

MUSCATINE COUNTY - DESIGN NO. 114

DESIGN TEAM	LCM / JLD /	ENGLISH	IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES	FILE NO. 30780	MUSCATINE COUNTY	PROJECT NUMBER BRFN-038-1(14)--39-70	SHEET NUMBER
2:16:43 PM	jldowning	G:\KC13\0048\Bridge\70038014.brg					

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2402-2720000	EXCAVATION, CLASS 20	CY	57.3	
2	2413-0698074	DECK REPAIR, CLASS A	SY	91.7	
3	2426-6772016	CONCRETE REPAIR	SF	70	
4	2499-0800000	PAVING NOTCH REPLACEMENT	LF	102	
5	2533-4980005	MOBILIZATION	LS	1.0	
		ALTERNATE AA OPTION 1			
6A	2413-0698066	DECK OVERLAY (CLASS O PCC)	SY	899.3	
		ALTERNATE AA OPTION 2			
6B	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC)	SY	899.3	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2402-2720000	EXCAVATION, CLASS 20 INCLUDES WATER, FURNISHING AND PLACING SUBDRAINS, POUROUS BACKFILL, GEOTEXTILE FABRIC, AND SUBDRAIN OUTLET
2	2413-0698074	DECK REPAIR, CLASS A
3	2426-6772016	CONCRETE REPAIR
4	2499-0800000	PAVING NOTCH REPLACEMENT INCLUDES 7.2 CY STRUCTURAL CONCRETE, CL C AND 1604 LBS EPOXY REINFORCING STEEL, EXCAVATION, REMOVING AND DISPOSING OF THE EXITING PAVING NOTCH AND CONCRETE REMOVED TO FORM THE SHEAR KEYWAYS, DRILLING HOLES FOR DOWEL BARS, AND POLYMER GROUT MATERIAL.
5	2533-4980005	MOBILIZATION
6A	2413-0698066	DECK OVERLAY (CLASS O PCC) INCLUDES FURNISHING AND PLACING CONCRETE SEALER.
6B	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC) INCLUDES FURNISHING AND PLACING CONCRETE SEALER.

DESIGN HISTORY
AT THIS SITE

DES. NO.	TYPE OF WORK
1269	ORIGINAL DESIGN
294	RETROFIT RAIL
114	BRIDGE DECK OVERLAY

TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO THRU TRAFFIC.
SEE TRAFFIC CONTROL PLAN SHOWN
ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN
ELSEWHERE IN THESE PLANS.

DESIGN FOR REPAIRS TO A 30° SKEW (R.A.)
180'-6 x 44'-0 PRETENSIONED
PRESTRESSED CONC. BM. BRIDGE
64'-1 & 51'-7 END SPANS64'-10 INTERIOR SPAN
ESTIMATED QUANTITIES & NOTES
STA. 64+30.00SEPTEMBER, 2013
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 9FILE NO. 30780DESIGN NO. 114

DESIGN TEAM LCM / JLD /

MUSCATINE COUNTYPROJECT NUMBER BRFN-038-1(14)--39-70

SHEET NUMBER2

XXXXXXXXXXSYSTEMTIME XXXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXGNSPEC

GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 180'-6 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE LOCATED IN MUSCATINE COUNTY ON IOWA 38 OVER MAD CREEK. COPIES OF ORIGINAL AND RAIL RETROFIT PLANS WILL BE MADE AVAILABLE TO THE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS - HIGHWAY DIVISION - IOWA D.O.T. - AMES. SEE DESIGN SHEET 2 FOR LIST OF REPAIR ITEMS.

DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 1269) AND RAIL RETROFIT DESIGN PLANS (DESIGN NO 294).

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

PRESENT DECK THICKNESS IS ABOUT 7½ INCHES. THE CONTRACTOR SHALL EXERCISE CARE IN REMOVING CONCRETE IN ORDER TO PREVENT UNNECESSARY UNBONDING OF REINFORCING STEEL.

CONSTRUCTION SHALL BE DONE IN STAGES WITH AT LEAST ONE LANE OF TRAFFIC MAINTAINED AT ALL TIMES IN ACCORDANCE WITH "TRAFFIC CONTROL PLAN" NOTE.

FAINT LINES ON PLANS INDICATE EXISTING PORTIONS OF THE BRIDGE.

SURFACE RAISE, AS SHOWN ON THE PLANS, SHALL BE CONSIDERED A MINIMUM. IN ORDER TO LIMIT THE ADDITIONAL DEAD LOAD SURFACE RAISE SHALL BE RESTRICTED TO A MAXIMUM OF ½" MORE THAN SHOWN ON THE PLANS. PROFILE MAY BE ADJUSTED TO THE EXTENT POSSIBLE WITHIN THESE LIMITS.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5d1 IS ⅝ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

THE TOP AND INTERIOR FACES OF THE CONCRETE RAILING ARE TO BE CLEANED AND SEALED IN ACCORDANCE WITH ARTICLE 2403.03, P OF THE STANDARD SPECIFICATIONS. ALL COSTS ASSOCIATED WITH CLEANING AND SEALING OF THE CONCRETE BARRIER RAILS SHALL BE INCLUDED IN THE UNIT PRICE BID ITEM "DECK OVERLAY".

THE PLAN QUANTITY FOR "CLASS A DECK REPAIR" IS ESTIMATED AS 83.4 SY BASED ON HAND SOUNDING OF THE DECK PLUS 10% FOR ESTIMATING PURPOSES. THE ACTUAL QUANTITY IS DETERMINED BY THE ENGINEER AT THE TIME OF REPAIR. ACTUAL SPALLED AND HOLLOW AREAS AS DETERMINED BY THE ENGINEER SHALL BE REPAIRED.

IT WILL BE NECESSARY TO SUPPORT THE EARTH AND/OR GRANULAR MATERIAL BEHIND THE ABUTMENT DURING PLACING OF THE NEW SUBDRAIN BY SOME METHOD APPROVED BY THE ENGINEER. ALL COSTS FOR SUPPORTING THE EARTH AND/OR GRANULAR MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "CLASS 20 EXCAVATION".

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.

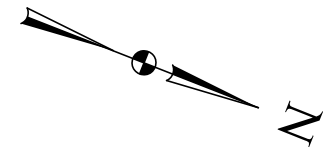
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

CONCRETE IN ACCORDANCE WITH SECTION 8, f'c=3,500 PSI.

SPECIFICATIONS:

DESIGN: AASHTO SERIES 2002.

CONSTRUCTION: THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2012, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT, INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR GUARDRAIL CONSTRUCTION AND REMOVAL.



DESIGN FOR REPAIRS TO A 30° SKEW (R.A.)

180'-6" x 44'-0" PRETENSIONED
PRESTRESSED CONC. BM. BRIDGE

64'-1" & 51'-7" END SPANS 64'-10" INTERIOR SPAN

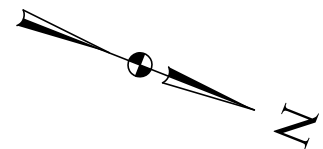
SITUATION PLAN

STA. 64+30.00 SEPTEMBER, 2013

MUSCATINE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 9 FILE NO. 30780 DESIGN NO. 114

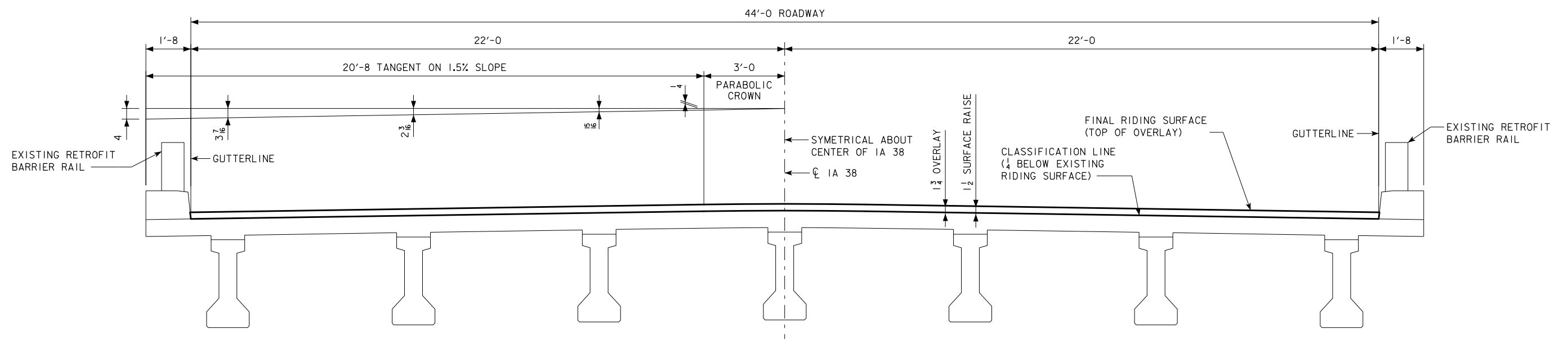


HATCHED AREA = 751 SQ. FT.

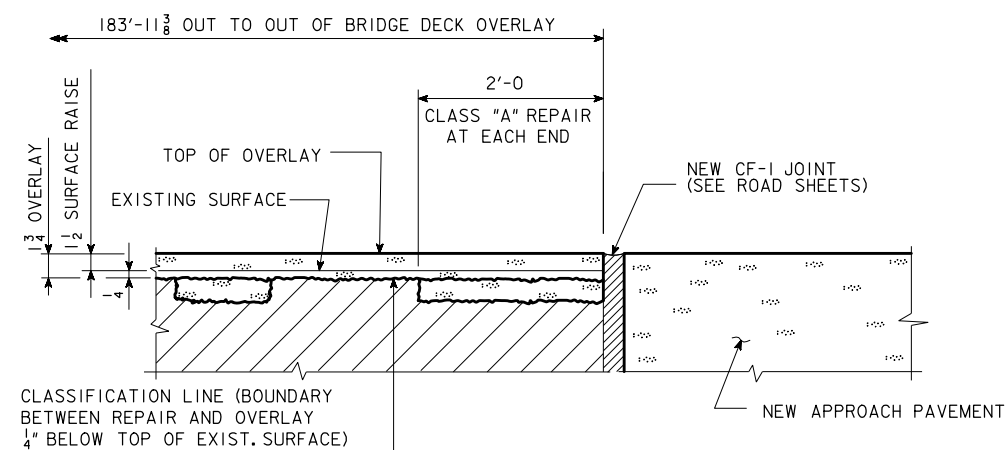
HATCHED AREAS REPRESENT DELAMINATED AREAS ON BRIDGE DECK THAT MAY REQUIRE CLASS "A" REPAIR.



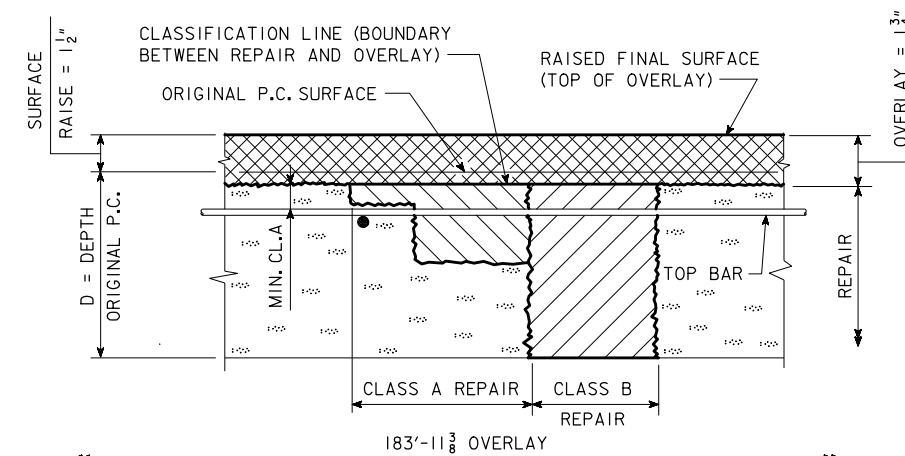
DESIGN FOR REPAIRS TO A 30° SKEW (R.A.)
180'-6 x 44'-0 PRETENSIONED
PRESTRESSED CONC. BM. BRIDGE
64'-1 & 51'-7 END SPANS 64'-10 INTERIOR SPAN
DECK SOUNDING SURVEY
STA. 64+30.00 SEPTEMBER, 2013
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 9 FILE NO. 30780 DESIGN NO. 114



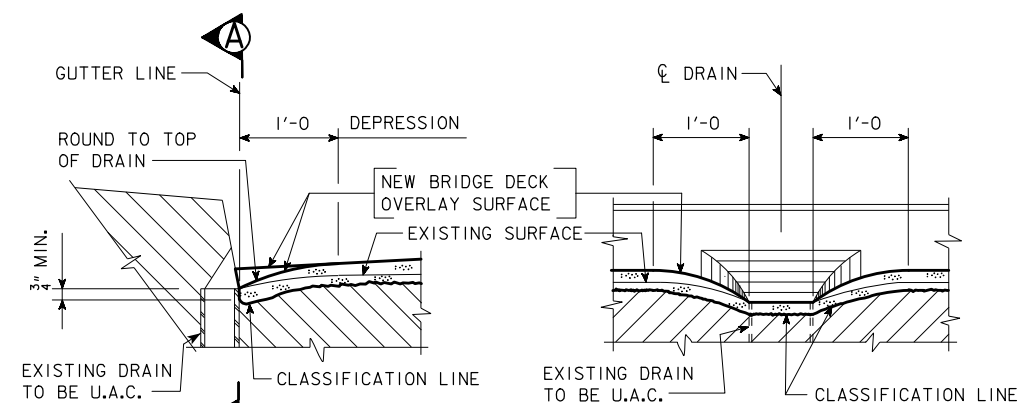
TYPICAL CROSS SECTION



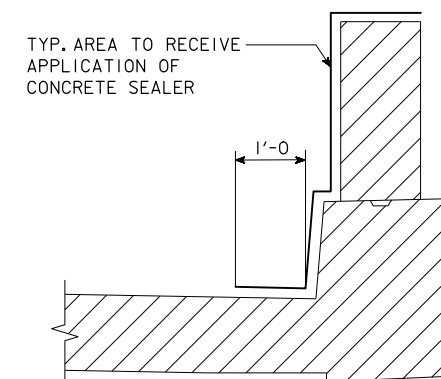
PART LONGITUDINAL SECTION ALONG ROADWAY
BOTH ABUTMENTS



REPAIR AND OVERLAY DEFINITION



DECK REPAIR DETAIL AT DRAIN
(REQUIRED AT 8 LOCATIONS)



DETAIL OF CONCRETE SEALER AREA

DESIGN FOR REPAIRS TO A 30° SKEW (R.A.)

**180'-6 x 44'-0 PRETENSIONED
PRESTRESSED CONC. BM. BRIDGE**

64'-1 & 51'-7 END SPANS 64'-10 INTERIOR SPAN

DECK OVERLAY DETAILS

STA. 64+30.00 SEPTEMBER, 2013

MUSCATINE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 9 FILE NO. 30780 DESIGN NO. 114



THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR EXCAVATION, CLASS 20.

THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS.

TECHNICAL DATA INFORMATION - GEOTEXTILE FABRIC				
MECHANICAL PROPERTIES	TEST METHOD	UNIT	MINIMUM AVERAGE ROLL VALUE	
			MD	CD
TENSILE STRENGTH (AT 5% STRAIN)	ASTM D 4595	kN/m (LBS/FT)	19.8 (1356)	19.8 (1356)
APPARENT OPENING SIZE (AOS)	ASTM D 4751	mm (U.S. SIEVE)	0.43 MAX (#40)	
FLOW RATE	ASTM D 4491	L/MIN/m ² (GAL/MIN/FT ²)	733 (18)	
UV RESISTANCE (AT 500 HOURS)	ASTM D 4355	% STRENGTH RETAINED	70	



ANCHOR DETAIL

SHALLOW REPAIR

REGULAR REPAIR

CURING COMPOUND

MIN. CLEAR $\frac{3}{4}$

HORIZONTAL SURFACE (BRIDGE SEAT)

GROUT FACE

$\frac{3}{4}$ " SAW CUT

$\frac{1}{2}$ " Φ CONCRETE ANCHOR

UNDERCUT

EXISTING SOUND CONCRETE

FORMED

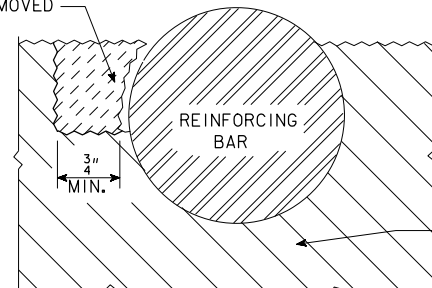
SHALLOW REPAIR (WITH GROUT, NO FORMS)

REGULAR REPAIR (NO GROUT, FORMED)

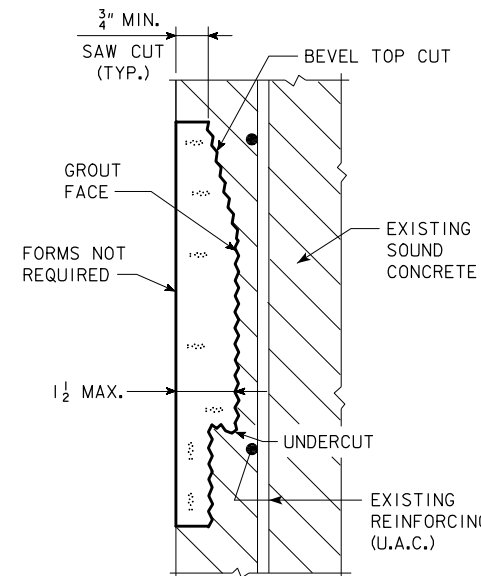
VERTICAL FACE

$\frac{3}{4}$ " SAW CUT

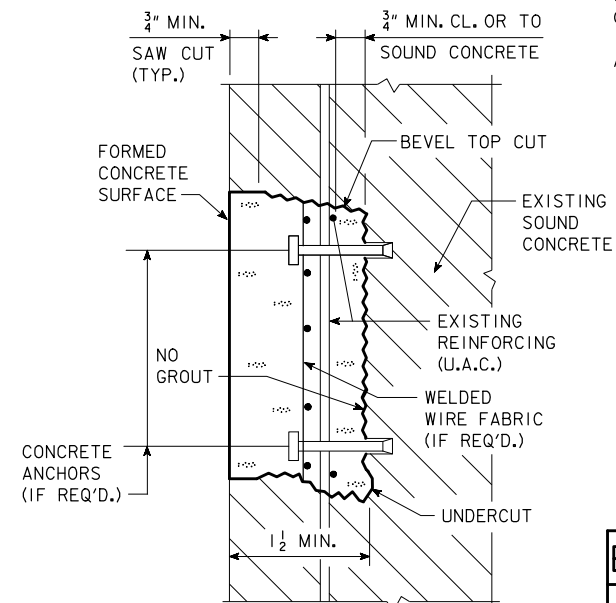
CORNER REPAIR



CONCRETE REMOVAL ADJACENT TO REINFORCING



SHALLOW REPAIR
VERTICAL FACE



REGULAR REPAIR
VERTICAL FACE

STANDARD NOTES:

REFER TO SECTION 2426, OF THE STANDARD SPECIFICATIONS, FOR INFORMATION ABOUT REPAIRING STRUCTURAL CONCRETE.

CONCRETE PLACEMENT QUANTITIES			
MARK	TYPE	UNITS	QUANTITY
①	SHALLOW REPAIR	SQ. FT.	0
②	REGULAR REPAIR	SQ. FT.	70
TOTAL (SQ. FT.)			70

ESTIMATED CONCRETE REPAIR QUANTITIES		
DESCRIPTION	UNITS	AMOUNT
CONCRETE REPAIR	SQ. FT.	70

DESIGN FOR REPAIRS TO A 30° SKEW (R.A.)

**180'-6 x 44'-0 PRETENSIONED
PRESTRESSED CONC. BM. BRIDGE**

64'-1 & 51'-7 END SPANS 64'-10 INTERIOR SPAN

CONCRETE REPAIR DETAILS

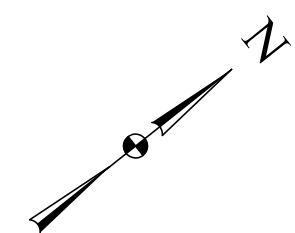
STA. 64+30.00 SEPTEMBER, 2013

MUSCATINE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 9 FILE NO. 30780 DESIGN NO. 114



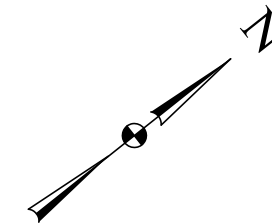
[illegible]

 AREAS OF SHALLOW REPAIR

 AREAS OF REGULAR REPAIR

NOTE: FOR CONCRETE REPAIR DETAILS AND CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 6.

[illegible]



Technical drawing of a bridge deck cross-section. The drawing shows a wide, flat deck supported by a series of vertical piers. On the left side, there is a parapet wall. The wall has a height of 10'-0" (labeled vertically) and a top flange thickness of 6" (labeled horizontally). The wall is filled with a cross-hatch pattern. The deck is shown with a series of vertical lines representing the piers. The drawing is a technical sketch, likely for construction purposes.

 AREAS OF SHALLOW REPAIR

 AREAS OF REGULAR REPAIR



TranSystems

DESIGN TEAM LCM / JLD /
XXXXXXXXXXSYSTEMTIME XXXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXGNSPEC

SHEET NUMBER	10
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		100-1D 10-18-05
PROJECT DESCRIPTION		
This project is for the replacement of bridge approach pavement, construction of guardrail and paved shoulders for a bridge deck overlay and repair project over Mad Creek in Muscatine County.		

[illegible][illegible][illegible]

ENGLISH	IOWA DOT	DESIGN TEAM	TRANSYSTEMS	MUSCATINE	COUNTY	PROJECT NUMBER	BRFN-038-1(14)--39-70	SHEET NUMBER	C.1
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108-30 04-16-13																				
CRASH CUSHIONS																				
* Bid Item																				
① Lane(s) to which the installation is adjacent.																				
② Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500																				
No.	① Direction of Traffic	Location Station	Side	Obstacle Width	Crash Cushion (Select One)*					Sand Barrel Details ②					Earthwork*		Spare Parts Kit (Select One)*		Obstacle Description	Remarks
					Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	V	W	X	Y	Z	Excavation Class 10	Embankment in Place	Permanent	Permanent Severe Use		
										Length	Length	Length	Length	Length						
				FT	FT	FT	FT	FT	CY	CY	EACH	EACH								
1	NB	61+38.28	LT	2.00	X													TBR	Stage 1	
2	NB	67+09.90	LT	2.00	X													TBR	Stage 1	
3	SB	61+38.28	RT	2.00	X													TBR	Stage 2	
4	SB	67+09.90	RT	2.00	X													TBR	Stage 2	

112-6																	04-16-13
BRIDGE APPROACH SECTION																	
Refer to the RK-Series.																	
* Not a bid item																	
Location				Approach Pavement					Fixed or Movable Abutment	Subdrain					Modified Subbase	Polymer Grid	Remarks
Bridge Station	End	Skew Ahead		T Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area		Perforated Subdrain 4"	Subdrain Outlet		Porous Backfill	Crushed Stone Backfill			
		Degrees									CY	CY					
		LEFT	RIGHT										Inches	FT			
64+23.75	S	0	30	12.0	80.0	100.3	62.2	140.0	M	64.0	62+64.08	RT	3.3	0.3	310.200	331.0	Last NR Sect. = 12'-3"
64+23.75	N	0	30	12.0	80.0	100.3	62.2	140.0	M	64.0	65+83.43	RT	3.3	0.3	310.200	331.0	Last NR Sect. = 12'-3"

112-9 04-17-12																							
SHOULDERS																							
① Lane(s) to which the shoulder is adjacent. ② Bid Item ③ Applies only for Paved Shoulders constructed on project with existing granular shoulders. ④ Does not include shrink.																							
Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.																							
Location					P	G	L	Quantities														Remarks	
Road Identification	① Direction Of Traffic	Station to Station		Side				Width	Width	Length	Class 13 Excavation Widening ③	HMA Base Widening ③		Hot Mix Asphalt		Paved Shoulder	Reinforced Paved Shoulder	Special Backfill		Modified Subbase	Granular Shoulder		Earth Shoulder Construction
					FT	FT	FT	CY ②	TON ②	TON/STA	TON	TON/STA	SY ②	SY ②	TON ②	TON/STA	CY ②	TON ②	TON/STA	STA ②	CY ④		
		IA 38	SB	62+15.22	62+35.22	LT	VAR.		20.0	10.0					24.9		7.85						
IA 38	SB	62+35.22	62+51.83	LT	VAR.		16.6	8.2					21.0		6.63								
IA 38	SB	62+51.83	62+85.15	LT	VAR.		33.3	14.8					38.1		12.00								
IA 38	SB	62+85.15	63+04.08	LT	9.6		18.9	8.1					20.2		6.38								
IA 38	SB	65+43.43	65+95.68	LT	9.6		52.3	21.7					55.9		17.60								
IA 38	SB	65+95.68	65+99.46	LT	7.6		3.8	1.2					3.2		1.54								
IA 38	SB	65+99.46	66+49.38	LT	VAR.		49.9	18.6					47.8		15.06								
IA 38	SB	66+49.38	66+69.38	LT	9.6		20.0	8.3					21.3		6.63								
IA 38	NB	61+65.75	61+85.75	RT	VAR.		20.0	11.6					29.1		9.17								
IA 38	NB	61+85.75	62+35.61	RT	VAR.		49.9	27.4					68.6		21.61								
IA 38	NB	62+35.61	62+51.83	RT	VAR.		16.2	7.9					20.5		6.46								
IA 38	NB	62+51.83	62+98.07	RT	VAR.		46.2	20.7					53.3		16.79								
IA 38	NB	62+98.07	63+04.08	RT	9.6		6.0	2.6					6.4		2.03								
IA 38	NB	65+43.43	65+62.36	RT	9.6		18.9	8.1					20.2		6.38								
IA 38	NB	65+62.36	65+95.68	RT	VAR.		33.3	14.8					38.1		12.00								
IA 38	NB	65+95.68	66+12.29	RT	VAR.		16.6	6.7					17.1		5.40								
IA 38	NB	66+12.29	66+32.29	RT	9.6		20.0	8.3					21.4		6.73								