

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**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.
- Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
- 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.
- Concrete Sealer shall be applied to the parapets, 30' approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
- The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- Stage construction shall be utilized to maintain traffic during construction.
- The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
- Protective Coat shall be applied only to the new Bridge Deck Latex Concrete Overlay.
- Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

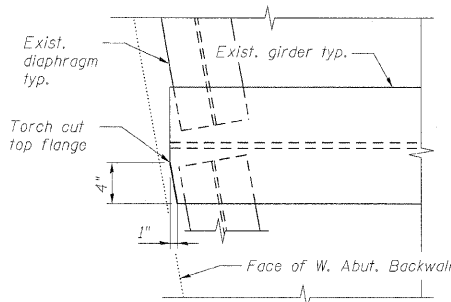
**INDEX OF SHEETS**

- General Plan and Elevation
- General Notes, Bill of Material and Index of Sheets
- Stage Construction Details
- Bridge Deck and Approach Slab Repairs
- Expansion Joint Repairs
- Expansion Joint Details
- Preformed Joint Strip Seal
- Substructure Repairs
- Bar Splicer Assembly Details

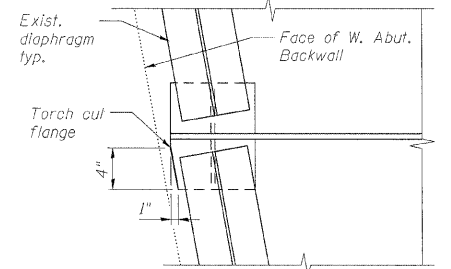
**\*\* TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	23.6		23.6
Protective Shield	Sq. Yd.	2,443		2,443
Concrete Superstructure	Cu. Yd.	23.6		23.6
Bridge Deck Grooving	Sq. Yd.	2,121		2,121
Protective Coat	Sq. Yd.	2,234		2,234
Reinforcement Bars, Epoxy Coated	Pound	2,450		2,450
Bar Splicers	Each	44		44
Preformed Joint Strip Seal	Foot	143.0		143.0
Concrete Sealer	Sq. Ft.	5,588	840	6,428
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,187		2,187
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.		76	76
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0		5.0
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	2,187		2,187
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	98.0		98.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	40.0		40.0
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	50		50
Clean and Reseal Relief Joint	Foot	106.0		106.0
Clip Existing Beam Flange	Each	3		3

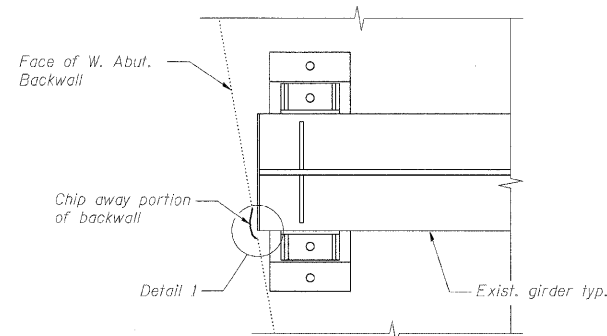
\*\* See sheets 317A thru 317C for Structural Steel Repair Details, Pay Items and Quantities.



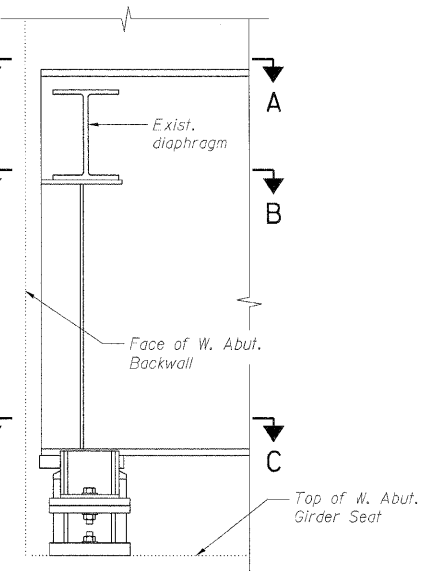
**SECTION A-A**



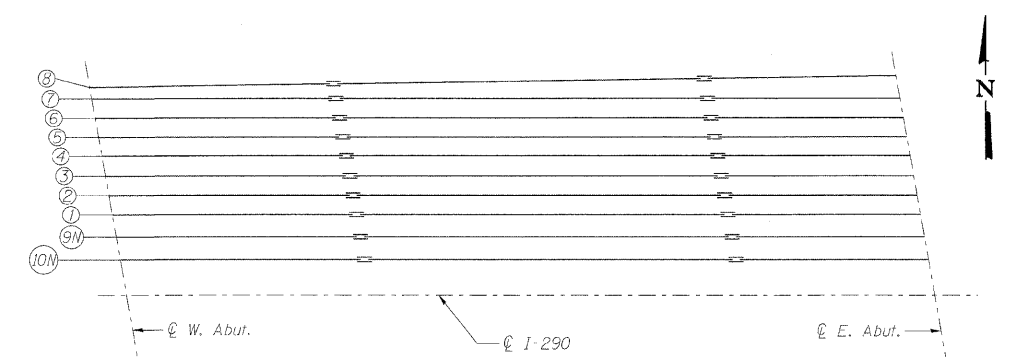
**SECTION B-B**



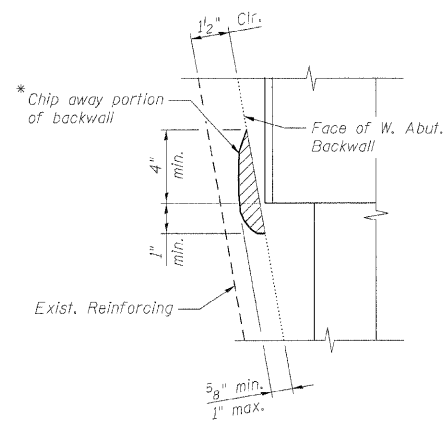
**SECTION C-C**



**GIRDER ELEVATION**



**EXISTING FRAMING PLAN**



**DETAIL 1**

Chipping of backwall shall be performed prior to application of Concrete Sealer on the abutment backwall.

\* Cost included with Clip Existing Beam Flange.

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

**GIRDER FLANGE CLIPPING DETAILS**

At West Abutment - 3 thus (Girders 7, 8 & 10N)

Cut surfaces shall be ground smooth, spot cleaned, and painted with an aluminum epoxy mastic primer followed by a finish coat to match the color of the existing beam. Paint shall be applied per the requirements of Paint System 2, according to the Special Provision "Cleaning and Painting Existing Steel Structures". Cost Included with Clip Existing Beam Flange. See Special Provision for "Clip Existing Beam Flange".

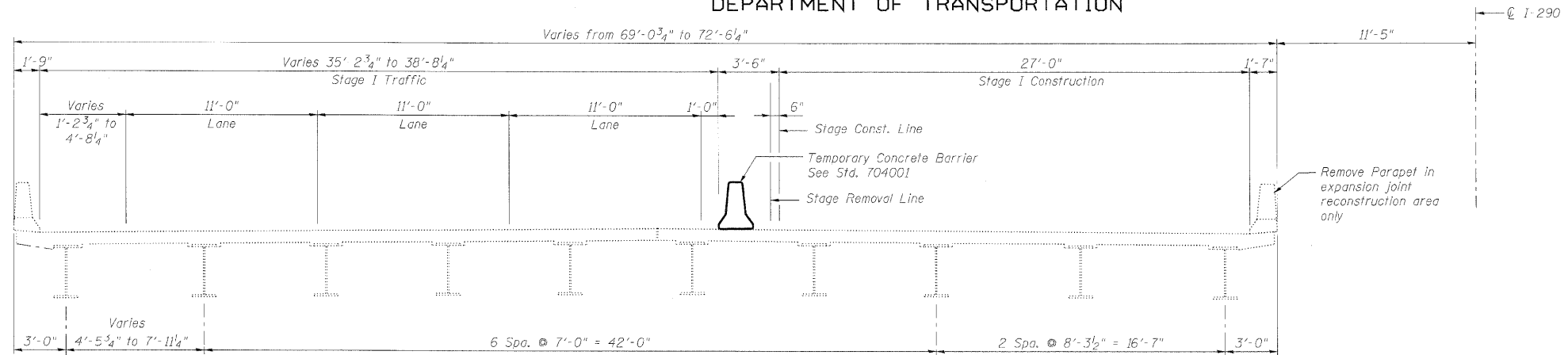
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

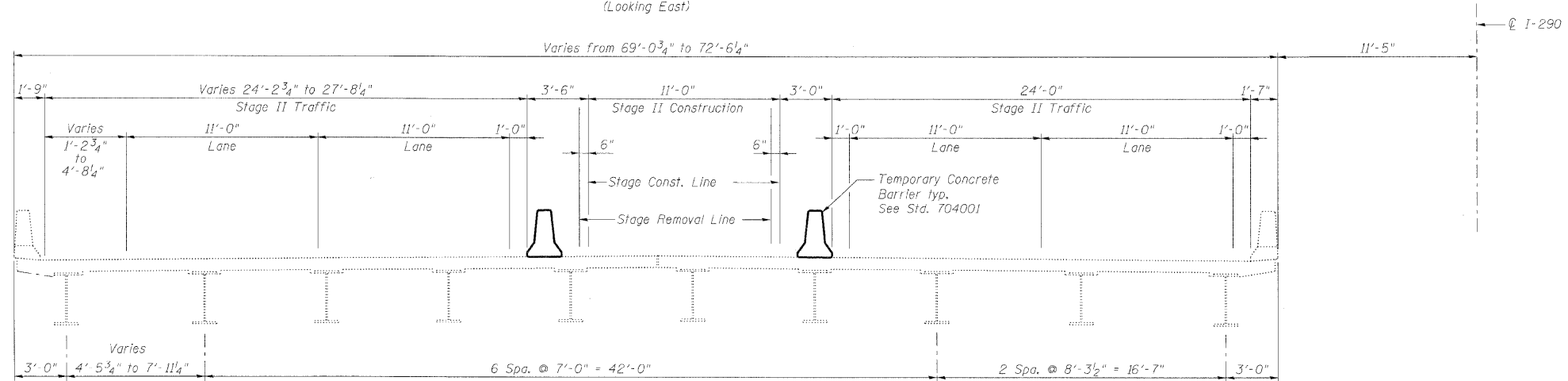
**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0097**

SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290/355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	301
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

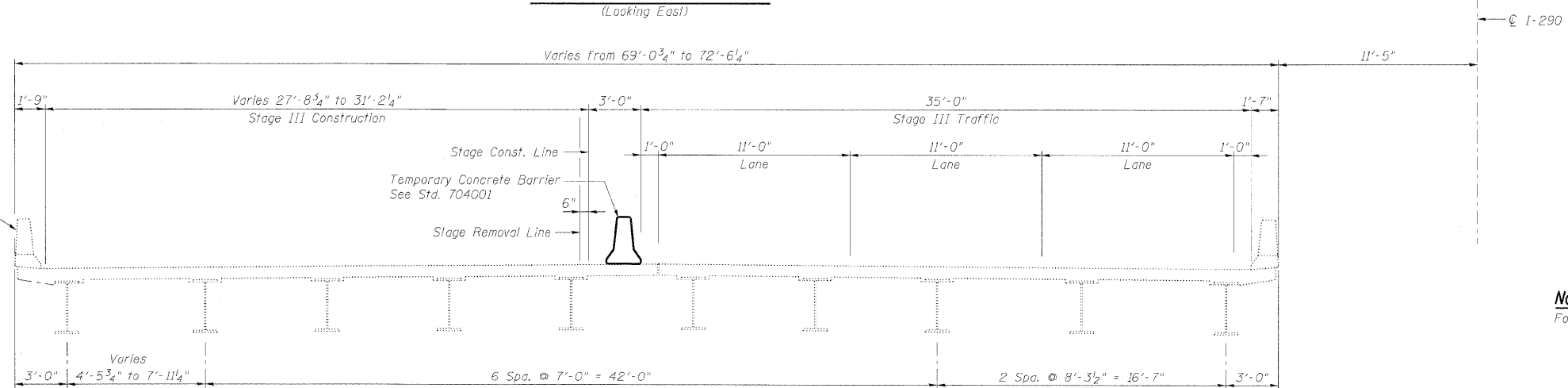
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)



**STAGE III CROSS SECTION**  
(Looking East)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0097**

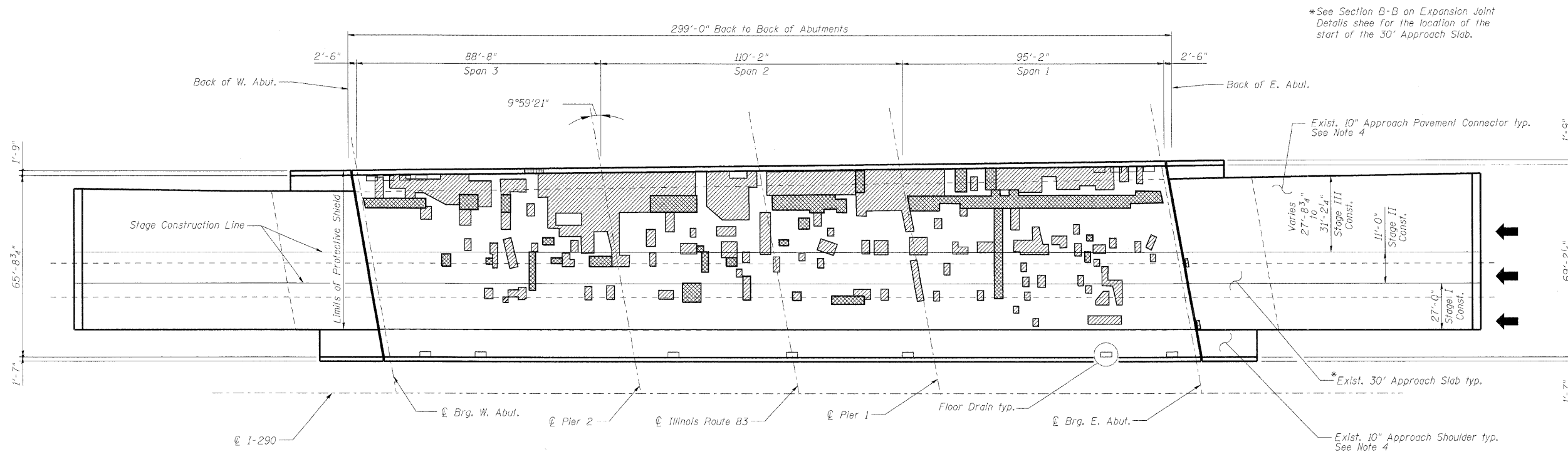
DESIGNED -	MFB
CHECKED -	MAC
DRAWN -	RMG/VH
CHECKED -	KWS

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Chicago, Illinois 60601  
312-565-0450 Job No. 10060

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	302
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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DEPARTMENT OF TRANSPORTATION



\*See Section B-B on Expansion Joint Details sheet for the location of the start of the 30' Approach Slab.

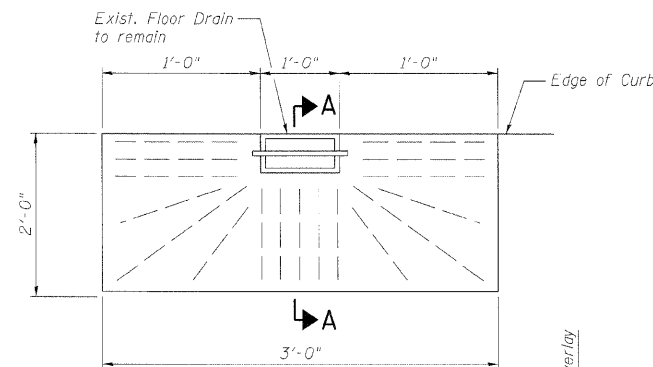
**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	419.3 <sup>▲</sup>
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	98.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	40.0
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0
	Cleaning & Painting Exposed Rebar (Special)	Sq. Ft.	50
	Protective Shield	Sq. Yd.	2,443
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	2,187
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,187
	Protective Coat	Sq. Yd.	2,234
	Bridge Deck Grooving	Sq. Yd.	2,121

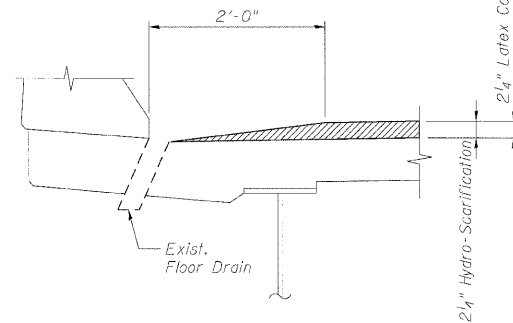
▲ For Information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

**PLAN**

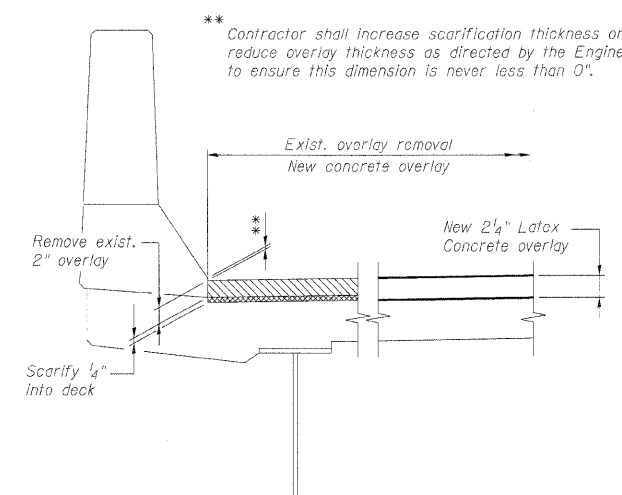


**PLAN**



**SECTION A-A**

**CONCRETE OVERLAY AT FLOOR DRAIN**



**SCARIFICATION & OVERLAY  
DETAIL AT PARAPET**

**Notes:**

- Deck and approach slab repair areas are estimated based on visual inspection completed in June 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield, required for deck slab and/or parapet repairs, shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation sheet.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned prior to placement of the Latex Concrete Overlay. Cost of cleaning the deck drains is included in Bridge Deck Hydro-Scarification, 2 1/4".
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

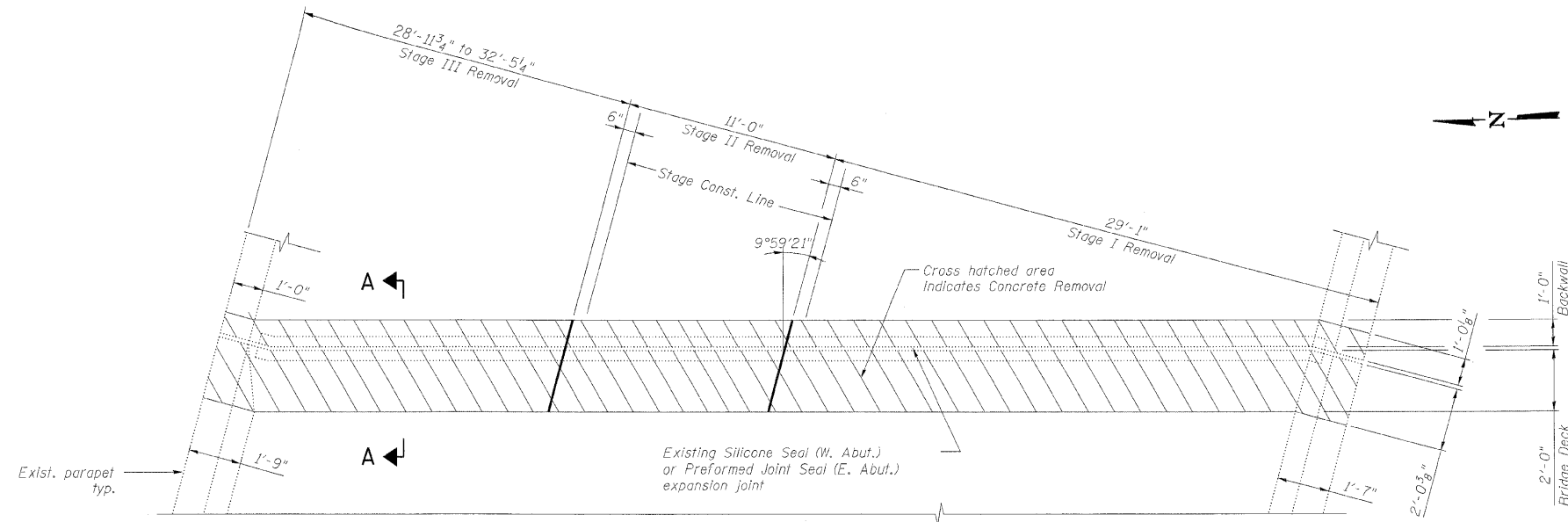
**BRIDGE DECK  
AND APPROACH SLAB REPAIRS  
STRUCTURE NO. 022-0097**

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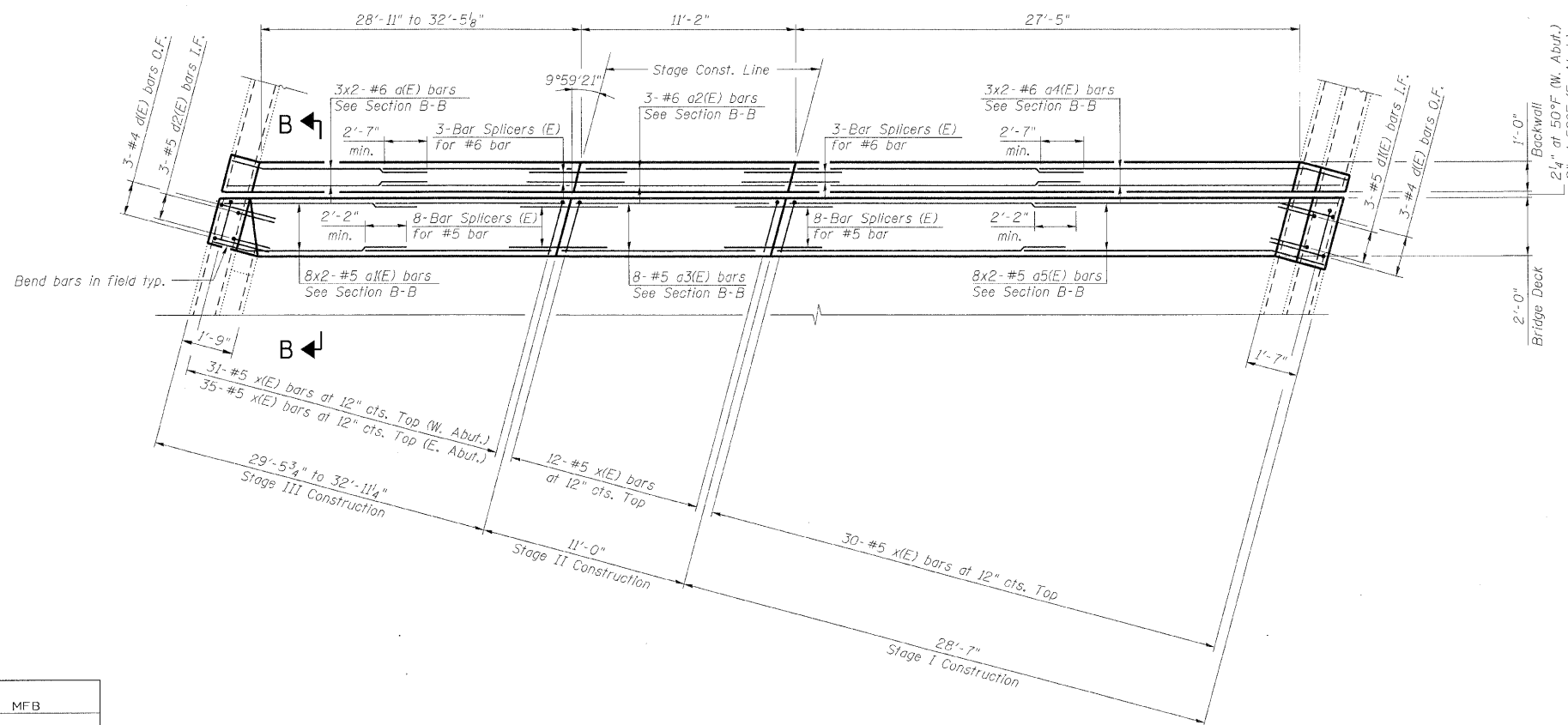
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 4 9 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 303
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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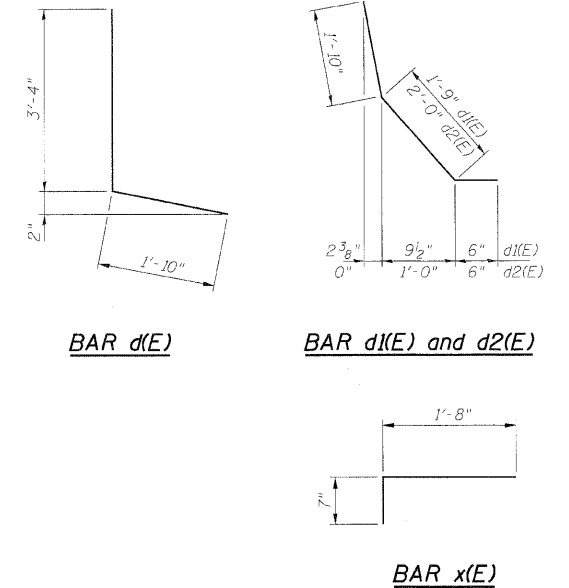
**EXISTING PARTIAL PLAN AT EAST ABUTMENT**  
(Opposite Hand For West Abutment)



**PROPOSED PARTIAL PLAN AT EAST ABUTMENT**  
(Opposite Hand For West Abutment)

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	12	#6	18'-0"	—
a1(E)	32	#5	17'-9"	—
a2(E)	6	#6	10'-10"	—
a3(E)	16	#5	10'-10"	—
a4(E)	12	#6	15'-9"	—
a5(E)	32	#5	15'-6"	—
d(E)	12	#4	5'-2"	┌
d1(E)	6	#5	4'-1"	└
d2(E)	6	#5	4'-4"	└
x(E)	150	#5	2'-3"	┌
Item	Unit	Total		
Concrete Removal	Cu. Yd.	23.6		
Concrete Superstructure	Cu. Yd.	23.6		
Reinforcement Bars, Epoxy Coated	Pound	2,450		



**Notes:**

1. Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
2. I.F. denotes Inside Face. O.F. denotes Outside Face.
3. Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
4. x(E) bar spacing measured along skew.

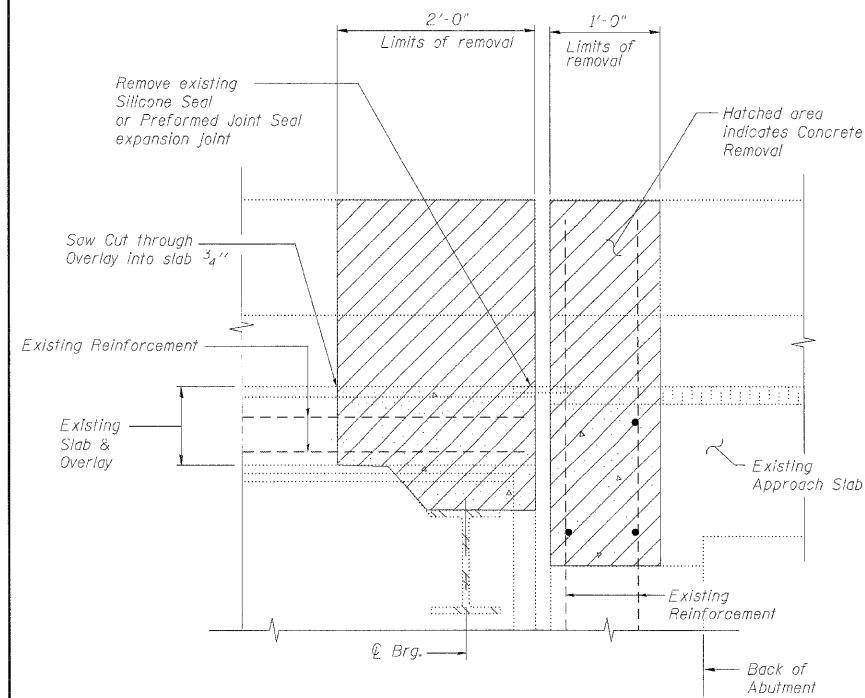
DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	VH
CHECKED -	KWS

**benesch**

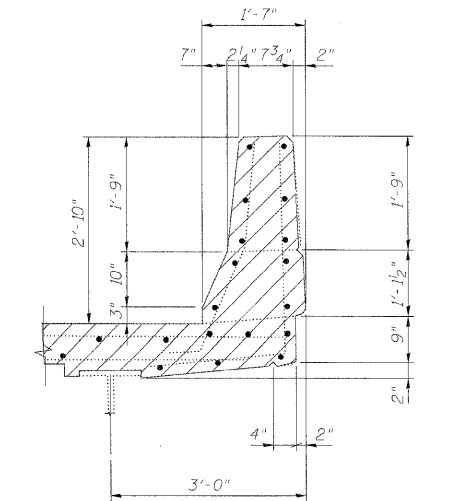
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312-565-0450 Job No. 10050

SHEET NO. 5 9 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 304
	CONTRACT NO. 60G51			ILLINOIS FED. AID PROJECT	

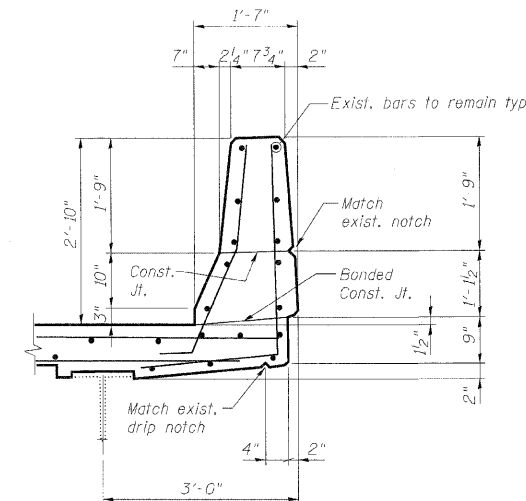
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



SECTION A-A



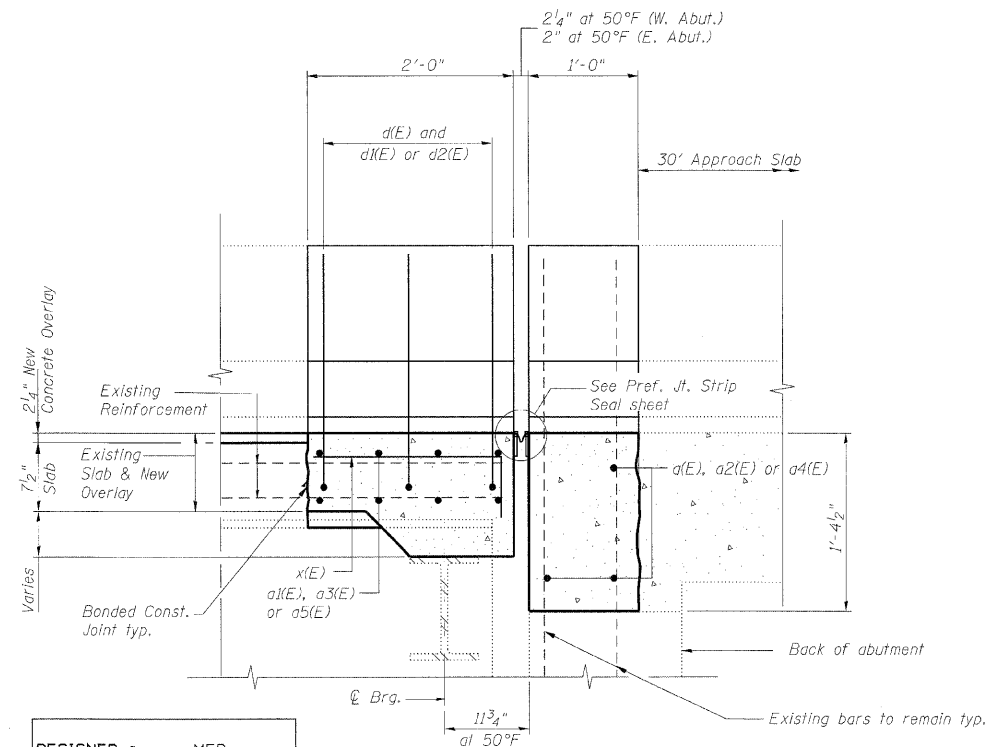
EXISTING INTERIOR PARAPET SECTION



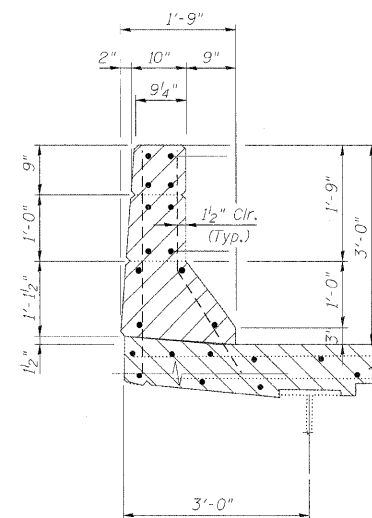
PROPOSED INTERIOR PARAPET SECTION

Notes:

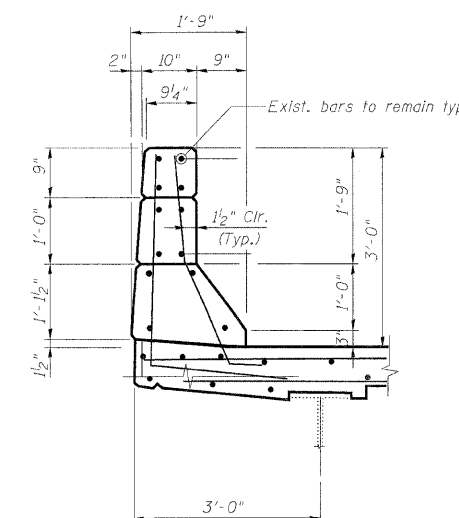
- Existing reinforcement bars extending into the concrete removal area shall be blast-cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be repaired or replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original location in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- Work this sheet with Expansion Joint Repairs sheet.



SECTION B-B



EXISTING EXTERIOR PARAPET SECTION



PROPOSED EXTERIOR PARAPET SECTION

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	VH
CHECKED -	KWS

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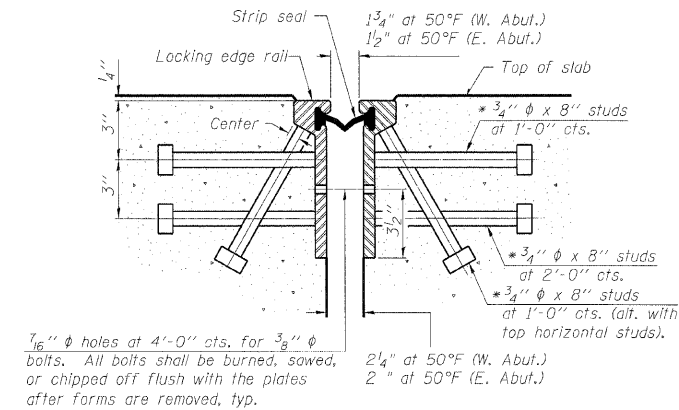
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312-565-0450 Job No. 10050

SHEET NO. 6	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	305
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

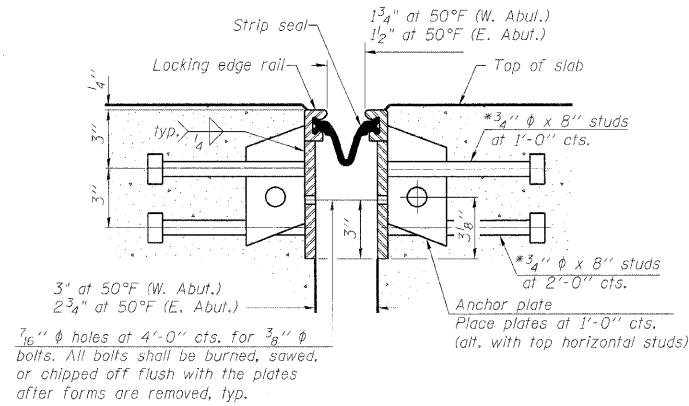
EXPANSION JOINT DETAILS  
STRUCTURE NO. 022-0097

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SECTION THRU  
ROLLED RAIL JOINT



SECTION THRU  
WELDED RAIL JOINT

Notes:

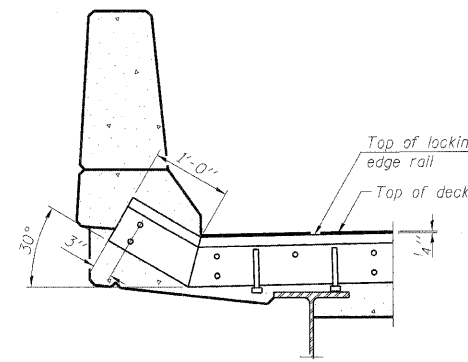
The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

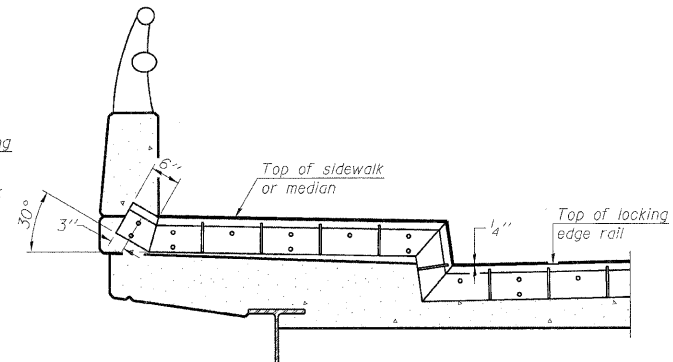
The manufacturer's recommended installation methods shall be followed.

The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

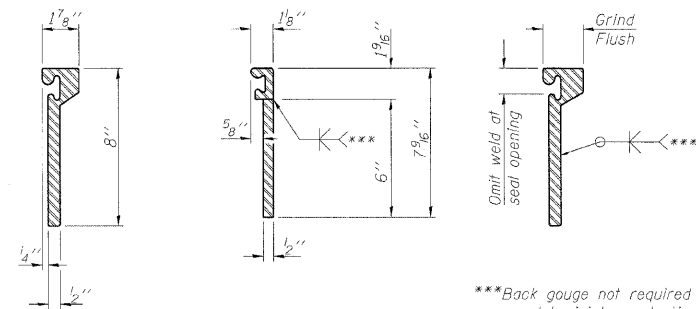


AT PARAPET

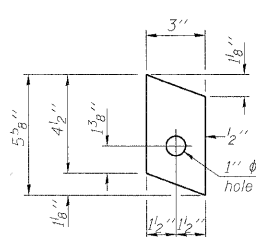


AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.



ROLLED  
EXTRUDED RAIL      WELDED RAIL



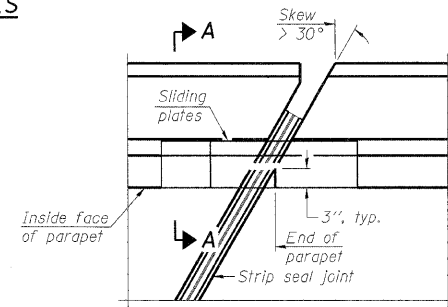
ANCHOR PLATE  
(for welded rail)

\*\*\*Back gouge not required if complete joint penetration is verified by mock-up.

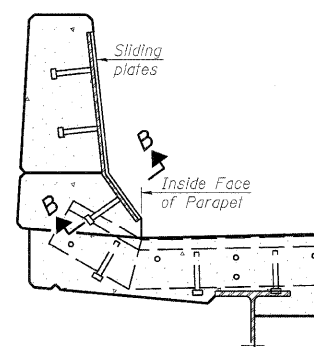
LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

LOCKING EDGE RAILS

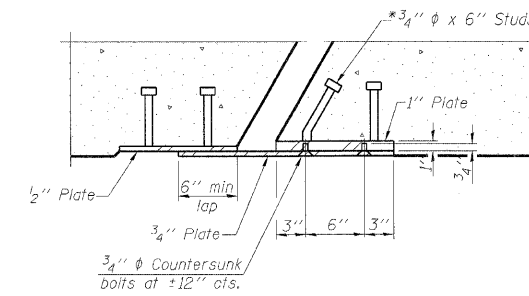


PLAN



SECTION A-A

POINT BLOCK DETAILS  
(for skews > 30°)



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	143.0

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

EJ-SSJ

10-1-08

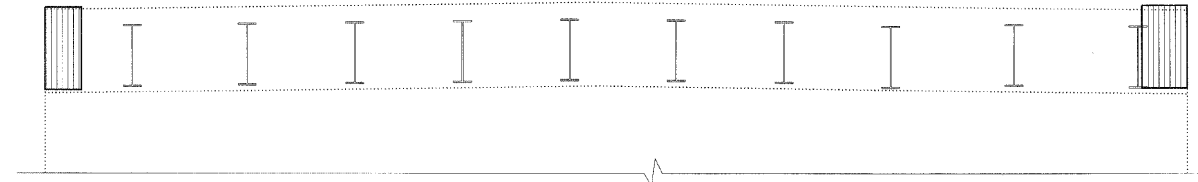
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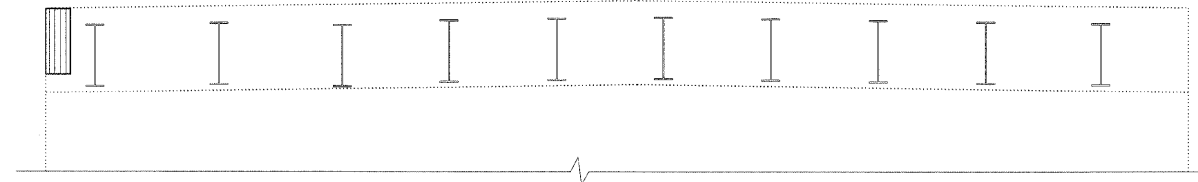
SHEET NO. 7	F.A.I. RTE. 290/355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS	SHEET NO.
				546	306
9 SHEETS			CONTRACT NO. 60G51		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0097

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**WEST ABUTMENT REPAIR**  
(Looking West)




**EAST ABUTMENT REPAIR**  
(Looking East)

**Notes:**

1. Abutment substructure repair type and areas are estimated based on visual inspection completed in June 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
2. The Contractor shall exercise extreme care with any existing conduits located near the repair areas. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer, at no additional cost to the Department. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.

**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	76

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

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312-565-0450 Job No. 10050

**SUBSTRUCTURE REPAIR**  
**STRUCTURE NO. 022-0097**

SHEET NO. 8 9 SHEETS	F.A.I. RTE. 290/355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 307
	CONTRACT NO. 60651				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		



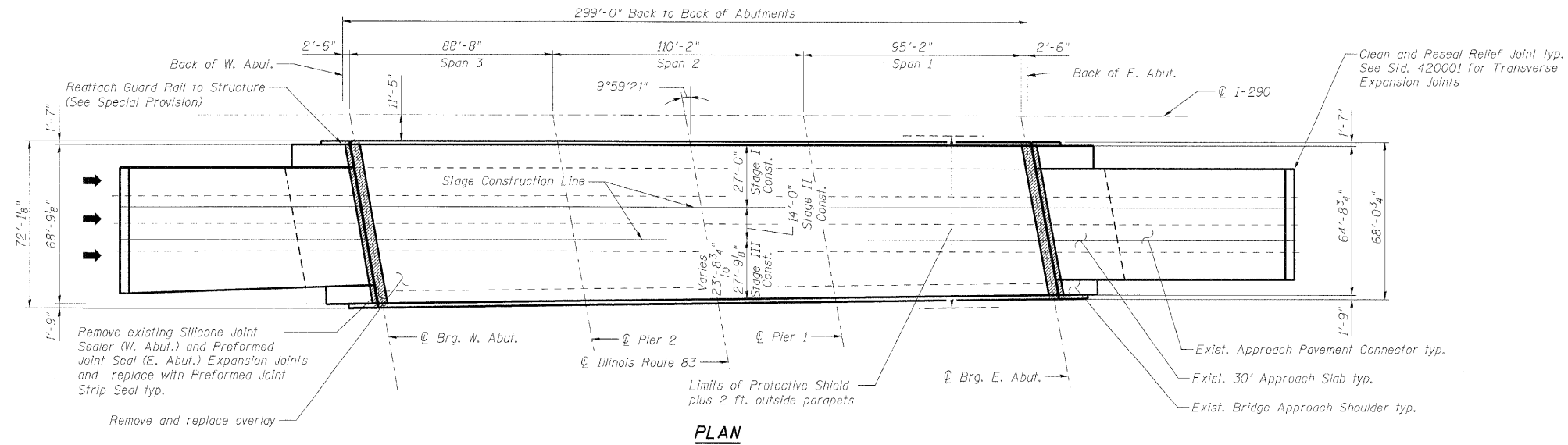


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DEPARTMENT OF TRANSPORTATION

**Existing Structure:**  
The bridge is a three-span continuous, composite plate girder bridge with a 7<sup>3</sup>/<sub>4</sub>-inch reinforced concrete deck and a 2-inch concrete overlay. The original structure was built in 1971. In 1985, the structure was widened and overlaid, the expansion joints were reconstructed and the bearings were replaced. In 1998, the expansion joints were reconstructed and partial depth repairs were made on the approaches. In 2002, the bridge was cleaned and painted.

Stage construction shall be utilized to maintain traffic during construction.

No salvage



PLAN

**DESIGN SPECIFICATIONS**

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

**DESIGN STRESSES**

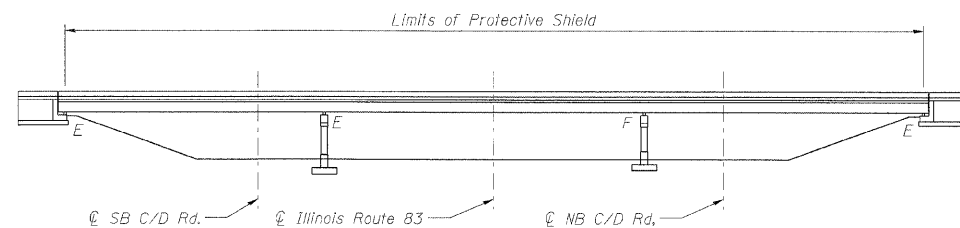
f'c = 3,500 psi  
fy = 60,000 psi

**SCOPE OF WORK**

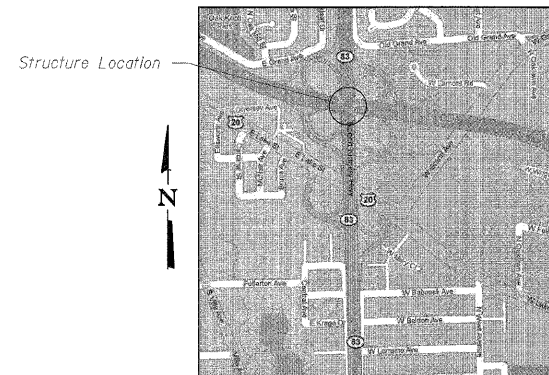
1. Structural Steel Repairs (see Note A).
2. Bridge Deck Hydro-scarification.
3. Repair bridge deck.
4. Repair approach slab.
5. Repair abutment backwalls.
6. Reconstruct deck joints at each abutment with preformed joint strip seal.
7. Place new overlay.
8. Reconnect guardrail.
9. Clip beam flanges at abutment backwall.
10. Clean and reseal relief joints at the end of approach pavement connectors.
11. Apply concrete sealer to parapets, approach slabs, abutment seats and backwalls.

**Note A:**

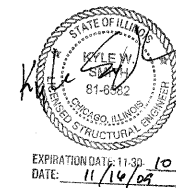
See sheets 317A thru 317C for Structural Steel Repair Details.



ELEVATION



LOCATION SKETCH



GENERAL PLAN AND ELEVATION  
I-290 EB OVER ILLINOIS ROUTE 83  
DUPAGE COUNTY  
STATION 205+44  
STRUCTURE NO. 022-0096

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 1 9 SHEETS	F.A.I. RTE. 290/355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 309
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**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.
- Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
- 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.
- Concrete Sealer shall be applied to the parapets, 30' approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
- The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- Stage construction shall be utilized to maintain traffic during construction.
- The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
- Protective Coat shall be applied only to the new Bridge Deck Latex Concrete Overlay.
- Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

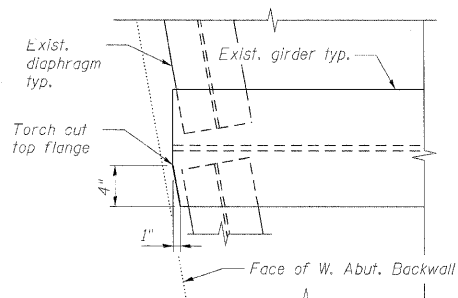
**INDEX OF SHEETS**

- General Plan and Elevation
- General Notes, Bill of Material and Index of Sheets
- Stage Construction Details
- Bridge Deck and Approach Slab Repairs
- Expansion Joint Repairs
- Expansion Joint Details
- Preformed Joint Strip Seal
- Substructure Repairs
- Bar Splicer Assembly Details

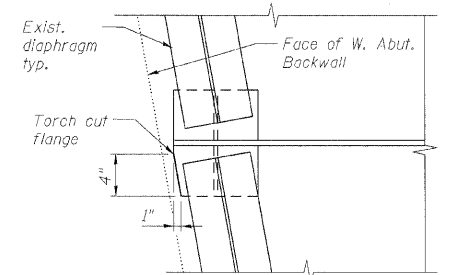
**\*\* TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	23.3		23.3
Protective Shield	Sq. Yd.	2,420		2,420
Concrete Superstructure	Cu. Yd.	23.3		23.3
Bridge Deck Grooving	Sq. Yd.	2,098		2,098
Protective Coat	Sq. Yd.	2,210		2,210
Reinforcement Bars, Epoxy Coated	Pound	2,370		2,370
Bar Splicers	Each	44		44
Preformed Joint Strip Seal	Foot	141.5		141.5
Concrete Sealer	Sq. Ft.	5,535		5,535
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,164		2,164
Structural Repair of Concrete (Depth Equal to or Less than 5 inches)	Sq. Ft.		57	57
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.9		5.9
Bridge Deck Hydra-Scarification, 2 1/4"	Sq. Yd.	2,164		2,164
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	62.4		62.4
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	87.3		87.3
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	61		61
Clean and Reseal Relief Joint	Foot	104.0		104.0
Reattach Guard Rail to Structure	Each	1		1
Clip Existing Beam Flange	Each	8		8

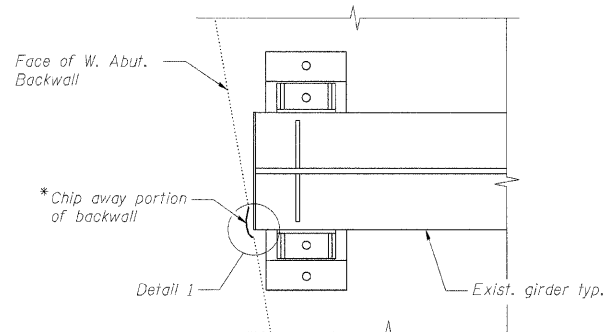
\*\* See sheets 317A thru 317C for Structural Steel Repair Details, Pay Items and Quantities.



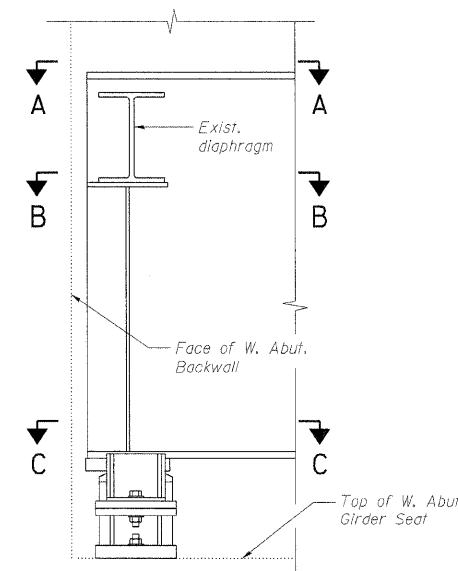
**SECTION A-A**



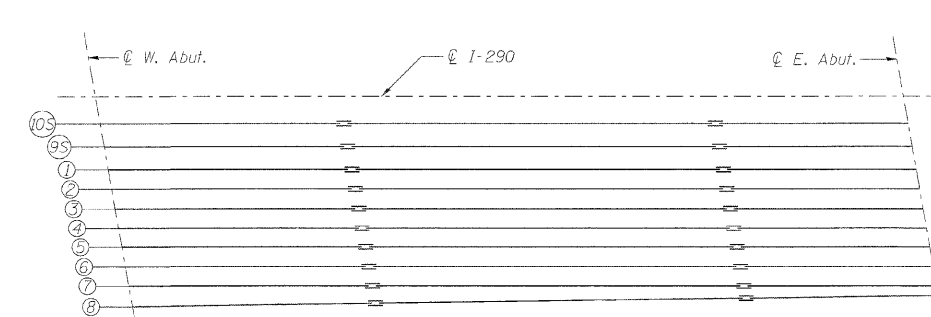
**SECTION B-B**



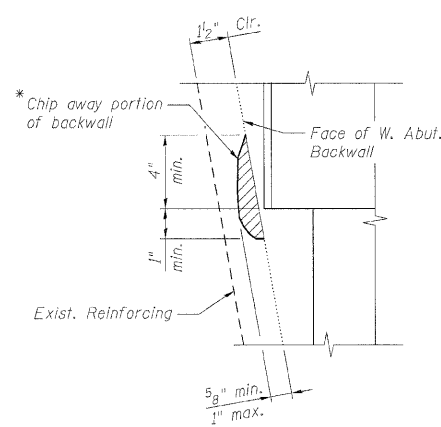
**SECTION C-C**



**GIRDER ELEVATION**



**EXISTING FRAMING PLAN**



**DETAIL 1**

Chipping of backwall shall be performed prior to application of Concrete Sealer on the abutment backwall.

\* Cost included with Clip Existing Beam Flange.

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

**GIRDER FLANGE CLIPPING DETAILS**

At West Abutment - 8 thus (Girders 1-8)

Cut surfaces shall be ground smooth, spot cleaned, and painted with an aluminum epoxy mastic primer followed by a finish coat to match the color of the existing beam. Paint shall be applied per the requirements of Paint System 2, according to the Special Provision "Cleaning and Painting Existing Steel Structures". Cost included with Clip Existing Beam Flange. See Special Provision for "Clip Existing Beam Flange".

**benesch**

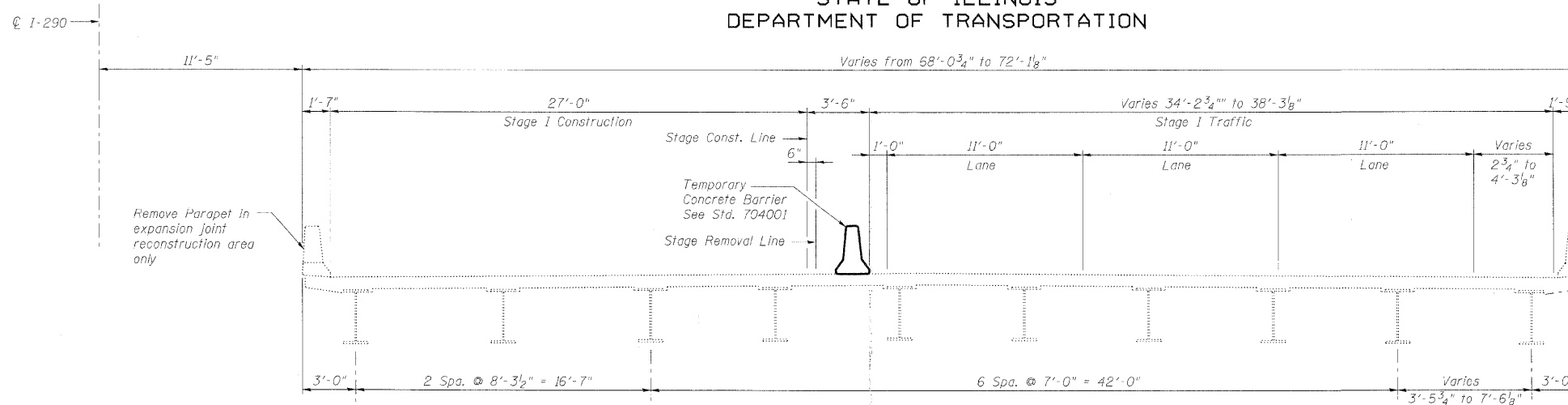
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Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0460 Job No. 10050

**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0096**

SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	310
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

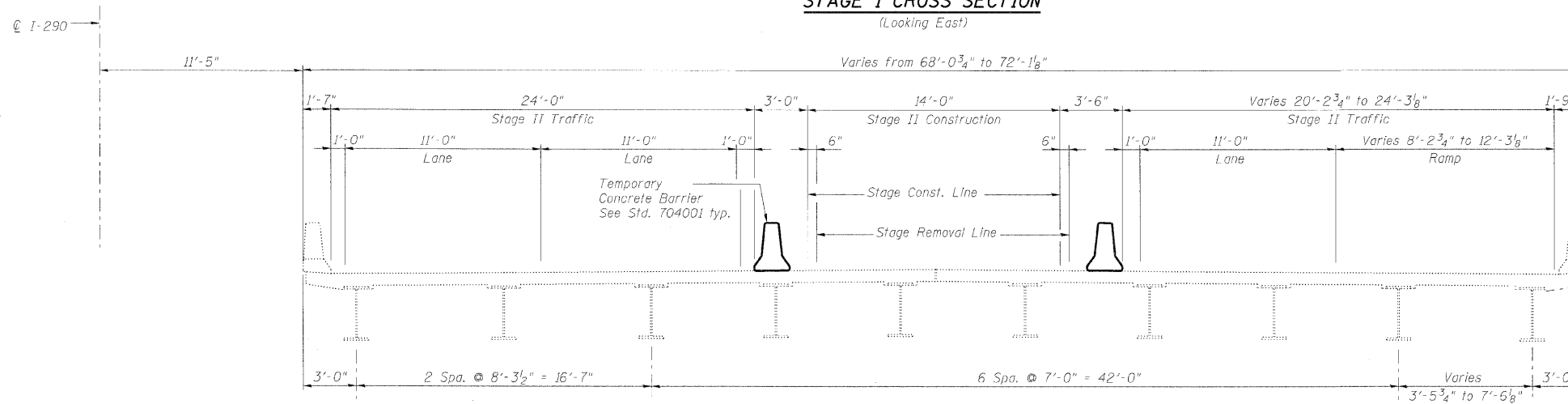
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



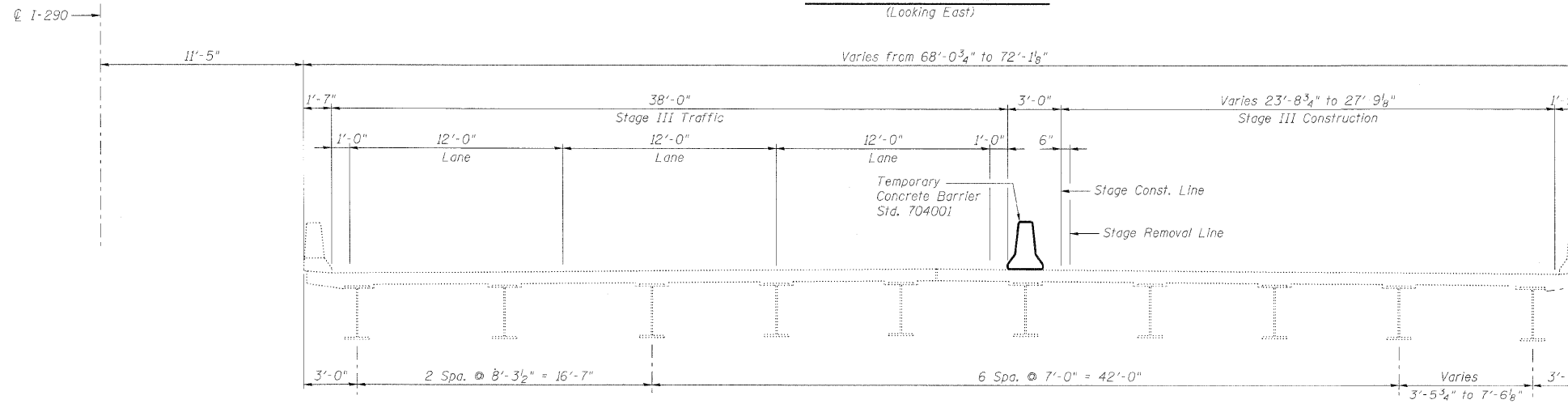
**STAGE I CROSS SECTION**

(Looking East)



**STAGE II CROSS SECTION**

(Looking East)



**STAGE III CROSS SECTION**

(Looking East)

Remove Parapet in expansion joint reconstruction area only

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

DESIGNED -	MFB
CHECKED -	MAC
DRAWN -	RMG
CHECKED -	KWS

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312-565-0450 Job No. 10050

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	311
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS		FED. AID PROJECT	

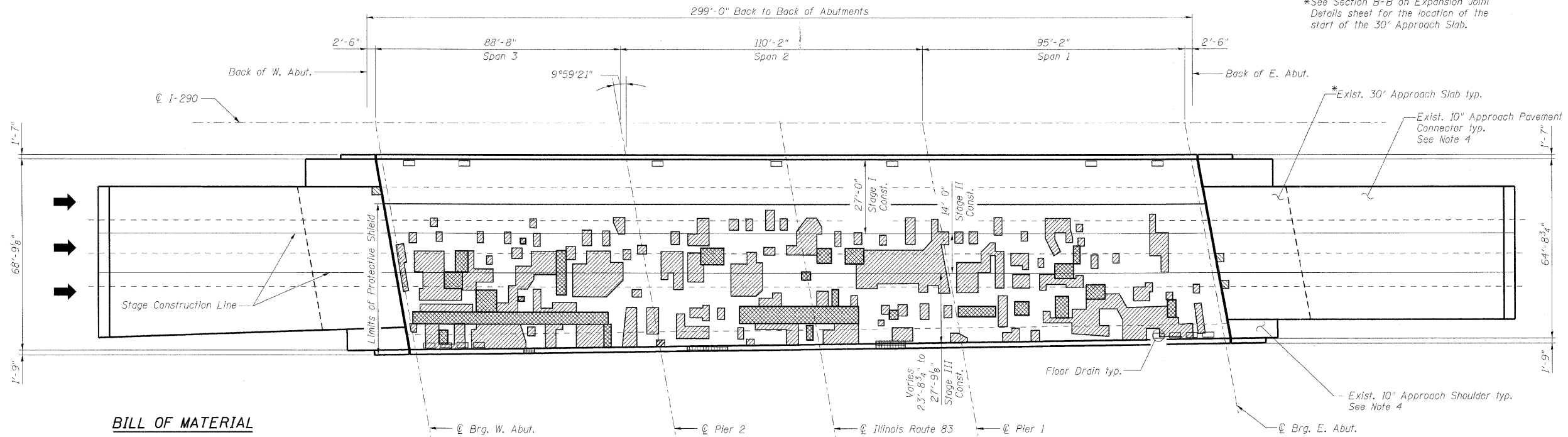
**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0096**

x:\10000s\10050\engineering\documents\contract\1\SN.022.0096.IL.83\0096-60G51-003-stageconst.dgn

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STATE OF ILLINOIS  
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\*See Section B-B on Expansion Joint Details sheet for the location of the start of the 30' Approach Slab.



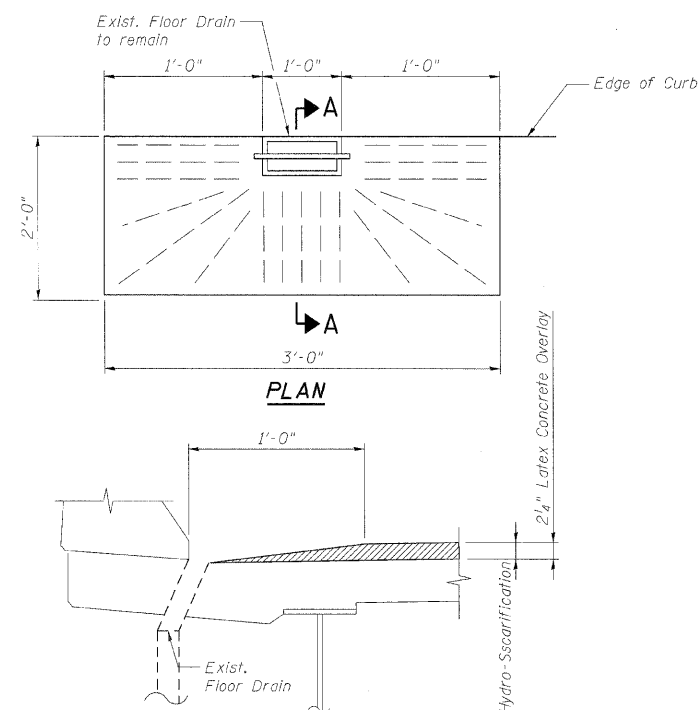
**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	468.2
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	62.4
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	87.3
	Cleaning & Painting Exposed Rebar (Special)	Sq. Ft.	61
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.9
	Protective Shield	Sq. Yd.	2,420
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	2,164
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,164
	Protective Coat	Sq. Yd.	2,210
	Bridge Deck Grooving	Sq. Yd.	2,098

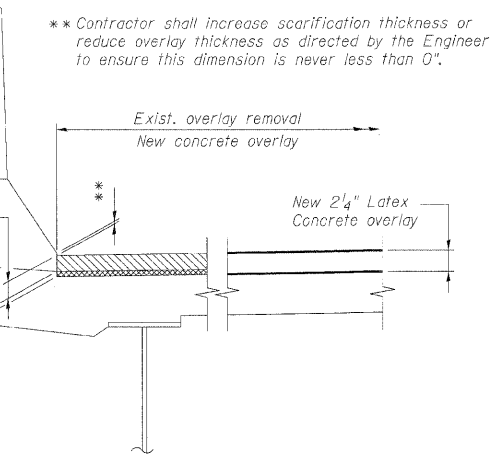
▲ For information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

**PLAN**



**SECTION A-A**  
**CONCRETE OVERLAY AT FLOOR DRAIN**



**SCARIFICATION & OVERLAY**  
**DETAIL AT PARAPET**

**Notes:**

- Deck and approach slab repair areas are estimated based on visual inspection completed in June 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield, required for deck slab and/or parapet repairs, shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation sheet.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned prior to placement of the Latex Concrete Overlay. Cost of cleaning the deck drains is included in Bridge Deck Hydro-Scarification, 2 1/4".
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

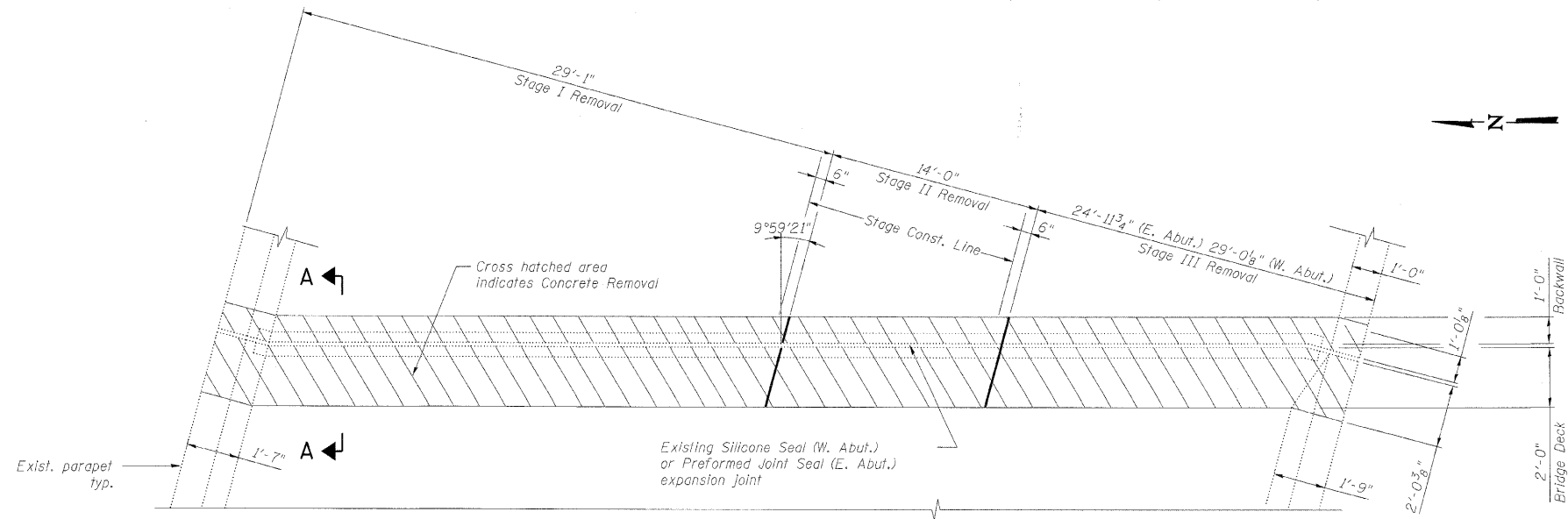
**BRIDGE DECK**  
**AND APPROACH SLAB REPAIRS**  
**STRUCTURE NO. 022-0096**

**benesch**

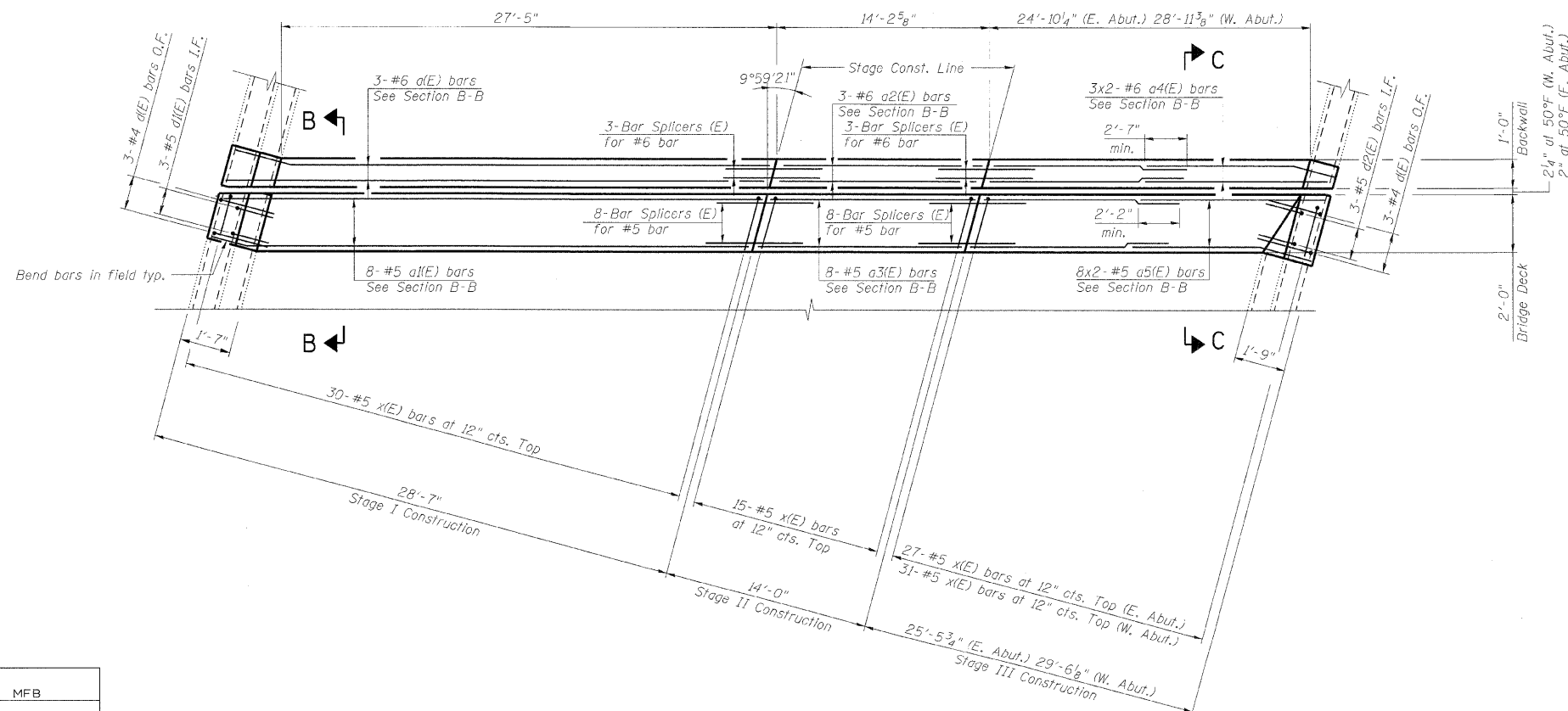
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 4	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	221, 1-1, 2&3RS-7	DUPAGE	546	312
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



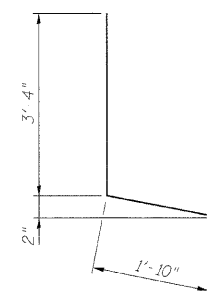
**EXISTING PARTIAL PLAN AT EAST ABUTMENT**  
(Opposite Hand For West Abutment)



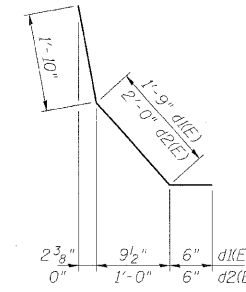
**PROPOSED PARTIAL PLAN AT EAST ABUTMENT**  
(Opposite Hand For West Abutment)

**BILL OF MATERIAL**

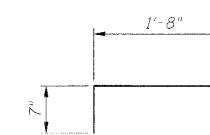
Bar	No.	Size	Length	Shape
a(E)	6	#6	28'-9"	—
a1(E)	16	#5	28'-6"	—
a2(E)	6	#6	13'-11"	—
a3(E)	16	#5	13'-11"	—
a4(E)	12	#6	16'-3"	—
a5(E)	32	#5	16'-0"	—
d(F)	12	#4	5'-2"	└
d1(E)	6	#5	4'-1"	└
d2(E)	6	#5	4'-4"	└
x(E)	148	#5	2'-3"	└
Item	Unit	Total		
Concrete Removal	Cu. Yd.	23.3		
Concrete Superstructure	Cu. Yd.	23.3		
Reinforcement Bars, Epoxy Coated	Pound	2,370		



**BAR d(E)**



**BAR d1(E) and d2(E)**



**BAR x(E)**

**Notes:**

- Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
- I.F. denotes Inside Face.  
O.F. denotes Outside Face.
- Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
- x(E) bar spacing measured along skew.

**EXPANSION JOINT REPAIRS  
STRUCTURE NO. 022-0096**

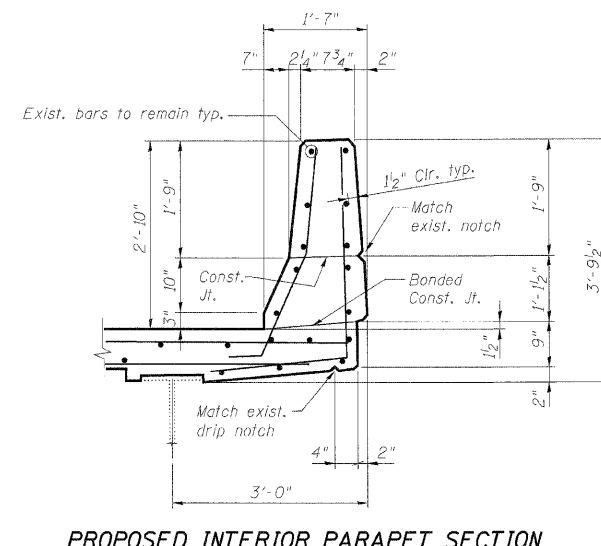
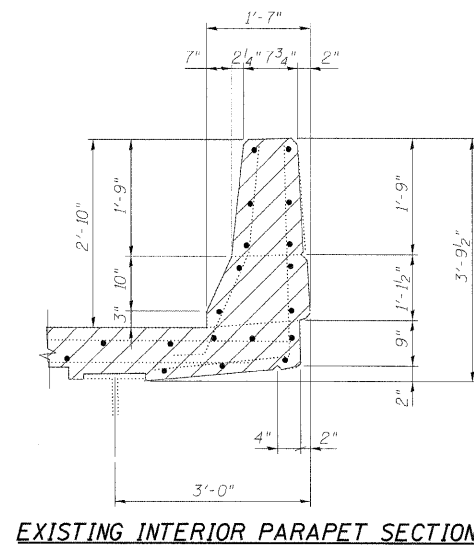
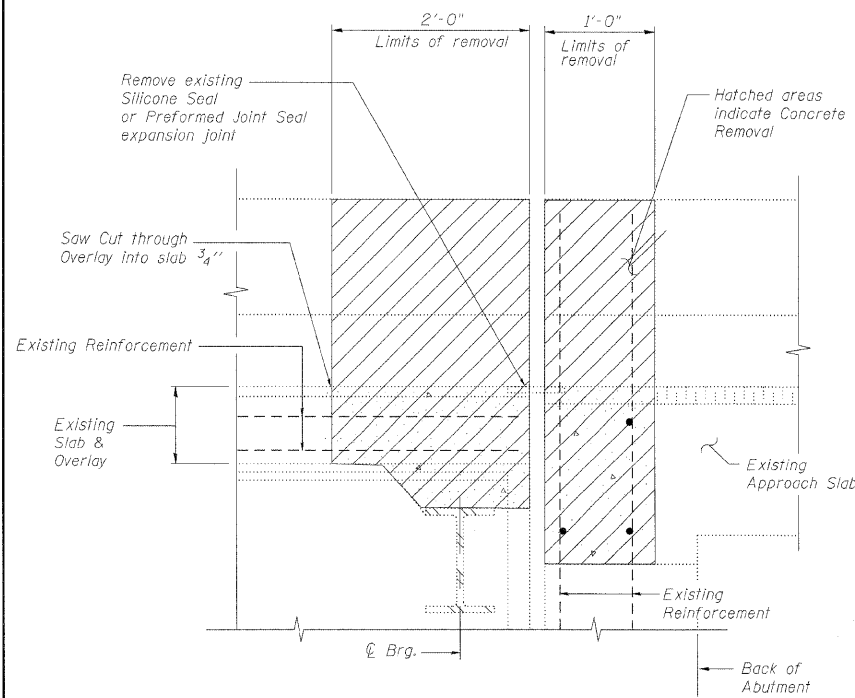
DESIGNED	MFB
CHECKED	KWS
DRAWN	VH
CHECKED	KWS

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312-565-0450 Job No. 10050

SHEET NO. 5 9 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 313
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

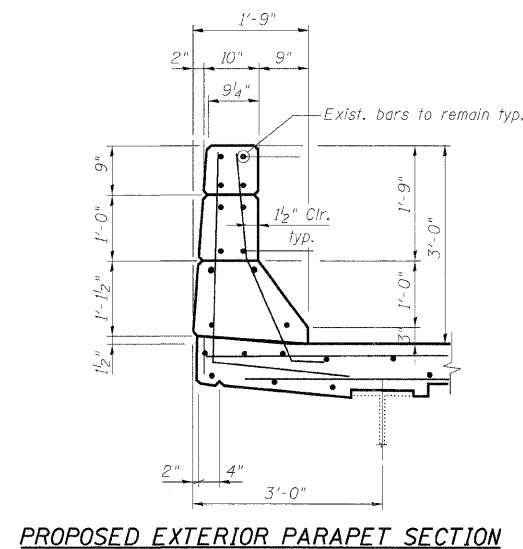
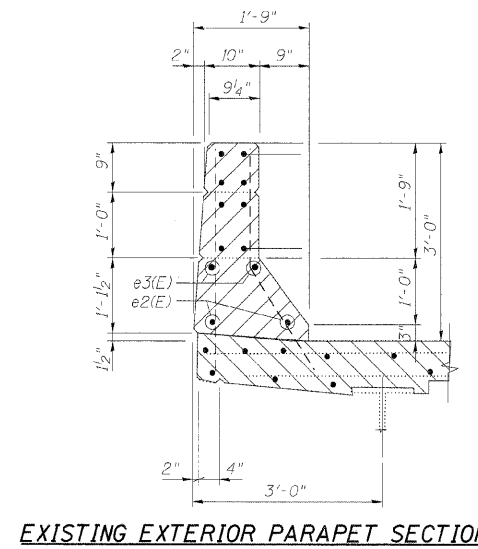
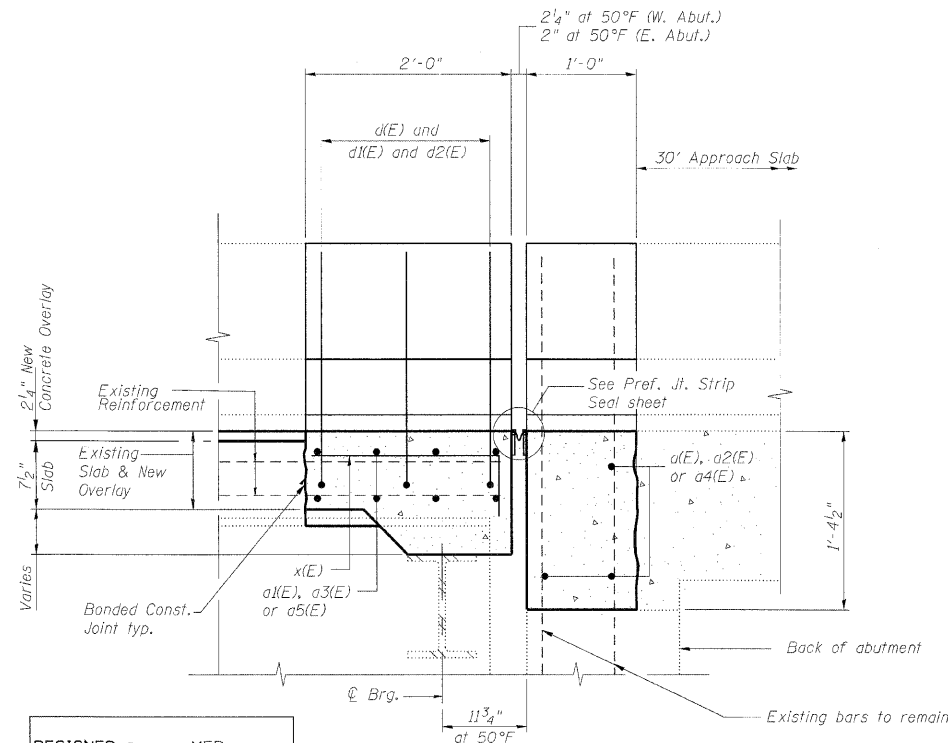
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**Notes:**

- Existing reinforcement bars extending into the concrete removal area shall be blast-cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be repaired or replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original location in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- Work this sheet with Expansion Joint Repairs sheet.

SECTION A-A



EXISTING EXTERIOR PARAPET SECTION

PROPOSED EXTERIOR PARAPET SECTION

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	VH
CHECKED -	KWS

SECTION B-B

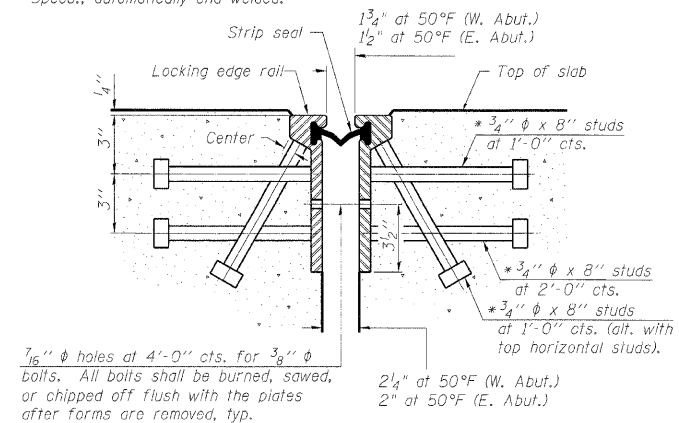
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Chicago, Illinois 60601  
312.565-0450 Job No. 10050

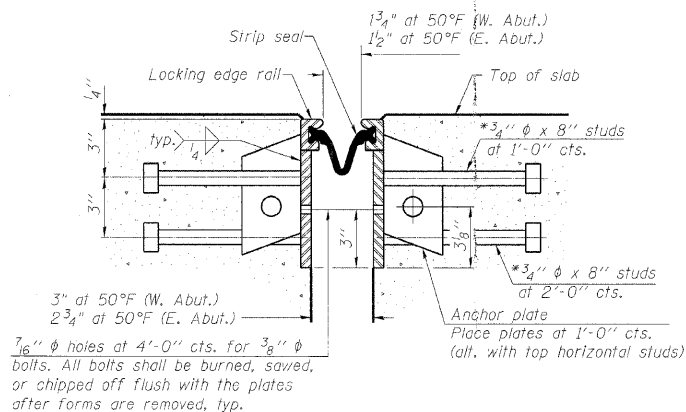
SHEET NO. 6	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	221, 1-1, 2&3RS-7	DUPAGE	546	314
9 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SECTION THRU  
ROLLED RAIL JOINT



SECTION THRU  
WELDED RAIL JOINT

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

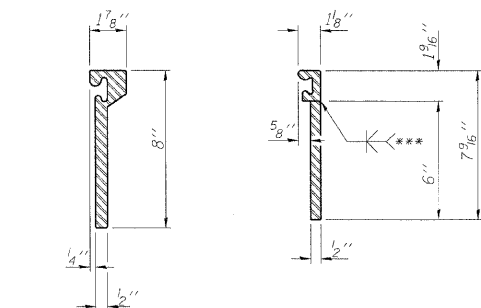
The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

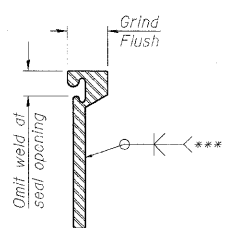
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

7/16" diameter holes at 4'-0" cts. for 3/8" diameter bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

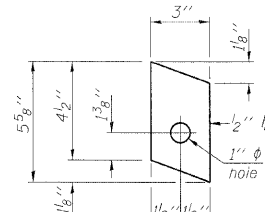
3" at 50°F (W. Abut.)  
2 3/4" at 50°F (E. Abut.)  
7/16" diameter holes at 4'-0" cts. for 3/8" diameter bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.



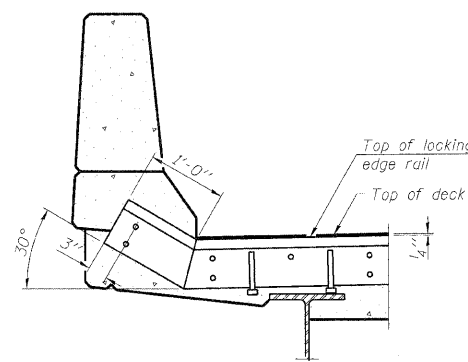
ROLLED  
EXTRUDED RAIL      WELDED RAIL



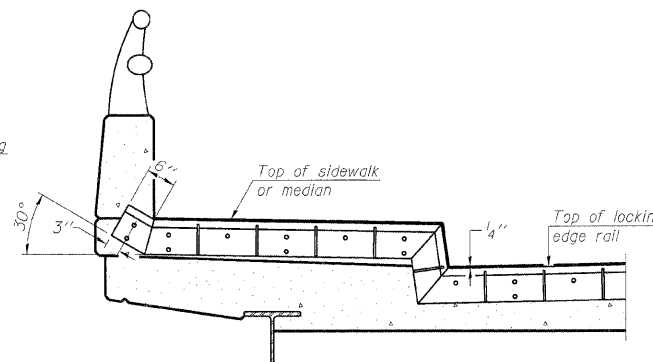
\*\*\*Back gouge not required if complete joint penetration is verified by mock-up.



ANCHOR PLATE  
(for welded rail)



AT PARAPET



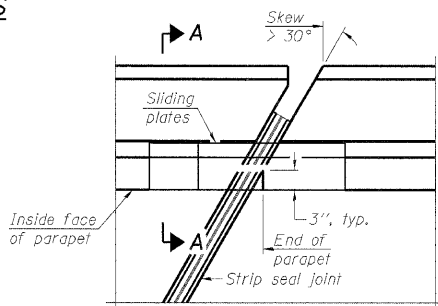
AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

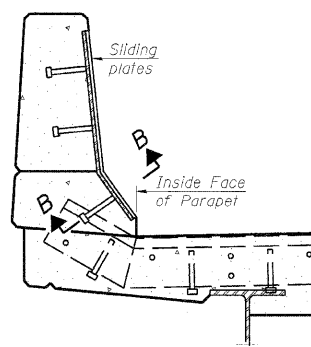
LOCKING EDGE RAILS

LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.



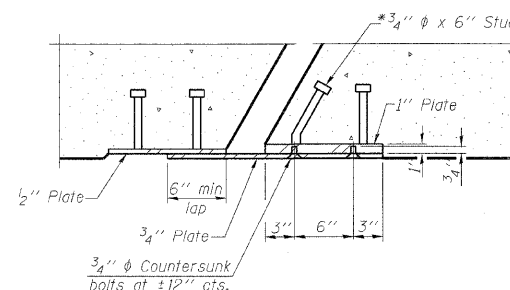
PLAN



SECTION A-A

POINT BLOCK DETAILS  
(for skew > 30°)

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	141.5

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

EJ-SSJ

10-1-08

benesch

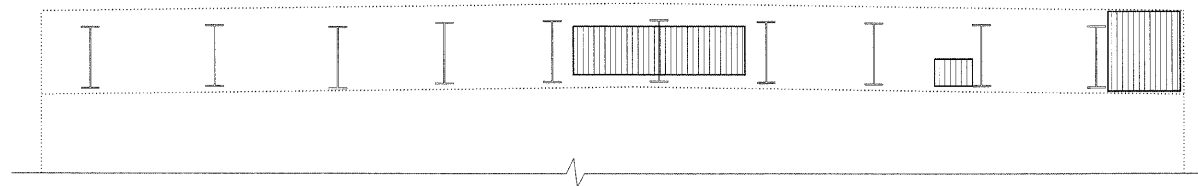
alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450      Job No. 10050

SHEET NO. 7	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290/355	221, 1-1, 2&3RS-7	DUPAGE	546	315
9 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0096

x:\10000s\100050\engineering\documents\contract\1\SN.022.0097.0096.IL.83\0096-60G51-007-Str-ipseal.dgn 18:04:04 11/12/2009

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**EAST ABUTMENT REPAIR**  
(Looking East)

**Notes:**

1. Abutment substructure repair type and areas are estimated based on visual inspection completed in June 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
2. The Contractor shall exercise extreme care with the existing conduits located near the repair areas. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer, at no additional cost to the Department. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.

**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	57

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

**SUBSTRUCTURE REPAIR**  
**STRUCTURE NO. 022-0096**

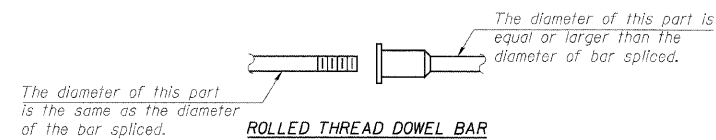
**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-566-0460 Job No. 10050

SHEET NO. 8	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	221, 1-1, 2&3RS-7	DUPAGE	546	316
9 SHEETS	CONTRACT NO. 60651				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

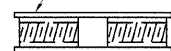


ROLLED THREAD DOWEL BAR



\*\* ONE PIECE

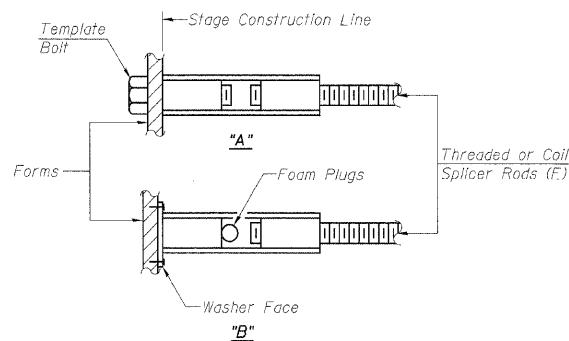
Wire Connector



WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



INSTALLATION AND SETTING METHODS

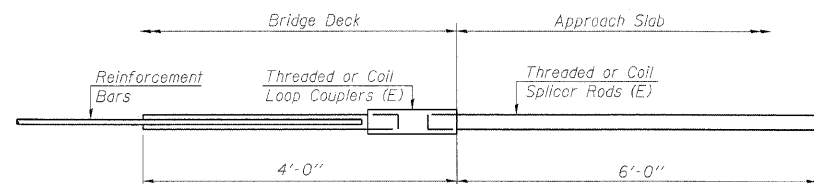
"A" : Set bar splicer assembly by means of a template bolt.  
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
(E) : Indicates epoxy coating.

NOTES

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

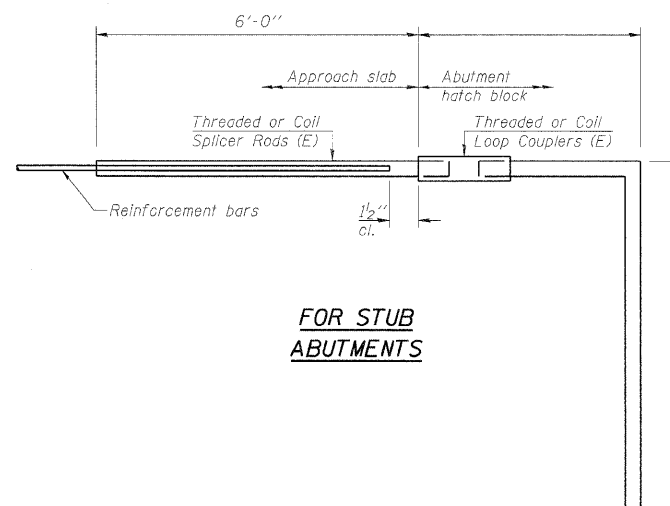
- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_s$   
(Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



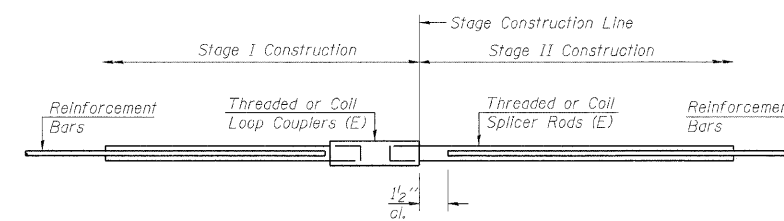
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



FOR STUB ABUTMENTS

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



STANDARD

Bar Size	No. Assemblies Required	Location
#5	32	Deck
#6	12	Deck

BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0096

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

BSD-1

10-1-08

benesch

alfred benesch & company  
Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-666-0450 Job No. 10060

SHEET NO. 9	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	317
9 SHEETS	FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		CONTRACT NO. 60G51

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Fasteners shall be high strength bolts. Bolts 7/8"φ, open holes 15/16"φ, unless otherwise noted.

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.

Cost of removal and re-installation of all members necessary to complete the work as detailed on the plans and as specified in the Special Provisions shall be included with Erecting Structural Steel.

The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Reddish Brown; Munsell No. 2.5YR 3/4. See Special Provision "Cleaning and Painting New Metal Structures".

After the new beam is in its final position and/or beam straightening operations have been completed, the Engineer in the field shall check to see that the top flange is tight against the slab. If not, the Contractor shall inject epoxy between the existing concrete deck and the top flange of the beam. See Special Provision "Epoxy Injection".

Existing structural steel that will be in contact with new structural steel shall be cleaned and painted prior to erection as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures".

Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

The Contractor shall provide support and/or shoring systems for the slab and beam in the area of existing beam removal. See Special Provisions "Erecting Structural Steel" and "Temporary Slab Support System".

As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that can not be removed by grinding 1/4" inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.

Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.

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.

Diaphragm connection holes shall be 15/16"φ for 3/4"φ bolts. Two hardened washers shall be required at diaphragm connections.

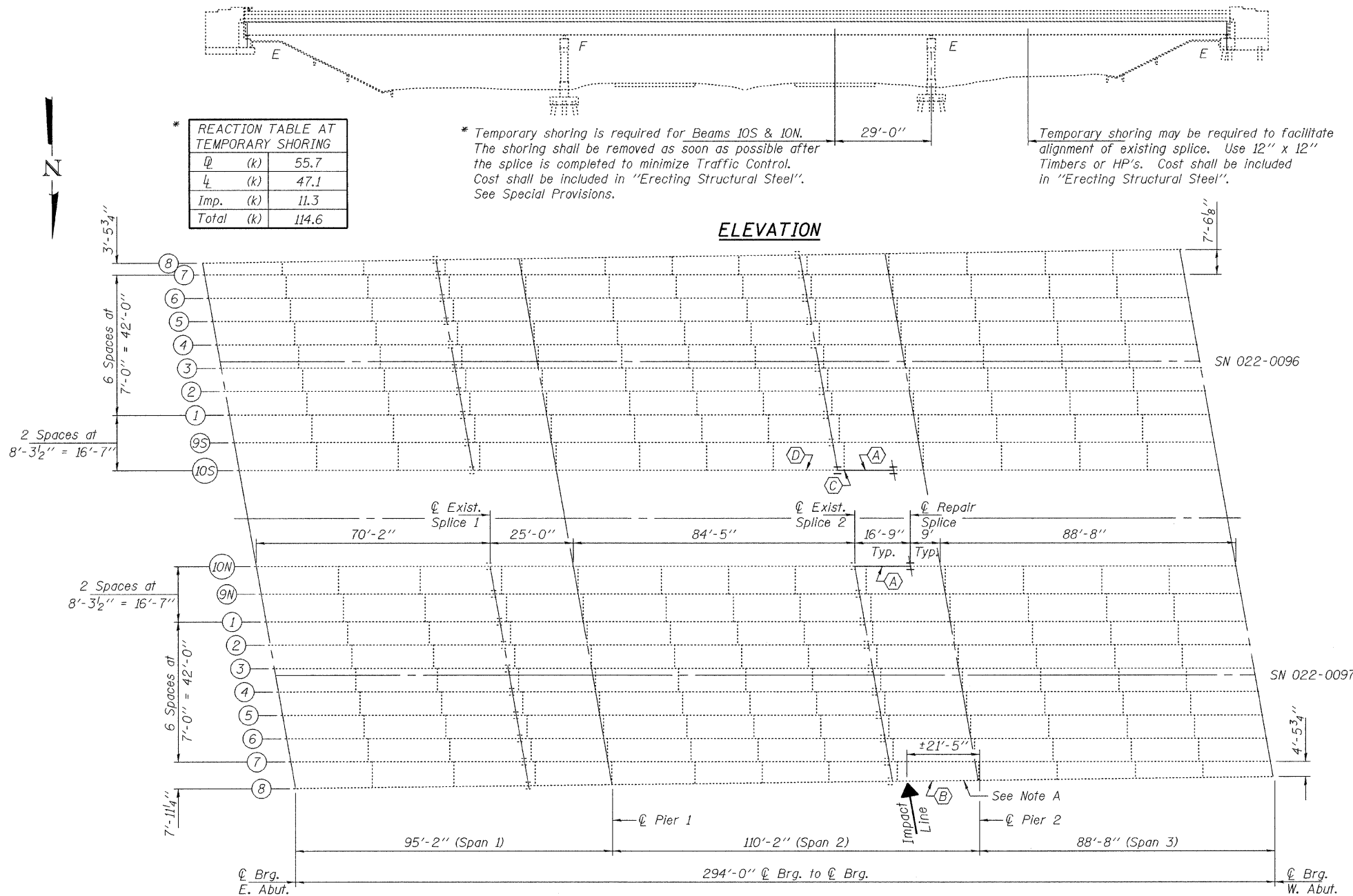
\* REACTION TABLE AT TEMPORARY SHORING

Q	(k)	55.7
L	(k)	47.1
Imp.	(k)	11.3
Total	(k)	114.6

\* Temporary shoring is required for Beams 10S & 10N. The shoring shall be removed as soon as possible after the splice is completed to minimize Traffic Control. Cost shall be included in "Erecting Structural Steel". See Special Provisions.

Temporary shoring may be required to facilitate alignment of existing splice. Use 12" x 12" Timbers or HP's. Cost shall be included in "Erecting Structural Steel".

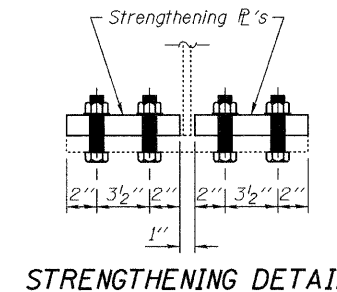
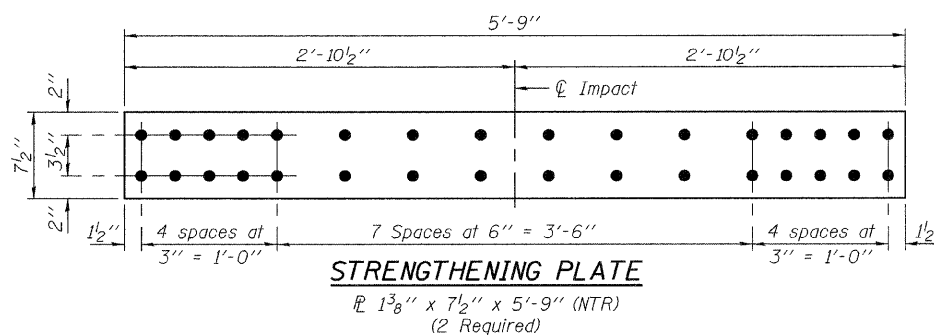
ELEVATION



FRAMING PLAN

- (A) - Existing Beam to be Replaced.
- (B) - Existing Beam to be Straightened & Strengthened.
- (C) - Replace Bottom Clip Angle.
- (D) - Existing Beam to be Straightened.

Note A:  
Conduit welded to the bottom flange may need to be removed and replaced to facilitate placement of strengthening R's.



TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	0.9
Concrete Superstructure	Cu. Yd.	0.9
Erecting Structural Steel	Pound	9260
Structural Steel Removal	Pound	7910
Beam Straightening	L.S.	1
Temporary Slab Support System	L.S.	1

PLAN & ELEVATION  
SN 022-0096 & 0097

DESIGNED *August J. Dupont*  
CHECKED *Adrian T. Holloway*  
DRAWN *Kyle M. Steffen*  
CHECKED *AJB ATH*

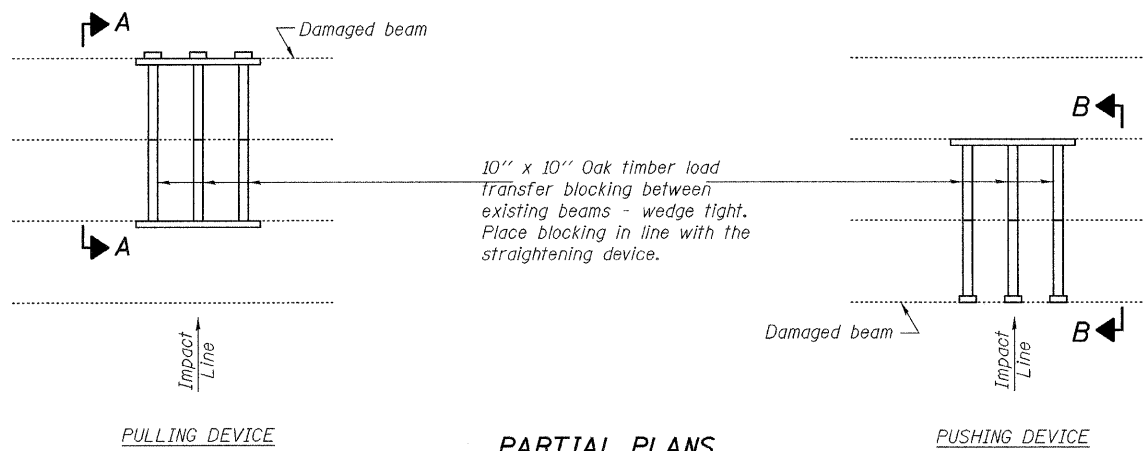
OCTOBER 13, 2009  
EXAMINED *[Signature]*  
PASSED *[Signature]*  
ENGINEER OF STRUCTURAL SERVICES  
ENGINEER OF BRIDGES AND STRUCTURES



Expires: November 30, 2010

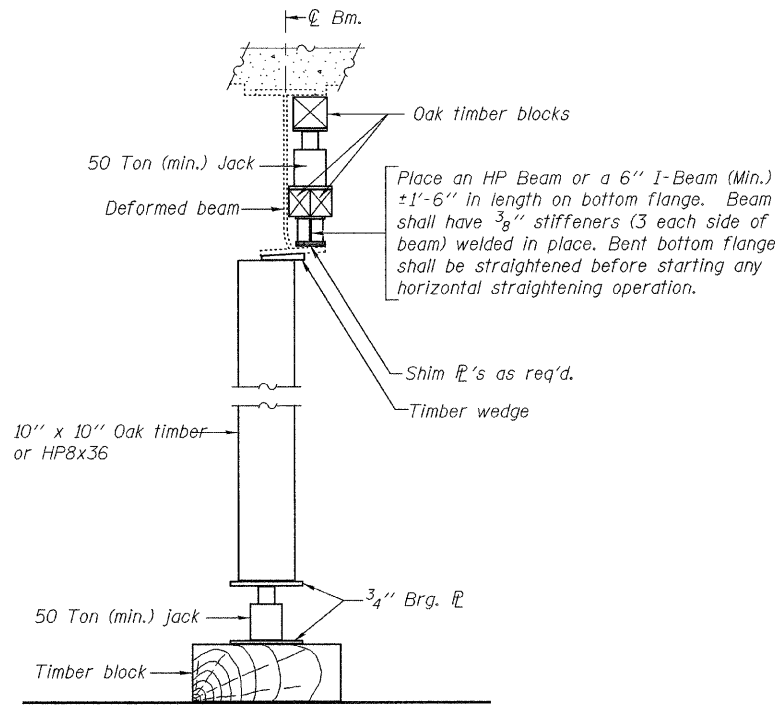
SHEET NO. 1 3 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1,1-1, 2 & 3)RS-7	COUNTY DuPAGE	TOTAL SHEETS 546	SHEET NO. 317A
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

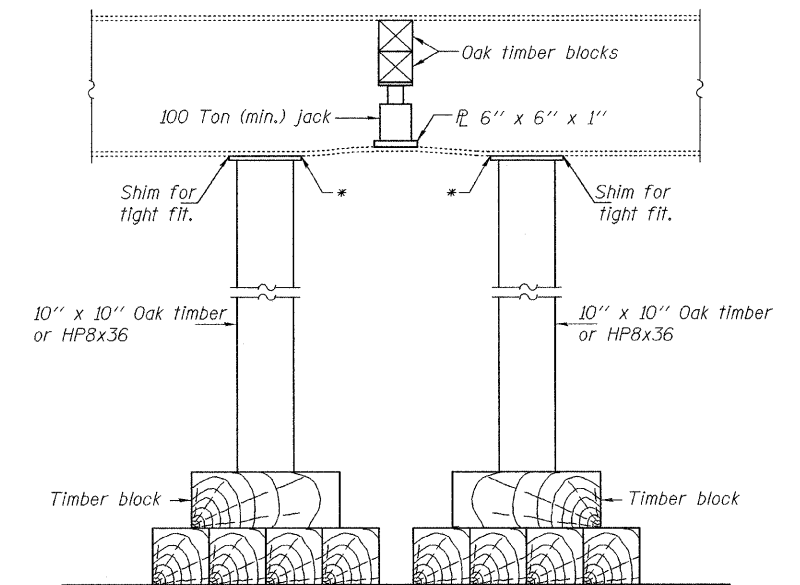


**PARTIAL PLANS**  
**SUGGESTED BEAM STRAIGHTENING METHODS**

Straightening force shall be maintained on all load transfer blocking during beam straightening.



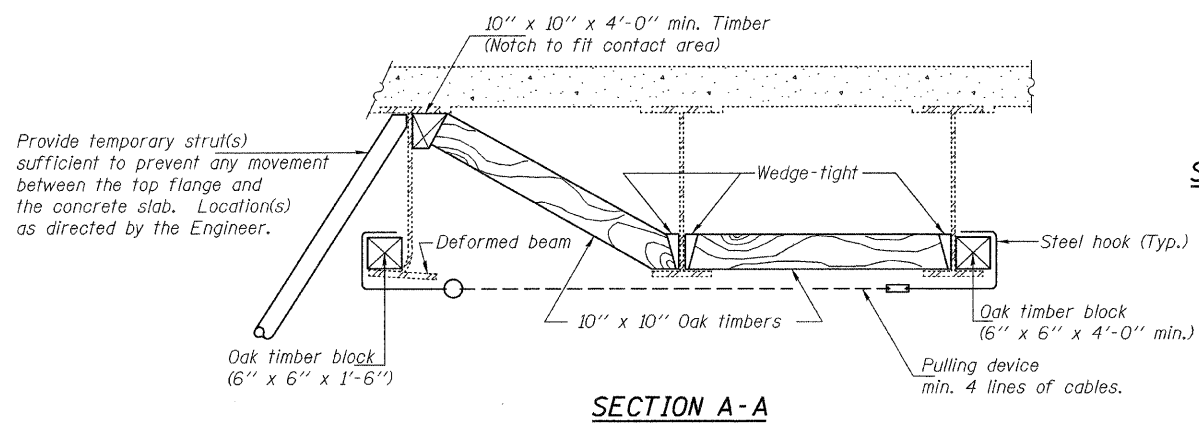
**SUGGESTED VERTICAL STRAIGHTENING DETAIL**  
(To correct flange rotation.)



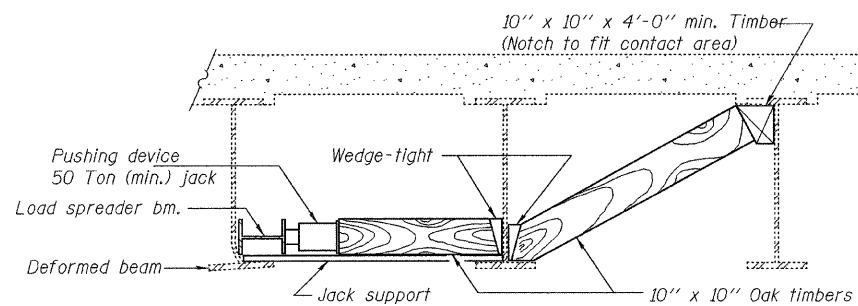
**SUGGESTED VERTICAL STRAIGHTENING DETAIL**  
(To correct localized vertical flange deformations.)

\* Edge of plate shall line up with edge of deformation.

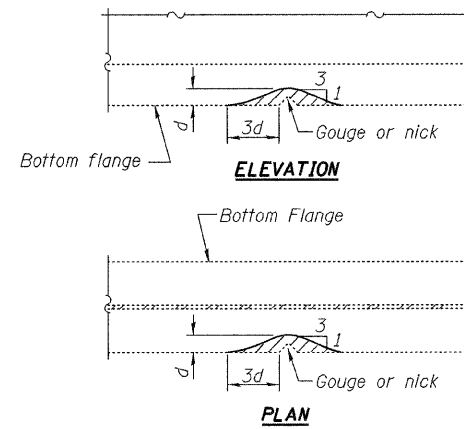
Note:  
Braces and jack assembly shall be placed on same side of web.  
Bent bottom flange shall be straightened before starting any horizontal straightening operations.



**SECTION A-A**



**SECTION B-B**

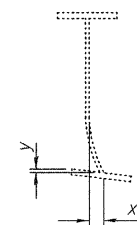


**GRINDING DETAIL**

Grind existing nicks, gouges and shallow cracks in the damaged beams as detailed. Ground surfaces shall be inspected for cracks using magnetic particle testing prior to initiating any beam straightening operations. Any cracks that cannot be removed by grinding approximately 1/4" deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. Ground surfaces shall be spot cleaned and painted with an aluminum epoxy mastic primer followed by a finish coat to match the color of the existing beam. Cost of grinding, testing and spot painting included with Beam Straightening.

**DIMENSION TABLE**

BM #	"X"	"Y"	"L"
8	2 1/8"	2 1/2"	25'
10S	2 3/8"	1 1/8"	10'



**EXISTING DEFORMATION TO BE STRAIGHTENED**

(Looking East)  
(Approximate max. deflections)  
Deflected length of beam to be straightened is approximately "L".

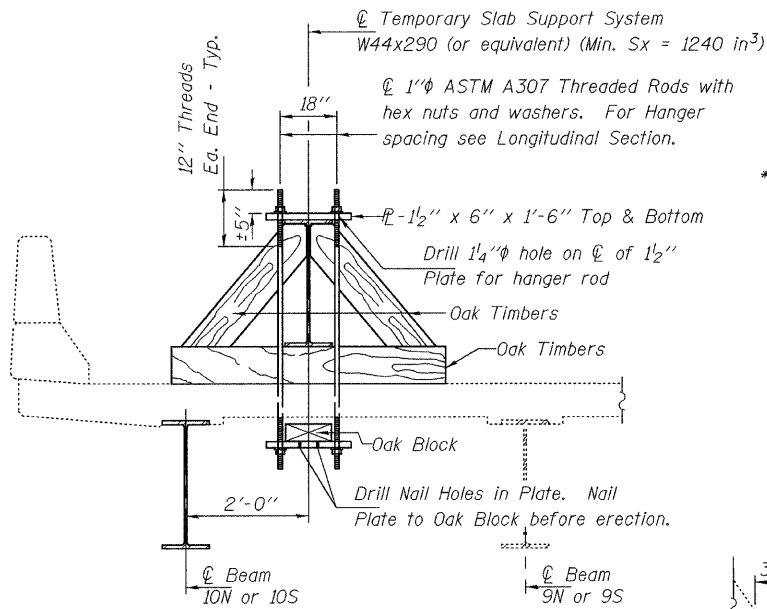
DESIGNED	AJB
CHECKED	ATH
DRAWN	Kyle M. Steffen
CHECKED	AJB ATH

OCTOBER 13, 2009  
EXAMINED *Carl P. ...*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

**BEAM STRAIGHTENING DETAILS**  
**SN 022-0096 & 0097**

SHEET NO. 2 3 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1,1-1, 2 & 3)RS-7	COUNTY DuPAGE	TOTAL SHEETS 546	SHEET NO. 317B
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

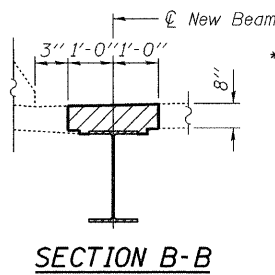


SECTION A-A

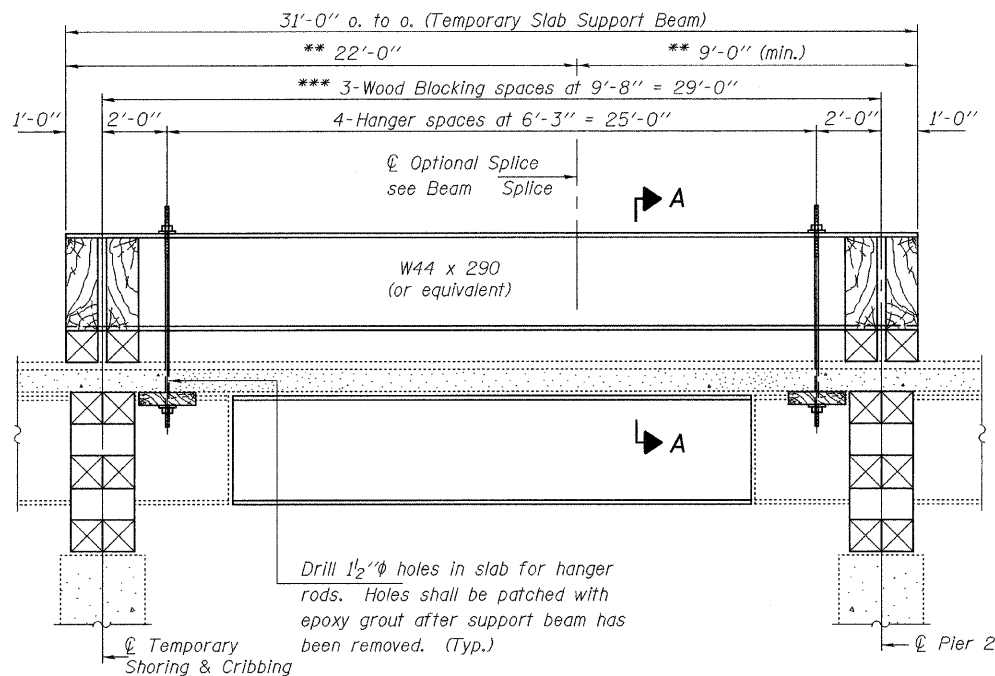
\*\* These dimensions may vary for available beams in stock.

\*\*\* Wood Blocking to be placed after support beam is allowed to deflect under its own weight.

\* Use new flange and web splice PL's at Beam 10S. Use existing flange and web splice PL's at Beam 10N and use existing PL's as template to field drill holes into new beam.



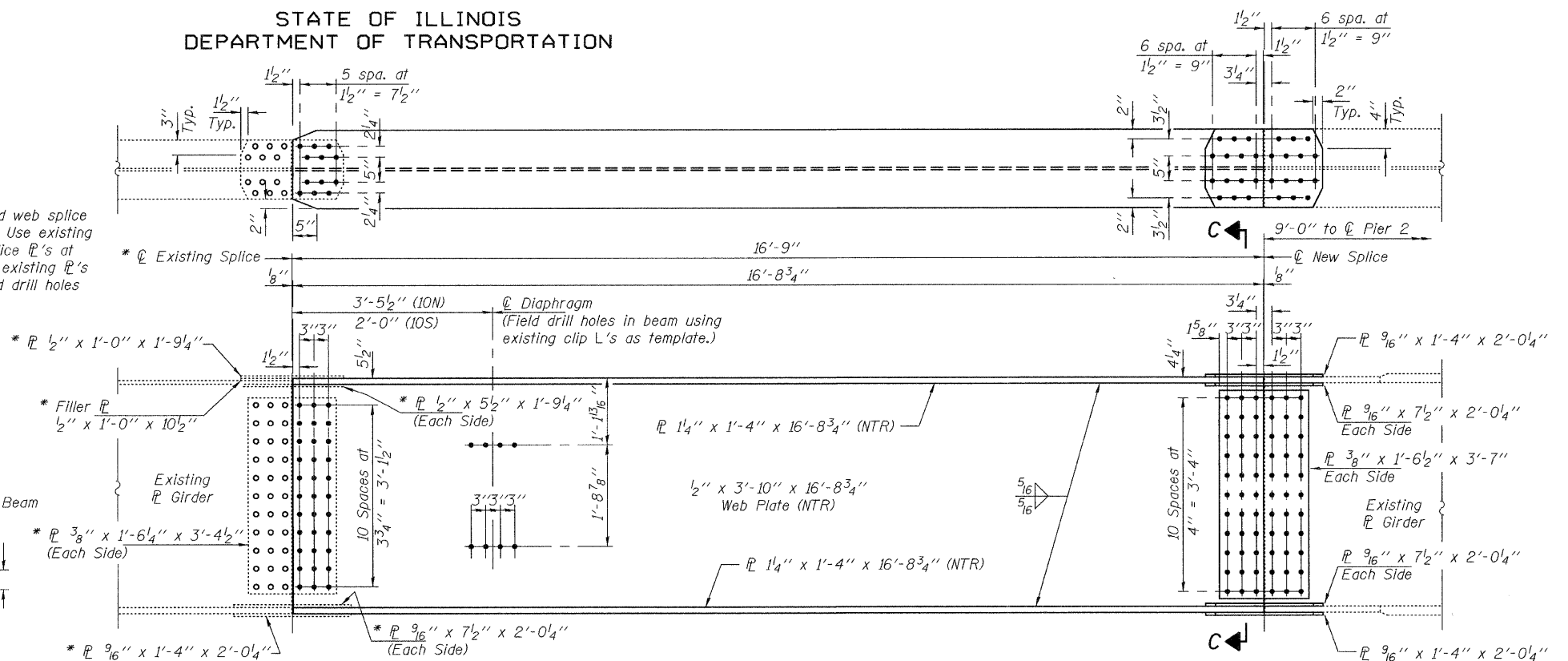
SECTION B-B



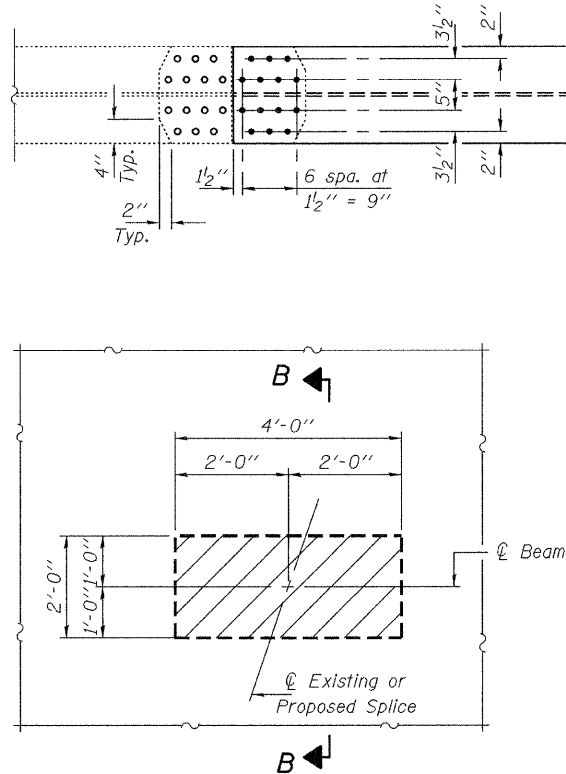
LONGITUDINAL SECTION  
SUGGESTED TEMPORARY SLAB SUPPORT SYSTEM

DESIGNED	AJB
CHECKED	ATH
DRAWN	Kyle M. Steffen
CHECKED	AJB ATH

OCTOBER 13, 2009  
EXAMINED *Carl Proyer*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

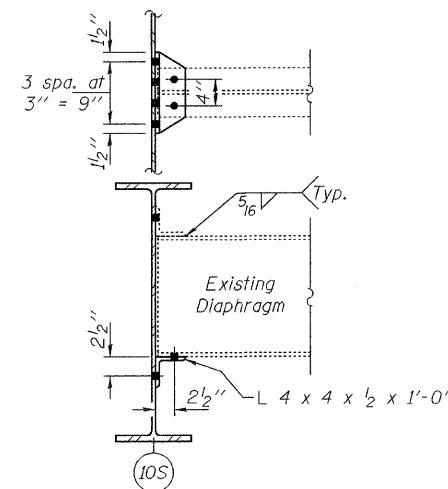


ELEVATION BEAMS 10S & 10N



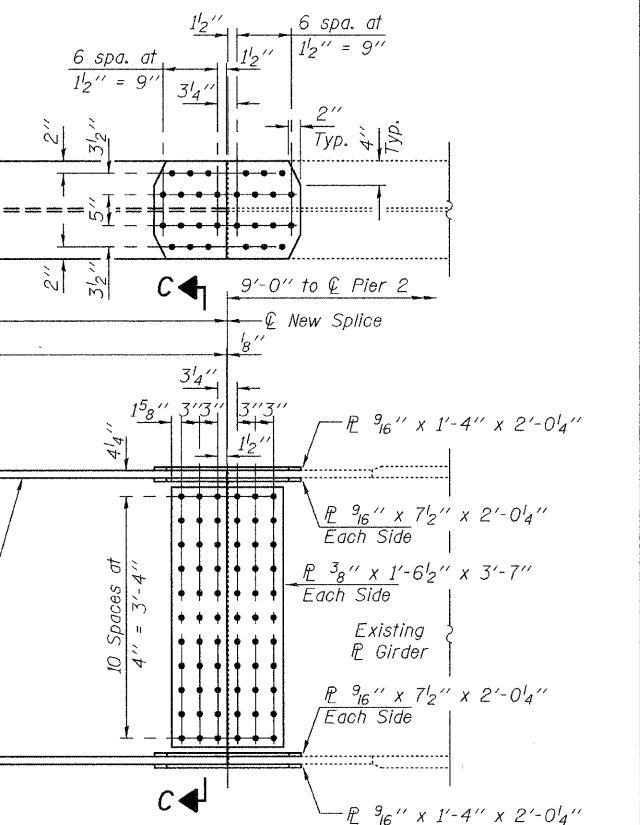
TYPICAL CONCRETE SURFACE  
REMOVAL AND REPLACEMENT

Hatched areas indicate concrete sections to be removed and replaced. Perimeters of concrete removal areas shall be saw cut 3/4" prior to the removal of concrete. Reinforcement shall be cut only if required for fitting bolts. Cut reinforcement shall be spliced as directed by the Engineer. Cost shall be included with Concrete Removal.



CLIP ANGLE  
REPLACEMENT DETAIL

Field drill holes in new beam and existing diaphragm using holes in new Clip L as template.



SECTION C-C

BEAM REPLACEMENT DETAILS  
SN 022-0096 & 0097

SHEET NO. 3	F.A.I. RTE. 290	SECTION 22(1,1-1, 2 & 3)RS-7	COUNTY DuPAGE	TOTAL SHEETS 546	SHEET NO. 317C
3 SHEETS	355		CONTRACT NO. 60G51		
FED. ROAD DIST. NO.		ILLINOIS		FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**Existing Structure:**  
The structure is a three-span continuous, composite plate girder structure with an 8-inch cast-in-place concrete deck and a 2-inch concrete overlay.  
The original structure was built in 1971 as FAI-290 and is in Section 1984-079-BW.  
In 1986, the bridge was widened, patched and overlaid, the approach slabs were patched, and the expansion joints were reconstructed. In 1998, the deck and the approach slabs were repaired and the expansion joints were reconstructed.

Stage construction shall be utilized to maintain traffic during construction.

No salvage

**DESIGN SPECIFICATIONS**

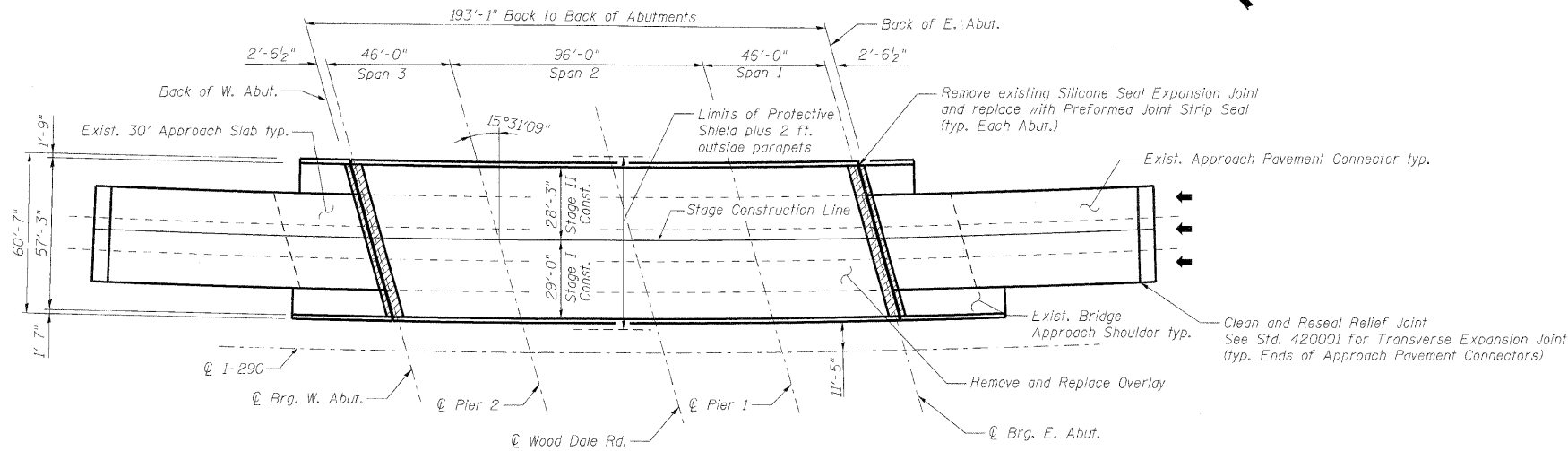
2002 AASHTO Standard Specifications  
for Highway Bridges, 17th Edition

**DESIGN STRESSES**

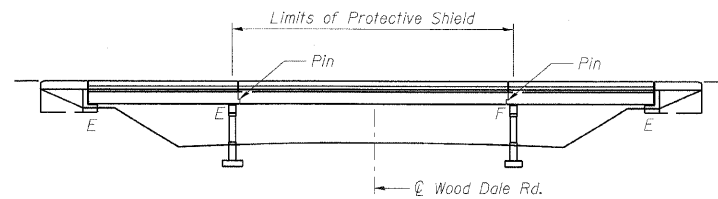
$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi

**SCOPE OF WORK**

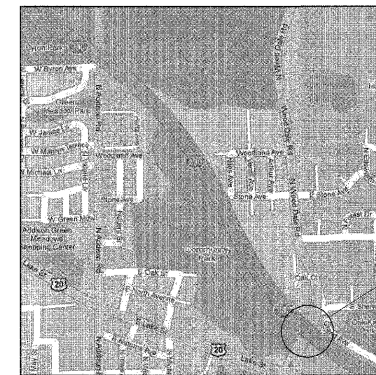
1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Reconstruct deck joints at each abutment with preformed joint strip seal.
5. Place new overlay.
6. Replace pin at pin connection.
7. Repair substructure.
8. Clean and paint exposed rebar under deck.
9. Repair slope wall.
10. Clean and reseal relief joints at the end of approach pavement connectors.
11. Apply concrete sealer to parapets, approach slabs, abutment seats and backwalls.



**PLAN**



**ELEVATION**



**LOCATION SKETCH**



Expiration Date 11-30-10  
DATE: 11/16/09

**GENERAL PLAN AND ELEVATION  
I-290 WB OVER WOOD DALE ROAD  
DuPAGE COUNTY  
STATION 174+36  
STRUCTURE NO. 022-0100**

DESIGNED	JJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-666-0450 Job No. 10050

SHEET NO. 1 12 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 318
	CONTRACT NO. 60G51			ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

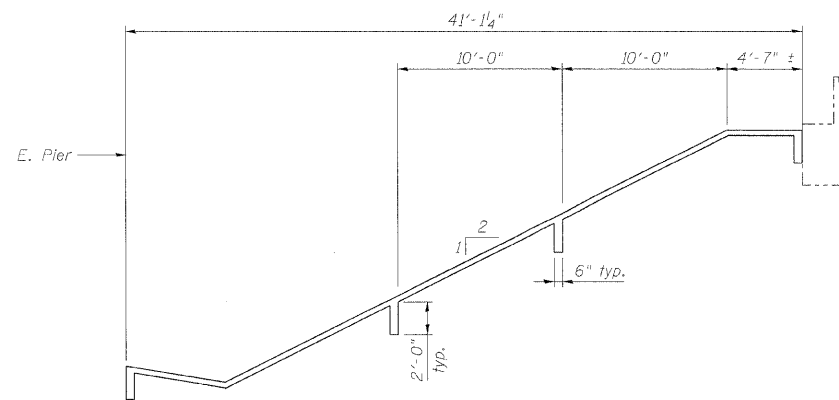
1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.
4. As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
5. 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.
6. Concrete Sealer shall be applied to the parapets, approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
7. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
8. Stage construction shall be utilized to maintain traffic during construction.
9. The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
10. Protective Coat shall be applied to the new Latex Concrete Overlay.
11. Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

**INDEX OF SHEETS**

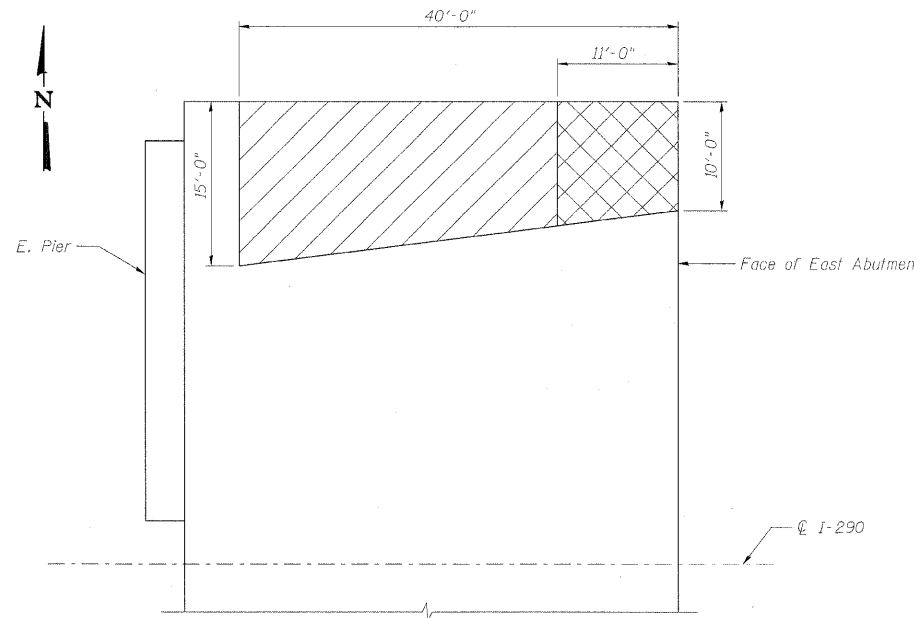
1. General Plan and Elevation
2. General Notes, Bill of Material and Index of Sheets
3. Stage Construction Details
4. Bridge Deck and Approach Slab Repairs
5. Expansion Joint Repairs
6. Expansion Joint Details
7. Preformed Joint Strip Seal
8. Pin Replacement Details
9. Substructure Repairs
10. Bar Splicer Assembly Details
11. Existing Plan Information 1 of 2
12. Existing Plan Information 2 of 2

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Porcus Granular Embankment	Cu. Yd.		51	51
Concrete Removal	Cu. Yd.	20.4		20.4
Slope Wall Removal	Sq. Yd.		56	56
Protective Shield	Sq. Yd.	689		689
Concrete Superstructure	Cu. Yd.	20.4		20.4
Bridge Deck Grooving	Sq. Yd.	1,174		1,174
Protective Coat	Sq. Yd.	1,229		1,229
Reinforcement Bars, Epoxy Coated	Pound	2,000		2,000
Bar Splicers	Each	22		22
Slope Wall 4 Inch	Sq. Yd.		56	56
Preformed Joint Strip Seal	Foot	123.0		123.0
Concrete Sealer	Sq. Ft.	4,071	954	5,025
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,198		1,198
Structural Repair of Concrete (Depth Greater than 5 Inches)	Sq. Ft.		1	1
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.		219	219
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0		5.0
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,198		1,198
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	34.2		34.2
Temporary Shoring & Cribbing	Each		3	3
Temporary Support System	Each	16		16
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	14		14
Clean and Reseal Relief Joint	Foot	72.0		72.0
Pin Replacement	Each	16		16



**SECTION THRU SLOPEWALL**



**SLOPE WALL REPAIR**

Slope wall shall be reinforced with welded wire fabric, 6 in. x 6 in. - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft. Existing and new welded wire fabrics should overlap at least 6\"/>

**LEGEND**

- Remove and Replace Slopewall, 5' Deep Void under Slopewall to be filled with Porcus Granular Embankment.
- Remove and Replace Slopewall, 2' Deep Void under Slopewall to be filled with Porcus Granular Embankment.

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

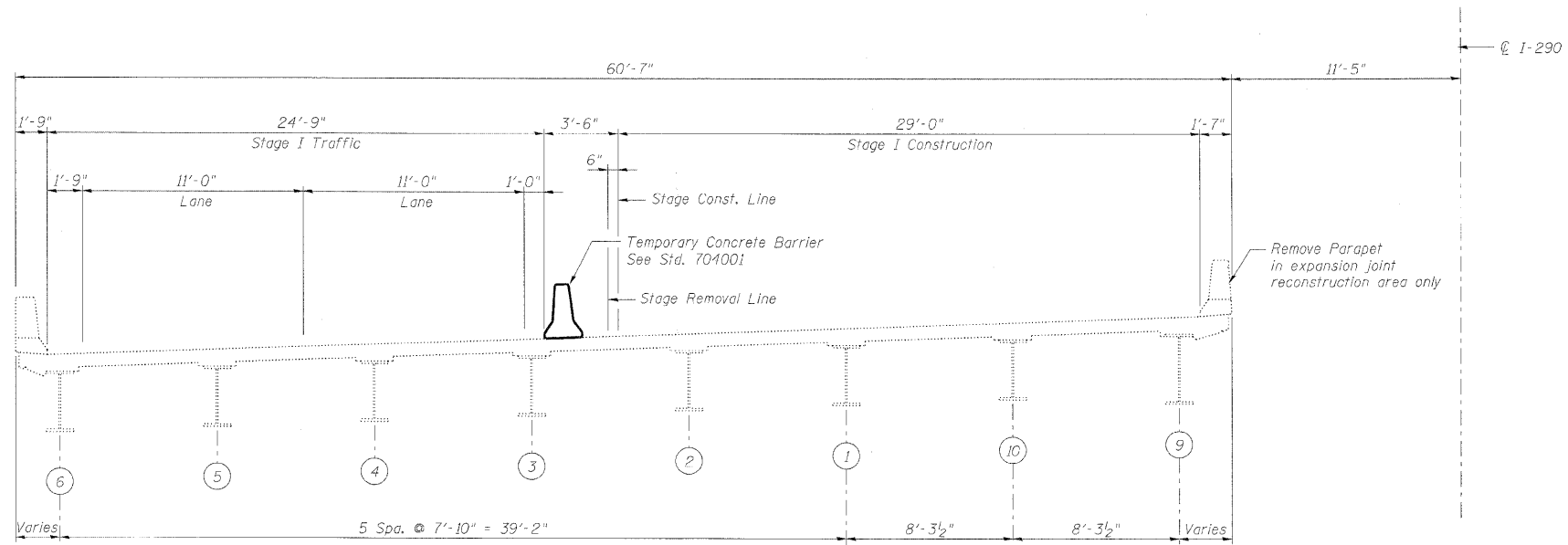
**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

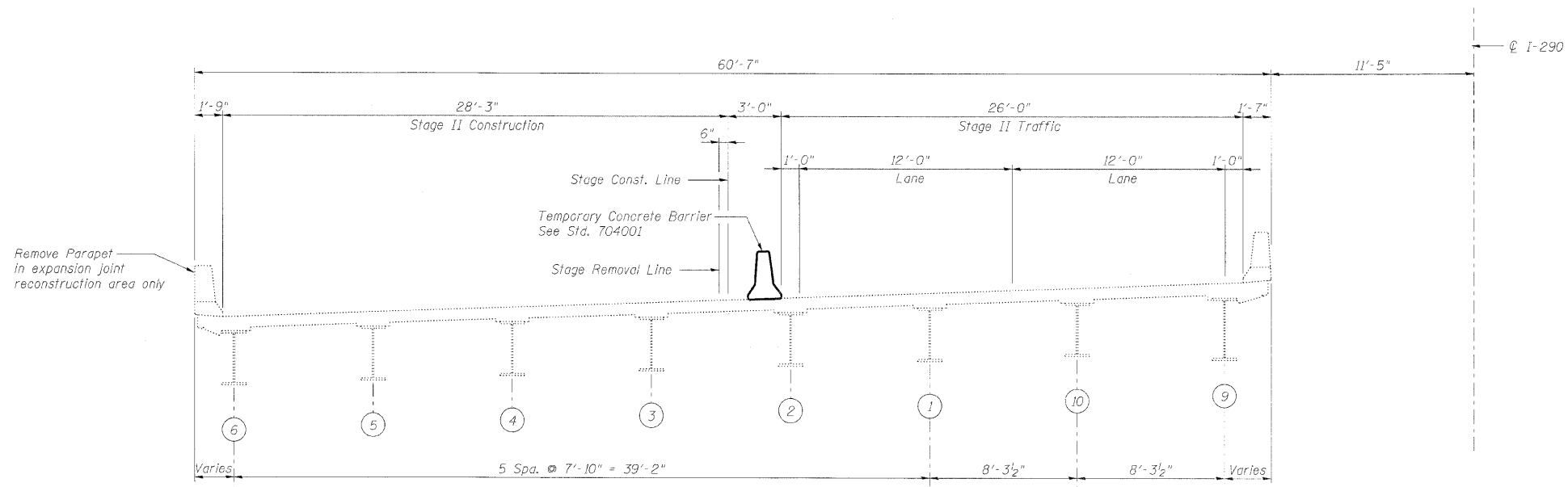
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	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0100**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

DESIGNED -	MFB
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

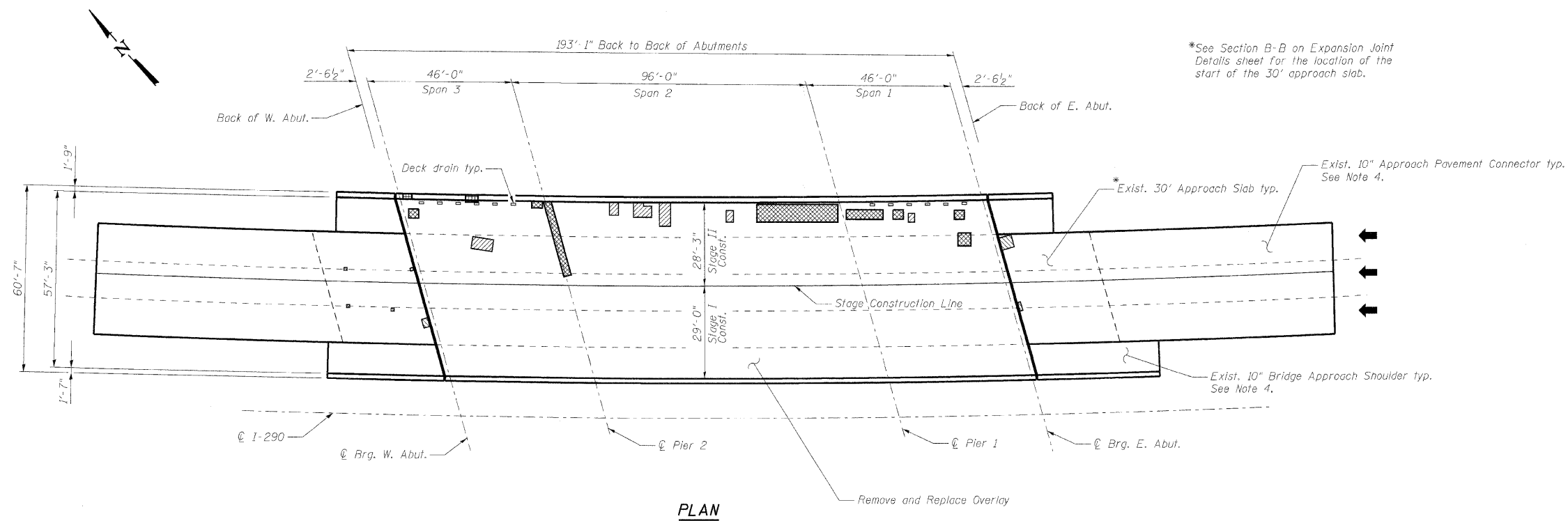
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312-665-0450 Job No. 10050

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0100**

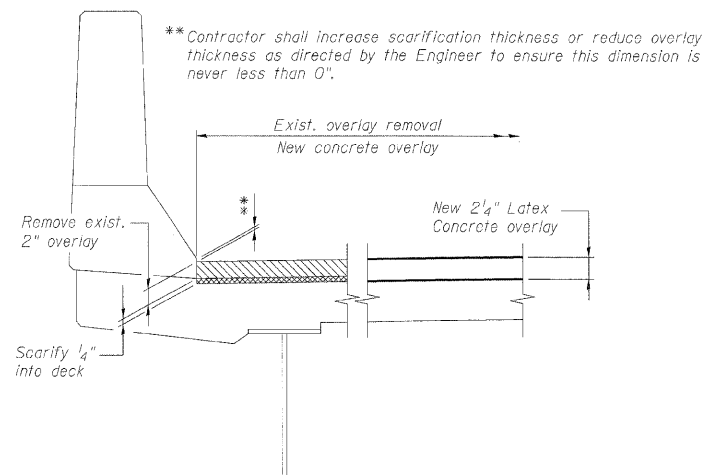
SHEET NO. 3 12 SHEETS	F.A.I. RTE. 290	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 320
	355	CONTRACT NO. 60G51			
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



\*See Section B-B on Expansion Joint Details sheet for the location of the start of the 30' approach slab.

PLAN



SCARIFICATION & OVERLAY  
DETAIL AT PARAPET

BILL OF MATERIAL

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	11.9 ▲
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	5.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	34.2
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0
	Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	14
	Protective Shield	Sq. Yd.	689
	Bridge Deck Grooving	Sq. Yd.	1,174
	Protective Coat	Sq. Yd.	1,229
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,198
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,198

▲ For information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".

Notes:

- Deck and approach slab repair areas are estimated based on an infrared thermographic deck survey (ITDS) report prepared by AECOM and the visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield required for full-depth repairs shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

BRIDGE DECK AND APPROACH  
SLAB REPAIRS  
STRUCTURE NO. 022-0100

DESIGNED	JJJ
CHECKED	AAY
DRAWN	RMG
CHECKED	AAY

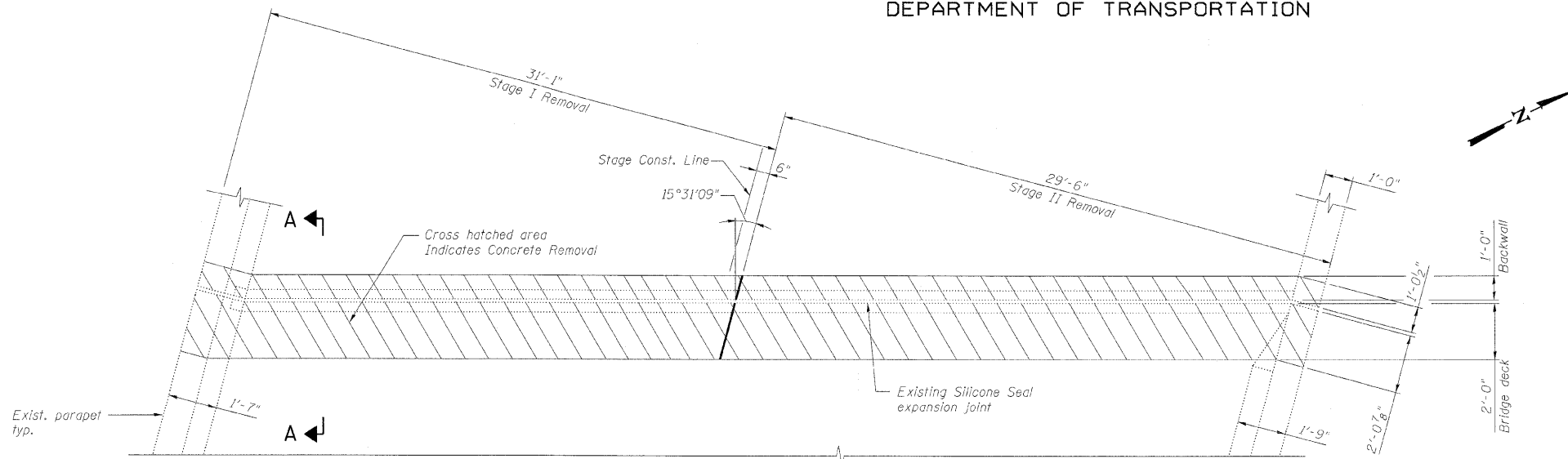
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312-665-0450 Job No. 10050

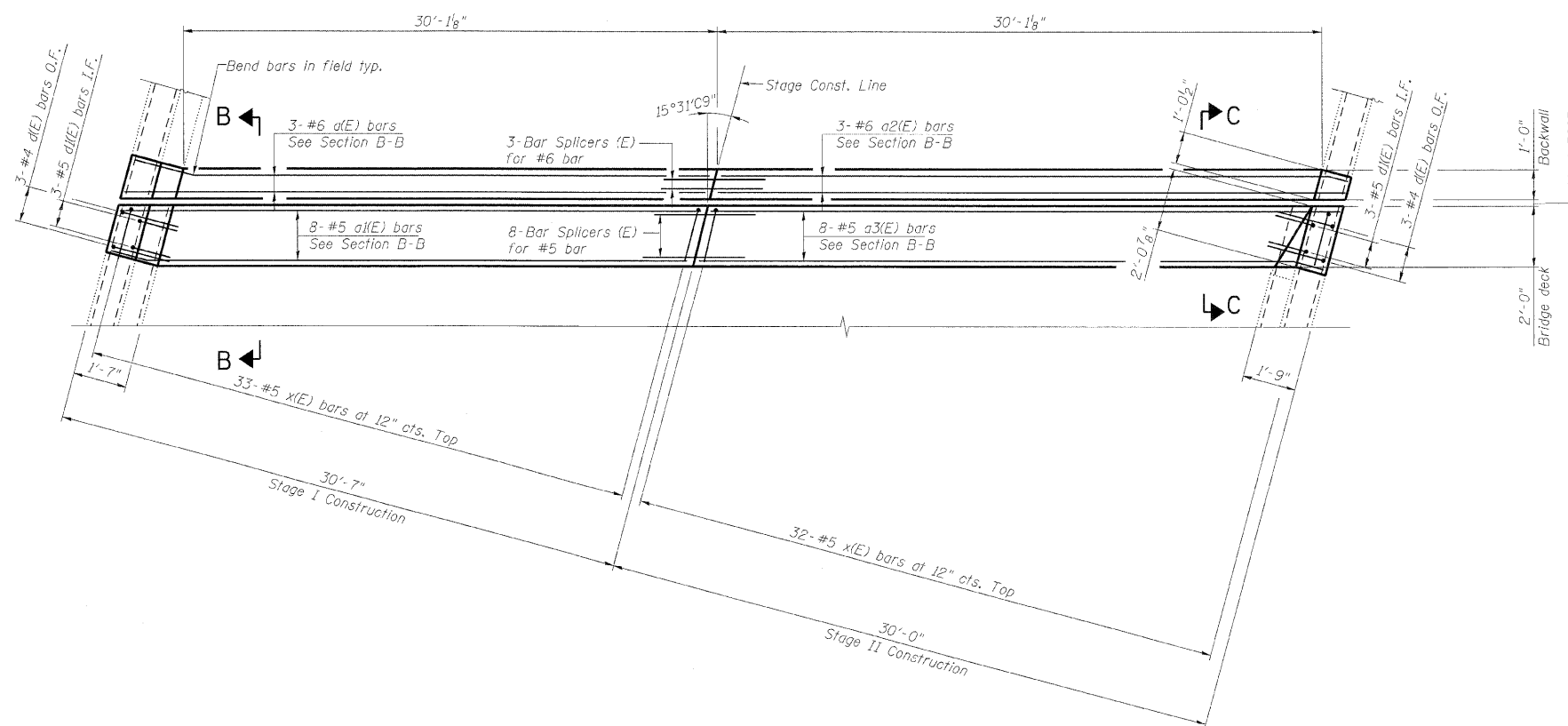
SHEET NO. 4	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	321
12 SHEETS	355	CONTRACT NO. 60G51			
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



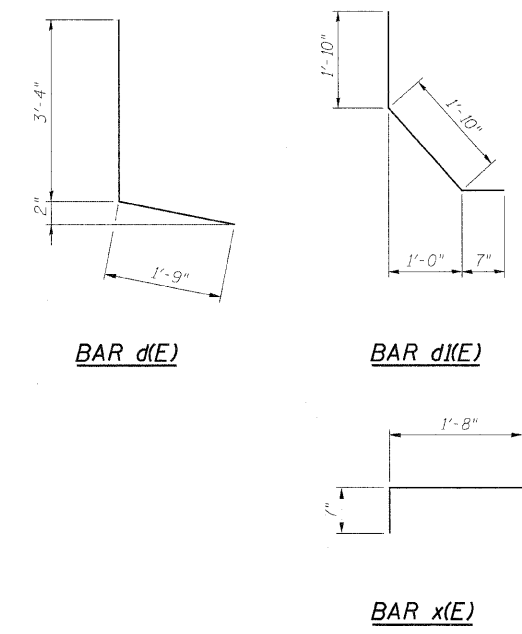
**EXISTING PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand For East Abutment)



**PROPOSED PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand For East Abutment)

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	6	#6	31'-5"	—
a1(E)	16	#5	31'-5"	—
a2(E)	6	#6	30'-10"	—
a3(E)	16	#5	30'-10"	—
d(E)	12	#4	5'-1"	┌
d1(E)	12	#5	4'-3"	└
x(E)	130	#5	2'-3"	┌
Item	Unit	Total		
Concrete Removal	Cu. Yd.	20.4		
Concrete Superstructure	Cu. Yd.	20.4		
Reinforcement Bars, Epoxy Coated	Pound	2,000		



**Notes:**

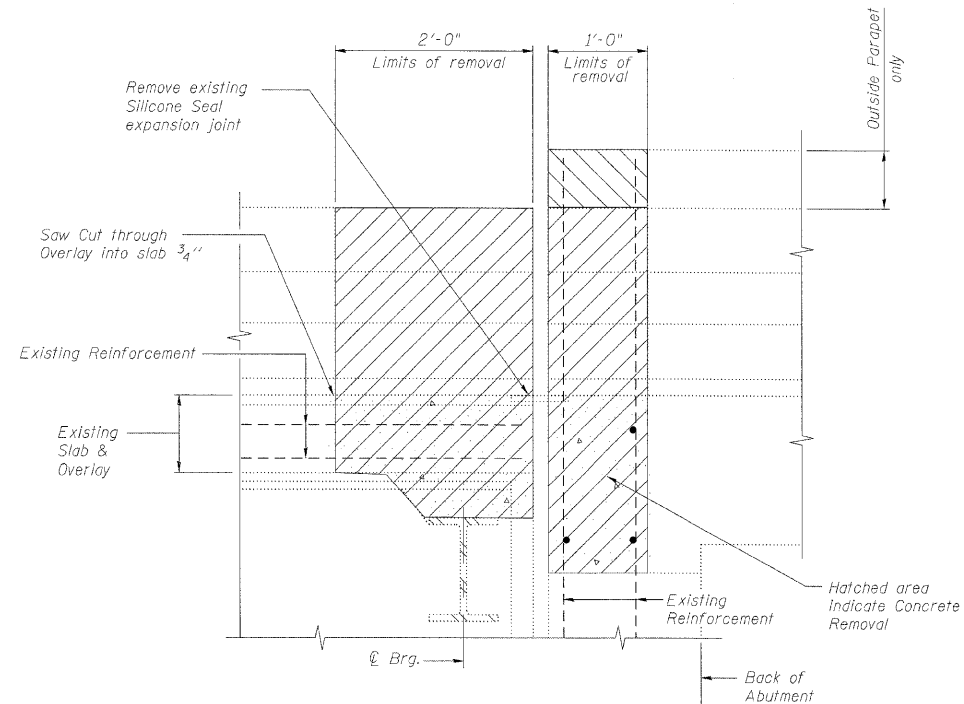
- I.F. denotes Inside Face.  
O.F. denotes Outside Face.
- Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
- x(E) bar spacing measured along skew.

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

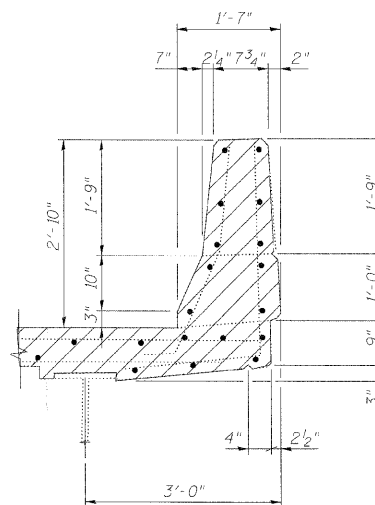
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Chicago, Illinois 60601  
312-565-0450 Job No. 10060

SHEET NO. 5 12 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 322
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

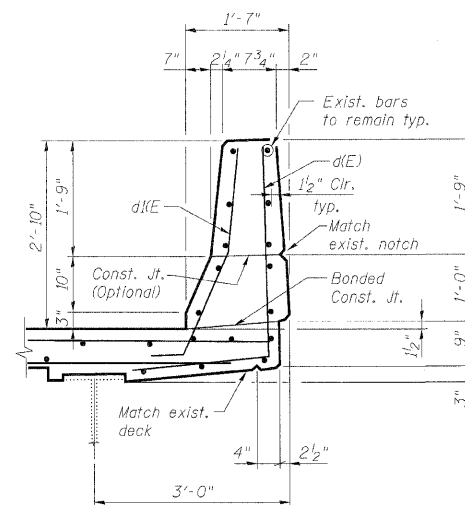
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



SECTION A-A



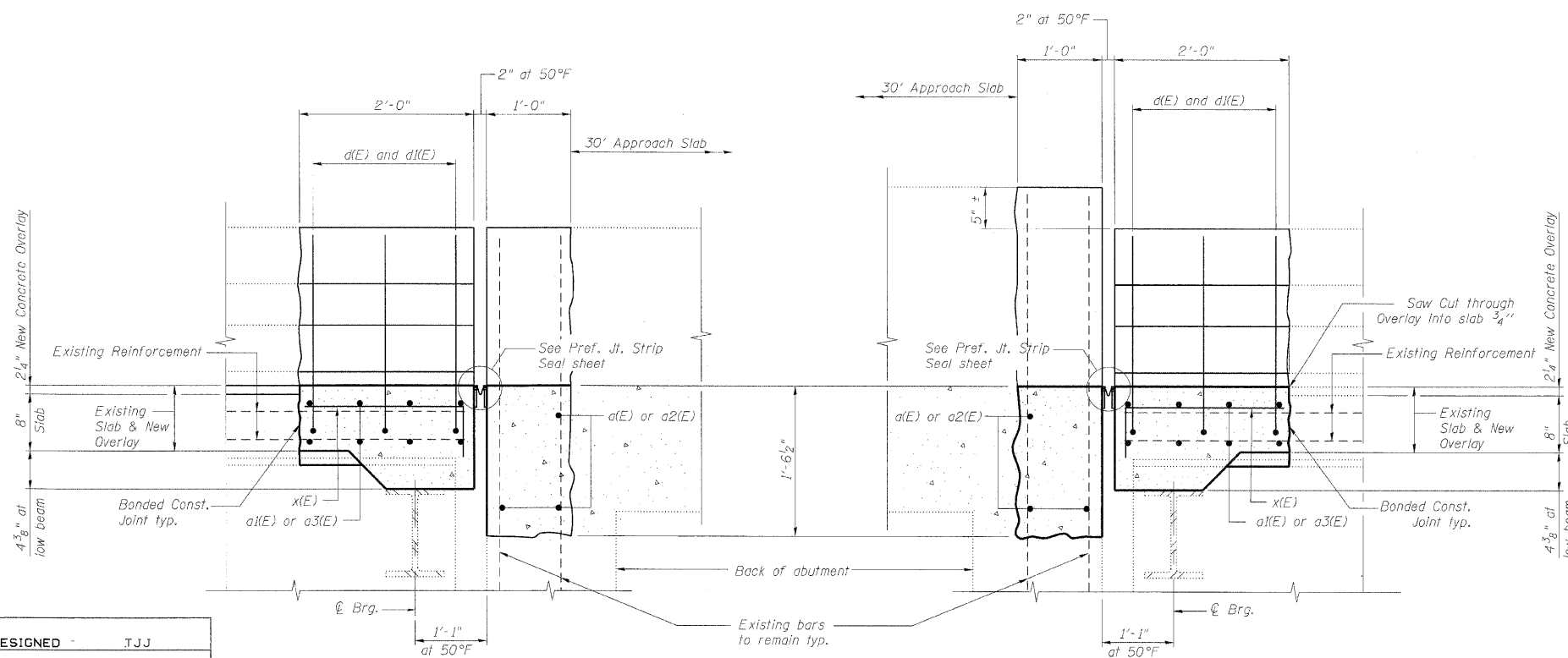
EXISTING INSIDE  
PARAPET SECTION



PROPOSED INSIDE  
PARAPET SECTION

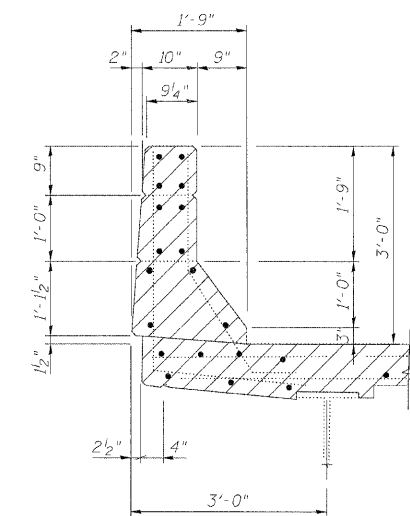
Notes:

- Existing reinforcement bars extending into the concrete 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.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original locations in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and to protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.
- Work this sheet with Expansion Joint Repairs sheet.

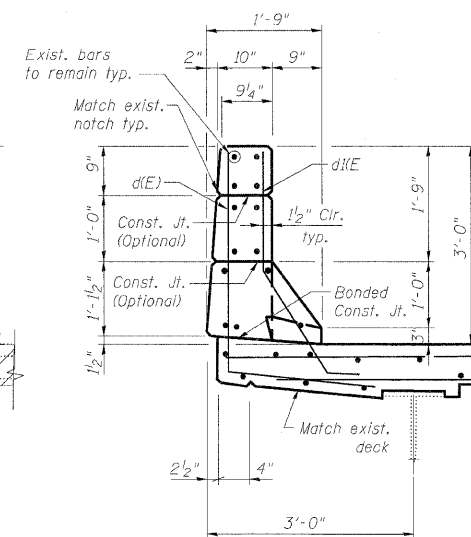


SECTION B-B

SECTION C-C



EXISTING OUTSIDE  
PARAPET SECTION



PROPOSED OUTSIDE  
PARAPET SECTION

EXPANSION JOINT DETAILS  
STRUCTURE NO. 022-0100

DESIGNED	TJJ
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

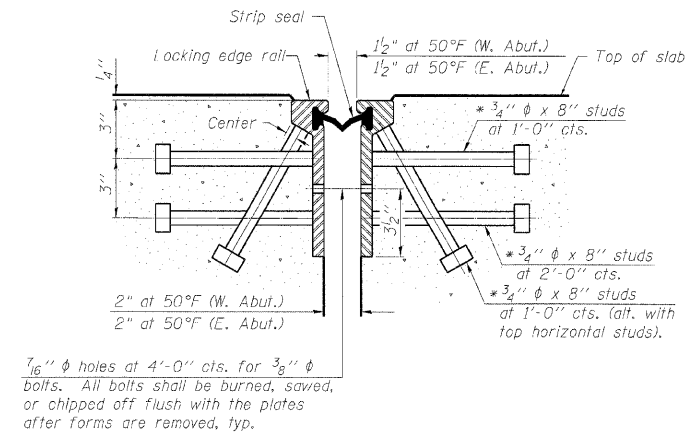
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312-565-0450 Job No. 10050

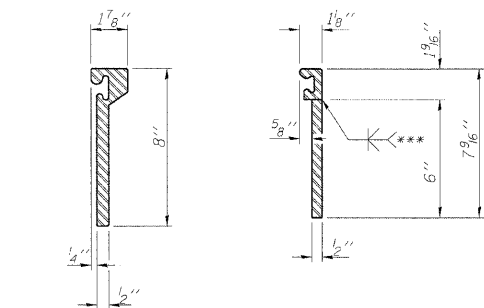
SHEET NO. 6	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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12 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

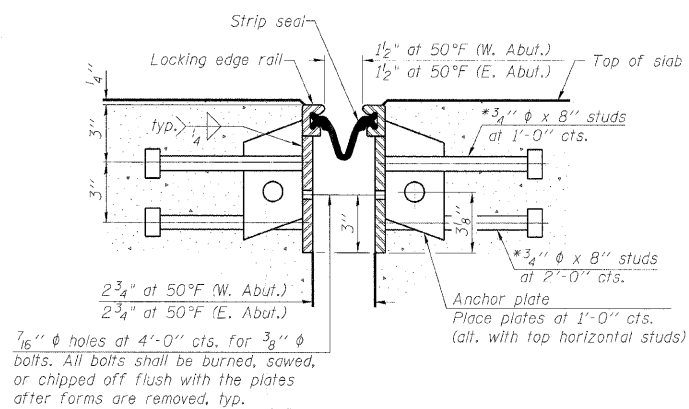
\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



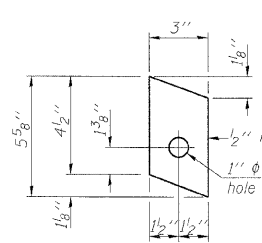
SECTION THRU  
ROLLED RAIL JOINT



ROLLED  
EXTRUDED RAIL      WELDED RAIL

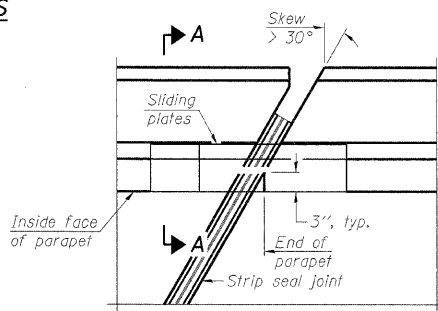


SECTION THRU  
WELDED RAIL JOINT

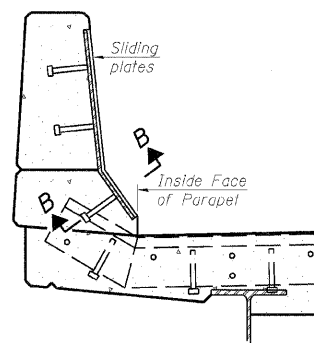


ANCHOR PLATE  
(for welded rail)

**LOCKING EDGE  
RAIL SPLICE**  
The inside of the locking edge rail groove shall be free of weld residue.



PLAN

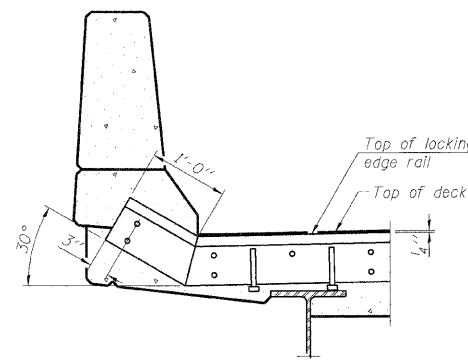


SECTION A-A

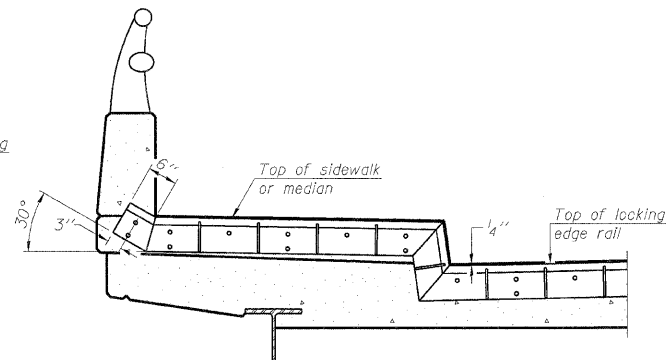
**POINT BLOCK DETAILS**  
(for skews > 30°)

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches. The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints. The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State. All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



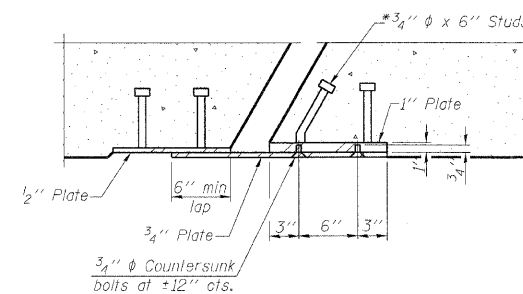
AT PARAPET



AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 3". See manufacturer's recommendation.

**TYPICAL END TREATMENTS**



SECTION B-B

**BILL OF MATERIAL**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	123.0

DESIGNED	TJJ
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

EJ-SSJ

10-1-08

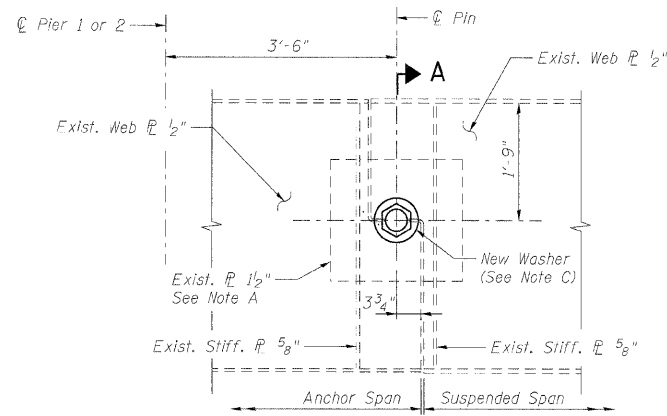
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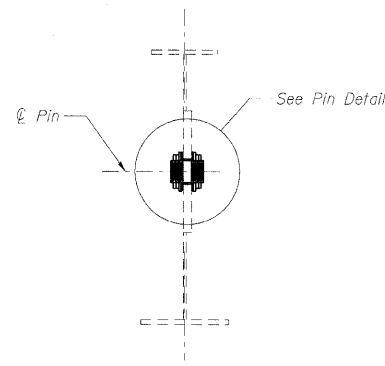
SHEET NO. 7	F.A.I. RTE. 290	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 324

**PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0100**

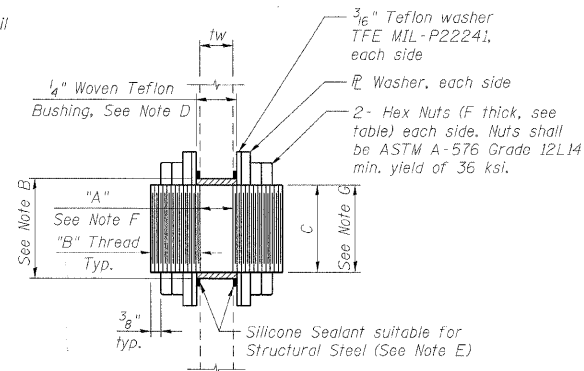
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**PIN ELEVATION - GIRDERS 1 & 6**  
(Dimensions and details from exist. plans)



**SECTION A-A**



**PIN ASSEMBLY DETAIL**

Note A:  
Existing welds shall be inspected for cracks using liquid dye penetrant or magnetic particle testing. Any cracks that are found shall be identified and reported to the Bureau of Bridges and Structures for further disposition. Clean and paint before installing new Pin Assembly Detail.

Note B:  
Bore diameter for bushing in existing webs and reinforcement plates shall correspond to bushing manufacturer's allowable tolerances for proper functioning. Hole diameter may be adjusted to allow use of stock bushings. Prime before installing Pin.

Note C:  
Inside face of new washer plates shall receive first field coat in shop. The primer shall pass the M.E.K. Rub Test before the first field coat is applied.

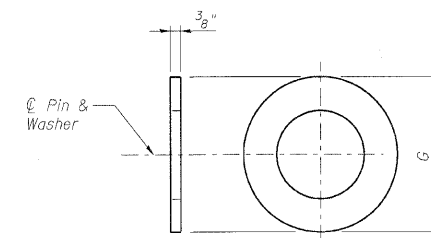
Note D:  
Actual bushing thickness per manufacturer's specifications, 1/4" is approximate. Bushings shall be self lubricating filament wound epoxy matrix backed Duralon Bearing, metal backed Fiber Glide Bearing or equivalent. No primer or grease shall be allowed on bushings. Bushings shall be suitable for dynamic loads of 20,000 psi.

Note E:  
Apply 3/8" bead to face of the web reinforcing plates approximately 1/2" turn from bushing immediately before installing new washer plates. Place sealant around nuts after installation. Sealant shall be suitable for prolonged exterior exposure without losing flexibility or adhesion to painted steel surfaces. Proposed products shall be subject to Department's acceptance based on documented testing or other evidence.

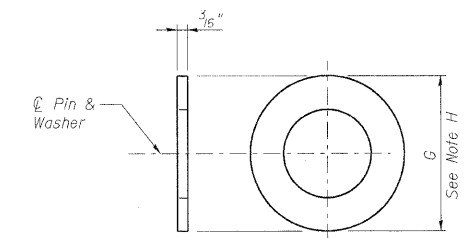
\* Note F:  
Body of Pin dimension "A" shall be based on measured thickness of captured plates (including paint), plus 1/2".  $A = tw + 1.125"$

Note G:  
Nominal Pin diameter (diameter tolerances subject to Specifications of Teflon Bushing Manufacturer and shall be approved by the Engineer). Pin shall be ASTM A276, UNS 21800 (Nitronic 60 (Stainless Steel) or equal) (No step at threads) 12 threads per inch.

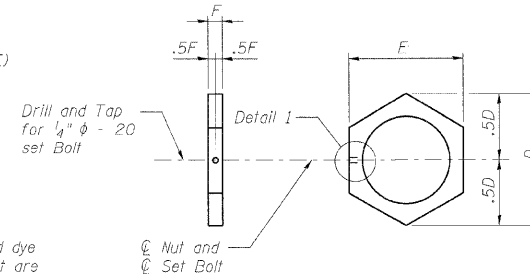
Note H:  
Outside diameter of Washer shall be,  $G = E + 1/2"$ .



**WASHER DETAIL**

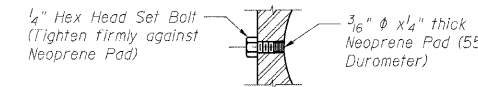


**TEFLON WASHER DETAIL**



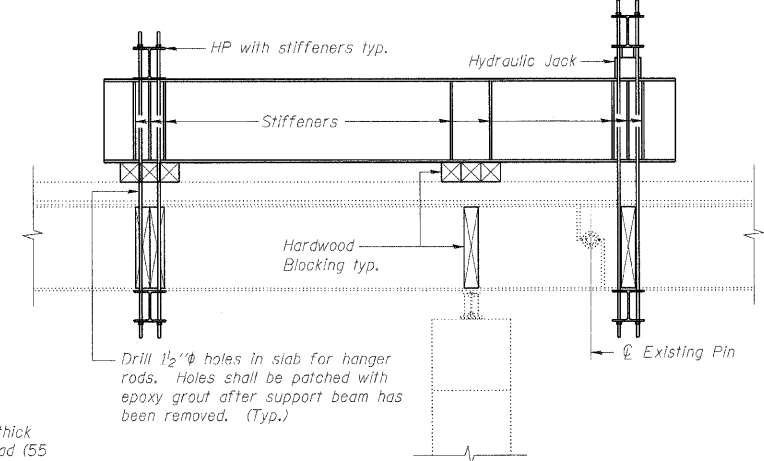
**HEX NUT DETAIL**

Drill and Tap for 1/4"  $\phi$  - 20 set Bolt



**DETAIL 1**

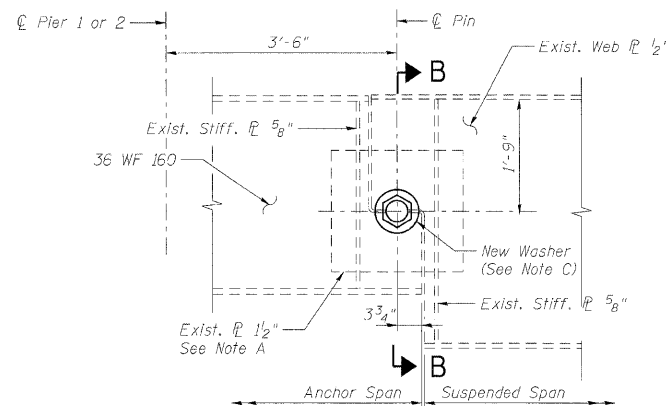
Set Bolts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.



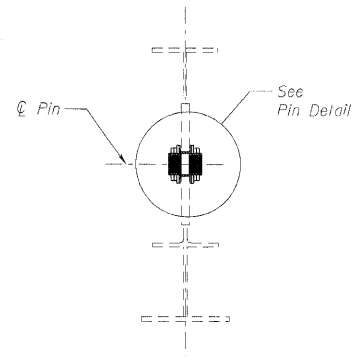
**LONGITUDINAL SECTION  
SUGGESTED TEMPORARY BEAM SUPPORT SYSTEM**

**Notes:**

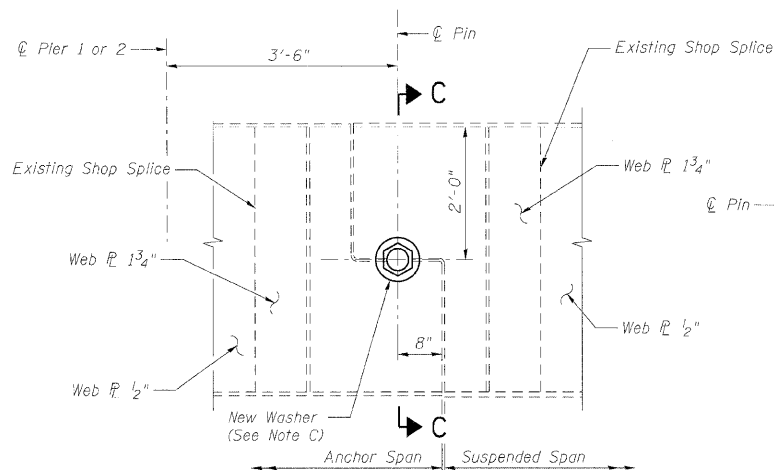
- All new structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.
- The contractor shall provide support and/or shoring systems for the beam in the area of existing pin replacement. The support and/or shoring systems shall be approved by the Engineer. Such approval will not relieve the Contractor of responsibility for the safety of the structure. See Special Provisions for "Temporary Support System."
- The inorganic zinc primer/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Light Grey, Munsell No. 10Y 7/L. See Special Provision "Cleaning and Painting Metal Structures".
- Existing structural steel shall be cleaned and painted as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures". Cost included with Pin Replacement.
- All existing steel surfaces behind washers shall be cleaned and primed before installation of new washers. Cost included with Pin Replacement.
- Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field 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 the scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
- The Pins and Washers shall conform to the minimum Charpy V-Notch Toughness of 25 ft-lbs. at 40° F.
- The Pins, Washers, Bushings, Nuts and Silicone Sealant are the items included in Pin Replacement.
- For existing pin removal, grind existing welds and ream holes to fit proposed bushing.



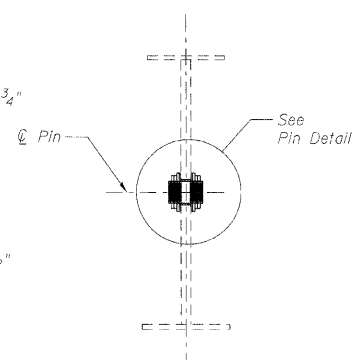
**PIN ELEVATION - INTERIOR GIRDERS 2 THRU 5**  
(Dimensions and details from exist. plans)



**SECTION B-B**



**PIN ELEVATION - 1985 WIDENING GIRDERS**  
Girders 9 & 10  
(Dimensions and details from exist. plans)



**SECTION C-C**

Dimension	Length (in.)	
	Girders 1-6	Girders 9-10
A *	2 5/8	2 1/2
B	1 1/16	1 7/8
C	4 1/4	4
D	7 1/16	7 1/4
E	6 5/8	6 1/4
F	3/4	3/4
G	8 1/8	7 3/4

\* Dimension "A" shall be increased in case of any misalignment between anchor span and suspended span web planes.

DESIGNED	-	AAV
CHECKED	-	KMP
DRAWN	-	RMG
CHECKED	-	AAV

**MAXIMUM REACTIONS AT PIN**

R (Dead load)	(K)	48.2
R (Superimposed Dead Load)	(K)	13.8
R (Live load)	(K)	58.0
Imp.	(K)	13.5
R (Total)	(K)	133.5

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Temporary Support System	Each	16
Pin Replacement	Each	16

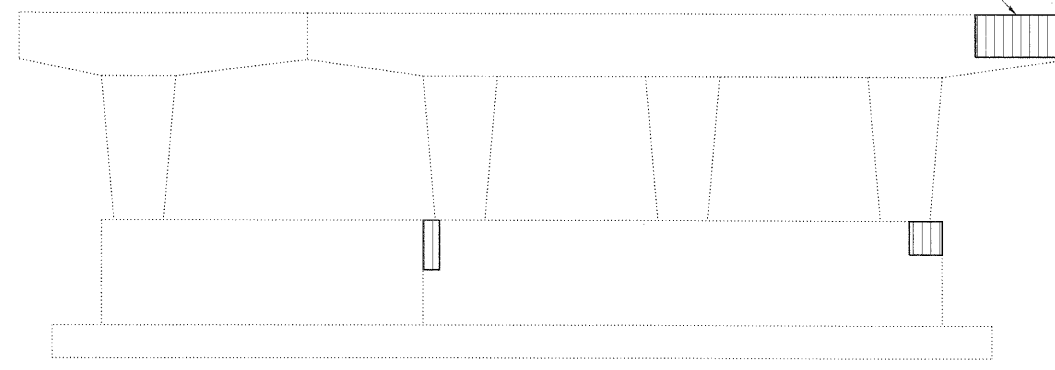
**benesch**

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 8  12 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 325
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

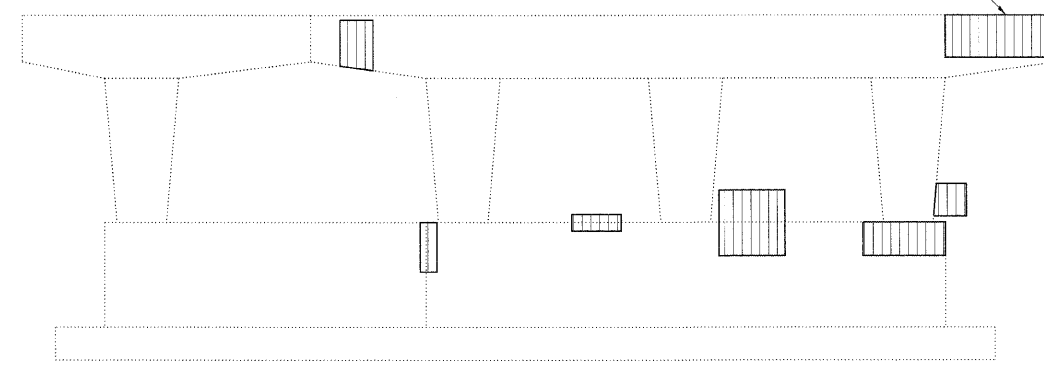
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

Temporary Shoring and Cribbing



EAST PIER REPAIRS - EAST FACE

Temporary Shoring and Cribbing



WEST PIER REPAIRS - EAST FACE

**BILL OF MATERIAL**

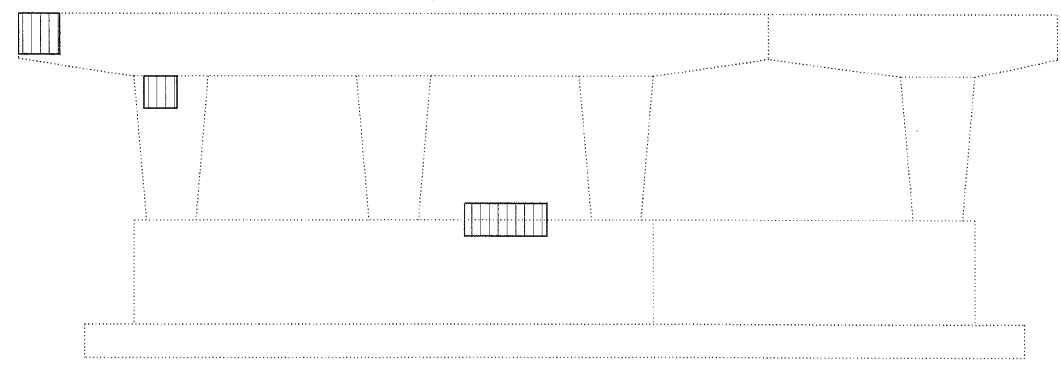
SYMBOL	ITEM	UNIT	QUANTITY
	Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	219
	Structural Repair of Concrete (Depth Greater than 5 Inches)	Sq. Ft.	4
	Temporary Shoring & Cribbing	Each	3

**BEAM REACTIONS (KIPS)**

DEAD LOAD	LIVE LOAD	IMPACT LOAD	TOTAL
101.0	55.3	14.8	171.1

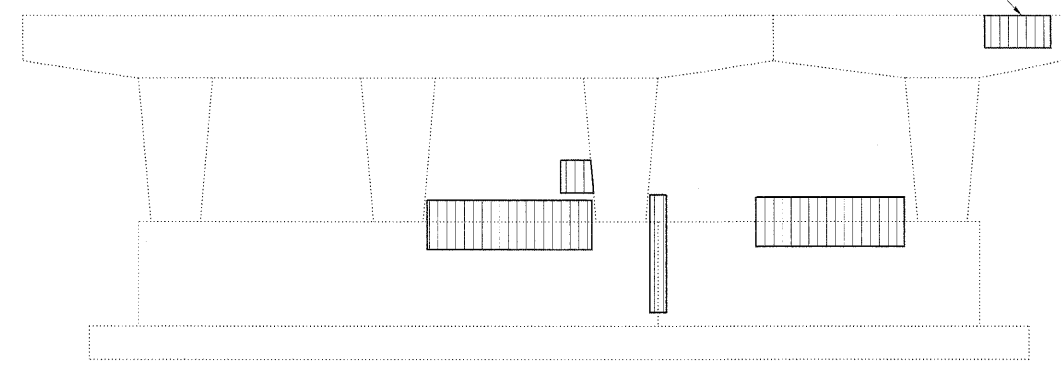
**Notes:**

- Substructure repair areas are estimated based on IDOT field notes from April 24, 2009.
- Interference is expected from existing conduits. The Contractor shall remove and reerect or temporarily support the existing conduits to complete the work as detailed. When the work is completed the conduits shall be reconnected to the reconstructed abutment or pier utilizing the existing mounting brackets or new mounting brackets. All labor, equipment, and materials necessary for removing and reinstalling or temporarily supporting the existing conduits shall be included in the cost for Structural Repair of Concrete (Depth Equal to or Less than 5 Inches).
- The tabulated beam reactions were taken from the existing construction plans. The Contractor shall verify that the equipment used to support the beams is sufficient to carry these loads in addition to any temporary construction loads.

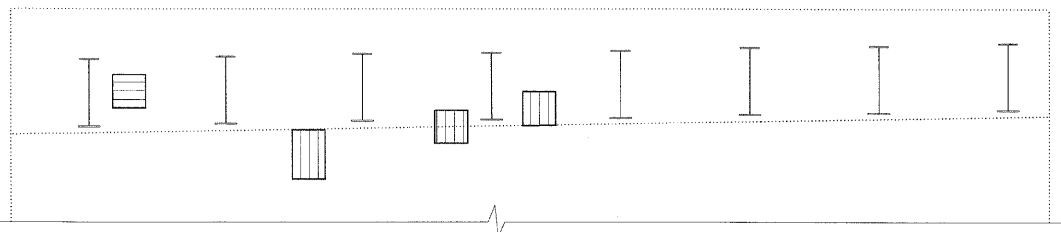


EAST PIER REPAIRS - WEST FACE

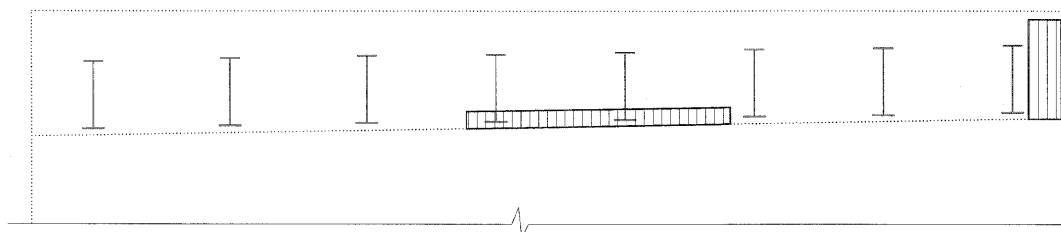
Temporary Shoring and Cribbing



WEST PIER REPAIRS - WEST FACE



EAST ABUTMENT REPAIR



WEST ABUTMENT REPAIR

DESIGNED -	T.JJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

**SUBSTRUCTURE REPAIRS  
STRUCTURE NO. 022-0100**

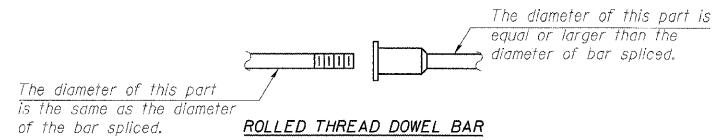
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312-665-0460 Job No. 10050

SHEET NO. 9 12 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 326
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



ROLLED THREAD DOWEL BAR



\*\* ONE PIECE

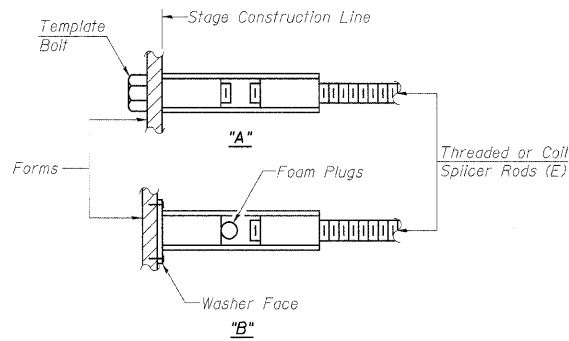
Wire Connector



WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



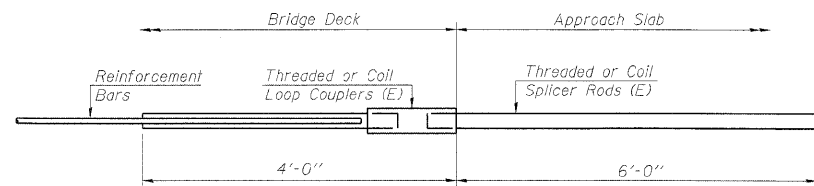
INSTALLATION AND SETTING METHODS

"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.

**NOTES**  
Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

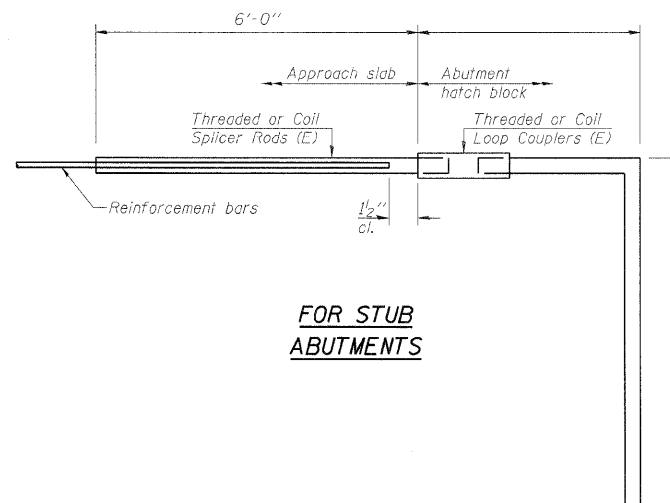
- ① Minimum Capacity (Tension in kips) =  $1.25 \times f_y \times A_s$
  - ② Minimum \*Pull-out Strength (Tension in kips) =  $0.66 \times f_y \times A_s$
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



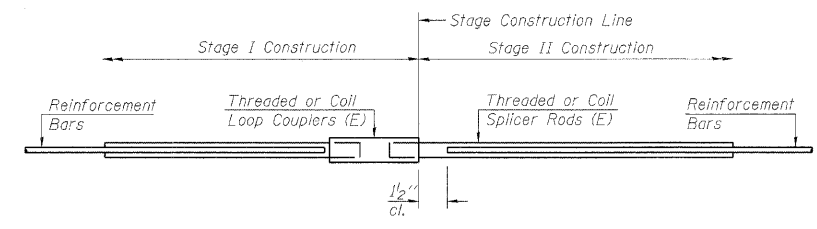
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



FOR STUB ABUTMENTS

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



STANDARD

Bar Size	No. Assemblies Required	Location
#5	16	Deck
#6	6	Deck

DESIGNED -	JJJ
CHECKED -	AAY
DRAWN -	VH
CHECKED -	AAY

BSD-1

10-1-08

**benesch**

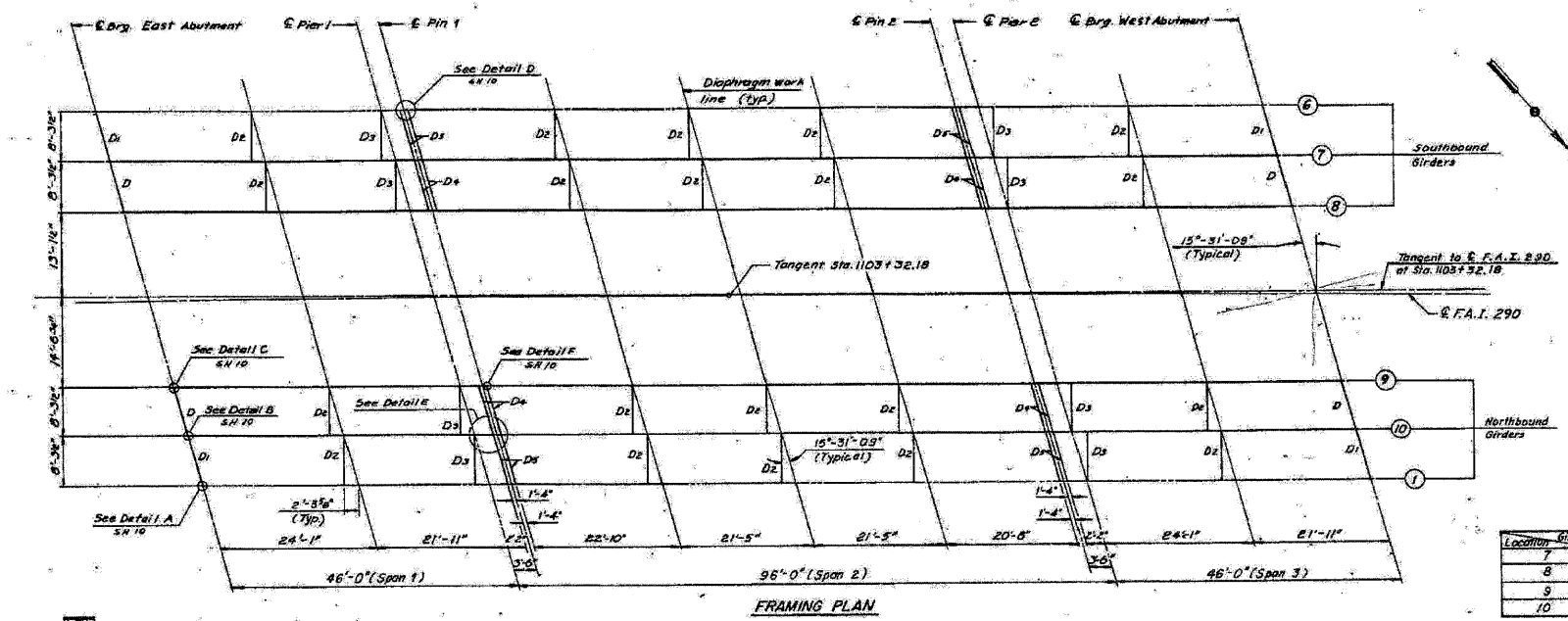
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0100

SHEET NO. 10 12 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 327
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. OF 10 SHEETS
FAL 290	1984-W	DUPAGE	108	B-4	
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT NO.			



INTERIOR GIRDER MOMENT TABLE

Span	Pier	0.5 Span
1/2 (ft)	137.2	24.356
1/2 (in)	25.072	
S <sub>1</sub> (in)	547	1,249
S <sub>2</sub> (in)	547	1,820
R (ft)	1.327	1.083
M <sub>1</sub> (K)	261	1,092
M <sub>2</sub> (K)	5.75	10.33
S <sub>3</sub> (in)		0.31
M <sub>3</sub> (K)		317
M <sub>4</sub> (K)	406	937
M <sub>5</sub> (K)	129	297
M <sub>6</sub> (K)	535	1,551
F <sub>5</sub> (K/ft)	11.74	10.23
F <sub>5</sub> Total (K)	17.47	20.56
V <sub>R</sub> (K)		61.0

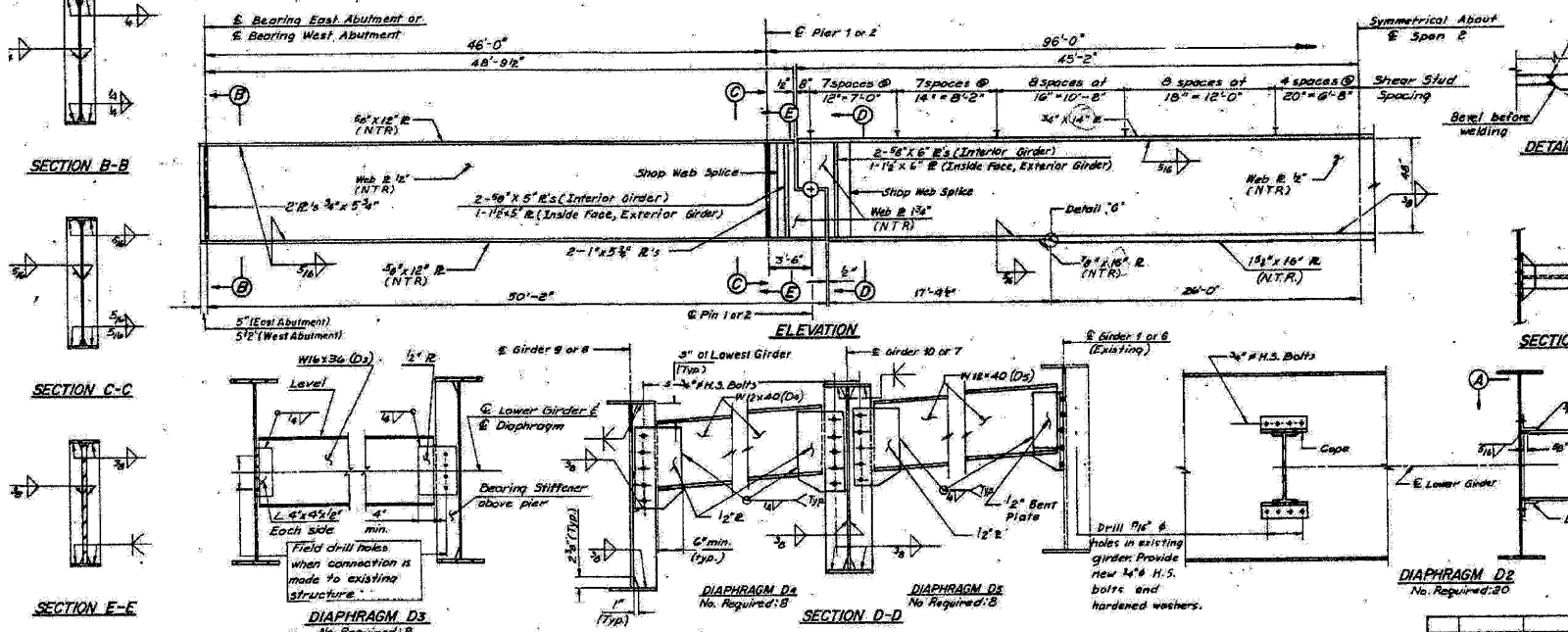
INTERIOR GIRDER REACTION TABLE

Location	Abut.	Pier
R <sub>1</sub> (K)	26.4	101.0
R <sub>2</sub> (K)	43.7	56.3
R <sub>3</sub> (K)	13.6	14.8
R <sub>4</sub> (K)	82.3	171.1

\* TOP OF WEB ELEVATIONS

Location	Girder	East Abutment	Pier 1	Pier 2	Pier 2	West Abutment
7		698.91	698.70	698.68	698.28	698.26
8		698.61	698.40	698.38	697.97	697.96
9		700.91	700.69	700.67	700.25	700.24
10		700.58	700.36	700.34	699.93	699.91

Notes:  
 I<sub>1</sub> and I<sub>2</sub> are the moment of inertia and section modulus of the steel section used in computing I<sub>s</sub> non-comp.  
 I<sub>1c</sub> and I<sub>2c</sub> are the moment of inertia and section modulus of the complete section used in computing I<sub>s</sub> comp.  
 V<sub>R</sub> is the maximum +ve impact shear range in span. \* is the superimposed wheel load.  
 #1/8" holes shall be drilled for all #4 H.S. bolts.  
 The interior corners of all stiffeners shall be clipped 1" Horiz. x 2" Vertically for additional details, see Sheets 10 and 11.  
 NTR Denotes Plates to which Notch Toughness Requirements are applicable.  
 One hardened washer shall be required over each 1/2" hole.  
 --- indicates existing structure  
 Plate girders shall not be cambered in Spans 1 and 3. Plate girders shall be cambered in Span 2 between Pier 1 and Pier 2. See sheet 5.



DATE 7-16-81 CHECKED DATE 3-8-85

HNTB

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312-666-0450 Job No. 10050

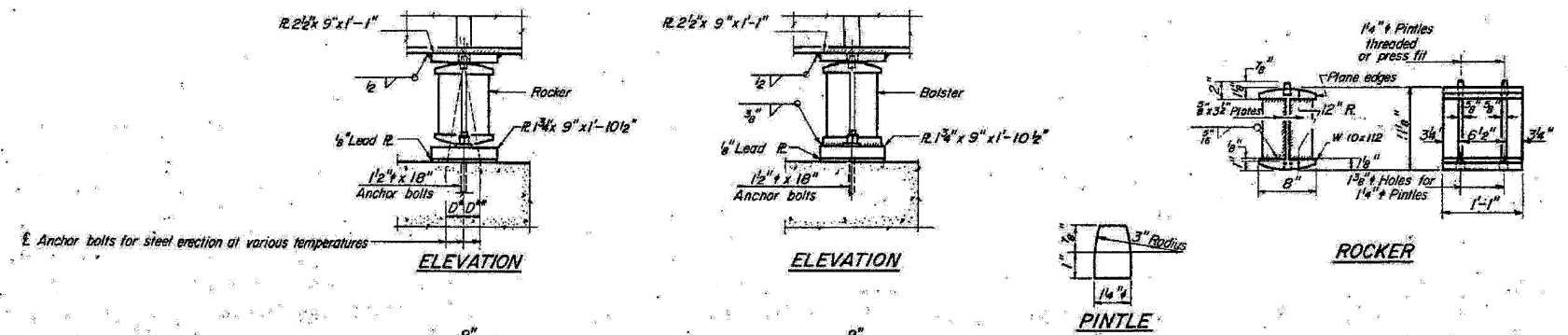
SHEET NO. 11	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 328
12 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

EXISTING PLAN INFORMATION 1 OF 2  
STRUCTURE NO. 022-0100

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. OF 18 SHEETS
F.A.I. RTE. 290	1984-079B-W	DUPAGE	546	329	
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT NO.			



**NOTE B**  
2" # Holes for 1/2" # anchor bolts, 5/16" x 3/8" # Washers under nut.

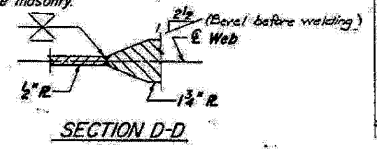
**NOTE A**  
1 3/8" # Holes - 1" deep in top R. for pintles. Thread or press fit pintles into bottom R.

**NOTE C**  
1 3/8" # Holes 1" deep in top R. only for 1/4" # pintles

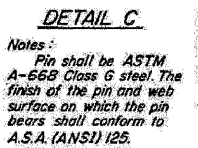
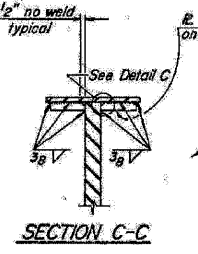
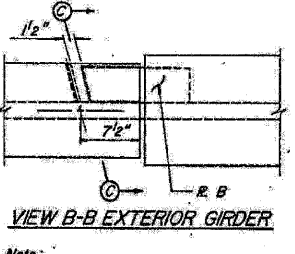
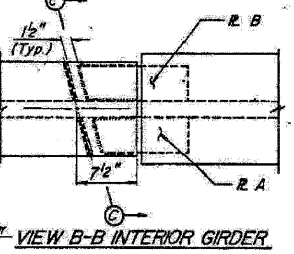
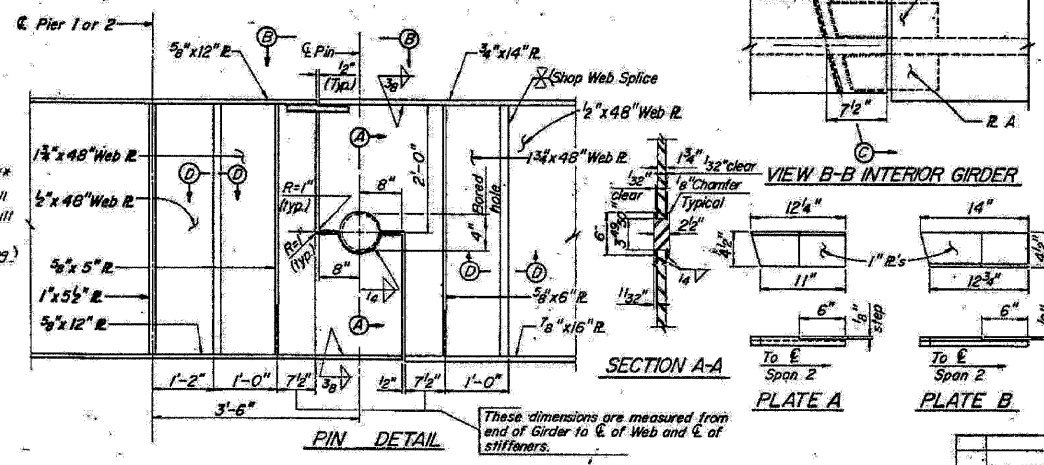
**NOTES ON SETTING OF ANCHOR BOLTS AT EXP. BRGS.**

- a) D\* (Side of brg. away from fixed brg.)  
D\*\* = 1/8" per each 100' of expansion for every 15° fall below the normal temp. of 50°F.
- D\*\* (Side of brg. toward fixed brg.)  
D\*\* = 1/8" per each 100' of expansion for every 15° rise above the normal temp. of 50°F.

b) After beams have been erected and dimensions D\* or D\*\* determined, holes shall be drilled and anchor bolts shall be grouted in place. All fixed anchor bolts may be built into the masonry.



**BEARING ASSEMBLY DETAILS**



Notes:  
Pin shall be ASTM A-668 Class G steel. The finish of the pin and web surface on which the pin bears shall conform to A.S.A. (ANSI) 125.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
<b>STRUCTURAL STEEL DETAILS AND BEARING DEVICES AT PIERS</b>
F.A.I. ROUTE 290, DUPAGE COUNTY
SECTION 1984-079B-W
STA. 1103+32.18
INTERSTATE ROUTE 290 OVER WOOD DALE ROAD

REVISED 4/17/85 M.K.C. 022-0100 SHEET 86 OF 109

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312-565-0450 Job No. 10050

SHEET NO. 12	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 329
12 SHEETS	355				
CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

EXISTING PLAN INFORMATION 2 OF 2  
STRUCTURE NO. 022-0100

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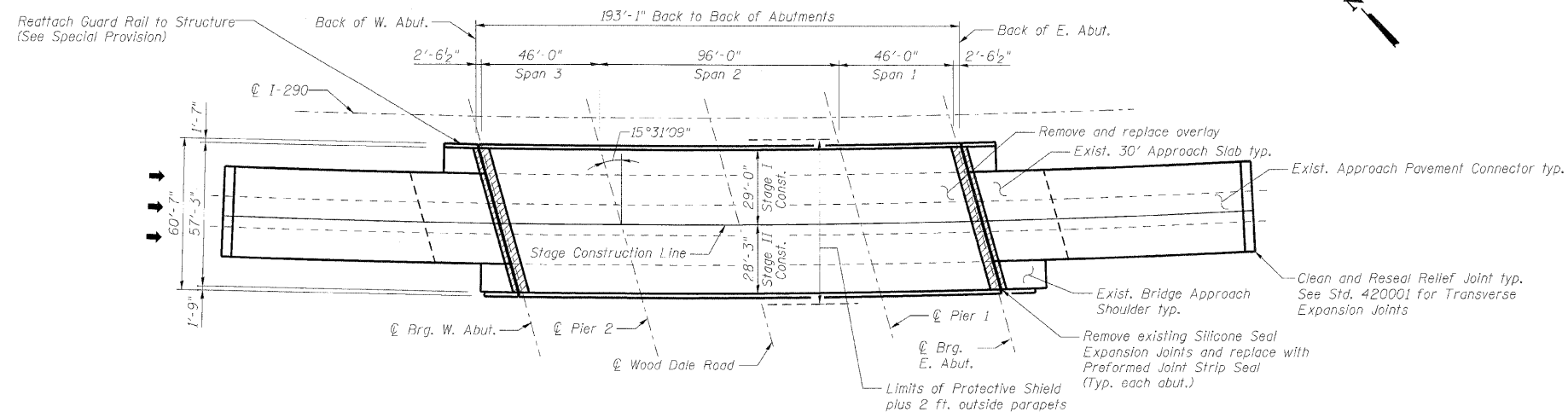
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

Existing Structure:

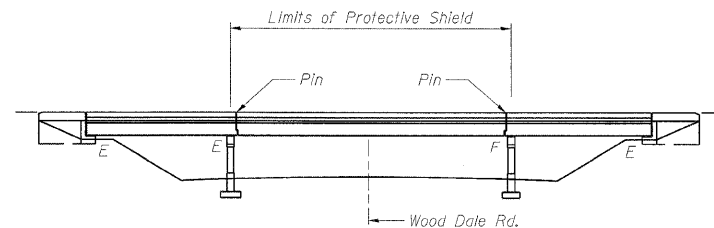
The bridge is a three-span continuous, plate girder bridge with a 8-inch reinforced concrete deck and a 2-inch concrete overlay. The original structure was built in 1971 as FAT-290, and the structure is in Section 1984-079-BW. In 1985, the structure was widened, patched and overlaid, the expansion joints were reconstructed, and the superstructure was cleaned and painted. In 1998, the deck and approaches were patched, the expansion joints were replaced, and the parapets were repaired.

Stage construction shall be utilized to maintain traffic during construction.

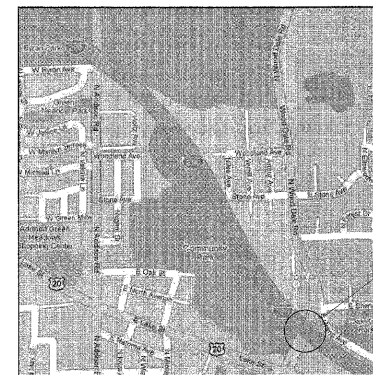
No salvage.



PLAN



ELEVATION



LOCATION SKETCH

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

DESIGN STRESSES

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

SCOPE OF WORK

1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Reconstruct deck joints at each abutment with preformed joint strip seal.
5. Place new overlay.
6. Replace pin at pin connection.
7. Repair substructure.
8. Repair slope wall.
9. Clean and reseal relief joints at the end of approach pavement connectors.
10. Apply concrete sealer to parapets, approach slabs, abutment seats and backwalls.



Expiration Date 11-30-10  
DATE: 11/16/09

GENERAL PLAN AND ELEVATION  
I-290 EB OVER WOOD DALE ROAD  
DuPAGE COUNTY  
STATION 174+61  
STRUCTURE NO. 022-0105

DESIGNED	TJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

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SHEET NO. 1 12 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 330
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

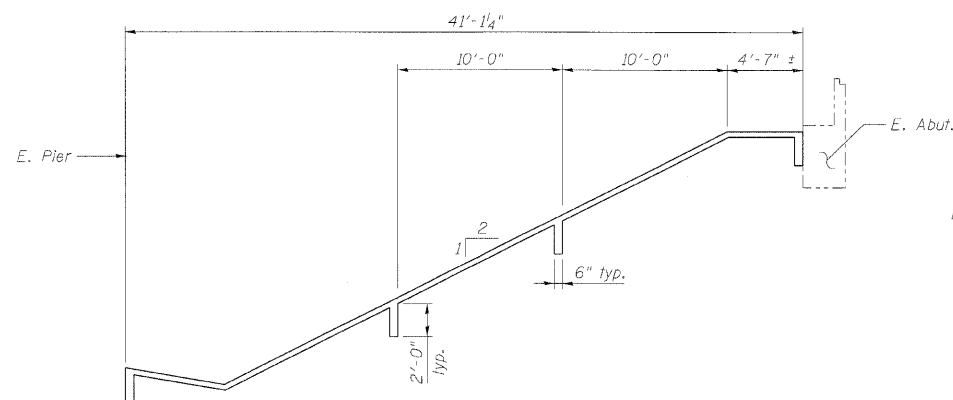
- Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
- Reinforcement bars designated (E) shall be epoxy coated.
- Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete. As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
- 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.
- Concrete Sealer shall be applied to the parapets, approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
- The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- Stage construction shall be utilized to maintain traffic during construction.
- The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
- Protective Coat shall be applied to the new Latex Concrete Overlay.
- Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

**INDEX OF SHEETS**

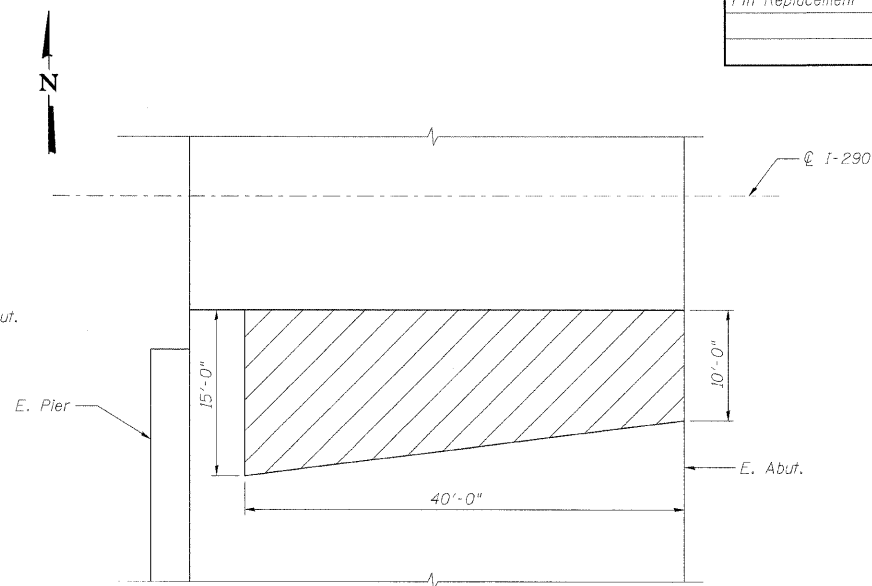
- General Plan and Elevation
- General Notes, Bill of Material and Index of Sheets
- Stage Construction Details
- Bridge Deck and Approach Slab Repairs
- Expansion Joint Repairs
- Expansion Joint Details
- Preformed Joint Strip Seal
- Pin Replacement Details
- Substructure Repairs
- Bar Splicer Assembly Details
- Existing Plan Information 1 of 2
- Existing Plan Information 2 of 2

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment	Cu. Yd.		38	38
Concrete Removal	Cu. Yd.	17.2		17.2
Slope Wall Removal	Sq. Yd.		56	56
Protective Shield	Sq. Yd.	689		689
Concrete Superstructure	Cu. Yd.	17.2		17.2
Bridge Deck Grooving	Sq. Yd.	1,174		1,174
Protective Coat	Sq. Yd.	1,229		1,229
Reinforcement Bars, Epoxy Coated	Pound	2,000		2,000
Bar Splicers	Each	22		22
Slope Wall 4 Inch	Sq. Yd.		56	56
Preformed Joint Strip Seal	Foot	123.0		123.0
Concrete Sealer	Sq. Ft.	3,851	954	4,805
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,198		1,198
Structural Repair of Concrete (Depth Greater than 5 Inches)	Sq. Ft.		40	40
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.		209	209
Approach Slab Repair (Partial Depth)	Sq. Yd.	17.2		17.2
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,198		1,198
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	13.3		13.3
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	14.0		14.0
Temporary Shoring & Cribbing	Each		3	3
Temporary Support System	Each	16		16
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	22		22
Clean and Reseal Relief Joint	Foot	72.0		72.0
Reattach Guard Rail to Structure	Each	1		1
Pin Replacement	Each	16		16



**SECTION THRU SLOPEWALL**



**SLOPE WALL REPAIR**

Slope wall shall be reinforced with welded wire fabric, 6 in. x 6 in. - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.  
Existing and new welded wire fabrics should overlap at least 6".

**LEGEND**

Remove and Replace Slopewall. 2' Deep Void under Slopewall to be filled with Porous Granular Embankment.

DESIGNED -	J.J.J
CHECKED -	A.A.Y
DRAWN -	R.M.G
CHECKED -	A.A.Y

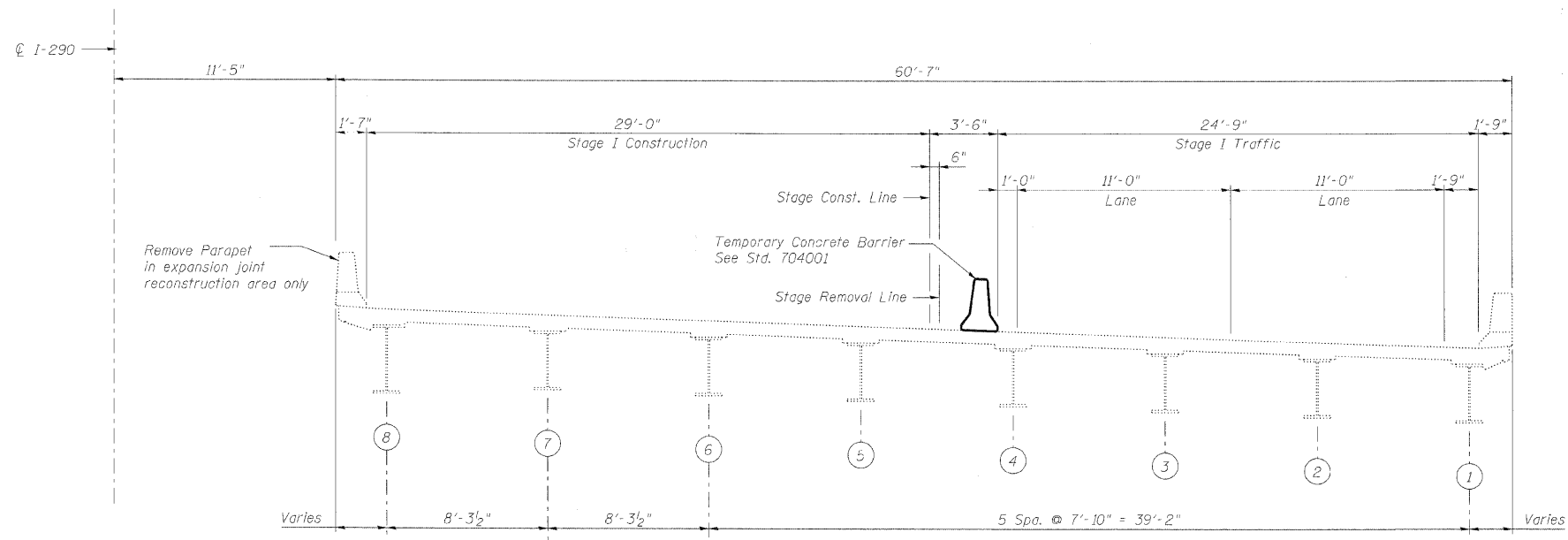
**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

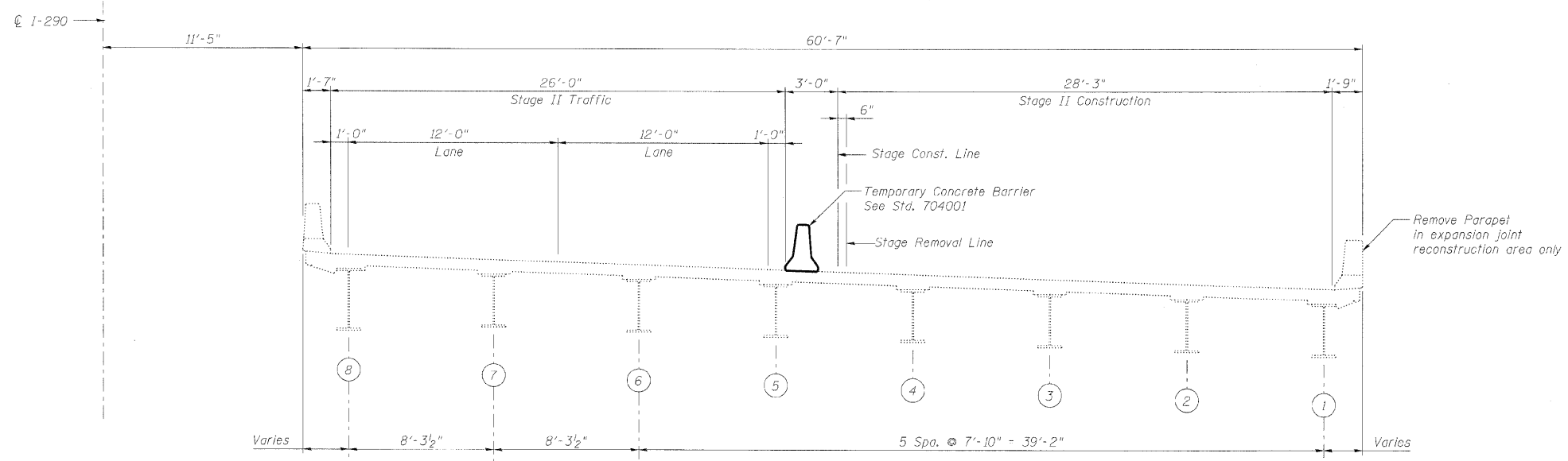
**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0105**

SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	331
12 SHEETS	355	CONTRACT NO. 60G51			
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)

**Note:**  
For Quantity of Temporary Concrete Barrier, See Roadway Plans

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0105**

DESIGNED -	MFB
CHECKED -	MAC
DRAWN -	VH
CHECKED -	AAV

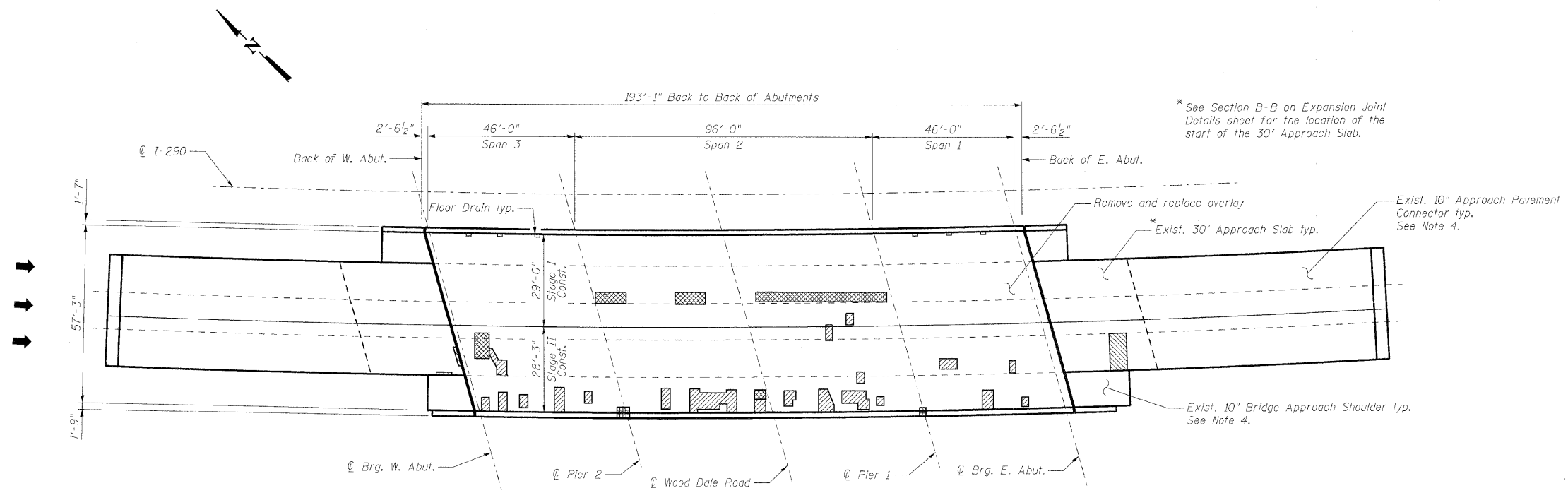
**benesch**

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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10060

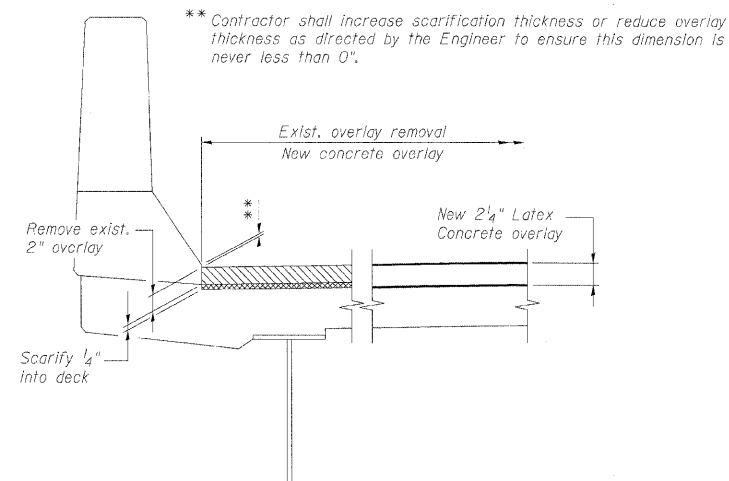
SHEET NO. 3  12 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 332
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN



SCARIFICATION & OVERLAY  
DETAIL AT PARAPET

DESIGNED	TJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

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Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0450 Job No. 10050

BILL OF MATERIAL

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	44.9 ▲
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	13.3
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	14.0
	Cleaning & Painting Exposed Rebar (Special)	Sq. Ft.	22
	Approach Slab Repair (Partial Depth)	Sq. Yd.	17.2
	Protective Shield	Sq. Yd.	689
	Bridge Deck Grooving	Sq. Yd.	1,174
	Protective Coat	Sq. Yd.	1,229
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,198
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,198

▲ For information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".

Notes:

- Deck and approach slab repair areas are estimated based on an infrared thermographic deck survey (ITDS) report prepared by AECOM and the visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield, required for deck slab and/or parapet repairs, shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned prior to placement of the Latex Concrete Overlay. Cost of cleaning the deck drains is included in Bridge Deck Hydro-Scarification, 2 1/4".
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

BRIDGE DECK AND APPROACH  
SLAB REPAIR  
STRUCTURE NO. 022-0105

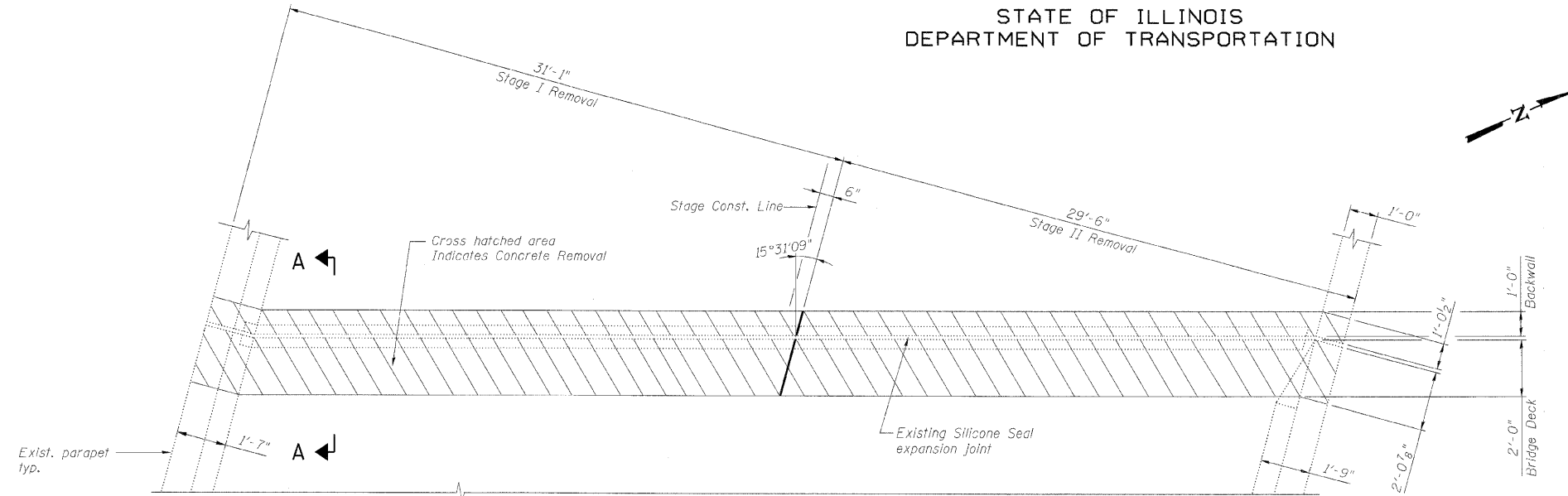
SHEET NO. 4	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	333
12 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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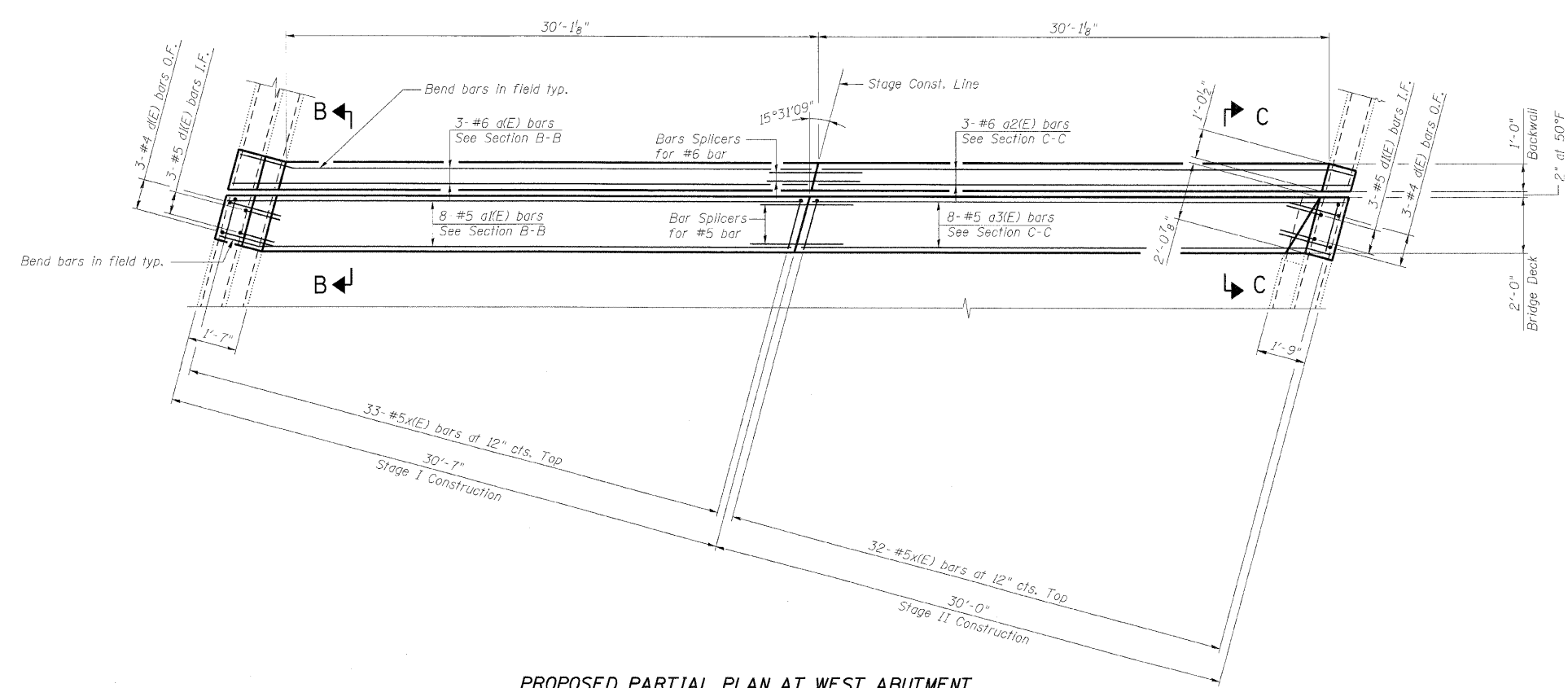
18:05:40

11\12\2009

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**EXISTING PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite for East Abutment)



**PROPOSED PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite for East Abutment)

DESIGNED	JLS
CHECKED	AAY
DRAWN	VH
CHECKED	AAY

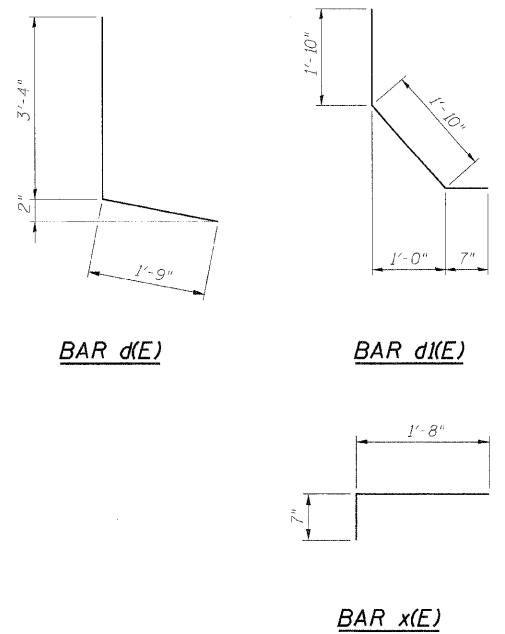
**benesch**  
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	6	#6	31'-5"	—
a(E)	16	#5	31'-5"	—
a2(E)	6	#6	30'-10"	—
a3(E)	16	#5	30'-10"	—
d(E)	12	#4	5'-1"	┌
d(E)	12	#5	4'-3"	└
x(E)	130	#5	2'-3"	┌

Item	Unit	Total
Concrete Removal	Cu. Yd.	17.2
Concrete Superstructure	Cu. Yd.	17.2
Reinforcement Bars, Epoxy Coated	Pound	2,000



- Notes:**
- I.F. denotes Inside Face.  
O.F. denotes Outside Face.
  - Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
  - x(E) bar spacing measured along skew.

**EXPANSION JOINT REPAIRS  
STRUCTURE NO. 022-0105**

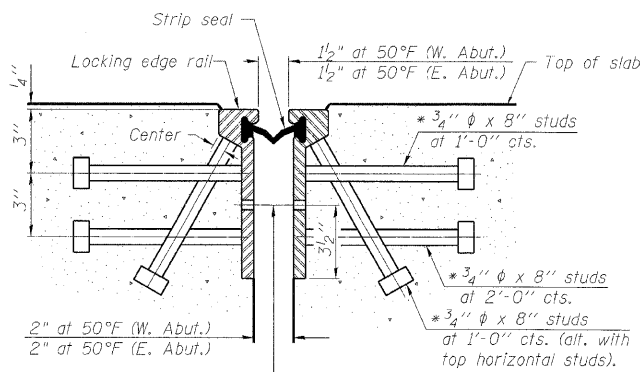
SHEET NO. 5 12 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 334
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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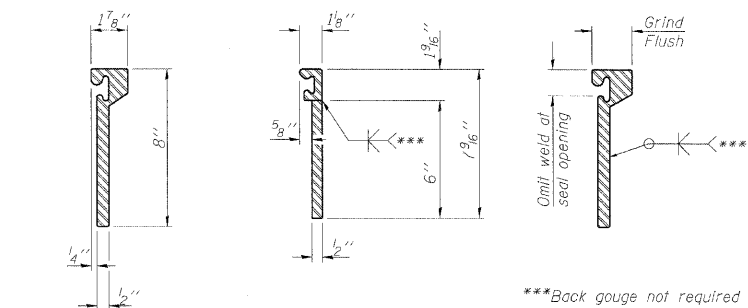
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

SECTION THRU  
ROLLED RAIL JOINT



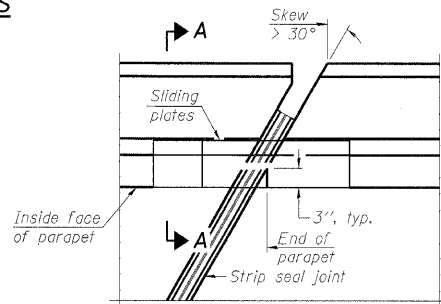
ROLLED  
EXTRUDED RAIL      WELDED RAIL

\*\*\*Back gouge not required if complete joint penetration is verified by mock-up.

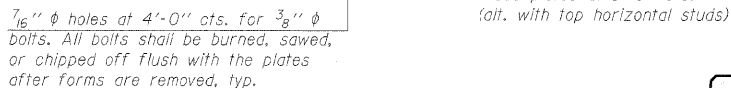
LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

LOCKING EDGE RAILS

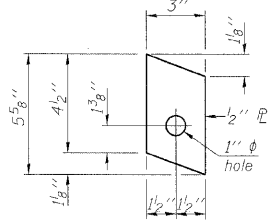


PLAN

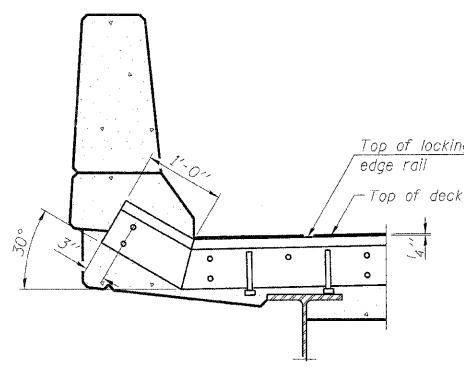


7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

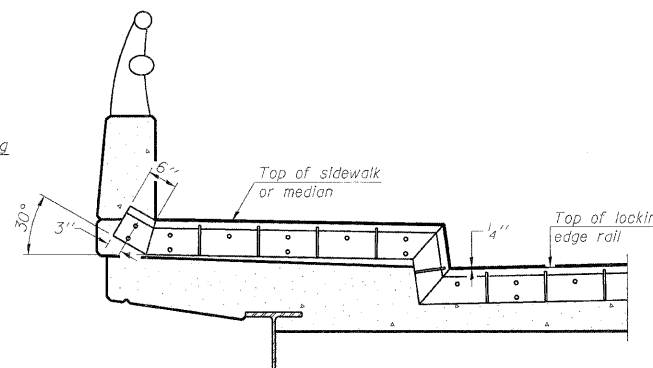
SECTION THRU  
WELDED RAIL JOINT



ANCHOR PLATE  
(for welded rail)



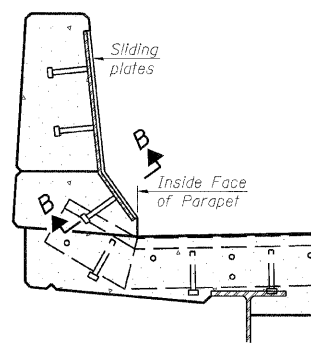
AT PARAPET



AT SIDEWALK OR MEDIAN

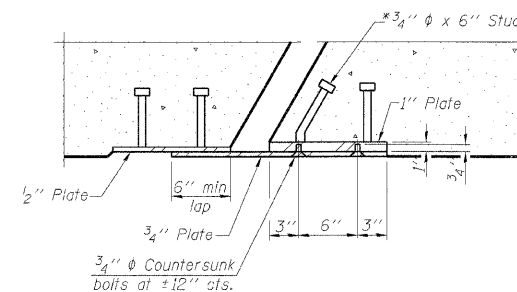
Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS



SECTION A-A

POINT BLOCK DETAILS  
(for skews > 30°)



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	123.0

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

EJ-SSJ

10-1-08

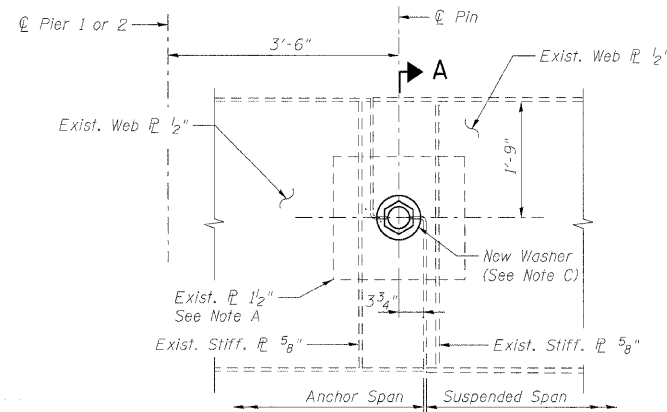
benesch

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Chicago, Illinois 60601  
312-566-0450      Job No. 10050

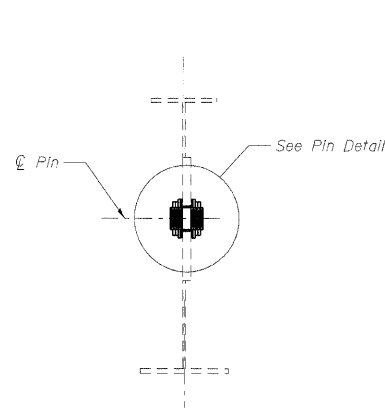
SHEET NO. 7  12 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 336
	CONTRACT NO. 60G51			FED. ROAD DIST. NO.    ILLINOIS    FED. AID PROJECT	

PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0105

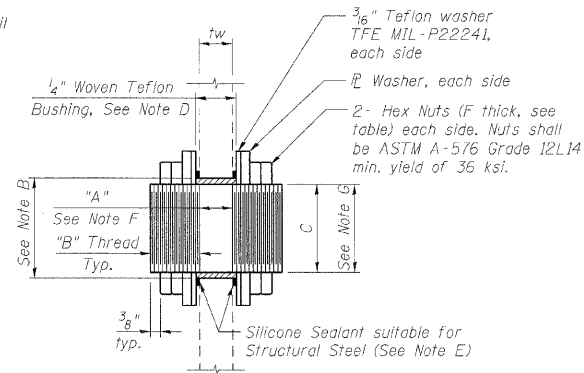
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



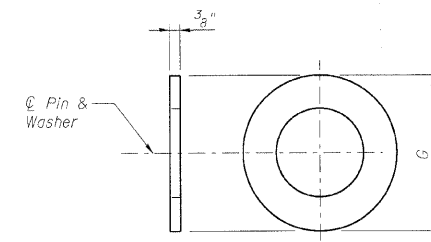
**PIN ELEVATION - GIRDERS 1 & 6**  
(Dimensions and details from exist. plans)



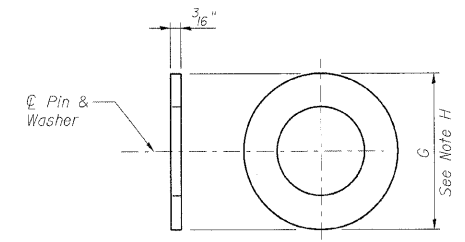
**SECTION A-A**



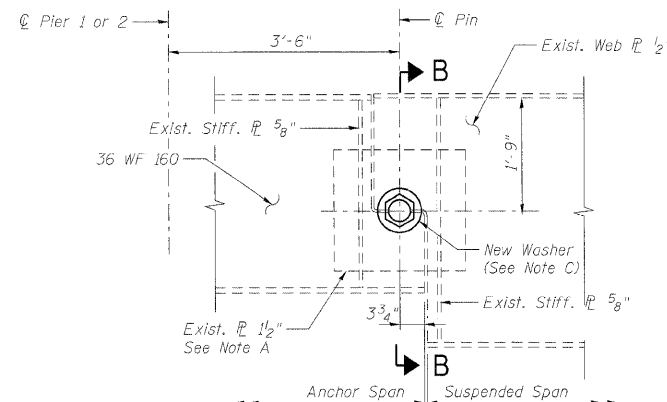
**PIN ASSEMBLY DETAIL**



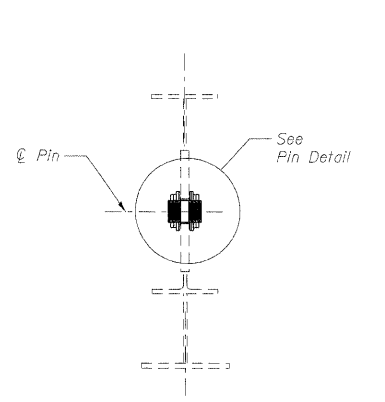
**WASHER DETAIL**



**TEFLON WASHER DETAIL**



**PIN ELEVATION - INTERIOR GIRDERS 2 THRU 5**  
(Dimensions and details from exist. plans)



**SECTION B-B**

**Note A:** Existing welds shall be inspected for cracks using liquid dye penetrant or magnetic particle testing. Any cracks that are found shall be identified and reported to the Bureau of Bridges and Structures for further disposition. Clean and paint before installing new Pin Assembly Detail.

**Note B:** Bore diameter for bushing in existing webs and reinforcement plates shall correspond to bushing manufacturer's allowable tolerances for proper functioning. Hole diameter may be adjusted to allow use of stock bushings. Prime before installing Pin.

**Note C:** Inside face of new washer plates shall receive first field coat in shop. The primer shall pass the M.E.K. Rub Test before the first field coat is applied.

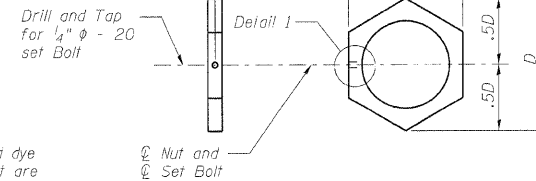
**Note D:** Actual bushing thickness per manufacturer's specifications, 1/4" is approximate. Bushings shall be self lubricating filament wound epoxy matrix backed Duralon Bearing, metal backed Fiber Glide Bearing or equivalent. No primer or grease shall be allowed on bushings. Bushings shall be suitable for dynamic loads of 20,000 psi.

**Note E:** Apply 3/8" bead to face of the web reinforcing plates approximately 1/2" turn from bushing immediately before installing new washer plates. Place sealant around nuts after installation. Sealant shall be suitable for prolonged exterior exposure without losing flexibility or adhesion to painted steel surfaces. Proposed products shall be subject to Department's acceptance based on documented testing or other evidence.

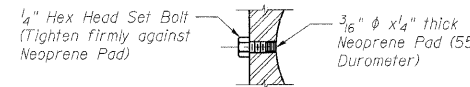
**\* Note F:** Body of Pin dimension "A" shall be based on measured thickness of captured plates (including paint), plus 1/2".  $A = tw + 1.125"$

**Note G:** Nominal Pin diameter (diameter tolerances subject to Specifications of Teflon Bushing Manufacturer and shall be approved by the Engineer). Pin shall be ASTM A276, UNS 21800 (Nitronic 60 (Stainless Steel) or equal) (No step at threads) 12 threads per inch.

**Note H:** Outside diameter of Washer shall be,  $G = E + 1/2"$ .

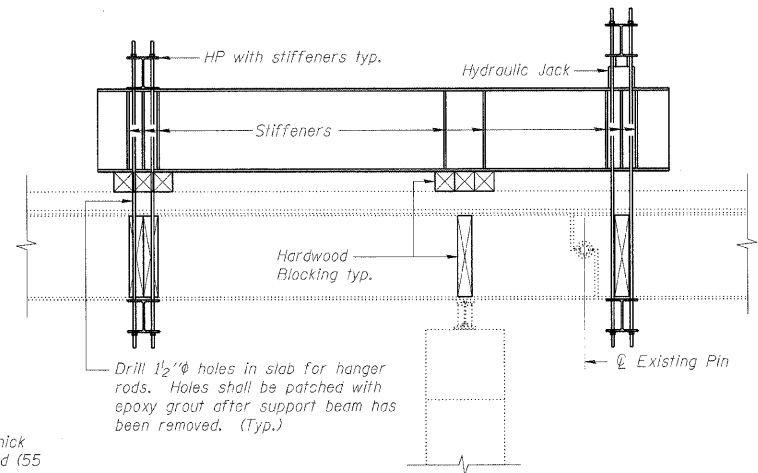


**HEX NUT DETAIL**



**DETAIL 1**

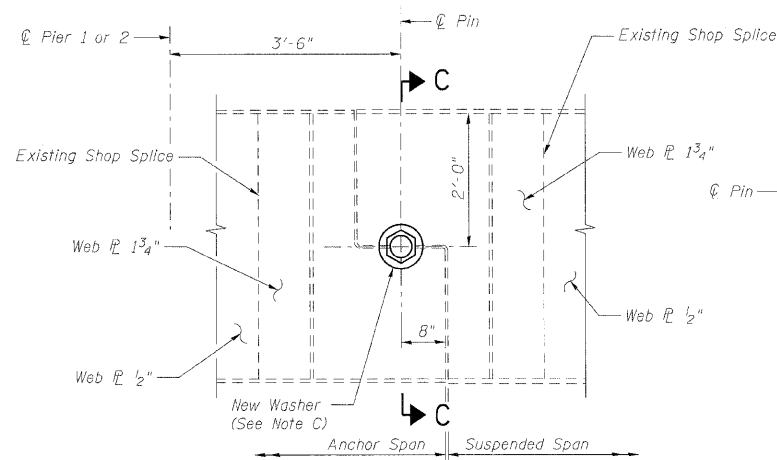
Set Bolts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.



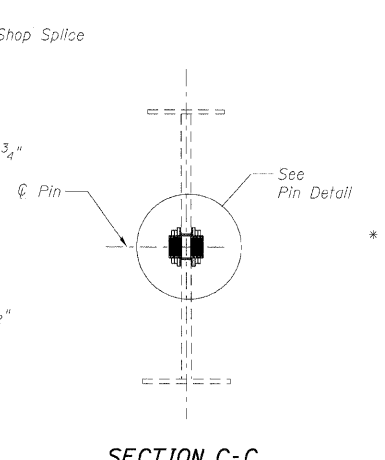
**LONGITUDINAL SECTION  
SUGGESTED TEMPORARY BEAM SUPPORT SYSTEM**

**Notes:**

- All new structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.
- The contractor shall provide support and/or shoring systems for the beam in the area of existing pin replacement. The support and/or shoring systems shall be approved by the Engineer. Such approval will not relieve the Contractor of responsibility for the safety of the structure. See Special Provisions for "Temporary Support System."
- The inorganic zinc primer/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Light Grey, Munsell No. 10Y 7/L. See Special Provision "Cleaning and Painting Metal Structures".
- Existing structural steel shall be cleaned and painted as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures". Cost included with Pin Replacement.
- All existing steel surfaces behind washers shall be cleaned and primed before installation of new washers. Cost included with Pin Replacement.
- Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field 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 the scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
- The Pins and Washers shall conform to the minimum Charpy V-Notch Toughness of 25 ft.-lbs. at 40° F.
- The Pins, Washers, Bushings, Nuts and Silicone Sealant are the items included in Pin Replacement.
- For existing pin removal, grind existing welds and ream holes to fit proposed bushing.



**PIN ELEVATION - 1985 WIDENING GIRDERS**  
Girders 7 & 8  
(Dimensions and details from exist. plans)



**SECTION C-C**

Dimension	Length (in.)	
	Girders 1-6	Girders 7-8
A *	2 5/8	2 1/2
B	1 1/8	1 7/8
C	4 1/4	4
D	7 1/8	7 1/4
E	6 5/8	6 1/4
F	3/4	3/4
G	8 1/8	7 3/4

\* Dimension "A" shall be increased in case of any misalignment between anchor span and suspended span web planes.

DESIGNED -	AAV
CHECKED -	KMP
DRAWN -	RMG
CHECKED -	AAV

**MAXIMUM REACTIONS AT PIN**

R (Dead load)	(K)	48.2
R (Superimposed Dead Load)	(K)	13.8
R (Live load)	(K)	58.0
Imp.	(K)	13.5
R (Total)	(K)	133.5

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Temporary Support System	Each	16
Pin Replacement	Each	16

**benesch**

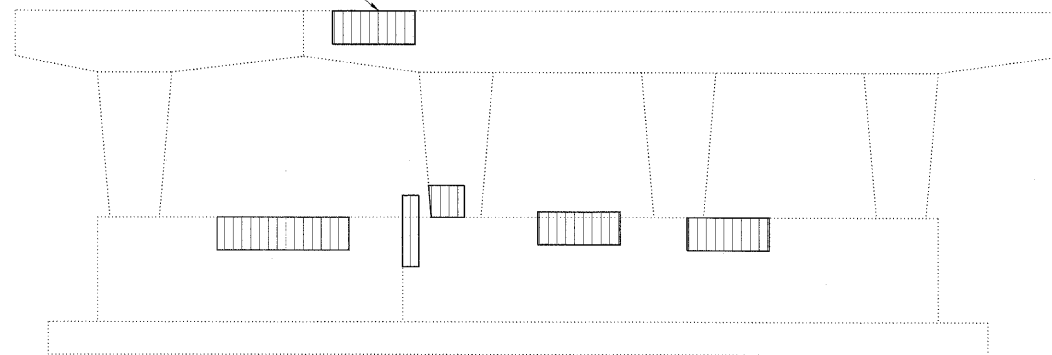
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312-565-0450 Job No. 119050

SHEET NO. 8 12 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 337
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

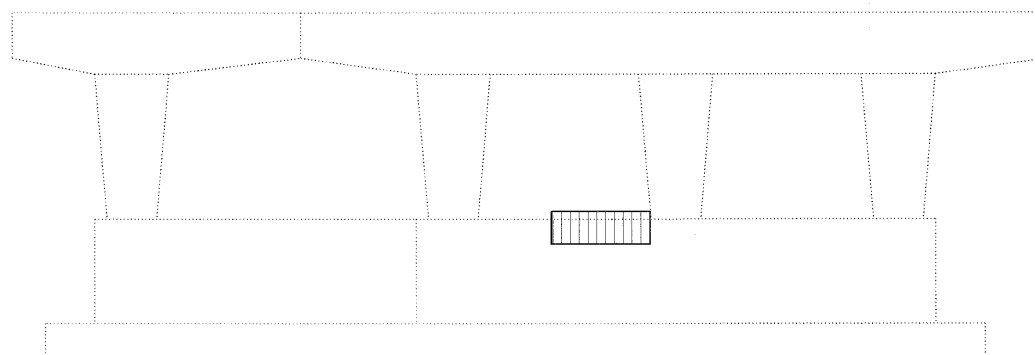


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

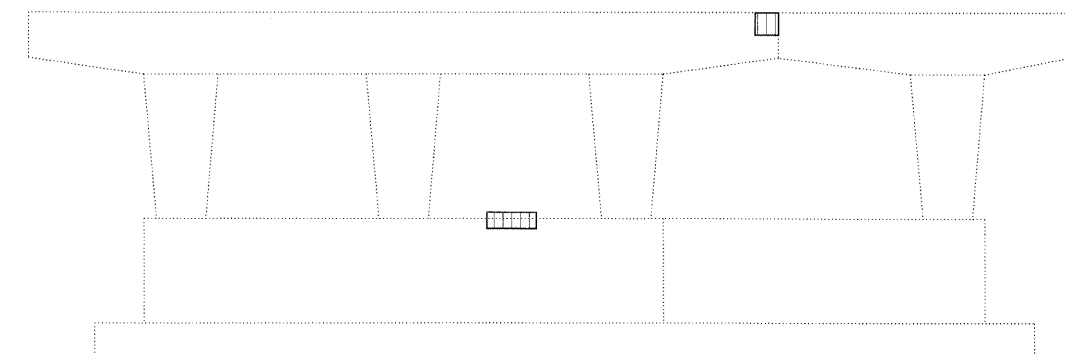
Temporary Shoring and Cribbing



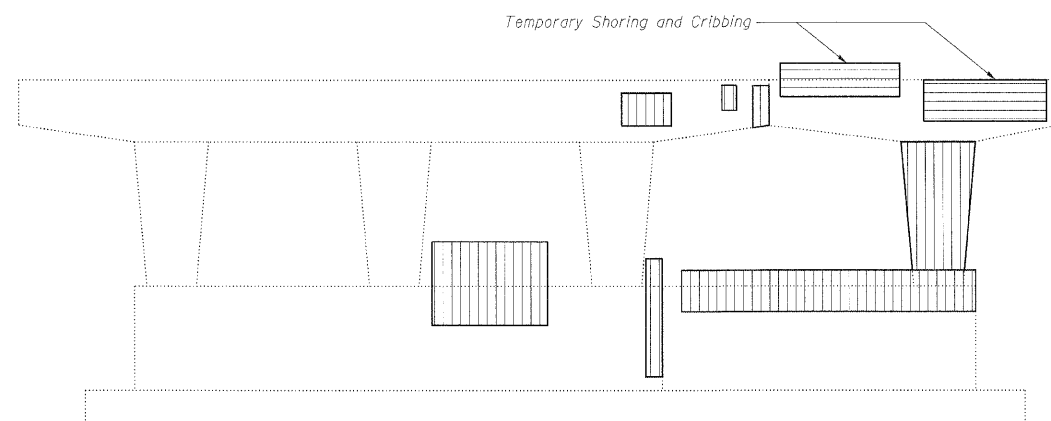
EAST PIER REPAIRS - WEST FACE



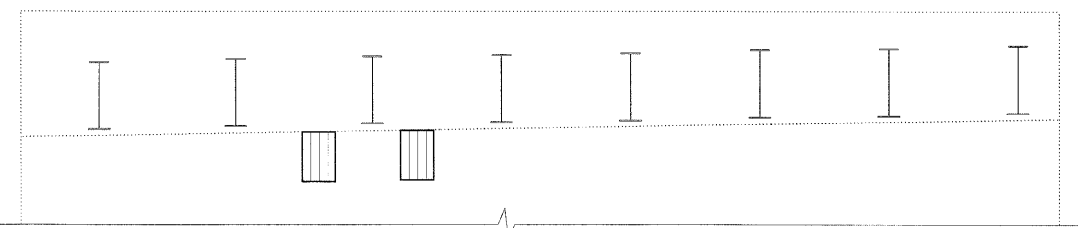
WEST PIER REPAIRS - WEST FACE



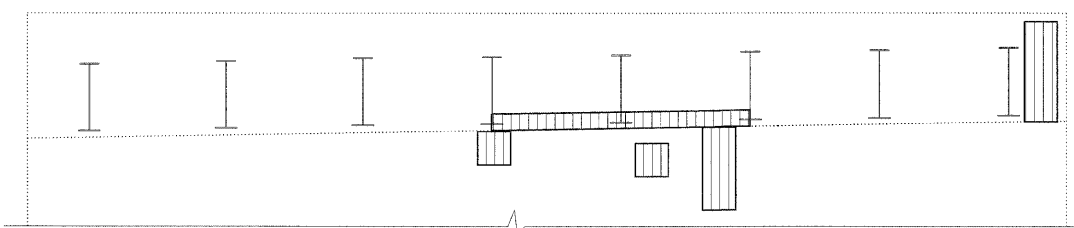
EAST PIER REPAIRS - EAST FACE



WEST PIER REPAIRS - EAST FACE



EAST ABUTMENT REPAIRS



WEST ABUTMENT REPAIRS

BILL OF MATERIAL

SYMBOL	ITEM	UNIT	QUANTITY
	Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	209
	Structural Repair of Concrete (Depth Greater than 5 Inches)	Sq. Ft.	40
	Temporary Shoring & Cribbing	Each	3

BEAM REACTIONS (KIPS)

DEAD LOAD	LIVE LOAD	IMPACT LOAD	TOTAL
101.0	55.3	14.8	171.1

Notes:

- Substructure repair areas are estimated based on IDOT field notes from April 24, 2009.
- Interference is expected from existing conduits. The Contractor shall remove and reerect or temporarily support the existing conduits to complete the work as detailed. When the work is completed the conduits shall be reconnected to the reconstructed abutment or pier utilizing the existing mounting brackets or new mounting brackets. All labor, equipment, and materials necessary for removing and reinstalling or temporarily supporting the existing conduits shall be included in the cost for Structural Repair of Concrete (Depth Equal to or Less than 5 Inches).
- The tabulated beam reactions were taken from the existing construction plans. The Contractor shall verify that the equipment used to support the beams is sufficient to carry these loads in addition to any temporary construction loads.

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

**benesch**

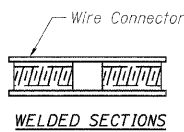
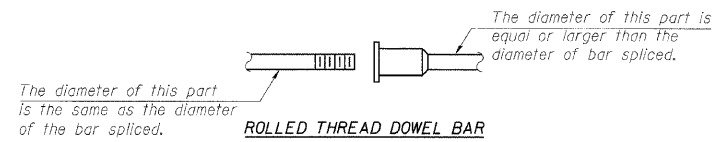
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 9 12 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 338
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

SUBSTRUCTURE REPAIRS  
STRUCTURE NO. 022-0105

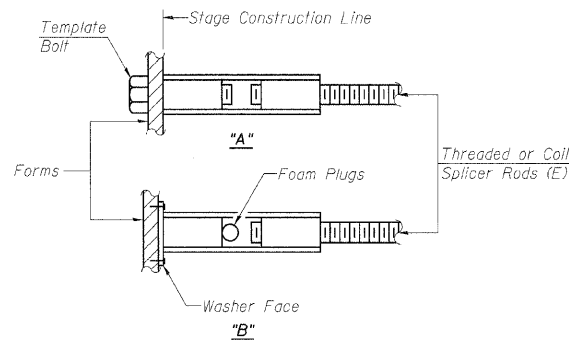
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



**INSTALLATION AND SETTING METHODS**

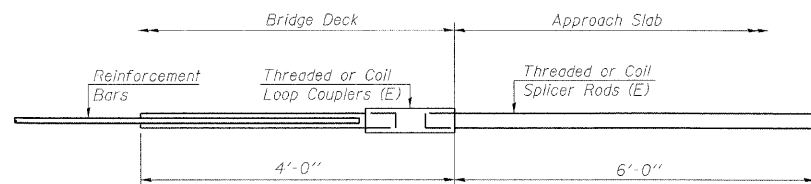
"A" : Set bar splicer assembly by means of a template bolt.  
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
(E) : Indicates epoxy coating.

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

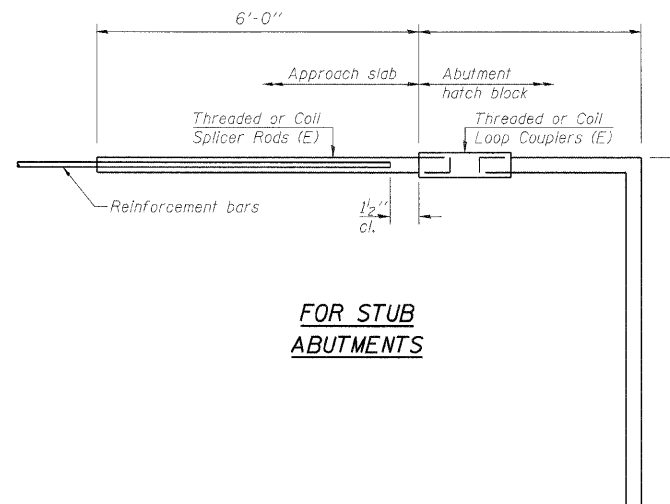
- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_s$   
(Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



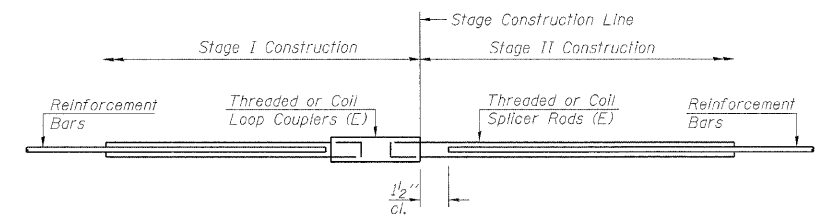
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**FOR STUB ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	16	Deck
#6	6	Deck

DESIGNED -	JLS
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

BSD-1

10-1-08

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312-555-0450 Job No. 10050

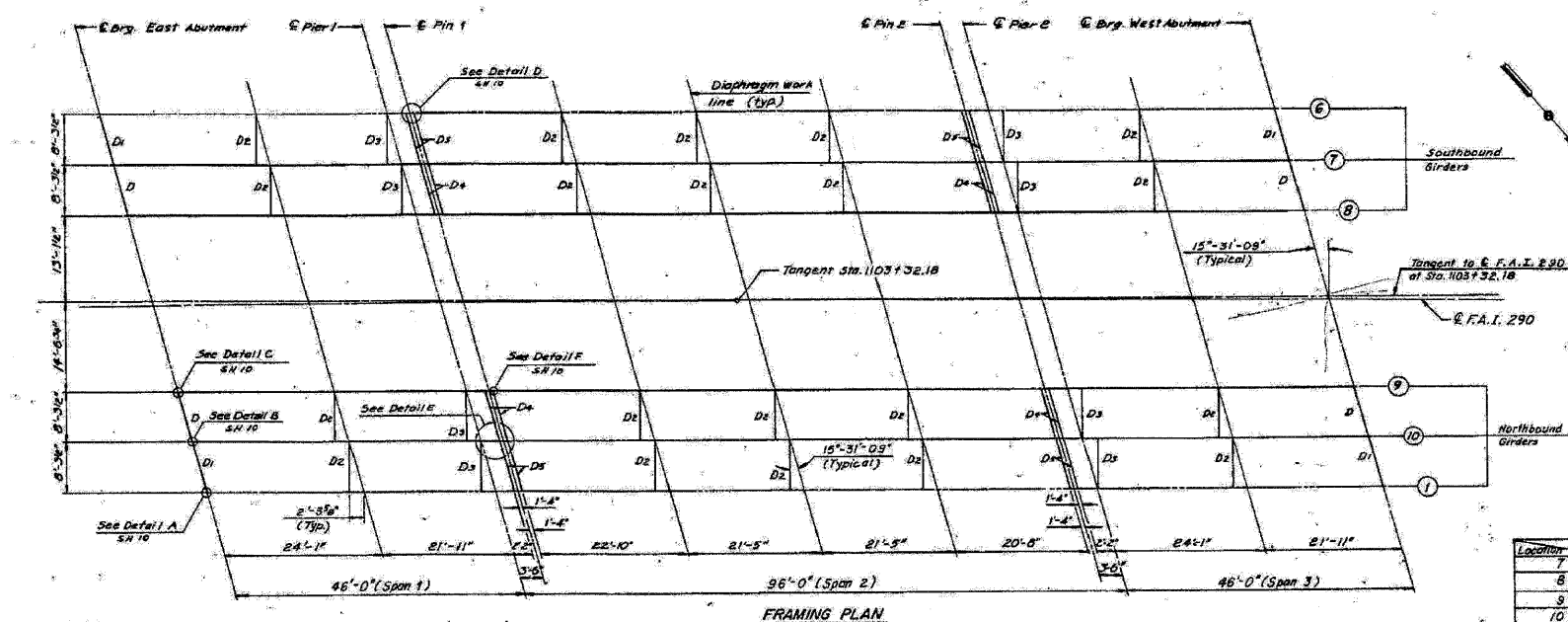
**BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0105**

SHEET NO. 10 12 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 339
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. OF 18 SHEETS
290	1984-0798-W	DUPAGE	109	84	
FED. ROAD DIST. NO. 7 ILLINOIS			FEDERAL AID PROJECT NO.		



INTERIOR GIRDER MOMENT TABLE

	04 Span 1 / 06 Span 3	Pier	05 Span 2
$I_x$ (in <sup>4</sup> )	13475	13475	24,356
$I_y$ (in <sup>4</sup> )			75,072
$S_x$ (in <sup>3</sup> )	547	547	1,267
$S_y$ (in <sup>3</sup> )			1,820
$Q$ (in <sup>2</sup> )	1.327	1.327	1.083
$M_x$ (in)	261	196	1,092
$M_y$ (in)	575	437	1,033
$S_x$ (in <sup>3</sup> )			0.31
$M_x$ (in)	406	140	937
$M_y$ (in)	129	45	297
$M_{total}$ (in)	535	185	1,551
$F_s$ (comp)	11.74	4.06	10.23
$F_s$ (total)	17.47	8.37	20.56
$VR$ (in)			61.0

3/4" x Granular or solid flux filled heads studs automatically and welded.

(Total No. Req'd. 4104)

INTERIOR GIRDER REACTION TABLE

	Abut.	Pier
$R_g$ (K)	26.4	101.0
$R_L$ (K)	43.3	53.3
$M_{total}$ (K)	12.6	14.8
$M_{total}$ (K)	82.3	171.1

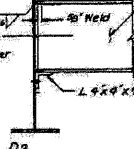
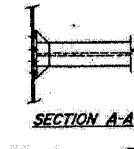
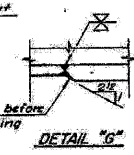
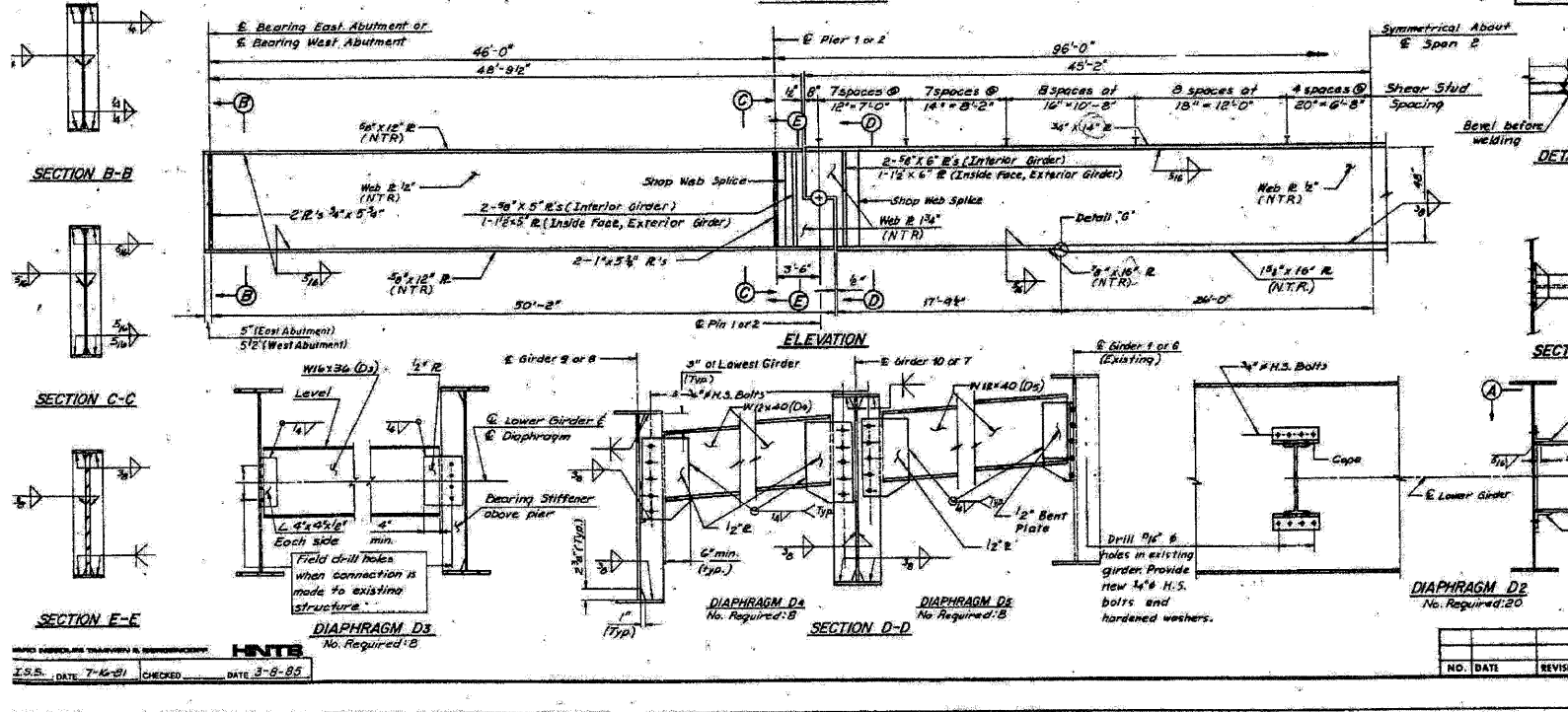
\* TOP OF WEB ELEVATIONS

Location	Girder	04 Span 1	06 Span 3	05 Span 2	06 Span 3	05 Span 2	04 Span 1
7		698.91	698.70	698.68	698.28	698.26	698.05
8		698.61	698.40	698.38	697.97	697.96	697.74
9		700.91	700.69	700.67	700.25	700.24	700.02
10		700.58	700.36	700.34	699.93	699.93	699.71

\* For Fabrication Only.

Notes:

$I_x$  and  $I_y$  are the moment of inertia and section modulus of the steel section used in computing  $F_s$  non-comp.  
 $I_c$  and  $I_c$  are the moment of inertia and section modulus of the composite section used in computing  $F_s$  comp.  
 $VR$  is the maximum  $\pm$  impact shear range in span.  $VR$  is the superimposed dead load.  
 5/16" Holes shall be drilled for all 3/4" H.S. Bolts.  
 The interior corners of all stiffeners shall be clipped 1/8" x 2 1/4" vertically for additional details, see Sheets 10 and 11.  
 NTR. Denotes Plates to which Notch Toughness Requirements are applicable.  
 One hardened washer shall be required over each 3/4" hole.  
 --- indicates existing structure  
 Plate girders shall not be cambered in Spans 1 and 3. Plate girders shall be cambered in Span 2 between Pin 1 and Pin 2. See sheet 5.



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DEPARTMENT OF TRANSPORTATION

**FRAMING PLAN AND GIRDER ELEVATION**

F.A.I. ROUTE 290, DUPAGE COUNTY  
SECTION 1984-0798-W  
STA. 1103+32.18  
INTERSTATE ROUTE 290 OVER  
WOOD DALE ROAD

SHEET 84 OF 109

FOR INFORMATION ONLY

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312-565-0450 Job No. 10050

SHEET NO. 11	F.A.I. RTE. 290/355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 340
12 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

EXISTING PLAN INFORMATION 1 OF 2  
STRUCTURE NO. 022-0105

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**Existing Structure:**  
The structure is a three-span continuous, composite plate girder structure with an 8-inch cast-in-place concrete deck and a 2 1/2-inch concrete overlay.  
The original structure was built in 1970 as FAI Route 290 and is in Section 1984-079-BW. In 1985, the bridge was widened, patched and overlaid, the approach slabs were patched, and the expansion joints were reconstructed. In 1998, the expansion joints were reconstructed and the approach slabs were repaired.

Stage construction shall be utilized to maintain traffic during construction.

No salvage

**DESIGN SPECIFICATIONS**

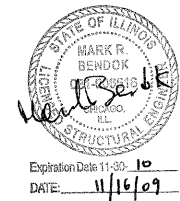
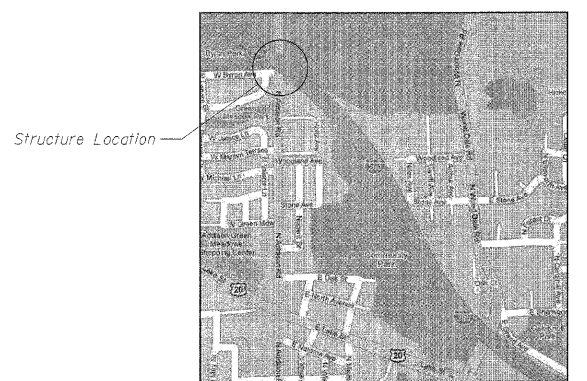
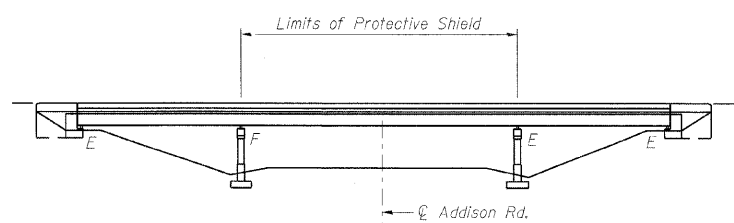
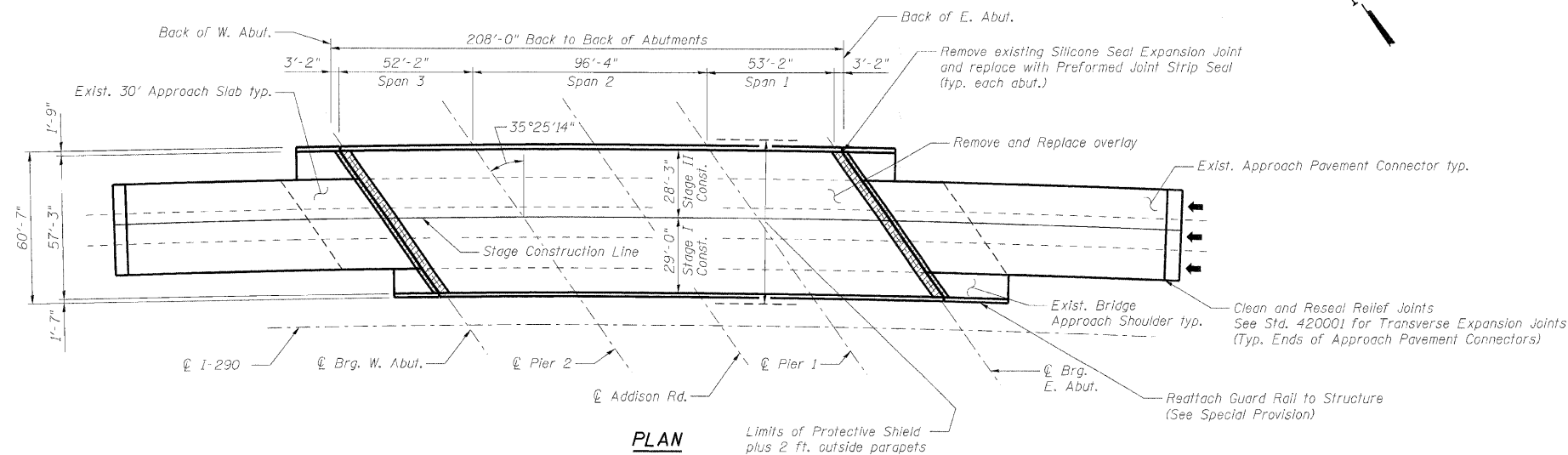
2002 AASHTO Standard Specifications  
for Highway Bridges, 17th Edition

**DESIGN STRESSES**

$f'_c = 3,500 \text{ psi}$   
 $f_y = 60,000 \text{ psi}$

**SCOPE OF WORK**

1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Reconstruct deck joints at each abutment with preformed joint strip seal.
5. Place new overlay.
6. Clean and reseal relief joints at the end of approach pavement connectors.
7. Apply concrete sealer to parapets, approach slabs, abutment seats and backwalls.



**GENERAL PLAN AND ELEVATION**  
**I-290 WB OVER ADDISON ROAD**  
**DUPAGE COUNTY**  
**STATION 121+43**  
**STRUCTURE NO. 022-0095**

DESIGNED	-	TJJ
CHECKED	-	AAV
DRAWN	-	RMG
CHECKED	-	AAV

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Chicago, Illinois 60601  
312-665-0450 Job No. 10050

SHEET NO. 1 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 342
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.
4. As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
5. 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.
6. Concrete Sealer shall be applied to the parapets, approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
7. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
8. Stage construction shall be utilized to maintain traffic during construction.
9. The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
10. Protective Coat shall be applied to the new Latex Concrete Overlay.
11. Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

**INDEX OF SHEETS**

1. General Plan and Elevation
2. General Notes, Bill of Material and Index of Sheets
3. Stage Construction Details
4. Bridge Deck and Approach Slab Repairs
5. Expansion Joint Repairs
6. Expansion Joint Details
7. Preformed Joint Strip Seal
8. Bar Splicer Assembly Details

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	24.0		24.0
Protective Shield	Sq. Yd.	691		691
Concrete Superstructure	Cu. Yd.	24.0		24.0
Bridge Deck Grooving	Sq. Yd.	1,265		1,265
Protective Coat	Sq. Yd.	1,324		1,324
Reinforcement Bars, Epoxy Coated	Pound	2,470		2,470
Bar Splicers	Each	22		22
Preformed Joint Strip Seal	Foot	145.0		145.0
Concrete Sealer	Sq. Ft.	4,208	1,053	5,261
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	18.4		18.4
Bridge Deck Latex Concrete Overlay, 2 3/4"	Sq. Yd.	1,297		1,297
Bridge Deck Hydro-Scarification, 2 3/4"	Sq. Yd.	1,297		1,297
Clean and Reseal Relief Joint	Foot	72.0		72.0
Reattach Guard Rail to Structure	Each	1		1

DESIGNED -	IJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

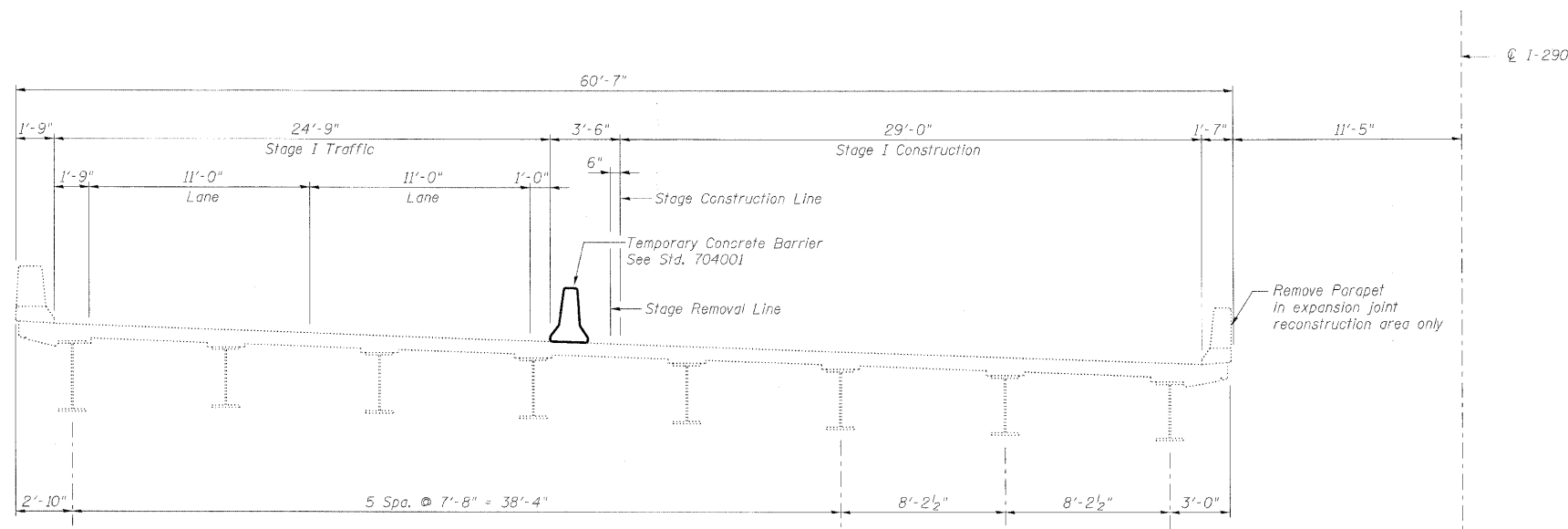
**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0095**

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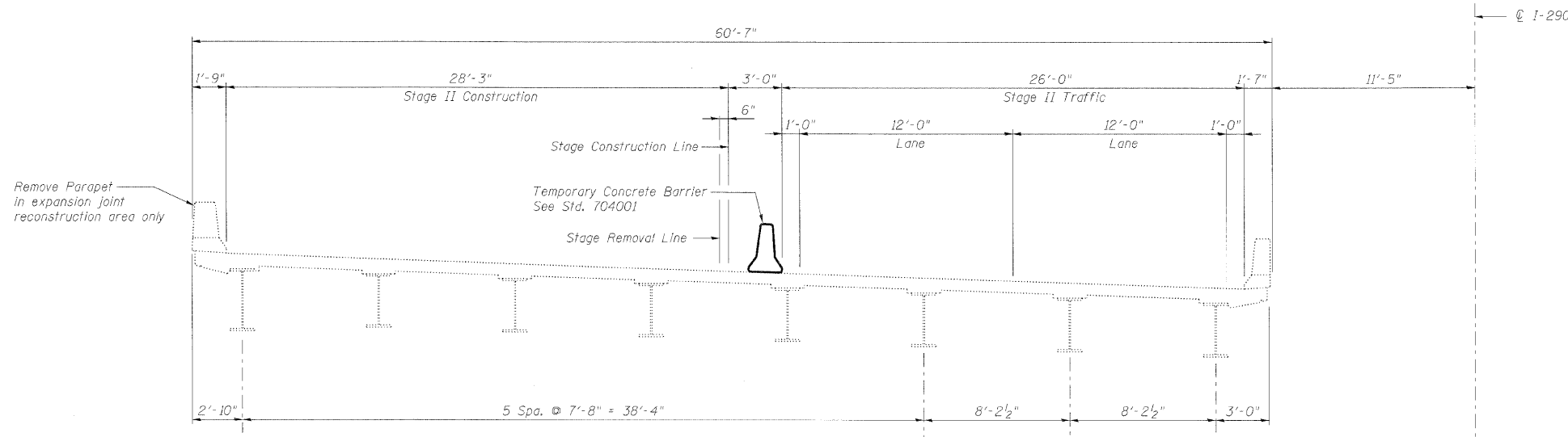
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Chicago, Illinois 60601  
312-565-0450 Job No. 10060

SHEET NO. 2  8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 343
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

DESIGNED -	MFB
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

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Chicago, Illinois 60601  
312-665-0450 Job No. 10050

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0095**

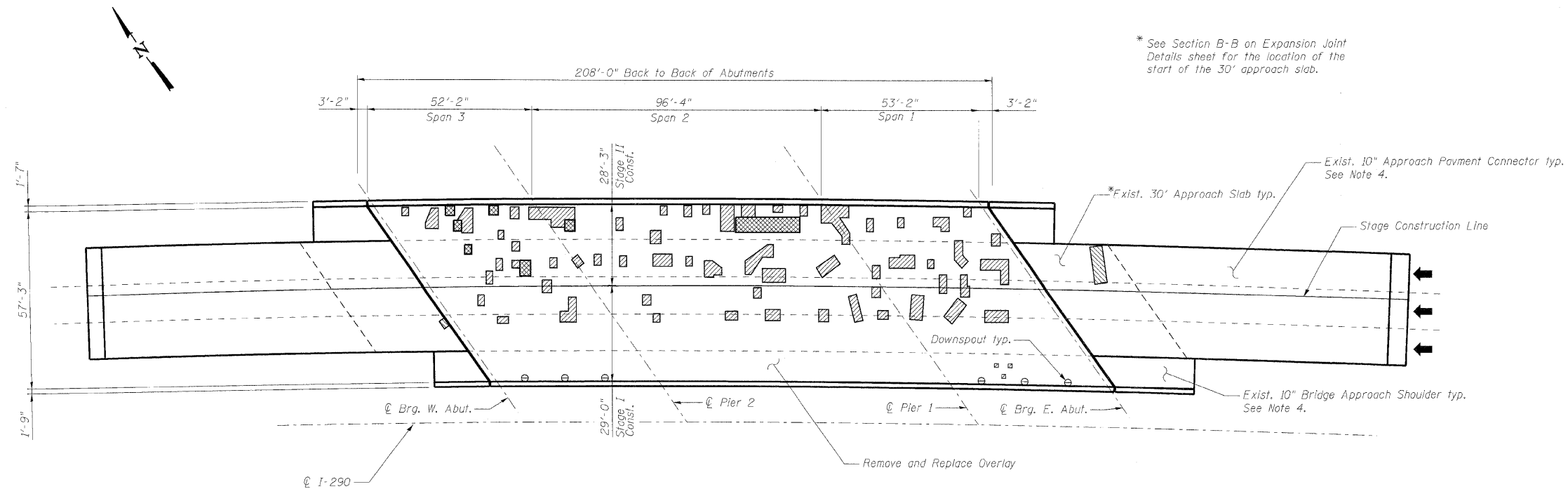
SHEET NO. 3 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 344
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

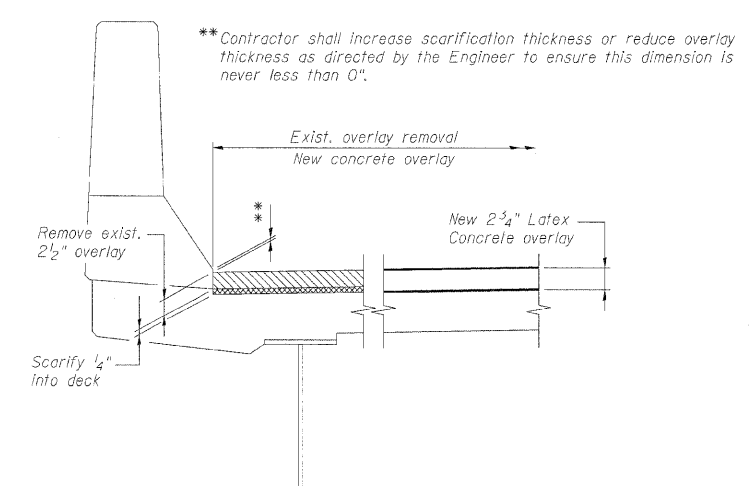
**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	111.9 ▲
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	5.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	18.4
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0
	Protective Shield	Sq. Yd.	691
	Bridge Deck Grooving	Sq. Yd.	1,265
	Protective Coat	Sq. Yd.	1,324
	Bridge Deck Latex Concrete Overlay, 2 3/4"	Sq. Yd.	1,297
	Bridge Deck Hydro-Scarification, 2 3/4"	Sq. Yd.	1,297

▲ For information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".



**PLAN**



**SCARIFICATION & OVERLAY  
DETAIL AT PARAPET**

**Notes:**

- Deck and approach slab repair areas are estimated based on an infrared thermographic deck survey (ITDS) report prepared by AECOM and the visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield required for full-depth repairs shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 3/4".

**BRIDGE DECK AND APPROACH  
SLAB REPAIRS  
STRUCTURE NO. 022-0095**

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

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312-565-0450 Job No. 10050

SHEET NO. 4 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 345
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

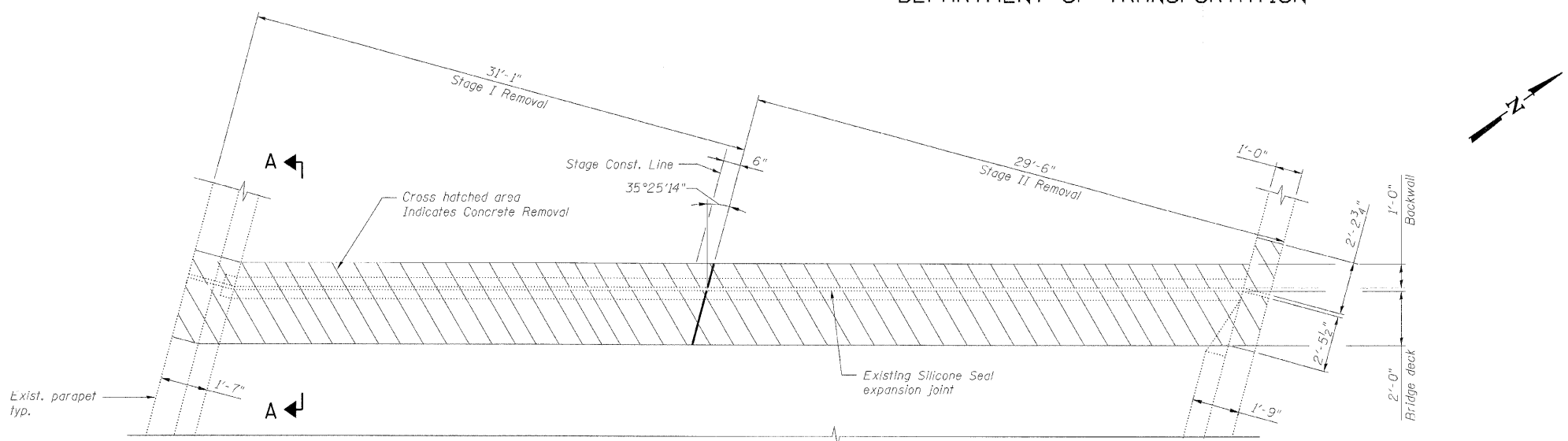
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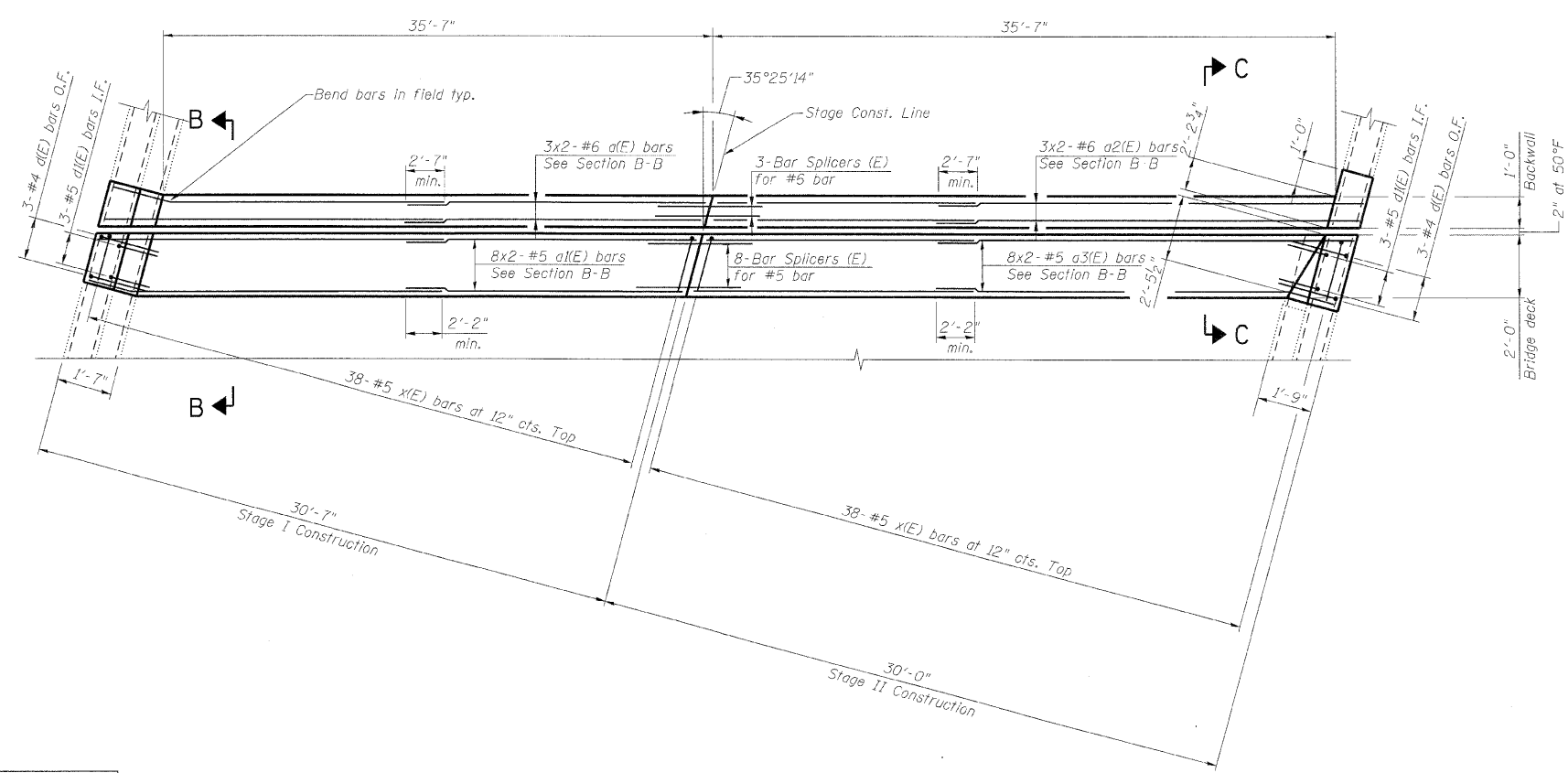
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIAL**

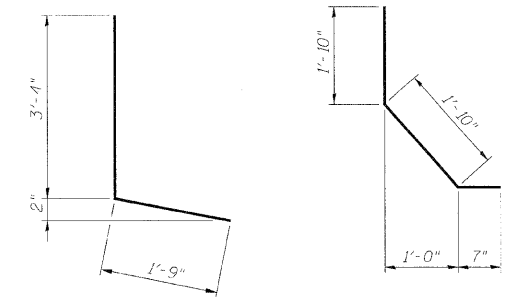
Bar	No.	Size	Length	Shape
a(E)	12	#6	19'-9"	—
a1(E)	32	#5	19'-9"	—
a2(E)	12	#6	19'-5"	—
a3(E)	32	#5	19'-5"	—
d(E)	12	#4	5'-1"	└
d1(E)	12	#5	4'-3"	└
x(E)	152	#5	2'-3"	└
Item	Unit	Total		
Concrete Removal	Cu. Yd.	24.0		
Concrete Superstructure	Cu. Yd.	24.0		
Reinforcement Bars, Epoxy Coated	Pound	2,470		



**EXISTING PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand for East Abutment)

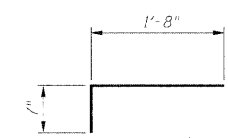


**PROPOSED PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand for East Abutment)



**BAR d(E)**

**BAR d1(E)**



**BAR x(E)**

**Notes:**

1. Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
2. I.F. denotes Inside Face.  
O.F. denotes Outside Face.
3. Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
4. x(E) bar spacing measured along skew.

DESIGNED	TJJ
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

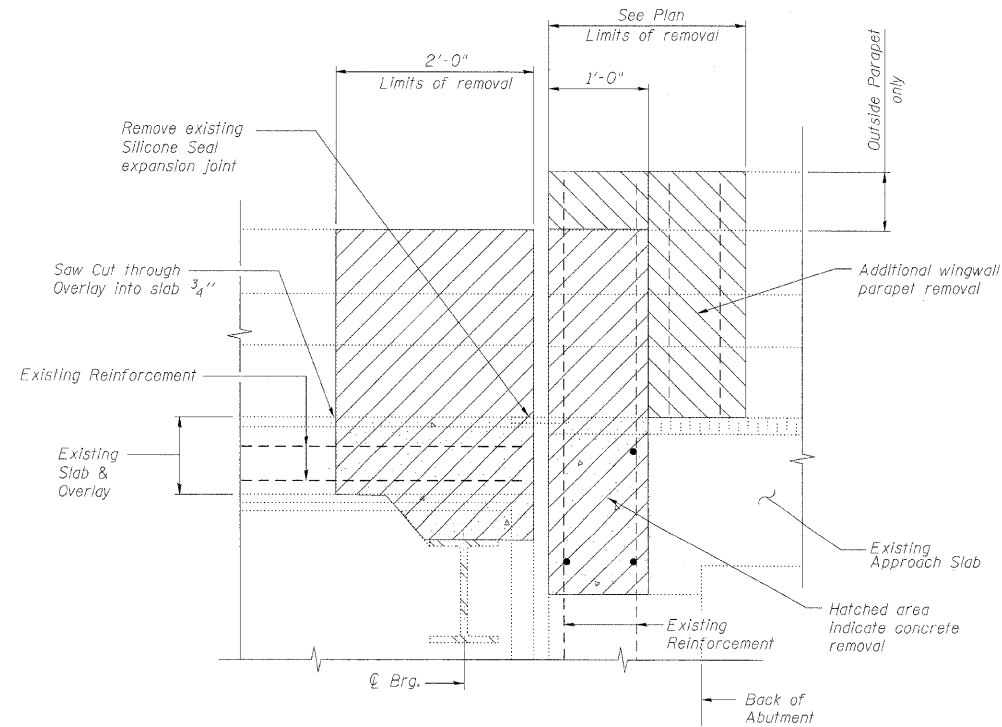
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 5 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 346
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

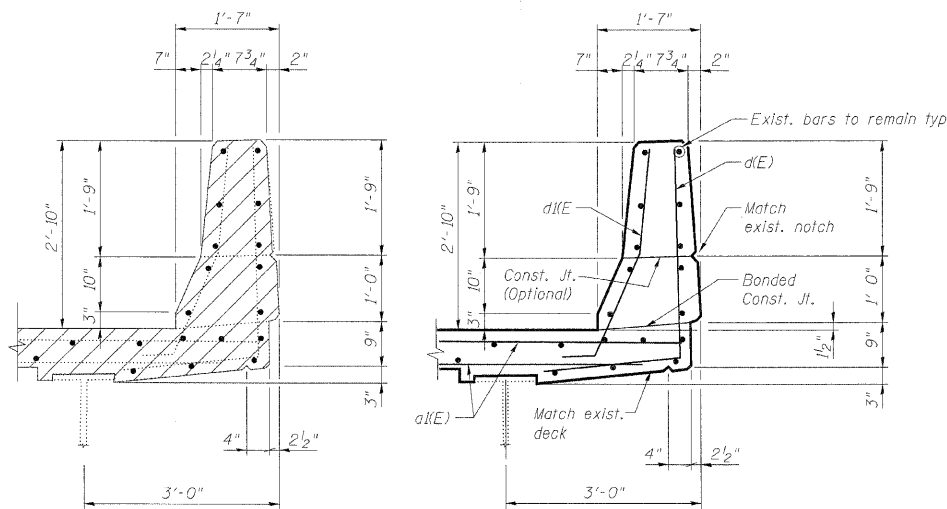
**EXPANSION JOINT REPAIRS  
STRUCTURE NO. 022-0095**

18:06:33  
 I:\10000s\100050\engineering\documents\contract\1\SN.022-0095.0104\_Addison\_Rd\0095-60G51-005-ExpJt-replacement.dgn  
 11/12/2009

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



SECTION A-A

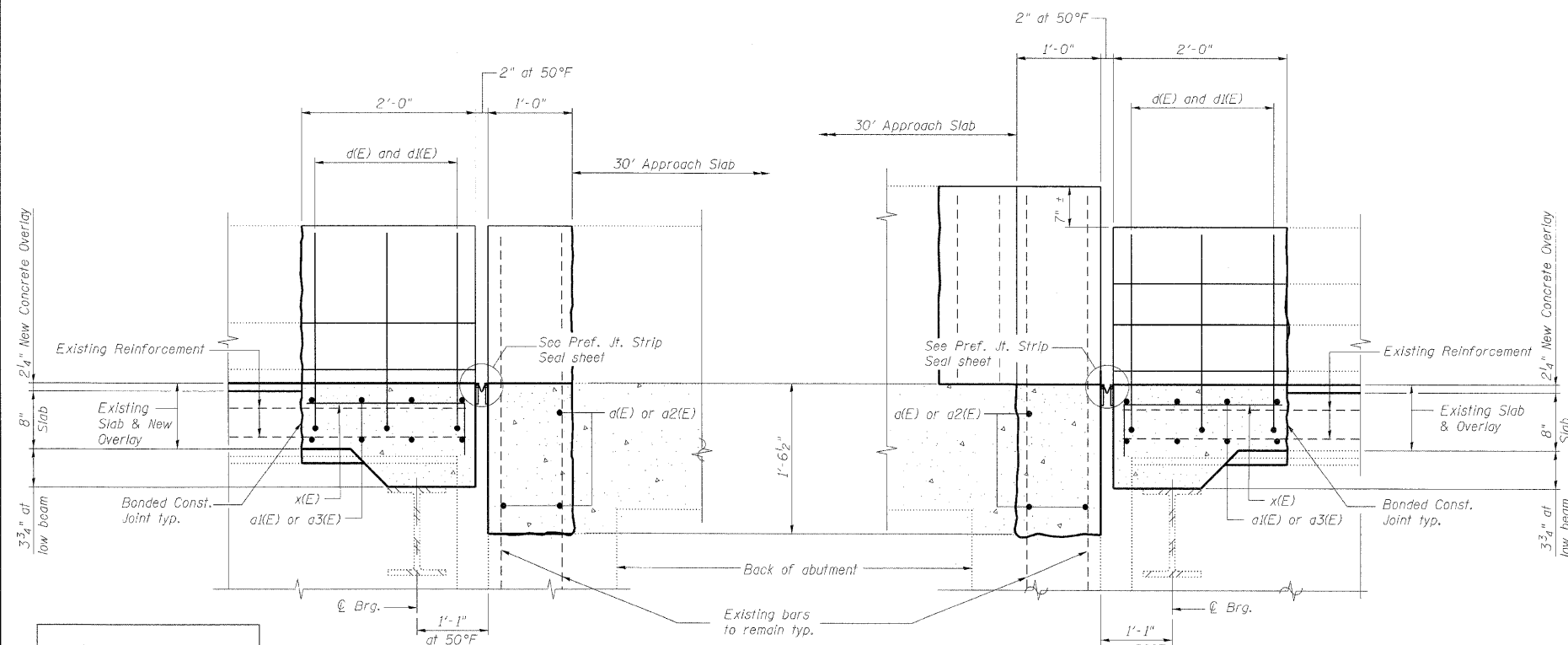


EXISTING INSIDE  
PARAPET SECTION

PROPOSED INSIDE  
PARAPET SECTION

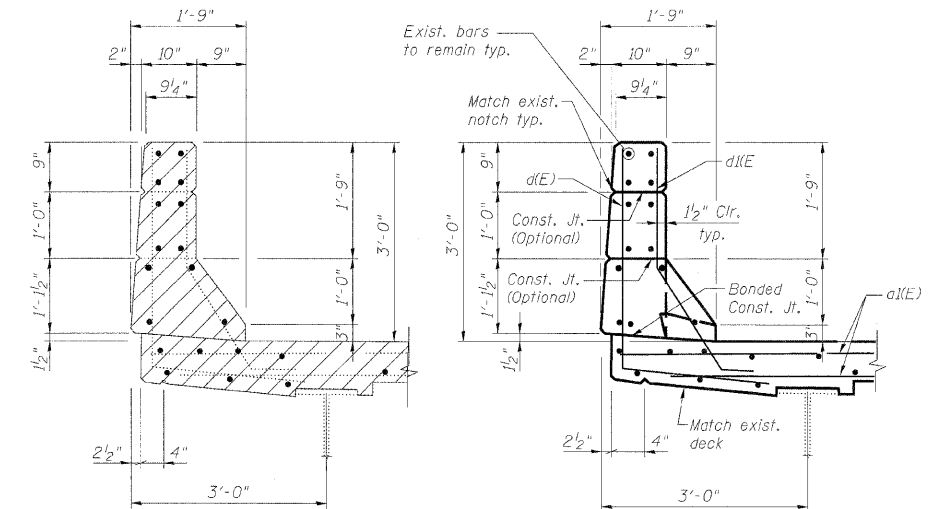
Notes:

- Existing reinforcement bars extending into the concrete 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.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original locations in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and to protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.
- Work this sheet with Expansion Joint Repairs sheet.



SECTION B-B

SECTION C-C



EXISTING OUTSIDE  
PARAPET SECTION

PROPOSED OUTSIDE  
PARAPET SECTION

EXPANSION JOINT DETAILS  
STRUCTURE NO. 022-0095

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

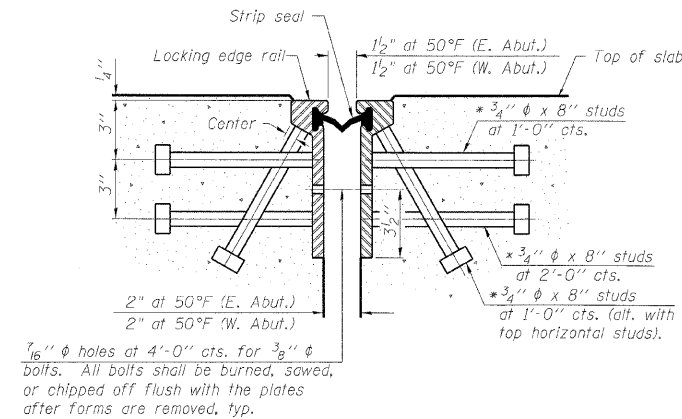
benesch

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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0450 Job No. 10050

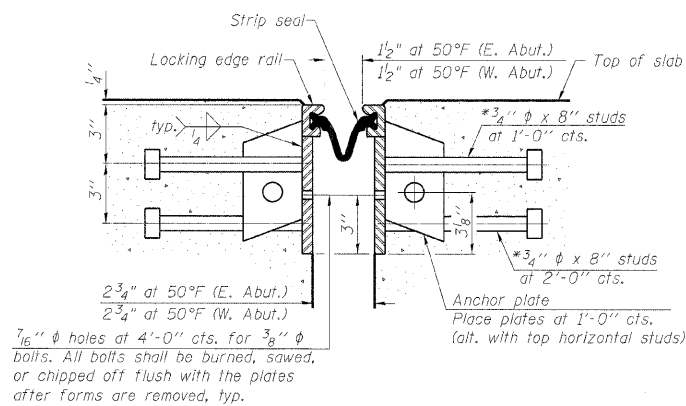
SHEET NO. 6 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 347
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS		FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SECTION THRU  
ROLLED RAIL JOINT



SECTION THRU  
WELDED RAIL JOINT

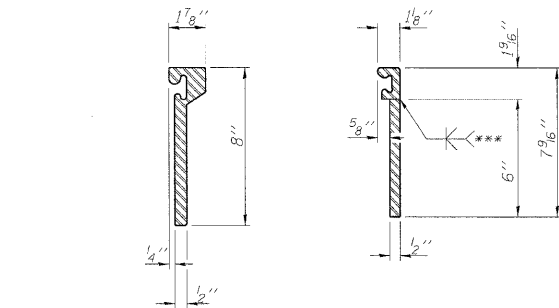
Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

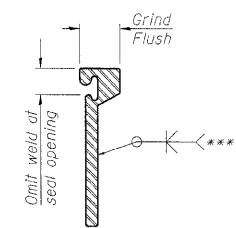
The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



ROLLED  
EXTRUDED RAIL      WELDED RAIL

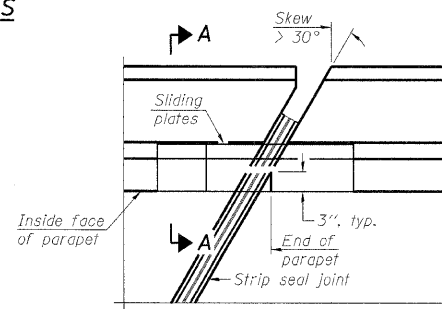


\*\*\*Back gouge not required if complete joint penetration is verified by mock-up.

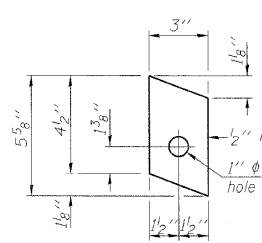
LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

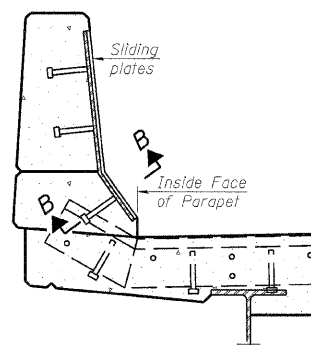
LOCKING EDGE RAILS



PLAN

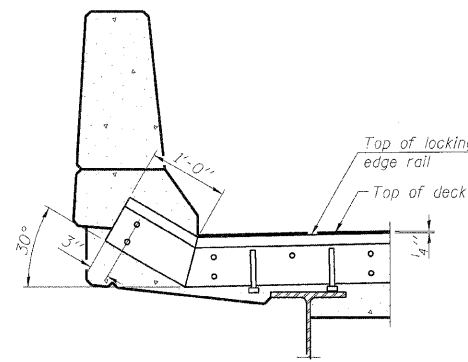


ANCHOR PLATE  
(for welded rail)

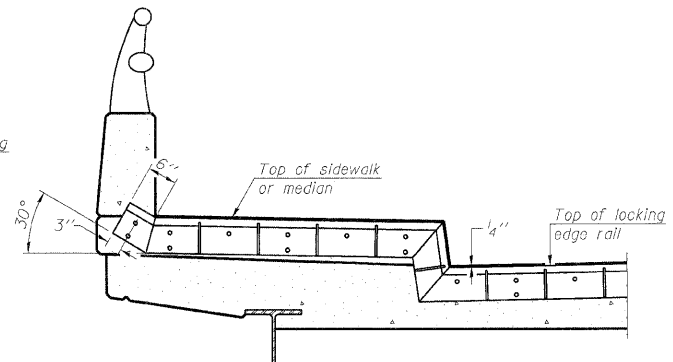


SECTION A-A

POINT BLOCK DETAILS  
(for skews > 30°)



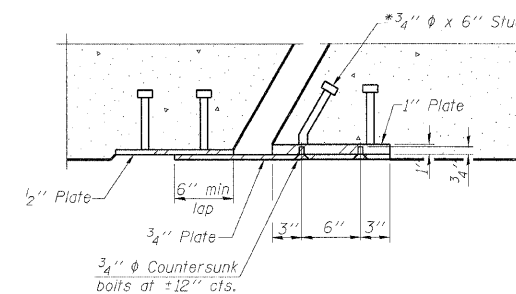
AT PARAPET



AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	145.0

DESIGNED	TJJ
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

EJ-SSJ

10-1-08

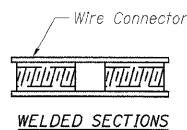
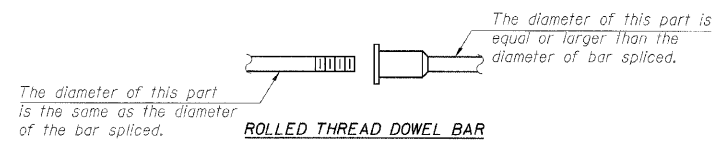
benesch

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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0450      Job No. 10050

SHEET NO. 7	F.A.I. RTE. 290/355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS	SHEET NO.
				546	348
8 SHEETS			CONTRACT NO. 60G51		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

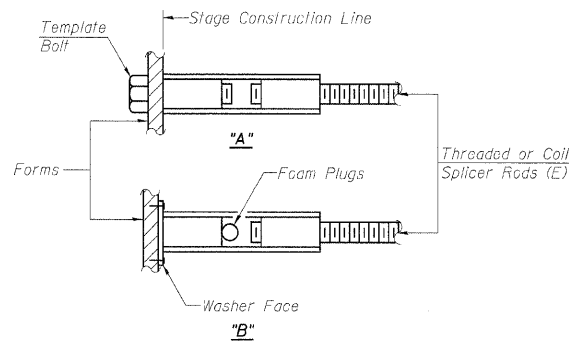
PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0095

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



**INSTALLATION AND SETTING METHODS**

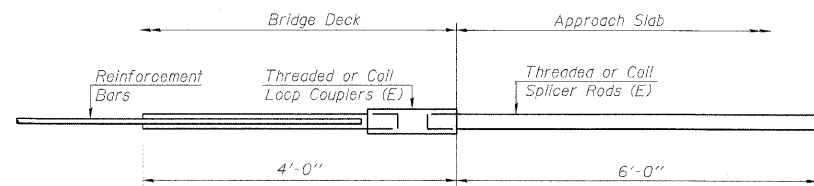
"A" : Set bar splicer assembly by means of a template bolt.  
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
(E) : Indicates epoxy coating.

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

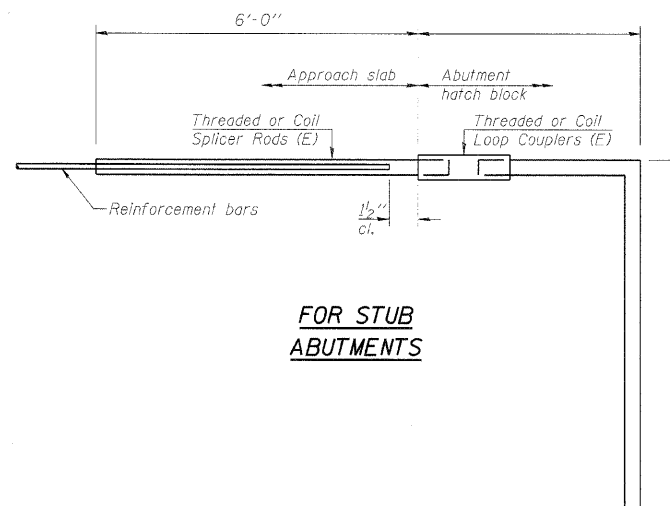
- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_s$   
(Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



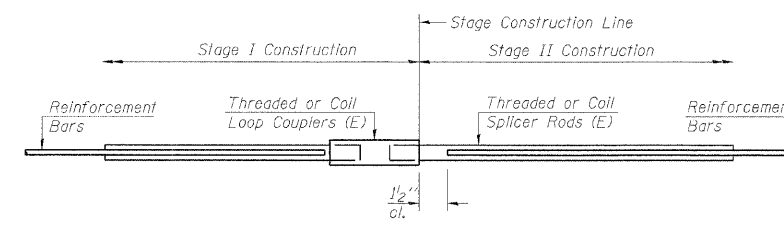
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**FOR STUB ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	16	Deck
#6	5	Deck

**BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0095**

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

BSD-1

10-1-08

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

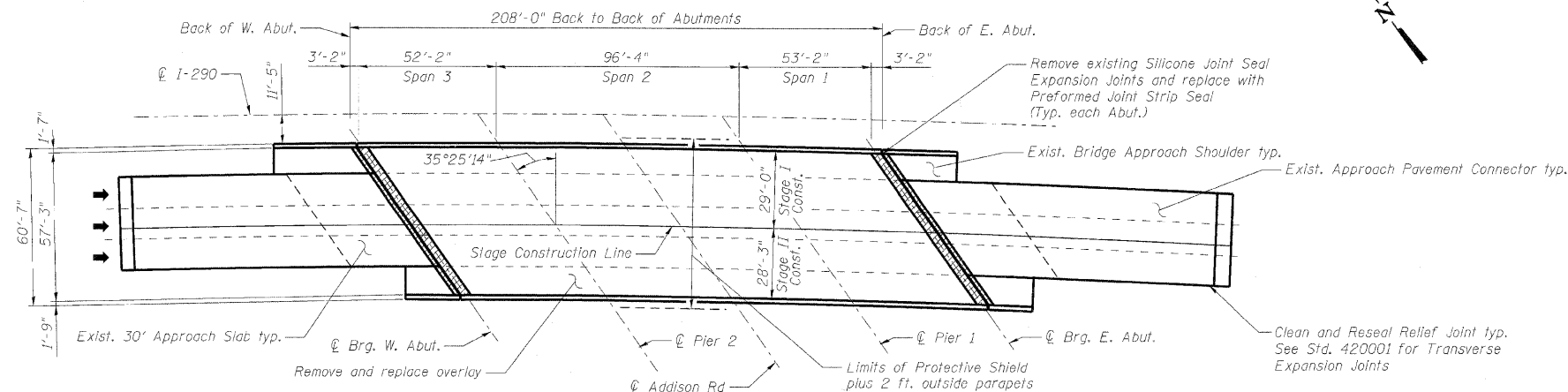
SHEET NO. 8 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 349
	FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 60G51	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

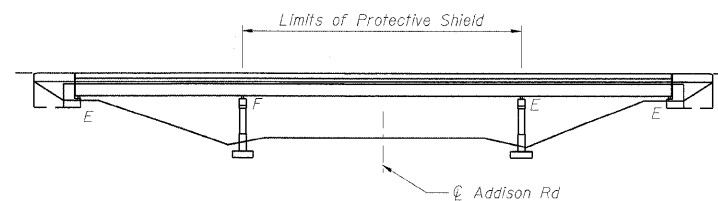
**Existing Structure:**  
The structure is a three-span continuous, composite plate girder structure with an 8-inch cast-in-place concrete deck and a 2 inch concrete overlay.  
The original structure was built in 1970 as FAI Route 290 and is in Section 1984-079-BW. In 1985, the bridge was widened, patched and overlaid, the approach slabs were patched, the expansion joints were reconstructed, and the slopewall was repaired. In 1998, the expansion joints were reconstructed and the approach slabs were repaired.

Stage construction shall be utilized to maintain traffic during construction.

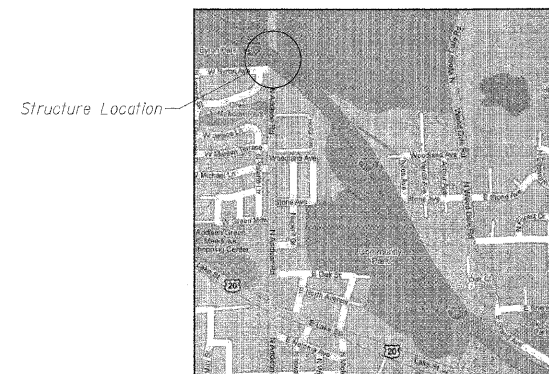
No salvage.



PLAN



ELEVATION



LOCATION SKETCH

**DESIGN SPECIFICATIONS**

2002 AASHTO Standard Specifications  
For Highway Bridges, 17th Edition

**DESIGN STRESSES**

$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi

**SCOPE OF WORK**

1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Reconstruct deck joints at each abutment with preformed joint strip seal.
5. Place new overlay.
6. Clean and reseal relief joints at the end of approach pavement connectors.
7. Apply concrete sealer to parapets, approach slabs, abutment seats and backwalls.



Expiration Date 11-30-10  
DATE: 11/16/09

GENERAL PLAN AND ELEVATION  
I-290 EB OVER ADDISON RD.  
DuPAGE COUNTY  
STATION 122+02  
STRUCTURE NO. 022-0104

DESIGNED	TJJ
CHECKED	AAY
DRAWN	RMG
CHECKED	AAY

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 1 8 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 350
	CONTRACT NO. 60C51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
4. 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.
5. Concrete Sealer shall be applied to the parapets, approach slabs, abutment seats and abutment backwalls. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
6. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
7. Stage construction shall be utilized to maintain traffic during construction.
8. The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
9. Protective Coat shall be applied to the new Latex Concrete Overlay.
10. Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

**INDEX OF SHEETS**

1. General Plan and Elevation
2. General Notes, Bill of Material and Index of Sheets
3. Stage Construction Details
4. Bridge Deck and Approach Slab Repairs
5. Expansion Joint Repairs
6. Expansion Joint Details
7. Prefomed Joint Strip Seal
8. Bar Splicer Assembly Details

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	24.0		24.0
Protective Shield	Sq. Yd.	691		691
Concrete Superstructure	Cu. Yd.	24.0		24.0
Bridge Deck Grooving	Sq. Yd.	1,265		1,265
Protective Coat	Sq. Yd.	1,324		1,324
Reinforcement Bars, Epoxy Coated	Pound	2,470		2,470
Bar Splicers	Each	22		22
Prefomed Joint Strip Seal	Foot	145.0		145.0
Concrete Sealer	Sq. Ft.	4,208	1,053	5,261
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,297		1,297
Approach Slab Repair (Partial Depth)	Sq. Yd.	6.0		6.0
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,297		1,297
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	63.8		63.8
Clean and Reseal Relief Joint	Foot	72.0		72.0

**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0104**

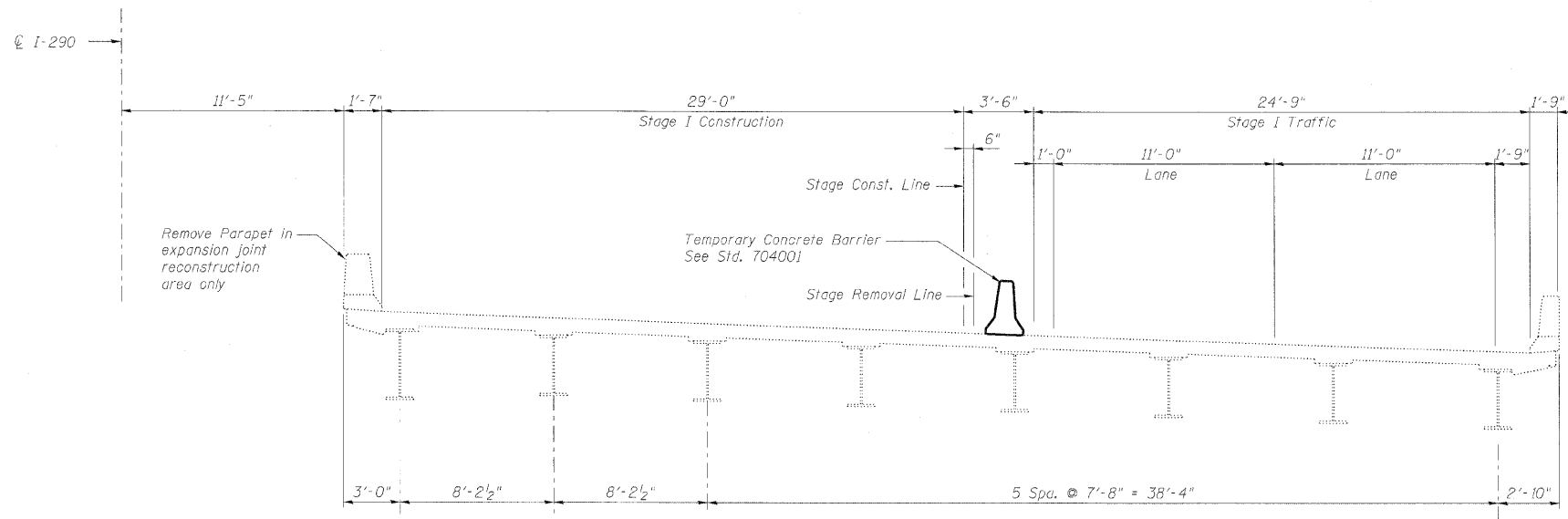
DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

**benesch**

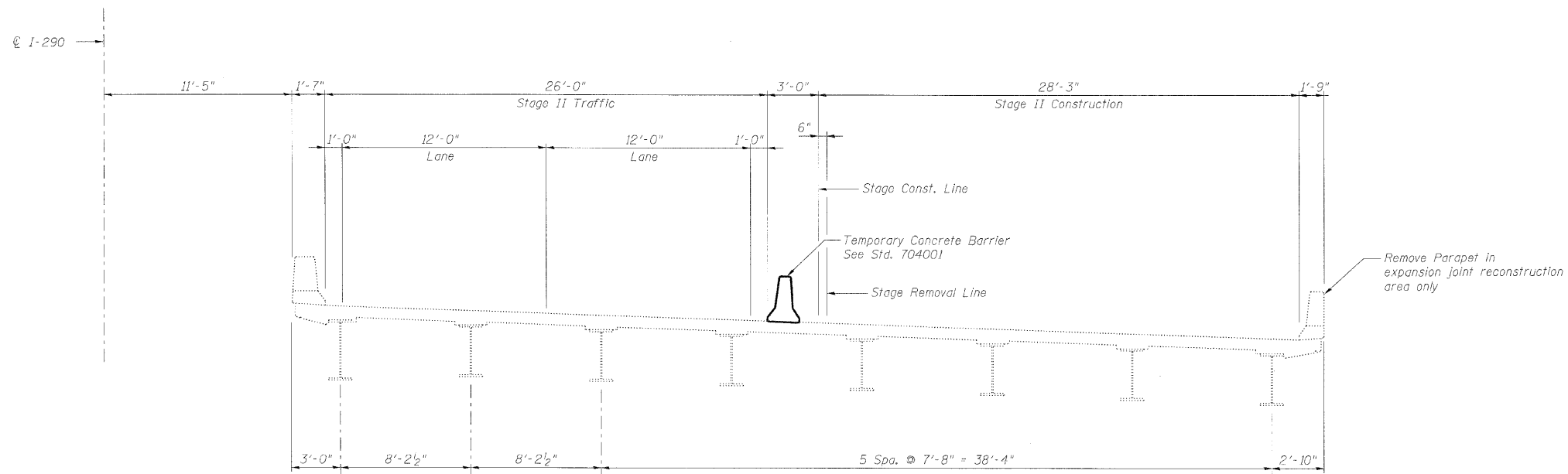
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 2	F.A.I. RTE.	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 351
	290 355				
8 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0104**

DESIGNED -	MFB
CHECKED -	MAC
DRAWN -	VH
CHECKED -	AAV

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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	352
8 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIAL**

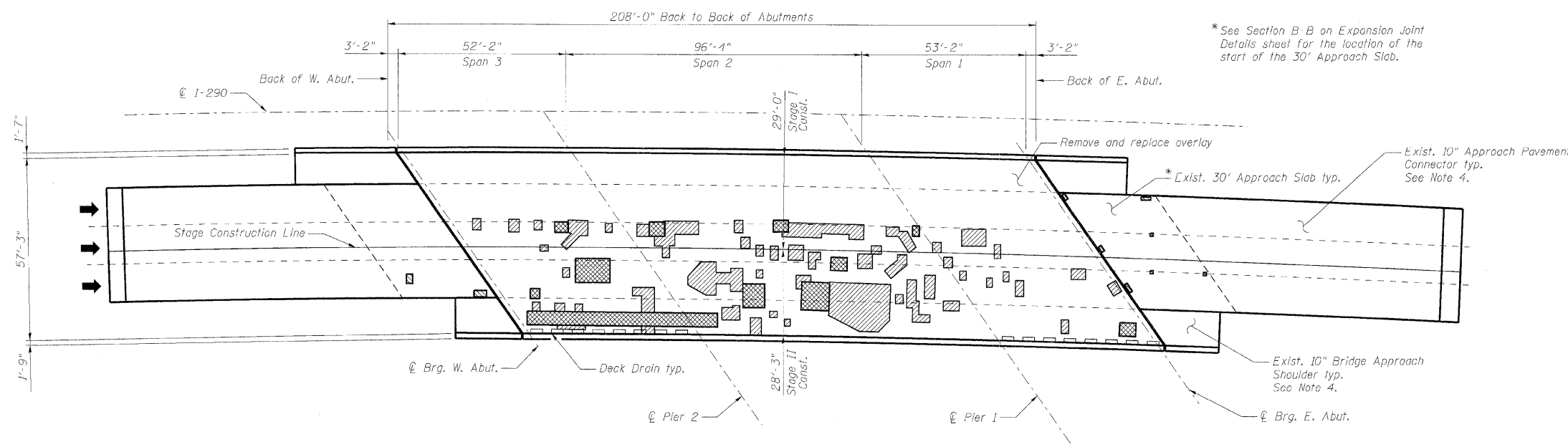
SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	137.3 ▲
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	5.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	63.8
	Approach Slab Repair (Partial Depth)	Sq. Yd.	6.0
	Protective Shield	Sq. Yd.	691
	Bridge Deck Grooving	Sq. Yd.	1,265
	Protective Coat	Sq. Yd.	1,324
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	1,297
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	1,297

▲ For information only to assist the Contractor in bidding.  
See Special Provisions for "Bridge Deck Latex Concrete Overlay".

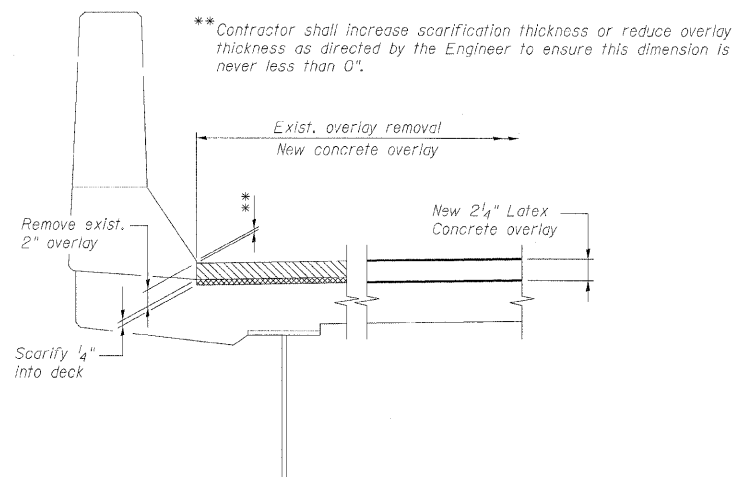
**Notes:**

- Deck and approach slab repair areas are estimated based on an infrared thermographic deck survey (ITDS) report prepared by AECOM and the visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield, required for deck slab and/or parapet repairs, shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned prior to placement of the Latex Concrete Overlay. Cost of cleaning the deck drains is included in Bridge Deck Hydro-Scarification, 1/2".
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

**BRIDGE DECK AND APPROACH  
SLAB REPAIRS  
STRUCTURE NO. 022-0104**



**PLAN**



**SCARIFICATION & OVERLAY  
DETAIL AT PARAPET**

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

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312-565-0450 Job No. 10050

SHEET NO. 4 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 353
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

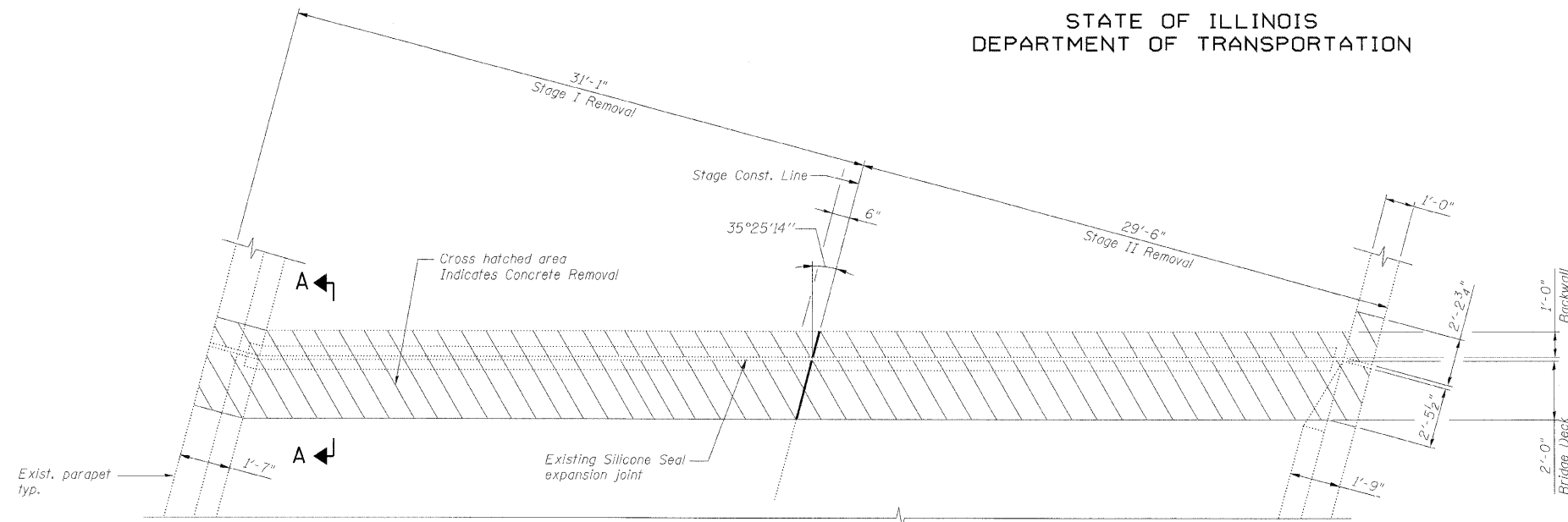
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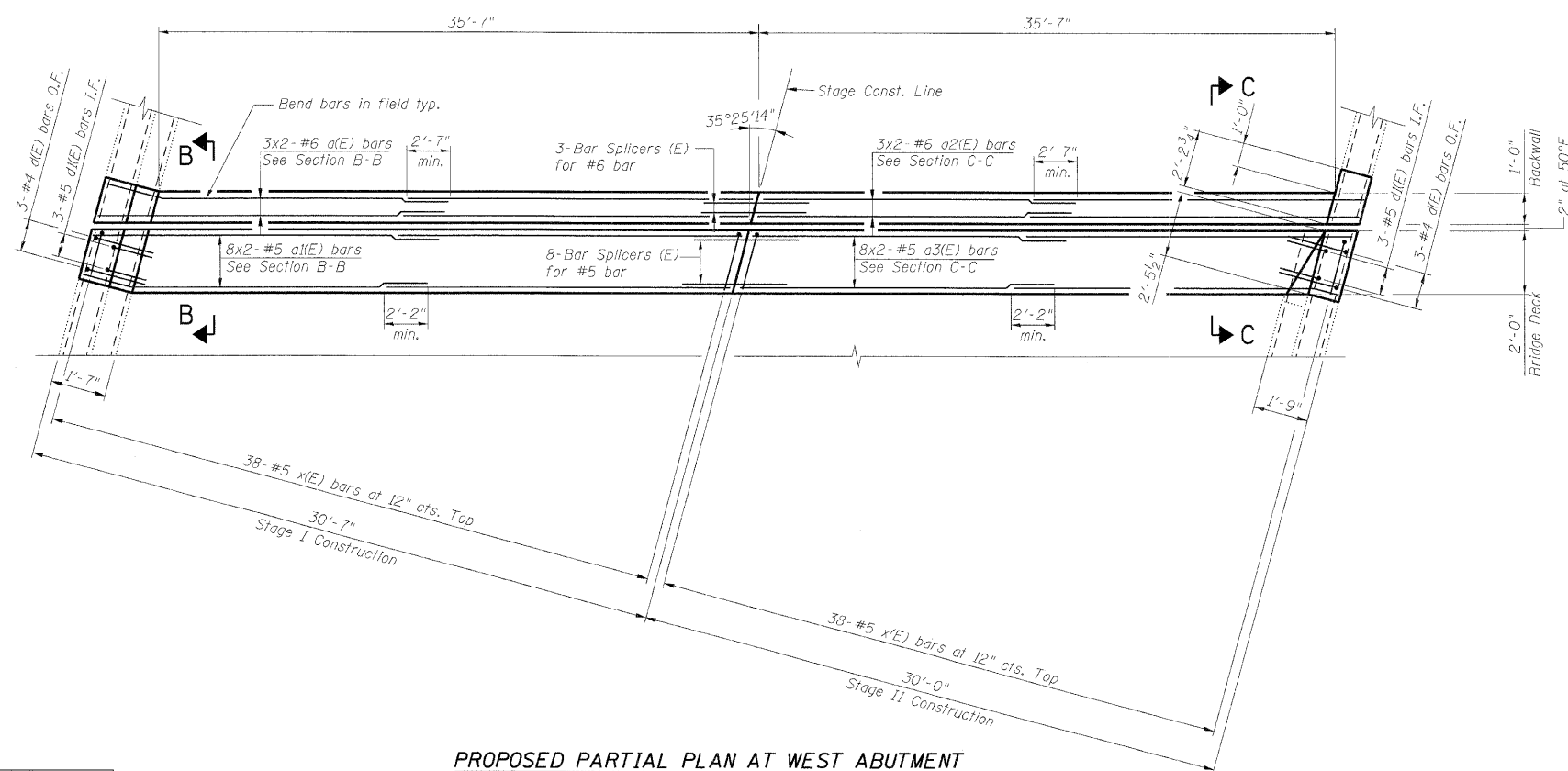
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIAL**

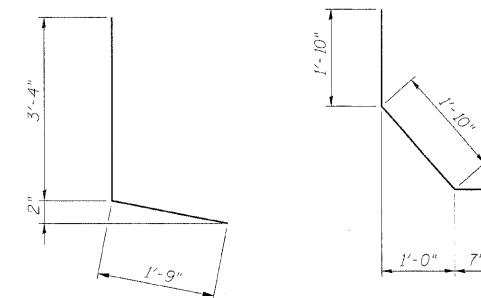
Bar	No.	Size	Length	Shape
a(E)	12	#6	19'-9"	—
a1(E)	32	#5	19'-9"	—
a2(E)	12	#6	19'-5"	—
a3(E)	32	#5	19'-5"	—
d(E)	12	#4	5'-1"	└
d1(E)	12	#5	4'-3"	└
x(E)	152	#5	2'-3"	└
Item	Unit	Total		
Concrete Removal	Cu. Yd.	24.0		
Concrete Superstructure	Cu. Yd.	24.0		
Reinforcement Bars, Epoxy Coated	Pound	2,470		



**EXISTING PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand for East Abutment)

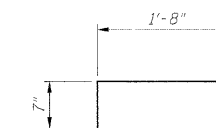


**PROPOSED PARTIAL PLAN AT WEST ABUTMENT**  
(Opposite Hand for East Abutment)



**BAR d(E)**

**BAR d1(E)**



**BAR x(E)**

**Notes:**

1. Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
2. I.F. denotes Inside Face.  
O.F. denotes Outside Face.
3. Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.
4. x(E) bar spacing measured along skew.

**EXPANSION JOINT REPAIRS  
STRUCTURE NO. 022-0104**

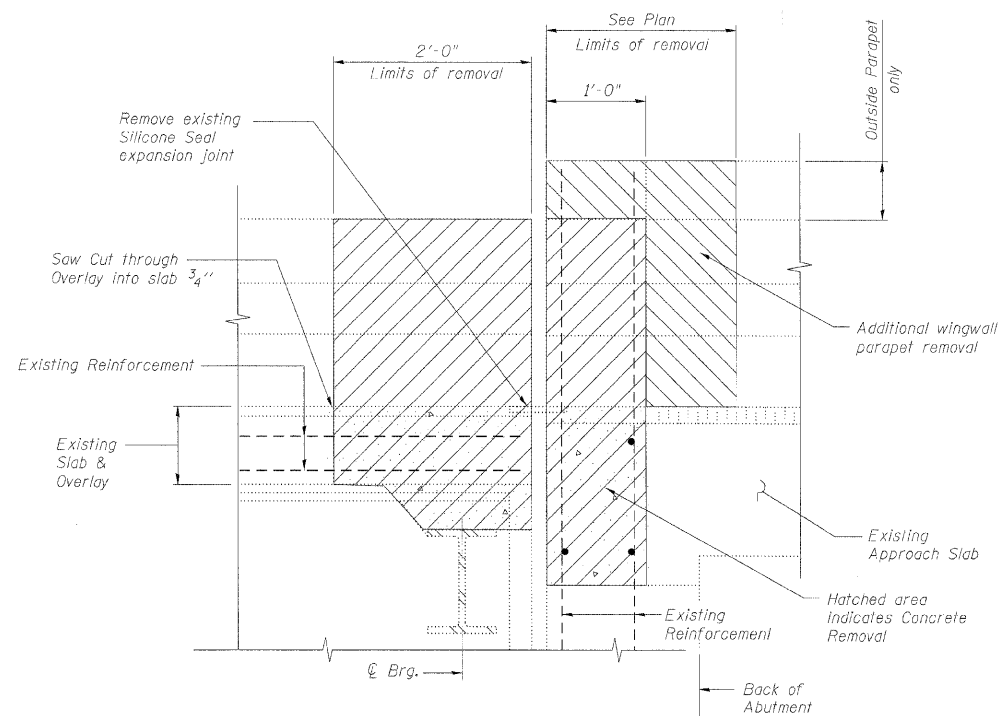
DESIGNED	JLS
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

**benesch**

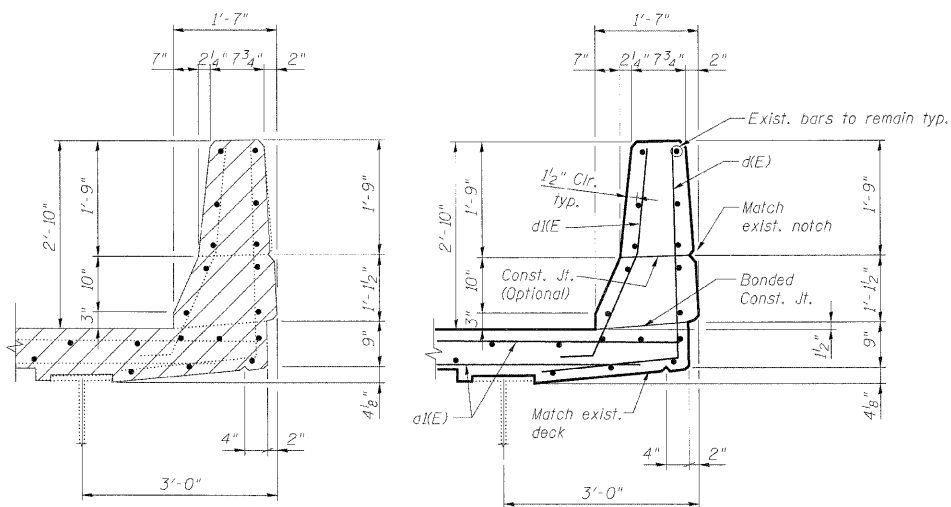
alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 5 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 354
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



SECTION A-A

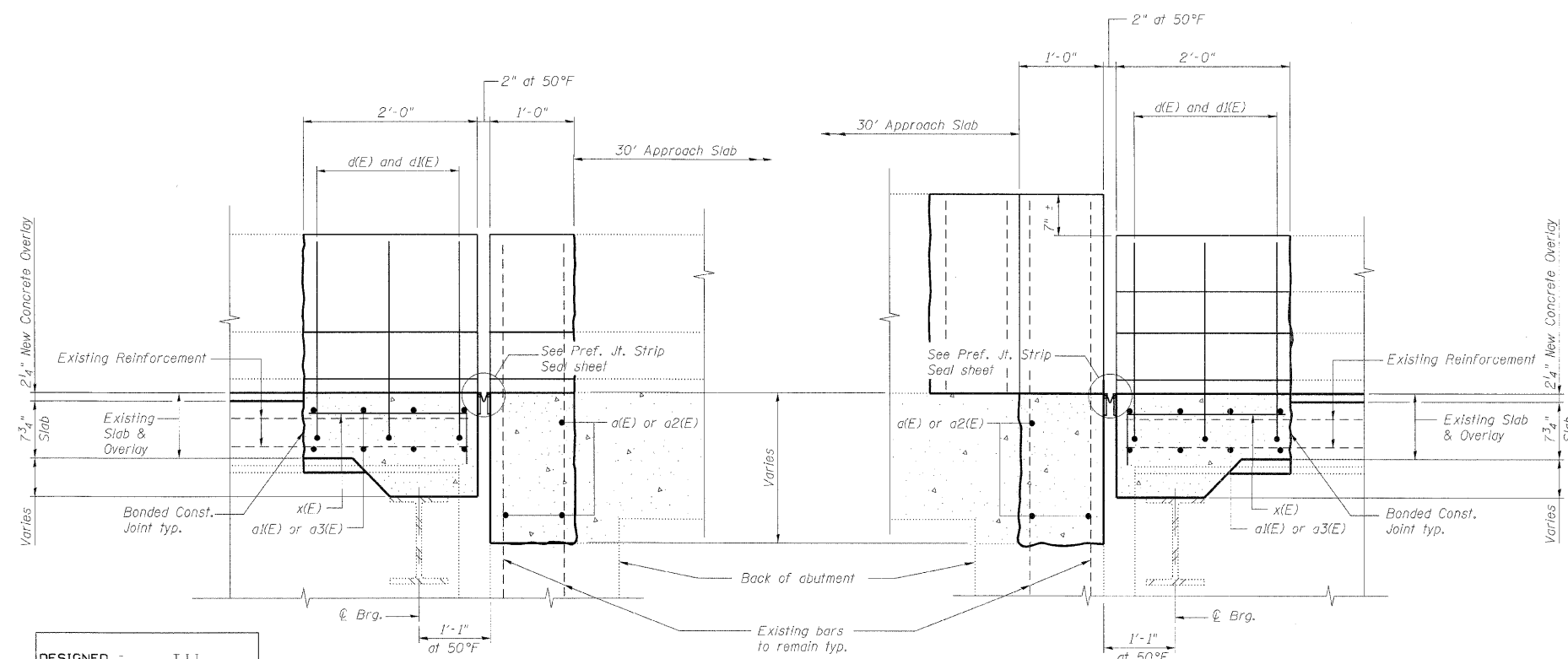


EXISTING INSIDE  
PARAPET SECTION

PROPOSED INSIDE  
PARAPET SECTION

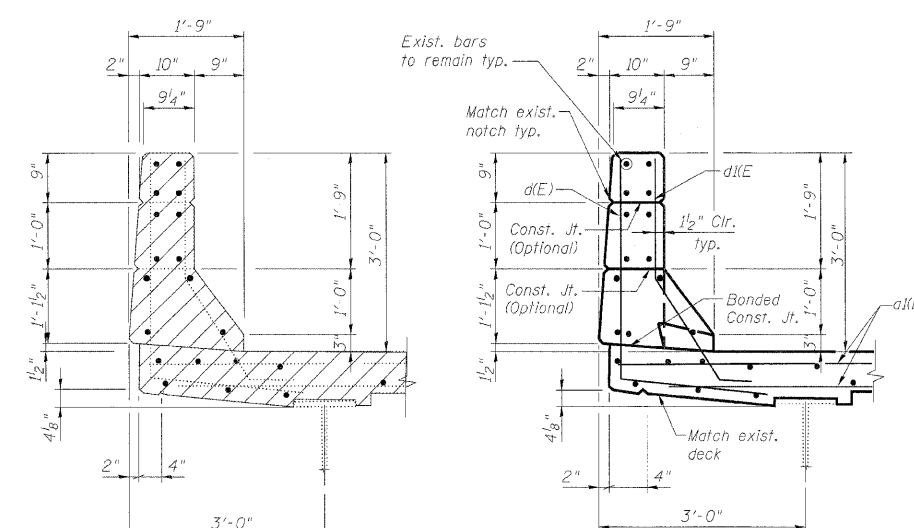
Notes:

- Existing reinforcement bars extending into the concrete 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.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original locations in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- Work this sheet with Expansion Joint Repairs sheet.



SECTION B-B

SECTION C-C



EXISTING OUTSIDE  
PARAPET SECTION

PROPOSED OUTSIDE  
PARAPET SECTION

EXPANSION JOINT DETAILS  
STRUCTURE NO. 022-0104

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	VH
CHECKED -	AAV

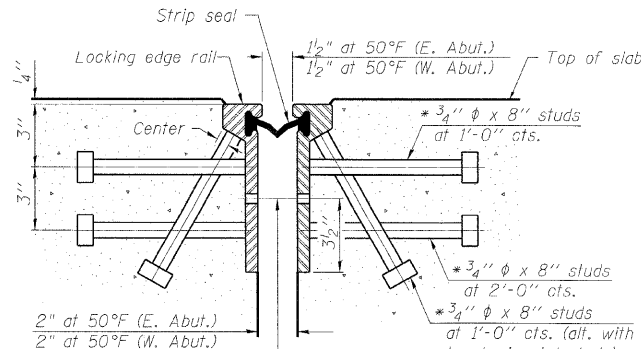
benesch

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 6 8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 355
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

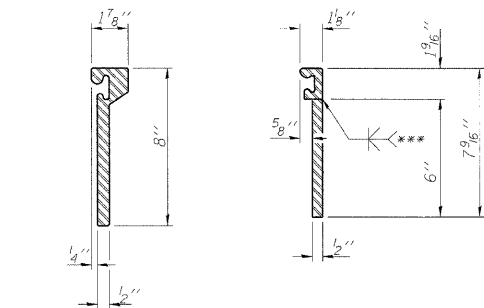
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

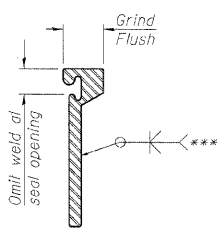


7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

SECTION THRU  
ROLLED RAIL JOINT



ROLLED  
EXTRUDED RAIL      WELDED RAIL

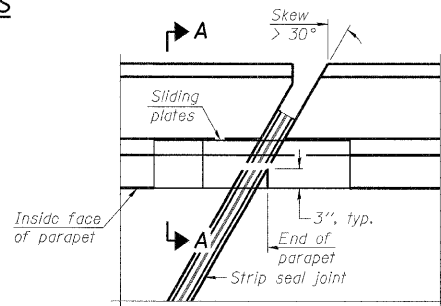


\*\*\*Back gauge not required if complete joint penetration is verified by mock-up.

LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

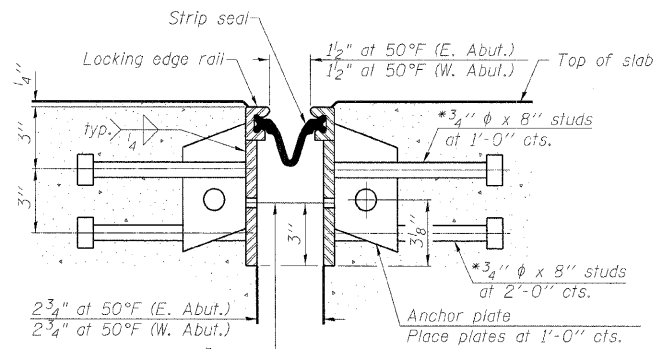
LOCKING EDGE RAILS



PLAN

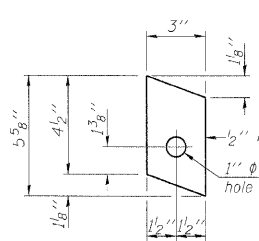
PLAN

SECTION THRU  
WELDED RAIL JOINT



7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

SECTION THRU  
WELDED RAIL JOINT

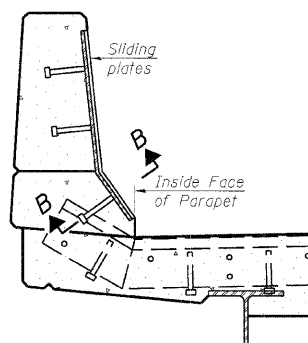


ANCHOR PLATE  
(for welded rail)

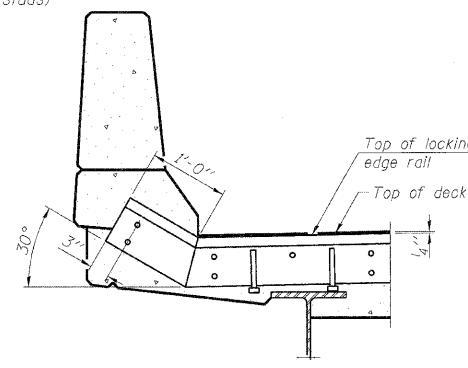
ANCHOR PLATE  
(for welded rail)

SECTION A-A

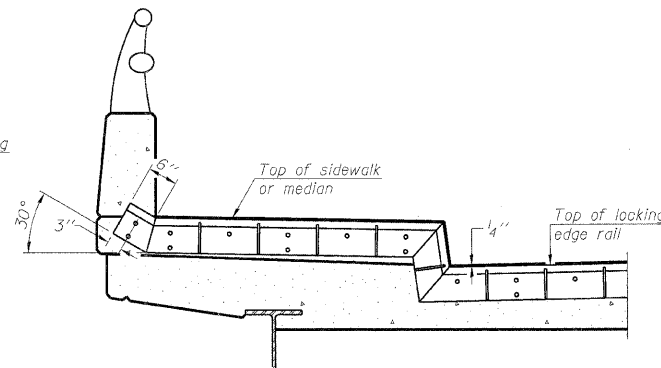
POINT BLOCK DETAILS  
(for skews > 30°)



POINT BLOCK DETAILS  
(for skews > 30°)



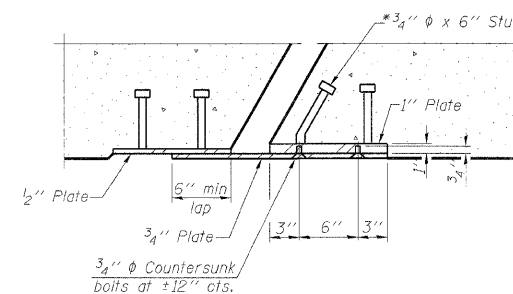
AT PARAPET



AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	145.0

DESIGNED	TJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

EJ-SSJ

10-1-08

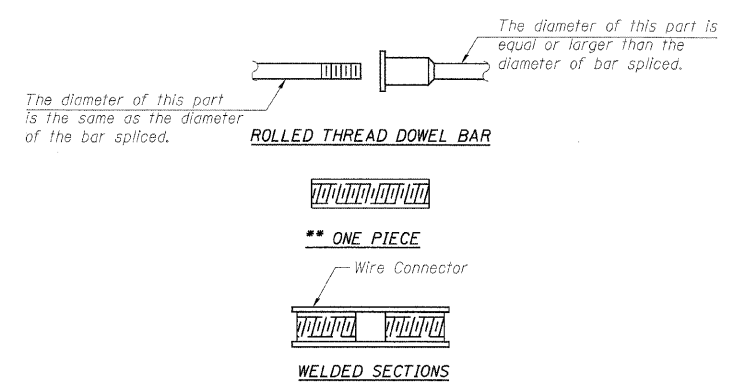
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312-665-0450 Job No. 10050

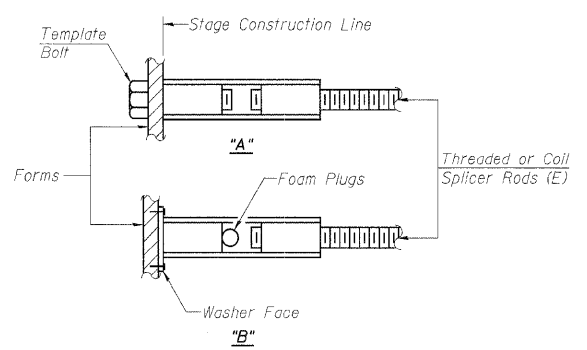
SHEET NO.	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
7	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	356
8 SHEETS					
CONTRACT NO. 60G51					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0104

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**BAR SPLICER ASSEMBLY ALTERNATIVES**  
 \*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.

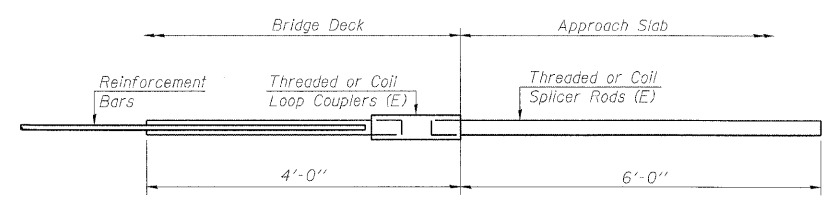


**INSTALLATION AND SETTING METHODS**  
 "A" : Set bar splicer assembly by means of a template bolt.  
 "B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
 (E) : Indicates epoxy coating.

**NOTES**  
 Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
 Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
 All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
 Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

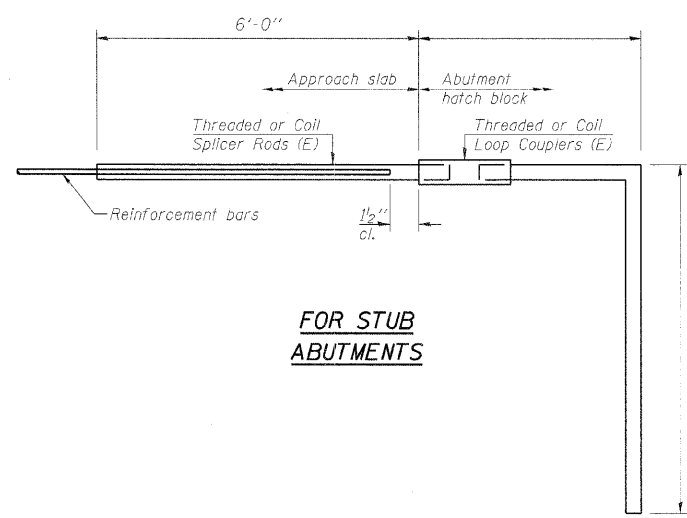
- ① Minimum Capacity =  $1.25 \times f_y \times A_t$   
 (Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_t$   
 (Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_t$  = Tensile stress area of lapped reinforcement bars.  
 \* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



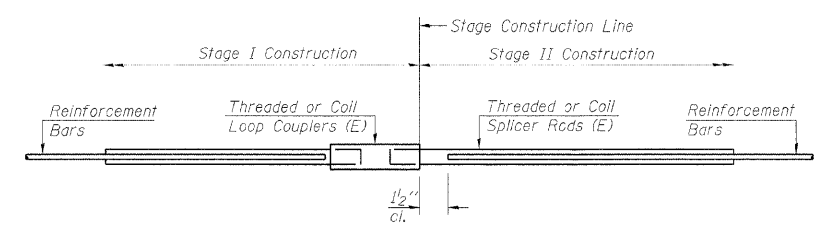
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**FOR STUB ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	16	Deck
#6	6	Deck

DESIGNED -	JLS
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

BSD-1 10-1-08

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 312-565-0450 Job No. 10050

SHEET NO. 8 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 357
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

**BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0104**

x:\10000s\100050\engineering\documents\contract\1\SN.022-0095.0104\_Address\_Rd\0104-60G51-008-BarSplicer.dgn 18:07:43 11\12\2009

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**Existing Structure:**  
The structure is a nine-span continuous, composite plate girder structure with an 8 1/2-inch cast-in-place concrete deck and a 2-inch concrete overlay. The original structure was built in 1970 as FAI Route 90, Sections 22-IHB-5 & 22-IHB-8. In 1988, the bridge was widened, patched and overlaid, the approach slabs were patched, and the expansion joints were reconstructed. In 1998, the deck and the approach slabs were repaired.

Stage construction shall be utilized to maintain traffic during construction.

No salvage

**DESIGN SPECIFICATIONS**

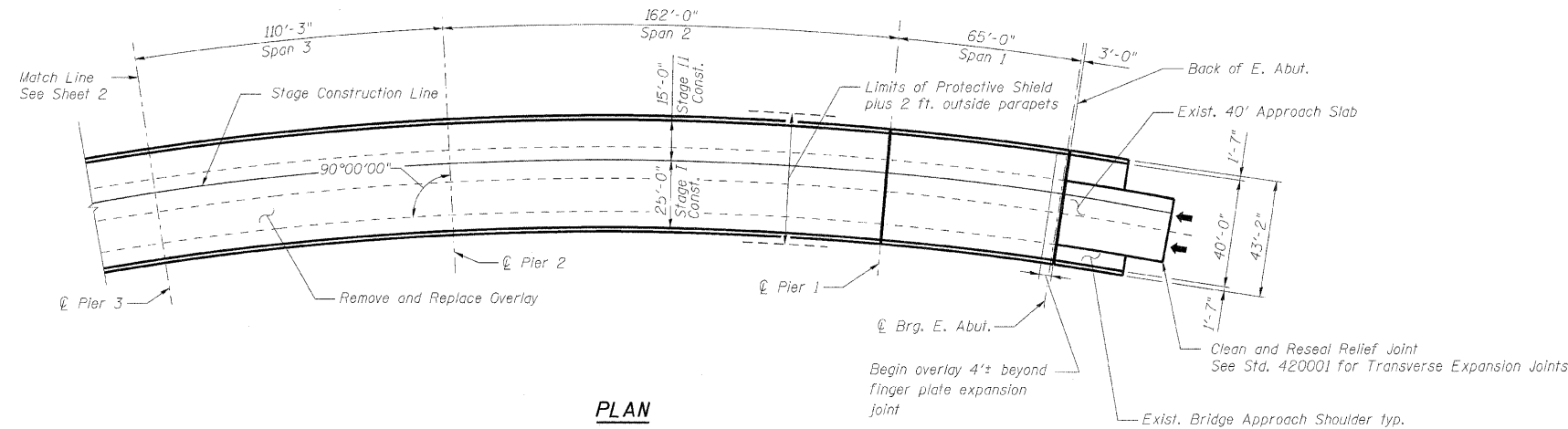
2002 AASHTO Standard Specifications  
for Highway Bridges, 17th Edition

**DESIGN STRESSES**

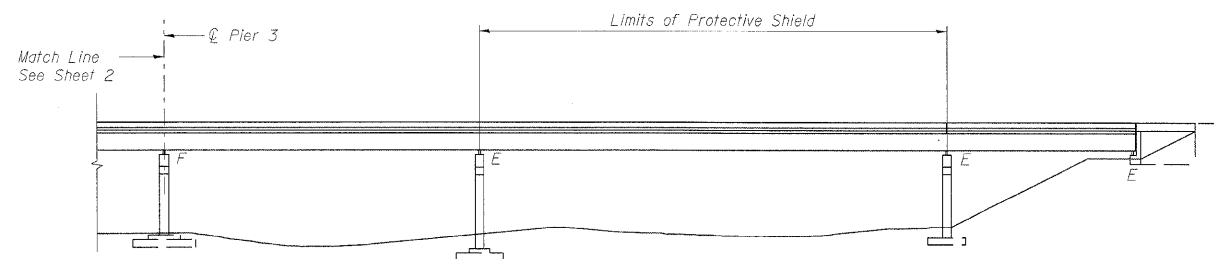
$f'_c = 3,500 \text{ psi}$   
 $f_y = 60,000 \text{ psi}$

**SCOPE OF WORK**

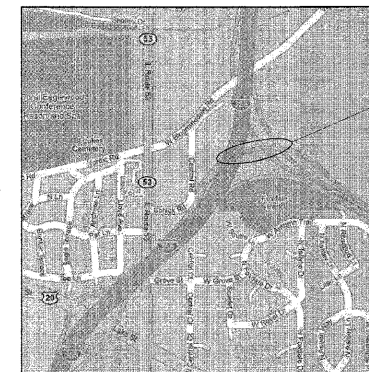
1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Replace preformed joint seal with silicone joint seal at Piers 1 and 8.
5. Place new overlay.
6. Clean and reseal relief joints at the end of approach slabs.
7. Clean trough under fingerplate expansion joint at both abutments and Pier 5.
8. Apply concrete sealer to top inside face of parapets and abutment wingwalls, approach slabs, tops of Piers 1 and 8, abutment seats and abutment backwalls.



**PLAN**



**ELEVATION**



**LOCATION SKETCH**



**GENERAL PLAN AND ELEVATION  
1 OF 3  
I-290 WB OVER I-290 EB & I-355  
DuPAGE COUNTY  
STATION 24+17  
STRUCTURE NO. 022-0094**

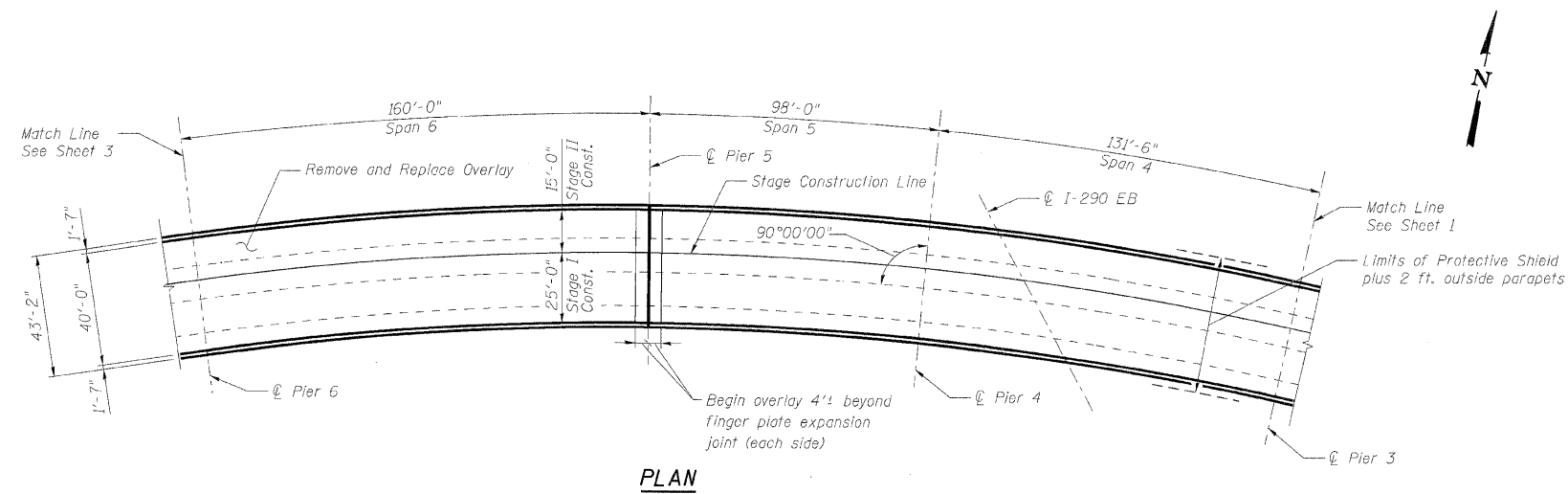
DESIGNED	-	TJJ
CHECKED	-	AAV
DRAWN	-	RMG
CHECKED	-	AAV

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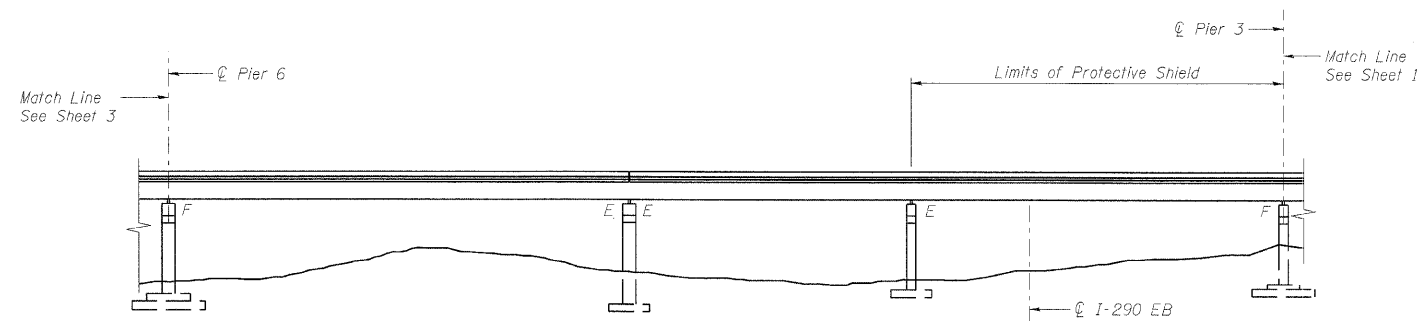
alfred benesch & company  
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 1  8 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 358
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN



ELEVATION

GENERAL PLAN AND ELEVATION  
2 OF 3  
I-290 WB OVER I-290 EB & I-355  
DuPAGE COUNTY  
STATION 24+17  
STRUCTURE NO. 022-0094

DESIGNED	-	TJJ
CHECKED	-	AAV
DRAWN	-	RMG
CHECKED	-	AAV

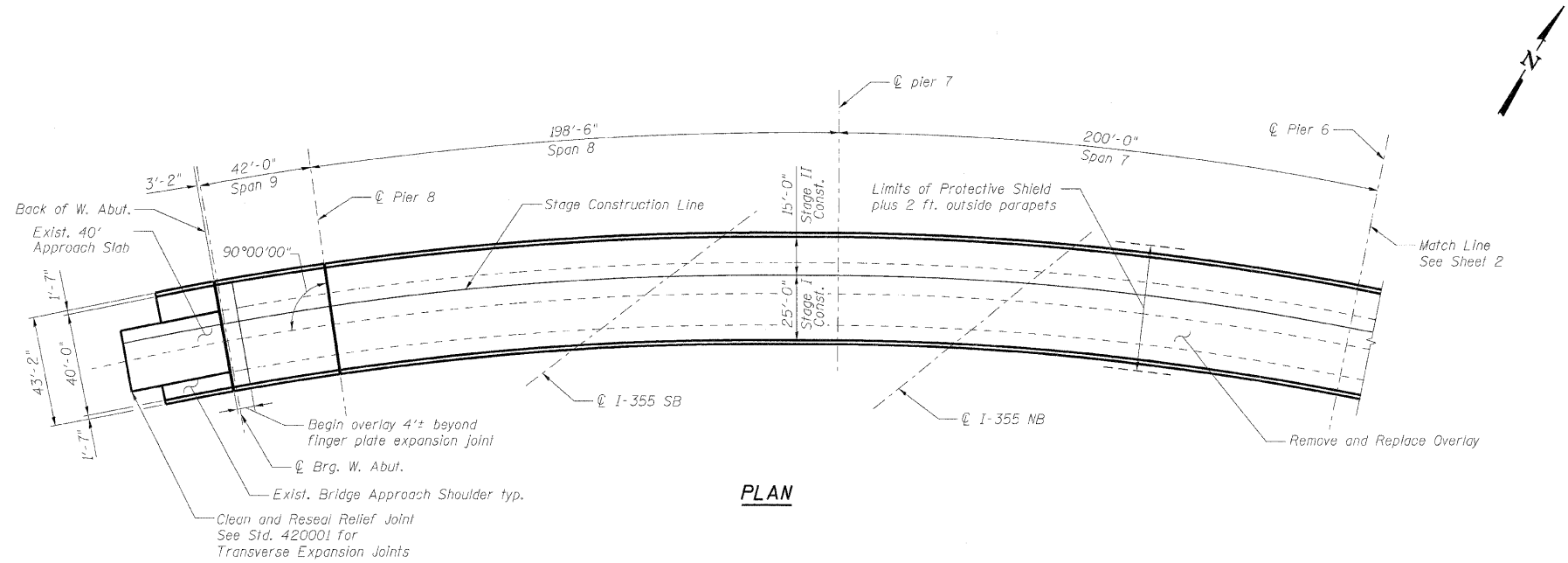
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Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-566-0460 Job No. 10060

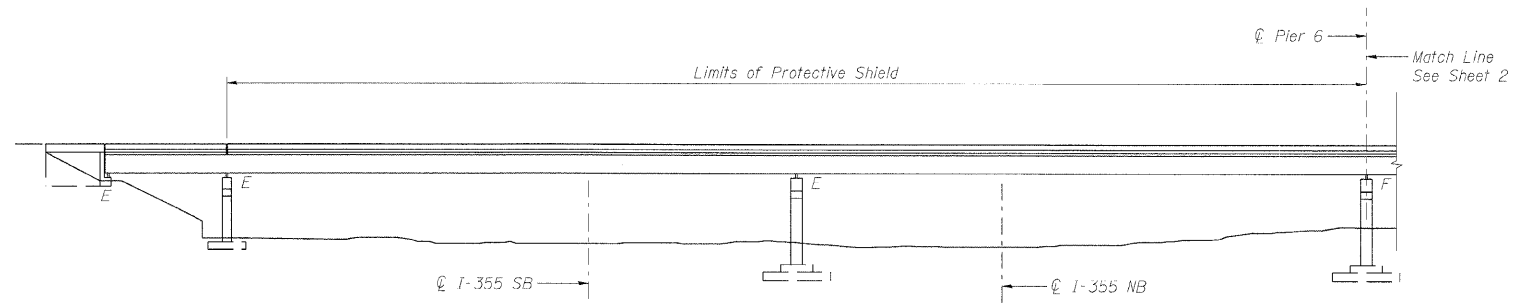
SHEET NO. 2  8 SHEETS	F.A.I. RTE. 290	SECTION 221, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 359
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN



ELEVATION

GENERAL PLAN AND ELEVATION  
3 OF 3  
I-290 OVER I-290 EB & I-355  
DuPAGE COUNTY  
STATION 24+17  
STRUCTURE NO. 022-0094

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 3 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 360
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

- Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
- 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.
- Concrete Sealer shall be applied to top inside face of parapets and abutment wingwalls, approach slabs, abutment seats and abutment backwalls, and seats for Piers 1 and 8. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost Included with Concrete Sealer.
- The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- Stage construction shall be utilized to maintain traffic during construction.
- Protective Coat shall be applied to the new Latex Concrete Overlay.

**INDEX OF SHEETS**

- General Plan and Elevation (1 of 3)
- General Plan and Elevation (2 of 3)
- General Plan and Elevation (3 of 3)
- General Notes, Bill of Material and Index of Sheets
- Stage Construction Details
- Bridge Deck and Approach Slab Repairs (1 of 3)
- Bridge Deck and Approach Slab Repairs (2 of 3)
- Bridge Deck and Approach Slab Repairs (3 of 3)

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Protective Shield	Sq. Yd.	3,627		3,627
Bridge Deck Grooving	Sq. Yd.	4,861		4,861
Protective Coat	Sq. Yd.	5,188		5,188
Concrete Sealer	Sq. Ft.	10,756	1,109	11,865
Silicone Joint Sealer	Foot	84.0		84.0
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	5,117		5,117
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0		5.0
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	5,117		5,117
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	298.8		298.8
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	200		200
Clean and Reseal Relief Joint	Foot	48.0		48.0
Clean Trough	Each	3		3

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0094**

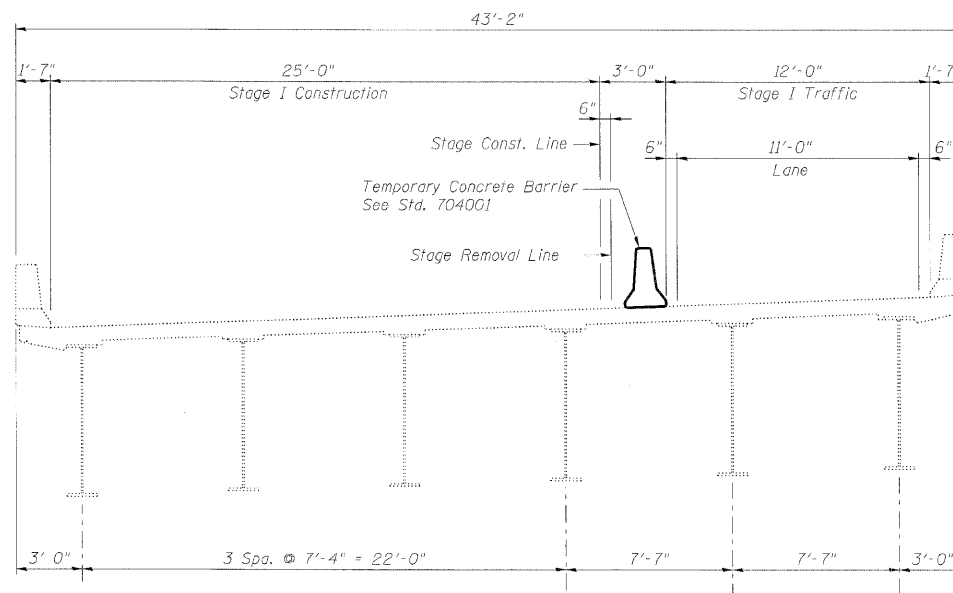
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312-565-0450 Job No. 10050

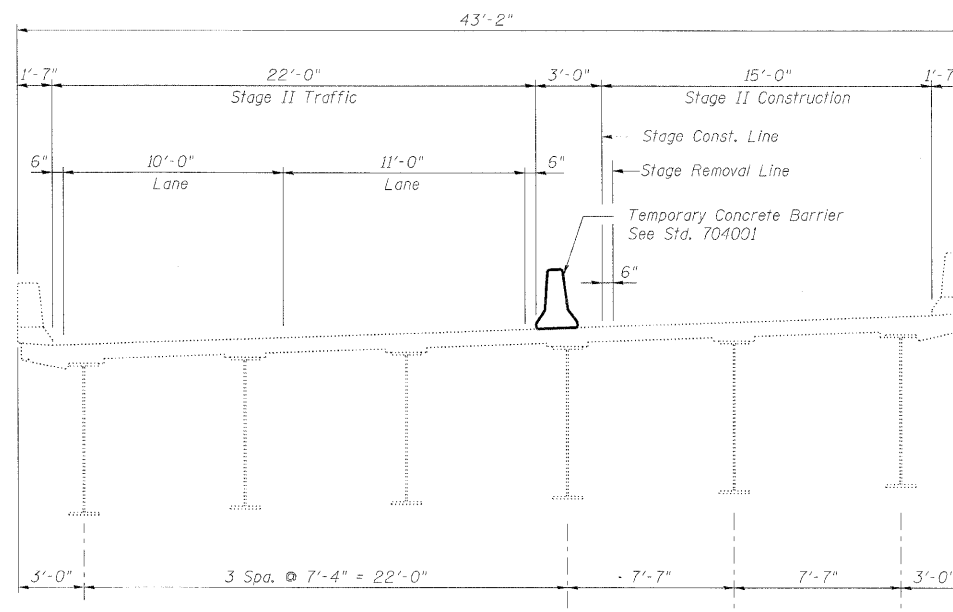
SHEET NO. 4 8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 361
	CONTRACT NO. 60G51			ILLINOIS FED. AID PROJECT	



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking West)



**STAGE II CROSS SECTION**  
(Looking West)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0094**

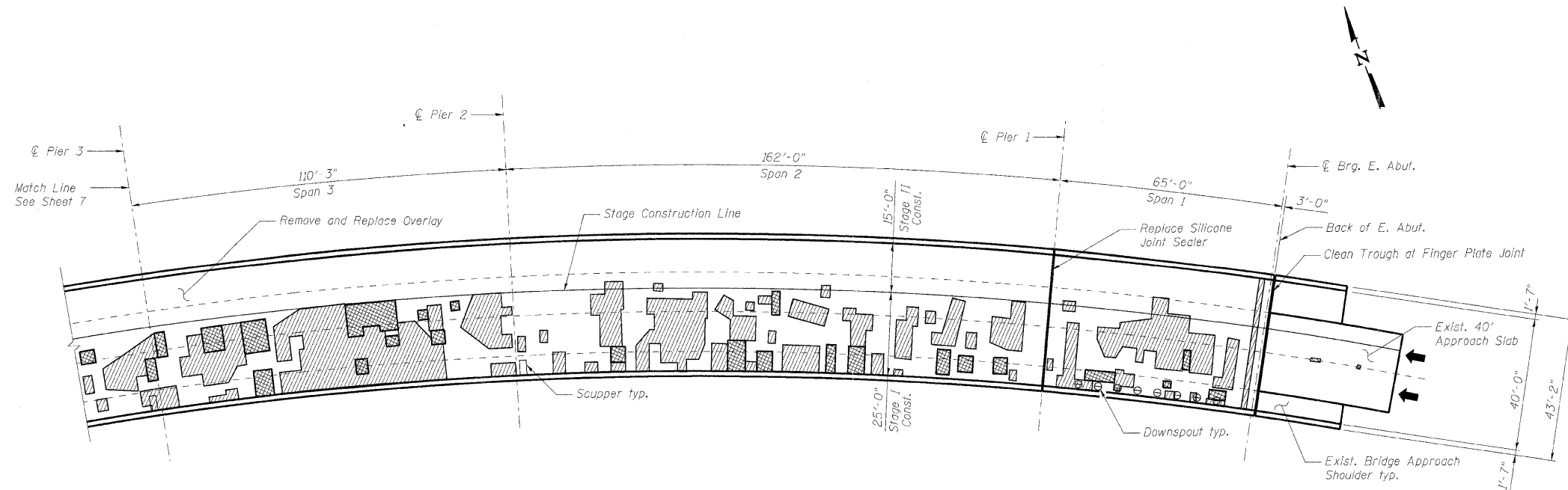
DESIGNED -	AAY
CHECKED -	KJN
DRAWN -	VH
CHECKED -	AAY

**benesch**

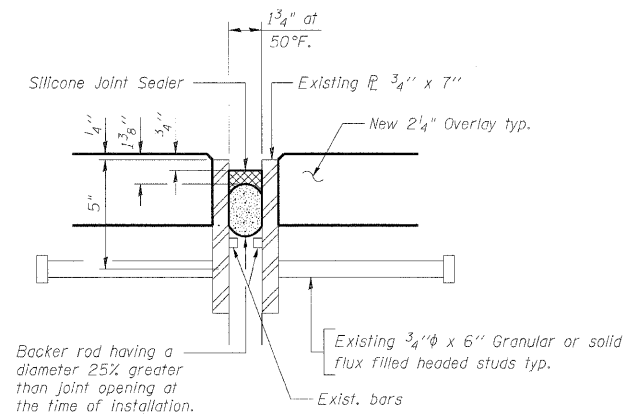
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 5  8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 362
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

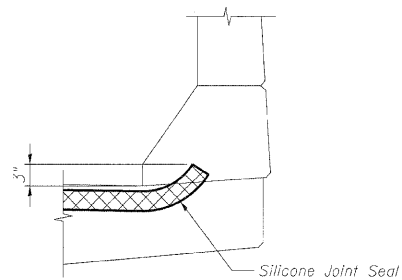
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



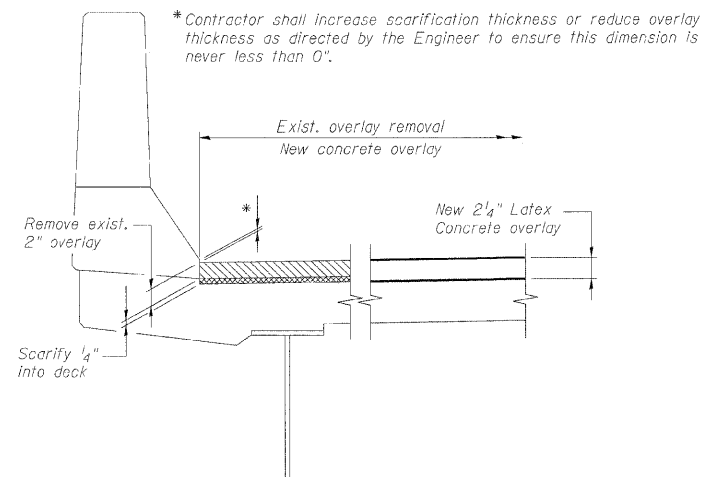
**PLAN**



**SILICONE JOINT SEALER DETAIL**  
(At Piers 1 & 8)



**SILICONE JOINT SEAL TREATMENT AT PARAPET**



**SCARIFICATION & OVERLAY DETAIL AT PARAPET**

**Notes:**

1. For Bill of Material, see Sheet 8.
2. Deck drains (downspouts, floor drains, and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.
3. For additional notes, see sheet 8.

**BRIDGE DECK AND APPROACH  
SLAB REPAIRS 1 OF 3  
STRUCTURE NO. 022-0094**

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

**benesch**

alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

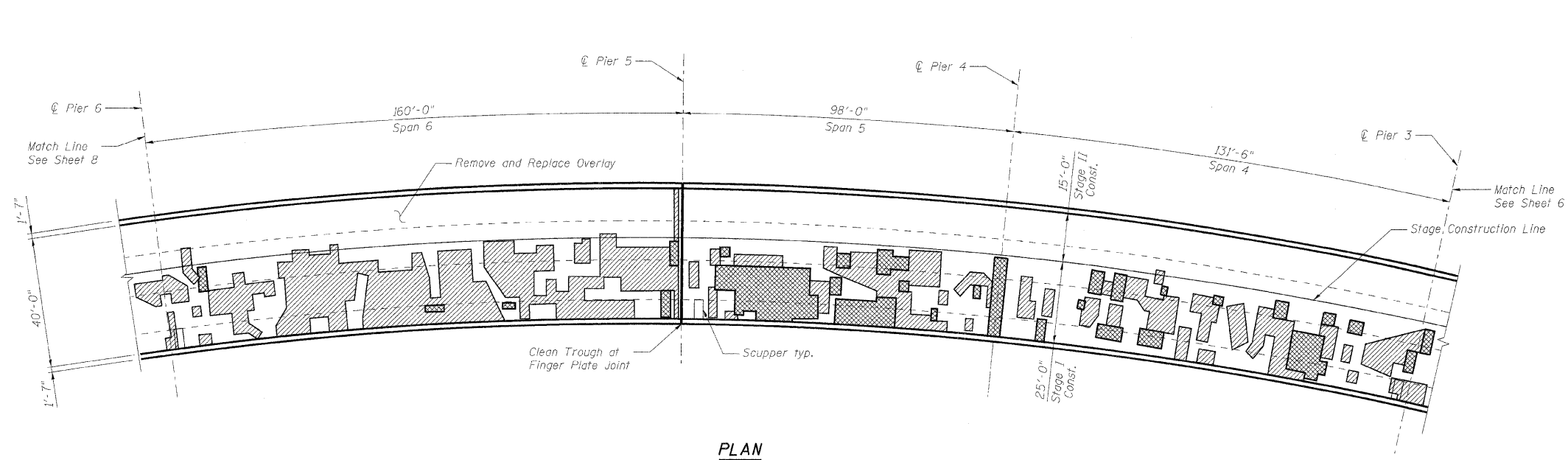
SHEET NO. 6	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	363
8 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS		FED. AID PROJECT	

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18:08:01

11/12/2009

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN

**Notes:**

1. For Bill of Material, see Sheet 8.
2. Deck drains (downspouts, floor drains, and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.
3. For additional notes, see sheet 8.

**BRIDGE DECK AND APPROACH  
SLAB REPAIRS 2 OF 3  
STRUCTURE NO. 022-0094**

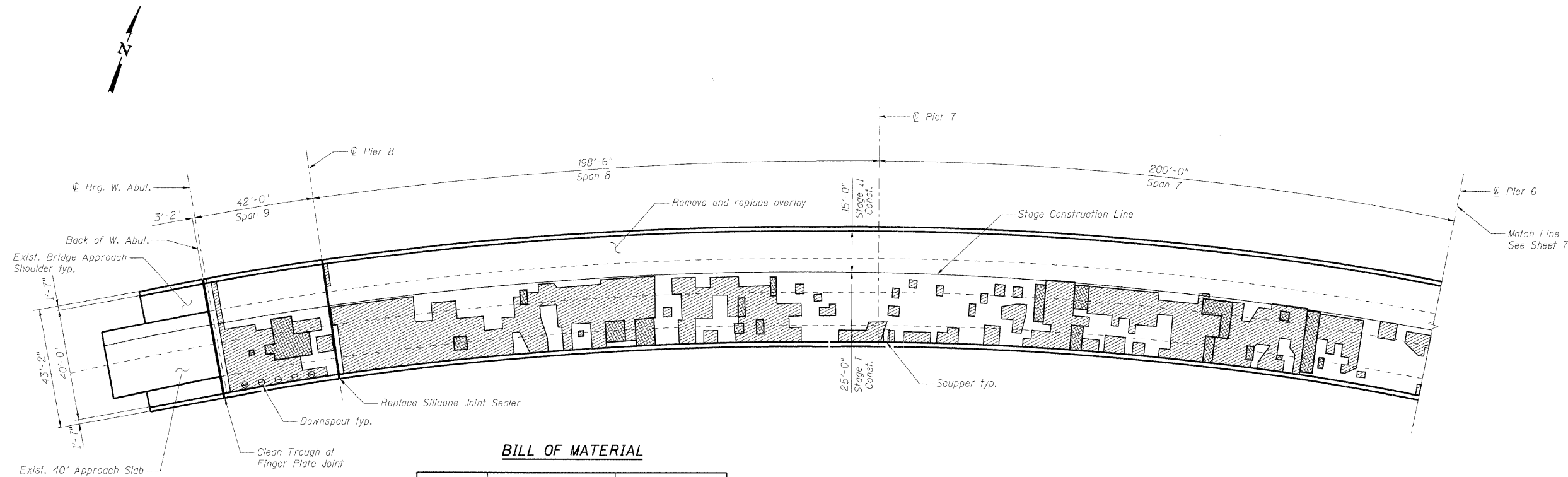
DESIGNED -	T.JJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

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Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0460 Job No. 10060

SHEET NO. 7  8 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 364
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	1,453.7 <sup>▲</sup>
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	5.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	298.8
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0
	Protective Shield	Sq. Yd.	3,627
	Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	200
	Bridge Deck Grooving	Sq. Yd.	4,861
	Protective Coat	Sq. Yd.	5,188
	Silicone Joint Sealer	Foot	84.0
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	5,117
	Bridge Deck Hydro-Scarification 2 1/4"	Sq. Yd.	5,117
	Clean Trough	Each	3

**PLAN**

**Notes:**

- Deck and approach slab repair areas are estimated based on an Infrared thermographic deck survey (ITDS) report prepared by AECOM and visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield required for full-depth repairs shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.
- The Engineer shall determine the type and quantity of Class A patching and the quantity of Mixture for Cracks, Joints and Flangeways. Estimated quantities are included in the overall Summary of Quantities in Roadway Plans.
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/4".

**BRIDGE DECK AND APPROACH  
SLAB REPAIRS 3 OF 3  
STRUCTURE NO. 022-0094**

DESIGNED	TJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

<sup>▲</sup> For information only to assist the Contractor in bidding.  
See Special Provision for "Bridge Deck Latex Concrete Overlay".

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312-565-0460 Job No. 10060

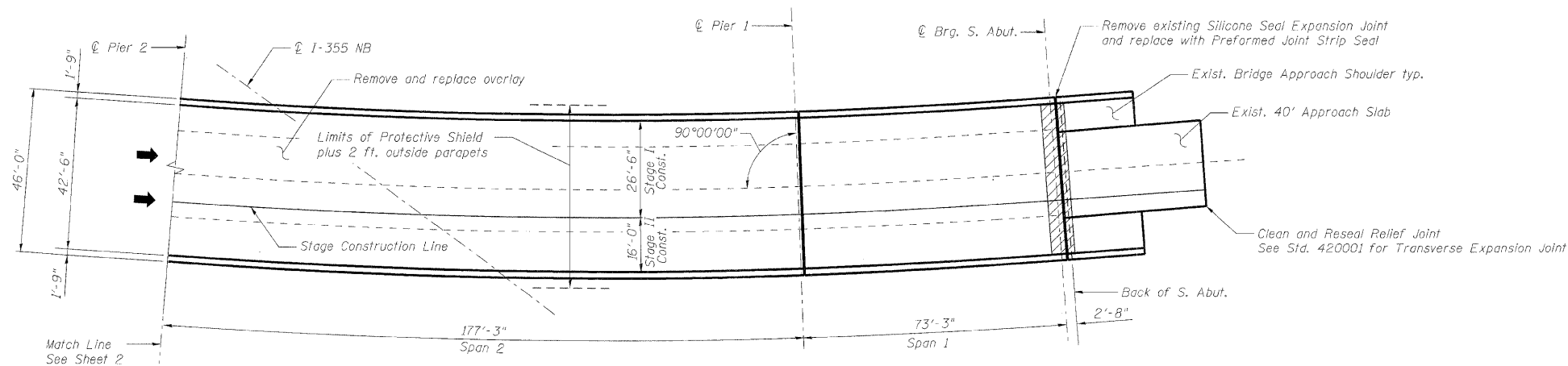
SHEET NO. 8	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	365
8 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

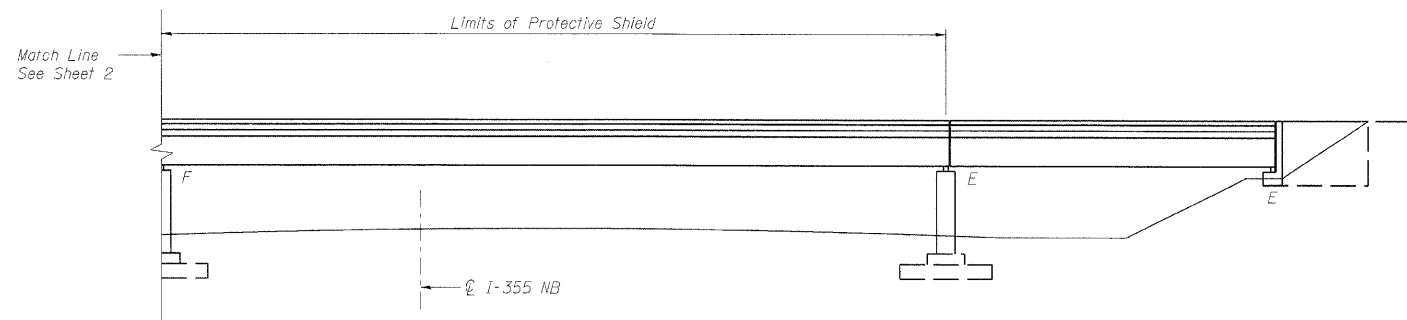
**Existing Structure:**  
The structure is a four-span continuous, composite plate girder structure with a 7-inch cast-in-place concrete deck and a 2-inch concrete overlay. The original structure was built in 1971 as FAI Route 90, Section 22-1HB-4. In 1989, the bridge was patched and overlaid, the approach slabs were patched, and the expansion joints were reconstructed. In 1998, the deck and the approach slabs were repaired, and an expansion joint and part of the north backwall were reconstructed. In 2004, the deck approach slabs and expansion joints were repaired, and part of the north abutment was reconstructed.

Stage construction shall be utilized to maintain traffic during construction.

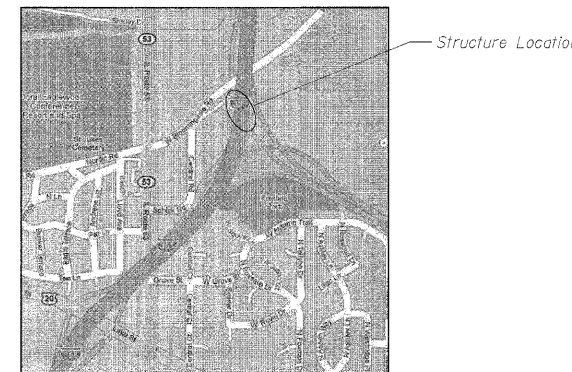
No salvage



PLAN



ELEVATION



LOCATION SKETCH

**DESIGN SPECIFICATIONS**

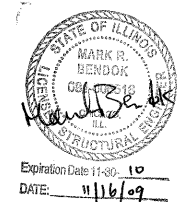
2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

**DESIGN STRESSES**

$f'_c = 3,500 \text{ psi}$   
 $f_y = 60,000 \text{ psi}$

**SCOPE OF WORK**

1. Bridge Deck Hydro-scarification.
2. Repair bridge deck.
3. Repair approach slab.
4. Reconstruct deck joint at south abutment with preformed joint strip seal.
5. Replace preformed joint seal with silicone joint seal at Pier 1.
6. Place new overlay.
7. Reconstruct damaged parapet section at south end, outside shoulder.
8. Clean and reseal relief joints at end of approach slabs.
9. Clean trough under fingerplate expansion joint at north abutment.
10. Apply concrete sealer to top and inside face of parapets and abutment wingwalls, approach slabs, top of Pier 1, abutment seats and backwalls.



GENERAL PLAN AND ELEVATION  
1 OF 2  
I-290 EB OVER I-355  
DuPAGE COUNTY  
STATION 39+06  
STRUCTURE NO. 022-0092

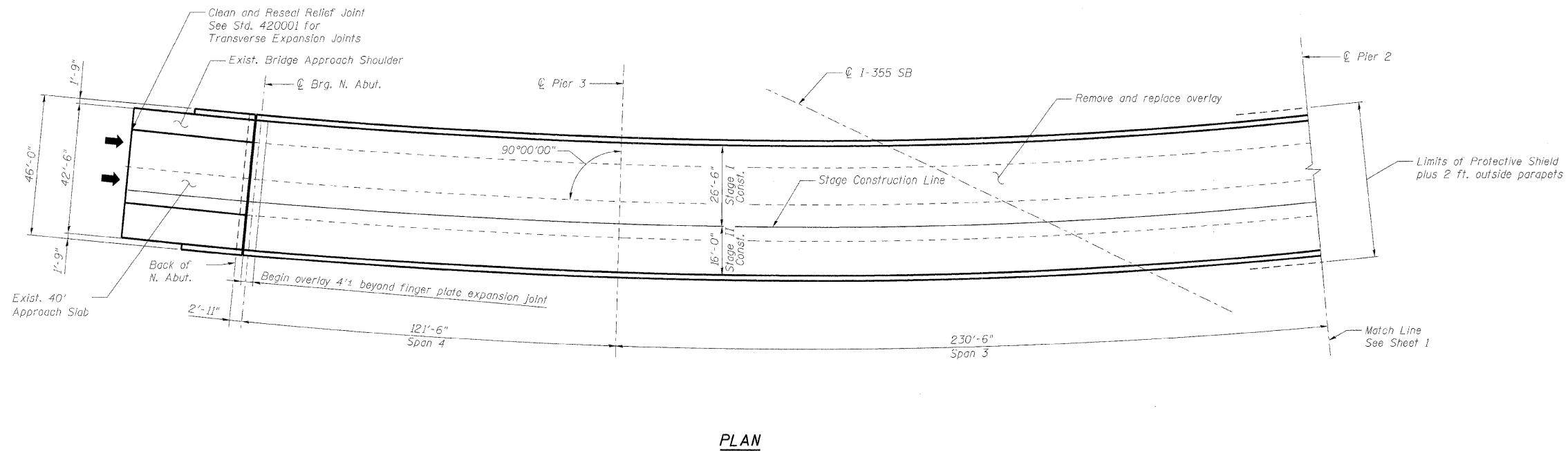
DESIGNED	JJJ
CHECKED	AAV
DRAWN	RMG
CHECKED	AAV

**benesch**

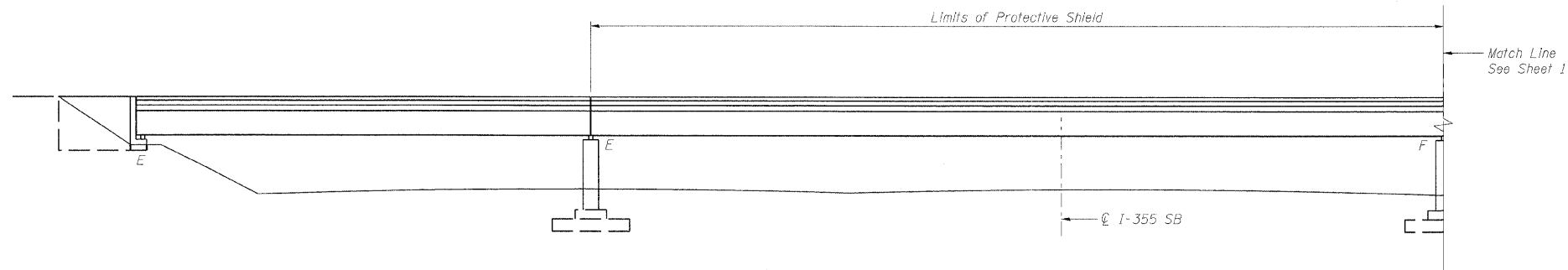
alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-665-0450 Job No. 10050

SHEET NO. 1 10 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 366
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN



ELEVATION

GENERAL PLAN AND ELEVATION  
2 OF 2  
I-290 EB OVER I-355  
DuPAGE COUNTY  
STATION 39+06  
STRUCTURE NO. 022-0092

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 2 10 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 367
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Prior to pouring new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.
4. As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
5. 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.
6. Concrete Sealer shall be applied to top and inside face of parapets and abutment wingwalls, approach slabs, abutment seats and abutment backwalls, and Pier 1 seat. All surfaces to be sealed shall be cleaned thoroughly prior to sealer application. Cost included with Concrete Sealer.
7. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
8. Stage construction shall be utilized to maintain traffic during construction.
9. The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms' integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
10. Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

**INDEX OF SHEETS**

1. General Plan and Elevation (1 of 2)
2. General Plan and Elevation (2 of 2)
3. General Notes, Bill of Material and Index of Sheets
4. Stage Construction Details
5. Bridge Deck and Approach Slab Repairs
6. Bridge Parapet Repairs
7. Expansion Joint Repairs
8. Expansion Joint Details
9. Preformed Joint Strip Seal
10. Bar Splicer Assembly Details

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	10.8		10.8
Protective Shield	Sq. Yd.	2,265		2,265
Concrete Superstructure	Cu. Yd.	10.8		10.8
Bridge Deck Grooving	Sq. Yd.	2,718		2,718
Protective Coat	Sq. Yd.	2,872		2,872
Reinforcement Bars, Epoxy Coated	Pound	1,460		1,460
Bar Splicers	Each	11		11
Preformed Joint Strip Seal	Foot	44.5		44.5
Concrete Sealer	Sq. Ft.	7,092	933	8,025
Silicone Joint Sealer	Foot	44.5		44.5
Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,839		2,839
Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0		5.0
Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	2,839		2,839
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0		5.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	152.1		152.1
Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	100		100
Clean and Reseal Relief Joint	Foot	48.0		48.0
Clean Trough	Each	1		1

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

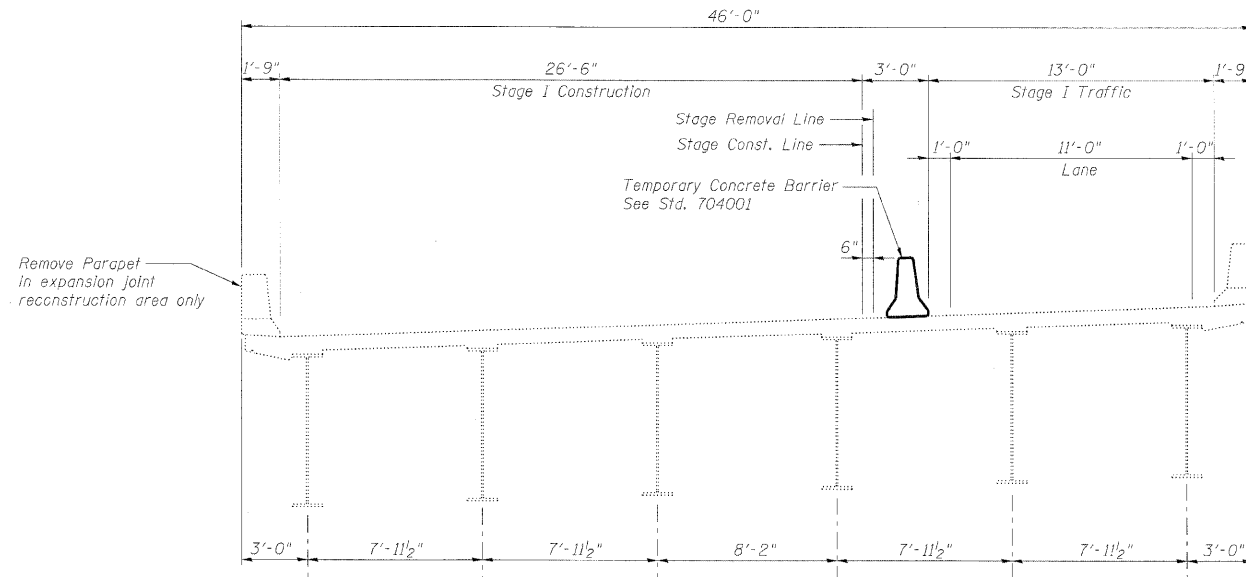
**GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0092**

**benesch**

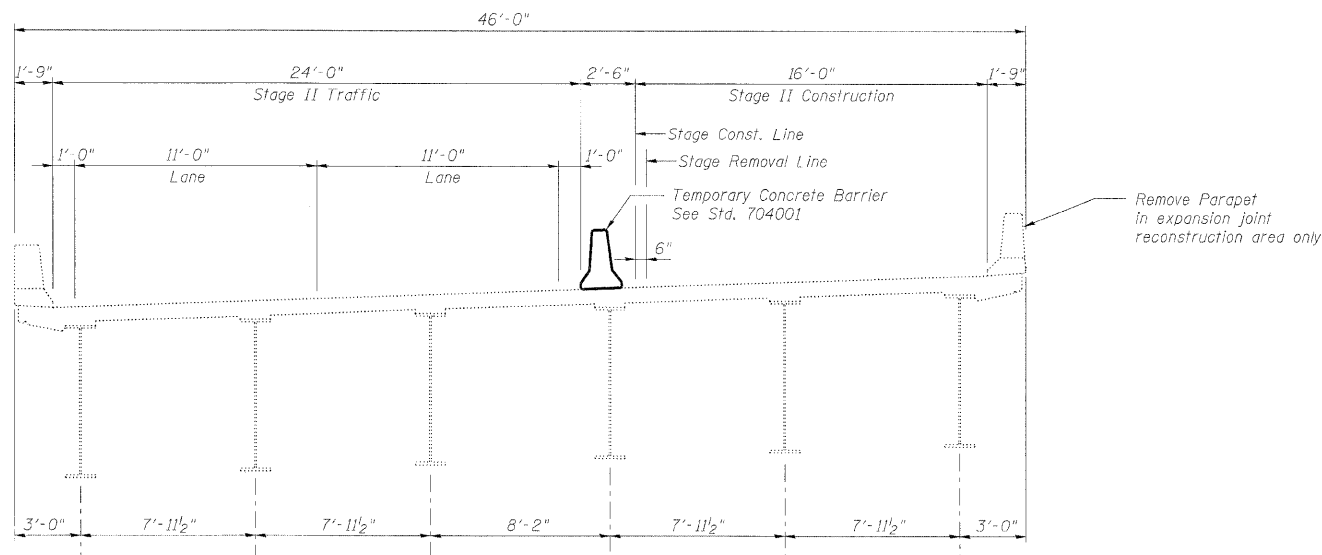
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Chicago, Illinois 60601  
312-665-0450 Job No. 10050

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290 355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	368
10 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**STAGE I CROSS SECTION**  
(Looking East)



**STAGE II CROSS SECTION**  
(Looking East)

**Note:**  
For quantity of Temporary Concrete Barrier, see roadway plans.

DESIGNED	-	AAY
CHECKED	-	KJN
DRAWN	-	VH
CHECKED	-	AAY

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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

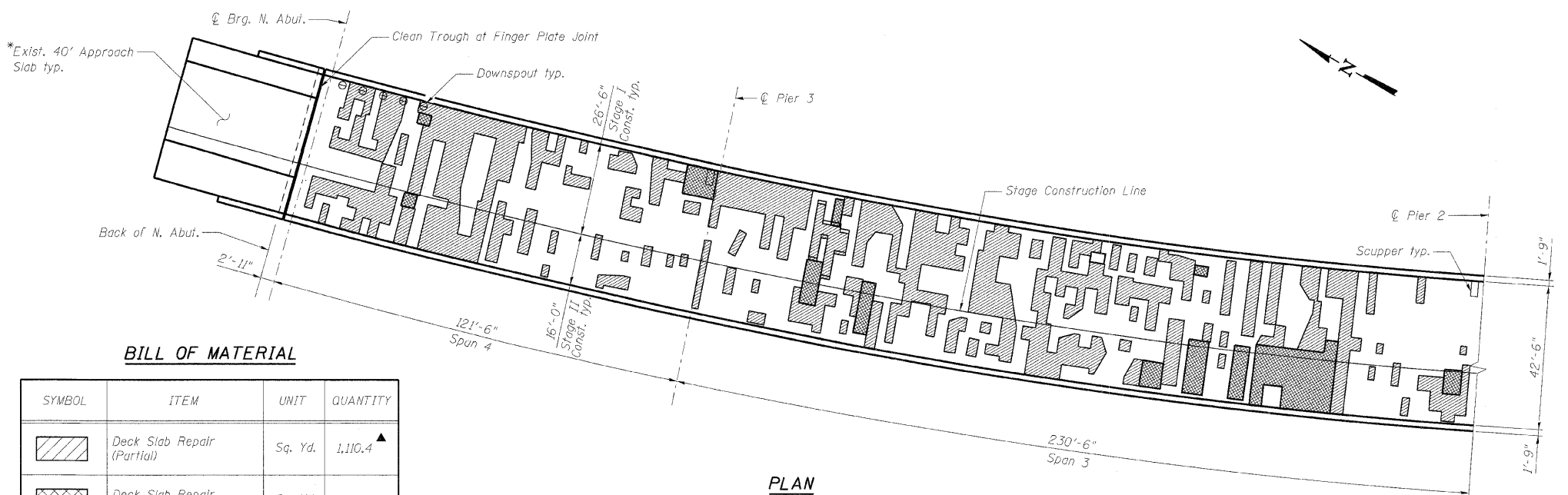
SHEET NO. 4  10 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 369
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

**STAGE CONSTRUCTION DETAILS**  
**STRUCTURE NO. 022-0092**



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\*See Section B-B on Expansion Joint Details sheet for the location of the start of the 40' approach slab.

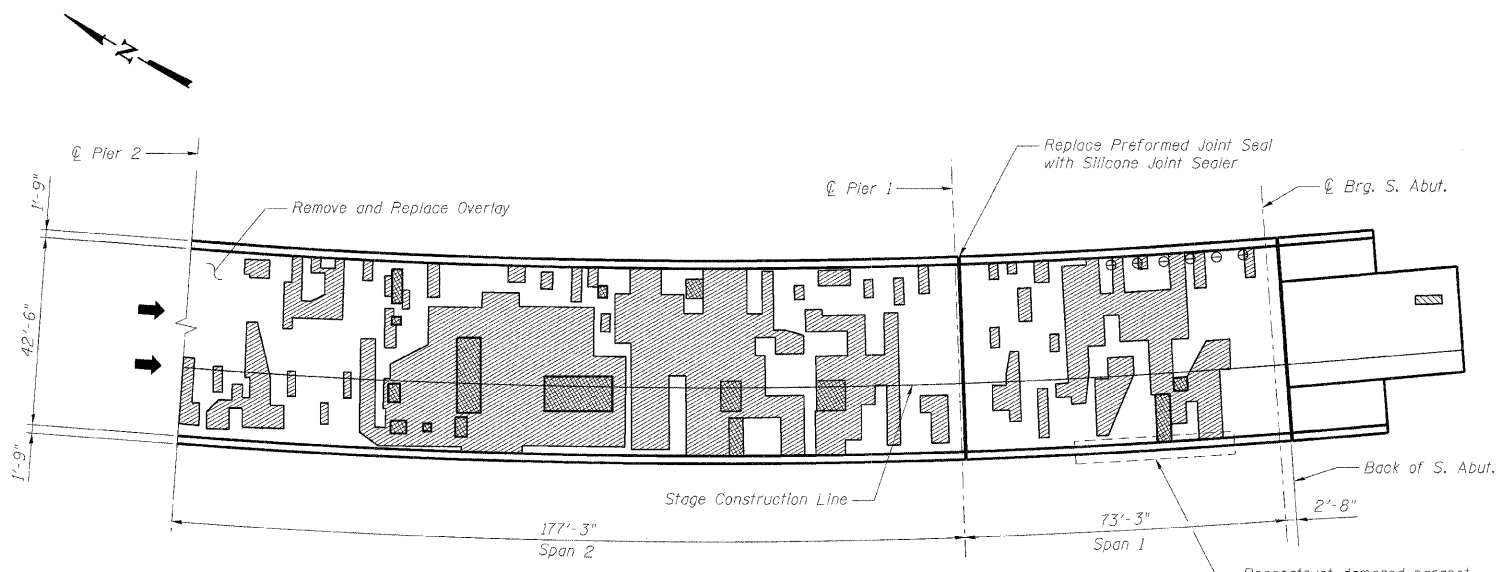


PLAN

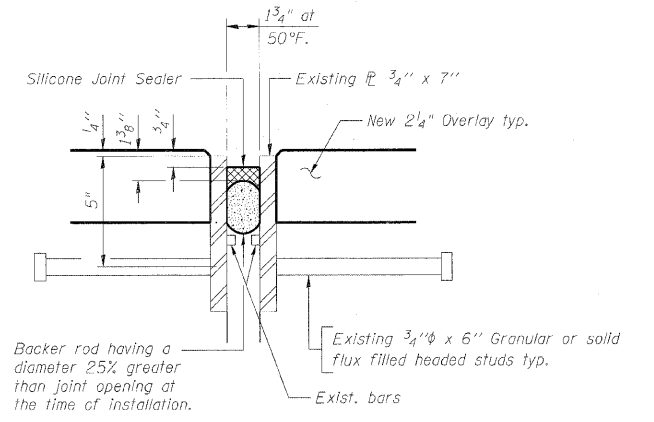
**BILL OF MATERIAL**

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	1,110.4 ▲
	Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	5.0
	Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	152.1
	Approach Slab Repair (Partial Depth)	Sq. Yd.	5.0
	Protective Shield	Sq. Yd.	2,265
	Bridge Deck Grooving	Sq. Yd.	2,718
	Protective Coat	Sq. Yd.	2,872
	Cleaning and Painting Exposed Rebar (Special)	Sq. Ft.	100
	Silicone Joint Sealer	Foot	44.5
	Bridge Deck Latex Concrete Overlay, 2 1/4"	Sq. Yd.	2,839
	Bridge Deck Hydro-Scarification, 2 1/4"	Sq. Yd.	2,839
	Clean Trough	Each	1

▲ For information only to assist the Contractor in bidding. See Special Provisions for "Bridge Deck Latex Concrete Overlay".

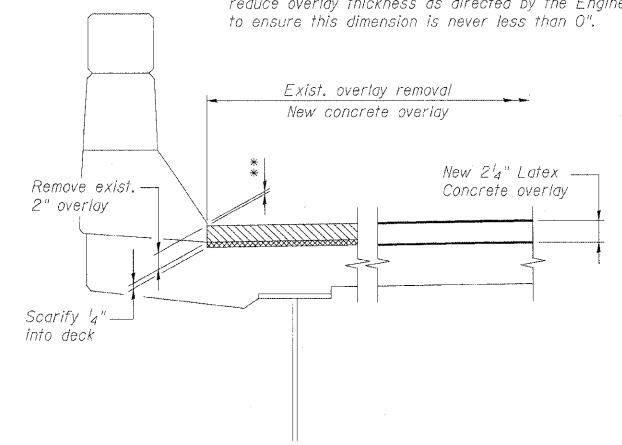


PLAN



**SILICONE JOINT SEALER DETAIL**  
(At Pier 1)

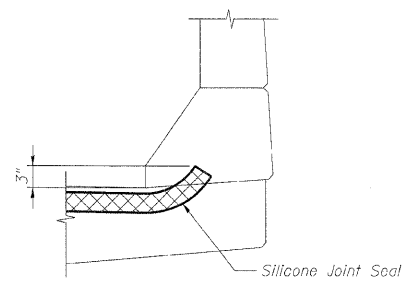
\*\* Contractor shall increase scarification thickness or reduce overlay thickness as directed by the Engineer to ensure this dimension is never less than 0".



**SCARIFICATION & OVERLAY DETAIL AT PARAPET**

**Notes:**

- Deck and approach slab repair areas are estimated based on an infrared thermographic deck survey (ITDS) report prepared by AFCEM and visual inspection conducted in June of 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield required for full-depth repairs shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation.
- Deck drains (downspouts, floor drains and scuppers) shall be cleaned with the bridge deck prior to application of the Concrete Sealer. Cost of cleaning the deck drains is included in Concrete Sealer.



**SILICONE JOINT SEAL TREATMENT AT PARAPET**

DESIGNED -	TJJ
CHECKED -	AAV
DRAWN -	RMG
CHECKED -	AAV

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Engineers - Surveyors - Planners  
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

**BRIDGE DECK AND APPROACH SLAB REPAIRS**  
**STRUCTURE NO. 022-0092**

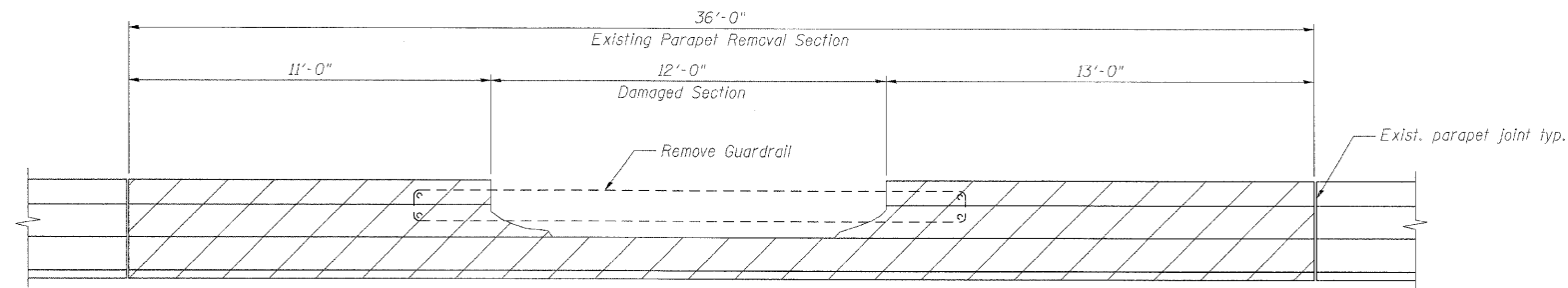
SHEET NO. 5 10 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 370
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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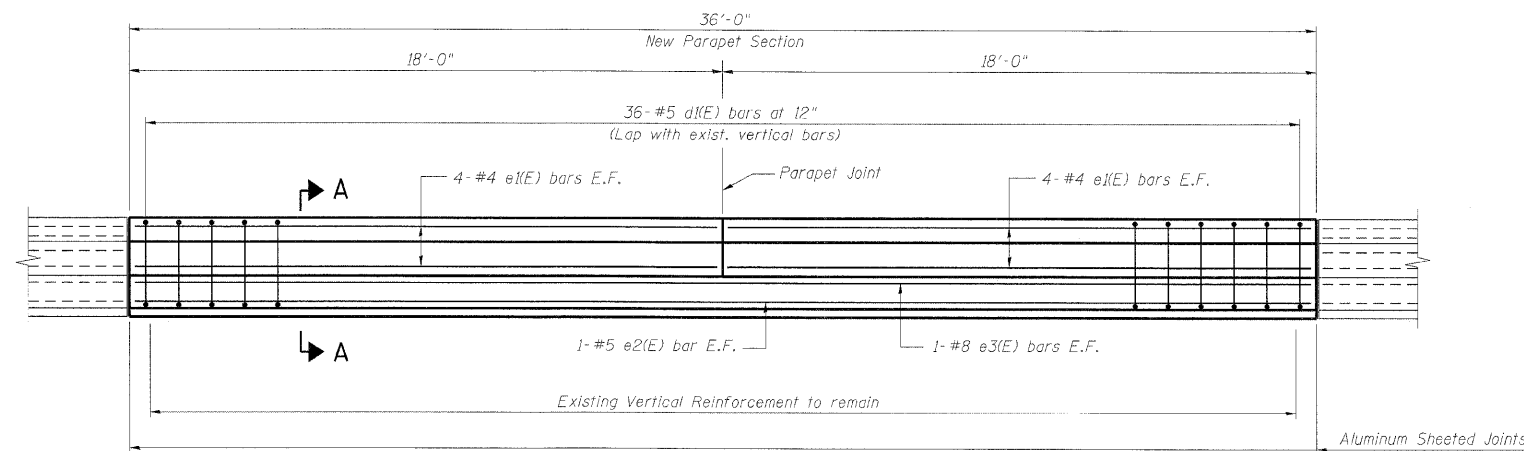
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIAL**

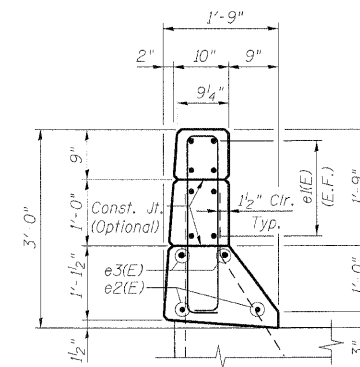
Bar	No.	Size	Length	Shape
d(E)	36	#5	6'-9"	
e1(E)	16	#4	17'-8"	
e2(E)	2	#5	35'-8"	
e3(E)	2	#8	35'-8"	
Item	Unit	Total		
Concrete Removal	Cu. Yd.	3.7		
Concrete Superstructure	Cu. Yd.	3.7		
Reinforcement Bars, Epoxy Coated	Pound	710		



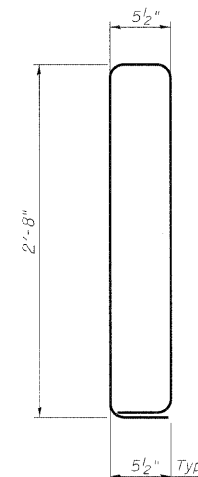
**ELEVATION - EXIST. PARAPET**  
(Inside Elevation)



**ELEVATION - PROPOSED PARAPET**



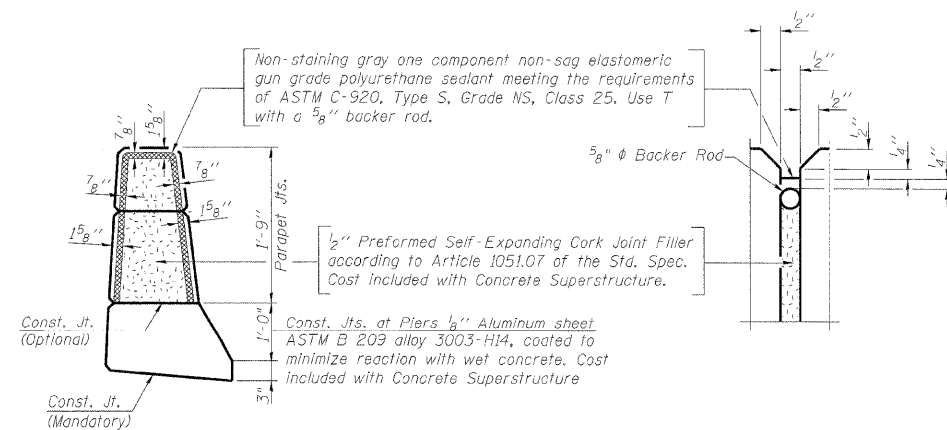
**SECTION A-A**



**BAR d(E)**

**Notes:**

- Existing reinforcement bars extending into the concrete 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.
- Existing horizontal reinforcement bars in the concrete removal area shall be removed.
- Existing guardrail shall be removed and disposed of. Cost is included with Concrete Removal.
- Protective shield required for concrete removal shall be installed according to Article 501.03 of the Standard Specifications. Cost of Protective Shield is included with Concrete Removal.
- E.F. denotes Each Face.



**PARAPET JOINT DETAILS**

DESIGNED	-	TJJ
CHECKED	-	AAV
DRAWN	-	RMG
CHECKED	-	AAV

**BRIDGE PARAPET REPAIRS  
STRUCTURE NO. 022-0092**

**benesch**

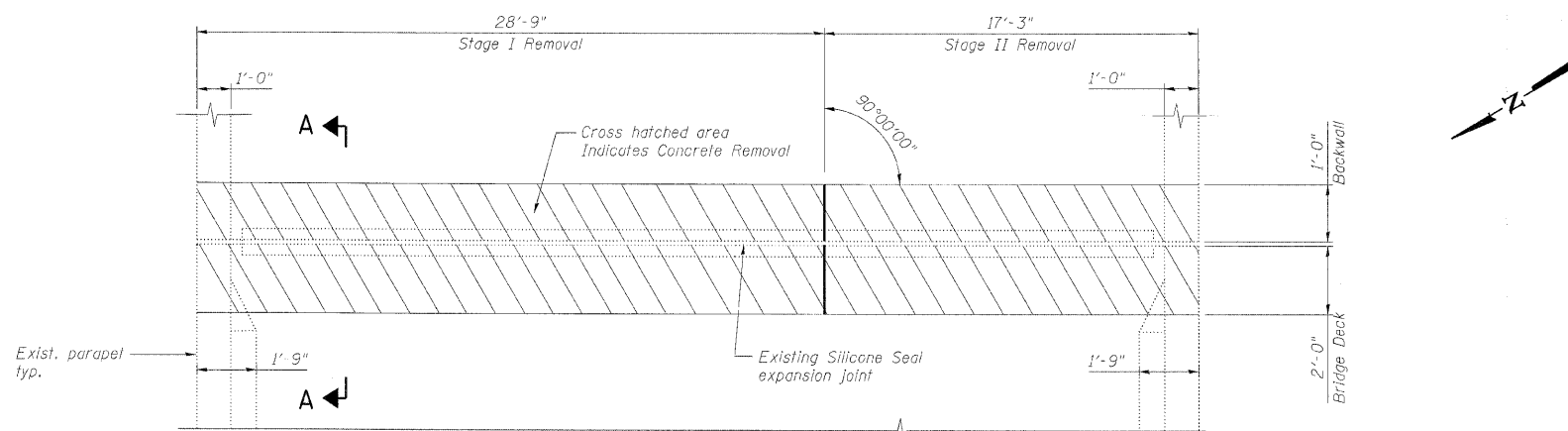
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0480 Job No. 10050

SHEET NO. 6  10 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 371
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

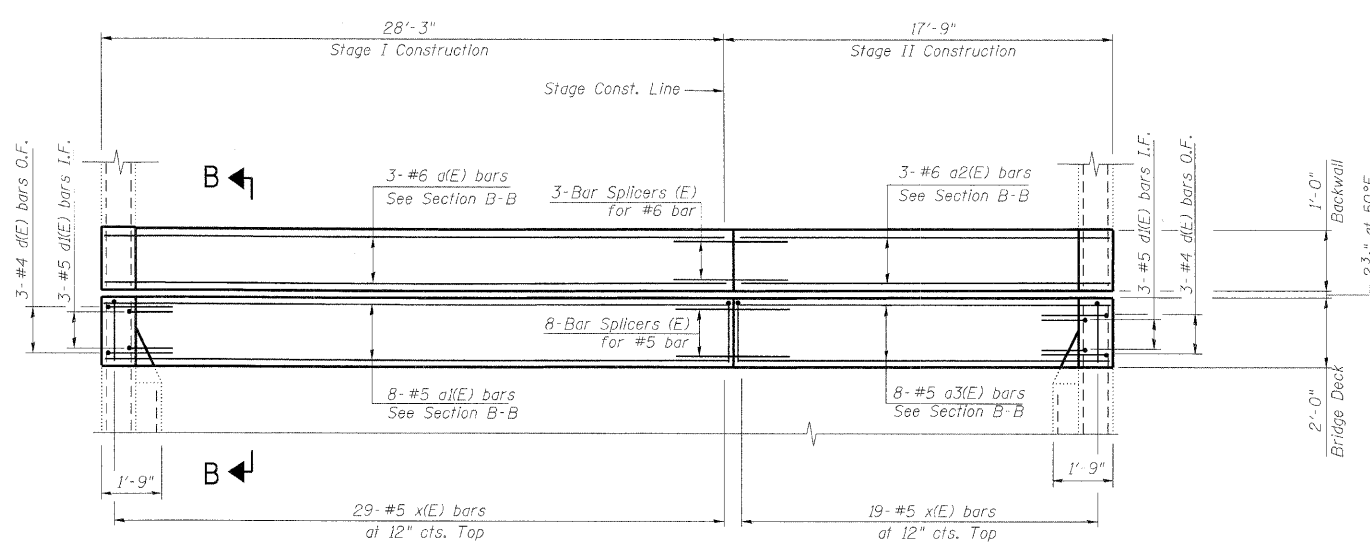
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIAL**

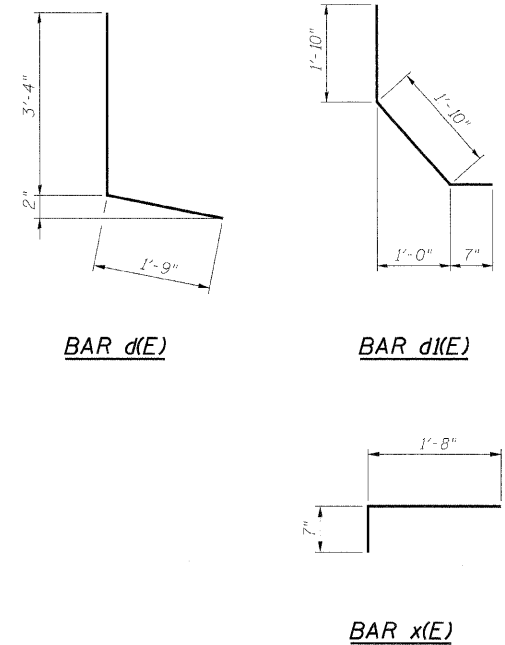
Bar	No.	Size	Length	Shape
a(E)	3	#6	27'-11"	—
a1(E)	8	#5	27'-11"	—
a2(E)	3	#6	17'-5"	—
a3(E)	8	#5	17'-5"	—
d(E)	6	#4	5'-1"	┌
d1(E)	6	#5	4'-3"	└
x(E)	48	#5	2'-3"	┌
Item		Unit	Total	
Concrete Removal		Cu. Yd.	7.1	
Concrete Superstructure		Cu. Yd.	7.1	
Reinforcement Bars, Epoxy Coated		Pound	750	



**EXISTING PARTIAL PLAN AT SOUTH ABUTMENT**



**PROPOSED PARTIAL PLAN AT SOUTH ABUTMENT**



- Notes:**
- I.F. denotes Inside Face.  
O.F. denotes Outside Face.
  - Work this sheet with Expansion Joint Details sheet and Bar Splicer Assembly Details sheet.

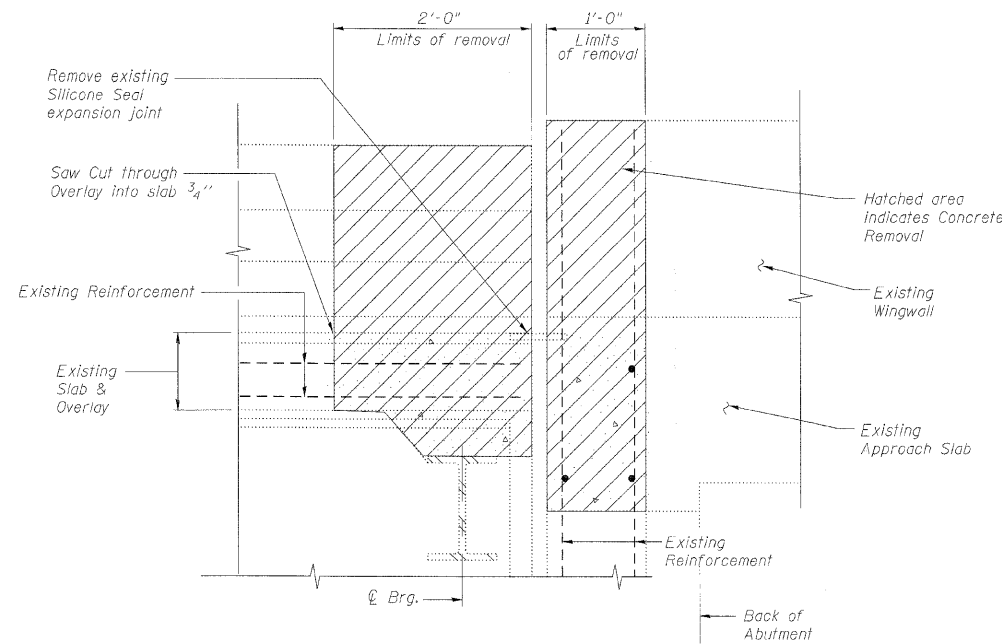
DESIGNED	JLS
CHECKED	AAV
DRAWN	VH
CHECKED	AAV

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Engineers • Surveyors • Planners  
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Chicago, Illinois 60601  
312-565-0450 Job No. 10050

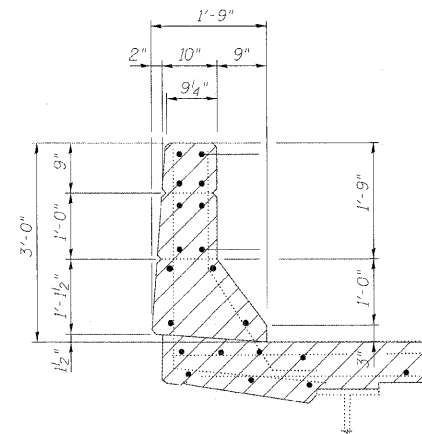
SHEET NO. 7 10 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 372
	CONTRACT NO. 60G51			ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



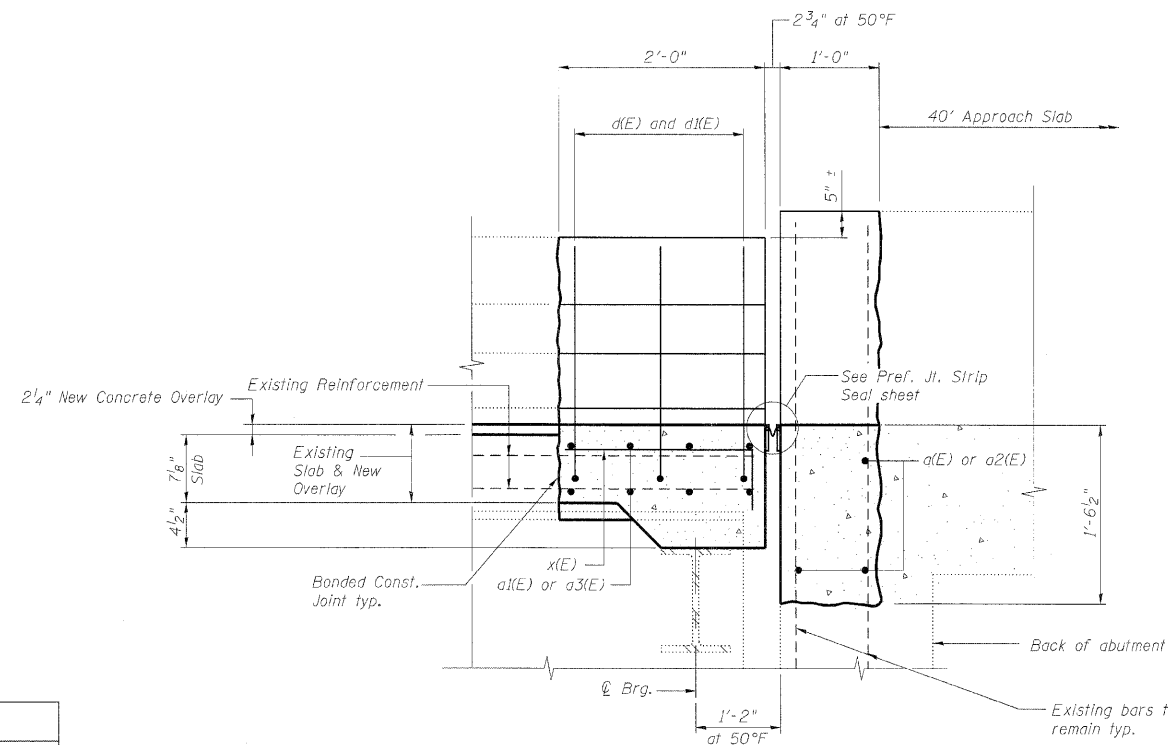
SECTION A-A



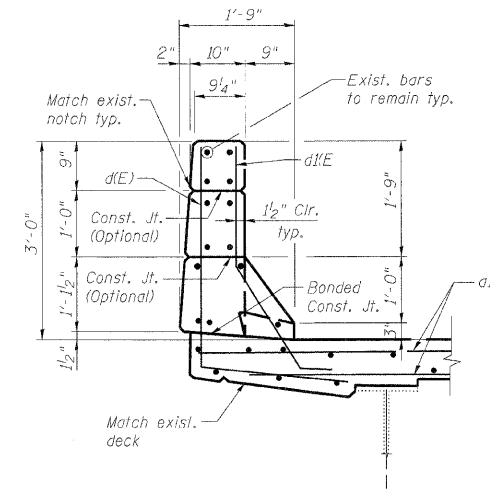
EXISTING PARAPET SECTION

Notes:

- Existing reinforcement bars extending into the concrete 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.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- If existing name plate falls within the limits of Concrete Removal, it shall be removed and reinstalled in its original location in accordance with IDOT Std. 515001. Cost included with Concrete Superstructure.
- If existing guardrail and/or end shoe fall within the limits of Concrete Removal, they shall be removed and reinstalled in their original locations in accordance with District 1 Std. BM-21. Cost included with Concrete Superstructure.
- The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and to protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.
- Work this sheet with Expansion Joint Repairs sheet.



SECTION B-B



PROPOSED PARAPET SECTION

DESIGNED	-	TJJ
CHECKED	-	AAV
DRAWN	-	VH
CHECKED	-	AAV

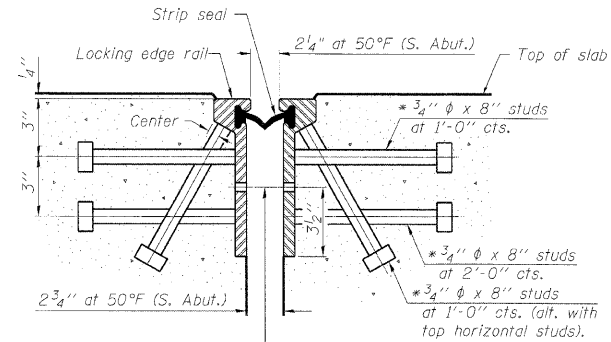
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Chicago, Illinois 60601  
312-565-0480 Job No. 10050

SHEET NO. 8 10 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 373
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

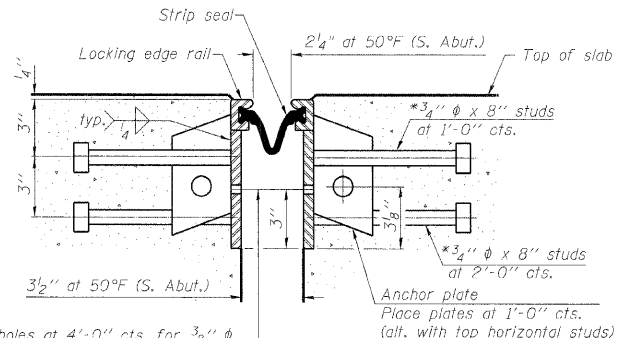
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

SECTION THRU  
ROLLED RAIL JOINT

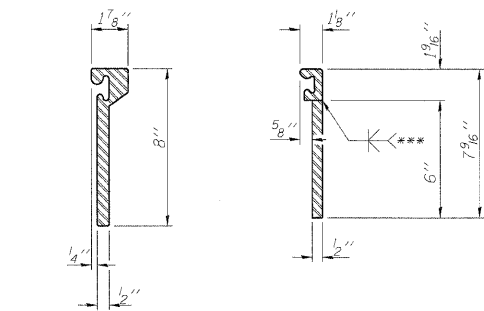


7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

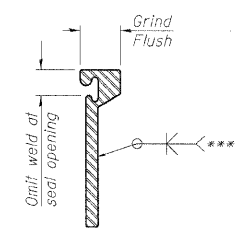
SECTION THRU  
WELDED RAIL JOINT

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches. The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints. The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State. All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



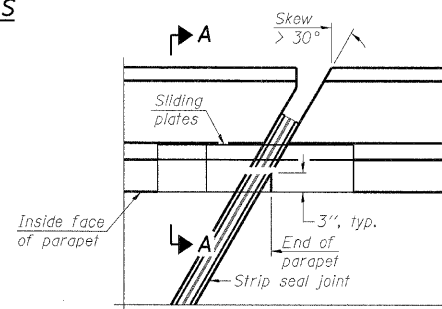
ROLLED  
EXTRUDED RAIL      WELDED RAIL



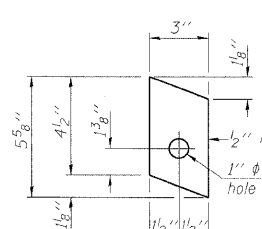
LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

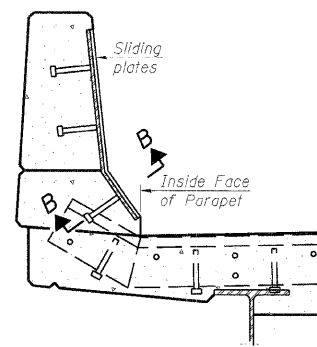
LOCKING EDGE RAILS



PLAN

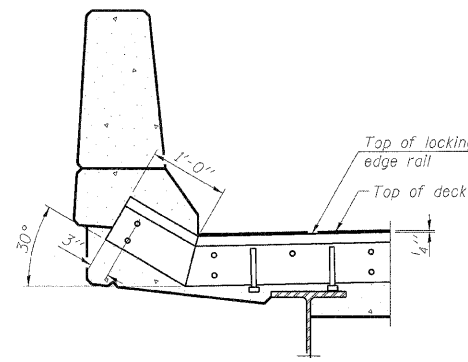


ANCHOR PLATE  
(for welded rail)

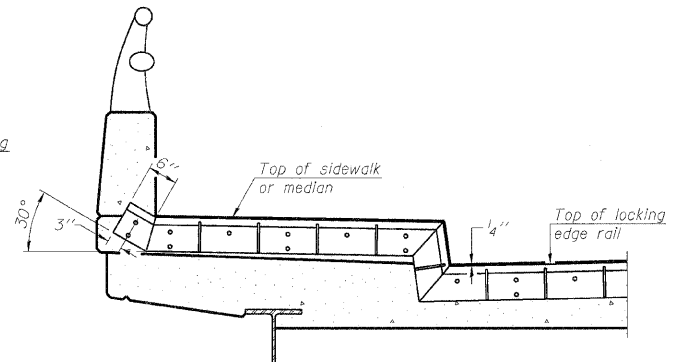


SECTION A-A

POINT BLOCK DETAILS  
(for skews > 30°)



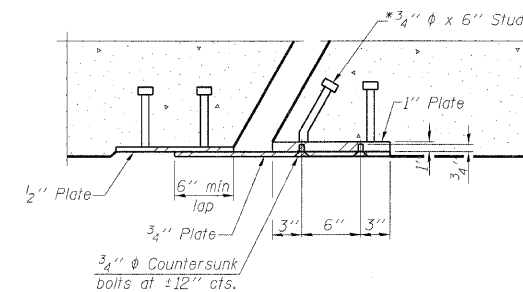
AT PARAPET



AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	44.5

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

EJ-SSJ

10-1-08

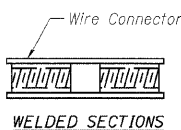
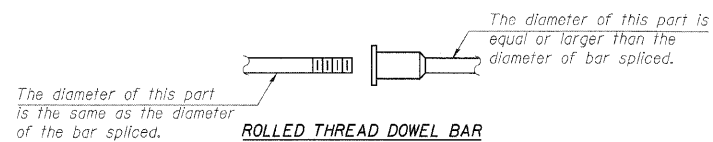
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Chicago, Illinois 60601  
312-566-0450      Job No. 10050

SHEET NO. 9 10 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 374
	CONTRACT NO. 60G51			FED. ROAD DIST. NO.      ILLINOIS FED. AID PROJECT	

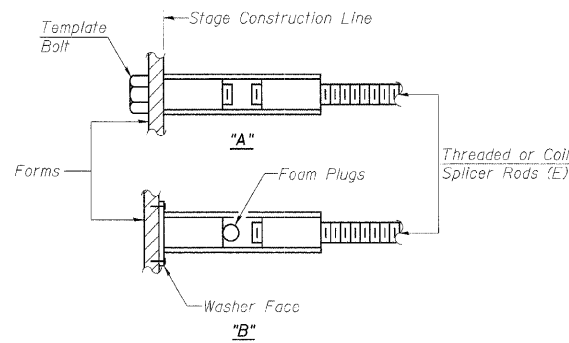
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



**INSTALLATION AND SETTING METHODS**

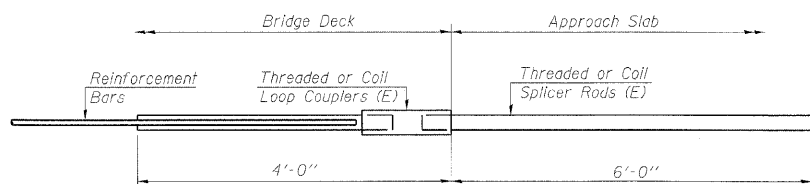
"A" : Set bar splicer assembly by means of a template bolt.  
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
(E) : Indicates epoxy coating.

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

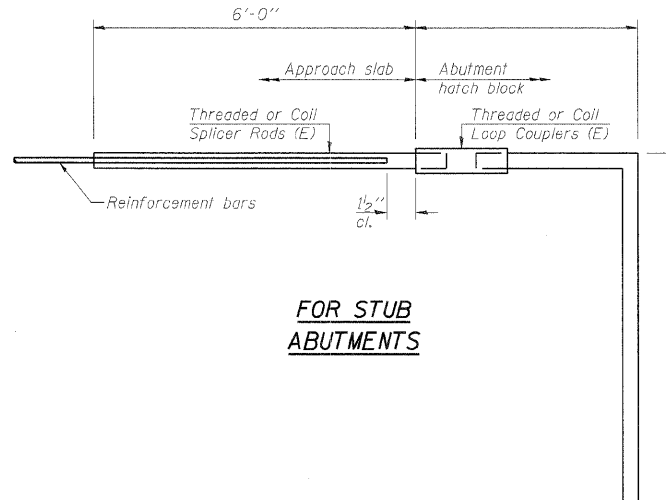
- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_s$   
(Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



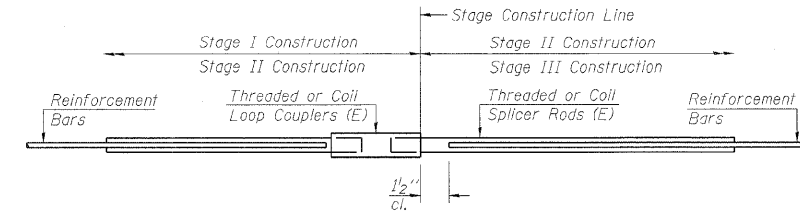
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**FOR STUB ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	8	Deck
#6	3	Deck

DESIGNED -	TJJ
CHECKED -	AAY
DRAWN -	RMG
CHECKED -	AAY

BSD-1

10-1-08

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312-555-0450 Job No. 10050

SHEET NO. 10 10 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 375
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

**BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 022-0092**

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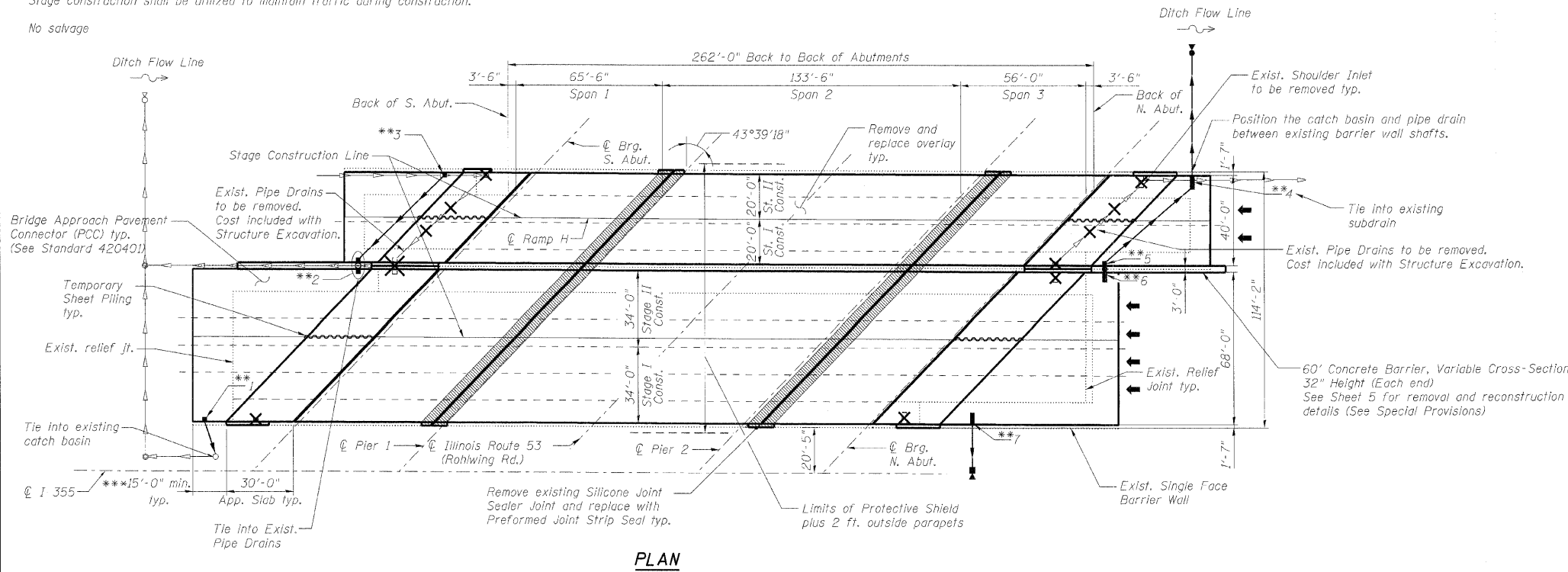
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**Existing Structure:**  
The structure is a three-span composite plate girder bridge with pin and link hinged connections near the piers.  
The original structure was built in 1970 as F.A.P. Route 61 Section 22-5HB-1, 22-1HB-9.  
In 1984, the bridge was widened and overlaid and the expansion joints were reconstructed.  
In 1988, the expansion joint at the north pier was replaced. In 1995, the pin and link connection was replaced. In 1997, an overlay was placed.

Bench Mark: Chiseled "□" on the South Wingwall of the West Abutment for the Northbound structure. EL. 755.09

Stage construction shall be utilized to maintain traffic during construction.

No salvage



**DESIGN SPECIFICATIONS**

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

**DESIGN STRESSES**

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

**SCOPE OF WORK**

1. Remove bridge approach slabs.
2. Bridge Deck Hydro-scarification.
3. Repair bridge deck.
4. Reconstruct deck joints near each pier with preformed joint strip seal.
5. Place New Overlay.
6. Stabilize abutments.
7. Replace bridge approach slabs and approach pavement connectors.
8. Install inlets at approach shoulders.
9. Trim beam ends at pin and link connection.
10. Apply Protective Coat.

**TABLE A - DRAINAGE DETAILS**

Location No.	*Drain Type	Pipe Drains, 12"	Concrete Thrust Blocks	End Sections, 12"	Additional Notes
1	Ty. B Inlet Box 609001	20'	-	-	tie into exist. catch basin
2	Dr. Str. T1 w/2 T20F&G	-	-	-	tie into exist. subdrain
3	Ty. B Inlet Box 609001	50'	-	-	tie into exist. subdrain
4	CB TC T20F&G	64'	1 Each	1 Each	outlet into ditch flow line & tie into exist. subdrain
5	CB TC T20F&G	50'	-	-	tie into drain #4
6	Ty. C Inlet Box 609001	2'	-	-	tie into drain #5
7	Ty. C Inlet Box 609001	20'	1 Each	1 Each	-

Drainage structures, inlets and catch basins scheduled for removal are assumed to be similar to proposed.

\* Match existing shoulder elevations.

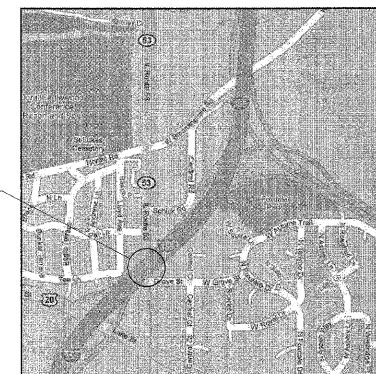
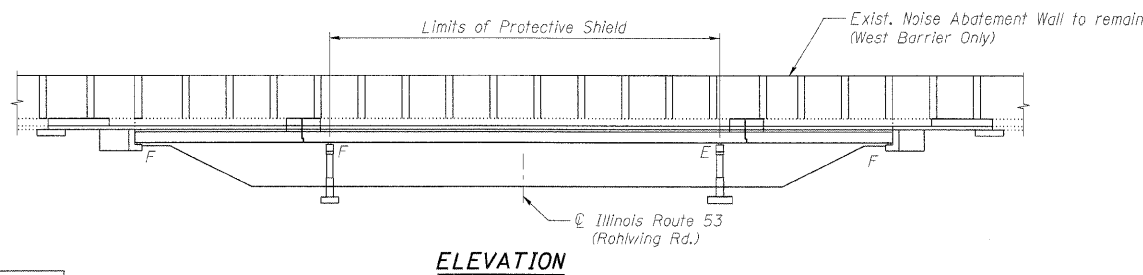
\*\* See Table A for Drainage Details.

\*\*\* Limits of Bridge Approach Pavement Connector (PCC) shall extend to the location of the existing relief joint, 6'-0" beyond the limits of the Proposed Bridge Approach Slab per Hwy. Std. 420401, or 15'-0" beyond the limits of the proposed Bridge Approach Slab per Hwy. Std. 609001 wherever should inlets are proposed.

Denotes drainage removal item

**LEGEND**

- Proposed Pipe Drains 12".
- Existing Pipe Drain or Subdrain to remain.
- X X Existing Pipe Drain or Subdrain to be removed. Cost included with Structure Excavation.
- X Drainage Removal Item.



**GENERAL PLAN AND ELEVATION**  
**I-355 SB OVER ILLINOIS ROUTE 53**  
**DUPAGE COUNTY**  
**STATION 106+46**  
**STRUCTURE NO. 022-0138**

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS/AAV

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Chicago, Illinois 60601  
312-665-0450 Job No. 10050

SHEET NO. 1 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 376
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOTAL BILL OF MATERIAL

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.
- Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
- 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.
- The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- If the contractor chooses to alter the temporary cantilevered sheet piling design requirements shown on the plans, a design submittal including plan details and calculations will be required for review and acceptance by the Engineer.
- The Contractor shall connect the first sheet to the existing abutment wall to ensure stability of sheets driven to the top of the existing pile. This connection shall be reviewed and accepted by the Engineer and included in the cost of Temporary Sheet Piling.
- Stage construction shall be utilized to maintain traffic during construction.
- The Contractor shall exercise care during removal of existing joints to ensure that the slab, beams and diaphragms integrity will not be detrimentally impacted. The Contractor shall repair any damage(s) to the slab, beams and diaphragms caused by his operation as directed by the Engineer at no additional cost to the Department.
- Protective Coat shall be applied to the new Bridge Deck Latex Concrete Overlay and Approach Slabs as well as the top and inside faces of the Parapets.
- Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

INDEX OF SHEETS

- General Plan and Elevation
- General Notes, Bill of Material and Index of Sheets
- Stage Construction Details
- Temporary Concrete Barrier for Stage Construction
- Bridge Deck and Approach Slab Repairs
- South Bridge Approach Slab Details 1 of 3
- South Bridge Approach Slab Details 2 of 3
- South Bridge Approach Slab Details 3 of 3
- North Bridge Approach Slab Details 1 of 3
- North Bridge Approach Slab Details 2 of 3
- North Bridge Approach Slab Details 3 of 3
- Expansion Joint Repairs
- Expansion Joint Details
- Preformed Joint Strip Seal
- Steel Repair Details
- Abutment Stabilization Details
- Bar Splicer Assembly Details
- Existing Plan Information

ITEM	UNIT	SUPER	SUB	TOTAL
Bridge Approach Pavement Connector (PCC)	Sq. Yd.	796		796
Pavement Reinforcement 9"	Sq. Yd.	796		796
Approach Slab Removal	Sq. Yd.	1,412		1,412
Concrete Barrier Removal	Foot	199.0		199.0
Concrete Removal	Cu. Yd.	72.9		72.9
Protective Shield	Sq. Yd.	1,753		1,753
* Structure Excavation	Cu. Yd.		697	697
Concrete Structures	Cu. Yd.		97.4	97.4
Concrete Superstructure	Cu. Yd.	425.9		425.9
Bridge Deck Grooving	Sq. Yd.	3,621		3,621
Protective Coat	Sq. Yd.	4,146		4,146
Reinforcement Bars, Epoxy Coated	Pound	92,030	19,920	111,950
Bar Splicers	Each	356	160	516
Temporary Sheet Piling	Sq. Ft.		673	673
Preformed Joint Strip Seal	Foot	303.0		303.0
End Sections 12"	Each	2		2
Geocomposite Wall Drain	Sq. Yd.		246	246
Pipe Drains 12"	Foot	206		206
Pipe Underdrains for Structures 4"	Foot		320	320
Catch Basins, Type C, Type 20 Frames and Grate	Each	2		2
Drainage Structures, Type 1 with Two Type 20 Frame and Grates	Each	1		1
Removing Catch Basins	Each	2		2
Removing Inlets	Each	4		4
Type B Inlet Box, Standard 609001	Each	2		2
Type C Inlet Box, Standard 609001	Each	2		2
Concrete Thrust Blocks	Each	2		2
Bridge Deck Latex Concrete Overlay, 2 1/2"	Sq. Yd.	3,183		3,183
Expanded Polystyrene Fill	Cu. Yd.		450	450
Bridge Deck Hydro Scarification, 2 1/2"	Sq. Yd.	3,183		3,183
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	27.0		27.0
Deck Slab Repair (Full Depth, Type II)	Sq. Yd.	19.8		19.8
Drainage Structure to be removed	Each	1		1
Modify Existing Pin & Link Connection	L. Sum	0.33		0.33

\*All excavated materials shall be disposed of within IDOT right-of-way and within the project limits. See the General Notes sheet from the roadway plans for more information.

GENERAL NOTES, BILL OF MATERIAL  
AND INDEX OF SHEETS  
STRUCTURE NO. 022-0138

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS/AAV

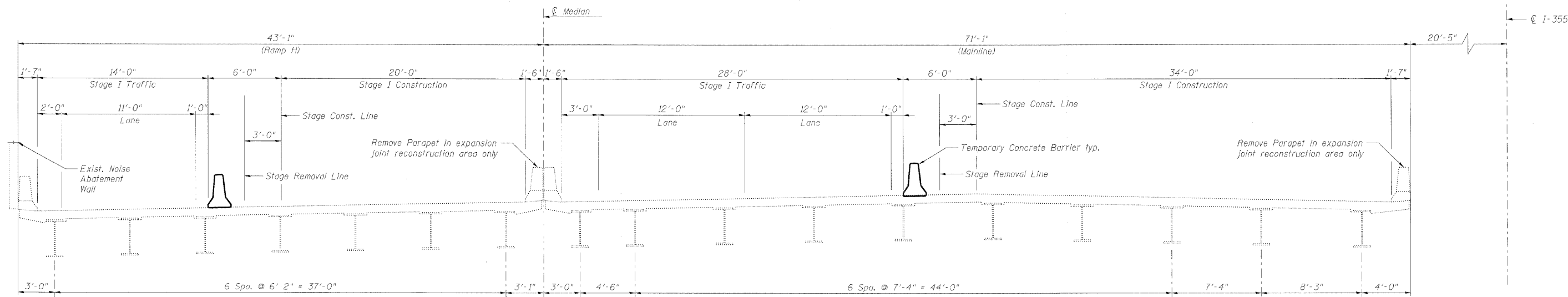
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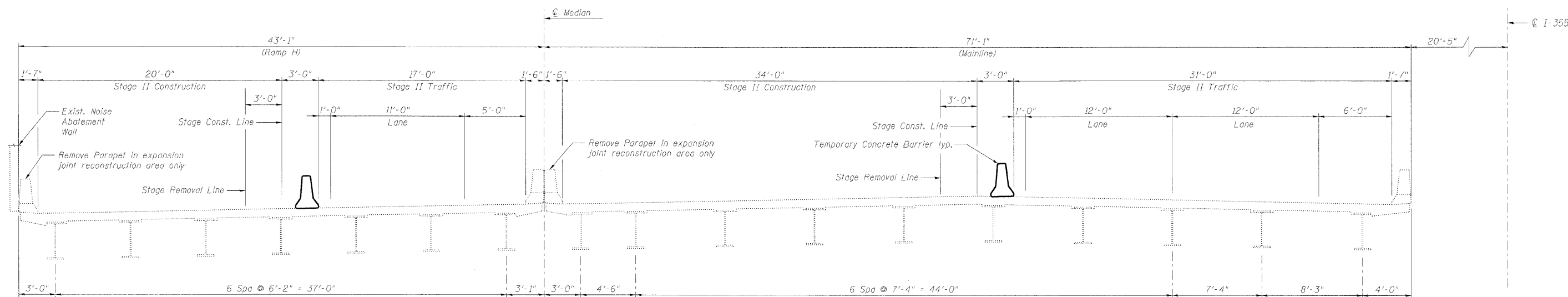
SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290				
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



STAGE I CROSS SECTION  
(Looking North)



STAGE II CROSS SECTION  
(Looking North)

**Notes:**

- For quantity of Temporary Concrete Barrier, see roadway plans.
- Temporary Concrete Barrier to be anchored to the approach slabs adjacent to locations of Structure Excavation. For Temporary Concrete Barrier Details, see Temporary Concrete Barrier for Stage Construction sheet.

DESIGNED	MFB
CHECKED	MAC
DRAWN	TMB
CHECKED	KWS

STAGE CONSTRUCTION DETAILS  
STRUCTURE NO. 022-0138

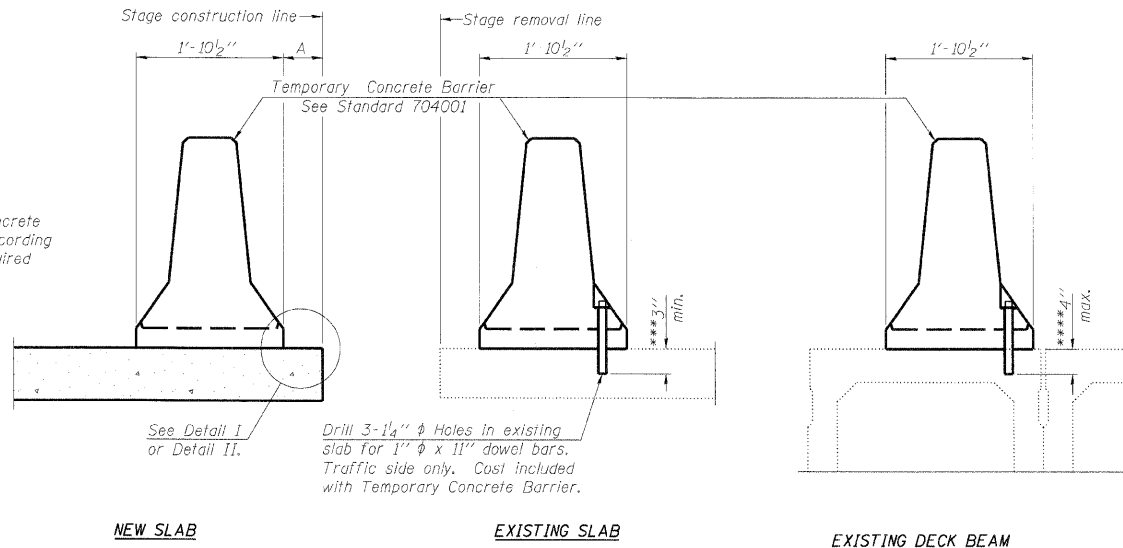
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205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312.666.0460 Job No. 10060

SHEET NO. 3 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 378
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

When "A" is 3'-6" or less, the temporary concrete barrier shall be anchored to the new slab according to Detail I or Detail II. No anchorage is required when "A" is greater than 3'-6".



SECTIONS THRU SLAB OR DECK BEAM

NOTES

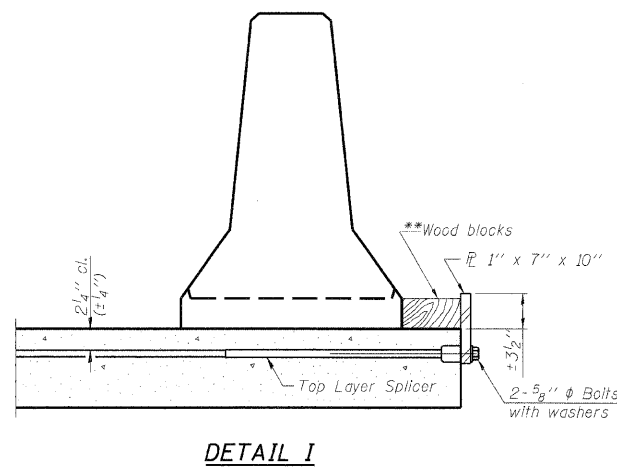
Detail I - With Bar Splicer or Couplers:  
Connect one (1) 1"x7"x10" steel  $\bar{P}$  to the top layer of couplers with 2- $\frac{5}{8}$ "  $\phi$  bolts screwed to coupler at approximate  $\phi$  of each barrier panel.

Detail II - With Extended Reinforcement Bars:  
Connect one (1) 1"x7"x10" steel  $\bar{P}$  to the concrete slab or concrete wearing surface with 2- $\frac{5}{8}$ "  $\phi$  Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate  $\phi$  of each barrier panel.

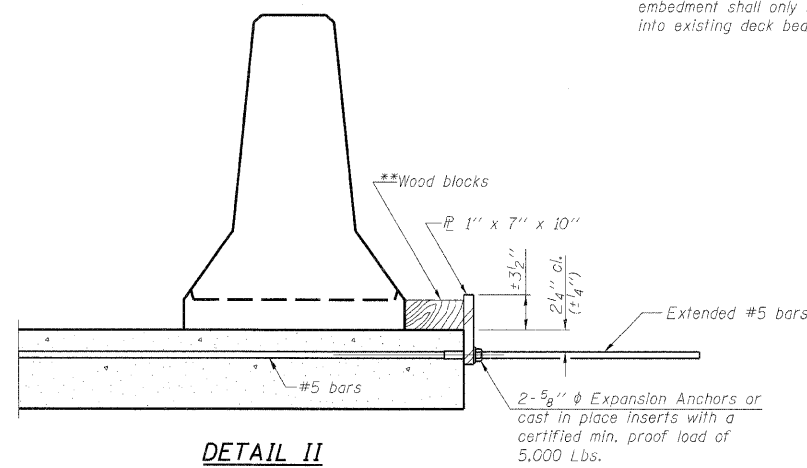
Cost of anchorage is included with Temporary Concrete Barrier. The 1" x 7" x 10" plate shall not be removed until stage II construction forms and all reinforcement bars are in place and the concrete is ready to be placed.

\*\*\* Dimension shown is minimum required embedment into concrete. If hot-mix asphalt wearing surface is present, minimum embedment shall be in addition to wearing surface depth.

\*\*\*\* If existing deck beam is to remain in place after stage construction, embedment shall only be into wearing surface and not into existing deck beam concrete.

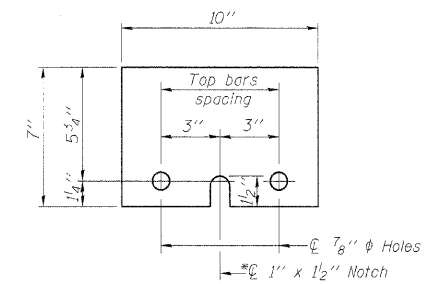


DETAIL I



DETAIL II

\*\*\*Wood blocks may be omitted when required to provide minimum stage traffic lane width. When the wood blocks are omitted, the concrete barrier shall be in direct contact with the steel retainer plate.



STEEL RETAINER  $\bar{P}$  1" x 7" x 10"

\* Required only with Detail II

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

R-27

10-1-08

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312-665-0450 Job No. 10060

TEMPORARY CONCRETE BARRIER  
FOR STAGE CONSTRUCTION  
STRUCTURE NO. 022-0138

SHEET NO. 4 38 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 379
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\*See Abutment Stabilization Detail on Abutment Stabilization Details sheet for the start of the Approach Slab.

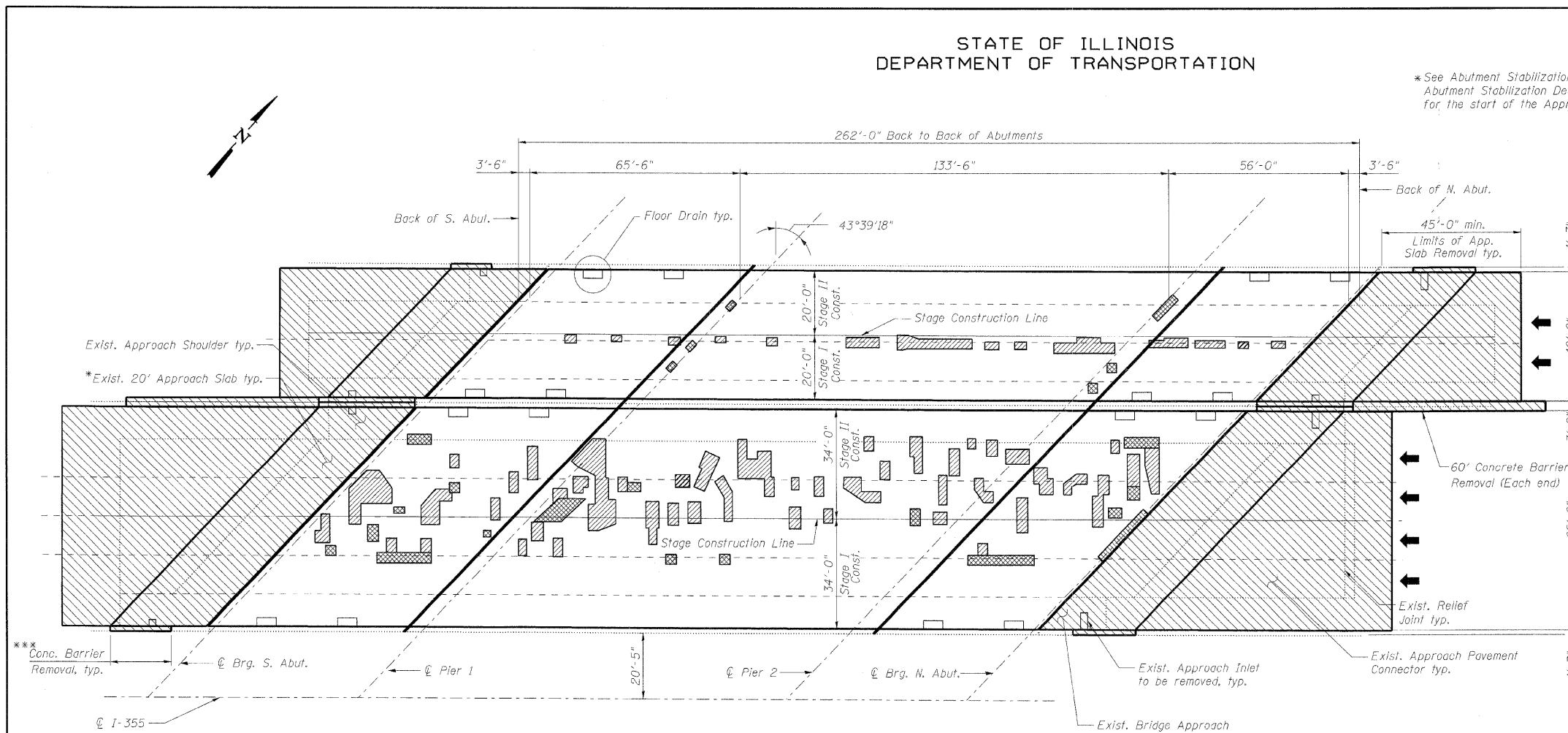
BILL OF MATERIAL

SYMBOL	ITEM	UNIT	QUANTITY
	Deck Slab Repair (Partial)	Sq. Yd.	211.7 ▲
	Deck Slab Repair (Full Depth - Type I)	Sq. Yd.	27.0
	Deck Slab Repair (Full Depth - Type II)	Sq. Yd.	19.8
	Protective Shield	Sq. Yd.	1,753
	Protective Coat	Sq. Yd.	3,340
	Bridge Deck Grooving	Sq. Yd.	2,917
	Bridge Deck Latex Concrete Overlay, 2 1/2"	Sq. Yd.	3,183
	Bridge Deck Hydro-Scarification, 2 1/2"	Sq. Yd.	3,183

▲ For information only to assist the Contractor in bidding. See Special Provision for "Bridge Deck Latex Concrete Overlay".

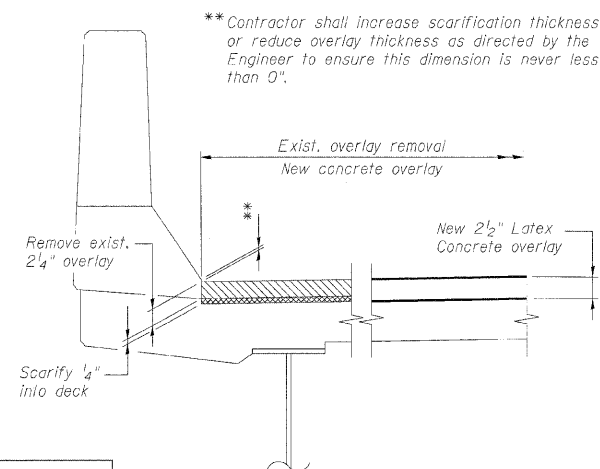
Notes:

- Deck and approach slab repair areas are estimated based on infrared thermographic deck survey and visual inspection completed in June 2009. Actual repair areas and locations shall be determined by the Engineer and shown on As-Built plans.
- Protective Shield, required for deck slab and/or parapet repairs, shall be installed according to Article 501.03 of the Standard Specifications. For limits of Protective Shield, see General Plan and Elevation sheet.
- Deck drains (downspouts, floor drains, and scuppers) shall be cleaned prior to placement of the Latex Concrete Overlay. Cost of cleaning the deck drains is included in Bridge Deck Hydro-Scarification, 2 1/2".
- Gaps caused by distress around floor drains shall be filled with epoxy as specified in the Special Provision "Epoxy Injection". Cost included with Bridge Deck Latex Concrete Overlay, 2 1/2".
- See Approach Slab Details sheets for Approach Slab removal and replacement details and quantities. See the Special Provisions for "Approach Slab Removal" and "Concrete Barrier Removal".
- The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and shall protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.

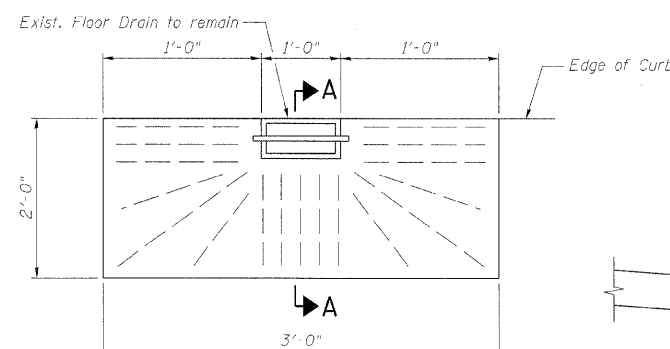


PLAN

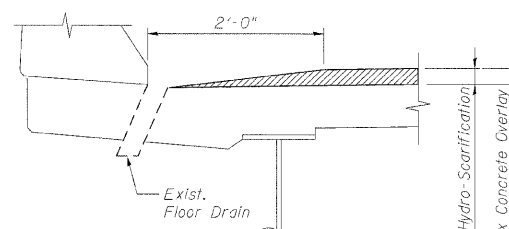
\*\*\* Limits of Concrete Barrier Removal shall match the limits of proposed parapet on the approaches. See sheets 6 thru 11 for details.



SCARIFICATION & OVERLAY  
DETAIL AT PARAPET

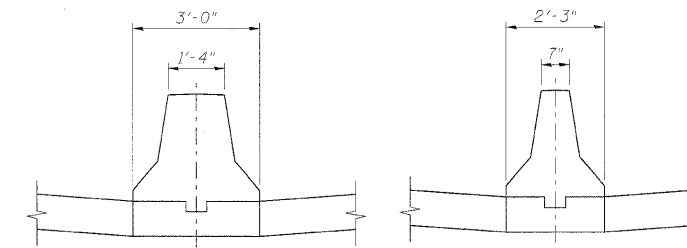


PLAN



SECTION A-A

CONCRETE OVERLAY AT FLOOR DRAIN

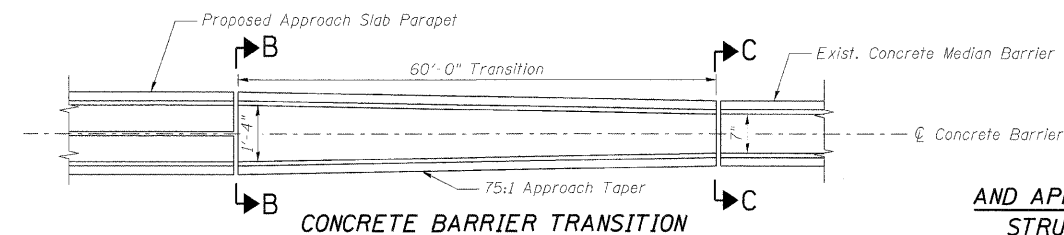


SECTION B-B

Concrete Barrier, Double Face  
16" Top Width

SECTION C-C

Concrete Barrier, Double Face  
7" Top Width



CONCRETE BARRIER TRANSITION

BRIDGE DECK  
AND APPROACH SLAB REPAIRS  
STRUCTURE NO. 022-0138

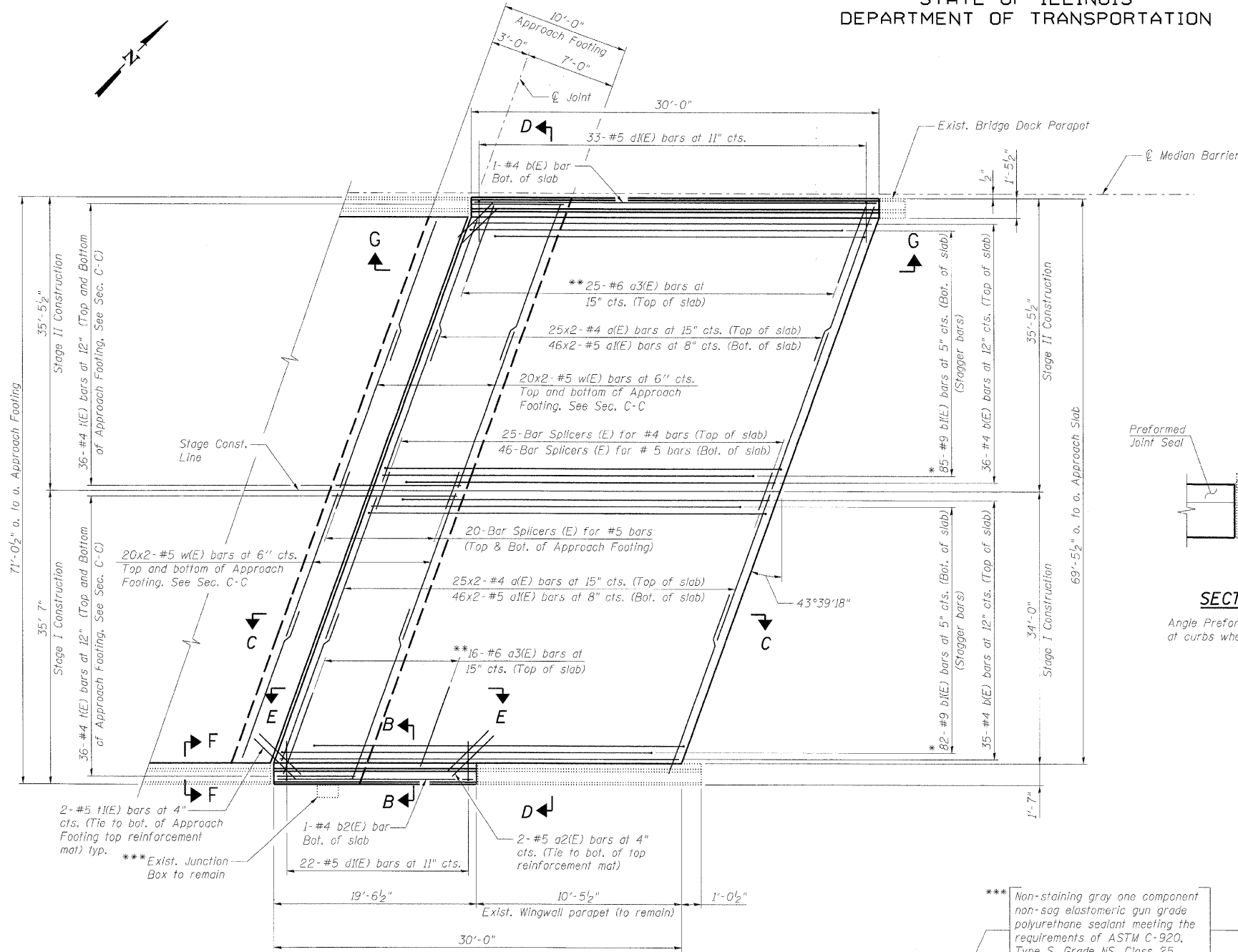
DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

benesch

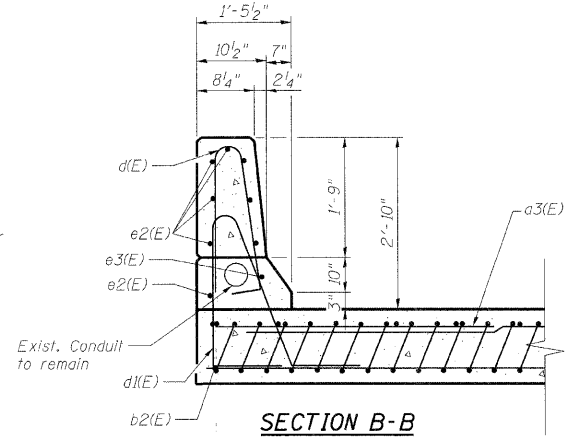
alfred benesch & company  
Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 5 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 380
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

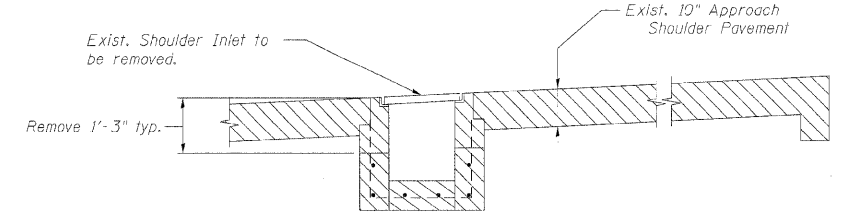


PLAN - MAINLINE

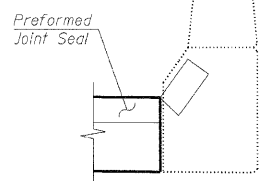


SECTION B-B

\* Tilt bars as required to maintain clearance.  
\*\* Alternate with d(E) or a4(E) bars.  
\*\*\* Cost included with Concrete Superstructure.

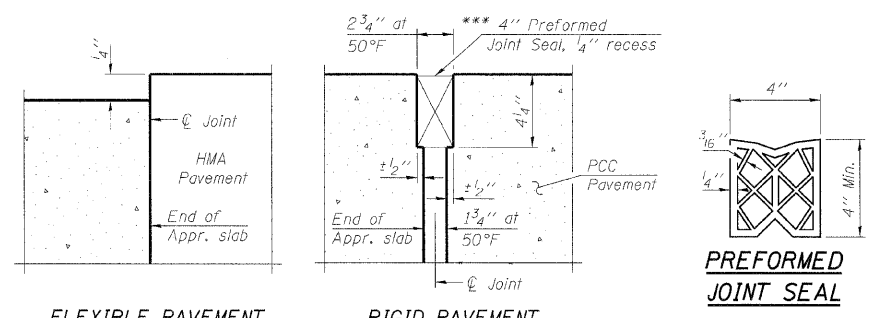


APPROACH SLAB REMOVAL DETAIL AT INLET

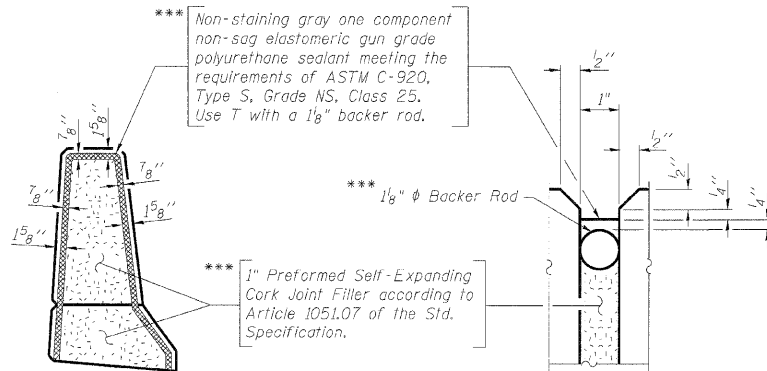


SECTION F-F

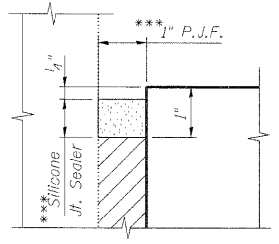
Angle Preformed Joint Seal at 45° at curbs when req'd for drainage.



DETAIL 3



DETAIL 2



DETAIL 1

**Note:**  
Work this sheet with South Bridge Approach Slab Details (2 of 3) and (3 of 3) sheets.

**SOUTH BRIDGE APPROACH SLAB DETAILS**  
(1 of 3)  
**STRUCTURE NO. 022-0138**

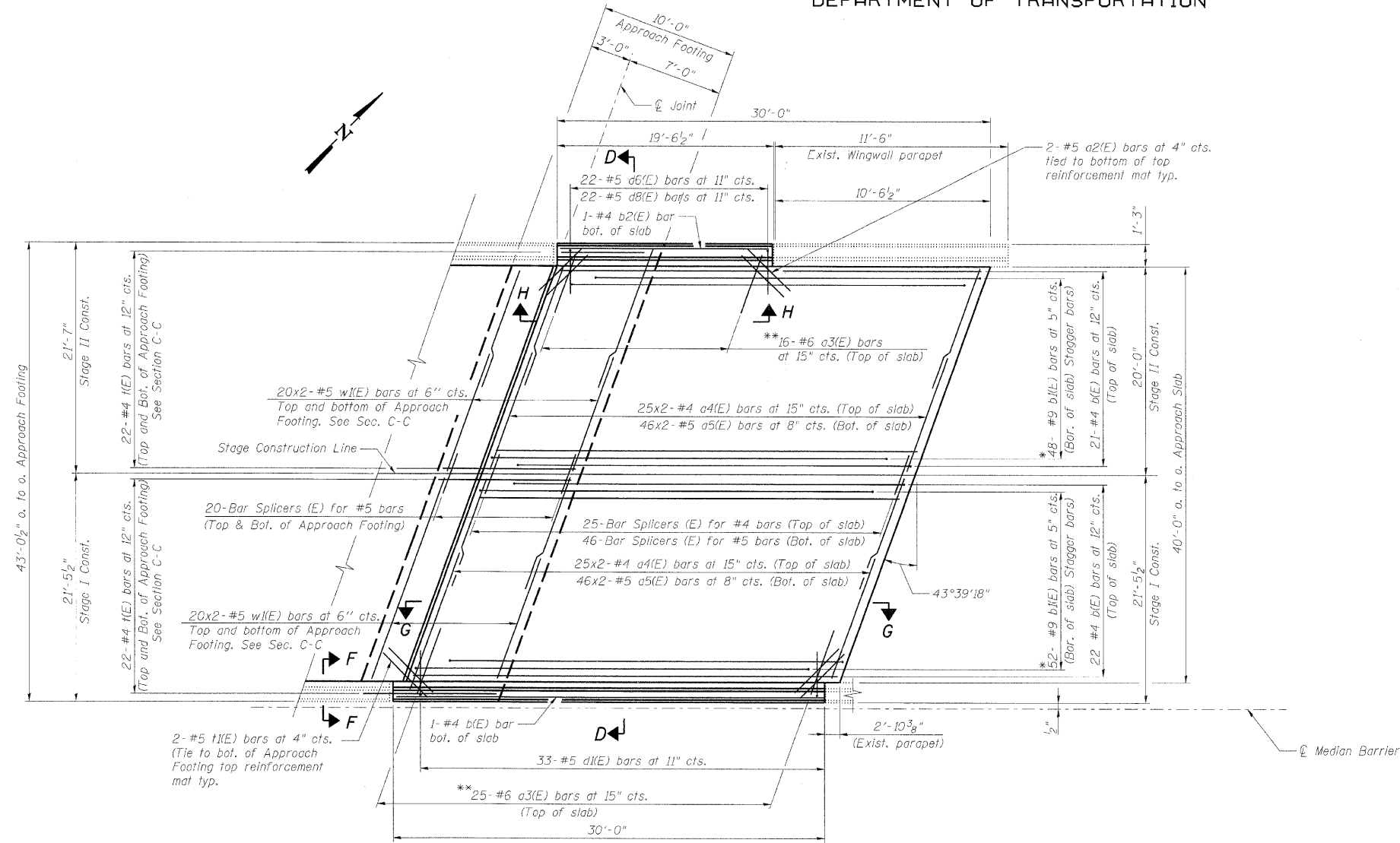
DESIGNED -	JLS/MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

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Chicago, Illinois 60601  
312-666-0460 Job No. 10060

SHEET NO. 6 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 381
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

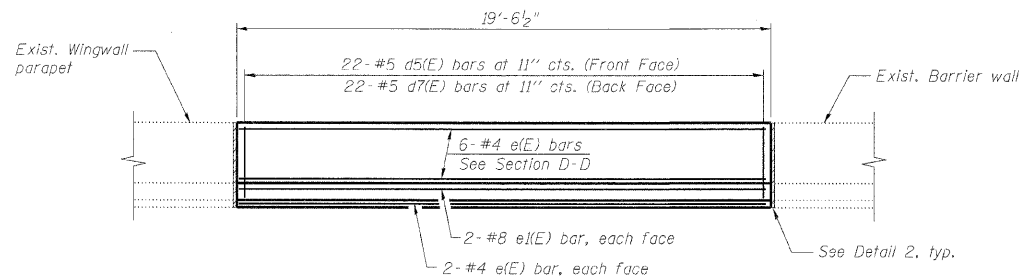
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



PLAN - RAMP H

- \* Tilt bars as required to maintain clearance.
- \*\* Alternate with a(E) or a4(E) bars.
- \*\*\* Cost included with Concrete Superstructure.



VIEW H-H

**Note:**

Work this sheet with South Bridge Approach Slab Details (1 of 3) and (3 of 3) sheets.

**SOUTH BRIDGE APPROACH SLAB DETAILS**  
**(2 of 3)**  
**STRUCTURE NO. 022-0138**

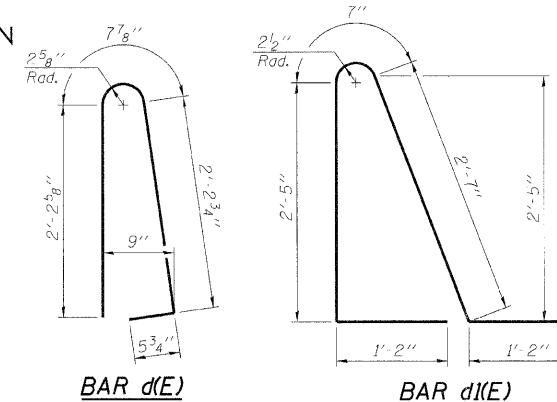
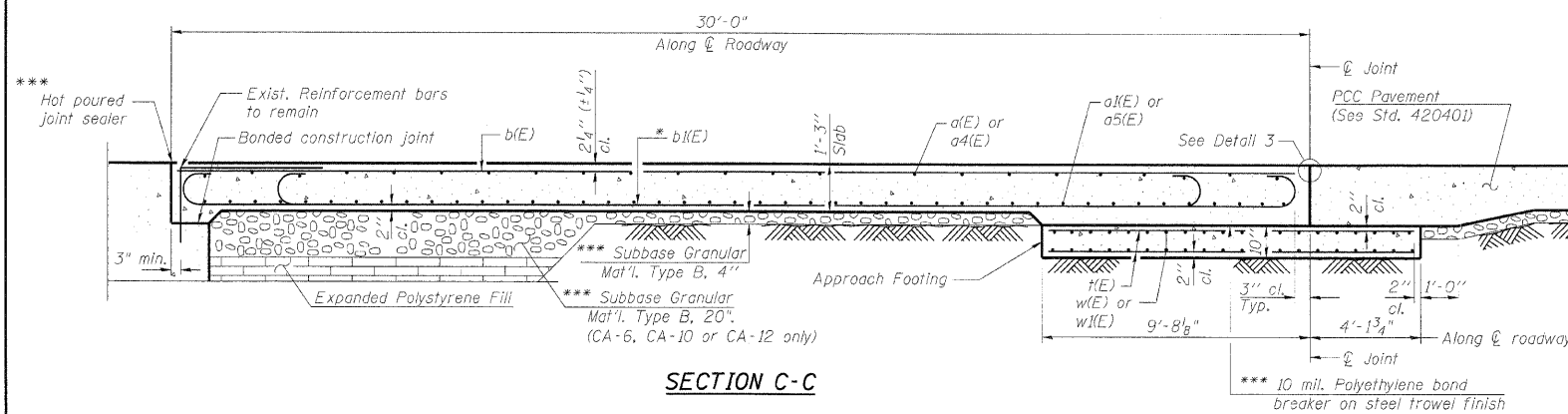
DESIGNED -	JLS/MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

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312-666-0460 Job No. 10060

SHEET NO. 7 38 SHEETS	F.A.I. RTE. 290 355	SECTION 221, 1-1, 2&3RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 382
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

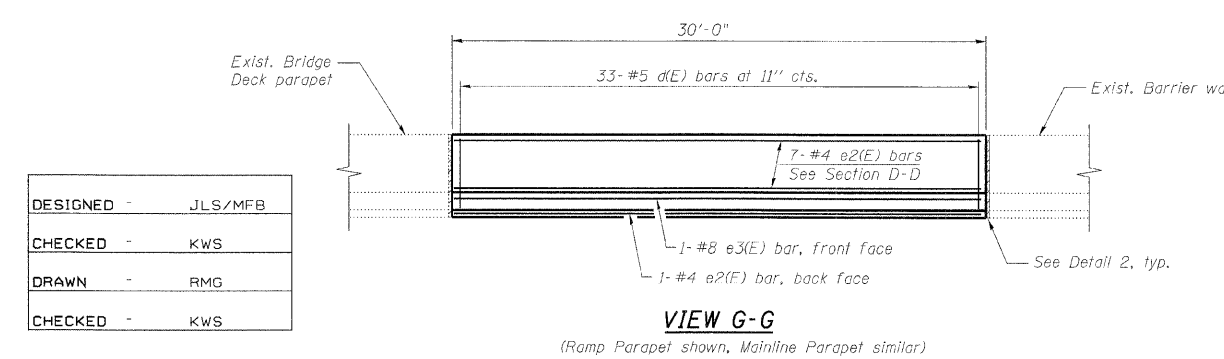
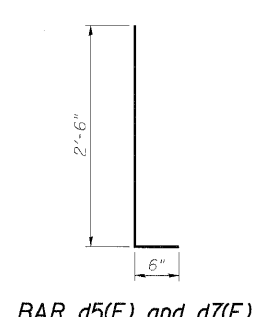
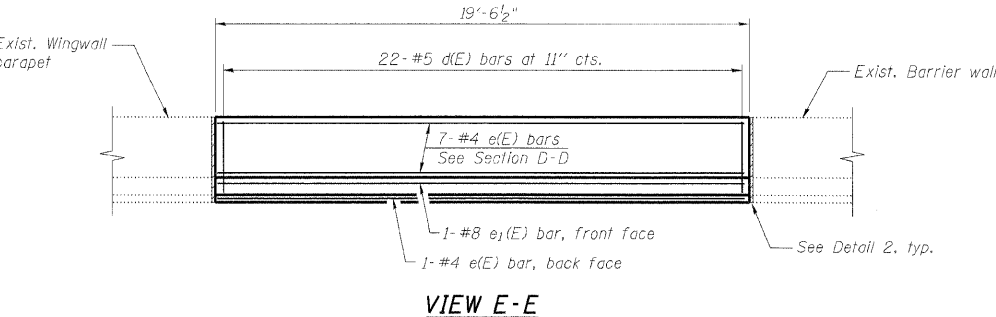
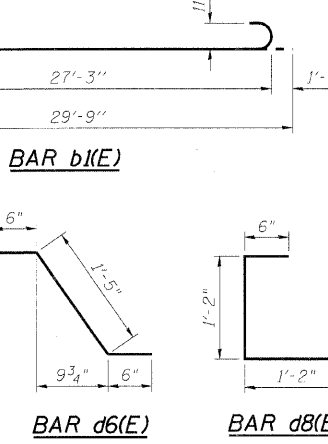
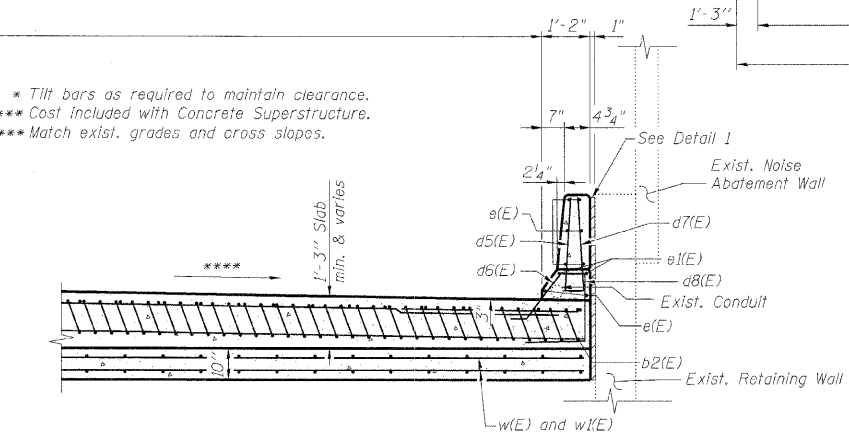
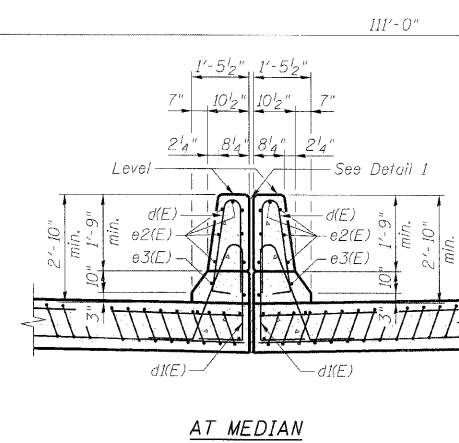
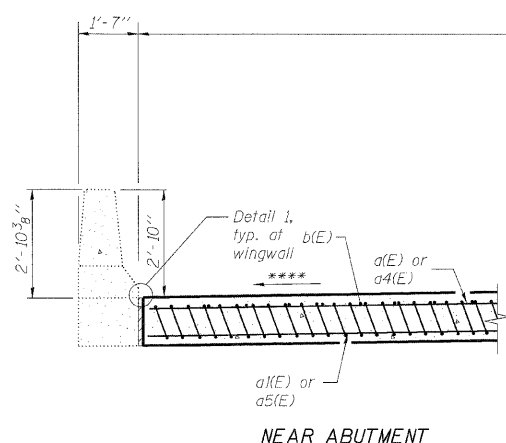
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
a(E)	100	#4	25'-6"	—
a1(E)	184	#5	25'-6"	—
a2(E)	6	#5	4'-0"	—
a3(E)	82	#6	6'-0"	—
a4(E)	100	#4	15'-9"	—
a5(E)	184	#5	15'-9"	—
b(E)	116	#4	29'-8"	—
b1(E)	267	#9	29'-9"	—
b2(E)	2	#4	19'-2"	—
d(E)	88	#5	5'-7"	—
d1(E)	88	#5	7'-11"	—
d5(E)	22	#5	3'-0"	—
d6(E)	22	#5	2'-5"	—
d7(E)	22	#4	3'-0"	—
d8(E)	22	#4	2'-10"	—
e(E)	16	#4	19'-2"	—
e1(E)	3	#8	19'-2"	—
e2(E)	16	#4	29'-8"	—
e3(E)	2	#8	29'-8"	—
f(E)	232	#4	13'-5"	—
f1(E)	8	#5	4'-0"	—
w(E)	160	#5	25'-9"	—
w1(E)	160	#5	21'-3"	—

ITEM	UNIT	TOTAL
Approach Slab Removal	Sq. Yd.	706
Concrete Barrier Removal	Foot	99.5
Concrete Superstructure	Cu. Yd.	176.5
Concrete Structures	Cu. Yd.	48.7
Bridge Deck Grooving	Sq. Yd.	352
Protective Coat	Sq. Yd.	403
Reinforcement Bars, Epoxy Coated	Pound	53,020



- Notes:**
- a(E), a1(E), a4(E) and a5(E) bar spacings measured parallel to  $\text{CL}$  Roadway. b(E) and b1(E) bars spacings measured perpendicular to  $\text{CL}$  Roadway. w(E) and w1(E) bars measured parallel to Exp.Jt.
  - For existing approach slab and shoulder pavement details, see existing plans.
  - Existing reinforcement bars extending into the concrete removal area shall be blast-cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during approach slab removal shall be repaired or replaced with an approved bar splicer or anchorage system. Cost included with Approach Slab Removal.
  - Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
  - Approach footing concrete shall be paid for as Concrete Structures.
  - Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
  - The approach footing maximum applied service bearing pressure ( $Q_{max}$ ) = 2.0 ksf.
  - For bar splicer details, see Bar Splicers Assembly Details sheet.
  - Cost of excavation for approach footing included with Concrete Structures.
  - For Expanded Polystyrene Fill and drainage treatment details, see sheet 16.
  - The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and shall protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.
  - Minimum bar lap: #4 bar = 1'-8"  
#5 bar = 2'-2"
  - Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
  - The existing junction box located in the concrete barrier is to remain and be incorporated into the proposed parapet. Cost included in Concrete Superstructure.
  - Cut w(E), w1(E) and f(E) bars in field to fit in the vicinity of the approach footing boxout around the existing concrete barrier wall.
  - Work this sheet with South Bridge Approach Slab Details (1 of 3) and (2 of 3) sheets.

SOUTH BRIDGE APPROACH SLAB DETAILS  
(3 OF 3)  
STRUCTURE NO. 022-0138

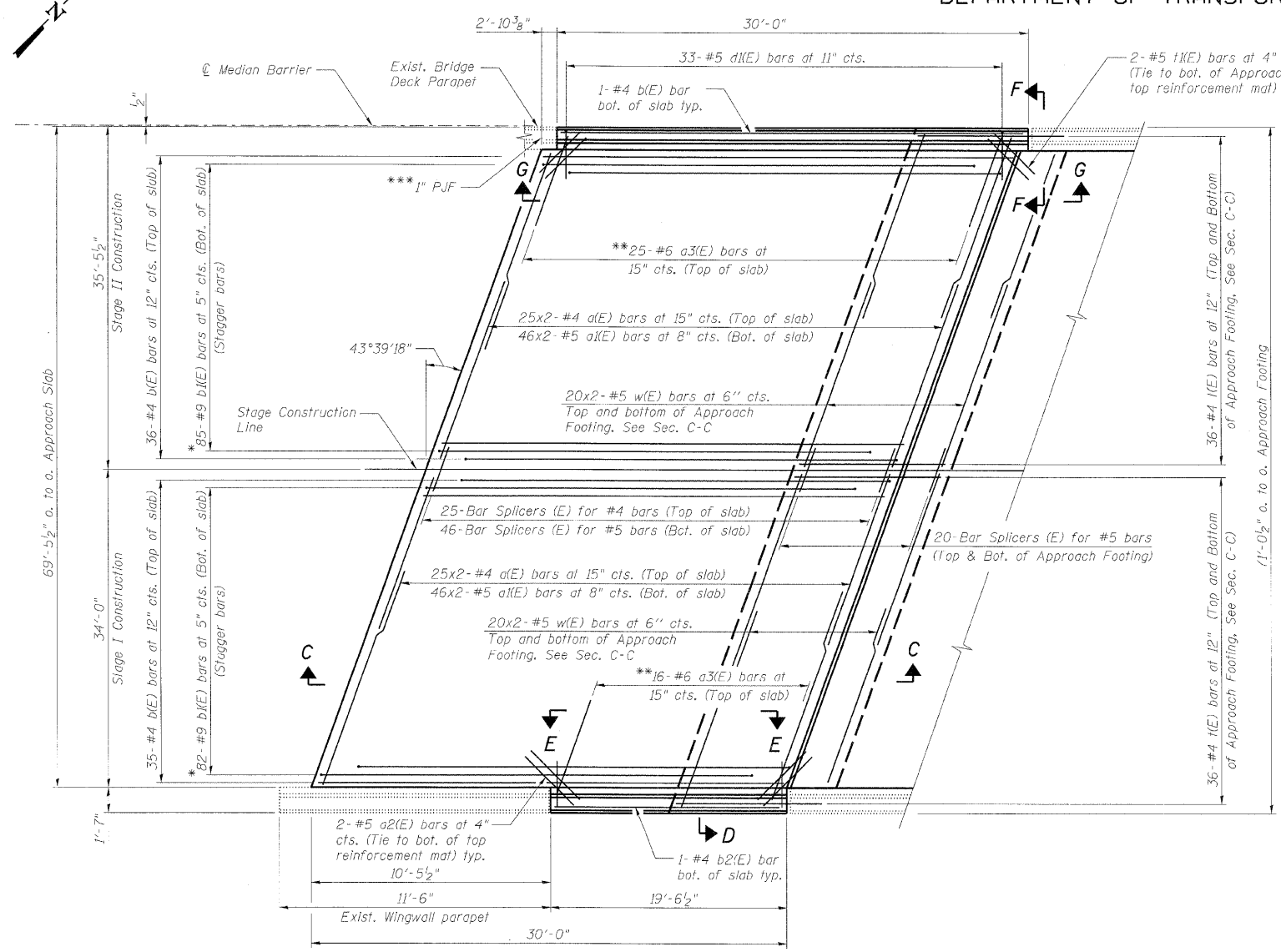
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CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

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312-565-0450 Job No. 10050

SHEET NO. 8 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 383
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

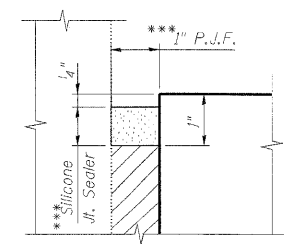
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

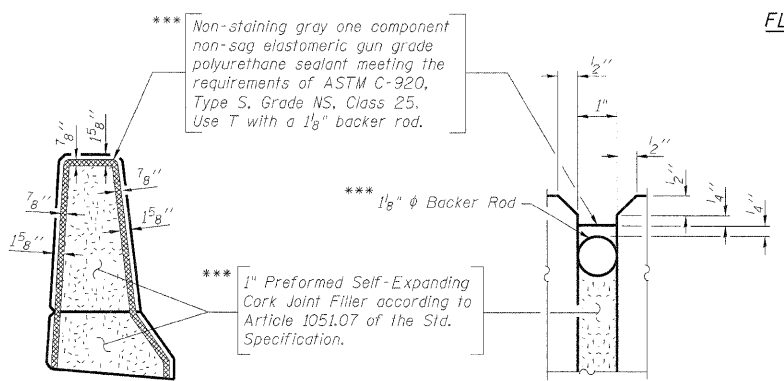


PLAN

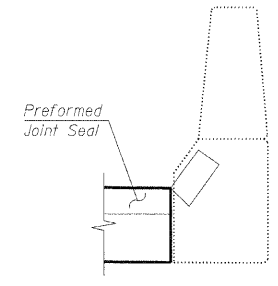
- \* Tilt bars as required to maintain clearance.
- \*\* Lap with alternate a(E) or a4(E) bars.
- \*\*\* Cost included with Concrete Superstructure.



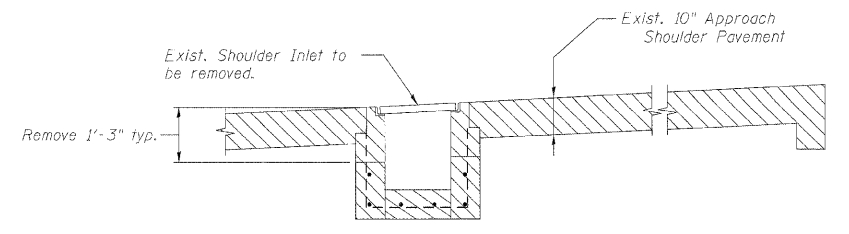
DETAIL 1



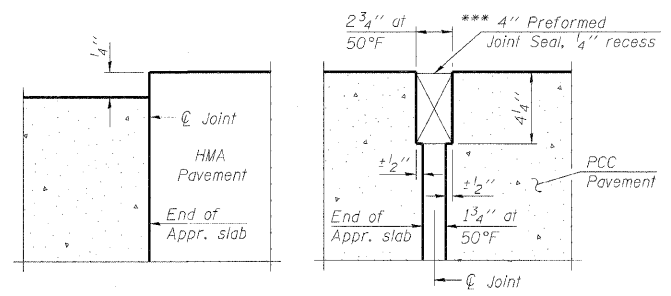
DETAIL 2



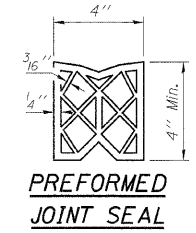
SECTION F-F  
Angle Preformed Joint Seal at 45°  
at curbs when req'd for drainage.



APPROACH SLAB REMOVAL DETAIL AT INLET



FLEXIBLE PAVEMENT RIGID PAVEMENT  
DETAIL 3



PREFORMED JOINT SEAL

**Note:**  
Work this sheet with North Bridge Approach Slab Details (2 of 3) and (3 of 3) sheets.

NORTH BRIDGE APPROACH SLAB DETAILS  
(1 of 3)  
STRUCTURE NO. 022-0138

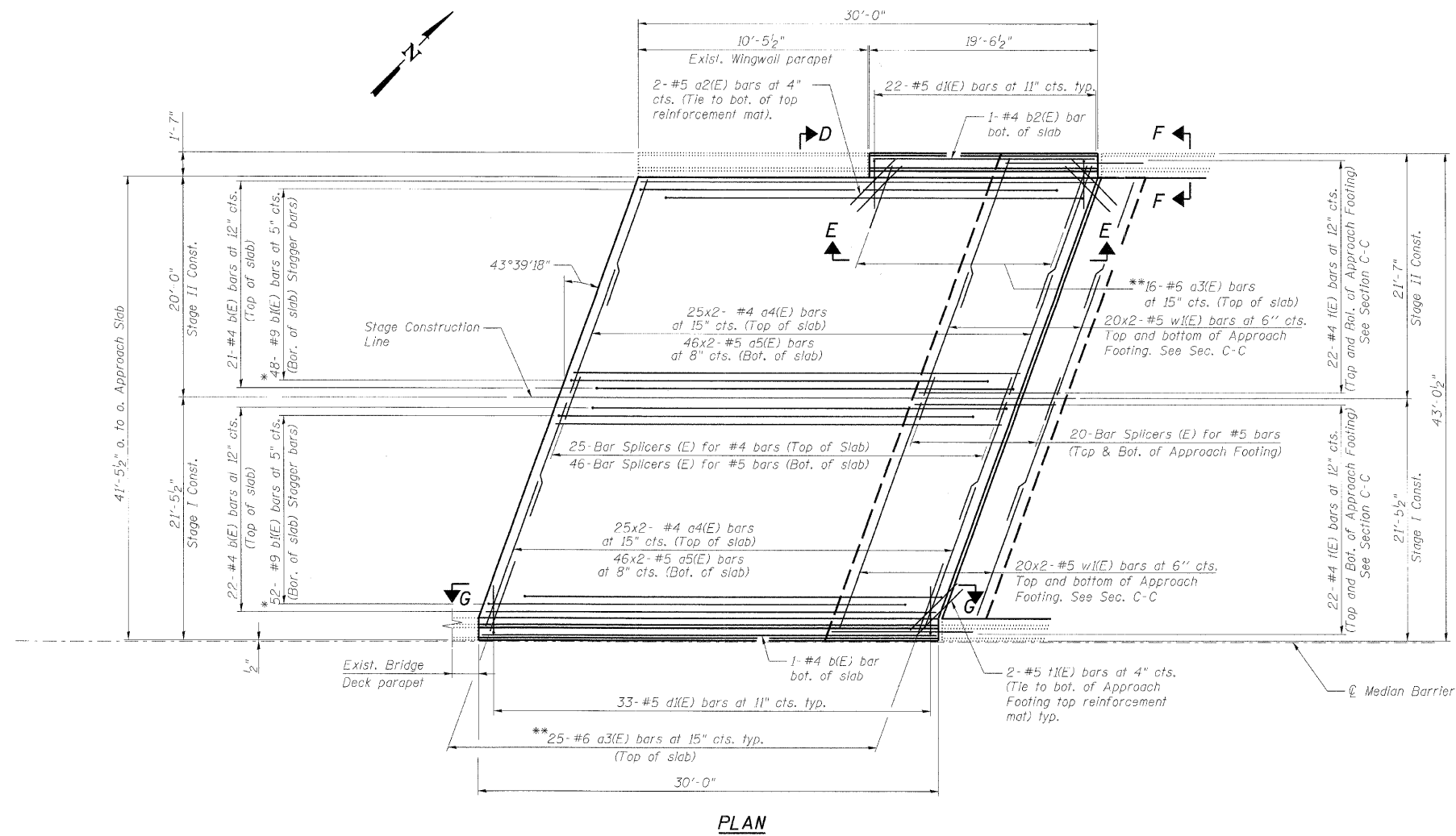
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DRAWN	RMG
CHECKED	KWS

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312-565-0450 Job No. 10050

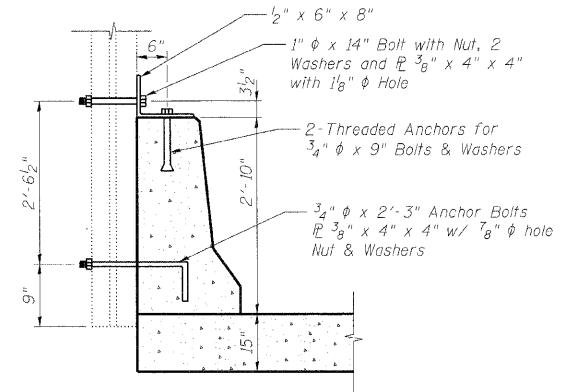
SHEET NO. 9 38 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 384
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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DEPARTMENT OF TRANSPORTATION



- \* Tilt bars as required to maintain clearance.
- \*\* Alternate with a(E) or a4(E) bars.
- \*\*\* Cost included with Concrete Superstructure.



**NOISE ABATEMENT WALL ATTACHMENT DETAIL**

(West Parapet Only, 3 Connections Assumed)  
Locations to match existing and to be verified in the field.  
Work to be performed per Art. 505 of the Std. Specs.  
Cost included with Concrete Superstructure

**Note:**

Work this sheet with North Bridge Approach Slab Details (1 of 3) and (3 of 3) sheets.

**NORTH BRIDGE APPROACH SLAB DETAILS  
(2 of 3)  
STRUCTURE NO. 022-0138**

DESIGNED	JLS/MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

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SHEET NO. 10 38 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 385
	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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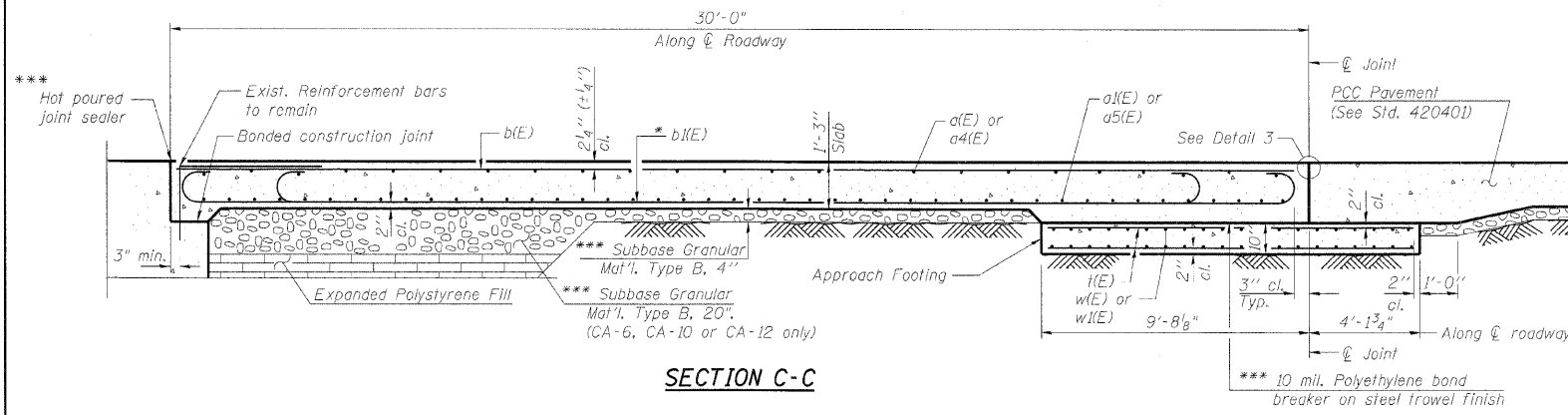


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

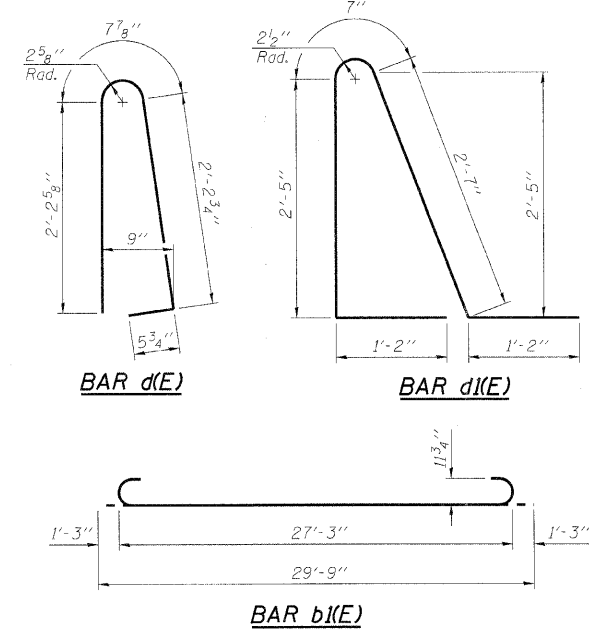
BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
a(E)	100	#4	25'-6"	—
a1(E)	184	#5	25'-6"	—
a2(E)	6	#5	4'-0"	—
a3(E)	82	#6	6'-0"	—
a4(E)	100	#4	15'-9"	—
a5(E)	184	#5	15'-9"	—
b(E)	116	#4	29'-8"	—
b1(E)	267	#9	29'-9"	—
b2(E)	2	#4	19'-2"	—
d(E)	110	#5	5'-7"	—
d1(E)	110	#5	7'-11"	—
e(E)	16	#4	19'-2"	—
e1(E)	2	#8	19'-2"	—
e2(E)	16	#4	29'-8"	—
e3(E)	2	#8	29'-8"	—
f(E)	232	#4	13'-5"	—
f1(E)	8	#5	4'-0"	—
w(E)	160	#5	25'-9"	—
w1(E)	160	#5	21'-3"	—

ITEM	UNIT	TOTAL
Approach Slab Removal	Sq. Yd.	706
Concrete Barrier Removal	Foot	99.5
Concrete Superstructure	Cu. Yd.	176.5
Concrete Structures	Cu. Yd.	48.7
Bridge Deck Grooving	Sq. Yd.	352
Protective Coat	Sq. Yd.	403
Reinforcement Bars, Epoxy Coated	Pound	53,060

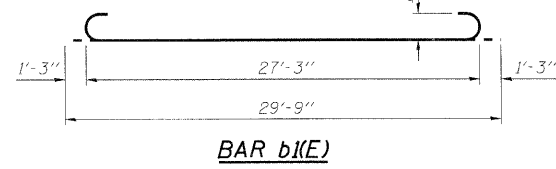


SECTION C-C

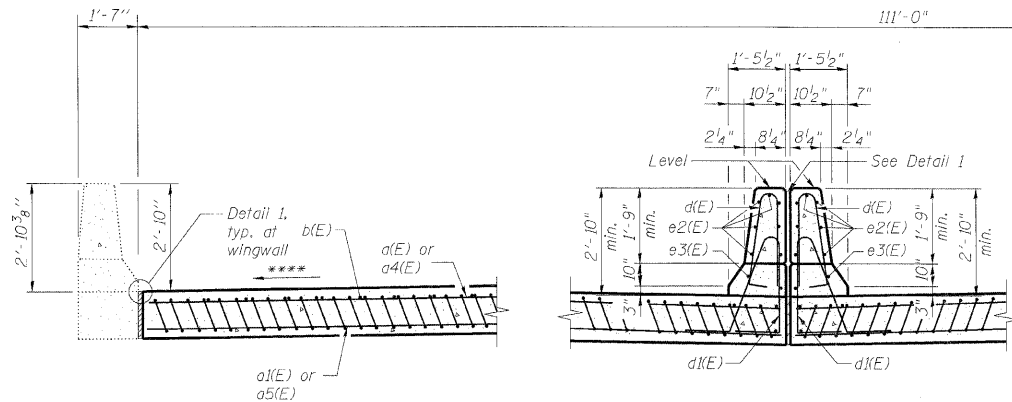


BAR d(E)

BAR b1(E)

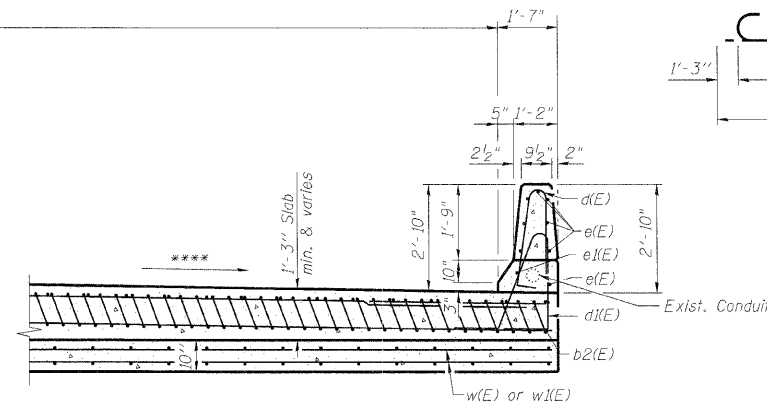


BAR b(E)



NEAR ABUTMENT

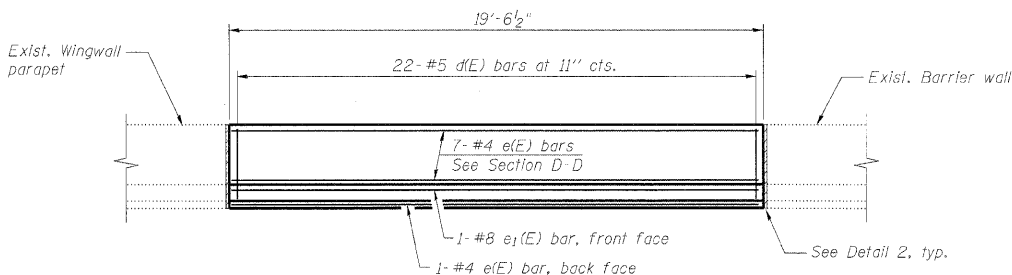
AT MEDIAN



AT APPROACH FOOTING

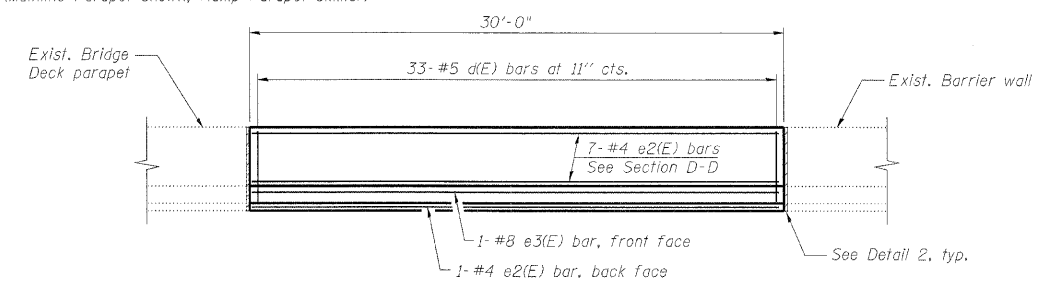
SECTION D-D

(See Plan for dimensions not shown)



VIEW E-E

(Mainline Parapet shown, Ramp Parapet similar)



VIEW G-G

(Ramp Parapet shown, Mainline Parapet similar)

DESIGNED	JLS/MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

Notes:

- d(E), a1(E), a4(E) and a5(E) bar spacings measured parallel to  $\perp$  Roadway. b(E) and b1(E) bars spacings measured perpendicular to  $\perp$  Roadway. w(E) and w1(E) bars measured parallel to Exp.Jt.
- For existing approach slab and shoulder pavement details, see existing plans.
- Existing reinforcement bars extending into the concrete removal area shall be blast-cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during approach slab removal shall be repaired or replaced with an approved bar splicer or anchorage system. Cost included with Approach Slab Removal.
- Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
- Approach footing concrete shall be paid for as Concrete Structures.
- Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
- The approach footing maximum applied service bearing pressure ( $Q_{max}$ ) = 2.0 ksf.
- For bar splicer details, see Bar Splicers Assembly Details sheet.
- Cost of excavation for approach footing included with Concrete Structures.
- For Expanded Polystyrene Fill and drainage treatment details, see sheet 16.
- The Contractor shall exercise extreme care with the existing conduits in sections of the parapet to be removed and shall protect and support the conduit. The Contractor will be required to repair any damage done to the conduit to the satisfaction of the Engineer. No splicing will be allowed to any cable damage resulting from this work, instead the Contractor will be required to repair the entire span of any damaged cable at no additional cost to the Department.
- Minimum bar lap: #4 bar = 1'-8"  
#5 bar = 2'-2"
- Bars indicated thus 8x2-#5 etc. indicates 8 lines of bars with 2 lengths per line.
- Cut w(E), w1(E) and f(E) bars in field to fit in the vicinity of the approach footing boxout around the existing concrete barrier wall.
- Work this sheet with North Bridge Approach Slab Details (1 of 3) and (2 of 3) sheets.

NORTH BRIDGE APPROACH SLAB DETAILS  
(3 OF 3)  
STRUCTURE NO. 022-0138

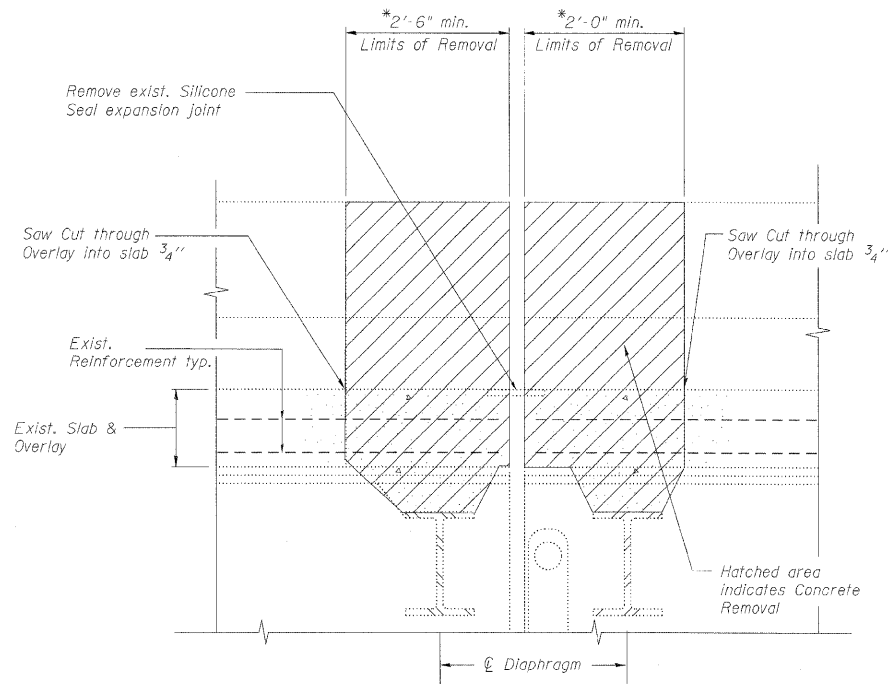
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Chicago, Illinois 60601  
312-665-0480 Job No. 10050

SHEET NO. 11 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 386
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

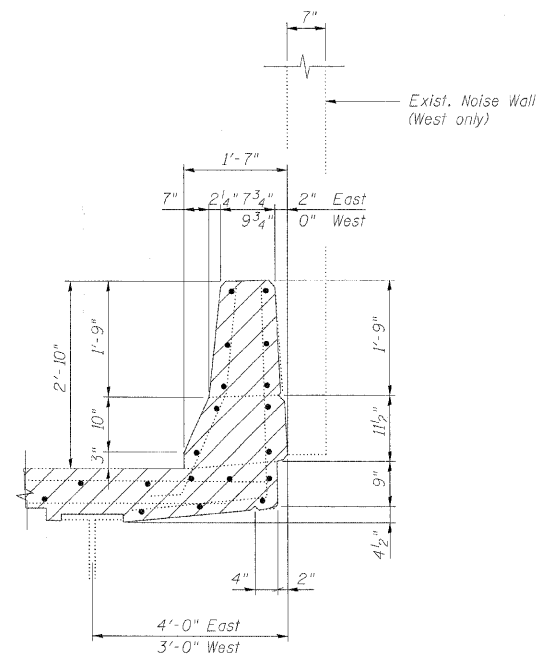
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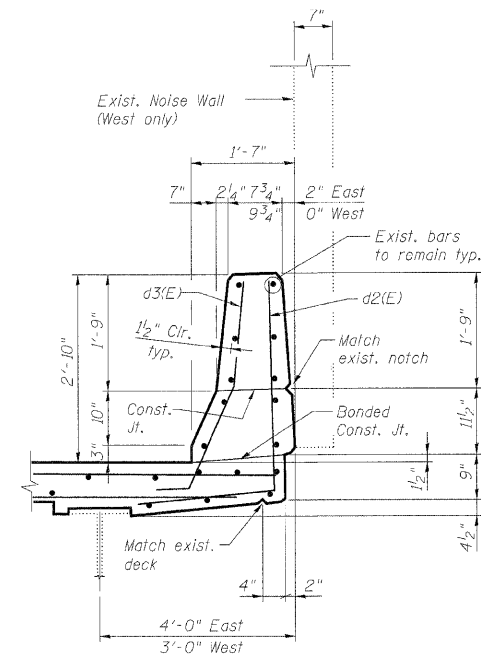
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



SECTION A-A



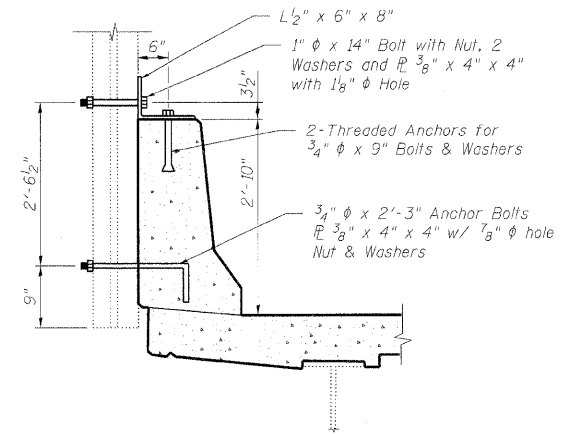
EXISTING OUTER PARAPET SECTION



PROPOSED OUTER PARAPET SECTION

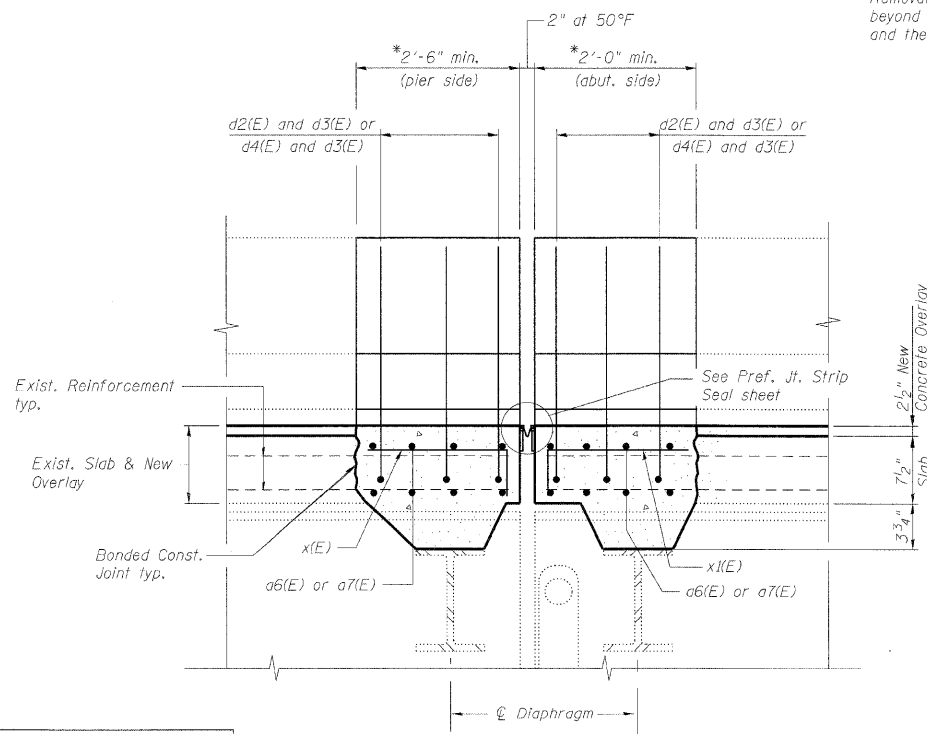
Notes:

- Existing reinforcement bars extending into the concrete 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.
- Existing reinforcement bars in the concrete removal area parallel to the expansion joints shall be removed.
- Removal and disposal of the existing expansion joints will not be paid for separately, but shall be included with the cost of Concrete Removal.
- Existing noise wall to remain. Care shall be taken not to damage the noise wall during parapet removal and reconstruction. Any damage to the noise walls shall be repaired at no additional cost to the Department. If a noise wall connection fails within the limits of concrete removal, then the connection shall be removed and reinstalled and noise wall temporarily supported to the satisfaction of the Engineer. Cost included in Concrete Removal.
- Work this sheet with Expansion Joint Repairs sheet.



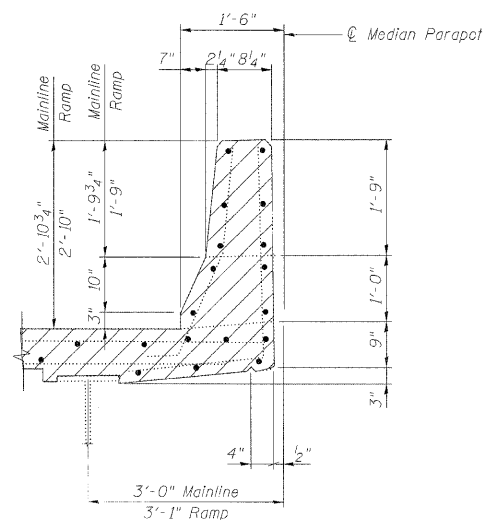
NOISE ABATEMENT WALL ATTACHMENT DETAIL

(West Parapet Only)  
Locations to match existing and to be verified in the field.  
Work to be performed per Art. 505 of the Std. Specs.  
Cost included with Concrete Superstructure

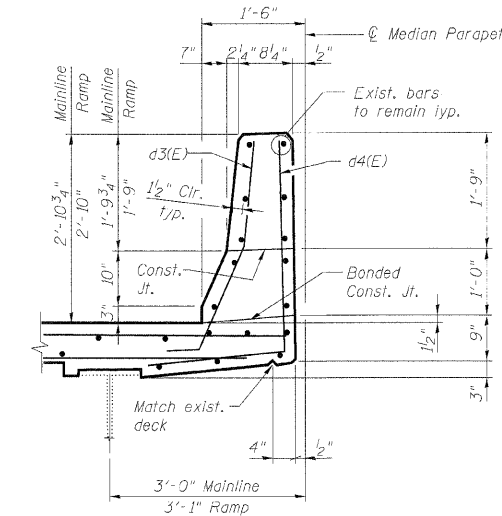


SECTION B-B

\* Removal and reconstruction limits shall extend beyond the haunch between the diaphragm and the deck.



EXISTING MEDIAN PARAPET SECTION



PROPOSED MEDIAN PARAPET SECTION

EXPANSION JOINT DETAILS  
STRUCTURE NO. 022-0138

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	VH
CHECKED -	KWS

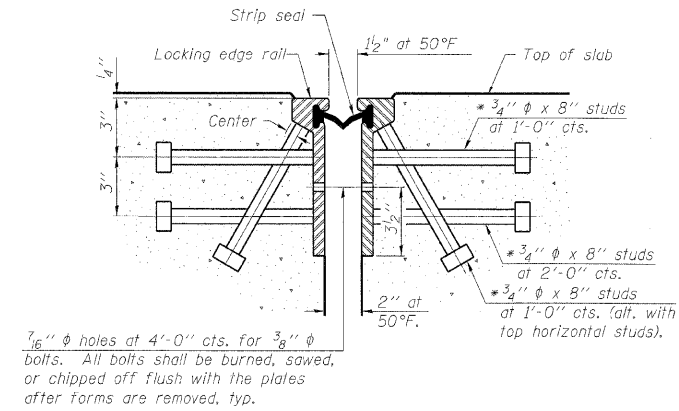
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312-665-0460 Job No. 10060

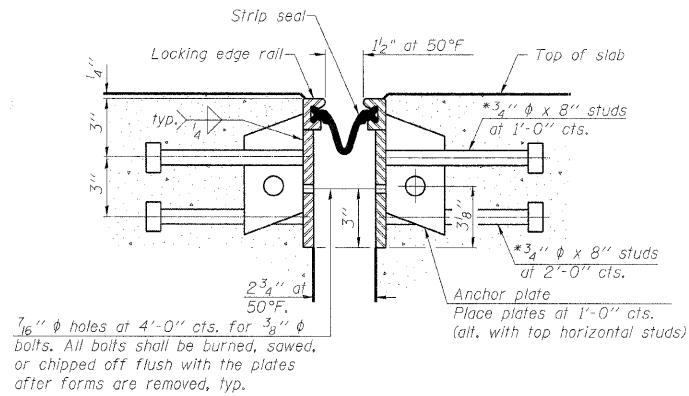
SHEET NO. 13	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	388
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SECTION THRU  
ROLLED RAIL JOINT



SECTION THRU  
WELDED RAIL JOINT

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

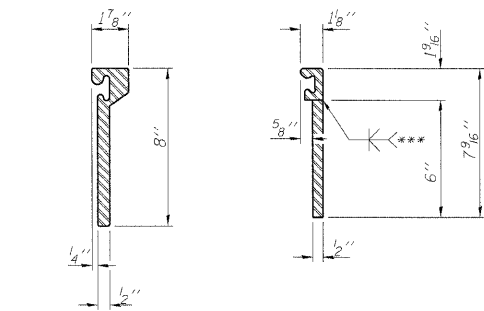
The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

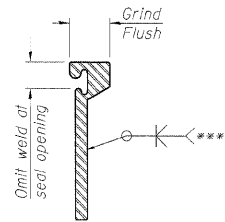
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

7/16" φ holes at 4'-0" cts. for 3/8" φ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

7/16" φ holes at 4'-0" cts. for 3/8" φ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.



ROLLED  
EXTRUDED RAIL      WELDED RAIL

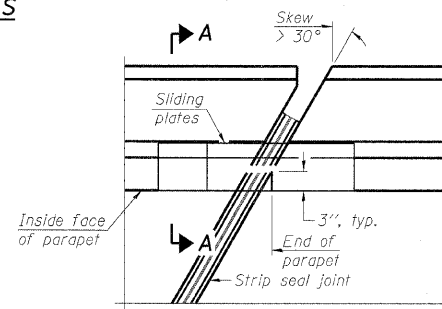


\*\*\*Back gauge not required if complete joint penetration is verified by mock-up.

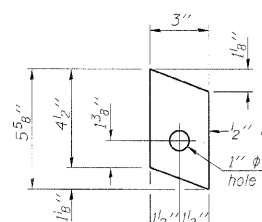
LOCKING EDGE  
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

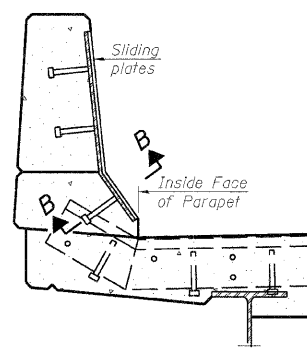
LOCKING EDGE RAILS



PLAN

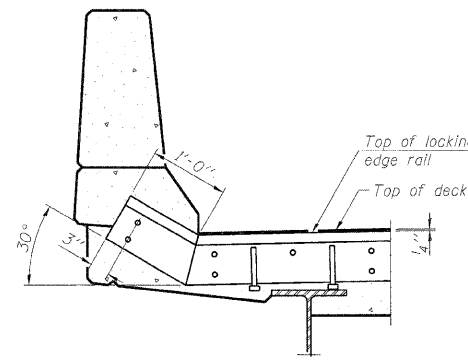


ANCHOR PLATE  
(for welded rail)

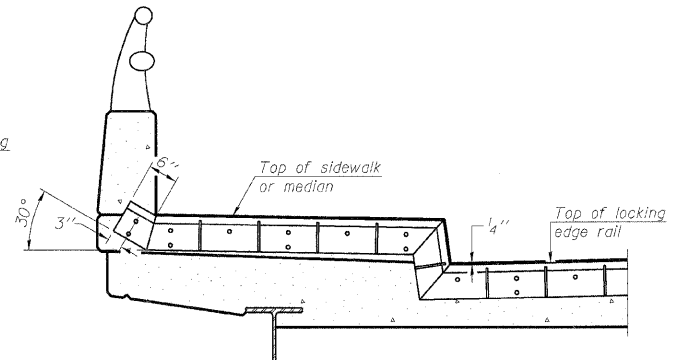


SECTION A-A

POINT BLOCK DETAILS  
(for skews > 30°)



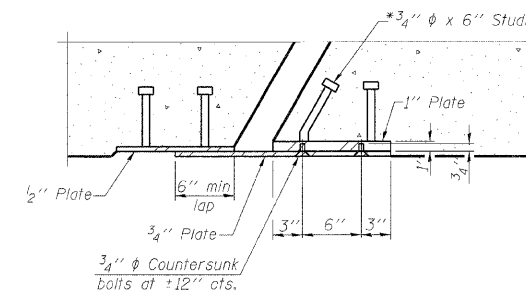
AT PARAPET



AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	303.0

DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS

EJ-SSJ

10-1-08

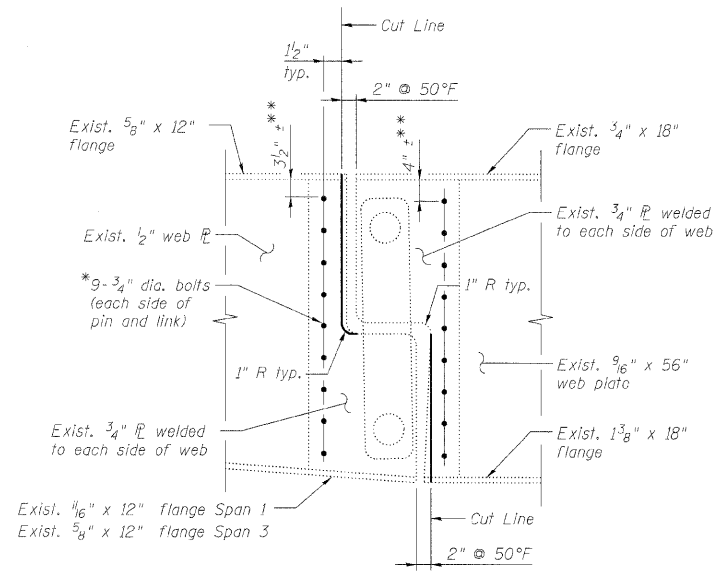
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312-665-0460      Job No. 10050

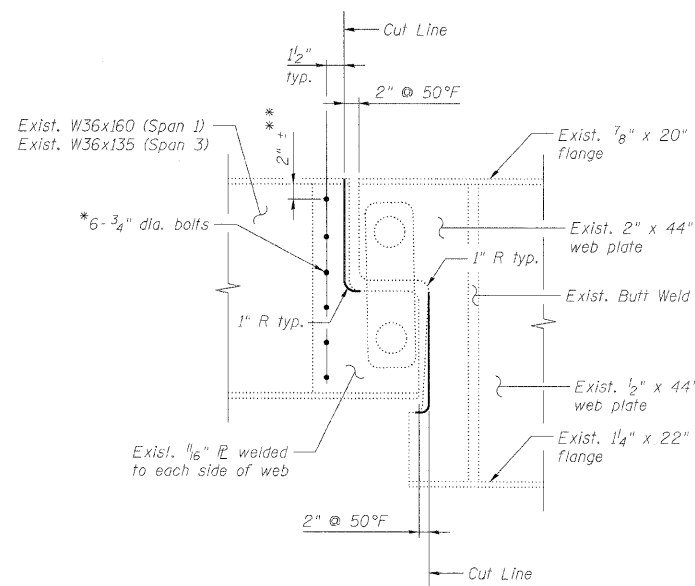
SHEET NO. 14	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290				
38 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO.    ILLINOIS    FED. AID PROJECT		

PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 022-0138

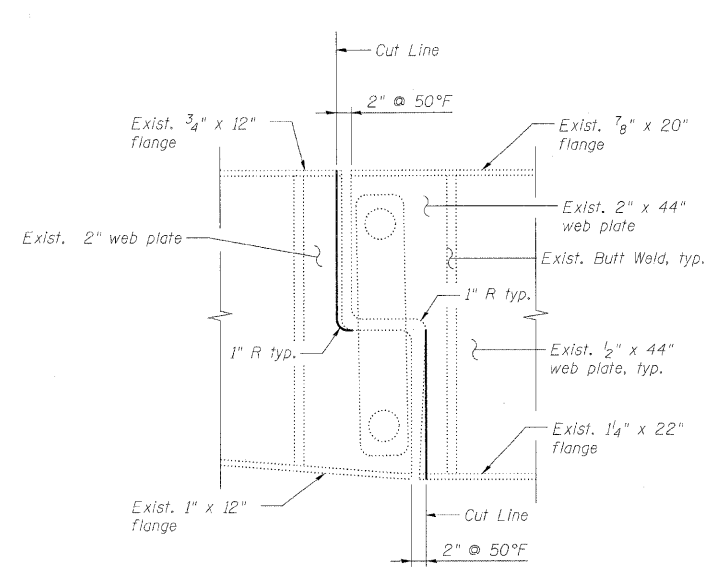
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



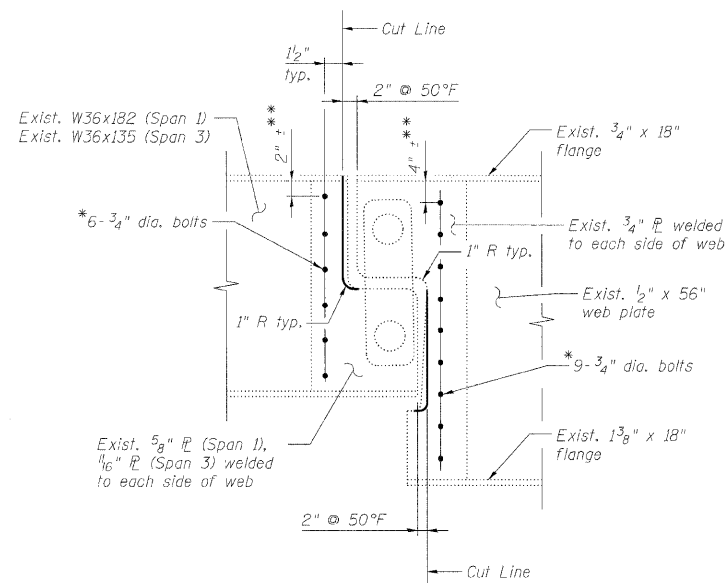
**GIRDER MODIFICATION DETAILS - GIRDERS 9 & 15**  
(18 bolts per connection - 72 thus)



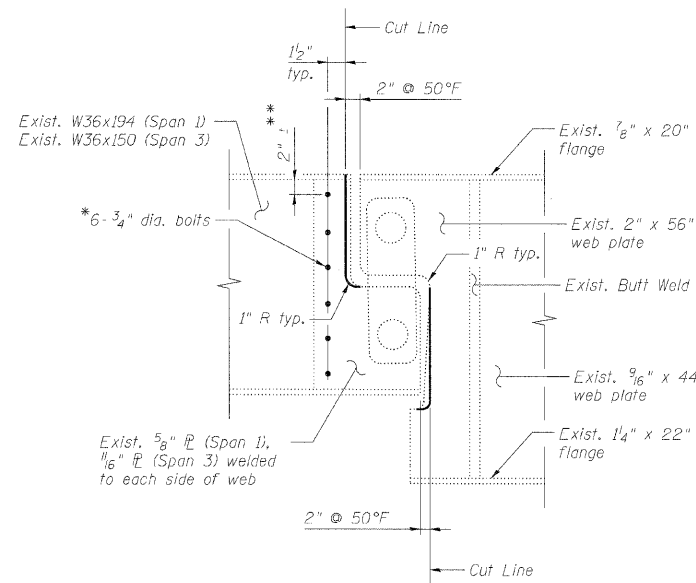
**GIRDER MODIFICATION DETAILS - GIRDERS 2-8**  
(6 bolts per connection - 84 thus)



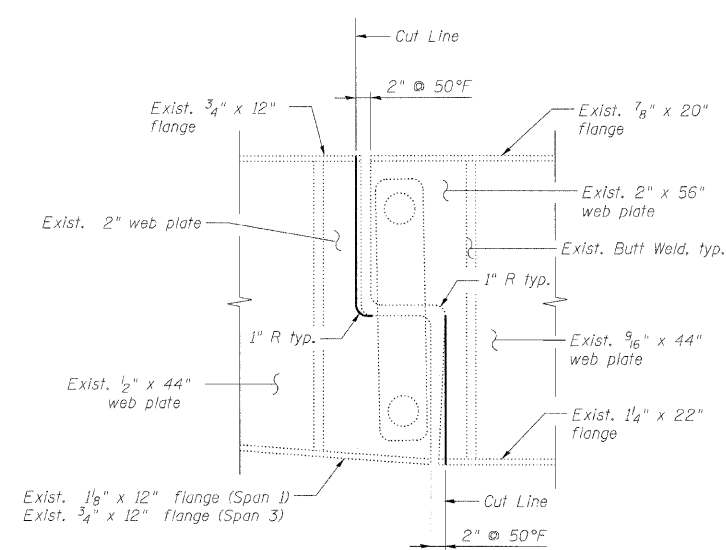
**GIRDER MODIFICATION DETAILS - GIRDER 1**



**GIRDER MODIFICATION DETAILS - GIRDERS 10-14**  
(15 bolts per connection - 150 thus)



**GIRDER MODIFICATION DETAILS - GIRDER 16**  
(6 bolts per connection - 12 thus)



**GIRDER MODIFICATION DETAILS - GIRDER 17**

**Notes:**

1. Cut surfaces shall be grinded smooth, spot cleaned, and painted with an aluminum epoxy mastic primer followed by a finish coat to match the color of the existing beam. Paint shall be applied per the requirements of Paint System 2, according to the Special Provision "Cleaning and Painting Existing Steel Structures". Cost included with Modify Existing Pin and Link Connection.
2. See existing plans for girder layout and numbering.
3. The Contractor must exercise extreme care so as not to damage the pins or link plate while trimming the girders.
4. Some connections may have already been cut therefore the current existing geometries may not match the geometries as shown on the existing plans.
5. Pin and Link connections are located near each pier. Thus, there are 2 connections per girder line.

\* Install 3/4" diameter high strength bolts with two hardened washers that conform with ASTM (A-325) and AASHTO-164 with 15/16" diameter holes at 6" (+) centers to hold plates together. Gaps between the plates and web shall be sealed such that no moisture can develop between the plates. Cost included with Modify Existing Pin and Link Connection.

\*\* Verify in field. Distance from flange to first bolt shall be equal at top and bottom of girder.

DESIGNED -	KWS
CHECKED -	MFB/EFS
DRAWN -	RMG
CHECKED -	KWS

**BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Modify Existing Pin and Link Connection	L. Sum	0.33

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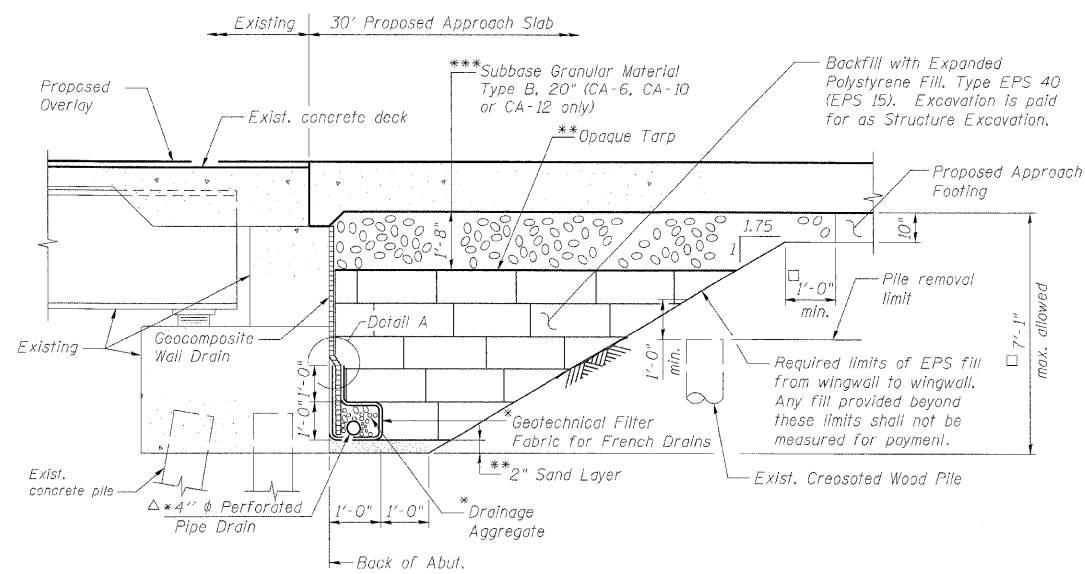
SHEET NO. 15	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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DEPARTMENT OF TRANSPORTATION



**ABUTMENT STABILIZATION DETAIL**  
(Horiz. dim. @ Rt. L's)

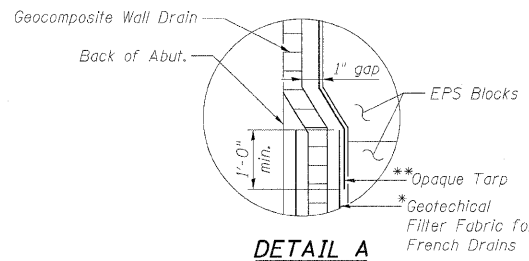
- \* Included in the cost of Pipe Underdrains for Structures.
- \*\* Included in the cost of Expanded Polystyrene Fill.
- \*\*\* Included in the cost of Concrete Superstructure. See Approach Slab Details.

△ Tie new Pipe Underdrain into existing drainage elements at interface where abutment section changes.

□ Max. allowed EPS fill depth to maintain 1'-0" min. berm from Proposed Approach Footing to EPS fill cut. If abutment exceeds this height, only install fill down to the max. allowed depth.

All drainage system components shall extend parallel to the abutment backwall until they intersect the wingwalls or 2'-0" from the end of the wingwalls when the wings are parallel to the abutment. The pipe shall extend under the wingwall, if necessary, until intersecting the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).

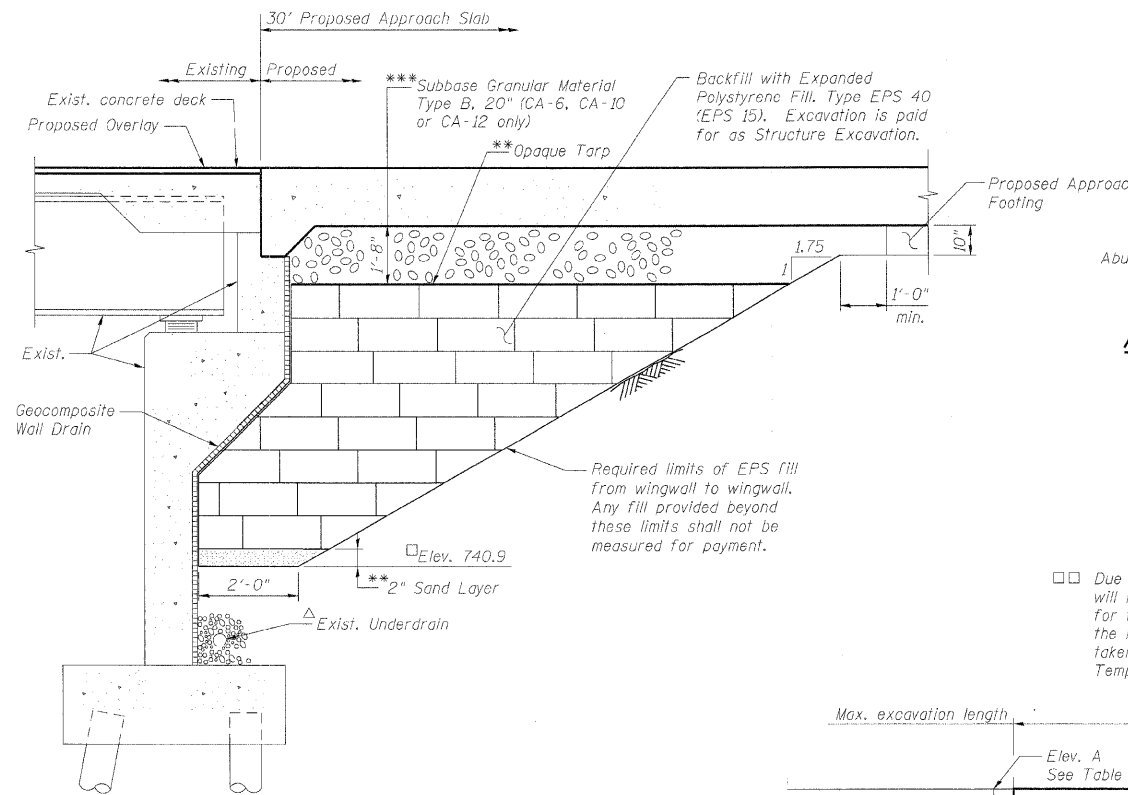
Existing approach slabs are supported on creosoted wood piles. The piles shall be removed down a minimum of 1'-0" below the limits of structure excavation. Cost included in Structure Excavation.



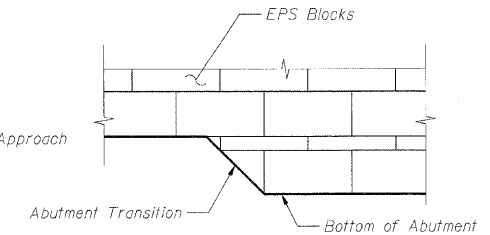
**DETAIL A**

**BILL OF MATERIAL**

Item	Unit	Total
Structure Excavation	Cu. Yd.	697
Temporary Sheet Piling	Sq. Ft.	673
Geocomposite Wall Drain	Sq. Yd.	246
Pipe Underdrains for Structures 4"	Foot	320
Expanded Polystyrene Fill	Cu. Yd.	450

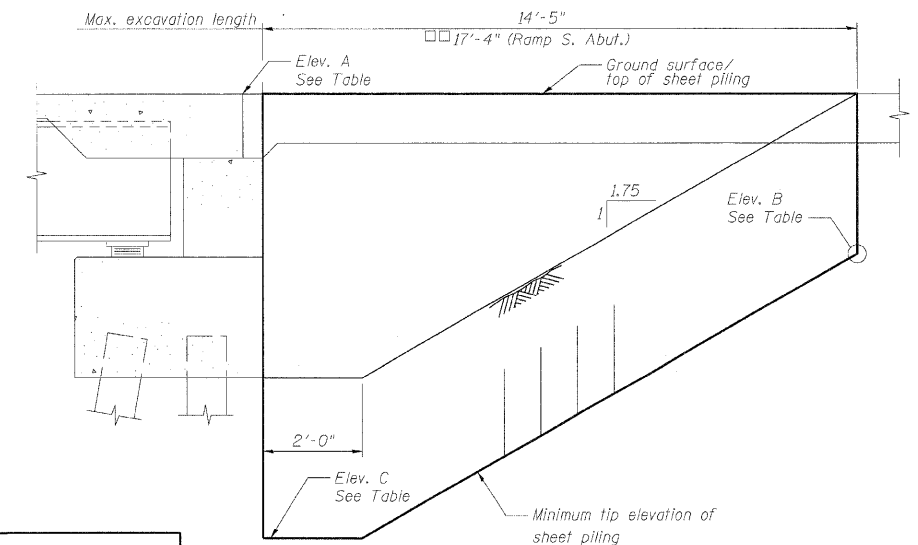


**ABUTMENT STABILIZATION DETAIL**  
(Horiz. dim. @ Rt. L's)  
(West Portion of Ramp H South Abutment Only)



**EPS BLOCK ORIENTATION AT ABUTMENT TRANSITION DETAIL**  
(Located at Steps in Abutment Footing)

□ Due to the shape of the ramp south abutment, the sheeting will not be able to be installed against the back of abutment for the full height of the cut. Soil at the inset portion of the ramp south abutment shall be retained and care shall be taken not to damage the footing. Cost included with Temporary Sheet Piling.



**TEMPORARY SHEET PILING**  
(Horiz. dim. @ Rt. L's)

**SHEET PILING ELEVATION TABLE**

Abutment	Location	Elev. A	Elev. B	Elev. C	Min. Section Modulus Req'd. (in. <sup>2</sup> /ft.)	Min. Embedment (ft.)
North	Mainline	745.88	739.68	732.59	3.3	6.3
North	Ramp	744.12	737.92	730.83	3.3	6.3
South	Mainline	751.43	745.23	738.14	3.3	6.3
South	Ramp	749.69	741.39	732.64	5.5	8.3

**ABUTMENT STABILIZATION DETAILS  
STRUCTURE NO. 022-0138**

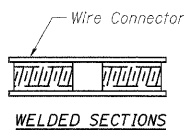
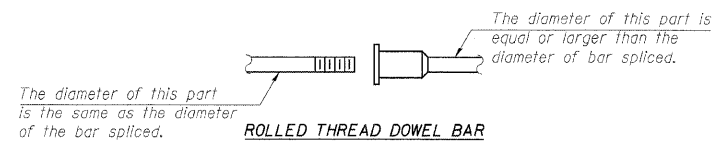
DESIGNED	MFB
CHECKED	KWS
DRAWN	RMG
CHECKED	KWS/AAV

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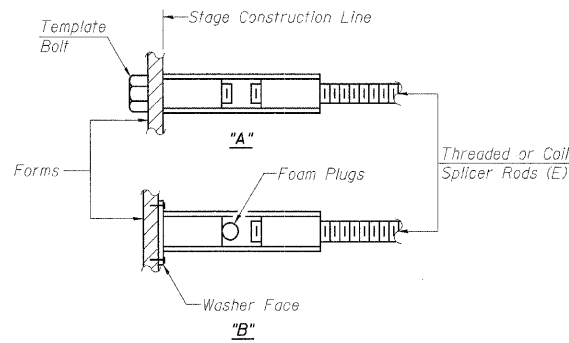
SHEET NO. 16	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	391
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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DEPARTMENT OF TRANSPORTATION



**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



**INSTALLATION AND SETTING METHODS**

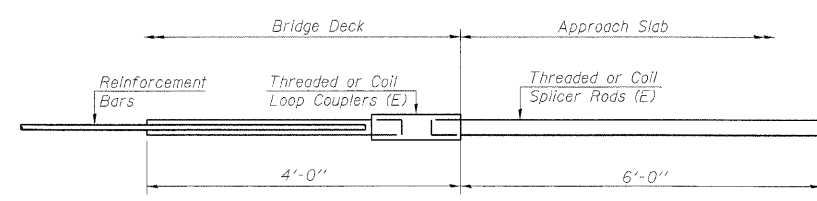
"A": Set bar splicer assembly by means of a template bolt.  
"B": Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
(E) : Indicates epoxy coating.

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

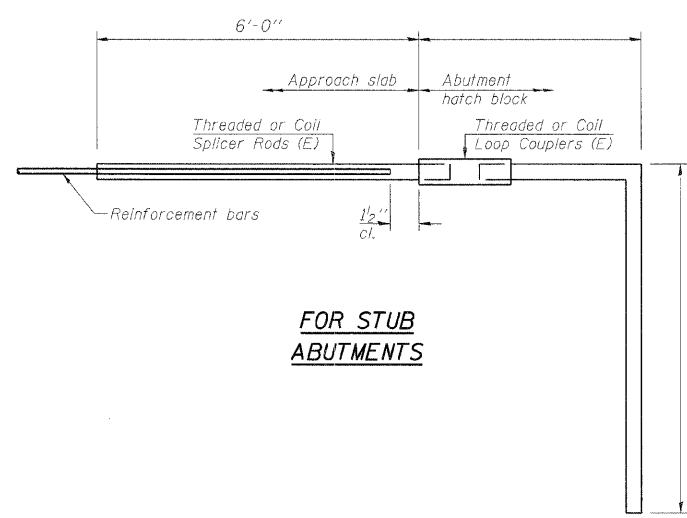
- ① Minimum Capacity =  $1.25 \times f_y \times A_t$   
(Tension in kips)
  - ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_t$   
(Tension in kips)
- Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_t$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



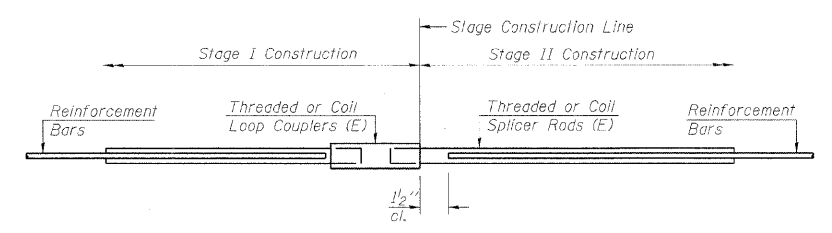
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**FOR STUB ABUTMENTS**

Bar Splicer for #5 bar	
Min. Capacity =	23.0 kips - tension
Min. Pull-out Strength =	12.3 kips - tension
No. Required =	



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	72	Deck
#4	100	Approach Slab
#5	184	Approach Slab
#5	160	Approach Footing

DESIGNED -	MFB
CHECKED -	KWS
DRAWN -	RMG
CHECKED -	KWS

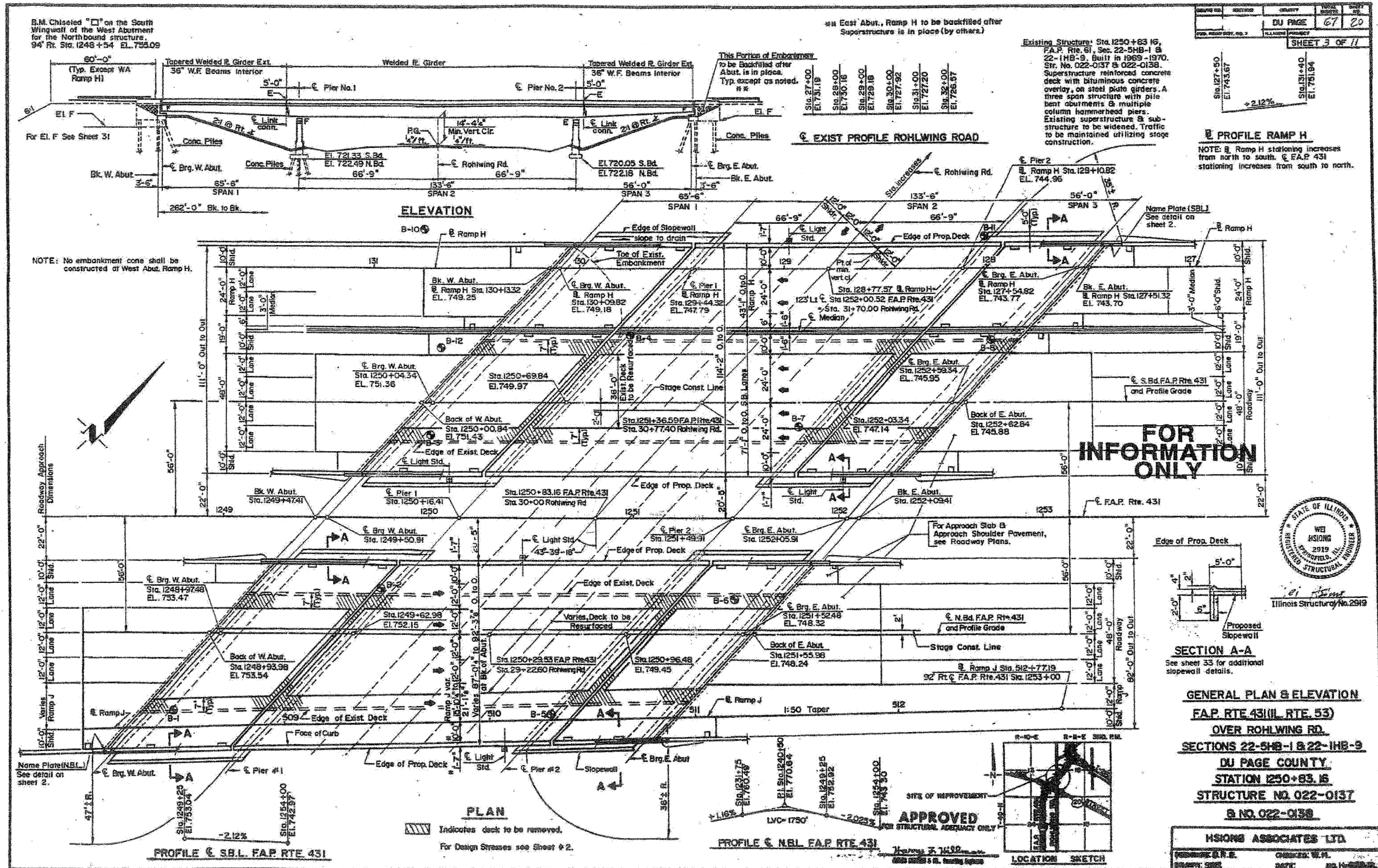
BSD-1 10-1-08

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Chicago, Illinois 60601  
312-565-0460 Job No. 10050

SHEET NO. 17	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	392
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



DU PAGE	67	20
SHEET 3 OF 11		



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Chicago, Illinois 60601  
312-565-0480 Job No. 10050

SHEET NO. 18 38 SHEETS	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 393
	FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 60G51	

EXISTING PLAN INFORMATION 1 OF 21  
STRUCTURE NO. 022-0138

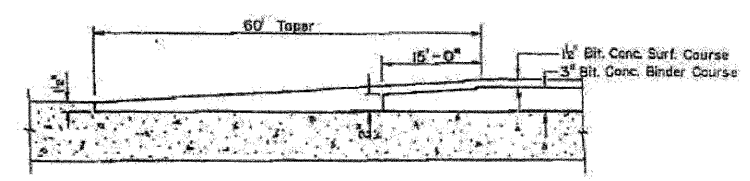
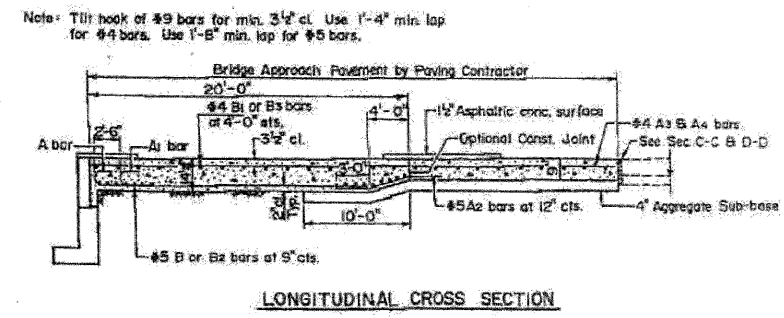
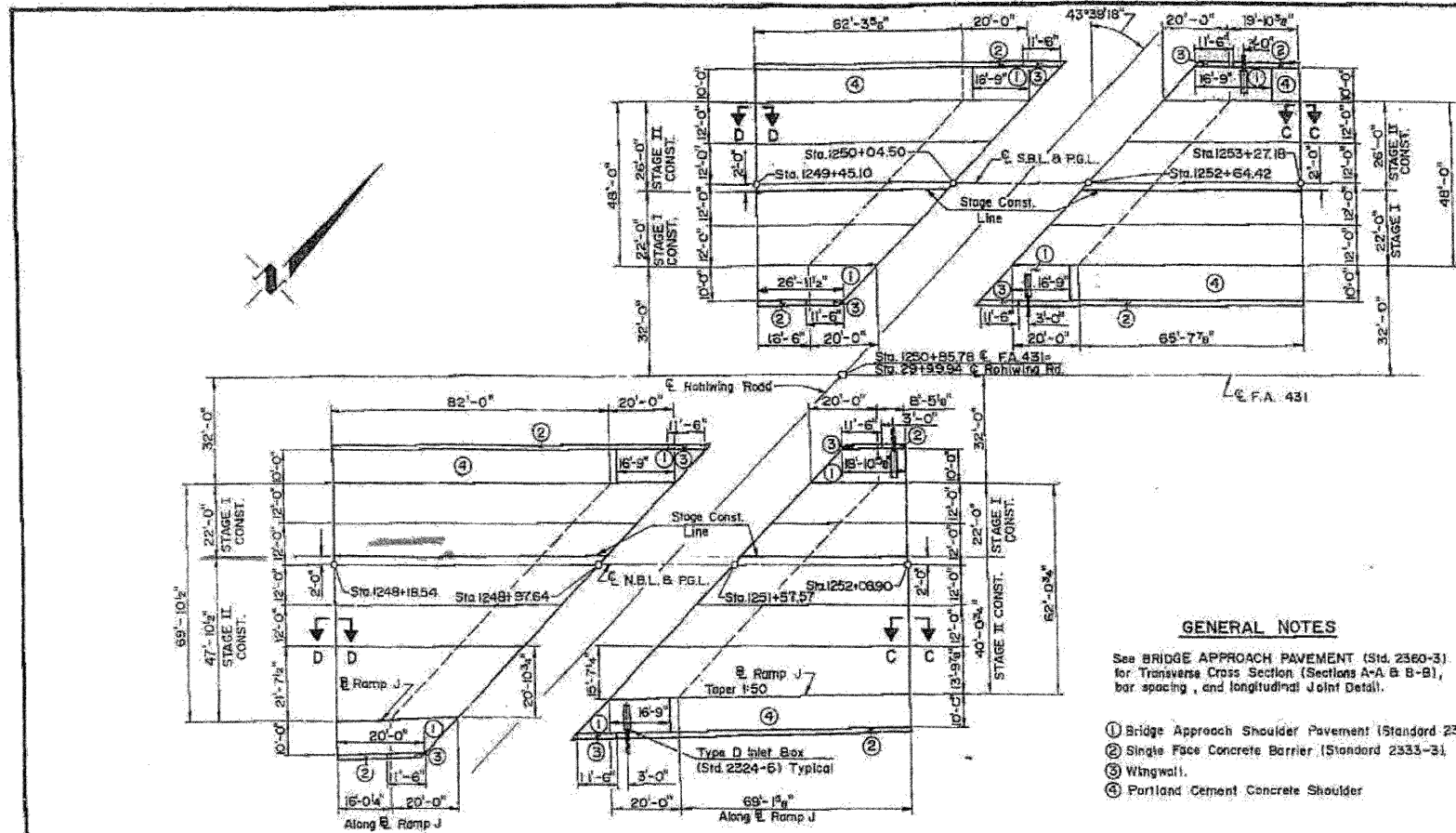
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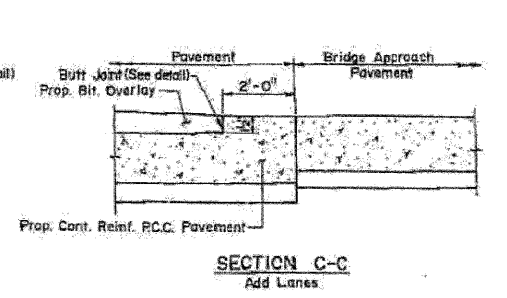
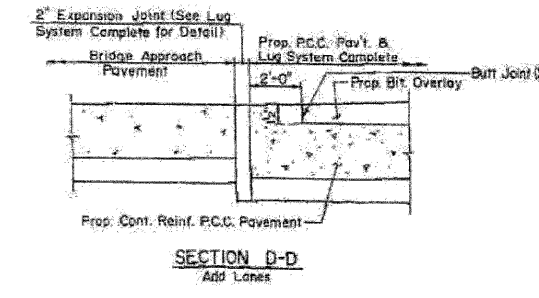
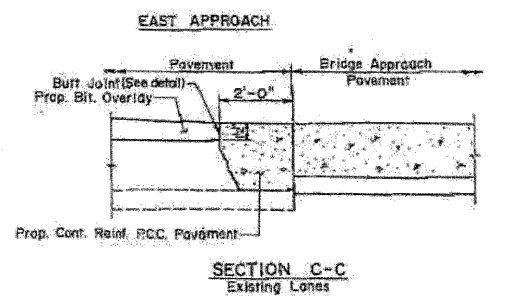
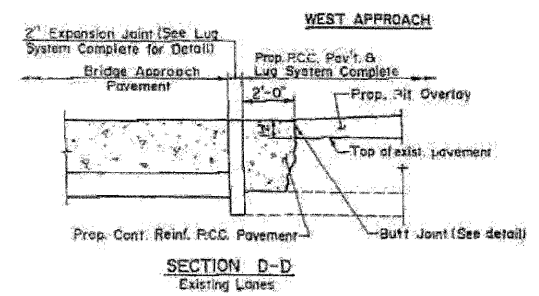
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

DATE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
02/11/11	22(1, 1-1, 2&3)RS-7	DUPAGE	546	394

\* 22(1, 1-1, 2&3)RS-7  
22(11B-5, 8 & 51B-1)BY(188)



- GENERAL NOTES**
- See BRIDGE APPROACH PAVEMENT (Std. 2360-3) for Transverse Cross Section (Sections A-A & B-B), bar spacing, and longitudinal Joint Detail.
- Bridge Approach Shoulder Pavement (Standard 2324-6).
  - Single Face Concrete Barrier (Standard 2333-3).
  - Wingwall.
  - Portland Cement Concrete Shoulder.

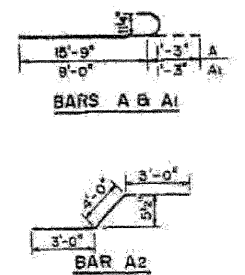


**WEST APPROACH - S.B.L. BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
A	56	#9	17'-0"	
A1	43	#9	10'-3"	
A2	56	#5	10'-0"	
A3	168	#4	19'-1"	
A4	84	#4	22'-3"	
B	27	#5	32'-6"	
B1	62	#4	11'-6"	
B2	27	#5	35'-3"	
Reinforcement Bars		Lbs.	11,100	
Bridge Approach Pav't. Special		Sq. Yd.	316.6	
R.C. Conc. Bridge Appr. Shldr. Pav't.		Sq. Yd.	68.3	

**EAST APPROACH - S.B.L. BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
A	56	#9	17'-0"	
A1	43	#9	10'-3"	
A2	56	#5	10'-0"	
A3	168	#4	20'-9"	
A4	84	#4	23'-9"	
B	27	#5	32'-6"	
B1	66	#4	11'-6"	
B2	27	#5	35'-3"	
Reinforcement Bars		Lbs.	11,400	
Bridge Approach Pav't. Special		Sq. Yd.	334.7	
R.C. Conc. Bridge Appr. Shldr. Pav't.		Sq. Yd.	66.2	



**WEST APPROACH - N.B.L. BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
A	77	#9	17'-0"	
A1	64	#9	10'-3"	
A2	77	#5	10'-0"	
A3	242	#4	18'-10"	
A4	150	#4	23'-1"	
B	27	#5	32'-6"	
B1	83	#4	11'-6"	
B2	54	#5	33'-6"	
B3	13	#4	20'-6"	
Reinforcement Bars		Lbs.	16,930	
Bridge Approach Pav't. Special		Sq. Yd.	531.1	
R.C. Conc. Bridge Appr. Shldr. Pav't.		Sq. Yd.	64.2	

**EAST APPROACH - N.B.L. BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
A	71	#9	17'-0"	
A1	58	#9	10'-3"	
A2	71	#5	10'-0"	
A3	111	#4	28'-3"	
A4	112	#4	31'-3"	
B	27	#5	32'-6"	
B1	78	#4	11'-6"	
B2	5	#5	29'-3"	
B3	21	#4	13'-6"	
Reinforcement Bars		Lbs.	14,650	
Bridge Approach Pav't. Special		Sq. Yd.	409.6	
R.C. Conc. Bridge Appr. Shldr. Pav't.		Sq. Yd.	59.4	

F.A.P. 431 (ILLINOIS ROUTE 1-5) OVER ROHLWING ROAD  
BRIDGE APPROACH PAVEMENT

EXISTING PLAN INFORMATION 2 OF 21  
STRUCTURE NO. 022-0138

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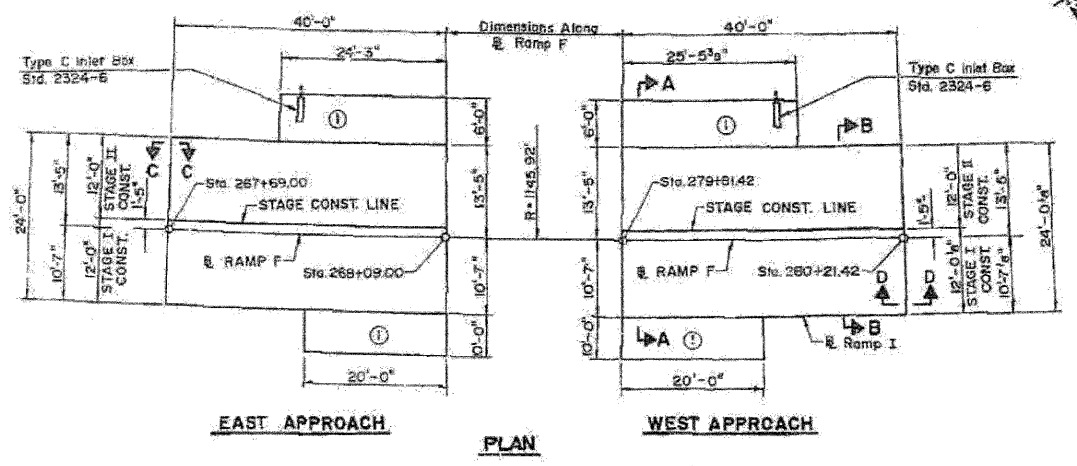
alfred benesch & company  
Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0460 Job No. 10060

SHEET NO. 19	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290/355	22(1, 1-1, 2&3)RS-7	DUPAGE	546	394
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

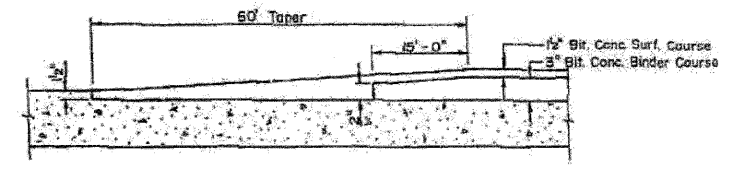
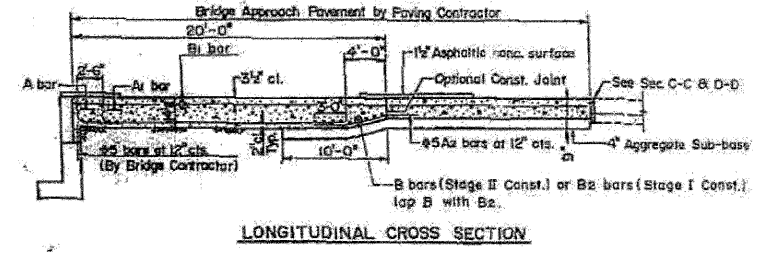
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

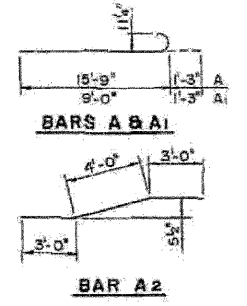
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
22(1,5,5-1)RS-7	N	DUPAGE	601	210
PROJECT				
22(1,5,5-1)RS-7, 22(1 & 5-1)K; 22(1RB-5,8 & 5IB-1)BY(86)				



Note: Tilt hook of #9 bars for min. 3 1/2" cl. Use 1'-4" min. lap for #4 bars. Use 1'-6" min. lap for #5 bars.



**GENERAL NOTES**  
See BRIDGE APPROACH PAVEMENT (Std. 2360-3) for Transverse Cross Section (Sections A-A & B-B), bar spacing and longitudinal joint details.

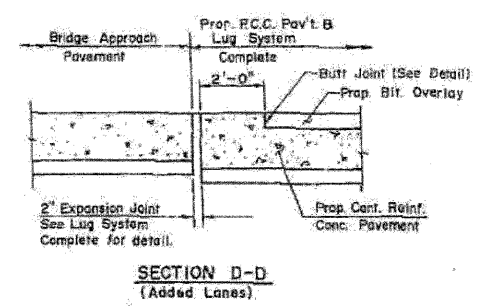
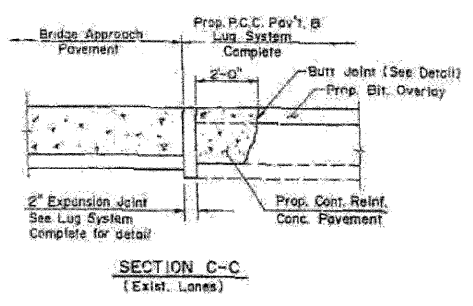


**EAST APPROACH**

BAR NO.	SIZE	LENGTH	SHAPE
A	#9	17'-0"	C
A1	#9	10'-3"	C
A2	#5	10'-0"	C
A3	#4	20'-9"	C
B	#5	11'-6"	C
B1	#4	11'-6"	C
B2	#5	13'-3"	C
Reinforcement Bars			Lbs. 4,950
Bridge Appr. Pav't. Special			Sq. Yds. 106.5
P.C. Conc. Bridge Approach Shoulder Pavement			Sq. Yds. 36.7

**WEST APPROACH**

BAR NO.	SIZE	LENGTH	SHAPE
A	#9	17'-0"	C
A1	#9	10'-3"	C
A2	#5	10'-0"	C
A3	#4	20'-9"	C
B	#5	11'-6"	C
B1	#4	11'-6"	C
B2	#5	13'-3"	C
Reinforcement Bars			Lbs. 4,950
Bridge Appr. Pav't. Special			Sq. Yds. 106.5
P.C. Conc. Bridge Approach Shoulder Pavement			Sq. Yds. 37.5



① BRIDGE APPROACH SHOULDER PAVEMENT (Std. 2324-6)

RAMP F OVER  
F.A.P. 431 (ILLINOIS ROUTE 53)  
BRIDGE APPROACH PAVEMENT

FOR INFORMATION ONLY

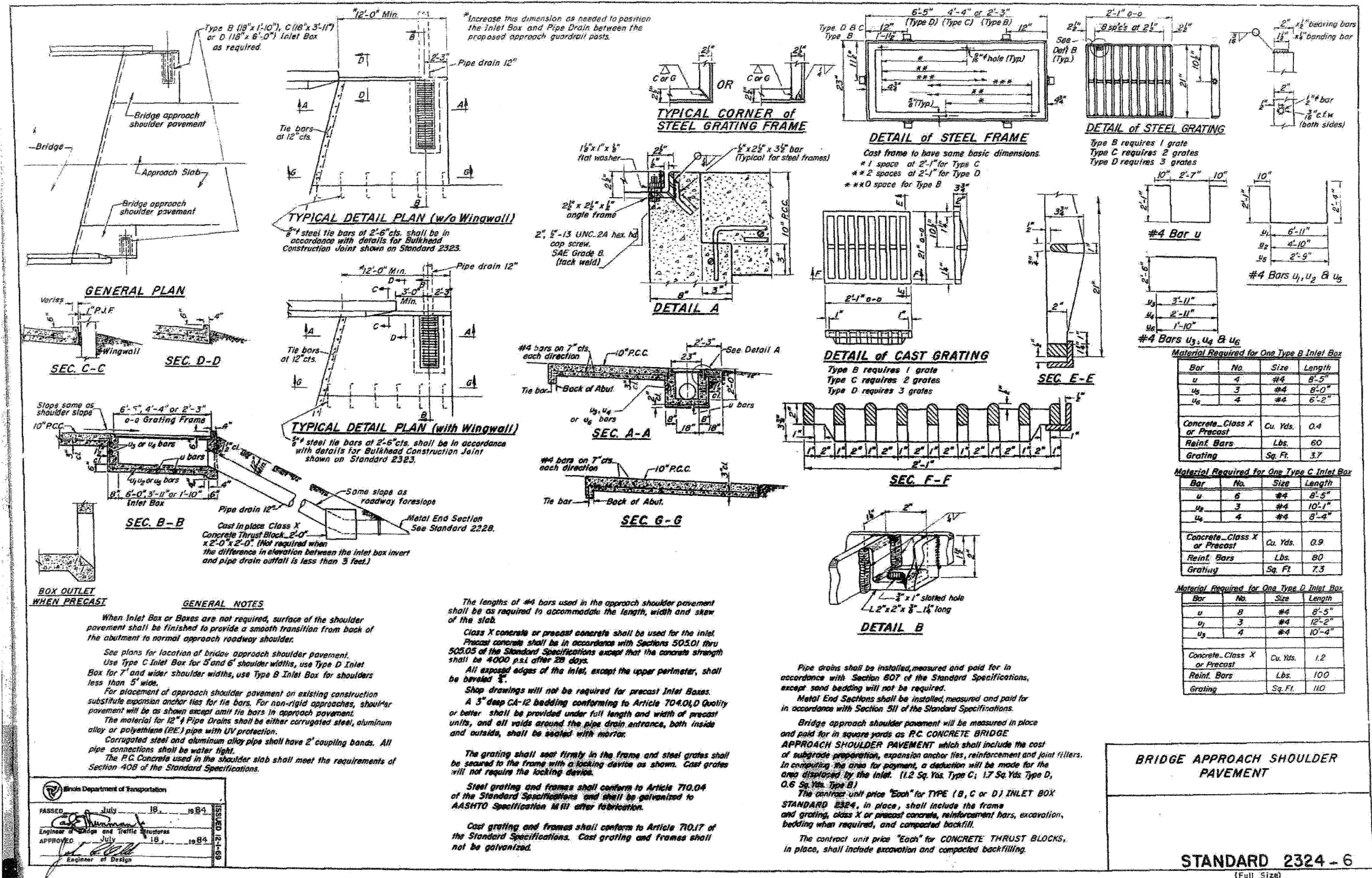
**benesch**  
alfred benesch & company  
Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 20 38 SHEETS	F.A.I. RTE. 290 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 395
	CONTRACT NO. 60G51			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

EXISTING PLAN INFORMATION 3 OF 21  
STRUCTURE NO. 022-0138

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DEPARTMENT OF TRANSPORTATION

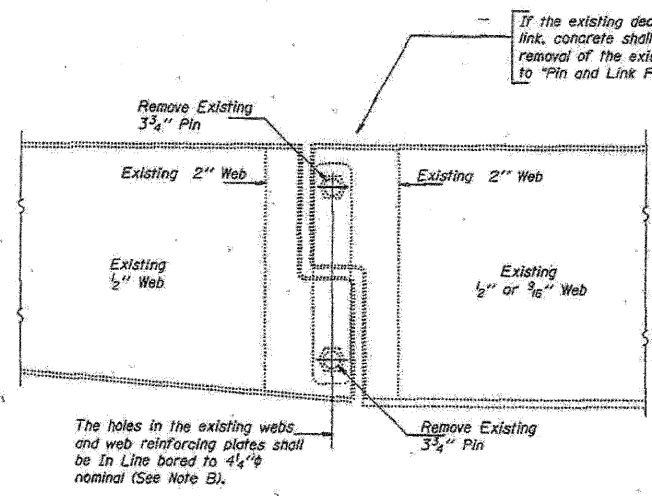


Illinois Department of Transportation  
PASSED July 18, 1984  
Approved July 18, 1984  
Engineer of Design

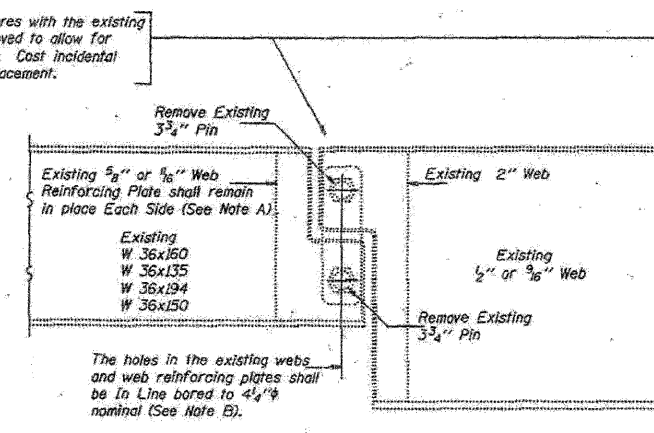
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

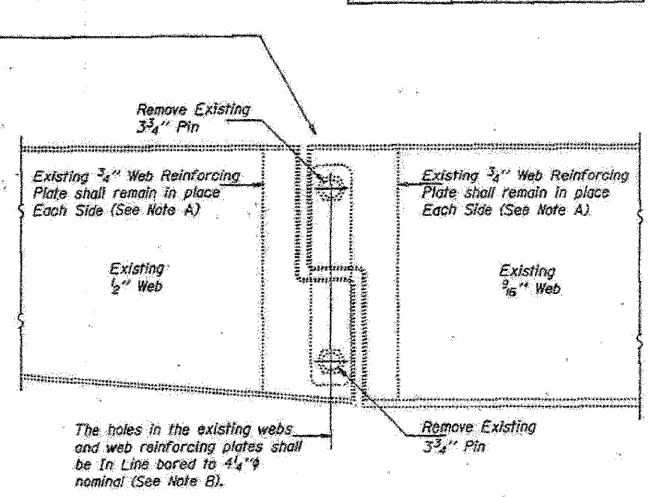
PROJECT NO.	SECTION	SHEET	TOTAL SHEETS
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SHEET NO. 1			
OF SHEETS			



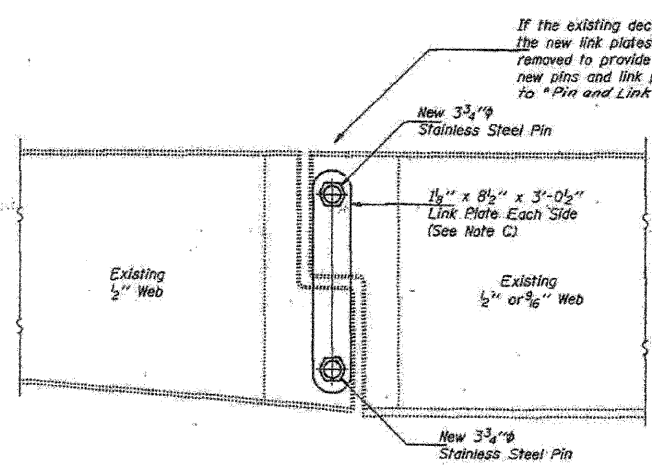
ELEVATION AT EXISTING PIN ASSEMBLY  
FOR BMS. 1, 17, 18, & 30



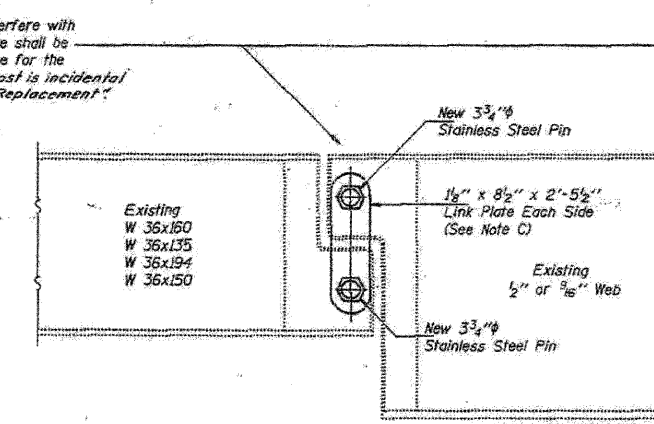
ELEVATION AT EXISTING PIN ASSEMBLY  
FOR BMS. 2, 3, 4, 5, 6, 7, 8, 16, 19, 28 & 29



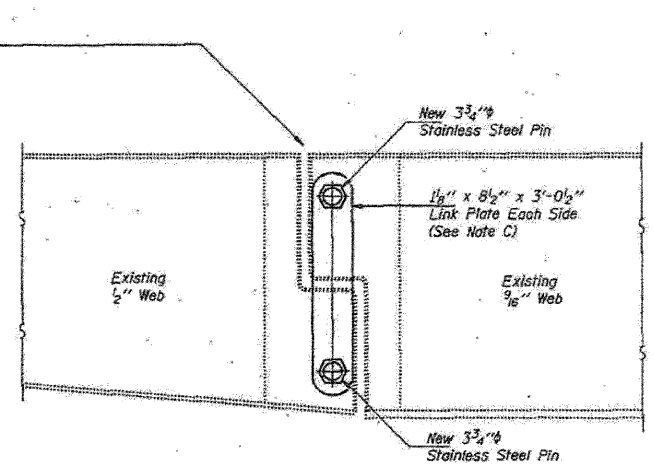
ELEVATION AT EXISTING PIN ASSEMBLY  
FOR BMS. 9, 15, 20, & 27



ELEVATION AT NEW PIN ASSEMBLY  
FOR BMS. 1, 17, 18, & 30



ELEVATION AT NEW PIN ASSEMBLY  
FOR BMS. 2, 3, 4, 5, 6, 7, 8, 16, 19, 28 & 29



ELEVATION AT NEW PIN ASSEMBLY  
FOR BMS. 9, 15, 20, & 27

DESIGNED	DECEMBER 13, 1995
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	DEPARTMENT OF TRANSPORTATION

For Notes A, B and C see sheet #2 of 9.  
**PIN AND LINK PLATE REPLACEMENT**  
F.A.P. RT. 431 SEC. 22-5HB-1 & 22-IHB-9  
DUPAGE COUNTY  
STA. 1250+83.16  
STR. No. 022-0137 & 022-0138

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Chicago, Illinois 06001  
312-665-0460 Job No. 10050

SHEET NO. 22	F.A.I. RTE. 290	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 397
38 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

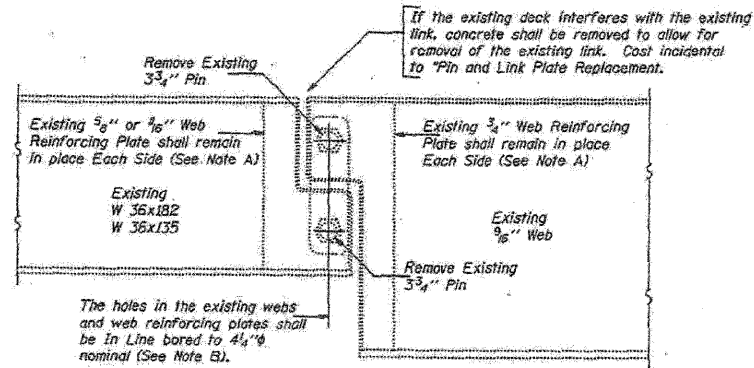
EXISTING PLAN INFORMATION 5 OF 21  
STRUCTURE NO. 022-0138

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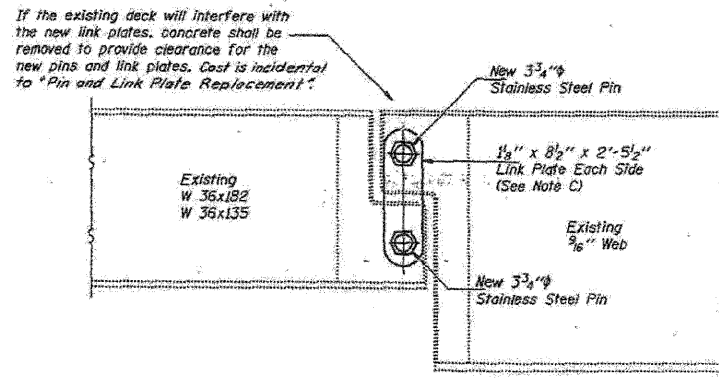
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

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DEPARTMENT OF TRANSPORTATION

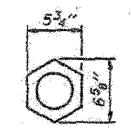
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F.A.P. 431	1995-03-11	CHM	67	19	11	11 SHEETS



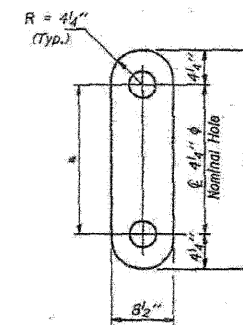
**ELEVATION AT EXISTING PIN ASSEMBLY**  
FOR BMS. 10, 11, 12, 13, 14, 21, 22, 23, 24, 25 & 26



**ELEVATION AT NEW PIN ASSEMBLY**  
FOR BMS. 10, 11, 12, 13, 14, 21, 22, 23, 24, 25 & 26



**NUT DETAIL**  
(480 Required)



**LINK PLATE DETAIL**

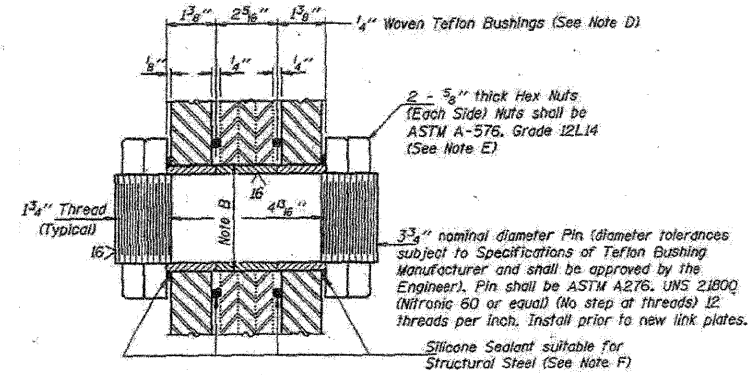
Girders	*	**	No. Required
1, 9, 15, 17, 18, 20, 27 & 30	2'-4"	3'-0 1/2"	32
2 thru 8, 10 thru 14, 16, 19, 21 thru 26, 28 and 29	1'-9"	2'-5 1/2"	88

**NOTES**

All new structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.  
The Contractor shall provide support and/or shoring systems for the beam in the area of existing pin and link plate replacement. The support and/or shoring systems shall be approved by the Engineer. Such approval will not relieve the Contractor of responsibility for the safety of the structure. See Special Provisions for "Temporary Support System."  
The inorganic zinc rich primer/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Light Grey, Munsell No. 10Y 7/L. See Special Provisions "Cleaning and Painting Metal Structures".  
Existing Structural steel shall be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures". Cost incidental to "Pin and Link Plate Replacement."  
All existing steel surfaces behind link plates shall be cleaned and primed before installation of new link plates. Cost incidental to "Pin and Link Plate Replacement."

**MAXIMUM REACTIONS AT PIN**

R <sub>0</sub>	(K)	39.9
R <sub>L</sub>	(K)	43.1
Imp.	(K)	11.7
R (Total)	(K)	94.7



**SECTION THRU PIN**  
(120 Required)

Note A:  
Existing welds shall be inspected for cracks using liquid dye penetrant or magnetic particle testing. Any cracks that are found shall be identified and reported to the Bureau of Bridges and Structures for further disposition. Clean and paint before installing new link plates.

Note B:  
Bore diameter for bushing in link plate, existing webs and web reinforcement plates shall correspond to bushing manufacturer's allowable tolerances for proper functioning. Hole diameter may be adjusted to allow use of stock bushings.

Note C:  
Inside face of new link plates shall receive first field coat in shop. The primer shall pass the M.E.K. Rub Test before the first field coat is applied.

Note D:  
Actual bushing thickness per manufacturer's specifications, 1/4" is approximate. Bushings shall be a self lubricating filament wound epoxy matrix backed Duralon Bearing, metal backed Fiber Glide Bearing or equivalent. No primer or grease shall be allowed on bushings. Bushings shall be suitable for dynamic loads of 20,000 psi.

Note E:  
Tighten inside nuts to bring all bushings into firm contact, then back off 1/4 turn and tighten outer nuts.

Note F:  
Apply 3/8" bead to face of the web reinforcing plates approximately 1/2" from bushing immediately before installing new link plates. Place sealant around nuts after installation. Sealant shall be suitable for prolonged exterior exposure without losing flexibility or adhesion to painted steel surfaces. Proposed products shall be subject to Department's acceptance based on documented testing or other evidence.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Temporary Support System	Each	60
Pin and Link Plate Replacement	Each	60

**PIN AND LINK PLATE REPLACEMENT**  
F.A.P. RT. 431 SEC. 22-5HB-1 & 22-IHB-9

**DUPAGE COUNTY**  
STA. 1250+83.16

STR. No. 022-0137 & 022-0138

DESIGNED	AYV
CHECKED	CHM
DRAWN	r.b. carbonell
CHECKED	AYV CHM

DECEMBER 13, 1995  
EXAMINED *John E. Hagan*  
PASSED  
ENGINEER OF BRIDGES AND STRUCTURES

FOR INFORMATION ONLY

**benesch**

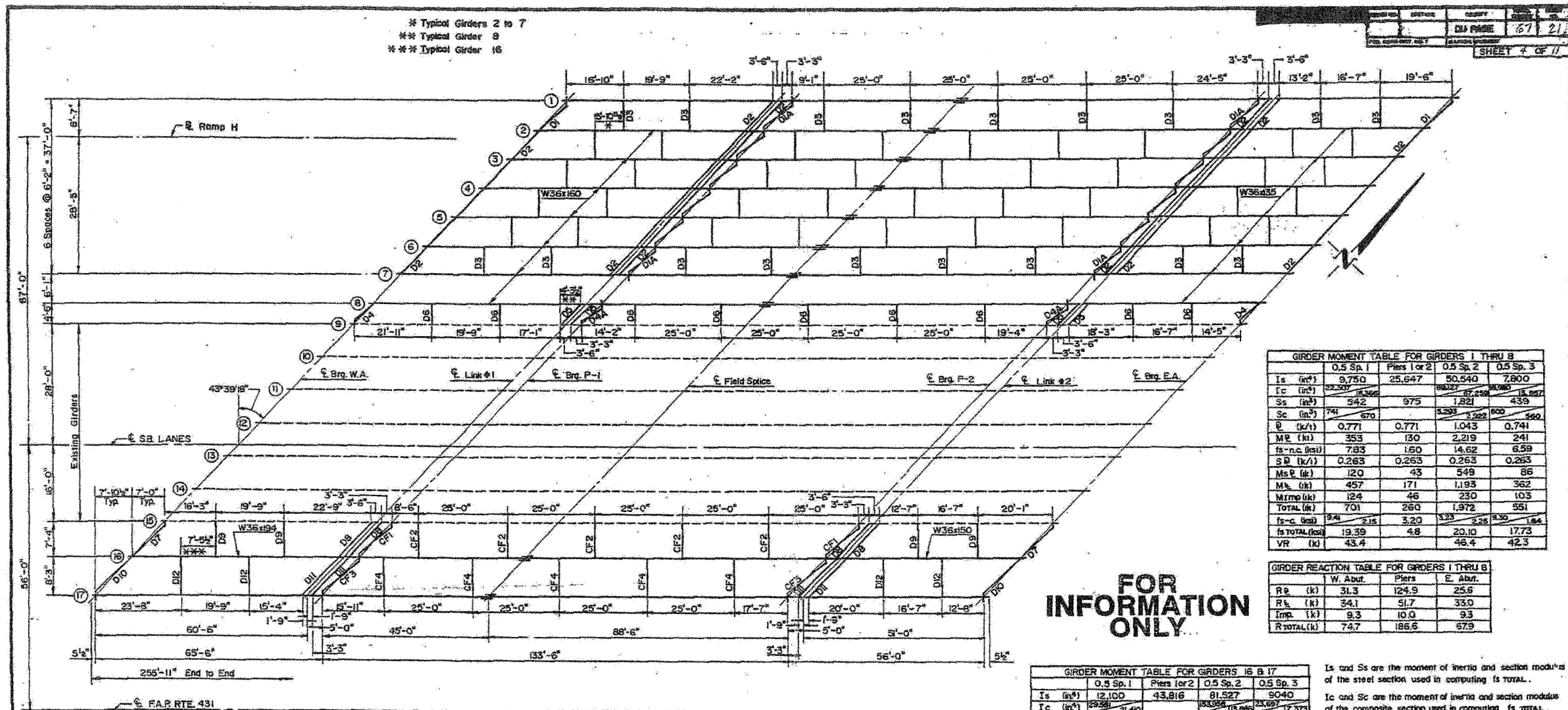
alfred benesch & company  
Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 10050

SHEET NO. 23	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	22(1, 1-1, 2&3)RS-7	DUPAGE	546	398
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

EXISTING PLAN INFORMATION 6 OF 21  
STRUCTURE NO. 022-0138

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**GIRDER MOMENT TABLE FOR GIRDERS 1 THRU 8**

	0.5 Sp. 1	Piers 1 or 2	0.5 Sp. 2	0.5 Sp. 3
I <sub>s</sub> (in <sup>4</sup> )	9,750	25,647	50,540	7,600
I <sub>c</sub> (in <sup>4</sup> )	22,207	18,266	34,227	15,897
S <sub>s</sub> (in <sup>3</sup> )	542	975	1,821	439
S <sub>c</sub> (in <sup>3</sup> )	741	670	1,293	300
ρ (k/ft)	0.771	0.771	1.043	0.741
M <sub>R</sub> (k)	353	130	2,219	241
f <sub>s-n.c.</sub> (ksi)	7.83	1.60	14.62	6.59
S <sub>D</sub> (k/ft)	0.263	0.263	0.263	0.263
M <sub>sR</sub> (k)	120	43	549	86
M <sub>n</sub> (k)	457	171	1,193	362
M <sub>imp</sub> (k)	124	46	230	103
TOTAL (k)	701	260	1,972	551
f <sub>s-c</sub> (ksi)	9.4	2.15	3.20	2.35
f <sub>s</sub> TOTAL (ksi)	19.39	4.8	20.10	17.73
VR (k)	43.4	46.4	42.3	

**GIRDER REACTION TABLE FOR GIRDERS 1 THRU 8**

	W. Abut.	Piers	E. Abut.
R <sub>g</sub> (k)	31.3	124.9	25.6
R <sub>h</sub> (k)	34.1	51.7	33.0
Imp. (k)	9.3	10.0	9.3
R <sub>TOTAL</sub> (k)	74.7	186.6	67.9

**FOR INFORMATION ONLY**

**GIRDER MOMENT TABLE FOR GIRDERS 16 & 17**

	0.5 Sp. 1	Piers 1 or 2	0.5 Sp. 2	0.5 Sp. 3
I <sub>s</sub> (in <sup>4</sup> )	12,100	43,816	81,527	30,400
I <sub>c</sub> (in <sup>4</sup> )	29,281	21,460	33,986	15,697
S <sub>s</sub> (in <sup>3</sup> )	664	1,342	2,352	504
S <sub>c</sub> (in <sup>3</sup> )	945	848	1,694	736
ρ (k/ft)	1.07	1.07	1.28	1.02
M <sub>R</sub> (k)	490	167	2,964	329
f <sub>s-n.c.</sub> (ksi)	8.85	1.49	14.62	7.84
S <sub>D</sub> (k/ft)	0.25	0.25	0.25	0.25
M <sub>sR</sub> (k)	113	41	555	81
M <sub>n</sub> (k)	578	226	1,592	467
M <sub>imp</sub> (k)	156	44	307	130
TOTAL (k)	847	313	2,454	668
f <sub>s-c</sub> (ksi)	9.32	1.90	2.80	2.31
f <sub>s</sub> TOTAL (ksi)	19.77	4.28	19.17	18.87
VR (k)	54.8	61.5	53.5	

I<sub>s</sub> and S<sub>s</sub> are the moment of inertia and section modulus of the steel section used in computing I<sub>s</sub> TOTAL.  
I<sub>c</sub> and S<sub>c</sub> are the moment of inertia and section modulus of the composite section used in computing I<sub>s</sub> TOTAL.  
VR is the maximum Impact shear range in span.  
f<sub>s-n.c.</sub> is the stress in the steel of the non-composite section.  
f<sub>s-c</sub> is the stress in the steel of the composite section.  
Values affected by the modular ratio n are shown as:  $\frac{f_s}{n}$

**FRAMING PLAN**  
South Bound

**TABLE OF ELEVATIONS**  
(For Fabrication Only)

GIRDERS LOCATION	SOUTH BOUND									
	1	2	3	4	5	6	7	8	16	17
Brq. W. Abut.	748.00	748.28	748.51	748.73	748.95	749.17	749.25	749.24	750.60	750.56
Link #1 (W Sect.)	746.62	746.84	747.13	747.36	747.57	747.79	747.88	747.86	749.27	749.20
Link #1 (Gird Sect.)	746.62	746.84	747.06	747.28	747.50	747.72	747.78	747.79	749.20	749.20
Brq. Pier #1	746.57	746.79	747.01	747.25	747.48	747.67	747.73	747.73	749.12	749.15
Field Splice	746.63	746.05	746.27	746.49	746.71	746.94	747.00	747.01	748.29	748.30
Brq. Pier #2	743.74	743.95	744.19	744.40	744.62	744.84	744.90	744.91	746.29	746.29
Link #2 (Gird Sect.)	743.58	743.80	744.02	744.24	744.46	744.68	744.74	744.75	746.15	746.15
Link #2 (W Sect.)	743.58	743.87	744.09	744.31	744.53	744.75	744.81	744.82	746.23	746.23
Brq. E. Abut.	742.60	742.87	743.10	743.32	743.54	743.76	743.82	743.83	745.19	745.15

For Girder Elevations, See Sheets 15 & 16  
For Detail of Diaphragms & Cross Frames, See Sheets 15, 16, & 18.

For Camber Diagram, See Sheet 19.  
Elevations of Links and field splice have been adjusted for camber.

For details of Links #1 & #2 for proposed girder see sheets 15 & 16.

For reconstruction details of Links #1 & #2 for existing girders see sheet 34.

Elevations are given to top of Web for Plate Girder Section & Top of Flange for W Sections

**FRAMING PLAN**  
**SOUTH BOUND LANES**  
**F.A.P. RTE. 431 SEC. 22-11B-9**  
**DUPAGE CO.**  
**STATION RESPONSES**  
**STR. NO. 022-0138**

EXISTING PLAN INFORMATION 7 OF 21  
STRUCTURE NO. 022-0138

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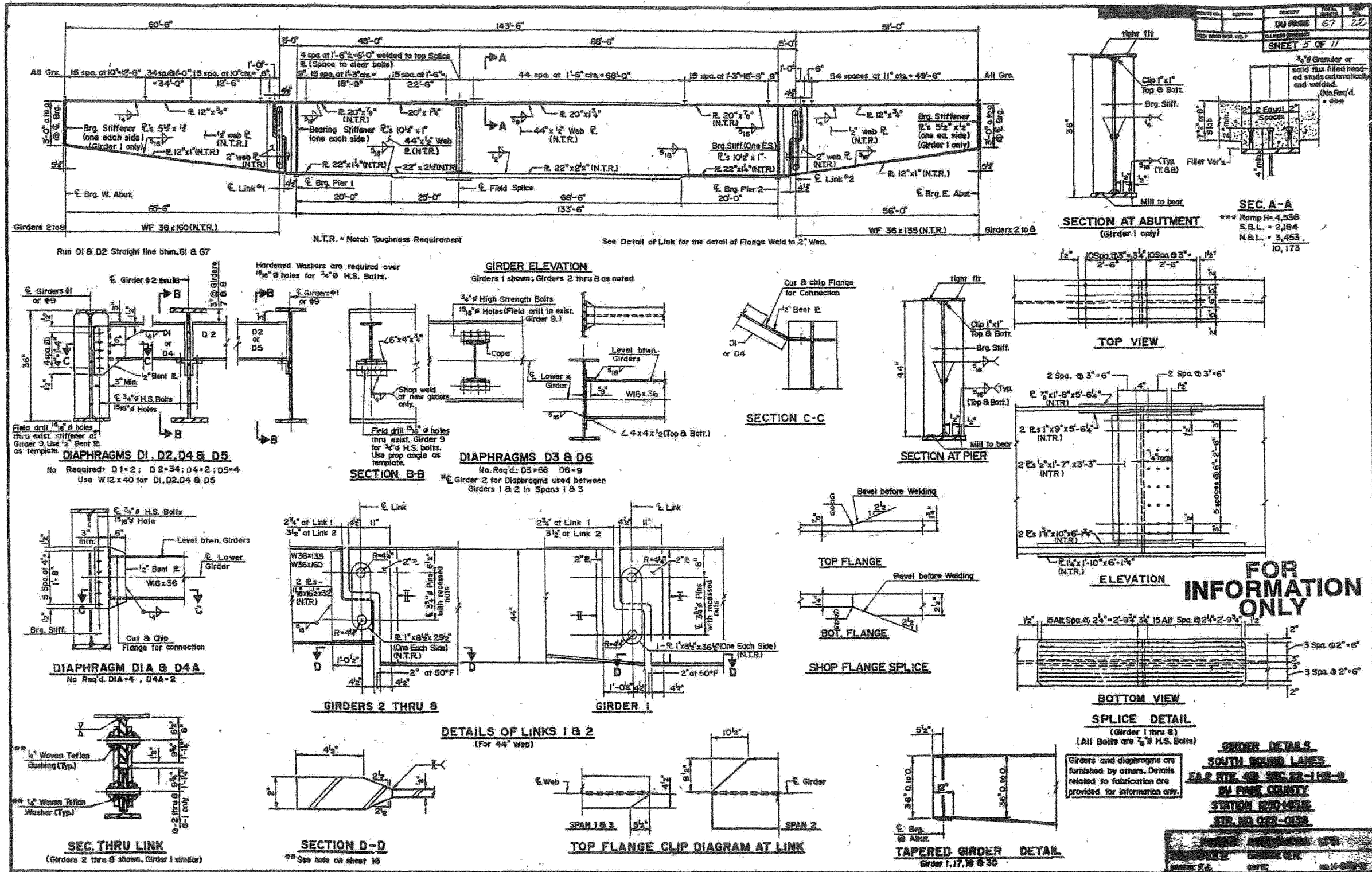
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alfred benesch & company  
Engineers • Surveyors • Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0460 Job No. 10050

SHEET NO. 24 290	F.A.I. RTE. 355	SECTION 22(1, 1-1, 2&3)RS-7	COUNTY DUPAGE	TOTAL SHEETS 546	SHEET NO. 399
	38 SHEETS	CONTRACT NO. 60G51		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



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Engineers - Surveyors - Planners  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-566-0450 Job No. 10050

SHEET NO. 25	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	290	221, 1-1, 2&3RS-7	DUPAGE	546	400
38 SHEETS	CONTRACT NO. 60G51				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

EXISTING PLAN INFORMATION 8 OF 21  
STRUCTURE NO. 022-0138

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