

INNOVATIONS IN CONCRETE PAVING

1. SCOTT COUNTY HIGHWAY 21

3 MILES NEW ROAD


2. SCOTT COUNTY HIGHWAY 66

5.2 MILES UNBONDED OVERLAY

COUNTY HIGHWAY 21 FEATURES

- 2' SAND SUBBASE WITH TILE DRAINS
- 6" MODIFIED CL VI GRAVEL BASE
- MEDIANS SLOPED INWARD WITH DROP INLETS IN CENTER OF MEDIAN
- 8" JOINTED PAVEMENT URBAN SECTION WITH INTEGRANT CURB ON BOTH SIDES
- 12' WIDE BUS SHOULDERS WITH INTEGRANT CURB

CH21 PROJECT OVERVIEW

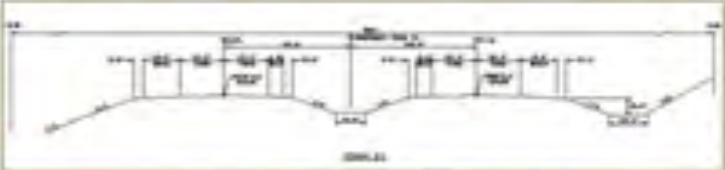


PROJECT DESCRIPTION

- Extension of Scott County State Aid Highway (CSAH) 21 between CSAH 42 and Trunk Highway (TH) 169
- In the cities of Prior Lake and Shakopee
- Proposed as a four-lane expressway; feasibility of a freeway design will also be explored in the EIS
- Access to be limited to major intersections

PROJECT NEED

- Connect the developing area of Prior Lake with TH 169 / Bloomington Ferry Bridge
- Provide roadway system continuity with existing CSAH 21 south of CSAH 42



Proposed CSAH 21 typical cross-section



CSAH 21 - Project Layout
 Scott County, Minnesota

INTEGRANT CURB



PAVING OPERATION WITH INTEGRANT CURB



PAVING OPERATION



28' wide pass with Integrant Curb on Inside



PAVEMENT SECTION

- 8" CONCRETE- JOINTED NON- REINFORCED
- 6" CI VI MODIFIED
- 24" GRANULAR MATERIAL
- 4" DRAINTILE ONE EACH SIDE UNDER SHOULDER

CL VI GRADATION

TABLE 3138-1
BASE AND SURFACING AGGREGATE

Sieve Size	Total Percent Passing					
	Class 1 (A)	Class 2	Class 3 (A)	Class 4 (A)	Class 5 (A) (B)	Class 6 (A) (B)
75 mm (3 inches)	--	--	--	--	--	--
90 mm (2 inches)	--	--	100	100	--	--
119 mm (4 3/4 inches)	--	--	--	--	--	--
150 mm (6 inches)	--	--	--	--	100	100
190 mm (3/4 inch)	100	100	--	--	90-100	90-100
250 mm (1 inch)	65-95	65-90	--	--	50-90	50-85
300 mm (1 1/8 inch)	40-85	35-70	35-100	35-100	35-80	35-85
375 mm (No. 4)	25-70	25-45	20-100	20-100	20-65	20-40
425 µm (No. 10)	10-45	12-30	5-50	5-35	10-35	10-20
75 µm (No. 200)	8.0-15.0	5.0-13.0	5.0-10.0	4.0-10.0	3.0-10.0	3.0-5

(A) When substituted materials are substituted for another class of aggregate, it shall meet the gradation requirements of the class being replaced except as amended in 3128.2 B.

(B) The gradation requirements for aggregates containing 60% or more crushed quarry rock may be amended with the concurrence of the Project Engineer and the Grading and Base Engineer.

STAGED CONSTRUCTION

- 5 stages indicated on the plans
- 7 stages actually constructed
- 5 stages required modification of 2 temporary signals
- Ended up with some B448 curb and gutter
- Used HE concrete which was included in the base bid
- Carried 19,000 ADT every day

Staged Construction CH 18 and 21



Staged Construction CH 18 and 21



Staged Const. CH 21 at 18 Signals



Staged Const. Closure pours CH21 and Pike Lake Road



NEW ROADWAY LOOKING NORTH TOWARD CH 16



Final Product



COUNTY HIGHWAY 66

5.2 MILE UBOL

- 6" UBOL WITH FABRIC BOND BREAKER
- PLACED IN 2 PASSES FOR MAJORITY OF PROJECT
- PLACED OVER 1926 -18' WIDE 9-7-9 SLAB WITH 4-6" OF BITUMINOUS
- MILLED BITUMINOUS DOWN TO 1-2 " PRIOR TO PAVING
- USED MILLING AS SHOULDER MATERIAL

CH 66 PROJECT LOCATION



ROAD SURFACE AFTER MILLING



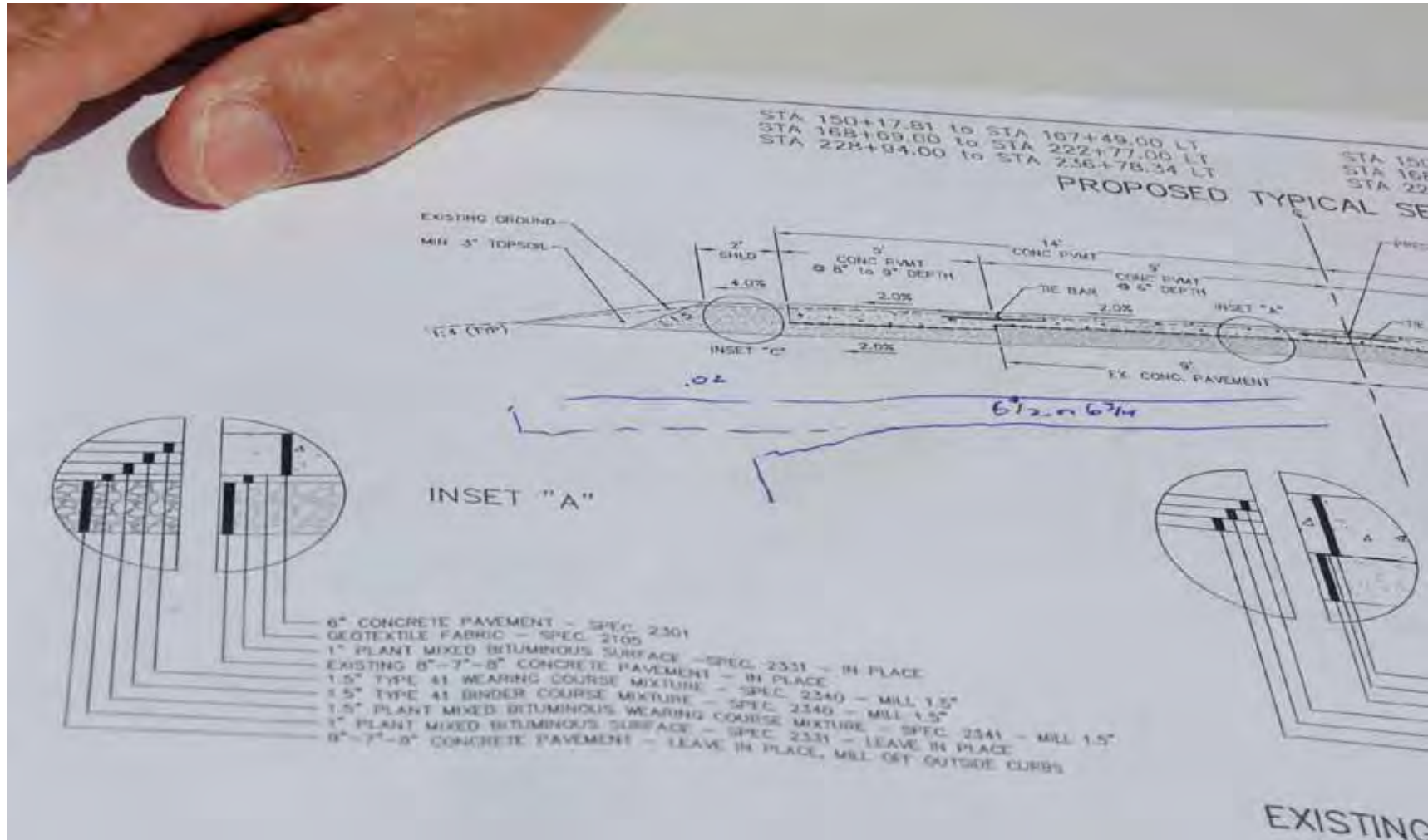
MILLED SURFACE BREAKOUTS



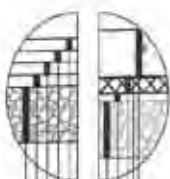
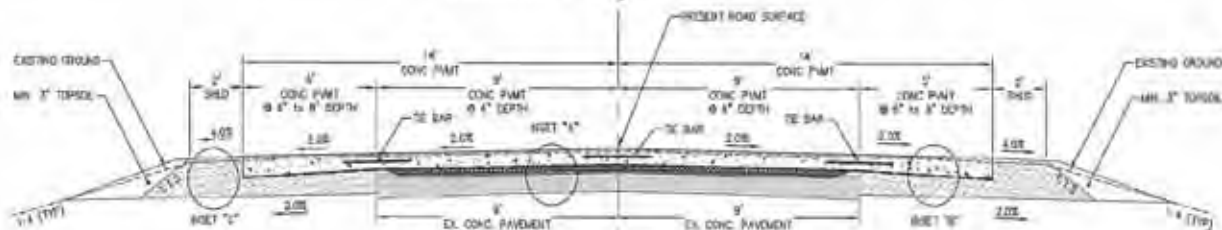
EDGE BREAKOUTS CAUSED REDESIGN



REDESIGNED TYPICAL SECTION



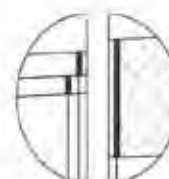
PROPOSED TYPICAL SECTION



INSET "A"



INSET "B"



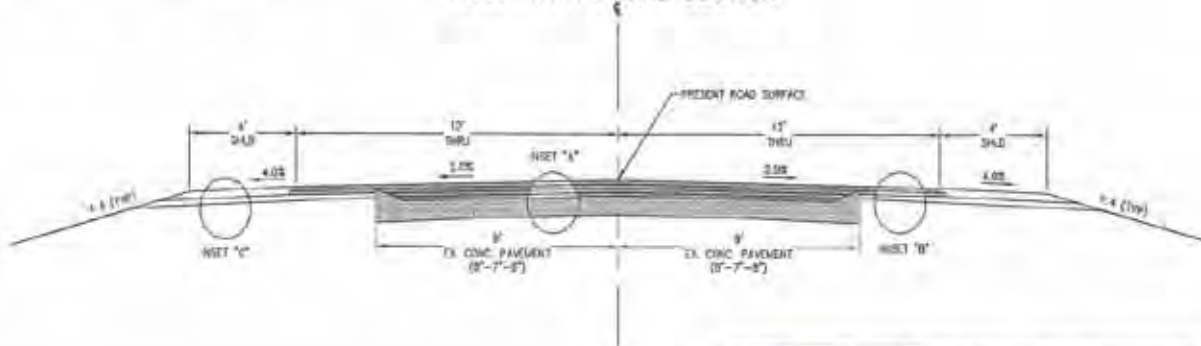
INSET "C"

- 4" CONCRETE PAVEMENT - SPEC. 2301
- REINFORCING FABRIC - SPEC. 2155
- VARIABLE DEPTH - 1" MINIMUM COURSE OF BITUMINOUS MILLING, SLOPED, WATERED & COMPACTED FOR CROSS SLOPE AND GRADE CORRECTION
- 1" EXISTING PLANT MIXED BITUMINOUS SURFACE - SPEC. 2211 - IN PLACE
- 8"-7"-6" CONCRETE PAVEMENT - IN PLACE
- 1.5" TYPE 41 WEARING COURSE MIXTURE - SPEC. 2343 - MILL 1.5"
- 1.5" TYPE 41 BINDER COURSE MIXTURE - SPEC. 2340 - MILL 1.5"
- 1.5" PLANT MIXED BITUMINOUS WEARING COURSE MIXTURE - SPEC. 2341 - MILL 1.5"
- 1.5" PLANT MIXED BITUMINOUS SURFACE - SPEC. 2211 - MILL 0.5"
- 8"-7"-6" CONCRETE PAVEMENT - LEAVE IN PLACE, MILL OFF OUTSIDE CORNER

- 6" to 8" TAPERED CONCRETE PAVEMENT - SPEC. 2301
- REINFORCING FABRIC - SPEC. 2155
- 7" to 8" TAPERED BITUMINOUS MILLING - SPEC. 2231
- 1.5" TYPE 41 WEARING COURSE MIXTURE - SPEC. 2343 - MILL 1.5"
- 1.5" TYPE 41 BINDER COURSE MIXTURE - SPEC. 2340 - MILL 1.5"
- 1.5" AGGREGATE SHOULDERING CLASS I - SPEC. 2221 - MILL 1.5"

- 1.5" BITUMINOUS MILLING - SPEC. 2231
- 2" AGGREGATE SHOULDERING CLASS I - SPEC. 2221 - MILL 3"
- 1.5" AGGREGATE SHOULDERING CLASS I - SPEC. 2221 - MILL 1.5"

EXISTING TYPICAL SECTION



PAVING HALF WIDTH OVER FABRIC



FABRIC JOINT



PAVING OVER FABRIC



PAVING OVER FABRIC SINGLE PASS



SINGLE PASS PAVING ON FABRIC



PREFORMED EDGE STRIPE GROOVE



GROOVE FORMING SHOE



TYPICAL DRIVEWAY OPENING



FINAL CONC SURFACE



FINISHED ROADWAY

