

UTILITY CONTACTS		
UTILITY	CONTACT	PHONE #
ELECTRIC (OVERHEAD)	MIDLAND POWER COOP	515-386-4111
WATER	CENTRAL IOWA WATER ASSOCIATION	319-824-5920
GAS	ALLIANT ENERGY	319-286-1315
TELEPHONE	HEART OF IOWA	641-486-2211

IOWA  
DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
PLANS OF PROPOSED IMPROVEMENT ON THE  
**FARM TO MARKET SYSTEM  
HARDIN COUNTY**  
HMA RESURFACING WITH MILLING

ON COUNTY HIGHWAY D65: FROM U.S. HIGHWAY 65 EAST TO COUNTY HIGHWAY S55 AND ON COUNTY HIGHWAY S57: FROM MARSHALL COUNTY LINE NORTH TO COUNTY HIGHWAY D65

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

**PROJECT TRAFFIC CONTROL PLAN**

THIS ROAD WILL REMAIN OPEN TO THROUGH TRAFFIC DURING CONSTRUCTION. TRAFFIC WILL BE DIRECTED AROUND THE CONSTRUCTION WITH FLAGGERS AND A PILOT CAR.

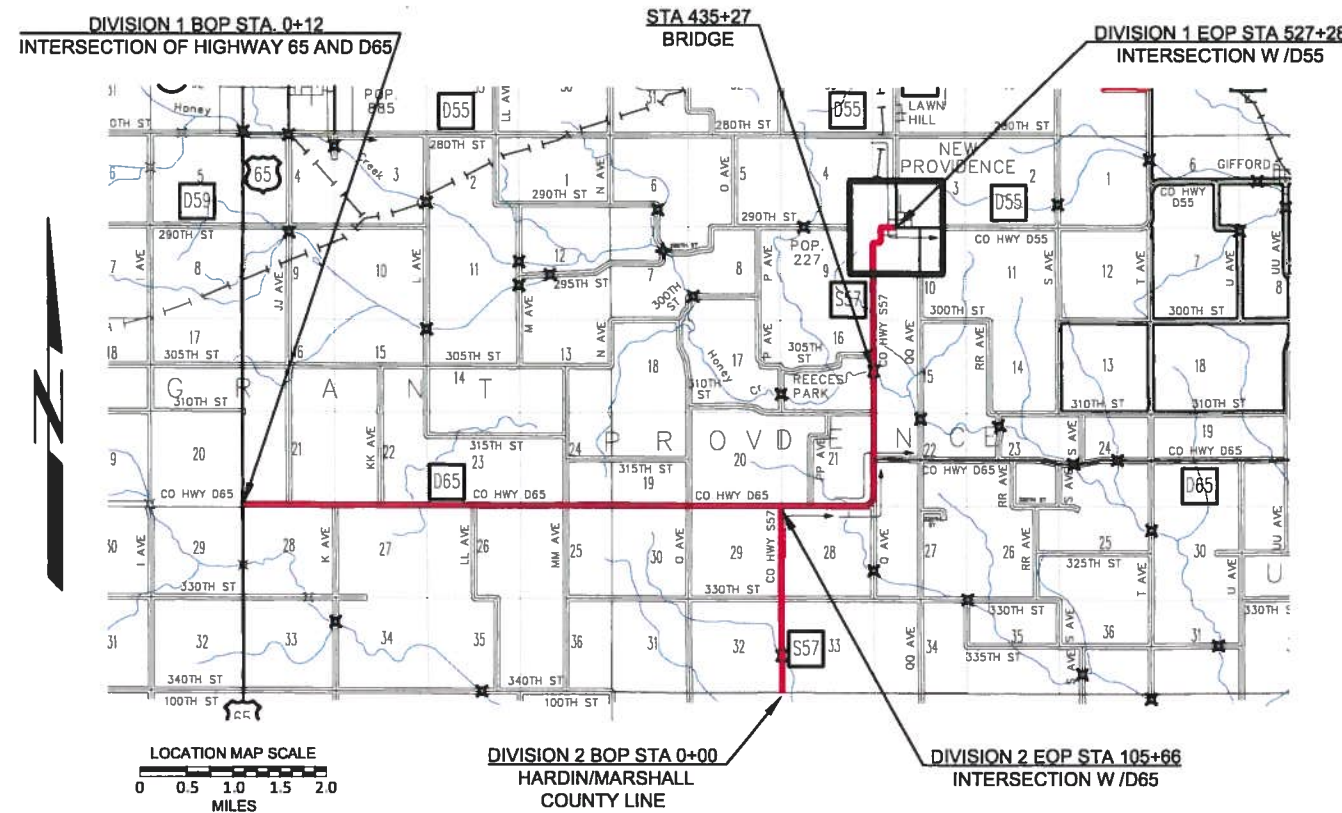
TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, PLACED, AND MAINTAINED BY THE CONTRACTOR.

INDEX OF SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE OF QUANTITIES AND REFERENCE NOTES
3	TYPICAL CROSS SECTION AND PAVEMENT MARKING TABULATIONS
4	SCARIFICATION DETAILS

MILEAGE SUMMARY			
DIV.	LOCATION	LIN.FT.	MILES
1	STA 0+12 - 527+28 LESS BRIDGE AT STA 435+27	52,716.00 127.00	9.984 0.024
2	STA 0+00 - 105+66	10,566.00	2.001
TOTAL PROJECT		63,155.00	11.961

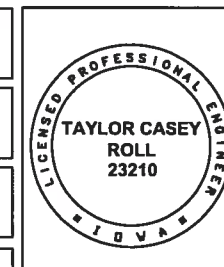
STANDARD ROAD PLANS		
THE FOLLOWING STANDARD PLANS SHALL BE CONSIDERED APPLICABLE TO CONSTRUCTION WORK ON THIS PROJECT.		
NUMBER	DATE	TITLE
PM-110	10-16-18	LINE TYPES
PM-120	10-21-14	STOP LINES AND ISLANDS
PM-420	04-19-11	TWO-LANE ROADWAY WITH NO TURN LANES (ONE WAY STOP CONDITION)
PM-520	04-19-11	TWO-LANE ROADWAY WITH NO TURN LANES (TWO-WAY STOP CONDITION)
PV-3	10-18-11	SAFETY EDGE
PV-202	04-16-13	HOT MIX ASPHALT RESURFACING
TC-1	04-16-13	WORK NOT AFFECTING TRAFFIC (TWO-LANE OR MULTI-LANE)
TC-213	04-17-12	LANE CLOSURE WITH FLAGGERS
TC-214	10-17-17	LANE CLOSURE WITH FLAGGERS FOR USE WITH PILOT CAR
TC-233	10-17-17	PAVEMENT MARKING OPERATIONS TWO-LANE
TC-282	04-19-11	UNEVEN LANES



2013 AADT 390 V.P.D.



BJ Hoffman	Chairperson
Renee McClellan	
Lance Granzow	
Approved Board of Supervisors	



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.

**CHECK PLANS**

Signature: Taylor Casey Roll  
Date: \_\_\_\_\_  
Printed or Typed Name: Taylor Casey Roll

My license renewal date is: December 31, 2019  
Pages or sheets covered by this seal: Sheets 1 thru 4

**ESTIMATE REFERENCE INFORMATION**

ESTIMATED QUANTITIES							
ITEM NO.	ITEM CODE	ITEM	UNIT	DIV. 1 (D65)	DIV. 2 (S57)	TOTAL	AS BUILT QTY.
1	2121-7425020	GRANULAR SHOULDER, TYPE B	TON	6,088.70	1,220.40	7,309.10	
2	2212-0475095	CLEAN+PREPARATION OF BASE	MILE	9.96	2.00	11.96	
3	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	481.50	74.10	555.60	
4	2214-5145150	PAVEMENT SCARIFICATION	SY	132,045.00	25,911.40	157,956.40	
5	2303-0002380	HMA INTERLAYER BASE COURSE, 3/8"	TON	7,492.50	1,474.60	8,967.10	
6	2303-1032500	HMA STANDARD TRAFFIC, INTERMEDIATE, 1/2" MIX	TON	11,916.00	1,624.20	13,540.20	
7	2303-1033504	HMA STANDARD TRAFFIC, SURF, 1/2" MIX, FRIC L-4	TON	11,680.40	1,588.00	13,268.40	
8	2303-1258283	ASPHALT BINDER, PG 58-28S, STANDARD TRAFFIC	TON	1,415.80	192.75	1,608.55	
9	2303-1258346	ASPHALT BINDER, PG 58-34E, EXTREMELY HIGH TRAFFIC	TON	599.40	117.90	717.30	
10	2303-6911000	HMA PAVEMENT SAMPLE	LS	0.75	0.25	1.00	
11	2303-7000610	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE LABORATORY VOIDS (FORMULA - BY PAY FACTOR)	EACH	11,800.00	2,500.00	14,300.00	
12	2303-7000620	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE FIELD VOIDS (FORMULA - BY PAY FACTOR)	EACH	11,800.00	2,500.00	14,300.00	
13	2303-9091010	RUMBLE STRIP PANEL (HMA SURFACE)	EACH	3.00	3.00	6.00	
14	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	980.00	90.00	1070.00	
15	2316-0000120	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA PAVEMENT SMOOTHNESS (BY SCHEDULE)	EACH	25,000.00	5,000.00	30,000.00	
16	2526-8285000	CONSTRUCTION SURVEY	LS	0.75	0.25	1.00	
17	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE/SOLVENT BASED	STA	3,373.19	584.89	3,958.08	
18	2528-8445110	TRAFFIC CONTROL	LS	0.75	0.25	1.00	
19	2528-8445113	FLAGGER	EACH	PER PROPOSAL	PER PROPOSAL	PER PROPOSAL	
20	2528-8445115	PILOT CAR	EACH	PER PROPOSAL	PER PROPOSAL	PER PROPOSAL	
21	2533-4980005	MOBILIZATION	LS	0.75	0.25	1.00	

**GENERAL NOTES:**

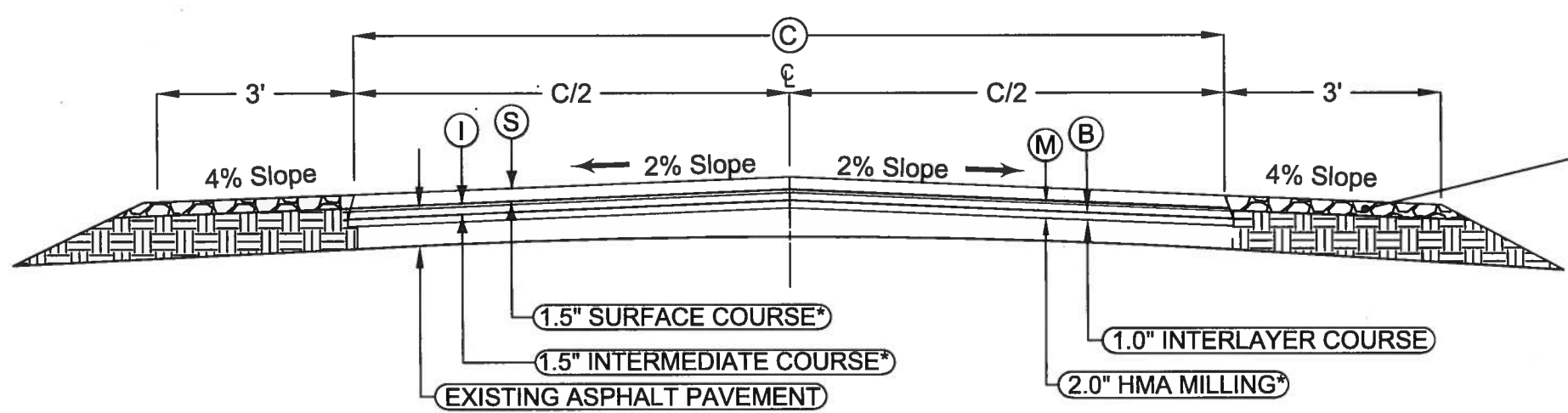
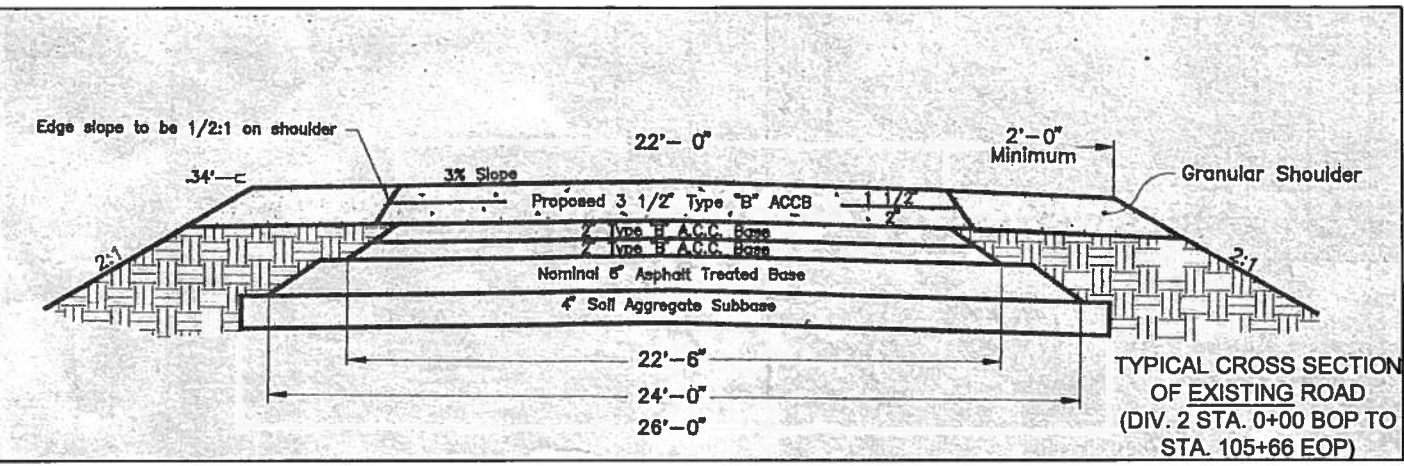
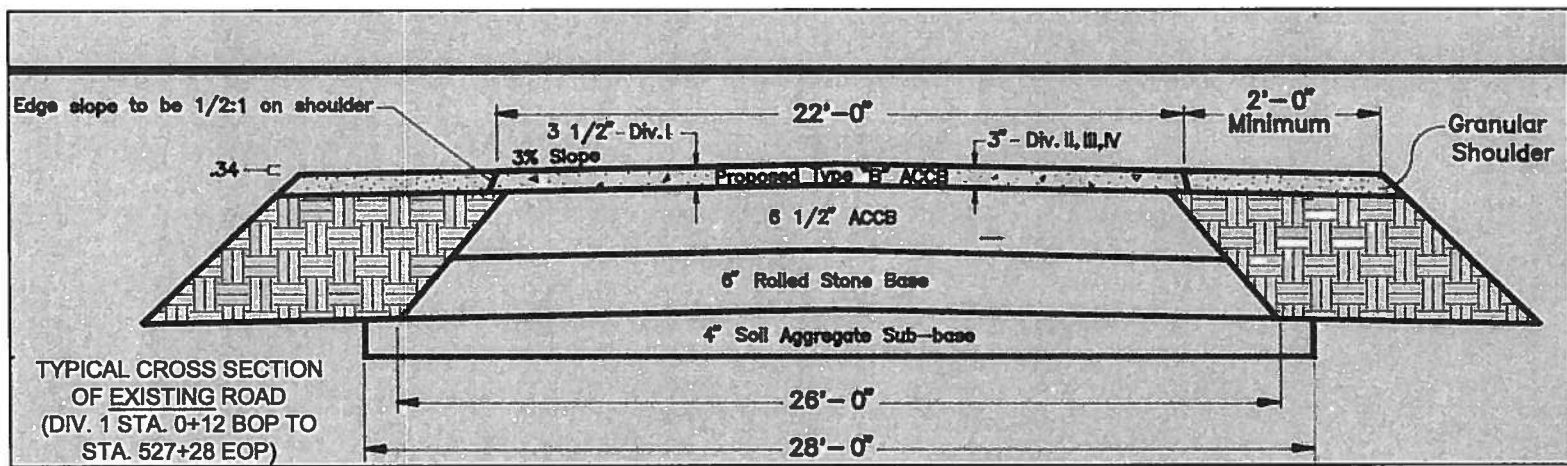
THIS PROJECT INVOLVES 2" MILLING, 1" INTERLAYER IN DIVISION 1 AND 2, 1.5" INTERMEDIATE AND SURFACE HMA RESURFACING IN DIVISION 1, 1.0" INTERMEDIATE AND SURFACE HMA RESURFACING IN DIVISION 2, 3' WIDE GRANULAR SHOULDERS AND PAVEMENT MARKINGS.

HARDIN COUNTY WILL MARK OUT SCARIFICATION SAWCUTS.

THE CONTRACTOR SHALL MAINTAIN CONTINUOUS PAVING. IF CONTINUOUS PAVING CANNOT BE MAINTAINED, PAVING OPERATIONS WILL BE SHUTDOWN UNTIL THE CONTRACTOR DEMONSTRATES THE ABILITY TO MAINTAIN CONTINUOUS PAVING.

THE CONTRACTOR SHALL VISIT THE SITE TO ENSURE THEY ARE FAMILIAR WITH EXISTING SITE CONDITIONS.

- 1 THE CONTRACTOR SHALL FURNISH CLASS "A" CRUSHED STONE TO BRING THE SHOULDERS UP TO THE HEIGHT OF THE NEW HMA PAVEMENT. THE CONTRACTOR SHALL DELIVER THE STONE TO THE JOBSITE AND PLACE IT THROUGH A SPREADER. THIS MATERIAL SHALL HAVE SUFFICIENT MOISTURE TO PROVIDE PROPER COMPACTION. THE FINAL COMPACTION PASS SHALL BE MADE WITH A STEEL DOUBLE DRUM ROLLER. FINAL ROAD SURFACE WILL NEED TO BE BROOMED UPON COMPLETION OF THE SHOULDERING. ESTIMATED PROJECT QUANTITY INCLUDES AN ADDITIONAL 10% FOR ANY IRREGULARITIES.
- 2 LOOSE MATERIAL SHALL BE REMOVED BEFORE HMA LIFTS ARE PLACED.
- 3 THIS ITEM INCLUDES ALL MATERIAL TO BE REMOVED FROM THE EXISTING GRAVEL SURFACED SIDE ROAD INTERSECTIONS. THE GRAVEL SHALL BE REMOVED TO ALLOW AN AVERAGE OF 7" HMA TO BE PLACED AT THE SIDE ROAD INTERSECTION. ALL GRAVEL MATERIAL CAN BE LEFT ON SITE AND USED ON THE EXISTING GRAVEL ROAD AS A TIE INTO THE NEW HMA SURFACE. SEE FILLET FOR NON-PAVED SIDE ROAD DETAIL ON SHEET 4 FOR LOCATIONS.
- 4 QUANTITY IS FOR MILLING NOTCHES FOR HEADERS AT BEGINNING AND END OF EACH DIVISION, AT BOTH ENDS OF BRIDGE, AND VARIOUS EXISTING PAVED HOUSE ENTRANCES. QUANTITY ALSO INCLUDES 2.0" OF MAINLINE HMA MILLING FOR ENTIRE LENGTH OF EACH DIVISION. HEADER LOCATIONS ARE EXISTING HMA. REFER TO SHEET 4 FOR DETAILS. SCARIFIED MATERIAL TO BE LOADED DIRECTLY INTO TRUCKS AND SHALL BECOME PROPERTY OF THE CONTRACTOR. IMMEDIATELY FOLLOWING THE SCARIFICATION OF ROADWAY HEADER LOCATIONS, THE CONTRACTOR SHALL PLACE A WEDGE OF MILLINGS ALONG THE HEADERS TO MAINTAIN TRAFFIC AND TO PROTECT THE EDGES OF THE ADJACENT ROADWAY.
- 5 A 1" THICK INTERLAYER BASE COURSE SHALL BE PLACED AS SHOWN ON TYPICAL SECTIONS ON SHEET 3.
- 6 A. THE FINAL MIXTURE SIZE OF THE HMA MATERIAL SHALL BE 1/2". SECTION 2303 OF THE CURRENT STANDARD SPECIFICATIONS SHALL APPLY. CERTIFIED PLANT INSPECTION IS REQUIRED.  
B. CONTRACTOR SHALL CONSTRUCT A 1 1/2" THICK HMA PAVEMENT IN DIVISION 1 AND A 1" THICK HMA PAVEMENT IN DIVISION 2 WITH A SINGLE LANE PICK-UP PAVER EQUIPPED WITH AN AUTOMATIC SCREED CONTROL.  
C. ITEM 7 C,D, AND E SHALL ALSO APPLY.
- 7 A. THE FINAL MIXTURE SIZE OF THE HMA MATERIAL SHALL BE 1/2" AND SHALL CONTAIN NOT LESS THAN 75% CRUSHED PARTICLES. SECTION 2303 OF THE CURRENT STANDARD SPECIFICATIONS SHALL APPLY. CERTIFIED PLANT INSPECTION IS REQUIRED.  
B. CONTRACTOR SHALL CONSTRUCT A 1 1/2" THICK HMA PAVEMENT IN DIVISION 1 AND A 1" THICK HMA PAVEMENT IN DIVISION 2 WITH A SINGLE LANE PICK-UP PAVER EQUIPPED WITH AN AUTOMATIC SCREED CONTROL.  
C. MATERIAL FOR FILLETS AT ENTRANCES AND ASPHALT RUNOUTS AT GRAVEL INTERSECTIONS IS INCLUDED.  
D. A WEIGHT OF 145 POUNDS PER CUBIC FOOT WAS USED TO ESTIMATE THE QUANTITY FOR THE HMA.  
E. THE MAT SHALL BE CLEANED AND TACKED BETWEEN LIFTS WITH CSS-1H APPLIED AT A RATE OF 0.05 GALLON PER SQUARE YARD. TACK OF FILLETS AND ASPHALT RUNOUTS SHALL BE INCLUDED IN THIS OPERATION.
- 8 FOR ESTIMATING PURPOSES, THE BASIC ASPHALT BINDER CONTENT FOR THE INTERMEDIATE AND SURFACE MIX SHALL BE 6%.
- 9 FOR ESTIMATING PURPOSES, THE BASIC ASPHALT BINDER CONTENT FOR THE INTERLAYER MIX SHALL BE 8%.
- 10 INCLUDES DELIVERING SAMPLES TO THE IOWA D.O.T. DISTRICT 1 MATERIALS OFFICE IN AMES.
- 13 RUMBLE STRIPS TO BE PLACED AT DIVISION 1 BOP AND DIVISION 2 EOP.
- 14 GRANULAR SURFACING SHALL CONSIST OF CLASS "A" CRUSHED STONE. INCLUDES GRANULAR SURFACING FOR DRIVEWAYS AND FIELD ENTRANCES. BID PRICE INCLUDES FURNISHING, DELIVERY, PLACING AND COMPACTION. ESTIMATED AT 10 TON PER ENTRANCE. FINAL ROAD SURFACE WILL NEED TO BE BROOMED UPON COMPLETION OF DRIVEWAY SURFACING.
- 15 SECTION 2316 OF THE CURRENT STANDARD SPECIFICATIONS SHALL APPLY. HMA PAVEMENT SMOOTHNESS (SCHEDULE A) INCENTIVE/DISINCENTIVE (EACH) = 108 SEGMENTS @ \$125 MAX PER SEGMENT.
- 16 CONTRACTOR SHALL LOCATE AND PRESERVE ALL LAND SURVEY CONTROL MONUMENTS LOCATED IN THE PROJECT AREA. SURVEY RECORDS ARE AVAILABLE AT THE COUNTY RECORDER AND COUNTY ENGINEER OFFICES. UPDATED CORNER CERTIFICATES AND MONUMENT PRESERVATION CERTIFICATES SHALL BE SUBMITTED TO HARDIN COUNTY UPON COMPLETION OF THE PROJECT. ALL OTHER CONSTRUCTION STAKING SHALL BE PERFORMED BY HARDIN COUNTY.
- 17 SEE TAB 108-22 ON SHEET 3. BROKEN CENTERLINE, DOUBLE CENTERLINE, AND NO PASSING ZONE LINE ESTIMATED FOR FOUR APPLICATIONS AND WHITE EDGE LINE ESTIMATED FOR ONE APPLICATION.
- 18 SEE SHEET 1 FOR TRAFFIC CONTROL PLAN.



Tack Coat estimated for 3 applications. Not a bid item. Quantities include HMA for Entrance Fillets.

Proposed 3' Wide Granular Shoulder (Typ. Both Sides)

DESIGN RATES	
ITEM	RATE
Surface Course	145 lbs./cu.ft
Intermediate Course	145 lbs./cu.ft
Interlayer Course	145 lb./cu.ft.
Tack Coat	0.05 gal./sq.yd.
Asphalt Binder	6% of Total HMA
Interlayer Binder	8% of Total HMA
Granular Shoulders	140 lbs./cu.ft. 5.8 tons/sta/side

TABLE OF MAINLINE DESIGN QUANTITIES											
LOCATION			B	I	S	M	C	HOT MIX ASPHALT (Tons)			REMARKS
ROAD IDENTIFICATION	STATION TO STATION		Inches	Inches	Inches	Inches	Feet	SURFACE	INTERMEDIATE	INTERLAYER	
DIV 1 (D65)	0+12	500+23	1.0	1.5	1.5	2.0	22.0	10,442.90	10,442.90	6961.90	INTERSECTION RUNOUT TOTALS NOT INCLUDED
DIV 1 (D65)	500+23	520+93	1.0	1.0*	1.0*	3.0*	22.0	288.90	288.90	288.90	S. EDGE OF NEW PROVIDENCE AT HOUSE #610 TO ENTRANCE OF FIRE DEPT. ON W. MAIN ST.
DIV 1 (D65)	520+93	527+28	1.0	1.0*	1.0*	3.0*	60.0*	241.70	241.70	241.70	ENTRANCE OF FIRE DEPT. TO EOP
DIV 2 (S57)	0+00	105+66	1.0	1.0*	1.0*	2.0	22.0	1479.20	1479.20	1479.20	INTERSECTION RUNOUT TOTALS NOT INCLUDED
TOTALS								12,452.70	12,452.70	8967.10	

TYPICAL CROSS SECTION PAVEMENT SCARIFICATION WITH HMA RESURFACING AND INTERLAYER COURSE DIV. I & II

### PAVEMENT MARKING LINE TYPES

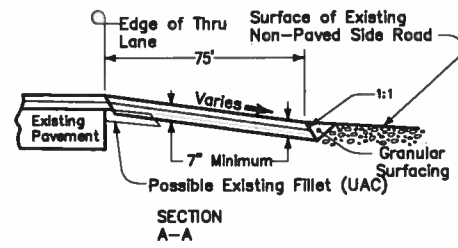
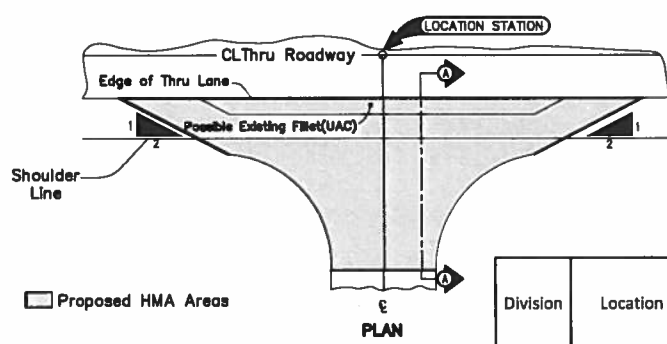
See PM-110

\*BCY4 - Place on the same side of the roadway to match existing markings near the project.  
 \*\*NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.

BCY4: Broken Centerline (Yellow) @ 0.25      DCY4: Double Centerline (Yellow) @ 2.00      NPY4: No Passing Zone Line (Yellow) @ 1.2  
 BLW4: Broken Lane Line (White) @ 0.25      ELRW4: Edge Line Right (White) @ 1.00      ELLW4: Edge Line Left (White) @ 1.00

Road ID	Station to Station		Length (STA)	Dir. of Travel	Marking Type	Side			Length by Line Type (Unfactored)							Remarks
						L	C	R	BCY4*	DCY4	NPY4**	BLW4	ELLW4	ELRW4	Stop	
						STA	STA	STA	STA	STA	STA	STA	STA	STA		
D65	0+12	527+28	527.16	BOTH	Waterborne/Solvent Paint	X	X	X	197.92	70.3	311.17	-	527.16	527.16	0.45	1 Stop Bar at BOP and EOP
S-57	0+00	105+66	105.66	BOTH	Waterborne/Solvent Paint	X	X	X	47.22	10.15	48.79	-	105.66	105.66	0.2	1 Stop Bar at EOP
Totals (Unfactored)									245.14	80.45	359.96		632.82	632.82	0.65	
Factor									0.25	2.00	1.25	0.25	1.00	1.00	6.00	
Totals (Per Application)									61.29	160.90	449.95	0.00	632.82	632.82	3.90	
Totals (Contract Quantities)									245.14	643.60	1799.80	0.00	632.82	632.82	3.90	

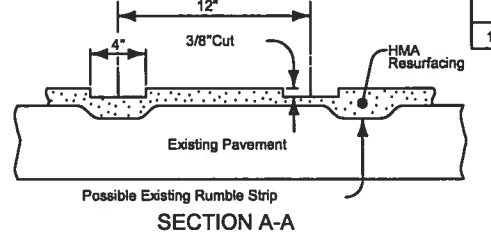
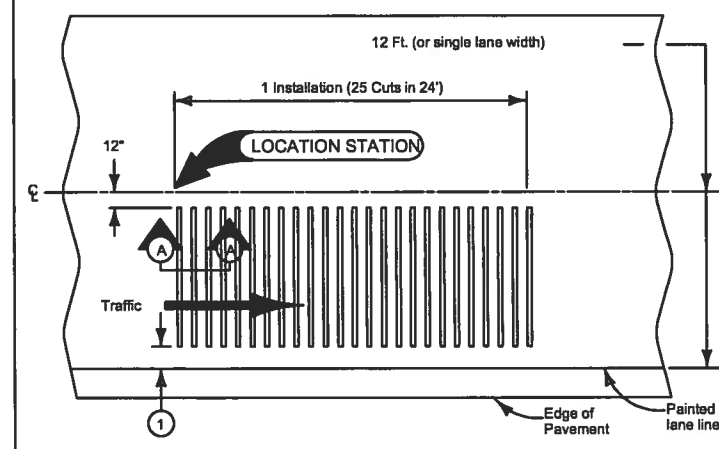




**Note:**  
 Payment for Excavation, Class 13, For Widening will be the contract unit price per cubic yard.  
 Seven inches of HMA will then be placed, five inches of intermediate and two inches of surface, and the stockpiled material will be used to blend the existing gravel surface into the HMA header.

Division	Location	Side	T Inches	L Feet	HOT MIX ASPHALT Tons (Per Location)	
					Surface	Intermediate
1	JJ Ave.	Left	7.0	75	40	72.5
1	K Ave.	Right	7.0	75	40	72.5
1	KK Ave.	Left	7.0	75	40	72.5
1	LL Ave.	Right	7.0	75	40	72.5
1	MM Ave.	Both	7.0	75	40	72.5
1	O Ave.	Both	7.0	75	40	72.5
1	PP Ave.	Left	7.0	75	40	72.5
1	Q Ave.	Y INT.	7.0	75	40	72.5
1	305th St.	Left	7.0	75	40	72.5
1	West Main St. a.k.a. 290th St.	Left	7.0	75	40	72.5
2	330th St.	Both	7.0	75	40	72.5

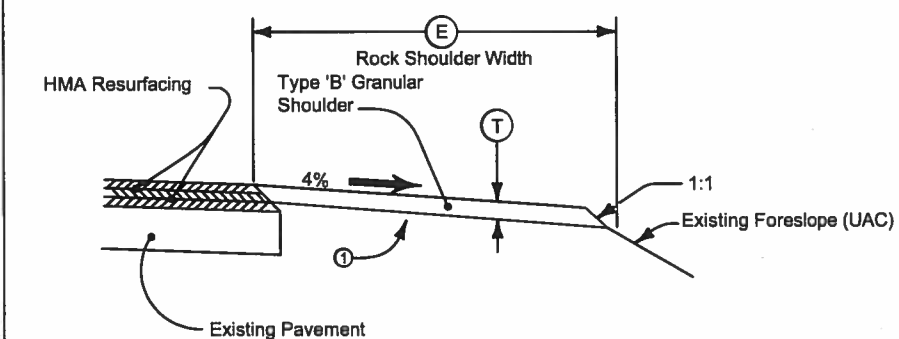
FILLET FOR NON-PAVED SIDE ROADS



Construction of rumble strip panels will be required on this project at locations designated on the plans.  
 Construction of rumble strip panels will be required within 24 hours after completion of final surface course.  
 The rumble strip panel shall be constructed by sawing strips of the dimension indicated above.  
 For each "Rumble Strip Panel" the contractor will be paid the contract unit price. This will be considered full compensation for construction of the panel as detailed hereon.

RUMBLE STRIP PANEL IN HMA RESURFACING

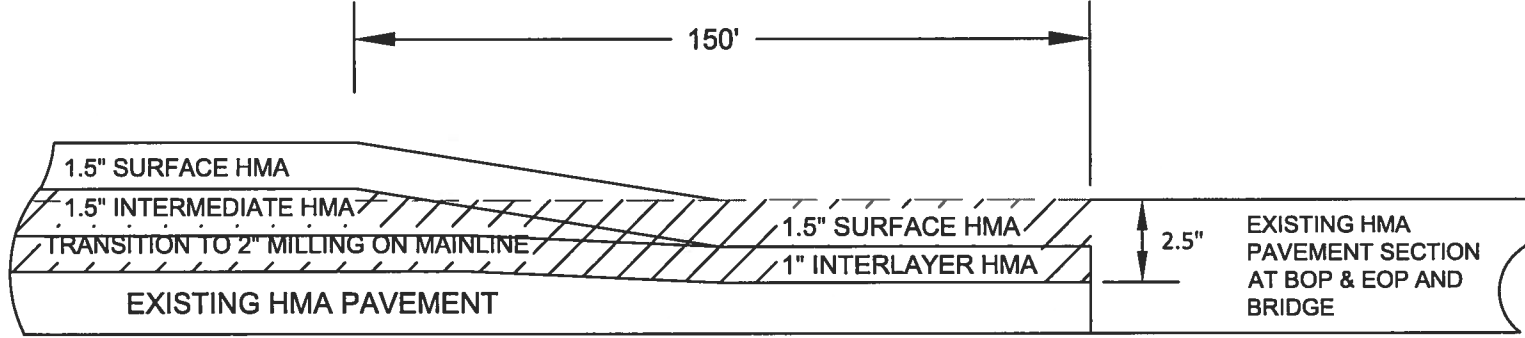
1 18" strip along painted lane line left as normal pavement surface to accommodate bicycles.



1 Existing shoulder surface to be shaped to a uniform cross slope prior to placing granular shoulder material. Shape to ensure the thickness of the granular shoulder material is not less than the thickness of the resurfacing.

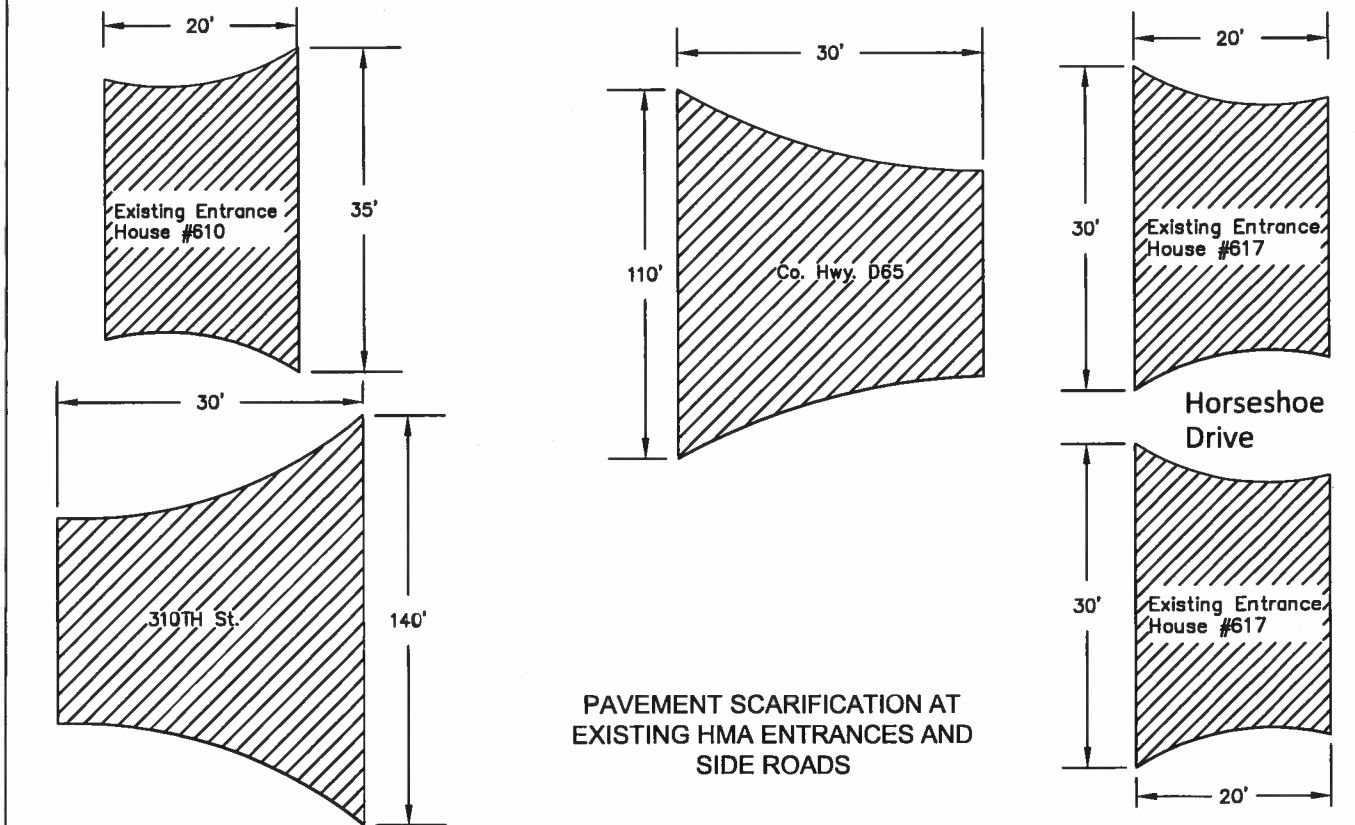
TYPICAL SECTION FOR TYPE 'B' GRANULAR SHOULDER ADJACENT TO HOT MIX ASPHALT RESURFACING

LOCATION		T	E
ROAD IDENTIFICATION	STATION TO STATION	Inches	Feet
D65	0+12 520+93	Both 3	3
S57	0+00 105+66	Both 3	3



LOCATION STATION		T	C	L	R	PAVEMENT SCARIFICATION Sq. Yds.	HOT MIX ASPHALT Tons	REMARKS
ROAD IDENTIFICATION	STATION TO STATION	Inches	Feet	Feet	Feet			
D65	0+12 1+62	2.5	Varies	Varies	Varies	450.00	61.20	Beginning of Project - DIV. 1
D65	433+13.5 434+63.5	2.5	22	11	11	366.70	49.80	South End of Bridge - DIV. 1
D65	435+90.5 437+40.5	2.5	22	11	11	366.70	49.80	North End of Bridge - DIV. 1
S57	0+00 1+50	2.5	22	11	11	366.70	49.80	Beginning of Project - Div. 2
S57	104+16 105+66	2.5	Varies	Varies	Varies	450.00	61.20	End of Project - Div. 2

TIE - IN HEADER RUNOUT DETAILS



PAVEMENT SCARIFICATION AT EXISTING HMA ENTRANCES AND SIDE ROADS