

MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

CONSTRUCTION PLAN FOR BITUMINOUS OVERLAY

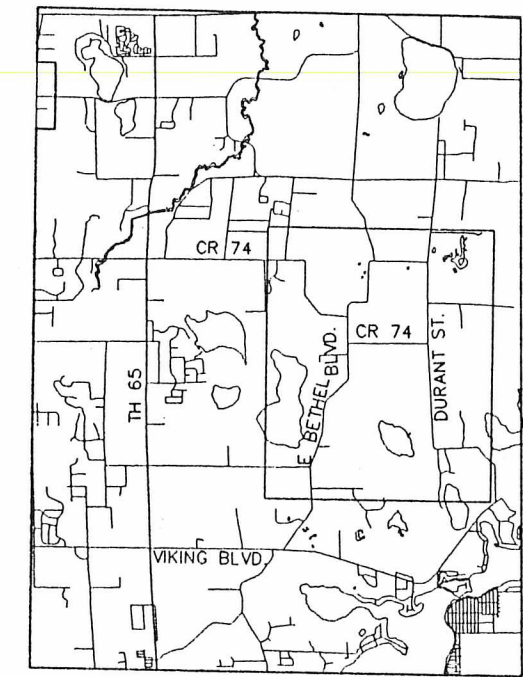
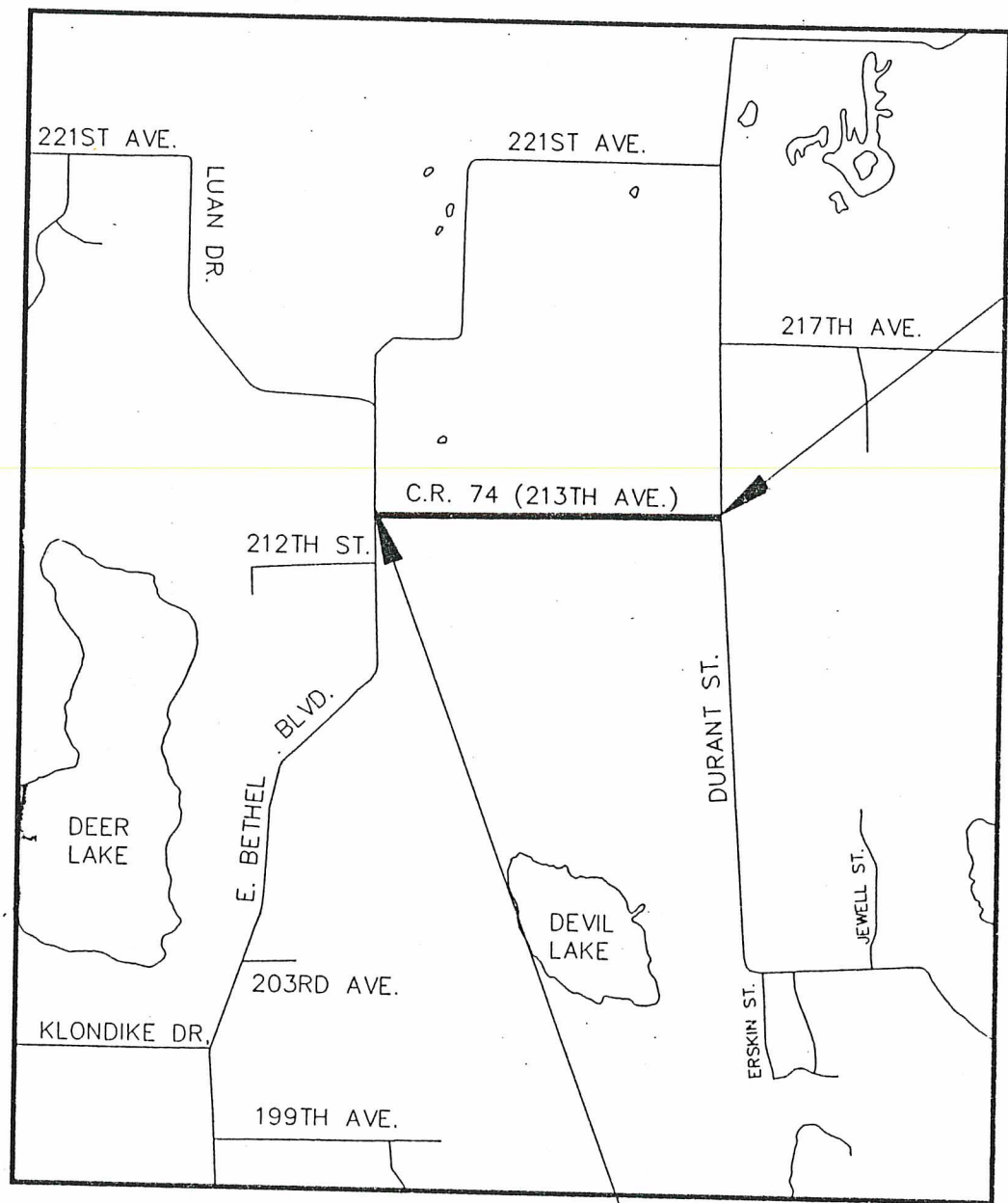
LOCATED ON CR 74 IN THE CITY OF EAST BETHEL BETWEEN EAST BETHEL BLVD. AND DURANT STREET

STATE PROJ. NO. 02-600-09 STATE PROJ. NO. _____

MN PROJ. NO. _____

GROSS LENGTH 5294.00 FEET 1.003 MILES	GROSS LENGTH _____ FEET _____ MILES
BRIDGES-LENGTH _____ FEET _____ MILES	BRIDGES-LENGTH _____ FEET _____ MILES
EXCEPTIONS-LENGTH _____ FEET _____ MILES	EXCEPTIONS-LENGTH _____ FEET _____ MILES
NET LENGTH 5294.00 FEET 1.003 MILES	NET LENGTH _____ FEET _____ MILES

1/2 SIZE
ORIGINAL
5-4-97



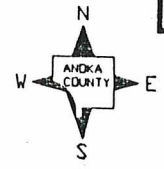
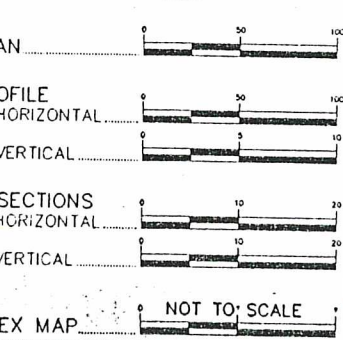
PLAN SYMBOLS

- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- SLOPE EASEMENT
- PRESENT RIGHT OF WAY
- PROPERTY LINE
- CORPORATE OR CITY LIMITS
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY
- RIVER OR CREEK
- DRAINAGE DITCH
- CULVERT
- DROP INLET
- GAUGE RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- WOOD FENCE
- STONE WALL OR FENCE
- HEDGE
- LOWLAND
- TIMBER ORCHARD
- SPRUSH NURSERY
- CATTLE GUARD
- OVERPASS (Highway Over)
- UNDERPASS (Highway Under)
- BRIDGE
- BUILDING (One Story Frame)
- F-FRAME C-CONCRETE
- S-SHED T-TILE
- B-BRICK ST-STUCCO
- RAILROAD CROSSING BELL
- RAILROAD CROSSING GATE
- MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- CAST IRON MONUMENT
- IRON PILE
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY

UTILITY SYMBOLS

- POWER POLE LINE
- TELEPHONE OR TELEGRAPH POLE LINE
- JOINT TELEPHONE & POWER ON POWER POLES
- ON TELEPHONE POLES
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (Cable Terminal)
- GAS MAIN
- WATERMAIN
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEPHONE CABLE
- BURIED ELECTRIC CABLE
- AERIAL TELEPHONE CABLE
- SEWER (Sanitary or Storm)
- SEWER MANHOLE

SCALES



MINN. PROJ. NO. _____
MINN. PROJ. NO. STP PAVE (010) _____

GOVERNING SPECIFICATIONS

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS AMENDED BY THE JANUARY 2, 1991 SUPPLEMENTAL SPECIFICATIONS SHALL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATED QUANTITIES
3	TABULATED QUANTITIES
4	TYPICAL SECTIONS
5	STANDARD DETAILS
6	TRAFFIC CONTROL

THIS PLAN CONTAINS 6 SHEETS

DESIGN DESIGNATION

£18₂₀ NA
 R VALUE NA
 ADT (1993)= 895
 Proj. ADT (2013)= 1522
 Proj. HCA DT (2013)= 114
 Soil Factor 50%
 7 TON DESIGN
 Shoulder Width 3'

Functional Classification
 No. of Traffic Lanes No. of Parking Lanes
 Design Speed 55 MPH
 Based on Stopping Sight Distance
 Height of eye 3.5 Height of object 0.5
 Design Speed not achieved at: NA
 STA. _____ TO STA. _____ MPH
 STA. _____ TO STA. _____ MPH
 STA. _____ TO STA. _____ MPH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 8/27/93 REG. NO. 20235 ENGR. *Joseph M. Tricker*
ANOKA COUNTY DESIGN ENGINEER

DESIGN SQUAD J. TRICK

Recommended for Approval *Michael R. Kelly* 8/27, 1993
 Recommended for Approval *John Stenlund* 8/27, 1993
 Recommended for Approval *John Stenlund* 9/17, 1993
 Approved 8/30, 1993 *John Stenlund*
 Approved 9/10, 1993 *John Stenlund*
 Recommended for Approval *Mary Jo Swearingen* 11/10, 1993
 Recommended for Approval *Mary Jo Swearingen* 4-4, 1994
 Approved 4/5, 1994 *John Stenlund*

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____
DIVISION ADMINISTRATOR DATE

STATEMENT OF ESTIMATED QUANTITIES

CHART ID	ITEM NO.	ITEM	UNIT	TOTAL QUANTITIES		S.P. 02-600-09		NON-PARTICIPATING	
				ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL
② ③ ⑤	A	0015.601	COMPUTER EQUIPMENT	LUMP SUM	0.03		0.03		
		2105.523	COMMON BORROW (LV)	CU YD	3		3		
		2232.501	MILL BITUMINOUS SURFACE	SQ YD	551		551		
		2340.508	TYPE 41 WEARING COURSE MIXTURE	TON	1195		1195		
		2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	724		724		
④ ①	B	0412.602	MAILBOX SUPPORT	EACH	4		4		
		0563.601	TRAFFIC CONTROL	LUMP SUM	0.03		0.03		
	D	2575.505	SODDING TYPE EROSION	SQ YD	190		190		
	D	2575.532	COMMERCIAL FERTILIZER ANALYSIS 10-10-10	LB	20		20		
		2580.501	TEMPORARY LANE MARKING	ROAD STA	53		53		

NOTES:

- ① ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING APPENDIX B DATED NOVEMBER 1992.
- ② INCLUDES MATERIAL NEEDED FOR APPROACH CORRECTIONS.
- ③ MILL TOUCHDOWN AREAS (20' LONG, FULL WIDTH) AT BEGIN AND END POINTS.
- ④ INCLUDES SALVAGING & INSTALLING OF EXISTING BOX AND F & I NEW SUPPORT.
- ⑤ INCLUDES 30 TONS FOR STREET APPROACHES AND ENTRANCES.

BASIS OF QUANTITIES

TYPE 41 WEAR COURSE:
110 LB/SY/INCH

BITUMINOUS MAT'L FOR TACK:
0.05 GAL/SY

COMMERCIAL FERTILIZER, ANALYSIS
10-10-10: 500 LBS/ACRE

BITUMINOUS MIXTURE DESIGNATION:
41 WE A50070Y

INDEX OF TABULATION CHARTS

CHART ID	SHEET NO.	DESCRIPTION
A	3	ENTRANCE APPROACH IMPROVEMENTS
B	3	MAILBOX SUPPORT
C	3	MISCELLANEOUS REMOVALS
D	3	TURF ESTABLISHMENT

THESE STANDARD PLATES, AS APPROVED BY THE FHWA SHALL APPLY

STANDARD PLATES

0005 A	SPECIFICATION REFERENCE TO STANDARD PLATES
8000 I	STANDARD BARRICADES
9102 D	TURF ESTABLISHMENT AREAS

ESTIMATED QUANTITIES

ENTRANCE APPROACH IMPROVEMENTS (A)														
STATION	LOC	ADDRESS	EXISTING CULVERT		REMOVE		FURNISH AND INSTALL							
			SIZE	TYPE	CULV. LIN.FT	APRON EACH	15" CULV LIN.FT	EXT.LT LIN.FT	EXT.RT LIN.FT	APRONS		EMBANKMENT		
										15'	18'	LEFT(CY)	RIGHT(CY)	
15+84	LT	3633												
18+45	LT	3633					0	0				0.0	0.0	
28+05	RT	3832					0	0				0.0	1.0	
31+90	RT	3832					0	0				0.0	0.0	
34+40	LT	3911					0	0				0.0	0.0	
39+77	LT	F. ENT					0	0				0.0	0.0	
42+89	RT	4044					0	0				1.0	0.0	
TOTALS							0	0	0	0	0	1.0	1.0	

① EARTHWORK SUMMARY:

COMMON BORROW(LV) = EMBANKMENT x 1.5 = (1.0+1.0) x 1.5 = 3 C.Y.

MISCELLANEOUS REMOVAL CHART (C)				
STATION	LOCATION	ITEM		REMARKS
		POWER POLE (EA)	SPLICE BOX (EA)	
48+46	30.0' RT	1		RELOCATE BY OTHERS
48+91	30.0' RT		1	
52+74	27.0' RT	1		
52+74	30.0' RT		1	
TOTALS		2	2	

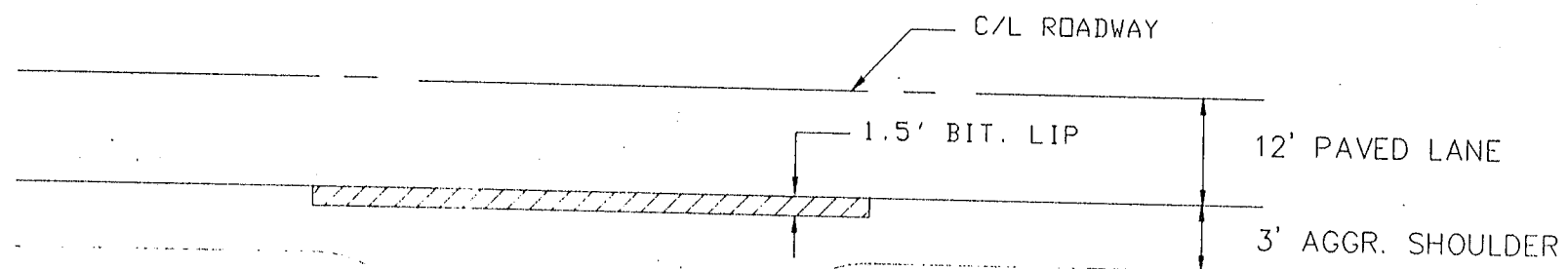
MAILBOX SUPPORT CHART (B)			
STATION	LOCATION	ADDRESS	RELOCATE
18+19	18.0' RT	3633	1
29+66	20.0' RT	3832	1
34+25	17.0' RT	3911	1
43+17	14.0' RT	4044	1
TOTALS			4

TURF ESTABLISHMENT (D)							
LOCATION	LOC	SEEDING	SEED MIX 700	SODDING TYPE EROSION CONTROL	MULCH MATERIAL TYPE 1	DISK ANCHORING	COMMERCIAL FERTILIZER ANALYSIS 10-10-10
		SQ YD	LB.	SQ. YD.	TON	SQ YD	LB.
18+45	LT			103			10.6
42+89	RT			87			9.0
TOTALS		0	0	190	0	0	19.6

TABULATED QUANTITIES

TYPICAL ENTRANCES

PAVED AND UNPAVED STREETS AND ENTRANCES

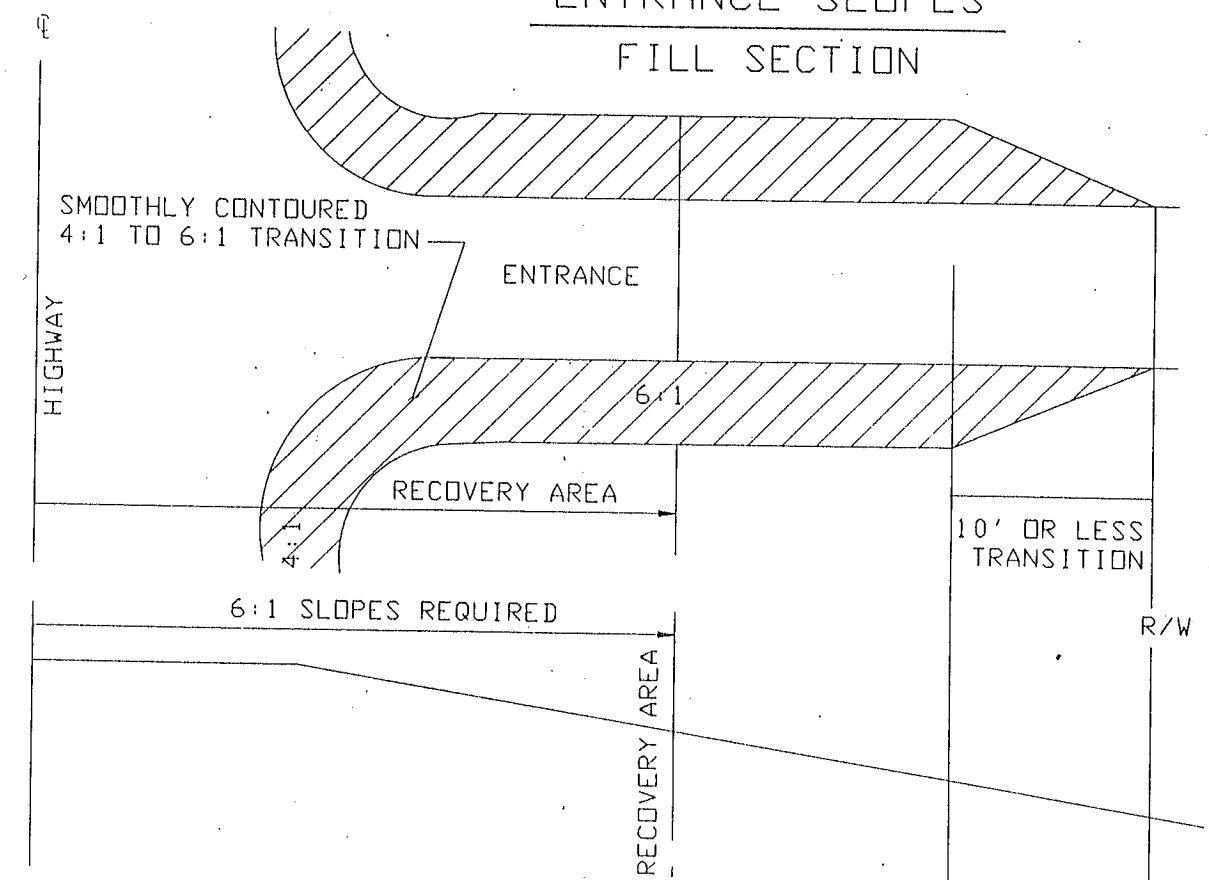


NOTE:
ON PAVED ENTRANCES
TACK PAVEMENT &
FEATHER BIT. TO
BLEND WITH EXISTING
DRIVEWAY.

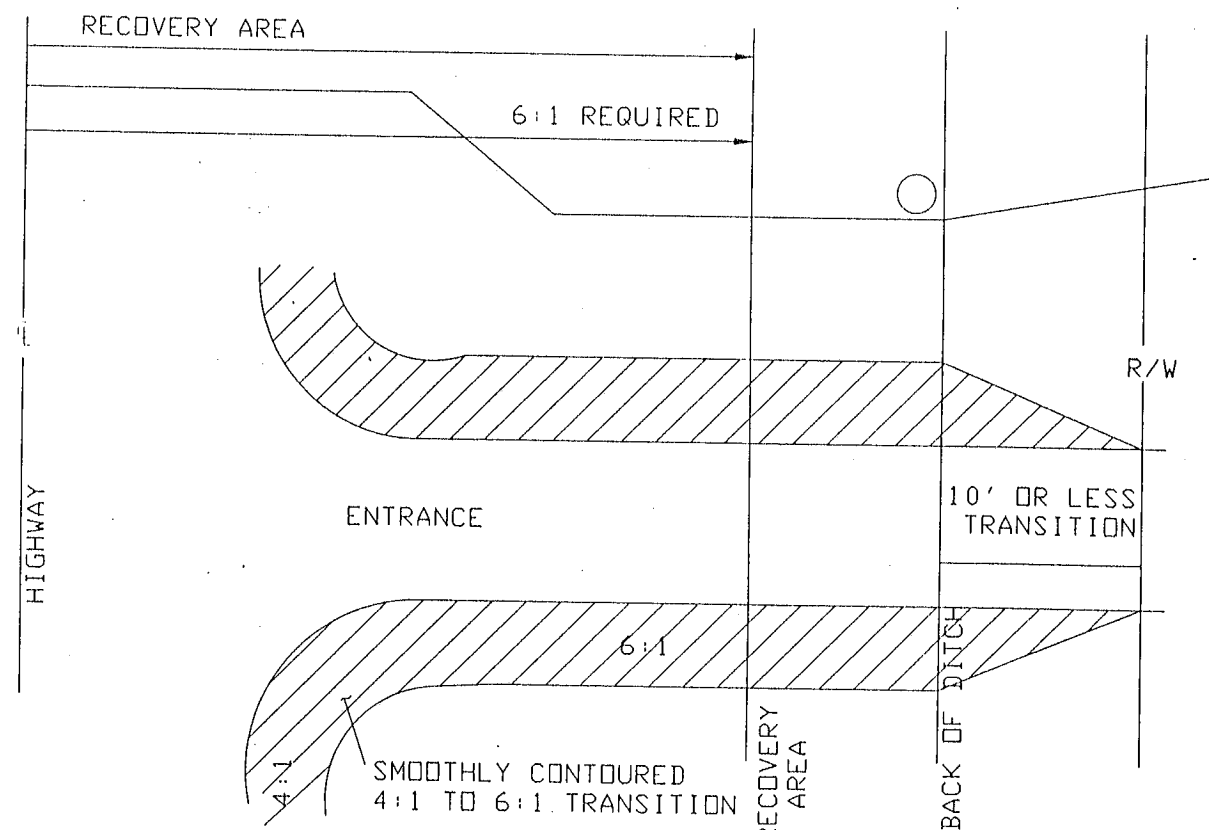
NOTE: NOT TO SCALE

ENTRANCE SLOPES

FILL SECTION

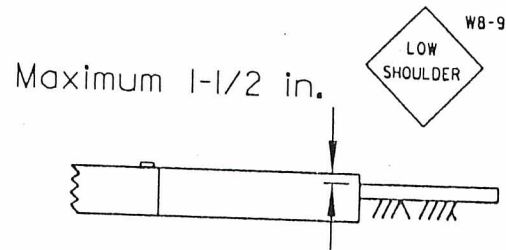


DITCH SECTION

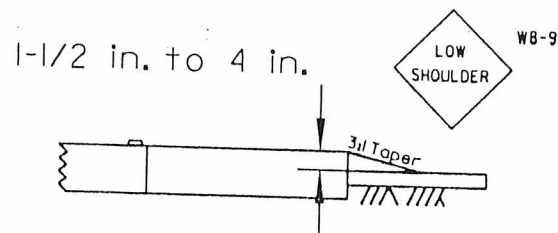


STANDARD DETAILS

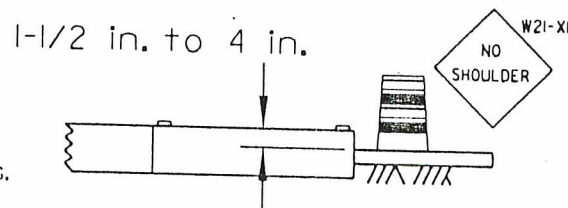
EDGE DROP OFF



EDGE DROP OFF - WITH TAPER

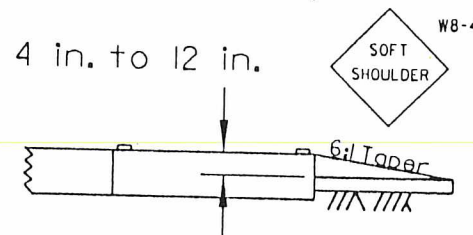


SHOULDER SHALL BE CLOSED WITH APPROPRIATE WARNING SIGNS AND CHANNELIZING DEVICES AT A MAXIMUM OF 100 FT. SPACING.



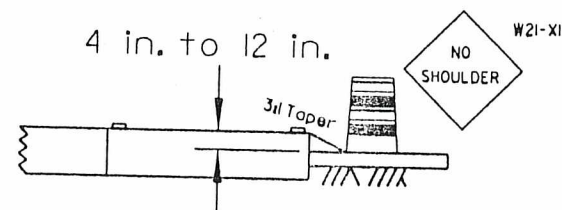
EDGE DROP-OFF WITH TAPER (SHOULDER - OPEN)

THIS CONDITION WILL NOT BE PERMITTED UNLESS THE 6:1 SLOPE IS COMPACTED SO THAT A VEHICLE MAY SAFELY DRIVE ONTO IT WITHOUT LOSING CONTROL AND IN THE OPINION OF THE ENGINEER THERE ARE NO OTHER HAZARDOUS CONDITIONS.

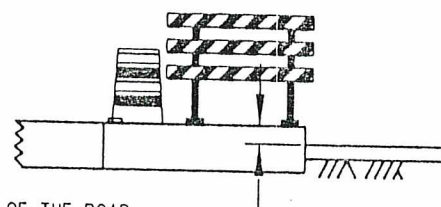


EDGE DROP-OFF WITH TAPER (SHOULDER - CLOSED)

SHOULDER SHALL BE CLOSED WITH APPROPRIATE WARNING SIGNS AND CHANNELIZING DEVICES AT A MAXIMUM OF 100 FT. SPACING

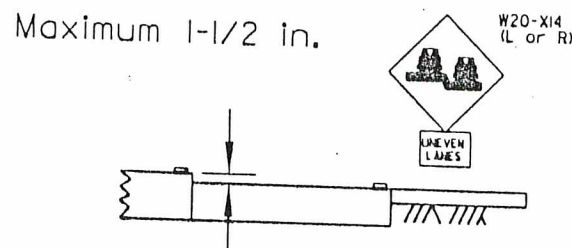


4 in. to 12 in.

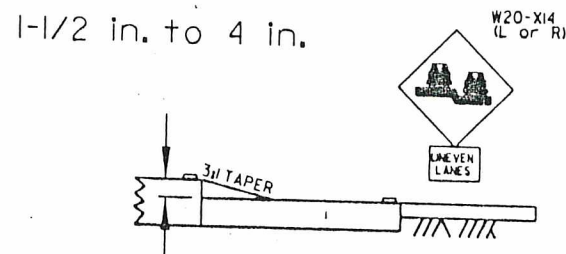


NOTE: SIGNS ARE REQUIRED ONLY ON THE SIDE OF THE ROAD THAT IS AFFECTED BY CONSTRUCTION (EXCEPT SIGNS THAT ARE FOR A LANE CLOSURE ON DIVIDED HIGHWAYS).

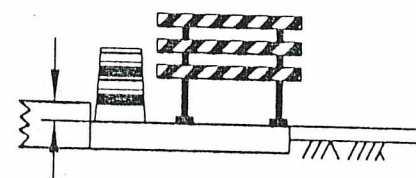
UNEVEN LANES



UNEVEN LANES - WITH TAPER



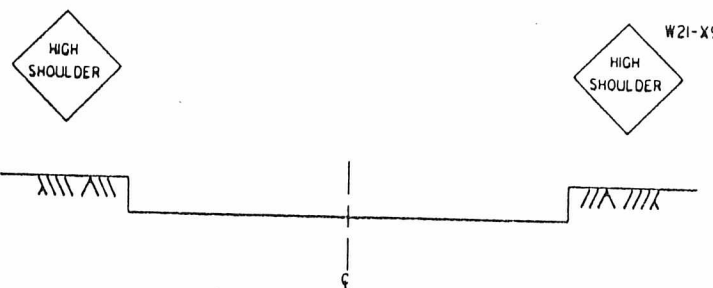
1-1/2 in. to 4 in.



LANE SHALL BE CLOSED WITH APPROPRIATE LANE CLOSURE FROM APPENDIX B, CHANNELIZING DEVICES AT A MAXIMUM OF 100 FT. SPACING AND A TYPE III BARRICADE EVERY 1000 FT.

NOTE: FOR DIVIDED HIGHWAYS, USE SIGNS ON RIGHT AND LEFT SIDE. SIGN SEQUENCE SHOWN FOR ONE DIRECTION ONLY; OTHER DIRECTION SHALL BE IDENTICAL.

MILLED EDGE



NOTE: MILLED EDGES SHOULD BE TREATED WITH TAPERS, CHANNELIZERS, AND SIGNING AS SHOWN ON EDGE DROP-OFF DETAILS.

NOTE: ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING APPENDIX B, DATED NOVEMBER 1992.

GUIDELINES

THESE GUIDELINES ARE INTENDED TO INCREASE TRAFFIC SAFETY USING TRAFFIC CONTROL DEVICES, SAFETY RELATED APPURTENANCES, AND CONSTRUCTION TECHNIQUES FOR UNEVEN LANES, MILLED EDGES, AND EDGE DROP-OFFS THAT OCCUR IN HIGHWAY WORK ZONES. THE BEST WAY TO INCREASE TRAFFIC SAFETY IS TO MAKE EVERY ATTEMPT TO MINIMIZE EXPOSURE TO UNEVEN LANES, MILLED EDGES, AND EDGE DROP-OFFS; HOWEVER, IT IS REALIZED THAT THIS IS OFTEN NOT POSSIBLE OR FEASIBLE. ONLY WHEN UNEVEN LANES, MILLED EDGES, OR EDGE DROP-OFFS ARE DEEMED NECESSARY, SHALL THE APPROPRIATE PORTION(S) OF THESE GUIDELINES BE APPLIED TO ENHANCE TRAFFIC SAFETY.

APPROPRIATE UNEVEN LANE WARNING SIGNS OR SHOULDER WARNING SIGNS SHALL BE REPEATED AFTER EACH INTERSECTION.

MAXIMUM WARNING SIGN SPACING SHALL BE:

- A - 1 MILE WHEN THE SPEED LIMIT IS GREATER THAN 30 MPH AND
- B - 1/4 MILE WHEN THE SPEED LIMIT IS 30 MPH OR LESS.

WHEN SPACE PERMITS, MINIMUM WARNING SIGN SIZE SHALL BE:

- A - 48 INCHES x 48 INCHES WHEN THE SPEED LIMIT IS GREATER THEN 30 MPH AND
- B - 36 INCHES x 36 INCHES WHEN THE SPEED LIMIT IS 30 MPH OR LESS.

1. FOR DROP-OFFS OF 1-1/2 INCHES OR LESS, APPROPRIATE WARNING SIGNS SHALL BE PROVIDED.
2. FOR DROP-OFFS GREATER THAN 1-1/2 INCHES UP TO 4 INCHES:
 - A - THE EDGE SHALL BE TAPERED AND COMPACTED AT A RATE OF 3:1 AND APPROPRIATE WARNING SIGNS SHALL BE PROVIDED; OR
 - B - IF THE TAPER IS NOT PROVIDED, TRAFFIC SHALL NOT BE PERMITTED TO CROSS THE DROP-OFF AND THAT PORTION OF THE ROADWAY SHALL BE CLOSED TO TRAFFIC WITH THE APPROPRIATE WARNING SIGNS AND DEVICES.
3. FOR DROP-OFFS GREATER THAN 4 INCHES UP TO 12 INCHES:
 - A - THE EDGE SHALL BE TAPERED AND COMPACTED AT A RATE OF 6:1 AND APPROPRIATE WARNING SIGNS SHALL BE PROVIDED, (6:1 TAPER SHALL NOT BE USED AS A TRAFFIC CARRYING LANE);
 - B - THE EDGE SHALL BE TAPERED AND COMPACTED AT A RATE OF 3:1, TRAFFIC SHALL NOT BE ALLOWED TO CROSS THE DROP-OFF, AND THAT PORTION OF THE ROADWAY SHALL BE CLOSED TO TRAFFIC WITH APPROPRIATE WARNING SIGNS AND CHANNELIZING DEVICES; OR
 - C - IF A TAPER IS NOT PROVIDED, THE TRAFFIC OR AUXILIARY LANE ADJACENT TO THE DROP-OFF SHALL BE CLOSED TO TRAFFIC WITH THE APPROPRIATE WARNING SIGNS AND CHANNELIZING DEVICES OR A POSITIVE BARRIER, SUCH AS A PORTABLE PRECAST CONCRETE BARRIER, SHALL BE PROVIDED TO PREVENT TRAFFIC FROM CROSSING THE DROP-OFF.
4. FOR SHOULDER EDGE DROP-OFFS:
 - A - 0-2 FOOT SHOULDER WIDTH AND A 0-12 INCH DROP-OFF; USE GUIDELINES AS SHOWN
 - B - 2-8 FOOT SHOULDER WIDTH AND A 0-4 INCH DROP-OFF; INSTALL EDGELINE OR USE GUIDELINES AS SHOWN
 - C - 8 FOOT OR GREATER SHOULDER WIDTH AND A 0-4 INCH DROP-OFF; NO TRAFFIC CONTROL REQUIRED
 - D - GREATER THAN 2 FOOT SHOULDER WIDTH AND A 4-12 INCH DROP-OFF; USE GUIDELINES AS SHOWN
5. DROP-OFFS GREATER THAN 4 INCHES ADJACENT TO TRAFFIC CARRYING LANES ARE PERMITTED WITHOUT TAPERS OR POSITIVE BARRIERS FOR:
 - A - PROJECTS WITHIN URBAN AREA WHEN THE SPEED LIMIT IS 30 MPH OR LESS; OR
 - B - SHORT TERM (7 CALENDAR DAYS OR LESS) CONCRETE OR UTILITY REPAIR, LESS THAN 50 FEET IN LENGTH WHEN THE SPEED LIMIT IS GREATER THAN 30 MPH.
6. AT NO TIME SHALL THERE BE MORE THAN ONE UNEVEN LANE CONDITION BETWEEN THE TRAFFIC CARRYING LANES WHICH INCLUDE AUXILIARY LANES, TURN LANES, AND RAMP ACCESS OR EGRESS AREAS. WEATHER PERMITTING, ALL EXPOSED UNEVEN LANES CONDITIONS WITHIN THE TRAFFIC CARRYING LANES SHALL BE "MATCHED" WITHIN 24 HOURS.
7. MILLING OPERATIONS SHALL BE REQUIRED TO COMPLETE THE FULL WIDTH OF THE SECTION UNDER CONSTRUCTION AT THE END OF EACH WORK PERIOD.

Traffic Control Treatment of
Longitudinal Joints and
Edge Drop-offs in Work Zones