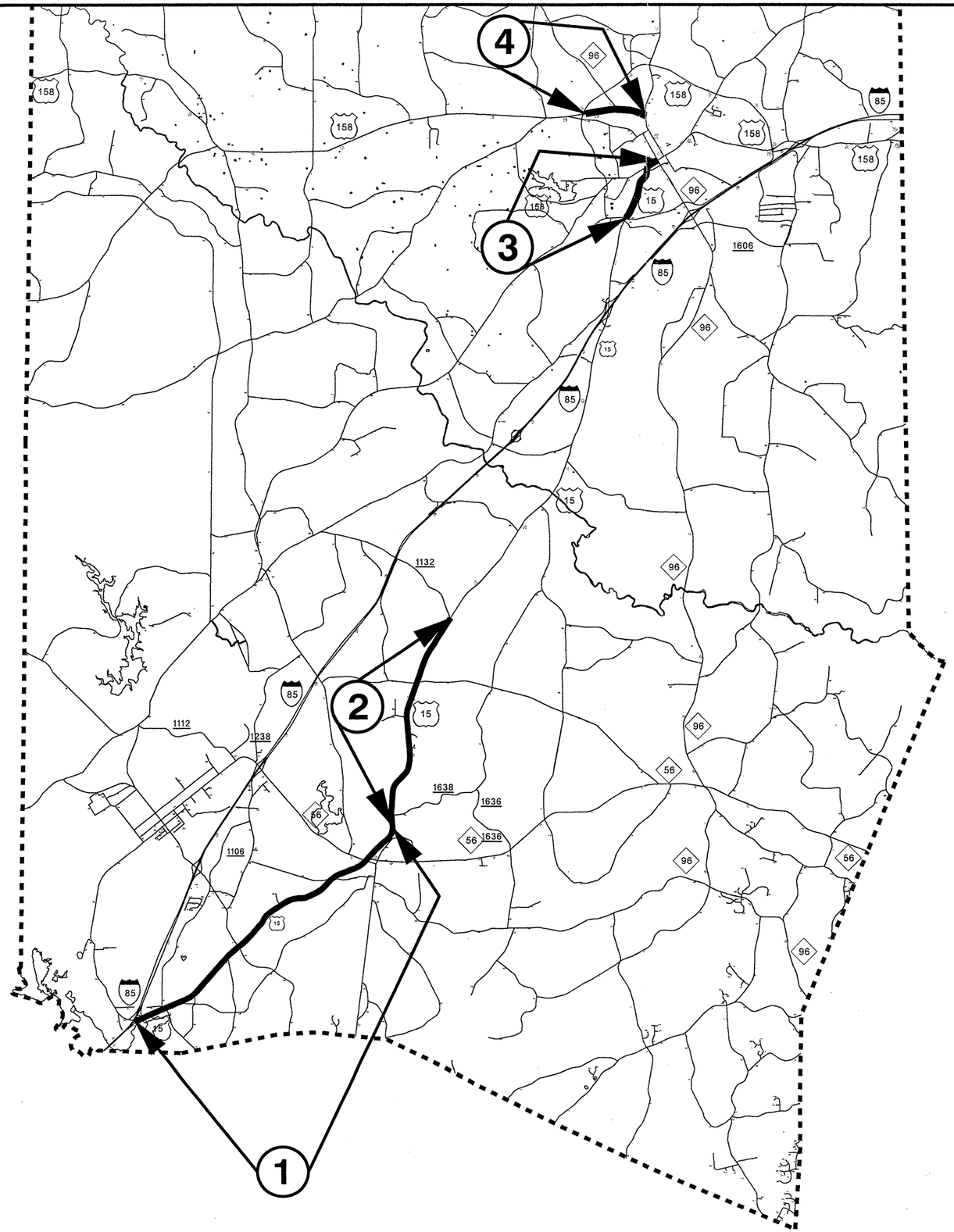
PROJECT REFERENCE NO.	SHEET NO.
5CRJ0391J4	1

2014 GRANVILLE COUNTY PRIMARY RESURFACING



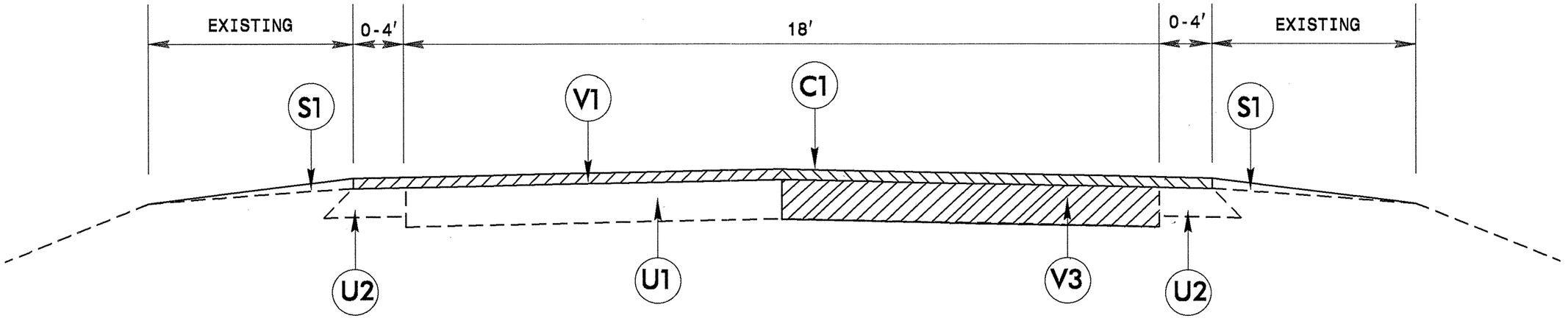
PROJECT REFERENCE NO.	SHEET NO.
5CRJ039I.14	2

PAVEMENT SCHEDULE

C1	1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	U1	EXISTING ASPHALT PAVEMENT OVER EXISTING CONCRETE PAVEMENT
C2	3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LIFTS	U2	EXISTING FULL DEPTH ASPHALT PAVEMENT
D	2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V1	PROP. 1½" MILLING EXISTING ASPHALT PAVEMENT
S1	PROP. SHOULDER RECONSTRUCTION BY THE CONTRACTOR	V2	PROP. 2½" MILLING EXISTING ASPHALT PAVEMENT
S2	PROP. SHOULDER RECONSTRUCTION BY STATE FORCES	V3	FULL DEPTH SLAB REPLACEMENT, AS DIRECTED BY THE ENGINEER SEE DETAIL SHEET4

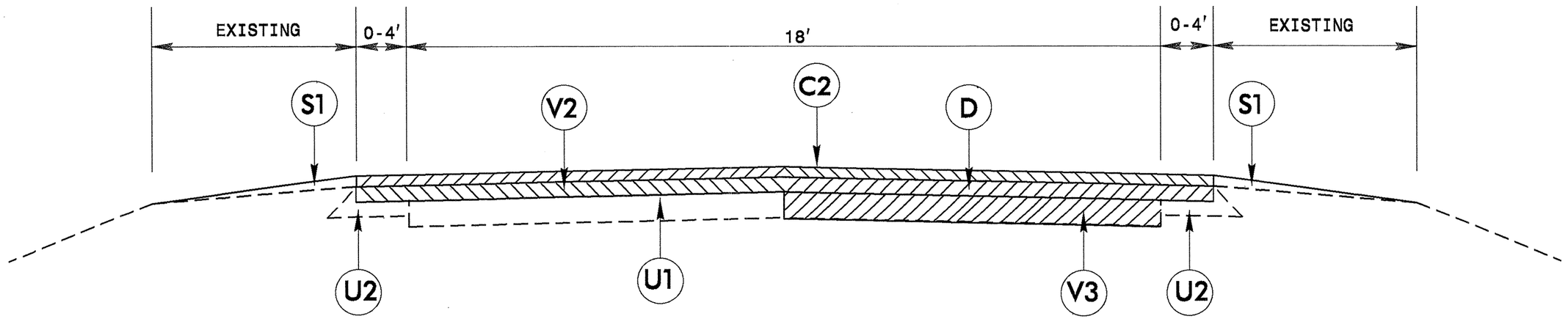
NOTES

ALL UNPAVED S.R. ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT
ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.
EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.
BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.



TYPICAL SECTION NO. 1

AFTER MILLING OPERATION, PERFORM PATCHING IN EXISTING ASPHALT SHOULDER, CRACK SEALING (LATERAL AND LONGITUDINAL) (HOTPOUR AND POLYMER) AND PERFORM FULL DEPTH REPAIRS IN CONCRETE PAVEMENT, AS DIRECTED BY THE ENGINEER



TYPICAL SECTION NO. 2

AFTER MILLING OPERATION, PERFORM PATCHING IN EXISTING ASPHALT SHOULDER, CRACK SEALING (LATERAL AND LONGITUDINAL) (HOTPOUR AND POLYMER) AND PERFORM FULL DEPTH REPAIRS IN CONCRETE PAVEMENT, AS DIRECTED BY THE ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
5CR.1039I.14	3

PAVEMENT SCHEDULE

C1	1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LIFTS
D	2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
S1	PROP. SHOULDER RECONSTRUCTION BY THE CONTRACTOR
S2	PROP. SHOULDER RECONSTRUCTION BY STATE FORCES
U1	EXISTING ASPHALT PAVEMENT OVER EXISTING CONCRETE PAVEMENT
U2	EXISTING FULL DEPTH ASPHALT PAVEMENT
V1	PROP. 1½" MILLING EXISTING ASPHALT PAVEMENT
V2	PROP. 2½" MILLING EXISTING ASPHALT PAVEMENT
V3	FULL DEPTH SLAB REPLACEMENT, AS DIRECTED BY THE ENGINEER SEE DETAIL SHEET4

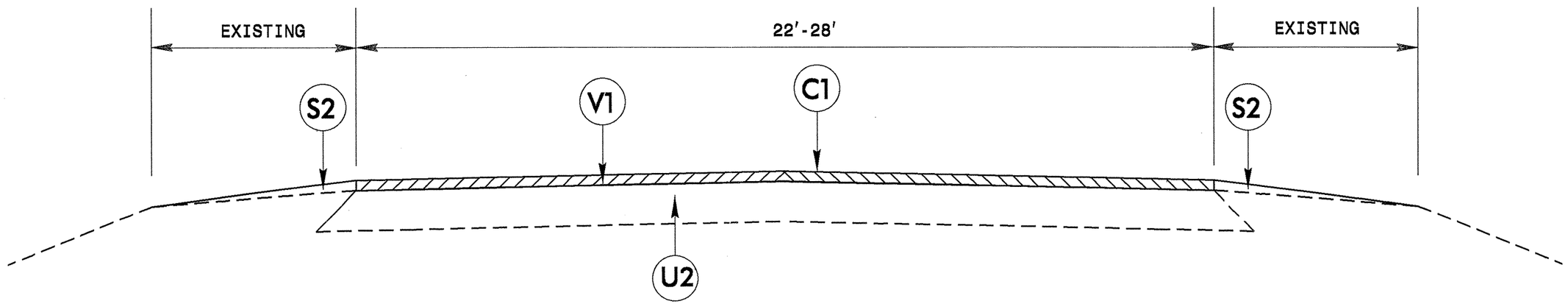
NOTES

ALL UNPAVED S.R. ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT
ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.
EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.
BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

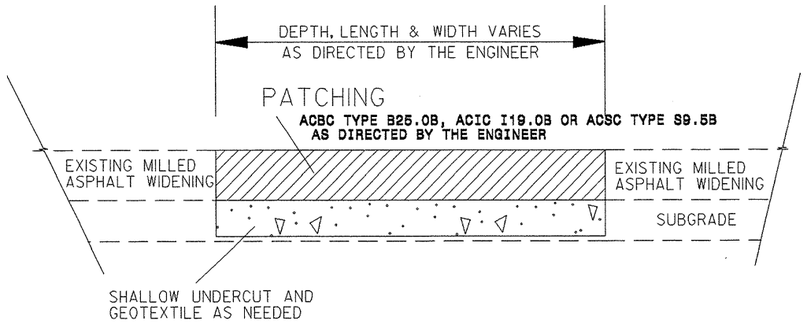
The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 8 - INCIDENTALS	
848.01	Concrete Sidewalk



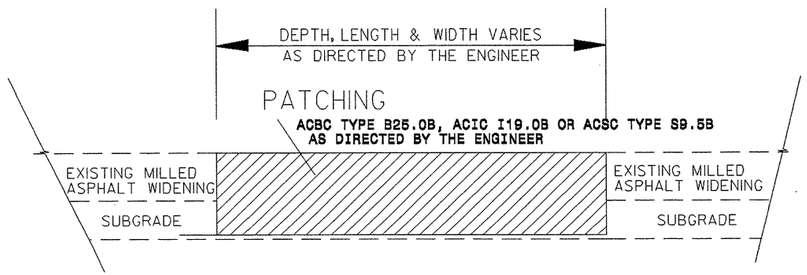
TYPICAL SECTION NO. 3

PROJECT REFERENCE NO.	SHEET NO.
5CRJ0391.14	4



IF SUBGRADE MATERIAL IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE REMOVE UP TO 12" AND REPLACE WITH SOIL STABILIZATION FABRIC AND CLASS IV SUBGRADE STABILIZATION

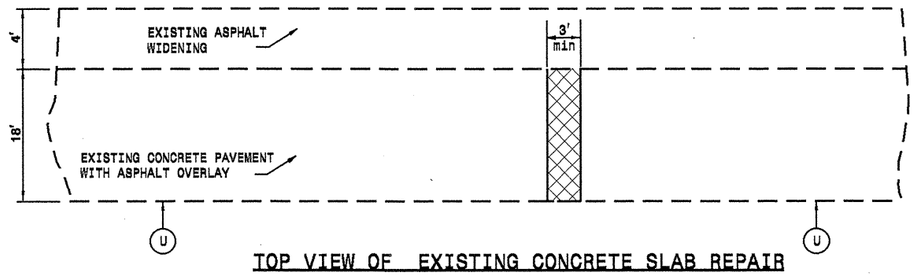
WIDENING REPAIR DETAIL 1



WIDENING REPAIR DETAIL 2

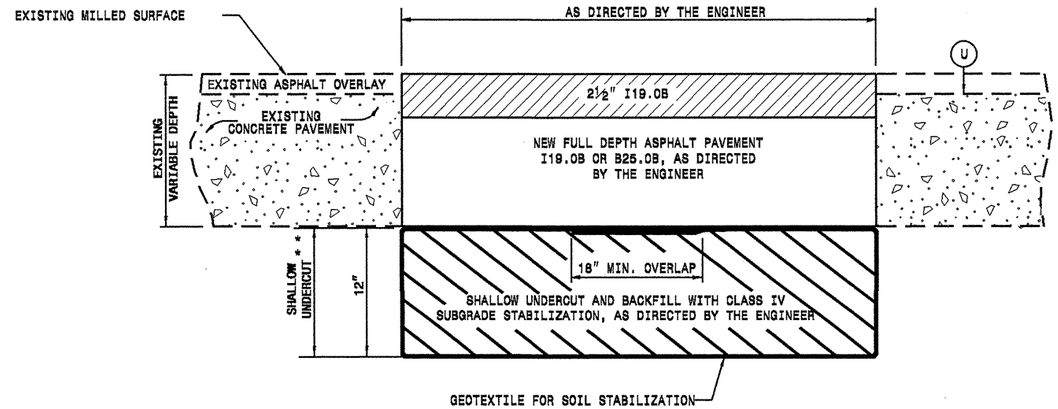
LOCATIONS AS DIRECTED BY THE ENGINEER

PATCHING TO BE PERFORMED AFTER MILLING OPERATION, AS DIRECTED BY THE ENGINEER



TOP VIEW OF EXISTING CONCRETE SLAB REPAIR

TO BE PERFORMED AFTER MILLING OPERATION, AS DIRECTED BY THE ENGINEER



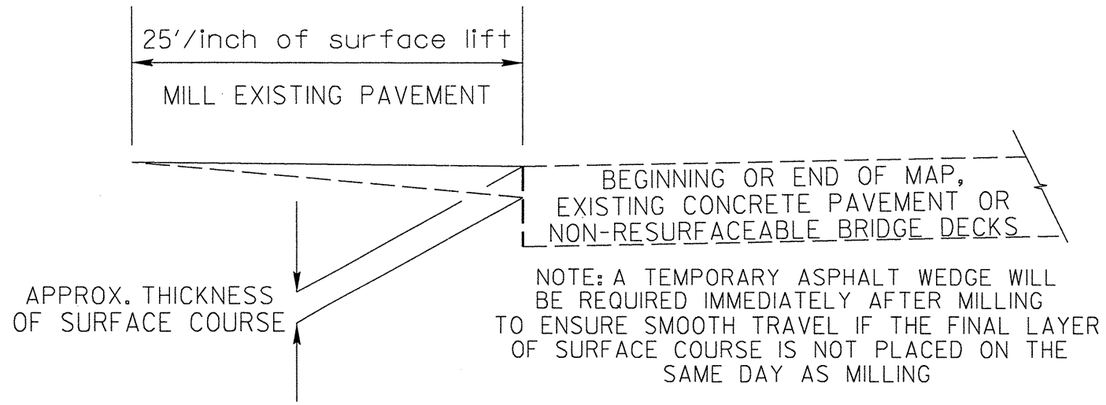
CROSS SECTION OF EXISTING CONCRETE SLAB REPAIR AFTER MILLING

* DIMENSIONS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED

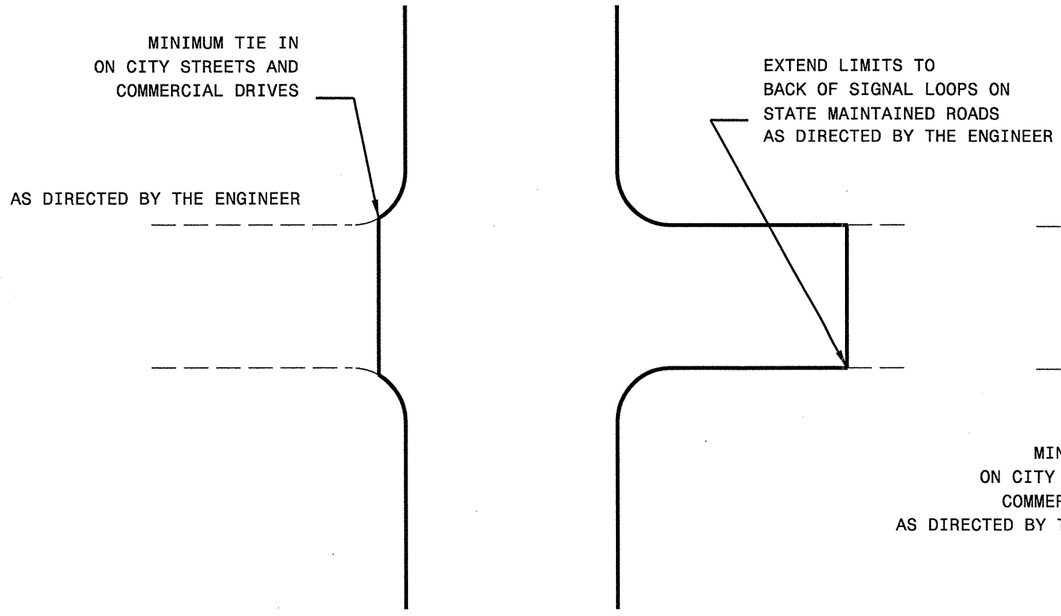
** SHALLOW UNDERCUT REQUIRED IN AREAS AS DIRECTED BY THE ENGINEER

DETAIL OF FULL DEPTH REPAIR IN EXISTING CONCRETE PAVEMENT

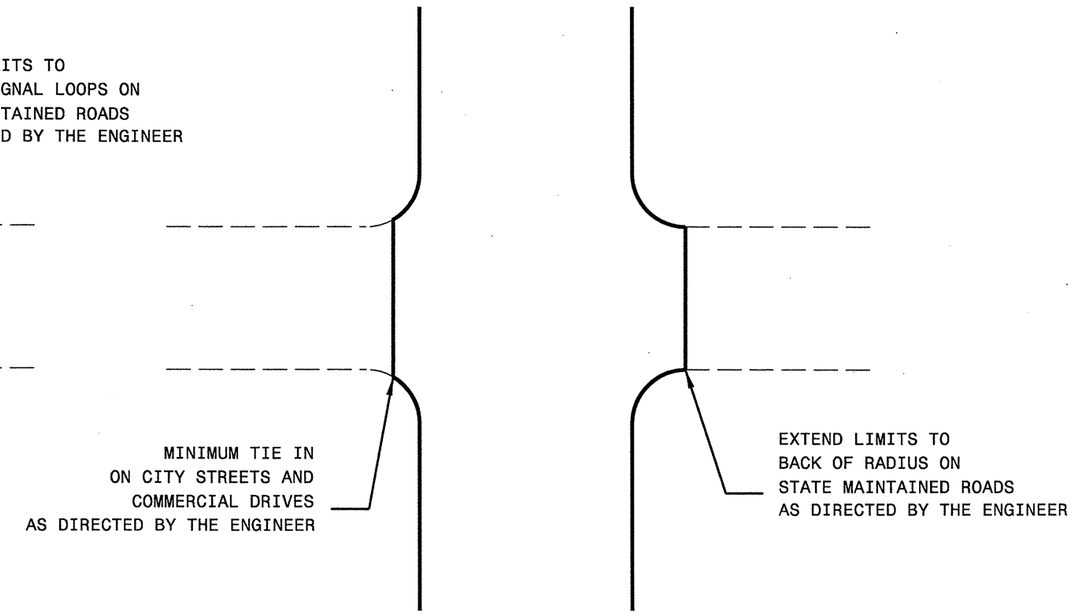
PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	5



DETAIL OF INCIDENTAL MILLING



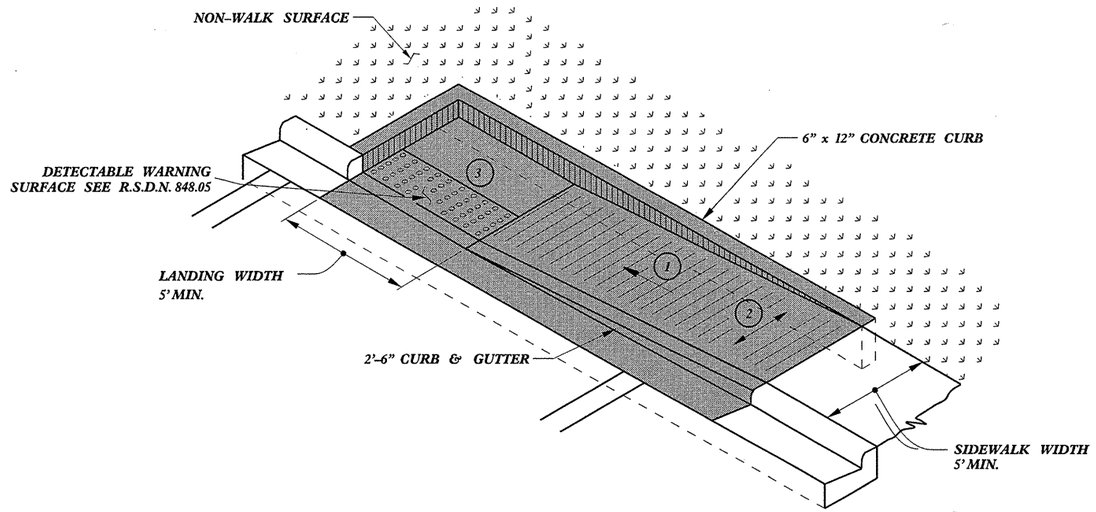
DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES



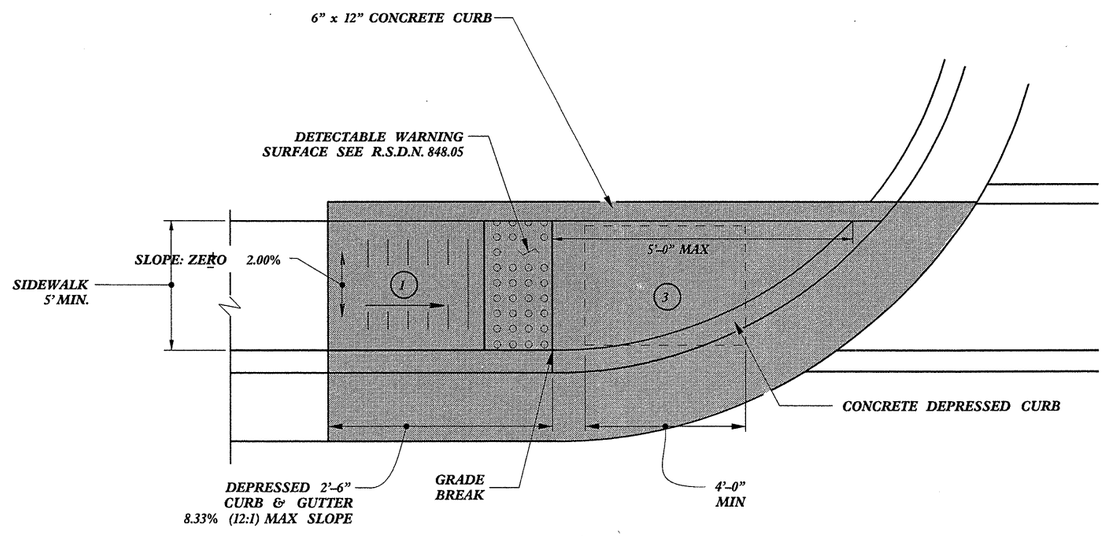
DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES

PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	6

PAY LIMITS FOR CURB RAMP



TYPE 1A



TYPE 1

(1) 8.33% (12:1) MAX RAMP SLOPE

(2) CROSS SLOPE: 2.00%

(3) CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99

22-MAR-2012 15:06
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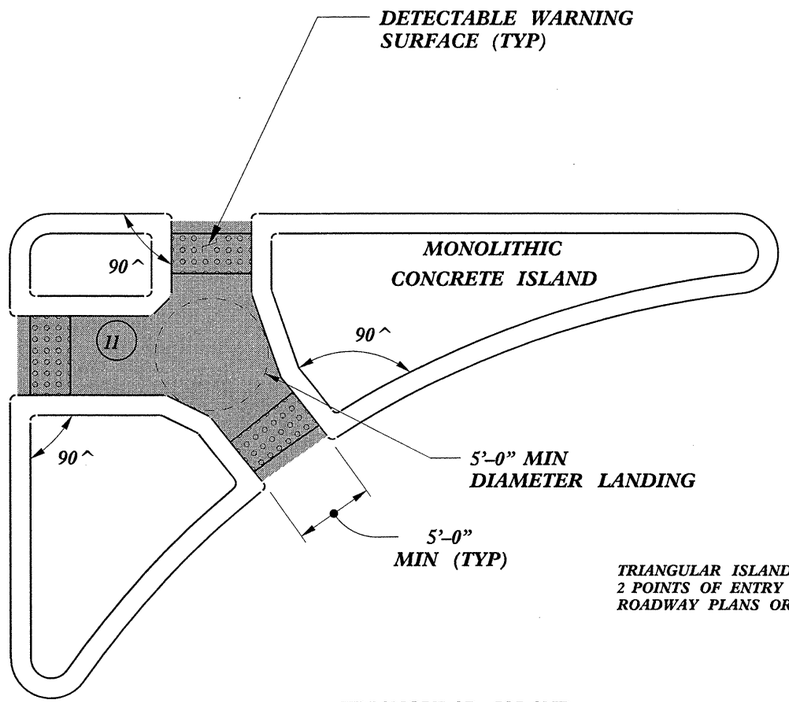
jhowerton
NT C5003700

PROJECT REFERENCE NO.	SHEET NO.
5CB.10391.14	7

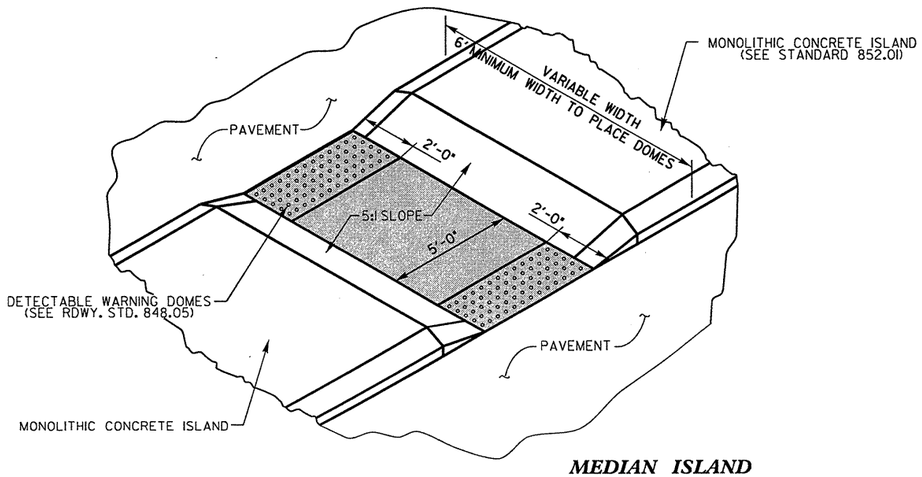
5/14/99

PAY LIMITS FOR 1 CURB RAMP

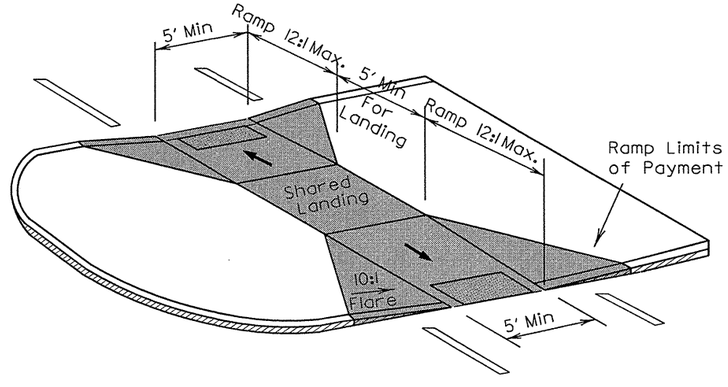


TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

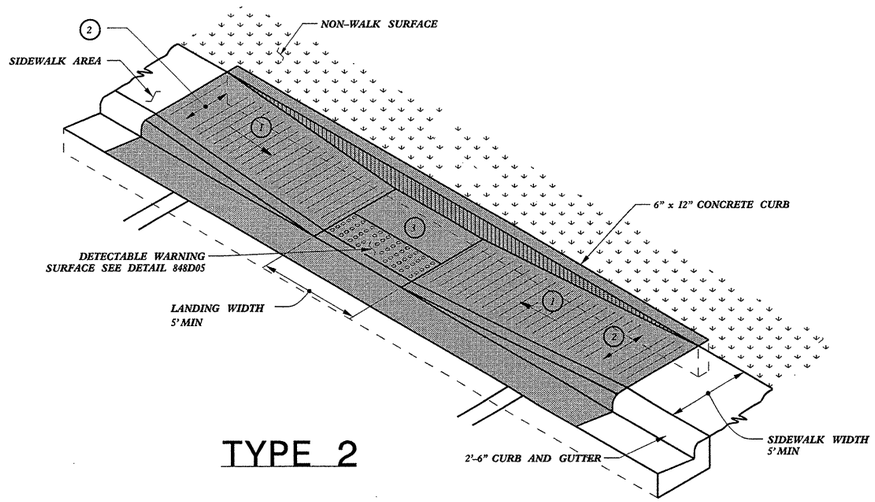
CURB RAMPS

Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$USERNAME$$$$
$$$$SYSTIME$$$$

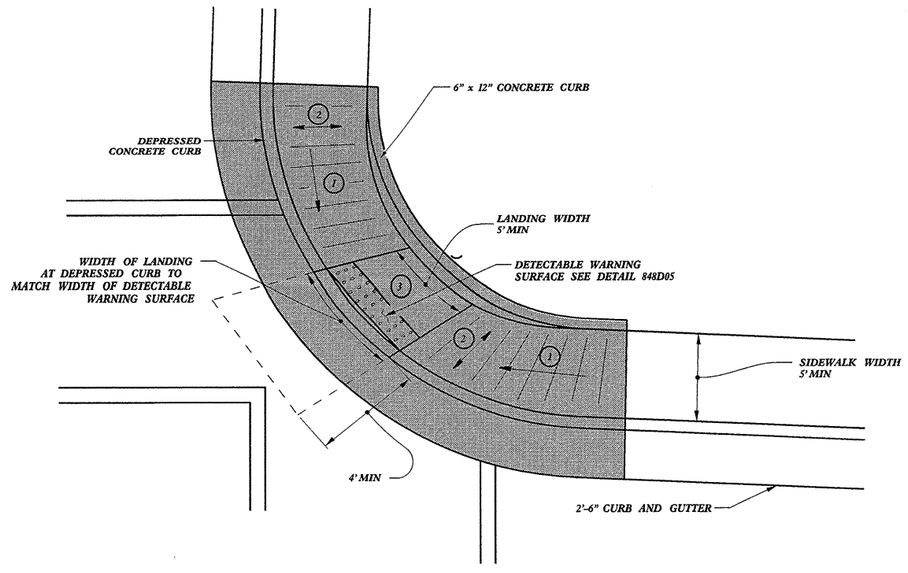
PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	B



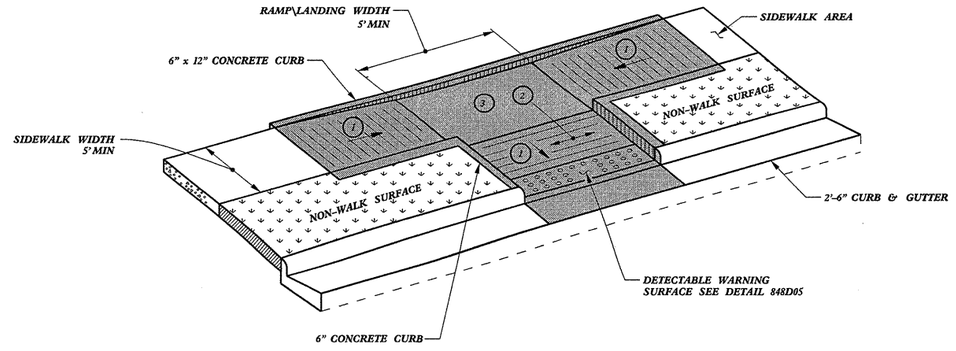
TYPE 2

PAY LIMITS FOR CURB RAMP

1. *8.33% (12:1) MAX RAMP SLOPE*
2. *CROSS SLOPE: 2.00%*
3. *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*



TYPE 2A



TYPE 3

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

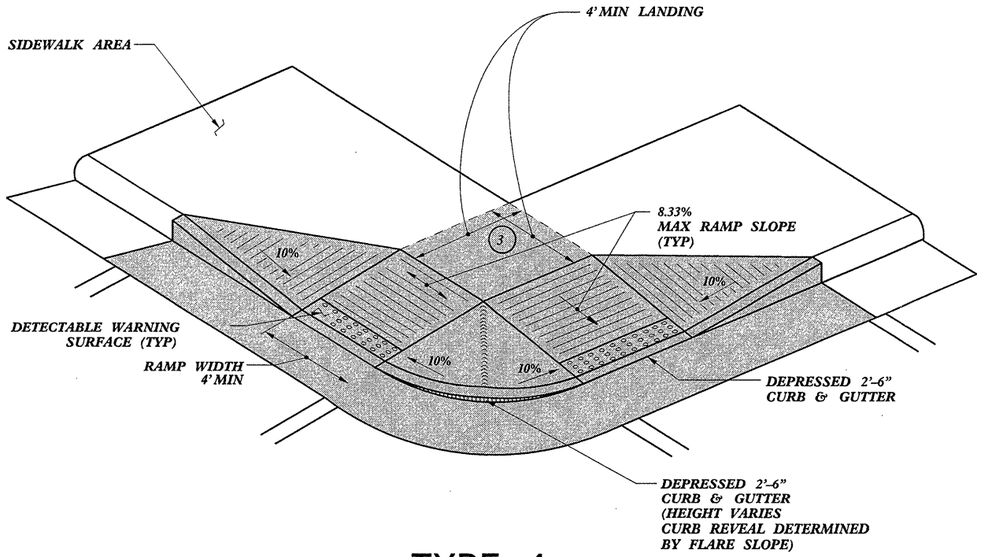
CURB RAMPS

Parallel Ramps

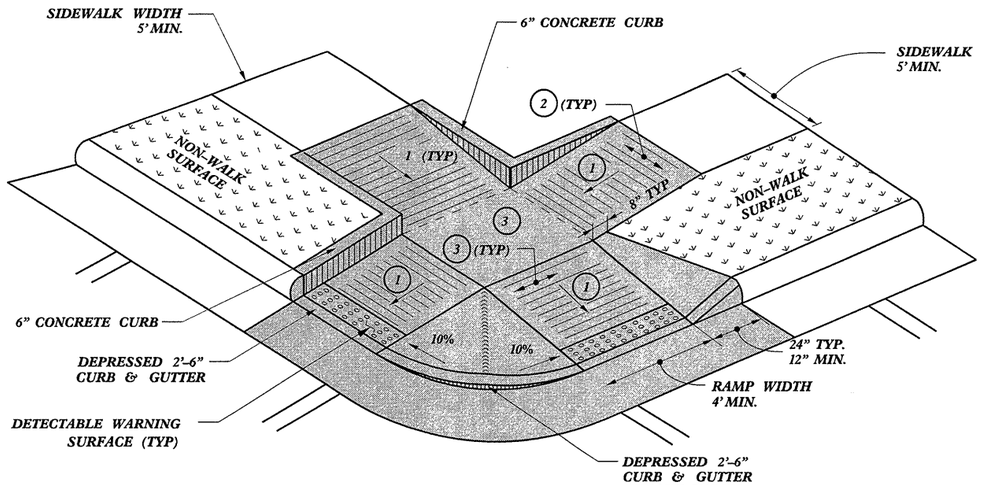
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99
22-MAR-2012 15:07
J:\Contracts\Projects\Special Details\jhowerton\Standard Drawings\2012 Standard Drawings\2012 Curb Ramp Special Details\Curb Ramp Details.dgn
jhowerton

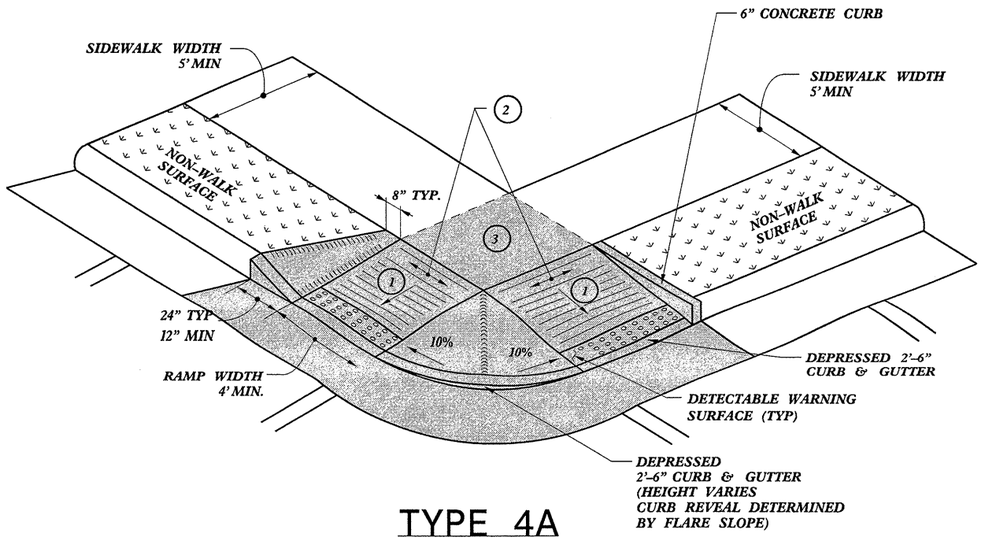
PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	9



TYPE 4



TYPE 5



TYPE 4A

PAY LIMITS FOR CURB RAMP

(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

(3) *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

Shared Landing

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99

22-MAR-2012 15:08
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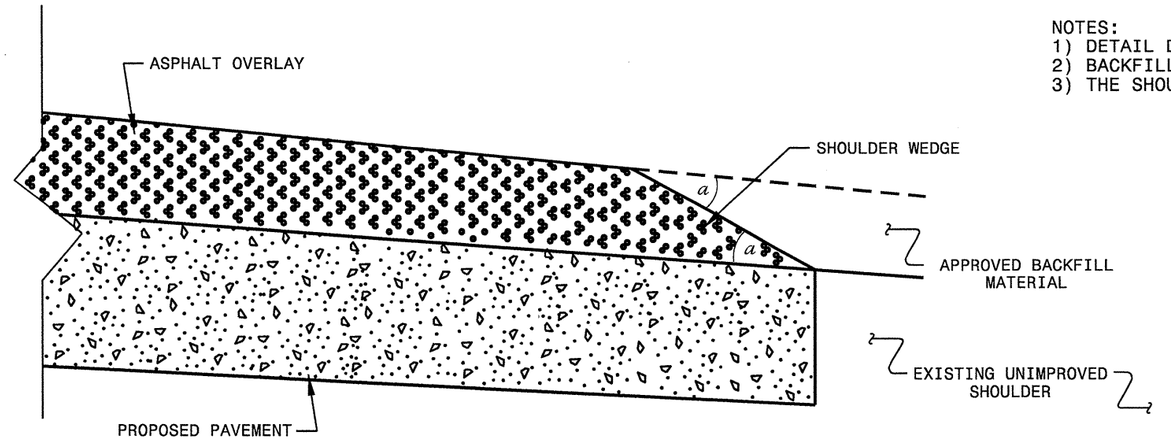
Jhowerton At CSC2750

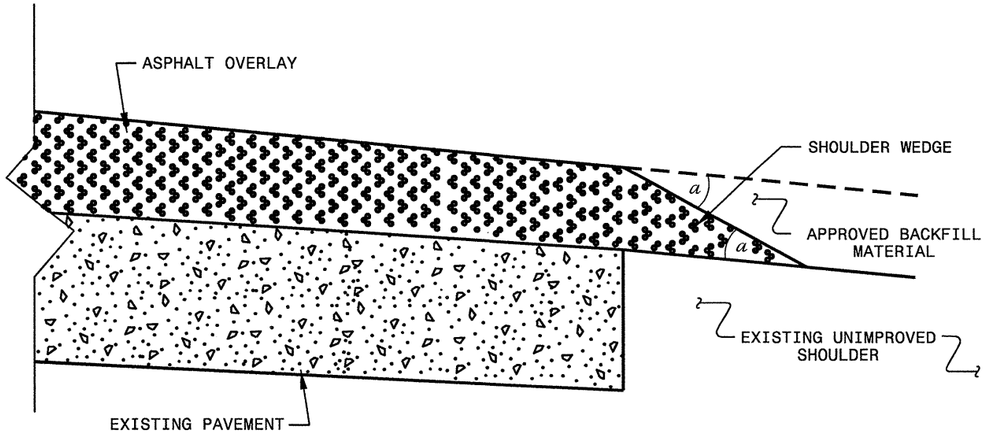
PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	10

NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



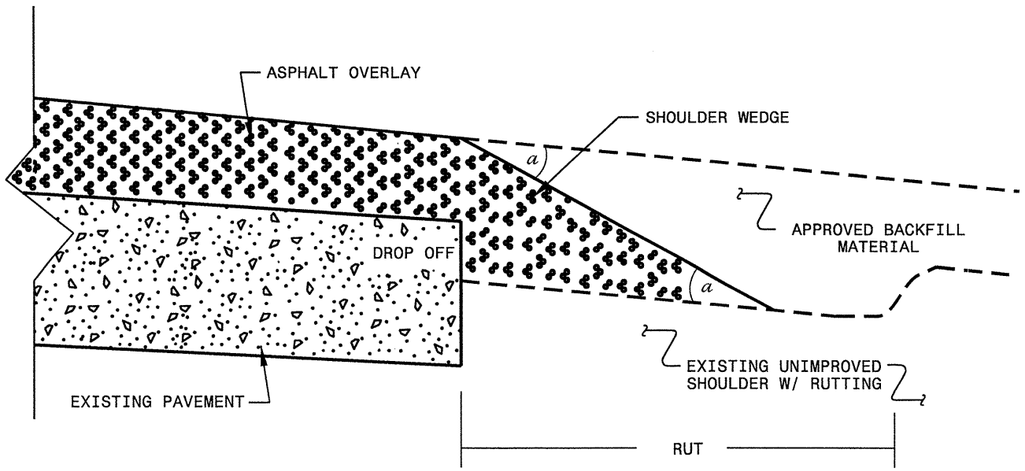
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	10/16/12
CHECKED BY:		DATE:	
FILE SPEC.:	s:\usr\details\stand\shoulderwedgedetail.dgn		

$$$$USERNAME$$$$
$$$$TIME$$$$
$$$$DATE$$$$
$$$$SYSTIME$$$$

PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	11

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	*STABILIZATION TIME*	*TIMEFRAME EXCEPTIONS*
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

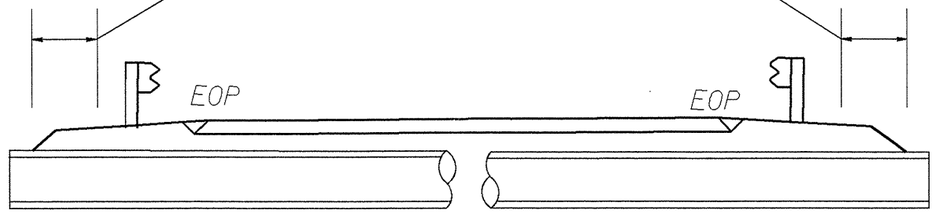
PROJECT REFERENCE NO.	SHEET NO.
5CRJ03911J4	12

NOTES: Less than 5' – 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

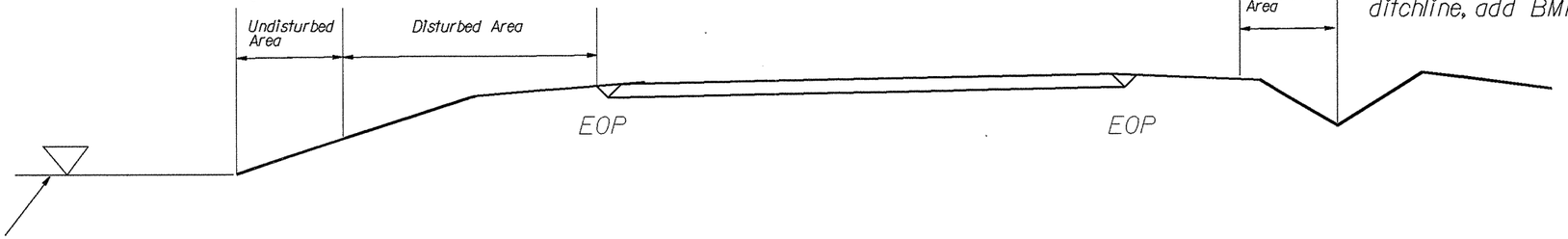
EROSION CONTROL DETAIL

< 5' – 10' Undisturbed buffer add BMP



Pipe/Culvert

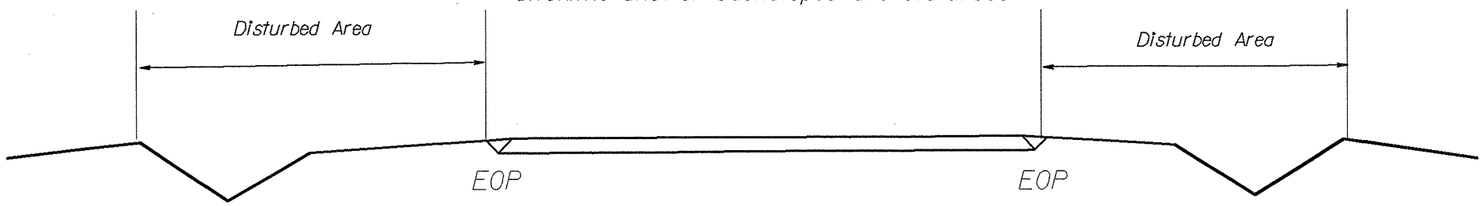
< 5' – 10' Undisturbed buffer from jurisdictional feature add BMP



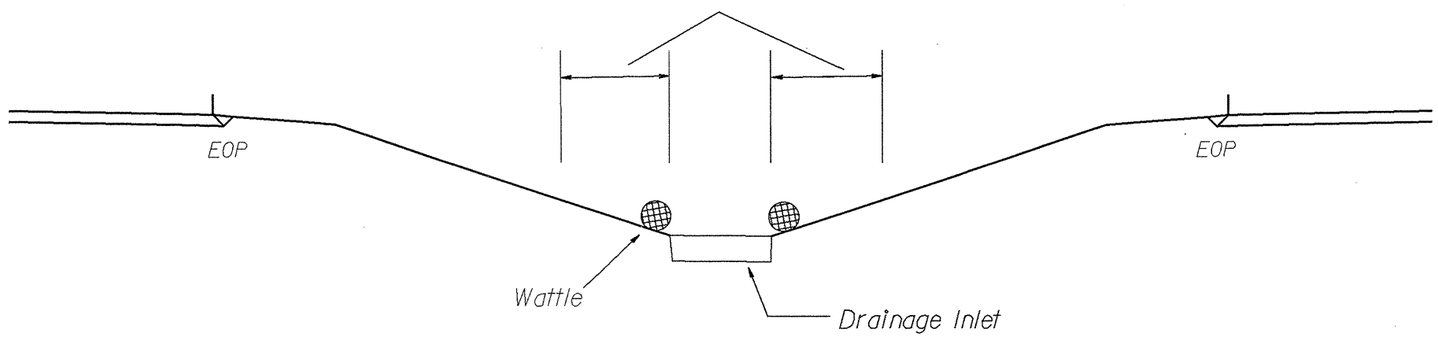
< 5' – 10' Undisturbed buffer from ditchline, add BMP

Jurisdictional Feature

Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed



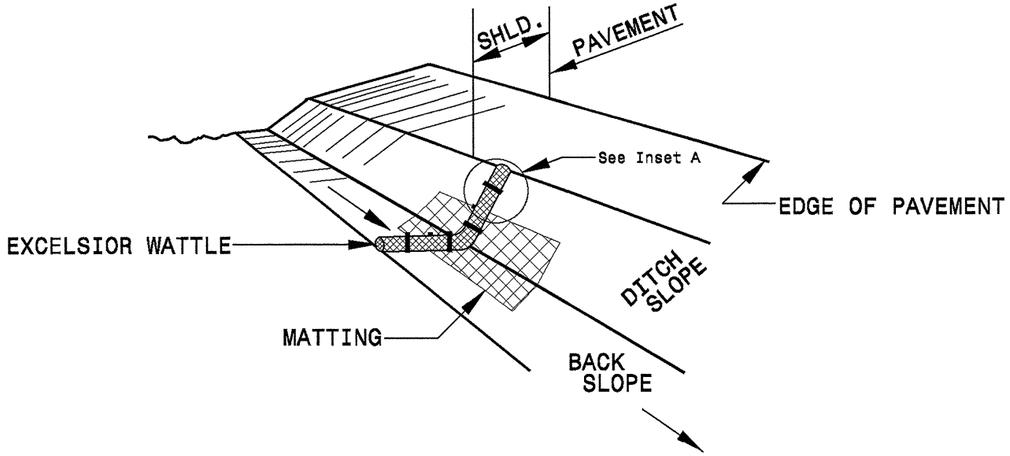
< 5' – 10' Undisturbed buffer from inlet, add wattle



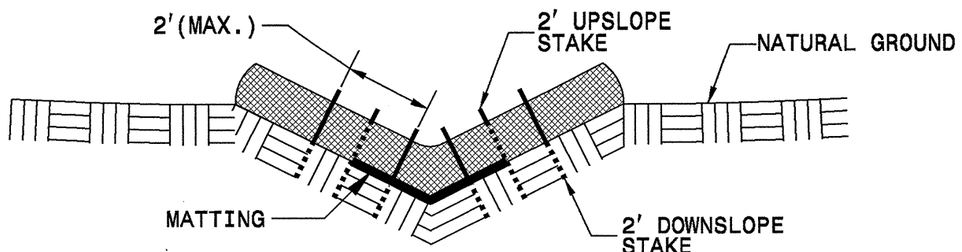
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
5CRJ039IJ4	13

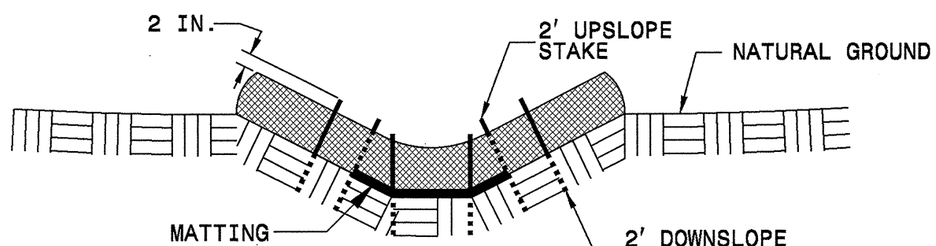
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

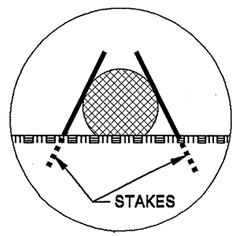
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

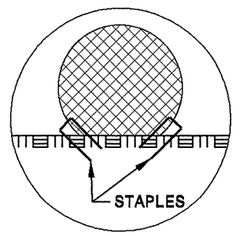
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

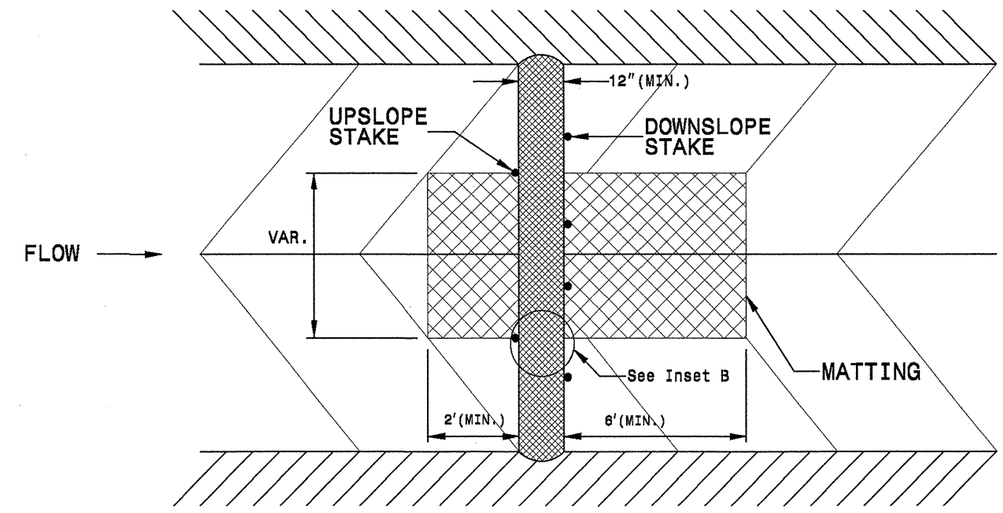
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

PROJECT NO.	SHEET NO.	TOTAL NO.
5CR.10391.14	14	14

SUMMARY OF QUANTITIES

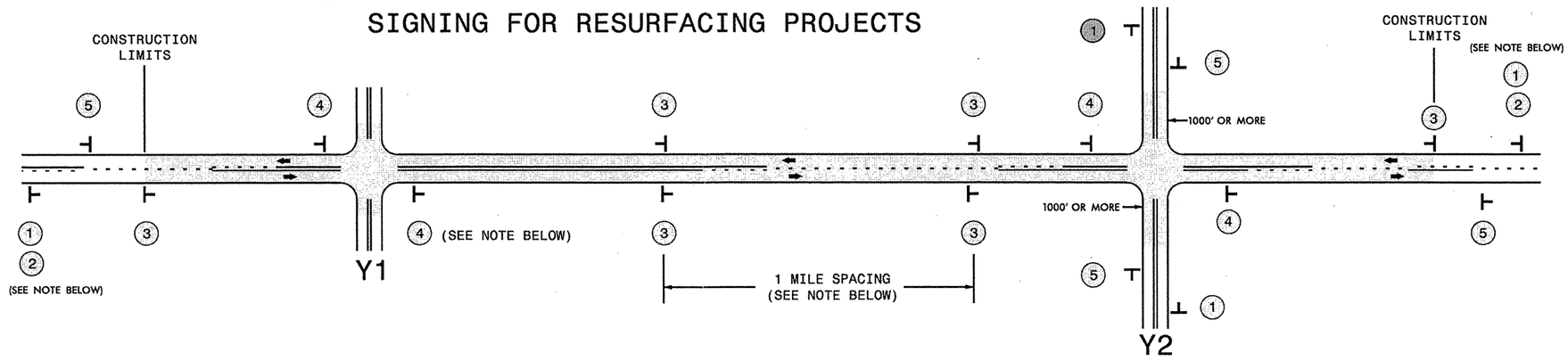
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	SHALLOW UNDERCUT CY	BORROW CY	REMOVAL OF EXISTING CONCRETE PAVEMENT SLABS SY	GEOTEXTILE FOR SOIL STABILIZATION SY	SEALING EXISTING PAVEMENT CRACKS LB	CLASS IV SUBGRADE STABILIZATION TON	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	1½" MILLING SY	2.5" MILLING SY	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	INTERMEDIATE COURSE, I19.0B TONS	SURFACE COURSE, S9.5B TONS	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TONS	4" CONCRETE SIDEWALK SY	GENERIC PAVING ITEM, REMOVE AND REPLACE CURB RAMPS EA	SEALING EXISTING PAVEMENT CRACKS, POLYMER PATCH LB	TEMPORARY SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	INDUCTIVE LOOP LF
5CR.10391.14	Granville	1	US 15	FROM STRUCTURE AT I-85 TO CREEDMOOR NCL	1	2	NO	YES	6.2	24	500	2,418	800	800.00	17,050.00	688	750	12.40	89,876			650	217	7,815	498	25			25,000.00	200	20	6.50	1,200
TOTAL FOR MAP NO. 1									6.2		500	2,418	800	800.00	17,050.00	688	750	12.40	89,876			650	217	7,815	498	25			25,000.00	200	20	6.50	1,200
5CR.10391.14	Granville	2	US 15	FROM CREEDMOOR NCL TO SR 1132 SANDERS ROAD	2	2	YES	YES	4.3	24	241	1,677	500	500.00	11,825.00	478	500	8.80		60,544	1,000	452	9,113	10,586	1,085	25			35,475.00	500	40	2.15	
TOTAL FOR MAP NO. 2									4.3		241	1,677	500	500.00	11,825.00	478	500	8.80		60,544	1,000	452	9,113	10,586	1,085	25			35,475.00	500	40	2.15	
5CR.10391.14	Granville	3	US 15 (LEWIS ST/HILLSBORO ST)	FROM SR 1646 (INDUSTRY DRIVE) TO NC 96 LINDEN AVE	3	2	NO	NO	1.2	28									25,579					2,221	133	20	10	8					1,500
TOTAL FOR MAP NO. 3									1.2										25,579					2,221	133	20	10	8					1,500
5CR.10391.14	Granville	4	US 158 (ROXBORO RD)	FROM US 15 TO JOINT AT US 158 BYP	3	2	NO	NO	1.1	22									14,080					1,347	81	20							500
TOTAL FOR MAP NO. 4									1.1										14,080					1,347	81	20							500
TOTAL FOR PROJ NO. 5CR.10391.14									12.8		741	4,095	1,300	1,300.00	28,875.00	1,166	1,250	21.20	129,535	60,544	1,000	1,102	9,330	21,969	1,797	90	10	8	60,475.00	700	60	8.65	3,200
GRAND TOTAL									12.8		741	4,095	1,300	1,300.00	28,875.00	1,166	1,250	21.20	129,535	60,544	1,000	1,102	9,330	21,969	1,797	90	10	8	60,475.00	700	60	8.65	3,200

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LENGTH	WIDTH	4413000000-E WORK ZONE ADVANCE/ GENERAL WARNING SIGNING SF	4457000000-N TEMPORARY TRAFFIC CONTROL LS	4685000000-E 4" X 90 M WHITE THERMO LF	4685000000-E 4" X 90 M YELLOW THERMO LF	4686000000-E 4" X 120 M WHITE THERMO LF	4686000000-E 4" X 120 M YELLOW THERMO LF	4695000000-E 8" X 90 M YELLOW THERMO LF	4697000000-E 8" X 120 M WHITE THERMO LF	4705000000-E 16" X 120 M WHITE THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4721000000-E THERMO MSG SCHOOL 120 M EA	4721000000-E THERMO RXR 120 M EA	4725000000-E THERMO LT ARROW 90 M EA	4725000000-E THERMO STR & RT ARROW 90 M EA	4725000000-E THERMO RT ARROW 90 M EA	4725000000-E THERMO STR ARROW 90 M EA	4725000000-E THERMO LT STR RT ARROW 90 M EA	4810000000-E 4" YELLOW PAINT LF	4810000000-E 4" WHITE PAINT LF	4830000000-E 16" WHITE PAINT LF	4835000000-E 24" WHITE PAINT LF	4840000000-E PAINT MSG SCHOOL EA	4840000000-E PAINT RXR EA	4845000000-N PAINT LT ARROW EA	4845000000-N PAINT STR & RT ARROW EA	4845000000-N PAINT RT ARROW EA	4905000000-N SNOW PLOWABLE MARKERS EA
5CR.10391.14	Granville	1	US 15	FROM STRUCTURE AT I-85 TO CREEDMOOR NCL	1	2	6.2	24	694.4	0.28	66,712		300	68,500	100	120		240			10	8	1			68,500	67,012		240			10	8	1	415
TOTAL FOR MAP NO. 1							6.2		694.4	0.28	66,712		300	68,500	100	120		240			10	8	1			68,500	67,012		240			10	8	1	415
5CR.10391.14	Granville	2	US 15	FROM CREEDMOOR NCL TO SR 1132 SANDERS ROAD	2	2	4.3	24	481.6	0.60	47,344		150	46,464				80								92,928	94,988		80						285
TOTAL FOR MAP NO. 2							4.3		481.6	0.60	47,344		150	46,464				80								92,928	94,988		80						285
5CR.10391.14	Granville	3	US 15 (LEWIS ST/HILLSBORO ST)	FROM SR 1646 (INDUSTRY DRIVE) TO NC 96 LINDEN AVE	3	2	1.2	28	134.4	0.07	11,836		500	12,675	60	100		200			7	4		1	1	12,675	12336		200						20
TOTAL FOR MAP NO. 3							1.2		134.4	0.07	11,836		500	12,675	60	100		200			7	4		1	1	12,675	12,336		200						20
5CR.10391.14	Granville	4	US 158 (ROXBORO RD)	FROM US 15 TO JOINT AT US 158 BYP	3	2	1.1	22	123.2	0.05	10,760		120	8,000			100	140	6	4	1		1			8,000	10880	100	140	6	4				75
TOTAL FOR MAP NO. 4							1.1		123.2	0	10,760		120	8,000			100	140	6	4	1		1			8,000	10,880	100	140	6	4				75
TOTAL FOR PROJ NO. 5CR.10391.14							12.8		1433.6	1	136,652		1,070	135,639	160	220	100	660	6	4	18	12	2	1	1	182,103	185,216	100	660	6	4	10	8	1	795
											136,652		136,709						10		34					367,319				10		19			
GRAND TOTAL							12.8		1433.6	1	136,652		1,070	135,639	160	220	100	660	6	4	18	12	2	1	1	182,103	185,216	100	660	6	4	10	8	1	795
											136,652		136,709						10		34					367,319				10		19			

PROJ. REFERENCE NO.	SHEET NO.
5CR.10391.14	1

SIGNING FOR RESURFACING PROJECTS



LEGEND
- ⊢ STATIONARY SIGN
- ⬅ DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION

(1) (2) ROAD WORK AHEAD W20-1 48" X 48" / NEXT XX MILES W7-3aP 24" X 18"

PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.

#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER.(NO FRACTIONAL OR DECIMAL NUMBERS)

(3) LOWSOFT SHOULDER SP 13107 48" X 48"

PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET ½ MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.

(4) ROAD UNDER CONST SP 13106 48" X 48"

THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.

(5) END ROAD WORK G20-2 A 48" X 24"

PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.

-Y- LINE SIGNING

NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:

1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE
2) SUBDIVISION ROADS
3) DEAD END ROADS

WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.

ROAD WORK AHEAD W20-1 48" X 48" — PLACED 500' IN ADVANCE OF FLAGGER.

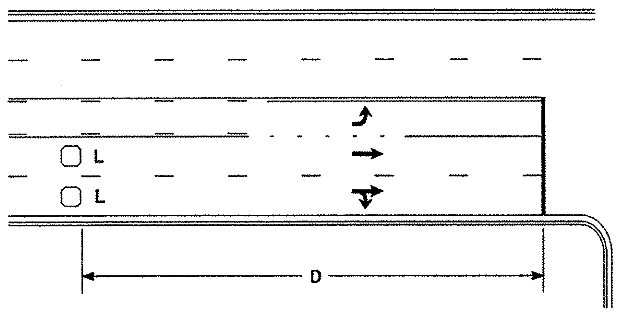
W20-7 A 48" X 48" — PLACED 250' IN ADVANCE OF FLAGGER.

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

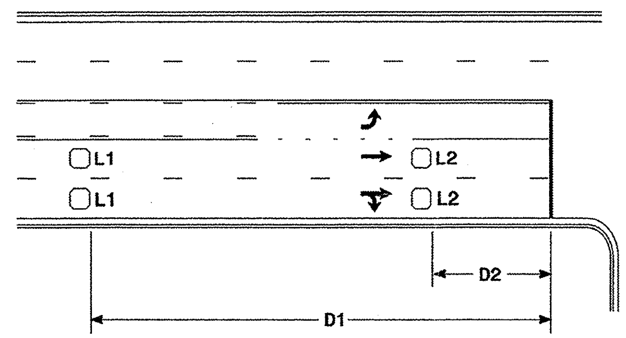
RESURFACING
ADVANCE WARNING SIGNS
FOR
RURAL AND SUBURBAN
2 LANE ROADWAYS

PROJECT REFERENCE NO.	SHEET NO.
5CR.10391.14	SIG 1

High Speed Detection
[≥40 mph (64 km/hr)]



OR



Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)
Wired in series for TS1 Controllers
Wired separately for TS2, 170, and 2070L Controllers

Volume Density Operation

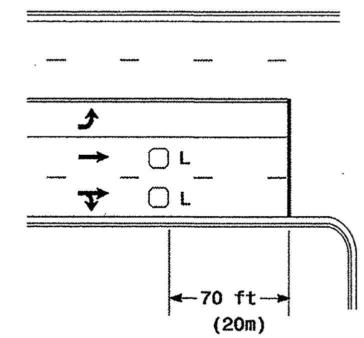
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

L1 = 6ft X 6ft (1.8m X 1.8m) Wired in series

L2 = 6ft X 6ft (1.8m X 1.8m) Wired in series

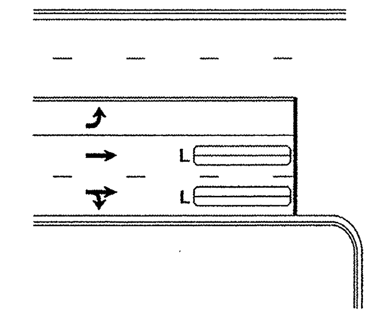
"Stretch" Operation

Low Speed Detection
[≤35 mph (56 km/hr)]



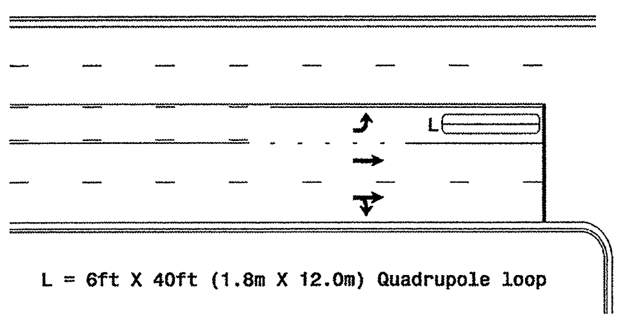
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



L = 6ft X 40ft (1.8m X 12.0m)
Quadrupole loop, wired separately

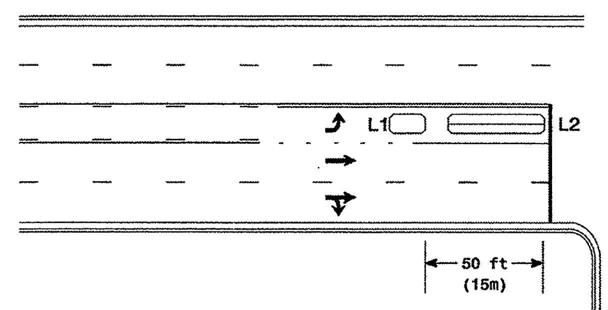
Left Turn Lane Detection



L = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

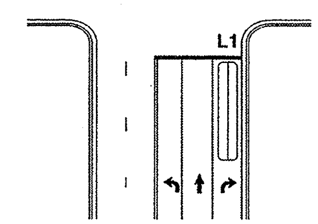
OR



L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

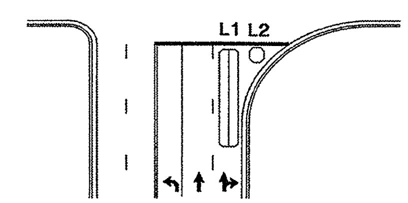
Queue Loop Detection

Right Turn Lane Detection

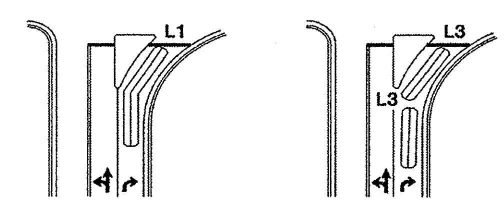


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

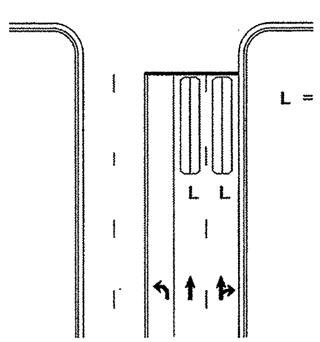


Wide Radius Turn



Channelized Turn

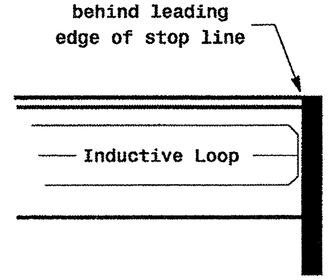
Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)
Quadrupole loop
Wired to separate detectors/channels

Presence Loop Placement at Stop Lines

Locate loop slightly behind leading edge of stop line



Note:
Loop may be located in advance of stop line when stop line is greater than 15′ (4.5m) from edge of intersecting roadway; or, when loop detects a permissive or protected/permissive left turn.

Recommended Number of Turns

Single 6′ X 6′ (1.8m X 1.8m) loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns

6′ X 15′ (1.8m X 4.6m) Loops:
Lead-in < 150′ (45 m), use 2 turns
Lead-in > 150′ (45 m), use 3 turns

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, State of North Carolina Department of Transportation, Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE:	June 2006	REVIEWED BY:
PREPARED BY:	P L Alexander	REVIEWED BY:

SCALE: N/A

REVISIONS	INIT.	DATE
Revise pavement markings	pa	12/11/06

SEAL: North Carolina Professional Engineer Seal 23486 Pamela A. Alexander

SIGNATURE — DATE 6/6/06

SIG. INVENTORY NO.

19-DEC-2006 14:29 s:\its signals\lib turn in\misc\looptypical2006.dgn pdalexander