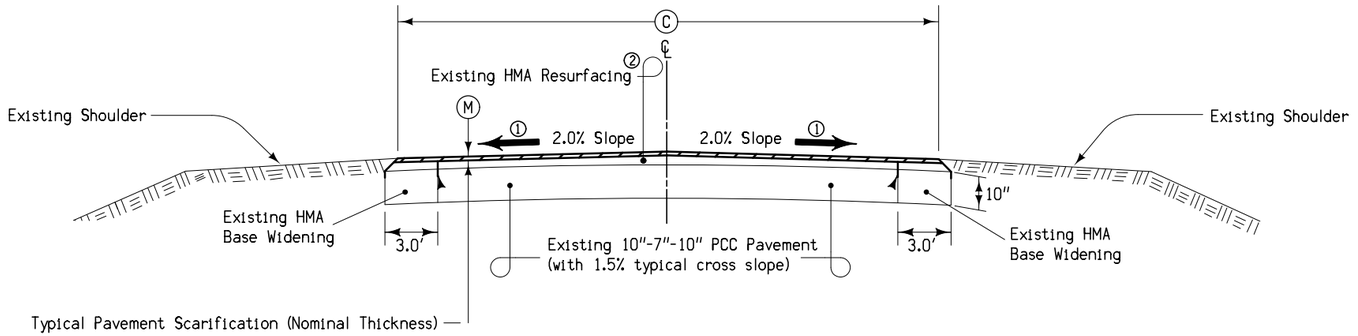
MILL-1
Special

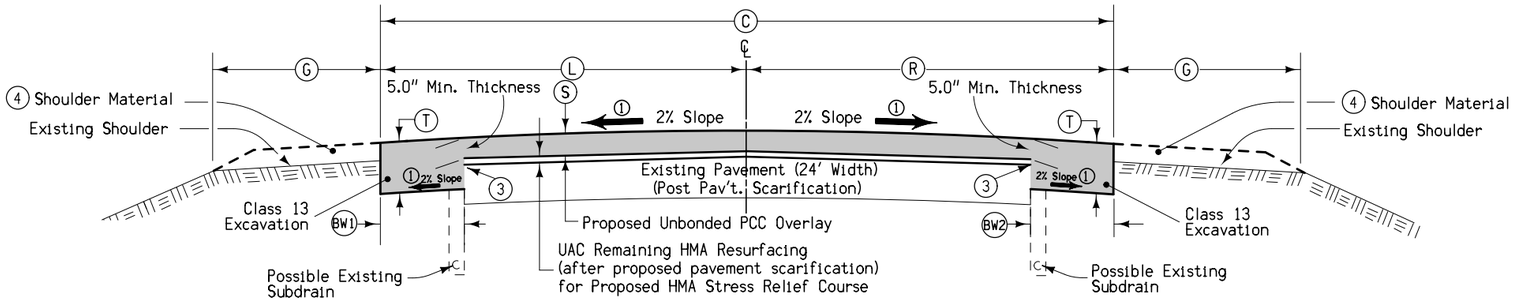


1. Typical section shown may be modified appropriately in areas of super elevated curves or other locations specifically designated by the engineer.
2. The remaining HMA resurfacing will bel Used As Constructed. The remaining HMA will be used as the Stress Relief Course.
3. Refer to sheets X.X and X.X for details of the existing pavement.

Location			(1) M	C	Pav't. Scarification	Remarks
Road Identification	Station To Station		Inches	Feet	Sq. Yds.	
US 63	329+06	331+56	3	24.0	667	Div. 1
US 63	331+56	339+48	3	24.0	2112	Div. 1
US 63	339+48	563+48	3	24.0	59734	Div. 2
US 63	563+48	563+98	3	24.0	200	Div. 2
US 63	570+20	570+75	3	24.0	200	Div. 2
US 63	570+75	721+50	3	24.0	40200	Div. 2
					103113	

TYPICAL CROSS SECTION PAVEMENT SCARIFICATION

PCC-1
Special



1. Typical section shown may be modified appropriately in areas of super elevated curves or other locations specifically designated by the engineer. At existing super elevated areas match existing cross slopes and transition rates.
2. Class 13 quantities include trench width (BW) minus 2.25' plus 1' x both Lt. & Rt. sides.
3. Provide a vertical clean edge similar to milling machine results. Incidental to Class 13 Excavation.
4. Shoulder material as specified elsewhere in these plans; refer to Typical 7135 on sheet B.8 for Type 'B' shoulder adjacent to PCC overlay.

Location			(S)	(2) C	(L)	(R)	Overlay Quantities (Per Location)			(T)	(BW1)	(BW2)	(G)	Remarks
Road	Station To Station						Class 13	PCC Overlay	PCC Overlay					
			Inches	Feet	Feet	Feet	Cu. Yds.	Cu. Yds.	Sq. Yds.	Inches	Feet	Feet	Feet	
US 63	329+06	339+48	5.0	32.0	16.0	16.0	138	689	3705	9.5	6.0	6.0	Vari.	Div. 1
US 63	339+48	563+98 (A)	5.0	32.0	16.0	16.0	2964	14837	79823	9.5	6.0	6.0	Vari.	Div. 2
US 63	570+20 (A)	618+40 (B)	5.0	28.0	16.0	12.0	318	2620	14996	9.5	6.0	2.0	Vari.	Div. 2 Refer to Typical ML-JNT2 on sheet B.10
US 63	618+40	623+60 (B)(C)	5.0	24.0	12.0	12.0	0	193	1387	9.5	2.0	2.0	Vari.	Div. 2 Refer to Typical ML-JNT3 on sheet B.11
US 63	623+60	671+80 (C)	5.0	28.0	12.0	16.0	318	2620	14996	9.5	2.0	6.0	Vari.	Div. 2 Refer to Typical ML-JNT2 on sheet B.10
US 63	671+80	721+50	5.0	32.0	16.0	16.0	656	3285	17672	9.5	6.0	6.0	Vari.	Div. 2

*** The contractor shall pave proposed shoulders thru all unpaved side road, paved side roads, and entrance intersections. At the existing paved intersections, the existing pavement will removed.

TYPICAL CROSS SECTION PCC OVERLAY WITH BASE WIDENING (AFTER PAVEMENT SCARIFICATION)

(A) Stop/Resume at Bridge Approach Pavement
(B) In area of NB Climbing Lane
(C) In area of SB Climbing Lane

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.1

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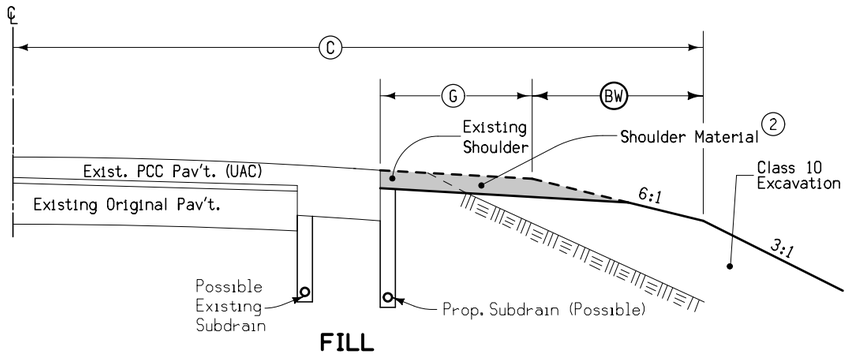
Grade-1
Special

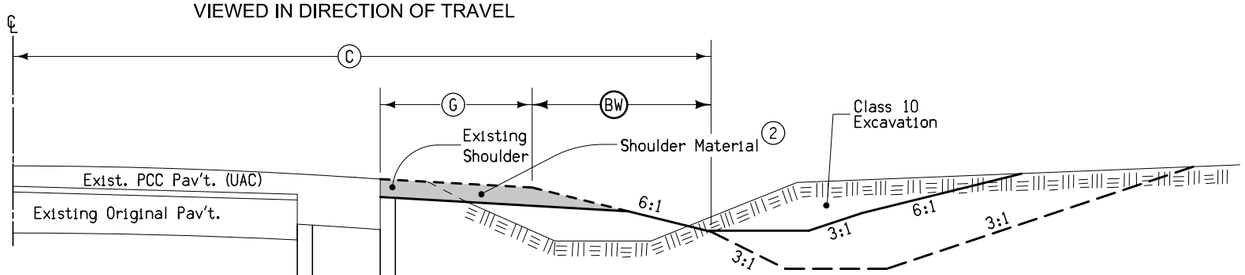
(1) Typical sections shown is for a cut and fill situation and may be on either side, left or right. Refer to the cross sections.

(2) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 for Type 'A' shoulder adjacent to PCC Pavement.



FILL

VIEWED IN DIRECTION OF TRAVEL



CUT

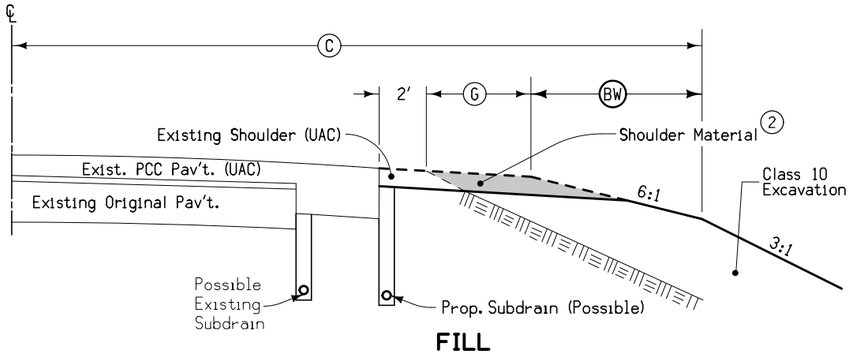
TYPICAL CROSS SECTION GRADING

Grading Location				Ⓒ	Ⓖ	Ⓑⓦ	Remarks
Road	Station To Station		Side	Feet	Feet	Feet	
US 63	339+00	339+48	Rt.	38.0	6.0	16.0	Div. 1
US 63	339+48	383+00	Rt.	38.0	6.0	16.0	Div. 2
US 63	345+00	381+00	Lt.	38.0	6.0	16.0	Div. 2
US 63	388+60	446+00	Rt.	32.0	6.0	16.0	Div. 2
US 63	391+50	446+00	Lt.	38.0	6.0	16.0	Div. 2
US 63	535+00	543+00	Rt.	38.0	6.0	16.0	Div. 2
US 63	536+25	543+00	Lt.	38.0	6.0	16.0	Div. 2
US 63	557+00	563+00	Rt.	38.0	6.0	16.0	Div. 2
US 63	671+80	691+00	Lt.	38.0	6.0	16.0	Div. 2

Grade-2
Special

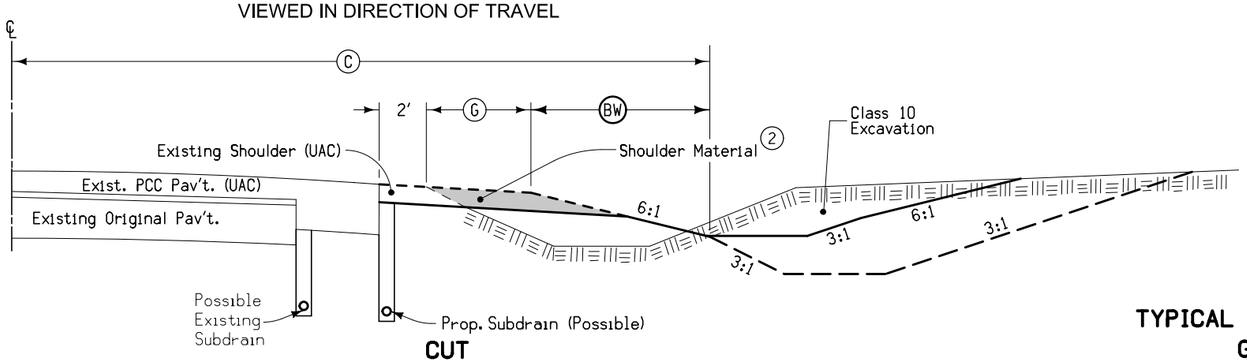
(1) Typical sections shown is for a cut and fill situation and may be on either side, left or right. Refer to the cross sections.

(2) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 for Type 'A' shoulder adjacent to PCC Pavement.



FILL

VIEWED IN DIRECTION OF TRAVEL



CUT

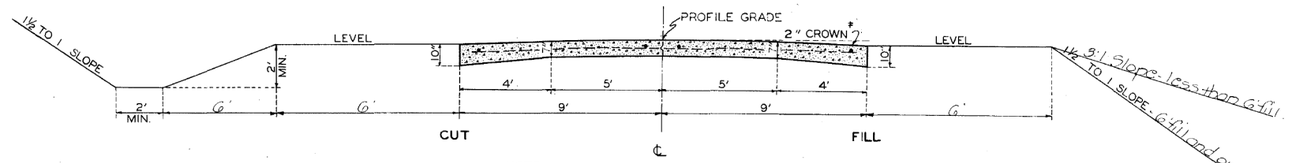
TYPICAL CROSS SECTION GRADING

Grading Location				Ⓒ	Ⓖ	Ⓑⓦ	Remarks
Road	Station To Station		Side	Feet	Feet	Feet	
US 63	579+75	585+00	Lt.	38.0	4.0	16.0	Div. 1
US 63	590+50	600+50	Lt.	38.0	4.0	16.0	Div. 2
US 63	652+00	657+00	Rt.	38.0	4.0	16.0	Div. 2

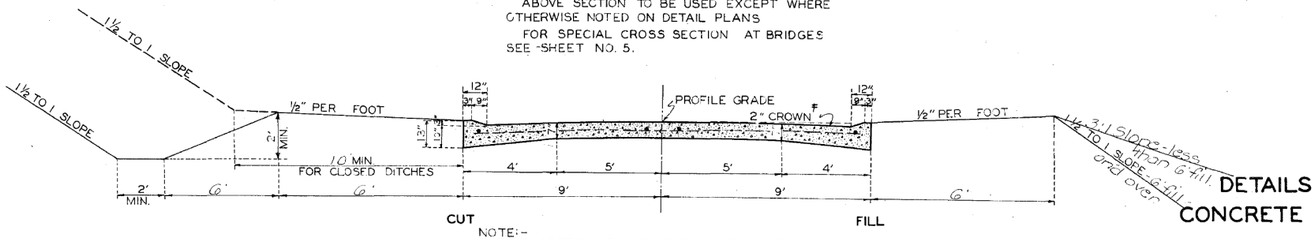
FED. ROAD DIST. NO.	STATE	F.A. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	332"A"		3	63

1932 PAVING

TYPICAL CROSS SECTIONS

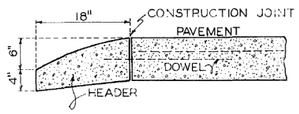


NOTE:-
ABOVE SECTION TO BE USED EXCEPT WHERE OTHERWISE NOTED ON DETAIL PLANS
FOR SPECIAL CROSS SECTION AT BRIDGES SEE SHEET NO. 5.

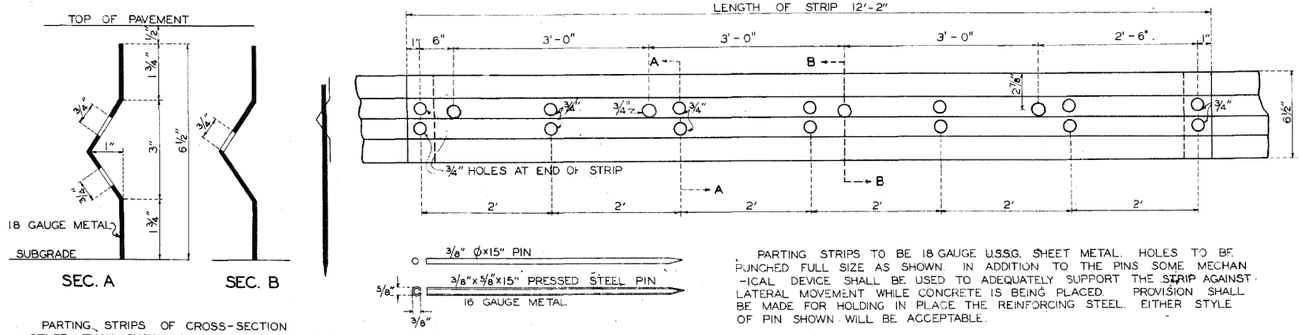


NOTE:-
CURB SECTION TO BE USED WHERE NOTED ON DETAIL PLANS.
CLOSED DITCHES TO BE USED WHERE NOTED ON DETAIL PLANS.

DETAILS OF CONCRETE HEADER



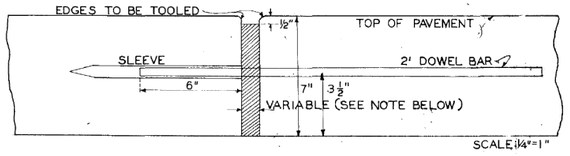
DETAILS FOR CENTER PARTING STRIP



PARTING STRIPS TO BE 18 GAUGE U.S.S.G. SHEET METAL. HOLES TO BE PUNCHED FULL SIZE AS SHOWN. IN ADDITION TO THE PINS SOME MECHANICAL DEVICE SHALL BE USED TO ADEQUATELY SUPPORT THE STRIP AGAINST LATERAL MOVEMENT WHILE CONCRETE IS BEING PLACED. PROVISION SHALL BE MADE FOR HOLDING IN PLACE THE REINFORCING STEEL. EITHER STYLE OF PIN SHOWN WILL BE ACCEPTABLE.

PARTING STRIPS OF CROSS-SECTION OTHER THAN SHOWN WILL BE CONSIDERED AS ALTERNATES.

DETAILS OF EXPANSION JOINTS



JOINTS MAY BE EITHER POURED OR PREMOULDED. IN EITHER CASE, INSTALLATION DEVICES ARE TO BE APPROVED BEFORE BEING USED. SUGGESTED DESIGNS FOR INSTALLATION DEVICES WILL BE FURNISHED ON APPLICATION.

* 1" EXPANSION JOINTS AT 80' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH LIME STONE AGGREGATE.

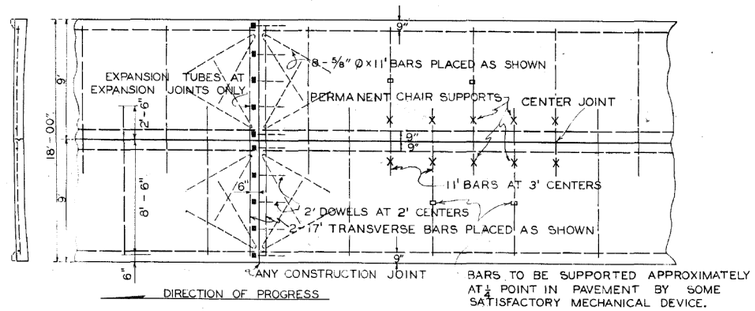
½" EXPANSION JOINTS AT 60' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH GRAVEL AGGREGATE.

½" EXPANSION JOINTS AT 40' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH CLASS 5 AGGREGATE.

REGARDLESS OF THE WIDTH AND SPACING OF JOINTS THE REINFORCING DIAGRAM WILL REMAIN UNCHANGED.

This Sheet
For Information Only

PAVEMENT REINFORCING PLAN



BARS TO BE SUPPORTED APPROXIMATELY AT ¼ POINT IN PAVEMENT BY SOME SATISFACTORY MECHANICAL DEVICE.

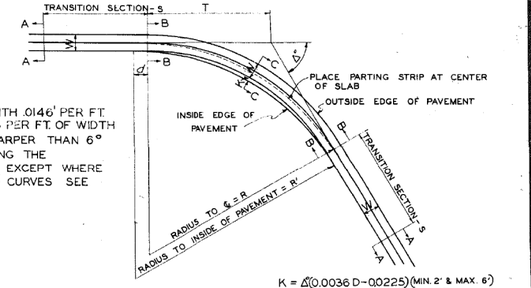
ALL REINFORCING STEEL TO BE PLAIN ⅝" Ø BARS. FOUR LONGITUDINAL BARS TO BE PLACED AS SHOWN, 2½" BELOW TOP SURFACE, 2' LAP TO BE USED AT ALL SPLICES. ALL DOWEL BARS TO BE PLACED IN CENTER OF SECTION. DOWELS AT TRANSVERSE JOINTS TO PROJECT 6" INTO NEW WORK, AND TO BE FITTED WITH EXPANSION TUBES AT EXPANSION JOINTS. LONGITUDINAL REINFORCING STEEL TO END 2" FROM TRANSVERSE JOINTS.

ALL REINFORCING STEEL, INCLUDING DOWELS AT TRANSVERSE JOINTS, TO BE HELD RIGIDLY IN CORRECT POSITION.

MINIMUM CONSTRUCTION REQUIREMENTS AS FOLLOWS:-

1. ALL TRANSVERSE BARS TO BE PLACED UNDER LONGITUDINAL BARS, AND TO BE SUPPORTED BY TWO PERMANENT CHAIRS AND ONE REMOVABLE DEVICE AT QUARTER POINT. (SEE PLAN ABOVE. ALSO SEE NOTE NO. 5 BELOW.)
2. SIDE LONGITUDINAL BARS TO BE SUPPORTED BY REMOVABLE BRACKETS FROM SIDE FORMS.
3. ALL LAPS AND INTERSECTIONS OF BARS TO BE SECURELY WIRED EXCEPT AS NOTED BELOW.
4. EIGHT BENT BARS TO BE PLACED 2⅛ INCHES BELOW TOP SURFACE, ADJACENT TO ALL TRANSVERSE JOINTS. (SEE PLAN ABOVE.) (NO WIRES REQUIRED FOR BENT BARS.)
5. * PERMANENT CHAIRS TO BE U-SHAPED PRESSED METAL PINS, WITH NOT LESS THAN 4" PENETRATION INTO SUBGRADE, DISTANCE FROM SUBGRADE LUG TO BOTTOM OF DOWEL HOLE TO BE 3¼". METAL TO BE 18 GAUGE.

DETAILS FOR SUPERELEVATION



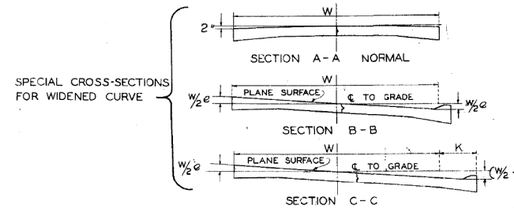
SUPERELEVATION BEGINS AT 0°30' CURVE WITH .0146' PER FT. OF WIDTH AND INCREASES UNIFORMLY TO .0833 PER FT. OF WIDTH AT 6° WITH NO CHANGE IN RATE FOR CURVES SHARPER THAN 6°. SUPERELEVATION IS ACCOMPLISHED BY ROTATING THE STANDARD SECTION ABOUT THE CENTER LINE EXCEPT WHERE CURVES ARE TO BE WIDENED. FOR WIDENED CURVES SEE TYPICAL CROSS SECTIONS BELOW.

$K = \Delta(0.0036D - 0.0225)$ (MIN. 2' & MAX. 6')

$R' = R\frac{E+K}{E} - \frac{W}{2}$ $\quad d = \frac{KT}{E}$

AREA OF ADDED WIDTH (SHADED PORTION)
$(R' - R + \frac{W}{2})(R' + R - \frac{W}{2})(\tan\frac{\Delta}{2} - 0.0087267\Delta^{\circ})$ SQ. FT.
(CARRY TO 3 PLACES) (CARRY TO 5 PLACES)

SPECIAL CROSS-SECTIONS FOR WIDENED CURVE



D = DEGREE OF ℄ CURVE
Δ = INTERSECTION ANGLE
R = RADIUS TO ℄
R' = RADIUS TO INSIDE EDGE
E = EXTERNAL DISTANCE TO ℄
T = TANGENT
W = NORMAL WIDTH OF PAVEMENT
K = ADDED WIDTH AT MIDDLE OF CURVE
e = SUPERELEVATION IN INCHES PER FT. OF WIDTH
S = 80' WHEN e = ½" OR LESS; 125' WHEN e = ⅝" OR MORE

SPECIAL CROSS-SECTION FOR CURVE WITHOUT WIDEN K

REVISED FEB. 1931
" MAR. 1931
* REVISED JUNE 1-1930
# " NOV. 1930
REVISED MAY 1929

Marshall Co. FA 332"A" Sh #3 1932 Paving

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.3

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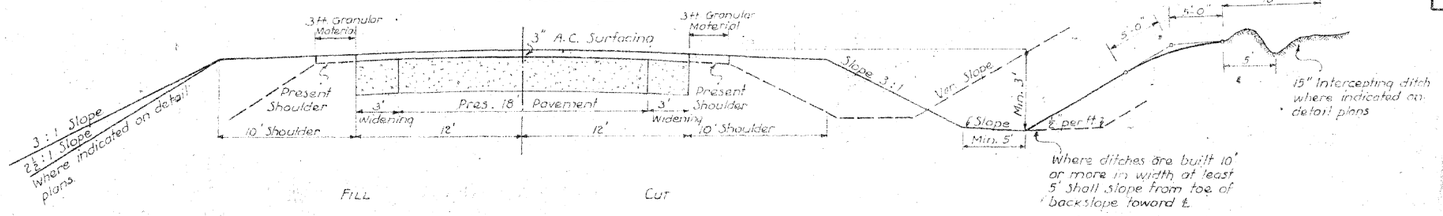
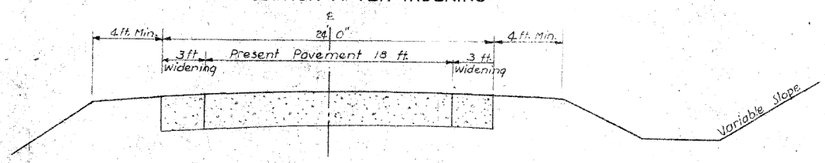
FED. ROAD DIST. NO.	STATE	P PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	1081		3	685

TYPICAL CROSS SECTION

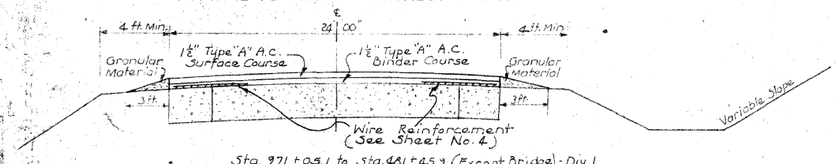


Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

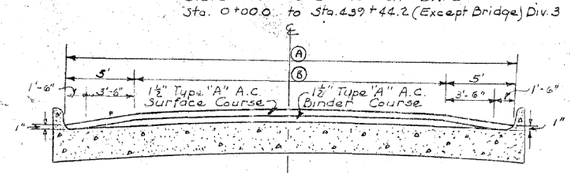
TYPICAL SECTION AFTER WIDENING



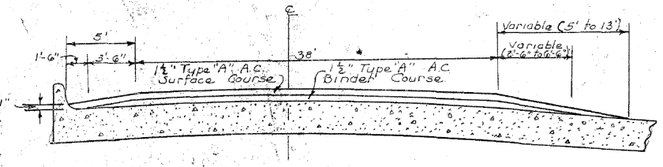
TYPICAL SECTION AFTER RESURFACING



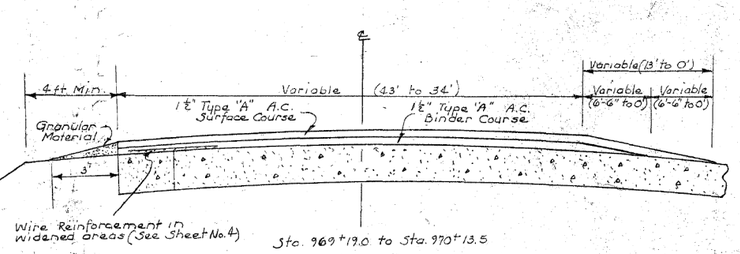
Sta. 971+05.1 to Sta. 981+45.9 (Except Bridge) - Div. 1
Sta. 981+45.9 to Sta. 993+00.0 (Except Bridge) Div. 2
Sta. 0+00.0 to Sta. 70+12.4 - Div. 2.
Sta. 0+00.0 to Sta. 439+44.2 (Except Bridge) Div. 3



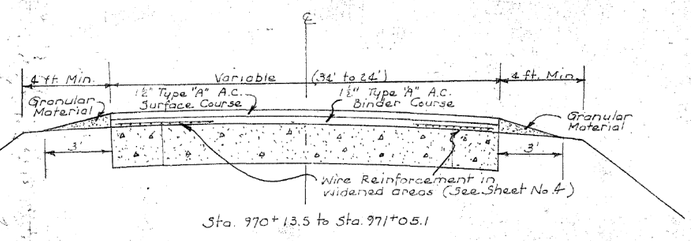
Sta. 952+95.2 to Sta. 954+88.2 { (A) = 44' to 34', (B) = 34' to 24'
Sta. 954+88.2 to Sta. 967+08.2 { (A) = 34', (B) = 24'
Sta. 967+08.2 to Sta. 968+63.2 { (A) = 34' to 48', (B) = 24' to 38'



Sta. 968+63.2 to Sta. 969+19.0

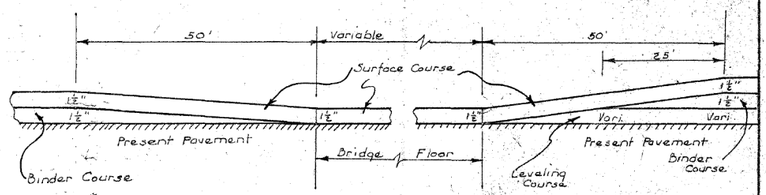


Sta. 969+19.0 to Sta. 970+13.5



Sta. 970+13.5 to Sta. 971+05.1

DETAILS OF BRIDGE AND BRIDGE APPROACH RESURFACING



This Sheet
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D-3

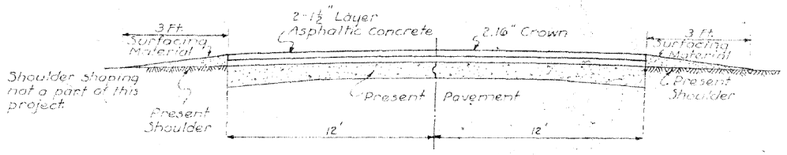
Revised Jan. 22, 1957

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.4

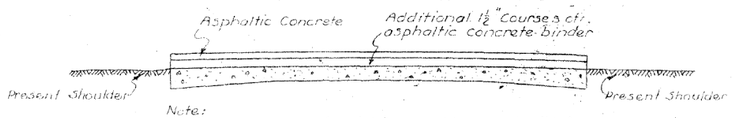
9:10:04 AM 6/14/2016 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	P. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	1081		4	625

TYPICAL CROSS SECTION

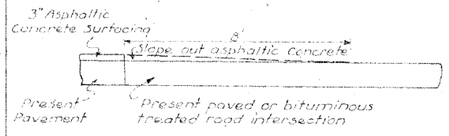


SECTION TO VOID EXCESS PATCHING

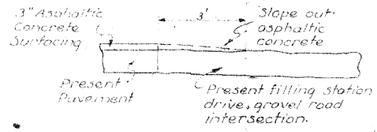


Note:
Where the area of patching would exceed 14% of the area in any 100 ft. station, no full depth patching will be required, but additional courses of asphaltic concrete will be placed as shown above. Where area of patching (full depth) is less than 14% in any station (100') patching will be required. use min. 50' runouts.

SECTION FOR PAVED OR BITUMINOUS TREATED ROAD INTERSECTION



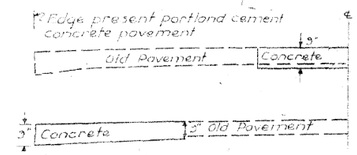
SECTION FOR COMMERCIAL DRIVES AND GRAVEL ROAD INTERSECTION



Note:
The area for sloping out asphaltic concrete is to be swept clean of any loose material and primed prior to placing of asphaltic concrete.

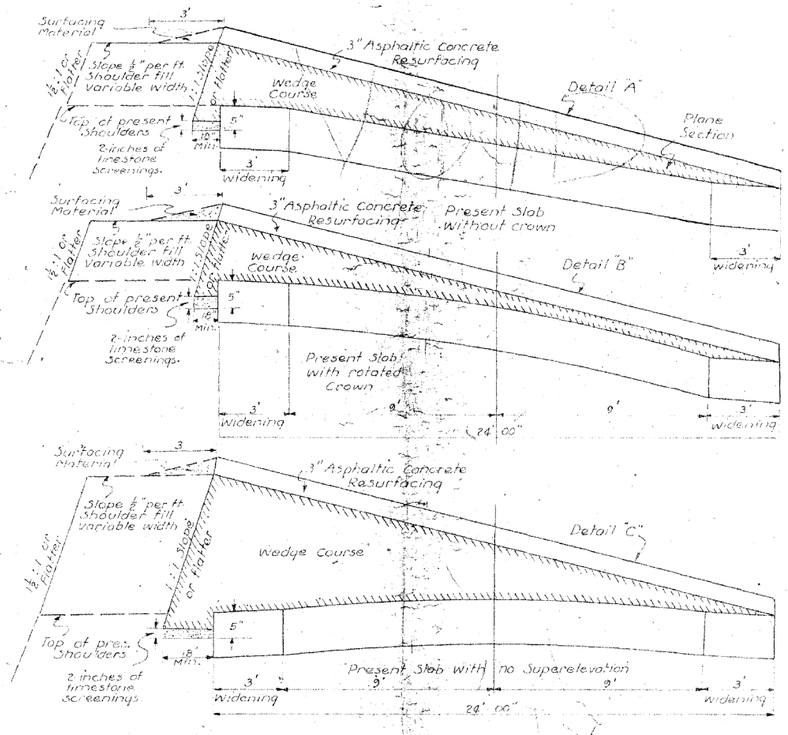
BASE REPAIR
FULL DEPTH PATCHING

PORTLAND CEMENT CONCRETE PATCH

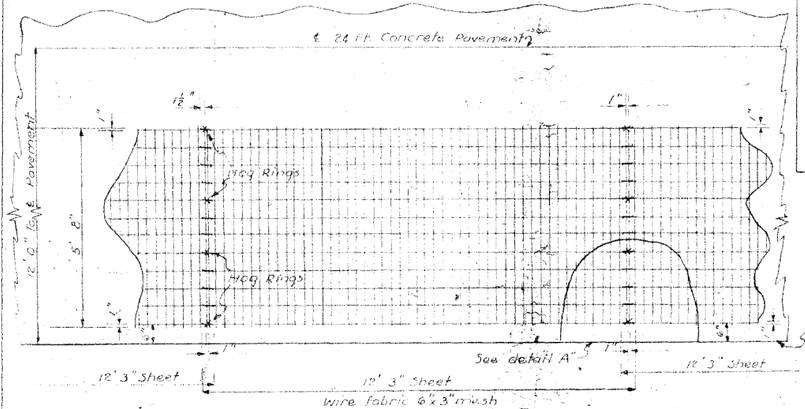


Note:
Length width and shape of patch will vary as necessary to repair present pavement. Pavment will be made on the square yard area of patch measured entirely within the neat lines of the present portland cement concrete pavement. See typical section and note where patching exceeds 14% of the area of any 100 ft. station. Old concrete removed shall be wasted or stockpiled within 1½ mile haul as directed by the Engineer.

DETAILS FOR PLACING WEDGE COURSE ON CURVES



Note:
Trench cut 3 inches below present pavement to required width. Trench excavation included in shoulder excavation. Base widening shall be constructed in accordance with article 2206-1956 Standard specifications with the exception that a trenching machine will not be required.

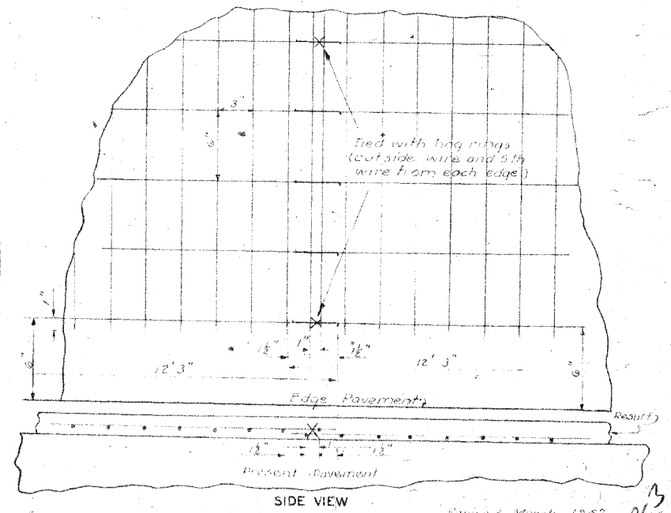


Wire fabric 6"x3" mesh No. 10 wire both ways Sheets 12'3" long by 5'6" wide

PLAN VIEW

DETAILS OF WIRE REINFORCEMENT

DETAIL "A"



SIDE VIEW

This Sheet
For Information Only

Revised March 1957
Revised May 1956
Revised April 1956

Marshall Co. P. Proj. No. 1081 A.C. Resurfacing Sheet No. 4.

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.5

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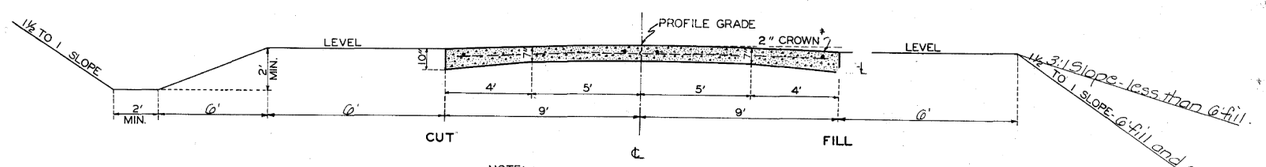
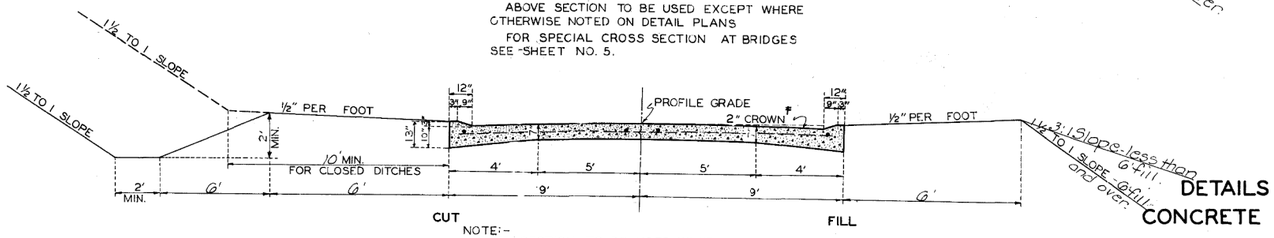
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	332"B"		3	76

1932 PAVING

TYPICAL CROSS SECTIONS

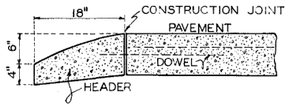


NOTE:-
ABOVE SECTION TO BE USED EXCEPT WHERE OTHERWISE NOTED ON DETAIL PLANS.
FOR SPECIAL CROSS SECTION AT BRIDGES SEE SHEET NO. 5.

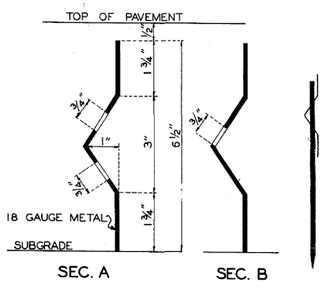


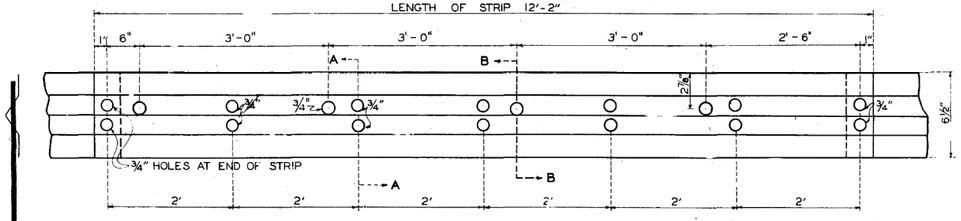
NOTE:-
CURB SECTION TO BE USED WHERE NOTED ON DETAIL PLANS.
CLOSED DITCHES TO BE USED WHERE NOTED ON DETAIL PLANS.

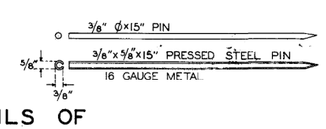
DETAILS OF CONCRETE HEADER



DETAILS FOR CENTER PARTING STRIP



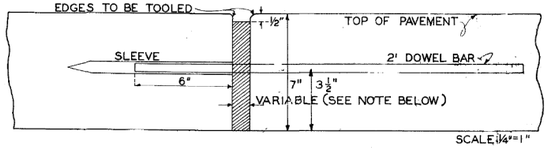




PARTING STRIPS TO BE 18 GAUGE U.S.S.G. SHEET METAL. HOLES TO BE PUNCHED FULL SIZE AS SHOWN. IN ADDITION TO THE PINS SOME MECHANICAL DEVICE SHALL BE USED TO ADEQUATELY SUPPORT THE STRIP AGAINST LATERAL MOVEMENT WHILE CONCRETE IS BEING PLACED. PROVISION SHALL BE MADE FOR HOLDING IN PLACE THE REINFORCING STEEL. EITHER STYLE OF PIN SHOWN WILL BE ACCEPTABLE.

PARTING STRIPS OF CROSS-SECTION OTHER THAN SHOWN WILL BE CONSIDERED AS ALTERNATES.

DETAILS OF EXPANSION JOINTS



JOINTS MAY BE EITHER POURED OR PREMOULDED. IN EITHER CASE, INSTALLATION DEVICES ARE TO BE APPROVED BEFORE BEING USED. SUGGESTED DESIGNS FOR INSTALLATION DEVICES WILL BE FURNISHED ON APPLICATION.

* 1" EXPANSION JOINTS AT 80' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH LIME STONE AGGREGATE

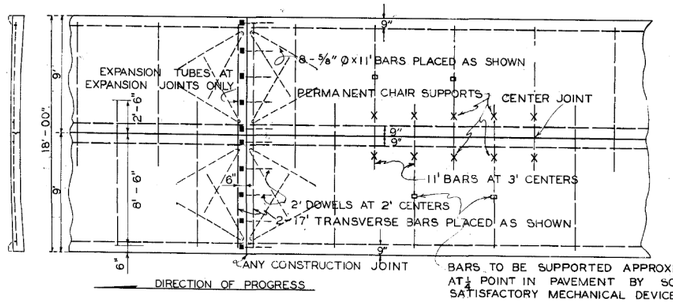
¾" EXPANSION JOINTS AT 60' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH GRAVEL AGGREGATE

½" EXPANSION JOINTS AT 40' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH CLASS 5 AGGREGATE.

REGARDLESS OF THE WIDTH AND SPACING OF JOINTS THE REINFORCING DIAGRAM WILL REMAIN UNCHANGED.

This Sheet
For Information Only

PAVEMENT REINFORCING PLAN



BARS TO BE SUPPORTED APPROXIMATELY AT ¼ POINT IN PAVEMENT BY SOMF SATISFACTORY MECHANICAL DEVICE.

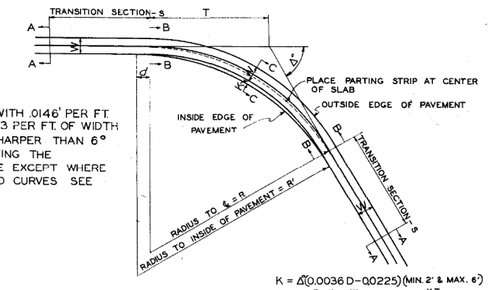
ALL REINFORCING STEEL TO BE PLAIN ⅝" Ø BARS. FOUR LONGITUDINAL BARS TO BE PLACED AS SHOWN, 2½" BELOW TOP SURFACE, 2' LAP TO BE USED AT ALL SPLICES. ALL DOWEL BARS TO BE PLACED IN CENTER OF SECTION. DOWELS AT TRANSVERSE JOINTS TO PROJECT 6" INTO NEW WORK, AND TO BE FITTED WITH EXPANSION TUBES AT EXPANSION JOINTS. LONGITUDINAL REINFORCING STEEL TO END 2" FROM TRANSVERSE JOINTS.

ALL REINFORCING STEEL, INCLUDING DOWELS AT TRANSVERSE JOINTS, TO BE HELD RIGIDLY IN CORRECT POSITION.

MINIMUM CONSTRUCTION REQUIREMENTS AS FOLLOWS:-

1. ALL TRANSVERSE BARS TO BE PLACED UNDER LONGITUDINAL BARS, AND TO BE SUPPORTED BY TWO PERMANENT CHAIRS AND ONE REMOVABLE DEVICE AT QUARTER POINT. (SEE PLAN ABOVE. ALSO SEE NOTE NO. 5 BELOW.)
2. SIDE LONGITUDINAL BARS TO BE SUPPORTED BY REMOVABLE BRACKETS FROM SIDE FORMS.
3. ALL LAPS AND INTERSECTIONS OF BARS TO BE SECURELY WIRED EXCEPT AS NOTED BELOW.
4. EIGHT BENT BARS TO BE PLACED 2½ INCHES BELOW TOP SURFACE, ADJACENT TO ALL TRANSVERSE JOINTS. (SEE PLAN ABOVE.) (NO WIRES REQUIRED FOR BENT BARS.)
5* PERMANENT CHAIRS TO BE U-SHAPED PRESSED METAL PINS, WITH NOT LESS THAN 4" PENETRATION INTO SUBGRADE, DISTANCE FROM SUBGRADE LUG TO BOTTOM OF DOWEL HOLE TO BE 3½". METAL TO BE 18 GAUGE.

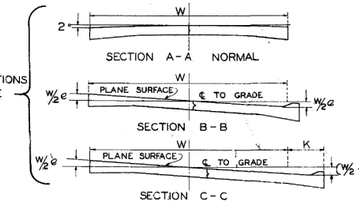
DETAILS FOR SUPERELEVATION



SUPERELEVATION BEGINS AT 0°30' CURVE WITH .0146' PER FT. OF WIDTH, AND INCREASES UNIFORMLY TO .0833 PER FT. OF WIDTH AT 6° WITH NO CHANGE IN RATE FOR CURVES SHARPER THAN 6° SUPERELEVATION IS ACCOMPLISHED BY ROTATING THE STANDARD SECTION ABOUT THE CENTER LINE EXCEPT WHERE CURVES ARE TO BE WIDENED. FOR WIDENED CURVES SEE TYPICAL CROSS SECTIONS BELOW.

$K = \Delta(0.0036D - 0.0225)$ (MIN. 2' & MAX. 6')
$R' = R\frac{E+K}{E} - \frac{W}{2}$ $\quad d = \frac{KT}{E}$
AREA OF ADDED WIDTH (SHADED PORTION)
$(R' - R + \frac{W}{2})(R' + R - \frac{W}{2})(\tan\frac{\Delta}{2} - 0.0087267\Delta)$ SQ. FT.
(CARRY TO 3 PLACES) (CARRY TO 5 PLACES)

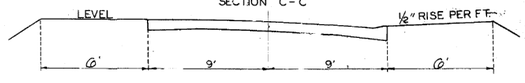
SPECIAL CROSS-SECTIONS FOR WIDENED CURVE



D = DEGREE OF ℄ CURVE
Δ = INTERSECTION ANGLE
R = RADIUS TO ℄
R' = RADIUS TO INSIDE EDGE
E = EXTERNAL DISTANCE TO ℄
T = TANGENT
W = NORMAL WIDTH OF PAVEMENT
K = ADDED WIDTH AT MIDDLE OF CURVE
e = SUPERELEVATION IN INCHES PER FT. OF WIDTH

S = 80' WHEN e = ½" OR LESS
S = 125' WHEN e = ⅝" OR MORE

SPECIAL CROSS-SECTION FOR CURVE WITHOUT WIDENING



REVISED FEB. 1931
" MAR. 1931
* REVISED JUNE 1-1930
\# " NOV. 1930
REVISED MAY 1929

Grundy Co. FA. 332"B" Sh. #3 1932 Paving

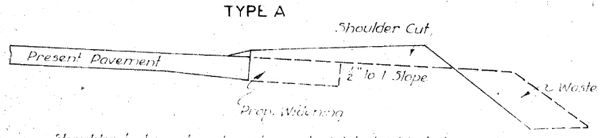
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.6

9:10:31 AM 6/14/2016 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	P PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	48 W		3	5

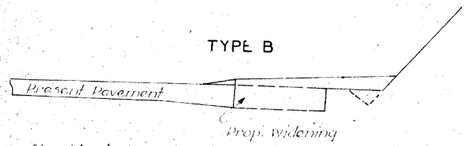
SHOULDER

TYPE A



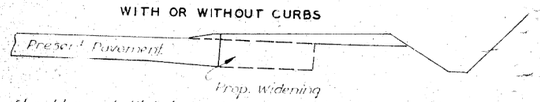
Shoulder to be cut and waste material to be bladed over shoulder and shaped. 55,210 ft. of shoulder one side of pavement.

TYPE B



Shoulder to be cut and material placed to widen shoulders in type A and type B shoulder areas. 12,413 ft. of shoulder one side of pavement.
Maximum haul 1 mile.

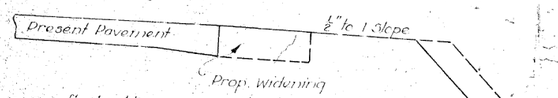
TYPE C
WITH OR WITHOUT CURBS



Shoulder and ditch to be cut and material placed to widen shoulders. 2,130 ft. of shoulder one side of pavement.
Maximum haul 1 mile.

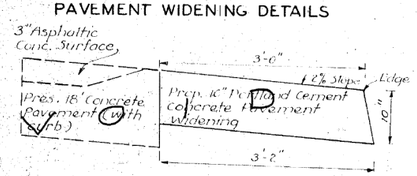
Note:
Additional dirt will be needed adjacent to culverts and bridges.

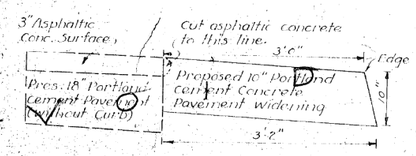
TYPE D



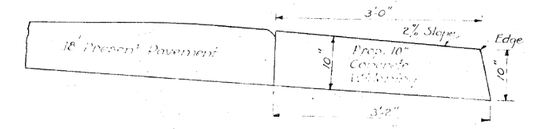
104,734 ft. shoulders, on one side of pavement equals 383.67 stations centerline measurement do not require excavation except for trench. Material excavated from trench shall be spread over shoulder after widening is built. Excess material can be bladed on the foreslopes.
Asphaltic material, rock and gravel now on shoulder that is considered worth salvaging will be done by the Highway Maintenance Department.

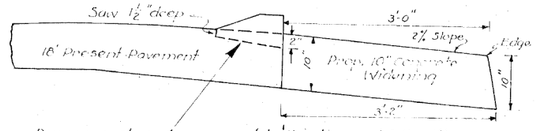
PAVEMENT WIDENING DETAILS



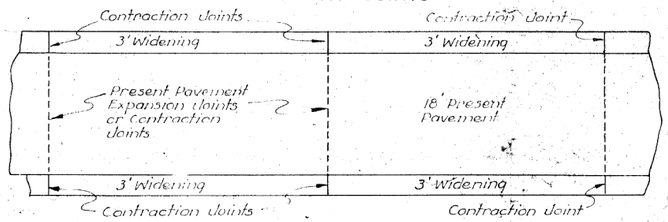


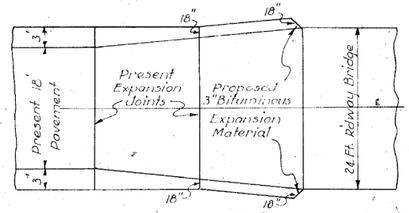
PAVEMENT WIDENING





CONTRACTION JOINTS

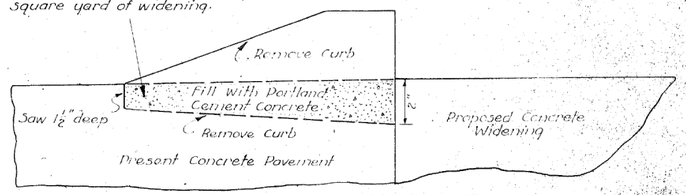




Detail for widening of bridge.
(Details for other width bridges will be be similar to detail shown.)

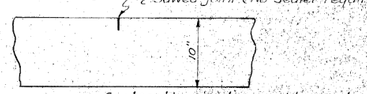
DETAIL OF CURB REMOVAL

Estimated 0.54 Cu. Yds. of concrete per station (one side) for filler. Not a Bid item, but incidental to price per square yard of widening.



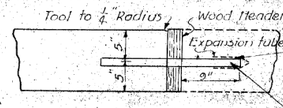
JOINTS IN WIDENING

CONTRACTION JOINT



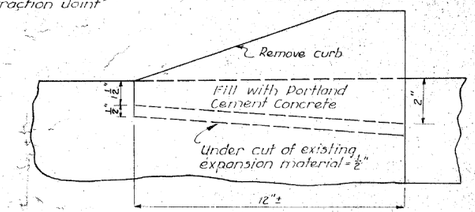
Contraction joints on widening to match expansion and contraction joints in present pavement.

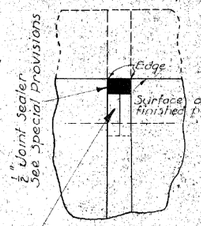
DAYS WORK OR EMERGENCY JOINT



Treat end of dowel to eliminate bond.
Use 400 W or heavy grease and expansion tube.

DETAIL OF EXPANSION JOINTS





Revised Oct. 17, 1955 - New sheet made
Revised Nov. 18, 1955 - Maximum haul one mile.

This Sheet
For Information Only

Oct. 10, 1955

Grundy Co. P Proj No 48 W (Pavement Widening) Sheet No. 3

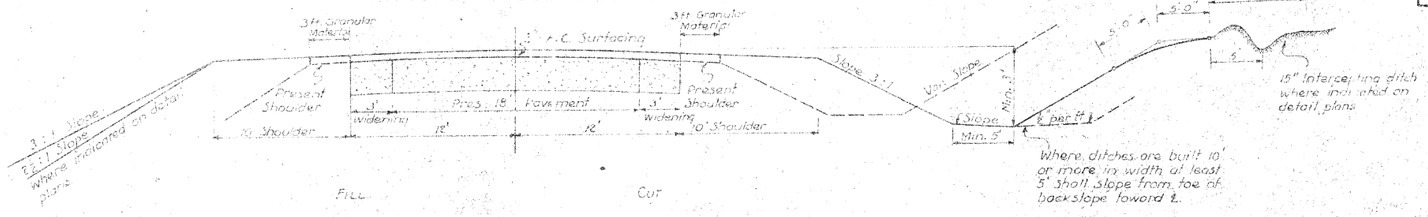
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.7

9:10:45 AM 6/14/2016 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	P. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	IOWA	48		3	5

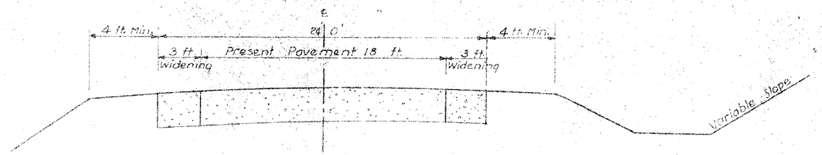
16

TYPICAL CROSS SECTION

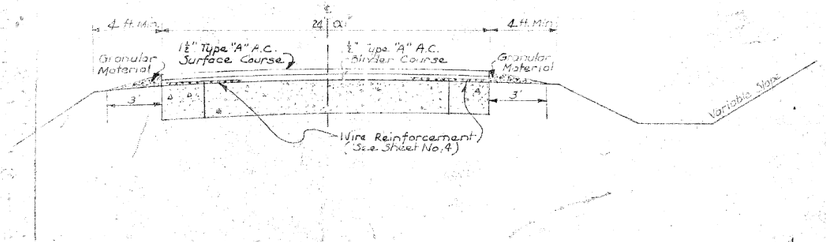


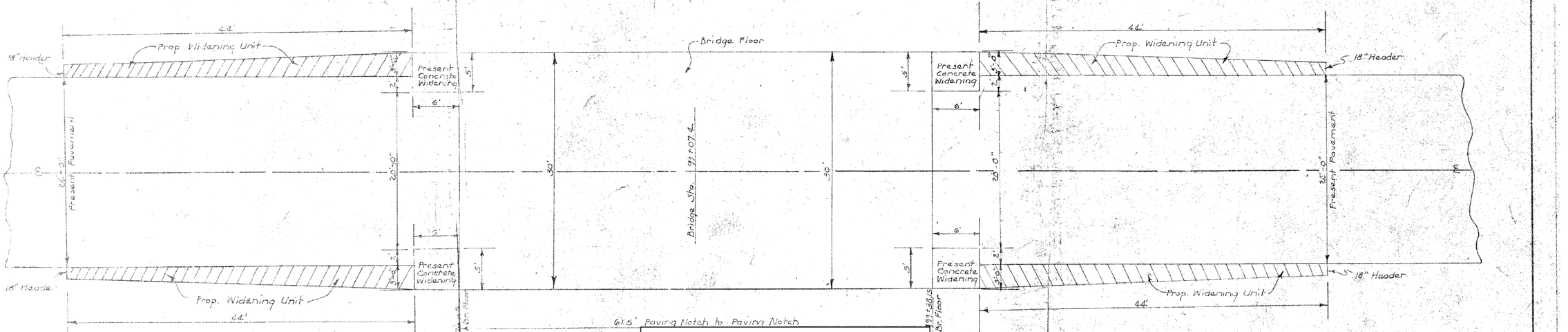
Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

TYPICAL SECTION AFTER WIDENING



TYPICAL SECTION AFTER RESURFACING





DETAILS OF BRIDG
BRIDG

This Sheet
For Information Only

Revised Jan. 22, 1957

Grundy Co. P Proj No. 48 Sheet No. 3

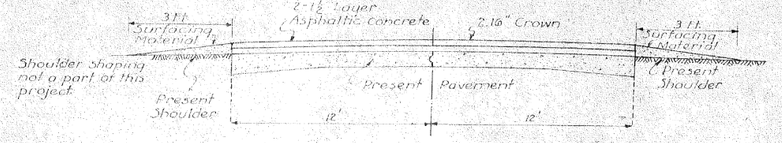
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.8

9:11:00 AM 6/14/2016 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

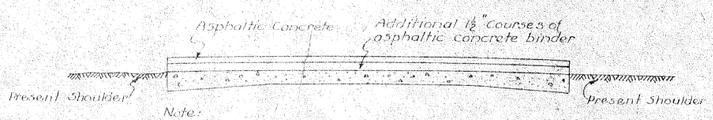
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	NO.	SHEETS
5	IOWA	48		4	5

16

TYPICAL CROSS SECTION

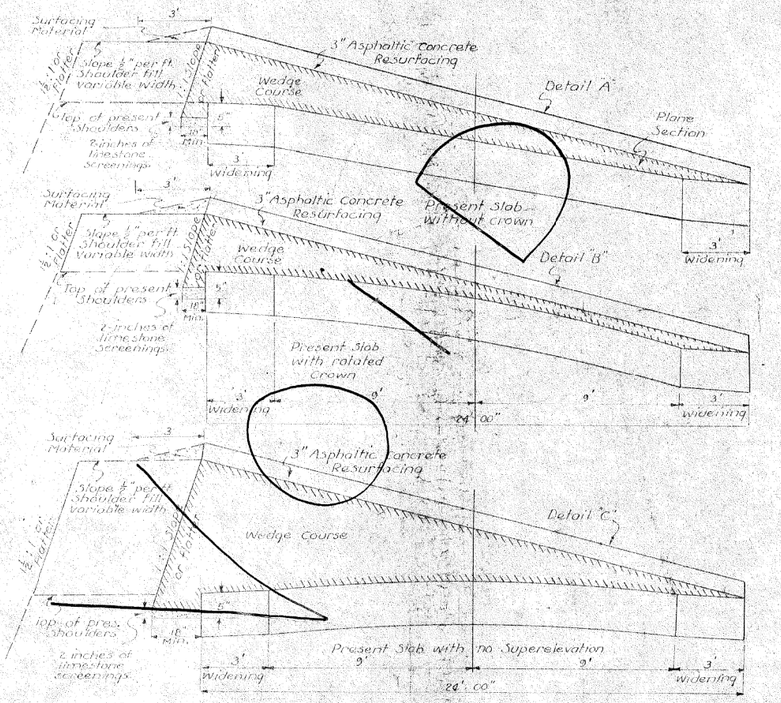


SECTION TO VOID EXCESS PATCHING



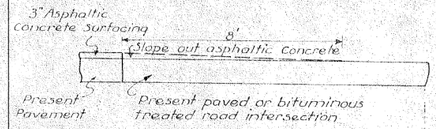
Note:
Where the area of patching would exceed 14% of the area in any 100 ft. station, no full depth patching will be required, but additional courses of asphaltic concrete will be placed as shown above. Where area of patching (full depth) is less than 14% in any station (100') patching will be required. use min. 50' runouts.

DETAILS FOR PLACING WEDGE COURSE ON CURVES

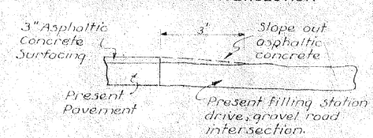


Note:
Trench out 5 inches below present pavement to required width. Trench excavation included in shoulder excavation. Base widening shall be constructed in accordance with article 2206-1956 Standard Specifications with the exception that a trenching machine will not be required.

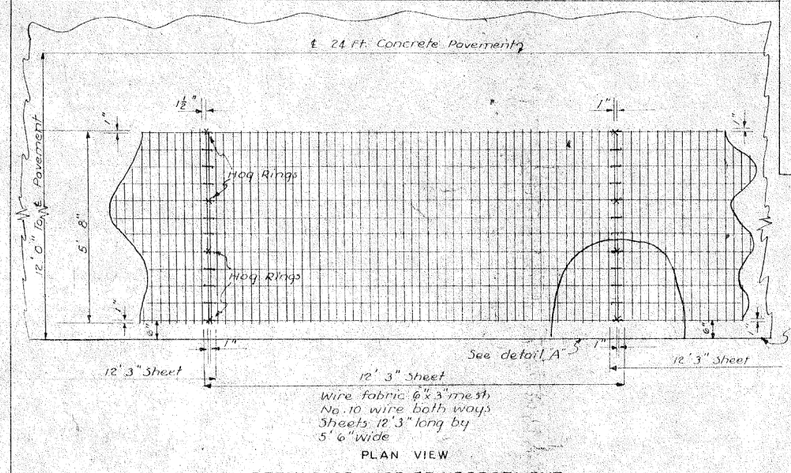
SECTION FOR PAVED OR BITUMINOUS TREATED ROAD INTERSECTION



SECTION FOR COMMERCIAL DRIVES AND GRAVEL ROAD INTERSECTION



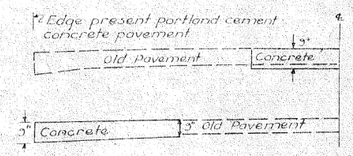
Note:
The area for sloping out asphaltic concrete is to be swept clean of any loose material and primed prior to placing of asphaltic concrete.



DETAILS OF WIRE REINFORCEMENT

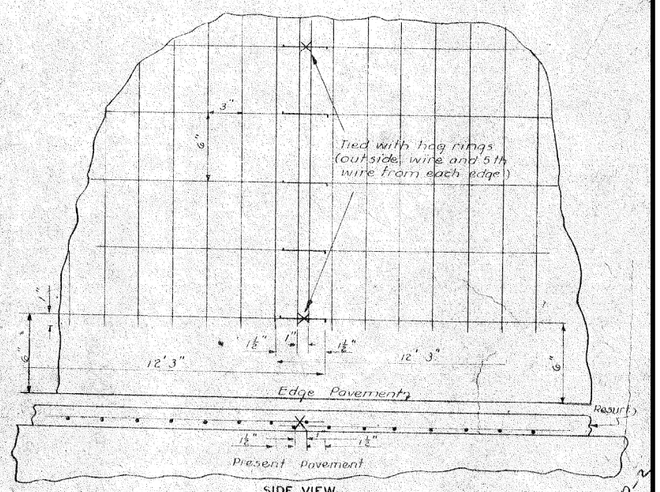
BASE REPAIR
FULL DEPTH PATCHING

PORTLAND CEMENT CONCRETE PATCH



Note:
Length width and shape of patch will vary as necessary to repair present pavement. Payment will be made on the square yard area of patch measured entirely within the neat lines of the present portland cement concrete pavement. See typical section and note where patching exceeds 14% of the area of any 100 ft. station. Old concrete removed shall be wasted or stockpiled within 1/2 mile haul as directed by the Engineer.

DETAIL "A"



Revised March 1957
Revised May 1956
Revised April 1956

Grundy Co. F. Proj. No. 48

Sheet No. 4.

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FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.9	

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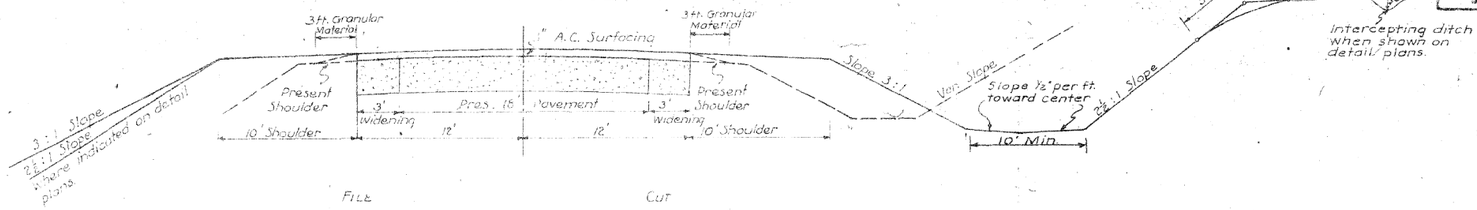
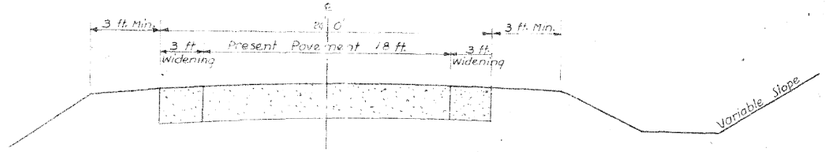
FED. ROAD DIST. NO.	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	IOWA	48		2	27

TYPICAL CROSS SECTION (ULTIMATE)

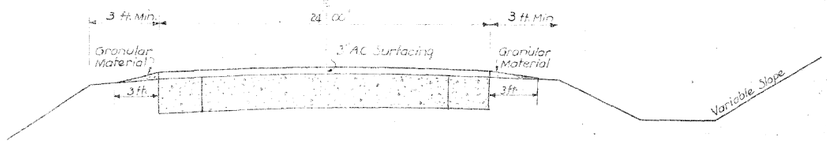


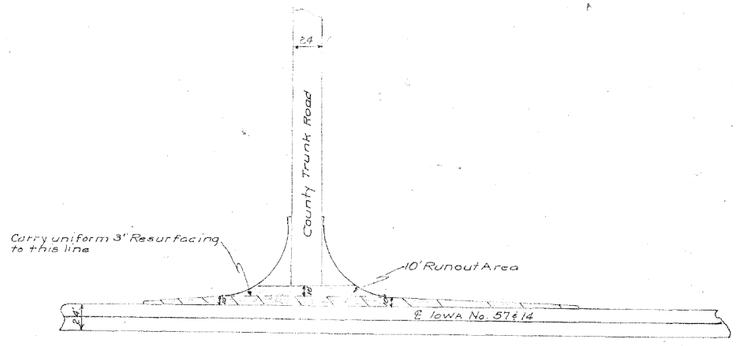
Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

TYPICAL SECTION AFTER WIDENING (EXISTING)



TYPICAL SECTION AFTER RESURFACING (THIS IMPROVEMENT)





DETAILS OF RUNOUT AT STA. 488+24.0

This Sheet
For Information Only

IOWA STATE HIGHWAY COMMISSION
STANDARD DESIGN NO. RD - 32
TYPICAL IMPROVEMENT SECTIONS
SCALE - NONE | DECEMBER 1958

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.10

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2602
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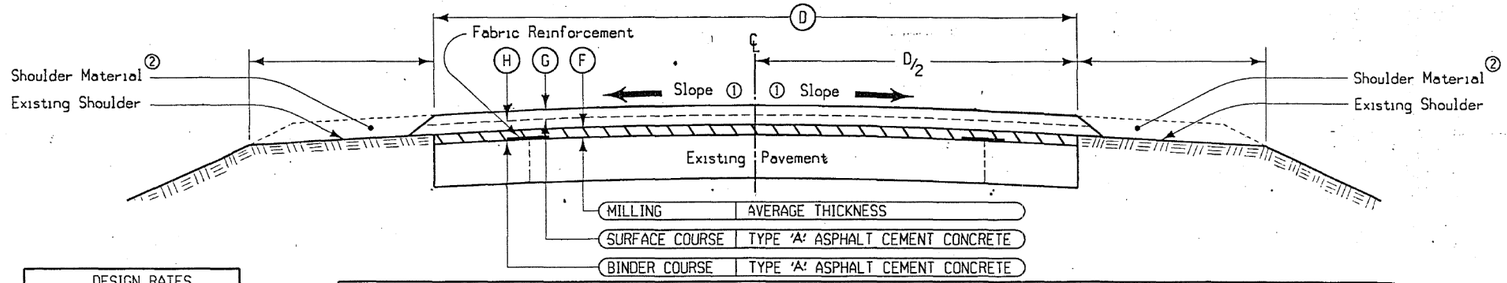


DESIGN RATES	
ITEM	RATE
Surface Course	140 lbs./cu.ft
Binder Course	140 lbs./cu.ft
Tack Coat	0.05 gal./sq.yd.
Milling	140 lbs./cu.ft

TABLE OF DESIGN QUANTITIES — Per Station

LOCATION		DIMENSIONS				PRIME AND TACK COAT	ASPHALT CEMENT	ASPHALT CEMENT CONCRETE Tons		MILLING
ROAD IDENTIFICATION	STATION TO STATION	(D)	(F)	(G)	(H)	Gallons	Tons	SURFACE (S)	BINDER (B)	TONS
IOWA 14	356+75.00 - 439+44.20	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0
IOWA 14	0+00.00 - 70+50.00	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0
IOWA 14	98+75.00 - 519+50.00	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0

Notes:

① Finished slope shall match existing pavement except that the maximum allowable slope is 3.0 %, minimum allowable slope is 2.0 %. Section may be modified as directed by the engineer through areas of special shaping.

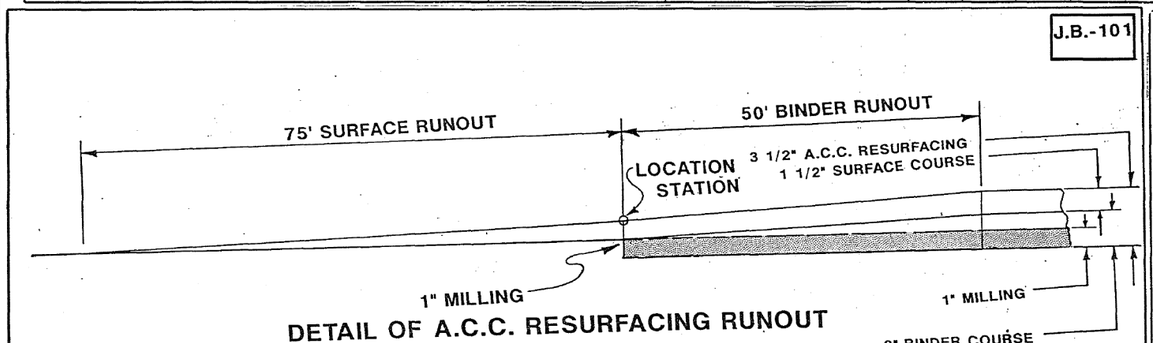
Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.

② Shoulder material as specified elsewhere in these plans; refer to Typical 7124 for "Type 'A' Granular Surfaced Shoulders".

③ To be placed in one lift.

TYPICAL CROSS SECTION ASPHALT CEMENT CONCRETE RESURFACING

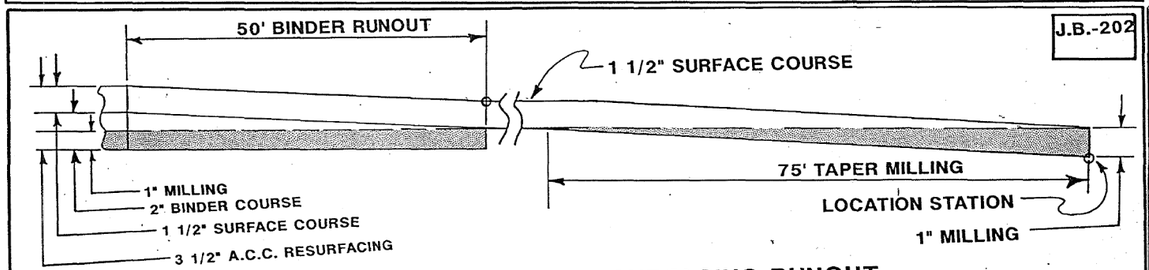
J.B.-101



DETAIL OF A.C.C. RESURFACING RUNOUT

LOCATION STATION
STA. 356+75.00(BACK)
STA. 519+50.00(AHEAD)

J.B.-202



DETAIL OF A.C.C. RESURFACING RUNOUT

LOCATION STATION
STA. 80+75.00(BACK)
STA. 98+76.00(AHEAD)

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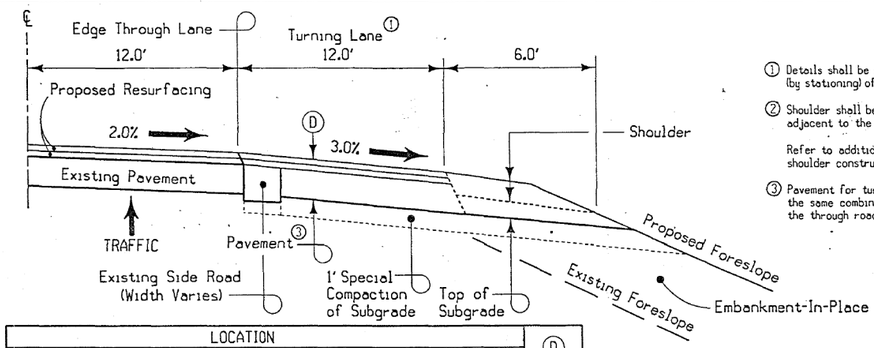
2305
MODIFIED



LOCATION			(D)
ROAD IDENT.	STATION TO STATION	SIDE	
Iowa 14	46+71.50	52+00.00	RT.	11.0"

① Details shall be similar for construction for either side (by stationing) of roadway.

② Shoulder shall be constructed 6 ft. wide only when adjacent to the turning lane pavement.

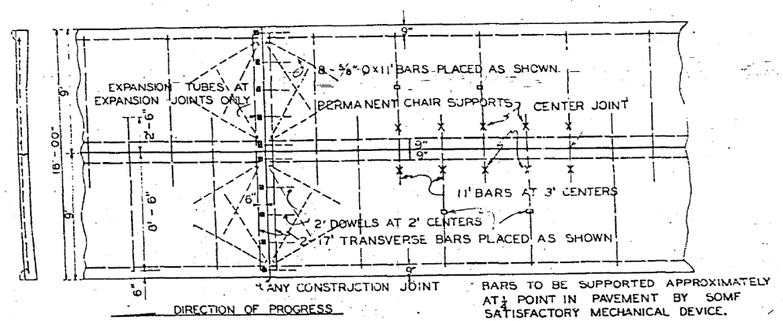
Refer to additional other plan drawings for details of shoulder construction.

③ Pavement for turning lane shall be constructed of the same combination of requirements specified for the through roadway pavement.

TYPICAL HALF SECTION ACC TURNING LANE

J.B.-303

1932 PAVING



EXISTING PAVEMENT REINFORCING PLAN

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	MARSHALL/GRUNDY COUNTY	PROJECT NUMBER FN-14-5(53)--21-64	SHEET NUMBER 2A	TOTAL SHEETS 17

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.11

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① Refer to Standard Road Plan RF-19C.
② Refer to Soils Sheets

TABULATION OF LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

(104-9)
07-21-87

LOCATION						LONGITUDINAL SUBDRAIN				CMP SUBDRAIN OUTLET RF-19D, RF-19E or RF-22			POROUS BACKFILL	Class "A" Crushed Stone	REMARKS
Line No.	Road or Lane Ident.	MARSHALL COUNTY Station	to Station	Side	Depth (D) Inch.	Shoulder ① Size	Shoulder ① Lin. Ft.	Backslope ② Size	Backslope ② Lin. Ft.	Station	Size	Type	Cu. Yds.	Cu. Yds.	
1	14	367+93	373+00	RT	40	4	537			367+93	6"	E	41	0.2	
										373+00	6"	E			
2	14	385+00	388+18	RT	40	4"	345			385+00	6"	E	58	0.2	
										388+18	6"	E			
3	14	388+43	394+70	RT	40	4"	653			388+43	6"	E	50	0.2	
										394+70	6"	E			
4	14	394+84	400+53	RT	40	4"	591			394+84	6"	E	33	0.2	
										400+53	6"	E			
5	14	400+90	403+30	RT	40	4"	263			400+90	6"	E	59	0.2	
										403+30	6"	E			
6	14	403+49	408+85	RT	40	4"	566			403+49	6"	E	56	0.2	
										408+85	6"	E			
7	14	413+00	419+09	RT	40	4"	618			419+09	6"	E	34	0.2	
8	14	409+09	413+00	RT	40	4"	631			419+28	6"	E	65	0.2	
8A	14	425+50	432+93	RT	40"	4"	760			432+93	6"	E		0.2	
9	14	433+11	438+65	RT	40	4	575			433+11	6"	E	116	0.2	
										438+65	6"	E			
		GRUNDY	COUNTY												
10	14	30+00	34+55	RT	40	4"	476			30+00	6"	E	157	0.2	
										34+55	6"	E			
11	14	34+68	39+34	RT	40	4"	486			34+68	6"	E	67	0.2	
										39+34	6"	E			
12	14	59+55	61+66	RT	40	4"	232			59+55	6"	E	45	0.2	
										61+66	6"	E			
13	14	62+02	64+00	RT	40	4"	221			62+02	6"	E	52	0.2	
										64+00	6"	E			
14	14	124+34	130+00	LT	40	4"	587			130+00	6"	E	25	0.2	
										124+34	6"	E			
15	14	168+55	170+53	LT	40	4"	216			170+53	6"	E	22	0.2	
										168+55	6"	E			
16	14	170+53	177+58	LT	40	4"	723			177+58	6"	E	55	0.2	
										170+53	6"	E			
17	14	177+77	180+00	LT	40	4"	251			177+67	6"	E	22	0.2	
										180+00	6"	E			
18	14	195+00	198+58	LT	40	4"	382			195+00	6"	E	67	0.2	
										198+58	6"	E			
19	14	198+65	201+00	LT	40	4"	255			198+65	6"	E	25	0.2	
										201+00	6"	E			
20	14	199+90	211+40	RT	40	4"	1164			199+90	6"	E	36	0.2	
										211+40	6"	E			
21	14	211+40	216+70	RT	40	4"	550			211+40	6"	E	24	0.2	
										216+70	6"	E			
22	14	216+70	226+00	RT	40	4"	945			216+70	6"	E	94	0.2	
										226+00	6"	E			
23	14	233+97	239+18	LT	40	4"	539			233+97	6"	E	55	0.2	
										239+18	6"	E			
24	14	239+50	240+94	LT	40	4"	164			239+50	6"	E	87	0.2	
										240+94	6"	E			
25	14	264+00	269+41	LT	40	4"	563			264+00	6"	E	52	0.2	
										269+41	6"	E			
26	14	269+58	275+00	RT	40	4"	564			269+58	6"	E	18	0.2	
										275+00	6"	E			
27	14	275+00	282+16	RT	40	4"	734			275+00	6"	E	53	0.2	
										282+16	6"	E			
28	14	282+30	287+00	RT	40	4"	489			282+30	6"	E	52	0.2	
										287+00	6"	E			
29	14	310+00	314+80	RT	40	4"	500			310+00	6"	E	69	0.2	
										314+80	6"	E			
30	14	315+50	329+50	RT	40	4"	1420			315+50	6"	E	46	0.2	
										329+50	6"	E			
31	14	329+58	335+00	RT	40	4"	562			329+58	6"	E	47	0.2	
										335+00	6"	E			
32	14	371+10	375+00	RT	40	4"	406			371+10	6"	E	130	0.2	
										375+00	6"	E			
33	14	375+00	380+00	RT	40	4"	520			375+00	6"	E	53	0.2	
										380+00	6"	E			
34	14	395+49	398+50	LT	40	4"	323			395+49	6"	E	40	0.2	
										398+50	6"	E			
35	14	411+13	415+00	RT	40	4"	407			411+13	6"	E	49	0.2	
										415+00	6"	E			
36	14	421+17	425+50	RT	40	4"	451			421+17	6"	E	37	0.2	
										425+50	6"	E			
37	14	425+50	430+50	RT	40	4"	519			425+50	6"	E	39	0.2	
										430+50	6"	E			
38	14	430+55	435+00	RT	40	4"	469			430+55	6"	E	44	0.2	
										435+00	6"	E			
39	14	435+00	440+00	RT	40	4"	517			435+00	6"	E	49	0.2	
										440+00	6"	E			
40	14	440+00	445+00	RT	40	4"	517			440+00	6"	E	44	0.2	
										445+00	6"	E			
41	14	445+00	450+00	RT	40	4"	519			445+00	6"	E	49	0.2	
										450+00	6"	E			
42	14	450+00	455+50	RT	40	4"	570			455+50	6"	E	49	0.2	
										450+00	6"	E			
43	14	455+60	469+00	RT	40	4"	1354			455+60	6"	E	49	0.2	
										469+00	6"	E			
44	14	469+00	480+00	LT	40	4"	1116			469+00	6"	E	53	0.2	
										480+00	6"	E			
45	14	480+00	488+04	LT	40	4"	824			480+00	6'	E	39	0.2	
										488+04	6"	E			
46	14	488+27	493+07	LT	40	4"	506			488+27	6"	E	89	0.2	
										493+07	6"	E			
47	14	493+18	498+50	LT	40	4"	551			493+18	6"	E	67	0.2	
										498+50	6"	E			
48	14	498+50	505+00	LT	40	4"	669			498+50	6"	E	58	0.2	
										505+00	6"	E			
49	14	505+00	509+63	LT	40	4"	486			505+00	6"	E	59	0.2	
										509+63	6"	E			
50	14	509+77	519+00	LT	40	4"	948			509+77	6"	E	48	0.2	
										519+00	6"	E			

NOTE: IN GRUNDY CO CUT SIDE ROAD FILLETS AT STA 210+35 AND STA 472+75.
CUT DRIVEWAY FILLETS AT STA 170+50 AND STA 462+00
NOTE: SPREAD CRUSHED FILLET MATERIAL ON SHOULDER AS DIRECTED BY ENGINEER OR DISPOSE OF FILLET MATERIAL IN A METHOD APPROVED BY IOWA DNR.

31740

EXTRA WORK ORDERS

NO.	DESCRIPTION	UNIT	TOTAL
8001	15" CONC. APRONS	ONLY	2
8002	18" CONC. APRONS	ONLY	2
8003	REMOVE AND REPLACE INTAKE	ONLY	1
8004	PAVEMENT REMOVAL	S.Y.	317.23
8005	FLAGGERS	DAYS	15
8006	PILOT CAR	DAYS	4
8007	ASPHALT FILLETS	TONS	566.02
8008	CLASS A STONE	TONS	0
8009	REMOVE AND HAUL DIRT	L.S.	8943.77
8010	RELOCATE MAIL BOXES	L.S.	307.52
8011	PAY OUT OF DISTANCE HAUL	TONS/MILE	11,431.29
8012	PATCHES FULL DEPTH BY AREA	S.Y.	1209.40
8013	E.F. JOINT ASSEMBLY	ONLY	2
8014	SILT FENCE	L.S.	200.00
8015	CLASS 13 FOR TAPERS	C.Y.	116.31
8016	ASPHALT CONC. FOR TAPERS	TONS	259.57
8017	DROP INLET	L.S.	200.00
8018	GRANULAR FILL	TONS	19.63
8019	FURNISH AND PLACE CONC.	L.S.	85.00
8020	SMOOTHNESS INCENTIVE	L.S.	12460.51
8021	FURNISH AND PLACE RF-37 POSTS	ONLY	6

GEOTECHNICAL DESIGN

I hereby certify that this plan was prepared under my supervision and that geotechnical decisions with regard to the design were made by me or by other duly Qualified Professional Geologists under the laws of the State of Iowa.

Name Gustafson Date 2/15/90

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ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	MARSHALL/GRUNDY COUNTY	PROJECT NUMBER FN-14-5(53)--21-64	SHEET NUMBER 3F	TOTAL SHEETS 17

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.12

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