

TANDA PLANS			TOTAL SHEETS 57						
			PROJECT NUMBER						
ISSUED	REVISED		BRF-092-2(36)38-15						
			R.O.W. PROJECT NUMBER						
		PR0.I	PROJECT IDENTIFICATION NUMBER						
		11100							
			09-15-092-010						
		11	NDEX OF SHEETS						
		NO.	DESCRIPTION						
			TITLE SHEET						
		2	ESTIMATE SHEET - DESIGN 113						
		2-26	DESIGN 113						
		SPS.I	SOIL PROFILE SHEET						
		C.I	ESTIMATE SHEET FOR ROADWAY						
		A.I-X.3	ROADWAY SHEETS						
IS		n							
15									

STED		INDEX OF SEALS							
AL	SHEET NO.	NAME	TYPE						
AL	I JAMES S. NELSON		STRUCTURAL DESIGN						
P.D.	I	STEVEN L.SEIVERT	HYDRAULIC DESIGN						
P.D.	SPS.I, CS.I	ROBERT L.STANLEY	GEOTECHNICAL DESIGN						
Р.Н.	A.I	PAUL W.FLATTERY	ROADWAY DESIGN						
	BRIDGE STANDARDS	NORMAN L.McDONALD	STRUCTURAL DESIGN						

S	STRUCTURAL DESIGN							
Jomes S. Nelson 16032	I hereby certify that this engine by me or under my direct per am a duly licensed Professional of the State of Iowa. Magnature James S. Printed or Typed Name My license renewal date is	sonal supervision and that I I Engineer under the laws 2-1-2013 Date Nelson						
My license renewal date is December 31, <u>2013</u> ges or sheets covered by this seal: <u>SHEETS I THRU 26 OF 57</u>								
NUMBER BRE-092-20	36)38_15	SHEET NUMBER						

		ESTIMATED BRIDGE QUANTITIES							ESTIMATE REFERENC
ITEM			UNIT		OTAL	AS BUILT QUAN.			
2	2401-6745	020 EXCAVATION, CLASS 10, CHANNEL 625 REMOVAL OF EXISTING BRIDGE 000 EXCAVATION, CLASS 20	CY LS CY		50.0 1.00 39		ITEM NO.	ITEM CODE	
4 5 6	2403-0100 2404-7775 2407-0563	010 STRUCTURAL CONCRETE (BRIDGE) 005 REINFORCING STEEL, EPOXY COATED 120 BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC120	CY LB EACH	47,38	98.0 30 6		10	2507-3250005	ENGINEERING FABRIC ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED F ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS
7 8 9	2414-6424 2501-0201	000 STRUCTURAL STEEL 110 CONCRETE BARRIER RAILING 517 PILES, STEEL, HP 14 X 117	LB LF LF	2,09	34.0 90		- 11	2507-6800061	REVETMENT, CLASS E ESTIMATED AT 1.6 TON/CY.
10 2	2507-6800 2507-8029	005 ENGINEERING FABRIC D61 REVETMENT, CLASS E 000 EROSION STONE	<u>SY</u> TON TON	,8] ,62			12	2507-8029000	EROSION STONE ESTIMATED AT I.6 TON/CY.
3 4 5	2533-4980	000 CONSTRUCTION SURVEY 005 MOBILIZATION 005 PRECAST ABUTMENT FOOTING	LS LS EACH		1.00		13	2526-8285000	CONSTRUCTION SURVEY
6 7 8	2599-9999 2599-9999	005 PRECAST WINGWALLS 010 PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE 650 BRIDGE WING ARMORING - EROSION STONE	EACH LS SY		4 .00 9.4		14	2533-4980005	MOBILIZATION
					13.1		15	2599-9999005	PRECAST ABUTMENT FOOTING THIS ITEM INCLUDES ALL COSTS FOR FURNISHING AND PLAC
		ESTIMATE REFERENCE INFORMATION							FOOTINGS) 43 CY STRUCTURAL CONCRETE (BRIDGE), 7.8 CY STEEL AND 49 LF OF 27" DIAMETER CMP. INCLUDES THE C STRUCTURAL CONCRETE (MISC.) IN THE PILE VOID HAS OBT MEASUREMENT AND BASIS OF PAYMENT WILL BE FOR EACH PF
ITEM							16	2599-9999005	PRECAST WINGWALLS THIS ITEM INCLUDES ALL COSTS FOR FURNISHING AND PLAC
NO.	ITEM CODE 2104-2710020	DESCRIPTION EXCAVATION, CLASS IO, CHANNEL							WINGWALLS) 22.4 CY STRUCTURAL CONCRETE (BRIDGE), 4 (STEEL, 3" DIAMETER PVC PIPE AND EXPANDING FOAM, AND SUPPORT THE PRECAST WINGWALLS UNTIL THE STRUCTURAL (STRENGTH FOR RELEASE. THE METHOD OF MEASUREMENT AND
2	2401-6745625	REMOVAL OF EXISTING BRIDGE INCLUDES THE REMOVAL OF THE EXISTING ARTICULATING BLOCK MAT.					17	2599-9999010	FURNISHED AND PLACED.
3	2402-2720000	EXCAVATION, CLASS 20							PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE SEE SPECIAL PROVISIONS FOR PREFABRICATED BRIDGE SUPE INCLUDES FURNISHING AND INSTALLING STAINLESS STEEL S
4	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE B. GEOTEXTILE FABRIC, NEOPRENE WATER STOP, WATER FLOODING, AND SUBDRAIN OUTLET				RM.	18	2601-2638650	BRIDGE WING ARMORING - EROSION STONE INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, FOR WING ARMORING.
5	2404-7775005	REINFORCING STEEL, EPOXY COATED					L		
6	2407-0563120	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTCI20 COARSE AGGREGATES FOR PRESTRESSED CONCRETE BRIDGE UNITS SHALL BE IN ACCORDAN SECTION 4115 CLASS III DURABILITY. GRADATION OF THE COARSE AGGREGATE SHALL I REQUIREMENTS OF ARTICLE 2407.02, A, OF THE STANDARD SPECIFICATIONS.				F			
		INCLUDES 24 BEARING PADS. SEE DESIGN SHEET 14 FOR ADDITIONAL DETAILS. IF AD THE CONTRACTORS MEANS AND METHODS OF PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE ADDITIONAL PAYMENT WILL BE MADE.							
		INCLUDES COIL TIES AT BEAM ENDS.							
7	2408-7800000	STRUCTURAL STEEL INCLUDES 8 DRAINS AT 106 LB EACH = 848 LBS.							
		INCLUDES INTERMEDIATE DIAPHRAGMS AT 1543 LBS.							
		INCLUDES 12 STEEL BEARINGS AT 727 LBS. SEE DESIGN SHEET 13 FOR DETAILS.							NOTE
8	2414-6424110	CONCRETE BARRIER RAILING IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRET BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE IF REQUIRED FOR PLACEMENT OF THE CONCRETE.							NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.
9	2501-0201517	PILES, STEEL, HP 14 X 117 INCLUDES FURNISHING AND INSTALLING 132 WELDED STUDS OR 66 ANCHOR ROD ASSEMBL ADDITIONAL DETAILS.	IES. SEE [DESIGN SI	HEET 9 F	OR			
DESIGN	TEAM JSN /	/ JDC / DRE							CASS COUNTY PROJECT NUMBER BRF

CE INFORMATION

DESCRIPTION

FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH NS.

LACING THE PRECAST ABUTMENT FOOTING INCLUDING (QUANTITIES FOR TWO CY STRUCTURAL CONCRETE (MISC.), 9342 LB EPOXY COATED REINFORCING E COST TO TEMPORARILY SUPPORT THE PRECAST FOOTING UNTIL THE OBTAINED THE SPECIFIED STRENGTH FOR RELEASE. THE METHOD OF PRECAST ABUTMENT FOOTING FURNISHED AND PLACED.

LACING THE PRECAST WINGWALLS INCLUDING (QUANTITIES FOR FOUR 4 CY STRUCTURAL CONCRETE (MISC.), 4012 LB EPOXY COATED REINFORCING ND 28 LF OF 27" DIAMETER CMP. INCLUDES THE COST TO TEMPORARILY CONCRETE (MISC.) IN THE PILE VOID HAS OBTAINED THE SPECIFIED AND BASIS OF PAYMENT WILL BE FOR EACH PRECAST WINGWALL

UPERSTRUCTURE MOVE.

SOLE PLATE ASSEMBLY.

C, EROSION STONE, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING



GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A 120'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE, SKEWED 0°, ON 1A 92 AT STATION 1134+61.00.

THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 40'-0 x 30'-0 STEEL I-BEAM BRIDGE, DESIGN NO. 7747. PLANS OF THE EXISTING STRUCTURE WILL BE MADE AVAILABLE TO THE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS - HIGHWAY DIVISION - IOWA D.O.T. - AMES.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL OF THE EXISTING 40'-0 \times 30'-0 STEEL I-BEAM BRIDGE AND ARTICULATING BLOCK MAT.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

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.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE BRIDGE CONTRACTOR WILL BE THE ONLY CONTRACTOR AT THE SITE AND IS RESPONSIBLE FOR THE COMPLETION OF ALL WORK AS DETAILED AND NOTED IN THESE PLANS.

CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03, A. 2. OF THE STANDARD SPECIFICATIONS. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD).

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 IO DEGREES FROM VERTICAL.

A SCRAPE SAMPLE WAS TAKEN FROM A BEAM OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS <25 PARTS PER MILLION (PPM) (INCLUDES <0.010 PPM LEACHABLE). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 29.1 PPM (INCLUDES <0.030 PPM LEACHABLE). THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS, NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

THE BRIDGE CONTRACTOR IS TO CLEAR AND/OR SHAPE THE CHANNEL WITHIN THE APPROXIMATE LIMITS SHOWN ON THE "SITUATION PLAN" AND "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEETS 5,6 AND 7.

CLASS 20 EXCAVATION QUANTITIES ARE BASED ON THE ASSUMPTION THAT THE CHANNEL EXCAVATION IS COMPLETED PRIOR TO STARTING CONSTRUCTION OF THE ABUTMENTS.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 5TH ED. SERIES OF 2010, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION: 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:
- SPECIAL PROVISIONS FOR PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE. DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE (4500 PSI (31 MPg) OR GREATER). DEVELOPMENTAL SPECIFICATIONS FOR CONSTRUCTION PROGRESS SCHEDULE

DESIGN STRESSES:

JSN / JDC / DRF

DESIGN TEAM

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH ED. SERIES OF 2010, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL. REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60. CONCRETE IN ACCORDANCE WITH SECTION 5, f'c = 4,000 PSI, EXCEPT PRECAST FOOTING AND WINGWALL CONCRETE IN ACCORDANCE WITH SECTION 5, f'c = 5000 PSI, AND PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 19.

STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 6 ASTM A709 GRADE 36, AND GRADE 50.

THIS PROJECT USES THE LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHODOLOGY FOR DETERMINING PILE CONTRACT LENGTH AND NOMINAL AXIAL BEARING RESISTANCE. NOMINAL AXIAL BEARING RESISTANCES WILL BE LARGER THAN BEARING VALUES IN THE PAST, BUT CONSTRUCTION CONTROL BLOW COUNTS WILL BE APPROXIMATELY THE SAME. A WEAP ANALYSIS AND BEARING GRAPH WILL BE PREPARED BY THE OFFICE OF CONSTRUCTION THAT GIVES THE RELATIONSHIP BETWEEN REQUIRED NOMINAL AXIAL BEARING RESISTANCE AND BLOW COUNT.

FOR THE CONTRACTOR'S BIDDING PURPOSES, PARTICULARLY FOR THE SIZING OF THE PILE DRIVING HAMMER, THE APPROXIMATE PREVIOUS DESIGN METHODOLOGY BEARING VALUES AT END OF DRIVE (EOD) ARE GIVEN BELOW. THESE VALUES SHALL NOT BE USED FOR CONSTRUCTION CONTROL AND ARE GIVEN ONLY FOR COMPARATIVE PURPOSES.

THE PREVIOUS DESIGN BEARING FOR THE WEST ABUTMENT PILES WOULD HAVE BEEN ABOUT 82 TONS.

THE PREVIOUS DESIGN BEARING FOR THE EAST ABUTMENT PILES WOULD HAVE BEEN ABOUT 82 TONS.

SUGGESTED CONSTRUCTION SEQUENCE FOR CRITICAL CLOSURE:

I. DEMOLISH EXISTING BRIDGE.

- 2. BERM GRADING / DRIVE PILING / PLACE REVETMENT
- 3. PLACE PRECAST ABUTMENT AND WINGWALL FOOTINGS
- 4. MOVE PREFABRICATED BRIDGE SUPERSTUCTURE
- 5. FLOODED BACKFILL
- 6. BRIDGE APPROACH PAVING

7. PAVED SHOULDER / GUARDRAIL / LONGITUDINAL GROOVING

THE SUGGESTED CONSTRUCTION SEQUENCE FOR CRITICAL CLOSURE IS A GENERAL LIST OF MAJOR ACTIVITIES AND NOT AN EXHAUSTIVE LIST OF ALL NECESSARY ACTIVITIES.

VALUE ENGINEERING PROPOSALS:

CONTRACTORS MAY DEVELOP ALTERNATIVE CONSTRUCTION PROPOSALS THAT ALLOW THE STATE TO BENEFIT FROM REDUCED COSTS, WHILE MAINTAINING THE SAME OR REDUCED ABC CONSTRUCTION SCHEDULE FOR THE PROJECT. THE CONTRACTOR SHALL ALSO PERFORM ANY NECESSARY REDESIGN OF BRIDGE COMPONENTS RESULTING FROM THE CHANGES. ONLY ALTERNATE DESIGNS THAT UTILIZE A PREFABRICATED BRIDGE CONSTRUCTED OFF-ALIGNMENT AND MOVED TO THE FINAL POSITION WILL BE ACCEPTED FOR REVIEW UNDER THE VALUE ENGINEERING PROPOSAL. THESE DESIGNS MUST PROVIDE THE REQUIRED PERFORMANCE, RELIABILITY, QUALITY AND CONSTRUCTABILITY.

CHANGES TO THE PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE SYSTEM (E.G. PTFE SLIDE, ROLLERS, SPMT, HEAVY LIFT) ARE NOT SUBJECT TO THE COST SAVINGS SHARING REQUIREMENTS OF VALUE ENGINEERING PROPOSALS AND SHALL BE SUBMITTED PER THE REQUIREMENTS OF THE SPECIAL PROVISION FOR PREFABRICATED BRIDGE SUPERSTRUCTURE MOVE.

> TRAFFIC CONTROL PLAN NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC ONLY DURING CRITICAL CLOSURE PERIOD. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

OF FORMS SHALL BE 575 PSI.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5al IS § 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	П
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

BRIDGE DECK DIMENSIONS TABLE ITEM NO. DECK LENGTH 2 MINIMUM DECK WIDTH 3 MAXIMUM DECK WIDTH 4 DECK AREA

I. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE CENTERLINE OF THE ROADWAY. 2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE CENTERLINE OF ROADWAY. 4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

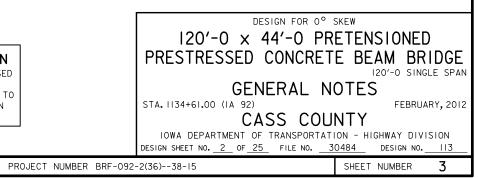
SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)							
SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS,FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE 10WA DEPARTMENT OF TRANSPORTATION.							
Í	DECK DRAIN DETAILS						
l 2	DECK DRAIN DETAILS INTERMEDIATE DIAPHRAGM DETAILS						
I 2 3							
	INTERMEDIATE DIAPHRAGM DETAILS						
3	INTERMEDIATE DIAPHRAGM DETAILS LAMINATED NEOPRENE BEARINGS						
3 4	INTERMEDIATE DIAPHRAGM DETAILS LAMINATED NEOPRENE BEARINGS SOLE PLATE						

CONCRETE FORMS ARE REQUIRED TO REMAIN IN PLACE 5 DAYS OR LONGER IN ACCORDANCE WITH ARTICLE 2403.03, M, 2, OF THE STANDARD SPECIFICATIONS, EXCEPT THE MINIMUM CONCRETE FLEXURAL STRENGTH REQUIRED BEFORE REMOVAL

UNIT	QUANTITY
 L.F.	121.8
L.F.	47.2
L.F.	47.2
S.F.	5749

SHOP DRAWING SUBMITTALS

DESIGN HISTORY AT THIS SITE					
DES.NO.	TYPE OF WORK				
8030	ORIGINAL DESIGN				
7747	RAISE AND WIDEN				
167	FLOOR REPAIR				
288	RETROFIT RAIL				
497	BRIDGE DECK OVERLAY				
1308	SCOUR COUNTERMEASURE				
113	BRIDGE REPLACEMENT				



SUBSTRUCTURE PRECASTING

PRECASTING MATERIALS AND PROCEDURES SHALL CONFORM TO SECTION 2407 OF THE STANDARD SPECIFICATIONS AND MATERIALS I.M. 570 LRFD. SITE CASTING SHALL CONFORM TO ALTERNATE SITE CASTING PROVISIONS LISTED ON DESIGN SHEET 4.

REMOVAL AND STORAGE:

ALL PRECAST ELEMENTS SHALL BE REMOVED FROM THE FORMS IN SUCH A MANNER THAT NO DAMAGE OCCURS TO THE ELEMENT. FORM REMOVAL SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 2407.03.F OF THE STANDARD SPECIFICATIONS. ANY MATERIALS FORMING BLOCKOUTS IN THE PRECAST ELEMENTS SHALL BE REMOVED SUCH THAT DAMAGE DOES NOT OCCUR TO THE PRECAST ELEMENTS OR THE BLOCKOUT. PRECAST ELEMENTS SHALL BE STORED IN SUCH A MANNER THAT ADEQUATE SUPPORT IS PROVIDED TO PREVENT CRACKING OR CREEP-INDUCED DEFORMATION (SAGGING). DURING STORAGE FOR LONG PERIODS OF TIME (LONGER THAN ONE MONTH),ALL PRECAST ELEMENTS SHALL BE CHECKED AT LEAST ONCE PER MONTH TO ENSURE CREEP-INDUCED DEFORMATION DOES NOT OCCUR.

LIFTING AND HANDLING:

LIFTING AND HANDLING CALCULATIONS DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA SHALL BE SUBMITTED. THE PRECAST FABRICATOR SHALL SUBMIT LIFTING LOCATIONS AND LIFTING ANCHOR DETAILS FOR APPROVAL BY ENGINEER PRIOR TO USE. THE LIFTING ANCHORS SHALL BE HOT-DIPPED GALVANIZED. THE LIFTING ANCHORS SHALL BE REMOVED OR CUT FLUSH WITH THE PRECAST SUBSTRUCTURE. HOLES SHALL BE PATCHED WITH AN APPROVED GROUT. STEEL CUT FLUSH WITH THE CONCRETE SHALL BE REPAIRED IN ACCORDANCE WITH MATERIALS IM 410 -"REPAIR OF DAMAGED HOT DIP GALVANIZED COATINGS."

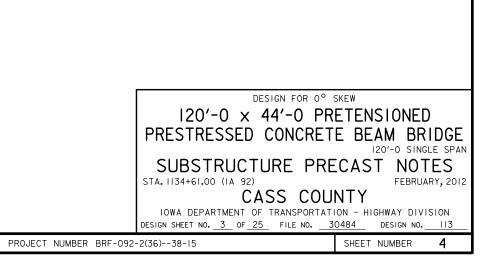
ALL PRECAST ELEMENTS SHALL BE HANDLED IN SUCH A MANNER AS NOT TO DAMAGE OR OVERSTRESS THE PRECAST ELEMENTS DURING LIFTING OR MOVING. LIFTING ANCHORS CAST INTO THE PRECAST ELEMENTS SHALL BE USED FOR LIFTING AND MOVING THE PRECAST ELEMENTS AT THE FABRICATION PLANT AND IN THE FIELD. THE ANGLE BETWEEN THE TOP SURFACE OF THE PRECAST ELEMENTS AND THE LIFTING LINE SHALL NOT BE LESS THAN SIXTY DEGREES, WHEN MEASURED FROM THE TOP SURFACE OF THE PRECAST ELEMENTS TO THE LIFTING LINE, DAMAGE CAUSED TO ANY PRECAST ELEMENTS SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

TRANSPORTATION:

ALL PRECAST ELEMENTS SHALL BE TRANSPORTED IN SUCH A MANNER THAT THE PRECAST ELEMENTS WILL NOT BE DAMAGED OR OVERSTRESSED DURING TRANSPORTATION. PRECAST ELEMENTS SHALL BE PROPERLY SUPPORTED DURING TRANSPORTATION SUCH THAT CRACKING OR DEFORMATION (SAGGING) DOES NOT OCCUR. IF MORE THAN ONE PRECAST ELEMENT IS TRANSPORTED PER VEHICLE, PROPER SUPPORT AND SEPARATION MUST BE PROVIDED BETWEEN THE INDIVIDUAL PRECAST ÉLEMENTS. PRECAST ELEMENTS SHALL LIE HORIZONTAL DURING TRANSPORTATION, UNLESS OTHERWISE APPROVED.

REPAIRS:

REPAIRS OF DAMAGE CAUSED TO THE PRECAST ELEMENTS DURING FABRICATION, LIFTING AND HANDLING, OR TRANSPORTATION SHALL BE ADDRESSED ON A CASE-BY-CASE BASIS. DAMAGE WITHIN ACCEPTABLE LIMITS OF THE PRECAST ELEMENTS SHALL BE REPAIRED USING MATERIALS I.M. 570 LRFD AT THE FABRICATION PLANT AT THE EXPENSE OF THE FABRICATOR. REPETITIVE DAMAGE TO PRECAST ELEMENTS SHALL BE CAUSE FOR STOPPAGE OF FABRICATION OPERATIONS UNTIL THE CAUSE OF THE DAMAGE CAN BE REMEDIED. ALL PROPOSED REPAIRS SHALL BE APPROVED BY THE ENGINEER IN ADVANCE.



ALTERNATE SITE CASTING:

IF THE CONTRACTOR ELECTS TO PRECAST THE ABUTMENT FOOTINGS AND WINGWALLS AT A TEMPORARY CASTING FACILITY, CASTING SHALL COMPLY WITH SECTION 2403 OF THE STANDARD SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE 4500 PSI (31 MPg) OR GREATER, AND THE PROVISIONS LISTED BELOW:

A. FQUIPMENT.

USE EQUIPMENT MEETING THE REQUIREMENTS OF SECTION 2001 AND THE FOLLOWING:

- L CASTING BEDS. FOR PRECAST CONCRETE, USE CASTING BEDS RIGIDLY CONSTRUCTED AND SUPPORTED SO THAT UNDER THE WEIGHT (MASS) OF THE CONCRETE THERE WILL BE NO VERTICAL DEFORMATION OF THE BED.
- 2. FORMS.

USE FORMS FOR PRECAST TRUE TO THE DIMENSIONS AS SHOWN IN THE CONTRACT DOCUMENTS, TRUE TO LINE, MORTAR TIGHT, AND OF SUFFICIENT RIGIDITY TO NOT SAG OR BULGE OUT OF SHAPE UNDER PLACEMENT AND VIBRATION OF CONCRETE. ENSURE INSIDE SURFACES ARE SMOOTH AND FREE OF ANY PROJECTIONS, INDENTATIONS, OR OFFSETS THAT MIGHT RESTRICT DIFFERENTIAL MOVEMENTS OF FORMS AND CONCRETE.

B. CURING.

- I. USE A METHOD OF CURING THAT PREVENTS LOSS OF MOISTURE AND MAINTAINS AN INTERNAL CONCRETE TEMPERATURE AT LEAST 40°F (4°C) DURING THE CURING PERIOD. OBTAIN THE ENGINEER'S APPROVAL FOR THIS METHOD.
- 2. WHEN USING ACCELERATED HEAT CURING, DO SO UNDER A SUITABLE ENCLOSURE. USE EQUIPMENT AND PROCEDURES THAT WILL ENSURE UNIFORM CONTROL AND DISTRIBUTION OF HEAT AND PREVENT LOCAL OVERHEATING. ENSURE THE CURING PROCESS IS UNDER THE DIRECT SUPERVISION AND CONTROL OF COMPETENT OPERATORS.

3. WHEN ACCELERATED HEAT IS USED TO OBTAIN TEMPERATURES ABOVE 100°F (38°C):

- i. RECORD THE TEMPERATURE OF THE INTERIOR OF THE CONCRETE USING A SYSTEM CAPABLE OF AUTOMATICALLY PRODUCING A TEMPERATURE RECORD AT INTERVALS OF NO MORE THAN 15 MINUTES DURING THE ENTIRE CURING PERIOD.
- ii. SPACE THE SYSTEMS AT A MINIMUM OF ONE LOCATION PER 100 FEET (30 M) OF LENGTH PER UNIT OR FRACTION THEREOF, WITH A MAXIMUM OF THREE LOCATIONS ALONG EACH LINE OF UNITS BEING CURED.
- iii. ENSURE ALL UNITS, WHEN CALIBRATED INDIVIDUALLY, ARE ACCURATE WITHIN ±5°F (3°C).
- IV. DO NOT ARTIFICIALLY RAISE THE TEMPERATURE OF THE CONCRETE ABOVE 100°F (38°C) FOR A MINIMUM OF 2 HOURS AFTER THE UNITS HAVE BEEN CAST. AFTER THE 2 HOUR PERIOD. THE TEMPERATURE OF THE CONCRETE MAY BE RAISED TO A MAXIMUM TEMPERATURE OF 155° (71°C) AT A RATE NOT TO EXCEED 25°F (15°C) PER HOUR.
- v. LOWER THE TEMPERATURE OF THE CONCRETE AT A RATE NOT TO EXCEED 40°F (22°C) PER HOUR BY REDUCING THE AMOUNT OF HEAT APPLIED UNTIL THE INTERIOR OF THE CONCRETE HAS REACHED THE TEMPERATURE OF THE SURROUNDING AIR.
- 4. IN ALL CASES, COVER THE CONCRETE AND LEAVE COVERED UNTIL CURING IS COMPLETED. SIDE FORMS AND PANS FORMING THE UNDERSIDE OF CHANNEL SHAPES MAY BE REMOVED DURING THIS PERIOD IF THE COVER IS IMMEDIATELY REPLACED. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE UNITS FROM THE CASTING BED UNTIL THE STRENGTH REQUIREMENTS ARE MET.

C. REMOVAL OF FORMS.

IF FORMS ARE REMOVED BEFORE THE CONCRETE HAS ATTAINED THE STRENGTH WHICH WILL PERMIT THE UNITS TO BE MOVED OR STRESSED, REMOVE PROTECTION ONLY FROM THE IMMEDIATE SECTION FROM WHICH FORMS ARE BEING REMOVED. IMMEDIATELY REPLACE THE PROTECTION AND RESUME CURING AFTER THE FORMS ARE REMOVED. DO NOT REMOVE PROTECTION ANY TIME BEFORE THE UNITS ATTAIN THE SPECIFIED COMPRESSIVE STRENGTH WHEN THE SURROUNDING AIR TEMPERATURE IS BELOW 20°F (-7°C).

ALTERNATE SITE CASTING: CONT'D

D. TOLERANCES.

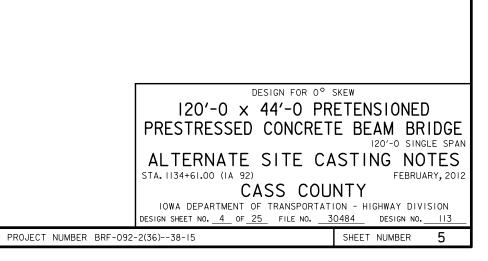
LIMIT VARIATION FROM DIMENSIONS SHOWN IN THE CONTRACT DOCUMENTS TO NO MORE THAN INCH (3 MM). FOR OVERRUNS, GREATER DEVIATION MAY BE ACCEPTED IF, IN THE ENGINEERS OPINION, IT DOES NOT IMPAIR THE SUITABILITY OF THE MEMBER FOR ITS INTENDED USE., UNLESS SHOWN ELSEWHERE IN THESE PLANS.

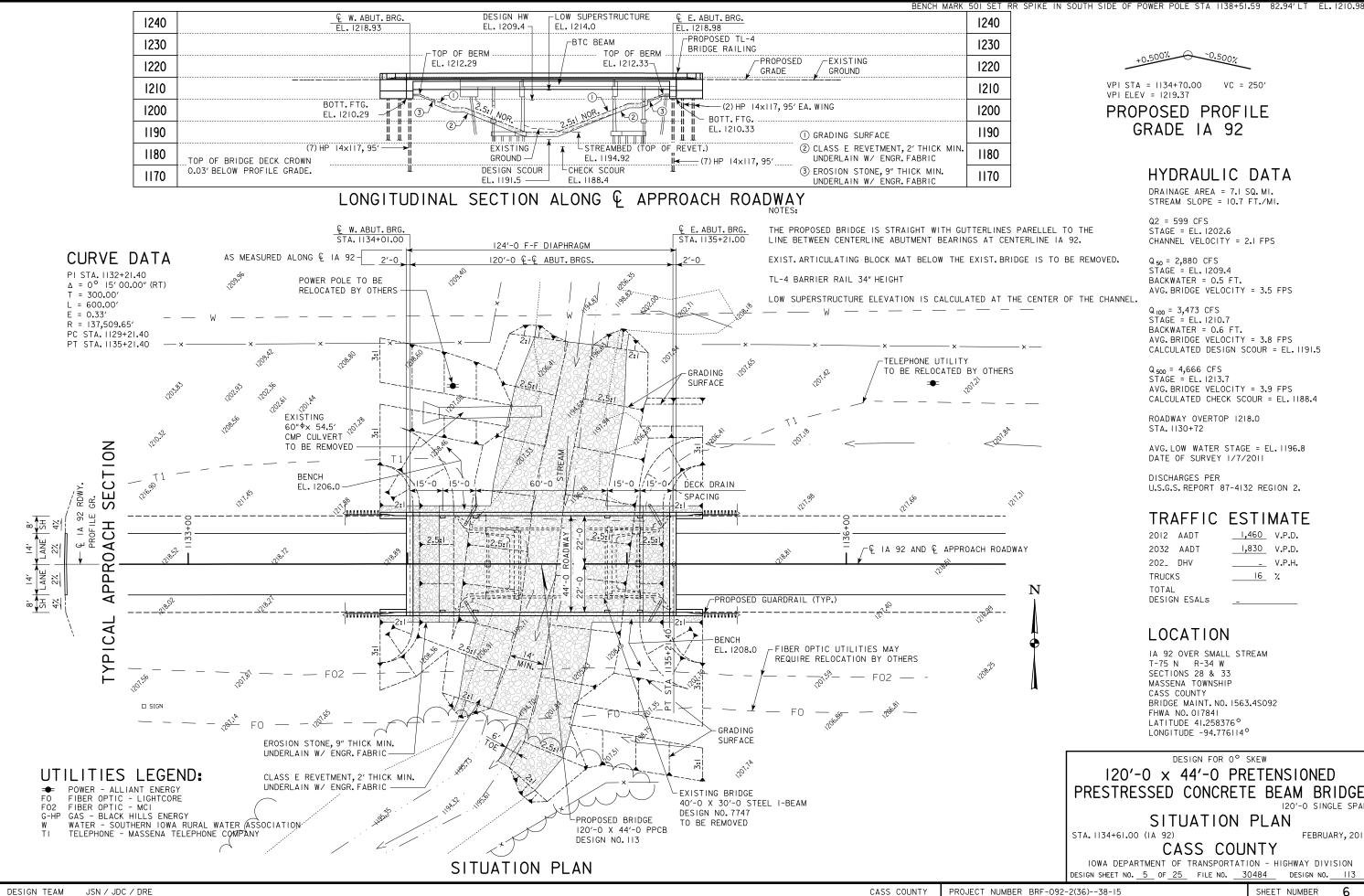
E. HANDLING AND STORAGE.

- I. WHEN LIFTING AND HANDLING PRECAST UNITS, SUPPORT THEM AT OR NEAR THE POINTS DESIGNATED IN THE APPROVED SHOP/WORKING DRAWINGS.
- 2. DO NOT LIFT OR STRAIN UNITS IN ANY WAY BEFORE THEY HAVE DEVELOPED THE STRENGTH SPECIFIED. IN STORAGE, SUPPORT UNITS AT POINTS ADJACENT TO THE BEARINGS.
- 3. DURING FABRICATION, STORAGE, HANDLING, AND HAULING TAKE CARE TO PREVENT CRACKING. TWISTING, UNNECESSARY ROUGHNESS, OR OTHER DAMAGE. IN PARTICULAR, DO NOT ALLOW TIEDOWNS TO COME IN DIRECT CONTACT WITH CONCRETE SURFACES DO NOT SUBJECT UNITS TO EXCESSIVE IMPACT. REPLACE AT NO ADDITIONAL COST TO THE CONTRACTING AUTHORITY UNITS THAT ARE, IN THE ENGINEER'S OPINION, DAMAGED IN A WAY TO IMPAIR THEIR STRENGTH OR SUITABILITY FOR THEIR INTENDED USE.

E. FINISH.

FINISH ALL SURFACES WHICH WILL BE EXPOSED IN THE FINISHED STRUCTURE AS PROVIDED IN ARTICLE 2403.03, P, 2, B, AND ENSURE THEY ARE FREE OF HONEYCOMB OR SURFACE DEFECTS. SUBMIT STRUCTURAL REPAIR PROCEDURES TO THE ENGINEER FOR APPROVAL.





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+0.500% -0.500%

VPI STA = 1134+70.00 VC = 250' VPI ELEV = 1219.37

PROPOSED PROFILE GRADE IA 92

HYDRAULIC DATA

DRAINAGE AREA = 7.1 SQ. MI. STREAM SLOPE = 10.7 FT./MI.

02 = 599 CES STAGE = EL. 1202.6 CHANNEL VELOCITY = 2.1 FPS

Q₅₀ = 2,880 CFS STAGE = EL. 1209.4 BACKWATER = 0.5 FT. AVG.BRIDGE VELOCITY = 3.5 FPS

> $Q_{100} = 3,473$ CFS STAGE = EL. 1210.7 BACKWATER = 0.6 FT. AVG. BRIDGE VELOCITY = 3.8 FPS CALCULATED DESIGN SCOUR = EL. 1191.5

Q₅₀₀ = 4,666 CFS STAGE = EL. 1213.7 AVG.BRIDGE VELOCITY = 3.9 FPS CALCULATED CHECK SCOUR = EL. 1188.4

ROADWAY OVERTOP 1218.0 STA. 1130+72

AVG.LOW WATER STAGE = EL. 1196.8 DATE OF SURVEY 1/7/2011

DISCHARGES PER U.S.G.S. REPORT 87-4132 REGION 2.

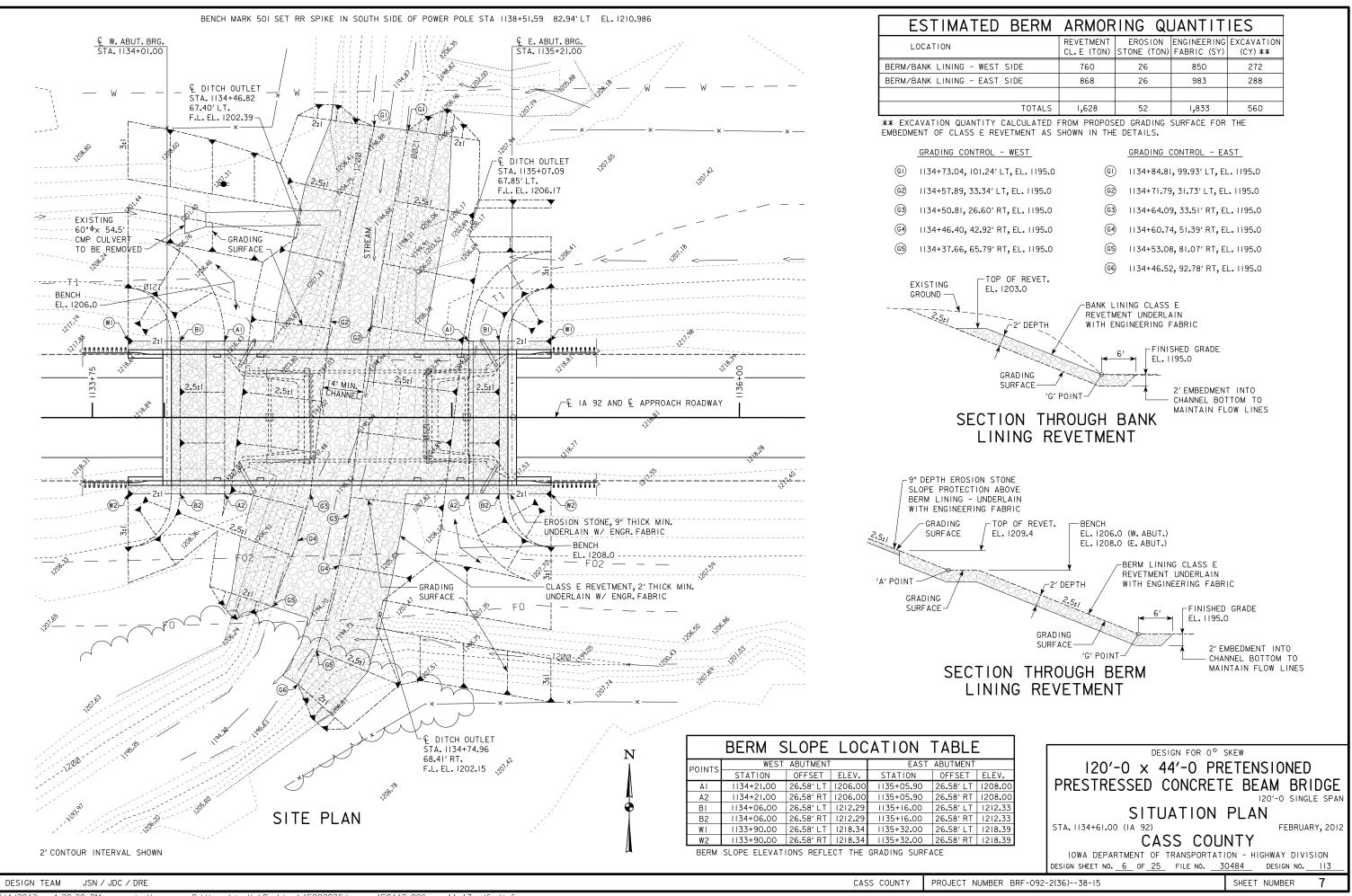
TRAFFIC ESTIMATE

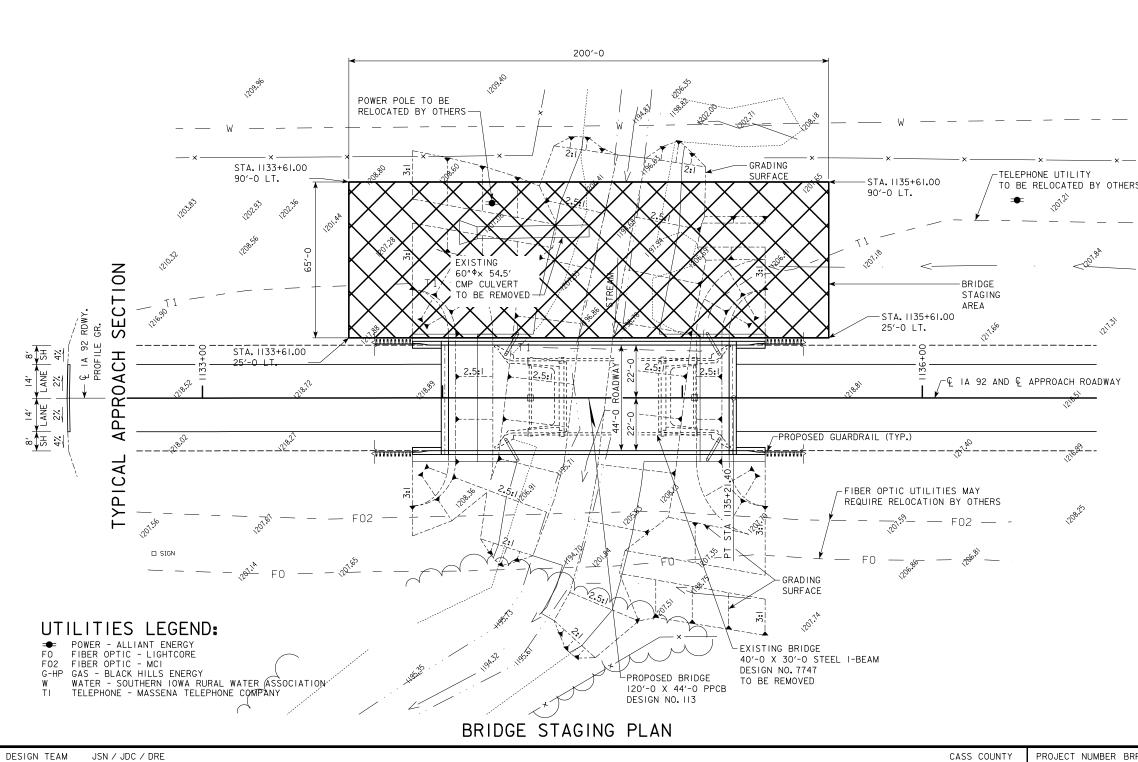
1,460 V.P.D. 2012 AADT 1,830 V.P.D. 2032 AADT 202_ DHV ___ V.P.H. TRUCKS τοται DESIGN ESALs

LOCATION

IA 92 OVER SMALL STREAM T-75 N R-34 W SECTIONS 28 & 33 MASSENA TOWNSHIP CASS COUNTY BRIDGE MAINT, NO. 1563,4S092 FHWA NO. 017841 LATITUDE 41.258376° LONGITUDE -94.776114°

DESIGN FOR O° SKEW $120'-0 \times 44'-0$ PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 120'-0 SINGLE SPAN SITUATION PLAN STA. 1134+61.00 (1A 92) FEBRUARY, 2012 CASS COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 5 OF 25 FILE NO. 30484 DESIGN NO. 113 SHEET NUMBER 6



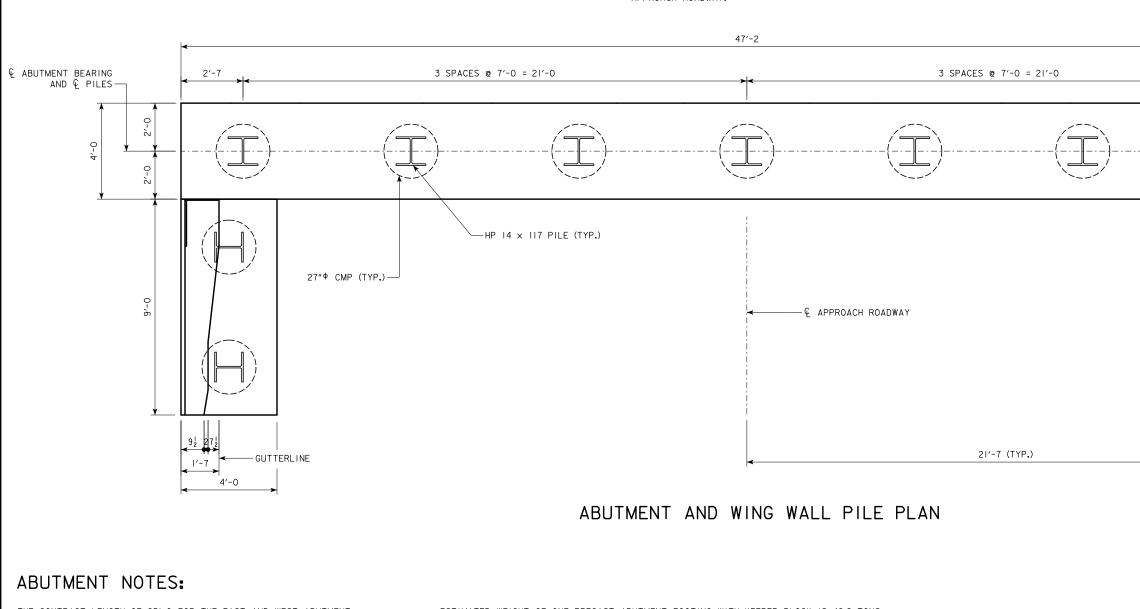


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DESIGN FOR 0° SKEW 120'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 120'-0 SINGLE SPAN
BRIDGE STAGING PLAN STA. 1134+61.00 (1A 92) FEBRUARY, 2012 CASS COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 7 OF 25 FILE NO. 30484 DESIGN NO. 113
-092-2(36)38-15 SHEET NUMBER 8

NOTE: ABUTMENT FOOTING PILES SHALL BE DRIVEN WITH PILE WEBS PARALLEL TO ♀ OF APPROACH ROADWAY.

WING PILES SHALL BE DRIVEN WITH PILE WEBS PERPENDICULAR TO \pounds OF APPROACH ROADWAY.



THE CONTRACT LENGTH OF 95'-O FOR THE EAST AND WEST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 237 KIPS AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR EAST AND WEST ABUTMENT PILES IS 182 TONS AT END OF DRIVE (EOD)OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

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

FINAL PILE HEAD POSITION SHALL NOT DEVIATE FROM THE LOCATION DESIGNATED IN THESE PLANS BY MORE THAN $3^{\prime\prime}$ IN ANY DIRECTION IN ORDER TO ALLOW THE PRECAST ABUTMENT FOOTING AND WINGS TO BE INSTALLED.

ESTIMATED WEIGHT OF ONE PRECAST ABUTMENT FOOTING WITH KEEPER BLOCK IS 42.2 TONS.

THE METHOD OF SUPPORTING THE PRECAST ABUTMENT FOOTING DURING ERECTION SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE ERECTION. SPECIAL EMPHASIS IS PLACED ON THE CONTRACTORS METHOD OF ELEVATION CONTROL.

THE PRECAST ABUTMENT FOOTING SUPPORT SHALL NOT BE REMOVED UNTIL 4000 PSI COMPRESSIVE STRENGTH HAS BEEN ACHEIVED.

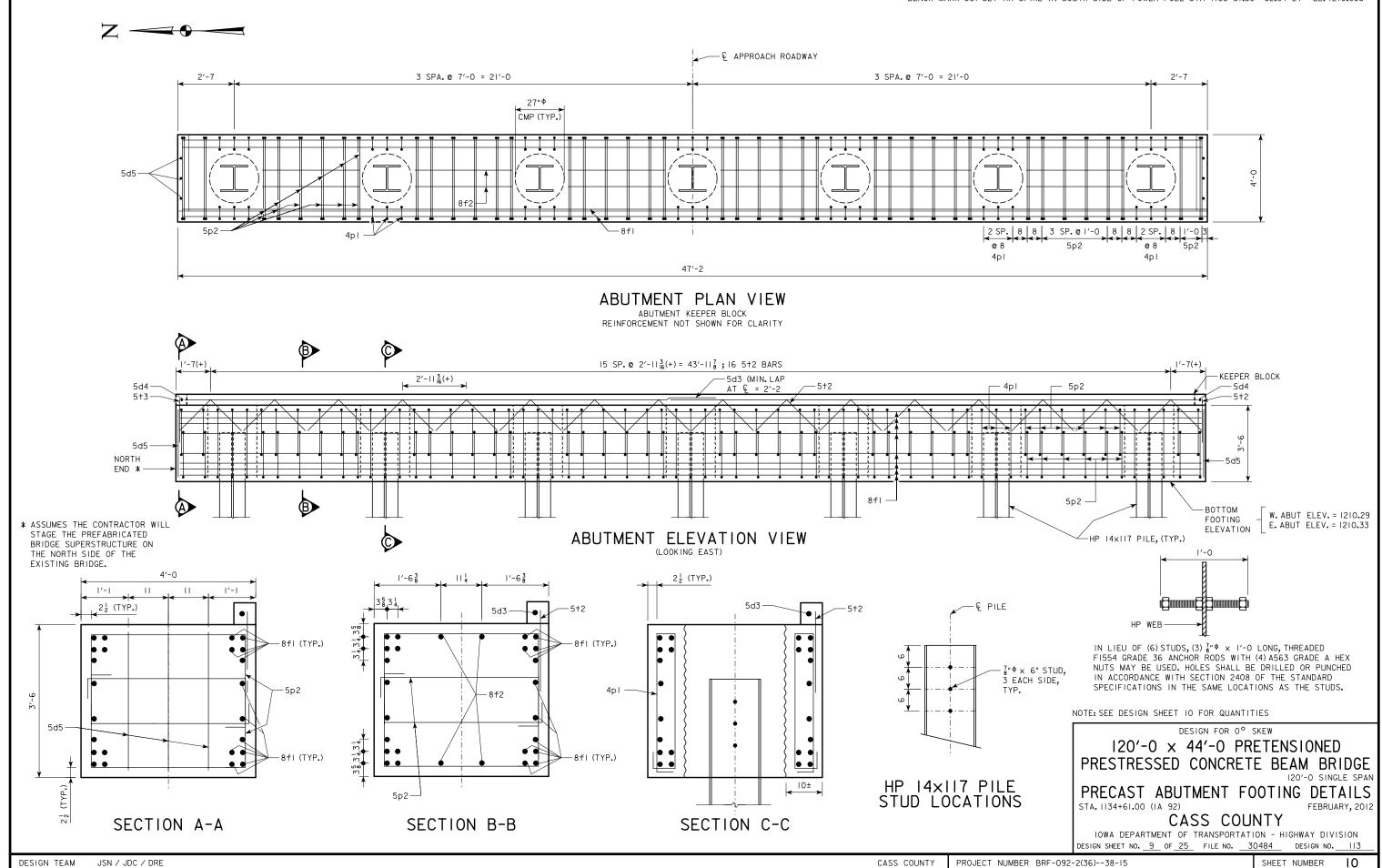
THE STRUCTURAL CONCRETE (MISC.) USED TO FILL THE ABUTMENT PILING ENCASEMENTS SHALL BE CLASS D CONCRETE WITH A HIGH RANGE WATER REDUCER. THE MAXIMUM SLUMP ACHIEVED WITH WATER SHALL BE 2 INCHES. THE HRWR SHALL BE ADDED AT THE POUR SITE. THE MAXIMUM ALLOWABLE SLUMP AFTER ADDITION OF THE HRWR SHALL BE 7 INCHES. COARSE AGGREGATE SHALL BE $\frac{1}{2}$ INCH TOP SIZE.

THE CONTRACTOR MAY EMPLOY METHODS SUCH AS THE USE OF A NON-CHLORIDE ACCELERATOR OR SUPPLEMENTAL HEATING AND PROTECTION TO INCREASE EARLY STRENGTH GAIN.

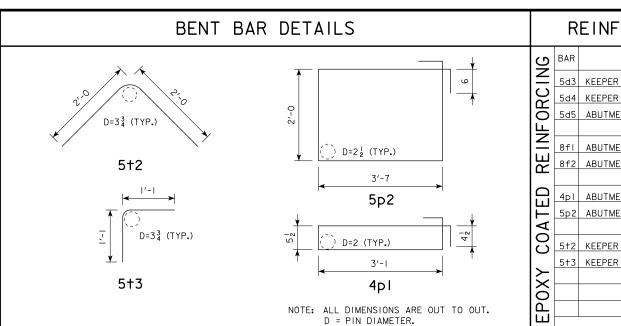
OTHER MIXES MAY BE CONSIDERED PROVIDED THEY HAVE BEEN REVIEWED AND APPROVED BY THE DISTRICT MATERIALS ENGINEER.

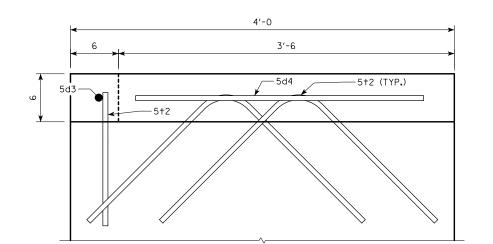
		2L I NE		
ESTIMATED	QUAN	ITIT	ES	
ITEM		UNITS	QUANTITY	
CLASS 20 EXCAVATION		CY	239	
PILES - HP 14 x 117 22	2 @ 95′	LF	2090	
I20'-0 × 44' PRESTRESSED CO ABUTME STA. II34+61.00 (IA 92) CASS IOWA DEPARTMENT OF TR/	EACH ABL RAIL NO FOR O° -O PF NCRE NT D S COL ANSPORTA	ITMENT. T SHOWN SKEW RETEN TE BE UETAI JNTY TION - HIG	IN DETAILS SIONEE AM BR 20'-0 SING LS FEBRUA GHWAY DIVI) IDGE SLE SPAN ARY, 2012 ISION
DESIGN SHEET NO. <u>8</u> OF <u>25</u> F	TILE NO.	<u>30484</u>	DESIGN NO.	<u>9</u>
-032-2(30)32-13		SHEEL	NUMDER	3

2′-7



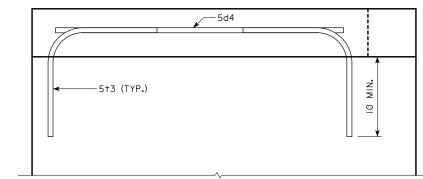
BENCH MARK 50I SET RR SPIKE IN SOUTH SIDE OF POWER POLE STA 1138+51.59 82.94' LT EL. 1210.986





KEEPER BLOCK REINFORCING DETAIL

SOUTH END *



THE 5+3 BARS SHALL BE SET IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. USE A POLYMER GROUT SYSTEM IN ACCORDANCE WITH ARTICLE 2301.03,E OF THE STANDARD SPECIFICATIONS.

KEEPER BLOCK REINFORCING DETAIL NORTH END 🗶

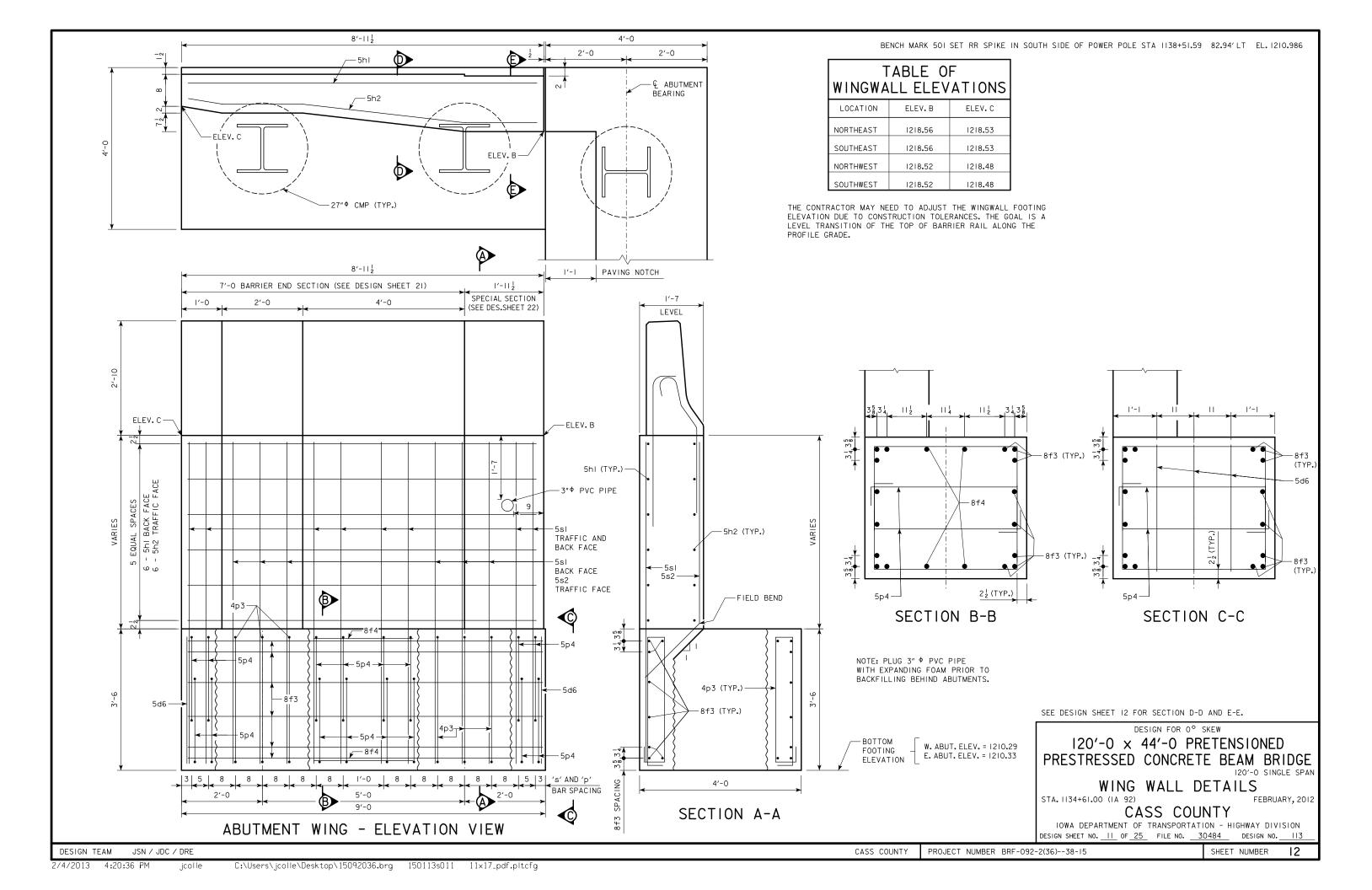
* ASSUMES THE CONTRACTOR WILL STAGE THE PREFABRICATED BRIDGE SUPERSTRUCTURE ON THE NORTH SIDE OF THE EXISTING BRIDGE.

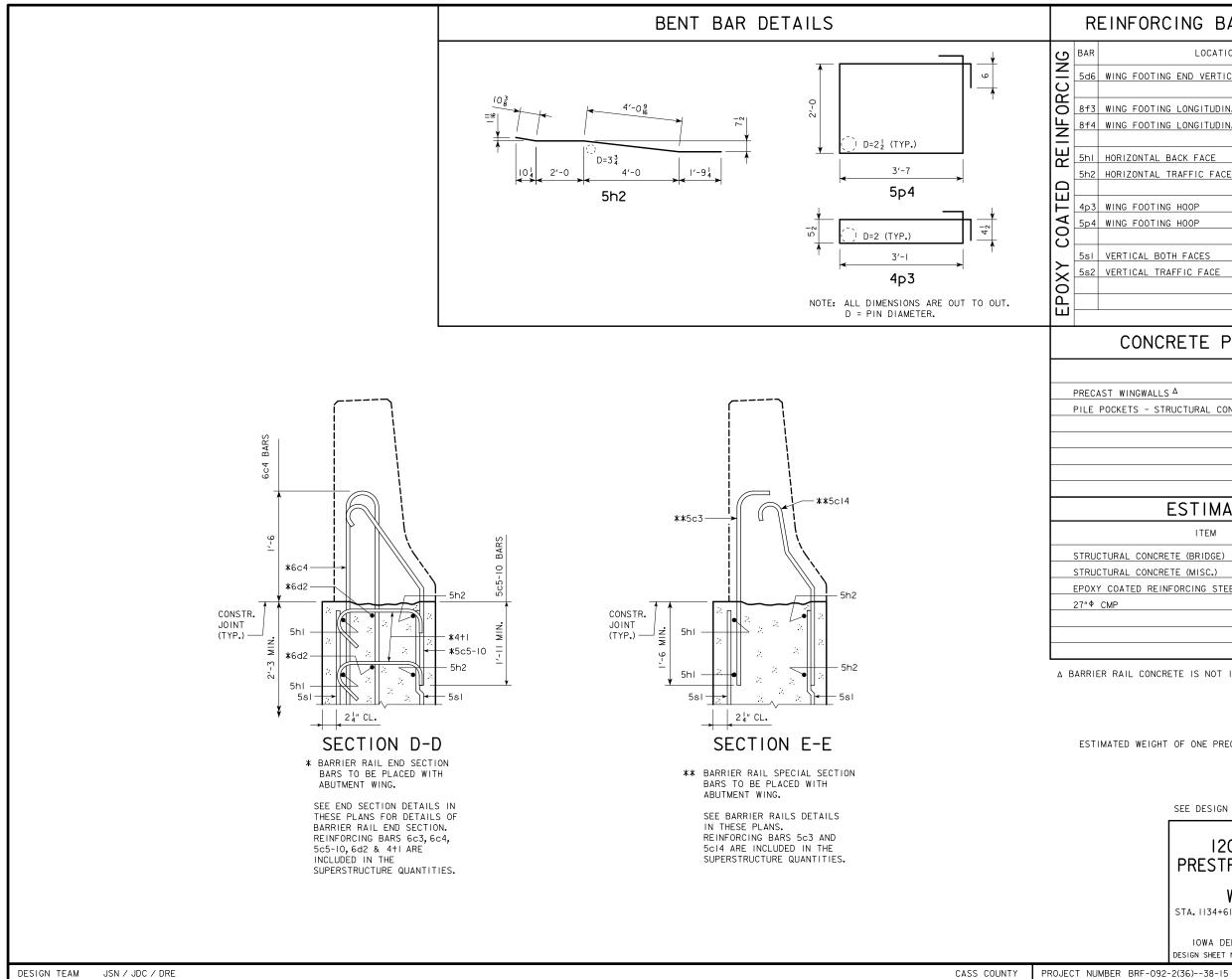
	REINFORCING BAR LIST - ONE ABUTMENT								
	R	EINFURCING BAR LIST -	UNE .						
DZ	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT			
	5d3	KEEPER BLOCK LONGITUDINAL		2	24'-5	51			
いころ	5d4	KEEPER BLOCK LONGITUDINAL		2	3'-0	6			
5	5d5	ABUTMENT FOOTING END VERTICAL		6	3'-2	20			
Ξ									
	8f1	ABUTMENT FOOTING LONGITUDINAL		24	46'-9	2996			
<	8f2	ABUTMENT FOOTING LONGITUDINAL		24	4'-5	283			
ב	4p1	ABUTMENT FOOTING HOOP	-	42	7′-10	220			
	5p2	ABUTMENT FOOTING HOOP		80	12'-2	1015			
ز	5†2	KEEPER BLOCK TIE	Г	18	4'-0	75			
_	5†3	KEEPER BLOCK DOWEL		2	2'-2	5			
<									
J				тот	L AL (LBS.)	4671			
		CONCRETE PLACEMENT							
		CONCRETE TEACEMENT	QUAN						
	WEST	PRECAST ABUTMENT FOOTING			21				
	EAST	PRECAST ABUTMENT FOOTING			21				
		POCKETS - STRUCTURAL CONCRETE (MISC.)			7.8				
		KEEPER BLOCK			0.5				
	EASÍ	KEEPER BLOCK			0.5)			
		TOT	AL (CU YDS	5.)	50.8	}			
		ESTIMATED QUANT	ITIES	5					
		ITEM		ITS	QUAN	ΤΙΤΥ			
	STRU	CTURAL CONCRETE (BRIDGE)	с	Y		13			
		CTURAL CONCRETE (MISC.)	С	Y	7	.8			
	EPOX	Y COATED REINFORCING STEEL 2 @ 4671	L	В	934	12			
	27"\$	CMP	L	F	4	19			
			I						

PRECAST ABUTMENT FOOTING NOTES:

ALL 27"^{\$} CMP ARE GALVANIZED COURRUGATED STEEL PIPE, TYPE 1, 16 GAGE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 4141 AND MATERIALS 1.M. 441

NOTE: SEE DESIGN SHEET 9 FOR DETAILS. DESIGN FOR O° SKEW 120'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 120'-0 SINGLE SPAN ABUTMENT FOOTING QUANTITIES STA. 1134+61.00 (1A 92) FEBRUARY, 2012 CASS COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 10 OF 25 FILE NO. 30484 DESIGN NO. 113 SHEET NUMBER 11

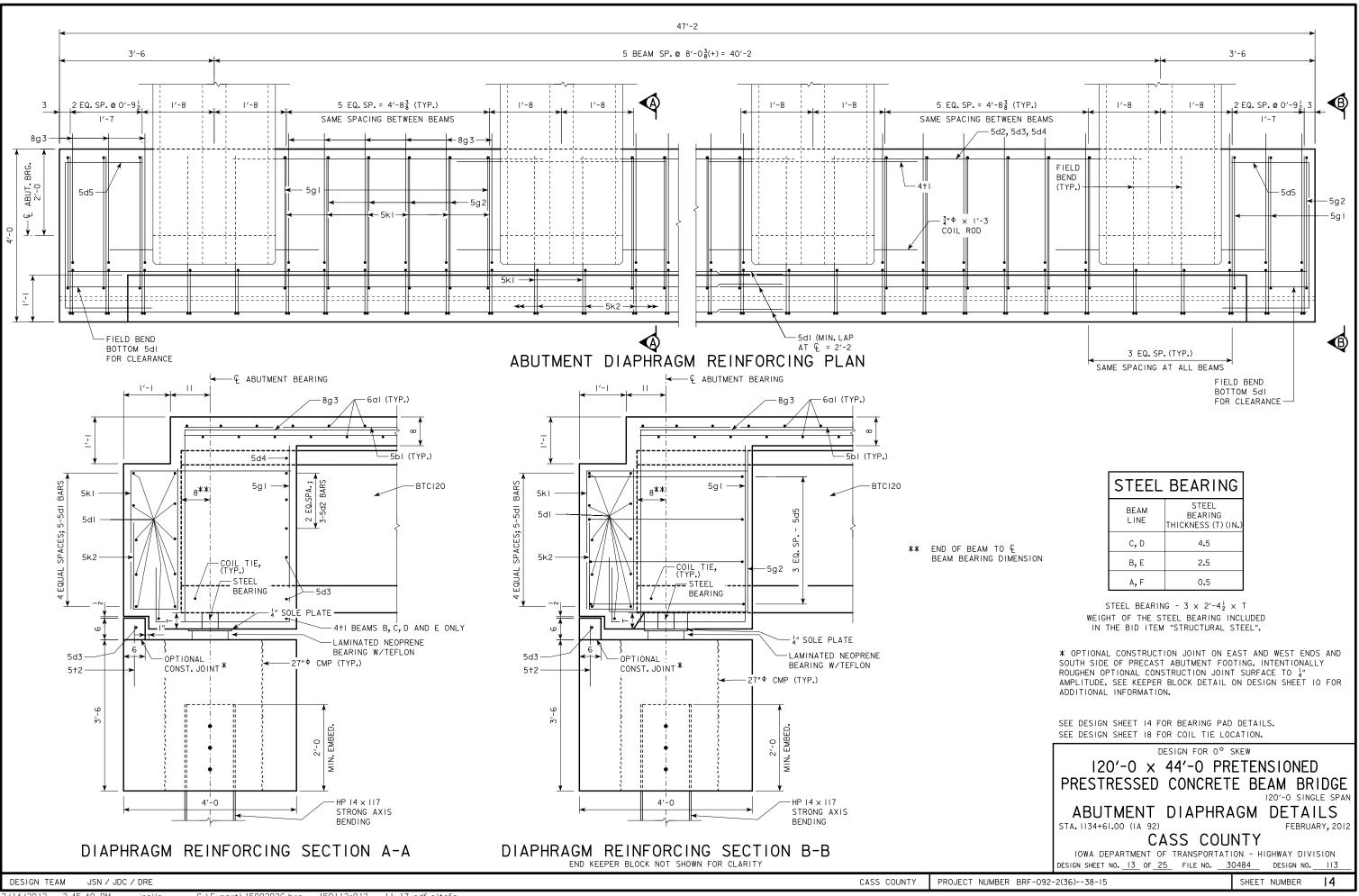




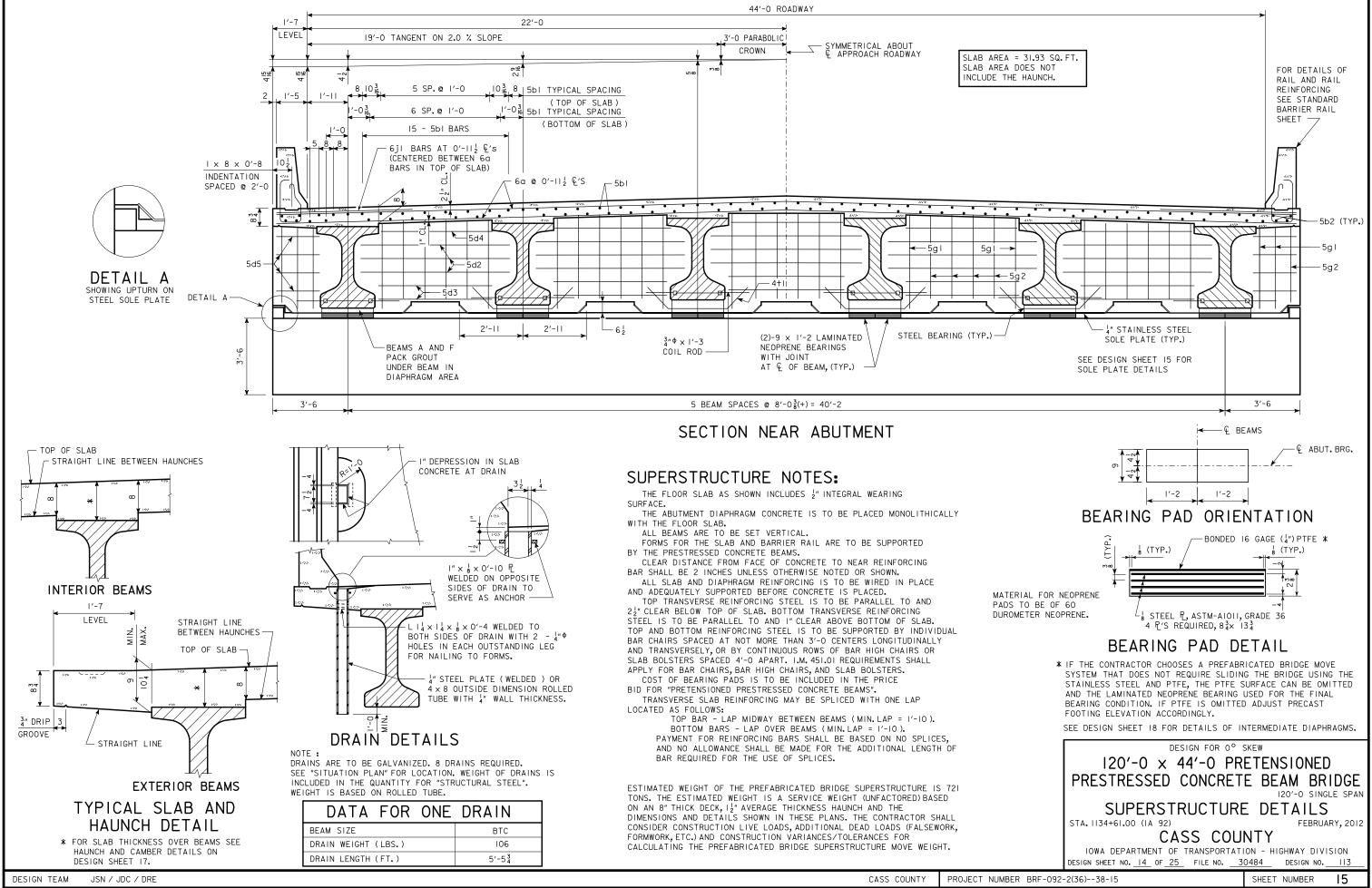
ORCING BAR LIST -	ONE	ΞV	VIN	IGWAL	L			
LOCATION	SHA	PE	NO.	LENGTH	WEIGHT			
FOOTING END VERTICAL		-	6	3'-2	20			
FOOTING LONGITUDINAL	— I6		16	8'-8	370			
FOOTING LONGITUDINAL		-	4	2′-5	26			
ONTAL BACK FACE	_	-	6	8′-7	54			
ONTAL TRAFFIC FACE		-	6	8′-8	54			
FOOTING HOOP	C	-	12	7′-10	63			
FOOTING HOOP			16	12'-2	203			
CAL BOTH FACES		_	22	7′-6	172			
CAL TRAFFIC FACE	_	-	6	6'-6	41			
		_						
				AL (LBS.)	1003			
ONCRETE PLACEMENT	QU	AN ⁻		TIES				
IGWALLS ^Δ S - STRUCTURAL CONCRETE (MISC.)		5.6 C		22.4				
S - STRUCTURAL CONCRETE (MISC.)	40	1.0 0	.1	4.0				
τοτα	AL (CL	J YDS	.)	26.4	ļ			
ESTIMATED QUANT	ITI	ES						
ITEM		UNI	TS	QUAN	τιτγ			
CONCRETE (BRIDGE)		CY	,	22	.4			
CONCRETE (MISC.)		CY			.0			
ED REINFORCING STEEL 4 @ 1003	LBS. LB LF			4012 28				
					-			
CONCRETE IS NOT INCLUDED.								
WEIGHT OF ONE PRECAST WING WALL WITH								
WEIGHT OF ONE PRECAST WING WALL WITH	BAR	TER	RAIL	15 15.1 10	JNS.			
SEE DESIGN SHEET II FOR LOCATION OF SECTION D-D AND E-E.								
DESIGN FOI								
I20'-0 × 44'-0 PRESTRESSED CONC								
			12	20'-0 SING				
WING WALL STA. 1134+61.00 (1A 92)					ARY, 2012			
IOWA DEPARTMENT OF TRANSPI	ORTAT	ION	- HIG					
DESIGN SHEET NO. 12 OF 25 FILE N	IO	0484 י	<u> </u>	DESIGN NO.	113			

SHEET NUMBER

13

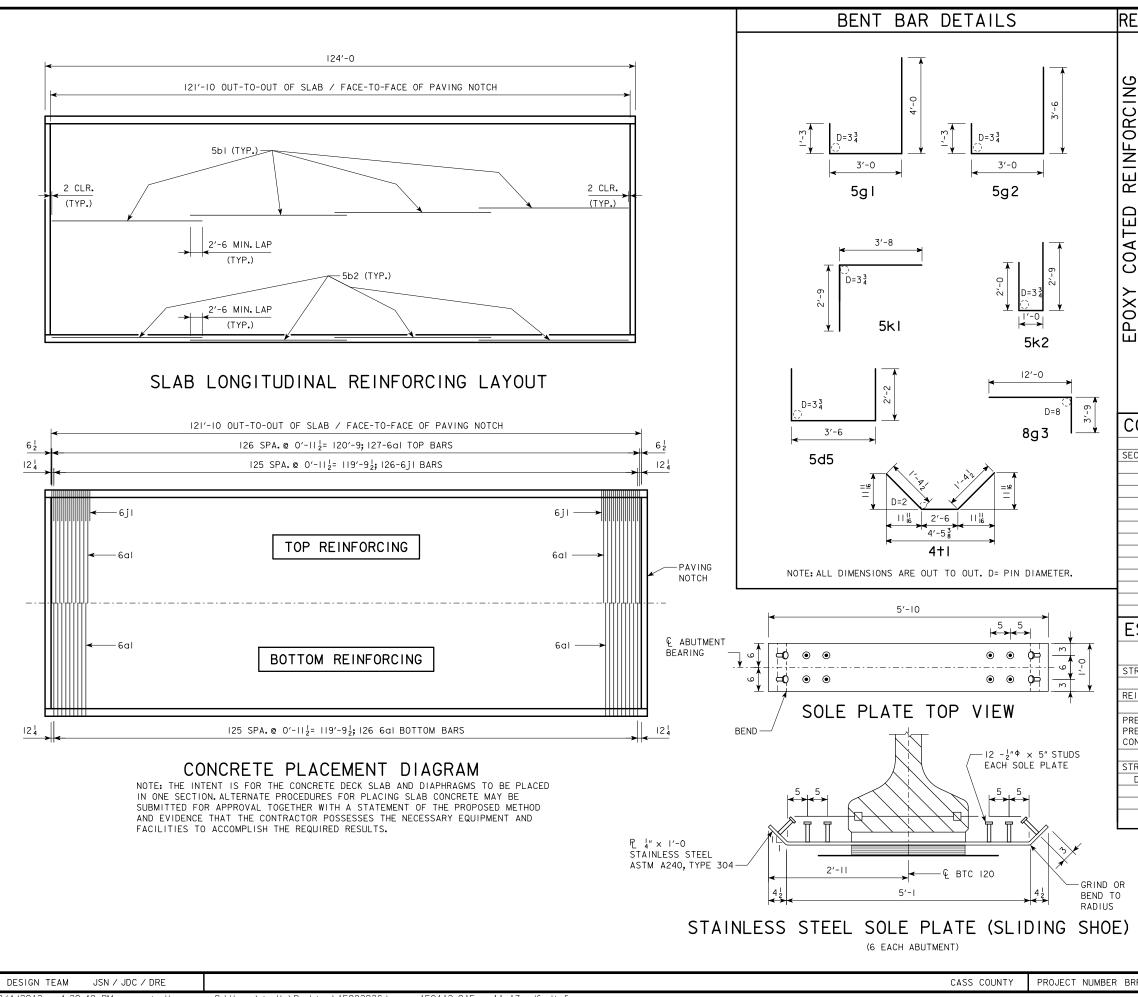


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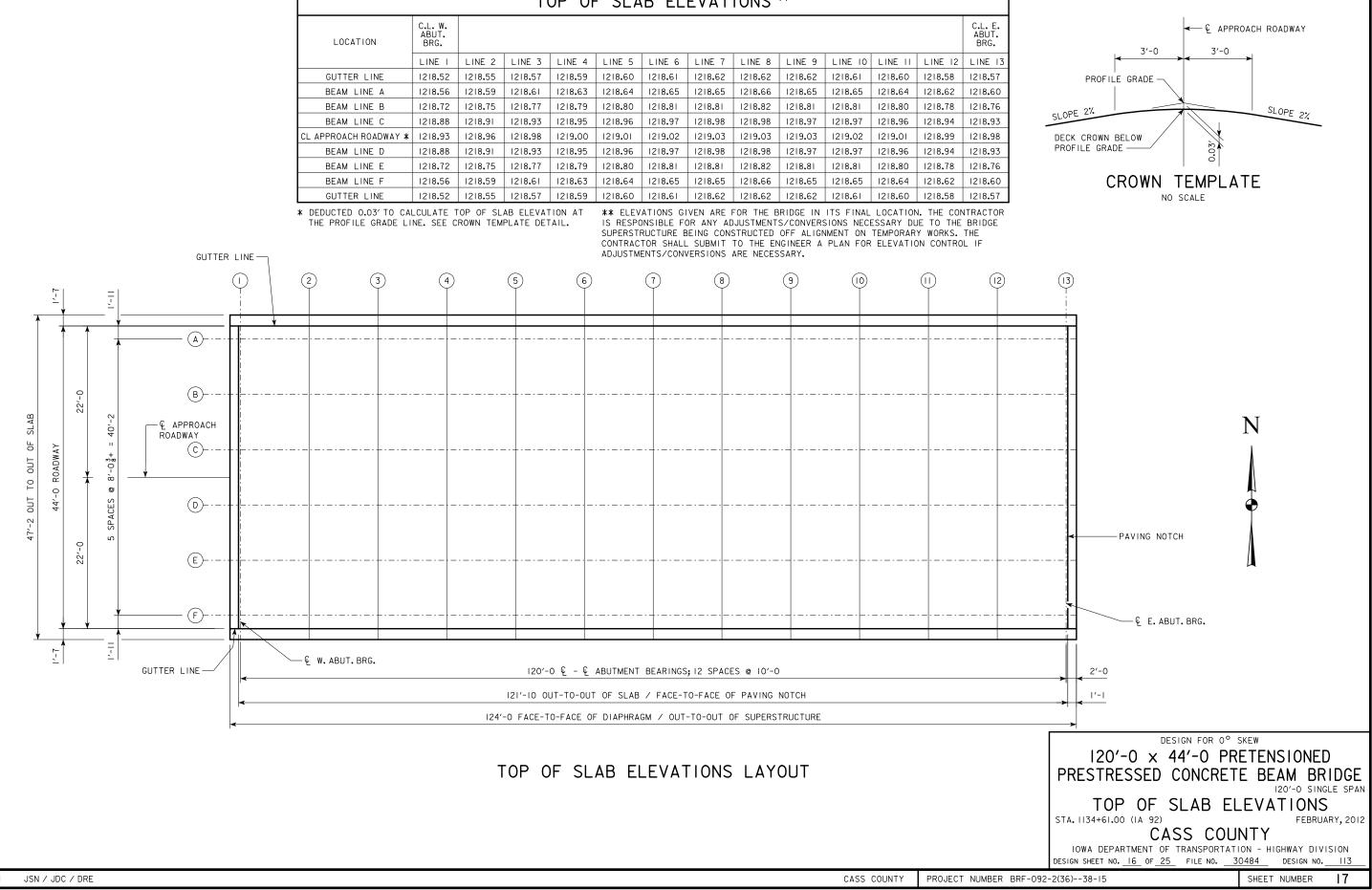


-	INF	.BAR LIST-ONE SUPER. &	TW	0	DIA	PHRA	GMS
	BAR	LOCATION	SHAF			LENGTH	
	6al	SLAB TRANSV. TOP & BOTT.		-	253	46'-10	17797
>							
	5b1 5b2	SLAB LONGIT.TOP & BOTT. SLAB LONGIT.,UNDER BARRIER RAIL		_	356 32	32'-3 32'-10	11975
					02	OL TO	1030
{	5dI	ABUT. PAVING NOTCH		_	44	24'-7	1128
	5d2	ABUT. DIAPH. LONGIT.		—	30	7′-0 5′-2	219 108
		ABUT. DIAPH. LONGIT. ABUT. DIAPH. LONGIT.		_	20 10	4'-10	50
	5d5	ABUT. DIAPH. ENDS			16	7′-10	131
ן נ	5g1	ABUT. DIAPH. VERT. F.F. ABUT. DIAPH. VERT. F.F.			28 44	8'-3 7'-9	241 356
-	8g3	ABUT. DIAPH. VERT. B.F.		-	72	15'-9	3028
5							
)	6jl	TOP OF SLAB TRANSV. (AT RAIL)		_	252	6′-3	2366
-							
	5kI	PAVING NOTCH			96	6'-5	643
j	5k2	PAVING NOTCH		-	96	5′-9	576
ו							
	4†1	UNDER BEAMS AT ABUTMENTS	\sim	/	8	5′-3	28
		BARRIER RAIL - SEE DESIGN SHT. NO. 22					7638
		REINFORCING STEEL EPOXY COA	L ATED	_	τοται	(LBS.)	47380
(PLACEMENT QUANTI			ONE	SUPER.	&
) DIAPHR ANTITY	AGMS
C.	TION	I,SLAB & ABUT.DIAPH.				198	
		TOTAL (CU.YI	DS.)			198	
3	STI	MATED QUANTITIES				SUPER.	
		ITEM			ит	QUAN	
R	UCTUF	RAL CONCRETE (BRIDGE)			YD.	19	
	IF ORC	ING STEEL EPOXY COATED		Lt	3S .	473	80
	TENSI			ΕA	КН	6	
	STRES	E BEAMS					
RI		RAL STEEL					
_		AGMS STEEL BEARINGS DECK DRAIN	IS				
	154	3 727 848		Lŧ	35.	311	8
		DESIGN FOR O° S	SKEW		I		
		120'-0 x 44'-0 PR	ETE	ΞN	SIC	ONED	
		PRESTRESSED CONCRET	ΕE	ΒE	ΑМ	BRII	DGE
					20'-0	SINGLE	E SPAN
			: C	E			
		STA. 1134+61.00 (1A 92) CASS COUI		Y	f	EBRUAR	r,2012
		IOWA DEPARTMENT OF TRANSPORTATI			GHWA	Y DIVISI	ON
		DESIGN SHEET NO. 15 OF 25 FILE NO. 30				GN NO	
	-092	-2(36)38-15	SHE	FT	NEM	BER	16

	TOP OF SLAB ELEVATIONS **												
LOCATION C.L. W. ABUT. BRG.											C.L. E. ABUT. BRG.		
	LINE I	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE II	LINE 12	LINE 13
GUTTER LINE	1218.52	1218.55	1218.57	1218.59	1218.60	1218.61	1218.62	1218.62	1218.62	1218.61	1218.60	1218.58	1218.57
BEAM LINE A	1218.56	1218.59	1218.61	1218.63	1218.64	1218.65	1218.65	1218.66	1218.65	1218.65	1218.64	1218.62	1218.60
BEAM LINE B	1218.72	1218.75	1218.77	1218.79	1218.80	1218.81	1218.81	1218.82	1218.81	1218.81	1218.80	1218.78	1218.76
BEAM LINE C	1218.88	1218.91	1218.93	1218.95	1218.96	1218.97	1218.98	1218.98	1218.97	1218.97	1218.96	1218.94	1218.93
CL APPROACH ROADWAY *	1218.93	1218.96	1218.98	1219.00	1219.01	1219.02	1219.03	1219.03	1219.03	1219.02	1219.01	1218.99	1218.98
BEAM LINE D	1218.88	1218.91	1218.93	1218.95	1218.96	1218.97	1218.98	1218.98	1218.97	1218.97	1218.96	1218.94	1218.93
BEAM LINE E	1218.72	1218.75	1218.77	1218.79	1218.80	1218.81	1218.81	1218.82	1218.81	1218.81	1218.80	1218.78	1218.76
BEAM LINE F	1218.56	1218.59	1218.61	1218.63	1218.64	1218.65	1218.65	1218.66	1218.65	1218.65	1218.64	1218.62	1218.60
GUTTER LINE	1218.52	1218.55	1218.57	1218.59	1218.60	1218.61	1218.62	1218.62	1218.62	1218.61	1218.60	1218.58	1218.57

THE PROFILE GRADE LINE. SEE CROWN TEMPLATE DETAIL.

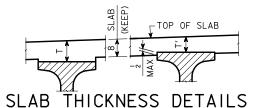
IS RESPONSIBLE FOR ANY ADJUSTMENTS/CONVERSIONS NECESSARY DUE TO THE BRIDGE SUPERSTRUCTURE BEING CONSTRUCTED OFF ALIGNMENT ON TEMPORARY WORKS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A PLAN FOR ELEVATION CONTROL IF ADJUSTMENTS/CONVERSIONS ARE NECESSARY.



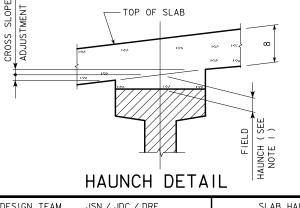
		TABL	E OF	BEAN	/ LIN	IE HA	UNCH	ELE	VATIO	ONS *			
LOCATION C.L. W. ABUT. BRG.								C.L. E. ABUT. BRG.					
	LINE I	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE II	LINE 12	LINE 13
BEAM LINE A	1217.89	1218.05	1218.17	1218.27	1218.34	1218.38	1218.40	1218.39	1218.35	1218.29	1218.20	1218.08	1217.94
BEAM LINE B	1218.05	1218.21	1218.33	1218.43	1218.50	1218.54	1218.56	1218.55	1218.51	1218.45	1218.36	1218.24	1218.10
BEAM LINE C	1218.22	1218.37	1218.49	1218.59	1218.66	1218.71	1218.72	1218.71	1218.68	1218.61	1218.52	1218.40	1218.26
BEAM LINE D	1218,22	1218.37	1218.49	1218.59	1218.66	1218.71	1218.72	1218.71	1218.68	1218.61	1218.52	1218.40	1218.26
BEAM LINE E	1218.05	1218.21	1218.33	1218.43	1218.50	1218.54	1218.56	1218.55	1218.51	1218,45	1218.36	1218.24	1218.10
BEAM LINE F	1217.89	1218.05	1218.17	1218.27	1218.34	1218.38	1218.40	1218.39	1218.35	1218,29	1218,20	1218.08	1217.94

* ELEVATIONS GIVEN ARE FOR THE BRIDGE IN ITS FINAL LOCATION. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADJUSTMENTS/CONVERSIONS NECESSARY DUE TO THE BRIDGE SUPERSTRUCTURE BEING CONSTRUCTED OFF ALIGNMENT ON TEMPORARY WORKS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A PLAN FOR ELEVATION CONTROL IF ADJUSTMENTS/CONVERSIONS ARE NECESSARY.

				MI	SCEL	LANE	DUS [DATA	TABL	E					
	BEAM	LINE	€ W.ABUT. BEARING												€ E.ABUT. BEARING
			LINE I	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE IO	LINE II	LINE 12	LINE 13
ANTICIPATED DEFLECTION DUE TO SLAB (IN.)	AL	L	0	1.51	2.75	3.72	4.40	4.82	4.96	4.82	4.40	3.72	2.75	1.51	0
CROSS SLOPE ADJUSTMENTS (IN.)	ALI	L							± ⁵ "						
								2¦" (0.208)						
FIELD HAUNCH (IN. & FT.)	MIN.	ALL						-	- ³ (-0.016	5)					



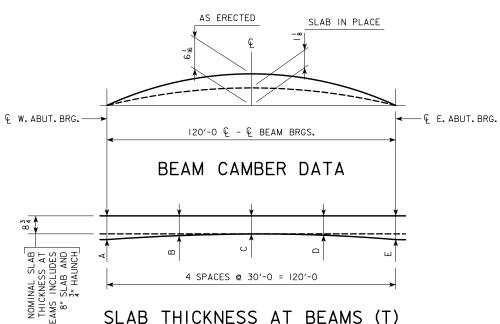
NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

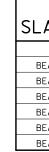


NOTE: BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

NOTE:

HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON SLAB ELEVATIONS SHEET.





ESTIMATED SLAB THICKNESS AT BEAMS VARIES DUE TO THE HORIZONTAL TOP OF ABUTMENT FOOTING AND BEARING THICKNESSES CHOSEN.

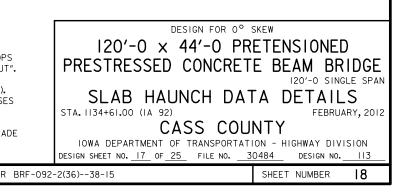
NOTE I:

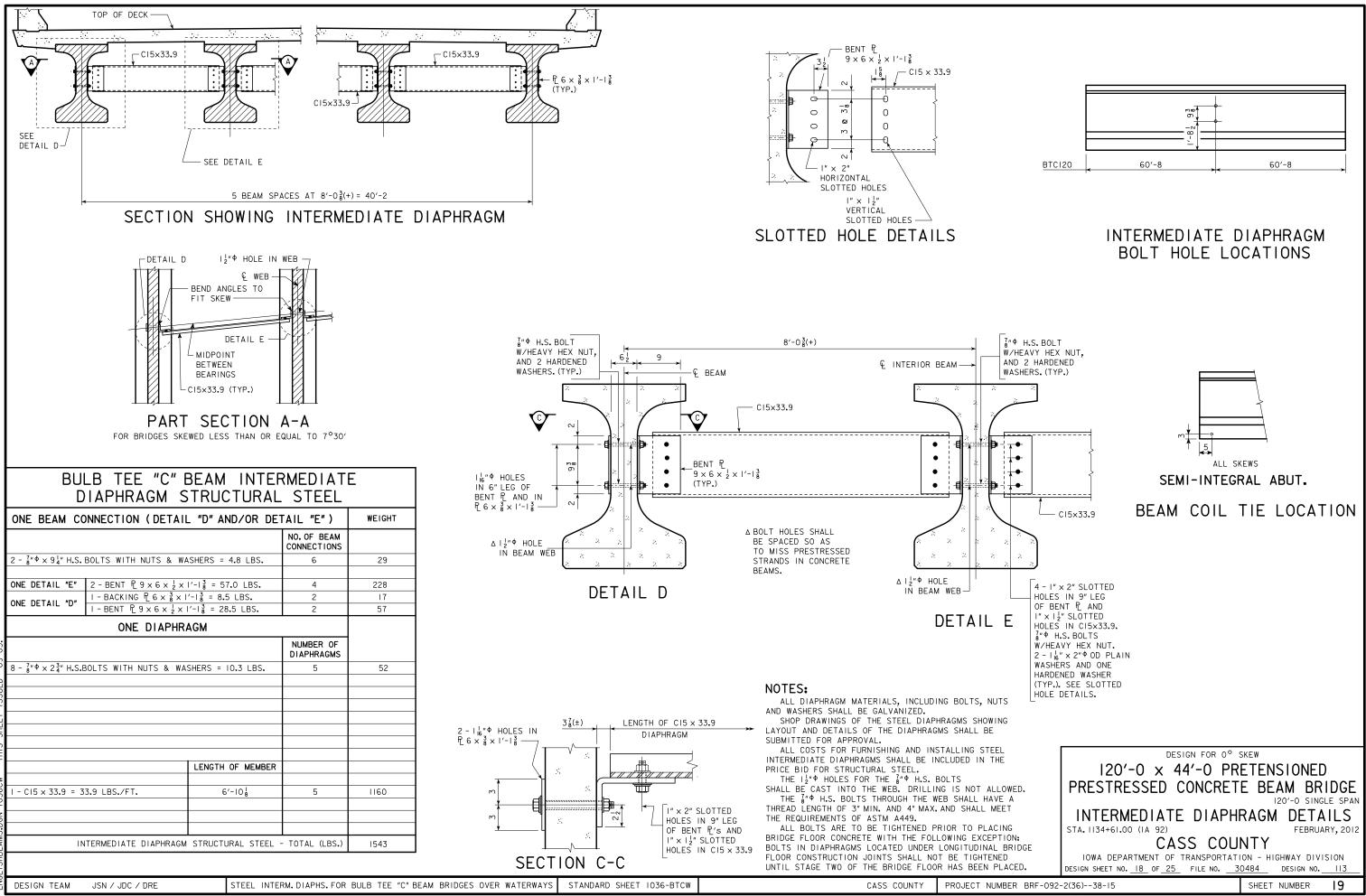
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

ШNС	DESIGN T	EAM JSN /	JDC / DRE	SLAB HAUNCH DATA DETAILS	STANDARD SHEET 1066	CASS COUNTY	PROJECT NUMBER
	2/4/2013	4:20:42 PM	jcolle	C:\Users\jcolle\Desktop\15092036.brg 150	0113s017 11×17_pdf.pltcfg		

BENCH MARK 50I SET RR SPIKE IN SOUTH SIDE OF POWER POLE STA 1138+51.59 82.94' LT EL. 1210.986

TABLE OF AB THICKNESS AT BEAMS (T)											
	А	В	С	D	E						
EAM LINE A	98	8 <mark>15</mark>	8 8	8 <mark>15</mark>	9 8						
EAM LINE B	916	878	8 13 16	878	916						
EAM LINE C	9	8 13	8 ³ 4	8 13	9						
EAM LINE D	9	8 <mark> 3</mark>	8 ³ 4	8 3 6	9						
EAM LINE E	9 9	88	8 3 6	8 8	916						
EAM LINE F	9 <mark>8</mark>	8 15	88	8 5	98						



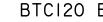


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-BTCW.

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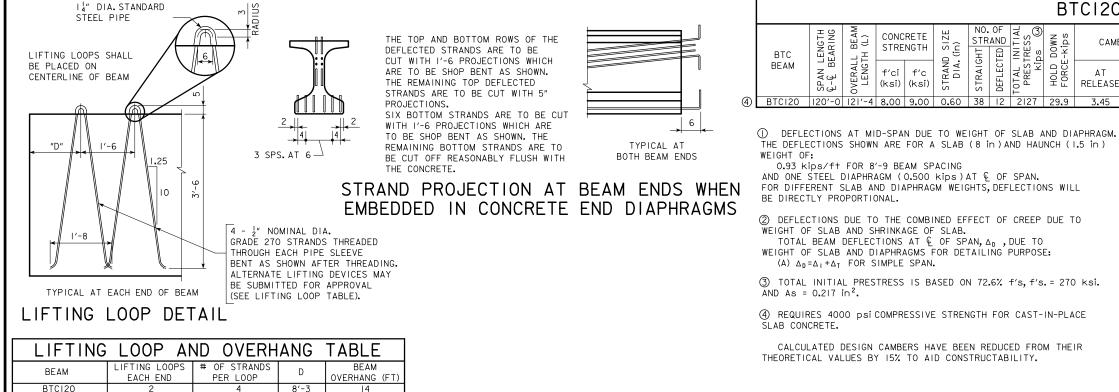
CAMBER

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FOR

29.9



LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL

TIES TO BE AS DETAILED ON SPECIFIC

BRIDGE DESIGN.

2'-5

COIL TIE DETAIL

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007. REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.

CONCRETE IN ACCORDANCE WITH SECTION 5. PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLE-MENTAL SPECIFICATIONS.

DESIGN: A.A.S.H.T.O. LRFD. SERIES OF 2007. WITH MINOR MODIFICATIONS.

ALTERNATE BAR NOTES:

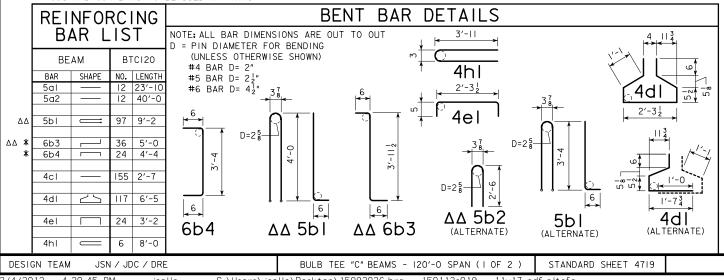
AA 561 AND 663 BARS TO BE EPOXY COATED * 6b3 AND 6b4 BARS TO BE USED IN PAIRS

³" ♦ COIL TIES

(MIN. 9000 LBS

PULL OUT CAPACITY)

> ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST, NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.



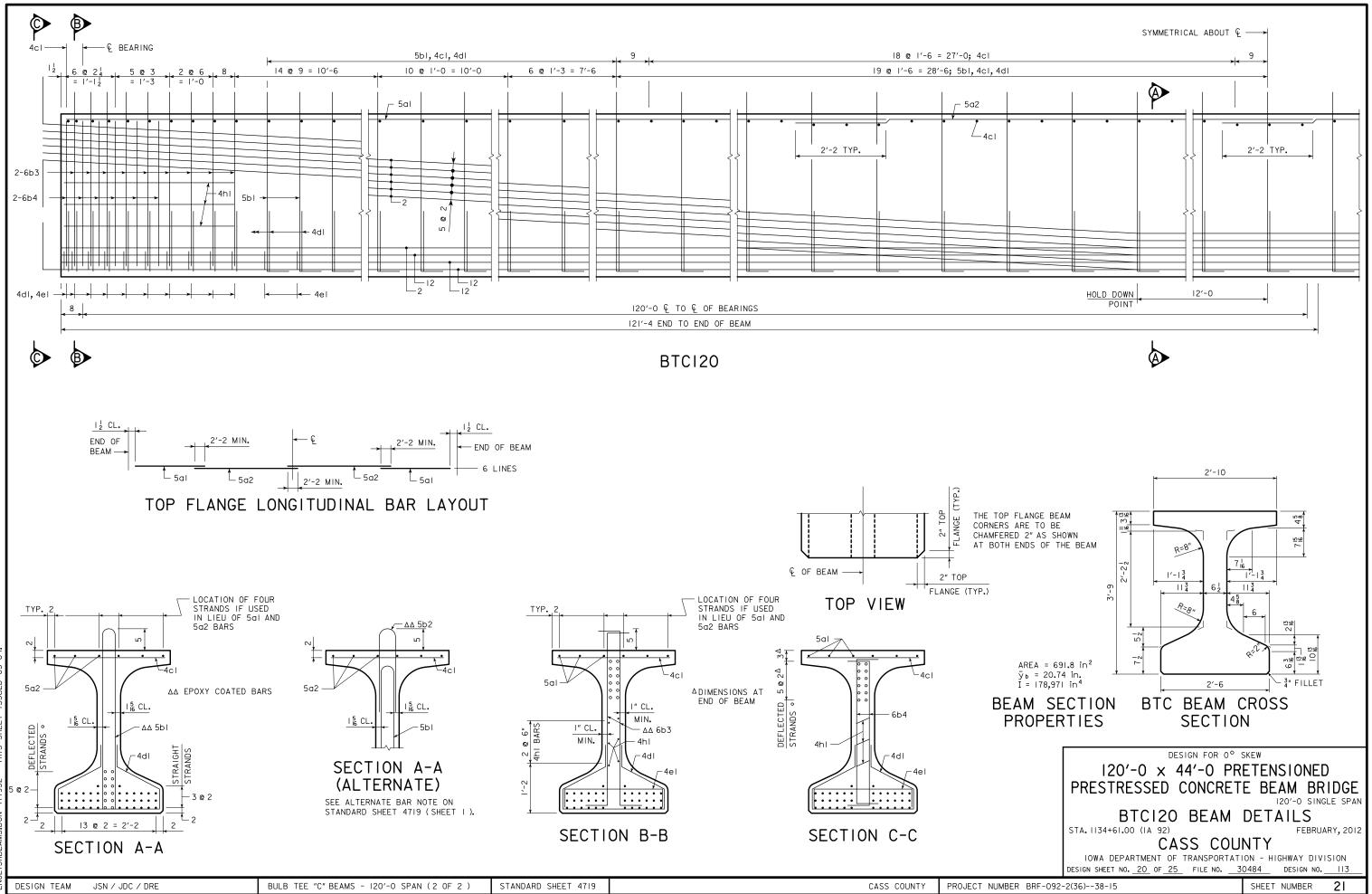
CASS COUNTY PROJECT NUMBER BRF-092-2(36)--38-15

DELETED. WAS NOTE NO DPT CON AND OR CAT FABRI TΗE VEEN BET DISTINGUISHES ENDS BEAM SEAL ING FOR NOTE REFERENCE 9SI - THIS N 24 08-12 Mis Dr NOI

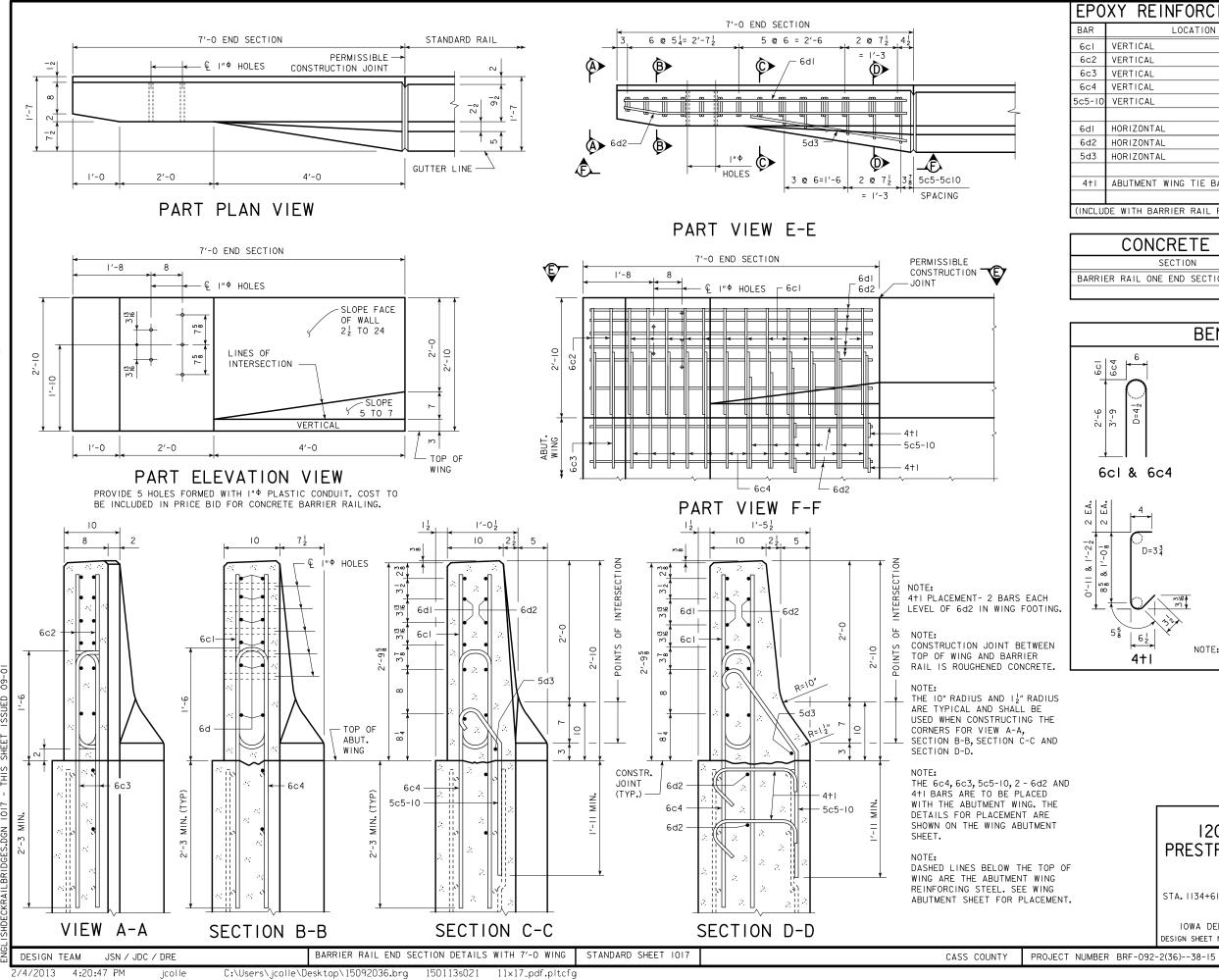
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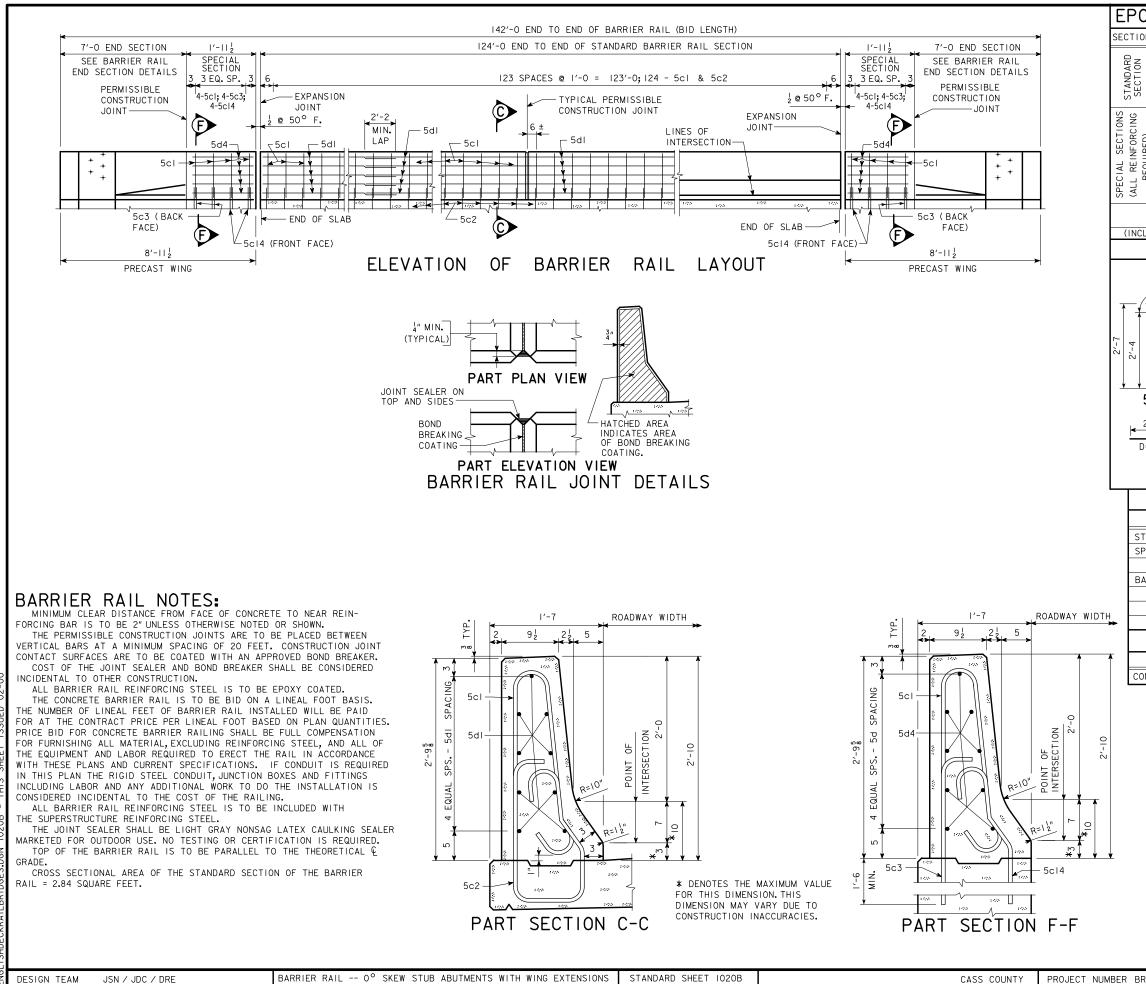
BEAN	1 DATA					
(in)	IMMEDIATE	DN (in)Δ _D TIME ② (PLASTIC)Δ _T	PERMISSIBLE MAXIMUM SPACING HL-93 LOADING	WEIGHT (TONS)	CONCRETE (CU YD.)	REINFORCING STEEL (WEIGHT-LBS)
AFTER LOSSES	STEEL DIAPHRAGM	STEEL DIAPHRAGM	STEEL DIAPHRAGM		(C C	REIN S (WEIO
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		0'-0 ×	design for 0° s 44'-0 PR CONCRET	ETENS		
		BTCI2	O BEAM		d'-0 SIN	JARY, 2012
	IOWA DE DESIGN SHEET	PARTMENT	ASS COUI OF TRANSPORTATI 25 FILE NO. 30	ON - HIGH	WAY DI DESIGN NO	. 113
RF-092-	2(36)38-15			SHEET N	UMBER	20



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Y REINFORCING STEEL -				
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ERTICAL	Π	12	8'-0	144
ERTICAL	ſ	6	VARIES	23
			<i></i>	
DRIZONTAL		6 8	6′-8 6′-9	60 81
DRIZONTAL		- 0	3'-9	4
BUTMENT WING TIE BARS	Ĺ	4	VARIES	5
WITH BARRIER RAIL REINFORCING)	тоти	AL WEIG	HT (LBS.)	458
CONCRETE PLACEMENT	- SH	ΜΜΔ	RY	
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RAIL ONE END SECTION				CU. YD.
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	-		5c6	0'-8 ¹ 2
		-	5c7	0'-104
		-	5c8	1'-0 <mark>4</mark>
_ 6d2			5c9	1'-2
-' ' & 6c4		1	5c10	1'-4
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EIND SECTI STA. 1134+61.00 (1A 92)				ARY, 2012
CASS		ΙΤΥ	FEDRU	-111,2012
IOWA DEPARTMENT OF TRANSF			HWAY DIV	ISION
DESIGN SHEET NO. 21 OF 25 FILE			DESIGN NO.	
BRF-092-2(36)38-15			NUMBER	22
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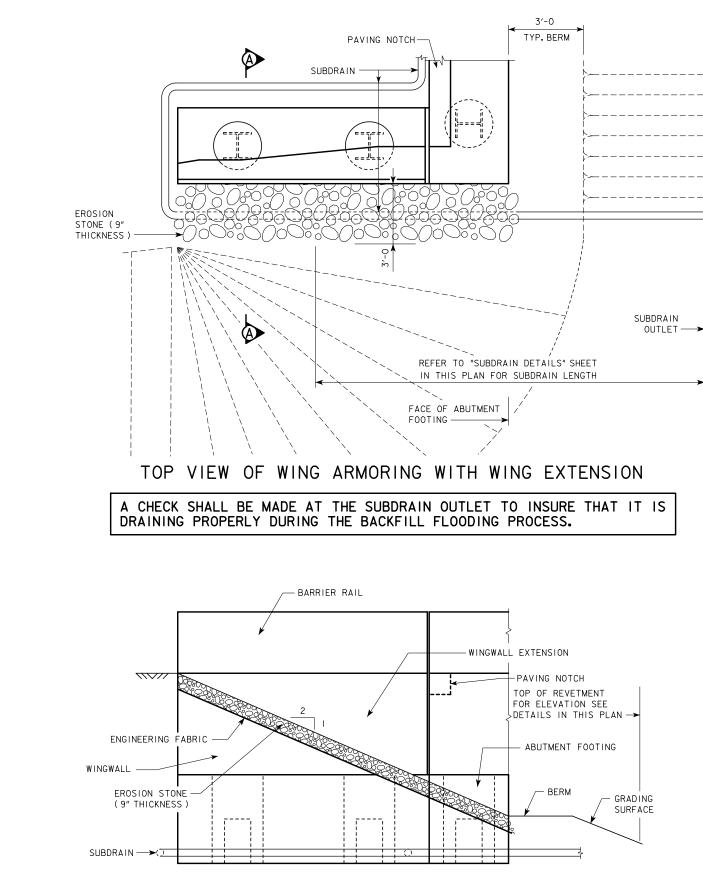


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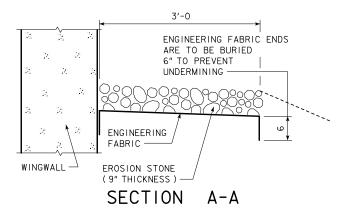
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ION	BAR		SHAPE	N0.	LENGTH	
	5c1 5c2	VERTICAL VERTICAL	2	248 248	5′-11 6′-0	1530 1552
	5dl	LONGITUDINAL		72	32′-7	2447
	5cl	VERTICAL	Ŋ	16	5′-11	99
ED)	5c3	VERTICAL VERTICAL	Ĺ	16	3'-3	54
REQUIRED)	5c14 5d4	LONGIT SPECIAL SECTIONS		16 36	3'-10	64 60
Ľ.	541					
	BARRI	ER RAIL END SECTION	4	AT 4	58 LBS.	1832
CLU	DE WI	TH SUPERSTRUCTURE REINFORCING)		TOTAL	(LBS.)	7638
2'- D=3	-10	Image: Second state Image: Second state Ima	-	5c1	4	5 1'-2 ⁸
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	С	D = PIN DIAMETER.		MM		
~ T + 1		D = PIN DIAMETER. ONCRETE PLACEMENT SECTION	SU		ТО	TAL
	NDARD	D = PIN DIAMETER.	SU YD. PE	ER FT	T0	TAL 26.1 0.8
SPE	NDARD CIAL S	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION 2 × 124'-0 @ 0.1052 CU. ECTION 4 × 1'-11½ @ 0.1052 CU.	YD. PE YD. PE	ER FT ER FT	T0	26.I 0.8
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SPE	NDARD CIAL S	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION SECTION 2 × 124'-0 $@$ 0.1052 CU. SECTION 4 × 1'-11 ¹ / ₂ $@$ 0.1052 CU. RAIL END SECTION 4 $@$ 0	YD. Pf YD. Pf YD. Pf	ER FT ER FT CU.YD	T0	26.1 0.8 2.6
BAR	NDARD CIAL S RIER F	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION 2 × 124'-0 \bigcirc 0.1052 CU. SECTION 4 × 1'-11 ¹ / ₂ \bigcirc 0.1052 CU. RAIL END SECTION 4 \bigcirc (TOTA	YD. Pf YD. Pf D.65 (ER FT ER FT CU. YD	T0	26.1 0.8 2.6 29.5
SPE(NDARD CIAL S RIER F	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION SECTION 2 × 124'-0 $@$ 0.1052 CU. SECTION 4 × 1'-11 ¹ / ₂ $@$ 0.1052 CU. RAIL END SECTION 4 $@$ 0	YD. Pf YD. Pf D.65 (AL (CL QU	ER FT ER FT CU. YD	то	26.1 0.8 2.6 29.5
SPEC BARF	NDARD CIAL S RIER F	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION 2 × 124'-0 @ 0.1052 CU. SECTION 4 × 1'-11½ @ 0.1052 CU. RAIL END SECTION 4 @ 0 TOTA CRETE BARRIER RAIL	YD. Pf YD. Pf D.65 (AL (CL QU	ER FT ER FT EU. YD J. YD.) AN	TO • • • • • • • • • • • • • • • • • • •	26.1 0.8 2.6 29.5 ES
BARF	NDARD CIAL S RIER F	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION SECTION 2 × 124'-0 • 0.1052 CU. ECTION 4 × 1'-11 ¹ • 0.1052 CU. RAIL END SECTION 4 • 0 TOT/ CRETE BARRIER RAIL ITEM BARRIER RAILING DESIGN FOR 0° SU I20'-0 × 44'-0 PRE PRESTRESSED CONCRETE BARRIER RAIL I STA. 1134+61.00 (1A 92) CASS COUN IOWA DEPARTMENT OF TRANSPORTATION		ISIC AM ISIC AM ISIC AM ISIC AM ISIC GHWA	DNED BRII D SINGLE S FEBRUAR Y DIVIS	26.1 0.8 2.6 29.5 ES NTITY 84 DGE E SPAN Y, 2012 ION
	NDARD CIAL S RIER F CONC CRETE	D = PIN DIAMETER. ONCRETE PLACEMENT SECTION SECTION 2 × 124'-0 • 0.1052 CU. ECTION 4 × 1'-11 ¹ • 0.1052 CU. RAIL END SECTION 4 • 0 TOT/ CRETE BARRIER RAIL ITEM BARRIER RAILING DESIGN FOR 0° SI 120'-0 × 44'-0 PRE PRESTRESSED CONCRETE BARRIER RAIL I STA. 1134+61.00 (1A 92) CASS COUN		ILF.	DNED BRI DSINGLE S FEBRUAR Y DIVIS GN NO	26.1 0.8 2.6 29.5 ES NTITY 84 DGE E SPAN Y, 2012 ION



PROFILE VIEW OF WING ARMORING WITH WING EXTENSION



GENERAL NOTES:

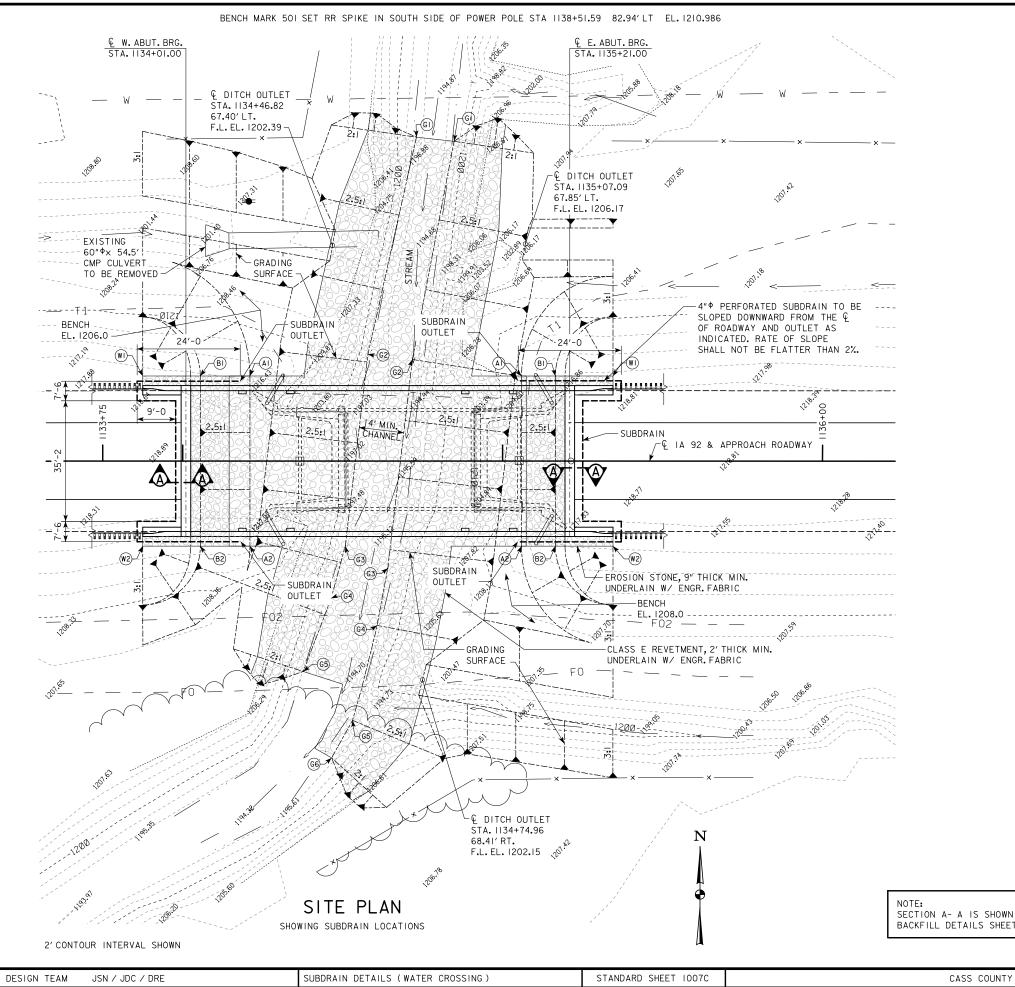
EROSION STONE SHALL BE PLACED ALONG THE SIDES OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKE STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 9" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".





2/4/2013

ONS

SUBDRAIN NOTES : REQUIRED FOR THIS STRUCTURE.

RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND IT'S PLACEMENT LOCATION. THE CONTRACTOR IS TO INSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET PIPE IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS. I. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF I'-O INTO THE METAL OUTLET PIPE). 2. INSERT I'-O OF THE 4" SUBDRAIN INTO THE 6" METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT. THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

4″∮ PERFORATED SUBDRAIN (POLYETHYLENE CORRUGATED TUBING)

SECTION A- A IS SHOWN ON ABUTMENT BACKFILL DETAILS SHEET.

	/ JDC / DRE	SUDDRAIN DETAILS (WA	ATER CRUSSING /	STANDARD SHEET TOUTC	CASS COUNTY
13 4:20:50 PM	4 jcolle	C:\Users\jcolle\Desktop\15092036.brg	150113s024 11×17_pdf.pltcfg		

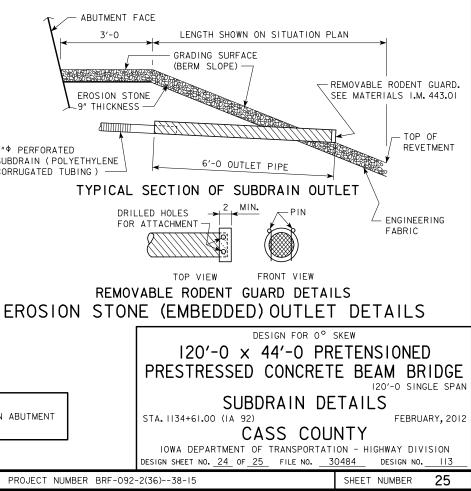
THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS

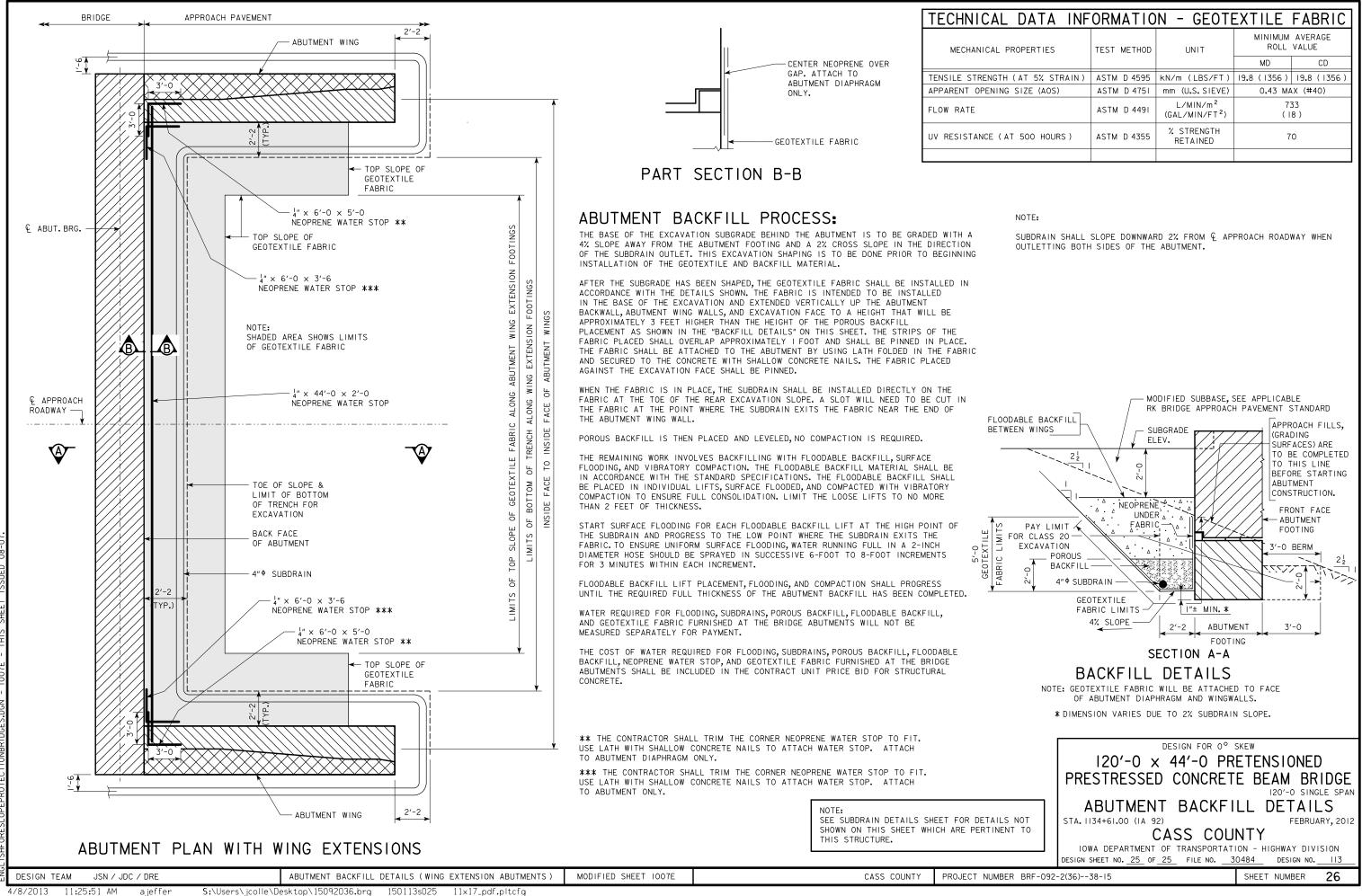
THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE

THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.

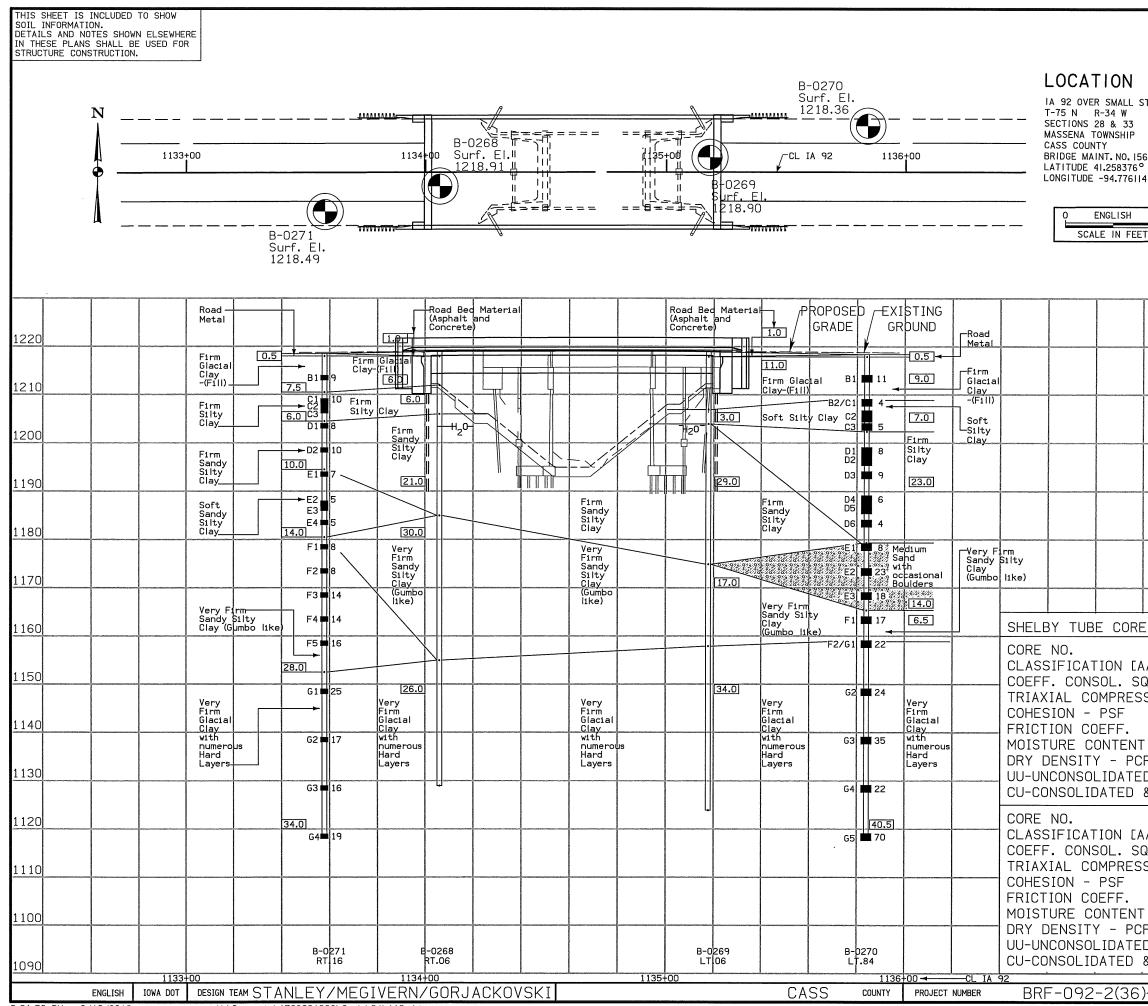
SUBDRAIN	OUTL	ΕT	ELEVATIONS
LOCATION			ELEVATION
EAST ABUTMENT			1209.9
WEST ABUTMENT			1209.8





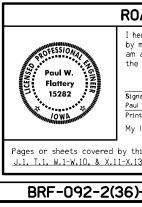
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ATA INF	ATA INFORMATION - GEOTEXTILE FABRIC											
PERTIES	TEST METHOD	UNIT		AVERAGE VALUE								
			MD	CD								
T 5% STRAIN)	ASTM D 4595	kN/m (LBS/FT)	19.8 (1356)	19.8(1356)								
ZE (AOS)	ASTM D 4751	mm (U.S.SIEVE)	0.43 MA	X (#40)								
	ASTM D 4491	L/MIN/m² (GAL/MIN/FT²)	7: (1	33 8)								
00 HOURS)	ASTM D 4355	% STRENGTH RETAINED	7	0								



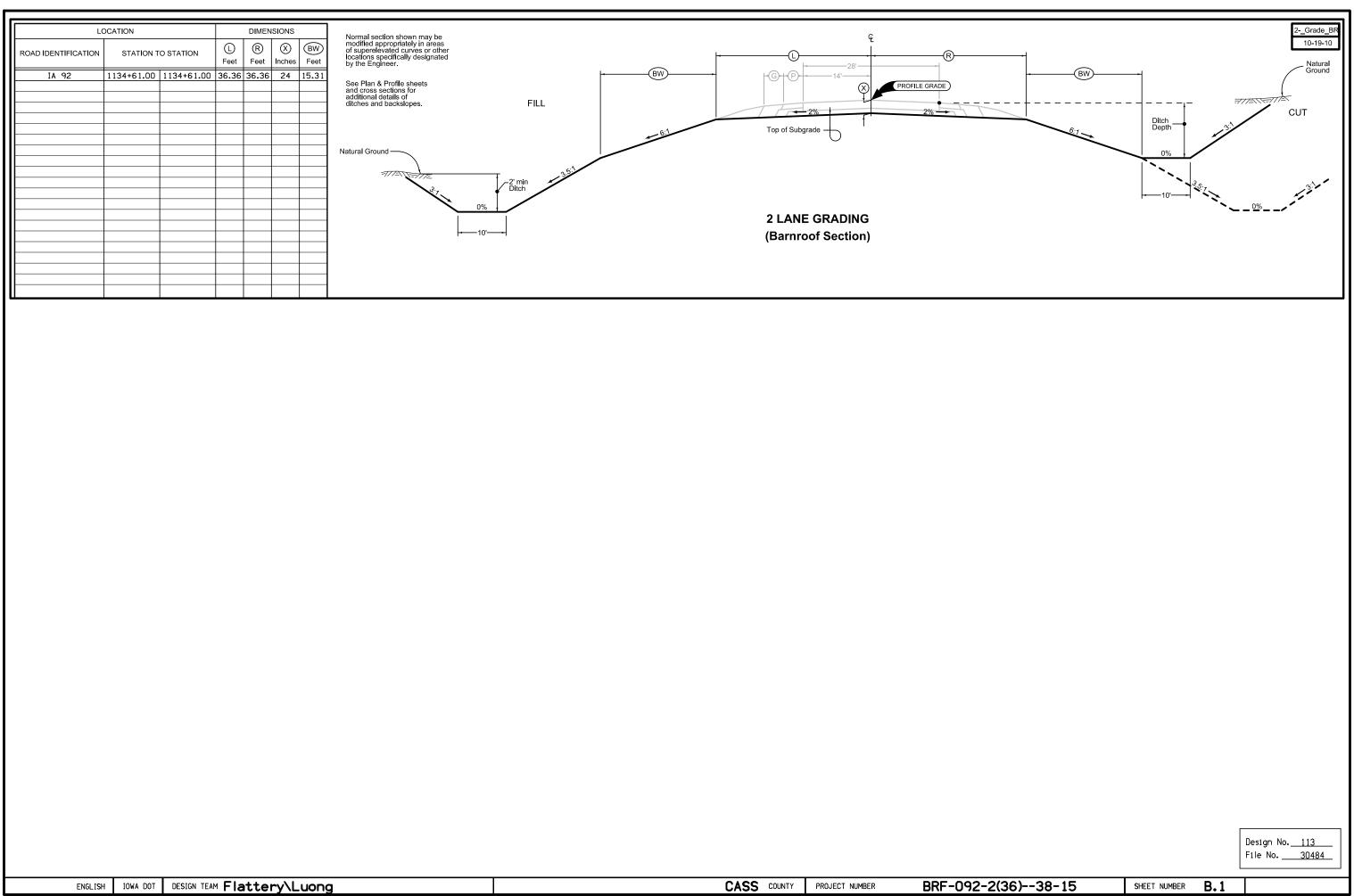
Printed ar Typer Name Pages or sheets covered by this seal: SPS.1 40 I20'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 120'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 120'-0 SINGLE SPAN SOIL PROFILE SHEET SOIL PROFILE SHEET STATION HI34+61.00 AUG 2012 CASS COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET No. 1 of _1 FILE NO. 30484 DESIGN NO. 113 Note: IOI cates Layer Thickness PLUGOED SOLS BOOK NO PRESTRE SED SAMEN BORING NO. Date Drilled GroundWater ECOCON PLUGOED SAMEN BORING NO. Date Drilled BORING NO. DATE BORING NO. DATE BORING NO. DATE BORING NO. DATE </th <th></th> <th></th> <th>G</th> <th>OTECH</th> <th></th> <th>DESIGN</th> <th> </th> <th></th>			G	OTECH		DESIGN		
Note: [23.0] Indicates Layer Thickness Hop WATER BLOW COUNT LEGEND Hom Dev BLOW COUNT LEGEND Hom Dev BLOW COUNT LEGEND Hom Dev Blow Count LEGEND Hom Mosture Blow Count Blow Count LEGEND Hom Mosture Blow Count Blow Count Blow Count Blow Count Hom Hom Count Blow Count Blow Count Blow Count Blow Count Bender Blow Count Blow Count Blow Count Bender Bender Bender Blow Count Blow Count Bender Bender Bender Bender Bender Bender Bender Bender Bender Bender Date Drilled GroundWater Bender Bender D3/01/2012 Mash Bore Bender Bender D3/01/2012 WASH Bore Bender Bender D.277 D.116	5TREAM 63.4509; 4° 40 T	Pages or shee I2 PREST I20'-0 SIN STATION II IOWA DE	ets covered 20'-0 RESSI GLE SPAN SOI 134+61.00	I hereby cc by me or to am a duly Signature Printed or T My license by this seal DESIGN X 44'- ED COI L PRO CASS IT OF TRAN	rtify that thi inder my dire licensed Prof of Jowa Robert Sped Name renewal dat FOR 0° FOR 0° FOR 0° COU NCRET OFILE COU	Is engineering ect personal essional Eng L. St is Decemb SKEW ETENS E BEA SHE NTY ON - HIG	i document vas p supervision and ineer under the <u>9 ~//0 -</u> <u>tanle^D</u> er 31, 2012. 5.1 FIONED M BRIE ET AUC	bat I lavs of /2)GE 3 2012 ON
B-0270-C1 B-0270-D2 B-0270-D5 AASHTO] A-7-6(23) A-7-6(25) A-6(16) Q. FT /DAY 0.277 0.116 0.355 SION CU CU CU* 274 276 194 0.150 0.170 0.150 ' 37.0 39.2 29.6 F 79.4 77.4 93.6 D & UNDRAINED & UNDRAINED B-0271-C2 B-0271-C3 B-0271-E3 ASHTO] A-7-6(26) A-7-6(29) A-6(26) Q. FT /DAY 0.243 0.867 0.1 SION CU* CU* CU* 324 253 205 0.142 0.044 0.030 ' 26.7 31.4 40.8 F 82.5 75.5 79.9 D & UNDRAINED & UNDRAINED		Note: [-H₂0- -DRY [-ORY] 	23.0 water dry plugged moisture shelby below count dens, core sample No. 68 69 70	Indica BLOW CC LAYER - NO B2 ■ 5 B2 ■ 5 C B2 ■ 5 B2 ■ 5 B2 ■ 5 B2 ■ 5 B2 ■ 5 B2 ■ 5 B2 ■ 5 C B2 = 5 C B2 C B2 C B2 C C B2 C B2 C B2 C C B2 C C C C	DIAMOND CORE SAND CRAVELLY BOULDERS Dr111ed /2012 /2012 /2012	ayer	Thickr GEND NO SAREA REMA REMEDIA AREA REMATHERED L SANDY SOIL SANDY SOIL SANDY SOIL DUNDWate SANDY SOIL CONTRACTOR SANDY SOIL SANDY SON SANDY SON	s. s. r T E
ASHTO] A-7-6(23) A-7-6(25) A-6(16) Q. FT /DAY 0.277 0.116 0.355 SION CU CU CU* 274 276 194 0.150 0.170 0.150 7. 37.0 39.2 29.6 F 79.4 77.4 93.6 D & UNDRAINED & UNDRAINED B-0271-C2 B-0271-C3 B-0271-E3 ASHTO] A-7-6(26) A-7-6(29) A-6(26) Q. FT /DAY 0.243 0.867 0.1 SION CU* CU* CU* 324 253 205 0.142 0.044 0.030 7. 26.7 31.4 40.8 F 82.5 75.5 79.9 D & UNDRAINED & UNDRAINED & UNDRAINED	E DATA							
ASHTO] A-7-6(26) A-7-6(29) A-6(26) Q. FT /DAY 0.243 0.867 0.1 SION CU* CU* CU* 324 253 205 0.142 0.044 0.030 7% 26.7 31.4 40.8 F 82.5 75.5 79.9 D & UNDRAINED & UNDRAINED	Q.FT SION 7 7 7 D & UN	/DAY NDRAINEI	A-7 0.2 CU 274 0.15 37 79.	7-6(23) 277 4 50 .0	A-7-6 0.116 CU 276 0.170 39.2	5(25) 5	A-6(16) 0.355 CU* 194 0.150 29.6	
)38-15 SHEET NUMBER SPS.1	Q.FT / SION - % F D & UN	/DAY Idrainei	A-7 0.2 CU 324 0.14 26.7 82.	2-6(26) 243 1 * 4 42 7	A-7-6 0.867 CU* 253 0.044 31.4	5(29) ,	A-6(26) 0.1 CU* 205 0.030 40.8	
)38-	15	SHEE	t number (SPS.1			

		INDEX OF SHEETS		
	No.	DESCRIPTION		
Α	Sheets	Title Sheets		
	A.1	Title Sheet		
В	Sheets	Typical Cross Sections and Details		
	В.1 - 4	Typical Cross Sections and Details		
С	Sheets	Quantities and General Information		
	C.1 - 4	Estimated Project Quantities		
CS	CS Sheets Soils Tabulations			
	CS.1 Soils Tabulations			
D	Sheets	Mainline Plan and Profile Sheets		
	[*] D.1	Plan & Profile Legend & Symbol Information Sheet		
	* D.2	ML092		
G	Sheets	Survey Sheets		
	G.1	Reference Ties and Bench Marks		
	G.2	Horizontal Control Tab. & Super for all Alignments		
Н	Sheets	Right-of-Way Sheets		
	Ή.1	"Mainline Name"		
J	Sheets	Traffic Control and Staging Sheets		
	J.1	Traffic Control Plan		
т	Sheets	Earthwork Quantity Sheets		
	́Т.1	Earthwork Quantity Sheets		
W	Sheets	Mainline Cross Sections		
	.í	Cross Sections Legend & Symbol Information Sheet		
	W.2 - 10	ML092		
Х	Sheets	Side Road Cross Sections		
	X.11 - 13	ChannelCross Sections		
		* Color Plan Sheets		



	ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36
-	12:04:35 PM 2/4/2013	untitleo				

ADWAY DESIGN		
ereby certify that this enginee me or under my direct perso a duly licensed Professional e State of Iowa.	nal supervision and that I	
license renewal date is Dec his seal: <u>A.1, B.1-B.4, C.1-C.</u> 3.		Design No. <u>113</u> File No. <u>30484</u>
38-15	SHEET NUMBER A.1	



ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)-
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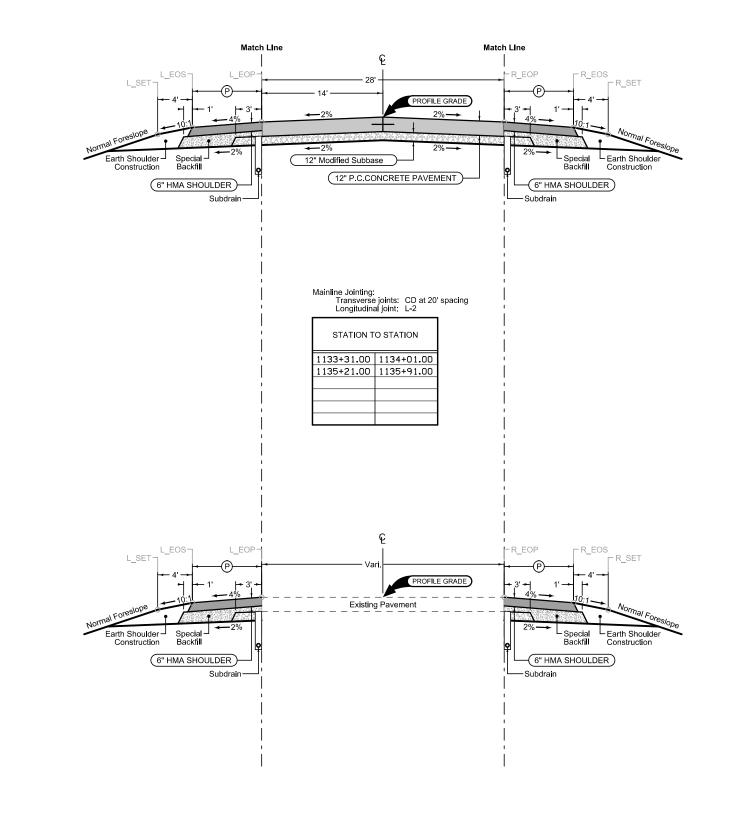
3-15	SHEET NUMBER	B.1	

Paved Shoulder at Guardrail

Shoulder Jointing: Longitudinal joint: B

2_P_Guard_ 04-16-13			
STATION TO STATION		P Feet	Remark
1133+31.00	1133+61.00	10.8-9.6	(1)
1133+61.00	1133+81.00	9.6	
1135+41.00	1135+81.00	9.6	
1135+81.00	1135+91.00	9.6	①

Note: (1) See Tab 112-9



Paved Shoulder at Guardrail

Shoulder Jointing: Longitudinal joint: B

			Guard_ 4-16-13
STATION T	O STATION	P Feet	Remark
1132+89.95	1133+31.00	9.0-8.8	1
1135+91.00	1136+12.26	7.4	1
1136+12.36	1136+49.66	7.4-9.3	0
1136+49.66	1136+81.52	9.3	0

Note: (1) See Tab 112-9

						L	
ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)38-15	SHEET NUMBER B.2	
10:20:47 AM 2/4/2013	untitle	d c:\pw_work\pwmain\hluong\dms57688\15092036b01.sht					

Paved Shoulder at Guardrail

Shoulder Jointing: Longitudinal joint: B

		2	_P_Guard 04-16-13
STATION T	O STATION	P Feet	Remark
1133+31.00	1133+61.00	12.3-9.6	()
1133+61.00	1133+81.00	9.6	
1135+41.00	1135+61.00	9.6	
1135+61.00	1135+91.00	9.6-10.8	0

Note: 1 See Tab 112-9

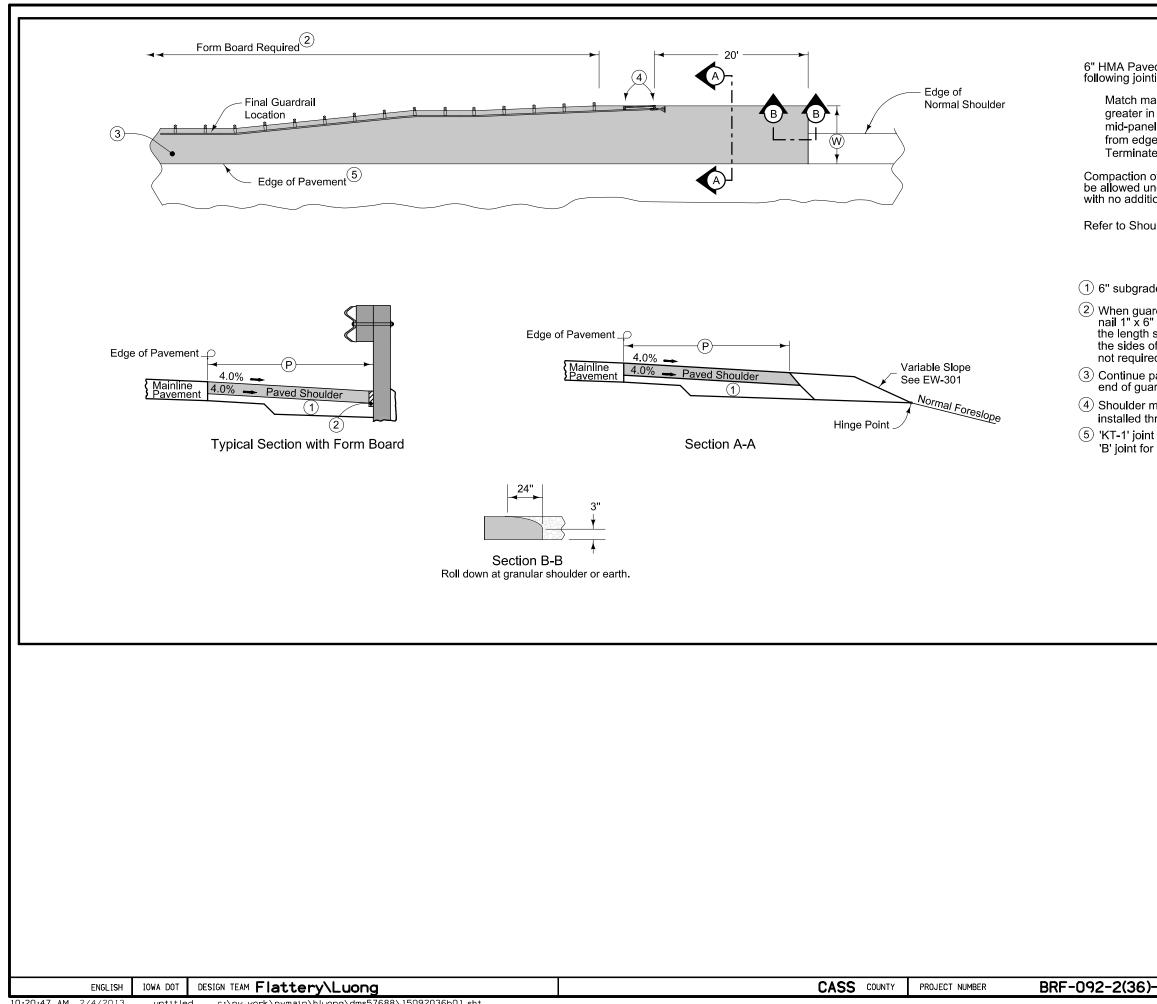
Paved Shoulder at Guardrail

Shoulder Jointing: Longitudinal joint: B

		2_P_Gu 04-1	ard_ 6-13
STATION T	O STATION	P Feet	Remark
1132+79.91	1133+04.79	7.0-10.5	1
1133+04.79	1133+31.00	10.5-9.8	0
1135+91.00	1136+32.14	9.4-9.8	1

Note: (1) See Tab 112-9

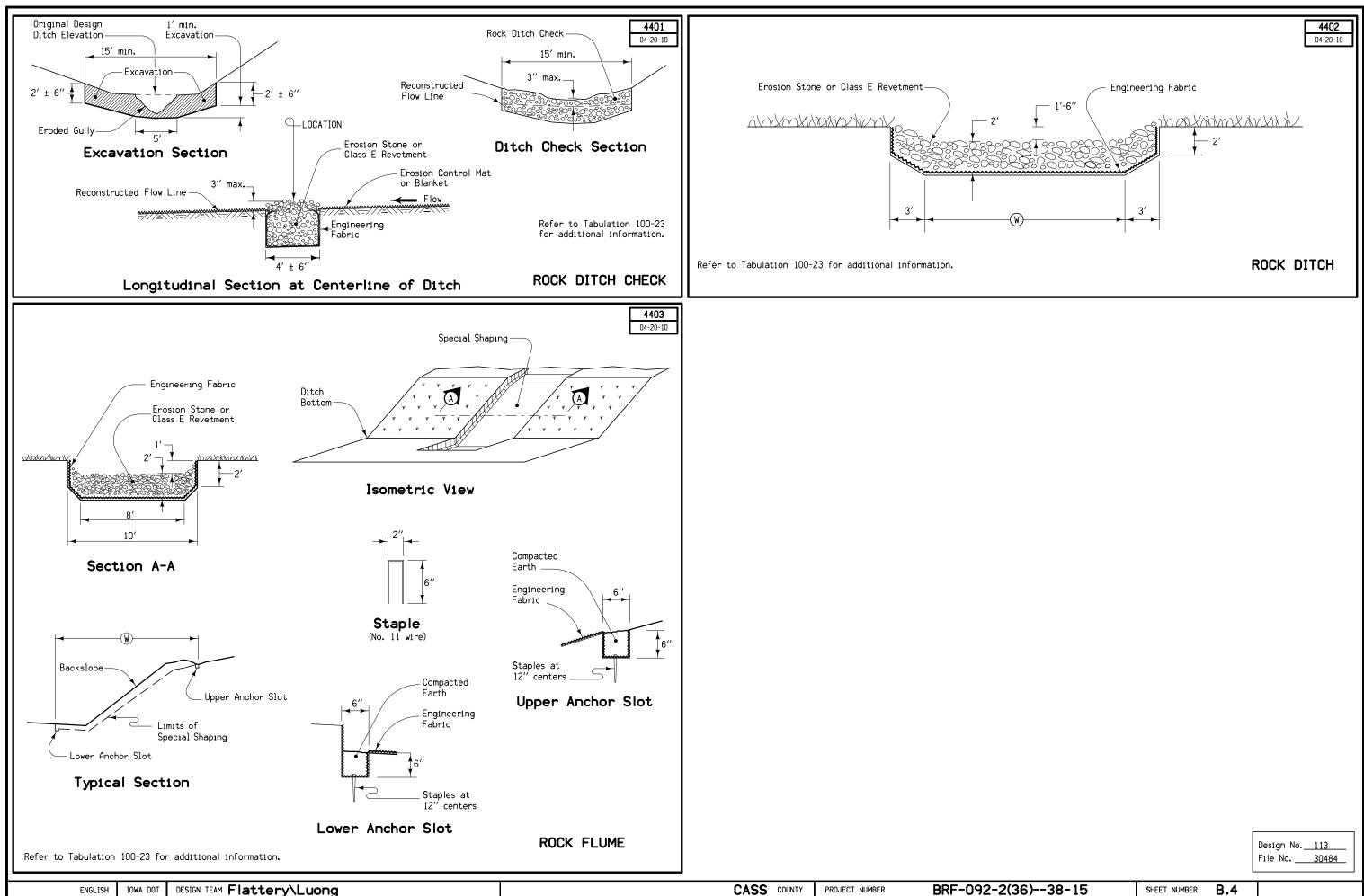
Design No.<u>113</u> File No.<u>30484</u>



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	7156 04-16-13
ed Shoulder at guardrail. 7" PCC may be substit	tuted with the
ainline pavement joint spacing. When mainline in thickness, place additional transverse 'C' joint el of the mainline pavement. Place longitudinal ' e of mainline pavement when W is greater than de longitudinal joint at transverse joint less than	s in shoulder at 'C' joint at W/2 n 10' wide.
of HMA is required to face of guardrail post. Ha nder guardrail.Removal & reinstallation of guard ional payment.	
ulder tabulation (112-9) for quantities.	
de tre stracht	
de treatment. Irdrail posts are installed prior to construction of "untreated form boards along the face of guard shown. This board is to prevent shoulder mater of the posts and altering the function of the guar ed for final 2 posts.	Irail posts for rial from contacting
baved shoulder to existing paved shoulder or 20 ardrail. may be notched for final 2 posts or post sleeves nrough pavement. t for PCC shoulder. r HMA shoulder.	
PAVED SHOULDER AT GUARE	DRAIL
	Design No. <u>113</u> File No. <u>30484</u>

3	8-	1	5
	0	т	-



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PROJECT	DESCRIPTION

100-1D 10-18-05

100-0A 10-28-97

This project involve bridge replacement in Cass County Ia-092 over small stream 1 mile west of Ia.148.

ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty
1	2101-0850002	CLEARING AND GRUBBING	UNIT	10	
2	2102-0425070	SPECIAL BACKFILL	TON	272.0	
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	3,611.0	
4	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	10.0	
5	2102-4560000	LOCATING TILE LINES	STA	9.30	
6	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	732.0	
7	2122-5190501	PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVED SHOULDER PANEL FOR	SY	107.0	
		BRIDGE END DRAIN)			
8	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	340.8	
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	3.40	
10	2301-0690200	BRIDGE APPROACH, RK-20	SY	512.4	
11	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	1,062.9	
12	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	300.0	
13	2505-4008300	STEEL BEAM GUARDRAIL	LF	75.0	
14	2505-4008400	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION	EACH	4	
15	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
16	2505-4021700		EACH	4	
17	2510-6745850	REMOVAL OF PAVEMENT	SY	588.7	
18	2518-6910000	SAFETY CLOSURE	EACH	4	
19	2520-3350010	FIELD LABORATORY	EACH	1	
20	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	10.40	
21	2528-8445110	TRAFFIC CONTROL	LS	1.00	
22	2528-8445113	FLAGGERS	EACH	See Proposal	
23	2601-2643401	TURF REINFORCEMENT MAT	SQ	16.0	
24	2601-2700010	OUTLET OR CHANNEL SCOUR PROTECTION	SF	128	
25	2602-0000020		LF	1,000.0	
26	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	400.0	
					111- 10-18

	INDEX OF TABULATIONS	
Tabulation	Tabulation Title	Sheet No.
100-0A	ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)	C.1
100-17	TABULATION OF SILT FENCES	C.3
100-4A	ESTIMATE REFERENCE INFORMATION	C.1
102-5	EXISTING PAVEMENT	C.2
104-3	DRAINAGE STRUCTURE BY ROAD CONTRACTOR	C.2
104-8A	SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN	C.3
105-4	STANDARD ROAD PLANS	C.2
108-13A	SAFETY CLOSURES	C.2
108-22	PAVEMENT MARKING LINE TYPES	C.3
108-8A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE END POST	C.2
110-1	REMOVAL OF PAVEMENT	C.2
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.3
111-25	INDEX OF TABULATIONS	C.1
112-6	BRIDGE APPROACH SECTION	C.4
112-9	SHOULDERS	C.4
232-3B	EROSION CONTROL (URBAN SEEDING)	C.3

		ESTIMATE REFERENC
Item No.	Item Code	
1	2101-0850002	CLEARING AND GRUBBING
-	-	Full description plus location will bw furnis
2	2102-0425070	SPECIAL BACKFILL See Tab 112-9 for details and locations.
- 3	- 2102-2710070	- EXCAVATION, CLASS 10, ROADWAY AND BORROW 2237 cubic yards Class 10 is needed to build of waste. All quantity include 30% for shrinka
-	-	-
4	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMED For boulders encountered during excavation.
- 5	- 2102-4560000	- LOCATING TILE LINES As needed.
-	-	-
6	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD See Tab 103-4 for details and locations. All a
7	2122-5190501	PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVE See Tab 104-8A for details and locations.
-	-	-
8	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN See Tab 112-9 for details and locations.
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH See Tab 112-9 including 40% for shrinkage.
-	-	
- 10	2301-0690200	BRIDGE APPROACH, RK-20 See Tab 112-6 for details and locations.
11	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE
		See Tab 100-28 for information and details.
- 12	- 2505-4008120	- REMOVAL OF STEEL BEAM GUARDRAIL
		See Tab.110-7A for information and details.
_		disposed of per Article 1106.07 of the current
13	2505-4008300	STEEL BEAM GUARDRAIL
14	2505-4008400	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION
15 16	2505-4021010 2505-4021700	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED STEEL BEAM GUARDRAIL END TERMINAL
10	2303-4021700	See Tab.108-8A for information and details.
-	-	-
17	2510-6745850	REMOVAL OF PAVEMENT See Tab 102-5 and Tab 110-1 for details and lo
- 18	- 2518-6910000	- SAFETY CLOSURE
_		See Tab.108-13A for information and details.
- 19	- 2520-3350010	- FIELD LABORATORY
- 20	- 2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVE
		Refer Tab.108-22 in the C Sheets.
-	-	- TRAFFIC CONTROL
21	2528-8445110	See Tab 108-23A for information's and details
22	2528-8445113	FLAGGERS
- 23	- 2601-2643401	- TURF REINFORCEMENT MAT
24	2601-2700010	OUTLET OR CHANNEL SCOUR PROTECTION See Tab 104-8A for details and locations.
-	-	-
25	2602-0000020	SILT FENCE This item includes 25% more silt fence than th
-		See Tab 100-17 for details and locations.
26	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR D
		This item is included for maintaining the silt quantity. See Tab 100-17 for details.
-	-	-

ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)

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100-4A 10-29-02

ICE INFORMATION

Description

shed by District at pre-construction meeting.

this project as shown on Tab 107-27 (Sheet T.1) and 1374 cubic yard kage. No pavement for overhaul will be allowed.

IENTS Refer to Tab 103-7.

areas to receive fill are to have 12 inches of topsoil stripped. VED SHOULDER PANEL FOR BRIDGE END DRAIN)

No over haul allowed for this material.

Materials to become property of the contractor. Guardrail shall be nt Specifications.

ION

locations.

ENT-BASED

the Tab 100-17 quantity for field adjustment and replacement.

DITCH CHECK

It fence during the project and is estimated as 50% fo the tab

Design No. <u>113</u> File No. <u>30484</u>

-38-15	SHEET NUMBER	C.1	
--------	--------------	-----	--

Number					Standard Ro			AD PLANS construction work on this Title	s project.			105 10-18		* Not a Bid	Item			RE	MOVAL Refer to 1	
BA-200 BA-201 BA-202 BA-203 BA-205	10-1 10-1 10-1	9-10 Stee 8-11 Stee 8-11 Stee	el Beam Gu el Beam Gu el Beam Gu	ıardrail Bo ıardrail W-	mponents Irrier Trans Ited End Ar Beam End Ar Id Terminal	nchor	tion							Begin Station	Enc Stati		Side	Pavement Type	Area	Sa
EC-201 EW-201	04-2 04-1	0-10 Silt 7-12 Brid	: Fence lge Berm G	irading wit		erable Slo	ope (Barr	nroof Section)						1133+31.0 1135+06.1			Lt. Rt.	AAC AAC	324.8	
EW-301 PM-110	04-1 04-1	9-11 Guar 5-13 Line	drail Gra Types	ding																
PV-101 RF-39	04-1		ir Protect		idge End Dr	rain											Totals:		588.7	7
RK-20 SI-173	04-2	0-10 Obj€	ct Marker																	
SI-211 TC-1	04-1	5-13 Work	Not Affe	cting Traf	eator Place fic (Two-La	ement with ane or Mul	Guardra ti-Lane)													
TC-202 TC-213	04-1	7-12 Lane	Closure	ure (One L with Flagg I to Traffi	ers															
TC-252	04-1	7-12 Rout	es Closed	to Iratti	.C															
1											_									
							1			-			NG	PAVEME						
No.			Location	r	End	Year	Туре	Project Number	Sur	face		Base		Subbase		moval		Co	arse Aggrega	ate
	County	Route	Dir. of Travel	Begin Milepost	-		J F -	- 5	Туре	Depth IN	Туре	Depth IN	T	pe Depth IN	туре	Depth IN		Source		Тур
1 2	Cass	92	EB	52.53	67.36	1988 1949		F-92-2(16)20-15 F-464(1)	AAC PC8	3							CRESCE WEST D	NT ES MOINES		C.LST GRAVE
		Nature	al Ground	B		F Nor	mal Ditcl	TABULATION O			TOF	Ρ a i r a	ny col nches ppropr eflect s deta	esive soil, iate adjustr the placeme iled hereon	scarify the ments have a ent of tops	e area to been made	be covero e in the to	ior to placing ed to a minimu emplate quanti backslope and	m depth of : ties to	- 11 3
				t Descript				<u> </u>				Topsoil Amount	Excava	tion Availat	le From					
Area	Quantity		Locati		Side	Slope	(T	/	arks			Reserved	S	tation to St	ation			Remarks		
No.	CY 291.0) 1132·	ation to +75.00	1134+00.0	00 Both	. B. or F Both	8	.0				CY 285.0			134+00.00					
	441.6		+00.00	1137+25.0	00 Both	Both	8	.0				447.0	1135	+00.00 1	137+25.00					
	732.0		TOTAL									732.0								

ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)-

110-1 04-16-13

PAVEMENT

ation 102-5

Saw Cut*	Remarks
LF	
28.0	
28.0	

102-5 10-16-12

		Reinforcement	
/pe	Durability Class	Туре	Remarks
БТ.			
/EL	2		

			108-13A 08-01-08
	SAFE	TY CLOS	URES
Refer t	to Section 25	18 of the Sta	ndard Specifications
Station	Closur	re Type	Remarks
Station	Road Qty.	Hazard Qty.	Reliar K3
1132+50	1		
1134+00	1		
1135+25	1		
1137+25	1		
Totals:	4		

		Design No. <u>113</u> File No. <u>30484</u>
38-15	SHEET NUMBER C.2	2

		sc	:our i	PROTE	CTION OF		FLUME FOR											04- Not a Bid	04-8A - 20-10 d Item							
L Bridge Station	Location Bridge Corner	Distance DI-1 or DI-2	Panels Require	s PCC	Shoulder C Polymer Grid	Modified Subbase		Eandard Road Pla Flume RF-40 Engineering Fabric		Sco Outlet or (Channel	Turf Reinf Mat (TF	nforced			Remarks	s									
1134+61.00 1134+61.00 1134+61.00 1134+61.00	SW NE	33.3 33.3 42.6 33.3	A B C or B A D B	21 42	Xds. Sq.Yds. 11.4 21.4 11.4 21.4 12.8 42.8 12.4 21.4	18.900 33.600	Material Tons	Sq.Yds.	Tons	Sq. Fe	Feet 32.0 32.0 32.0 32.0 32.0	Square	res 4.0 4.0 4.0 4.0													
		Totals:		107	107.0	90.300					128.0		16.0													
*BCY4 - Place **NPY4 - For e BCY4: Broken C ELY4: Edge Lin	estimating Centerline	g purposes or e (Yellow) @	only. No Pa 0.25	Passing Zon	cch existing mar ne <u>Lines will b</u> DCY4: Double Co	be located in	n the field.	***MNY4 -		1.00 as val	See alue inclu	RKING L ee PM-110 udes number Zone Line ('	r of 4-inch	h passes to			e area. oken Lane	Line (Whi	 te) @ 0.2	.5		ELW4: Ec	dge Line	Right (Whi	 ite) @ 1.00	108-22 04-16-13
					Location				<u> </u>						ength by Li	ine Type	(Unfactore	<u>∍d)</u>					<u> </u>			
Road ID IA.92		tion to Stati	tion	Dir. of Travel	 	Marking Ty		Side	BCY4* R STA	STA	NPY4**		ELW4 STA	ELY4 STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	_	Remarks	S
IA.92 IA.92 IA.92	1133+31 1133+31 1133+31	1.00 113	35+91.00 35+91.00 35+91.00	BOTH EB WB	Wat	terborne/Solva terborne/Solva terborne/Solva	vent Paint	X X X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - - X - -	x Totals:	2.60			2.60 2.60 5.20													
REMOV	o which the	End Terminal	ion is ad-	diacent.		Pollowing			DING)	10 ea, place se	232-3B 10-16-12 seed,	Begin St	TABUL	Re cion	Side			100- 04-20- S arks								
Ğ Direction (_) of Traffic	Statio	ion to Static		Side	Removal of Guardrail 2 LF	SEEDING MI Bluegrass, Fescue, Cr Ryegrass,	IIXTURE: Seeding Ra , KY Creeping Red Perennial (Finele	Rate: 4 lbs. per	r 1000 sq. [.]	ft.	70% 20% nt) 10%		50.00 1:	1135+00.00	Both Both	500.0 R										
1 EB 2 EB 3 WB 4 WB	1133+ 1134+ 1134+ 1133+	+92 11 +92 11 +77 11	1134+52 1135+67 1135+67 1134+52 Totals:	Lt. Rt.	75.0 75.0 75.0 75.0 300.0	 17 lbs. of sq. ft. MULCH: 70 lbs. of but not se mulch. Con stabilizer Use Certif Iowa Crop Improvemen Preparing fertilizer 	of 13-13-13 (or equ of dry cereal straw seeded by September onsolidate all mulc	aw per 1000 sq. er 30th, scarify Lch into the soi d Seed Free Mulc ociation or adja furnishing and	ft. For argin ft. For argin ft. For a 3 ingin for a 3 ingi	reas disturb nch depth ar mulch rmined by th e's Crop seed,	rbed, and the	1134	ion Tc 33+31 34+61	Total SY 256.2 Br 550.5 Br	DINAL Bridge Appr Bridge Deck Bridge Appr	Rema roach. k.		100-2								
																									Design N File No.	No. <u>113</u> . <u>30484</u>

ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)-
2/4/2012 10 55 11 11					

104-8A

		Design No. <u>113</u> File No. <u>30484</u>	
		-	-
38-15	SHEET NUMBER C	.3	

* Not a bid it	.em							BRIDG	E APPR			N						04-16-13				
Bridge Station	Loc	De	w Ahead egrees	Thickness	Pay Lengt	Area	Single- Reinf. Pavement Area	Double- Reinf. Pavement Area	Abutment	* Perforated Subdrain 4"		Subdrain * in Outlet	* Porous C Backfill	Class 'A'* rushed Stone Backfill	Subbase	* Polymer Grid	Remarks					
1134+61.00 1134+61.00	x	LEFT 	RIGHT					SY 100.7 100.7	For M M M	LF	STA	Side	СҮ	CY	TON 267.700 267.700	SY 288.2 288.2						
			Totals:			186.7	124.4	201.3							535.400	576.4						
1 2 Lane(s) to 3 Applies or 4 Does not :	ly for nclude	Paved She shrink.	oulders cons	structed on									IOULDER	_								112-9 04-17-12
Calculatio Road Identificati	on (1)	Traffic	<u>unit weight</u> tion Station to		F 0, a S	P Width	G Width	L Length	Class 13 Excavatio Widening	s (3) on HMA Ba	ase Widenir	3 ng Hot M	ight (lbs/cf) of 140. Paved Shoulder SY ⁽²⁾	Quantition Reinforced Paved Shoulder SY (2)	Special	Backfill Modified Subbase	Granular Shoulder	Earth Sho Construc STA ⁽²⁾		Rema	rks
IA.92 IA.92 IA.92		EB 11	32+79.91 33+04.79 33+31.00	1133+04.79 1133+31.00 1133+81.00	Rt.	10.5-9.8	FT 0.0 0.0 0.0	FT 24.9 26.2 50.0	СҮ		2) TON/S1	TA TON	TON/STA	24.4 29.6 36.8	SY C	18.300 23.680 28.340			0.2 0.3 0.5			
IA.92 IA.92		EB 11 EB 11	.35+61.00 .35+91.00	1135+91.00 1136+32.14	Rt. Rt.	9.6-10.8 9.4-9.8	0.0 0.0	30.0 41.1						33.8 44.4		27.040 35.080			0.3 0.4			
IA.92 IA.92 IA.92		WB 11	.32+89.95 .33+31.00 .35+81.00	1133+31.00 1133+61.00 1135+91.00	Lt.	9.0-8.8 10.8-9.6 9.6	0.0 0.0 0.0	41.1 30.0 10.0						41.3 33.9 10.7		33.870 27.800 8.560			0.4 0.3 0.1			
IA.92 IA.92 IA.92		WB 11 WB 11	35+91.00 36+12.36 36+49.66	1136+12.26 1136+49.66 1136+81.52	Lt. Lt.	7.4 7.4-9.3 9.3 Totals:	0.0 0.0 0.0	21.3 37.3 31.9						17.7 35.2 33.0 340.8		14.510 28.160 26.730 272.070			0.2 0.4 0.3 3.4			
						ВЕАМ	GUARDR					OR BR	IDGE EI	ND POS				108-8A 10-19-10				
					-200, B		02, BA-205,	BA-250, SI	-172, SI-173	3 and SI-211				tems 1	1 Se	e Standards	s for list of materia	ls.				
Locatic		ion Offset	VT1		T2	ET Ty	Delinea pe Type White No.	1 Type	OM-3L	e 3 OM-3R B	Anchor . olted A-202 Type	Barrier Transition Section BA-201 No.	Steel Beam Guardrail BA-200 LF		rminal Flared for Cable Connection BA-206 No.	Adapter BA-210 No.	Remarks					
1 11 2 11 3 11	34+01 34+01 35+21 35+21	6 6 6	28.125 28.125 28.125 28.125 28.125	25.00 50.00 	 	50.0	3 3 3				B B B B	1 1 1 1	25.0 0.0 50.0									
							Tota	ls:			4	4	75.0	4							Г	Design No 113
ENGLISH				TEAM Fla	ttor		7	1					1	CVEE	COUNTY P			-2(36)38-:	15	SHEET NUMB		Design No. <u>113</u> File No. <u>30484</u>

Shoulder	Earth Sh Constru		Remarks
TON/STA	sta 2	CY (4)	
	0.2		
	0.3		
	0.5		
	0.3		
	0.4		
	0.4		
	0.3		
	0.1		
	0.2		
	0.4		
	0.3		
	3.4		

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103-7 08-01-08

SHRINKAGE DATA

Material	%	Remarks
TOPSOIL	40%	
REMAINDER PROJECT CUT	30%	
		BOULDERS 10 Cu. Yds.

SPECIAL ATTENTION-SLIVER FILL

Special Attention should be given to Section 2107.03.C, Standard Specification Series of 2012, on this project.

LONGITUDINAL SUBDRAINS

RECORDS INDICATE THAT LONGITUDINAL SUBDRAINS AND OUTLETS EXIST NEAR THE PROJECT AREA. ANY LONGITUDINAL SUBDRAINS AND THEIR ASSOCIATED OUTLETS SHALL BE REMOVED TO THE OUTER LIMITS OF THE PROJECT AND NEW LONGITUDINAL SUBDRAIN OUTLETS INSTALLED

Design No.	113
File No.	30484

GE01	ECHNICAL DESIGN
	i nereby certity that this engineering document was prepared
SEESSION	by me or under my direct personal supervision and that I
A PROPERTY AND	am a duly licensed Professional Engineer under the laws of
19/ 39	the State of Iowa.
S Robert L.	RVaT Mr. 2-11-12
Stanley	Robert Stanley 2-11-13
08468	Signature Date
	Robert L. Stanley
Went "Annakat F. W	-
10WA	Printed or Typed Name My license renewal date is December 31, 2014
	ny Iteense renewal wate is becember 51, 2014
Pages or sheets covered by	this seal. CS 1
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6-76	
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SURVEY SYMBOLS	UTILITY LEGEND	PLAN VIEW COLOR L
 BNK Stream Bank PIP Pipe Culvert Tile - TIL Tile Line stow SI Sign PR Electic Riser Pole # # FCL Chain Link and Security Fence EB Electrical Box × FW Wire Fence GDL Guard Rail (Rail and Cable) GV Gas Valve BRG Bridge MIS Miscellaneous stow SL Speed Limit Sign TDC Tree Deciduous 	 Alliant Energy F0 - Lightcore F02 - MCI Black Hills Energy W - Southern Iowa Rural Water Assocation T1 - Massena Telephone Company 	Green (2) Existing Topog Blue (1) Proposed Align Purple (5) Existing Utiliti Yellow (4) Highlight for C Red (3) Delineates Rest Lavender (9) Temporary Pave Gray, Light (48) Proposed Pavem Gray, Med (80) Proposed Granu Gray, Dark (112) Proposed Grade Brown, Light (237) Grading Shadin
COS Square Bridge Pier Column TLNL Tree Line Left BLD Building or Foundation GP Guard Post (Less Than 4 Posts) TP TPD Telephone Pedestal VS Valley Section D Centerline Draw or Stream (Down) GE Edge of Gravel Road ENT Centerline BL of Entrance EP Edge of Paved Roads (ML or SR) SP Stream Profile		PROFILE VIEW COLOR Green (2) Existing Ground Blue (1) Proposed Profil Purple (5) Existing Utiliti Blue, Light (230) Proposed Ditch Black (0) Proposed Ditch Rust (14) Proposed Ditch
 D) Centrine Draw or Stream (Up) CON Concrete or A/C Slab G) Gutter In Front of Curb RIP Rip-Rap EW Edge of Water Power Pole F0 - Existing Fiber Optics Telephone Line F02 - Existing Fiber Optics Telephone Line 2 W - Existing Telephone Line T1 - Existing Telephone Line 		CONVENTIONAL SIGNS

ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)
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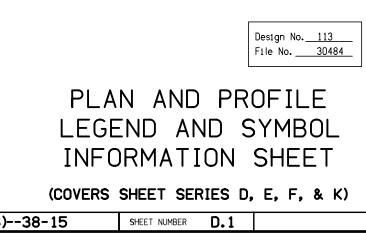
LEGEND OF PLAN AND PROFILE SHEETS

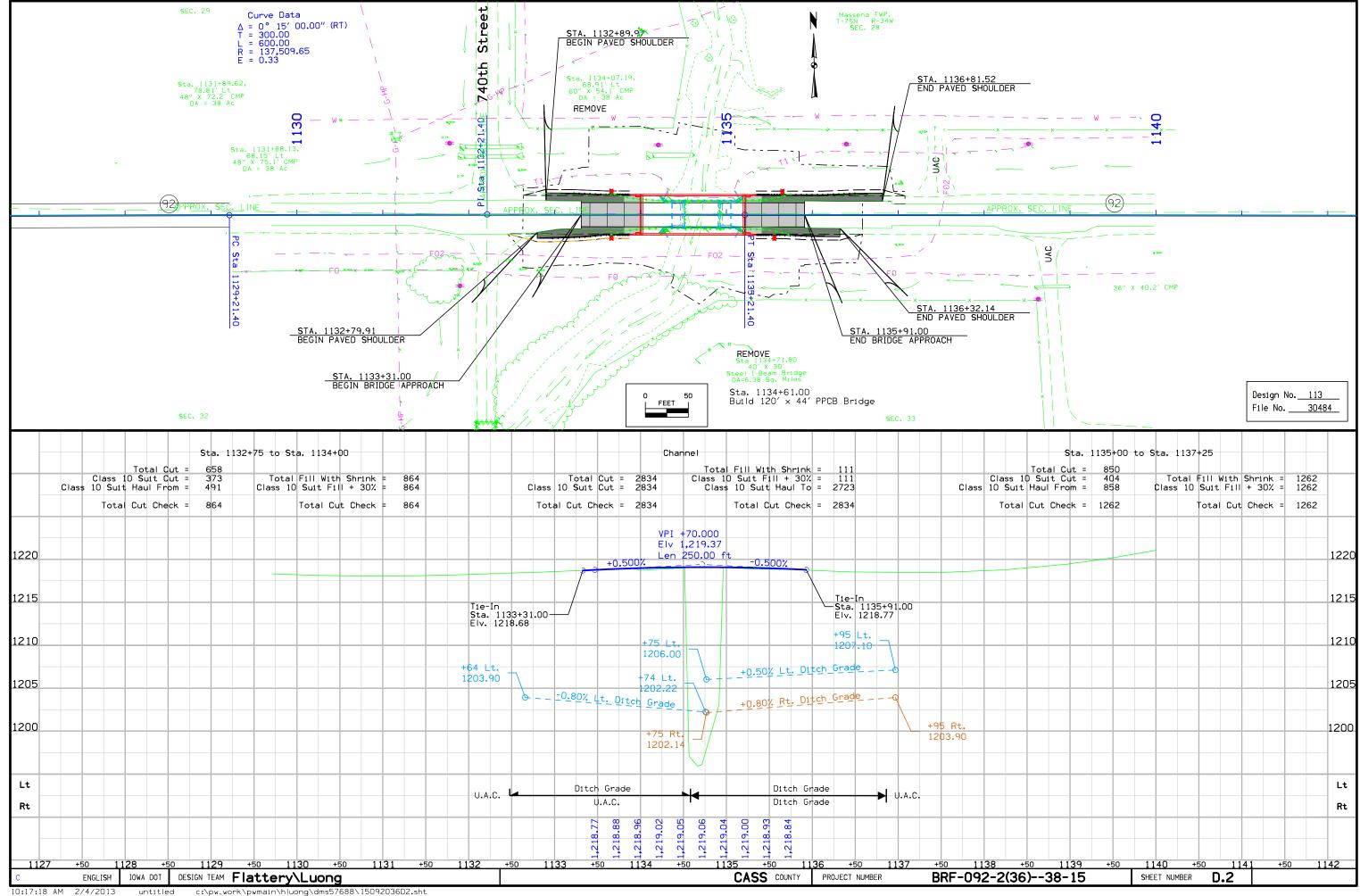
pographic Features and Labels lignment, Stationing, Tic Marks, and Alignment Annotation ilities or Critical Notes or Features Restricted Areas Pavement Shading avement Shading ranular Shading rade and Pave Shading ading

OR LEGEND OF PLAN AND PROFILE SHEETS

ound Line Profile ofile and Annotation .lities tch Grades, Left tch Grades, Median tch Grades, Right

IS	RIGHT-OF-WAY LE	EGEND
	Proposed Right-of-Way	
ner	\triangle Existing Right-of-Way	
a	Existing and Proposed R	light-of-Way
-	Easement and Existing F	Right-of-Way
	Borrow	
	Easement (Temporary)	
	Easement	
	X Excess	
	—≫ ∢— Property Line	
	A/C Access Control	





Survey Information

General Information

Measurement units for this survey are US survey feet.

The purpose of this survey is to replace the existing IA 92 Bridge (Maint. No. 1563.4S092) in Cass County over a small natural stream 1 mile west of IA 148.

Vertical Control

Vertical datum for this survey is relative to NAVD88. GEOID09. US survey feet.

This survey control is relative to IaRTN reference stations. Multiple Iowa RTN observations were completed on a G001. After review of these observations, the shots were averaged to establish the site BM elevation. A level run was then completed through project control points and benchmarks. The error was allowable and the error was distributed proportionately among the project monuments.

Horizontal Control

Iowa State Plane South Zone coordinates were transformed to project ground coordinates using a 1/combined scale factor broadcast about held point G001 at the east end of project using OPUS in US Feet. The State Plane coordinate and Project Coordinate at:

G001 are: N=460972.55 E=1290032.05

Combined Scale=0.99989548 1/Combined Scale=1.000104531

VERTICAL DATUM = NAVD88 (COMPUTED FROM IaRTN observations using GEOID09) HORIZONTAL DATUM = NAD83 (1996CORS) for Epoch 2002.0000 From OPUS

Alignment Information

The horizontal alignment for this survey is a retrace of the Office Relocate line in Cass & Adair Counties Iowa 92 from U.S. 71 east toward Fontanelle: F. project 464 as identified on sheet No. 29 thru 33. Survey stationing was equated holding section corners referenced in the plan set.

PI Sta. 1068+97.4 This Survey = PT Sta. 1068+97.4 Cass & Adair Counties F. Proj. No. 464

PI Sta. 1132+21.4 This Survey = PI Sta. 1132+21.4 Cass & Adair Counties F. Proj. No. 464

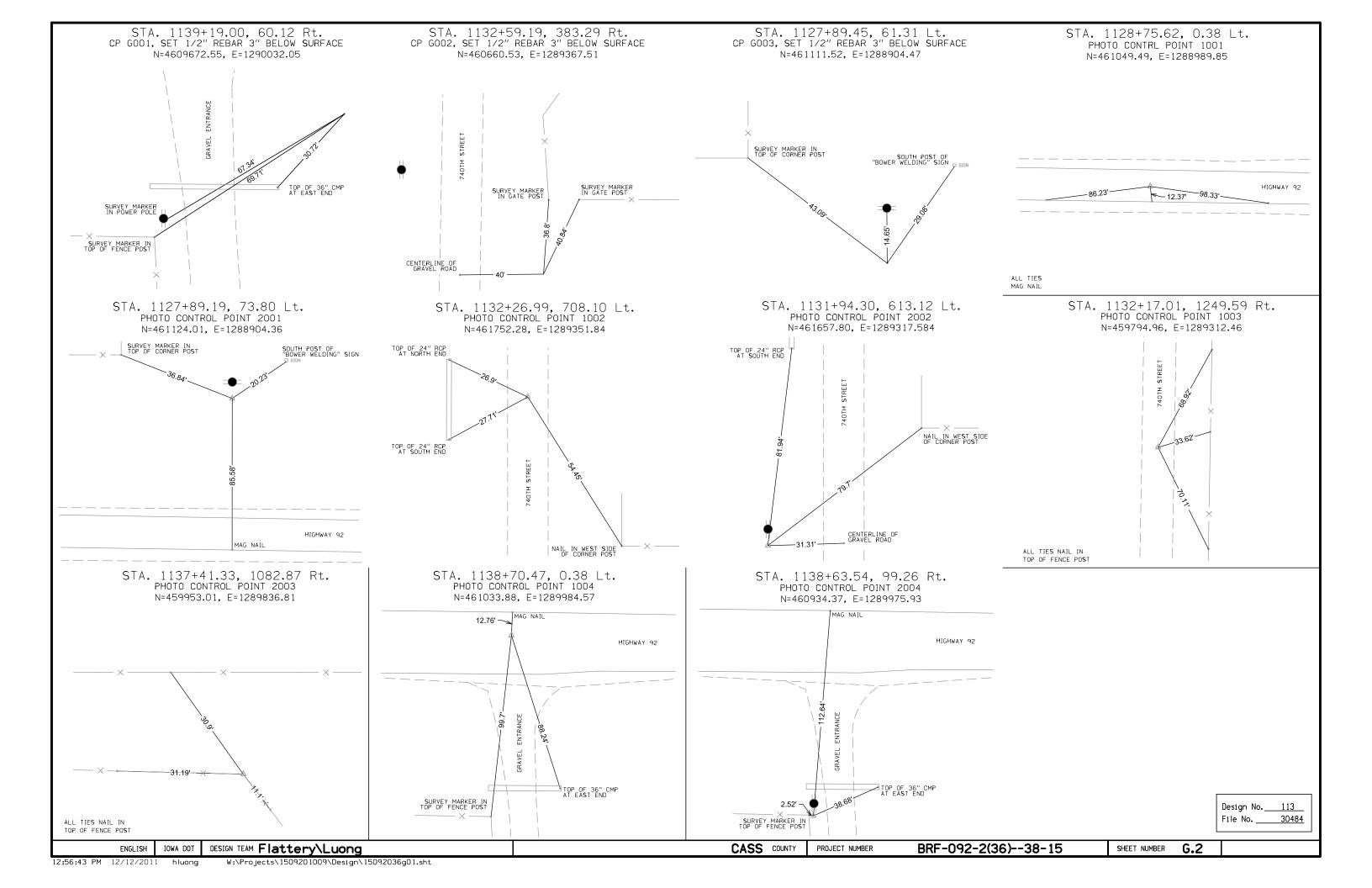
PI Sta. 1192+83.69 This Survey = PC Sta. 1192+83.7 Cass & Adair Counties F. Proj. No. 464

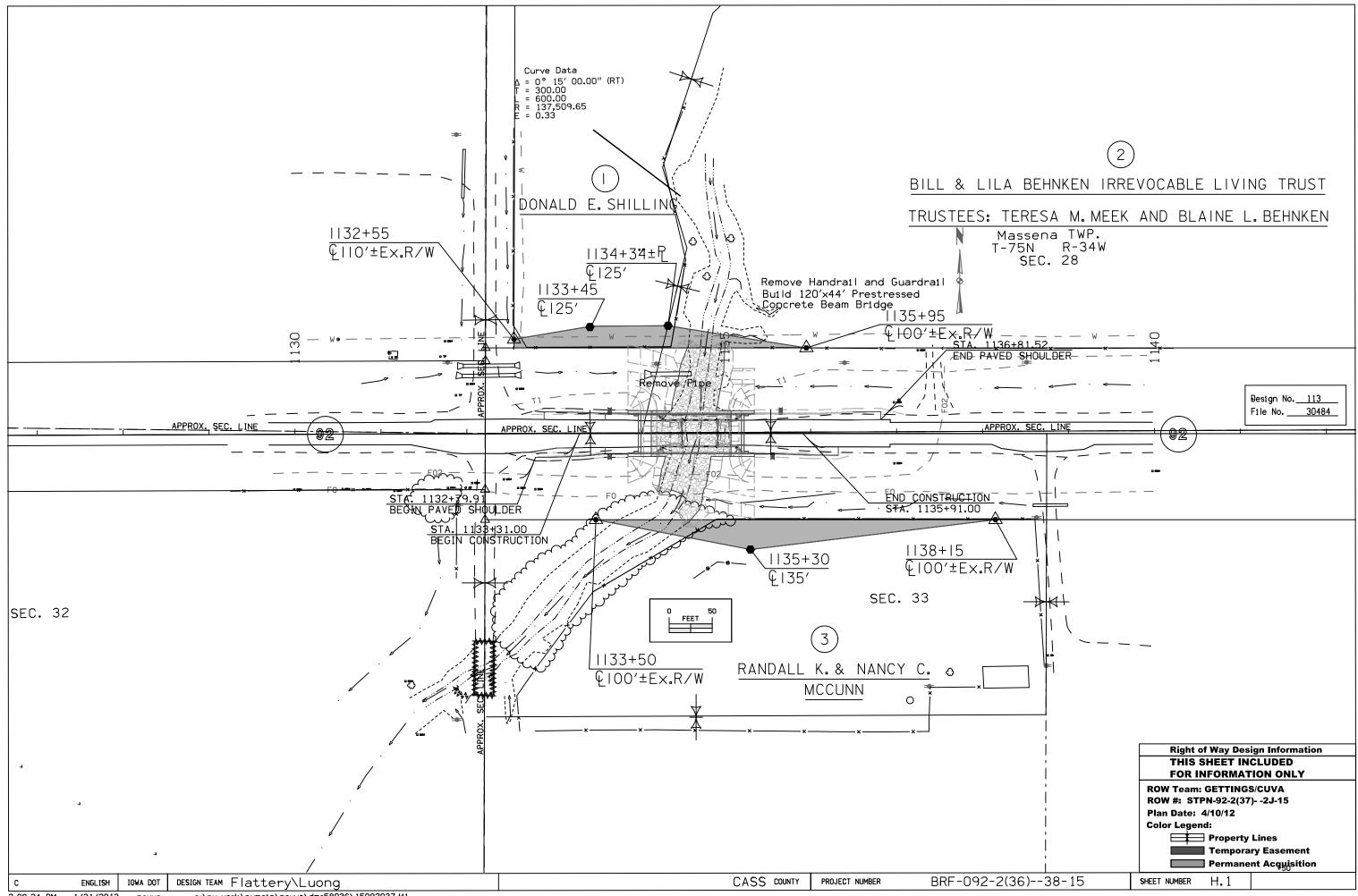
VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
500	461123.980	1289091.990	1215.629	1129+76.77	-76.189	BM	SET RR SPIKE IN SOUTH SIDE OF POWER POLE
501	461116.750	1289967.110	1210.986	1138+51.59	-82.939	BM	SET RR SPIKE IN SOUTH SIDE OF POWER POLE

ENGLISH	IOWA DOT	DESIGN TEAM Flattery Luong	CASS COUNTY	PROJECT NUMBER	BRF-092-2(36)3
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			Design No. <u>113</u> File No. <u>30484</u>
)38-15	SHEET NUMBER	G.1	





		102-15 08-01-08
ТА	BULATION OF SPECIAL EVENTS	
Event	Location	Date
No special events provided.		
		108-23A 08-01-08
	TRAFFIC CONTROL PLAN	

1. Traffic on IA 92 will be closed and an offsite detour will be utilized. The detour would follow Cass county road N-28 north for 3 miles, then continue east on county road G-43 for 6.5 miles to the junction with IA 148. It would then turn south on IA 148 for 3.5 miles to rejoin IA 92. Traffic will be maintained by offside detour by the Iowa Department of Transportation.

2. Traffic control on this project shall be in accordance with the Standard Road Plans listed in Tabulation 105-4 and the J Sheets in this plan. For additional complimentary information refer to Part 6 of the Manual on Uniform Traffic Control Devices and the current Standard Specifications.

ENGLISH	IOWA DOT	DESIGN TEAM Flattery\Luong	CASS COUNTY PROJECT NUM	BER BRF-092-2(36)3

38-15	SHEET NUMBER	Design No. <u>113</u> File No. <u>30484</u> J.1

											Refer to	Standard F	olan EW-101 a	nd RL-1						
TATION	TOTAL CUT	TOPSOIL CLASS 10 SAVED -C	CLASS 10 SUITABLE CUT	ADJUSTED CLASS 10 TOTAL	TOTAL FILL	CLASS 10 SUITABLE + 30% SHRINK	TOTAL FILL WITH SHRINK						STATION	TOTAL CUT	TOPSOIL CLASS 10 SAVED -C	CLASS 10 SUITABLE CUT	ADJUSTED CLASS 10 TOTAL	TOTAL FILL	CLASS 10 SUITABLE + 30% SHRINK	TOTAL FILL
A_92 +75.00 +79.90	9 19	7 14	2	2	19 37	25 48	25 48						=							
89.99 00.00	20	14 14 30	6 13	6 13	34 70	48	48	 	 											
+22.12 +25.00	6 21	4	2	2	9 20	12 26	12 26													
+31.00 +35.38	22 108	6 42	16 66	16 66	16 82	21 107	21 107													
+50.00 +59.51	91 145	40 65	51 80	51 80	70 123	91 160	91 160													
+75.00 +87.49	117 57	55	62 57	62 57	120 64	156 83	156 83		 											
+00.00 IDGE	2		2	2	2	3	3													
+00.00 +34.49 +50.00	162 149	80 74	82 75	82 75	180 162	234 211	234 211													
-50.00 -62.27	149 121 122	58	63 67	63	119	155	155 138													_
-75.00 -91.00	101	55 54	47	67 47	106 107	138 139	139													
+00.00 +12.25	20 20	15 13	5 7	5 7	35 31	46 40	46 40													
25.00 32.15 50.00 58.39	24 13	16 9	8 4	8 4	37 20	48 26	48 26							-						
50.00	44 20	34 16	10 4	10 4	71 32	92 42	92 42													
75.00	26 11	15 7	11 4	11 4	41 17	53 22	53 22		 											
-82.16 -00.00	7 4		7	74	10	13	13													
-07.82 -25.00	4		4	4																
NNEL																				
5+25.00 5+50.00			25	25	11	14	14													
5+75.00 5+00.00	249		113 249	113 249	3 12	4 16	4													
5+25.00 5+50.00	790		595 790	595 790	11 2	14 3	14 3													
6+75.00	299		570 299	570 299	9 23	12 30	12 30													
7+00.00 7+25.00	193		193	193	14	18	18													
TALS	4342	731	3611	3611	1719	2237	2237													
									 											-
									-											

ENGLISH	IOWA DOT	Design Team Flattery/Luong	CASS COUNTY	Project Number BRF-092-2(36)38
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			Design No. <u>113</u> File No. <u>30484</u>
15	Sheet Number		