INDEX OF MISCELLANEOUS STANDARDS

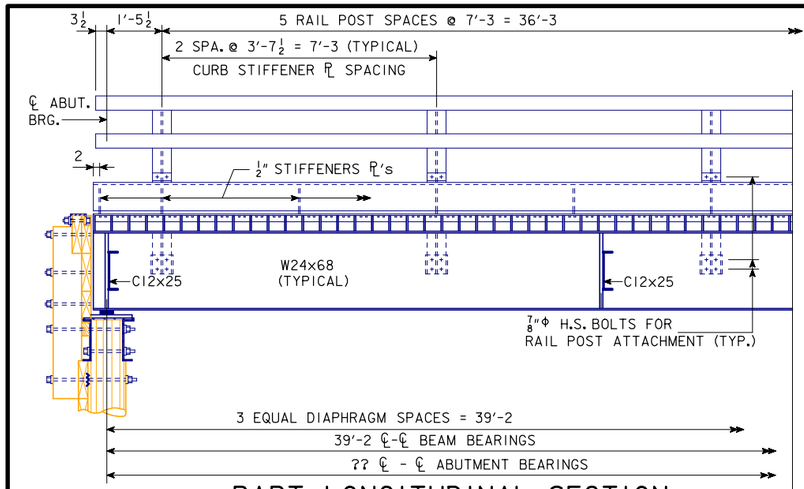
STANDARD	DESCRIPTION
1035	TEMPORARY DETOUR BRIDGE - WOOD PILES
1035A	TEMPORARY DETOUR BRIDGE - SINGLE SPAN - WOOD PILES
1035B	TEMPORARY DETOUR BRIDGE - MULTIPLE SPANS - WOOD PILES
1035C	TEMPORARY DETOUR BRIDGE - STEEL PILES
1035D	TEMPORARY DETOUR BRIDGE - SINGLE SPAN - STEEL PILES
1035E	TEMPORARY DETOUR BRIDGE - MULTIPLE SPANS - STEEL PILES
1037	PRECAST PRESTRESSED CONCRETE DECK PANELS (MAXIMUM CLEAR SPAN = 7'-0)
1037A	PRECAST PRESTRESSED CONCRETE DECK PANEL
1037B	PRECAST PRESTRESSED CONCRETE DECK PANELS (MIN. CL. SPAN = 7'-0, MAX. CL. SPAN = 10'-0)
1046	12" PRESTRESSED CONCRETE FOUNDATION PILE
1049	TEMPORARY BARRIER RAIL - F SHAPE CONCRETE - ONE WAY TRAFFIC
1050	TEMPORARY BARRIER RAIL - F SHAPE CONCRETE - TWO WAY TRAFFIC
1050A	TEMPORARY BARRIER RAIL - F SHAPE CONCRETE - BRIDGE FLOOR OVERLAY TWO WAY TRAFFIC
1054	AESTHETIC DECK DRAIN
1056	STEEL HI4x73 TEMPORARY BARRIER RAIL STANDARDS FOR TWO WAY TRAFFIC
1058	STEEL HI4x73 TEMPORARY BARRIER RAIL STANDARDS FOR ONE WAY TRAFFIC
1065	BEAM CAMBER & DECK THICKNESS DETAILS
1066	DECK HAUNCH DATA DETAILS
1067	BNSF & UPRR RAILROAD GENERAL NOTES & SHORING DETAILS
1068	PAVING NOTCH REPLACEMENT DETAILS
1069	HYDRODEMOLITION NOTES
1090	FLOOR SUPPORT BEAM DETAILS
1090A	FLOOR SUPPORT BEAM DETAILS
1091	FLOOR SUPPORT BEAM LAYOUT EXAMPLE
2110	"A" BEAM INTEGRAL ABUTMENT WING DETAILS
2111	"B" & "BTB" BEAM INTEGRAL ABUTMENT WING DETAILS
2112	"C" & "BTC" BEAM INTEGRAL ABUTMENT WING DETAILS
2112-S	"C" & "BTC" BEAM STUB ABUTMENT WING DETAILS
2113	"D" & "BTD" BEAM INTEGRAL ABUTMENT WING DETAILS
2113-S	"D" & "BTD" BEAM STUB ABUTMENT WING DETAILS
2114	"BTE" BEAM INTEGRAL ABUTMENT WING DETAILS
2114-S	"BTE" BEAM STUB ABUTMENT WING DETAILS
2115	ABUTMENT WING DETAILS FOR WELDED GIRDER & NON-STANDARD BEAMS
P10L	LRFD CONCRETE AND STEEL TRESTLE PILE BENTS

REVISED 09-2016 - CORRECTED TYPOS.
REVISED 07-2019: CHANGED STANDARDS 1065 & 1066 TITLES REFERING TO "SLAB" TO "DECK".
ENGLISHMISCELLANEOUSBRIDGES.DGN - 100-M - THIS SHEET ISSUED 02-10.

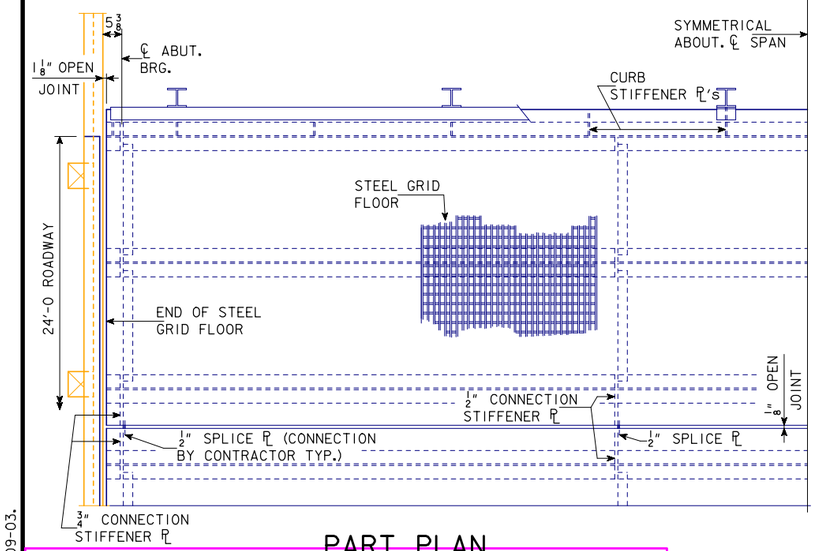
INDEX OF MISCELLANEOUS STANDARDS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



PART LONGITUDINAL SECTION

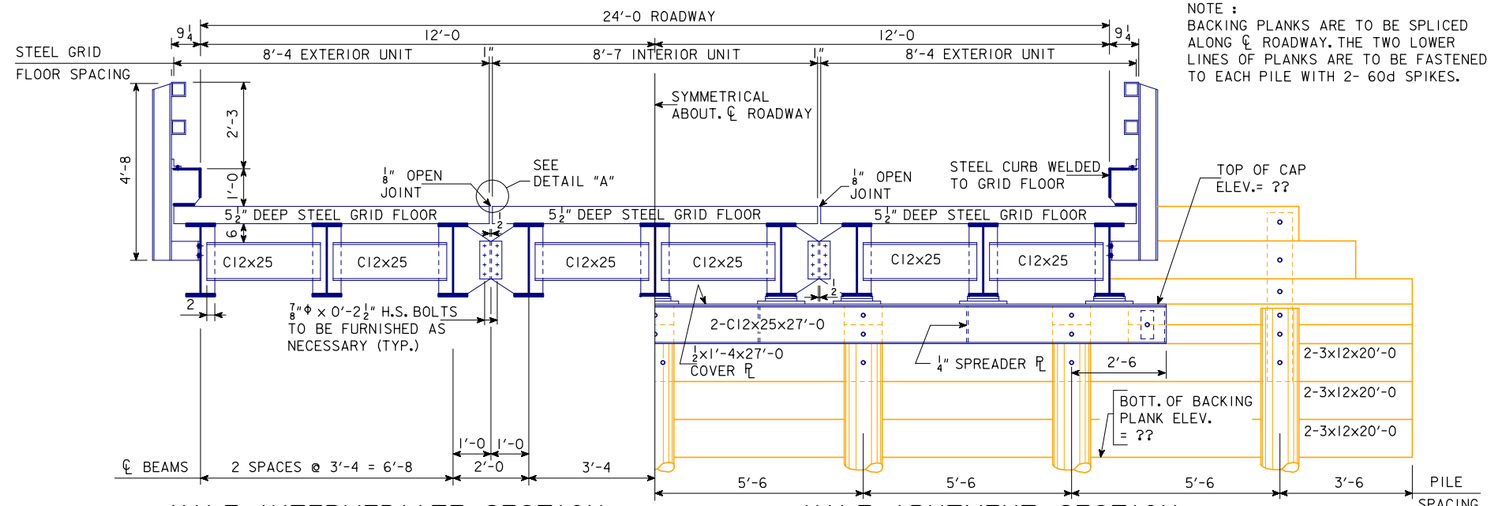


PART PLAN

NOTE :
SUPERSTRUCTURE UNITS AND ABUTMENT CAPS ARE ALREADY FABRICATED. DETAILS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.

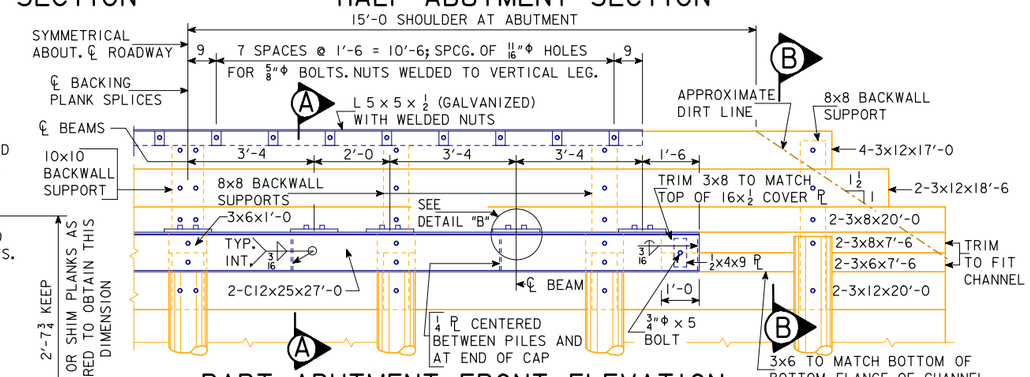
BENCH MARK:

NOTE :
BACKING PLANKS ARE TO BE SPLICED ALONG ℄ ROADWAY. THE TWO LOWER LINES OF PLANKS ARE TO BE FASTENED TO EACH PILE WITH 2- 60d SPIKES.

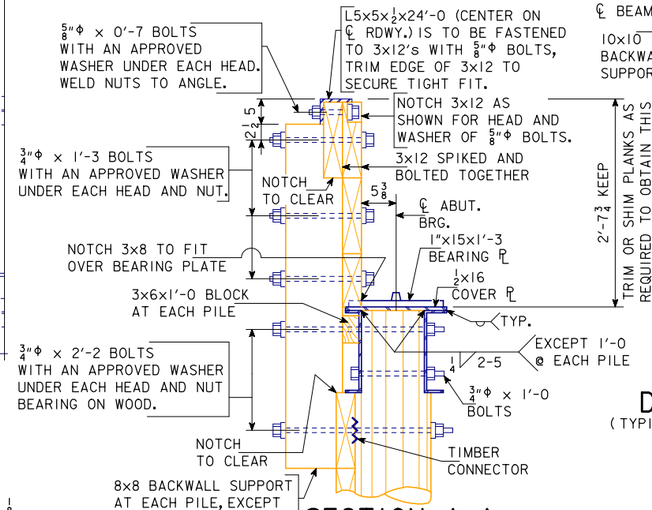


HALF INTERMEDIATE SECTION

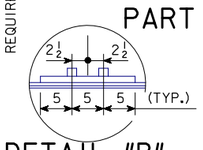
HALF ABUTMENT SECTION



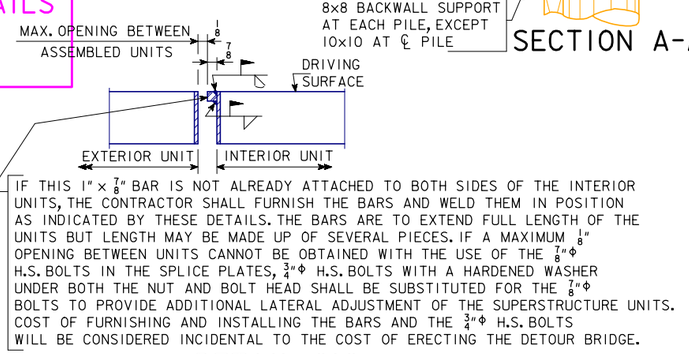
PART ABUTMENT FRONT ELEVATION



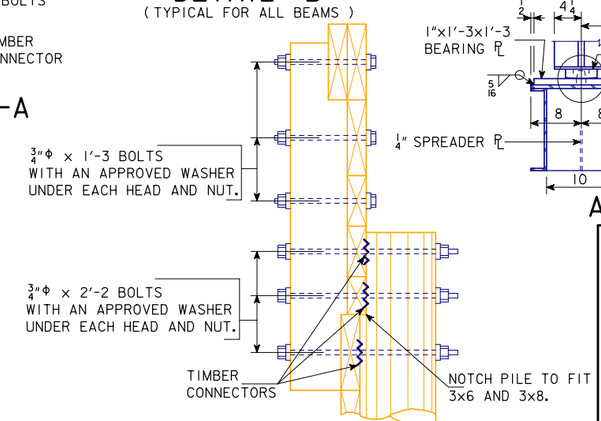
SECTION A-A



DETAIL "B"
(TYPICAL FOR ALL BEAMS)



DETAIL "A"



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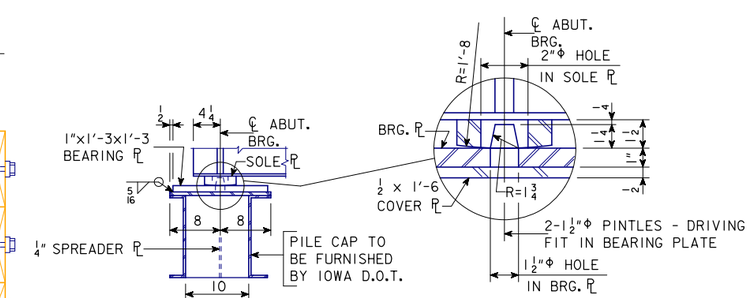


ABUTMENT BEARING DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	TEMPORARY DETOUR BRIDGE - WOOD PILES	STANDARD SHEET 1035	COUNTY	PROJECT NUMBER	SHEET NUMBER

DETOUR BRIDGE NOTES:

THE 39'-2 x 24'-0 I-BEAM DETOUR BRIDGE IS DESIGNED FOR H20 LOADING. THE SUPERSTRUCTURE IS COMPOSED OF THREE PREFABRICATED UNITS OF I-BEAMS AND ATTACHED STEEL GRID FLOOR. EXTERIOR UNITS ARE FURNISHED WITH CURBS AND HANDRAILS.

THE ABUTMENT PILE CAPS ARE TO BE FURNISHED BY THE IOWA D.O.T. MAINTENANCE OFFICE. THE CONTRACTOR IS TO FURNISH AND INSTALL NEW TREATED TIMBER TRESTLE PILES, NEW LUMBER FOR THE BACKWALLS AND ANGLE ARMOR FOR THE TOPS OF THE BACKWALLS.

THE PRICE BID FOR "HAUL DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF LOADING AND HAULING 3 UNITS OF THE BRIDGE SUPERSTRUCTURE AND 2 ABUTMENT PILE CAPS FROM THE IOWA D.O.T. MAINTENANCE YARD AT WILLIAMS TO THE BRIDGE SITE. IT SHALL ALSO INCLUDE THE COST OF LOADING AND HAULING THE SUPERSTRUCTURE UNITS AND ABUTMENT PILE CAPS TO WILLIAMS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE AND STORING ALL UNITS AS DIRECTED BY THE MAINTENANCE OFFICE.

THE BRIDGE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE DETOUR BRIDGE IN GOOD CONDITION DURING THE PERIOD IT IS BEING USED TO CARRY DETOUR TRAFFIC. ANY DAMAGE CAUSED BY MISHANDLING, BY THE BRIDGE CONTRACTOR, SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. OTHER DAMAGES TO THE UNITS, CAUSED BY TRAFFIC OR CONDITIONS BEYOND THE BRIDGE CONTRACTORS CONTROL SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AND WILL BE PAID FOR AS EXTRA WORK. THE BRIDGE CONTRACTOR SHALL MAKE A REASONABLE EFFORT TO ENSURE THE DETOUR BRIDGE IS IN GOOD CONDITION AND ALL REPAIRS ARE COMPLETED BEFORE STORING THE BRIDGE UNITS AT THE D.O.T. MAINTENANCE YARD.

THE HANDRAIL ASSEMBLIES, ATTACHED TO THE EXTERIOR UNITS, MAY BE REMOVED WHEN TRANSPORTING THE EXTERIOR UNITS, AT THE CONTRACTOR'S OPTION. HANDRAIL ASSEMBLIES, WHEN DETACHED, SHALL BE MATCH MARKED TO FACILITATE RE-ERECTION. HANDRAIL ASSEMBLIES ARE TO BE RE-CONNECTED BEFORE THE FINAL STORAGE AT THE D.O.T. MAINTENANCE YARD. COST OF REMOVAL AND REPLACEMENT OF RAIL ASSEMBLIES IS CONSIDERED INCIDENTAL AND NO SPECIAL PAYMENT WILL BE MADE.

THE SUPERSTRUCTURE UNITS SHALL BE PICKED UP BY THE LIFTING U-BOLTS PROVIDED AT ALL FOUR CORNERS OF EACH UNIT. THE U-BOLTS ARE TO BE REMOVED DURING THE TIME THE DETOUR BRIDGE IS OPEN TO TRAFFIC AND STORED IN A LOCATION WHERE THEY WILL BE PROTECTED FROM ANY DAMAGE.

THE PRICE BID FOR "ERECT DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF PLACING THE SUPERSTRUCTURE ON THE COMPLETED ABUTMENTS. IT SHALL ALSO INCLUDE THE COST OF REMOVING THE SUPERSTRUCTURE AND ABUTMENTS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE. ALL $\frac{7}{8}$" DIAMETER HIGH STRENGTH BOLTS NECESSARY TO BOLT UP THE SPLICES (SEE DETOUR BRIDGE CROSS SECTION) SHALL ALSO BE INCLUDED IN THE BID ITEM. IT SHOULD BE NOTED THAT MOST OF THE $\frac{7}{8}$" DIAMETER H.S. BOLTS REQUIRED FOR THE SUPERSTRUCTURE ARE STORED WITH THE SUPERSTRUCTURE UNITS. ABUTMENT PILES ARE TO BE REMOVED TO 1'-0 BELOW EXISTING GROUND LINE. THE TRESTLE PILING AND BACKWALL LUMBER SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE FURNISHING AND ERECTING THE GALVANIZED ANGLES AT THE TOP OF THE BACKWALLS. ALL STEEL FURNISHED UNDER THIS BID ITEM IS TO BE NEW MATERIAL AND SHALL REMAIN THE PROPERTY OF THE IOWA D.O.T.

THE BID ITEM "GALVANIZED HARDWARE" IS TO INCLUDE ALL BOLTS, NUTS, WASHERS AND TIMBER CONNECTORS REQUIRED FOR ABUTMENT PILE CAPS AND ABUTMENT BACKWALLS OF THE DETOUR BRIDGE.

TIMBER CONNECTORS ARE TO BE BULLDOG PL 4" SQUARE x 16 ga , TECO TOOTHED RING $3\frac{3}{8}$" x 16 ga, TECO SPIKE GRID 4" CAST OR AN APPROVED EQUAL.

ALL LUMBER MAY BE UNTREATED. WIDTHS SHOWN ARE NOMINAL. ROUGH LUMBER MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE BACKWALL CONFIGURATION APPROXIMATELY AS SHOWN.

THE MASS OF SUPERSTRUCTURE UNITS IS 16,000 LBS. FOR INTERIOR UNIT AND 17,200 LBS. FOR EXTERIOR UNIT (19,000 LBS. WITH RAIL POST ASSEMBLY LEFT IN PLACE).

ALL BOLTS ARE TO HAVE SQUARE OR HEX. HEADS. ALL BOLTS ARE TO HAVE 5" MINIMUM THREADS.

EXCAVATION REQUIRED FOR CONSTRUCTION OF DETOUR STRUCTURE IS TO BE CONSIDERED INCIDENTAL.

BENCH MARK :

PILE DRIVING NOTE FOR DETOUR BRIDGE:

THE DESIGN BEARING FOR THE ABUTMENT PILES IS 20 TONS.

ESTIMATED QUANTITIES - DETOUR BRIDGE

ITEM	UNITS	QUANTITY
STRUCTURAL STEEL	LB	
UNTREATED LUMBER	MFBM	
GALVANIZED HARDWARE	LB	
HAUL DETOUR BRIDGE UNITS	LS	1.0
ERECT DETOUR BRIDGE UNITS	LS	1.0
PILES, FURNISH WOOD (TREATED TIMBER TRESTLE PILES) ?@? FT.	LF	
PILES, DRIVE WOOD (TREATED TIMBER TRESTLE PILES) ?@? FT.	LF	

NOTE: ABOVE QUANTITIES ARE INCLUDED IN "TOTAL ESTIMATED BRIDGE QUANTITIES" ON DES. SHT. ?.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 06-2017 - CORRECTED TYPOS.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1035A - THIS SHEET ISSUED 09-03.

DETOUR BRIDGE NOTES:

THE ? x 24'-0 I-BEAM DETOUR BRIDGE IS DESIGNED FOR H20 LOADING. THE SUPERSTRUCTURE IS COMPOSED OF THREE PREFABRICATED UNITS OF I-BEAMS PER SPAN AND ATTACHED STEEL GRID FLOOR. EXTERIOR UNITS ARE FURNISHED WITH CURBS AND HANDRAILS.

THE ABUTMENT AND PIER PILE CAPS ARE TO BE FURNISHED BY THE IOWA D.O.T. MAINTENANCE OFFICE. THE CONTRACTOR IS TO FURNISH AND INSTALL NEW TREATED TIMBER TRESTLE PILES, NEW LUMBER FOR THE BACKWALLS, ANGLE ARMOR FOR THE TOPS OF THE BACKWALLS AND BRACING PLANK FOR THE PIERS, AS REQUIRED.

THE PRICE BID FOR "HAUL DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF LOADING AND HAULING ? UNITS OF THE BRIDGE SUPERSTRUCTURE, 2 ABUTMENT PILE CAPS AND THE PIER CAPS FROM THE IOWA D.O.T. MAINTENANCE YARD AT WILLIAMS TO THE BRIDGE SITE. IT SHALL ALSO INCLUDE THE COST OF LOADING AND HAULING THE SUPERSTRUCTURE UNITS, ABUTMENT PILE CAPS AND THE PIER CAPS TO WILLIAMS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE AND STORING ALL UNITS AS DIRECTED BY THE MAINTENANCE OFFICE.

THE BRIDGE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE DETOUR BRIDGE IN GOOD CONDITION DURING THE PERIOD IT IS BEING USED TO CARRY DETOUR TRAFFIC. ANY DAMAGE CAUSED BY MISHANDLING, BY THE BRIDGE CONTRACTOR, SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. OTHER DAMAGES TO THE UNITS, CAUSED BY TRAFFIC OR CONDITIONS BEYOND THE BRIDGE CONTRACTORS CONTROL SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AND WILL BE PAID FOR AS EXTRA WORK. THE BRIDGE CONTRACTOR SHALL MAKE A REASONABLE EFFORT TO ENSURE THE DETOUR BRIDGE IS IN GOOD CONDITION AND ALL REPAIRS ARE COMPLETED BEFORE STORING THE BRIDGE UNITS AT THE D.O.T. MAINTENANCE YARD.

THE HANDRAIL ASSEMBLIES, ATTACHED TO THE EXTERIOR UNITS, MAY BE REMOVED WHEN TRANSPORTING THE EXTERIOR UNITS, AT THE CONTRACTOR'S OPTION. HANDRAIL ASSEMBLIES, WHEN DETACHED, SHALL BE MATCH MARKED TO FACILITATE RE-ERECTION. HANDRAIL ASSEMBLIES ARE TO BE RE-CONNECTED BEFORE THE FINAL STORAGE AT THE D.O.T. MAINTENANCE YARD. COST OF REMOVAL AND REPLACEMENT OF RAIL ASSEMBLIES IS CONSIDERED INCIDENTAL AND NO SPECIAL PAYMENT WILL BE MADE.

THE SUPERSTRUCTURE UNITS SHALL BE PICKED UP BY THE LIFTING U-BOLTS PROVIDED AT ALL FOUR CORNERS OF EACH UNIT. THE U-BOLTS ARE TO BE REMOVED DURING THE TIME THE DETOUR BRIDGE IS OPEN TO TRAFFIC AND STORED IN A LOCATION WHERE THEY WILL BE PROTECTED FROM ANY DAMAGE.

THE PRICE BID FOR "ERECT DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF PLACING THE SUPERSTRUCTURE ON THE COMPLETED ABUTMENTS AND PIERS. IT SHALL ALSO INCLUDE THE COST OF REMOVING THE SUPERSTRUCTURE, ABUTMENTS AND PIERS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE. ALL $\frac{7}{8}$" DIAMETER HIGH STRENGTH BOLTS NECESSARY TO BOLT UP THE SPLICES (SEE DETOUR BRIDGE CROSS SECTION) SHALL ALSO BE INCLUDED IN THE BID ITEM. IT SHOULD BE NOTED THAT MOST OF THE $\frac{7}{8}$" DIAMETER H.S. BOLTS REQUIRED FOR THE SUPERSTRUCTURE ARE STORED WITH THE SUPERSTRUCTURE UNITS. ABUTMENT PILES ARE TO BE REMOVED TO 1'-0 BELOW EXISTING GROUND LINE. PIER PILES ARE TO BE REMOVED TO 1'-0 BELOW NATURAL STREAM BOTTOM. THE TRESTLE PILING, BACKWALL LUMBER AND PIER BRACING PLANKS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE FURNISHING AND ERECTING THE GALVANIZED ANGLES AT THE TOP OF THE BACKWALLS. ALL STEEL FURNISHED UNDER THIS BID ITEM IS TO BE NEW MATERIAL AND SHALL REMAIN THE PROPERTY OF THE IOWA D.O.T.

THE BID ITEM "GALVANIZED HARDWARE" IS TO INCLUDE ALL BOLTS, NUTS, WASHERS AND TIMBER CONNECTORS REQUIRED FOR ABUTMENT PILE CAPS, PIER PILE CAPS AND ABUTMENT BACKWALLS OF THE DETOUR BRIDGE.

TIMBER CONNECTORS ARE TO BE BULLDOG ℙ 4" SQUARE x 16 ga , TECO TOOTHED RING $3\frac{3}{8}$" x 16 ga, TECO SPIKE GRID 4" CAST OR AN APPROVED EQUAL.

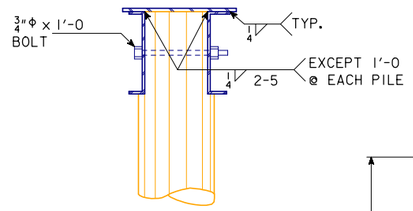
ALL LUMBER MAY BE UNTREATED. WIDTHS SHOWN ARE NOMINAL. ROUGH LUMBER MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE BACKWALL CONFIGURATION APPROXIMATELY AS SHOWN.

THE MASS OF SUPERSTRUCTURE UNITS IS 16,000 LBS. FOR INTERIOR UNIT AND 17,200 LBS. FOR EXTERIOR UNIT (19,000 LBS. WITH RAIL POST ASSEMBLY LEFT IN PLACE).

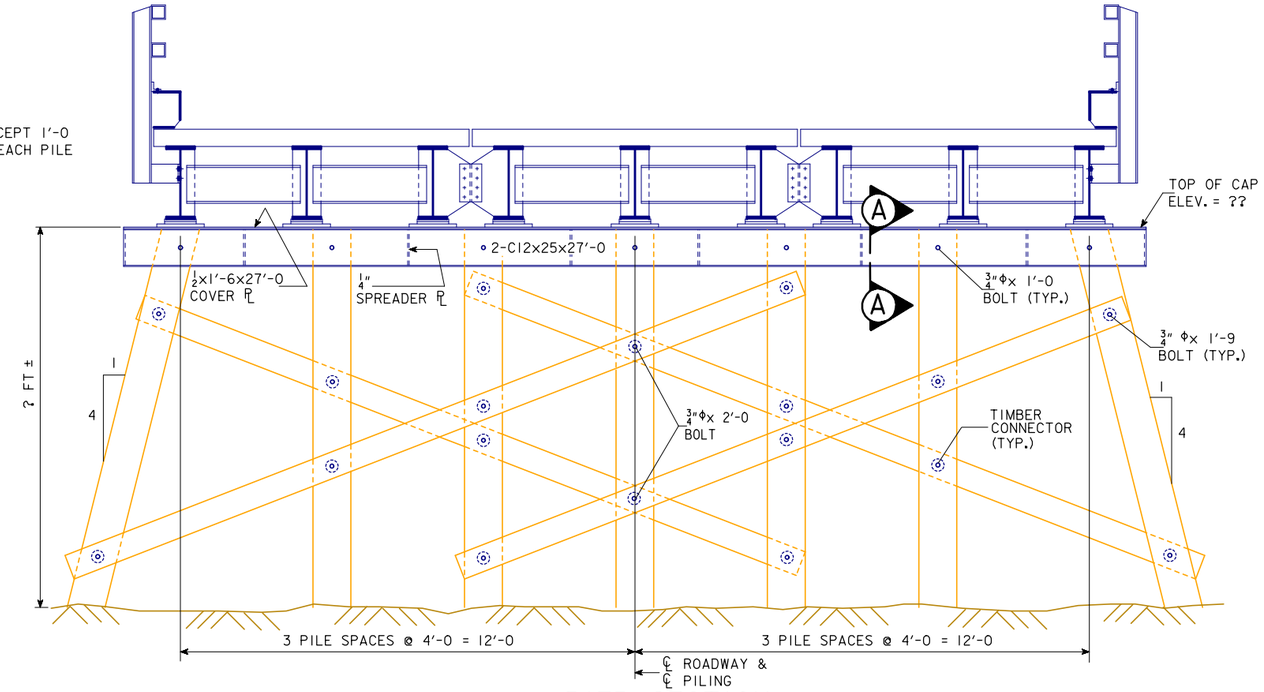
ALL BOLTS ARE TO HAVE SQUARE OR HEX. HEADS. ALL BOLTS ARE TO HAVE 5" MINIMUM THREADS.

EXCAVATION REQUIRED FOR CONSTRUCTION OF DETOUR STRUCTURE IS TO BE CONSIDERED INCIDENTAL.

BENCH MARK :



SECTION A-A



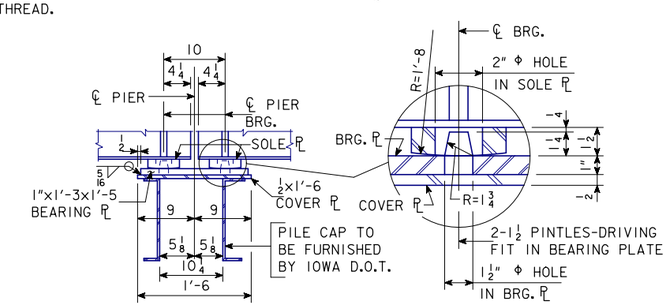
PIER SECTION

PIER PILING SHALL BE BRACED. BRACING SHALL CONSIST OF 3 x 8's PLACED DIAGONALLY ON BOTH SIDES OF BENT. EACH BRACING PLANK IS TO BE FASTENED TO EACH PILE WITH TIMBER CONNECTOR AND 2-$\frac{5}{16}$" x 7" GALVANIZED SPIKES IN ADDITION TO A $\frac{3}{4}$" DIA. BOLT WITH 7" THREAD.

PILE DRIVING NOTE FOR DETOUR BRIDGE:

THE DESIGN BEARING FOR THE ABUTMENT AND PIER PILES IS 20 TONS.

THE BID ITEM "GALVANIZED HARDWARE" IS TO INCLUDE ALL BOLTS, NUTS, WASHERS AND TIMBER CONNECTORS REQUIRED FOR ABUTMENT PILE CAPS AND ABUTMENT BACKWALLS OF THE DETOUR BRIDGE.



PIER BEARING DETAILS

NOTE :
SUPERSTRUCTURE UNITS AND PIER CAPS ARE ALREADY FABRICATED. DETAILS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.

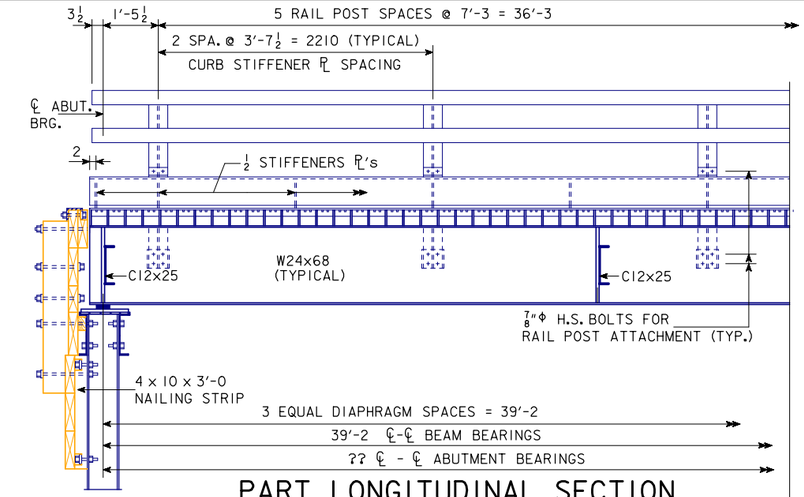
ESTIMATED QUANTITIES - DETOUR BRIDGE

ITEM	UNITS	QUANTITY
STRUCTURAL STEEL	LB	
UNTREATED LUMBER	MFBM	
GALVANIZED HARDWARE	LB	
HAUL DETOUR BRIDGE UNITS	LS	1.0
ERECT DETOUR BRIDGE UNITS	LS	1.0
PILES, FURNISH WOOD (TREATED TIMBER TRESTLE PILES) ?@? FT.	LF	
PILES, DRIVE WOOD (TREATED TIMBER TRESTLE PILES) ?@? FT.	LF	

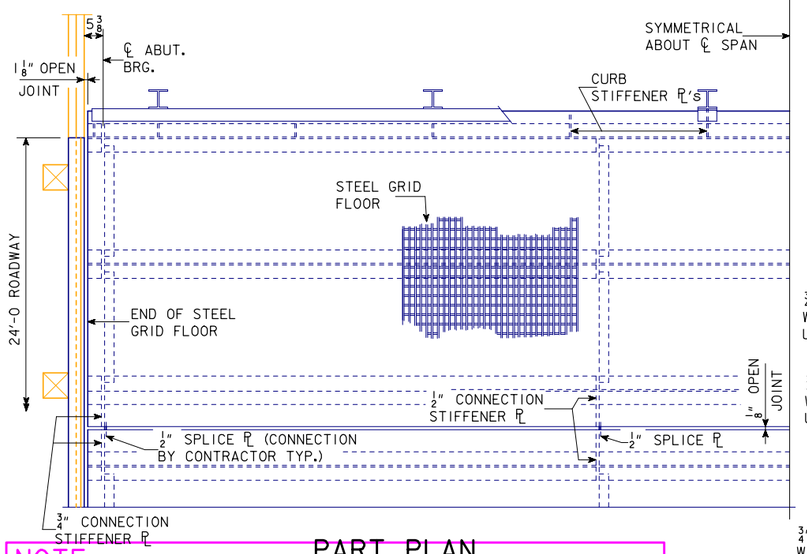
NOTE: ABOVE QUANTITIES ARE INCLUDED IN "TOTAL ESTIMATED BRIDGE QUANTITIES" ON DES. SHT. ?.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	TEMPORARY DETOUR BRIDGE - MULTIPLE SPAN - WOOD PILES	STANDARD SHEET 1035B	COUNTY	PROJECT NUMBER	SHEET NUMBER



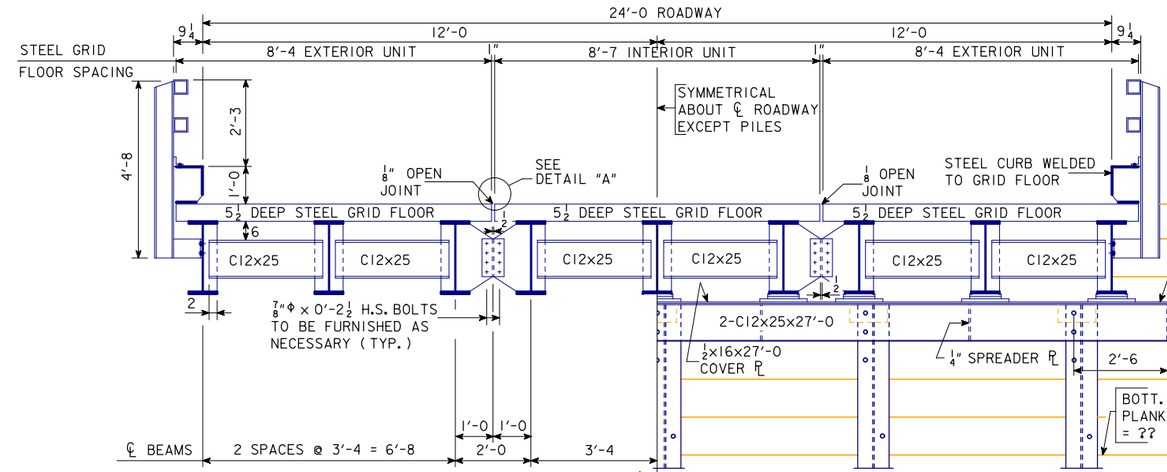
PART LONGITUDINAL SECTION



PART PLAN

NOTE:
SUPERSTRUCTURE UNITS AND ABUTMENT CAPS ARE ALREADY FABRICATED. DETAILS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.

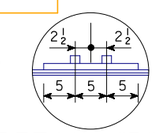
BENCH MARK :



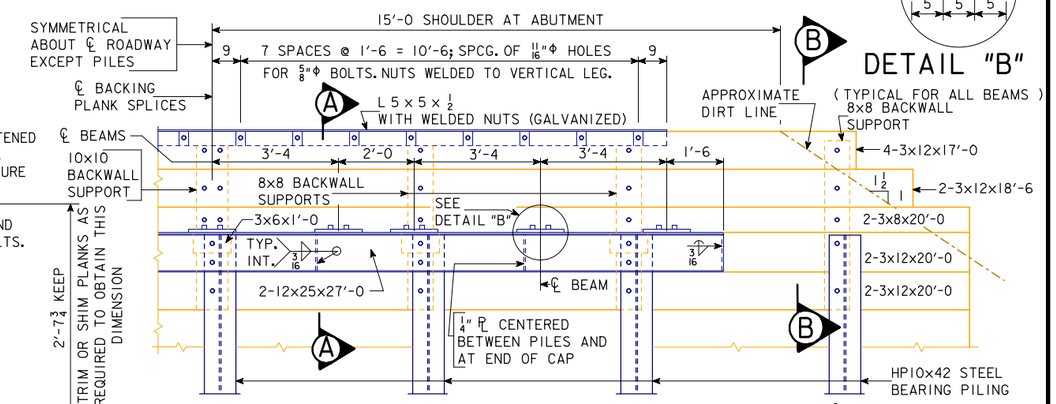
HALF INTERMEDIATE SECTION

HALF ABUTMENT SECTION

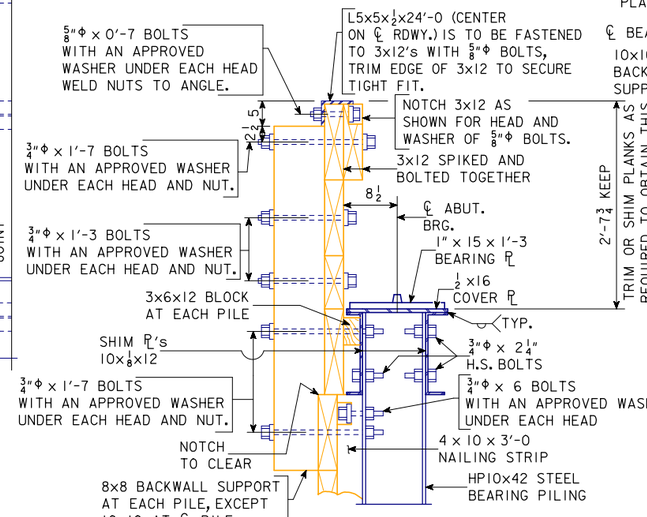
NOTE:
BACKING PLANKS ARE TO BE SPLICED ALONG ℄ ROADWAY. LOWER LINES OF PLANKS ARE TO BE FASTENED TO THE NAILING STRIPS WITH 2- 60d SPIKES.



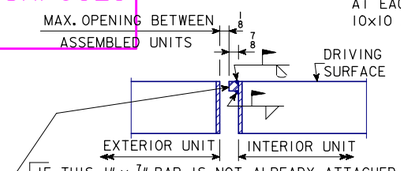
DETAIL "B"



PART ABUTMENT FRONT ELEVATION

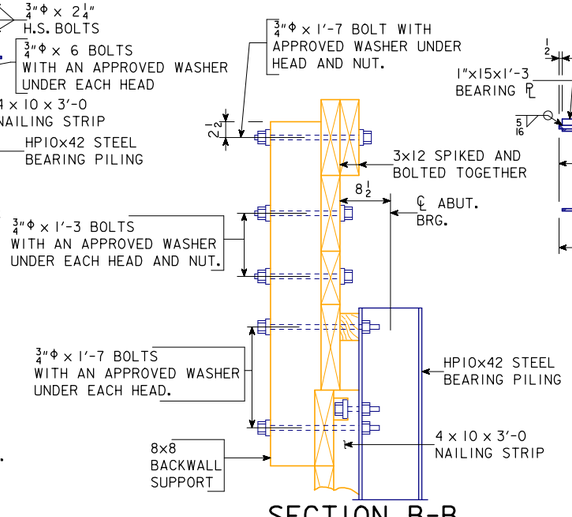


SECTION A-A

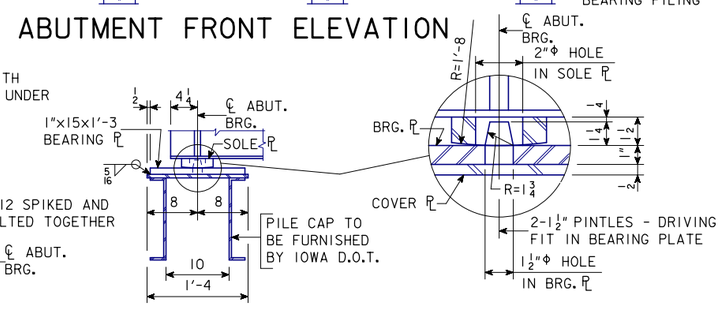


IF THIS 1" x ⅞" BAR IS NOT ALREADY ATTACHED TO BOTH SIDES OF THE INTERIOR UNITS, THE CONTRACTOR SHALL FURNISH THE BARS AND WELD THEM IN POSITION AS INDICATED BY THESE DETAILS. THE BARS ARE TO EXTEND FULL LENGTH OF THE UNITS BUT LENGTH MAY BE MADE UP OF SEVERAL PIECES. IF A MAXIMUM ⅛" OPENING BETWEEN UNITS CANNOT BE OBTAINED WITH THE USE OF THE ⅞"Φ H.S. BOLTS IN THE SPLICE PLATES, ¾"Φ H.S. BOLTS WITH A HARDENED WASHER UNDER BOTH THE NUT AND BOLT HEAD SHALL BE SUBSTITUTED FOR THE ⅞"Φ BOLTS TO PROVIDE ADDITIONAL LATERAL ADJUSTMENT OF THE SUPERSTRUCTURE UNITS. COST OF FURNISHING AND INSTALLING THE BARS AND THE ¾"Φ H.S. BOLTS WILL BE CONSIDERED INCIDENTAL TO THE COST OF ERECTING THE DETOUR BRIDGE.

DETAIL "A"



SECTION B-B



ABUTMENT BEARING DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	TEMPORARY DETOUR BRIDGE - STEEL PILES	STANDARD SHEET 1035C	COUNTY	PROJECT NUMBER	SHEET NUMBER

REVISED 10-2016 - CORRECTED TYPOS.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1035C - THIS SHEET ISSUED 09-03.

BENCH MARK :

DETOUR BRIDGE NOTES:

THE 39'-2 x 24'-0 I-BEAM DETOUR BRIDGE IS DESIGNED FOR H20 LOADING. THE SUPERSTRUCTURE IS COMPOSED OF THREE PREFABRICATED UNITS OF I-BEAMS AND ATTACHED STEEL GRID FLOOR. EXTERIOR UNITS ARE FURNISHED WITH CURBS AND HANDRAILS.

THE ABUTMENT PILE CAPS ARE TO BE FURNISHED BY THE IOWA D.O.T. MAINTENANCE OFFICE. THE CONTRACTOR IS TO FURNISH AND INSTALL NEW STEEL PILES, NEW LUMBER FOR THE BACKWALLS AND ANGLE ARMOR FOR THE TOPS OF THE BACKWALLS.

THE PRICE BID FOR "HAUL DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF LOADING AND HAULING 3 UNITS OF THE BRIDGE SUPERSTRUCTURE, 2 ABUTMENT PILE CAPS AND PIER CAPS FROM THE IOWA D.O.T. MAINTENANCE YARD AT WILLIAMS TO THE BRIDGE SITE. IT SHALL ALSO INCLUDE THE COST OF LOADING AND HAULING THE SUPERSTRUCTURE UNITS, ABUTMENT PILE CAPS AND PIER CAPS TO WILLIAMS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE AND STORING ALL UNITS AS DIRECTED BY THE MAINTENANCE OFFICE.

THE BRIDGE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE DETOUR BRIDGE IN GOOD CONDITION DURING THE PERIOD IT IS BEING USED TO CARRY DETOUR TRAFFIC. ANY DAMAGE CAUSED BY MISHANDLING, BY THE BRIDGE CONTRACTOR, SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. OTHER DAMAGES TO THE UNITS, CAUSED BY TRAFFIC OR CONDITIONS BEYOND THE BRIDGE CONTRACTORS CONTROL SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AND WILL BE PAID FOR AS EXTRA WORK. THE BRIDGE CONTRACTOR SHALL MAKE A REASONABLE EFFORT TO ENSURE THE DETOUR BRIDGE IS IN GOOD CONDITION AND ALL REPAIRS ARE COMPLETED BEFORE STORING THE BRIDGE UNITS AT THE D.O.T. MAINTENANCE YARD.

THE HANDRAIL ASSEMBLIES, ATTACHED TO THE EXTERIOR UNITS, MAY BE REMOVED WHEN TRANSPORTING THE EXTERIOR UNITS, AT THE CONTRACTOR'S OPTION. HANDRAIL ASSEMBLIES, WHEN DETACHED, SHALL BE MATCH MARKED TO FACILITATE RE-ERECTION. HANDRAIL ASSEMBLIES ARE TO BE RE-CONNECTED BEFORE THE FINAL STORAGE AT THE D.O.T. MAINTENANCE YARD. COST OF REMOVAL AND REPLACEMENT OF RAIL ASSEMBLIES IS CONSIDERED INCIDENTAL AND NO SPECIAL PAYMENT WILL BE MADE.

THE SUPERSTRUCTURE UNITS SHALL BE PICKED UP BY THE LIFTING U-BOLTS PROVIDED AT ALL FOUR CORNERS OF EACH UNIT. THE U-BOLTS ARE TO BE REMOVED DURING THE TIME THE DETOUR BRIDGE IS OPEN TO TRAFFIC AND STORED IN A LOCATION WHERE THEY WILL BE PROTECTED FROM ANY DAMAGE.

THE PRICE BID FOR "ERECT DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF PLACING THE SUPERSTRUCTURE ON THE COMPLETED ABUTMENTS. IT SHALL ALSO INCLUDE THE COST OF REMOVING THE SUPERSTRUCTURE AND ABUTMENTS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE. ALL $\frac{7}{8}$" DIAMETER HIGH STRENGTH BOLTS NECESSARY TO BOLT UP THE SPLICES (SEE DETOUR BRIDGE CROSS SECTION) SHALL ALSO BE INCLUDED IN THE BID ITEM. IT SHOULD BE NOTED THAT MOST OF THE $\frac{7}{8}$" DIAMETER H.S. BOLTS REQUIRED FOR THE SUPERSTRUCTURE ARE STORED WITH THE SUPERSTRUCTURE UNITS. ABUTMENT PILES ARE TO BE REMOVED TO 1'-0 BELOW EXISTING GROUND LINE. THE STEEL PILING AND BACKWALL LUMBER SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE FURNISHING AND ERECTING THE GALVANIZED ANGLES AT THE TOP OF THE BACKWALLS. ALL STEEL FURNISHED UNDER THIS BID ITEM IS TO BE NEW MATERIAL AND SHALL REMAIN THE PROPERTY OF THE IOWA D.O.T.

THE BID ITEM "GALVANIZED HARDWARE" IS TO INCLUDE ALL BOLTS, NUTS AND WASHERS REQUIRED FOR ABUTMENT PILE CAPS AND ABUTMENT BACKWALLS OF THE DETOUR BRIDGE.

ALL LUMBER MAY BE UNTREATED. WIDTHS SHOWN ARE NOMINAL. ROUGH LUMBER MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE BACKWALL CONFIGURATION APPROXIMATELY AS SHOWN.

THE MASS OF SUPERSTRUCTURE UNITS IS 16,000 LBS. FOR INTERIOR UNIT AND 17,200 LBS. FOR EXTERIOR UNIT (19,000 LBS. WITH RAIL POST ASSEMBLY LEFT IN PLACE).

ALL BOLTS ARE TO HAVE SQUARE OR HEX. HEADS. ALL BOLTS ARE TO HAVE 5" MINIMUM THREADS, EXCEPT FOR THE $\frac{3}{4}$" DIAMETER x $2\frac{1}{4}$" H.S. BOLTS.

EXCAVATION REQUIRED FOR CONSTRUCTION OF DETOUR STRUCTURE IS TO BE CONSIDERED INCIDENTAL.

PILE DRIVING NOTE FOR DETOUR BRIDGE:

THE DESIGN BEARING FOR THE ABUTMENT PILES IS 20 TONS.

ESTIMATED QUANTITIES - DETOUR BRIDGE

ITEM		UNITS	QUANTITY
STRUCTURAL STEEL		LB	
UNTREATED LUMBER		MFBM	
GALVANIZED HARDWARE		LB	
HAUL DETOUR BRIDGE UNITS		LS	1.0
ERECT DETOUR BRIDGE UNITS		LS	1.0
PILES, STEEL BEARING, HP10x42	FURNISH ?@? FT.	LF	
	DRIVE ?@? FT.	LF	

NOTE : ABOVE QUANTITIES ARE INCLUDED IN "TOTAL ESTIMATED BRIDGE QUANTITIES" ON DES. SHT. ?.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 06-2017 - ADDED "PIER CAPS" TO ITEMS THAT ARE TO BE HAULED TO WILLIAMS AFTER DETOUR BRIDGE IS NO LONGER NEEDED.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1035D - THIS SHEET ISSUED 09-03.

DETOUR BRIDGE NOTES:

THE ? x 24'-0 I-BEAM DETOUR BRIDGE IS DESIGNED FOR H20 LOADING. THE SUPERSTRUCTURE IS COMPOSED OF THREE PREFABRICATED UNITS OF I-BEAMS PER SPAN AND ATTACHED STEEL GRID FLOOR. EXTERIOR UNITS ARE FURNISHED WITH CURBS AND HANDRAILS.

THE ABUTMENT AND PIER PILE CAPS ARE TO BE FURNISHED BY THE IOWA D.O.T. MAINTENANCE OFFICE. THE CONTRACTOR IS TO FURNISH AND INSTALL NEW STEEL PILES, NEW LUMBER FOR THE BACKWALLS, ANGLE ARMOR FOR THE TOPS OF THE BACKWALLS AND BRACING PLANK FOR THE PIERS, AS REQUIRED.

THE PRICE BID FOR "HAUL DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF LOADING AND HAULING ? UNITS OF THE BRIDGE SUPERSTRUCTURE, 2 ABUTMENT PILE CAPS AND PIER CAPS FROM THE IOWA D.O.T. MAINTENANCE YARD AT WILLIAMS TO THE BRIDGE SITE. IT SHALL ALSO INCLUDE THE COST OF LOADING AND HAULING THE SUPERSTRUCTURE UNITS, ABUTMENT PILE CAPS AND PIER CAPS TO WILLIAMS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE AND STORING ALL UNITS AS DIRECTED BY THE MAINTENANCE OFFICE.

THE BRIDGE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE DETOUR BRIDGE IN GOOD CONDITION DURING THE PERIOD IT IS BEING USED TO CARRY DETOUR TRAFFIC. ANY DAMAGE CAUSED BY MISHANDLING, BY THE BRIDGE CONTRACTOR, SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. OTHER DAMAGES TO THE UNITS, CAUSED BY TRAFFIC OR CONDITIONS BEYOND THE BRIDGE CONTRACTORS CONTROL SHALL BE REPAIRED BY THE BRIDGE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AND WILL BE PAID FOR AS EXTRA WORK. THE BRIDGE CONTRACTOR SHALL MAKE A REASONABLE EFFORT TO ENSURE THE DETOUR BRIDGE IS IN GOOD CONDITION AND ALL REPAIRS ARE COMPLETED BEFORE STORING THE BRIDGE UNITS AT THE D.O.T. MAINTENANCE YARD.

THE HANDRAIL ASSEMBLIES, ATTACHED TO THE EXTERIOR UNITS, MAY BE REMOVED WHEN TRANSPORTING THE EXTERIOR UNITS, AT THE CONTRACTOR'S OPTION. HANDRAIL ASSEMBLIES, WHEN DETACHED, SHALL BE MATCH MARKED TO FACILITATE RE-ERECTION. HANDRAIL ASSEMBLIES ARE TO BE RE-CONNECTED BEFORE THE FINAL STORAGE AT THE D.O.T. MAINTENANCE YARD. COST OF REMOVAL AND REPLACEMENT OF RAIL ASSEMBLIES IS CONSIDERED INCIDENTAL AND NO SPECIAL PAYMENT WILL BE MADE.

THE SUPERSTRUCTURE UNITS SHALL BE PICKED UP BY THE LIFTING U-BOLTS PROVIDED AT ALL FOUR CORNERS OF EACH UNIT. THE U-BOLTS ARE TO BE REMOVED DURING THE TIME THE DETOUR BRIDGE IS OPEN TO TRAFFIC AND STORED IN A LOCATION WHERE THEY WILL BE PROTECTED FROM ANY DAMAGE.

THE PRICE BID FOR "ERECT DETOUR BRIDGE UNITS" SHALL INCLUDE THE COST OF PLACING THE SUPERSTRUCTURE ON THE COMPLETED ABUTMENTS AND PIERS. IT SHALL ALSO INCLUDE THE COST OF REMOVING THE SUPERSTRUCTURE, ABUTMENTS AND PIERS AFTER THE DETOUR BRIDGE IS NO LONGER NEEDED AT THIS SITE. ALL $\frac{7}{8}$" DIAMETER HIGH STRENGTH BOLTS NECESSARY TO BOLT UP THE SPLICES (SEE DETOUR BRIDGE CROSS SECTION) SHALL ALSO BE INCLUDED IN THE BID ITEM. IT SHOULD BE NOTED THAT MOST OF THE $\frac{7}{8}$" DIAMETER H.S. BOLTS REQUIRED FOR THE SUPERSTRUCTURE ARE STORED WITH THE SUPERSTRUCTURE UNITS. ABUTMENT PILES ARE TO BE REMOVED TO 1'-0 BELOW EXISTING GROUND LINE. PIER PILES ARE TO BE REMOVED TO 1'-0 BELOW NATURAL STREAM BOTTOM. THE STEEL PILING, BACKWALL LUMBER AND PIER BRACING PLANKS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE FURNISHING AND ERECTING THE GALVANIZED ANGLES AT THE TOP OF THE BACKWALLS. ALL STEEL FURNISHED UNDER THIS BID ITEM IS TO BE NEW MATERIAL AND SHALL REMAIN THE PROPERTY OF THE IOWA D.O.T.

THE BID ITEM "GALVANIZED HARDWARE" IS TO INCLUDE ALL BOLTS, NUTS AND WASHERS REQUIRED FOR ABUTMENT PILE CAPS, PIER PILE CAPS AND ABUTMENT BACKWALLS OF THE DETOUR BRIDGE.

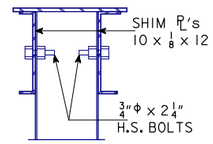
ALL LUMBER MAY BE UNTREATED. WIDTHS SHOWN ARE NOMINAL. ROUGH LUMBER MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE BACKWALL CONFIGURATION APPROXIMATELY AS SHOWN.

THE MASS OF SUPERSTRUCTURE UNITS IS 16,000 LBS. FOR INTERIOR UNIT AND 17,200 LBS. FOR EXTERIOR UNIT (19,000 LBS. WITH RAIL POST ASSEMBLY LEFT IN PLACE).

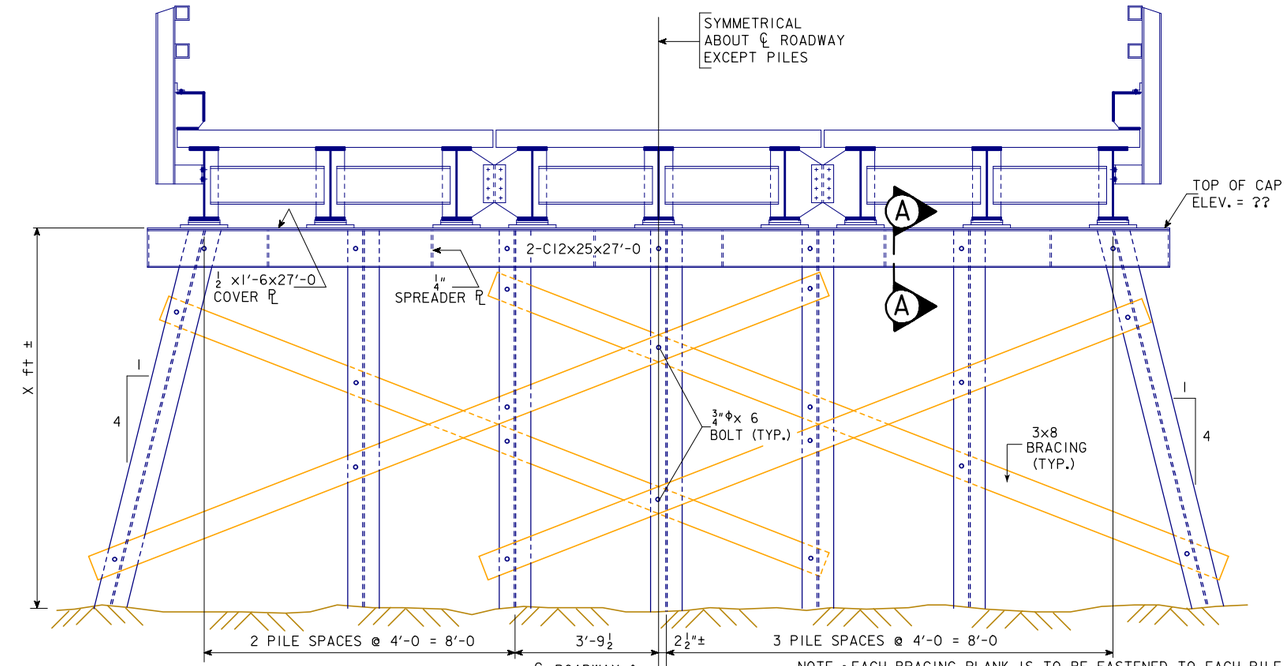
ALL BOLTS ARE TO HAVE SQUARE OR HEX. HEADS. ALL BOLTS ARE TO HAVE 5" MINIMUM THREADS, EXCEPT FOR THE $\frac{3}{4}$" DIAMETER x $2\frac{1}{4}$" H.S. BOLTS.

EXCAVATION REQUIRED FOR CONSTRUCTION OF DETOUR STRUCTURE IS TO BE CONSIDERED INCIDENTAL.

BENCH MARK :



SECTION A-A

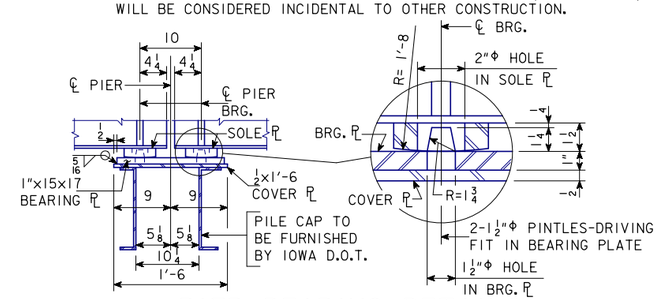


PIER SECTION

NOTE : EACH BRACING PLANK IS TO BE FASTENED TO EACH PILE WITH 1-$\frac{3}{4}$" DIA. x 6" BOLT WITH AN APPROVED WASHER UNDER EACH HEAD AND NUT BEARING ON WOOD. THE $\frac{3}{4}$" DIA. x 6" BOLT IS TO HAVE 3" THREAD LENGTH. ALL BRACING IS TO BE 3 x 8's. BRACING MAY BE OMITTED WHEN THE DISTANCE FROM TOP OF CAP TO GROUND IS LESS THAN ? FT. THE COST OF BRACING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

PILE DRIVING NOTE FOR DETOUR BRIDGE:

THE DESIGN BEARING FOR THE ABUTMENT AND PIER PILES IS 20 TONS.



PIER BEARING DETAILS

NOTE :
SUPERSTRUCTURE UNITS AND PIER CAPS ARE ALREADY FABRICATED. DETAILS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.

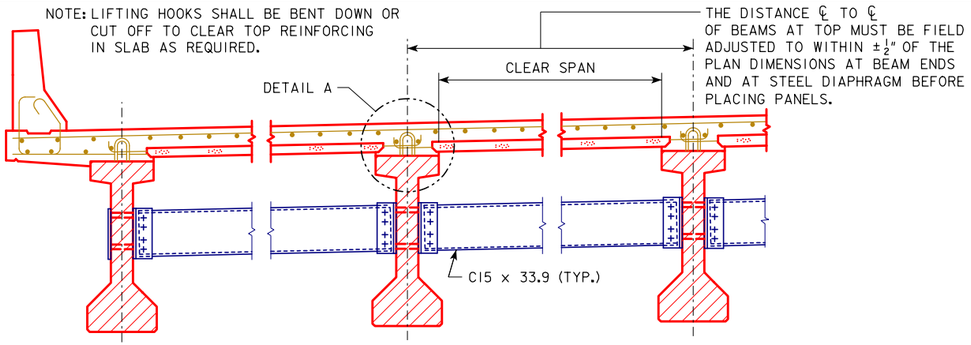
ESTIMATED QUANTITIES - DETOUR BRIDGE

ITEM		UNITS	QUANTITY
STRUCTURAL STEEL		LB	
UNTREATED LUMBER		MFBM	
GALVANIZED HARDWARE		LB	
HAUL DETOUR BRIDGE UNITS		LS	1.0
ERECT DETOUR BRIDGE UNITS		LS	1.0
PILES, STEEL BEARING, HP10x42	FURNISH ?@? FT.	LF	
	DRIVE ?@? FT.	LF	

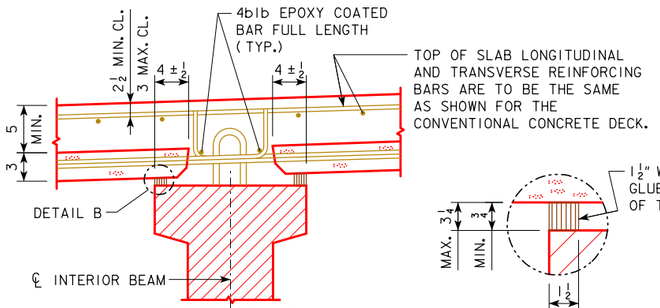
NOTE : ABOVE QUANTITIES ARE INCLUDED IN "TOTAL ESTIMATED BRIDGE QUANTITIES" ON DES. SHT. ?.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

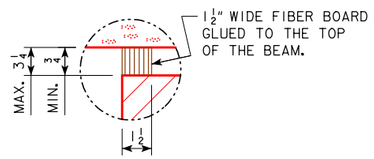
DESIGN TEAM	TEMPORARY DETOUR BRIDGE - MULTIPLE SPAN - STEEL PILES	STANDARD SHEET 1035E	COUNTY	PROJECT NUMBER	SHEET NUMBER



SECTION SHOWING INTERMEDIATE DIAPHRAGM

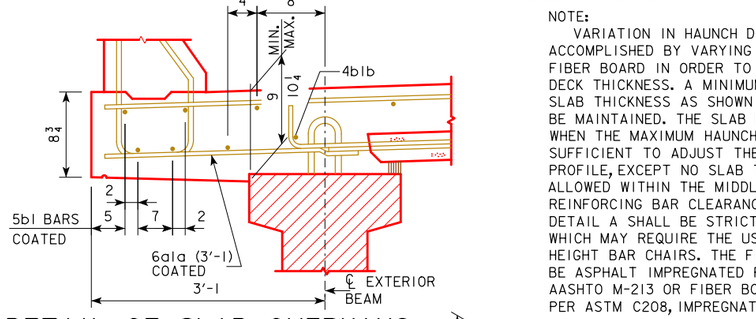


DETAIL A

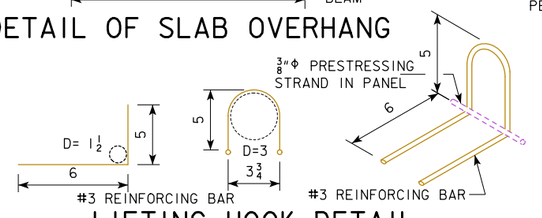


DETAIL B

NOTE:
VARIATION IN HAUNCH DIMENSION IS TO BE ACCOMPLISHED BY VARYING THE THICKNESS OF FIBER BOARD IN ORDER TO SECURE A UNIFORM DECK THICKNESS. A MINIMUM CAST-IN-PLACE SLAB THICKNESS AS SHOWN IN DETAIL A SHALL BE MAINTAINED. THE SLAB MAY BE THICKENED WHEN THE MAXIMUM HAUNCH SHOWN IS NOT SUFFICIENT TO ADJUST THE SLAB TO A SMOOTH PROFILE, EXCEPT NO SLAB THICKENING WILL BE ALLOWED WITHIN THE MIDDLE HALF OF A SPAN. REINFORCING BAR CLEARANCES AS SHOWN ON DETAIL A SHALL BE STRICTLY ADHERED TO, WHICH MAY REQUIRE THE USE OF VARIABLE HEIGHT BAR CHAIRS. THE FIBER BOARD SHALL BE ASPHALT IMPREGNATED FIBER BOARD AS PER AASHTO M-213 OR FIBER BOARD SHEATHING AS PER ASTM C208, IMPREGNATED WITH ASPHALT.

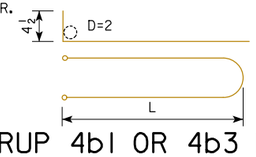


DETAIL OF SLAB OVERHANG



LIFTING HOOK DETAIL

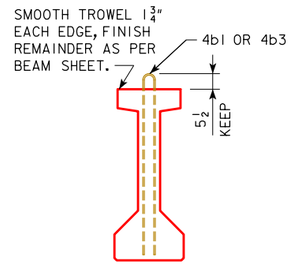
NOTE: ALTERNATE LIFTING HOOK MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER.

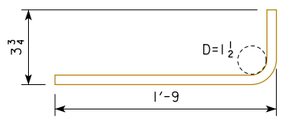


4b1 OR 4b3 DIMENSIONS	
BEAM DEPTH	L
2'-8	2'-11¾
3'-3	3'-6¾
3'-9	4'-0¾
4'-6	4'-9¾

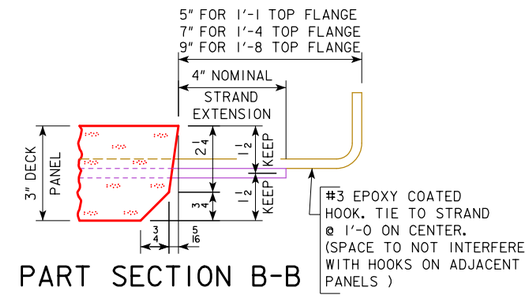
STIRRUP 4b1 OR 4b3 DETAILS

NOTE:
BEAM STIRRUP 4b1 OR 4b3 SHALL BE MODIFIED AS SHOWN WHEN DECK PANELS ARE USED.
D = PIN DIAMETER.
STIRRUP DIMENSIONS ARE OUT TO OUT.

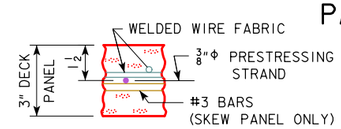




HOOKED #3

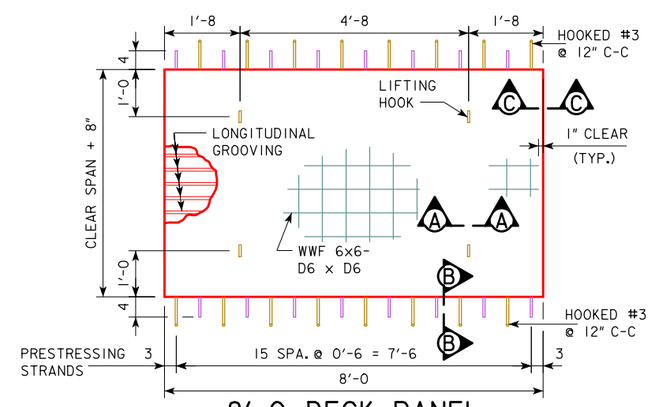


PART SECTION B-B



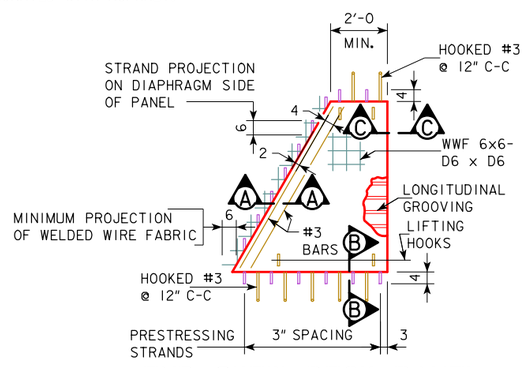
PART SECTION A-A

PART SECTION C-C



8'-0 DECK PANEL

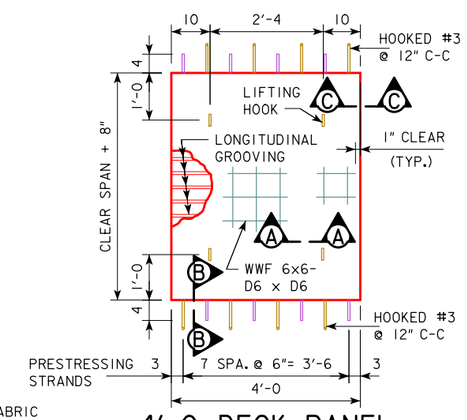
MAXIMUM CLEAR SPAN = 7'-0



END SKEW DECK PANEL

MAXIMUM CLEAR SPAN 7'-0

NOTE: FOR 0° SKEWS, NO MINIMUM PROJECTION OF WELDED WIRE FABRIC OVER DIAPHRAGMS ARE REQUIRED; MAINTAIN 1" CLEAR DISTANCE FROM ALL PANEL EDGES TO WELDED WIRE FABRIC.



4'-0 DECK PANEL

MAXIMUM CLEAR SPAN = 7'-0

GENERAL NOTES:

THE STAY-IN-PLACE DECK PANELS ARE DESIGNED TO SUPPORT THE DEAD LOAD OF THE PANEL, REINFORCEMENT, PLASTIC CAST-IN-PLACE CONCRETE AND 50 LBS. PER SQUARE FOOT OF CONSTRUCTION LOAD. THE PANEL AND CAST-IN-PLACE SLAB, ACTING AS A COMPOSITE SECTION IS DESIGNED FOR HS20-44 LOADING PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

SHOP DRAWINGS SHOWING LAYOUT AND CONSTRUCTION DETAILS OF THE DECK PANELS SHALL BE SUBMITTED FOR APPROVAL.

THE MAXIMUM ALLOWABLE DIMENSIONAL TOLERANCE FOR THE DECK PANELS SHALL BE AS FOLLOWS:

THICKNESS ..... + 3/16" OR -0"

LENGTH ..... ± ¼"

WIDTH ..... ± ⅛"

SQUARE ENDS (DEVIATION FROM SQUARE) ..... ± ⅜"

THE TOP SURFACE OF THE DECK PANELS SHALL BE GIVEN A SUITABLE TEXTURE WITH A WIRE BROOM OR COMB HAVING A SINGLE ROW OF TINES. THE DESIRED GROOVING IS LONGITUDINAL GROOVING (PARALLEL TO THE CENTERLINE OF BRIDGE ROADWAY) WHICH MAY VARY FROM 1/16 INCH WIDTH AT ½ INCH CENTERS TO 3/16 INCH WIDTH AT ¾ INCH CENTERS, AND THE GROOVE DEPTH SHOULD BE ⅛ INCH TO 3/16 INCH.

SANDBLASTING THE PLANK SURFACE IS NOT CONSIDERED NECESSARY, UNDER NORMAL CONDITIONS, BUT MAY BE REQUIRED TO REMOVE UNUSUAL SURFACE LAITANCE OR OTHER SURFACE CONTAMINANTS. PRIOR TO CONCRETE PLACEMENT, THE PLANK SURFACE AND BEAM TOP SHALL BE BLOWN FREE OF DUST AND DEBRIS WITH AN OIL FREE AIR BLAST. SPECIAL CARE MUST BE TAKEN TO REMOVE ALL DEBRIS FROM UNDER THE ENDS OF THE PLANK. THE PLANK SURFACE SHALL BE DRY AND DUST FREE WHEN CAST-IN-PLACE CONCRETE IS PLACED ON THE PLANK.

THE PRESTRESSING STRANDS SHALL BE ⅜" Φ GRADE 270 ASTM A416 LOW-RELAXATION STRANDS WITH AN INITIAL TENSION OF 16,100 LBS. PER STRAND (70% OF THE GUARANTEED ULTIMATE TENSILE STRENGTH.)

THE WELDED DEFORMED STEEL WIRE FABRIC SHALL BE ASTM A497.

#3 REINFORCING BARS SPACED AT 1'-0 CENTERS IN BOTH DIRECTIONS SHALL BE CONSIDERED AN ALLOWABLE SUBSTITUTION FOR THE WWF 6x6-D6 x D6. NO ADDITIONAL PAYMENT WILL BE PROVIDED.

THE PANEL CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 6000 PSI AND A MINIMUM RELEASE STRENGTH OF 4500 PSI.

THE DECK PANELS SHALL BE AT LEAST 28 DAYS OLD BEFORE THE CAST-IN-PLACE SLAB IS PLACED OR AS APPROVED BY ENGINEER.

WHEN DECK PANELS ARE USED IN CONSTRUCTION OF BRIDGE DECK, THE BOTTOM MAT OF SLAB REINFORCING BARS BETWEEN ALL BEAMS WILL BE REPLACED BY CONCRETE DECK PANELS. THE BOTTOM LONGITUDINAL REINFORCING BARS IN THE SLAB OVERHANG AND THE TOP MAT OF REINFORCING BARS FOR THE SLAB ARE TO REMAIN THE SAME AS SHOWN FOR THE CONVENTIONAL FULL-DEPTH CAST-IN-PLACE SLAB. THE 6a1a BOTTOM TRANSVERSE REINFORCING BARS IN THE SLAB OVERHANG SHALL BE USED IN LIEU OF THE 6a1 BOTTOM TRANSVERSE REINFORCING BARS. 6a1a BARS SHALL BE SPACED AND ORIENTED THE SAME AS 6a1 BARS.

ADDITIONAL EPOXY COATED LONGITUDINAL BARS 4b1b WILL ALSO BE REQUIRED FOR THE FULL LENGTH OF THE BRIDGE. THE LOCATION AND NUMBER OF THESE BARS IS SHOWN IN DETAIL A AND THE SLAB OVERHANG DETAIL.

SPECIFICATIONS:
DESIGN: AASHTO SERIES OF 1996.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT SERIES, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

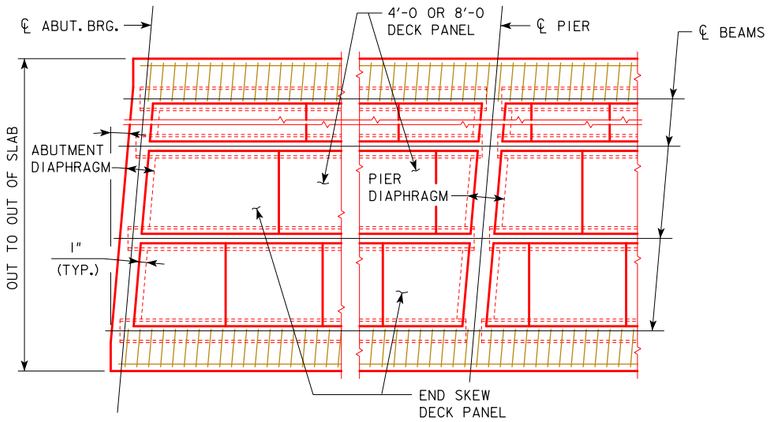
DESIGN STRESSES:
DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 9, f'c = 6,000 PSI.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, f's = 270,000 PSI.

PRECAST DECK PANEL DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

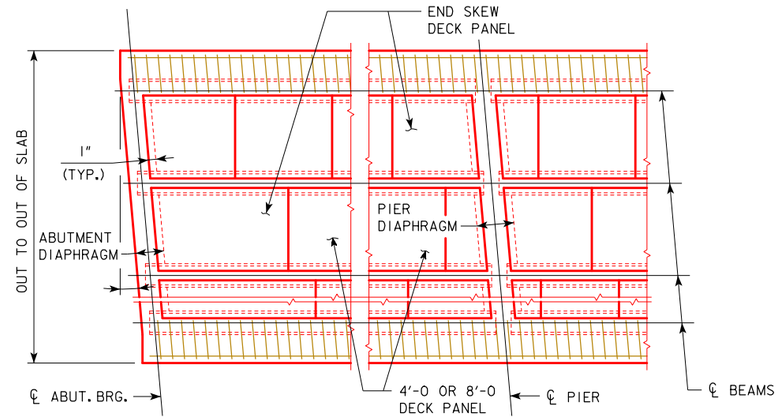
REVISED: 5-99 - MAXIMUM CLEAR SPAN AND STRAND EXTENSION CHANGED.
REVISED: 04-2018 - MOVED DIMENSION TEXT IN 8'-0 DECK PANEL DETAIL. IT WAS OVERLAPPED BY DIMENSION LINE.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1037 - THIS SHEET REDRAWN 12-27-89.



DECK PANEL LOCATION PART PLAN

(FOR L. A. SKEWS 0° TO 7°30')

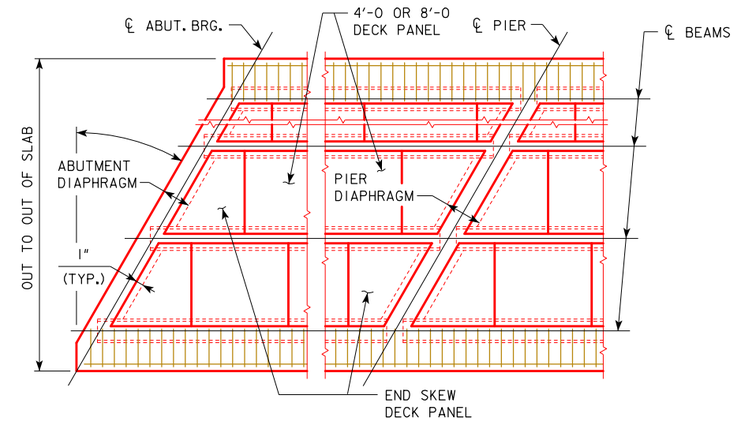
NOTE:
AREAS OUTSIDE OF PANEL SECTIONS ARE FULL DEPTH CAST-IN-PLACE SLAB AND DIAPHRAGMS. ALTERNATE DETAIL OF USING FULL DEPTH CAST-IN-PLACE SLAB AT THE SKEWED ENDS MAY BE SUBMITTED FOR APPROVAL.



DECK PANEL LOCATION PART PLAN

(FOR R. A. SKEWS 0° TO 7°30')

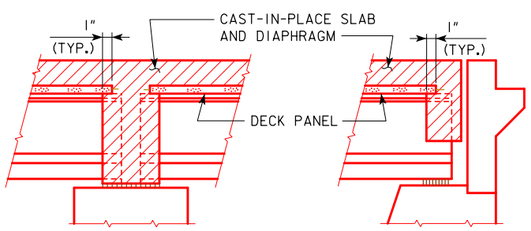
NOTE:
AREAS OUTSIDE OF PANEL SECTIONS ARE FULL DEPTH CAST-IN-PLACE SLAB AND DIAPHRAGMS. ALTERNATE DETAIL OF USING FULL DEPTH CAST-IN-PLACE SLAB AT THE SKEWED ENDS MAY BE SUBMITTED FOR APPROVAL.



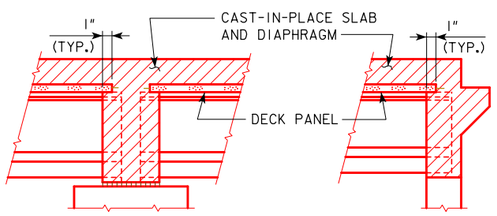
DECK PANEL LOCATION PART PLAN

(FOR L. A. SKEWS 7°31' TO 40°)

NOTE:
AREAS OUTSIDE OF PANEL SECTIONS ARE FULL DEPTH CAST-IN-PLACE SLAB AND DIAPHRAGMS. ALTERNATE DETAIL OF USING FULL DEPTH CAST-IN-PLACE SLAB AT THE SKEWED ENDS MAY BE SUBMITTED FOR APPROVAL.



PIER DIAPHRAGM STUB ABUT. DIAPH.



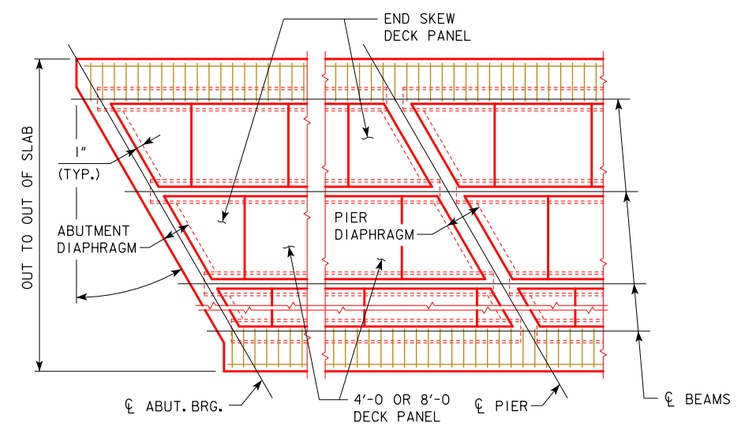
PIER DIAPHRAGM INTEGRAL ABUT. DIAPH.

IF THE PRECAST PRESTRESSED CONCRETE DECK PANELS ARE TO BE USED IN THE CONSTRUCTION OF THE BRIDGE DECK IN LIEU OF THE CONVENTIONAL CAST-IN-PLACE DECK, THE FOLLOWING ADJUSTMENTS TO THE SUPERSTRUCTURE EPOXY COATED REINFORCING STEEL SHALL BE MADE.

ADJUSTMENTS TO EPOXY COATED REINFORCING STEEL

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
DELETE	6a1	SLAB TRANSV. BOTT.	—			
	5b1	SLAB LONGIT. BOTT.	—			
ADD	6a1a	SLAB TRANSV. BOTT.	—		3'-1	
	4b1b	SLAB LONGIT. BOTT.	—			
REINFORCING STEEL EPOXY COATED - REDUCTION (LBS.)						

PUT ON SUPERSTRUCTURE BAR LIST SHEET.



DECK PANEL LOCATION PART PLAN

(FOR R. A. SKEWS 7°31' TO 40°)

NOTE:
AREAS OUTSIDE OF PANEL SECTIONS ARE FULL DEPTH CAST-IN-PLACE SLAB AND DIAPHRAGMS. ALTERNATE DETAIL OF USING FULL DEPTH CAST-IN-PLACE SLAB AT THE SKEWED ENDS MAY BE SUBMITTED FOR APPROVAL.

NOTE:
IF THE PRECAST PRESTRESSED CONCRETE DECK PANELS ARE TO BE USED IN CONSTRUCTION OF THE BRIDGE DECK IN LIEU OF THE CONVENTIONAL CAST-IN-PLACE DECK, THE 4b1 OR 4b3 STIRRUPS SHOWN ON THIS SHEET SHALL BE MODIFIED AS SHOWN ON DESIGN SHEET

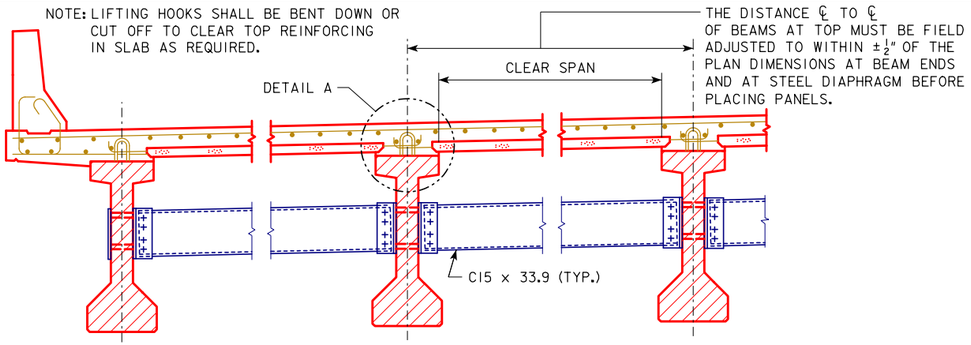
PUT ON BEAM SHEET.

PRECAST DECK PANEL DETAILS

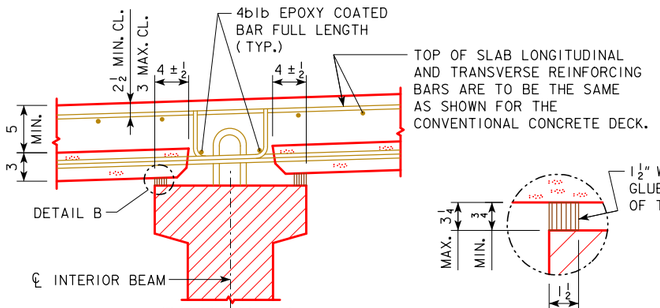
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

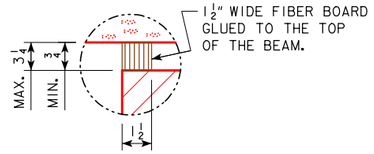
REVISED: 5-99 - REINFORCING BAR LIST CHANGED.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1037A - THIS SHEET REDRAWN 12-27-89.



SECTION SHOWING INTERMEDIATE DIAPHRAGM

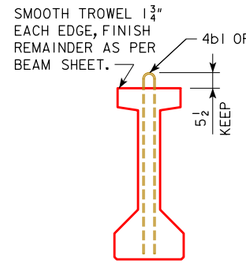


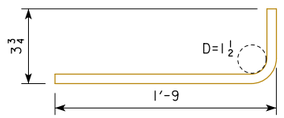
DETAIL A



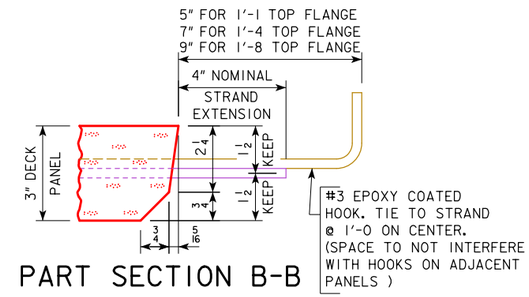
DETAIL B

NOTE:
VARIATION IN HAUNCH DIMENSION IS TO BE ACCOMPLISHED BY VARYING THE THICKNESS OF FIBER BOARD IN ORDER TO SECURE A UNIFORM DECK THICKNESS. A MINIMUM CAST-IN-PLACE SLAB THICKNESS AS SHOWN IN DETAIL A SHALL BE MAINTAINED. THE SLAB MAY BE THICKENED WHEN THE MAXIMUM HAUNCH SHOWN IS NOT SUFFICIENT TO ADJUST THE SLAB TO A SMOOTH PROFILE, EXCEPT NO SLAB THICKENING WILL BE ALLOWED WITHIN THE MIDDLE HALF OF A SPAN. REINFORCING BAR CLEARANCES AS SHOWN ON DETAIL A SHALL BE STRICTLY ADHERED TO, WHICH MAY REQUIRE THE USE OF VARIABLE HEIGHT BAR CHAIRS. THE FIBER BOARD SHALL BE ASPHALT IMPREGNATED FIBER BOARD AS PER AASHTO M-213 OR FIBER BOARD SHEATHING AS PER ASTM C208, IMPREGNATED WITH ASPHALT.

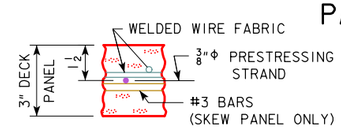




HOOKED #3

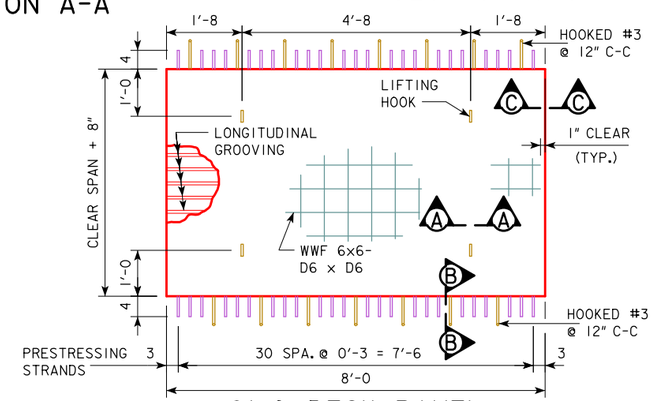


PART SECTION B-B



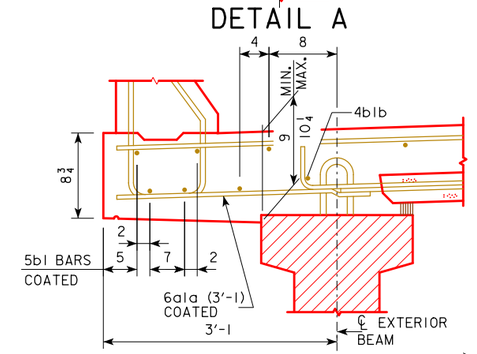
PART SECTION A-A

PART SECTION C-C

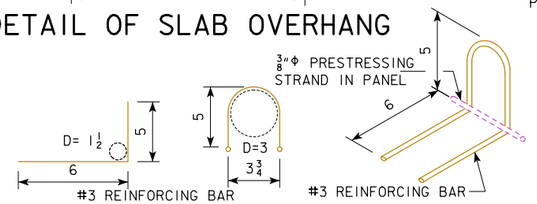


8'-0 DECK PANEL

(MINIMUM CLEAR SPAN > 7'-0)
(MAXIMUM CLEAR SPAN = 10'-0)

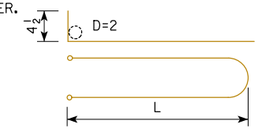


DETAIL OF SLAB OVERHANG



LIFTING HOOK DETAIL

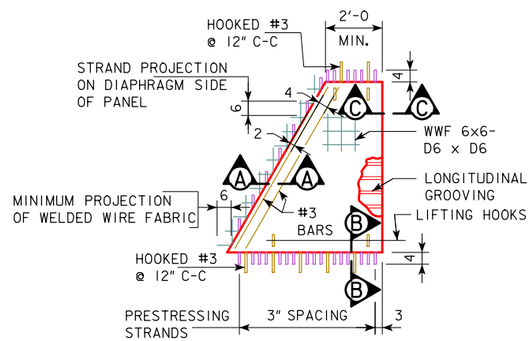
NOTE: ALTERNATE LIFTING HOOK MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER.



4b1 OR 4b3 DIMENSIONS	
BEAM DEPTH	L
2'-8	2'-11¾
3'-3	3'-6¾
3'-9	4'-0¾
4'-6	4'-9¾

STIRRUP 4b1 OR 4b3 DETAILS

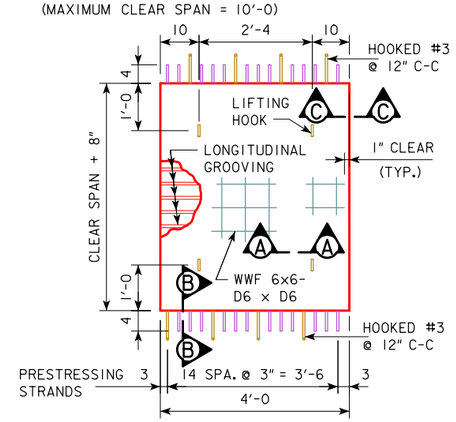
NOTE:
BEAM STIRRUP 4b1 OR 4b3 SHALL BE MODIFIED AS SHOWN WHEN DECK PANELS ARE USED.
D = PIN DIAMETER.
STIRRUP DIMENSIONS ARE OUT TO OUT.



END SKEW DECK PANEL

(MINIMUM CLEAR SPAN 7'-0)
(MAXIMUM CLEAR SPAN 10'-0)

NOTE: FOR 0° SKEWS, NO MINIMUM PROJECTION OF WELDED WIRE FABRIC OVER DIAPHRAGMS ARE REQUIRED; MAINTAIN 1" CLEAR DISTANCE FROM ALL PANEL EDGES TO WELDED WIRE FABRIC.



4'-0 DECK PANEL

(MINIMUM CLEAR SPAN 7'-0)
(MAXIMUM CLEAR SPAN 10'-0)

GENERAL NOTES:

THE STAY-IN-PLACE DECK PANELS ARE DESIGNED TO SUPPORT THE DEAD LOAD OF THE PANEL, REINFORCEMENT, PLASTIC CAST-IN-PLACE CONCRETE AND 50 LBS. PER SQUARE FOOT OF CONSTRUCTION LOAD. THE PANEL AND CAST-IN-PLACE SLAB, ACTING AS A COMPOSITE SECTION IS DESIGNED FOR HS20-44 LOADING PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

SHOP DRAWINGS SHOWING LAYOUT AND CONSTRUCTION DETAILS OF THE DECK PANELS SHALL BE SUBMITTED FOR APPROVAL.

THE MAXIMUM ALLOWABLE DIMENSIONAL TOLERANCE FOR THE DECK PANELS SHALL BE AS FOLLOWS:

THICKNESS ..... + 3/16" OR -0"
LENGTH ..... ± ¼"
WIDTH ..... ± ⅛"
SQUARE ENDS (DEVIATION FROM SQUARE) ..... ± ⅜"

THE TOP SURFACE OF THE DECK PANELS SHALL BE GIVEN A SUITABLE TEXTURE WITH A WIRE BROOM OR COMB HAVING A SINGLE ROW OF TINES. THE DESIRED GROOVING IS LONGITUDINAL GROOVING (PARALLEL TO THE CENTERLINE OF BRIDGE ROADWAY) WHICH MAY VARY FROM 1/16 INCH WIDTH AT ½ INCH CENTERS TO 3/16 INCH WIDTH AT ¾ INCH CENTERS, AND THE GROOVE DEPTH SHOULD BE ⅛ INCH TO 3/16 INCH.

SANDBLASTING THE PLANK SURFACE IS NOT CONSIDERED NECESSARY, UNDER NORMAL CONDITIONS, BUT MAY BE REQUIRED TO REMOVE UNUSUAL SURFACE LAITANCE OR OTHER SURFACE CONTAMINANTS. PRIOR TO CONCRETE PLACEMENT, THE PLANK SURFACE AND BEAM TOP SHALL BE BLOWN FREE OF DUST AND DEBRIS WITH AN OIL FREE AIR BLAST. SPECIAL CARE MUST BE TAKEN TO REMOVE ALL DEBRIS FROM UNDER THE ENDS OF THE PLANK. THE PLANK SURFACE SHALL BE DRY AND DUST FREE WHEN CAST-IN-PLACE CONCRETE IS PLACED ON THE PLANK.

THE PRESTRESSING STRANDS SHALL BE ⅜" Φ GRADE 270 ASTM A416 LOW-RELAXATION STRANDS WITH AN INITIAL TENSION OF 16,100 LBS. PER STRAND (70% OF THE GUARANTEED ULTIMATE TENSILE STRENGTH.)

THE WELDED DEFORMED STEEL WIRE FABRIC SHALL BE ASTM A497.

#3 REINFORCING BARS SPACED AT 1'-0 CENTERS IN BOTH DIRECTIONS SHALL BE CONSIDERED AN ALLOWABLE SUBSTITUTION FOR THE WWF 6x6-D6 x D6. NO ADDITIONAL PAYMENT WILL BE PROVIDED.

THE PANEL CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 6000 PSI AND A MINIMUM RELEASE STRENGTH OF 4500 PSI.

THE DECK PANELS SHALL BE AT LEAST 28 DAYS OLD BEFORE THE CAST-IN-PLACE SLAB IS PLACED OR AS APPROVED BY ENGINEER.

WHEN DECK PANELS ARE USED IN CONSTRUCTION OF BRIDGE DECK, THE BOTTOM MAT OF SLAB REINFORCING BARS BETWEEN ALL BEAMS WILL BE REPLACED BY CONCRETE DECK PANELS. THE BOTTOM LONGITUDINAL REINFORCING BARS IN THE SLAB OVERHANG AND THE TOP MAT OF REINFORCING BARS FOR THE SLAB ARE TO REMAIN THE SAME AS SHOWN FOR THE CONVENTIONAL FULL-DEPTH CAST-IN-PLACE SLAB. THE 6a1a BOTTOM TRANSVERSE REINFORCING BARS IN THE SLAB OVERHANG SHALL BE USED IN LIEU OF THE 6a1 BOTTOM TRANSVERSE REINFORCING BARS. 6a1a BARS SHALL BE SPACED AND ORIENTED THE SAME AS 6a1 BARS.

ADDITIONAL EPOXY COATED LONGITUDINAL BARS 4b1b WILL ALSO BE REQUIRED FOR THE FULL LENGTH OF THE BRIDGE. THE LOCATION AND NUMBER OF THESE BARS IS SHOWN IN DETAIL A AND THE SLAB OVERHANG DETAIL.

SPECIFICATIONS:
DESIGN: AASHTO SERIES OF 1996.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT SERIES, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:
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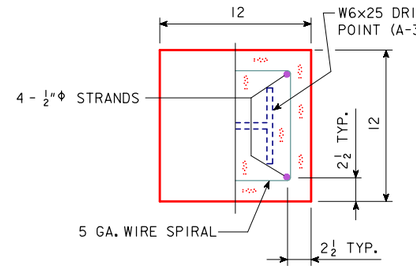
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 9, f'c = 6,000 PSI.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, f's = 270,000 PSI.

PRECAST DECK PANEL DETAILS

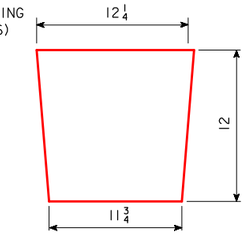
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	PRECAST PRESTRESSED CONCRETE DECK PANEL MIN. CL. SPAN = 7'-0 - MAX. CL. SPAN = 10'-0	STANDARD SHEET 1037B	COUNTY	PROJECT NUMBER	SHEET NUMBER

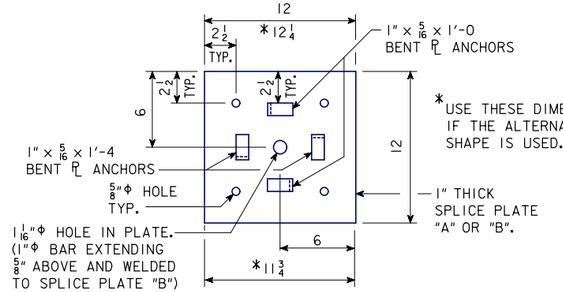
REVISED 04-2018 - CORRECTED DETAIL B CALL-OUT CIRCLE LOCATION. MOVED DIMENSION TEXT IN 8'-0 DECK PANEL DETAIL. IT WAS OVERLAPPED BY DIMENSION LINE.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1037B - THIS SHEET REDRAWN 5-99.



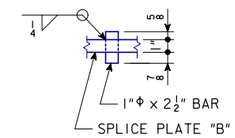
TOP OF PILE
(SPLICE PLATE NOT SHOWN)



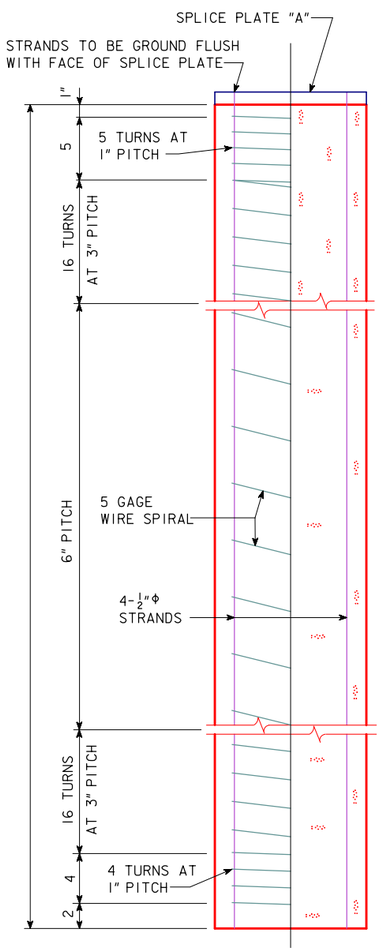
ALTERNATE PILE SHAPE



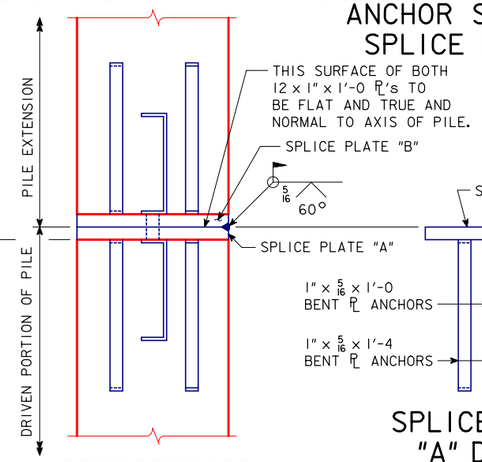
ANCHOR SIDE OF SPLICE PLATE



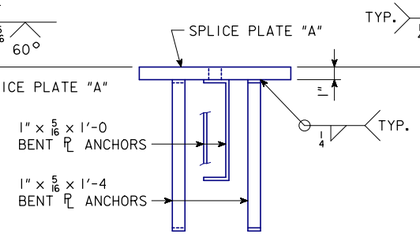
1"Φ BAR DETAIL



PRESTRESSED CONCRETE FOUNDATION PILE

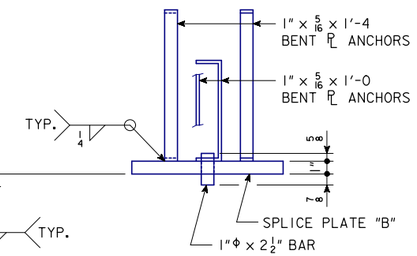


PRESTRESSED CONCRETE FOUNDATION PILE SPLICE DETAIL



SPLICE PLATE "A" DETAIL

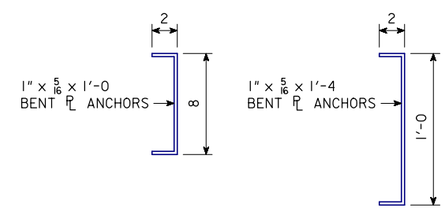
WEIGHT OF SPLICE PLATE "A" = 45.1 LBS.



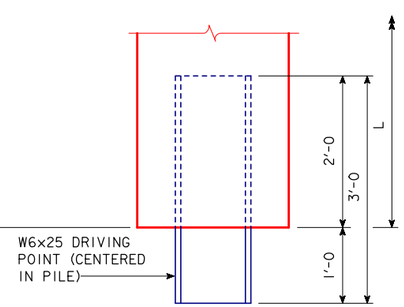
SPLICE PLATE "B" DETAIL

WEIGHT OF SPLICE PLATE "B" = 45.6 LBS.

NOTE:
SPLICE PLATE "A" AND "B" ARE THE SAME EXCEPT FOR 1"Φ x 2 1/2" BAR WELDED IN CENTER HOLE OF SPLICE PLATE "B".



ANCHOR DETAILS



STEEL DRIVING POINTS

WEIGHT OF DRIVING POINT = 75 LBS.
(USE ONLY IF SPECIFIED ON PLANS)

GENERAL NOTES:

THE 12" PRESTRESSED CONCRETE FOUNDATION PILE SHALL BE USED IN PIER FOOTINGS AND STUB ABUTMENT FOOTINGS ONLY.

EXCEPT AS NOTED ELSEWHERE, MATERIAL, CONSTRUCTION, DRIVING, AND EXTENSIONS SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS OF THE IOWA D.O.T. - AND CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS WHEN APPLICABLE.

BEARING VALUE SHOWN IS FOR FRICTION TYPE BEARING. BEARING VALUE SHALL BE AS SPECIFIED ON THE PLANS.

DRIVING POINT, IF CALLED FOR ON THE PLANS, SHALL BE AS DETAILED. COST OF ALL DRIVING POINTS IS TO BE INCLUDED IN THE PRICE BID PER LINEAL FOOT FOR PILING.

THE SPLICING OF THE PILES SHALL BE IN ACCORDANCE WITH ARTICLE 2501.03, P, OF THE STANDARD SPECIFICATIONS.

ALL PILES, EXCEPT PILE EXTENSIONS IF REQUIRED, SHALL HAVE SPLICE PLATE "A" INSTALLED ON TOP END OF PILE TO FACILITATE SPLICING OF PILES AS NECESSARY.

HEADS OF PRESTRESSED PILES SHALL BE NORMAL TO AXIS OF PILE.

ALL PRESTRESSING STRANDS ARE TO BE 1/2" Φ 270K GRADE. THE TOTAL INITIAL PRESTRESSING FORCE IS TO BE 118 KIPS FOR NORMAL CURING OR 122 KIPS FOR ARTIFICIAL CURING.

WIRE SPIRAL SHALL CONFORM TO ASTM A82.

PILE SPLICE NOTES:

ALL PILES ARE REQUIRED TO HAVE A PILE SPLICE PLATE "A" INSTALLED IN THE UPPER END OF THE PILE TO FACILITATE PILE EXTENSION IN THE EVENT THE PLAN LENGTH PILES ARE NOT ADEQUATE. PILE SPLICERS SHALL BE AS DETAILED ON THIS SHEET.

THE MAXIMUM LENGTH (L) OF AN INDIVIDUAL SECTION OF PILE SHALL BE 55 FEET. WHEN PILES LONGER THAN 55 FEET ARE REQUIRED ON THE PLANS, PILE SPLICERS SHALL BE USED TO FASTEN PILE SECTIONS TOGETHER TO PROVIDE THE REQUIRED PLAN LENGTH. ONE PILE SPLICE ONLY WILL BE ALLOWED IN THE PLAN LENGTH OF PILES 56 TO 110 FEET. PILE SECTIONS SHALL BE WELDED TOGETHER AT SPLICES AFTER FIRST SECTION OF PILE IS DRIVEN.

COST OF STRUCTURAL STEEL REQUIRED FOR SPLICE PLATES SHALL BE CONSIDERED INCIDENTAL TO PRICE BID FOR PRESTRESSED CONCRETE PILING - 12 INCH.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 7th EDITION, SERIES OF 2014.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT SERIES, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 7th EDITION, SERIES OF 2014.
CONCRETE IN ACCORDANCE WITH SECTION 5, f'c = 5,000 PSI.
PRESTRESSING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f's = 270,000 PSI.
STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36.

NOTE:
THE TOP PORTIONS OF THE PRESTRESSED CONCRETE FOUNDATION PILES THAT ARE TO BE ENCASED IN CONCRETE SHALL BE ROUGHENED, AFTER PILES HAVE BEEN DRIVEN, BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE PILE AND FOOTING IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS. COST OF THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE PILING - 12 INCH.

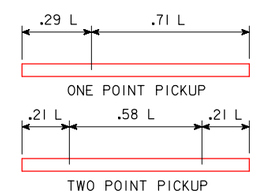
12" PRESTR. CONC. FOUNDATION PILE MATERIAL COMPONENTS

ITEM	UNIT	L=40'	ONE FOOT INCREMENT
CONCRETE	CU. YDS.	1.48	0.037
5 GAGE WIRE SPIRAL	LBS.	32	0.62
PRESTRESSING STEEL	LBS.	84	2.08

APPROVED BY: _____
BRIDGE ENGINEER

PILE DATA

MAX. LENGTH 1 PT. PICK-UP	FT.	40
MAX. LENGTH 2 PT. PICK-UP	FT.	55
f'c (PSI)		5000
NOMINAL RESISTANCE	Pn KIPS	200



PILE HANDLING DIAGRAM

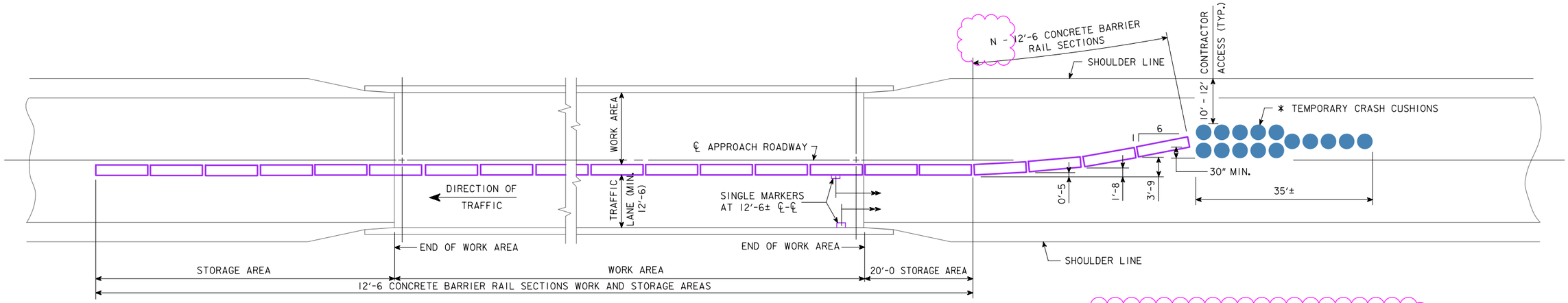
LATEST REVISION DATE: 10-2016

12" PRESTR. CONC. FOUNDATION PILES

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 10-2016 - UPDATED SPECIFICATIONS DESIGN: AASHTO LRFD 7th ED. SERIES OF 2014 (WAS SERIES OF 2014 (WAS SERIES OF 1992). CHANGED DESIGN STRESSES (WAS AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1992. CONCRETE IN ACCORDANCE WITH SECTION 9, f'c = 5,000 PSI. PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, f's = 270,000 PSI. STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10. ASTM A36). ADDED PILE DATA "NOMINAL RESISTANCE" (WAS MAX. BEARING VALUE 50T). CHANGED PRESTRESSING FORCE IS TO 118 (WAS 116) KIPS FOR NORMAL CURING.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1046 - THIS SHEET REDRAWN 11-29-90.

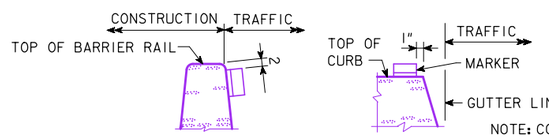
DESIGN TEAM	12" PRESTRESSED CONCRETE FOUNDATION PILE	STANDARD SHEET 1046	COUNTY	PROJECT NUMBER	SHEET NUMBER



TEMPORARY CONCRETE BARRIER RAIL LAYOUT FOR ONE WAY TRAFFIC

N = NUMBER OF 12'-6 TBR SECTIONS BASED ON TRAFFIC LANE AND BRIDGE WIDTH. DESIGNER TO DETERMINE NUMBER OF SECTIONS.

REMOVE CLOUDED AREAS



MARKER DETAILS

NOTE: COLOR OF MARKER SHALL BE APPROPRIATE FOR EDGE LINE.

CONCRETE TEMPORARY BARRIER RAIL NOTES:

CONCRETE TEMPORARY BARRIER RAIL SHALL BE CONSTRUCTED AS DETAILED AND NOTED ON THE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE).

REFER TO OTHER DETAILS, NOTES, AND QUANTITY ITEMS ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.

NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME.

ANCHORS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF WHEN ANCHORS ARE REQUIRED, SEE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE) FOR DETAILS. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING THE TEMPORARY BARRIER RAIL.

* NOTE:

SEE STANDARD ROAD PLAN BA-500 FOR TEMPORARY CRASH CUSHIONS SAND BARREL.

COST OF TEMPORARY CRASH CUSHIONS TO BE INCLUDED WITH ROADWAY BID ITEMS.

ESTIMATED QUANTITIES

ITEM	AMOUNT
TEMPORARY BARRIER RAIL, CONCRETE	LF

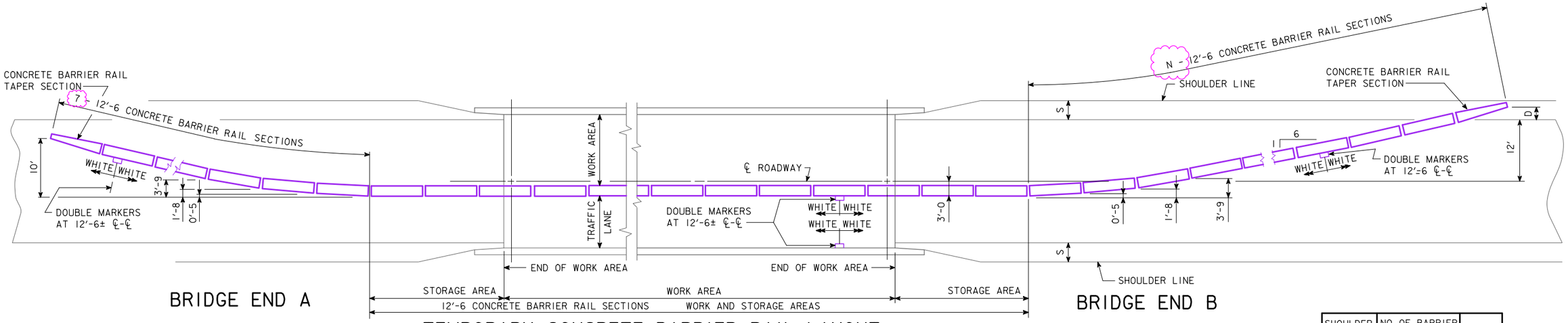
ITEM REFERENCE:
ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 12'-6 LONG CONCRETE UNITS.

F-SHAPE TEMP. BARR. RAIL-CONC.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 02-14 - CHANGED THE TBR TO THE TEMPORARY STRUCTURES LEVEL.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1035 - THIS SHEET REDRAWN 9-97.

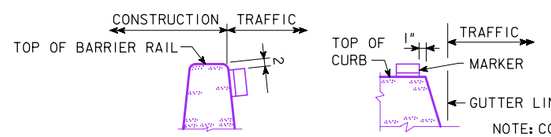


TEMPORARY CONCRETE BARRIER RAIL LAYOUT FOR TWO WAY TRAFFIC

NOTE: THE LAYOUT SHOWN IS FOR ONE STAGE OF CONSTRUCTION AND WOULD BE THE SAME FOR THE OTHER STAGE BY ROTATING 180°.

SHOULDER WIDTH (S)	NO. OF BARRIER RAIL SECT. (N)	D
4 FT.	11	4 FT.
6 FT.	12	5.5 FT.
8 FT.	12	7 FT.
10 FT.	13	9 FT.

SHOULDER WIDTH AT THIS BRIDGE SITE IS ____ FEET, THEREFORE ____ CONCRETE BARRIER RAIL SECTIONS ARE REQUIRED FOR BRIDGE END "B".



MARKER DETAILS

NOTE: COLOR OF MARKER SHALL BE APPROPRIATE FOR EDGE LINE.

CONCRETE TAPERED SECTIONS CAN ONLY BE USED IN URBAN CONDITIONS WITH LESS THAN 35 mph POSTED SPEED LIMIT

REMOVE CLOUDED AREAS

CONCRETE TEMPORARY BARRIER RAIL NOTES:

CONCRETE TEMPORARY BARRIER RAIL SHALL BE CONSTRUCTED AS DETAILED AND NOTED ON THE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE).

REFER TO OTHER DETAILS, NOTES, AND QUANTITY ITEMS ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.

NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME.

ANCHORS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF. WHEN ANCHORS ARE REQUIRED, SEE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE) FOR DETAILS. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING THE TEMPORARY BARRIER RAIL.

ESTIMATED QUANTITIES

ITEM	AMOUNT
TEMPORARY BARRIER RAIL, CONCRETE	L.F.

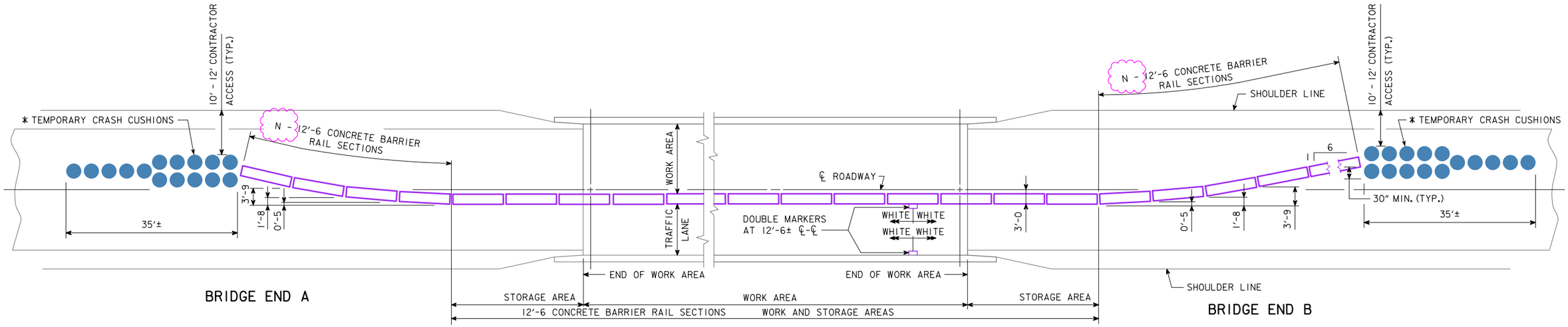
ITEM REFERENCE:
ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 12'-6 LONG CONCRETE UNITS.

F-SHAPE TEMP. BARR. RAIL-CONC.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 02-14 - CHANGED THE TBR TO THE TEMPORARY STRUCTURES LEVEL.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1050 - THIS SHEET REDRAWN 9-97.

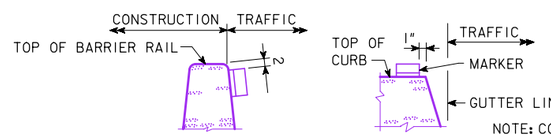


TEMPORARY CONCRETE BARRIER RAIL LAYOUT FOR TWO WAY TRAFFIC

* NOTE:

SEE STANDARD ROAD PLAN BA-500 FOR TEMPORARY CRASH CUSHIONS SAND BARREL.

COST OF TEMPORARY CRASH CUSHIONS TO BE INCLUDED WITH ROADWAY BID ITEMS.



MARKER DETAILS

NOTE: COLOR OF MARKER SHALL BE APPROPRIATE FOR EDGE LINE.

N = NUMBER OF 12'-6 TBR SECTIONS BASED ON TRAFFIC LANE AND BRIDGE WIDTH. DESIGNER TO DETERMINE NUMBER OF SECTIONS.

REMOVE CLOUDED AREAS

CONCRETE TEMPORARY BARRIER RAIL NOTES:

CONCRETE TEMPORARY BARRIER RAIL SHALL BE CONSTRUCTED AS DETAILED AND NOTED ON THE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE).

REFER TO OTHER DETAILS, NOTES, AND QUANTITY ITEMS ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.

NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME.

ANCHORS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF WHEN ANCHORS ARE REQUIRED, SEE STANDARD ROAD PLANS BA-401 FOR TEMPORARY BARRIER RAIL (PRECAST CONCRETE) FOR DETAILS. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING THE TEMPORARY BARRIER RAIL.

ESTIMATED QUANTITIES

ITEM	AMOUNT
TEMPORARY BARRIER RAIL, CONCRETE	LF

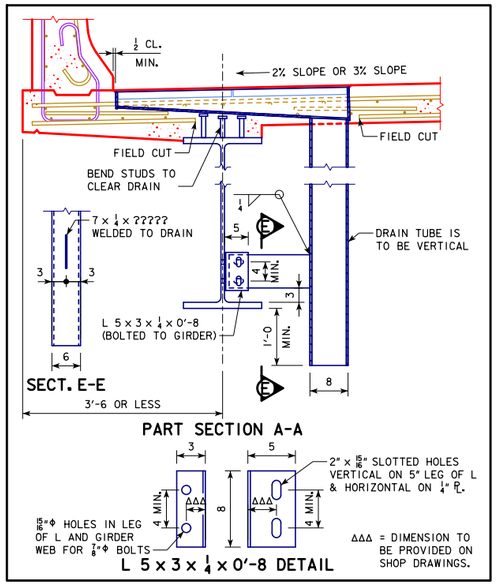
ITEM REFERENCE:
ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 12'-6 LONG CONCRETE UNITS.

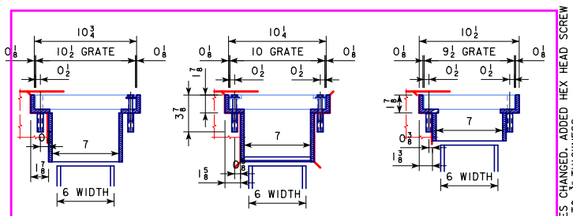
F-SHAPE TEMP. BARR. RAIL-CONC.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

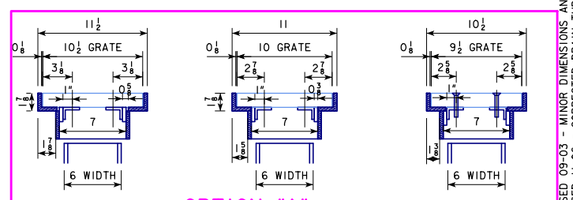
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 02-14 - CHANGED THE TBR TO THE TEMPORARY STRUCTURES LEVEL.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1050A - THIS SHEET ISSUED 11-06.





OPTION "B"
Details for reference.

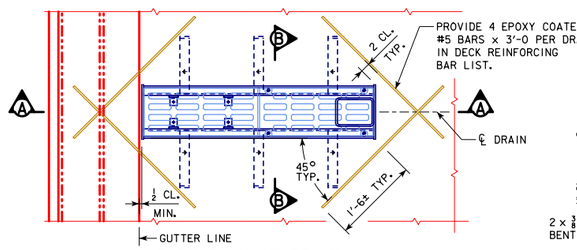


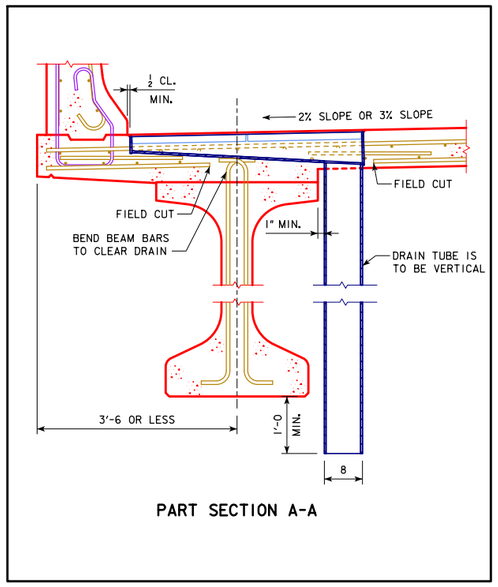
OPTION "A"
Details for reference.

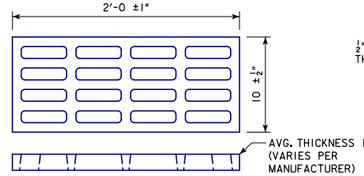
REVISED 09-03 - MINOR DIMENSIONS AND PLATE SIZES CHANGED, ADDED HEX HEAD SCREW DETAIL. ADDITIONAL BEAM SHAPES OUTSIDE OF SHEET.
REVISED 11-06 - CORRECTED DRAIN TUBE THICKNESS TO 3/8" THICKNESS.
REVISED 07-11 - CHANGED THE TRENCH GRATE AASHTO LOADING FROM HS20 TO HL-93, CHANGED DRAIN TUBE FROM STRUCTURAL TUBE TO ROUND TUBE WITH SQUARE TUBE OPTION. GRATE HOLD DOWN BOLTS CHANGED TO 3/8" SIZE.
REVISED 09-15 - CHANGED THE FIELD CUT BELOW THE GIRDER WEB TO 2" CLEARANCE.
REVISED 07-13 - THE STAINLESS STEEL 3/8"Ø CAP SCREWS AND HEX HEAD BOLT WERE CHANGED TO MECHANICALLY GALANIZED.
REVISED 10-2016 - ADDED 1/4" FILLET WELD CALLOUT TO DRAIN TUBE IN "PART SECTION A-A" STEEL BEAM DETAIL.

REVISED 06-2017 - SHEET IS REDRAWN TO ACCOMODATE THE USE OF A 6" x 8" x 3/8" DRAIN TUBE. (WAS 8" DIA. x 3/8" STRUCTURAL DRAIN TUBE MAY BE SUBSTITUTED WITH A 8" x 8" x 3/8" STRUCTURAL TUBE).
REVISED 04-2018 - ADDED ADDITIONAL WELD SYMBOL ARROWS TO DRAIN TRENCH DETAILS IN PART SECTIONS B-B.
REVISED 07-2019: UPDATED WELD SYMBOLS ON DRAIN TRENCH DETAILS IN PART "SECTION B-B & C-C" AND "PLAN VIEW OF DRAIN TRENCH" FOR CLARITY, ADDED "SEAL WELD AROUND TUBE" IN SECTION C-C.
ADDED "ΔΔΔ = DIMENSION TO BE PROVIDED ON SHOP DRAWINGS" TO DOWN SPOUT BRACKET ON STEEL GIRDER DETAIL. CHANGED ALL REFERENCES OF "SLAB" TO "DECK".

ENGLISHMISCELLANEOUSBRIDGES.DGN 1054 - THIS SHEET REDRAWN 11-00.

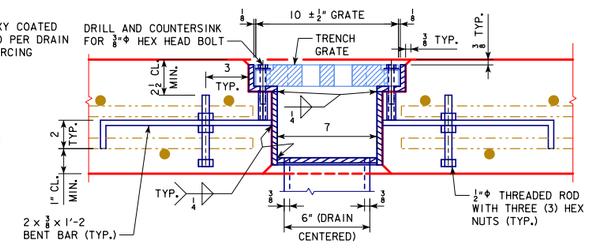




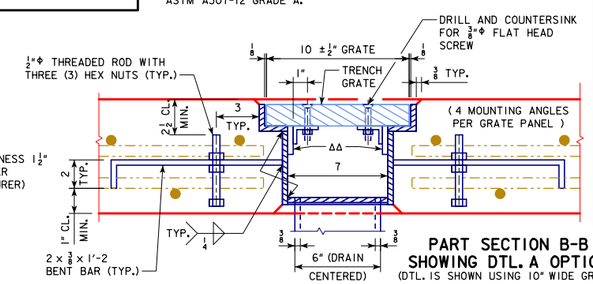


DRAIN TRENCH GRATE DETAILS
(2 GRATES REQUIRED PER DRAIN)

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.



PART SECTION B-B - SHOWING DTL. B OPTION
(DETAIL IS SHOWN USING 10" WIDE GRATE)



PART SECTION B-B
SHOWING DTL. A OPTION
(DTL. IS SHOWN USING 10" WIDE GRATE)

DRAIN NOTES

THE DRAINS SHALL BE 3/8 INCH THICK STEEL. THE DRAIN ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION. THE BID ITEM "DECK DRAIN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

THE DRAIN TRENCH GRATES SHALL BE FERROUS CASTINGS. METAL USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM A48-83 CLASS 35B OR BETTER GRAY IRON CASTINGS IN ACCORDANCE WITH CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS. FINISH OF CASTINGS SHALL BE SMOOTH AND FREE OF DEFECTS. TRENCH GRATES SHALL BE CAPABLE OF CARRYING AASHTO HL-93 LOADING. GALVANIZING OF THE TRENCH GRATES IS NOT REQUIRED.

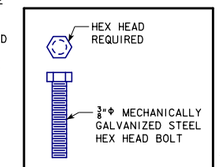
DRAINS SHALL BE CENTERED OVER THE NEAREST BOTTOM TRANSVERSE DECK REINFORCING BAR FROM THE LOCATION DESIGNATED ON THE SITUATION PLAN. THE BOTTOM TRANSVERSE DECK REINFORCING BAR SHALL BE CUT OFF TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. THE TOP TRANSVERSE DECK REINFORCING BARS ON EACH SIDE OF THE DRAIN, SHALL BE SPACED AS NECESSARY TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL DECK REINFORCING BARS THAT CONFLICT WITH THE DRAIN SHALL BE CUT OFF TO PROVIDE 2 INCH CLEARANCE FROM THE DRAIN. ALL CUT ENDS OF BARS SHALL BE COATED WITH EPOXY PATCHING MATERIAL SUPPLIED BY THE MANUFACTURER OF THE EPOXY COATING. LONGITUDINAL DECK REINFORCING BARS SHALL BE SHIFTED AS NECESSARY TO ACCOMMODATE ANCHOR BARS.

MATERIALS

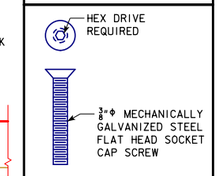
PLATES, BARS, THREADED RODS AND ANGLES SHALL MEET THE REQUIREMENTS ASTM A709 GRADE 36. THE TUBE STEEL SHALL MEET THE REQUIREMENTS ASTM A500 GRADE B.

3/8"Φ MECHANICALLY GALVANIZED STEEL FLAT HEAD SCREW SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM F835-12.

3/8"Φ MECHANICALLY GALVANIZED STEEL HEX HEAD BOLT AND HEX NUT SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM A307-12 GRADE A.



HEX HEAD BOLT DETAIL
(USED FOR DETAIL B)

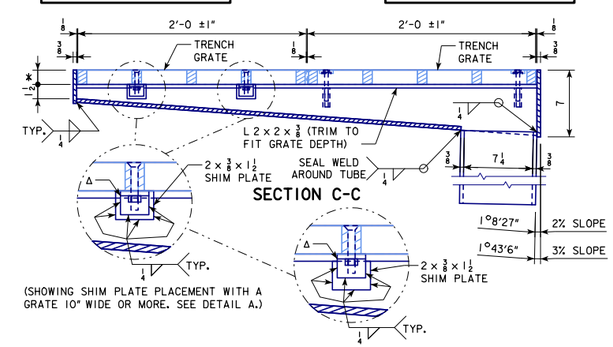


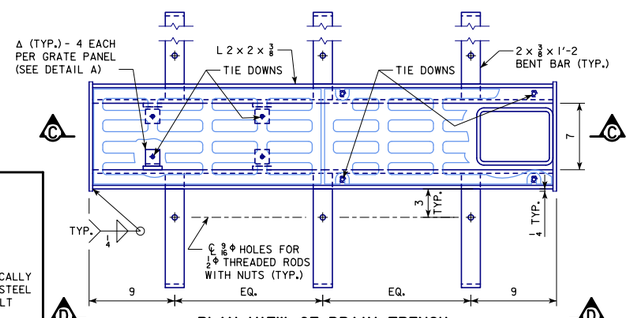
FLAT HEAD SCREW DETAIL
(USED FOR DETAIL A)

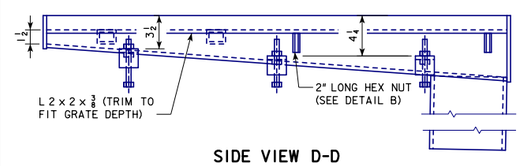
ΔΔ = ADJUST SHIM PLATE ACCORDING TO WIDTH OF GRATE.

* = DEPTH BASED ON TRENCH GRATE MANUFACTURER.

Δ = L 1 3/4 x 1 1/4 x 1/4 x 0'-1 1/2 LONG (TYP. - SEE DETAIL A).







IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	AESTHETIC DECK DRAIN DETAILS	STANDARD SHEET 1054	COUNTY	PROJECT NUMBER	SHEET NUMBER

7/1/2019 2:41:34 PM bkloss W:\Highway\Bridge\Standards\Bridges\EnglishMiscellaneousBridges.dgn 1054 11x17_pdf.pltcfg

STEEL TEMPORARY BARRIER RAIL NOTES :

THE STEEL HP14x73 TEMPORARY BARRIER RAILS SHALL BE CONSTRUCTED AS DETAILED AND NOTED ON THE STANDARD ROAD PLANS BA-400 FOR TEMPORARY BARRIER RAIL (STEEL).

HP14x73 SECTIONS ARE TO BE JOINED BEFORE P.C. CONCRETE FILL IS PLACED. HP SECTIONS MAY BE JOINED BY BUTT WELDS ON BOTH EXTERIOR FACES AS DETAILED OR BY OTHER MEANS APPROVED BY THE ENGINEER. HP SECTIONS SHALL BE FREE FROM EXCESSIVE SWEEP AND CAMBER; STRAIGHTENING MAY BE REQUIRED BY THE ENGINEER IN ORDER TO PRODUCE A STABLE BARRIER.

CONCRETE MIX FOR THE P.C. FILL MAY BE ANY IOWA D.O.T. CONSTRUCTION SPECIFICATION MIX OR MAY BE A COMMERCIAL READY-MIX WITH A MINIMUM F'C = 2500 P.S.I. THE P.C. FILL MAY BE DEPOSITED BY A METHOD ACCEPTABLE TO THE ENGINEER. LIMITS OF FILL SHOWN ARE APPROXIMATE AND MAY BE ROUGH OR SLUMPED DEPENDING ON THE METHOD OF BULKHEADING.

REFER TO OTHER DETAILS, NOTES AND QUANTITY ITEMS, ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.

NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME.

TRAFFIC MARKERS SHALL BE A RETRO-REFLECTIVE TYPE, IN ACCORDANCE WITH MATERIALS I.M. 486.06. THEY SHALL BE LOCATED AS SHOWN ON THIS SHEET. THE CONTRACTOR SHALL MAINTAIN THE MARKERS AND SHALL PROMPTLY REPLACE ANY MISSING OR DAMAGED UNITS. ALL COSTS FOR FURNISHING, INSTALLING AND MAINTAINING MARKERS SHALL BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL".

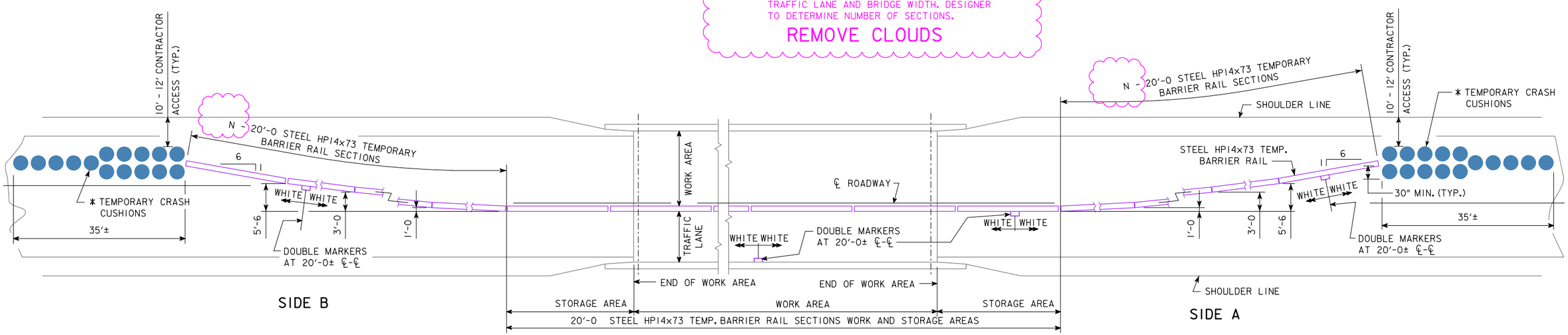
CARE SHALL BE TAKEN IN MOVING THE STEEL TEMPORARY BARRIER RAIL FOR STAGE 2 CONSTRUCTION, SO THAT THE NEW CONCRETE OF STAGE I WILL NOT BE DAMAGED. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

THE STEEL HP 14x73 TEMPORARY BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF TEMPORARY BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ANCHORS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF. WHEN ANCHORS ARE REQUIRED, SEE STANDARD ROAD PLANS BA-400 FOR TEMPORARY BARRIER RAIL (STEEL) FOR DETAILS. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING THE TEMPORARY BARRIER RAIL.

N = NUMBER OF 20'-0 TBR SECTIONS BASED ON TRAFFIC LANE AND BRIDGE WIDTH. DESIGNER TO DETERMINE NUMBER OF SECTIONS.

REMOVE CLOUDS



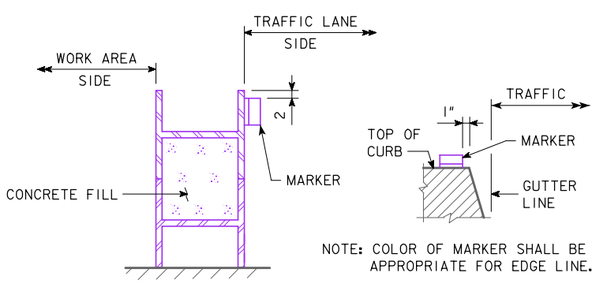
TEMPORARY BARRIER RAIL LAYOUT FOR TWO WAY TRAFFIC

NOTE:
THE LAYOUT SHOWN IS FOR ONE STAGE OF CONSTRUCTION AND WOULD BE A MIRROR IMAGE FOR THE OTHER STAGE.

* NOTE:

SEE STANDARD ROAD PLAN BA-500 FOR TEMPORARY CRASH CUSHIONS SAND BARREL.

COST OF TEMPORARY CRASH CUSHIONS TO BE INCLUDED WITH ROADWAY BID ITEMS.



NOTE: COLOR OF MARKER SHALL BE APPROPRIATE FOR EDGE LINE.

MARKER DETAILS

ESTIMATED QUANTITIES	
ITEM	AMOUNT
TEMPORARY BARRIER RAIL, STEEL	LF

NOTE :
ALL CONNECTION MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL".

STEEL HP14x73 TEMP. BARR. RAIL

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 02-14 - CHANGED THE TBR SECTIONS TO THE TEMPORARY STRUCTURES LEVEL.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1056 - THIS SHEET REDRAWN 09-03.

DESIGN TEAM	STEEL HI4x73 TEMPORARY BARRIER RAIL	STANDARD SHEET 1056	COUNTY	PROJECT NUMBER	SHEET NUMBER

STEEL TEMPORARY BARRIER RAIL NOTES :

THE STEEL HP14x73 TEMPORARY BARRIER RAILS SHALL BE CONSTRUCTED AS DETAILED AND NOTED ON THE STANDARD ROAD PLANS BA-400 FOR TEMPORARY BARRIER RAIL (STEEL).

HP14x73 SECTIONS ARE TO BE JOINED BEFORE P.C. CONCRETE FILL IS PLACED. HP SECTIONS MAY BE JOINED BY BUTT WELDS ON BOTH EXTERIOR FACES AS DETAILED OR BY OTHER MEANS APPROVED BY THE ENGINEER. HP SECTIONS SHALL BE FREE FROM EXCESSIVE SWEEP AND CAMBER; STRAIGHTENING MAY BE REQUIRED BY THE ENGINEER IN ORDER TO PRODUCE A STABLE BARRIER.

CONCRETE MIX FOR THE P.C. FILL MAY BE ANY IOWA D.O.T. CONSTRUCTION SPECIFICATION MIX OR MAY BE A COMMERCIAL READY-MIX WITH A MINIMUM F'C = 2500 P.S.I. THE P.C. FILL MAY BE DEPOSITED BY A METHOD ACCEPTABLE TO THE ENGINEER. LIMITS OF FILL SHOWN ARE APPROXIMATE AND MAY BE ROUGH OR SLUMPED DEPENDING ON THE METHOD OF BULKHEADING.

REFER TO OTHER DETAILS, NOTES AND QUANTITY ITEMS, ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.

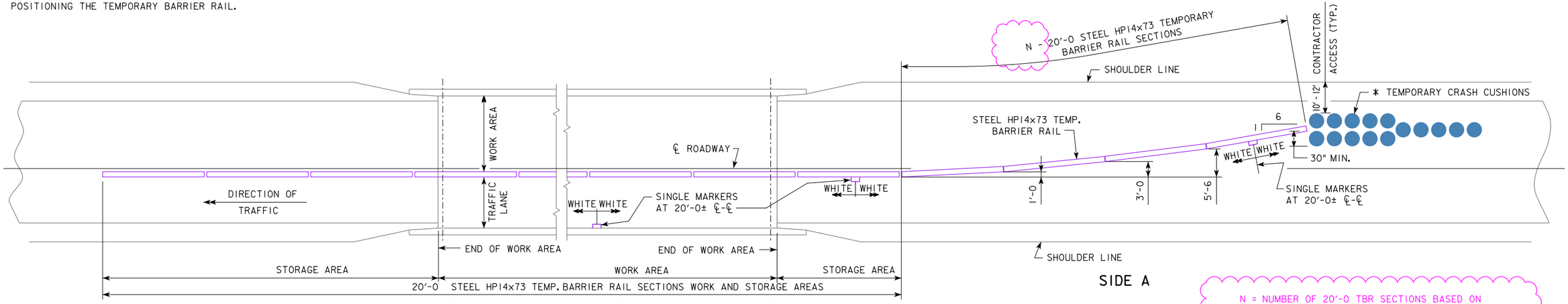
NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME.

TRAFFIC MARKERS SHALL BE A RETRO-REFLECTIVE TYPE, IN ACCORDANCE WITH MATERIALS I.M. 486.06. THEY SHALL BE LOCATED AS SHOWN ON THIS SHEET. THE CONTRACTOR SHALL MAINTAIN THE MARKERS AND SHALL PROMPTLY REPLACE ANY MISSING OR DAMAGED UNITS. ALL COSTS FOR FURNISHING, INSTALLING AND MAINTAINING MARKERS SHALL BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL".

CARE SHALL BE TAKEN IN MOVING THE STEEL TEMPORARY BARRIER RAIL FOR STAGE 2 CONSTRUCTION, SO THAT THE NEW CONCRETE OF STAGE I WILL NOT BE DAMAGED. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

THE STEEL HP 14x73 TEMPORARY BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF TEMPORARY BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ANCHORS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF. WHEN ANCHORS ARE REQUIRED, SEE STANDARD ROAD PLANS BA-400 FOR TEMPORARY BARRIER RAIL (STEEL) FOR DETAILS. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING THE TEMPORARY BARRIER RAIL.



SIDE A

TEMPORARY BARRIER RAIL LAYOUT FOR ONE WAY TRAFFIC

NOTE:
THE LAYOUT SHOWN IS FOR ONE STAGE OF CONSTRUCTION AND WOULD BE A MIRROR IMAGE FOR THE OTHER STAGE.

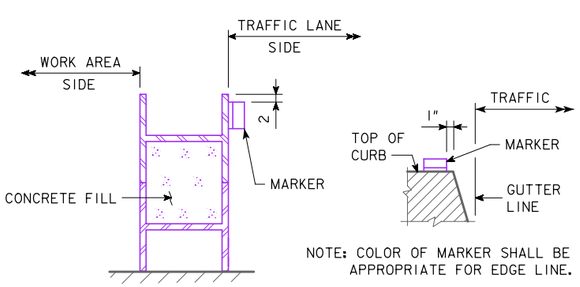
N = NUMBER OF 20'-0 TBR SECTIONS BASED ON TRAFFIC LANE AND BRIDGE WIDTH. DESIGNER TO DETERMINE NUMBER OF SECTIONS.

REMOVE CLOUDS

* NOTE:

SEE STANDARD ROAD PLAN BA-500 FOR TEMPORARY CRASH CUSHIONS SAND BARREL.

COST OF TEMPORARY CRASH CUSHIONS TO BE INCLUDED WITH ROADWAY BID ITEMS.



NOTE: COLOR OF MARKER SHALL BE APPROPRIATE FOR EDGE LINE.

MARKER DETAILS

ESTIMATED QUANTITIES	
ITEM	AMOUNT
TEMPORARY BARRIER RAIL, STEEL	LF

NOTE :
ALL CONNECTION MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL, STEEL".

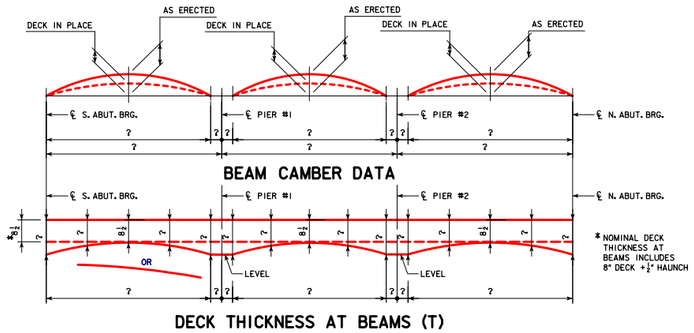
STEEL HP14x73 TEMP. BARR. RAIL

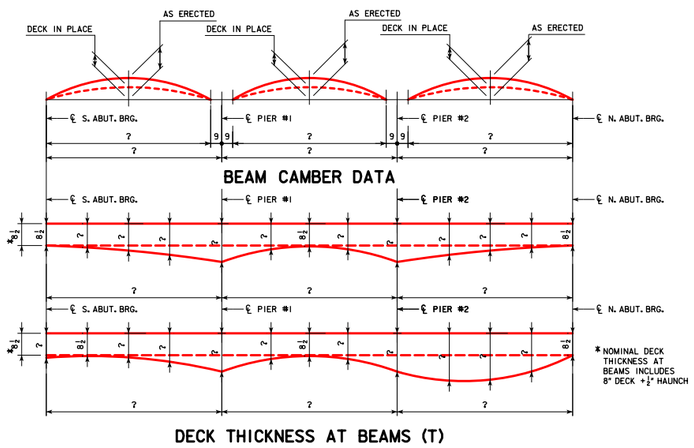
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

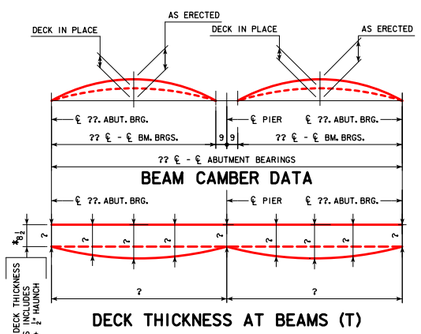
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

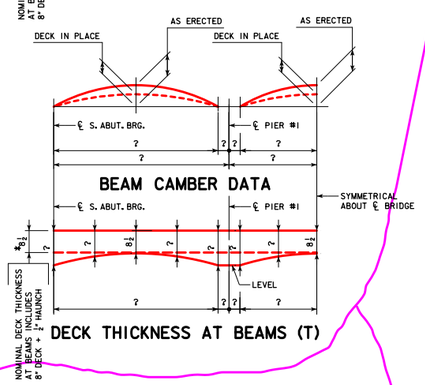
DESIGN TEAM	STEEL HI4x73 TEMPORARY BARRIER RAIL	STANDARD SHEET 1058	COUNTY	PROJECT NUMBER	SHEET NUMBER

CORRECTION 02-14 - CHANGED THE TBR SECTIONS TO THE TEMPORARY STRUCTURE LEVEL.
ENGLISHMISCELLANEOUSBRIDGES.DGN 1058 - THIS SHEET REDRAWN 09-03.

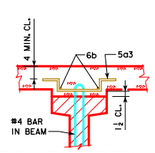








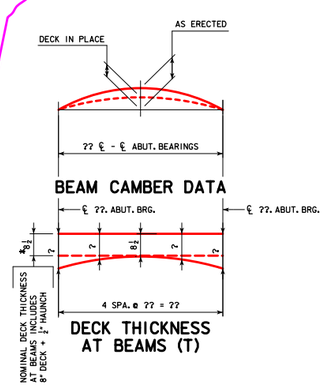
NOTE:
PLACE ONE 5a2 BAR ADJACENT TO EACH #4 BEAM STIRRUP (4b1 BARS ON DES. SHTS. ??, ?? & ??) THAT EXTEND FROM THE BEAMS INTO THE DECK HAUNCH. THE 5a4 BARS MAY BE TILTED AS NECESSARY TO FIT UNDER THE TOP OF DECK REINFORCING MAT AND MAINTAIN THE 4" MINIMUM DIMENSION SHOWN.



SECTION THRU DECK HAUNCH
TYPICAL EACH LINE OF BEAMS

HAUNCH REINFORCING LAYOUT
(REQUIRED AT ALL PIERS)

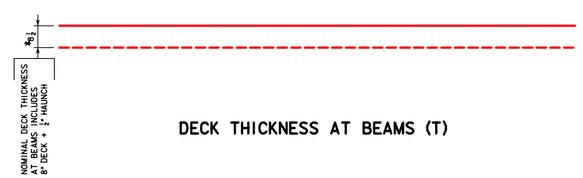
NOTE:
PLACE ONE 5a3 BAR ADJACENT TO EACH #4 BEAM STIRRUP (4b1 BARS ON DES. SHTS. ?? & ??) THAT EXTEND FROM THE BEAMS INTO THE DECK HAUNCH.



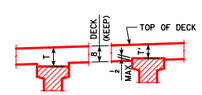
BENCH MARK NO.1

BEAM CAMBER DATA

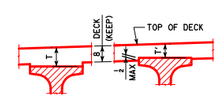
EXAMPLES OUTSIDE OF SHEET



DECK THICKNESS AT BEAMS (T)



DECK THICKNESS DETAILS



DECK THICKNESS DETAILS

NOTE: THE DECK 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.

REVISED 06-2017 - REMOVED CENTER 6b BAR FROM UNDER "#4 BAR IN BEAM" IN "SECTION THRU SLAB HAUNCH" DETAIL. (WAS THREE 6b BARS NOW TWO).
REVISED 07-2019 CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISH/SCELLANEOUS/BRIDGES.DGN - 1065 - THIS SHEET ISSUED 02-08.

DECK THICKNESS DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	BEAM CAMBER AND DECK THICKNESS DETAILS	STANDARD SHEET 1065	COUNTY	PROJECT NUMBER	SHEET NUMBER

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BENCH MARK NO.:

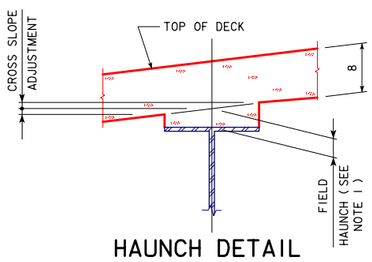
TABLE OF BEAM LINE DECK HAUNCH ELEVATIONS

BEAM LINE	℄ __. ABUT. BEARING				℄ PIER NO. 1 BEARINGS											℄ PIER NO. 2 BEARINGS					℄ __. ABUT. BEARING
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19	LINE 20	LINE 21
A																					
B																					
C																					
D																					
E																					
F																					
G																					
H																					

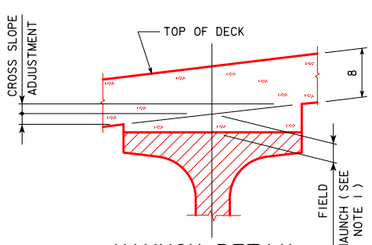
MISCELLANEOUS DATA TABLE

	BEAM LINE		℄ ?. ABUT. BEARING				℄ PIER NO. 1 BEARINGS											℄ PIER NO. 2 BEARINGS					℄ ?. ABUT. BEARING
			LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19	LINE 20	LINE 21
INCH → ANTICIPATED DEFLECTION DUE TO DECK (IN.)	ALL		0				0	0										0	0				0
INCH → CROSS SLOPE ADJUSTMENTS (IN.)	A, B, D, E & F																						
	C																						
INCH (FEET) → ALLOWABLE FIELD HAUNCH (IN. & FT.)	MAX.	ALL	EXAMPLE $2\frac{1}{2}$ (0.208)																				
	MIN.	ALL	EXAMPLE $2\frac{1}{2}$ (0.208)																				

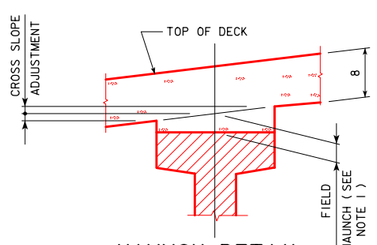
NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON DECK ELEVATIONS SHEET.



HAUNCH DETAIL



HAUNCH DETAIL



HAUNCH DETAIL

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 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF DECK 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 DECK 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.

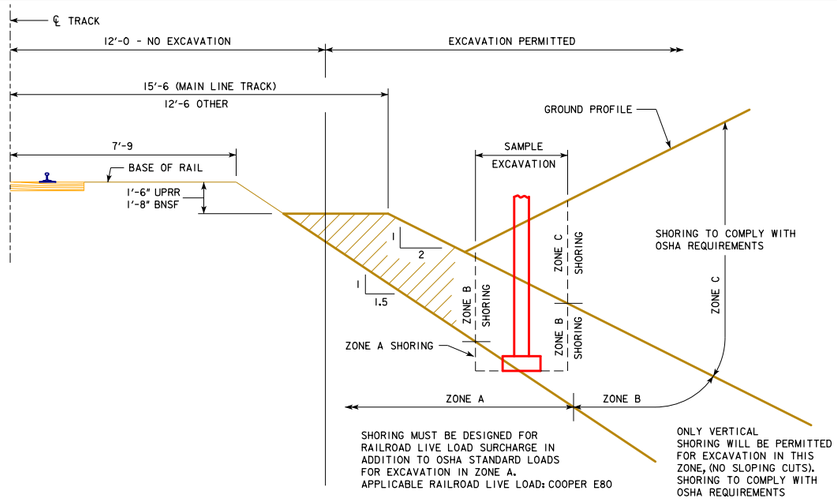
DECK HAUNCH DATA DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX.& MIN.WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
REVISED 07-2019: CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

DESIGN TEAM	DECK HAUNCH DATA DETAILS	STANDARD SHEET 1066	COUNTY	PROJECT NUMBER	SHEET NUMBER

REVISED 09-13 - RAILROAD CHANGED THE MINIMUM VERTICAL CONSTRUCTION CLEARANCE TO 21'-6. DISTANCE FROM MAINLINE TRACK TO EDGE OF EMBANKMENT CHANGED TO 15'-6.
REVISED 06-2017 - ADDED NOTE OUTSIDE OF SHEET BORDER TO EXPLAIN THE USE OF THIS STANDARD SHEET WITH ARCHIVED METHODS MEMO MM201.
07-2013 - FOR BNSF, CHANGED HORIZONTAL DISTANCE OF MINIMUM CONSTRUCTION CLEARANCE ENVELOPE TO 15'-0" (WAS 12'-0").
ENGLISHMISCELLANEOUSBRIDESIGN - 1067 - THIS SHEET ISSUED 12-08.



GENERAL EXCAVATION ZONES

TOP OF RAIL ELEVATIONS

(STATIONS INCREASE WITH MILEPOST INCREASE)

MAIN LINE			
ALIGNMENT: LEFT RAIL		ALIGNMENT: RIGHT RAIL	
STATION	ELEVATION	STATION	ELEVATION
0+00		0+00	
1+00		1+00	
2+00		2+00	
3+00		3+00	
4+00		4+00	
5+00		5+00	
6+00		6+00	
7+00		7+00	
8+00		8+00	
9+00		9+00	
(1) 10+00		(1) 10+00	
11+00		11+00	
12+00		12+00	
13+00		13+00	
14+00		14+00	
15+00		15+00	
16+00		16+00	
17+00		17+00	
18+00		18+00	
19+00		19+00	
20+00		20+00	

(1) EXISTING TRACK STA. 10+00

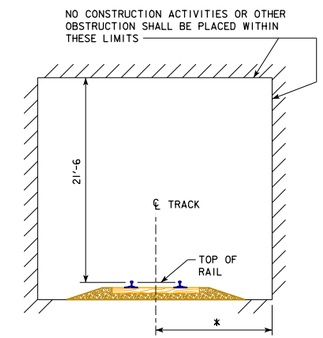
RAILROAD GENERAL NOTES:

1. RAILROAD REVIEW AND APPROVAL OF SHORING, ERECTION, DEMOLITION, AND FALSEWORK IS REQUIRED. ALLOW A MINIMUM OF FOUR WEEKS FOR THE REVIEW AND APPROVAL OF EACH SUBMITTAL.
2. THE PROPOSED GRADE SEPARATION PROJECT SHALL NOT INCREASE THE QUANTITY AND/OR CHARACTERISTICS OF THE FLOW IN THE RAILROAD'S DITCHES AND/OR DRAINAGE STRUCTURES.
3. THE ELEVATION OF THE EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE RAILROAD PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR MUST SUBMIT A PROPOSED METHOD OF EROSION AND SEDIMENT CONTROL AND HAVE THE METHOD APPROVED BY THE RAILROAD.
5. ALL SHORING SYSTEMS THAT IMPACT THE RAILROAD'S OPERATIONS AND/OR SUPPORTS THE RAILROAD'S EMBANKMENT SHALL BE DESIGNED AND CONSTRUCTED PER CURRENT RAILROAD GUIDELINES FOR TEMPORARY SHORING.
6. ALL DEMOLITIONS WITHIN THE RAILROAD'S RIGHT-OF-WAY AND/OR DEMOLITION THAT MAY IMPACT THE RAILROAD'S TRACKS OR OPERATIONS SHALL BE IN COMPLIANCE WITH THE RAILROAD'S DEMOLITION GUIDELINES.
7. ERECTION OVER THE RAILROAD'S RIGHT-OF-WAY SHALL BE DESIGNED TO CAUSE NO INTERRUPTION TO THE RAILROAD'S OPERATION, ENABLING THE TRACK(S) TO REMAIN OPEN TO TRAFFIC PER THE RAILROAD'S REQUIREMENTS.
8. ALL CONSTRUCTION PHASING THAT MAY IMPACT THE RAILROAD OPERATIONS SHALL BE DESIGNED TO CAUSE NO INTERRUPTION TO THE RAILROAD'S OPERATION, ENABLING THE TRACK(S) TO REMAIN OPEN TO TRAFFIC PER THE RAILROAD'S REQUIREMENTS.
9. FALSE-WORK CLEARANCES SHALL COMPLY WITH MINIMUM CONSTRUCTION CLEARANCES.
10. ALL PERMANENT CLEARANCES SHALL BE VERIFIED BEFORE PROJECT CLOSING.
11. FOR RAILROAD COORDINATION PLEASE REFER TO THE RAILROAD COORDINATION REQUIREMENTS AS PART OF SPECIAL PROVISIONS.

GENERAL SHORING NOTES:

1. ALL DIMENSIONS ARE MEASURED PERPENDICULAR TO TRACK.
2. PRIOR TO COMMENCING ANY WORK, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE RAILROAD DETAILED PLANS INDICATING THE NATURE AND EXTENT OF THE TRACK PROTECTION SHORING PROPOSED. THE CONTRACTOR SHALL INSTALL THE TEMPORARY SHORING SYSTEM PER THE APPROVED PLANS. DESIGN OF THE TEMPORARY SHORING SYSTEM TO COMPLY WITH GUIDELINES FOR TEMPORARY SHORING.
3. FOR EXCAVATIONS WHICH ENCROACH INTO ZONE A OR B, SHORING PLANS SHALL BE ACCOMPANIED BY DESIGN CALCULATIONS. PLANS AND CALCULATIONS MUST BE SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA.

NOTE:
BNSF = BURLINGTON NORTHERN SANTA FE RAILROAD
UPRR = UNION PACIFIC RAILROAD



MINIMUM CONSTRUCTION CLEARANCE ENVELOPE

(NORMAL TO RAILROAD)

* 15'-0" FOR BNSF AND 15'-0" FOR UPRR

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	BNSF & UPRR GENERAL NOTES & SHORING	STANDARD SHEET 1067	COUNTY	PROJECT NUMBER	SHEET NUMBER

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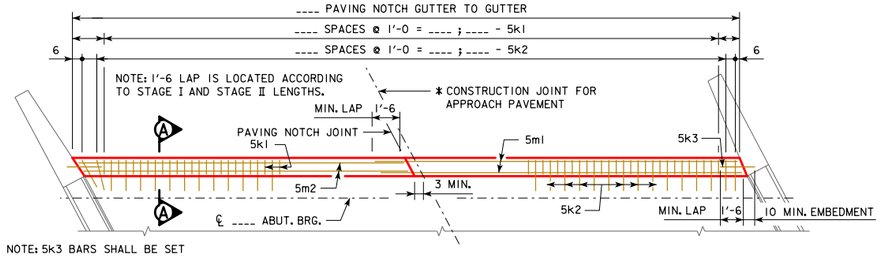
This information shown below is what is to be included on the TS&L sheet (Situation Plan) when this Standard Sheet 1067 is used.
In discussions with the BNSF and UP railroads, the Bridge Office has agreed to provide the standard sheet 1067 and the information listed below.
This information will be provided by Preliminary Bridge Design Section on the Plan View and Elevation View on the TS&L sheet of all bridge projects that involve BNSF and UP railroad except the items noted with an asterisk (*). These items will be provided by the Final Bridge Design Sections.
Final Design Sections should review the list to make sure all information is provided. See archived Methods Memo MM201 for further explanation.

Plan View

1. Centerline of bridge and/or centerline of project.
2. Track layout and limits of railroad right-of-way with respect to centerline of main lines.
3. Future tracks, access roadways and existing tracks as main line, siding, spur, etc.
4. Horizontal clearance at right angle from centerline of nearest existing or future track to the face of obstruction such as substructure above grade.
*5. Horizontal clearance at right angle from centerline of nearest existing or future track to the face of nearest foundation below grade.
6. Horizontal spacing at right angle between centerlines of existing and/or future tracks.
*7. Limits of shoring and minimum distance at right angle from centerline of nearest track.
8. All existing facilities and utilities.
9. Existing ground shots and proposed grading.
10. Railroad Milepost and direction of increasing Milepost (Provided by Railroad).
11. Direction of flow for all drainage systems within project limits.
*12. Limits of barrier rail and fence with respect to centerline of track.
*13. Location of deck drains (Note drains shall not be located over the railroad right-of-way).
*14. Total width of superstructure.
15. Width of shoulder and/or sidewalk.
16. North arrow
17. Footprint of proposed superstructure and substructure including existing structure if applicable

Elevation View

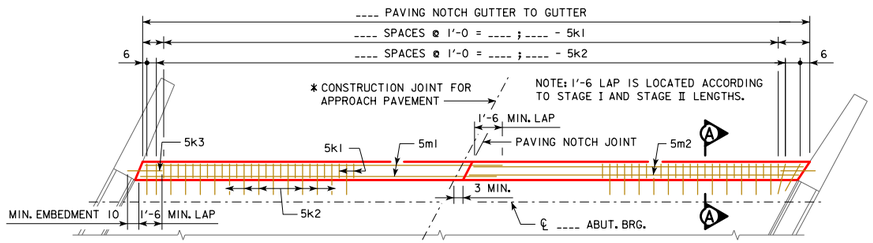
1. Future tracks, access roadways and existing tracks as main line, siding, spur, etc.
2. Point of minimum vertical clearance and distance within the vertical clearance envelope, measured perpendicular from the centerline of nearest track.
*3. Limits of shoring and minimum distance at right angle from centerline of nearest track.
4. Toe of slope and/or limits of retaining wall.
*5. Limits of barrier rail and fence with respect to centerline of track.
6. Depth of foundation from top of tie / base of rail.
*7. Top and bottom of pier protection wall elevation relative to top of rail elevation.
8. Controlling dimensions of drainage ditches and/or drainage structures.
9. Top of rail elevations for all tracks.
10. Minimum permanent vertical clearance above the top of high rail to the lowest point under the bridge.
11. Existing and proposed groundline and roadway profile.
12. Show slope and specify type of slope paving. Toe of slope shall be shown relative to drainage ditch and top of subgrade.



NOTE: 5k3 BARS SHALL BE SET AS DOWELS EMBEDDED 10 INCHES MINIMUM INTO THE EXISTING BRIDGE WINGWALLS AND EXTENDING A MINIMUM OF 1'-6 INTO THE NEW PAVING NOTCH REPLACEMENT.

PART PLAN VIEW AT ABUTMENT

NOTE:
NEW PAVING NOTCH REPLACEMENT SHOULD EXTEND FROM BRIDGE WINGWALL TO BRIDGE WINGWALL.

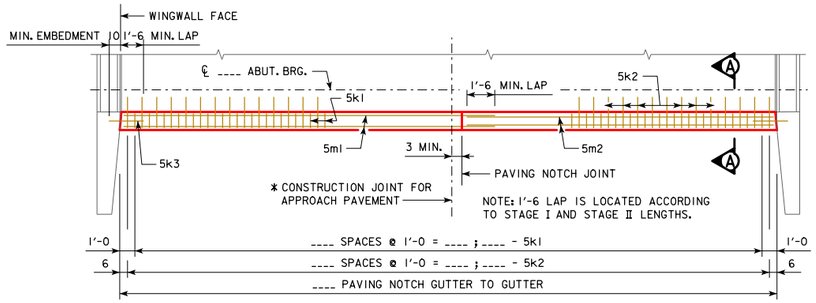


NOTE: 5k3 BARS SHALL BE SET AS DOWELS EMBEDDED 10 INCHES MINIMUM INTO THE EXISTING BRIDGE WINGWALLS AND EXTENDING A MINIMUM OF 1'-6 INTO THE NEW PAVING NOTCH REPLACEMENT.

PART PLAN VIEW AT ABUTMENT

NOTE:
NEW PAVING NOTCH REPLACEMENT SHOULD EXTEND FROM BRIDGE WINGWALL TO BRIDGE WINGWALL.

* CONSTRUCTION JOINT FOR NOTCH REPAIR TO EXTEND A MINIMUM OF 3 INCHES PAST CONSTRUCTION JOINT FOR PAVEMENT. PROVIDE 1'-6 MINIMUM LAP FOR REINFORCEMENT



NOTE: 5k3 BARS SHALL BE SET AS DOWELS EMBEDDED 10 INCHES MINIMUM INTO THE EXISTING BRIDGE WINGWALLS AND EXTENDING A MINIMUM OF 1'-6 INTO THE NEW PAVING NOTCH REPLACEMENT.

PART PLAN VIEW AT ABUTMENT

NOTE:
NEW PAVING NOTCH REPLACEMENT SHOULD EXTEND FROM BRIDGE WINGWALL TO BRIDGE WINGWALL.

DOWEL SETTING NOTE:

THE DEFORMED 5k2 & 5k3 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. A POLYMER GROUT SYSTEM SHALL BE USED TO INSTALL THE DEFORMED DOWEL BARS IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS, AND THE GROUT MANUFACTURER'S RECOMMENDATIONS.

NOTE:
USE "BR-203" APPROACH PAVEMENT STANDARD FOR MOVEABLE ABUTMENT.

LOCATION

?
T-?N R-?W
SECTION ?
? TOWNSHIP
? COUNTY
FHWA NO. ?
BRIDGE MAINT. NO. ?
LATITUDE ??.123456°
LONGITUDE ??.123456°

PAVING NOTCH REPLACEMENT NOTES:

THE PAVING NOTCH REPLACEMENT IS TO BE CLASS "C" STRUCTURAL CONCRETE.

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

THE BID ITEM "PAVING NOTCH REPLACEMENT" LINEAR FEET, SHALL INCLUDE ALL COSTS OF LABOR AND MATERIALS ASSOCIATED WITH EXCAVATION, REMOVING AND DISPOSING OF THE EXISTING PAVING NOTCH, GRANULAR BACKFILL AND COMPACTION AS NEEDED, AND INSTALLING THE NEW PAVING NOTCH. THIS WORK SHALL INCLUDE, CUTTING OF EXISTING #4 BARS, PAINTING THE ENDS OF THE #4 BARS, REMOVING THE CONCRETE FOR THE SHEAR KEYWAYS, DRILLING THE HOLES FOR THE DEFORMED DOWELS AND CONSTRUCTING THE NEW NOTCH TO THE DIMENSIONS SHOWN. THE NEW NOTCH IS ESTIMATED AT 0.07 CUBIC YARDS PER FOOT OF STRUCTURAL CONCRETE AND 16.0 POUNDS OF EPOXY COATED REINFORCING STEEL PER FOOT.

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

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ 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

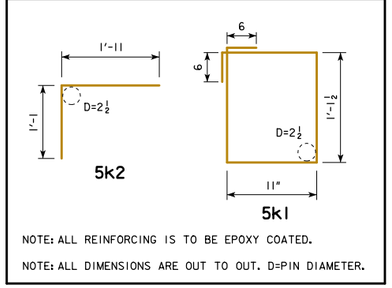
SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 2002.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

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 = 4.0 KSI.

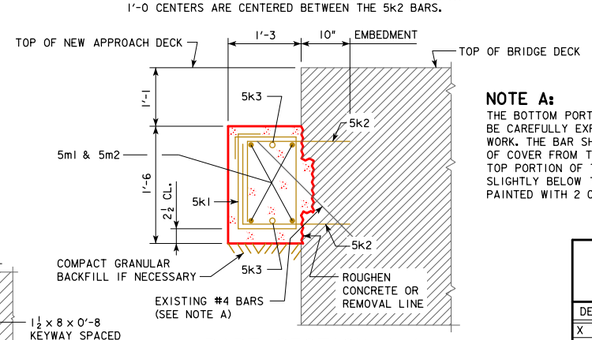
BENT BAR DETAILS



NOTE: ALL REINFORCING IS TO BE EPOXY COATED.

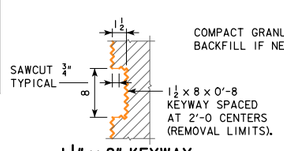
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER.

NOTE: 5k2 BARS AT 1'-0 CENTERS ARE TO BE PLACED AT THE TOP & BOTTOM OF THE PAVING NOTCH. THE 5k1 BARS AT 1'-0 CENTERS ARE CENTERED BETWEEN THE 5k2 BARS.



PART SECTION A-A

NOTE: DOWELS SHALL BE PLACED TO MISS ANY EXISTING REINFORCING STEEL EXPOSED DURING REMOVALS.



1½" x 8" KEYWAY DETAIL

NOTE A:

THE BOTTOM PORTION OF THE EXISTING #4 BARS SHALL BE CAREFULLY EXPOSED AND INCORPORATED INTO NEW WORK. THE BAR SHALL BE CUT OFF TO PROVIDE 2 INCHES OF COVER FROM THE TOP OF THE NEW PAVING NOTCH. THE TOP PORTION OF THE BAR SHALL BE CUT OFF FLUSH OR SLIGHTLY BELOW THE CONCRETE SURFACE AND THE ENDS PAINTED WITH 2 COATS OF ZINC RICH PAINT.

DESIGN HISTORY AT THIS SITE

(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
X	X
X	X
X	X
X	X
X	X

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 06-2017 - ADDED STATEMENT IN PAVING NOTCH REPLACEMENT NOTE PARAGRAPH ",GRANULAR BACKFILL AND COMPACTION AS NEEDED,". UPDATED DESIGN HISTORY TABLE.
REVISED 07-2019, CHANGED BENT ENDS (HOOK LEG) OF 5k1 BAR TO 6" (WAS 4½"). CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1068 - THIS SHEET ISSUED 04-09.

DESIGN TEAM	PAVING NOTCH REPLACEMENT	STANDARD SHEET 1068	COUNTY	PROJECT NUMBER	SHEET NUMBER

HYDRODEMOLITION NOTES:

IT IS THE INTENT TO USE THE HYDRODEMOLITION PROCESS TO REMOVE ALL UNSOUND CONCRETE AS DIRECTED BY THE ENGINEER BY USING A HIGH PRESSURE WATER STREAM. REMOVALS SHALL CREATE A VERY ROUGH, BONDABLE SURFACE FOR NEW CONCRETE TO ADHERE TO. ALL HMA PATCH MATERIAL SHALL BE REMOVED PRIOR TO HYDRODEMOLITION. CONCRETE PATCH MATERIAL CAN REMAIN IF DETERMINED TO BE SOUND.

THE COMPLETE BRIDGE DECK SURFACE SHALL BE MILLED TO A DEPTH OF $\frac{1}{4}$ INCH BEFORE HYDRODEMOLITION BEGINS.

THE CONTRACTOR SHALL USE SELF-PROPELLED HYDRODEMOLITION EQUIPMENT THAT PROVIDES A HIGH PRESSURE WATER JET STREAM FOR CONCRETE REMOVALS. THIS EQUIPMENT SHALL BE CAPABLE OF REMOVING ANY UNSOUND CONCRETE, AS WELL AS REMOVING RUST AND CONCRETE PARTICLES FROM EXPOSED REINFORCING STEEL.

CLEAN POTABLE WATER SHALL BE PROVIDED FOR HIGH PRESSURE REMOVALS AND THE EXCESS WATER RECLAIMED USING VACUUM METHODS OF COLLECTION, THEN FILTERED AND REUSED AS MUCH AS PRACTICAL.

OPERATION OF THE HYDRODEMOLITION EQUIPMENT SHALL BE PERFORMED AND SUPERVISED BY QUALIFIED PERSONNEL CERTIFIED BY THE EQUIPMENT MANUFACTURER.

THE CONTRACTOR SHALL ENSURE CONTAINMENT OF ALL DISLODGED MATERIAL, FLYING DEBRIS AND EXCESS WATER WITHIN THE EXISTING ROADWAY AND NOT ALLOW DEBRIS OR WATER TO ENTER ADJACENT TRAVEL LANES OR TRAFFIC, OR BELOW THE WORK AREA.

CALIBRATING HYDRODEMOLITION:

PRIOR TO THE COMMENCEMENT OF THE REMOVAL OPERATION WITH HYDRODEMOLITION, THE EQUIPMENT SHALL BE CALIBRATED ON TWO SECTIONS DESIGNATED BY THE ENGINEER TO DEMONSTRATE THAT EQUIPMENT, PERSONNEL AND METHODS OF OPERATION ARE CAPABLE OF PRODUCING RESULTS SATISFACTORY TO THE ENGINEER. THE TRIAL SECTIONS WILL BE APPROXIMATELY 100 SQUARE FEET EACH, CONSISTING OF ONE SECTION OF SOUND CONCRETE THEN ONE SECTION OF DETERIORATED CONCRETE. THE CALIBRATION SHALL NOT INCLUDE ANY AREAS OF EXISTING OVERLAY OR PATCH MATERIAL. THE CONTRACTOR WILL DOCUMENT THE FOLLOWING INITIAL SETTINGS:

1. WATER PRESSURE GAUGE (13,000 PSI MINIMUM)
2. WATER USAGE (55 GALLONS PER MINUTE, MINIMUM) - VERIFY NEED FOR THIS VALUE
3. MACHINE STAGING CONTROL (STEP)
4. NOZZLE SIZE
5. NOZZLE SPEED (TRAVEL)

AFTER THE INITIAL TEST ON SOUND CONCRETE, THE EQUIPMENT SHALL THEN BE MOVED TO THE DETERIORATED AREA TO VERIFY THAT INITIAL SETTINGS WILL FULLY REMOVE UNSOUND CONCRETE WITHIN THE DESIGNATED AREA. THE INITIAL SETTINGS MAY NEED TO BE ADJUSTED, WITHIN THE LIMITS ESTABLISHED ABOVE, IN ORDER TO ACHIEVE TOTAL REMOVAL OF UNSOUND CONCRETE. THE CONTRACTOR SHALL DOCUMENT THE FINAL EQUIPMENT SETTINGS RESULTING FROM THE CALIBRATION PROCESS.

CONCRETE BRIDGE DECK REMOVAL BY HYDRODEMOLITION:

AFTER CALIBRATION OF THE EQUIPMENT, CONCRETE REMOVAL BY HYDRODEMOLITION SHALL BE CONDUCTED ON THE BRIDGE DECK. THE REMOVAL SETTINGS WILL BE VERIFIED AS NECESSARY. THE EQUIPMENT SETTINGS WILL BE DOCUMENTED BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER. CALIBRATION OF THE HYDRODEMOLITION EQUIPMENT SHALL BE CONDUCTED FOR EVERY DAY OF OPERATION AND, IF NECESSARY, RE-CALIBRATED TO INSURE REMOVAL OF KNOWN AREAS OF DELAMINATED CONCRETE AS WELL AS TO GUARD AGAINST EXCESSIVE REMOVAL OF SOUND CONCRETE. HANDCHIPPING MAY BE USED IN AREAS THAT ARE INACCESSIBLE TO THE SELF-PROPELLED OR HAND OPERATED HYDRODEMOLITION EQUIPMENT. HANDCHIPPING TOOLS (15 LBS. MAXIMUM) MAY BE HAND OR MECHANICALLY DRIVEN.

ADDITIONAL REMOVAL:

AFTER CONCRETE BRIDGE DECK REMOVAL BY HYDRODEMOLITION HAS BEEN COMPLETED FOR THE CONSTRUCTION PHASE, THE DECK WILL UNDERGO FINAL SOUNDING TO ASSURE THAT ALL UNSOUND CONCRETE HAS BEEN REMOVED. THE PREPARED DECK SURFACE WILL BE COMPLETELY DRY PRIOR TO FINAL SOUNDING AND WILL CONSIST OF AS MANY SUCCESSIVE SOUNDINGS AS REQUIRED TO ENSURE THAT ALL DELAMINATED OR DEBONDED CONCRETE HAS BEEN REMOVED. ADDITIONAL CONCRETE REMOVAL SHALL BE PERFORMED BY HANDCHIPPING AND/OR HYDRODEMOLITION. HANDCHIPPING TOOLS MAY BE HAND OR MECHANICALLY DRIVEN AND OPERATED IN ACCORDANCE WITH ARTICLE 2413.03 OF THE STANDARD SPECIFICATIONS.

IN ADDITION, WHERE REINFORCING STEEL IS EXPOSED AND CONCRETE AND STEEL ARE NO LONGER BONDED, REMOVE ANY CONCRETE TO CLEAR AT LEAST $\frac{3}{4}$" INCH AROUND THE EXPOSED BARS. UN-BONDED BARS SHALL DETERMINED BY THE ENGINEER, MORE THAN ONE-HALF OF THE BAR PERIMETER MAY BE EXPOSED AND STILL DETERMINED TO BE "BONDED". DO NOT USE CHIPPING HAMMERS HEAVIER THAN 15 LBS. TO REMOVE CONCRETE. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT NO DAMAGE IS DONE TO ANY REINFORCING BARS EXPOSED DURING THE REMOVAL PROCESS. ANY DAMAGE DONE SHALL BE REPAIRED BY THE CONTRACTOR AS APPROVED BY THE ENGINEER AT NO ADDITIONAL COST TO THE STATE.

FULL DEPTH REPAIR OF BRIDGE DECK:

WHERE THE DECK IS SOUND FOR LESS THAN HALF OF ITS ORIGINAL DEPTH, THE CONCRETE SHALL BE REMOVED FULL DEPTH (DESIGNATED AS CLASS B REPAIR) EXCEPT FOR LIMITED AREAS AS DETERMINED BY THE ENGINEER.

PREPARATION OF BRIDGE DECK PRIOR TO OVERLAY PLACEMENT:

VACUUMING OF DEBRIS AND WATER SHALL BE DONE IMMEDIATELY AFTER ANY HYDRODEMOLITION WORK. CONTRACTOR IS TO ENSURE ALL WATER RUN-OFF AND RESIDUAL MATERIAL IS CONTAINED WITHIN THE WORK AREA AND COLLECTED FOR DISPOSAL. DISPOSE OF EXCESS WATER AND DEBRIS AS APPROVED BY THE ENGINEER.

CLEANING OF THE HYDRODEMOLITION DEBRIS AND SLURRY SHALL BE PERFORMED WITH A VACUUM SYSTEM EQUIPPED WITH DUST CONTROL DEVICES AND CAPABLE OF REMOVING WET DEBRIS AND WATER IN THE SAME PASS. THE VACUUM EQUIPMENT SHALL BE CAPABLE OF WASHING THE DECK WITH PRESSURIZED WATER DURING THE VACUUM OPERATION TO DISLODGE ALL DEBRIS AND SLURRY FROM THE BRIDGE DECK SURFACE. CLEANING SHALL BE DONE BEFORE DEBRIS AND SLURRY IS ALLOWED TO DRY ON THE BRIDGE DECK SURFACE.

AFTER COMPLETION OF HYDRODEMOLITION AND ADDITIONAL REMOVALS, BUT NOT MORE THAN 24 HOURS PRIOR TO PLACEMENT OF THE OVERLAY, THE ENTIRE DECK SHALL BE SANDBLASTED OR WATER BLASTED TO EXPOSE FINE AND COARSE AGGREGATES AND TO REMOVE LAITANCE FROM THE SURFACE. EXPOSED REINFORCING STEEL AND THE CONCRETE UNDER AND AROUND THE EXPOSED STEEL SHALL BE THOROUGHLY CLEANED BY SANDBLASTING OR WATER BLASTING. THE SURFACE SHALL BE CLEANED USING COMPRESSED AIR TO REMOVE ALL DUST, CHIPS AND WATER. AIR LINES FOR SANDBLASTING AND COMPRESSED AIR CLEANING SHALL BE EQUIPPED WITH OIL TRAPS.

BID ITEM INFORMATION:

THE BID ITEM "HYDRODEMOLITION REMOVAL" SHALL INCLUDE ALL COSTS FOR HYDRODEMOLITION, CLEAN-UP, WATER CONTROL, DISPOSAL, AND FINAL CLEAN-UP IN PREPARATION FOR "CONCRETE REPAIR, REPLACE VARIABLE DEPTH CONCRETE".

THE BID ITEM "CONCRETE REPAIR, REPLACE VARIABLE DEPTH CONCRETE", CUBIC YARDS, SHALL INCLUDE THE ADDITIONAL CONCRETE TO REPAIR THE DECK FROM THE HYDRO-DEMOLITION REMOVAL AND HAND REMOVAL. FOR THE FIELD MEASUREMENT OF THIS ITEM, THE CONCRETE REQUIRED FOR THE DECK OVERLAY (_____ CUBIC YARDS) WILL BE DEDUCTED FROM THE TOTAL CONCRETE VOLUME PLACED DURING THE OVERLAY OPERATION. THE _____ CUBIC YARD QUANTITY WAS DETERMINED USING A $2\frac{1}{4}$ INCH OVERLAY THICKNESS ($1\frac{3}{4}$ INCH NOMINAL PLUS $\frac{1}{2}$ INCH ALLOWABLE VARIATION). IT IS ASSUMED THE OVERLAY OPERATION WILL PLACE ALL DECK CONCRETE (EXCLUDING AREAS OF CLASS B REPAIR) IN ONE OPERATION.

THE BID ITEM "DECK OVERLAY (CLASS O PPC)" OR "DECK OVERLAY (CLASS HPC-O PCC)" SHALL INCLUDE THE COST OF THE _____ CUBIC YARDS OF CONCRETE MATERIAL NOTED AS A DEDUCTION WHEN CALCULATING THE "CONCRETE REPAIR, REPLACE VARIABLE DEPTH CONCRETE" PAY QUANTITY.

THE BID ITEM "REMOVALS, CLASS A" SHALL INCLUDE COST OF LABOR AND EQUIPMENT REGUIRED TO REMOVE UNSOUND CONCRETE AND UNBONDED CONCRETE AROUND EXPOSED REINFORCING BARS AFTER HYDRODEMOLITION. REMOVALS WILL INVOLVE HAND CHIPPING TOOLS AND BE PAID FOR BY CONTRACT UNIT PRICE PER SQ. YD.

THE ENGINEER WILL DETERMINE THE SQ. YD. OF "REMOVALS, CLASS A" BY MEANS OF SURFACE DIMENSIONS OF THE AREAS TO BE REMOVED TO THE NEAREST 0.1 SQ. YD.

CONCERNING ADJUSTMENT OF PRICE FOR OVERRUN OR UNDERRUN OF THE CONTRACT QUANTITY, "REMOVALS, CLASS A" WILL NOT BE CONSIDERED A MAJOR ITEM OF WORK.

DEFECTS IN EMBEDDED REINFORCING STEEL DUE TO CORROSION, WHICH HAS REDUCED THE CROSS SECTIONAL AREA OF THE STEEL BY 25% OR GREATER, SHALL HAVE NEW REINFORCING STEEL OF THE SAME SIZE OR GREATER CROSS SECTIONAL AREA LAPPED TO EACH SIDE OF THE DAMAGED AREA. 2'-2" LAP LENGTHS SHALL BE USED. NEW REINFORCEMENT SHALL BE EPOXY COATED. NEW REINFORCEMENT SHALL BE PAID FOR AS AN EXTRA WORK ORDER.

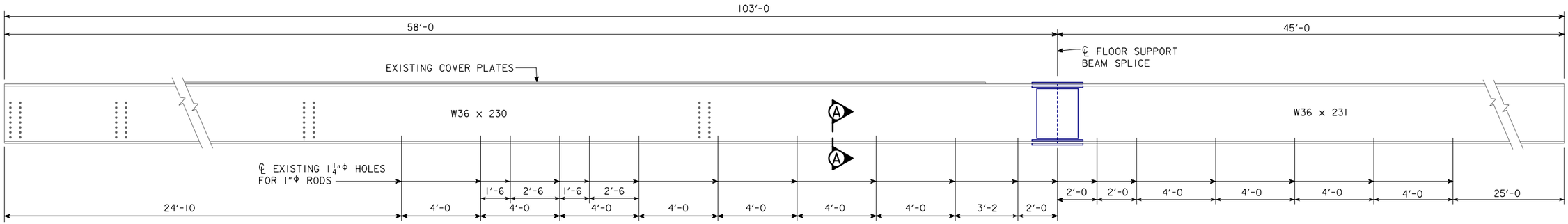
WHERE THE DECK IS UNSOUND FOR MORE THAN HALF OF ITS ORIGINAL DEPTH AS DETERMINED BY THE ENGINEER, THE CONCRETE SHALL BE REMOVED FULL DEPTH. FOR THESE AREAS OF FULL DEPTH REMOVAL (DESIGNED AS CLASS B REPAIR), THE WORK SHALL BE PAID FOR AS EXTRA WORK.

HYDRODEMOLITION NOTES

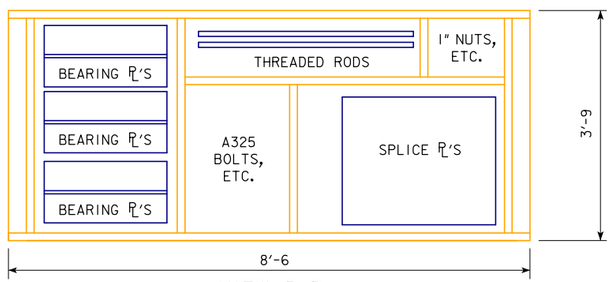
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

REVISED 06-2017 - UPDATED REFERENCES TO BRIDGE DECK (WAS BRIDGE FLOOR).
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1069 - THIS SHEET ISSUED 01-14.

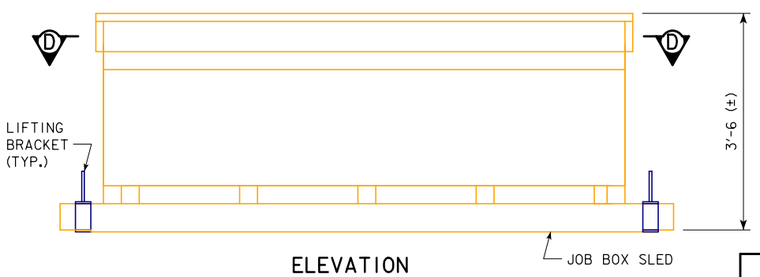


ELEVATION VIEW OF FLOOR SUPPORT BEAM



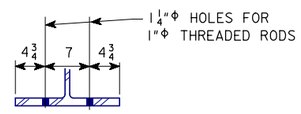
VIEW D-D

SHOWING INTERIOR PARTITIONS
(LID NOT SHOWN)

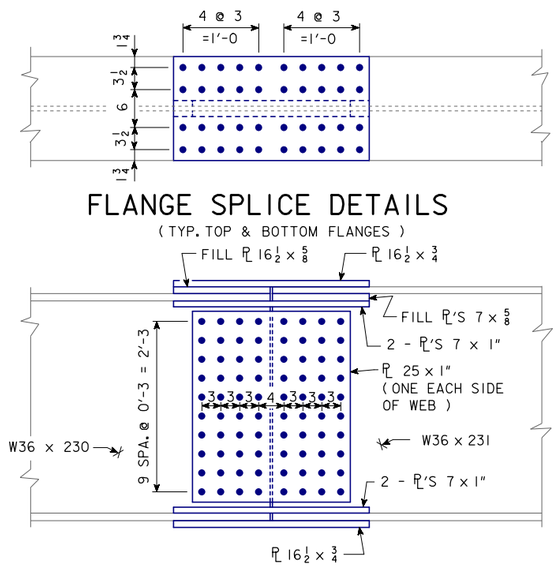


ELEVATION

JOB BOX DETAILS



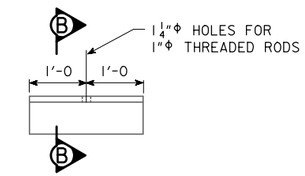
PART SECTION A-A



FLANGE SPLICE DETAILS

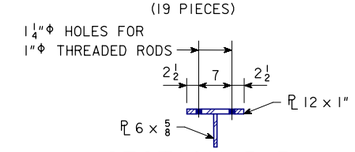
(TYP. TOP & BOTTOM FLANGES)

FLOOR SUPPORT BEAM SPLICE DETAILS

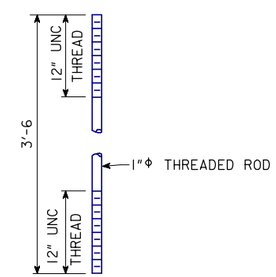


BEARING PL

(19 PIECES)



SECTION B-B



THREADED ROD DETAILS

(38 PIECES)

NOTE:
THE 1"Φ THREADED RODS ARE TO HAVE A WASH AND TWO HEAVY HEXAGONAL NUTS ON THE BOTTOM AND A WASHER AND ONE HEAVY HEXAGONAL NUT ON THE TOP.

HIGH STRENGTH BOLTS

NUMBER	ITEM	LOCATION
88	⅞"Φ x 4" A325 BOLTS	WEB
44	⅞"Φ x 4¼" A325 BOLTS	BOTTOM FLANGE
44	⅞"Φ x 5" A325 BOLTS	TOP FLANGE
176	⅞"Φ HEX NUT	
176	⅞"Φ WASHER	

JOB BOX INVENTORY

NUMBER	ITEM	LOCATION
2	WEB SPLICE PL 25½ x 1" x 30½	
4	FLG SPLICE PL 7 x 1" x 31½	
2	FLG SPLICE PL 16½ x ¾ x 31½	
1	FILL PL 15¾ x ⅝ x 16½	TOP FLANGE
2	FILL PL 7 x ⅝ x 16½	TOP FLANGE
19	BEARING PL - 2'-0 LENGTHS	
38	1"Φ x 3'-6 THREADED RODS	
84	WASHERS FOR THREADED RODS	
125	HEAVY HEX NUTS FOR THREADED RODS	

FLOOR SUPPORT BEAM SYSTEM NOTES:

THE FLOOR SUPPORT BEAM SYSTEM IS THE PROPERTY OF THE DOT, AND IS STORED AT THE DOT MAINTENANCE YARD IN AMES AT INTERSECTION OF I-35/US30. THE FLOOR SUPPORT BEAM SECTIONS AND JOB BOX CONTAINING ITEMS LISTED IN INVENTORY ON THIS SHEET ARE LOCATED AT FACILITY IN NE CORNER OF YARD. FLOOR SUPPORT BEAM SECTIONS, 58'-0 AND 45'-0 LENGTHS, ARE NOT SPLICED TOGETHER IN STORAGE. JOB BOX, CONTAINING BOLTED FIELD SPLICE MATERIALS, THREADEDED RODS AND BEARING PLATES, IS TO BE TRANSPORTED TO ANY FUTURE JOBSITE BY CONTRACTOR.

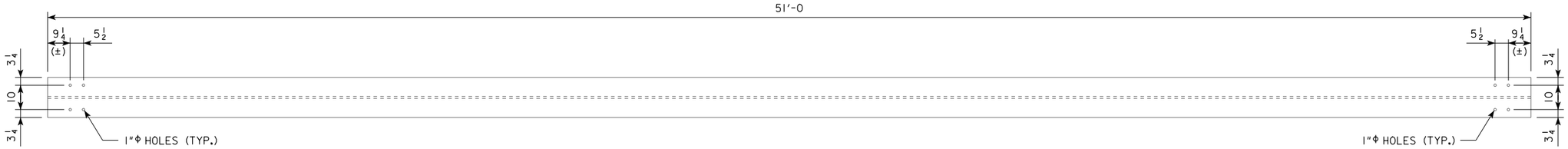
THE LUMP SUM BID ITEM "STRUCTURAL STEEL, HAUL + STORING" SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE HANDLING AND TRANSPORT OF THE FLOOR SUPPORT BEAM SYSTEM FROM THE DOT MAINTENANCE YARD IN AMES TO THE JOBSITE, AND RETURNING THESE MATERIALS.

THE FLOOR SUPPORT BEAM SYSTEM SHALL BE STORED AT THE DOT MAINTENANCE YARD IN AMES AT THE CONCLUSION OF ANY PROJECT EMPLOYING THESE MATERIALS. THERE SHALL BE NO EXCEPTIONS TO THIS REQUIREMENT.

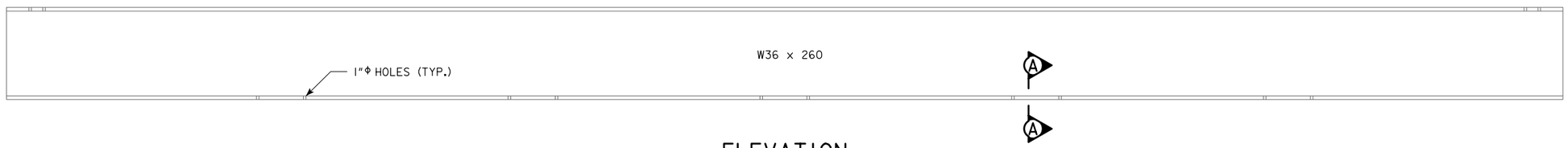
FLOOR SUPPORT BEAM DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

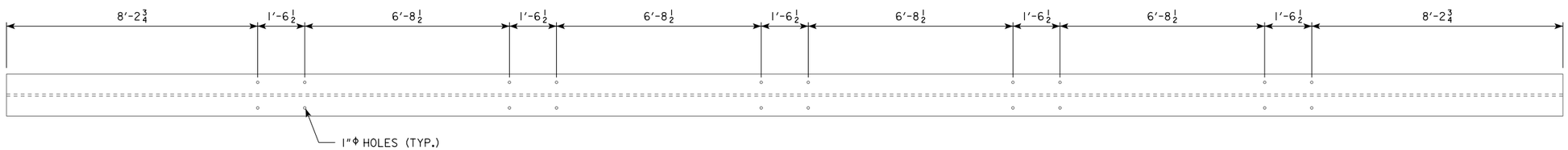
REVISED 11-09 - HIGH STRENGTH BOLT REPLACEMENT NOTE WAS DELETED.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1090 - THIS SHEET ISSUED 05-08.



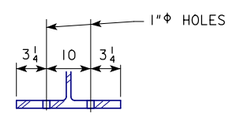
TOP FLANGE



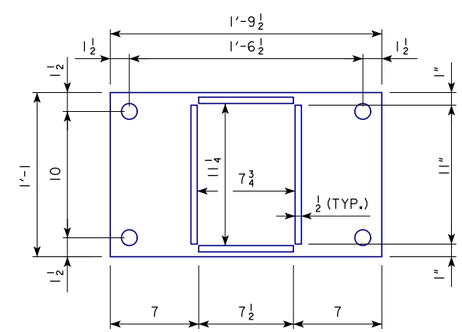
ELEVATION



BOTTOM FLANGE



PART SECTION A-A



BEARING PLATE
(5 TOTAL)

SUPPORT BEAM NOTES:

THE SUPPORT BEAMS ARE THE PROPERTY OF THE DOT, AND THERE ARE TWO IDENTICAL BEAMS STORED AT THE DOT MAINTENANCE YARD IN AMES AT THE INTERSECTION OF I-35/US30. THE SUPPORT BEAM SECTIONS ARE LOCATED AT THE FACILITY IN THE NE CORNER OF THE YARD. THE SUPPORT BEAMS WERE ORIGINALLY FABRICATED IN AUGUST 2004 FOR BUCHANAN COUNTY DESIGN 104. THE SUPPORT BEAMS ARE A709 GRADE 50 STEEL.

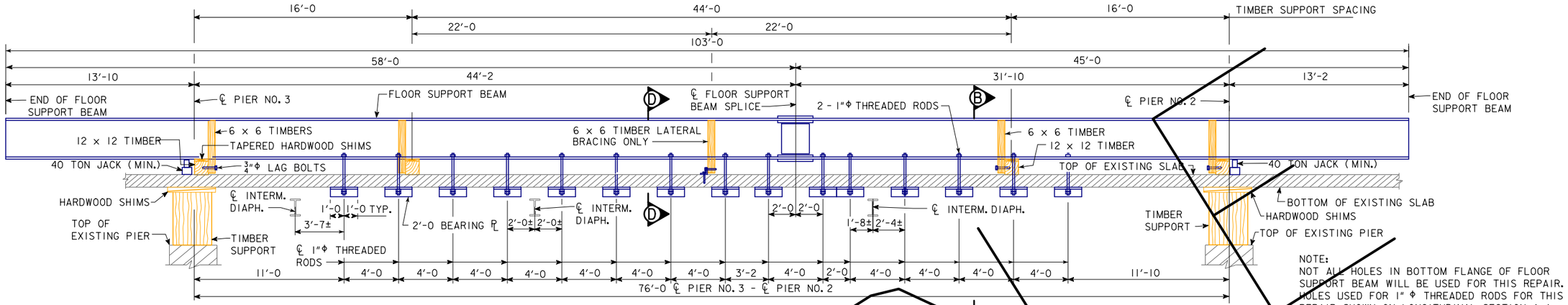
THE LUMP SUM BID ITEM "STRUCTURAL STEEL, HAUL + STORING" SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE HANDLING AND TRANSPORT OF THE SUPPORT BEAMS FROM THE DOT MAINTENANCE YARD IN AMES TO THE JOB SITE, AND RETURNING THESE MATERIALS.

THE SUPPORT BEAMS SHALL BE RETURNED TO THE DOT MAINTENANCE YARD IN AMES AT THE CONCLUSION OF ANY PROJECT EMPLOYING THESE MATERIALS. THERE SHALL BE NO EXCEPTIONS TO THIS REQUIREMENT. ANY MISSING OR DAMAGED COMPONENTS SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE. WHEN THE SUPPORT BEAMS ARE STORED AT THE JOB SITE OR ONCE THEY ARE RETURNED TO THE AMES MAINTENANCE YARD, THE SUPPORT BEAMS SHALL BE PLACED ON TIMBER DUNNAGE OFF THE GROUND.

FLOOR SUPPORT BEAM DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

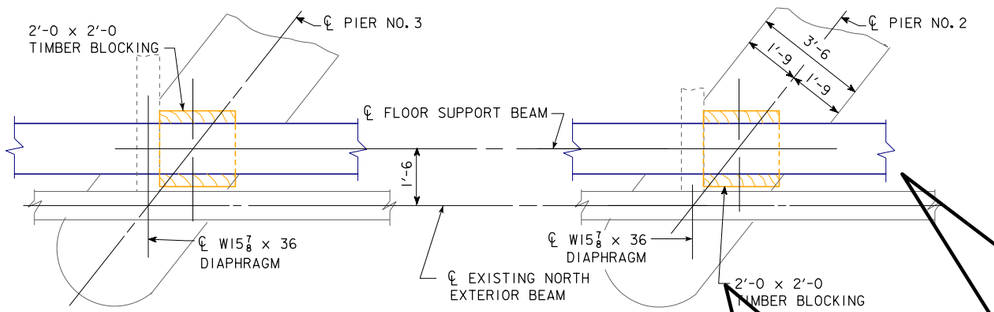
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



NOTE:
NOT ALL HOLES IN BOTTOM FLANGE OF FLOOR SUPPORT BEAM WILL BE USED FOR THIS REPAIR. HOLES USED FOR 1" Φ THREADED RODS FOR THIS REPAIR SHOWN ON LONGITUDINAL SECTION A-A.

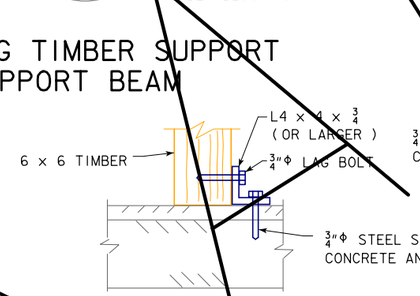
LONGITUDINAL SECTION A-A

(SHOWING FLOOR SUPPORT BEAM DETAILS - LOOKING SOUTH)

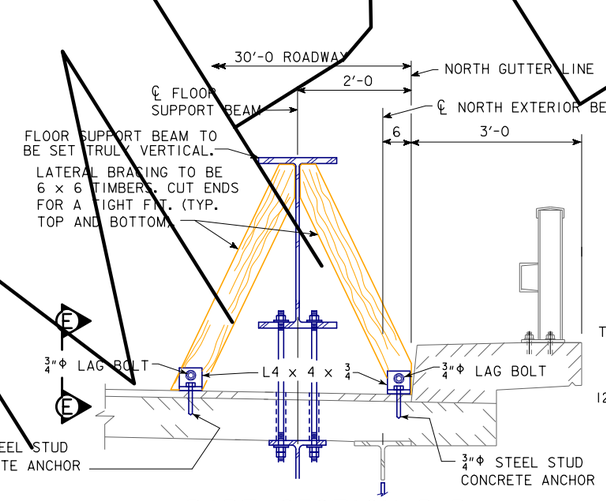


PART PLAN VIEW SHOWING TIMBER SUPPORT FOR END OF FLOOR SUPPORT BEAM

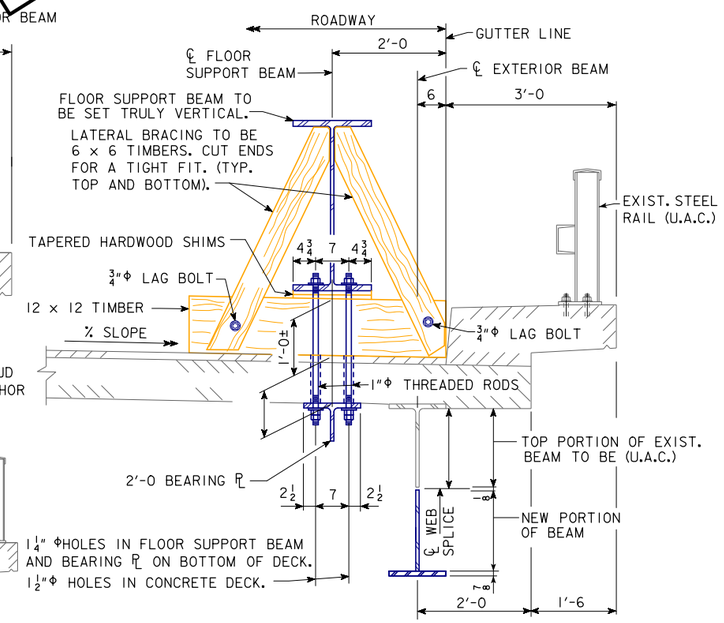
(SLAB NOT SHOWN)



PART VIEW E-E

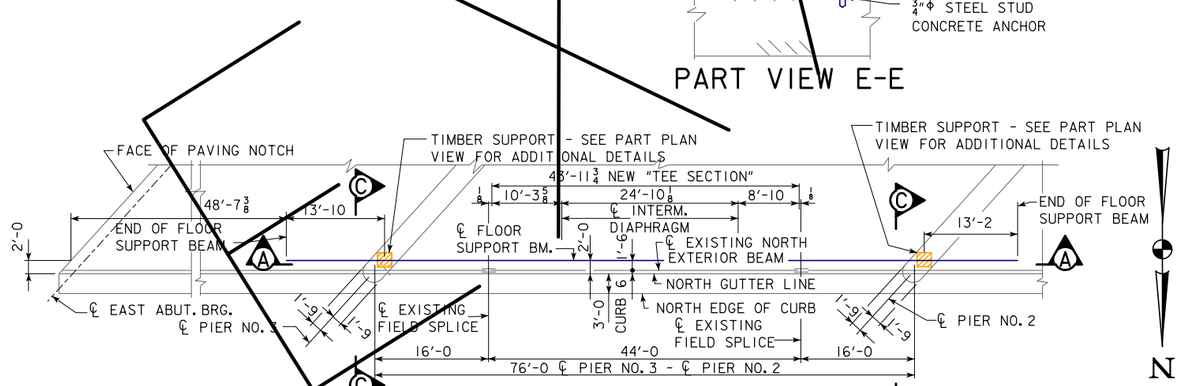


PART SECTION D-D

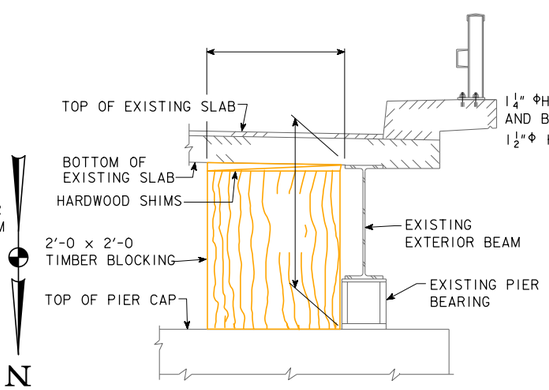


PART SECTION B-B

NOTE: SEE DES. SHT. ??? FOR ADDITIONAL FLOOR SUPPORT BEAM DETAILS.



PART PLAN SHOWING FLOOR SUPPORT BEAM LAYOUT AND EXISTING BEAM LAYOUT DETAILS



PART SECTION C-C

(SHOWING TIMBER SUPPORT FOR END OF FLOOR SUPPORT BEAM. FLOOR SUPPORT BEAM NOT SHOWN.)

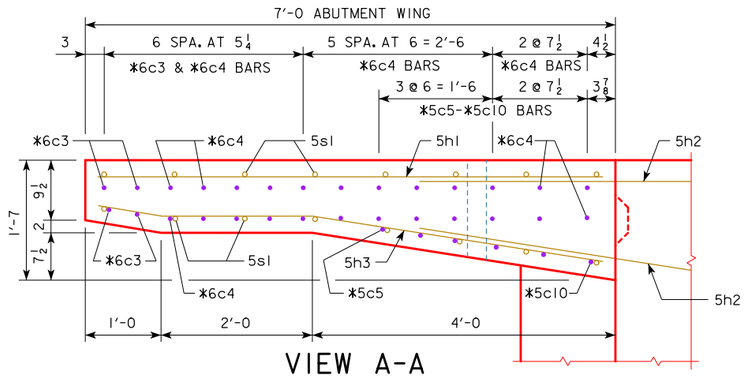
FLOOR SUPPORT BEAM - LAYOUT

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

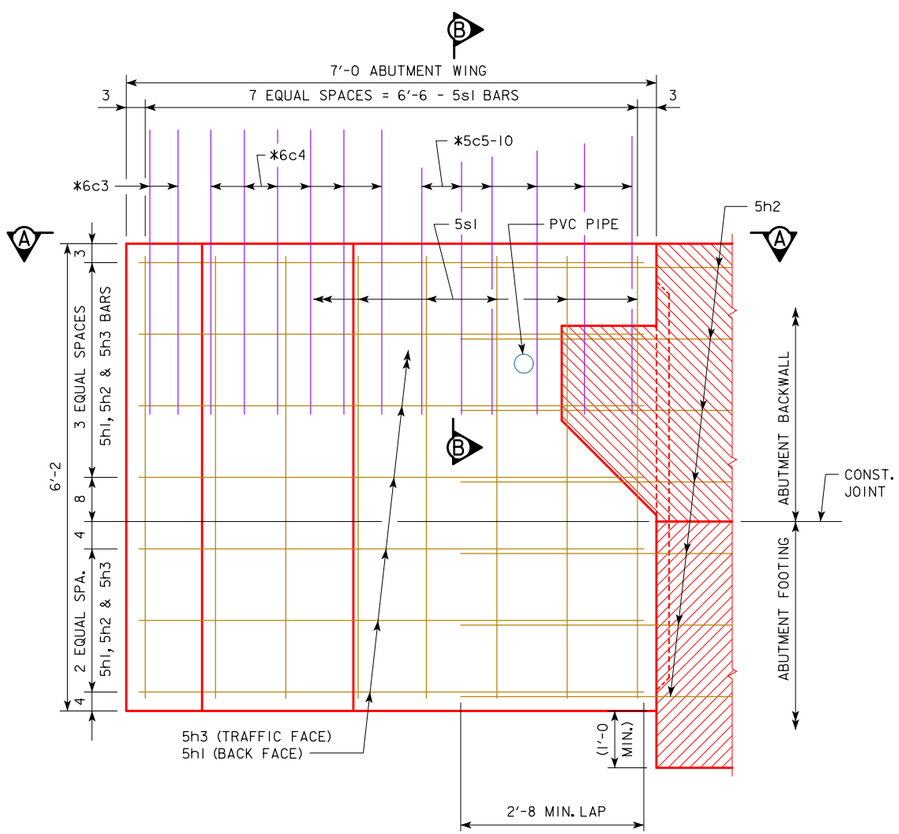
DESIGN TEAM	FLOOR SUPPORT BEAM LAYOUT	STANDARD SHEET 1091	COUNTY	PROJECT NUMBER	SHEET NUMBER

ENGLISHMISCELLANEOUSBRIDGES.DGN - 1091 - THIS SHEET ISSUED 05-08.

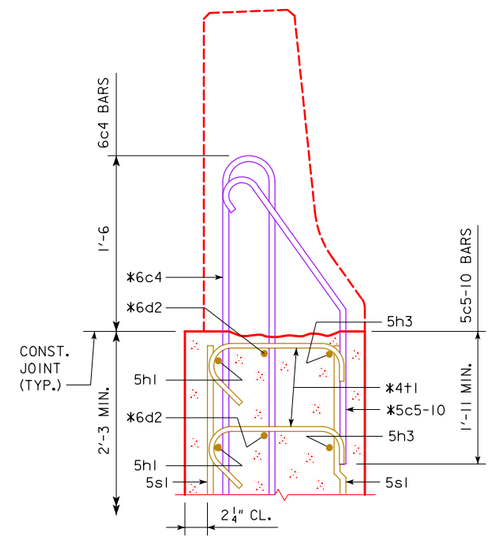


VIEW A-A

NOTE:
PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.



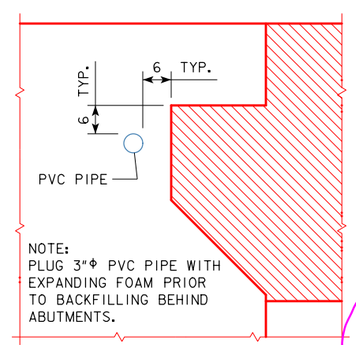
ABUTMENT WING - ELEVATION VIEW



SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.



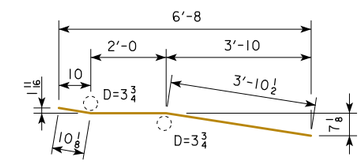
NOTE:
PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.

PVC PIPE LOCATION

NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		7	6'-8	49
5h3	HORIZONTAL TRAFFIC FACE		7	6'-9	49
5s1	VERTICAL BOTH FACES		16	5'-10	97
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				195



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	1.8
TOTAL (CU. YDS.)	1.8

NOTE:

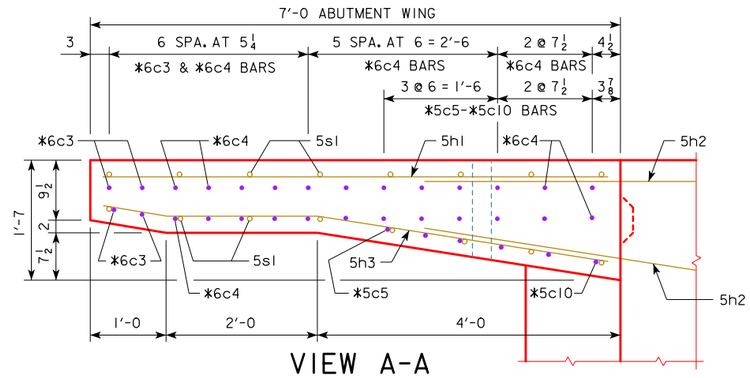
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

ABUTMENT WING DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

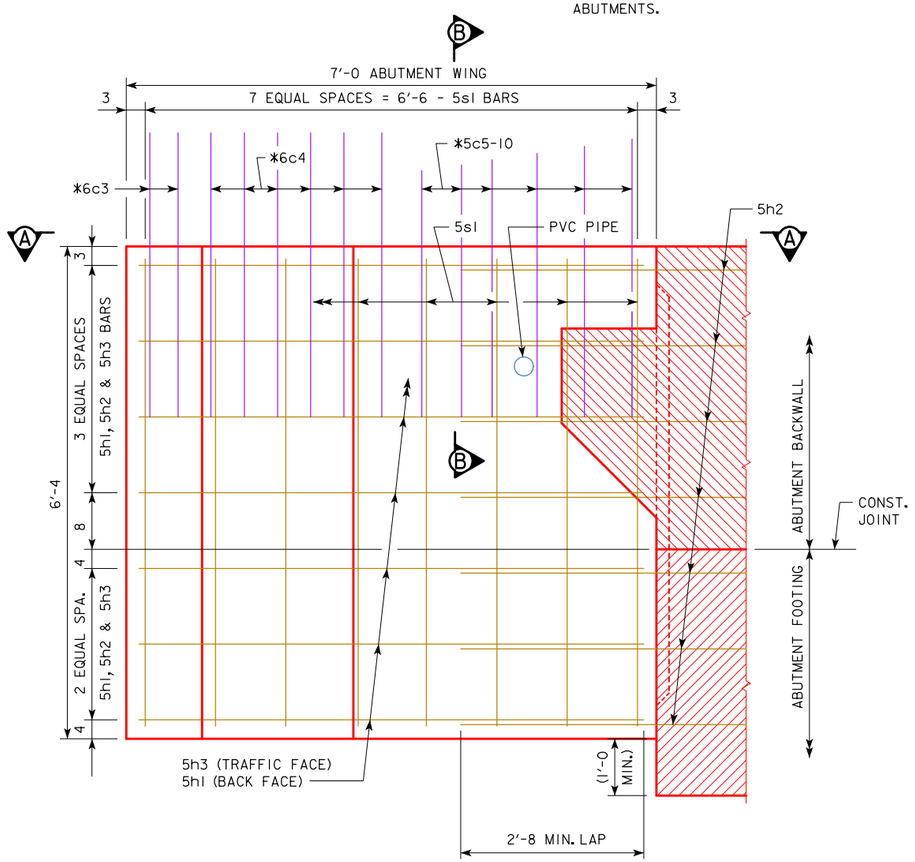
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2110 - THIS SHEET ISSUED 02-08.

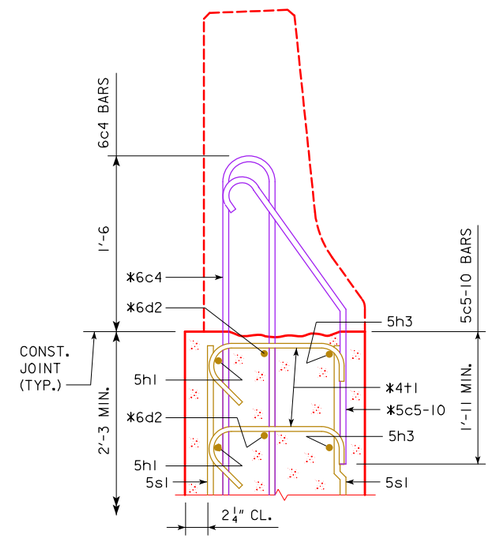


VIEW A-A

NOTE:
PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.



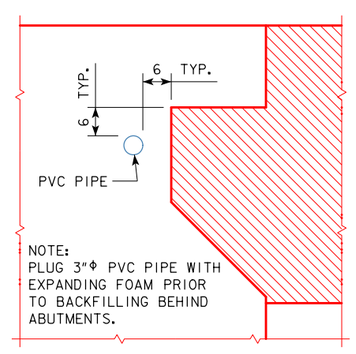
ABUTMENT WING - ELEVATION VIEW



SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.

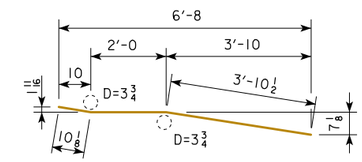


NOTE:
PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.

PVC PIPE LOCATION

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		7	6'-8	49
5h3	HORIZONTAL TRAFFIC FACE		7	6'-9	49
5s1	VERTICAL BOTH FACES		16	6'-0	100
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				198



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	1.9
TOTAL (CU. YDS.)	1.9

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

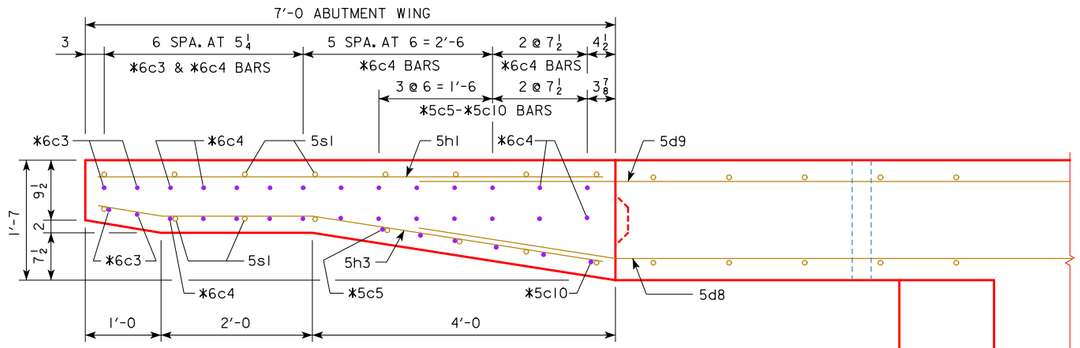
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

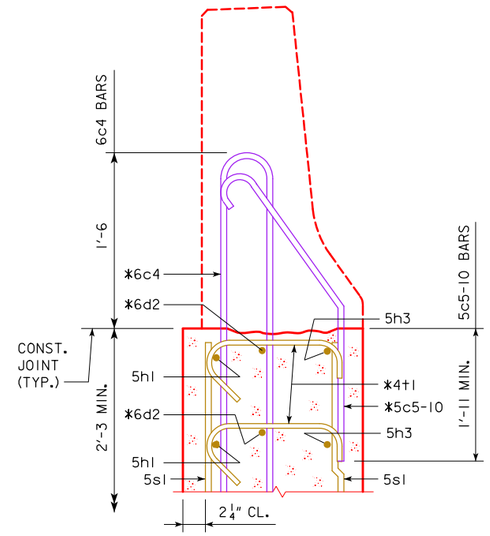
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2111 - THIS SHEET ISSUED 02-08.



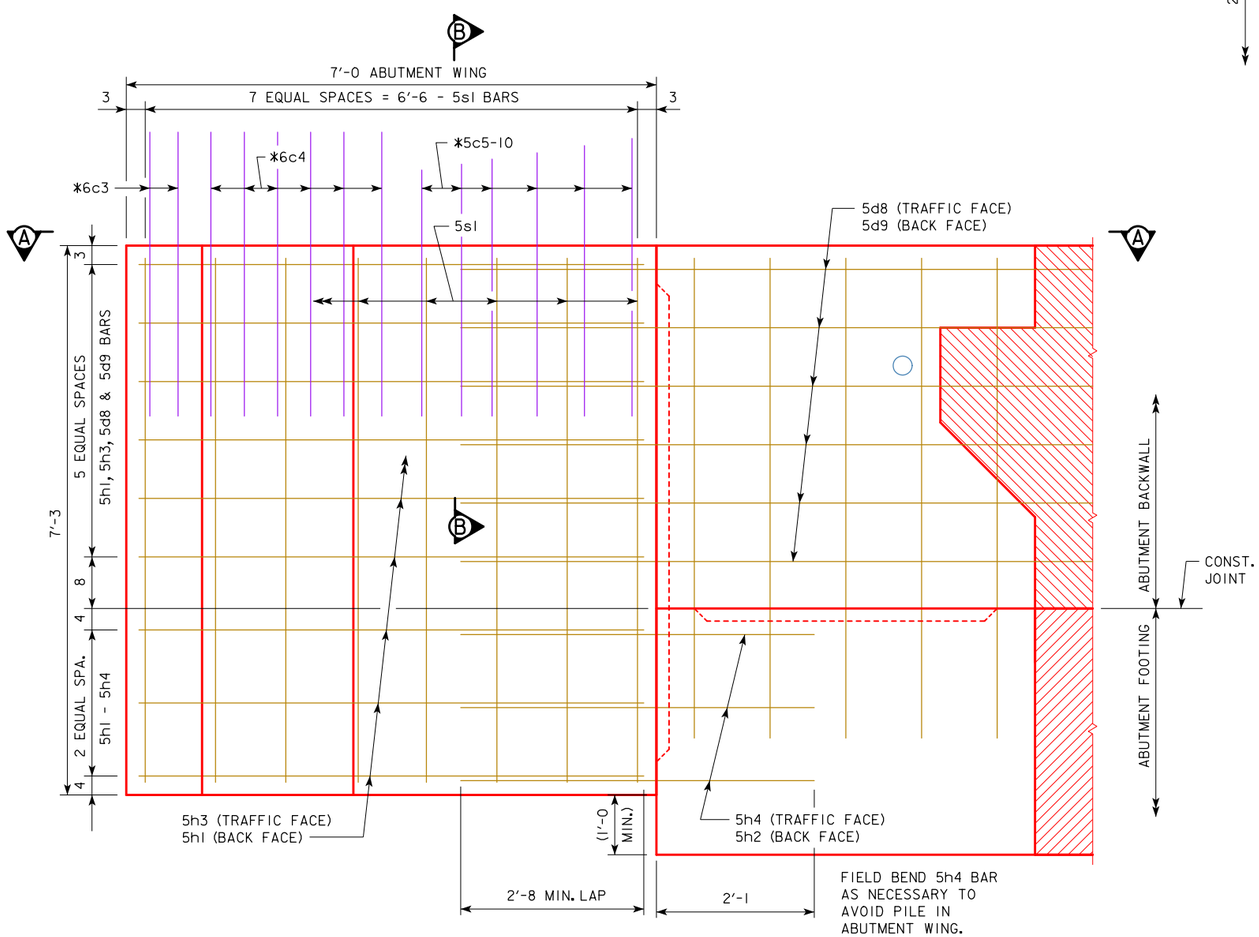
VIEW A-A



SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

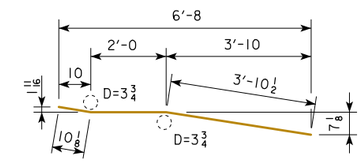
SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.



ABUTMENT WING - ELEVATION VIEW

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		9	6'-8	63
5h3	HORIZONTAL TRAFFIC FACE		9	6'-9	63
5s1	VERTICAL BOTH FACES		16	6'-11	115
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				241



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.1
TOTAL (CU. YDS.)	2.1

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

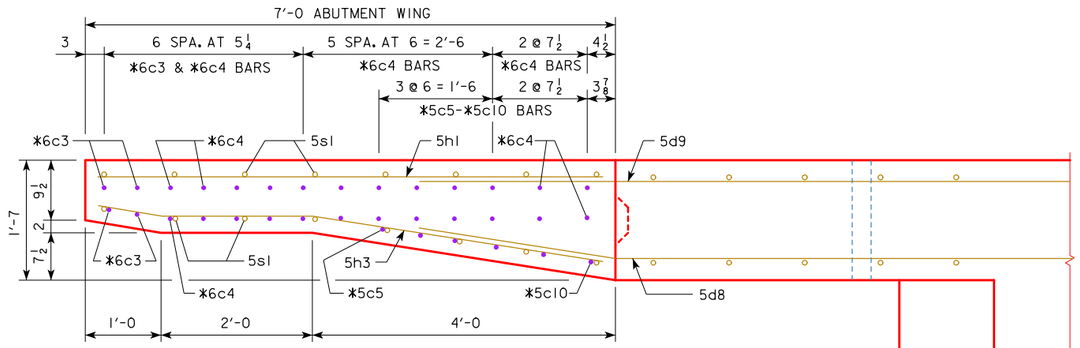
ABUTMENT WING DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

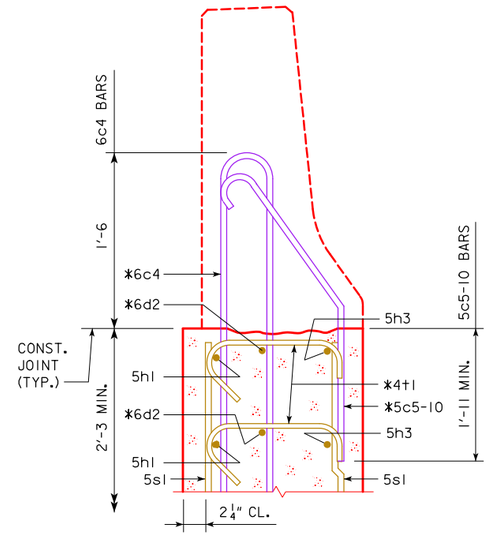
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	'BTC' OR 'C' BEAM INTEGRAL ABUTMENT WING DETAILS	STANDARD SHEET 2112	COUNTY	PROJECT NUMBER	SHEET NUMBER

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2112 - THIS SHEET ISSUED 02-08.



VIEW A-A



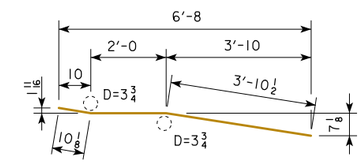
SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4+1.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		9	6'-8	63
5h3	HORIZONTAL TRAFFIC FACE		9	6'-9	63
5s1	VERTICAL BOTH FACES		16	7'-7	127
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				253



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

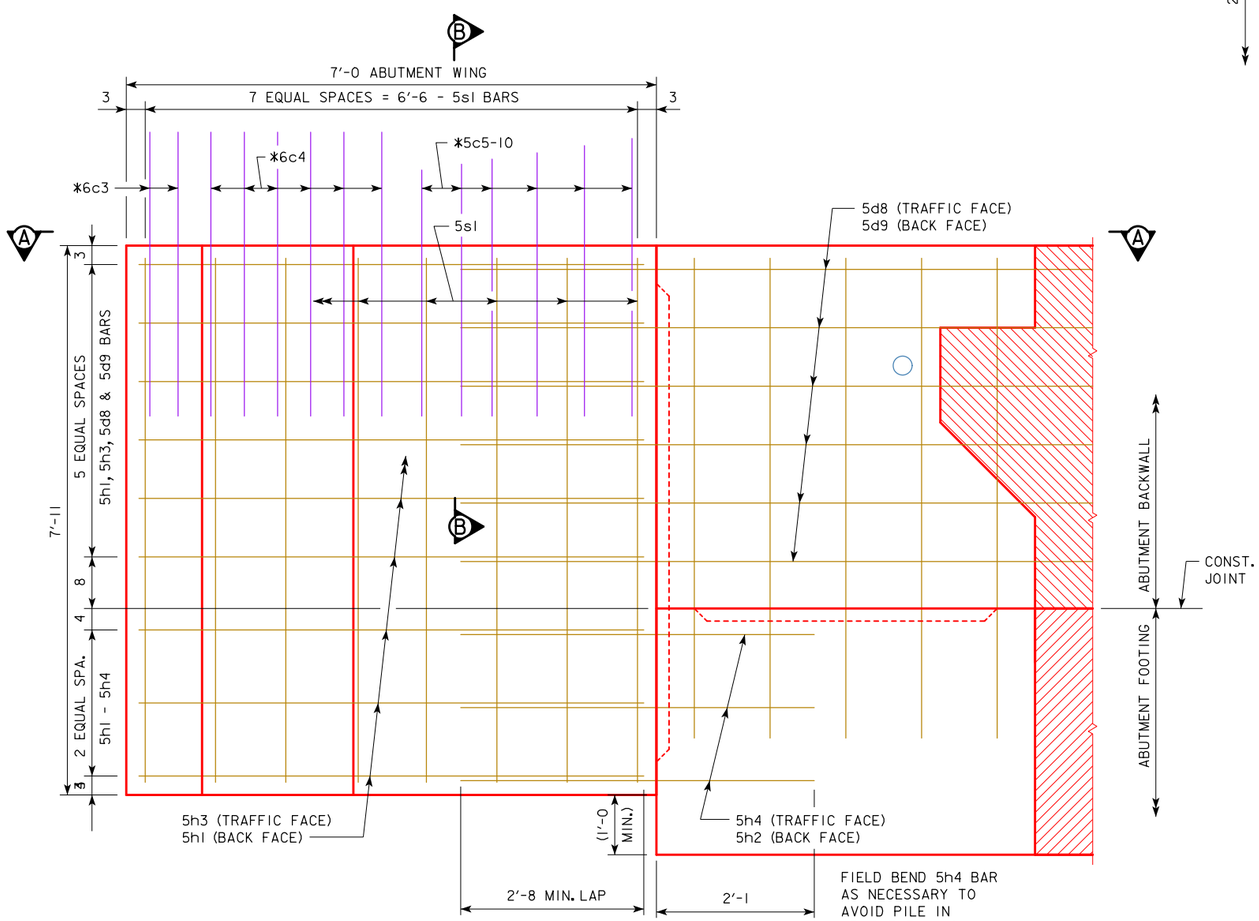
BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.3
TOTAL (CU. YDS.)	2.3

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.



ABUTMENT WING - ELEVATION VIEW

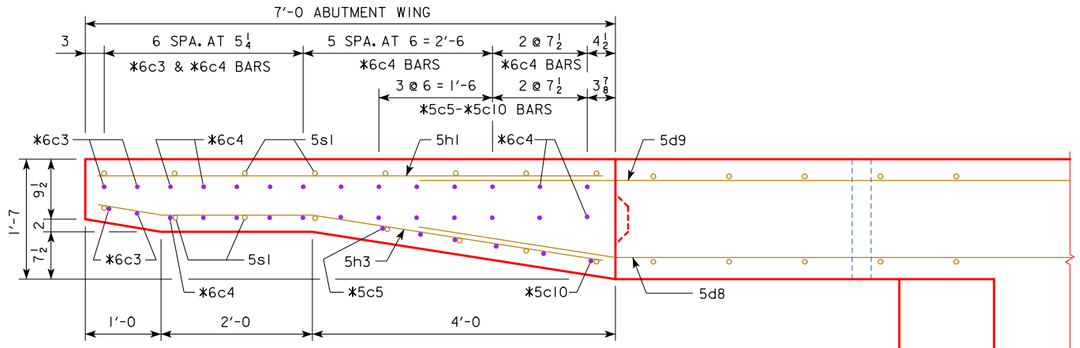
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

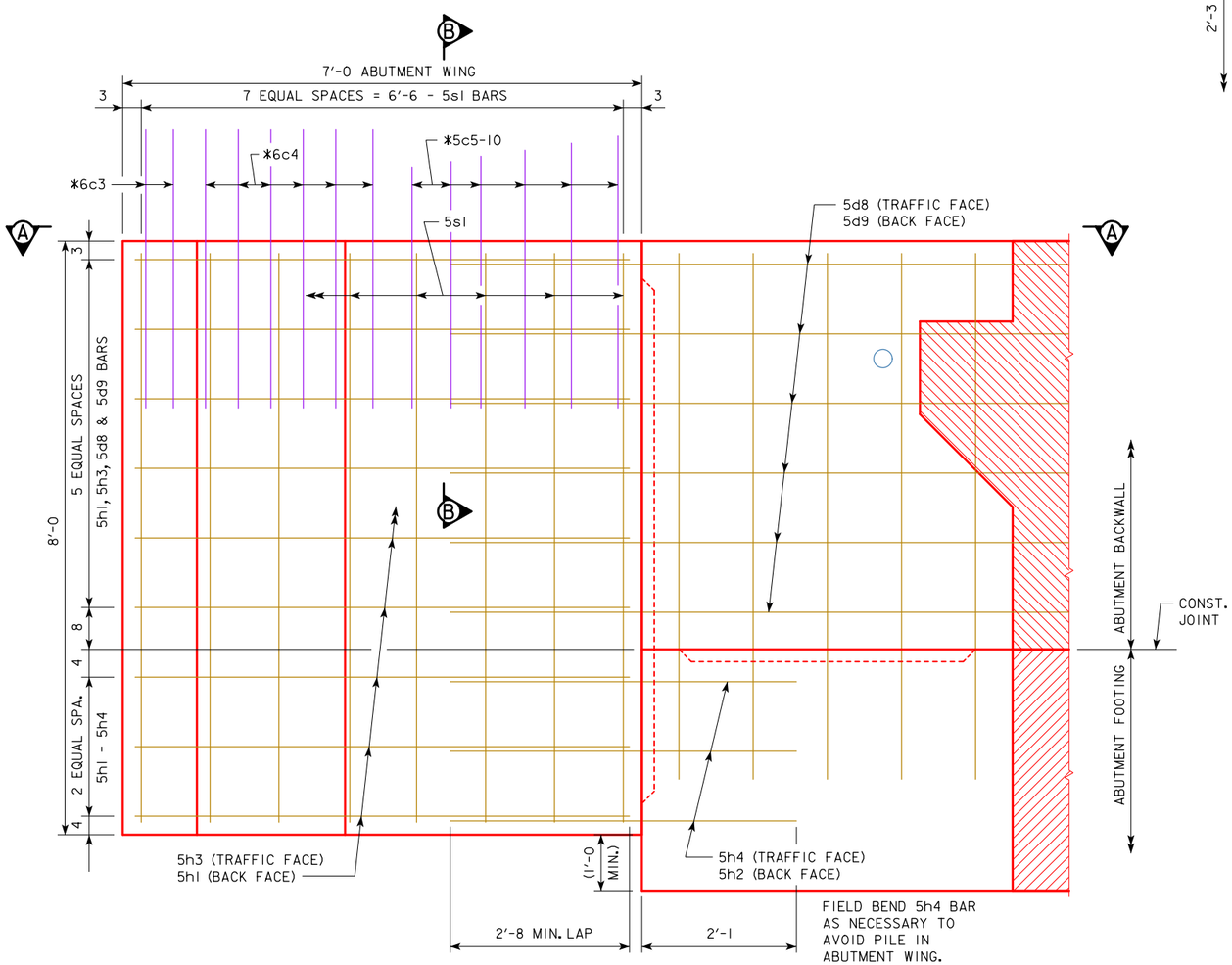
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

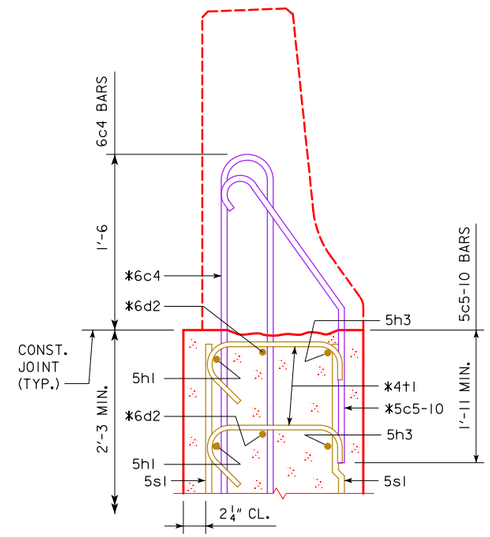
CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2112-S - THIS SHEET ISSUED 02-08.



VIEW A-A



ABUTMENT WING - ELEVATION VIEW



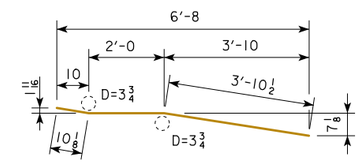
SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		9	6'-8	63
5h3	HORIZONTAL TRAFFIC FACE		9	6'-9	63
5s1	VERTICAL BOTH FACES		16	7'-8	128
				REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)	254



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.3
TOTAL (CU. YDS.)	2.3

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

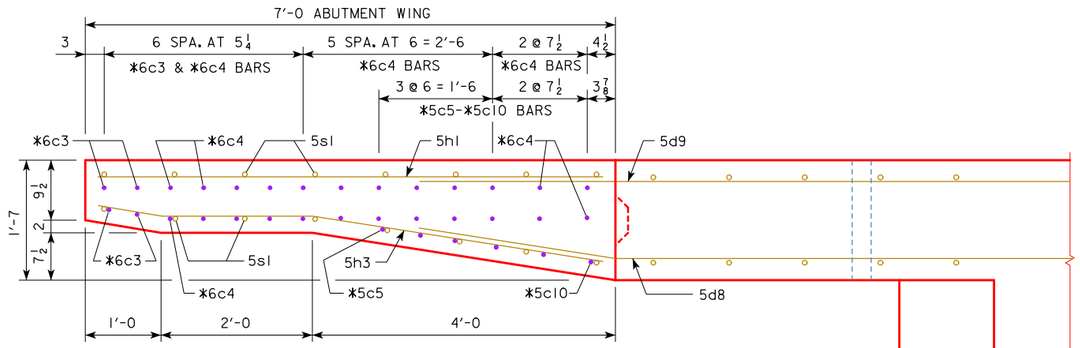
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

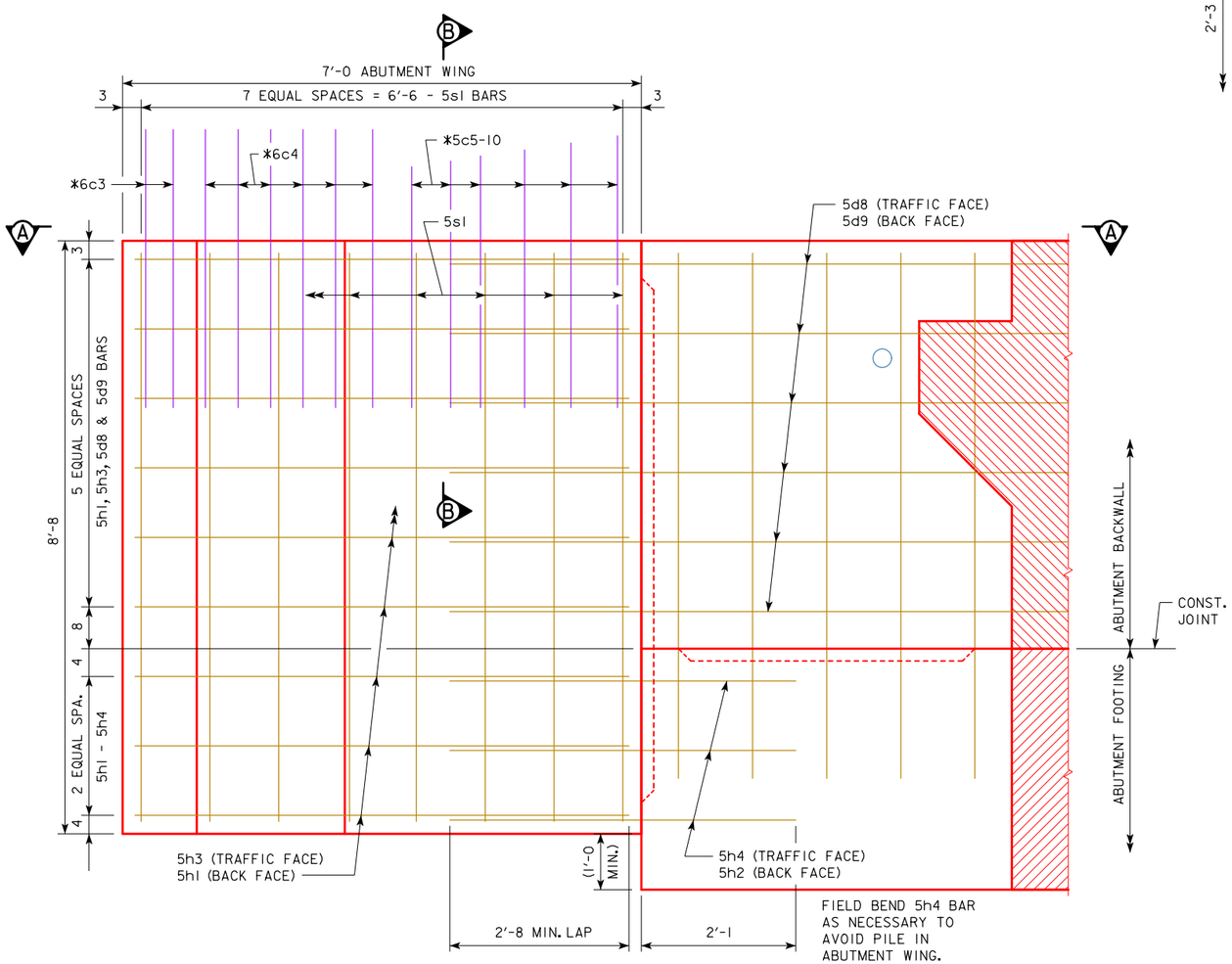
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

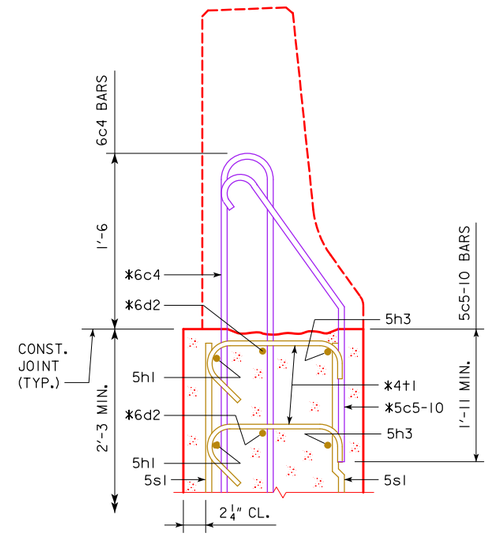
CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2113 - THIS SHEET ISSUED 02-08.



VIEW A-A



ABUTMENT WING - ELEVATION VIEW



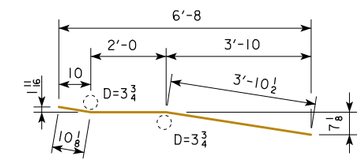
SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		9	6'-8	63
5h3	HORIZONTAL TRAFFIC FACE		9	6'-9	63
5s1	VERTICAL BOTH FACES		16	8'-4	139
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				265



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.5
TOTAL (CU. YDS.)	2.5

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

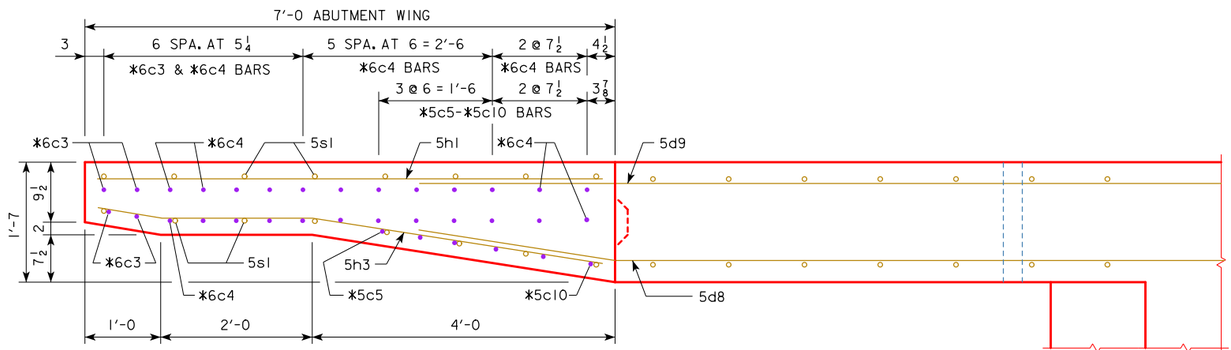
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

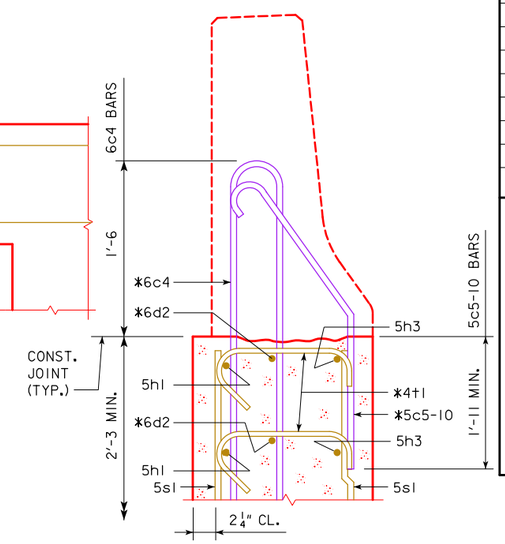
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2113-S - THIS SHEET ISSUED 02-08.



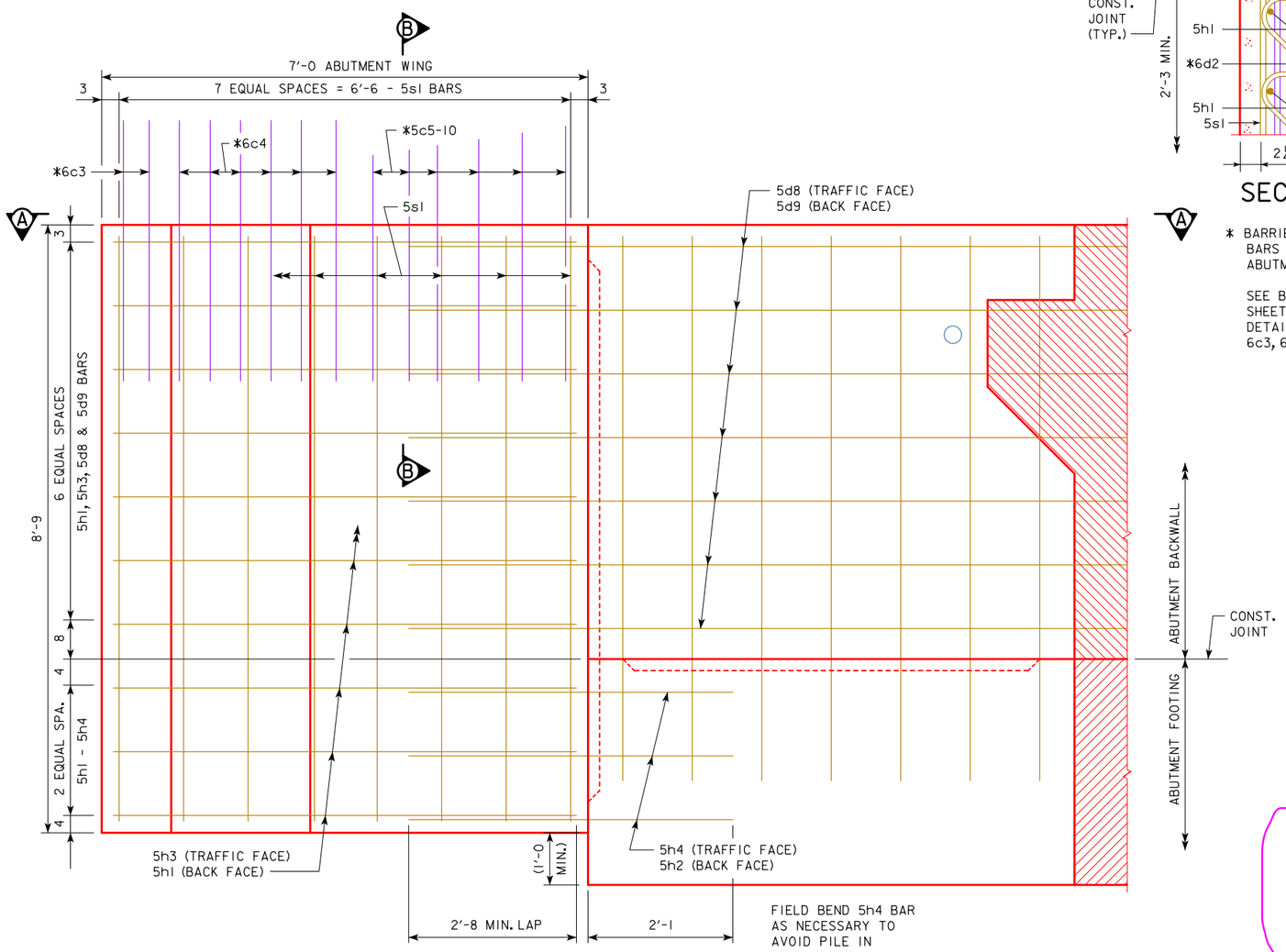
VIEW A-A



SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

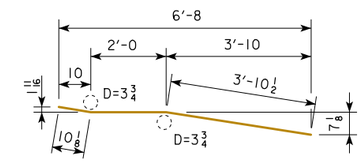
SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.



ABUTMENT WING - ELEVATION VIEW

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		10	6'-8	70
5h3	HORIZONTAL TRAFFIC FACE		10	6'-9	70
5s1	VERTICAL BOTH FACES		16	8'-5	140
				REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)	280



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.6
TOTAL (CU. YDS.)	2.6

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

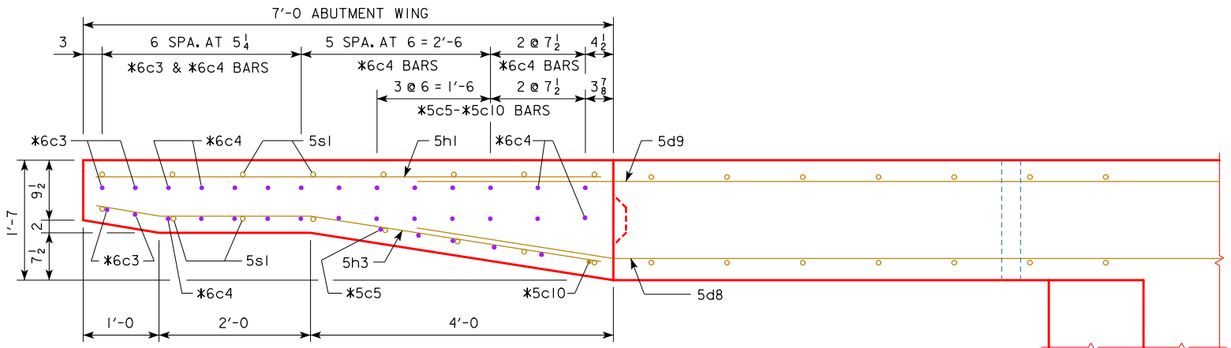
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

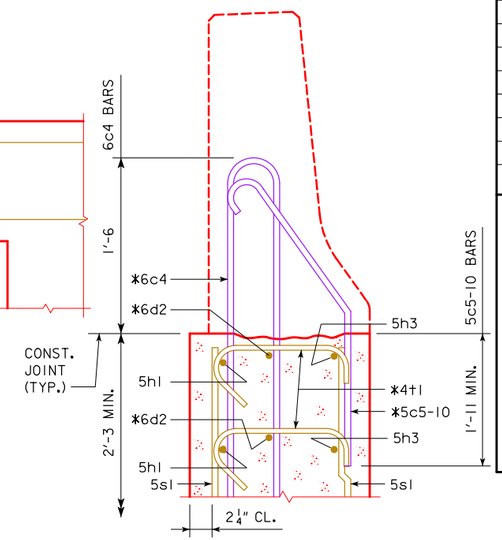
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

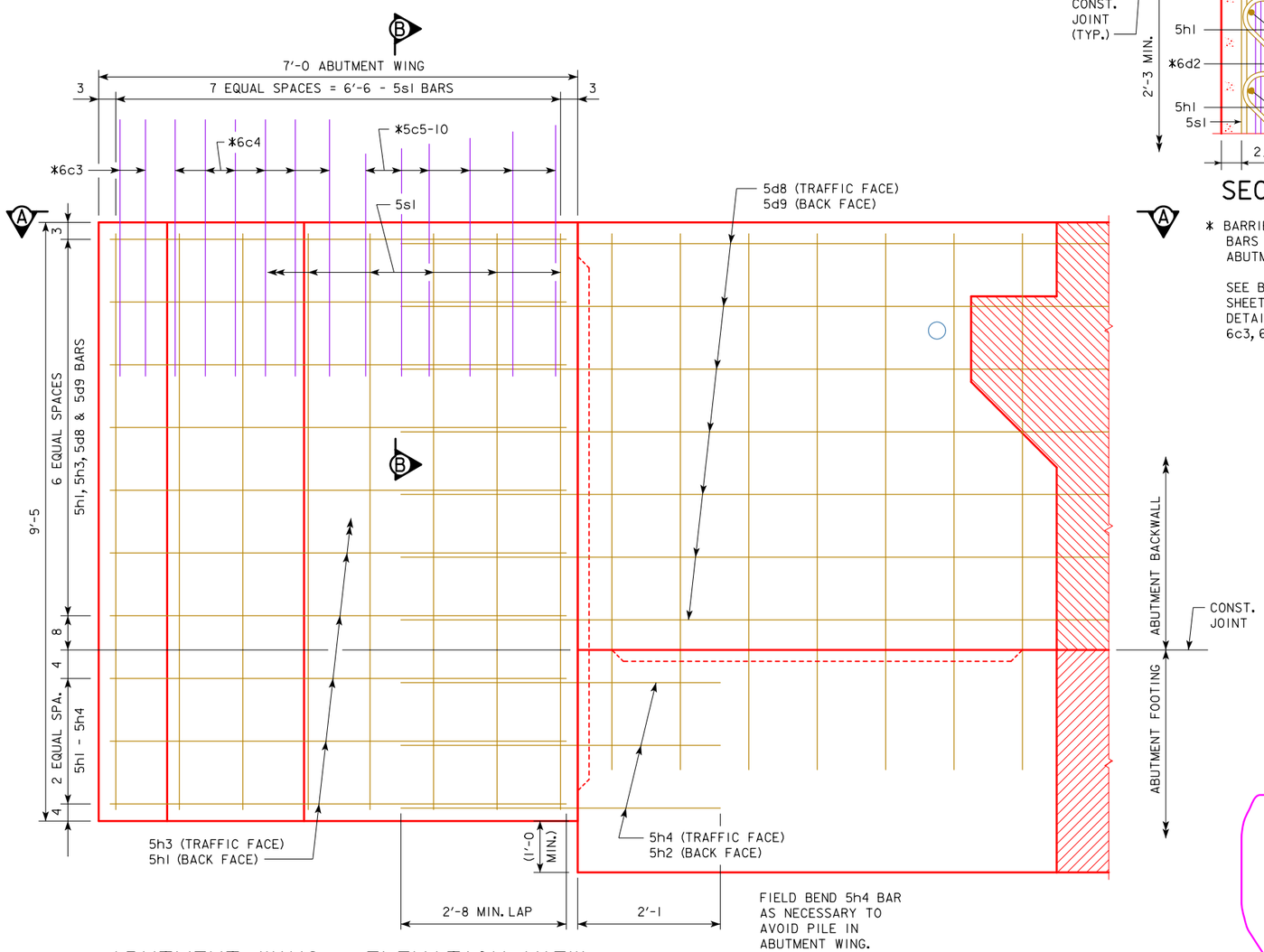
CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2114 - THIS SHEET ISSUED 02-08.



VIEW A-A



SECTION B-B



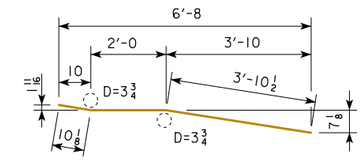
ABUTMENT WING - ELEVATION VIEW

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		10	6'-8	70
5h3	HORIZONTAL TRAFFIC FACE		10	6'-9	70
5s1	VERTICAL BOTH FACES		16	9'-1	152
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				292



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.7
TOTAL (CU. YDS.)	2.7

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

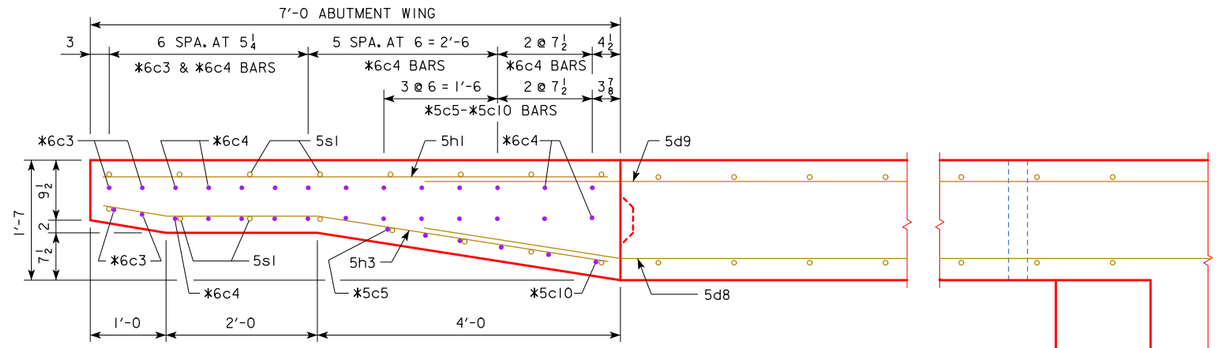
NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

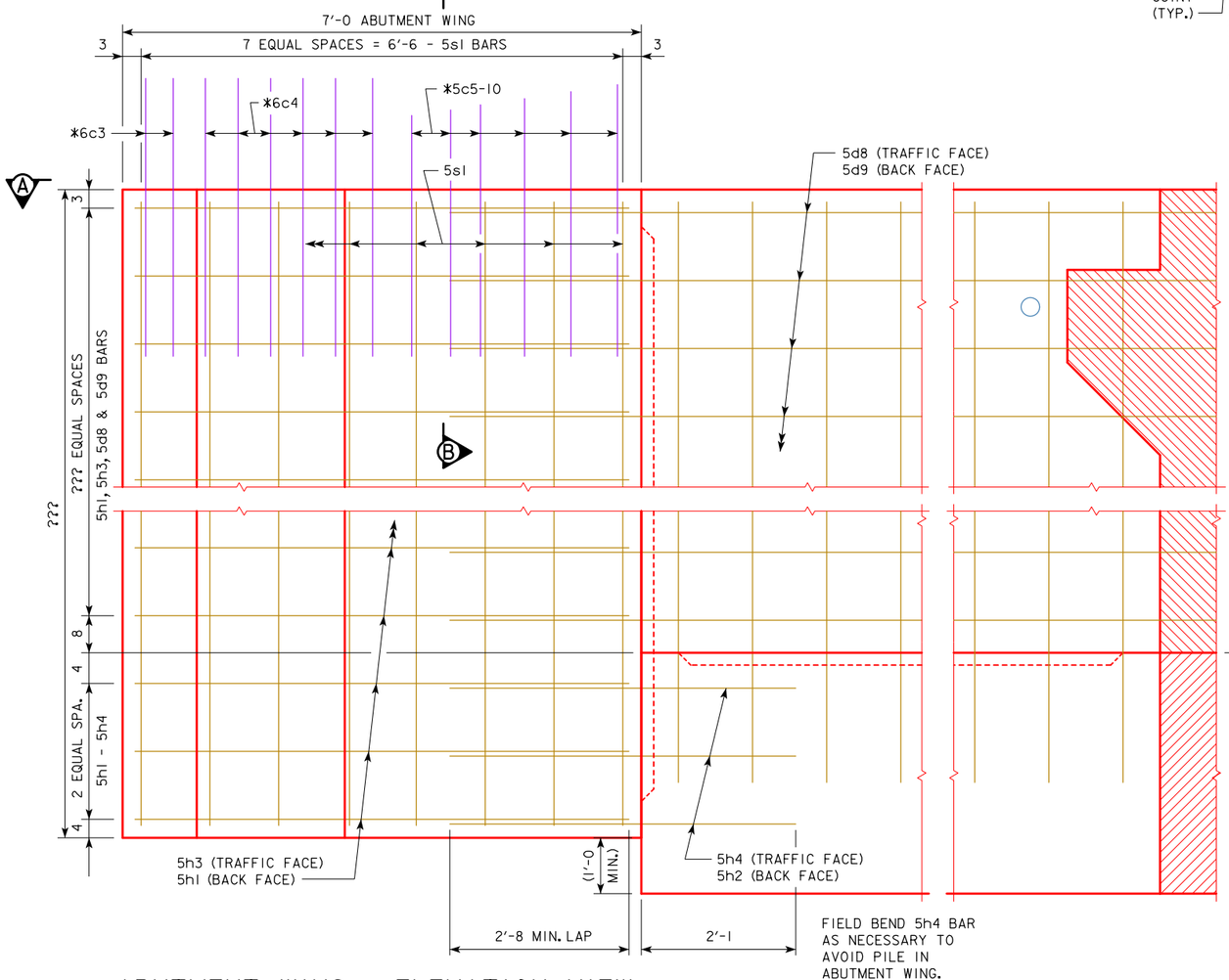
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

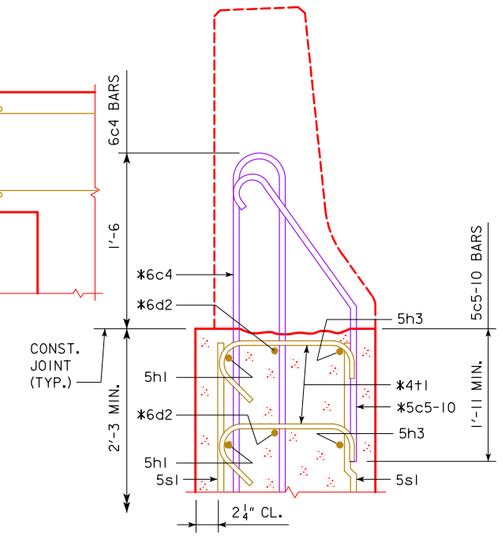
CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2114-S - THIS SHEET ISSUED 02-08.



VIEW A-A



ABUTMENT WING - ELEVATION VIEW



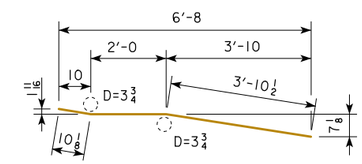
SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4+1.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE			6'-8	
5h3	HORIZONTAL TRAFFIC FACE			6'-9	
5s1	VERTICAL BOTH FACES		16		
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING 0.292 CU. YDS. PER FOOT OF DEPTH	
TOTAL (CU. YDS.)	

NOTE:

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: "STAINLESS STEEL" LEVEL OR "REBAR EPOXY A" LEVEL SHOULD BE ON OR OFF DEPENDING ON BARRIER RAIL STEEL EMBEDDED IN THE BRIDGE DECK.

ABUTMENT WING DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

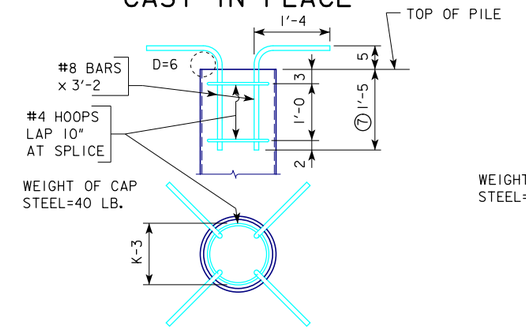
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	ABUTMENT WING DETAILS	STANDARD SHEET 2115	COUNTY	PROJECT NUMBER	SHEET NUMBER

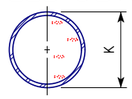
CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2115 - THIS SHEET ISSUED 02-08.

REVISION 07-2019: CHANGED ALL REFERENCES OF "LINEAL" TO "LINEAR". TYPE 3 FOR "ROUND HP14x73 PILE" CHANGED "CONCRETE (E=18')" QTY. TO 3.17 (WAS 2.75).
CHANGED "CONCRETE 1' CHANGE" TO 0.176 (WAS 0.153). CHANGED "REINFORCING (E=18')" QTY. TO 3.15 (WAS 2.73). CHANGED "CONCRETE (E=18')" WEIGHT TO 110 LB. (WAS 107). CHANGED "REINFORCING (E=18')" WEIGHT TO 5.62 LB. (WAS 5.50).
TYPE 3 FOR "ROUND HP14x89 PILE" CHANGED "CONCRETE 1' CHANGE" TO 0.175 (WAS 0.152). CHANGED "REINFORCING 1' CHANGE" WEIGHT TO 5.62 LB. (WAS 5.50).
ENGLISHMISCELLANEOUSBRIDGES.DGN - PIOL - THIS SHEET ISSUED 01-09.

CAST IN PLACE

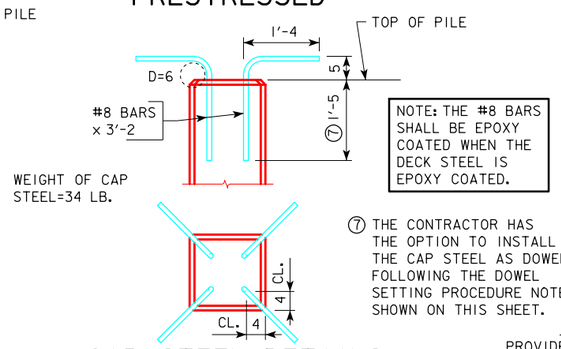


CAP STEEL DETAILS



SPIRAL WELDED OR SEAMLESS STEEL PIPE ASTM A252 GR. 2 OR GR. 3

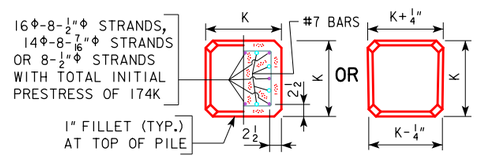
PRESTRESSED



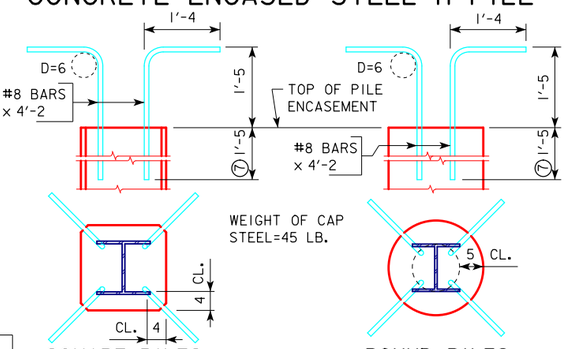
NOTE: THE #8 BARS SHALL BE EPOXY COATED WHEN THE DECK STEEL IS EPOXY COATED.

⑦ THE CONTRACTOR HAS THE OPTION TO INSTALL THE CAP STEEL AS DOWELS FOLLOWING THE DOWEL SETTING PROCEDURE NOTES SHOWN ON THIS SHEET.

CAP STEEL DETAILS



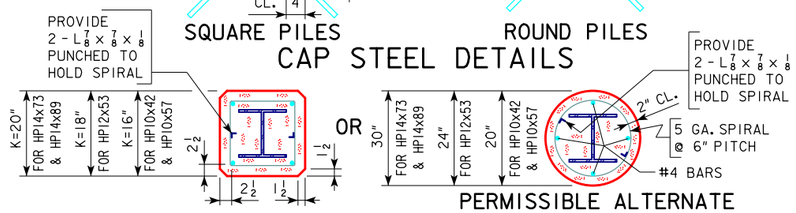
CONCRETE ENCASED STEEL H PILE



SQUARE PILES

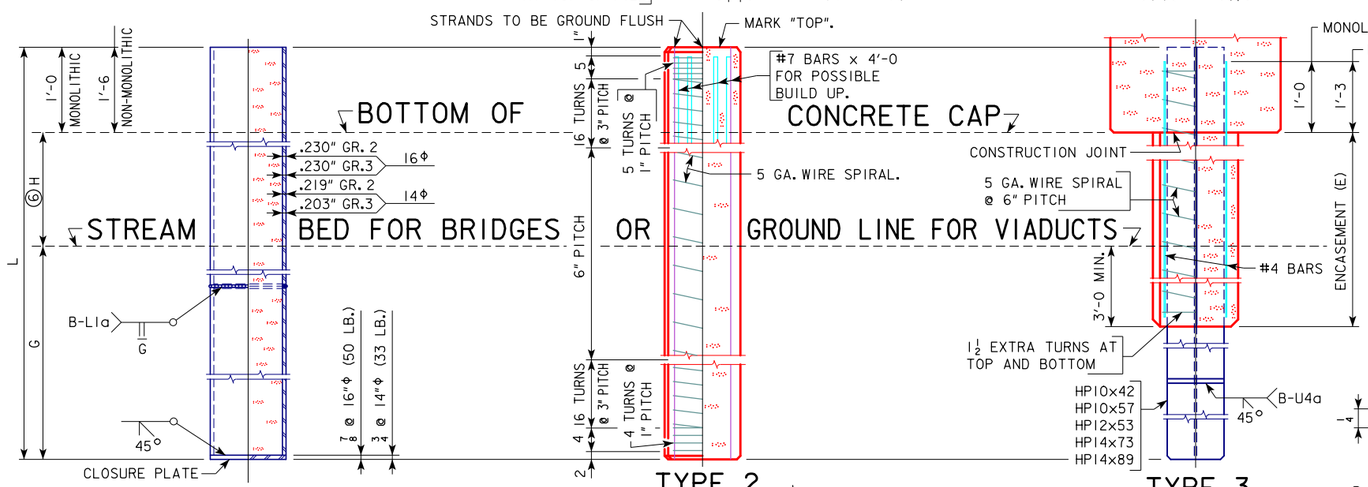
ROUND PILES

CAP STEEL DETAILS



PERMISSIBLE ALTERNATE ENCASEMENT

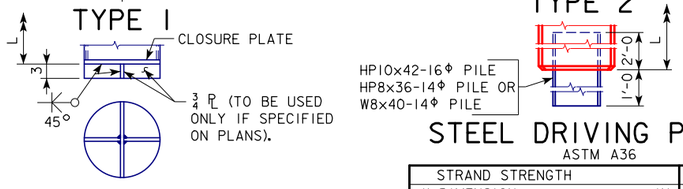
BOTTOM OF STREAM BED FOR BRIDGES OR GROUND LINE FOR VIADUCTS



TYPE 1

TYPE 2

TYPE 3



STEEL DRIVING POINTS

ASTM A36

K DIMENSION	IN.	14Φ		16Φ	
G MIN. BELOW GROUND	FT.	24		27	
⑥ H MAX. ABOVE GROUND	FT.	18		22	
SHELL ASTM A-252		GR. 2	GR. 3	GR. 2	GR. 3
CONCRETE (L=40')	C.Y.	1.49	1.49	1.95	1.95
CONCRETE 1' CHANGE	C.Y.	0.0372	0.0373	0.0488	0.0488
① WT. OF SHELL (L=40')	LB.	1325	1231	1600	1600
WT. OF SHELL 1' CHANGE	LB.	32.26	29.94	38.77	38.77
f'c	KSI	4.0	4.0	4.0	4.0
⑤ NOMINAL RESISTANCE Pn	KIPS	119	119	137	137

① INCLUDES WEIGHT OF CLOSURE PLATE.

STEEL DRIVING POINTS

ASTM A36

STRAND STRENGTH		270K	
K DIMENSION	IN.	14Φ	16Φ
G MIN. BELOW GROUND	FT.	24	27
⑥ H MAX. ABOVE GROUND	FT.	18	22
CONCRETE (L=40')	C.Y.	2.01	2.62
CONCRETE 1' CHANGE	C.Y.	0.050	0.066
② REINFORCING (L=40')	LB.	232	280
REINFORCING 1' CHANGE	LB.	3.93	5.10
MAX. L 1 PT. PICK-UP	FT.	57	60
MAX. L 2 PT. PICK-UP	FT.	82	86
f'c	KSI	5.0	5.0
⑤ NOMINAL RESISTANCE Pn	KIPS	127	146
③ INITIAL PRESTRESS	KIPS	174	231

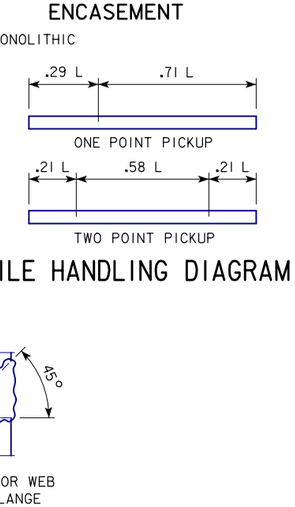
② INCLUDES PRESTRESSING STRANDS.
③ INCREASE 5% FOR ARTIFICIAL CURING.

⑥ THE MAXIMUM H MAY BE MEASURED TO THE STREAMBED ELEVATION. HOWEVER, H SHALL BE MEASURED TO THE SCOUR ELEVATION WHEN THIS ELEVATION IS DEEPER THAN THE STREAMBED ELEVATION.

	STEEL H PILE		HP10x42	HP10x57	HP12x53	HP14x73	HP14x89
	G MINIMUM BELOW GROUND	FT.	18	18	21	24	24
	⑥ H MAX. ABOVE GROUND W/MONOLITHIC	FT.	19	19	23	28	29
	⑥ H MAX. ABOVE GROUND W/NON-MONOLITHIC	FT.	15	16	20	25	26
SQUARE	CONCRETE (E=18')	C.Y.	1.12	1.10	1.41	1.74	1.72
SQUARE	CONCRETE 1' CHANGE	C.Y.	0.062	0.061	0.078	0.097	0.096
SQUARE	④ REINFORCING (E=18')	LB.	96	96	99	103	103
SQUARE	④ REINFORCING 1' CHANGE	LB.	4.98	4.98	5.13	5.28	5.28
ROUND	CONCRETE (E=18')	C.Y.	1.40	1.38	2.02	3.17	3.15
ROUND	CONCRETE 1' CHANGE	C.Y.	0.078	0.076	0.112	0.176	0.175
ROUND	④ REINFORCING (E=18')	LB.	97	97	102	110	110
ROUND	④ REINFORCING 1' CHANGE	LB.	5.02	5.02	5.26	5.62	5.62
	⑤ NOMINAL RESISTANCE Pn	KIPS	154	208	192	265	324

f'c = 4.0 KSI

④ INCLUDES WEIGHT OF PUNCHED L 7/8 x 7/8 x 1/8
⑤ SEE BRIDGE DESIGN MANUAL 6.6.4.2 FOR ADDITIONAL INFORMATION



PILE HANDLING DIAGRAM

GENERAL NOTES:

EXCEPT AS NOTED ELSEWHERE, MATERIAL, CONSTRUCTION, DRIVING AND EXTENSIONS OR BUILD UPS WHEN NECESSARY SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS OF THE IOWA D.O.T. AND CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE.

CAP STEEL SHALL BE AS DETAILED ON THIS SHEET (D=PIN DIAMETER). IT SHALL BE USED IF PILE EMBEDMENT IS LESS THAN 1'-6.

"NOMINAL RESISTANCE Pn", "G", AND "H" AS GIVEN IN TABLES ARE RECOMMENDED DESIGN VALUES FOR ORDINARY CONDITIONS, BUT MAY BE MODIFIED FOR SPECIAL CONDITIONS ON ANY GIVEN JOB.

NOMINAL RESISTANCE Pn AND PILE SIZE REQUIRED SHALL IN ALL CASES BE AS SPECIFIED ON THE PLANS.

NOMINAL RESISTANCE Pn SHOWN ARE FOR FRICTION RESISTANCE EXCEPT FOR TYPE 3 PILING WHERE THE RESISTANCE VALUES SHOWN COULD BE EITHER FRICTION OR POINT RESISTANCE.

COST OF ALL DRIVING POINTS AND CAP STEEL IS TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT FOR PILING.

WIRE SPIRAL SHALL CONFORM TO ASTM A82.

CAST IN PLACE PILE NOTES:

SHELL THICKNESSES SHOWN ARE MINIMUM REQUIREMENTS. THE METHOD OF DRIVING STEEL SHELL PILES SHALL BE ADAPTED TO THE TYPE AND THICKNESS OF SHELL SPECIFIED. ANY SHELLS WHICH HAVE BEEN IMPROPERLY DRIVEN, BROKEN OR ARE OTHERWISE DEFECTIVE SHALL BE REMOVED AND REPLACED BY THE BRIDGE CONTRACTOR.

ALL CAST IN PLACE PILES SHALL HAVE A CLOSURE PLATE. DRIVING POINTS SHALL BE USED IF SPECIFIED ON THE PLANS.

PRESTRESSED PILE NOTES:

EXCEPT AS OTHERWISE NOTED ALL EXPOSED CORNERS 90° OR SHARPER SHALL BE FILLETED 3/4".

DRIVING POINTS FOR PRESTRESSED PILES, IF CALLED FOR ON THE PLANS, SHALL BE AS DETAILED.

HEADS OF PRESTRESSED PILES TO BE FINISHED SMOOTH AND NORMAL TO AXIS OF PILE.

BIDDING NOTES:

THE PLANS SHALL DESIGNATE THE SIZE OF PILE TO BE USED. THEY SHALL ALSO SPECIFY THE TYPE, EITHER TYPE 1, TYPE 2, OR TYPE 3. IF THE OPTION OF TYPE 1 OR 2 IS GIVEN ON THE PLANS, THE CONTRACTOR SHALL CHOOSE THE TYPE TO BE USED. IF TYPE 3 IS SPECIFIED, TYPE 3 SHALL BE USED, BUT THE CONTRACTOR MAY CHOOSE THE SHAPE OF THE ENCASEMENT. IT SHOULD BE KEPT IN MIND THAT FOR A GIVEN SIZE AND RESISTANCE VALUE, LENGTH MAY VARY WITH THE SHAPE (SQUARE OR ROUND).

PILES SHALL BE BID DESIGNATING THE SIZE, TYPE AND LENGTH.
TYPE 1 PILING WILL BE BID PER LINEAR FOOT OF PILE.
TYPE 2 PILING WILL BE BID PER LINEAR FOOT OF PILE.
TYPE 3 PILING WILL BE BID PER LINEAR FOOT OF PILE AND LINEAR FOOT OF ENCASEMENT. PRICE BID FOR ENCASEMENT SHALL BE FULL PAYMENT FOR NECESSARY EXCAVATION AND FOR FURNISHING AND PLACING ALL MATERIAL.

DOWEL SETTING PROCEDURE:

IF CAP STEEL IS REQUIRED FOR THE PRESTRESSED PILES THE #8 DEFORMED BARS ARE TO BE SET AS DOWELS INTO THE PILES WITH POLYMER GROUT IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS OR BY THE FOLLOWING PROCEDURE.

-A.) DRILL HOLE APPROXIMATELY TWICE THE DIAMETER OF THE DOWEL BAR AND TO THE DEPTH INDICATED.
-B.) FILL HOLE WITH WATER AND ALLOW TO STAND LONG ENOUGH TO THOROUGHLY SATURATE THE SURROUNDING CONCRETE (ABOUT FOUR HOURS).
-C.) BLOW OUT ALL FREE WATER AND FILL HOLE 2/3 FULL OF MORTAR.
-D.) INSERT DOWEL BY DRIVING, IF NECESSARY, AND MANIPULATE OR TAP WITH A HAMMER TO CONSOLIDATE MORTAR AND SECURE COMPLETE EMBEDMENT.
-E.) ADD MORE MORTAR, IF NECESSARY, TO FILL HOLE.
-F.) MORTAR SHALL CONSIST OF EQUAL PARTS PORTLAND CEMENT AND SAND WITH JUST ENOUGH WATER TO MAKE A WORKABLE MIX.

APPROVED BY: _____
BRIDGE ENGINEER

LATEST REVISION DATE: 07-2019

STANDARD DESIGN

CONCRETE AND STEEL PILES

CAST IN PLACE, PRESTRESSED AND ENCASED
FOR USE IN

LRFD TRESTLE PILE BENTS - PIOL

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	LRFD DESIGNED TRESTLE PILE BENTS	STANDARD PIOL	COUNTY	PROJECT NUMBER	SHEET NUMBER