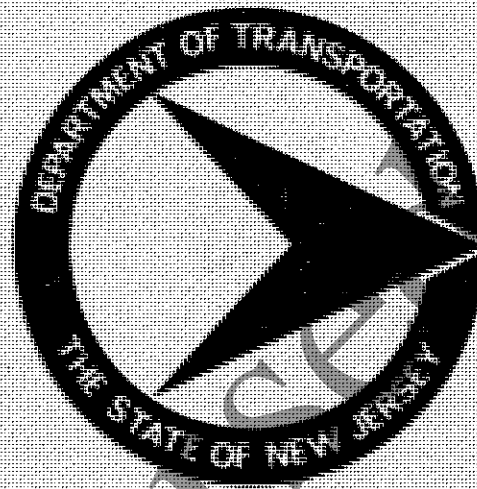


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**NEW JERSEY  
DEPARTMENT OF TRANSPORTATION**



**1980 SUPPLEMENT**

**TO THE  
STANDARD SPECIFICATIONS  
FOR  
ROAD AND BRIDGE CONSTRUCTION  
DATED 1961**

CONTENTS

DIVISION 1 GENERAL PROVISIONS	PAGE
<hr/>	
SECTION 1 GENERAL INFORMATION	
<hr/>	
1.1.3 DEFINITIONS .....	1
SECTION 2 INFORMATION FOR BIDDERS	
<hr/>	
1.2.4 PROPOSAL .....	4
1.2.5 PROPOSAL GUARANTEES .....	5
1.2.7 SUBMITTING PROPOSAL .....	5
1.2.9 CAUSES FOR REJECTION .....	6
1.2.11 FAMILIARITY WITH WORK .....	7
1.2.12 SUBSURFACE CONDITIONS .....	8
SECTION 3 CONTRACT AND SUBCONTRACT PROCEDURE	
<hr/>	
1.3.1 AWARD OF CONTRACT .....	8
1.3.2 PROGRESS SCHEDULE .....	9
1.3.3 RETURN OF PROPOSAL GUARANTEES .....	11
1.3.4 CONTRACT BOND .....	11
1.3.5 EXECUTION OF CONTRACT .....	12
1.3.6 FAILURE TO EXECUTE CONTRACT .....	12
1.3.7 SUBLETTING AND ASSIGNING CONTRACT .....	12
SECTION 4 SCOPE OF THE WORK	
<hr/>	
* 1.4.5 FIELD OFFICE AND MATERIALS FIELD LABORATORY .....	13
1.4.7 MATERIALS .....	17
1.4.10 WORKING SITE .....	22
(ADDED) 1.4.12 MOBILIZATION .....	22
SECTION 5 CONTROL OF THE WORK	
<hr/>	
1.5.1 DUTIES OF ENGINEER .....	23
1.5.2 PLANS AND SPECIFICATIONS .....	24
* 1.5.4 CONSTRUCTED LAYOUT .....	25

NOTE: \* ASTERISK DENOTES REVISED ARTICLE HEADING

SECTION 5 LEGAL AND PUBLIC RELATIONS		PAGE
1.5.2	DAMAGE CLAIMS .....	27
1.5.3	LAWS, ORDINANCES AND REGULATIONS .....	29
1.5.5	PERMITS AND LICENSES .....	31
1.5.6	RESPONSIBILITY FOR WORK .....	31
1.5.8	ACCIDENT PREVENTION .....	32
1.5.10	PROPERTY DAMAGE .....	32
1.5.11	PUBLIC UTILITIES .....	32

SECTION 7 PROCEDURE AND PROGRESS		PAGE
1.7.1	COMMENCEMENT AND PROCEDURE .....	34
1.7.7	LIQUIDATED DAMAGES .....	35

SECTION 9 MEASUREMENT AND PAYMENT		PAGE
1.9.1	MEASUREMENT OF QUANTITIES .....	37
1.9.5	PAYMENT .....	38
1.9.7	GUARANTY AGAINST DEFECTIVE WORK .....	40

DIVISION 2 EARTHWORK

	SECTION 1	CLEARING SITE .....	41
(ADDED)	SECTION 1A	SEALING OF ABANDONED WELLS .....	45
	SECTION 2	ROADWAY EXCAVATION .....	46
	SECTION 3	EMBANKMENT .....	51
	SECTION 4	BORROW EXCAVATION .....	56
(ADDED)	SECTION 4A	BORROW EXCAVATION, BRIDGE FOUNDATION .....	57
(ADDED)	SECTION 4B	BORROW EXCAVATION, SELECTED MATERIAL .....	58
	SECTION 5	CHANNEL AND GUTCH EXCAVATION .....	59
	SECTION 6	FOUNDATION EXCAVATION .....	60
(ADDED)	SECTION 6A	BRIDGE EXCAVATION .....	61
(ADDED)	SECTION 6B	CRUSHED STONE BED .....	62
	SECTION 7	SUBSURFACE STRUCTURE EXCAVATION .....	63
	SECTION 8	ROAD-MIXED STABILIZATION .....	65
	SECTION 9	SURBASE .....	65
	SECTION 10	SUBGRADE .....	69
	SECTION 11	SHOULDERS .....	70
	SECTION 12	CONCRETE AND SLOPE PROTECTION .....	71
(ADDED)	SECTION 12A	CONCRETE SLOPE PROTECTION .....	71

DIVISION 1 PAVEMENTS

		PAGE
	SECTION 1 GRAVEL BASE COURSE .....	74
	SECTION 2 MACADAM BASE COURSE .....	74
	SECTION 2A BITUMINOUS-SEALIZED BASE COURSE .....	74
	SECTION 3 CONCRETE BASE COURSE .....	78
	SECTION 4 MODIFIED PENETRATION MACADAM INTERMEDIATE COURSE .....	79
	SECTION 5 GRAVEL SURFACE COURSE .....	80
	SECTION 6 BITUMINOUS SURFACE TREATMENT .....	80
	SECTION 9 PENETRATION MACADAM SURFACE COURSE .....	83
	SECTION 10 BITUMINOUS CONCRETE SURFACE COURSE, HOT-MIXED .....	83
(ADDED)	SECTION 10A OPEN GRADED PLANT MIX SURFACE COURSE .....	129
	SECTION 11 BITUMINOUS CONCRETE SURFACE COURSE, COLD-MIXED .....	132
	SECTION 12 CONCRETE SURFACE PAVEMENT .....	133
	SECTION 14 TRAFFIC STRIPES .....	154
(ADDED)	SECTION 14A TEMPORARY TRAFFIC STRIPES .....	155

DIVISION 4 BRIDGE STRUCTURES

	SECTION 1 CONCRETE STRUCTURES .....	160
(ADDED)	SECTION 1A CLASS C CONCRETE (ROADWAY) .....	169
(ADDED)	SECTION 1B REINFORCEMENT STEEL IN STRUCTURES, EPDM COATED .....	169
(ADDED)	SECTION 1C MEMBRANE WATERPROOFING .....	192
(ADDED)	SECTION 1D SEPARATION .....	199
(ADDED)	SECTION 1E LOW SLUMP HIGH DENSITY CONCRETE .....	200
(ADDED)	SECTION 1F LATEX MODIFIED CONCRETE OVERLAY .....	209
	SECTION 2 PRESTRESSED CONCRETE STRUCTURES .....	217
	SECTION 3 STEEL STRUCTURES .....	223
	SECTION 4 TIMBER STRUCTURES .....	239
	SECTION 5 BEARING PILES .....	243
	SECTION 6 ABUTMENTS .....	251
	SECTION 8 METAL BRIDGE RAILINGS .....	255
(ADDED)	SECTION 9 OVERHEAD SIGN SUPPORTS .....	256

DIVISION 5 ROAD STRUCTURES

	SECTION 1 UNDERDRAINS .....	269
(ADDED)	SECTION 1A UNDERDRAINS, BRIDGE .....	271
	SECTION 2 STORM DRAINS .....	272
(ADDED)	SECTION 2A STORM DRAINS, BRIDGE .....	274
	SECTION 3 MANHOLES, INLETS AND CATCH BASINS .....	277
	SECTION 4 GUTTERS .....	279
	SECTION 5 CURBS AND HEADERS .....	279

CONTENTS

PAGE NO. 3

	SECTION 5	WHITE CONCRETE CURB .....	280
(ADDED)	SECTION 6A	WHITE CONCRETE BARRIER CURB, BRIDGE ..	282
	SECTION 8	SIDEWALKS .....	293
	SECTION 9	ISLAND PAVEMENT .....	295
	SECTION 11	CONCRETE CURB WALLS .....	296
	SECTION 12	HEADWALLS AND CURBS .....	298
	SECTION 13	MONUMENTS AND FEDERAL PROJECT MARKER POSTS .....	297
	* SECTION 14	BEAM GUIDE RAIL .....	298
(ADDED)	SECTION 14A	BEAM GUIDE RAIL, BRIDGE .....	299
(ADDED)	SECTION 14B	RUB RAIL .....	290
(ADDED)	SECTION 14C	BREAKAWAY CABLE TERMINALS .....	291
(ADDED)	SECTION 17	FENCES .....	293

DIVISION 7 LANDSCAPING

	SECTION 1	SELECTIVE THINNING .....	304
(ADDED)	SECTION 1A	SELECTIVE CLEARING .....	304
	SECTION 2	TRIMMING EXISTING TREES .....	306
(ADDED)	SECTION 2A	TREE REMOVAL .....	306
	* SECTION 5	TOPSOILING .....	308
	SECTION 6	SLOPE BOARDS .....	310
	SECTION 7	FERTILIZING AND SEEDING .....	311
(ADDED)	SECTION 7A	SOIL STABILIZATION MATTING .....	315
	SECTION 8	SOODING .....	317
	SECTION 9	MULCHING .....	320
	SECTION 10	PLANTING .....	322
	SECTION 11	MOWING .....	329

DIVISION 8 MATERIALS

SECTION 1 BITUMINOUS MATERIALS

	B.1.2	ASPHALT CEMENT FOR PAVING .....	331
	B.1.5	ASPHALT, EMULSIFIED .....	332
	* B.1.7	ASPHALT, CUTBACK .....	332
	B.1.8	JOINT FILLER, PREFORMED .....	333
(ADDED)	B.1.9	JOINT SEALER AND FILLERS, LIQUID .....	333
		TABLE 19 USES OF BITUMINOUS MATERIALS .....	335

SECTION 3 LANDSCAPING MATERIALS

	B.3.1	FERTILIZERS .....	325
	* B.3.3	LIMESTONE, PULVERIZED .....	327
	B.3.5	MISCELLANEOUS LANDSCAPE MATERIALS .....	327

NOTE: \* ASTERISK DENOTES REVISED SECTION/ARTICLE HEADING

B.3.6	MULCH .....	340
B.3.9	PLANT MATERIALS .....	341
B.3.10	SEED MIXTURES .....	341
B.3.11	SOD .....	344
B.3.12	TOPSOIL .....	345

#### SECTION 4 METALS

B.4.1	ALUMINUM ALLOYS .....	346
B.4.2	BEARING AND EXPANSION PLATES .....	347
* B.4.16	STEEL POSTS FOR BEAM GUIDE RAIL .....	348
* B.4.17	STEEL RAIL ELEMENT FOR BEAM GUIDE RAIL ....	348
B.4.18	STEEL, REINFORCEMENT, FOR PAVEMENT .....	348
B.4.19	STEEL, REINFORCEMENT, FOR STRUCTURES .....	349
B.4.20	STEEL, REINFORCEMENT, POST-TENSIONING STRANDS, POST-TENSIONING TENDONS AND HIGH-TENSILE ALLOY BARS FOR PRESTRESSED CONCRETE CONSTRUCTION .....	350
B.4.21	STEEL, REINFORCEMENT, PRE-TENSIONING STRANDS FOR PRESTRESSED CONCRETE CONSTRUCTION .....	350
* B.4.23	STRUCTURAL STEEL .....	351
B.4.24	STEEL, STRUCTURAL FOR WELDED MEMBERS .....	352
B.4.25	STEEL, STRUCTURAL NICKEL .....	353
(REVISED) B.4.35	STEEL BARS, HOT GALVANIZED .....	353

#### SECTION 5 NONMETALLIC MATERIALS

B.5.2	AIR-ENTRAINING ADMIXTURES FOR CONCRETE ....	353
B.5.3	AGGREGATE, GENERAL .....	354
B.5.4	AGGREGATE, COARSE .....	354
	TABLE 2E STANDARD SIZES OF COARSE AGGREGATES .....	356
B.5.5	BROKEN STONE .....	357
B.5.6	GRAVEL, WASHED .....	359
B.5.7	SLAG, BLAST FURNACE .....	359
B.5.8	SLAG, PULVER .....	360
B.5.9	AGGREGATE, FINE .....	360
B.5.10	AGGREGATE, FINE, FOR PORTLAND CEMENT CONCRETE AND MORTAR .....	361
B.5.11	AGGREGATE, FINE, FOR WHITE PORTLAND CEMENT CONCRETE AND MORTAR ....	361
B.5.12	AGGREGATE, FINE, OR BITUMINOUS CONCRETE AND SHEET ASPHALT .....	362
B.5.15	BLOCK, CONCRETE, FOR INLETS, CATCH BASINS AND MANHOLES .....	364

NOTE: \* ASTERISK DENOTES REVISED ARTICLE HEADING

	B.5.14	BLOCK, CONCRETE, FOR SLOPE PROTECTION .....	364
	B.5.15	BRICK, CONSTRUCTION .....	365
	B.5.19	CALCIUM CHLORIDE .....	365
	B.5.22	CEMENT, STANDARD PORTLAND .....	365
	B.5.23	CEMENT, AIR-ENTRAINING PORTLAND .....	366
	B.5.29	CURING MATERIALS FOR CONCRETE .....	366
	B.5.31	JOINT FILLER, PREFORMED .....	367
	B.5.34	MINERAL FILLER .....	367
	B.5.39	WATERPROOFING PROTECTION, INSULATION BOARD .....	368
(ADDED)	B.5.40	RETARDING ADMIXTURE .....	368
(ADDED)	B.5.41	EPOXY WATERPROOFING .....	368
(ADDED)	B.5.42	PREFORMED ELASTIC JOINT SEALER .....	370
(ADDED)	B.5.43	EPOXY SEAL COAT .....	373
(ADDED)	B.5.44	PLASTIC WATERSTOP .....	374
(ADDED)	B.5.46	EPOXY FOR COATING REINFORCEMENT STEEL .....	385

#### SECTION 6 PAINTS

	B.6.1	GENERAL .....	390
	B.6.4	FOLIAGE GREEN PAINT .....	390
	B.6.5	GRAPHITE PAINT, BLACK .....	392
	B.6.6	GREEN ENAMEL PAINT .....	394
	B.6.7	RED LEAD PAINT .....	394
	B.6.8	RED LEAD-GRAPHITE PAINT .....	395
	B.6.9	RUST-INHIBITIVE PRIMER .....	395
	B.6.12	ZINC OXIDE-IRON OXIDE PAINT .....	395
	B.6.14	TRAFFIC PAINT .....	395
	B.6.15	GLASS BEADS FOR REFLECTORING TRAFFIC PAINT .....	400
(ADDED)	B.6.16	LAKE BLUE PAINT .....	400
(ADDED)	B.6.17	VINYL SHOP PRIMER .....	401
(ADDED)	B.6.18	VINYL INTERMEDIATE COAT .....	401
(ADDED)	B.6.19	VINYL INTERMEDIATE COAT OR ALTERNATE SHOP PRIMER .....	405
(ADDED)	B.6.20	VINYL FINISH COAT, GREEN AND BLUE .....	408
(ADDED)	B.6.21	ZINC-RICH PRIMER, ORGANIC VEHICLE TYPE .....	410
(ADDED)	B.6.22	VINYL WASH PRIMER .....	414

#### SECTION 7 PIPE

	B.7.2	CAST IRON CULVERT PIPE .....	415
	B.7.3	CAST IRON WATER PIPE .....	415
	B.7.4	CLAY PIPE .....	417
	B.7.5	CONCRETE PIPE .....	417
	B.7.6	CORRUGATED METAL PIPE .....	418
	B.7.7	CORRUGATED METAL PIPE-ARCHES .....	419

NOTE: \* ASTERISK DENOTES REVISED ARTICLE HEADING

SECTION 8 SOIL AGGREGATES

	PAGE
8.8.1 SOIL AGGREGATES .....	420
TABLE 36 SOIL AGGREGATE GRADATIONS .....	423

DIVISION 9 METHODS OF TESTS AND  
TEMPERATURE-VOLUME CORRECTION FACTORS

SECTION 1 METHODS OF TESTS

9.1.13 METHOD OF TEST FOR DETERMINING WATER RESISTANCE OF TRAFFIC PAINT .....	423
9.1.14 METHOD OF TESTS FOR GLASS BEADS .....	423
(ADDED) 9.1.15 METHOD OF TEST FOR SOUNDNESS OF AGGREGATES BY USE OF SODIUM SULPHATE .....	424
(ADDED) 9.1.20 METHOD OF TEST FOR DETERMINING MICA IN FINE AGGREGATE .....	427
(ADDED) 9.1.21 METHOD OF TEST FOR MAXIMUM SPECIFIC GRAVITY OF BITUMINOUS PAVING MIXTURES BY SOLVENT IMMERSIONS .....	428
(ADDED) 9.1.22 METHOD OF SAMPLING BITUMINOUS MIXTURES ....	430
(ADDED) 9.1.23 METHOD OF TEST FOR LABORATORY ANALYSIS OF BITUMINOUS CONCRETE .....	433
(ADDED) 9.1.24 METHOD OF TEST TO MEASURE THICKNESS OF BITUMINOUS PAVEMENT FROM CORES .....	438
(ADDED) 9.1.25 METHOD OF TEST FOR DETERMINATION OF PERCENTAGE OF CARBONATES IN CRUSHED GRAVEL BY PETROGRAPHIC ANALYSIS .....	439
(ADDED) 9.1.26 METHOD OF TEST TO DETERMINE THE PERCENTAGE OF ADHERENT FINES PRESENT IN COARSE AGGREGATE .....	441
(ADDED) 9.1.27 METHOD OF TEST FOR RAPIDLY DETERMINING THE BREAKDOWN IN SIZES OF GRADED AGGREGATE BASE COURSE USING A MODIFIED PROCTOR COMPRESSION EFFORT .....	442
(ADDED) 9.1.28 METHOD OF TEST FOR DETERMINING CONFORMANCE OF BITUMINOUS CONCRETE MIXTURE FOR FULLY AUTOMATED PLANTS USING HOT BIN SAMPLES AND BATCH WEIGHT PRINTOUTS .....	443

SECTION 2 TEMPERATURE-VOLUME CORRECTION FACTORS

9.2.1 TEMPERATURE-VOLUME CORRECTION FACTORS .....	445
---	-----



Superseded

DIVISION 1  
-----  
GENERAL PROVISIONS  
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SECTION 1  
-----  
GENERAL INFORMATION  
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1.1.3. DEFINITIONS.

THE SECOND AND THIRD ABBREVIATIONS AND THEIR MEANINGS ON PAGE 1 OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

A.A.S.H.O. OR A.A.S.H.T.O., AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.

A.S.A. OR A.N.S.I., AMERICAN NATIONAL STANDARDS INSTITUTE.

THE FOLLOWING ABBREVIATION AND ITS MEANING IS ADDED ON PAGE 1 OF THE STANDARD SPECIFICATIONS:

N.E.M.A., NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION.

THE FOLLOWING IS ADDED UNDER ABBREVIATIONS ON PAGE 1 OF THE STANDARD SPECIFICATIONS:

NOTE: WHENEVER ANY OF THE ABOVE ABBREVIATIONS OF REFERENCE PUBLICATIONS ARE SPECIFIED, IT SHALL MEAN THE CURRENT ISSUE UNLESS THE DATE OR YEAR IS SPECIFICALLY PROVIDED.

THE LAST TERM AND ITS MEANING ON PAGE 1 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BUREAU OF PUBLIC ROADS, THE FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION, WASHINGTON, D.C., ACTING THROUGH ITS REPRESENTATIVES ON WORK IN WHICH THE FEDERAL GOVERNMENT PARTICIPATES.

THE FIRST, SECOND AND FIFTH TERMS AND THEIR MEANINGS ON PAGE 2 OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

COMMISSIONER, THE COMMISSIONER OF THE DEPARTMENT OF  
TRANSPORTATION OF NEW JERSEY, AS ESTABLISHED BY  
CHAPTER 301, P.L. 1966 APPROVED DECEMBER 12, 1966.

CONTRACT, THE AGREEMENT COVERING THE PERFORMANCE OF THE  
PROJECT AND PAYMENTS THEREFOR, INCLUDING ADVERTISE-  
MENT FOR PROPOSAL, PROPOSAL, CERTIFICATION AS TO  
PUBLICATION AND NOTICE OF ADVERTISEMENT FOR  
PROPOSAL, APPOINTMENT OF AGENT BY NONRESIDENT  
CONTRACTORS, NONCOLLUSION AFFIDAVIT, WARRANTY  
CONCERNING SOLICITATION OF THE CONTRACT BY OTHERS,  
PROGRESS SCHEDULE, RESOLUTION OF AWARD OF CONTRACT,  
EXECUTED FORM OF CONTRACT, CONTRACT BOND, STANDARD  
SPECIFICATIONS, SUPPLEMENT, SUPPLEMENTARY SPECIFI-  
CATIONS, PLANS, CHANGE ORDERS, SUPPLEMENTARY AGREE-  
MENTS, AND LETTERS AND OTHER FORMS OF NOTICE GIVING  
REVISIONS AND INTERPRETATIONS OF ANY OF THE FORE-  
GOING DOCUMENTS WHICH ARE MAILED OR OTHERWISE  
SENT TO PROSPECTIVE BIDDERS, ALL OF WHICH ARE TO  
BE TREATED AS ONE INSTRUMENT WHETHER OR NOT SET  
FORTH AT LENGTH IN THE FORM OF CONTRACT.

DEPARTMENT, THE DEPARTMENT OF TRANSPORTATION OF NEW  
JERSEY, AS ESTABLISHED BY CHAPTER 301, P.L. 1966  
APPROVED DECEMBER 12, 1966.

THE FIRST TERM AND ITS MEANING OF PAGE 3 OF THE STANDARD  
SPECIFICATIONS IS DELETED.

THE SECOND AND FIFTH TERMS AND THEIR MEANINGS ON PAGE 3  
OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

SPECIFICATIONS, THE STANDARD SPECIFICATIONS, THE SUPPLE-  
MENT, THE SUPPLEMENTARY SPECIFICATIONS AND ALL  
WRITTEN AGREEMENTS, MADE OR TO BE MADE, PERTAINING  
TO THE METHOD OR MANNER OF PERFORMING THE PROJECT  
OR TO THE QUANTITIES OR QUALITIES OF MATERIALS TO  
BE FURNISHED FOR THE PROJECT.

SUPPLEMENTARY SPECIFICATIONS, ADDITIONS TO OR AMENDMENTS  
OF THE STANDARD SPECIFICATIONS AND THE SUPPLEMENT  
PERTAINING TO THE PROJECT.

THE LAST TERM AND ITS MEANING ON PAGE 3 OF THE STANDARD  
SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WORKING DAY, A CALENDAR DAY EXCLUSIVE OF SATURDAYS,  
SUNDAYS, AND HOLIDAYS AND EXCLUSIVE OF THOSE  
DAYS WHICH THE ENGINEER DETERMINES WEATHER OR  
OTHER CONDITIONS, NOT UNDER THE CONTROL OF THE

CONTRACTOR, WOULD NOT PERMIT CONSTRUCTION OPERATIONS TO PROCEED FOR THE MAJOR PART OF THE DAILY SHIFT WITH THE NORMAL WORKING FORCE ENGAGED IN PERFORMING THE ITEM OR ITEMS OF WORK WHICH WOULD BE IN PROGRESS AT THE TIME.

THE FOLLOWING TERMS AND THEIR MEANINGS ARE ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CALENDAR DAY OR DAY, EVERY DAY SHOWN ON THE CALENDAR.

CURRENT, THE DATE PRIOR TO THE DATE FOR THE RECEIPT OF BIDS FOR THE PROJECT.

INTERAGENCY ENGINEERING COMMITTEE, REPRESENTATION OF THE DEPARTMENT, THE NEW JERSEY TURNPIKE AUTHORITY, THE NEW JERSEY HIGHWAY AUTHORITY, THE PORT AUTHORITY OF NEW YORK AND THE DELAWARE RIVER PORT AUTHORITY.

STATE BUSINESS DAY, A CALENDAR DAY, EXCLUSIVE OF SATURDAYS, SUNDAYS, STATE RECOGNIZED LEGAL HOLIDAYS, AND SUCH OTHER HOLIDAYS OR STATE OFFICE CLOSINGS AS DECLARED BY THE GOVERNOR.

SUBSTANTIAL COMPLETION, A CONTRACT SHALL BE DEEMED SUBSTANTIALLY COMPLETE WHEN THE PERFORMANCE OF ALL WORK UNDER THE CONTRACT, EXCEPT LANDSCAPING ITEMS, FINAL CLEANING UP AND REPAIR OF COMPLETED CONSTRUCTION NOT ACCEPTABLE TO THE ENGINEER, HAS BEEN COMPLETED, PROVIDED THAT, THE ENGINEER HAS DETERMINED, IN HIS SOLE DISCRETION, THAT THE PROJECT IS SAFE AND CONVENIENT FOR USE BY THE PUBLIC, AND, PROVIDED FURTHER, THAT THE VALUE OF THE WORK REMAINING TO BE PERFORMED UNDER THE CONTRACT INCLUDING REPAIRS AND CLEANING UP IS LESS THAN 2 PERCENT OF THE TOTAL CONTRACT PRICE. FOR HIGHWAY PROJECTS OVER NEW RIGHT-OF-WAY SUBSTANTIAL COMPLETION SHALL, IN ADDITION, BE DEEMED TO REQUIRE THAT THE PROJECT BE ACCEPTABLE TO THE ENGINEER FOR OPENING TO TRAFFIC.

SUPPLEMENT, ADDITIONS TO OR AMENDMENTS OF THE STANDARD SPECIFICATIONS.

SECTION 2

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INFORMATION FOR BIDDERS  
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1.2.4. PROPOSAL.

-----  
THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PROPOSALS SHALL BE SUBMITTED ON THE FORM OF PROPOSAL FURNISHED BY THE DEPARTMENT, AND SHALL BE PROPERLY FILLED OUT AND DULY EXECUTED. THE BIDDER SHALL STATE IN THE FORM OF PROPOSAL, IN FIGURES, THE PRICE PER UNIT OF MEASURE FOR EACH SCHEDULED ITEM OF WORK FOR WHICH HE WILL AGREE TO CARRY OUT THE WORK, THE PRODUCTS OF THE RESPECTIVE ESTIMATED QUANTITIES AND THE UNIT PRICE BID THEREFOR, AND THE TOTAL PRICE FOR THE PERFORMANCE OF THE PROJECT OBTAINED BY ADDING THE AMOUNTS OF THE SEVERAL ITEMS. ALL FIGURES SHALL BE TYPEWRITTEN OR WRITTEN IN INK.

AFTER THE PROPOSALS ARE OPENED AND READ, THEY WILL BE COMPARED ON THE BASIS OF THE CORRECTLY DETERMINED PRODUCTS OF ALL THE QUANTITIES FOR CONTRACT ITEMS SHOWN IN THE PROPOSAL MULTIPLIED BY THE UNIT PRICES BID. AWARD WILL BE MADE ON THE BASIS OF THE CORRECT TOTAL CONTRACT PRICE.

IN THE EVENT OF A DISCREPANCY BETWEEN THE UNIT PRICE BID FOR ANY CONTRACT ITEM AND THE EXTENSION SHOWN FOR THAT ITEM UNDER THE COLUMN OF THE PROPOSAL DESIGNATED AMOUNT THE UNIT PRICE SHALL GOVERN. WHERE A UNIT PRICE IS BID FOR A CONTRACT ITEM, BUT NO EXTENSION IS PROVIDED, THE DEPARTMENT SHALL PROVIDE THE EXTENSION BASED ON THE UNIT PRICE BID AND THE ESTIMATED QUANTITY FOR THAT CONTRACT ITEM. WHERE AN EXTENSION IS PROVIDED BY THE BIDDER IN THE AMOUNT COLUMN, BUT NO UNIT PRICE APPEARS IN THE UNIT PRICE COLUMN OF THE PROPOSAL, THE DEPARTMENT SHALL PROVIDE THE UNIT PRICE BY DIVIDING THE AMOUNT FIGURE PROVIDED BY THE BIDDER BY THE ESTIMATED QUANTITY. WHERE NO FIGURE IS PROVIDED BY THE BIDDER IN BOTH THE UNIT PRICE AND AMOUNT COLUMNS FOR ONE OR MORE CONTRACT ITEMS, OR WHERE NO FIGURE IS PROVIDED BY THE BIDDER IN THE AMOUNT COLUMN FOR ONE OR MORE LUMP SUM CONTRACT ITEMS, THE BID WILL BE CONSIDERED TO BE NON-CONFORMING AND SHALL BE REJECTED.

THE LAST SENTENCE OF THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BEFORE AWARD IS MADE TO A BIDDER NOT A RESIDENT OF THE STATE OF NEW JERSEY, SUCH BIDDER SHALL APPOINT, ON THE FORM FURNISHED BY THE DEPARTMENT, A PROPER AGENT IN THE STATE OF NEW JERSEY ON WHOM SERVICE CAN BE MADE IN EVENT OF LITIGATION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE BIDDER SHALL ALSO STATE THE PRICE PER UNIT OF MEASURE FOR EACH ALTERNATIVE ITEM SCHEDULED IN THE PROPOSAL REGARDLESS OF WHICH THE ENGINEER SELECTS AFTER AWARD OF CONTRACT. HOWEVER, THE PRODUCT SHALL BE SHOWN ONLY FOR THE LOWEST PRICED.

1.2.6. PROPOSAL GUARANTIES.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE PROPOSAL WHEN SUBMITTED SHALL BE ACCOMPANIED BY A PROPOSAL BOND SATISFACTORY TO THE COMMISSIONER, ON THE FORM FURNISHED BY THE DEPARTMENT AND ATTACHED TO THE FORM OF PROPOSAL, FOR A SUM OF NOT LESS THAN 50 PER CENT OF THE TOTAL PRICE BID FOR THE PROJECT.

THE PROPOSAL BOND SHALL BE PROPERLY FILLED OUT, SIGNED AND WITNESSED, AND SHALL BE FURNISHED ONLY BY SUCH SURETY COMPANY OR COMPANIES AS ARE LISTED IN THE CURRENT U.S. TREASURY DEPARTMENT CIRCULAR 570 AS OF THE DATE FOR RECEIPT OF BIDS FOR THE PARTICULAR PROJECT.

THE PROPOSAL BOND SHALL BE ACCOMPANIED BY A COPY OF THE POWER OF ATTORNEY EXECUTED BY THE SURETY COMPANY OR COMPANIES. THE POWER OF ATTORNEY SHALL SET FORTH THE AUTHORITY OF THE ATTORNEY-IN-FACT WHO HAS SIGNED THE BOND ON BEHALF OF THE SURETY COMPANY TO BIND THE COMPANY AND SHALL FURTHER CERTIFY THAT SUCH POWER IS IN FULL FORCE AND EFFECT AS OF THE DATE OF THE BOND.

1.2.7. SUBMITTING PROPOSAL.

THE LAST SENTENCE OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ENCLOSED IN THE SEALED ENVELOPE WITH THE PROPOSAL SHALL BE SUBMITTED THE FOLLOWING DOCUMENTS:

CONTRACTOR'S UPDATED FINANCIAL STATEMENT ON FORM DC-74 B FURNISHED BY THE DEPARTMENT AND INCLUDED WITH THE ENVELOPE DESCRIBED ABOVE, PROPERLY FILLED OUT, SIGNED AND NOTARIZED.

PROPOSAL BOND AS DESCRIBED IN ARTICLE 1.2.6 ON FORM DC-7.

THE FIRST AND SECOND FULL PARAGRAPHS ON PAGE 6 OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

WHEN THE BIDDER SUBMITS PROPOSALS FOR TWO OR MORE PROJECTS, A SINGLE CONTRACTOR'S UPDATED FINANCIAL STATEMENT, SUBMITTED IN A SEPARATE SEALED ENVELOPE, WILL BE ACCEPTED IN LIEU OF A SEPARATE STATEMENT FOR EACH PROJECT.

WHEN LETTERS AND OTHER FORMS OF NOTICE, GIVING REVISIONS AND INTERPRETATIONS OF THE PLANS, SPECIFICATIONS, PROPOSAL AND OTHER CONTRACT DOCUMENTS, ARE MAILED OR OTHERWISE SENT TO PROSPECTIVE BIDDERS, ACKNOWLEDGEMENT THEREOF MUST BE MADE BY THE BIDDER, IF AN INDIVIDUAL, BY AN OFFICER OF THE COMPANY, OR A PARTNER. THE ACKNOWLEDGEMENT SHALL BE SENT TO THE BUREAU OF CONTRACT ADMINISTRATION OF THE DEPARTMENT, AND MUST BE RECEIVED BEFORE THE PROPOSAL OF THE BIDDER CONCERNED WILL BE OPENED.

THE THIRD FULL PARAGRAPH ON PAGE 6 AND THE LAST PARAGRAPH BEGINNING ON PAGE 6 OF THE STANDARD SPECIFICATIONS ARE DELETED.

1.2.9. CAUSES FOR REJECTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BID ENVELOPES SUBMITTED BY BIDDERS NOT QUALIFIED TO BID ACCORDING TO THE PROVISIONS OF ARTICLE 1.2.2 WILL NOT BE ACCEPTED BUT WILL BE RETURNED TO THE BIDDER UNOPENED.

IF ACKNOWLEDGEMENTS OF LETTERS AND OTHER NOTICES TO PROSPECTIVE BIDDERS, GIVING REVISIONS OF OR AMENDMENTS TO CONTRACT DOCUMENTS, HAVE NOT BEEN RECEIVED BY THE DEPARTMENT FROM A PROSPECTIVE BIDDER AS PRESCRIBED IN ARTICLE 1.2.7, THE BID ENVELOPE SUBMITTED BY SUCH A BIDDER WILL NOT BE ACCEPTED BUT WILL BE RETURNED TO THE BIDDER UNOPENED.

PROPOSALS WILL BE REJECTED FOR THE FOLLOWING REASONS:

IF THE BID PROPOSAL IS NOT PROPERLY SIGNED.

IF THE BID PROPOSAL FAILS TO INCLUDE PRICES IN BOTH THE UNIT PRICE AND THE AMOUNT COLUMNS FOR ONE OR MORE CONTRACT ITEMS OR IN THE AMOUNT COLUMN FOR ONE OR MORE LUMP SUM CONTRACT ITEMS.

IF THE BID IS NOT TYPED OR IN INK.

IF THE TOTAL AMOUNT OF THE BID IS ABOVE THE CLASSIFICATION HELD BY THE BIDDER AS OF THE DATE OF THE OPENING OF THE BID PROPOSALS.

IF THE BID PROPOSAL FAILS TO SET FORTH A TOTAL AMOUNT FOR THE BID.

PROPOSALS FROM BIDDERS WILL ALSO BE REJECTED FOR NON-COMPLIANCE WITH THE REQUIREMENTS FOR THE COMPLETION AND SUBMISSION OF THE FOLLOWING DOCUMENTS WITH THE BID PROPOSAL AS SPECIFIED IN ARTICLE 1.2.7:

CONTRACTOR'S UPDATED FINANCIAL STATEMENT.

PROPOSAL BOND.

PROPOSALS FROM BIDDERS WILL ALSO BE REJECTED IF THE BIDDER MAKES ANY ALTERATION OF THE UNIT PRICES OR AMOUNTS THAT HAVE BEEN INCLUDED BY THE DEPARTMENT, UNLESS OTHERWISE DIRECTED BY ADDENDUM RECEIVED PRIOR TO RECEIPT OF BIDS.

IN ADDITION, PROPOSALS MAY BE REJECTED FOR THE FOLLOWING REASONS:

IF CONDITIONS, LIMITATIONS OR PROVISOS ARE ATTACHED BY A BIDDER TO HIS PROPOSAL, IF PROPOSALS ARE OTHERWISE IRREGULAR, OR IF THE ENCLOSED OR ACCOMPANYING DOCUMENTS ARE NOT COMPLETED AND PROPERLY EXECUTED.

IF THE PRICES ARE OBVIOUSLY UNBALANCED.

IF RECEIVED FROM BIDDERS WHO HAVE PERFORMED WORK PREVIOUSLY FOR THE STATE IN AN UNSATISFACTORY MANNER.

IF THE COMMISSIONER, IN HIS SOLE DISCRETION, DEEM IT ADVISABLE TO DO SO IN THE INTEREST OF THE STATE.

1.2.11. FAMILIARITY WITH WORK.

ALL REFERENCE TO THE REMOVAL OF BUILDINGS BY THE CONTRACTOR IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

DIVISION 1

PAGE NO. 7



THE CONTRACTOR SHALL MAKE NO CLAIMS FOR ADDITIONAL COM-  
PENSATION ON ACCOUNT OF DELAYS OR NECESSARY ALTERATIONS IN THE  
PROCEDURE OF HIS WORK THAT MAY BE CAUSED BY DELAYS IN THE VACATING  
OR REMOVAL OF BUILDINGS BY OTHERS AND/OR THE ACQUISITION OF RIGHT-  
OF-WAY.

1.2.12. SUBSURFACE CONDITIONS.

THE FOLLOWING PARAGRAPH IS ADDED TO THIS ARTICLE OF THE  
STANDARD SPECIFICATIONS:

SUCH INFORMATION AS THE DEPARTMENT HAS ON SUBSURFACE  
CONDITIONS RELATING TO THE CONSTRUCTION OF THE PROJECT IS ON FILE  
AT THE BUREAU OF GEOTECHNICAL ENGINEERING AND IS AVAILABLE FOR  
INSPECTION OR PURCHASE.

SECTION 3

CONTRACT AND SUBCONTRACT PROCEDURE

1.3.1. AWARD OF CONTRACT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED  
TO READ AS FOLLOWS:

AWARD, IF MADE, WILL BE TO THE LOWEST RESPONSIBLE BIDDER  
WHOSE PROPOSAL CONFORMS IN ALL RESPECTS TO THE REQUIREMENTS STATED  
HEREIN. THE COMMISSIONER WILL AWARD THE CONTRACT OR ALTERNATIVELY  
REJECT ALL BIDS WITHIN 30 STATE BUSINESS DAYS AFTER THE BIDS ARE  
RECEIVED, EXCEPT THAT TIME LIMIT MAY BE EXTENDED BY MUTUAL AGREE-  
MENT. THE AWARD SHALL NOT BE BINDING UPON THE STATE UNTIL THE  
CONTRACT HAS BEEN EXECUTED BY THE COMMISSIONER, NOR SHALL ANY  
WORK BE PERFORMED ON ACCOUNT OF THE PROPOSED CONTRACT UNTIL THE  
CONTRACT HAS BEEN DULY EXECUTED AND DELIVERED.

1.3.2. PROGRESS SCHEDULE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD  
SPECIFICATIONS:

WHEN AN ITEM PROGRESS SCHEDULE IS SCHEDULED IN THE PROPOSAL, THE CONTRACTOR SHALL FURNISH THE SCHEDULE IN ACCORDANCE WITH THIS ARTICLE OF THE STANDARD SPECIFICATIONS AND WITH THE FOLLOWING:

THE PROGRESS SCHEDULE SHALL BE PREPARED BY THE CRITICAL PATH METHOD (CPM), PROJECT EVALUATION AND REVIEW TECHNIQUE (PERT), OR A COMPARABLE NETWORK SYSTEM CONFORMING WITH THE REQUIREMENTS HEREINAFTER PRESCRIBED.

SCHEDULING OF CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. THEREFOR, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MOST FEASIBLE SYSTEM OF NETWORK DIAGRAMMING COMMENSURATE WITH THE CONTRACTOR'S ABILITIES. THE SYSTEM SELECTED SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. THE REQUIREMENT FOR THE SYSTEM IS INCLUDED TO ASSURE ADEQUATE PLANNING AND EXECUTION OF THE WORK, AND TO ASSIST THE ENGINEER IN APPRAISING THE REASONABLENESS OF THE PROPOSED SCHEDULE AND TO EVALUATE PROGRESS OF THE WORK.

IF IN THE PREPARATION OF THE NETWORK DIAGRAM, THE CONTRACT REFLECTS A COMPLETION DATE DIFFERENT THAN THE SPECIFIED COMPLETION DATE, THIS IN NO WAY VOIDS THE ORIGINAL DATE SET. THE DATE AS SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS SHALL BE THE GOVERNING DATE. THE NETWORK DIAGRAM AND THE CONTRACTOR'S SCHEDULE SHOULD REFLECT THE MOST LOGICAL TIME ESTIMATES BASED ON THE CONTRACTOR'S ABILITY TO COMPLETE THE PROJECT.

THE NETWORK SHALL INCLUDE, AS A MINIMUM, ONE ACTIVITY FOR EACH ITEM OF WORK SCHEDULED IN THE PROPOSAL. THE SYSTEM SHALL CONSIST OF NETWORK DIAGRAMS AND ACCOMPANYING MATHEMATICAL TABULATIONS AS DESCRIBED HEREINAFTER.

DIAGRAMS SHALL SHOW THE ORDER AND INTERDEPENDENCE OF ACTIVITIES AND THE SEQUENCE AND QUANTITIES IN WHICH THE WORK IS TO BE ACCOMPLISHED AS PLANNED BY THE CONTRACTOR. THE BASIC CONCEPT OF NETWORK SCHEDULING SHALL BE FOLLOWED TO SHOW HOW THE START OF A GIVEN ACTIVITY IS DEPENDENT ON THE COMPLETION OF PRECEDING ACTIVITIES AND HOW ITS COMPLETION MAY AFFECT THE START OF FOLLOWING ACTIVITIES. THE CRITICAL PATH SHALL BE DISTINGUISHED FROM OTHER PATHS ON THE NETWORK. THE NETWORK DIAGRAM SHALL INCLUDE THE FOLLOWING:

- (1) ACTIVITY DESCRIPTION
- (2) ACTIVITY DURATION (WORK DAYS)
- (3) CRITICAL PATH DENOTED
- (4) EVENT NODES NUMBERED
- (5) ALL RESTRAINTS NOTED
- (6) SLACK OR FLOAT FOR EACH ACTIVITY
- (7) WORK DAYS CALENDAR

IN ADDITION TO CONSTRUCTION ACTIVITIES, NETWORK ACTIVITIES SHALL INCLUDE THE FOLLOWING: (1) THE SUBMITTAL AND APPROVAL OF SAMPLES OF MATERIALS AND SHOP DRAWINGS, (2) FABRICATION OF SPECIAL MATERIALS. ALL ACTIVITIES OF THE DEPARTMENT THAT AFFECT PROGRESS AND ANY SPECIAL CONTRACT REQUIRED DATES SHALL BE SHOWN.

THE MATHEMATICAL TABULATION OF THE NETWORK DIAGRAM SHALL INCLUDE A TABULATION OF EACH ACTIVITY SHOWN ON THE DETAILED NETWORK DIAGRAM. THE FOLLOWING INFORMATION SHALL BE FURNISHED AS A MINIMUM FOR EACH ACTIVITY ON THIS TABULATION:

- (1) EVENT NODES NUMBERED
- (2) ACTIVITY DESCRIPTION
- (3) ESTIMATED DURATION
- (4) EARLIEST START DATE (CALENDAR DATE)
- (5) EARLIEST FINISH DATE (CALENDAR DATE)
- (6) LATEST START DATE (CALENDAR DATE)
- (7) LATEST FINISH DATE (CALENDAR DATE)
- (8) SLACK OR FLOAT FOR EACH ACTIVITY
- (9) QUANTITIES INVOLVED ON EACH ACTIVITY
- (10) PERCENTAGES OF ACTIVITY COMPLETED
- (11) CRITICAL PATH ACTIVITIES DENOTED

THIS MATHEMATICAL TABULATION CAN BE EITHER A COMPUTER PRINTOUT IF A COMPUTER IS UTILIZED IN COMPUTATIONS, OR ONE MANUALLY PREPARED BY THE CONTRACTOR, WITH A COLUMN FOR EACH OF THE ABOVE REQUIREMENTS.

THE CONTRACTOR SHALL UPDATE THE MATHEMATICAL TABULATION ON A TWO MONTH BASIS AND WILL PROVIDE THE ENGINEER WITH UPDATED COPIES OF THE COMPUTER PRINTOUT OR MANUAL TABULATION, WHICHEVER IS UTILIZED. THE UPDATED TABULATIONS SHALL REFLECT THE CURRENT STATUS OF ACTIVITIES AS OUTLINED ON THE NETWORK DIAGRAM. IF ANY DELAYS HAVE OCCURRED, THESE SHALL BE NOTED FOR TIME CONSIDERATION. THE UPDATED TABULATION SHEET SHALL REFLECT ALL CHANGES IN DATES, DURATIONS, AND FLOAT TIME.

CONDITIONS MAY DEVELOP WHICH REQUIRE NETWORK LOGIC REVISIONS TO THE ORIGINAL DIAGRAM. IF DURING THE PROGRESS OF THE WORK, MAJOR CHANGES DEVELOP WHICH NECESSITATE CHANGES IN THE ORIGINAL PLAN, THE CONTRACTOR SHALL MAKE SUCH CHANGES SO AS TO DEPICT THE CURRENT MODE OF OPERATION AND SHALL PROVIDE THE ENGINEER WITH A REVISED NETWORK DIAGRAM.

PAYMENT FOR PREPARATION AND UPDATING THE PROGRESS SCHEDULE WILL BE MADE AT THE LUMP SUM PRICE BID FOR THE ITEM PROGRESS SCHEDULE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF ALL WORK DESCRIBED ABOVE, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

1.3.3. RETURN OF PROPOSAL GUARANTIES.

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THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE PROPOSAL GUARANTIES OF ALL BUT THE LOWEST AND NEXT LOWEST BIDDERS ON EACH PROJECT WILL BE RETURNED WITHIN 3 STATE BUSINESS DAYS AFTER RECEIPT OF BIDS. THE PROPOSAL GUARANTIES OF THE LOWEST AND NEXT LOWEST BIDDERS ON EACH PROJECT WILL BE RETURNED WHEN THE CONTRACT AND CONTRACT BOND HAVE BEEN EXECUTED AND DELIVERED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.3.5 OR, IF NOT EXECUTED, WHEN OTHER DISPOSITION OF THE MATTER SHALL HAVE BEEN MADE BY THE COMMISSIONER EXCEPT, HOWEVER, WHEN THE AWARD OF CONTRACT SHALL HAVE BEEN ANNULLED, DUE TO FAILURE OF THE BIDDER TO WHOM AWARD SHALL HAVE BEEN MADE TO EXECUTE AND DELIVER THE CONTRACT AND SURETY CORPORATION BOND, HIS PROPOSAL BOND SHALL BECOME OPERATIVE, AS PROVIDED IN ARTICLE 1.3.6.

1.3.4. CONTRACT BOND.

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THE TERM TEN DAYS IN THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ 10 STATE BUSINESS DAYS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE SURETY CORPORATION BOND SHALL BE FURNISHED BY ONLY THOSE SURETIES AS ARE LISTED IN THE CURRENT U.S. TREASURY DEPARTMENT CIRCULAR 570 AS OF THE DATE FOR RECEIPT OF BIDS FOR THE PARTICULAR PROJECT.

THE SURETY CORPORATION BOND SHALL BE ACCOMPANIED BY A CERTIFICATION AS TO AUTHORIZATION OF THE ATTORNEY-IN-FACT TO COMMIT THE SURETY COMPANY AND A TRUE AND CORRECT STATEMENT OF THE FINANCIAL CONDITION OF SAID SURETY COMPANY.

PAYMENT FOR FURNISHING AND DELIVERING THE SURETY CORPORATION BOND WILL BE MADE UNDER THE ITEM CONTRACT BOND IN THE PROPOSAL, AT THE ACTUAL COST OF THE BOND TO THE CONTRACTOR OR AT THE LUMP SUM PRICE BID FOR THE BOND, WHICHEVER PRICE MAY BE LOWER. PAYMENT FOR THIS ITEM WILL BE MADE ONLY UPON DELIVERY TO THE ENGINEER OF A RECEIPTED BILL FOR THE BOND.

1.3.5. EXECUTION OF CONTRACT.

THE TERM TEN DAYS IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO 10 STATE BUSINESS DAYS.

1.3.6. FAILURE TO EXECUTE CONTRACT.

THE LAST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

IT IS UNDERSTOOD AND AGREED BY SAID BIDDER THAT IF THE AWARD IS ANNULLED FOR THE ABOVE REASONS, THE STATE MAY PROCEED TO RECOVER UNDER THE TERMS AND PROVISIONS OF THE PROPOSAL BOND, AS DESCRIBED IN ARTICLE 1.2.6, AT THE DISCRETION OF THE COMMISSIONER.

1.3.7. SUBLETTING AND ASSIGNING CONTRACT.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED AS FOLLOWS:

SUBLETTING OF LANDSCAPE ITEMS WILL BE PERMITTED ONLY TO SUBCONTRACTORS HOLDING A LANDSCAPE PREQUALIFICATION RATING WITH THE DEPARTMENT.

THE LAST SENTENCE OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHERE THE VALUE OF THE WORK TO BE SUBLET IS \$100,000 OR MORE, SUBLETTING WILL BE PERMITTED ONLY TO SUBCONTRACTORS PRE-QUALIFIED WITH THE DEPARTMENT.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

APPLICATION FOR SUBLETTING ANY PART, OR PARTS, OF THE WORK SHALL BE MADE BY THE CONTRACTOR AND SHALL BE ADDRESSED TO THE APPROPRIATE OFFICIAL, OR OFFICIALS, OF THE DEPARTMENT HAVING CHARGE OF THE WORK TO BE SUBLET. THE APPLICATION SHALL BE MADE IN DUPLICATE, ON FORM NO. DC-18 TO BE FURNISHED BY THE DEPARTMENT.

EXCEPT FOR SPECIALTY ITEMS AND LUMP SUM ITEMS, WHEN THE CONTRACTOR PROPOSES TO SUBLET A PORTION OF THE WORK INCLUDED IN THE UNIT MEASUREMENT OF AN ITEM, THE TOTAL UNIT PRICE BID IN THE PROPOSAL FOR THAT ITEM SHALL BE USED IN COMPUTING THE COST OF THE WORK TO BE SUBLET.

WHEN THE CONTRACTOR PROPOSES TO SUBLET A PORTION OF THE WORK INCLUDED IN A LUMP SUM ITEM, OR TO SUBLET AN ITEM WHICH INCLUDES SPECIALTY WORK, HE SHALL SUBMIT, ON OR ATTACHED TO FORM NO. DC-18, A BREAKDOWN OF COST SHOWING THE VALUE OF THE PORTION OF THE ITEM TO BE SUBLET IN RELATION TO THE VALUE OF THE WHOLE ITEM, WHICH SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL GIVE ASSURANCE THAT, WHEN MINIMUM WAGE RATES ARE SPECIFIED, THEY SHALL APPLY TO LABOR PERFORMED ON ALL WORK SUBLET, ASSIGNED, OR OTHERWISE DISPOSED OF IN ANY WAY.

SECTION 4

SCOPE OF THE WORK

1.4.5. FIELD OFFICE AND SOILS FIELD LABORATORY.

THIS ARTICLE HEADING OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

1.4.5. FIELD OFFICE AND MATERIALS FIELD LABORATORY.

THE REQUIREMENTS FOR PLAN RACKS AND FILE CABINETS IN THE NEXT TO LAST SENTENCE OF THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

2 ROUGH PLAN RACKS, AND 2 FIRE RESISTANT, 4-DRAWER LEGAL SIZE FILE CABINETS WITH LOCK AND KEY AND MEETING FIRE UNDERWRITERS APPROVAL FOR NOT LESS THAN A 1-HOUR TEST.

THE FOLLOWING IS ADDED TO THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE OFFICE SHALL ALSO BE EQUIPPED WITH 1 PRESSURIZED WATER TYPE FIRE EXTINGUISHER WITH A MINIMUM CAPACITY OF 2 1/2 GALLONS, AND 1 PRESSURIZED DRY POWDER FIRE EXTINGUISHER WITH A MINIMUM CAPACITY OF 10 POUNDS. THE FIRE EXTINGUISHERS SHALL MEET WITH FIRE UNDERWRITERS APPROVAL, AND SHALL BE MAINTAINED BY THE CONTRACTOR IN GOOD WORKING ORDER AT FULL CAPACITY AT ALL TIMES.

THE CONTRACTOR SHALL ALSO FURNISH AND MAINTAIN IN GOOD WORKING CONDITION THE FOLLOWING ADDITIONAL EQUIPMENT IN THE CONSTRUCTION FIELD OFFICE:

ONE (1) CALCULATING MACHINE, ELECTRIC, TEN (10) KEY  
ONE (1) TYPEWRITER, STD, ELITE TYPE, 15 INCH CARRIAGE

THE TYPE OF EQUIPMENT TO BE PROVIDED SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH ON PAGE 19 OF THE STANDARD SPECIFICATIONS:

TYPE D. AN OFFICE CONFORMING TO THE REQUIREMENTS SPECIFIED HEREINABOVE FOR TYPE A EXCEPT THAT IT SHALL HAVE A FLOOR SPACE OF 720 SQUARE FEET AND SHALL BE DIVIDED INTO FOUR COMMUNICATING ROOMS, ONE WITH A FLOOR SPACE OF NOT LESS THAN 288 SQUARE FEET AND THREE WITH FLOOR SPACE OF NOT LESS THAN 144 SQUARE FEET EACH AND EQUIPPED WITH TABLES AND CHAIRS FOR THE USE OF 20 MEN.

TYPE E. AN OFFICE CONFORMING TO THE REQUIREMENTS SPECIFIED HEREINABOVE FOR TYPE A EXCEPT THAT IT SHALL HAVE A FLOOR SPACE OF 864 SQUARE FEET AND SHALL BE DIVIDED INTO FOUR COMMUNICATING ROOMS, TWO WITH FLOOR SPACE OF NOT LESS THAN 288 SQUARE FEET EACH AND TWO WITH FLOOR SPACE OF NOT LESS THAN 144 SQUARE FEET EACH AND EQUIPPED WITH TABLES AND CHAIRS FOR THE USE OF 24 MEN.

TYPE F. AN OFFICE CONFORMING TO THE REQUIREMENTS SPECIFIED HEREINABOVE FOR TYPE A EXCEPT THAT IT SHALL HAVE A FLOOR SPACE OF 1008 SQUARE FEET AND SHALL BE DIVIDED INTO FIVE COMMUNICATING ROOMS, TWO WITH FLOOR SPACE OF NOT LESS THAN 288 SQUARE FEET EACH AND THREE WITH FLOOR SPACE OF NOT LESS THAN 144 SQUARE FEET EACH AND EQUIPPED WITH TABLES AND CHAIRS FOR THE USE OF 28 MEN.

THE FIRST PARAGRAPH ON PAGE 20 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR SHALL PROVIDE FOR THE INSTALLATION OF A TELEPHONE OR TELEPHONES IN THE FIELD OFFICE AND MATERIALS FIELD LABORATORY, AS DIRECTED BY THE ENGINEER, FOR THE EXCLUSIVE USE OF THE ENGINEER AND WILL MAKE ALL PAYMENTS FOR THE TELEPHONE SERVICE. ALL COSTS OF PROVIDING THE TELEPHONE WILL BE REIMBURSED TO THE CONTRACTOR.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN IN GOOD CONDITION FOR THE EXCLUSIVE USE OF THE ENGINEER ONE OF THE HERE-

INAFTER DESCRIBED SURVEY FIELD OFFICES AT A LOCATION TO BE APPROVED BY THE ENGINEER. SURVEY FIELD OFFICES MAY BE A SEPARATE BUILDING OR MAY BE A SEPARATE ROOM IN THE SPECIFIED CONSTRUCTION FIELD OFFICE.

TYPE S. AN OFFICE CONFORMING TO THE REQUIREMENTS SPECIFIED HEREINBEFORE FOR TYPE A EXCEPT THAT IT SHALL BE ONE ROOM AND SHALL HAVE A FLOOR SPACE OF NOT LESS THAN 144 SQUARE FEET AND SHALL BE EQUIPPED WITH TABLES AND CHAIRS FOR THE USE OF 4 MEN, AND SHALL BE EQUIPPED WITH 1 ROUGH PLAN RACK, 1 FIRE RESISTANT 4-DRAWER LEGAL SIZE FILE CABINET WITH LOCK AND KEY AND MEETING FIRE UNDERWRITERS APPROVAL FOR NOT LESS THAN A 1-HOUR TEST.

TYPE T. AN OFFICE CONFORMING TO THE REQUIREMENTS SPECIFIED HEREINBEFORE FOR TYPE A EXCEPT THAT IT SHALL BE ONE ROOM AND SHALL HAVE A FLOOR SPACE OF NOT LESS THAN 288 SQUARE FEET AND SHALL BE EQUIPPED WITH TABLES AND CHAIRS FOR THE USE OF 8 MEN, AND SHALL BE EQUIPPED WITH 1 ROUGH PLAN RACK, 1 FIRE RESISTANT 4-DRAWER LEGAL SIZE FILE CABINET WITH LOCK AND KEY AND MEETING FIRE UNDERWRITERS APPROVAL FOR NOT LESS THAN A 1-HOUR TEST.

THE CONTRACTOR SHALL ALSO FURNISH AND MAINTAIN IN GOOD WORKING CONDITION THE FOLLOWING ADDITIONAL EQUIPMENT IN THE SURVEY FIELD OFFICE:

ONE (1) ELECTRONIC CALCULATOR WITH TRIGONOMETRIC FUNCTION CAPABILITY.

THE TYPE OF EQUIPMENT TO BE PROVIDED SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

ALL REFERENCES TO SOILS FIELD LABORATORY IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ MATERIALS FIELD LABORATORY AND THE THIRD PARAGRAPH ON PAGE 20 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHEN THE ITEM MATERIALS FIELD LABORATORY IS SCHEDULED IN THE PROPOSAL, THE CONTRACTOR SHALL FURNISH THE LABORATORY IN ACCORDANCE WITH THE FOLLOWING PROVISIONS:

A MATERIALS FIELD LABORATORY AS HEREINAFTER DESCRIBED SHALL BE PROVIDED AND MAINTAINED IN GOOD CONDITION BY THE CONTRACTOR AT A LOCATION TO BE APPROVED BY THE ENGINEER. IT SHALL BE OF WEATHER PROOF CONSTRUCTION WITH A FLOOR SPACE OF NOT LESS THAN 240 SQ. FT. FOR USE AS A MATERIALS TESTING LABORATORY. IT SHALL BE PROVIDED WITH SUFFICIENT NATURAL AND ARTIFICIAL LIGHT, SHALL BE ADEQUATELY HEATED AND AIR-CONDITIONED AND SHALL BE EQUIPPED WITH A SINK WITH RUNNING WATER AND ATTACHED DRAIN BOARD



AND DRAIN CAPABLE OF HANDLING ELUTRIABLE MATERIAL; 3 DESKS; 6 CHAIRS AND 2 STOOLS; 1 WORK BENCH 2-1/2 FT. X 8 FT.; 1 PLAN RACK; 1 FOUR-DRAWER LEGAL SIZE FILE CABINET WITH LOCK AND KEY; 1 CONCRETE OR WOOD FOUNDATION, 3 FEET X 3 FEET X 4 INCHES THICK, FOR THE MECHANICAL SAMPLE SHAKER AND A 3 FT. X 3 FT. X 4 FT. BOX ENCLOSURE, WITH DOOR, FABRICATED WITH 1/2 IN. INSULATION BOARD TO ENCLOSE THE SHAKER; MINIMUM OF FOUR ELECTRICAL OUTLETS; EITHER 2 ADDITIONAL 3-PRONG OUTLETS WITH 120 VOLT SERVICE TO PROVIDE 2400 WATTS TO EACH OUTLET OR COMMERCIALY BOTTLED GAS OR GAS SUPPLIED BY A PUBLIC UTILITY COMPANY WITH AT LEAST 2 CONNECTIONS, AS DIRECTED BY THE ENGINEER. FANS OR OTHER MEANS SHALL BE PROVIDED TO DISSIPATE THE EXCESS HEAT AND FUMES. AN ENCLOSURE, CAPABLE OF BEING SECURED, WITH A CONCRETE FLOOR CONTAINING FLOOR SPACE OF NOT LESS THAN 36 SQ. FT. AND CEILING HEIGHT OF NOT LESS THAN 7 FT. SHALL BE FURNISHED ADJACENT TO THE LABORATORY, AND SHALL BE EQUIPPED WITH ONE 3-PRONG ELECTRICAL OUTLET AND 1 OVER-HEAD LIGHT.

A CUBE OF CONCRETE WEIGHING A MINIMUM OF 200 LBS. AND MEASURING APPROXIMATELY 10 IN. X 10 IN. X 21 IN. WITH A 1 IN. X 10 IN. SQUARE STEEL PLATE FASTENED TO THE TOP SHALL BE ERECTED ON A FIRM FOUNDATION AT A LOCATION APPROVED BY THE ENGINEER.

DOORS AND WINDOWS SHALL BE EQUIPPED WITH ADEQUATE LOCKS AND ALL KEYS SHALL BE IN THE POSSESSION OF THE ENGINEER. SUITABLE SANITARY FACILITIES FOR USE OF THE ENGINEER, CONFORMING TO THE REQUIREMENTS OF ART. 1.4.6, SHALL BE PROVIDED IN OR ADJOINING MATERIALS FIELD LABORATORY WHICH SHALL BE MAINTAINED, CLEANED, KEPT IN GOOD WORKING CONDITION AND STOCKED WITH SANITARY SUPPLIES AT ALL TIMES DURING THE PERIOD OF THE CONTRACT.

THE MATERIALS FIELD LABORATORY, AS SPECIFIED HEREIN BEFORE, SHALL ALSO BE EQUIPPED WITH 1 PRESSURIZED WATER TYPE FIRE EXTINGUISHER WITH A MINIMUM CAPACITY OF 2 1/2 GALLONS, AND 1 PRESSURIZED DRY POWDER FIRE EXTINGUISHER WITH A MINIMUM CAPACITY OF 10 POUNDS. THE FIRE EXTINGUISHERS SHALL MEET WITH FIRE UNDERWRITERS APPROVAL, AND SHALL BE MAINTAINED BY THE CONTRACTOR IN GOOD WORKING ORDER AT FULL CAPACITY AT ALL TIMES.

NOTE: THE ITEM MATERIALS FIELD LABORATORY MAY BE DELETED FROM THIS CONTRACT. THE CONTRACTOR SHALL DEFER PROVIDING THE MATERIALS FIELD LABORATORY UNTIL HE HAS BEEN NOTIFIED BY THE ENGINEER THAT THIS ITEM IS REQUIRED.

THE REQUIREMENTS FOR THE LABORATORY IN THE FIFTH PARAGRAPH ON PAGE 20 OF THE STANDARD SPECIFICATIONS ARE CHANGED AS FOLLOWS:

THE MATERIALS FIELD LABORATORY SHALL BE READY FOR USE NOT LATER THAN 10 DAYS AFTER THE DATE OF NOTIFICATION BY THE ENGI-

NEER THAT THIS ITEM IS REQUIRED, AND SHALL BE MAINTAINED UNTIL 1 MONTH AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE COMMISSIONER AND THEN SHALL BE REMOVED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PAYMENT FOR FIELD OFFICE TELEPHONE SERVICE WILL BE AT THE ACTUAL COST OF THE TELEPHONE SERVICE TO THE CONTRACTOR AS EVIDENCED BY RECEIPTED PAID BILLS FROM THE TELEPHONE COMPANY. PAYMENT WILL BE MADE UNDER THE ITEM FIELD OFFICE TELEPHONE SERVICE IN THE PROPOSAL. AN ESTIMATED AMOUNT TO COVER THESE REIMBURSEMENTS HAS BEEN INCLUDED IN THE PROPOSAL.

THE CONTRACTOR WILL NOT BE PERMITTED TO PROVIDE FOR STATE USE AS A FIELD OFFICE OR MATERIALS FIELD LABORATORY, ANY BUILDING WHICH IS SCHEDULED TO BE DEMOLISHED UNDER THIS CONTRACT.

1.4.7. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

GENERAL.

THE FOLLOWING IS ADDED:

ATTENTION IS DIRECTED TO THE FACT THAT THE SUPPLEMENTARY SPECIFICATIONS PROVIDE ALTERNATIVE TYPES OF MATERIALS OR PRODUCTS FOR EACH OF CERTAIN SCHEDULED ITEMS OF THE CONTRACT. HOWEVER, FOR EACH SUCH ITEM, ONLY ONE OF THE SPECIFIED ALTERNATIVES SHALL BE FURNISHED THROUGHOUT THE PROJECT.

SOIL AGGREGATES OBTAINED FROM SUBAQUEOUS SOURCES AND PLACED BY METHODS OTHER THAN HYDRAULICALLY SHALL FIRST BE PLACED IN A STOCKPILE AND DRAINED BEFORE BEING PLACED IN THE FINAL LOCATION SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. IT SHALL NOT BE PLACED IN ITS PRESCRIBED LOCATION UNTIL THE ENGINEER HAS DETERMINED THAT ITS MOISTURE CONTENT IS NOT EXCESSIVE.

INSPECTION.

THE FOLLOWING IS ADDED:

SHIPMENT OF BULK CEMENT BY TRUCK WILL BE PERMITTED ON THIS PROJECT PROVIDED THAT THE MANUFACTURER'S LOADING FACILITIES AND THE CONTRACTOR'S HAULING EQUIPMENT AND RECEIVING FACILITIES MEET THE REQUIREMENTS THEREFOR ON FILE WITH THE DEPARTMENT, DATED JUNE 20, 1962.

**SAMPLING AND TESTING. GENERAL.**

IN TABLE 1 ON PAGE 23, THE REQUIREMENTS FOR AGGREGATES, COARSE ARE CHANGED TO READ AS FOLLOWS:

MATERIAL	SAMPLES	RATE OF SAMPLING	DELIVERY INSTRUCTIONS
<b>AGGREGATES, COARSE</b>			
STD. SIZE NO. 1	150 LB.	1000 TONS	3 LARGE SAMPLE BAGS
STD. SIZE NO. 2 & 24	100 LB.	1000 TONS	2 LARGE SAMPLE BAGS
STD. SIZE NO. 3 & 357	90 LB.	1000 TONS	2 LARGE SAMPLE BAGS
STD. SIZE NO. 4 & 467	70 LB.	1000 TONS	2 LARGE SAMPLE BAGS
STD. SIZE NO. 5, 56 & 57	50 LB.	500 TONS	1 LARGE SAMPLE BAG
STD. SIZE NO. 6, 67 & 68	30 LB.	500 TONS	1 LARGE SAMPLE BAG
STD. SIZE NO. 7 & 78	20 LB.	250 TONS	1 LARGE SAMPLE BAG
STD. SIZE NO. 8, 89 & 9	10 LB.	250 TONS	1 SMALL SAMPLE BAG

IN TABLE 1 ON PAGE 24, ASPHALTIC OIL IS CHANGED TO READ CUTBACK ASPHALT.

IN TABLE 1 ON PAGE 24, THE REQUIREMENTS FOR BITUMINOUS CONCRETE AND FOR BITUMINOUS STABILIZED BASE COURSE ARE CHANGED TO READ AS FOLLOWS:

MATERIAL	SAMPLES	RATE OF SAMPLING	DELIVERY INSTRUCTIONS
<b>BITUMINOUS CONCRETE, HOT MIXED</b>			
	(IN ACCORDANCE WITH ARTICLE 3.10.2)		
COLD MIXED MIXTURE	5 LB.	EACH TYPE PRODUCED DAILY	SECURELY WRAPPED
<b>BITUMINOUS STABILIZED BASE COURSE</b>			
	(IN ACCORDANCE WITH ARTICLE 3.10.2)		

THE FOLLOWING IS ADDED TO TABLE 1 ON PAGE 24 AS A FOOTNOTE TO THE RATE OF SAMPLING OF BITUMINOUS CONCRETE AND BITUMINOUS STABILIZED BASE COURSE:

WHEN A PLANT IS PRODUCING BITUMINOUS CONCRETE OR BITUMINOUS STABILIZED BASE COURSE FOR TWO OR MORE DEPARTMENT PROJECTS AT THE SAME TIME, THE RATE OF SAMPLING SHALL BE APPLIED TO THE PLANT'S PRODUCTION FOR ALL DEPARTMENT PROJECTS RATHER THAN INDIVIDUAL PROJECTS.

IN TABLE 1 ON PAGE 26, THE REQUIREMENTS FOR SCREENINGS, STONE OR SLAG ARE CHANGED TO READ AS FOLLOWS:

MATERIAL	SAMPLES	RATE OF SAMPLING	DELIVERY INSTRUCTIONS
SCREENING, STONE OR SLAG STD. SIZE NO. 10	10 LB.	250 TONS	SMALL SAMPLE BAG

IN TABLE 1 ON PAGE 26, SHOULDER AGGREGATE AND THE REQUIREMENTS THEREOF ARE DELETED.

THE FOLLOWING IS ADDED IN TABLE 1 ON PAGE 27 AS FOOTNOTES TO THE RATE OF SAMPLING OF SOIL AGGREGATES:

SOIL AGGREGATE DESIGNATIONS 1-6, 1-7, 1-9, 1-10, 1-11, 1-12 AND 1-13 ARE CHANGED FROM ONE SAMPLE FOR EACH 500 CU.YD. TO ONE SAMPLE FOR EACH 2000 CU.YD. AFTER THE INITIAL 10,000 CU.YD. OF THAT CLASS OF SOIL AGGREGATE HAVE BEEN SAMPLED, EXCEPT THAT IF ANY SAMPLES FAIL OR BECOME BORDERLINE, THE RATE OF SAMPLING SHALL REVERT TO ONE SAMPLE PER 500 CU.YD.

BORROW EXCAVATION, ZONE 3 - ONE SAMPLE PER 2000 CU.YD. OR AS DIRECTED BY THE ENGINEER.

ON PAGE 27, THE REQUIREMENTS FOR SAMPLES AND THE RATE OF SAMPLING FOR STEEL REINFORCEMENT, PLAIN AND DEFORMED BARS ARE CHANGED TO READ AS FOLLOWS:

SAMPLES	RATE OF SAMPLING
TWO 2 FT. PIECES	** SAMPLE AT TIME OF FABRICATION IN THE FIELD OR IN THE PLANT AS APPLICABLE - EACH HEAT, MINIMUM 2 PIECES

IN TABLE 1 ON PAGE 28, THE RATE OF SAMPLING FOR STEEL, STRUCTURAL IS CHANGED TO READ AS FOLLOWS:

SUBJECT TO TEST AND INSPECTION AT THE POINT OF FABRICATION.

ON PAGE 29 THE FOLLOWING IS ADDED AFTER THE NOTE UNDER TABLE 1, SAMPLES REQUIRED:

NOTE: THE CONTRACTOR SHALL REQUIRE THE MANUFACTURER OR SUPPLIER TO FURNISH FOUR (4) COPIES OF CERTIFICATION OF COMPLIANCE WITH EACH DELIVERY OF MATERIALS, COMPONENTS AND MANUFACTURED ITEMS THAT ARE ACCEPTABLE BY CERTIFICATION. ONE (1)

COPY SHALL BE FURNISHED THE ENGINEER; ONE (1) COPY SHALL BE FURNISHED THE BUREAU OF PLANT AND PROJECT INSPECTION; ONE (1) COPY SHALL BE FURNISHED THE BUREAU OF QUALITY CONTROL; ONE (1) COPY SHALL BE RETAINED BY THE CONTRACTOR.

CERTIFICATES OF COMPLIANCE SHALL CONTAIN THE FOLLOWING INFORMATION:

1. PROJECT TO WHICH THE MATERIAL IS CONSIGNED.
2. NAME OF THE CONTRACTOR TO WHICH THE MATERIAL IS SUPPLIED.
3. KIND OF MATERIAL SUPPLIED.
4. QUANTITY OF MATERIAL REPRESENTED BY THE CERTIFICATE.
5. MEANS OF IDENTIFYING THE CONSIGNMENT, SUCH AS LABEL MARKING, SEAL NUMBER, ETC.
6. DATE AND METHOD OF SHIPMENT.
7. THAT THE MATERIAL HAS BEEN TESTED AND FOUND IN CONFORMITY WITH THE PERTINENT SPECIFICATIONS STATED IN THE CERTIFICATE.
8. SIGNATURE OF A PERSON HAVING LEGAL AUTHORITY TO BIND THE SUPPLIER.
9. SIGNATURE ATTESTED TO BY A NOTARY PUBLIC OR OTHER PROPERLY AUTHORIZED PERSON.

SAMPLING AND FIELD TESTING OF SOILS.

THE SECOND SENTENCE IS CHANGED TO PROVIDE THAT ZONE 3 BORROW EXCAVATION SHALL BE SUBJECT TO SAMPLING AND TESTING.

THE SECOND AND THIRD SENTENCES OF THE SECOND PARAGRAPH ARE CHANGED TO READ AS FOLLOWS:

WRITTEN NOTICE OF THE PROPOSED SOURCES OF SOIL AGGREGATE MATERIALS, AS WELL AS THE RESULTS OF THE SAMPLING AND LABORATORY TESTS, SHALL BE GIVEN THE ENGINEER BY THE CONTRACTOR AFTER HIS INITIAL DETERMINATION AS SPECIFIED ABOVE, AND NOT LESS THAN 10 DAYS PRIOR TO THE TIME OF THEIR INTENDED USE. THEN BEFORE APPROVING OR DISAPPROVING A SOURCE, THE ENGINEER MAY SAMPLE AND TEST MATERIALS REPRESENTATIVE OF THAT PORTION OF THE SOURCE WHICH THE CONTRACTOR INTENDS TO USE.

PAGE 30: THE FOLLOWING IS ADDED TO THE FIRST FULL PARAGRAPH ON

DIVISION 1

PAGE NO. 20

SHOULD THE SOURCE, IN THE OPINION OF THE ENGINEER, CONTAIN OVERSIZE MATERIAL, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO ELIMINATE SUCH OVERSIZE MATERIAL BY METHODS ACCEPTABLE TO THE ENGINEER PRIOR TO THE DELIVERY OF THE MATERIAL TO THE PROJECT.

VALVES FOR SAMPLING BITUMINOUS MATERIALS.

THIS HEADING AND TEXT IS ADDED:

ALL TANKS USED FOR BULK STORAGE, DISTRIBUTION, OR DELIVERY OF BITUMINOUS MATERIALS SHALL BE EQUIPPED WITH SAMPLING VALVES AND DEVICES AS HEREINAFTER PRESCRIBED. SAFE AND CONVENIENT ACCESS SHALL BE PROVIDED TO ALL SAMPLING VALVES. THE VALVES SHALL BE SIMILAR IN DESIGN TO THOSE SHOWN ON DRAWINGS ON FILE WITH THE LABORATORY. COPIES OF THE DRAWINGS ARE AVAILABLE UPON REQUEST.

BULK STORAGE TANKS EQUIPPED WITH MECHANICAL AGITATORS, AIR AGITATORS, OR CIRCULATING LINES SHALL BE PROVIDED WITH A SUBMERGED SAMPLING VALVE. ON HORIZONTAL TANKS THE VALVE SHALL BE IN THE LOWER HALF OF AN END BULKHEAD. ON VERTICAL TANKS THE VALVE SHALL BE LOCATED IN THE LOWER HALF OF THE SIDE AND AT LEAST 3 1/2 FEET FROM THE BOTTOM.

BULK STORAGE TANKS NOT EQUIPPED WITH AGITATING DEVICES SHALL BE PROVIDED WITH 3 SUBMERGED SAMPLING VALVES, LOCATED IN THE TOP, MIDDLE, AND LOWER THIRD OF THE SIDE IF A VERTICAL TANK, AND OF AN END BULKHEAD IF A HORIZONTAL TANK. THE UPPERMOST VALVE SHALL BE AT LEAST 3 FEET FROM THE TOP OF THE TANK, AND THE LOWEST VALVE SHALL BE AT LEAST 3 1/2 FEET FROM THE BOTTOM.

DISTRIBUTION TANKS AND DELIVERY VEHICLE TANKS SHALL BE PROVIDED WITH EITHER A SUBMERGED VALVE MOUNTED IN THE LOWER HALF OF A BULKHEAD, OR WITH A VALVE INSERTED IN THE DISTRIBUTOR LINE. THE VALVES SHALL BE CLEARLY LABELLED "SAMPLING VALVE".

MEASURING DEVICES FOR BITUMINOUS MATERIALS TANKS.

THIS HEADING AND TEXT IS ADDED:

EACH TANK USED FOR BITUMINOUS MATERIALS SHALL BE EQUIPPED WITH A DEVICE TO INDICATE THE BOTTOMS VOLUME TO WITHIN 0.5 PERCENT OF TANK CAPACITY. THE DEVICE SHALL BE AT A LOW POINT OF THE TANK, AND SHALL BE VISIBLE THROUGH AN OBSERVATION HATCH AT LEAST EIGHT INCHES IN DIAMETER.

1.4.10. WORKING SITE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR SHALL NOT USE THE DECKS OF ANY COMPLETED BRIDGES, OR THE AREAS (INCLUDING SLOPES) UNDER ANY COMPLETED BRIDGES, AS WORKING SITES OR STORAGE AREAS FOR MATERIALS OR EQUIPMENT.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

1.4.12. MOBILIZATION.

WHEN THE ITEM MOBILIZATION IS SCHEDULED IN THE PROPOSAL, THE PROVISIONS, AS HEREINAFTER DESCRIBED, SHALL APPLY.

MOBILIZATION SHALL CONSIST OF INITIATING THE CONTRACT, AND MAY INCLUDE SUCH PORTIONS OF THE FOLLOWING AS ARE REQUIRED AT THE BEGINNING OF THE PROJECT: SETTING UP THE CONTRACTOR'S GENERAL PLANT, OFFICES, SHOPS, STORAGE AREAS, SANITARY AND OTHER FACILITIES AS REQUIRED BY THE SPECIFICATIONS, BY LOCAL OR STATE LAW, OR BY REGULATION; PROVIDING ACCESS TO THE PROJECT SITE; OBTAINING NECESSARY PERMITS AND LICENSES, AND PAYMENT OF FEES; PROTECTING EXISTING UTILITIES; LIGHTING WORK AREAS; PROVIDING WORKING DRAWINGS; SAMPLING AND TESTING OF MATERIALS; PROVIDING REQUIRED INSURANCE AND BONDS OTHER THAN THE CONTRACT BOND AS SPECIFIED IN ARTICLE 1.3.4.

SUCH MATERIALS AS ARE REQUIRED THAT ARE NOT TO BE A PART OF THE COMPLETED CONTRACT SHALL BE DETERMINED BY THE CONTRACTOR.

ALL WORK DONE IN PROVIDING THE FACILITIES AND SERVICES UNDER THIS ITEM SHALL BE DONE IN A SAFE AND WORKMANLIKE MANNER.

PAYMENT FOR MOBILIZATION WILL BE MADE AT THE LUMP SUM PRICE BID FOR THIS ITEM IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COSTS OF INITIATING THE CONTRACT AS HEREINBEFORE DESCRIBED.

THE PROVISIONS FOR PAYMENT FOR THE ITEM MOBILIZATION SUPERSEDE ANY PROVISIONS ELSEWHERE IN THE SPECIFICATIONS FOR INCLUDING THE COSTS OF THESE INITIAL SERVICES AND FACILITIES IN THE PRICES BID FOR THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

PAYMENT TO THE CONTRACTOR FOR THE ITEM MOBILIZATION WILL BE MADE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

WHEN 5% OF THE WORK IS COMPLETED - 25% OF THE AMOUNT BID FOR MOBILIZATION OR 2 1/2% OF THE ORIGINAL CONTRACT AMOUNT, WHICHEVER IS LESSER, WILL BE PAID

WHEN 10% OF THE WORK IS COMPLETED - 50% OF THE AMOUNT BID FOR MOBILIZATION OR 5% OF THE ORIGINAL CONTRACT AMOUNT, WHICHEVER IS LESSER, WILL BE PAID

WHEN 25% OF THE WORK IS COMPLETED - 60% OF THE AMOUNT BID FOR MOBILIZATION OR 6% OF THE ORIGINAL CONTRACT AMOUNT, WHICHEVER IS LESSER, WILL BE PAID

WHEN 50% OF THE WORK IS COMPLETED - 100% OF THE AMOUNT BID FOR MOBILIZATION OR 10% OF THE ORIGINAL CONTRACT AMOUNT, WHICHEVER IS LESSER, WILL BE PAID

PERCENTAGE OF WORK COMPLETED SHALL BE THE TOTAL OF PAYMENTS EARNED, EXCLUSIVE OF THE AMOUNT BID FOR THIS ITEM, AS SHOWN ON THE MONTHLY CERTIFICATES OF THE APPROXIMATE QUANTITIES OF WORK DONE, PREPARED IN ACCORDANCE WITH ARTICLE 1.8.5.

UPON COMPLETION OF ALL WORK ON THE PROJECT, PAYMENT FOR ANY AMOUNT BID FOR MOBILIZATION IN EXCESS OF 10% OF THE ORIGINAL CONTRACT AMOUNT WILL BE PAID.

THE TOTAL SUM OF ALL PAYMENTS SHALL NOT EXCEED THE ORIGINAL CONTRACT AMOUNT BID FOR THE ITEM, REGARDLESS OF THE FACT THAT THE CONTRACTOR MAY HAVE, FOR ANY REASON, SHUT DOWN HIS WORK ON THE PROJECT OR MOVED EQUIPMENT AWAY FROM THE PROJECT AND BACK AGAIN.

SECTION 5

CONTROL OF THE WORK

1.5.1. DUTIES OF ENGINEER.

THE FIRST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE ENGINEER WILL FURNISH PLANS AND SPECIFICATIONS FOR THE PROJECT AS SPECIFIED IN ARTICLE 1.5.2, FURNISH INFORMATION ON



ALL ALIGNMENT CONTROL POINTS, FURNISH BENCH MARKS AS SHOWN ON THE PLANS, FURNISH NECESSARY LAYOUT FROM BASE LINES PROVIDED BY THE CONTRACTOR FOR ANY UTILITY WORK TO BE DONE BY OTHERS, AND MAKE ALL NECESSARY MEASUREMENTS FOR CERTIFICATION OF QUANTITIES FOR PAYMENT OF MONTHLY AND FINAL ESTIMATES AS PROVIDED IN ARTICLE 1.8.5.

THE ABOVE CONSTITUTES THAT WHICH WILL BE FURNISHED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH ALL OTHER WORK REQUIRED FOR THE LAYOUT AND CONSTRUCTION OF THE PROJECT.

THE LAST LINE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ "THE PLANS AND SPECIFICATIONS".

1.5.2. PLANS AND SPECIFICATIONS.

THE FIRST SIX PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

PLANS AND SUPPLEMENTARY SPECIFICATIONS FOR THE PROJECT, AND THE STANDARD SPECIFICATIONS AND THE SUPPLEMENT THERETO, FORM A PART OF THE CONTRACT AND ARE ON FILE WITH THE DEPARTMENT.

STANDARD SPECIFICATIONS AND THE SUPPLEMENT THERETO WILL BE FURNISHED UPON REQUEST AT A CHARGE OF \$7.50 PER COPY FOR THE STANDARD SPECIFICATIONS AND A CHARGE OF \$4.00 PER COPY FOR THE SUPPLEMENT TO THE STANDARD SPECIFICATIONS.

CONSTRUCTION PLANS WILL BE FURNISHED UPON REQUEST AT THE CHARGES PER COPY AS SPECIFIED IN TABLE 1A BELOW:

TABLE 1A - CHARGES FOR PLANS

CONSTRUCTION PLANS CONSISTING OF	CHARGE PER SET
50 SHEETS OR LESS .....	\$12.00
51 TO 100 SHEETS .....	23.00
101 TO 150 SHEETS .....	34.00
151 TO 200 SHEETS .....	45.00
201 TO 250 SHEETS .....	56.00
251 TO 300 SHEETS .....	67.00
FOR EACH ADDITIONAL MULTIPLE OF 50 SHEETS, OR PART THEREOF, AN ADDITIONAL CHARGE OF .....	13.00

ONE COPY OF THE SUPPLEMENTARY SPECIFICATIONS WILL BE FURNISHED, WITHOUT CHARGE, WITH EACH COPY OF CONSTRUCTION PLANS.

ADDITIONAL COPIES OF SUPPLEMENTARY SPECIFICATIONS OR COPIES REQUESTED WITHOUT PLANS WILL BE FURNISHED AT A CHARGE OF \$3.00 PER COPY.

UPON AWARD OF THE CONTRACT, THE SUCCESSFUL BIDDER WILL RECEIVE ONE COPY OF THE STANDARD SPECIFICATIONS AND THE SUPPLEMENT THERETO, ONE COPY OF THE PLANS, AND A MAXIMUM OF FIVE ADDITIONAL COPIES OF THE SUPPLEMENTARY SPECIFICATIONS WITHOUT CHARGE, IF REQUESTED.

HOWEVER, NOT MORE THAN ONE COPY OF THE STANDARD SPECIFICATIONS AND ONE COPY OF THE SUPPLEMENT THERETO WILL BE FURNISHED ANY CONTRACTOR, REGARDLESS OF REPEAT CONTRACT AWARDS TO HIM EXCEPT UPON PAYMENT OF CHARGES SPECIFIED ABOVE.

THE CONTRACTOR SHALL KEEP ONE OR MORE COPIES OF THE PLANS AND SPECIFICATIONS AT THE SITE OF THE PROJECT AT ALL TIMES.

COPIES OF BORING PLANS AND BORING LOGS WILL BE FURNISHED UPON REQUEST AT A CHARGE OF THE ACTUAL COST OF REPRODUCING.

BORING LOGS MAY BE INSPECTED AT OR ORDERED THROUGH THE BUREAU OF GEOTECHNICAL ENGINEERING, 1035 PARKWAY AVENUE, TRENTON, NEW JERSEY, 08625 TELEPHONE: 609-292-3456

REQUESTS FOR CONSTRUCTION PLANS, SPECIFICATIONS AND PROPOSAL FORMS SHALL BE DIRECTED TO THE CASHIER OF THE DEPARTMENT, ACCOMPANIED BY A CHECK FOR THE PROPER AMOUNT DRAWN TO THE ORDER OF THE NEW JERSEY DEPARTMENT OF TRANSPORTATION. THE CONTRACTOR'S REQUEST FOR THOSE ITEMS FURNISHED WITHOUT CHARGE SHALL BE DIRECTED TO THE BUREAU OF CONTRACT ADMINISTRATION.

#### 1.5.4. CONSTRUCTION STAKES.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS, INCLUDING THE HEADING, IS CHANGED TO READ AS FOLLOWS:

#### 1.5.4. CONSTRUCTION LAYOUT.

THE CONTRACTOR SHALL PROVIDE ALL WORK REQUIRED IN CONNECTION WITH THE LAYOUT FOR CONSTRUCTION OF THE PROJECT, USING THE CONTROL POINTS AND DATA FURNISHED BY THE ENGINEER, AS SPECIFIED IN ARTICLE 1.5.1.

THE CONTRACTOR WILL BE REQUIRED TO FURNISH ALL NECESSARY QUALIFIED PERSONNEL AND ADEQUATE EQUIPMENT TO PRESERVE SUCH CONTROLS THROUGHOUT THE DURATION OF THE CONTRACT AND TO LAY OUT THEREFROM ALL OF THE LINES AND GRADES NECESSARY FOR THE COMPLETE CONSTRUCTION OF THE PROJECT.

THE CONTRACTOR SHALL MAKE ALL NECESSARY COMPUTATIONS TO ESTABLISH THE EXACT POSITION OF ALL THE WORK FROM THE CONTROL POINTS WHICH ARE SHOWN ON THE PLANS OR FURNISHED BY THE ENGINEER. ALL THE WORK SHALL BE REFERENCED TO BASE LINES WHICH THE CONTRACTOR SHALL ESTABLISH FROM THE CONTROL POINTS, RE-ESTABLISH WHEN NECESSARY AND MAINTAIN THROUGHOUT THE LIFE OF THE CONTRACT SO AS TO PERMIT THE ENGINEER TO MAKE THE NECESSARY PRELIMINARY, INTERIM, AND FINAL MEASUREMENTS, TO MAKE THE NECESSARY LAYOUT FOR ANY UTILITY WORK TO BE DONE BY OTHERS, AND TO CHECK THE CONTRACTOR'S LAYOUT IF HE SO DESIRES.

THE ENGINEER WILL NOTIFY THE CONTRACTOR FOUR (4) DAYS IN ADVANCE OF THE TIME THAT HE WILL REQUIRE BASE LINE POINTS IN ANY AREA, AND THE CONTRACTOR SHALL PROVIDE THE BASE LINE POINTS AT THE TIME REQUIRED TO PERMIT THE ENGINEER TO COMPLETE HIS WORK WITHOUT DELAY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL CONTROL POINTS FURNISHED BY THE DEPARTMENT FOR HIS USE IN STAKING OUT THE WORK. IF SUCH CONTROL POINTS BE DAMAGED, LOST, DISPLACED OR REMOVED, THEY SHALL BE RESET AT HIS EXPENSE.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OFFSET STAKES FROM EACH MAIN ROADWAY BASE LINE, FROM EACH RAMP, JUGHANDLE, OR TURNAROUND BASE LINE AND FROM EACH LOCAL ROAD BASE LINE, AT EACH STATION, AND OUTSIDE THE LIMITS OF GRADING AND CONSTRUCTION.

EACH STAKE SHALL BE IDENTIFIED AND MARKED TO SHOW THE OFFSET DISTANCE FROM THE BASE LINE AND THE CONTRACTOR SHALL FURNISH GRADE SHEETS SHOWING THE CUT OR FILL TO THE FINISHED PROFILE LINES WITH REFERENCE TO THE OFFSET STAKES.

THE CONTRACTOR SHALL PROVIDE ADEQUATE AND ACCURATE OFFSET LINES DURING SUCH CONSTRUCTION THAT WILL REQUIRE OCCUPATION OF THE BASE LINES BY CONSTRUCTION EQUIPMENT OR LOSS OF THE BASE LINE POINTS BY CONSTRUCTION OPERATIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE POINTS HE HAS ESTABLISHED. ANY ERROR OR APPARENT DISCREPANCIES FOUND IN THE PLANS OR SPECIFICATIONS SHALL BE CALLED TO THE ENGINEER'S ATTENTION FOR INTERPRETATION PRIOR TO PROCEEDING WITH THE WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINISHED WORK CONFORMING TO THE LINES AND GRADES CALLED FOR ON THE PLANS, AND HE SHALL CORRECT ALL ERRORS CAUSED BY HIS PERSONNEL AT HIS OWN EXPENSE.

ATTENTION IS DIRECTED TO THE NEED FOR CAUTION IN LAYING OUT AND CONSTRUCTING STORM DRAINS OR HEADWALLS TO ASCERTAIN THAT THESE ITEMS DO NOT ENCROACH ON PRIVATE PROPERTY WHERE EASEMENTS HAVE NOT BEEN OBTAINED.

PAYMENT FOR CONSTRUCTION LAYOUT WILL BE MADE AS FOLLOWS:

THE RATIO OF PAYMENT FOR CONSTRUCTION LAYOUT TO THE LUMP SUM PRICE BID IN THE PROPOSAL FOR CONSTRUCTION LAYOUT SHALL BE THE SAME AS THE RATIO OF THE FINAL COST OF THE CONTRACT EXCLUSIVE OF PAYMENT FOR CONSTRUCTION LAYOUT, TO THE ORIGINAL CONTRACT TOTAL PRICE EXCLUSIVE OF THE PRICE BID FOR CONSTRUCTION LAYOUT.

PAYMENT FOR CONSTRUCTION LAYOUT SHALL INCLUDE ALL COSTS FOR LAYOUT FOR CONSTRUCTION AS ABOVE DESCRIBED, FURNISHING QUALIFIED PERSONNEL, EQUIPMENT, FIELD OFFICE, MATERIALS, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 6

LEGAL AND PUBLIC RELATIONS

1.6.2. DAMAGE CLAIMS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR SHALL INDEMNIFY AND SAVE HARMLESS THE DEPARTMENT, ITS OFFICERS AND EMPLOYEES, FROM ALL SUITS, ACTIONS, OR CLAIMS OF ANY CHARACTER BROUGHT BECAUSE OF ANY INJURIES OR DAMAGE RECEIVED OR SUSTAINED BY ANY PERSON, PERSONS, OR PROPERTY ON ACCOUNT OF THE OPERATIONS OF SAID CONTRACTOR; OR ON ACCOUNT OF OR IN CONSEQUENCE OF ANY NEGLIGENCE IN SAFEGUARDING THE WORK; OR THROUGH USE OF UNACCEPTABLE MATERIALS IN CONSTRUCTING THE WORK; OR BECAUSE OF ANY ACT OR OMISSION, NEGLIGENCE, OR MISCONDUCT OF SAID CONTRACTOR; OR BECAUSE OF ANY CLAIMS OR AMOUNTS RECOVERED FROM ANY INFRINGEMENTS OF PATENT, TRADEWORK, OR COPYRIGHT; OR FROM ANY CLAIMS OR AMOUNTS ARISING OR RECOVERED UNDER THE WORKMEN'S COMPENSATION ACT, OR ANY OTHER LAW ORDINANCE, ORDER, OR DECREE; AND SO MUCH OF THE MONEY DUE THE SAID CONTRACTOR UNDER AND BY VIRTUE OF HIS CONTRACT AS MAY BE CONSIDERED NECESSARY BY THE DEPARTMENT FOR SUCH PURPOSE MAY BE RETAINED FOR THE USE OF THE STATE; OR IN CASE NO MONEY IS DUE, HIS SURETY MAY BE HELD UNTIL

SUCH SUIT OR SUITS, ACTION OR ACTIONS, CLAIM OR CLAIMS FOR INJURIES OR DAMAGES AS AFORESAID SHALL HAVE BEEN SETTLED AND SUITABLE EVIDENCE TO THAT EFFECT FURNISHED TO THE DEPARTMENT; EXCEPT THAT MONEY DUE TO THE CONTRACTOR WILL NOT BE WITHHELD WHEN THE CONTRACTOR PRODUCES SATISFACTORY EVIDENCE THAT HE IS ADEQUATELY PROTECTED BY PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE.

AS A MINIMUM, THE CONTRACTOR SHALL CARRY THE FOLLOWING KINDS AND AMOUNTS OF INSURANCE IN ADDITION TO ANY OTHER FORMS OF INSURANCE OR BONDS REQUIRED UNDER THE TERMS OF THESE SPECIFICATIONS. BEFORE BEGINNING WORK THE CONTRACTOR SHALL FILE WITH THE ENGINEER A CERTIFICATE FROM HIS INSURORS, SHOWING THE AMOUNTS OF INSURANCE CARRIED AND THE RISKS COVERED THEREBY, OR A COPY OF THE REQUIRED INSURANCE POLICIES.

PUBLIC LIABILITY INSURANCE OF NOT LESS THAN \$250,000 FOR ALL DAMAGES ARISING OUT OF BODILY INJURY OR DEATH OF ONE PERSON, AND SUBJECT TO THAT LIMIT FOR EACH PERSON, A TOTAL LIMIT OF \$500,000, ARISING OUT OF BODILY INJURY OR DEATH OF TWO OR MORE PERSONS IN ANY ONE ACCIDENT OR OCCURRENCE.

PROPERTY DAMAGE LIABILITY INSURANCE PROVIDING FOR A LIMIT OF NOT LESS THAN \$500,000 FOR ALL DAMAGES ARISING OUT OF INJURY OR DESTRUCTION OF PROPERTY IN ANY ONE ACCIDENT OR OCCURRENCE AND SUBJECT TO THAT LIMIT PER ACCIDENT, A TOTAL OR AGGREGATE LIMIT OF \$1,000,000 FOR ALL DAMAGES ARISING OUT OF INJURY TO OR DESTRUCTION OF PROPERTY DURING THE POLICY PERIOD.

IN ADDITION, WITH RESPECT TO OPERATIONS THE CONTRACTOR'S ENGINEER PERFORMS AND ALSO THOSE PERFORMED FOR HIM BY SUBCONTRACTORS, THE CONTRACTOR SHALL CARRY FOR AND IN THE NAME OF THE STATE, REGULAR PROTECTIVE LIABILITY INSURANCE IN THE AMOUNT OF \$250,000/\$500,000, AND REGULAR PROTECTIVE PROPERTY DAMAGE LIABILITY INSURANCE IN THE AMOUNT OF \$500,000/\$1,000,000.

IT IS SPECIFICALLY AGREED BETWEEN THE PARTIES EXECUTING THIS CONTRACT THAT IT IS NOT INTENDED BY ANY OF THE PROVISIONS OF ANY PART OF THE CONTRACT TO CREATE THE PUBLIC OR ANY MEMBER THEREOF A THIRD PARTY BENEFICIARY HEREUNDER, OR TO AUTHORIZE ANYONE NOT A PARTY TO THIS CONTRACT TO MAINTAIN A SUIT FOR PERSONAL INJURIES OR PROPERTY DAMAGE PURSUANT TO THE TERMS OR PROVISIONS OF THIS CONTRACT.

1.6.3. LAWS, ORDINANCES AND REGULATIONS.

THE FOLLOWING IS ADDED UNDER THE PROVISIONS OF CHAPTER 9 TITLE 34 IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THESE PROVISIONS ARE NOT APPLICABLE TO FEDERAL-AID HIGHWAY CONTRACTS.

THE PROVISIONS UNDER CHAPTER 2, TITLE 10, IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ARE CHANGED TO READ AS FOLLOWS:

CHAPTER 2, TITLE 10, REVISED STATUTES, WHEREBY THE CONTRACTOR, AS A CONDITION OF THE CONTRACT, SHALL AND HEREBY DOES AGREE THAT:

(A) IN THE HIRING OF PERSONS FOR THE PERFORMANCE OF WORK UNDER THIS CONTRACT OR ANY SUBCONTRACT HEREUNDER, OR FOR THE PROCUREMENT, MANUFACTURE, ASSEMBLING OR FURNISHING OF ANY SUCH MATERIALS, EQUIPMENT, SUPPLIES OR SERVICES TO BE ACQUIRED UNDER THIS CONTRACT, NO CONTRACTOR, NOR ANY PERSON ACTING ON BEHALF OF SUCH CONTRACTOR OR SUBCONTRACTOR, SHALL, BY REASON OF RACE, CREED, COLOR, NATIONAL ORIGIN, OR ANCESTRY, DISCRIMINATE AGAINST ANY PERSON WHO IS QUALIFIED AND AVAILABLE TO PERFORM THE WORK TO WHICH THE EMPLOYMENT RELATES;

(B) NO CONTRACTOR, SUBCONTRACTOR, NOR ANY PERSON ON HIS BEHALF SHALL, IN ANY MANNER, DISCRIMINATE AGAINST OR INTIMIDATE ANY EMPLOYEE ENGAGED IN THE PERFORMANCE OF WORK UNDER THIS CONTRACT OR ANY SUBCONTRACT HEREUNDER, OR ENGAGED IN THE PROCUREMENT, MANUFACTURE, ASSEMBLING OR FURNISHING OF ANY SUCH MATERIALS, EQUIPMENT, SUPPLIES OR SERVICES TO BE ACQUIRED UNDER SUCH CONTRACT, ON ACCOUNT OF RACE, CREED, COLOR, NATIONAL ORIGIN, OR ANCESTRY;

(C) THERE MAY BE DEDUCTED FROM THE AMOUNT PAYABLE TO THE CONTRACTOR BY THE STATE, UNDER THIS CONTRACT, A PENALTY OF \$50.00 FOR EACH PERSON FOR EACH CALENDAR DAY DURING WHICH SUCH PERSON IS DISCRIMINATED AGAINST OR INTIMIDATED IN VIOLATION OF THE PROVISIONS OF THE CONTRACT; AND

(D) THIS CONTRACT MAY BE CANCELED OR TERMINATED BY THE COMMISSIONER, AND ALL MONEY DUE OR TO BECOME DUE HEREUNDER MAY BE FORFEITED, FOR ANY VIOLATION OF THIS SECTION OF THE CONTRACT OCCURRING AFTER NOTICE TO THE CONTRACTOR FROM THE CONTRACTING PUBLIC AGENCY OF ANY PRIOR VIOLATION OF THIS SECTION OF THE CONTRACT.

THE FOLLOWING IS ADDED TO THE SECOND PARAGRAPH "ATTENTION IS CALLED TO THE FOLLOWING STATE LAWS AND REGULATIONS:" OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CHAPTER 2, SECTIONS 3 AND 4 OF THE AIR POLLUTION CONTROL CODE WHICH PROHIBITS THE DISPOSAL OF ANY TYPE OF PLANT LIFE BY OPEN BURNING.

CHAPTER 150, TITLE 34, REVISED STATUTES (N.J.S.A.34:11-56.25 ET SEQ.), PROVIDING FOR PREVAILING WAGES, AND FOR REMEDIES AND PENALTIES.

N.J.A.C. 7:30-1 ET SEQ, WHICH PROVIDES THAT ANYONE APPLYING PESTICIDES MUST BE CERTIFIED AND REGISTERED WITH THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

THE CONTRACTOR IS REQUIRED TO IMPLEMENT AND MAINTAIN A SPECIFIC AFFIRMATIVE ACTION COMPLIANCE PROGRAM OF EQUAL EMPLOYMENT OPPORTUNITY IN SUPPORT OF THE NEW JERSEY "LAW AGAINST DISCRIMINATION", P.S. 1945, CHAPTER 169, AS SUPPLEMENTED AND AMENDED IN ACCORDANCE WITH EXECUTIVE ORDER NO. 11246, IMPLEMENTED BY THE EQUAL EMPLOYMENT OPPORTUNITY REGULATIONS OF THE SECRETARY OF LABOR, PUBLISHED MAY 28, 1968 IN THE FEDERAL REGISTER, VOLUME 33, PAGES 7804 TO 7812.

THE CONTRACTOR'S PROGRAM SHALL INCORPORATE, AS MINIMUM REQUIREMENTS, THE PROCEDURES SPECIFIED IN THE DEPARTMENT'S "AFFIRMATIVE ACTION PROGRAM FOR EQUAL EMPLOYMENT OPPORTUNITY", AND SHALL INCLUDE ADDITIONAL PROCEDURES THAT FEDERAL AND STATE LAWS AND REGULATIONS MAY REQUIRE.

COPIES OF THE DEPARTMENT'S "AFFIRMATIVE ACTION PROGRAM FOR EQUAL EMPLOYMENT OPPORTUNITY" MAY BE OBTAINED FROM THE BUREAU OF CONTRACT ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, 1035 PARKWAY AVENUE, TRENTON, N.J. 08625.

ESSENTIAL INITIAL REQUIREMENTS WILL BE ORIGINAL AND REAFFIRMATION AFFIDAVITS CERTIFYING TO THE ADOPTION AND MAINTENANCE OF THE REQUIRED PROGRAM. THESE AFFIDAVITS SHALL BE PROPERLY EXECUTED AS PART OF THE CLASSIFICATION AND PROPOSAL SUBMISSION REQUIREMENTS SPECIFIED IN ARTICLE 1.2.2.

THE CONTRACTOR SHALL MAINTAIN RECORDS THAT DOCUMENT HIS AFFIRMATIVE ACTION TO ACHIEVE SUCCESS OF HIS EEO PROGRAM. COPIES OF THESE RECORDS SHALL BE SUBMITTED TO THE ENGINEER.

BIDDERS ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF P.L. 1975, C. 127.

COMPLIANCE WITH EITHER THE STATE EQUAL OPPORTUNITY CLAUSES OR THE FEDERAL EQUAL OPPORTUNITY CLAUSES DOES NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE OTHER, UNLESS SPECIFICALLY PROVIDED.

ELECTRICAL CONTRACTORS LICENSING ACT OF 1962, N.J.S.A. 45:5A-1 ET SEQ., PROVIDING THAT ELECTRICAL INSTALLATION WORK SHALL BE DONE UNDER THE SUPERVISION OF A LICENSED ELECTRICAL CONTRACTOR.

THE PARAGRAPH "RULES AND REGULATIONS GOVERNING BLASTING ON CONSTRUCTION AND RELATED OPERATIONS" ON PAGE 40 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

P. L. 1960, CHAPTER 55, PAGE 468, (21:1A-128 ET SEQ.), KNOWN AS THE "EXPLOSIVES ACT", AS IT MAY BE AMENDED AND SUPPLEMENTED, PERTAINING TO REGULATIONS GOVERNING THE STORAGE, HANDLING AND USE OF EXPLOSIVES.

BLASTING AND RELATED OPERATIONS UNDER THE CONTRACT SHALL BE GOVERNED BY THE FOLLOWING RULES AND REGULATIONS OF THE NEW JERSEY DEPARTMENT OF LABOR AND INDUSTRY, OR BY SUCH OTHER RULES AND REGULATIONS AS MAY BE PROMULGATED UNDER THE PROVISIONS OF THE EXPLOSIVES ACT, P.L. 1960, CHAPTER 55:

SAFETY REGULATION NO. 20, EXPLOSIVE PERMITS AND FEES  
SAFETY REGULATION NO. 21, TRANSPORTATION OF EXPLOSIVES  
SAFETY REGULATION NO. 22, STORAGE OF EXPLOSIVES  
SAFETY REGULATION NO. 23, USE OF EXPLOSIVES.

#### 1.6.5. PERMITS AND LICENSES.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PRIOR TO SUBMITTING A BID BASED ON UTILIZING HYDRAULICALLY PROCURED SOIL AGGREGATE MATERIALS, BIDDERS SHALL ASSURE THEMSELVES THAT THE STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION WILL ISSUE A PERMIT TO DREDGE SUCH MATERIALS.

#### 1.6.6. RESPONSIBILITY FOR WORK.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE ENGINEER MAY ORDER COMPLETED OR PARTLY COMPLETED SECTIONS OF THE PROJECT TO BE OPENED TO TRAFFIC PRIOR TO THE



ACCEPTANCE OF THE PROJECT. THE CONTRACTOR AGREES THAT HE WILL MAKE NO CLAIMS FOR AND SHALL HAVE NO RIGHT TO ADDITIONAL PAYMENT OR ANY OTHER CONCESSION DUE TO MAINTENANCE AND PROTECTION OF TRAFFIC OR ADDITIONAL PROTECTION OF WORK CAUSED BY SUCH OPENING TO TRAFFIC, EITHER BEFORE OR AFTER THE COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL REPLACE OR RENEW ANY WORK OR MATERIALS LOST OR DAMAGED BECAUSE OF SUCH OPENING TO TRAFFIC. ALL REPAIR OF DAMAGE CAUSED BY OPENING TO TRAFFIC PRIOR TO THE ACCEPTANCE OF THE PROJECT, FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR, WILL BE PAID FOR BY THE DEPARTMENT AT CONTRACT PRICES, IF APPLICABLE, OR BY SUPPLEMENTARY AGREEMENT.

1.6.9. ACCIDENT PREVENTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR'S ATTENTION IS PARTICULARLY DIRECTED TO THE REQUIREMENTS OF THE CURRENT CONSTRUCTION SAFETY CODE PROMULGATED BY THE NEW JERSEY DEPARTMENT OF LABOR AND INDUSTRY, BUREAU OF ENGINEERING AND SAFETY. ARTICLE 3.6 OF THE CONSTRUCTION SAFETY CODE STATES THE REQUIREMENTS REGARDING REPORTING OF ACCIDENTS INVOLVING INJURY, LOSS OF LIFE, AND PROPERTY DAMAGE.

1.6.10. PROPERTY DAMAGE.

IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, CHANGE "PRIVATE PROPERTY" TO READ "PUBLIC AND PRIVATE PROPERTY".

1.6.11. PUBLIC UTILITIES.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

IT IS UNDERSTOOD AND AGREED THAT THE CONTRACTOR HAS CONSIDERED IN HIS BID ALL OF THE PERMANENT AND TEMPORARY UTILITY APPURTENANCES IN THEIR PRESENT OR RELOCATED POSITIONS AS SHOWN ON THE PLANS. IT IS FURTHER UNDERSTOOD AND AGREED THAT THE CONTRACTOR HAS CONSIDERED IN HIS BID THE TIME ESTIMATED FOR ANY NECESSARY UTILITY RELOCATIONS OR INSTALLATIONS AS SET FORTH HEREIN AND THAT NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY DELAYS OR INCONVENIENCE SUSTAINED BY HIM DUE TO ANY INTERFERENCE FROM THE SAID UTILITY APPURTENANCES OR THE OPERATION OF MOVING OR INSTALLING THEM PRIOR TO EXPIRATION OF THE ESTIMATED TIME. THE CONTRACTOR

TOR WILL BE PAID FOR HIS EXPENSES DURING DELAYS BEYOND HIS CONTROL CAUSED BY UTILITY WORK DONE BY OTHERS SUBSEQUENT TO THE ESTIMATED TIME FOR COMPLETION. SUCH REIMBURSEMENT WILL BE IN ACCORDANCE WITH THE PROVISIONS FOR SUPPLEMENTARY AGREEMENTS IN ARTICLE 1.8.4.

THE PROVISIONS IN THE FIRST PARAGRAPH OF ARTICLE 1.4.2 WITH REFERENCE TO THE CONTRACTOR MAKING NO CLAIMS AGAINST THE STATE FOR ADDITIONAL PAYMENT DUE TO DELAYS DOES NOT APPLY UNDER THE CONDITIONS SPECIFIED ABOVE.

ELECTRICAL INSTALLATIONS OF THE DEPARTMENT OF TRANSPORTATION CONSTRUCTED EITHER BEFORE OR DURING THE TIME OF THIS CONTRACT SHALL BE CONSIDERED AS A PUBLIC UTILITY AND ALL PROVISIONS OF THIS ARTICLE SHALL BE APPLICABLE. PLANS SHOWING THE LOCATIONS OF SUCH ELECTRICAL FACILITIES, PARTICULARLY THOSE UNDERGROUND, ARE ON FILE AT THE OFFICE OF THE ELECTRICAL ENGINEER, 1035 PARKWAY AVENUE, TRENTON, NEW JERSEY, AND SHOULD BE EXAMINED BY THE CONTRACTOR BEFORE PERFORMING ANY WORK WHICH WOULD ENDANGER THESE FACILITIES.

THE CONTRACTOR SHALL PERMIT THE OWNERS OF THE UTILITIES, OR THEIR AGENTS, ACCESS TO THE SITE OF THE WORK AT ALL TIMES, IN ORDER TO RELOCATE OR PROTECT THEIR FACILITIES, AND HE SHALL COOPERATE WITH THEM IN PERFORMING THIS WORK.

THE CONTRACTOR SHALL COOPERATE WITH THE UTILITY OWNERS CONCERNED AND SHALL NOTIFY THEM NOT LESS THAN 10 DAYS IN ADVANCE OF THE TIME HE PROPOSES TO PERFORM ANY WORK THAT WILL ENDANGER OR AFFECT THEIR FACILITIES.

SEPARATE PAYMENT WILL NOT BE MADE FOR PROTECTION AND PRESERVATION OF UTILITIES AND COOPERATION WITH THEIR OWNERS. THE BIDDER SHALL INCLUDE ALL SUCH COSTS IN THE UNIT PRICES BID FOR THE VARIOUS ITEMS OF THE CONTRACT AS LISTED IN THE PROPOSAL.

FOR THE PURPOSE OF ESTABLISHING THE EXACT LOCATION OF SUB-SURFACE UTILITIES, THE ENGINEER MAY DIRECT THE EXCAVATION OF TEST PITS, AND PAYMENT THEREFOR WILL BE MADE UNDER THE ITEM EARTH EXCAVATION FOR TEST PITS, AS PROVIDED IN DIVISION 2, SECTION 7, OF THE STANDARD SPECIFICATIONS. FAILURE OF THE ENGINEER TO DIRECT THE DIGGING OF TEST PITS WILL NOT, HOWEVER, BE CONSIDERED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITIES REGARDING THE PROTECTION AND PRESERVATION OF UTILITIES.

ANY PUBLIC UTILITY FACILITIES BEING CONSTRUCTED UNDER THIS CONTRACT SHALL BE SUBJECT TO INSPECTION BY THE UTILITY OWNER DURING CONSTRUCTION, AND THE UTILITY OWNER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT MATERIAL TO BE USED IN REFERENCE TO THE SPECIFICATIONS AND PLAN DETAILS APPLYING TO SUCH MATERIALS. THE CONTRACTOR SHALL NOTIFY THE UTILITY OWNER TEN (10) DAYS IN

ADVANCE OF THE BEGINNING OF CONSTRUCTION OF THE PUBLIC UTILITY FACILITIES.

SECTION 7  
PROCEDURE AND PROGRESS

1.7.1. COMMENCEMENT AND PROCEDURE.

THIS ARTICLE OF THE STANDARD SPECIFICATION IS AMENDED AS FOLLOWS:

THE PROGRESS SCHEDULE TO BE SUBMITTED BY THE CONTRACTOR, IN ACCORDANCE WITH ARTICLE 1.3.2, SHALL CLEARLY OUTLINE THE VARIOUS STAGES AND OPERATIONS BY WHICH HE PROPOSES TO COMPLETE THE ENTIRE PROJECT, INCLUDING THE MAINTENANCE OF TRAFFIC AS SPECIFIED IN ARTICLE 1.4.3.

CONSTRUCTION OPERATIONS SHALL NOT BEGIN UNTIL THE ABOVE SCHEDULE HAS BEEN APPROVED BY THE ENGINEER, AND THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED SCHEDULE WITHOUT THE EXPRESS PERMISSION OF THE ENGINEER.

THE CONTRACTOR SHALL ARRANGE AND CONDUCT THE WORK USING SUCH PROCEDURES AND STAGES AS MAY BE NECESSARY TO COMPLY WITH THE PROVISIONS OF ARTICLES 1.4.2, 1.4.3, 1.6.11, 1.7.1, AND 1.7.2.

NO WORK WHICH CLOSES OR ALTERS THE USE OF EXISTING ROADWAYS SHALL BE UNDERTAKEN UNTIL ADEQUATE PROVISIONS, CONFORMING TO THE REQUIREMENTS OF ARTICLE 1.4.3, HAVE BEEN MADE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL ARRANGE AND PROSECUTE HIS WORK SO THAT EACH SUCCESSIVE CONSTRUCTION OPERATION AT EACH LOCATION SHALL FOLLOW THE PRECEDING OPERATION AS CLOSELY AS THE REQUIREMENTS OF THE VARIOUS TYPES OF CONSTRUCTION WILL PERMIT, AND THE COMBINED SUCCESSIVE OPERATIONS SHALL BE LIMITED TO A MINIMUM PRACTICAL LENGTH AND TIME, AS APPROVED BY THE ENGINEER.

THE WORK UNDER THIS PROJECT SHALL BE CARRIED OUT IN ACCORDANCE WITH THE STAGE CONSTRUCTION AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.4.3. HOWEVER, TWO OR MORE CONSTRUCTION OPERATIONS MAY PROCEED SIMULTANEOUSLY SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE DETAILED PLAN OF STAGE CONSTRUCTION AND MAINTENANCE OF TRAFFIC FOR WRITTEN APPROVAL BY THE ENGINEER, WHICH INCORPORATES THE REQUIREMENTS OF THE DEPARTMENT AND IS BASED ON APPROVED CONSTRUCTION METHODS AND PROCEDURES.

THE ENGINEER MAY REVISE STAGE CONSTRUCTION AND MAINTENANCE OF TRAFFIC, IF DEEMED NECESSARY, DUE TO UNFORESEEN CIRCUMSTANCES WHICH MAY ARISE DURING CONSTRUCTION. REVISIONS SO MADE SHALL NOT BE CONSIDERED REASON FOR ANY CLAIM FOR EXTRA PAYMENT OR EXTENSION OF TIME BY THE CONTRACTOR.

COMPLETED OR PARTLY COMPLETED SECTIONS OF THE PROJECT TO BE OPENED TO TRAFFIC PRIOR TO ACCEPTANCE OF THE PROJECT DUE TO THE VARIOUS STAGES OF CONSTRUCTION ARE SUBJECT TO THE APPROVAL OF THE ENGINEER AND THE PROVISIONS OF ARTICLES 1.4.3 AND 1.6.6.

WHEN POSSIBLE, THE CONSTRUCTION OF SUBSURFACE STRUCTURES WITHIN OR IMMEDIATELY ADJACENT TO ROADWAY LIMITS SHALL BE PERFORMED WHILE TRAFFIC IS BEING DIVERTED FROM SUCH AREAS. IF TRAFFIC MUST BE MAINTAINED IN SUCH AREAS, THE WORK SHALL BE DONE EXPEDITIOUSLY IN STAGES, AS APPROVED BY THE ENGINEER, AND WITH MINIMUM INTERFERENCE WITH TRAFFIC.

SUBSURFACE STRUCTURE EXCAVATION WITHIN AND IMMEDIATELY ADJACENT TO ROADWAYS AVAILABLE TO TRAFFIC SHALL NOT REMAIN OPEN OVERNIGHT.

THE CONTRACTOR SHALL PROCEED WITH THE WORK OF DEMOLITION OF THE VARIOUS BUILDINGS, IDENTIFIED ON THE PLANS WITH A DEMOLITION NUMBER, AS AND WHEN THEY BECOME AVAILABLE FOR DEMOLITION.

IF ANY OF THE BUILDINGS TO BE DEMOLISHED ARE NOT AVAILABLE FOR DEMOLITION AT THE TIME THE CONTRACTOR BEGINS WORK ON THE PROJECT, THE CONTRACTOR SHALL ARRANGE AND PROSECUTE HIS WORK SO AS TO TEMPORARILY DEFER HIS WORK IN THE VICINITY OF SUCH BUILDINGS AND COMPLETE SUCH WORK WHEN THE BUILDINGS ARE MADE AVAILABLE FOR DEMOLITION.

OPERATIONS ADJACENT TO ROADWAYS ON WHICH TRAFFIC IS BEING MAINTAINED SHALL BE CONFINED TO ONLY ONE SIDE OF THE ROADWAY AT ANY ONE TIME.

PROPOSED CONCRETE CURBS ADJACENT TO FLEXIBLE BASE AND PAVEMENT COURSES SHALL BE COMPLETED, CURED, AND BACKFILLED BEFORE SUCH BASE AND PAVEMENT COURSES ARE CONSTRUCTED.

THE CONTRACTOR SHALL DEFER ALL TOPSOILING, SEEDING, LANDSCAPE WORK AND INSTALLATION OF GUARD RAIL IN ANY AREA IN

WHICH UNDERGROUND DUCTS AND FOUNDATIONS FOR HIGHWAY LIGHTING WILL BE CONSTRUCTED BY OTHERS UNDER A SEPARATE CONCURRENT CONTRACT AS SHOWN ON THE PLANS UNTIL THE HIGHWAY LIGHTING CONTRACTOR HAS COMPLETED THE DUCTS AND FOUNDATIONS IN THAT AREA.

WHEN THE CONTRACTOR'S EXCAVATING OPERATIONS ENCOUNTER PREHISTORIC REMAINS OR ARTIFACTS OF HISTORICAL OR ARCHEOLOGICAL SIGNIFICANCE, THE OPERATIONS SHALL BE TEMPORARILY DISCONTINUED IN THAT AREA. THE ENGINEER WILL CONSULT ARCHEOLOGICAL AUTHORITIES AND DETERMINE THE DISPOSITION OF THE REMAINS OR ARTIFACTS. THE CONTRACTOR AGREES THAT HE WILL MAKE NO CLAIM FOR ADDITIONAL PAYMENT OR FOR EXTENSION OF TIME BECAUSE OF ANY DELAYS IN OR ALTERATION OF HIS PROCEDURE DUE TO REMOVAL OF ANY SUCH REMAINS OR ARTIFACTS.

CONSTRUCTION OF THE TURNAROUNDS (JUG-HANDLES) SHALL BE COMPLETED PRIOR TO THE CONSTRUCTION OF THE BARRIER CURB UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

IN ALL AREAS WHERE WORK IS BEING PERFORMED DURING THE HOURS OF DUSK OR DARKNESS, THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN LIGHTING FACILITIES MEETING WITH THE APPROVAL OF THE ENGINEER AND CAPABLE OF PROVIDING LIGHT OF SUFFICIENT INTENSITY TO PERMIT GOOD WORKMANSHIP AND PROPER INSPECTION AT ALL TIMES.

NO SEPARATE PAYMENT WILL BE MADE FOR LIGHTING WORK AREAS AS SPECIFIED ABOVE.

#### 1.7.7. LIQUIDATED DAMAGES.

THE FIRST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR AND THE DEPARTMENT RECOGNIZE THAT DELAY IN COMPLETION OF THE PROJECT WILL RESULT IN DAMAGE TO THE STATE OF NEW JERSEY IN TERMS OF THE EFFECT OF THE DELAY IN THE USE OF THE PROJECT UPON THE PUBLIC CONVENIENCE AND ECONOMIC DEVELOPMENT OF THE STATE OF NEW JERSEY, AND WILL ALSO RESULT IN ADDITIONAL COST TO THE STATE FOR ENGINEERING, INSPECTION AND ADMINISTRATION OF THE CONTRACT. BECAUSE SOME OF THIS DAMAGE IS DIFFICULT OR IMPOSSIBLE TO ESTIMATE, THE PARTIES AGREE THAT IF THE CONTRACTOR FAILS TO COMPLETE THE PROJECT AND EACH AND EVERY PART AND APPURTENANCE THEREOF FULLY, ENTIRELY AND IN CONFORMITY WITH THE PROVISIONS OF THE CONTRACT WITHIN THE TIME STATED IN THE CONTRACT, OR WITHIN SUCH FURTHER TIME AS MAY HAVE BEEN GRANTED IN ACCORDANCE WITH THE PROVISIONS OF THE CONTRACT, THE CONTRACTOR SHALL PAY THE STATE LIQUIDATED DAMAGES, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE, IN

LIEU OF THE ABOVE STATED ACTUAL DAMAGE. SUCH LIQUIDATED DAMAGES SHALL BE PAID FOR EACH AND EVERY DAY, AS HEREINAFTER DEFINED, THAT HE IS IN DEFAULT ON TIME TO COMPLETE THE WORK.

SCHEDULE OF LIQUIDATED DAMAGES FOR EACH DAY OF  
OVERRUN IN CONTRACT TIME

<u>ORIGINAL CONTRACT AMOUNT</u>		<u>LIQUIDATED DAMAGES</u>	
<u>FROM MORE THAN</u>	<u>TO AND INCLUDING</u>	<u>PER CALENDAR DAY</u>	<u>PER WORKING DAY</u>
\$ 0	\$ 25,000	\$ 45	\$ 63
25,000	50,000	75	105
50,000	100,000	110	154
100,000	500,000	150	210
500,000	1,000,000	225	315
1,000,000	2,000,000	300	420
2,000,000	5,000,000	450	630
5,000,000	10,000,000	600	840
10,000,000	- - -	700	980

SECTION 8

MEASUREMENT AND PAYMENT

1.8.1. MEASUREMENT OF QUANTITIES.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

UNLESS OTHERWISE SPECIFIED, LONGITUDINAL MEASUREMENTS FOR AREA COMPUTATION WILL BE MADE HORIZONTALLY. UNLESS OTHERWISE SPECIFIED, TRANSVERSE MEASUREMENTS FOR AREA COMPUTATION WILL BE THE NEAT DIMENSIONS SHOWN ON THE PLANS OR ORDERED IN WRITING BY THE ENGINEER.

1.8.5. PAYMENT.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MONTHLY CERTIFICATES WILL BE MADE OF THE APPROXIMATE QUANTITIES OF WORK DONE DURING THE PRECEDING MONTH AND PAYMENTS ON ACCOUNT THEREFOR WILL BE MADE BASED ON THE PRICES BID IN THE PROPOSAL AND AS MAY BE STIPULATED ELSEWHERE HEREIN, IF ANY, EXCEPT THAT 5 PERCENT OF THE AMOUNT DUE ON SUCH PARTIAL PAYMENTS, ON THE FIRST 50 PERCENT OF THE TOTAL CONTRACT PRICE, WILL BE WITHHELD FROM THE CONTRACTOR PENDING COMPLETION OF THE CONTRACT. THEREAFTER ON THE REMAINING 50 PERCENT OF THE TOTAL CONTRACT PRICE, NO PERCENTAGE OF THE PARTIAL PAYMENTS WILL BE WITHHELD FROM THE CONTRACTOR PENDING SUCH COMPLETION. HOWEVER, UPON SUBSTANTIAL COMPLETION OF THE CONTRACT, AS DETERMINED BY THE ENGINEER, THE OVERALL RETAINAGES SHALL BE REDUCED TO 2 PERCENT OF THE TOTAL CONTRACT PRICE. SAID 2 PERCENT SHALL REMAIN WITHHELD UNTIL COMPLETION OF THE PROJECT AT WHICH TIME FINAL PAYMENT WILL BE MADE UPON AUTHORIZATION OF THE ENGINEER. ANY PARTIAL PAYMENTS MADE AFTER SUBSTANTIAL COMPLETION OF THE CONTRACT WILL BE MADE ONLY UPON CERTIFICATION BY THE CONTRACTOR TO THE DEPARTMENT THAT ALL SUBCONTRACTORS HAVE BEEN PAID IN THE SAME PROPORTION THAT THE CONTRACTOR HAS BEEN PAID. HOWEVER, SHOULD THE AMOUNT OWED BY THE CONTRACTOR TO A SUBCONTRACTOR BE IN DISPUTE, SUCH PARTIAL PAYMENTS WILL BE MADE ONLY UPON SETTLEMENT OF THE DISPUTE OR UPON DETERMINATION BY THE DEPARTMENT THAT THE CLAIM OF THE SUBCONTRACTOR IS NONPERSUASIVE. THE MONTHLY CERTIFICATES AND PAYMENTS ON ACCOUNT WILL ALSO INCLUDE AN AMOUNT EQUAL TO THE COST OF MATERIALS FURNISHED BUT NOT INCORPORATED IN THE WORK, AS DETERMINED BY THE ENGINEER, PROVIDED THAT SUCH MATERIALS HAVE BEEN PROPERLY STORED AND PROTECTED ALONG OR UPON THE SITE OR HAVE BEEN STORED AT LOCATIONS OWNED OR LEASED BY THE CONTRACTOR OR THE DEPARTMENT AND THAT THE MATERIALS HAVE BEEN INSPECTED AND APPROVED; AND PROVIDED FURTHER, THAT THE MATERIALS, IF STORED ON PROPERTY OWNED BY OTHER THAN THE STATE OF NEW JERSEY, SHALL BE FENCED IN WITH ACCESS LIMITED TO THE STATE OF NEW JERSEY AND THE CONTRACTOR OR THEIR AUTHORIZED AGENTS AND SHALL BE CLEARLY IDENTIFIED AS PROPERTY OF THE STATE OF NEW JERSEY AND THE PROJECT, WITH SIGNS IDENTIFYING IT AS SUCH IN LARGE LETTERS, AND PROVIDED THAT IF STORED ON LEASED AREA, THE LEASE SHALL BE MADE OUT TO THE CONTRACTOR BUT SHALL BE CANCELLED ONLY WITH THE WRITTEN PERMISSION OF THE DEPARTMENT AND ALL COSTS OF SAID LEASE SHALL BE BORNE BY THE CONTRACTOR; AND PROVIDED FURTHER, THAT ALL COSTS OF STORAGE INCLUDING ANY TAXES LEVIED AGAINST THE MATERIALS BY ANY OTHER GOVERNMENTAL AGENCIES SHALL BE BORNE BY THE CONTRACTOR; AND PROVIDED FURTHER THAT IT IS EXPRESSLY UNDERSTOOD THAT THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFE STORAGE AND PROTECTION OF THE MATERIALS AND NOTHING HEREIN SHALL ALTER THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY INCORPORATE SAID

MATERIALS INTO THE PROJECT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS; AND PROVIDED FURTHER, THAT THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH SATISFACTORY RELEASES OF LIENS FOR SAID MATERIALS; AND PROVIDED FURTHER, THAT IF CLAIMS HAVE BEEN FILED WITH THE COMMISSIONER AGAINST THE CONTRACTOR, SUFFICIENT MONEY MAY BE WITHHELD TO SATISFY SUCH CLAIMS UNTIL THEY HAVE BEEN SATISFIED.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR MAY ELECT TO DEPOSIT IN A BANK LOCATED IN THE STATE OF NEW JERSEY WHICH IS AN AUTHORIZED DEPOSITORY OF THE STATE OF NEW JERSEY AND WHICH HAS A TRUST DEPARTMENT, NEGOTIABLE BONDS OF THE STATE OF NEW JERSEY OR ANY OF ITS POLITICAL SUBDIVISIONS WHICH HAVE BEEN APPROVED BY THE COMMISSIONER, TO SECURE RELEASE OF ALL OR A PORTION OF THE RETAINAGE UNDER THE PROVISIONS OF AN ESCROW AGREEMENT TO BE ENTERED INTO BETWEEN THE CONTRACTOR AND THE DEPARTMENT.

THE PAR VALUE OR MARKET VALUE OF SAID BONDS, WHICHEVER IS LOWER, SHALL BE EQUAL TO THE AMOUNT OF MONEY BEING RELEASED TO THE CONTRACTOR.

THE AGREEMENT FORMS AND A LIST OF APPROVED BONDS MAY BE OBTAINED FROM THE BUREAU OF CONTRACT ADMINISTRATION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

NONCOMPLIANCE BY THE CONTRACTOR WITH THE REQUIREMENTS OF THE AFFIRMATIVE ACTION PROGRAM FOR EQUAL EMPLOYMENT OPPORTUNITY SPECIFIED IN ARTICLE 1.6.3 MAY BE CAUSE FOR DELAYING OR WITHHOLDING MONTHLY AND FINAL PAYMENTS PENDING CORRECTIVE AND APPROPRIATE MEASURES BY THE CONTRACTOR TO THE SATISFACTION OF THE DEPARTMENT.

IN CONFORMANCE WITH CHAPTER 150, LAWS OF 1963 (N.J.S.A. 34:11-56.25 ET SEQ.) THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

BEFORE FINAL PAYMENT BASED ON THE FINAL CERTIFICATE OF COST AND ACTUAL AS BUILT QUANTITIES WILL BE MADE, THE CONTRACTOR AND SUBCONTRACTORS SHALL FURNISH THE ENGINEER WITH WRITTEN STATEMENTS IN FORM SATISFACTORY TO THE COMPTROLLER OF THE DEPARTMENT CERTIFYING TO THE AMOUNTS THEN DUE AND OWING FROM THE CONTRACTOR AND SUBCONTRACTORS FILING SUCH STATEMENT TO ANY AND ALL WORKMEN FOR WAGES DUE ON ACCOUNT OF THE CONTRACT, SETTING FORTH THEREIN THE NAMES OF THE PERSONS WHOSE WAGES ARE UNPAID AND THE AMOUNT DUE TO EACH RESPECTIVELY, WHICH STATEMENT SHALL BE VERIFIED BY



THE OATH OF THE CONTRACTOR OR SUBCONTRACTOR, AS THE CASE MAY BE, THAT HE HAS READ SUCH STATEMENT SUBSCRIBED BY HIM, KNOWS THE CONTENTS THEREOF, AND THAT THE SAME IS TRUE OF HIS OWN KNOWLEDGE, PROVIDED, HOWEVER, THAT NOTHING HEREIN SHALL IMPAIR THE RIGHT OF THE CONTRACTOR TO RECEIVE FINAL PAYMENT BECAUSE OF FAILURE OF ANY SUBCONTRACTOR TO COMPLY WITH PROVISIONS OF THIS ARTICLE.

1.8.7. GUARANTY AGAINST DEFECTIVE WORK.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS.

THE CONTRACTOR SHALL OBTAIN AND ASSIGN, TO THE STATE ANY MANUFACTURERS' WARRANTIES OR GUARANTIES, ON ELECTRICAL OR MECHANICAL EQUIPMENT OR ANY OTHER PRODUCT OR MATERIAL INSTALLED IN THE PROJECT, WHICH ARE GIVEN AS CUSTOMARY TRADE PRACTICE.

Superseded

DIVISION 2

EARTHWORK

SECTION 1

CLEARING SITE

2.1.1. DESCRIPTION.

CLEARING SITE SHALL ALSO INCLUDE THE REMOVAL OF ALL OBSTRUCTIONS EITHER STANDING OR FELLED WITHIN THE LIMITS OF CONSTRUCTION AND FOR WHICH PAYMENT IS NOT OTHERWISE PROVIDED IN THE CONTRACT BUT WHICH IS DIRECTED FOR REMOVAL ON THE PLANS OR BY THE ENGINEER DURING CONSTRUCTION.

ALL REFERENCES TO REMOVAL OF BUILDINGS BY THE CONTRACTOR IN THIS SECTION OF THE STANDARD SPECIFICATIONS ARE DELETED.

2.1.3. METHODS OF CONSTRUCTION.

THE LAST SENTENCE ON PAGE 59 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TREE STUMPS MAY REMAIN EXTENDING NOT MORE THAN 1 FOOT ABOVE THE EXISTING GROUND SURFACE, EXCEPT THAT THE STUMPS SHALL BE GRUBBED OUT IN THE FOLLOWING AREAS:

- (A) WHERE THE PROPOSED PAVEMENT SUBGRADE, OR PROPOSED FINISHED GRADE IN OTHER AREAS, WILL BE LESS THAN 3-1/2 FEET ABOVE THE EXISTING GROUND SURFACE.
- (B) WITHIN 5 FEET OF ANY PROPOSED STRUCTURE, INCLUDING PIPES OR DUCTS.

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH ON PAGE 59 OF THE STANDARD SPECIFICATIONS:

CLEARING SITE SHALL EXTEND 8 FEET BEYOND THE TOP OF SLOPES OF ROADWAY EXCAVATION AND 5 FEET BEYOND THE TOP OF SLOPES OF DITCHES AND CHANNELS, EXCEPT THAT SUCH ADDITIONAL CLEARING SHALL NOT BE DONE OUTSIDE RIGHT-OF-WAY LIMITS.

THE FOURTH PARAGRAPH ON PAGE 61 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MATERIALS ACCUMULATED BY CLEARING, GRUBBING, REMOVAL OF BRIDGES AND OTHER STRUCTURES, AND CLEANING OUT AS ABOVE DESCRIBED SHALL BE DISPOSED OF BY THE CONTRACTOR AT SITES TO BE PROVIDED BY HIM OUTSIDE THE RIGHT OF WAY OF THE PROJECT AND OUTSIDE OTHER RIGHT OF WAY PROPOSED OR CONTEMPLATED FOR ACQUISITION BY THE STATE, AND OUT OF SIGHT FROM ANY EXISTING OR PROPOSED STATE HIGHWAY, IN A MANNER SATISFACTORY TO THE ENGINEER, EXCEPT THAT MATERIALS SUITABLE FOR EMBANKMENT SHALL BE USED FOR THAT PURPOSE IF DIRECTED BY THE ENGINEER. ANY BURNING OF WOOD, TREES, BRUSH AND DEBRIS CLEAR-ED FROM THE SITE SHALL BE GOVERNED BY THE STATE'S AIR POLLUTION CONTROL CODE.

#### DEMOLITION OF BUILDINGS.

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DEMOLITION OF BUILDINGS SHALL INCLUDE THE WORK DESCRIBED UNDER THIS HEADING ON PAGE 61 OF THE STANDARD SPECIFICATIONS EXCEPT AS OTHERWISE SPECIFIED BELOW.

BUILDINGS TO BE DEMOLISHED ARE DESIGNATED ON THE PLANS BY A DEMOLITION NUMBER.

ALL BUILDINGS TO BE DEMOLISHED BY THE CONTRACTOR SHALL BE DEMOLISHED IN PLACE.

WHERE BUILDINGS HAVE BEEN REMOVED BY OTHERS, THE CONTRACTOR SHALL DISCONNECT AND TERMINATE UTILITY SERVICES REMAINING, SHALL REMOVE FOUNDATION WALLS AND STEPS TO GROUND LEVEL, REMOVE ALL DETACHED BUILDINGS, AND REMOVE ALL FIXTURES, WOOD AND DEBRIS FROM THE AREA.

DEMOLITION OF BUILDINGS SHALL ALSO INCLUDE THE CONTROL OF RATS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

AT LEAST 10 DAYS BEFORE BEGINNING DEMOLITION OF ANY STRUCTURE, THE CONTRACTOR SHALL BEGIN THE FOLLOWING PROGRAM TO RID THE STRUCTURE AND ADJACENT AREAS WITHIN THE LIMITS OF THE CONTRACT OF ANY RATS OR THEIR CARCASSES AND TO PREVENT THEIR MIGRATION TO OTHER ADJACENT AREAS.

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND PROCEDURES OF N.J.A.C. 7:30-1 ET SEQ FOR THE APPLICATION OF EXTERMINATING MATERIALS.

THE RAT CONTROL PROGRAM SHALL BE CARRIED OUT BY A PEST CONTROL OPERATOR WHOSE QUALIFICATIONS AND EXPERIENCES SHALL MEET WITH THE APPROVAL OF THE ENGINEER.

TOXIC BAIT SHALL CONSIST OF A SUITABLE GRAIN BAIT IN PLASTIC BAGS OR IN PARAFFINIZED BLOCKS CONTAINING ONE OF THE

FOLLOWING ANTICOAGULANTS IN THE AMOUNT SPECIFIED:

	PERCENTAGE BY WEIGHT
DIAPHACINONE	0.005 TO 0.01
FUMARIN	0.025 MINIMUM
PIVAL	0.025 MINIMUM
WARFARIN	0.005 TO 0.025

THE TOXIC BAIT SHALL BE PLACED IN EACH STRUCTURE TO BE DEMOLISHED AT LOCATIONS SELECTED BY THE PEST CONTROL OPERATOR AT THE MINIMUM RATE OF 1 POUND PER 400 SQUARE FEET OF THE FIRST FLOOR OF THE STRUCTURE, OR AT THE RATE OF 1 POUND PER ROOM ON THE FIRST FLOOR OF THE STRUCTURE, WHICHEVER IS GREATER.

WHERE NO COMPETING SUPPLY OF WATER EXISTS WITHIN A STRUCTURE, A PAN CONTAINING AT LEAST ONE PINT OF WATER WITH AN ANTICOAGULANT FOR LIQUID BAITING SHALL BE PLACED IN THE STRUCTURE FOR EACH 5 POUNDS OF DRY BAIT OR FRACTION THEREOF. THE ANTICOAGULANT SHALL BE ADDED TO THE WATER IN SUCH AMOUNTS AS TO PRODUCE A CONCENTRATION EQUAL TO STRENGTHS SPECIFIED HEREINBEFORE FOR TOXIC BAIT.

TOXIC BAIT IN THE FORM OF 1 POUND PARAFFINIZED BLOCK SHALL ALSO BE PLACED IN EACH MANHOLE, CATCH BASIN OR INLET OF STORM OR COMBINATION DRAINS LOCATED ON THE SAME STREET AS THE BUILDING TO BE DEMOLISHED AND WITHIN THE SAME BLOCK, INCLUDING THE ENTIRE INTERSECTIONS OF THE NEAREST CROSS STREETS. BAIT SHALL BE PLACED IN SUITABLE LOCATIONS WITHIN THE DRAINAGE STRUCTURES AS DETERMINED BY THE PEST CONTROL OPERATOR. THE BAIT BLOCK SHALL BE FASTENED IN ITS LOCATION WITH WIRE.

ALL TOXIC BAIT IN STRUCTURES OR DRAINS SHALL BE INSPECTED AND RENEWED AS NECESSARY ON THE FOURTH OR FIFTH DAY AFTER INITIAL BAITING.

ALL VISIBLE CARCASSES OF RATS SHALL BE REMOVED AND DISPOSED OF TO THE SATISFACTION OF THE ENGINEER.

THE PEST CONTROL OPERATOR SHALL SUBMIT A SIGNED STATEMENT TO THE ENGINEER AFTER THE INITIAL TREATMENT AND EACH FOLLOW-UP INSPECTION REPORTING THE AMOUNT AND TYPE OF BAIT PLACED IN EACH TREATMENT, AND STATING THE VISIBLE RESULTS OBTAINED FROM THE RAT CONTROL PROGRAM.

NOTE: THE ANTIDOTE FOR ANTICOAGULANTS SPECIFIED IS VITAMIN K.

2.1.4. QUANTITY AND PAYMENT.

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THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE ATTENTION OF BIDDERS IS DIRECTED TO THE FACT THAT IN THE PROPOSAL A LUMP SUM BID WILL BE MADE FOR DEMOLITION OF BUILDINGS. HOWEVER, EACH BIDDER SHALL SHOW AN ANALYSIS OF THE LUMP SUM PRICE BID BY LISTING, ON SEPARATE FORM FURNISHED BY THE DEPARTMENT AND ATTACHED TO THE PROPOSAL FORM, THE PRICE OF DEMOLISHING EACH BUILDING.

THE DEPARTMENT RESERVES THE RIGHT TO DELETE FROM THE CONTRACT THE DEMOLITION OF ANY BUILDINGS LISTED IN THE ANALYSIS OF THE LUMP SUM PRICE BID FOR DEMOLITION OF BUILDINGS, AND THE LUMP SUM PRICE TO BE PAID FOR THE ITEM DEMOLITION OF BUILDINGS SHALL BE REDUCED ACCORDINGLY.

PAYMENT FOR DEMOLITION OF BUILDINGS WILL BE MADE AT THE LUMP SUM PRICE BID, REDUCED IN ACCORDANCE WITH THE FOREGOING, IF APPLICABLE, FOR THE ITEM DEMOLITION OF BUILDINGS IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE PERFORMANCE OF ALL THE WORK OF DEMOLITION AS SPECIFIED IN ART. 2.1.3 UNDER THE HEADING DEMOLITION OF BUILDINGS, THE COST OF FURNISHING ALL LABOR, MATERIALS AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

PAYMENT FOR DEMOLITION OF BUILDING SHALL ALSO INCLUDE THE FILLING OF CELLARS. ATTENTION IS DIRECTED TO THE FOURTH FULL PARAGRAPH ON PAGE 63 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL MAKE NO CLAIMS FOR ADDITIONAL COMPENSATION EITHER ON ACCOUNT OF DELAYS OR NECESSARY ALTERATIONS IN THE PROCEDURE OF HIS WORK THAT MAY BE CAUSED BY DELAY IN MAKING ANY BUILDINGS AVAILABLE FOR DEMOLITION, OR ON ACCOUNT OF ELIMINATION OF DEMOLITION OF ANY BUILDINGS FROM THE CONTRACT.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 1A

SEALING OF ABANDONED WELLS

2.1A.1. DESCRIPTION.

SEALING OF ABANDONED WELLS SHALL CONSIST OF THE FILLING AND SEALING ABANDONED WELLS WITHIN THE LIMITS OF THE PROJECT AT LOCATIONS WHERE SHOWN ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER.

2.1A.3. METHODS OF CONSTRUCTION.

ABANDONED WELLS SHALL BE FILLED AND SEALED AS HEREINAFTER PROVIDED:

UG WELLS SHALL BE FILLED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF ARTICLE 2.3.3.

DRILLED WELLS SHALL BE SEALED IN ACCORDANCE WITH THE RULES AND REGULATIONS AS CONTAINED IN N.J.A.C. 7:9-9.1 ET SEQ, WHICH IS AVAILABLE UPON REQUEST TO THE BUREAU OF WATER SUPPLY, PLANNING AND MANAGEMENT, DEPARTMENT OF ENVIRONMENTAL PROTECTION, TELEPHONE: 609-292-2232.

2.1A.4. QUANTITY AND PAYMENT.

PAYMENT FOR SEALING OF ABANDONED WELLS WILL BE MADE FOR THE NUMBER OF ABANDONED WELLS ACTUALLY FILLED AND SEALED AT THE UNIT PRICE BID FOR THE ITEM SEALING OF ABANDONED WELLS IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COSTS OF ALL WORK AS HEREIN BEFORE SPECIFIED, ALL LABOR, MATERIALS AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 2  
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ROADWAY EXCAVATION  
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2.2.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

ROADWAY EXCAVATION SHALL ALSO INCLUDE, AS REQUIRED, THE SCARIFICATION OF BITUMINOUS PAVEMENTS, THE EXCAVATION AND REMOVAL OF TEMPORARY PAVEMENTS AND DIVERSIONARY ROADS, ABANDONED ROADWAYS AND DRIVEWAYS, AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

2.2.3. METHODS OF CONSTRUCTION.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ROADWAY EXCAVATION SHALL BE CARRIED TO THE LINES, GRADES AND SLOPES SHOWN ON THE PLANS, EXCEPT SUCH LINES, GRADES AND SLOPES MAY BE CHANGED BY THE ENGINEER DUE TO THE NATURE OF ROCK ENCOUNTERED.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED TO INCLUDE THE PROVISION THAT BOULDERS SHALL BE EXCAVATED AND FINISHED AS SPECIFIED FOR ROCK, EXCEPT THAT BOULDERS EXTENDING BEYOND THE PRESCRIBED LIMITS OF EXCAVATION MAY BE REMOVED ENTIRELY IF THE CONTRACTOR SO ELECTS. ANY SPACE CREATED OUTSIDE THE SPECIFIED LIMITS BY SUCH BOULDER REMOVAL SHALL BE REFILLED WITH SUITABLE MATERIAL OBTAINED FROM PROJECT EXCAVATION, AS APPROVED BY THE ENGINEER, AND THE MATERIAL SHALL BE COMPACTED AS SPECIFIED IN ARTICLE 2.3.3 FOR COMPACTION OF AREAS NOT ACCESSIBLE TO NORMAL COMPACTING EQUIPMENT. NO SEPARATE PAYMENT WILL BE MADE FOR EXCAVATION OF BOULDERS BEYOND THE SPECIFIED LIMITS OR FOR BACKFILL OF SUCH EXCAVATION, BUT ALL SUCH ADDITIONAL EXCAVATION AND BACKFILL SHALL BE PERFORMED BY THE CONTRACTOR AT HIS EXPENSE AT NO COST TO THE STATE.

THE FOURTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED TO PERMIT THE USE OF ROCK FINES FOR BACKFILL OF ANY SPACES CREATED BY ROCK EXCAVATION IN PAVEMENT, SHOULDER AND CURB AREAS, BELOW THE PRESCRIBED BOTTOM LIMIT OF EXCAVATION. IN OTHER AREAS, ANY SPACE WHICH MAY BE EXCAVATED BELOW THE PRESCRIBED LIMITS OF EXCAVATION SHALL BE BACKFILLED

WITH SUITABLE MATERIAL FROM ROADWAY EXCAVATION APPROVED BY THE ENGINEER.

THE SENTENCE BEGINNING AT THE BOTTOM OF PAGE 66 AND ENDING AT THE TOP OF PAGE 67 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ROADWAY EXCAVATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT THE GRADE THROUGHOUT THE WORK IS KEPT PROPERLY DRAINED AT ALL TIMES.

THE PLOUGH FURROW, AS SPECIFIED AT THE TOP OF PAGE 67 IN THE STANDARD SPECIFICATIONS, WILL NOT BE REQUIRED IN AREAS WHERE DITCHES ARE TO BE CONSTRUCTED OUTSIDE THE TOP OF EXCAVATION SLOPES.

THE FIRST FULL PARAGRAPH ON PAGE 67 OF THE STANDARD SPECIFICATIONS IS AMENDED BY THE FOLLOWING:

ALL EXCESS EXCAVATION AND UNSUITABLE MATERIALS FOR WHICH NO USE IS SHOWN ON THE PLANS OR PRESCRIBED IN THE SPECIFICATIONS SHALL BE DISPOSED OF BY THE CONTRACTOR AT SITES TO BE PROVIDED BY HIM OUTSIDE THE RIGHT OF WAY OF THE PROJECT AND OUTSIDE OTHER RIGHT OF WAY PROPOSED OR CONTEMPLATED FOR ACQUISITION BY THE STATE, AND OUT OF SIGHT FROM ANY EXISTING OR PROPOSED STATE HIGHWAY, IN A MANNER SATISFACTORY TO THE ENGINEER.

IF ANY MATERIALS SUITABLE FOR SOIL AGGREGATES AS SHOWN IN TABLE 36 IN ART. 8.8.1 ARE ENCOUNTERED IN MATERIAL REMOVED AS ROADWAY EXCAVATION, AND THE CONTRACTOR ELECTS TO USE SUCH MATERIALS FOR CONSTRUCTING ITEMS OF SOIL AGGREGATES, PAYMENT FOR THE VARIOUS ITEMS SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF ART. 2.2.4.

IF THE CONTRACTOR ELECTS TO USE ROADWAY EXCAVATION MATERIALS FOR CONSTRUCTING ITEMS OF SOIL AGGREGATES, HE SHALL SO ARRANGE HIS WORK THAT ALL PROPER MEASUREMENTS MAY BE MADE BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING NOT LESS THAN FIVE (5) DAYS IN ADVANCE OF THE TIME MEASUREMENTS ARE REQUIRED AND NO CLAIMS SHALL BE MADE BECAUSE OF DELAYS IF THE CONTRACTOR FAILS TO GIVE SUCH NOTICE.

THE FOLLOWING IS ADDED AFTER THE FIRST FULL PARAGRAPH ON PAGE 67 OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR SHALL NOT DISPOSE OF ANY EXCAVATED MATERIALS OUTSIDE THE LIMITS OF THE PROJECT UNTIL HE HAS THE WRITTEN APPROVAL OF THE ENGINEER TO DO SO.



THE THIRD AND FOURTH SENTENCES OF THE FIRST PARAGRAPH ON PAGE 68 OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

IF THERE BE ROCK IN EXCESS OF THAT WHICH CAN BE DISPOSED OF AS SPECIFIED ABOVE WITHIN THE NORMAL LATERAL LIMITS OF ZONE 3 EMBANKMENT, IT SHALL BE USED TO WIDEN EMBANKMENTS WITHIN THE PROJECT LIMITS, OR DEPOSITED ALONG SLOPES ADJACENT TO STREAMS FOR SLOPE PROTECTION, IF AND AS SPECIFIED OR AS DIRECTED BY THE ENGINEER. IF NO USE BE SPECIFIED OR DIRECTED FOR SURPLUS ROCK, IT SHALL BE DISPOSED OF AS HEREINBEFORE PROVIDED FOR THE DISPOSAL OF EXCESS EXCAVATION MATERIALS.

THE FIRST SENTENCE OF THE FOURTH PARAGRAPH ON PAGE 68 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAVEMENT BREAKERS WHICH INVOLVE THE USE OF A BALL, WEIGHT OR PUNCH, DROPPED MECHANICALLY OR BY GRAVITY, SHALL NOT BE USED IN THE BREAKING OR REMOVAL OF PAVEMENT WITHIN 5 FEET OF A TRANSVERSE JOINT, OR WITHIN 3 FEET OF ANY STRUCTURE OR OF OTHER PAVEMENT WHICH IS TO REMAIN IN PLACE.

THE FOURTH SENTENCE OF THE PARAGRAPH BEGINNING AT THE BOTTOM OF PAGE 68 AND ENDING AT THE TOP OF PAGE 69 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHEN SUCH USE IS NOT FEASIBLE, THE BROKEN CONCRETE SHALL BE DISPOSED OF AS SPECIFIED FOR DISPOSAL OF EXCESS EXCAVATION MATERIALS.

#### WET EXCAVATION.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH UNDER THIS HEADING ON PAGE 69 OF THE STANDARD SPECIFICATIONS:

IF A SLOPE FAILURE SHOULD DEVELOP DURING WET EXCAVATION OPERATIONS ADJACENT TO AN EXISTING ROADWAY, SUCH OPERATIONS SHALL IMMEDIATELY CEASE. LIMITS OF WET EXCAVATION SHALL BE DETERMINED AND BACKFILLING SHALL THEN BE STARTED AT ONCE. WHEN IT HAS BEEN DETERMINED THAT THE FAILURE HAS STABILIZED, WET EXCAVATION SHALL BE RESUMED AT A RATE AND BY A METHOD TO BE DETERMINED BY THE ENGINEER.

THE THIRD FULL PARAGRAPH ON PAGE 70 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE DEPARTMENT RESERVES THE RIGHT TO MAKE BORINGS THROUGH THE EMBANKMENT AND TO TAKE SAMPLES WHEN AND WHERE DEEMED NECESSARY BY THE ENGINEER IN ORDER TO DETERMINE IF THERE BE ANY MUCK OR OTHER UNSTABLE MATERIAL REMAINING BELOW THE BOTTOM OF OR ENTRAPPED WITHIN THE EMBANKMENT.

THE SECOND SENTENCE OF THE SECOND PARAGRAPH ON PAGE 71 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ANY AREAS OF WET EXCAVATION OUTSIDE THE PRESCRIBED WET EXCAVATION LIMITS SHALL BE REFILLED TO ADJACENT ORIGINAL GROUND LEVEL WITH BORROW EXCAVATION, ZONE 2 MATERIAL, AT THE CONTRACTOR'S EXPENSE.

THE THIRD SENTENCE OF THE THIRD FULL PARAGRAPH ON PAGE 71 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

DISPOSAL SITES PROVIDED BY THE CONTRACTOR SHALL NOT BE LOCATED WITHIN THE RIGHT OF WAY OF THE PROJECT OR WITHIN OTHER RIGHT OF WAY PROPOSED OR CONTEMPLATED FOR ACQUISITION BY THE STATE OR WITHIN SIGHT FROM ANY EXISTING OR PROPOSED STATE HIGHWAY, EXCEPT WITH APPROVAL OF THE ENGINEER AND PROVIDED THAT, UPON SUCH APPROVAL, THE MATERIAL SHALL BE GRADED TO A REASONABLY EVEN, WELL-DRAINED SURFACE NOT HIGHER THAN ADJACENT ROADWAYS OR SUCH OTHER ELEVATION AS THE ENGINEER MAY DETERMINE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

MATERIAL FROM WET EXCAVATION THAT IS, IN THE OPINION OF THE ENGINEER, ACCEPTABLE FOR USE IN EMBANKMENT SHALL BE PLACED IN EMBANKMENT IN ACCORDANCE WITH ARTICLE 2.3.3 WHERE AND AS DIRECTED BY THE ENGINEER.

#### 2.2.4. QUANTITY AND PAYMENT.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ROADWAY EXCAVATION WILL BE MEASURED IN THE ORIGINAL POSITION OF THE EXCAVATED MATERIALS BY THE CROSS SECTION METHOD, AND THE VOLUMES OF EARTH AND ROCK WILL BE COMPUTED BY AVERAGING END AREAS. THE DISTANCE BETWEEN CROSS SECTIONS FOR THE PURPOSE OF AVERAGING END AREAS WILL BE THE DISTANCE BETWEEN THE POINTS OF INTERSECTION OF THE CROSS SECTION AND THE BASE LINE, PROFILE LINE, CENTER LINE, CURB LINE OR OTHER SUCH LINE ON WHICH THE STATIONING FOR THE CROSS SECTIONS IS CARRIED. THE QUANTITIES OF ROADWAY EXCAVATION FOR WHICH PAYMENT WILL BE MADE WILL BE THOSE SHOWN IN THE CONTRACT FOR THE VARIOUS ITEMS, PROVIDED THE PROJECT IS CONSTRUCTED ESSENTIALLY TO THE LINES AND GRADES SHOWN ON THE PLANS.

WHEN THE PLANS HAVE BEEN ALTERED OR WHEN DISAGREEMENT EXISTS BETWEEN THE CONTRACTOR AND THE ENGINEER AS TO THE ACCURACY

OF THE PLAN QUANTITIES IN ANY BALANCE, OR THE ENTIRE PROJECT, EITHER PARTY SHALL HAVE THE RIGHT TO REQUEST AND CAUSE THE QUANTITIES INVOLVED TO BE MEASURED AS SPECIFIED HEREINAFTER UNDER THE SUBHEADING, MEASURED QUANTITIES.

MEASURED QUANTITIES. WHEN PAYMENT IS MADE ON A VOLUME BASIS, ALL EXCAVATION WILL NORMALLY BE MEASURED IN ITS ORIGINAL POSITION BY USING CROSS SECTIONAL MEASUREMENTS OR PHOTOGRAMMETRY OR ELECTRONIC COMPUTING METHODS.

WHEN CROSS SECTIONAL MEASUREMENTS ARE USED, THE PRELIMINARY OR CONSTRUCTION CROSS SECTIONS WILL BE USED AS THE BASE CROSS SECTIONS AND THE FINAL CROSS SECTIONS PLOTTED THEREON. ADDITIONAL INTERMEDIARY CROSS SECTIONS MAY BE INTERPOLATED AT POINTS WHERE NECESSARY TO MORE ACCURATELY DETERMINE THE QUANTITIES.

THE AVERAGE END-AREAS METHOD WILL BE USED FOR COMPUTING THE VOLUME OF EARTHWORK EXCEPT THAT WHERE IT IS IMPRACTICAL TO MEASURE MATERIAL BY THE CROSS SECTIONAL METHOD DUE TO THE ERRATIC TYPE OR LOCATION OF THE WORK, THE EXCAVATION MAY BE MEASURED BY ACCEPTABLE METHODS INVOLVING THREE-DIMENSIONAL MEASUREMENTS.

QUANTITY AND PAYMENT FOR ROADWAY EXCAVATION, UNCLASSIFIED SHALL BE AS PROVIDED THEREFOR IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, AND AS AMENDED HEREINBELOW.

THE UNIT PRICE BID FOR THE ITEM ROADWAY EXCAVATION, UNCLASSIFIED IN THE PROPOSAL SHALL ALSO INCLUDE ALL COSTS OF ADDITIONAL WORK OF THIS ITEM SPECIFIED IN ARTICLES 2.2.1 AND 2.2.3 HEREINBEFORE.

QUANTITY AND PAYMENT FOR PAVEMENT EXCAVATION SHALL BE AS PROVIDED THEREFOR IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL SHALL ALSO INCLUDE ALL COSTS OF ADDITIONAL WORK OF THIS ITEM SPECIFIED IN ARTICLE 2.2.3.

QUANTITY AND PAYMENT FOR WET EXCAVATION SHALL BE AS PROVIDED THEREFOR IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS AND AS AMENDED HEREINBELOW.

THE UNIT PRICE BID FOR THE ITEM WET EXCAVATION IN THE PROPOSAL SHALL ALSO INCLUDE ALL COSTS OF ADDITIONAL WORK OF THIS ITEM PRESCRIBED IN ARTICLES 2.2.1 AND 2.2.3.

THE FIRST SENTENCE OF THE SIXTH FULL PARAGRAPH ON PAGE 73 OF THE STANDARD SPECIFICATIONS IS AMENDED TO PROVIDE THAT THE PAYMENT QUANTITY FOR WET EXCAVATION, AS DETERMINED THEREIN, WILL BE THE VOLUME ACTUALLY REMOVED FROM WITHIN THE LIMITS SHOWN ON

THE PLANS OR DIRECTED BY THE ENGINEER OR OTHERWISE PRESCRIBED IN THE SPECIFICATIONS.

THE UNIT PRICE BID IN THE PROPOSAL FOR WET EXCAVATION SHALL NOT INCLUDE THE COST OF MAKING CHECK BORINGS THROUGH THE ZONE 2 EMBANKMENT, AND REFERENCE THERETO IN THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

SECTION 3  
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EMBANKMENT  
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2.3.2. MATERIALS.

THE FIRST PARAGRAPH AND TABLE 2 OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

EMBANKMENT ZONE MATERIALS FOR VARIOUS CONDITIONS OF USE AND SOURCE SHALL BE SOIL AGGREGATES OF THE DESIGNATIONS HEREIN-- AFTER SPECIFIED. THE DESIGNATIONS SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED RESPECTIVELY THEREFOR IN DIVISION 8, SECTION 8.

TABLE 2 - DESIGNATIONS OF EMBANKMENT MATERIALS

USE	PLACEMENT METHOD	SOIL AGGREGATE DESIGNATION
ZONE 1 (SAND BLANKET)	DRY	I-7
	HYDRAULIC	I-7
ZONE 2	DRY	I-11
	HYDRAULIC	I-12
ZONE 3, IN UPLAND AND SWAMP EMBANKMENTS	DRY	AS SPECIFIED BELOW
	HYDRAULIC	I-12

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

BORROW EXCAVATION, ZONE 3 MATERIAL SHALL BE COMPOSED OF SOIL AGGREGATE, OR SOIL AGGREGATE AND ROCK. THE PORTION OF THE MATERIAL PASSING THE 4 INCH SIEVE SHALL CONTAIN NOT MORE THAN 35 PERCENT BY WEIGHT OF MATERIAL PASSING THE NUMBER 200 SIEVE. WHEN THE BORROW EXCAVATION ZONE 3 IS COMPOSED OF SOIL AGGREGATE AND

ROCK, THE PROPORTION OF SOIL AGGREGATE SHALL BE NOT LESS THAN THAT REQUIRED TO FILL ALL THE ROCK VOIDS.

2.3.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

GENERAL.

THE FOLLOWING IS ADDED:

ALL EMBANKMENT SHALL BE CONSTRUCTED BY THE DRY FILL METHOD.

EMBANKMENT WHICH IS PRESCRIBED, OR DIRECTED BY THE ENGINEER TO BE CONSTRUCTED UNDER WATER OR ON WET AND UNSTABLE GROUND, SHALL BE CONSTRUCTED BY END-DUMPING METHODS. END-DUMPING SHALL BE USED ONLY TO SUCH AN ELEVATION THAT WILL PERMIT THE USE OF COMPACTING EQUIPMENT. THEN THE REMAINDER OF THE EMBANKMENT SHALL BE PLACED AND COMPACTED AS SPECIFIED FOR UPLAND EMBANKMENT, ZONE 3 IN ARTICLE 2.3.3. END-DUMPING SHALL NOT BE STARTED UNTIL THE SUITABILITY OF THE SURFACE ON WHICH THE EMBANKMENT IS TO BE PLACED HAS BEEN APPROVED BY THE ENGINEER. WHEN APPROVAL OF THE SURFACE HAS BEEN GIVEN BY THE ENGINEER, END-DUMPING SHALL BEGIN IMMEDIATELY. WHEN INTERRUPTED FOR A PERIOD OF 24 HOURS OR MORE, NO DUMPING SHALL BE DONE UNTIL THE SUITABILITY OF THE SURFACE HAS BEEN RE-APPROVED BY THE ENGINEER.

THE FOURTH PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

WHEN COMPACTION TO A DENSITY OF NOT LESS THAN 95 PERCENT, OR OTHER PERCENTAGE, IS PRESCRIBED IN THE SPECIFICATIONS FOR EMBANKMENT OR OTHER CONSTRUCTION, IT SHALL BE UNDERSTOOD TO MEAN COMPACTION TO NOT LESS THAN THE SPECIFIED PERCENTAGE OF MAXIMUM DENSITY AS DETERMINED BY CURRENT A.S.T.M. DESIGNATION D 698, METHOD C, UNLESS ANOTHER DESIGNATION OR METHOD IS SPECIFICALLY PRESCRIBED IN THE SUPPLEMENTARY SPECIFICATIONS OR SHOWN ON THE PLANS. DENSITY CONTROL IN THE FIELD SHALL BE BASED ON THE CALIBRATED SAND METHOD.

POROUS FILL.

THE FIRST AND SECOND PARAGRAPHS ARE CHANGED TO READ AS FOLLOWS:

POROUS FILL SHALL BE PLACED ADJACENT TO PROPOSED BRIDGES AND OTHER STRUCTURES AT THE LOCATIONS AND CONFORMING

TO THE PRESCRIBED CROSS SECTIONS AND DIMENSIONS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.

POROUS FILL MATERIAL SHALL BE SOIL AGGREGATE DESIGNATION I-9 CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN DIVISION 8, SECTION 8 EXCEPT THAT BLAST FURNACE SLAG WILL NOT BE PERMITTED.

UPLAND EMBANKMENT, ZONE 3.

THE FOLLOWING IS ADDED:

IN AREAS WHERE PROPOSED EMBANKMENT IS TO BE CONSTRUCTED UPON EXISTING BITUMINOUS CONCRETE PAVEMENT WHICH IS TO REMAIN IN PLACE, SUCH PAVEMENT SHALL BE SCARIFIED TO A DEPTH OF SIX (6) INCHES AND COMPACTED AS REQUIRED FOR LAYERS OF EMBANKMENT THEREON.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

UNLESS OTHERWISE DIRECTED OR APPROVED BY THE ENGINEER, WHEN AN EMBANKMENT IS TO BE PLACED AGAINST THE SLOPE OF AN EXISTING EMBANKMENT OR HILL OR OF A NEWLY CONSTRUCTED EMBANKMENT, THE SLOPE AGAINST WHICH THE EMBANKMENT IS TO BE PLACED SHALL BE BENCH-ED AS SHOWN IN THE PLANS. NO SEPARATE PAYMENT WILL BE MADE FOR BENCHING SLOPES AS SPECIFIED ABOVE, BUT ALL COSTS THEREOF SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

THE FOLLOWING IS ADDED TO THE SECOND PARAGRAPH ON PAGE 79:

SUBBASE MATERIAL OR ROCK FINES SHALL BE USED FOR BACK-FILL IN ROCK EXCAVATION AREAS WITHIN PAVEMENT, SHOULDER AND CURB LIMITS BELOW THE BOTTOM OF PROPOSED SUBBASE COURSES, AND THAT THE BACKFILL TO BE USED IN ALL OTHER ROCK EXCAVATION AREAS SHALL BE SUITABLE MATERIAL OBTAINED FROM ROADWAY EXCAVATION APPROVED BY THE ENGINEER, OR FROM BORROW EXCAVATION IF THE MATERIAL BE NOT AVAILABLE FROM ROADWAY EXCAVATION.

THE SENTENCE BEGINNING ON THE EIGHTH LINE ON PAGE 80 IS CHANGED TO READ AS FOLLOWS:

EACH LAYER SHALL BE COMPACTED BY A MINIMUM OF FIVE (5) PASSES OF A 50 TON COMPACTOR AS HEREINAFTER SPECIFIED UNDER ALTERNATIVE (4) FOR THE DRY FILL METHOD OF CONSTRUCTION. AS AN ALTERNATIVE TO THE 50 TON COMPACTOR, A VIBRATING ROLLER HAVING A MINIMUM STATIC WEIGHT OF NOT LESS THAN 10 TONS, ACCEPTABLE TO THE ENGINEER AND CAPABLE OF OPERATING AT THE OPTIMUM FREQUENCY OF VIBRATION REQUIRED, MAY BE USED ON EARTH AND ROCK EMBANKMENT. THERE SHALL BE NOT LESS THAN TWO NOR MORE THAN FIVE PASSES OF

THE COMPACTOR ON EACH LAYER OF THE EMBANKMENT, THE ACTUAL NUMBER OF PASSES TO BE AS DIRECTED BY THE ENGINEER.

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH ON PAGE 80:

ALL INTERNAL ROCK EMBANKMENT SLOPES ON WHICH A SOIL AGGREGATE IS REQUIRED TO BE PLACED SHALL BE SEALED WITH A CHOKER COURSE CONSISTING OF ROCK FRAGMENTS OF A SIZE CAPABLE OF COMPLETELY FILLING SURFACE VOIDS.

THIS HEADING IS AMENDED UNDER THE SUBHEADINGS AS FOLLOWS:

DRY FILL METHOD.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

THE EMBANKMENT SHALL BE COMPACTED BY THE ROLLING OR VIBRATING METHOD AS HEREINAFTER DESCRIBED:

THE FOLLOWING IS ADDED:

IF, IN THE OPINION OF THE ENGINEER, THE EMBANKMENT CONSTRUCTION IS BEING ADVERSELY AFFECTED BY THE MOISTURE CONTENT OF THE SOIL BEING EITHER EXCESSIVE OR DEFICIENT, EMBANKMENT CONSTRUCTION SHALL NOT CONTINUE UNTIL THE MOISTURE CONTENT IS SUFFICIENTLY REDUCED OR INCREASED, AS DETERMINED BY THE ENGINEER, TO PRODUCE SATISFACTORY COMPACTION.

ROLLING OR VIBRATING METHOD.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE EMBANKMENT SHALL BE PLACED IN LAYERS NOT MORE THAN 6 INCHES THICK, LOOSE MEASUREMENT, EXCEPT THAT WHERE EMBANKMENT IS COMPACTED WITH FIFTY-TON COMPACTOR, THE LAYERS MAY BE 12 INCHES THICK, LOOSE MEASUREMENT. EACH LAYER SHALL BE COMPACTED BY ONE OF THE FOLLOWING ALTERNATIVE TYPES OF EQUIPMENT AND NUMBER OF PASSES OF EACH:

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH ON PAGE 82:

IF THE EMBANKMENT SURFACES BECOME RUTTED OR UNEVEN DUE TO THE USE OF THE 50-TON ROLLER, THEY SHALL BE FINALLY SHAPED AND ROLLED WITH A THREE WHEEL, 10-TON ROLLER, HAVING A LOAD OF NOT LESS THAN 330 POUNDS PER LINEAR INCH WIDTH OF THE REAR WHEELS.

THE FOURTH PARAGRAPH ON PAGE 82 IS DELETED.

DIVISION 2

PAGE NO. 54

THE FOLLOWING IS ADDED AFTER THE FIFTH PARAGRAPH ON  
PAGE 82:

WHEN THE GROUND UNDERLYING PROPOSED EMBANKMENT IS UN-  
STABLE BECAUSE OF EXCESSIVE MOISTURE, THE ENGINEER MAY WAIVE THE  
FOREGOING PROVISIONS FOR DEFERMENT OF EMBANKMENT CONSTRUCTION, AND  
THE CONTRACTOR, IN SUCH CASE, SHALL PROCEED WITH EMBANKMENT CON-  
STRUCTION, OR REMOVE THE UNSTABLE MATERIAL, AS DIRECTED BY THE  
ENGINEER.

SWAMP EMBANKMENT: WET EXCAVATION AND BACKFILL METHOD.

ZONE 2 EMBANKMENT.

THIS HEADING IS AMENDED UNDER THE SUBHEADINGS AS  
FOLLOWS:

DRY FILL METHOD.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH:

AFTER WET EXCAVATION HAS BEEN COMPLETED, THE EXCAVATED  
AREAS SHALL BE BACKFILLED WITH THE APPROPRIATE MATERIALS SPECIFIED  
THEREFORE IN ARTICLE 2.3.2 TO THE PRESCRIBED ELEVATION FOR THE TOP  
OF ZONE 2 EMBANKMENT.

IN THE CONSTRUCTION OF ZONE 2 EMBANKMENT BY THE DRY FILL  
METHOD THE MATERIAL MAY BE END-DUMPED ONLY TO SUCH AN ELEVATION  
THAT WILL PERMIT THE USE OF COMPACTING EQUIPMENT. THE REMAINDER  
OF THE ZONE 2 EMBANKMENT SHALL BE PLACED AND COMPACTED AS SPEC-  
IFIED FOR UPLAND EMBANKMENT, ZONE 3.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS DELETED.

VERTICAL SAND DRAINS.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

MATERIAL FOR BACKFILLING VERTICAL SAND DRAINS SHALL BE  
SOIL AGGREGATE DESIGNATION I-6, CONFORMING TO THE REQUIREMENTS  
SPECIFIED THEREFOR IN DIVISION 8, SECTION 8. FROZEN OR LUMPY  
MATERIAL SHALL NOT BE USED.



SECTION 4  
BORROW EXCAVATION

2.4.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

BORROW EXCAVATION, ZONE 1, BORROW EXCAVATION, ZONE 2, AND BORROW EXCAVATION, ZONE 3 MATERIALS SHALL BE PLACED IN EMBANKMENTS TO THE RESPECTIVE LIMITS AND AT THE LOCATIONS SPECIFIED, SHOWN ON THE PLANS, OR DIRECTED BY THE ENGINEER.

2.4.2. MATERIALS.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BORROW EXCAVATION, ZONE 1, BORROW EXCAVATION, ZONE 2 AND BORROW EXCAVATION, ZONE 3 SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 2.3.2.

2.4.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

METHODS OF CONSTRUCTION FOR BORROW EXCAVATION, ZONE 1, BORROW EXCAVATION, ZONE 2 AND/OR BORROW EXCAVATION, ZONE 3 SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS SPECIFIED FOR THE VARIOUS TYPES AND METHODS OF CONSTRUCTION IN ARTICLE 2.3.3.

2.4.4. QUANTITY AND PAYMENT.

REFERENCE TO BORINGS MADE BY THE CONTRACTOR IN THE SECOND PARAGRAPH UNDER METHOD B.2. ON PAGE 103 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ BORINGS MADE BY THE DEPARTMENT.

THE UNIT PRICE BID IN THE PROPOSAL FOR BORROW EXCAVATION, ZONE 2 SHALL NOT INCLUDE THE COST OF MAKING BORINGS THROUGH THE COMPLETED ZONE 2 EMBANKMENT CONSTRUCTED BY THE WET EXCAVATION

AND BACKFILL METHOD AND REFERENCE THERETO IN THE NEXT TO LAST PARAGRAPH OF THIS ARTICLE ON PAGE 108 OF THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

SECTION 4A

BORROW EXCAVATION, BRIDGE FOUNDATION

2.4A.1. DESCRIPTION.

BORROW EXCAVATION, BRIDGE FOUNDATION SHALL BE PLACED IN CONJUNCTION WITH PROPOSED BRIDGES AND OTHER STRUCTURES AT THE LOCATIONS AND TO THE LIMITS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

2.4A.2. MATERIALS.

BORROW EXCAVATION, BRIDGE FOUNDATION MATERIAL WHEN PLACED UNDER WATER SHALL BE SOIL AGGREGATE DESIGNATION I-9 AND WHEN PLACED ABOVE WATER SHALL BE SOIL AGGREGATE DESIGNATION I-10. THE TYPE AND CLASSES OF SOIL AGGREGATES SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED RESPECTIVELY THEREFOR IN DIVISION 8, SECTION 8.

2.4A.3. METHODS OF CONSTRUCTION.

METHODS OF CONSTRUCTION FOR EMBANKMENTS CONSTRUCTED WITH BORROW EXCAVATION, BRIDGE FOUNDATION ON WHICH ABUTMENTS AND PIERS ARE FOUNDED WITHOUT PILES SHALL BE IN ACCORDANCE WITH APPLICABLE PROVISIONS OF ARTICLES 2.3.3 AND 2.4.3, WITH THE FOLLOWING AMENDMENTS:

MATERIAL WHICH DOES NOT MEET THE GRADATION REQUIREMENTS SHALL BE REMOVED AND MAY BE BLENDED OFF THE PLACEMENT SITE TO CORRECT GRADATION AND THEN RETURNED TO THE SITE.

COMPACTION SHALL BE BY THE DENSITY CONTROL METHOD SPECIFIED ON PAGE 82 OF THE STANDARD SPECIFICATIONS, EXCEPT THAT IT SHALL BE NOT LESS THAN 95 PERCENT OF MAXIMUM DENSITY AS DETERMINED IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION D-1557, METHOD D. THE CONTRACTOR MAY CHOOSE HIS OWN METHODS AND MEANS OF ATTAINING THE DENSITY SPECIFIED, EXCEPT THAT THE MAXIMUM THICKNESS OF ANY LAYER SHALL BE 24 INCHES, LOOSE MEASUREMENT. DENSITY CONTROL IN THE FIELD SHALL BE BASED ON THE CALIBRATED SAND CONE METHOD.

METHODS OF CONSTRUCTION FOR EMBANKMENTS CONSTRUCTED WITH BORROW EXCAVATION, BRIDGE FOUNDATION WHERE PILES ARE TO BE DRIVEN FOR ABUTMENTS AND PIERS SHALL BE IN ACCORDANCE WITH APPLICABLE PROVISIONS OF ARTICLES 2.3.3 AND 2.4.3 AND WITH THE FOLLOWING:

COMPACTION SHALL BE BY THE ROLLING OR VIBRATING METHOD AS SPECIFIED ON PAGES 81 AND 82 OF THE STANDARD SPECIFICATIONS.

#### 2.4A.4. QUANTITY AND PAYMENT.

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THE QUANTITY OF BORROW EXCAVATION, BRIDGE FOUNDATION FOR WHICH PAYMENT WILL BE MADE WILL BE THE COMPACTED VOLUME, MEASURED IN PLACE WITHIN THE PRESCRIBED LIMITS, ACTUALLY FURNISHED AND PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR BORROW EXCAVATION, BRIDGE FOUNDATION WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING, HAULING, PLACING, AND COMPACTING THE MATERIAL, ALL LABOR, EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

### SECTION 48

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#### BORROW EXCAVATION, SELECTED MATERIAL

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#### 2.48.1. DESCRIPTION.

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BORROW EXCAVATION, SELECTED MATERIAL SHALL BE PLACED AT THE LOCATIONS AND TO THE LIMITS SHOWN THEREFOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

2.48.2. MATERIALS.

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BORROW EXCAVATION, SELECTED MATERIAL SHALL BE SOIL AGGREGATE DESIGNATION I-13, CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN DIVISION 8, SECTION 8.

2.48.3. METHODS OF CONSTRUCTION.

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METHODS OF CONSTRUCTION FOR BORROW EXCAVATION, SELECTED MATERIAL SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS FOR CONSTRUCTION OF EMBANKMENT AND BORROW EXCAVATION IN ARTICLES 2.3.3 AND 2.4.3, RESPECTIVELY, AND, IF USED IN OTHER CONSTRUCTION, IN ACCORDANCE WITH APPLICABLE REQUIREMENTS FOR SUCH CONSTRUCTION.

2.48.4. QUANTITY AND PAYMENT.

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THE QUANTITY OF BORROW EXCAVATION, SELECTED MATERIAL FOR WHICH PAYMENT WILL BE MADE WILL BE THE COMPACTED VOLUME, MEASURED IN PLACE WITHIN THE PRESCRIBED LIMITS, OF BORROW EXCAVATION, SELECTED MATERIAL ACTUALLY FURNISHED AND PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR BORROW EXCAVATION, SELECTED MATERIAL WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING, HAULING, PLACING, AND COMPACTING THE MATERIAL, ALL LABOR, EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 5

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CHANNEL AND DITCH EXCAVATION

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2.5.3. METHODS OF CONSTRUCTION.

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THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR SHALL PROVIDE 2 ADEQUATELY EQUIPPED ROWBOATS, TO BE APPROVED BY THE ENGINEER, AT EACH LOCATION WHERE CHANNEL EXCAVATION WORK IS IN PROGRESS AND HE SHALL PROVIDE THE ENGINEER AMPLE SPACE AND OPPORTUNITY FOR THEIR OPERATION IN THE WORK OF MEASURING THE BOTTOM OF THE EXCAVATION.

2.5.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PAYMENT FOR CHANNEL EXCAVATION SHALL ALSO INCLUDE FURNISHING THE REQUIRED ROWBOATS AND NECESSARY ACCESSORIES.

SECTION 6

FOUNDATION EXCAVATION

2.6.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

ABANDONED DRAINS, SEWERS, GAS MAINS, WATER MAINS AND OTHER UTILITIES WHICH ARE ENCOUNTERED AND WHICH INTERFERE WITH THE WORK OF THE CONTRACT SHALL BE REMOVED TO THE EXTENT NECESSARY TO PERFORM THE WORK.

THE CONTRACTOR SHALL NOT PROCEED WITH THE EXCAVATION FOR BRIDGE FOUNDATIONS UNTIL ALL OTHER EXCAVATION WHICH IS TO BE PERFORMED WITHIN THE LIMITS OF THE FOUNDATION HAS BEEN COMPLETED. IF THE AREA TO BE OCCUPIED BY BRIDGE FOUNDATIONS HAS BEEN OVERLAID WITH EMBANKMENT MATERIAL, PAYMENT WILL NOT BE MADE FOR THE REMOVAL OF THE EMBANKMENT MATERIAL.

IN EXCAVATING FOR FOOTINGS WHICH ARE WITHIN NEW EMBANKMENTS, THE CONTRACTOR SHALL MAKE HIS EXCAVATION SO AS TO REMOVE THE MINIMUM AMOUNT OF EMBANKMENT MATERIAL AND HE SHALL CONDUCT HIS OPERATIONS SO AS TO CAUSE THE MINIMUM DISTURBANCE OF THE EMBANKMENT. HE SHALL BACKFILL WITHIN THE EXCAVATED AREA AND COMPACT IT THOROUGHLY AND RESTORE THE EMBANKMENT TO THE FINAL SECTION SHOWN ON THE PLANS TO THE SATISFACTION OF THE ENGINEER.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 6A

BRIDGE EXCAVATION

2.6A.1. DESCRIPTION.

BRIDGE EXCAVATION SHALL INCLUDE THE EXCAVATION REQUIRED FOR CONSTRUCTION OF BORROW EXCAVATION, BRIDGE FOUNDATION.

2.6A.2. MATERIALS.

BRIDGE EXCAVATION IS UNCLASSIFIED MATERIAL AND SHALL CONSIST OF THE REMOVAL OF WHATEVER MATERIALS ARE ENCOUNTERED.

2.6A.3. METHODS OF CONSTRUCTION.

THE APPLICABLE PROVISIONS OF ARTICLE 2.6.3 SHALL BE ADHERED TO WHEN PERFORMING BRIDGE EXCAVATION.

2.6A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF BRIDGE EXCAVATION FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME IN PLACE WITHIN THE LIMITS SHOWN ON PLANS OR AS THE ENGINEER MAY DIRECT.

PAYMENT FOR BRIDGE EXCAVATION WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID FOR THE ITEM BRIDGE EXCAVATION IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF EXCAVATION, PLACING AND COMPACTING EXCESS MATERIAL IN EMBANKMENT OR OTHERWISE DISPOSING OF IT, PUMPING, SHORING, SHEATHING, LABOR, EQUIPMENT, AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

SECTION 68  
CRUSHED STONE BED

2.68.1. DESCRIPTION.

CRUSHED STONE BED SHALL CONSIST OF THE CONSTRUCTION OF A STONE BED AND THE PREPARATION OF THE UNDERLYING MATERIAL.

2.68.2. MATERIALS.

THE MATERIALS FOR CRUSHED STONE BED SHALL BE BROKEN STONE OF ARGILLITE, GRANITE, GNEISS, QUARTZITE OR TRAP ROCK, OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLES 8.5.5 AND 8.5.6, RESPECTIVELY. THE AGGREGATE STANDARD SIZE SHALL BE NO. 57 AND SHALL CONFORM TO THE GRADATION SHOWN IN TABLE 28 IN ARTICLE 8.5.4, OR OTHER SIZES APPROVED BY THE ENGINEER.

2.68.3. METHODS OF CONSTRUCTION.

THE CRUSHED STONE BED SHALL BE PLACED FOLLOWING THE COMPLETION OF THE FOUNDATION EXCAVATION IN THE AREAS SPECIFIED. THE MATERIAL ON WHICH THE CRUSHED STONE BED IS TO BE PLACED SHALL BE SHAPED TO AN EVEN SURFACE, THE STONE BED SHALL THEN BE PLACED IN 6 INCH LAYERS AND COMPACTED ON THE SLOPE AND SURFACES SHOWN ON THE PLANS. COMPACTION OF THE STONE BED SHALL BE ATTAINED BY THE USE OF APPROVED FLAT-FACED TAMPERS OR BY OTHER MEANS APPROVED BY THE ENGINEER.

2.68.4. QUANTITY AND PAYMENT.

THE QUANTITY OF CRUSHED STONE BED FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME IN PLACE AND COMPACTED WITHIN THE LIMITS AND DEPTHS, AND AT THE LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR CRUSHED STONE BED WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE

PRICE PER CUBIC YARD BID FOR THE ITEM CRUSHED STONE BED IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COST OF SHAPING THE UNDERLYING MATERIAL, PLACING AND COMPACTING THE BED, ALL MATERIAL, LABOR, AND EQUIPMENT, AND ALL ELSE INCIDENTAL THERETO.

PAYMENT WILL NOT BE MADE FOR CRUSHED STONE BED USED AT OTHER LOCATIONS BUT ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

SECTION 7

SUBSURFACE STRUCTURE EXCAVATION

2.7.3. METHOD OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED AS FOLLOWS:

BROKEN CONCRETE WILL NOT BE PERMITTED IN THE BACKFILL FOR ANY SUBSURFACE STRUCTURE.

PUDDLING OF BACKFILL WILL NOT BE PERMITTED.

WHERE ROCK IS ENCOUNTERED AT THE LOCATIONS OF PROPOSED INLETS, MANHOLES AND HEADWALLS, THE ROCK SHALL BE DRESSED TO LEVEL BEDS AS DIRECTED BY THE ENGINEER.

WHERE THE WORK OF SUBSURFACE STRUCTURE EXCAVATION IS PERFORMED WITHIN EXISTING PAVEMENT AND SHOULDER AREAS, THE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE PLAN DETAIL AND/OR THE DIRECTION OF THE ENGINEER.

ALL BACKFILL SHALL BE OF SUITABLE MATERIAL APPROVED BY THE ENGINEER.

THE LAST SENTENCE OF THE FIRST FULL PARAGRAPH ON PAGE 115 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE BOTTOM OF THE TRENCHES PREPARED AS ABOVE SPECIFIED SHALL CONFORM TO THE GRADES OF THE BOTTOMS OF STRUCTURES AND OF PIPES OR PIPE ARCHES WITH NOMINAL HORIZONTAL DIAMETERS OF LESS THAN 24 INCHES, AND SHALL BE RECESSED FOR PIPE BELLS. THE BOTTOM OF TRENCHES, PREPARED AND GRADED AS ABOVE SPECIFIED FOR



PIPES AND PIPE ARCHES 24 INCHES OR MORE IN NOMINAL HORIZONTAL DIAMETER, SHALL BE SHAPED TO FIT THE CONDUIT TO A DEPTH OF NOT LESS THAN 10 PERCENT OF ITS TOTAL HEIGHT AND SHALL BE RECESSED FOR PIPE BELLS.

THE LAST PARAGRAPH ON PAGE 115 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BACKFILL AROUND INLETS, MANHOLES, AND OTHER SUBSURFACE STRUCTURES SHALL BE COMPACTED BY APPROVED VIBRATORY COMPACTORS OR FLAT-FACED MECHANICAL TAMPERS.

THE LAST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SUITABLE SURPLUS MATERIAL NOT REQUIRED FOR EMBANKMENT AND UNSUITABLE MATERIALS FOR WHICH NO USE IS PRESCRIBED SHALL BE DISPOSED OF BY THE CONTRACTOR AS SPECIFIED FOR THE DISPOSAL OF EXCESS EXCAVATION AND UNSUITABLE MATERIALS IN ARTICLE 2.2.3.

#### 2.7.4. QUANTITY AND PAYMENT.

BACKFILL WITHIN EXISTING PAVEMENT AND SHOULDER AREAS, MADE WITH SOIL AGGREGATES AS SHOWN IN THE PLAN DETAIL, WILL BE PAID FOR AT THE UNIT PRICES BID IN THE PROPOSAL FOR THE RESPECTIVE ITEMS.

THE SECOND SENTENCE IN THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MEASUREMENT FOR ROCK IN MASS FORMATION WILL EXTEND 1 FOOT BEYOND THE EXTERNAL BARREL DIAMETER OF PIPES, AND 1 FOOT BEYOND THE OUTMOST NEAT LINES AT THE SIDES AND 6 INCHES BELOW THE BOTTOM OF OTHER STRUCTURES EXCEPT UNDERDRAIN TRENCHES; IN UNDERDRAIN TRENCHES MEASUREMENT WILL EXTEND 6 INCHES BEYOND THE PRESCRIBED LIMITS OF THE SPECIAL BACKFILL MATERIAL AT THE SIDES AND BOTTOM.

SECTION 8

ROAD-MIXED STABILIZATION

2.8.2. MATERIALS.

ON PAGE 119 OF THE STANDARD SPECIFICATIONS, SUBSTITUTE 'CUTBACK ASPHALT' FOR 'ASPHALTIC OIL'.

2.8.3. METHODS OF CONSTRUCTION.

IN PARAGRAPHS 3(B) AND 4(A) ON PAGE 123 OF THE STANDARD SPECIFICATIONS, SUBSTITUTE 'CUTBACK ASPHALT, GRADES RC-70 OR MC-30' FOR 'ASPHALTIC OIL, GRADES RC-0, RC-1, MC-0 OR MC-1'.

SECTION 9

SUBBASE

2.9.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SUBBASE MATERIAL DESIGNATIONS I-1, I-2 AND I-3 AS SHOWN ON THE PLANS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN DIVISION 8, SECTION 8.

DENSE GRADED AGGREGATE BASE COURSE SHALL CONSIST OF QUARRY-PROCESSED STONE CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 OR BLAST FURNACE SLAG CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.7 OR CRUSHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.6 EXCEPT THAT AT LEAST 90 PERCENT OF ALL FRAGMENTS SHALL CONTAIN AT LEAST ONE FACE RESULTING FROM FRACTURE, AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS AND GRADATION:

THE MOISTURE CONTENT OF DENSE GRADED AGGREGATE BASE COURSE SHALL BE 6 PERCENT PLUS OR MINUS 2 PERCENT BASED ON DRY WEIGHT, IMMEDIATELY PRIOR TO PLACEMENT.

IF DENSE GRADED AGGREGATE BASE COURSE IS TO BE PAID FOR ON A TONNAGE BASIS, THE MOISTURE CONTENT SHALL NOT EXCEED 8 PERCENT WHEN DELIVERED TO THE PROJECT SITE.

<u>SIEVE SIZE</u>	<u>% PASSING BY WEIGHT</u>
1 1/2"	100
3/4"	55-90
NO. 4	25-60
NO. 50	5-25
NO. 200	3-12

THE GRADATION SHALL BE DETERMINED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T-27.

THE PORTION PASSING THE NO. 40 SIEVE SHALL BE NON-PLASTIC WHEN TESTED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T-90.

DENSE GRADED AGGREGATE BASE COURSE WILL BE TESTED FOR WEAR AND DURABILITY IN ACCORDANCE WITH ARTICLE 9.1.27. AFTER THIS TEST, THE AGGREGATE SHALL NOT HAVE MORE THAN 25% CUMULATIVE LOSS BETWEEN THE ORIGINAL AND FINAL GRADATION ON ANY ONE SAMPLE. THE LOSS WILL BE DETERMINED ON THE MATERIAL PASSING THE NUMBER 4, 8, 50 AND 200 SIEVES. THE GRADATION AFTER BREAKDOWN SHALL COMPLY WITH THE SPECIFIED GRADATION.

THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT WILL BE DETERMINED AS SPECIFIED IN SUBPARAGRAPH 3 (D) OF ARTICLE 9.1.27.

DENSE GRADED AGGREGATE BASE COURSE WILL BE FINALLY ACCEPTED ON THE PROJECT AFTER COMPACTION AND SHALL COMPLY WITH ALL SPECIFICATION REQUIREMENTS AT THAT POINT.

### 2.9.3. METHODS OF CONSTRUCTION.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE SUBBASE SUBGRADE SHALL BE SHAPED AND COMPACTED BY THE METHODS AND EQUIPMENT SPECIFIED FOR COMPACTION OF UPLAND EMBANKMENT, ZONE 3, DRY FILL METHOD, BY ALTERNATIVE (1) OR (2) OR BY VIBRATORY ROLLERS CONFORMING WITH ALTERNATIVE (5) UNDER ROLLING OR VIBRATING METHOD AS SPECIFIED ON PAGE 81 OF THE STANDARD SPECIFICATIONS. WHERE ACCESS WITH ROLLERS SPECIFIED ABOVE IS NOT POSSIBLE, THE SUBBASE SUBGRADE SHALL BE COMPACTED BY OTHER MEANS TO A DENSITY OF NOT LESS THAN 95 PERCENT AS DEFINED IN ARTICLE 2.3.3.

NOTE: \* ASTERISK DENOTES INTERAGENCY  
ENGINEERING COMMITTEE  
SPECIFICATION

THE FIRST PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE VARIOUS TYPES OF SUBBASE SHALL BE CONSTRUCTED IN SEPARATE COURSES TO THE COMPACTED THICKNESS SHOWN FOR EACH ON THE PLANS.

THE THIRD PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COURSES OF 8 INCHES OF LESS COMPACTED THICKNESS SHALL BE CONSTRUCTED IN A SINGLE LAYER. COURSES OF MORE THAN 8 INCHES COMPACTED THICKNESS SHALL BE CONSTRUCTED IN 2 OR MORE LAYERS OF EQUAL COMPACTED THICKNESS, NO LAYER TO BE MORE THAN 8 INCHES THICK.

EACH COURSE OF DESIGNATION I-1, I-2 OR I-3 MATERIALS SHALL BE COMPACTED BY ALTERNATIVE (2) OR ALTERNATIVE (5), AS SPECIFIED UNDER ROLLING AND VIBRATING METHOD ON PAGE 81 OF THE STANDARD SPECIFICATIONS; EACH COURSE OF DENSE GRADED AGGREGATE BASE COURSE SHALL BE COMPACTED BY ALTERNATIVE (5).

IF, IN THE OPINION OF THE ENGINEER, THE SUBBASE CONSTRUCTION IS BEING ADVERSELY AFFECTED BY THE MOISTURE CONTENT OF THE MATERIAL BEING EITHER EXCESSIVE OR DEFICIENT, THE CONSTRUCTION SHALL NOT PROCEED UNTIL THE MOISTURE CONTENT OF THE MATERIAL IS SO SUFFICIENTLY REDUCED OR INCREASED, AS DETERMINED BY THE ENGINEER, TO PRODUCE SATISFACTORY COMPACTION.

THE FIFTH PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS IS DELETED.

THE SIXTH PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

IF AGGREGATE BE EXPOSED IN ANY AREAS AFTER THE SUBBASE FOR PROPOSED CONCRETE SURFACE PAVEMENT HAS BEEN SHAPED AND COMPACTED AT SUBGRADE ELEVATION, A VERY THIN LAYER OF SOIL AGGREGATE DESIGNATION I-8, OR STONE OR SLAG SCREENINGS, SHALL BE SPREAD OVER SUCH AREAS OF SUBBASE. IN NO CASE SHALL A MEASURABLE THICKNESS OF SUCH FINE MATERIAL BE PLACED ABOVE THE LEVEL OF SUCH EXPOSED AGGREGATE. THE LAYER OF SOIL AGGREGATE OR SCREENINGS SHALL BE OF THE MINIMUM THICKNESS TO PREVENT BONDING OF THE CONCRETE PAVEMENT WITH THE LARGE AGGREGATE OF THE SUBBASE.

THE FOLLOWING IS ADDED TO THE SEVENTH PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS:

IN NO CASE SHALL A MEASURABLE THICKNESS OF SUCH FINE MATERIAL BE LEFT IN PLACE ABOVE THE SURFACE OF THE SUBBASE.

THE FOLLOWING IS ADDED AFTER THE SEVENTH PARAGRAPH ON PAGE 126 OF THE STANDARD SPECIFICATIONS:

IF THE ABOVE SHOULD FAIL TO PREVENT EARLY (FIRST 24 HOURS) TRANSVERSE CRACKING OF PAVEMENT SLABS WHICH THE DEPARTMENT, AFTER INVESTIGATION, ATTRIBUTES TO SUBGRADE FRICTION, THE ENGINEER MAY DIRECT THE CONTRACTOR TO APPLY A PRIME COAT OF ASPHALTIC OIL, GRADE MC-30 OR 70, TO THE SUBBASE IN ACCORDANCE WITH ARTICLES 8.1.7 AND 3.10.3. PAYMENT FOR THE PRIME COAT WILL BE MADE UNDER APPLICABLE CONTRACT ITEMS OR IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.8.4.

THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

IF UTILITY PIPES, DRAINS, SEWERS, OR OTHER SUBSURFACE PIPES OR FACILITIES BE CLOSE TO, OR ABOVE, THE PROPOSED SUBBASE SUBGRADE, OR IF BUILDINGS OR OTHER STRUCTURES BE CLOSE TO THE SUBBASE AREA, SUCH THAT COMPACTION OF THE SUBBASE OR SUBGRADE THEREFOR BY THE METHODS AND EQUIPMENT SPECIFIED MAY CAUSE DAMAGE TO THE PIPES OR OTHER FACILITIES, OR TO THE BUILDINGS OR OTHER STRUCTURES, OR CONTENTS THEREOF, THE USE OF SUCH METHODS AND EQUIPMENT WILL BE WAIVED. AT SUCH LOCATIONS THE SUBBASE AND SUBBASE SUBGRADE WITHIN THE NECESSARY LIMITS SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT DENSITY AS DEFINED IN ARTICLE 2.3.3 BY SUCH MEANS AS THE CONTRACTOR MAY CHOOSE SO AS TO AVOID SUCH DAMAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE UTILITY FACILITIES, AS SPECIFIED IN ARTICLE 1.6.11, AND FOR ANY DAMAGE TO THE BUILDINGS OR OTHER STRUCTURES OR THEIR CONTENTS, THAT MAY BE CAUSED BY HIS OPERATIONS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SHOULD THE SUBBASE MATERIAL BECOME CONTAMINATED OR FOR ANY REASON BE RENDERED UNFIT FOR ITS INTENDED USE AFTER IT HAS BEEN SAMPLED AND APPROVED AND PRIOR TO THE PLACEMENT OF PAVEMENT COURSES THEREON, THE ENGINEER RESERVES THE RIGHT TO RE-SAMPLE AND AGAIN TEST THE MATERIAL. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, SHOULD ANY DEFICIENCIES BE FOUND, TO CORRECT THEM OR TO REPLACE THE SUBBASE WITH MATERIAL WHICH DOES MEET THE REQUIREMENTS OF THE SPECIFICATIONS ALL AT NO EXPENSE TO THE STATE.

2.9.4. QUANTITY AND PAYMENT.

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THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT FOR SUBBASE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE UNIT PRICES BID FOR THE ITEMS SUBBASE DESIGNATION I-1, I-2 AND I-3 AND DENSE GRADED AGGREGATE BASE COURSE IN THE PROPOSAL, WHICH PRICES SHALL INCLUDE THE COSTS OF FURNISHING, PLACING AND COMPACTING THE SUBBASE MATERIALS, AS SPECIFIED, FURNISHING AND APPLYING WATER FOR COMPACTION IF NECESSARY, ALL LABOR, MATERIALS, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 10

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SUBGRADE  
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2.10.3 METHODS OF CONSTRUCTION.

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THE FIRST PARAGRAPH ON PAGE 128 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE PAVEMENT SUBGRADE SHALL BE SHAPED AND COMPACTED, AND WHEN FINISHED, IT SHALL CONFORM TO THE REQUIRED GRADE AND CONTOUR. THE PAVEMENT SUBGRADE SHALL BE SHAPED AND SMOOTHED TO CORRECT RIDGES AND OTHER SURFACE IRREGULARITIES CAUSED BY THE COMPACTION EQUIPMENT OR OTHERWISE, AND SHALL BE WELL COMPACTED BY SMOOTH STEEL 3-WHEEL POWER ROLLERS WEIGHING NOT LESS THAN 330 POUNDS PER LINEAR INCH OF TREAD OF THE REAR WHEELS. INACCESSIBLE AREAS SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.

THE SECOND PARAGRAPH ON PAGE 128 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE SUBGRADE SHALL BE PREPARED INITIALLY TO A SURFACE SLIGHTLY ABOVE ITS REQUIRED GRADE AND CONTOUR SO THAT THE FINAL SUBGRADING OPERATION WILL BE ONE OF BLADING AND SCRAPING. THE FINAL COMPACTION AT SUBGRADE LEVEL BETWEEN FORMS FOR CONCRETE SURFACE OR BASE COURSE, OR IN ADVANCE OF CONSTRUCTION OF OTHER TYPES OF PAVEMENT, SHALL BE PERFORMED BY A 3-WHEEL POWER ROLLER AS DESCRIBED ABOVE. WATER SHALL BE APPLIED WITHOUT ADDITIONAL COMPENSATION, WHEREVER NECESSARY TO ATTAIN SATISFACTORY COMPACTION OF THE SUBGRADE. THE FINAL PREPARATION OF THE SUBGRADE SHALL BE

COMPLETED FOR A DISTANCE OF NOT LESS THAN 500 FEET IN ADVANCE OF PAVEMENT CONSTRUCTION.

2.10.4. QUANTITY AND PAYMENT.

IN THE FIRST LINE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS, THE WORD 'CONCRETE' IS CHANGED TO READ 'CONCRETE BASE'.

SECTION 11

SHOULDERS

2.11.2. MATERIALS.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MATERIAL FOR GRAVEL SHOULDER SURFACES AND BASE COURSES SHALL BE SOIL AGGREGATE DESIGNATION 1-5 CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.8.1.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MATERIAL FOR STONE SHOULDER SURFACES AND BASE COURSES SHALL BE BROKEN STONE CONFORMING TO THE TYPES AND REQUIREMENTS OF ART. 8.5.5, OR BLAST FURNACE SLAG CONFORMING TO THE REQUIREMENTS OF ART. 8.5.7.

SECTION 12

CONCRETE BAG SLOPE PROTECTION

2.12.2. MATERIALS.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE SHALL BE 3/4 OR 5/8 INCH SIZE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY.

THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BAGS SHALL BE 7 OZ. CLOTH, THREAD COUNT 40 X 26, OR OF AN EQUIVALENT QUALITY, APPROVED BY THE ENGINEER. THEY SHALL MEASURE APPROXIMATELY 18 INCHES X 29 1/2 INCHES, AND SHALL BE CAPABLE OF HOLDING, WHEN CLOSED AND TIED, 1 CUBIC FOOT OF CLASS D CONCRETE WITHOUT RIPPING, TEARING, BURSTING, OR LOSS OF CONTAINED CONCRETE MIX DURING HANDLING AND PLACING ON THE SLOPE.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 13A

CONCRETE SLOPE PROTECTION

2.13A.1. DESCRIPTION.

CONCRETE SLOPE PROTECTION SHALL CONSIST OF FURNISHING AND PLACING A REINFORCED CONCRETE SLAB ON THE SLOPES IN FRONT OF THE ABUTMENTS TO THE PRESCRIBED LINES AND GRADES AND WITHIN THE LIMITS AS DETAILED ON THE PLANS. THE WORK SHALL ALSO INCLUDE THE SHAPING AND COMPACTION OF THE SUBGRADE FOR THE SLAB.



2.13A.2. MATERIALS.

CONCRETE SHALL BE CLASS B WITH AIR ENTRAINMENT CONFORMING TO THE REQUIREMENTS OF ARTICLE 4.1.2.

CEMENT SHALL BE STANDARD PORTLAND CEMENT, TYPE II OR AIR-ENTRAINING PORTLAND CEMENT, TYPE IIA CONFORMING TO THE REQUIREMENTS SPECIFIED RESPECTIVELY IN ARTICLES 8.5.22 AND 8.5.23. ONLY ONE BRAND OF CEMENT SHALL BE USED.

AGGREGATES, AIR-ENTRAINING AGENTS AND WATER SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 4.1.2.

STEEL MESH SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.4.18 AND THE SIZE AND SPACING SHALL BE AS SHOWN ON THE PLANS.

2.13A.3. METHODS OF CONSTRUCTION.

THE SLOPE ON WHICH THE PROTECTION IS TO BE PLACED SHALL BE SHAPED TO AN EVEN SURFACE, THE EMBANKMENT HAVING BEEN PLACED ACCORDING TO THE REQUIREMENTS OF UPLAND EMBANKMENT, ZONE 3 IN ARTICLE 2.3.3. COMPACTION OF THE SLOPED SURFACE SHALL BE ATTAINED BY THE USE OF APPROVED FLAT-FACED TAMPERS OR BY OTHER MEANS APPROVED BY THE ENGINEER.

PREPARATION AND METHODS OF CONSTRUCTION FOR REINFORCEMENT AND CONCRETE SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF ARTICLE 4.1.3. AFTER BEING PLACED, THE CONCRETE SHALL BE TAMPED, SCREEDED AND FINISHED TO TRUE GRADE AND SURFACE.

THE FINISH SHALL BE MADE WITH A WOOD FLOAT, FOLLOWED BY BRUSHING WITH A WET SOFT HAIR BRUSH TO A NEAT AND UNIFORM SURFACE.

EDGE BEAMS AND KEY BEAMS, AS SHOWN ON THE PLANS, SHALL BE FORMED AS SHOWN IN DETAIL ON THE PLANS AND SHALL BE PLACED MONOLITHICALLY WITH THE SLAB.

WELDED WIRE FABRIC REINFORCEMENT SHALL BE PLACED IN BEAMS AND SLAB TO CONFORM TO THE ARRANGEMENT SHOWN ON THE PLANS.

DUMMY JOINTS, LONGITUDINAL AND TRANSVERSE SHALL BE FORMED IN THE SLAB AT INTERVALS SHOWN AND ALL EDGES NEATLY ROUNDED TO A 1/2 INCH RADIUS WITH THE PROPER EDGING TOOL. LONGITUDINAL CONSTRUCTION JOINTS SHALL BE PROVIDED AT INTERVALS OF NOT MORE THAN 30 FEET AND AS DIRECTED, WITH EXPOSED EDGES ROUNDED TO A 1/2 INCH RADIUS.

THE CONCRETE SLAB SHALL BE CURED BY THE METHOD DESIGNATED AS 1 IN ARTICLE 3.12.3.

2.13A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF CONCRETE SLOPE PROTECTION FOR WHICH PAYMENT WILL BE MADE WILL BE THE SLOPE SURFACE AREA ACTUALLY COVERED WITH THE CONCRETE IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR CONCRETE SLOPE PROTECTION WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM, CONCRETE SLOPE PROTECTION IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF PREPARATION AND COMPACTION OF SLOPE SURFACE, FURNISHING AND PLACING REINFORCEMENT AND CONCRETE AS PROVIDED HEREIN AND FURNISHING ALL MATERIALS, LABOR AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

Superseded

DIVISION 3

PAVEMENTS

SECTION 1

GRAVEL BASE COURSE

3.1.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE MATERIALS SHALL BE SOIL AGGREGATE DESIGNATION I-5 CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN DIVISION 8, SECTION 8. WHENEVER THE TERM GRAVEL OR ROAD GRAVEL IS USED IN THIS SECTION WITH REFERENCE TO NEW MATERIAL, IT SHALL BE CONSTRUED TO MEAN SOIL AGGREGATE AS SPECIFIED ABOVE.

SECTION 2

MACADAM BASE COURSE

3.2.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE MATERIALS FOR LARGE AGGREGATE AND SCREENINGS SHALL BE BROKEN STONE OR BLAST FURNACE SLAG CONFORMING TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.7, RESPECTIVELY. THE LARGE AGGREGATE SHALL BE STANDARD SIZE NO. 1 OR 2 FOR COURSES 4 INCHES OR MORE IN THICKNESS AND STANDARD SIZE NO. 2 OR 3 FOR COURSES OF LESS THAN 4 INCH THICKNESS, AND SCREENINGS SHALL BE STANDARD SIZE NO. 10.

SOIL AGGREGATE DESIGNATION I-8 CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.8.1 MAY BE SUBSTITUTED AS AN ALTERNATIVE FOR SCREENINGS.

3.2.3. METHODS OF CONSTRUCTION.

THE LAST FULL PARAGRAPH ON PAGE 139 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHERE MACADAM BASE COURSE IS TO BE CONSTRUCTED DIRECTLY ON AN EARTH SUBGRADE, AN INVERTED CHOKE LAYER OF STONE OR SLAG SCREENINGS, 1 INCH LOOSE THICKNESS, SHALL BE PLACED ON THE SUBGRADE BY MEANS OF STONE SPREADERS BEFORE THE LARGE AGGREGATE IS PLACED. THE SCREENINGS SHALL NOT BE COMPACTED. IF THE BASE COURSE BE CONSTRUCTED IN TWO LAYERS, THE SCREENINGS SHALL BE PLACED ONLY BELOW THE BOTTOM LAYER. THE CHOKE LAYER SHALL NOT BE PLACED WHERE MACADAM BASE COURSE IS TO BE CONSTRUCTED ON SUBBASE, SELECTED GRANULAR MATERIAL BASE, OR ON EXISTING PAVEMENT OR SHOULDER.

IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ALL REFERENCE TO "BITUMINOUS CONCRETE" ALSO APPLIES TO "BITUMINOUS-STABILIZED BASE COURSE".

3.2.4. QUANTITY AND PAYMENT.

IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ALL REFERENCE TO "BITUMINOUS CONCRETE" ALSO APPLIES TO "BITUMINOUS-STABILIZED BASE COURSE".

SECTION 2A

BITUMINOUS-STABILIZED BASE COURSE

3.2A.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

SOIL AGGREGATES.

SOIL AGGREGATE SHALL BE STONE MIX OR GRAVEL MIX AS SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS.

THE LAST SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE PORTION PASSING THE NO.40 SIEVE SHALL BE NON PLASTIC WHEN TESTED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 90.

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

STONE FOR STONE MIX SHALL BE BROKEN STONE CONFORMING TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5.

GRAVEL FOR GRAVEL MIX SHALL BE WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.6 AND SHALL COMPLY WITH THE PERCENTAGE OF WEAR REQUIREMENTS IN ARTICLE 8.5.5.

UNLESS OTHERWISE SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS, SOIL AGGREGATE SHALL NOT BE USED FOR GRAVEL MIX. WHEN SOIL AGGREGATE FOR GRAVEL MIX IS PERMITTED, IT SHALL CONTAIN BY WEIGHT, A TOTAL OF NOT MORE THAN 25 PERCENT OF SHALE, SLATE, SCHIST AND SOFT AND DECOMPOSED AGGREGATE WHEN TESTED IN ACCORDANCE WITH ARTICLE 9.1.17.

ANY AGGREGATE BLENDED WITH THE SOIL AGGREGATE OF A GRAVEL OR STONE MIX SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF ARTICLES 8.5.5, 8.5.6 OR 8.5.12.

THE PORTION OF THE STONE MIX PASSING THE NO.4 SIEVE MAY CONSIST ENTIRELY OR IN PART OF NATURAL OR PROCESSED SANDS.

CRUSHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.6 EXCEPT THAT IT NEED NOT BE WASHED, MAY BE USED AS AN ALTERNATIVE MATERIAL FOR BROKEN STONE IN STONE MIX PROVIDED IT ALSO COMPLIES WITH THE PERCENTAGE OF WEAR REQUIREMENTS IN ARTICLE 8.5.5.

WHERE GRAVEL MIX IS PRESCRIBED, STONE MIX MAY BE USED AS AN ALTERNATIVE MATERIAL AND THE STABILITY REQUIREMENTS FOR STONE MIX IN TABLE 3-C IN ARTICLE 3.10.2 ARE CHANGED TO READ AS FOLLOWS:

DESIGN STABILITY, LBS. MIN.	1100
CONTROL STABILITY, LBS. MIN.	800

BITUMINOUS MATERIAL.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS MATERIAL SHALL BE ASPHALT CEMENT, VISCOSITY GRADE AC-20, CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.1.2.

COMPOSITION OF MIXTURES.

THE ENTIRE TEXT, INCLUDING THE GRADATION TABLE, IS CHANGED TO READ AS FOLLOWS:

THE MINERAL CONSTITUENTS FOR EACH MIX SHALL BE COMBINED IN SUCH PROPORTIONS THAT THE RESULTING MIXTURE WILL COMPLY WITH THE GRADING REQUIREMENTS PRESCRIBED IN ARTICLE 3.10.2 FOR MIX NO. I-2 EXCEPT THAT THE 3/4 INCH AND 3/8 INCH SIEVES SHALL NOT APPLY AND EXCEPT THAT THE MAXIMUM AGGREGATE PARTICLE SIZE IN INCHES SHALL NOT EXCEED ONE HALF OF THE PLANNED COMPACTED THICKNESS OF THE COURSE OR LIFT TO BE LAID. IN CALCULATING PERCENTAGES OF AGGREGATES OF THE VARIOUS SIZES, BITUMINOUS MATERIAL IS EXCLUDED.

FORMULA FOR JOB MIX.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

THE PROVISIONS PERTAINING TO JOB MIX FORMULA AND ITS APPLICATION SHALL BE AS SPECIFIED FOR MIX NO. I-2 UNDER HOT-MIXED BITUMINOUS CONCRETE IN ARTICLE 3.10.2.

3.2A.3. METHODS OF CONSTRUCTION.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE TOTAL COMPACTED THICKNESS OF BITUMINOUS-STABILIZED BASE COURSE SHALL BE AS SHOWN ON THE PLANS OR AS PRESCRIBED IN THE SUPPLEMENTARY SPECIFICATIONS. THE BASE COURSE SHALL BE CONSTRUCTED IN LAYERS OF NOT MORE THAN 2 1/2 INCH COMPACTED THICKNESS, EXCEPT IN THOSE AREAS WHERE STONE MIX IS PRESCRIBED AND THE TOTAL COMBINED THICKNESS OF SURFACE COURSE, BINDER COURSE (IF ANY) AND BITUMINOUS STABILIZED BASE IS 7 INCH OR GREATER, THE CONTRACTOR MAY CONSTRUCT LAYERS OF NOT MORE THAN 4 INCH COMPACTED THICKNESS.

THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

3.2A.4. QUANTITY AND PAYMENT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

QUANTITY AND PAYMENT FOR BITUMINOUS-STABILIZED BASE COURSE, TACK COAT, PRIME COAT, ASPHALT CEMENT AND ASPHALT PRICE ADJUSTMENT SHALL BE AS SPECIFIED FOR HOT-MIXED BITUMINOUS CONCRETE SURFACE COURSE, TACK COAT, PRIME COAT, ASPHALT CEMENT AND ASPHALT PRICE ADJUSTMENT IN ARTICLE 3.10.4.

SECTION 3

CONCRETE BASE COURSE

3.3.2. MATERIALS.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CLASS B CONCRETE CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ART. 4.1.2 SHALL BE USED WHERE CONCRETE BASE COURSE IS CONSTRUCTED MONOLITHIC WITH ADJACENT CURB AND SHALL BE AIR-ENTRAINED.

CLASS D-1 CONCRETE CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ART. 4.1.2 SHALL BE USED WHERE DESIGNATED ON THE PLANS AS HIGH EARLY STRENGTH AND SHALL BE AIR-ENTRAINED.

WHITE CONCRETE CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 5.6.2 SHALL BE USED WHERE CONCRETE BASE COURSE IS CONSTRUCTED MONOLITHIC WITH WHITE CONCRETE CURB.

3.3.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

TRANSVERSE CONTRACTION JOINTS ARE REQUIRED AND SHALL BE OF THE DESIGN AS SHOWN ON THE PLANS. CONTRACTION JOINTS SHALL BE COINCIDENT WITH THE EXPANSION JOINTS IN THE ADJACENT EXISTING CONCRETE PAVEMENT. IN ADDITION, ONE OR MORE CONTRACTION JOINTS,

SPACED EQUIDISTANTLY NOT LESS THAN 13 FEET OR MORE THAN 20 FEET APART, ARE TO BE INSTALLED BETWEEN THE ABOVE JOINTS. ELSEWHERE THE CONTRACTION JOINTS ARE TO BE INSTALLED AT 15 FOOT INTERVALS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

OPENING OF BASE COURSE OF CLASS B CONCRETE SHALL BE AS PROVIDED FOR HIGH EARLY STRENGTH CONCRETE.

CONCRETE BASE CONSTRUCTED OF WHITE CONCRETE SHALL ALSO CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 5.6.3.

3.3.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

WHERE CONCRETE BASE COURSE IS CONSTRUCTED MONOLITHIC WITH CONCRETE CURB, THE FULL DEPTH OF CONCRETE WITHIN THE CURB AREA SHALL BE INCLUDED IN THE UNIT PRICE BID IN THE PROPOSAL FOR THE APPROPRIATE CURB ITEM.

SEPARATE PAYMENT WILL NOT BE MADE FOR TRANSVERSE CONTRACTION JOINTS, BUT THE COST THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID IN THE PROPOSAL.

SECTION 4

MODIFIED PENETRATION MACADAM INTERMEDIATE COURSE

3.4.2. MATERIALS.

THE FIRST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE SHALL BE BROKEN STONE CONFORMING TO THE TYPES AND REQUIREMENTS OF ART. 8.5.5.



SECTION 5

GRAVEL SURFACE COURSE

3.5.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE MATERIAL FOR NEW GRAVEL SURFACE COURSE AND NEW GRAVEL REQUIRED FOR RECONSTRUCTED GRAVEL SURFACE COURSE SHALL BE SOIL AGGREGATE DESIGNATION 1-5 CONFORMING TO THE REQUIREMENTS SPECIFIED IN DIVISION 8, SECTION 8. WHENEVER THE TERM GRAVEL OR ROAD GRAVEL IS USED IN THIS SECTION WITH REFERENCE TO NEW MATERIAL, IT SHALL BE CONSTRUED TO MEAN SOIL AGGREGATE AS SPECIFIED ABOVE.

3.5.3. METHODS OF CONSTRUCTION.

NEW SURFACE COURSE.

THE THIRD PARAGRAPH UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED TO PROVIDE THAT COMPACT-ION OF THE TOP OR SINGLE LAYER SHALL BE AS SPECIFIED FOR THE BOTTOM LAYER.

SECTION 6

BITUMINOUS SURFACE TREATMENT

3.6.2. MATERIALS.

IN THE LISTING OF MATERIALS UNDER THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ASPHALTIC OIL IS CHANGED TO READ CUTBACK ASPHALT.

IN THE LIST OF MATERIALS IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ROAD GRAVEL IS CHANGED TO READ AS FOLLOWS:

3.6.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

DISTRIBUTING TRUCKS.

THE FOLLOWING IS ADDED TO PARAGRAPH 7 (C):

THERMOMETERS SHALL BE ACCURATE WITHIN PLUS OR MINUS 5 DEGREES F. AND SHALL BE CHECKED AND CERTIFIED AT LEAST EVERY 6 MONTHS.

THE FOLLOWING IS ADDED TO PARAGRAPH 7 (C):

5. THE LOADING TEMPERATURE OF MATERIAL.

THE FOLLOWING IS ADDED TO PARAGRAPH 8:

(E) AN APPROVED SAMPLING SYSTEM.

TEMPERATURE.

ASPHALTIC OILS AND THE TEMPERATURES AT WHICH TO BE APPLIED ARE CHANGED TO READ AS FOLLOWS:

CUT-BACK	MC-30	MC-70	MC-250	MC-800	MC-3000
ASPHALT		RC-70	RC-250	RC-800	RC-3000
DEG. F.	95-125	130-160	170-200	205-235	235-265

THE FOLLOWING IS ADDED:

NOTE: THE STORAGE, LOADING AND/OR TRANSFER TEMPERATURES FOR THE ABOVE MATERIALS SHALL NOT EXCEED THE MAXIMUM APPLICATION TEMPERATURES BY MORE THAN 25 DEGREES F.

CAUTION: THE PURPOSE OF THE ABOVE CHART IS TO INDICATE TEMPERATURE RANGES NECESSARY TO PROVIDE PROPER VISCOSITY FOR SPRAYING AND MIXING APPLICATIONS FOR THE GRADES SHOWN. IT MUST BE RECOGNIZED, HOWEVER, THAT TEMPERATURE RANGES INDICATED BY THIS CHART GENERALLY ARE ABOVE THE MINIMUM FLASH POINT FOR THE RC AND MC CUTBACK ASPHALTS. IN FACT, SOME OF THESE CUTBACK ASPHALTS WILL "FLASH" AT TEMPERATURES BELOW THESE INDICATED RANGES. ACCORDINGLY, SUITABLE SAFETY PRECAUTIONS ARE MANDATORY AT ALL TIMES WHEN HANDLING THESE CUTBACK ASPHALTS. THESE SAFETY PRECAUTIONS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

1. DO NOT PERMIT OPEN FLAMES OR SPARKS OF ANY KIND CLOSE TO THESE MATERIALS EXCEPT IN HEATING KETTLES, MIXERS, DISTRIBUTORS, OR OTHER EQUIPMENT PROPERLY DESIGNED AND APPROVED FOR HANDLING AND APPLYING THEM.
2. DO NOT USE AN OPEN FLAME TO INSPECT OR EXAMINE CONTAINERS IN WHICH THESE MATERIALS HAVE BEEN STORED.
3. PROPERLY VENT AND GROUND VEHICLES TRANSPORTING THESE MATERIALS.
4. PERMIT ONLY EXPERIENCED PERSONNEL TO SUPERVISE THE HANDLING OF THESE MATERIALS.
5. COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS.

APPLICATION OF OTHER ASPHALTIC OILS AND TARS.

THIS HEADING IS CHANGED TO READ AS FOLLOWS:

APPLICATION OF OTHER CUTBACK MATERIALS, TARS  
AND EMULSIONS.

THE FOLLOWING PARAGRAPHS ARE AMENDED TO PROVIDE THAT COVER MATERIAL FOR THE PRIME COAT WILL NOT BE REQUIRED, THAT PROPER PENETRATION OF THE PRIME COAT WILL BE DETERMINED BY THE ENGINEER, AND THAT THE REQUIRED ROLLERS SHALL IN NO CASE BE SO HEAVY AS TO CRUSH THE COVER MATERIAL.

3.6.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PAYMENT FOR SURFACE TREATMENT, BITUMINOUS MATERIALS WILL BE MADE AS SPECIFIED FOR TACK AND PRIME COAT IN ARTICLE 3.10.4.

SECTION 9

PENETRATION MACADAM SURFACE COURSE

3.9.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

AGGREGATES.

THE SECOND PARAGRAPH IS CHANGE TO READ AS FOLLOWS:

BROKEN STONE SHALL CONFORM TO THE TYPES AND REQUIREMENTS OF ART. 8.5.5. BLAST FURNACE SLAG SHALL CONFORM TO THE REQUIREMENTS OF ART. 8.5.7.

BITUMINOUS BINDER, THIRD HOT APPLICATION.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS BINDER AS SPECIFIED FOR THE FIRST AND SECOND HOT APPLICATIONS, CUT BACK ASPHALT, GRADE RC-250 OR TAR, GRADE RT-7, RT-8, RT-9 OR RT-10 SHALL BE USED, SUBJECT TO THE APPROVAL OF THE ENGINEER. CUTBACK ASPHALT AND TAR SHALL CONFORM TO THE REQUIREMENTS OF ARTICLES 8.1.7 AND 8.1.2 RESPECTIVELY.

SECTION 10

BITUMINOUS CONCRETE SURFACE COURSE, HOT-MIXED

3.10.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

BITUMINOUS MATERIAL.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLJWS:

THE BITUMINOUS MATERIAL SHALL BE ASPHALT CEMENT CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.1.2. THE GRADE SHALL

BE AC-20 UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE USE OF GRADE AC-10 MAY BE DIRECTED BY THE ENGINEER, WHEN CONDITIONS ARE SUCH AS TO CAUSE RAPID COOLING OF THE MIXTURE.

COARSE AGGREGATE.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE FOR TOP COURSE (TOTAL RETAINED ON NO. 8 SIEVE) SHALL BE BROKEN STONE OR CRUSHED GRAVEL. BROKEN STONE SHALL CONFORM TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5 EXCEPT THAT CARBONATE ROCK SHALL NOT BE USED UNLESS OTHERWISE PERMITTED IN THE SUPPLEMENTARY SPECIFICATIONS. CRUSHED GRAVEL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.6 EXCEPT THAT IT NEED NOT BE WASHED AND IT SHALL CONTAIN NOT MORE THAN 50 PERCENT (30 PERCENT ON FEDERAL AID PROJECTS) OF TOTAL CARBONATES AS DETERMINED IN ARTICLE 9.1.25, UNLESS OTHERWISE SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS.

COARSE AGGREGATE FOR BOTTOM COURSE (TOTAL RETAINED ON NO. 8 SIEVE) SHALL BE BROKEN STONE OR CRUSHED GRAVEL CONFORMING TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5 OR ARTICLE 8.5.6, EXCEPT THAT IT NEED NOT BE WASHED.

COARSE AGGREGATE FOR BITUMINOUS CONCRETE SHOULDERS SHALL BE BROKEN STONE OR CRUSHED GRAVEL. THE BROKEN STONE SHALL CONFORM TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5 AND THE CRUSHED GRAVEL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.6 EXCEPT THAT IT NEED NOT BE WASHED. THE COARSE AGGREGATE SHALL HAVE A 5 PERCENT GREATER REFLECTANCE VALUE THAN COARSE AGGREGATE USED IN ADJACENT BITUMINOUS PAVEMENTS.

REFLECTANCE VALUE WILL BE DETERMINED IN ACCORDANCE WITH ARTICLE 9.1.4, EXCEPT THAT THE RECEPTACLE SPECIFIED UNDER APPARATUS WILL BE OF SUFFICIENT SIZE TO HOLD SEVERAL POUNDS OF AGGREGATE AND WILL BE AT LEAST 5 INCHES DEEP.

COARSE AGGREGATE FOR THE VARIOUS TYPES AND MIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ARTICLES 8.5.5 AND 8.5.6, EXCEPT THAT THE GRADATION NEED NOT CONFORM TO TABLE 28 UNDER ARTICLE 8.5.4.

COARSE AGGREGATE FOR THE VARIOUS TYPES AND MIXTURES SHALL CONTAIN A MAXIMUM OF 1.5 PERCENT ADHERENT FINES OF CLAY, CAKED STONE DUST, OR OTHER COATINGS AS DETERMINED IN ARTICLE 9.1.26.

TACK COAT MATERIALS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

WHERE A TACK COAT IS SPECIFIED, THE MATERIAL SHALL BE CUTBACK ASPHALT, GRADE RC-70 OR RC-T, OR EMULSIFIED ASPHALT, GRADE RS-1 OR SS-1 OR INVERTED EMULSIFIED CUTBACK ASPHALT GRADE IERC-30, CONFORMING TO THE REQUIREMENTS THEREFOR SPECIFIED IN ARTICLES 8.1.7 AND 8.1.5, RESPECTIVELY.

PRIME COAT MATERIALS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

WHERE A PRIME COAT IS SPECIFIED THE MATERIAL SHALL BE CUTBACK ASPHALT, GRADE MC-30 OR MC-70, OR EMULSIFIED ASPHALT, GRADE SS-1 OR TAR, GRADE RT-1 OR RT-2 CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLES 8.1.7, 8.1.5 OR 8.1.12, RESPECTIVELY.

COMPOSITION OF MIXTURES.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE SEVERAL MINERAL CONSTITUENTS FOR EACH MIXTURE SHALL BE COMBINED IN SUCH PROPORTIONS THAT THE RESULTING MIXTURE WILL MEET THE GRADING REQUIREMENTS IN TABLE 3. IN CALCULATING THE PERCENTAGES OF AGGREGATES OF THE VARIOUS SIZES, THE BITUMINOUS MATERIAL IS EXCLUDED.

THE THIRD PARAGRAPH IS DELETED.

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH ON PAGE 168:

IN THE FOLLOWING TABLES, THE VARIOUS BITUMINOUS CONCRETE COURSES SHALL BE CONSTRUCTED WITH THE MIX NUMBERS AS SHOWN BELOW:

<u>COURSE</u>	<u>MIX NO.</u>
BITUMINOUS STABILIZED BASE (STONE OR GRAVEL MIX)	I-2 (EXCEPT THAT 3/4" AND 3/8" SIEVES SHALL NOT APPLY)
ALL BOTTOM COURSES	I-3 (EXCEPT THAT 3/4" AND 3/8" SIEVES SHALL NOT APPLY)
MA-BC-1 AND MA-BC-2, TOP	I-4 (EXCEPT THAT NO. 16 AND NO. 30 SIEVES SHALL NOT APPLY)

FA-BC-1 AND FA-BC-2, TOP

I-5 (EXCEPT NO. 16  
AND NO. 30 SIEVES  
SHALL NOT APPLY)

SP-1 AND SP-2, TOP

I-6

NOTE: CA-BC-1 AND CA-BC-2, TOP MIXTURES SHALL BE AS SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS.

TABLE 3 IS CHANGED TO READ AS FOLLOWS:

TABLE 3. BITUMINOUS CONCRETE MIXTURES

NEW JERSEY INTER-AGENCY ENGINEERING COMMITTEE STANDARD BITUMINOUS CONCRETE MIXTURE DESIGN TABLE						
MIX DESIGNATION AND NOMINAL MAXIMUM SIZE OF AGGREGATE						
	BASE COURSE		BINDER COURSE		TOP COURSE	
	I-1 1"	I-2 1-1/2"	I-3 1"	I-4 3/4"	I-5 3/8"	I-6 NO. 4
SIEVE SIZE	GRADING OF TOTAL AGGREGATE (COARSE PLUS FINE, PLUS FILLER IF REQUIRED). AMOUNTS FINER THAN EACH LABORATORY SIEVE (SQUARE OPENING) WEIGHT PERCENT.					
2"	---	100	---	---	---	---
1-1/2"	100	90-100	100	---	---	---
1"	90-100	80-100	90-100	100	---	---
3/4"	60-80	65-95(NA)	75-90(NA)	95-100	---	---
1/2"	---	50-85	60-80	75-95	100	---
3/8"	15-40	40-75(NA)	50-70(NA)	65-85	80-100	100
NO. 4	0-10	25-60	25-60	35-65	55-75	80-100
NO. 8	---	20-50	15-45	25-50	30-60	65-100
NO. 16	---	---	---	18-40(NA)	20-45(NA)	40-80
NO. 30	---	---	---	12-30(NA)	15-35(NA)	20-65
NO. 50	---	8-30	3-18	10-25	10-30	7-40
NO. 100	---	---	---	---	---	5-20
NO. 200	---	4-12	1-7	3-10	4-10	4-10
ASPHALT CEMENT, WEIGHT PER CENT OF TOTAL MIXTURE						
	2.5-3.1	3.5-8	4-8.5	4.5-9.5	5-10	7-12

NOTE 1 - MATERIAL PASSING THE NO. 200 SIEVE MAY CONSIST OF FINE PARTICLES OF THE AGGREGATE OR MINERAL FILLER, OR BOTH. MATERIAL PASSING THE NO. 40 SIEVE SHALL BE NON-PLASTIC WHEN TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION T 90.

NOTE: \* ASTERISK DENOTES INTERAGENCY ENGINEERING COMMITTEE SPECIFICATION

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NOTE 2 - DESIGN REQUIREMENTS - THE MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE NO MORE THAN 1/2 OF THE PROPOSED PAVEMENT LIFT THICKNESS.

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\*

NOTE 3 - MIX I-1 SHALL NOT BE SUBJECT TO THE DESIGN REQUIREMENTS SPECIFIED ELSEWHERE HEREIN.

NOTE 4 - (NA) DENOTES NOT APPLICABLE FOR N.J.D.O.T. MIX.

FORMULA FOR JOB MIX.

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THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR SHALL SUBMIT FOR THE ENGINEER'S APPROVAL ON FORMS SUPPLIED BY THE DEPARTMENT, A JOB MIX FORMULA FOR EACH MIXTURE REQUIRED FOR THE PROJECT, A STATEMENT NAMING THE SOURCE OF EACH COMPONENT, AND A REPORT SHOWING THE RESULTS OF THE APPLICABLE TESTS SPECIFIED IN TABLE 3-C.

THE JOB MIX FORMULA FOR EACH MIXTURE SHALL ESTABLISH THE PERCENTAGE OF DRY WEIGHT OF AGGREGATE PASSING EACH REQUIRED SIEVE SIZE AND AN OPTIMUM PERCENTAGE OF ASPHALT CEMENT BASED UPON THE WEIGHT OF THE TOTAL MIX. THE OPTIMUM PERCENTAGE OF ASPHALT CEMENT SHALL BE DETERMINED IN ACCORDANCE WITH CURRENT ASPHALT INSTITUTE "MIX DESIGN METHODS FOR ASPHALT CONCRETE" MANUAL SERIES NUMBER 2 (MS-2) MARSHALL METHOD AND SHALL PRODUCE A MIXTURE THAT WILL CONFORM TO THE REQUIREMENTS OF TABLE 3-C. THE JOB MIX FORMULA, INCLUDING THE TOLERANCES SHOWN IN TABLE 3-A, SHALL BE WITHIN THE MASTER RANGE SPECIFIED IN TABLE 3 EXCEPT THAT FOR TOP COURSE WHEN THE OPTIMUM PERCENTAGE OF ASPHALT CEMENT IS LESS THAN SPECIFIED, THE ENGINEER MAY APPROVE THE USE OF A REDUCED ASPHALT CONTENT PROVIDING IT IS NOT BELOW THE LOWER LIMIT OF THE MASTER RANGE LISTED IN TABLE 3. WHEN PLOTTED ON A 0.45 POWER GRADING ACCUMULATION CHART AS USED BY THE DEPARTMENT, THE AGGREGATE GRADATION FOR THE JOB MIX FORMULA SHALL PRODUCE A GRADING CURVE WITH NO ABRUPT CHANGES AND APPROXIMATELY PARALLEL TO THE CURVE OF THE GRADING LIMITS SPECIFIED IN TABLE 3.

IN ADDITION THE CONTRACTOR SHALL SUBMIT WITH HIS MIX DESIGN FORMS, THREE MARSHALL SPECIMENS (FOR EACH MIX SPECIFIED) MOLDED AT THE COMPOSITION, INCLUDING ASPHALT CONTENT, PROPOSED IN THE JOB MIX FORMULA. THE ENGINEER RESERVES THE RIGHT TO BE PRESENT AT THE TIME OF MOLDING THE MARSHALL SPECIMENS. THE SUBMITTED SPECIMENS WILL BE USED TO VERIFY THE PROPERTIES OF THE JOB MIX FORMULA.

THE JOB MIX FORMULA FOR EACH MIXTURE SHALL BE IN EFFECT UNTIL MODIFICATION IS APPROVED BY THE ENGINEER.

NOTE: \* ASTERISK DENOTES INTERAGENCY ENGINEERING COMMITTEE SPECIFICATION



WHEN UNSATISFACTORY RESULTS FOR ANY SPECIFIED CHARACTERISTIC OF THE WORK MAKE IT NECESSARY, THE CONTRACTOR MAY ESTABLISH A NEW JOB MIX FORMULA FOR APPROVAL BY THE ENGINEER. IN SUCH INSTANCES, IF THE CONTRACTOR FAILS TO TAKE CORRECTIVE ACTION THE ENGINEER RESERVES THE RIGHT TO REQUIRE AN APPROPRIATE ADJUSTMENT.

SHOULD A CHANGE IN SOURCES OF MATERIALS BE MADE, A NEW JOB MIX FORMULA SHALL BE ESTABLISHED AND APPROVED BEFORE THE NEW MATERIAL IS USED.

QUALITY CONTROL TESTING SHALL BE PERFORMED BY THE PRODUCER TO KEEP THE MIX WITHIN THE SPECIFIED TOLERANCES.

WHEN TWO CONSECUTIVE LOTS OR THREE OUT OF FIVE CONSECUTIVE LOTS OF ANY MIX OR COMBINATION OF MIXES FAIL TO CONFORM TO THE JOB MIX FORMULA REQUIREMENTS, WORK MAY BE ORDERED STOPPED BY THE ENGINEER UNTIL THE CONTRACTOR HAS TAKEN CORRECTIVE ACTION TO OBTAIN CONFORMANCE TO THE JOB MIX FORMULA.

TABLE 3-A. TOLERANCES FROM JOB MIX FORMULA FOR AVERAGE OF 5 SAMPLES - MANUAL BATCH PLANTS.

GRADATION MIX NO.	I-2	I-3	I-4	I-5	I-6
SIEVE SIZE	TOLERANCE (PLUS OR MINUS) PERCENTAGE				
NO. 8	4.5	4.0	4.0	4.0	4.0
NO. 50	3.0	3.0	3.0	3.0	3.0
NO. 200	1.4	1.4	1.4	1.4	1.4
ASPHALT	0.45	0.45	0.45	0.45	0.45

TABLE 3-A1. TOLERANCES FROM JOB MIX FORMULA FOR AVERAGE OF 5 SAMPLES - FULLY AUTOMATED BATCH PLANTS

GRADATION MIX NO.	I-2	I-3	I-4	I-5	I-6
SIEVE SIZE	TOLERANCE (PLUS OR MINUS) PERCENTAGE				
NO. 8	4.5	4.0	4.0	4.0	4.0
NO. 50	3.0	3.0	3.0	3.0	3.0
NO. 200	1.4	1.4	1.4	1.4	1.4
ASPHALT	0.15	0.15	0.15	0.15	0.15

TABLE 3-A2. TOLERANCES FROM JOB MIX FORMULA  
FOR AVERAGE OF N SAMPLES FROM A  
SHORT LOT-MANUAL BATCH PLANT

GRADATION MIX NO.		I-2	I-3	I-4	I-5	I-6
NUMBER OF SAMPLES	SIEVE SIZE AND ASPHALT	TOLERANCE (PLUS OR MINUS) PERCENTAGE				
4	NO. 8	5.0	4.5	4.5	4.5	4.5
	NO. 50	3.5	3.5	3.5	3.5	3.5
	NO. 200	1.6	1.6	1.6	1.6	1.6
	ASPHALT	0.50	0.50	0.50	0.50	0.50
3	NO. 8	6.0	5.0	5.0	5.0	5.0
	NO. 50	4.0	4.0	4.0	4.0	4.0
	NO. 200	1.8	1.8	1.8	1.8	1.8
	ASPHALT	0.60	0.60	0.60	0.60	0.60
2	NO. 8	7.0	6.5	6.5	6.5	6.5
	NO. 50	4.5	4.5	4.5	4.5	4.5
	NO. 200	2.2	2.2	2.2	2.2	2.2
	ASPHALT	0.70	0.70	0.70	0.70	0.70

TABLE 3-A3. TOLERANCES FROM JOB MIX FORMULA  
FOR AVERAGE OF N SAMPLES FROM A  
SHORT LOT-FULLY AUTOMATED BATCH  
PLANTS

GRADATION MIX NO.		I-2	I-3	I-4	I-5	I-6
NUMBER OF SAMPLE	SIEVE SIZE AND ASPHALT	TOLERANCE (PLUS OR MINUS) PERCENTAGE				
4	NO. 8	5.0	4.5	4.5	4.5	4.5
	NO. 50	3.5	3.5	3.5	3.5	3.5
	NO. 200	1.6	1.6	1.6	1.6	1.6
	ASPHALT	0.15	0.15	0.15	0.15	0.15
3	NO. 8	6.0	5.0	5.0	5.0	5.0
	NO. 50	4.0	4.0	4.0	4.0	4.0
	NO. 200	1.8	1.8	1.8	1.8	1.8
	ASPHALT	0.20	0.20	0.20	0.20	0.20

2	NO. 8	7.0	6.5	6.5	6.5	6.5
	NO. 50	4.5	4.5	4.5	4.5	4.5
	NO. 200	2.2	2.2	2.2	2.2	2.2
	ASPHALT	0.25	0.25	0.25	0.25	0.25

THE TEMPERATURE OF THE MIXTURE AT DISCHARGE FROM THE PLANT OR SURGE AND STORAGE BINS SHALL BE MAINTAINED AT A MINIMUM OF 15 DEGREES ABOVE THE LAYDOWN TEMPERATURE. IN NO CASE SHALL THE MIXTURE TEMPERATURE EXCEED 325 DEGREES F.

THE MOISTURE CONTENT OF THE MIXTURE AT DISCHARGE FROM THE PLANT SHALL NOT EXCEED 1.0 PERCENT. MOISTURE DETERMINATIONS WILL BE BASED ON THE WEIGHT LOSS ON HEATING FOR 3 HOURS IN AN OVEN AT 280 DEGREES F PLUS OR MINUS 5 DEGREES OF AN APPROXIMATELY 1500 GRAM SAMPLE OF MIXTURE. A MINIMUM OF 1 SAMPLE PER LOT BUT NOT LESS THAN 2 SAMPLES PER DAY SHALL BE TESTED FOR MOISTURE. SAMPLES FOR MOISTURE DETERMINATIONS WILL BE OBTAINED BY THE ENGINEER IN ACCORDANCE WITH ARTICLE 9.1.22.

TABLE 3-B. TOLERANCES FOR RANGE OF 5 SAMPLES -  
MANUAL BATCH PLANTS

GRADATION MIX NO.	I-2	I-3	I-4	I-5	I-6
SIEVE SIZE	TOLERANCE PERCENTAGE				
NO. 8	16.0	13.0	13.0	13.0	13.0
NO. 200	4.8	4.8	4.8	4.8	4.8
ASPHALT	1.5	1.5	1.5	1.5	1.5

NOTE: FOR ANY ONE CHARACTERISTIC THE RANGE IS THE ABSOLUTE DIFFERENCE BETWEEN THE SMALLEST AND LARGEST VALUE IN THE FIVE SAMPLES OF THE LOT.

TABLE 3-B1. TOLERANCES FOR RANGE OF 5 SAMPLES -  
FULLY AUTOMATED BATCH PLANTS

GRADATION MIX NO.	I-2	I-3	I-4	I-5	I-6
SIEVE SIZE	TOLERANCE PERCENTAGE				
NO. 8	16.0	13.0	13.0	13.0	13.0
NO. 200	4.8	4.8	4.8	4.8	4.8
ASPHALT	0.4	0.4	0.4	0.4	0.4

NOTE: FOR ANY ONE CHARACTERISTIC THE RANGE IS THE ABSOLUTE DIFFERENCE BETWEEN THE SMALLEST AND LARGEST VALUE IN THE FIVE SAMPLES OF THE LOT.

TOLERANCES FOR OTHER MIXES IN TABLE 3 NOT INCLUDED IN TABLES 3-A, 3-A1, 3-A2, 3-3, 3-B AND 3-B1 SHALL BE AS SPECIFIED IN THE SUPPLEMENTARY SPECIFICATIONS.

THE TOTAL MINERAL AGGREGATE AND BITUMINOUS MATERIAL SHALL BE SO COMBINED AND MIXED THAT AT LEAST 95 PERCENT OF THE COARSE AGGREGATE PARTICLES ARE ENTIRELY COATED WITH ASPHALT AS DETERMINED BY A. S. T. M. DESIGNATION D 2489, DEGREE OF PARTICLE COATING OF BITUMINOUS AGGREGATE MIXTURES. AT THE OPTION OF THE ENGINEER, RANDOM SAMPLES WILL BE OBTAINED FROM EACH OF FIVE (5) TRUCKS AND THE ADEQUACY OF THE MIXING WILL BE BASED ON THE AVERAGE OF PARTICLE COUNTS MADE ON THESE FIVE (5) TEST PORTIONS. IF THE ABOVE REQUIREMENT IS NOT FULLY MET, MIXING TIME SHALL BE INCREASED AS NECESSARY TO OBTAIN THE REQUIRED DEGREE OF COATING.

RESISTANCE TO PLASTIC FLOW. THE BITUMINOUS MIXTURE WHEN COMBINED IN THE PROPORTIONS OF THE JOB MIX FORMULA SHALL CONFORM TO THE DESIGN AND CONTROL REQUIREMENTS OF TABLE 3-C WHEN TESTED IN ACCORDANCE WITH REQUIREMENTS OF CURRENT A. S. T. M. DESIGNATION D 1559 EXCEPT REFERENCE TO 1" MAXIMUM SIZE AGGREGATE IS DELETED AND EXCEPT THAT SPECIMENS FOR MIX NUMBERS I-2, I-3 AND I-4 WILL BE COMPACTED BY 75 BLOWS OF THE COMPACTION HAMMER.

TABLE 3-C. DESIGN AND CONTROL REQUIREMENTS

MIX NUMBER	I-2	I-3	I-4	I-5	I-6
	STONE GRAVEL				
CRITERIA	TEST LIMITS				
DESIGN STABILITY, LBS. MIN.	1500	1100	1200	1300	1200
CONTROL STABILITY, LBS. MIN.	1200	800	900	1000	900
FLOW VALUE, 0.01"	6-18	6-18	6-18	6-16	6-16
DESIGN % VOIDS IN MINERAL AGGREGATE	12	12	13	14	16
DESIGN AIR VOIDS, PERCENTAGE (NOTE 2)	2-5	2-5	2-5	2-5	2-6
CONTROL AIR VOIDS, AVERAGE OF 5 CORES, PERCENTAGE (NOTE 1 AND 2)	2-8	2-8	2-8	2-8	2-8

NOTE: \* ASTERISK DENOTES INTERAGENCY ENGINEERING COMMITTEE SPECIFICATION

ASPHALT CEMENT TANKS WILL BE SAMPLED AT LEAST ONCE A WEEK IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 40 FOR VISCOSITY AND PENETRATION DETERMINATION AND TESTED AT THE DEPARTMENT LABORATORY FOR COMPLIANCE WITH THE GRADE SPECIFIED IN THE JOB MIX FORMULA. UNDERGROUND TANKS WILL BE SAMPLED FROM A VALVE IN THE LINE BEFORE THE ASPHALT CEMENT BUCKET.

PRODUCER'S TESTING WILL NOT PRECLUDE THE STATE FROM REQUIRING THE CONTRACTOR TO DISPOSE OF, WITHOUT FURTHER TESTING, ANY BATCH OR SHIPMENT WHICH IS RENDERED UNFIT FOR ITS INTENDED USE DUE TO CONTAMINATION, SEGREGATION, TEMPERATURE, OR INCOMPLETE COATING OF THE AGGREGATE. VISUAL INSPECTION OF THE MATERIAL BY THE ENGINEER SHALL BE CONSIDERED SUFFICIENT GROUNDS FOR SUCH REJECTION. SHOULD THE ENGINEER REJECT MATERIAL FOR ANY OF THE ABOVE REASONS, EXCEPT TEMPERATURE, A SAMPLE WILL BE TAKEN AND SENT TO THE CENTRAL LABORATORY FOR TESTING. SHOULD SUCH TESTING INDICATE THAT THE MATERIAL WAS ERRONEOUSLY REJECTED, THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE FOR THE REJECTED MATERIAL.

BITUMINOUS MIXTURES PROCESSED THROUGH A SURGE OR STORAGE SYSTEM SHALL UNDERGO SPECIAL VISUAL INSPECTION TO ASSURE THAT THEY ARE ESSENTIALLY FREE OF LUMPS OF COLD MATERIAL. THE ENGINEER WILL REQUIRE THE CONTRACTOR TO DISPOSE OF, WITHOUT PAYMENT, ANY BATCH OR SHIPMENT OF MATERIAL FOUND TO BE SO CONTAMINATED.

THE AVERAGE OF TEST RESULTS FOR THE 5 SAMPLES OR LESS FOR A LOT SHALL CONFORM TO THE JOB MIX FORMULA WITHIN THE APPLICABLE TOLERANCES OF TABLE 3-A, 3-A1, 3-A2, OR 3-A3. ALSO THE RANGE OF TEST RESULTS FOR THE 5 SAMPLES FROM A LOT SHALL BE WITHIN THE APPLICABLE TOLERANCES OF TABLES 3-B OR 3-B1. PAYMENT FOR ANY LOT WHICH DOES NOT COMPLY WITH THESE REQUIREMENTS WILL BE ADJUSTED IN ACCORDANCE WITH TABLE 3-D. THE ENGINEER MAY ORDER THE REMOVAL, AT THE CONTRACTOR'S EXPENSE, OF ANY MATERIAL SUBJECT TO THE MAXIMUM PAYMENT ADJUSTMENT SHOWN IN TABLE 3-D.

TABLE 3-D. ADJUSTMENT OF CONTRACT PAYMENT PER LOT OF BITUMINOUS CONCRETE DUE TO NONCONFORMANCE TO JOB MIX FORMULA AND RANGE IN THE CHARACTERISTICS OF ASPHALT CONTENT OR OF AGGREGATE PASSING THE NO.8, NO.50 OR NO.200 SIEVE (SEE NOTE 1)

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DEVIATION OF SAMPLE AVERAGE  
BEYOND APPLICABLE TOLERANCE  
IN TABLES 3-A, 3-A1, 3-A2 AND  
3-3. (PERCENT OF TOLERANCE  
IN TABLE 3-A FOR MANUAL BATCH  
PLANTS OR TABLE 3-A1 FOR  
AUTOMATED BATCH PLANTS)

REDUCTION OF CONTRACT PAYMENT  
PER LOT, (PERCENT)

1 TO 50	2
51 TO 100	5
OVER 100 (SEE NOTE 2)	10

DEVIATION OF 5-SAMPLE RANGE.  
BEYOND APPLICABLE TOLERANCE.  
IN TABLES 38 OR 38-1 (PERCENT  
OF TOLERANCE IN TABLE 3-8 FOR  
MANUAL BATCH PLANTS OR TABLE  
3-81 FOR AUTOMATED BATCH  
PLANTS)

REDUCTION OF CONTRACT PAYMENT  
PER LOT (PERCENT)

GREATER THAN 0	5
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NOTE 1 - WHERE MORE THAN ONE PAYMENT ADJUSTMENT DUE TO NONCONFORMANCE TO JOB MIX FORMULA IS APPLICABLE TO A LOT, ONLY THE GREATEST SINGLE ADJUSTMENT WILL BE USED.

CONFORMANCE TO CONTROL STABILITY REQUIREMENTS. CONFORMANCE TO THE CONTROL STABILITY REQUIREMENTS SPECIFIED IN TABLE 3-C WILL BE ASCERTAINED FROM THE AVERAGE OF FIVE STABILITY DETERMINATIONS FOR EACH LOT OF MATERIAL AS ESTABLISHED FOR TESTING CONFORMANCE TO THE JOB MIX FORMULA. THE MATERIAL FOR THE STABILITY DETERMINATIONS WILL BE OBTAINED IN ACCORDANCE WITH ARTICLE 9.1.22 AT THE MIXING PLANT AT THE SAME TIME THAT THE RANDOM SAMPLES ARE TAKEN FOR MEASUREMENT OF CONFORMANCE TO THE JOB MIX FORMULA AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS FOR RESISTANCE TO PLASTIC FLOW AS SPECIFIED HEREINBEFORE. PAYMENT FOR ANY LOT WHICH DOES NOT COMPLY WITH THE SPECIFIED STABILITY REQUIREMENTS WILL BE ADJUSTED IN ACCORDANCE WITH TABLE 3-E. THE ENGINEER MAY ORDER THE REMOVAL, AT THE CONTRACTOR'S EXPENSE, OF ANY MATERIAL SUBJECT TO THE MAXIMUM PAYMENT ADJUSTMENT SHOWN IN TABLE 3-E.

TABLE 3-E. ADJUSTMENT OF PAYMENT PER LOT OF BITUMINOUS CONCRETE DUE TO NON-CONFORMANCE TO STABILITY REQUIREMENTS.

DEVIATION OF 5-SAMPLE AVERAGE BELOW CONTROL STABILITY OF TABLE 3-C (LBS.)	REDUCTION OF PAYMENT PER LOT (PERCENT)
1 TO 150	2
151 TO 300	5
OVER 300	10

DETERMINATION OF CONFORMANCE TO CONTROL AIR VOIDS REQUIREMENTS. CONFORMANCE TO THE CONTROL OF AIR VOIDS SPECIFIED IN TABLE 3-C SHALL BE DETERMINED ON THE BASIS OF THE AVERAGE OF 5

AIR VOIDS MEASUREMENTS FOR EACH LOT OF APPROXIMATELY 5,000 SQUARE YARDS OF PAVEMENT. PAYMENT FOR ANY LOT WHICH DOES NOT COMPLY WITH THE SPECIFIED AIR VOIDS REQUIREMENTS SHALL BE ADJUSTED IN ACCORDANCE WITH TABLE 3-F. THE ENGINEER MAY ORDER THE REMOVAL, AT THE CONTRACTOR'S EXPENSE, OF ANY MATERIAL SUBJECT TO THE MAXIMUM PAYMENT ADJUSTMENT SHOWN IN TABLE 3-F.

TABLE 3-F. ADJUSTMENT OF PAYMENT PER LOT (APPROX. 5,000 SQ. YDS.) OF BITUMINOUS CONCRETE DUE TO NON-CONFORMANCE TO AIR VOIDS REQUIREMENTS.

MIX NUMBER	DEVIATION OF 5-SAMPLE AVERAGE ABOVE MAX. CONTROL AIR VOIDS OF TABLE 3-C (PERCENT)	DEVIATION OF 5-SAMPLE AVERAGE BELOW MIN. CONTROL AIR VOIDS OF TABLE 3-C (PERCENT)	REDUCTION OF PAYMENT PER LOT (PERCENT)
I-2	0.1 TO 1.0	----	5
THRU	1.1 TO 2.0	0.1 TO 0.5	10
I-6	OVER 2.0	OVER 0.5	20

REDUCTIONS IN PAYMENT FOR NONCONFORMANCE TO JOB MIX FORMULA AND CONTROL STABILITY REQUIREMENTS, AS SPECIFIED ABOVE, WILL NOT BE APPLIED TO THE INITIAL LOT EACH YEAR FOR EACH TYPE OF MIX NOR TO THE INITIAL LOT WHEN A NEW JOB MIX FORMULA IS APPROVED IN WHICH A CHANGE OF AGGREGATE PRODUCER HAS CAUSED THE MAXIMUM SPECIFIC GRAVITY TO CHANGE BY MORE THAN 0.04 AS DETERMINED BY THE DEPARTMENT LABORATORY. THE ABOVE WAIVER WILL NOT APPLY WHEN THE AVERAGE RESULTS OF THE JOB MIX FORMULA CONFORMANCE SAMPLES OF THE INITIAL LOT VARIES OUTSIDE THOSE LIMITS FOR THE 8, 50 AND 200 SIEVES AND ASPHALT CONTENT SHOWN IN TABLE 3 AND THE CONTROL STABILITY SHOWN IN TABLE 3-C. IN THIS CASE, THE ENTIRE INITIAL LOT WILL BE SUBJECT TO NON-PAYMENT.

THE INITIAL LOT EACH YEAR IS DEFINED AS THE PLANT'S PRODUCTION FOR THE FIRST DAY IN A CALENDAR YEAR UP TO 1000 TONS. IN THE EVENT THE FIRST DAY'S PRODUCTION DOES NOT REACH 400 TONS, THE INITIAL LOT WILL BE EXTENDED UNTIL THE 400 TON LEVEL IS REACHED OR THE PROJECT IS COMPLETED.

PLANTS PRODUCING FOR MULTIPLE PROJECTS. WHEN A PLANT IS PRODUCING BITUMINOUS CONCRETE OR BITUMINOUS STABILIZED BASE COURSE FOR TWO OR MORE DEPARTMENT PROJECTS AT THE SAME TIME, ONLY ONE COMMON SET OF LOTS FOR STABILITY AND JOB MIX FORMULA SHALL BE ESTABLISHED AND THE SAMPLES TAKEN FOR EACH LOT SHALL APPLY TO EACH PROJECT ON WHICH A PART OF THAT LOT WAS USED.

### 3.10.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

#### BITUMINOUS CONCRETE PLANT AND EQUIPMENT.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS MIXING PLANT. SUFFICIENT STORAGE SPACE SHALL BE PROVIDED FOR EACH SIZE AND SOURCE OF AGGREGATE. THE DIFFERENT AGGREGATES SHALL BE KEPT SEPARATED UNTIL THEY HAVE BEEN DELIVERED TO THE COLD FEED BELT OR ELEVATOR. THE AGGREGATE STORAGE AREA SHALL BE MAINTAINED NEAT AND ORDERLY AND THE SEPARATE MATERIALS STOCKPILED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 8.5.3 EXCEPT THAT THE PROHIBITION ON THE USE OF STEEL-TRACKED EQUIPMENT SHALL NOT APPLY.

THE ENGINEER SHALL HAVE ACCESS AT ALL TIMES TO ANY PART OF THE PLANT FOR EXERCISING ALL GENERAL INSPECTION PERTAINING TO THE MATERIALS, BATCHING, MIXING, TEMPERATURES OF MATERIAL, AND MIXES, PROCUREMENT OF SAMPLES, STABILITY TESTS, AND TESTING PERFORMED BY PLANT TECHNICIANS, TRUCK WEIGHING, AND THE PREPARATION AND REPORTING OF THE NECESSARY RECORDS.

#### (A) GENERAL REQUIREMENTS FOR ALL BATCH PLANTS.

ALL PLANTS SHALL BE DESIGNED, EQUIPPED, CALIBRATED AND OPERATED TO DELIVER WELL COATED, HOMOGENEOUS BITUMINOUS MIXTURES COMPLYING WITH THE JOB MIX FORMULA.

ANY DEFECT WHICH ADVERSELY AFFECTS THE FUNCTIONING OF A PLANT OR PLANT UNIT, OR THE QUALITY OF THE MIXTURE, IN ANY MANNER SHALL BE CORRECTED IMMEDIATELY.

PLANT UNITS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

#### 1. EQUIPMENT FOR PREPARATION OF BITUMINOUS MATERIAL.

TANKS FOR STORAGE OF BITUMEN SHALL BE EQUIPPED FOR HEATING THE MATERIAL TO A UNIFORM TEMPERATURE, UNDER EFFECTIVE AND POSITIVE CONTROL AT ALL TIMES, TO THE TEMPERATURE REQUIREMENTS SET FORTH IN THE SPECIFICATIONS FOR THE PAVING MIXTURE. HEATING SHALL BE ACCOMPLISHED BY STEAM OR OIL COILS, ELECTRICITY, OR OTHER MEANS SUCH THAT NO FLAME SHALL COME IN CONTACT WITH THE HEATING TANK.

A CIRCULATING SYSTEM FOR THE BITUMEN SHALL BE PROVIDED, OF ADEQUATE CAPACITY TO PROVIDE FOR PROPER AND CONTINUOUS



CIRCULATION BETWEEN STORAGE TANK AND PROPORTIONING UNITS DURING THE ENTIRE OPERATING PERIOD, EXCEPT FOR A GRAVITY FED SYSTEM. THE DISCHARGE END OF THE BITUMINOUS BINDER CIRCULATING PIPE SHALL BE MAINTAINED BELOW THE SURFACE OF THE BITUMEN IN THE STORAGE TANK TO PREVENT DISCHARGING THE HOT BITUMEN INTO THE OPEN AIR.

ALL PIPE LINES AND FITTINGS SHALL BE STEAM OR OIL-JACKETED ELECTRICALLY OR OTHERWISE PROPERLY HEATED AND INSULATED TO PREVENT HEAT LOSS.

PROVISIONS SHALL BE MADE FOR SAMPLING BITUMINOUS MATERIAL BY MEANS OF VALVES COMPLYING WITH THE APPLICABLE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION T 40 EXCEPT THAT A SAMPLING VALVE SHALL BE LOCATED IN THE LOWER THIRD OF THE STORAGE TANK.

## 2. FEEDER FOR DRYER.

SEPARATE FEEDERS SHALL BE PROVIDED FOR EACH SIZE AND SOURCE OF AGGREGATE AND EACH SIZE MUST BE FED ONTO THE BELT GOING TO THE DRYER BY MECHANICAL FEEDERS WITH SEPARATE ADJUSTABLE GATES, AND THE FEEDERS SHALL BE CAPABLE OF DELIVERING THE SEPARATE AGGREGATES ONTO THE BELT IN PROPER PROPORTIONS. THE FEEDERS SHALL BE PROVIDED FOR ADJUSTMENT OF TOTAL FEED AND PROPORTIONAL FEED.

ADEQUATE MEANS SHALL BE PROVIDED TO ASSURE A CONSTANT AND UNIFORM FLOW OF MATERIAL FROM EACH BIN.

THE AGGREGATE SHALL BE FED UNIFORMLY INTO THE DRYER SO THAT UNIFORM PRODUCTION AND UNIFORM TEMPERATURE MAY BE OBTAINED.

## 3. DRYER.

BATCH PLANTS SHALL INCLUDE A DRIER OR DRIERS WHICH CONTINUOUSLY AGITATE THE AGGREGATE DURING THE HEATING AND DRYING PROCESS. THE DRIER SHALL BE CAPABLE OF DRYING AND HEATING THE AGGREGATE TO THE MOISTURE AND TEMPERATURE REQUIREMENTS SET FORTH IN THE PAVING MIXTURE SPECIFICATIONS, WITHOUT LEAVING ANY VISIBLE UNBURNED OIL OR CARBON RESIDUE ON THE AGGREGATE WHEN DISCHARGED FROM THE DRIER.

## 4. SCREENS.

PLANT SCREENS, CAPABLE OF SCREENING ALL AGGREGATES TO THE SPECIFIED SIZES AND PROPORTIONS AND HAVING NORMAL CAPACITIES IN EXCESS OF THE FULL CAPACITY OF THE MIXER, SHALL BE PROVIDED.

5. AGGREGATE HOT BINS.

THE PLANT SHALL INCLUDE AT LEAST 4 AGGREGATE STORAGE BINS OF SUFFICIENT CAPACITY TO SUPPLY THE MIXER WHEN IT IS OPERATING AT FULL CAPACITY. BINS SHALL BE ARRANGED TO ASSURE SEPARATE AND ADEQUATE STORAGE OF APPROPRIATE FRACTIONS OF THE MINERAL AGGREGATES. SEPARATE DRY STORAGE SHALL BE PROVIDED FOR MINERAL FILLER OR HYDRATED LIME WHEN USED AND THE PLANT SHALL BE EQUIPPED TO FEED SUCH MATERIAL INTO THE MIXER ACCURATELY AND UNIFORMLY. EACH BIN SHALL BE PROVIDED WITH OVERFLOW PIPES, OF SUCH SIZE AND AT SUCH LOCATIONS AS TO PREVENT BACKING UP OF MATERIAL INTO OTHER COMPARTMENTS OR BINS. EACH COMPARTMENT SHALL BE PROVIDED WITH ITS INDIVIDUAL OUTLET GATE, CONSTRUCTED SO THAT WHEN CLOSED THERE SHALL BE NO LEAKAGE. THE GATES SHALL CUT OFF QUICKLY AND COMPLETELY. BINS ON FULLY AUTOMATED PLANTS SHALL BE PROVIDED WITH MEANS TO OBTAIN REPRESENTATIVE SAMPLES. BINS SHALL BE EQUIPPED WITH ADEQUATE TELL-TALE DEVICES TO INDICATE WHEN THE LEVEL OF AGGREGATE REACHES THE LOWER QUARTER POINTS.

6. BITUMINOUS CONTROL UNIT.

SATISFACTORY MEANS, EITHER BY WEIGHING OR METERING, SHALL BE PROVIDED TO FURNISH THE PROPER AMOUNT OF BITUMINOUS MATERIAL IN THE MIX. MEANS SHALL BE PROVIDED FOR CHECKING THE QUANTITY OR RATE OF FLOW OF BITUMINOUS MATERIAL INTO THE MIXER.

7. THERMOMETRIC EQUIPMENT.

AN ARMORED THERMOMETER OR DIAL THERMOMETER OF ADEQUATE RANGE IN TEMPERATURE READING SHALL BE FIXED IN THE BITUMINOUS FEED LINE AT A SUITABLE LOCATION NEAR THE CHARGING VALVE AT THE MIXER UNIT, AND SHALL BE CAPABLE OF ACCURATELY INDICATING THE TEMPERATURE OF THE BITUMINOUS MATERIAL.

THE PLANT SHALL ALSO BE EQUIPPED WITH AN APPROVED RECORDING THERMOMETER, PYROMETER, OR OTHER APPROVED THERMOMETRIC INSTRUMENT SO PLACED AT THE DISCHARGE CHUTE OF THE DRIER AS TO REGISTER AUTOMATICALLY OR INDICATE THE TEMPERATURE OF THE HEATED AGGREGATES.

8. DUST COLLECTOR.

THE PLANT SHALL BE EQUIPPED WITH A DUST COLLECTOR CAPABLE OF WASTING OR UNIFORMLY RETURNING TO THE PLANT ALL OR ANY PART OF THE MATERIAL COLLECTED AS DIRECTED. DUST COLLECTING SYSTEMS SHALL BE INSTALLED AND OPERATED IN COMPLIANCE WITH THE PROVISIONS SET FORTH IN THE NEW JERSEY ADMINISTRATIVE CODE, SUBCHAPTER 7:27-6.1 ET SEQ.

## 9. SAFETY REQUIREMENTS.

ADEQUATE AND SAFE STAIRWAYS TO THE MIXER PLATFORM AND SAMPLING POINTS SHALL BE PROVIDED AND GUARDED LADDERS TO OTHER PLANT UNITS SHALL BE PLACED AT ALL POINTS WHERE ACCESSIBILITY TO PLANT OPERATIONS IS REQUIRED. A HOIST OR PULLY SYSTEM SHALL BE PROVIDED TO RAISE SCALE CALIBRATION EQUIPMENT, SAMPLING EQUIPMENT AND OTHER SIMILAR EQUIPMENT FROM THE GROUND TO THE MIXER PLATFORM AND RETURN. ALL GEARS, PULLEYS, CHAINS, SPROCKETS, AND OTHER DANGEROUS MOVING PARTS SHALL BE THOROUGHLY GUARDED AND PROTECTED. AMPLE AND UNOBSTRUCTED SPACE SHALL BE PROVIDED ON THE MIXING PLATFORM. A CLEAR AND UNOBSTRUCTED PASSAGE SHALL BE MAINTAINED AT ALL TIMES IN AND AROUND THE TRUCK LOADING AREA. THIS AREA SHALL BE KEPT FREE FROM DRIPPINGS FROM THE MIXING PLATFORM.

ACCESSIBILITY TO THE TOP OF TRUCK BODIES SHALL BE PROVIDED BY TWO PLATFORMS, LOCATED AWAY FROM THE MIXING PLANT, TO ENABLE THE ENGINEER TO OBTAIN SAMPLES AND TEMPERATURE DATA FROM EACH SIDE OF LOADED TRUCKS.

ADEQUATE OVERHEAD PROTECTION SHALL BE PROVIDED WHERE NECESSARY. IN ADDITION, TO THE ABOVE, THE PLANT SHALL CONFORM TO ALL STATE AND LOCAL SAFETY REQUIREMENTS.

## 10. PLANT LABORATORY.

AT EACH PLANT SITE THERE SHALL BE PROVIDED AND MAINTAINED IN GOOD CONDITION A TESTING LABORATORY FOR JOINT USE OF THE PRODUCER'S QUALITY CONTROL AND ACCEPTANCE TESTING FUNCTIONS AND THE ENGINEER OR INSPECTOR DURING PERIODS OF MIX PRODUCTION, SAMPLING, AND TESTING, AND WHENEVER MATERIALS SUBJECT TO THE PROVISIONS OF THESE SPECIFICATIONS ARE BEING SUPPLIED OR TESTED.

THE BITUMINOUS PLANT TESTING LABORATORY SHALL HAVE A FLOOR AREA OF NOT LESS THAN 150 SQUARE FEET, WITH A CEILING HEIGHT OF NOT LESS THAN 7 1/2 FEET. THE LABORATORY SHALL BE WEATHER TIGHT, SUFFICIENTLY HEATED IN COLD WEATHER, AIR-CONDITIONED IN HOT WEATHER TO MAINTAIN TEMPERATURES FOR TESTING PURPOSES BETWEEN 68 AND 80 DEGREES F. IT SHALL BE SO LOCATED ON THE ASPHALT PLANT SITE AS TO PROVIDE AN UNOBSTRUCTED VIEW OF THE TRUCKS AS THEY ARE LOADED WITH THE PLANT MIXED MATERIALS.

THE BITUMINOUS PLANT TESTING LABORATORY SHALL HAVE: ADEQUATE ARTIFICIAL LIGHTING; ELECTRICAL OUTLETS SUFFICIENT IN NUMBER AND CAPACITY FOR OPERATING THE REQUIRED TESTING EQUIPMENT AND FOR DRYING SAMPLES; FIRE UNDERWRITER'S APPROVED EXTINGUISHERS; WORK BENCHES FOR TESTING WITH DIMENSIONS NOT LESS THAN 2 1/2' X 10'; A DESK OR TABLE AND AT LEAST 2 CHAIRS;

CALCULATING MACHINE, ELECTRIC, TEN KEY; SANITARY FACILITIES CONVENIENT TO THE TESTING LABORATORY, AND COMPLYING WITH THE REQUIREMENTS OF ARTICLE 1.4.6; EXHAUST FAN TO OUTSIDE AIR, WITH MINIMUM BLADE DIAMETER OF 12" TO ADEQUATELY HANDLE LABORATORY DUST AND FUMES; A HOOD OF SUCH SIZE AS TO ENCLOSE THE OPERATIONS OF EXTRACTION, EVAPORATION, AND ASHING AS WELL AS ANY OTHER IN WHICH A VAPOR OR GAS IS EMITTED, DESIGNED, CONSTRUCTED AND MAINTAINED IN SUCH A WAY THAT ANY OPERATION INVOLVING 1.1.1 TRICHLOROETHANE WITHIN THE HOOD DOES NOT REQUIRE THE INSERTION OF ANY PORTION OF AN EMPLOYEE'S BODY OTHER THAN HANDS AND ARMS, CONTAINING AN EXHAUST FAN TO OUTSIDE AIR WHICH SHALL EXHAUST AIR AT A MINIMUM LINEAR VELOCITY OF 100 FEET PER MINUTE, ALL COMPLYING WITH O.S.H.A. SAFETY AND HEALTH STANDARD 29CF-R1910, AND BE A DEVICE ENCLOSED ON 3 SIDES, TOP AND BOTTOM; TELEPHONE, FOUR DRAWER LEGAL SIZE FILE CABINET; A SINK WITH RUNNING WATER AND ATTACHED DRAINBOARD AND DRAIN CAPABLE OF HANDLING ELUTRIABLE MATERIAL; A METAL STAND TO HOLD SIEVES USED IN WASHING ELUTRIABLE MATERIAL; A 2-ELEMENT HOT PLATE OR OTHER COMPARABLE HEATING DEVICE, WITH SUITABLE DIAL TYPE THERMOSTATIC CONTROLS TO ADJUST THE HEAT, FOR DRYING AGGREGATES; MECHANICAL SHAKER AND SIEVES CONFORMING TO REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 92 OR A.S.T.M. DESIGNATION E 11 FOR DETERMINING THE GRADATION OF COARSE AND FINE AGGREGATES; 1000 ML ERLMAYER FLASK WITH A 45/50 GROUND GLASS NECK; TORQUE WRENCH CALIBRATED IN INCH-POUNDS WITH A MINIMUM CAPACITY OF 110 INCH-POUNDS; TESTING EQUIPMENT MEETING THE REQUIREMENTS OF APPENDIX A FOR THE EXTRACTION OF BITUMEN FROM BITUMINOUS PAVING MIXTURES. ALL WEIGHING DEVICES UTILIZED FOR THE TESTING OF BITUMINOUS MIXTURE SAMPLES SHALL BE REGULARLY INSPECTED AND SEALED BY THE WEIGHTS AND MEASURES SECTION OF THE N.J. DEPARTMENT OF LAW AND PUBLIC SAFETY OR A MUNICIPAL WEIGHTS AND MEASURES AGENCY, APPARATUS AS SPECIFIED BY CURRENT REQUIREMENTS OF A.S.T.M. DESIGNATION D 1559 FOR STABILITY TESTING BY THE MARSHALL METHOD, OTHER NECESSARY SMALL HAND TOOLS REQUIRED FOR PROPER SAMPLING AND TESTING OF MATERIALS, AS REQUESTED BY THE ENGINEER.

THE REQUIREMENTS FOR THE BITUMINOUS PLANT TESTING LABORATORY ARE MINIMUM FOR NOT MORE THAN 2500 TONS OF BITUMINOUS CONCRETE MIXTURE PER DAY FOR A FULLY AUTOMATED PLANT AND FOR 2000 TONS PER DAY FOR A MANUAL PLANT. ASPHALT PLANT SITES PRODUCING LARGER DAILY PRODUCTION SHALL REQUIRE PROPORTIONATELY INCREASED LABORATORY FACILITIES AND EQUIPMENT AND IN ADDITION ANOTHER TECHNICIAN MAY BE REQUIRED IF IT BECOMES OBVIOUS TO THE ENGINEER THAT ONE TECHNICIAN CANNOT FULFILL THE TESTING REQUIREMENTS.

APPROVAL OF THE BITUMINOUS PLANT AND TESTING LABORATORY WILL REQUIRE THAT ALL THE ABOVE FACILITIES AND EQUIPMENT BE IN GOOD WORKING ORDER, AND OPERATED IN ACCORDANCE WITH SPECIFIED METHODS OF TESTING BY A RESIDENT TECHNICIAN WHO SHALL BE PRESENT DURING ALL PERIODS OF MIX PRODUCTION, SAMPLING, AND

TESTING; AND WHENEVER MATERIALS SUBJECT TO THE PROVISIONS OF THESE SPECIFICATIONS ARE BEING SUPPLIED OR TESTED. FAILURE TO PROVIDE ANY OF THE ABOVE FACILITIES, RESIDENT TECHNICIAN, USE OF NON-STANDARD METHODS, OR FAILURE TO REPORT ALL TEST RESULTS SHALL BE SUFFICIENT CAUSE FOR DISAPPROVING THE BITUMINOUS PLANT OPERATION.

#### 11. PLANT SCALE REQUIREMENTS.

ALL PLANT SCALES SHALL BE OF THE SPRINGLESS DIAL TYPE OR ELECTRONIC LOAD CELL TYPE WITH A READDOUT, AND SHALL BE ACCURATE WITHIN THE TOLERANCES PERMITTED BY THE DEPARTMENT OF LAW AND PUBLIC SAFETY, WEIGHTS AND MEASURES SECTION. SCALES SHALL CONFORM TO THE REQUIREMENTS OF HANDBOOK 44 OF THE WEIGHTS AND MEASURES SECTION.

SCALES OR SLAVE SYSTEMS SHALL BE SO LOCATED THAT THEY ARE PLAINLY VISIBLE TO THE PLANT OPERATOR AT ALL TIMES.

THE GRADUATION OF SCALES USED IN WEIGHING AMOUNTS OF AGGREGATES LESS THAN 5,000 POUNDS SHALL NOT BE GREATER THAN FIVE POUNDS; FOR AMOUNTS OF AGGREGATES FROM 5,000 TO 10,000 POUNDS, NOT GREATER THAN TEN POUNDS; AND FOR AMOUNTS OF AGGREGATES IN EXCESS OF 10,000 POUNDS, NOT GREATER THAN 0.1 PERCENT OF THE CAPACITY OF THE SCALES.

SCALES FOR THE WEIGHING OF BITUMINOUS MATERIAL SHALL CONFORM TO THE REQUIREMENTS FOR AGGREGATE SCALES EXCEPT THAT THEY SHALL READ TO THE NEAREST POUND AND SHALL HAVE A CAPACITY OF NOT MORE THAN 250 PERCENT OF THE NORMAL AMOUNT OF ASPHALT REQUIRED.

SCALES SHALL BE SATISFACTORY TO THE ENGINEER AND SHALL BE TESTED AND SEALED AT LEAST ONCE EACH YEAR OR AS OFTEN AS THE ENGINEER MAY DEEM NECESSARY. ALL WEIGHING EQUIPMENT SHALL BE SUBSTANTIALLY CONSTRUCTED AND OF A DESIGN WHICH WILL PERMIT EASY REALIGNMENT AND ADJUSTMENT. THE CONTRACTOR SHALL PROVIDE AT LEAST TEN 50-POUND STANDARD WEIGHTS FOR TESTING OF ALL SCALES AT THE OPTION OF THE ENGINEER. FOR EACH SCALE, A SUITABLE CRADLE OR PLATFORM, SHALL BE PROVIDED FOR APPLYING THE TEST LOAD SO THAT THE LOAD MAY BE UNIFORMLY DISTRIBUTED. THE TEST WEIGHTS SHALL BE KEPT CLEAN AND STORED AT THE ASPHALT PLANT SITE.

ALL PLANTS SHALL BE CAPABLE OF CONTINUOUSLY WEIGHING WITHIN TOLERANCES ESTABLISHED HEREIN FOR THE ACCURATE PROPORTIONING OF THE VARIOUS COMPONENTS OF THE MIXTURE BY WEIGHT, WITHIN THE FULL RANGE OF BATCH SIZES. ALL TOLERANCES ARE BASED ON THE TOTAL BATCH WEIGHT OF THE BITUMINOUS MIX.

## WEIGHING TOLERANCES

EACH AGGREGATE COMPONENT	+ OR - 1.5%
MINERAL FILLER	+ OR - 0.5%
BITUMINOUS MATERIAL	+ OR - 0.1%
ZERO RETURN (AGGREGATES)	+ 0.5%
ZERO RETURN (BITUMINOUS MATERIAL)	+ 0.1%

IF MINERAL FILLER IS USED IN A BATCH CYCLE, THE ALLOWABLE TOLERANCE FOR THE AGGREGATE COMPONENT WEIGHED JUST PRIOR TO THE FILLER IN A CUMULATIVE WEIGHING SYSTEM SHALL BE PLUS OR MINUS 0.5 PERCENT.

### 12. WEIGH BOX OR HOPPER.

THE EQUIPMENT SHALL INCLUDE A MEANS FOR ACCURATELY WEIGHING EACH SIZE OF AGGREGATE IN A WEIGH BOX OR HOPPER SUSPENDED ON SCALES AND OF AMPLE SIZE TO PREVENT OVERFLOW TO THE PUGMILL.

THE DISCHARGE GATE SHALL CLOSE TIGHTLY SO THAT NO MATERIAL IS ALLOWED TO LEAK INTO THE MIXER WHILE A BATCH IS BEING WEIGHED. THE WEIGH BOX OR HOPPER SHALL BE SUPPORTED ON FULCRUMS AND KNIFE EDGES SO CONSTRUCTED THAT THEY WILL NOT EASILY BE THROWN OUT OF ALIGNMENT OR ADJUSTMENT.

### 13. BITUMINOUS CONTROL.

WHEN A BITUMINOUS MATERIAL BUCKET IS USED IT SHALL BE A TYPE RECOMMENDED BY THE PLANT MANUFACTURER. THE LENGTH OF THE DISCHARGE OPENING OR SPRAY BAR SHALL BE NOT LESS THAN 3/4 THE LENGTH OF THE MIXER AND IT SHALL DISCHARGE DIRECTLY INTO THE MIXER. THE BITUMINOUS MATERIAL BUCKET, ITS DISCHARGE VALVE OR VALVES AND SPRAY BAR SHALL BE ADEQUATELY HEATED. THE PLANT SHALL HAVE AN ADEQUATELY HEATED, QUICK-ACTING, NONDRIP, CHARGING VALVE LOCATED DIRECTLY OVER THE BITUMINOUS MATERIAL BUCKET.

WHEN A VOLUMETRIC METER IS USED, THE METER SHALL AUTOMATICALLY METER THE ASPHALT INTO EACH BATCH. THE DIAL TO INDICATE THE AMOUNT OF BITUMINOUS MATERIAL SHALL HAVE A CAPACITY OF AT LEAST 10 PERCENT IN EXCESS OF THE BITUMINOUS MATERIALS REQUIRED IN ONE BATCH. THE METER SHALL BE CONSTRUCTED SO THAT IT MAY BE LOCKED AT ANY DIAL SETTING AND WILL AUTOMATICALLY RESET TO THIS READING AFTER THE ADDITION OF BITUMINOUS MATERIAL TO EACH BATCH. THE DIAL SHALL BE IN FULL VIEW OF THE MIXER OPERATOR. THE FLOW OF BITUMINOUS MATERIAL SHALL BE AUTOMATICALLY CONTROLLED TO BEGIN WHEN THE DRY MIXING PERIOD IS OVER. ALL OF THE BITUMINOUS MATERIAL REQUIRED FOR ONE BATCH

SHALL BE DISCHARGED IN NOT MORE THAN 15 SECONDS AFTER THE FLOW HAS STARTED. THE SIZE AND SPACING OF THE SPRAY BAR OPENINGS SHALL PROVIDE A UNIFORM APPLICATION OF BITUMINOUS MATERIAL THE FULL LENGTH OF THE MIXER. THE SECTION OF THE FLOW LINE BETWEEN THE CHARGING VALVE AND THE SPRAY BAR SHALL BE PROVIDED WITH A VALVE AND OUTLET FOR CHECKING AND TESTING THE ACCURACY OF THE METER.

#### 14. MIXER.

THE BATCH MIXER SHALL BE AN APPROVED TYPE CAPABLE OF PRODUCING A UNIFORM MIXTURE WITHIN THE JOB-MIX TOLERANCES. IF NOT ENCLOSED, THE MIXER BOX SHALL BE EQUIPPED WITH A DUST HOOD TO PREVENT LOSS OF DUST.

THE CLEARANCE OF BLADES FROM ALL FIXED AND MOVING PARTS SHALL NOT EXCEED ONE INCH UNLESS THE MAXIMUM DIAMETER OF THE AGGREGATE IN THE MIX EXCEEDS 1-1/4 INCHES, IN WHICH CASE THE CLEARANCE SHALL NOT EXCEED 1-1/2 INCHES.

#### 15. CONTROL OF MIXING TIME.

THE MIXER SHALL BE EQUIPPED WITH AN ACCURATE TIME LOCK TO CONTROL THE OPERATIONS OF A COMPLETE MIXING CYCLE. IT SHALL LOCK THE WEIGH BOX GATE AFTER THE CHARGING OF THE MIXER UNTIL THE CLOSING OF THE MIXER GATE AT THE COMPLETION OF THE CYCLE. IT SHALL LOCK THE BITUMINOUS MATERIAL DISCHARGE THROUGHOUT THE DRY MIXING PERIOD AND SHALL LOCK THE MIXER GATE THROUGHOUT THE DRY AND WET MIXING PERIODS. THE DRY MIXING PERIOD IS DEFINED AS THE INTERVAL OF TIME BETWEEN THE OPENING OF THE WEIGH BOX GATE AND THE START OF INTRODUCTION OF BITUMINOUS MATERIAL. THE WET MIXING PERIOD IS THE INTERVAL OF TIME BETWEEN THE START OF INTRODUCTION OF BITUMINOUS MATERIAL AND THE OPENING OF THE MIXER GATE.

THE CONTROL OF THE TIMING SHALL BE FLEXIBLE AND CAPABLE OF BEING SET AT INTERVALS OF 5 SECONDS OR LESS. A MECHANICAL BATCH COUNTER SHALL BE INSTALLED AS A PART OF THE TIMING DEVICE AND SHALL BE SO DESIGNED AS TO REGISTER ONLY COMPLETELY MIXED BATCHES.

THE SETTING OF TIME INTERVALS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER AND SHALL BE SUCH AS TO PROVIDE AGGREGATE COATING AS SPECIFIED IN ARTICLE 3.10.2.

#### (B) SPECIAL REQUIREMENTS FOR MANUAL BATCH PLANTS.

IN ADDITION TO THE GENERAL REQUIREMENTS FOR ALL BATCH PLANTS, MANUAL BATCH PLANTS SHALL BE EQUIPPED WITH PLATFORM TRUCK SCALES CONFORMING TO THE FOLLOWING REQUIREMENTS:

PLATFORM TRUCK SCALES SHALL BE A DIRECT READING CABINET DIAL TYPE, OR AN ELECTRONIC LOAD CELL TYPE WITH A VISUAL INDICATING DEVICE AND CAPABLE OF AUTOMATICALLY PRINTING BOTH GROSS AND TARE WEIGHTS AND TIME AND DATE ON THE DELIVERY TICKET. THE TIME AND DATE MAY BE PRINTED AUTOMATICALLY BY A TIME CLOCK EACH TIME THE TRUCK PASSES OVER THE SCALE. THE SCALES SHALL BE EQUIPPED WITH A MOTION DETECTION DEVICE OR A TIME DELAY RELAY WHICH WILL PREVENT PRINTING THE WEIGHT ON THE DELIVERY TICKET UNTIL THE SCALE IS FULLY AT REST. TARE BEAMS MUST BE REMOVED OR PERMANENTLY LOCKED IN PLACE.

THE SCALE SHALL HAVE A MANUFACTURER'S RATING EQUAL TO OR GREATER THAN THE MAXIMUM GROSS LOAD BEING WEIGHED. THE SCALE SHALL BE ACCURATE WITHIN THE TOLERANCE PERMITTED BY THE WEIGHTS AND MEASURES SECTION, DEPARTMENT OF LAW AND PUBLIC SAFETY AND SHALL BE SO CERTIFIED AND SEALED BY THE WEIGHTS AND MEASURES SECTION AT LEAST ONCE EACH YEAR OR AS OFTEN AS THE ENGINEER DEEMS NECESSARY.

THE APPROACHES TO THE SCALE AT BOTH ENDS SHALL HAVE A LEVEL GRADE AT THE SAME ELEVATION AS THE PLATFORM. THE SCALE CABINET AND DIAL AND THE MECHANICAL WEIGHT RECORDER SHALL BE HOUSED IN A SUITABLE SHELTER, FURNISHED WITH ADEQUATE HEAT AND LIGHT.

(C) SPECIAL REQUIREMENTS FOR FULLY AUTOMATED BATCH PLANTS.

FULLY AUTOMATED PLANTS SHALL INCLUDE AN AUTOMATIC BATCHING AND MIXING CONTROL SYSTEM INCLUDING AN AUTOMATIC PRINTER SYSTEM CONFORMING TO THE FOLLOWING REQUIREMENTS.

THE RECORDATION EQUIPMENT AND BATCH SCALES SHALL BE INTERLOCKED AND THE PANELS PROVIDING ACCESS TO INTERLOCKING DEVICES SHALL BE MAINTAINED UNDER SEALED CONDITIONS.

THE SYSTEM SHALL CONTAIN AUXILIARY INTERLOCKING CUTOFF CIRCUITS TO INTERRUPT AND STOP THE AUTOMATIC CYCLING OF THE BATCHING OPERATIONS AT ANY TIME AN ERROR IN WEIGHING OCCURS OR WHEN ANY AGGREGATE BIN BECOMES EMPTY OR WHEN THERE IS A MALFUNCTIONING OF ANY PORTION OF THE CONTROL SYSTEM. IF AT ANY TIME, THE AUTOMATIC PROPORTIONING OR RECORDING DEVICES BECOME INOPERATIVE, THE PLANT MAY BE OPERATED MANUALLY, PROVIDED AN APPROVED PLATFORM TRUCK SCALE IS AVAILABLE MEETING THE REQUIREMENT FOR MANUAL PLANTS HEREINABOVE AND PROVIDED THE GENERAL REQUIREMENTS FOR ALL BATCH PLANTS ARE ADHERED TO.

THE CONTRACTOR SHALL MAKE DAILY CHECKS TO INSURE THAT HOPPERS ARE DISCHARGING COMPLETELY AND THAT THE BALANCE RETURNS TO A ZERO TARE WHENEVER THE HOPPERS ARE EMPTIED. DAILY CHECKS



SHALL BE MADE ON ALL BATCH SCALES. THE CONTRACTOR SHALL MAKE WEEKLY CHECKS TO VERIFY THE ACCURACY OF THE BATCH SCALES WITHIN THE NORMAL WEIGHING RANGE AND TO ASSURE THAT THE INTERLOCKING DEVICES AND AUTOMATIC RECORDATION EQUIPMENT ARE FUNCTIONING PROPERLY.

THE DEPARTMENT RESERVES THE RIGHT TO MAKE INDEPENDENT CHECKS ON BATCH WEIGHTS BY WEIGHING TRUCKS BEFORE AND AFTER LOADING AND RESERVES THE RIGHT TO REQUEST AN INSPECTION OF THE PLANT SCALES BY WEIGHTS AND MEASURES SECTION, DEPARTMENT OF LAW AND PUBLIC SAFETY FOR VERIFICATION OF THE AUTOMATIC PRINTOUT TICKETS. DEVIATIONS IN THE WEIGHTS EXCEEDING THE TOLERANCES PERMITTED BY THE WEIGHTS AND MEASURES SECTION WILL BE CAUSE FOR THE ENGINEER TO REQUIRE MANUAL WEIGHING OF THE MATERIAL UNTIL THE AUTOMATIC SYSTEM CAN BE CORRECTED.

(D) SURGE AND STORAGE BINS.

A PLANT SHALL BE PERMITTED TO STORE HOT MIXTURE FROM ITS PUGMILL IN A SURGE OR STORAGE BIN PROVIDED SAID BIN HAS RECEIVED PRIOR EVALUATION AND APPROVAL BY THE DEPARTMENT. USE OF THE BIN IS TO BE IN CONFORMANCE WITH ALL LIMITATIONS ON RETENTION TIME, TYPE OF MIXTURE, HEATER OPERATION, BIN ATMOSPHERE, BIN LEVEL OR OTHER CHARACTERISTICS SET FORTH IN THE DEPARTMENT'S LETTER OF APPROVAL. AFFIXED TO EACH BIN AND VISIBLE FROM THE INSPECTORS OFFICE SHALL BE A LIGHT, WHICH WILL BE ACTIVATED WHEN THE MATERIAL IN THE BIN REACHES THE 25 PLUS OR MINUS 5 TON LEVEL.

AN EVALUATION OF A SURGE OR STORAGE UNIT WILL BE CONDUCTED BY THE DEPARTMENT ON WRITTEN REQUEST BY THE SUPPLIER. THE SUPPLIER SHALL SUBMIT WITH HIS REQUEST 2 COPIES OF PLANS FOR HIS SURGE OR STORAGE SYSTEM SHOWING BIN CAPACITY, HEATING AND SPLITTER ARRANGEMENTS. THE EVALUATION WILL DETERMINE THE DEGREE OF COMPOSITION UNIFORMITY, TEMPERATURE CHARACTERISTICS AND DEGREE OF ASPHALT CEMENT HARDENING OF MIXTURE PROCESSED THROUGH THE SURGE OR STORAGE UNIT. APPROVAL WILL BE GRANTED FOR BIN USAGE THAT CONSISTENTLY RESULTS IN MIXTURE HAVING GRADATION, TEMPERATURE AND ASPHALT HARDENING PROPERTIES OF NO LESSER QUALITY THAN ACCEPTABLE MIXTURES DISCHARGED DIRECTLY FROM THE PLANT.

THE METHOD OF SAMPLING, RATE OF SAMPLING, AND TESTING AND ANALYSIS PROCEDURES WILL BE IN ACCORDANCE WITH THE REQUIREMENTS OF "APPENDIX A: EVALUATION PROCEDURE" OF THE REPORT "STORAGE OF HOT BITUMINOUS CONCRETE MIXES," NJDOT RESEARCH REPORT NO. 74-007-7733 (OCTOBER 1973).

THE ANALYSIS OF ASPHALT HARDENING PERFORMED AS A PART OF THE PREQUALIFICATION OF THE SURGE BIN SYSTEM SHALL CONSIST OF A COMPARISON OF THE PENETRATION OF THE ASPHALT CEMENT FROM

MIXTURE RECOVERY SAMPLES OBTAINED AT THE PLANT DISCHARGE AND THE SURGE SILO DISCHARGE. THE PENETRATION OF THE ASPHALT CEMENT RECOVERED FROM THE STORED SURGE SILO MIXTURE SAMPLES WILL BE ACCEPTABLE IF THE AVERAGE PENETRATION IS NO MORE THAN 15 PERCENT LESS THAN THE AVERAGE PENETRATION OF THE ASPHALT CEMENT RECOVERED FROM MIXTURE SAMPLES FROM THE PLANT DISCHARGE. RECOVERY OF ASPHALT FROM MIXTURE SAMPLES WILL BE PERFORMED IN ACCORDANCE WITH A.S.T.M. DESIGNATION D 1856.

IN THE EVENT THAT AN APPROVED SURGE OR STORAGE SYSTEM IS CHANGED OR ALTERED, THE DEPARTMENT SHALL BE NOTIFIED OF MODIFICATION. ANY RADICAL DEPARTURE FROM THE APPROVED SYSTEM WILL NECESSITATE REEVALUATION. THE DEPARTMENT RESERVES THE RIGHT TO REEVALUATE ANY SURGE OR STORAGE SYSTEM WHOSE PERFORMANCE BECOMES SUSPECT DUE TO DEFICIENCIES IN MIXTURE QUALITY.

BITUMINOUS CONCRETE PAVERS.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS CONCRETE PAVERS (FOR 8 FOOT WIDTHS OR MORE) SHALL BE SELF-CONTAINED, POWER PROPELLED UNITS, PROVIDED WITH AN ACTIVATED SCREED OR STRIKE-OFF ASSEMBLY, HEATED IF NECESSARY, AND CAPABLE OF SPREADING AND FINISHING COURSES OF BITUMINOUS PLANT MIX MATERIAL IN LANE WIDTHS APPLICABLE TO THE SPECIFIED TYPICAL SECTION AND THICKNESSES SHOWN ON THE PLANS.

THE PAVER SHALL BE EQUIPPED WITH A RECEIVING HOPPER HAVING SUFFICIENT CAPACITY FOR A UNIFORM SPREADING OPERATION. THE HOPPER SHALL BE EQUIPPED WITH A DISTRIBUTION SYSTEM TO PLACE THE MIXTURE UNIFORMLY IN FRONT OF THE SCREED.

THE SCREED OR STRIKE-OFF ASSEMBLY SHALL EFFECTIVELY PRODUCE A FINISHED SURFACE OF THE REQUIRED EVENNESS AND TEXTURE WITHOUT TEARING, SHOYING OR GOUGING THE MIXTURE. SCREEDS OR STRIKE-OFF ASSEMBLIES SHALL EXTEND THE FULL WIDTH OF THE COURSE BEING LAID AND SHALL IMPART INITIAL COMPACTION THEREON. THE PAVER SHALL BE CAPABLE OF BEING OPERATED AT FORWARD SPEEDS CONSISTENT WITH SATISFACTORY LAYING OF THE MIXTURE.

BITUMINOUS CONCRETE PAVERS SHALL BE EQUIPPED AND OPERATED WITH AUTOMATIC GRADE AND SLOPE CONTROLS, EXCEPT AS OTHERWISE PROVIDED. THE AUTOMATIC CONTROL SYSTEM MUST MAINTAIN THE SCREED OR STRIKE-OFF IN A CONSTANT POSITION RELATIVE TO PROFILE AND CROSS SLOPE REFERENCES. THE REFERENCES SHALL BE SUCH THAT CONTROL OF THE SCREED OR STRIKE-OFF POSITION IS REASONABLY INDEPENDENT OF IRREGULARITIES IN THE UNDERLYING SURFACE AND OF SPREADER OPERATIONS. WHEN PAVING IN WIDTHS EXCEEDING THE MANUFACTURERS RECOMMENDATIONS FOR USE OF THE AUTOMATIC SLOPE CONTROL, A GRADE REFERENCE SYSTEM SHALL BE USED ON BOTH SIDES OF THE PAVER.

WHILE OPERATING AUTOMATICALLY IT SHALL BE POSSIBLE TO MANUALLY OVERRIDE THE AUTOMATIC CONTROLS.

IN THE EVENT OF MECHANICAL FAILURE OF THE AUTOMATIC CONTROLS, THE CONTRACTOR MAY BE PERMITTED TO FINISH THE DAY'S WORK USING MANUAL CONTROLS, BUT WILL NOT BE ALLOWED TO RESUME WORK THE FOLLOWING DAY UNTIL BOTH THE GRADE AND SLOPE CONTROLS ARE IN PROPER WORKING ORDER. SUCH PERMISSION SHALL NOT CONSTITUTE A WAIVER OF ANY OF THE APPLICABLE QUALITY REQUIREMENTS CONTAINED IN THE SPECIFICATIONS.

AUTOMATIC SCREED CONTROLS WILL NOT BE REQUIRED ON SECTIONS OF PROJECTS WHERE IN THE OPINION OF THE ENGINEER SERVICE ROAD CONNECTIONS OR INTERSECTIONS AND OTHER CONDITIONS INTERFERE WITH THEIR EFFICIENT OPERATION.

THE REFERENCE SYSTEM MAY BE EITHER STRINGLINE OR SKI TYPE ON ALL WORK EXCEPT NEW OR STAGE CONSTRUCTION.

ON NEW OR STAGE CONSTRUCTION, A STRINGLINE GRADE REFERENCE SYSTEM SHALL BE USED FOR LONGITUDINAL GRADE CONTROL ON THE FIRST LIFT OF PAVING EXCEPT THAT IF A PREVIOUSLY PLACED STRIP OF PAVEMENT OR OTHER SUITABLE GRADE REFERENCE, SUCH AS CONCRETE GUTTER OR A SIMILAR ITEM, HAS BEEN PLACED TO A SPECIFIED LINE, GRADE AND CROSS SECTION AND IS TO ADJOIN THE STRIP TO BE PLACED. THE PREVIOUSLY PLACED PAVEMENT OR OTHER SUITABLE REFERENCE MAY SERVE AS LONGITUDINAL GRADE CONTROL REFERENCE FOR THE NEW STRIP BY UTILIZING A SKI OR JOINT MATCHING SHOE.

GRADE REFERENCE SYSTEM FOR SUBSEQUENT LIFTS OF PAVING SHALL BE SKI TYPE.

THE STRING LINE REFERENCE SYSTEM SHALL CONSIST OF SUITABLE LINE SUPPORTED BY APPROVED DEVICES COMPATIBLE WITH THE TYPE OF AUTOMATIC PAVEMENT CONTROL SYSTEM USED. THE STRING LINE AND SUPPORTS SHALL BE CAPABLE OF MAINTAINING THE LINE AND GRADE DESIGNATED BY THE PLANS AT THE POINT OF SUPPORT WHILE WITHSTANDING THE TENSIONING NECESSARY TO PREVENT SAG IN EXCESS OF ONE-FOURTH INCH BETWEEN SUPPORTS SPACED FIFTY FEET APART. ADDITIONAL SUPPORTS SHALL THEN BE INSTALLED TO PROVIDE A MINIMUM SPACING OF TWENTY-FIVE FEET BETWEEN SAME, OR LESS IF DIRECTED BY THE ENGINEER, TO REMOVE ANY APPARENT DEVIATION OF THE STRING LINE FROM THEORETICAL GRADE.

THE CONTRACTOR SHALL ESTABLISH THE STRING LINE REFERENCE SYSTEM. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS REQUIRED TO CONSTRUCT THE STRING LINE REFERENCE SYSTEM AS DESCRIBED HEREIN AND SHALL MAINTAIN SAME UNTIL ITS USE IS NO LONGER REQUIRED.

THE STRING LINE REFERENCE SYSTEM SHALL BE COMPLETE IN PLACE SUFFICIENTLY IN ADVANCE OF THE CONSTRUCTION TO AVOID ANY DELAY OR INTERRUPTION OF LAYING THE PAVEMENT.

BITUMINOUS CONCRETE PAVERS (FOR LESS THAN 8 FOOT WIDTHS). PAVERS USED FOR SHOULDERS AND SIMILAR CONSTRUCTION SHALL BE CAPABLE OF SPREADING AND FINISHING COURSES OF BITUMINOUS CONCRETE MATERIAL IN THE WIDTHS AND THICKNESSES SHOWN ON THE PLANS.

VEHICLES FOR TRANSPORTING BITUMINOUS MIXTURES.

THE FOLLOWING IS ADDED:

AT THE OPTION OF THE CONTRACTOR A 3/8 INCH DIAMETER OPENING MAY BE PROVIDED IN THE LEFT SIDE OF EACH TRUCK FOR THE INSERTION OF A THERMOMETER. THE OPENING SHALL BE LOCATED FOUR TO SIX FEET FROM THE REAR OF THE TRUCK BED AND IN THE MIDDLE THIRD VERTICALLY.

ROLLERS.

THE FOLLOWING IS ADDED:

VIBRATORY ROLLERS SHALL BE OF THE SELF PROPELLED TYPE AND SHALL HAVE ONE OR TWO SMOOTH STEEL DRUMS. VIBRATORY ROLLERS USED ON SURFACE COURSES SHALL HAVE AT LEAST TWO SMOOTH STEEL DRUMS. RUBBER TIED VIBRATORY ROLLERS SHALL NOT BE USED ON SURFACE COURSES. VIBRATORY ROLLERS SHALL HAVE A STATIC WEIGHT OF NOT LESS THAN 6 1/2 TONS AND SHALL BE CAPABLE OF MAINTAINING THE FREQUENCY OF VIBRATION AND THE AMPLITUDE SPECIFIED BY THE MANUFACTURER.

ROLLERS SHALL BE IN GOOD WORKING CONDITION AND SHALL BE FREE FROM BACKLASH OR FAULTY STEERING MECHANISM OR WORKING PARTS. ROLLERS SHALL BE EQUIPPED WITH ADJUSTABLE SCRAPERS TO KEEP THE WHEELS CLEAN, AND WITH MEANS OF KEEPING THE WHEELS MOIST TO PREVENT THE MIX FROM STICKING TO THE WHEELS. WHEELS SHALL ALSO BE FREE OF FLAT AREAS, OPENINGS, OR PROJECTIONS WHICH WILL MAR THE SURFACE.

ROLLERS SHALL BE EQUIPPED WITH AN AUTOMATIC VIBRATION DISCONNECT SYSTEM WHICH WILL AUTOMATICALLY SHUT OFF THE VIBRATION WHEN THE ROLLER IS IN A STATIONARY POSITION.

EACH VIBRATORY ROLLER SHALL BE EQUIPPED WITH THE FOLLOWING EQUIPMENT:

1. VIBRATORY INDICATOR LIGHT SYSTEM. TWO LIGHTS SHALL BE MOUNTED ON FENDERS OR ONE LIGHT SHALL BE MOUNTED ON THE CONSOLE OR ABOVE THE ROLLER AND SHALL BLINK WHEN VIBRATORY SYSTEM IS ACTUATED. THE SYSTEM SHALL INDICATE WHEN THE ROLLER IS IN VIBRATORY MOTION OR STATIC MOTION.

2. ROLLER SPEED INDICATOR. A FEET PER MINUTE OR TENTHS OF A MILE PER HOUR SPEED INDICATOR SHALL BE PROVIDED TO PERMIT THE OPERATOR TO CLOSELY CONTROL THE ROLLING SPEED.

3. AMPLITUDE DECAL. AN EASILY READ DECAL SHALL BE PLACED ON THE CONTROLS FOR AMPLITUDE SETTING FOR DETERMINATION OF THE AMPLITUDE THE MACHINE IS OPERATING IN.

4. MECHANICAL VIBRATORY COUNTER. A VIBRATING REED TACHOMETER SHALL BE PROVIDED WITH EACH ROLLER FOR PLACEMENT BY THE ENGINEER ON THE PAVEMENT TO PROVIDE A MECHANICAL CHECK ON THE ROLLERS VIBRATION CONTROL SYSTEM.

5. AUTOMATIC VIBRATION DISCONNECT OVERRIDE. A MECHANICAL OVERRIDE SYSTEM SHALL BE PROVIDED IN THE EVENT OF TEMPORARY FAILURE OF THE AUTOMATIC SYSTEM WHICH SHUTS OFF THE VIBRATION WHEN THE ROLLER IS IN A STATIONARY POSITION. THIS REQUIREMENT WILL BE WAIVED IF THE CONTRACTOR HAS A STANDBY THREE WHEEL ROLLER FOR USE IN THE EVENT OF BREAKDOWN OF THE AUTOMATIC SHUT OFF SYSTEM.

6. INSTRUCTION PLATES. INSTRUCTION PLATES CONTAINING MACHINE OPERATIONAL INSTRUCTIONS, RECOMMENDED AMPLITUDE, VIBRATIONS PER MINUTE AND SPEED SETTINGS SHALL BE PROVIDED.

#### CONSTRUCTION.

THIS HEADING IS AMENDED UNDER THE SUB-HEADINGS AS FOLLOWS:

#### WEATHER LIMITATIONS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS CONCRETE MIXTURES SHALL BE PLACED WHEN THE COMBINATIONS OF LAYDOWN AND BASE SURFACE TEMPERATURES ARE WITHIN THE LIMITS SHOWN IN THE FOLLOWING TABLE, WHEN THE WEATHER IS NOT RAINY, AND WHEN THE ROADBED IS IN A SATISFACTORY CONDITION, PROVIDED, HOWEVER, THAT THE ENGINEER MAY PERMIT, IN CASE OF SUDDEN RAIN, THE PLACING OF MIXTURE THEN IN TRANSIT FROM THE PLANT, IF LAID AT PROPER TEMPERATURE AND IF THE ROADBED IS FREE FROM POOLS OF WATER. SUCH PERMISSION SHALL IN NO WAY RELAX THE REQUIREMENTS FOR QUALITY AND SMOOTHNESS OF FINISHED SURFACE.

LAYDOWN TEMPERATURE WILL BE MEASURED IN THE RECEIVING HOPPER OF THE PAVER.

MINIMUM LAYDOWN TEMPERATURE

BASE TEMP.	1/2"	3/4"	1"	1 1/2"	2"	3" AND GREATER (2)
20-30	(1)	(1)	(1)	310	300	285
31-40	(1)	(1)	(1)	305	295	280
41-50	(1)	(1)	310	300	285	275
51-60	(1)	310	300	295	280	270
61-70	310	300	290	285	275	265
71-80	300	290	285	280	270	265
81-90	290	280	275	270	265	260
91 & OVER	280	275	270	265	260	255

NOTES

(1) NO PAVING PERMITTED

(2) INCREASE BY 15 DEG. WHEN PLACEMENT IS ON BASE OR SUBBASE CONTAINING FROZEN MOISTURE.

CONDITIONING OF EXISTING SURFACE.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

WHEN BITUMINOUS CONCRETE IS LAID ON EXISTING PORTLAND CEMENT CONCRETE, EXISTING BITUMINOUS CONCRETE OR SURFACE TREATED MACADAM OR GRAVEL SURFACES, OR NEWLY CONSTRUCTED BITUMINOUS CONCRETE ON WHICH TRAFFIC HAS BEEN MAINTAINED, THE PAVED SURFACE SHALL BE GIVEN AN APPLICATION OF TACK COAT MATERIAL, AS SPECIFIED IN ARTICLE 3.10.2, AT THE RATE OF 0.02 TO 0.05 GALLON PER SQUARE YARD AS DIRECTED BY THE ENGINEER, PRIOR TO PLACING THE NEW SURFACE.

TACK COAT MATERIAL SHALL NOT BE APPLIED ON AREAS OF MEMBRANE WATER PROOFING.

THE FOURTH PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

WHEN THE BITUMINOUS CONCRETE IS TO BE PLACED ON NEWLY CONSTRUCTED MACADAM OR STONE BASE, ON ALL SUBBASE COURSES OR ON A NEW OR EXISTING GRAVEL COURSE, THE SURFACE SHALL BE CLEANED OF ALL LOOSE AGGREGATE AND BINDER AND WHEN DIRECTED BY THE ENGINEER GIVEN A PRIME COAT OF CUTBACK ASPHALT, TAR OR EMULSIFIED ASPHALT AS SPECIFIED IN ARTICLE 3.10.2, AT THE RATE OF 0.15 GALLON TO 0.35 GALLON PER SQUARE YARD AS DIRECTED BY THE ENGINEER. THE ENGINEER MAY WAIVE THE PRIME COAT IF THE BASE COURSE IS MAINTAINED AT OPTIMUM MOISTURE. APPLICATION OF THE PRIME COAT SHALL BE MADE

BEHIND THE FIRST UNIT SO AS NOT TO PERMIT COOLING OF THE LONGITUDINAL JOINT BETWEEN THE TWO LANES.

WHERE THE PAVING MUST BE CONFINED TO ONE LANE AT A TIME, THE SPREADING AND COMPACTING SHALL ADVANCE IN ANY ONE LANE FOR NOT MORE THAN 1500 FEET OR FOR SUCH DISTANCE AS WILL MAINTAIN THE TEMPERATURE OF THE MATERIAL AT THE LONGITUDINAL JOINT AT NOT LESS THAN 150 DEGREES F. THE PAVER SHALL THEN BE MOVED BACK AND SPREADING AND FINISHING STARTED IN THE ADJACENT STRIP.

IF, DUE TO THE REQUIRED MAINTENANCE OF TRAFFIC OR TO UNFORESEEABLE CONDITIONS, THE LONGITUDINAL EDGE OF THE MIXTURE LAID IN ONE STRIP BE TOO COOL TO FORM A PROPER BOND WITH THE MIXTURE IN THE ADJACENT STRIP BEING LAID AGAINST IT, THE EDGE SHALL BE PAINTED FIRST WITH A COAT OF AN APPROPRIATE GRADE CUT-BACK OR EMULSIFIED ASPHALT CONFORMING TO THE APPLICABLE REQUIREMENTS OF ARTICLE 8.1.5 OR 8.1.7. IF SUCH EDGE SHOULD NOT BE VERTICAL IT SHALL BE CUT BACK TO AN APPROXIMATELY VERTICAL FACE AND THE ADJOINING LANE AND JOINT CONSTRUCTED AS FOLLOWS. THE MATERIAL BEING PLACED IN THE ABUTTING LANE SHALL BE TIGHTLY CROWDED AGAINST THE VERTICAL FACE OF THE PREVIOUSLY PLACED LANE. THE PAVER SHALL BE POSITIONED SO THAT IN SPREADING, THE MATERIAL OVERLAPS THE EDGE OF THE LANE PREVIOUSLY PLACED BY ONE INCH TO TWO INCHES AND SHOULD BE LEFT SUFFICIENTLY HIGH TO ALLOW FOR COMPACTION. TO ASSURE A TRUE LINE, THE PAVER SHALL CLOSELY FOLLOW THE LINE OR MARKINGS PLACED ALONG THE JOINT FOR ALIGNMENT PURPOSES. THE WIDTH AND DEPTH OF THE OVERLAPPED MATERIAL SHALL BE KEPT UNIFORM AT ALL TIMES.

#### COMPACTION.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

AFTER THE BITUMINOUS MIXTURE HAS BEEN SPREAD, STRUCK OFF AND SURFACE IRREGULARITIES ADJUSTED, IT SHALL BE THOROUGHLY AND UNIFORMLY COMPACTED BY ROLLING.

THE SURFACE SHALL BE ROLLED WHEN THE MIXTURE IS IN THE PROPER CONDITION AND WHEN THE ROLLING DOES NOT CAUSE UNDUE DISPLACEMENT, CRACKING OR SHOING.

WHEN THE AVERAGE LAYDOWN RATE DOES NOT EXCEED 2,000 SQUARE YARDS PER HOUR, INITIAL OR BREAKDOWN ROLLING SHALL BE ACCOMPLISHED BY AT LEAST ONE THREE WHEEL STEEL ROLLER AND FINAL ROLLING SHALL BE ACCOMPLISHED BY AT LEAST ONE TANDEM STEEL WHEEL ROLLER, EXCEPT IF APPROVED BY THE ENGINEER, ONE VIBRATORY ROLLER MAY BE SUBSTITUTED FOR BOTH THE THREE WHEEL STEEL ROLLER AND THE TANDEM STEEL WHEEL ROLLER.

WHEN THE AVERAGE LAYDOWN RATE EXCEEDS 2,000 SQUARE YARDS PER HOUR BUT IS LESS THAN 4,000 SQUARE YARDS PER HOUR, INITIAL OR BREAKDOWN ROLLING SHALL BE ACCOMPLISHED BY AT LEAST TWO THREE WHEEL STEEL ROLLERS AND FINAL ROLLING SHALL BE ACCOMPLISHED BY AT LEAST ONE TANDEM STEEL WHEEL ROLLER, EXCEPT IF APPROVED BY THE ENGINEER, ONE VIBRATORY ROLLER MAY BE SUBSTITUTED FOR ONE THREE WHEEL STEEL ROLLER AND THE TANDEM STEEL WHEEL ROLLER.

WHEN THE AVERAGE LAYDOWN RATE EXCEEDS 4,000 SQUARE YARDS PER HOUR, INITIAL OR BREAKDOWN ROLLING SHALL BE ACCOMPLISHED BY AT LEAST THREE THREE WHEEL STEEL ROLLERS AND FINAL ROLLING SHALL BE ACCOMPLISHED BY AT LEAST TWO TANDEM STEEL WHEEL ROLLERS, EXCEPT IF APPROVED BY THE ENGINEER, ONE VIBRATORY ROLLER MAY BE SUBSTITUTED FOR ONE THREE WHEEL STEEL ROLLER AND ONE TANDEM STEEL WHEEL ROLLER OR TWO VIBRATORY ROLLERS MAY BE SUBSTITUTED FOR TWO THREE WHEEL STEEL ROLLERS AND THE TWO TANDEM STEEL WHEEL ROLLERS.

FOR A PARTICULAR MIX AND THICKNESS THEREOF, THE ENGINEER WILL APPROVE USE OF THE VIBRATORY ROLLER IF THE CONTRACTOR DEMONSTRATES ON THIS PROJECT THAT THE EQUIPMENT IS CAPABLE OF ACCOMPLISHING THE REQUIRED COMPACTION. THIS CAPABILITY MAY BE DEMONSTRATED BY EITHER OF THE FOLLOWING METHODS:

(1) TEST STRIP METHOD. THE CONTRACTOR SHALL CONSTRUCT A TEST STRIP CONSISTING OF AT LEAST 400 SQUARE YARDS OF PAVEMENT OF THE LAYER THICKNESS PROPOSED FOR USE AS PERMITTED BY THE SPECIFICATIONS. THE TEST STRIP SHALL BE COMPACTED BY THE VIBRATORY ROLLER USING FREQUENCY AND AMPLITUDE LEVELS SELECTED BY THE CONTRACTOR. THE NUMBER OF ROLLER COVERAGES SHALL BE SUCH THAT IN THE OPINION OF THE CONTRACTOR THE TEST STRIP IS IN CONFORMANCE WITH THE CONTROL AIR VOIDS REQUIREMENTS SPECIFIED ELSEWHERE HEREIN.

THE ENGINEER WILL TAKE 5 CORES FROM RANDOMLY SELECTED LOCATIONS IN THE TEST STRIP AND THE CONTRACTOR WILL MEASURE THEM FOR AIR VOIDS UNDER THE DEPARTMENT'S SURVEILANCE. SHOULD THE AVERAGE VOIDS LEVEL BE IN CONFORMANCE WITH THE CONTROL AIR VOIDS REQUIREMENTS SPECIFIED ELSEWHERE HEREIN, THE ENGINEER WILL APPROVE THE VIBRATORY ROLLER FOR USE ON THE PROJECT.

(2) COMPARISON METHOD. THE CONTRACTOR SHALL CONSTRUCT TWO TEST STRIPS OF AT LEAST 400 SQUARE YARDS OF PAVEMENT EACH. EACH STRIP SHALL BE OF THE LAYER THICKNESS PROPOSED FOR USE AS PERMITTED BY THE SPECIFICATIONS. THE FIRST TEST STRIP SHALL BE COMPACTED USING THE 3 WHEEL STEEL ROLLER AND TANDEM ROLLER AS SPECIFIED. THE ENGINEER WILL MAKE 10 RANDOM DENSITY MEASUREMENTS ON THIS TEST STRIP. DENSITY MEASUREMENTS WILL BE MADE WITH A NUCLEAR-DENSITY GAUGE UTILIZING THE SURFACE PREPARATION, BACKSCATTER TECHNIQUE AND TWO ONE-MINUTE COUNTS. THE 10 MEASURE-



MENTS WILL BE AVERAGED TO DETERMINE THE AVERAGE DENSITY OF THE TEST STRIP. THE SECOND TEST STRIP SHALL BE COMPACTED USING THE VIBRATORY ROLLER AS SPECIFIED IN METHOD (1) ABOVE. TEN RANDOM DENSITY MEASUREMENTS WILL BE TAKEN ON THIS STRIP IN SIMILAR MANNER AS FOR THE FIRST TEST STRIP. SHOULD THE AVERAGE OF THESE 10 MEASUREMENTS BE EQUAL TO OR GREATER THAN THE AVERAGE DENSITY OF THE FIRST TEST STRIP, THE ENGINEER WILL APPROVE THE VIBRATORY ROLLER FOR USE ON THE PROJECT.

IF DURING COMPACTION WITH THE VIBRATORY ROLLER IN EITHER OF THE TWO TEST METHODS, THERE IS EXCESSIVE AGGREGATE FRACTURE OR CRUSHING, LATERAL DISPLACEMENT OR COMPACTION WAVES, THE VIBRATORY ROLLER WILL BE REJECTED FOR USE ON THE PROJECT.

TEST STRIPS MAY REMAIN IN PLACE AND BECOME A PORTION OF THE COMPLETED ROADWAY SUBJECT TO THE PAVEMENT ACCEPTANCE REQUIREMENTS SPECIFIED ELSEWHERE HEREIN.

A FUNCTION OF THE TEST STRIP OR COMPARISON METHOD FOR DETERMINING THE APPROVED USE OF A VIBRATORY ROLLER WILL ALSO BE TO ESTABLISH THE APPROPRIATE VIBRATORY ROLLING ZONE IN RELATION TO THE PAVER. IF THE AVERAGE FORWARD PAVER TRAVEL SPEED IS SUCH THAT THE VIBRATORY ROLLER FALLS BEHIND ITS ESTABLISHED ROLLER ZONE AND CAN ONLY KEEP UP WITH THE PAVER BY INCREASING SPEED OR BY REDUCING PASSES, OR BOTH, THEN THE ENGINEER MAY REQUIRE ADDITIONAL ROLLERS TO BE PLACED ON THE JOB AND TO BE USED IN ACCORDANCE WITH THE RESULTS OF A NEW TEST STRIP OR COMPARISON METHOD INVOLVING THE REVISED NUMBER OF ROLLERS.

SHOULD THE CONTRACTOR BE ABLE TO DEMONSTRATE BY THE TEST STRIP METHOD THAT HE CAN ACHIEVE REQUIRED DENSITY BY USING FEWER ROLLERS THAN HEREINBEFORE SPECIFIED, THE ENGINEER WILL APPROVE THE USE OF FEWER ROLLERS. SHOULD THE USE OF FEWER ROLLERS BE APPROVED HOWEVER, PAVING WILL CEASE IMMEDIATELY UPON BREAKDOWN OF ANY OF THE REMAINING ROLLERS. ONLY ONE SUCH DEMONSTRATION WILL BE PERMITTED.

ROLLING SHALL BEGIN AT THE SIDES AND PROGRESS GRADUALLY TO THE CENTER, EXCEPT THAT ON SUPERELEVATED CURVES ROLLING SHALL PROGRESS FROM THE LOWER TO THE UPPER EDGE PARALLELED TO THE CENTER LINE OF THE ROAD AND UNIFORMLY LAPPING EACH PRECEDING TRACK UNTIL THE ENTIRE SURFACE HAS BEEN ROLLED AT LEAST ONCE BY THE REAR WHEELS.

ALTERNATE TRIPS OF THE ROLLER SHALL BE TERMINATED IN STOPS APPROXIMATELY TWO FEET FROM THE PRECEDING STOP. WHEN PAVING IN ECHELON, ROLLERS SHALL NOT COMPACT WITHIN SIX INCHES OF AN EDGE WHERE AN ADJACENT LANE IS TO BE PLACED.

THE DRIVE WHEELS OF THE ROLLERS SHALL BE TOWARD THE PAVER DURING COMPACTION OPERATIONS.

ROLLERS SHALL MOVE AT A SLOW BUT UNIFORM SPEED. UNLESS OTHERWISE DIRECTED, ROLLING SHALL BE CONTINUED UNTIL ALL ROLLER MARKS ARE ELIMINATED AND THE AIR VOIDS OF THE PAVEMENT CONFORMS TO THE SPECIFIED REQUIREMENTS.

ANY DISPLACEMENT OCCURRING AS A RESULT OF THE REVERSING OF THE DIRECTION OF A ROLLER, OR FROM OTHER CAUSES, SHALL BE CORRECTED AT ONCE BY THE USE OF LUTES AND ADDITION OF FRESH MIXTURE WHEN REQUIRED. CARE SHALL BE EXERCISED IN ROLLING NOT TO DISPLACE THE LINE AND GRADE OF THE EDGES OF THE BITUMINOUS MIXTURE.

IF NECESSARY TO PREVENT ADHESION OF THE MIXTURE TO THE ROLLERS, THE WHEELS SHALL BE KEPT PROPERLY MOISTENED WITH WATER OR WATER MIXED WITH VERY SMALL QUANTITIES OF DETERGENT OR OTHER APPROVED MATERIAL. EXCESS LIQUID WILL NOT BE PERMITTED.

ALONG FORMS, CURBS, HEADER, WALLS, AND OTHER PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE THOROUGHLY COMPACTED WITH MECHANICAL TAMPERS. ON DEPRESSED AREAS, A TRENCH ROLLER MAY BE USED OR CLEATED COMPRESSION STRIPS MAY BE USED UNDER THE ROLLER TO TRANSMIT COMPRESSION TO THE DEPRESSED AREA.

ANY MIXTURE THAT BECOMES LOOSE AND BROKEN, MIXED WITH DIRT, OR IS IN ANY WAY DEFECTIVE SHALL BE REMOVED AND REPLACED WITH FRESH HOT MIXTURE, WHICH SHALL BE COMPACTED TO CONFORM WITH THE SURROUNDING AREA. ANY AREA SHOWING AN EXCESS OR DEFICIENCY OF BITUMINOUS MATERIAL SHALL BE REMOVED AND REPLACED.

#### THICKNESS AND WEIGHT.

THE ENTIRE TEXT, INCLUDING TABLE 4, IS CHANGED TO READ AS FOLLOWS:

BITUMINOUS CONCRETE PAVEMENT TYPE FA-BC-2, CA-BC-2 OR MA-BC-2, 3" THICK, SHALL BE CONSTRUCTED TO A COMPACTED DEPTH OF 3 INCHES, CONSISTING OF 1 1/2 INCHES OF TOP COURSE AND 1 1/2 INCHES OF BOTTOM COURSE MATERIAL.

BITUMINOUS CONCRETE PAVEMENT TYPE FA-BC-2, CA-BC-2 OR MA-BC-2 VARIABLE THICKNESS, SHALL BE CONSTRUCTED IN TWO OR MORE LAYERS. THE TOP COURSE MATERIAL SHALL BE 1 1/2 INCHES COMPACTED DEPTH AND THE BOTTOM COURSE MATERIAL SHALL BE CONSTRUCTED IN LAYERS OF NOT MORE THAN 2 1/2 INCHES COMPACTED DEPTH.

OTHER BITUMINOUS PAVEMENTS SHALL BE CONSTRUCTED TO THE COMPACTED DEPTH SHOWN ON THE PLANS.

IF DURING THE PROGRESS OF CONSTRUCTION, IT IS DETERMINED BY THE ENGINEER THAT THE SUBGRADE, SUBBASE, OR ANY BASE COURSE OR PAVEMENT COURSE HAS NOT BEEN COMPACTED AND FINISHED IN REASONABLY CLOSE CONFORMITY TO THE SPECIFIED THICKNESS OR GRADE, THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION OF ANY SUBSEQUENT COURSE THEREON UNTIL APPROPRIATE CORRECTIVE MEASURES SATISFACTORY TO THE ENGINEER HAVE BEEN COMPLETED.

BEFORE CONSTRUCTION OF BITUMINOUS CONCRETE PAVEMENT OR BITUMINOUS STABILIZED BASE COURSE ON THE PROJECT, THE CONTRACTOR SHALL, FOR THE MATERIALS SELECTED, DETERMINE THE THEORETICAL WEIGHT PER SQUARE YARD PER INCH OF THICKNESS FOR EACH OF THE VARIOUS TYPES OF BITUMINOUS CONCRETE AND BITUMINOUS-STABILIZED BASE COURSE. THE LABORATORY WILL ASSIST THE CONTRACTOR IN THE DETERMINATION OF THESE THEORETICAL WEIGHTS, BUT WILL NOT BE RESPONSIBLE FOR THE ACCURACY OF ANY WEIGHTS SO DETERMINED.

THE LABORATORY WILL COMPUTE, FROM CORES OF THE BITUMINOUS CONCRETE AND BITUMINOUS-STABILIZED BASE COURSE ACTUALLY CONSTRUCTED ON THE PROJECT, THE WEIGHT PER SQUARE YARD PER INCH OF THICKNESS OF EACH OF THE VARIOUS TYPES OF BITUMINOUS CONCRETE AND BITUMINOUS-STABILIZED BASE COURSE. THE COMPUTED ACTUAL WEIGHT SHALL BE CALCULATED FROM THE AVERAGE SPECIFIC GRAVITY ON AT LEAST TEN (10) PERCENT OF THE DRILLED CORES, BUT NOT LESS THAN THREE (3) CORES, AS DETERMINED IN ACCORDANCE WITH THE CURRENT PROVISIONS OF A.A.S.H.T.O. DESIGNATION T 166 METHOD B, EXCEPT THAT THE PROVISION FOR DRYING TO A CONSTANT WEIGHT DOES NOT APPLY. THIS COMPUTED ACTUAL WEIGHT SHALL BE USED FOR ALL COMPUTATIONS OF PAYMENT QUANTITIES WHEN NECESSARY.

THE THICKNESS REQUIREMENTS CONTAINED HEREIN SHALL APPLY ONLY WHEN EACH COMPONENT BITUMINOUS MIXTURE IN THE PAVEMENT STRUCTURE IS SPECIFIED TO BE OF A UNIFORM THICKNESS. WHEN SUCH UNIFORM THICKNESS BITUMINOUS PAVEMENT STRUCTURE(S) ARE SPECIFIED, THE COMBINED TOTAL THICKNESS OF THE MIXTURE OR MIXTURES SHALL BE MEASURED TO DETERMINE COMPLIANCE WITH THE GOVERNING ACCEPTANCE LIMIT SHOWN IN TABLE 4. IN ADDITION, THE TOP COURSE SHALL ALSO BE MEASURED TO DETERMINE COMPLIANCE WITH A MINIMUM THICKNESS REQUIREMENT USING AN ACCEPTANCE LIMIT OF 1.25 INCHES. RESULTS OF THIS CHECK ON TOP COURSE MINIMUM THICKNESS WILL BE USED SOLELY TO DETERMINE WHETHER A REMOVE AND REPLACE OR AN OVERLAY CONDITION EXISTS, NOT FOR PAYMENT ADJUSTMENT.

THICKNESS MEASUREMENT OF BITUMINOUS PAVEMENT FROM CORES WILL BE IN ACCORDANCE WITH ARTICLE 9.1.24.

TABLE 4. THICKNESS ACCEPTANCE LIMITS

SPECIFIED OR TOTAL PLAN THICKNESS (INCHES)	GOVERNING ACCEPTANCE LIMIT (INCHES)
1.5	1.25
2.0	1.70
2.25	1.90
3.0	2.60
4.0	3.50
5.0	4.40
6.0	5.30
OVER 6.0	SPECIFIED THICKNESS LESS 0.7 INCHES

CONFORMANCE TO THICKNESS REQUIREMENTS WILL BE DETERMINED IN LOTS CONSISTING OF APPROXIMATELY 15,000 SQUARE YARDS OR LESS OF COMPLETED PAVEMENT AND ALL THE UNDERLYING BITUMINOUS MIXTURES. ROADWAY AREAS CONSISTING OF DIFFERENT COMBINATIONS OF BITUMINOUS MIXTURES OR THICKNESSES THEREOF WILL NOT BE INCLUDED IN THE SAME LOT.

A THICKNESS LOT SHALL HAVE NOT MORE THAN 20 PERCENT OF THE LOT AREA, AS DETERMINED FROM TABLE 4-A, LESS THAN THE GOVERNING ACCEPTANCE LIMIT FOR TOTAL THICKNESS SHOWN IN TABLE 4. TO SATISFY THIS REQUIREMENT, IT WILL BE NECESSARY THAT A LOT BE CONSTRUCTED TO A THICKNESS UNIFORMITY CONSISTENT WITH GOOD CONSTRUCTION PRACTICES AND, IN GENERAL, TO AN AVERAGE TOTAL THICKNESS OF NOT LESS THAN THAT SPECIFIED.

THE ACCEPTANCE OF A THICKNESS LOT WILL BE DETERMINED FROM THICKNESS MEASUREMENTS OF 15 CORES OBTAINED BY THE ENGINEER FOR EACH LOT. EACH LOT WILL BE DIVIDED INTO THREE SECTIONS OF APPROXIMATELY EQUAL AREA, AND FIVE CORES WILL BE REMOVED FROM RANDOM LOCATIONS WITHIN EACH SECTION. THE TOTAL CORE THICKNESS AND THE THICKNESS OF EACH COMPONENT BITUMINOUS MIXTURE CONTAINED THEREIN WILL BE DETERMINED IN ACCORDANCE WITH THE METHOD SPECIFIED IN ARTICLE 9.1.24.

WHEN VARIATIONS IN TOTAL THICKNESS CAUSE MORE THAN 20 PERCENT OF THE AREA OF A LOT TO BE LESS THAN THE GOVERNING ACCEPTANCE LIMIT SHOWN IN TABLE 4 THE LOT IS UNACCEPTABLE AND SHALL BE REMOVED AND REPLACED OR OVERLAID AT THE OPTION OF THE CONTRACTOR, IF APPROVED BY THE ENGINEER. HOWEVER, SHOULD THE PERCENT OF LOT DEVIATING FROM THE THICKNESS ACCEPTANCE LIMIT NOT EXCEED 40 PERCENT, UPON WRITTEN REQUEST OF THE CONTRACTOR THE LOT CAN BE LEFT IN PLACE WITHOUT BEING OVERLAID PROVIDED THAT PAYMENT IS ADJUSTED IN ACCORDANCE WITH TABLE 4-A.

THE PERCENT OF LOT AREA LESS THAN THE APPLICABLE ACCEPTANCE LIMIT SHALL BE DETERMINED FROM THE CALCULATED VALUE FOR THE TERM QL. THE TERM QL IS HERE DEFINED AS:

$$QL = \frac{(\text{AVERAGE LOT THICKNESS}) - (\text{THICKNESS ACCEPTANCE LIMIT})}{\text{AVERAGE RANGE}}$$

WHERE AVERAGE LOT THICKNESS IS THE AVERAGE OF THE TOTAL THICKNESS MEASUREMENTS OBTAINED FROM THE 15 LOT CORES, AVERAGE RANGE IS THE AVERAGE OF THE THREE R VALUES IN ONE LOT AND R IS THE ABSOLUTE DIFFERENCE BETWEEN THE SMALLEST AND LARGEST TOTAL THICKNESS VALUES IN EACH GROUP OF FIVE CONSECUTIVE CORES MEASURED.

WHEN THE TERM QL, CALCULATED FOR THE TOTAL THICKNESS FOR ANY LOT, IS WITHIN THE LIMITS SHOWN IN COLUMN A OF TABLE 4-A, THE PERCENT OF THE LOT AREA OUTSIDE THE THICKNESS ACCEPTANCE LIMIT IS INDICATED IN COLUMN B, AND THE PERCENT REDUCTION, IF ANY, TO BE APPLIED TO THE LOT IS SPECIFIED IN COLUMN C. WHEN A PERCENT REDUCTION IS INDICATED FOR A LOT, THE PERCENTAGE SHALL BE APPLIED TO THE COMPUTED LOT TONNAGE DETERMINED IN ACCORDANCE WITH ARTICLE 3.10.4.

TABLE 4-A. ADJUSTMENT OF PAYMENT PER LOT OF COMPLETED PAVEMENT AND UNDERLYING BITUMINOUS MIXTURES DUE TO NONCONFORMANCE TO THICKNESS REQUIREMENTS

COLUMN A QL	COLUMN B PERCENT OF LOT AREA OUTSIDE THICKNESS ACCEPTANCE LIMIT	COLUMN C REDUCTION OF PAYMENT PER LOT, PERCENT (SEE NOTE 1)
0.36	0 - 20	NONE
0.29	21 - 25	5
0.23	26 - 30	10
0.17	31 - 35	20
0.11	36 - 40	50
--	GREATER THAN 40	(SEE NOTE 2)

NOTE 1 - NOT APPLICABLE WHEN THE TERM QL IS CALCULATED TO DETERMINE IF THE TOP COURSE COMPLIES WITH THE MINIMUM THICKNESS REQUIREMENT.

NOTE 2 - REMOVE AND REPLACE OR OVERLAY.

THE TERM QL SHALL ALSO BE CALCULATED FOR THE TOP COURSE OF EACH LOT INDEPENDENTLY USING THE CORE THICKNESS VALUES FOR

THAT COURSE AND A MINIMUM THICKNESS ACCEPTANCE LIMIT OF 1.25 INCHES. WHEN THE QL VALUE, SO CALCULATED, IS LESS THAN 0.29 INDICATING THAT MORE THAN 25 PERCENT OF THE TOP COURSE IS OUTSIDE THE MINIMUM THICKNESS ACCEPTANCE LIMIT OF 1.25 INCHES, THE TOP COURSE IN THAT LOT SHALL BE REMOVED AND REPLACED OR OVERLAID, AND ANY PAYMENT REDUCTION FOR THAT LOT BASED ON TOTAL THICKNESS REQUIREMENTS SHALL NOT BE APPLIED.

WHEN AN UNACCEPTABLE LOT IS OVERLAID, THE OVERLAY SHALL BE OF THE TOP COURSE MIXTURE SPECIFIED FOR THAT LOT AND SHALL BE A MINIMUM OF ONE INCH IN THICKNESS IF THAT MIXTURE IS FABC AND 1 1/4 INCHES IN THICKNESS IF THAT MIXTURE IS MABC.

THE REPLACEMENT OR OVERLAY MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF THESE SPECIFICATIONS. PAYMENT FOR AN OVERLAID OR REPLACED LOT WILL ONLY BE MADE FOR THAT MATERIAL PLACED UP TO THE SPECIFIED TOTAL THICKNESS OF THE BITUMINOUS PAVEMENT STRUCTURE.

THE QUANTITY OF MATERIAL TO BE PAID FOR SHALL BE COMPUTED USING THE CALCULATED AVERAGE WEIGHT OF THE TOP COURSE MIXTURE, THE AREA OF THE LOT AND THE DIFFERENCE BETWEEN THE SPECIFIED TOTAL THICKNESS AND THE AVERAGE THICKNESS OF THE ORIGINAL 15 LOT CORES.

#### SURFACE REQUIREMENTS.

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THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

A. PERMISSABLE SURFACE VARIATIONS. THE SURFACE OF BITUMINOUS CONCRETE SURFACE COURSES WILL BE TESTED BY THE ENGINEER WITH A 10-FOOT ROLLING STRAIGHTEDGE THAT AUTOMATICALLY MARKS IN COLORED DYE, THE LENGTH OF PAVEMENT SURFACE, VARIATIONS WHICH EXCEED A TOLERANCE OF 1/8 INCH IN 10 FEET. BITUMINOUS CONCRETE SURFACE COURSE PLACED ON A NEW MAINLINE ROADWAY AND OVER BASE COURSE OF UNIFORM THICKNESS SHALL BE SO CONSTRUCTED THAT WHEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF PARAGRAPH C SPECIFIED BELOW. THE PERCENT OF MEASURED LENGTH OF LOT EXCEEDING THE SPECIFIED 1/8 INCH TOLERANCE SHALL NOT EXCEED THE ACCEPTABLE VALUE OF 1.3 PERCENT SPECIFIED IN TABLE 4-C. WHERE ANY COMPONENT MIXTURE OF THE BITUMINOUS STRUCTURE IS SPECIFIED TO BE OF A VARIABLE THICKNESS, IS CONSTRUCTED ADJOINING AN EXISTING PAVEMENT, OR PLACED IN A NON-MAINLINE AREA OF THE PROJECT, THE BITUMINOUS CONCRETE SURFACE COURSE WILL BE TESTED AND ACCEPTED IN ACCORDANCE WITH THE PROVISIONS OF PARAGRAPH D SPECIFIED BELOW.

B. CONTROL TESTING. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR AND SHALL CONDUCT SUCH CONTROL TESTING OF ALL PAVEMENTS DURING PLACEMENT AS MAY BE NECESSARY TO ASSURE COMPLIANCE WITH THE SPECIFIED SURFACE REQUIREMENT.

C. SURFACE TOLERANCE ACCEPTANCE PLAN. ANY REQUIRED SWEEPING OF THE PAVEMENT SURFACE PRIOR TO ACCEPTANCE TESTING SHALL BE PERFORMED BY THE CONTRACTOR AS PART OF THE WORK OF PAVEMENT CONSTRUCTION AND SHALL BE INCLUDED IN THE UNIT PRICE BID THEREFORE.

CONFORMANCE TO THE SURFACE TOLERANCE FOR BITUMINOUS CONCRETE SURFACE COURSES ON NEW MAINLINE ROADWAYS OVER BASE COURSES OF UNIFORM THICKNESSES WILL BE DETERMINED IN LOTS EQUAL TO THE TOTAL NUMBER OF TONS OF TOP OR SURFACE COURSE MIXTURE ACCEPTED AND PLACED ON A NEW MAINLINE ROADWAY EACH PRODUCTION DAY, LESS THE TONNAGE, EITHER FROM TICKET WEIGHTS OR CALCULATIONS, OF SUCH MIXTURE PLACED IN SHOULDER AREAS. WHEN THE TONNAGE OF BITUMINOUS CONCRETE SURFACE COURSE PLACED IN A SHOULDER AREA CANNOT BE READILY DETERMINED FROM WEIGHT TICKETS, IT SHALL BE CALCULATED BASED ON THE SQUARE YARDS OF SHOULDER AREA PAVED ON THE GIVEN DAY, THE SPECIFIED THICKNESS, AND THE AVERAGE WEIGHT PER INCH SQUARE YARD OF SURFACE COURSE.

THE ACCEPTANCE OF A LOT WILL BE BASED ON THE PERCENTAGE OF THE TOTAL LENGTH OF THE LOT HAVING SURFACE VARIATION EXCEEDING 1/8 INCH IN 10 FEET, THIS PERCENT NON-COMPLIANCE BEING DEFINED AS THE LOT PERCENT DEFECTIVE LENGTH. LOT PERCENT DEFECTIVE LENGTH WILL BE COMPUTED BY ADDING THE LENGTHS OF INDIVIDUAL SURFACE DEFECTS EXCEEDING THE SPECIFIED TOLERANCE, DIVIDING THIS SUM BY THE LENGTH OF PAVEMENT TESTED, AND MULTIPLYING BY 100 TO CONVERT TO PERCENT.

THE FULL EXTENT OF THE LOT WILL BE TESTED IN THE LONGITUDINAL DIRECTION. THE TRANSVERSE LOCATION OF THE TEST WILL GENERALLY BE IN THE WHEELPATHS OF VEHICLE TRAVEL, HERE DEFINED AS THE TWO IMAGINARY LINES LOCATED APPROXIMATELY 3 FEET ON EACH SIDE OF THE CENTERLINE OF THE LANE AND EXTENDING FOR THE FULL LENGTH OF THE LANE. THE WHEELPATH OF THE TEST WILL BE DETERMINED RANDOMLY AND VARIED EVERY 300 TO 400 FEET.

THE MINIMUM NUMBER OF FULL-LENGTH TESTS REQUIRED TO DETERMINE THE LOT PERCENT DEFECTIVE LENGTH WILL BE AS SHOWN IN TABLE 4-B. THE 25 PERCENT SAMPLING PLAN, WHEREIN THE NUMBER OF TESTS IS AT LEAST EQUAL TO ONE-FOURTH OF THE NUMBER OF WHEELPATHS IN A DAY'S PRODUCTION, WILL BE USED INITIALLY. BITUMINOUS CONCRETE SURFACE COURSE WILL BE ACCEPTED WHEN THE LOT PERCENT DEFECTIVE LENGTH IS EQUAL TO OR LESS THAN 1.0 BASED ON THE 25 PERCENT SAMPLING PLAN. IF A LOT PERCENT DEFECTIVE LENGTH GREATER THAN 1.0 IS INDICATED BY THE TESTS OF THE 25 PERCENT SAMPLING PLAN, ADDITIONAL TESTS WILL BE PERFORMED SUCH THAT THE TOTAL NUMBER OF TESTS PERFORMED EQUALS THAT SHOWN FOR THE 50 PERCENT SAMPLING PLAN. IF THE LOT PERCENT DEFECTIVE LENGTH EXCEEDS 3.4 PERCENT, EACH WHEELPATH WILL BE TESTED.

TABLE 4-B. SURFACE TOLERANCE ACCEPTANCE TESTING  
SCHEDULE FOR BITUMINOUS CONCRETE  
SURFACE COURSE

SAMPLING PLAN	CORRESPONDING NUMBER OF TESTS				LOT PERCENT DEFECTIVE LENGTH MEASURED	PAYMENT REDUCTION OR RETEST REQUIREMENT
	ONE LANE	TWO LANES	THREE LANES	FOUR LANES		
25%	--	1	2	2	0 TO 1.0	NONE
					1.1 TO 3.4	PERFORM 50% TESTING
					3.5 OR MORE	TEST EACH WHEELPATH
50%	1	2	3	4	0 TO 3.4	PAY AS PER TABLE 4-C
					3.5 OR MORE	TEST EACH WHEELPATH
100%	2	4	6	8	ALL VALUES	PAY AS PER TABLE 4-C

WHEN MORE THAN ONE TEST IS SPECIFIED IN TABLE 4-B, THE INITIAL AND INTERMEDIATE TRANSVERSE LOCATIONS OF EACH TEST WILL BE DETERMINED RANDOMLY. IN NO CASE WILL EXACT DUPLICATE TESTS BE PERFORMED. WHEN TESTING OF ALL WHEELPATHS IS SPECIFIED, NO INTERMEDIATE TRANSVERSE VARIATION OF THE INDIVIDUAL TESTS WILL BE MADE. THE RESULTS OF PRECEDING TESTS WILL NOT BE INCLUDED IN THE COMPUTATION OF LOT PERCENT DEFECTIVE LENGTH WHEN APPLICATION OF THE 100 PERCENT SAMPLING PLAN IS INDICATED.

THE NUMBER OF TESTS PERFORMED BEYOND THE MINIMUMS SPECIFIED IN TABLE 4-B, IF ANY, WILL BE COMPLETELY AT THE OPTION OF THE ENGINEER. IN ADDITION TO THE TESTS RUN ON RANDOMLY SELECTED SITES, THE ENGINEER RESERVES THE RIGHT TO TEST ANY AREA WHICH APPEARS DEFECTIVE, INCLUDING A PREVIOUS DAY'S PRODUCTION WHICH IS DAMAGED BY THE CONTRACTOR'S OPERATION.

IF THE LOT PERCENT DEFECTIVE LENGTH EXCEEDS 1.3 PERCENT, AND IF THE CONTRACTOR ELECTS NOT TO REMOVE AND REPLACE THE SURFACE COURSE, THE LOT WILL BE ACCEPTED UPON WRITTEN REQUEST OF THE CONTRACTOR PROVIDED THAT PAYMENT FOR THE LOT IS ADJUSTED IN ACCORDANCE WITH TABLE 4-C.



TABLE 4-C. ADJUSTMENT OF PAYMENT PER LOT OF BITUMINOUS CONCRETE SURFACE COURSE DUE TO NON-CONFORMANCE TO SURFACE REQUIREMENTS.

LOT PERCENT DEFECTIVE LENGTH	REDUCTION OF PAYMENT PER LOT, PERCENT
0 - 1.3	NONE
1.4 - 2.3	12
2.4 - 3.4	30

IF THE LOT PERCENT DEFECTIVE LENGTH EXCEEDS THE MAXIMUM VALUE OF 3.4 PERCENT SHOWN IN TABLE 4-C, THE ENGINEER MAY ORDER ANY OR ALL OF THE MATERIAL IN THE LOT TO BE REMOVED, REPLACED, AND RETESTED FOR ACCEPTANCE. IF THE ENGINEER ALLOWS THE SURFACE COURSE MATERIAL TO REMAIN IN PLACE, NO PAYMENT WILL BE MADE FOR SAID MATERIAL.

D. OTHER TESTING. BITUMINOUS SURFACE COURSES, INCLUDING SHOULDERS, PLACED ON OTHER THAN NEW MAINLINE ROADWAYS OVER BASE COURSES OF UNIFORM THICKNESSES WILL NOT BE SUBJECT TO THE FOREGOING SURFACE TOLERANCE ACCEPTANCE REQUIREMENTS.

THE ENGINEER RESERVES THE RIGHT, HOWEVER, TO TEST THE SURFACE OF ANY OR ALL PORTIONS OF THE TRAVELED WAY OF THE PROJECT (INCLUDING, BUT NOT LIMITED TO, SUCH AREAS AS RAMPS AND FRONTAGE ROADS) TO DETERMINE THE ADEQUACY OF THE CONTRACTOR'S PAVING METHODS AND/OR EQUIPMENT. THE CONTRACTOR'S PAVING OPERATION SHALL BE CONSIDERED ACCEPTABLE IF THE SURFACE IS IN SUBSTANTIAL CONFORMITY WITH A 1/8 INCH IN 10 FOOT SURFACE TOLERANCE. SHOULD THE SURFACE BE FOUND NOT TO BE IN CONFORMITY, THE ENGINEER RESERVES THE RIGHT TO DIRECT THAT PAVING OPERATIONS BE DISCONTINUED UNTIL MUTUALLY ACCEPTABLE PAVING METHODS OR EQUIPMENT ARE UTILIZED.

THE CONTRACTOR WILL NOT BE GRANTED ADDITIONAL COMPENSATION, EXTENSION OF TIME OR OTHER CONCESSION BECAUSE OF REVISED METHODS OR EQUIPMENT NECESSARY TO PRODUCE PAVEMENT IN SUBSTANTIAL CONFORMITY WITH AN 1/8 INCH IN 10 FEET SURFACE TOLERANCE.

#### 3.10.4. QUANTITY AND PAYMENT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED READ AS FOLLOWS:

THE TONNAGE OF BITUMINOUS CONCRETE DELIVERED AND USED SHALL BE DETERMINED WHETHER PAYMENT IS PROVIDED TO BE MADE ON THE TON OR SQUARE YARD BASIS. IN COMPUTING THE TONNAGE, PROVEN

TRUCK WEIGHTS SHALL GOVERN. THE NET WEIGHT OF MIXTURE DELIVERED IN EACH TRUCKLOAD SHALL BE DETERMINED BY ONE OF THE FOLLOWING METHODS:

A WEIGH TICKET PRINTED BY AN APPROVED AUTOMATIC PRINTER SYSTEM USED IN CONJUNCTION WITH AN AUTOMATED BATCHING AND MIXING SYSTEM. THE PRINTED TICKET SHALL SHOW THE INDIVIDUAL WEIGHTS OF THE VARIOUS COMPONENTS OF THE BITUMINOUS MIXTURE IN A BATCH, THE TOTAL WEIGHT OF EACH BATCH, AND THE SUM OF ALL BATCH WEIGHTS IN THE TRUCK LOAD. TO EACH WEIGH TICKET SHALL BE AFFIXED THE SIGNATURE AND OFFICIAL SEAL OF A CERTIFIED WEIGHMASTER.

A WEIGH TICKET PRINTED BY AN AUTOMATIC SCALE SHOWING THE TARE AND GROSS WEIGHTS OF THE TRUCK AS DETERMINED FOR EACH TRIP AND THE TIME AND DATE INDICATING WHEN THE TRUCK WAS TARED AND WHEN IT DEPARTED FROM THE PLANT. TIME AND DATE MAY BE PRINTED AUTOMATICALLY BY A TIME CLOCK. HOWEVER, THE NET WEIGHT MUST BE DOCUMENTED ON EACH DELIVERY TICKET BY A CERTIFIED WEIGHMASTER. FULLY AUTOMATIC SCALES THAT PRINT GROSS, TARE AND NET WEIGHTS WILL BE ACCEPTABLE IF THE SYSTEM IS OF AN APPROVED TYPE IN ACCORDANCE WITH THE REQUIREMENTS OF THE DEPARTMENT AND THE OFFICE OF WEIGHTS AND MEASURES, DIVISION OF CONSUMER AFFAIRS, DEPARTMENT OF LAW AND PUBLIC SAFETY. THE SIGNATURE AND OFFICIAL SEAL OF A CERTIFIED WEIGHMASTER SHALL BE AFFIXED TO EACH WEIGH TICKET.

AUTOMATIC TRUCK SCALE WEIGHING DEVICES MUST BE APPROVED AND CERTIFIED BY THE WEIGHTS AND MEASURES OFFICE, DIVISION OF CONSUMER AFFAIRS, DEPARTMENT OF LAW AND PUBLIC SAFETY.

IN THE EVENT OF BREAKDOWN OF THE AUTOMATED PRINTING SYSTEM, WEIGH TICKETS SHOWING THE GROSS, TARE AND NET WEIGHT OF EACH TRUCK AS ENTERED AND CERTIFIED BY A WEIGHMASTER WILL BE ACCEPTED FOR A PERIOD NOT EXCEEDING THE NECESSARY REPAIR TIME AS CERTIFIED BY A LICENSED REPAIRMAN.

A WEIGH TICKET SHALL BE FURNISHED TO THE DEPARTMENT'S REPRESENTATIVE ON THE PROJECT. NO MATERIAL WILL BE ACCEPTED UNLESS ACCOMPANIED BY SUCH A WEIGH TICKET, WHICH SHALL BE COMPLETELY LEGIBLE AND CLEARLY INDICATE THE TITLE OF THE PROJECT FOR WHICH DELIVERY IS INTENDED, THE TIME AND DATE, TRUCK NUMBER, LOT NUMBER AND MIX NUMBER OF MATERIAL BEING FURNISHED, THE INDIVIDUAL BATCH WEIGHTS AND OR THE TOTAL NET WEIGHT IN EACH TRUCK LOAD. THE CONTRACTOR SHALL FURNISH ALL WEIGH TICKETS.

ALL ADJUSTMENTS OF PAYMENT QUANTITIES OF BITUMINOUS CONCRETE PAVEMENT AND OF BITUMINOUS-STABILIZED BASE COURSE BECAUSE OF NONCONFORMANCE TO THE JOB MIX FORMULA, STABILITY, AIR VOIDS, SPECIFIED THICKNESS AND SURFACE TOLERANCE REQUIREMENTS, SHALL BE CUMULATIVE. EACH ADJUSTMENT SHALL BE COMPUTED AS A FUNCTION OF THE FULL ORIGINAL LOT QUANTITY. THE COMPUTATION OF ADJUSTMENTS

MAY REQUIRE CONVERSIONS BETWEEN TONNAGE AND SQUARE YARDS. SUCH CONVERSIONS WILL BE MADE USING THE COMPUTED ACTUAL WEIGHT PER SQUARE YARD ESTABLISHED IN ACCORDANCE WITH ARTICLE 3.10.3.

ADJUSTMENT OF PAYMENT QUANTITIES FOR THE FULL DEPTH OF BITUMINOUS CONCRETE WILL BE PROPORTIONED TO THE VARIOUS PAY ITEMS. APPORTIONING OF THE ADJUSTMENT WILL BE BASED ON THE RATIOS OF THE REQUIRED THICKNESSES OF THE VARIOUS PAVEMENT COURSES TO THE REQUIRED THICKNESS OF THE FULL DEPTH SECTION.

THE QUANTITY OF ASPHALT CEMENT FOR WHICH PAYMENT WILL BE MADE WILL BE THE PRODUCT OF THE ASPHALT CEMENT CONTENT PERCENTAGE IN THE APPROVED JOB MIX FORMULA AND THE TONNAGE OF BITUMINOUS CONCRETE ACCEPTED AND COMPLETE IN PLACE.

THE QUANTITY OF TACK COAT AND PRIME COAT FOR WHICH PAYMENT WILL BE MADE WILL BE THE NUMBER OF GALLONS USED, MEASURED AT 60 DEGREES F., AS DETERMINED BY THE TEMPERATURE-VOLUME CORRECTIONS SPECIFIED IN ARTICLE 9.2.1, TABLE 38 FOR ASPHALT PRODUCTS, TABLE 40 FOR TAR PRODUCTS AND TABLE 41 FOR EMULSIFIED ASPHALT.

THE QUANTITIES OF BITUMINOUS CONCRETE SURFACE COURSES OF THE VARIOUS TYPES WILL BE PAID FOR IN ACCORDANCE WITH THE FOLLOWING:

WHERE A VARIABLE THICKNESS OF BITUMINOUS CONCRETE IS SPECIFIED, PAYMENT WILL BE MADE AT THE RESPECTIVE CONTRACT UNIT PRICE PER TON OF MIXTURE ACCEPTED AND COMPLETE IN PLACE; PROVIDED HOWEVER, PAYMENT FOR PAVEMENT NOT CONFORMING TO THE REQUIREMENTS FOR JOB MIX FORMULA, STABILITY, AND AIR VOIDS, AS SPECIFIED IN ARTICLE 3.10.2, WILL BE ADJUSTED AS SPECIFIED THEREIN.

WHERE A UNIFORM THICKNESS OF BITUMINOUS CONCRETE PAVEMENT IS SPECIFIED, PAYMENT WILL BE MADE AT THE RESPECTIVE CONTRACT UNIT PRICE PER TON OF MIXTURE ACCEPTED AND COMPLETE IN PLACE; PROVIDED HOWEVER, PAYMENT FOR PAVEMENT NOT CONFORMING TO THE REQUIREMENTS FOR JOB MIX FORMULA, STABILITY, AIR VOIDS, AND THICKNESS AS SPECIFIED IN ARTICLES 3.10.2 AND 3.10.3 WILL BE ADJUSTED AS SPECIFIED THEREIN.

WHERE A UNIFORM THICKNESS OF BITUMINOUS CONCRETE PAVEMENT SURFACE COURSE ON NEW MAINLINE ROADWAYS OVER BASE COURSES OF UNIFORM THICKNESSES IS SPECIFIED, PAYMENT FOR THE SURFACE PAVEMENT ACCEPTED AND COMPLETE IN PLACE, WILL BE MADE AS HEREINBEFORE SPECIFIED; PROVIDED HOWEVER, PAYMENT FOR SURFACE PAVEMENT NOT MEETING THE SURFACE TOLERANCE REQUIREMENTS SPECIFIED IN ARTICLE 3.10.3 WILL BE SUBJECT TO THE ADDITIONAL SPECIFIED ADJUSTMENT AS SPECIFIED THEREIN.

PAYMENT FOR HOT-MIXED BITUMINOUS CONCRETE SURFACE COURSES FA-BC-1, FA-BC-2, CA-BC-1, CA-BC-2, MA-BC-1, MA-BC-2, SP-1, SP-2, AND ALL BOTTOM COURSES WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN TONS, AT THE PRICES PER TON BID FOR THE ITEMS PAVEMENT TYPE FA-BC, CA-BC, MA-BC, AND SP RESPECTIVELY, IN THE PROPOSAL, WHICH PRICES SHALL INCLUDE THE COST OF THE BITUMINOUS CONCRETE PAVEMENT COMPLETED, LABOR, EQUIPMENT, ALL MATERIALS EXCEPT ASPHALT CEMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

PAYMENT FOR ASPHALT CEMENT WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED MEASURED IN TONS, AT THE PRICE PER TON BID FOR THE ITEM ASPHALT CEMENT IN THE PROPOSAL, WHICH PRICE AND PAYMENT WILL BE FULL COMPENSATION, EXCEPT FOR ASPHALT PRICE ADJUSTMENT, FOR FURNISHING ALL ASPHALT CEMENT NECESSARY TO COMPLETE THE ITEM.

PAYMENT FOR TACK COAT AND PRIME COAT WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN GALLONS, AT THE CONTRACT UNIT PRICE PER GALLON, WHICH PRICE AND PAYMENT WILL BE FULL COMPENSATION, EXCEPT FOR ASPHALT PRICE ADJUSTMENT, FOR FURNISHING AND APPLYING TACK COAT AND PRIME COAT AS REQUIRED.

PAYMENT FOR ASPHALT PRICE ADJUSTMENT FOR ASPHALT CEMENT WILL BE DETERMINED BY THE FORMULA PRESCRIBED BELOW:

FORMULA:  $A = B \times I \times T$

DEFINITIONS: A = ASPHALT PRICE ADJUSTMENT  
B = BID PRICE FOR ASPHALT CEMENT  
I = ASPHALT PRICE ADJUSTMENT FACTOR  
T = TONS OF ASPHALT CEMENT FURNISHED

PAYMENT FOR ASPHALT PRICE ADJUSTMENT FOR TACK COAT AND PRIME COAT WILL BE DETERMINED BY THE FORMULA PRESCRIBED BELOW:

FORMULA:  $A = (B \times I \times C \times M \times G)$

DEFINITIONS:  
A = ASPHALT PRICE ADJUSTMENT  
B = BID PRICE FOR TACK COAT/PRIME COAT  
I = ASPHALT PRICE ADJUSTMENT FACTOR  
C = PETROLEUM CONTENT OF THE TACK COAT AND PRIME COAT IN PERCENTAGE BY VOLUME: 100% FOR CUTBACKS, 90% FOR INVERTED EMULSIONS AND 60% FOR RS OR SIMILAR TYPE EMULSIONS  
M = PERCENTAGE OF BID PRICE APPLICABLE TO MATERIALS ONLY - USE 82%  
G = GALLONS OF TACK COAT AND PRIME COAT FURNISHED AND APPLIED

THE ASPHALT PRICE ADJUSTMENT FACTOR FOR A GIVEN MONTH WILL BE A PERCENTAGE INCREASE OR DECREASE DETERMINED BY COMPARING THAT MONTH'S MONTHLY ASPHALT PRICE INDEX WITH THE BASIC ASPHALT PRICE INDEX. THE MONTHLY ASPHALT PRICE INDEX WILL BE THE AVERAGE OF QUOTATIONS FROM REFINERIES SERVING THE AREA IN WHICH THE PROJECT IS LOCATED AND WILL BE DETERMINED BY THE DEPARTMENT EACH MONTH.

FOR THAT PART OF THE STATE NORTH OF AND INCLUDING ROUTE 195, THE INDEX WILL BE BASED ON QUOTATIONS FROM THE CHEVRON, EXXON AND WEST BANK REFINERIES. FOR THAT PART OF THE STATE SOUTH OF ROUTE 195, THE INDEX WILL BE BASED ON QUOTATIONS FROM ARCO, CHEVRON AND WEST BANK REFINERIES.

THE BASIC ASPHALT PRICE INDEX WILL BE THE MONTHLY ASPHALT PRICE INDEX FOR THE MONTH IN WHICH BIDS ARE RECEIVED.

SHOULD THE ASPHALT PRICE ADJUSTMENT FACTOR INDICATE AN INCREASE OF 50 PERCENT OR MORE, THE CONTRACTOR SHALL NOT FURNISH BITUMINOUS CONCRETE FOR THE PROJECT WITHOUT WRITTEN APPROVAL OF THE ENGINEER. PAYMENT FOR ASPHALT CEMENT, WILL NOT EXCEED 150 PERCENT OF THE BID PRICE WITHOUT SUCH WRITTEN APPROVAL. ASPHALT PRICE ADJUSTMENTS WILL NOT BE ALLOWED FOR ASPHALT ITEMS FURNISHED AFTER THE COMPLETION DATE FOR THE ENTIRE PROJECT AS SPECIFIED IN ARTICLE 1.7.2, OR AFTER SUCH OTHER TIME AS MAY BE GRANTED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.7.8.

SHOULD THE ASPHALT PRICE ADJUSTMENT FACTOR FOR A GIVEN MONTH SHOW A PERCENTAGE DECREASE BY COMPARING THAT MONTH'S MONTHLY INDEX WITH THE BASIC ASPHALT PRICE INDEX, THEN PREVIOUSLY ALLOWED PAYMENT OF ASPHALT PRICE ADJUSTMENT WILL BE DECREASED CORRESPONDINGLY. HOWEVER, SHOULD THE NET RESULT OF ALL ASPHALT PRICE ADJUSTMENTS FOR THE PROJECT BE NEGATIVE (IE, MONTHLY ASPHALT PRICE INDEX DURING MONTHS OF PAVING AVERAGING LESS THAN THE BASIC ASPHALT PRICE INDEX) THEN THE RESULTANT NEGATIVE ASPHALT PRICE ADJUSTMENT SHALL BE RECOVERED FROM THE CONTRACTOR IN THE FORM OF A LUMP SUM CREDIT TO BE DETERMINED BY THE ENGINEER AND PROCESSED BY CHANGE ORDER.

AN ESTIMATED LUMP SUM AMOUNT TO COVER THE ASPHALT PRICE ADJUSTMENT HAS BEEN INCLUDED IN THE PROPOSAL. PAYMENTS FOR ASPHALT PRICE ADJUSTMENT INCREASES WILL BE MADE FROM THIS LUMP SUM AMOUNT.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 10A

OPEN GRADED PLANT MIX SURFACE COURSE

3.10A.1. DESCRIPTION.

OPEN GRADED PLANT MIX SURFACE COURSE SHALL CONSIST OF THE CONSTRUCTION OF A HOT MIX HAVING HIGH AIR VOIDS AND ASPHALT CONTENT ON PREVIOUSLY CONSTRUCTED BASE COURSES.

3.10A.2. MATERIALS.

OPEN GRADED PLANT MIX SURFACE COURSE SHALL BE PREPARED FROM THE FOLLOWING MATERIALS:

COARSE AGGREGATE SHALL BE GNEISS, TRAP ROCK, OR CRUSHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 OR 8.5.6 EXCEPT THAT CRUSHED GRAVEL SHALL NOT CONTAIN MORE THAN 50 PERCENT CARBONATES (30 PERCENT ON FEDERAL AID PROJECTS).

FINE AGGREGATE SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 8.5.12.

MINERAL FILLER SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 8.5.34.

ASPHALT CEMENT SHALL BE GRADE AC-20 CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.1.2 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

COMPOSITION OF MIXTURE. THE INGREDIENTS SHALL BE COMBINED TO PRODUCE A MIXTURE MEETING THE FOLLOWING REQUIREMENTS:

<u>SIEVE SIZES</u>	<u>TOTAL PERCENT PASSING BY WEIGHT</u>
1/2 IN.	100
3/8 IN.	80-100
NO. 4	30-50
NO. 8	5-15
NO. 200	2-5 (SEE NOTE 1)
ASPHALT CEMENT, PERCENT BY WEIGHT OF DRY AGGREGATE	5.7-7 (SEE NOTE 2)

NOTE 1: INCLUDED IN THE PERCENT PASSING THE NO. 200 SIEVE (2-5%) A MINIMUM OF 2 PERCENT SHALL BE MINERAL FILLER CONFORMING TO ARTICLE 8.5.34.

NOTE 2: THE SPECIFIC ASPHALT CONTENT FOR THE JOB MIX FORMULA SHALL BE DETERMINED BY THE CONTRACTOR. 1,000 GRAM TRIAL BATCHES SHALL BE MIXED IN THE PRODUCERS LABORATORY AT 250 PLUS OR MINUS 10 DEG. F. AND PLACED ON AN 8 TO 9 INCH DIA-METER HEAT RESISTANCE CLEAR PYREX DISH. THE MIXTURE SHALL BE SPREAD ON THE DISH WITH A MINIMUM OF MANIPULATION. THE DISH SHALL IMMEDIATELY BE PLACED IN AN OVEN AT 255 PLUS OR MINUS 5 DEG. F. FOR A PERIOD OF ONE HOUR. AFTER ONE HOUR THE BOTTOM OF THE PLATE SHALL BE EXAMINED. THE MIXTURE WITH A SLIGHT PUDDLE AT POINTS OF CONTACT BETWEEN THE AGGREGATE AND THE GLASS PLATE SHALL BE SELECTED. PHOTOGRAPHS OF A DESIRABLE DRAINAGE CONDITION ARE ON FILE IN THE DEPARTMENT'S LABORATORY AND CAN BE OBTAINED UPON REQUEST.

THE FORMULA SELECTED AND SAMPLES OF ALL MATERIALS USED IN THE FINAL MIXTURE DESIGN SHALL BE SUBMITTED BY THE PRODUCER TO THE DEPARTMENT OF TRANSPORTATION'S LABORATORY, BITUMINOUS SECTION, 999 PARKWAY AVE., TRENTON, NEW JERSEY AT LEAST 3 WEEKS PRIOR TO THE INITIAL PRODUCTION DATE.

#### SAMPLING REQUIREMENTS

COARSE AGGREGATE	35 LBS.
FINE AGGREGATE	35 LBS.
MINERAL FILLER	5 LBS.
ASPHALT CEMENT	2 QTS.

THE SUBMITTED MATERIALS WILL BE TESTED FOR VERIFICATION OF THE PRODUCER'S MIX DESIGN AND FOR RESISTANCE TO EFFECTS OF WATER (A.A.S.H.T.O. DESIGNATION T 165 AND T 167 IMMERSION-COMPRESSION TEST\*) BY THE DEPARTMENT LABORATORY.

\* SAMPLES WILL BE MOLDED AT 255 DEGREES F USING A PRESSURE OF 2000 PSI. AFTER 4-DAY IMMERSION AT 120 F, THE INDEX OF RETAINED STRENGTH SHALL NOT BE LESS THAN 50 PERCENT. SHOULD LABORATORY TESTS ESTABLISH THE NEED FOR A HEAT-STABLE ANTI-STRIPPING ADDITIVE THE AMOUNT REQUIRED WILL BE SO SPECIFIED BY THE LABORATORY.

THE MIXTURE SHALL HAVE A MINIMUM VOID CONTENT OF 15% AS DETERMINED IN FEDERAL HIGHWAY ADMINISTRATION REPORT NO. FHWA RD-74-2, ENTITLED "DESIGN OF OPEN GRADED ASPHALT FRICTION COURSES".

VERIFICATION OF THE MINIMUM VOID CONTENT SHALL BE MADE BY THE DEPARTMENT LABORATORY.

DURING PRODUCTION OPERATIONS FIVE RANDOM SAMPLES WILL BE TAKEN FROM EACH LOT OF APPROXIMATELY 1000 TONS TO VERIFY MIXTURE COMPLIANCE WITH COMPOSITION REQUIREMENTS. WHEN A LOT IS NECESSARILY LESS THAN 1000 TONS, SAMPLES SHALL BE TAKEN AT RANDOM AT THE RATE OF ONE SAMPLE FOR EACH 200 TONS OR FRACTION THEREOF. SAMPLING AND TESTING FOR MIXTURE COMPOSITION SHALL BE IN ACCORDANCE WITH ARTICLE 9.1.22 AND 9.1.23.

### 3.10A.3. METHODS OF CONSTRUCTION.

THE PROVISIONS FOR BITUMINOUS MIXING PLANT, BITUMINOUS CONCRETE PAVERS, VEHICLES FOR TRANSPORTING BITUMINOUS MIXTURES, ROLLER AND CONSTRUCTION OF ARTICLE 3.10.3 SHALL APPLY TO OPEN GRADED PLANT MIX SURFACE COURSE WITH THE FOLLOWING EXCEPTIONS:

THE OPEN GRADED MIX SHALL BE TRANSPORTED TO THE JOB SITE IN CLEAN VEHICLES WITH SMOOTH DUMP BEDS THAT HAVE BEEN SPRAYED WITH A NON-PETROLEUM RELEASE AGENT. MINERAL FILLERS, FINE AGGREGATES, SLAG DUST, ETC. SHALL NOT BE USED TO DUST TRUCK BEDS. THE MIX SHALL BE COVERED DURING TRANSPORTATION TO PREVENT COOLING AND THE FORMATION OF LUMPS THAT COULD DISTORT THE ROADWAY SURFACE. THE CONTRACTOR IS CAUTIONED THAT LONG HAULS, PARTICULARLY THOSE IN EXCESS OF 30 MILES, MAY RESULT IN SEPARATION OF THE MIX AND CONSEQUENT REJECTION BY THE ENGINEER.

HAND PLACING SHALL BE AVOIDED EXCEPT WHERE ABSOLUTELY NECESSARY. OPEN-GRADED MIXES NOT ONLY ARE DIFFICULT TO PLACE AND WORK BY HAND, BUT COOL SO RAPIDLY THAT EXCESS TIME USED FOR PLACING BY HAND MAY RESULT IN A LACK OF BOND BETWEEN THE PARTICLES OF AGGREGATE BY THE TIME THE MIX IS READY TO ROLL.

THE LAYING TEMPERATURE OF THE MIX SHALL BE NO LESS THAN 225 DEGREES F.

AMBIENT TEMPERATURE SHALL BE 60 DEGREES F. MINIMUM.

MAT THICKNESS SHALL BE 3/4 INCH PLUS OR MINUS 1/4 INCH.

THE TEMPERATURE OF THE MIXTURE AT DISCHARGE FROM THE PLANT SHALL BE MAINTAINED BETWEEN 240 AND 270 DEGREES F.

IMMEDIATELY AFTER SPREADING AND STRIKE-OFF AND WHILE STILL HOT, THE OPEN-GRADED SURFACE COURSE SHALL BE COMPACTED BY



A MINIMUM OF ONE PASS OF A TWO-AXLE OR THREE-AXLE TANDEM ROLLER CONFORMING TO THE REQUIREMENTS OF ARTICLE 3.10.3. ADDITIONAL ROLLING SHALL BE DONE IF AND AS DIRECTED BY THE ENGINEER TO FIRMLY SET THE AGGREGATE IN THE SURFACE.

IN ORDER TO ASCERTAIN THE ACTUAL THICKNESS OF THE COMPLETED OPEN GRADED PLANT MIX SURFACE COURSE PAVEMENT, THE DEPARTMENT RESERVES THE RIGHT TO SECURE DRILLED CORES FROM SUCH PAVEMENTS AND AT SUCH LOCATIONS AS MAY BE DIRECTED BY THE ENGINEER.

IF, IN THE OPINION OF THE ENGINEER, CORE MEASUREMENTS OF THE COMPLETED PAVEMENT INDICATE A SIGNIFICANT VARIATION FROM THE PRESCRIBED THICKNESS, THE CONTRACTOR SHALL RECONSTRUCT OR REMOVE AND REPLACE THE PAVEMENT TO THE PRESCRIBED THICKNESS AS DIRECTED BY THE ENGINEER AND AT NO ADDITIONAL COST TO THE STATE.

#### 3.10A.4. QUANTITY AND PAYMENT.

PAYMENT FOR OPEN-GRADED PLANT MIX SURFACE COURSE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN TONS, AT THE PRICE PER TON BID FOR THE ITEM OPEN-GRADED PLANT MIX SURFACE COURSE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF BITUMINOUS CONCRETE PAVEMENT COMPLETED, LABOR, EQUIPMENT, ALL MATERIALS EXCEPT ASPHALT CEMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

ASPHALT CEMENT AND ASPHALT PRICE ADJUSTMENT WILL BE MEASURED AND PAID FOR AS SPECIFIED IN ARTICLE 3.10.4.

### SECTION 11

#### BITUMINOUS CONCRETE SURFACE COURSE, COLD-MIXED

#### 3.11.2 MATERIALS.

##### COARSE AGGREGATE.

THE FIRST AND SECOND PARAGRAPHS UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE FOR TOP COURSE (TOTAL RETAINED ON NO. 10 SIEVE) SHALL BE BROKEN STONE CONFORMING TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5 EXCEPT THAT THE MAXIMUM ALLOWABLE PERCENTAGE OF WEAR SHALL BE 4.5 FOR ARGILLITE AND CARBONATE ROCK. BROKEN STONE OF ONLY ONE TYPE AND FROM ONLY ONE SOURCE SHALL BE USED IN THE TOP COURSE ON ANY ONE CONTRACT UNLESS OTHERWISE APPROVED BY THE ENGINEER.

COARSE AGGREGATE FOR BOTTOM COURSE (TOTAL RETAINED ON NO. 10 SIEVE) SHALL BE BROKEN STONE CONFORMING TO THE TYPES AND REQUIREMENTS OF ARTICLE 8.5.5.

### 3.11.3 METHODS OF CONSTRUCTION.

#### CONSTRUCTION.

THIS HEADING UNDER THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE SUBHEADINGS AS FOLLOWS:

#### CONDITIONING EXISTING SURFACE.

IN THE TEXT UNDER THIS SUB-HEADING, ASPHALTIC OIL, GRADE RC-2 OR 3 IS CHANGED TO READ CUT-BACK ASPHALT, GRADE RC-250.

## SECTION 12

### CONCRETE SURFACE PAVEMENT

### 3.12.2 MATERIALS.

THE FIRST SENTENCE OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CLASS B-1 CONCRETE CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN ART. 4.1.2 SHALL BE USED WHERE DESIGNATED ON THE PLANS AS HIGH EARLY STRENGTH.

THE FIRST PARAGRAPH ON PAGE 192 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF THE AIR-ENTRAINING ADMIXTURE AND THE METHODS GOVERNING ITS USE SHALL BE SUCH AS TO PRODUCE IN THE CONCRETE NOT LESS THAN 4.5 AND NOT MORE THAN 7.5 PERCENT OF ENTRAINED AIR AS DETERMINED BY THE PROVISIONS OF CURRENT A.A.S.H.T.O. DESIGNATION T152, AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE PRESSURE METHOD. THE AMOUNT OF ENTRAINED AIR SHALL BE WITHIN THESE PERCENTAGE LIMITS AFTER IT IS IN PLACE IN THE PROJECT IRRESPECTIVE OF THE METHOD OF OBTAINING THE AIR ENTRAINMENT AND OF THE METHODS AND EQUIPMENT USED FOR MIXING THE CONCRETE.

THE FIFTH PARAGRAPH ON PAGE 192 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE SHALL BE BROKEN STONE OF ARGILLITE, GRANITE, GNEISS, QUARTZITE OR TRAP ROCK, OR WASHED GRAVEL, CONFORMING TO THE REQUIREMENTS OF ART. 8.5.5 AND 8.5.6, RESPECTIVELY.

### 2.12.3 METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

#### HANDLING, MEASURING AND BATCHING MATERIALS.

THE LAST SENTENCE ON PAGE 193 AND THE FIRST PARAGRAPH ON PAGE 194 ARE DELETED.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH ON PAGE 194 IS CHANGED TO READ AS FOLLOWS:

AGGREGATES THAT HAVE BECOME MIXED WITH EARTH OR OTHER FOREIGN MATERIALS IN EXCESS OF THE LIMITS STIPULATED IN ARTICLE 8.5.6, SHALL NOT BE USED, IRRESPECTIVE OF APPROVAL AT THE SOURCE.

#### MIXING.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

FIVE METHODS OF MIXING AS HEREINAFTER DESCRIBED ARE PERMISSIBLE, I. E., (1) MIXING ON THE PROJECT IN BATCH (PAVING) MIXERS, (2) MIXING ON THE PROJECT IN TRUCK MIXERS, (3) MIXING AT A CENTRAL MIXING PLANT AND (4) TRANSIT MIXING, EXCEPT THAT, WITH THE ENGINEER'S APPROVAL, MIXERS OF A SUITABLE TYPE AND CAPABLE OF PROPERLY MIXING NOT LESS THAN A 1-BAG BATCH OF THE CLASS OF CONCRETE OR MORTAR REQUIRED, MAY BE USED WHERE ONLY SMALL QUANTITIES OF CONCRETE OR MORTAR CAN BE PLACED AT A TIME; AND (5) MIXING ON THE PROJECT IN CONTINUOUS MIXING TYPE TRUCK MIXERS WHICH

IS PERMISSIBLE FOR CONCRETE USED IN HEADWALLS, STEPS, PIPE PLUGS, UTILITY ENCASEMENT, THRUST BLOCKS, MANHOLE AND INLET BOTTOMS, GUTTER, CURB, HEADERS, BARRIER CURB, STONE CURB FOOTINGS, SIDE-WALK, ISLAND PAVEMENT, DRIVES, FENCE AND SIGN FOOTINGS, SIGNAL, LIGHT STANDARD AND METER CABINET FOOTINGS, JUNCTION BOXES AND OTHER SMALL POUR ITEMS AS MAY BE APPROVED BY THE ENGINEER.

THIS HEADING IS AMENDED UNDER THE SUB-HEADINGS AS FOLLOWS:

1. MIXING ON THE PROJECT IN BATCH (PAVING) MIXERS.

THE FIRST SENTENCE IS CHANGED TO READ AS FOLLOWS:

CONCRETE SHALL BE MIXED IN A BATCH MIXER OF APPROVED TYPE AND CAPACITY SO DESIGNED TO INSURE UNIFORM DISTRIBUTION OF THE MATERIALS THROUGHOUT THE MASS AND SAID BATCH MIXERS SHALL BE OPERATED IN COMPLIANCE WITH THE PROVISIONS SET FORTH IN THE NEW JERSEY ADMINISTRATIVE CODE, SUBCHAPTER 7:27-6.1 ET SEQ.

2. MIXING ON THE PROJECT IN TRANSIT MIXERS.

THIS HEADING AND TEXT IS CHANGED TO READ AS FOLLOWS:

2. MIXING ON THE PROJECT IN TRUCK MIXERS.

TRUCK-MIXED CONCRETE SHALL BE MATERIALS PROPORTIONED AT A CENTRAL BATCHING PLANT AND MIXED IN A REVOLVING DRUM TRUCK MIXER AT THE POINT OF DELIVERY FOLLOWING THE ADDITION OF THE PROPER AMOUNT OF MIXING WATER.

EACH TRUCK MIXER SHALL HAVE ATTACHED A METAL PLATE OR PLATES ON WHICH IS PLAINLY MARKED THE MANUFACTURER'S CAPACITY RATING IN TERMS OF THE GROSS DRUM VOLUME, THE CAPACITY OF THE DRUM IN TERMS OF THE VOLUME OF MIXED CONCRETE, AND THE MANUFACTURER'S DESIGNATED DRUM SPEED OF ROTATION FOR BOTH MIXING AND AGITATION. TRUCK MIXERS SHALL BE EQUIPPED WITH ELECTRICALLY ACTUATED COUNTERS BY WHICH THE NUMBER OF REVOLUTIONS OF THE DRUM MAY BE READILY VERIFIED. THE REVOLUTION COUNTER SHALL BE PLAINLY VISIBLE AND CONVENIENTLY OPERATED AT THE TRUCK OPERATOR'S STATION WHERE THE MIXING WATER AND DRUM ROTATION ARE CONTROLLED.

THE MIXER SHALL BE CAPABLE OF PRODUCING A THOROUGHLY MIXED AND UNIFORM MASS AND DISCHARGING THE CONCRETE WITH SATISFACTORY UNIFORMITY WITHIN THE RANGES OF SLUMP AND AIR ENTRAINMENT SPECIFIED FOR THE CLASS AND TYPE OF CONCRETE BEING FURNISHED.

EACH TRUCK MIXER SHALL BE EQUIPPED TO CARRY SUFFICIENT WATER TO MIX A FULL CAPACITY LOAD OF CONCRETE WITHIN THE REQUIRED RANGE OF SLUMP, AND SHALL ALSO CARRY WASH WATER AS NECESSARY.

THE MIXING WATER TANK, PUMP AND ALL PIPING SHALL BE KEPT CLEAN AND FREE OF LEAKS. A MEASURING DEVICE SHALL BE PROVIDED WHICH, WHEN SET, WILL DELIVER THE REQUIRED AMOUNT OF MIXING WATER FOR THE BATCH AND THEN SHUT OFF. THE MEASURING DEVICE SHALL HAVE AN ACCURACY OF PLUS OR MINUS 1 PERCENT BY VOLUME OF THE AMOUNT SET TO BE DELIVERED, REGARDLESS OF THE ATTITUDE OR POSITION OF THE TRUCK MIXER. THE DISTRIBUTION SYSTEM SHALL BE EQUIPPED WITH 3-WAY VALVES AND BYPASSES OR OTHER SUITABLE MEANS FOR CALIBRATION OF THE WATER-MEASURING DEVICE. THE WATER-MEASURING DEVICE SHALL BE CALIBRATED AT LEAST ANNUALLY, AND RE-CALIBRATED WHENEVER ANY REPAIRS OR MODIFICATIONS ARE MADE THAT MAY AFFECT THE CALIBRATION. EVIDENCE SHOWING THE DATE OF CALIBRATION OF THE WATER-MEASURING DEVICE SHALL BE CARRIED ON EACH TRUCK MIXER, AND COPIES SHALL BE FURNISHED TO THE ENGINEER UPON REQUEST. NEAR THE MEASURING DEVICE ON THE MIXING WATER TANK THERE SHALL BE STENCILED THE WORD "CALIBRATED" AND THE DATE OF THE LAST CALIBRATION.

THE MIXING WATER MEASURING DEVICE SHALL BE LOCATED SO AS TO BE PLAINLY VISIBLE TO THE TRUCK OPERATOR WHEN HE IS OPERATING THE MIXING WATER AND THE DRUM CONTROLS, AND TO THE ENGINEER WHILE HE IS STANDING ON THE GROUND. ALL MEASURING INDICATORS SHALL BE KEPT CLEAN AND IN GOOD CONDITION.

TRUCK MIXERS SHALL BE SUBJECT TO INSPECTION AND APPROVED BY THE ENGINEER. INSPECTION SHALL INCLUDE MECHANICAL CONDITION OF THE TRUCK MIXER, VERIFYING THE MIXING AND AGITATION RATES, THE ACCURACY OF THE WATER MEASURING DEVICE, THE SIZE OF DISCHARGE OPENING AND CHUTES, AND THE GENERAL CONDITION AND WEAR OF THE BLADES. THE TRUCK MIXER SHALL NOT BE APPROVED FOR USE ON THE PROJECT IF ANY PART OR SECTION OF THE PICKUP AND THROW-OVER BLADES ARE WORN 1 INCH OR MORE BELOW THE ORIGINAL HEIGHT OF THE MANUFACTURER'S DESIGN. TRUCK MIXERS SHALL BE EXAMINED DAILY FOR CLEANLINESS OF THE DRUM AND BLADES, LEAKS IN THE MIXING WATER SYSTEM, AND THE CONDITION OF THE WATER MEASURING DEVICE AND THE REVOLUTION COUNTER.

THE CONCRETE SUPPLIER SHALL MAINTAIN AT A CONVENIENT LOCATION A COPY OF THE MANUFACTURER'S DESIGN FOR EACH SIZE AND TYPE OF TRUCK SHOWING DIMENSIONS AND ARRANGEMENTS OF THE BLADES, THE DIMENSIONS OF THE DRUM, THE GROSS DRUM VOLUME, THE RECOMMENDED RATES OF ROTATION FOR ALL TYPES OF OPERATIONS, AND ANY OTHER PERTINENT INFORMATION USEFUL TO THE ENGINEER IN OBTAINING CONCRETE OF UNIFORM QUALITY.

THE HANDLING, MEASURING AND BATCHING OF MATERIALS SHALL CONFORM TO THE REQUIREMENTS THEREFOR HEREINABOVE SPECIFIED UNDER THAT HEADING AND SHALL BE SUBJECT TO INSPECTION BY AND APPROVAL OF THE ENGINEER AT ALL TIMES WHILE TRUCK-MIXED CONCRETE IS BEING FURNISHED.

NO WATER OR OTHER FLUIDS SHALL BE PERMITTED IN THE DRUM OF THE TRUCK MIXER PRIOR TO THE TIME THE MIXING WATER IS ADDED AT THE JOB SITE EXCEPT CONCRETE ADMIXTURES WHICH ARE MEASURED AND DISPERSED WITH THE DRY INGREDIENTS. THE ENGINEER MAY REQUIRE THAT TRUCK MIXERS PULL UNDER THE BATCH PLANT WITH THE DRUMS REVOLVING IN DISCHARGE ROTATION AS AN INDICATION THAT THE DRUM IS EMPTY.

THE TRUCK MIXER WHEN LOADED FOR MIXING CONCRETE, SHALL NOT CONTAIN MORE THAN 63 PERCENT OF THE GROSS DRUM VOLUME.

THE MAXIMUM ELAPSED TIME FROM THE LOADING OF THE PORTLAND CEMENT INTO THE DRUM TO THE DISCHARGE OF ALL THE CONCRETE FROM THE MIXER SHALL BE 90 MINUTES, EXCEPT THAT UNDER CONDITIONS CONTRIBUTING TO QUICK STIFFENING OF THE CONCRETE OR WHEN THE TEMPERATURE OF THE CONCRETE IS 85 DEGREES FAHRENHEIT OR ABOVE, SUCH TIME LIMIT SHALL BE CHANGED TO 60 MINUTES. HOWEVER, IF RETARDERS ARE USED WITH THE APPROVAL OF THE ENGINEER, THE ENGINEER MAY INCREASE THE TIME LIMIT TO A MAXIMUM OF 90 MINUTES. UNDER VERY SEVERE CONDITIONS, THE ENGINEER MAY FURTHER REDUCE THE TIME LIMITS OR REQUIRE A REDUCTION IN THE SIZE OF THE LOADS.

IMMEDIATELY FOLLOWING THE ADDITION OF ALL THE MIXING WATER, THE MIXING REVOLUTION COUNTER SHALL BE RESET TO ZERO WITH THE DRUM REVOLVING AT THE RATE OF SPEED DESIGNATED BY THE MANUFACTURER FOR MIXING. IN NO CASE SHALL CHARGING SPEEDS OR DISCHARGING SPEEDS BE USED DURING THE MIXING PERIODS.

EACH BATCH SHALL BE MIXED NOT LESS THAN 50 NOR MORE THAN 80 REVOLUTIONS AT THE RATE OF ROTATION DESIGNATED AS MIXING SPEED. THE CONCRETE SHALL BE MIXED INTO A PLASTIC UNIFORM MASS COMPLYING WITH THE SPECIFIED RANGE OF SLUMP AND AIR ENTRAINMENT. THE NUMBER OF REVOLUTIONS WITHIN THE LIMITS SPECIFIED ABOVE AND THE CONTROL OF THE CONSISTENCY SHALL BE SUBJECT TO REGULATION BY THE ENGINEER.

IF THE CONCRETE CANNOT BE ENTIRELY DISCHARGED WITHIN TEN MINUTES AFTER THE MIXING HAS BEEN COMPLETED, THE CONCRETE REMAINING IN THE DRUM SHALL BE KEPT PLASTIC AND WORKABLE BY REVOLVING THE TRUCK DRUM AT THE MANUFACTURER'S DESIGNATED SPEED FOR AGITATION FOR A PERIOD OF TWO MINUTES IN EACH TEN MINUTES.

PRIOR TO THE COMPLETION OF 30 MIXING REVOLUTIONS, THE OPERATOR MAY ADD WATER IN INCREMENTS, IF NECESSARY, IN ORDER TO PRODUCE CONCRETE WITHIN THE REQUIRED SLUMP RANGE. IF SUBSEQUENTLY NECESSARY, THE CONCRETE MAY BE TEMPERED ONLY ONCE, FOLLOWED IMMEDIATELY BY AN ADDITIONAL 20 TO 30 REVOLUTIONS AT MIXING SPEED.

NOTE: IF THE CONCRETE IS NEAR THE PROPER RANGE FOR CONSISTENCY AND SLUMP, THE ADDITION OF A GALLON OF WATER PER YARD OF CONCRETE WILL INCREASE THE SLUMP APPROXIMATELY ONE INCH. THE ADDITIONAL QUANTITY OF MIXING WATER FOR TEMPERING SHALL BE SET ON THE WATER MEASURING DEVICE SO AS TO SHUT OFF AFTER THE TEMPERING WATER HAS BEEN ADDED. THE TOTAL AMOUNT OF WATER SHALL NOT EXCEED THE MAXIMUM GALLONS PER BAG SPECIFIED.

DURING DISCHARGE, DRUM GATES AND COVERS SHALL BE FULLY OPENED AND THE RATE OF DISCHARGE SHALL BE GOVERNED BY DRUM SPEED.

DISCHARGE CHUTES SHALL BE AMPLE IN SIZE, WITHOUT STRUTS, AND CAPABLE OF HANDLING THE CONCRETE WITHIN THE SPECIFIED SLUMP RANGE. USE OF EXTENSION CHUTES SHALL BE RESTRICTED AS MUCH AS PRACTICABLE.

WASH WATER SHALL BE PROVIDED IN ADDITION TO THE WATER REQUIRED FOR MIXING. IF THE WASH WATER RUNS THROUGH THE MEASURING DEVICE FOR THE MIXING WATER, IT SHALL NOT BE USED DURING ANY OF THE PERIODS WHEN MIXING WATER IS BEING MEASURED INTO THE DRUM. UNDER NO CIRCUMSTANCES SHALL THE WASHDOWN HOSE BE USED TO TEMPER THE CONCRETE OR TO AID THE FLOW OF THE CONCRETE IN THE CHUTE, EXCEPT FOR PREWETTING THE CHUTE. ANY CONCRETE THAT HAS BEEN WETTED WITH WASH WATER SHALL BE DISCARDED.

IMMEDIATELY AFTER THE DISCHARGE OF EACH LOAD, THE DRUM SHALL BE THOROUGHLY WASHED OUT, AND THE WASH WATER AND ANY RESIDUE FROM THE PREVIOUS BATCH SHALL BE COMPLETELY DISCHARGED BEFORE RELOADING THE DRUM AT THE BATCH PLANT.

A DELIVERY TICKET, COMPLETELY FILLED OUT, SHALL BE FURNISHED TO THE ENGINEER FOR EACH LOAD. THE TICKETS SHALL BE SERIALLY NUMBERED, AND SHALL BEAR THE PRINTED HEADING OF THE SUPPLIER AND THE LOCATION OF THE BATCH PLANT. EACH TICKET SHALL SHOW THE NAME OF THE PROJECT, THE NAME OF THE CONTRACTOR, AND SUBCONTRACTOR IF PERTINENT; THE NUMBER OF CUBIC YARDS OF CONCRETE AND THE CLASS AND TYPE; THE NAME OF EACH ADMIXTURE AND THE QUANTITY SHOWN IN LIQUID MEASURE OF WEIGHT; THE TIME WHEN THE CEMENT WAS LOADED INTO THE DRUM AND THE TIME WHEN THE CONCRETE WAS COMPLETELY DISCHARGED; THE AMOUNT OF MIXING WATER AND THE AMOUNT OF TEMPERING WATER, IF USED, BOTH IN GALLONS; THE TOTAL NUMBER OF REVOLUTIONS ON THE COUNTER AT THE TIME OF COMPLETE DISCHARGE; THE DATE; AND THE TRUCK NUMBER. IN ADDITION, FOR THE FIRST TICKET OF EACH DAY, THE FIRST TICKET OF EACH POUR, AND WHEN CHANGES OCCUR IN THE INFORMATION, THE TICKET SHALL SHOW THE NUMBER OF POUNDS OF PORTLAND CEMENT WITH THE BRAND NAME AND TYPE, THE NUMBER OF POUNDS AND THE SOURCE OF THE FINE AGGREGATE, AND THE NUMBER OF POUNDS AND THE SIZES AND SOURCES OF THE COARSE AGGREGATES. THE TICKET SHALL BE AUTHENTICATED BY AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR

OR SUPPLIER AND INITIALLED BY THE INSPECTOR TO INDICATE THAT IT IS COMPLETE.

THE CONCRETE WILL BE REJECTED IF:

- (A) THE MIXER FAILS TO MAINTAIN THE MANUFACTURER'S STATED SPEED OF ROTATION FOR BOTH MIXING AND AGITATION, OR IS NOT ABLE TO PROMPTLY DISCHARGE THE CONCRETE;
- (B) THERE IS ANY EVIDENCE OF IMPROPER BATCHING, LACK OF UNIFORM DISTRIBUTION OF CONSTITUENTS THROUGHOUT THE LOAD, BALLING OF THE CEMENT AND AGGREGATES;
- (C) THE CONCRETE DOES NOT COMPLY WITH THE SPECIFIED RANGES FOR SLUMP AND ENTRAINED AIR;
- (D) THE CONCRETE IS NOT DISCHARGED WITHIN THE SPECIFIED TIME LIMIT AFTER LOADING CEMENT INTO THE DRUM, OR IF THE REVOLUTION COUNTER SHOWS A TOTAL OF MORE THAN 200 REVOLUTIONS, PROVIDED, HOWEVER, THAT IF THE LOAD HAS BEEN PARTIALLY DISCHARGED AND IF THE CONCRETE YET TO BE DISCHARGED WILL COMPLY WITH THE SPECIFIED RANGES FOR SLUMP AND ENTRAINED AIR, WITHOUT THE FURTHER ADDITION OF WATER, THE ENGINEER MAY PERMIT THE DISCHARGE AND USE OF THE CONCRETE;
- (E) THERE IS ANY FAILURE TO COMPLY WITH ALL OF THE SPECIFIED PROVISIONS FOR THE TRUCK-MIXER AND APPURTENANCES OR FOR THE METHOD OF OPERATION.

### 3. MIXING AT A CENTRAL MIXING PLANT.

THE FIRST AND SECOND PARAGRAPHS ARE CHANGED TO READ AS FOLLOWS:

CENTRAL-MIX CONCRETE SHALL BE MATERIALS PROPORTIONED AND MIXED AT A CENTRAL PLANT AND TRANSPORTED TO THE POINT OF USE IN AN AGITATOR OR NON-AGITATOR TRUCK OF APPROVED DESIGN.

CENTRAL MIXING PLANT MIXERS SHALL BE OF THE APPROVED TYPE AND CAPACITY, CAPABLE OF COMBINING THE CEMENT, AGGREGATES AND WATER INTO A THOROUGHLY MIXED AND UNIFORM MASS WITHIN THE SPECIFIED MIXING TIME AND OF DISCHARGING THE MIXTURE WITH A SATISFACTORY DEGREE OF UNIFORMITY AND SHALL BE OPERATED IN COMPLIANCE WITH THE PROVISIONS SET FORTH IN THE NEW JERSEY ADMINISTRATIVE CODE, SUBCHAPTER 7:27-6.1 ET SEQ.



THE THIRD AND FOURTH SENTENCES OF THE THIRD PARAGRAPH ARE CHANGED TO READ AS FOLLOWS:

MIXING TIME AT THE CENTRAL MIX PLANT SHALL BE NOT LESS THAN 1 MINUTE.

THE FOLLOWING IS ADDED BEFORE THE FIRST FULL PARAGRAPH ON PAGE 199:

NON-AGITATOR TRUCKS WILL BE ALLOWED FOR CONCRETE DELIVERY TO THIS PROJECT. BODIES OF NON-AGITATING HAULING EQUIPMENT FOR CONCRETE, SHALL BE SMOOTH, MORTAR TIGHT METAL CONTAINERS AND SHALL BE CAPABLE OF DISCHARGING THE CONCRETE AT A SATISFACTORY CONTROLLED RATE WITHOUT SEGREGATION. COVERS SHALL BE PROVIDED WHEN NEEDED FOR PROTECTION. ORDINARY FLAT-BOTTOM DUMP TRUCK BODIES MAY BE USED IF THE HAUL IS NOT TO EXCEED 5 MILES AND IF THE SURFACES OVER WHICH THE CONCRETE IS TO BE HAULED ARE MAINTAINED IN A SMOOTH, EASY RIDING PROPERLY MAINTAINED CONDITION. THE TIME ELAPSING FROM THE TIME WATER IS ADDED TO THE MIX UNTIL THE CONCRETE IS DEPOSITED IN PLACE AT THE SITE OF THE WORK SHALL NOT EXCEED 30 MINUTES.

THE SECOND FULL PARAGRAPH ON PAGE 199 IS CHANGED TO READ AS FOLLOWS:

THE MAXIMUM LENGTH OF TIME FROM LOADING AT PLANT TO THE DISCHARGE AT THE PROJECT SHALL NOT EXCEED 75 MINUTES, EXCEPT THAT UNDER CONDITIONS CONTRIBUTING TO QUICK STIFFENING OF THE CONCRETE OR WHEN THE TEMPERATURE OF THE CONCRETE IS 85 DEGREES FAHRENHEIT OR ABOVE, SUCH TIME LIMIT SHALL BE CHANGED TO 60 MINUTES. HOWEVER, IF RETARDERS ARE USED WITH THE APPROVAL OF THE ENGINEER, THE ENGINEER MAY INCREASE THE TIME LIMIT TO A MAXIMUM OF 75 MINUTES. UNDER VERY SEVERE CONDITIONS, THE ENGINEER MAY FURTHER REDUCE THE TIME LIMITS OR REQUIRE A REDUCTION IN THE SIZE OF THE BATCHES. DURING THESE INTERVALS, THE CONCRETE SHALL BE AGITATED CONTINUOUSLY.

THE FOLLOWING IS ADDED AFTER THE SECOND FULL PARAGRAPH ON PAGE 199:

THE USE OF OPEN BODY TRUCKS, WITH APPROVED AGITATING MECHANISM, WILL BE PERMITTED FOR TRANSPORTING CONCRETE FROM CENTRAL MIX PLANTS, PROVIDED THAT THE FOLLOWING REQUIREMENTS ARE MET:

1. MAXIMUM DISTANCE OF HAUL FROM PLANT TO LOCATION OF PAVING ON PROJECT SHALL BE 10 MILES.
2. CANVAS COVERS OVER TRUCKS SHALL BE PROVIDED IF DIRECTED BY THE ENGINEER.

#### 4. TRANSIT MIXING.

THE HEADING AND TEXT IS ADDED AFTER THE FIFTH FULL PARAGRAPH ON PAGE 199:

TRANSIT MIX CONCRETE SHALL BE MATERIALS, INCLUDING WATER, PROPERLY PROPORTIONED AND INTRODUCED INTO AN APPROVED TRUCK MIXER FROM A ONE-STOP OR TWO-STOP BATCHING PLANT AND MIXED WHILE THE TRUCK IS AT THE PLANT, EN ROUTE TO A JOB SITE, ON A JOB SITE, OR A COMBINATION OF ALL THREE.

A ONE-STOP BATCHING PLANT SHALL BE A PLANT WHERE ALL DRY INGREDIENTS FOR EACH BATCH OF CONCRETE ARE LOADED INTO THE MIXER TRUCK SIMULTANEOUSLY WHILE WATER IS BEING INTRODUCED.

A TWO-STOP BATCHING PLANT SHALL BE A PLANT WHERE THE INGREDIENTS FOR EACH BATCH OF CONCRETE ARE LOADED INTO THE MIXER TRUCK AT TWO SEPARATE LOCATIONS.

THE PLANT SHALL BE EQUIPPED WITH A WATER METER OR SCALE, MEASURING EITHER BY VOLUME OR WEIGHT, WHICH SHALL BE USED TO BATCH THE MIXING WATER. THE METER SHALL BE ACCURATE WITHIN A TOLERANCE OF PLUS OR MINUS 1.0 PERCENT.

EACH TRANSIT MIXER SHALL COMPLY WITH THE REQUIREMENTS FOR TRUCK MIXERS AS SPECIFIED HEREINBEFORE IN METHOD (2) EXCEPT THAT THE MIXING WATER TANK AND MEASURING DEVICE SHALL BE USED ONLY FOR PROVIDING TEMPERING WATER IF NECESSARY.

IN ADDITION, ALL TRUCK MIXERS USED FOR TRANSIT MIX CONCRETE SHALL BE EQUIPPED WITH AN APPROVED, ELECTRICALLY OPERATED COUNTER UNIT WHICH SHALL BE NON RESETTABLE EXCEPT BY USE OF A 110 VOLT DEVICE UTILIZING A NON STANDARD PLUG AND LOCATED AT THE BATCHING PLANT. THE COUNTER UNIT SHALL CONTAIN TWO COUNTERS. ONE COUNTER SHALL RECORD ONLY THOSE REVOLUTIONS AT SPEEDS RECOMMENDED BY THE MANUFACTURER OF THE TRUCK MIXER AS MIXING SPEED AND SHALL RECORD THE TOTAL OF ALL SUCH MIXING REVOLUTIONS FROM THE TIME THE TRUCK IS LOADED. THE OTHER COUNTER SHALL RECORD REVOLUTIONS OF THE DRUM AT ALL SPEEDS AND SHALL RECORD THE TOTAL REVOLUTIONS FROM THE TIME THE TRUCK IS LOADED. THE UNIT SHALL BE SO DESIGNED THAT IT WILL SHOW A POSITIVE INDICATION ON THE FRONT PANEL IF THE INSTRUMENT HAS BEEN TURNED OFF OR TAMPERED WITH IN ANY MANNER AFTER BEING RESET AT THE TIME OF LOADING. THE COUNTER UNIT AND THE RESETTING DEVICE SHALL CONFORM WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND WITH SECTION 8 OF THE CONSTRUCTION SAFETY CODE OF THE NEW JERSEY DEPARTMENT OF LABOR AND INDUSTRY.

THE COUNTER UNIT SHALL BE POSITIONED ON THE TRUCK SO AS TO BE PLAINLY VISIBLE IF THE DRIVER'S DOOR IS OPEN.

EACH DELIVERY TICKET SHALL BE IMPRINTED BY AN AUTOMATIC TIME CLOCK TO INDICATE THE TIME OF LOADING. IN LIEU OF THE AUTOMATIC TIME CLOCK THE COUNTER UNIT MAY CONTAIN A THIRD COUNTER, AN ELECTRICALLY OPERATED TIMER, WHICH SHALL BE NONRESETTABLE EXCEPT BY USE OF THE 110 VOLT DEVICE.

MIXING AND DELIVERY FOR TRANSIT MIX CONCRETE SHALL COMPLY WITH THE REQUIREMENTS FOR MIXING AND DELIVERY OF TRUCK MIX CONCRETE AS SPECIFIED HEREINBEFORE IN METHOD (2) EXCEPT AS FOLLOWS:

ALL INGREDIENTS INCLUDING WATER SHALL BE INTRODUCED INTO THE TRANSIT MIXER AT THE BATCH PLANT. AT A ONE-STOP BATCHING PLANT, AT LEAST ONE-THIRD OF THE MIXING WATER SHALL BE INTRODUCED INTO THE MIXER PRIOR TO THE DRY INGREDIENTS AND SUFFICIENT MIX WATER TO WASH DOWN THE CHUTE SHALL BE INTRODUCED AFTER ALL THE DRY INGREDIENTS HAVE BEEN ADDED. AT A TWO-STOP BATCHING PLANT, WHEN THE TEMPERATURE OF THE MIXING WATER IS LESS THAN 100 DEGREES F., THE MIXER SHALL BE CHARGED IN THE FOLLOWING SEQUENCE: ONE-HALF TO THREE-QUARTERS OF THE MIXING WATER, AGGREGATES, CEMENT AND REMAINING WATER. AS AN ALTERNATIVE, AT EITHER A ONE-STOP OR TWO-STOP BATCHING PLANT, WHEN THE MIXING WATER IS LESS THAN 100 DEGREES F., "SLURRY MIXING" CAN BE USED. WHEN THIS METHOD IS USED, ALL MIXING WATER IS ADDED FIRST, FOLLOWED BY THE CEMENT, AND MIXED AT MIXING SPEED FOR ONE MINUTE. THE REMAINING INGREDIENTS ARE THEN ADDED. AT EITHER A ONE-STOP OR TWO-STOP BATCHING PLANT, WHEN THE TEMPERATURE OF THE MIXING WATER EXCEEDS 100 DEGREES F., THE LOADING SEQUENCE SHALL BE MODIFIED IN THE FOLLOWING MANNER, ALL MIXING WATER, AGGREGATES AND THEN CEMENT. MIXING WATER SHALL BE INTRODUCED INTO THE MIXER PRIOR TO THE DRY INGREDIENTS AND SUFFICIENT MIX WATER TO WASH DOWN THE CHUTE SHALL BE INTRODUCED AFTER ALL THE DRY INGREDIENTS HAVE BEEN ADDED. MIXING SHALL BEGIN IMMEDIATELY FOLLOWING THE COMPLETE CHARGING OF THE DRUM AND CONTINUE FOR NOT LESS THAN 50 NOR MORE THAN 80 REVOLUTIONS OF THE DRUM AT THE MIXING SPEED RECOMMENDED BY THE MANUFACTURER OF THE TRUCK MIXER. UPON COMPLETION OF THE DESIGNATED NUMBER OF MIXING REVOLUTIONS, THE SPEED OF THE DRUM SHALL BE REDUCED TO THE AGITATION SPEED RECOMMENDED BY THE MANUFACTURER. CONCRETE DELIVERED TO THE JOB WITH LESS THAN 50 REVOLUTIONS SHALL BE MIXED TO AT LEAST 50 BUT NO MORE THAN 80 REVOLUTIONS AT MIXING SPEED.

THE MAXIMUM ELAPSED TIME FROM LOADING AT THE PLANT TO THE DISCHARGE OF ALL THE CONCRETE FROM THE MIXER SHALL BE 90 MINUTES, EXCEPT THAT UNDER CONDITIONS CONTRIBUTING TO QUICK STIFFENING OF THE CONCRETE OR WHEN THE TEMPERATURE OF THE CONCRETE IS 85 DEGREES FAHRENHEIT OR ABOVE, SUCH TIME LIMIT SHALL BE CHANGED TO 60 MINUTES. HOWEVER, IF RETARDERS ARE USED WITH THE APPROVAL OF THE ENGINEER, THE ENGINEER MAY INCREASE THE TIME LIMIT TO A MAXIMUM OF 75 MINUTES. UNDER VERY SEVERE CONDITIONS, THE

ENGINEER MAY FURTHER REDUCE THE TIME LIMITS OR REQUIRE A REDUCTION IN THE SIZE OF THE LOADS.

AT THE DISCRETION OF THE ENGINEER THE SLUMP MAY BE ADJUSTED ONCE BY ADDING TEMPERING WATER AT THE JOB SITE. THE TOTAL WATER ADDED TO THE MIXTURE, HOWEVER, SHALL NOT EXCEED THE SPECIFIED WATER CONTENT. THE MIXING DRUM THEN MUST BE ROTATED AT MIXING SPEED FOR 20 TO 30 ADDITIONAL REVOLUTIONS.

TRANSIT MIX CONCRETE WILL BE REJECTED IF THE CONCRETE IS NOT DISCHARGED WITHIN THE SPECIFIED TIME LIMIT AFTER LOADING ALL INGREDIENTS INTO THE DRUM, IF THE POSITIVE INDICATOR ON THE COUNTER SHOWS THAT THE INSTRUMENT HAS BEEN TURNED OFF OR TAMPERED WITH, IF THE NONRESETTABLE TOTAL REVOLUTION COUNTER SHOWS MORE THAN 300 REVOLUTIONS, OR IF THE MIXING REVOLUTION COUNTER SHOWS MORE THAN 110 REVOLUTIONS, PROVIDED HOWEVER, THAT IF THE LOAD HAS BEEN PARTIALLY DISCHARGED AND IF THE CONCRETE YET TO BE DISCHARGED WILL COMPLY WITH THE SPECIFIED RANGES FOR SLUMP AND ENTRAINED AIR, WITHOUT THE FURTHER ADDITION OF WATER, THE ENGINEER MAY PERMIT THE DISCHARGE AND USE OF THE CONCRETE.

THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH TWO-WAY TELEPHONE OR RADIO COMMUNICATION BETWEEN THE PROJECT SITE AND THE BATCHING PLANT, WITHOUT ADDITIONAL COMPENSATION.

5. MIXING ON THE PROJECT IN CONTINUOUS MIXING TYPE  
TRUCK MIXERS.

THIS HEADING AND TEXT IS ADDED BEFORE THE LAST PARAGRAPH ON PAGE 199:

CONTINUOUS MIX CONCRETE SHALL BE MATERIALS ACCURATELY PROPORTIONED BY VOLUMETRIC MEASUREMENT FROM BINS ON THE TRUCK MIXER AND HYDRATED AND MIXED ON THE TRUCK MIXER AT THE SITE OF THE WORK.

THE CONCRETE SHALL BE MIXED IN AN APPROVED TYPE MIXING UNIT WHICH IS PART OF THE TRUCK CARRYING THE DRY INGREDIENTS. THE MIXING UNIT SHALL BE AN AUGER TYPE MIXER INCORPORATED IN THE TRUCK'S DISCHARGE CHUTE OR OTHER SUITABLE MIXING MECHANISM APPROVED BY THE ENGINEER, AND SHALL PRODUCE CONCRETE OF UNIFORM CONSISTENCY AND DISCHARGE THE MIX WITHOUT SEGREGATION.

THE TRUCK MIXER SHALL HAVE PERMANENTLY ATTACHED THERETO IN A PROMINENT PLACE A METAL PLATE OR PLATES ON WHICH ARE PLAINLY MARKED THE GROSS VOLUME OF THE UNIT IN TERMS OF MIXED CONCRETE, OPERATING SPEED, AND THE CEMENT CONSTANT OF THE MACHINE IN TERMS OF AN INDICATOR REVOLUTION COUNT REQUIRED TO DELIVER 94 LB. OF CEMENT, ALL AS RATED BY THE MANUFACTURER.

THE TRUCK MIXER SHALL BE EQUIPPED WITH A CEMENT BIN OF SUFFICIENT CAPACITY TO STORE AND SUPPLY THE QUANTITY OF DRY CEMENT REQUIRED TO PRODUCE THE MAXIMUM VOLUME CONCRETE CAPACITY OF THE TRUCK MIXER AS RATED BY THE MANUFACTURER. THE CEMENT BIN SHALL BE FREE OF MOISTURE AND CONTAMINATION AT ALL TIMES.

THE TRUCK MIXER SHALL BE EQUIPPED WITH AGGREGATE BINS OF SUFFICIENT CAPACITY TO STORE SEPARATELY THE QUANTITIES OF FINE AND COARSE AGGREGATES REQUIRED TO PRODUCE THE MAXIMUM VOLUME CONCRETE CAPACITY OF THE TRUCK MIXER AS RATED BY THE MANUFACTURER. SUITABLE MEANS, APPROVED BY THE ENGINEER, SHALL BE PROVIDED TO PREVENT CONTAMINATION OR INTERMIXING OF THE FINE AND COARSE AGGREGATES DURING LOADING AND TRANSPORTING. AGGREGATE BINS SHALL BE COVERED WHEN THERE EXISTS A POSSIBILITY OF MOISTURE ENTERING THE BINS.

THE TRUCK MIXER SHALL BE EQUIPPED WITH SUITABLE MEANS, APPROVED BY THE ENGINEER, OF READILY DETERMINING THE LEVEL OF AGGREGATES IN THE AGGREGATE BINS WITHOUT THE NEED FOR CLIMBING UP ON THE TRUCK.

THE AGGREGATE BINS SHALL BE EQUIPPED WITH VIBRATORS OR OTHER SUITABLE MEANS, APPROVED BY THE ENGINEER, OF MAINTAINING A SMOOTH, EVEN AND CONTINUOUS FLOW OF AGGREGATE FROM THE BINS.

THE TRUCK MIXER SHALL BE EQUIPPED WITH WATER TANKS OF SUFFICIENT CAPACITY TO STORE THE QUANTITY OF WATER REQUIRED TO PRODUCE THE MAXIMUM VOLUME CONCRETE CAPACITY OF THE TRUCK MIXER AS RATED BY THE MANUFACTURER AND AT THE SLUMP SPECIFIED FOR EACH CONCRETE ITEM.

IF CONCRETE ADDITIVES ARE TO BE USED IN THE MIX, SUITABLE MEANS, APPROVED BY THE ENGINEER, SHALL BE PROVIDED FOR STORING THE ADDITIVES ON THE TRUCK AND INCORPORATING THEM IN THE MIX. SUITABLE MEANS SHALL ALSO BE PROVIDED ON THE TRUCK MIXER TO PERMIT THE ENGINEER TO CHECK THE RATE OF FLOW OF THE ADDITIVE INTO THE MIX.

THE TRUCK MIXER SHALL INCLUDE A FEEDER UNIT MOUNTED UNDER THE COMPARTMENT BINS TO DELIVER THE INGREDIENTS TO THE MIXING UNIT.

EACH BIN ON THE TRUCK SHALL HAVE AN ACCURATELY CONTROLLED INDIVIDUAL GATE OR FEEDING MECHANISM TO FORM AN ORIFICE FOR VOLUMETRICALLY MEASURING THE MATERIAL DRAWN FROM EACH RESPECTIVE BIN COMPARTMENT. THE CEMENT BIN FEEDING MECHANISM SHALL BE SET TO DISCHARGE CONTINUOUSLY AND AT A UNIFORM RATE A GIVEN VOLUMETRIC WEIGHT EQUIVALENT OF CEMENT DURING THE CONCRETE MIXING OPERATION. THE GATES OF THE AGGREGATE BINS SHALL BE CALIBRATED AT THE VARIOUS OPENINGS TO DISCHARGE THE VOLUMETRIC WEIGHT EQUIVALENT OF AGGREGATES REQUIRED FOR VARIOUS CONCRETE MIXES.

THE TRUCK MIXER SHALL BE SO CONSTRUCTED AS TO ALLOW THE ENGINEER TO CHECK THE CALIBRATION OF THE GATE OPENINGS AND METERS BY MEANS OF WEIGHT TEST SAMPLES.

THE CALIBRATION OF THE GATE OPENINGS AND METERS SHALL BE CHECKED AND CERTIFIED AT LEAST ONCE A YEAR BY A TESTING LABORATORY APPROVED BY THE ENGINEER AND RETAINED BY THE OWNER OF THE TRUCK MIXER. A COPY OF THE CERTIFICATION SHALL ACCOMPANY THE TRUCK MIXER AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED AT LEAST ONE WEEK PRIOR TO THE DATE OF THE ANNUAL CALIBRATION, IN ORDER THAT THE DEPARTMENT MAY, IF DESIRED, OBSERVE THE OPERATION.

THE ENGINEER RESERVES THE RIGHT TO MAKE HIS OWN CALIBRATION CHECK OR TO RUN A YIELD TEST ON THE TRUCK MIXER AT ANY TIME.

EACH TRUCK MIXER SHALL BE EQUIPPED WITH AN ACCURATE REVOLUTION COUNTER INDICATOR PERMITTING THE READING OF THE VOLUMETRIC WEIGHT EQUIVALENT OF CEMENT DISCHARGED DURING THE CONCRETE MIXING OPERATION.

EACH TRUCK MIXER SHALL BE EQUIPPED WITH FINE AND COARSE AGGREGATE DIALS TO PERMIT ACCURATE ADJUSTMENT OF THE GATES OF THE AGGREGATE BINS FOR VOLUMETRIC PROPORTIONING OF AGGREGATES.

EACH TRUCK MIXER SHALL BE EQUIPPED WITH A WATER METER OR GAUGE TO REGISTER THE DISCHARGE RATE OF WATER BY VOLUME ENTERING THE MIX.

EACH TRUCK MIXER SHALL BE EQUIPPED WITH POSITIVE AUTOMATIC MEANS OF MAINTAINING THE OPERATING SPEED OF THE PROPORTIONING AND MIXING OPERATION INDEPENDENT OF THE DRIVE ENGINE OF THE TRUCK, AND WITHIN 8 PERCENT ABOVE OR BELOW THAT ESTABLISHED BY THE MANUFACTURER AND NOTED ON THE AFOREMENTIONED METAL PLATE AS THE SPEED AT WHICH THE MACHINE WILL ACCURATELY PROPORTION CONCRETE. SUCH POSITIVE AUTOMATIC MEANS SHALL AUTOMATICALLY SHUT DOWN THE PROPORTIONING AND MIXING OPERATION WHEN THE OPERATING SPEED VARIES BY MORE THAN THE ABOVE TOLERANCE. A TACHOMETER SHALL BE MOUNTED ON THE UNIT TO INDICATE THE OPERATING SPEED.

ALL INDICATORS, DIALS, METERS, TACHOMETER, AND CONTROLS SHALL BE IN FULL VIEW AND NEAR ENOUGH TO BE ACCURATELY READ OR ADJUSTED BY THE OPERATOR WHILE MIXING CONCRETE.

HANDLING, MEASURING AND BATCHING OF MATERIALS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS THEREFOR HEREINABOVE SPECIFIED UNDER THAT HEADING EXCEPT AS FOLLOWS:

CEMENT AND AGGREGATES SHALL BE PROPORTIONED, MEASURED, AND BATCHED BY A VOLUMETRIC WEIGHT EQUIVALENT METHOD. SEPARATE

BATCHING EQUIPMENT AND STORAGE BINS WILL NOT BE REQUIRED AND THE MATERIALS SHALL BE BATCHED IN THE CONTINUOUS MIXING TRUCK TYPE MIXER.

THE CONCRETE WILL BE REJECTED IF THERE BE ANY EVIDENCE OF IMPROPER BATCHING, MIXING, EXCESSIVE SEGREGATION, USE OF EXCESSIVE MIXING WATER, OR IF THE AMOUNT OF ENTRAINED AIR BE OTHER THAN AS SPECIFIED.

EACH TRUCK LOAD OF INGREDIENTS SHALL BE ACCOMPANIED BY A SUFFICIENT NUMBER OF DELIVERY TICKETS SUCH THAT THE OPERATOR MAY SUPPLY ONE COPY OF THE DELIVERY TICKET TO THE ENGINEER FOR EACH PROJECT AND FOR EACH CLASS OF CONCRETE DELIVERED. THE DELIVERY TICKETS SHALL SHOW THE BRAND NAME AND TYPE OF CEMENT, THE CALIBRATED CEMENT CONSTANT OF THE MACHINE IN TERMS OF THE INDICATOR REVOLUTION COUNT, THE SOURCE OF AGGREGATES AND THE SIZE OF THE COARSE AGGREGATE. THE DELIVERY TICKETS SHALL BE SIGNED BY A RESPONSIBLE OFFICER OR EMPLOYEE OF THE CONCRETE SUPPLIER. AT EACH PROJECT, FOR EACH CLASS OF CONCRETE AND FOR EACH SEPARATE MIXING OPERATION THE MIXER OPERATOR SHALL ENTER ON THE TICKETS THE NAME OF THE PROJECT, THE NAME OF THE CONTRACTOR, THE REVOLUTION COUNTER READINGS INDICATING THAT VOLUMETRIC WEIGHT EQUIVALENT OF CEMENT DISCHARGED DURING THAT MIXING OPERATION, THE AGGREGATE DIAL SETTINGS, AND THE CLASS OF CONCRETE DELIVERED. THE OPERATOR SHALL SIGN EACH COMPLETED TICKET AND FURNISH ONE COPY TO THE ENGINEER.

PLACING CONCRETE AND REINFORCEMENT.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH:

WHEN TRUCK-MIX OR CENTRAL-MIX CONCRETE IS USED TO CONSTRUCT CONCRETE SURFACE PAVEMENT, THE CONCRETE SHALL BE DISCHARGED DIRECTLY FROM THE TRUCK INTO THE HOPPERS OF CONCRETE SPREADERS, EXCEPT THAT WHERE THE ENGINEER PERMITS THE HAND PLACING AND FINISHING OF CONCRETE SURFACE PAVEMENT, THE CONCRETE SHALL BE WELL DISTRIBUTED BY THE DISCHARGE CHUTE ACROSS THE FORMED AREA. IN NO CASE SHALL THE CONCRETE BE DISCHARGED INTO WINDROWS OR PILES ON THE SUBGRADE.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH ON PAGE 201:

THE USE OF APPROVED POWER EQUIPMENT FOR PLACING REINFORCEMENT STEEL WILL BE PERMITTED. IF THE CONTRACTOR ELECTS TO USE SUCH EQUIPMENT, HE MAY PLACE THE CONCRETE MIXTURE IN A SINGLE LAYER TO THE FULL DEPTH OF THE SIDE FORMS PRIOR TO PLACING REINFORCEMENT STEEL.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH ON PAGE 201:

WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, CONCRETE SURFACE PAVEMENT SHALL BE CONSTRUCTED MONOLITHIC WITH ADJACENT CURB.

#### MACHINE FINISHING.

ALL REFERENCE TO A LONGITUDINAL FINISHING MACHINE IS DELETED. THE LONGITUDINAL FINISHING MACHINE IS NOT REQUIRED FOR MACHINE FINISHING.

THE SECOND FULL PARAGRAPH ON PAGE 203 IS CHANGED TO READ AS FOLLOWS:

WHEN A TIGHT, UNIFORM SURFACE HAS BEEN ACHIEVED AND AS SOON AS THE WATER SHEEN HAS PRACTICALLY DISAPPEARED, THE SURFACE SHALL BE TEXTURED USING METAL TINES. THE METAL TINES SHALL BE TEMPERED SPRING STEEL, ARRANGED IN A SINGLE LINE AND SECURELY MOUNTED IN A SUITABLE HEAD.

THE TINES SHALL BE OF A SIZE AND STIFFNESS SUFFICIENT TO PRODUCE A GROOVE OF THE SPECIFIED DIMENSIONS IN THE PLASTIC CONCRETE WITHOUT EITHER SLUMPING OF THE EDGE OR SEVERE TEARING OF THE SURFACE. THE METAL COMB SHALL BE ATTACHED TO AN APPROVED MECHANICAL DEVICE CAPABLE OF TRAVERSING THE ENTIRE PAVEMENT WIDTH IN A SINGLE PASS AT A UNIFORM SPEED. THE GROOVING DEVICE SHALL BE OPERATED SO AS TO PRODUCE A RELATIVELY UNIFORM PATTERN OF GROOVES PERPENDICULAR TO THE PAVEMENT CENTERLINE SPACED AT APPROXIMATELY 1/2-INCH CENTERS, 1/8 TO 3/16-INCH DEEP AND 0.100 TO 0.125-INCH WIDE.

#### HAND FINISHING.

THE FIRST SENTENCE IS CHANGED TO READ AS FOLLOWS:

WHEN HAND FINISHING IS USED, THE MAJOR PART OF THE CONCRETE ABOVE THE REQUIRED GRADE SHALL BE REMOVED BY A VIBRATORY HAND-OPERATED SCREED, MOVED FORWARD WITH A COMBINED LONGITUDINAL AND TRANSVERSE MOTION AND SO MANIPULATED THAT IT REMAINS ON THE SIDE FORMS.

THE FIRST FULL PARAGRAPH ON PAGE 204 IS CHANGED TO READ AS FOLLOWS:

IMMEDIATELY AND PROGRESSIVELY FOLLOWING THE LONGITUDINAL SCREEDING, FURTHER FINISHING WITH SCRAPING STRAIGHTEDGES, OR LUTES, FINAL FINISHING WITH METAL TINES, ROUNDING OF JOINT EDGES, CHECKING OF PAVEMENT SURFACE WITH A STRAIGHT EDGE, AND CORRECTION OF EXCESSIVE SURFACE IRREGULARITIES, SHALL BE PERFORMED AS HEREBEFORE SPECIFIED FOR MACHINE FINISHING EXCEPT THAT A MECHANICAL FINISHING MACHINE NEED NOT BE USED. TINES SHALL BE OF THE QUALITY,



SIZE, AND CONSTRUCTION AND BE OPERATED SO AS TO PRODUCE THE SURFACE FINISH HEREINBEFORE SPECIFIED FOR MACHINE FINISHING.

#### LONGITUDINAL JOINTS

THE FOLLOWING IS ADDED:

WHERE ADJACENT LANES OF NEW PAVEMENT ARE CONSTRUCTED ONE LANE AT A TIME, TIE-BOLTS SHALL BE INSTALLED IN THE LONGITUDINAL JOINTS BETWEEN THE ADJACENT LANES OF NEW PAVEMENT IN ACCORDANCE WITH THE PLANS.

THE COST OF TIE-BOLTS SHALL BE INCLUDED IN THE UNIT PRICES BID FOR CONCRETE PAVEMENT SURFACE.

WHERE TWO OR MORE LANES OF CONCRETE PAVEMENT ARE TO BE CONSTRUCTED ON THE MAIN ROAD, THE CONTRACTOR MAY, IF HE SO ELECTS, CONSTRUCT TWO ADJACENT LANES AS A SINGLE OPERATION.

WHERE THREE LANES OF CONCRETE PAVEMENT ARE TO BE CONSTRUCTED AS ONE-HALF OF A DUAL ROAD, THE CONTRACTOR MAY, IF HE SO ELECTS, CONSTRUCT EITHER THE TWO LANES FARTHEST FROM THE MEDIAN AS A SINGLE OPERATION, OR THE SINGLE LANE FARTHEST FROM THE MEDIAN AND THEN THE TWO REMAINING LANES AS A SINGLE OPERATION, UNLESS THE ENGINEER APPROVES, IN WRITING, ANOTHER SEQUENCE OF OPERATIONS.

WHERE FOUR LANES OF CONCRETE PAVEMENT ARE TO BE CONSTRUCTED TO FORM A SINGLE ROADWAY, THE CONTRACTOR MAY, IF HE SO ELECTS, CONSTRUCT EACH OF THE TWO PAIRS OF LANES AS A SINGLE OPERATION.

WHERE TWO ADJACENT LANES OF CONCRETE PAVEMENT ARE CONSTRUCTED AS A SINGLE OPERATION, THE LONGITUDINAL JOINT BETWEEN THE LANES SHALL BE OF THE SAWED TYPE, AND IN THE LOCATION CALLED FOR IN THE PLANS. THE SAW CUT SHALL HAVE A DEPTH OF 2-1/4 INCHES IN 8 INCH PAVEMENT, AND A DEPTH OF 2 3/4 INCHES IN 9 INCH PAVEMENT. THE WIDTH OF THE SAW CUT SHALL BE NOT LESS THAN 1/8 INCH NOR MORE THAN 1/4 INCH. THE TIME OF SAWING SHALL NOT BE POSTPONED BEYOND SEVEN DAYS AFTER PAVEMENT CONSTRUCTION. IF, HOWEVER, DUE TO A DELAY IN SAWING, LONGITUDINAL CRACKING OF THE PAVEMENT OCCURS, THE SAWING OF ALL PAVEMENT STILL TO BE CONSTRUCTED SHALL BE DONE JUST AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT THIS OPERATION TO BE PERFORMED WITHOUT TEARING OUT OR RAVELLING OF THE CONCRETE ADJACENT TO THE SAW CUT. THE SAWING OF PAVEMENT IN WHICH LONGITUDINAL CRACKING MAY HAVE OCCURRED WILL BE SUBJECT TO THE DECISION OF THE ENGINEER.

AS RELATED TO THE EQUIPMENT USED IN THE SPREADING AND FINISHING OF THE CONCRETE, AND AS TO THE TIME OF CONSTRUCTING LANES OF PAVEMENT ADJACENT TO PREVIOUSLY CONSTRUCTED PAVEMENT,

THE CONTRACTOR SHALL EMPLOY WHATEVER PRECAUTIONS ARE NECESSARY TO PREVENT DAMAGE TO THE PREVIOUSLY CONSTRUCTED PAVEMENT. IN THE EVENT OF SUCH DAMAGE THE CONTRACTOR SHALL AT HIS OWN EXPENSE, REPAIR, RESTORE AND MAKE GOOD ALL DAMAGED AREAS, AS DIRECTED BY THE ENGINEER.

THE SAWED GROOVE SHALL BE COMPLETELY FILLED WITH HOT-POURED RUBBER-ASPHALT JOINT SEALER OR, AS AN ALTERNATIVE, THE GROOVE MAY BE FILLED WITH A COLD-POURED TYPE OF SEALER COMPLYING WITH FEDERAL SPECIFICATIONS SS-S-159.

THE CONTRACTOR SHALL EMPLOY WHATEVER SPECIAL TYPE OF JOINT-SEALING EQUIPMENT IS NECESSARY TO INSURE THE COMPLETE FILLING OF THE SAWED GROOVES WITH JOINT SEALER.

TIE BARS, CONSISTING OF 5/8 INCH DIAMETER STRAIGHT BARS OF REINFORCING STEEL, 36 INCHES LONG, SHALL BE INSTALLED BETWEEN THE LANES, AND POSITIONED SUCH THAT THEY WILL BE CENTERED ON THE LONGITUDINAL JOINT AND AT RIGHT ANGLES THERETO, AND MIDWAY BETWEEN THE TOP AND BOTTCM OF THE PAVEMENT. THE BARS SHALL BE OF INTERMEDIATE-GRADE, NEW BILLET STEEL, WITH DEFORMATIONS CONFORMING TO ASTM SPECIFICATION A305. THEIR SPACING SHALL BE SUCH THAT THERE IS A BAR ON EACH SIDE OF EVERY TRANSVERSE JOINT, AND 13 INCHES THEREFROM, AND AT INTERMEDIATE INTERVALS OF NOT MORE THAN 48 INCHES. THE BARS SHALL BE INSTALLED IN THE REQUIRED POSITION BY A METHOD THAT MEETS WITH THE APPROVAL OF THE ENGINEER.

IN ALL OTHER RESPECTS, THE PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE PLANS AND SPECIFICATIONS.

THE SUBSTITUTION OF THE METHOD OF CONSTRUCTING TWO ADJACENT LANES AS A SINGLE OPERATION SHALL INVOLVE NO ADDITIONAL COST TO THE STATE.

CURING.

METHODS 3 AND 4 ARE CHANGED TO READ AS FOLLOWS:

3. WHITE POLYETHYLENE SHEETING OR WHITE BURLAP-POLYETHYLENE SHEETING MAINTAINED IN PLACE FOR NOT LESS THAN 72 HOURS.

4. BURLAP, HAY OR STRAW MAINTAINED WET AND IN PLACE FOR NOT LESS THAN 72 HOURS.

WHITE POLYETHYLENE SHEETING.

THIS HEADING AND ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

WHITE POLYETHYLENE OR WHITE BURLAP-POLYETHYLENE SHEETING

THE TOP SURFACE AND SIDES OF THE PAVEMENT SHALL BE ENTIRELY COVERED WITH POLYETHYLENE OR BURLAP-POLYETHYLENE SHEETING. THE UNITS USED SHALL BE LAPPED AT LEAST 18 INCHES. THE SHEETING SHALL BE SO PLACED AND WEIGHTED DOWN AS TO CAUSE IT TO REMAIN IN INTIMATE CONTACT WITH THE SURFACE COVERED. THE SHEETING AS PREPARED FOR USE SHALL HAVE SUCH DIMENSION THAT EACH UNIT AS LAID WILL EXTEND BEYOND THE EDGES OF THE SLAB AT LEAST TWICE THE THICKNESS OF THE PAVEMENT. UNLESS OTHERWISE SPECIFIED, THE COVERING SHALL BE MAINTAINED IN PLACE FOR 72 HOURS AFTER THE CONCRETE HAS BEEN PLACED.

COTTON MATS.

THIS HEADING AND ENTIRE TEXT ARE DELETED.

BURLAP.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

IF A PIPE LINE BE USED TO FURNISH WATER FOR SPRINKLING, IT SHALL HAVE TEES AND STOP COCKS NOT MORE THAN 200 FEET APART. IF THIS PIPE LINE BE USED FOR SUPPLYING WATER FOR THE CONCRETE MIXER AND OTHER OPERATIONS, IT SHALL BE OF SUFFICIENT SIZE, AND OPERATED UNDER SUFFICIENT PRESSURE, TO SERVE ALL SUCH OPERATIONS AND TO PERMIT PROPER SPRINKLING OF THE CURING MATERIAL, AND SHALL NOT BE REMOVED FROM THE SITE OF SPRINKLING UNTIL THE CURING PERIOD IS OVER.

HAY OR STRAW.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

IF A PIPE LINE BE USED TO FURNISH WATER FOR SPRINKLING, IT SHALL HAVE TEES AND STOP COCKS NOT MORE THAN 200 FEET APART. IF THIS PIPE LINE BE USED FOR SUPPLYING WATER FOR THE CONCRETE MIXER AND OTHER OPERATIONS, IT SHALL BE OF SUFFICIENT SIZE, AND OPERATED UNDER SUFFICIENT PRESSURE, TO SERVE ALL SUCH OPERATIONS AND TO PERMIT PROPER SPRINKLING OF THE CURING MATERIAL, AND SHALL NOT BE REMOVED FROM THE SITE OF SPRINKLING UNTIL THE CURING PERIOD IS OVER.

JOINT SEALER.

THIS HEADING AND TEXT IS ADDED.

THE SPECIFIED JOINTS SHALL BE SEALED WITH HOT-POURED RUBBER-ASPHALT TYPE COMPOUND. BEFORE ANY TRAFFIC IS PERMITTED

ON THE PAVEMENT, THE JOINT OPENING SHALL BE CLEANED OF ALL EXTRA-NEOUS MATTER AND THE CONTACT FACES OF THE JOINT SHALL BE DRY AT THE TIME OF FILLING AND SEALING. COMPRESSED AIR JETS, POWER DRIVEN WIRE BRUSHES AND ANY SUCH ADDITIONAL EQUIPMENT NECESSARY TO CLEAN THE JOINT AND DRY THE CONTACT FACES THEREOF SHALL BE REQUIRED. THE COMPOUND SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IN THE SHADE IS LESS THAN 50 F. EXCEPT BY APPROVAL OF THE ENGINEER. THE HEATING KETTLE IN WHICH THE COMPOUND IS PREPARED FOR POURING SHALL BE OF A TYPE WITH INDIRECT HEATING, OF THE DOUBLE BOILER TYPE, WITH BUILT-IN AGITATOR AND EQUIPPED WITH AN INDICATING THERMOMETER TO MEASURE THE TEMPERATURE OF THE MELTING COMPOUND. DIRECT HEAT WILL NOT BE PERMITTED.

THE CONTRACTOR MAY BE REQUIRED TO DEMONSTRATE THAT THE EQUIPMENT PROPOSED FOR USE WILL CONSISTENTLY PRODUCE A JOINT SEALER OF PROPER CONSISTENCY AND THAT THE FLOW TEST PANELS PREPARED FROM THIS COMPOUND AND TESTED IN ACCORDANCE WITH CURRENT FEDERAL SPECIFICATIONS SS-R-406 WILL NOT SHOW A FLOW IN EXCESS OF 0.5 CMS.

THE COMPOUND SHALL BE CUT INTO SMALL PIECES TO FACILITATE UNIFORM MELTING AND SHALL BE MELTED SLOWLY WITH CONSTANT STIRRING. THE COMPOUND SHALL NOT BE HEATED TO A TEMPERATURE IN EXCESS OF THE SAFE HEATING TEMPERATURE. DURING THE PROCESS OF POURING THE JOINTS, THE ENGINEER MAY AT HIS DISCRETION REQUIRE THAT SUFFICIENT COMPOUND BE TAKEN FROM THE MELTING UNIT TO MAKE A FLOW TEST IN ACCORDANCE WITH CURRENT FEDERAL SPECIFICATION SS-R-406. IF THE FLOW IS GREATER THAN 0.5 CMS., THE CONTRACTOR WILL BE REQUIRED TO MODIFY THE METHOD OF HEATING OR OF CHARGING THE HEATING UNIT WITH COMPOUND SO THAT SUBSEQUENT SAMPLES WILL SHOW SATISFACTORY RESULTS. POURING OF THIS COMPOUND FOR SEALING THE JOINTS SHALL BE DONE BY THE USE OF HAND POTS, MECHANICAL METHODS OR ANY OTHER METHOD WHICH WILL GIVE SATISFACTORY RESULTS. POURING SHALL BE DONE IN SUCH A MANNER THAT THE COMPOUND WILL NOT BE SPILLED ON EXPOSED SURFACE OF THE CONCRETE. ANY EXCESS COMPOUND ON THE SURFACE OF THE CONCRETE PAVEMENT SHALL BE REMOVED IMMEDIATELY.

SUFFICIENT COMPOUND SHALL BE POURED INTO THE JOINTS SO THAT UPON COMPLETION OF THE WORK THE SURFACE OF THE COMPOUND WILL BE FLUSH WITH THE SURFACE OF THE ADJACENT CONCRETE. IF THE COMPOUND SUBSIDES TO A LEVEL BELOW THE SURFACE OF THE ADJACENT CONCRETE, ANOTHER POURING WILL BE REQUIRED. WHEN MORE THAN ONE POURING IS REQUIRED TO FILL THE JOINTS, SUCCEEDING POURING SHALL BE MADE IMMEDIATELY AFTER SHRINKAGE OF THE COMPOUND IN THE PREVIOUS POURING HAS TAKEN PLACE. TRAFFIC SHALL NOT BE PERMITTED OVER THE POURED JOINTS UNTIL THE COMPOUND HAS HARDENED SUFFICIENTLY TO RESIST PICKUP.

**BRIDGE APPROACH AND TRANSITION SLABS.**

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THE TEXT IS CHANGED TO READ AS FOLLOWS:

BRIDGE APPROACH AND THE TRANSITION SLABS ADJACENT THERETO SHALL BE CONSTRUCTED IN ALL RESPECTS IN CONFORMITY WITH THE REQUIREMENTS SPECIFIED ABOVE EXCEPT THAT THE PROVISIONS FOR PAVING TWO OR MORE LANES AS A SINGLE OPERATION WILL NOT BE PERMITTED, SIDE FORMS SHALL BE OF A DESIGN ACCEPTABLE TO THE ENGINEER, AND THAT THE REINFORCEMENT STEEL FOR THE BRIDGE APPROACH SLABS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN ARTICLES 4.1.2 AND 8.4.19.

**CONCRETE BATCHING PLANT INSPECTION OFFICE.**

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THIS HEADING AND TEXT IS ADDED:

AT EACH PORTLAND CEMENT CONCRETE BATCHING PLANT THE CONTRACTOR SHALL PROVIDE A PLANT INSPECTION OFFICE FOR USE AS AN OFFICE AND FOR TESTING BY THE ENGINEER DURING THE TIME OF BATCHING OPERATIONS FOR ANY CONCRETE SUPPLIED FOR THE PROJECT. THE INSPECTION OFFICE MAY BE A SEPARATE BUILDING OR A PART OF THE PLANT AND SHALL HAVE AN APPROVED FLOOR WITH AN AREA OF NOT LESS THAN 150 SQUARE FEET, AND THE CEILING SHALL BE NOT LESS THAN 8 FEET FROM THE FLOOR. THE LABORATORY-OFFICE SHALL BE PROVIDED WITH:

NOT LESS THAN 20 SQUARE FEET OF WINDOWS TO FURNISH NATURAL LIGHT;

ADEQUATE ARTIFICIAL LIGHTING;

ADEQUATE 220-VOLT ELECTRICAL OUTLETS FOR HEATING APPARATUS FOR DRYING MATERIALS;

A SUITABLE FIRE UNDERWRITERS' APPROVED FIRE EXTINGUISHER;

WORK BENCH WITH MINIMUM DIMENSIONS OF 72 INCHES X 30 INCHES;

STORAGE SHELVING AS REQUIRED;

A DESK OR TABLE AND AT LEAST 2 CHAIRS;

A 4-DRAWER LEGAL-SIZE FILE CABINET;

SANITARY FACILITIES, CONFORMING TO ARTICLE 1.4.6, IN CLOSE PROXIMITY TO THE INSPECTION OFFICE;

AN EXHAUST FAN, MINIMUM 10 INCH DIAMETER, LOCATED IN CEILING OR WALL;

CONVENIENT ACCESS TO A TELEPHONE IN CLOSE PROXIMITY TO THE INSPECTION OFFICE.

THE INSPECTION OFFICE SHALL BE WATERPROOF, SUFFICIENTLY HEATED IN COLD WEATHER, AND SO LOCATED THAT PLANT OPERATIONS ARE PLAINLY VISIBLE FROM ONE OF THE WINDOWS.

THE CONTRACTOR SHALL ALSO PROVIDE, FOR THE EXCLUSIVE USE OF THE ENGINEER, THE FOLLOWING EQUIPMENT:

A PLATFORM SCALE OF 200 POUNDS MINIMUM CAPACITY WITH A BEAM OR DIAL WITH SIGNIFICANT GRADUATIONS OF 1/10 POUND OR LESS. THE SCALE SHALL BE REGULARLY INSPECTED AND SEALED BY THE NEW JERSEY BUREAU OF WEIGHTS AND MEASURES OR BY A MUNICIPAL WEIGHTS AND MEASURES AGENCY;

A 1 CUBIC FOOT CALIBRATED CONTAINER WITH DETACHABLE INVERTED TRUNCATED CONE APPARATUS CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFORE IN ARTICLE 9.1.5.

MECHANICAL SHAKERS, SCREENS AND SIEVES CONFORMING TO REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION E-11 FOR DETERMINING THE GRADATION OF COARSE AND FINE AGGREGATES;

A SINK WITH RUNNING WATER AND AN ATTACHED DRAIN-BOARD AND DRAIN CAPABLE OF HANDLING ELUTRIABLE MATERIALS;

A METAL STAND TO HOLD SIEVES USED IN WASHING ELUTRIABLE MATERIALS;

A 2-ELEMENT HOT PLATE OR OTHER COMPARABLE ELECTRICAL HEATING DEVICE, WITH SUITABLE DIAL TYPE THERMOSTATIC CONTROLS TO ADJUST THE HEAT, FOR DRYING AGGREGATES;

A BALANCE OF NOT LESS THAN 1000 GRAM CAPACITY WITH A BEAM OR DIAL WITH SIGNIFICANT GRADUATIONS OF 1/10 GRAM OR LESS, AND WITH PANS SUITABLE FOR WEIGHING FINE AGGREGATES. THE BALANCE SHALL BE REGULARLY INSPECTED AND SEALED BY THE NEW JERSEY BUREAU OF WEIGHTS AND MEASURES OR BY A MUNICIPAL WEIGHTS AND MEASURES AGENCY;

A SAMPLE SPLITTER OR SPLITTERS CAPABLE OF SPLITTING AGGREGATES FROM 2 1/2 INCHES GRADATION SIZE THROUGH CONCRETE SAND SIZE;

OTHER NECESSARY SMALL HAND TOOLS REQUIRED FOR PROPER SAMPLING AND TESTING OF THE MATERIALS, AS REQUESTED BY THE ENGINEER.

ALL EQUIPMENT SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE INSPECTION OFFICE, FURNITURE, FIXTURES AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. NO COMPENSATION WILL BE ALLOWED FOR LOSS, ALTERATION OR DAMAGE DURING THEIR USE ON THE PROJECT.

SECTION 14  
TRAFFIC STRIPES

3.14.1. DESCRIPTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TRAFFIC STRIPES SHALL INCLUDE THE STRIPING OF PAVEMENTS WITH WHITE OR YELLOW TRAFFIC PAINT AND APPLYING GLASS BEADS THERETO.

3.14.2. MATERIALS.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHITE TRAFFIC PAINT SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN ARTICLE 8.6.14 FOR WHITE TRAFFIC PAINT, FAST DRY TYPE IV.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

YELLOW TRAFFIC PAINT SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN ARTICLE 8.6.14 FOR YELLOW TRAFFIC PAINT, FAST DRY TYPE IV.

3.14.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATION:

WHERE TRAFFIC STRIPES ARE TO BE PROVIDED ON THE FINAL SURFACE OF THE BITUMINOUS PAVEMENT, THE STRIPES SHALL BE PLACED BEFORE THE PAVEMENT IS OPENED TO TRAFFIC.

PAINT MAY BE THINNED WITH METHYL ETHYL KETONE AS NECESSARY TO COMPLY WITH THE SPECIFIED APPLICATION RATE. NO OTHER TYPE THINNER SHALL BE USED.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 14A

TEMPORARY TRAFFIC STRIPES

3.14A.1. DESCRIPTION.

TEMPORARY TRAFFIC STRIPES SHALL INCLUDE THE STRIPING OF PAVEMENT OR BASE COURSES OR BOTH WITH EITHER WHITE, YELLOW, OR BOTH TYPES OF TRAFFIC PAINT AT LOCATIONS SHOWN ON THE PLANS OR DESIGNATED BY THE ENGINEER, AND SHALL ALSO INCLUDE MAINTAINING AND REMOVING THE STRIPES AS DIRECTED BY THE ENGINEER.

3.14A.2. MATERIALS.

TRAFFIC PAINT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

THESE SPECIFICATIONS COVER ONE TYPE OF READY MIXED WHITE OR YELLOW TRAFFIC PAINT FOR EACH COLOR AS FOLLOWS:



VINYL-ETHYLENE COPOLYMER EMULSION.

THE GENERAL REQUIREMENTS SHALL BE THE SAME AS THE GENERAL REQUIREMENTS AS SPECIFIED IN ARTICLE 8.6.14.

DETAIL REQUIREMENTS AND TESTS-  
TRAFFIC PAINT, WHITE AND YELLOW

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PREPARATION OF PAINT. THE SPECIFIED PROPORTIONS OF PIGMENT FOR THE RESPECTIVE COLOR SHALL BE GROUND IN A SUITABLE AMOUNT OF VEHICLE. THE REMAINDER OF THE VEHICLE, ADDITIONAL THINNER AND ADDITIVES, SHALL THEN BE ADDED TO PRODUCE THE SPECIFIED CONSISTENCY. THE EQUIPMENT TO BE USED IN THE PREPARATION AND MANUFACTURE OF THE PAINT SHALL BE SUBJECT TO INSPECTION AND APPROVAL OF THE ENGINEER.

CONSISTENCY. FORTY EIGHT HOURS AFTER THE PAINT HAS BEEN PREPARED AND PLACED IN CONTAINERS, IT SHALL HAVE A CONSISTENCY OF 85 TO 95 K.U. ALL CONSISTENCIES SHALL BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF FEDERAL TEST METHOD STANDARD NO.141 - METHOD 4281.

DETAIL REQUIREMENTS AND TESTS-TRAFFIC PAINT, WHITE

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DRYING TIME. THE PAINT SHALL HAVE A MAXIMUM NO-PICK-UP DRYING TIME OF 15 MINUTES WHEN APPLIED AT 15 MILS ON CLEAN DRY PAVEMENT AT TEMPERATURES ABOVE 50 DEG. F.

CONTRAST RATIO. THE PAINT SHALL HAVE A 0.94 MINIMUM ON 0.0025 INCH WET FILM THICKNESS DRAWDOWN.

REFLECTANCE. THE PAINT SHALL HAVE A DAYLIGHT REFLECTANCE OF 86% MINIMUM ON A 0.004 INCH WET FILM THICKNESS.

GLOSS. 85 DEGREE. THE PAINT SHALL HAVE A 5 TO 15 PERCENT GLOSS READING AT 0.004 INCH WET FILM THICKNESS DRAWDOWN.

FINENESS OF GRIND. THE PIGMENT IN THE PAINT SHALL BE GROUND TO INDICATE A FINENESS OF 3 MINIMUM AS DETERMINED ON A HEGMAN GRIND GAUGE.

DETAIL REQUIREMENTS AND TESTS-TRAFFIC PAINT, YELLOW

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DRYING TIME- THE PAINT SHALL HAVE A MAXIMUM NO-PICK-UP DRYING TIME OF 1 HOUR WHEN APPLIED AT 15 MILS ON CLEAN DRY PAVEMENT AT TEMPERATURES ABOVE 50 DEG. F.

CONTRAST RATIO. THE PAINT SHALL HAVE A 0.99 MINIMUM ON 0.003 WET FILM THICKNESS DRAWDOWN.

REFLECTANCE. THE PAINT SHALL HAVE A DAYLIGHT REFLECTANCE OF 49% MINIMUM ON A .004 INCH WET FILM THICKNESS DRAWDOWN.

GLOSS. 85 DEGREE. THE PAINT SHALL HAVE 6% MAXIMUM GLOSS READING AT .004 INCH WET FILM THICKNESS.

FINENESS OF GRIND. THE PIGMENT IN THE PAINT SHALL BE GROUND TO INDICATE A FINENESS OF 3 MINIMUM AS DETERMINED ON A HEGMAN GRIND GAUGE.

TRAFFIC PAINT, WHITE

(A) COMPOSITION OF PAINT.

PIGMENT, % BY WEIGHT	40.0 - 42.0
VEHICLE, % BY DIFFERENCE	58.0 - 60.0
WEIGHT PER GALLON, POUNDS MIN.	11.5
TOTAL SOLIDS, % BY WEIGHT	50.0 - 52.0

(B) COMPOSITION OF PIGMENT.

	PERCENT BY WEIGHT OF TOTAL PIGMENT
TITANIUM DIOXIDE, RUTILE	25 - 27
CALCIUM CARBONATE	46 - 48
CALCINED CLAY	26 - 28

(C) COMPOSITION OF VEHICLE

VINYL-ETHYLENE COPOLYMER EMULSION (NON-VOLATILE PERCENT)	15 - 17
WATER, PERCENT	83 - 85

TRAFFIC PAINT, YELLOW

(A) COMPOSITION OF PAINT

TOTAL SOLIDS, % BY WEIGHT	56 - 58
PIGMENT, % BY WEIGHT	44 - 46
VEHICLE, % BY DIFFERENCE	54 - 56
WEIGHT PER GALLON, POUNDS MIN.	12.4

(B) COMPOSITION OF PIGMENT

	PERCENT BY WEIGHT OF TOTAL PIGMENT
MEDIUM CHROME YELLOW	38 - 40
PURE RUTILE TITANIUM DIOXIDE	4 - 6
CALCIUM CARBONATE	25 - 27

CALCINED CLAY  
SILICA

16 - 18  
12 - 14

(C) COMPOSITION OF VEHICLE

VINYL-ETHYLENE  
COPOLYMER EMULSION (NON-VOLITILE)

20 - 22

(D) COLOR. COLOR SHALL CONFORM TO 33538 FEDERAL  
STANDARD 595.

3.14A.3. METHODS OF CONSTRUCTION.

THE METHODS OF CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REQUIREMENTS AS SPECIFIED IN ARTICLE 3.14.3 AND WITH THE FOLLOWING:

THE TRAFFIC STRIPES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE CONTRACTOR SHALL MAINTAIN THE TRAFFIC STRIPES IN GOOD CONDITION AT ALL TIMES THAT THEY ARE NEEDED FOR THE MAINTENANCE OF TRAFFIC.

WHERE MAINTENANCE OF TRAFFIC OR CONSTRUCTION STAGING REQUIRE THE USE OF TRAFFIC STRIPES FOR RELATIVELY SHORT AND TEMPORARY PERIODS, STRIPING OF BITUMINOUS AND CONCRETE PAVEMENTS AND BASE COURSES SHALL BE ACCOMPLISHED BEFORE OPENING TO TRAFFIC.

WHEN NO LONGER REQUIRED, THE TEMPORARY TRAFFIC STRIPES SHALL BE REMOVED FROM THE PAVEMENT BY USE OF APPROPRIATE BRUSH AND DETERGENTS OR BY OTHER MEANS APPROVED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED TO THE TRAFFIC STRIPES IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF DIVISION 3, SECTION 14 AND ARTICLE 8.6.15.

3.14A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF TEMPORARY TRAFFIC STRIPES, WHITE OR YELLOW, OR BOTH, FOR WHICH PAYMENT WILL BE MADE WILL BE THE LENGTH OF 4 INCH WIDE STRIPES ACTUALLY PAINTED, (EXCLUDING GAPS), INCLUDING THE ACTUAL LENGTHS REPAINTED DUE TO REQUIRED MAINTENANCE, IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR TEMPORARY TRAFFIC STRIPES WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM TEMPORARY TRAFFIC STRIPES IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE CLEANING THE PAVEMENT SURFACE, PAINTING AND REMOVING STRIPES, FURNISHING PAINT AND ALL OTHER MATERIALS, ALL LABOR AND EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

Superseded

DIVISION 4  
BRIDGE STRUCTURES

SECTION 1  
CONCRETE STRUCTURES

4.1.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

EPOXY WATERPROOFING SHALL INCLUDE THE FURNISHING AND PLACING OF AN EPOXY COMPOUND ON SURFACES OF CONCRETE AT THE PRESCRIBED LOCATIONS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

EPOXY SEAL COAT SHALL INCLUDE THE FURNISHING AND PLACING OF AN EPOXY SEAL COAT ON SURFACES OF CONCRETE AT THE PRESCRIBED LOCATIONS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

PREFORMED ELASTIC JOINT SEALER SHALL INCLUDE THE FURNISHING AND PLACING OF JOINT SEALER, BONDED TO THE CONCRETE WITH A LUBRICANT-ADHESIVE, IN ROADWAY EXPANSION JOINTS ON BRIDGE DECK SLABS AT LOCATIONS SHOWN ON PLANS.

ROCK ANCHORS TO INSURE THE STABILITY OF FOUNDATIONS FOR WALLS EMBODYING CURTAIN WALL CONSTRUCTION AGAINST ROCK AND OTHER WALLS CONSTRUCTED AGAINST ROCK FACES, SHALL BE OF THE TYPE AND SIZE SHOWN ON THE PLANS. THE NUMBER, LENGTH AND SPACING OF ROCK ANCHORS SHALL BE AS SHOWN ON THE PLANS.

EPOXY BONDING COMPOUND SHALL INCLUDE THE FURNISHING AND PLACING OF AN EPOXY BONDING COMPOUND ON EXISTING CONCRETE AND/OR EXISTING REINFORCEMENT STEEL BEFORE PLACING NEW CONCRETE OR MORTAR AT THE LOCATIONS PRESCRIBED ON THE PLANS OR DETERMINED BY THE ENGINEER.

4.1.2. MATERIALS.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE, EXCEPT FOR WHITE CONCRETE CURB, SHALL BE WASHED GRAVEL OR BROKEN STONE CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.6 AND 8.5.5, RESPECTIVELY, EXCEPT THAT CARBONATE ROCK SHALL NOT BE USED IN CONCRETE FOR BRIDGE DECKS.

THE FIFTH AND SIXTH PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

EXCEPT WHERE OTHERWISE SPECIFICALLY PROVIDED, COARSE AGGREGATES FOR THE VARIOUS ITEMS OF WORK SHALL BE OF THE STANDARD SIZE NUMBERS AS FOLLOWS:

<u>ITEMS OF WORK</u>	<u>STANDARD SIZE NUMBERS</u>
CONCRETE BASE COURSE	
CONCRETE SURFACE PAVEMENT.....	357,467,57, OR 67
FOOTINGS OF NONREINFORCED CONCRETE	
ABUTMENTS, PIERS AND WALLS.....	357,4,467,57, OR 67
FOOTINGS OF REINFORCED CONCRETE	
ABUTMENTS, PIERS AND WALLS.....	467,57, OR 67
NONREINFORCED CONCRETE ABUTMENTS,	
PIERS AND WALLS, ABOVE FOOTINGS.....	357,4,467,57, OR 67
REINFORCED CONCRETE ABUTMENTS,	
PIERS AND WALLS, ABOVE FOOTINGS.....	57 OR 67
ARCH SPANS AND RIGID FRAMES.....	57 OR 67
DECK SLABS, CURBS, SIDEWALKS	
AND PARAPETS.....	57 OR 67
SEAL CONCRETE.....	57 OR 67
BALUSTRADES AND POSTS.....	57,67, OR 7
PRESTRESSED CONCRETE BEAMS AND	
CAST-IN-PLACE CONCRETE DIAPHRAGMS.....	57,67, OR 7
PRECAST AND CAST-IN-PLACE	
CONCRETE PILES.....	57,67, OR 7
MANHOLE, INLET AND CATCH BASIN WALLS,	
PIPE PLUGS, SADDLES AND ENCASEMENTS.....	57,67, OR 7
FOUNDATIONS FOR MANHOLES, INLETS	
AND CATCH BASINS.....	357,467,57,67, OR 7

TOP SLABS FOR MANHOLES, INLETS AND CATCH BASINS.....	57 OR 67
CONCRETE GUTTERS, AND CURBS AND HEADERS.....	57, 67, OR 7
FOUNDATION FOR GRANITE CURB AND HEADERS.....	57, 67, OR 7
WHITE CONCRETE VERTICAL AND SLOPING CURBS.....	57, 67, OR 7
WHITE CONCRETE BARRIER CURB.....	57 OR 67
CONCRETE SIDEWALK AND ISLAND PAVEMENT, WHITE CONCRETE ISLAND PAVEMENT.....	57, 67, OR 7
CLASS C CONCRETE (ROADWAY).....	57, 67, OR 7
CONCRETE CRIB MEMBERS, HEADWALLS AND APRONS, AND MONUMENTS.....	57, 67, OR 7
CONCRETE CULVERTS.....	57 OR 67
FOOTINGS FOR FENCES, SIGNS.....	57, 67, OR 7
FOUNDATIONS FOR HIGHWAY LIGHTING AND TRAFFIC SIGNAL EQUIPMENT AND SIGNS.....	57, 67, OR 7
JUNCTION BOXES.....	57, 67, OR 7

UNLESS SPECIFICALLY EXCLUDED BY SPECIAL PROVISIONS, THE CONTRACTOR MAY USE ANY OF THE AGGREGATE SIZES INDICATED FOR A PARTICULAR ITEM OF WORK; HOWEVER, THE ENGINEER RESERVES THE RIGHT TO REQUIRE THAT THE NEXT SMALLER STANDARD SIZE SHOWN IN THE ABOVE LISTING BE USED SHOULD THE SIZE SELECTED BY THE CONTRACTOR PROVE TO BE A CLEARANCE PROBLEM.

BLENDED SIZES MAY BE PRODUCED BY WEIGHT PROPORTIONING INTO THE WEIGH HOPPER OR PRODUCED BY PLANT COMBINATION INTO STOCKPILES EXCEPT FOR STANDARD SIZE NOS. 357 AND 467. STANDARD SIZE NOS. 357 AND 467 MAY NOT BE STOCKPILED AND SHALL BE PRODUCED ONLY BY WEIGHT PROPORTIONING INTO THE WEIGH HOPPER FROM THEIR CONSTITUENT SIZES. CONFORMANCE TO REQUIRED GRADATION WILL BE DETERMINED ON THE BASIS OF SEPARATE TESTS OF THE COMPONENT SIZES BEFORE COMBINING.

THE FIRST PARAGRAPH ON PAGE 220 OF THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SPECIAL PROVISIONS FOR COUNTY AND MUNICIPAL PROJECTS.

WHEN SO PROVIDED IN THE SUPPLEMENTARY SPECIFICATIONS OF COUNTY AND MUNICIPAL PROJECTS, STANDARD SIZE NOS. 8 AND 89 MAY BE ALLOWED AS ALTERNATIVES FOR SPECIFIC CONSTRUCTION ITEMS.

CONCRETE.

THE FIRST PARAGRAPH UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CONCRETE FOR ALL THE BRIDGE WORK CONSTRUCTED UNDER THIS SECTION SHALL BE AIR-ENTRAINED, EXCEPT THAT AIR-ENTRAINING MAY BE OMITTED FOR CONCRETE IN FOOTINGS. THE REQUIREMENTS FOR AIR-ENTRAINED CONCRETE, AIR-ENTRAINING ADDITIVES AND AIR-ENTRAINING ADMIXTURES SHALL BE AS SPECIFIED IN ARTICLE 3.12.2.

THE CLASS OF CONCRETE REQUIRED FOR PARAPETS AS LISTED UNDER THE SECOND PARAGRAPH ON PAGE 221 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PARAPETS, OTHER THAN PARAPETS FOR 3-RAIL METAL RAILING, SHALL BE CLASS A CONCRETE.

BARRIER PARAPETS SHALL BE CLASS B CONCRETE.

THE LAST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

JOINT SEALER, COLD-APPLIED, SHALL BE TWO-COMPONENT, RUBBER TYPE, AND SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER ARTICLE 8.1.10. BLACK OR GREY COLOR MAY BE USED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

EPOXY WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED UNDER ARTICLE 8.5.41 ELSEWHERE HEREIN.

EPOXY SEAL COAT SHALL BE A POLYSULFIDE EPOXY RESIN SYSTEM CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.43 ELSEWHERE HEREIN.

GRIT FOR SPREADING OVER THE EPOXY SEAL COAT SHALL BE A SUB-ANGULAR NATURAL 98 PERCENT SILICA SAND, OR BOILER SLAG CONFORMING TO ARTICLE 8.5.8. THE PARTICLE SIZE SHALL BE SUCH THAT 90 PERCENT OF THE TOTAL SAMPLE (BY WEIGHT) FALLS BETWEEN NO.6 AND NO.20 MESH WITH NOTHING FINER THAN NO.30 MESH.



PREFORMED ELASTIC JOINT SEALER SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED UNDER ARTICLE 8.5.42 ELSEWHERE HEREIN.

STEEL BARS FOR ROCK ANCHORS SHALL BE DEFORMED STEEL REINFORCEMENT BARS CONFORMING TO THE REQUIREMENTS AS SPECIFIED THEREFOR IN ARTICLE 8.4.19.

GROUT FOR THE ROCK ANCHORS SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND IN PROPORTIONS OF 1:1 MIXED WITH WATER. THE EXACT INGREDIENTS OF THE GROUT MIXTURE SHALL BE APPROVED BY THE ENGINEER. THE COMPRESSIVE STRENGTH OF NON SHRINK GROUT SHALL BE 6000 PSI MINIMUM AFTER 7 DAY AIR CURE AT 75 DEG. F.

RETARDING ADMIXTURE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER ARTICLE 8.5.40 ELSEWHERE HEREIN.

JOINT SEALER, HOT POURED, SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER ARTICLE 8.1.10.

PLASTIC WATERSTOP, CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.44, SPECIFIED ELSEWHERE HEREIN, MAY BE USED AS AN ALTERNATIVE FOR COPPER FLASHING IN JOINTS FOR ABUTMENTS, RETAINING WALLS AND CULVERTS AS SHOWN ON THE PLANS.

CONFIGURATION OF THE PLASTIC WATERSTOP SHALL CONFORM TO DETAILS SHOWN ON THE PLANS. DETAIL DRAWINGS FOR APPROVAL AND DISTRIBUTION SHALL BE FORWARDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.5.3.

FINE AGGREGATE FOR WHITE CONCRETE CURB SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.11.

COLUMN FORMS OF MANUFACTURED FIBER TUBES WILL BE PERMITTED FOR USE AS FORMS FOR ROUND COLUMNS OF CONCRETE. COLUMN FORMS SHALL BE RIGID AND TRULY CIRCULAR IN SECTION. THEY SHALL HAVE A HARD SMOOTH SURFACE ON THE SIDE IN CONTACT WITH THE CONCRETE, SUCH AS WILL PRODUCE A SURFACE SATISFACTORY TO THE ENGINEER WITHOUT THE NECESSITY FOR RUBBING. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF THE TYPE OF FORM HE INTENDS TO USE AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK.

SLEEVES FOR ANCHOR BOLTS, IF AND WHERE USED, SHALL BE CIRCUMFERENTIALLY CORRUGATED. SLEEVES SHALL EITHER BE GALVANIZED METAL OR PLASTIC. THE WALL THICKNESS OF THE SLEEVES SHALL ONLY BE THAT WHICH IS NECESSARY TO WITHSTAND THE CONSTRUCTION LOADS APPLIED TO IT.

SLEEVES FOR INSTALLATION OF THE 16-INCH DUCTILE IRON PIPE THROUGH ABUTMENT BACKWALLS SHALL BE 20-INCH GALVANIZED STEEL

PIPE WITH A MINIMUM WALL THICKNESS OF 0.25 INCHES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A120.

THE GROUT SHALL BE A NON-METALLIC, NON-SHRINK GROUT WHICH, WHEN MIXED WITH WATER WILL HARDEN RAPIDLY TO PRODUCE A PERMANENT ANCHORING BOND. IT SHALL CONTAIN NO METALS NOR RUST OR CORROSION PROMOTING AGENTS. THE COLOR SHALL BE LIGHT GRAY MATCHING APPROXIMATELY THE COLOR OF HARDENED CONCRETE.

THE MATERIAL PREPARED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS, SHALL BE OF A TROWELABLE CONSISTENCY. IT SHALL ALSO HAVE THE FOLLOWING PROPERTIES:

1. THE MATERIAL SHALL EXHIBIT NO SHRINKAGE BUT MAY EXHIBIT SLIGHT EXPANSION OF NO MORE THAN 0.02%.
2. COMPRESSIVE STRENGTH - TWO-INCH CUBES OF THIS MATERIAL WHEN CURED AS SHOWN SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS:

<u>CURE</u>	<u>STRENGTH</u>
24 HOUR AIR CURE AT 75 DEG. F. ....	4000 PSI MINIMUM
7 DAY AIR CURE AT 75 DEG. F. ....	6000 PSI MINIMUM
7 DAY AIR, 10 DAY WATER SUBMERSION .....	6000 PSI MINIMUM
7 DAY AIR, 24 HOUR WATER SUBMERSION, 25 CYCLES	
FREEZE-THAW .....	6000 PSI MINIMUM

3. THE MATERIAL SHALL HAVE A MINIMUM WORKING LIFE OF 30 MINUTES FROM THE TIME OF THE WATER ADDITION.
4. PULL-OUT STRENGTH - A NO. 5 CONCRETE REINFORCEMENT BAR GROUTED 6 INCHES DEEP IN A 7/8 INCH DIAMETER HOLE IN SATURATED SURFACE DRIED CONCRETE SHALL HAVE A PULL-OUT STRENGTH OF 10,000 POUNDS.
5. THE MATERIAL SHALL CONTAIN NOT MORE THAN 0.05% CHLORIDES OR 5% SULFATES.

#### 4.1.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE SLUMP OF SEAL CONCRETE SHALL BE BETWEEN 4 AND 8 INCHES.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

FORMS.

THE FOLLOWING IS ADDED:

WHEN THE CONTRACT PLANS ARE DEVELOPED FOR THE USE OF REMOVABLE BRIDGE DECK FORMS AND AN ALTERNATIVE BID ITEM IS SCHEDULED IN THE PROPOSAL FOR PERMANENT STEEL BRIDGE DECK FORMS. THE BIDDER SHALL ENTER THE PRICE PER UNIT OF MEASURE FOR EACH ALTERNATE SCHEDULED REGARDLESS OF WHICH ALTERNATE THE ENGINEER SELECTS AFTER AWARD OF CONTRACT. WHEN ALTERNATES ARE SCHEDULED, THE PRODUCTS SHALL BE SHOWN ONLY FOR THE LOW ALTERNATE OF SUCH ITEMS. THE ENGINEER WILL NOTIFY THE CONTRACTOR, IN WRITING, WITHIN 30 CALENDAR DAYS AFTER AWARD OF CONTRACT WHICH ALTERNATE SHALL BE USED IN THE CONSTRUCTION.

THE DESIGN, FABRICATION AND INSTALLATION OF THE PERMANENT STEEL BRIDGE DECK FORMS SHALL CONFORM TO THE FOLLOWING PROVISIONS.

MATERIALS. PERMANENT STEEL BRIDGE DECK FORMS AND SUPPORTS SHALL BE FABRICATED FROM STEEL CONFORMING TO A.S.T.M. SPECIFICATION A446 (GRADE C OR E) ZINC-COATED GALVANIZED) WITH A MINIMUM OF 2.0 OUNCES PER SQUARE FOOT (TOTAL COATING, BOTH SIDES). "BASED ON A TRIPLE SPOT TEST WHEN TESTED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 65. ALL SUPPORTS FOR REINFORCEMENT STEEL IN CONTACT WITH THE FORMS SHALL ALSO BE GALVANIZED."

DESIGN. THE FOLLOWING CRITERIA SHALL GOVERN THE DESIGN OF PERMANENT STEEL BRIDGE DECK FORMS:

1. THE STEEL FORMS SHALL BE DESIGNED ON THE BASIS OF DEAD LOAD OF FORM, REINFORCEMENT AND PLASTIC CONCRETE PLUS 50 POUNDS PER SQUARE FOOT FOR CONSTRUCTION LOADS. THE UNIT WORKING STRESS IN THE STEEL SHEET SHALL BE NOT MORE THAN 0.725 OF THE SPECIFIED MINIMUM YIELD STRENGTH OF THE MATERIAL FURNISHED, BUT NOT TO EXCEED 36,000 POUNDS PER SQUARE INCH.
2. DEFLECTION UNDER THE WEIGHT OF THE FORMS, THE PLASTIC CONCRETE AND REINFORCEMENT SHALL NOT EXCEED 1/180 OF THE FORM SPAN OR 1/2 INCH, WHICHEVER IS LESS, BUT IN NO CASE SHALL THIS LOADING BE LESS THAN 120 PSF TOTAL.

THE PERMISSIBLE FORM CAMBER SHALL BE BASED ON THE ACTUAL DEAD LOAD CONDITION. CAMBER SHALL NOT BE USED TO COMPENSATE FOR DEFLECTION IN EXCESS OF THE FOREGOING LIMITS.

3. THE DESIGN SPAN OF THE FORM SHEETS SHALL BE THE CLEAR SPAN OF FORM PLUS 2 INCHES MEASURED PARALLEL TO THE FORM FLUTES.
4. PHYSICAL DESIGN PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH REQUIREMENTS OF THE AMERICAN IRON AND STEEL INSTITUTE SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS, LATEST PUBLISHED EDITION.
5. ALL REINFORCEMENT SHALL HAVE MINIMUM CONCRETE COVER AS INDICATED ON PLANS.
6. THE PLAN DIMENSIONS OF BOTH LAYERS OF PRIMARY DECK REINFORCEMENT FROM THE TOP SURFACE OF THE CONCRETE DECK SHALL BE MAINTAINED.
7. PERMANENT STEEL BRIDGE DECK FORM SHALL NOT BE CONSIDERED AS LATERAL BRACING FOR COMPRESSION FLANGES OF SUPPORTING STRUCTURAL MEMBERS.
8. PERMANENT STEEL BRIDGE DECK FORM SHALL NOT BE USED IN PANELS WHERE LONGITUDINAL DECK CONSTRUCTION JOINTS ARE LOCATED BETWEEN STRINGERS NOR SHALL THEY BE USED FOR THE SLAB OUTSIDE THE FASCIA STRINGERS.
9. WELDING WILL NOT BE PERMITTED TO FLANGES IN TENSION OR TO STRUCTURAL STEEL BRIDGE ELEMENTS FABRICATED FROM NON-WELDABLE GRADES OF STEEL.
10. FABRICATORS' SHOP AND ERECTION DRAWINGS FOR THE FORMS, TOGETHER WITH DECK REINFORCEMENT PLACEMENT DRAWINGS, SHALL BE SUBMITTED IN ACCORDANCE WITH ARTICLE 1.5.3. THESE PLANS SHALL INDICATE THE GRADE OF STEEL, GALVANIZING SPECIFICATION, THE PHYSICAL AND SECTION PROPERTIES FOR ALL PERMANENT STEEL BRIDGE DECK FORM SHEETS AND A CLEAR INDICATION OF LOCATIONS WHERE THE FORMS ARE SUPPORTED BY STEEL FLANGES SUBJECT TO TENSILE STRESSES.
11. VERTICAL LEGS OF FORM SUPPORTS SHALL BE CUT AT OR BELOW THE THEORETICAL BOTTOM OF DECK SLAB IN ORDER TO MAINTAIN CONCRETE COVER OF REINFORCEMENT STEEL AT ALL LOCATIONS.

CONSTRUCTION. ALL FORMS SHALL BE INSTALLED IN ACCORDANCE WITH APPROVED FABRICATION AND ERECTION PLANS.

FORM SHEETS WILL NOT BE PERMITTED TO REST DIRECTLY ON THE TOP OF THE STRINGER OR FLOOR BEAM FLANGES. SHEETS SHALL BE SECURELY FASTENED TO FORM SUPPORTS AND SHALL HAVE A MINIMUM BEARING LENGTH OF 1 INCH AT EACH END. FORM SUPPORTS SHALL BE PLACED IN DIRECT CONTACT WITH THE FLANGE OF STRINGER OR FLOOR BEAM. ALL ATTACHMENTS SHALL BE MADE BY PERMISSIBLE WELDS, BOLTS, CLIPS, OR OTHER

APPROVED MEANS. HOWEVER, WELDING OF FORM SUPPORTS TO FLANGES OF STEELS NOT CONSIDERED WELDABLE AND TO PORTIONS OF FLANGE SUBJECT TO TENSILE STRESSES WILL NOT BE PERMITTED. WELDING AND WELDS SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF AWS D2.0 PERTAINING TO FILLET WELDS EXCEPT THAT 1/8 INCH FILLET WELDS WILL BE PERMITTED.

ANY PERMANENTLY EXPOSED FORM METAL WHERE THE GALVANIZED COATING HAS BEEN DAMAGED SHALL BE THOROUGHLY CLEANED, WIRE BRUSHED AND PAINTED WITH TWO COATS OF ZINC OXIDE-ZINC DUST PRIMER, FEDERAL SPECIFICATION TT-P-641D, TYPE II, NO COLOR ADDED, TO THE SATISFACTION OF THE ENGINEER. MINOR HEAT DISCOLORATION IN AREAS OF WELDS NEED NOT BE TOUCHED UP.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE LOCATED AT THE BOTTOM OF A FLUTE AND 1/4-INCH KEEP HOLES SHALL BE FIELD DRILLED AT NOT LESS THAN 12 INCHES ON CENTER ALONG THE LINE OF THE JOINT.

PLACING OF CONCRETE. PARTICULAR EMPHASIS SHOULD BE PLACED ON PROPER VIBRATION OF THE CONCRETE TO AVOID HONEYCOMB AND VOIDS, ESPECIALLY AT CONSTRUCTION JOINTS, EXPANSION JOINTS, AND VALLEYS AND ENDS OF FORM SHEETS. POURING SEQUENCES, PROCEDURES AND MIXES SHALL BE APPROVED BY THE ENGINEER. CALCIUM CHLORIDE OR ANY OTHER ADMIXTURE CONTAINING CHLORIDE SALTS SHALL NOT BE USED IN THE CONCRETE.

INSPECTION. THE CONTRACTOR'S METHOD OF CONSTRUCTION WILL BE CAREFULLY OBSERVED DURING ALL PHASES OF THE CONSTRUCTION OF THE BRIDGE DECK SLAB. THESE PHASES INCLUDE INSTALLATION OF THE METAL FORMS; LOCATION AND FASTENING OF THE REINFORCEMENT; COMPOSITION OF CONCRETE ITEMS, MIXING PROCEDURES, CONCRETE PLACEMENT AND VIBRATION; AND FINISHING OF THE BRIDGE DECK.

SHOULD THE ENGINEER DETERMINE THAT THE PROCEDURES USED DURING THE PLACEMENT OF THE CONCRETE WARRANT INSPECTION OF THE UNDERSIDE OF THE DECK, THE CONTRACTOR SHALL REMOVE AT LEAST ONE SECTION OF THE FORMS AT A LOCATION AND TIME SELECTED BY THE ENGINEER FOR EACH SPAN IN THE CONTRACT. THIS SHOULD BE DONE AS SOON AFTER PLACING THE CONCRETE AS PRACTICABLE IN ORDER TO PROVIDE VISUAL EVIDENCE THAT THE CONCRETE MIX AND THE CONTRACTOR'S PROCEDURES ARE OBTAINING THE DESIRED RESULTS. AN ADDITIONAL SECTION SHALL BE REMOVED IF THE ENGINEER DETERMINES THAT THERE HAS BEEN ANY CHANGE IN THE CONCRETE MIX OR IN THE CONTRACTOR'S PROCEDURES WARRANTING ADDITIONAL INSPECTION.

AFTER THE DECK CONCRETE HAS BEEN IN PLACE FOR A MINIMUM PERIOD OF 2 DAYS, THE CONCRETE SHALL BE TESTED FOR SOUNDNESS AND BONDING OF THE FORMS BY SOUNDING WITH A HAMMER AS DIRECTED BY THE ENGINEER. IF AREAS OF DOUBTFUL SOUNDNESS ARE DISCLOSED BY THIS PROCEDURE, THE CONTRACTOR WILL BE REQUIRED TO REMOVE THE FORMS FROM

SUCH AREAS FOR VISUAL INSPECTION AFTER THE POUR HAS ATTAINED ADE-  
QUATE STRENGTH. THIS REMOVAL OF THE PERMANENT STEEL BRIDGE DECK  
FORMS SHALL BE AT NO COST TO THE STATE.

AT LOCATIONS WHERE SECTIONS OF THE FORMS ARE REMOVED, THE CONTRAC-  
TOR WILL NOT BE REQUIRED TO REPLACE THE FORMS, BUT THE ADJACENT  
METAL FORMS AND SUPPORTS SHALL BE REPAIRED TO PRESENT A NEAT AP-  
PEARANCE AND ASSURE THEIR SATISFACTORY RETENTION. AS SOON AS THE  
FORM IS REMOVED, THE CONCRETE SURFACES WILL BE EXAMINED FOR CAVIT-  
IES, HONEYCOMBING AND OTHER DEFECTS. IF IRREGULARITIES ARE FOUND,  
AND IT IS DETERMINED BY THE ENGINEER THAT THESE IRREGULARITIES DO  
NOT JUSTIFY REJECTION OF THE WORK, THE CONCRETE SHALL BE REPAIRED  
AS THE ENGINEER MAY DIRECT AND SHALL BE GIVEN AN A.A.S.H.T.O.  
CLASS 1 ORDINARY SURFACE FINISH. IF THE CONCRETE WHERE THE FORM  
IS REMOVED IS UNSATISFACTORY, ADDITIONAL FORMS, AS NECESSARY,  
SHALL BE REMOVED TO INSPECT AND REPAIR THE SLAB, AND THE CONTRAC-  
TOR'S METHODS OF CONSTRUCTION SHALL BE MODIFIED AS REQUIRED TO  
OBTAIN SATISFACTORY CONCRETE IN THE SLAB. ALL UNSATISFACTORY  
CONCRETE SHALL BE REMOVED OR REPAIRED AS DIRECTED BY THE ENGINEER.

THE AMOUNT OF SOUNDING AND FORM REMOVAL MAY BE MODERATED, AT THE  
ENGINEER'S DISCRETION, AFTER A SUBSTANTIAL AMOUNT OF SLAB HAS  
BEEN CONSTRUCTED AND INSPECTED, IF THE CONTRACTOR'S METHODS OF  
CONSTRUCTION AND THE RESULTS OF THE INSPECTIONS AS OUTLINED ABOVE  
INDICATE THAT SOUND CONCRETE IS BEING OBTAINED THROUGHOUT THE  
SLABS.

THE CONTRACTOR SHALL PROVIDE ALL FACILITIES AS ARE REASONABLY  
REQUIRED FOR THE SAFE AND CONVENIENT CONDUCT OF THE ENGINEER'S  
INSPECTION PROCEDURES.

BASIS OF PAYMENT. THE PAY QUANTITY IN THE BRIDGE SLABS SHALL BE  
COMPUTED FROM THE DIMENSIONS SHOWN ON THE PLANS WITH NO ALLOWANCE  
FOR FORM DEFLECTION.

ANY ADDITIONAL REINFORCEMENT STEEL REQUIRED BY THE USE OF THE  
FORMS WILL NOT BE MEASURED FOR PAYMENT.

COLUMN FORMS OF FIBER TUBE, IF USED, SHALL BE ERECTED  
PROMPTLY AFTER DELIVERY. IF STORAGE IS NECESSARY THE TUBES SHALL  
BE SUPPORTED THEIR ENTIRE LENGTH, AND NOT LESS THAN FOUR FEET  
ABOVE THE GROUND. MINIMUM PROTECTION SHALL CONSIST OF TARPAULIN  
WHICH WILL COVER ENDS OF TUBES AT ALL TIMES.

COLUMN FORMS SHALL BE ERECTED AND HELD IN A VERTICAL  
POSITION IN A MANNER WHICH WILL PREVENT DISTORTION OF THE CIRCULAR  
SECTION DURING PLACEMENT OF CONCRETE.

PLACING REINFORCEMENT STEEL.

THE FOLLOWING IS ADDED:

BARS SHALL BE TIED AT ALL INTERSECTIONS EXCEPT WHERE THE SPACING IS LESS THAN 12 INCHES IN EACH DIRECTION, IN WHICH CASE ALTERNATE INTERSECTIONS SHALL BE TIED.

REINFORCEMENT UNDER MASONRY PLATES SHALL BE ACCURATELY POSITIONED TO GIVE PROPER CLEARANCE TO THE ANCHOR BOLTS. AT ABUTMENTS, WHEN THE CONTRACTOR ELECTS TO SET THE ANCHOR BOLTS IN DRILLED HOLES, THE REINFORCEMENT SHALL BE ACCURATELY POSITIONED SO THAT NO BARS ARE DAMAGED BY THE DRILLING.

IF METAL BAR CHAIRS ARE USED TO SUPPORT REINFORCEMENT STEEL, THEY SHALL BE GALVANIZED OR PROVIDED WITH PLASTIC COATED FEET SUBJECT TO THE APPROVAL OF THE ENGINEER.

UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING REINFORCEMENT STEEL SHALL BE PLACED WITHIN THE FOLLOWING TOLERANCES:

FOR EFFECTIVE DESIGN DEPTH "D" IN SLABS, FLEXURAL MEMBERS, WALLS AND COMPRESSION MEMBERS WHERE "D" IS

9 INCHES OR LESS (DECK SLAB).....  
VERTICAL: PLUS 1/8 INCH MINUS 1/4 INCH  
HORIZONTAL: PLUS OR MINUS 1/4 INCH

9 INCHES OR LESS (OTHER MEMBERS).....PLUS OR MINUS 1/4 INCH

MORE THAN 9 INCHES  
BUT LESS THAN 24 INCHES.....PLUS OR MINUS 3/8 INCH

24 INCHES OR MORE.....PLUS OR MINUS 1/2 INCH

PLACING CONCRETE.

THE SECOND SENTENCE IS CHANGED TO READ AS FOLLOWS:

THE CONCRETE MIXTURE SHALL BE PLACED IN SUCH A MANNER THAT SEGREGATION DOES NOT OCCUR AND THE REINFORCEMENT STEEL IS NOT DISPLACED.

THE THIRD SENTENCE IS DELETED.

ALL REFERENCE TO CONCRETE DECK SLABS IN THE LAST PARAGRAPH ON PAGE 225 AND IN THE 2ND AND 3RD FULL PARAGRAPHS ON PAGE 226 ARE DELETED AND THE FOLLOWING TWO SUBSECTIONS ARE SUBSTITUTED THEREFOR:

CONCRETE DECK SLABS. AT LEAST 30 CALENDAR DAYS PRIOR TO THE PROPOSED START OF PLACING BRIDGE DECK CONCRETE, THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN OF OPERATION FOR REVIEW BY THE ENGINEER. THIS PLAN SHALL INCLUDE A SCREED AND RAIL ERECTION PLAN, DECK GRADES, THE SEQUENCE AND PROPOSED RATE OF PLACING CONCRETE, THE NUMBER AND TYPE OF PERSONNEL WHO WILL BE ENGAGED IN THE WORK, AND A COMPLETE DESCRIPTION OF THE EQUIPMENT TO BE USED IN HANDLING, PLACING, AND FINISHING THE CONCRETE. APPROVAL OF THIS PLAN WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR THE SATISFACTORY PERFORMANCE OF HIS METHODS AND EQUIPMENT.

COMPUTATIONS FOR SETTING FORMS AND SCREED SUPPORTS SHALL BE BASED ON AN ACCURATE SET OF ELEVATIONS RUN BY THE CONTRACTOR AT POINTS NO FURTHER THAN 10 FEET APART ON EACH BEAM.

THE PLACING OF CONCRETE WILL NOT BE PERMITTED UNTIL THE ENGINEER IS SATISFIED THAT THE PROPOSED PLACEMENT AND FINISHING OPERATION WILL BE COMPLETED WITHIN THE SCHEDULED TIME, THAT EXPERIENCED CONCRETE FINISHERS ARE AVAILABLE TO FINISH THE DECK, THAT ANY REQUIRED WEATHER PROTECTIVE MATERIALS ARE IN PLACE, AND THAT ALL NECESSARY FINISHING TOOLS AND EQUIPMENT ARE ON HAND AT THE SITE OF THE WORK AND ARE IN SATISFACTORY CONDITION FOR USE.

METHODS, PROCEDURES, AND EQUIPMENT SHALL BE USED WHICH WILL INSURE A SMOOTH RIDING SURFACE COMPLYING WITH THE SURFACE TOLERANCES SPECIFIED HEREIN BELOW WITHOUT OVERVIBRATION OR SEGREGATION OF THE COMPONENTS OF THE CONCRETE.

ANY CHANGE IN THE NUMBER, LOCATION OR CONFIGURATION OF CONSTRUCTION JOINTS FROM THAT SHOWN ON THE DESIGN DRAWINGS MUST BE APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL MAINTAIN A MINIMUM RATE OF PLACEMENT OF 30 CUBIC YARDS PER HOUR FOR ALL DECK SLABS OF 180 CUBIC YARDS OR LESS. WHEN THE DECK SLAB IS IN EXCESS OF 180 CUBIC YARDS OF CONCRETE, THE MINIMUM RATE OF PLACEMENT SHALL BE 40 CUBIC YARDS PER HOUR. THE PLACEMENT OF CONCRETE SHALL BE SCHEDULED SUCH THAT FINISHING OPERATIONS CAN BE COMPLETED DURING DAYLIGHT HOURS UNLESS ADEQUATE LIGHTING FACILITIES ARE PRESENT ON THE SITE AND THE ENGINEER'S APPROVAL IS GIVEN.

THE CONCRETE SHALL BE DELIVERED, DISTRIBUTED AND CONSOLIDATED AT A UNIFORM RATE TO INSURE A CONTINUOUS OPERATION. THE WORKING FACE OF FRESH CONCRETE SHALL AT ALL TIMES BE MAINTAINED APPROXIMATELY PARALLEL TO THE FINISHING MACHINE OR OTHER STRIKEOFF.



UNLESS OTHERWISE INDICATED ON THE PLANS, AN APPROVED SELF-PROPELLED FINISHING MACHINE WILL BE REQUIRED FOR STRIKING OFF AND FINISHING THE SURFACE OF ALL STRUCTURES. THE FINISHING MACHINE SHALL BE THE ROTATING CYLINDER TYPE OR THE OSCILLATING TYPE. LONGITUDINAL OR TRANSVERSE TYPE FINISHING MACHINES MAY BE EMPLOYED FOR SPANS UP TO 75 FEET, WHILE FINISHING MACHINES FOR SPANS EXCEEDING 75 FEET SHALL BE OF THE TRANSVERSE TYPE. THE FINISHING MACHINE SHALL BE CAPABLE OF BEING PROPELLED BOTH FORWARD AND BACKWARD TO ENABLE REPEAT PASSES TO BE MADE IN ORDER TO CORRECT SURFACE IRREGULARITIES AND TO PRODUCE A SURFACE WHICH CONFORMS TO THE REQUIRED PROFILE GRADE, CROSSSECTION AND SURFACE SMOOTHNESS. LONGITUDINAL FINISHING MACHINES SHALL BE THE FULL LENGTH OF THE SPAN. TRANSVERSE FINISHING MACHINES SHALL PREFERABLY BE OF SUFFICIENT SIZE TO FINISH THE FULL WIDTH OF DECK BETWEEN CURBS, BUT NOT LESS THAN THE WIDTH OF THE APPROACH PAVEMENT OR THE DISTANCE BETWEEN LONGITUDINAL CONSTRUCTION JOINTS. IN AREAS OUTSIDE THE WIDTH OF TRAFFIC LANES OR IN AREAS INACCESSIBLE BY MACHINE, VIBRATORY SCREEDS OR OTHER MANUALLY OPERATED STRIKEOFF APPROVED BY THE ENGINEER MAY BE USED.

THE WEIGHT OF THE FINISHING MACHINE SHALL NOT CAUSE UNQUE DEFLECTION OF THE BRIDGE MEMBERS OR FALSEWORK. THE MACHINE SHALL TRAVEL ON STEEL RAILS, PIPE OR OTHER APPROVED GRADE CONTROL, WHICH SHALL BE ADEQUATELY SUPPORTED BY VERTICAL SUPPORTS SECURELY FASTENED IN PLACE AT SPACING SUFFICIENTLY CLOSE TO PREVENT ANY APPRECIABLE DEFLECTION BETWEEN RAIL SUPPORTS. THE SUPPORTS FOR THE RAILS, WHEN LOCATED IN THE DECK CONCRETE, SHALL BE OF THE TYPE WHICH CAN BE REMOVED WITHOUT DISTURBING THE CONCRETE OR PARTIALLY REMOVABLE SO THAT NO PART REMAINS ABOVE 2 1/2-INCHES BELOW THE FINISHED CONCRETE SURFACE. IF SUCH SUPPORTS ARE REMOVED BEFORE INITIAL SET HAS TAKEN PLACE, THE RESULTING HOLES SHALL BE FILLED WITH DECK CONCRETE: IF THE CONCRETE HAS HARDENED HOLES SHALL BE SATISFACTORILY FILLED WITH NON-SHRINK, NON-STAINING GROUT.

PRIOR TO PLACING THE CONCRETE, RAILS OR OTHER GUIDES FOR THE FINISHING MACHINE SHALL BE COMPLETELY IN PLACE, ACCURATELY SET TO ACHIEVE THE DECK ELEVATIONS SHOWN ON THE PLANS, AND SECURED FOR THE FULL LENGTH OF THE CONCRETE PLACING PLUS SUCH ADDITIONAL DISTANCE THAT THE MACHINE WILL CLEAR ALL FINISHING OPERATIONS.

THE FINISHING MACHINE SHALL BE OPERATED OVER THE FULL LENGTH OF THE BRIDGE SEGMENT TO BE FINISHED PRIOR TO BEGINNING CONCRETING OPERATIONS. THIS TEST RUN SHALL BE MADE WITH THE SCREED ADJUSTED TO ITS FINISHING POSITION. DURING THE TEST RUN CHECKS SHALL BE MADE OF THE DEFLECTION AND ADJUSTMENT OF GUIDE RAILS AND OF THE COVER OVER SLAB REINFORCEMENT AND FORMS. ALL NECESSARY CORRECTIONS SHALL BE MADE BEFORE CONCRETING IS BEGUN. IF THE FINISHING MACHINE IS OF THE LONGITUDINAL TYPE, THE TEST RUN MAY BE OMITTED WHEN REINFORCEMENT CLEARANCES PRECLUDE MOVEMENT OF THE MACHINE ACROSS THE DECK.

CONCRETE PLACEMENT AND INITIAL STRIKEOFF BY A TRANSVERSE FINISHING MACHINE SHALL BE COORDINATED SO THAT INITIAL STRIKEOFF IS NEVER MORE THAN 10 FEET BEHIND THE CONCRETE PLACEMENT.

STRIKEOFF BY A LONGITUDINAL FINISHING MACHINE SHALL NOT BE INITIATED UNTIL CONCRETE HAS BEEN PLACED A MINIMUM OF TWO BAYS WIDE FOR THE ENTIRE SLAB LENGTH. IN THIS CONTEXT, A BAY IS DEFINED AS THE HORIZONTAL DISTANCE BETWEEN ADJACENT GIRDERS. THE FINAL PASS BY THE LONGITUDINAL FINISHING MACHINE SHALL SUBSEQUENTLY UNIFORMLY LAG THE PLACEMENT BY THE MINIMUM TWO BAY WIDTH. SUFFICIENT DEPTH CHECKS SHALL BE MADE BEHIND THE MACHINE AND ALONG THE FULL LENGTH OF THE SPAN TO INSURE ACHIEVEMENT OF THE REQUIRED SECTION AND REINFORCEMENT COVER.

THE CONCRETE SHALL BE GIVEN AS FEW PASSES OF THE MACHINE AS ARE NECESSARY TO OBTAIN A SMOOTH, DENSE SURFACE OF THE REQUIRED CONTOUR. A SMALL UNIFORM QUANTITY OF MORTAR SHALL BE MAINTAINED AHEAD OF THE SCREED ON EACH PASS. AT NO TIME SHALL THE QUANTITY OF CONCRETE CARRIED AHEAD OF THE SCREED BE SO GREAT AS TO CAUSE SLIPPING OR LIFTING OF THE FINISHING MACHINE ON THE RAILS.

IMPROPER ADJUSTMENT OR OPERATION OF THE FINISHING MACHINE WHICH RESULTS IN UNSATISFACTORY CONSOLIDATION, REINFORCEMENT COVER, OR SMOOTHNESS SHALL BE CORRECTED IMMEDIATELY. UNSATISFACTORY PERFORMANCE, PARTICULARLY WITH RESPECT TO THE SURFACE SMOOTHNESS ATTAINED, MAY BE CAUSE FOR REJECTION OF THE EQUIPMENT.

A WORK BRIDGE OR OTHER POSITIVE MEANS OF PERMITTING ACCESS TO THE SURFACE OF THE DECK SHALL BE PROVIDED BY THE CONTRACTOR FOR THE PURPOSE OF FINISHING, STRAIGHT-EDGING, MAKING CORRECTIONS, AND FOR OTHER OPERATIONS REQUIRING ACCESS TO THE SURFACE OF THE DECK AFTER THE PASSING OF THE SCREED. BEFORE CONCRETE PLACING OPERATIONS BEGIN,

SUBSTANTIAL BULKHEADS OR HEADERS SHALL BE SET AND SHAPED TO THE REQUIRED DECK SURFACE CROSS-SECTION. UNLESS OTHERWISE SPECIFIED, THE CONCRETE SHALL BE PLACED AS A MONOLITHIC UNIT IN A CONTINUOUS OPERATION BETWEEN JOINTS.

WHEN THE CONCRETE PLACING IS WITHIN ANY COMPLETE UNIT (I.E. FOR TRUSSES, ARCHES, CONTINUOUS OR CANTILEVERED UNIT) IS TO BE DIVIDED AS SHOWN ON PLANS, THE PLACING SHALL BE MADE AND FINISHED IN THE NUMBERED SEQUENCE SHOWN, BEGINNING WITH THE LOWEST NUMBER. ALL SECTIONS HAVING THE SAME NUMBER SHALL BE PLACED BEFORE SECTIONS OF HIGHER NUMBER. HOWEVER, THE SEQUENCE OF PLACING HAVING THE SAME NUMBER SHALL BE AT THE DISCRETION OF THE CONTRACTOR. NO DECK SECTION SHALL BE PLACED UNTIL ALL PREVIOUSLY PLACED CONCRETE WITHIN THE COMPLETE UNIT HAS CURED FOR 72 HOURS. THIS REQUIRE-

MENT MAY BE WAIVED, UNDER CERTAIN CONDITIONS IF THE SUCCEEDING SECTION CAN BE COMPLETED, WITH 4 HOURS OF THE INITIAL PLACEMENT OF THE DAY. WRITTEN APPROVAL OF THE ENGINEER WILL BE REQUIRED TO WAIVE THIS REQUIREMENT.

AFTER THE CONCRETE OF FINISHED SURFACES HAS BEGUN TO SET IT SHALL NOT BE WALKED UPON OR OTHERWISE DISTURBED FOR A PERIOD OF AT LEAST 72 HOURS OR LONGER, IF IN THE OPINION OF THE ENGINEER 72 HOURS ARE NOT SUFFICIENT.

UNLESS OTHERWISE SHOWN, THE SIDEWALKS, PARAPETS AND CURBS WITHIN ANY ONE COMPLETE UNIT SHALL NOT BE PLACED UNTIL ALL THE DECK SLABS WITHIN THAT COMPLETE UNIT HAVE BEEN PLACED. THE NUMBERED SEQUENCE SHOWN SHALL ALSO APPLY TO PEDESTRIAN SIDEWALKS (OVER 2' - 6" WIDE) SECTIONS, BUT IT NEED NOT APPLY TO SAFETY CURBS (2' - 6" WIDE OR LESS), CURBS, AND PARAPETS.

FOR SIMPLE SPANS THE PLACING OF CONCRETE SHALL PREFERABLY PROGRESS UPGRADE. HOWEVER, DECK SLABS MAY BE PLACED WITH A FINISHING MACHINE IN A CONTINUOUS OPERATION FROM EITHER END OF A BRIDGE REGARDLESS OF GRADE.

FINISHING DECK SLAB SURFACES. BRIDGE DECK OR TOP SLABS OF STRUCTURES SERVING AS FINISHED PAVEMENTS OR BASES SHALL BE FINISHED AS SPECIFIED ABOVE.

FINISHING SHALL CONTINUE UNTIL SUCH TIME AS THERE REMAINS NO DEVIATION GREATER THAN 1/8-INCH WHEN TESTED FOR TRUENESS WITH A 10 FOOT METAL STRAIGHT EDGE FURNISHED BY THE CONTRACTOR. WHEN A BITUMINOUS CONCRETE SURFACE IS TO BE PLACED ON A BRIDGE DECK, THEN SAID DEVIATION MAY BE RELAXED TO 1/4-INCH, WHEN TESTED FOR TRUENESS WITH A 10 FOOT METAL STRAIGHT EDGE.

THE ROADWAY SURFACE SHALL BE GIVEN A FINAL FINISH IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 3.12.3.

IF THE BRIDGE DECK CONCRETE DOES NOT MEET THE ABOVE SMOOTHNESS SPECIFICATIONS, THE CONTRACTOR WILL BE ALLOWED TO REMOVE HIGH SPOTS UP TO 1/2-INCH BY MEANS OF GRINDING. THE USE OF BUSH HAMMERS WILL NOT BE ALLOWED. THE CONTRACTOR SHALL RESTORE THE TINED SURFACE TEXTURE FINISH CHARACTER OF THE AREA SO GROUND IN A MANNER SATISFACTORY TO THE ENGINEER. NO CONCRETE SHALL BE REMOVED THAT WILL RESULT IN A CONCRETE SLAB THICKNESS LESS THAN THAT CALLED FOR ON THE PLANS. ANY OTHER CORRECTIONS SHALL BE MADE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE FOLLOWING IS ADDED:

NEWLY PLACED CONCRETE IN CONTACT WITH PREVIOUSLY PLACED CONCRETE AT HORIZONTAL CONSTRUCTION JOINTS THAT WILL BE VISIBLE IN

THE FINISHED STRUCTURE AND NEWLY PLACED CONCRETE IN CONTACT WITH SURFACES OF EXISTING CONCRETE STRUCTURES SHALL CONTAIN AN EXCESS OF MORTAR TO INSURE BOND. IN ORDER TO PROVIDE SUFFICIENT MORTAR FOR SUCH JOINTS, A LAYER OF PORTLAND CEMENT MORTAR ONE TO TWO INCHES THICK SHALL BE DEPOSITED AGAINST THE EXISTING CONCRETE INTO WHICH THE REGULAR MIX CONCRETE SHALL BE DEPOSITED IMMEDIATELY. THE CEMENT SAND MORTAR SHALL BE OF THE SAME PROPORTIONS AS IN THE REGULAR CONCRETE MIX EXCEPT THAT THE COARSE AGGREGATE IS OMITTED.

CONCRETING IN COLD WEATHER.

THE LAST PARAGRAPH IS DELETED.

THE FOLLOWING IS ADDED:

SUBJECT TO THE ENGINEER'S APPROVAL, CONCRETE MAY BE PLACED WHEN THE ATMOSPHERIC TEMPERATURE IS ABOVE 10 DEGREES F., UNDER THE FOLLOWING CONDITIONS:

- A. WHEN THE CONCRETE IS PLACED WITHIN AN ADEQUATE ENCLOSURE, WHICH WILL EFFECTIVELY MAINTAIN THE REQUIRED TEMPERATURES AND MOISTURE FOR THE SPECIFIED PERIODS OF TIME.
- B. WHEN CONCRETE HEATED TO 60 DEGREES F. IS PLACED IN A FROST-FREE EXCAVATION BELOW GROUND LEVEL AND THE TOP SURFACE IS PROTECTED WITH NOT LESS THAN A ONE-FOOT THICKNESS OF STRAW OR HAY AND IS TIGHTLY COVERED BY TARPULINS SO AS TO MAINTAIN THE REQUIRED TEMPERATURES AND MOISTURE FOR THE SPECIFIED PERIODS OF TIME.
- C. WHEN CONCRETE IS ADEQUATELY PROTECTED BY INSULATION SO AS TO MAINTAIN THE REQUIRED TEMPERATURES AND MOISTURE FOR THE SPECIFIED PERIODS OF TIME.

THE FOLLOWING REQUIREMENTS SHALL BE OBSERVED IN THE USE OF INSULATION:

1. THE INSULATING BLANKET SHALL HAVE A MOISTURE-RESISTANT COVERING ON THE SIDE EXPOSED TO THE WEATHER AND A HEAVY PAPER LINING ON THE INNER SIDE. THE THERMAL CONDUCTIVITY (K) OF THE INSULATING BLANKET SHALL NOT EXCEED .27 BTU PER SQUARE FOOT PER HOUR, PER DEGREE F. TEMPERATURE DIFFERENCE BETWEEN THE TWO SURFACES.
2. THE BLANKET INSULATION SHALL BE TIGHTLY APPLIED AGAINST THE FORMS WITH NAILING FLANGES EXTENDING OUT FROM THE BLANKET SO THAT THEY CAN BE STAPLED OR

THE MINIMUM NUMBER OF FULL-LENGTH TESTS REQUIRED TO DETERMINE THE LOT PERCENT DEFECTIVE LENGTH SHALL BE EQUAL TO THE TOTAL NUMBER OF WHEELPATHS IN THE LOT. THE NUMBER OF TESTS PERFORMED BEYOND THIS MINIMUM, IF ANY, AND THEIR LOCATION, SHALL BE COMPLETELY AT THE OPTION OF THE ENGINEER.

IF THE LOT PERCENT DEFECTIVE LENGTH OF A MACHINE FINISHED DECK SLAB IS 20.0 PERCENT OR MORE, THE ENGINEER MAY ORDER REMOVAL OF ANY OR ALL OF THE CONCRETE IN THE LOT.

CESSATION OF DECK CONCRETING:

THE ENGINEER RESERVES THE RIGHT TO REJECT METHODS OR EQUIPMENT WHICH DO NOT RESULT IN SUBSTANTIAL CONFORMITY WITH A 1/8 INCH IN 10 FEET SURFACE TOLERANCE.

IN NO CASE SHALL THE CONTRACTOR BE PERMITTED TO IMMEDIATELY INITIATE FURTHER PROJECT DECK POURS IF THE LOT PERCENT DEFECTIVE LENGTH EQUALS OR EXCEEDS 20.0 PERCENT ON ANY MACHINE FINISHED DECK SLAB. IF THESE LIMITATIONS BE EXCEEDED, THE PARTICULAR PLACEMENT AND FINISHING OPERATIONS INVOLVED SHALL BE DISCONTINUED UNTIL OTHER METHODS OR EQUIPMENT ARE PROPOSED FOR TRIAL BY THE CONTRACTOR, SUBMITTED IN WRITING TO THE ENGINEER, AND APPROVED. APPROVAL OF THIS REVISED PLAN OF OPERATIONS WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR THE SATISFACTORY PERFORMANCE OF HIS REVISED METHODS OR EQUIPMENT.

THE CONTRACTOR WILL NOT BE GRANTED ADDITIONAL COMPENSATION, EXTENSION OF TIME, OR OTHER CONCESSION BECAUSE OF THE REQUIRED EXECUTION AND APPROVAL OF A REVISED PLAN OF OPERATIONS.

SURFACE REMEDIAL MEASURES:

REGARDLESS OF THE OVERALL SMOOTHNESS CONFORMITY OF A LOT OF BRIDGE DECK CONCRETE, IF SURFACE DEVIATIONS HAVE A DETRIMENTAL EFFECT ON DECK DRAINAGE OR REINFORCEMENT STEEL COVER, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO UNDERTAKE APPROPRIATE REMEDIAL MEASURES TO RESTORE ANY OR ALL OF THE DECK SLAB SURFACE TO THE REQUIRED GRADES AND SURFACE TOLERANCE. WHEN SUCH REMEDIAL PROCEDURES ARE ORDERED BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT IN WRITING, FOR APPROVAL BY THE ENGINEER AND THE BUREAU OF STRUCTURAL DESIGN, A PROPOSAL SETTING FORTH THE INTENDED LIMITS OF THE SURFACE RESTORATION AND A COMPLETE DESCRIPTION OF THE METHODS, EQUIPMENT AND MATERIALS PROPOSED FOR USE.

FOLLOWING SATISFACTORY COMPLETION OF THE APPROVED SURFACE RESTORATION MEASURES TO THE BRIDGE SLAB, THE ENTIRE LOT CONTAINING THE AFFECTED AREA SHALL BE RETESTED FOR SMOOTHNESS ACCEPTANCE.

THE ENTIRE WORK OF PLANNING AND EXECUTING SURFACE RESTORATIONS, INCLUDING ALL MATERIALS, LABOR, EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO, SHALL BE CONSIDERED PART OF THE WORK OF CONCRETE DECK SLAB CONSTRUCTION. THE CONTRACTOR WILL NOT BE GRANTED ADDITIONAL COMPENSATION, EXTENSION OF TIME, OR OTHER CONCESSION FOR ANY SURFACE RESTORATIONS ORDERED BY THE ENGINEER.

CURING.

THE FOLLOWING SHALL BE ADDED AFTER THE FIRST SENTENCE:

CONCRETE DECKS SHALL BE CURED BY METHOD 1. WHITE PIGMENTED LIQUID COMPCUND AS DESIGNATED IN ARTICLE 3.12.3, EXCEPT THAT FOR CONCRETE SURFACES SCHEDULED TO RECEIVE AN EPOXY COATING, RUBBED FINISH OR COVERED WITH A SUBSEQUENT PLACEMENT SUCH AS A SIDEWALK OR CONCRETE PARAPET METHODS 2, 3 AND 4 ONLY SHALL BE USED.

CONTRACTION AND CONSTRUCTION JOINTS.

THE FOLLOWING IS ADDED:

FOR BOX CULVERTS, THE CONTRACTOR MAY OMIT THE CONSTRUCTION JOINT BETWEEN THE WALLS AND TOP SLAB ONLY IF THE JOINT IS DESIGNATED "OPTIONAL" IN THE PLANS.

IF THE CONTRACTOR ELECTS TO OMIT THE JOINT, HE SHALL DELAY PLACING THE CONCRETE IN THE TOP SLAB FOR AT LEAST 2 HOURS AFTER THE CONCRETE IN THE WALLS HAS BEEN PLACED.

SURFACE FINISH.

THE LAST TWO SENTENCES OF THE THIRD FULL PARAGRAPH ON PAGE 230 ARE DELETED:

THE FOLLOWING IS ADDED:

ALL EXTERIOR SURFACES OF CONCRETE PARAPETS, PYLONS, SILLS FOR 3-RAIL METAL RAILING AND FACIAS, AND ALL OTHER SURFACES INDICATED OR NOTED ON THE PLANS TO BE RUBBED, SHALL BE FINISHED BY RUBBING WITH BLOCKS OF CARBORUNDUM AS DESCRIBED UNDER THIS HEADING OF THE STANDARD SPECIFICATIONS.

ALL EXPOSED SURFACES OF CONCRETE THAT ARE NOT REQUIRED TO BE FINISHED BY CARBORUNDUM RUBBING OR SPECIAL ARCHITECTURAL FORMS AND LININGS SHALL BE FINISHED BY RUBBING WITH BURLAP AND GROUT COMPOSED OF EQUAL PARTS OF CEMENT AND CLEAN SHARP SAND TO FILL ALL BUBBLE HOLES AND PRODUCE A SMOOTH SURFACE OF UNIFORM COLOR SATISFACTORY TO THE ENGINEER.

IF THE CONTRACTOR USES A FORM COATING WHICH PRODUCES A CONCRETE SURFACE THAT IS ENTIRELY UNIFORM IN COLOR WITH A PERFECTLY SMOOTH TEXTURE THAT IS, IN THE OPINION OF THE ENGINEER, EQUAL IN EVERY WAY TO THE SURFACE FINISH OBTAINED BY THE RUBBING PROCESS SPECIFIED HEREIN, THE RUBBING NEED NOT BE DONE. THE ENGINEER SHALL BE THE SOLE JUDGE AS TO WHETHER OR NOT THE RUBBING MAY BE ELIMINATED.

EPOXY WATERPROOFING.

THIS HEADING AND TEXT IS ADDED:

THE SEALER SHALL BE APPLIED NOT EARLIER THAN SEVEN DAYS AFTER STRIPPING THE FORMS. BEFORE APPLICATION, THE SURFACES SHALL BE THOROUGHLY CLEANED OF DIRT, GREASE, FORM OIL, OR OTHER FOREIGN MATERIAL WHICH MAY HAVE ACCUMULATED.

THE TWO COMPONENTS OF THE ADHESIVE SHALL BE BLENDED IN EQUAL PARTS BY VOLUME, AND TO EACH FOUR PARTS OF THE MIXTURE THUS OBTAINED, THERE SHALL BE ADDED ONE PART TOLUENE AS A THINNER. NOT MORE ADHESIVE SHALL BE MIXED THAN CAN BE APPLIED IN ONE HOUR, AND THE TEMPERATURE SHALL BE BETWEEN 40 AND 85 DEGREES FAHRENHEIT AT THE TIME OF APPLICATION. APPLICATION SHALL BE BY BRUSH ONLY, AND TWO COATS SHALL BE APPLIED, THE SECOND COAT AFTER THE FIRST IS THOROUGHLY DRY. FINISHED THICKNESS SHALL BE 10 MILS.

BEFORE THE SECOND COAT IS DRY, AND WHILE STILL TACKY, A LAYER OF SAND SHALL BE SPREAD OVER THE TOP SURFACES ONLY, EXCEPT ON MASONRY PLATE BEARING AREAS AND TAMPED INTO THE ADHESIVE. AFTER THE ADHESIVE HAS SET, ALL EXCESS SAND SHALL BE BRUSHED OFF. SAND SHALL BE AS SPECIFIED FOR CONCRETE FINE AGGREGATE EXCEPT THAT ALL PARTICLES COARSER THAN NO. 30 SIEVE SHALL BE SCREENED OUT.

BEARING SURFACES OF MASONRY SHALL RECEIVE THE APPLICATION OF SEALING COMPOUND AFTER THEY ARE BUSH-HAMMERED TO THE PROPER ELEVATION.

THE CONTRACTOR IS WARNED THAT THESE WATERPROOFING MATERIALS ARE TOXIC, AND ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT INJURY DUE TO THEIR USE.

EPOXY SEAL COAT.

THIS HEADING AND TEXT IS ADDED:

OIL AND GREASE SPOTS SHALL BE REMOVED BY SCRUBBING WITH A 10 PERCENT MURIATIC (HYDROCHLORIC) ACID SOLUTION FOLLOWED BY FLUSHING WITH CLEAN WATER FOR ABOUT 3 TO 5 MINUTES.

THE PLACING OF THE COATING SHALL BEGIN FOLLOWING A DRY WEATHER PERIOD OF AT LEAST 3 DAYS. THE CONCRETE SURFACE SHALL BE COMPLETELY DRY AT THE TIME THE COATING IS PLACED. AIR JETS OR A LARGE VACUUM CLEANER (SUCH AS BLACK AND DECKER NO. 95 VACKAR) SHALL BE USED TO INSURE COMPLETE REMOVAL OF ALL DUST AND SMALL PARTICLES JUST PRIOR TO COATING.

THE EPOXY SEAL COAT SHALL BE APPLIED AT THE RATE OF ONE (1) GALLON PER 100 SQUARE FEET. THE SEALER SHALL BE MIXED AND APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. NO SOLVENT SHALL BE ADDED. HAND SPRAY METHODS WILL BE PERMITTED PROVIDED DUE CARE IS TAKEN TO INSURE UNIFORM AND ADEQUATE COVERAGE. THE COATING SHALL ALSO BE PLACED ON THE VERTICAL FACES OF CURBS FOR A HEIGHT OF NOT LESS THAN ONE NOR MORE THAN 2 INCHES ABOVE THE TOP OF CONCRETE SLAB.

BEFORE THE COATING HAS SET AND WHILE IT IS STILL TACKY, GRIT SHALL BE BROADCAST OVER THE COATING BY TRUCK SPREADER OR BY HAND AT A UNIFORM RATE OF AT LEAST 5 POUNDS PER SQUARE YARD. IT IS IMPORTANT THAT THE SURFACING GRIT BE CLEAN AND DRY WHEN APPLIED. THE GRIT SHALL BE LIGHTLY ROLLED INTO THE RESIN. WHEN THE COATING HAS HARDENED, THE EXCESS GRIT SHALL BE SWEEP AWAY. THE GRIT REMOVED MAY BE REUSED ON REMAINING AREAS TO BE RESURFACED, PROVIDED THAT IT IS CLEAN AND DRY.

THE BITUMINOUS CONCRETE OR FILL SHALL NOT BE PLACED UNTIL THE SEALER HAS SUFFICIENTLY CURED SO AS TO BE TACK FREE. ANY AREAS OF THE SEALER DAMAGED BY THE CONTRACTOR'S OPERATIONS WILL RESULT IN THE REQUIREMENT THAT THEY BE REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO EXPENSE TO THE STATE.

THE POT-LIFE OF THE RESIN, MIXING PERIOD, MAXIMUM TIME-LAPSE BETWEEN MIXING AND GRIT APPLICATION, AND CURING PERIOD ARE DEPENDENT ON THE TEMPERATURE, HUMIDITY, WIND CONDITIONS, AND ON THE PROPRIETARY PRODUCT BEING USED. THE CONTRACTOR SHALL ACQUAINT HIMSELF WITH SUCH INFORMATION AS RECOMMENDED BY THE MANUFACTURER AND HE SHALL SCHEDULE HIS OPERATIONS ACCORDINGLY.

PREFORMED ELASTIC JOINT SEALER.

THIS HEADING AND TEXT IS ADDED:

THE SEALER SHALL BE INSTALLED BY THE USE OF SUITABLE HAND OR MACHINE TOOLS AND THOROUGHLY SECURED IN PLACE WITH THE LUBRICANT-ADHESIVE WHICH SHALL COVER BOTH SIDES OF THE SEALER OVER THE FULL AREA IN CONTACT WITH THE STEEL. THE ADHESIVE MAY BE APPLIED TO THE CONCRETE OR THE SEALER OR BOTH. THE SEALER SHALL BE INSTALLED IN A SUBSTANTIALLY FULLY COMPRESSED CONDITION AND SHALL AT ALL TIMES BE 1/2" BELOW THE LEVEL OF THE PAVEMENT SURFACE.



THE SEALER SHALL BE INSTALLED AS SOON AS PRACTICAL AFTER THE CURING PERIOD USING AN APPROVED LUBRICANT-ADHESIVE. TEMPERATURE LIMITATIONS OF THE ADHESIVE AS GUARANTEED BY THE MANUFACTURER SHALL BE OBSERVED. JOINTS SHALL BE THOROUGHLY CLEANED AND SHALL BE FREE OF OIL, CURING COMPOUND AND ALL OTHER FOREIGN MATERIALS IMMEDIATELY PRIOR TO THE APPLICATION OF THE LUBRICANT-ADHESIVE.

ALL SEALERS AND ADHESIVES SHALL BE FURNISHED TO COMPLY WITH THE MATERIAL AS APPROVED AS A RESULT OF TESTS. FOR ALL SUCH SEALERS AND ADHESIVE FURNISHED AND INSTALLED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER A CERTIFICATION THAT THE MATERIALS PLACED ARE THE SAME AS THOSE APPROVED AND SHALL BACK THIS UP WITH A CERTIFICATION BY THE MANUFACTURER AS TO THE NATURE AND CHARACTERISTICS OF THE MATERIALS PURCHASED BY THE CONTRACTOR.

THE SEALER SHALL BE FURNISHED AND INSTALLED CONTINUOUS IN LENGTH ACROSS THE FULL WIDTH OF SLAB, UNLESS OTHERWISE PERMITTED BY THE ENGINEER IN WRITING.

#### ROCK ANCHORS.

THIS HEADING AND TEXT IS ADDED:

HOLES FOR ROCK ANCHORS SHALL BE DRILLED TO THE DIAMETER AND LENGTHS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, BY ACCEPTABLE ROCK DRILLING PRACTICES. WHEN THE HOLE HAS REACHED THE PROPER DEPTH, IT SHALL BE THOROUGHLY CLEANED OUT BY AIR STREAMS UNDER PRESSURE. A METAL TUBE OF SUFFICIENT LENGTH TO REACH THE BOTTOM OF THE DRILLED HOLE SHALL THEN BE INSERTED TILL IT TOUCHES THE BOTTOM OF THE HOLE. THE GROUT SHALL THEN BE PLACED INSIDE THE METAL TUBE, WHICH WHILE BEING FILLED SHALL BE GRADUALLY WITHDRAWN ALLOWING THE GROUT TO FLOW INTO THE HOLE AND FILL THE SPACE BEHIND IT. IMMEDIATELY AFTER THE GROUT HAS BEEN PLACED, THE STEEL ANCHOR RODS SHALL BE FORCED INTO THE GROUT-FILLED HOLE BY STEADY PRESSURE OR LIGHT TAPPING UNTIL IT COMES TO REST ON THE BOTTOM OF THE HOLE.

WHEN THE GROUT HAS SET AND HARDENED SUFFICIENTLY, IN THE OPINION OF THE ENGINEER, TO BE READY FOR TESTING, A NUMBER OF ANCHOR ASSEMBLIES AMOUNTING TO NOT LESS THAN 5 PERCENT OF THE TOTAL NUMBER PROVIDED BUT IN NO CASE LESS THAN 2, SHALL BE SUBJECTED TO A PULL-OUT TEST BY THE APPLICATION OF A FORCE OF 20 KIPS ON THE ROD. THE TEST PROCEDURE AND APPARATUS SHALL BE APPROVED BY THE ENGINEER.

#### RETARDING MIXTURE.

THIS HEADING AND TEXT IS ADDED:

A RETARDING ADMIXTURE SHALL BE EMPLOYED AS AN INTEGRAL PART OF THE DESIGN MIX FOR CONCRETE IN THE BRIDGE DECK SLABS. THE

ADMIXTURE SHALL ALSO BE USED IN THE CONCRETE MIX FOR SIDEWALK SLABS WIDER THAN 3'-0". IT MAY BE USED FOR PARAPETS AND SIDEWALK SLABS 3'-0" WIDE AND LESS AT THE OPTION OF THE CONTRACTOR.

IN GENERAL, THE MINIMUM AMOUNT OF RETARDING ADMIXTURE TO BE USED SHALL BE IN THE PROPORTION OF 2 OUNCES LIQUID PER BAG OF CEMENT AT AMBIENT TEMPERATURES BETWEEN 50 DEGREES F AND 65 DEGREES F; 3 OUNCES LIQUID AT TEMPERATURES FROM 65 DEGREES F TO 85 DEGREES F; 4 OUNCES LIQUID AT TEMPERATURES ABOVE 85 DEGREES F, EXCEPT WHEN THE INGREDIENTS OF CONCRETE ARE HEATED, THE TEMPERATURE OF THE CONCRETE SHALL GOVERN THE PORTION TO BE USED. UNDER EXCEPTIONAL HOT WEATHER CONCRETING CONDITIONS, OR WHERE EXCEPTIONAL RETARDATION IS NEEDED FOR REVIBRATION OF SPECIAL QUALITY CONCRETE, THE ENGINEER WILL DIRECT THE AMOUNTS TO BE USED. NO RETARDING ADMIXTURE WILL BE REQUIRED AT AMBIENT TEMPERATURES BELOW 50 DEGREES FAHRENHEIT.

#### DECK JOINTS.

THIS HEADING AND TEXT IS ADDED:

AT JOINTS IN THE DECK, THE CONTRACTOR SHALL ADJUST THE TWO HALVES OF THE JOINT SO THAT THE TOP SURFACES WILL BE IN A TRUE PLANE AFTER THE REMOVAL OF THE FORMS AND SUPPORTS.

NO CONSTRUCTION JOINTS SHALL BE FORMED IN THE DECKS EXCEPT WHERE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

#### RUNNING EQUIPMENT ON NEW DECK.

THIS HEADING AND TEXT IS ADDED:

WHEN THE CONCRETE ON THE DECK HAS ATTAINED A STRENGTH OF NOT LESS THAN 3000 POUNDS PER SQUARE INCH AS DETERMINED FROM CYLINDERS CAST DURING THE POURING OF THE DECK AND IS NOT LESS THAN FOURTEEN (14) DAYS OLD, MIXED CONCRETE OR MATERIALS THEREFOR MAY BE TRANSPORTED ON THE SLAB IN TRUCKS.

WHEN CLASS B-1 CONCRETE IS SPECIFIED FOR USE IN THE DECK SLABS, MIXED CONCRETE OR MATERIALS MAY NOT BE TRANSPORTED ON THE SLAB IN TRUCKS UNTIL THE CONCRETE HAS ATTAINED A STRENGTH OF NOT LESS THAN 3000 POUNDS PER SQUARE INCH AS DETERMINED FROM CYLINDERS CAST DURING POURING OF THE DECK AND IS NOT LESS THAN SEVEN (7) DAYS OLD.

HAND OPERATED BUGGIES, IF USED, SHALL BE EQUIPPED WITH PNEUMATIC RUBBER TIRES AND SHALL NOT BE OPERATED OVER CONCRETE WHICH HAS CURED LESS THAN 72 HOURS (OR LONGER, IF THE 72 HOURS ARE NOT SUFFICIENT, IN THE OPINION OF THE ENGINEER).

### SEALING OF JOINTS.

THIS HEADING AND TEXT IS ADDED:

SURFACES OF THE SEAMS AND JOINTS MUST BE CLEAN AND DRY, AND MUST BE FREE OF ALL LOOSE AGGREGATE, PAINT, CORROSION, FORM OIL AND CONCRETE CURING COMPOUND.

ALL LOOSE CONCRETE, DIRT, AND FOREIGN MATTER SHALL BE REMOVED BY SAND BLASTING OR BY THE USE OF A WIRE BRUSH. PROJECTIONS OF CONCRETE INTO THE SEAMS SHALL ALSO BE REMOVED. THE JOINTS AND SURFACES ADJACENT TO THE SEAMS SHALL BE BLOWN FREE FROM ALL LOOSE DUST BY MEANS OF OIL FREE COMPRESSED AIR OF NOT LESS THAN 90 P.S.I. IMMEDIATELY PRIOR TO PRIMING.

ALKALINE SEEPAGE AND FORM OIL SHALL BE CLEANED BY ETCHING OF THE CONCRETE SURFACE WITH 5 PERCENT MURIATIC ACID (COMMERCIAL HYDROCHLORIC ACID), THOROUGHLY RINSING, NEUTRALIZING AND DRYING.

CARE SHALL BE USED TO PREVENT EXCESS PRIMER MATERIAL FROM BEING BRUSHED OUTSIDE OF THE JOINTS IN ORDER TO PREVENT DISCOLORATION OF THE ADJACENT EXPOSED SURFACES.

THE DIRECTIONS FOR APPLICATION OF THE PRIMER, MIXING AND PLACING OF THE COMPOUND, AND THE USE OF EQUIPMENT PRESCRIBED BY THE MANUFACTURER, SHALL BE STRICTLY ADHERED TO. ANY MATERIAL IMPROPERLY MIXED OR LIKELY TO SET UP BEFORE PLACEMENT WILL BE REJECTED.

THE JOINTS SHALL BE SEALED IN A NEAT AND WORKMANLIKE MANNER, FREE FROM ALL DUST AND FOREIGN MATTER. THE SEALING COMPOUND SHALL BE MADE FLUSH WITH OR NOT MORE THAN 1/16 OF AN INCH ABOVE THE ADJACENT SURFACES BY CUTTING OFF ALL EXCESS COMPOUND WITH A WIDE BLADE PUTTY KNIFE.

### COMPOSITE ACTION DESIGN.

THIS HEADING AND TEXT IS ADDED:

THE SUPERSTRUCTURE OF THE BRIDGE IS DESIGNED ON THE ASSUMPTION OF COMPOSITE ACTION OF THE CONCRETE DECK SLAB AND STRINGERS UNDER LIVELOAD AND IMPACT. THE CONTRACTOR SHALL NOT USE ANY SHORING TO SUPPORT THE STRINGERS AT ANY POINT IN THE SPAN LENGTH.

### SETTING ANCHOR BOLTS FOR BEARINGS.

THIS HEADING AND TEXT IS ADDED:

SETTING ANCHOR BOLTS FOR THE MASONRY BEARING PLATES AT THE ABUTMENTS AND PIERS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER ARTICLE 4.3.3.

BRUSH CURBS.

THIS HEADING AND TEXT IS ADDED:

THE 9" BRUSH CURBS ON DECK SLABS AND WINGWALLS SHALL BE PAINTED WITH WHITE TRAFFIC PAINT, TYPE III, CONFORMING TO THE PROVISIONS OF ARTICLE 8.6.14, AS SHOWN ON THE PLANS AND DIRECTED BY THE ENGINEER.

4.1.4. QUANTITY AND PAYMENT.

THE SECOND FULL PARAGRAPH ON PAGE 232 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT FOR CONCRETE PARAPET WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM CONCRETE PARAPET (CLASS A CONCRETE) IN THE PROPOSAL.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

IF GALVANIZED STEEL STAY-IN-PLACE DECK FORMS ARE APPROVED FOR USE ON THE BRIDGES OF THIS CONTRACT, ANY ADDITIONAL CONCRETE REQUIRED IN ORDER TO CONFORM TO THE CRITERIA STATED UNDER ARTICLE 4.1.3 ELSEWHERE HEREIN WILL NOT BE MEASURED FOR PAYMENT.

NO SPECIFIC PAYMENT WILL BE MADE FOR ANY COSTS INCURRED BY THE CONTRACTOR IN COMPLYING WITH PROCEDURES FOR INSPECTION OF STAY-IN-PLACE DECK FORMS SPECIFIED UNDER ARTICLE 4.1.3, AND ALL SUCH COSTS WILL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM CLASS B CONCRETE IN STRUCTURES, SUPERSTRUCTURE.

THE VOLUME OF CONCRETE IN SILLS FOR 3-RAIL METAL RAILING ON THE DECK SPANS WILL BE INCLUDED FOR PAYMENT UNDER THE ITEM CLASS B CONCRETE IN STRUCTURES, SUPERSTRUCTURE.

THE VOLUME OF CONCRETE IN SILLS FOR 3-RAIL METAL RAILING ON ABUTMENT WALLS, TOGETHER WITH THE VOLUME OF CONCRETE IN PYLONS AND SIDEWALKS FORMING AN INTEGRAL PART OF THE WALLS, WILL BE INCLUDED FOR PAYMENT UNDER THE ITEM CLASS B CONCRETE IN STRUCTURES, SUBSTRUCTURE.

THE QUANTITY OF BARRIER PARAPET FOR WHICH PAYMENT WILL BE MADE, WILL BE TOTAL LENGTH OF EACH SIZE OF PARAPET BARRIER ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR BARRIER PARAPET WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM BARRIER PARAPET CONCRETE OF EACH SIZE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE CONSTRUCTION OF BARRIER PARAPET COMPLETE, ALL MATERIALS EXCEPT REINFORCEMENT STEEL (EPOXY COATED), LABOR, EQUIPMENT AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

THE VOLUME OCCUPIED BY EMBEDDED METAL WORK WILL NOT BE DEDUCTED FROM THE VOLUME OF CONCRETE MEASURED FOR PAYMENT.

THE QUANTITY OF EPOXY WATERPROOFING FOR WHICH PAYMENT WILL BE MADE WILL BE THE AREA OF SURFACES ACTUALLY COVERED WITH THE EPOXY SEALING COMPOUND WITHIN THE LIMITS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SEALING CONCRETE SURFACES WITH EPOXY WATERPROOFING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE FEET, AT THE PRICE PER SQUARE FOOT BID FOR THE ITEM EPOXY WATERPROOFING WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING ALL MATERIALS, LABOR AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF EPOXY SEAL COAT FOR WHICH PAYMENT WILL BE MADE WILL INCLUDE THE AREA ACTUALLY COVERED WITH EPOXY SEALER, MEASURED IN SQUARE FEET, IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR EPOXY SEALER WILL BE MADE AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM EPOXY SEAL COAT, WHICH PRICE SHALL INCLUDE CLEANING OF CONCRETE SURFACE, PLACING ALL MATERIALS INCLUDING GRIT, ALL EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF PREFORMED ELASTIC JOINT SEALER FOR WHICH PAYMENT WILL BE MADE WILL BE THE LENGTH OF SEALER ACTUALLY INSTALLED OF THE SIZES AND AT LOCATIONS SHOWN ON PLANS OR DIRECTED BY THE ENGINEER.

PAYMENT FOR THE JOINT SEALER WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM PREFORMED ELASTIC JOINT SEALER, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING THE SEALER AND LUBRICANT-ADHESIVE, INSTALLING IN THE JOINTS, LABOR, EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF ROCK ANCHORS FOR WHICH PAYMENT WILL BE MADE WILL BE THE AGGREGATE OF THE LENGTHS OF HOLES DRILLED FOR AUTHORIZED ROCK ANCHORS, MEASURED FROM THE FACE OF THE ROCK TO THE BOTTOM OF THE HOLES.

PAYMENT FOR THE ROCK ANCHORS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM ROCK ANCHORS WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING ALL MATERIALS, DRILLING, GROUTING, TESTING, LABOR, EQUIPMENT AND ALL ELSE NECESSARY FOR THE PROPER PERFORMANCE OF THE WORK AS SPECIFIED AND AS DIRECTED BY THE ENGINEER, AND ALL OTHER WORK NECESSARY THEREFOR AND INCIDENTAL THERETO.

NO SPECIAL PAYMENT WILL BE MADE FOR FURNISHING AND PLACING WHITE CONCRETE CURB ON THE STRUCTURE AS SHOWN ON THE PLANS.

THE VOLUME OF WHITE CONCRETE ACTUALLY PLACED IN THE BRIDGE DECK SIDEWALKS WILL BE INCLUDED IN THE QUANTITY OF CLASS B CONCRETE IN STRUCTURES, SUPERSTRUCTURE, MEASURED FOR PAYMENT.

THE VOLUME OF WHITE CONCRETE ACTUALLY PLACED IN THE CURBS BUILT AS AN INTEGRAL PART OF THE WINGWALLS WILL BE INCLUDED IN THE QUANTITY OF CLASS B CONCRETE IN STRUCTURES, SUBSTRUCTURE, MEASURED FOR PAYMENT.

NO SPECIFIC PAYMENT WILL BE MADE FOR EMPLOYING ADMIXTURES IN THE CONCRETE MIX, BUT ALL COSTS THEREFOR SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CLASS OF CONCRETE WHERE THEY ARE USED.

NO SPECIFIC PAYMENT WILL BE MADE FOR WATERPROOFING JOINTS, AND THE COST OF THE JOINT FILLER AND PROTECTION, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CLASS OF CONCRETE CONTAINING THE JOINT SEALING COMPOUND.

ANCHORAGES FOR FUTURE LIGHT STANDARDS WILL NOT BE MEASURED FOR PAYMENT, AND ALL COSTS THEREFOR SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE VARIOUS SCHEDULED BRIDGE ITEMS.

NO SPECIFIC PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING METAL SLEEVES FOR ANCHOR BOLTS, IF AND WHERE USED, BUT ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CLASS OF CONCRETE CONTAINING THE ANCHOR BOLTS.

NO SPECIFIC PAYMENT WILL BE MADE FOR CONCRETE PYLONS, BUT THE VOLUME OF CONCRETE PLACED WILL BE INCLUDED IN THE QUANTITY OF CLASS B CONCRETE IN STRUCTURES, SUBSTRUCTURE, MEASURED FOR PAYMENT.

PAYMENT FOR REINFORCEMENT STEEL IN CONCRETE PYLONS WILL BE INCLUDED IN THE ITEM REINFORCEMENT STEEL IN STRUCTURES.

ANCHOR BOLTS FOR BEAM GUIDE RAIL AND 3-PIPE RAIL ATTACHMENTS WILL NOT BE MEASURED FOR PAYMENT, AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE VARIOUS SCHEDULED BRIDGE ITEMS.

THE QUANTITY AND PAYMENT FOR DECK SLAB INSERTS AND SLEEVES THROUGH ABUTMENTS FOR UTILITIES SHALL BE AS SPECIFIED UNDER ARTICLE 4.11.4 ELSEWHERE HEREIN.

NO SPECIFIC PAYMENT WILL BE MADE FOR PAINTING BRUSH CURBS WITH WHITE TRAFFIC PAINT, AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CLASS OF CONCRETE TO BE PAINTED.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 1A

CLASS C CONCRETE (ROADWAY)

4.1A.1. DESCRIPTION.

CLASS C CONCRETE SHALL INCLUDE THE CONSTRUCTION OF MISCELLANEOUS CONCRETE STRUCTURES SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, AND FOR WHICH PAYMENT IS NOT OTHERWISE PROVIDED.

4.1A.2. MATERIALS.

MATERIALS SHALL CONFORM TO THE REQUIREMENTS SHOWN ON THE PLANS AND AS SPECIFIED THEREFOR IN ARTICLE 4.1.2.

4.1A.3. METHODS OF CONSTRUCTION.

EXCAVATION AND BACKFILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF DIVISION 2, SECTION 7.

METHODS OF CONSTRUCTION, AS APPLICABLE, SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ART. 4.1.3 AND AS FOLLOWS:

THE SECOND SENTENCE OF THE SECOND PARAGRAPH ON PAGE 224 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE CONCRETE MIXTURE SHALL BE PLACED IN SUCH A MANNER THAT SEGREGATION DOES NOT OCCUR AND THE REINFORCEMENT STEEL IS NOT DISPLACED.

THE THIRD SENTENCE OF THE SECOND PARAGRAPH ON PAGE 224 OF THE STANDARD SPECIFICATIONS IS DELETED.

PIPE PLUGS SHALL BE CONSTRUCTED IN SUCH MANNER THAT THE INTERIOR OF THE PIPE TO BE PLUGGED SHALL BE COMPLETELY FILLED TO A DEPTH OF 2 FEET, OR A DISTANCE EQUIVALENT TO THE INSIDE DIAMETER OF THE PIPE, WHICHEVER IS THE LESSER DISTANCE.

4.1A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF CLASS C CONCRETE (ROADWAY) FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME OF CLASS C CONCRETE ACTUALLY PLACED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND THE DIRECTIONS OF THE ENGINEER.

PAYMENT FOR CLASS C CONCRETE (ROADWAY) WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID FOR THE ITEM CLASS C CONCRETE (ROADWAY) IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF CONSTRUCTION COMPLETE, EXCAVATION AND BACKFILL, FORMS AND THE REMOVAL THEREOF IF NECESSARY, FURNISHING AND PLACING REINFORCEMENT STEEL, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND ALL OTHER WORK IN CONNECTION THEREWITH OR INCIDENTAL THERETO.

SECTION 18

REINFORCEMENT STEEL IN STRUCTURES, EPOXY COATED

4.18.1. DESCRIPTION.

REINFORCEMENT STEEL IN STRUCTURES, EPOXY COATED SHALL CONSIST OF FURNISHING, EPOXY COATING, FABRICATING, PLACING, AND SECURING IN PLACE REINFORCEMENT STEEL WHICH IS DESIGNATED TO BE EPOXY COATED.

THE EPOXY SHALL BE A POWDER, APPLIED ELECTROSTATICALLY.



THE REINFORCEMENT STEEL BARS SHALL BE UNIFORMLY COATED OVER RIDGES AND VALLEYS.

4.1B.2. MATERIALS.

REINFORCEMENT STEEL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.4.19.

EPOXY FOR COATING REINFORCEMENT STEEL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.46 ELSEWHERE HEREIN.

APPROVAL OF THE EPOXY POWDER SHALL INCLUDE PREQUALIFICATION TESTING BY A RECOGNIZED TESTING LABORATORY.

THE NEW JERSEY DEPARTMENT OF TRANSPORTATION WILL RESERVE THE RIGHT TO PERFORM ANY OR ALL TESTS NECESSARY TO INDICATE PRODUCT COMPLIANCE WITH THE MATERIAL SPECIFICATIONS.

4.1B.3. METHODS OF CONSTRUCTION.

REINFORCEMENT STEEL MAY BE COATED BEFORE OR AFTER FABRICATION.

REINFORCEMENT STEEL SHALL BE BLAST CLEANED TO A NEAR WHITE FINISH IN ACCORDANCE WITH THE REQUIREMENTS OF THE STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATION SSPC-SP 10-63T, AMENDED JANUARY 1, 1971.

REINFORCEMENT STEEL SHALL BE COATED AS SOON AS POSSIBLE AFTER BLAST CLEANING AND BEFORE ANY VISIBLE OXIDATION OF THE CLEANED SURFACE OCCURS, BUT IN NO CASE SHALL MORE THAN 8 HOURS ELAPSE BETWEEN CLEANING AND COATING.

THE COATING SHALL BE APPLIED ELECTROSTATICALLY IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE EPOXY MANUFACTURER.

THE THICKNESS OF THE COATED COATING SHALL BE 7 MILS PLUS OR MINUS 2 MILS. THE THICKNESS OF THE COATING SHALL BE MEASURED IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION G 12.

THE COATING SHALL BE CHECKED VISUALLY AFTER CURING FOR CONTINUITY. IT SHALL BE FREE FROM HOLES, VOIDS, CONTAMINATION, CRACKS, AND DAMAGED AREAS. THE COATING SHALL NOT HAVE MORE THAN 2 HOLIDAYS (PINHOLES NOT VISIBLE TO THE NAKED EYE) IN ANY LINEAR FOOT OF COATED BAR. HOLIDAY CHECKS SHALL BE MADE WITH A 67-1/2-

VOLT HOLIDAY DETECTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

THE COATING APPLICATOR SHALL CHECK EACH PRODUCTION LOT, USING THE METHOD HE HAS FOUND MOST EFFECTIVE FOR MEASURING CURE, AND SHALL CERTIFY THAT THE ENTIRE PRODUCTION LOT OF COATED BARS SUPPLIED IS IN THE FULLY CURED CONDITION.

ALL SYSTEMS FOR HANDLING EPOXY COATED BARS SHALL HAVE PADDED CONTACT AREAS FOR THE BARS WHEREVER POSSIBLE.

ALL BUNDLING BANDS SHALL BE PADDED AND ALL BUNDLES SHALL BE LIFTED WITH A "STRONG BACK", MULTIPLE SUPPORTS, OR A PLATFORM BRIDGE SO AS TO PREVENT BAR TO BAR ABRASION FROM SAGS IN THE BAR BUNDLE.

THE BARS OR BUNDLES SHALL NOT BE DROPPED OR DRAGGED.

BAR SUPPORTS AND TIE WIRES SHALL BE PLASTIC COATED OR EPOXY COATED.

REPAIR TO COATING DAMAGE SHALL BE MADE WITH AN APPROVED PATCHING MATERIAL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

COATING BREAKS (OTHER THAN AT BENDS) IN NON-CRITICAL STRUCTURE AREAS WILL NOT BE REQUIRED TO BE PATCHED IF THE TOTAL DAMAGED AREA IS LESS THAN 5 PERCENT OF THE COATED AREA.

COATING CRACKS ON THE OUTSIDE OF BEND AREAS NEED NOT BE PATCHED IF NO COATING BOND LOSS IS APPARENT.

WHEN REPAIR IS REQUIRED, ALL AREAS SHALL BE PATCHED AS SOON AS POSSIBLE AND BEFORE ANY VISIBLE OXIDATION APPEARS.

#### 4.18.4. QUANTITY AND PAYMENT.

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THE QUANTITY OF REINFORCEMENT STEEL IN STRUCTURES, EPOXY COATED FOR WHICH PAYMENT WILL BE MADE WILL BE THE NET THEORETICAL WEIGHT (NOT INCLUDING THE EPOXY COATING) OF REINFORCEMENT STEEL OF THE SPECIFIED NOMINAL CROSS SECTION, FORMING PART OF THE PERMANENT WORK, ACTUALLY IN PLACE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER. FASTENINGS AND FASTENING DIVICES WILL NOT BE MEASURED FOR PAYMENT. REINFORCEMENT STEEL FOR SPLICES OTHER THAN THOSE SHOWN ON THE PLANS WILL NOT BE MEASURED FOR PAYMENT. IF BARS LARGER THAN THOSE SPECIFIED HAVE BEEN PERMITTED TO BE USED, THE EXCESS MATERIAL WILL NOT BE MEASURED FOR PAYMENT.

PAYMENT FOR REINFORCEMENT STEEL IN STRUCTURES, EPOXY COATED WILL BE MADE FOR THE QUANTITY AS DETERMINED ABOVE, MEASURED IN POUNDS, AT THE PRICE PER POUND BID FOR THE ITEM REINFORCEMENT STEEL IN STRUCTURES, EPOXY COATED IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING, EPOXY COATING, FABRICATING, PLACING AND SECURING IN PLACE, THE REINFORCEMENT STEEL, ALL MATERIALS, LABOR AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 1C

MEMBRANE WATERPROOFING

4.1C.1. DESCRIPTION.

MEMBRANE WATERPROOFING SHALL INCLUDE FURNISHING AND PLACING OF A WATERPROOFING MEMBRANE ON THE SURFACE OF THE EXISTING BRIDGE DECK. THE MEMBRANE SHALL COVER THE ENTIRE BRIDGE DECK EXCLUSIVE OF HEADERS, IN ACCORDANCE WITH THE PLANS, THESE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

4.1C.2. MATERIALS.

THE CONTRACTOR SHALL CHOOSE ANY ONE OF THE MEMBRANE WATERPROOFING SYSTEMS SPECIFIED BELOW.

W.R. GRACE SYSTEM:

HEAVY DUTY BITUTHENE, BITUTHENE PRIMER AND BITUTHENE MASTIC SHALL BE AS MANUFACTURED BY W. R. GRACE AND COMPANY, 62 WHITTEMORE AVENUE, CAMBRIDGE, MASSACHUSETTS, 02140.

ROYSTON SYSTEM:

ROYSTON BRIDGE MEMBRANE NO. 10 AND ROYSTON BRIDGE MEMBRANE PRIMER SHALL BE AS MANUFACTURED BY ROYSTON LABORATORIES INCORPORATED, PITTSBURGH, PENNSYLVANIA, 15238.

PROTECTO WRAP SYSTEM:

M-400 MEMBRANE, NO. 80 PRIMER AND CA 1200 MASTIC SHALL BE AS MANUFACTURED BY PROTECTO WRAP COMPANY, 2255 SOUTH DELAWARE STREET, DENVER, COLORADO, 80223.

#### 4.1C.3. METHODS OF CONSTRUCTION.

##### W.R. GRACE SYSTEM:

SURFACES SHALL BE CLEANED OF OLD MEMBRANE OR OTHER CONTAMINANTS AND REPAIRED IN EVENT OF SPALLING OR OTHER IRREGULARITIES, EXCEPT THAT MINOR DIMPLING INCIDENT TO USE OF A MAUL TO BREAK-UP THE SETTING BED WILL BE ACCEPTED. ELIMINATION OF IRREGULARITIES SHALL BE DONE IMMEDIATELY BEFORE PRIMING. SHARP PROTRUSIONS SHALL BE REMOVED AND THE SURFACE BROOM CLEANED OF LOOSE STONES AND DEBRIS.

ALL CONCRETE SURFACES SHALL BE PRIMED WITH BITUTHENE PRIMER APPLIED BY BRUSH OR ROLLER. PRIMER SHOULD DRY ONE HOUR OR UNTIL TACK-FREE. IT IS PREFERABLE TO PRIME ONLY THE AREA THAT WILL BE COVERED WITH HEAVY DUTY BITUTHENE WITHIN 24 HOURS TO AVOID EXCESSIVE DIRT PICKUP OR SURFACE MOISTURE CONDENSATION. SURFACES NOT COVERED WITHIN 36 HOURS SHALL BE REPRIMED. METAL OR OTHER DENSE SURFACES DO NOT REQUIRE PRIMING, BUT MUST BE CLEAN, DRY, AND FREE OF GREASE, OIL, DIRT, LOOSE PAINT, RUST OR OTHER CONTAMINANTS.

HEAVY DUTY BITUTHENE SHALL NOT BE APPLIED WHEN THE TEMPERATURE OF THE AIR OR CONCRETE IS BELOW 40 DEGREES F.

PROPER PITCH SHALL BE PROVIDED TO GUTTERS OR DRAINS. HEAVY DUTY BITUTHENE SHALL BE LAID FROM THE LOW POINT TO THE HIGH POINT WITH THE MEMBRANE OVERLAPPED IN SHINGLE FASHION.

OVER NON-WORKING JOINTS OR CRACKS GREATER THAN 3/16" WIDE AN 8" REINFORCING STRIP OF HEAVY DUTY BITUTHENE SHALL BE APPLIED BEFORE APPLYING THE FULL COVERAGE OF THE MEMBRANE.

WHERE HEAVY DUTY BITUTHENE IS TERMINATED, TERMINATION EDGES SHALL BE SEALED WITH A BEAD OF BITUTHENE MASTIC.

AT CURBS AND HEADERS, FLASHING STRIPS SHALL BE APPLIED TO THE HEIGHT OF THE ASPHALT CONCRETE OVERLAY AND A MINIMUM OF 6 INCHES ON THE DECK. THE FIRST FULL SHEET OF MEMBRANE SHALL THEN BE APPLIED ON THE DECK AS CLOSE AS POSSIBLE TO THE CURB OR HEADER.

ALL TERMINATION POINTS SHALL BE SEALED WITH A BEAD OF BITUTHENE MASTIC APPLIED AFTER THE MEMBRANE HAS BEEN PLACED. IF A JOB MUST BE LEFT PARTIALLY COMPLETE THE EXPOSED TERMINATION EDGES OF THE MEMBRANE SHALL BE SEALED WITH A BEAD OF BITUTHENE MASTIC.

AREAS AROUND DRAINS OR PROTRUSIONS SHALL BE DOUBLE COVERED WITH HEAVY DUTY BITUTHENE. FLASHING PIECES SHALL BE AP-

PLIED UNDER THE FULL MEMBRANE TO MINIMIZE DAMAGE FROM PAVING EQUIPMENT.

TO AVOID DAMAGE TO THE MEMBRANE OR EXCESS DIRT PICKUP, THE ASPHALT CONCRETE OVERLAY SHALL BE PLACED AS SOON AS POSSIBLE AFTER APPLICATION OF HEAVY DUTY BITUTHENE. HEAVY DUTY BITUTHENE WILL SELF-SEAL SMALL HOLES SUCH AS MADE BY A NAIL BUT NOT LARGE HOLES OR TEARS. BEFORE COVERING THE MEMBRANE, CAREFUL INSPECTION SHALL BE MADE AND ANY TEARS, HOLES, MISALIGNED OR INADEQUATELY LAPPED SEAMS SHALL BE REPAIRED WITH A PATCH OF HEAVY DUTY BITUTHENE.

HEAVY DUTY BITUTHENE MEMBRANE IS INCOMPATIBLE WITH CERTAIN TARS, PITCHES, LIQUID WATERPROOFING AND SEALANTS. CARE MUST BE EXERCISED TO AVOID DIRECT CONTACT WITH SUCH MATERIALS.

FLAT TRACKED OR PNEUMATIC TIRE ASPHALT CONCRETE PAVING EQUIPMENT MAY BE USED. EQUIPMENT SHALL BE INSPECTED FOR BURRS ON TRACKS OR STONES OR SHARP PROJECTIONS WHICH COULD DAMAGE THE MEMBRANE. TRACKED PAVING EQUIPMENT IS PARTICULARLY ADVISABLE IN WARM WEATHER (ABOVE 70 DEGREES F.) FOR ITS GREATER EASE OF CONTROL DURING PAVING.

SUDDEN STOPS OR SHARP TURNS SHALL BE AVOIDED BY THE COMPACTION ROLLERS.

ROYSTON SYSTEM:

ALL POT HOLES AND SPALLS IN THE CONCRETE DECK SHALL BE PATCHED. THE DECK SHALL BE REPAIRED TO THE EXTENT THAT THE SURFACE IS FREE OF SHARP PROTRUSIONS AND VOIDS. ANY UNUSUALLY SHARP CONCRETE EDGES ON THE DECK SURFACE SHALL BE CORRECTED IN A MANNER SATISFACTORY TO THE ENGINEER. MINOR DIMPLING INCIDENT TO THE USE OF A MAUL TO BREAK-UP THE SETTING BED WILL BE ACCEPTED.

THE SURFACE OF THE DECK AND FACE OF THE CURBS, FOR A HEIGHT OF AT LEAST ONE INCH ABOVE THE PROPOSED ASPHALT CONCRETE OVERLAY, SHALL BE THOROUGHLY CLEANED OF ALL LAITENCE, LOOSE CONCRETE, SAND, SOIL, DUST AND OTHER CONTAMINANTS BY SAND BLASTING OR OTHER MECHANICAL METHOD APPROVED BY THE ENGINEER. ALL DUST AND DIRT SHALL BE BLOWN OFF WITH AIR JETS IMMEDIATELY PRECEDING THE APPLICATION OF THE PRIMER. THE CONCRETE SURFACES SHALL BE VISIBLY DRY PRIOR TO AND DURING THE APPLICATION OF THE PRIMER.

ONE COAT OF ROYSTON ROYBOND PRIMER 713 SHALL BE APPLIED TO THE CLEANED DECK AND ALSO UP THE CURB FACE TO THE HEIGHT REQUIRED FOR THE MEMBRANE. THE PRIMER SHALL BE APPLIED WITH A SQUEEGEE, BRUSH OR ROLLER AND WORKED THOROUGHLY INTO THE SURFACE. APPLY AT THE RATE OF ABOUT 10 SQUARE YARDS PER GALLON. AVOID EX-

CESS SQUEEGEE PRESSURE WHICH MAY RESULT IN INSUFFICIENT PRIMER THICKNESS. USE A COARSE BRUSH TO REMOVE EXCESS PRIMER FROM LOW AREAS WHERE IT TENDS TO PUDDLE. PRIMER ACCUMULATIONS IN SMALL HOLES SHOULD BE DISSIPATED BY USING A SMALL PAINT BRUSH. THESE DRYING PRECAUTIONS ARE NECESSARY TO PREVENT SOLVENT ENTRAPMENT WHICH MAY CAUSE SUBSEQUENT BLISTERING OF THE MEMBRANE OR ASPHALT OVERLAY. ALLOW THE PRIMER TO DRY THOROUGHLY BEFORE APPLYING THE MEMBRANE. THIS WILL TAKE ABOUT 30 MINUTES DEPENDING ON TEMPERATURE AND HUMIDITY. EXTENDED DRYING OF THE PRIMER IS NOT HARMFUL BUT PRIMED AREAS SHALL BE PROTECTED AGAINST CONTAMINATION.

THE MEMBRANE SHALL NOT BE APPLIED DURING WET WEATHER CONDITIONS, NOR WHEN THE DECK OR AMBIENT AIR TEMPERATURES ARE BELOW 50 DEGREES F. APPLICATION AT A LOWER TEMPERATURE MAY BE APPROVED BY THE ENGINEER PROVIDED ADEQUATE HEATING EQUIPMENT IS USED TO WARM THE MEMBRANE TO A SATISFACTORY CONDITION.

THE MEMBRANE SHALL BE APPLIED WITH THE STICKY SURFACE DOWN BY REMOVING THE RELEASE PAPER AS APPLICATION PROGRESSES. CARE SHALL BE TAKEN TO APPLY THE MEMBRANE SMOOTHLY WITHOUT WRINKLING AND WITHOUT ENTRAPPING AIR POCKETS. IF MAINTAINING ALIGNMENT IS A PROBLEM THE MEMBRANE MAY BE TAKEN UP AND REPOSITIONED, OR THE ROLL MAY BE CUT INTO TWO 25 FOOT LENGTHS. A HAND ROLLER OF 100 TO 200 POUNDS SHALL BE USED TO PRESS THE MEMBRANE INTO CLOSE CONTACT WITH THE PRIMED SURFACE. SUCCESSIVE ROLLS SHOULD BE APPLIED TO ACHIEVE A SHINGLING EFFECT, WITH AN OVERLAP OF AT LEAST TWO INCHES. REMOVING THE NARROW BAND OF RELEASE PAPER AT THE SIDE OF THE APPLIED ROLL EXPOSES THE STICKY EDGE WHICH WILL BOND TO THE UNDERSIDE OF THE NEXT ROLL WITHOUT PRIMER OR ADHESIVE. WHEN ROLLS ARE OVERLAPPED AT THE END THE SURFACE TO BE COVERED SHALL BE HEATED WITH A PROPANE TORCH TO MELT THE POLYESTER FILM AND FUSE TO THE UNDERSIDE OF THE NEXT ROLL. THIS HEAT FUSION METHOD SHALL ALSO BE USED TO BOND THE MEMBRANE TO THE CURB BY PRESSING OR ROLLING THE HEATED MEMBRANE INTO INTIMATE CONTACT WITH THE PRIMED CURB SURFACE. ANY TORN OR CUT AREAS, OR NARROW OVERLAPS SHALL BE PATCHED BY THE HEAT FUSION METHOD, OVERLAPPING A MINIMUM OF FOUR INCHES. THE MEMBRANE SHALL BE CUT AND MOLDED AROUND IRREGULAR CONTOURS, SUCH AS SCUPPERS, USING THE TORCH WHERE NECESSARY TO AID CONFORMANCE. IF ANY BLISTERS OR BUBBLES APPEAR IN THE APPLIED MEMBRANE THEY SHALL BE CUT OUT AND THE EXPOSED AREA SHALL BE RE-PRIMED, THOROUGHLY DRIED, AND PATCHED.

RUBBER TIRED VEHICLES, INCLUDING PAVERS, MAY BE DRIVEN OR OPERATED ON THE MEMBRANE COVERED SURFACE PROVIDED CARE IS TAKEN TO AVOID SUDDEN STARTS, STOPS OR TURNS. THE MEMBRANE SHALL BE CLEANED OF ANY CONTAMINATION WHICH MAY HAVE ACCUMULATED PRIOR TO PAVING.

PROTECTO WRAP SYSTEM:

THE DECK SHALL BE CLEANED FREE OF ALL LOOSE MATERIAL. SANDBLASTING MAY BE REQUIRED TO REMOVE ROAD OIL, TAR, OR OTHER PETROLEUM BASED CONTAMINANTS. TO DETERMINE IF THIS IS REQUIRED, SMALL TEST AREAS OF PRIMER AND MEMBRANE SHOULD BE APPLIED TO DETERMINE COMPATIBILITY AND ADHESION CHARACTERISTICS. EXPOSED AGGREGATE OR ROUGH AREAS SHALL BE SMOOTHED BY GRINDING OR GROUTING TO PREVENT PUNCTURING OF THE MEMBRANE. MINOR DIMPLING INCIDENT TO THE USE OF MAUL TO BREAK-UP THE SETTING BED WILL BE ACCEPTED.

THE PRIMER REQUIRES THOROUGH MIXING BEFORE USE. USING A PAINT BRUSH, PRIME THE VERTICAL CURB FACE TO THE REQUIRED HEIGHT. IT MAY BE OF HELP TO CHALK A LINE ALONG THE CURB FACE BEFOREHAND. THE DECK AREA SHALL BE PRIMED BY THE USE OF 18" OR LARGER PAINT ROLLERS ON LONG HANDLES. ON SMOOTH SURFACES, 24" SQUEEGEES MAY SUFFICE. IN ANY CASE, EXCESSIVELY THICK APPLICATION OF THE PRIMER SHALL BE AVOIDED. APPLICATION RATE SHALL BE ABOUT 130 SQUARE FEET/GALLON; HOWEVER, THIS WILL VARY WITH THE TEXTURE OF THE SURFACE. (NO. 80 PRIMER MAY ALSO BE APPLIED BY AIRLESS SPRAY METHODS.) THE PRIMER SHOULD DRY TACK FREE IN ABOUT 30 MINUTES TO 1 HOUR. THE SURFACE SHALL BE REPRIMED IF DRIED FOR OVER 12 HOURS, PARTICULARLY IF THE SURFACE HAS BECOME DUSTY. APPEARANCE OF BUBBLES IN THE PRIMER AS IT DRIES IS NORMAL; HOWEVER THEY SHALL BE BROKEN WITH A BROOM OR SQUEEGEE PRIOR TO MEMBRANE APPLICATION. WHEN THE PRIMER ALONG THE CURB HAS AT LEAST PARTIALLY DRIED, RUN A BEAD OF CA 1200 MASTIC ALONG THE COVE AREA BETWEEN THE CURB FACE AND THE DECK. THEN, USING A BRUSH OR PUTTY KNIFE, SPREAD A THIN COATING OF MASTIC ALONG THE VERTICAL CURB FACE OVER THE PRIMER. CA 1200 MASTIC SHALL ALSO BE USED TO SEAL EDGES OF THE MEMBRANE AT EXPANSION JOINTS, ENDS OF THE BRIDGE DECK, AND AROUND SCUPPERS.

THE MEMBRANE IS NORMALLY SUPPLIED IN 50' ROLLS, 30" OR 60" WIDE. THE MEMBRANE IS INTERWOUND WITH A POLYETHYLENE RELEASE FILM WHICH SHALL BE LEFT IN PLACE UNTIL JUST PRIOR TO THE ASPHALT OVERLAY APPLICATION. THIS RELEASE FILM IS PERFORATED ABOUT 5" FROM THE EDGE OF THE ROLLS, ENABLING THE APPLICATION OF SUCCESSIVE STRIPS WITHOUT REMOVING THE ENTIRE FILM.

A POLE OR PIPE ABOUT 8' LONG AND 1" IN DIAMETER MAY BE USED AS A SPINDLE FOR UNROLLING THE MATERIAL. THE CURB AREAS SHALL BE COMPLETED FIRST AS FOLLOWS: CHALK A LINE PARALLEL TO THE CURB TO AID IN PROPERLY ALIGNING THE MATERIAL. EXAMPLE: TOTAL OVERLAY THICKNESS IS TO BE 1.5". CHALK THE LINE 30" MINUS 1.5" OR 28.5" FROM THE CURB FACE. THE 30" WIDE MATERIAL IS THEN APPLIED, RUNNING THE MEMBRANE UP THE CURB FACE THE REQUIRED DISTANCE. PROPER APPLICATION TO THE CURB IS CRITICAL, AND SPECIAL

CARE SHALL BE TAKEN TO SEE THAT THE MATERIAL IS WELL BONDED ALONG THE CURB FACE. ADDITIONAL MASTIC SHALL BE USED IN AREAS WHERE THE BOND IS NOT ADEQUATE.

NEXT, MATERIAL IS APPLIED TO THE DECK IN A MANNER TO PRODUCE A SHINGLING EFFECT SO THAT THE SIDE LAPS ARE DOWNSLOPE. OVERLAP ON ADJACENT STRIPS SHALL BE AT LEAST 2", AND ON END LAPS AT LEAST 5". ADDITIONAL NO. 80 PRIMER MAY BE REQUIRED IF THE OVERLAP BOND IS UNSATISFACTORY DUE TO DUST OR DIRT ON THE EXPOSED EDGES. ON END OVERLAPS, PEEL BACK APPROXIMATELY 8" OF THE RELEASE FILM TO PRESENT A BARE MEMBRANE SURFACE BEFORE APPLYING THE NEXT ROLL. NORMALLY IT IS NOT NECESSARY TO CHALK A GUIDE LINE FOR EACH SUBSEQUENT ROLL.

AS THE MATERIAL IS APPLIED, IT IS MOST IMPORTANT TO MAINTAIN TENSION ON THE ROLL TO PREVENT WRINKLING AND TO MINIMIZE THE POSSIBILITY OF TRAPPING AIR BENEATH THE MATERIAL. WITH THE 30" MATERIAL, THIS IS EASILY DONE BY STRETCHING A 50' ROLL INTO PLACE AFTER IT HAS BEEN UNROLLED. THE 60" MATERIAL REQUIRES A MODIFIED PROCEDURE TO ENSURE THAT A PROPER OVERLAP IS MAINTAINED. THIS IS ACCOMPLISHED BY UNROLLING A 15' TO 20' SECTION OF MATERIAL (2 MEN ON THE ROLL, AND 2 MEN HOLDING THE LOOSE END). LAY ONE EDGE OF THE MEMBRANE DOWN ON THE ADJACENT MATERIAL ON THE DECK TO LINE UP THE PROPER OVERLAP FOR AT LEAST A 10' TO 15' SECTION. THEN CONTINUE TO UNROLL THE REMAINDER OF THE MATERIAL AND STRETCH IN PLACE.

THE FINAL RUN OF MATERIAL DOWN THE BRIDGE CENTERLINE MAY REQUIRE THAT A 30" OR 60" ROLL BE TRIMMED TO ADEQUATELY COVER THE EXPOSED AREA WITHOUT WASTING MATERIAL ON EXCESS OVERLAPS.

ONCE A FAIRLY LARGE SECTION OF THE BRIDGE DECK IS COMPLETED, IT IS RECOMMENDED THAT A PNEUMATIC TIRED ROLLER, TRUCK, OR AUTOMOBILE BE USED TO PRESSURE ROLL THE MATERIAL TO ACHIEVE AN INITIAL BOND, ESPECIALLY ON ALL OVERLAPS. (THE POLYETHYLENE FILM MUST BE LEFT IN PLACE DURING THIS PROCEDURE.)

INSPECT THE COMPLETED JOB FOR LARGE WRINKLES, "FISHMOUTHS", LOOSE AGGREGATE OR DEBRIS BENEATH THE MEMBRANE, POOR OVERLAP BONDS, AND DAMAGED AREAS, AND REPAIR AND PATCH AS NECESSARY. UNSATISFACTORY OVERLAP BONDS SHALL BE COATED WITH NO. 80 PRIMER OR CA 1200 MASTIC. LARGE POCKETS OF ENTRAPPED AIR SHALL BE VENTED AND THE HOLE PATCHED. IN AREAS WHERE THE MEMBRANE HAS BECOME DUSTY OR DIRTY, PRIME LIGHTLY WITH NO. 80 PRIMER OR CA 1200 MASTIC BEFORE APPLYING PATCH. (PRIMER OR MASTIC DOES NOT HAVE TO DRY).



WHEN ONLY A PORTION OF THE WORK AREA IS COMPLETED IN ONE DAY, A LAYER OF CA 1200 MASTIC SHALL BE SPREAD ALONG THE EXPOSED EDGES OF THE MEMBRANE SO THAT MOISTURE CANNOT RUN UNDER THE MATERIAL IN CASE OF RAIN.

ROUGH SPOTS, FIXED JOINTS, AND OTHER INSTANCES MAY REQUIRE A SECOND SMALL STRIP OF MATERIAL FOR A DOUBLE LAYER TO ENSURE PROTECTION OF THESE AREAS (12" X 50' ROLLS ARE AVAILABLE ON SPECIAL ORDER FOR THIS PURPOSE).

THE ASPHALT OVERLAY OPERATION MAY BEGIN AS SOON AS THE RELEASE FILM IS REMOVED (ADDITIONAL PLACES REQUIRING PATCHING MAY BECOME EVIDENT AFTER THE FILM IS REMOVED).

RUBBER TIERED LAYDOWN EQUIPMENT IS PREFERABLE. NO VEHICLES OTHER THAN THE OVERLAY EQUIPMENT AND MIX TRUCKS SHALL BE PERMITTED ON THE BARE MEMBRANE (POLYETHYLENE REMOVED). IN HOT WEATHER, THE MEMBRANE SURFACE BECOMES TACKY AND A VERY SMALL AMOUNT OF PORTLAND CEMENT POWDER (OR TALC) SHOULD BE LIGHTLY DUSTED ON THE MATERIAL ALONG THE TIRE PATHS TO PREVENT STICKING AND SUBSEQUENT DAMAGE TO THE MEMBRANE. ANY VEHICLE MOVING ON THE MEMBRANE SHOULD FIRST HAVE ITS TIRES INSPECTED TO ENSURE THAT NO LOOSE AGGREGATE IS CARRIED ON TO THE DECK, AND THAT NO OTHER SHARP MATERIAL IS WEDGED IN THE TIRE TREADS. VEHICLES SHOULD NOT START OR STOP SUDDENLY, OR TURN SHARPLY ON THE MEMBRANE.

#### 4.1C.4. QUANTITY AND PAYMENT.

THE QUANTITY OF MEMBRANE WATERPROOFING FOR WHICH PAYMENT WILL BE MADE WILL BE THE TOTAL SURFACE AREA OF THE BRIDGE DECK ACTUALLY COVERED WITH THE MEMBRANE WATERPROOFING, IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR MEMBRANE WATERPROOFING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM MEMBRANE WATERPROOFING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF PREPARATORY CLEANING, FURNISHING AND APPLYING ALL MATERIALS, ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERE-TO.

SECTION 1D  
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SCARIFICATION  
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4.1D.1. DESCRIPTION.

THIS ITEM OF WORK SHALL CONSIST OF SCARIFYING THE EXISTING CONCRETE BRIDGE DECKS AS INDICATED ON THE PLANS AND REMOVING AREAS OF UNACCEPTABLE CONCRETE, AS DETERMINED BY THE ENGINEER AND TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACING THE BRIDGE DECK PROTECTIVE SYSTEM.

4.1D.2. MATERIALS.

NO MATERIALS REQUIRED.

4.1D.3. METHODS OF CONSTRUCTION.

THE SCARIFICATION SHALL BE ACCOMPLISHED BY SELF-PROPELLED EQUIPMENT CAPABLE OF PREPARING 1,000 SQUARE YARDS PER DAY. THE EQUIPMENT SHALL BE CAPABLE OF REMOVING AT LEAST 1/4 INCH ACROSS THE CUTTING PATH IN ONE PASS. THE EQUIPMENT SHALL BE CAPABLE OF ACCURATELY ESTABLISHING PROFILE GRADES BY REFERENCING FROM EXISTING GRADES AND SHALL HAVE A POSITIVE MEANS FOR CONTROLLING CROSS SLOPE ELEVATIONS.

THE EQUIPMENT SHALL HAVE AN EFFECTIVE MEANS FOR REMOVING MILLED MATERIAL FROM THE SURFACE AND FOR PREVENTING ANY DUST RESULTING FROM THE OPERATION FROM ESCAPING INTO THE AIR.

THE EQUIPMENT USED FOR SCARIFYING SHALL HAVE A FLOATING TYPE HEAD THAT ALLOWS FOR DEEPER CUTTING IN AREAS OF DETERIORATED CONCRETE. IT SHALL HAVE THE CAPABILITY OF LOCKING OUT THE HEAD FLOAT.

SAW-CUTTING AND CHIPPING WITH PNEUMATIC HAMMERS MAY BE USED TO REMOVE SURFACES ADJACENT TO CURBS AND SCUPPERS. PNEUMATIC HAMMERS NOT HEAVIER THAN NOMINAL 30 POUNDS CLASS AND TRIPLE HEADED TAMPERS FITTED WITH STAR DRILLS NOT LESS THAN 2-INCH DIAMETER MAY BE USED.

THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS SUCH THAT THE EXISTING TRANSVERSE AND LONGITUDINAL JOINTS ARE NOT DAMAGED BELOW THE LIMITS OF SCARIFICATION.

ALL BROKEN CONCRETE AND LAITANCE RESULTING FROM THE SCARIFYING OPERATION SHALL BE COMPLETELY REMOVED BY HAND, POWER BROOM, VACUUM, OR OTHER APPROVED MEANS, AND DISPOSED OF BY THE CONTRACTOR. FLUSHING OF THIS DEBRIS WILL NOT BE PERMITTED. DEBRIS SHALL BE REMOVED AT THE END OF EACH WORK DAY.

4.1D.4. QUANTITY AND PAYMENT.

THE QUANTITY FOR SCARIFICATION FOR BRIDGE DECK PROTECTION WILL BE MADE IN SQUARE YARDS COVERING THE DECK AS INDICATED ON THE PLANS.

PAYMENT FOR SCARIFICATION WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED REGARDLESS OF HOW MANY PASSES ARE MADE WITH THE SCARIFIER MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM SCARIFICATION IN THE PROPOSAL WHICH PRICE SHALL INCLUDE DISPOSAL OF MATERIAL AND ALL HAND TOOLS, AND LABOR AND EQUIPMENT TO REMOVE PATCHING MATERIAL AND EPOXY MATERIAL AND ALL ELSE NECESSARY THEREFORE AND INCIDENTAL THERETO.

SECTION 1E

LOW SLUMP HIGH DENSITY CONCRETE

4.1E.1. DESCRIPTION.

LOW SLUMP HIGH DENSITY CONCRETE SHALL CONSIST OF PLACING A PORTLAND CEMENT CONCRETE WEARING SURFACE. THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIAL AND ALL ELSE NECESSARY FOR THE HANDLING STORAGE, MIXING AND PLACING FOR THE CONCRETE OVERLAY.

LOW SLUMP HIGH DENSITY CONCRETE SHALL ALSO INCLUDE THE FURNISHING AND PLACING OF ALL MATERIAL USED FOR THE APPROACH SLAB AND DECK JOINTS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

FINISHING OF LOW SLUMP HIGH DENSITY CONCRETE SHALL INCLUDE ALL WORK REQUIRED TO STRIKE OFF AND FINISH THE LOW SLUMP HIGH DENSITY CONCRETE TO THE REQUIRED THICKNESS AND SMOOTHNESS AS REQUIRED BY THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

4.1E.2. MATERIALS.

ALL MATERIALS SHALL MEET THE REQUIREMENTS FOR THE RESPECTIVE ITEMS IN DIVISION 4 OF THE SPECIFICATIONS, WITH THE FOLLOWING EXCEPTIONS:

CEMENT.

ONLY ONE BRAND OF CEMENT SHALL BE USED DURING PLACEMENT OF AN INDIVIDUAL POUR CONFORMING TO THE REQUIREMENTS OF ARTICLE 4.1.2.

AGGREGATE.

COARSE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.5, EXCEPT THAT CARBONATE ROCK SHALL NOT BE PERMITTED FOR USE. THE GRADATION REQUIREMENTS SHALL CONFORM TO THE REQUIREMENTS OF SIZE NUMBER 7 AS SHOWN IN TABLE 28 IN ARTICLE 8.5.4.

CONCRETE.

CONCRETE SHALL MEET THE FOLLOWING REQUIREMENTS:

BASIC ABSOLUTE VOLUMES PER UNIT VOLUME OF CONCRETE

COARSE AGGREGATE	0.312088
FINE AGGREGATE	0.312088
AIR	0.060000
WATER	0.160255
CEMENT	0.155569
	1.000000

APPROXIMATE CEMENT CONTENT WILL BE 8.75 BAGS PER CUBIC YARD.

A WATER-REDUCING ADMIXTURE FOR IMPROVING WORKABILITY SHALL BE REQUIRED. THIS ADMIXTURE SHALL BE AN HYDROXYLATED CARBOXYLIC ACID WATER-REDUCING ADMIXTURE. THE SPECIFIC ADMIXTURE SHALL BE APPROVED BY THE ENGINEER.

THE SLUMP, MEASURED IN ACCORDANCE WITH AASHTO T 119, SHALL BE 3/4 INCH WITH A TOLERANCE OF PLUS OR MINUS 1/4 INCH.

THE INTENDED AIR ENTRAINMENT OF THE FINISHED CONCRETE IS 6 PERCENT, BUT THE AIR CONTENT OF FRESH, UNVIBRATED CONCRETE AT THE TIME OF PLACEMENT, AS DETERMINED BY AASHTO T 152, SHALL BE 6.5 PERCENT, WITH A MAXIMUM VARIATION OF PLUS OR MINUS 1.0 PERCENT.

FOLLOWING SAMPLING OF THE DISCHARGED, NORMALLY MIXED CONCRETE FROM A CONTINUOUS MIXER, THE COMMENCEMENT OF TESTS SHALL BE DELAYED FROM 4 TO 4-1/2 MINUTES.

#### GROUT.

GROUT FOR BONDING NEW CONCRETE TO PREVIOUSLY PLACED CONCRETE SHALL CONSIST OF EQUAL PARTS BY WEIGHT OF PORTLAND CEMENT AND SAND, MIXED WITH SUFFICIENT WATER TO FORM A STIFF SLURRY. THE CONSISTENCY OF THIS SLURRY SHALL BE SUCH THAT IT CAN BE APPLIED WITH A STIFF BRUSH OR BROOM TO THE PREVIOUSLY PLACED CONCRETE IN A THIN, EVEN COATING THAT WILL NOT RUN OR PUDDLE IN LOW SPOTS.

FOR SEALING VERTICAL JOINTS BETWEEN ADJACENT LANES AND AT THE CURBS, THIS GROUT SHALL BE THINNED TO PAINT CONSISTENCY.

#### 4.1E.3. METHODS OF CONSTRUCTION.

##### EQUIPMENT.

EQUIPMENT USED SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER AND SHALL COMPLY WITH THE FOLLOWING:

PROPORTIONING AND MIXING EQUIPMENT SHALL MEET REQUIREMENTS OF ARTICLE 4.1.3. IN ADDITION, THE DEVICE FOR PROPORTIONING WATER SHALL BE ACCURATE WITHIN ONE PERCENT. A CONSTRUCTION OR STATIONARY CONCRETE MIXER OF THE ROTATING-PADDLE TYPE, OR A CONTINUOUS MIXER USED IN CONJUNCTION WITH VOLUMETRIC PROPORTIONING, WILL BE REQUIRED.

SUFFICIENT MIXING CAPACITY OR MIXERS SHALL BE PROVIDED TO PERMIT THE INTENDED POUR TO BE PLACED WITHOUT INTERRUPTION.

PLACING AND FINISHING EQUIPMENT SHALL INCLUDE ADEQUATE HAND TOOLS FOR PLACEMENT OF STIFF PLASTIC CONCRETE AND FOR WORKING DOWN TO APPROXIMATELY THE CORRECT LEVEL FOR STRIKING-OFF WITH THE SCREED. AN APPROVED FINISHING MACHINE COMPLYING WITH REQUIREMENTS OF ARTICLE 4.1.3 AND THE FOLLOWING ADDITIONAL REQUIREMENTS SHALL BE USED. THE FINISHING MACHINE SHALL BE INSPECTED AND APPROVED BEFORE WORK IS STARTED ON EACH PROJECT.

A MECHANICAL STRIKE-OFF SHALL BE REQUIRED TO PROVIDE A UNIFORM THICKNESS OF CONCRETE IN FRONT OF THE OSCILLATING SCREED.

AT LEAST ONE OSCILLATING SCREED SHALL BE DESIGNED TO CONSOLIDATE THE CONCRETE TO 100 PERCENT OF THE UNIT WEIGHT, DETERMINED IN ACCORDANCE WITH A.S.T.M. DESIGNATION C 138, BY VIBRATION. A SUFFICIENT NUMBER OF IDENTICAL VIBRATORS SHALL BE EFFECTIVELY INSTALLED SUCH THAT AT LEAST ONE VIBRATOR IS PROVIDED FOR EACH 5 FEET OF SCREED LENGTH. THE BOTTOM FACE OF THIS SCREED SHALL BE AT LEAST 5 INCHES WIDE WITH A TURNED UP OR ROUNDED LEADING EDGE TO MINIMIZE TEARING OF THE SURFACE OF THE PLASTIC CONCRETE. EACH SCREED SHALL HAVE AN EFFECTIVE WEIGHT OF AT LEAST SEVENTY-FIVE POUNDS FOR EACH SQUARE FOOT OF BOTTOM FACE AREA. EACH SCREED SHALL BE PROVIDED WITH POSITIVE CONTROL OF THE VERTICAL POSITION, THE ANGLE OF TILT, AND THE SHAPE OF THE CROWN. DESIGN OF THE FINISHING MACHINE TOGETHER WITH APPURTENANT EQUIPMENT SHALL BE SUCH THAT POSITIVE MACHINE SCREEDING OF THE PLASTIC CONCRETE WILL BE OBTAINED WITHIN ONE INCH OF THE FACE OF THE EXISTING CURBS. THE LENGTH OF THE SCREED SHALL BE SUFFICIENT TO EXTEND AT LEAST 6 INCHES BEYOND THE LINE WHERE A SAWCUT IS INTENDED TO FORM THE EDGE OF A SUBSEQUENT PLACEMENT SECTION, AND SHALL OVERLAP THE SAWN EDGE OF A PREVIOUSLY PLACED COURSE AT LEAST 6 INCHES. THE FINISHING MACHINE SHALL BE CAPABLE OF FORWARD AND REVERSE MOTION UNDER POSITIVE CONTROL. PROVISION SHALL BE MADE FOR RAISING THE SCREEDS TO CLEAR THE SCREEDED SURFACE FOR TRAVELING IN REVERSE.

SUPPORTING RAILS UPON WHICH THE FINISHING MACHINE TRAVELS WILL BE REQUIRED ON ALL SURFACING PROJECTS. THE SUPPORT FOR THESE RAILS SHALL BE FULLY ADJUSTABLE (NOT SHIMMED) TO OBTAIN THE CORRECT PROFILE.

WHEN PLACING CONCRETE IN A LANE ABUTTING A PREVIOUSLY COMPLETED LANE, THAT SIDE OF THE FINISHING MACHINE ADJACENT TO THE COMPLETED LANE SHALL BE EQUIPPED TO TRAVEL ON THE COMPLETED LANE.

GENERAL. THE OVERALL COMBINATION OF LABOR AND EQUIPMENT FOR PROPORTIONING, MIXING, PLACING AND FINISHING NEW CONCRETE SHALL BE OF SUCH MINIMUM CAPABILITY AS TO MEET THE FOLLOWING REQUIREMENTS EXCEPT WHEN NOTED OTHERWISE ON THE PLANS.

TOTAL SURFACE AREA PER BRIDGE (SQ. YD.)	MINIMUM REQUIREMENT (C.Y./HR.)
0- 328	1.0
329 - 492	1.5
493 - 656	2.0
OVER 656	2.5

THE FINISHING MACHINE SHALL BE SO DESIGNED THAT, WHEN CONCRETE IS BEING MIXED AND PLACED AT THE SPECIFIED MINIMUM RATE,

UNDER NORMAL OPERATING CONDITIONS, THE ELAPSED TIME BETWEEN DEPOSITING THE CONCRETE ON THE FLOOR AND FINAL SCREEDING SHALL NOT EXCEED 10 MINUTES.

PREPARATION OF SURFACE. ALL LOOSE, DISINTEGRATED, OR UNSOUND CONCRETE SHALL BE REMOVED FROM THE BRIDGE DECK AS DESIGNATED BY THE ENGINEER.

THE THICKNESS OF ALL NEW CONCRETE ABOVE THE PREPARED SURFACE SHALL BE AS SPECIFIED ON THE PLANS. THE CLEARANCE SHALL BE CHECKED IN THE FOLLOWING MANNER BEFORE CONCRETE IS PLACED.

A FILLER BLOCK HAVING A THICKNESS 1/4 INCH LESS THAN THE DESIGNATED SURFACE THICKNESS SHALL BE ATTACHED TO THE BOTTOM OF THE SCREED; WITH SCREED GUIDES IN PLACE, THE SCREED SHALL BE PASSED OVER THE AREA TO BE CONCRETED. AS AN ALTERNATE TO PASSAGE OF THE FINISHING MACHINE, AN APPROVED TEMPLATE, SUPPORTED BY THE SCREED GUIDES, MAY BE PASSED OVER THE AREA TO BE CONCRETED. IF THE FILLER BLOCK DOES NOT CLEAR THE AREA TO BE CONCRETED, THE PROFILE OF THE NEW SURFACE SHALL BE ADJUSTED AS APPROVED BY THE ENGINEER.

PRIOR TO APPLYING GROUT IN PREPARATION FOR PLACEMENT OF NEW CONCRETE, THE SURFACE SHALL BE SAND BLASTED FOLLOWED BY AN AIR BLAST. THE SAND BLAST SHALL BE OF SUCH AN EXTENT TO REMOVE ALL DIRT, OIL AND OTHER FOREIGN MATERIAL, AS WELL AS ANY UNSOUND CONCRETE OR LAITANCE FROM THE SURFACE AND EDGES AGAINST WHICH NEW CONCRETE IS TO BE PLACED. METAL FLOOR DRAINS AND AREAS OF THE CURB OR RAILING ABOVE THE PROPOSED SURFACE SHALL BE PROTECTED FROM THE SAND BLAST. IT IS DESIRED THAT THE SURFACE BE ROUGHENED BY THE SAND BLAST TO PROVIDE SATISFACTORY BOND WITH THE SURFACING CONCRETE. IT IS NOT INTENDED OR DESIRED THAT EXISTING CONCRETE, PREPARED FOR SURFACING, BE PRESATURATED BEFORE GROUT AND NEW CONCRETE IS PLACED. THE PREPARED SURFACE SHALL BE DRY TO ALLOW SOME ABSORPTION OF THE GROUT.

#### PROPORTIONING AND MIXING OF CONCRETE MATERIALS.

CONCRETE SHALL BE PROPORTIONED AND MIXED AS SPECIFIED HEREINBEFORE WITH THE FOLLOWING EXCEPTIONS AND ADDITIONS:

CONCRETE SHALL BE PROPORTIONED AND MIXED AT THE PROJECT SITE. READY-MIXED CONCRETE WILL NOT BE APPROVED. CONTINUOUS MIXERS SHALL BE RECHARGED AT THE SITE.

THE WATER-REDUCING ADMIXTURE FOR IMPROVED WORKABILITY SHALL BE MIXED AND INCORPORATED IN THE CONCRETE MIXTURE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THE ENGINEER'S INSTRUCTIONS.

## PLACING AND FINISHING CONCRETE.

AN APPROVED FINISHING MACHINE WILL BE REQUIRED. SCREED GUIDES SHALL BE PLACED AND FASTENED IN POSITION TO INSURE FINISHING THE CONCRETE TO THE REQUIRED PROFILE. SUPPORTING RAILS UPON WHICH THE FINISHING MACHINE TRAVELS SHALL BE PLACED OUTSIDE THE AREA TO BE CONCRETED. PROVISIONS FOR ANCHORAGE OF SUPPORTING RAILS SHALL PROVIDE FOR HORIZONTAL AND VERTICAL STABILITY. POSITIVE ANCHORAGE MAY BE REQUIRED BY THE ENGINEER. A HOLD-DOWN DEVICE SHOT INTO CONCRETE WILL NOT BE PERMITTED UNLESS THE CONCRETE IS TO BE SUBSEQUENTLY SURFACED. HOLD-DOWN DEVICES OF OTHER TYPES LEAVING HOLES IN EXPOSED AREAS WILL BE APPROVED PROVIDED THE HOLES REMAINING ARE GROUTED FULL. PLANS FOR ANCHORING SUPPORT RAILS AND THE CONCRETE PLACING PROCEDURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

THE LOCATIONS OF LONGITUDINAL JOINTS MAY BE SHOWN ON THE PLANS. IF NOT SHOWN, THE LOCATIONS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER, AND HIS APPROVAL WILL BE BASED ON AVOIDING JOINTS IN THE WHEELPATHS AS MUCH AS PRACTICAL.

SMOOTHNESS OF THE DECKS SHALL BE TESTED AS SPECIFIED IN ARTICLE 4.1.3.

AT TRANSVERSE AND LONGITUDINAL JOINTS, THE SURFACE COURSE PREVIOUSLY PLACED SHALL BE SAWN TO A STRAIGHT AND VERTICAL EDGE BEFORE THE ADJACENT SURFACE COURSE IS PLACED.

AFTER THE SURFACE HAS BEEN CLEANED AND IMMEDIATELY BEFORE PLACING CONCRETE, A THIN COATING OF BONDING GROUT SHALL BE SCRUBBED INTO THE DRY, PREPARED SURFACE. CARE SHALL BE EXERCISED TO INSURE THAT ALL PARTS RECEIVE A THOROUGH, EVEN COATING AND THAT NO EXCESS GROUT IS PERMITTED TO COLLECT IN POCKETS. THE RATE OF PROGRESS IN APPLYING GROUT SHALL BE LIMITED SO THAT THE GROUT DOES NOT BECOME DRY BEFORE IT IS COVERED WITH NEW CONCRETE.

PLACEMENT OF THE CONCRETE SHALL BE A CONTINUOUS OPERATION THROUGHOUT THE POUR. THE NEW CONCRETE SHALL BE MANIPULATED AND MECHANICALLY STRUCK OFF SLIGHTLY ABOVE FINAL GRADE. IT SHALL THEN BE MECHANICALLY CONSOLIDATED TO 100 PERCENT OF THE RODDED UNIT WEIGHT, WITH A MINUS TOLERANCE OF 2 PERCENT, AND SCREEDED TO FINAL GRADE. THE RODDED UNIT WEIGHT WILL BE DETERMINED IN ACCORDANCE WITH A.S.T.M. DESIGNATION C 138. HAND FINISHING WITH A WOOD FLOAT MAY BE REQUIRED FOR PRODUCING A TIGHT, UNIFORM SURFACE.

WHEN A TIGHT, UNIFORM SURFACE HAS BEEN ACHIEVED, THE SURFACE SHALL BE GIVEN A FINAL FINISH IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 3.12.3, EXCEPT THE TINE FINISH FOR THE LAST 12 INCHES OF PAVEMENT ADJACENT TO THE CURB SHALL BE OMITTED. AS SOON AS THE FINISHING HAS BEEN



COMPLETED, ALL VERTICAL JOINTS WITH ADJACENT CONCRETE SHALL BE SEALED BY PAINTING WITH THINNED GROUT.

AFTER THE JOINT PAINTING IS COMPLETED, THE SURFACE SHALL BE PROMPTLY COVERED WITH A SINGLE LAYER OF CLEAN, WET BURLAP.

CARE SHALL BE EXERCISED TO INSURE THAT THE BURLAP IS WELL DRAINED, AND THAT IT IS PLACED AS SOON AS THE SURFACE WILL SUPPORT IT WITHOUT DEFORMATION.

IT IS INTENDED THAT THE SURFACE RECEIVE A WET BURLAP CURE FOR AT LEAST 72 HOURS. FOR THE FIRST 24 HOURS, THE BURLAP SHALL BE KEPT CONTINUOUSLY WET BY MEANS OF AN AUTOMATIC SPRINKLING OR WETTING SYSTEM. AFTER 24 HOURS, THE CONTRACTOR MAY COVER THE WET BURLAP WITH A LAYER OF 4 MIL POLYETHYLENE FILM FOR A MINIMUM OF 48 HOURS IN LIEU OF USING A SPRINKLING OR WETTING SYSTEM.

THE WET BURLAP SHALL BE APPLIED WITHIN 30 MINUTES AFTER THE CONCRETE HAS BEEN DEPOSITED ON THE DECK, EXCEPT WHEN THE SURFACE WILL BE EXCESSIVELY MARRED BY SO DOING, AS DIRECTED BY THE ENGINEER. IF THE CONCRETE IS REVIBRATED BECAUSE OF FAILURE TO MEET DENSITY REQUIREMENTS WITH INITIAL VIBRATION, THIS TIME WILL BE EXTENDED 15 MINUTES. FAILURE TO APPLY WET BURLAP WITHIN THE REQUIRED TIME SHALL BE CAUSE FOR REJECTING THE WORK SO AFFECTED. SURFACE CONCRETE IN THE REJECTED AREA SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST.

ALL CONCRETE SURFACES SHALL BE SEALED WITH POLYVINYL-ACRYLIC COMPOUND MODIFIED WITH CHLORINATED TRI-PHENYL ON THE DECKS, CURBS AND SIDEWALKS, CONFORMING TO THE REQUIREMENTS OF FEDERAL SPECIFICATIONS TT-C-800A. THIS TREATMENT SHALL NOT BE APPLIED UNTIL THE LOW SLUMP HIGH DENSITY CONCRETE IS 7 DAYS OLD. THE COMPOUND SHALL BE APPLIED EITHER BY SPRAYING OR ROLLING, AT THE RATE OF 175 TO 250 SQ. FT./GAL. IF THE COMPOUND IS SPRAYED, TWO COATS SHALL BE APPLIED SO THAT THE COMBINED APPLICATION RATE IS 175 TO 250 SQ. FT./GAL. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

NIGHT WORK WILL BE PERMITTED, IN WHICH CASE SUPPLEMENTAL LIGHTING MAY BE REQUIRED, IF NECESSARY TO MAKE QUALITY WORKMANSHIP AND ADEQUATE INSPECTION POSSIBLE, AT THE CONTRACTOR'S EXPENSE. THE ENGINEER SHALL BE GIVEN REASONABLE NOTICE.

CONCRETE SHALL NOT BE PLACED ADJACENT TO A SURFACE COURSE LESS THAN 36 HOURS OLD; HOWEVER, THIS RESTRICTION DOES NOT APPLY TO A CONTINUATION OF PLACEMENT IN A LANE OR STRIP BEYOND A JOINT IN THE SAME LANE OR STRIP.

NO PREPARATION WORK WILL BE ALLOWED IN A LANE OR STRIP UNTIL THE LANE IS CLOSED TO TRAFFIC. IN AREAS WHERE THERE IS NO

TRAFFIC, PREPARATION OF THE AREA MAY BE STARTED IN A LANE OR STRIP ADJACENT TO NEWLY PLACED SURFACE THE DAY FOLLOWING ITS PLACEMENT IF THIS WORK IS STARTED BEFORE THE END OF THE 72-HOUR CURING PERIOD, THE WORK WILL BE RESTRICTED AS FOLLOWS:

SAWING OR OTHER OPERATIONS SHALL INTERFERE WITH THE CURING PROCESS FOR THE MINIMUM PRACTICAL TIME ONLY, AND IN THE IMMEDIATE WORK AREA ONLY, AND THE CURING SHALL BE RESUMED PROMPTLY.

NO POWER-DRIVEN TOOLS HEAVIER THAN A 15-POUND CHIPPING HAMMER SHALL BE USED.

AIR COMPRESSORS SHALL BE OPERATED ON THE DECK ONLY DIRECTLY OVER THE PIERS.

NO LOADS OTHER THAN CONSTRUCTION EQUIPMENT SHALL BE PERMITTED ON ANY PORTION OF THE BRIDGE DECK THAT HAS UNDERGONE PREPARATION AND PRIOR TO PLACEMENT AND CURING OF NEW CONCRETE.

NO TRAFFIC SHALL BE PERMITTED ON A FINISHED SURFACE COURSE UNTIL 72 HOURS AFTER PLACEMENT. AT TEMPERATURES BELOW 55 DEGREES F., THE ENGINEER MAY REQUIRE A LONGER WAITING TIME.

#### 4.1E.4. QUANTITY AND PAYMENT.

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THE QUANTITY OF LOW SLUMP HIGH DENSITY CONCRETE FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME ACTUALLY PLACED WITHIN THE NEAT LINES OF THE CONSTRUCTION AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR THE LOW SLUMP HIGH DENSITY CONCRETE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID FOR THE ITEMS LOW SLUMP DENSITY CONCRETE, BRIDGE DECK AND LOW SLUMP HIGH DENSITY CONCRETE, IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF THE CONCRETE OVERLAY, SURFACE PREPARATION, FINISHING, CURING, SEALING JOINTS, WATER-REDUCING ADMIXTURES, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO, EXCEPT AS FOLLOWS:

IF THE QUANTITY INCREASES MORE THAN 20 PERCENT, THE QUANTITY IN EXCESS OF 120 PERCENT OF THE ORIGINAL QUANTITY WILL BE PAID FOR AT 75 PERCENT OF THE PRICE BID IN THE PROPOSAL.

SECTION 1F

LATEX MODIFIED CONCRETE OVERLAY

4.1F.1. DESCRIPTION.

LATEX MODIFIED CONCRETE (LMC) OVERLAY SHALL INCLUDE THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIAL AND ALL ELSE NECESSARY FOR THE HANDLING, STORAGE, PROPORTIONING, MIXING, PREPARING SURFACE, PLACING, FINISHING, AND CURING THE LMC OVERLAY ON THE BRIDGE DECK.

LATEX MODIFIED CONCRETE SHALL ALSO INCLUDE THE FURNISHING AND PLACING OF ALL MATERIAL USED FOR THE APPROACH SLAB AND DECK JOINTS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

FINISHING OF LATEX MODIFIED CONCRETE SHALL INCLUDE ALL WORK REQUIRED TO STRIKE OFF AND FINISH THE LATEX MODIFIED CONCRETE TO THE REQUIRED THICKNESS AND SMOOTHNESS AS REQUIRED BY THE PLANS AND THESE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

4.1F.2. MATERIALS.

CEMENT SHALL BE STANDARD PORTLAND CEMENT TYPE II CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.22.

WATER SHALL MEET THE REQUIREMENTS OF ARTICLE 8.5.38.

SAND SHALL BE CLEAN AND SHARP AND SHALL MEET THE REQUIREMENTS OF A.S.T.M. DESIGNATION C 33 FOR CONCRETE SAND.

COARSE AGGREGATE SHALL BE WASHED GRAVEL OR BROKEN STONE CONFORMING TO THE REQUIREMENTS OF ARTICLES 8.5.6 AND 8.5.5 RESPECTIVELY, EXCEPT THAT CARBONATE ROCK SHALL NOT BE USED. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 1/2 INCH. COARSE AGGREGATE SHALL BE STANDARD SIZE 8.

LATEX EMULSION ADMIXTURE SHALL BE A NON-HAZARDOUS, FILM FORMING, POLYMERIC EMULSION IN WATER TO WHICH ALL STABILIZERS HAVE BEEN ADDED AT THE POINT OF MANUFACTURE AND SHALL BE HOMOGENEOUS AND UNIFORM IN COMPOSITION.

THE LATEX SHALL BE A STYRENE-BUTADIENE POLYMERIC EMULSION TO WHICH THE POLYMER COMPRISE 48 PLUS AND MINUS 1% OF THE TOTAL EMULSION. THE POLYMER SHALL CONTAIN 66 PLUS AND MINUS

1-1/2% STYRENE AND 3/4 PLUS AND MINUS 1-1/2% BUTADIENE. THE POLYMERIC EMULSION SHALL BE STABILIZED WITH ANIONIC, NONIONIC AND POLYORGANO-SILOXANE FLUID SURFACTANT IN WHICH THE ANIONIC SURFACTANT IS A SODIUM ALKYL SULFATE. THE POLYMER PARTICLE SHALL HAVE AN AVERAGE SIZE OF 2000 PLUS AND MINUS 200 ANGSTROMS. THE LATEX SHALL HAVE A PH OF 10.5 PLUS AND MINUS 0.5 AND A SURFACE TENSION OF 32 PLUS OR MINUS DYNES CM2.

THE LATEX MODIFIED CONCRETE SHALL HAVE THE FOLLOWING DESIGN MIX:

CEMENT, SACKS (CU. FT.)/CU. YD.	-----7.0
LATEX EMULSION ADMIXTURE	
GAL./SACK	-----3.5
WATER, GAL./SACK	-----3.5
AIR CONTENT, PER CENT OF PLASTIC MIX	
ACCORDING TO AASHO T-152	-----6.5% MAX.
SLUMP, INCHES	-----4.0 TO 6.0
PERCENT FINE AGGREGATE AS PERCENT OF	
TOTAL AGGREGATE, BY WEIGHT	-----50.0 TO 55.0
WEIGHT RATIO OF CEMENT SAND/COARSE AGGREGATE	
DRY BASIS	
AGGREGATE SPECIFIC GRAVITY IS 2.65	-----1:2.5:2.0

THE NET WATER ADDED SHALL BE ADJUSTED TO CONTROL THE SLUMP WITHIN THE PRESCRIBED LIMITS AND SHOULD PRODUCE NET WATER CEMENT RATIOS OF 0.35 TO 0.40, BY WEIGHT.

THE SLUMP SHALL BE MEASURED 4 TO 5 MINUTES AFTER DISCHARGE FROM THE MIXER. DURING THIS WAITING PERIOD NO MODIFIED CONCRETE SHALL BE PLACED ON THE DECK.

THE DRY WEIGHT RATIOS ARE APPROXIMATE AND SHOULD PRODUCE GOOD WORKABILITY BUT DUE TO GRADATION CHANGES MAY BE ADJUSTED WITHIN LIMITS BY THE ENGINEER. THE SAND RATIO MAY BE INCREASED BY AS MUCH AS 0.2 IF THE COARSE AGGREGATE IS REDUCED BY AN EQUIVALENT VOLUME.

#### TESTING PROCEDURE FOR PERCENT SOLIDS IN THE LATEX

##### SCOPE

THIS INVOLVES THE DETERMINATION OF THE PERCENT SOLIDS ON ALL LATEX SAMPLES. IT INVOLVES WEIGHING A SAMPLE OF WET LATEX, DRYING IT IN AN OVEN AND THEN EXPRESSING THE WEIGHT RATIO OF WET/ DRY IN PERCENT.

PROCEDURE

1. ALL SAMPLES TO BE TESTED MUST BE AT ROOM TEMPERATURE. IF THE SAMPLE IS WARM IT CAN BE COOLED IN A PAN OF COLD TAP WATER.
2. THE LEVEL OF THE BALANCE SHOULD BE CHECKED AND ADJUSTED IF NECESSARY. ALSO THE ZERO OF THE BALANCE SHOULD BE CHECKED AND ADJUSTED CORRESPONDINGLY.
3. WEIGH THREE ALUMINUM CUPS AND RECORD THE WEIGHT OF EACH (TARE WEIGHT). NOTE EVERY SAMPLE TESTED MUST BE DONE IN TRIPPLICATE.
4. MIX BY HAND EACH SAMPLE WHEN COOL BY INVERTING THE CONTAINER FIVE TO TEN TIMES.
5. WEIGH APPROXIMATELY ONE GRAM OF LATEX TO THE NEAREST MILLIGRAM INTO EACH PREWEIGHED ALUMINUM CUP.
6. PLACE ALL THREE SAMPLES IN THE OVEN TO DRY FOR 120 MINUTES (OVEN TEMPERATURE 285 PLUS OR MINUS 1 DEGREE F.).
7. REMOVE THE SAMPLES FROM THE OVEN AND PLACE IMMEDIATELY IN A DESICATOR FOR A FEW MINUTES OR UNTIL COOL. THIS PREVENTS MOISTURE PICK UP FROM THE AIR WHILE COOLING.
8. REWEIGH EACH SAMPLE OUT OF THE DESICATOR TO THE NEAREST MILLIGRAM AND RECORD.
9. CALCULATIONS.

$$\text{TOTAL SOLIDS IN PERCENT} = ((C-A)/(B-A)) \times 100.$$

A = THE WEIGHT OF THE EMPTY ALUMINUM CUP.

B = THE WEIGHT OF THE ALUMINUM CUP AND THE WET SAMPLE.

C = THE WEIGHT OF THE ALUMINUM CUP AND THE DRIED SAMPLE.

10. CONTINUATION OF CALCULATIONS.

EXAMPLE:

IF:	A = 1.179 G	THEN (C-A) = 1.374
	B = 2.356 G	1.179
	C = 1.374 G	<hr/>
		0.405 G

$$\begin{array}{r} (B-A) = 2.356 \\ 1.179 \\ \hline 1.177 \text{ G} \end{array}$$

THEREFORE:

$$((C-A)/(B-A)) \times 100 = (0.405/1.177) \times 100 = 47.7 \text{ PERCENT SOLIDS.}$$

11. RESULTS.

- A. IF ALL THREE SAMPLES ARE WITHIN 2 PERCENT, AVERAGE THE THREE SAMPLES TO OBTAIN THE PERCENT SOLIDS.
- B. IF ALL THREE SAMPLES ARE NOT WITHIN 2 PERCENT, BUT TWO SAMPLES ARE WITHIN 1 PERCENT, THE AVERAGE BETWEEN THE TWO SAMPLES WITHIN 1 PERCENT IS REPORTED AS THE PERCENT SOLIDS AND THE THIRD DETERMINATION IS DISCARDED.
- C. IF ALL THREE SAMPLES ARE NOT WITHIN 2 PERCENT AND NO TWO ARE WITHIN 1 PERCENT, ALL THE VALUES MUST BE DISCARDED AND THE SOLIDS PROCEDURE MUST BE REPEATED.

THE FOLLOWING FOUR PRODUCTS ARE APPROVED FOR USE BY THE FEDERAL HIGHWAY ADMINISTRATION FOR LATEX MODIFIED CONCRETE OVERLAYS:

DOW MODIFIER A AS PRODUCED BY DOW CHEMICAL U.S.A., FUNCTIONAL PRODUCTS AND SYSTEM DEPARTMENT MIDLAND MICHIGAN 48640.

THE RMOFLEX 8002 AS PRODUCED BY THERMOFLEX INC. 2927-GRIFFITH AVENUE, P.O. BOX 21134, LOUISVILLE KENTUCKY 40212.

ARCO DYLES 1186 AS PRODUCED BY ARCO/POLYMER INC. 1500-MARKET STREET, PHILADELPHIA, PA 19101.

DECO-REZ 4776 AS PRODUCED BY GENERAL POLYMERS CORP 3925 HUSTON AVENUE, CINCINNATI OHIO 45212.

THE CONTRACTOR SHALL FURNISH A CERTIFICATION TO THE STATE FROM THE LATEX MODIFIED CONCRETE SUPPLIER STATING THAT THE MODIFIER BEING USED FOR THIS PROJECT IS IDENTICAL TO THAT SUPPLIED TO THE FHWA FOR EARLIER TESTS.

#### 4.1F.3. METHODS OF CONSTRUCTION.

ALL EQUIPMENT TO BE USED SHALL FIRST BE APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY WORK.

##### STORAGE AND HANDLING.

SAND AND COARSE AGGREGATE SHALL BE SO STORED AND HANDLED AS TO AVOID CONTAMINATION AND FREQUENT VARIATION IN MOISTURE CONTENT OF THE MATERIAL USED.

SAND AND COARSE AGGREGATE WHICH ARE STORED IN PILES OR BINS SHALL BE KEPT ENTIRELY SEPARATED.

SUITABLE PROVISIONS SHALL BE MADE TO PREVENT LOSS OF CEMENT DURING HANDLING.

CEMENT TO BE STORED SHALL BE KEPT IN SUITABLE WEATHER-PROOF ENCLOSURES WHICH WILL PROTECT THE CEMENT FROM BEING WET AND DAMP. CEMENT WHICH HAS DEVELOPED LUMPS IN STORAGE SHALL NOT BE USED.

LATEX ADMIXTURE TO BE STORED SHALL BE KEPT IN SUITABLE ENCLOSURES WHICH WILL PROTECT IT FROM FREEZING AND FROM PROLONGED EXPOSURE TO TEMPERATURES IN EXCESS OF 85 DEGREES F. CONTAINERS OF LATEX ADMIXTURE MAY BE STORED AT THE PROJECT SITE, IN DIRECT SUNLIGHT, FOR A PERIOD NOT TO EXCEED 10 DAYS, IN WHICH CASE, THE CONTAINERS SHALL BE COVERED COMPLETELY WITH SUITABLE INSULATING BLANKET MATERIAL TO AVOID EXCESSIVE TEMPERATURES.

##### PROPORTIONING AND MIXING.

THE MIXER SHALL BE SELF-PROPELLED AND BE CAPABLE OF CARRYING SUFFICIENT UNMIXED DRY, BULK CEMENT, SAND, COARSE AGGREGATE, LATEX MODIFIER AND WATER TO PRODUCE ON THE SITE NOT LESS THAN 6 CUBIC YARDS OF CONCRETE.

THE MIXER SHALL BE CAPABLE OF POSITIVE MEASUREMENT OF CEMENT BEING INTRODUCED INTO THE MIX. A RECORDING METER VISIBLE AT ALL TIMES AND EQUIPPED WITH A TICKET PRINTOUT SHALL INDICATE THIS QUANTITY.

THE MIXER SHALL BE CALIBRATED TO ACCURATELY PROPORTION THE SPECIFIED MIX. CERTIFICATION OF THE CALIBRATION BY AN APPROVED TESTING AUTHORITY WILL BE ACCEPTED AS EVIDENCE OF THIS ACCURACY IF THE YIELD IS SHOWN TO BE TRUE WITHIN A TOLERANCE OF 1.0 PERCENT ACCORDING TO THE FOLLOWING TEST:

WITH THE CEMENT METER SET ON ZERO AND ALL CONTROL SET FOR THE DESIGN MIX ACTIVATE THE

MIXER DISCHARGING MIXED MATERIAL INTO A ONE QUARTER CUBIC YARD CONTAINER - 36 INCHES BY 36 INCHES BY 9 INCHES. WHEN THE CONTAINER IS LEVEL-STRUCK FULL MAKING PROVISION FOR SETTLING THE MATERIAL INTO ALL CORNERS, THE CEMENT METER MUST SHOW A DISCHARGE OF 1-3/4 BAGS OF CEMENT.

THE MIXER SHALL PROVIDE POSITIVE CONTROL OF THE FLOW OF WATER AND LATEX EMULSION INTO THE MIXING CHAMBER. THE WATER FLOW SHALL BE INDICATED BY A FLOW METER AND SHALL BE READILY ADJUSTABLE TO PROVIDE FOR MINOR VARIATIONS IN AGGREGATE MOISTURE.

THE MIXER SHALL BE CAPABLE OF BEING CALIBRATED TO AUTOMATICALLY PROPORTION AND BLEND ALL COMPONENTS OF THE DESIGN MIX ON A CONTINUOUS OR INTERMITTENT BASIS AS REQUIRED BY THE FINISHING OPERATION AND SHALL DISCHARGE MIXED MATERIAL THROUGH A CHUTE ONTO THE DECK DIRECTLY IN FRONT OF THE FINISHING MACHINE.

THE MIXER SHALL BE CAPABLE OF SPRAYING WATER OVER THE ENTIRE PLACEMENT WIDTH AS IT MOVES AHEAD TO INSURE THAT THE SURFACE TO BE OVERLAID IS WETTED TO RECEIVE THE LMC.

MATERIAL FOR THE LMC SHALL BE MIXED AT THE SITE IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS FOR THE EQUIPMENT USED. THE LMC AS DISCHARGED FROM THE MIXER SHALL BE UNIFORM IN COMPOSITION AND CONSISTENCY. MIXING CAPABILITY SHALL BE SUCH THAT PLACING AND FINISHING CAN BE ACCOMPLISHED IN ONE CONTINUOUS OPERATION WITHOUT ANY DELAY BEFORE THE FORMATION OF THE PLASTIC SURFACE FILM.

#### PREPARING THE SURFACE.

WITHIN THE 24 HOUR PERIOD PRECEDING THE PLACEMENT OF THE LMC OVERLAY OR REPAIR LAYER, THE ENTIRE SURFACE WHICH IS TO RECEIVE THE OVERLAY OR REPAIR LAYER SHALL BE THOROUGHLY CLEANED BY SAND BLASTING. THE CONTACT SURFACES BETWEEN THE OVERLAY AND THE CURB SURFACES SHALL ALSO BE SANDBLASTED. ALL DUST, SMALL PARTICLES AND OTHER RESIDUE FROM THE SAND BLASTING OPERATION SHALL BE COMPLETELY REMOVED USING AIR JETS OR A VACUUM CLEANER. THE SAND BLASTED SURFACE SHALL BE APPROVED BY THE ENGINEER AS SUITABLE FOR PLACEMENT OF THE OVERLAY OR REPAIR LAYER.

SAND BLASTING EQUIPMENT SHALL BE OF A TYPE APPROVED BY THE ENGINEER AND SHALL BE CAPABLE OF REMOVING ANY SMALL CHIPS OF CONCRETE WHICH WERE PARTIALLY LOOSENEED BY THE SCARIFYING OPERATIONS.



DURING THE SURFACE PREPARATION FOR THE PLACEMENT OF LMC FOR THE OVERLAY LAYER, PRECAUTIONS SHALL BE TAKEN SO THAT THE LMC PLACED DURING THE REPAIR LAYER IS NOT DISTURBED OR DAMAGED. ANY DAMAGE TO THE REPAIR LAYER SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AND AT NO EXTRA COST TO THE STATE.

IMMEDIATELY PRIOR TO PLACEMENT OF THE LATEX MODIFIED CONCRETE OVERLAY OR REPAIR LAYER, THE CLEANED SURFACE SHALL BE THOROUGHLY WETTED FOR A PERIOD OF NOT LESS THAN ONE HOUR. JUST BEFORE THE OVERLAY OR REPAIR LAYER IS PLACED, ANY STANDING WATER SHALL BE DISPERSED.

#### REPAIR LAYER.

IN THE AREAS OF THE DECK WHERE THE DEPTH OF THE UNSOUND CONCRETE REMOVED IS SUCH THAT THE FINAL THICKNESS OF THE LMC AT ANY SECTION SHALL BE GREATER THAN TWO (2) INCHES, LMC IN THESE AREAS SHALL RECEIVE A REPAIR LAYER.

THE LMC SHALL BE PLACED TO THE LOWER LIMITS OF THE 1 1/4 INCH OVERLAY. IT SHALL BE CONSOLIDATED AND THEN MACHINE OR HAND FINISHED AS DIRECTED BY THE ENGINEER.

DURING THE PLACEMENT OF REPAIR LAYER, THE CONTRACTOR SHALL FOLLOW ALL THE TEMPERATURE RESTRICTIONS, METHOD OF PLACING FINISHING AND CURING AS SPECIFIED FOR LMC ELSEWHERE HEREIN; UNLESS OTHERWISE SPECIFIED.

THE LMC SURFACE SHALL BE COVERED WITH A SINGLE LAYER OF CLEAN WET BURLAP AS SOON AS THE SURFACE SHALL SUPPORT IT WITHOUT ANY DEFORMATION.

WITHIN ONE HOUR OF COVERING WITH WET BURLAP, A LAYER OF POLYETHYLENE SHEETING SHALL BE PLACED ON THE WET BURLAP AND SHALL REMAIN FOR 24 HOURS. AFTER THIS 24 HOUR PERIOD OF WET CURE HAS ELAPSED, THE POLYETHYLENE SHEETING AND WET BURLAP SHALL BE REMOVED AND THE LMC SHALL RECEIVE AN ADDITIONAL MINIMUM OF 24 HOURS OF AIR CURE. TOTAL MINIMUM CURING TIME IS 48 HOURS.

THE MINIMUM 24 HOUR AIR CURE PERIOD MAY BE EXTENDED BY THE ENGINEER IF THE TEMPERATURE DURING THAT PERIOD WERE BELOW 55 DEGREES F.

#### OVERLAY LAYER.

THE ENTIRE BRIDGE DECK SHALL RECEIVE A LAYER OF LMC. THE CONSTRUCTION JOINTS MAY BE FORMED IN THE LMC. THE LOCATION OF ALL THE CONSTRUCTION JOINTS SHALL HAVE A PRIOR APPROVAL OF THE ENGINEER.

PLACEMENT OF LMC OVERLAY SHALL BE CARRIED OUT IN ONE CONTINUOUS OPERATION OVER THE LIMITS AS EARLIER APPROVED BY THE ENGINEER.

TESTING PROCEDURE FOR BOND TO UNDERLYING CONCRETE

THE CONTRACTOR SHALL FURNISH A CERTIFICATE TO THE STATE FROM THE LATEX MODIFIED SUPPLIER STATING THAT THE LATEX MODIFIED CONCRETE WHEN TESTED (FOR BOND TO UNDERLYING CONCRETE) IN ACCORDANCE WITH THE ARIZONA SLANT SHEAR BOND TEST AS SPECIFIED IN THE REPORT NO. FHWA-RD-78-35, SHALL MEET THE FOLLOWING REQUIREMENTS:

THE AVERAGE COMPRESSIVE FORCE REQUIRED TO FAIL THE COMPOSITE CYLINDER AT 28 DAYS AND 42 DAYS CURE, SHALL BE AT LEAST 45 PERCENT OF THE AVERAGE COMPRESSIVE STRENGTH OF THE FULL MONOLITHIC LATEX MODIFIED CONCRETE CYLINDERS.

THE REPORT NO. FHWA - RD-78-35, ENTITLED "STYRENE-BUTADIENE LATEX MODIFIERS FOR BRIDGE DECK OVELAY CONCRETE" IS AVAILA3LE AT THE FOLLOWING ADDRESS:

NATIONAL TECHNICAL INFORMATION SERVICE  
SPRINGFIELD, VIRGINIA 22161

THE CONTRACTOR SHALL SUBMIT HIS LATES MODIFIER ADMIXTURE TO THE BUREAU OF QUALITY CONTROL FOR TESTING. ALL THE REQUIRED TESTS WILL BE PERFORMED BY THE DEPARTMENT. TWO SETS OF FIVE COMPOSITE CYLINDERS AND FIVE MONOLITHIC CYLINDERS SHALL BE TESTED, ONE SET AFTER 28 DAYS AND THE OTHER SET AFTER 42 DAYS CURE.

JOINTS.

CONSTRUCTION DECK JOINTS SHALL BE FORMED THROUGH THE MODIFIED OVERLAY AS DIRECTED BY THE ENGINEER. A BULKHEAD SHALL BE INSTALLED AT EACH DECK JOINT TO THE REQUIRED GRADE AND PROFILE PRIOR TO PLACING THE LMC OVERLAY. PLACING THE LMC OVERLAY FULL ACROSS THE JOINT AND LATER SAWING WILL BE PERMITTED ONLY AT THE LOCATIONS AS SHOWN ON THE PLANS AND AS SPECIFIED ELSEWHERE HEREIN.

TEMPERATURE RESTRICTIONS.

THE LATEX MODIFIED CONCRETE SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IS LOWER THAN 45 DEGREES F. THE LMC MAY BE PLACED AT 45 DEGREES F. WHEN RISING TEMPERATURE IS PREDICTED AND THEN ONLY IF THE PREDICTION INDICATES THAT THE TEMPERATURE WILL BE HIGHER THAN 45 DEGREES F. FOR THE FIRST EIGHT HOURS OF THE CURING PERIOD.

AT TEMPERATURES ABOVE 85 DEGREES F. THE ENGINEER MAY REQUIRE LMC PLACEMENT TO BE MADE AT NIGHT OR EARLY MORNING HOURS IF IN HIS OPINION A SATISFACTORY SURFACE FINISH IS NOT BEING ACHIEVED. THE CONTRACTOR SHALL PROVIDE ALL THE LIGHTING REQUIRED FOR A SATISFACTORY NIGHT PLACEMENT OPERATION.

#### PLACING AND FINISHING.

THE CONTRACTOR SHALL ARRANGE FOR A REPRESENTATIVE OF THE LATEX MODIFIED CONCRETE SUPPLIER TO BE PRESENT DURING THE CONCRETE PLACEMENT.

THE CONTRACTOR WILL BE REQUIRED TO HAVE IN USE ENOUGH MODIFIED CONCRETE MIXERS TO ASSURE THAT THE PLACEMENT OF THE MODIFIED CONCRETE CAN BE CARRIED OUT IN ONE CONTINUOUS OPERATION.

THE LMC SHALL BE DEPOSITED ON THE BRIDGE DECK DIRECTLY FROM THE MIXER CHUTE. THE LMC SHALL BE BRUSHED ONTO THE WETTED PREPARED BRIDGE DECK.

THE LMC SHALL BE PLACED AND STRUCK-OFF TO APPROXIMATELY 1/4 INCH ABOVE FINAL GRADE. IT SHALL THEN BE CONSOLIDATED AND FINISHED TO THE FINAL GRADE BY THE FINISHING MACHINE. HAND FINISHING MAY BE REQUIRED IN AREAS THAT CAN NOT BE SERVICED BY THE FINISHING MACHINE.

AN APPROVED FINISHING MACHINE SHALL BE USED TO STRIKE OFF AND FINISH THE SURFACE OF THE LATEX MODIFIED CONCRETE OVERLAY.

THE FINISHING MACHINE SHALL BE SELF-PROPELLED. IT SHALL HAVE A ROLLER, AN AUGER, A FINISHING FLOAT AND A 1,500 TO 2,500 VPM VIBRATORY PAN. THE FINISHING MACHINE SHALL BE CAPABLE OF FORWARD AND REVERSE MOVEMENT UNDER POSITIVE CONTROL.

RAILS FOR THE FINISHING MACHINE SHALL BE 2" BY 2" PERFORATED STEEL BAR STOCK, 2 INCH PIPE RAIL OR APPROVED EQUAL. SUPPORTS SHALL BE SO LOCATED SO AS NOT TO INTERFERE WITH THE RIDING SURFACE OF THE BRIDGE DECK.

THE RAILS SHALL BE ACCURATELY SET TO PROPER GRADE AND PROFILE.

A SUITABLE PORTABLE LIGHTWEIGHT OR WHEELED WORK BRIDGE SHALL BE REQUIRED AND USED BEHIND THE FINISHING OPERATION FOR TOUCH-UP WORK, SURFACE TEXTURING AND CURING COVER PLACEMENT.

BEFORE ANY PLACEMENT OF LMC IS MADE, THE FINISHING MACHINE SHALL MAKE A "DRY-RUN" OVER THE ENTIRE BRIDGE DECK TO MAKE CERTAIN THAT THE 1-1/4 INCHES MINIMUM THICKNESS OF OVERLAY WILL BE ATTAINED.

APPROVED HAND OPERATED VIBRATORS AND SCREEDS MAY BE USED TO PLACE AND FINISH SMALL AREAS OF THE DECK THAT CANNOT BE FINISHED USING THE FINISHING MACHINE.

PLACING AND FINISHING EQUIPMENT SHALL INCLUDE HAND TOOLS FOR PLACEMENT AND BRUSHING-IN FRESHLY MIXED MODIFIED CONCRETE AND FOR DISTRIBUTING IT TO APPROXIMATELY THE CORRECT LEVEL FOR STRIKING-OFF WITH THE FINISHING MACHINE.

A CONSTRUCTION DAM OR BULKHEAD SHALL BE INSTALLED IN CASE OF MAJOR DELAYS IN THE PLACEMENT OPERATION EXCEEDING ONE HOUR IN DURATION. DURING MINOR DELAYS OF ONE HOUR OR LESS, THE END OF THE PLACEMENT MAY BE PROTECTED FROM DRYING WITH SEVERAL LAYERS OF WET BURLAP.

ADEQUATE PRECAUTIONS SHALL BE TAKEN TO PROTECT FRESHLY PLACED MATERIAL FROM SUDDEN OR UNEXPECTED RAIN. ALL PLACING OPERATIONS SHALL STOP WHEN IT STARTS TO RAIN. THE ENGINEER MAY ORDER REMOVAL OF ANY MATERIAL DAMAGED BY RAINFALL.

SMOOTHNESS OF THE DECKS SHALL BE TESTED AS SPECIFIED IN ARTICLE 4.1.3.

WHEN A TIGHT, UNIFORM SURFACE HAS BEEN ACHIEVED, THE SURFACE SHALL BE GIVEN A FINAL FINISH IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 3.12.3, EXCEPT THE TINE FINISH FOR THE LAST 12 INCHES OF PAVEMENT ADJACENT TO THE CURB SHALL BE OMITTED. AS SOON AS THE FINISHING HAS BEEN COMPLETED, ALL VERTICAL JOINTS WITH ADJACENT CONCRETE SHALL BE SEALED BY PAINTING WITH THINNED GROUT.

#### CURING.

AFTER THE SURFACE IS GIVEN A SUITABLE TEXTURE, THE LMC SURFACE SHALL BE COVERED WITH A SINGLE LAYER OF CLEAN, WET BURLAP AS SOON AS THE SURFACE WILL SUPPORT IT WITHOUT DEFORMATION.

WITHIN ONE HOUR OF COVERING WITH WET BURLAP, A LAYER OF POLYETHYLENE SHEETING SHALL BE PLACED ON THE WET BURLAP AND SHALL REMAIN FOR 24 HOURS. AFTER THIS 24 HOUR PERIOD OF WET CURE HAS ELAPSED, THE POLYETHYLENE SHEETING AND WET BURLAP SHALL BE REMOVED AND THE MODIFIED CONCRETE SHALL RECEIVE AN ADDITIONAL MINIMUM 5 DAYS OF AIR CURE. TOTAL MINIMUM CURING TIME IS 6 DAYS.

THE MINIMUM 5 DAY AIR CURE PERIOD MAY BE EXTENDED BY THE ENGINEER IF THE TEMPERATURES DURING THAT PERIOD WERE BELOW 55 DEGREES F.

NO VEHICULAR TRAFFIC OF ANY KIND SHALL BE PERMITTED ON THE LMC SURFACE UNTIL THE MINIMUM CURING PERIOD HAS ELAPSED AND THEN ONLY ON THE CONDITION THAT TEST CYLINDERS MADE BY STATE PERSONNEL AT THE TIME OF PLACEMENT HAVE A 3,000 BREAK AT SIX DAYS.

A MINIMUM OF THREE TEST CYLINDERS OF LMC SHALL BE MADE FOR EACH DAYS PLACEMENT.

THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS AND SHALL HAVE ON HAND ALL NECESSARY EQUIPMENT TO PROTECT FRESHLY PLACED LMC FROM A SUDDEN UNEXPECTED STORM. THE ENGINEER SHALL ORDER THE REMOVAL OF ANY LMC DAMAGED BY THE RAIN.

4.1F.4. QUANTITY AND PAYMENT.

THE QUANTITY OF LATEX MODIFIED CONCRETE OVERLAY FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME ACTUALLY MIXED AND DISCHARGED FROM THE MIXER CHUTE ONTO THE BRIDGE DECK. ANY MODIFIED CONCRETE THAT IS NOT USED IN THE FINISHED PROJECT OR THAT IS REJECTED WILL NOT BE MEASURED FOR PAYMENT.

PAYMENT FOR LATEX MODIFIED CONCRETE OVERLAY WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE PRICE PER CUBIC YARD BID FOR THE ITEMS LATEX MODIFIED CONCRETE, BRIDGE DECK AND LATEX MODIFIED CONCRETE, APPROACH SLAB IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF THE CONCRETE OVERLAY, SURFACE PREPARATION, FINISHING, CURING, SEALING JOINTS, ALL MATERIALS, LABOR, EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO, EXCEPT AS FOLLOWS:

IF THE QUANTITY INCREASES MORE THAN 20 PERCENT, THE QUANTITY IN EXCESS OF 120 PERCENT OF THE ORIGINAL QUANTITY WILL BE PAID FOR AT 75 PERCENT OF THE PRICE BID IN THE PROPOSAL.

SECTION 2

PRESTRESSED CONCRETE STRUCTURES

4.2.2. MATERIALS.

THE FIRST PARAGRAPH ON PAGE 233 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ALL MATERIALS FOR PRESTRESSED CONCRETE STRUCTURES SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN 1977 A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES AND INTERIMS EXCEPT AS HEREINAFTER AMENDED.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

STEEL STRANDS AND WIRES.

THE LAST SENTENCE IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR SHALL FURNISH, FREE OF CHARGE, ONE 6 FOOT LENGTH OF STRAND OR WIRE FROM EACH MANUFACTURED REEL FOR THIS PURPOSE.

COARSE AGGREGATE.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE SHALL BE WASHED GRAVEL OR BROKEN STONE OF ARGILLITE, GRANITE, GNEISS, QUARTZITE OR TRAP ROCK, CONFORMING TO THE REQUIREMENTS OF ARTICLES 8.5.6 AND 8.5.5 RESPECTIVELY, AND SHALL BE GRADED AS SPECIFIED FOR STANDARD SIZE NO. 57, 67 OR 7.

CONCRETE FOR PRESTRESSED MEMBERS.

THE LAST SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE SLUMP SHALL BE 2 INCHES PLUS OR MINUS ONE INCH.

GROUT.

THE FOLLOWING IS ADDED:

GROUT FOR GROUTING TIE ROD CAVITIES AND SHEAR KEYS AND OTHER APPLICATIONS SHALL MEET THE REQUIREMENTS SPECIFIED UNDER ARTICLE 4.1.2.

SOLE PLATES.

THIS HEADING AND TEXT IS ADDED:

STRUCTURAL STEEL FOR SOLE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 4.3.2 AND SHALL BE GALVANIZED AS SPECIFIED.

ELASTOMERIC BEARING PADS.

THIS HEADING AND TEXT IS ADDED:

ELASTOMERIC BEARING PADS SHALL CONFORM TO THE REQUIREMENTS OF 1977 A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 1.12 AND 2.25 (60 DURO)

THE CONTRACTOR SHALL FURNISH A 1-FOOT LENGTH OF THE ELASTOMERIC BEARING PAD HE INTENDS TO FURNISH, TOGETHER WITH A CERTIFICATION THAT THE BEARING PAD MATERIAL CONFORMS TO THE REQUIREMENTS OF THE ABOVE SPECIFICATION.

TRANSVERSE TIE RODS.

THIS HEADING AND TEXT IS ADDED:

TRANSVERSE TIE RODS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 36. NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 307 AND A 36. TIE RODS, NUTS AND WASHERS SHALL BE GIVEN TWO SHOP COATS OF RED LEAD PAINT.

4.2.3. METHODS OF CONSTRUCTION.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ALL OPERATIONS PERTAINING TO THE CONSTRUCTION OF PRESTRESSED CONCRETE MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF 1977 A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (ARTICLE 2.4.33) AND TO THE FOLLOWING ADDITIONS:

AT LEAST 30 CALENDAR DAYS PRIOR TO THE PROPOSED START OF ERECTION, THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN OF OPERATIONS FOR REVIEW BY THE ENGINEER AT A PRE-ERECTION MEETING. THIS PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, THE METHOD OF ERECTION HE PROPOSES TO FOLLOW, AND THE AMOUNT AND CHARACTER OF EQUIPMENT AND MANPOWER HE PROPOSES TO USE. REVIEW AND ACCEPTANCE OF THE PLAN BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR OF THE RE-

RESPONSIBILITY FOR THE SAFETY OF HIS METHOD OR EQUIPMENT, OR FROM CARRYING OUT THE WORK IN FULL ACCORDANCE WITH PLANS AND SPECIFICATIONS.

ERECTION OF PRESTRESSED CONCRETE MEMBERS SHALL NOT PROCEED UNTIL SUBSTRUCTURE CONCRETE HAS CURED.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

FORMS.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH:

THE CONTRACTOR SHALL PAY ALL COSTS OF CHECKING OF COMPUTATIONS AND PLANS FOR ANY PROPOSED ALTERNATIVE DESIGN HE MAY SUBMIT, IN ACCORDANCE WITH THE PRECEDING PARAGRAPH, WHETHER OR NOT THE DESIGN IS APPROVED BY THE STATE.

NO ADDITIONAL COMPENSATION WILL BE MADE BY THE STATE TO THE CONTRACTOR FOR THE SUBSTITUTION OF ANY ALTERNATIVE DESIGN WHICH MAY BE APPROVED.

PLACING OF PRETENSIONING STRANDS AND APPLICATION OF PRESTRESSES.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH:

IF THE CONTRACT PLANS CALL FOR A PRESTRESSED PRETENSIONED BEAM, AND THE CONTRACTOR ELECTS TO SUBMIT FOR APPROVAL A DESIGN BASED ON A SYSTEM OTHER THAN PRETENSIONING, THE PROPOSED DESIGN SHALL INCLUDE END BLOCKS.

IF THE CONTRACT PLANS CALL FOR A POST-TENSIONED OR COMBINATION POST-TENSIONED AND PRETENSIONED BEAM, AND THE CONTRACTOR ELECTS TO SUBMIT FOR APPROVAL A PRETENSIONED DESIGN, THE PROPOSED DESIGN MAY DELETE THE END BLOCKS.

THE CONTRACTOR MAY SUBMIT, FOR APPROVAL OF THE ENGINEER, A PRETENSIONED DESIGN WITHOUT END BLOCKS.

IN THE CASE OF MULTIPLE SPAN STRUCTURES, IF THE DESIGN OF BEAMS OF ANY ONE SPAN REQUIRES END BLOCKS, THE FASCIA BEAMS FOR ALL SPANS SHALL HAVE END BLOCKS.

PLACING CONCRETE.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:



THE CONCRETE SHALL BE VIBRATED INTERNALLY OR EXTERNALLY, OR BOTH, AS ORDERED BY THE ENGINEER.

CONCRETE FINISH.

THE FOLLOWING IS ADDED:

THE OUTSIDE FACE OF FASCIA BEAMS SHALL BE GIVEN A RUBBED FINISH AT THE PLANT WITH CARBORUNDUM AS DESCRIBED IN ARTICLE 4.1.3.

TRANSVERSE TIE RODS.

THIS HEADING AND TEXT IS ADDED:

THE ROD SHALL BE PLACED IN POSITION THROUGH PREFORMED HOLES AND STRESSED TO A TOTAL TENSION OF 7000 POUNDS. PRECAUTIONS SHALL BE TAKEN TO PREVENT DAMAGE TO THE CONCRETE UNDER THE OUTSIDE BEARING PLATES. THE TENSIONING PROCESS SHALL BE CONDUCTED SO THAT THE TENSION BEING APPLIED MAY BE MEASURED AT ALL TIMES.

AFTER STRESSING, THE EXPOSED END OF THE ROD AT THE FASCIA MEMBER SHALL BE REMOVED SO THAT NO PART OF THE ROD OR OF THE END FITTINGS EXTENDS BEYOND A POINT ONE INCH INSIDE THE EXTERIOR FACE OF THE FASCIA MEMBER. THE CUTTING SHALL BE DONE IN SUCH A MANNER AS TO CAUSE NO DAMAGE TO THE ROD OR FITTING.

THE EXPOSED PARTS OF THE END FITTINGS SHALL BE COATED WITH TWO COATS OF BITUMINOUS PAINT AND THE OPENING FILLED WITH NON-SHRINK GROUT TO MATCH THE CONCRETE SURFACE.

WHEN THE TRANSVERSE BARS HAVE BEEN STRESSED TO THE SPECIFIED TENSION, THE LONGITUDINAL SHEAR KEYS SHALL BE FILLED WITH NON-SHRINK GROUT.

4.2.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE FURNISHING AND PLACING OF GROUT, TRANSVERSE TIE RODS, AND PREFORMED ELASTOMERIC BEARING PADS WILL NOT BE MEASURED FOR PAYMENT, AND THE COST OF ALL MATERIAL AND WORK IN CONNECTION WITH PLACING THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM PRESTRESSED CONCRETE BEAMS.

THE WEIGHT OF SOLE PLATES EMBEDDED IN THE CONCRETE BEAMS WILL NOT BE MEASURED FOR PAYMENT UNDER THE ITEM OF STRUCTURAL STEEL, BUT ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM PRESTRESSED CONCRETE BEAMS.

SECTION 3  
STEEL STRUCTURES

4.3.2. MATERIALS.  
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IN THE LISTING OF MATERIALS UNDER THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ALL REFERENCE TO STEEL, STRUCTURAL CARBON AND STEEL, STRUCTURAL, FOR WELDED MEMBERS, SHALL BE CHANGED TO READ AS FOLLOWS:

STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.4.23 AND TO THE DESIGNATION SPECIFICATION PRESCRIBED ON PLANS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

ANCHOR BOLTS. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A36 AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION, INCLUDING THREADING, IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A153.

NUTS AND WASHERS. NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. SPECIFICATION A307 AND A36 RESPECTIVELY, AND SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. SPECIFICATION A153.

BRONZE WASHERS. BRONZE WASHERS SHALL MEET THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION B 100, ALLOY NO. 511 OR FEDERAL SPECIFICATION QQ-B-637, ALLOY 464.

BEDDING MATERIALS. BEDDING MATERIALS FOR MASONRY PLATES SHALL BE FURNISHED AND PLACED ACCORDING TO THE REQUIREMENTS OF 1977 A.A.S.H.T.O. SPECIFICATIONS FOR HIGHWAY BRIDGES, ART. 2.10.55.

STRUCTURAL STEEL BEARINGS. STRUCTURAL STEEL BEARINGS FOR PRESTRESSED CONCRETE BEAMS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH A.S.T.M. DESIGNATION A123, EXCEPT THAT BEARING AREAS OF PINS AND SURFACES UPON WHICH PINS BEAR SHALL BE EXCLUDED FROM THIS REQUIREMENT.

BEARING PINS. BEARING PINS SHALL BE EITHER ANNEALED CARBON STEEL FORGING CONFORMING TO THE REQUIREMENTS OF A.A.S.H.O. SPECIFICATION M 102 (A.S.T.M. DESIGNATION A668) CLASS C1, OR COLD FINISHED CARBON STEEL SHAFTING CONFORMING TO THE REQUIREMENTS OF A.A.S.H.O. M 169 (A.S.T.M. DESIGNATION A108) GRADE 1016 TO 1030 INCLUSIVE.

FORMED STEEL FLOORING. FORMED STEEL FLOORING FOR USE ON PEDESTRIAN BRIDGES SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 570, GRADE A, ZINC COATED (GALVANIZED) WITH A MINIMUM OF 2 OUNCES PER SQUARE FOOT (TOTAL-BOTH SIDES) WHEN TESTED IN ACCORDANCE WITH A.A.S.H.O. T65.

#### 4.3.3. METHODS OF CONSTRUCTION.

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THE FIRST PARAGRAPH UNDER THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE METHOD OF CONSTRUCTION FOR STEEL STRUCTURES, INCLUDING FABRICATION AND ERECTION, SHALL CONFORM TO THE REQUIREMENTS OF 1977 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (ARTICLES 2.10.51 THROUGH 2.10.60) AND TO THE FOLLOWING AMENDMENTS AND ADDITIONS THERETO:

ARTICLE 2.10.54 OF 1977 AASHTO STANDARD SPECIFICATIONS IS MODIFIED AS FOLLOWS:

AT LEAST 30 CALENDAR DAYS PRIOR TO THE PROPOSED START OF ERECTION, THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN OF OPERATIONS FOR REVIEW BY THE ENGINEER AT A PRE-ERECTION MEETING. THIS PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, THE METHOD OF ERECTION HE PROPOSES TO FOLLOW, AND THE AMOUNT AND CHARACTER OF EQUIPMENT AND MANPOWER HE PROPOSES TO USE. REVIEW AND ACCEPTANCE OF THE PLAN BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR THE SAFETY OF HIS METHOD OR EQUIPMENT, OR FROM CARRYING OUT THE WORK IN FULL ACCORDANCE WITH PLANS AND SPECIFICATIONS.

ERECTION OF STRUCTURAL STEEL SHALL NOT PROCEED UNTIL SUBSTRUCTURE CONCRETE HAS CURED AS SPECIFIED UNDER ARTICLE 4.1.3 OF THE SPECIFICATIONS AS AMENDED.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

WELDING.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

WELDING SHALL CONFORM TO THE REQUIREMENTS OF AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE, AWS D1.1-75 AS MODIFIED BY AASHTO 1977 STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, EXCEPT THAT ELECTRO-SLAG WELDMENTS ON MAIN STRUCTURAL TENSION MEMBERS WILL NOT BE PERMITTED.

ALL NON-DESTRUCTIVE TESTS UPON WELDMENTS AT THE SITE OF FABRICATION OF WELDED STRUCTURES AND OR THEIR APPURTENANCES WILL BE PERFORMED BY REPRESENTATIVES DESIGNATED BY THE STATE AT NO COST TO THE CONTRACTOR.

THE CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE TESTING COMPANY, DESIGNATED BY THE STATE AFTER AWARD OF CONTRACT, NOT LESS THAN THREE DAYS IN ADVANCE OF WHEN ANY WELDING IS TO BE COMPLETED SO THAT NECESSARY ARRANGEMENTS FOR INSPECTION MAY BE MADE.

A COPY OF THIS NOTICE SHALL BE SENT TO THE CHIEF, BUREAU OF INSPECTION, PLANT AND PROJECT, NEW JERSEY DEPARTMENT OF TRANSPORTATION, 940 LOWER FERRY TRENTON, NEW JERSEY 08625, AND ALSO TO THE DISTRICT CONSTRUCTION ENGINEER AT THE ADDRESS SPECIFIED UNDER ARTICLE 1.4.1.

GROOVE WELDS WILL BE TESTED USING ULTRASONIC TESTING PROCEDURES. ULTRASONIC TESTING MAY BE SUPPLEMENTED BY RADIOGRAPHIC TESTING WHEN WARRANTED, AS DETERMINED BY THE ENGINEER.

THE ABOVE REFERENCED SPECIFICATIONS ARE AMENDED AS FOLLOWS:

6.7 NONDESTRUCTIVE TESTING.

PARAGRAPH 6.7.8.1 - THE PROVISIONS ARE CHANGED AS FOLLOWS:

6.7.8.1 SHOP WELDS

ALL JOINTS SUBJECT TO TENSION OR REVERSAL OF STRESS, BUTT WELD SPLICES IN BEAM OR GIRDER WEBS, COMPRESSION, SHEAR, AND LONGITUDINAL BUTT WELD SPLICES WILL BE TESTED FOR THE FULL LENGTH OF THE WELD.

ALL WELDS SCHEDULED FOR NONDESTRUCTIVE TESTING SHALL BE GROUND FLUSH FOR THE FULL LENGTH OF THE WELD. GRINDING SHALL BE

IN THE DIRECTION OF APPLIED STRESS.

HIGH-STRENGTH BOLTS.

THE SECOND SENTENCE IS CHANGED TO READ AS FOLLOWS:

THE PROVISIONS OF ARTICLE 2.10.20, "CONNECTIONS USING HIGH STRENGTH BOLTS" OF A.A.S.H.T.O. "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", TWELFTH EDITION, 1977, SHALL GOVERN FOR THE INSTALLATION AND INSPECTION OF CONNECTIONS MADE WITH HIGH STRENGTH BOLTS.

THE FOLLOWING IS ADDED UNDER THIS HEADING OF THE STANDARD SPECIFICATIONS:

WHERE CONNECTIONS ARE CALLED FOR ON THE PLANS TO BE FIELD WELDED, THE CONTRACTOR MAY, AT HIS OPTION, MAKE THESE CONNECTIONS WITH EITHER HIGH STRENGTH BOLTS OR RIVETS SUBJECT TO THE APPROVAL OF THE ENGINEER. THE DESIGN OF THE CONNECTIONS USING HIGH STRENGTH BOLTS OR RIVETS SHALL BE MADE BY AND AT THE SOLE EXPENSE OF THE CONTRACTOR AND SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL NOT MAKE ANY CLAIM FOR ADDITIONAL COMPENSATION DUE TO REDESIGNING CONNECTIONS WHETHER OR NOT THEY ARE APPROVED.

AUTOMATIC END-WELDED STUDS.

THE FIRST SENTENCE IS CHANGED TO READ AS FOLLOWS:

AUTOMATIC END-WELDED STUDS SHALL BE USED AS SHEAR CONNECTORS OR FOR OTHER PURPOSES WHERE CALLED FOR IN THE PLANS OR DIRECTED BY THE ENGINEER.

THE FOLLOWING IS ADDED UNDER THIS HEADING OF THE STANDARD SPECIFICATIONS:

STUD SHEAR CONNECTORS SHALL BE INSTALLED IN THE FIELD ONLY AFTER THE STRUCTURAL STEEL IS ERECTED AND PRIOR TO PLACING OF REINFORCEMENT STEEL. SHOP INSTALLATION OF SHEAR CONNECTORS WILL NOT BE PERMITTED.

PAINTING.

THE FIRST FULL PARAGRAPH ON PAGE 246 IS CHANGED TO READ AS FOLLOWS:

CLEANING AND PAINTING OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS FOR THE ZONE SYSTEM SPECIFIED ON PLANS.

COLOR OF FINISH COAT SHALL BE THE COLOR AS SPECIFIED ON THE PLANS.

ALL REFERENCES TO "SSPC" IN THE FOLLOWING PROVISIONS REFER TO SPECIFICATIONS PUBLISHED BY THE STEEL STRUCTURES PAINTING COUNCIL, 4400 FIFTH AVENUE, PITTSBURGH, PENNSYLVANIA.

SURFACES OF STEEL WHICH WILL BE IN CONTACT WITH OR EMBEDDED IN CONCRETE SHALL BE GIVEN ONE PRIME COAT OF PAINT.

SURFACES WITHIN 2 INCHES OF FIELD WELDS SHALL NOT BE PAINTED, BUT SHALL RECEIVE A LIGHT COAT OF APPROVED RUST INHIBITIVE COATING.

CONTACT SURFACES AT JOINTS MADE WITH HIGH STRENGTH BOLTS SHALL BE FREE OF OIL, PAINT, LACQUER, OR GALVANIZING.

ROLLERS AND MACHINED SURFACES SHALL BE COATED WITH HARD GREASE WHICH WILL READILY ADHERE TO THE METAL IN COLD AND HOT WEATHER, OR SHALL BE COATED WITH A HOT COAT OF WHITE LEAD AND TALLOW MIXTURE, OR A CORROSIVE PREVENTIVE COMPOUND MEETING THE REQUIREMENTS OF MIL-C-117968 CLASS 3. THE COATING SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER BEING ACCEPTED AND BEFORE REMOVAL FROM THE SHOP.

ZONE 1 AND ZONE 3A SYSTEMS

TYPE: BASIC LEAD SILICO CHROMATE PRIMER, INTERMEDIATE COAT, AND FINISH COAT.

SURFACE PREPARATION: "COMMERCIAL BLAST CLEANING" SSPC-SP6 FOLLOWED IMMEDIATELY (4 HOURS MAXIMUM) BY SHOP PRIMER.

PAINT APPLICATION: ALL PAINT SHALL BE APPLIED IN ACCORDANCE WITH SSPC-PA 1-64, "SHOP, FIELD, AND MAINTENANCE PAINTING."

NUMBER OF COATS: A MINIMUM NUMBER OF 3 COATS SHALL BE APPLIED; PRIME COAT IN THE SHOP; INTERMEDIATE COAT IN THE FIELD; FINISH COAT IN THE FIELD.

PRIME COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.7.

INTERMEDIATE COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.7.

FINISH COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.4 WHEN GREEN COLOR IS SPECIFIED; SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.16 WHEN BLUE COLOR IS SPECIFIED.

PAINT FILM THICKNESS: THE DRY FILM THICKNESS OF THE PAINT AT ANY POINT SHALL NOT BE LESS THAN THE FOLLOWING:

FOR THE PRIME COAT-----1.7 MILS  
FOR THE INTERMEDIATE COAT--1.3 MILS  
FOR THE FINISH COAT-----1.0 MILS  
FOR THE 3 COAT SYSTEM-----4.0 MILS

IF THE REQUIRED PAINT FILM THICKNESS IS NOT ACHIEVED AS SPECIFIED, ADDITIONAL COATS SHALL BE APPLIED UNTIL THE REQUIRED THICKNESS IS OBTAINED.

TOUCH-UP PAINTING: BEFORE APPLICATION OF THE FINISH COATS, THE STEEL SHALL BE TOUCHED UP IN ACCORDANCE WITH THE PROVISIONS OF SSPC-PA 1-64, "SHOP, FIELD, AND MAINTENANCE PAINTING", ESPECIALLY SECTION 3.5.3, "FIELD PAINTING."

ZONE 2 SYSTEM

TYPE: BASIC LEAD SILICO CHROMATE VINYL PRIMER AND INTERMEDIATE COAT, AND VINYL FINISH COAT.

SURFACE PREPARATION: "WHITE METAL BLAST CLEANING" SSPC-SP5 OR MATCHING ASTM D-2200 ASA3, BSA3, CSA3, AND DSA3 FOLLOWED IMMEDIATELY (4 HOURS MAXIMUM) BY WASH PRIME COAT.

PAINT APPLICATION: ALL PAINT SHALL BE APPLIED IN ACCORDANCE WITH SSPC-PA 1-64 "SHOP, FIELD, AND MAINTENANCE PAINTING." THE PRIME COAT MUST BE APPLIED WITHIN 4 HOURS AFTER THE WASH PRIME COAT.

NUMBER OF COATS: A MINIMUM NUMBER OF 4 COATS SHALL BE APPLIED; WASH PRIME COAT IN THE SHOP; PRIME COAT IN THE SHOP; INTERMEDIATE COAT IN THE FIELD (OR IN THE SHOP JUST PRIOR TO DELIVERY); FINISH COAT IN THE FIELD.

WASH PRIME COAT: SHALL CONFORM TO THE PROVISIONS OF MIL SPEC P-15328B.

PRIME COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.17 OR ALTERNATE ARTICLE 8.6.19.

INTERMEDIATE COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.18 OR ALTERNATE ARTICLE 8.6.19.

FINISH COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.20.

PAINT FILM THICKNESS: THE DRY FILM THICKNESS OF THE PAINT AT ANY POINT SHALL NOT BE LESS THAN THE FOLLOWING:

FOR THE WASH PRIME COAT-----0.3 TO 0.5 MILS  
FOR THE PRIME COAT----- 2.0 MILS  
FOR THE INTERMEDIATE COAT-----2.0 MILS  
FOR THE FINISH COAT ----- 2.0 MILS  
FOR THE 4 COAT SYSTEM-----6.3 MILS

IF THE REQUIRED PAINT FILM THICKNESS IS NOT ACHIEVED AS SPECIFIED, ADDITIONAL COATS SHALL BE APPLIED UNTIL THE REQUIRED THICKNESS IS OBTAINED.

TOUCH-UP PAINTING: BEFORE APPLICATION OF THE FINISH COATS, THE STEEL SHALL BE TOUCHED UP IN ACCORDANCE WITH THE PROVISIONS OF SSPC-PA 1-64, "SHOP, FIELD, AND MAINTENANCE PAINTING," ESPECIALLY 3.5.3, "FIELD PAINTING."

#### ZONE 3B SYSTEM

TYPE: ORGANIC ZINC RICH PRIMER, VINYL FINISH COAT.

SURFACE PREPARATION: "WHITE METAL BLAST CLEANING" SSPC -SP5 OR MATCHING ASTM D-2200 ASA3, BSA3, CSA3, AND DSA3 FOLLOWED IMMEDIATELY (3 HOURS MAXIMUM) BY PRIME COAT.

PAINT APPLICATION: ALL PAINT SHALL BE APPLIED IN ACCORDANCE WITH SSPC-PA 1-64 "SHOP, FIELD, AND MAINTENANCE PAINTING" AND TO THE FOLLOWING PROVISIONS.

THE PAINT SHALL BE THINNED, USING A POWER AGITATED STIRRER, WITH NOT EXCEEDING ONE VOLUME OF A MIXTURE OF 82% BY VOLUME OF ETHYLENE GLYCOL MONOETHYL ETHER ACETATE AND 18% BY VOLUME TOLUENE TO 4 VOLUMES OF PAINT PRIOR TO USE TO PRODUCE A SMOOTH UNIFORM COATING. AFTER THINNING AND THOROUGH MIXING, THE PRIMER SHALL BE STRAINED THROUGH A 30-60 MESH SCREEN OR DOUBLE LAYER OF CHEESECLOTH. THERE SHALL BE NO UNDISPERSED AGGLOMERATES OF ZINC PIGMENT REMAINING IN THE PAINT AFTER MIXING.

AFTER BLAST CLEANING THE ANCHOR PATTERN SHALL BE A MINIMUM OF 1-1/2 MILS DEEP IN A DENSE AND UNIFORM PATTERN OF DEPRESSIONS AND RIDGES.

THE FIRST COAT OF ZINC RICH PRIMER MUST BE APPLIED WITHIN THREE HOURS OF BLAST CLEANING SURFACE.

BLAST CLEANING AND PAINTING WILL NOT BE PERMITTED WHEN THE RELATIVE HUMIDITY EXCEEDS 85% AS MEASURED AT THE SITE OF OPERATIONS.

ALL PAINT SHALL BE APPLIED BY SPRAY METHODS EXCEPT THAT AREAS INACCESSIBLE TO SPRAY APPLICATION SHALL BE BRUSHED. COATED



SURFACES WHICH ARE DAMAGED, FAULTY, OR ABRADED, AND ALL EXPOSED UNCOATED SURFACES SHALL BE CLEANED BY SANDBLASTING AND SPOT PAINTED WITH THIS PRIMER AFTER ERECTION AND BEFORE APPLICATION OF THE SPECIFIED TOP COATS.

FIRST COAT OVER CLEANED STEEL SURFACE SHALL BE TYPE I, RED TINT. SECOND COAT SHALL BE TYPE II, GRAY. IF ADDITIONAL COATS ARE REQUIRED, THEY SHALL BE ALTERNATING TYPE I AND TYPE II. AN AGITATED POT CONTAINING THE PAINT SHALL BE MANDATORY IN ALL SPRAY PAINTING OR BRUSH APPLICATION WORK. THE AGITATOR OR STIRRING ROD SHALL REACH TO WITHIN TWO INCHES OF THE BOTTOM OF THE SPRAY POT AND SHALL BE IN MOTION AT ALL TIMES DURING PAINT APPLICATION. SUCH MOTION SHALL BE SUFFICIENT TO KEEP THE PAINT WELL MIXED. THE PAINT SHALL BE STORED IN A COOL PLACE.

COMPLETE INSTRUCTIONS FOR USE SHALL BE INCLUDED WITH EACH CONTAINER OF PAINT.

WHENEVER PAINTING OPERATIONS ARE INTERRUPTED, THE ZINC-RICH PRIMER REMAINING IN THE FLUID HOSE SHALL BE EXPELLED FROM THE HOSE. SPRAY EQUIPMENT WHICH IS USED FOR APPLICATION OF ZINC-RICH PRIMER SHALL BE THOROUGHLY CLEANED AT THE END OF EACH WORK DAY WITH THE THINNER DESCRIBED HEREINABOVE.

PRIOR TO APPLICATION OF THE FINISH COATS, EXCEPT FOR THE FAYED SURFACES, ALL SURFACES PAINTED WITH ZINC-RICH PRIMER SHALL BE TREATED WITH VINYL WASH PRIMER CONFORMING TO ARTICLE 8.6.22 (MIL. SPEC. P-15329B). THE ZINC-RICH PRIMER SHALL BE CURED FOR AT LEAST 24 HOURS BEFORE APPLICATION OF THE VINYL WASH PRIMER. THE VINYL WASH PRIMER SHALL BE APPLIED IN SUCH A MANNER AS TO PRODUCE A WET FILM AS THE SPRAY CONTACTS THE SURFACE. THE VINYL WASH PRIMER SHALL BE APPLIED AT THE RATE OF 260 TO 430 SQUARE FEET PER GALLON AND DRIED FILM THICKNESS OF 0.3 TO 0.5 MILS. IT SHALL COMPLETELY AND UNIFORMLY COVER THE UNDERLYING SURFACE.

THE FIRST FINISH COAT SHALL BE APPLIED OVER THE PRETREATMENT VINYL WASH PRIMER IN NOT MORE THAN 72 HOURS.

NUMBER OF COATS: A MINIMUM NUMBER OF 4 COATS SHALL BE APPLIED; PRIME COAT IN THE SHOP; INTERMEDIATE COAT IN THE SHOP; WASH PRIME COAT AND FINISH COAT IN THE FIELD.

PRIME COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.21.

INTERMEDIATE COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.21.

WASH PRIME COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.22.

FINISH COAT: SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.6.20.

PAINT FILM THICKNESS: THE DRY FILM THICKNESS OF THE PAINT AT ANY POINT SHALL NOT BE LESS THAN THE FOLLOWING:

FOR THE PRIME COAT AND  
FOR THE INTERMEDIATE COAT-----3.0 MILS TOTAL FOR 2 COATS  
FOR THE WASH PRIMER COAT-----0.3 TO 0.5 MILS  
FOR THE FINISH COAT-----2.0 MILS  
FOR THE 4 COAT SYSTEM-----5.3 MILS

IF THE REQUIRED PAINT FILM THICKNESS IS NOT ACHIEVED AS SPECIFIED, ADDITIONAL COATS SHALL BE APPLIED UNTIL THE REQUIRED THICKNESS IS OBTAINED.

TOUCH-UP PAINTING: BEFORE APPLICATION OF THE FINISH COATS, THE STEEL SHALL BE TOUCHED UP IN ACCORDANCE WITH THE PROVISIONS OF SSPC-PA 1-64 "SHOP, FIELD, AND MAINTENANCE PAINTING," ESPECIALLY 3.5.3, "FIELD PAINTING."

THIS HEADING IS AMENDED UNDER THE SUBHEADINGS AS FOLLOWS:

SHOP PAINTING.

THE FOLLOWING IS ADDED AND ALL CONFLICTING PROVISIONS ARE DELETED:

ALL INTERIOR SURFACES OF BOX GIRDERS SHALL BE PAINTED TWO (2) COATS IN THE SHOP AS FOLLOWS:

FIRST SHOP COAT...RED LEAD PAINT CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.6.7.

SECOND SHOP COAT...GRAPHITE PAINT CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.6.5.

THE DRY FILM THICKNESS OF THE SHOP COAT PAINT FOR THE INTERIOR SURFACES OF BOX GIRDERS AT ANY POINT SHALL NOT BE LESS THAN THE FOLLOWING:

FOR THE 1ST SHOP COAT.....3.0 MILS.  
FOR THE 2ND SHOP COAT.....2.0 MILS.  
FOR THE 2 SHOP COAT SYSTEM...5.0 MILS.

IF THE REQUIRED PAINT FILM THICKNESS IS NOT ACHIEVED, AS SPECIFIED, ADDITIONAL COATS SHALL BE APPLIED UNTIL THE REQUIRED THICKNESS IS OBTAINED.

FIELD PAINTING.

THE FIRST FULL PARAGRAPH ON PAGE 247 IS CHANGED TO READ AS FOLLOWS:

ALL EXPOSED STRUCTURAL METAL, UNLESS OTHERWISE SPECIFIED, SHALL BE PAINTED ONE SHOP COAT AND TWO FIELD COATS OF PAINT. THE SHOP COAT AND THE FIRST FIELD COAT SHALL BE OF RED LEAD PAINT.

THE SECOND FIELD COAT SHALL BE OF GRAPHITE PAINT EXCEPT FOR THE OUTER SURFACES OF FASCIA GIRDERS, THE UNDER SIDE OF FASCIA GIRDER FLANGES AND BEARINGS UNDER FASCIA GIRDERS, ALL OF WHICH SHALL BE GIVEN A SECOND FIELD COAT OF THE COLOR, AS SPECIFIED ON THE PLANS.

THE FOLLOWING IS ADDED:

IMMEDIATELY AFTER FIELD WELDING AND INSTALLATION OF HIGH-STRENGTH BOLTS, THE AREAS ADJACENT TO FIELD WELDS, AND THE BOLTS AND THE AREAS ADJACENT TO THE BOLTS WHICH WERE NOT PAINTED IN THE SHOP SHALL BE PAINTED WITH SHOP COAT PAINT. THE FIRST, AND SUBSEQUENTLY THE SECOND FIELD COAT SHALL THEN BE APPLIED.

CLEANING AND PAINTING EXISTING STRUCTURAL STEEL

THIS SUBHEADING AND TEXT IS ADDED:

ALL EXISTING STRUCTURAL STEEL, FERROUS METAL PARTS AND PREVIOUSLY APPLIED PAINT SHALL BE THOROUGHLY CLEANED PRIOR TO PAINTING AS SPECIFIED HEREIN.

ALL CLEANING OF STEEL SHALL BE IN ACCORDANCE WITH SURFACE PREPARATION SPECIFICATIONS OF THE STEEL STRUCTURES PAINTING COUNCIL, 4400 FIFTH AVENUE, PITTSBURG, PENNSYLVANIA, APPROVED OCTOBER 1963 AND JANUARY 1971, COVERING NO. 1, SOLVENT CLEANING; NO. 2, HAND CLEANING; NO. 6, COMMERCIAL BLAST CLEANING; AND IN ACCORDANCE WITH THESE SPECIFICATIONS.

THE ABOVE METHODS OF CLEANING SHALL BE EMPLOYED AS FOLLOWS, AND AS DIRECTED BY THE ENGINEER.

THE NO. 1 SOLVENT CLEANING PROCEDURE SHALL BE EMPLOYED FOR THE REMOVAL OF DIRT, OIL, AND GREASE IN CASES WHERE THE UNDERLYING PAINT IS FREE FROM RUST AND IN GOOD CONDITION, OR WHERE OTHER METHODS MIGHT RESULT IN DAMAGE TO EQUIPMENT.

THE NO. 2 HAND CLEANING PROCEDURE SHALL ONLY BE EMPLOYED IN CASES WHERE NO. 6 COMMERCIAL BLAST CLEANING IS IMPRACTICABLE OR MAY RESULT IN DAMAGE TO EQUIPMENT AND/OR STRUCTURE.

THE NO. 6 COMMERCIAL BLAST CLEANING PROCEDURE SHALL BE USED ONLY IF DIRECTED BY THE ENGINEER. ALL SANDBLASTING SHALL BE DRY BLASTED.

THE SURFACE OF THE METAL SHALL BE COMMERCIALY BLAST CLEANED BY DRY SANDBLASTING USING COMPRESSED AIR BLAST NOZZLES AND DRY SAND OF A MAXIMUM PARTICLE SIZE NO LARG THAN THAT PASSING THROUGH A 16 MESH SCREEN, US SIEVE SERIES. THE CLEANED SURFACE SHALL BE CLEANED AT LEAST AS WELL AS WOULD BE PRODUCED BY AIR PRESSURE, BLASTING WITH DRY OTTAWA SILICA SAND, AMERICAN FOUNDRY-MAN'S ASSOCIATION STANDARD GRADE NO. 27, THROUGH A NEW NOZZLE HELD AT THE OPTIUMUM ANGLE AND DISTANCE FOR THE PARTICULAR SURFACE BEING CLEANED. IT IS NOT THE INTENT THAT THE SANDBLASTING SHOULD REMOVE PAINT WHICH ADHERES TIGHTLY TO THE STEEL, BUT ALL LOOSE AND DISINTEGRATED PAINT, LOCSE OR POWDERED RUST, AND ADHERING CONCRETE SHALL BE REMOVED.

THE CONTRACTOR SHALL SO ARRANGE HIS PIPING AND HOSES THAT THERE SHALL BE NO INTERFERENCE WITH RAILROAD OR VEHICULAR TRAFFIC.

SANDBLASTING SHALL BE DONE PROGRESSIVELY FROM ONE SIDE OF THE BRIDGE TO THE OTHER USING THREE NOZZLES AT ALL TIMES. THE CONTRACTOR SHALL EMPLOY A SUFFICIENT NUMBER OF MEN TO MAKE UP THE SANDBLAST CREW SO THAT EQUIPMENT AND AIR LINES CAN BE SPEEDILY RELOCATED AND THE WORK PROGRESSED WITHOUT DELAY.

THE CONTRACTOR SHALL FURNISH COMPRESSORS, SANDBLAST POTS, NOZZLES, AND ALL OTHER EQUIPMENT, FILTERS, HOSELINES, TOOLS AND RIGGING AS NECESSARY TO COMPLETE THE WORK.

ADDITIONAL BLASTING REQUIRED IN AREAS WHERE THE TIME LIMITATIONS FOR PRIMING UNDER "APPLICATION OF PAINT" ARE NOT MET SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

NO PAINT SHALL BE APPLIED UNTIL THE CONDITION OF THE SURFACE IS APPROVED BY THE ENGINEER.

NO BLASTING EQUIPMENT SHALL BE REMOVED OR RELOCATED UNTIL THE ENGINEER HAS APPROVED THE FRESHLY BLASTED SURFACES AS SATISFACTORY FOR PRIMING.

THE CONTRACTOR'S ATTENTION IS DRAWN PARTICULARLY TO THE SAFETY PRECAUTIONS OF THE STEEL STRUCTURES COUNCIL SURFACE PREPARATION SPECIFICATIONS. THESE SAFETY REQUIREMENTS SHALL BE RIGIDLY ADHERED TO.

IN ADDITION TO THE DETAILED CLEANING REQUIREMENTS SPECIFIED HEREINBEFORE, ALL PAINT SURFACES, REGARDLESS OF CONDITION

SHALL BE BRUSHED TO INSURE THE REMOVAL OF DUST, DIRT, SAND, MUD, AND GRIME BEFORE PAINTING. ALL SURFACES SHALL BE DRY AS WELL AS CLEAN BEFORE ANY PAINT IS APPLIED. ESPECIALLY WHERE CORROSION HAS SET IN, THE STEEL SHALL BE "BARED" TO SOLID METAL. SPECIAL CARE SHALL BE GIVEN TO TIGHT OR HIDDEN AREAS WHERE DIRT HAS ACCUMULATED.

AFTER THE CLEANING IS COMPLETED, THE STRUCTURE SHALL BE INSPECTED CAREFULLY BY THE CONTRACTOR AND THE ENGINEER.

#### APPLICATION OF PAINT

THIS SUBHEADING AND TEXT IS ADDED:

THE EXISTING STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH ZONE SYSTEM SPECIFIED ON PLANS EXCEPT THAT ALL COATS WILL BE APPLIED IN THE FIELD.

PAINT SHALL NOT BE APPLIED BEFORE THE METALWORK HAS BEEN THOROUGHLY CLEANED AND PREPARED IN ACCORDANCE WITH THE REQUIREMENTS STATED HEREINBEFORE.

PAINT SHALL NOT BE APPLIED BEFORE THE SURFACES TO BE PAINTED ARE APPROVED BY THE ENGINEER AS SATISFACTORY. THIS SHALL APPLY TO EXISTING SURFACES PREPARED FOR PAINTING, SURFACES WHICH HAVE RECEIVED A PRIME COAT OF PAINT AND SURFACES WHICH HAVE RECEIVED AN INTERMEDIATE COAT OF PAINT.

PRIOR TO THE APPLICATION OF ANY COAT OF PAINT, ALL DAMAGE OR IMPERFECTIONS IN THE PREVIOUS COAT SHALL BE TOUCHED UP WITH THE SPECIFIED PAINT FOR THAT COAT, EACH COAT BEING ALLOWED TO DRY THOROUGHLY BEFORE THE SUBSEQUENT COAT IS APPLIED. THE CONTRACTOR SHALL RESTORE, IN ACCORDANCE WITH THE PAINT SPECIFICATIONS AND IN THE NUMBER OF COATS HEREIN SPECIFIED, ANY DAMAGED PAINT MARRED BY HIS OPERATIONS, REGARDLESS OF THE CONDITION OF THE PAINT AT THE TIME THE OPERATION BEGAN.

SUCCEEDING COATS OF PAINT SHALL NOT BE APPLIED UNTIL PREVIOUS COATS HAVE DRIED THOROUGHLY. PAINT FILMS SHALL BE CONSIDERED TO BE THOROUGHLY DRY WHEN THE FILM CANNOT BE DISTORTED, WRINKLED, LOOSENED, OR REMOVED WHEN MAXIMUM PRESSURE IS APPLIED WITH THE THUMB, AND THE THUMB IS ROTATED THROUGH 90 DEGREES.

ALL NEW PAINTING DONE WITH IMPURE OR UNAUTHORIZED PAINT SHALL BE COMPLETELY REMOVED AND REPAINTED TO THE SATISFACTION OF THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

FRESHLY SANDBLASTED OR CLEANED AREAS OF STEEL SHALL PREFERABLY BE PRIMED WITHIN FOUR HOURS AFTER THE SURFACES HAVE BEEN APPROVED FOR PRIMING BY THE ENGINEER. IF, HOWEVER, WEATHER

CONDITIONS AT THE TIME OF CLEANING AND THE OFFICIAL UNITED STATES GOVERNMENT WEATHER PREDICTIONS FOR THE ENSUING 24 HOURS ARE SATISFACTORY IN THE OPINION OF THE ENGINEER, THE ENGINEER MAY, AT HIS DISCRETION, PERMIT PRIMING TO BE DELAYED OVERNIGHT SUBJECT TO SUCH SURFACES BEING REINSPECTED THE FOLLOWING MORNING AND GIVEN A WIRE BRUSHING BEFORE THE PRIME COAT IS APPLIED. IN NO CASE, HOWEVER, WILL A CLEANED OR SANDBLASTED AREA BE PERMITTED TO REMAIN UNPRIMED FOR MORE THAN 24 HOURS SUCH AS OVER A WEEKEND OR A PUBLIC HOLIDAY.

PROTECTOR OF MASONRY

THIS SUBHEADING AND TEXT IS ADDED:

THE CONTRACTOR SHALL EFFECTIVELY PROTECT, BY METHODS SATISFACTORY TO THE ENGINEER, ALL NEW AND EXISTING CONCRETE AGAINST DISCOLORATION DUE TO PAINT SPRAY. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAMAGE TO THE MASONRY, AND SHALL RESTORE IT TO ITS ORIGINAL CONDITION IF INJURED OR STAINED IN ANY MANNER BEFORE ACCEPTANCE OF THE BRIDGE.

CLEANING AND PROTECTION OF CONCRETE

THIS SUBHEADING AND TEXT IS ADDED:

THE CONTRACTOR SHALL PROTECT THE ABUTMENTS AND OTHER CONCRETE WORK WITH A WRAPPING OF REINFORCED POLYETHYLENE OR SIMILAR MATERIAL WHICH SHALL BE LEFT IN PLACE TO PREVENT STAINING UNTIL AFTER THE DECK HAS BEEN PLACED.

PAINTING OF GALVANIZING SURFACES.

THE LAST SENTENCE IS CHANGED TO READ AS FOLLOWS:

THE GALVANIZED SURFACE SHALL THEN BE GIVEN ONE BRUSH APPLICATION OF ZINC DUST-ZINC OXIDE PAINT PRIMER, TYPE 2.

THE FOLLOWING IS ADDED:

NO PAINTING WILL BE REQUIRED FOR STRUCTURAL STEEL BEARINGS FOR PRESTRESSED CONCRETE BEAMS BUT THEY SHALL BE GALVANIZED CONFORMING TO THE PROVISION SPECIFIED UNDER ARTICLE 4.3.2.

FIELD GALVANIZING.

THIS HEADING AND TEXT IS ADDED:

ALL ABRADED OR OTHERWISE DAMAGED GALVANIZED SURFACES SHALL BE REGALVANIZED IN THE FIELD PRIOR TO OR AFTER INSTALLATION BY MEANS OF APPLYING A LOW MELTING ZINC BASE ALLOY WHICH SHALL

FORM A NEW COATING WITH THE APPEARANCE OF THE ORIGINAL COATING AND WITH CORROSION RESISTANT PROPERTIES AND WEARING QUALITIES OF ZINC. THE LOW MELTING ALLOY SHALL BE SUCH THAT THE TEMPERATURE OF SURFACES TO BE RE-GALVANIZED NEED NOT BE RAISED TO MORE THAN 600 DEGREES F. THE ALLOY SHALL BE APPLIED OVER THE SURFACE TO BE RE-GALVANIZED AND WHILE IN LIQUID STATE SHALL BE EVENLY SPREAD WITH A SUITABLE TOOL SO AS TO PROVIDE A SMOOTH UNIFORM COATING.

A COLD-APPLIED ZINC COATING, OF A TYPE APPROVED BY THE ENGINEER, APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS MAY BE USED INSTEAD OF THE LOW MELTING ZINC NOTED ABOVE.

SETTING ANCHOR BOLTS AND BEARINGS.

THIS HEADING AND TEXT IS ADDED:

AT ABUTMENTS, ANCHOR BOLTS FOR THE MASONRY BEARING PLATES MAY BE SET IN DIRECTLY DURING THE PLACING OF CONCRETE, OR SET IN OVERSIZE SLEEVES EMBEDDED IN THE CONCRETE, OR SET IN OVERSIZE HOLES DRILLED BEFORE ERECTION.

AT PIERS, ANCHOR BOLTS FOR THE MASONRY BEARING PLATES MAY BE SET IN DIRECTLY DURING THE PLACING OF CONCRETE, OR SET IN OVERSIZE SLEEVES EMBEDDED IN THE CONCRETE. DRILLING FOR ANCHOR BOLTS WILL NOT BE PERMITTED.

DURING THE TIME BETWEEN THE SETTING OF THE BOLTS AND PLACING OF THE BEARINGS, THE CONTRACTOR SHALL PROVIDE AGAINST COLLECTION OF WATER IN HOLES AND ITS FREEZING IN COLD WEATHER BY FILLING THE HOLES WITH SAND TO WITHIN ONE INCH OF THE TOP, AND SEALING WITH RUBBER-ASPHALT JOINT FILLER. BEFORE THE SHOE IS SET, THE SAND AND FILLER MATERIAL, AND ANY OTHER FOREIGN MATERIAL, SHALL BE COMPLETELY REMOVED FROM THE HOLES.

THE ANCHOR BOLTS SHALL BE SET IN GROUT CONFORMING TO THE REQUIREMENTS SPECIFIED UNDER ARTICLE 4.1.2.

FIELD SPLICE.

THIS HEADING AND TEXT IS ADDED:

WHENEVER THE LENGTH OF A WELDED STRINGER IS GOVERNED BY PREVAILING SHIPPING LIMITATIONS, FIELD SPLICING OF THE STRINGER BY THE USE OF HIGH-STRENGTH BOLTS WILL BE PERMITTED WHEN SHOWN ON THE PLANS OR APPROVED. IN SPANS BETWEEN 120 AND 150 FEET IN LENGTH, ONE FIELD SPLICE WILL BE PERMITTED WHICH SHALL BE LOCATED BETWEEN THE ONE THIRD AND OUTER ONE QUARTER POINTS OF THE SPAN LENGTH. WHEN THE SPAN EXCEEDS 150 FEET, A FIELD SPLICE MAY BE LOCATED BETWEEN EACH OF THE ONE THIRD AND OUTER ONE QUARTER POINTS.

THE BOLTS SHALL BE HIGH-STRENGTH BOLTS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A325. SUFFICIENT ADDITIONAL AREA SHALL BE PROVIDED, PREFERABLY AND WHERE APPLICABLE BY EXTENDING THE HEAVIER FLANGE PLATES TOWARD THE SUPPORTS TO COMPENSATE FOR THE AREA DEDUCTED FOR HOLES. DETAILED COMPUTATIONS FOR THE BOLTED SPLICE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

STRINGERS INVOLVING FIELD SPLICES SHALL BE COMPLETELY PREASSEMBLED IN THE SHOP, TAKING INTO ACCOUNT ITS RELATIVE POSITION IN THE FINISHED STRUCTURE AS TO GRADE, CAMBER, AND CURVATURE. FIELD SPLICES IN SIMPLE SPAN BUILT-UP STRINGERS OR GIRDERS, SHALL BE MADE PRIOR TO ERECTION. ADEQUATE LATERAL SUPPORT SHALL BE PROVIDED WHEN HOISTING MEMBERS INTO POSITION SO AS TO PREVENT LATERAL BUCKLING OR OTHER DAMAGE.

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL THE LOCATION OF FIELD SPLICES, DETAILS OF SPLICE, DETAILED COMPUTATIONS, AND ERECTION PROCEDURE PRIOR TO FABRICATION. BOLT HEADS OF HIGH-STRENGTH BOLTS SHALL BE ON THE OUTSIDE OF FASCIA STRINGERS. BOLT HEADS IN THE TOP FLANGE CONNECTION SHALL BE ON THE TOP SIDE. BOLT HEADS IN THE BOTTOM FLANGE CONNECTION SHALL BE ON THE BOTTOM SIDE.

#### ERECTION.

THIS HEADING AND TEXT IS ADDED:

FOR THE PEDESTRIAN BRIDGE, THE GIRDERS, STIFFENERS, DIAPHRAGMS AND STEEL BRIDGE FLOORING SHALL BE COMPLETELY ASSEMBLED IN THE SHOP AND DELIVERED TO THE SITE AND ERECTED AS A UNIT. AS SPECIFIED ELSEWHERE HEREIN, THE TWO FIELD COATS OF PAINT MAY BE APPLIED IN THE SHOP OR ON THE SITE PRIOR TO ERECTION. IF PAINTED AREAS ARE DAMAGED DURING TRANSPORTATION OR ERECTION, THESE AREAS SHALL BE REPAINTED TO THE SATISFACTION OF THE ENGINEER.

#### 4.3.4. QUANTITY AND PAYMENT.

THE LAST PARAGRAPH ON PAGE 248 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT FOR STUDS USED AS SHEAR CONNECTORS, COMPLETE IN PLACE INCLUDING WELDING AND ALL INCIDENTAL WORK, WILL BE MADE FOR THE ACTUAL NUMBER IN PLACE AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM SHEAR CONNECTORS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:



NO SEPARATE PAYMENT WILL BE MADE FOR BEDDING MASONRY PLATES, AND THE CONTRACTOR SHALL INCLUDE THE COST OF THE MATERIAL AND ITS INSTALLATION IN THE PRICE BID FOR THE ITEM STRUCTURAL STEEL IN THE PROPOSAL.

PAYMENT FOR STRUCTURAL STEEL BEARINGS FOR PRESTRESSED CONCRETE BEAMS (EXCLUDING SOLE PLATES WHICH ARE CAST IN THE CONCRETE BEAMS) TOGETHER WITH BOLTS, WASHERS AND NUTS THEREFOR WILL BE MADE AT THE LUMP SUM PRICE BID IN THE PROPOSAL FOR THE ITEM STRUCTURAL STEEL BEARINGS, WHICH PAYMENT SHALL BE CONSIDERED AS COMPENSATION FOR ALL EQUIPMENT, TOOLS, HANDLING, TRANSPORTATION, LABOR, GALVANIZING, MATERIALS AND ALL ELSE NECESSARY FOR THE COMPLETE FABRICATION, ERECTION, AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

NO SEPARATE PAYMENT WILL BE MADE FOR FIELD SPLICES, AND THE CONTRACTOR SHALL INCLUDE ALL COSTS THEREOF IN THE PRICE BID FOR THE ITEM STRUCTURAL STEEL IN THE PROPOSAL.

ALL REFERENCE TO PAYMENT FOR STRUCTURAL STEEL ON PAGES 247 AND 248 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT WILL BE MADE FOR STRUCTURAL STEEL AT THE LUMP SUM PRICE BID IN THE PROPOSAL FOR EACH SEPARATE STRUCTURE, PORTIONS OF STRUCTURES, OR COMBINATION OF STRUCTURES AS SCHEDULED IN THE PROPOSAL. THE PRICES AND PAYMENTS SHALL BE CONSIDERED FULL COMPENSATION FOR FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, ERECTION, FINAL ADJUSTMENT OF ROCKER BEARINGS, AND ALL ELSE NECESSARY TO COMPLETE THE WORK INCLUDING SHOP PLANS, RIVETING, WELDING, HIGH-STRENGTH BOLTS, SHOP AND FIELD PAINTING, ANCHOR BOLTS AND NUTS, BEARINGS AND BASE PLATES, SHOES, ROCKERS, ROLLERS, PINS, END DAMS, BEARING PADS, BRONZE PLATES, STRUCTURAL STEEL SHAPE AND PLATE SUPPORTS FOR UTILITIES EXCLUSIVE OF HANGERS AND INSERTS, AND ALL OTHER STRUCTURAL STEEL FOR WHICH NO SPECIFIC ITEM IS SCHEDULED IN THE PROPOSAL.

THE ESTIMATE OF WEIGHT FOR STEEL STRUCTURES SHOWN ON THE PLANS IS APPROXIMATE ONLY, AND NO GUARANTEE IS MADE, EXPRESSED OR IMPLIED THAT IT IS THE CORRECT WEIGHT TO BE FURNISHED. NO ADJUSTMENT IN THE CONTRACT PRICE WILL BE MADE IF THE WEIGHT FURNISHED IS MORE OR LESS THAN THE ESTIMATED WEIGHT SHOWN ON THE PLANS.

IF DESIGN CHANGES ARE ORDERED AFTER AWARD OF CONTRACT, THE ADDITIONAL COST OR REDUCTION OF COST WILL BE NEGOTIATED.

PARTIAL PAYMENTS FOR STRUCTURAL STEEL WILL BE MADE IN ACCORDANCE WITH THE GENERAL PROVISIONS, BASED UPON AN APPROXIMATION OF THE PROPORTIONATE VALUE OF THE WORK COMPLETED.

PAYMENT WILL BE MADE FOR STRUCTURAL STEEL DECK JOINTS AT LUMP SUM PRICE BID IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF ALL LABOR, MATERIALS AND EQUIPMENT INCLUDING GALVANIZING, ANCHOR STUDS, BOLTS, NUTS, WASHER, WELDING AND ALL ELSE NECESSARY AND INCIDENTAL THERETO.

SECTION 4

TIMBER STRUCTURES

4.4.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

TIMBER STRUCTURES, TREATED SHALL INCLUDE THE FURNISHING AND PLACING OF NEW TREATED TIMBER OF VARIOUS SIZES AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, FOR WHICH PROVISION HAS NOT OTHERWISE BEEN MADE, AND ALL WORK INCIDENTAL AND NECESSARY THERETO.

TIMBER STRUCTURES, TREATED (DECKING) SHALL INCLUDE THE FURNISHING AND PLACING OF NEW TIMBER DECKING AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND ALL WORK INCIDENTAL AND NECESSARY THERETC.

TIMBER STRUCTURES, TREATED, WALES SHALL INCLUDE THE FURNISHING AND PLACING OF NEW TREATED TIMBER WALES REQUIRED TO REPLACE DAMAGED EXISTING TIMBER WALES AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND ALL WORK INCIDENTAL AND NECESSARY THERETO.

TIMBER STRUCTURES, TREATED, SHEETING SHALL INCLUDE THE FURNISHING AND PLACING OF NEW TREATED TIMBER SHEETING AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND ALL WORK INCIDENTAL AND NECESSARY THERETO.

4.4.2. MATERIALS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SOUTHERN YELLOW PINE SHALL BE STRESS GRADED, CONFORMING TO THE REQUIREMENTS OF THE 1970 STANDARD GRADING RULES OF THE SOUTHERN PINE INSPECTOR BUREAU. ALL MATERIAL SHALL BE DESIGNATED AS NO. 1 DENSE IF UNDER 5" THICK AND NO. 1 DENSE SR IF 5" THICK AND THICKER. TIMBER SHALL BE DRESSED SQUARE EDGED S4S.

SOUTHERN YELLOW PINE SHALL BE TREATED WITH COAL TAR CREOSOTE, A.W.P.A. STANDARD NO. P13 BY THE FULL-CELL PROCESS TO A RETENTION OF NOT LESS THAN 20-POUNDS OF PRESERVATIVE PER CUBIC FOOT OF TIMBER, IN ACCORDANCE WITH STANDARD NO. C2 OF THE AMERICAN WOOD-PRESERVERS' ASSOCIATION.

DOUGLAS FIR SHALL BE STRESS GRADED, CONFORMING TO THE REQUIREMENTS OF THE 1970 STANDARD GRADING RULES OF THE WEST COAST LUMBER INSPECTION BUREAU. TIMBER FOR DECKING SHALL BE DESIGNATED COMMERCIAL DEX AND ALL OTHER DOUGLAS FIR SHALL BE DENSE NO. 1. TIMBER SHALL BE DRESSED SQUARE EDGED S4S.

DOUGLAS FIR SHALL BE TREATED WITH COAL TAR CREOSOTE A.W.P.A. STANDARD NO. P13 BY THE FULL-CELL PROCESS TO A RETENTION OF NOT LESS THAN 12-POUNDS OF PRESERVATIVE PER CUBIC FOOT OF TIMBER, IN ACCORDANCE WITH STANDARD NO. C2 OF THE AMERICAN WOOD-PRESERVERS' ASSOCIATION.

ALL BOLTS, NUTS, WASHERS, SPIKES, NAILS, SHAPES AND ALL OTHER METAL WHICH IS NOT CAST SHALL BE DOUBLE HOT-DIP GALVANIZED STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A-36. THE DIMENSIONS AND OTHER CHARACTERISTICS OF BOLT HEADS, NUTS AND THREADS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A-307, SECTION 5, GRADE A BOLTS. GALVANIZING SHALL MEET THE REQUIREMENTS OF A.S.T.M. SPECIFICATION A-123 AND A-153 RESPECTIVELY.

ALL CASTINGS SHALL BE HOT-DIP GALVANIZED MALLEABLE IRON CASTINGS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A-47, GRADE 35018. GALVANIZING SHALL MEET THE REQUIREMENTS OF A.S.T.M. SPECIFICATION A-123 AND A-153 RESPECTIVELY.

#### 4.4.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE TIMBERS SHALL BE CAREFULLY HANDLED WITHOUT SUDDEN DROPPING, BREAKING OF OUTER FIBERS, BRUISING, OR PENETRATING THE SURFACE WITH TOOLS. THEY SHALL BE HANDLED WITH ROPE SLINGS. CANT HOOKS, PEAVEYS, SPIKES, OR HOOKS SHALL NOT BE USED.

ALL NEW TREATED TIMBER IS TO BE INSPECTED AT THE CREOSOTING PLANT BY REPRESENTATION OF THE DEPARTMENT BEFORE IT IS SHIPPED TO THE SITE OF THE WORK.

ALL CUTS AND ABRASIONS IN TREATED TIMBERS AFTER HAVING BEEN CAREFULLY TRIMMED, SHALL BE COVERED WITH TWO (2) APPLICATIONS OF A MIXTURE OF SIXTY (60) PERCENT CREOSOTE OIL AND FORTY (40) PERCENT ROOFING PITCH OR BRUSH COATED WITH AT LEAST TWO (2) APPLICATIONS OF HOT CREOSOTE OIL AND COVERED WITH HOT ROOFING PITCH.

BEFORE DRIVING BOLTS, THE BOLT HOLES SHALL BE TREATED WITH CREOSOTE OIL BY MEANS OF AN APPROVED PRESSURE BOLT HOLE TREATER. ANY UNFILLED HOLES, AFTER BEING TREATED WITH CREOSOTE OIL, SHALL BE PLUGGED WITH CREOSOTE PLUGS.

WORKMANSHIP SHALL BE FIRST CLASS THROUGHOUT. ALL FRAMING SHALL BE TRUE AND EXACT. UNLESS OTHERWISE SPECIFIED, NAILS SHALL BE DRIVEN WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. DEEP HAMMER MARKS IN WOOD SURFACES SHALL BE CONSIDERED EVIDENCE OF POOR WORKMANSHIP AND SUFFICIENT CAUSE FOR REJECTION OF THE MEMBER WHERE THEY OCCUR. ALL CUTTING FRAMING, AND BORING OF TREATED TIMBERS SHALL BE DONE BEFORE TREATMENT IN SO FAR AS IS PRACTICABLE.

WHENEVER, WITH THE APPROVAL OF THE ENGINEER, FORMS OR TEMPORARY BRACES ARE ATTACHED TO TREATED TIMBER WITH NAILS OR SPIKES, THE HOLES SHALL BE FILLED BY DRIVING GALVANIZED NAILS OR SPIKES FLUSH WITH THE SURFACE OR PLUGGING HOLES AS REQUIRED FOR BOLT HOLES.

GALVANIZED STEEL FLAT PLATE WASHERS SHALL BE USED UNDER ALL BOLT HEADS WHICH ARE TO BE COUNTERSUNK ON THE CHANNEL FACE OF THE FENDERS. OGEE WASHERS SHALL BE USED AT ALL OTHER LOCATIONS. ALL BOLTS SHALL BE EFFECTIVELY CHECKED AFTER THE NUTS HAVE BEEN FINALLY TIGHTENED. RECESSES FORMED FOR COUNTERSINKING SHALL BE PAINTED WITH HOT CREOSOTED OIL, AND, AFTER THE BOLT IS IN PLACE, SHALL BE FILLED WITH POT PITCH.

HOLES FOR BOLTS SHALL BE BORED WITH A BIT THE SAME DIAMETER AS THE BOLT.

EXISTING TIMBER DESIGNATED FOR REUSE SHALL HAVE ANY CUTS OR ABRASIONS TREATED AS SPECIFIED ABOVE FOR NEW TIMBER TO THE SATISFACTION OF THE ENGINEER.

EXISTING HARDWARE MAY BE REUSED SUBJECT TO THE APPROVAL OF THE ENGINEER.

4.4.4. QUANTITY AND PAYMENT.

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THE FIRST AND SECOND PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF TIMBER STRUCTURES, TREATED FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL VOLUME OF NEW TIMBER IN THE FINISHED STRUCTURE THAT IS NOT DESIGNATED AS DECKING. THE QUANTITY SHALL BE MEASURED IN 1,000 FEET BOARD MEASURE, BASED ON NOMINAL CROSS SECTION DIMENSIONS AND ACTUAL LENGTH. NO ALLOWANCE WILL BE MADE FOR WASTE.

PAYMENT FOR TIMBER STRUCTURES, TREATED WILL BE MADE AT THE UNIT PRICE BID FOR THE ITEM TIMBER STRUCTURES, TREATED IN THE PROPOSAL, WHICH COST SHALL INCLUDE ALL COSTS OF FURNISHING AND INSTALLING NEW TIMBER, ALL HARDWARE, PRESERVATIVES AND PRESERVATIVE TREATMENT, FASTENING NEW TIMBER TO THE STRUCTURE, REPLACING AND REFASTENING THE TIMBER GUIDE RAILING BACK TO ITS ORIGINAL POSITION, TREATING CUTS AND ABRASIONS ON EXISTING TIMBER DESIGNATED FOR REUSE, EQUIPMENT, TOOLS, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF TIMBER STRUCTURES, TREATED (DECKING) FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL VOLUME OF NEW TIMBER DECKING IN THE FINISHED STRUCTURE MEASURED IN 1,000 FEET BOARD MEASURE, BASED ON NOMINAL CROSS SECTION DIMENSIONS AND ACTUAL LENGTH. NO ALLOWANCE WILL BE MADE FOR WASTE.

PAYMENT FOR TIMBER STRUCTURES, TREATED (DECKING) WILL BE MADE AT THE UNIT PRICE BID FOR THE ITEM TIMBER STRUCTURES, TREATED (DECKING) IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING AND INSTALLING NEW TIMBER DECKING, PRESERVATIVES AND PRESERVATIVE TREATMENT, FASTENING DECKING TO THE STRUCTURE, TREATING CUTS AND ABRASIONS ON EXISTING TIMBER DECKING WHERE DIRECTED BY THE ENGINEER, EQUIPMENT, TOOLS, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

NO SPECIFIC PAYMENT WILL BE MADE FOR HARDWARE, METAL SHAPER OR ANY OTHER METAL, BUT ALL COSTS THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM TIMBER STRUCTURES, TREATED.

THE QUANTITY OF TIMBER STRUCTURES, TREATED, WALES FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL VOLUME OF NEW TIMBER WALES IN THE FINISHED FENDER MEASURED IN 1,000 FEET BOARD MEASURE, BASED ON NOMINAL CROSS SECTION DIMENSIONS AND ACTUAL LENGTH. NO ALLOWANCE WILL BE MADE FOR WASTE.

PAYMENT FOR TIMBER STRUCTURES, TREATED, WALES WILL BE MADE AT THE UNIT PRICE BID FOR THE ITEM TIMBER STRUCTURES, TREATED, WALES IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL

COSTS OF FURNISHING AND INSTALLING NEW TIMBER WALES, HARDWARE, PRESERVATIVES AND PRESERVATIVE TREATMENT, FASTENING NEW WALES TO THE FENDER, TREATING CUTS AND ABRASIONS ON EXISTING TIMBER WALES DESIGNATED FOR REUSE, PAINTING, EQUIPMENT, TOOLS, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF TIMBER STRUCTURES, TREATED, SHEETING FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL VOLUME OF NEW TIMBER SHEETING IN THE FINISHED FENDER MEASURED IN 1,000 FEET BOARD MEASURE, BASED ON NOMINAL CROSS SECTION DIMENSIONS AND ACTUAL LENGTH. NO ALLOWANCE WILL BE MADE FOR WASTE.

PAYMENT FOR TIMBER STRUCTURES, TREATED, SHEETING WILL BE MADE AT THE UNIT PRICE BID FOR THE ITEM TIMBER STRUCTURES TREATED, SHEETING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING AND INSTALLING NEW TIMBER SHEETING, HARDWARE, PRESERVATIVES AND PRESERVATIVE TREATMENT, FASTENING NEW TIMBER SHEETING TO THE FENDER, TREATING CUTS AND ABRASIONS ON EXISTING TIMBER SHEETING DESIGNATED FOR REUSE, PAINTING, EQUIPMENT, TOOLS, LABOR, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 5

BEARING PILES

4.5.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

FURNISHING EQUIPMENT FOR DRIVING PILES SHALL INCLUDE FURNISHING EQUIPMENT AT THE SITE FOR DRIVING BEARING PILES. PRIOR TO DELIVERY OF THE EQUIPMENT TO THE WORK SITE, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, THE TYPE, STRIKING ENERGY PER BLOW, RATED SPEED, SOURCE OF ENERGY, AND SERIAL NUMBER OF THE HAMMER HE PROPOSES TO USE.

TREATED TIMBER PILES IN FENDERS SHALL INCLUDE THE FURNISHING AND DRIVING OF TREATED TIMBER PILES WITHIN THE LIMITS OF FENDER REPAIR AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

TREATED TIMBER PILES, DOLPHIN, SHALL INCLUDE THE FURNISHING AND DRIVING OF NEW TREATED TIMBER PILES FOR THE NEW

PILE DOLPHIN WITHIN THE LIMITS OF REPAIR AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

4.5.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

CONCRETE PILES.

THE THIRD AND FOURTH PARAGRAPHS ARE CHANGED TO READ AS FOLLOWS:

THE COARSE AGGREGATE SHALL BE STANDARD SIZE NO. 57, 67, OR 7.

FOR PRECAST CONCRETE PILES, THE COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ART. 8.5.5 AND 8.5.6, RESPECTIVELY.

THE FOLLOWING IS ADDED AFTER THE FIFTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

METAL SHELLS FOR CAST-IN-PLACE CONCRETE PILES MAY BE TAPERED OR CYLINDRICAL AT THE OPTION OF THE CONTRACTOR.

- (A) TAPERED SHELLS SHALL HAVE A 12-INCH MINIMUM DIAMETER AT THE BUTT END REMAINING IN THE STRUCTURE, AND SHALL BE 8 INCHES MINIMUM DIAMETER AT THE TIP.
- (B) CLOSED END SEAMLESS OR WELDED STEEL TUBES SHALL HAVE A MINIMUM OUTSIDE DIAMETER OF 12 INCHES.

THE THIRD PARAGRAPH ON PAGE 251 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

STEEL H-PILES AND PLATES FOR SPLICES AND POINTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A36.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

EXTERNAL SPLICES FOR CAST IN PLACE CONCRETE PILES WILL NOT BE APPROVED FOR USE.

REINFORCEMENT STEEL FOR CAST-IN-PLACE CONCRETE PILES SHALL BE OF THE DEFORMED TYPE AND SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.4.19.

PREFABRICATED PILE SPLICES AND PILE SHOES APPROVED BY THE ENGINEER MAY BE USED IN LIEU OF THE PILE SPLICES AND REINFORCED TIP DETAILS FOR STEEL PILES SHOWN ON PLANS.

#### 4.5.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE TREATED TIMBER PILES SHALL BE CAREFULLY HANDLED WITHOUT SUDDEN DROPPING, BREAKING OF OUTER FIBERS, BRUISING, OR PENETRATING THE SURFACE WITH TOOLS. THEY SHALL BE HANDLED WITH ROPE SLINGS. CANT HOOKS, PEAVEYS, SPIKES OR HOOKS SHALL NOT BE USED.

ALL CUTS AND ABRASIONS IN TREATED TIMBER PILES, AFTER HAVING BEEN CAREFULLY TRIMMED, SHALL BE COVERED WITH TWO APPLICATIONS OF A MIXTURE OF SIXTY (60) PERCENT CREOSOTE OIL AND FORTY (40) PERCENT ROOFING PITCH OR BRUSH COATED WITH AT LEAST TWO (2) APPLICATIONS OF HOT CREOSOTE OIL AND COVERED WITH HOT ROOFING PITCH.

BEFORE DRIVING BOLTS, HOT CREOSOTE OIL SHALL BE POURED INTO ALL BOLT HOLES IN SUCH A MANNER THAT THE ENTIRE SURFACE OF THE HOLE SHALL BE THOROUGHLY COATED WITH OIL. ANY UNFILLED HOLES, AFTER BEING TREATED WITH CREOSOTE OIL, SHALL BE PLUGGED WITH CREOSOTED PLUGS.

THE HEADS OF TIMBER PILES SHALL BE PROTECTED DURING DRIVING BY CAPS OF APPROVED DESIGN. WHEN THE AREA OF ANY TIMBER PILE IS GREATER THAN THAT OF THE FACE OF THE HAMMER, A SUITABLE CAP SHALL BE PROVIDED TO DISTRIBUTE THE BLOW OF THE HAMMER THROUGHOUT THE CROSS SECTION OF THE PILE AND THUS AVOID, AS FAR AS POSSIBLE, THE TENDENCY TO SPLIT OR SHATTER THE PILE. COLLARS OR BANDS TO PROTECT TIMBER PILES AGAINST SPLITTING AND BROOMING SHALL BE PROVIDED WHERE NECESSARY.

TIMBER PILE HEADS SHALL BE PROTECTED AFTER DRIVING BY ONE OF EITHER OF THE METHODS SPECIFIED IN THE CURRENT A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

FULL LENGTH PILES SHALL BE USED. SPLICING OF PILES WILL NOT BE PERMITTED. ALL PILES SHALL BE DRIVEN TO DEPTHS AS DIRECTED TO OBTAIN THE PENETRATION REQUIRED BY THE ENGINEER.

ALL NEW TREATED TIMBER PILES ARE TO BE INSPECTED AT THE CREOSOTING PLANT BY REPRESENTATION OF THE DEPARTMENT BEFORE THEY ARE SHIPPED TO THE SITE OF THE WORK.



NEW 7/8 INCH DIAMETER HOT-DIPPED GALVANIZED WIRE ROPE SHALL BE USED FOR WRAPPING AROUND FENDER PILES AT LOCATIONS SHOWN ON THE PLANS.

AFTER THE PILES IN THE DOLPHIN HAVE BEEN DRIVEN, THE PILES SHALL BE DRAWN TOGETHER AT THE TOP AND BANDED WITH TWO BANDS OF 7/8 INCH DIAMETER HOT-DIPPED GALVANIZED WIRE ROPE. THE ROPE SHALL BE FASTENED TO EACH ALTERNATE PILE IN EACH TURN WITH 1/2 INCH BY 5-INCH GALVANIZED STEEL STAPLES. THE PILES SHALL BE NOTCHED TO RECESS THE CABLES ON THE CHANNEL FACES.

PILES LOCATED IN EMBANKMENT SHALL NOT BE DRIVEN UNTIL THE EMBANKMENT HAS BEEN PLACED AND COMPACTED AS SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS.

FOR CAST-IN-PLACE PILES, NO CONCRETE SHALL BE PLACED UNTIL ALL DRIVING WITHIN A RADIUS OF 30 FEET HAS BEEN COMPLETED. IF THIS CANNOT BE DONE, ALL DRIVING WITHIN THE ABOVE LIMIT SHALL BE DISCONTINUED UNTIL THE CONCRETE IN THE LAST PILE CAST HAS SET AT LEAST SEVEN DAYS.

CONCRETE IN EACH PILE SHALL BE PLACED CONTINUOUSLY AND SHALL BE COMPACTED BY VIBRATING OR BY OTHER MEANS ACCEPTABLE TO THE ENGINEER. ACCUMULATIONS OF WATER IN THE SHELLS SHALL BE REMOVED BEFORE THE CONCRETE IS PLACED.

PRIOR TO THE PERFORMANCE OF ANY LOAD TEST, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, A WRITTEN DESCRIPTION WITH APPROPRIATE DRAWINGS OF THE METHOD, EQUIPMENT AND APPARATUS THAT THE CONTRACTOR PROPOSES TO USE IN MAKING THE LOAD TEST. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY FOR DAMAGES SUSTAINED THROUGH THE USE OF SUCH METHOD, EQUIPMENT AND APPARATUS.

EACH LOADING TEST SHALL CONSIST OF THE APPLICATION OF A LOAD TO A SINGLE PILE. ALL PILES TO BE LOAD TESTED SHALL BE DESIGNATED BY THE ENGINEER. THE TEST LOAD MAY BE APPLIED BY APPLYING A STATIC LOAD UPON A SUITABLE PLATFORM SUPPORTED BY THE PILE, OR IT MAY BE APPLIED BY MEANS OF A HYDRAULIC JACK EQUIPPED WITH A PRESSURE GAUGE SO CALIBRATED THAT THE LOAD APPLIED CAN BE DERIVED FROM THE GAUGE READING.

PILE LOAD TEST OPERATIONS WILL BE UNDER THE DIRECT SUPERVISION OF THE ENGINEER WHO WILL MAKE ALL OBSERVATIONS AND KEEP ALL RECORDS OF THE TESTS. THE CONTRACTOR SHALL FURNISH ALL LOADING PLATFORMS, ADEQUATE PILE BRACES, LOADS, REACTION FRAMES, HYDRAULIC JACKS FOR APPLYING LOADS TO THE TEST PILES, HYDRAULIC GAGES EACH ACCEPTABLY CALIBRATED TO THE JACK WITH WHICH IT WILL BE USED, AMES DIALS, PLATFORMS OR OTHER FRAMEWORK FOR SUPPORTING

MEASURING DEVICES, ALL MATERIALS AND LABOR REQUIRED, AND THE USE OF ANY CONSTRUCTION EQUIPMENT TO BE REGULARLY EMPLOYED ON THE JOB WHICH, IN THE OPINION OF THE ENGINEER, IS NECESSARY FOR THE SATISFACTORY PROSECUTION OF THE PILE LOAD TESTS AS HEREIN SPECIFIED. THE CONTRACTOR SHALL FURNISH CERTIFIED LISTS OF PROPERLY KNOWN WEIGHTS AND RECENT VERIFICATION OF THE CALIBRATION OF EACH JACK AND GAGE PROPOSED TO BE USED FOR MAKING THE TEST. THE ENGINEER WILL MAKE ALL MEASUREMENTS AND THE CONTRACTOR SHALL FURNISH THE ENGINEER ADEQUATE MEASURING INSTRUMENTS AND OTHER EQUIPMENT REQUIRED FOR DETERMINING THE SETTLEMENT AND REBOUND OF THE TEST PILES. INTERPRETATIONS OF ALL READINGS WILL BE MADE BY THE ENGINEER AND HIS ACCEPTANCE OF THE TEST OR HIS DECISION TO ORDER FURTHER TESTING SHALL BE FINAL. ALL RECORDS OF THE TEST SHALL BECOME THE PROPERTY OF THE STATE.

IF THE CONTRACTOR ELECTS TO APPLY LOADING BY THE USE OF HYDRAULIC JACKS, THE TEST LOADS SHALL BE APPLIED BY HYDRAULIC JACKS CENTERED ON THE AXIS OF THE PILE AND REACTING AGAINST A LOADED PLATFORM OR REACTION FRAME. REACTION PILES, IF USED, SHALL NOT BE PLACED IN THE LINE OF THE BENT AND NOT CLOSER THAN FIVE (5) FEET TO THE PILE UNDER TEST. THE JACKS SHALL BE OF SUCH DESIGN AND MAINTAINED IN A CONDITION WHICH WILL PERMIT DEVELOPING AND HOLDING THE REQUIRED TEST LOADS FOR THE PERIOD OF TIME DIRECTED, AND THEN TO PROPERLY RELEASE THE LOADS. THE CONTRACTOR SHALL PROVIDE A SUBSTANTIALLY RIGID BEAM PASSING ADJACENT TO THE PILE FOR THE PURPOSE OF SUPPORTING THE SETTLEMENT MEASURING INSTRUMENTS. THE BEAM SHALL BE SUPPORTED ON TWO END POSTS AT LEAST SIXTEEN (16) FEET APART. THE BEAM SHALL BE FIXED AT ONE END AND FREE TO MOVE LONGITUDINALLY (WITH LATERAL RESTRAINT) AT THE OTHER END. SMALL PLATE OR ANGLE LEGS SHALL BE WELDED OR OTHERWISE SECURELY ATTACHED TO EACH PILE AS A CONTACT SURFACE FOR THE TWO SETTLEMENT GAGES. THE CONTRACTOR SHALL PROVIDE A QUALIFIED EMPLOYEE IN CONTINUOUS ATTENDANCE DURING THE PERFORMANCE OF THE TEST TO ASCERTAIN THAT THE JACK PRESSURE IS KEPT CONSTANT BETWEEN APPLICATIONS OF LOADING INCREMENTS AND FOR THE PERIOD OF SUSTAINED FINAL LOADING. ANY LOSS OF LOAD WHICH, IN THE ENGINEER'S OPINION, MATERIALLY AFFECTS THE TEST RESULT WILL INVALIDATE SUCH RESULTS AND ANOTHER TEST WILL BE REQUIRED AT THE CONTRACTOR'S EXPENSE.

IF THE CONTRACTOR ELECTS TO APPLY LOADING BY APPLYING A STATIC LOAD UPON A SUITABLE PLATFORM SUPPORTED BY THE PILE, THE PILE AND PLATFORM SHALL BE BRACED AGAINST OVERTURNING IN SUCH A MANNER AS NOT TO RELIEVE THE TEST PILE OF THE VERTICAL LOAD. THE LOADING MATERIAL SHALL BE AS APPROVED BY THE ENGINEER. THE LOAD SHALL BE APPLIED TO THE PILE CONCENTRICALLY AND WITHOUT VIBRATION. THE PLATFORM SHALL BE ADEQUATELY BRACED AGAINST LATERAL MOVEMENT AND SHALL BE CENTERED OVER THE PILE TO BE TESTED. THE PLATFORM SHALL BE SO CONSTRUCTED THAT READINGS MAY BE TAKEN DIRECTLY ON THE PILE AND SHALL BE CAPABLE OF SAFELY CARRYING THE LOAD.

THE TEST LOAD SHALL NOT BE APPLIED TO CAST-IN-PLACE CONCRETE PILES UNTIL THE CONCRETE IN THE TEST PILE HAS SET AT LEAST SEVEN (7) DAYS.

THE TOTAL TEST LOAD TO BE APPLIED TO THE RESPECTIVE TYPE PILES SHALL BE AS FOLLOWS:

TIMBER PILES.....48 TONS  
CAST-IN-PLACE CONCRETE PILES.....70 TONS

THE TOTAL TEST LOAD SHALL BE APPLIED IN FOUR (4) EQUAL INCREMENTS. EACH INCREMENT OF LOAD SHALL REMAIN IN PLACE UNTIL THE SETTLEMENT OVER A PERIOD OF TWO (2) HOURS IS LESS THAN ONE-HUNDREDTH (0.01) OF AN INCH. WHEN THERE IS NO MORE THAN ONE-HUNDREDTH (0.01) OF AN INCH SETTLEMENT OVER A TWO (2) HOUR PERIOD, THE NEXT LOAD INCREMENT SHALL BE APPLIED. THE FULL TEST LOAD SHALL BE MAINTAINED UNTIL THE SETTLEMENT OVER A FORTY-EIGHT (48) HOUR PERIOD DOES NOT EXCEED ONE-HUNDREDTH (0.01) OF AN INCH AND UNTIL THERE IS NO OBSERVED SETTLEMENT DURING THE LAST TWELVE (12) HOURS OR AS OTHERWISE DIRECTED BY THE ENGINEER. THE FULL TEST LOAD SHALL BE REMOVED IN FOUR (4) DECREMENTS WITH A SIX (6) HOUR PERIOD BETWEEN DECREMENTS. AFTER OBSERVATIONS OF THE UNLOADED PILE HAVE DETERMINED THAT REBOUND HAS CEASED, BUT IN NO CASE LESS THAN TWELVE (12) HOURS AFTER THE LOAD HAS BEEN REMOVED, THE TEST WILL BE CONSIDERED COMPLETE.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THE LOCATION, NUMBER, LENGTHS AND METHOD OF LOAD TESTING PILES MAY BE CHANGED AS DIRECTED BY THE ENGINEER AT ANY TIME DURING THE PROGRESS OF THE WORK.

4.5.4. QUANTITY AND PAYMENT.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

IF TEST PILES ARE PROVIDED FOR ON THE PLANS OR IN THE SUPPLEMENTARY SPECIFICATIONS AND NO SPECIFIC ITEM FOR PAYMENT THEREFORE IS SCHEDULED IN THE PROPOSAL, THEY WILL BE PAID FOR AT THE UNIT PRICE BID FOR THE SAME TYPE OF PERMANENT PILE AND THE LENGTH TO BE PAID FOR WILL BE THE FULL LENGTH OF TEST PILE ORDERED BY THE ENGINEER, EXCEPT THAT FOR CAST-IN-PLACE CONCRETE PILES, THE LENGTH OF TEST PILES MEASURED FOR PAYMENT WILL BE THE ACTUAL LENGTH REMAINING IN PLACE IN THE FINISHED WORK.

THE FIRST SENTENCE OF THE THIRD FULL PARAGRAPH ON PAGE 253 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

NO PAYMENT WILL BE MADE FOR SPLICES WITHIN THE PILE LENGTHS ORDERED BY THE ENGINEER, EXCEPT AS PROVIDED ABOVE FOR SPLICES FOR STEEL H-PILES, UNLESS THE ORDERED LENGTHS ARE IN EXCESS OF EIGHTY (80) FEET.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE QUANTITY OF TREATED TIMBER PILES FENDERS FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL LENGTH, IN LINEAR FEET, OF PILES IN THE FENDER, MEASURED FROM THE TIP OF THE PILE TO CUT-OFF, NO ALLOWANCE BEING MADE FOR THE CUT-OFF TOPS.

PAYMENT FOR TREATED TIMBER PILES IN FENDERS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE BID FOR THE ITEM TREATED TIMBER PILES IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING, DRIVING INCLUDING JETTING, BORING, THE USE OF SPUDS OR OTHER EQUIPMENT OR WORK NECESSARY TO OBTAIN THE PENETRATION REQUIRED BY THE ENGINEER, CUTTING OFF THE PILES, TREATING TIMBER PILES, TREATING CUTS, ABRASIONS AND BOLT HOLES, TREATING TIMBER PILE HEADS, FURNISHING AND WRAPPING WITH WIRE ROPE, ALL MATERIALS, EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF TREATED TIMBER PILES, DOLPHIN FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL LENGTH, IN LINEAR FEET, OF PILES IN THE DOLPHIN, MEASURED FROM THE TIP OF THE PILE TO CUT OFF, NO ALLOWANCE BEING MADE FOR THE CUT-OFF TOPS.

PAYMENT FOR TREATED TIMBER PILES, DOLPHIN WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE BID FOR THE ITEM TREATED TIMBER PILES, DOLPHIN IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING, DRIVING INCLUDING JETTING, BORING, THE USE OF SPUDS OR OTHER EQUIPMENT OR WORK NECESSARY TO OBTAIN THE PENETRATION REQUIRED BY THE ENGINEER, CUTTING OFF THE PILES, TREATING TIMBER PILES, TREATING CUTS, ABRASIONS AND BOLT HOLES, TREATING PILE HEADS, FURNISHING AND WRAPPING WITH WIRE ROPE, ALL MATERIALS, EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

PAYMENT FOR PILE CUT-OFFS, IF NOT USED IN THE PROJECT, WILL BE MADE AS FOLLOWS:

TIMBER PILES.....	\$3.00/LIN. FT.
TREATED TIMBER PILES.....	\$5.00/LIN. FT.
8HP36 STEEL PILES.....	\$8.00/LIN. FT.
10HP42 STEEL PILES.....	\$10.00/LIN. FT.
10HP57 STEEL PILES.....	\$12.00/LIN. FT.

DIVISION 4

PAGE NO. 249

12HP53 STEEL PILES.....\$12.00/LIN. FT.  
12HP74 STEEL PILES.....\$16.00/LIN. FT.  
14HP73 STEEL PILES.....\$16.00/LIN. FT.

NO SEPARATE PAYMENT WILL BE MADE FOR PILE DRIVING POINTS AND THE CONTRACTOR SHALL INCLUDE THE COST OF THE MATERIAL AND FABRICATION IN THE UNIT PRICE BID FOR THE ITEM STEEL H-PILES.

NO PAYMENT WILL BE MADE FOR A LOAD TEST THAT IS NOT COMPLETED SATISFACTORILY BECAUSE OF IMPROPER ACTIONS OF THE CONTRACTOR, DEFECTS IN THE EQUIPMENT AND IN THE CONSTRUCTION OF THE LOADING APPARATUS, OR BECAUSE THE PILE FAILS DURING THE TEST LOADING.

THE PRICE BID FOR THE ITEM LOADING TESTS IN THE PROPOSAL SHALL ALSO INCLUDE FULL COMPENSATION FOR ALL LOSS OR DAMAGE THAT THE CONTRACTOR MAY SUSTAIN BY REASON OF DELAY TO HIS OPERATIONS IN CONNECTION WITH THE LOADING TESTS AND FOR ALL OTHER COSTS INCURRED AND NECESSARY FOR THE PROPER EXECUTION OF THE TEST.

THE CONTRACTOR SHALL MAKE NO CLAIMS FOR ADDITIONAL COMPENSATION EITHER ON ACCOUNT OF DELAYS OR NECESSARY ALTERATIONS IN THE PROCEDURE OF HIS WORK THAT MAY BE CAUSED BY DELAY IN MAKING THE REVISED PILE LAYOUT WHEN REQUIRED.

PAYMENT WILL BE MADE AT THE LUMP SUM PRICE BID FOR THIS ITEM AS FOLLOWS: SEVENTY-FIVE PERCENT (75%) OF THE AMOUNT BID WILL BE PAID WHEN ALL THE EQUIPMENT NECESSARY FOR DRIVING PILES IS FURNISHED AND DRIVING OF SATISFACTORY TEST PILES HAS COMMENCED. THE REMAINING 25% WILL BE PAID WHEN THE WORK OF DRIVING PILES IS ENTIRELY COMPLETED ON AN INDIVIDUAL BRIDGE BASIS.

THE LUMP SUM PRICE BID SHALL INCLUDE THE COST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR TRANSPORTING, ERECTING, MAINTAINING, MAKING ANY ORDERED EQUIPMENT REPLACEMENT, MOVING IN AND OUT AS REQUIRED FOR STAGE CONSTRUCTION, DISMANTLING AND REMOVING THE ENTIRE PILE DRIVING EQUIPMENT. THE COST OF ALL LABOR, INCLUDING THE MANIPULATION OF THE PILE DRIVING EQUIPMENT AND MATERIALS IN CONNECTION WITH DRIVING PILES SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT FOR THE PILES TO BE DRIVEN.

PAYMENT FOR JETTING, AUGERS OR SPUDS WILL BE CONSIDERED AS INCLUDED IN THE UNIT PRICE BID FOR PILES.

PAYMENT WILL BE MADE AT THE LUMP SUM PRICE BID FOR THIS ITEM AS FOLLOWS: SEVENTY-FIVE PERCENT (75%) OF THE AMOUNT BID WILL BE PAID WHEN ALL THE EQUIPMENT NECESSARY FOR DRIVING PILES IS FURNISHED AND DRIVING OF SATISFACTORY TEST PILES HAS COMMENCED. THE REMAINING 25% WILL BE PAID WHEN THE WORK OF DRIVING PILES IS ENTIRELY COMPLETED ON AN INDIVIDUAL BRIDGE BASIS.

THE LUMP SUM PRICE BID SHALL INCLUDE THE COST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR TRANSPORTING, ERECTING, MAINTAINING, MAKING ANY ORDERED EQUIPMENT REPLACEMENT, MOVING IN AND OUT AS REQUIRED FOR STAGE CONSTRUCTION, DISMANTLING AND REMOVING THE ENTIRE PILE DRIVING EQUIPMENT. THE COST OF ALL LABOR, INCLUDING THE MANIPULATION OF THE PILE DRIVING EQUIPMENT AND MATERIALS IN CONNECTION WITH DRIVING PILES SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT FOR THE PILES TO BE DRIVEN.

PAYMENT FOR JETTING, AUGERS OR SPUDS WILL BE CONSIDERED AS INCLUDED IN THE UNIT PRICE BID FOR PILES.

SECTION 6

BULKHEADS

4.6.1. DESCRIPTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

TREATED TIMBER STRUCTURES SHALL INCLUDE THE FURNISHING AND INSTALLING OF TIMBER WALERS AND DEAD MEN AND ALL OTHER TIMBER, EXCLUSIVE OF SHEETING AND PILES, REQUIRED FOR THE CONSTRUCTION OF THE BULKHEAD.

TREATED TIMBER SHEET PILING SHALL INCLUDE THE FURNISHING AND DRIVING OF TIMBER SHEETING FOR THE BULKHEAD.

TIE RODS SHALL INCLUDE THE FURNISHING AND INSTALLING OF THE RODS, PLATES, TURNBUCKLES, WASHERS AND NUTS FOR THE BULKHEAD.

TREATED TIMBER BULKHEAD PILES SHALL INCLUDE THE FURNISHING AND DRIVING OF TREATED TIMBER PILES FOR THE BULKHEAD.

4.6.2. MATERIALS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SOUTHERN YELLOW PINE SHALL BE STRESS GRADED, CONFORMING TO THE REQUIREMENTS OF THE 1970 STANDARD GRADING RULES OF THE SOUTHERN PINE INSPECTION BUREAU. ALL MATERIAL SHALL BE DESIGNATED AS NO. 1 DENSE IF UNDER 5" THICK AND NO. 1 DENSE SR IF 5" THICK AND THICKER. TIMBER SHALL BE DRESSED SQUARE EDGED S4S.

SOUTHERN YELLOW PINE SHALL BE TREATED WITH COAL TAR CREOSOTE, A.W.P.A. STANDARD NO. P13 BY THE FULL-CELL PROCESS TO A RETENTION OF NOT LESS THAN 20-POUNDS OF PRESERVATIVE PER CUBIC FOOT OF TIMBER, IN ACCORDANCE WITH STANDARD NO. C2 OF THE AMERICAN WOOD-PRESERVERS' ASSOCIATION.

DOUGLAS FIR SHALL BE STRESS GRADED, CONFORMING TO THE REQUIREMENTS OF THE 1970 STANDARD GRADING RULES OF THE WEST COAST LUMBER INSPECTION BUREAU. DOUGLAS FIR SHALL BE DENSE NO. 1. TIMBER SHALL BE DRESSED SQUARE EDGED S4S.

DOUGLAS FIR SHALL BE TREATED WITH COAL TAR CREOSOTE A.W.P.A. STANDARD NO. P13 BY THE FULL-CELL PROCESS TO A RETENTION OF NOT LESS THAN 12-POUNDS OF PRESERVATIVE PER CUBIC FOOT OF TIMBER, IN ACCORDANCE WITH STANDARD NO. C2 OF THE AMERICAN WOOD-PRESERVERS' ASSOCIATION.

ALL PILES SHALL BE OF SOUTHERN YELLOW PINE CONFORMING TO THE REQUIREMENTS FOR TIMBER PILES OF THE CURRENT STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS.

ALL PILES AND TIMBER SHALL BE TREATED WITH GRADE 1 CREOSOTE OIL BY THE FULL-CELL PROCESS TO A RETENTION OF NOT LESS THAN 20-POUNDS OF PRESERVATIVE PER CUBIC FOOT OF TIMBER, IN ACCORDANCE WITH STANDARD NO. C2-74 AND C3-74 OF THE AMERICAN WOOD PRESERVERS ASSOCIATION.

ALL BOLTS, NUTS, WASHERS, SPIKES, NAILS, SHAPES AND ALL OTHER METAL WHICH IS NOT CAST SHALL BE DOUBLE HOT-DIP GALVANIZED STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A-36. THE DIMENSIONS AND OTHER CHARACTERISTICS OF BOLT HEADS, NUTS AND THREADS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A-307, SECTION 5, GRADE A BOLTS. GALVANIZING SHALL MEET THE REQUIREMENTS OF A.S.T.M. SPECIFICATION A-123 AND A-153 RESPECTIVELY.

ALL CASTINGS SHALL BE DOUBLE HOT-DIP GALVANIZED MALLEABLE IRON CASTINGS CONFORMING TO THE REQUIREMENTS OF A.S.T.M.

DESIGNATION A-47, GRADE 35018, GALVANIZING SHALL MEET THE REQUIREMENTS OF A.S.T.M. SPECIFICATION A-123 AND A-153 RESPECTIVELY.

COATING FOR ALL SURFACES OF STEEL SHEET PILING, WALES, TIE RODS, TURNBUCKLES, NUTS, PLATES, AND WASHERS, SHALL CONFORM TO THE PROVISIONS OF SSPC SPECIFICATION NO. 16-63, COAL TAR EPOXY-POLYAMIDE BLACK (OR DARK RED) PAINT. SURFACE PREPARATION SHALL BE BY BLASTING TO THE NEAR-WHITE GRADE (SSPC-SP 10-63). A MINIMUM OF TWO COATS SHALL BE APPLIED TO A DRY FILM THICKNESS OF 16 MILS MINIMUM. DAMAGED OR REJECTED COATING SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN OR LOOSE MATERIAL AND PROMPTLY COATED AS SPECIFIED ABOVE. THE TOP COAT SHALL BE COMPLETELY DRY BEFORE DRIVING; HOWEVER, THE SHEETING SHALL NOT BE DRIVEN UNTIL THE TOP COAT HAS CURED FOR AT LEAST 72 HOURS. COLOR SHALL BE BLACK OR DARK RED AS SPECIFIED ON THE PLANS.

#### 4.6.3. METHODS OF CONSTRUCTION.

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THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE TIMBERS, SHEETING, AND PILES SHALL BE CAREFULLY HANDLED WITHOUT SUDDEN DROPPING, BREAKING OF OUTER FIBERS, BRUISING, OR PENETRATING THE SURFACE WITH TOOLS. THEY SHALL BE HANDLED WITH ROPE SLINGS. CANT HOOKS, PEAVEYS, SPIKES OR HOOKS SHALL NOT BE USED.

ALL CUTS AND ABRASIONS IN TREATED TIMBERS, SHEETING, AND PILES, AFTER HAVING BEEN CAREFULLY TRIMMED, SHALL BE COVERED WITH TWO (2) APPLICATIONS OF A MIXTURE OF SIXTY (60) PERCENT CREOSOTE OIL AND FORTY (40) PERCENT ROOFING PITCH OR BRUSH COATED WITH AT LEAST TWO (2) APPLICATIONS OF HOT CREOSOTE OIL AND COVERED WITH HOT ROOFING PITCH.

BEFORE DRIVING BOLTS, HOT CREOSOTE OIL SHALL BE Poured INTO ALL BOLT HOLES IN SUCH A MANNER THAT THE ENTIRE SURFACE OF THE HOLE SHALL BE THOROUGHLY COATED WITH OIL. ANY UNFILLED HOLES, AFTER BEING TREATED WITH CREOSOTE OIL, SHALL BE PLUGGED WITH CREOSOTED PLUGS.

THE HEADS OF TIMBER PILES SHALL BE PROTECTED DURING DRIVING BY CAPS OF APPROVED DESIGN. WHEN THE AREA OF ANY TIMBER PILE IS GREATER THAN THAT OF THE FACE OF THE HAMMER, A SUITABLE CAP SHALL BE PROVIDED TO DISTRIBUTE THE BLOW OF THE HAMMER THROUGHOUT THE CROSS SECTION OF THE PILE AND THUS AVOID, AS FAR AS POSSIBLE, THE TENDENCY TO SPLIT OR SHATTER THE PILE. COLLARS OR BANDS TO PROTECT TIMBER PILES AGAINST SPLITTING AND



BROOMING SHALL BE PROVIDED WHERE NECESSARY AND/OR DIRECTED BY THE ENGINEER.

TIMBER PILE HEADS SHALL BE PROTECTED AFTER DRIVING BY ONE OF EITHER OF THE METHODS SPECIFIED IN THE CURRENT A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

WORKMANSHIP SHALL BE FIRST CLASS THROUGHOUT. ALL FRAMING SHALL BE TRUE AND EXACT. UNLESS OTHERWISE SPECIFIED, NAILS SHALL BE DRIVEN WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. DEEP HAMMER MARKS IN WOOD SURFACES SHALL BE CONSIDERED EVIDENCE OF POOR WORKMANSHIP AND SUFFICIENT CAUSE FOR REJECTION OF THE MEMBER WHERE THEY OCCUR. ALL CUTTING, FRAMING, AND BORING OF TREATED TIMBERS SHALL BE DONE BEFORE TREATMENT IN SO FAR AS IS PRACTICABLE.

4.6.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE QUANTITY OF TREATED TIMBER BULKHEAD PILES FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL LENGTH, IN LINEAR FEET, OF PILES IN THE BULKHEAD, MEASURED FROM THE TIP OF THE PILE TO CUT-OFF; NO ALLOWANCE SHALL BE MADE FOR THE CUT-OFF TOPS.

NO DEDUCTION WILL BE MADE FOR DRIFT SHARPENING OF TREATED TIMBER SHEET PILING.

PAYMENT FOR TREATED TIMBER BULKHEAD PILES WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE BID IN THE PROPOSAL FOR THE ITEM TREATED TIMBER BULKHEAD PILES, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING, DRIVING, CUTTING OFF TOPS, TREATING, ALL MATERIALS, EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 8  
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METAL BRIDGE RAILINGS  
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4.8.2. MATERIALS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE MATERIALS FOR METAL BRIDGE RAILINGS SHALL BE AS NOTED ON THE PLANS. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE BUREAU OF BRIDGE DESIGN.

CERTIFICATION THAT THE MATERIALS SUPPLIED CONFORM WITH THE SPECIFICATIONS SHALL BE FURNISHED IN ACCORDANCE WITH ARTICLE 1.4.7.

4.8.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

BOLTS SET PREVIOUS TO CONCRETING SHALL BE HELD SECURELY IN PLACE BY A NUT ABOVE THE FORM TEMPLATE AND A THREADED ALUMINUM ALLOY WASHER (6061-T6), OR OTHER MEANS AS APPROVED BY THE ENGINEER, BELOW THE FORM TEMPLATE. THE LOWER FASTENING SHALL PREVENT PASSAGE OF MORTAR ONTO THE EXPOSED BOLT THREADS.

MINOR VARIATIONS IN DETAILS OF METAL RAILING WILL BE PERMITTED SUBJECT TO THE APPROVAL OF THE BUREAU OF BRIDGE DESIGN; BUT, ANY MAJOR DEPARTURE FROM THE DESIGN SHOWN ON PLANS WILL NOT BE ALLOWED.

WHERE DETAILS SHOW A DOUBLE POST-PANELIZED RAILING SYSTEM, THE CONTRACTOR MAY SUBMIT A SINGLE POST-CONTINUOUS RAILING SYSTEM FOR APPROVAL BY THE BUREAU OF BRIDGE DESIGN. THE SINGLE POST SYSTEM SHALL BE DETAILED TO PRODUCE A SYMMETRICAL PATTERN FOR THE FULL LENGTH OF THE BRIDGE; BUT, THE SPACING OF POSTS SHALL NOT BE GREATER THAN 6'-1 1/2". DOUBLE POSTS WILL BE REQUIRED AT ALL DECK JOINTS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

ALUMINUM RAILING.

THE FIRST FULL SENTENCE ON PAGE 261 IS CHANGED TO READ

AS FOLLOWS:

THE ANCHOR BOLTS SHALL BE TIGHTENED AGAIN WHERE NECESSARY AND ALL BOLTS SHALL NOT PROJECT MORE THAN 1/4" ABOVE THE NUT AND SHALL BE STAKED TO PREVENT THE LOOSENING OF THE NUT DUE TO VIBRATIONS AND VANDALISM.

IN THE SECOND PARAGRAPH ON PAGE 261, SPECIFICATION MILP-6883 IS CHANGED TO READ FEDERAL SPECIFICATION TTC-001079A.

IN THE THIRD PARAGRAPH ON PAGE 261, GRADE 2 IS CHANGED TO GRADE 1.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 9

OVERHEAD SIGN SUPPORTS

4.9.1. DESCRIPTION.

OVERHEAD SIGN SUPPORTS SHALL CONSIST OF FURNISHING AND INSTALLING THE SUPPORTING STRUCTURES FOR "GO" SIGNS AT THE LOCATIONS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND THE REQUIREMENTS OF THE SPECIFICATIONS.

BRIDGE MOUNTED SIGN SUPPORTS SHALL CONSIST OF FURNISHING AND INSTALLING THE SUPPORTING STRUCTURES FOR "GOX" SIGNS AT THE LOCATIONS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND THE REQUIREMENTS OF THE SPECIFICATIONS.

CANTILEVER SIGN SUPPORTS SHALL CONSIST OF FURNISHING AND INSTALLING THE SUPPORTING STRUCTURES FOR "GO" SIGNS AT THE

LOCATIONS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND THE REQUIREMENTS OF THE SPECIFICATIONS.

SHOP PLANS SHALL BE SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 1.5.3. MINOR VARIATION IN DETAILS WILL BE PERMITTED SUBJECT TO THE APPROVAL OF THE ENGINEER, BUT ANY MAJOR DEPARTURE FROM THE DESIGN SHOWN ON THE PLANS WILL NOT BE APPROVED.

THE ELECTRICAL WORK FOR ILLUMINATION OF ALL "GO" & "GOX" SIGNS IS INCLUDED IN THE SUPPLEMENTARY SPECIFICATIONS.

THE PROVISIONS OF A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS SHALL GOVERN FOR ANY REQUIREMENTS NOT COVERED BY THESE SPECIFICATIONS.

#### 4.9.2. MATERIALS.

UNLESS OTHERWISE SPECIFIED ON THE PLANS, MATERIALS SHALL BE AS FOLLOWS:

#### ALUMINUM.

ALL ALUMINUM SHALL CONFORM TO THE APPROPRIATE CURRENT A.S.T.M. SPECIFICATION AND ALLOY LISTED IN THE FOLLOWING TABLE:

<u>APPLICATION</u>	<u>ASTM DESIGNATION</u>	<u>ASTM ALLOY</u>
PERMANENT MOLD CASTING	B108	A444-T4
SAND CASTING	B26	356-T6
PLATE	B209	6061-T6
BOLTS, SCREWS	B211	6061-T6
NUTS, 1/4" TAP AND UNDER	B211	2024-T4*
NUTS, 5/16" TAP AND OVER	B211	6061-T6
ROLLED OR EXTRUDED SHAPES	B308	6061-T6
EXTRUDED BAR	B221	6061-T6
DRAWN TUBE	B210	6061-T6
EXTRUDED TUBE	B221	6061-T6
PIPE	B241	6061-T6
SHIMS	B209	1100-0
FLAT WASHERS	B209	2024-T4
LOCK WASHERS	B211	7075-T6

\*THIS ALLOY SHOULD HAVE AN ANODIC COATING OF 0.0002 INCH MINIMUM THICKNESS, WITH DICHROMATE OR BOILING WATER SEAL.

A.S.T.M. B 429, ALLOY 6061-T6 MAY BE USED IN LIEU OF A.S.T.M. B 241, ALLOY 6061-T6 FOR PIPE USED IN THE HANDRAIL OF MAINTENANCE WALKWAY.

#### GALVANIZED STEEL.

PIPE SHALL BE SEAMLESS STEEL PIPE CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A53, TYPE S, GRADE B AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION, INCLUDING WELDING, IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A123.

PLATES, SHAPES, FLAT WASHERS AND SHIMS SHALL BE MADE OF STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A36 AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION, INCLUDING WELDING, IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A123.

#### STAINLESS STEEL.

STAINLESS STEEL PLATES AND SHIMS SHALL BE MADE OF STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A167, TYPE 304

#### ANCHOR BOLTS.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE MADE OF STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A36. THE DIMENSIONS AND OTHER CHARACTERISTICS OF BOLT HEADS, NUTS AND THREADS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A307, SECTION 5, GRADE A BOLTS. WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A123. BOLTS AND NUTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A153. THE UPPER ENDS OF THE BOLTS SHALL BE THREADED BEFORE GALVANIZING TO THE DIMENSIONS SHOWN ON THE PLANS. ANCHOR BOLTS SHALL BE FURNISHED WITH DOUBLE NUTS.

#### MISCELLANEOUS MATERIALS.

FILLER METAL FOR WELDING ALUMINUM SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION B285, A.W.S.-A.S.T.M. CLASSIFICATION ER 5556 OR ER 5356.

STEEL SURFACES SHALL BE PREVENTED FROM COMING IN CONTACT WITH ALUMINUM SURFACES BY MEANS OF APPROVED PADS OR PROTECTIVE-COATING, PLACED BETWEEN THE DISSIMILAR METALS. PADS SHALL BE STAINLESS STEEL PLATES AS SHOWN ON THE PLANS, OR APPROVED EQUAL.

THE PROTECTIVE COATING SHALL BE ZINC-CHROMATE PRIMER CONFORMING TO THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-P-666B APPLIED TO THE ALUMINUM SURFACE; STAINLESS STEEL OR HOT-DIP GALVANIZED STEEL PLACED IN CONTACT WITH ALUMINUM NEED NOT BE PAINTED.

ALUMINUM SURFACES TO BE PLACED IN CONTACT WITH CONCRETE SHALL BE GIVEN A HEAVY COAT OF AN ALUMINUM-PIGMENTED, ALKALINE-RESISTANT BITUMINOUS PAINT CONFORMING TO THE REQUIREMENTS OF SPECIFICATION TT-C-001079A.

STAINLESS STEEL PLATE, SHEET AND STRIP SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A167 TYPE 304. STAINLESS STEEL BARS AND SHAPES SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A276 TYPE 304. STAINLESS STEEL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A320 GRADE B8 (A.I.S.I. TYPE 304).

STEEL CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION A27 GRADE 70-36.

ALL STAINLESS STEEL SHALL BE PASSIVATED.

#### 4.9.3. METHODS OF CONSTRUCTION.

##### FABRICATION.

OVERHEAD AND BRIDGE MOUNTED SIGN STRUCTURES SHALL BE FABRICATED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS. ALL WELDING CALLED FOR ON THE PLANS OR APPROVED SHOP DRAWINGS SHALL BE PERFORMED IN CONFORMITY WITH THE PROVISIONS INCLUDED HEREIN. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS.

THE CONTRACTOR MAY SUBSTITUTE GALVANIZED STEEL END POSTS FOR ALUMINUM END POSTS. THE NOMINAL DIAMETER AND WALL THICKNESS OF THE STEEL POSTS AND DIMENSIONS OF APPURTENANCES THERETO SHALL BE THE SAME AS SHOWN ON THE PLANS FOR ALUMINUM.

CANTILEVER TYPE SUPPORTING STRUCTURES SHALL BE MADE OF TUBULAR ALUMINUM ALLOY AND TUBULAR GALVANIZED STEEL. EACH STRUCTURE SHALL CONSIST OF EITHER A SINGLE ARM TRUSS OR A RECTANGULAR SPACE TRUSS SUPPORTED BY A SINGLE POST AS SHOWN ON THE PLANS. TRUSSES SHALL BE ALL-WELDED, ONE-PIECE UNITS WITH DIAGONALS AND VERTICALS MILLED FOR EXACT FIT AND WELDED TO THE CHORDS. ENDS OF CHORDS AND TOPS OF POST SHALL BE CAPPED. ATTACHMENT OF THE UPPER AND LOWER CHORDS TO THE POST SHALL BE AS SHOWN IN DETAIL ON THE PLANS. THE ARM OF EACH STRUCTURE SHALL BE CAMBERED FOR FULL DEAD LOAD AS SHOWN ON THE PLANS.

SPAN TYPE SUPPORTING STRUCTURES SHALL BE MADE OF TUBULAR ALUMINUM ALLOY. EACH STRUCTURE SHALL CONSIST OF TWO OR MORE TRUSS SECTIONS BOLTED TOGETHER AND SUPPORTED ON END FRAMES OR A SINGLE POST AS SHOWN ON THE PLANS. THE TRUSS SECTIONS SHALL BE ALL-WELDED, ONE-PIECE UNITS WITH DIAGONALS AND VERTICALS MILLED FOR EXACT FIT AND WELDED TO THE CHORDS. THE TRUSS SECTIONS SHALL BE JOINED TOGETHER BY MEANS OF ALUMINUM FLANGES WELDED TO THE CHORDS AND BOLTED TOGETHER WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS. END FRAMES SHALL CONSIST OF TWO POSTS WITH BRACES WELDED BETWEEN THEM. THE TRUSS CHORDS SHALL REST ON SUPPORTING BRACKETS WELDED TO THE POSTS. THE CHORDS SHALL BE SECURED TO THE BRACKETS BY MEANS OF STAINLESS STEEL "U" BOLTS, NUTS AND LOCK WASHERS AS SHOWN ON THE PLANS. ENDS OF CHORDS AND TOPS OF POSTS SHALL BE CAPPED. THE SPANS SHALL BE CAMBERED AS SHOWN ON THE PLANS.

BRIDGE MOUNTED SIGN SUPPORTS SHALL BE MADE OF TUBULAR ALUMINUM ALLOY. EACH STRUCTURE SHALL CONSIST OF ONE TRUSS ASSEMBLY ATTACHED TO EXISTING CONCRETE PARAPETS AS SHOWN ON THE PLANS. THE TRUSS SECTIONS SHALL BE ALL WELDED, ONE-PIECE UNITS WITH DIAGONALS AND VERTICALS MILLED FOR EXACT FIT AND WELDED TO THE CHORDS. ENDS OF CHORDS SHALL BE CAPPED. ATTACHMENT OF THE SUPPORT ASSEMBLY SHALL BE AS SHOWN IN DETAIL ON THE PLANS.

THE POSTS, CHORDS, DIAGONALS, VERTICALS AND OTHER BRACES SHALL BE OF THE DIMENSIONS SHOWN IN THE SCHEDULE ON THE PLANS.

GALVANIZED COATINGS DAMAGED FOR ANY REASONS SHALL BE REPAIRED BY THE APPLICATION OF A PASTE COMPOSED OF APPROVED ZINC POWDER AND FLUX, MIXED WITH A MINIMUM AMOUNT OF WATER. THE PLACES TO BE COATED SHALL BE THOROUGHLY CLEANED BEFORE THE PASTE IS APPLIED. THE SURFACE TO BE COATED SHALL FIRST BE HEATED WITH A TORCH TO A SUFFICIENT TEMPERATURE SO THAT ALL METALLICS IN THE PASTE ARE MELTED WHEN APPLIED TO THE HEATED SURFACE. EXTREME CARE SHALL BE TAKEN TO SEE THAT THE SURROUNDING GALVANIZED SURFACES ARE NOT DAMAGED BY THE TORCH. THE FLUX IN THE PASTE WILL CAUSE A BLACK SUBSTANCE TO APPEAR ON THE SURFACE OF THE COATED PARTS AND THIS BLACK SUBSTANCE SHALL BE REMOVED BY WIPING OFF WITH WASTE OR BY THE QUICK APPLICATION OF COLD WATER.

NO SHOP PAINT SHALL BE APPLIED TO THE METAL WORK.

NO PAINTING OF ALUMINUM, STAINLESS STEEL AND GALVANIZED STEEL SURFACES WILL BE REQUIRED EXCEPT WHERE NOTED ON THE PLANS.

IF ANY SURFACES ON EXISTING STRUCTURES HAVE BEEN DAMAGED BY THE CONTRACTOR DURING INSTALLATION OF SIGN SUPPORTS, THE CONTRACTOR SHALL AT HIS OWN EXPENSE CLEAN, SPOT-PRIME AND PAINT THE DAMAGED SURFACES WITH A COMPATIBLE PAINT AS DIRECTED AND TO THE SATISFACTION OF THE ENGINEER.

WHERE INDICATED ON THE PLANS, A SUFFICIENT NUMBER OF REINFORCED HANDCLES AND ELECTRICAL WIRE OUTLET FITTINGS SHALL BE BUILT INTO THE STRUCTURE. WHERE A CABLE PASSES THROUGH A HOLE OR RUNS ALONG A SURFACE AT ANY POINT ON THE COMPLETE ASSEMBLY, SUCH HOLES AND SURFACES SHALL BE DEBURRED AND FREE OF ANY SHARP EDGES OR PROTUBERANCES THAT MAY IN ANY MANNER DAMAGE THE CABLE.

WELDING.

STEEL.

WELDING OF STEEL USED IN OVERHEAD SIGN SUPPORTS SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 4.3.3.

ALUMINUM.

WELDING SHALL BE DONE ACCORDING TO THE BEST MODERN PRACTICES AND SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS OF THE ISSUE IN EFFECT ON DATE OF RECEIVING BIDS FOR THIS CONTRACT:

AMERICAN WELDING SOCIETY

RECOMMENDED PRACTICES FOR GAS SHIELDED ARC WELDING OF ALUMINUM AND ALUMINUM ALLOY PIPE.

MILITARY SPECIFICATIONS

MIL-I-453	INSPECTION, RADIOGRAPHIC
MIL-I-6866	PENETRANT METHOD OF INSPECTION
MIL-C-6021-F	CLASSIFICATION AND INSPECTION OF CASTINGS
MIL-W-8604	WELDING OF ALUMINUM ALLOYS
MIL-STD-19	WELDING SYMBOLS
MIL-STD-20	WELDING TERMS AND DEFINITIONS

CERTIFIED PROOF OF THE QUALIFICATIONS OF WELDERS SHALL BE PRESENTED BY THE CONTRACTOR BEFORE FABRICATION BEGINS, IF REQUESTED BY THE ENGINEER. THIS CERTIFICATION SHALL BE FROM A COMMERCIAL OR PUBLIC TESTING LABORATORY, OTHER THAN STATE'S REPRESENTATIVE, AND QUALIFICATION SHALL BE BASED ON WELDING OF ALUMINUM ALLOY 6061-T6 WITH CONSUMABLE ELECTRODE TYPE WELDING USING ALUMINUM ALLOY 4043 FILLER MATERIAL.

WELDERS SHALL QUALIFY BY PASSING THE REQUIREMENTS OF UNITED STATES MILITARY SPECIFICATION MIL-T-5021, GROUP IV, CLASS A.



## WORKMANSHIP SAMPLES

IN ADDITION TO THE REQUIRED WELDING CERTIFICATION, EACH PRODUCTION WELDER WILL BE REQUIRED TO FABRICATE ONE FILLET-WELD-BREAK TEST SPECIMEN FOR EACH OVERHEAD SIGN STRUCTURE UNIT IN THE CONTRACT (EXCLUDING CANTILEVER AND BRIDGE MOUNTED SIGN STRUCTURES). METALLOGRAPHIC EXAMINATION OF THE SPECIMEN SHALL ALSO BE MADE. THE EXAMINATION SHALL BE OF THE MACRO SCALE TYPE AS SPECIFIED UNDER 69.158 OF THE A.W.S. "WELDING ALUMINUM" PUBLICATION. FABRICATION AND TESTING OF EACH SPECIMEN SHALL BE DONE IMMEDIATELY PRIOR TO PRODUCTION WELDING FOR THAT RELATED SIGN STRUCTURE. SUFFICIENT TIME SHALL BE PROVIDED TO COMPLETE TESTING AND SATISFACTORY TEST RESULTS SHALL BE PROVIDED TO THE STATE BY CERTIFICATION.

THE SPECIMEN SHALL BE FABRICATED TO CONFORM TO THE DETAILS SHOWN IN FIGURE 63, PAGE 127, OF THE 1968 AWS WELDING INSPECTION HANDBOOK EXCEPT THAT L SHALL BE 3 INCHES, THE WIDTH OF THE BASE PLATE SHALL BE 5 INCHES, T SHALL BE 3/8 INCHES, F SHALL BE 1/2 INCHES, AND THE HEIGHT OF THE VERTICAL PLATE SHALL BE 4 INCHES. THE BASE METAL, WELD METAL, AND METHOD OF APPLICATION SHOULD BE SUBSTANTIALLY THE SAME AS THE PRODUCTION WELDING PROCEDURE, AND THE WELDING SHALL BE DONE BY THE PRODUCTION WELDER.

THE SPECIMENS WILL BECOME THE PROPERTY OF THE STATE AND WILL BE SUBJECT TO A FILLET-WELD-BREAK TEST TO ESTABLISH WELD SOUNDNESS AND QUALITY OF WORKMANSHIP. METALLOGRAPHIC EXAMINATION OF THE SPECIMEN WILL ALSO BE MADE. THE EXAMINATION WILL BE OF THE MACRO SCALE TYPE AS SPECIFIED UNDER 69.158 OF THE A.W.S. "WELDING ALUMINUM" PUBLICATION.

## INSPECTION

RADIOGRAPHIC INSPECTION OF WELDMENTS AT THE SITE OF FABRICATION WILL BE PERFORMED BY STATE PERSONNEL OR BY A PRIVATE TESTING AGENCY DESIGNATED BY THE STATE. THE INITIAL RADIOGRAPHIC INSPECTION FOR EACH WELDMENT WILL BE PERFORMED AT NO COST TO THE CONTRACTOR. THE COST OF RADIOGRAPHIC INSPECTION OF ALL REPAIRED WELDMENTS SHALL BE PAID TO THE STATE BY THE CONTRACTOR AT THE RATE OF \$22.50 PER WELD. SUCH COSTS MAY BE RECOVERED BY THE STATE FROM ANY MONIES DUE OR THAT BECOME DUE THE CONTRACTOR.

THE CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE TESTING AGENCY, DESIGNATED BY THE STATE AFTER AWARD OF CONTRACT, NOT LESS THAN 3 DAYS IN ADVANCE OF WHEN WELDING IS TO BE COMPLETED SO THAT NECESSARY ARRANGEMENTS FOR INSPECTION MAY BE MADE. A COPY OF THIS NOTICE SHALL ALSO BE FORWARDED TO THE CHIEF, BUREAU OF PLANT AND PROJECT INSPECTION.

ALL WELDMENTS WILL BE INSPECTED VISUALLY AND THE EXTENT OF PENETRANT INSPECTIONS WILL BE AT THE DISCRETION OF THE TESTING AGENCY.

RADIOGRAPHIC EXAMINATION WILL BE TAKEN AT THE FREQUENCY OF 25 PERCENT OF THE NUMBER OF WELDS. WHEN A FAILURE RATE OF 10 PERCENT OR MORE IS OBTAINED A FREQUENCY OF 100 PERCENT OF THE NUMBER OF WELDS WILL BE TAKEN. IF THE FAILURE RATE FALLS BELOW 10 PERCENT, THE 25 PERCENT FREQUENCY WILL BE REESTABLISHED.

RADIOGRAPHIC EXAMINATION WILL BE PERFORMED IN ACCORDANCE WITH PROCEDURES OUTLINED IN N.J.D.O.T. BUREAU OF PLANT AND PROJECT INSPECTION, OPERATIONS BULLETIN NO. 14, "SECTION F, X-RAY/RADIOGRAPHIC INSPECTION OF WELDMENTS". COPIES OF THESE PROVISIONS MAY BE OBTAINED UPON WRITTEN REQUEST TO THE CHIEF, BUREAU OF PLANT AND PROJECT INSPECTION.

DEFECTS IN WELDMENTS IDENTIFIED BY VISUAL, PENETRANT OR X-RAY EXAMINATION SHALL BE CORRECTED BY COMPLETELY REMOVING THE DEFECT AND REWELDING.

DURING WINTER MONTHS AND INCLEMENT WEATHER THE FABRICATOR SHALL PROVIDE THE INSPECTORS WITH SUFFICIENT INDOOR SPACE TO PERFORM THE REQUIRED RADIOGRAPHIC INSPECTION.

WHEN A FABRICATOR IS LOCATED MORE THAN 250 MILES FROM A NEW JERSEY STATE BORDER, NOTIFICATION 15 DAYS PRIOR TO THE NEED FOR RADIOGRAPHIC INSPECTION IS REQUIRED.

WELDMENTS EXHIBITING DISCONTINUITIES IN EXCESS OF THE FOLLOWING WILL BE REJECTED:

<u>DISCONTINUITY</u>	<u>LIMIT</u>
UNDERCUT	
LENGTH, EACH UNDERCUT	0.20 INCHES, MAX.
DEPTH	15 PERCENT OF MINIMUM PARENT METAL THICKNESS, MAXIMUM
DISTANCE BETWEEN UNDERCUTS	NONE CLOSER THAN 2.0 INCHES
UNDERFILL	
DEPTH	15 PERCENT OF MINIMUM PARENT METAL THICKNESS, MAXIMUM
LENGTH, EACH UNDERFILL	0.75 INCHES MAX.
LENGTH, CUMULATIVE	NOT MORE THAN 1.5 INCHES IN ANY 6.0 INCHES OF WELD
SCRATCH OR BURN MARKS	
DEPTH	15 PERCENT OF MINIMUM PARENT METAL THICKNESS, MAXIMUM

FILLET WELD THROAT  
CONVEXITY

20 PERCENT OF THEORETICAL  
THROAT, MAXIMUM

CONCAVITY

NONE WILL BE ACCEPTED.

CRACKS

NONE WILL BE ACCEPTED

POROSITY OR INCLUSIONS  
WITH SHARP TAILS

LENGTH

NONE WILL BE ACCEPTED

INADEQUATE JOINT PENETRATION

LENGTH

20 PERCENT MAXIMUM CUMULATIVE  
LENGTH IN ANY ONE WELD.

INCOMPLETE FUSION IN THE FILLET  
WELD ROOT AREA SHALL BE  
CLASSIFIED IN THE "INADEQUATE  
JOINT PENETRATION" DISCONTINUITY  
CATEGORY WHEN IT IS LESS THAN  
20 PERCENT OF THE WELD SIZE T.

INCOMPLETE FUSION

NONE WILL BE ACCEPTED EXCEPT  
AS NOTED ABOVE FOR "INADEQUATE  
JOINT PENETRATION".

POROSITY (ROUND)

MAXIMUM PERMISSIBLE POROSITY INDICATIONS IN RADIOGRAPHS PER 3 INCH  
LENGTH OF WELD:

(T) WELD SIZE (IN.)	TOTAL AREA OF POROSITY PERMITTED (SQ. IN.)	LARGE PORE		MED PORE		FINE PORE	
		MAXIMUM SIZE NO. (IN.)		MAXIMUM SIZE NO. (IN.)		MAXIMUM SIZE NO. (IN.)	
3/8	0.024	0.100	3	0.037	23	0.022	65
1/2	0.033	0.125	2	0.041	25	0.026	62
5/8	0.042	0.125	3	0.043	28	0.029	63

1. ASSORTED SIZE PORES ARE ACCEPTABLE PROVIDING THE COMBINATION OF THE VARIOUS SIZES DOES NOT EXCEED THE TOTAL AREA OF POROSITY PERMITTED, NOR EXCEED THE MAXIMUM NUMBER OF THE VARIOUS SIZES SPECIFIED ABOVE FOR A 3 INCH LENGTH OF WELD.

DIVISION 4

PAGE NO. 264

2. FOR WELDS OF LARGER SIZE THAN SPECIFIED ABOVE, THE TOTAL AREA OF POROSITY AS DETERMINED FROM THE RADIOGRAPHIC FILM SHALL NOT EXCEED  $0.067T$  SQUARE INCHES IN ANY 3 INCH LENGTH OF WELD,  $T$  IS THE SIZE OF THE WELD. IF THE WELD IS LESS THAN 3 INCHES LONG, THE TOTAL ALLOWABLE AREA OF POROSITY WILL BE REDUCED IN DIRECT PROPORTION.
3. THE MAXIMUM LARGE PORE DIMENSION SHALL BE 26.7 PERCENT OF  $T$ , OR  $1/8$  INCHES, WHICHEVER IS SMALLER EXCEPT THAT AN ISOLATED PORE SEPARATED FROM AN ADJACENT LARGE PORE BY  $1\ 1/4$  INCHES OR MORE MAY BE 30 PERCENT OF  $T$ , OR  $1/4$  INCHES, WHICHEVER IS LESS.
4. ALIGNED POROSITY WILL BE ACCEPTABLE PROVIDING THE SUMMATION OF THE DIAMETER OF THE PORES IS NOT MORE THAN  $1/2 T$  IN A LENGTH  $6T$ , OR 3 INCHES WHICHEVER IS LESS, PROVIDING EACH PORE IS SEPARATED BY A DISTANCE AT LEAST 6 TIMES THE DIAMETER OF THE LARGEST ADJACENT PORE. ALIGNED POROSITY INDICATIONS WILL BE COUNTED IN THE TOTAL AREA OF PERMISSIBLE INDICATIONS IN ANY 3-INCH LENGTH OF WELD.

#### ACCEPTANCE

SIGN SUPPORT STRUCTURES WILL BE ACCEPTED AND RELEASED FOR SHIPPING ON THE BASIS OF A TOTAL STRUCTURAL UNIT BEING COMPLETED AND INSPECTED. THIS ACCEPTANCE AND RELEASE FOR SHIPMENT WILL BE PROVIDED BY THE PRIVATE TESTING AGENCY, OR THE STATE, IN WRITING, DIRECTLY TO THE FABRICATOR WITH COPIES TO THE CONTRACTOR AND RESIDENT ENGINEER. THIS NOTICE WILL BE PROVIDED WITHIN 10 WORKING DAYS FROM THE TIME WHEN THE TESTING AGENCY FINISHES INSPECTION OF THE TOTAL STRUCTURE.

THE STRUCTURES SHALL BE LOADED ON TRUCKS OR RAIL CARS IN SUCH A MANNER THAT THEY MAY BE TRANSPORTED AND UNLOADED AT THEIR DESTINATION WITHOUT BEING EXCESSIVELY STRESSED, DEFORMED OR OTHERWISE DAMAGED. RE-INSPECTION MAY BE REQUIRED ON THE SITE OF ERECTION FOR SUCH CAUSE.

#### ERECTION.

ERECTION OF SIGN STRUCTURES SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE STANDARD SPECIFICATIONS AND THE A.A.S.H.T.O. "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" AND THE "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNS".

END POSTS SHALL NOT BE ERECTED UNTIL THE CONCRETE IS 14 DAYS OLD AND HAS ATTAINED A STRENGTH OF NOT LESS THAN 3000 PSI AS DETERMINED FROM CYLINDERS CAST WHEN THE CONCRETE WAS PLACED.

FOOTINGS SHALL BE OF CLASS B CONCRETE, REINFORCED, OF THE TYPES AND DIMENSIONS SHOWN ON THE PLANS AND SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 4.1.2 AND 4.1.3, EXCEPT THAT THE BATCHING AND MIXING EQUIPMENT MAY BE OF A TYPE SUITABLE FOR THE WORK TO BE DONE, AND SHALL BE APPROVED BY THE ENGINEER.

STEEL REINFORCEMENT FOR THE FOOTINGS SHALL BE AS SHOWN IN THE SCHEDULES ON THE PLANS.

ANCHOR BOLTS SHALL BE ACCURATELY SET BY TEMPLATE FOR ALIGNMENT AND ELEVATION AND SHALL BE ADEQUATELY SECURED IN POSITION TO PREVENT DISPLACEMENT WHILE CONCRETE IS BEING PLACED. THE STEEL REINFORCEMENT AND CONDUIT ELBOWS SHALL HAVE BEEN PROPERLY PLACED AND SECURED BEFORE PLACING OF THE CONCRETE.

THE TOP SURFACE OF THE CONCRETE FOOTING SHALL BE LEVELLED OFF 3" BELOW THE ELEVATION OF THE BOTTOM OF THE POST BASE TO PROVIDE FOR CEMENT GROUT UNDER THE POST BASE AFTER THE STRUCTURE HAS BEEN ADJUSTED TO THE PROPER LINES AND GRADES.

THE CONTRACTOR SHALL FURNISH AND INSTALL 1.5" CONDUIT "WELLS" IN FOOTINGS WHERE INDICATED ON THE PLANS. WHERE THIS CONDUIT IS NOT TO BE EXTENDED TO A JUNCTION BOX THE LOWER END OF EACH "WELL" SHALL TERMINATE THREE FEET FROM THE FACE OF THE PED-ESTAL AND 1' 6" BELOW GRADE AND SHALL BE CAPPED WITH A STANDARD PIPE CAP. THE UPPER END OF EACH "WELL" SHALL PROJECT ABOVE THE FOUNDATION A SUFFICIENT DISTANCE TO TERMINATE AT THE LEVEL OF THE BOTTOM OF THE HANDHOLE IN THE SIGN SUPPORT POST, OR AT A MAXIMUM OF 2-INCHES BELOW SUCH LEVEL, AT WHICH POINT IT SHALL BE TERMINATED BY MEANS OF A GROUND BONDING BUSHING (WITH CLOSURE DISK IN CONDUITS NOT TO BE EXTENDED).

CONDUITS AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.2.2.

GROUT SHALL CONSIST OF 1 PART TYPE 3 CEMENT TO 1.5 PARTS SAND, WITH THE ADDITION OF AN APPROVED ADMIXTURE TO PRODUCE NO SHRINKAGE AND HIGH STRENGTH, OR OTHER READY-FOR-USE NON SHRINK GROUT MEETING THE NO SHRINKAGE REQUIREMENT OF ASTM C-827 AND CORP OF ENGINEER SPECIFICATION CRD C-588. THE GROUT SHALL NOT CONTAIN ALUMINUM POWDER.

POSTS SHALL BE ERECTED IN POSITION TO ENGAGE THE ANCHOR BOLTS ON TOP OF THE CONCRETE FOOTING. AFTER THE ENTIRE STRUCTURE, INCLUDING TRUSS ARMS AND SIGN PANELS, HAS BEEN ERECTED AND ADJUSTED FOR PLUMBNESS, GRADES AND ALIGNMENT BY THE MANIPULATION OF THE LEVELING NUTS ON THE ANCHOR BOLTS, THE 3" CEMENT GROUT FINISHING COURSE ON THE FOOTING SHALL BE PLACED SO AS TO COMPLETELY FILL THE SPACES BETWEEN THE TOP OF CONCRETE FOOTINGS AND THE SHAFT BASES. THE EXPOSED PORTIONS OF THE TOP SURFACE SHALL BE SLOPED DOWN AWAY FROM THE POST BASE PLATE.

GALVANIZED COATINGS DAMAGED FOR ANY REASONS IN SHIPPING, HANDLING AND ERECTING THE STRUCTURES SHALL BE REPAIRED AS SPECIFIED ABOVE UNDER FABRICATION.

THE ENGINEER SHALL BE GIVEN ALL FACILITIES REQUIRED FOR A THOROUGH INSPECTION OF WORKMANSHIP. ALL MEMBERS SHALL BE SHIPPED, TRUCKED AND HANDLED IN A MANNER THAT WILL CAUSE NO DANGER OF PERMANENT DEFLECTION OR OTHER DAMAGE AND IN A MANNER APPROVED BY THE ENGINEER. NO MATERIAL SHALL AT ANY TIME BE DROPPED, THROWN OR DRAGGED OVER THE GROUND. ALL PHASES OF WORK INCLUDING FABRICATION, WELDING, AND ERECTION SHALL BE CHARACTERIZED BY CARE AND HIGH QUALITY WORKMANSHIP. THE MANUFACTURER SHALL SUPPLY DETAILED, WRITTEN ERECTION INSTRUCTIONS AND DRAWINGS TO THE ERECTOR, AND THE ENGINEER, AND THESE SHALL BE OBSERVED IN THE ERECTION OF ALL STRUCTURES.

CARE SHALL BE TAKEN IN DRILLING HOLES IN EXISTING CONCRETE PARAPETS TO INSURE PROPER ALIGNMENT OF THE BOLTS AND AVOID DAMAGE TO THE EXISTING STRUCTURE.

ALL WALKWAYS, LUMINARIES, SIGNS AND MISCELLANEOUS ATTACHMENTS SHALL BE INSTALLED WITHIN THE SAME 8 HOUR PERIOD THAT THE TRUSSES ARE ERECTED.

IN ADDITION, DAMPERS, TO BE FURNISHED AND INSTALLED BY THE FABRICATOR PRIOR TO SHIPMENT, SHALL BE PROVIDED FOR ALL OVERHEAD SIGN SUPPORT STRUCTURES (EXCLUSIVE OF CANTILEVER AND BRIDGE MOUNTED SIGN SUPPORT STRUCTURES).

THE DAMPER SHALL CONSIST OF 2 GALVANIZED CAST-IRON WEIGHTS CONNECTED BY A SHORT LENGTH OF FLEXIBLE 7 WIRE STEEL MESSENGER CABLE AND SHALL BE ATTACHED TO THE STRUCTURE BY MEANS OF AN ALUMINUM CLAMP CAST INTEGRALLY WITH THE MESSENGER CABLE. THE DAMPER SHALL WEIGH ABOUT 31 POUNDS AND SHALL BE FURNISHED AND INSTALLED COMPLETE WITH U-BOLTS, LOCK NUTS, ADDITIONAL SUPPORT PIPE AND ALL OTHER NECESSARY APPURTENANCES. THE DAMPER SHALL BE LOCATED AT MID-SPAN ON THE UPPER FRONT CHORD. DAMPER LOCATION AND DETAILS SHALL BE SHOWN ON THE SHOP PLANS.

#### 4.9.4. QUANTITY AND PAYMENT.

THE QUANTITY OF OVERHEAD SIGN SUPPORTS AND CANTILEVER SIGN SUPPORTS FOR WHICH PAYMENT WILL BE MADE WILL BE A LUMP SUM PRICE FOR EACH OVERHEAD SIGN SUPPORT ACTUALLY FURNISHED AND ERECTED IN ACCORDANCE WITH THE PLANS, THESE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

THE QUANTITY OF BRIDGE MOUNTED SIGN SUPPORTS FOR WHICH PAYMENT WILL BE MADE WILL BE A LUMP SUM PRICE FOR EACH SIGN SUPPORT ACTUALLY FURNISHED AND ERECTED IN ACCORDANCE WITH THE PLANS, THESE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR OVERHEAD SIGN SUPPORTS AND CANTILEVER SIGN SUPPORTS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, AT THE LUMP SUM PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF MAINTENANCE WALKWAY, UPRIGHT MEMBERS, HORIZONTAL BEAMS, PLATES, CAPS, BASES, ANCHOR BOLTS AND NUTS, POLE CLAMPS, CONDUIT ELLS, ALL MATERIALS, EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO, INCLUDING WORKMANSHIP SAMPLE, SPECIMEN AND TESTS.

PAYMENT FOR BRIDGE MOUNTED SIGN SUPPORTS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, AT THE LUMP SUM PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF ALL ALUMINUM MEMBERS, CAPS, PLATES, BOLTS, NUTS, CLAMPS, GROUT, MAINTENANCE WALKWAY, ALL MATERIALS, EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFOR AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

QUANTITY AND PAYMENT FOR EXCAVATION AND BACKFILL FOR SIGN SUPPORT FOOTINGS WILL BE MADE AS PROVIDED UNDER ARTICLE 2.6.4 FOR FOUNDATION EXCAVATION.

QUANTITY AND PAYMENT FOR CLASS B CONCRETE IN STRUCTURES, AND REINFORCEMENT STEEL IN STRUCTURES WILL BE MADE AS PROVIDED IN ARTICLE 4.1.4.

THE LUMP SUM PRICE BID FOR EACH OVERHEAD BRIDGE TYPE SIGN SUPPORT SHALL ALSO INCLUDE THE COST OF FURNISHING AND INSTALLING APPROVED VIBRATION DAMPER.

DIVISION 5  
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ROAD STRUCTURES  
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SECTION 1  
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UNDERDRAINS  
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5.1.1. DESCRIPTION.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SUBBASE OUTLET DRAINS SHALL CONSIST OF STONE POCKETS AND/OR TRENCHES EXCAVATED AND FILLED WITH SPECIAL BACKFILL MATERIAL, AND OUTLET PIPES INSTALLED AT THE LOWER ENDS OF THE DRAINS, AS SHOWN ON THE PLANS.

5.1.2. MATERIALS.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PIPES FOR UNDERDRAINS AND SUBBASE OUTLET DRAINS SHALL BE OF THE TYPES SHOWN ON THE PLANS AND SHALL CONFORM TO THE REQUIREMENTS IN THE APPROPRIATE ARTICLES OF DIVISION 8, SECTION 7, OR IN THE CASE OF PERFORATED ASBESTOS-CEMENT PIPE, PERFORATED BITUMINOUS FIBER PIPE, PERFORATED CORRUGATED PLASTIC OR POLYETHYLENE DRAINAGE PIPE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PERFORATED ASBESTOS-CEMENT PIPE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 189.

PERFORATED BITUMINOUS FIBER PIPE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 177.

PERFORATED CORRUGATED PLASTIC AND POLYETHYLENE DRAINAGE PIPE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 252 AND SHALL BE HEAVY DUTY.

THE THIRD SENTENCE OF THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.



5.1.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

SUBBASE OUTLET DRAINS.

THE FOLLOWING IS ADDED:

STONE POCKETS SHALL BE CONSTRUCTED AS SHOWN THEREFOR ON THE PLAN DETAIL FOR SUBBASE OUTLET DRAIN WITH 6" CORRUGATED METAL PIPE.

WHERE SHOWN ON THE PLANS, EXISTING SUBBASE OUTLET DRAINS SHALL BE INTERCEPTED AND CONSTRUCTED VARYING DISTANCES TO AN OUTFALL POINT, TOGETHER WITH STONE POCKETS AND OUTLET PIPES IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE PLAN DETAIL.

COMBINED STORM DRAIN AND SUBBASE OUTLET DRAIN TRENCH.

THIS HEADING AND TEXT IS ADDED:

IN ROCK CUTS, STORM DRAIN TRENCHES SHALL BE BACKFILLED WITH BROKEN STONE OR WASHED GRAVEL AS SHOWN ON THE PLANS AND AT THE LOCATIONS SHOWN ON THE PLANS.

5.1.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

STONE POCKETS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED FOR PAYMENT UNDER THE ITEM SUBBASE OUTLET DRAIN AT THE RATE OF ONE AND ONE-HALF (1-1/2) LINEAR FEET OF SUBBASE OUTLET DRAIN FOR EACH STONE POCKET.

THE UNIT PRICE BID FOR 6" CORRUGATED METAL PIPE SHALL ALSO INCLUDE THE COST OF FURNISHING AND INSTALLING THE PERFORATED CAPS.

IF ROCK IS ENCOUNTERED IN THE EXCAVATION FOR SUBBASE OUTLET DRAINS, IT SHALL BE REMOVED AND PAID FOR AS SPECIFIED IN ARTICLE 2.7.4.

THE QUANTITY OF BROKEN STONE OR WASHED GRAVEL FOR WHICH PAYMENT WILL BE MADE WILL BE THE VOLUME OF BROKEN STONE OR WASHED

GRAVEL ACTUALLY PLACED AS BACKFILL FOR STORM DRAIN TRENCHES IN ROCK CUTS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR BROKEN STONE OR WASHED GRAVEL WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN CUBIC YARDS, AT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE FURNISHING AND PLACING OF THE STONE OR GRAVEL AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 1A

UNDERDRAINS, BRIDGE

5.1A.1. DESCRIPTION.

UNDERDRAINS SHALL INCLUDE THE CONSTRUCTION OF CORRUGATED METAL PIPE AND PERFORATED CORRUGATED METAL PIPE BEHIND ABUTMENTS AND WALLS AS SHOWN ON THE PLANS.

5.1A.2. MATERIALS.

CORRUGATED METAL PIPE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR UNDERDRAINS IN ARTICLE 8.7.6 AND TO THE FOLLOWING:

PERFORATED PIPE SHALL BE PERFORATED IN THE LOWER HALF.

BACKFILL MATERIAL SHALL BE BROKEN STONE AS SHOWN ON THE PLANS AND SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED IN ARTICLE 8.5.5.

5.1A.3. METHODS OF CONSTRUCTION.

METHODS OF CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REQUIREMENTS AS SPECIFIED IN ARTICLE 5.1.3.

5.1A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF CORRUGATED METAL PIPE AND PERFORATED CORRUGATED METAL PIPE FOR WHICH PAYMENT SHALL BE MADE WILL BE THE COMBINED LENGTH OF EACH TYPE ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR PIPE WILL BE MADE FOR THE COMBINED LENGTH OF EACH AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM CORRUGATED METAL PIPE IN THE PROPOSAL, OF THE SIZE SHOWN ON THE PLANS, WHICH PRICE SHALL INCLUDE THE COST OF EXCAVATION, FURNISHING, LAYING, ASSEMBLING AND CAULKING THE PIPE COMPLETE, SHORING, PUMPING, BACKFILLING, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR, AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

THE UNIT PRICE SHALL ALSO INCLUDE THE COST OF THE BROKEN STONE FILL PLACED FOR THE PERFORATED CORRUGATED METAL PIPE AS SHOWN ON THE PLANS.

SECTION 2

STORM DRAINS

5.2.2. MATERIALS.

THE SECOND PARAGRAPH ON PAGE 266 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CLAY PIPE AND REINFORCED CONCRETE CULVERT PIPE SHALL SHALL BE STANDARD STRENGTH UNLESS OTHERWISE SHOWN ON THE PLANS.

THE THIRD AND FOURTH PARAGRAPHS ON PAGE 266 OF THE STANDARD SPECIFICATIONS ARE DELETED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CORRUGATED METAL SEWER PIPE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.7.6.

CORRUGATED METAL SEWER PIPE ARCH SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.7.7.

ELONGATED CORRUGATED METAL PIPE SHALL CONFORM TO THE REQUIREMENTS FOR CORRUGATED METAL CULVERT PIPE SPECIFIED IN THIS ARTICLE EXCEPT THAT THE PIPE SHALL BE FABRICATED WITH A 5 PERCENT VERTICAL ELONGATION.

IN THE SEVENTH PARAGRAPH ON PAGE 266 OF THE STANDARD SPECIFICATIONS, CLASS D CONCRETE FOR PIPE PLUGS IS CHANGED TO CLASS C.

5.2.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PIPE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER TO BE ABANDONED SHALL BE PLUGGED WITH CLASS C CONCRETE AS SPECIFIED IN DIVISION 4 SECTION 1A, ELSEWHERE HEREIN.

TRENCH OPENINGS FOR PIPES SHALL NOT REMAIN OPEN OVERNIGHT WITHIN OR ADJACENT TO ROADWAYS ON WHICH TRAFFIC IS BEING MAINTAINED, OR WITHIN THE NORMAL LIMITS OF PEDESTRIAN ACCESS, UNLESS ADEQUATELY PROTECTED TO THE SATISFACTION OF THE ENGINEER.

THE CONTRACTOR SHALL MAINTAIN THE ROADWAYS, WHERE STORM DRAINS ARE INSTALLED, IN GOOD SERVICEABLE CONDITION, AND ALL ABRUPT DEPRESSIONS SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE FLOW DURING CONSTRUCTION TO THE SATISFACTION OF THE ENGINEER UNTIL PROPOSED DRAINAGE FACILITIES ARE COMPLETED AND PUT INTO SERVICE.

WHERE THE ENDS OF PIPES ARE TO ENTER EXISTING CONCRETE OR MASONRY WALLS, THE PIPE AND WALL SHALL BE NEATLY CUT TO FIT AT THE FACE OF THE WALL AND THE PIPE SHALL BE GROUTED IN PLACE. WHERE PIPES ARE TO ENTER BELOW THE PAVED INVERT OF EXISTING STRUCTURES, THE CONTRACTOR WILL BE REQUIRED TO CUT THE EXISTING CONCRETE AND SHAPE A NEW CHANNEL, ALL AS DIRECTED BY THE ENGINEER.

WHERE STORM DRAINS ARE CONSTRUCTED IN TWO OR MORE STAGES, A TEMPORARY PIPE PLUG SHALL BE CONSTRUCTED IN THE END OF THE PIPE AT THE TERMINATION OF EACH STAGE EXCEPT WHERE IT IS REQUIRED TO KEEP THE PIPE OPEN FOR TEMPORARY DRAINAGE.

THE CONTRACTOR SHALL CONSTRUCT ANY NECESSARY DITCHES OR TRENCHES TO KEEP THE SITE AND THE WORK WELL DRAINED AT ALL TIMES DURING PROGRESS OF THE WORK.

5.2.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE UNIT PRICES BID IN THE PROPOSAL FOR THE VARIOUS ITEMS OF STORM DRAINS SHALL ALSO INCLUDE ALL COSTS OF MATERIALS AND LABOR NECESSARY TO CONNECT THE PIPES TO EXISTING AND PROPOSED DRAINAGE STRUCTURES IN A MANNER SATISFACTORY TO THE ENGINEER AND IN CONFORMANCE WITH THE DETAIL PLANS FOR MANHOLES AND INLETS, MAINTAINING DRAINAGE FLOW AS SPECIFIED, AND TEMPORARY PLUGGING AND STAGING AS REQUIRED.

THE UNIT PRICES BID FOR THE ITEMS OF CORRUGATED METAL SEWER PIPE AND/OR CORRUGATED METAL SEWER PIPE ARCH SHALL ALSO INCLUDE THE COST OF THE INTERIOR BITUMINOUS LINING.

SEPARATE PAYMENT FOR PERMANENT CONCRETE PIPE PLUGS WILL BE MADE UNDER ITEM CLASS C CONCRETE (ROADWAY) AS PROVIDED IN DIVISION 4 SECTION 1A, ELSEWHERE HEREIN.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 2A

STORM DRAINS, BRIDGE

5.2A.1. DESCRIPTION.

STORM DRAINS, BRIDGE SHALL CONSIST OF FURNISHING AND INSTALLING SCUPPERS AND DOWNSPOUTS FOR SURFACE DRAINAGE OF BRIDGE DECKS.

SHOP DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 1.5.3.

### 5.2A.2. MATERIALS.

PIPE AND FITTINGS FOR DOWNSPOUTS SHALL BE OF ALLOY STEEL CONFORMING TO THE CHEMICAL ANALYSIS OF CURRENT A.S.T.M. DESIGNATION A 333, GRADE 9 AND SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 123.

SCUPPERS SHALL BE GRAY IRON CASTINGS CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.4.4.

NON-ABSORBENT COMPRESSABLE MATERIAL SHALL BE AS FOLLOWS:

CORK SHALL CONFORM TO THE REQUIREMENTS FOR CORK JOINT MATERIAL AS SPECIFIED IN ARTICLE 8.5.31, AS AMENDED, THE THICKNESS OF EACH LAYER SHALL BE SUCH THAT NO CRACKING OCCURS WHEN THE CORK IS WRAPPED AROUND THE PIPE.

CORK PIPE INSULATION SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C 640, EXCEPT THAT THERMAL CONDUCTIVITY REQUIREMENTS ARE WAIVED.

RIGID URETHANE FOAM SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION D 2341, TYPE 000899000000. THE FOAM SHALL BE SUPPLIED AS HOLLOW CYLINDRICAL SHAPES SPLIT IN HALF LENGTHWISE AND SHALL FORM A NEAT FIT AROUND THE PIPE. THE EDGES AND ENDS SHALL BE SQUARE.

### 5.2A.3. METHODS OF CONSTRUCTION.

THE BEARING SURFACES OF FRAMES AND GRATES SHALL BE MACHINED SO THE GRATES WILL HAVE UNIFORM BEARING ON THE FRAMES AND SHALL BE MATCH MARKED BEFORE BEING DELIVERED.

PIPE AND FITTINGS SHALL BE CONNECTED BY WELDING. FIELD WELDS SHALL BE MINIMIZED. SHOP WELDS SHALL BE MADE PRIOR TO GALVANIZING. FIELD WELDS AND AREAS WHERE THE GALVANIZING HAS BEEN DAMAGED SHALL BE FIELD GALVANIZED AS SPECIFIED IN ARTICLE 4.3.3.

PIPE WHICH IS TO BE CAST IN WITH THE CONCRETE SHALL BE WRAPPED WITH A 1" MIN. THICKNESS OF NON-ABSORBENT COMPRESSABLE MATERIAL. THE PIPE SHALL BE ADEQUATELY SECURED IN POSITION SO AS TO PREVENT MOVEMENT DURING CONCRETING OPERATIONS.

THE 1" MIN. THICKNESS REFERRED TO ABOVE IS A FINAL THICKNESS AFTER THE CONCRETE HAS HARDENED. THE CONTRACTOR SHALL ALLOW FOR COMPRESSION OF THE MATERIAL FROM THE PRESSURE OF THE FRESHLY PLACED CONCRETE SO THAT A MIN. THICKNESS OF 1" RESULTS.

BANDS USED FOR SECURING THE MATERIAL AROUND THE PIPE SHALL BE OF SUFFICIENT WIDTH SO AS NOT TO CUT INTO THE MATERIAL WHEN THEY ARE TIGHTENED.

5.2A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF SCUPPERS FOR WHICH PAYMENT WILL BE MADE WILL BE THE NUMBER OF INLETS AND FRAMES ACTUALLY FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SCUPPERS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM SCUPPERS, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING AND INSTALLING THE CAST IRON FRAMES AND GRATES.

THE QUANTITY OF DOWNSPOUTS FOR WHICH PAYMENT WILL BE MADE WILL BE THE LENGTH OF PIPE ACTUALLY FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER, MEASURED IN PLACE.

PAYMENT FOR DOWNSPOUTS WILL BE MADE FOR THE LENGTH OF THE TYPE AND SIZE AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID IN THE PROPOSAL FOR THE ITEM DOWNSPOUTS, WHICH PRICE SHALL INCLUDE ALL COSTS OF FURNISHING AND INSTALLING THE PIPE AND FITTINGS, WELDED CONNECTIONS AND SUPPORTS.

ALL COSTS OF FURNISHING AND INSTALLING THE NON-ABSORBENT COMPRESSIBLE MATERIAL AROUND PIPES CAST IN WITH THE CONCRETE SHALL BE INCLUDED IN THE PRICE BID IN THE PROPOSAL FOR THE ITEM DOWNSPOUTS.

SECTION 3

MANHOLES, INLETS AND CATCH BASINS

5.3.2. MATERIALS.

THE FOURTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL.

THE REFERENCE TO CONCRETE BRICK IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CONCRETE BRICK SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.1B EXCEPT THAT THE SIZES AND SHAPES MAY VARY, AS APPROVED BY THE ENGINEER, WHEN USED FOR LEVELING COURSES OR FOR REDUCTION OF CROSS SECTION AREA.

ALL REFERENCE TO CLAY OR SHALE BRICK IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

STEEL, HOT DIPPED GALVANIZED FOR LADDER RUNGS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.4.36 ELSEWHERE HEREIN.

5.3.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

BRICK AND CONCRETE BLOCK STRUCTURES.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE CONCRETE BLOCK AND BRICK SHALL BE LAID WITH BROKEN JOINTS. ALL HORIZONTAL JOINTS, ALL VERTICAL JOINTS OF BRICK, AND ALL KEYWAYS OF VERTICAL JOINTS OF CONCRETE BLOCK SHALL BE FILLED WITH 1:2 CEMENT-SAND MORTAR. ALL HORIZONTAL JOINTS, AND IN BRICK, ALL VERTICAL JOINTS SHALL BE NOT MORE THAN 3/8 INCH WIDE. THE OUTSIDE WALL SHALL BE PLASTERED WITH A MINIMUM OF 1/2 INCH THICKNESS OF 1:2 CEMENT-SAND MORTAR, TROWELED TO A SMOOTH FINISH.

THE FOLLOWING IS ADDED:



TO PROVIDE TEMPORARY DRAINAGE AT SUCH INLETS AS THE ENGINEER MAY DIRECT, THE CONTRACTOR SHALL OMIT ONE OR MORE BLOCKS IN WHICHEVER COURSE OR COURSES OF THE STRUCTURE AS THE ENGINEER MAY DETERMINE DURING CONSTRUCTION. PRIOR TO CONSTRUCTION OF BASE AND PAVEMENT COURSES AT INLETS WHERE BLOCKS ARE TEMPORARILY OMITTED, THE REQUIRED BLOCKS SHALL BE PLACED AND THE INLET WALLS COMPLETED. ALL COSTS OF PROVIDING SUCH TEMPORARY DRAINAGE AND SUBSEQUENTLY COMPLETING THE INLETS SHALL BE INCLUDED IN THE UNIT PRICE BID RESPECTIVELY FOR THE VARIOUS TYPES OF INLETS IN THE PROPOSAL.

CURB INLET CASTINGS SHALL BE PERMANENTLY SET TO FINAL GRADE AFTER ADJACENT CURB BACK-FORMS HAVE BEEN SET TO GRADE AND APPROVED BY THE ENGINEER, AND BEFORE PLACEMENT OF CONCRETE FOR ADJACENT CURB.

THE VARIOUS PROPOSED SUBSURFACE STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RESPECTIVE DETAIL PLANS THEREFOR. PARTICULAR ATTENTION OF THE CONTRACTOR IS DIRECTED TO REQUIRED CONSTRUCTION FEATURES AND MATERIALS FOR THE VARIOUS PROPOSED STRUCTURES WHICH VARY FROM STANDARD REQUIREMENTS, AND ANY ADDITIONAL COSTS THEREOF SHALL BE INCLUDED IN THE PRICES BID IN THE PROPOSAL FOR THE VARIOUS PROPOSED STRUCTURES.

#### 5.3.4. QUANTITY AND PAYMENT.

THE SECOND PARAGRAPH UNDER THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF MANHOLES, INLETS AND CATCH BASINS, ADDITIONAL DEPTH, FOR WHICH PAYMENT WILL BE MADE WILL BE THE DEPTH, IN FEET, CONSTRUCTED IN EXCESS OF A DEPTH OF 8 FEET, FOR ONLY THOSE STRUCTURES WHOSE DEPTH IS MORE THAN 10 FEET AND CONSTRUCTED OF GREATER WALL THICKNESS AND GREATER FOUNDATION THICKNESS AND AREA CONFORMING TO THE REQUIREMENTS SHOWN ON THE PLANS, AND AS MEASURED FOR EACH STRUCTURE BELOW THE TOP OF COVER OR GRATE TO THE INVERT OF THE DRAINAGE STRUCTURE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE UNIT PRICES BID FOR THE VARIOUS MANHOLE AND INLET ITEMS IN THE PROPOSAL SHALL ALSO INCLUDE ALL COSTS OF ADAPTING CONSTRUCTION OF THE PROPOSED STRUCTURES TO UTILIZE EXISTING DRAINAGE FACILITIES WHERE DIRECTED; THE REMOVAL OF EXISTING DRAINAGE STRUCTURES TO BE ABANDONED WITHIN THE LIMITS OF WORK ON THE PROPOSED STRUCTURES, AND ANY NECESSARY REPAIRS TO EXISTING STRUCTURES REQUIRED AS A RESULT OF REMOVING EXISTING FACILITIES.

SECTION 4

GUTTERS

5.4.4. QUANTITY AND PAYMENT.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF GUTTER OF THE TYPE PRESCRIBED FOR WHICH PAYMENT WILL BE MADE WILL BE THE SURFACE AREA ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

SECTION 5

CURBS AND HEADERS

5.5.2. MATERIALS.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CEMENT AGGREGATES, WATER AND THE MATERIALS FOR METHODS OF AIR ENTRAINMENT OF THE CONCRETE SHALL BE AS SPECIFIED FOR CONCRETE SURFACE PAVEMENT IN ARTICLE 3.12.2, EXCEPT THAT CARBONATE ROCK MAY ALSO BE USED.

IN THE SIXTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS, CLEAR OR TRANSLUCENT IS CHANGED TO READ WHITE PIGMENTED.

5.5.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

CONCRETE CURB AND HEADERS.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

FORMS SHALL CONFORM TO THE REQUIREMENTS FOR SIDE FORMS SPECIFIED IN ART. 3.12.3 EXCEPT THAT THE PROVISIONS THEREOF WHICH APPLY PARTICULARLY TO PAVEMENT CONSTRUCTION, AND TO THE FOLLOWING REQUIREMENTS: FORMS SHALL BE METAL, WOOD OR OTHER SUITABLE MATERIAL AS APPROVED BY THE ENGINEER.

IN THE SECOND PARAGRAPH ON PAGE 274, CLEAR OR TRANSLUCENT IS CHANGED TO READ WHITE PIGMENTED.

SECTION 6

WHITE CONCRETE CURB

5.6.2. MATERIALS.

THE SIXTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE FOR GRAY CONCRETE SHALL BE BROKEN STONE OR WASHED GRAVEL, CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY.

THE SEVENTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

COARSE AGGREGATE FOR WHITE CONCRETE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS SPECIFIED RESPECTIVELY THEREFOR IN ARTICLES 8.5.5 AND 8.5.6. TRAP ROCK SHALL BE THOROUGHLY CLEANED AT THE SOURCE OF SUPPLY AND WASHED AT THE MIXING SITE, WHEN SO DIRECTED BY THE ENGINEER, WITHOUT ADDITIONAL COMPENSATION. THE SIZE OF COARSE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 4.1.2.

THE COARSE AGGREGATE FOR GRAY CONCRETE AND WHITE CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 5.5.2, EXCEPT THAT STANDARD SIZE NO. 57 OR 67 SHALL BE USED FOR BARRIER CURB.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

DOWELS FOR CURB DOWELED TO PAVEMENT SHALL BE OF ANY GRADE OF CARBON STEEL.

SLEEVES INSTALLED IN BARRIER CURB SHALL BE POLYVINYL CHLORIDE, ASBESTOS CEMENT OR BITUMINOUS FIBER.

5.6.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

WHITE CONCRETE VERTICAL AND BARRIER CURBS.

THE FOLLOWING IS ADDED:

SLEEVES FOR INSTALLATION OF SIGN OR DELINEATOR POSTS SHALL BE INSTALLED IN BARRIER CURB AT THE LOCATIONS AND OF THE SIZE AND LENGTH AS SHOWN ON THE PLANS. THE SLEEVES SHALL BE FILLED WITH SAND IMMEDIATELY AFTER INSTALLATION AND SHALL BE SEALED WITH HOT-POURED RUBBER ASPHALT JOINT SEALER AND SHALL BE RESEALED IF AND WHEN THE POSTS ARE INSTALLED UNDER THIS CONTRACT.

CURBS SHALL BE CAST IN PLACE IN ACCORDANCE WITH THE PLANS.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

THE CURB SHALL BE CONSTRUCTED ENTIRELY OF WHITE CONCRETE UNLESS OTHERWISE SHOWN ON THE PLANS.

WHITE CONCRETE SLOPING CURB.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

THE MATERIALS FOR AND CONSTRUCTION OF WHITE CONCRETE SLOPING CURB SHALL BE AS SPECIFIED HEREIN ABOVE FOR WHITE CONCRETE VERTICAL CURB.

5.6.4. QUANTITY AND PAYMENT.

QUANTITY AND PAYMENT SHALL ALSO INCLUDE THE COSTS OF ANY ADDITIONAL WORK AND MATERIALS REQUIRED IN THE TRANSITION AREAS BETWEEN DIFFERENT SIZES AND TYPES OF CURB.

CURB IN TRANSITION AREAS WILL BE MEASURED AND PAID FOR UNDER THE ITEM OF THE LARGER SIZE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SEPARATE PAYMENT WILL NOT BE MADE FOR INSTALLING SLEEVES IN BARRIER CURB, BUT ALL COSTS THEREOF, INCLUDING MATERIALS, EQUIPMENT AND LABOR, SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS ITEMS OF BARRIER CURB IN THE PROPOSAL.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 6A

WHITE CONCRETE BARRIER CURB, BRIDGE

5.6A.1. DESCRIPTION.

WHITE CONCRETE BARRIER CURB, BRIDGE, SHALL CONSIST OF THE CONSTRUCTION OF A WHITE CONCRETE BARRIER CURB OF THE SIZE AND AT THE LOCATIONS SHOWN ON THE PLANS.

5.6A.2. MATERIALS.

WHITE CONCRETE, CEMENT, FINE AGGREGATE, COARSE AGGREGATE, JOINT FILLER AND CURING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 5.6.2, EXCEPT THAT COARSE AGGREGATE STANDARD SIZE NO. 57 OR 67 SHALL BE USED FOR BRIDGE BARRIER CURB.

5.6A.3. METHODS OF CONSTRUCTION.

WHITE CONCRETE BARRIER CURB, BRIDGE, SHALL BE CON-  
STRUCTED IN ACCORDANCE WITH THE DETAILS ON THE PLANS AND WITH THE  
REQUIREMENTS OF ARTICLE 5.6.3 EXCEPT FOR THE FOLLOWING AMENDMENTS:

METAL FORMS SHALL BE USED.

DRILLING OF HOLES IN THE BRIDGE DECK OUTSIDE THE LIMITS  
OF THE BARRIER CURB TO SUPPORT CURB FORMS WILL NOT BE PERMITTED.

5.6A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF WHITE CONCRETE BARRIER CURB, BRIDGE, FOR  
WHICH PAYMENT WILL BE MADE, WILL BE THE TOTAL LENGTH OF EACH SIZE  
OF BARRIER CURB ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS  
OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR BARRIER CURB WILL BE MADE FOR THE QUANTITY  
AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER  
LINEAR FOOT BID FOR THE ITEM WHITE CONCRETE BARRIER CURB, BRIDGE,  
OF EACH SIZE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE CONSTRU-  
TION OF CURB COMPLETE, ALL MATERIALS EXCEPT REINFORCEMENT STEEL,  
LABOR, EQUIPMENT AND ALL OTHER WORK IN CONNECTION THEREWITH AND  
INCIDENTAL THERETO.

SECTION 8  
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SIDEWALKS  
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5.8.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED  
UNDER THE HEADINS AS FOLLOWS:

CONCRETE SIDEWALK MATERIALS.  
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THE SECOND SENTENCE IS CHANGED TO READ AS FOLLOWS:

THE MATERIALS FOR CONCRETE AND THE MATERIALS AND METHODS  
USED FOR AIR ENTRAINMENT SHALL BE AS SPECIFIED IN ARTICLE 3.12.2,  
EXCEPT THAT THE COARSE AGGREGATE MAY ALSO CONSIST OF CARBONATE  
ROCK.

BITUMINOUS CONCRETE SIDEWALK MATERIALS.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

GRAVEL BASE MATERIAL SHALL BE SOIL AGGREGATE DESIGNATION I-5 CONFORMING TO THE REQUIREMENTS SPECIFIED THEREFOR IN DIVISION 8, SECTION 8.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

AGGREGATES FOR MACADAM BASE SHALL BE BROKEN STONE OR BLAST FURNACE SLAG CONFORMING TO THE TYPES AND REQUIREMENTS OF ART. 8.5.5 AND 8.5.7, RESPECTIVELY. THE AGGREGATE SIZES SHALL BE 1-1/2 INCH AND SCREENINGS.

IN THE FOURTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS, ASPHALTIC OIL, GRADE MC-0 OR MC-1 IS CHANGED TO READ CUTBACK ASPHALT MC-30.

5.8.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

SUBGRADE.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

THE SUBGRADE FOR ALL SIDEWALKS SHALL BE CONSTRUCTED AS PRESCRIBED FOR PAVEMENT SUBGRADE IN ARTICLE 2.10.3 EXCEPT THAT IT SHALL BE COMPACTED INITIALLY BY ALTERNATIVES (2) OR (5) AS SPECIFIED IN ARTICLE 2.3.3 FOR THE COMPACTION OF UPLAND EMBANKMENT, ZONE 3, DRY FILL METHOD. INACCESSIBLE AREAS WHICH CANNOT BE COMPACTED BY THESE METHODS SHALL BE COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT.

CONCRETE SIDEWALKS.

THE FOLLOWING IS ADDED:

OPENING TO TRAFFIC OF CONCRETE IN DRIVEWAY AREAS SHALL BE GOVERNED BY THE PROVISIONS OF THE PARAGRAPH "OPENING TO TRAFFIC" IN ART. 3.12.3, UNLESS OTHERWISE DIRECTED OR APPROVED BY THE ENGINEER.

SECTION 9  
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ISLAND PAVEMENT  
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5.9.2. MATERIALS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SLEEVES.

SLEEVES INSTALLED IN ISLAND PAVEMENT SHALL BE POLYVINYL CHLORIDE, ASBESTOS CEMENT OR BITUMINOUS FIBER.

5.9.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SLEEVES.

SLEEVES FOR INSTALLATION OF SIGN OR DELINEATOR POSTS SHALL BE INSTALLED IN ISLAND PAVEMENT AT THE LOCATIONS AND OF THE SIZE AND LENGTH AS SHOWN ON THE PLANS. THE SLEEVES SHALL BE FILLED WITH SAND IMMEDIATELY AFTER INSTALLATION AND SHALL BE SEALED WITH HOT-POURED RUBBER ASPHALT JOINT SEALER AND SHALL BE RESEALED IF AND WHEN THE POSTS ARE INSTALLED UNDER THIS CONTRACT.

SLEEVES INSTALLED THROUGH EXISTING BITUMINOUS OR CONCRETE BASE AND/OR PAVEMENT COURSES SHALL BE FILLED AND SEALED AS SPECIFIED ABOVE.

5.9.4. QUANTITY AND PAYMENT.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SEPARATE PAYMENT WILL NOT BE MADE FOR INSTALLING SLEEVES IN ISLAND PAVEMENT, BUT ALL COSTS THEREOF, INCLUDING MATERIALS, EQUIPMENT AND LABOR, SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS ITEMS OF ISLAND PAVEMENT IN THE PROPOSAL.

PAYMENT FOR SLEEVES INSTALLED THROUGH EXISTING BITUMINOUS OR CONCRETE BASE AND/OR PAVEMENT COURSES WILL BE MADE



AT THE PRICE PER UNIT BID FOR THE ITEM SLEEVES FOR POSTS IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF EXCAVATING OR BREAKING THROUGH THE EXISTING BASE AND/OR PAVEMENT COURSES, AND ALL MATERIALS; EQUIPMENT, LABOR AND ALL ELSE NECESSARY THEREFORE AND INCIDENTAL THERETO.

SECTION 11  
CONCRETE CRIB WALLS

5.11.2. MATERIALS.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PORDUS FILL MATERIAL FOR CRIB WALL SHALL BE SOIL AGGREGATE DESIGNATION I-9 CONFORMING TO THE REQUIREMENTS THEREFOR SPECIFIED IN ARTICLE 8.8.1.

SECTION 12  
HEADWALLS AND CULVERTS

THE CONSTRUCTION OF CONCRETE HEADWALLS AND PAYMENT THEREFOR HAVE BEEN INCLUDED UNDER THE ITEM CLASS C CONCRETE (ROADWAY) AS PROVIDED IN DIVISION 4 SECTION 1A, ELSEWHERE HEREIN, AND ALL PROVISIONS REGARDING CONCRETE HEADWALLS IN THIS SECTION OF THE STANDARD SPECIFICATIONS ARE REFERRED THERETO.

SECTION 13

MONUMENTS AND FEDERAL PROJECT MARKER POSTS

ALL REFERENCE TO FEDERAL PROJECT MARKER POSTS IN THIS SECTION OF STANDARD SPECIFICATIONS IS DELETED.

5.13.3. METHODS OF CONSTRUCTION.

THE PROVISIONS OF THE FOURTH PARAGRAPH ON PAGE 292 OF THE STANDARD SPECIFICATIONS ARE AMENDED TO INCLUDE NEW JERSEY GEODETIC CONTROL SURVEY MONUMENTS.

INQUIRIES REGARDING MONUMENTS OF THE NEW JERSEY GEODETIC CONTROL SURVEY SHOULD BE ADDRESSED TO THE TOPOGRAPHIC ENGINEER, STATE GEODETIC CONTROL SURVEY, BUREAU OF GEOLOGY AND TOPOGRAPHY, P. O. BOX 1889, TRENTON, NEW JERSEY, 08625, TELEPHONE: 609-292-2576.

5.13.4. QUANTITY AND PAYMENT.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF NEW MONUMENTS AND RESET MONUMENTS FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL NUMBER OF NEW MONUMENTS FURNISHED AND SET AND THE ACTUAL NUMBER OF RESET MONUMENTS RESET IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT FOR NEW MONUMENTS AND RESET MONUMENTS WILL BE MADE FOR THE QUANTITY OF EACH AS ABOVE DETERMINED AT THE UNIT PRICES BID FOR THE ITEMS NEW MONUMENTS AND RESET MONUMENTS, RESPECTIVELY, IN THE PROPOSAL, WHICH PRICES SHALL INCLUDE FURNISHING AND SETTING NEW MONUMENTS, RESETTING EXISTING MONUMENTS, ALL EXCAVATION AND BACKFILLING, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFORE AND INCIDENTAL THERETO.

THE PROVISIONS OF THE FIRST PARAGRAPH ON PAGE 293 OF THE STANDARD SPECIFICATIONS ARE AMENDED TO INCLUDE NEW JERSEY GEODETIC CONTROL SURVEY MONUMENTS.

SECTION 14

BEAM GUARD RAIL

ALL REFERENCE TO CONCRETE POSTS IN THIS SECTION OF THE STANDARD SPECIFICATIONS IS DELETED.

ALL REFERENCE TO BEAM GUARD RAIL IN THIS SECTION OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ BEAM GUIDE RAIL.

5.14.1. DESCRIPTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BEAM GUIDE RAIL CONSISTS OF A STEEL RAIL ELEMENT MOUNTED ON STEEL POSTS UNLESS OTHERWISE SHOWN ON THE PLANS.

5.14.3. METHODS OF CONSTRUCTION.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

STEEL POSTS SHALL BE DRIVEN TO THE REQUIRED POSITION, OR IF IN ROCK, THE POSTS SHALL BE SET IN HOLES DRILLED IN THE ROCK AND BACKFILLED WITH CONCRETE AS SHOWN ON THE PLANS.

THE SEVENTH PARAGRAPH OF THIS ARTICLE IN THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 14A

BEAM GUIDE RAIL, BRIDGE

5.14A.1. DESCRIPTION.

BEAM GUIDE RAIL, BRIDGE SHALL CONSIST OF CONSTRUCTING GUIDE RAIL, POSTS, BLOCKS, BASE PLATES, AND OTHER HARDWARE ON EXISTING STRUCTURES.

5.14A.2. MATERIALS.

MATERIAL SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN ARTICLE 5.14.2 AND AS SHOWN IN THE PLANS.

STEEL PLATE SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 183-79I (A.S.T.M. A 36-77A) AND SHALL BE GALVANIZED CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 123.

BOLTS AND NUTS SHALL BE MANUFACTURED OF STEEL CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 307. WASHER SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 36. BOLTS, NUTS AND WASHER SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 153.

EXPANSION ANCHOR BOLTS SHALL MEET THE MINIMUM REQUIREMENTS OF A.S.T.M. DESIGNATION A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATION A 153.

5.14A.3. METHODS OF CONSTRUCTION.

WELDING SHALL CONFORM TO THE REQUIREMENTS OF AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE, AWS D1.1-75 AS MODIFIED BY A.A.S.H.T.O. 1977 STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES.

ATTACHMENTS SHALL BE INSTALLED IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.

EXPANSION ANCHOR BOLTS SHALL BE FASTENED TO THE CONCRETE AS PER MANUFACTURER'S RECOMMENDATIONS.

ALL THE HOLES IN THE DECK FOR EXPANSION ANCHOR BOLTS SHALL BE DRILLED WITH MASONARY DRILL AND DRILL BIT SIZES FOR EXPANSION ANCHOR BOLTS HOLES SHALL CONFORM TO THE ANSI STANDARDS.

ALL EXPANSION ANCHOR BOLTS SHALL BE PROPERLY SPACED AND SHALL BE LOCATED TO CLEAR EXISTING DECK AND REINFORCEMENT AND DECK JOINTS.

THE CONTRACTOR SHALL TAKE ALL THE NECESSARY PRECAUTIONS SO THAT CONCRETE AND EXISTING UTILITY CONDUITS ARE NOT DAMAGED DURING DRILLING IN THE SIDEWALK DECK FOR EXPANSION ANCHOR BOLTS. ANY DAMAGE TO THE EXISTING CONCRETE SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND AT NO EXTRA COST TO THE STATE.

THE CONTRACTOR SHALL FURNISH A NOTARIZED CERTIFICATION IN ACCORDANCE WITH ARTICLE 1.4.7 THAT 1-1/8 INCH DIAMETER EXPANSION ANCHOR BOLT WITH 5-1/2 INCH EMBEDMENT SHALL HAVE A MINIMUM PULL OUT STRENGTH 20,000 LBS.

5.14A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF BEAM GUIDE RAIL, BRIDGE FOR WHICH PAYMENT WILL BE MADE WILL BE THE SUM OF THE OVER-ALL LENGTHS OF ALL SECTIONS OF GUIDE RAIL CONSTRUCTED ON STRUCTURES IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER, MEASURED ALONG THE FACE OF GUIDE RAIL.

PAYMENT FOR BEAM GUIDE RAIL, BRIDGE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM BEAM GUIDE RAIL, BRIDGE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE FURNISHING, ERECTING, THE GUIDE RAIL COMPLETE INCLUDING RAILS, BLOCKS, POSTS, PLATES, DRILLED HOLES, NUTS, RODS, WASHERS, FURNISHING OF ALL MATERIALS, LABOR AND EQUIPMENT, AND ALL ELSE NECESSARY AND INCIDENTAL THERETO.

SECTION 14B

RUB RAIL

5.14B.1. DESCRIPTION.

RUB RAIL CONSISTS OF A STEEL CHANNEL OR A BENT PLATE MOUNTED ON A STEEL POST.

5.148.2. MATERIALS.

THE STEEL CHANNELS AND BENT PLATE FOR RUB RAIL SHALL BE FABRICATED OF STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 36 AND SHALL BE GALVANIZED CONFORM- TO THE REQUIREMENTS FOR CURRENT A.A.S.H.T.O. DESIGNATION M 111.

5.148.3. METHODS OF CONSTRUCTION.

WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER RUB RAIL SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.

5.148.4. QUANTITY AND PAYMENT.

THE QUANTITY OF RUB RAIL FOR WHICH PAYMENT WILL BE MADE WILL BE THE SUM OF THE OVERALL LENGTHS OF RUB RAIL CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER MEASURED ALONG THE CENTERLINE OF THE POSTS.

PAYMENT FOR RUB RAIL WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM RUB RAIL IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE FURNISHING AND ERECTING THE RUB RAIL COMPLETE, INCLUDING ALL BOLTS, HARDWARE AND DRILLING OF HOLES IN POSTS AND RUB RAIL NECESSARY, THE FURNISHING OF ALL MATERIALS, LABOR AND EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 14C

BREAKAWAY CABLE TERMINALS

5.14C.1. DESCRIPTION.

BREAKAWAY CABLE TERMINALS CONSISTS OF THE FURNISHING AND INSTALLING OF BREAKAWAY CABLE TERMINALS AT THE ENDS OF BEAM GUIDE RAIL AT LOCATIONS SHOWN ON THE PLANS OR SELECTED BY THE ENGINEER.

5.14C.2. MATERIALS.

BREAKAWAY CABLE TERMINALS SHALL CONFORM TO DETAILS SHOWN ON THE PLANS AND TO THE FOLLOWING:

WOOD POSTS SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 5.14.2.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 307.

NUTS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 563, GRADE A OR BETTER.

NUTS, BOLTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION A 153.

PLATES SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION A 123.

5.14C.3. METHODS OF CONSTRUCTION.

METHODS OF CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF ARTICLE 5.14.3.

5.14C.4. QUANTITY AND PAYMENT.

THE QUANTITY OF BREAKAWAY CABLE TERMINALS FOR WHICH PAYMENT WILL BE MADE WILL BE THE NUMBER OF BREAKAWAY CABLE TERMINALS ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

PAYMENT FOR BREAKAWAY CABLE TERMINALS WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED AT THE UNIT PRICE BID FOR THE ITEM BREAKAWAY CABLE TERMINALS IN THE PROPOSAL WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING THE WOOD POSTS, CABLE ASSEMBLY, ANCHOR PLATES, RAILS, BEARING PLATE, BUFFER END SECTION AND CONCRETE FOOTINGS; ALL LABOR, MATERIALS AND EQUIPMENT AND ALL ELSE NECESSARY THEREFORE AND INCIDENTAL THERETO.

SECTION 17

FENCES

CHAIN LINK FENCE

DESCRIPTION.

CHAIN LINK FENCE SHALL INCLUDE THE FURNISHING OF MATERIALS FOR AND THE ERECTION OF CHAIN LINK FENCE IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND THE DIRECTIONS OF THE ENGINEER.

ATTENTION IS DIRECTED TO THE PROVISIONS OF ART. 1.4.7 CONCERNING THE USE OF ALTERNATIVE TYPES OF MATERIALS.

MATERIALS.

MATERIALS FOR CHAIN LINK FENCE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN CURRENT A.A.S.H.T.O. DESIGNATION M 181 AND THE FOLLOWING:

CARRIAGE BOLTS WITH ELASTIC STOP NUTS SHALL BE ZINC COATED BY THE ELECTROPLATING PROCESS AND SHALL BE TYPE RS CONFORMING TO A.S.T.M. DESIGNATION A 164.

BONDED TYPE VINYL COATED FABRIC SHALL ALSO BE ZINC COATED WITH THE WEIGHT AS SPECIFIED FOR EXTRUDED TYPE.

FOR FEDERAL AID PROJECTS, ZINC COATED STEEL FABRIC MAY BE USED AND THE WEIGHT OF COATING SHALL BE CLASS A.

VINYL COATED FABRIC SHALL BE GREEN WHERE SHOWN ON THE PLANS AND THE FRAMEWORK AND FITTINGS SHALL BE COATED.

GATE FABRIC SHALL BE THE SAME MATERIALS AS USED IN THE ADJACENT FENCE UNLESS OTHERWISE SHOWN IN THE PLANS.

GATE LOCKING DEVICES, STOPS AND KEEPERS MAY BE GALVANIZED MALLEABLE IRON OR STEEL, EXCEPT PLUNGER BARS WHICH MAY BE TUBULAR OR BAR STEEL.

CONCRETE SHALL BE CLASS D AS SPECIFIED IN ART. 4.1.2. AIR-ENTRAINED CONCRETE IS NOT REQUIRED.



PAINT SHALL BE ZINC CHROMATE PRIMER CONFORMING TO U.S. MILITARY SPECIFICATION MIL-P-735 OR EQUIVALENT.

METHODS OF CONSTRUCTION.

THE FENCE SHALL BE ERECTED IN ACCORDANCE WITH THE DETAILS AND TO THE LINES AND GRADE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND SHALL ALSO COMPLY WITH CURRENT PRACTICE FOR FENCE CONSTRUCTION AS RECOMMENDED BY THE MANUFACTURER AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR SHALL CLEAR THE LINE OF FENCE OF ALL OBSTRUCTIONS AND DISPOSE OF SUCH MATERIALS, ALL AS DIRECTED BY THE ENGINEER.

TERMINAL POSTS SHALL BE LOCATED AT THE BEGINNING AND END OF EACH CONTINUOUS LENGTH OF FENCE CONSTRUCTION AND AT ABRUPT CHANGES IN VERTICAL AND HORIZONTAL ALIGNMENT, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TERMINAL POSTS SHALL ALSO BE ON EACH SIDE OF GATE LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

ALL POSTS SHALL BE SET IN CONCRETE AS SHOWN IN THE PLANS AND SHALL BE PLUMB WITH TOPS PROPERLY ALIGNED.

CONCRETE FOOTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAIL PLANS AND REQUIREMENTS OF ARTICLE 4.1.3, EXCEPT AS FOLLOWS:

FORMS WILL NOT BE REQUIRED AND THE ENTIRE EXCAVATION SHALL BE FILLED WITH CONCRETE.

ALUMINUM SURFACES TO BE PLACED IN CONTACT WITH CONCRETE SHALL BE GIVEN A COAT OF ZINC CHROMATE PRIMER.

FENCE FABRIC SHALL FACE AWAY FROM THE ROADWAY EXCEPT WHERE OTHERWISE DIRECTED BY THE ENGINEER.

ALL CARRIAGE BOLTS SHALL BE INSTALLED SO AS TO BE NON-REMOVABLE FROM OUTSIDE OF FENCE.

GATES SHALL BE SINGLE OR DOUBLE GATES AND OF THE WIDTH AS SHOWN ON THE PLANS AND SHALL BE INSTALLED TO OPEN THROUGH A MINIMUM ARC OF 180 DEGREES.

QUANTITY AND PAYMENT.

THE QUANTITY OF CHAIN LINK FENCE FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL LENGTH CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER, MEASURED IN PLACE ALONG THE BOTTOM LINE OF THE FABRIC, BETWEEN CENTERS OF TERMINAL POSTS.

THE QUANTITY OF CHAIN LINK GATES FOR WHICH PAYMENT WILL BE MADE, WILL BE THE NUMBER ACTUALLY FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

PAYMENT FOR CHAIN LINK FENCE OF THE TYPES AND HEIGHTS SPECIFIED WILL BE MADE FOR THE QUANTITY OF EACH AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICES BID RESPECTIVELY THEREFOR IN THE PROPOSAL, WHICH PRICES SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING THE FENCE COMPLETE, INCLUDING CLEARING AND GRUBBING IF REQUIRED, EXCAVATION AND BACKFILL, CONCRETE FOOTINGS, PAINTING, ALL LABOR, EQUIPMENT, MATERIALS AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

PAYMENT FOR CHAIN LINK FENCE GATES OF THE TYPES AND WIDTHS SPECIFIED FOR THE QUANTITY OF EACH AS ABOVE DETERMINED, AT THE UNIT PRICES BID RESPECTIVELY THEREFOR IN THE PROPOSAL, WHICH PRICES SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING THE GATE COMPLETE, EXCAVATION AND BACKFILL, CONCRETE FOOTINGS, ALL LABOR, EQUIPMENT, MATERIALS AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

HINGE JOINT FARM TYPE FENCE

DESCRIPTION.

HINGE JOINT FARM TYPE FENCE SHALL BE ERECTED IN ACCORDANCE WITH THE DETAIL PLANS AND SPECIFICATIONS, IF AND WHERE DIRECTED BY THE ENGINEER.

MATERIALS.

MATERIALS FOR HINGE JOINT FARM TYPE FENCE SHALL BE AS SHOWN ON THE PLANS.

METHODS OF CONSTRUCTION.

THE GROUND SURFACE ALONG THE FENCE LINE SHALL BE SO GRADED AND CLEARED OF ALL GROWTHS, ROCKS AND IRREGULARITIES THAT THE BOTTOM OF THE FABRIC WILL BE APPROXIMATELY 3 1/2 INCHES ABOVE THE GROUND SURFACE.

END, CORNER AND BRACING POSTS, AND LINE POSTS LOCATED IN HOLLOWES OR AT ABRUPT CHANGES IN LINE OR GRADE SHALL BE SET IN CONCRETE FOOTINGS TO THE DIMENSIONS AS SHOWN ON THE DETAIL PLANS.

END POSTS SHALL BE LOCATED AT THE BEGINNING AND END OF EACH CONTINUOUS LENGTH OF FENCE CONSTRUCTION AND AT ABRUPT CHANGES IN VERTICAL ALIGNMENT AND HORIZONTAL ALIGNMENT CHANGES EXCEEDING 15 DEGREES, AT INTERVALS NOT EXCEEDING 1000 FEET AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

QUANTITY AND PAYMENT.

THE QUANTITY OF HINGE JOINT FARM TYPE FENCE FOR WHICH PAYMENT WILL BE MADE, WILL BE THE LENGTH OF FENCE ACTUALLY CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT QUANTITY WILL NOT INCLUDE SUCH FENCE ERECTED IN CONJUNCTION WITH BORROW PIT PONDS AS PROVIDED IN ARTICLE 2.4.3.

PAYMENT FOR HINGE JOINT FARM TYPE FENCE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF THE FENCE COMPLETE IN PLACE AS SPECIFIED, INCLUDING CLEARING AND GRADING OF FENCE SITE, EXCAVATION, BACKFILL AND CONCRETING AND ALL ELSE NECESSARY THEREFOR OR INCIDENTAL THERETO.

CHAIN LINK FARM TYPE FENCE

DESCRIPTION.

CHAIN LINK FARM TYPE FENCE SHALL INCLUDE THE FURNISHING OF MATERIALS FOR AND THE ERECTION OF CHAIN LINK FARM TYPE FENCE IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND THE DIRECTIONS OF THE ENGINEER.

## MATERIALS.

MATERIALS FOR CHAIN LINK FARM TYPE FENCE SHALL CONFORM TO THE CURRENT REQUIREMENTS SPECIFIED IN THE A.A.S.H.T.O. DESIGNATION M 181, AND WITH THE FOLLOWING:

CONCRETE SHALL BE CLASS D AS SPECIFIED IN ARTICLE 4.1.2. AIR-ENTRAINED CONCRETE IS NOT REQUIRED.

PAINT SHALL BE ZINC CHROMATE PRIMER CONFORMING TO U.S. MILITARY SPECIFICATION MIL-P-735 OR EQUIVALENT.

## METHODS OF CONSTRUCTION.

THE FENCE SHALL BE ERECTED IN ACCORDANCE WITH THE DETAILS AND TO THE LINES AND GRADE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND SHALL ALSO COMPLY WITH CURRENT PRACTICE FOR FENCE CONSTRUCTION AS RECOMMENDED BY THE MANUFACTURER AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR SHALL CLEAR THE LINE OF FENCE OF ALL OBSTRUCTIONS AND DISPOSE OF SUCH MATERIALS, ALL AS DIRECTED BY THE ENGINEER.

TERMINAL POSTS SHALL BE LOCATED AT THE BEGINNING AND END OF EACH CONTINUOUS LENGTH OF FENCE CONSTRUCTION AND AT ABRUPT CHANGES IN VERTICAL ALIGNMENT AND HORIZONTAL ALIGNMENT CHANGES EXCEEDING 15 DEGREES, AT INTERVALS NOT EXCEEDING 1000 FT. AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

CONCRETE FOOTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAIL PLANS AND REQUIREMENTS OF ARTICLE 4.1.3, EXCEPT AS FOLLOWS:

FORMS WILL NOT BE REQUIRED AND THE ENTIRE EXCAVATION SHALL BE FILLED WITH CONCRETE.

ALUMINUM SURFACES TO BE PLACED IN CONTACT WITH CONCRETE SHALL BE GIVEN A COAT OF ZINC CHROMATE PRIMER.

FENCE FABRIC SHALL FACE AWAY FROM THE ROADWAY EXCEPT WHERE OTHERWISE DIRECTED BY THE ENGINEER.

ALL CARRIAGE BOLTS SHALL BE INSTALLED SO AS TO BE NON-REMOVABLE FROM OUTSIDE OF FENCE.

QUANTITY AND PAYMENT.

THE QUANTITY OF CHAIN LINK FARM TYPE FENCE FOR WHICH PAYMENT WILL BE MADE IS THE ACTUAL LENGTH CONSTRUCTED REQUIRED BY THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER, MEASURED IN PLACE ALONG THE BOTTOM LINE OF THE FABRIC, BETWEEN CENTERS OF TERMINAL POSTS.

PAYMENT FOR CHAIN LINK FARM TYPE FENCE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE COST OF FURNISHING AND INSTALLING THE FENCE COMPLETE, INCLUDING CLEARING AND GRUBBING IF REQUIRED, EXCAVATION AND BACKFILL, CONCRETE FOOTINGS, PAINTING, ALL LABOR, EQUIPMENT, MATERIALS AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

RESET FENCE

DESCRIPTION.

RESET FENCE SHALL CONSIST OF THE REMOVAL AND RESETTING OF VARIOUS TYPES OF FENCE WITHIN THE LIMITS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, USING RECLAIMED MATERIALS AND NEW MATERIALS IF REQUIRED.

MATERIALS.

EXISTING FENCE MATERIALS WHICH ARE FOUND TO BE UNUSABLE OR ARE RENDERED UNUSABLE BY THE CONTRACTOR'S OPERATIONS SHALL BE DISPOSED OF AND REPLACED WITH NEW MATERIALS OF THE SAME OR EQUIVALENT TYPE, SATISFACTORY TO THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

METHODS OF CONSTRUCTION.

METHODS OF CONSTRUCTION SHALL BE SUCH THAT, WHEN COMPLETED, THE RESET FENCE SHALL CONFORM IN GENERAL TO THE EXISTING FENCE AND TO THE SATISFACTION OF THE ENGINEER.

QUANTITY AND PAYMENT.

THE QUANTITY OF RESET FENCE FOR WHICH PAYMENT WILL BE MADE WILL BE THE AGGREGATE OF THE LENGTHS OF FENCE ACTUALLY RESET IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR RESET FENCE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF REMOVING AND RESETTING THE FENCE, FURNISHING NEW MATERIALS IF REQUIRED, EXCAVATION, BACKFILL, DISPOSAL OF EXCESS MATERIAL, ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR OR INCIDENTAL THERETO.

## RESET CHAIN LINK FENCE

### DESCRIPTION.

RESET CHAIN LINK FENCE SHALL CONSIST OF THE REMOVAL AND RESETTING OF CHAIN LINK FENCE WITHIN THE LIMITS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, USING RECLAIMED MATERIALS AND NEW MATERIALS IF REQUIRED.

### MATERIALS.

EXISTING FENCE MATERIALS WHICH ARE FOUND TO BE UNUSABLE OR ARE RENDERED UNUSABLE BY THE CONTRACTOR'S OPERATIONS SHALL BE DISPOSED OF AND REPLACED WITH NEW MATERIALS OF THE SAME OR EQUIVALENT TYPE, SATISFACTORY TO THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

### METHODS OF CONSTRUCTION.

METHODS OF CONSTRUCTION SHALL BE SUCH THAT, WHEN COMPLETED, THE RESET FENCE SHALL CONFORM IN GENERAL TO THE EXISTING FENCE AND TO THE SATISFACTION OF THE ENGINEER.

### QUANTITY AND PAYMENT.

THE QUANTITY OF RESET FENCE FOR WHICH PAYMENT WILL BE MADE WILL BE THE AGGREGATE OF THE LENGTHS OF FENCE ACTUALLY RESET IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR RESET CHAIN LINK FENCE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET, AT THE UNIT PRICE BID THEREFOR IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE ALL COSTS OF REMOVING AND RESETTING THE FENCE, FURNISHING NEW MATERIALS IF REQUIRED, EXCAVATION, BACKFILL, CONCRETE FOOTINGS IF REQUIRED, DISPOSAL OF EXCESS MATERIAL, ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

CHAIN LINK FENCE, BRIDGE.

DESCRIPTION.

ALUMINUM CHAIN LINK FENCE SHALL CONSIST OF THE FURNISHING, FABRICATION AND ERECTION OF AN ALUMINUM ALLOY DIAMOND MESH CHAIN LINK FENCE ON THE BRIDGE IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.

MATERIALS.

MATERIALS FOR ALUMINUM CHAIN LINK FENCE SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.4.1.

CERTIFICATION THAT THE MATERIALS SUPPLIED CONFORM WITH THE SPECIFICATIONS SHALL BE FURNISHED IN ACCORDANCE WITH ARTICLE 1.4.7.

METHODS OF CONSTRUCTION.

THE PROVISIONS OF ARTICLE 4.8.3 OF THE STANDARD SPECIFICATIONS SHALL BE USED FOR THE CONSTRUCTION OF THE ALUMINUM CHAIN LINK FENCE, BRIDGE, EXCEPT AS AMENDED HEREIN:

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH ON PAGE 258 OF THE STANDARD SPECIFICATIONS:

BOLTS SET PREVIOUS TO CONCRETING SHALL BE HELD SECURELY IN PLACE BY A NUT ABOVE THE FORM TEMPLATE AND A THREADED ALUMINUM ALLOY WASHER (6061-T6), OR OTHER MEANS AS APPROVED BY THE ENGINEER, BELOW THE FORM TEMPLATE. THE LOWER FASTENING SHALL PREVENT PASSAGE OF MORTAR ONTO THE EXPOSED BOLT THREADS.

THE FIRST FULL SENTENCE ON PAGE 261 OF STANDARD SPECIFICATIONS IS HEREBY DELETED AND THE FOLLOWING SUBSTITUTED THEREFOR; THE ANCHOR BOLTS SHALL BE TIGHTENED AGAIN WHERE NECESSARY AND ALL BOLTS SHALL NOT PROJECT MORE THAN 1/4" ABOVE THE NUT AND SHALL BE STAKED TO PREVENT THE LOOSENING OF THE NUT DUE TO VIBRATIONS OR VANDALISM.

IN THE SECOND PARAGRAPH ON PAGE 261 OF THE STANDARD SPECIFICATIONS MILP-6883 IS CHANGED TO READ FEDERAL SPECIFICATION TTC-001079A.

IN THE THIRD PARAGRAPH ON PAGE 261 OF THE STANDARD SPECIFICATIONS, GRADE 2 IS CHANGED TO READ GRADE 1.

THE FOLLOWING IS ADDED:

MINOR VARIATIONS IN DETAILS OF ALUMINUM CHAIN LINK FENCE WILL BE PERMITTED SUBJECT TO THE APPROVAL OF THE BUREAU OF BRIDGE DESIGN; BUT, ANY MAJOR DEPARTURE FROM THE DETAILS SHOWN ON THE PLANS WILL NOT BE ALLOWED.

THE MESH FABRIC SIZE SHALL NOT VARY BY MORE THAN PLUS OR MINUS 1/16 INCH AND THE WIDTH OF THE FABRIC BY MORE THAN PLUS OR MINUS 3/4 INCH.

THE FABRIC SHALL BE THOROUGHLY CLEANED TO REMOVE OIL FILM AND OTHER DELETERIOUS SUBSTANCES PRIOR TO LEAVING THE SHOP.

QUANTITY AND PAYMENT.

THE QUANTITY OF ALUMINUM CHAIN LINK FENCE FOR WHICH PAYMENT WILL BE MADE, WILL BE THE ACTUAL LENGTH CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

THE LENGTH OF ALUMINUM CHAIN LINK FENCE, MEASURED FOR PAYMENT, WILL BE THE OVERALL HORIZONTAL LENGTH AFTER ERECTION.

PAYMENT FOR FENCE WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET FOR EACH PARTICULAR HEIGHT OF FENCE, AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM ALUMINUM CHAIN LINK FENCE, BRIDGE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING COMPLETE IN EVERY DETAIL THE ALUMINUM ALLOY CHAIN LINK FENCE WITH ANCHORAGES AND FASTENINGS AS SHOWN ON THE PLANS AND SPECIFIED HEREIN, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

METAL RAILING (3-RAIL) AND CHAIN LINK FENCE.

DESCRIPTION.

METAL RAILING (3-RAIL) AND CHAIN LINK FENCE SHALL CONSIST OF THE FURNISHING, FABRICATION AND ERECTION OF AN ALUMINUM METAL RAILING IN COMBINATION WITH AN ALUMINUM ALLOY DIAMOND MESH CHAIN LINK FENCE ON THE BRIDGE IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.



## MATERIALS.

THE MATERIALS FOR METAL RAILING (3-RAIL) SHALL BE AS NOTED ON THE PLANS. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE BUREAU OF BRIDGE DESIGN.

THE MATERIALS FOR CHAIN LINK FENCE SHALL CONFORM TO THE PROVISIONS OF ARTICLE 8.4.1.

CERTIFICATION THAT THE MATERIALS SUPPLIED CONFORM WITH THE SPECIFICATIONS SHALL BE FURNISHED IN ACCORDANCE WITH ARTICLE 1.4.7.

## METHODS OF CONSTRUCTION.

THE PROVISIONS OF ARTICLE 4.8.3 OF THE STANDARD SPECIFICATIONS SHALL BE USED FOR THE CONSTRUCTION OF THE METAL RAILING (3-RAIL) AND CHAIN LINK FENCE, EXCEPT AS AMENDED HEREIN:

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH ON PAGE 258 OF THE STANDARD SPECIFICATIONS:

BOLTS SET PREVIOUS TO CONCRETING SHALL BE HELD SECURELY IN PLACE BY A NUT ABOVE THE FORM TEMPLATE AND A THREADED ALUMINUM ALLOY WASHER (6061-T6), OR OTHER MEANS AS APPROVED BY THE ENGINEER, BELOW THE FORM TEMPLATE. THE LOWER FASTENING SHALL PREVENT PASSAGE OF MORTAR ONTO THE EXPOSED BOLT THREADS.

THE FIRST FULL SENTENCE ON PAGE 261 OF THE STANDARD SPECIFICATIONS IS HEREBY DELETED AND THE FOLLOWING SUBSTITUTED THEREFOR; THE ANCHOR BOLTS SHALL BE TIGHTENED AGAIN WHERE NECESSARY AND ALL BOLTS SHALL NOT PROJECT MORE THAN 1/4" ABOVE THE NUT AND SHALL BE STAKED TO PREVENT THE LOOSENING OF THE NUT DUE TO VIBRATIONS OR VANDALISM.

IN THE SECOND PARAGRAPH ON PAGE 261 OF THE STANDARD SPECIFICATIONS MILP-6883 IS CHANGED TO READ FEDERAL SPECIFICATION TTC-001079A.

IN THE THIRD PARAGRAPH ON PAGE 261 OF THE STANDARD SPECIFICATIONS, GRADE 2 IS CHANGED TO READ GRADE 1.

THE FOLLOWING IS ADDED:

MINOR VARIATIONS IN DETAILS OF METAL RAILING AND CHAIN LINK FENCE WILL BE PERMITTED SUBJECT TO THE APPROVAL OF THE BUREAU

MINOR VARIATIONS IN DETAILS OF ALUMINUM CHAIN LINK FENCE WILL BE PERMITTED SUBJECT TO THE APPROVAL OF THE BUREAU OF STRUCTURAL DESIGN; BUT ANY MAJOR DEPARTURE FROM THE DETAILS SHOWN ON THE PLANS WILL NOT BE ALLOWED.

THE MESH FABRIC SIZE SHALL NOT VARY BY MORE THAN PLUS OR MINUS 1/16 INCH AND THE WIDTH OF THE FABRIC BY MORE THAN PLUS OR MINUS 3/4 INCH.

THE FABRIC SHALL BE THOROUGHLY CLEANED TO REMOVE OIL FILM AND OTHER DELETERIOUS SUBSTANCES PRIOR TO LEAVING THE SHOP.

QUANTITY AND PAYMENT.

THE QUANTITY OF METAL RAILING (3-RAIL) AND CHAIN LINK FENCE FOR WHICH PAYMENT WILL BE MADE, WILL BE THE ACTUAL LENGTH CONSTRUCTED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR RAILING AND FENCE IN COMBINATION WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN LINEAR FEET AT THE PRICE PER LINEAR FOOT BID FOR THE ITEM METAL RAILING (3-RAIL) AND CHAIN LINK FENCE IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING COMPLETE IN EVERY DETAIL THE METAL RAILING AND CHAIN LINK FENCE WITH ANCHORAGES, FASTENINGS, SHIMS, WELDING AND CAULKING AS SHOWN ON THE PLANS AND SPECIFIED HEREIN, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

DIVISION 7  
LANDSCAPING

SECTION 1  
SELECTIVE THINNING

7.1.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND PROCEDURES OF N.J.A.C. 7:30-1 ET SEQ FOR THE APPLICATION OF HERBICIDES.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 1A  
SELECTIVE CLEARING

7.1A.1. DESCRIPTION.

UNLESS OTHERWISE DIRECTED, ALL VEGETATION, BOTH STANDING AND FALLEN TREES AND SHRUBS AND OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FOR THE PURPOSE OF CREATING BAYS IN WOODED AREAS, ESTABLISH NEW VEGETATION LIMITS ALONG ROADSIDES AND TO OPEN VISTAS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

7.1A.2. MATERIALS.

HERBICIDES SHALL CONFORM TO THE REQUIREMENTS THEREFOR SPECIFIED IN ARTICLE 8.3.5.

7.1A.3. METHODS OF CONSTRUCTION.

ALL VEGETATION EXCEPT FOR DESIGNATED SPECIMEN PLANTS SHALL BE REMOVED AND DISPOSED OF AS SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER. TREES SHALL BE CAREFULLY FELLED TO PREVENT DAMAGE TO VEGETATION THAT IS TO REMAIN, STRUCTURES OR ADJACENT PROPERTY.

STUMPS OF TREES, SHRUBS AND VINES SHALL BE COMPLETELY REMOVED OR GROUND TO 6 INCHES BELOW THE EXISTING GROUND SURFACE. IF SUCKERING OCCURS PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL APPLY HERBICIDES OR PERFORM MECHANICAL OPERATIONS TO INSURE THAT REGROWTH DOES NOT OCCUR. HERBICIDES SHALL BE APPLIED IN A MANNER APPROVED BY THE ENGINEER. STUMP HOLES SHALL BE BACKFILLED WITH TOPSOIL TO ELIMINATE DEPRESSIONS.

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND PROCEDURES OF N.J.A.C. 7:30-1 ET SEQ FOR THE APPLICATION OF HERBICIDES.

ALL CLEARED MATERIAL, DEADWOOD, STUMPS AND DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 2.1.3.

ANY DAMAGE TO STRUCTURES OR PROPERTY SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR. LIMBS, BARK AND ROOTS OF VEGETATION TO REMAIN, DAMAGED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE BY REPLACEMENT OR PROPER DRESSING, CUTTING, TRACING AND PAINTING METHODS AS APPROVED BY THE ENGINEER.

WORK SHALL NOT BEGIN WITHOUT THE CONSENT OF THE ENGINEER.

7.1A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF SELECTIVE CLEARING FOR WHICH PAYMENT WILL BE MADE WILL BE AREAS ACTUALLY SELECTIVELY CLEARED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SELECTIVE CLEARING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN ACRES AT THE UNIT PRICE PER ACRE BID FOR THE ITEM SELECTIVE CLEARING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF REMOVING TREES, SHRUBS, STUMPS AND OTHER VEGETATION, FURNISHING AND APPLYING HERBICIDES, BACKFILL, DISPOSING OF ALL DEBRIS, FURNISHING ALL

MATERIALS, LABOR, EQUIPMENT AND ALL OTHER WORK CONNECTED THERE-  
WITH AND INCIDENTAL THERETO.

SECTION 2

TRIMMING EXISTING TREES

7.2.3. METHODS OF CONSTRUCTION.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ALL TREE TRIMMING WORK SHALL BE SUPERVISED BY A CERTIFIED TREE EXPERT OR OTHER PERSON WITH EQUIVALENT COMPETENCE IN THE WORK REQUIRED, AS DETERMINED BY THE ENGINEER.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 2A

TREE REMOVAL

7.2A.1. DESCRIPTION.

TREE REMOVAL SHALL INCLUDE THE WORK OF CUTTING AND REMOVING ALL SPECIFICALLY DESIGNATED INDIVIDUAL TREES, AS INDICATED FOR REMOVAL ON THE PLAN SHEETS OR AS DIRECTED BY THE ENGINEER.

7.2A.3. METHODS OF CONSTRUCTION.

ALL TREES TO BE REMOVED UNDER THIS ITEM SHALL BE MARKED BY THE ENGINEER BEFORE ANY TREE REMOVAL IS BEGUN. EACH TREE DESIGNATED FOR REMOVAL SHALL BE COMPLETELY REMOVED, EXCEPT FOR THE STUMP WHICH IS TO BE CUT OFF 6 INCHES BELOW THE EXISTING GROUND SURFACE AND BACKFILLED WITH TOPSOIL. IF NECESSARY TREES SHALL BE

FELLED IN SECTIONS AND DISPOSED OF TO PREVENT DAMAGE TO ADJACENT VEGETATION, STRUCTURES, UTILITY WIRES, OR OTHER PROPERTY.

CUTTING OF TREES SHALL BE DONE BY COMPETENT WORKMEN ONLY AND IN WORKMANLIKE MANNER. ALL TREES SHALL BE TOPPED AND LIMBED PREVIOUS TO FELLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ANY DAMAGE TO OTHER VEGETATION, STRUCTURES, UTILITY WIRES, OR OTHER PROPERTY SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. DAMAGE TO EXISTING TREES TO REMAIN SHALL BE TREATED IN ACCORDANCE WITH APPROVED ARBORICULTURAL PRACTICES. GRASS AREAS DAMAGED AS A RESULT OF TREE REMOVAL SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS FOR TOPSOILING AND SEEDING AS SPECIFIED IN DIVISION 7 SECTION 5.

ALL BRANCHES, LIMBS, TRUNKS, AND OTHER DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 2.1.3.

7.2A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF TREE REMOVAL FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL NUMBER OF TREES COMPLETELY REMOVED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER. THE CALIPER AT 4 1/2 FEET ABOVE THE GROUND LINE SHALL DETERMINE THE SIZE CATEGORY OF THE TREES FOR WHICH PAYMENT WILL BE MADE.

PAYMENT FOR TREE REMOVAL WILL BE MADE FOR THE NUMBER OF UNITS REMOVED AT THE RESPECTIVE UNIT PRICE BID FOR THE ITEMS OF TREE REMOVAL IN THE PROPOSAL FOR THE VARIOUS SIZES, WHICH PRICES SHALL INCLUDE THE COMPLETE REMOVAL OF TREES AS DIRECTED ABOVE, BACKFILLING, DISPOSING OF DEBRIS, FURNISHING OF ALL LABOR, EQUIPMENT AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

SECTION 5  
TOPSOILING AND SEEDING

THE HEADING OF THIS SECTION OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TOPSOILING

7.5.1. DESCRIPTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

WHEN THE ITEM STRIPPING IS INCLUDED ON THE PROJECT AND THE MATERIAL TO BE STRIPPED IS FOUND TO BE ACCEPTABLE FOR USE AS TOPSOIL, IN CONFORMITY WITH ARTICLE 8.3.12, TOPSOILING SHALL INCLUDE PREPARING TOPSOIL STRIPPED FROM THE SITE OF THE PROJECT AND PLACING IT, AND FURNISHING AND PLACING TOPSOIL REQUIRED IN EXCESS OF THAT OBTAINED FROM STRIPPING.

WHEN THE ITEM STRIPPING IS NOT INCLUDED ON THE PROJECT OR STRIPPED MATERIAL IS FOUND TO BE UNACCEPTABLE, TOPSOILING SHALL INCLUDE FURNISHING OF TOPSOIL OBTAINED FROM OUTSIDE THE LIMITS OF THE PROJECT AND PLACING IT IN AREAS WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

7.5.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TOPSOIL SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.3.12.

7.5.3. METHODS OF CONSTRUCTION.

EXCEPT FOR THE LAST 5 PARAGRAPHS, THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE CONTRACTOR SHALL NOT PLACE OR SPREAD TOPSOIL UNTIL THE AREA TO BE TOPSOILED HAS BEEN SHAPED AND DRESSED AND APPROVED BY THE ENGINEER IN CHARGE. SHAPING AND DRESSING SHALL INCLUDE

GRADING TO REQUIRED LINES AND ELEVATIONS AND THE REMOVAL OF ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION AND THE REMOVAL OF ALL OTHER DEBRIS SUCH AS WIRES, CABLES, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS, AND OTHER UNSUITABLE MATERIAL.

AFTER THE AREA TO BE TOPSOILED HAS BEEN APPROVED BY THE ENGINEER, THE TOPSOIL SHALL BE SPREAD IN A UNIFORM LAYER THAT WILL PRODUCE THE PRESCRIBED COMPACTED THICKNESS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING TOPSOILED AREAS OUTSIDE THE LIMITS OF HIS WORK AGAINST DAMAGE CAUSED BY THE DELIVERY, HANDLING AND/OR STORAGE OF MATERIALS, WASHOUTS DUE TO DRAINAGE DIVERSION, OR BY HIS WORKMEN OR EQUIPMENT. ANY SUCH DAMAGE SHALL BE REPAIRED BY PROPERLY GRADING, FERTILIZING, SEEDING, AND MULCHING AT THE CONTRACTOR'S EXPENSE EXCEPT AS SPECIFIED UNDER ARTICLE 7.7.4.

STORAGE OF TOPSOIL SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 2.2.3, EXCEPT AS FOLLOWS:

THE CONTRACTOR SHALL OBTAIN ALL LEGAL RIGHTS OR EASEMENTS NECESSARY THEREFOR FROM PRIVATE OWNERS ON WHOSE LANDS THE TOPSOIL MAY BE STORED. SAID EASEMENTS OR RIGHTS SHALL BE IN WRITTEN FORM SATISFACTORY TO THE ENGINEER, SIGNED BY BOTH THE CONTRACTOR AND PROPERTY OWNER INVOLVED, OR THEIR DULY AUTHORIZED REPRESENTATIVES. ONE COPY OF EACH SUCH RIGHT OR EASEMENT SHALL BE PRESENTED TO THE ENGINEER PRIOR TO THE STORING OF ANY TOPSOIL ON ANY PRIVATE PROPERTY.

TOPSOIL IN EXCESS OF THE QUANTITY REQUIRED FOR THE PROJECT SHALL BE STORED IN NEATLY GRADED STORAGE PILES FOR FUTURE USE OF THE STATE, OR DISPOSED OF, AS DIRECTED BY THE ENGINEER.

STORAGE PILES OF TOPSOIL AND AREAS FROM WHICH STORED TOPSOIL HAS BEEN REMOVED, WITHIN THE RIGHT-OF-WAY LIMITS OF THE PROJECT, SHALL BE FERTILIZED AND SEEDING IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 7.7.3.

#### 7.5.4. QUANTITY AND PAYMENT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF TOPSOILING FOR WHICH PAYMENT WILL BE MADE WILL BE THE SURFACE AREA OF EACH PRESCRIBED THICKNESS OF TOPSOIL ACTUALLY PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.



NO REDUCTION IN QUANTITY WILL BE MADE FOR AREAS DESIGNATED FOR PLANTING PITS.

PAYMENT FOR TOPSOILING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEMS OF TOPSOILING IN THE PROPOSAL. THE PRICE SHALL INCLUDE THE COST OF PREPARING ACCEPTABLE STRIPPED MATERIAL FOR TOPSOIL AND PLACING IT AND/OR FURNISHING, CLEANING AND PLACING TOPSOIL FURNISHED FROM SOURCES OUTSIDE THE LIMITS OF THE PROJECT INCLUDING FURNISHING AND INCORPORATING PEAT IF REQUIRED, GRADING THE TOPSOIL, RAKING WHERE REQUIRED, REPAIRING AREAS DAMAGED BY THE CONTRACTORS WORK AND EQUIPMENT, FURNISHING ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 6

SLOPE BOARDS

7.6.3. METHODS OF CONSTRUCTION.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SLOPE BOARDS SHALL BE PLACED OVER THE ENTIRE AREA OF SLOPES MORE THAN 8 FEET HIGH, MEASURED VERTICALLY AND SLOPING 2:1 OR STEEPER, EXCEPT AS OTHERWISE DIRECTED BY THE ENGINEER.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO REQUIRE THAT SLOPE BOARDS BE PLACED SO THEY DECLINE IN THE RATIO OF 6 FEET HORIZONTALLY TO 1 FOOT VERTICALLY.

THE LAST SENTENCE OF THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SLOPE BOARDS SHALL BE HELD FIRMLY IN PLACE BY BEING NAILED TO THE 4 INCH FACE OF THE STAKES. THE STAKES SHALL BE SPACED NOT MORE THAN 3 FEET APART O.C. AND DRIVEN INTO THE GROUND VERTICALLY SO THE TOP OF THE STAKE IS FLUSH WITH, OR NOT MORE THAN 1/2 INCH BELOW, THE TOP EDGE OF THE BOARD.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

ON SLOPES WHICH WOULD NORMALLY REQUIRE SLOPE BOARDS, BUT UPON WHICH SAID SLOPE BOARDS CANNOT BE INSTALLED EXCEPT WITH EXTREME DIFFICULTY BECAUSE OF UNDERLYING SHALE OR ROCK, THE ENGINEER MAY DIRECT THAT THE SLOPE BOARDS BE ELIMINATED AND THE TOPSOIL SPREAD IN A UNIFORM LAYER THAT WILL PRODUCE A 2 INCH COMPACTED THICKNESS.

SECTION 7

FERTILIZING AND SEEDING

THE ENTIRE TEXT OF THIS SECTION OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

7.7.1. DESCRIPTION.

FERTILIZING AND SEEDING SHALL INCLUDE THE FURNISHING AND PLACING OF SEED MIXTURES, PULVERIZED LIMESTONE, FERTILIZER AND OTHER MATERIALS AS SPECIFIED, AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

PLANTING BEDS SHALL NOT BE FERTILIZED OR SEEDED.

7.7.2. MATERIALS.

MATERIALS FOR FERTILIZING AND SEEDING SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE ARTICLES LISTED BELOW:

FERTILIZER.....ARTICLE 8.3.1  
LIMESTONE, PULVERIZED.....ARTICLE 8.3.3.  
SEED MIXTURES.....ARTICLE 8.3.10  
GRAIN SEED.....ARTICLE 8.3.10

7.7.3. METHODS OF CONSTRUCTION.

WHEN THE ANALYSIS OF THE TOPSOIL TO BE SEEDED INDICATES THE PRESENCE OF LESS THAN 35 POUNDS OF AVAILABLE MAGNESIUM PER ACRE, SUFFICIENT PULVERIZED LIMESTONE SHALL BE ADDED TO PROVIDE

200 POUNDS OF MAGNESIUM OXIDE PER ACRE. IF THE ANALYSIS INDICATES THE PRESENCE OF 35 TO 50 POUNDS OF AVAILABLE MAGNESIUM PER ACRE, SUFFICIENT PULVERIZED LIMESTONE SHALL BE ADDED TO PROVIDE 100 POUNDS OF MAGNESIUM OXIDE PER ACRE.

WHEN THE SOIL TO BE SEEDING HAS A PH VALUE OF LESS THAN 5.8, SUFFICIENT PULVERIZED LIMESTONE SHALL BE ADDED TO CHANGE THE SOIL PH VALUE TO 6.5.

RECOMMENDED AMOUNTS OF TOTAL OXIDES (CALCIUM AND MAGNESIUM) TO RAISE THE PH OF A FOUR INCH LAYER ON DIFFERENT SOIL TEXTURAL CLASSES TO APPROXIMATELY 6.5 ARE AS FOLLOWS:

SOIL (PH)	SOIL TEXTURAL CLASS			
	POUNDS PER ACRE			
	LOAMY SAND	SANDY LOAM	LOAM	SILT LOAM
5.7 - 6.0	300	600	900	1200
5.3 - 5.6	600	1035	1500	1800
4.9 - 5.2	900	1500	2100	2400
4.5 - 4.8	1200	1800	2700	3000
4.1 - 4.4	1500	2100	3300	3600

THE TOTAL AMOUNTS OF MAGNESIUM AND CALCIUM OXIDES TO PROVIDE FOR THE ABOVE REQUIREMENTS SHALL BE STIPULATED BY THE LABORATORY BASED ON TESTS RUN ON THE SOIL SAMPLES SUBMITTED.

THE QUANTITY OF PULVERIZED LIMESTONE REQUIRED WILL BE IN PROPORTION TO ITS MAGNESIUM AND CALCIUM OXIDE CONTENT. PULVERIZED LIMESTONE SHALL BE EVENLY SPREAD OVER THE AREA TO BE SEEDING AT THE RATE NECESSARY TO CHANGE THE PH VALUE TO 6.5 OR TO PROVIDE THE SPECIFIED QUANTITY OF MAGNESIUM OXIDE, WHICHEVER IS GREATER.

BEFORE APPLYING SEED, ALL STONES, ROCKS, ROOTS, WIRES, CLOUDS, AND OTHER DEBRIS MEASURING 2 INCHES OR MORE IN ANY DIMENSION SHALL BE REMOVED.

WITHIN THE LIMITS SET FORTH UNDER MATERIALS THE CONTRACTOR MAY SELECT THE FERTILIZER HE WILL USE. THE FERTILIZER FOR ESTABLISHING TURF SHALL BE LIMITED TO ONE SELECTION THROUGHOUT THE PROJECT. FERTILIZER SHALL BE APPLIED IN THE QUANTITY NECESSARY TO YIELD 60 POUNDS OF NITROGEN PER ACRE, 30 POUNDS AT THE TIME OF SEEDING AND AN ADDITIONAL APPLICATION OF 30 POUNDS APPROXIMATELY SIX MONTHS AFTER SEEDING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE ENGINEER MAY ADJUST THE 6 MONTH PERIOD DEPENDING UPON THE DATE OF THE INITIAL SEEDING. IT IS PREFERRED THAT THIS SECOND APPLICATION BE MADE DURING THE MONTHS OF MARCH AND SEPTEMBER.

THE SOIL SHALL BE IN A FRIABLE CONDITION AT THE TIME OF SEEDING.

TYPE A SEED MIXTURE SHALL BE SOWN AT THE RATE OF 100 POUNDS PER ACRE THROUGHOUT THE PROJECT.

TYPE A-2 SEED MIXTURE SHALL BE SOWN AT THE RATE OF 60 POUNDS PER ACRE THROUGHOUT THE PROJECT.

TYPE B SEED MIXTURE SHALL BE SOWN AT THE RATE OF 100 POUNDS PER ACRE ON SANDY DRY SOILS OCCASIONALLY SUBJECT TO SALT WATER.

TYPE D SEED MIXTURE SHALL BE SOWN AT THE RATE OF 100 POUNDS PER ACRE IN RESIDENTIAL AND OTHER AREAS OF REFINED TURF, AS DETERMINED BY THE ENGINEER.

TYPE E SEED MIXTURE SHALL BE SOWN AT THE RATE OF 110 POUNDS PER ACRE ON SLOPE AREAS AS DETERMINED BY THE ENGINEER.

TYPE F SEED SHALL BE SOWN AT THE RATE OF 100 POUNDS PER ACRE ON UNTOPSOILED AREAS SCHEDULED FOR COMPLETION AT A LATER DATE, DIVERSIONARY ROADS AND LOCATIONS OF TEMPORARY POLLUTION CONTROL.

RYE OR OAT GRAIN SHALL BE SOWN WITH ONLY TYPE A, B AND E SEED MIXTURES AT THE RATE OF 10 POUNDS PER ACRE. WHEN SEEDING IN THE SPRING, OAT GRAIN SHALL BE USED, IN THE FALL, RYE.

WHEN THE ITEM FERTILIZING AND SEEDING IS REQUIRED WITHIN THE LIMITS OF GRADING IN AREAS OF CUT OR EMBANKMENT, WHICH ARE NOT DESIGNATED FOR TOPSOILING, SEPARATE PROVISIONS WILL NOT BE MADE FOR SHAPING THE SURFACE AND REMOVING STONES, ROCKS, AND DEBRIS SINCE SUCH SHAPING AND REMOVAL IS PART OF THE WORK OF THE SHAPING AND DRESSING OF SLOPES, SHOULDERS, ISLANDS, AND OTHER SURFACES FOR WHICH PAYMENT IS PROVIDED IN ARTICLE 2.2.4.

FINISHED SEEDED AREAS SHALL BE SMOOTH AND SHALL CONFORM TO THE PRESCRIBED LINES AND ELEVATIONS. ALL SEEDED AREAS SHALL BE MULCHED AS SPECIFIED IN ARTICLE 7.9.3.

SHRUB AND GROUND COVER PLANTINGS SHALL BE MULCHED SEPARATELY AS PROVIDED IN ARTICLE 7.9.3.

THE CONTRACTOR SHALL COMPLETE AS MUCH OF THE SEEDING AS POSSIBLE FROM MARCH 1 TO MAY 15 AND FROM AUGUST 15 TO OCTOBER 15 WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE THEREFOR. SEEDING WHICH CANNOT BE COMPLETED DURING THESE PERIODS MAY BE PERFORMED AT OTHER TIMES WHEN, IN THE OPINION OF THE ENGINEER,

WEATHER AND SOIL CONDITIONS ARE SUITABLE. WHEN A SATISFACTORY STAND OF GRASS AND LEGUMES, PRACTICALLY WEED FREE AND CONTAINING PLANTS IN REASONABLE PROPORTION TO THE VARIOUS KINDS OF SEED IN THE GRASS SEED MIXTURE, IS NOT ESTABLISHED ON AREAS OF SEEDING THE DEFICIENT AREAS SHALL BE MOWED, REFERTILIZED, RESEEDED AND REMULCHED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, UNTIL A SATISFACTORY STAND OF GRASS IS ESTABLISHED.

IF PRIOR TO THE ESTABLISHMENT OF A SATISFACTORY STAND OF GRASS, AN EXCESSIVE AMOUNT OF WEED GROWTH BECOMES ESTABLISHED, THE CONTRACTOR SHALL MOW THE UNACCEPTABLE AREAS AT HIS OWN EXPENSE.

#### 7.7.4. QUANTITY AND PAYMENT.

THE QUANTITY OF FERTILIZING AND SEEDING FOR WHICH PAYMENT WILL BE MADE, WILL BE THE AREAS ACTUALLY FERTILIZED AND SEEDED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR FERTILIZING AND SEEDING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM FERTILIZING AND SEEDING OF THE VARIOUS TYPES IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND PLACING SEED MIXTURES AND GRAIN SEED; FURNISHING AND PLACING FERTILIZER, PULVERIZED LIMESTONE, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR, AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

ADDITIONAL PAYMENT WILL NOT BE MADE FOR THE SHAPING AND DRESSING OF SLOPES, SHOULDERS, ISLANDS, AND OTHER SURFACES UNDER THIS ITEM SINCE SUCH PAYMENT IS PROVIDED FOR IN ARTICLE 2.2.4 AND ARTICLE 7.5.4.

NO PAYMENT WILL BE MADE FOR THE MOWING, REFERTILIZING, RESEEDING AND REMULCHING OF AREAS OF TURF DETERMINED TO BE UNACCEPTABLE, OR OF WEED AREAS THAT HAVE BEEN MOWED IN ORDER TO ESTABLISH ACCEPTABLE TURF.

THE FOLLOWING IS ADDED TO THIS DIVISION OF THE STANDARD SPECIFICATIONS:

SECTION 7A

SOIL STABILIZATION MATTING

7.7A.1. DESCRIPTION.

SOIL STABILIZATION MATTING SHALL CONSIST OF FURNISHING, PLACING AND STAPLING EITHER JUTE OR EXCELSIOR MATTING ON SOIL SURFACES, PREPARED AND SEEDED UNDER OTHER ITEMS, AT LOCATIONS SHOWN ON THE PLANS OR DESIGNATED BY THE ENGINEER.

7.7A.2. MATERIALS.

MATERIALS TO BE USED FOR SOIL STABILIZATION MATTING SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE ARTICLE AS FOLLOWS:

MATTING.....ARTICLE 8.3.5  
STAPLES.....ARTICLE 8.3.5

7.7A.3. METHODS OF CONSTRUCTION.

BEFORE THE MATTING IS PLACED IN POSITION THE SOIL MUST BE SMOOTH, SOFT AND FREE OF DEPRESSIONS, CLOUDS, MOUNDS, STONES, OR OTHER DEBRIS WHICH WILL PREVENT THE MATTING FROM MAKING COMPLETE CONTACT WITH THE SOIL.

AFTER THE SOIL HAS BEEN PROPERLY SHAPED, FERTILIZED AND SEEDED, THE MATTING SHALL BE LAID OUT FLAT, AND ANCHORED SECURELY WITH STAPLES, SO THAT THE MATTING WILL BE IN CONTACT WITH THE SOIL AT ALL POINTS.

WHERE SOIL STABILIZATION MATTING IS REQUIRED IN SWALES OF MEDIANS, THE MATTING MAY BE INSTALLED IN MULTIPLE WIDTHS.

WHEN JUTE MATTING IS BEING LAID, THE HIGHER END SHALL BE TURNED UNDER 6 INCHES AND BURIED IN A VERTICAL POSITION.

WHERE STRIPS OF JUTE MATTING ARE LAID END TO END, THE ADJOINING ENDS SHALL BE LAID SO THAT THE UPHILL STRIP OVERLAPS THE DOWNHILL STRIP. THE UPPER END OF EACH DOWNHILL STRIP SHALL BE BURIED 6 INCHES DEEP IN VERTICAL POSITION WITH THE UPHILL STRIP OVERLAPPING FOR A DISTANCE OF 6 INCHES TO FORM A SMOOTH SHINGLE-LIKE EFFECT.

WHEN ADJOINING ROLLS OF JUTE MATTING ARE LAID PARALLEL TO ONE ANOTHER, THE MATTING SHALL OVERLAP FROM 3 TO 6 INCHES.

WHEN EXCELSIOR MATTING IS BEING LAID, THE MATERIAL SHALL BE UNROLLED IN THE DIRECTION OF THE FLOW OF WATER.

WHERE STRIPS OF EXCELSIOR MATTING ARE LAID END TO END, THE ADJOINING ENDS SHALL BE BUTTED SNUGLY.

WHEN ADJOINING ROLLS OF EXCELSIOR MATTING ARE LAID PARALLEL TO ONE ANOTHER, THE MATTING SHALL BE BUTTED SNUGLY.

BULGING SEAMS IN EITHER MATTING MATERIAL SHALL BE CUT AND JOINTS FORMED AS DESCRIBED ABOVE.

STAPLES SHALL BE PLACED ALONG THE OUTER EDGES OF THE MATTING AND IN A PARALLEL ROW DOWN THE CENTER OF THE STRIP. STAPLES SHALL BE SPACED 24 TO 26 INCHES APART IN THE ROWS EXCEPT ALONG OVERLAPPING EDGES WHERE THEY SHALL BE 12 TO 13 INCHES APART. STAPLES SHALL BE DRIVEN AT AN ANGLE OF APPROXIMATELY 30 DEGREES FROM HORIZONTAL.

IN ADDITION TO THE ABOVE REQUIREMENTS, STAPLES SHALL BE PLACED 12 INCHES APART ACROSS THE MATTING AT 50 FOOT INTERVALS AND AT CRITICAL LOCATIONS SUCH AS AT INLETS, CHECK SLOTS (IF REQUIRED) AND OVERLAPPING JOINTS AND ENDS. THE STAPLES SHALL BE DRIVEN FLUSH WITH THE SURFACE OF THE MATTING AND CARE SHALL BE TAKEN SO AS NOT TO FORM DEPRESSIONS OR BULGES IN THE SURFACE OF THE MATTING.

IF ANY STAPLES BECOME LOOSE OR RAISED, OR IF ANY MATTING BECOMES LOOSE, TORN OR UNDERMINED, SATISFACTORY REPAIRS SHALL BE MADE IMMEDIATELY WITHOUT ADDITIONAL COMPENSATION.

#### 7.7A.4. QUANTITY AND PAYMENT.

THE QUANTITY OF SOIL STABILIZATION MATTING FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL AREA PLACED ON THE SURFACE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SOIL STABILIZATION MATTING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM SOIL STABILIZATION MATTING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND PLACING THE MATTING AND STAPLES, REFERTILIZING AND RESEEDING AND THE PREPARATION OF AREA THEREFOR IF REQUIRED, AND ALL OTHER

NECESSARY MATERIALS, LABOR AND EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

SECTION 8

SODDING

THE ENTIRE TEXT OF THIS SECTION OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

7.8.1. DESCRIPTION.

SODDING SHALL INCLUDE FURNISHING AND PLACING 4 INCHES OF TOPSOIL, SOD AND WATERING UNTIL A FIRM ROOT MASS IS ESTABLISHED.

7.8.2. MATERIALS.

MATERIALS FOR SODDING SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE ARTICLES AS FOLLOWS:

FERTILIZER, 1-2-2 RATIO	ARTICLE 8.3.1
LIMESTONE, PULVERIZED	ARTICLE 8.3.3
PEGS	ARTICLE 8.3.5
SOD	ARTICLE 8.3.11
TOPSOIL	ARTICLE 8.3.12

7.8.3. METHODS OF CONSTRUCTION.

PLACEMENT OF 4 INCHES OF TOPSOIL SHALL BE SUBJECT TO ALL APPLICABLE PROVISIONS OF ARTICLE 7.5.3. AND 8.3.12.

IMMEDIATELY BEFORE PLACING THE SOD, A 1-2-2 RATIO FERTILIZER APPLIED AT A RATE NECESSARY TO YIELD 50 POUNDS OF NITROGEN PER ACRE, AND PULVERIZED LIMESTONE IF NECESSARY, SHALL BE INCORPORATED INTO THE TOPSOIL. THE SOD SHALL BE HARVESTED, AND WITHIN 36 HOURS, DELIVERED AND PLACED ON A 4 INCH THICK BED OF TOPSOIL.



SOD SHALL BE LAID WITH STAGGERED JOINTS AND PRESSED CLOSELY TOGETHER. THE ENDS OF SOD STRIPS SHALL BE MATCHED SO THAT THE ENDS AND SIDES ALWAYS LAY FLUSH WITH EACH OTHER. SOD SHALL BE PRESSED INTO THE UNDERLYING SOIL BY HAND TAMPING AND ROLLING. THEN THE SODDED AREAS SHALL BE THOROUGHLY WATERED.

WATERING SHALL BE PERFORMED AS NECESSARY UNTIL A FIRM ROOT MASS IS ESTABLISHED. EACH WATERING SHALL BE PERFORMED UNTIL WATER INFILTRATES THROUGH THE ROOT ZONE AND INTO THE TOPSOIL ZONE. THE METHOD OF WATERING SHALL BE PERFORMED IN A MANNER THAT PROVIDES EQUAL DISTRIBUTION AND COVERAGE TO ALL AREAS SODDED.

SOD SHALL NOT BE TRANSPLANTED WHEN THE MOISTURE CONTENT (EXCESSIVELY WET OR DRY) MAY ADVERSELY AFFECT ITS SURVIVAL. WHENEVER THE UPPER HALF INCH OF TOPSOIL IS DRY. THE SOIL SHALL BE LIGHTLY MOISTENED IMMEDIATELY PRIOR TO LAYING THE SOD.

THE FINISHED SURFACE SHALL BE SMOOTH, EVEN AND TO THE PRESCRIBED LINES AND CONTOUR. SOD THAT IS OTHER THAN ALIVE AND HEALTHY BEFORE ACCEPTANCE SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. AT THE TIME OF ACCEPTANCE ALL SOD SHALL BE ALIVE, HEALTHY AND ESTABLISHED.

ON SLOPES, PLACING SOD SHALL START AT THE BOTTOM. AT THE TOP OF SLOPES THE UPPER EDGE OF THE SOD STRIPS SHALL BE TURNED INTO THE SOIL AND COVERED WITH TOPSOIL. ON SLOPES STEEPER THAN 3:1., SOD SHALL BE HELD IN PLACE WITH PEGS DRIVEN FLUSH WITH THE SURFACE OF THE SOD. THE PEGS SHALL BE NOT MORE THAN 1 FOOT APART. NO LESS THAN 2 PEGS SHALL BE USED FOR EACH STRIP OF SOD.

INSPECTION. WITH EACH DELIVERY OF SOD THE CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER, A DELIVERY SLIP WITH THE FOLLOWING CERTIFICATIONS:

CERTIFIED SOD. THE DATE OF HARVEST OF THE SOD; A NJDA SOD CERTIFICATION.

CULTIVATED SOD. A LIST OF THE SPECIES OF GRASSES IN THE SOD; THE FIELD LOCATION; AND DATE OF HARVEST.

PASTURE SOD CONSISTING OF SOD LIFTED FROM PASTURES OR MEADOWS WHICH MAY HAVE BEEN GROWN PRIMARILY FOR FORAGE IS NOT ACCEPTABLE.

AFTER A FIRM ROOT MASS IS ESTABLISHED AND BEFORE THE TURF REACHES THE HEIGHT OF 3 INCHES, THE AREA SHALL BE MOWED WITH A MACHINE THAT WILL NOT PRODUCE RUTS OR CONTRIBUTE TO SOIL COMPACTION OR IN ANY WAY DAMAGE THE SOD. MOWING SHALL BE

PERFORMED AS NEEDED UNTIL THE TIME OF ACCEPTANCE OF THE SOD, AS DIRECTED BY THE ENGINEER.

7.8.4. QUANTITY AND PAYMENT.

THE QUANTITY OF SODDING FOR WHICH PAYMENT WILL BE MADE WILL BE THE ACTUAL AREA SODDED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SODDING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE PRICE PER SQUARE YARD BID FOR THE ITEM SODDING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND PLACING TOPSOIL, SOD, PULVERIZED LIMESTONE IF NEEDED, FERTILIZER, PEGGING, ALL MATERIALS, LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE QUANTITY OF WATERING SOD FOR WHICH PAYMENT WILL BE MADE WILL BE THE QUANTITY OF WATER ACTUALLY APPLIED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER. WATER WILL BE MEASURED BY MEANS OF APPROVED METERS, BY ACTUAL MEASUREMENT IN TANKS, TANK TRUCK OR OTHER APPROVED CONTAINER OR BY COMPUTATIONS BASED ON WEIGHT.

PAYMENT FOR WATERING SOD WILL BE MADE FOR THE QUANTITY AS DETERMINED ABOVE MEASURED IN ONE THOUSAND GALLON UNITS AT THE PRICE PER UNIT BID FOR THE ITEM WATERING THE PROPOSAL WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND APPLYING THE WATER AND THE COST OF FURNISHING ALL EQUIPMENT, LABOR AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

THE QUANTITY OF MOWING FOR WHICH PAYMENT WILL BE MADE WILL BE THE NUMBER OF SQUARE YARDS ACTUALLY MOWED IN AREAS DESIGNATED ON THE PLANS OR BY THE ENGINEER.

PAYMENT FOR MOWING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED MEASURED IN SQUARE YARDS, AT THE PRICE BID PER SQUARE YARD FOR THE ITEM MOWING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE MOWING, REMOVING EXCESS CUTTINGS WHEN NECESSARY, AND FURNISHING ALL LABOR AND EQUIPMENT, AND ALL ELSE NECESSARY AND INCIDENTAL THERETO.

SECTION 9

MULCHING

THE ENTIRE TEXT OF THIS SECTION OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

7.9.1. DESCRIPTION.

STRAW MULCHING SHALL INCLUDE THE FURNISHING, SPREADING AND BINDING OF STRAW ON AREAS PRESCRIBED THEREFOR.

WOOD CHIP MULCHING SHALL INCLUDE THE FURNISHING AND SPREADING OF WOOD CHIPS ON AREAS PRESCRIBED THEREFOR.

7.9.2. MATERIALS.

MATERIALS FOR MULCHING SHALL CONFORM TO THE REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 8.3.6.

7.9.3. METHODS OF CONSTRUCTION.

SEEDED AREAS SHALL BE MULCHED WITH STRAW UNIFORMLY SPREAD IN A LAYER 1 TO 1 1/2 INCHES THICK, LOOSE MEASUREMENT, AND SHALL BE BOUND IN PLACE WITH ONE OF THE FOLLOWING: CUT-BACK ASPHALT GRADE RC-250, SYNTHETIC PLASTIC EMULSION, FIBER MULCH, OR VEGETABLE BASED GEL.

CUT-BACK ASPHALT, GRADE RC-250, SHALL BE APPLIED AT A TEMPERATURE OF 185 DEGREES F. PLUS OR MINUS 15 DEGREES F. THIS BINDER SHALL BE APPLIED AT THE RATE OF 0.04 GALLONS PER SQUARE YARD ON SLOPES LESS THAN 8 FEET HIGH AND 0.075 GALLONS PER SQUARE YARD OVER THE ENTIRE AREA OF SLOPES 8 FEET OR MORE IN HEIGHT.

SYNTHETIC PLASTIC EMULSION SHALL BE APPLIED BY HYDRAULIC PRESSURE EQUIPMENT AT A RATE OF 30 GALLONS (264 LBS) OF UNDILUTED MATERIAL PER ACRE. THE SYNTHETIC BINDER SHALL BE DILUTED IN WATER AT A RATIO OF 1:15 (450 GALLONS). APPLICATION OF SYNTHETIC BINDER SHALL NOT BE MADE DURING RAIN OR IN FREEZING WEATHER.

FIBER MULCH SHALL BE MIXED WITH WATER AND APPLIED BY HYDRAULIC EQUIPMENT. THE FIBER MULCH SHALL BE USED AS RECOMMENDED

BY THE MANUFACTURER, EXCEPT THAT NO LESS THAN 400 POUNDS OF THE DRY PRODUCT SHALL BE USED PER ACRE. THE MIXTURE SHALL BE EVENLY DISTRIBUTED OVER THE STRAW MULCH.

VEGETABLE BASED GELS SHALL BE MIXED WITH WATER AND APPLIED BY HYDRAULIC PRESSURE EQUIPMENT. THE VEGETABLE GELS SHALL BE USED AS RECOMMENDED BY THE MANUFACTURER, EXCEPT THAT NO LESS THAN 40 POUNDS OF THE DRY MATERIAL SHALL BE THOROUGHLY MIXED IN 750 GALLONS OF WATER. APPLICATION OF VEGETABLE GELS SHALL NOT BE MADE DURING RAIN OR IN FREEZING WEATHER.

SEEDED AREAS SHALL BE MULCHED WITHIN 7 DAYS.

IN AREAS WHERE PEDESTRIAN TRAFFIC WOULD MAKE THE USE OF ASPHALTIC BINDER OBJECTIONABLE, THE ENGINEER MAY DIRECT THE SPREADING OF A SMALL QUANTITY OF TOPSOIL ON THE MULCH AS AN ALTERNATIVE METHOD OF SECURING THE MULCH IN PLACE.

IF, PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, ANY MULCH IS DISPLACED BEFORE THE GRASS HAS MADE A GROWTH OF 1 1/2 INCHES, THE AREA SHALL BE REFERTILIZED, RESEEDED AND REMULCHED IN ACCORDANCE WITH THE SPECIFICATIONS, WITHOUT ADDITIONAL COMPENSATION.

THE SPECIFIED PLANT PITS OF INDIVIDUAL TREES OR SHRUBS AND THE ENTIRE BEDS WHERE MATERIAL IS PLANTED IN BEDS SHALL BE MULCHED WITH WOOD CHIPS SPREAD IN A 3 TO 4 INCH LAYER. ALL PLANTS SHALL BE MULCHED WITHIN 10 DAYS AFTER PLANTING.

IF, PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, ANY WOOD CHIPS ARE DISPLACED, THE PLANTING AREA SHALL BE REMULCHED IN ACCORDANCE WITH THE SPECIFICATIONS, WITHOUT ADDITIONAL COMPENSATION.

ALL MULCH SHALL BE LEFT IN PLACE AND ALLOWED TO DISINTEGRATE EXCEPT THAT EXCESSIVE AMOUNTS OF STRAW SHALL BE REMOVED WHEN DIRECTED BY THE ENGINEER.

#### 7.9.4. QUANTITY AND PAYMENT.

THE QUANTITY OF MULCHING FOR WHICH PAYMENT WILL BE MADE WILL BE THE AREAS ACTUALLY MULCHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR STRAW MULCHING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM STRAW MULCHING, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING, SPREADING AND SECURING THE MULCH WITH BINDER AS PRESCRIBED, REMOVING AND DISPOSING OF EXCESS MULCH, ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERE TO.

PAYMENT FOR WOOD CHIP MULCHING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED, MEASURED IN SQUARE YARDS, AT THE UNIT PRICE BID IN THE PROPOSAL FOR THE ITEM WOOD CHIP MULCHING, WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND SPREADING THE MULCH, ALL LABOR, EQUIPMENT AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERE TO.

SECTION 10

PLANTING

7.10.2. MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED AS FOLLOWS:

GROUND LIMESTONE IS CHANGED TO READ PULVERIZED LIMESTONE.

ALL REFERENCE TO MANURE IS DELETED.

7.10.3. METHODS OF CONSTRUCTION.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE CONTRACTOR SHALL STAKE OUT THE FIELD LOCATIONS OF MATERIAL TO BE PLANTED. ALL COSTS OF STAKING OUT PLANTS SHALL BE INCLUDED IN THE COST OF THE PLANT MATERIAL ITEMS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

TIME OF PLANTING.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

BROADLEAF AND CONIFEROUS EVERGREEN TREES, SHRUBS, VINES AND GROUND COVER SHALL BE PLANTED BETWEEN MARCH 15 AND MAY 15, AND BETWEEN AUGUST 15 AND DECEMBER 1. DECIDUOUS TREES, SHRUBS, VINES AND PERENNIALS SHALL BE PLANTED BETWEEN MARCH 15 AND MAY 15, AND

BETWEEN OCTOBER 15 AND DECEMBER 1. THESE PLANTING DATES WILL NOT BE CHANGED EXCEPT IN CONSIDERATION OF EXTREME WEATHER AND SOIL CONDITIONS AS DIRECTED BY THE ENGINEER.

THE SECOND AND THIRD PARAGRAPHS ARE DELETED.

PLANTING BEDS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

UNLESS OTHERWISE DIRECTED, ALL VEGETATION WITHIN PLANTING BEDS SHALL BE REMOVED AND THE SURFACE RAKED AND NEATLY EDGED. ALL BEDS SHALL BE TREATED WITH A PRE-EMERGENCE HERBICIDE SUCH AS TRIFURALIN, OR ITS EQUIVALENT. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND PROCEDURES OF N.J.A.C. 7:30-1 ET SEQ FOR THE APPLICATION OF HERBICIDES. THE HERBICIDE SHALL BE APPLIED PRIOR TO THE PLACING OF ANY MULCHING MATERIALS. PLANTING BEDS IN AREAS FLATTER THAN 4:1 SHALL, IN ADDITION TO THE ABOVE, BE CULTIVATED TO A DEPTH OF 6 INCHES.

PLANTING PITS.

THE FOLLOWING IS ADDED:

PLANTING PITS SHALL NOT REMAIN OPEN MORE THAN 10 DAYS IN ADVANCE OF PLANTING ON SLOPES STEEPER THAN FOUR UNITS HORIZONTAL TO ONE VERTICAL.

IN MEDIANS OR OTHER AREAS CLOSE TO THE ROADWAY WHERE A HAZARDOUS CONDITION MAY RESULT, AS DETERMINED BY THE ENGINEER, PLANTING PITS SHALL NOT REMAIN OPEN BEYOND THE CLOSE OF THE WORKING DAY UNLESS ADEQUATE PRECAUTIONS ARE TAKEN TO WARN OF THEIR PRESENCE AND PROTECT THE PUBLIC FROM INJURY.

BACKFILLING.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

BACKFILL FOR PLANTING SHALL BE TOPSOIL CONFORMING TO ARTICLE 8.3.12.

FERTILIZING PLANTS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

ALL PLANTS SHALL BE FERTILIZED WITH A SLOW RELEASE 16-8-16 ANALYSIS FERTILIZER CONTAINED IN A POLYETHYLENE PERFORATED BAG WITH MICROPOROUS HOLES. THE BAG SHALL CONTAIN 4 OUNCES MINIMUM OF WATER SOLUBLE FERTILIZER TO BE EFFECTIVE FOR EIGHT YEARS.

THE PACKETS SHALL BE PLACED EQUIDISTANTLY WITHIN THE PLANTING PIT ADJACENT TO THE BALL OR ROOT MASS BUT NOT IN DIRECT CONTACT WITH ROOTS. PLACEMENT DEPTH SHALL BE 6 TO 8 INCHES. PACKETS SHALL NOT BE CUT, RIPPED OR DAMAGED.

IF IT BECOMES NECESSARY TO REMOVE AND REPLACE DEAD OR UNHEALTHY PLANTS, DAMAGED OR BROKEN PACKETS SHALL BE REPLACED WITH NEW PACKETS.

THE APPLICATION RATES SHALL BE AS FOLLOWS:

<u>TYPES OF PLANTS</u>	<u>NO. OF PACKETS</u>
SHADE AND STREET TREES	
OVER 4 INCH CALIPER	4
1 TO 4 INCH CALIPER	3
EVERGREEN AND SMALL FLOWERING TREES	
OVER 6 FEET HIGH	4
OVER 3 TO 6 FEET HIGH	3
OVER 15 TO 36 INCHES HIGH	2
UNDER 15 INCHES HIGH	1
SHRUBS	
OVER 3 FEET	3
OVER 2 TO 3 FEET	2
UNDER 2 FEET	1
VINES AND GROUND COVER	1

MULCHING PLANTS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

ALL PLANT MATERIAL SHALL BE MULCHED WITHIN 10 DAYS AFTER PLANTING IN ACCORDANCE WITH REQUIREMENTS SPECIFIED THEREFOR IN ARTICLE 7.9.3.

WRAPPING TREES.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

ALL DECIDUOUS TREES MORE THAN 2 INCHES IN CALIPER SHALL BE WRAPPED EXCEPT WHEN OTHERWISE DESIGNATED. BURLAP WRAPPING MATERIAL SHALL BE WOUND FROM THE GROUND LINE TO 6" ABOVE THE LOWEST MAIN BRANCHES. THE WRAPPING SHALL BE TIED AT THE BOTTOM AND AT THE TOP AND AT MAXIMUM 24" INTERVALS BETWEEN. THE TREES SHALL BE WRAPPED WITHIN 4 DAYS AFTER PLANTING, BUT NOT BEFORE THE CONDITION OF THE TRUNKS OF THE TREES HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.

### SUPPORTING TREES.

THE FIRST, SECOND AND THIRD PARAGRAPHS ARE CHANGED TO READ AS FOLLOWS:

ALL TREES 1 INCH OR MORE IN CALIPER OR MORE THAN 3 FEET HIGH SHALL BE STAKED OR GUYED IMMEDIATELY AFTER PLANTING, EXCEPT THAT MULTI-STEMMED, SHRUB-LIKE TREES WITHIN THIS CALIPER AND HEIGHT RANGE, NEED NOT BE STAKED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

THE FOLLOWING TREES SHALL BE STAKED WITH ONE POST PLACED, WHERE POSSIBLE, ON THE SIDE OF THE TREE AWAY FROM THE ROAD AND SET NOT LESS THAN 24 INCHES IN THE GROUND AND 9 INCHES FROM THE TREE TRUNK.

DECIDUOUS TREES, EXCEPT SALIX (WILLOW), 1 TO 1 1/2 INCH CALIPER, INCLUSIVE.  
CONE TYPE (PYRAMIDAL) TREES, 3 TO 5 FEET HIGH.  
COLUMNAR EVERGREEN TREES, 4 TO 7 FEET HIGH, INCLUSIVE.

THE FOLLOWING TREES SHALL BE STAKED WITH TWO POSTS PLACED ON OPPOSITE SIDES OF THE TREES AND SET NOT LESS THAN 24 INCHES IN THE GROUND. THE POSTS SHALL BE PLACED AT THE PERIMETER OF THE BALL.

DECIDUOUS TREES OVER 1 1/2 INCH TO 2 1/2 INCH CALIPER, INCLUSIVE.  
ALL SALIX (WILLOW) TREES, REGARDLESS OF HEIGHT OR CALIPER, BARE ROOT, OR BALLED AND BURLAPPED.  
COLUMNAR EVERGREEN TREES, OVER 7 FEET TO 9 FEET HIGH, INCLUSIVE.

IN THE LAST PARAGRAPH ON PAGE 339 OF THE STANDARD SPECIFICATIONS, BUSHY EVERGREEN TREES IS CHANGED TO READ CONE TYPE (PYRAMIDAL) TREES.

### MAINTENANCE.

THE LAST SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

AT THE TIME OF ACCEPTANCE OF THE PLANTING, ALL PLANTING AREAS SHALL BE FREE OF WEEDS AND A MINIMUM OF 95% OF THE PLANTS, AS DETERMINED BY THE BUREAU OF LANDSCAPE ARCHITECTURE, SHALL BE ALIVE AND HEALTHY. THE UNACCEPTABLE PLANT MATERIAL (5% OR LESS) WILL BE REPLANTED DURING THE NEXT PLANTING SEASON. UPON ACCEPTANCE OF THE REPLANTED MATERIAL (5% OR LESS) THE GUARANTEE DATE FOR THE REPLANTED MATERIAL (5% OR LESS) WILL BE RETROACTIVE TO THE INITIAL GUARANTEE DATE.



THE SECOND PARAGRAPH IS DELETED.

THE FOLLOWING IS ADDED:

ANY PLANT MATERIAL THAT DIES DURING THE ONE YEAR PERIOD AFTER THE FINAL ACCEPTANCE OF THE COMPLETED LANDSCAPE PLANTING, SHALL BE REMOVED BY THE CONTRACTOR, AS REQUIRED, UPON DIRECTION OF THE ENGINEER.

REPLACEMENT PLANTING.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH:

THE REQUIREMENTS FOR MAKING REPLACEMENTS SHALL BE THE SAME AS REQUIRED FOR INITIAL PLANTING EXCEPT FOR THE FOLLOWING:

EXISTING BACKFILL MAY BE REUSED.

WOOD CHIPS, IF SALVAGABLE MAY BE REUSED. ANY ADDITIONAL WOOD CHIPS REQUIRED OR REUSED WOOD CHIPS SHALL CONFORM TO ARTICLE 8.3.6. EXISTING WOOD CHIPS SHALL BE COMPLETELY REMOVED BEFORE ANY EARTH IS EXCAVATED FOR REPLACEMENT PLANTING. TOPSOIL SHALL NOT BE PERMITTED FOR REUSE IF IT CONTAINS WOOD CHIP MULCH.

AT THE TIME PLANT REPLACEMENTS ARE MADE THE CONTRACTOR SHALL ALSO REMOVE ALL WEEDS AND DEBRIS FROM ALL PLANTING AREAS.

REPLACEMENT PLANTS SHALL BE STAKED AND GUYED, AND DECIDUOUS TREES SHALL BE WRAPPED, ALL IN ACCORDANCE WITH THIS SECTION OF THE SPECIFICATIONS.

AT THE TIME OF THE ACCEPTANCE OF THE REPLACEMENTS, ALL PLANTING AREAS THROUGHOUT THE PROJECT SHALL BE FREE OF WEEDS AND DEBRIS AND IN A CONDITION AS SPECIFIED FOR FINAL ACCEPTANCE.

SEPARATE PAYMENT WILL NOT BE MADE FOR FURNISHING AND INSTALLING REPLACEMENT PLANTS OR ASSOCIATED ITEMS, THE COST OF WHICH SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.

THE SECOND PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

REPLACEMENT OF EVERGREEN MATERIALS SHALL BE MADE FROM MARCH 15 TO MAY 1 AND FROM AUGUST 15 TO NOVEMBER 15. REPLACEMENT OF DECIDUOUS MATERIAL SHALL BE MADE FROM MARCH 15 TO MAY 1 AND FROM OCTOBER 15 TO NOVEMBER 15.

THE THIRD PARAGRAPH IS DELETED.

THE FIRST, SECOND AND THIRD PARAGRAPHS ON PAGE 341  
ARE DELETED.

THE FOLLOWING IS ADDED:

TWO WEEKS PRIOR TO THE CONCLUSION OF THE ONE YEAR PLANT  
REPLACEMENT PERIOD ALL TREE WRAPPING, STAKES, GUYS AND GUY WIRES  
SHALL BE REMOVED BY THE CONTRACTOR, EXCEPT FOR REPLACEMENT PLANTS.

CONTAINERIZED PLANT MATERIAL.

THIS HEADING AND TEXT IS ADDED:

IMMEDIATELY PRIOR TO PLANTING CONTAINERIZED PLANT  
MATERIAL, THE ROOT MASS SHALL RECEIVE THREE VERTICAL CUTS,  
SPACED EQUIDISTANTLY ABOUT THE PERIMETER. EACH CUT, ABOUT 1/2  
INCH DEEP SHALL BEGIN AT THE TOP OF THE ROOT MASS AND CONTINUE  
TO THE BOTTOM.

PROTECTING TREES.

THIS HEADING AND TEXT IS ADDED:

TREE PROTECTORS SHALL BE INSTALLED TO A HEIGHT OF 2 FEET  
ABOVE THE GROUND SURFACE ON ALL NEWLY PLANTED MALUS AND CRATAEGUS  
SPECIES TO PREVENT DAMAGE FROM BARK CONSUMING RODENTS.

WATERING.

THIS HEADING AND TEXT IS ADDED:

THE INITIAL WATERING AT THE TIME OF PLANTING SHALL BE  
AT THE RATE OF 15 GALLONS PER SQUARE YARD OF PLANT PIT AREA.  
ALL PLANTS SHALL BE WATERED ONCE A WEEK THEREAFTER UNTIL THE  
PROJECT IS FINALIZED UNLESS OTHERWISE DIRECTED BY THE ENGINEER  
BECAUSE OF WEATHER OR SOIL CONDITIONS. EACH WATERING, AFTER THE  
FIRST, SHALL PROVIDE 5 GALLONS OF WATER PER SQUARE YARD IN THE  
PLANT PIT BASIN.

MORE THAN ONE WATERING PER WEEK MAY BE REQUIRED BY THE  
ENGINEER DURING PLANTING OPERATIONS OR DURING PERIODS OF EXCESSIVE  
DRYNESS.

DURING PERIODS OF EXCESSIVE DRYNESS, WATERING SHALL BE  
PERFORMED ON THE SAME DAY THE PLANT MATERIAL IS INSTALLED AND  
AGAIN FIVE DAYS LATER PROVIDED THE WOOD CHIP MULCHING HAS NOT BEEN  
COMPLETED. IF THE PLANTS REMAIN UNMULCHED TO THE TENTH DAY, AS  
PERMITTED BY THE SPECIFICATIONS, AN ADDITIONAL WATERING SHALL BE  
APPLIED.

ONCE A PLANT HAS BEEN MULCHED, NORMAL SPECIFIED WATERING PRACTICES SHALL APPLY.

IF THE BASIN CONSTRUCTED AROUND EACH PLANT, AS SPECIFIED ELSEWHERE HEREIN, DOES NOT FUNCTION PROPERLY IT SHALL BE REPAIRED BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. ALL DAMAGE TO GRASS, PLANTS, STAKES, GUYS, MULCH OR WATERING BASINS RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION.

7.10.4. QUANTITY AND PAYMENT.

THE FIRST FULL PARAGRAPH ON PAGE 342 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE QUANTITY OF TOPSOIL FOR WHICH PAYMENT WILL BE MADE WILL BE THE TOTAL VOLUME OF TOPSOIL AS DETERMINED BY COMPUTING THE VOLUME OF THE SPECIFIED PLANTING PITS REDUCED BY THE VOLUME OF THE SPECIFIED PLANT BALLS OR PLANT CONTAINERS.

NO REDUCTION IN QUANTITY WILL BE MADE FOR ROOT SYSTEMS OF BARE ROOT PLANT MATERIAL. NO REDUCTION WILL BE MADE FOR THE USE OF MATERIAL SUITABLE FOR TOPSOIL OBTAINED FROM THE PROJECT.

THE SECOND AND SIXTH FULL PARAGRAPHS ON PAGE 342 OF THE STANDARD SPECIFICATIONS ARE DELETED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SEPARATE PAYMENT WILL NOT BE MADE FOR THE REMOVAL OF DEAD PLANT MATERIAL, TREE WRAPPING, STAKES, GUYS AND GUY WIRES. THE COST OF THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE INDIVIDUAL PLANT MATERIAL ITEMS.

SEPARATE PAYMENT WILL NOT BE MADE FOR THE APPLICATION OF A PRE-EMERGENCE HERBICIDE TO PLANTING BEDS, THE COST OF WHICH SHALL BE INCLUDED IN THE BID PRICE FOR THE INDIVIDUAL PLANT MATERIAL ITEMS.

SEPARATE PAYMENT WILL NOT BE MADE FOR FURNISHING AND INSTALLING FERTILIZING PACKETS. ALL COSTS OF FERTILIZING PLANTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PLANT MATERIAL ITEMS.

SEPARATE PAYMENT WILL NOT BE MADE FOR TREE PROTECTORS, THE COST OF WHICH SHALL BE INCLUDED IN THE PRICE BID FOR EACH INDIVIDUAL PLANT MATERIAL ITEM DESIGNATED TO RECEIVE THIS TREATMENT.

THE QUANTITY OF WATERING FOR WHICH PAYMENT WILL BE MADE WILL BE THE QUANTITY OF WATER ACTUALLY PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER. WATER WILL BE MEASURED BY MEANS OF APPROVED METERS, BY ACTUAL MEASUREMENT IN TANKS, TANKTRUCK OR OTHER APPROVED CONTAINER OR BY COMPUTATIONS BASED ON WEIGHT.

PAYMENT FOR WATERING WILL BE MADE FOR THE QUANTITY AS DETERMINED ABOVE MEASURED IN ONE THOUSAND GALLON UNITS AT THE PRICE PER UNIT BID FOR THE ITEM WATERING IN THE PROPOSAL WHICH PRICE SHALL INCLUDE THE COST OF FURNISHING AND APPLYING THE WATER AND THE COST OF FURNISHING ALL EQUIPMENT, LABOR AND ALL OTHER WORK IN CONNECTION THEREWITH AND INCIDENTAL THERETO.

SECTION 11

MOWING

7.11.3. METHODS OF CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

GRASS SHALL BE MOWED WHEN IT ATTAINS THE HEIGHT OF 6 INCHES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE GRASS AND OTHER VOLUNTEER GROWTH SHALL BE MOWED TO A HEIGHT OF 3 TO 4 INCHES. THE CONTRACTOR WILL BE REQUIRED TO EMPLOY HAND MOWING METHODS AND LIGHT EQUIPMENT IN AREAS WHERE THE USE OF HEAVY EQUIPMENT MIGHT BE INJURIOUS TO THE TURF OR SOIL.

WHERE, IN THE OPINION OF THE ENGINEER, THE CUTTINGS RESULTING FROM THE MOWING OPERATION ARE EXCESSIVE, THE CUTTINGS SHALL BE REMOVED.

7.11.4. QUANTITY AND PAYMENT.

THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

PAYMENT FOR MOWING WILL BE MADE FOR THE QUANTITY AS ABOVE DETERMINED MEASURED IN ACRES, AT THE PRICE PER ACRE BID FOR THE ITEM MOWING IN THE PROPOSAL, WHICH PRICE SHALL INCLUDE MOWING, REMOVING EXCESS CUTTINGS, AND FURNISHING ALL LABOR AND EQUIPMENT, AND ALL ELSE NECESSARY THEREFOR AND INCIDENTAL THERETO.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS.

NO PAYMENT WILL BE MADE FOR THE MOWING OF AREAS OF TURF DETERMINED TO BE UNACCEPTABLE, OR OF WEED AREAS THAT HAVE BEEN MOWED IN ORDER TO ESTABLISH ACCEPTABLE TURF.

Superseded

DIVISION 8

MATERIALS

SECTION 1

BITUMINOUS MATERIALS

8.1.2. ASPHALT CEMENT FOR PAVING.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ASPHALT CEMENT SHALL BE PREPARED BY THE DISTILLATION OF ASPHALTIC PETROLEUM, SHALL BE HOMOGENEOUS, FREE FROM WATER, TAR AND TAR PRODUCTS AND SHALL NOT FOAM WHEN HEATED TO A TEMPERATURE OF 347 DEG. F. IT SHALL CONFORM TO THE VISCOSITY GRADE OR GRADES PRESCRIBED FOR SPECIFIC USES. THE VARIOUS VISCOSITY GRADES SHALL CONFORM TO THE REQUIREMENTS GIVEN IN TABLE 8A, BELOW.

TABLE 8A.- ASPHALT CEMENT - VISCOSITY GRADED AT 140 DEG. F (60 DEG. C)

TESTS	VISCOSITY GRADE							
	AC-5		AC-10		AC-20		AC-40	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
VISCOSITY, 140 DEG. F (60 DEG. C), POISES	400	600	800	1200	1600	2400	3200	4800
VISCOSITY, 275 DEG. F (135 DEG. C), CS	200	---	250	---	300	---	400	---
PENETRATION, 77 DEG. F (25 DEG. C), 100G, 5 SEC.	120	---	70	---	60	---	30	---
FLASH POINT, CDC, (F)	350	---	425	---	450	---	450	---
SOLUBILITY IN TRICHLOROETHYLENE, %	99.0	---	99.0	---	99.0	---	99.0	---
TESTS ON RESIDUE—THIN FILM OVEN TEST								
LOSS ON HEATING %	---	1.00	---	0.50	---	0.50	---	0.50
DUCTILITY, 60 DEG. F (15.5 DEG. C)	100	---	40	---	10	---	---	---
VISCOSITY RATIO, AFTER TFOT/BEFORE TFOT	---	4	---	4	---	4	---	4

THE PROPERTIES OF ASPHALT CEMENT AS SPECIFIED IN TABLE 8A ABOVE SHALL BE DETERMINED IN ACCORDANCE WITH THE FOLLOWING METHODS OF TESTS:

<u>PROPERTY</u>	<u>METHOD OF TEST</u>
VISCOSITY, 140 DEG. F (60 DEG. C), POISES	A.A.S.H.O. DESIGNATION T202
VISCOSITY, 275 DEG. F (135 DEG. C), CS	A.A.S.H.O. DESIGNATION T201
PENETRATION, 77 DEG. F (25 DEG. C), 100G, 5 SEC.	A.A.S.H.O. DESIGNATION T49
FLASH POINT, COC, (F)	A.A.S.H.O. DESIGNATION T48
SOLUBILITY IN TRICHLOROETHYLENE, %	A.A.S.H.O. DESIGNATION T44
TESTS ON RESIDUE—THIN FILM OVEN TEST	
LOSS ON HEATING %	A.A.S.H.O. DESIGNATION T179
DUCTILITY, 60 DEG. F (15.5 DEG. C) 5CM PER MIN. CM	A.A.S.H.O. DESIGNATION T51
VISCOSITY RATIO, 140 DEG. F AFTER TFO TEST	A.A.S.H.O. DESIGNATION T202
VISCOSITY RATIO, 140 DEG. F BEFORE TFO TEST	A.A.S.H.O. DESIGNATION T202

8.1.5. ASPHALT, EMULSIFIED.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

EMULSIFIED ASPHALT, TYPES RS-1, RS-2, MS-1, MS-2H, SS-1 AND SS-1H SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 140.

8.1.7. ASPHALTIC OIL.

THIS ARTICLE, INCLUDING TABLES 13, 14, AND 15, OF THE STANDARD SPECIFICATIONS IS DELETED AND THE FOLLOWING SUBSTITUTED THEREFOR:

8.1.7. ASPHALT, CUTBACK.

CUTBACK ASPHALT, RAPID CURING TYPES RC-70, RC-250, RC-800, RC-3000 SHALL CONFORM TO THE CURRENT A.A.S.H.O. DESIGNATION M 81.

CUTBACK ASPHALT, RAPID CURING TYPE RC-T SHALL CONFORM TO THE CURRENT A.A.S.H.T.O. DESIGNATION M 81 AND SHALL HAVE THE FOLLOWING PROPERTIES:

	MINIMUM	MAXIMUM
WATER, PERCENT BY WEIGHT		0
VISCOSITY, FUROL AT 104 DEG. F., SEC.		40.0
DISTILLATION		
DISTILLATE, PERCENT BY VOLUME OF TOTAL DISTILLATE TO 680 DEG. F.		
TO 320 DEG. F.	35.0	
TO 374 DEG. F.	55.0	
TO 437 DEG. F.	75.0	
TO 500 DEG. F.	85.0	
TO 600 DEG. F.	90.0	
ASPHALT RESIDUE FROM DISTILLATION TO 680 DEG. F., PERCENT BY VOLUME, BY DIFFERENCE	100.0	
TESTS ON RESIDUE FROM DISTILLATION		
PENETRATION AT 77 DEG. F., 100 GRS., 5 SEC.	80.0	140.0
DUCTILITY AT 77 DEG. F., CMS.	100.0	
TOTAL BITUMEN, SOLUBILITY IN CARBON DISULPHIDE, PERCENT BY WEIGHT	99.5	

CUTBACK ASPHALT, MEDIUM CURING TYPES MC-30, MC-70, MC-250, MC-800, MC-3000 SHALL CONFORM TO THE CURRENT A.A.S.H.O. DESIGNATION M 82.

8.1.9. JOINT FILLER, PREFORMED.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

8.1.10. JOINT SEALER AND FILLERS, LIQUID.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

JOINT SEALER, HOT-POURED RUBBER-ASPALT.

THE FIFTH PARAGRAPH ON PAGE 353 IS CHANGED TO READ AS FOLLOWS:

BOND. THE SEALER, WHEN TESTED AT -20 DEGREES F., SHALL NOT DEVELOP AT ANY TIME DURING THE TEST PROCEDURE A CRACK, SEPARA-



TION OR OTHER OPENING WHICH AT ANY POINT IS MORE THAN 1/4 INCH DEEP IN THE SEALER OR BETWEEN THE SEALER AND THE MORTAR BLOCK.

THE FOLLOWING IS ADDED AFTER THE SIXTH PARAGRAPH ON PAGE 353:

DUCTILITY. THE DUCTILITY SHALL NOT BE LESS THAN 50 CM AT 77 DEG. F. WHEN TESTED AT THE RATE OF 5 CM PER MINUTE.

JOINT SEALER, COLD POURED.

THIS HEADING IS CHANGED TO READ AS FOLLOWS:

JOINT SEALER, COLD-APPLIED.

JOINT FILLERS, GRADE BM.

THE SECOND SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

FOR GRADE BM-1, THE ASPHALT CEMENT USED SHALL BE VISCOSITY GRADE 10 AND FOR GRADE BM-2, VISCOSITY GRADE 20.

TABLE 18. USES OF BITUMINOUS MATERIALS.

PAGE 358 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS SHOWN ON FORM DC-71 ON THE FOLLOWING PAGE:

TABLE 18. - USES OF BITUMINOUS MATERIALS

TYPE OF CONSTRUCTION	CUTBACK ASPHALT		TAR		EMULSIFIED	
	GRADE		GRADE		ASPHALT	CUTBACK
	GRADE		GRADE		GRADE	GRADE
<b>SURFACE TREATMENT - NEW MACADAM</b>						
Prime Coat	MC-30		RT-1 or 2			IE-MC-0 or 1
Seal Coat	RC-800		RT-7,8,9,10, 11 or 12	RS-2		IE-RC-3 or 4
<b>GRAVEL</b>						
Prime Coat	MC-30		RT-1			IE-MC-0 or 1
Seal Coat (a)	RC-800		RT-7,8,9,10, 11 or 12	RS-2		IE-RC-2,3, or 4
Seal Coat (b)	MC-250					IE-MC-1,2 or 3
<b>SURFACE RETREATMENT: AGGREGATE SIZE - GRITS</b>						
	RC-250		RT-7,8,9,10,11 or 12	RS-1		IE-RC-2,3 or 4
3/8 inch	RC-800		RT-7,8,9,10,11 or 12	RS-2		IE-RC-3 or 4
1/2 inch	RC-800		RT-8,9,10,11 or 12	RS-2		IE-RC-3 or 4
<b>FINE AGGREGATE</b>						
	MC-70					IE-MC-2 or 3 IE-RC-2, 3 or 4
<b>BOILER SLAG</b>						
			RT-7 or 8			IE-RC-2, 3 or 4
<b>MIXED - IN- PLACE:</b>						
<b>COARSE AGGREGATE</b>						
3/4 inch or 1 inch	RC-250 or 800			MS-1		IE-RC-2,3 or 4
<b>SOIL AGGREGATE</b>						
DESIGNATION 1-5 (Road Gravel)	MC-250			SS-1 or SS-2		IE-MC-2 or 3
<b>PATCHING - COLD MIX:</b>						
<b>1/4 inch to 1 inch Size Aggregate</b>						
	RC-250 or 800		RTCB-5 or 6	MS-1		IE-RC-2,3 or 4
<b>SOIL AGGREGATE</b>						
DESIGNATION 1-5 (Road Gravel)	MC-250 or 800		RT-5 or 6	SS-1		IE-MC-2, 3 or 4
<b>SAND GRAVEL</b>						
	MC-250 or 800		RT-5 or 6	SS-1		IE-MC-2,3 or 4
<b>FINE AGGREGATE</b>						
	MC-250 or 800		RT-5 or 6	SS-1		IE-MC-2,3 or 4

ALTERNATIVE TYPES OF BITUMINOUS MATERIALS SHOWN IN THE ABOVE TABLE MAY BE USED EXCEPT AS OTHERWISE PRESCRIBED. WHERE TWO OR MORE GRADES OF A GIVEN MATERIAL ARE INDICATED, THE HIGHER-NUMBERED GRADE OR GRADES SHALL BE USED IN WARM WEATHER, AS DIRECTED OR APPROVED BY THE ENGINEER.

(a) for use with coarse aggregate cover.

(b) for use with fine aggregate cover.

DIVISION 8

PAGE NO. 335

SECTION 3  
LANDSCAPING MATERIALS

8.3.1. FERTILIZER.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

FERTILIZER FOR ESTABLISHING TURF SHALL HAVE A COMMERCIAL DESIGNATION OF 10-20-10 OR ANY 1-2-1 RATIO FERTILIZER CONTAINING A MINIMUM 5 PERCENT NITROGEN, 10 PERCENT AVAILABLE PHOSPHORIC ACID (P2O5), AND 5 PERCENT SOLUBLE POTASH (K2O).

IF THE FERTILIZER IS TO BE APPLIED WITH A MECHANICAL SPREADER IN THE DRY FORM, A MINIMUM OF 75 PERCENT SHALL PASS A NO. 8 SIEVE AND A MINIMUM OF 75 PERCENT SHALL BE RETAINED ON A NO. 16 SIEVE, AND THE MAXIMUM FREE MOISTURE CONTENT SHALL BE 2 PERCENT.

FERTILIZER FOR ESTABLISHING SOD SHALL BE ANY 1-2-2 RATIO FERTILIZER CONTAINING A MINIMUM OF 5 PERCENT NITROGEN, 10 PERCENT AVAILABLE PHOSPHORIC ACID (P2O5), AND 10 PERCENT SOLUBLE POTASH (K2O).

ALL FERTILIZERS SHALL BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR APPLICATION WITH APPROVED EQUIPMENT.

EACH DELIVERY OF FERTILIZER SHALL BE ACCOMPANIED BY A DELIVERY SLIP SHOWING THE WEIGHT AND A CERTIFIED CHEMICAL ANALYSIS OF THE COMPOSITION OF THE FERTILIZER WHICH SHALL BE FURNISHED TO THE ENGINEER AT THE TIME OF DELIVERY.

FERTILIZER FOR TREES, SHRUBS AND VINES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

ANALYSIS 16-8-16

TOTAL NITROGEN 16% - 9% AMMONICAL NITROGEN  
7% NITRATE NITROGEN

AVAILABLE PHOSPHORIC ACID P2O5 - 8% FROM AMMONIUM  
PHOSPHATE

SOLUBLE POTASH - 16% FROM POTASSIUM CHLORIDE

POTENTIAL ACIDITY - 42.5% CALCIUM CARBONATE EQUIVALENT  
PER TON

EACH DELIVERY OF FERTILIZER PACKETS SHALL BE ACCOMPANIED BY A DELIVERY SLIP AND A CERTIFICATION INCLUDING:

CHEMICAL ANALYSIS; PACKET WEIGHT; EFFECTIVE PACKET LIFE.

8.3.3. LIMESTONE, GROUND.

THIS ARTICLE, INCLUDING THE HEADING, OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

8.3.3. LIMESTONE, PULVERIZED.

PULVERIZED LIMESTONE SHALL BE COMPOSED OF NOT LESS THAN 85 PERCENT CALCIUM AND MAGNESIUM CARBONATES EQUIVALENT TO NOT LESS THAN 40 PERCENT CALCIUM AND MAGNESIUM OXIDES.

EACH DELIVERY OF PULVERIZED LIMESTONE SHALL BE ACCOMPANIED BY A DELIVERY SLIP INDICATING ITS WEIGHT AND A CERTIFIED ANALYSIS OF ITS CHEMICAL COMPOSITION AND GRADATION, INCLUDING CALCIUM AND MAGNESIUM OXIDE EQUIVALENTS, WHICH SHALL BE FURNISHED TO THE ENGINEER AT THE TIME OF DELIVERY.

8.3.5. MISCELLANEOUS LANDSCAPE MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

CEDAR POSTS.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

CEDAR POSTS SHALL BE OF WHITE CEDAR AND SHALL HAVE A DIAMETER OF NOT LESS THAN 2 INCHES NOR MORE THAN 3 INCHES AT THE THINNER END. NEW WOODEN POSTS, 2 INCHES BY 2 INCHES, STAINED DARK BROWN, OF SOLID REASONABLY KNOT-FREE LUMBER, MAY BE APPROVED BY THE ENGINEER AS AN ALTERNATE FOR WHITE CEDAR POSTS. THE LENGTH OF EITHER POST SHALL BE 1/2 THE HEIGHT OF THE PLANT TO BE SUPPORTED, PLUS A MINIMUM OF 24 INCHES FOR SETTING IN THE GROUND UP TO A MAXIMUM OVERALL LENGTH OF 8 FEET.

GUY WIRE.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

GUY WIRE SHALL BE OF 14-GAUGE STEEL WIRE.

HERBICIDES.

ALL REFERENCES TO 2-4-5, T ARE DELETED.

THE FOLLOWING IS ADDED:

HERBICIDES FOR SELECTIVE THINNING SHALL BE 2-4-D OR 2-4-D AND MCPP MIXED IN OIL AND APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

RUBBER HOSE.

THE HEADING AND TEXT IS CHANGED TO READ AS FOLLOWS:

HOSE.

HOSE SHALL BE CORDED 3/4 INCH RUBBER OR PLASTIC HOSE.

SLOPE BOARDS.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

SLOPE BOARDS SHALL BE 1 INCH BY 6 INCH BOARDS, NOMINAL SIZE LUMBER, OF SOUND WOOD WITH NO DEFECT WHICH CAN IMPAIR THEIR USEFULNESS.

SLOPE BOARD STAKES SHALL BE 2 INCH BY 4 INCH, NOMINAL SIZE LUMBER, WITH A MINIMUM LENGTH OF 24 INCHES, OF SOUND UNSPLIT WOOD WITH NO DEFECTS THAT MAY IMPAIR THEIR USEFULNESS, THE UPPER 6 INCHES OF THE STAKE SHALL BE FULL WIDTH TO PROVIDE THE MAXIMUM NAILING SURFACE.

WOOD GUY STAKES.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

WOOD GUY STAKES, SHALL BE NEW, SOUND WOOD, 2 INCH BY 4 INCH, NOMINAL SIZE LUMBER, OF A MINIMUM LENGTH OF 24 INCHES OF A VARIETY APPROVED BY THE ENGINEER. THE STAKES SHALL BE POINTED AND NOTCHED 4 INCHES FROM THE OTHER END FOR FASTENING THE WIRE GUYS.

WRAPPING MATERIAL.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

WRAPPING MATERIAL FOR TREES SHALL BE NATURAL-COLORED 8 OUNCE BURLAP STRIPS, 6 INCHES WIDE.

SOIL STABILIZATION MATTING.

THIS HEADING AND TEXT IS ADDED:

SOIL STABILIZATION MATTING MAY BE EITHER JUTE OR EXCELSIOR MAT CONFORMING TO THE REQUIREMENTS SPECIFIED BELOW:

JUTE MAT SHALL BE CLOTH OF A UNIFORM PLAIN WEAVE OF UN-DYED AND UNBLEACHED SINGLE JUTE YARN, 48 INCHES IN WIDTH PLUS OR MINUS 1 INCH AND WEIGHING AN AVERAGE OF 1.2 POUNDS PER LINEAR YARD OF CLOTH WITH A TOLERANCE OF PLUS OR MINUS 5 PERCENT, WITH APPROXIMATELY 78 WARP ENDS PER WIDTH OF CLOTH AND 41 WEFT ENDS PER LINEAR YARD OF CLOTH. THE YARN SHALL BE OF A LOOSELY TWISTED CONSTRUCTION HAVING AN AVERAGE TWIST OF NOT LESS THAN 1.6 TURNS PER INCH AND SHALL NOT VARY IN THICKNESS BY MORE THAN ONE HALF ITS NORMAL DIAMETER.

EXCELSIOR MAT SHALL BE WOOD EXCELSIOR, 48 INCHES IN WIDTH PLUS OR MINUS 1 INCH AND WEIGHING 0.8 POUNDS PER SQUARE YARD PLUS OR MINUS 10 PERCENT. THE EXCELSIOR MATERIAL SHALL BE COVERED WITH A NETTING TO FACILITATE HANDLING AND TO INCREASE STRENGTH.

STAPLES.

THIS HEADING AND TEXT IS ADDED:

STAPLES FOR ANCHORING SOIL STABILIZATION MATTING SHALL BE MADE OF 12 INCH LENGTHS OF NO. 8 PLAIN IRON WIRE.

TREE PROTECTORS.

THIS HEADING AND TEXT IS ADDED:

TREE PROTECTORS MAY BE EITHER PLASTIC OR WIRE MESH CONFORMING TO THE REQUIREMENTS SPECIFIED BELOW:

PLASTIC, WRAP AROUND THE TRUNK TYPE, DARK BROWN, DARK GREY OR DARK GREEN IN COLOR.

WIRE MESH, 1/4 INCH X 1/4 INCH MESH, FORMING A 6 INCH DIAMETER CYLINDER AROUND THE TRUNK OF THE TREE WITH THE ABUTTING EDGES FASTENED TOGETHER WITH WIRE.

8.3.6. MULCH.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

STRAW.

STRAW SHALL BE THE THRESHED, UNROTTED STALKS OF RYE, BARLEY OR WHEAT, RELATIVELY FREE FROM SEEDS, NOXIOUS WEEDS AND OTHER FOREIGN MATERIAL.

WOOD CHIPS.

WOOD CHIPS SHALL BE PRODUCED BY A WOOD CHIPPING MACHINE; THEY SHALL BE HARD CHIPS AND SHALL NOT CONTAIN LEAVES, TWIGS, BRANCHES, WOOD SHAVINGS, DIRT, STONES, OR OTHER FOREIGN MATERIAL OR DEBRIS. WOOD CHIPS SHALL NOT EXCEED 3 INCHES IN ANY DIMENSION.

SELECTED WOOD CHIPS PRODUCED FROM CLEARING OPERATIONS THAT ARE REASONABLY IN CONFORMANCE WITH THE ABOVE, WILL BE ACCEPTABLE.

SAMPLES OF WOOD CHIPS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE DELIVERY TO THE PROJECT.

INSPECTION OF EACH SHIPMENT OF WOOD CHIPS WILL ALSO BE MADE UPON DELIVERY TO THE PROJECT.

EACH SHIPMENT OF WOOD CHIPS SHALL BE ACCOMPANIED BY A DELIVERY SLIP WHICH SHALL BE FURNISHED TO THE ENGINEER AT THE TIME OF DELIVERY.

CUT-BACK ASPHALT.

CUT-BACK ASPHALT, GRADE RC-250, FOR MULCH BINDER SHALL CONFORM TO THE REQUIREMENT SPECIFIED THEREFOR IN ARTICLE 8.1.7.

SYNTHETIC PLASTIC EMULSION.

HIGH POLYMER SYNTHETIC PLASTIC EMULSIONS FOR MULCH BINDER SHALL BE MISCIBLE WITH ALL NORMALLY AVAILABLE WATER WHEN DILUTED TO ANY PROPORTION. AFTER ADEQUATE DRYING, THE SYNTHETIC PLASTIC BINDER SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER BUT SHALL REMAIN TACKY UNTIL THE GRASS SEED HAS GERMINATED. THE PLASTIC BINDER SHALL BE PHYSIOLOGICALLY HARMLESS AND SHALL NOT HAVE ANY PHYTOTOXIC OR CROP DAMAGING PROPERTIES.

FIBER MULCH.

FIBER MULCH MATERIAL SHALL BE MADE FROM WOOD OR PLANT FIBERS CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS.

VEGETABLE BASED GELS.

VEGETABLE BASED GEL MATERIALS WHICH CAN BE CLASSIFIED AS NATURALLY OCCURRING POWDER BASED HYDROPHYLIC ADDITIVES FORMULATED TO PROVIDE GELS, WHICH WHEN APPLIED UNDER SATISFACTORY CURING CONDITIONS, WILL FORM MEMBRANED NETWORKS OF WATER INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND SHALL NOT HAVE PHYTOTOXIC OR CROP DAMAGING PROPERTIES.

8.3.9. PLANT MATERIALS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

GENERAL.

THE SECOND SENTENCE OF THIS PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

ALL PLANT MATERIAL SHALL CONFORM TO THE MARCH 18, 1959 AMERICAN STANDARD FOR NURSERY STOCK, SPONSORED BY THE A.A.N.

INSPECTION.

THE FOLLOWING IS ADDED:

THE ENGINEER MAY ALSO MAKE LIMITED RANDOM INSPECTIONS OF PLANT MATERIAL BY BREAKING OPEN CERTAIN EARTH BALLS TO EXAMINE THE ROOT SYSTEM. THE DEPARTMENT WILL REIMBURSE THE CONTRACTOR IN THE AMOUNT OF ONE HALF THE ORIGINAL UNIT PRICE BID FOR THE ITEM IN THE PROPOSAL FOR PLANTS RENDERED UNACCEPTABLE BY THIS METHOD OF INSPECTION, PROVIDED THE PLANT, THUS EXAMINED, WAS FOUND TO HAVE BEEN ACCEPTABLE BEFORE INSPECTION.

BALL SIZES, COLLECTED.

ALL TREES, SUCH AS OR SIMILAR TO CHRISTMAS TREES, GROWN IN PLANTATIONS OR RE-FORESTATION PLANTATIONS OR TREES THAT HAVE BEEN GROWN WITHOUT THE BENEFIT OF ROOT PRUNING, SHALL BE CONSIDERED COLLECTED MATERIAL AND SHALL BE BALLED ACCORDINGLY.

8.3.10. SEED MIXTURES.

TABLE 26 ON PAGE 370 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:



TABLE 26A-2. - TYPE A-2 SEED MIXTURE

KIND OF SEED	CULTIVAR	PER CENT OF TOTAL WEIGHT OF MIXTURE
SPREADING FESCUE	FORTRESS	33 1/3
CHEWINGS OR HARD FESCUE	BANNER	33 1/3
KENTUCKY BLUEGRASS	KENBLUE	33 1/3

ALL GRASS SEED IN THE ABOVE MIXTURE SHALL BE CERTIFIED SEED.

THE DEPARTMENT HAS ROYALTY FREE LICENSE TO USE THE PROPRIETARY SEED MIXTURES FORTRESS AND BANNER. THE CONTRACTOR SHALL NOTIFY SEED PRODUCERS THAT SEED PURCHASED WILL BE USED ON A DEPARTMENT PROJECT AND THE SEED SO PURCHASED WILL NOT BE SUBJECT TO ROYALTIES.

TABLE 26B.-TYPE B SEED MIXTURE.

KIND OF SEED	MINIMUM PURITY, PER CENT	MINIMUM GERMINATION, PER CENT	PER CENT OF TOTAL WEIGHT OF MIXTURE
REOTOP	92	85	10
RED FESCUES (CREEPING OR CHEWINGS)	95	80	40
BLACKWELLS SWITCHGRASS	95	85	10
REED CANARY GRASS	96	80	10
WEeping LOVE GRASS	95	85	10
PERENNIAL RYEGRASS	98	85	5
KENTUCKY 31	95	80	15

TABLE 26D.-TYPE D SEED MIXTURE.

KIND OF SEED	MINIMUM PURITY, PER CENT	MINIMUM GERMINATION, PER CENT	PER CENT OF TOTAL WEIGHT OF MIXTURE
KENTUCKY BLUEGRASS	85	75	50
RED FESCUES (CREEPING OR CHEWINGS)	95	85	35
REOTOP	92	85	5
PERENNIAL RYEGRASS	95	90	10

TABLE 26E.--TYPE E SEED MIXTURE.

KIND OF SEED	MINIMUM PURITY, PER CENT	MINIMUM GERMINATION, PER CENT	POUNDS PER 110 POUNDS OF MIXTURE
TYPE A SEED MIXTURE (AS PER TABLE 25)			100
CROWN VETCH	95	68	10

TABLE 26F.--TYPE F SEED.

KIND OF SEED	MINIMUM PURITY PER CENT	MINIMUM GERMINATION, PER CENT
PERENNIAL RYEGRASS	95	90

CROWN VETCH SEED.

THE SECOND AND THIRD PARAGRAPHS UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

CROWN VETCH SEED SHALL NOT BE ADDED TO GRASS SEED MIXTURE USED FOR FERTILIZING AND SEEDING, TYPE A, A-2, B OR D.

CROWN VETCH SEED SHALL BE INOCULATED WITH FRESH INOCULANT IMMEDIATELY PRIOR TO SOWING.

CROWN VETCH SEED SHALL BE DELIVERED TO THE PROJECT IN SEPARATE CONTAINERS AND SHALL NOT BE INCORPORATED WITH THE SEED MIXTURE UNTIL THE TIME OF SOWING. THE INOCULANT SHALL BE DELIVERED TO THE PROJECT IN DATED CONTAINERS OF SUCH SIZE THAT, ONCE OPENED, THE ENTIRE CONTENTS WILL BE USED THE SAME DAY. THE INOCULANT SHALL BE STORED IN A COOL, DRY PLACE UNTIL USED. THE QUANTITY OF INOCULANT USED SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE INOCULANT OR THE PRODUCER OF THE SEED EXCEPT THAT, WHEN SEEDING HYDRAULICALLY, THE INOCULANT SHALL BE ADDED AT A RATE THREE TIMES THE ABOVE RECOMMENDATION FOR INOCULATING CROWN VETCH SEED WHEN SOWN DRY. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE TIME AND PLACE THE INOCULATING IS TO BE DONE SUFFICIENTLY IN ADVANCE TO ALLOW AN INSPECTOR TO BE PRESENT DURING THE INOCULATING PROCESS. CROWN VETCH SEED WHICH HAS NOT BEEN INOCULATED IN THE PRESENCE OF AN INSPECTOR WILL NOT BE ACCEPTED.

8.3.11. SOD.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

SOD SHALL BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 5/8 INCH, PLUS OR MINUS 1/4 INCH AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH, AND THATCH. INDIVIDUAL STRIPS OF SOD SHALL BE OF A UNIFORM WIDTH AND LENGTH. BROKEN STRIPS AND TORN OR UNEVEN STRIPS MAY BE REJECTED. STANDARD SIZE STRIPS OF SOD SHALL BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY FROM THE UPPER 10 PERCENT OF THE STRIP.

SOD TYPE 1

CERTIFIED SOD SHALL BE OF THE FOLLOWING VARIETIES:

KENTUCKY BLUEGRASS BLEND  
KENTUCKY BLUEGRASS - FESCUE BLEND

CERTIFIED SOD IS A SUPERIOR SOD GROWN FROM A CERTIFIED GRASS SEED OR STOLONS. THE SOD IS INSPECTED AND CERTIFIED BY THE N.J. DEPARTMENT OF AGRICULTURE TO ASSURE GENETIC IDENTITY, PURITY, AND FREEDOM FROM NOXIOUS WEEDS AND EXCESSIVE AMOUNTS OF WEEDY PLANTS.

SOD TYPE 2

CULTIVATED SOD SHALL BE OF THE FOLLOWING VARIETIES:

KENTUCKY BLUEGRASS BLEND  
KENTUCKY BLUEGRASS - FESCUE BLEND, OR OTHER GRASSES APPROVED BY THE ENGINEER.

CULTIVATED SOD IS GROWN FROM HIGH QUALITY SEED OF KNOWN ORIGIN, FIELD GROWN UNDER SIMILAR CONDITIONS AS CERTIFIED SOD, AND FREE OF NOXIOUS WEEDS. CULTIVATED SOD IS NOT GROWN UNDER THE INSPECTION OF THE N.J. DEPARTMENT OF AGRICULTURE, AND MAY NOT ATTAIN PURITY AND WEED FREE QUALITY STANDARDS OF CERTIFIED SOD.

8.3.12. TOPSOIL.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TOPSOIL OBTAINED FROM STRIPPING WITHIN THE LIMITS OF THE PROJECT OR FURNISHED FROM OUTSIDE THE PROJECT SHALL CONTAIN NO STONES, LUMPS, ROOTS OR SIMILAR OBJECTS LARGER THAN 2 INCHES IN ANY DIMENSION, AND SHALL HAVE A PH VALUE OF NOT LESS THAN 5.8. WHEN THE PH VALUE OF THE TOPSOIL IS LESS THAN 5.8 IT SHALL BE INCREASED BY APPLYING GROUND LIMESTONE AT A RATE NECESSARY TO ATTAIN A PH VALUE OF 6.5.

MATERIAL STRIPPED FROM THE FOLLOWING SOURCES SHALL NOT BE CONSIDERED SUITABLE FOR USE AS TOPSOIL.

SOILS HAVING A PH LESS THAN 4.1.

CHEMICALLY CONTAMINATED SOILS.

AREAS FROM WHICH THE ORIGINAL SURFACE HAS BEEN STRIPPED AND/OR COVERED OVER SUCH AS BORROW PITS, OPEN MINES, DEMOLITION SITES, DUMPS AND SANITARY LANDFILLS.

UNACCEPTABLE WET EXCAVATION.

THE FOLLOWING IS ADDED AFTER THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE ORGANIC CONTENT OF ALL TOPSOIL USED FOR PLANTING SHALL CONFORM TO THE REQUIREMENTS SPECIFIED ABOVE.

THE FOLLOWING IS ADDED AFTER THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE LOWER LIMITS OF SILT AND CLAY SHALL BE FLEXIBLE TO THE EXTENT THAT SOILS WITH A MINIMUM COMBINED SILT AND CLAY CONTENT OF 20 PERCENT SHALL BE SATISFACTORY. HOWEVER, IF MORE THAN ONE-HALF OF THE SAND IS LARGER THAN 0.5 MM., THEN THE MINIMUM CLAY SHALL BE 15 PERCENT OR THE MINIMUM COMBINED SILT AND CLAY SHALL BE 25 PERCENT.

SECTION 4

METALS

8.4.1. ALUMINUM ALLOYS.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CHAIN LINK FENCE, BRIDGE

<u>APPLICATION</u>	<u>A.S.T.M. DESIGNATION</u>	<u>A.S.T.M. ALLOY</u>
WIRE MESH FABRIC	B211	6061-T94
WIRE FABRIC TIES	B211	6061-T6
STRETCHER BAR BANDS	B221	6063-T6
STRETCHER BARS	B211	6061-T6
RAILING AND POST SLEEVE	B221	6061-T6
BASE PLATES	B209	6061-T6
POSTS AND RAILS	B221	6061-T6
STRETCHER BAR BAND FASTENERS	B209	2024-T4
END DAM PLATES	B209	6061-T6
MCULDING STRIP	B209	6061-T6
PANEL FRAMES	B209	6061-T6

CASTINGS SUCH AS FITTINGS, CAPS, ENDS, CONNECTORS AND OTHER CASTINGS SHALL BE EITHER ALUMINUM ALLOY PERMANENT MOLD CASTINGS (A356-T6) CONFORMING TO A.S.T.M. DESIGNATION B108, ALLOY SG708, CONDITION T6; OR TENZALOY ALLOY ZC818, CONDITION T5; OR ALUMINUM ALLOY SAND CASTING (356-T6) CONFORMING TO A.S.T.M. DESIGNATION B26, ALLOY SG70A, CONDITION T6; OR TENZALOY ALLOY ZC81A, CONDITION T5. ALLOY ZG-61A MAY BE USED AS AN ALTERNATE FOR ZC81A.

VALUES SHOWN IN PARENTHESES IN THE ABOVE PARAGRAPH ARE THE ESTABLISHED COMMERCIAL ALLOY DESIGNATION.

CARRIAGE BOLTS WITH ELASTIC STOP NUT SHALL BE ZINC COATED BY ELECTROPLATING AND SHALL BE TYPE RS CONFORMING TO A.S.T.M. DESIGNATION A164.

POST CASTINGS, PERMANENT MOLD.

TEST SPECIMENS. ALL TEST COUPONS SHALL BE REMOVED FROM POSTS BEFORE INSTALLATION.

METHOD OF TESTING. THE TENSILE PROPERTIES SHALL BE DETERMINED IN ACCORDANCE WITH A.S.T.M. METHOD E8.

HEAT TREATMENT. THE CASTINGS SHALL BE HEAT-TREATED IN SUCH A MANNER AS TO PRODUCE MATERIAL WITH THE UTMOST UNIFORMITY, WHICH WILL CONFORM TO THE PROPERTIES SPECIFIED HEREIN. HEAT TREATMENT SHALL BE PERFORMED ON THE WHOLE CASTING AND NEVER ON A PORTION ONLY.

WORKMANSHIP. THE CASTINGS SHALL BE OF UNIFORM QUALITY AND CONDITION, FREE FROM CRACKS, AND SHALL NOT CONTAIN ANY OTHER DEFECTS SUCH AS BLOWHOLES, POROUS PLACES, HARD SPOTS AND SHRINKAGE DEFECTS WHICH, DUE TO THEIR NATURE, DEGREE OR EXTENT, DETRIMENTALLY AFFECT THE SUITABILITY OF THE CASTINGS FOR THEIR INTENDED USE. BEFORE INSPECTION, THE CASTINGS SHALL BE SMOOTH AND WELL-CLEANED.

INSPECTION. WHEN CONVENIENT, INSPECTION SHALL BE MADE AT THE MANUFACTURER'S WORKS WHERE THE CASTINGS ARE MADE.

THE GENERAL REQUIREMENTS SPECIFIED UNDER WORKMANSHIP SHALL BE CHECKED BY VISUAL INSPECTION OF THE CASTINGS OR COMPARISON WITH OBSERVATIONAL STANDARDS WHERE SUCH STANDARDS ARE ESTABLISHED.

THE MANUFACTURER SHALL AFFORD THE INSPECTOR REPRESENTING THE ENGINEER ALL REASONABLE FACILITIES TO SATISFY HIM THAT THE MATERIAL IS BEING FURNISHED IN ACCORDANCE WITH THIS SPECIFICATION. ALL TESTS AND INSPECTION SHALL BE SO CONDUCTED AS NOT TO INTERFERE UNNECESSARILY WITH THE OPERATION OF THE WORKS.

REPORTS. CERTIFIED INSPECTION REPORTS, CERTIFYING COMPLIANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION, SHALL BE FURNISHED.

#### 8.4.2. BEARING AND EXPANSION PLATES.

##### ROLLED COPPER-ALLOY BEARING AND EXPANSION PLATES.

THE LAST SENTENCE UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ALLOY NO. 511 SHALL BE FURNISHED.

8.4.16. STEEL POSTS FOR BEAM GUARD RAIL.

---

THIS ARTICLE OF THE STANDARD SPECIFICATIONS, INCLUDING THE HEADING, IS CHANGED TO READ AS FOLLOWS:

8.4.16. STEEL POSTS FOR BEAM GUIDE RAIL.

---

STEEL POSTS FOR BEAM GUIDE RAIL SHALL BE FABRICATED OF STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 36 AND SHALL BE GALVANIZED CONFORMING TO THE REQUIREMENTS FOR CURRENT A.A.S.H.T.O. DESIGNATION M 111.

8.4.17. STEEL RAIL ELEMENT FOR BEAM GUARD RAIL.

---

THIS ARTICLE OF THE STANDARD SPECIFICATIONS, INCLUDING THE HEADING, IS CHANGED TO READ AS FOLLOWS:

8.4.17. STEEL RAIL ELEMENT FOR BEAM GUIDE RAIL.

---

THE RAIL ELEMENT FOR BEAM GUIDE RAIL SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 180 AND THE WEIGHT OF COATING SHALL CONFORM TO THE REQUIREMENTS PRESCRIBED IN TABLE 2 FOR TYPE 1.

8.4.18. STEEL, REINFORCEMENT, FOR PAVEMENT.

---

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

REINFORCEMENT STEEL FOR PAVEMENT SHALL BE EITHER DEFORMED STEEL BARS OR COLD DRAWN STEEL WIRE, BUT ONLY ONE OF THESE TYPES SHALL BE USED IN THE PROJECT UNLESS OTHERWISE APPROVED BY THE ENGINEER. HCT OR COLD TWISTED BARS SHALL NOT BE USED.

DEFORMED BAR MATS.

---

THE TEXT UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

DEFORMED BAR MATS SHALL BE ASSEMBLED BY BEING CLIPPED AND SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 184. THE DEFORMED BARS SHALL BE ROLLED FROM NEW BILLET STEEL MADE BY THE OPEN-HEARTH OR ELECTRIC-FURNACE PROCESS CONFORMING TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 31 OR A.S.T.M. DESIGNATION A 615, OR FROM AXLE STEEL CONFORMING TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 53 OR

A.S.T.M. DESIGNATION A 617. THE BARS SHALL BE SIZE NO. 3. ALL BARS SHALL HAVE THE TENSILE REQUIREMENT OF GRADE 40. THE NUMBER OF BARS AND SPACING SHALL BE AS SHOWN ON THE PLANS.

PLAIN BAR MATS.

THIS HEADING AND TEXT OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

8.4.19. STEEL, REINFORCEMENT, FOR STRUCTURES.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

REINFORCEMENT STEEL FOR STRUCTURES SHALL BE DEFORMED BARS UNLESS OTHERWISE SHOWN ON THE PLANS OR PRESCRIBED IN THE SUPPLEMENTARY SPECIFICATIONS. COLD OR HOT TWISTED BARS SHALL NOT BE USED. THE BARS SHALL BE ROLLED FROM NEW BILLET STEEL MADE BY OPEN-HEARTH OR ELECTRIC FURNACE PROCESS CONFORMING TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 31 OR A.S.T.M. DESIGNATION A615. ALL BARS SHALL HAVE THE TENSILE REQUIREMENTS OF GRADE 40 OR 60 AS SHOWN ON THE PLANS.

THE CONTRACTOR MAY USE GRADE 60 REINFORCEMENT IN LIEU OF THE GRADE 40 DESIGNATED ON PLANS. DETAILING DIMENSIONS FOR HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315-74)" FOR GRADE 60. PRODUCTION BENDING OF GRADE 60 BARS SHALL BE BY THE COLD METHOD, MOTIVE POWER MACHINE, IN THE SHOP ONLY.

FIELD BENDING OF GRADE 60 BARS WILL NOT BE PERMITTED EXCEPT TO MAKE MINOR ADJUSTMENTS. SUCH BENDING SHALL BE ACCOMPLISHED BY PREHEATING THE BAR TO 1100-1200F, AND THEN BENDING AS GENTLY AND IN AS GRADUAL AN ARC AS POSSIBLE. FOR BARS PARTIALLY EMBEDDED IN CONCRETE, HEATING MUST BE PERFORMED IN SUCH A MANNER THAT THERE IS NO DAMAGE TO THE CONCRETE. IF THE BEND AREA IS WITHIN 9 INCHES OF THE CONCRETE, PROTECTIVE INSULATION SHALL BE USED.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE BARS SHALL BE SAMPLED AND INSPECTED AT THE PLACE WHERE FABRICATED, AT A DEALER'S WAREHOUSE, OR AT THE PROJECT SITE AND SHALL NOT BE INCORPORATED INTO THE STRUCTURE UNTIL APPROVED.



THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

SPIRAL REINFORCEMENT SHALL BE COLD-DRAWN AND SHALL CONFORM TO A.A.S.H.T.O. DESIGNATION M 32 (A.S.T.M. DESIGNATION A82).

WELDED WIRE MESH CONFORMING TO A.S.T.M. DESIGNATION A 185 SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. 123 AFTER FABRICATION.

8.4.20. STEEL, REINFORCEMENT. POST-TENSIONING STRANDS,  
-----  
POST-TENSIONING TENDONS AND HIGH-TENSILE  
-----  
ALLOY BARS FOR PRESTRESSED CONCRETE CONSTRUCTION.  
-----  
POST-TENSIONING TENDONS.  
-----

THE FOURTH FULL PARAGRAPH UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE MINIMUM YIELD STRENGTH, MEASURED BY THE 1.0 PERCENT EXTENSION UNDER LOAD METHOD, SHALL BE NOT LESS THAN 80 PERCENT OF THE SPECIFIED MINIMUM ULTIMATE STRENGTH.

8.4.21. STEEL, REINFORCEMENT. PRETENSIONING STRANDS FOR  
-----  
PRESTRESSED CONCRETE CONSTRUCTION.  
-----

THE THIRD FULL PARAGRAPH ON PAGE 379 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE MINIMUM YIELD STRENGTH, MEASURED BY THE 1.0 PERCENT EXTENSION UNDER LOAD METHOD, SHALL BE NOT LESS THAN 85 PERCENT OF THE SPECIFIED MINIMUM ULTIMATE STRENGTH.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

IF THE CONTRACTOR USES HIGH STRENGTH STRANDS AS PERMITTED UNDER THE PROVISIONS OF ARTICLE 4.2.2 ELSEWHERE HEREIN, THE FOLLOWING SHALL APPLY:

HIGH STRENGTH, 7-WIRE, UNCOATED, STRESS-RELIEVED STRAND SHALL BE FABRICATED AND TESTED IN ACCORDANCE WITH THE

REQUIREMENTS OF A.S.T.M. DESIGNATION A416-59T WITH THE FOLLOWING EXCEPTIONS:

<u>STRAND DIAMETER</u>	<u>APPROX. AREA SQUARE INCHES</u>	<u>MINIMUM ULTIMATE STRENGTH, LBS.</u>
3/8"	0.0854	23,000

THE LOAD AT 1.0 PERCENT EXTENSION SHALL BE MEASURED FROM AN INITIAL LOAD OF 2300 POUNDS AND SHALL BE NOT LESS THAN 19,600 POUNDS. THE AVERAGE MODULUS OF ELASTICITY SHALL BE APPROXIMATELY 28,000,000 POUNDS PER SQUARE INCH.

<u>STRAND DIAMETER</u>	<u>APPROX. AREA SQUARE INCHES</u>	<u>MINIMUM ULTIMATE STRENGTH, LBS.</u>
7/16"	0.115	31,000

THE LOAD AT 1.0 PERCENT EXTENSION SHALL BE MEASURED FROM AN INITIAL LOAD OF 3100 POUNDS AND SHALL BE NOT LESS THAN 26,350 POUNDS. THE AVERAGE MODULUS OF ELASTICITY SHALL BE APPROXIMATELY 28,000,000 POUNDS PER SQUARE INCH.

<u>STRAND DIAMETER</u>	<u>APPROX. AREA SQUARE INCHES</u>	<u>MINIMUM ULTIMATE STRENGTH, LBS.</u>
1/2"	0.153	41,300

THE LOAD AT 1.0 PERCENT EXTENSION SHALL BE MEASURED FROM AN INITIAL LOAD OF 4130 POUNDS AND SHALL BE NOT LESS THAN 35,100 POUNDS. THE AVERAGE MODULUS OF ELASTICITY SHALL BE APPROXIMATELY 28,000,000 POUNDS PER SQUARE INCH.

8.4.23. STEEL STRUCTURAL CARBON.

THIS ARTICLE OF THE STANDARD SPECIFICATION, INCLUDING THE HEADING, IS CHANGED TO READ AS FOLLOWS:

8.4.23. STRUCTURAL STEEL.

STRUCTURAL STEEL SHALL CONFORM TO THE DESIGNATION SPECIFICATION PRESCRIBED ON PLANS.

(1) A.A.S.H.T.O. DESIGNATION M183-79I (A.S.T.M. A36-77A)

SUPPLEMENTARY REQUIREMENT S3 IS MANDATORY FOR MATERIAL DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

(2) A.A.S.H.T.O. DESIGNATION M188-79I (A.S.T.M. A441-79)

SUPPLEMENTARY REQUIREMENT S1 IS MANDATORY FOR MATERIALS DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESSES. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

(3) A.A.S.H.T.O. M161-77 DESIGNATION (A.S.T.M. A242-79)

SUPPLEMENTARY REQUIREMENT S1 IS MANDATORY FOR MATERIALS DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESSES. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

(4) A.A.S.H.T.O. DESIGNATION M222-79I (A.S.T.M. A588-79A)

SUPPLEMENTARY REQUIREMENT S1 IS MANDATORY FOR MATERIALS DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESSES. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

(5) A.A.S.H.T.O. DESIGNATION M223-79I (A.S.T.M. A572-79)

SUPPLEMENTARY REQUIREMENT S2 IS MANDATORY FOR MATERIALS DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESSES. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

(6) A.A.S.H.T.O. DESIGNATION M244-79I (A.S.T.M. A514-77)

SUPPLEMENTARY REQUIREMENT S3 IS MANDATORY FOR MATERIALS DESIGNATED (T) ON THE CONTRACT DRAWINGS AS MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESSES. ZONE 2 OF TABLE S1 SHALL GOVERN THE TOUGHNESS REQUIREMENTS.

8.4.24. STEEL, STRUCTURAL, FOR WELDED MEMBERS.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

8.4.25. STEEL, STRUCTURAL NICKEL.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

8.4.36. STEEL BARS, HOT GALVANIZED.

PLAIN STEEL BARS SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.O. DESIGNATION M 31 FOR STRUCTURAL OR INTERMEDIATE GRADE. AFTER CUTTING AND BENDING TO COMPLY WITH DIMENSIONS AND SHAPE SHOWN ON THE PLANS, THEY SHALL BE ZINC COATED BY THE HOT-DIP PROCESS TO COMPLY WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION A 153, TABLE I, CLASS B.

SECTION 5

NONMETALLIC MATERIALS

8.5.2. AIR-ENTRAINING ADMIXTURES FOR CONCRETE.

THE SECOND FULL PARAGRAPH ON PAGE 382 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

EITHER PRIOR TO OR AT ANY TIME DURING CONSTRUCTION, THE ENGINEER MAY REQUIRE THAT THE ADMIXTURE SELECTED BY THE CONTRACTOR BE FURTHER TESTED TO DETERMINE ITS EFFECT UPON THE STRENGTH OF THE CONCRETE. WHEN SO TESTED, 7-DAY COMPRESSIVE STRENGTH OF CONCRETE, MADE WITH THE CEMENT AND AGGREGATES IN THE PROPORTIONS TO BE USED IN THE WORK AND CONTAINING THE ADMIXTURE UNDER TEST IN AN AMOUNT SUFFICIENT TO PRODUCE FROM 4.5 TO 7.5 PERCENT ENTRAINED AIR IN THE PLASTIC CONCRETE, SHALL BE NOT LESS THAN 90 PERCENT OF THE STRENGTH OF CONCRETE MADE WITH THE SAME MATERIALS AND WITH THE SAME CEMENT CONTENT AND CONSISTENCY BUT WITHOUT THE ADMIXTURE.

8.5.3. AGGREGATES, GENERAL.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

AT BATCHING PLANTS, THE STOCKPILES SHALL BE OF SUFFICIENT SIZE TO PROVIDE FOR A MINIMUM OF ONE (1) DAY'S OPERATIONS AND SHALL BE WELL DRAINED. THE AGGREGATE STOCKPILES SHALL BE PLACED ON A FIRM, HARD SURFACE SUCH AS A COMPACTED AGGREGATE OR STABILIZED BASE, BITUMINOUS PAVEMENT OR PORTLAND CEMENT CONCRETE PAVEMENT.

STOCKPILES AT BATCHING PLANTS SHALL BE CONSTRUCTED BY PLACING THE AGGREGATES IN LAYERS NOT MORE THAN 3 FEET DEEP.

THE USE OF STEEL-TRACKED EQUIPMENT WILL NOT BE PERMITTED ON THE STOCKPILES. AGGREGATES FROM THE HAULWAY AREAS SHALL NOT BE USED WITHOUT THE CONSENT OF THE ENGINEER.

THE PILES SHALL BE LOCATED SO THAT THERE IS NO CONTAMINATION BY FOREIGN MATERIAL AND NO INTERMINGLING OF AGGREGATES FROM ADJACENT PILING. AGGREGATES FROM DIFFERENT SOURCES AND OF DIFFERENT GRADINGS SHALL NOT BE STOCKPILED NEAR EACH OTHER UNLESS A TIGHT BULKHEAD IS PLACED BETWEEN THE DIFFERENT MATERIALS. AGGREGATES OF DIFFERENT GRADINGS AND OF DIFFERENT SOURCES FOR USE IN SPECIFIED BLENDS SHALL BE BLENDED BY PROPORTION THROUGH THE WEIGH HOPPERS.

AGGREGATES FOUND SEGREGATED OR CONTAMINATED SHALL BE REJECTED FOR USE. IF THE ENGINEER APPROVES, A REJECTED STOCKPILE MAY BE RECONSTRUCTED FOR FURTHER EVALUATION. AGGREGATES SHALL BE REMOVED FROM STOCKPILES IN A MANNER SUCH AS TO PREVENT SEGREGATION.

AGGREGATES WHICH REQUIRE WASHING SHALL NOT BE USED SOONER THAN 24 HOURS AFTER WASHING NOR UNTIL THE SURPLUS WATER HAS DRAINED OUT AND THE MATERIAL FOR USE HAS A UNIFORM MOISTURE CONTENT.

8.5.4. AGGREGATE, COARSE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

EXCEPT AS OTHERWISE PROVIDED, COARSE AGGREGATE SIZES SPECIFIED IN THE VARIOUS DIVISIONS OR IN THE PLANS ARE CHANGED TO THE STANDARD SIZE NUMBERS AS FOLLOWS:

AGGREGATE  
SIZE

STANDARD  
SIZE NO.

2-1/2"

2

1-1/2"

3 OR 4

1"

56

3/4"

57

5/8"

67

1/2"

7

3/8"

8

1/4"

9

GRITS

9

SCREENINGS

10

TABLE 28 ON PAGE 383 OF THE STANDARD SPECIFICATIONS IS  
CHANGED TO READ AS SHOWN ON FORM DC-124 ON THE FOLLOWING PAGE:

Superseded

NEW JERSEY DEPARTMENT OF TRANSPORTATION  
 TABLE 28. STANDARD SIZES OF COARSE AGGREGATES

2-21-68

Size Number	Nominal Size Square Openings (1)	Amounts finer than each laboratory sieve (square openings), percentage by weight															
		4	3 1/2	3	2 1/2	2	1 1/2	1	3/4	1/2	3/8	No. 4	No. 8	No. 16	No. 50	No. 100	
1	3 1/2 to 1 1/2	100	90-100		25-60		0-15		0-5								
2	2 1/2 to 1 1/2			100	90-100	35-70	0-15		0-5								
24	2 1/2 to 3/4			100	90-100		25-60		0-10	0-5							
3	2 to 1				100	90-100	35-70	0-15		0-5							
357	2 to No. 4				100	95-100		35-70		10-30		0-5					
4	1 1/2 to 3/4					100	90-100	20-55	0-15		0-5						
467	1 1/2 to No. 4					100	95-100		35-70	10-30	0-5						
5	1 to 3/4						100	90-100	20-55	0-10	0-5						
56	1 to 3/8						100	90-100	40-75	15-35	0-15	0-5					
57	1 to No. 4						100	95-100		25-60		0-10	0-5				
6	3/4 to 3/8							100	90-100	20-55	0-15	0-5					
67	3/4 to No. 4							100	90-100	20-55	0-10	0-5					
68	3/4 to No. 8							100	90-100	30-65	5-25	0-10	0-5				
7	3/2 to No. 4								100	90-100	40-70	0-15	0-5				
78	3/2 to No. 8								100	90-100	40-75	5-25	0-10	0-5			
8	3/8 to No. 8									100	85-100	10-30	0-10	0-5			
89	3/8 to No. 16									100	90-100	20-55	5-30	0-10	0-5		
9	No. 4 to No. 16										100	85-100	10-40	0-10	0-5		
10	No. 4 to 0 (2)											100	85-100				10-30

(1) In inches, except where otherwise indicated. Numbered sieves are those of the United States Standard Sieve Series.  
 (2) Screenings.

8.5.5. BROKEN STONE.

THE ENTIRE TEXT OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BROKEN STONE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN ARTICLES 8.5.3 AND 8.5.4 AND TO THE FOLLOWING REQUIREMENTS:

THE BROKEN STONE SHALL BE UNIFORM IN TEXTURE AND QUALITY. IT SHALL CONTAIN NOT MORE THAN 5 PERCENT OF WEATHERED AND DECOMPOSED ROCK, NOT MORE THAN 5 PERCENT OF STONE OF TYPES OTHER THAN THE TYPE APPROVED FOR USE, NOT MORE THAN 7 PERCENT, BY WEIGHT, OF FLAT OR ELONGATED PIECES, AND NOT MORE THAN 1.7 PERCENT ABSORPTION IN COLD WATER FOR SIZE NOS. 1 THROUGH 8, AND NOT MORE THAN 1.8 PERCENT FOR SIZE NOS. 89, 9 AND 10, AS DETERMINED BY CURRENT A.A.S.H.T.O. DESIGNATION T 85. THE FLAT AND ELONGATED TEST SHALL BE APPLIED TO SIZED MATERIALS OF ONE INCH AGGREGATE SIZE OR LARGER (SEE TABLE 28). A FLAT PIECE SHALL BE ONE IN WHICH THE RATIO OF THE WIDTH TO THICKNESS OF ITS CIRCUMSCRIBING RECTANGULAR PRISM IS GREATER THAN 4 TO 1, AND AN ELONGATED PIECE SHALL BE ONE IN WHICH THE RATIO OF THE LENGTH TO THE WIDTH OF ITS CIRCUMSCRIBING RECTANGULAR PRISM IS GREATER THAN 4 TO 1. IT SHALL NOT LOSE MORE THAN 10 PERCENT WHEN TESTED IN ACCORDANCE WITH THE SODIUM SULFATE METHOD PRESCRIBED IN ARTICLE 9.1.19 ELSEWHERE HEREIN.

THE PERCENTAGE OF WEAR DETERMINED IN ACCORDANCE WITH THE LOS ANGELES TEST, A.A.S.H.T.O. DESIGNATION T 96 SHALL BE AS FOLLOWS FOR VARIOUS USES:

USE	PERCENT MAXIMUM LOSS
PORTLAND CEMENT CONCRETE - SURFACE PAVEMENTS AND BRIDGE DECKS	40
PORTLAND CEMENT CONCRETE - ALL OTHERS	50
BITUMINOUS CONCRETE WEARING COURSE	40
BITUMINOUS CONCRETE BINDER COURSE	45
STABILIZED BASES	45
COVER STONE	40
RAILROAD BALLAST	40
BITUMINOUS CONCRETE SHOULDERS	50

THOSE TYPES OF ROCK PERMISSIBLE FOR USE IN WHITE CONCRETE SHALL BE FREE FROM DIRT AND DISCOLORING MATTER AND SHALL BE APPROVED BY THE ENGINEER.

NOTE: \* ASTERISK DENOTES INTERAGENCY ENGINEERING COMMITTEE SPECIFICATION



BROKEN STONE SHALL CONSIST OF THE FOLLOWING TYPES OF ROCK UNLESS OTHERWISE SPECIFIED:

ARGILLITE.

ARGILLITE SHALL MEAN A HARD, UNIFORMLY DENSE SEDIMENTARY ROCK DEVOID OF FISSILE PARTINGS. IT SHALL BE UNIFORM IN QUALITY AND COLOR AND HAVE BLOCKY CLEAVAGE.

CARBONATE ROCK.

CARBONATE ROCK SHALL MEAN A ROCK CONSISTING PRIMARILY OF CALCIUM AND MAGNESIUM CARBONATES. IT SHALL CONTAIN NOT LESS THAN 75 PERCENT TOTAL OF CALCIUM AND MAGNESIUM CARBONATES, NOR MORE THAN 20 PERCENT OF ELEMENTS WHICH ARE INSOLUBLE IN HOT, DILUTE, HYDROCHLORIC ACID.

GNEISS.

GNEISS SHALL MEAN A METAMORPHIC ROCK CONSISTING PRINCIPALLY OF QUARTZ AND FELDSPARS. IT SHALL HAVE A DENSE STRUCTURE AND SHALL NOT BREAK IN THIN PIECES AT LINES OF STRATIFICATION AND SHALL HAVE A UNIFORM DISTRIBUTION OF MINERALS.

GRANITE.

GRANITE SHALL MEAN AN EQUIGRANULAR OR PORPHYRITIC IGNEOUS ROCK CONSISTING PRINCIPALLY OF QUARTZ AND FELDSPARS. IT SHALL BE OF MEDIUM OR FINE GRAIN TEXTURE.

QUARTZITE.

QUARTZITE SHALL MEAN A METAMORPHIC ROCK COMPOSED PRINCIPALLY OF QUARTZ. IT SHALL BE QUARRIED SO THAT ONLY THE NON-ARKOSIC, UNIFORMLY COMPACTED QUARTZITES ARE INCLUDED IN THE GRADED PRODUCTS, AND SHALL NOT BE SCHISTOSE IN STRUCTURE.

TRAP ROCK.

TRAP ROCK SHALL MEAN EITHER BASALT OR DIABASE. IT SHALL HAVE A UNIFORM DISTRIBUTION OF CONSTITUENT MINERALS.

8.5.6. GRAVEL, WASHED.

THE SECOND AND THIRD PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

WASHED GRAVEL SHALL BE EITHER CRUSHED OR UNCRUSHED. IT SHALL CONTAIN NOT MORE THAN 5 PERCENT OF SOFT FRAGMENTS AS DETERMINED BY CURRENT A.A.S.H.T.O. DESIGNATION T 189; NOT MORE THAN 10 PERCENT LOSS AS DETERMINED BY THE SODIUM SULFATE TEST METHOD SHOWN IN ARTICLE 9.1.19 ELSEWHERE HEREIN; A MAXIMUM COLD WATER ABSORPTION OF 1.7 PERCENT FOR SIZE NOS. 1 THROUGH 8, AND 1.8 PERCENT FOR SIZE NOS. 89, 9 AND 10, AS DETERMINED BY CURRENT A.A.S.H.T.O. DESIGNATION T 85; NOT MORE THAN 0.5 PERCENT BY WEIGHT OR VOLUME, WHICHEVER IS GREATER, OF CLAY LUMPS, ORGANICS, COAL, AND OTHER FOREIGN OR DELETERIOUS MATTER; AND SHALL CONTAIN NOT MORE THAN TWO THOUSAND PPM OF SEA SALT. WHEN THE SODIUM SULFATE AND SCRATCH HARDNESS TESTS TOTAL 10 PERCENT OR MORE, A LITHOLOGIC ANALYSIS SHALL BE MADE TO DETERMINE THE UNSOUND AND WEATHERED MATERIALS. A MAXIMUM OF 10 PERCENT WILL BE ALLOWED. BEFORE BEING LOADED FOR SHIPMENT, BUT NOT LESS THAN 24 HOURS PRIOR TO USE, IT SHALL HAVE BEEN WASHED SO THAT THE SURFACES ARE CLEAN AND FREE FROM COATINGS OF FOREIGN MATTER. CRUSHED GRAVEL SHALL BE ARTIFICIALLY CRUSHED WITH AT LEAST 60 PERCENT OF ALL FRAGMENTS CONTAINING AT LEAST ONE FACE RESULTING FROM FRACTURE. NICKED GRAVEL SHALL NOT BE CONSIDERED CRUSHED.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE PERCENTAGE OF WEAR DETERMINED IN ACCORDANCE WITH THE LOS ANGELES TEST, A.A.S.H.T.O. DESIGNATION T 96 SHALL BE AS SPECIFIED IN ARTICLE 8.5.5 FOR THE VARIOUS USES, EXCEPT THAT THE PERCENT MAXIMUM LOSS FOR QUARTZ GRAVEL SHALL BE 50 PERCENT. QUARTZ GRAVEL SHALL MEAN A MATERIAL COMPOSED OF NATURAL PEBBLES OF WHICH THE OVERWHELMING MAJORITY ARE COARSELY CRYSTALLINE QUARTZ. THE INDIVIDUAL CRYSTALS WITHIN EACH PEBBLE SHALL BE INTERGROWN INTO A TENACIOUS, NONPOROUS, INTERLOCKING TEXTURE WHICH FRACTURES AS A SINGLE UNIT.

8.5.7. SLAG, BLAST FURNACE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE SLAG ALSO SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

SULFUR, PERCENTAGE BY WEIGHT, MAXIMUM ..... 1

THERE SHALL NOT BE A LOSS OF MORE THAN 10 PERCENT BY WEIGHT AS DETERMINED IN ACCORDANCE WITH ARTICLE 9.1.19.

FOR BLAST FURNACE SLAG USED AS SUBBASE MATERIAL, THE GRADATION SHALL BE AS SPECIFIED FOR SUBBASE IN THE PLANS AND/OR IN ART. 2.9.2, AND THE FIVE REQUIREMENTS AS LISTED ON THE BOTTOM OF PAGE 385 OF THE STANDARD SPECIFICATIONS ARE REPLACED BY THE FOLLOWING:

PERCENTAGE OF WEAR, LOS ANGELES TEST, MAXIMUM.....50  
WEIGHT PER CUBIC FOOT, DRY LOOSE MEASUREMENT,  
MINIMUM.....60 LB.

8.5.8. SLAG, BOILER.

THE THIRD AND FOURTH PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

IT SHALL WEIGH NOT LESS THAN 85 POUNDS PER CUBIC FOOT, LOOSE MEASUREMENT, AS DETERMINED BY THE "METHOD OF TEST FOR UNIT WEIGHT OF COARSE AGGREGATE (DRY LOOSE MEASURE)" SPECIFIED IN ARTICLE 9.1.2.

IT SHALL HAVE A SPECIFIC GRAVITY OF NOT LESS THAN 2.80, 1.2 PERCENT MAXIMUM ABSORPTION IN COLD WATER, AND SHALL CONFORM TO THE GRADING REQUIREMENTS SPECIFIED FOR STANDARD SIZE NO. 10 IN TABLE 28.

8.5.9. AGGREGATE, FINE.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

FINE AGGREGATE FOR CONCRETE AND MORTAR SHALL BE WASHED AND PROCESSED MATERIAL COMPOSED OF QUARTZ OR OTHER HARD, DURABLE PARTICLES, WITH PREDOMINATELY ANGULAR SHAPE, NOT MORE THAN 2.0 PERCENT OF MICA AS DETERMINED IN ART. 9.1.20 ELSEWHERE HEREIN, AND SHALL BE TESTED BY AND CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.O. DESIGNATION T 21. IT SHALL BE REASONABLY FREE FROM SOFT PARTICLES, CLAY, LOAM, AND CEMENTED PARTICLES, AND CONTAIN NO MORE THAN TWO THOUSAND PARTS PER MILLION OF SEA SALT. A COLD WATER ABSORPTION AS DETERMINED BY CURRENT A.A.S.H.O. DESIGNATION T 84 SHALL BE LIMITED TO A MAXIMUM OF 2.0 PERCENT, AND A SODIUM SULFATE LOSS OF NOT MORE THAN 5.0 PERCENT WHEN TESTED

IN ACCORDANCE WITH THE METHOD SHOWN IN ART. 9.1.19, ELSEWHERE HEREIN.

FOR WHITE CONCRETE AND MORTAR, THE FINE AGGREGATE SHALL BE AS SPECIFIED IN ART. 8.5.11.

THE MEASUREMENT OF THE MORTAR-MAKING PROPERTIES OF FINE AGGREGATE SHALL BE DETERMINED BY THE METHOD OF TEST FOR MORTAR-MAKING PROPERTIES OF FINE AGGREGATES AS SPECIFIED IN ART. 9.1.3. THE GRADATION OF THE FINE AGGREGATE SHALL CONFORM TO TABLE 29.

8.5.10. AGGREGATE, FINE, FOR PORTLAND CEMENT CONCRETE AND MORTAR.

TABLE 29 ON PAGE 387 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

TABLE 29. - FINE AGGREGATE FOR CONCRETE AND MORTAR, GRADATION

SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
3/8"	100
NO. 4	95-100
NO. 8	80-100
NO. 16	50-85
NO. 30	25-60
NO. 50	10-30
NO. 100	2-10
NO. 200	0-3

NOTE: THE PERCENTAGE OF MATERIAL PASSING THE NO. 200 SIEVE SHALL BE DETERMINED BY WASHING IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION C-117.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

THE FINE AGGREGATE SHALL NOT HAVE MORE THAN 45 PERCENT RETAINED BETWEEN ANY TWO CONSECUTIVE SIEVES, AND ITS FINENESS MODULUS SHALL NOT BE LESS THAN 2.3 AND NOT MORE THAN 3.1.

8.5.11. AGGREGATE, FINE, FOR WHITE PORTLAND CEMENT CONCRETE AND MORTAR.

THE SECOND AND THIRD PARAGRAPHS OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

THE FINE AGGREGATE SHALL BE CLEAN, CRUSHED WHITE MARBLE OR CALCITE, OR A CLEAN, WASHED NATURAL SAND. IT SHALL CONTAIN NOT MORE THAN 0.75 PERCENT OF IRON AS  $Fe_2O_3$ . ITS MORTAR MAKING PROPERTIES SHALL BE 100 PERCENT OR MORE AS COMPARED TO STANDARD OTTAWA SAND.

WHEN THE COARSE AGGREGATE USED IN THE MANUFACTURE OF WHITE PORTLAND CEMENT CONCRETE HAS A REFLECTANCE VALUE OF 20 PERCENT OR MORE, THE FINE AGGREGATE SHALL HAVE A REFLECTANCE VALUE OF NOT LESS THAN 40 PERCENT AS DETERMINED BY ARTICLE 9.1.4, METHOD OF TEST TO DETERMINE REFLECTANCE VALUE OF FINE AGGREGATE FOR WHITE CONCRETE AND MORTAR.

WHEN THE COARSE AGGREGATE HAS A REFLECTANCE VALUE OF LESS THAN 20 PERCENT, THE FINE AGGREGATE SHALL HAVE A REFLECTANCE VALUE OF 50 PERCENT OR MORE.

TABLE 30 OF THIS ARTICLE OF STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS

TABLE 30. - FINE AGGREGATE FOR WHITE CONCRETE AND MORTAR, GRADATION

SIEVE	PERCENTAGE PASSING
3/8"	100
NO. 4	95 TO 100
NO. 8	80 TO 100
NO. 16	50 TO 85
NO. 30	25 TO 60
NO. 50	10 TO 30
NO. 100	2 TO 10
NO. 200	(NATURAL SAND) 0 TO 5
NO. 200	(CRUSHED SAND) 0 TO 7

THE FINE AGGREGATE SHALL NOT HAVE MORE THAN 45 PERCENT RETAINED BETWEEN ANY TWO CONSECUTIVE SIEVES, AND ITS FINENESS MODULUS SHALL BE NOT LESS THAN 2.0 OR MORE THAN 3.1

8.5.12. AGGREGATE, FINE, FOR BITUMINOUS CONCRETE AND SHEET ASPHALT.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

FINE AGGREGATE FOR HOT-MIXED BITUMINOUS CONCRETE SHALL BE STONE SAND OF ARGILLITE, GNEISS, GRANITE, QUARTZITE OR TRAP ROCK CONFORMING TO THE QUALITY REQUIREMENTS PRESCRIBED THEREFORE IN ARTICLE 8.5.5, HOWEVER NOT MORE THAN 15 PERCENT BASED ON OVEN DRY WEIGHT SHALL PASS THE NO. 200 SIEVE, OR NATURAL SAND AS HEREINAFTER SPECIFIED.

NATURAL SAND SHALL CONSIST OF MATERIAL COMPOSED OF PREDOMINANTLY ANGULAR PARTICLES OF QUARTZ OR OTHER HARD DURABLE MINERALS.

IT SHALL CONFORM TO THE FOLLOWING QUALITY REQUIREMENTS:

<u>ITEM</u>	<u>MAX. PERCENT BY WT. OF TOTAL SAMPLE</u>
MICA	2.0
ABSORPTION, COLD WATER	2.0
SODIUM SULPHATE SOUNDNESS (5 CYCLES)	5.0
CLAY AND CLAY LUMPS AS DETERMINED BY A.A.S.H.T.O. DESIGNATION T 88	5.0

IT SHALL COMPLY WITH THE FOLLOWING GRADATION REQUIREMENTS:

<u>SIEVE NO.</u>	<u>TOTAL PCT PASSING</u>
3/8"	100
NO. 4	95-100
NO. 8	85-100

UNLESS OTHERWISE SPECIFICALLY EXCLUDED NATURAL FINE AGGREGATES FOR SURFACE COURSES SHALL BE WASHED AND GRADED PRODUCTS. AFTER WASHING NOT MORE THAN A TOTAL OF 5 PERCENT BASED ON OVEN DRY WEIGHT SHALL PASS THE NO. 200 SIEVE.

IN LIEU OF THE ABOVE REQUIREMENTS FOR GRADATION AND WASHING THE APPROPRIATE PROVISIONS OF THE CURRENT REQUIREMENTS OF A.S.T.M. DESIGNATION C 33 MAY BE SUBSTITUTED, EXCEPT THAT NOT MORE THAN A TOTAL OF 5 PERCENT BASED ON OVEN DRY WEIGHT SHALL PASS THE NO. 200 SIEVE.

SIEVE ANALYSIS OF FINE AGGREGATE SHALL BE IN ACCORDANCE WITH CURRENT A.A.S.H.T.O. DESIGNATION T 27.

SPECIFIC GRAVITY AND ABSORPTION OF FINE AGGREGATE SHALL BE IN ACCORDANCE WITH CURRENT A.A.S.H.T.O. DESIGNATION T 84.

PERCENT OF MICA IN FINE AGGREGATE SHALL BE DETERMINED BY THE PROVISIONS OF ARTICLE 9.1.20 ELSEWHERE HEREIN.

THE SODIUM SULPHATE SOUNDNESS TEST FOR FINE AGGREGATE SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 9.1.19 ELSEWHERE HEREIN.

TABLE 31 IN THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

**8.5.15. BLOCK, CONCRETE, FOR INLETS, CATCH BASINS AND MANHOLES.**

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THE LAST SENTENCE OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED

IN THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS, THE REQUIREMENTS FOR JOINT WIDTHS ARE DELETED.

THE LAST THREE SENTENCES OF THE SECOND PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

THE BLOCKS SHALL CONFORM TO THE COMPRESSIVE STRENGTH AND ABSORPTION REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C 139.

THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

FOR THE REDUCTION OF CROSS SECTIONAL AREA OF THE CONES OR TOPS OF MANHOLES, BLOCKS MAY BE OF SPECIAL SHAPES AND HEIGHTS. BLOCKS OF SPECIAL SHAPES AND HEIGHTS MAY BE USED IN THE TOP COURSES OF ALL STRUCTURES SO THAT THE HEAD CASTINGS WILL BE SET AT THE REQUIRED ELEVATION ON A MORTAR BED NOT MORE THAN 1/2 INCH THICK WITHOUT CUTTING THE BLOCKS.

**8.5.16. BLOCK, CONCRETE, FOR SLOPE PROTECTION.**

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THE LAST SENTENCE OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS DELETED.

8.5.18. BRICK, CONSTRUCTION.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

CLAY OR SHALE BRICK.

THE FIRST PARAGRAPH IS CHANGED TO READ AS FOLLOWS:

CLAY OR SHALE BRICK SHALL BE NEW AND SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C-62, GRADE MW, WITH THE FOLLOWING MODIFICATIONS:

CONCRETE BRICK.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

CONCRETE BRICK SHALL CONFORM TO THE REQUIREMENTS FOR CONCRETE BLOCK FOR INLETS, CATCH BASINS AND MANHOLES, AS SPECIFIED IN ARTICLE 8.5.15 EXCEPT THAT THE SIZES MAY BE AS SPECIFIED ABOVE FOR CLAY OR SHALE BRICK.

8.5.19. CALCIUM CHLORIDE.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CALCIUM CHLORIDE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 144 AND SHALL BE TYPE 1. OR TYPE 2. AS MAY BE SPECIFIED.

8.5.22. CEMENT, STANDARD PORTLAND

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

STANDARD PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.21 AND TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C150 EXCEPT THAT FOR TYPE II THE AUTOCLAVE EXPANSION SHALL NOT EXCEED 0.5 PER CENT.



8.5.23. CEMENT, AIR-ENTRAINING PORTLAND

THE ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

AIR-ENTRAINING PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.21 AND TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C175 EXCEPT THAT FOR TYPE II A THE AUTOCLAVE EXPANSION SHALL NOT EXCEED 0.5 PER CENT.

8.5.29. CURING MATERIALS FOR CONCRETE.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

COTTON MATS.

THIS HEADING AND TEXT IS DELETED.

POLYETHYLENE SHEETING, WHITE.

THE ENTIRE TEXT IS CHANGED TO READ AS FOLLOWS:

WHITE POLYETHYLENE SHEETING SHALL CONFORM TO THE REQUIREMENTS FOR POLYETHYLENE FILM-WHITE OPAQUE IN CURRENT A.A.S.H.T.O. DESIGNATION M 171.

POLYETHYLENE SHEETING, WHITE BURLAP.

THIS HEADING AND TEXT IS ADDED:

WHITE BURLAP - POLYETHYLENE SHEETING. WHITE BURLAP POLYETHYLENE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 171.

WATERPROOF PAPER.

THE TEXT IS CHANGED TO READ AS FOLLOWS:

WATERPROOF PAPER SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 171.

**8.5.31. JOINT FILLER, PREFORMED.**

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THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

**BITUMINOUS CELLULAR TYPE.**

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THE TEXT IS CHANGED TO READ AS FOLLOWS:

PREFORMED BITUMINOUS CELLULAR TYPE JOINT FILLER FOR CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 213.

**CORK JOINT MATERIAL.**

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THE TEXT IS CHANGED TO READ AS FOLLOWS:

CORK JOINT MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M153, TYPE II.

**8.5.34. MINERAL FILLER.**

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THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

MINERAL FILLER FOR BITUMINOUS CONCRETE AND SHEET ASPHALT SHALL BE CARBONATE ROCK, TRAP ROCK, FLY ASH OR OTHER INERT MINERAL MATTER FROM SOURCES APPROVED BY THE LABORATORY, FREE FROM LUMPS AND FOREIGN MATERIALS, AND SHALL BE OF THE QUALITY AND FINENESS HEREINAFTER SPECIFIED.

NOT LESS THAN 95 PERCENT SHALL PASS A NO. 50 SIEVE AND NOT LESS THAN 70 PERCENT SHALL PASS A NO. 200 SIEVE WHEN TESTED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 37.

CARBONATE ROCK AND TRAP ROCK SHALL CONFORM TO THE QUALITY REQUIREMENTS AS SPECIFIED IN ARTICLE 8.5.5. FLY ASH SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.30.

MINERAL FILLER SHALL BE OF SUCH QUALITY THAT A BITUMINOUS MIXTURE CONTAINING THE FILLER WILL RETAIN 70 PERCENT OF ITS INITIAL STRENGTH AFTER AN IMMERSION CYCLE OF 14 DAYS WHEN PREPARED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 167 AND TESTED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T 165.

8.5.39. WATERPROOFING PROTECTION, INSULATION BOARD.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

PREFORMED BITUMINOUS TYPE JOINT FILLER CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.31 MAY BE SUBSTITUTED FOR VEGETABLE FIBER INSULATION BOARD.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

8.5.40. RETARDING ADMIXTURE.

RETARDING ADMIXTURE SHALL BE HYDROXYLATED CARBOXYLIC ACID IN LIQUID FORM CONFORMING TO CURRENT A.S.T.M. C494 TYPES B + D. DOSAGE SHALL BE AS SPECIFIED IN ARTICLE 4.1.3 ELSEWHERE HEREIN, OR AS RECOMMENDED BY THE MANUFACTURER SUBJECT TO THE APPROVAL OF THE ENGINEER. NOT MORE THAN 1 PERCENT OF AIR ENTRAINMENT SHALL BE INTRODUCED BY THE USE OF SUCH ADMIXTURE. AIR ENTRAINMENT SHALL BE CONTROLLED BY THE USE OF AN AIR-ENTRAINING ADMIXTURE AND SHALL NOT EXCEED 7.5 PERCENT IN THE PLASTIC MIX. NO CHLORIDES OR CARBOHYDRATES SHALL BE CONTAINED IN THE ADMIXTURE.

PROPORTIONING OF CONCRETE MIXTURES FOR ACCEPTANCE OR CONTROL TESTING WILL BE AS CURRENTLY SPECIFIED IN ARTICLE 4.1.2. ACCEPTANCE TEST BATCHES FOR NEW ADMIXTURES WILL BE MADE, USING TYPICAL MATERIALS CURRENTLY APPROVED FOR USE BY THE DEPARTMENT.

THE CONTRACTOR SHALL SUBMIT A CERTIFICATION OF COMPLIANCE FROM THE MANUFACTURER OF THE ADMIXTURE IN ACCORDANCE WITH ARTICLE 1.4.7, CERTIFYING THAT HIS PRODUCT CONFORMS TO THESE SPECIFICATIONS IN REGARD TO PERFORMANCE AND CHEMICAL LIMITATIONS, WITH PARTICULAR REFERENCE TO UNVARYING UNIFORMITY. UNIFORMITY WILL BE DETERMINED THROUGH THE USE OF INFRA RED SPECTOPHOTOMETRY PH VALUES, SPECIFIC GRAVITY AND SOLIDS CONTENT.

8.5.41. EPOXY WATERPROOFING.

THE SEALING COMPOUND SHALL BE A LIQUID POLYSULFIDE POLYMER/EPOXY RESIN BINDER SUPPLIED AS A TWO COMPONENT SYSTEM. THE COMPONENTS SHALL MEET THE FOLLOWING SPECIFICATIONS:

1. COMPONENT A.

EPOXY RESIN. EPOXY RESIN SHALL BE COMPOSED OF 100 PER-

CENT REACTIVE CONSTITUENTS WHICH ARE A CONDENSATION PRODUCT OF THE REACTION OF EPICHLOROHYDRIN WITH BISPHENOL A. THE PRODUCT SHALL BE ESSENTIALLY PURE LIQUID DIGLYCIDYL ETHER OF BISPHENOL A, AND CHLORINE FREE. THE EPOXIDE EQUIVALENT SHALL BE BETWEEN 170 AND 210, AND THE VISCOSITY (BROOKFIELD) IN CENTIPOISES SHALL BE BETWEEN 10,000 AND 18,000 AT 25 DEGREES C. THE EPOXY RESIN SHALL CONTAIN NO REACTIVE DILUENTS, AND SHALL HAVE MAXIMUM COLOR, HELLIGE, OF 5.

2. COMPONENT B.

THE POLYSULFIDE POLYMER SYSTEM SHALL BE COMPOSED OF A POLYSULFIDE FLEXIBILIZER AND CURING AGENTS AS SPECIFIED BELOW. THE RESULTANT VISCOSITY OF BLENDED MATERIAL HEREIN CALLED COMPONENT B SHALL BE BETWEEN 600 TO 1200 CENTIPOISES AT 25 DEGREES C BY BROOKFIELD VISCOSIMETER. THE POLYSULFIDE POLYMER SHALL CONTAIN NO FILLER, SOLVENTS OR DILUENTS.

IF NECESSARY, A THIXOTROPIC AGENT MAY BE USED TO ADJUST THE FINAL VISCOSITY OF COMPONENT B BUT IT IS NOT TO EXCEED 2 PERCENT OF THE TOTAL WEIGHT.

- A. POLYSULFIDE FLEXIBILIZER SHALL BE A DICHLORO-ETHYL FORMAL POLYSULFIDE, MERCAPTAN TERMINATED, LONG CHAIN ALIPHATIC POLYMER CONTAINING DISULFIDE LINKAGES. THE MOLECULAR WEIGHT SHALL BE IN THE 1000 RANGE WITH A VISCOSITY IN CENTIPOISES OF 700 TO 1400 AT 25 DEGREES C. THE POLYSULFIDE POLYMER SHALL CONTAIN NO MORE THAN 0.1 PERCENT WATER AND THE PH OF THIS EXTRACTED WATER SHALL BE IN THE RANGE OF 6.0 TO 8.0 (INCLUSIVE). THE RATIO OF POLYSULFIDE FLEXIBILIZER TO EPOXY RESIN SHALL BE FORMULATED TO BE APPROXIMATELY 1:1 BY WEIGHT.
  - B. CURING AGENTS SHALL BE A COMBINATION OF THE FOLLOWING COMPONENTS:
    - 2, 4, 6 TRI-DIMETHYLAMINOMETHYL PHENOL AND DIMETHYLAMINOMETHYL PHENOL.
    - 2, 4, 6 TRI-DIMETHYLAMINOMETHYL PHENOL MAY BE USED ALONE WHEN LOW TEMPERATURES INHIBIT THE EARLY CURING RATE OF THE LIQUID POLYSULFIDE POLYMER/EPOXY ADHESIVE; HOWEVER, SUCH USE WILL BE SUBJECT TO PRIOR APPROVAL OF THE ENGINEER.
3. THINNER SHALL BE A VOLATILE AROMATIC SUCH AS TOLUENE. THINNER, IS TO BE ADDED AT THE JOB SITE UNDER THE SUPERVISION OF THE ENGINEER.

COMPONENTS A AND B SHALL BE BLENDED IN EQUAL PARTS BY VOLUME, AND TO EACH FOUR PARTS OF THE MIXTURE THUS OBTAINED, THERE SHALL BE ADDED ONE PART TOLUENE AS THINNER.

PRIOR TO SHIPMENT TO EACH PROJECT, ALL COMPONENTS USED IN THE MANUFACTURE OF THE ABOVE WATERPROOFING SYSTEM SHALL BE SUBMITTED TO THE LABORATORY FOR APPROVAL. THIS SHALL INCLUDE COMPONENTS A AND B PLUS MATERIALS USED IN THE FORMULATION OF COMPONENT B.

#### 8.5.42. PREFORMED ELASTIC JOINT SEALER.

##### 1. SCOPE.

1.1 THIS SPECIFICATION COVERS THE MATERIAL QUALIFICATION AND IDENTIFICATION REQUIREMENTS FOR PREFORMED ELASTOMERIC COMPRESSION JOINT SEALERS TO BE UTILIZED IN BRIDGE CONSTRUCTION WITH THE BASE POLYMER BEING IN ACCORDANCE WITH 2.1.

##### 2. MATERIALS AND MANUFACTURE.

2.1 SEALERS SHALL BE PREFORMED AND MANUFACTURED FROM VULCANIZED ELASTOMERIC COMPOUND USING POLYCHLOROPRENE AS THE ONLY BASE POLYMER.

2.2 IF OTHER BASE POLYMERS ARE SHOWN TO BE SUITABLE IN THIS APPLICATION, THE REQUIREMENTS OF THIS SPECIFICATION SHALL BE AMENDED BY ALTERNATE REQUIREMENTS, WHICH SHALL BE DEVELOPED TO DEFINE ADEQUATE QUALITY OF THE NEW COMPOSITION.

##### 3. PHYSICAL REQUIREMENTS.

3.1 THE MATERIAL SHALL CONFORM TO THE PHYSICAL PROPERTIES PRESCRIBED IN TABLE NO.1 AND NO.2.

TABLE NO.1  
TESTS FOR IDENTIFICATION REQUIREMENTS

PROPERTIES DETERMINED ON ACTUAL SEALER	(A) TEST PROCEDURE	PHYSICAL REQUIREMENTS
TENSILE STRENGTH, MIN., PSI, (KG/CM <sup>2</sup> )	D-412	2000 (141)
ELONGATION AT BREAK, MIN., PERCENT	D-412	250
HARDNESS, TYPE A, DUROMETER	(B) D-2240	55 PLUS OR MINUS 5

PERMANENT SET AT BREAK, MAX., PERCENT	D-412	10
OVEN OR HEAT AGING		
70 HRS./212 DEG. F.	D-573	
1. TENSILE STRENGTH, CHANGE, MAX. PERCENT		+10 TO -20
2. ELONGATION, CHANGE, MAX. PERCENT		-20
3. HARDNESS, TYPE A, POINTS CHANGE		0 TO +10
OZONE RESISTANCE 20 PERCENT, 300 PPHM IN AIR, 70 HRS./104 DEG. F. (40 DEG. C.) (WIPE WITH SOLVENT TO REMOVE SURFACE CONTAMINATION)	D-1149	NO CRACKS
OIL SWELL, A.S.T.M. OIL NO.3, 70 HRS./212 DEG. F. WEIGHT CHANGE, MAX. PERCENT	D-471	+45

TABLE NO.2  
TESTS FOR QUALIFICATION REQUIREMENTS

PROPERTIES DETERMINED ON ACTUAL SEALER	(SIMULATED SERVICE TESTS) (A) TEST PROCEDURE	PHYSICAL REQUIREMENTS
HIGH TEMPERATURE RECOVERY 70 HRS. AT 212 DEG. F. AND (D) AT "Z" PERCENT OF NOMINAL WIDTH	(C) SUBSECTION 8.1 TO 8.1.1.3	85 PERCENT MIN. (E) (NO CRACKING OR STICKING)
LOW TEMPERATURE RECOVERY 72 HRS. AT +14 DEG. F. AND AT 50 PERCENT OF NOMINAL WIDTH	(C) SUBSECTION 8.1 TO 8.1.1.3	88 PERCENT MIN. (E) (NO CRACKING OR STICKING)
LOW TEMPERATURE RECOVERY 22 HRS. AT -20 DEG. F. AND AT 50 PERCENT OF NOMINAL WIDTH	(C) SUBSECTION 8.1 TO 8.1.1.3	83 PERCENT MIN. (E) (NO CRACKING OR STICKING)
PRESSURE-DEFLECTION	(C) SUBSECTION	
1. MIN. CONTACT PRESSURE, P.S.I. AT 80 PERCENT OF NOMINAL WIDTH AND AT 73 DEG. F. PLUS OR MINUS 2 DEG. F.	8.1.2	2.5
2. MAX CONTACT PRESSURE, P.S.I. (D) AT "Z" PERCENT OF NOMINAL WIDTH AND AT 73 DEG. F. PLUS OR MINUS 2 DEG. F.		200

(A) THESE DESIGNATIONS REFER TO THE FOLLOWING METHODS SPECIFIED IN THE LATEST EDITION OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARDS:

PART 28: D-412, TEST FOR TENSION TESTING OF VULCANIZED RUBBER  
D-395, TEST FOR COMPRESSION SET OF VULCANIZED RUBBER  
D-573, TEST FOR ACCELERATED AGING OF VULCANIZED RUBBER BY THE OVEN METHOD  
D-471, TEST FOR CHANGE IN PROPERTIES OF ELASTOMERIC VULCANIZATES RESULTING FROM IMMERSION IN LIQUIDS  
D-1149, TEST FOR ACCELERATED OZONE CRACKING OF VULCANIZED RUBBER  
D-2240, TEST FOR INDENTATION HARDNESS OF RUBBER AND PLASTICS BY MEANS OF A DUROMETER  
D-575, TEST FOR COMPRESSION-DEFLECTION CHARACTERISTICS OF VULCANIZED RUBBER  
PART 31: E-4, VERIFICATION OF TESTING MACHINES

(B) THE HARDNESS TEST SHALL BE MADE WITH THE DUROMETER IN A DUROMETER STAND.

(C) THE REFERENCE SUBSECTION ARE THOSE OF THIS SPECIFICATION.

(D) THE DEGREE OF COMPRESSION \*Z\* IN PERCENT OF NOMINAL WIDTH IS DEFINED AND NUMERICALLY SPECIFIED IN SUBSECTIONS 4.1.4 AND 4.1.5.

(E) CRACKING OR SPLITTING AND/OR STICKING OF SPECIMEN DURING RECOVERY SHALL MEAN THAT THE SPECIMEN HAS FAILED THE TEST.

#### 4. DIMENSIONS AND PERMISSIBLE VARIATIONS.

4.1 THE SIZE, SHAPE, AND DIMENSIONAL TOLERANCES OF THE SEALERS ARE SUBJECT TO DESIGN AND/OR SHALL BE GUIDED AS OUTLINED IN PARAGRAPHS 4.1.1 AND 4.1.2.

4.1.1 THE ACCEPTED WIDTH AND HEIGHT OF A SEALER SHALL BE NOT LESS THAN NOMINAL; THE HEIGHT OF A SEALER CAN BE IN EXCESS OF NOMINAL BUT BY NOT MORE THAN ONE QUARTER (+1/4") OF AN INCH.

4.1.2 THE DIMENSIONAL TOLERANCES SHALL BE DETERMINED ON THE BASIS OF THE LIMIT OF SAFE COMPRESSIBILITY OF SEALERS.

4.1.3 THE LIMIT OF SAFE COMPRESSIBILITY, AN INHERENT CHARACTERISTIC OF EACH SEALER, IS THE BORDER LINE BETWEEN CLOSURE OF ESSENTIALLY ALL OF THE AIR VOIDS AND THE BEGINNING OF SOLIDS COMPRESSION AND IS CLEARLY INDICATED ON THE PRESSURE-DEFLECTION CURVE BY RAPID AND CONSIDERABLE INCREASE OF PRESSURE.

4.1.4 AT THE LIMIT OF SAFE COMPRESSIBILITY THE RATIO OF THE SEALER WIDTH TO ITS NOMINAL WIDTH MULTIPLIED BY 100 SHALL BE LESS THAN OR EQUAL TO A VALUE "Z". "Z" (IN PERCENT) IS THE MAXIMUM PERMITTED DEGREE OF SEALER COMPRESSION USED IN THE JOINT SEALING DESIGN AND SHALL BE CALCULATED AS FOLLOWS:

$$\text{"Z" (PERCENT)} = \frac{\text{MIN. SEALER WIDTH}}{\text{NOM. SEALER WIDTH}} \times 100$$

4.1.5 THE VALUE OF "Z" (IN PERCENT) SHALL BE NOT MORE THAN 50.

## 5. QUALITY CONTROL OF MATERIAL.

5.1 THE AMOUNT OF INITIAL CONTACT PRESSURE WHICH SEALERS SHALL BE CAPABLE UNIFORMLY TO EXERT WHEN COMPRESSED, IS STIPULATED IN PARAGRAPHS 5.1.1, 5.1.2, AND 5.1.3.

5.1.1 THE MINIMAL INITIAL CONTACT PRESSURE AT 80 PERCENT OF SEALERS NOMINAL WIDTH FOR ALL SIZES OF BRIDGE SEALERS SHALL BE NOT LESS THAN 2.5 POUNDS PER SQUARE INCH (LBS/IN<sup>2</sup>) ON THE THIRD SUCESSIVE TEST RUN OR CYCLE.

5.1.2 THE MAXIMUM INITIAL CONTACT PRESSURE AT THE DEGREE OF COMPRESSION "Z" (PERCENT) FOR ANY SIZE OF BRIDGE SEALER SHALL NOT EXCEED 200 POUNDS PER SQUARE INCH (LBS/IN<sup>2</sup>) ON THE FIRST TEST RUN OR CYCLE.

5.1.3 THE AMOUNTS OF INITIAL CONTACT PRESSURE (LBS/IN<sup>2</sup>) ARE BASED ON THE ACTUALLY MEASURED LENGTH (6IN.) AND HEIGHT (HA) OF THE SEALER'S TEST SAMPLE; THEY SHALL BE ESTABLISHED ON THE BASIS OF THREE SUCCESSIVE TEST RUNS OR CYCLES, PERFORMED ON THE COMPRESSION TESTING MACHINE (A.S.T.M. DESIGNATION: E4). CALCULATE INITIAL CONTACT PRESSURE AS FOLLOWS:

$$\text{LBS/IN}^2 \text{ PRESSURE} = \frac{\text{TOTAL PRESSURE}}{\text{ACTUAL CONTACT AREA}} = \frac{P}{6.0 \times HA}$$

## 6. SAMPLING.

6.1 A LOT SHALL CONSIST OF A QUANTITY REPRESENTED BY NOT MORE THAN (1) DAY'S PRODUCTION OF EACH CROSS SECTION AND SIZE OF BRIDGE SEALER.

6.2 THE SAMPLE SPECIMENS SHALL BE TAKEN AT RANDOM FROM EACH NEW SHIPMENT OF THE PREFORMED SEALER TO EACH CONSTRUCTION SITE AND SUBMITTED DIRECTLY TO THE BUREAU OF QUALITY CONTROL AT LEAST THREE (3) WEEKS IN ADVANCE OF THE PRODUCTS DELIVERY TO THE



CONSTRUCTION SITE. IF A SHIPMENT CONSISTS OF MORE THAN ONE LOT, EVERY LOT IN A SHIPMENT SHALL BE REPRESENTED BY A NEW APPROPRIATELY TAKEN SAMPLE SPECIMEN.

6.3 THE SCHEDULE OF MINIMUM LENGTHS OF SAMPLES FOR TESTING PURPOSES, GRADUATED BY SEALER SIZES, IS PRESCRIBED IN TABLE 3.

6.4 IN ALL TESTS, THE MATERIAL TO BE TESTED SHALL BE FURNISHED FROM STANDARD PRODUCTION.

TABLE NO. 3  
MINIMUM LENGTHS OF SAMPLES FOR TESTING PURPOSES (INCHES)

PROPERTIES	SEALER SIZE WIDTH					
	6''	5''	4''	3'' TO 3-1/2''	2'' TO 2-1/2''	1-1/2'' TO 1-3/4''
TENSILE STRENGTH	6	6	6	6	6	18
ELONGATION						
HARDNESS						
PERMANENT SET						
OVEN AGING	0*	0	0	6	6	18
TENSILE STRENGTH						
ELONGATION						
HARDNESS						
OZONE RESISTANCE	0	0	0	0	6	0
OIL SWELL	0	0	0	0	0	0
HIGH TEMP. REC.	6	6	6	6	6	6
LOW TEMP. REC.	6	6	6	6	6	6
LOW TEMP. REC.	6	6	6	6	6	6
PRESSURE-DEFLECTION	6	6	6	6	6	6
TOTAL	30	30	30	36	42	60
RESERVE FOR RETESTING	6	6	6	6	12	12
MIN. LENGTH OF SEALER SAMPLE	36	36	36	42	54	72

\* '0' MEANS THAT FOR THE SPECIFIC TEST NO ADDITIONAL SAMPLE LENGTH IS REQUIRED.

#### 7. SPECIMEN PREPARATION.

7.1 COMPLIANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION SHALL BE DETERMINED BY TESTS CONDUCTED IN ACCORDANCE WITH THE METHODS SPECIFIED USING SPECIMENS CUT OR BUFFED FROM THE ACTUAL EXTRUDED COMPRESSION JOINT SEALERS.

7.2 SPECIMENS FOR THE HIGH AND LOW-TEMPERATURE RECOVERY TESTS SHALL CONSIST OF SIX-INCH LENGTHS OF THE PREFORMED SEALERS.

7.2.1 IN THE HIGH-TEMPERATURE TEST THE INTERNAL SURFACES SHALL REMAIN AS RECEIVED FROM PRODUCTION WHILE THE OUTSIDE SURFACES ONLY MAY BE DUSTED OFF WITH TALC TO PREVENT THEM FROM STICKING TO THE STEEL COMPRESSION PLATES.

7.2.2 FOR THE LOW-TEMPERATURE TESTS, TO PREVENT ADHESION, TALCING OF OUTSIDE AND INTERNAL SURFACES IS DESIRABLE.

7.3 SPECIMENS FOR PRESSURE-DEFLECTION TEST SHALL CONSIST OF SIX-INCH LENGTHS OF THE PREFORMED SEALERS.

7.3.1 IN THE PRESSURE-DEFLECTION TEST, TO PREVENT ADHESION TALCING OF OUTSIDE AND INTERNAL SURFACES IS DESIRABLE.

## 8. METHODS OF TESTING.

8.1 PERFORM THE HIGH AND LOW-TEMPERATURE RECOVERY TEST AND THE PRESSURE-DEFLECTION TEST USING SPECIMENS PREPARED IN ACCORDANCE WITH 7.2, 7.2.1, 7.2.2, 7.3 AND 7.3.1 RESPECTIVELY. USE A NEW SPECIMEN FOR EACH TEST.

8.1.1 DEFLECT THE SPECIMENS BETWEEN PARALLEL PLATES TO 50 PERCENT OR "Z" PERCENT OF THE NOMINAL WIDTH IN ACCORDANCE WITH THE SCHEDULE SHOWN IN TABLE NO. 2, USING THE COMPRESSION SET CLAMP ASSEMBLY DESCRIBED IN A.S.T.M. D395, METHOD B. EACH WIDTH MEASUREMENT SHALL BE TAKEN IN THE CENTER OF A SIX-INCH LENGTH USING A DIAL CALIPER GRADUATED IN THOUSANDTHS OF AN INCH.

IF A GAUGE IS USED, IT SHALL HAVE A 1/4 INCH DIAMETER FOOT AND SHALL BE MOUNTED ON A PLATFORM. THE DIAL CALIPER, MADE OF STAINLESS STEEL HARDENED THROUGHOUT, SHALL BE CAREFULLY CALIBRATED. THE WIDTH MEASUREMENTS SHALL BE MADE AT BOTH THE TOP AND BOTTOM LONGITUDINAL EDGES OF THE SPECIMEN. FOR THIS PURPOSE EACH EDGE SHALL BE PLACED AT THE CENTER OF THE FOOT OF THE GAUGE OR AT THE MEASURING TIPS OF CALIPER JAWS. THE POSITION OF THE FOOT OR JAW SHALL BE CAREFULLY MARKED ON THE SPECIMEN BEFORE THE FIRST READING IS MADE.

PRIOR TO COMPRESSION, THE SPECIMEN SHALL BE PLACED IN SUCH A HORIZONTAL POSITION THAT THE PLANE THROUGH BOTH EDGES OF THE TOP SURFACE OF THE SEALER IS PERPENDICULAR TO THE COMPRESSION PLATES. AS THE SPECIMEN IS BEING COMPRESSED THE TOP SURFACE OF THE JOINT SEALER SHALL FOLD INWARD TOWARD THE CENTER OF THE SPECIMEN. THE COMPRESSED WIDTH SHALL BE MEASURED ON THE CENTERS OF ALL FOUR (4) SIDES OF THE CLAMP ASSEMBLY WITH CAREFULLY CALIBRATED INTERNAL DIAL CALIPER.

8.1.1.1 LOW TEMPERATURE TESTS: EXPOSE THE CLAMP ASSEMBLY WITH THE COMPRESSED SPECIMEN IN A FROST-FREE REFRIGERATED BOX FOR THE TIME AND AT THE TEMPERATURE SPECIFIED IN TABLE 2. TO ACHIEVE THE FROST-FREE CONDITION, A SUFFICIENT AMOUNT OF A DESICCANT SUCH AS CALCIUM CHLORIDE SHALL BE PLACED INTO THE BOX. WHEN THE COLD AGING PERIOD IS COMPLETED, UNCLAMP THE TEST SPECIMEN AT THE TEST TEMPERATURE, ALLOW IT TO RECOVER FOR TWO (2) HOURS IN A FREE STATE AT THE TEST TEMPERATURE. AT THIS POINT, MEASURE THE RECOVERY WIDTH AT THE TEST TEMPERATURE. THE MEASUREMENTS SHALL BE MADE AT THE LOCATIONS AT WHICH THE ORIGINAL WIDTHS WERE DETERMINED. CALCULATE THE RECOVERY AS IN 8.1.1.3.

8.1.1.2 HIGH TEMPERATURE TESTS: EXPOSE THE CLAMP ASSEMBLY WITH THE COMPRESSED SPECIMEN FOR 70 HOURS IN AN OVEN MAINTAINED AT 212 DEGREES F PLUS OR MINUS 2 DEGREES F. DO NOT PREHEAT THE CLAMP ASSEMBLY. WHEN THE AGING PERIOD IN THE OVEN IS COMPLETED, REMOVE THE CLAMP ASSEMBLY AND IMMEDIATELY UNCLAMP THE TEST SPECIMEN. COOL THE TEST SPECIMEN AT ROOM TEMPERATURE (73 DEGREES F PLUS OR MINUS 4 DEGREES F) ON A WOODEN SURFACE FOR ONE HOUR BEFORE MEASURING THE HEAT AGED RECOVERY-WIDTH; THIS MEASUREMENT IS TO BE MADE AT THE SAME LOCATION AS THE ORIGINAL WIDTH. CALCULATE THE RECOVERY AS IN 8.1.1.3.

8.1.1.3 CALCULATIONS: CALCULATE THE RECOVERY, EXPRESSED AS A PERCENTAGE OF THE ORIGINAL WIDTH AND IN RELATION TO THE CORRESPONDING RECOVERED WIDTH, SEPARATELY FOR THE TOP AND THE BOTTOM MEASUREMENTS. FOR THE DETERMINATION OF PHYSICAL REQUIREMENTS, USE THE SMALLEST OF THE TWO RECOVERY PERCENTAGES, CALCULATE RECOVERY AS FOLLOWS:

$$\text{PERCENT RECOVERY} = \frac{\text{RECOVERED WIDTH}}{\text{ORIGINAL WIDTH}} \times 100$$

8.1.2 PRESSURE-DEFLECTION: THE PRESSURE-DEFLECTION TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF A.S.T.M. COMPRESSION-DEFLECTION TEST DESIGNATION D-575, METHOD A. THE SPEED THAT MUST BE USED IN THIS TEST SHALL BE AT THE RATE OF APPROXIMATELY 0.2 INCH/MINUTE. THE TEST SHALL BE PERFORMED IN A REASONABLY DUST-FREE ENCLOSURE AT THE CONSTANT ROOM TEMPERATURE (73 DEGREES F PLUS OR MINUS 4 DEGREES F).

THE SPECIMEN SHALL BE PLACED BETWEEN THE PLATENS OF THE TESTING MACHINE IN THE HORIZONTAL POSITION IN SUCH A WAY THAT A PLANE THROUGH BOTH EDGES OF THE TOP SURFACE OF THE SEALER SHALL BE PERPENDICULAR TO THE PLATENS, WHICH MUST BE LARGER THAN THE SPECIMEN.

THE TEST SPECIMEN SHALL BE AT ZERO (0.0) PERCENT DEFLECTION. IT SHALL THEN BE DEFLECTED AT THE PRESCRIBED RATE UNTIL THE LIMIT OF SAFE COMPRESSIBILITY IS ESTABLISHED AS DESCRIBED IN PARAGRAPHS 4.1.2, 4.1.3, AND 4.1.4. THE SPECIMEN SHALL THEN BE IMMEDIATELY RELEASED AT THE SAME RATE BACK TO THE INITIAL ZERO PERCENT DEFLECTION. THIS PRESSURE-DEFLECTION CYCLE OR TEST RUN SHALL BE SUCCESSIVELY REPEATED TWO (2) ADDITIONAL TIMES (TOTAL THREE (3) TIMES) AS STATED ABOVE AND UP TO THE LIMITS OF DEFLECTION ESTABLISHED IN THE FIRST RUN.

THE ZERO PERCENT DEFLECTION IS AT ZERO POUNDS (0.0 LBS) OF PRESSURE. THE PRESSURE EXERTED BY THE SAMPLE, ITS DEFLECTION, THE TIME-SCHEDULE AT THE BEGINNING AND THE END OF TEST RUN, AND THE RATE OF SPEED SHALL BE FROM THE BEGINNING TILL THE END OF THE TEST CONTINUOUSLY READ AND RECORDED.

#### 9. CERTIFICATION AND ACCEPTANCE.

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9.1 PREFORMED ELASTOMERIC JOINT SEALERS SHALL NOT BE INSTALLED PRIOR TO SECURING APPROVAL OF THE MATERIAL FROM THE DEPARTMENT'S BUREAU OF QUALITY CONTROL LABORATORY.

9.2 CERTIFICATION OF THE MANUFACTURER, WITHOUT TESTING BY THE DEPARTMENT, IS NOT ADEQUATE FOR ACCEPTANCE OF THE PRODUCT.

9.3 THE ACCEPTANCE OF PREFORMED ELASTOMERIC JOINT SEALER SHALL BE BASED UPON THE FOLLOWING:

9.3.1 FIELD SPLICING OF SEALERS SHALL NOT BE PERMITTED

9.3.1.1 IF SPLICING OF SEALER IS UNAVOIDABLE, SPLICING SHALL BE ACCOMPLISHED ONLY THROUGH FACTORY VULCANIZATION AND SHALL BE SO ATTESTED IN THE CERTIFICATION OF THE MANUFACTURER AS STATED IN PARAGRAPH 9.2.3.2.

9.3.2 TESTING BY THE DEPARTMENT'S BUREAU OF QUALITY CONTROL LABORATORY OF ALL PROPERTIES IN ACCORDANCE WITH THE PROVISIONS OF THE SPECIFICATIONS.

9.3.3 A CERTIFICATION OF THE MANUFACTURER INDICATING CONFORMANCE TO THE TEST REQUIREMENTS, SUBMITTED TOGETHER WITH SAMPLE SPECIMEN AS STIPULATED IN PARAGRAPH 6.2, DIRECTLY TO THE BUREAU OF QUALITY CONTROL LABORATORY IN ADVANCE OF THE PRODUCTS DELIVERY TO THE CONSTRUCTION SITE.

9.3.3.1 MANUFACTURERS NAME OR TRADE MARK AND LOT NUMBER SHALL BE MARKED ON THE JOINT SEALER ITSELF TO IDENTIFY EACH SHIPMENT AND SAMPLE SPECIMEN, AND SHALL BE ACCOMPANIED BY THE MANUFACTURER'S CERTIFICATION INDICATING CONFORMANCE TO THE TEST REQUIREMENTS INCLUDING THE VALUE OF "Z" (IN PERCENT).

9.4 THE MANUFACTURER'S CERTIFICATION SHALL CONTAIN THE FOLLOWING INFORMATION:

9.4.1 PROJECT TO WHICH THE MATERIAL IS CONSIGNED.

9.4.2 NAME OF THE CONTRACTOR TO WHICH THE MATERIAL IS SUPPLIED.

9.4.3 KIND OF MATERIAL SUPPLIED.

9.4.4 QUANTITY OF MATERIAL REPRESENTED BY THE CERTIFICATE.

9.4.5 MEANS OF IDENTIFYING THE CONSIGNMENT.

9.4.6 DATE AND METHOD OF SHIPMENT.

9.4.7 A COPY OF THE MANUFACTURER'S TEST REPORT THAT THE MATERIAL HAS BEEN SAMPLED AND TESTED AND INSPECTED IN ACCORDANCE WITH THE PROVISIONS OF THE SPECIFICATION.

9.4.8 EACH CERTIFICATION SHALL BE SIGNED BY AN AUTHORIZED AGENT OF THE MANUFACTURER WHO HAS LEGAL AUTHORITY TO BIND HIM.

9.4.9 SIGNATURE ATTESTED TO BY A NOTARY PUBLIC.

8.5.43. EPOXY SEAL COAT.

A. GENERAL REQUIREMENTS.

A.1. SCOPE

THIS SPECIFICATION COVERS A TWO-COMPONENT, MINERAL-FILLED, POLYSULFIDE POLYMER-MODIFIED EPOXY RESIN SYSTEM. WHEN PROPERLY APPLIED AND CURED THE SYSTEM SHALL WATERPROOF THE CONCRETE AND HELP PREVENT DETERIORATION CAUSED BY FREEZE THAW CYCLES AND WHICH IS AGGRAVATED BY DEICING CHEMICALS.

A.2. MATERIALS

A. THE POLYSULFIDE/EPOXY RESIN SYSTEM SHALL HAVE THE ABILITY TO CURE IN THE PRESENCE OF MOISTURE.

B. THE MINERAL FILLER USED IN MANUFACTURING THE COMPOUND SHALL BE INERT AND SHALL BE NON-SETTLING OR BE READILY DISPERSIBLE.

C. THE POLYSULFIDE/EPOXY RESIN SYSTEM SHALL BE SUPPLIED IN TWO SEPARATE PACKAGES FOR MIXING AT THE JOBSITE. THE MIXING RATIO SHALL BE 1 TO 1, PARTS BY VOLUME. EACH CONTAINER SHALL BE MARKED WITH THE NAME OF THE MANUFACTURER, THE LOT OR BATCH NUMBER, THE DATE OF PACKAGING AND THE QUANTITY CONTAINED THEREIN IN POUNDS AND GALLONS.

D. THE CONSISTENCY OF EACH COMPONENT AT 77 DEGREES F. SHALL BE SUCH THAT IT MAY BE SPRAYED WITH COMMERCIALY AVAILABLE TWO-COMPONENT PUMPING AND SPRAYING EQUIPMENT, SUCH AS PYLES OR BINKS SPRAY SYSTEMS. THE VISCOSITY OF THE FRESHLY MIXED COMPOUND SHALL NOT EXCEED 110 POISES AS MEASURED BY THE BROOKFIELD VISCOMETER. TESTING SHALL BE DONE AT 77 DEGREES F. USING SPINDLE NO.4 AT 60 RPM.

E. THE COLOR OF THE MIXED COMPOUND SHALL BE TAN OR LIGHT GRAY. WHEN SPECIFIED BY THE ENGINEER, HOWEVER, THE POLYSULFIDE/EPOXY RESIN SYSTEM SHALL BE PIGMENTED TO HAVE A COLOR SIMILAR TO THAT OF THE MINERAL GRIT USED TO IMPART SKID-RESISTANCE.

F. GRIT SHALL BE AS SPECIFIED UNDER ARTICLE 4.1.2.

G. WHEN STORED IN UNOPENED CONTAINERS AT ROOM TEMPERATURE, EACH COMPONENT SHALL HAVE A SHELF LIFE OF 12 MONTHS MINIMUM, WHICH SHALL BE MEASURED FROM THE DATE OF RECEIPT BY THE PURCHASER.

H. THE CONTRACTOR SHALL SUBMIT A CERTIFICATION OF COMPLIANCE FROM THE MANUFACTURER IN ACCORDANCE WITH ARTICLE 1.4.7 AS AMENDED ELSEWHERE IN THESE SUPPLEMENTARY SPECIFICATIONS. THE CERTIFICATION THAT THE MATERIAL HAS BEEN TESTED AND FOUND TO BE IN CONFORMITY WITH THESE SPECIFICATIONS SHALL BE MADE BY A RECOGNIZED TESTING LABORATORY.

I. THE CONTAINERS SHALL BE APPROPRIATELY LABELED WITH CAUTIONARY STATEMENTS RELATING TO THE NEED FOR TAKING PRECAUTIONS IN HANDLING OF THE PACKAGED MATERIALS.

J. THE POLYSULFIDE/EPOXY RESIN SYSTEM SHALL BE AT LEAST 98 PERCENT SOLIDS BY WEIGHT.

### A.3. APPLICATION

A. SURFACE PREPARATION AND APPLICATION OF THE EPOXY SEAL COAT SHALL BE IN ACCORDANCE WITH THE PROVISIONS SPECIFIED UNDER ARTICLE 4.1.3.

B. IF DESIRED, THE TWO COMPONENTS OF THE SURFACE SEALER MAY BE WARMED BY INDIRECT HEAT TO 90 TO 100 DEGREES F. TO REDUCE

THE VISCOSITY. HOWEVER, UNDER NO CIRCUMSTANCES SHALL ANY SOLVENT BE ADDED TO THE COMPOUND.

C. THE POLYSULFIDE/EPOXY SURFACE SEALER SHALL BE USED ONLY WHEN AIR AND PAVEMENT TEMPERATURES ARE 60 DEGREE F. AND HIGHER.

D. CERTAIN UNCURED COMPONENTS OF THE EPOXY RESIN SYSTEM ARE SLIGHTLY TOXIC. PERSONS HANDLING THESE MATERIALS SHOULD OBSERVE HANDLING PRECAUTIONS AS NOTED IN THE BULLETIN: "GUIDE FOR USE OF EPOXY COMPOUNDS WITH CONCRETE" (TITLE NO. 59-43), AMERICAN CONCRETE INSTITUTE, DETROIT 19, MICHIGAN.

B. DETAILED REQUIREMENTS.

B.1. EXTRACTABLE CONTENT

SPECIMENS TESTED IN CONFORMITY WITH PARAGRAPH C-1 SHALL HAVE A MAXIMUM WEIGHT LOSS OF 3 PERCENT.

B.2. POT LIFE

WHEN DETERMINED IN ACCORDANCE WITH ARTICLE C-2, THE POT LIFE SHALL BE BETWEEN 20 AND 60 MINUTES.

B.3. RATE OF CURE

THE EPOXY RESIN SYSTEM, WHEN TESTED IN ACCORDANCE WITH PARAGRAPH C-3, SHALL CURE SUFFICIENTLY AT 72 DEGREES F. TO BE TACK FREE IN SIX HOURS MINIMUM.

B.4. TENSILE STRENGTH AND ULTIMATE ELONGATION

SPECIMENS PREPARED, CURED AND TESTED IN ACCORDANCE WITH ARTICLE C-4, SHALL HAVE AN ULTIMATE TENSILE STRENGTH BETWEEN 1,000 AND 4,000 PSI AND AN ELONGATION OF 3 PERCENT MINIMUM.

B.5. MODULUS OF ELASTICITY

SPECIMENS PREPARED, CURED AND TESTED IN ACCORDANCE WITH ARTICLE C-4 SHALL HAVE A MODULUS OF ELASTICITY (IN TENSION) OF 250,000 PSI MAXIMUM.

B.6. MODULUS OF TOUGHNESS

TEST SPECIMENS WHEN PREPARED IN ACCORDANCE WITH ARTICLE C-4 SHALL HAVE A MINIMUM MODULUS OF TOUGHNESS OF 75 IN. LBS./CU. IN.

B.7. WATER ABSORPTION

WHEN TESTED IN ACCORDANCE WITH PARAGRAPH C-5, THE PERCENT WEIGHT GAIN SHALL NOT EXCEED 1.0 PERCENT.

B.8. HEAT AGING

TEST SPECIMENS PREPARED, CURED, HEAT AGED AND TESTED IN ACCORDANCE WITH PARAGRAPH C-6 SHALL HAVE AN ULTIMATE ELONGATION OF 20 PERCENT MINIMUM. THE TENSILE STRENGTH OF HEAT AGED SPECIMENS SHALL BE BETWEEN 250 AND 1,500 PSI.

B.9. LOW TEMPERATURE PROPERTIES

SPECIMENS PREPARED AND CONDITIONED AT 32 DEGREES F. AND TESTED ALL IN ACCORDANCE WITH PARAGRAPH C-7 SHALL HAVE AN ULTIMATE ELONGATION OF 6 PERCENT MINIMUM.

B.10. BOND STRENGTH TO HARDENED CONCRETE

WHEN TESTED IN ACCORDANCE WITH ARTICLE C-8, THE DIRECT TENSILE STRENGTH SHALL BE 250 PSI MINIMUM. AT LEAST 90 PERCENT OF THE FAILURE SHALL BE IN THE CONCRETE.

B.11. IMPACT STRENGTH

SPECIMENS TESTED IN ACCORDANCE WITH PARAGRAPH C-9 SHALL HAVE AN IMPACT STRENGTH OF 20 FOOT POUNDS MINIMUM.

C. TEST PROCEDURES.

C.1. EXTRACTABLE CONTENT

THREE SPECIMENS SHALL BE PREPARED AND CURED AT 72 DEGREES F. FOR SEVEN DAYS. THE SPECIMENS SHALL BE HEAT AGED AT 212 DEGREES F. FOR SEVEN DAYS. THE LOSS OF WEIGHT FOR THE THREE SPECIMENS SHALL BE CALCULATED AS A PERCENTAGE AND AVERAGED.

C.2. POT LIFE

THE POT LIFE TEST IS MEANT TO BE A FAST AND SIMPLE METHOD OF DETERMINING THE GENERAL QUALITY OF THE RESINOUS CEMENTS. THE RESULTING CURE TIME DOES NOT BEAR A DIRECT RELATIONSHIP TO CURE TIME OF THE RESINOUS CEMENTS ON THE ROADWAY SURFACE.

SAMPLES OF EACH RESINOUS CEMENT COMPONENT ARE CONDITIONED AT 73 PLUS OR MINUS 2 DEGREES F. WHEN THE SAMPLES HAVE REACHED 73 PLUS OR MINUS 2 DEGREES F., 60 PLUS OR MINUS 0.4G TOTAL WEIGHT



OF COMPONENTS A AND B IN PROPORTIONS RECOMMENDED BY THE MANUFACTURER ARE WEIGHED INTO AN UNWAXED PAPER CUP. THE TIME IS RECORDED AND THEY ARE IMMEDIATELY MIXED, STIRRING FOR THREE MINUTES WITH A WOODEN TONGUE DEPRESSOR, TAKING CARE TO PERIODICALLY SCRAPE THE WALLS AND BOTTOM OF THE CUP AND THE MIXER. THE SAMPLE IS THEN POURED INTO AN EIGHT-OUNCE UNWAXED PAPER CUP, SET ON A WOODEN BENCH TOP, AND PROBED EVERY TWO MINUTES WITH A SMALL STICK STARTING TWENTY MINUTES FROM THE TIME OF MIXING. THE TIME AT WHICH A SOFT BALL FORMS IN THE CENTER OF THE CONTAINER IS RECORDED AS THE POT LIFE.

### C.3. RATE OF CURE

THE EPOXY UNDER TEST SHALL BE BRUSHED UPON A CLEAN METAL PLATE IN AN APPROXIMATELY 25 MIL FILM AT 73 DEGREES F. THE TIME TO BECOME TACK FREE SHALL BE RECORDED.

### C.4. MECHANICAL PROPERTIES

TEST PROCEDURE SHALL BE A.S.T.M. METHOD D-638 AS HEREINAFTER AMENDED AND SUPPLEMENTED. A MINIMUM OF THREE SPECIMENS SHALL BE CAST IN SILICONE RUBBER MOLDS AND TEST RESULTS REPORTED SHALL BE THE AVERAGE OF THE THREE SPECIMENS. SPECIMENS SHALL HAVE A THICKNESS OF 3/16 INCH. WHEN MIXING THE EPOXY COMPONENTS, CARE SHALL BE TAKEN TO ENTRAIN A MINIMUM OF AIR BUBBLES. SPECIMENS WITH EXCESSIVE AIR BUBBLES SHALL BE DISCARDED. THE TEST RATE SHALL BE 0.2 IN/MIN. THE SPECIMENS SHALL BE CURED AT 72 DEGREES F. FOR SEVEN DAYS AND THEN TESTED. AN EXTENSOMETER MAY BE USED TO MEASURE DEFORMATION. A "C" DYE SHALL BE USED.

### C.5. WATER ABSORPTION

TEST PROCEDURE SHALL BE A.S.T.M. METHOD D-570, 1/2 HOUR WATER BOIL METHOD F. WEIGHT GAIN SHALL BE RECORDED AS A PERCENTAGE. SPECIMENS SHALL BE CURED SEVEN DAYS AT 72 DEGREES F. BEFORE BEING SUBJECTED TO THIS TEST.

### C.6. HEAT AGING

THREE SPECIMENS SHALL BE CAST AS GIVEN IN ARTICLE C-4 AND CURED FOR SEVEN DAYS AT 72 DEGREES F. THE SPECIMENS SHALL THEN BE AGED AT 158 DEGREES F. FOR AN ADDITIONAL SEVEN DAYS. THE TENSILE STRENGTH AND ULTIMATE ELONGATION SHALL BE DETERMINED IN ACCORDANCE WITH ARTICLE C-4, AFTER ALLOWING SEVERAL HOURS TO ALLOW SPECIMENS TO COOL TO ROOM TEMPERATURE.

### C.7. LOW TEMPERATURE PROPERTIES

THREE TYPICAL TENSION SPECIMENS SHALL BE PREPARED IN ACCORDANCE WITH ARTICLE C-4 AND CURED FOR SEVEN DAYS AT 72 DEGREES

F. SPECIMENS MUST ALSO BE HEAT AGED AT 158 DEGREES F. FOR SEVEN DAYS. AFTER CONDITIONING AT 32 DEGREES F., THE THREE SPECIMENS SHALL BE TESTED IN TENSION AND THE ULTIMATE ELONGATION DETERMINED. TESTING SHALL BE DONE AT 32 DEGREES F.

THREE SPECIMENS SHALL BE MADE AND THE RESULTS AVERAGED.

C.8. DIRECT TENSION TEST.

TEST PROCEDURE MAY BE THE TEST DESCRIBED IN A.C.I. BULLETIN "GUIDE FOR USE OF EPOXY COMPOUNDS WITH CONCRETE" OR THE P. C. A. DIRECT TENSION BOND TEST DESCRIBED IN THE A.A.S.H.T.O. EPOXY RESIN GUIDE SPECIFICATION.

GENERAL REQUIREMENTS FOR BOND TESTS AS GIVEN IN THE APPENDIX SHALL BE FOLLOWED. THE EPOXY SHALL BE ALLOWED TO CURE 96 HOURS AT ROOM TEMPERATURE.

THE THICKNESS OF THE GLUE LINE SHALL BE 15 MILS MINIMUM. ONLY NOMINAL CONTACT PRESSURE SHALL BE USED TO HOLD THE ELEMENTS TOGETHER UNTIL THE EPOXY SETS.

THREE SPECIMENS SHALL BE MADE AND THE RESULTS AVERAGED.

C.9. IMPACT STRENGTH.

TEST PROCEDURE SHALL BE THE FALLING STEEL BALL METHOD, U. S. NAVY SPECIFICATION, MIL-C-16423A.

THREE SPECIMENS SHALL BE MADE AND THE RESULTS AVERAGED. SPECIMENS SHALL BE CURED FOR SEVEN DAYS AT 72 DEGREES F. PLUS SIX HOURS AT 158 DEGREES F.

GENERAL REQUIREMENTS FOR BOND TESTS

1. OLD CONCRETE SURFACES SHALL BE PREPARED FOR BONDING BY SAND-BLASTING OR BY IMMERSING BRIEFLY IN A SOLUTION OF HYDROCHLORIC ACID. AFTER USING THE ACID ETCH, WASH SPECIMENS THOROUGHLY.

2. CONCRETE SHALL BE DESIGNED FOR 5,000 PSI COMPRESSIVE STRENGTH AT THE TIME OF TESTING (HIGH-EARLY STRENGTH CEMENT MAY BE USED).

3. FOR TESTING THE BOND OF HARDENED TO HARDENED CONCRETE, CURE THE ADHESIVE 96 HOURS IN AIR, BUT SOAK THE SPECIMENS 24 HOURS IN WATER BEFORE TESTING.

## 8.5.44. PLASTIC WATERSTOP.

### DESCRIPTION.

THE PLASTICIZED POLYVINYLCHLORIDE MATERIAL FROM WHICH THE WATERSTOPS SHALL BE EXTRUDED SHALL NOT CONTAIN ANY RECLAIMED, REGROUND OR REWORKED MATERIAL WHATSOEVER BUT SHALL BE COMPOUNDED FROM VIRGIN PVC RESINS, PLASTICIZERS, STABILIZERS AND SUCH MATERIALS THAT WHEN COMPOUNDED IT SHALL MEET THE PERFORMANCE REQUIREMENTS CONTAINED IN THE POLYVINYLCHLORIDE WATERSTOP SPECIFICATIONS OF THE CORPS OF ENGINEER, U.S. ARMY (CRO-C-572-61).

WATERSTOPS SHALL BE EXTRUDED IN SUCH A MANNER THAT ANY CROSS-SECTIONS SHALL BE DENSE, HOMOGENEOUS AND FREE FROM POROSITY OR OTHER IMPERFECTIONS. THE CROSS-SECTION OF WATERSTOPS FOR EXPANSION, CONTRACTION OR CONSTRUCTION JOINTS SHALL BE OF MULTIPLE RIDGE DESIGN CONSISTING OF A CENTRAL HOLLOW TUBE BETWEEN TWO FLAT SURFACES CONTAINING LONGITUDINAL TRIANGULAR RIDGES ON BOTH SIDES.

### GENERAL REQUIREMENTS.

THE WATERSTOPS SHALL BE SPLICED ONLY AT JOINTING MADE NECESSARY BY CONSTRUCTION DESIGN.

WHERE JOINTS ARE REQUIRED, THEY SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, WITHOUT APPRECIABLE LOSS IN STRENGTH, ELASTICITY OR PERMEABILITY OF THE MATERIAL.

THE WATERSTOP MATERIAL SHALL BE PRACTICALLY IMPERVIOUS TO WATER AND RESISTANT TO MOST COMMON ACIDS, ALKALIS, SEA WATER AND MINERAL OILS. THE MATERIAL SHALL BE SUCH THAT IT WILL NOT ENGAGE IN ELECTROLYTIC ACTION WITH STEEL, AND WILL NOT DISCOLOR CONCRETE.

THE APPROVED WATERSTOP WHEN PROPERLY INSTALLED, AS IN A CONCRETE CONSTRUCTION OR EXPANSION JOINT, SHALL BE CAPABLE OF MAINTAINING A HEAD OF 75 FEET OF WATER WITHOUT LEAKAGE.

### SHAPES AND DIMENSIONS.

THE WATERSTOPS SHALL BE OF MULTIPLE-RIB DESIGN WITH FULLY CLOSED CENTER BULB.

THE MINIMUM DIMENSIONS FOR WATERSTOPS SHALL BE AS FOLLOWS:

OVER ALL WIDTH: 6"  
THICKNESS OF WATERSTOP -

ALT. NO.1

FLAT SECTION EITHER SIDE OF BULB: 3/16" THICK  
(WEIGHT OF THIS SECTION APPROX.  
85 LBS. PER C.L.F.).

ALT. NO.2

FLAT SECTION EITHER SIDE OF BULB: 3/16" THICK  
TAPERING TO 1/8"  
(WEIGHT OF THIS SECTION APPROX.  
72 LBS. PER C.L.F.).

HEIGHT OF TRIANGULAR RIDGES: 1/16"

NUMBER OF TRIANGULAR RIDGES ON  
EACH OF THE 4 FLAT SURFACES: 8.

CONSTRUCTION.

PLASTIC WATERSTOP SHALL BE CAREFULLY PLACED AT THE LOCATIONS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. A SPLIT FORM TECHNIQUE SHALL BE USED DURING INSTALLATION. BENDING OF THE WATERSTOP ALONG THE FACE OF FORM SHALL NOT BE PERMITTED. PRECAUTIONS SHALL BE TAKEN THAT THE WATERSTOP SHALL NEITHER BE DISPLACED NOR DAMAGED BY CONSTRUCTION OPERATIONS OR OTHER MEANS. ALL SURFACES OF THE WATERSTOP SHALL BE FREE FROM OIL, GREASE, DRIED MORTAR OR OTHER FOREIGN MATTER WHILE THE WATERSTOP IS BEING EMBEDDED IN CONCRETE. MEANS SHALL BE USED TO INSURE THAT ALL PORTIONS OF THE WATERSTOP DESIGNED FOR EMBEDMENT SHALL BE TIGHTLY ENCLOSED BY DENSE CONCRETE.

QUALIFICATION SAMPLES.

A MANUFACTURER REQUESTING APPROVAL OF A WATERSTOP SHALL FURNISH SAMPLES OF THE MATERIAL WHICH HE PROPOSES TO USE. THIS MATERIAL SHALL BE IN SHEET FORM. SHEETS 1/15 TO 1/8 INCH THICK, APPROX. 8 INCHES SQUARE, SHALL BE SUPPLIED BY THE MANUFACTURER WITH AN ACCOMPANYING CERTIFICATION TO THE EFFECT THAT THE SHEET SAMPLES ARE IN ALL RESPECTS FROM THE SAME MATERIAL AS THE ONE THAT IS AND WILL BE USED IN THE MANUFACTURE OF THE FINISHED WATERSTOPS AND FURNISHED BY THE CONTRACTOR. THE CERTIFICATION SHALL ALSO STATE THAT THE ELASTOMERIC PLASTIC COMPOUND THAT HAS BEEN OR WILL BE USED IN THE MANUFACTURE OF THE WATERSTOP CONTAINS POLYVINYL-CHLORIDE (PVC) AS ITS BASIC RESIN AND THAT NO RECLAIMED PVC HAS BEEN OR WILL BE USED.

IN ADDITION, THE MANUFACTURER SHALL FURNISH A 1-FT. LENGTH OF THE EXTRUDED SECTION OF WATERSTOP THAT HE INTENDS TO

SUPPLY, TOGETHER WITH A CERTIFICATION THAT THE WATERSTOP CONFORMS TO THE REQUIREMENTS OF THESE SPECIFICATIONS.

PHYSICAL REQUIREMENTS.

THE WATERSTOPS OR THE MATERIAL FROM WHICH THE WATERSTOPS ARE FABRICATED SHALL MEET THE FOLLOWING PERFORMANCE REQUIREMENTS:

1. SAMPLES TAKEN FROM THE FINISHED WATERSTOP SHALL MEET THE REQUIREMENTS OF TESTS IN ACCORDANCE WITH U.S. ARMY SPECIFICATION CRD-C-572-61 EXCEPT AS NOTED:

PROPERTY	FEDERAL TEST METHOD STANDARD NO.406	A.S.T.M. EQUIVALENT	REQUIREMENT
WATER ABSORPTION	7031	D 570	MAX. 0.5 PERCENT
VOLATILE LOSS	6081	D 1203	NOT MORE THAN MFR.'S VALUE

2. SAMPLES TAKEN FROM THE SHEET MATERIAL SUBMITTED SHALL MEET THE REQUIREMENTS OF TESTS IN ACCORDANCE WITH U.S. ARMY SPECIFICATION CRD-C-572-61.

8.5.46. EPOXY FOR COATING REINFORCEMENT STEEL.

DESCRIPTION.

THE COATING MATERIAL SHALL BE A POWDERED EPOXY RESIN OF ORGANIC COMPOSITION EXCEPT THAT, IF A PIGMENT IS USED, THE PIGMENT MAY BE INORGANIC.

TEST SPECIMENS.

THE FOLLOWING SPECIMENS SHALL BE SUBMITTED TO THE LABORATORY FOR TESTING.

1. A ONE POUND SAMPLE OF THE COATING MATERIAL WITH ITS GENERIC DESCRIPTION (INCLUDING PERCENTAGES OF PIGMENTS, DILUENTS, FILLERS, FLEXIBILIZERS AND ALL OTHER ADDITIVES) AND ITS FINGER-PRINT (INCLUDING THE METHOD, SUCH AS INFRARED SPECTROSCOPY AND THERMAL ANALYSIS).

2. ONE QUART OF PATCHING MATERIAL, WHICH SHALL BE COMPATIBLE WITH THE COATING MATERIAL AND INERT IN CONCRETE.

THE PATCHING MATERIAL SHALL BE A TYPE SUITABLE FOR REPAIRING AREAS OF THE COATED REINFORCEMENT STEEL WHICH WERE DAMAGED DURING FABRICACION OR HANDLING.

THE PATCHING MATERIAL MAY BE A LIQUID WHICH HARDENS TO A SOLID UPON CURING.

3. TWELVE REINFORCEMENT STEEL BARS, NO. 6, 4 FEET LONG, EPOXY COATED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 8.4.19 AND AS SPECIFIED HEREINAFTER.

4. FOUR STEEL PLATES, 4" X 4" X 0.05, EPOXY COATED AS SPECIFIED ABOVE FOR REINFORCEMENT STEEL BARS EXCEPT THAT THE THICKNESS OF THE COATING SHALL BE 10 MILS.

5. THREE FILMS OF EPOXY, 7 MILS PLUS OR MINUS 2 MILS THICK.

THE COATINGS AND FILMS SHALL BE FREE FROM HOLES, VOIDS, CONTAMINATION, CRACKS, DAMAGED AREAS AND HOLIDAYS (PINHOLES NOT VISIBLE TO THE NAKED EYE). THE COATINGS SHALL BE CHECKED FOR HOLIDAYS USING A 67-1/2-VOLT HOLIDAY DETECTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

#### REQUIREMENTS OF COATINGS.

##### CHEMICAL RESISTANCE.

THE CHEMICAL RESISTANCE OF THE COATINGS SHALL BE EVALUATED ACCORDING TO A.S.T.M. DESIGNATION G 20-72 T BY IMMERSING COATED REINFORCING BARS IN EACH OF THE FOLLOWING: DISTILLED WATER, AN AQUEOUS SOLUTION OF 3M  $CaCl_2$ , AN AQUEOUS SOLUTION OF 3M  $NaOH$ , AND A SOLUTION SATURATED WITH  $Ca(OH)_2$ . SPECIMENS WITHOUT HOLIDAYS AND SPECIMENS WITH INTENTIONAL HOLES DRILLED THROUGH THE COATING 1/4-INCH IN DIAMETER SHALL BE TESTED. THE TEMPERATURE OF THE TEST SOLUTIONS SHALL BE 24 PLUS OR MINUS 2 DEG. C. MINIMUM TEST TIME SHALL BE 45 DAYS. THE COATING SHALL NOT BLISTER, SOFTEN, LOOSE BOND, NOR DEVELOP HOLIDAYS DURING THIS PERIOD. THE INTENTIONALLY MADE HOLES SHALL EXHIBIT NO UNDERCUTTING DURING THE 45-DAY PERIOD.

##### RESISTANCE TO APPLIED VOLTAGE.

THIS IS A TYPE OF ACCELERATED CORROSION TEST.

THE EFFECTS OF ELECTRICAL AND ELECTROCHEMICAL STRESSES ON THE BOND OF COATINGS TO STEEL AND ON THE FILM INTEGRITY OF THE COATING SHALL BE ASSESSED. THE METHODS GIVEN IN PART A OF A.S.T.M. DESIGNATION G 8-69 T WILL BE FOLLOWED EXCEPT:

(1) THE CATHODE AND ANODE SHALL BE REINFORCING BARS COATED WITH THE PROPOSED MATERIAL.

(2) THE ELECTROLYTE SHALL BE AN AQUEOUS SOLUTION OF 7 PERCENT NACL.

(3) A POTENTIAL OF TWO VOLTS SHALL BE APPLIED, AND

(4) NO INTENTIONAL HOLES SHALL BE MADE.

NO FILM FAILURES, AS EVIDENCE BY EVOLUTION OF HYDROGEN GAS AT THE CATHODE OR APPEARANCE OF CORROSION PRODUCTS OF IRON AT THE ANODE, SHALL TAKE PLACE DURING THE FIRST 1-HOUR OF TESTING.

THE TEST SHALL BE CONTINUED FOR 30 DAYS AND THE ELAPSED TIME FOR DEVELOPMENT OF THE FIRST HOLIDAYS SHALL BE RECORDED. IF NO HOLIDAYS HAVE DEVELOPED AFTER 30 DAYS, THEN SINGLE INTENTIONAL HOLES 1/4-INCH IN DIAMETER SHALL BE MADE IN BOTH THE ANODE AND CATHODE. THEN THE TEST SHALL BE CONTINUED FOR AN ADDITIONAL 24 HOURS IN WHICH TIME NO UNDERCUTTING SHALL OCCUR.

#### CHLORIDE PERMEABILITY.

THE CHLORIDE PERMEABILITY CHARACTERISTICS OF THE FILMS OF CURED COATINGS HAVING THE SAME THICKNESS AS PROPOSED FOR USE SHALL BE MEASURED BY THE METHODS OUTLINED IN REPORT NO. FHWA-RD-74-18, "NONMETALLIC COATINGS FOR CONCRETE REINFORCING BARS" BY CLIFTON, BEEGLY AND MATHEY, DATED FEBRUARY 1974. THE TEST SHALL BE CARRIED OUT AT 24 PLUS OR MINUS 2 DEG. C FOR 45 DAYS. THE ACCUMULATIVE CONCENTRATION OF CHLORIDE IONS PERMEATING THROUGH THE FILM SHALL BE LESS THAN  $1 \times 10^{-4}M$ .

#### FLEXIBILITY.

THE FLEXIBILITY OF THE COATING SHALL BE EVALUATED BY BENDING THE COATED REINFORCING BAR 120 DEGREES (AFTER REBOUND) AROUND A 6-INCH DIAMETER WOODEN MANDREL. THE BEND SHALL BE MADE AT A UNIFORM RATE AND MAY TAKE UP TO ONE MINUTE TO COMPLETE. THE TWO LONGITUDINAL DEFORMATIONS MAY BE PLACED IN A PLANE PERPENDICULAR TO THE MANDREL RADIUS AND THE SPECIMEN SHALL BE AT THERMAL EQUILIBRIUM OF 24 PLUS OR MINUS 2 DEG. C.

NO CRACKING OF THE COATING SHALL BE VISIBLE TO THE NAKED EYE ON THE OUTSIDE RADIUS OF THE BENT BAR.

#### BOND STRENGTH TO CONCRETE.

THE BOND STRENGTH OF THE COATED BARS TO CONCRETE SHALL BE DETERMINED WITH PULL-OUT SPECIMENS BY THE METHODS GIVEN BY MATHEY AND WATSTEIN, ACI JOURNAL, 32 (1961), PP. 1071-1090. THE PULL-OUT SPECIMEN SHOULD BE A CONCRETE PRISM 10 X 10 X 12-INCHES LONG WITH A NO. 6 REINFORCING BAR EMBEDDED ALONG THE LONGITUDINAL AXIS OF THE SPECIMEN.

WHEN, IN THE OPINION OF THE ENGINEER, THE COATING MATERIAL CONTAINS APPRECIABLE QUANTITIES OF PIGMENTS, DILUENTS, FILLERS, FLEXIBILIZERS, OR OTHER ADDITIVES SUCH THAT THE CREEP OF COATED REINFORCING STEEL EMBEDDED IN PORTLAND CEMENT CONCRETE MIGHT BE CRITICAL, TWO SPECIMENS SHALL BE TESTED UNDER A 30,000 POUNDS PER SQUARE INCH LOAD FOR A PERIOD OF 45 DAYS BY THE METHOD DESCRIBED IN REPORT NO. FHWA-RD-74-18 BY CLIFTON, BEEGLY AND MATHEY, AND TITLED "NONMETALLIC COATINGS FOR CONCRETE REINFORCING BARS, FINAL REPORT". THE CREEP SPECIMENS SHALL BE A CONCRETE PRISM 10 X 10 X 12-INCHES LONG WITH A NO. 6 REINFORCING BAR EMBEDDED ALONG THE LONGITUDINAL AXIS OF THE SPECIMEN. THE SLIP-RATIO OF COATED BARS TO UNCOATED BARS SHALL BE NO GREATER THAN 1.3 FOR FREE END SLIP OR 1.6 FOR LOADED END SLIP.

#### ABRASION RESISTANCE.

THE RESISTANCE OF A COATING ON EACH OF THE STEEL PANELS TO ABRASION BY A TABER ABRASER OR ITS EQUIVALENT, USING CS-10 WHEELS AND A 1000-GRAM LOAD, SHALL BE SUCH THAT THE WEIGHT LOSS SHALL NOT EXCEED 100 MG. PER 1000 CYCLES.

#### IMPACT TEST.

THE RESISTANCE OF A BAR COATING TO MECHANICAL DAMAGE SHALL BE DETERMINED BY THE FALLING WEIGHT TEST. A TEST APPARATUS SIMILAR TO THAT DESCRIBED IN A.S.T.M. DESIGNATION G-14-72 SHALL BE USED ALONG WITH A 4-POUND TUP. IMPACT SHALL OCCUR ON THE LOW-LYING AREAS ON THE COATED BARS; I.F., BETWEEN DEFORMATION RIDGES. THE TEST SHALL BE PERFORMED AT ROOM TEMPERATURE. WITH AN IMPACT OF 80 INCH-POUNDS, NO SHATTERING, CRACKING OR BOND LOSS OF THE COATING SHALL OCCUR EXCEPT AT THE IMPACT AREA; I.E., AREA PERMANENTLY DEFORMED BY THE TUP.

#### HARDNESS TEST.

THE HARDNESS OF THE COATING ON REINFORCING BARS SHALL BE DETERMINED BY FOLLOWING THE METHOD OF A.S.T.M. DESIGNATION D 1474-68, USING A 10 G WEIGHT. THE HARDNESS SHALL EXCEED THE KNOOP HARDNESS NUMBER OF 16.



SECTION 6

PAINTS

8.6.1. GENERAL.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

ALL CONTAINERS SHALL BE LABELED IN ACCORDANCE WITH INTERSTATE COMMERCE COMMISSION STANDARD REGULATIONS FOR FLAMMABLES.

NO MIXING OR DISPERSION APPARATUS WILL BE ACCEPTABLE AS A GRINDING MEDIUM.

SAMPLES AND ANALYSES OF ANY INGREDIENTS TO BE USED OR ANY PAINT MANUFACTURED SHALL BE FURNISHED BY THE MANUFACTURER TO THE DEPARTMENT WITHIN TEN (10) DAYS AFTER REQUEST THEREFOR IS MADE. THE MANUFACTURER SHALL PERMIT, AT ANY TIME, INSPECTION IN HIS PLANT BY AN AUTHORIZED REPRESENTATIVE OF THE DEPARTMENT, OF THE MANUFACTURE OF THE PAINT OR ANY MATERIALS USED THEREIN. PAINT PREPARED BY ANY MANUFACTURER NOT COMPLYING WITH THESE REQUIREMENTS MAY BE REJECTED, REGARDLESS OF CHARACTER OR COMPOSITION.

IN ADDITION TO THE METHODS OF TESTS AND INSPECTION SET FORTH IN THIS SPECIFICATION, THE DEPARTMENT RESERVES THE RIGHT TO MAKE ANY AND ALL ADDITIONAL TESTS IT MAY DEEM NECESSARY TO DETERMINE COMPLIANCE WITH THESE SPECIFICATIONS AND THE SUITABILITY OF THE PAINT FOR ITS INTENDED USAGE. THE DEPARTMENT FURTHER RESERVES THE RIGHT TO REQUIRE THE MANUFACTURER OF THE PAINT TO CERTIFY TO THE USE OF SPECIFIC MATERIALS AND COMPONENTS IN THE QUANTITIES SPECIFIED HEREIN WHERE SUCH MATERIALS OR COMPONENTS ARE NOT READILY IDENTIFIABLE IN THE FINISHED PAINT.

IF, DURING THE EXECUTION OF A CONTRACT, ANY FEDERAL REGULATIONS ARE IN EFFECT OR BECOME EFFECTIVE THAT MAY PREVENT THE MANUFACTURE OF PAINTS IN ACCORDANCE WITH THESE SPECIFICATIONS, PAINT SHALL BE MADE IN ACCORDANCE WITH SUCH SPECIFICATIONS AS MAY BE AGREED UPON BY THE CONTRACTOR AND THE DEPARTMENT.

8.6.4. FOLIAGE GREEN PAINT.

THIS ENTIRE ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

FOLIAGE GREEN PAINT SHALL BE A BASIC LEAD SILICO CHROMATE-CHROMIUM OXIDE FOLIAGE GREEN-ALKYD PAINT CONFORMING TO THE REQUIREMENTS HEREINAFTER SPECIFIED.

MATERIALS

CHROMIUM OXIDE GREEN	-	FED. SPEC. TT-P-347
TITANIUM DIOXIDE	-	A.S.T.M. D476, TYPE IV TI O2 93% MINIMUM PURITY
ALKYD RESIN SOLUTION	-	FED. SPEC. TT-R-266, TYPE I, GRADE A
COBALT NAPHTHENATE (6 PERCENT)	-	FED. SPEC. TT-D-643, TYPE II
BASIC LEAD SILICO CHROMATE	-	A.S.T.M. D 1648
ZIRCONIUM CATALYST	-	5.9 TO 6.1 PERCENT ZIRCONIUM AS METAL

PIGMENT COMPOSITION (BY WEIGHT)

	MIN.	MAX.
BASIC LEAD SILICO CHROMATE	40.0	50.0 PERCENT
TITANIUM DIOXIDE (RUTILE, NON CHALKING)	20.0	30.0
CHROMIUM OXIDE GREEN	25.0	35.0
PHTHALD CYANINE BLUE OR GREEN (NO CHROME GREEN PERMITTED),		PERCENT AS REQUIRED
*ORGANO MONTMORILLONITE	0.5	0.7

\* SHOULD BE PREDAMPENED WITH 30-35 PERCENT METHANOL-WATER (95-5)

VEHICLE COMPOSITION (BY WEIGHT)

THE LIQUID SHALL CONSIST OF NOT LESS THAN 45.0 PERCENT NONVOLATILE VEHICLE, THE BALANCE TO BE COMBINED DRIER AND THINNER. THE NON-VOLATILE VEHICLE SHALL BE COMPOSED OF RAW LINSEED OIL AND ALKYD RESIN COMBINED IN THE APPROPRIATE PROPORTIONS OF ONE PART LINSEED OIL TO 7.1 PARTS ALKYD RESIN SOLIDS, BY WEIGHT, AND SHALL CONTAIN A MINIMUM OF 20.0 PERCENT PHTHALIC ANHYDRIDE. SMALL QUANTITIES OF GRINDING AND WETTING AIDS MAY BE USED IF DESIRED.

PAINT COMPOSITION

	MIN.	MAX.
PIGMENT (BY WEIGHT), PERCENT	33.5	-
VEHICLE (BY WEIGHT), PERCENT	-	66.5
WEIGHT PER GALLON, LBS.	10.2	-
WATER, PERCENT	-	0.5
COARSE PARTICLES (RESIDUE RETAINED ON 325 MESH SIEVE), PERCENT	-	1.0

FINENESS (HEGMAN)	3	-
VISCOSITY, KU	65	80
DRYING TIME: SET TO TOUCH, HOURS	-	2
DRY HARD, HOURS	-	8

THE COLOR OF THE FINISHED PAINT (DRY FILM) SHALL MATCH THE FEDERAL STANDARD 595, COLOR CHIP NO. 24172.

**8.6.5. GRAPHITE PAINT, BLACK.**

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

BLACK GRAPHITE PAINT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE AND GRADE.

THIS SPECIFICATION COVERS A READY-MIXED, LINSEED OIL, BLACK GRAPHITE PAINT INTENDED FOR OUTSIDE USE ON EITHER WOOD OR METAL. ONLY NATURAL CRYSTALLINE FLAKE GRAPHITE WILL BE PERMITTED.

DETAIL REQUIREMENTS.

PIGMENTS

THE PIGMENT SHALL CONSIST OF GRAPHITE OF THE NATURAL CRYSTALLINE FLAKE VARIETY, SILICEOUS MATTER, AND GAS CARBON BLACK OR LAMPBLACK. THE PIGMENT ON ANALYSIS SHALL SHOW NOT LESS THAN 40 NOR MORE THAN 60 PERCENT GRAPHITIC CARBON. THE GAS CARBON BLACK OR LAMPBLACK SHALL BE NOT LESS THAN 5 AND NOT MORE THAN 10 PERCENT OF THE TOTAL PIGMENT. GROUND COAL AND POWDERED SHALE ARE NOT PERMITTED UNDER THIS SPECIFICATION.

SUGGESTED WEIGHT FORMULA

	PERCENT
PIGMENT: NATURAL CRYSTALLINE FLAKE GRAPHITE	95
(CONTAINING ABOUT 55% GRAPHITIC CARBON)	
GAS CARBON BLACK	5
	<hr/>
TOTAL	100
VEHICLE: BOILED LINSEED OIL	85
DRIER	5
MINERAL SPIRITS	10
	<hr/>
TOTAL	100

PAINT:	PIGMENT	PERCENT
	VEHICLE	40
		60
		-----
	TOTAL	100

WEIGHT PER GALLON OF PAINT, 10 POUNDS.

VOLUME ANALYSIS

ONE GALLON OF PAINT CONTAINS:	GALLONS
DRY GRAPHITE	0.195
DRY CARBON BLACK	0.013
	-----
TOTAL PIGMENTS	0.208
LINSEED OIL	0.654
	-----
TOTAL NONVOLATILE	0.862
MINERAL SPIRITS AND DRIER	0.138
	-----
TOTAL PAINT	1.000
OTHER VOLUME CHARACTERISTICS OF PAINT:	PERCENT
VOLUME OF PIGMENT IN PAINT	21
VOLUME OF OIL IN PAINT	65
VOLUME OF PIGMENT IN NONVOLATILE	24

THE ABOVE VOLUME FIGURES MEAN THAT WHEN 1 GALLON OF THIS PAINT IS PURCHASED, EACH GALLON CONTAINS 0.862 GALLON TOTAL SOLIDS OR FILM-FORMING MATERIALS, AND THAT IN THE DRY FILM THERE IS APPROXIMATELY 24 PERCENT BY VOLUME OF PIGMENT AND 76 PERCENT BY VOLUME OF OIL. FOR THE ABOVE REASONS, PAINT SHOULD BE PURCHASED BY VOLUME, 231 CUBIC INCHES EQUALS 1 GALLON.

LIQUID

THE LIQUID IN THE READY-MIXED PAINT SHALL CONTAIN NOT LESS THAN 85 PERCENT LINSEED OIL, THE BALANCE TO BE COMBINED DRIER AND THINNER. THE THINNER SHALL BE TURPENTINE, VOLATILE MINERAL SPIRITS, OR ANY MIXTURE THEREOF.

READY-MIXED PAINT

READY-MIXED PAINT SHALL CONSIST OF THE PIGMENT AND THE LIQUID JUST DESCRIBED. IT SHALL BE WELL GROUND, SHALL NOT SETTLE BADLY OR CAKE IN THE CONTAINER, SHALL BE READILY BROKEN UP WITH A PADDLE TO A SMOOTH, UNIFORM PAINT OF GOOD BRUSHING CONSISTENCY, AND SHALL DRY WITHIN 24 HOURS TO A FULL OIL GLOSS, WITHOUT RUNNING

OR SAGGING. THE COLOR AND HIDING POWER WHEN SPECIFIED SHALL BE EQUAL TO THOSE OF A SAMPLE MUTUALLY AGREED UPON BY BUYER AND SELLER. THE WEIGHT PER GALLON SHALL BE NOT LESS THAN 9 1/2 POUNDS. THE PAINT SHALL CONSIST OF:

	PERCENTAGE	
	MAXIMUM	MINIMUM
PIGMENT	42	35
LIQUID (CONTAINING AT LEAST 85 PERCENT LINSEED OIL)	65	58
WATER	0.5	---
COARSE PARTICLES AND "SKINS" (TOTAL RESIDUE RETAINED ON NO. 325 BASED ON PIGMENT)	5.0	---

WHEN TWO COATS OF GRAPHITE PAINT ARE SPECIFIED, THE FIRST COAT SHALL CONTAIN NO CARBON BLACK OR LAMPBLACK PIGMENT.

#### 8.6.6. GREEN ENAMEL PAINT.

THE LAST SENTENCE OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE TINT SHALL MATCH THE STANDARD COLOR CHIP NO. 14062, AS SHOWN IN CURRENT FEDERAL TEST STANDARD NO. 595.

#### 8.6.7. RED LEAD PAINT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

RED LEAD PAINT FOR SHOP COAT OR TOUCH UP COAT SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M-229, TYPE V. THE SUSPENDING AGENT USED SHALL BE ORGANO MONTMORILLONITE. IT SHALL BE PRE-DAMPENED WITH 30-35 PERCENT METHANOL-WATER (95-5).

RED LEAD PAINT FOR THE FIRST FIELD COAT SHALL COMPLY WITH THE FOLLOWING:

BASIC LEAD SILICO CHROMATE MAROON INTERMEDIATE COAT SHALL CONFORM TO THE REQUIREMENTS GIVEN HEREINBELOW:

PIGMENT COMPOSITION

	MIN.	MAX.
BASIC LEAD SILICO CHROMATE, %	63.6	----
IRON OXIDE AS FE2O3	----	30.0
SILICA AND SILICATES	----	6.0
ORGANO MONTMORILLONITE, %	0.4	0.8

FOR GREATEST EFFECTIVENESS, THE ORGANO MONTMORILLONITE SHOULD BE PREDAMPENED WITH 30-35% METHANOL-WATER (95-5).

VEHICLE COMPOSITION

THE VEHICLE SHALL CONSIST OF NOT LESS THAN 59.0% NON-VOLATILE VEHICLE, THE BALANCE TO BE COMBINED DRIER AND THINNER. THE NON-VOLATILE VEHICLE SHALL BE COMPOSED OF RAW LINSEED OIL AND ALKYD RESIN COMBINED IN THE APPROXIMATE PROPORTIONS OF TWO PARTS LINSEED OIL TO ONE PART ALKYD RESIN SOLIDS, RESPECTIVELY BY WEIGHT, AND SHALL CONTAIN A MINIMUM OF 7.7% PHTHALIC ANHYDRIDE. SMALL QUANTITIES OF GRINDING AND WETTING AIDS MAY BE USED IF DESIRED.

PAINT COMPOSITION

WHEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF FEDERAL STANDARD NO. 141 AND APPLICABLE METHODS OF TEST, THE FINISHED PAINT SHALL CONSIST OF:

	MIN.	MAX.
PIGMENT, %	62.0	----
VEHICLE, %	----	38.0
WEIGHT/GALLONS, LBS.	14.7	----
WATER, %	----	0.5
COARSE PARTICLES AND SKINS (TOTAL RESIDUE RETAINED ON 325 SIEVE BASED ON PAINT), %	----	1.0
FINENESS OF GRIND (HEGMAN)	3	----
VISCOSITY, (STORMER-KREBS UNITS)	73	85
VISCOSITY (GRAMS STORMER)	155	220
DRYING TIME:		
SET-TO-TOUCH, HRS.	----	5
DRY-TO-HANDLE, HRS.	----	18
DRY-TO-RECOAT, HRS.	----	36

COLOR

THE COLOR OF THE FINISHED PAINT (DRY FILM) SHALL MATCH THE COLOR OF A CHIP OR SAMPLE FURNISHED BY THE NEW JERSEY DEPARTMENT OF TRANSPORTATION.

8.6.8. RED LEAD-GRAPHITE PAINT.

THE SECOND AND THIRD SENTENCES OF THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

NATURAL CRYSTALLINE FLAKE GRAPHITE AND SILICEOUS MATTER SHALL CONFORM TO THE REQUIREMENTS FOR BLACK GRAPHITE PAINT PIGMENTS AS SPECIFIED IN ARTICLE 8.6.6. RED LEAD SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION D83, 97% GRADE.

8.6.9. RUST-INHIBITIVE PRIMER.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

RUST-INHIBITIVE PRIMER FOR USE ON METAL SURFACES SHALL CONFORM TO THE REQUIREMENTS OF CURRENT FEDERAL SPECIFICATION TT-P-618.

8.6.12. ZINC CHROMATE-IRON OXIDE PAINT.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

ZINC CHROMATE-IRON OXIDE PAINT SHALL CONFORM TO THE REQUIREMENTS OF STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION 11-64T.

8.6.14. WHITE TRAFFIC PAINT.

THIS ENTIRE ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

8.6.14. TRAFFIC PAINT.

DESCRIPTION

TRAFFIC PAINT SHALL BE BASED ON A VEHICLE COMPOSED OF PURE DRYING ALKYD, CHLORINATED RUBBER AND CHLORINATED PARAFFIN, WITH APPROPRIATE PIGMENTS, STABILIZERS AND FLOW CONTROL AGENTS AND SHALL BE OF THE TYPES HERINAFTER SPECIFIED. THE VEHICLE

AND PIGMENT SHALL BE SO PREPARED AND BLENDED THAT THE RESULTING PAINT SHALL BE UNIFORM IN COMPOSITION AND OF THE REQUIRED CONSISTENCY.

#### PREPARATION

THE SPECIFIED COMPONENTS SHALL BE DISPERSED IN A SUITABLE AMOUNT OF VEHICLE. THE GRINDING SHALL BE PERFORMED BY EITHER A HIGH-R-SPEED MILL, ROLLER MILL, PEBBLE MILL, OR HIGH SPEED DISC DISPENSER SIMILAR TO THOSE MANUFACTURED BY COWIES-MOREHOUSE OR HOCKMEYER. THE RESULTANT PASTE SHALL HAVE A FINENESS OF NOT LESS THAN 4 AS DETERMINED ON A HEGMAN GRIND GAGE (FEDERAL STANDARD NO. 141A METHOD 4411). THE REMAINDER OF THE VEHICLE, ADDITIONAL THINNERS AND STABILIZERS, WHEN REQUIRED, SHALL THEN BE ADDED TO PRODUCE A PAINT HAVING THE SPECIFIED CONSISTENCY. THE EQUIPMENT TO BE USED IN PREPARATION AND MANUFACTURE OF THE PAINT SHALL BE SUBJECT TO INSPECTION AND APPROVAL OF THE ENGINEER.

#### PHYSICAL PROPERTIES

CONSISTENCY. FORTH-EIGHT HOURS AFTER THE PAINT HAS BEEN PREPARED AND PLACED IN THE CONTAINERS, IT SHALL HAVE A CONSISTENCY OF 70-80 K.U. FOR USE IN SPRAY TYPE EQUIPMENT. CONSISTENCY SHALL BE DETERMINED ACCORDING TO A.S.T.M. METHOD D-562.

DRYING TIME. THE PAINT SHALL DRY TO NO-PICK UP IN NOT MORE THAN 6 MINUTES WITHOUT GLASS BEADS WHEN TESTED IN ACCORDANCE WITH ASTM D 711. THE FILM SHALL BE APPLIED AT A WET FILM THICKNESS OF 0.015 INCHES (15 MILS).

FLEXIBILITY AND ADHESION. A FILM OF PAINT HAVING A WET FILM THICKNESS OF 0.015 INCHES SHALL BE APPLIED WITH A DOCTOR BLADE TO A TIN PANEL 3 INCHES X 5 INCHES WEIGHING 0.39 TO 0.51 LBS./SQ.FT., PREVIOUSLY CLEANED WITH BENZENE AND LIGHTLY BUFFED WITH STEEL WOOL. AFTER DRYING IN A HORIZONTAL POSITION AT ROOM TEMPERATURE (70-80 DEGREES F.) FOR 18 HOURS, THE COATED PANELS SHALL BE BAKED IN AN OVEN AT 122 DEGREES PLUS OR MINUS 4 DEGREES F. FOR 2 HOURS, REMOVED AND ALLOWED TO COOL TO ROOM TEMPERATURE. IT SHALL THEN BE BENT RAPIDLY WITH THE PAINTED SURFACE UPPERMOST OVER A 1/2 INCH DIAMETER MANDREL AND EXAMINED WITHOUT MAGNIFICATION. THE PAINT SHALL ADHERE FIRMLY TO THE PANEL AND ANY EVIDENCE OF CRACKING OR FLAKING OF THE FILM SHALL BE CAUSE FOR REJECTION OF THE PAINT.

WATER RESISTANCE. THE PAINT SHALL SHOW NO SOFTENING NOR BLISTERING WHEN TESTED AS SPECIFIED IN ARTICLE 9.1.13.

LIGHT RESISTANCE. THE PAINT SHALL SHOW RESISTANCE TO DISCOLORATION OR DARKENING, WHEN TESTED BY THE METHOD PRESCRIBED BY FEDERAL SPECIFICATION TT-P-115.



## STABILIZER COMPOSITION

ANTI-SETTLING AGENT SHALL BE ADDED - 2 LBS. TO EACH 100 GALLONS OF FINISHED PAINT.

ANTI-SKINNING AGENT SHALL BE ADDED - 3 LBS. TO EACH 100 GALLONS OF FINISHED PAINT.

CHLORINATED RUBBER STABILIZER SHALL BE PROPYLENE OXIDE OR EPICHLOROHYDRIN. THIS SHALL BE ADDED TO THE FINISHED PAINT JUST BEFORE CLOSING AND SEALING THE DRUM. THE PROPORTION SHALL BE 2% OF WEIGHT OF PROPYLENE OXIDE OR EPICHLOROHYDRIN BASED ON THE CHLORINATED RUBBER.

## VEHICLE COMPOSITION

THE VEHICLE SHALL CONSIST OF MEDIUM DRYING OIL PHTHALIC ALKYD RESIN, CHLORINATED PARAFFIN, CHLORINATED RUBBER AND METHYL ETHYL KETONE. THE VEHICLE, AS SEPARATED FROM THE PIGMENT, SHALL SHOW NON-VOLATILE CONTENT OF AT LEAST 41.0% FOR WHITE AND 40.5% FOR YELLOW. FORMULATION OF THE VEHICLE, EXCLUDING SOLVENTS, SHALL BE AS FOLLOWS:

42% ALKYD RESIN SOLUTION  
33% CHLORINATED RUBBER  
25% CHLORINATED PARAFFIN

ALKYD RESIN SHALL BE A MEDIUM DRYING OIL PHTHALIC ALKYD CONTAINING 33 TO 37% PHTHALIC ANHYDRIDE AND 48 TO 55% OIL ACIDS BASED ON THE SOLID RESIN. THE OIL SOURCE SHALL BE A VEGETABLE ORIGIN, EITHER ALKALI-REFINED SOYBEAN OIL OR LINSEED OIL OR MIXTURE OF THE TWO, WITH FATTY ACIDS HAVING AN IODINE VALUE OF 115 MINIMUM. THE RESIN SHALL HAVE AN ACID NUMBER OF 8 MAXIMUM. NO RECOVERED OILS OR FATTY ACID DERIVATIVES SHALL BE USED. NO OILS OR RESIN OTHER THAN THE ABOVE SHALL BE PRESENT.

THE ALKYD RESIN SOLUTION SHALL BE SUPPLIED AT 60% PLUS OR MINUS 1% SOLIDS IN VM & P NAPHTHA. THE ALKYD RESIN SOLUTION MUST TOLERATE 500% DILUTION WITH VM & P NAPHTHA. A SOLUTION CONTAINING 100 GRAMS OF 20 CP. CHLORINATED RUBBER, 130 GRAMS OF THE 60% ALKYD SOLUTION, AND 290 GRAMS OF METHYL ETHYL KETONE SHALL BE CLEAR, TRANSPARENT AND SHOW NO SEPARATION AFTER 24 HOURS STORAGE IN A 3/4 FULL TEST TUBE AT 80 DEGREES PLUS OR MINUS 5 DEGREES F.

THE ALKYD RESIN, AT 45% SOLIDS BASIS (REDUCED FROM 60% SOLIDS WITH VM & P NAPHTHA) SHALL HAVE A GARDNER COLOR OF 9 MAXIMUM AND A VISCOSITY (GARDNER) OF D TO G. A CAST FILM OF THE ALKYD, 3 MILS THICK, SHALL SET TO TOUCH IN NOT MORE THAN 90 MINUTES.

PHTHALIC ANHYDRIDE SHALL BE DETERMINED IN ACCORDANCE WITH FEDERAL STANDARD NO. 141A, METHOD 7021 OR ASTM D 1307.

OIL ACIDS SHALL BE DETERMINED IN ACCORDANCE WITH FEDERAL STANDARD NO. 141A, METHOD 7031.

IODINE NUMBER OF FATTY ACIDS SHALL BE DETERMINED IN ACCORDANCE WITH FEDERAL STANDARD NO. 141A, METHOD 5061.

CHLORINATED RUBBER SHALL HAVE THE FOLLOWING PROPERTIES:

FIXED CHLORINE 65.0% MINIMUM  
COLOR (GARDNER), 20% BY WT. IN TOLUENE, 4 MAXIMUM  
VISCOSITY, 20% BY WT. IN TOLUENE 9-25 CPS.

CHLORINATED PARAFFIN SHALL COMPLY WITH MIL-C-429. THE CHLORINATED PARAFFINS SHOULD BE CHLORAFIN 40 (HERCULES INCORPORATED), CHLOROWAX 40 (DIAMOND), CERECOR 42 (I.C.I.) OR APPROVED EQUAL.

METHYL ETHYL KETONE SHALL MEET THE REQUIREMENTS OF ASTM DESIGNATION D 740.

DRIERS SHALL BE 0.06% COBALT (METAL) AND 1.0% LEAD (METAL) BASED ON RESIN SOLIDS.

#### PAINT COMPOSITION

THE COMPOSITION OF WHITE TRAFFIC PAINT, FAST DRYING TYPE IV WHEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF FEDERAL TEST METHOD STANDARD NO. 141A AND APPLICABLE METHODS OF TEST SHALL BE AS FOLLOWS:

	MINIMUM	MAXIMUM
PIGMENT, % BY WT., METHOD 4021	48.0	50.0
VEHICLE, % BY DIFFERENCE	50.0	52.0
WT./GAL., LBS., METHOD 4184	11.9	
NON-VOLATILE VEHICLE, % BY WEIGHT	41.0	
TOTAL SOLIDS IN PAINT, % BY WEIGHT	69.5	

#### PIGMENT COMPOSITION.

TITANIUM DIOXIDE (ASTM D 476 TYPE III RUTILE) 94% MINIMUM PURITY	34.0	36.0
MAGNESIUM SILICATE (ASTM D605)	30.0	32.0
CALCIUM CARBONATE (ASTM D 1199 TYPE GC, GRADE II)	25.0	27.0
ZINC OXIDE (ASTM D 7944)	8.0	10.0

THE COMPOSITION OF YELLOW TRAFFIC PAINT, FAST DRYING

TYPE IV WHEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF FEDERAL TEST METHOD STANDARD NO. 141A AND APPLICABLE METHODS OF TEST SHALL BE AS FOLLOWS:

	MINIMUM	MAXIMUM
PIGMENT, % BY WT., METHOD 4021	50.0	52.0
VEHICLE, % BY DIFFERENCE	48.0	50.0
WT./GAL., LBS., METHOD 4184	12.4	
NON-VOLATILE VEHICLE, % BY WEIGHT	40.5	
TOTAL SOLIDS IN PAINT, % BY WEIGHT	70.5	
PIGMENT COMPOSITION.		
MEDIUM CHROME YELLOW (ASTM D 211 TYPE III)	34.0	36.0
MAGNESIUM SILICATE (ASTM D 605)	11.0	13.0
CALCIUM CARBONATE (ASTM D 1199 TYPE GC GRADE II)	53.0	55.0

THE COLOR OF YELLOW TRAFFIC PAINT, FAST DRYING TYPE IV SHALL MATCH COLOR CHIP NO. 33538 OF FEDERAL STANDARD SPECIFICATION TTC-595.

8.6.15. GLASS BEADS FOR REFLECTORIZING TRAFFIC PAINT.

THE FIFTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

5. THE BEADS SHALL BE FREE OF TINT OR COLOR AND HAVE A DAYLIGHT 45 DEGREES - 0 DEGREES REFLECTANCE, IN BULK, OF NOT LESS THAN 45 PERCENT.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

8.6.16. LAKE BLUE PAINT.

LAKE BLUE PAINT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

MATERIALS

TITANIUM DIOXIDE (RUTILE) - A. S. T. M. D 476, TYPE IV  
(UNEXTENDED) TI O2 93% MINIMUM  
PURITY

ZINC OXIDE	-	A.S.T.M. D 79, AMERICAN PROCESS TYPE
SHADING PIGMENTS	-	TT-E-489C, PARAGRAPH 4.3
SUSPENDING AGENT: (ALUMINUM STEARATE)	-	FED. SPEC. MIL-A-15206A
LONG OIL SOYA ALKYD RESIN	-	TT-R-266A TYPE I OR II
THINNERS	-	MINERAL SPIRITS A.S.T.M. D 235
DRIERS	-	A.S.T.M. D 600 CLASS B

PIGMENT COMPOSITION (BY WEIGHT)

	<u>MIN.</u>	<u>MAX.</u>	
TITANIUM DIOXIDE (RUTILE)	77.0	79.0	PERCENT
ZINC OXIDE	9.0	11.0	
SHADING PIGMENTS	-	12.0	
SUSPENDING AGENT (ALUMINUM STEARATE)	0.5	2.0	

VEHICLE COMPOSITION (BY WEIGHT)

	<u>MIN.</u>	<u>MAX.</u>	
LONG OIL SOYA ALKYD RESIN (SOLIDS)	55.0	59.0	PERCENT
THINNERS AND DRIERS	41.0	45.0	

PAINT COMPOSITION

	<u>MIN.</u>	<u>MAX.</u>
PIGMENT (BY WEIGHT), PERCENT	16.0	20.0
VEHICLE SOLIDS (BY WEIGHT), PERCENT	44.0	48.0
THINNER AND DRIER (BY WEIGHT) PERCENT	32.0	40.0
TOTAL SOLIDS (BY WEIGHT) PERCENT	60.0	68.0
GALLON WEIGHT, LBS.	8.9	-
VISCOSITY (STORMER), KU	70	80
GRIND (HEGMAN)	5	-
FLASH POINT T.C.C., DEG. F.	100	105
DRY TO TOUCH, HOURS	4	6
DRY THROUGH, HOURS	8	12

LAKE BLUE PAINT COLOR SHALL MATCH THE FEDERAL STANDARD 595, COLOR CHIP NO. 25189.

8.6.17 VINYL SHOP PRIMER

THIS SPECIFICATION COVERS A MODIFIED VINYL TYPE SHOP PRIMER WHICH IS COMPATIBLE WITH VINYL OR ALKYD/LINSEED OVERCOATS. ALL STRUCTURAL STEEL SURFACES TO BE PAINTED WITH THE PRIMER SHALL RECEIVE BLAST CLEANING PLUS A VINYL WASH COAT AS CITED ELSEWHERE IN THE SPECIFICATIONS.

PAINT CHARACTERISTICS

		MINIMUM	MAXIMUM
PIGMENT	%	48.0	--
VEHICLE	%	--	52.0
WEIGHT/GALLON	LBS.	10	13
VISCOSITY	K.U.	70	105
TOTAL SOLIDS	%	67.0	--
NON-VOLATILE VEHICLE	%	39.0	--
WATER	%	--	1.0
DRY TIME, TO TOUCH THROUGH			20 MINUTES 5 HOURS
GRIND, HEGMAN		4	
COMPATIBILITY:			

THE PAINT SHALL BE COMPATIBLE SO THAT WHEN ONE PART PAINT IS MIXED WITH ONE PART OF METHYL ETHYL KETONE, NO CURDLING, LIVERING OR SEPARATING IS NOTED.

PIGMENT

BASIC LEAD SILICO CHROMATE, %	65.0	--
ASTM D-1648		
BARIUM SULFATE, (BARYTES), %	--	35.0
ASTM D-602		

VEHICLE SOLIDS

ALKYD RESIN LONG OIL, %	--	40
TTR-226 TYPE I OR II		
VINYL RESIN (1), %	60	--

(1) VINYL RESIN SHALL MEET THE FOLLOWING:

VINYL CHLORIDE %	90
VINYL ACETATE %	3
VINYL ALCOHOL %	6
VISCOSITY, 2% BY WEIGHT IN METHYL ETHYL KETONE	35 CPS

SOLVENT

METHYL ETHYL KETONE  
ASTM D-740

DRY FILM CHARACTERISTICS

ALL TESTS SHALL BE TESTED IN ACCORDANCE WITH FEDERAL TEST STANDARD NUMBER 141.

## ADHESION

NOT MORE THAN 10 PERCENT OF THE TOTAL CROSS-HATCHES SHALL FAIL BECAUSE OF INSUFFICIENT ADHESION.

## CHEMICAL RESISTANCE

THE SHOP PRIMER SHALL NOT BE AFFECTED, OTHER THAN DISCOLORATION AFTER EXPOSURE FOR 4 DAYS AT 77 PLUS OR MINUS 5 DEGREE F. TO:

- (1) 10% SULFURIC ACID SOLUTION
- (2) 10% SODIUM HYDROXIDE SOLUTION
- (3) 10% SODIUM CHLORIDE SOLUTION
- (4) DISTILLED WATER

## SALT SPRAY RESISTANCE

THE SHOP PRIMER SHALL SHOW NO DETERIORATION AFTER EXPOSURE TO 5 PERCENT SALT SPRAY SOLUTION FOR 300 HOURS. THE RUST IN THE CROSS SCRIBED AREA SHALL NOT EXCEED 1/16 FROM THE SCRIBE.

## ACCELERATED WEATHERING

THE SHOP PRIMER SHALL SHOW NO MORE THAN A NO. 8 CHALK AFTER 300 HOURS EXPOSURE. OTHER THAN COLOR CHANGES, NO VISIBLE DEGRADATION SHALL HAVE OCCURRED.

## RECOATABILITY

THIS MATERIAL SHALL NOT BE LIFTED BY A SUCCEEDING SPECIFIED COATING.

## 8.6.18 VINYL INTERMEDIATE COAT

THIS SPECIFICATION COVERS A VINYL FIELD PRIMER INTENDED FOR APPLICATION OVER A COMPATIBLE VINYL SHOP PRIMER. THIS PAINT IS TO BE TINTED IN COLOR TO CONTRAST THE FIRST COAT APPLIED. IF ADDITIONAL CONTRAST IS NECESSARY, TINTING MATERIAL SHALL BE A COMMERCIAL PURE SYNTHETIC IRON OXIDE.

## PAINT CHARACTERISTICS

		MINIMUM	MAXIMUM
PIGMENT	%	28.0	--
VEHICLE	%	--	72.0
WEIGHT/GALLON	LBS.	11.0	13.0
VISCOSITY	K.U.	70	105
NON-VOLATILE VEHICLE	%	32	--

WATER	%	1.0
DRY TIME, TO TOUCH, MINUTES		20
THROUGH, HOURS		5
GRIND, HEGMAN		4

COMPATIBILITY:

THE PAINT SHALL BE COMPATIBLE SO THAT WHEN ONE PART OF PAINT IS MIXED WITH AN EQUAL PART OF RECOMMENDED SOLVENT, NO CURDLING, LIVERING, OR SEPARATING OCCURS.

PIGMENT

BASIC LEAD SILICO CHROMATE, %	85.0	--
ASTM D-1648		
BARIUM SULFATE	--	15.0

VEHICLE SOLIDS

VINYL RESIN, A (1) %	65
VINYL RESIN, B (2) %	20
PHTHALATE PLASTICIZER, (3) %	15

(1) VINYL RESIN A SHALL MEET THE FOLLOWING:

VINYL RESIN %	90
VINYL ACETATE %	6
VINYL ALCOHOL %	3
VISCOSITY, 20% BY WEIGHT IN METHYL ETHYL KETONE	35 CPS

(2) VINYL RESIN B SHALL MEET THE FOLLOWING:

VINYL CHLORIDE %	86
VINYL ACETATE %	14
VISCOSITY, 20% BY WEIGHT IN METHYL ETHYL KETONE	23 CPS

(3) THE PLASTICIZER SHALL BE MIXED ISOMERS OF PHTHALATE ESTERS HAVING A FORMULA WEIGHT EQUAL TO 446, SPECIFIC GRAVITY EQUAL TO 0.9675 AT 20 DEGREES C, BOILING POINT = 251 DEGREES C, AND A VISCOSITY AT 20 DEGREES C OF 113 CENTIPOISE.

SOLVENT

METHYL ETHYL KETONE, %	60
ASTM D-740	
CYCLOHEXANONE, %	20
XYLENE, %	20
ASTM D-364	

## DRY FILM CHARACTERISTICS

ALL TESTS BELOW SHALL BE CONDUCTED IN ACCORDANCE WITH FEDERAL TEST STANDARD NUMBER 141.

### FLEXIBILITY

NO FAILURE SHALL BE NOTED WHEN BENT OVER 1/2 INCH MANDREL.

### ADHESION

NOT MORE THAN 10 PERCENT OF THE TOTAL CROSS-HATCHES SHALL FAIL BECAUSE OF INSUFFICIENT ADHESION.

### CHEMICAL RESISTANCE

THE SHOP PRIMER SHALL NOT BE AFFECTED, OTHER THAN DISCOLORATION, AFTER EXPOSURE FOR 4 DAYS AT 77 PLUS OR MINUS 5 DEGREES F. TO:

- (1) 10% SULFURIC ACID SOLUTION
- (2) 10% SODIUM HYDROXIDE SOLUTION
- (3) 10% SODIUM CHLORIDE SOLUTION
- (4) DISTILLED WATER

### SALT SPRAY RESISTANCE

THE SHOP PRIMER SHALL SHOW NO DETERIORATION AFTER EXPOSURE TO 5 PERCENT SPRAY SOLUTION FOR 300 HOURS. THE RUST IN THE CROSS SCRIBED AREA SHALL NOT EXCEED 1/16 FROM THE SCRIBE.

### ACCELERATED WEATHERING

THE SHOP PRIMER SHALL SHOW NO MORE THAN A NO. 8 CHALK AFTER 300 HOURS EXPOSURE. OTHER THAN COLOR CHANGES, NO VISIBLE DEGRADATION SHALL HAVE OCCURRED.

### RECOATABILITY

THIS MATERIAL SHALL NOT BE LIFTED BY A SUCCEEDING VINYL COAT MEETING REQUIREMENTS CITED ELSEWHERE IN THESE SPECIFICATION.



## 8.6.19 VINYL INTERMEDIATE COAT OR ALTERNATE SHOP PRIMER

THIS SPECIFICATION COVERS AN ALTERNATE VINYL SHOP PRIMER AND INTERMEDIATE FIELD PRIMER FOR APPLICATION TO STEEL, BLAST CLEANED TO A WHITE OR NEAR-WHITE CONDITION IN THE FIELD. IF TINTING IS REQUIRED FOR THE CONTRAST INTERMEDIATE COAT, COMMERCIALY PURE SYNTHETIC IRON OXIDE SHALL BE USED.

### PAINT CHARACTERISTICS

		MINIMUM	MAXIMUM
PIGMENT		48	--
VEHICLE	%	--	52
WEIGHT/GALLON	LBS.	11.8	13.0
VISCOSITY	K.U.	70	105
TOTAL SOLIDS	%	58.0	--
DRY TIME, TO TOUCH, MINUTES		--	20
THROUGH, HOURS		4	--
GRIND, HEGMAN			

### COMPATIBILITY:

THE PAINT SHALL BE COMPATIBLE SO THAT WHEN ONE PART OF PAINT IS MIXED WITH AN EQUAL PART OF RECOMMENDED SOLVENT, NO CURDLING, LIVERING OR SEPARATING OCCURS.

### PIGMENT

BASIC LEAD SILICO CHROMATE, % ASTM D-1648		85.0	--
BARIUM SULFATE, (BARYTES), % ASTM D-602		--	15.0

### VEHICLE SOLIDS

TRICRESYL PHOSPHATE, % ASTM D-363		--	15
VINYL RESIN (1), %		85	--

(1) VINYL RESINS SHALL MEET THE FOLLOWING:

VINYL CHLORIDE	%	90	
VINYL ACETATE	%	3	
VINYL ALCOHOL	%	8	
VISCOSITY, 20% BY WEIGHT IN METHYL ETHYL KETONE		35 CPS	

SOLVENT

METHYL ISO-BUTYL KETONE, STM D-1153	%	60
TOLUENE STM D-362,	%	40

DRY FILM CHARACTERISTICS

ALL TESTS BELOW SHALL BE CONDUCTED IN ACCORDANCE WITH FEDERAL TEST STANDARD NUMBER 141.

ADHESION

NOT MORE THAN 10 PERCENT OF THE TOTAL CROSS-HATCHES SHALL FAIL BECAUSE OF INSUFFICIENT ADHESION.

FLEXIBILITY

NO FAILURE SHALL BE NOTED WHEN BENT OVER 1/2 INCH MAN-  
DREL.

CHEMICAL RESISTANCE

THE SHOP PRIMER SHALL NOT BE AFFECTED, OTHER THAN DIS-  
COLORATION AFTER EXPOSURE FOR 4 DAYS AT 77 PLUS OR MINUS 5 DEGREES  
F. TO:

- (1) 10% SULFURIC ACID SOLUTION
- (2) 10% SODIUM HYDROXIDE SOLUTION
- (3) 10% SODIUM CHLORIDE SOLUTION
- (4) DISTILLED WATER

SALT SPRAY RESISTANCE

THE SHOP PRIMER SHALL SHOW NO DETERIORATION AFTER EXPO-  
SURE TO 5 PERCENT SPRAY SOLUTION FOR 300 HOURS. THE RUST IN THE  
CROSS SCRIBED AREA SHALL NOT EXCEED 1/16" FROM THE SCRIBE.

ACCELERATED WEATHERING

THE SHOP PRIMER SHALL SHOW NO MORE THAN A NO. 8 CHALK  
AFTER 300 HOURS EXPOSURE. OTHER THAN COLOR CHANGES, NO VISIBLE  
DEGRADATION SHALL HAVE OCCURRED.

RECOATABILITY

THIS MATERIAL SHALL NOT BE LIFTED BY A SUCCEEDING VINYL  
COAT MEETING REQUIREMENTS CITED ELSEWHERE IN THESE SPECIFICATIONS.

## 8.6.20 VINYL FINISH COAT, GREEN AND BLUE

THIS SPECIFICATION COVERS A VINYL FINISH COAT FOR APPLICATION OVER THE VINYL INTERMEDIATE PRIMER SPECIFIED ELSEWHERE. THE INGREDIENTS TO BE USED IN THIS TOPCOAT ARE NOT TOTALLY SPECIFIED; HOWEVER, THE FINISHED PRODUCT SHALL COMPLY WITH ALL REQUIREMENTS CITED HEREIN. THE COMPOSITION FORMULA OF THIS TOPCOAT SHALL BE APPROVED BY THE BUREAU OF QUALITY CONTROL PRIOR TO USE.

### PAINT CHARACTERISTICS

		MINIMUM	MAXIMUM
PIGMENT	%	8	--
VEHICLE	%	--	92
WEIGHT/GALLON	LBS.	8.0	10.0
VISCOSITY	K.U.	80	100
TOTAL SOLIDS	%	33	--
WATER	%	--	1.0
DRY TIME,	TO TOUCH, MINUTES	--	20
	THROUGH, HOURS	--	3
GRIND, HEGMAN		6	--

### COMPATABILITY:

THE PAINT SHALL BE COMPATIBLE SO THAT WHEN ONE PART OF PAINT IS MIXED WITH AN EQUAL PART OF RECOMMENDED SOLVENT, NO CURDLING, LIVERING OR SEPARATING OCCURS.

### PIGMENT/BINDER:

THE PIGMENT/BINDER RATIO BY WEIGHT SHALL BE 1.0/1.65. THE RATIO BY VOLUME SHALL BE 1.00/5.25.

### PIGMENT

TITANIUM DIOXIDE  
ANTIMONY OXIDE  
PHTHALOCYANINE GREEN AND BLUE

### VEHICLE SOLIDS

VINYL RESIN, (1) % 85  
PHTHALATE PLASTICIZER, (2) % 15

(1) VINYL RESIN SHALL MEET THE FOLLOWING:

VINYL CHLORIDE % 86  
VINYL ACETATE % 14  
VISCOSITY, 20% BY WEIGHT IN MEK 20 CPS

(2) THE PLASTICIZER SHALL BE MIXED ISOMERS OF PHTHALATE ESTERS HAVING A FORMULA WEIGHT EQUAL TO 446 SPECIFIC GRAVITY EQUAL TO 0.9675 AT 20 DEGREE C, BOILING POINT EQUAL TO 20 DEGREE C, AND A VISCOSITY AT 20 DEGREE C OF 113 CENTIPOISE.

SOLVENT

METHYL ISO-BUTYL KETONE  
ASTM D-1153

TOLUENE  
ASTM D-362

DRY FILM CHARACTERISTICS

ALL TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH FEDERAL TEST STANDARD NUMBER 141.

COLOR

COLOR FOR GREEN FINISH COAT (TOPCOAT) SHALL MATCH THE FEDERAL STANDARD 595 NUMBER 24172.

COLOR FOR BLUE FINISH COAT (TOPCOAT) SHALL MATCH THE FEDERAL STANDARD 595 NUMBER 25189.

FLEXIBILITY

NO FAILURE WHEN BENT OVER 1/2 INCH MANDREL.

ADHESION

NO MORE THAN 10 PERCENT OF THE TOTAL CROSS-HATCHES SHALL FAIL BECAUSE OF INSUFFICIENT ADHESION.

CHEMICAL RESISTANCE

THE VINYL TOPCOAT SHALL NOT BE AFFECTED, OTHER THAN DISCOLORATION, AFTER EXPOSURE FOR 7 DAYS AT 77 PLUS OR MINUS 5 DEGREES F. TO:

- (1) 10% SULFURIC ACID SOLUTION
- (2) 10% SODIUM HYDROXIDE SOLUTION
- (3) 10% SODIUM CHLORIDE SOLUTION
- (4) DISTILLED WATER

ACCELERATED WEATHERING

THE VINYL TOPCOAT SHALL SHOW NO MORE THAN A NO. 6 CHALK AFTER 500 HOURS EXPOSURE. COLOR CHANGE AFTER 500 HOURS SHALL NOT BE MORE THAN 5 NBS UNITS.

DIVISION 8

PAGE NO. 409

**8.6.21 ZINC-RICH PRIMER, ORGANIC VEHICLE TYPE**

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**SCOPE:** THIS SPECIFICATION COVERS A ONE-PACKAGE, THERMO-PLASTIC ORGANIC ZINC-RICH PRIMER WHOSE MECHANISM OF DRY IS THAT OF SOLVENT RELEASE. IT IS INTENDED FOR USE ONLY ON OPEN STEEL STRUCTURES EXPOSED TO THE AIR. SURFACE PREPARATION OF THE STEEL MUST BE BY BLAST CLEANING AS DESCRIBED HEREIN. IT IS NOT INTENDED FOR USE IN CONFINED SPACES SUCH AS THE INTERIOR OF TANKS, SILOS, OR SIMILAR STRUCTURES BECAUSE OF EXPLOSION AND POSSIBLE TOXIC HAZARDS.

THIS COATING IS INTENDED FOR APPLICATION BY BRUSHING OR SPRAYING EITHER CONVENTIONAL OR AIRLESS. BECAUSE OF RAPID DRYING CHARACTERISTICS, BEST SURFACE APPEARANCE IS OBTAINED BY SPRAY.

**APPLICABLE SPECIFICATION:** FEDERAL TEST METHOD STANDARD, LATEST REVISION. AMERICAN SOCIETY FOR TESTING AND MATERIALS, LATEST REVISION. MILITARY SPECIFICATION, LATEST REVISION.

**MATERIALS:** THE RAW MATERIALS FOR USE IN THE PAINT FORMULA SHALL CONFORM TO THE SPECIFICATION DESIGNATED BY FEDERAL SERIAL NUMBER OR PAINT MATERIAL CODE NUMBER HEREINAFTER SPECIFIED. SUBSEQUENT AMENDMENTS TO THE SPECIFICATIONS QUOTED SHALL APPLY TO ALL RAW MATERIALS AND FINISHED PRODUCTS. NO "OR EQUAL" SUBSTITUTION FOR ANY SPECIFIED MATERIAL SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE ENGINEER.

PAINT SHALL BE HOMOGENEOUS, FREE OF CONTAMINANT AND OF A CONSISTENCY SUITABLE FOR USE IN THE CAPACITY FOR WHICH IT IS SPECIFIED. FINISHED PAINT SHALL BE WELL GROUND AND THE PIGMENT SHALL BE PROPERLY DISPERSED IN THE VEHICLE ACCORDING TO THE REQUIREMENTS OF THE PAINT. THE DISPERSION SHALL BE OF SUCH NATURE THAT THE PIGMENT DOES NOT SETTLE BADLY, DOES NOT LIVER OR CURDLE. ANY SETTLEMENT OF PIGMENT IN THE PAINT SHALL BE A THOROUGHLY WETTED, SOFT MUSHY MASS PERMITTING THE COMPLETE AND EASY VERTICAL PENETRATION OF A PADDLE. SETTLED PIGMENT SHALL BE EASILY RE-DISPERSED, WITH MINIMUM RESISTANCE TO THE SIDEWISE MANUAL MOTION OF THE PADDLE ACROSS THE BOTTOM OF THE CONTAINER, TO FORM A SMOOTH UNIFORM PRODUCT OF THE PROPER CONSISTENCY. THE MANUFACTURER SHALL INCLUDE IN THE PAINT THE NECESSARY ADDITIVES FOR CONTROL OF SAGGING, PIGMENT SETTLING, LEVELING, AND OTHER QUALITIES OF A SATISFACTORY WORKING MATERIAL. THE PAINT SHALL POSSESS SATISFACTORY PROPERTIES IN ALL RESPECTS WHICH AFFECT ITS APPLICATION AND CURING.

THERE SHALL BE NO EVIDENCE OF INCOMPATIBILITY WHEN ONE VOLUME OF THE THINNER DESCRIBED UNDER "APPLICATION OF COATING" IS MIXED WITH FOUR VOLUMES OF THE PAINT.

**CHARACTERISTICS OF PAINT**

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PIGMENT, % BY WEIGHT	62.3 MINIMUM
VEHICLE, % BY WEIGHT	37.7 MAXIMUM
VOLATILES AT 105 DEGREES C, PERCENT	
BY WEIGHT	28 - 32
WEIGHT PER GALLON, POUNDS	17.2 - 18.0
VISCOSITY, KU AT 77 DEGREE F	100- 120
METALLIC ZINC, PERCENT BY WEIGHT	
OF EXTRACTED PIGMENT BY FEDERAL	
TEST METHOD NO 141, METHOD 7221	90.2 MIN.
DRY TIME AT 77 DEGREES F, 50% RELATIVE	
HUMIDITY 6 MIL WET THICKNESS:	
SET TO TOUCH, HOURS	3/4 MAX.
DRY HARD, HOURS	5 MAX.
STORAGE LIFE, YEARS	1 MIN.

**PIGMENT COMPOSITION**

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	TYPE I, RED TINT	TYPE II, GRAY
SPECIFICATION	PARTS BY WT. OF PIGMENT	
ZINC DUST	ASTM D520, TYPE I 95.0 MIN.	95.0 MIN.
RED IRON - OXIDE (1)	(1) 1.5 MAX.	
ZINC OXIDE	ASTM D79	1.5 MAX.
THIXOTROPES & ADDITIVES	3.5 MAX.	3.5 MAX.

(1) EXCEPT THE METALLIC ZINC CONTENT SHALL BE 95 PERCENT BY WEIGHT MINIMUM.

(2) FE<sub>2</sub>O<sub>3</sub> 98.5% MINIMUM; OIL ABSORPTION, 21; FINENESS THROUGH 325 MESH SCREEN, 99% MINIMUM; AND SPECIFIC GRAVITY, 5.15.

THE AVERAGE PARTICLE SIZE OF THE PIGMENT SHALL NOT EXCEED 9 MICRONS AS DETERMINED BY THE FISHER SUB-SIEVE SIZER. THE RED IRON OXIDE MUST FIRST BE GROUND INTO A PORTION OF THE VEHICLE TO PROVIDE A HEGMAN GRAD SUFFICIENT TO PRODUCE THE SPECIFIED COLOR OF THE FINISHED PAINT.

VEHICLE COMPOSITION

	<u>SPECIFICATION</u>	<u>PARTS OF WEIGHT OF VEHICLE</u>
POLYARYL ETHER(3)		19.0
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	MIL-E-7125	66.8
TOLUENE	TT-T-548	14.2

(3) A POLYHYDROXY POLYALKARYL POLYETHER OF THE FOLLOWING PROPERTIES:

SPECIFIC GRAVITY	1.18
VISCOSITY OF 40% SOLIDS IN MENTHYL ETHYL KETONE, BROOKFIELD RVF, 20 RPM NO. 5 SPINDLE	5500 TO 7700 CPS
REDUCED VISCOSITY (0.2 G/100 ML DIMETHYLFORMAMIDE)	0.4 TO 0.6
ULTIMATE TENSILE STRENGTH	9000 TO 9500 PSI
ULTIMATE TENSILE ELONGATION	50 TO 100%
SOFTENING TEMPERATURE	212 DEGREES F
BULKING VALUE	9.83 LB. PER GAL.

THE NECESSARY ADDITIVES TO PREVENT GAS FORMATION IN THE CONTAINERS DURING STORAGE SHALL BE INCORPORATED INTO THE FORMULATED PAINT.

INFRARED CHARACTERISTIC CURVE OF PRIMER VEHICLE

WHEN DRIED UPON A POTASSIUM BROMIDE DISC, A FILM OF THE PRIMER SHALL HAVE INFRARED ABSORPTION MAXIMUMS AT THE SAME WAVELENGTHS AND TO THE SAME RELATIVE DEGREE AS THAT SHOWN BY THE "INFRARED CURVE OF NEW JERSEY DEPARTMENT OF TRANSPORTATION ZINC RICH PRIMER-VEHICLE SOLIDS". COPIES OF THIS CURVE ARE AVAILABLE UPON WRITTEN REQUEST TO THE NEW JERSEY DEPARTMENT OF TRANSPORTATION, CHIEF, BUREAU OF QUALITY CONTROL.

PROPERTIES OF CURED COATING

WHEN APPLIED TO A PLATE GLASS PANEL WITH A 6 MIL GAP CLEARANCE DOCTOR BLADE AND CURED FOR 15 DAYS AT 77 PLUS OR MINUS 5 DEGREES F AND 50 PLUS OR MINUS 5% RELATIVE HUMIDITY; THE COATING SHALL HAVE THE FOLLOWING PROPERTY:

PENCIL HARDNESS

8 MIN.

WHEN APPLIED BY AIR OR AIRLESS SPRAY TO A MINIMUM DRY FILM THICKNESS OF 1.5 MILS ON SANDBLASTED STEEL HAVING AN ANCHOR PROFILE PATTERN OF ONE TO 1.5 MILS, THE MIXED PAINT SHALL COMPLETELY WET THE SURFACE OF THE STEEL WITH NO EVIDENCE OF DRY SPRAY PARTICLES OR SAGGING.

WHEN APPLIED TO A WET FILM THICKNESS OF 6 MILS ON A METAL PANEL CORRESPONDING TO FEDERAL SPECIFICATION QQ-S-636, THE PANEL BEING PREVIOUSLY CLEANED BY SANDBLASTING TO PRODUCE A ONE TO 1.5 MIL ANCHOR PATTERN, AND CURED FOR 15 DAYS AT A RELATIVE HUMIDITY OF 50 PLUS OR MINUS 5% AND TESTED ACCORDING TO THE CONICAL MANDREL TEST, FEDERAL TEST METHOD STANDARD NO. 141, METHOD 622, THERE SHALL BE NO LOOSENING OF THE FILM ABOVE THE POINT OF THE LONGEST CONTINUOUS CRACK.

WHEN STEEL PANEL IS SANDBLASTED TO WHITE METAL AND COATED WITH 3 TO 4 MILS DRY FILM THICKNESS OF THIS COATING AND CURED FOR 15 DAYS AT 75 DEGREES F AND 50 PLUS OR MINUS 5% RELATIVE HUMIDITY AND DIAGONALLY SCRIBED TO EXPOSE BARE STEEL, THERE SHALL BE NO UNDERFILM CORROSION ON THE SURFACE OF THE PANEL EXTENDING BEYOND THE SCRIBED LINES AFTER 1000 HOURS WHEN TESTED ACCORDING TO ASTM DESIGNATION B-117.

PATENTS: THE CONTRACTOR SHALL ASSUME ALL COSTS ARISING FROM THE USE OF PATENTED MATERIALS, EQUIPMENT, DEVICES, OR PROCESSES USED ON OR INCORPORATED IN THE WORK, AND AGREES TO INDEMNIFY AND SAVE HARMLESS THE STATE AND ITS DULY AUTHORIZED REPRESENTATIVE FROM ALL SUITS OF LAW OR ACTION OF EVERY NATURE FOR, OR ON ACCOUNT OF THE USE OF ANY PATENTED MATERIALS, EQUIPMENT, OR PROCESSES.

MANUFACTURING AND PACKAGING: THE FINISHED PAINT SHALL BE FURNISHED IN NEW FIVE GALLON, ROUND, NONTAPERED STEEL CONTAINERS OF NOT THINNER THAN 24 GAUGE METAL. THE CONTAINERS SHALL HAVE LUG TYPE CRIMP LIDS WITH RING SEALS AND BE EQUIPPED WITH EARS AND BAILS. THE CONTAINERS SHALL MEET U. S. DEPARTMENT OF TRANSPORTATION HAZARDOUS MATERIALS SHIPPING REGULATIONS. THE CONTAINER MUST BE LINED IF NECESSARY SO AS TO PREVENT ATTACK BY THE PAINT. THE LINING MUST NOT COME OFF THE CAN AS SKINS.

NO FINISHED PAINT SHALL BE USED UNTIL AT LEAST 7 DAYS HAVE ELAPSED FROM THE DATE OF ITS MANUFACTURE.

ALL CONTAINERS OF PAINT SHALL BE LABELED SHOWING THE EXACT TITLE OF THE SPECIFICATION, STATE SPECIFICATION NUMBER, MANUFACTURER'S NAME, DATE OF MANUFACTURE, STATE LOT NUMBER, AND MANUFACTURER'S BATCH NUMBER.



PRECAUTIONS CONCERNING THE HANDLING AND THE APPLICATION OF PAINT SHALL BE SHOWN ON THE LABEL OF PAINT AND SOLVENT CONTAINERS.

INSPECTION AND TESTING: THIS MATERIAL SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH NEW JERSEY DEPARTMENT OF TRANSPORTATION STATE SPECIFICATION OR AS OTHERWISE DEEMED NECESSARY. ALL TESTS SHALL BE PERFORMED ACCORDING TO ASTM, FEDERAL TEST METHOD STANDARD NO. 141, OR METHODS DESIGNATED BY THE BUREAU OF QUALITY CONTROL TO INCLUDE INFRARED, CHROMATOGRAPHY AND OTHER INSTRUMENTAL METHODS OF ANALYSIS.

8.6.22 VINYL WASH PRIMER

THIS SPECIFICATION IS BASED ON MILITARY SPECIFICATION P-15328 AND IS TO BE USED AS A TIE COAT BETWEEN ORGANIC ZINC RICH PRIMER AND A SUBSEQUENT FINISH COAT (TOPCOAT). IT IS ALSO TO BE USED ON BLAST CLEANED STEEL UNDER VINYL PRIMER PAINT.

THE WASH PRIMER IS A TWO COMPONENT SYSTEM AND IS TO MEET THE FOLLOWING REQUIREMENTS. THE COMPONENTS SHALL BE MIXED BY VOLUME AS 80% RESIN AND 20% ACID SOLUTION OR 4 GALLONS OF RESIN COMPONENT TO 1 GALLON OF ACID COMPONENT. THE MIXTURE MUST BE USED WITHIN EIGHT HOURS AFTER MIXING.

CHARACTERISTICS OF RESIN COMPONENT

		MINIMUM	MAXIMUM
PIGMENT	%	9.5	10.5
VEHICLE	%	80.0	82.0
NON-VOLATILE VEHICLE	%	8.5	9.5
RATIO OF PIGMENT TO BINDER BY WEIGHT		9.7 TO 9	10.3 TO 9
WEIGHT/GALLON	LBS.	7.2	7.7
VISCOSITY	K.U.	57	67
FINENESS, HEGMAN		5	—

CHARACTERISTICS OF ACID COMPONENT

PHOSPHORIC ACIDS	%	15.0	16.5
WEIGHT/GALLON,	LBS.	7.5	7.9
DISTILLATION:			
INITIAL B. P. DEGREE C		75	81
TEMPERATURE AT 105 ML POINT, DEGREE C		—	82
VOLUME AT END POINT, ML		120	—
MAXIMUM TEMPERATURE DURING DISTILLATION		—	102

## CHARACTERISTICS OF MIXED RESIN AND ACID COMPONENTS

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DRY TIME, HARD 30 MINUTES  
SMOOTH HOMOGENEOUS MIX, NO GELATIN WITHIN 24 HOURS IN CLOSED CONTAINER.

### COMPOSITION

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#### RESIN COMPONENT

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		POUNDS/80 GALLONS OF RESIN
POLYVINYL-BUTYRAL RESIN	(1)	56
ZINC CHROMATE	(2)	54
MAGNESIUM SILICATE (MIL M 15173)		8
LAMPBLACK (TTP - 350)		0.6
BUTYL ALCOHCL (TTB - 846)		125
ETHYL ALCOHCL		380

- (1) THE RESIN SHALL CONTAIN ONLY POLYVINYL BUTYRAL, POLYVINYL ALCOHOL, AND POLYVINYL ACETATE IN THE MOLECULE, HAVING 18-20% VINYL ALCOHCL, AND NOT OVER 1.0% VINYL ACETATE. SPECIFIC GRAVITY = 1.05 - 1.15.
- (2) ZINC CHROMATE SHALL BE THE INSOLUBLE TYPE SHOWING AN ANALYSIS 16 TO 19%  $CrO_3$ , AND 67-72% ZNO AND NOT MORE THAN 1% WATER SOLUBLE SALTS.

#### ACID COMPONENT

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		POUNDS/20 GALLONS OF ACID
PHOSPHORIC ACIDS, 85%		28
WATER		25 MAX.
ETHYL ALCOHCL		102.

### PACKAGING AND LABELING

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THE LABEL SHALL STATE THAT THE PRIMER IS TO BE PACKAGED SUCH THAT THE ACID COMPONENT CAN BE MIXED WITH THE RESIN IN THE RESIN COMPONENT CONTAINER. THE RESIN AND ACID COMPONENTS SHALL BE SEPARATELY PACKAGED, AND THE PACKAGES SHALL BE OF SUCH TYPE AS TO PREVENT ATTACK BY THE COMPONENTS.

THE LABEL SHALL STATE THAT ONE PART BY VOLUME OF THE ACID COMPONENT IS TO BE ADDED SLOWLY WITH CONSTANT STIRRING TO FOUR PARTS BY VOLUME OF THE RESIN COMPONENT JUST BEFORE USE AND THE MIXED COMPONENTS MUST BE USED WITHIN EIGHT HOURS. IT SHALL FURTHER STATE THAT THE MIXED MATERIAL IS INTENDED FOR SPRAY APPLICATION IN DRY FILM THICKNESSES OF 0.3 MIL TO 0.5 MILS.

SECTION 7

PIPE

8.7.2. CAST IRON CULVERT PIPE.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CAST IRON CULVERT PIPE SHALL BE EXTRA-HEAVY CAST IRON CULVERT PIPE CONFORMING TO CURRENT A.A.S.H.O. DESIGNATION M 64 OR DUCTILE IRON WATER PIPE CONFORMING TO THE REQUIREMENTS OF CURRENT A.N.S.I. SPECIFICATION A21.51 WITH PUSH ON JOINT AND TO THE FOLLOWING TABLE.

<u>NOMINAL DIAMETER INCHES</u>	<u>THICKNESS CLASS</u>	<u>NOMINAL THICKNESS INCHES</u>	<u>NOMINAL WEIGHT LBS. PER FT.</u>
12	2	0.37	48.7
14	1	0.36	55.5
16	1	0.37	65.3
18	1	0.38	75.4
20	1	0.39	86.0
24	2	0.44	115.7
30	5	0.59	186.3
36	5	0.68	256.7
42	6	0.83	361.4
48	6	0.93	461.7
54	6	1.05	584.3

8.7.3. CAST IRON WATER PIPE.

THE FOLLOWING IS ADDED TO THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

DUCTILE IRON PIPE OF THE SIZE AND CLASS SPECIFIED ELSEWHERE HEREIN CONFORMING TO A.N.S.I. STANDARD A 21.50, MAY BE USED AS AN ACCEPTABLE ALTERNATE MATERIAL TO CAST IRON WATER PIPE.

8.7.4. CLAY PIPE.

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THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

STANDARD STRENGTH, EXTRA STRENGTH, STANDARD STRENGTH PERFORATED, EXTRA STRENGTH PERFORATED, AND CRADLE INVERT CLAY PIPE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED RESPECTIVELY THEREFOR IN CURRENT A.A.S.H.T.O. DESIGNATION M 65.

8.7.5. CONCRETE PIPE.

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THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

NONREINFORCED CONCRETE SEWER PIPE.

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NONREINFORCED CONCRETE SEWER PIPE SHALL BE STANDARD STRENGTH UNLESS OTHERWISE SPECIFICALLY PROVIDED. PIPE SHALL BE OF THE BELL AND SPIGOT TYPE AND SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 86 WITH THE FOLLOWING EXCEPTIONS:

FINE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.10. COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY.

PERFORATED CONCRETE PIPE.

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PERFORATED CONCRETE PIPE, NONREINFORCED, SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 175 WITH THE FOLLOWING EXCEPTIONS:

PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C 150 OR C 175.

FINE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.10. COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY.

REINFORCED CONCRETE CULVERT STORM DRAIN AND SEWER PIPE.

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REINFORCED CONCRETE CULVERT STORM DRAIN AND SEWER PIPE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 170 AMENDED AS FOLLOWS:

FINE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.10. COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY. ELLIPTICAL REINFORCING WILL NOT BE PERMITTED IN CIRCULAR PIPE. UNLESS OTHERWISE SPECIFICALLY PROVIDED, CLASS III, WALL B SHALL BE USED AS A MINIMUM FOR STANDARD STRENGTH AND CLASS IV, WALL B SHALL BE USED AS A MINIMUM FOR EXTRA STRENGTH REINFORCED CONCRETE CULVERT PIPE.

POROUS CONCRETE PIPE.

POROUS CONCRETE PIPE SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.A.S.H.T.O. DESIGNATION M 176 WITH THE FOLLOWING EXCEPTIONS:

PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION C 150 OR C 175.

FINE AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 8.5.10. COARSE AGGREGATE SHALL BE BROKEN STONE OR WASHED GRAVEL CONFORMING TO THE REQUIREMENTS OF ARTICLE 8.5.5 AND 8.5.6, RESPECTIVELY.

AS AN ALTERNATIVE, THE TEST FOR RATE OF INFILTRATION MAY BE MADE IN ACCORDANCE WITH ART. 9.1.16.

8.7.6. CORRUGATED METAL PIPE.

THE FIRST PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

CORRUGATED METAL CULVERT PIPE SHALL CONFORM TO THE REQUIREMENTS FOR TYPE I PIPE IN CURRENT AASHTO DESIGNATION M 36, EXCEPT THAT UNLESS OTHERWISE DESIGNATED THE SHEET THICKNESS FOR VARIOUS SIZES SHALL CONFORM TO THE FOLLOWING TABLE:

NOMINAL INSIDE DIAMETER INCHES	SHEET THICKNESS (MINIMUM GAGE) FOR DEPTHS OF CORRUGATIONS		
	1/4 INCH	1/2 INCH	1 INCH
6	.052 (18)		
8	.064 (16)	.064 (16)	
10	.064 (16)	.064 (16)	
12		.064 (16)	
15		.064 (16)	
18		.064 (16)	
21		.064 (16)	
24		.064 (16)	

30	.079 (14)	
36	.079 (14)	.064 (16)
42	.079 (14)	.064 (16)
48	.079 (14)	.064 (16)
54	.109 (12)	.079 (14)
60	.138 (10)	.109 (12)
66	.138 (10)	.109 (12)
72	.168 (8)	.138 (10)
78	.168 (8)	.138 (10)
84	.168 (8)	.138 (10)
90		.138 (10)
96		.138 (10)
102		.168 (8)
108		.168 (8)
114		.168 (8)
120		.168 (8)

THE FOLLOWING IS ADDED AFTER THE THIRD PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CORRUGATED METAL SEWER PIPE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR CORRUGATED METAL CULVERT PIPE, EXCEPT THAT, INSTEAD OF THE INTERIOR BITUMINOUS COATING, IT SHALL HAVE A CONTINUOUS SMOOTH BITUMINOUS LINING, APPLIED BY A CENTRIFUGAL METHOD, AND EXTENDING NOT LESS THAN 1/8 INCH NOR MORE THAN 1/4 INCH ABOVE THE CRESTS OF THE CORRUGATIONS AROUND THE ENTIRE INNER CIRCUMFERENCE OF THE PIPE.

MATERIAL FOR THE BITUMINOUS LINING SHALL BE THE SAME AS SPECIFIED ABOVE FOR BITUMINOUS COATING.

CORRUGATED METAL PIPE FOR UNDERDRAINS SHALL CONFORM TO THE REQUIREMENT FOR TYPE III PIPE IN CURRENT A.A.S.H.T.O. DESIGNATION M 36, EXCEPT AS FOLLOWS:

SHEET THICKNESS FOR THE SIZE OF PIPE SHALL CONFORM TO THAT AS SHOWN ABOVE FOR THE SAME SIZE OF CORRUGATED METAL CULVERT PIPE UNLESS OTHERWISE DESIGNATED.

CLASS IV PIPE (NOMINAL 4-5/8 INCH DIAMETER) MAY BE SUBSTITUTED FOR 6 INCH PIPE AS SHOWN ON PLANS AND SHALL CONFORM TO SHEET THICKNESS FOR 6 INCH CORRUGATED METAL CULVERT PIPE AS SHOWN ABOVE.

THE FOLLOWING IS ADDED AFTER THE FOURTH PARAGRAPH OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS:

CORRUGATED METAL PIPE FOR SUBBASE OUTLET DRAINS SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR CORRUGATED METAL PIPE FOR UNDERDRAINS, EXCEPT THAT THE PIPE SHALL BE PERFORATED OR NON-PERFORATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

8.7.7. CORRUGATED METAL PIPE-ARCHES.

THE FIRST FOUR PARAGRAPHS, INCLUDING TABLE 35, OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS ARE CHANGED TO READ AS FOLLOWS:

CORRUGATED METAL PIPE-ARCHES SHALL CONFORM TO THE REQUIREMENTS FOR TYPE II PIPE IN CURRENT AASHTO DESIGNATION M 36, EXCEPT AS FOLLOWS:

THE SHEET THICKNESS FOR THE VARIOUS SIZES SHALL CONFORM TO THE THICKNESS FOR THE EQUIVALENT DIAMETER AS SHOWN IN ARTICLE 8.7.6 UNLESS OTHERWISE DESIGNATED.

CORRUGATED METAL PIPE-ARCHES OF THE SAME EQUIVALENT ROUND DIAMETER MAY BE SUBSTITUTED FOR EACH OTHER UNLESS OTHERWISE SPECIFIED.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH ON PAGE 417 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE PIPE-ARCHES SHALL BE BITUMINOUS COATED, INSIDE AND OUTSIDE, OR BITUMINOUS COATED AND LINED AS SPECIFIED RESPECTIVELY FOR CORRUGATED METAL CULVERT PIPE OR CORRUGATED METAL SEWER PIPE IN ARTICLE 8.7.6.

SECTION 8

SOIL AGGREGATES

8.8.1. SOIL AGGREGATES.

THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS AMENDED UNDER THE HEADINGS AS FOLLOWS:

DEFINITIONS OF CONSTITUENT MATERIALS.

IN THE FIRST, THIRD AND FOURTH PARAGRAPHS, NO. 10 SIEVE IS CHANGED TO READ NO. 8.

TYPES AND COMPOSITION OF SOIL AGGREGATES.

THE ENTIRE TEXT, BEGINNING WITH THE LAST TWO LINES ON PAGE 418 AND ENDING WITH THE FIFTH FULL PARAGRAPH ON PAGE 419, IS CHANGED TO READ AS FOLLOWS:

EXCEPT AS HEREINAFTER SPECIFIED UNDER DESIGNATION I-5, SOIL AGGREGATES SHALL NOT BE USED IF THEY CONTAIN SHALE AND SIMILAR SOFT MATERIALS WHICH BREAK UP SO THAT THEY DO NOT CONFORM TO THE SPECIFIED GRADING REQUIREMENTS WHEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 9.1.18.

DESIGNATIONS I-1 AND I-2 SHALL CONSIST OF BANK-RUN SAND AND GRAVEL, COMMERCIAL SAND AND GRAVEL COMBINED OR STONE.

DESIGNATIONS I-3, I-4, I-9, I-10, I-11, I-12 AND I-13 SHALL CONSIST OF BANK-RUN SAND AND GRAVEL, COMMERCIAL SAND AND GRAVEL COMBINED OR BLAST FURNACE SLAG OR STONE.

DESIGNATION I-5 SHALL BE HARD DURABLE GRAVEL OR STONE MIXED WITH SAND, STONE DUST OR SILT-CLAY SO THAT IT CAN BE COMPACTED INTO A HARD, DENSE MASS. THE COMPOSITE MIXTURE SHALL CONTAIN, BY WEIGHT, A TOTAL OF NOT MORE THAN 25 PERCENT OF SHALE, SLATE, SCHIST, AND SOFT AND DECOMPOSED AGGREGATE AS DETERMINED IN ACCORDANCE WITH ARTICLE 9.1.17.

DESIGNATIONS I-6, I-7, I-8, SHALL CONSIST OF CLEAN, FREE DRAINING SAND, GRAVEL OR STONE.

THE FIFTH PARAGRAPH ON PAGE 419 OF THE STANDARD SPECIFICATIONS IS DELETED.

TABLE 36 ON PAGE 420 OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS SHOWN ON THE FOLLOWING PAGE.

THE LAST PARAGRAPH ON PAGE 420 OF THE STANDARD SPECIFICATIONS IS DELETED.

EXCEPT AS OTHERWISE PROVIDED, SOIL AGGREGATE TYPES SPECIFIED IN THE VARIOUS DIVISIONS OR IN THE PLANS ARE CHANGED TO THE STANDARD DESIGNATIONS AS FOLLOWS:

<u>AGGREGATE TYPE</u>	<u>STANDARD DESIGNATIONS</u>
1A	I-1
1B	I-2
1C	I-3



\* \* \* \* \*

**TABLE 36**  
**NEW JERSEY INTERAGENCY ENGINEERING COMMITTEE**  
**STANDARD SOIL AGGREGATE GRADATIONS**

GRADATION DESIGNATIONS - Percentage by weight passing square mesh sieves

SIEVE SIZE	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13
4 inches	100		100						100	100	100	100	100
2½ inches													
2 inches	70-100	100		100	100				80-100	80-100	80-100		
1 inch				60-100		100	100						
¾ inch	50-95	65-100	60-100		70-100				60-100	60-100	60-100	70-100	
½ inch				40-100		80-100	80-100	100					
NO. 4	30-60	40-75	30-100	25-100	30-80			95-100	40-100	40-100	40-100		30-100
NO. 8				20-100		45-100	35-100						
NO. 16				15-85		30-90	25-90	45-70	20-60	20-70			
NO. 50	5-25	5-30	5-35	8-45	10-35	0-20	5-50	5-25	10-30	5-40	0-75	0-75	
NO. 100						0-3	0-8		0-20	0-30			
NO. 200	0-7	0-7	0-5	5-10	5-12		0-2	0-5	0-8	0-20	0-9	0-5	0-12

\* \* \* \* \*

NOTE: \* ASTERISK DENOTES INTERAGENCY ENGINEERING COMMITTEE SPECIFICATION

DIVISION 9  
METHODS OF TESTS  
AND  
TEMPERATURE-VOLUME CORRECTION FACTORS

SECTION 1  
METHODS OF TESTS

9.1.13. METHOD OF TEST FOR DETERMINING WATER RESISTANCE OF  
TRAFFIC PAINT.

PROCEDURE.

THE SECOND PARAGRAPH UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

THE PAINT SHALL BE APPLIED WITH A DOCTOR BLADE TO THE PANELS TO A WET FILM THICKNESS OF 0.015 INCH. ALLOW THE PAINT FILM TO DRY IN A HORIZONTAL POSITION AT ROOM TEMPERATURE (70 - 80 DEGREES) FOR 72 HOURS, PROTECTING IT AGAINST THE ACCUMULATION OF DUST, THEN IMMERSE ONE-HALF OF THE PAINT FILM ON THE GLASS PANELS IN DISTILLED WATER AT ROOM TEMPERATURE FOR 18 HOURS. ALLOW TO AIR-DRY FOR 2 HOURS AND THEN EXAMINE.

9.1.14. METHODS OF TESTS FOR GLASS BEADS.  
SPHERICAL PARTICLES.

THE ENTIRE TEXT UNDER THIS HEADING OF THIS ARTICLE OF THE STANDARD SPECIFICATIONS IS CHANGED TO READ AS FOLLOWS:

3. THE PERCENTAGE OF SPHERICAL PARTICLES SHALL BE DETERMINED IN ACCORDANCE WITH THE STANDARD METHOD OF TEST FOR ROUNDNESS OF GLASS SPHERES, CURRENT A.S.T.M. DESIGNATION D 1155, EXCEPT THAT A 3 INCH WIDTH BRUSH EQUIPPED WITH A POLONIUM IONIZER BUILT IN THE FERRULE OF THE BRUSH SHALL BE USED TO CLEAN THE GLASS PANEL FREQUENTLY DURING THE TEST OPERATION.

THE FOLLOWING IS ADDED TO THIS SECTION OF THE STANDARD SPECIFICATIONS:

9.1.19. METHOD OF TEST FOR SOUNDNESS OF AGGREGATES BY USE OF  
SODIUM SULPHATE.

SCOPE.

1. THIS METHOD COVERS THE PROCEDURE TO BE FOLLOWED IN TESTING AGGREGATES TO DETERMINE THEIR RESISTANCE TO DISINTEGRATION BY A SATURATED SOLUTION OF SODIUM SULFATE.

APPARATUS.

2. THE APPARATUS SHALL CONSIST OF THE FOLLOWING:

(A) SIEVES. SQUARE OPENING SIEVES CONFORMING TO THE SPECIFICATION OF CURRENT A.S.T.M. DESIGNATION E 11.

FINE SERIES		COARSE SERIES	
NO.	4		2-1/2"
NO.	8		2 "
NO.	16		1-1/2"
NO.	30		1 "
NO.	50		3/4"
NO.	100		1/2"
			3/8"

(B) CONTAINERS. PERFORATED CONTAINERS FOR IMMERSING THE AGGREGATE SAMPLES IN THE SULFATE SOLUTION AS DESCRIBED IN THIS METHOD. THE PERFORATIONS SHALL ALLOW FREE ACCESS AND DRAINAGE OF THE SOLUTION WITHOUT LOSS OF THE AGGREGATES. THE CONTAINERS FOR FINE AGGREGATE SHALL BE NO. 120 MESH SIEVES OF SUFFICIENT SIZE TO HOLD A MINIMUM OF 100 GRAMS, AND ALLOW PROPER SOLUTION COVER. THE VOLUME OF THE SOLUTION SHALL BE SUCH THAT A MINIMUM OF 1/2 INCH OF SOLUTION RISES ABOVE THE TOP SURFACES OF THE AGGREGATES.

(C) TEMPERATURE REGULATION. THE TEMPERATURE OF THE SOLUTION SHALL BE 70 DEGREES PLUS OR MINUS 2 DEGREES F.

(D) BALANCES. BALANCES FOR FINE AGGREGATES SHALL HAVE A MINIMUM CAPACITY OF 500 GRAMS, SENSITIVE TO 0.1 GRAM OR LESS. BALANCES FOR COARSE AGGREGATES SHALL HAVE A MINIMUM CAPACITY OF 5,000 GRAMS, SENSITIVE TO 1 GRAM OR LESS.

(E) DRYING OVEN. THE OVEN SHALL BE CAPABLE OF MAINTAINING A CONSTANT TEMPERATURE OF 221 DEGREES TO 230 DEGREES F. (105 DEGREES - 110 DEGREES C.) WITH A MINIMUM EVAPORATION RATE OF 25 GRAMS PER HOUR.

3. SODIUM SULFATE SOLUTION. A SATURATED SOLUTION OF  $Na_2SO_4$  USING USP OR EQUAL GRADE OF THE SALT SHALL BE USED. THE SOLUTION SHALL HAVE A SPECIFIC GRAVITY RANGE OF 1.151 TO 1.174 AT 70 DEGREES PLUS OR MINUS 2 DEGREES F. CONTAMINATED SOLUTIONS SHALL BE DISCARDED.

SAMPLES.

4. (A) FINE AGGREGATE. FINE AGGREGATE SHALL BE PASSED THROUGH A NO. 4 SIEVE. THE SAMPLE SHALL BE OF SUFFICIENT SIZE TO PROVIDE NOT LESS THAN 100 GRAMS OF THE FOLLOWING SIZES. EACH OF THE FOLLOWING SIZES SHALL BE USED FOR TESTING THE FINE AGGREGATE:

<u>PASSING</u>		<u>RETAINED ON</u>	
NO.	4	NO.	8
NO.	8	NO.	16
NO.	16	NO.	30
NO.	30	NO.	50
NO.	50	NO.	100

(B) COARSE AGGREGATE. COARSE AGGREGATE SHALL BE CONSIDERED THAT WHICH IS LARGER THAN RETAINED ON A NO. 4 SIEVE. THE SAMPLE SHALL BE OF SUFFICIENT SIZE TO PROVIDE THE FOLLOWING AMOUNTS OF THE VARIOUS SIZES.

<u>SIEVE SIZE</u>	<u>WEIGHT</u>
2" TO 1-1/2"	2000 GRAMS
1-1/2" TO 1"	1500 GRAMS
1" TO 3/4"	1000 GRAMS
3/4" TO 1/2"	750 GRAMS
1/2" TO 3/8"	500 GRAMS
3/8" TO NO. 4	300 GRAMS

(C) IF THE SAMPLES CONTAIN LESS THAN 5 PERCENT OF ANY OF THE SIZES SPECIFIED IN (A) OR (B), THAT SIZE SHALL NOT BE TESTED, BUT SHALL BE CONSIDERED TO HAVE THE SAME LOSS AS THE AVERAGE OF THE NEXT SMALLER AND THE NEXT LARGER SIZE, OR THE SAME LOSS AS THE NEXT SMALLER OR THE NEXT LARGER SIZE, WHICHEVER IS APPLICABLE. EACH SIEVE SIZE TESTED SHALL BE SHAKEN TO REFUSAL PRIOR TO CYCLING.

(D) FOR TESTING COARSE AGGREGATES, THREE CONSECUTIVE SIEVE SIZES SHALL BE TESTED TO DETERMINE THE AMOUNT OF LOSS. THE SIZES TO BE DETERMINED BY THE GRADATION OF THE SAMPLE.

(E) THE PREPARATION OF THE TEST SAMPLE AND PROCEDURE OF TESTING SHALL CONFORM TO THE CURRENT A.S.T.M. DESIGNATION C 88 METHOD, WITH THE EXCEPTION THAT ANY REFERRAL TO A PREVIOUS SECTION OF THE TEST SHALL BE INTERPRETED AS REFERRING TO THE SAME SECTION OF THIS TEST METHOD.

(F) NUMBER OF CYCLES. THE PROCESS OF ALTERNATE IMMERSION AND DRYING SHALL BE REPEATED FOR 5 CYCLES.

QUANTITATIVE EXAMINATION.

5. THE QUANTITATIVE EXAMINATION SHALL BE MADE AS FOLLOWS:

(A) AFTER COMPLETION OF THE FINAL CYCLE, AND AFTER THE SAMPLE HAS COOLED, THE SAMPLE SHALL BE WASHED UNTIL FREE OF THE  $\text{Na}_2\text{SO}_4$  SOLUTION, AS DETERMINED BY THE REACTION OF THE WASH WATER WITH BARIUM CHLORIDE.

(B) AFTER THE REMOVAL OF THE  $\text{Na}_2\text{SO}_4$  SOLUTION, EACH FRACTION OF THE SAMPLE SHALL BE DRIED TO CONSTANT WEIGHT AT 221 DEGREES TO 230 DEGREES F (105 DEGREES - 110 DEGREES C), WEIGHED, AND, EXCEPT IN THE CASE OF LEDGE ROCK, SIEVED OVER THE SAME SIZE SIEVE ON WHICH IT WAS RETAINED BEFORE THE CYCLING PROCEDURE. THE AMOUNT RETAINED ON THIS SIEVE, AFTER SHAKING TO REFUSAL, SHALL BE WEIGHED AND THE WEIGHT RECORDED

(C) IN THE CASE OF LEDGE ROCK, THE LOSS IN WEIGHT SHALL BE DETERMINED BY SUBTRACTING THE FINAL WEIGHT OF ALL FRAGMENTS WHICH HAVE NOT SPLIT INTO THREE OR MORE PIECES FROM THE ORIGINAL WEIGHT OF THE TEST SAMPLE.

NOTE: A PIECE OF AGGREGATE IS DEFINED AS ANY FRAGMENT THAT WEIGHS AT LEAST 10 PERCENT OF THE OVEN DRY WEIGHT OF THE FRAGMENT FROM WHICH IT BROKE.

REPORT.

6. (A) THE REPORT SHALL SHOW THE TOTAL WEIGHTED AVERAGE LOSS CALCULATED FROM THE PERCENTAGE LOSS FOR EACH SIEVE FRACTION BASED ON THE ORIGINAL GRADING OF THE SAMPLE.

(B) IN THE CASE OF LEDGE ROCK, THE LOSS SHALL BE DETERMINED AS OUTLINED IN SECTION 5 (C) ABOVE.

9.1.20. METHOD OF TEST FOR DETERMINING MICA IN FINE AGGREGATE.

SCOPE.

1. THIS METHOD OF TEST COVERS THE PROCEDURE FOR DETERMINING THE MICA CONTENT OF FINE AGGREGATE.

APPARATUS.

2. (A) SIEVES. SQUARE OPENING SIEVES CONFORMING TO THE SPECIFICATIONS OF CURRENT A.S.T.M. DESIGNATION E 11.

NO. 10  
NO. 200

(B) BALANCES. - BALANCES FOR FINE AGGREGATES SHALL HAVE A MINIMUM CAPACITY OF 500 GRAMS, SENSITIVE TO 0.1 GRAM OR LESS. THE ANALYTICAL BALANCES USED IN THE MICA DETERMINATION SHALL HAVE A CAPACITY OF NOT MORE THAN 200 GRAMS, SENSITIVE TO 1/10 OF A MILLIGRAM.

(C) IONIZING BRUSH. 3 INCH LENGTH BRUSH EQUIPPED WITH A POLONIUM IONIZER BUILT IN THE FERRULE OF THE BRUSH WHICH IS AN ALPHA EMITTER AND IMMEDIATELY NEUTRALIZES ANY SURFACE IN CLOSE PROXIMITY FREEING IT OF STATIC ELECTRICITY.

(D) MICROSCOPE. WIDE FIELD, LOW POWER MAGNIFICATION 20X WORKING DISTANCE 71 MM. (2.795 INCHES). FIELD AREA 12.6 MM. (0.496 INCHES).

(E) SCRAPER. RUBBER EDGED SCRAPING BLADE WITH METAL STEM. RUBBER EDGE APPROXIMATELY 4 INCHES IN LENGTH.

(F) ROUNDOMETER. ROUNDOMETER AS DESCRIBED IN CURRENT A.S.T.M. DESIGNATION D 1155.

SELECTION OF SAMPLE.

3. SAMPLE AS RECEIVED IN THE LABORATORY SHALL BE TAKEN FROM REPRESENTATIVE SAMPLE OF FIELD STOCKPILE. FINE AGGREGATE SHALL BE GRADED IN CONFORMANCE WITH CURRENT STANDARD GRADATION SPECIFICATIONS AS INDICATED IN TABLES 29, 30 AND 31. A REPRESENTATIVE AIR DRY SAMPLE IS THEN SPLIT TO APPROXIMATELY 25 GRAMS. THE SAMPLE SHALL BE REPRESENTATIVE OF MATERIAL PASSED THROUGH A 10 MESH SIEVE AND RETAINED ON A 200 MESH SIEVE. THE 25 GRAM SAMPLE SHALL THEN BE KEPT IN A FRICTION TOP CAN UNTIL READY FOR TEST. THIS SAMPLE SHALL BE FURTHER REDUCED TO TWO REPRESENTATIVE 1 GRAM SAMPLES, BOTH OF WHICH SHALL BE TESTED FOR MICA CONTENT.

## PROCEDURE.

4. WEIGH TWO 1 GRAM SAMPLES FROM THE 25 GRAM SAMPLE ON AN ANALYTICAL BALANCE. BRUSH SURFACE OF VIBRATING GLASS PANEL WITH IONIZING BRUSH (SEE NOTE). ADJUST THE HEIGHT OF SLOPE OF THE GLASS PANEL TO 1-3/4 INCHES. SET THE VIBRATOR AMPLITUDE CONTROL AT SUCH A POSITION THAT FLAT PARTICLES ON THE UPPER HALF OF THE PANEL WILL MOVE SLOWLY UP THE SLOPE, WHILE THE FINE AGGREGATE ROLLS DOWN. POUR THE SAMPLE ONTO VIBRATING GLASS PANEL SLOWLY, AT SUCH A RATE THAT NO BUNCHING OCCURS. WHILE THE FLAT PARTICLES ARE MOVING TOWARD THE UPPER END OF THE PANEL, SCRAPE MICA PARTICLES INTO SUITABLE RECEIVER. REPEAT THIS PROCEDURE UNTIL MICROSCOPIC EXAMINATION OF EACH SEPARATION SHOWS THAT 95 PERCENT OR MORE OF THE MICA HAS BEEN REMOVED. WEIGH THE MICA COLLECTED. BOTH 1 GRAM SAMPLES ARE TO BE TESTED.

NOTE: IF MICA ADHERES TO THE GLASS PANEL DURING THE TEST, INDICATING STATIC ELECTRICITY, CLEAN THE PANEL AND THE BRUSH WITH THE IONIZING BRUSH.

## CALCULATION.

5. 
$$\frac{\text{WEIGHT OF MICA IN GRAMS}}{\text{WEIGHT OF SAMPLE}} \times 100 = \text{PERCENT OF MICA}$$

## REPORT.

6. REPORT THE RESULTS OF TEST TO THE NEAREST 0.1 PERCENT. THE AVERAGE OF THE RESULTS OF THE TWO SAMPLES TESTED SHALL BE REPORTED.

## 9.1.21. METHOD OF TEST FOR MAXIMUM SPECIFIC GRAVITY OF BITUMINOUS PAVING MIXTURES BY SOLVENT IMMERSIONS.

### SCOPE.

1. THE METHOD CONSISTS OF PLACING A BITUMINOUS MIXTURE IN A LARGE PYCNOMETER AND INTRODUCING A SOLVENT THAT DISSOLVES THE ASPHALT, THEREBY LIBERATING THE AIR VOIDS IN THE MASS. FROM THE WEIGHTS OF THE SAMPLE AND THE SOLVENT USED, THE SPECIFIC GRAVITY OF THE VOIDLESS BITUMINOUS MIXTURE CAN BE DETERMINED BY CALCULATION.

APPARATUS.

2. (A) CONSTANT TEMPERATURE WATER BATH THERMOSTATICALLY CONTROLLED AT 25 PLUS OR MINUS 0.10 DEG. C.

(B) BALANCE OF APPROXIMATELY 3 KG CAPACITY ACCURATE TO PLUS OR MINUS 0.1 G.

(C) SPECIFIC GRAVITY BOTTLE APPROVED BY THE ENGINEER. LOWER PORTION SHALL BE A 1000 ML Erlenmeyer flask WITH A 45/50 GROUND GLASS NECK. THE UPPER PORTION SHALL BE SPECIALLY MADE WITH DIMENSIONS APPROVED BY THE ENGINEER AND HAVING A GROUND GLASS 45/50 CONNECTION TO FIT INTO A FLASK PORTION. THE TOP SHALL BE FITTED WITH A GROUND GLASS STOPPER.

(D) SOLVENT (TRICHLOROETHYLENE OR 1,1,1-TRICHLORODETHANE INDUSTRIAL PURE GRADE OR BETTER).

PROCEDURE.

3. (A) THE SPECIFIC GRAVITY BOTTLE SHALL BE CALIBRATED AS FOLLOWS: WEIGH THE EMPTY FLASK UNIT AND RECORD ITS WEIGHT UNDER A. WEIGH THE FLASK UNIT FILLED TO MARK WITH SOLVENT BROUGHT TO A TEMPERATURE OF 25 DEG. C AND RECORD WEIGHT UNDER B.

(B) THE SPECIFIC GRAVITY OF THE SOLVENT SHALL BE DETERMINED BY HYDROMETER OR PYCNOMETER, TO THREE DECIMAL PLACES AT 25/25 DEGREES C AND RECORD UNDER C.

(C) THE SAMPLE OF BITUMINOUS MIX SHALL BE BROKEN UP AND HEATED SUFFICIENTLY TO PASS THROUGH THE LARGE NECK OF THE FLASK. THE SAMPLE SHALL BE PLACED IN THE FLASK AND WEIGHED AND RECORDED UNDER D. APPROXIMATELY 500 ML OF SOLVENT SHALL BE ADDED AND LET STAND UNTIL ALL BITUMEN IN SAMPLE IS DISSOLVED. THE CONTENTS SHALL BE CAREFULLY AGITATED TO HELP BREAK UP SPECIMEN AND TO RELEASE AIR VOIDS.

(D) WHEN ALL BITUMEN IS IN SOLUTION AND NO MORE AIR BUBBLES RISE, THE FLASK SHALL BE FILLED TO MARK WITH SOLVENT AND PLACED IN THE CONSTANT TEMPERATURE BATH FOR 2 HOURS. THE SOLVENT WHICH HAS PREVIOUSLY BEEN BROUGHT TO A TEMPERATURE OF 25 DEGREES C SHALL BE ADDED TO FLASK AS REQUIRED. THE FLASK CONTAINING BITUMINOUS MIX AND SOLVENT SHALL BE WEIGHED AT 25 DEGREES C AND RECORDED UNDER E. MAXIMUM SPECIFIC GRAVITY OF BITUMINOUS MIXTURE SAMPLE SHALL BE CALCULATED AS FOLLOWS:



$$\frac{(D-A) \text{ TIMES } C}{(B + D) - (E + A)}$$

EQUALS MAXIMUM  
SPECIFIC  
GRAVITY

- WHERE: A EQUALS WEIGHT OF FLASK UNIT, GRAMS  
B EQUALS WEIGHT OF FLASK FILLED TO MARK  
WITH SOLVENT AT 25 DEGREES C, GRAMS  
C EQUALS SPECIFIC GRAVITY OF SOLVENT  
D EQUALS WEIGHT OF FLASK PLUS SAMPLE, GRAMS  
E EQUALS WEIGHT OF FLASK PLUS SAMPLE, PLUS  
SOLVENT AT 25 DEGREES C, GRAMS

REPORT.

4. THE MAXIMUM SPECIFIC GRAVITY SHALL BE REPORTED TO THE NEAREST 0.001 TOGETHER WITH A CALCULATIONS AND OTHER SAMPLE INFORMATION.

9.1.22. METHOD OF SAMPLING BITUMINOUS MIXTURES.

SCOPE.

1. THIS METHOD OF SAMPLING COVERS THE PROCEDURES USED TO SAMPLE BITUMINOUS MIXTURES AT THE PLANT TO OBTAIN SAMPLES FOR MARSHALL STABILITY TESTS AND ACCEPTANCE EXTRACTION TESTS.

APPARATUS.

2. (A) TABLE OF RANDOM NUMBERS  
(B) SCOOP TO MAKE FURROWS AND TO DIG MATERIAL FROM THE FURROWS IN THE PILE OF BITUMINOUS MIXTURE.

PROCEDURE.

3. (A) THE SAMPLES FOR EXTRACTION AND STABILITY TESTING WILL BE TAKEN AT THE PLANT, FROM TRUCKS BY THE DEPARTMENT'S PLANT INSPECTOR.

(B) THE RATES OF SAMPLING WILL BE APPLIED TO THE PLANT'S PRODUCTION FOR ALL DEPARTMENT PROJECTS RATHER THAN INDIVIDUAL PROJECTS.

(C) THE PLANT'S PRODUCTION WILL BE DIVIDED INTO SUCCESSIVE PARTS OR LOTS OF THE SIZE SPECIFIED FOR THE MIXTURE BEING SAMPLED. FIVE SAMPLES TO BE TESTED FOR STABILITY AND FIVE TO BE USED FOR EXTRACTION TESTING WILL BE TAKEN FROM EACH LOT.

(D) THE DEPARTMENT'S PLANT INSPECTOR WILL ASSIGN CONSECUTIVE LOT NUMBERS FOR EACH TYPE OF MIX AT THE PLANT. THE PRODUCER SHALL INCLUDE THE ASSIGNED LOT IDENTIFICATION NUMBER ON EACH WEIGH TICKET.

(E) A TABLE OF RANDOM NUMBERS WILL BE USED BY THE DEPARTMENT TO MAKE RANDOM SELECTION OF WHICH TON OF MIX AND THUS FROM WHICH TRUCKLOAD EACH SAMPLE WILL BE TAKEN.

(F) THE FOLLOWING METHOD WILL BE USED TO OBTAIN SAMPLES FROM THE DESIGNATED TRUCKLOADS OF MATERIAL:

FROM ONE OF THE CONICAL PILES OF MIXTURE WITHIN THE TRUCK, TWO FURROWS THREE TO SIX INCHES IN DEPTH WILL BE DUG EXTENDING FROM THE TOP TO THE BOTTOM OF THE PILE. THE FURROWS WILL BE 180 DEGREES FROM EACH OTHER AND WILL BE PREPARED WITHIN EITHER THE FRONT OR THE REAR HALF OF THE TRUCK. A COIN WILL BE FLIPPED TO DETERMINE WHICH HALF OF THE TRUCK IS TO BE USED - HEADS FRONT HALF, TAILS REAR HALF. EACH FURROW WILL FOLLOW THE SLOPE OF THE PILE AND BE FORMED AS NEAR ITS CENTER AS POSSIBLE. SAMPLING IN AREAS BETWEEN PILES WILL BE AVOIDED BECAUSE OF POSSIBLE SEGREGATION.

THREE SCOOPS OF APPROXIMATELY EQUAL VOLUMES OF MATERIAL WILL BE DUG FROM EACH FURROW, REPRESENTING THE TOP-THIRD, CENTER-THIRD AND BOTTOM-THIRD OF THE PILE. THE MATERIAL WILL THEN BE THOROUGHLY MIXED TOGETHER TO FORM ONE SAMPLE. THE VOLUME OF THIS SAMPLE WILL BE A MINIMUM OF 28 POUNDS IN WEIGHT.

THE SAMPLE REMOVED FROM THE TRUCK WILL BE REDUCED AS FOLLOWS:

MARSHALL SPECIMEN - THE CONTAINER OF MATERIAL WILL BE DUMPED ON A CLEAN LEVEL SURFACE AND THOROUGHLY MIXED BY THE DEPARTMENT'S REPRESENTATIVE. THE SUPPLIER'S TECHNICIAN WILL THEN TAKE A SAMPLE TO BE MOLDED INTO ONE SPECIMEN FOR THE MARSHALL STABILITY TEST.

DURING THE PRODUCTION OF THE FIRST LOT OF EACH MIX SUPPLIED AND FOR EACH SUCCEEDING FOURTH LOT (I.E. 1, 5, 9, ETC.) THE DEPARTMENT REPRESENTATIVE WILL MOLD THREE MARSHALL SPECIMENS IN ADDITION TO THOSE MOLDED FOR STABILITY TESTS. THE SPECIMENS SHALL BE SUBMITTED TO THE CENTRAL LABORATORY FOR VERIFICATION OF THE MAXIMUM SPECIFIC GRAVITY, STABILITY, FLOW, AIR VOIDS AND ANY

OTHER PROPERTIES DEEMED APPROPRIATE. ALL TESTS SHALL BE IN ACCORDANCE WITH METHODS SPECIFIED IN ARTICLE 3.10.2.

EXTRACTION SAMPLE - FOLLOWING THE REMOVAL OF MATERIAL FOR THE MARSHALL SPECIMEN THE MATERIAL WILL BE REMIXED AND QUARTERED BY THE DEPARTMENT'S REPRESENTATIVE. THE SUPPLIER'S TECHNICIAN SHALL SELECT ONE OF THE QUARTERS FOR ACCEPTANCE TESTING. THE QUARTER DIAGONALLY OPPOSITE TO THE ONE SELECTED IS TO BE USED FOR MOLDING THE COMPARISON SAMPLE. A MOLDED COMPARISON SAMPLE, OF APPROXIMATELY 5 POUNDS, SHALL BE WRAPPED AND SEALED AND THE DEPARTMENT'S REPRESENTATIVE WILL LABEL IT ACCORDINGLY.

IN THE EVENT OF A SITUATION WHEREBY THE TEST RESULTS WILL NOT BE VALID BECAUSE OF HUMAN OR MECHANICAL FAILURE, THE COMPARISON SAMPLE WILL BE TESTED AND USED IN PLACE OF THE INITIAL ACCEPTANCE SAMPLE.

THE COMPARISON SAMPLE IS TO BE STORED AT THE PLANT SO IT WILL BE AVAILABLE FOR SELECTION BY DEPARTMENT PERSONNEL IF REQUIRED.

PRIOR TO AND AFTER EACH REMIXING AND QUARTERING, ALL TOOLS WILL BE CLEANED TO PREVENT THE BUILD-UP OF ASPHALT AND FINES. THE CLEANING, DURING THE REMIXING AND QUARTERING OPERATIONS WILL BE ACCOMPLISHED WITHOUT SOLVENTS.

ALL SAMPLES FORWARDED FOR COMPARISON TESTING MUST BE IDENTIFIED AS TO THEIR LOT NUMBER AND POSITION IN THE LOT'S SAMPLING SEQUENCE. FOR THIS PURPOSE, AN IDENTIFICATION CODE, CONSISTING OF A NUMBER FOLLOWED BY A LETTER, WILL BE USED WITH EACH SAMPLE. THE NUMBER-PORTION OF THE CODE WILL BE THE NUMBER OF THE LOT FROM WHICH THE SAMPLE WAS TAKEN. THE LETTER-PORTION IS TO INDICATE WHERE THE SAMPLE FITS INTO THE LOT'S SAMPLING SEQUENCE. THE LETTER "A" WILL BE USED TO INDICATE THE FIRST SAMPLE OF THE LOT, THE LETTER "B" FOR THE SECOND SAMPLE, THE LETTER "C" FOR THE THIRD, AND SO FORTH. WHEN SEVERAL SAMPLES (EXTRACTIONS AND/OR STABILITY) COME FROM THE SAME TRUCK-LOAD OF MIX, EACH OF THESE SAMPLES WILL HAVE THE SAME IDENTIFICATION CODE (NUMBER AND LETTER).

9.1.23. METHOD OF TEST FOR LABORATORY ANALYSIS OF BITUMINOUS  
CONCRETE.

A. QUANTITATIVE EXTRACTION OF BITUMEN

SCOPE.

1. THIS METHOD COVER PRODECURES FOR THE QUANTITATIVE DETERMINATION OF BITUMEN IN PAVING MIXTURES AND PAVEMENT SAMPLES. THE BITUMEN CONTENT IS CALCULATED BY DIFFERENCE FROM THE WEIGHT OF THE EXTRACTED AGGREGATE, MOISTURE CONTENT AND WEIGHT OF ASH IN EXTRACT, AS AN ALTERNATE A.A.S.H.T.O. DESIGNATION T 164 METHOD A MAY BE USED EXCEPT WATER CONTENT SHALL BE DETERMINED IN ACCORD-  
ANCE WITH ARTICLE 3.10.2 AS REQUIRED, AND THE USE OF A STEAM BATH FOR THE ASH DETERMINATION IS NOT REQUIRED. A BALANCE CONFORMING TO A.A.S.H.T.O. DESIGNATION M 231 CLASS C MAY BE USED TO DETERMINE THE WEIGHT OF THE ASH.

APPARATUS.

2. (A) OVEN, CAPABLE OF MAINTAINING THE TEMPERATURE AT 280 DEGREES F.

(B) PAN, 12 INCH DIAMETER.

(C) BALANCE, CAPABLE OF WEIGHING 2000 GRAMS TO AN ACCURACY OF 0.2 G.

(D) BALANCE, CAPABLE OF WEIGHING 5000 GRAMS TO AN ACCURACY OF 0.2 G.

(E) HOT PLATE, ELECTRIC, 3600-WATT, LOW, MEDIUM, AND HIGH SETTING.

(F) SMALL MOUTH GRADUATE, 1000 ML CAPACITY.

(G) TEST TUBE, 100 ML CAPACITY.

(H) DESICCATOR.

(I) ANALYTICAL BALANCE.

(J) CENTRIFICAL EXTRACTION APPARATUS, CONSISTING OF A BOWL (MIN. CAPACITY 1500G.) AND AN APPARATUS IN WHICH THE BOWL IS REVOLVED UP TO A SPEED OF 3600 RPM. THE APPARATUS SHALL BE PROVIDED WITH A CONTAINER FOR CATCHING THE SOLVENT THROWN FROM THE BOWL AND A DRAIN FOR REMOVING THE SOLVENT. THE APPARATUS SHALL BE PROVIDED WITH EXPLOSION-PROOF FEATURES AND INSTALLED IN A HOOD TO PROVIDE VENTILATION.

- (K) FILTER RINGS, TO FIT THE RIM OF THE BOWL.
- (L) REAGENT, INHIBITED SOLVENT 1, 1, 1,  
TRICHLOROETHANE.
- (M) CENTRIFUGE, CAPABLE OF ROTATING 100 ML TEST  
TUBES AT 1500 RPM.
- (N) TORQUE WRENCH CALIBRATED IN INCH-POUNDS WITH A  
MINIMUM CAPACITY OF 110 INCH POUNDS.

PROCEDURE.

3. (A) RANDOM WEIGHT SAMPLES OF 1000 GRAMS PLUS ARE TO BE USED FOR EXTRACTION. A SAMPLE SHALL BE OBTAINED AND PLACED ON A FLAT PAN AND WARM IN A 280 DEGREE F. OVEN, ONLY UNTIL IT CAN BE HANDLED. THE PARTICLES OF THE MIXTURE SHALL BE SEPARATED AS UNIFORMLY AS POSSIBLE USING CARE NOT TO FRACTURE THE MINERAL PARTICLES.

(B) THE 1000 PLUS GRAM SAMPLE SHALL BE TRANSFERRED INTO THE BOWL.

(C) THE SAMPLE SHALL BE COVERED IN THE BOWL WITH SOLVENT AND SUFFICIENT TIME ALLOWED FOR THE SOLVENT TO DISINTEGRATE THE SAMPLE (NOT OVER ONE HOUR). THE BOWL CONTAINING THE SAMPLE AND THE SOLVENT SHALL BE PLACED IN THE EXTRACTION APPARATUS. THE FILTER RING SHALL BE DRIED AND WEIGHED AND FIT AROUND THE EDGE OF THE BOWL. THE COVER SHALL BE CLAMPED ON THE BOWL TIGHTLY WITH A TORQUE WRENCH TO 110 INCH POUNDS. A BEAKER SHALL BE PLACED UNDER THE DRAIN TO COLLECT THE EXTRACT.

(D) THE CENTRIFUGE SHALL BE REVOLVED UNTIL THE SOLVENT CEASES TO FLOW FROM THE DRAIN. THE MACHINE SHALL BE ALLOWED TO STOP, 200-250 ML OF SOLVENT SHALL BE ADDED AND THIS PROCEDURE REPEATED TWICE MORE. THE EXTRACT AND THE WASHINGS SHALL BE COLLECTED IN A SUITABLE GRADUATE. SUFFICIENT ML SOLVENT ADDITIONS SHALL BE USED, AS REQUIRED, TO PRODUCE AN EXTRACT THAT IS CLEAR AND NOT DARKER THAN A LIGHT STRAW COLOR.

(E) THE FILTER RING SHALL BE REMOVED FROM THE BOWL AND DRIED. AS MUCH OF THE MINERAL MATTER ADHERING TO THE RING SHALL BE REMOVED AS POSSIBLE AND ADDED TO THE AGGREGATE. THE RING AND CONTENTS OF THE BOWL SHALL BE DRIED TO CONSTANT WEIGHT IN AN OVEN AT 280 DEGREES F.

(F) THE VOLUME OF THE TOTAL EXTRACT IN THE GRADUATE SHALL BE RECORDED. THE EXTRACT SHALL BE AGITATED THOROUGHLY AND 75 ML IMMEDIATELY MEASURED OUT AND Poured INTO A PREVIOUSLY WEIGHED TEST TUBE. THE TEST TUBE SHALL BE PLACED IN A CENTRIFUGE

AND REVOLVED AT 1500 RPM FOR THIRTY MINUTES. THE LIQUID SHALL BE DECANTED AND Poured IN CLEAN SOLVENT. THE RESIDUE SHALL BE DIS-  
 LODGED AND STIRRED WITH A SPATULA. THE TEST TUBE SHALL BE FILLED  
 WITH SOLVENT, CLEANING THE SPATULA, AND PLACED BACK IN THE CENTRI-  
 FUGE FOR THIRTY MINUTES. THE RINSING PROCESS SHALL BE REPEATED  
 UNTIL SOLVENT REMAINS CLEAN. THE TEST TUBE SHALL BE DECANTED AND  
 PLACED IN AN OVEN UNTIL DRY, THEN COOLED IN A DESICCATOR AND  
 WEIGHED. A MINIMUM OF ONE DETERMINATION OF FINES IN THE EXTRACT  
 SHALL BE DONE ON EACH LOT OF MATERIAL.

(G) CENTRIFUGE FINES IN EXTRACT SHALL BE CALCULATED  
 AS FOLLOWS:

$$\frac{AB}{75} \text{ EQUALS WEIGHT OF FINES IN EXTRACT}$$

WHERE: A EQUALS TOTAL AMOUNT OF EXTRACT  
 B EQUALS AMOUNT OF MATERIAL IN TUBE

CONVERT TO ASH AS FOLLOWS:

$$Y \text{ EQUALS } (1.0338X) \text{ PLUS } 1.0488$$

WHERE: Y EQUALS WEIGHT OF ASH IN EXTRACT  
 X EQUALS WEIGHT OF CENTRIFUGE FINES IN  
 EXTRACT

(H) USING A DRY OR PREVIOUSLY DRIED SAMPLE CALCU-  
 LATE PERCENTAGE OF BITUMEN IN THE SAMPLE SHALL BE CALCULATED AS  
 FOLLOWS:

$$\text{PERCENT A.C. EQUALS } \frac{(W1+W2)-(W3+W4+W5)}{W1} \text{ TIMES } 100$$

WHERE:

W1 EQUALS WEIGHT OF SAMPLE  
 W2 EQUALS WEIGHT OF RING  
 W3 EQUALS WEIGHT OF AGGREGATE  
 W4 EQUALS WEIGHT OF RING AFTER CENTRIFUGING  
 W5 EQUALS WEIGHT OF FINES IN EXTRACT

(I) A MINIMUM OF ONE SAMPLE PER LOT BUT NOT LESS  
 THAN TWO SAMPLES PER DAY SHALL BE TESTED FOR MOISTURE AS HEREIN-  
 BEFORE DESCRIBED. THE AMOUNT OF MOISTURE DETERMINED SHALL BE USED  
 IN THE CALCULATION OF BITUMEN CONTENT EITHER IN ACCORDANCE WITH  
 A.A.S.H.T.O. DESIGNATION T 164, 9.2 OR BY DIFFERENCE IN PERCENTAGE  
 ON THAT SAMPLE AND SUBSEQUENT SAMPLES OR, UNTIL ANOTHER MOISTURE  
 CONTENT IS DETERMINED. SAMPLES FOR MOISTURE DETERMINATION WILL BE  
 OBTAINED BY THE ENGINEER IN ACCORDANCE WITH ARTICLE 9.1.22.

4. THE PERCENTAGE OF BITUMEN SHALL BE REPORTED TO THE NEAREST HUNDRETH OF A PERCENT BY THE SUPPLIERS TECHNICIAN. THIS WILL BE ROUNDED TO THE NEAREST 0.05 PERCENT FOR REPORTING BY THE ENGINEER. THE ROUNDING PROCEDURE WILL BE IN ACCORDANCE WITH CURRENT A.S.T.M. DESIGNATION E 29.

## B. MECHANICAL ANALYSIS OF EXTRACTED AGGREGATE.

### SCOPE.

1. THIS METHOD OF TEST COVERS A PROCEDURE FOR THE DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION OF FINE AND COARSE AGGREGATES EXTRACTED FROM BITUMINOUS MIXTURES, USING SIEVES WITH SQUARE OPENINGS. AS AN ALTERNATE A.A.S.H.T.O. DESIGNATION T-30 MAY BE USED.

### APPARATUS.

2. (A) BALANCE: THE BALANCE OR SCALE SHALL BE SENSITIVE TO WITHIN 0.2G.

(B) SIEVES: THE SIEVES WITH SQUARE OPENINGS SHALL BE MOUNTED ON SUBSTANTIAL FRAMES CONSTRUCTED IN A MANNER THAT WILL PREVENT LOSS OF MATERIAL DURING SIEVEING. SUITABLE SIEVE SIZES SHALL BE SELECTED TO FURNISH THE INFORMATION REQUIRED BY THE SPECIFICATIONS COVERING THE MATERIAL TO BE TESTED. THE WOVEN WIRE CLOTH SIEVES SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR SIEVES FOR TESTING PURPOSES (A.A.S.H.T.O. DESIGNATION M 92).

### SAMPLE.

3. THE SAMPLE SHALL CONSIST OF THE ENTIRE LOT OR SAMPLE OF AGGREGATE FROM WHICH THE BITUMINOUS MATERIAL HAS BEEN EXTRACTED.

### PROCEDURE.

4. (A) THE TEST SAMPLE SHALL BE DRIED TO A CONSTANT WEIGHT, AND WEIGHED. THE WEIGHT OF MINERAL MATTER CONTAINED IN THE EXTRACTED BITUMEN SHALL BE DETERMINED AND THIS WEIGHT ADDED TO THE WEIGHT OF THE WASHED AND DRIED AGGREGATE.

(B) THE TEST SAMPLE AFTER BEING DRIED AND WEIGHED SHALL BE PLACED OVER PROPER SIEVES DECREASING IN SIZE DOWN TO THE NO. 10 OR NO. 8 WITH A CATCH PAN UNDER THEM. THE SIEVEING OPERATION SHALL BE CONDUCTED BY MEANS OF A LATERAL AND VERTICAL MOTION OF THE SIEVE, ACCOMPANIED BY JARRING ACTION SO AS TO KEEP THE SAMPLE MOVING CONTINUOUSLY OVER THE SURFACE OF THE SIEVE. IN NO CASE SHALL FRAGMENTS IN THE SAMPLE BE

TURNED OR MANIPULATED THROUGH THE SIEVE BY HAND. SIEVEING SHALL BE CONTINUED UNTIL NOT MORE THAN 1 PERCENT BY WEIGHT OF THE RESIDUE PASSES ANY SIEVE DURING 1 MIN.

(C) THE FINE AGGREGATE IN THE CATCH PAN SHALL BE WEIGHED AND RECORDED, THEN PLACED IN A LARGE PAN AND COVERED WITH WATER WHICH CONTAINS A WETTING AGENT (JOY, CALGON OR OTHER SUITABLE PRODUCT) AND AGITATED VIGOROUSLY AND THE WASH WATER IMMEDIATELY POURED OVER A NEST OF TWO SIEVES CONSISTING OF A 2.00 OR 1.18 MM SIEVE SUPERIMPOSED OVER A NO. 200 SIEVE.

THE AGITATION SHALL BE SUFFICIENTLY VIGOROUS TO RESULT IN A COMPLETE SEPARATION FROM THE COARSE PARTICLES ALL PARTICLES FINER THAN THE NO. 200 SIEVE AND BRING THEM INTO SUSPENSION IN ORDER THAT THEY MAY BE REMOVED BY DECANTATION OF THE WASH WATER. CARE SHALL BE TAKEN TO AVOID DECANTATION OF THE COARSE PARTICLES. THE OPERATION SHALL BE REPEATED UNTIL THE WASH WATER IS CLEAR.

ALL MATERIALS RETAINED ON THE NESTED SIEVES SHALL BE RETURNED TO THE CONTAINER. THE WASHED AGGREGATE SHALL BE DRIED TO CONSTANT WEIGHT AT A TEMPERATURE OF 110 PLUS OR MINUS 5 DEGREES C (230 PLUS OR MINUS 9 DEGREES F) AND WEIGHED TO THE NEAREST 0.1%.

(D) IF THE AMOUNT OF PASSING NO. 200 MATERIAL FAILS TO MEET THE MINIMUM REQUIREMENT FOR THE SPECIFIC SAMPLE UNDER TEST, THE COARSE AGGREGATE OF THE PARTICULAR SAMPLE MUST ALSO BE WASHED OVER A NO. 200 SIEVE. THE MINUTE AMOUNT OF FINES WASHED FROM THE COARSE AGGREGATE SHALL THEN BE ADDED TO THE PASSING NO. 200 MATERIAL WASHED FROM THE FINE AGGREGATE PORTION OF THE SAMPLE.

(E) THE DRIED MATERIAL SHALL THEN BE PLACED OVER A SET OF PROPER SIEVES INCLUDING THE NO. 200 SIEVE. IT SHALL BE AGITATED MECHANICALLY FOR FIVE MINUTES.

(F) THE WEIGHT OF MATERIAL PASSING EACH SIEVE AND RETAINED ON THE NEXT AND THE AMOUNT PASSING THE NO. 200 SIEVE SHALL BE RECORDED. THE WEIGHT OF DRY MATERIAL PASSING THE NO. 200 SIEVE BY DRY SIEVING SHALL BE ADDED TO THE WEIGHT OF MINERAL MATTER IN THE BITUMEN, IN THE RING, AND THE WEIGHT REMOVED BY WASHING IN ORDER TO OBTAIN THE TOTAL PASSING THE NO. 200.

REPORT.

5. THE RESULTS OF THE SIEVE ANALYSIS SHALL BE REPORTED AS FOLLOWS:



(A) TOTAL PERCENTAGES PASSING EACH SIEVE. PERCENTAGES SHALL BE REPORTED TO THE NEAREST TENTH OF A PERCENT BY THE SUPPLIER'S TECHNICIAN. RESULTS FOR THE NO. 8 AND NO. 50 SIEVES WILL BE ROUNDED TO THE NEAREST 0.5% AND FOR SIEVES LARGER THAN THE NO. 8 TO THE NEAREST WHOLE PERCENT WHEN RECORDED BY THE ENGINEER. THE ROUNDING PROCEDURE WILL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT A.S.T.M. DESIGNATION E 29.

9.1.24. METHOD OF TEST TO MEASURE THICKNESS OF BITUMINOUS PAVEMENTS FROM CORES.

SCOPE.

1. THE METHOD CONSISTS OF PLACING THE DRILLED BITUMINOUS CONCRETE CORE IN A MEASURING DEVICE AND RECORDING THE INDIVIDUAL LIFT THICKNESSES OF THE SPECIFIED COURSES.

APPARATUS.

2. (A) THE APPARATUS WILL CONSIST OF A CALIPERING DEVICE THAT WILL MEASURE THE AXIAL LENGTHS OF INDIVIDUAL LIFTS BEFORE SEPARATION. A DRAWING OF THIS DEVICE IS ON FILE AT THE DEPARTMENT LABORATORY.

(B) THE APPARATUS IS SO DESIGNED THAT THE SPECIMEN WILL BE HELD WITH ITS AXIS IN A HORIZONTAL POSITION BY TWO METAL ROLLER BEARINGS SUFFICIENTLY RIGID AND STABLE TO MAINTAIN ALIGNMENT WITHOUT DISTORTION OR DEFLECTION.

(C) THE APPARATUS WILL PROVIDE FOR THE ACCOMMODATION OF SPECIMENS OF DIFFERENT NOMINAL LENGTHS OVER A RANGE OF AT LEAST 1/2 TO 12 INCH.

(D) A SUITABLE GAGE WILL BE PROVIDED TO CALIBRATE AND CHECK THE ZERO REFERENCE POINT OF THE APPARATUS.

PROCEDURE.

3. (A) THE SPECIMEN WILL BE PLACED IN THE MEASURING APPARATUS WITH THE SMOOTH END OF THE CORE, THAT IS, THE END THAT REPRESENTS THE UPPER SURFACE OF A PAVEMENT CORE FIRMLY AGAINST THE HARDENED - STEEL REFERENCE PIN.

(B) FOUR EQUIDISTANT MEASUREMENTS (APPROX. 90 DEGREES) WILL BE TAKEN AROUND THE PERIPHERY OF THE SPECIMEN USING THE SLIDING INDEX ATTACHED TO THE SCALE TO INDICATE AT EACH READING THE DIVISION OF THE VARIOUS LIFTS. EACH OF THESE

FOUR MEASUREMENTS FOR EACH LIFT WILL BE READ DIRECTLY TO 0.001 OF AN INCH. THE FOUR MEASUREMENTS WILL BE AVERAGED AND RECORDED TO THE NEAREST 0.01 OF AN INCH.

(C) IF, DURING THE COURSE OF THE MEASURING OPERATION IT IS DISCOVERED THAT ONE OR MORE OF THE MEASURING POINTS IS NOT REPRESENTATIVE OF THE PLANE OF THE CORE BECAUSE OF A SMALL PROJECTION OR DEPRESSION, THE SPECIMEN WILL BE ROTATED SLIGHTLY ABOUT ITS AXIS AND THE MEASUREMENT TAKEN AT THE NEAREST DISCERNABLE POINT.

REPORT.

4. (A) THE FIRST (TOP) LIFT AVERAGE THICKNESS WILL BE REPORTED TO THE NEAREST 0.01 OF AN INCH, AS THE DIFFERENCE BETWEEN THE ZERO REFERENCE POINT AND THE DEMARCATION POINT OF THE FIRST LIFT.

(B) THE SECOND LIFT AVERAGE THICKNESS WILL BE REPORTED TO THE NEAREST 0.01 OF AN INCH, AS THE DIFFERENCE BETWEEN THE ZERO REFERENCE POINT AND THE DEMARCATION POINT OF THE SECOND LIFT MINUS THE MEASUREMENT OF THE FIRST LIFT.

(C) ADDITIONAL LIFT THICKNESSES WILL BE REPORTED AS THE DIFFERENCE BETWEEN THE ZERO REFERENCE POINT AND THE DEMARCATION POINT OF THE SUBSEQUENT LIFTS MINUS THE TOTAL MEASUREMENT OF ALL PREVIOUS LIFTS.

9.1.25. METHOD OF TEST FOR DETERMINATION OF PERCENTAGE OF CARBONATES IN CRUSHED GRAVEL BY PETROGRAPHIC ANALYSIS.

SCOPE.

1. THIS METHOD OF TEST COVERS THE PROCEDURE FOR THE VISUAL DETERMINATION OF ROCK TYPES AND DELETERIOUS MATERIALS IN COARSE AGGREGATES.

APPARATUS.

2. THE APPARATUS SHALL BE AS FOLLOWS:

BINOCULAR MICROSCOPE.

DILUTE HCL.

SCALE ACCURATE TO PLUS OR MINUS 0.1 GRAM.

GEOLOGY OR MASON HAMMER OR OTHER CRACKING IMPLEMENT AND A STEEL STRIKING PLATE.

PENKNIFE, SCREWDRIVER OR SIMILAR SCRATCHING DEVICE.

PETROGRAPHER.

3. THE EXAMINER SHALL HAVE A DEGREE IN GEOLOGY OR SHALL BE A TRAINED TECHNICIAN WITH A GENERAL BACKGROUND IN GEOLOGY AND A SPECIFIC BACKGROUND IN PETROLOGY.

SAMPLE PREPARATION.

4. A SAMPLE OF APPROXIMATELY 35 LBS. SHALL BE SPLIT AND SCREENED TO PRODUCE A REPRESENTATIVE SAMPLE OF 3000 GR. OF PLUS 4 MATERIAL FOR SIZES 3 THROUGH 5, 1000 GR. OF PLUS 4 MATERIAL FOR SIZES 56 THROUGH 68 AND 500 GR. OF PLUS 8 MATERIAL FOR SIZES 7 THROUGH 9. IT SHALL THEN BE WASHED TO REMOVE COATINGS WHICH WOULD MAKE PARTICLE EXAMINATION DIFFICULT.

PROCEDURE.

5. (A) THE PREPARED SAMPLE SHALL BE DIVIDED INTO ROCK TYPES AS DEFINED IN THE CURRENT A.S.T.M. DESIGNATION C 294. THIS WILL BE DONE BY VISUAL EXAMINATION WITH THE AID OF THE BINOCULAR MICROSCOPE, DILUTE HCL, AND CRACKING AND SCRATCHING IMPLEMENTS. THE RESULTING GROUPS WILL BE WEIGHED TO THE NEAREST GRAM AND CALCULATED AS A PERCENT OF THE WHOLE.

(B) DELETERIOUS MATERIAL SAMPLES SHALL BE EXAMINED FOR WEATHERED AND LEACHED, POROUS, FRIABLE, FRACTURED, ALTERED OR OTHERWISE UNSOUND PARTICLES. PIECES AFFECTED BY SUCH CONDITIONS TO THE DEGREE THAT THEIR PERFORMANCE MAY BE IMPAIRED, SHALL BE SORTED OUT, WEIGHED AND CALCULATED AS A PERCENT OF THE WHOLE.

NOTE: SINCE THIS IS A SUBJECTIVE DETERMINATION, THE FOLLOWING GUIDE LINES SHALL BE USED IN DETERMINING IF PARTICLES ARE WEATHERED AND UNSOUND:

- (1) CAN BE BROKEN INTO SEVERAL PIECES BY A LIGHT HAMMER TAP.
- (2) SHOWS MORE THAN SUPERFICIAL OXIDATION OR ALTERATION OF FELDSPARS.
- (3) ARE VISIBLY POROUS.
- (4) SHOWS NUMEROUS MICROFRACTURES OR CLEAVAGE PLANES.
- (5) ARE OF ABNORMAL COLORATION.

PARTICLES WHICH ARE AS OUTLINED ABOVE SHOULD BE CONSIDERED WORTHY OF CLOSE EXAMINATION.

REPORT.

6. REPORT SHALL CONTAIN THE PERCENTAGE BY WEIGHT OF INDIVIDUAL ROCK TYPES AS DEFINED IN THE CURRENT A.S.T.M. DESIGNA-

TION C 294, AND THE PERCENTAGE BY WEIGHT OF DELETERIOUS MATERIAL WHICH SHALL BE REPORTED AS (1) WEATHERED AND (2) UNSOUND.

9.1.26. METHOD OF TEST TO DETERMINE THE PERCENTAGE OF ADHERENT  
-----  
FINES PRESENT IN COARSE AGGREGATE.  
-----

SCOPE.

1. THIS METHOD OF TEST IS INTENDED TO DETERMINE THE PERCENTAGE OF ADHERENT FINES PRESENT IN COARSE AGGREGATES.

APPARATUS.

2. THE APPARATUS SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION T 11.

SAMPLES.

3. THE SAMPLE FOR THE TEST SHALL CONFORM TO THE CURRENT REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION T 11.

PROCEDURE.

4. THE TEST SAMPLE SHALL BE DRIED TO CONSTANT MASS AT A TEMPERATURE OF 110 DEGREES PLUS OR MINUS 5 DEGREES C. (230 DEG. PLUS OR MINUS 9 DEG. F.) AND WEIGHED TO THE NEAREST 0.1 PERCENT. THE SAMPLE SHALL BE SIEVED, FOR A PERIOD NOT TO EXCEED 1 MINUTE, OVER A NO. 16 SIEVE. THE MATERIAL PASSING THE NO. 16 SIEVE SHALL BE CONSIDERED NON-ADHERENT FINES. THE REMAINING MATERIAL SHALL THEN BE TESTED IN ACCORDANCE WITH CURRENT A.A.S.H.T.O. DESIGNATION T 11 AND THAT MATERIAL DETERMINED TO BE FINER THAN THE NO. 200 SIEVE SHALL BE CONSIDERED ADHERENT FINES.

REPORT.

5. THE REPORT SHALL INCLUDE:

(A) THE AMOUNT OF NON-ADHERENT FINES COMPUTED AS A PERCENTAGE OF THE TOTAL MASS OF THE SAMPLE.

(B) THE AMOUNT OF ADHERENT FINES COMPUTED AS A PERCENTAGE OF THE TOTAL MASS OF THE SAMPLE.

\* 9.1.27. METHOD OF TEST FOR RAPIDLY DETERMINING THE BREAKDOWN IN  
\* SIZES OF DENSE GRADED AGGREGATE BASE COURSE USING A  
\* MODIFIED PROCTOR COMPACTION EFFORT:

\* SCOPE.

\* 1. THIS METHOD OF TEST RAPIDLY DETERMINES THE APPRO-  
\* XIMATE AMOUNT OF GRADED AGGREGATE BASE COURSE WHICH MAY BE  
\* EXPECTED TO BREAK DOWN TO FINER SIZES UNDER FIELD COMPACTION AND  
\* EXPOSURE TO WEATHERING.

\* APPARATUS.

\* 2. (A) THE APPARATUS FOR DETERMINING MOISTURE-DENSITY  
\* RELATIONSHIP AND SOIL AGGREGATE BREAKDOWN SHALL CONFORM TO THE  
\* CURRENT REQUIREMENTS OF A.S.T.M. DESIGNATION D-1557, METHOD D.

\* (B) THE APPARATUS FOR PERFORMING THE MECHANICAL  
\* ANALYSIS SHALL CONFORM TO THE CURRENT REQUIREMENTS OF A.A.S.H.T.O.  
\* DESIGNATION T-27.

\* PREPARATION OF SAMPLE.

\* 3. (A) A SAMPLE OF APPROXIMATELY 150 LBS. SHALL BE  
\* AIR-DRIED AND THOROUGHLY MIXED.

\* (B) A MECHANICAL ANALYSIS SHALL BE RUN ON TWO (2)  
\* SAMPLES OF APPROXIMATELY TWELVE (12) POUNDS EACH, OBTAINED FROM  
\* THE ABOVE SAMPLE BY QUARTERING. THESE TWO (2) GRADATIONS SHALL  
\* BE AVERAGED AND THE AVERAGE REPORTED AS THE "ORIGINAL" GRADATION  
\* OF THE MATERIAL.

\* (C) A SAMPLE SHALL BE PREPARED TO HAVE THE SAME  
\* GRADATION AS THE "ORIGINAL" DETERMINED IN 3(B) ABOVE.

\* (D) THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT  
\* SHALL BE DETERMINED FROM A REPRESENTATIVE PORTION OF THE  
\* "PREPARED" SAMPLE IN ACCORDANCE WITH THE "MOISTURE DENSITY  
\* RELATIONS OF SOILS, METHOD D, OF CURRENT A.S.T.M. DESIGNATION  
\* D-1557", EXCEPT THAT AGGREGATE PASSING THE 1 1/2 INCH SIEVE  
\* SHALL BE USED INSTEAD OF THE MATERIAL PASSING THE 3/4 INCH SIEVE  
\* SPECIFIED IN THIS A.S.T.M. METHOD.

\* PROCEDURE.

\* (A) ANOTHER SAMPLE SHALL BE PREPARED FROM THE  
\* REMAINING MATERIAL AT THE OPTIMUM MOISTURE CONTENT DETERMINED  
\* IN 3(D) ABOVE. THE EQUIPMENT SPECIFIED IN 2(A) SHALL BE USED

NOTE: \* ASTERISK DENOTES INTERAGENCY  
ENGINEERING COMMITTEE  
SPECIFICATION

\* TO COMPACT THE MATERIAL IN FIVE (5) EQUAL LAYERS WITH 56 BLOWS  
\* AT EACH LAYER.

\* (B) A MECHANICAL ANALYSIS SHALL BE PERFORMED TO  
\* DETERMINE THE "BREAKDOWN" GRADATION OF THE MATERIAL.

\* REPORT.

\* 5. (A) THE REPORT SHALL INCLUDE THE FOLLOWING:

\* THE AVERAGE OF TWO (2) GRADATIONS (DESIGNATED  
\* "ORIGINAL") DETERMINED IN 3(B).

\* THE GRADATION (DESIGNATED AS "BREAKDOWN") OF  
\* THE PREPARED SAMPLE AFTER COMPACTION IN 4(B).

\* THE DIFFERENCE BETWEEN THE "ORIGINAL" AND  
\* "BREAKDOWN" GRADATION ON THE NUMBER 4, 8, 50  
\* AND 200 SIEVES.

\* THE PERCENT CUMULATIVE "BREAKDOWN" BY SUMMING  
\* THE DIFFERENCES DETERMINED IN (3) ABOVE.

\* THE SPECIFIED GRADATION FOR THE MATERIAL.

\* THE MAXIMUM DENSITY AT OPTIMUM MOISTURE OF  
\* THE PREPARED SAMPLE DETERMINED IN 3(D).

9.1.28. METHOD OF TEST FOR DETERMINING CONFORMANCE OF  
BITUMINOUS CONCRETE MIXTURE FOR FULLY AUTOMATED PLANTS  
USING HOT BIN SAMPLES AND BATCH WEIGHT PRINTOUTS.

SCOPE.

THIS METHOD OF TEST COVERS A PROCEDURE FOR THE DETER-  
MINATION OF HOT BIN PERCENTAGES AND THE COMPOSITION OF EACH BATCH,  
TO ENSURE COMPLIANCE WITH THE TOLERANCES OF TABLE 3-A1, ARTICLE  
3.10.2.

ACCEPTANCE SAMPLES SELECTED FOR STABILITY DETERMINATION  
SHALL COMPLY WITH THE CONTROL LIMITS SHOWN IN TABLE 3-C, ARTICLE  
3.10.2.

NOTE: \* ASTERISK DENOTES INTERAGENCY  
ENGINEERING COMMITTEE  
SPECIFICATION

## APPARATUS.

APPARATUS SHALL COMPLY WITH THE REQUIREMENTS LISTED UNDER THE HEADING B. MECHANICAL ANALYSIS OF EXTRACTED AGGREGATE OF ARTICLE 9.1.23.

## PROCEDURE.

1. RANDOM SAMPLES OF NOT LESS THAN 25 POUNDS SHALL BE SELECTED FROM EACH HOT BIN FOR EACH 400 TONS BATCHED. (THE BIN SAMPLES WILL BE TAKEN DURING THE LOADING OF THE TRUCK FROM WHICH THE MARSHALL SAMPLES WILL BE SELECTED.) WHEN MINERAL FILLER IS USED, A MINIMUM OF ONE FILLER SAMPLE SHALL BE TAKEN PER LOT.

2. THE MINIMUM SAMPLE WEIGHT FOR TESTING SHALL BE 25 POUNDS FOR BINS NO. 5 AND 4, 10 POUNDS FOR BIN NO. 3 AND 2 POUNDS FOR BIN NO. 2. MINIMUM TEST SAMPLE WEIGHT FOR BIN NO. 1 SHALL BE 500 GRAMS, AND FOR MINERAL FILLER 100 GRAMS.

3. TEST SAMPLES (FROM BINS NO. 2, 3, 4), AFTER BEING WEIGHED, SHALL BE PLACED OVER PROPER SIEVES DECREASING IN SIZE DOWN TO THE NO. 8 WITH A CATCH PAN UNDERNEATH. THE SIEVING OPERATION SHALL BE CONDUCTED BY MEANS OF A LATERAL AND VERTICAL MOTION OF THE SIEVE, ACCOMPANIED BY JARRING ACTION SO AS TO KEEP THE SAMPLE MOVING CONTINUOUSLY OVER THE SURFACE OF THE SIEVE. IN NO CASE SHALL FRAGMENTS IN THE SAMPLE BE TURNED OR MANIPULATED THROUGH THE SIEVE BY HAND. SIEVING SHALL BE CONTINUED UNTIL NOT MORE THAN ONE PERCENT BY WEIGHT OF THE RESIDUE PASSES ANY SIEVE DURING ONE MINUTE. THAT MATERIAL PASSING THE NO. 8 SIEVE SHALL BE WASHED AND GRADED USING PROCEDURE HEREINAFTER DESCRIBED FOR BIN NO. 1.

4. THE BIN NO. 1 MATERIAL SHALL BE WEIGHED AND RECORDED, THEN WASHED THROUGH A NO. 200 WASH SIEVE USING SOLVENT OR WATER. THE SAMPLE SHALL BE CAREFULLY AGITATED DURING THIS WASHING OPERATION RESULTING IN THE MINUS 200 MATERIAL BEING REMOVED BY THE WASHING MEDIUM.

THE WASHED MATERIAL SHALL BE THOROUGHLY DRIED ON A HOT PLATE AND WEIGHED, THEN PLACED OVER THE PROPER SIEVES, DECREASING IN SIZE DOWN TO THE NO. 200 WITH A CATCH PAN UNDERNEATH. IT SHALL BE AGITATED MECHANICALLY FOR FIVE MINUTES.

THE AMOUNT OF MATERIAL PASSING EACH SIEVE AND RETAINED ON THE NEXT AND THE AMOUNT PASSING THE NO. 200 SIEVE SHALL BE RECORDED. THE WEIGHT OF DRY MATERIAL PASSING THE NO. 200 AND THE WEIGHT REMOVED BY WASHING SHALL BE ADDED TOGETHER IN ORDER TO OBTAIN THE TOTAL PASSING THE NO. 200.

5. THE MINERAL FILLER SAMPLE IS TO BE WASHED THROUGH THE NO. 200 SIEVE USING INHIBITED SOLVENT 1,1,1-TRICHLOROETHANE OR IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION T-37.

REPORT.

1. THE PERCENT OF MATERIAL FROM EACH BIN WILL BE DETERMINED BY DIVIDING THE RECORDED DELIVERY TICKET WEIGHTS FOR EACH BIN BY THE TOTAL AGGREGATE WEIGHT OF THE LOAD.

2. ACCEPTABILITY OF THE MIX GRADATION WILL BE DETERMINED BY COMPUTING THE PERCENTAGE OF MATERIAL PASSING EACH SIEVE FOR EACH BIN, AND MULTIPLYING THE PERCENTAGE BY THE PERCENTAGES DETERMINED IN NO. 1 ABOVE AND TOTALED TO DETERMINE THE MIX GRADATION.

3. ACCEPTABILITY OF THE ASPHALT CONTENT WILL BE DETERMINED BY DIVIDING THE RECORDED DELIVERY TICKET ASPHALT CEMENT WEIGHT FOR THE LOAD BY THE TOTAL LOAD WEIGHT. PERCENTAGES WILL BE REPORTED TO THE NEAREST 0.01 PERCENT ON THE WORK SHEET AND THE DAILY INSPECTION REPORT AND ROUNDED TO THE NEAREST 0.05 PERCENT WHEN REPORTED ON THE LOT DATA REPORT.

4. BIN PERCENTAGES AND BIN GRADATIONS WILL BE COMPUTED TO THE NEAREST TENTH OF A PERCENT WHEN REPORTED ON THE WORK SHEET AND DAILY INSPECTION REPORT. RESULTS FOR THE NO. 8 AND NO. 50 SIEVES WILL BE ROUNDED TO THE NEAREST 0.5 PERCENT AND FOR SIEVES LARGER THAN THE NO. 8 TO THE NEAREST WHOLE PERCENT WHEN RECORDED ON THE LOT DATA REPORT; THE NO. 200 WILL BE REPORTED TO THE NEAREST TENTH OF A PERCENT.

5. THE ROUNDING PROCEDURE WILL BE IN ACCORDANCE WITH THE CURRENT A. S. T. M. DESIGNATION E-29.



SECTION 2

TEMPERATURE-VOLUME CORRECTION FACTORS

9.2.1. TEMPERATURE-VOLUME CORRECTION FACTORS.

IN TABLE 37, ON PAGE 449 OF THE STANDARD SPECIFICATIONS, ASPHALTIC OIL, GRADES RC-3, RC-4, RC-5, MC-3, MC-4, MC-5 IS CHANGED TO READ: CUTBACK ASPHALT, GRADES RC-800, RC-3000, MC-800, MC-3000.

IN TABLE 38, ON PAGE 452 OF THE STANDARD SPECIFICATIONS, ASPHALTIC OIL, GRADES RC-0, RC-1, RC-2, MC-0, MC-1, MC-2, SCO IS CHANGED TO READ: CUTBACK ASPHALT, GRADES RC-70, RC-250, MC-30, MC-70, MC-250.

Superseded

INDEX

	PAGE	PAGE	
ABANDONED WELLS, SEALING .....	45	CONCRETE BATCHING PLANT INSPECTION OFFICE .....	152
ANCHORS, ROCK .....	182	CONCRETE SLOPE PROTECTION .....	71
ARTIFACTS, ARCHEOLOGICAL OR HISTORICAL .....	35	CONTRACT BOND .....	11
ASPHALT CEMENT .....	127	CRUSHED STONE S&D .....	62
ASPHALT PRICE ADJUSTMENT .....	127	CURRENT .....	3

	PAGE		PAGE
- 2 -		- 3 -	
BASIC ASPHALT PRICE INDEX .....	122	DEFINITIONS:	
BEAM GUARD RAIL .....	235	CALENDAR DAY .....	3
BEAM GUIDE RAIL SEE BEAM GUARD RAIL		CURRENT .....	3
BEAM GUIDE RAIL, BRIDGE .....	289	INTERAGENCY ENGINEERING COMMITTEE .....	3
BOND:		STATE BUSINESS DAY .....	3
CONTRACT .....	11	SUBSTANTIAL COMPLETION .....	3
SURETY CORPORATION .....	11	SUPPLEMENT .....	3
BORROW EXCAVATION, BRIDGE FOUNDATION .....	57	GRADE GRADED	
SELECTED MATERIAL .....	58	AGGREGATE BASE COURSE .....	65
BREAKAWAY CABLE TERMINALS .....	291	DOWNSPOTS .....	275
BRIDGE:			
BEAM GUIDE RAIL .....	289	- 4 -	PAGE
CURB, WHITE CONCRETE .....	282	SPDRY:	
DOWNSPOTS .....	275	SEAL COAT .....	186
FENCE, CHAIN LINK .....	293	WATERPROOFING .....	186
SCUPPERS .....	275	EXCAVATION, BRIDGE .....	61
BRIDGE EXCAVATION .....	61	EXCAVATION, BORROW BRIDGE FOUNDATION .....	57
BRUSH CURBS .....	185	SELECTED MATERIAL .....	58

	PAGE		PAGE
- C -		- 5 -	
CALENDAR DAY .....	3	FENCE:	
CHAIN LINK FENCE .....	293	CHAIN LINK .....	293
CHAIN LINK FENCE, BRIDGE .....	300	CHAIN LINK, BRIDGE .....	295
CHAIN LINK FARM TYPE FENCE .....	295	CHAIN LINK FARM TYPE .....	295
CLASS C CONCRETE (ROADWAY) .....	188	HINGE JOINT FARM TYPE .....	295
CLEARING, SELECTIVE .....	304	METAL RAILING (1-RAIL) AND CHAIN LINK .....	301
CONSTRUCTION FIELD OFFICE .....	13		
CONSTRUCTION LAYOUT .....	25		
CONTAINERIZED PLANT MATERIAL .....	327		

INDEX

FENCE	PAGE
RESET	298
RESET CHAIN LINK	299
FERTILIZER	
SOD	326
TREES	326
TURF	326
FIBER MULCH	320
FIELD OFFICE	
CONSTRUCTION	13
SURVEY	13
FORMS, BRIDGE DECK	186

- H - PAGE

HINGE JOINT FARM TYPE FENCE	293
-----------------------------	-----

- I - PAGE

INTERAGENCY ENGINEERING COMMITTEE	3
-----------------------------------	---

- J - PAGE

JOINT SEALER	
PERFORATED PLASTIC	186

- L - PAGE

LABORATORY	
BITUMINOUS PLANT TESTING	100
MATERIALS FIELD	15
LATEX MODIFIED CONCRETE OVERLAY	206
LAYOUT, CONSTRUCTION	25
LIMESTONE, PULVERIZED	311
LOW SLUMP HIGH DENSITY CONCRETE	200

- K - PAGE

MATERIALS FIELD LABORATORY	15
MATTING	
EXCELSTON	339

PAGE	
JUTE	329
SOIL STABILIZATION	339
MEMBRANE WATERPROOFING	192
METAL RAILING (3-RAIL) AND CHAIN LINK FENCE	101
METHODS OF TESTS (SEE CONTENTS-DIVISION 9)	
MIXTURES, SEED	341
MOSQUITO LARVAE	22
MULCH	
FIBER	340
STRAW	340
WOOD CHIP	340

- O - PAGE

OFFICE	
CONCRETE BATCHING PLANT INSPECTION	152
CONSTRUCTION FIELD	13
SURVEY FIELD	15
OPEN GRADED PLANT MIX SURFACE COURSE	129
OVERHEAD SIGN SUPPORTS	256

- P - PAGE

PIPE	
ASBESTOS-CEMENT	299
BITUMINOUS FIBER	269
CORRUGATED METAL SEWER	272
CORRUGATED PLASTIC	259
POLYETHYLENE	259
PLANT MATERIAL	
CONTAINERIZED	327
PROGRESS SCHEDULE	3
PROTECTIONS, TREE	339
PULVERIZED LIMESTONE	311

- R - PAGE

RAT CONTROL PROGRAM	44
REMOVAL, TREE	187
RESET CHAIN LINK FENCE	299
RESET FENCE	298

INDEX

- 2 -	PAGE	- 4 -	PAGE
ROCK ANCHORS .....	187	VEGETABLE BASED GELS .....	341
RUB PAUL .....	290		

- 5 -	PAGE	- 6 -	PAGE
SEANIFICATION .....	189	WATERING .....	327
SCHEDULE, PROGRESS .....	5	WATERPROOFING,	
SCUPPERS .....	275	EPOXY .....	369
SEED MIXTURES .....	311	MEMBRANE .....	192
SELECTIVE CLEARING .....	304	WELLS, SEALING OF .....	45
SLEEVES (FOR SIGNS) ....	281/285	WHITE CONCRETE	
SLOPE PROTECTION, CONCRETE	71	BARRIER CURS, BRIDGE ....	282
SOB,		WOOD CHIP MULCHING .....	320
CERTIFIED .....	313		
CULTIVATED .....	313		
SOIL STABILIZATION MATTING	313		
STATE BUSINESS DAY .....	3		
STORM DRAINS, BRIDGE .....	274		
STRAW MULCHING .....	320		
SUBSTANTIAL COMPLETION .....	3		
SUPPLEMENT .....	3		
SUPPLEMENT,			
DISTRIBUTION & SALE OF ..	24		
SURVEY FIELD OFFICE .....	15		

- 7 -	PAGE
TEMPORARY TRAFFIC STRIPES ..	155
TERMINAL, BREAKAWAY CABLE ..	291
TESTS, METHODS OF	
(SEE CONTENTS-DIVISION 91)	
TINE FINISH .....	147
TOPSOILING .....	308
TREE PROTECTORS .....	339
TREE REMOVAL .....	306
TRUCK MIXERS .....	115
CONTINUOUS TYPE .....	143

- 8 -	PAGE
UNDERDRAINS, BRIDGE .....	271

INDEX

PAGE NO. 3

Superseded