03-11-11 LETTING ITEM 088

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
549	117M	OGLE	10	1
	ILLINOIS	CONTRACT NO. 64G84		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

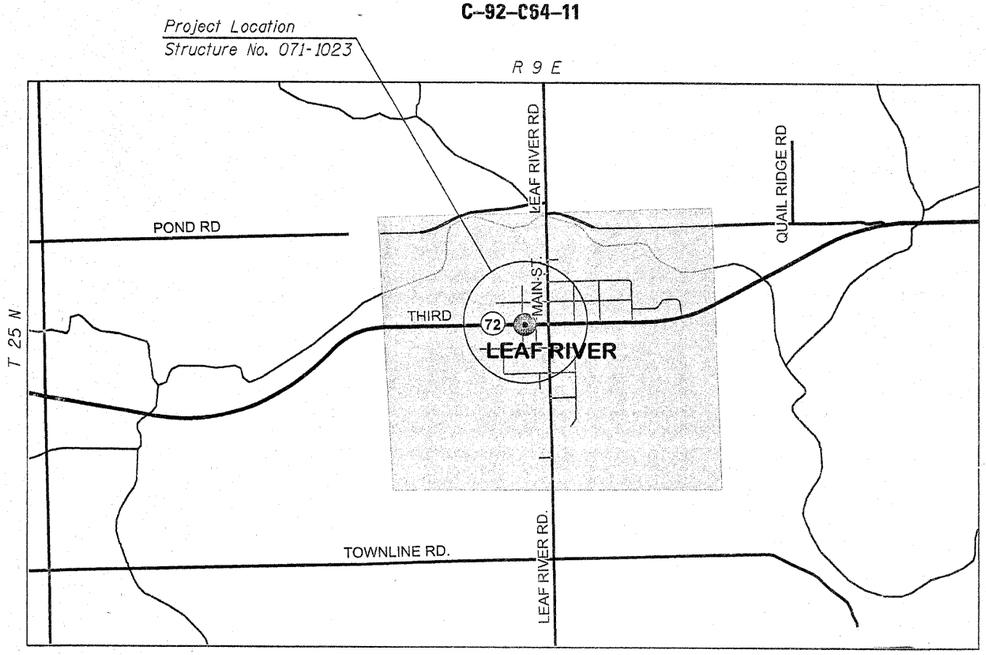
PROPOSED
HIGHWAY PLANS

FAP ROUTE 549 (IL 72)
SECTION 117M

CULVERT REPAIRS
OGLE COUNTY

C-92-C54-11

FOR INDEX OF SHEETS, SEE SHEET NO. 3



D-92-035-11

LOCATION OF SECTION INDICATED THUS: –

100′ 200′ 300′ — 1″ = 100′
0 10′ 20′ 30′ — 1″ = 10′
0 50′ 100′ — 1″ = 50′
0 50′ 100′ — 1″ = 40′
0 50′ 100′ — 1″ = 30′
0 50′ 100′ — 1″ = 20′

FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED December 8 20 10
George E Ryman
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER
February 4 20 11
Scott E. Stitt P.E. /a
acting ENGINEER OF DESIGN AND ENVIRONMENT
February 4 20 11
Christine M. Reed /a
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

PROJECT ENGINEER: Mahmoud Etemadi 815/284-5393
PLAN TECHNICIAN: Dan Link 815/284-5416

CONTRACT NO. 64G84

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

SUMMARY OF QUANTITIES

Paycode	Description	Unit	Quantity 100% State 0021
50102400	CONCRETE REMOVAL	CU YD	3.4
50300225	CONCRETE STRUCTURES	CU YD	3.3
50300255	CONCRETE SUPERSTRUCTURE	CU YD	7.7
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3160
50800515	BAR SPLICERS	EACH	21
54002020	EXPANSION BOLTS 3/4 INCH	EACH	16
~~54205503~~	~~PIPE CULVERTS, CLASS D, TYPE 1 EQUIVALENT ROUND SIZE 48~~	~~FOOT~~	~~48~~
~~59300100~~	~~CONTROLLED LOW STRENGTH MATERIAL~~	~~CU YD~~	~~12.8~~
67100100	MOBILIZATION	L SUM	1
70100100	TRAFFIC CONTROL AND PROTECTION, STANDARD 701316	EACH	1
70102620	TRAFFIC CONTROL AND PROTECTION, STANDARD 701501	L SUM	1
70102640	TRAFFIC CONTROL AND PROTECTION, STANDARD 701801	L SUM	1
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1
70300220	TEMPORARY PAVEMENT MARKING - LINE 4"	FOOT	836
70300280	TEMPORARY PAVEMENT MARKING - LINE 24"	FOOT	24
70301000	WORK ZONE PAVEMENT MARKING REMOVAL	SQ FT	318
X4422000	PARTIAL DEPTH REMOVAL (VARIABLE DEPTH)	SQ YD	39.7
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1

Rev

FILE NAME = O:\BR\CADD plans\Ogle County\071023\PLANeng.dgn	USER NAME = linkdj	DESIGNED - ---	REVISED - ---	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SUMMARY OF QUANTITIES
	PLOT SCALE = 50.0000 ' / IN.	DRAWN - ---	REVISED - ---		SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____
	PLOT DATE = Fri Jan 07 08:23:18 2011	CHECKED - ---	REVISED - ---		
		DATE - _____	REVISED - ---		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
549	117M	OGLE	10	2
		CONTRACT NO. 64C84		
	ILLINOIS FED. AID PROJECT			

GENERAL NOTES

The final top four inches of soil in any right-of-way area disturbed by the Contractor must be capable of supporting vegetation. The soil must be from the A horizon (zero to 2' deep) of soil profiles of local soils.

All Borrow/Waste/Use sites must be approved by the Department prior to removing any material from the project or initiating any earthmoving activities, including temporary stockpiling outside the limits of construction.

The Contractor shall seed all disturbed areas within the project limits. Seeding Class 4 or 2A shall be used, except in front of properties where the grass will be mowed, then use Seeding, Class 1. Class 2A shall be used on front slopes and ditch bottoms. Class 4 shall be used behind Type A gutter, on all backslopes and areas behind the backslope, and beyond the toe of front slope on fill sections without ditches. This work will be included in the contract unit price per Cubic Yard for CONCRETE REMOVAL.

Fertilizer shall be applied to all disturbed areas and incorporated into the seedbed prior to seeding or placement of sod at the rate specified in Sections 250 and 252 of the Standard Specifications. This work shall be included in the cost of CONCRETE REMOVAL.

Mulch Method II shall be applied over all seeded areas. This shall be included in the cost of the CONCRETE REMOVAL.

The Contractor shall be responsible for protecting utility property during construction operations as outlined in Article 107.31 of the Standard Specifications. A minimum of 48 hours advance notice is required for non-emergency work. The JULIE number is 800-892-0123.

STANDARDS

701006-03 Off-Road Operations, 2L, 2W, 4.5 m (15') to 600 mm (24") From Pavement Edge
701301-04 Lane Closure, 2L, 2W, Short Time Operations
701501-06 Urban Lane Closure, 2L, 2W, Undivided
701801-04 Lane Closure, Multilane 1W or 2W Crosswalk or Sidewalk Closure
701316-05 Lane Closure, 2L, 2W, Bridge Repair, for Speeds > 45 MPH
701901-01 Traffic Control Devices
720011-01 Metal Posts for Signs, Markers and Delineators
728001-01 Telescoping Steel Sign Support
729001-01 Applications of Types A and B Metal Posts (For Signs & Markers)

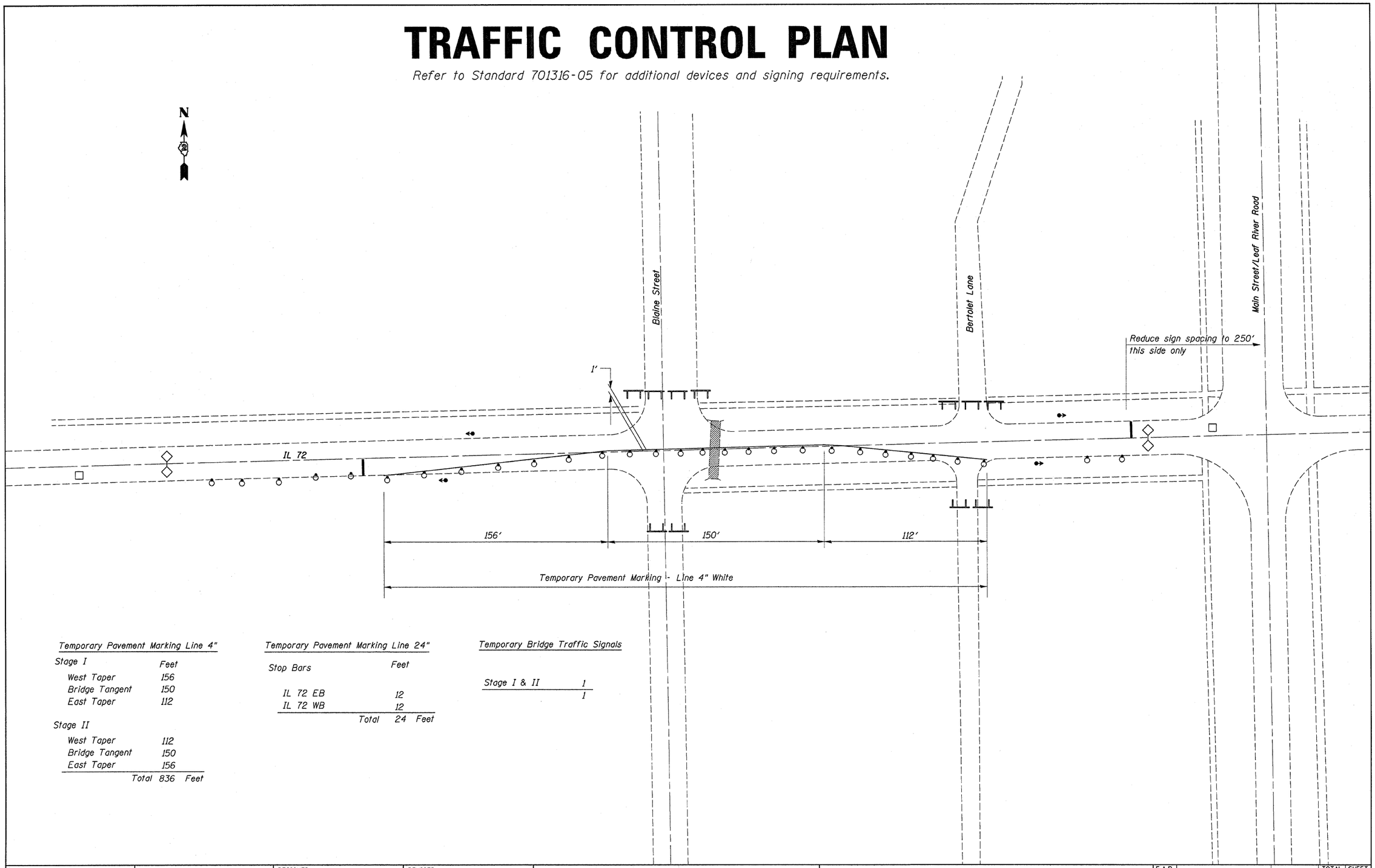
INDEX OF SHEETS

FILE NAME = O:\BR\CADD plans\Ogle County\8711023\PLAN\eng.dgn	USER NAME = lnkdj	DESIGNED - ___	REVISED - ___ _____	**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**	**GENERAL NOTES, STANDARDS, INDEX OF SHEETS**
	PLOT SCALE = 50.0000 ' / IN.	DRAWN - ___	REVISED - ___ _____		SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____
	PLOT DATE = Fri Feb 04 13:32:27 2011	CHECKED - ___	REVISED - ___ _____		
		DATE - _____	REVISED - ___ _____		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
549	117M	OGLE	10	3
		CONTRACT NO. 64G84		
		ILLINOIS FED. AID PROJECT		

TRAFFIC CONTROL PLAN

Refer to Standard 701316-05 for additional devices and signing requirements.



Temporary Pavement Marking Line 4"

Stage I	Feet
West Taper	156
Bridge Tangent	150
East Taper	112
Stage II	
West Taper	112
Bridge Tangent	150
East Taper	156
Total	836 Feet

Temporary Pavement Marking Line 24"

Stop Bars	Feet
IL 72 EB	12
IL 72 WB	12
Total	24 Feet

Temporary Bridge Traffic Signals

Stage I & II	1
	1

FILE NAME = O:\BR\CADD plans\Ogle County\0711023\PLANeng.dgn	USER NAME = linkdj	DESIGNED - ___	REVISED - ___
		DRAWN - ___	REVISED - ___
	PLOT SCALE = 30.0000 ' / IN.	CHECKED - ___	REVISED - ___
	PLOT DATE = Fri Feb 04 13:32:19 2011	DATE - _____	REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Traffic Control Plan
Structure No. 071-1023

SCALE: _____ | SHEET NO. __ OF ___ SHEETS | STA. _____ TO STA. _____

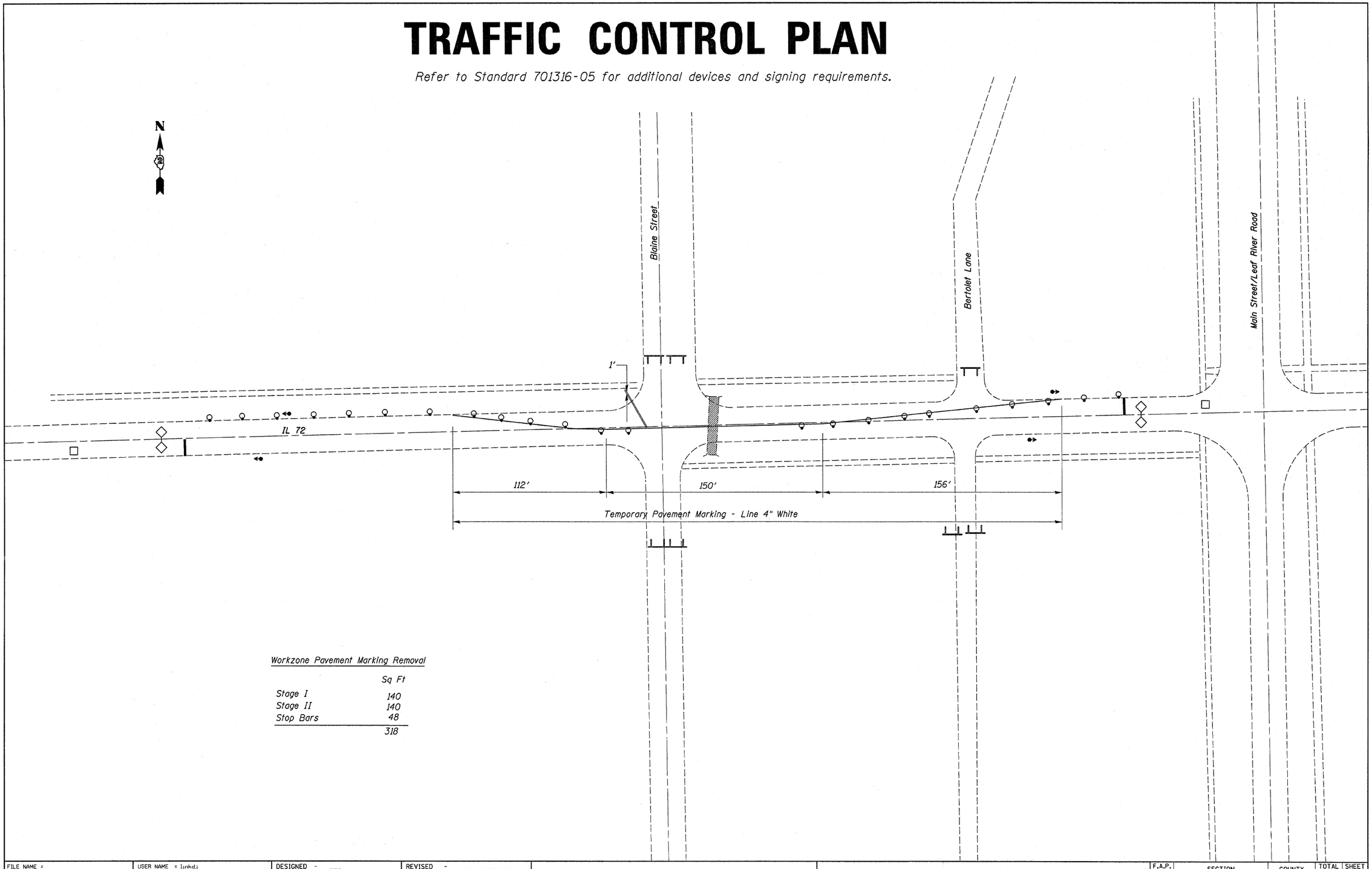
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
549	117M	Ogle	10	4

CONTRACT NO. 64G84

ILLINOIS | FED. AID PROJECT

TRAFFIC CONTROL PLAN

Refer to Standard 701316-05 for additional devices and signing requirements.



Workzone Pavement Marking Removal

	Sq Ft
Stage I	140
Stage II	140
Stop Bars	48
	318

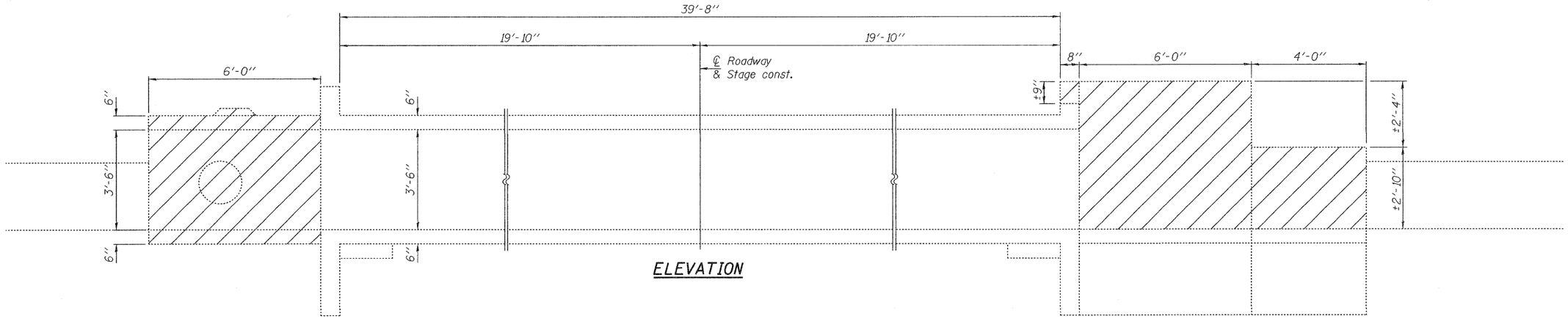
FILE NAME = O:\BR\CADD plans\Ogle County\8711023\PLAN eng.dgn	USER NAME = linkdj	DESIGNED -	REVISED -
		DRAWN -	REVISED -
	PLOT SCALE = 30.0000 ' / IN.	CHECKED -	REVISED -
	PLOT DATE = Fri Feb 04 13:32:05 2011	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

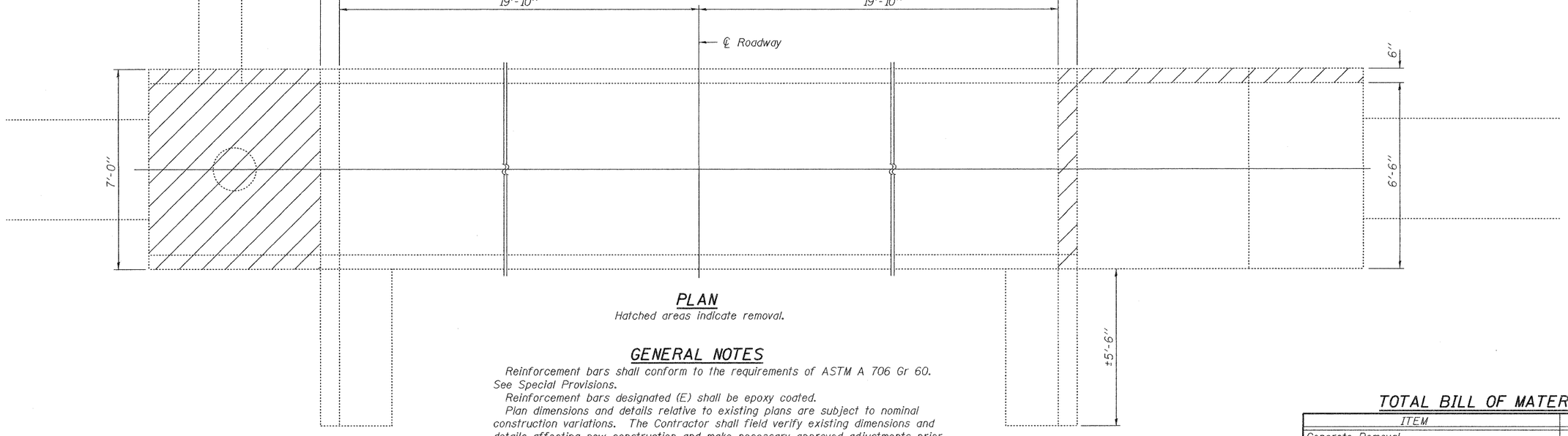
Traffic Control Plan

SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
549	117M	Ogle	10	5
		CONTRACT NO. 64G84		
	ILLINOIS	FED. AID PROJECT		



ELEVATION



PLAN

Hatched areas indicate removal.

GENERAL NOTES

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.

Reinforcement bars designated (E) shall be epoxy coated.

Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

Existing reinforcement bars extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.

The slab surface shall have its final finish tined according to Article 420.09(e)(1) of the Standard Specifications. Cost included with Concrete Superstructure.

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	3.4
Concrete Structures	Cu. Yd.	3.3
Concrete Superstructure	Cu. Yd.	7.7
Reinforcement Bars, Epoxy Coated	Pound	3160
Expansion Bolts $\frac{3}{4}$"	Each	16
Partial Depth Removal (Variable Depth)	Sq. Yd.	39.7
Bar Splicers	Each	21

DESIGN STRESSES

fy = 60,000 psi
f'c = 3,500 psi

LICENSED STRUCTURAL ENGINEER
DAVID CARL PUZEY
061-005470
SPRINGFIELD ILLINOIS
STATE OF ILLINOIS

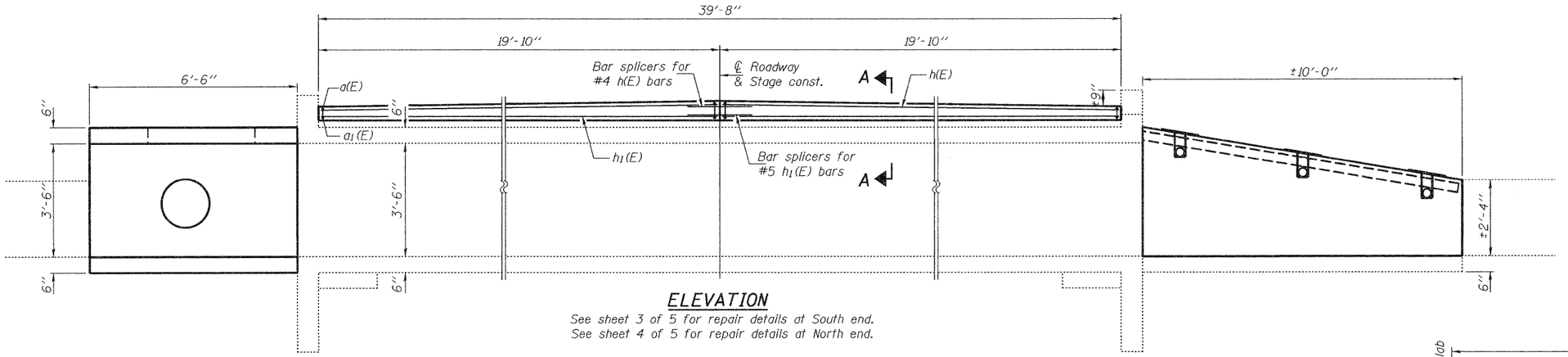
EXPIRES 11-30-2012

DESIGNED	Victor H. Veliz	EXAMINED	ACTING ENGINEER OF STRUCTURAL SERVICES
CHECKED	Victor H. Veliz	PASSED	ACTING ENGINEER OF BRIDGES AND STRUCTURES
DRAWN	baliva	DATE	FEBRUARY 3, 2011
CHECKED	VHV		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

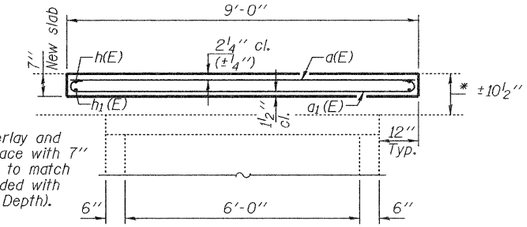
REMOVAL PLAN AND ELEVATION
SN 071-1023
SHEET NO. 1 OF 5 SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	117 M	OGLE	10	6
		CONTRACT NO. 64G84		
	ILLINOIS FED. AID PROJECT			



ELEVATION

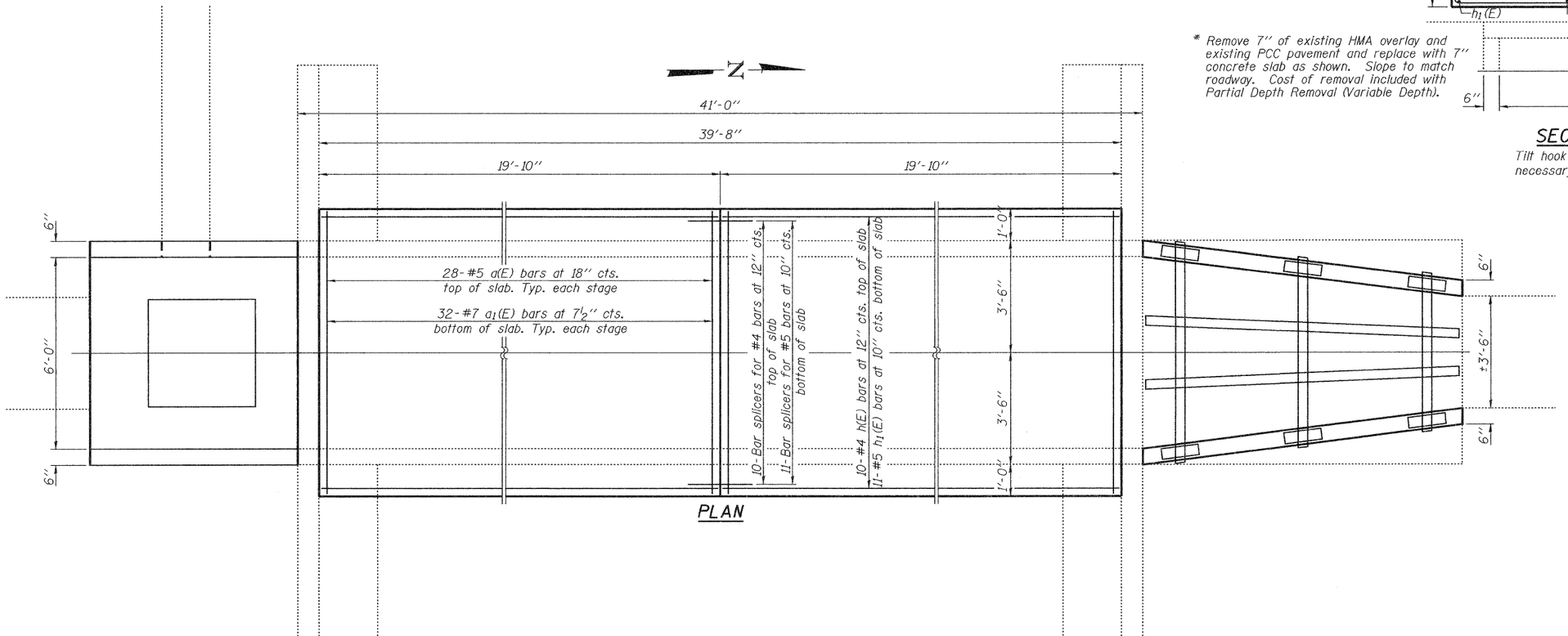
See sheet 3 of 5 for repair details at South end.
See sheet 4 of 5 for repair details at North end.



* Remove 7" of existing HMA overlay and existing PCC pavement and replace with 7" concrete slab as shown. Slope to match roadway. Cost of removal included with Partial Depth Removal (Variable Depth).

SECTION A-A

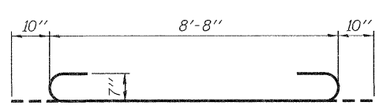
Tilt hook of $a_1(E)$ bars if necessary for 1½" min. cl.



PLAN

BILL OF MATERIAL
TOP SLAB REPAIR

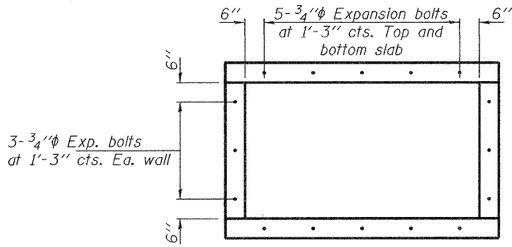
Bar	No.	Size	Length	Shape
a(E)	28	#5	8'-8"	———
$a_1(E)$	64	#7	11'-2"	⌐——¬
h(E)	20	#4	19'-6"	———
$h_1(E)$	22	#5	19'-6"	———
Bar Splicers			Each	21
Partial Depth Removal (Variable Depth)			Sq. Yd.	39.7
Reinforcement Bars, Epoxy Coated			Pound	2420
Concrete Superstructure			Cu. Yds.	7.7



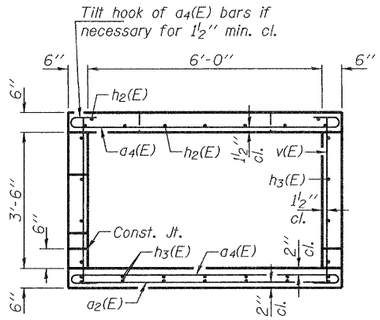
BAR $a_1(E)$

DESIGNED DAB	EXAMINED	DATE FEBRUARY 3, 2011	**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**	**REPLACEMENT DETAILS SN 071-1023**
CHECKED VHV	ACTING ENGINEER OF STRUCTURAL SERVICES			SHEET NO. 2 OF 5 SHEETS
DRAWN baliva	PASSED			
CHECKED DAB VHV	ACTING ENGINEER OF BRIDGES AND STRUCTURES			

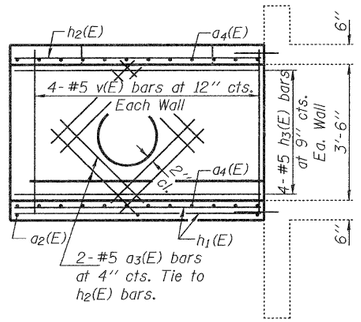
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	117 M	OGLE	10	7
		CONTRACT NO. 64G84		
	ILLINOIS FED. AID PROJECT			

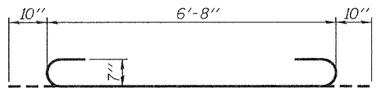


EXPANSION BOLT LAYOUT

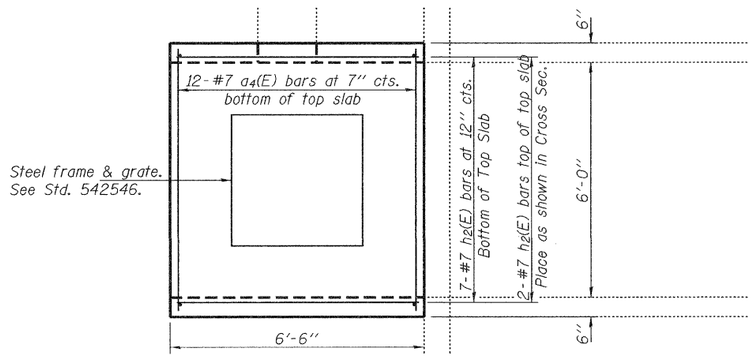


SECTION THRU BARREL



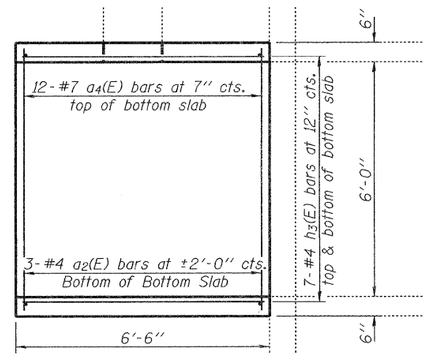


BAR a4(E)



PLAN
TOP SLAB

Cut a4(E) & h2(E) bars as required to clear grate.



PLAN
BOTTOM SLAB

BILL OF MATERIAL
SOUTH END

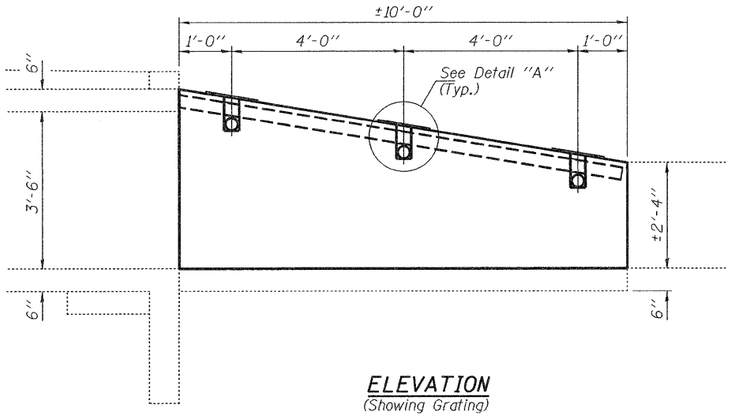
Bar	No.	Size	Length	Shape
a2(E)	3	#4	6'-8"	——
a3(E)	8	#5	3'-0"	——
a4(E)	12	#7	8'-4"	⊂⊃
h2(E)	9	#7	6'-2"	——
h3(E)	22	#4	6'-2"	——
v(E)	4	#5	4'-2"	——
Expansion Bolts 3/4"			Each	16
Concrete Removal			Cu. Yd.	2.6
Concrete Structures			Cu. Yd.	2.1
Reinforcement Bars, Epoxy Coated			Pound	280

Note:
Expansion bolts shall be 3/4"ϕ hooked bolts. Hooked bolts shall extend 9" min. into new concrete.

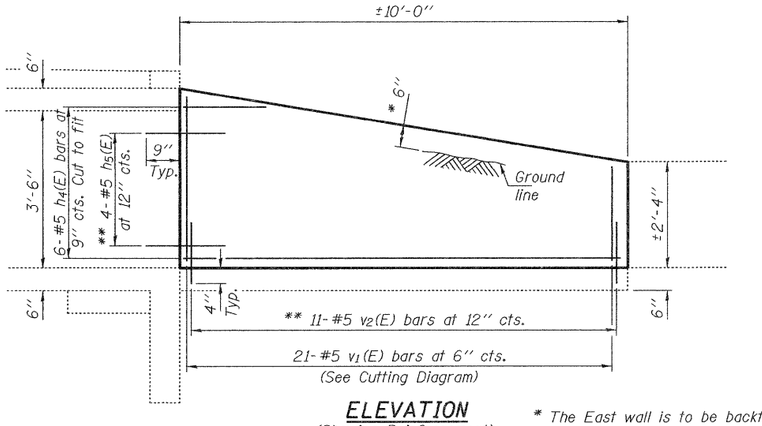
DESIGNED DAB	EXAMINED	DATE FEBRUARY 3, 2011	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED VHV	ACTING ENGINEER OF STRUCTURAL SERVICES		
DRAWN baliva	PASSED		
CHECKED DAB VHV	ACTING ENGINEER OF BRIDGES AND STRUCTURES		

REPAIR DETAILS – SOUTH END
SN 071-1023
SHEET NO. 3 OF 5 SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	117 M	OGLE	10	8
		CONTRACT NO. 64684		
	ILLINOIS FED. AID PROJECT			



ELEVATION
(Showing Grating)



ELEVATION
(Showing Reinforcement)

NOTES

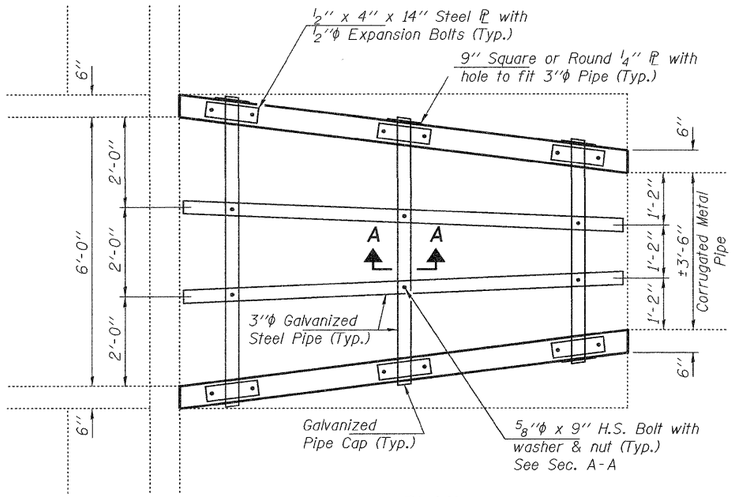
Bolts, nuts, and washers shall be in accordance with Article 710.11 of the Standard Specifications and shall be galvanized.

The contract unit price per cubic yard for Concrete Structures shall include the galvanized pipe, bolts, nuts, washers and steel plates.

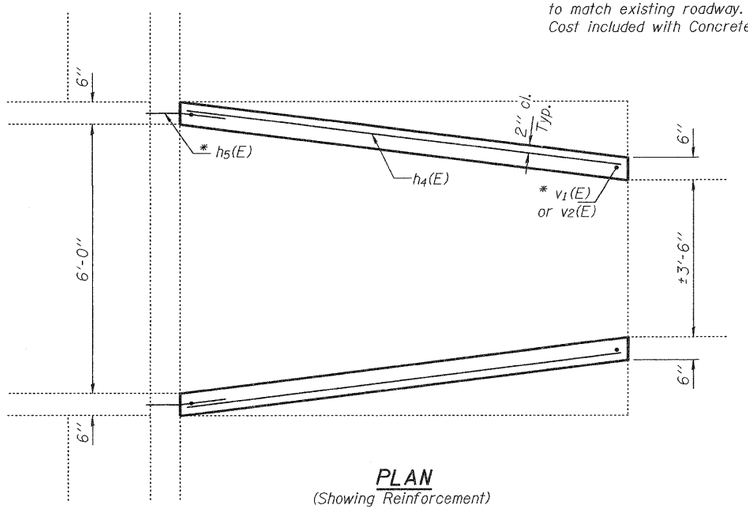
Steel pipes shall conform to ASTM A-53 (Type E or S) Grade B, Schedule 40 and shall be galvanized conforming to ASTM A-120. Contractor shall field verify pipe length.

Steel plates shall conform to AASHTO M-183 and shall be galvanized conforming to AASHTO M-111.

* The East wall is to be backfilled to within 6" of the top of the wall. The West wall shall be backfilled & compacted to match existing roadway. Cost included with Concrete Structures.

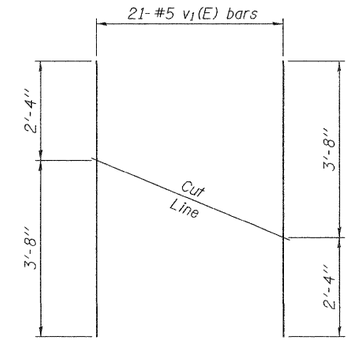


PLAN
(Showing Grating)

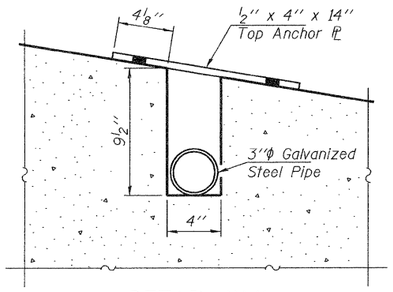


PLAN
(Showing Reinforcement)

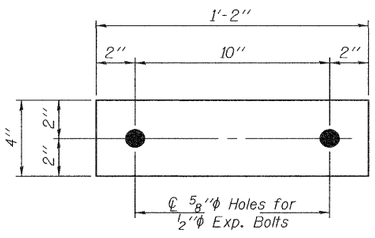
** Epoxy grout $h_5(E)$ & $v_2(E)$ bars according to Article 584 of the Standard Specifications.



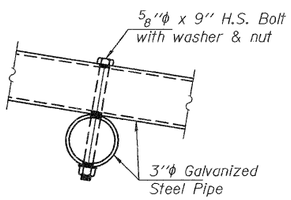
CUTTING DIAGRAM
Order bars full length and cut as shown. Place remainder of bar in opposite wall.



DETAIL "A"
1/2"ϕ Expansion Bolts not shown for clarity.



TOP ANCHOR PLATE
PL 1/2" x 4" x 14" (6 Required)



SECTION A-A

BILL OF MATERIAL FOR GRATED CULVERT EXTENSION

FOR INFORMATION ONLY
(Cost included with Concrete Structures)

ITEM	UNIT	TOTAL
3"ϕ Galvanized Steel Pipe	Foot	38
3"ϕ Galvanized Pipe Caps	Each	10
1/2"ϕ Expansion Bolts	Each	12
1/4" Galvanized Steel Plate	Pound	35
1/2" x 4" x 14" Galvanized Steel Plate	Pound	48
5/8"ϕ x 9" Galv. Steel Bolts & Nuts	Each	6

BILL OF MATERIAL NORTH END

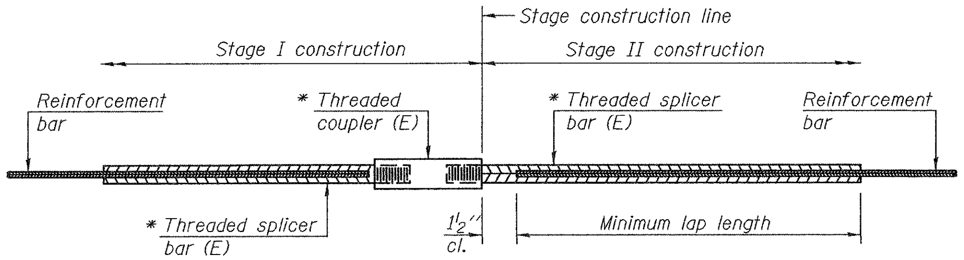
Bar	No.	Size	Length	Shape
$h_4(E)$	12	#5	9'-8"	——
$h_5(E)$	8	#5	2'-0"	——
$v_1(E)$	21	#5	6'-0"	——
$v_2(E)$	22	#5	1'-6"	——
Concrete Removal			Cu. Yd.	0.8
Concrete Structures			Cu. Yd.	1.2
Reinforcement Bars, Epoxy Coated			Pound	280

DESIGNED	DAB	EXAMINED	Joyce F. Schiff, ACTING ENGINEER OF STRUCTURAL SERVICES
CHECKED	VHV	PASSED	A. Carl Longo, ACTING ENGINEER OF BRIDGES AND STRUCTURES
DRAWN	baliva	DATE	FEBRUARY 3, 2011
CHECKED	DAB VHV		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

REPAIR DETAILS – NORTH END
SN 071-1023
SHEET NO. 4 OF 5 SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	117 M	OGLE	10	9
		CONTRACT NO. 64684		
	ILLINOIS	FED. AID PROJECT		



STANDARD BAR SPLICER ASSEMBLY

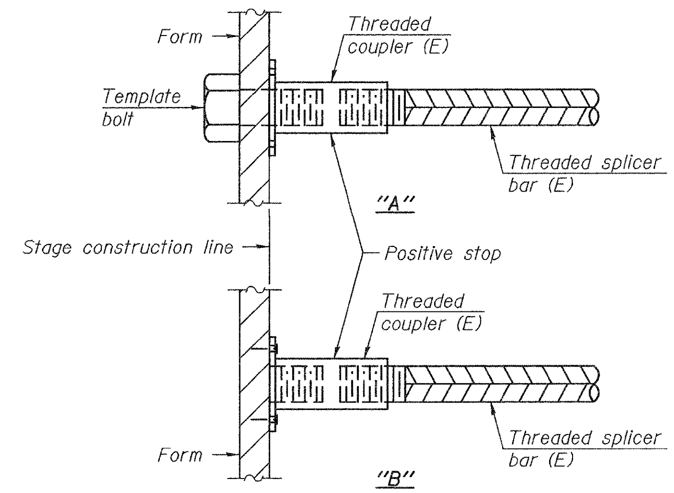
Minimum Lap Lengths					
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5
3, 4	1′-5″	1′-11″	2′-1″	2′-4″	2′-3″
5	1′-9″	2′-5″	2′-7″	2′-11″	2′-10″
6	2′-1″	2′-11″	3′-1″	3′-6″	3′-4″
7	2′-9″	3′-10″	4′-2″	4′-8″	4′-6″
8	3′-8″	5′-1″	5′-5″	6′-2″	5′-10″
9	4′-7″	6′-5″	6′-10″	7′-9″	7′-5″

Table 1: Black bar, 0.8 Class C
Table 2: Black bar, Top bar lap, 0.8 Class C
Table 3: Epoxy bar, 0.8 Class C
Table 4: Epoxy bar, Top bar lap, 0.8 Class C
Table 5: Epoxy bar, Top bar lap, Class B

Threaded splicer bar length = min. lap length + 1½″ + thread length

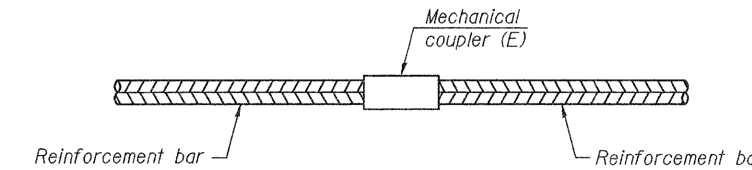
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
Top of slab	#4	10	3
Bottom of slab	#5	11	3



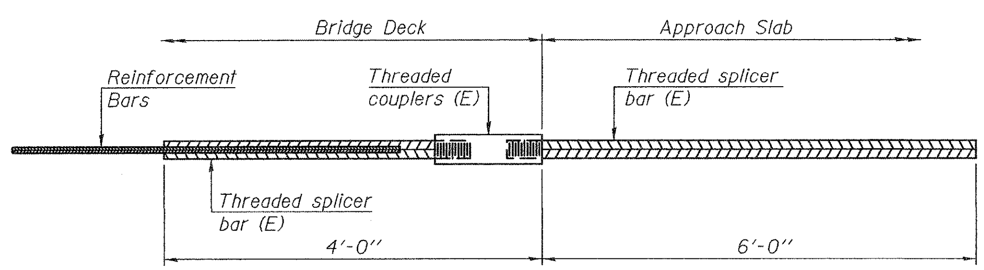
INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.



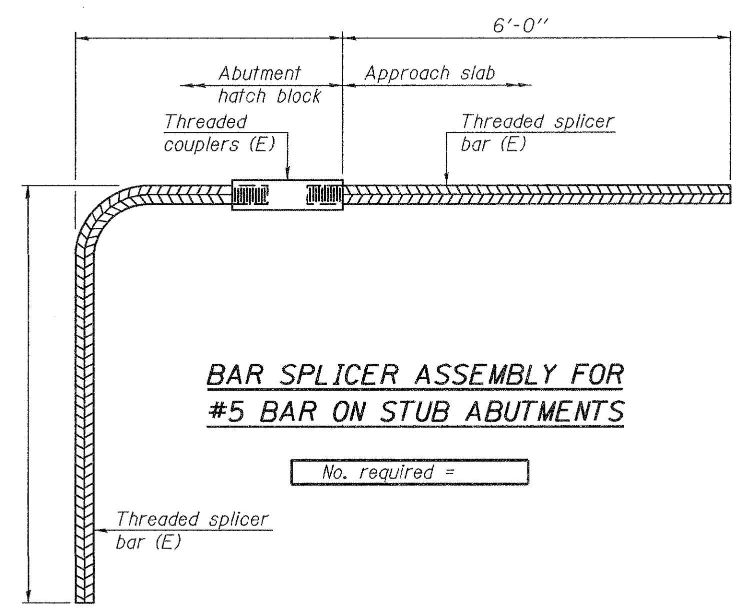
STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required



BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required =



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
All reinforcement shall be lapped and tied to the splicer bars.
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
See special provision for Mechanical Splicers.
See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1 7-1-10

DESIGNED DAB	EXAMINED — ACTING ENGINEER OF STRUCTURAL SERVICES	DATE FEBRUARY 3, 2011	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED VHV			
DRAWN baliva	PASSED — ACTING ENGINEER OF BRIDGES AND STRUCTURES		
CHECKED DAB VHV			

BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
STRUCTURE NO.
SHEET NO. 5 OF 5 SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	117 M	OGLE	10	10

CONTRACT NO. 64G84
ILLINOIS FED. AID PROJECT