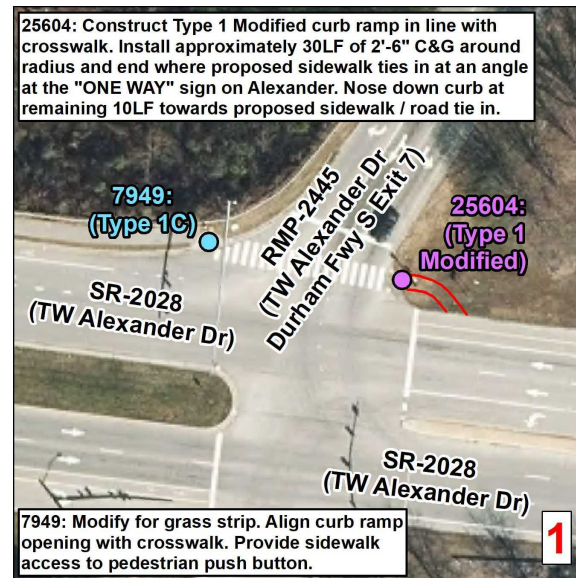
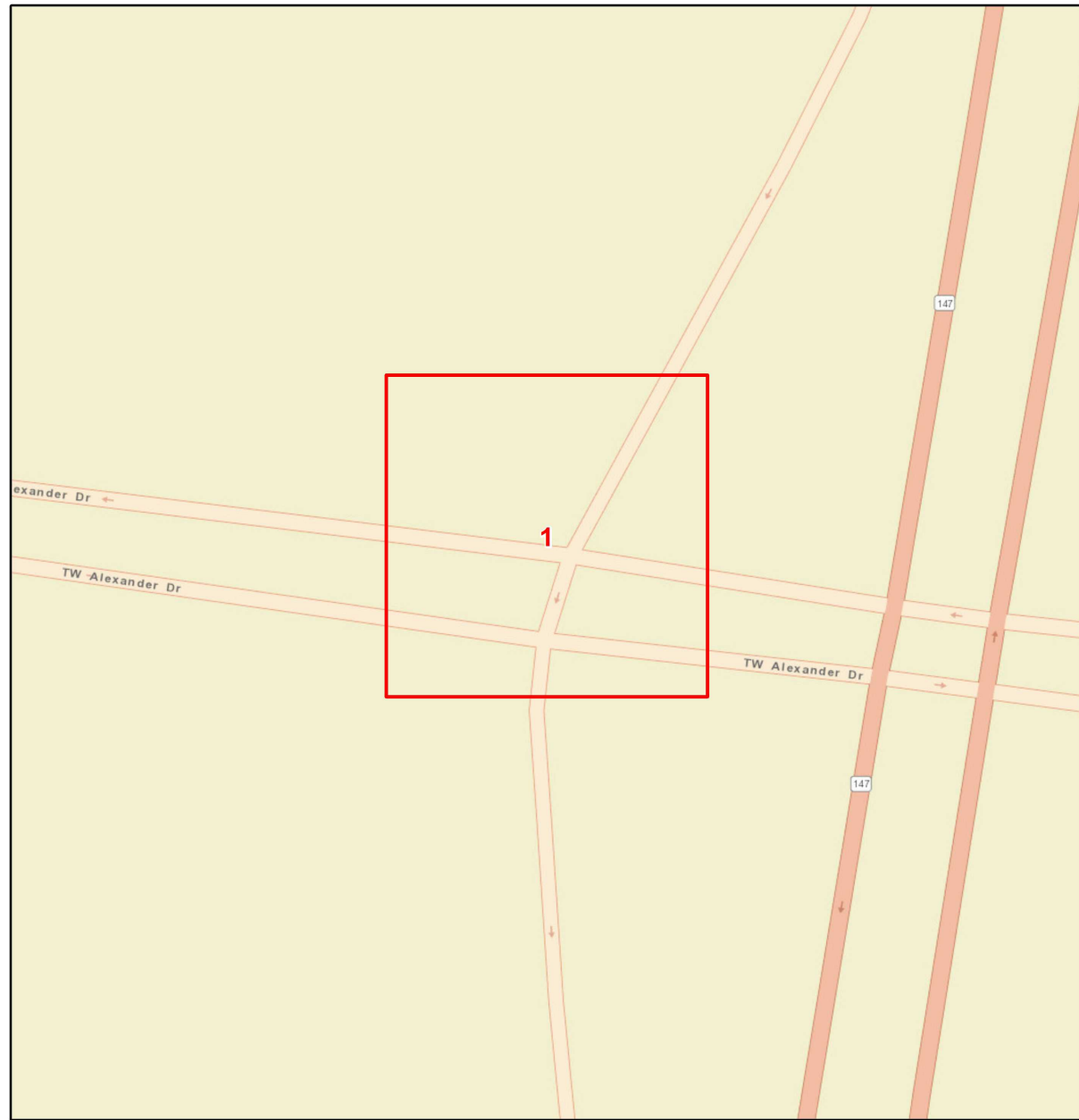


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Curb Ramps To Be Repaired		
	Retrofit	
	Remove and Replace	
	New Curb Ramp	
	Remove Ramp	
	Municipal Boundary	
	NCHPO Historic Boundary (NR and LHD)	
HI-0023		
WBS: 50807.3.1		
I-885 S Durham Freeway Exit 7 at TW Alexander Dr		
	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 5	
<small>Source: NV5 Engineers and Consultants Inc., ESRI, NC OneMap, NCDOT, NCHPO</small>		

PAVEMENT SCHEDULE

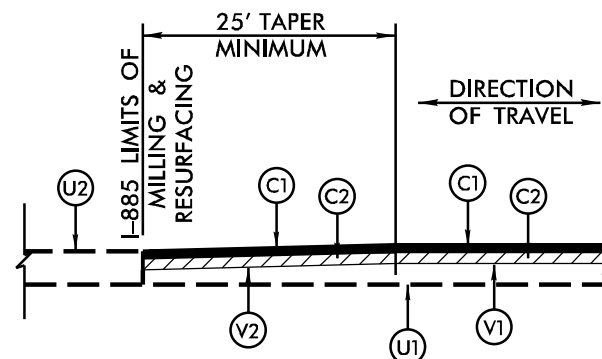
PROJECT REFERENCE NO.

SHEET NO.

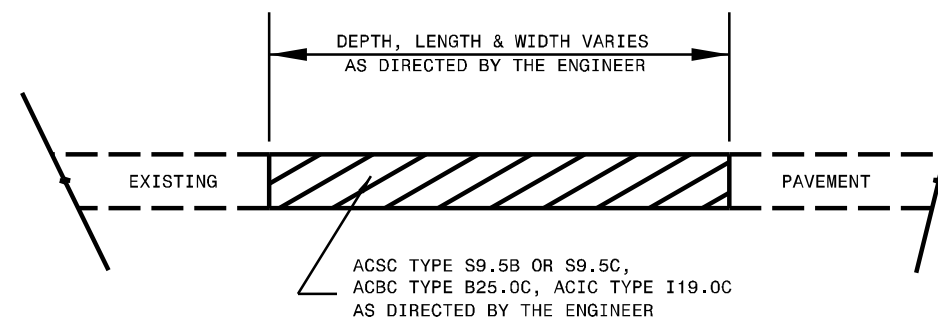
HI-0023

3

C1	5/8" ULTRA-THIN BONDED WEARING COURSE AT A RATE OF 70 LBS. PER SQ. YD.
C2	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
F	FOG SEAL - ROADWAY SURFACE TO BE SWEEPED PRIOR TO FOG SEAL APPLICATION
V1	MILL ASPHALT PAVEMENT, 2" DEPTH
V2	MILL ASPHALT PAVEMENT, VAR. DEPTH (2" TO 2 5/8")
R	MILLED RUMBLE STRIPS
U1	EXISTING PAVEMENT
U2	EXISTING OR PROP. PAVEMENT OR BRIDGE APPROACH SLAB

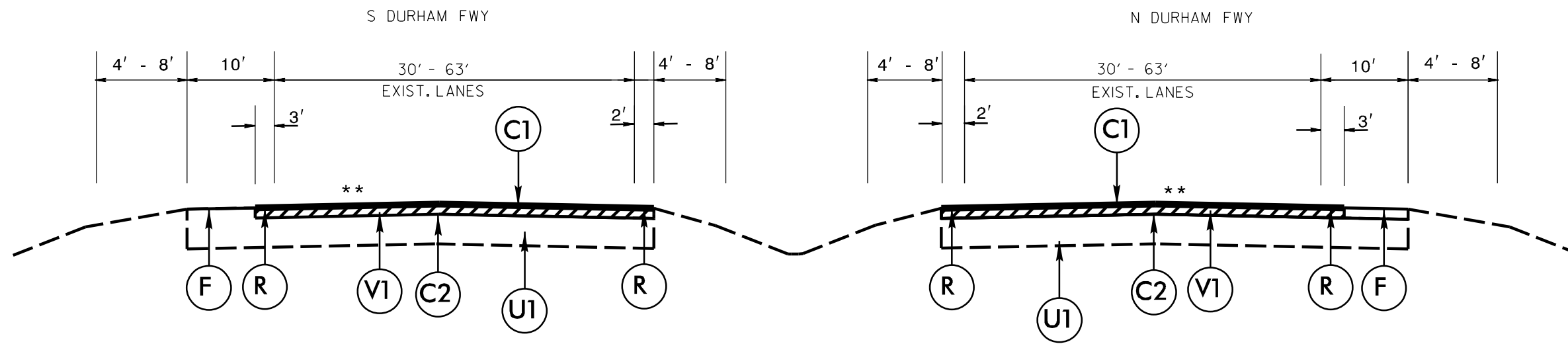


ULTRA-THIN BONDED WEARING COURSE TIE-IN DETAIL
 USE AT I-885 BEGIN/END PROJECT, BRIDGE, AND RAMP TIE-INS



PATCHING EXISTING PAVEMENT
 MILLING TO BE PERFORMED PRIOR TO PATCHING

* PATCH EXISTING PAVED SHOULDERS AT THE APROACH SLABS TO BRIDGE # 212.



** MATCH EXISTING CROSS SLOPES.
 * MAPS 1 & 2

TYPICAL 1

PAVEMENT SCHEDULE

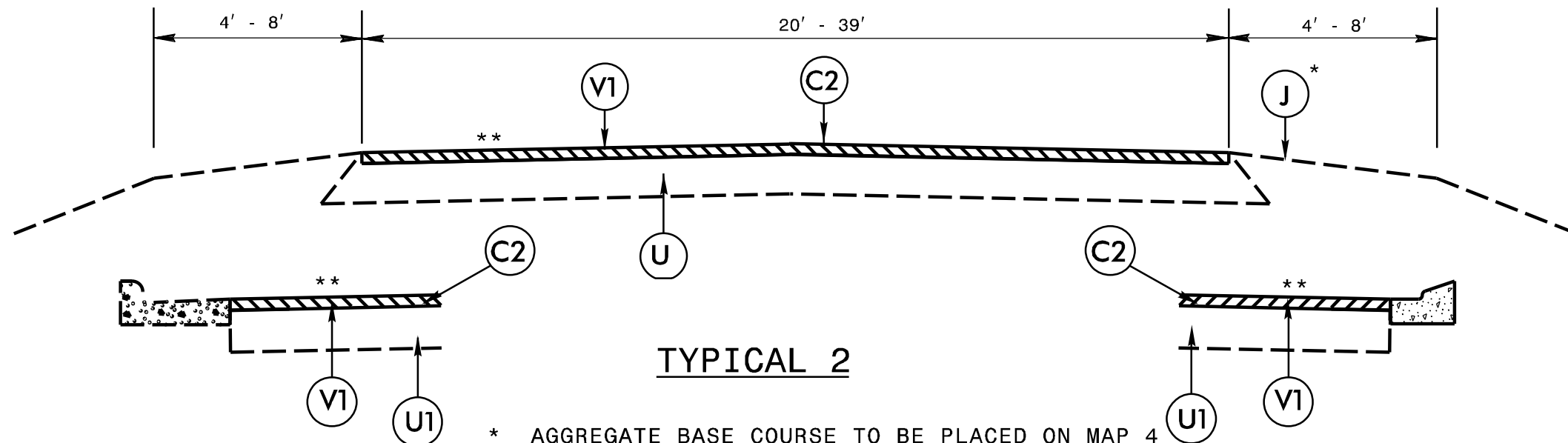
PROJECT REFERENCE NO.

SHEET NO.

HI-0023

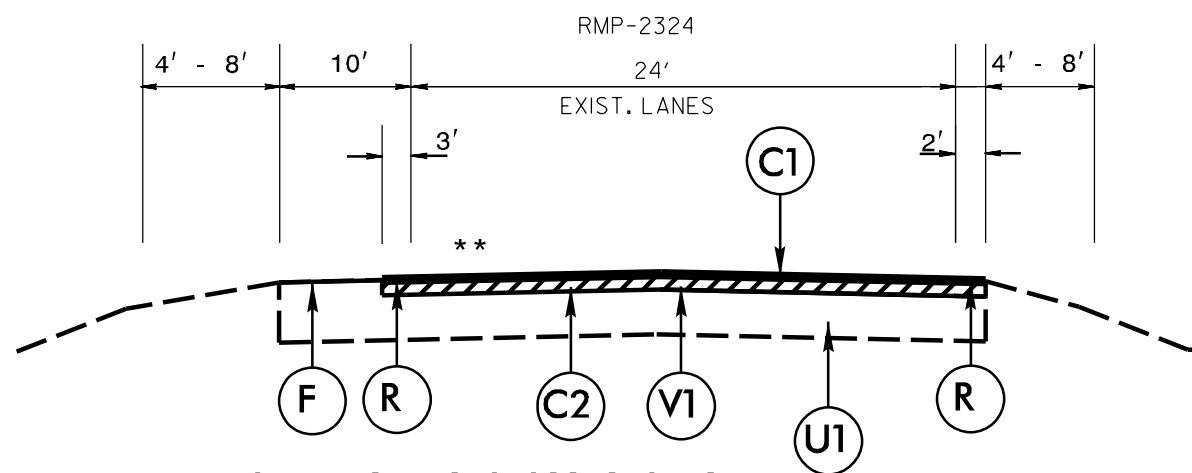
4

C1	5/8" ULTRA-THIN BONDED WEARING COURSE AT A RATE OF 70 LBS. PER SQ. YD.
C2	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
F	FOG SEAL - ROADWAY SURFACE TO BE SWEEPED PRIOR TO FOG SEAL APPLICATION
J	PROP. 6" OF AGGREGATE BASE COURSE, AS DIRECTED BY THE ENGINEER
V1	MILL ASPHALT PAVEMENT, 2" DEPTH
V2	MILL ASPHALT PAVEMENT, VAR. DEPTH (2" TO 2 5/8")
R	MILLED RUMBLE STRIPS
U1	EXISTING PAVEMENT
U2	EXISTING OR PROP. PAVEMENT OR BRIDGE APPROACH SLAB



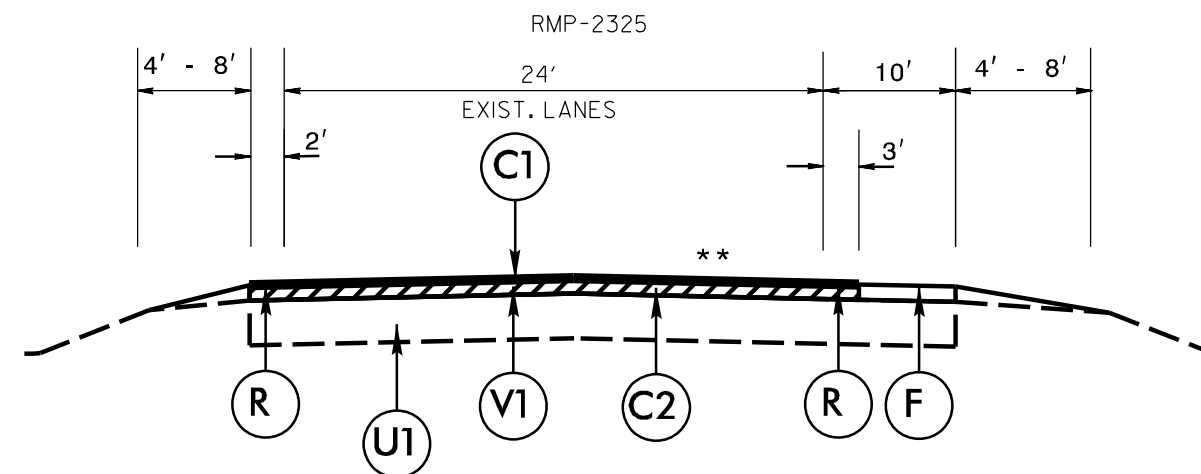
TYPICAL 2

- * AGGREGATE BASE COURSE TO BE PLACED ON MAP 4
- * MAPS 3-7 AND 10-14
- ** MATCH EXISTING CROSS SLOPES.



- ** MATCH EXISTING CROSS SLOPES.
- * MAP 9

TYPICAL 3

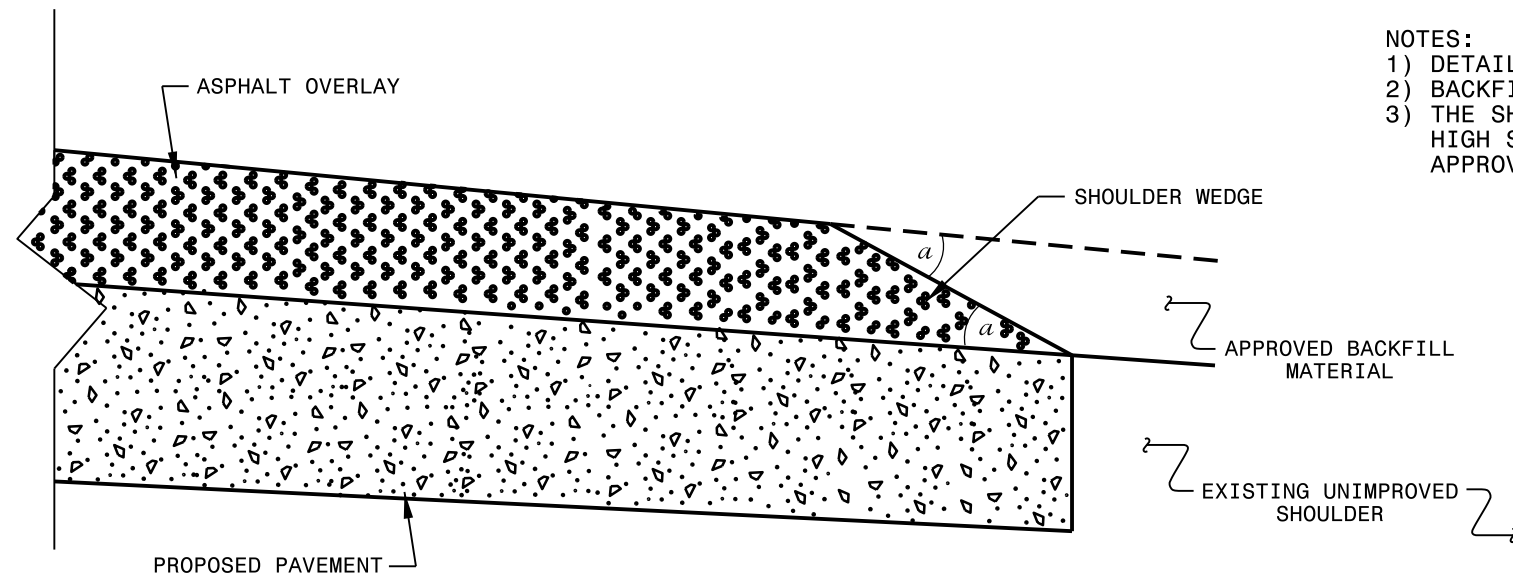


- ** MATCH EXISTING CROSS SLOPES.
- * MAP 8

TYPICAL 4

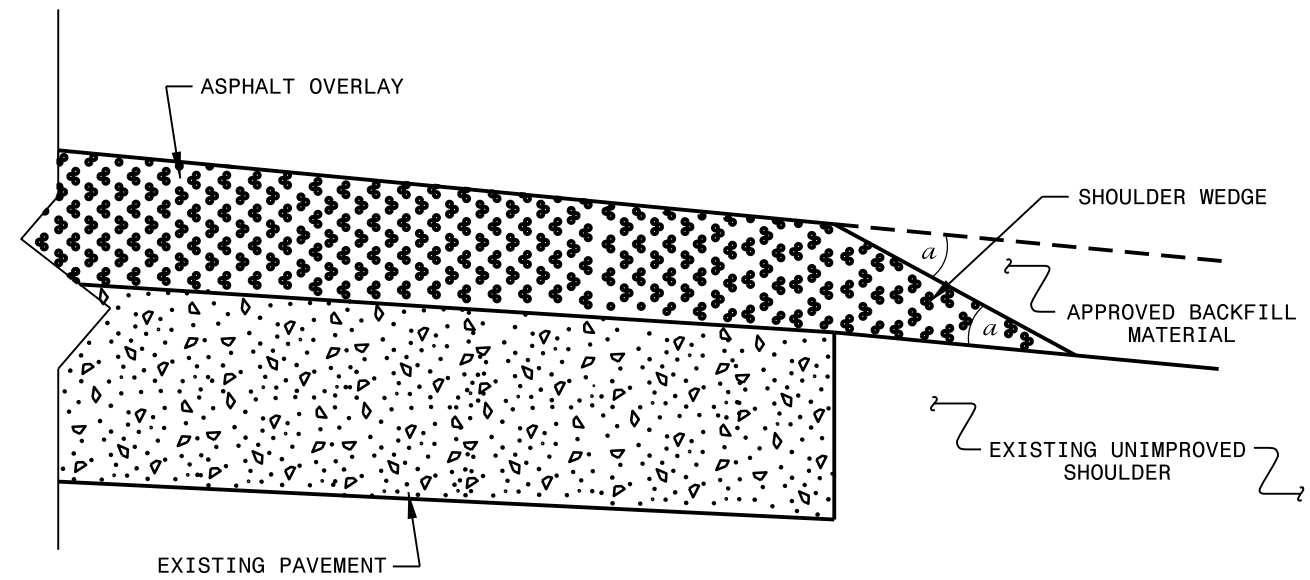
NOTES:

- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



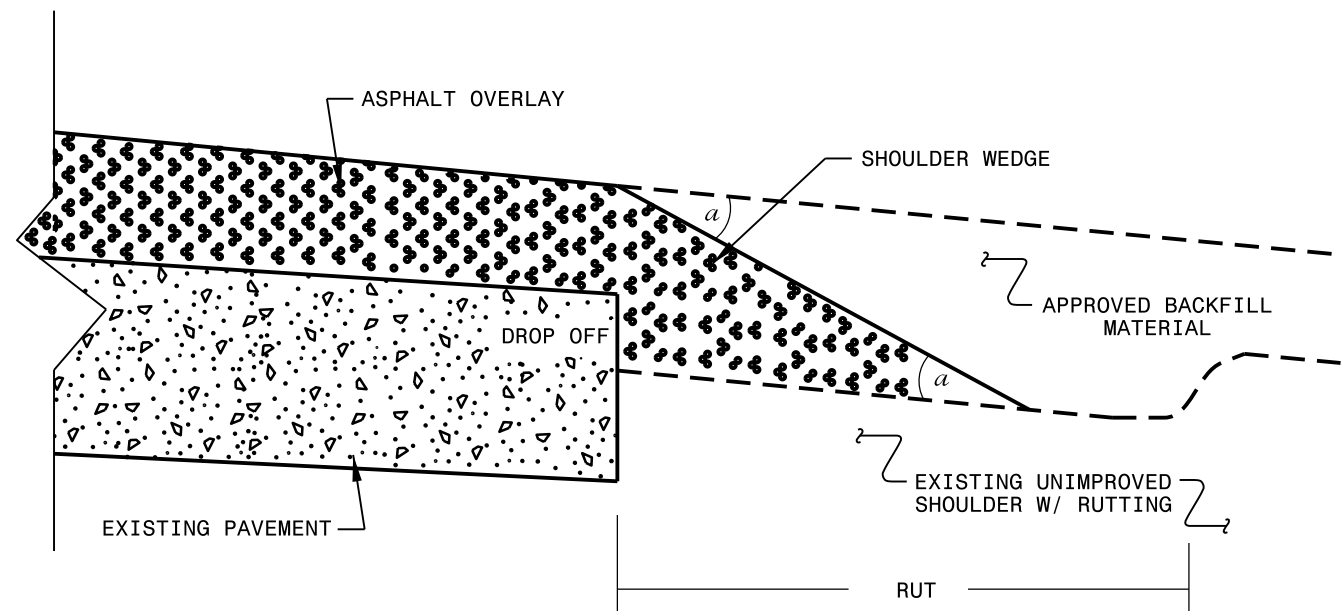
SHOULDER WEDGE DETAIL

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



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



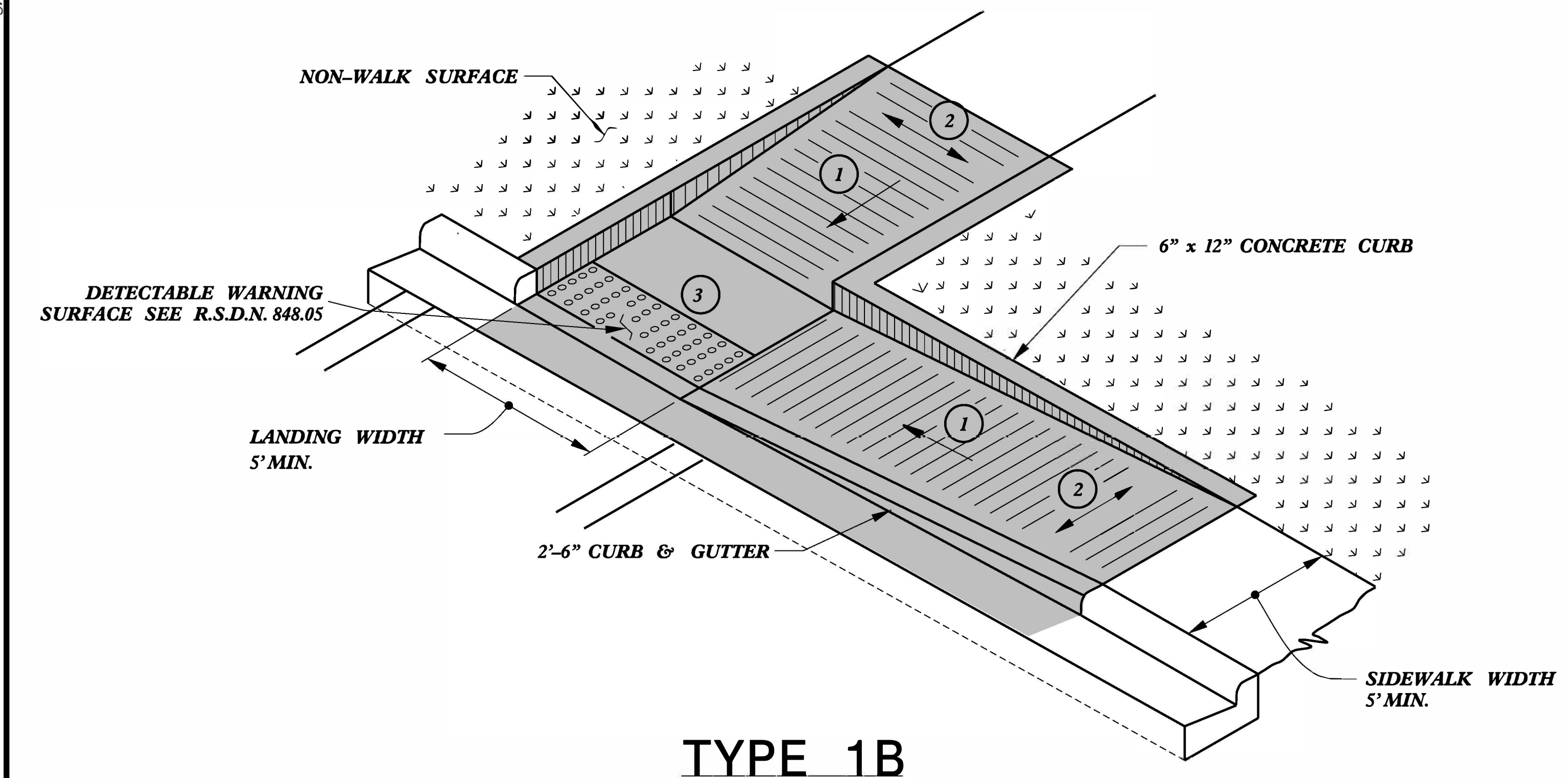
SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

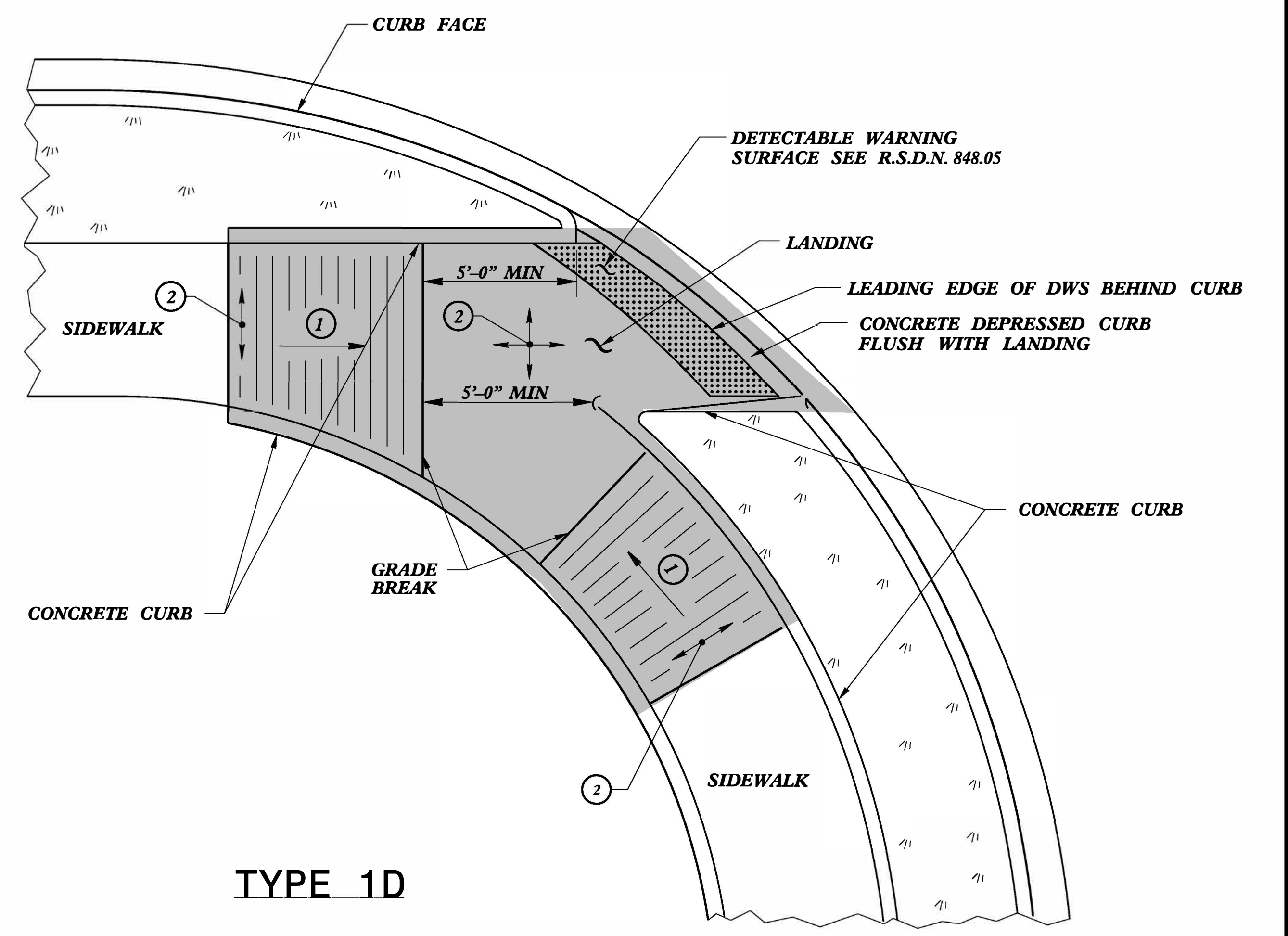
- SHOULDER WEDGE ANGLE = 30°

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: 2/2/16	
CHECKED BY:	DATE:	
FILE SPEC.: szusr/details/stand/shoulderwedgedetail.dgn		

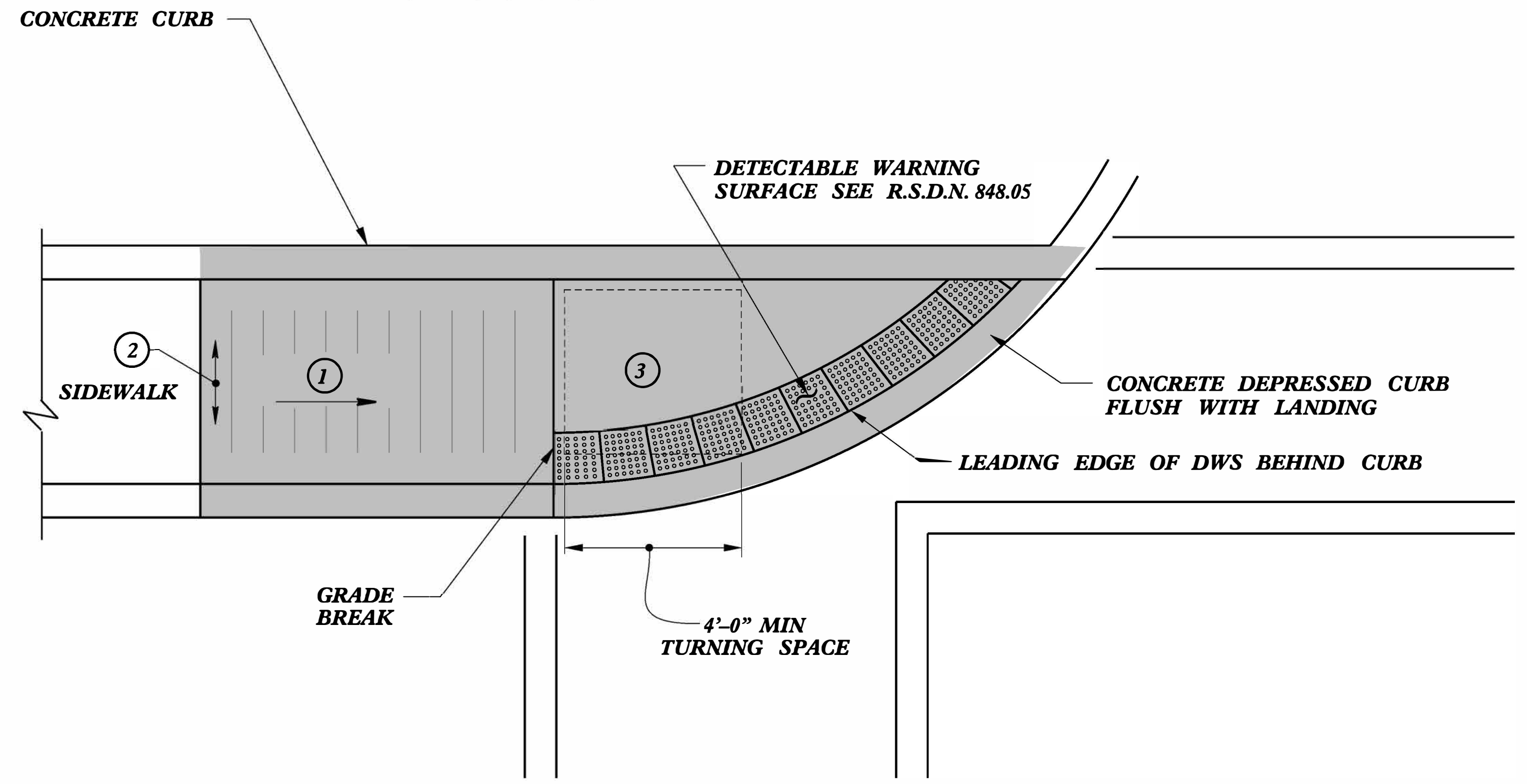
5/14/99



TYPE 1B



TYPE 1D



TYPE 1C

- 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.

PAY LIMITS FOR 1 CURB RAMP

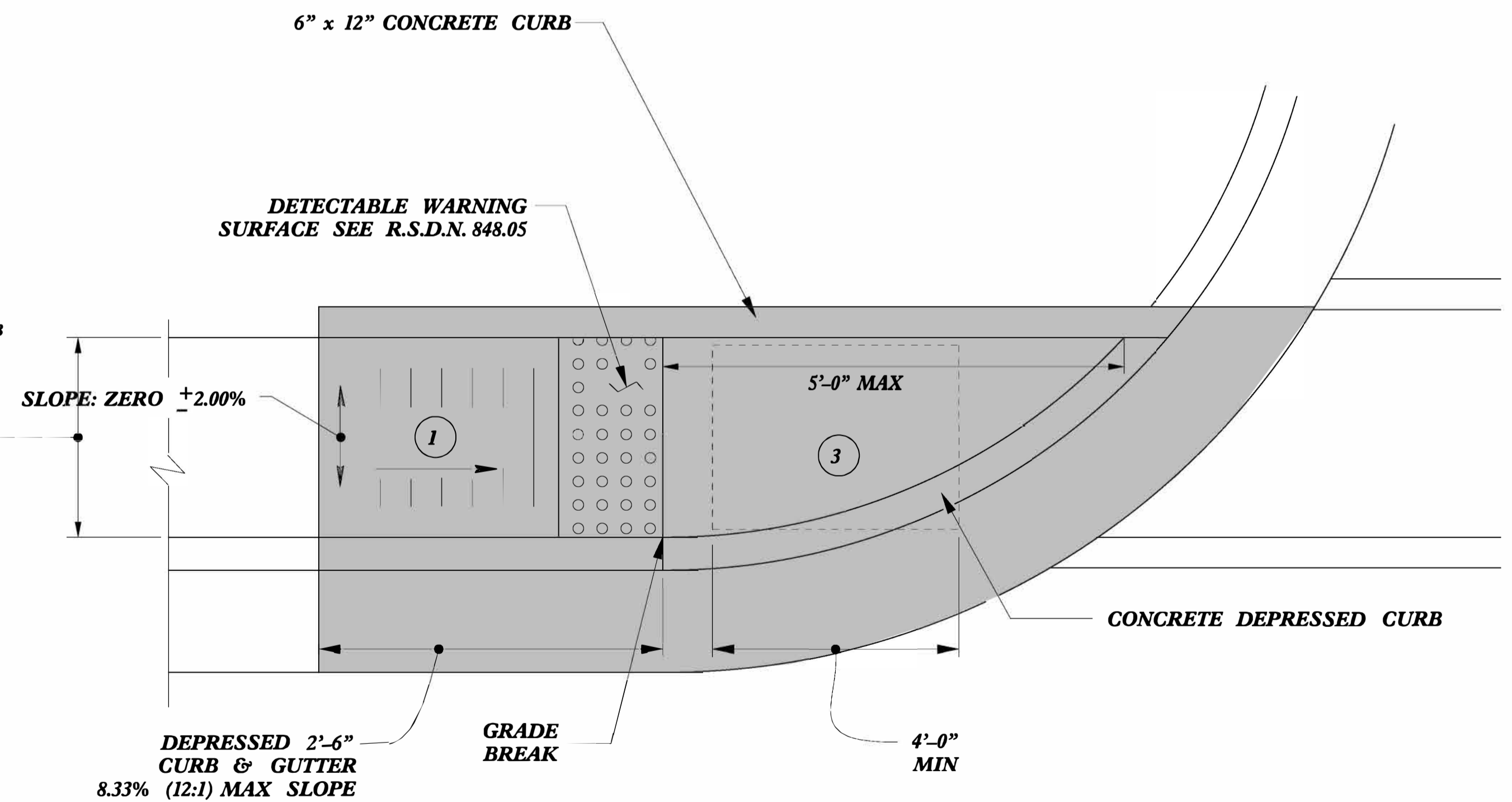
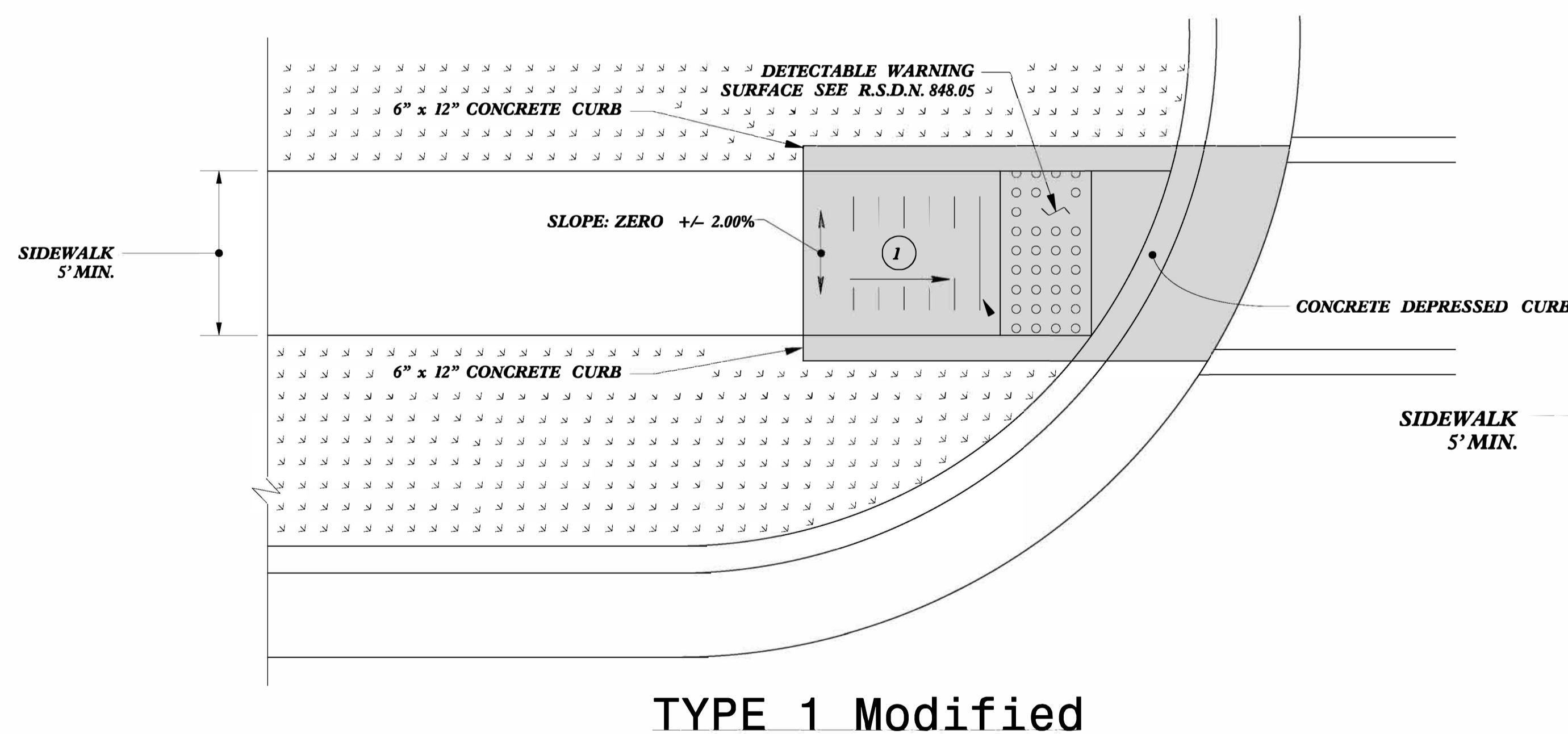
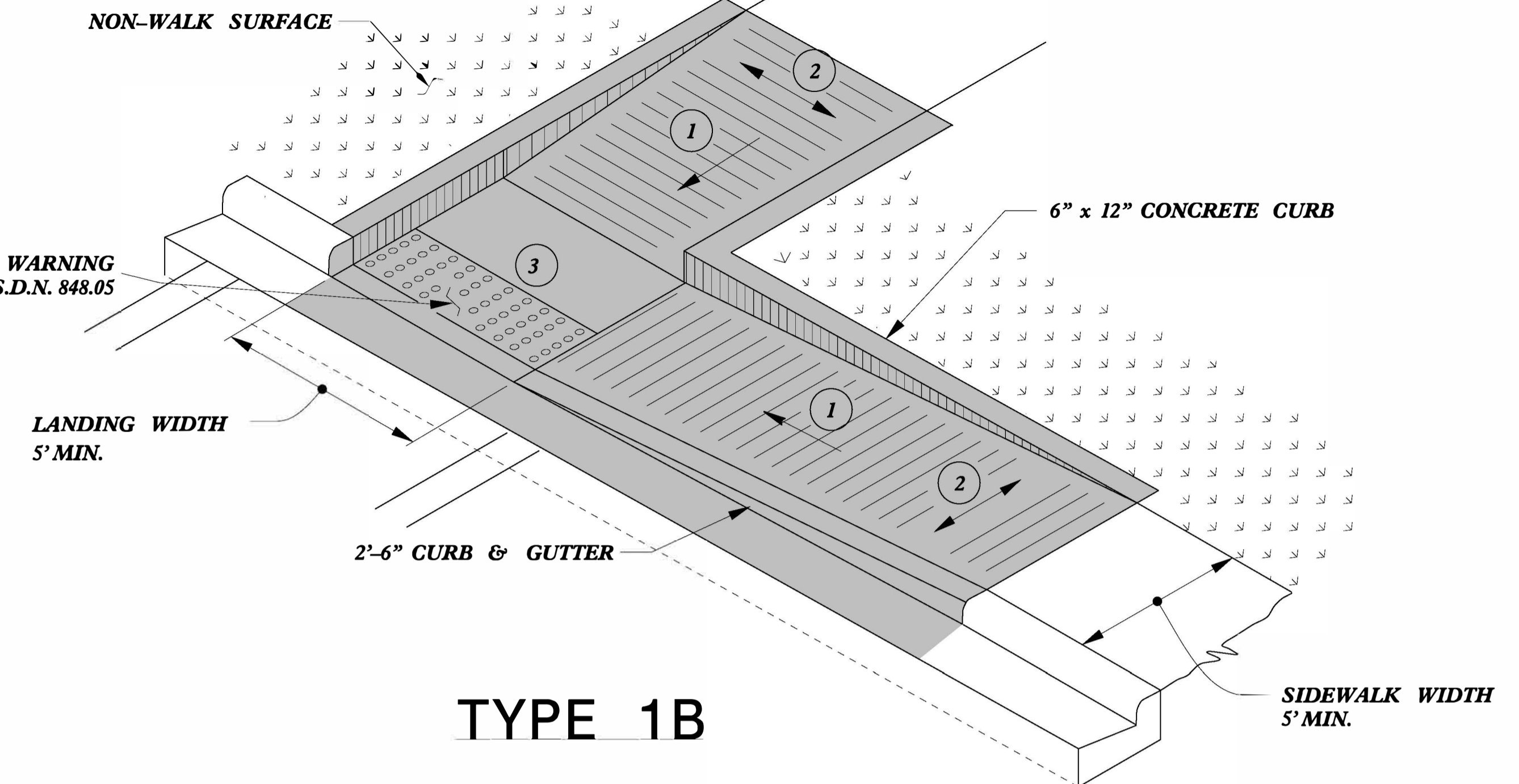
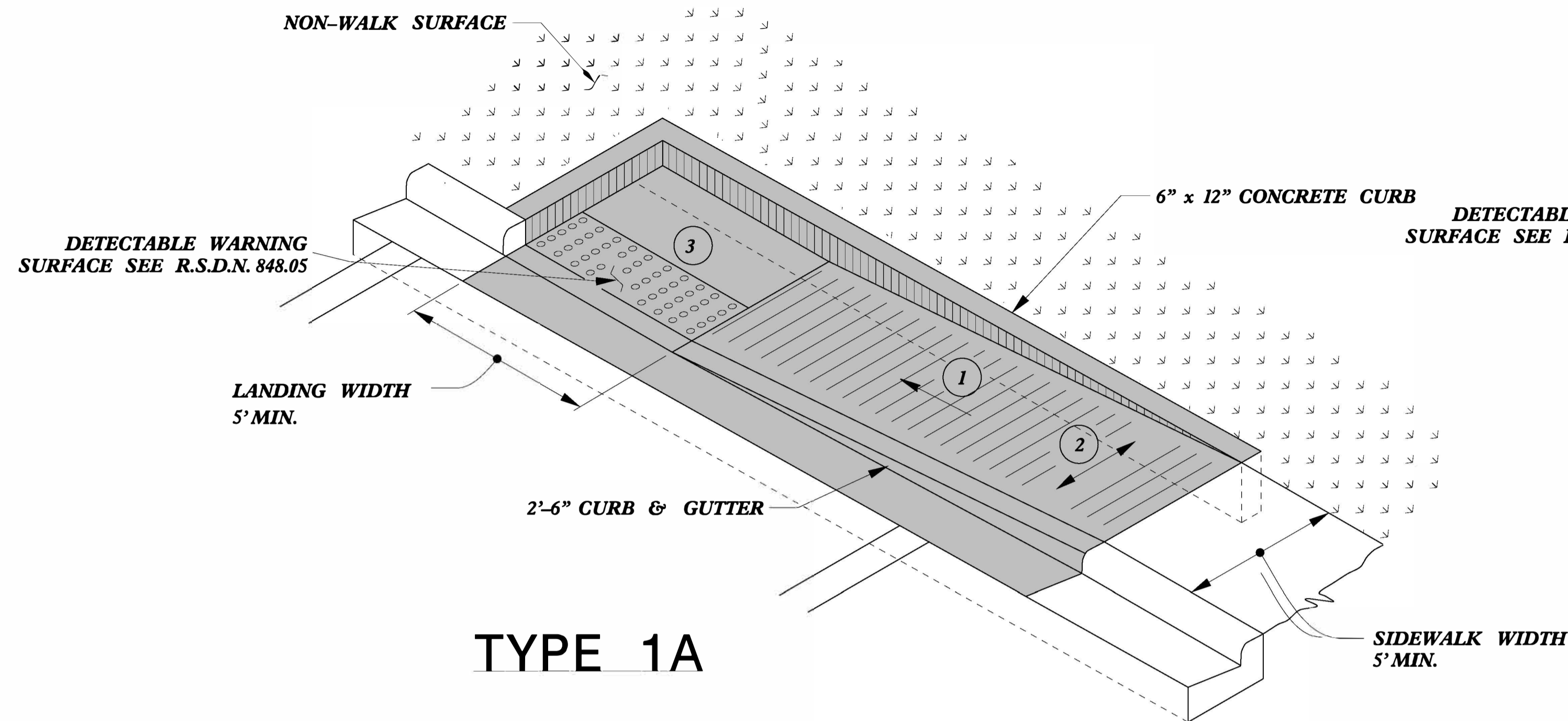
REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.dwg	

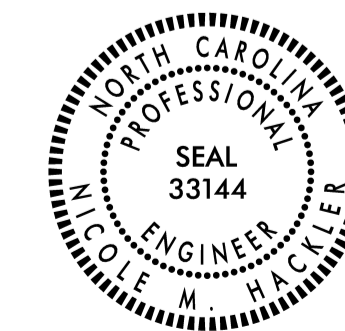
SYSTEMS DESIGN SERVICES
 1000 W. GARDNER STREET
 SUITE 100
 RALEIGH, NC 27601
 TEL: 919-876-1000
 FAX: 919-876-1001
 WWW.SYSDS.COM



- 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.

PAY LIMITS FOR 1 CURB RAMP

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

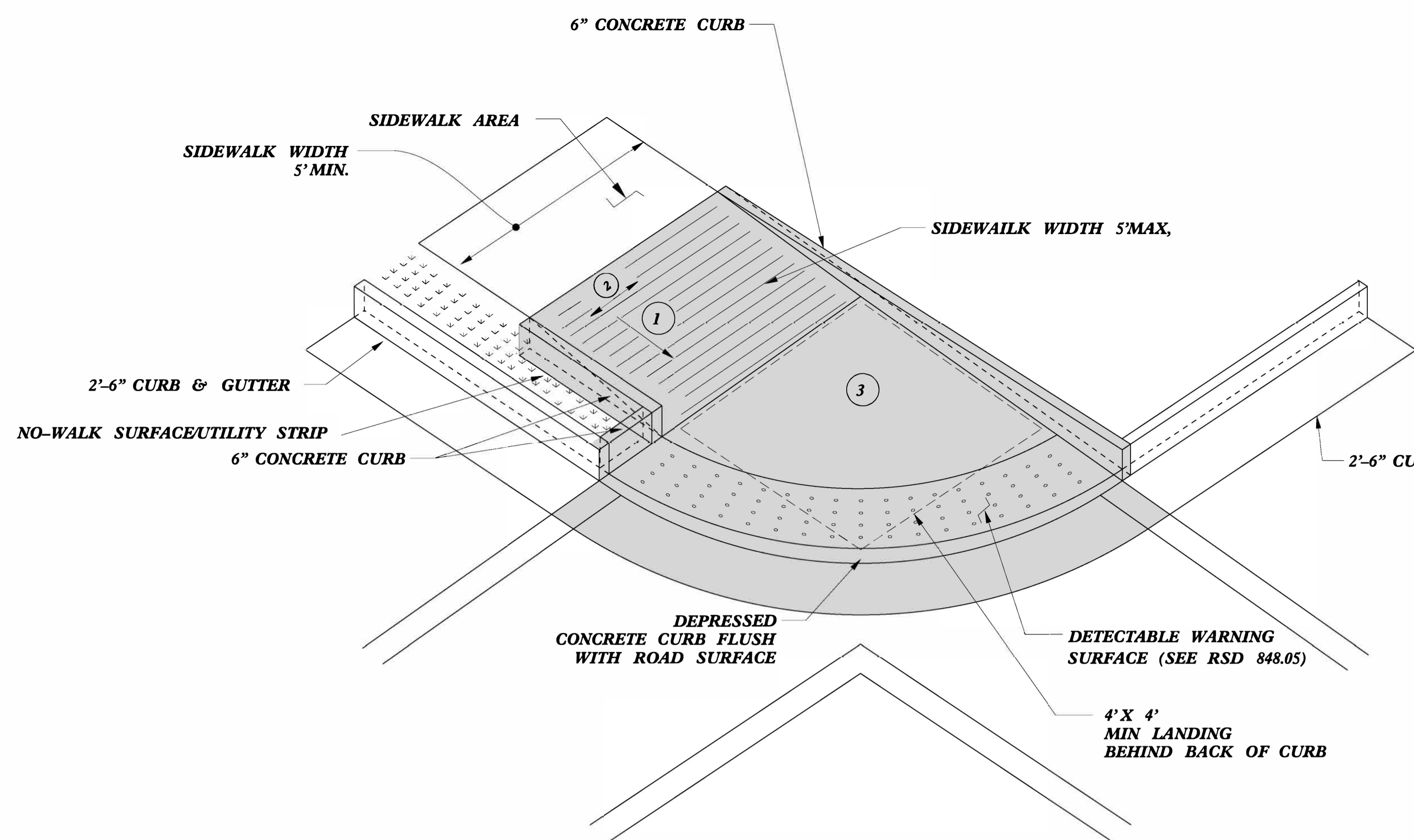


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

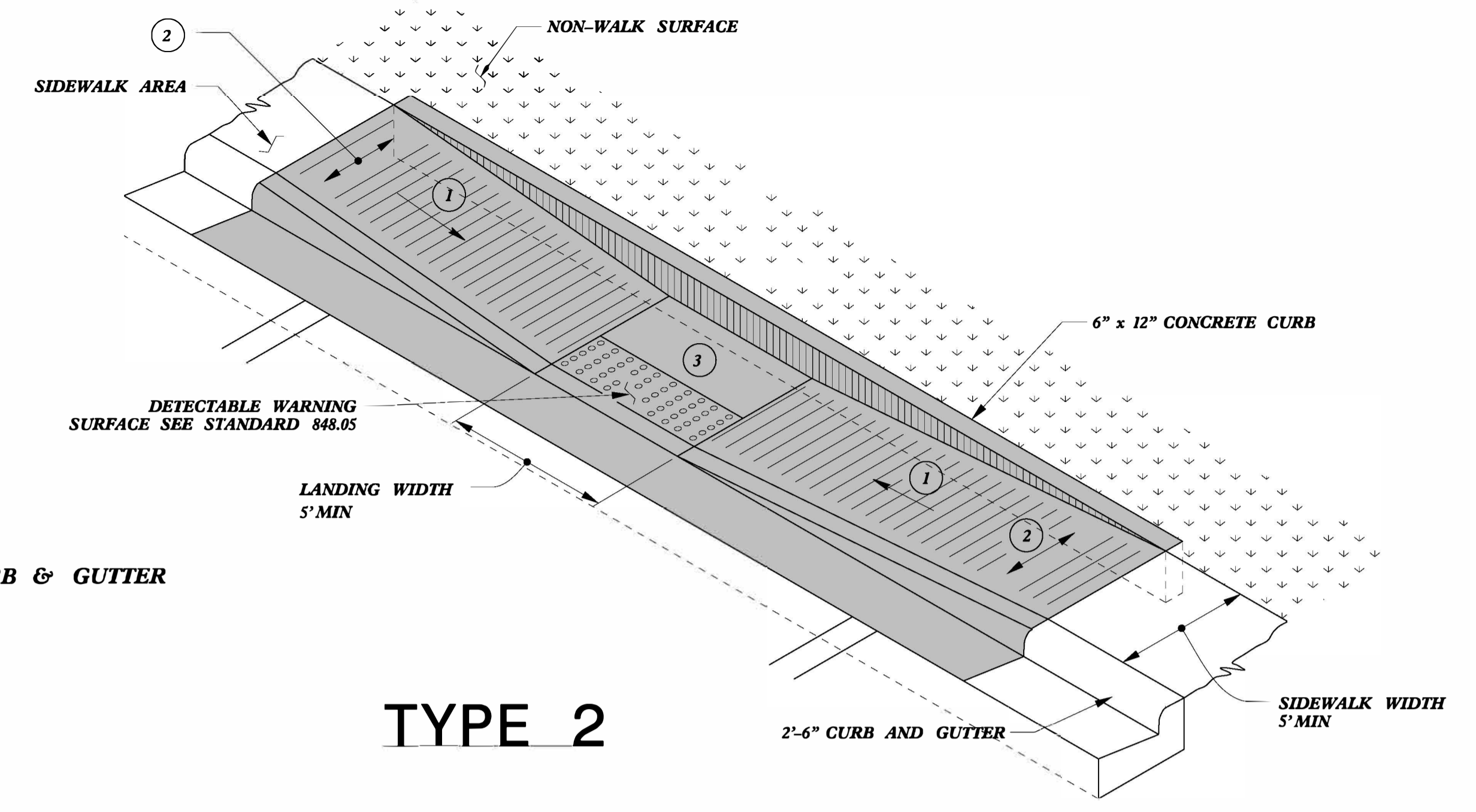
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS
Directional Ramps

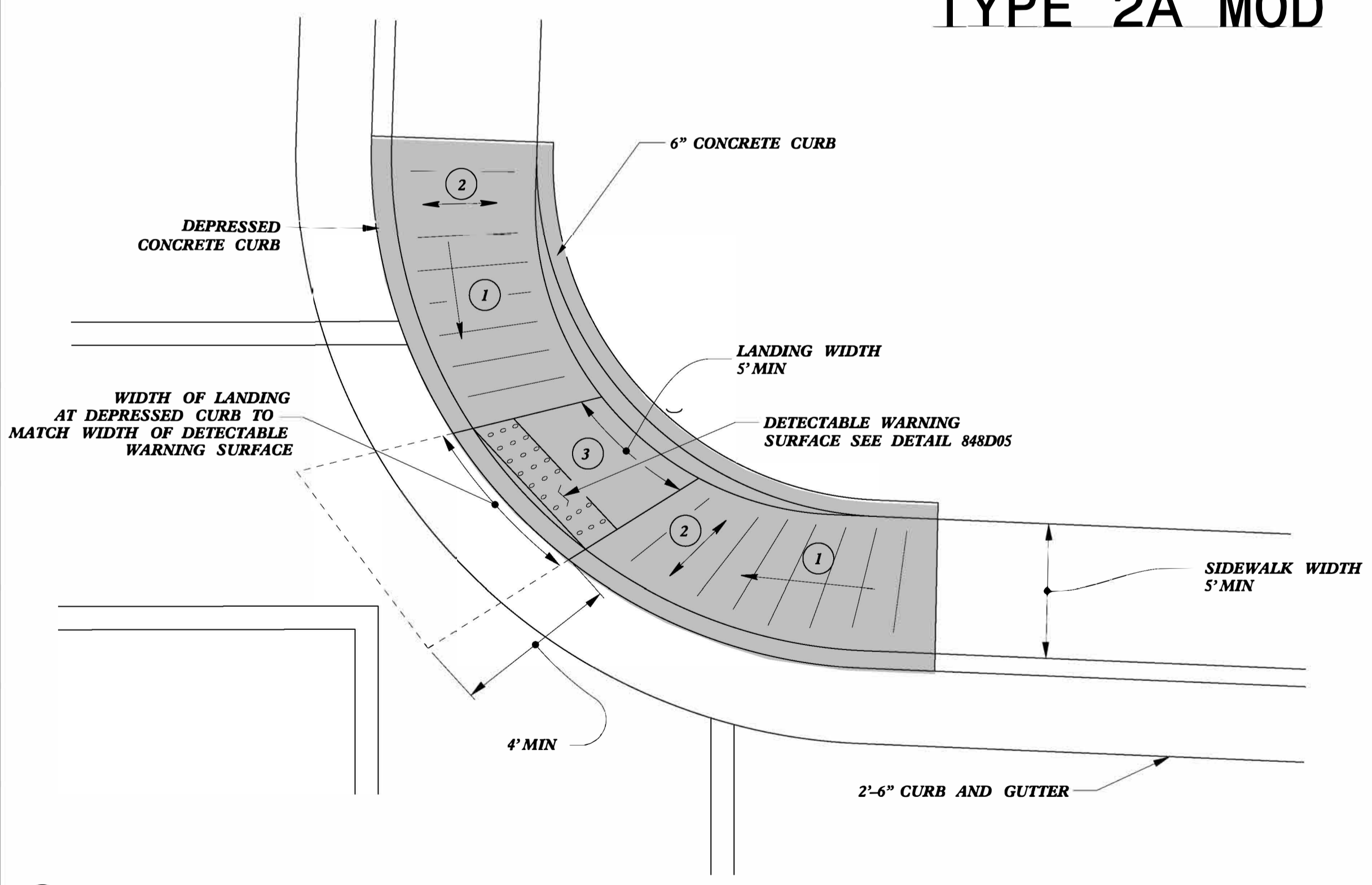
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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn



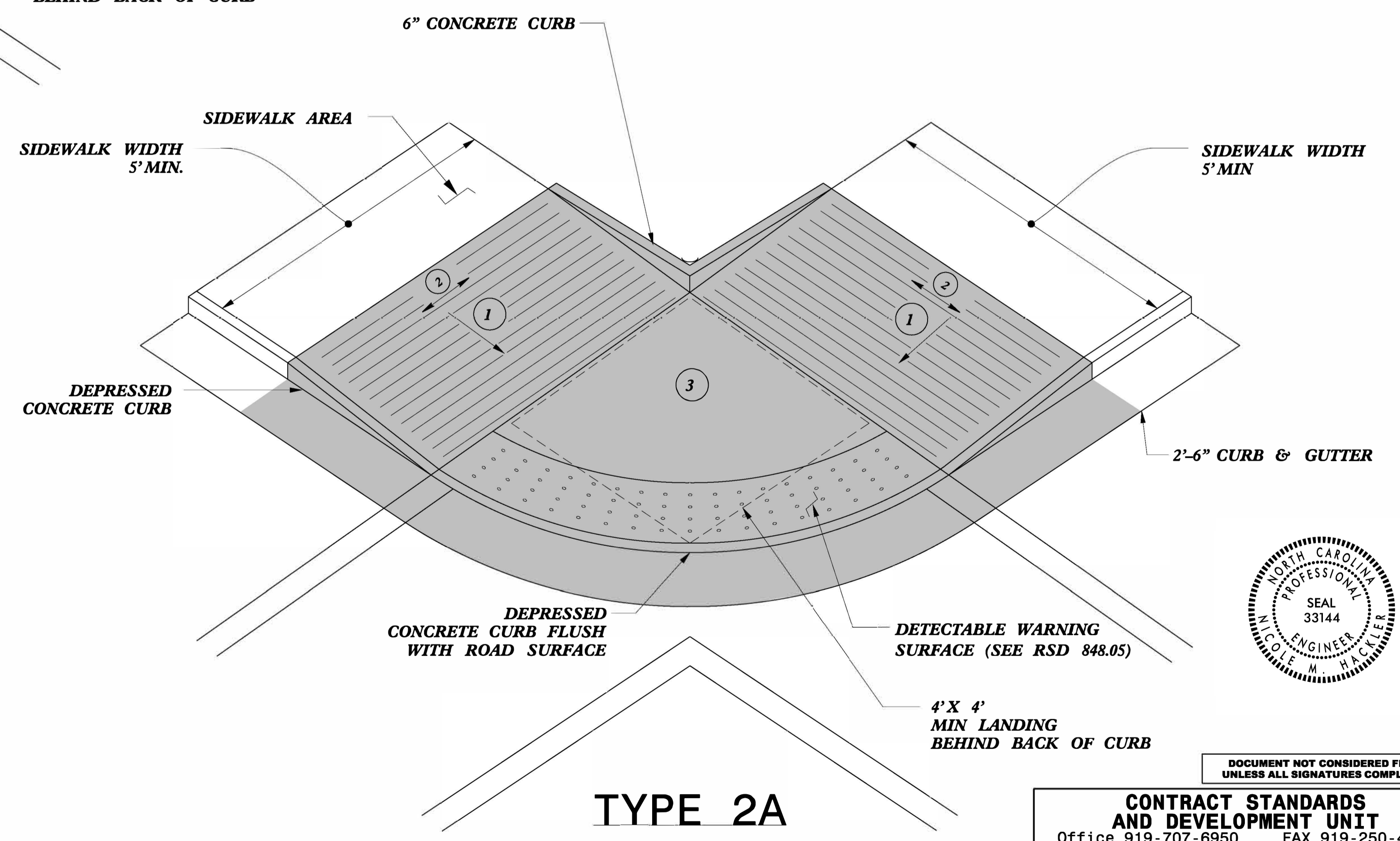
TYPE 2A MOD



TYPE 2



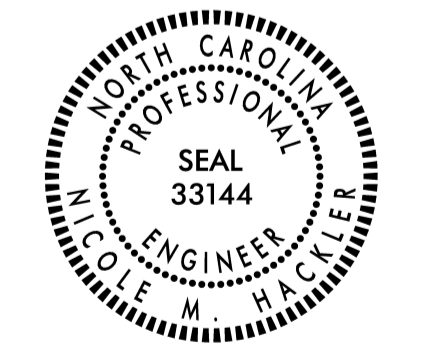
TYPE 2B



TYPE 2A

- 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.

PAY LIMITS FOR 1 CURB RAMP



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

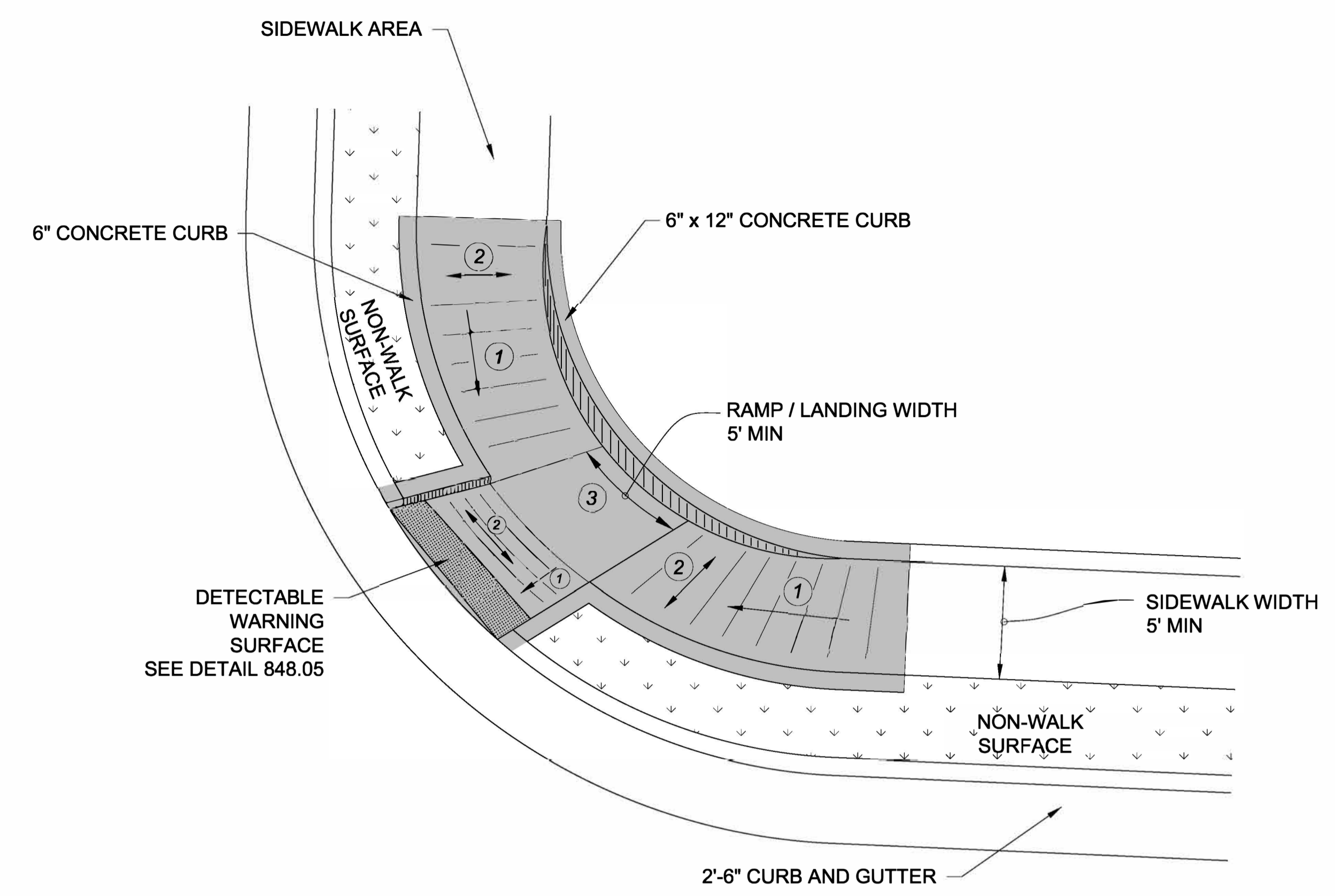
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

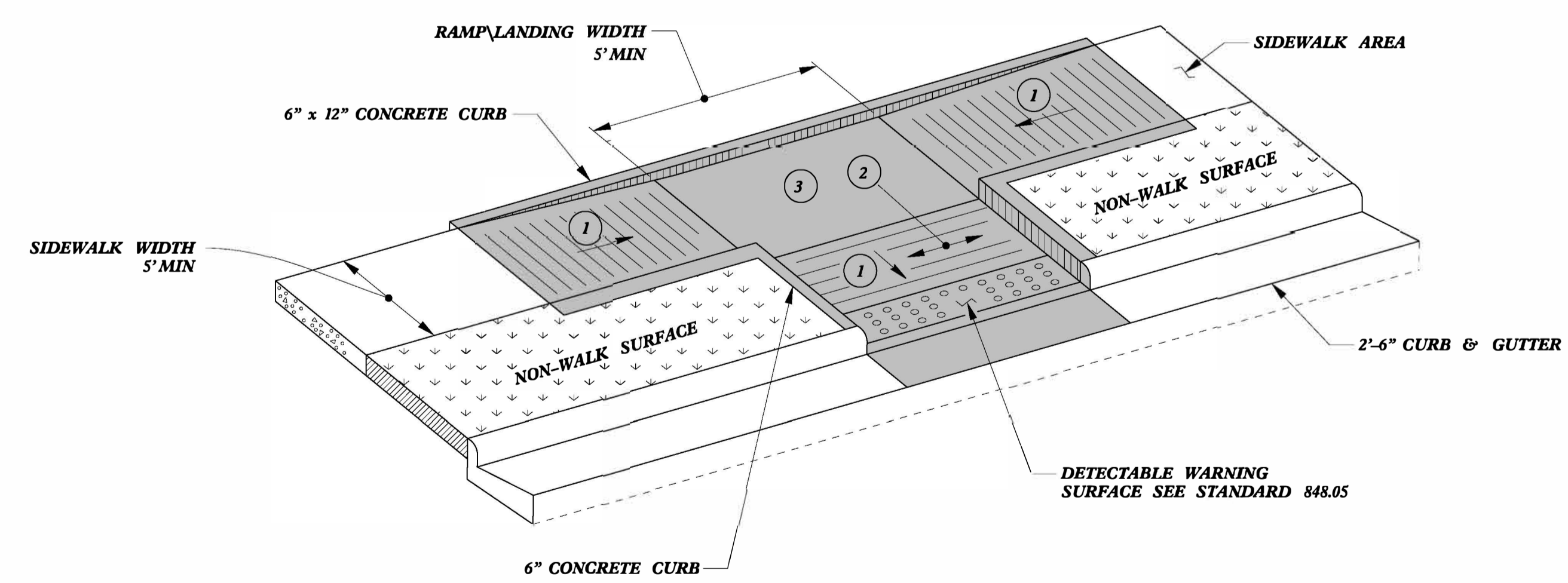
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 MODIFIED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99

PAY LIMITS FOR 1 CURB RAMP

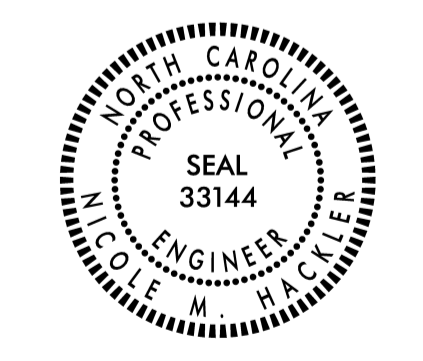


TYPE 3 MODIFIED
INSTALLATION IN A RADIUS



TYPE 3

- 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.

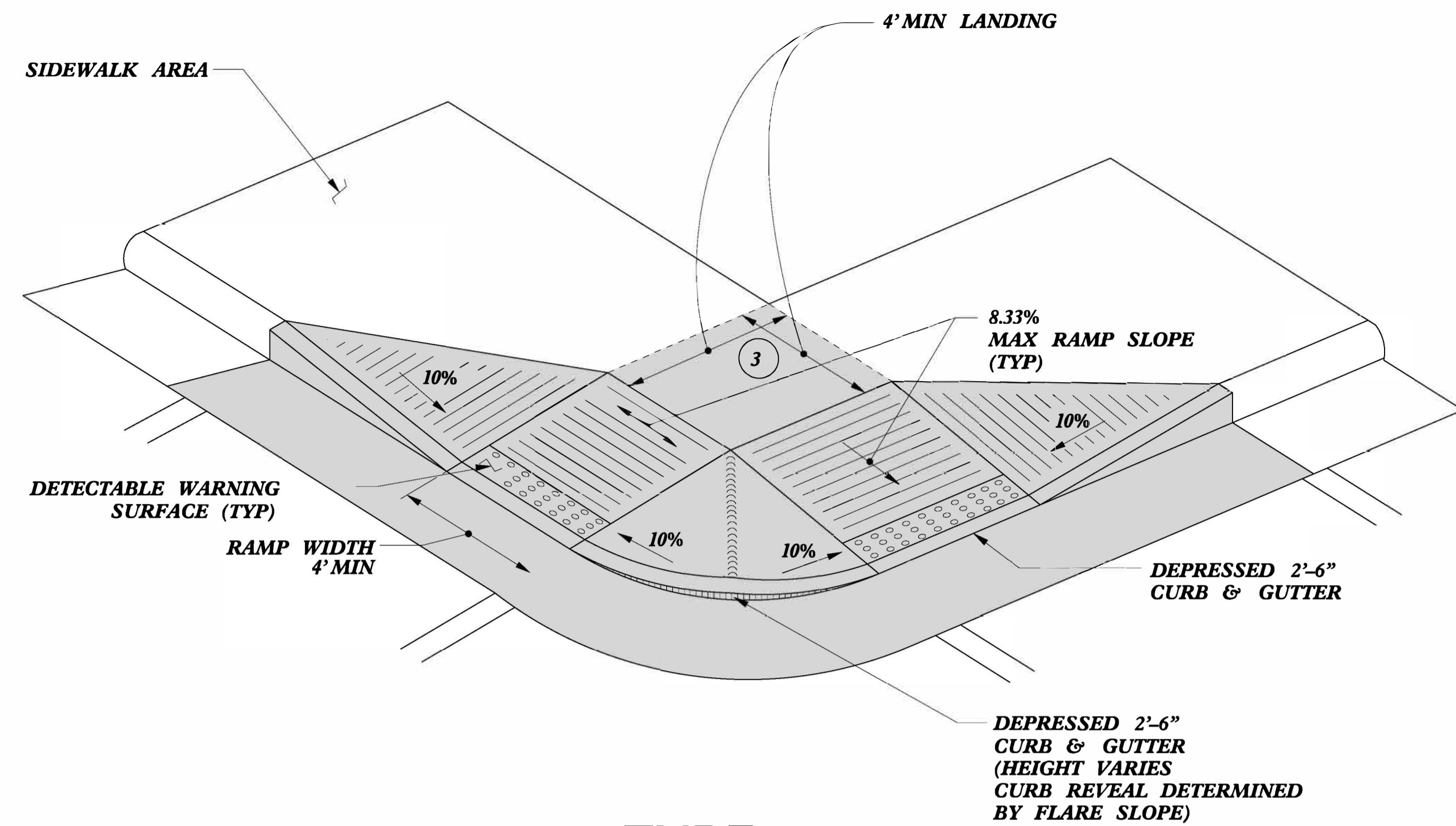


DOCUMENT NOT CONSIDERED FINAL
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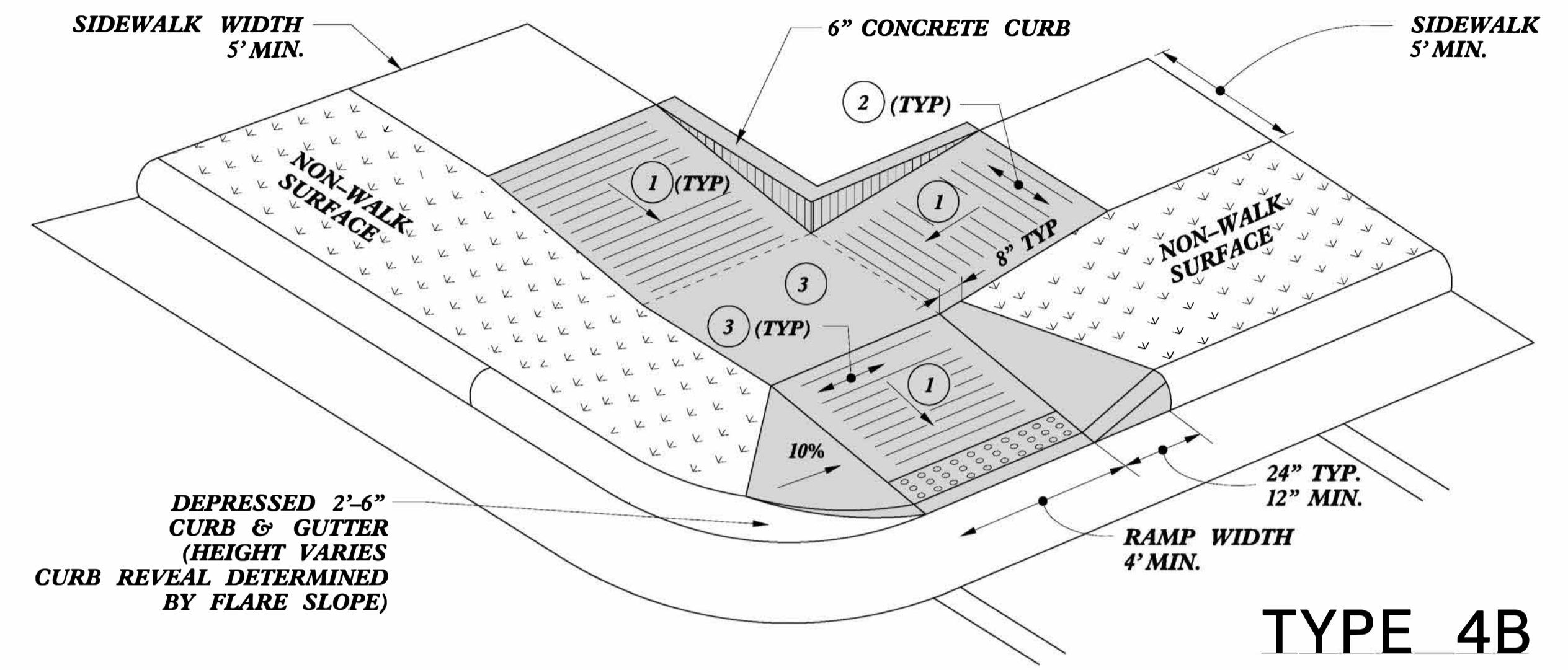
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC. :stds/2012CurbRamp/CurbRampDetails.dgn	

5/14/99
C:\P\2012\20120707\20120707.dwg

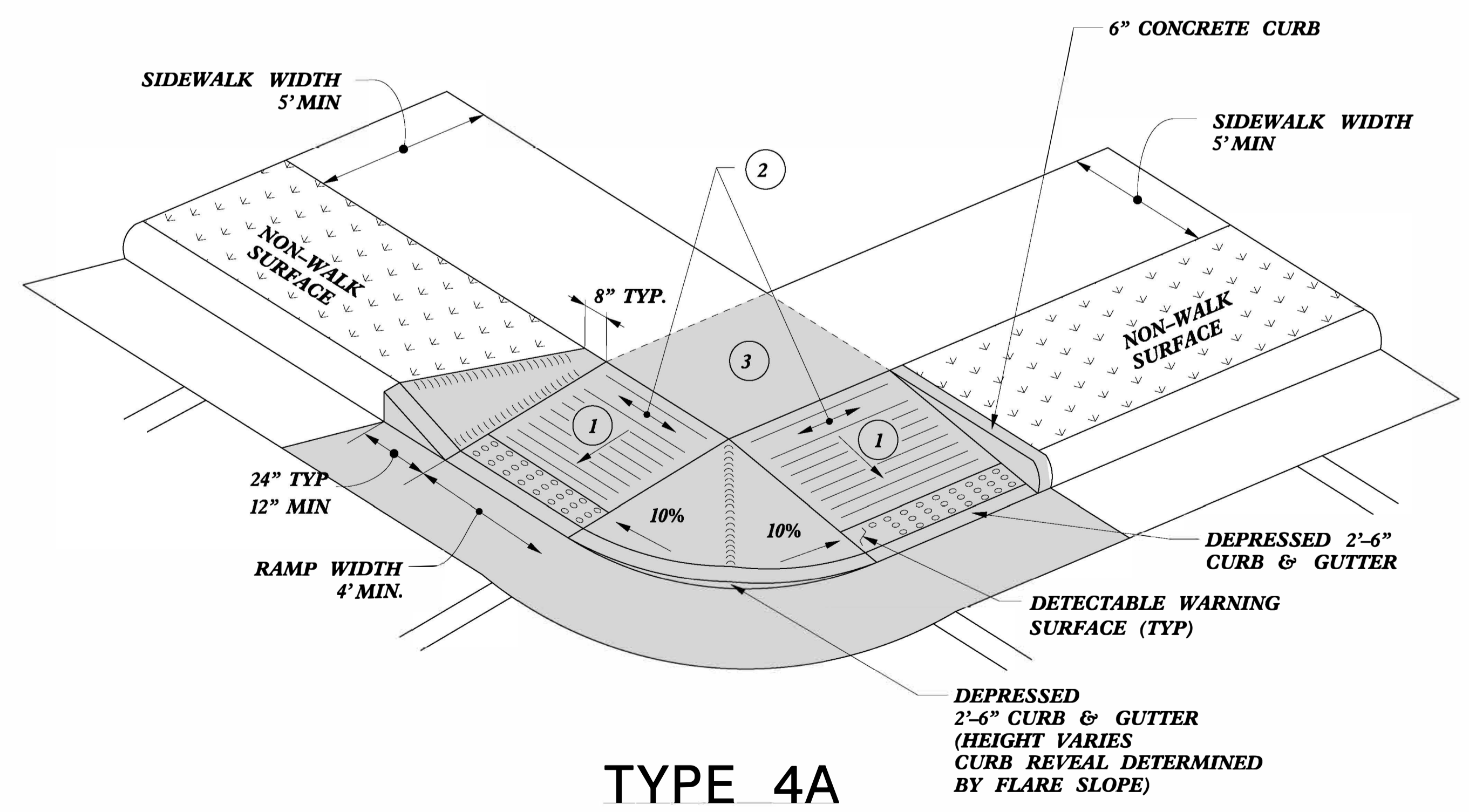
PAY LIMITS FOR 1 OR 2 CURB RAMPS
(CALCULATE BASED ON NUMBER OF SETS
OF TRUNCATED DOMES)



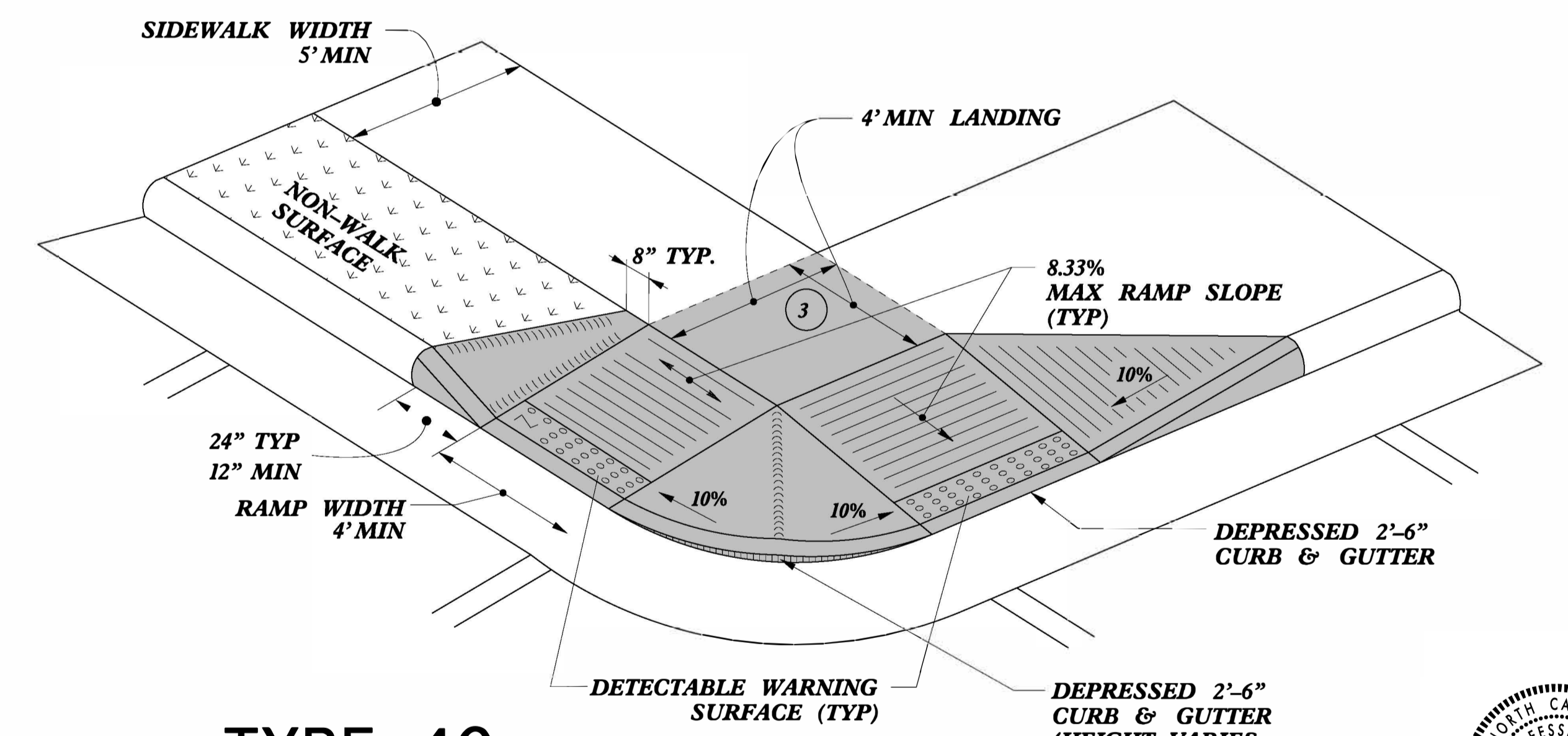
TYPE 4



TYPE 4B



TYPE 4A



TYPE 4C

- 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.



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AND DEVELOPMENT UNIT**
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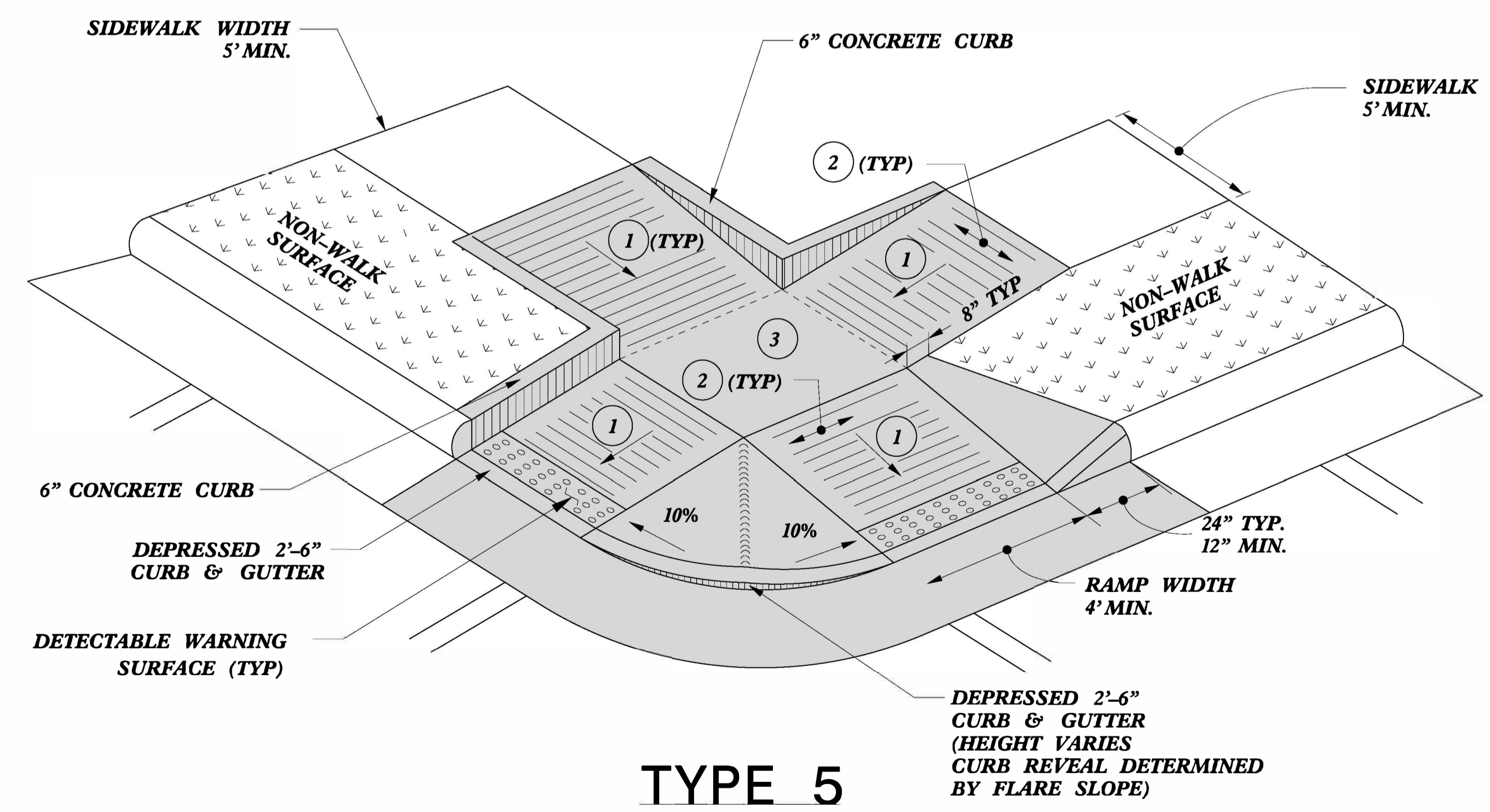
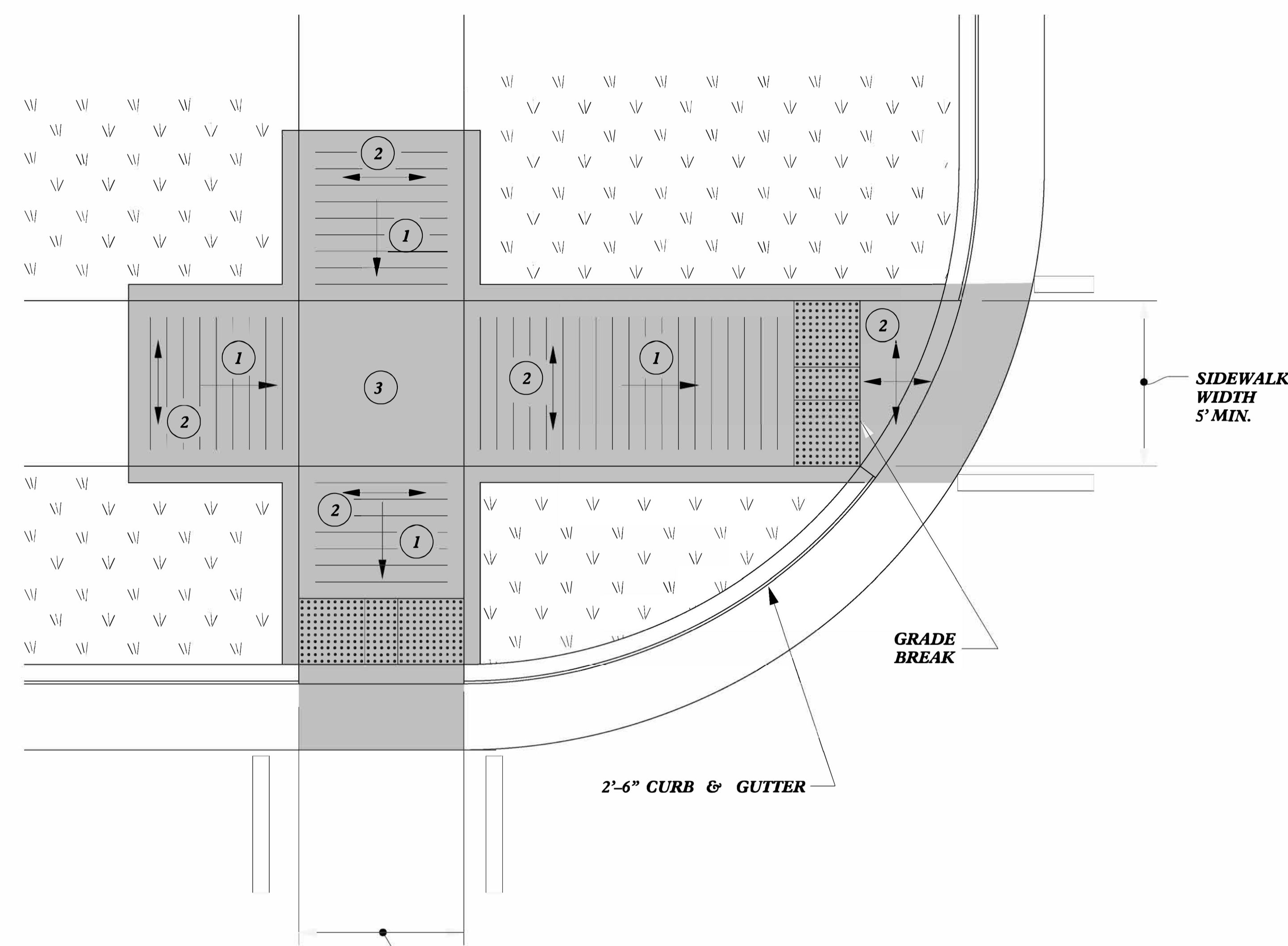
CURB RAMPS

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

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

5/14/99
 C:\TME\848\84805\84805.dwg
 PLOT DATE: 7/7/11 10:00 AM
 PLOT BY: J.S. HOWERTON
 PLOT DEVICE: HP DesignJet 5000PSN

PAY LIMITS FOR 1 OR 2 CURB RAMPS
(CALCULATE BASED ON NUMBER OF SETS
OF TRUNCATED DOMES)



TYPE 5A

TYPE 5

- 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.



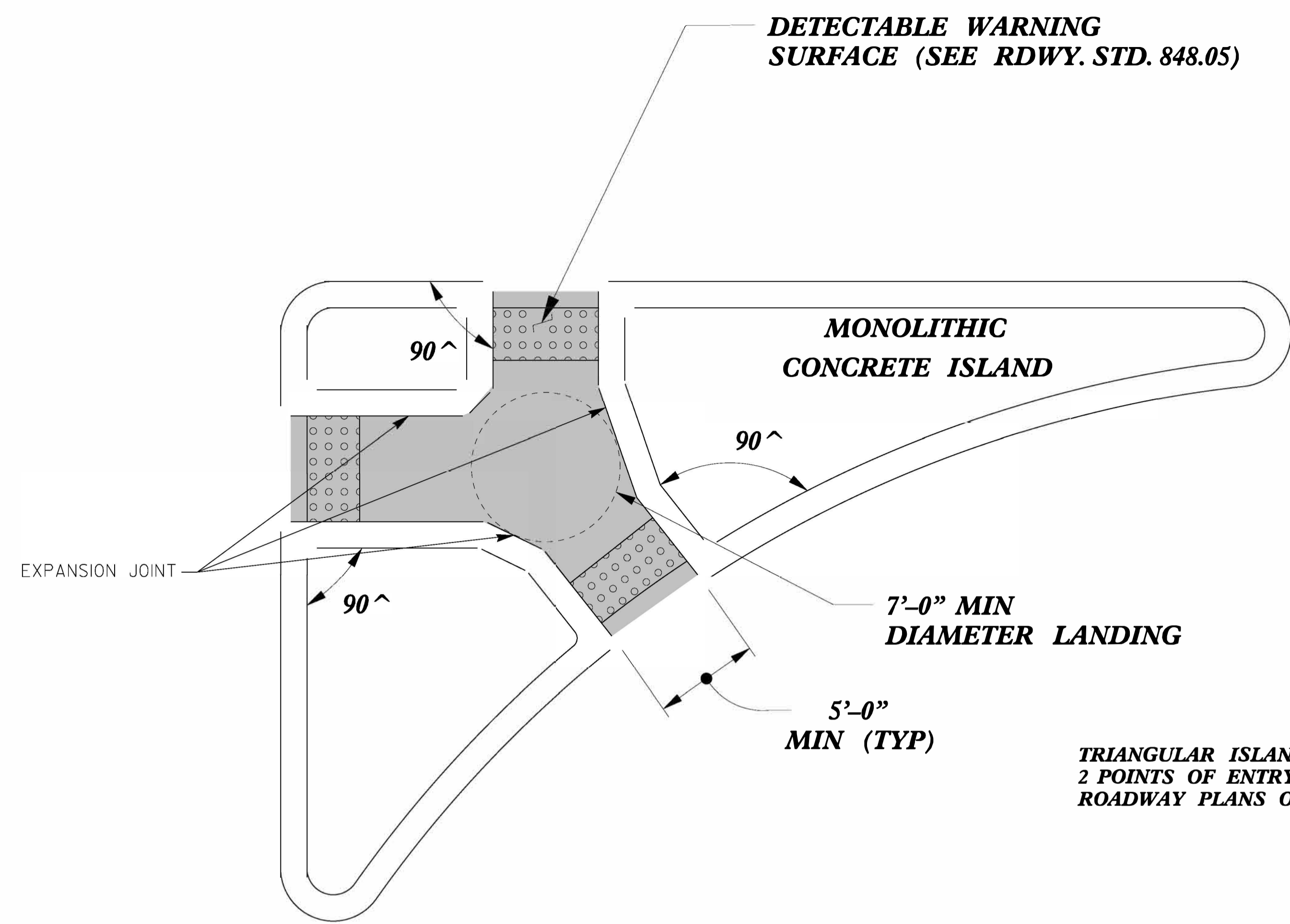
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
CURB RAMPS	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC. :stds/2012CurbRamp/CurbRampDetails.dgn	

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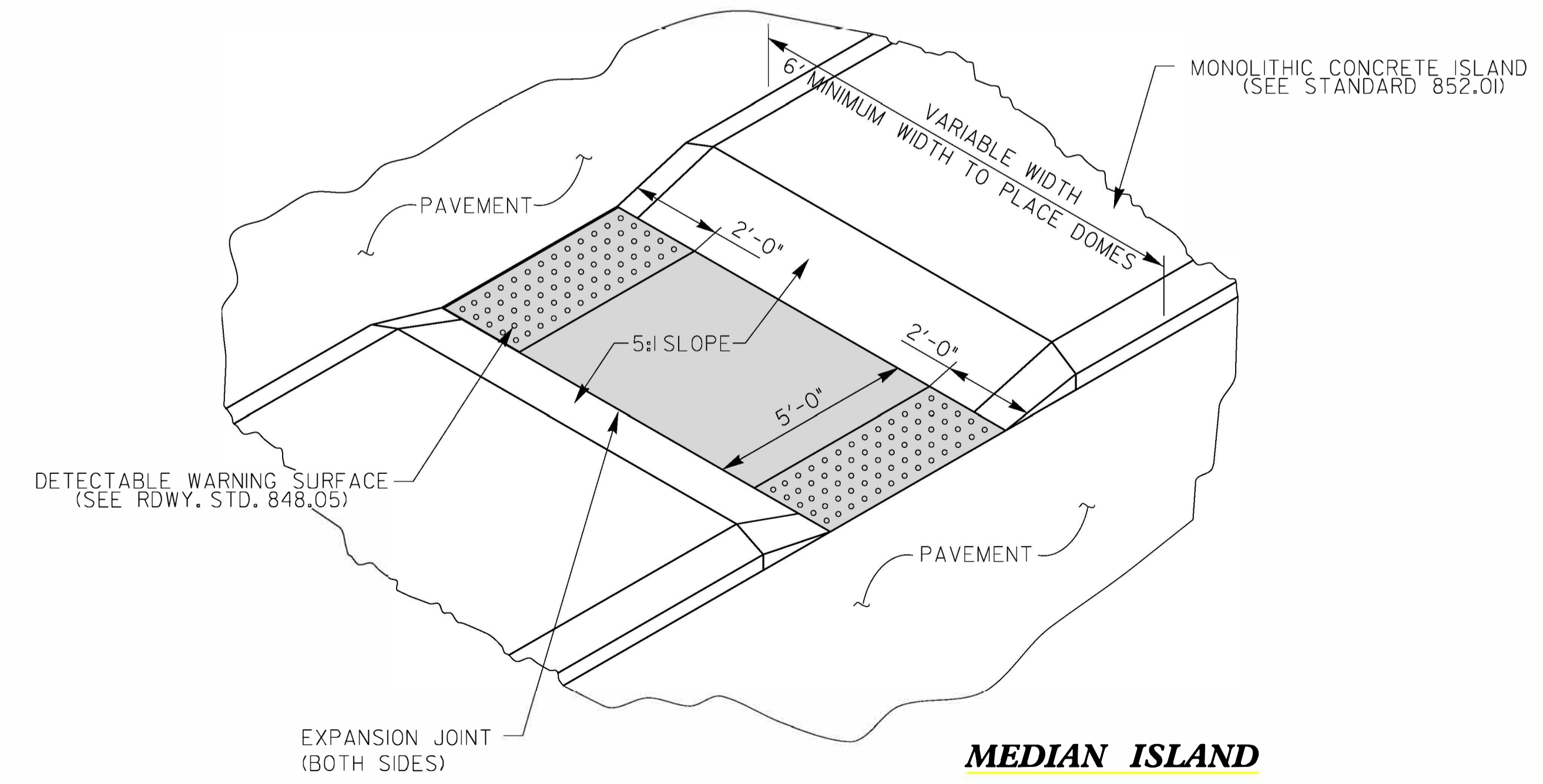
5/14/99

**PAY LIMITS FOR 2 OR 3 CURB RAMPS
(CALCULATE BASED ON NUMBER OF
SETS OF TRUNCATED DOMES)**

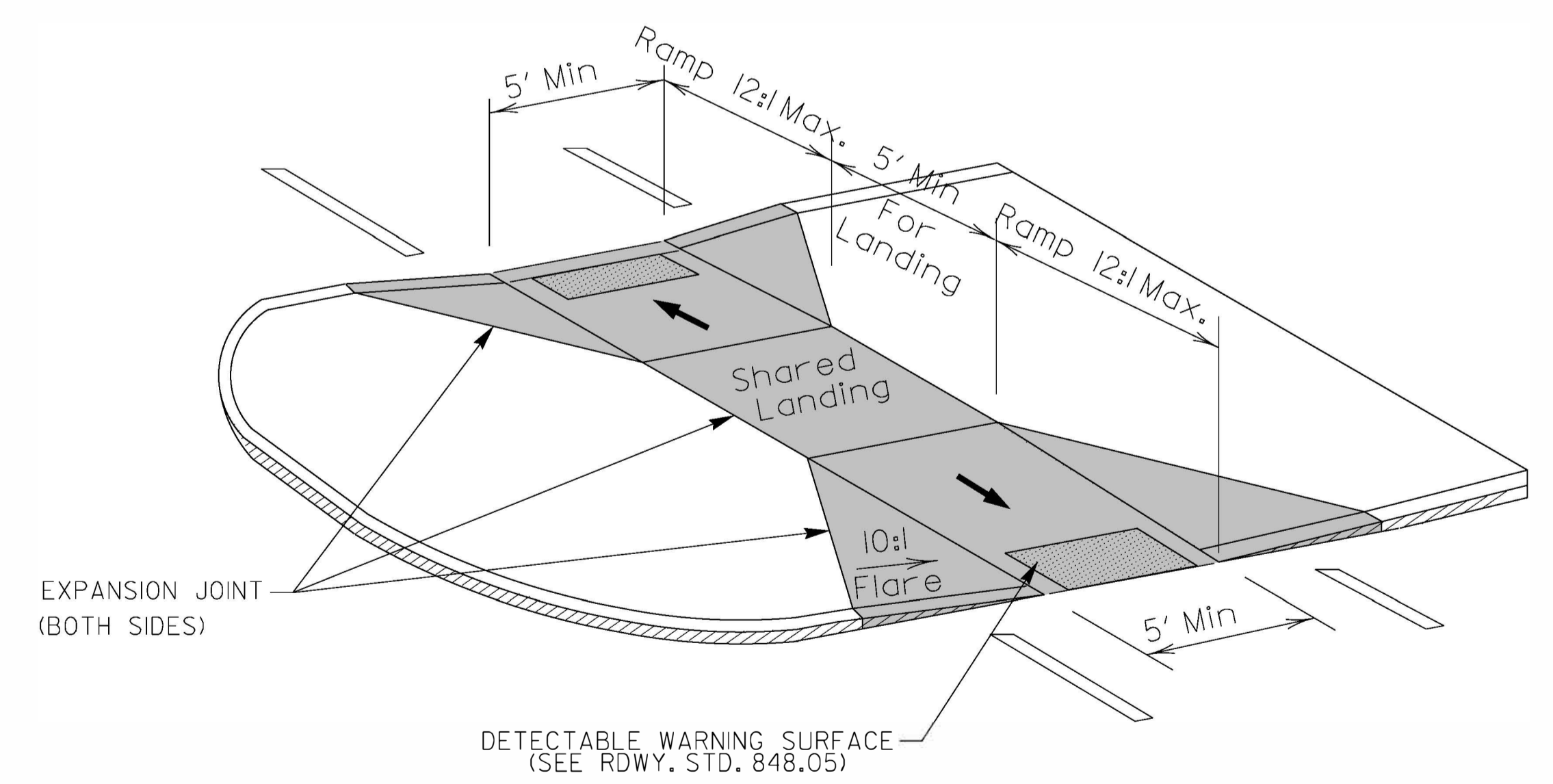


**TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY
2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE
ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.**

**TRIANGULAR ISLAND
WITH CUT THROUGH
TYPE 6**



**MEDIAN ISLAND
WITH CUT THROUGH
TYPE 7**



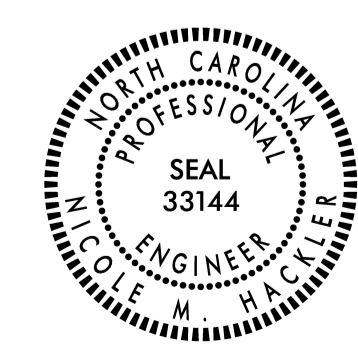
**MEDIAN ISLAND
WITH TWO CURB RAMPS
TYPE 8**

DOCUMENT NOT CONSIDERED FINAL
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**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



SYTIME 0000
CONSTRUCTION
SUGGESTION

ADA SUMMARY OF QUANTITIES - HI-0023 (I-885 S DURHAM FREEWAY EXIT 7 AT TW ALEXANDER DR)

Municipality:	Outside Municipality
Project Number:	HI-0023
WBS Number:	50807.31
County:	Durham

Sheet No.
13

Ramp ID	Inset Map Number	Route 1	Route 2	4447000000-E	4600000000-N	4600000000-N	0156000000-E	2549000000-E	2591000000-E	2613000000-N	2605000000-N	Improvement Type
				Pedestrian Channelizing Devices LF	Generic Traffic Control Item - Pedestrian Transport Service EA	Generic Traffic Control Item - Audible Warning Device EA	Removal of Existing Asphalt Pavement SY	2'-6" Concrete Curb & Gutter LF	4" Concrete Sidewalk SY	Remove and Replace Curb Ramp EA	Concrete Curb Ramp EA	
7949	1	SR-2028 (T W Alexander Dr)	RMP-2445 (T W Alexander Dr Durham Fwy S Exit 7)	60	10	2	7		7	1		Type1C
25604	1	SR-2028 (T W Alexander Dr)	RMP-2445 (T W Alexander Dr Durham Fwy S Exit 7)					30	12		1	Type1Modified
Total for HI-0023 (I-885 S Durham Freeway Exit 7 at TW Alexander Dr)				60	10	2	7	30	19	1	1	

PROJECT NO.		SHEET NO.	TOTAL NO.
HI-0023		14	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	0156000000-E	1121000000-E	1297000000-E	1308000000-E	1523000000-E	1575000000-E	1577000000-E	1704000000-E	1820000000-E	1839140000-E	1840000000-E
											REMOVAL OF EXISTING ASPHALT PAVEMENT	AGGREGATE BASE COURSE	2" MILLING	2" TO 2 5/8" MILLING	SURFACE COURSE, \$9.5C	ASPHALT BINDER FOR PLANT MIX	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	ASPHALT SURFACE TREATMENT, FOG SEAL	ULTRA-THIN BONDED WEARING COURSE	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE)
									MI	FT	SY	TONS	SY	SY	TONS	TON	TON	TONS	SY	TONS	LF
50807	Durham	1	I-885 N / N DURHAM FREEWAY	PVMT JT JUST S OF RMP-2324 TO CONCRETE PAVEMENT JT	1	2	NO	NO	1.975	36-75			55,951	306	6,917	408	116		7,055	2,227	20,856
50807	Durham	2	I-885 S / S DURHAM FREEWAY	CONCRETE PAVEMENT JT TO PVMT JT S OF RMP-2325	1	2	NO	NO	1.975	36-75			46,728	440	5,781	341	85		5,363	1,635	20,856
50807	Durham	3	RMP-2445 OI	TW ALEXANDER DR. DURHAM FWY S EXIT 7	2	1	NO	NO	0.224	42	7		3,874		480	28					
50807	Durham	4	RMP-2446 OI	TW ALEXANDER DR DURHAM FWY S ON RAMP	2	1	NO	NO	0.277	24		138	2,832		352	21					
50807	Durham	5	RMP-2449 OI	E CORNWALLIS RD DURHAM FWY S EXIT 6	2	1	NO	NO	0.311	24			3,686		458	27					
50807	Durham	6	RMP-2450 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	NO	NO	0.161	24			1,341		167	10					
50807	Durham	7	RMP-2451 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	NO	NO	0.085	20			410		52	3					
50807	Durham	8	RMP-2325 OI	I 40 E DURHAM FWY RAMP	4	1	NO	NO	0.843	36			10,484	200	1,302	78	19	35	1,293	367	5,608
50807	Durham	9	RMP-2324 OI	I 40 E DURHAM FWY EXIT 279 B	3	2	NO	NO	0.712	40			9,258	67	1,149	68	14		1,816	266	4,876
50807	Durham	10	RMP-2454 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	NO	NO	0.04	28			469		58	3					
50807	Durham	11	RMP-2453 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	NO	NO	0.262	20			2,180		272	16					
50807	Durham	12	RMP-2452 OI	E CORNWALLIS RD DURHAM FWY N ON RAMP	2	1	NO	NO	0.302	22			3,578		444	26					
50807	Durham	13	RMP-2447 OI	TW ALEXANDER DR DURHAM FWY N EXIT 7	2	1	NO	NO	0.27	45			6,843		846	50					
50807	Durham	14	RMP-2448 OI	TW ALEXANDER DR DURHAM FWY N ON RAMP	2	1	NO	NO	0.184	22			1,970		245	14					
TOTAL FOR PROJ NO. 50807									7.621		7	138	149,604	1,013	18,523	1,093	234	35	15,527	4,495	52,196
GRAND TOTAL									7.621		7	138	149,604	1,013	18,523	1,093	234	35	15,527	4,495	52,196

PROJECT NO.	SHEET NO.	TOTAL NO.
50807	16	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LENGTH		4400000000-E	4423000000-N	4424000000-N	4434000000-N	4447000000-E	4510000000-N	4688000000-E		4695000000-E	4700000000-E	4709000000-E	4720000000-E
							MI	FT	STATIONARY WORK ZONE SIGN	WORK ZONE DIGITAL SPEED LIMIT SIGNS	WORK ZONE PRESENCE LIGHTING	SEQUENTIAL FLASHING WARNING LIGHTS	PEDESTRIAN CHANNELIZING DEVICES	LAW ENFORCEMENT	6" X 90 M YELLOW THERMO	6" X 90 M WHITE THERMO	8" X 90 M WHITE THERMO	12" X 90 M WHITE THERMO	24" X 90 M WHITE THERMO	THERMO MSG ONLY 90 M
									SF	EA	EA	EA	LF	HR	LF	LF	LF	LF	EA	
50807	Durham	1	I-885 N / N DURHAM FREEWAY	PVMT JT JUST S OF RMP-2324 TO CONCRETE PAVEMENT JT	1	2	1.975	36-75	152	5	14	18		400	10,083	15,345		3,840		8
50807	Durham	2	I-885 S / S DURHAM FREEWAY	CONCRETE PAVEMENT JT TO PVMT JT S OF RMP-2325	1	2	1.975	36-75	152	5	14	18		400	10,470	14,425		2,802		
50807	Durham	3	RMP-2445 OI	TW ALEXANDER DR. DURHAM FWY S EXIT 7	2	1	0.224	42					60		850		37		240	
50807	Durham	4	RMP-2446 OI	TW ALEXANDER DR DURHAM FWY S ON RAMP	2	1	0.277	24							1,060	1,060				
50807	Durham	5	RMP-2449 OI	E CORNWALLIS RD DURHAM FWY S EXIT 6	2	1	0.311	24							1,190	1,295	37	71	45	
50807	Durham	6	RMP-2450 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	0.161	24							527	25		36		
50807	Durham	7	RMP-2451 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	0.085	20							185	100				
50807	Durham	8	RMP-2325 OI	I 40 E DURHAM FWY RAMP	4	1	0.843	36							2,765	3,230		86		
50807	Durham	9	RMP-2324 OI	I 40 E DURHAM FWY EXIT 279 B	3	2	0.712	40							2,255	3,032		235		
50807	Durham	10	RMP-2454 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	0.04	28										125	22	
50807	Durham	11	RMP-2453 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	0.262	20							495			195		
50807	Durham	12	RMP-2452 OI	E CORNWALLIS RD DURHAM FWY N ON RAMP	2	1	0.302	22							850	1,330				
50807	Durham	13	RMP-2447 OI	TW ALEXANDER DR DURHAM FWY N EXIT 7	2	1	0.27	45							1,050	1,680	37	240	26	
50807	Durham	14	RMP-2448 OI	TW ALEXANDER DR DURHAM FWY N ON RAMP	2	1	0.184	22							820	830	116			
TOTAL FOR PROJ NO. 50807							7.621		304	10	28	36	60	800	32,600	42,352	227	7,630	333	8
															74,952					
GRAND TOTAL							7.621		304	10	28	36	60	800	32,600	42,352	227	7,630	333	8
															74,952					

PROJECT NO.	SHEET NO.	TOTAL NO.
50807	17	

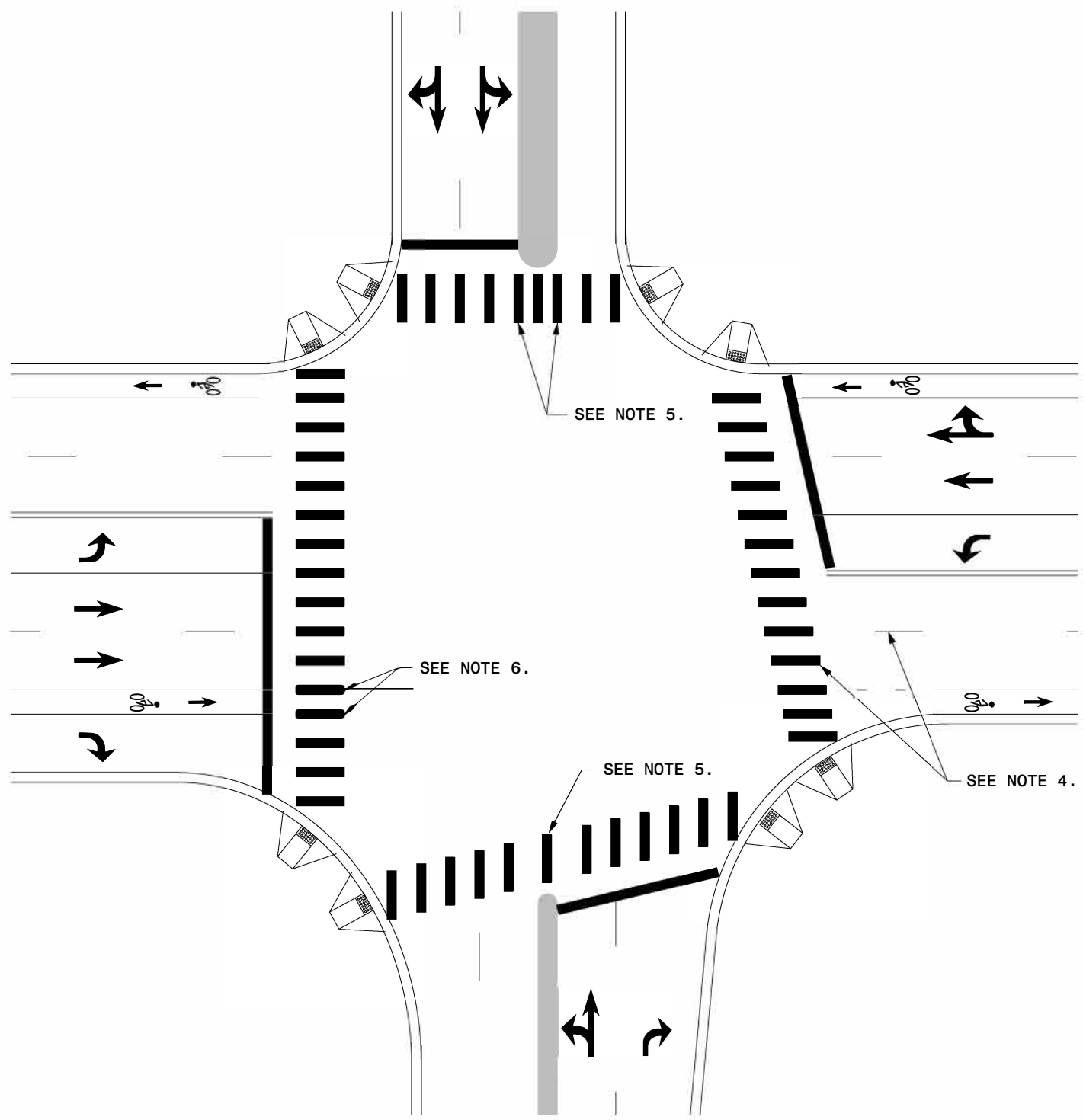
THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	4725000000-E					4775000000-E		4815000000-E		4825000000-E	4840000000-N	4845000000-N		8550000000	4905100000-N		
							LENGTH	WIDTH	THERMO	THERMO	THERMO STR	THERMO	THERMO	6" YELLOW	6" WHITE	6"	6"	12" WHITE	PAINT MSG	PAINT	PAINT	6" LINE	NON-CAST
									RT ARROW 90 M	MERGE ARROW 90 M	& LT ARROW 90 M	LT ARROW 90 M	ELONGATED ARROW 90 M	COLD APPLIED PLASTIC, TYPE III	COLD APPLIED PLASTIC, TYPE III	YELLOW PAINT	WHITE PAINT	PAINT	ONLY	RT ARROW	MERGE ARROW	REMOVAL	IRON SNOWPLOWA BLE PAVEMENT MARKER
MI	FT	EA	EA	EA	EA	EA	LF	LF	LF	LF	LF	EA	EA	EA	LF	EA							
50807	Durham	1	I-885 N / N DURHAM FREEWAY	PVMT JT JUST S OF RMP-2324 TO CONCRETE PAVEMENT JT	1	2	1.975	36-75	4	11					10,083	15,345	3,840	8	4	11		426	
50807	Durham	2	I-885 S / S DURHAM FREEWAY	CONCRETE PAVEMENT JT TO PVMT JT S OF RMP-2325	1	2	1.975	36-75		3					10,470	14,425	2,802			3		313	
50807	Durham	3	RMP-2445 OI	TW ALEXANDER DR. DURHAM FWY S EXIT 7	2	1	0.224	42	3		4	3										43	
50807	Durham	4	RMP-2446 OI	TW ALEXANDER DR DURHAM FWY S ON RAMP	2	1	0.277	24															
50807	Durham	5	RMP-2449 OI	E CORNWALLIS RD DURHAM FWY S EXIT 6	2	1	0.311	24	3			3										24	
50807	Durham	6	RMP-2450 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	0.161	24					1									2	
50807	Durham	7	RMP-2451 OI	E CORNWALLIS RD DURHAM FWY S ON RAMP	2	1	0.085	20														2	
50807	Durham	8	RMP-2325 OI	I 40 E DURHAM FWY RAMP	4	1	0.843	36		4				380	475	2,765	3,230	86		4	855	24	
50807	Durham	9	RMP-2324 OI	I 40 E DURHAM FWY EXIT 279 B	3	2	0.712	40							2,255	3,032	235					48	
50807	Durham	10	RMP-2454 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	0.04	28														6	
50807	Durham	11	RMP-2453 OI	E CORNWALLIS RD DURHAM FWY N EXIT 6	2	1	0.262	20															
50807	Durham	12	RMP-2452 OI	E CORNWALLIS RD DURHAM FWY N ON RAMP	2	1	0.302	22					1										
50807	Durham	13	RMP-2447 OI	TW ALEXANDER DR DURHAM FWY N EXIT 7	2	1	0.27	45	3		3	3										44	
50807	Durham	14	RMP-2448 OI	TW ALEXANDER DR DURHAM FWY N ON RAMP	2	1	0.184	22															
TOTAL FOR PROJ NO. 50807							7.621		13	18	7	9	2	380	475	25,573	36,032	6,963	8	4	18	855	932
									49					855		61,605		22					
GRAND TOTAL							7.621		13	18	7	9	2	380	475	25,573	36,032	6,963	8	4	18	855	932
									49					855		61,605		22					

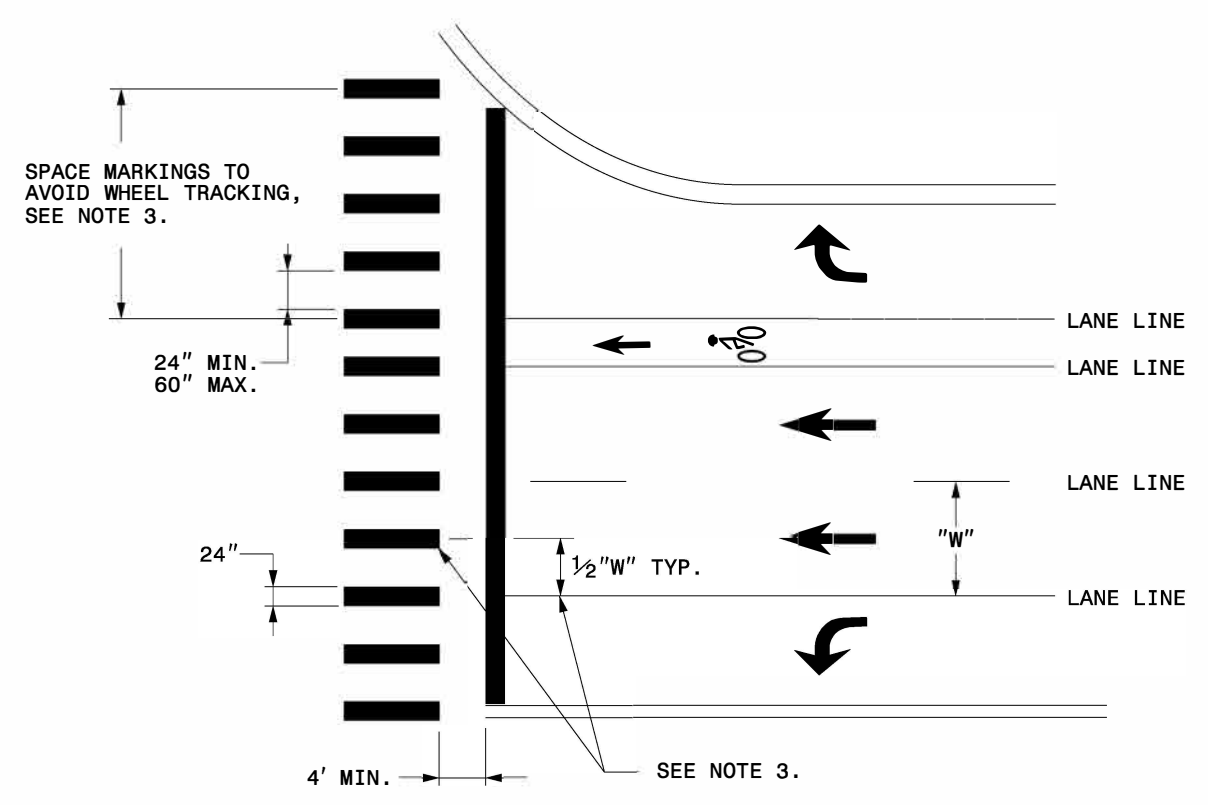
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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-18

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
HI-VISIBILITY CROSSWALKS
NO-TRACK MARKING GUIDANCE



CROSSWALK INTERSECTION DETAIL



CROSSWALK MARKING DETAIL

GENERAL NOTES:

- 1- THE GUIDANCE IN THIS DETAIL IS TO BE USED WHEN NO-TRACK SPACING OF HI-VISIBILITY MARKINGS IS REQUESTED.
- 2- USE THE GUIDANCE SHOWN ON THE ABOVE DETAILS IN CONJUNCTION WITH PAVEMENT MARKING GUIDANCE SHOWN ON ROADWAY STANDARD DRAWINGS 1205.01 AND 1205.07.
- 3- PLACE MARKINGS TO AVOID WHEELPATH OF VEHICLES. MARKINGS TYPICALLY WILL BE LOCATED CENTERED AT THE LANE LINES AND EDGE LINES WITH ONE ADDITIONAL MARKING CENTERED IN THE MIDDLE OF THE LANE. AT WIDE LANE WIDTHS DUE TO TAPERS AND LARGE RADII, LOCATE MARKINGS AT BEST SPACING TO AVOID WHEEL TRACKING. THE SPACE BETWEEN MARKINGS SHALL NOT BE LESS THAN 24 INCHES OR GREATER THAN 60 INCHES.
- 4- WHERE THE CROSSWALK IS SKEWED TO THE LANE LINES, THE MARKINGS SHOULD BE PARALLEL TO THE LANE LINES.
- 5- PLACE MARKINGS ON BOTH EDGES OF THE NOSE OF A MEDIAN. FOR NARROW MEDIANS LESS THAN 4 FEET, A SINGLE MARKING MAY BE USED. FOR WIDE MEDIANS, INSTALL ADDITIONAL MARKINGS IN THE MEDIAN AREA. THE SPACE BETWEEN THE MARKINGS SHALL NOT TO BE LESS THAN 24 INCHES OR GREATER THAN 60 INCHES.
- 6- LOCATE MARKINGS CENTERED ON BICYCLE LANE LINES. MARKINGS SHALL NOT BE LOCATED IN THE CENTER OF THE BICYCLE PATH.

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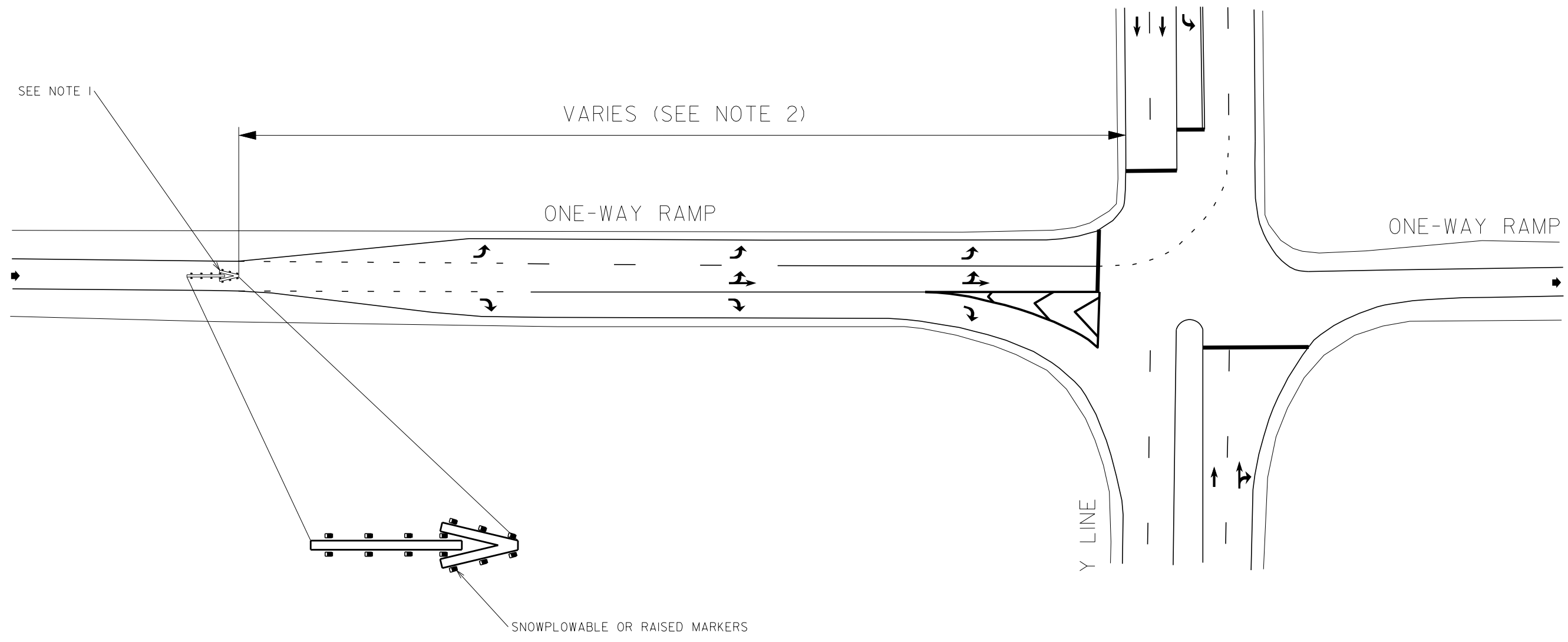
ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
HI-VISIBILITY CROSSWALKS
NO-TRACK MARKING GUIDANCE

SHEET 1 OF 1

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DEPT. OF TRANSPORTATION
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RALEIGH, N.C.

8-18
ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

ASPHALT TREATMENT



- NOTES:
- 1) REFER TO THE ROADWAY STANDARD DRAWING 1205.08, SHEET 1, FOR RAMP ARROW DIMENSIONS AND MARKER PLACEMENT.
 - 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
 - 3) MARKING SHALL BE THERMOPLASTIC MATERIAL.

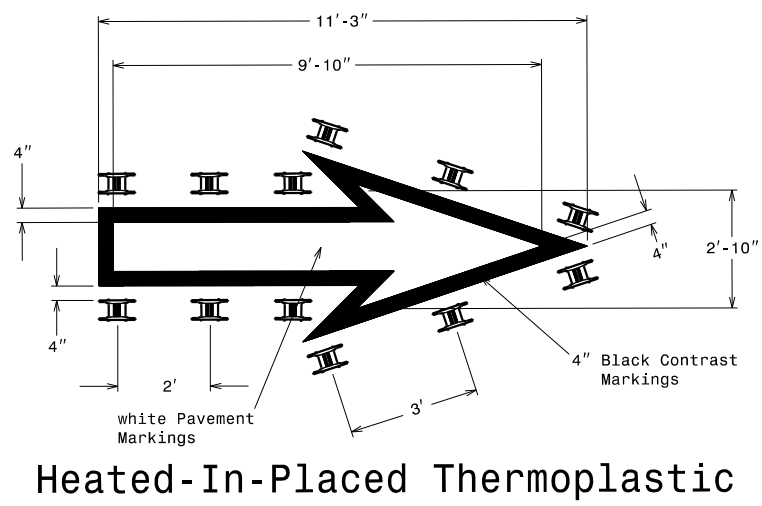
LEGEND

- ◆ DIRECTION OF TRAFFIC FLOW
- ◆ PAVEMENT MARKING SYMBOLS

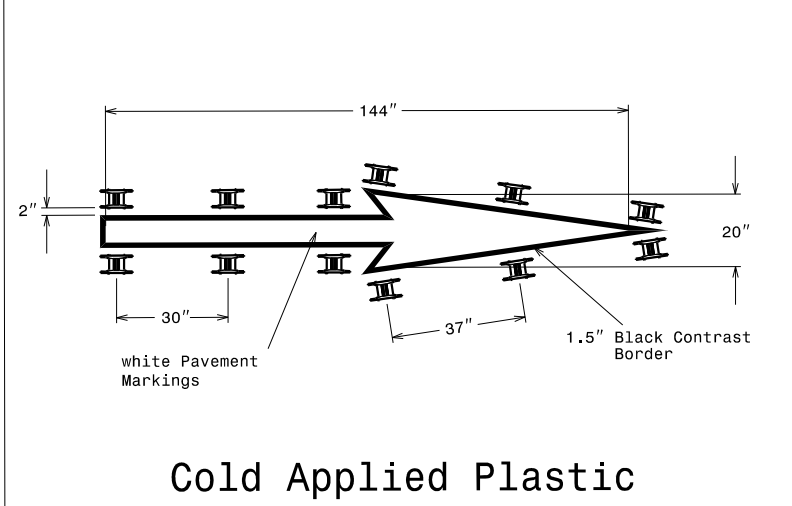
8-18
STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

8-18

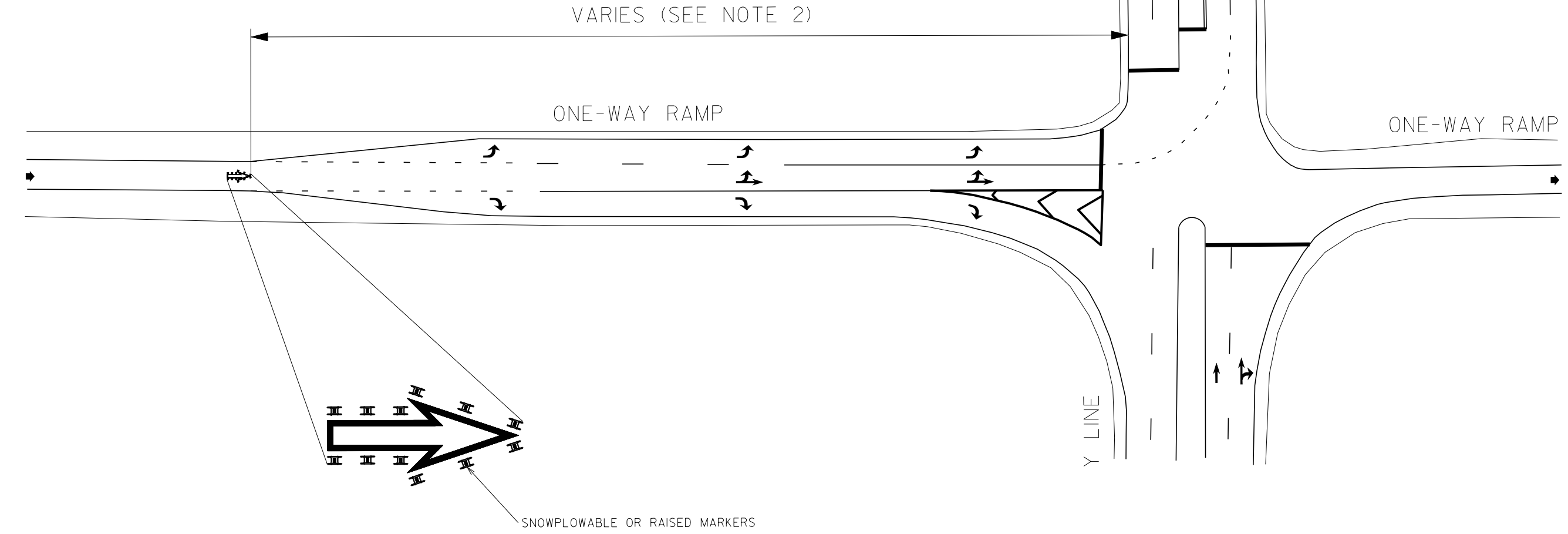


Heated-In-Placed Thermoplastic



Cold Applied Plastic

CONCRETE TREATMENT



- NOTES:
- 1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.
 - 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
 - 3) INSTALL MARKERS, SNOWPLOWABLE OR RAISED, IN ACCORDANCE TO THE DETAILS ON THIS SHEET.
 - 4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH WITH BLACK CONTRAST BORDER.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

8-18

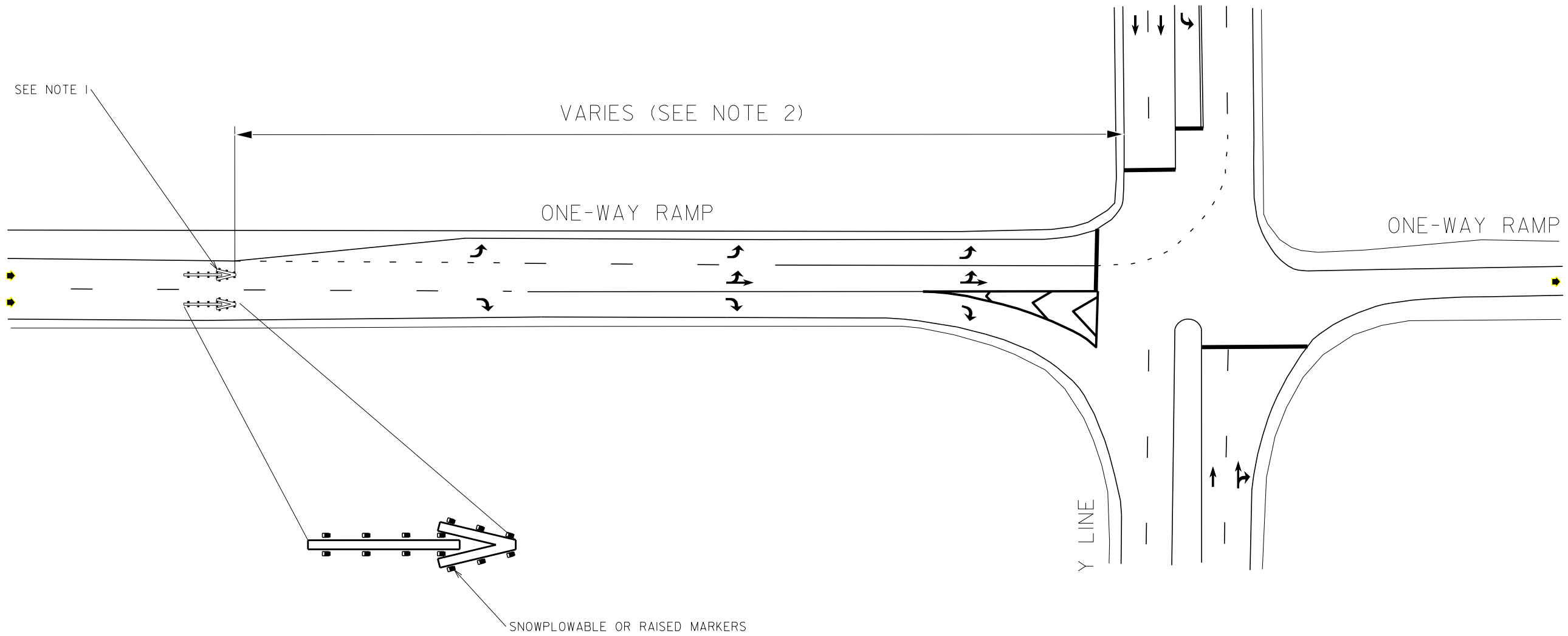
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-18

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 1 OF 2

ASPHALT TREATMENT



- NOTES:
- 1) REFER TO THE ROADWAY STANDARD DRAWING 1205.08, SHEET 1, FOR RAMP ARROW DIMENSIONS AND MARKER PLACEMENT.
 - 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
 - 3) MARKING SHALL BE THERMOPLASTIC MATERIAL.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

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RALEIGH, N.C.

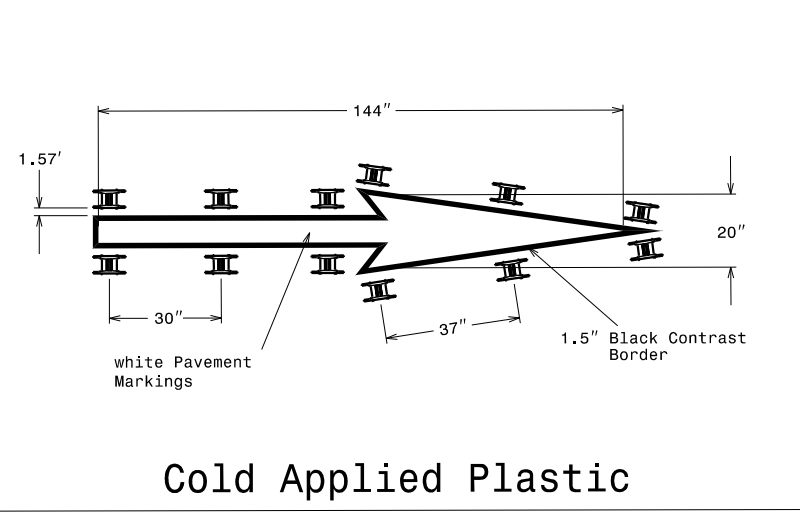
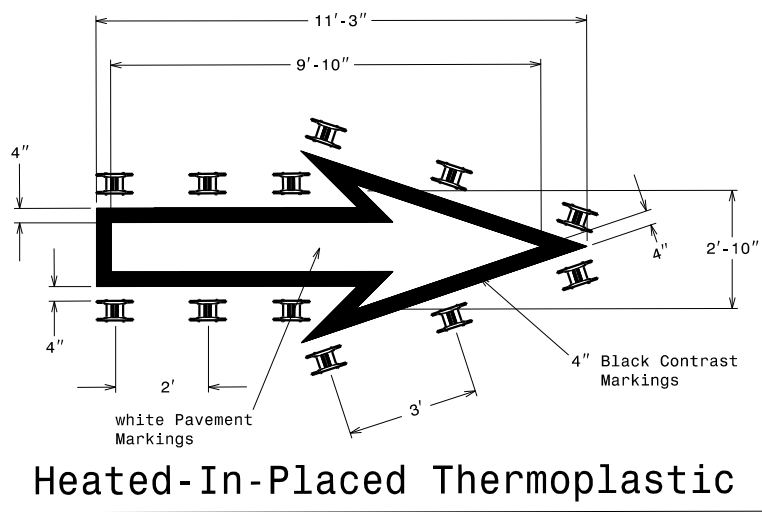
8-18

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

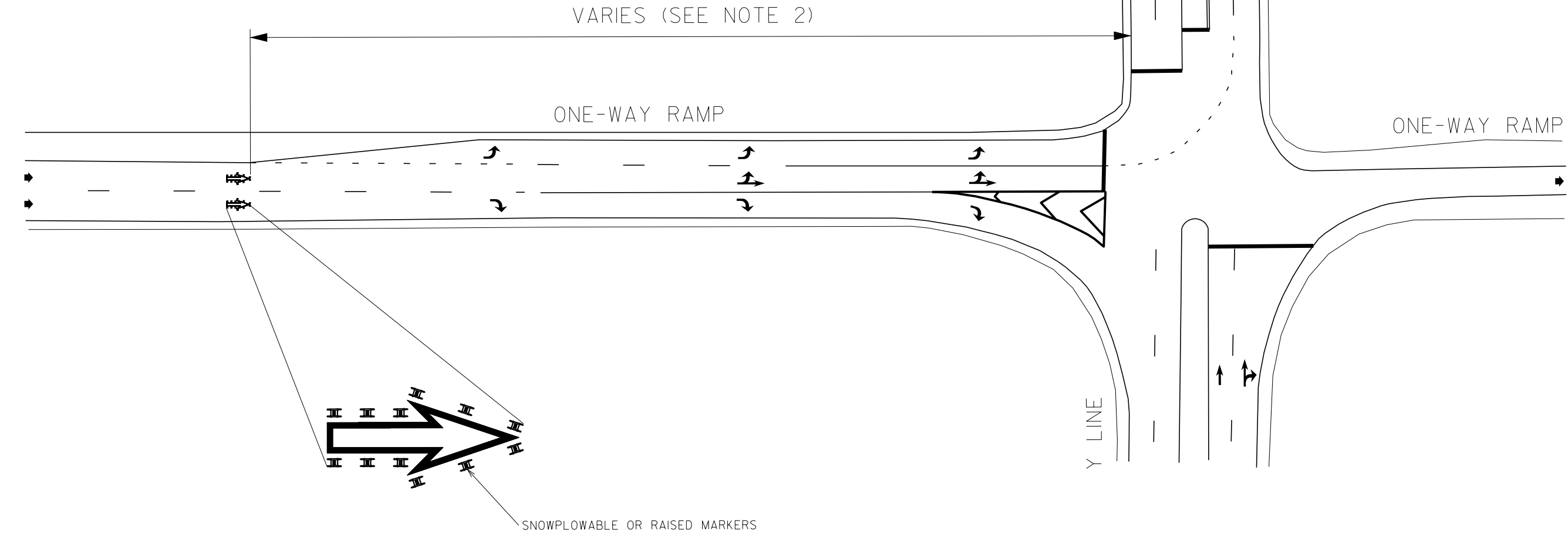
SHEET 1 OF 2

04-12-2016

8-18



CONCRETE TREATMENT



NOTES:

- 1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS, SNOWPLOWABLE OR RAISED, IN ACCORDANCE TO THE DETAILS ON THIS SHEET.
- 4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH BLACK CONTRAST BORDER.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

8-18

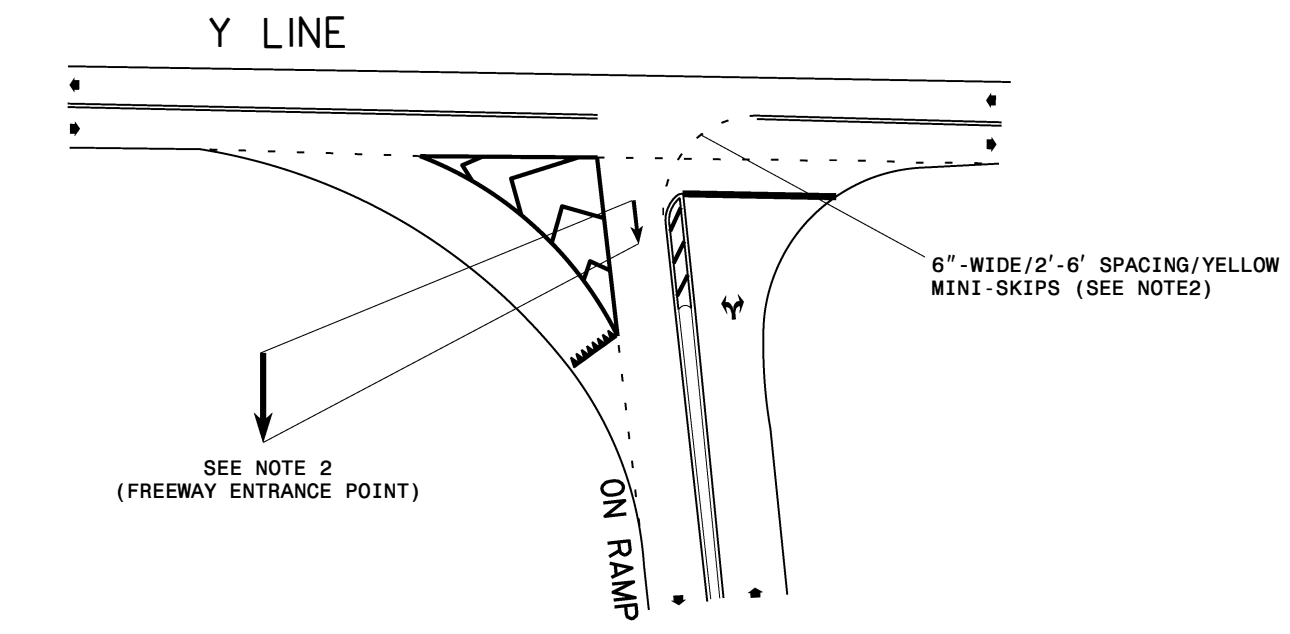
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RALEIGH, N.C.

10-17

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
SIDE-BY-SIDE/ADJACENT ON/OFF RAMP
PAVEMENT MARKING LANE TREATMENT

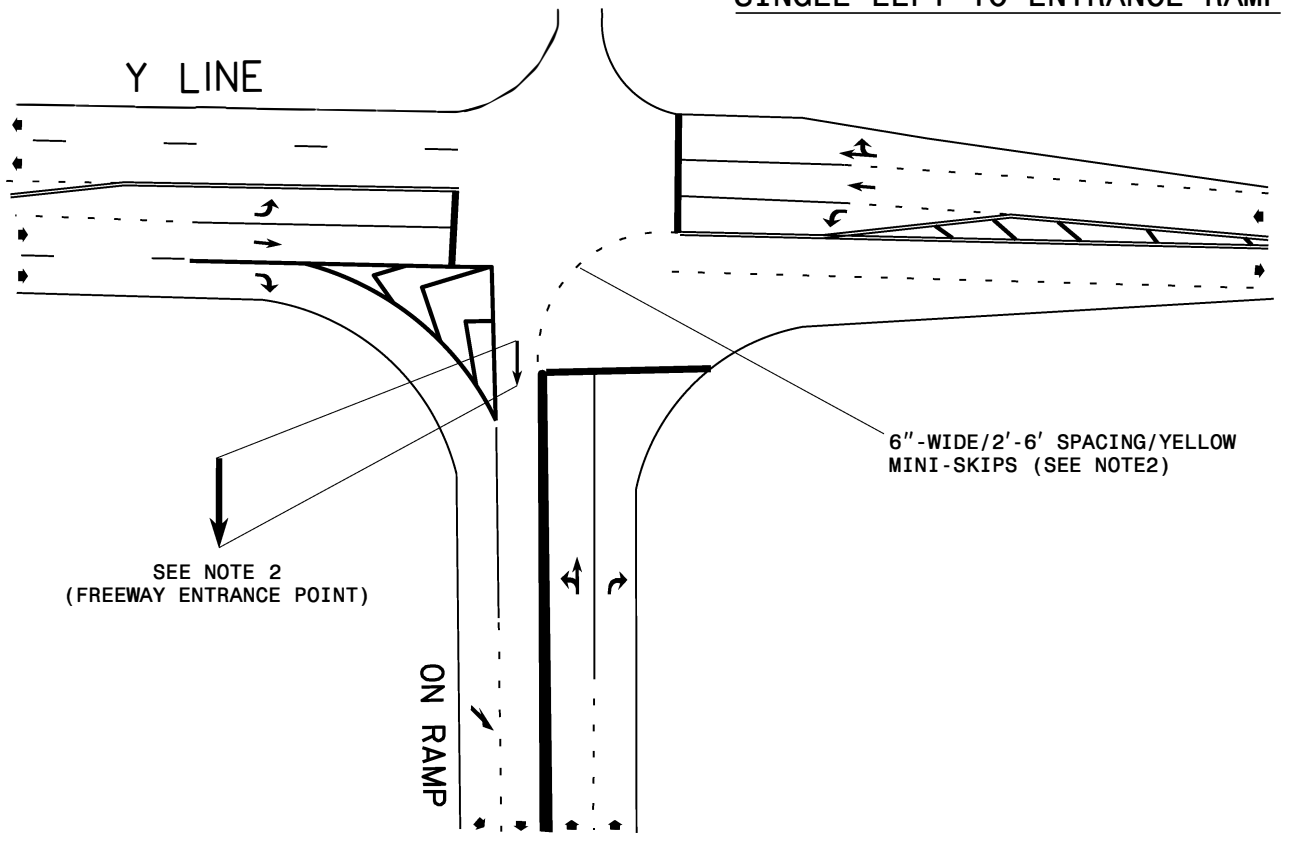
SHEET 1 OF 1

TWO-LANE, TWO-WAY



SEE NOTE 2
(FREEWAY ENTRANCE POINT)

SINGLE LEFT TO ENTRANCE RAMP

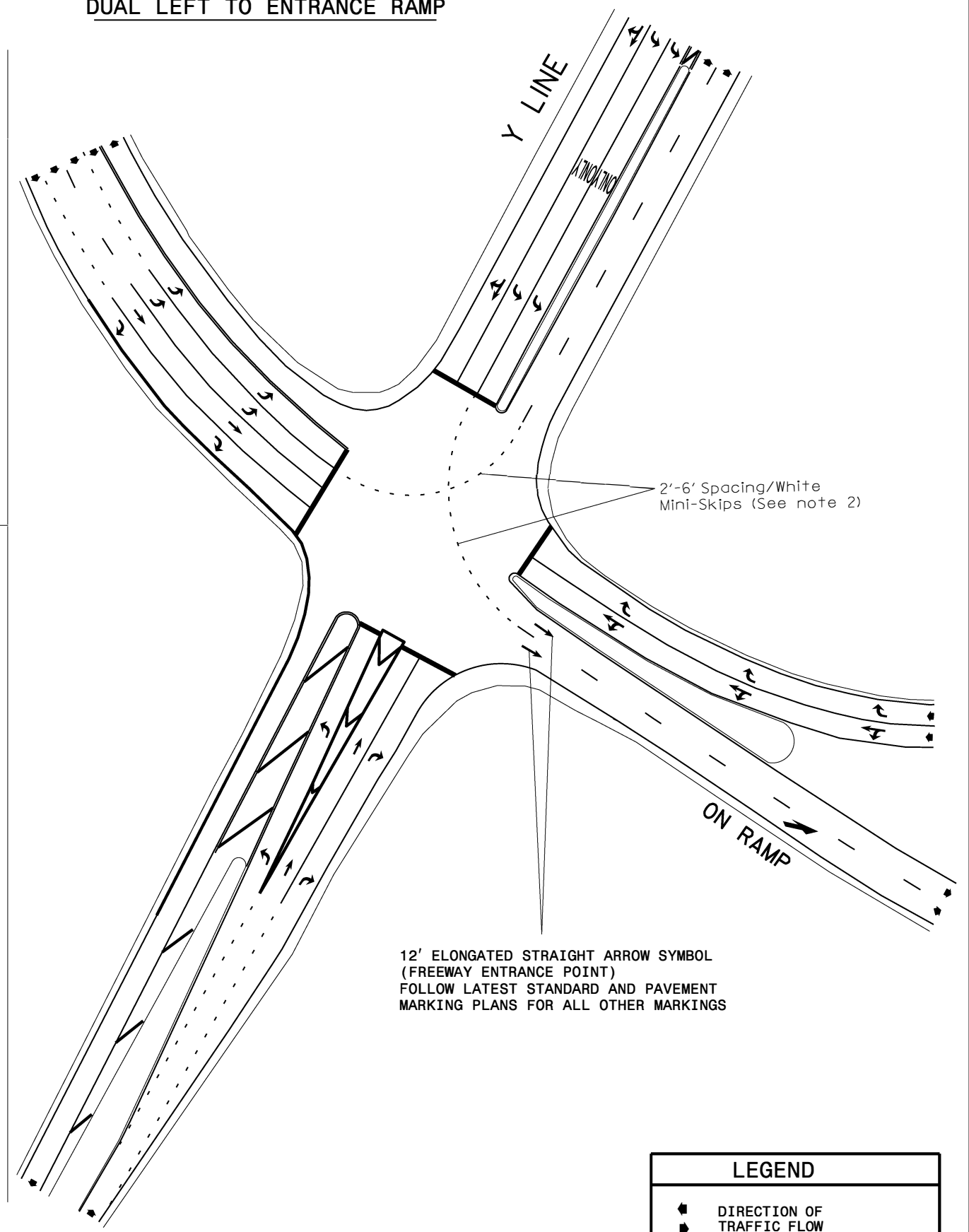


SEE NOTE 2
(FREEWAY ENTRANCE POINT)

NOTES:

- 1) REFER TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS AND THE PAVEMENT MARKING PLANS FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.
- 2) PROPOSED MINI-SKIPS AND ELONGATED STRAIGHT ARROW SYMBOL MATERIALS SHALL BE PER THE PAVEMENT MARKING PLAN OR AS DIRECTED BY THE ENGINEER. ELONGATED STRAIGHT ARROW SHALL BE APPROXIMATELY 12' LONG AND SHALL BE PAID AS A SYMBOL.

DUAL LEFT TO ENTRANCE RAMP



2'-6' Spacing/White
Mini-Skips (See note 2)

12' ELONGATED STRAIGHT ARROW SYMBOL
(FREEWAY ENTRANCE POINT)
FOLLOW LATEST STANDARD AND PAVEMENT
MARKING PLANS FOR ALL OTHER MARKINGS

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

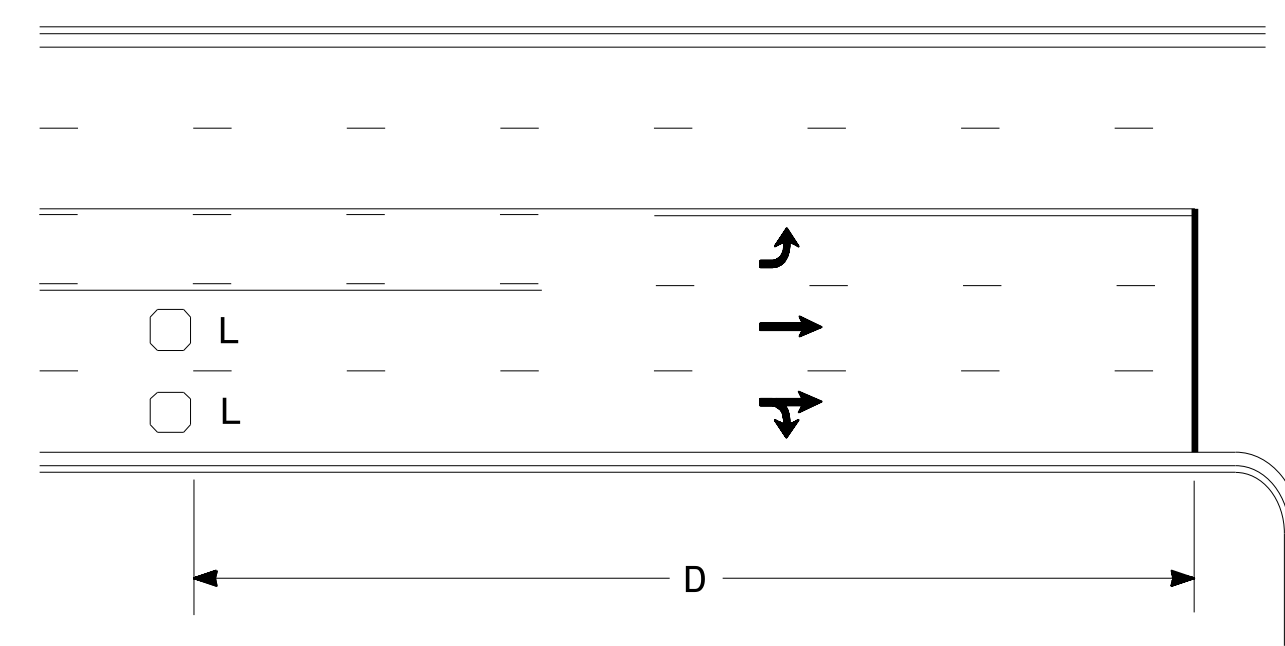
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RALEIGH, N.C.

10-17

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
SIDE-BY-SIDE/ADJACENT ON/OFF RAMP
PAVEMENT MARKING LANE TREATMENT

SHEET 1 OF 1

High Speed Detection (≥40 mph)

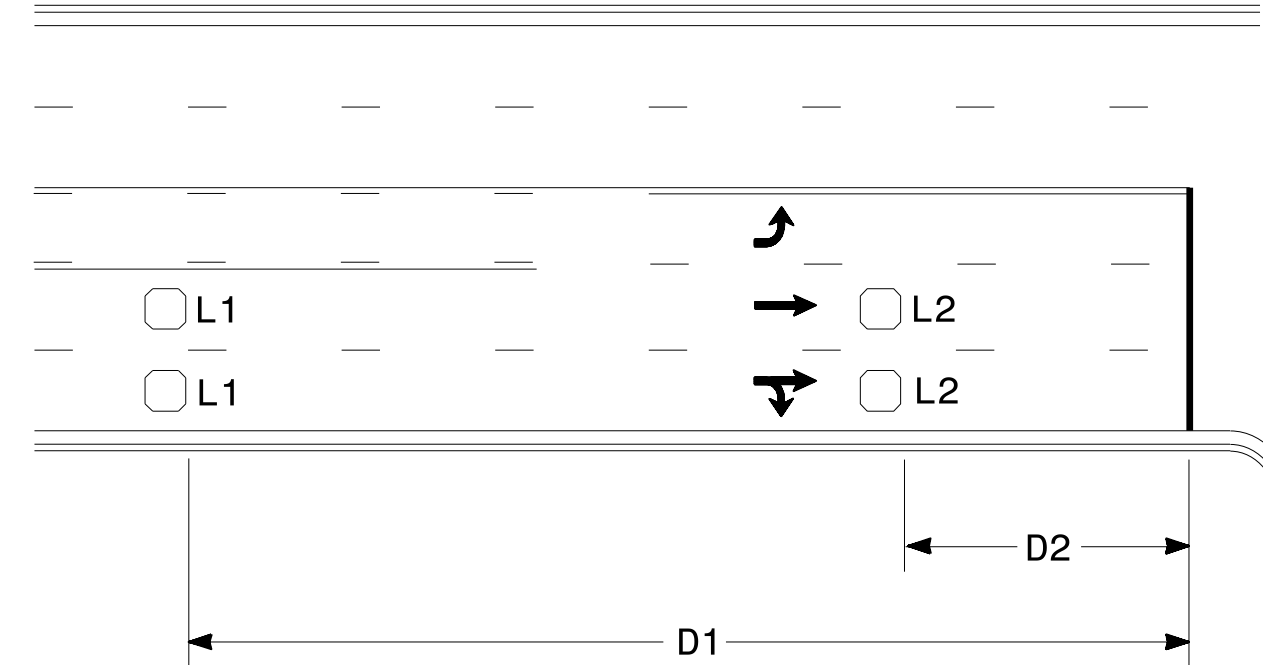


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

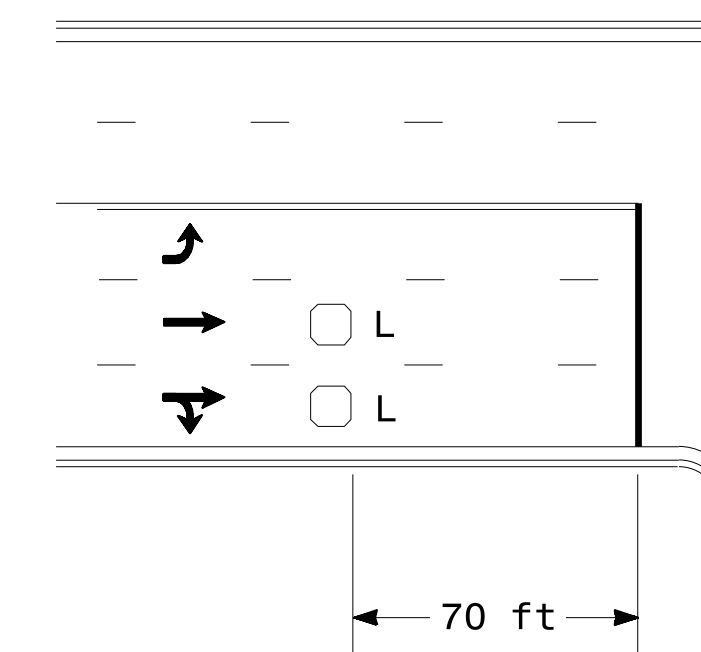


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

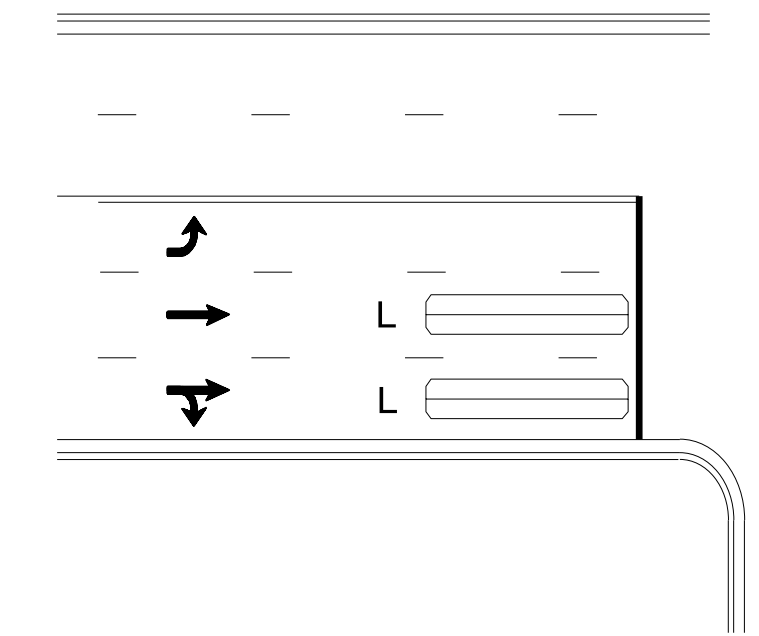
"Stretch" Operation

Low Speed Detection (≤35 mph)



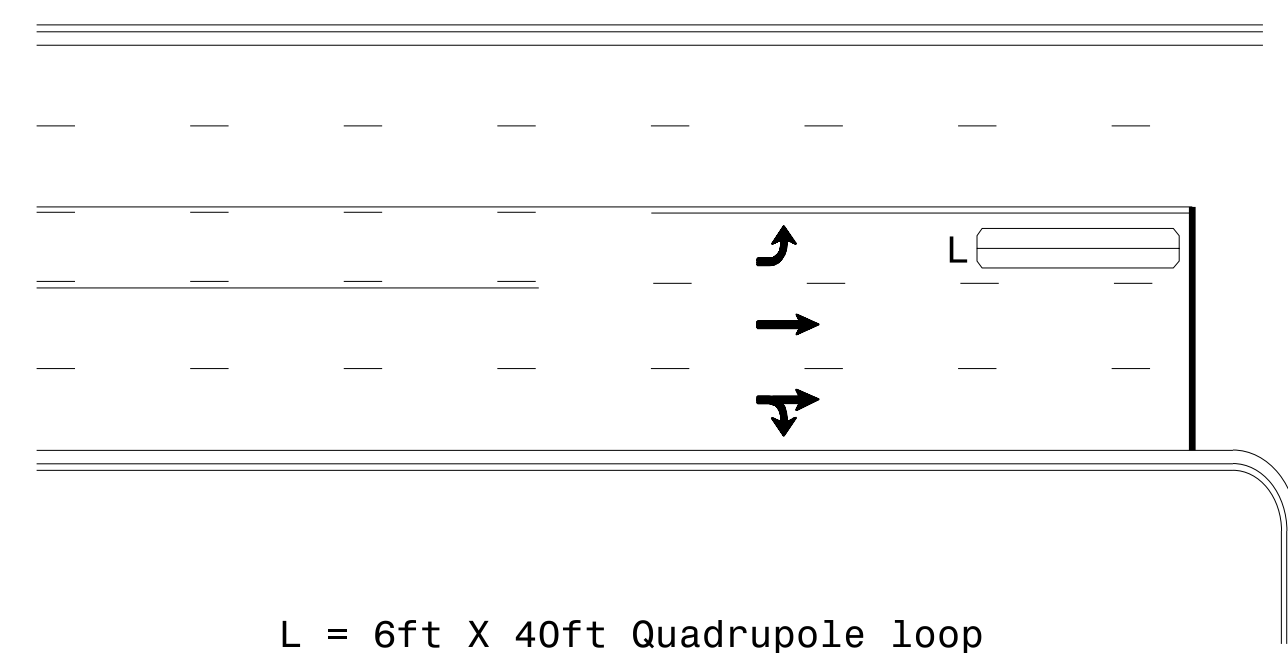
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

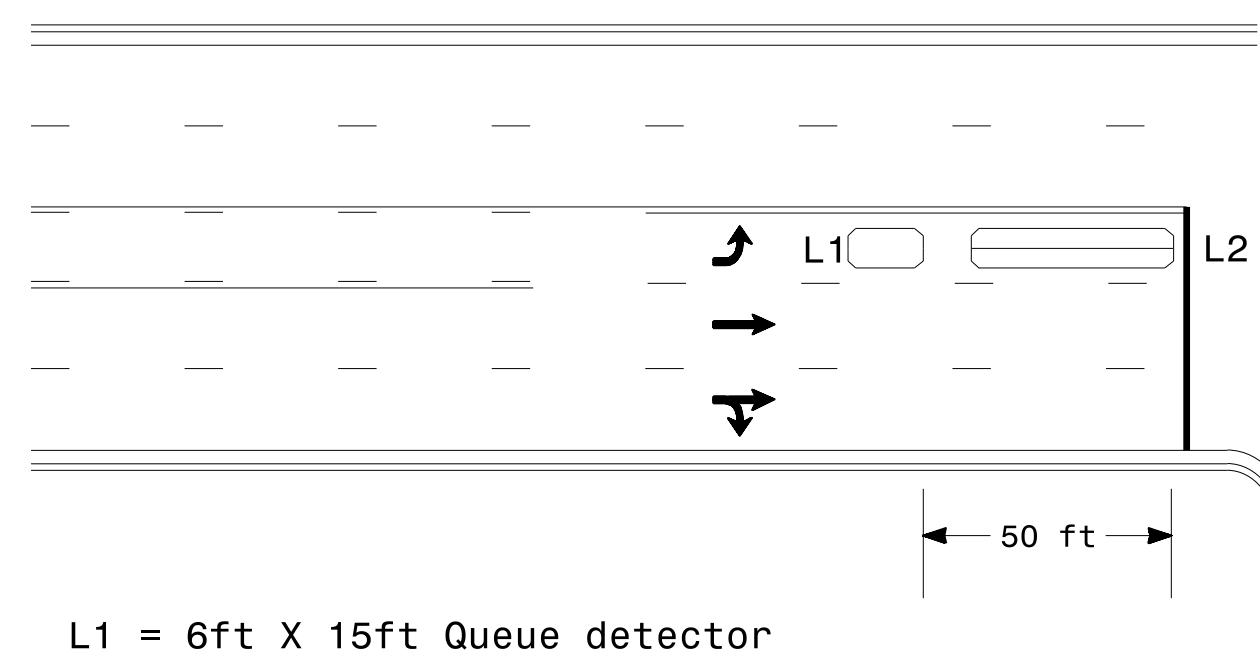
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

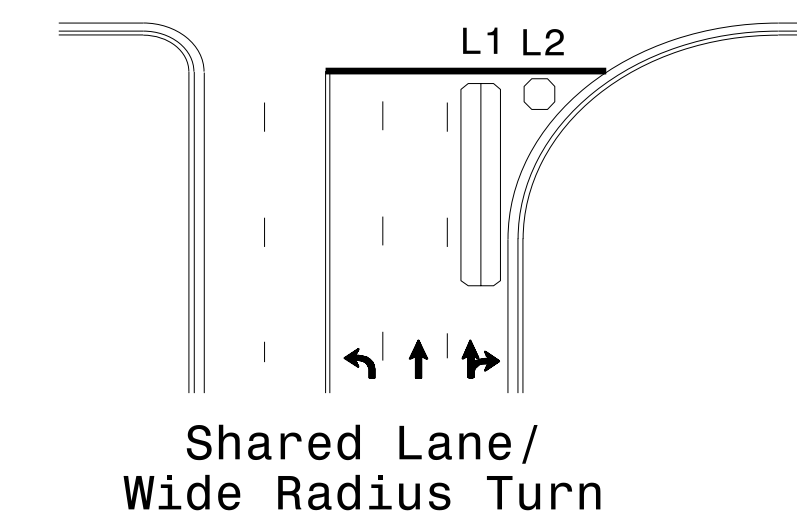
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

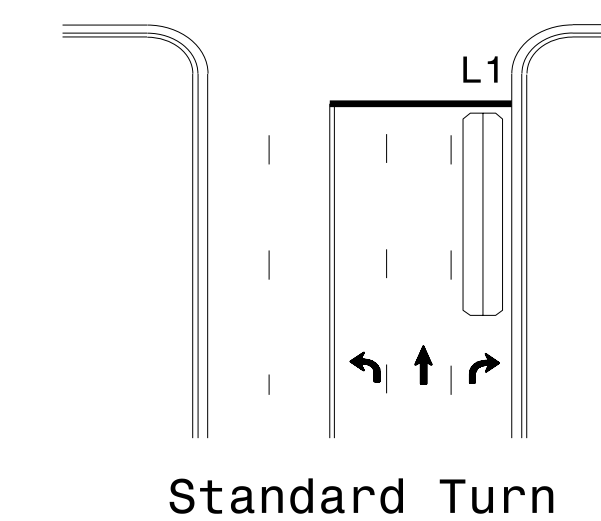
Queue Loop Detection

Right Turn Lane Detection

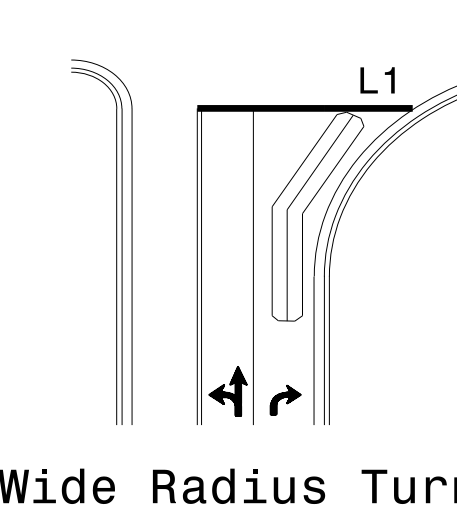


Shared Lane/
Wide Radius Turn

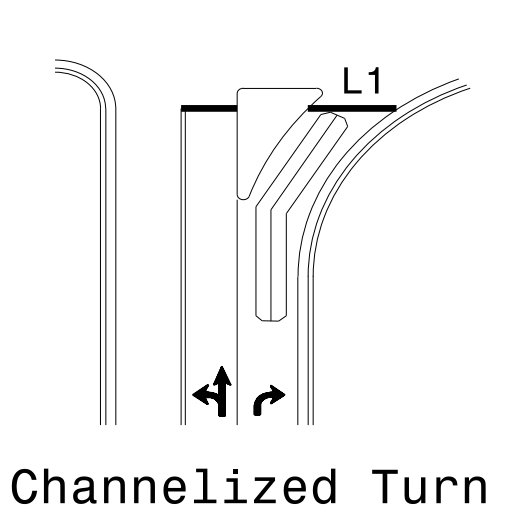
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

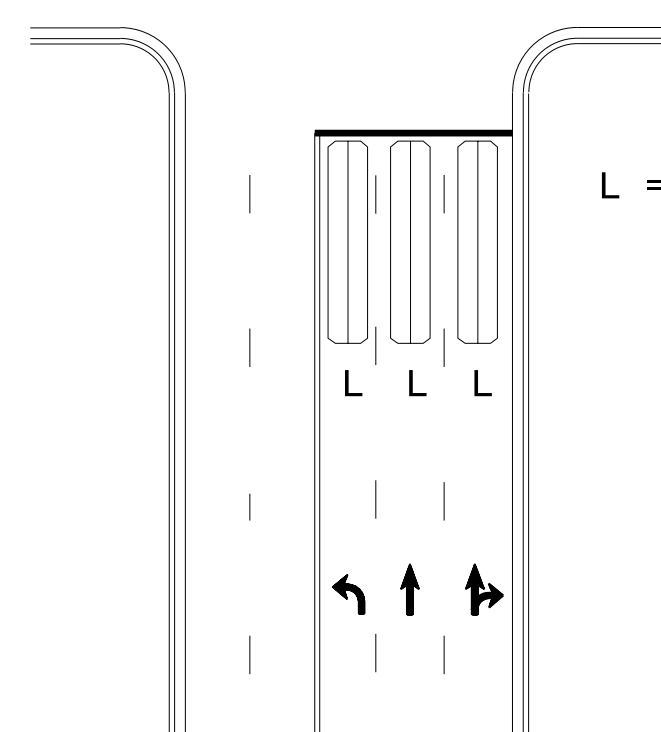


Wide Radius Turn



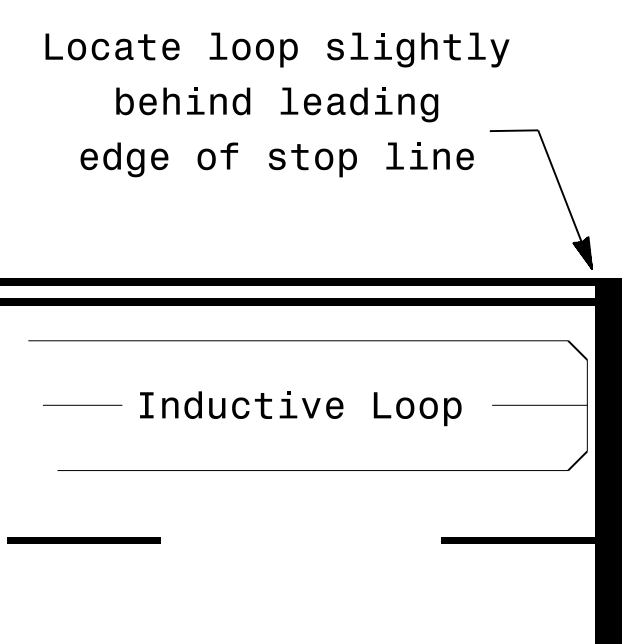
Channelized Turn

Side Street Detection



L = 6ft X 40ft
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 under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

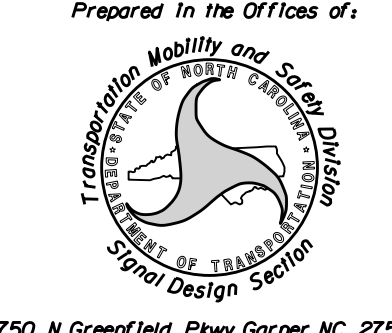
Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

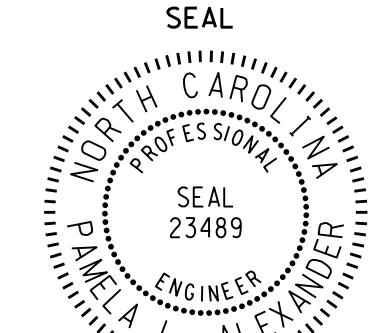
Quadrupole loops: Use 2-4-2 turns

6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns



Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE



SCALE: N/A

DocuSigned by: P. Alexander 1/30/2015 11:47:56 AM
SIG. INVENTORY NO. DATE