

# BILL OF MATERIAL

## BENT #48

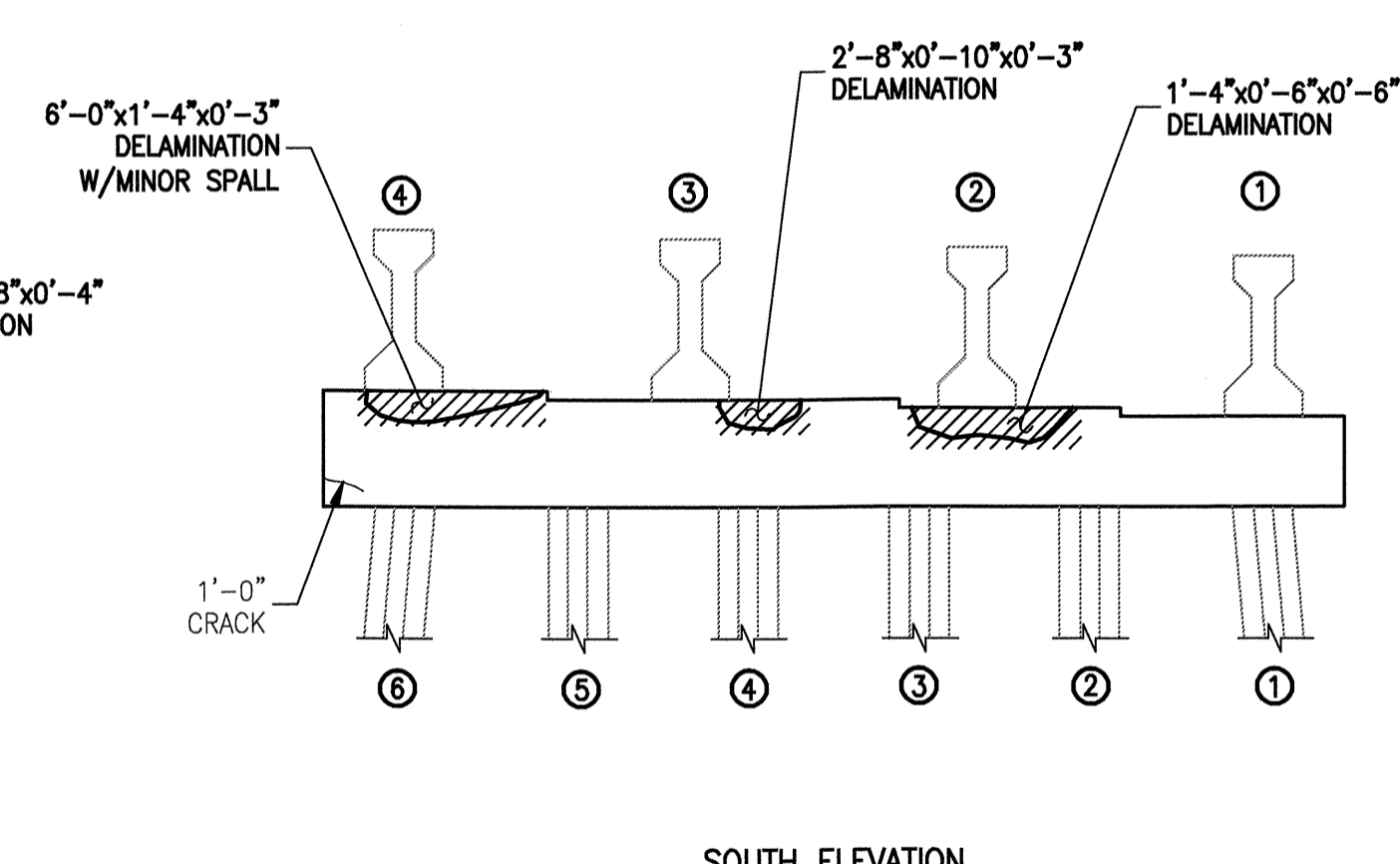
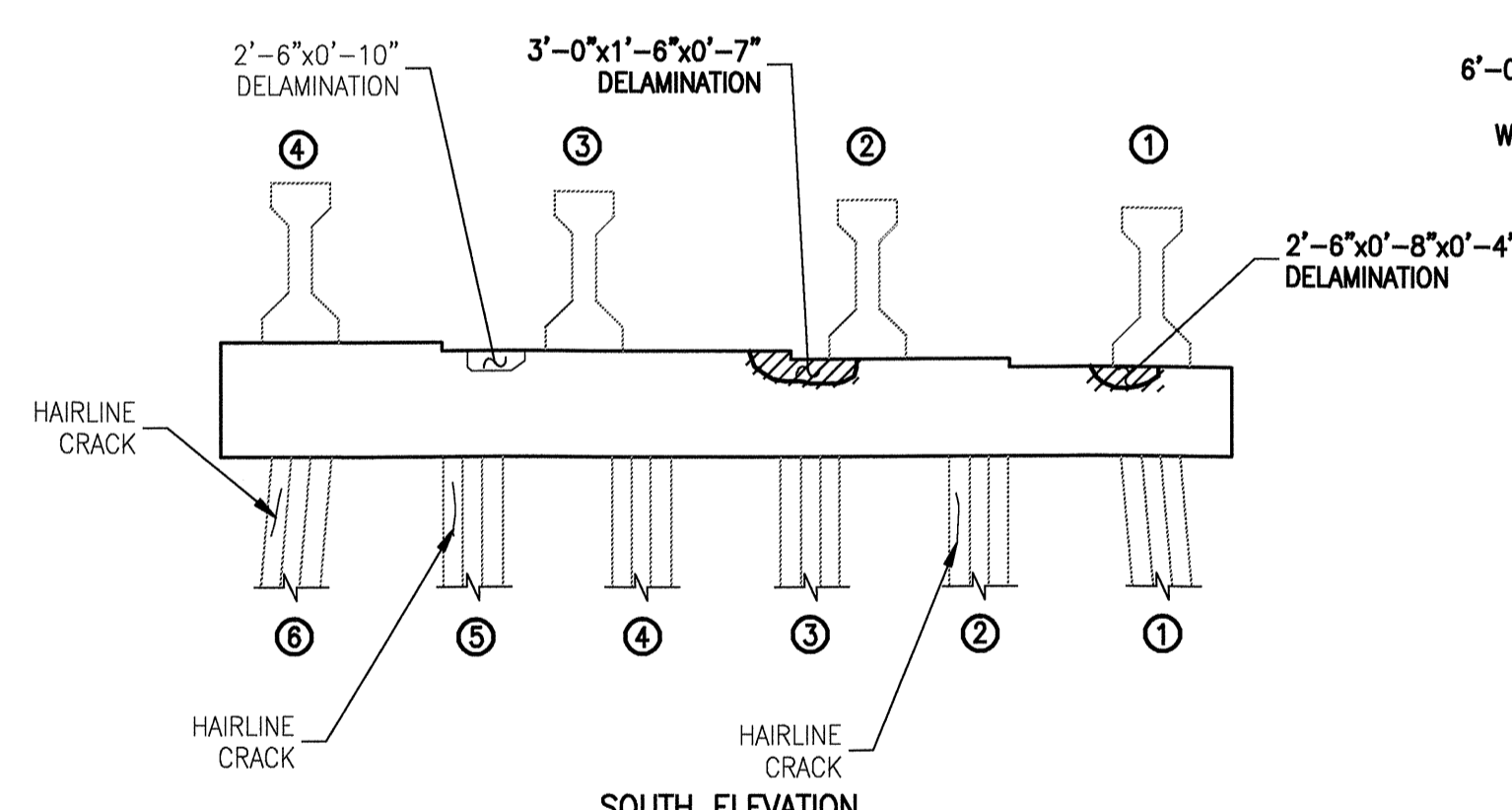
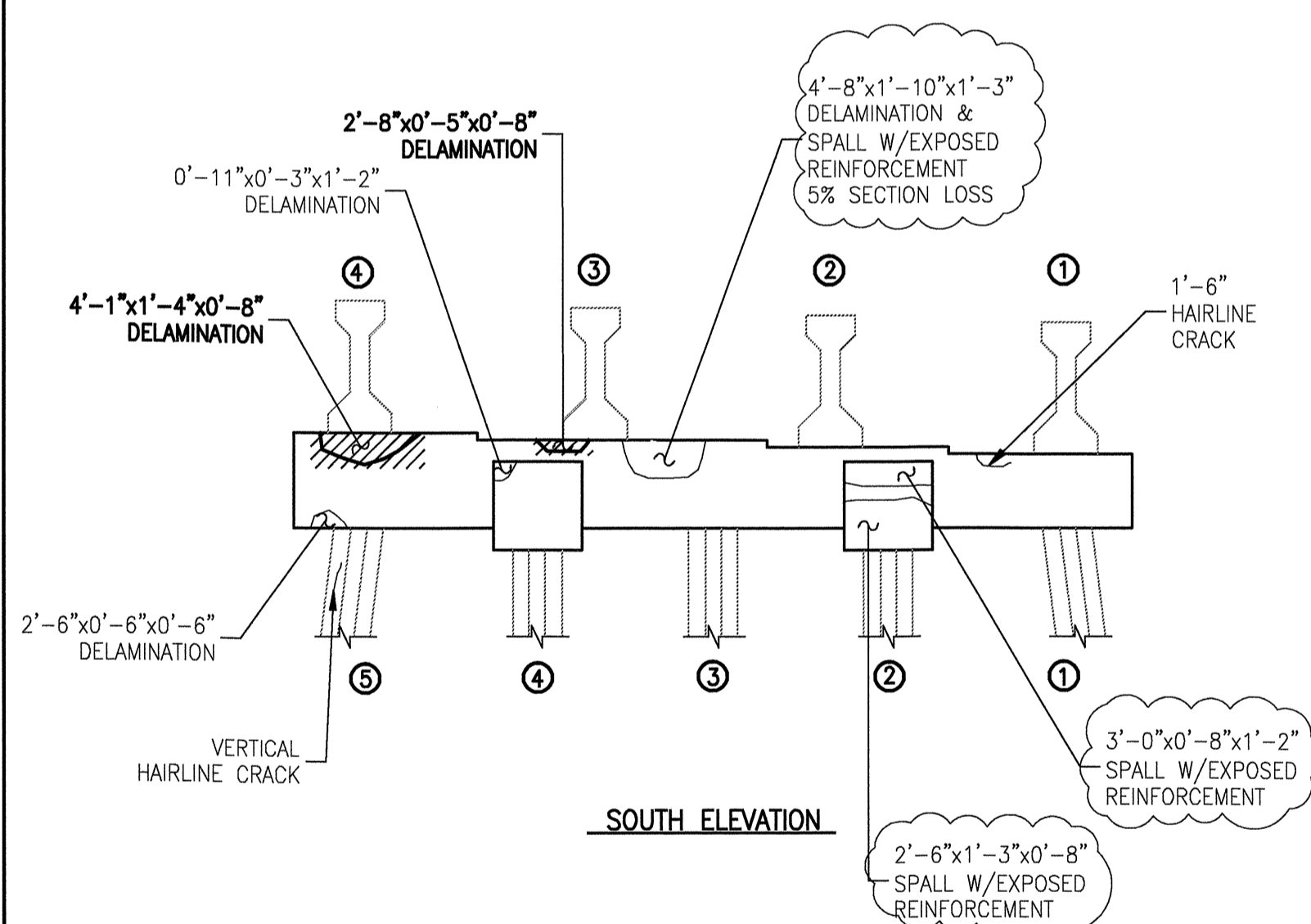
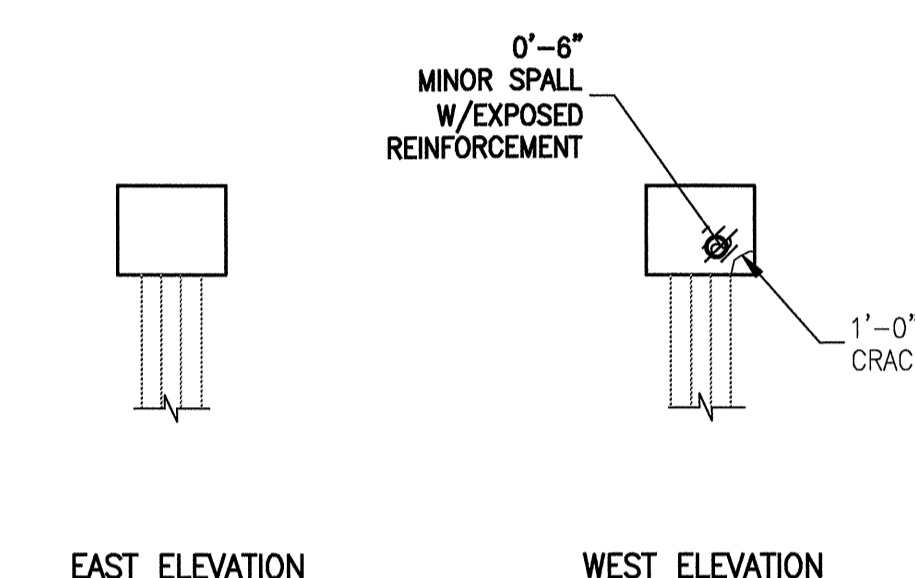
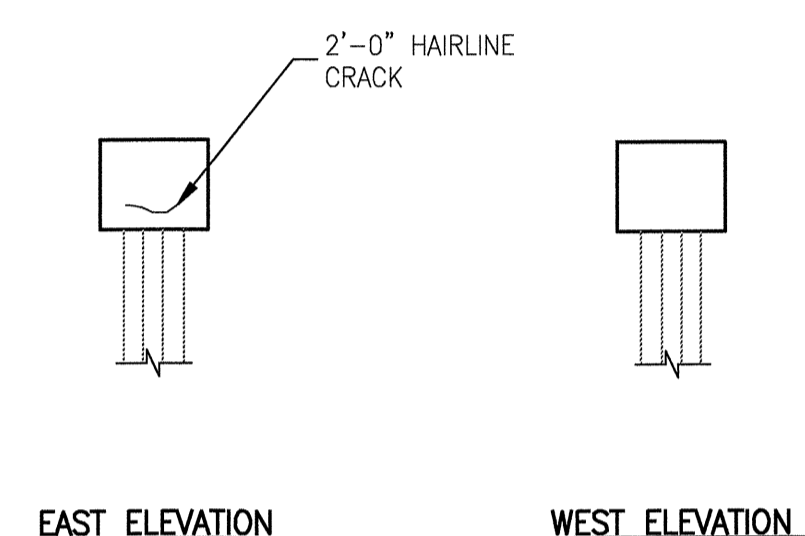
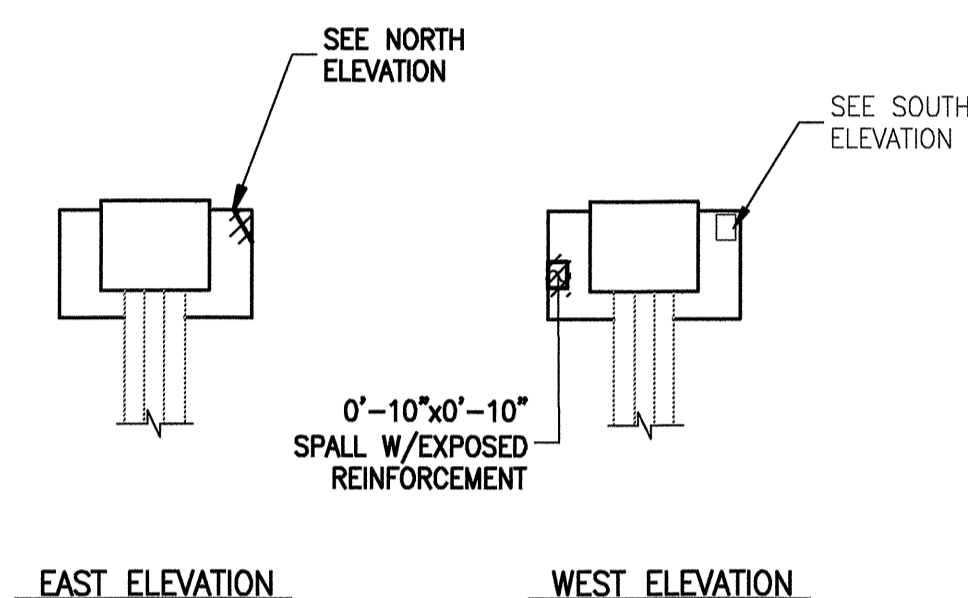
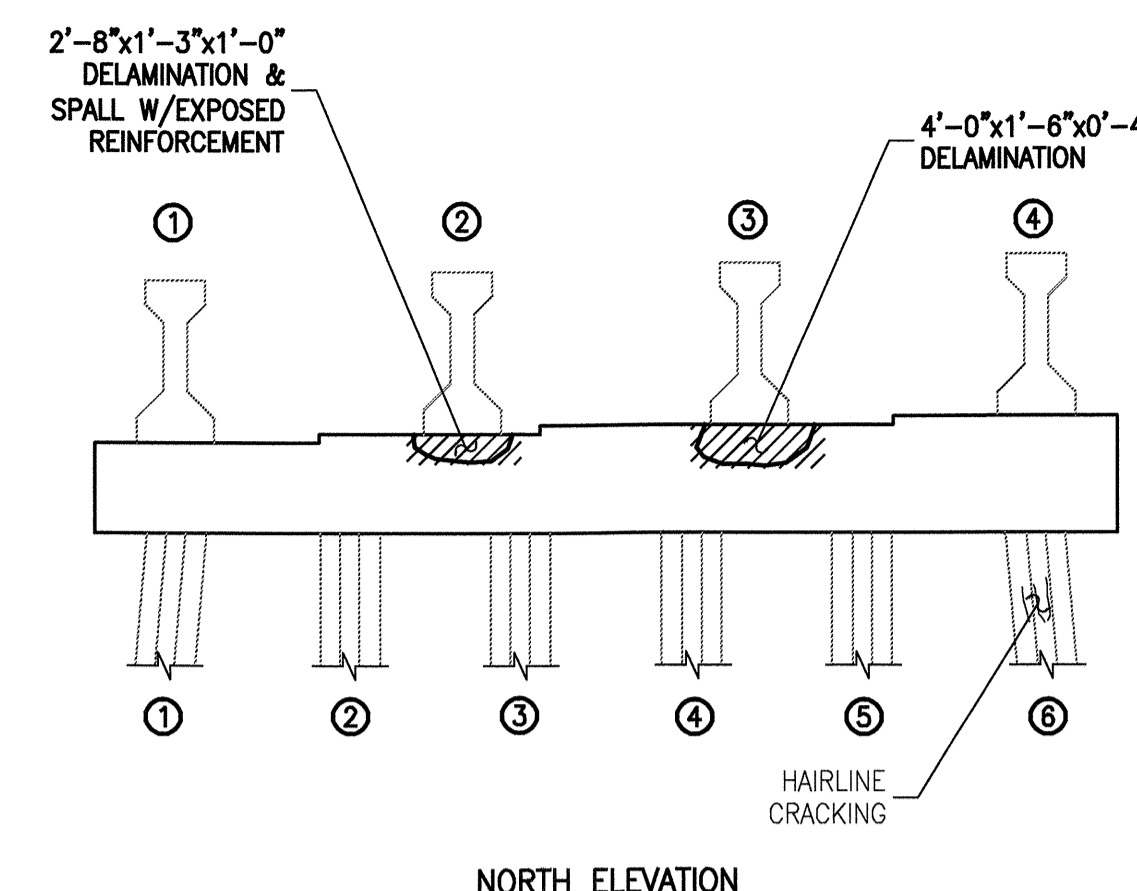
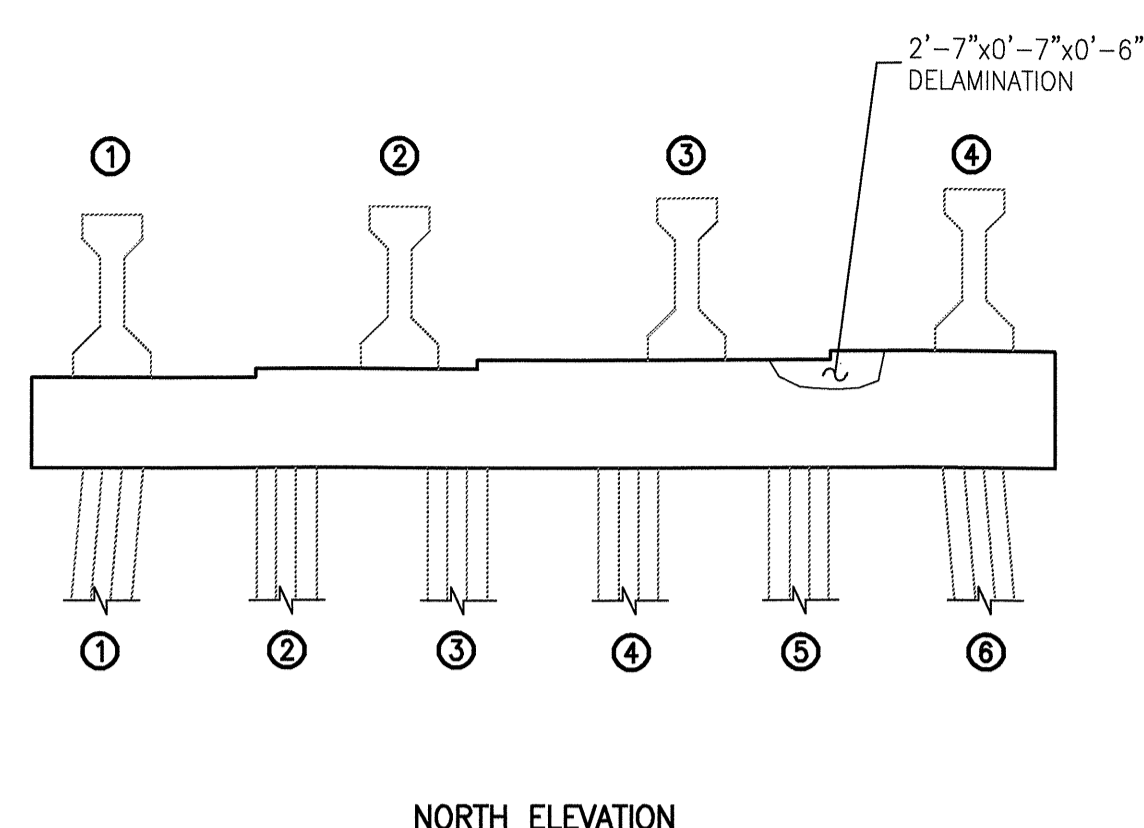
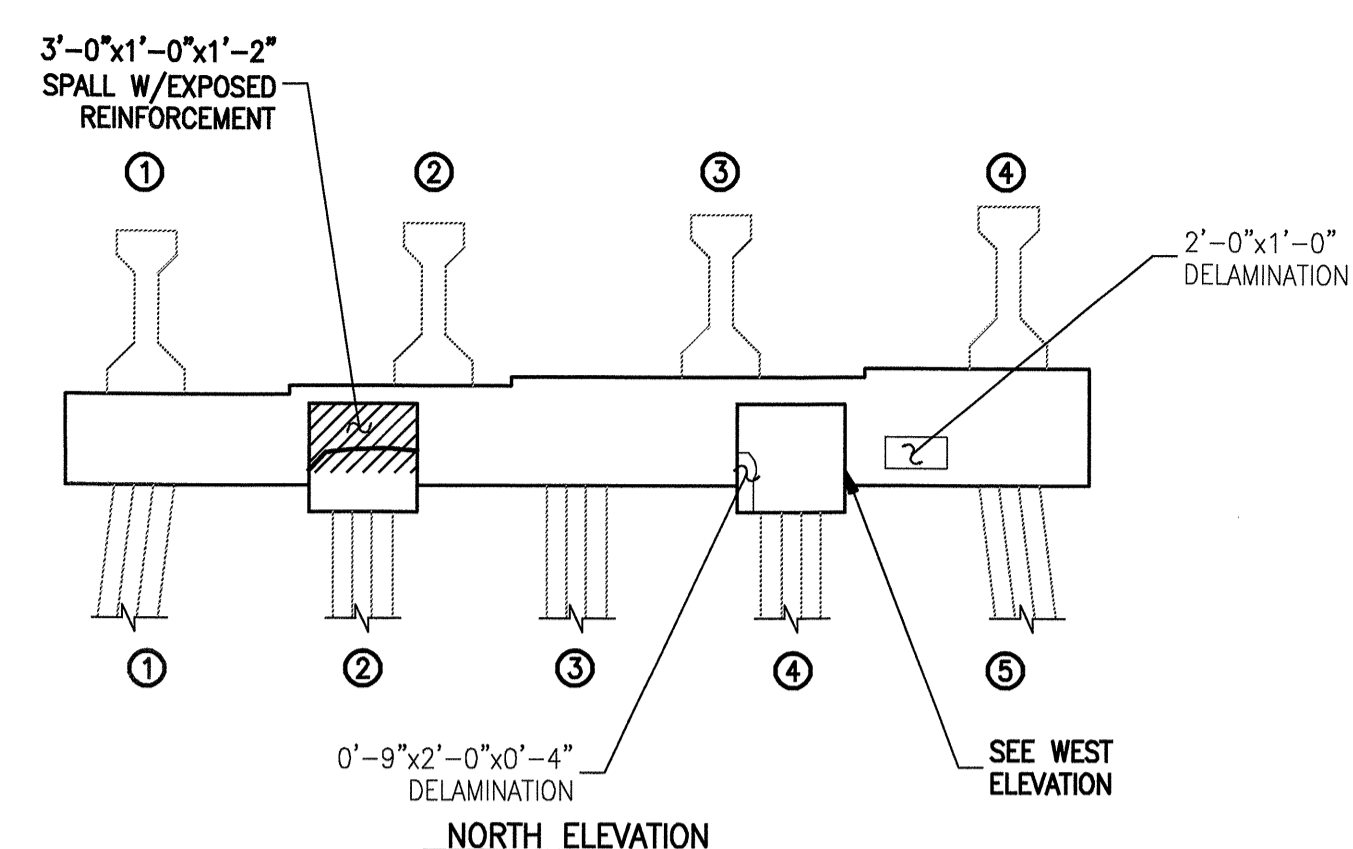
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	4
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	26
EPOXY MORTAR (FORMED)	CF	-

## BENT #49

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	2
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	15
EPOXY MORTAR (FORMED)	CF	-

## BENT #50

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	7
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	45
EPOXY MORTAR (FORMED)	CF	-



**BENT #48**

**BENT #49**

**BENT #50**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) $\times$ (VERT) $\times$ (DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) $\times$ (VERT) $\times$ (DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

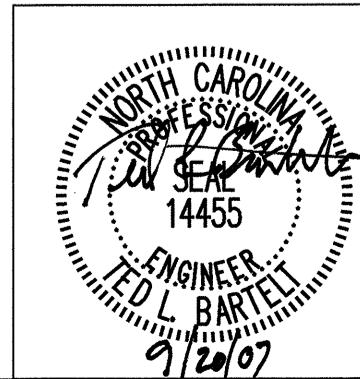
PLAN PREPARED BY:



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 AGC PROJ. NO. 2007.015

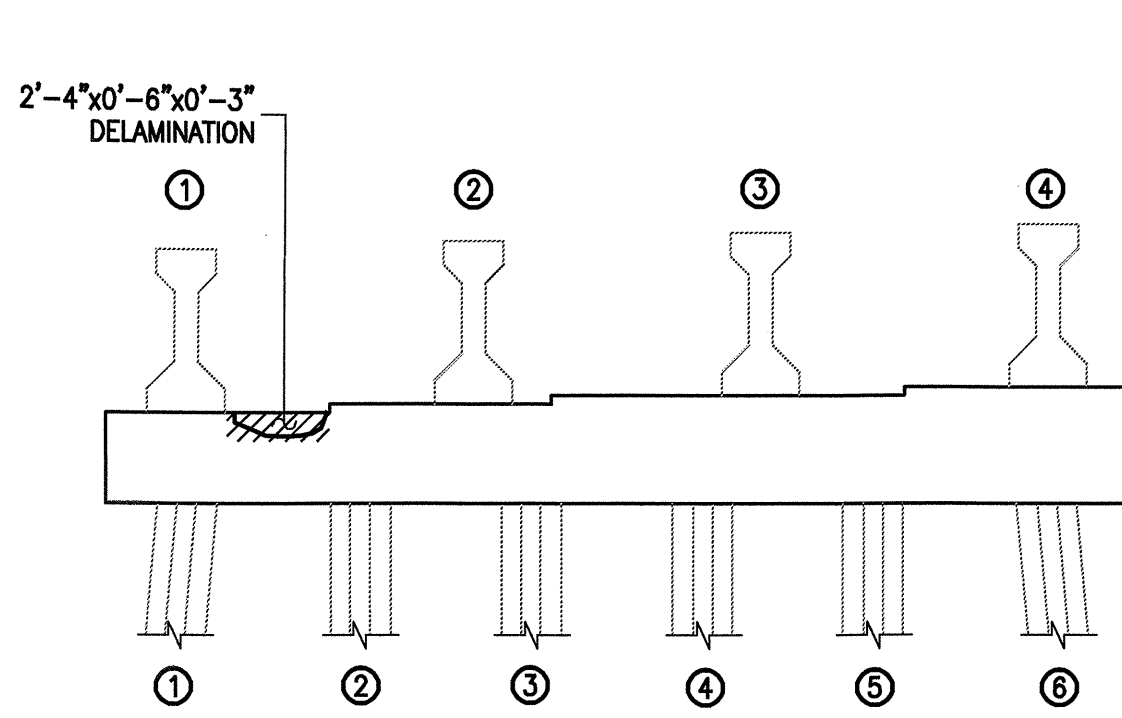
PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #48-#50

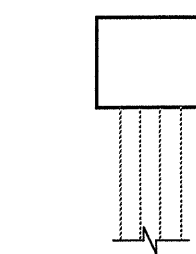


DRAWN BY G.R. COLS DATE 4/26/07  
 CHECKED BY F.E. ROBBINS DATE 4/26/07

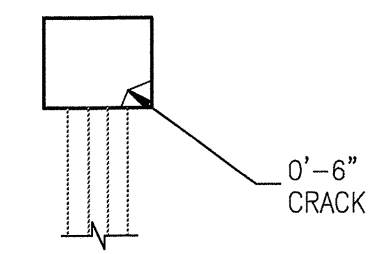
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
1			3		83
2			4		



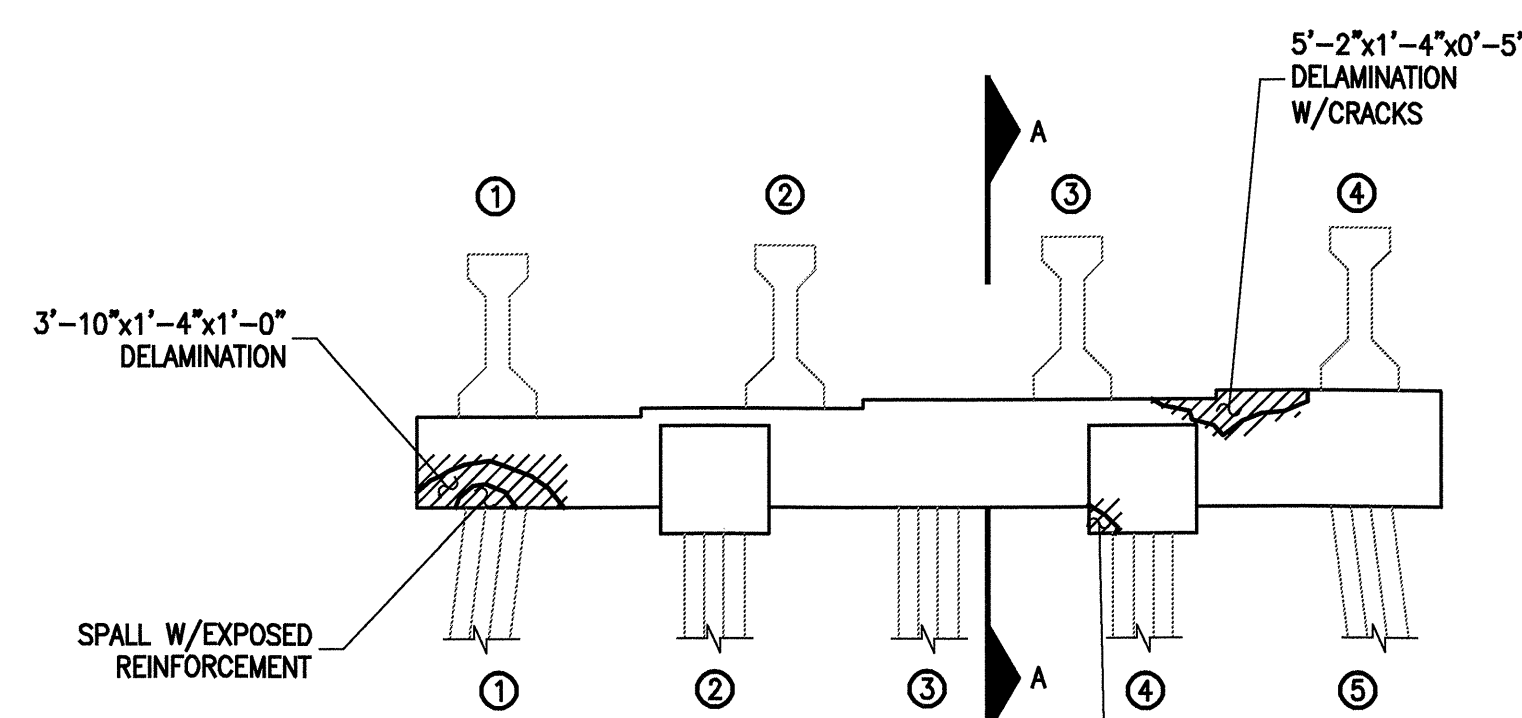
NORTH ELEVATION



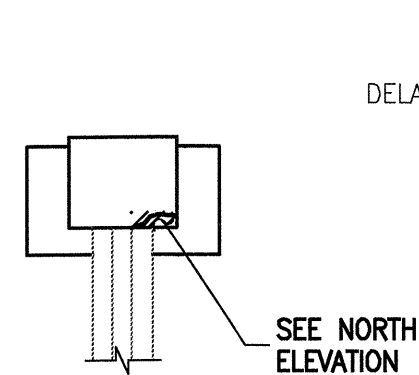
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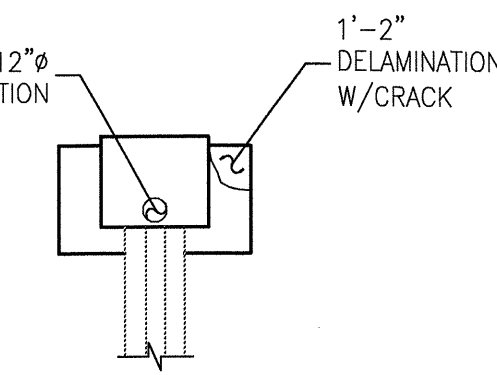
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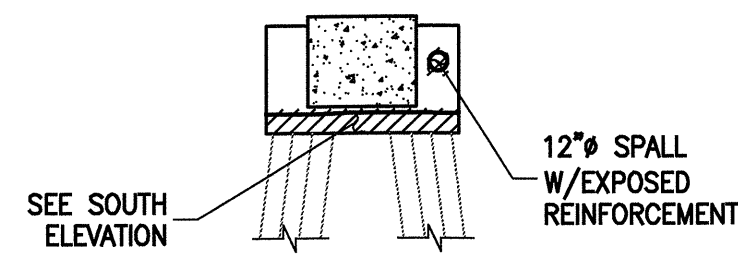
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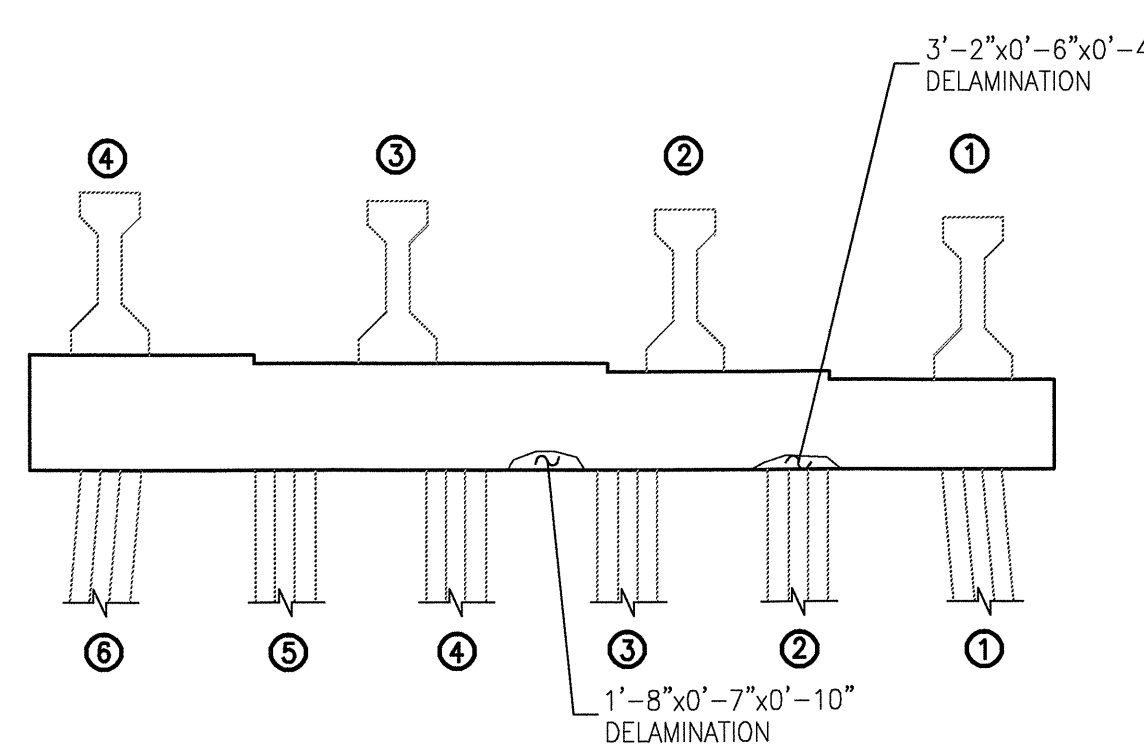
EAST ELEVATION



WEST ELEVATION

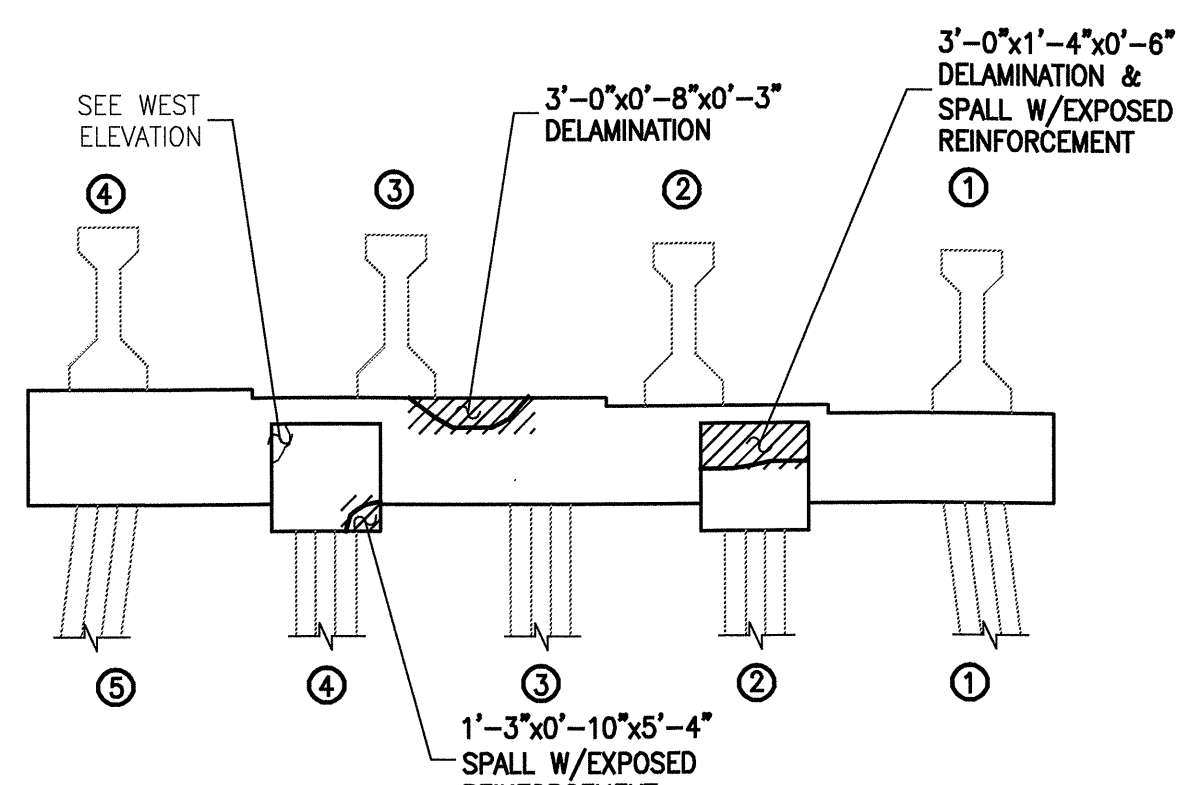


SECTION A-A



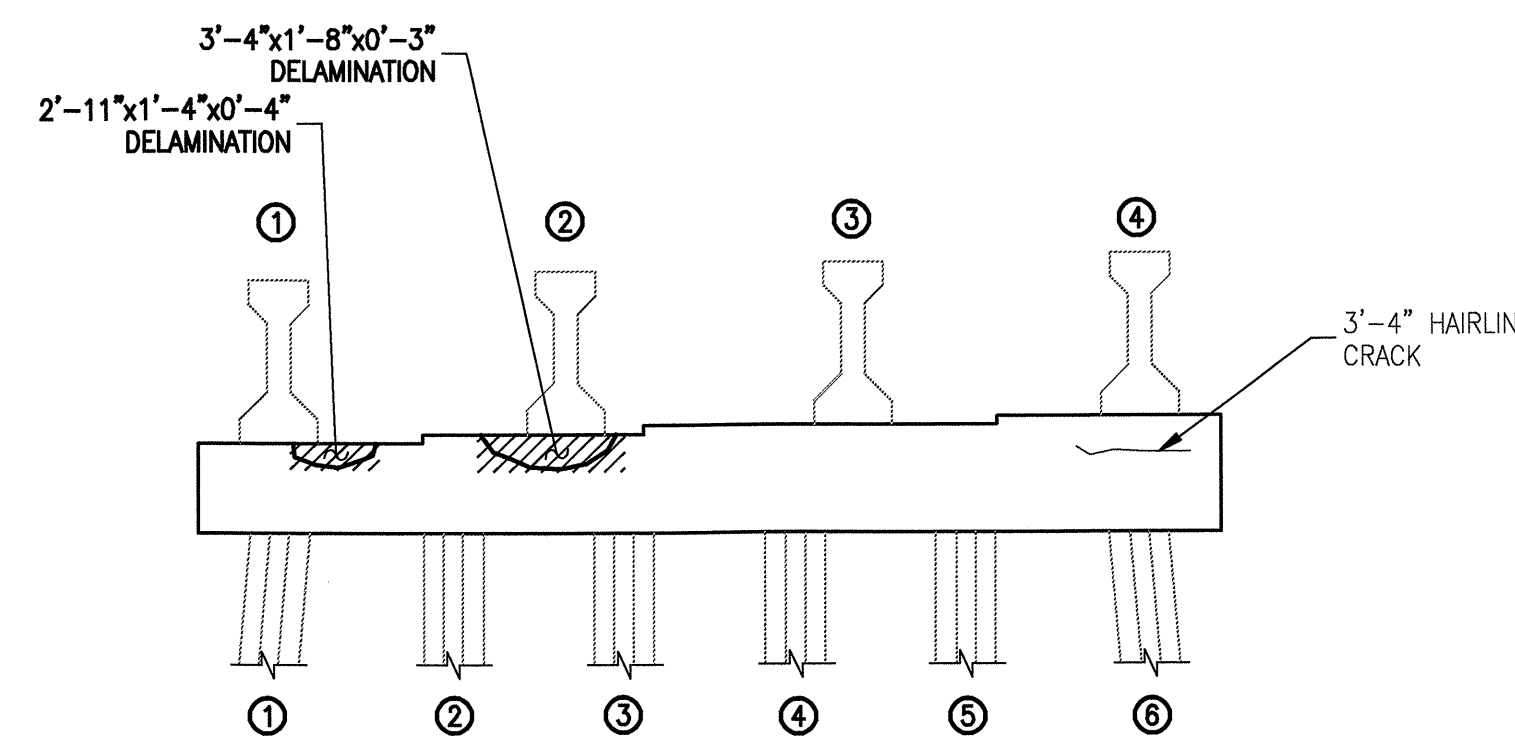
SOUTH ELEVATION

**BENT #51**

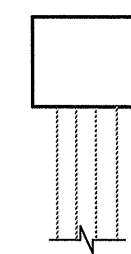


SOUTH ELEVATION

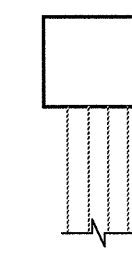
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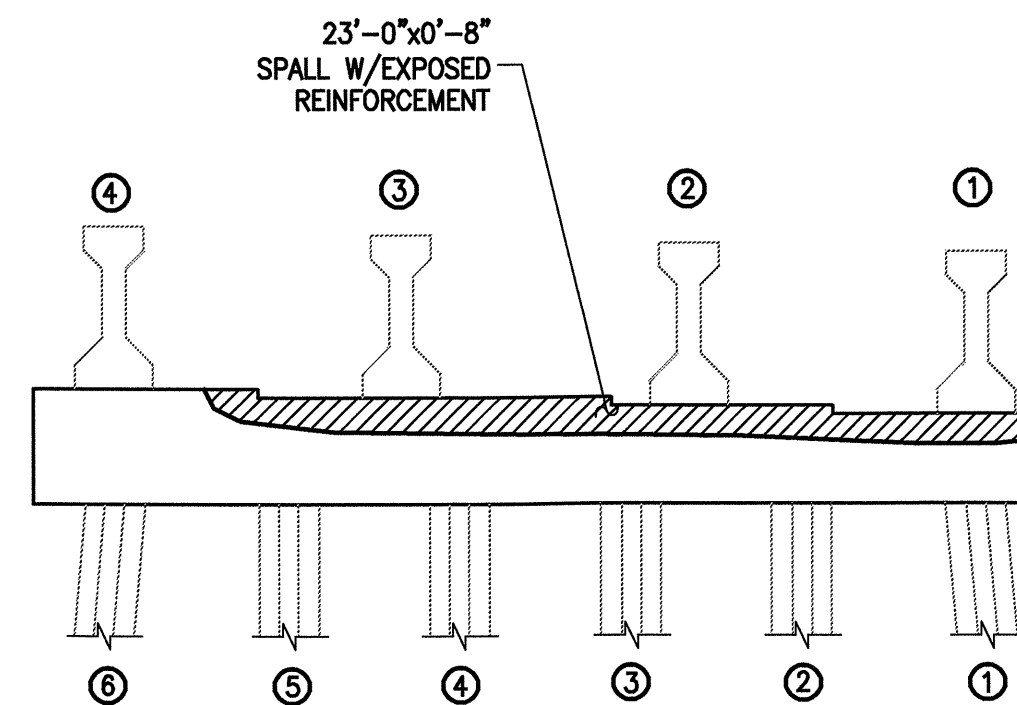
NORTH ELEVATION



EAST ELEVATION



WEST ELEVATION



SOUTH ELEVATION

**BENT #53**

BILL OF MATERIAL			
BENT #51			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	1	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	-	
EPOXY MORTAR (FORMED)	CF	-	
BENT #52			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	7	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	8	
EPOXY MORTAR (FORMED)	CF	-	
BENT #53			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	8	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	78	
EPOXY MORTAR (FORMED)	CF	-	

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

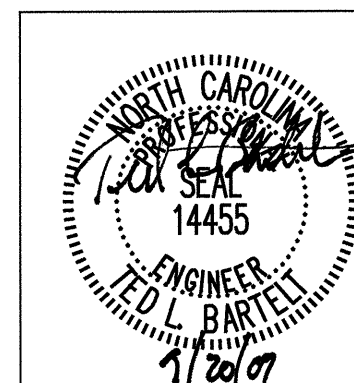


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #51-#53



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 4/26/07

REVISIONS						SHEET NO. 84
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

# BILL OF MATERIAL

## BENT #54

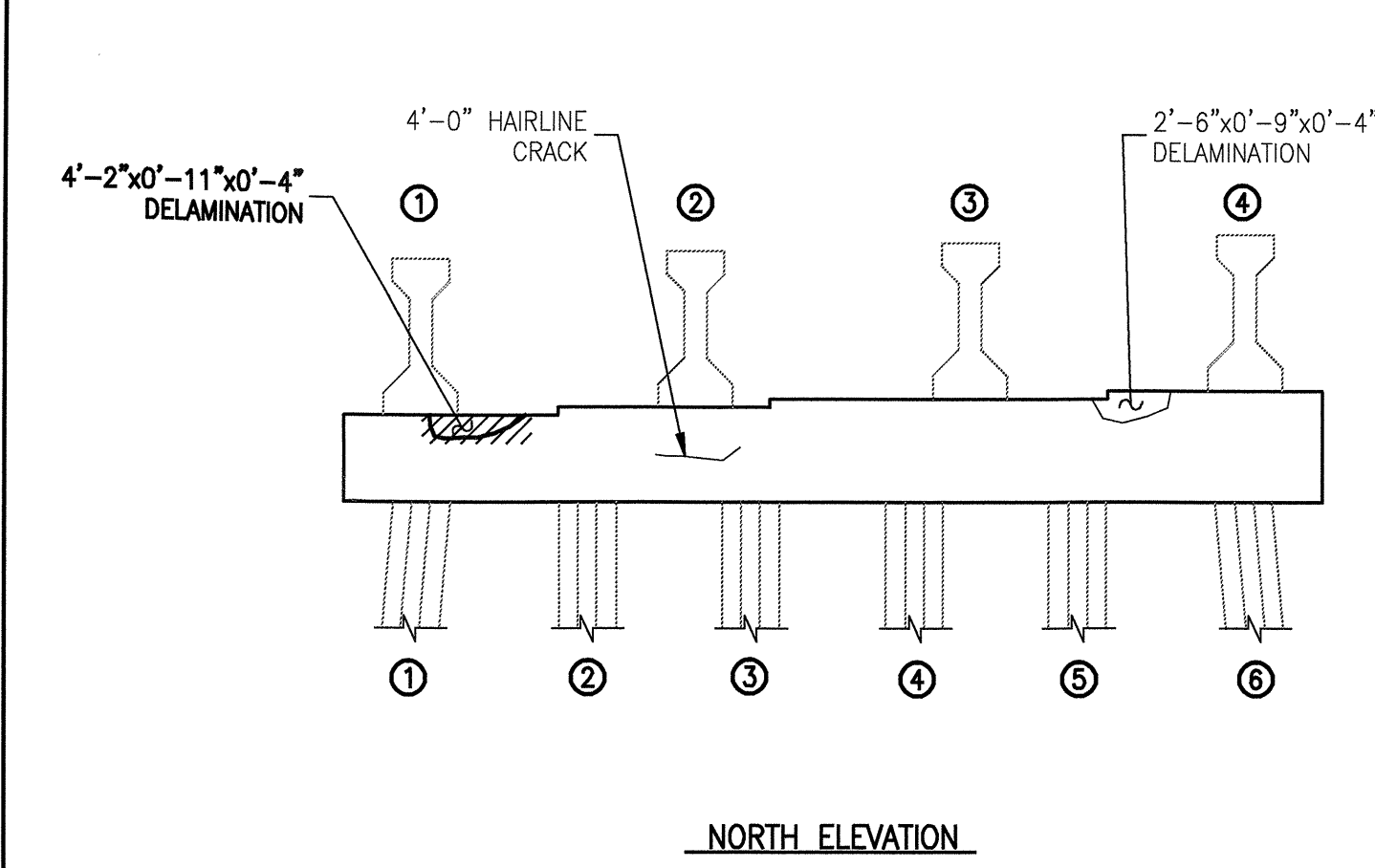
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	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	10
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	66
EPOXY MORTAR (FORMED)	CF	-

## BENT #55

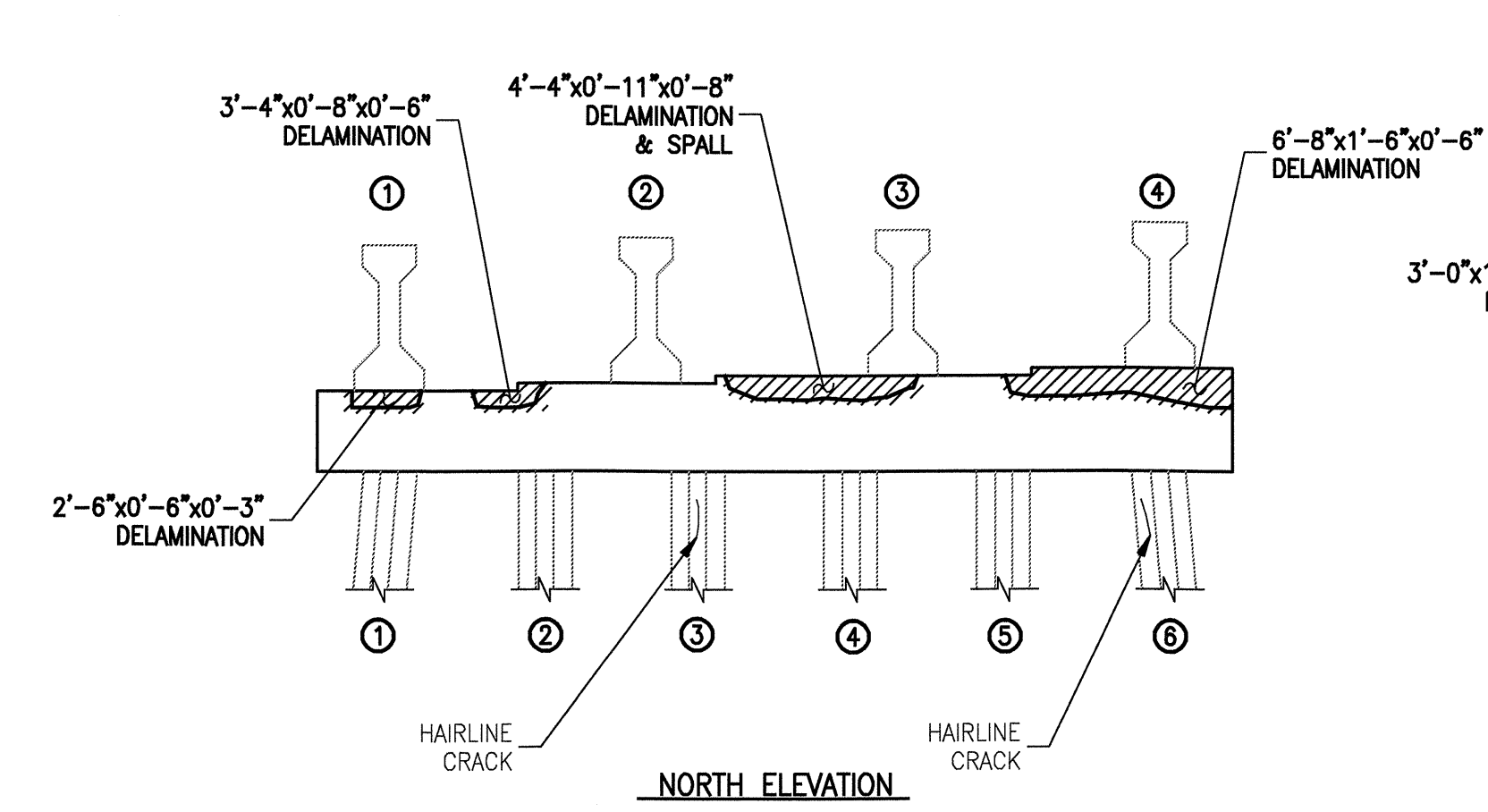
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	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	12
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	53
EPOXY MORTAR (FORMED)	CF	-

## BENT #56

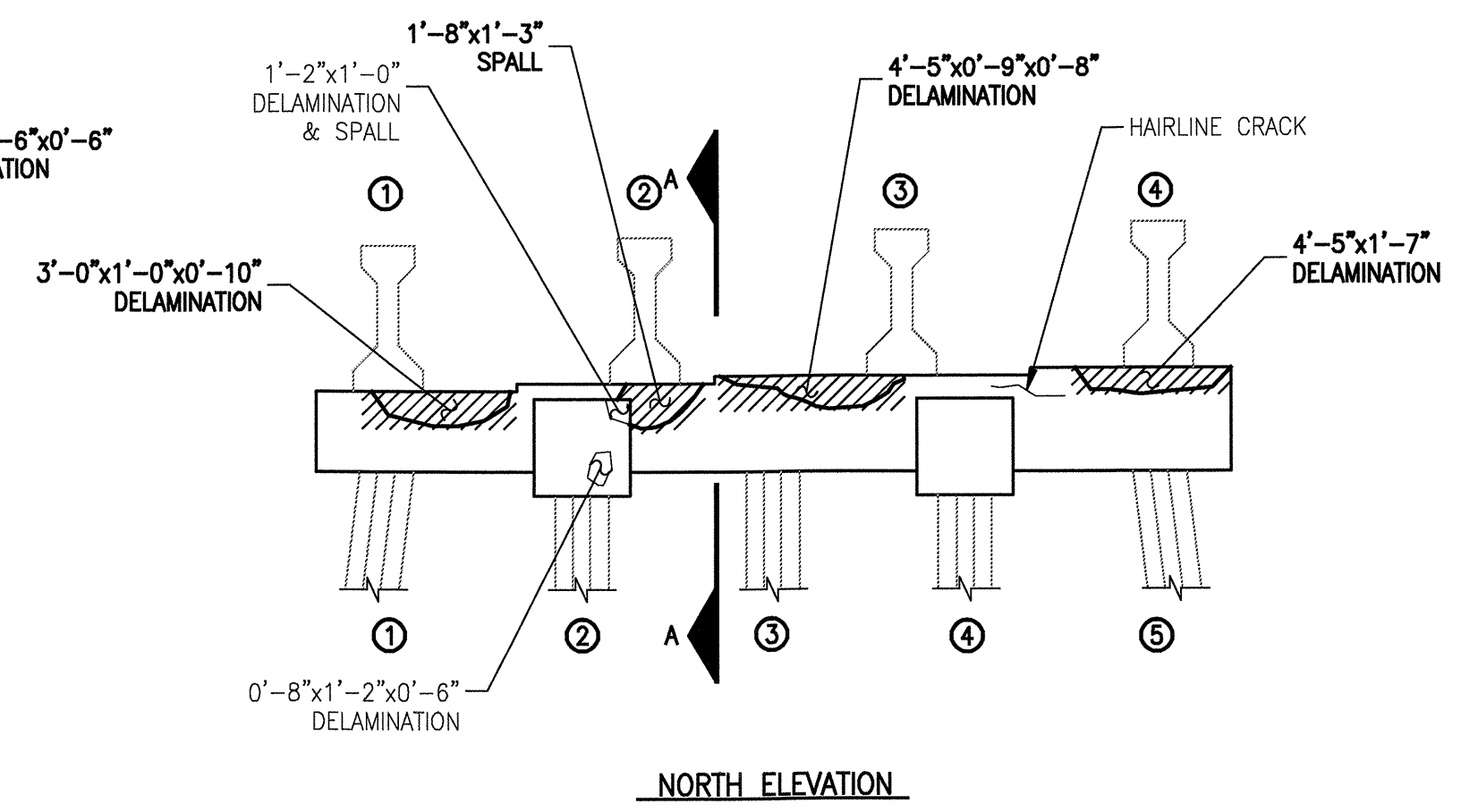
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	9
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	55
EPOXY MORTAR (FORMED)	CF	-



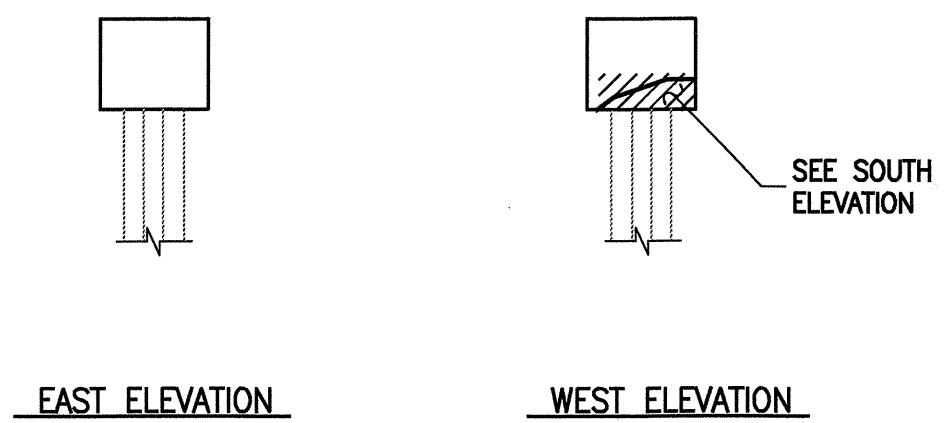
NORTH ELEVATION



NORTH ELEVATION

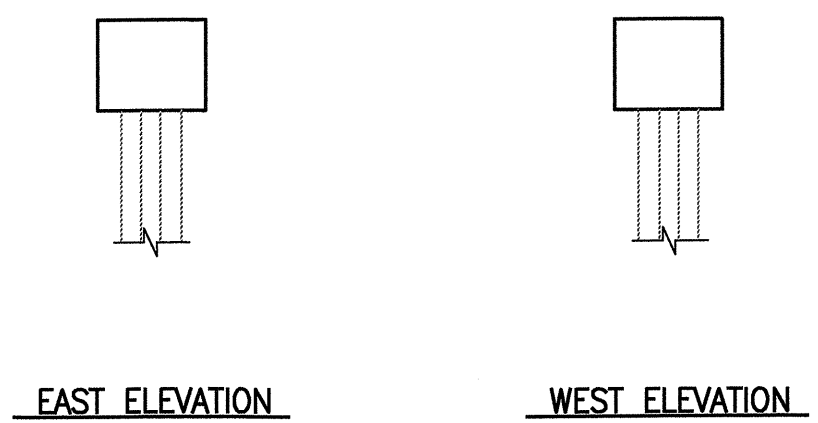


NORTH ELEVATION



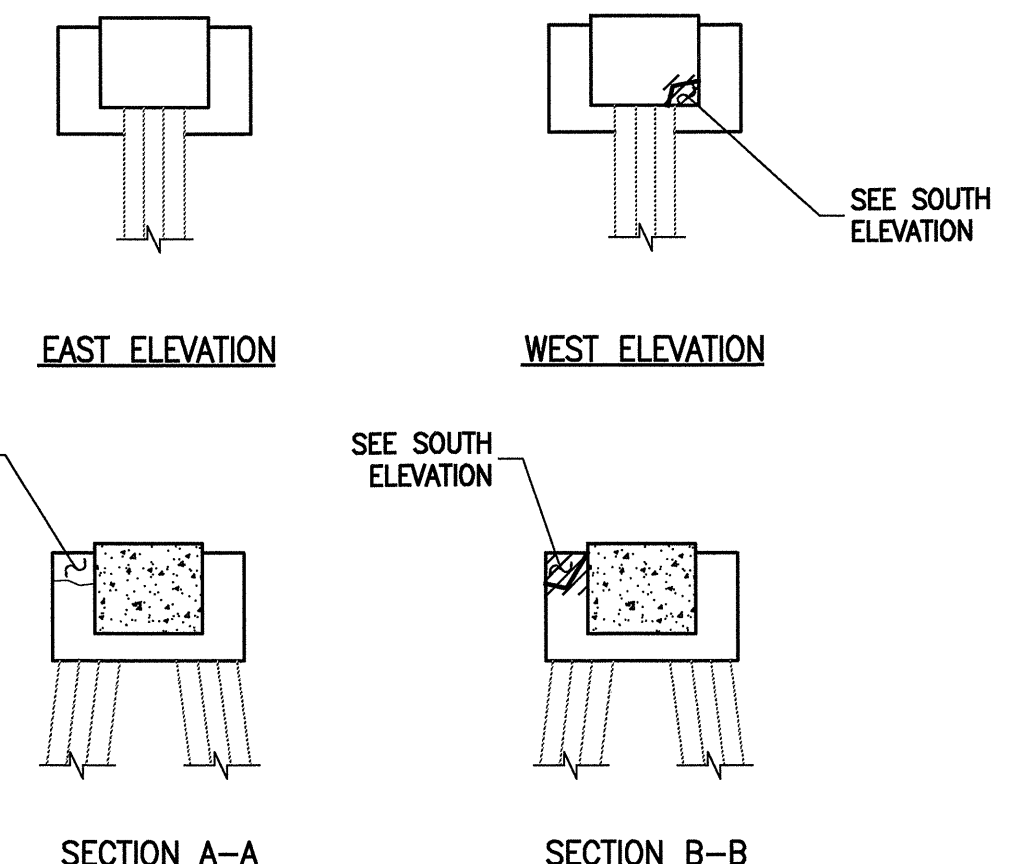
EAST ELEVATION

WEST ELEVATION



EAST ELEVATION

WEST ELEVATION

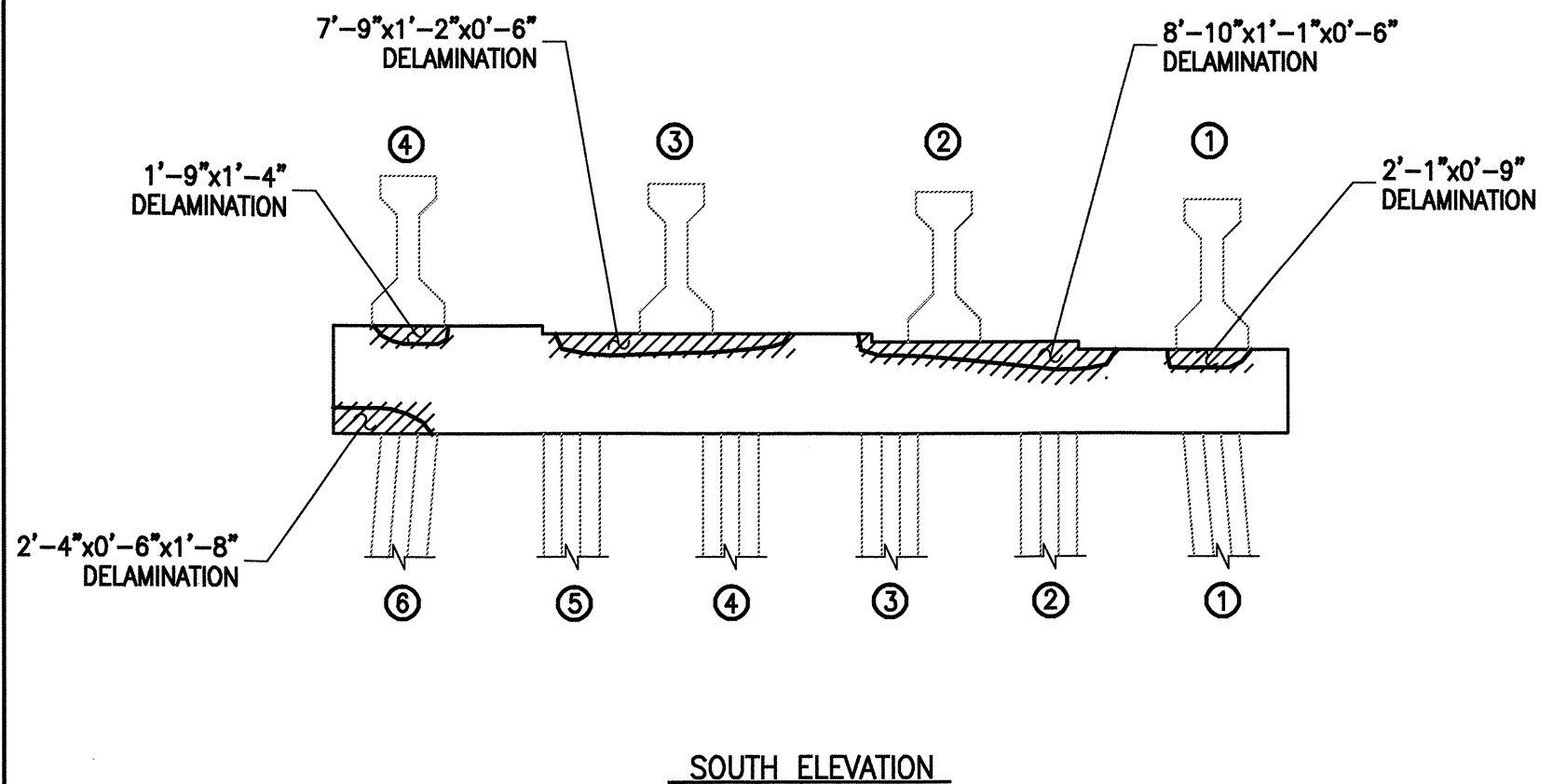


EAST ELEVATION

WEST ELEVATION

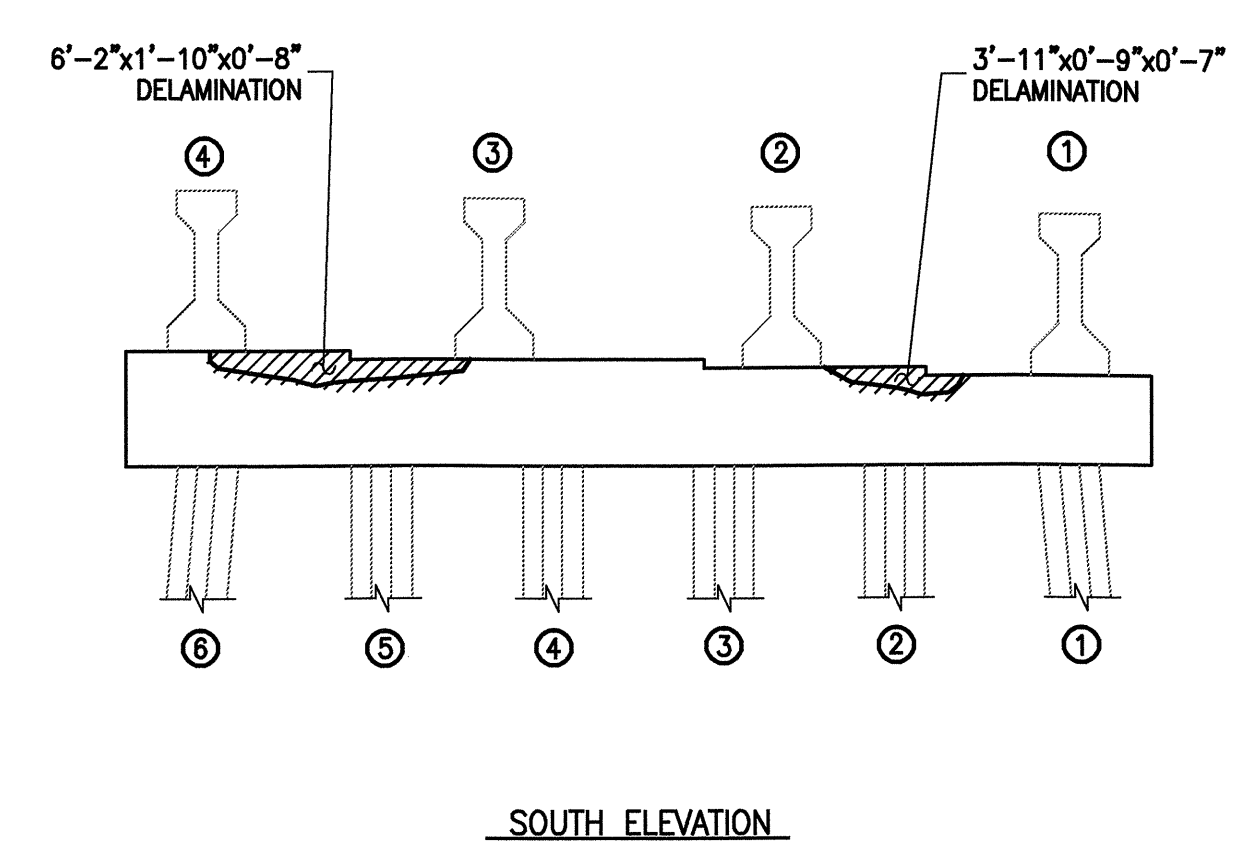
SECTION A-A

SECTION B-B



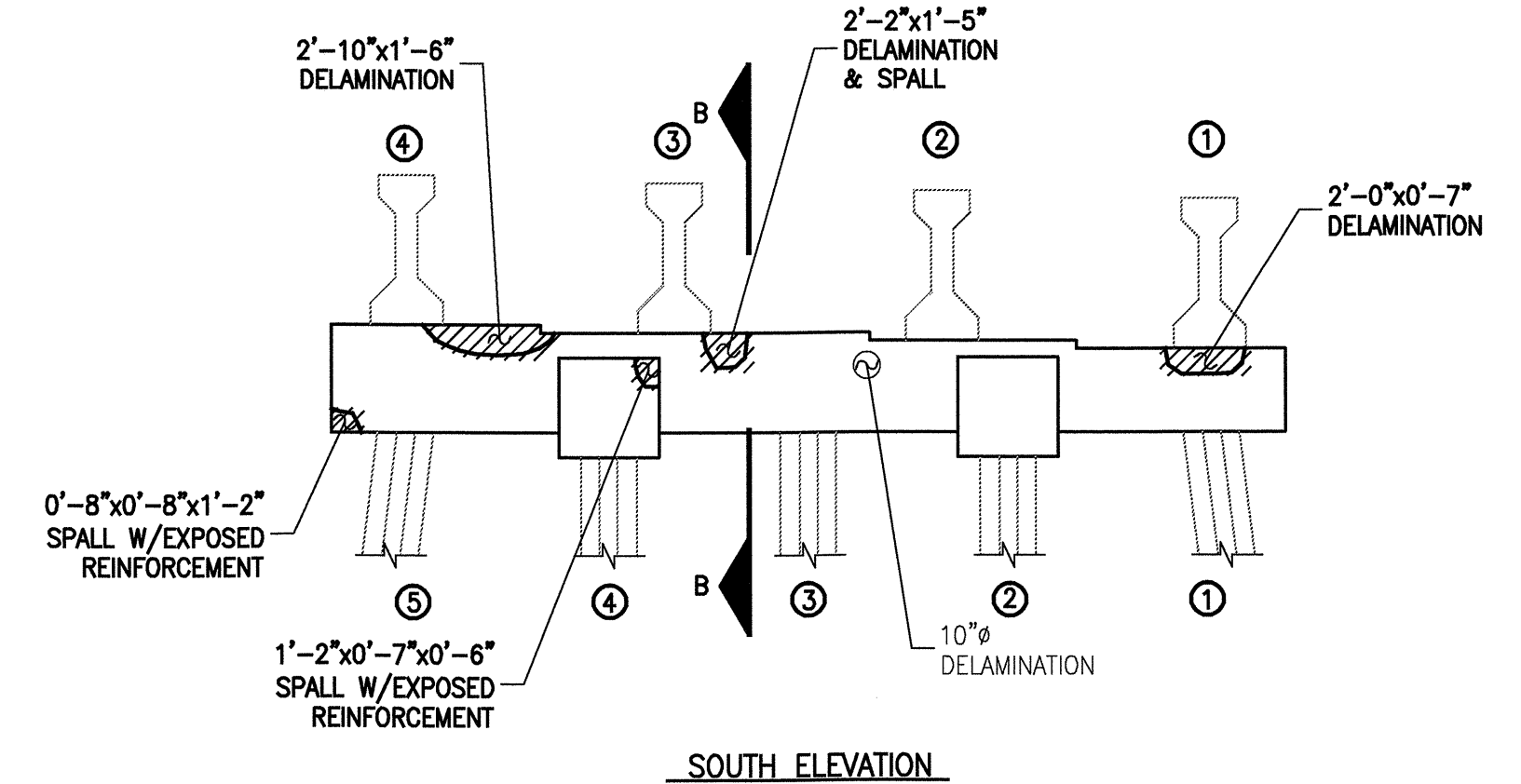
SOUTH ELEVATION

**BENT #54**



SOUTH ELEVATION

**BENT #55**

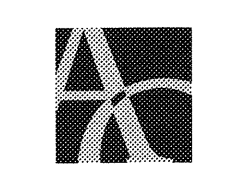


SOUTH ELEVATION

**BENT #56**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

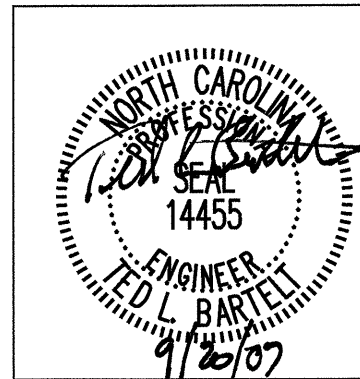
PLAN PREPARED BY:



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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #54-#56



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 4/26/07

REVISIONS					SHEET NO. 85
NO.	BY:	DATE:	NO.	DATE:	
1			3		TOTAL SHEETS 166
2			4		



# BILL OF MATERIAL

## BENT #57

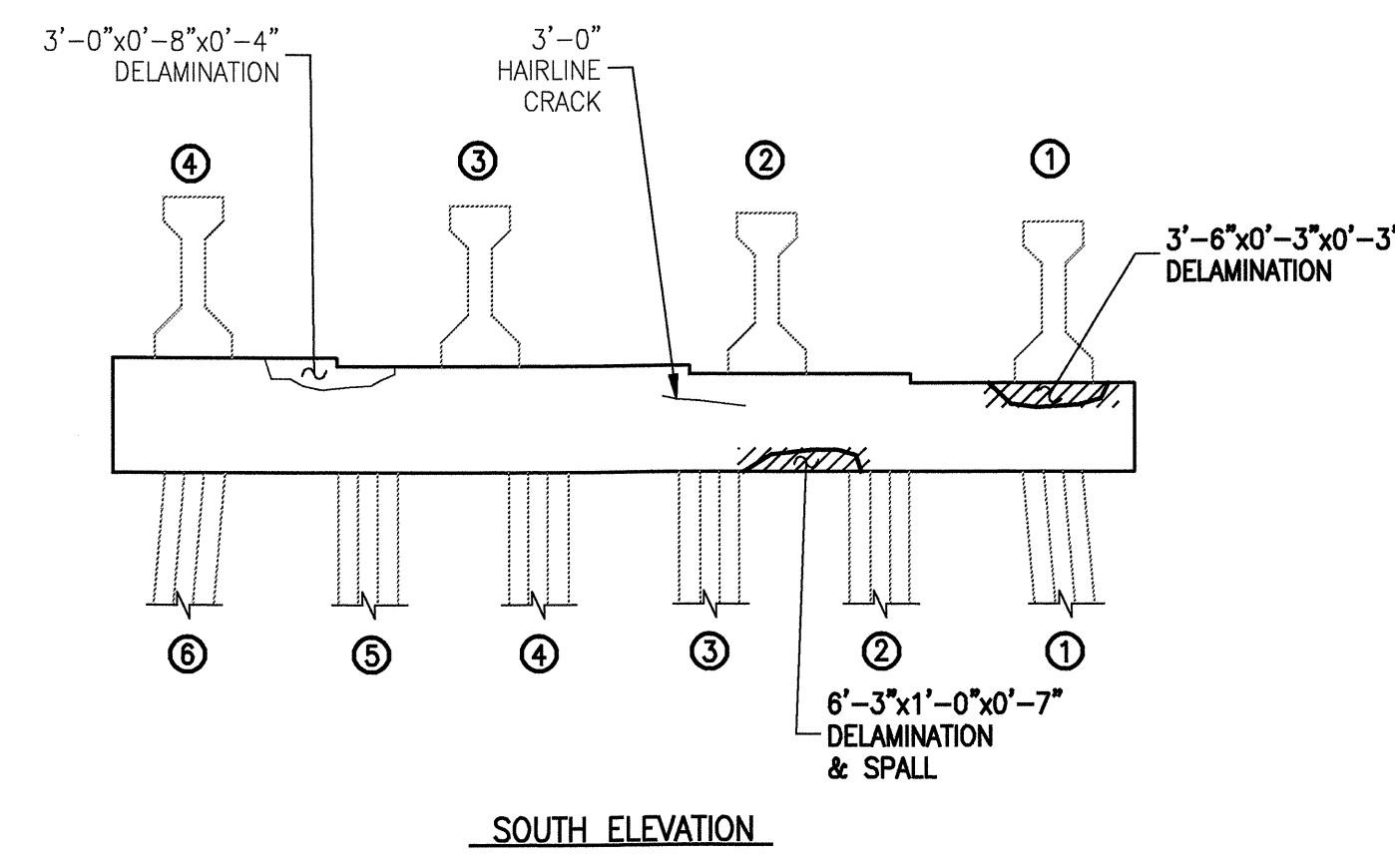
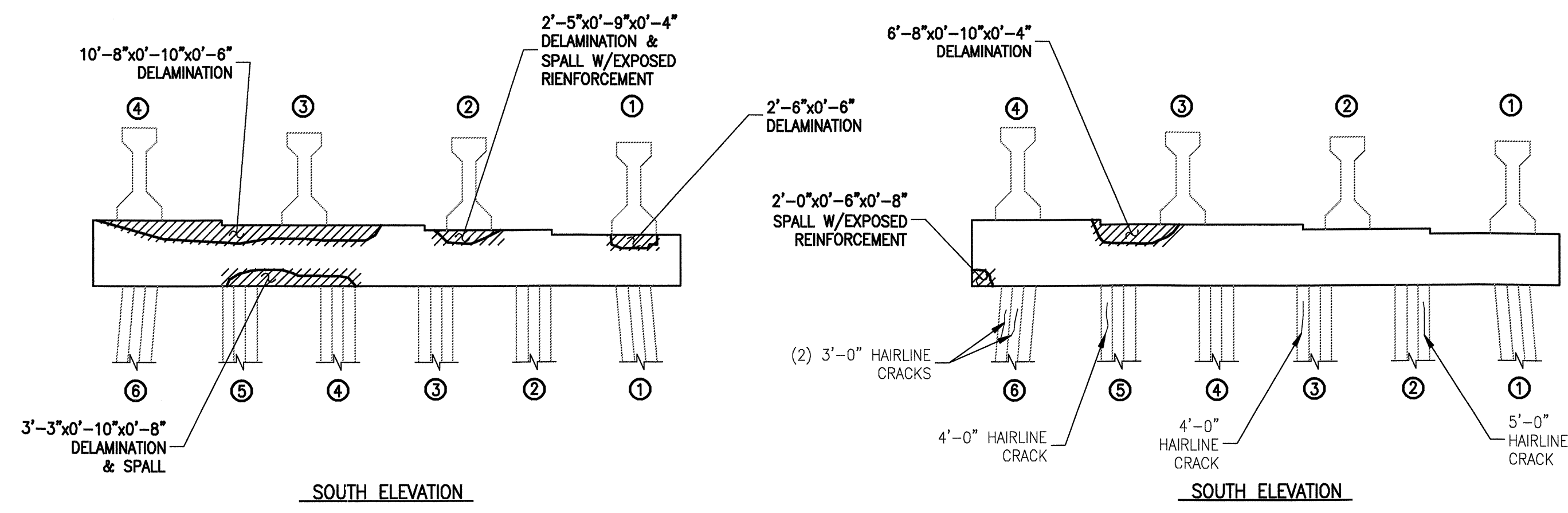
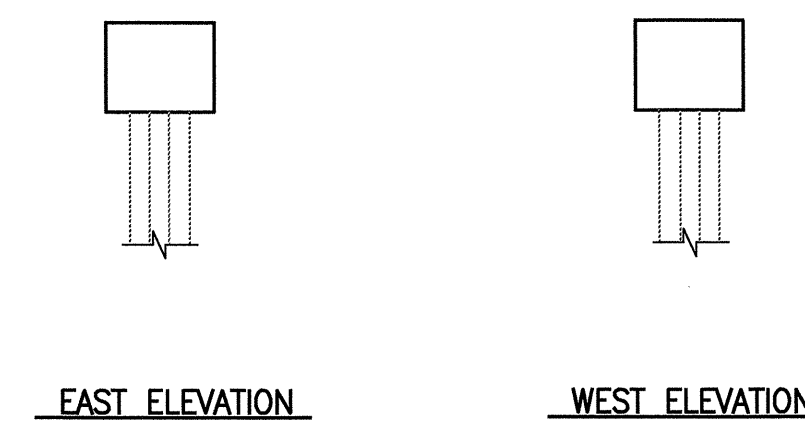
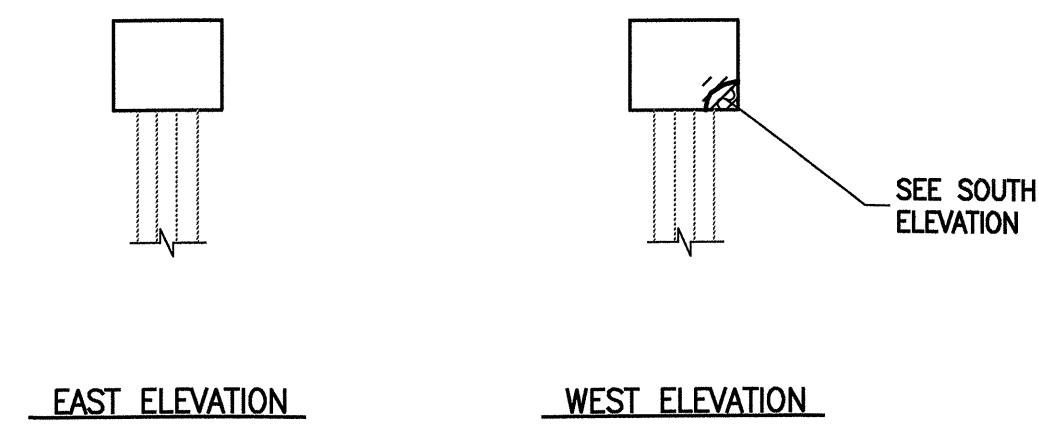
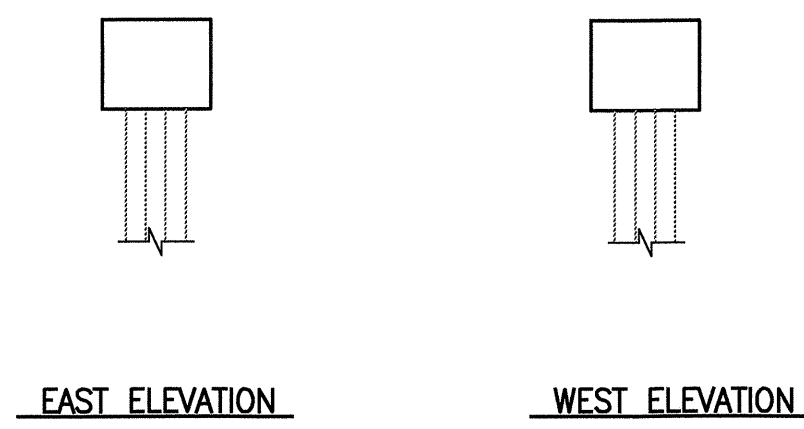
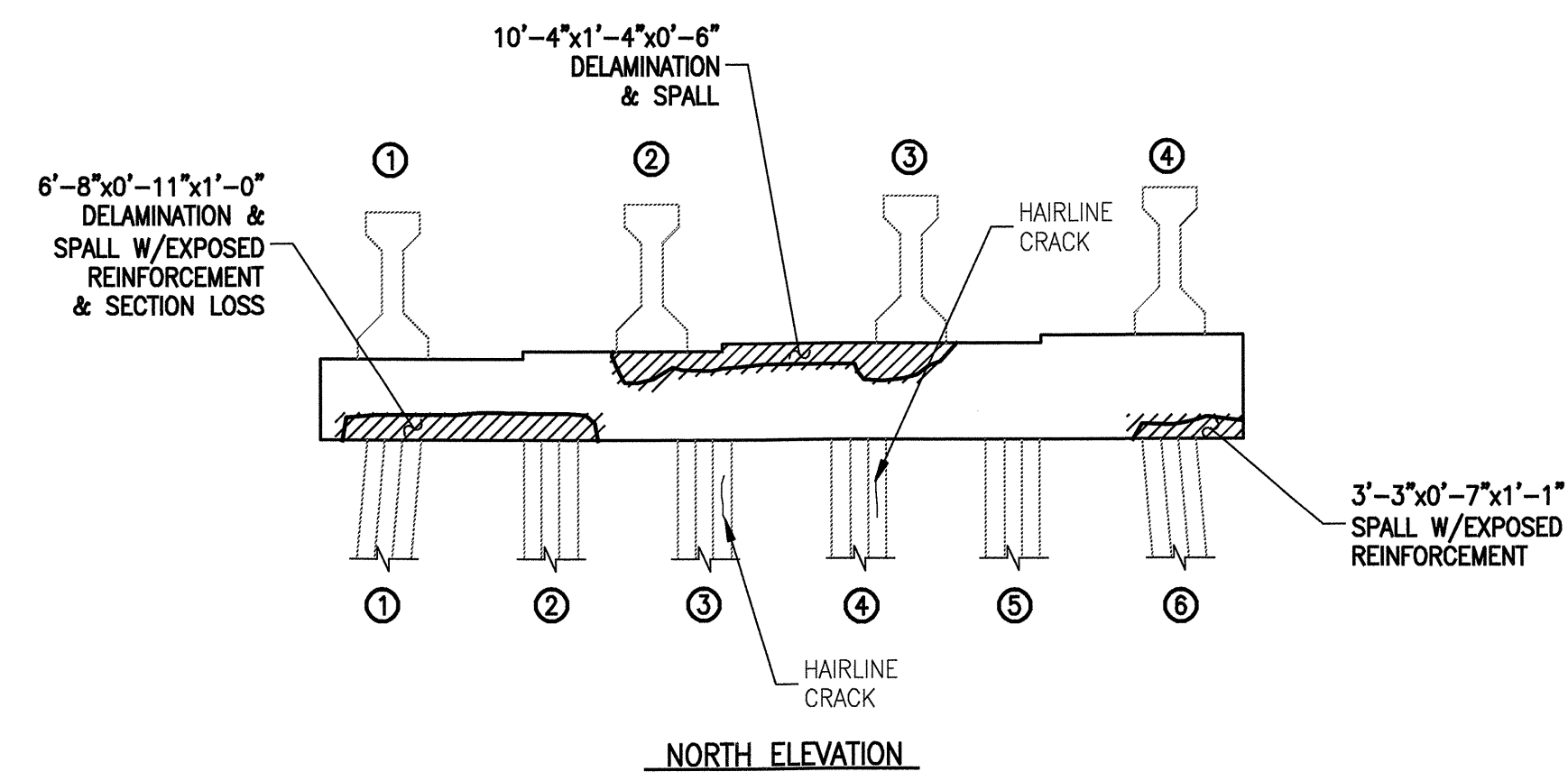
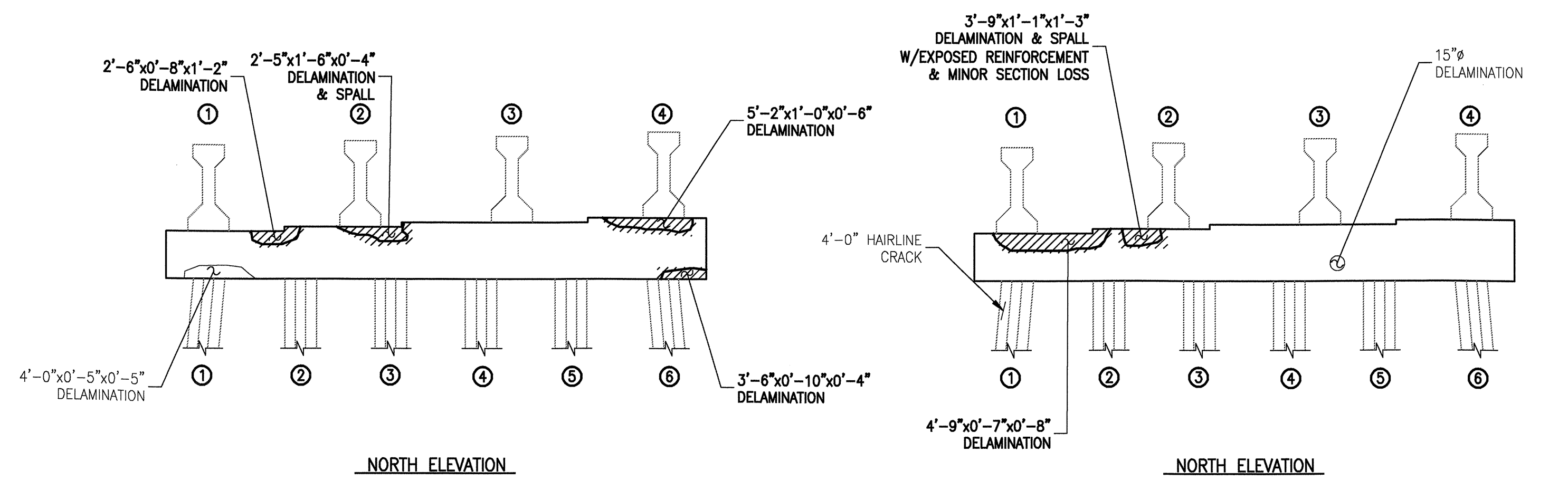
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	9
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	69
EPOXY MORTAR (FORMED)	CF	-

## BENT #58

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	5
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	41
EPOXY MORTAR (FORMED)	CF	-

## BENT #59

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	8
OVERHEAD SHOTCRETE	CF	6
ADDITIONAL REINFORCING	LBS	37
EPOXY MORTAR (FORMED)	CF	-



**BENT #57**

**BENT #58**

**BENT #59**

### KEY

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

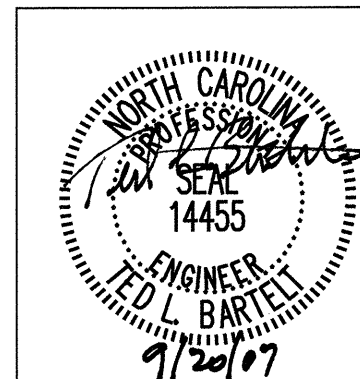


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

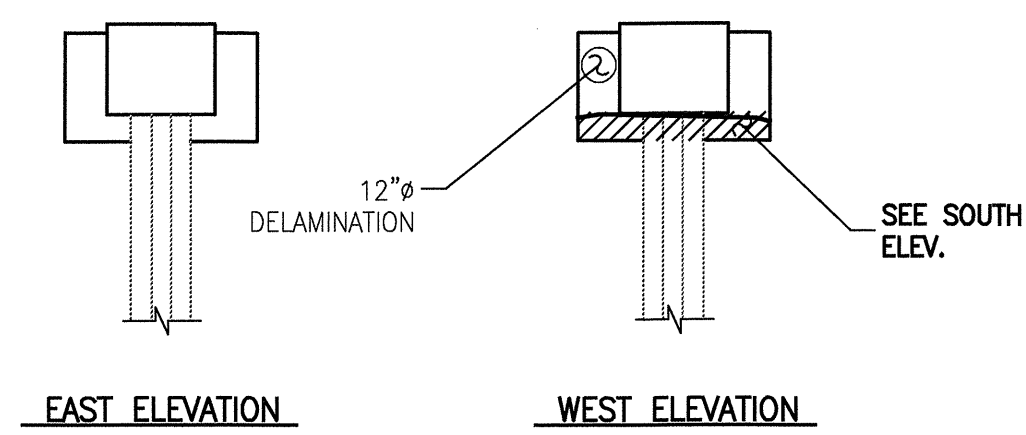
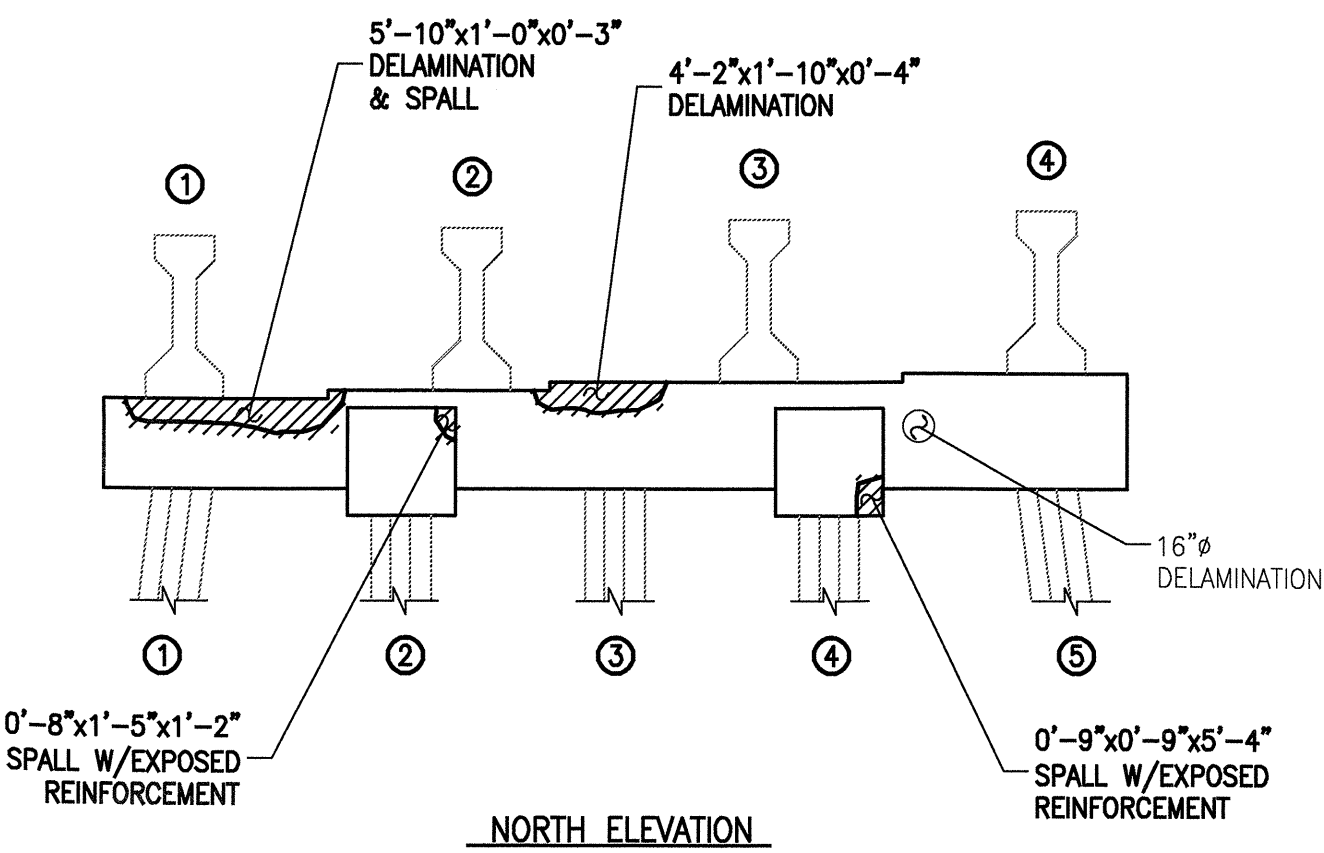
BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #57-#59



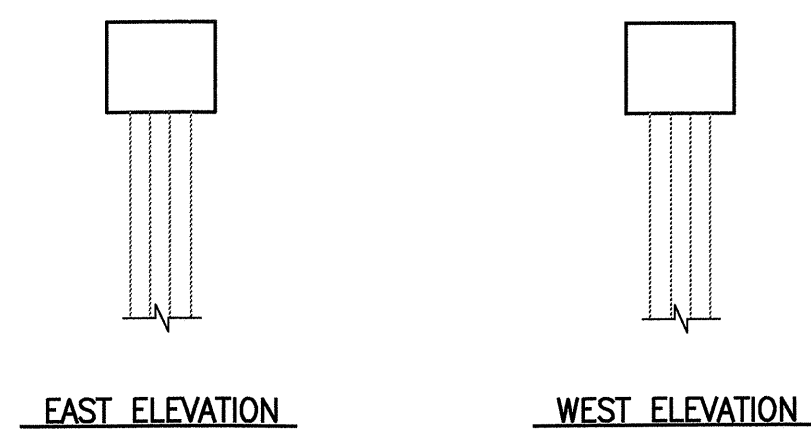
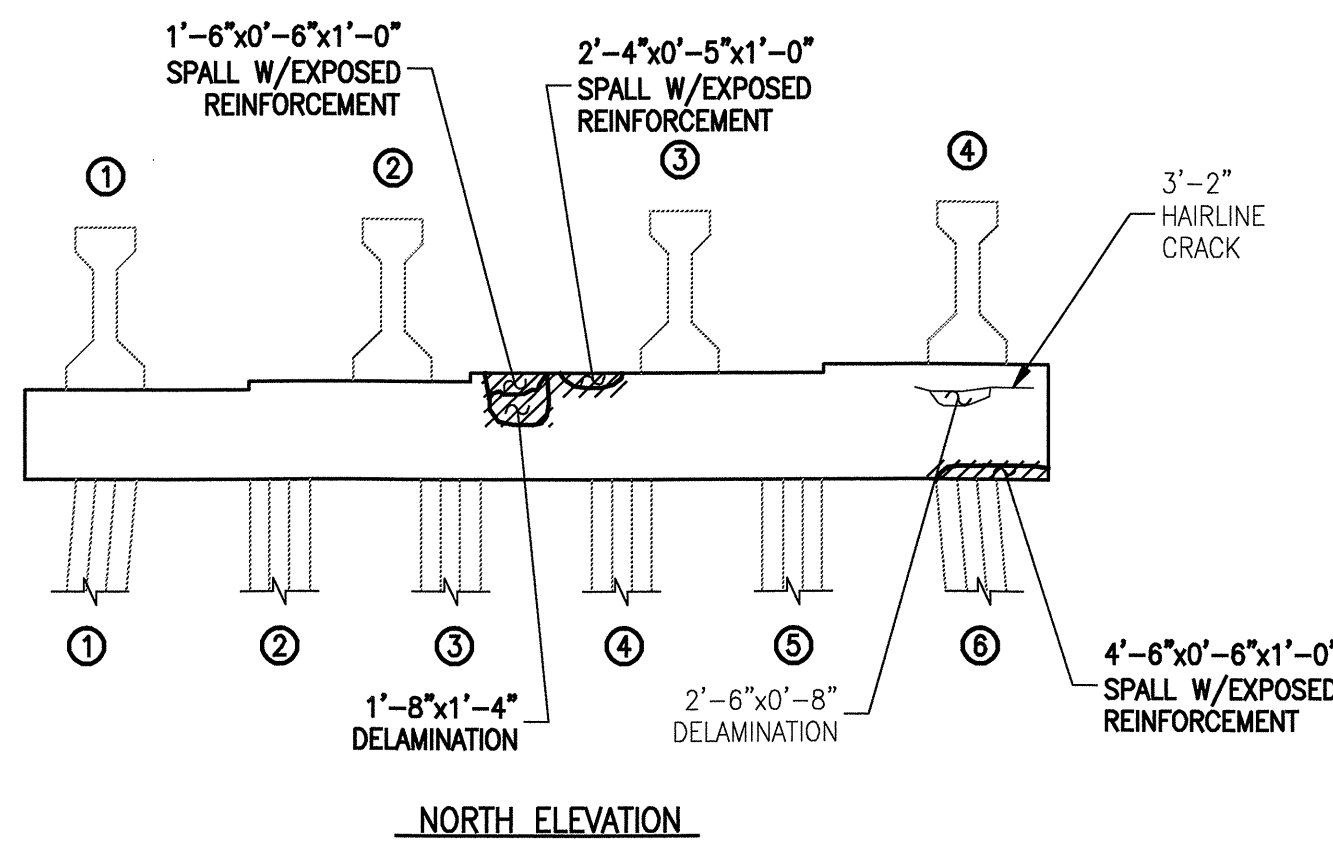
DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 4/26/07

REVISIONS						SHEET NO. 86
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

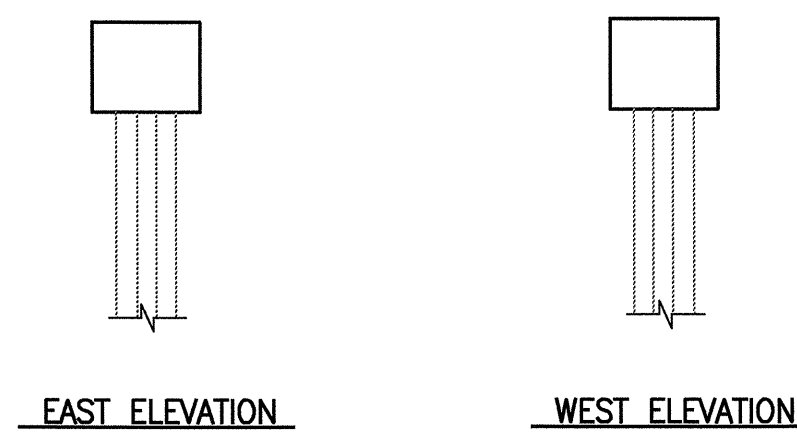
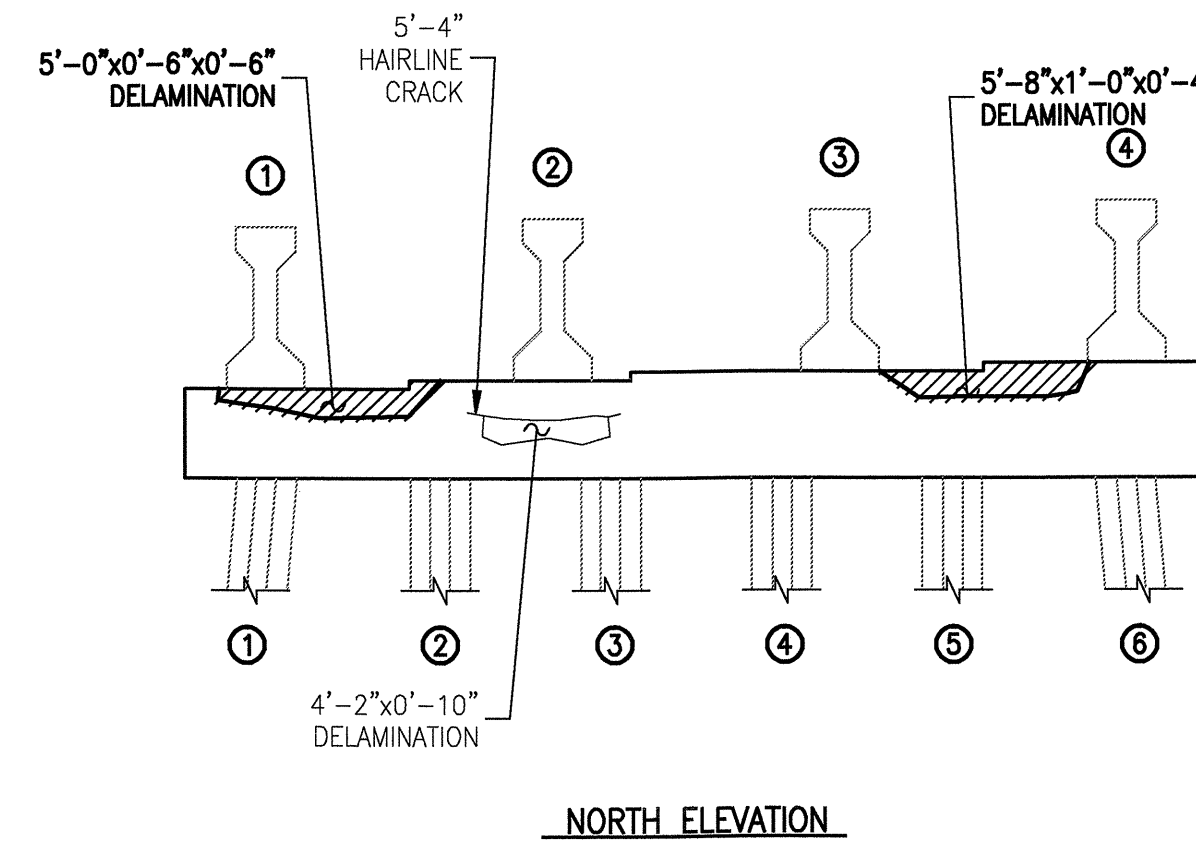




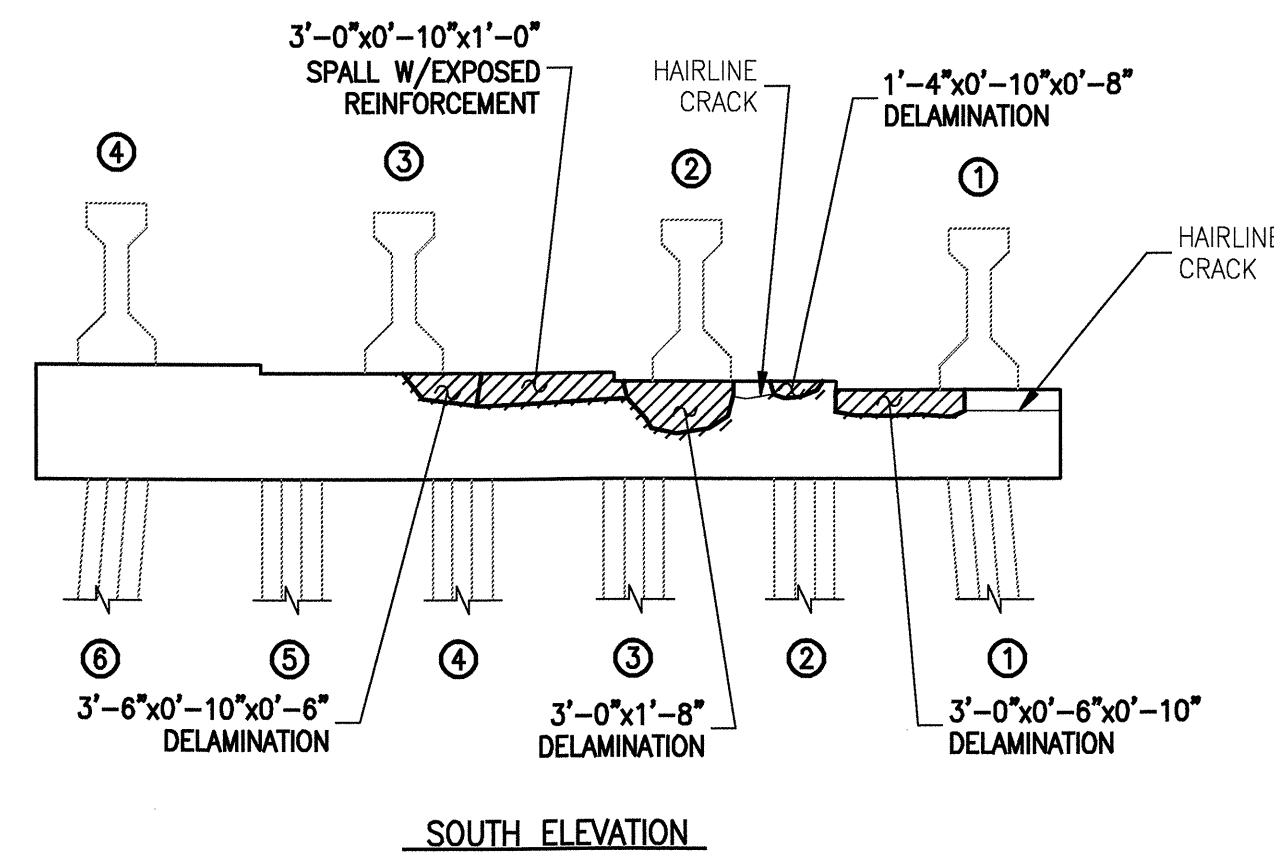
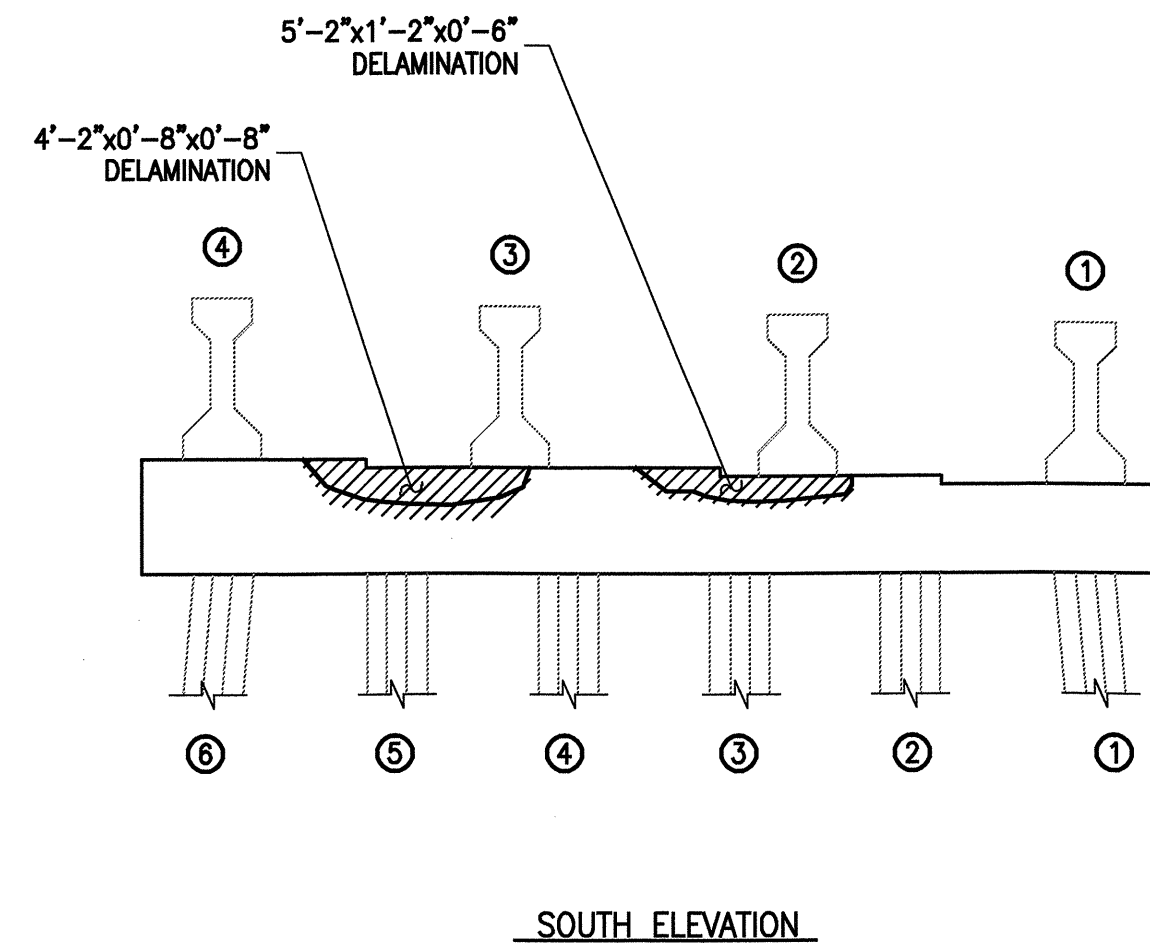
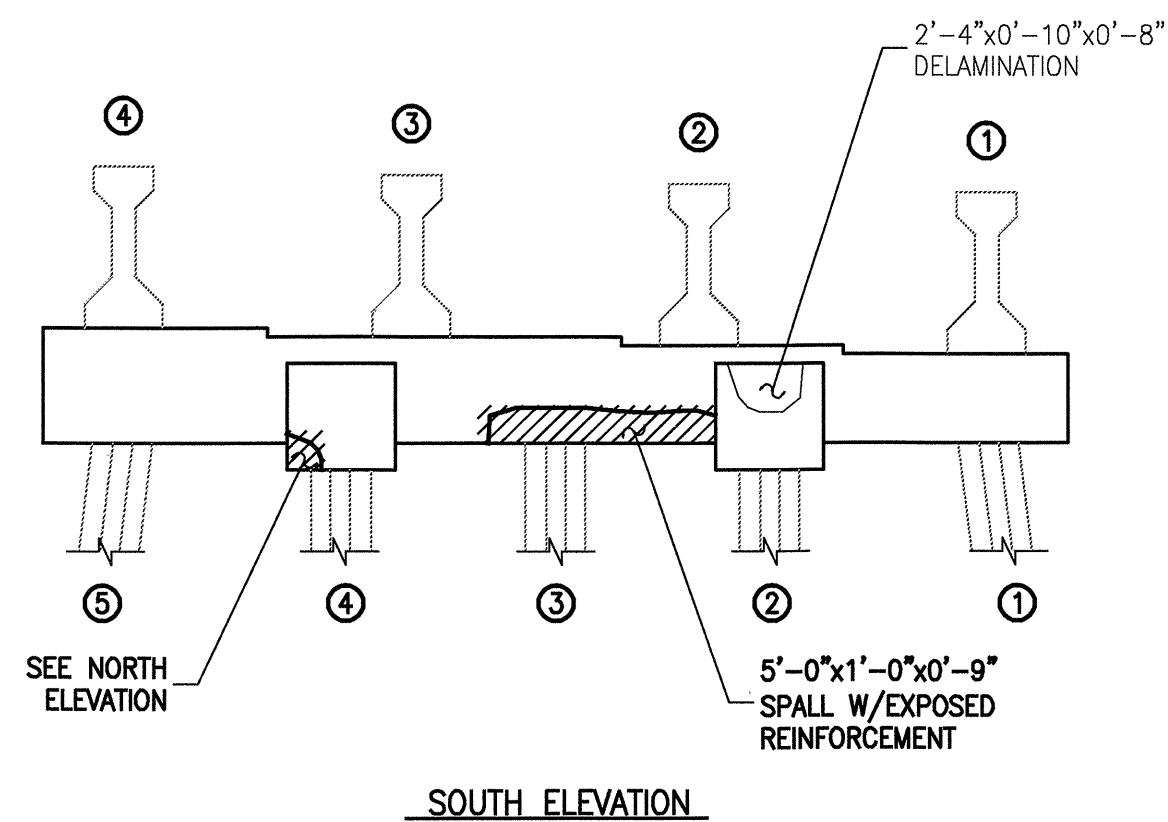
**BENT #60**



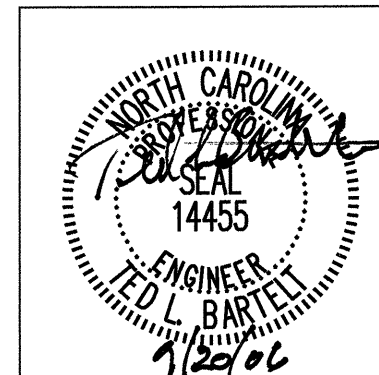
**BENT #61**



**BENT #62**



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 4/26/07



BILL OF MATERIAL			
BENT #60			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	7	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	16	
EPOXY MORTAR (FORMED)	CF	-	
BENT #61			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	5	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	25	
EPOXY MORTAR (FORMED)	CF	-	
BENT #62			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	8	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	39	
EPOXY MORTAR (FORMED)	CF	-	

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:  
  
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 AOG PROJ. NO. 2007.015

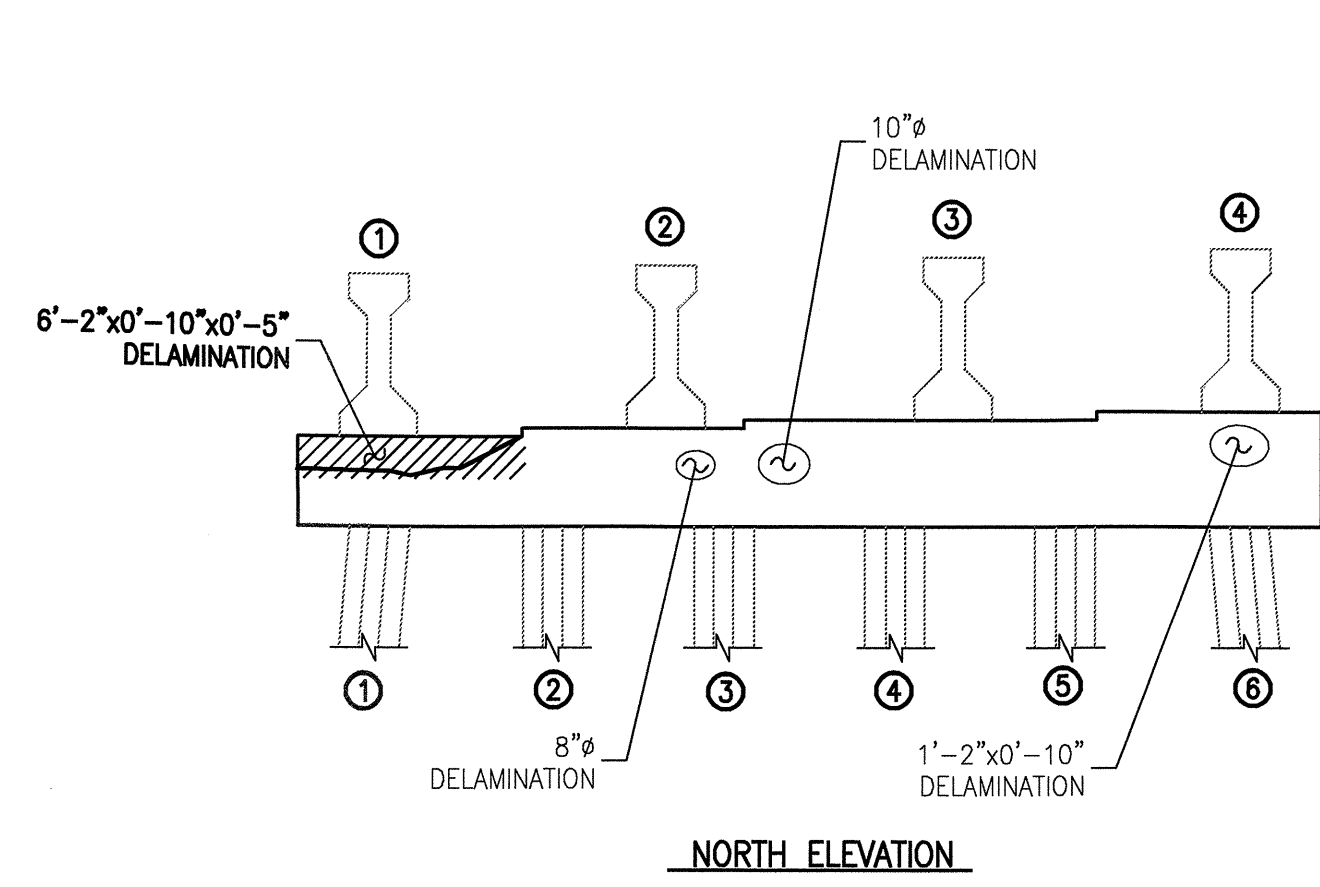
PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #60-#62

REVISIONS						SHEET NO. 87
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

**BILL OF MATERIAL**

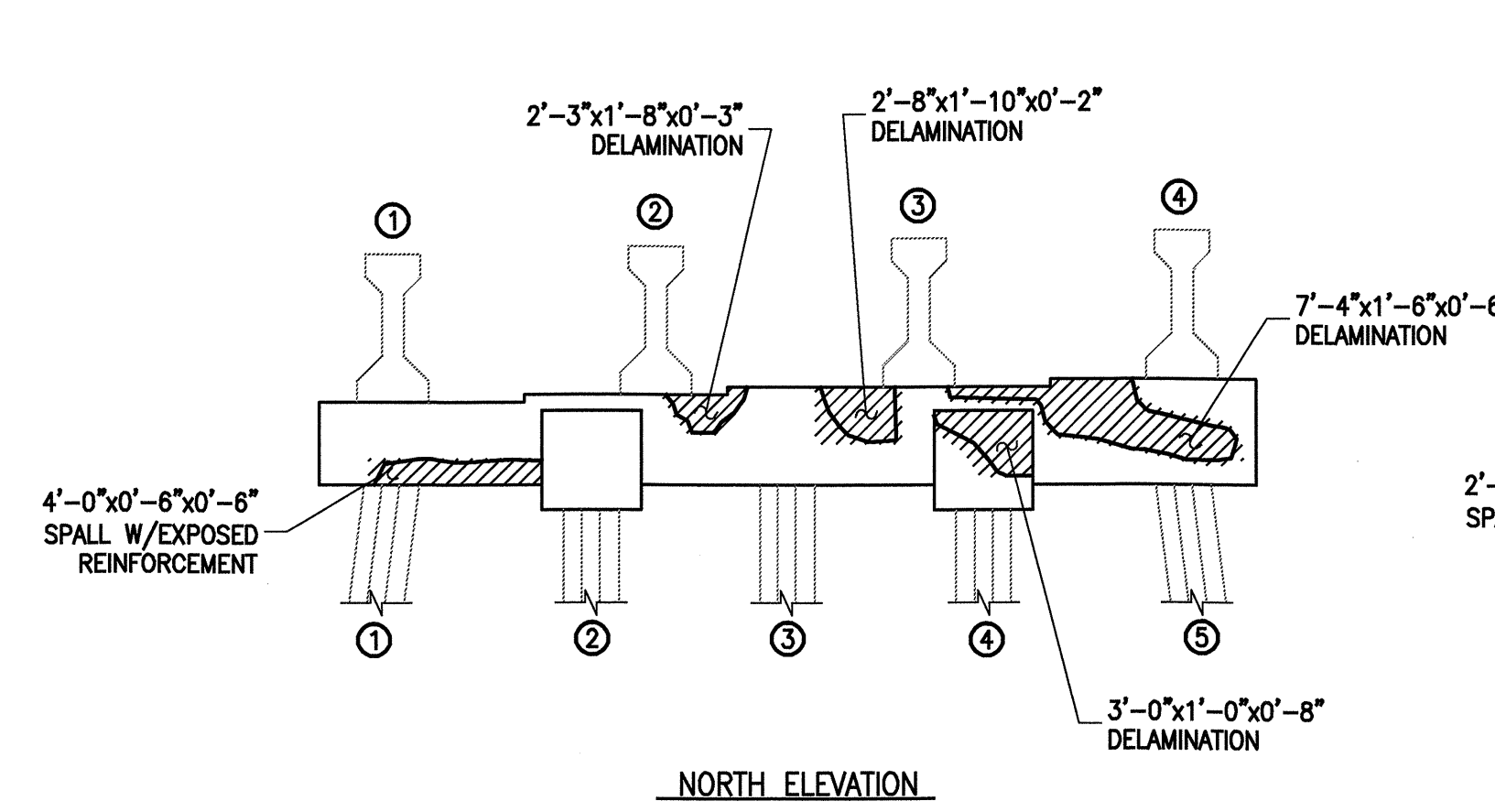
BENT #63			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	8	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	48	
EPOXY MORTAR (FORMED)	CF	-	
BENT #64			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	9	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	40	
EPOXY MORTAR (FORMED)	CF	-	
BENT #65			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	3	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	15	
EPOXY MORTAR (FORMED)	CF	-	



NORTH ELEVATION



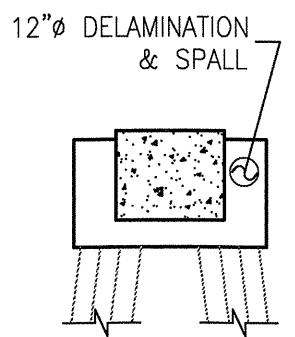
EAST ELEVATION      WEST ELEVATION



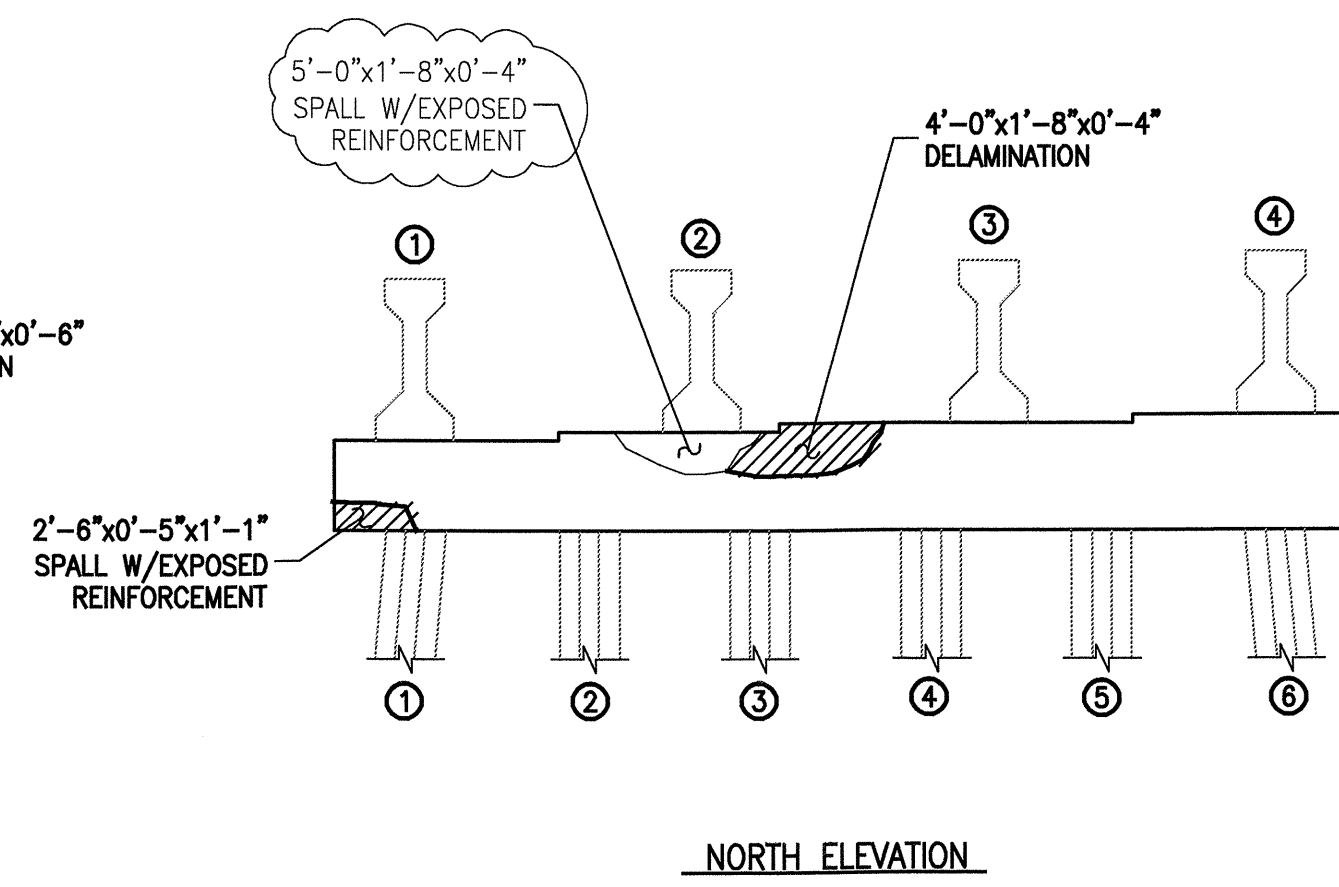
NORTH ELEVATION



EAST ELEVATION      WEST ELEVATION



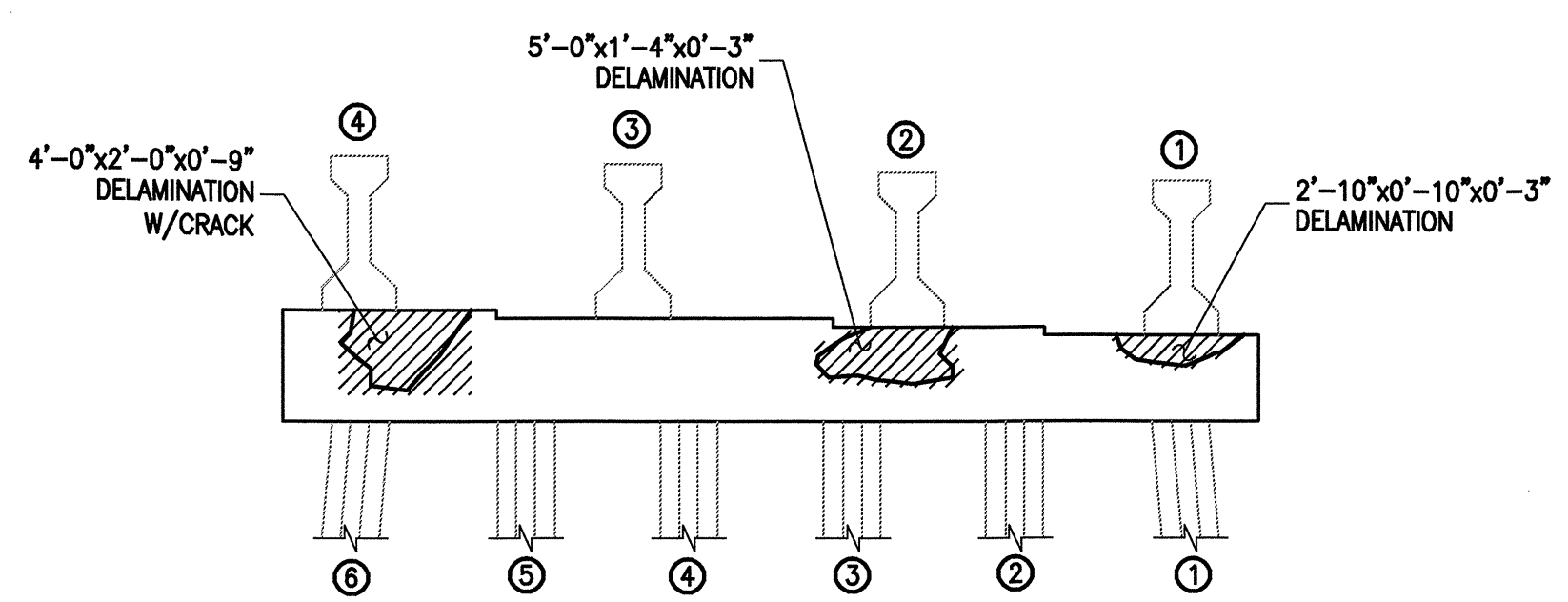
SECTION A-A



NORTH ELEVATION

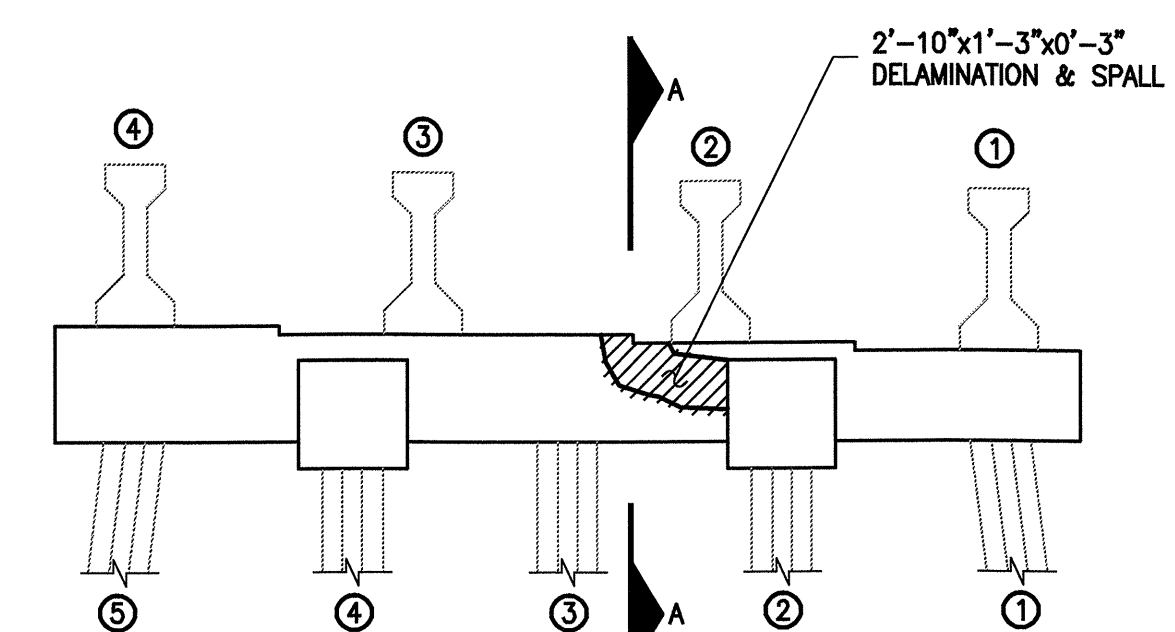


EAST ELEVATION      WEST ELEVATION



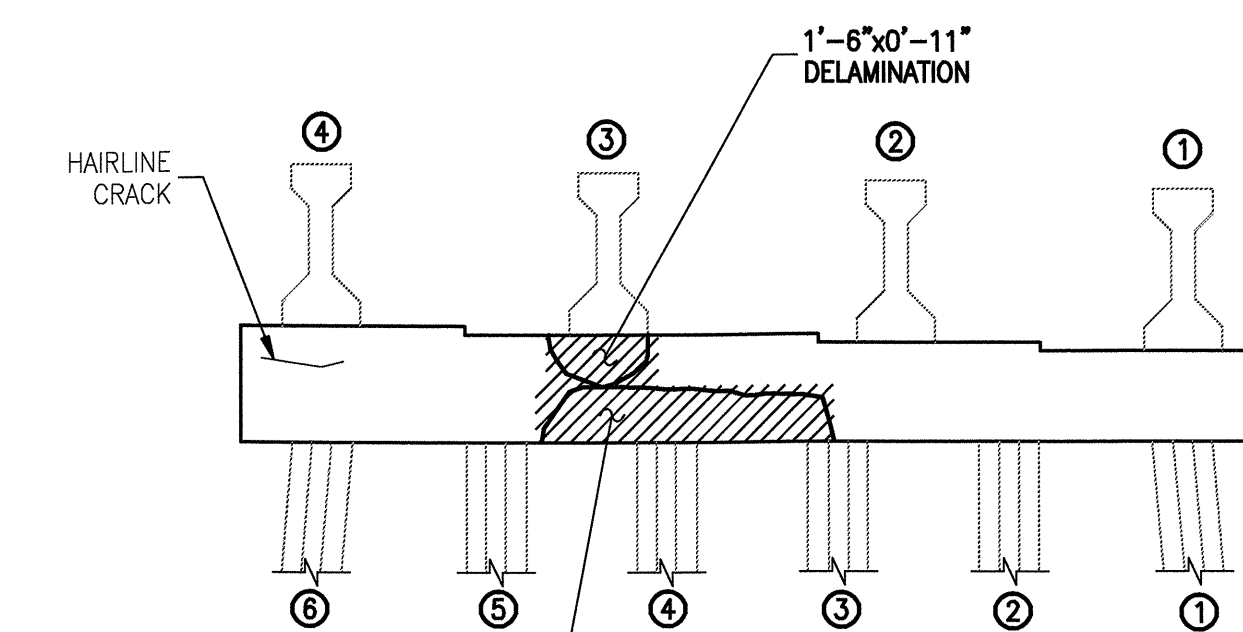
SOUTH ELEVATION

BENT #63



SOUTH ELEVATION

BENT #64



SOUTH ELEVATION

BENT #65

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

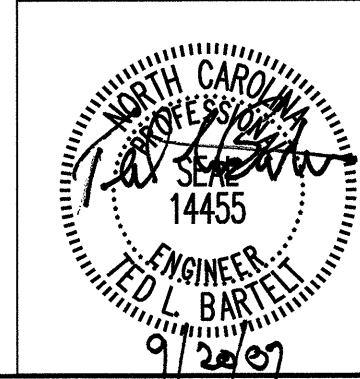
PLAN PREPARED BY:



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PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #63-#65



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 4/26/07

REVISIONS				SHEET NO.
NO.	BY:	DATE:		
1		3		88 TOTAL SHEETS
2		4		

**BILL OF MATERIAL**

**BENT #66**

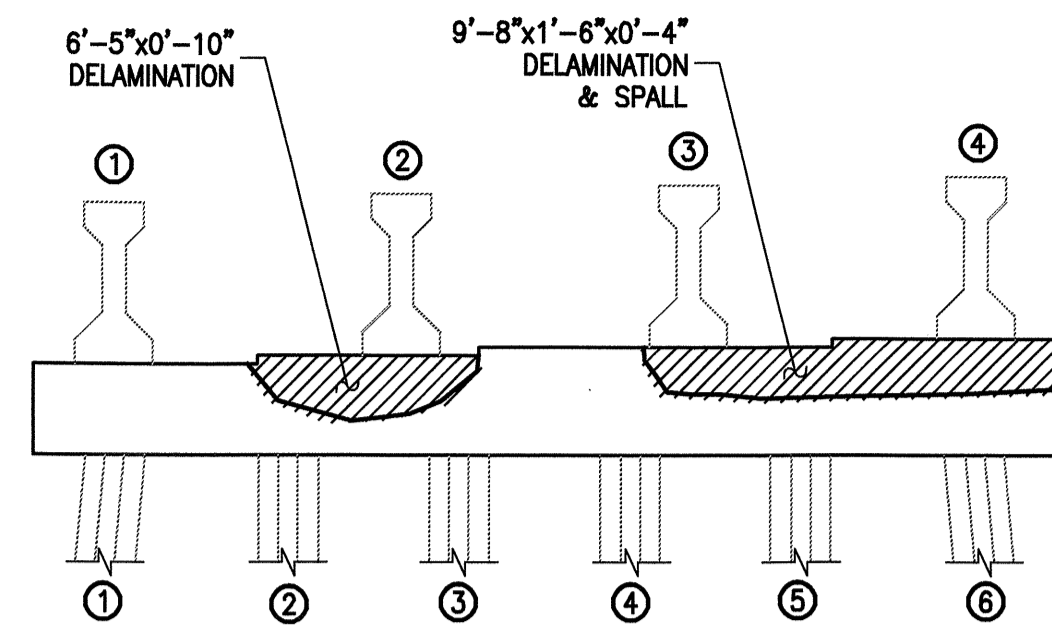
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	13
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	82
EPOXY MORTAR (FORMED)	CF	-

**BENT #67**

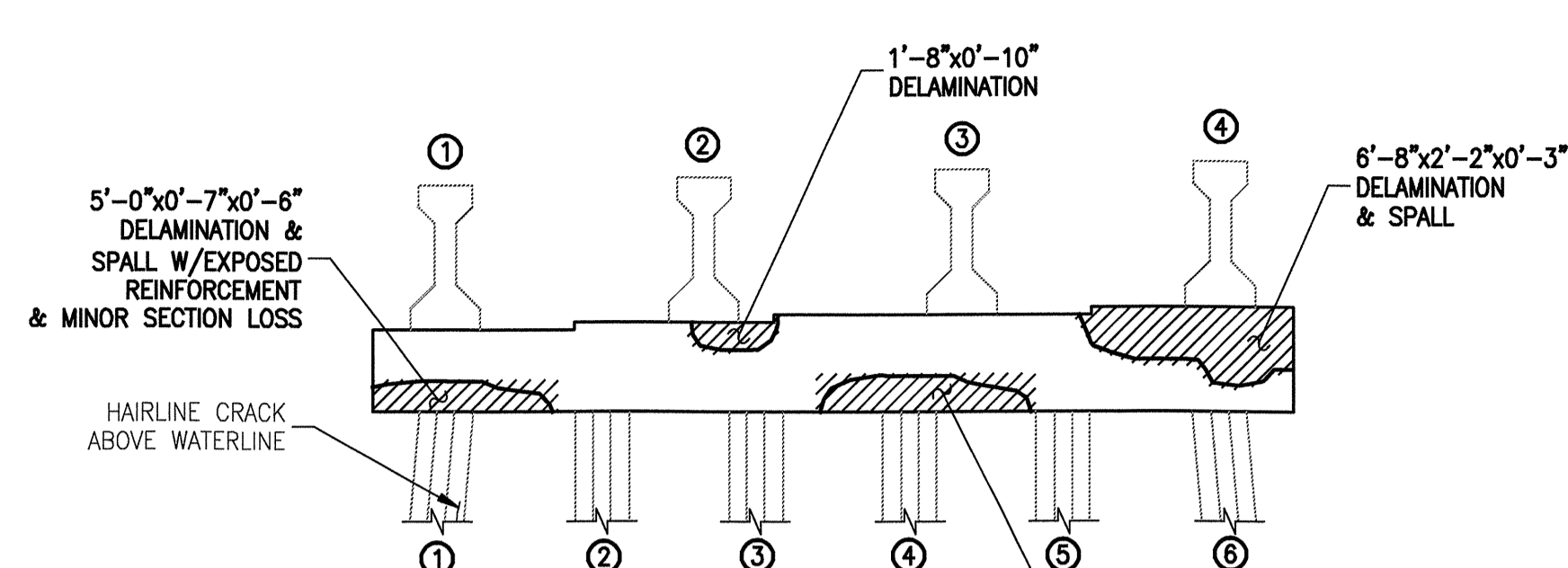
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	11
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	48
EPOXY MORTAR (FORMED)	CF	-

**BENT #68**

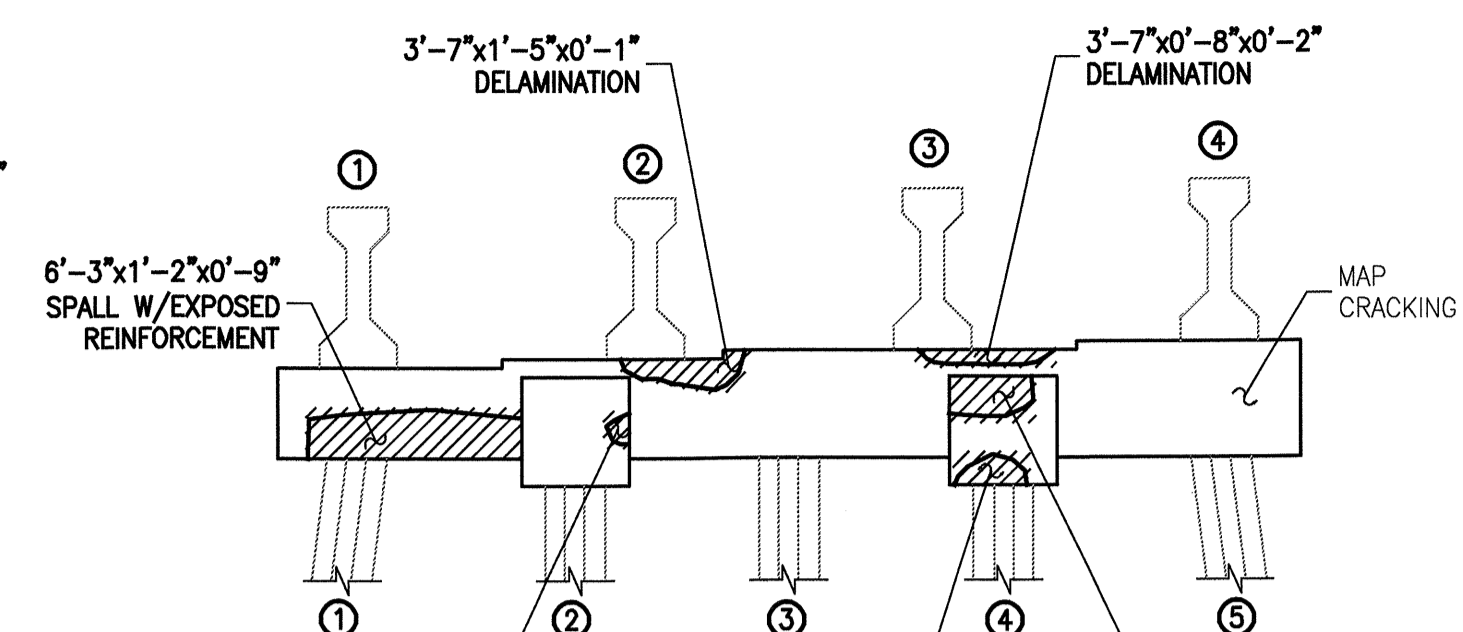
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	9
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	45
EPOXY MORTAR (FORMED)	CF	-



NORTH ELEVATION



NORTH ELEVATION



NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION



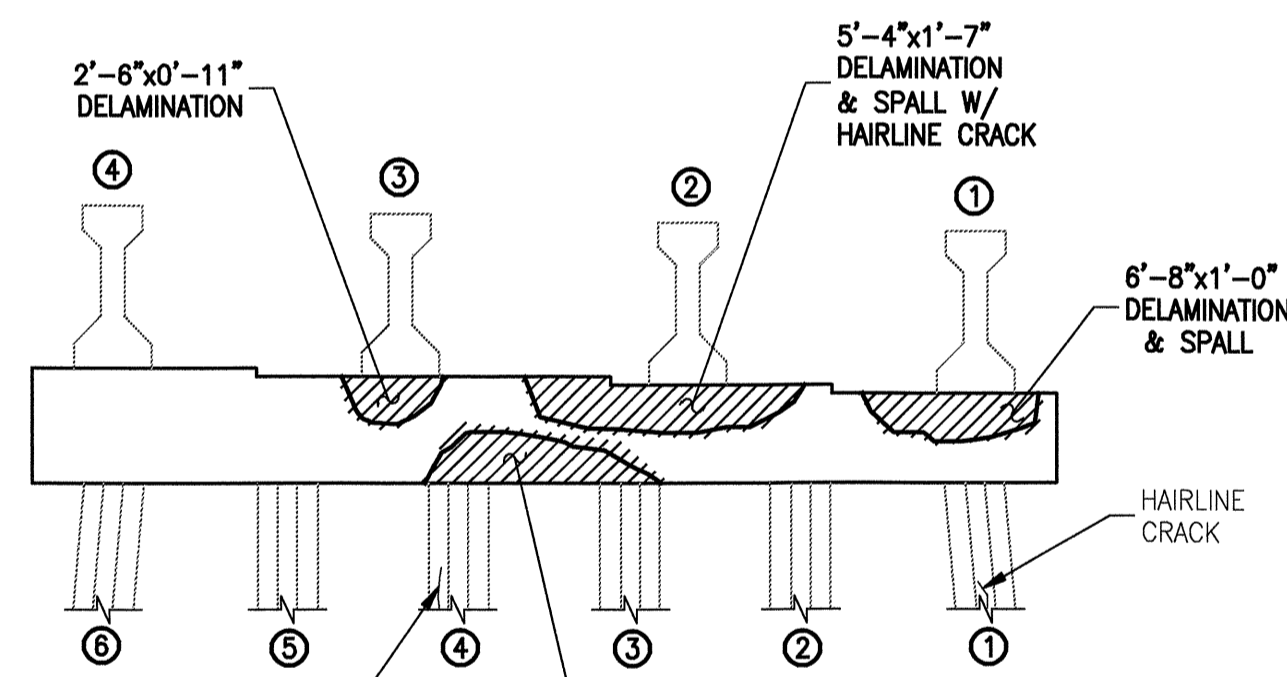
EAST ELEVATION

WEST ELEVATION



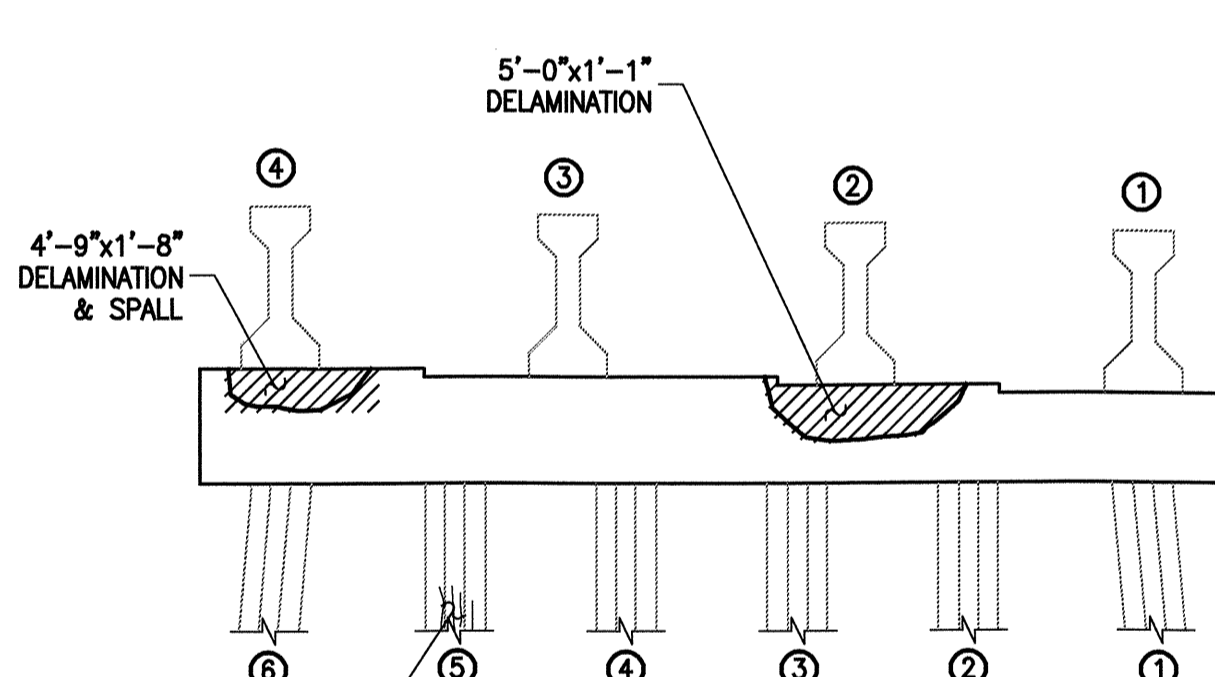
EAST ELEVATION

WEST ELEVATION



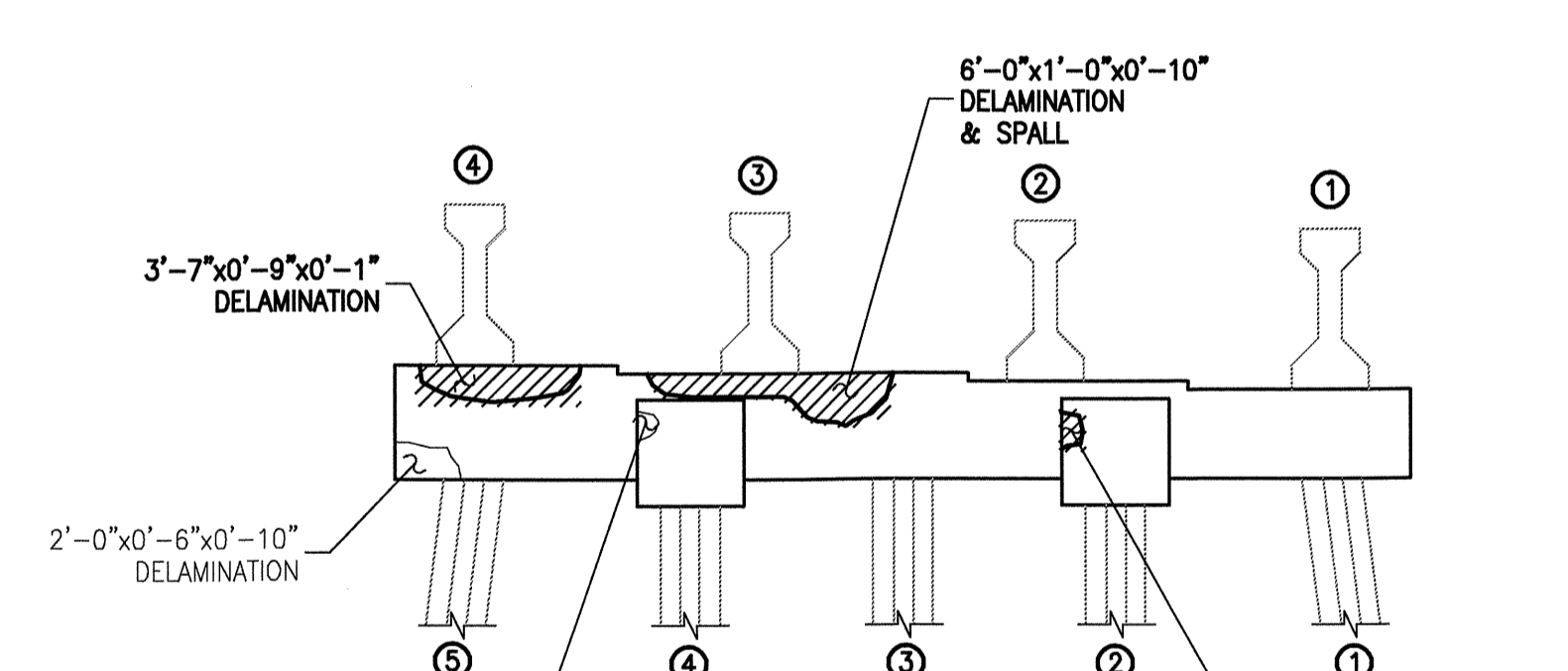
SOUTH ELEVATION

**BENT #66**



SOUTH ELEVATION

**BENT #67**



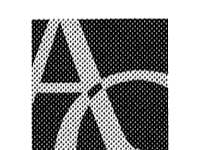
SOUTH ELEVATION

**BENT #68**

**KEY**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

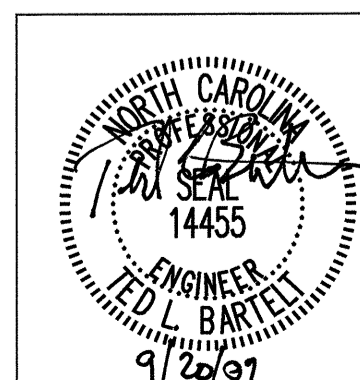


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

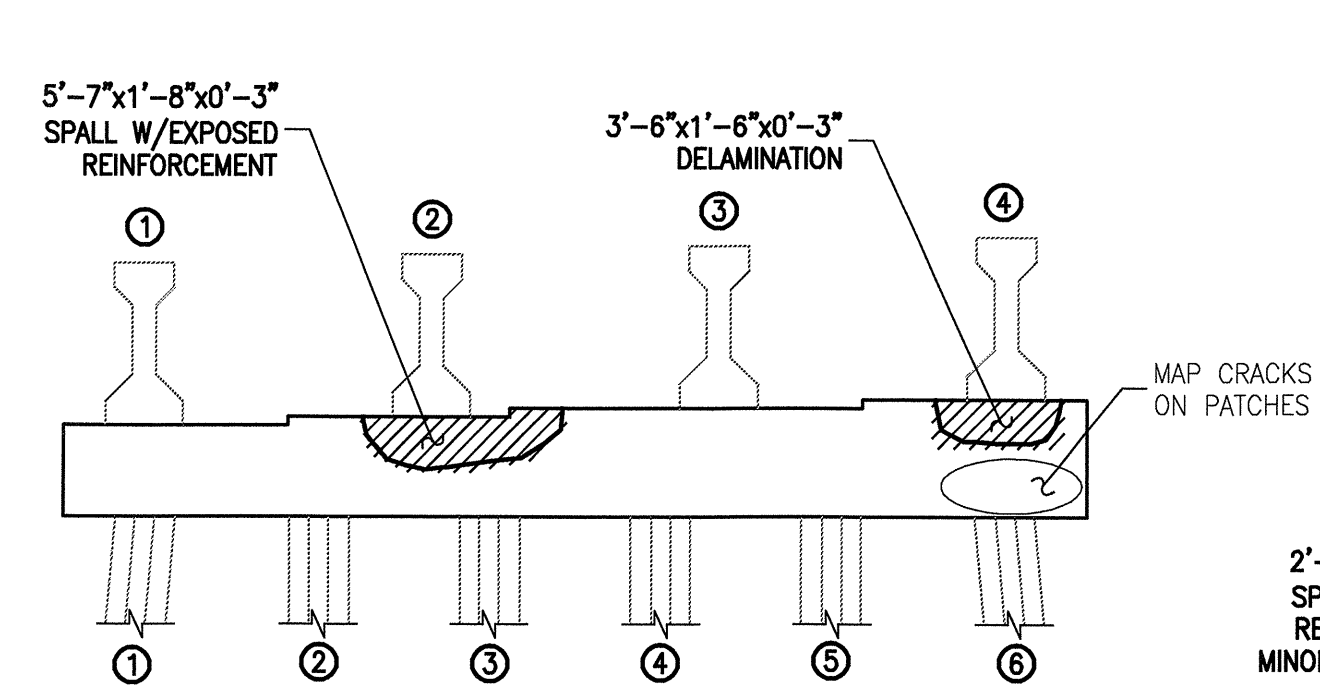
BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #66-#68



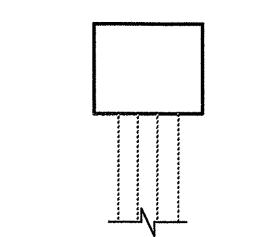
DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/3/07

REVISIONS						SHEET NO. 89
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

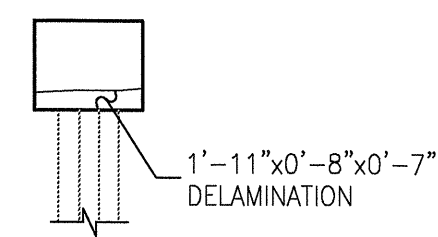




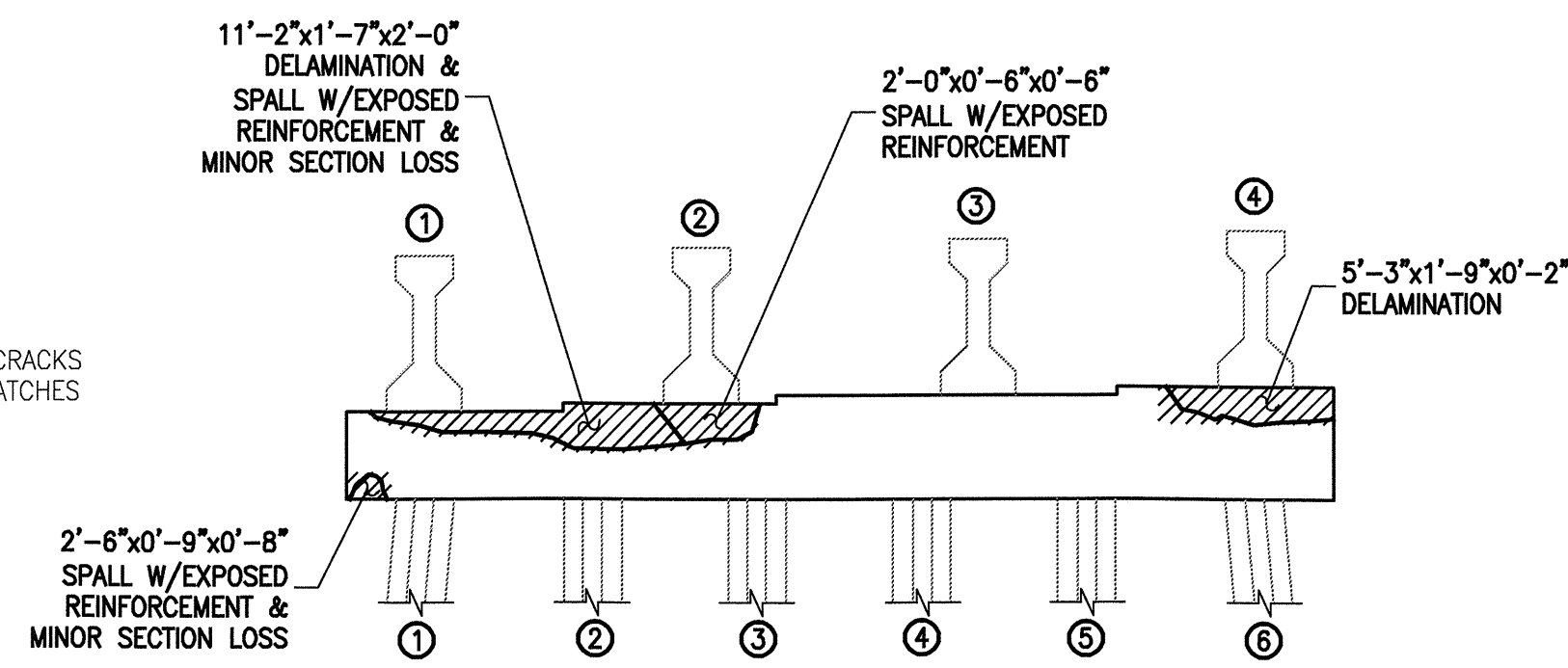
NORTH ELEVATION



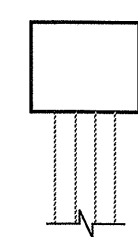
EAST ELEVATION



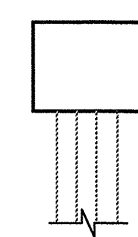
WEST ELEVATION



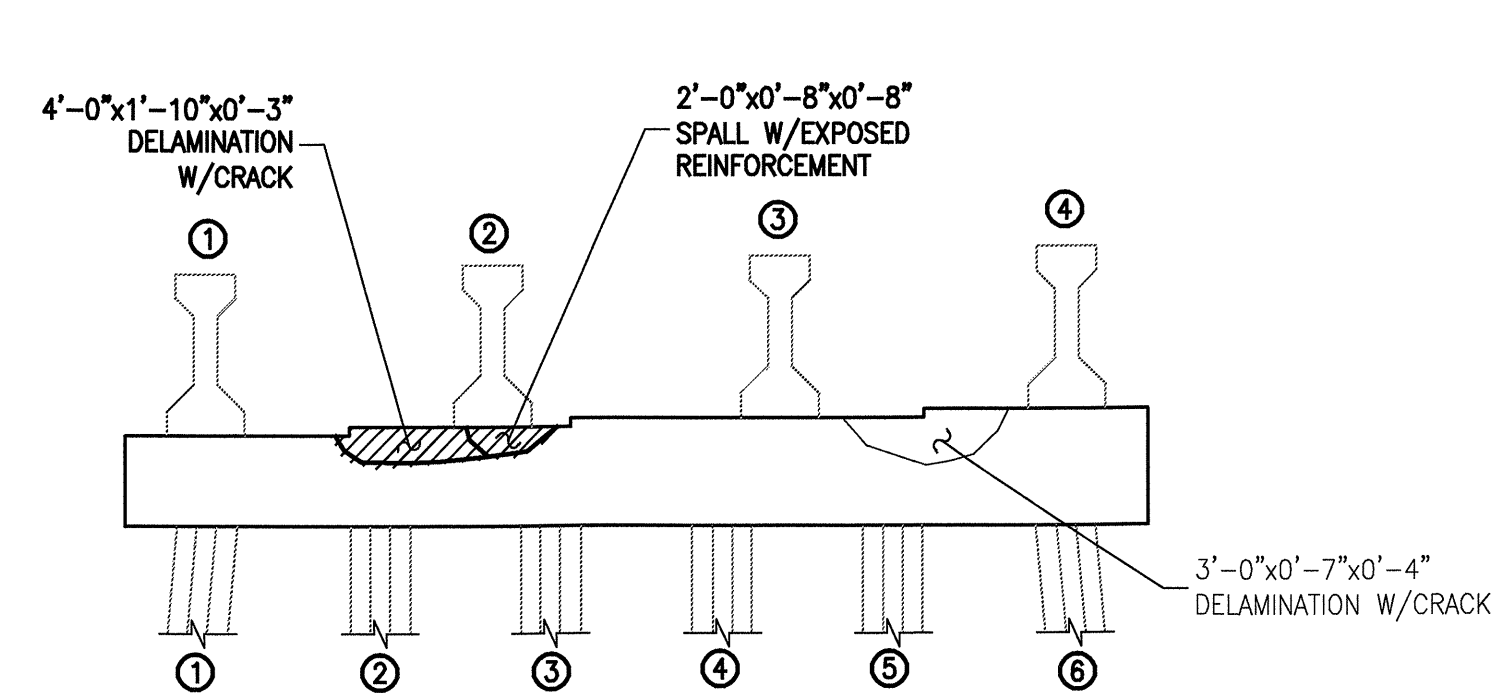
NORTH ELEVATION



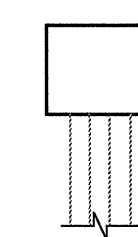
EAST ELEVATION



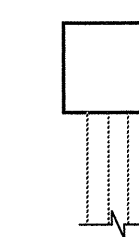
WEST ELEVATION



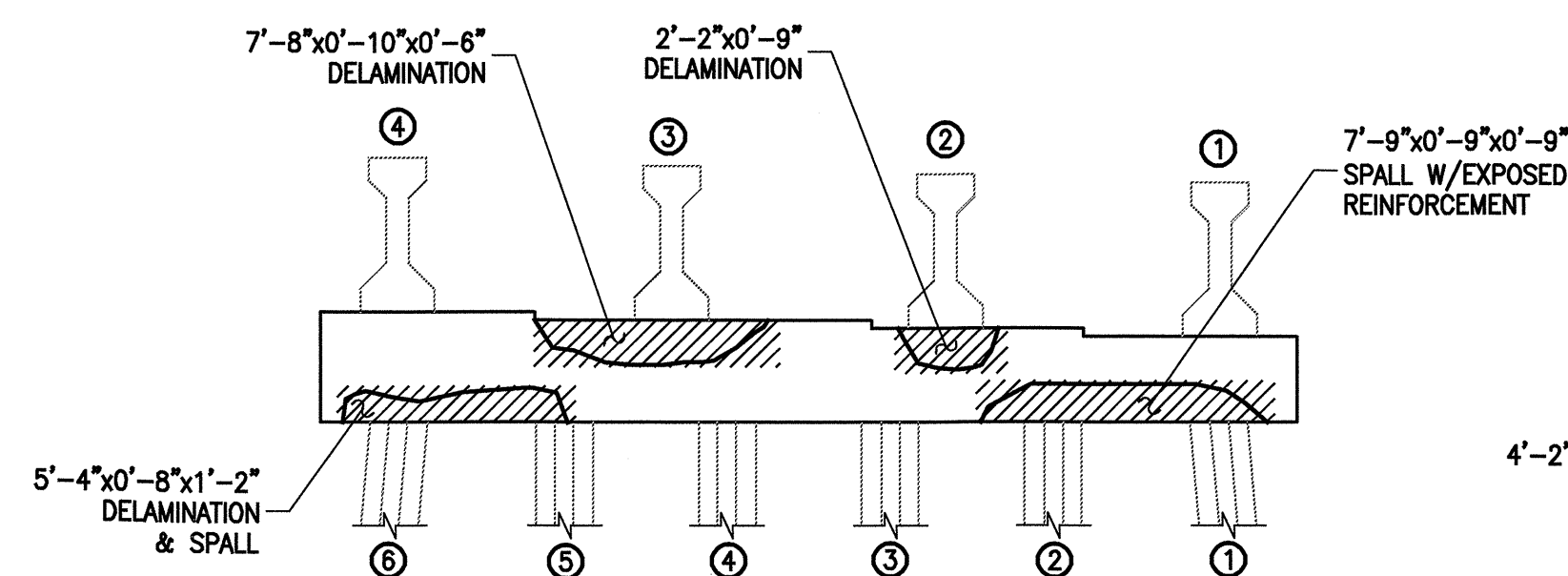
NORTH ELEVATION



EAST ELEVATION

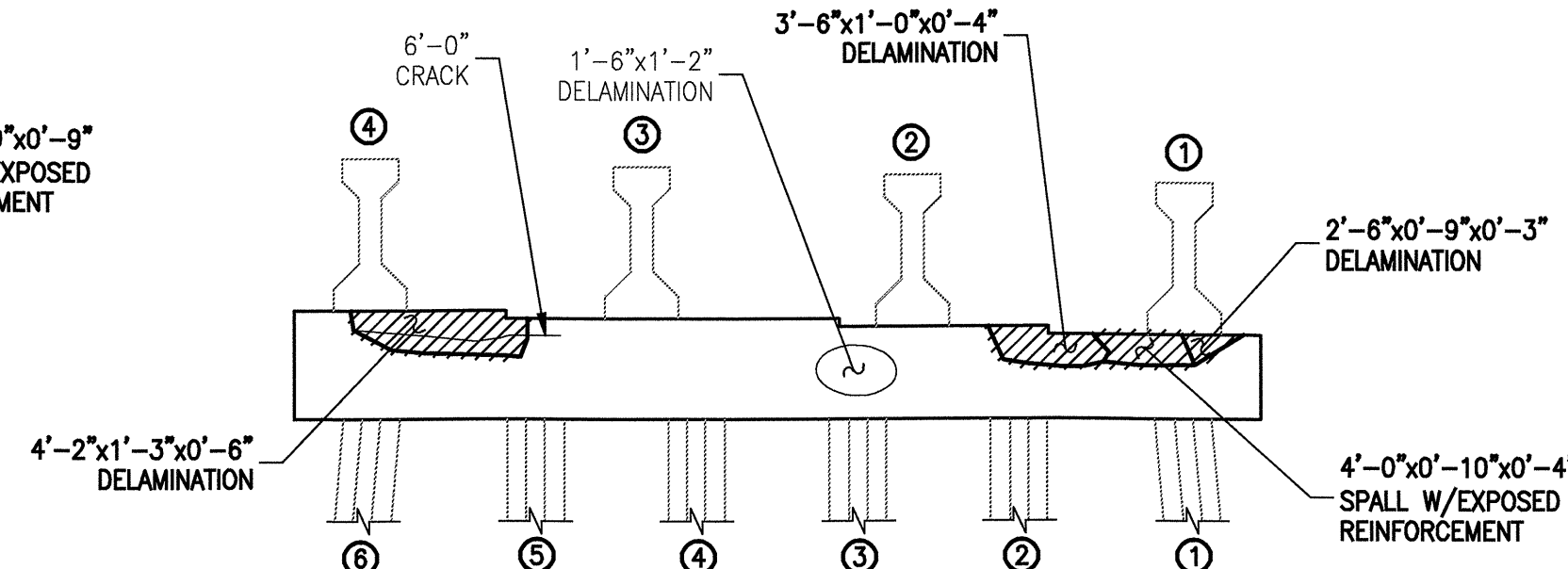


WEST ELEVATION



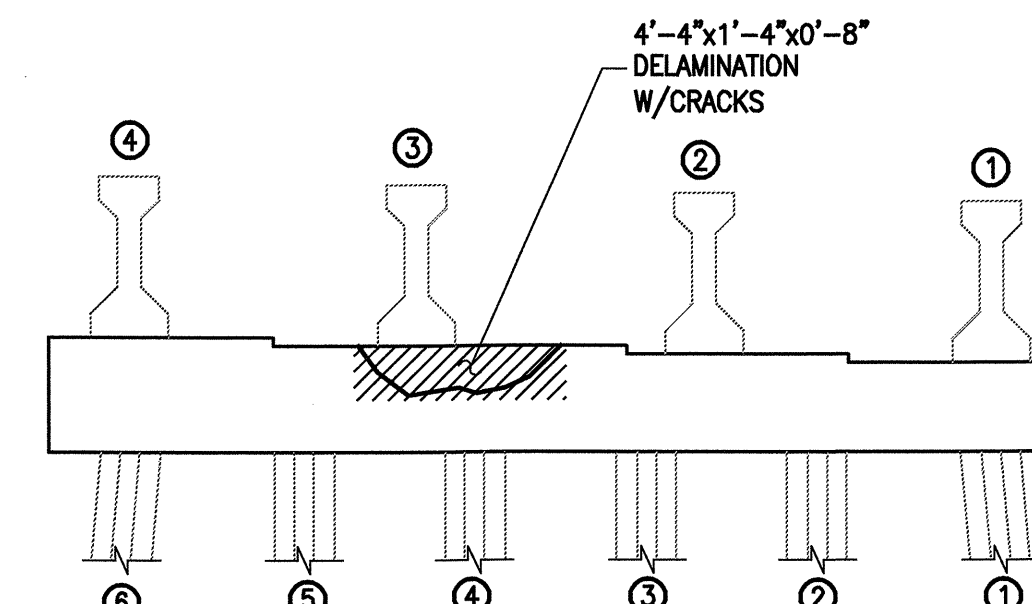
SOUTH ELEVATION

BENT #69



SOUTH ELEVATION

BENT #70



SOUTH ELEVATION

BENT #71

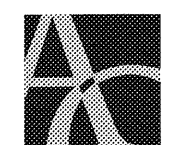
BILL OF MATERIAL

BENT #69			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	9	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	51	
EPOXY MORTAR (FORMED)	CF	-	
BENT #70			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	6	
VERTICAL SHOTCRETE	CF	14	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	67	
EPOXY MORTAR (FORMED)	CF	-	
BENT #71			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	5	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	17	
EPOXY MORTAR (FORMED)	CF	-	

KEY

- DENOTES GENERAL AREA OF REPAIR
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9"x8'-1"x0'-6"$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

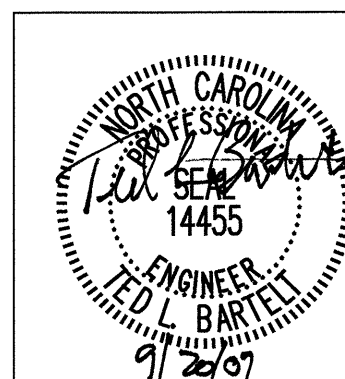


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #69-#71



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/3/07

REVISIONS						SHEET NO. 90
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

**BILL OF MATERIAL**

**BENT #72**

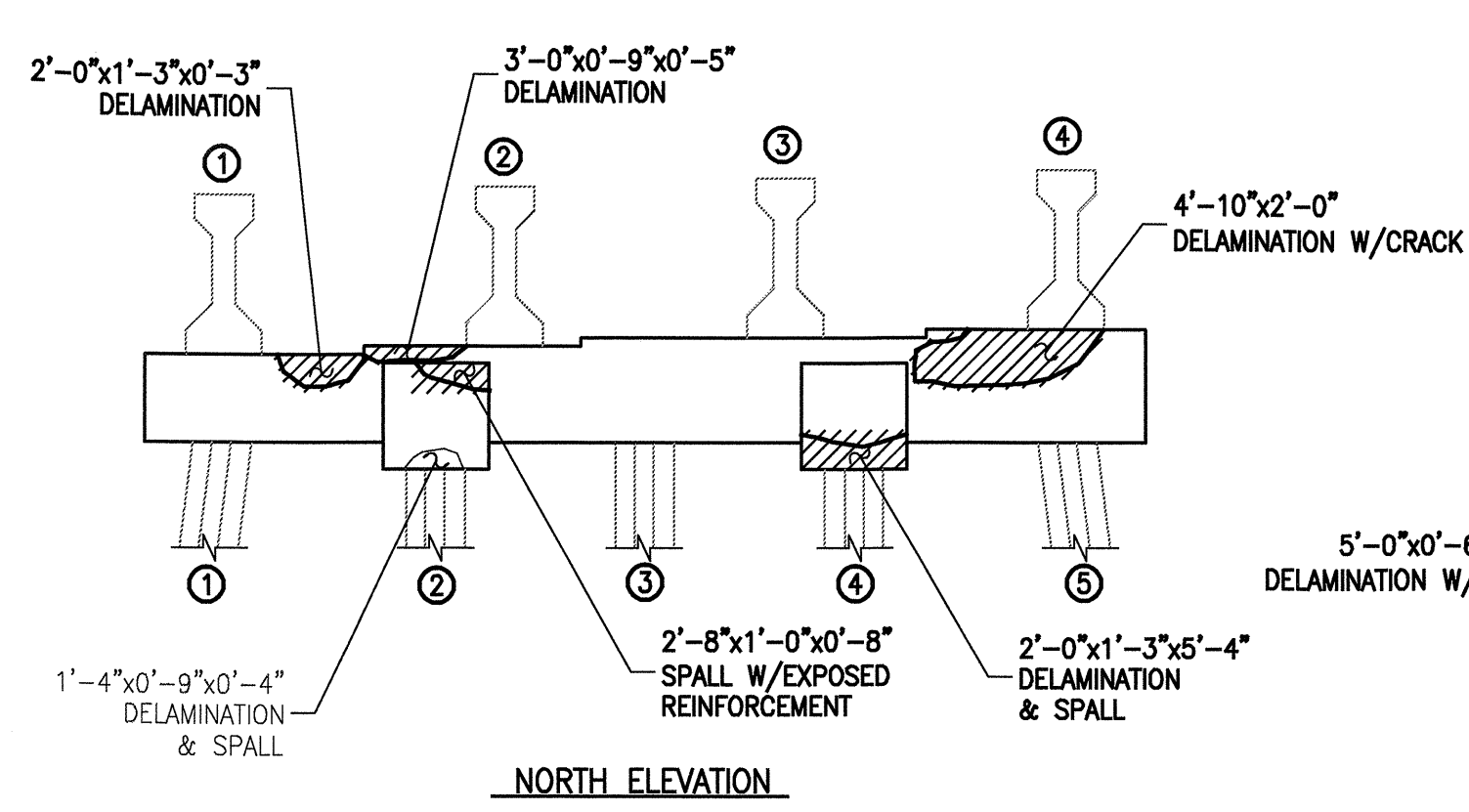
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	13
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	32
EPOXY MORTAR (FORMED)	CF	-

**BENT #73**

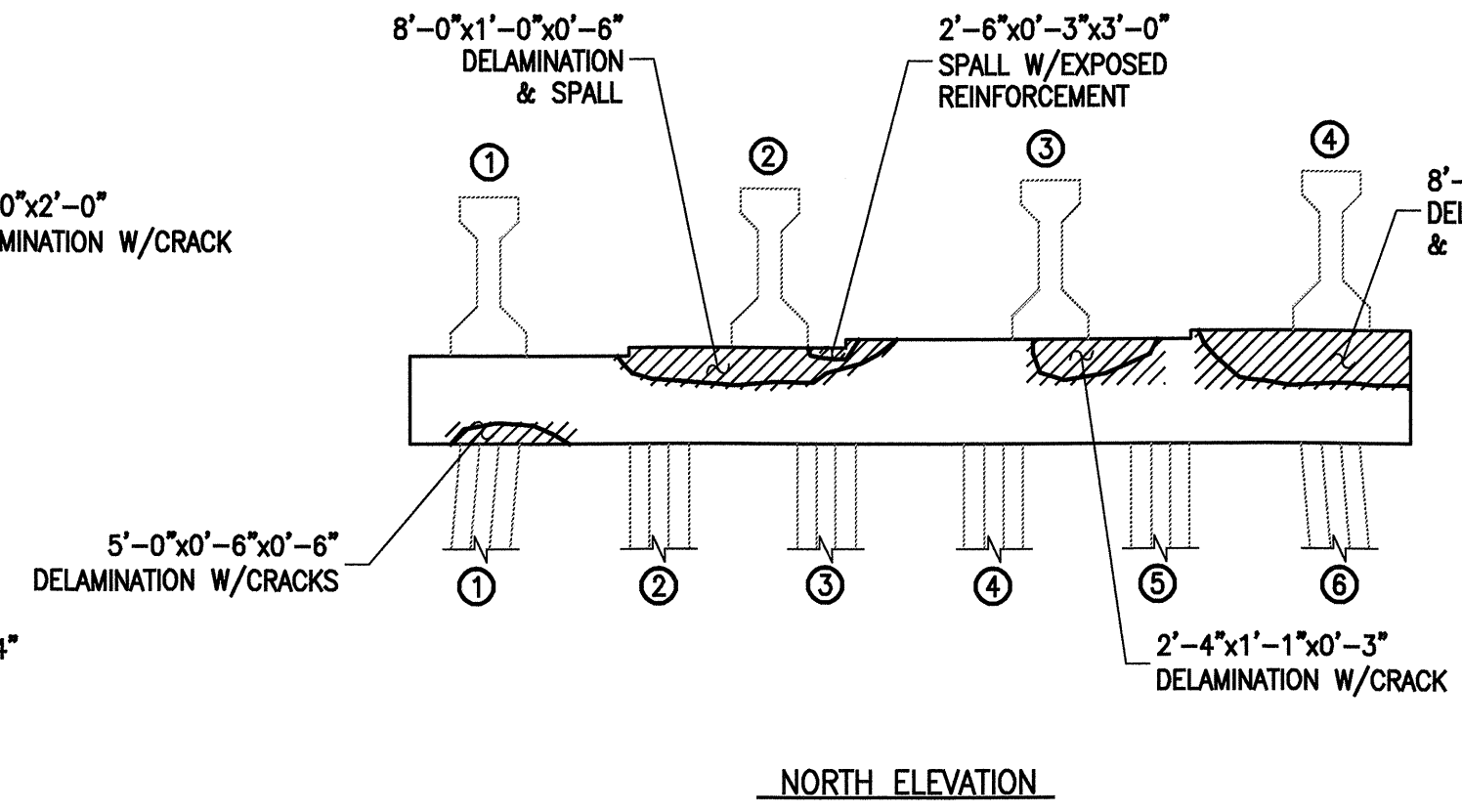
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	10
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	87
EPOXY MORTAR (FORMED)	CF	-

**BENT #74**

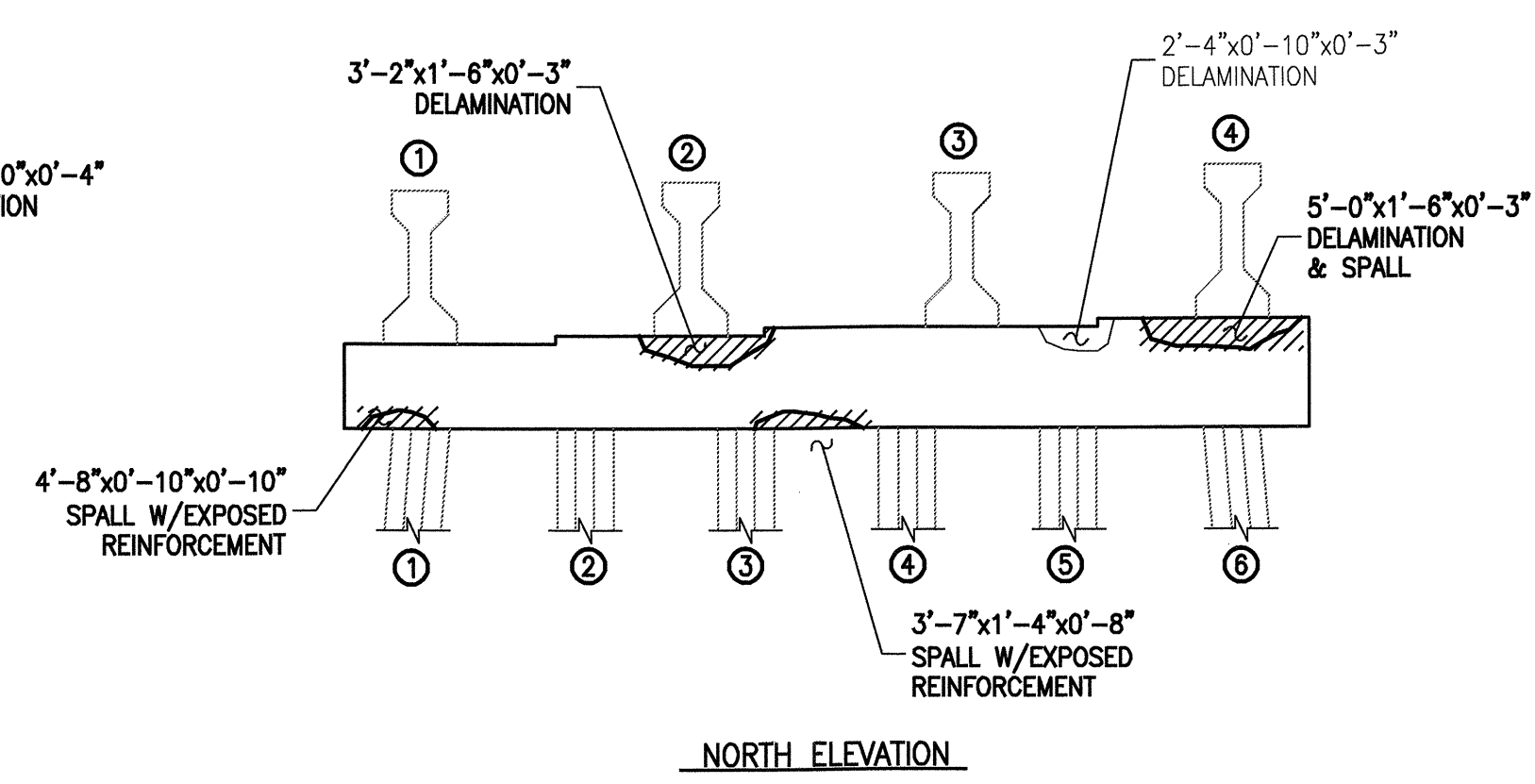
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	7
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	22
EPOXY MORTAR (FORMED)	CF	-



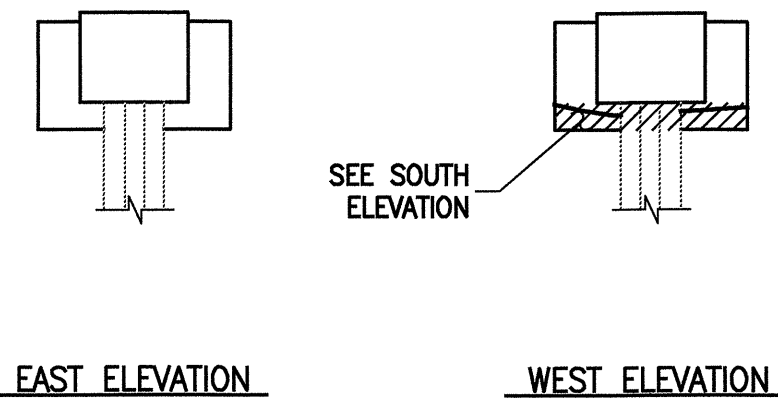
NORTH ELEVATION



NORTH ELEVATION



NORTH ELEVATION



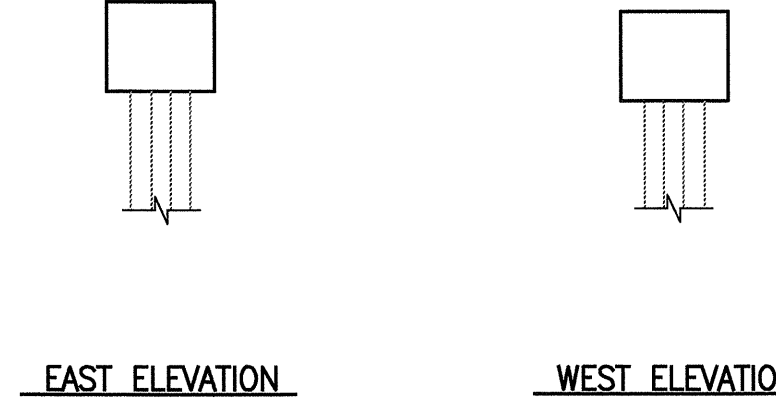
EAST ELEVATION

WEST ELEVATION



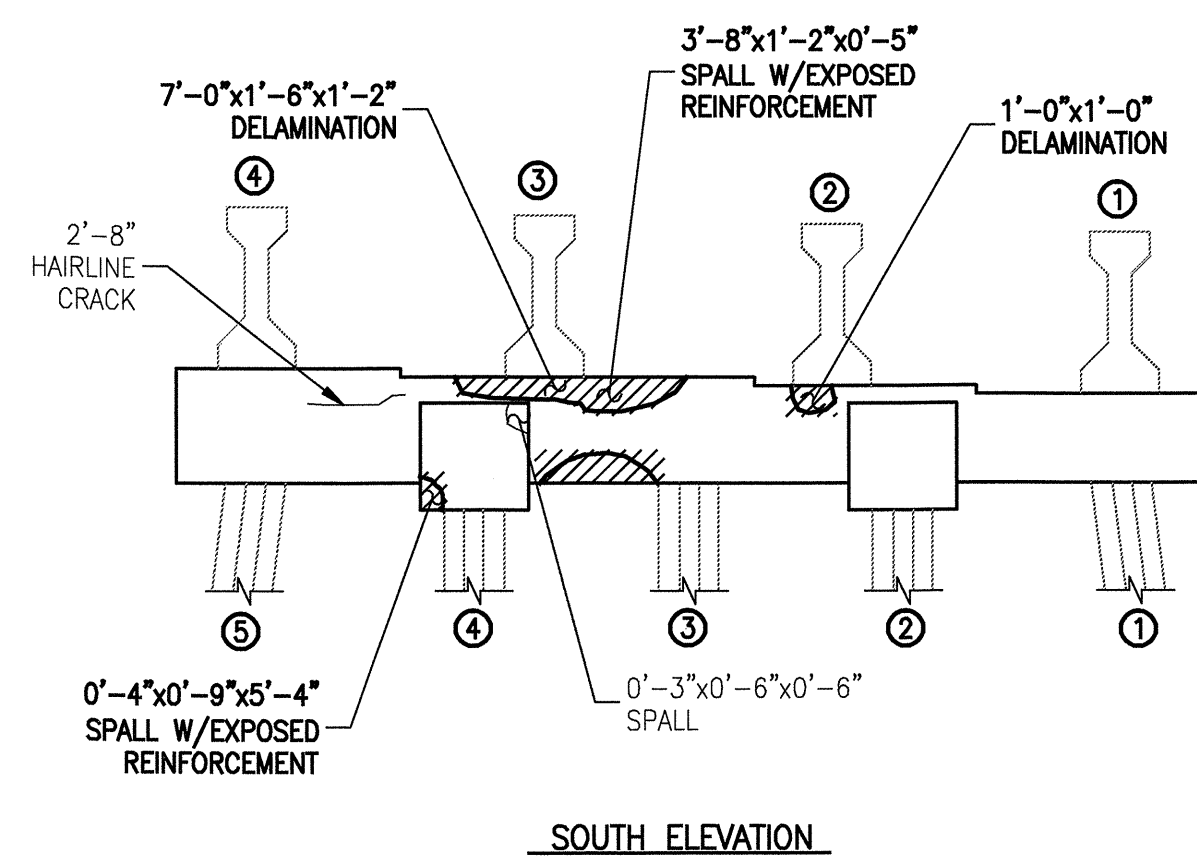
EAST ELEVATION

WEST ELEVATION



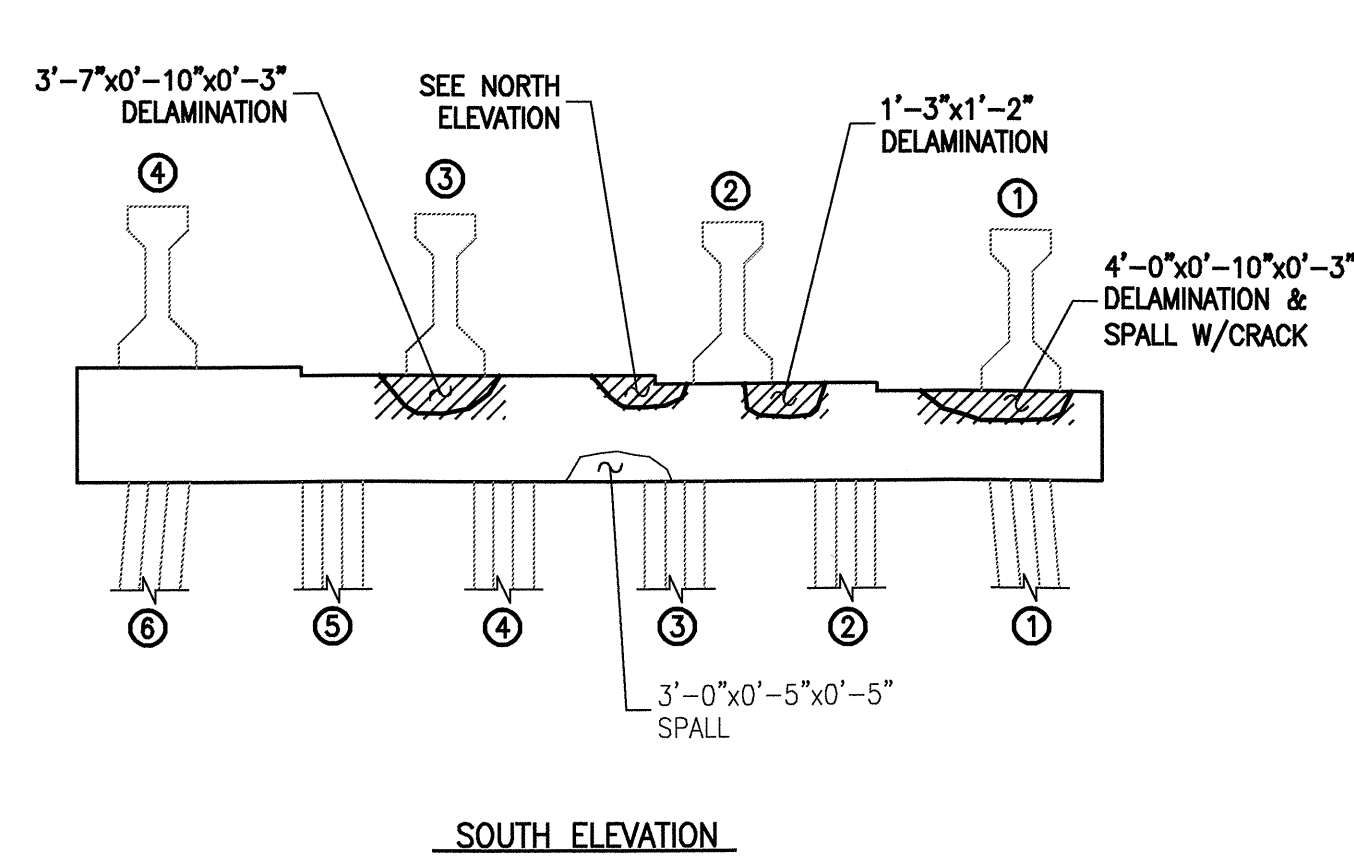
EAST ELEVATION

WEST ELEVATION



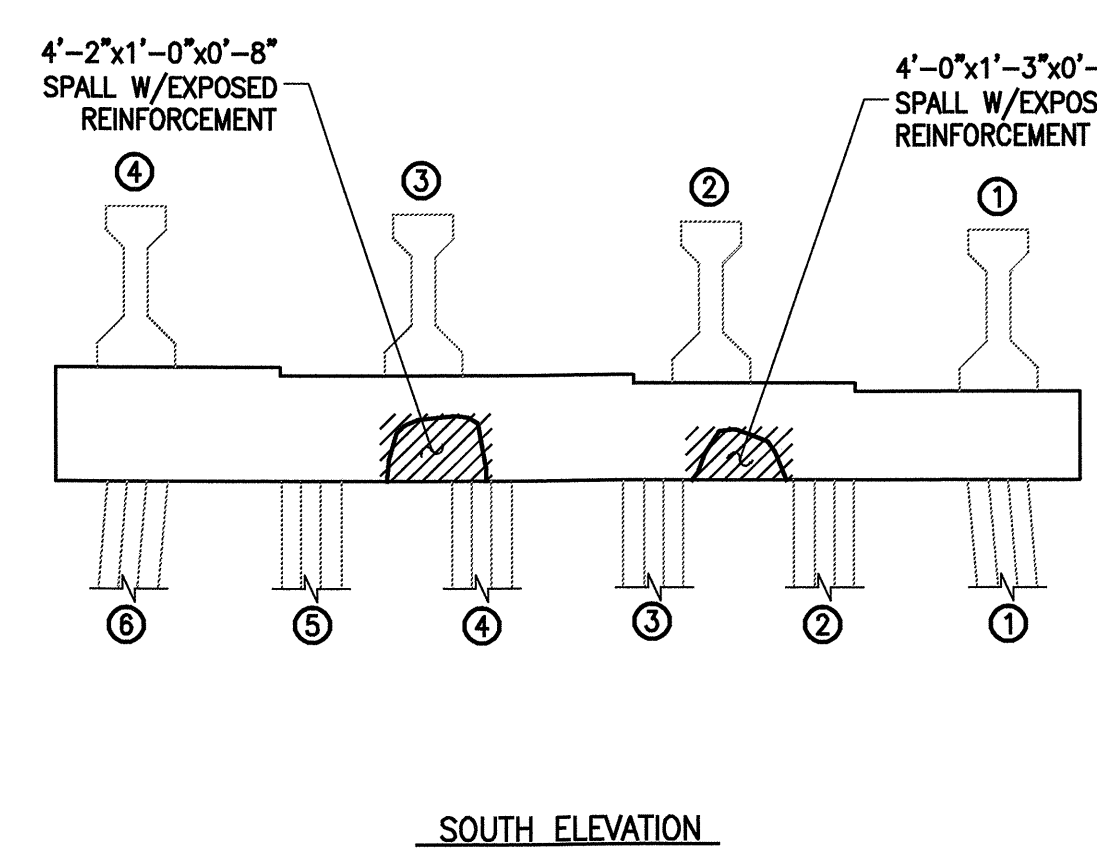
SOUTH ELEVATION

**BENT #72**



SOUTH ELEVATION

**BENT #73**



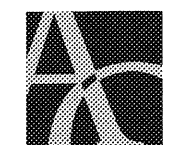
SOUTH ELEVATION

**BENT #74**

**KEY**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

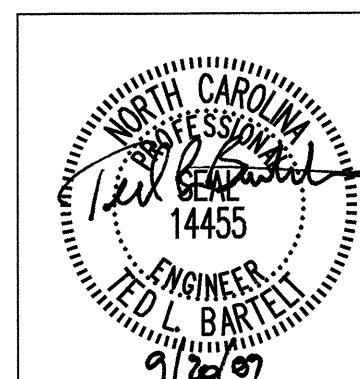


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #72-#74



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/3/07

REVISIONS						SHEET NO. 91
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

## BENT #75

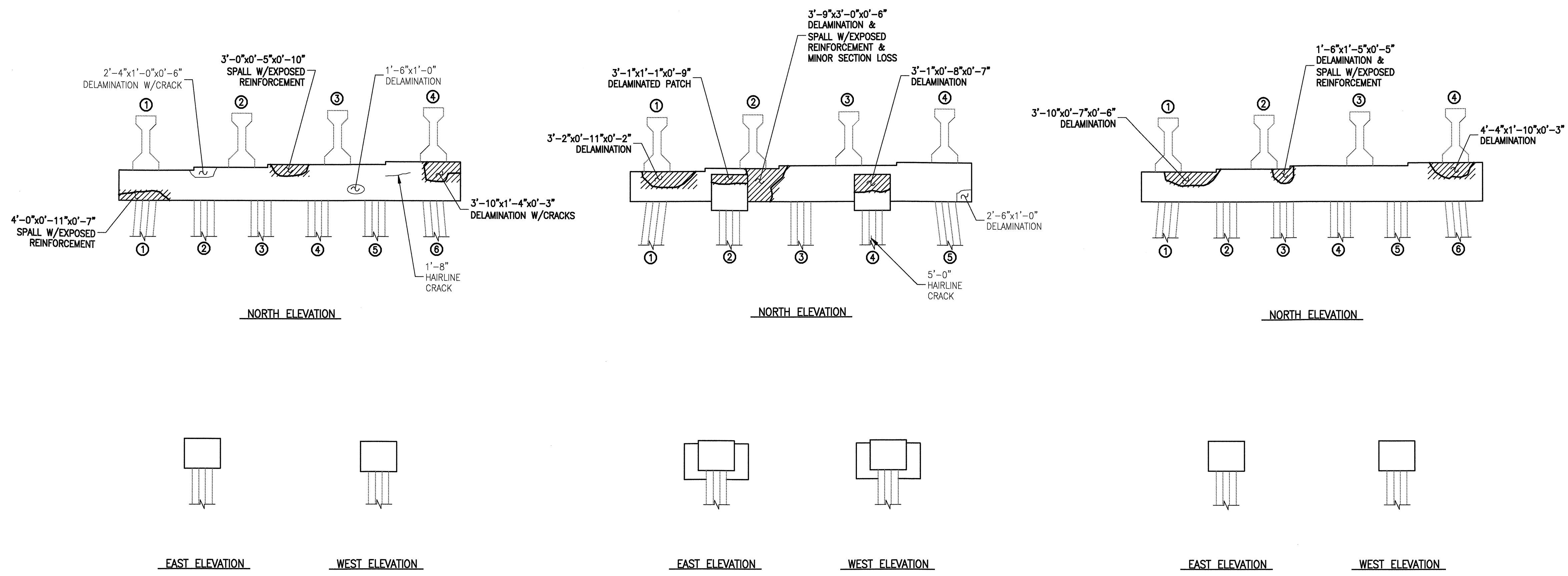
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	6
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	26
EPOXY MORTAR (FORMED)	CF	-

## BENT #76

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	10
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	36
EPOXY MORTAR (FORMED)	CF	-

## BENT #77

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	8
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	40
EPOXY MORTAR (FORMED)	CF	-



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

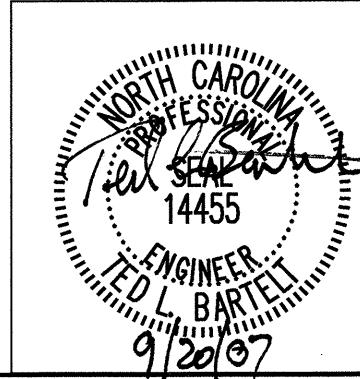
PLAN PREPARED BY:



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 4911 Green Road Suite 107 Raleigh, NC 27616  
 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com  
 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #75-#77



REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

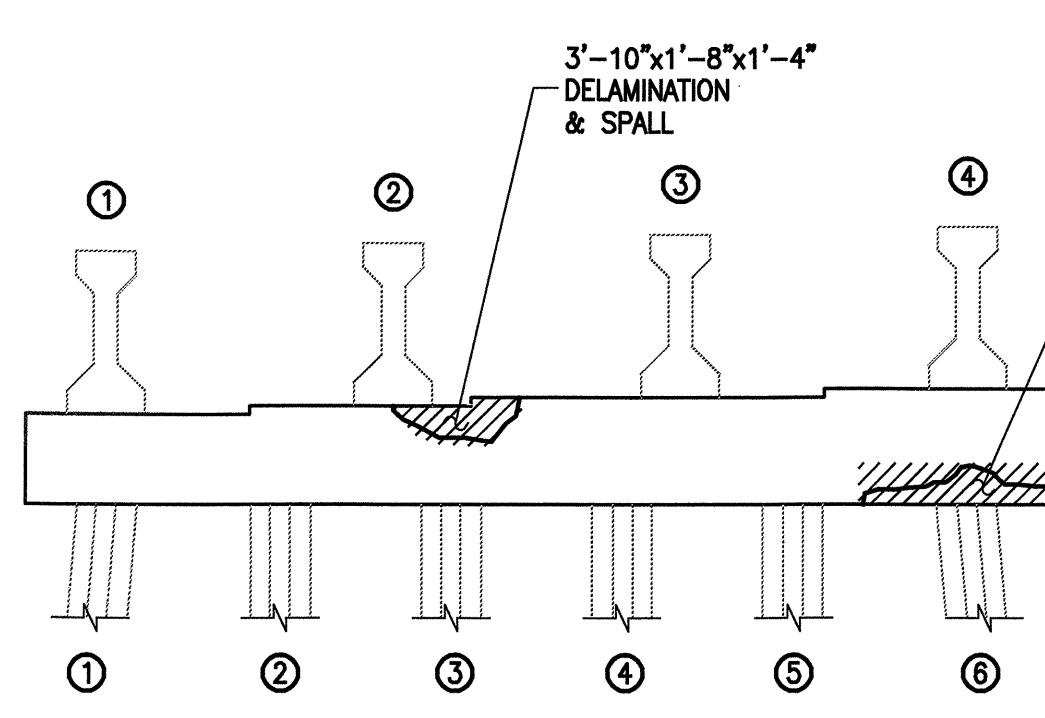
TOTAL SHEETS: 166

DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/10/06



**BILL OF MATERIAL**

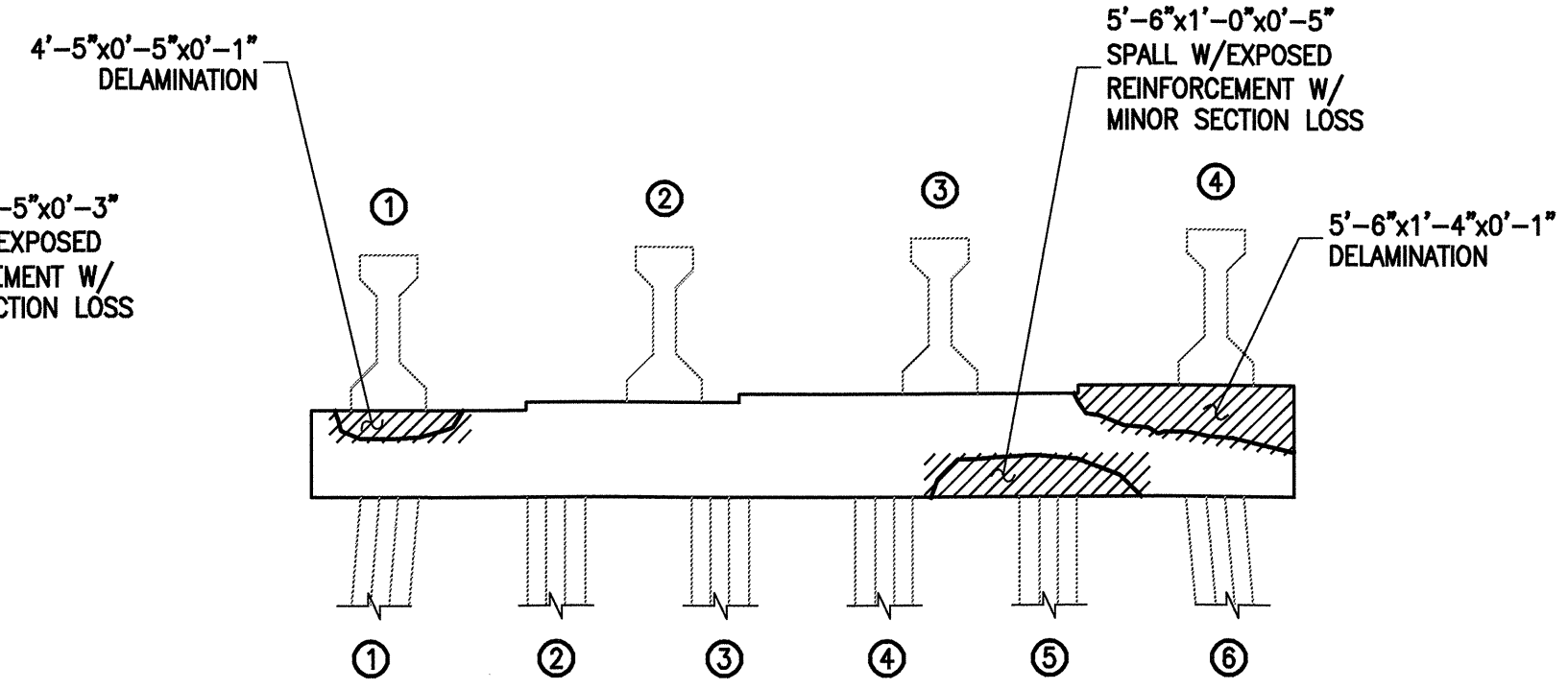
BENT #78			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	28	
EPOXY MORTAR (FORMED)	CF	-	
BENT #79			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	37	
EPOXY MORTAR (FORMED)	CF	-	
BENT #80			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	38	
EPOXY MORTAR (FORMED)	CF	-	



NORTH ELEVATION



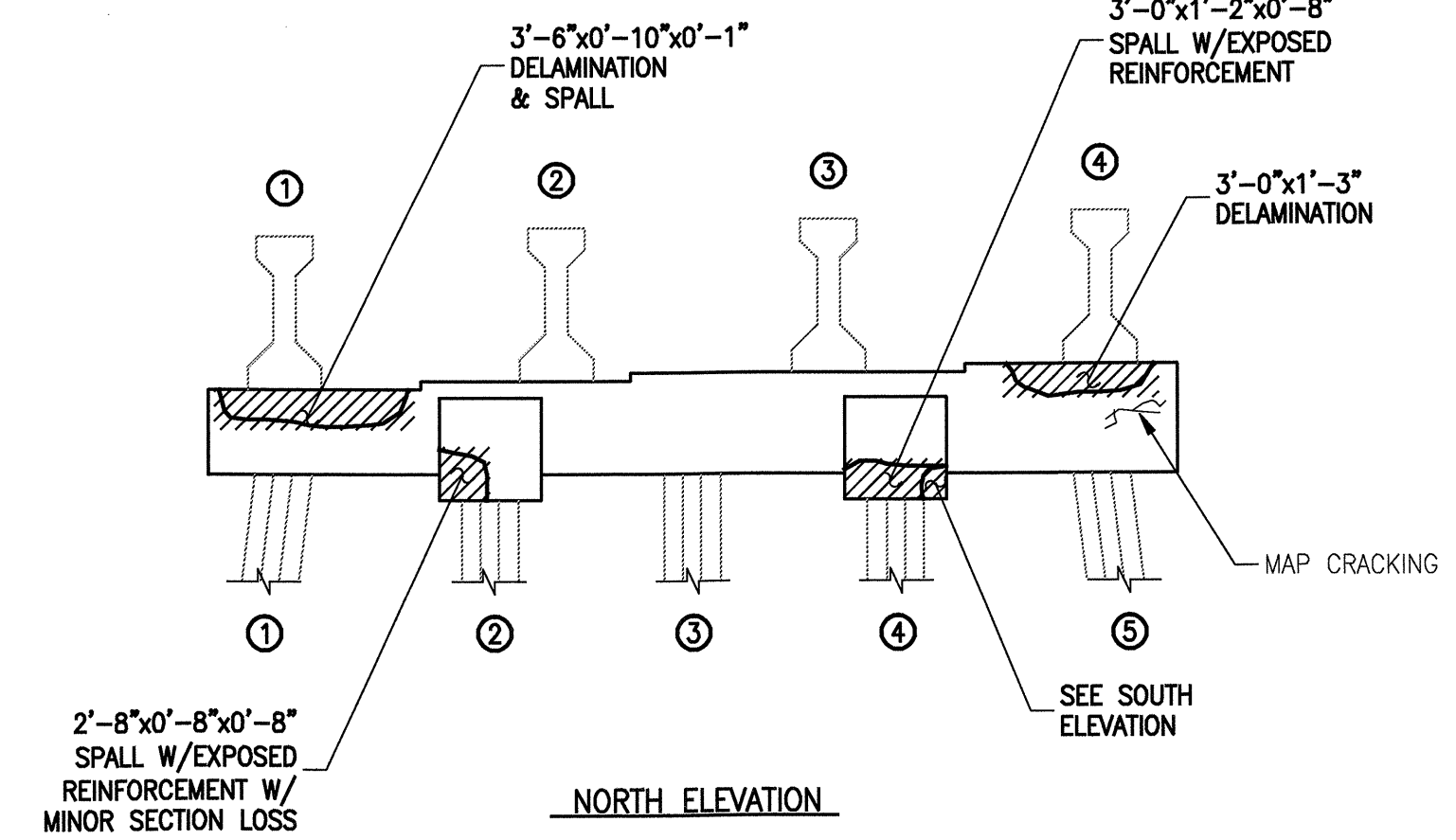
EAST ELEVATION WEST ELEVATION



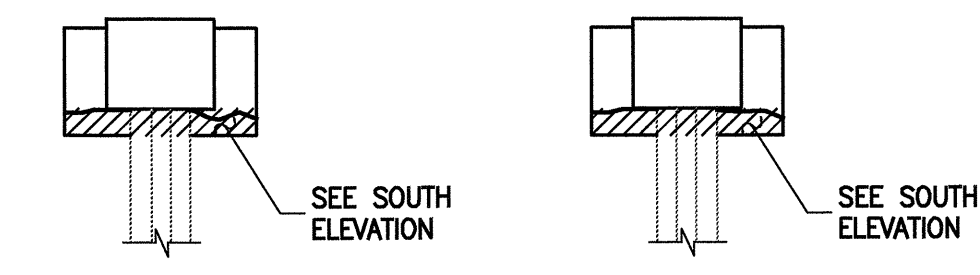
NORTH ELEVATION



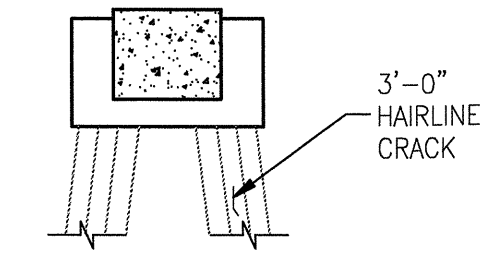
EAST ELEVATION WEST ELEVATION



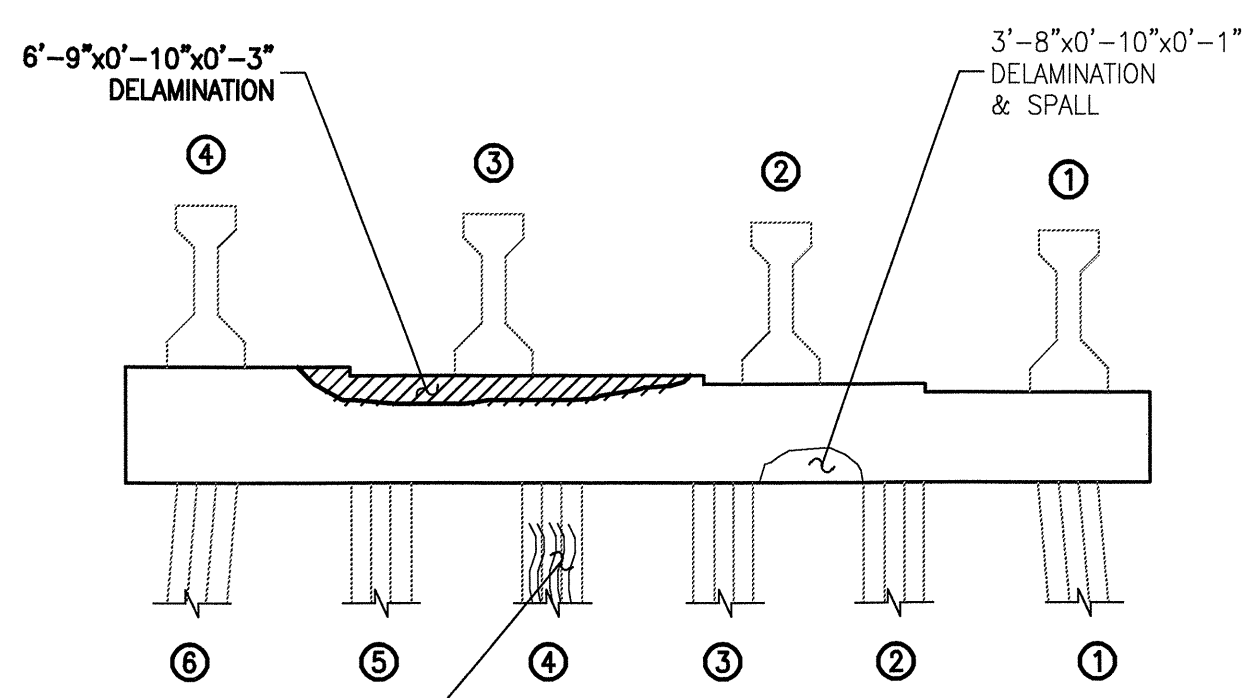
NORTH ELEVATION



EAST ELEVATION WEST ELEVATION

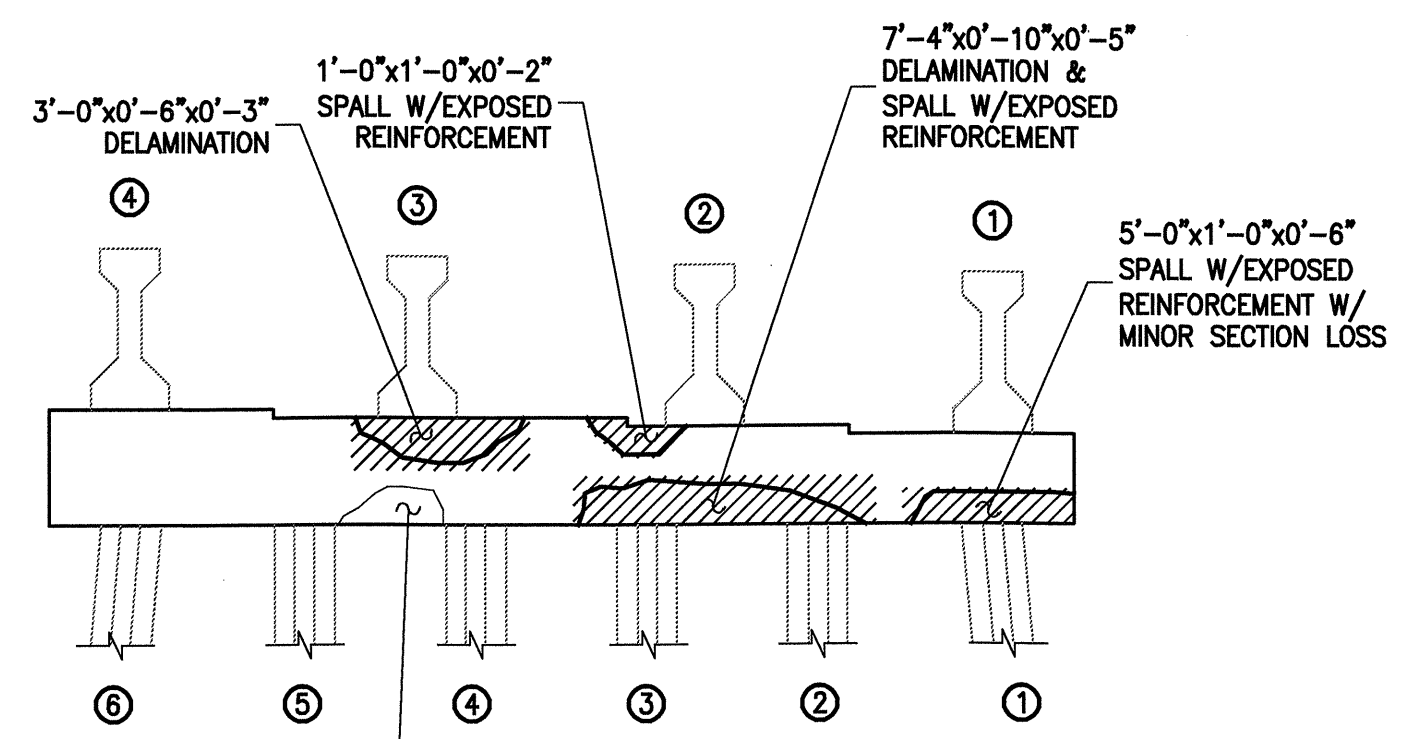


SECTION A-A



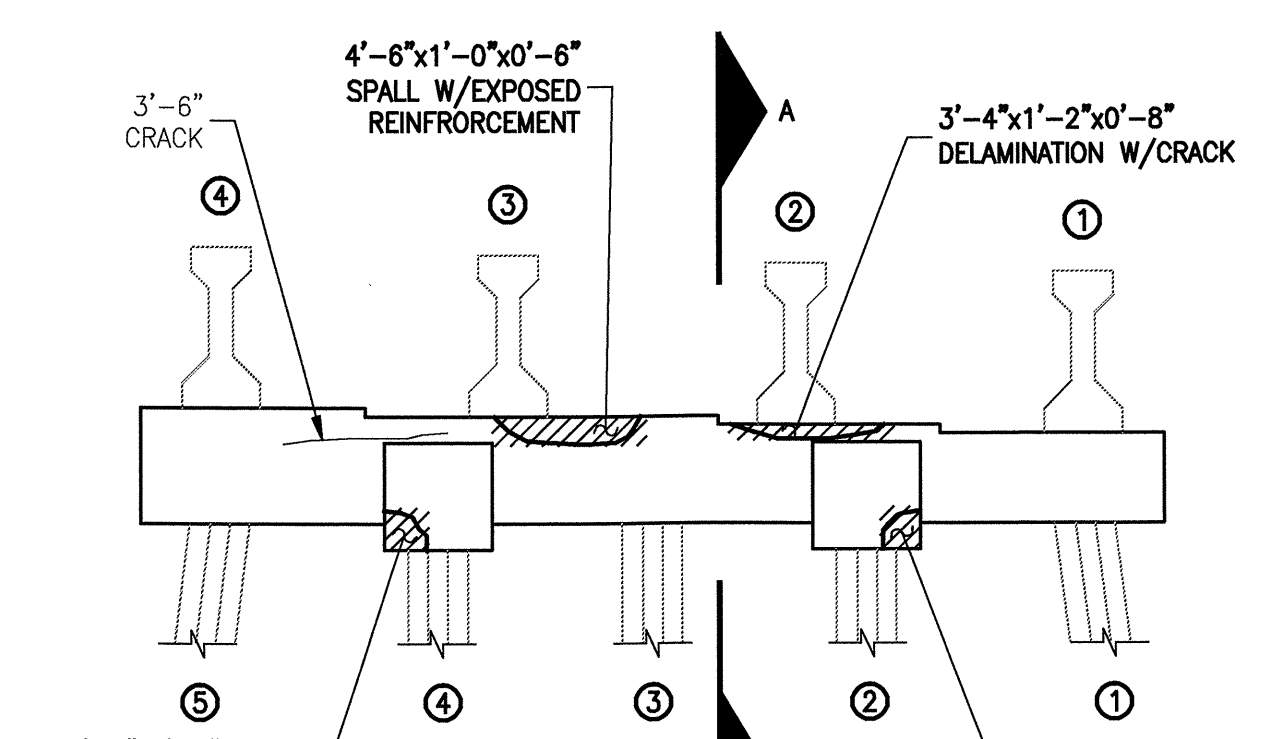
SOUTH ELEVATION

**BENT #78**



SOUTH ELEVATION

**BENT #79**



SOUTH ELEVATION

**BENT #80**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

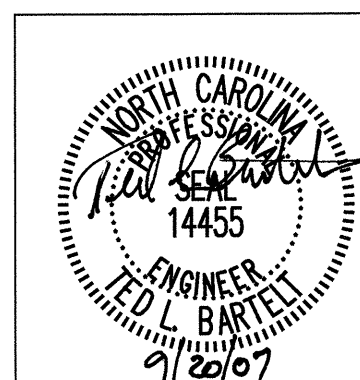
PLAN PREPARED BY:



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PROJECT NO. B-5014  
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STATE OF NORTH CAROLINA  
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 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #78-#80

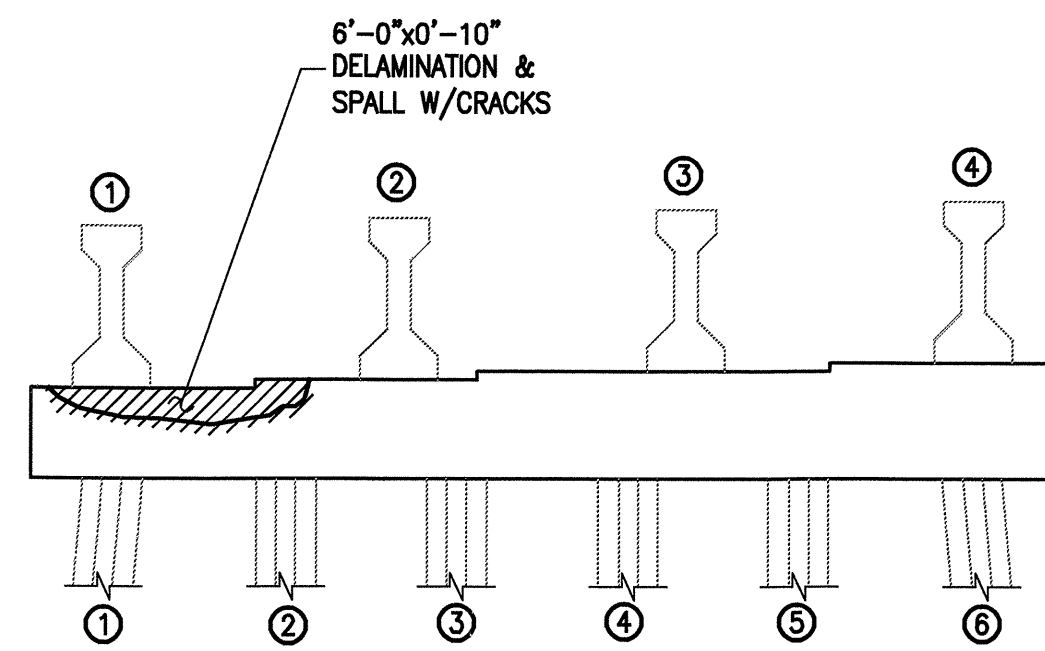


DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/3/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

### BILL OF MATERIAL

BENT #81			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	30	
EPOXY MORTAR (FORMED)	CF	-	
BENT #82			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	2	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	12	
EPOXY MORTAR (FORMED)	CF	-	
BENT #83			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	3	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	15	
EPOXY MORTAR (FORMED)	CF	-	

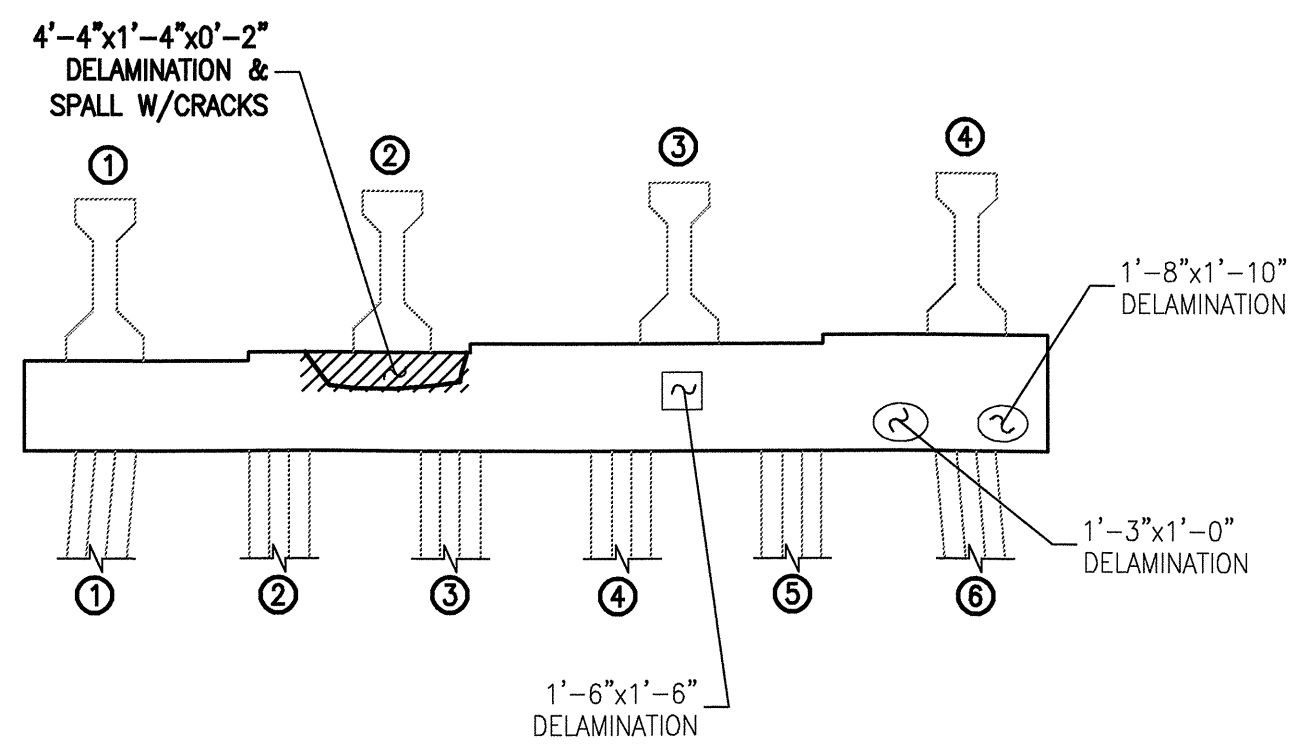


NORTH ELEVATION

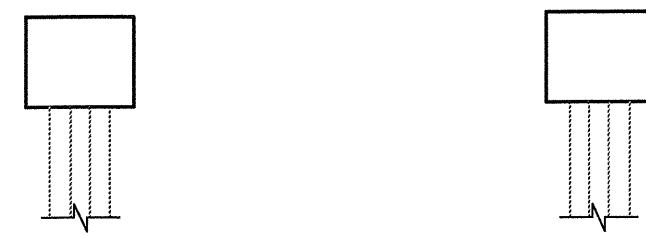


EAST ELEVATION

WEST ELEVATION

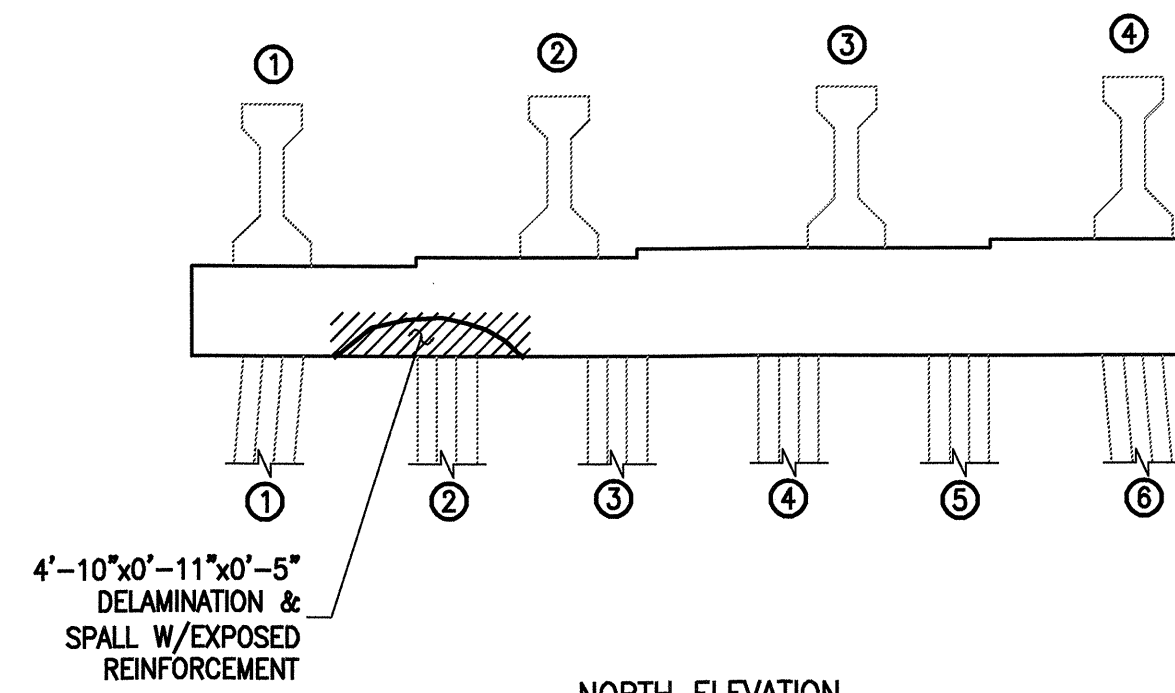


NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION

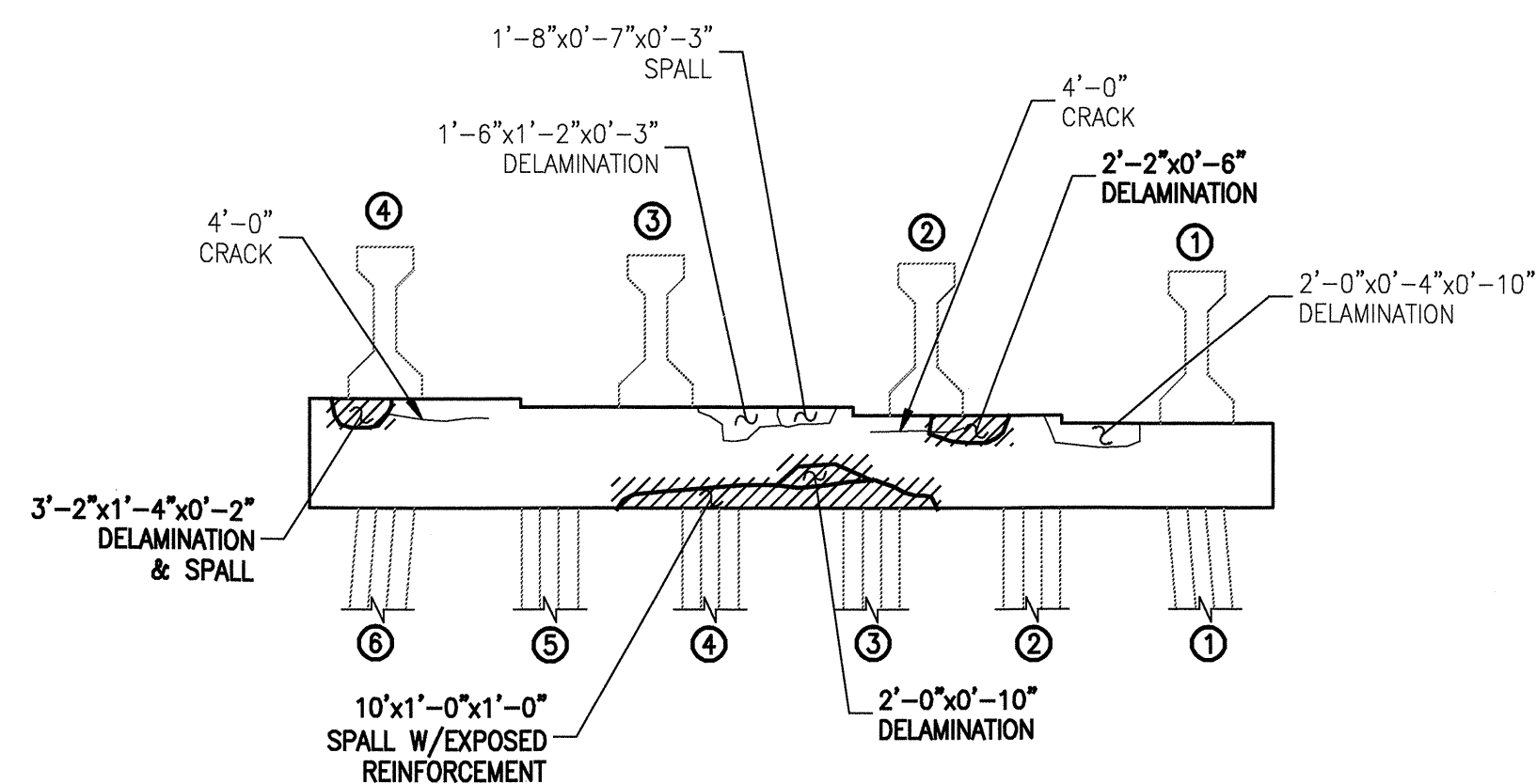


NORTH ELEVATION



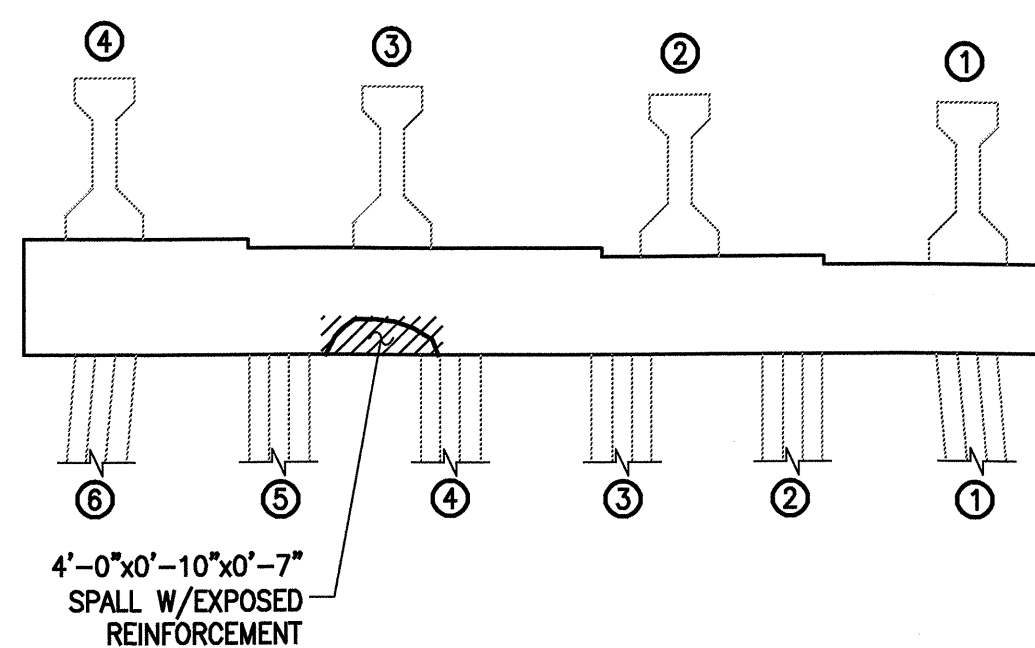
EAST ELEVATION

WEST ELEVATION



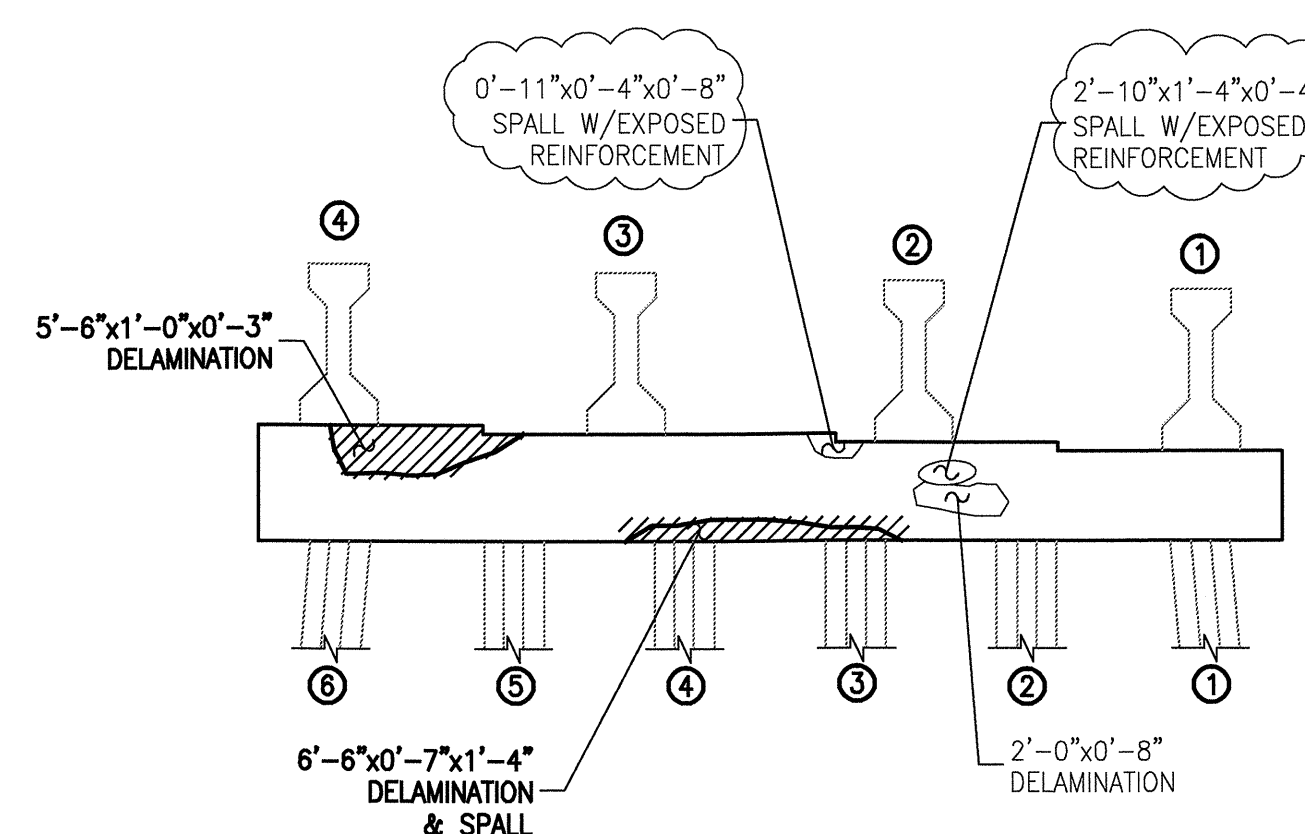
SOUTH ELEVATION

**BENT #81**



SOUTH ELEVATION

**BENT #82**



SOUTH ELEVATION

**BENT #83**

### KEY

- DENOTES GENERAL AREA OF REPAIR
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

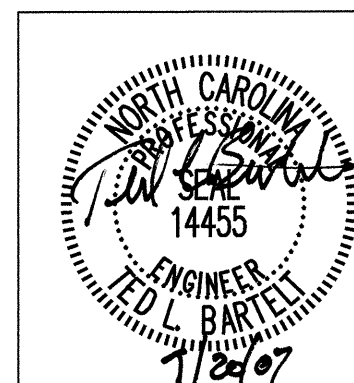


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #81-#83



DRAWN BY: G.R. COLS DATE: 4/24/07  
 CHECKED BY: F.E. ROBBINS DATE: 5/10/07

REVISIONS						SHEET NO. 94
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

## BENT #84

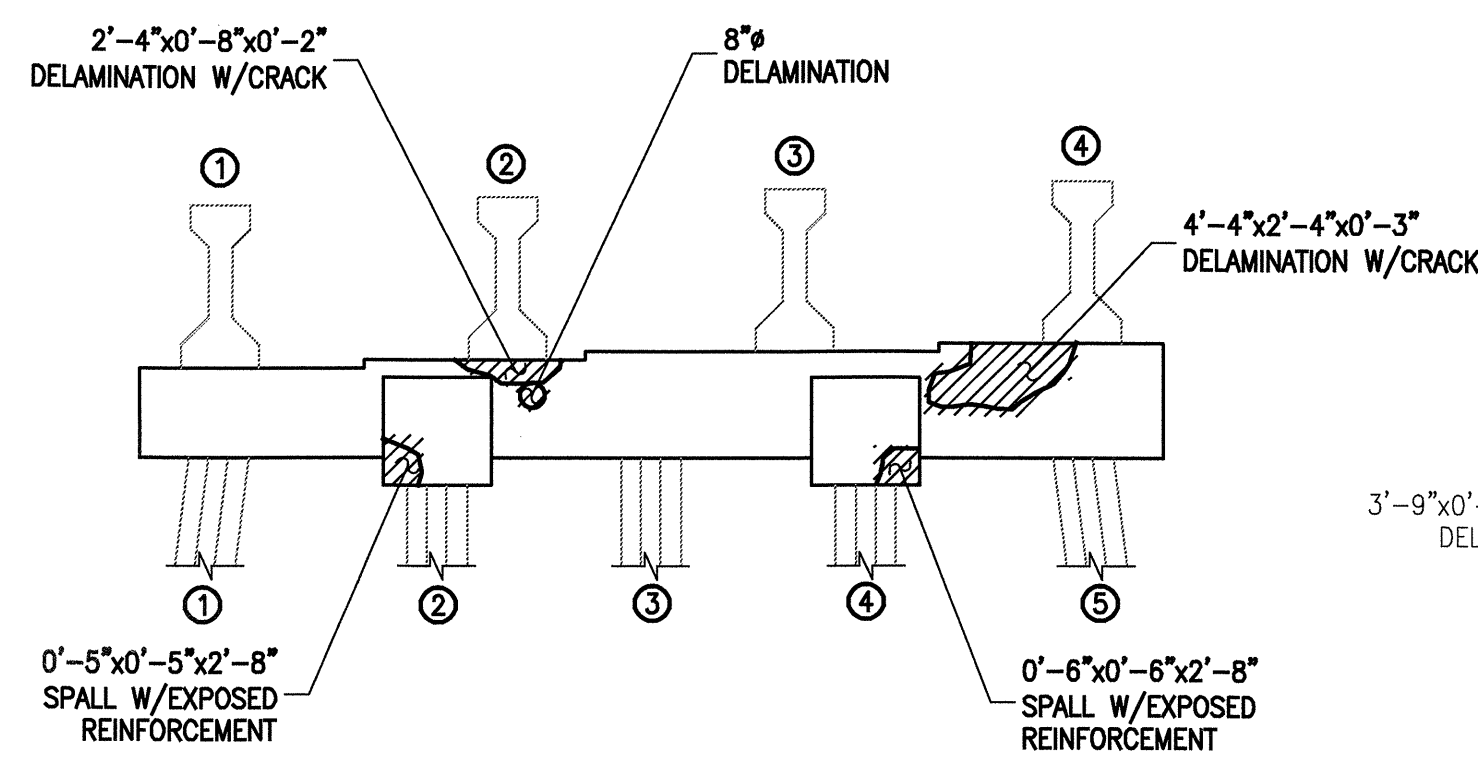
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	10
OVERHEAD SHOTCRETE	CF	6
ADDITIONAL REINFORCING	LBS	37
EPOXY MORTAR (FORMED)	CF	-

## BENT #85

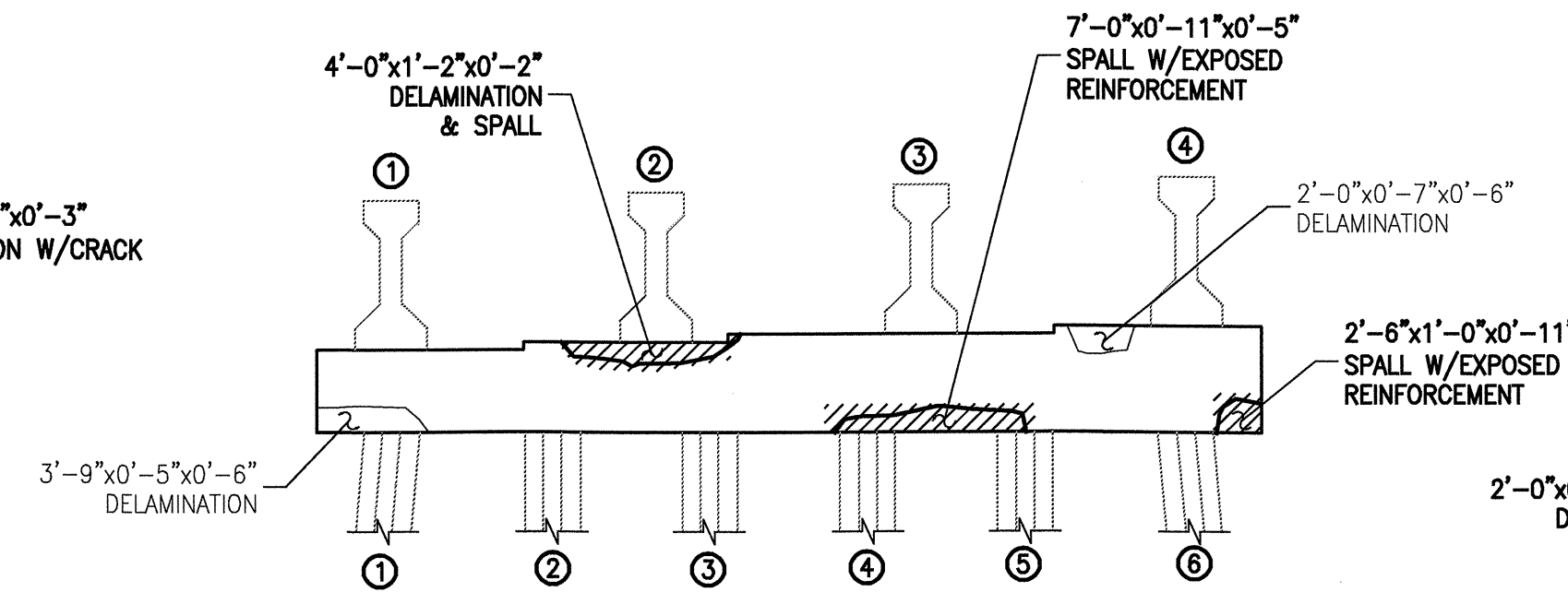
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	3
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	11
EPOXY MORTAR (FORMED)	CF	-

## BENT #86

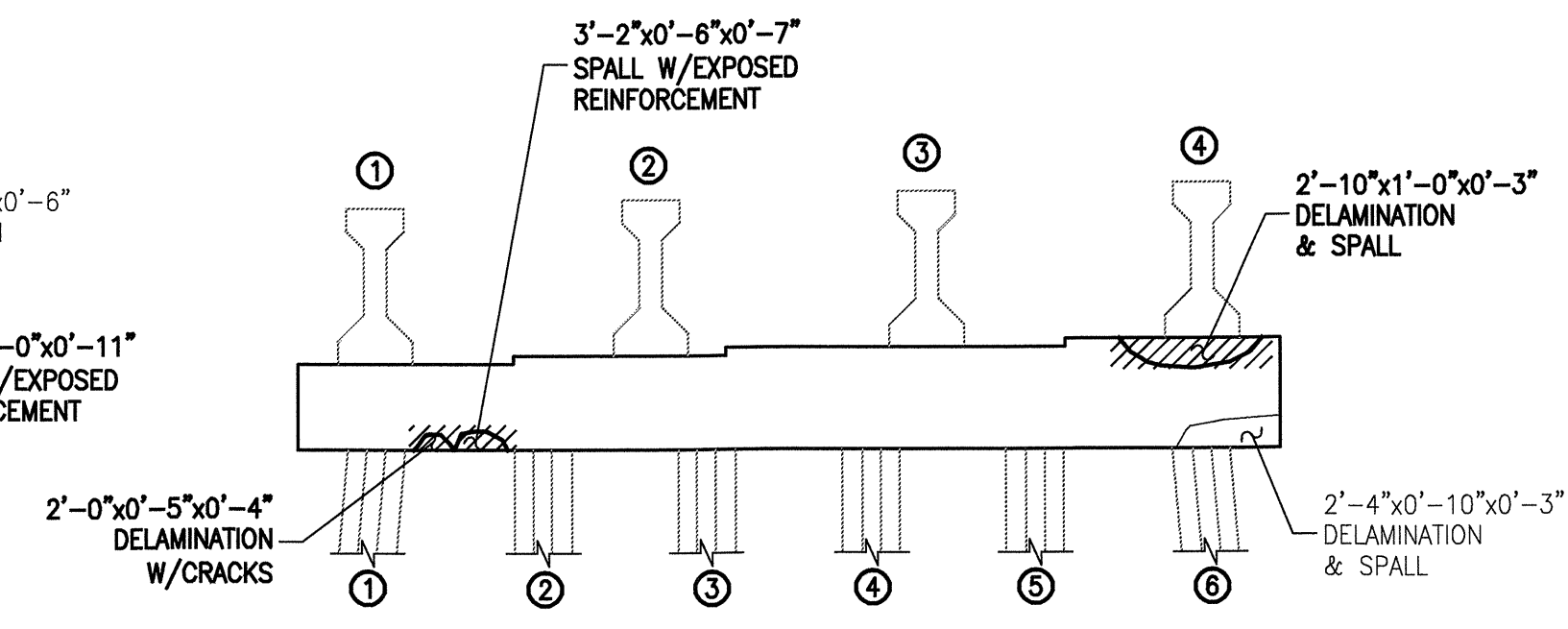
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	2
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	14
EPOXY MORTAR (FORMED)	CF	-



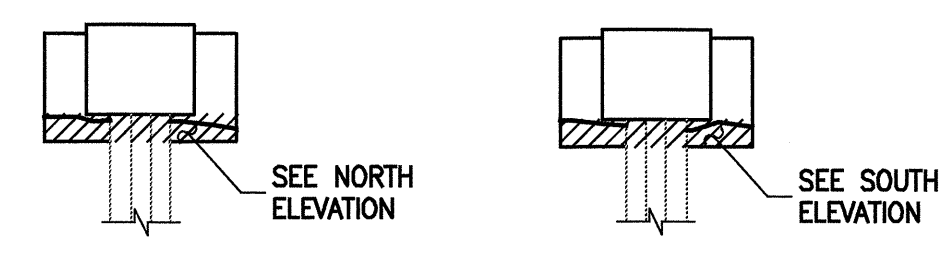
NORTH ELEVATION



NORTH ELEVATION



NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION



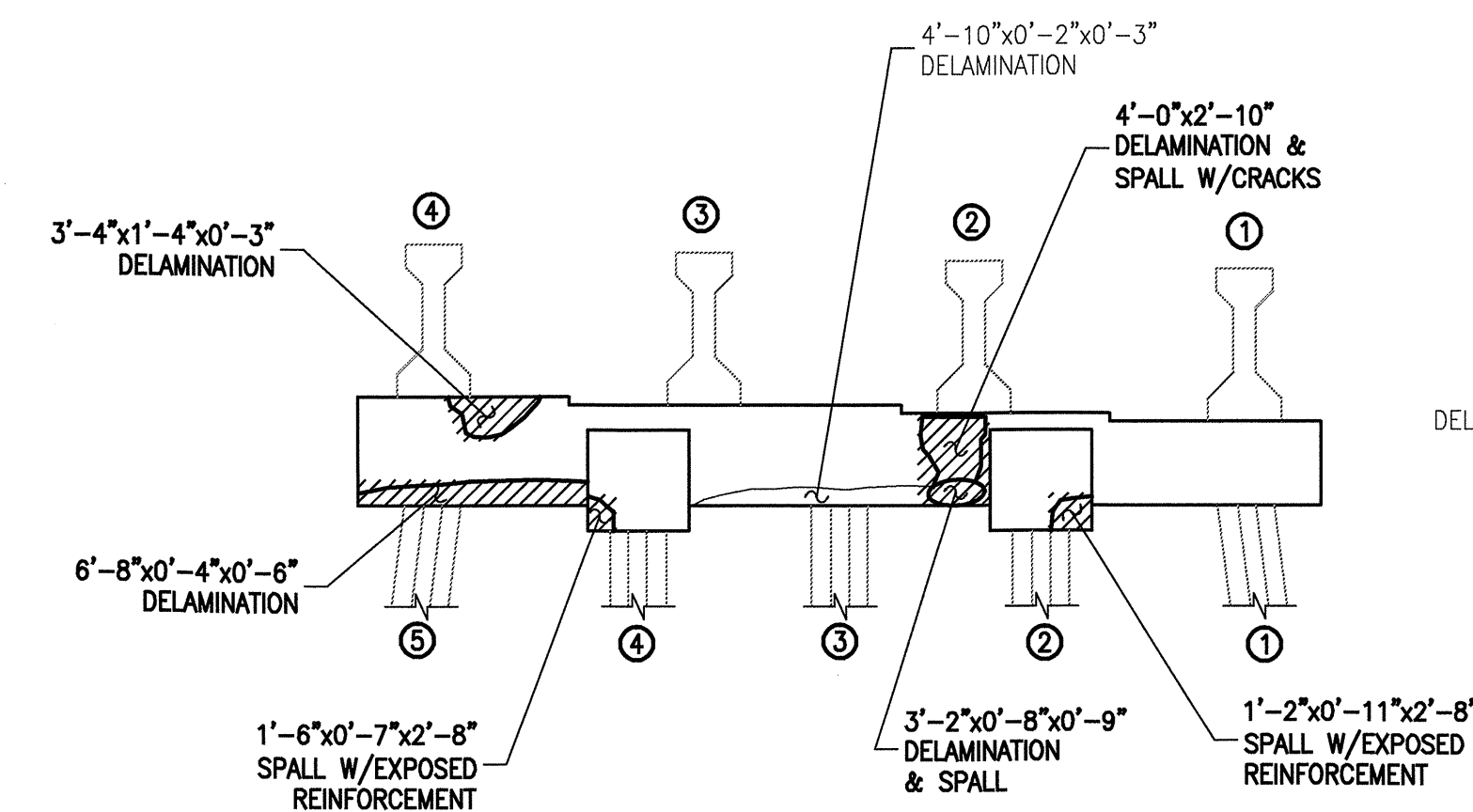
EAST ELEVATION

WEST ELEVATION



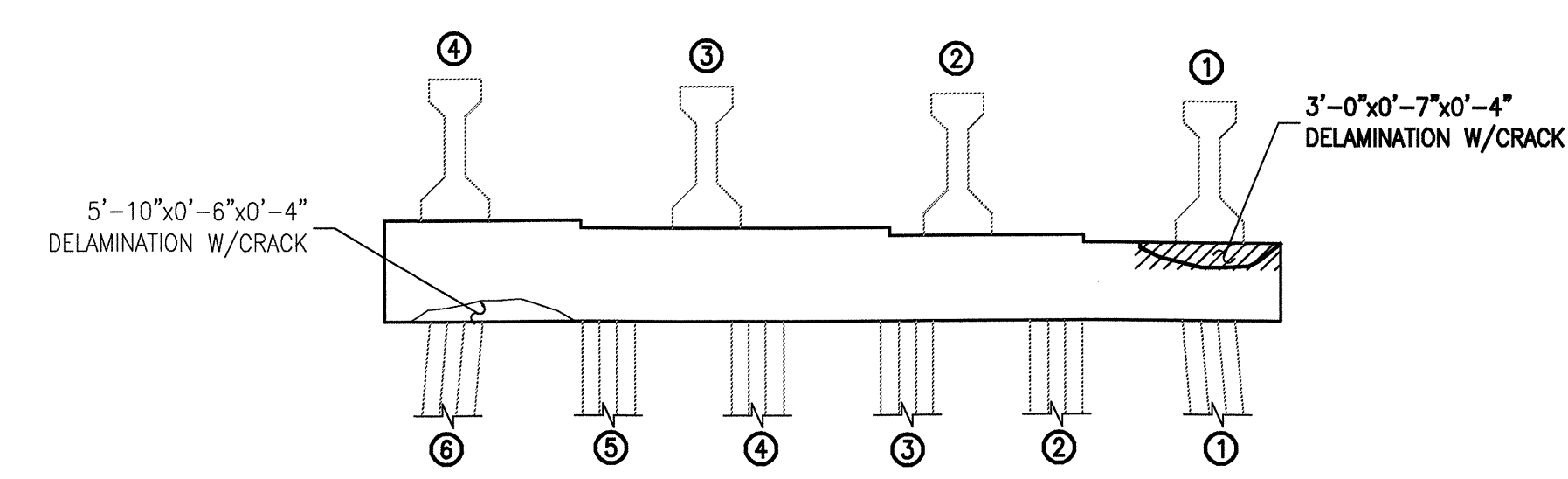
EAST ELEVATION

WEST ELEVATION



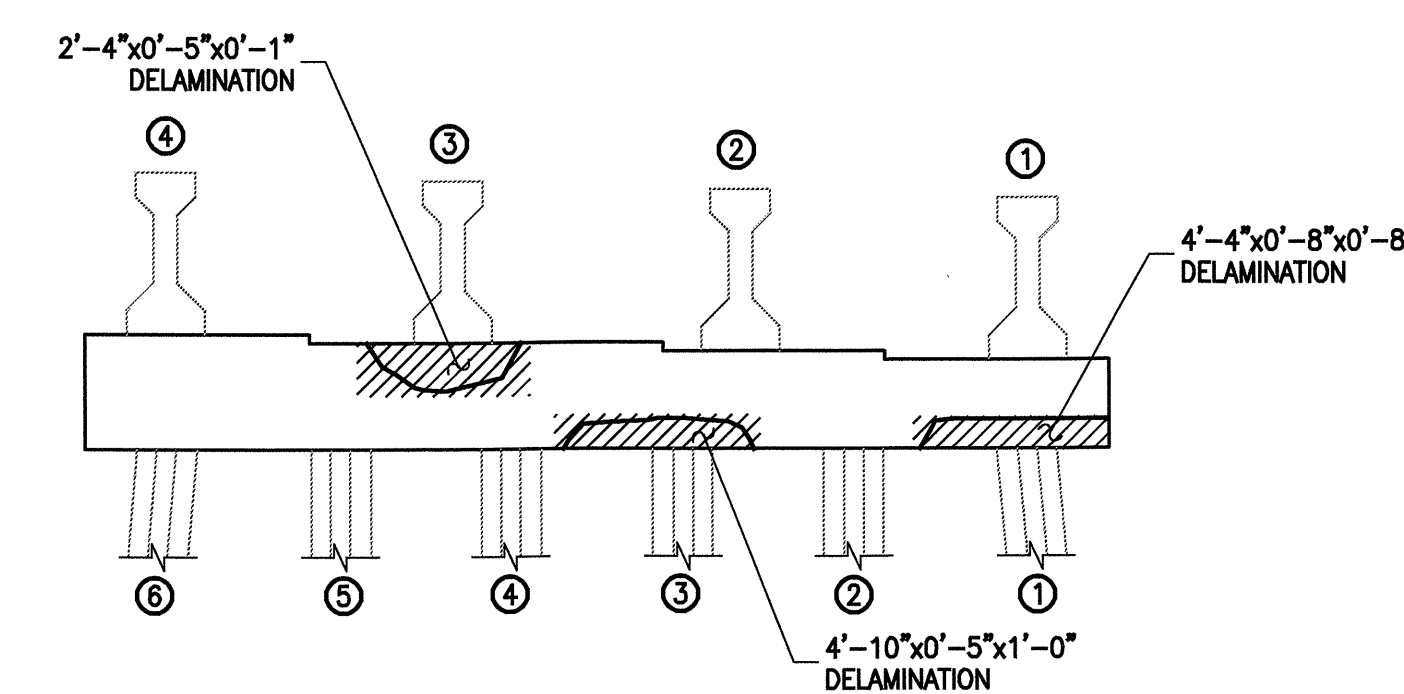
SOUTH ELEVATION

## BENT #84



SOUTH ELEVATION

## BENT #85

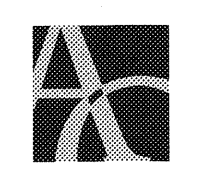


SOUTH ELEVATION

## BENT #86

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)(VERT)(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)(VERT)(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

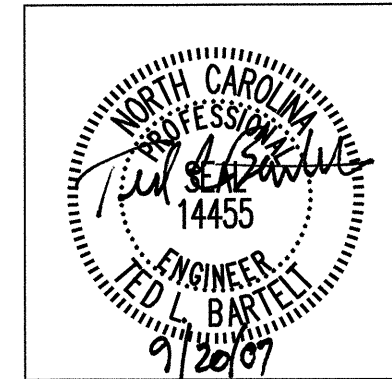
PLAN PREPARED BY:



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 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com  
 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #84-#86

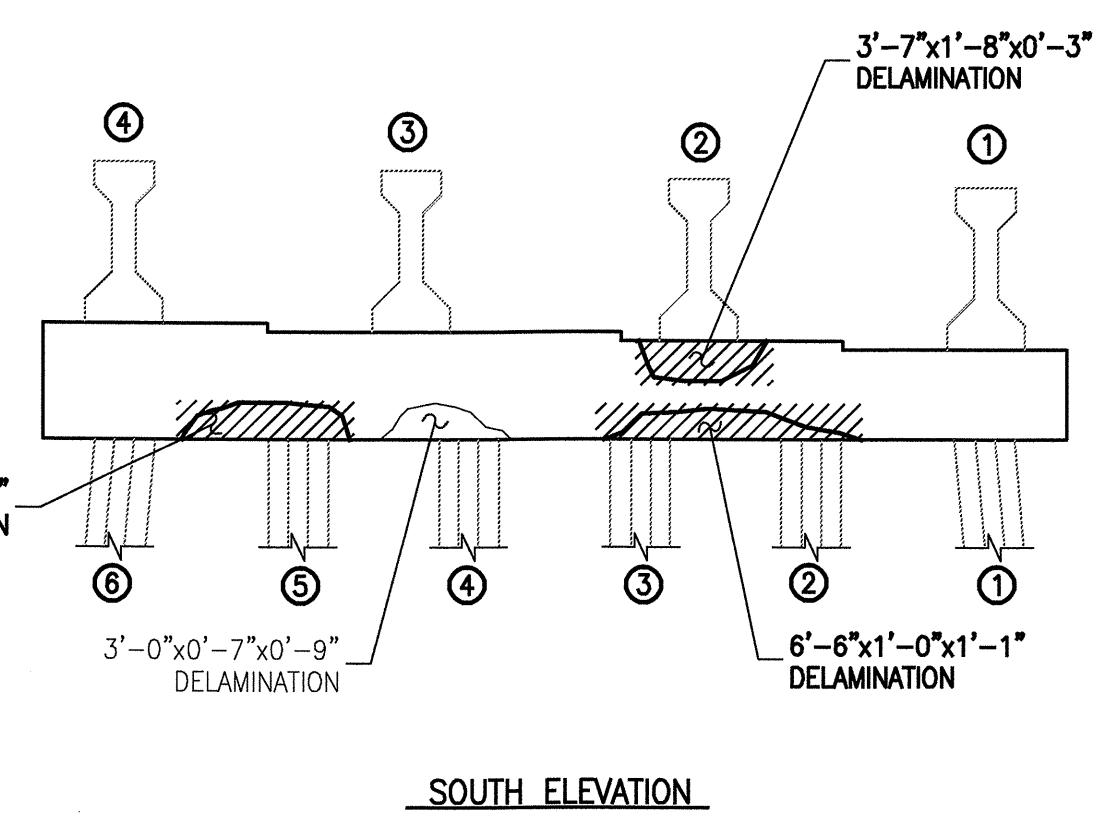
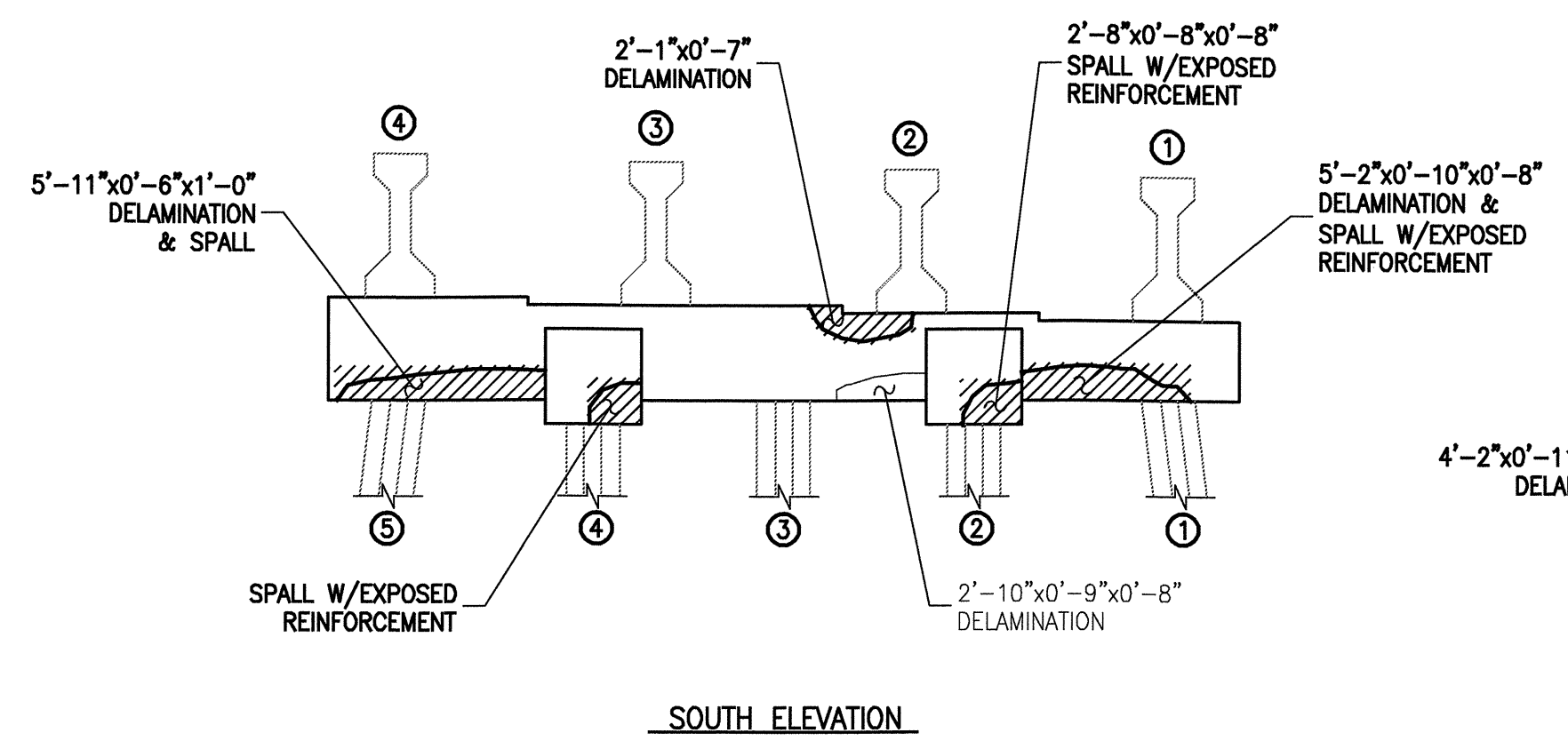
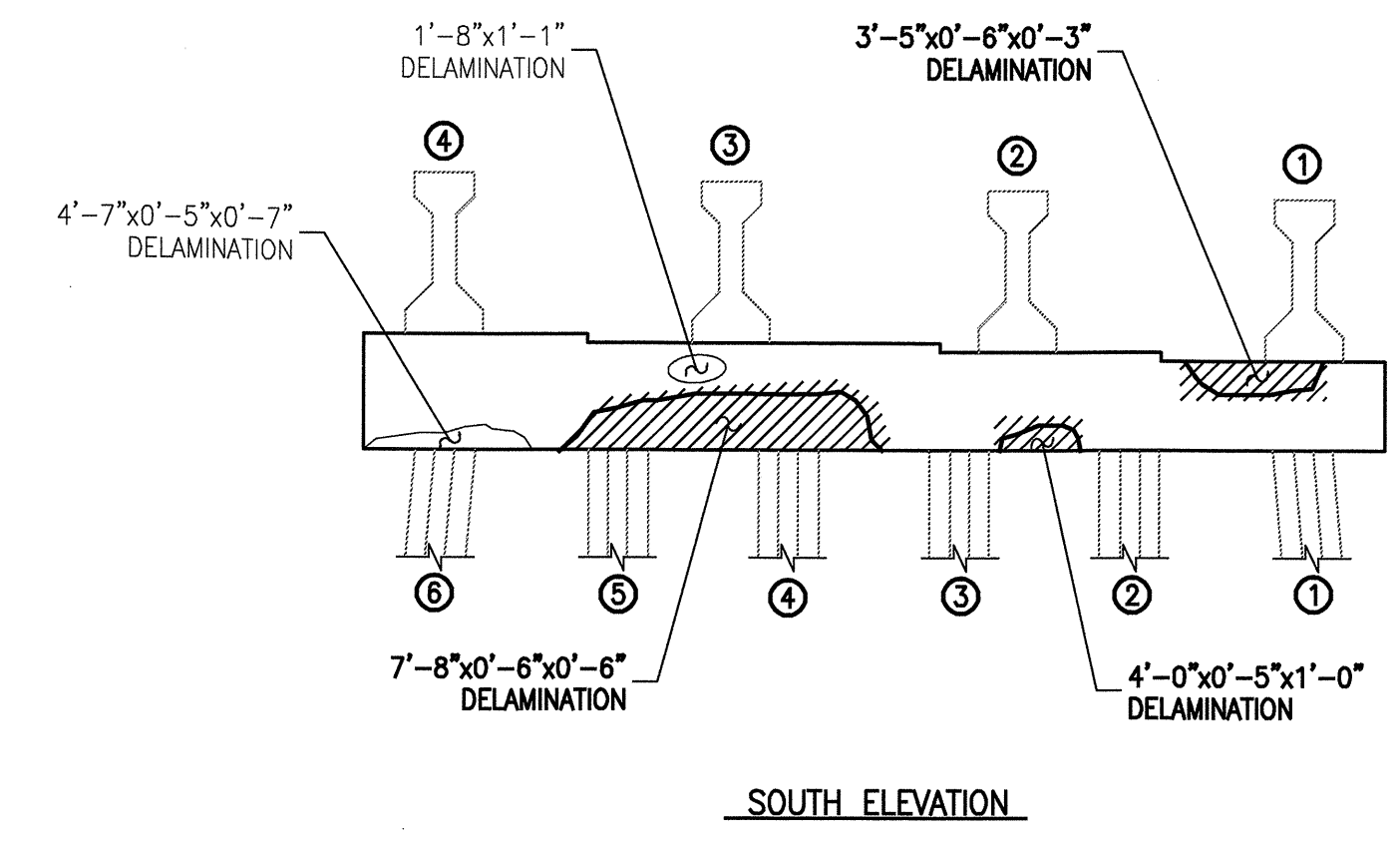
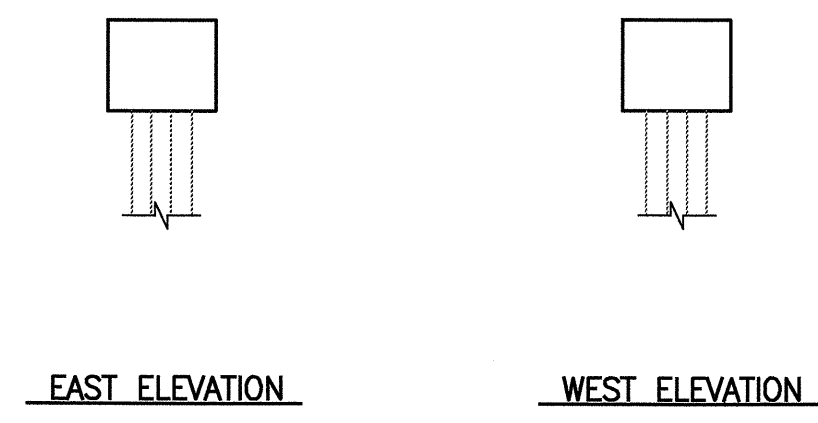
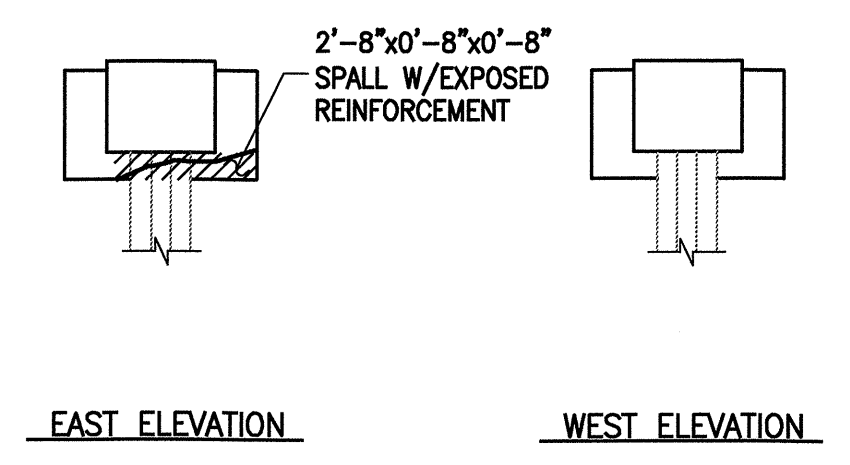
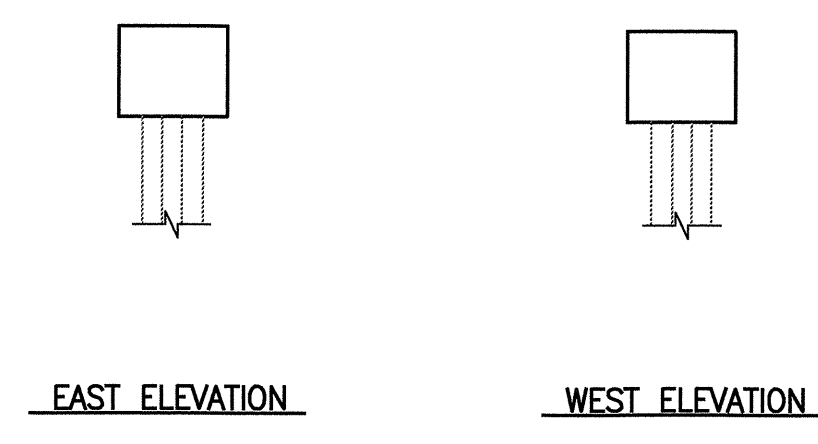
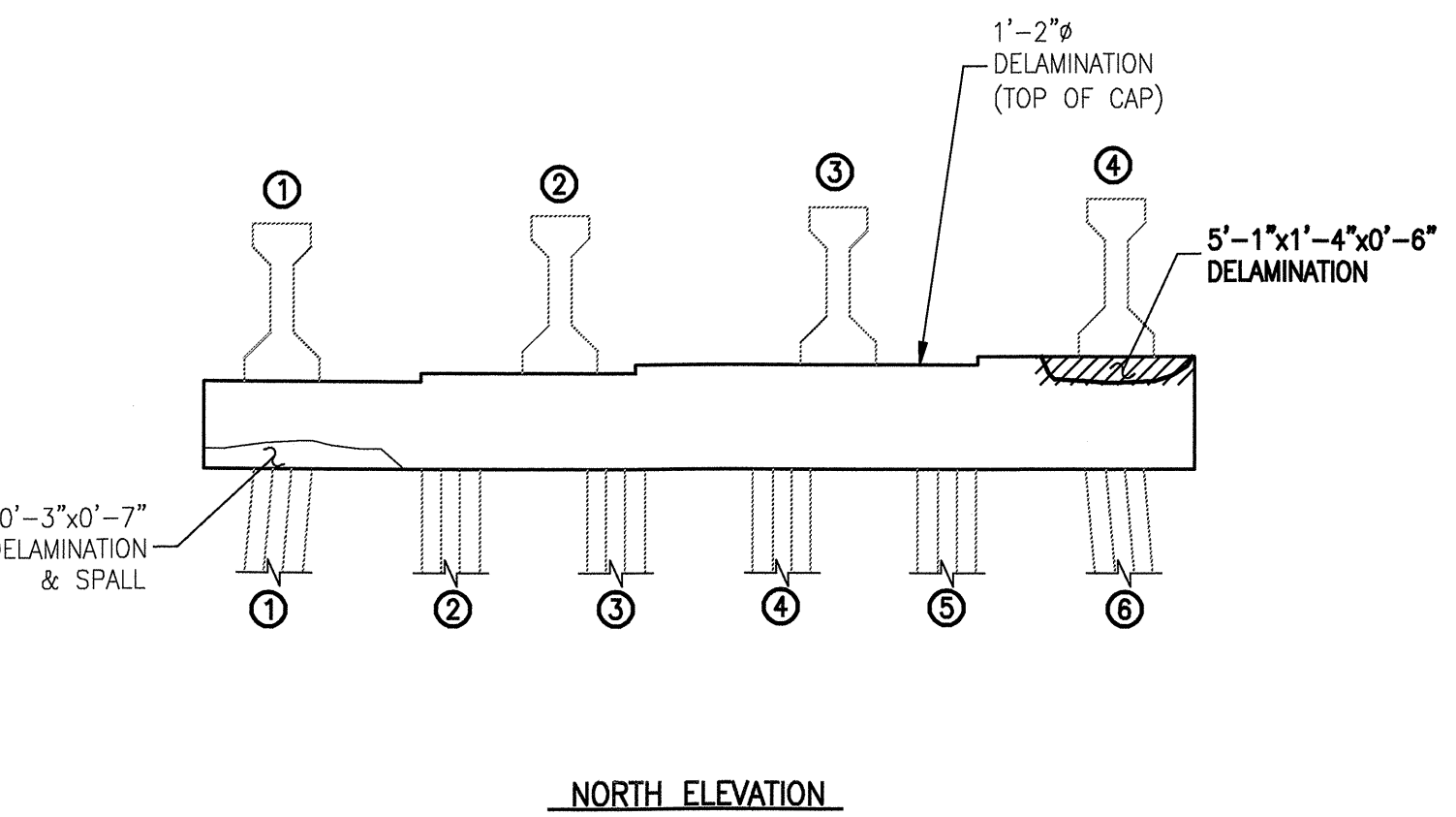
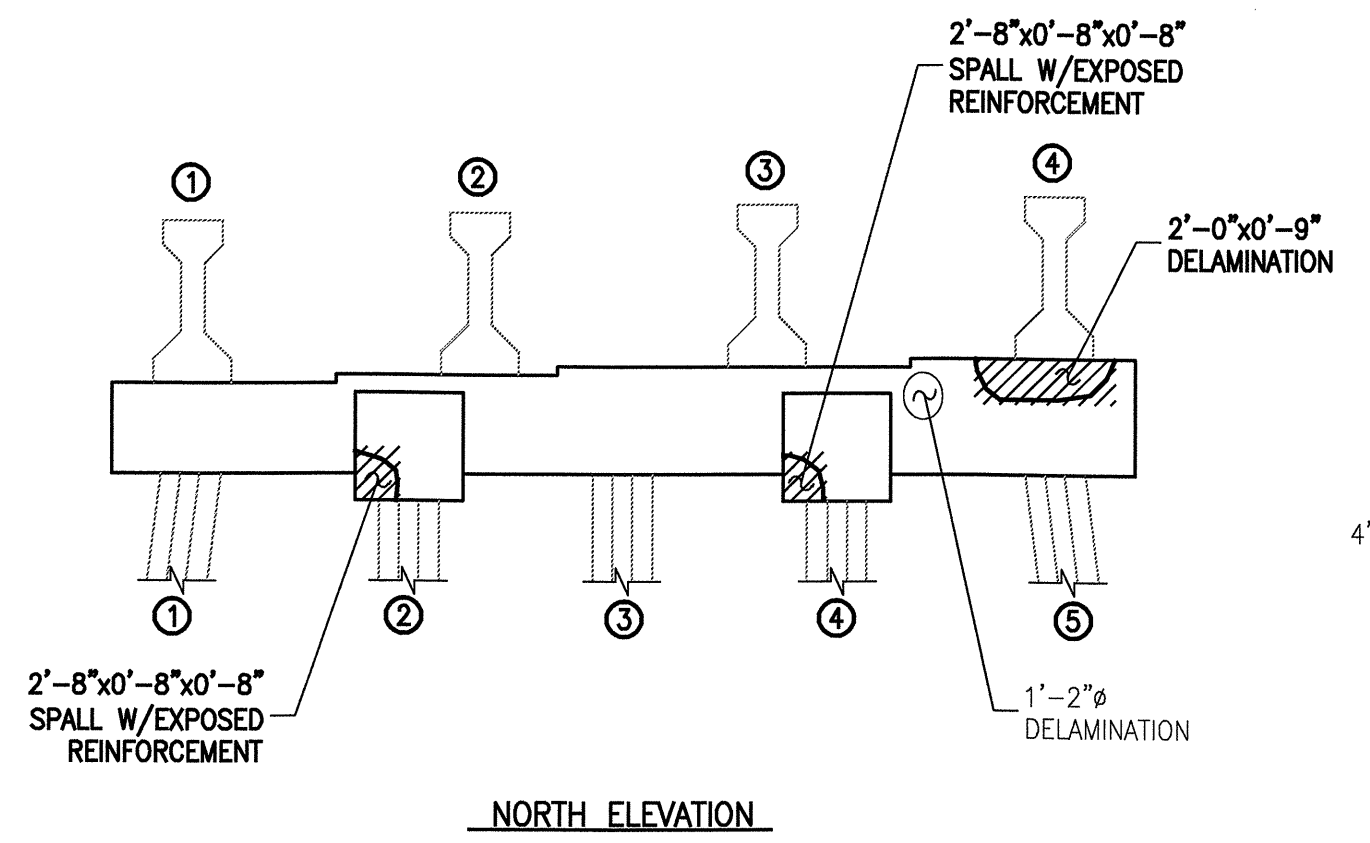
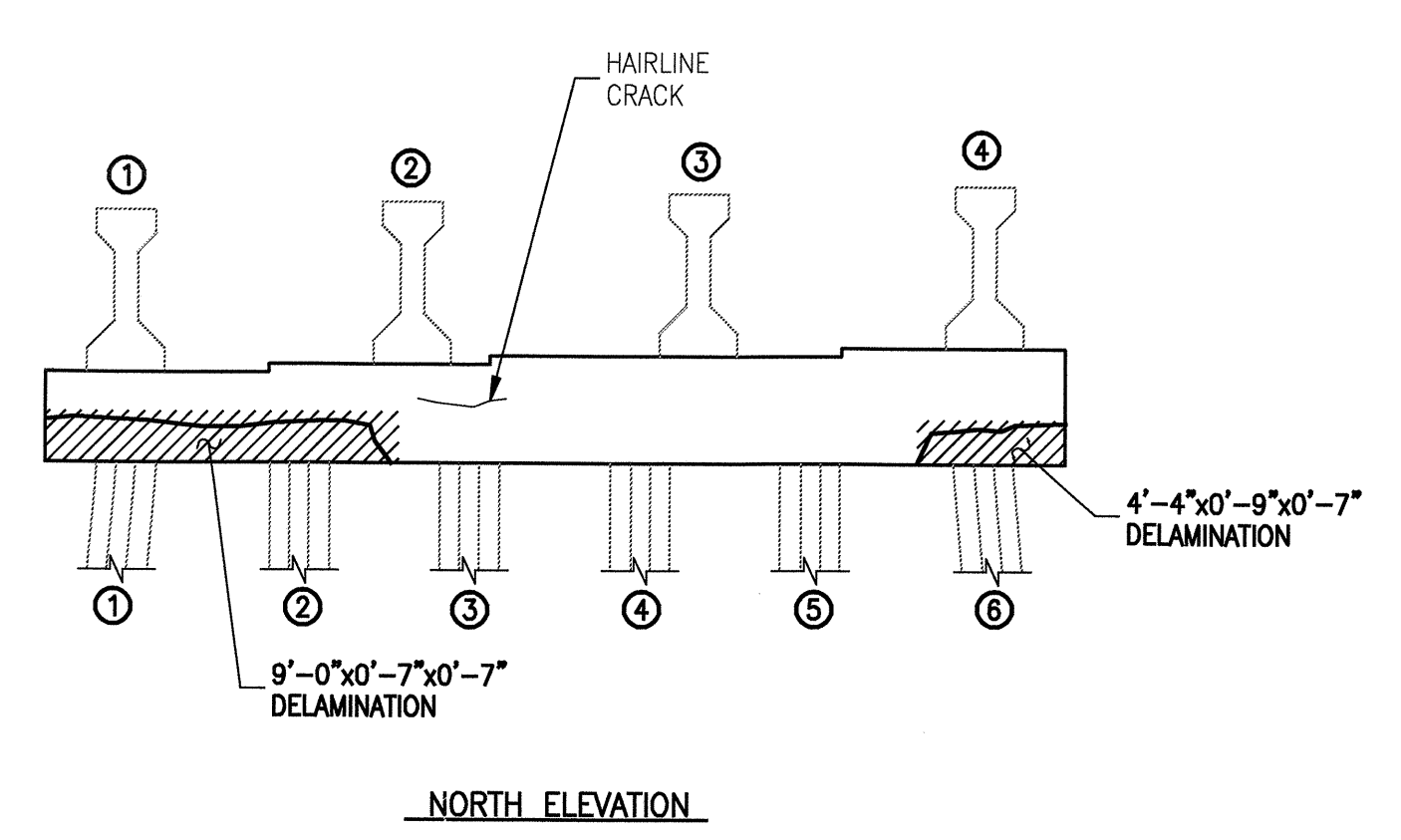


DRAWN BY: G.R. COLS DATE: 5/15/07  
 CHECKED BY: M.T. MILLS DATE: DATE

REVISIONS						SHEET NO. 95
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



BILL OF MATERIAL			
BENT #87			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	1	
OVERHEAD SHOTCRETE	CF	7	
ADDITIONAL REINFORCING	LBS	9	
EPOXY MORTAR (FORMED)	CF	-	
BENT #88			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	2	
OVERHEAD SHOTCRETE	CF	7	
ADDITIONAL REINFORCING	LBS	11	
EPOXY MORTAR (FORMED)	CF	-	
BENT #89			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	23	
EPOXY MORTAR (FORMED)	CF	-	



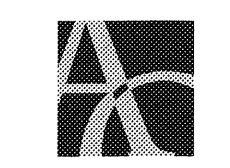
**BENT #87**

**BENT #88**

**BENT #89**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

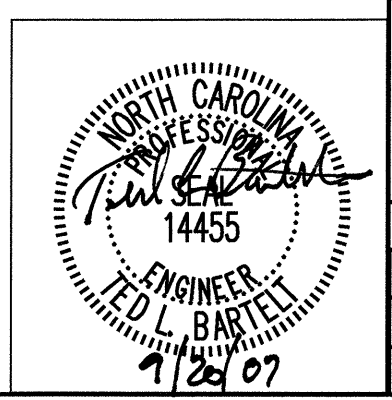
PLAN PREPARED BY:



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 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #87-#89



DRAWN BY: G.R. COLS DATE: 4/24/07  
 CHECKED BY: I.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	96
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

## BENT #90

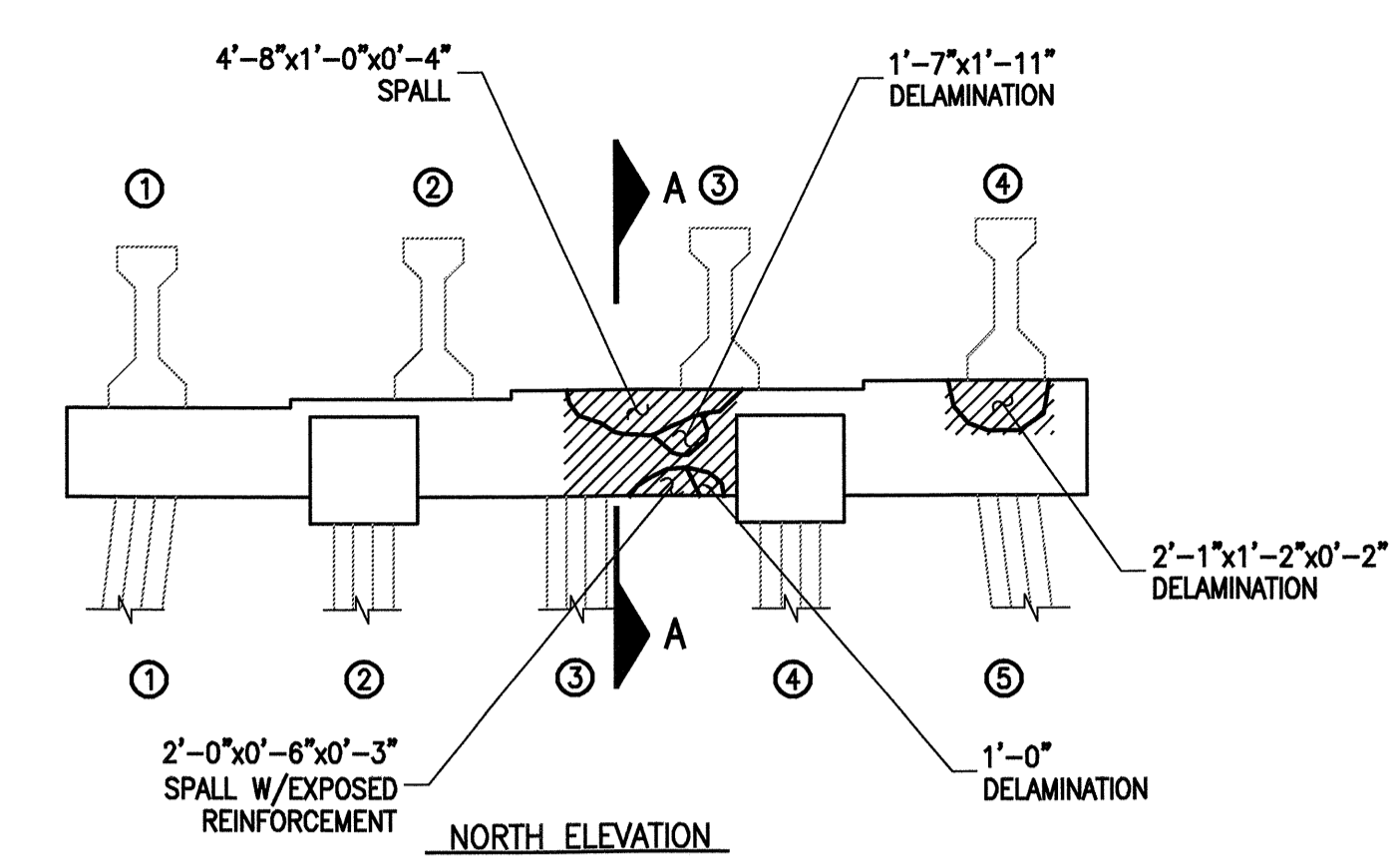
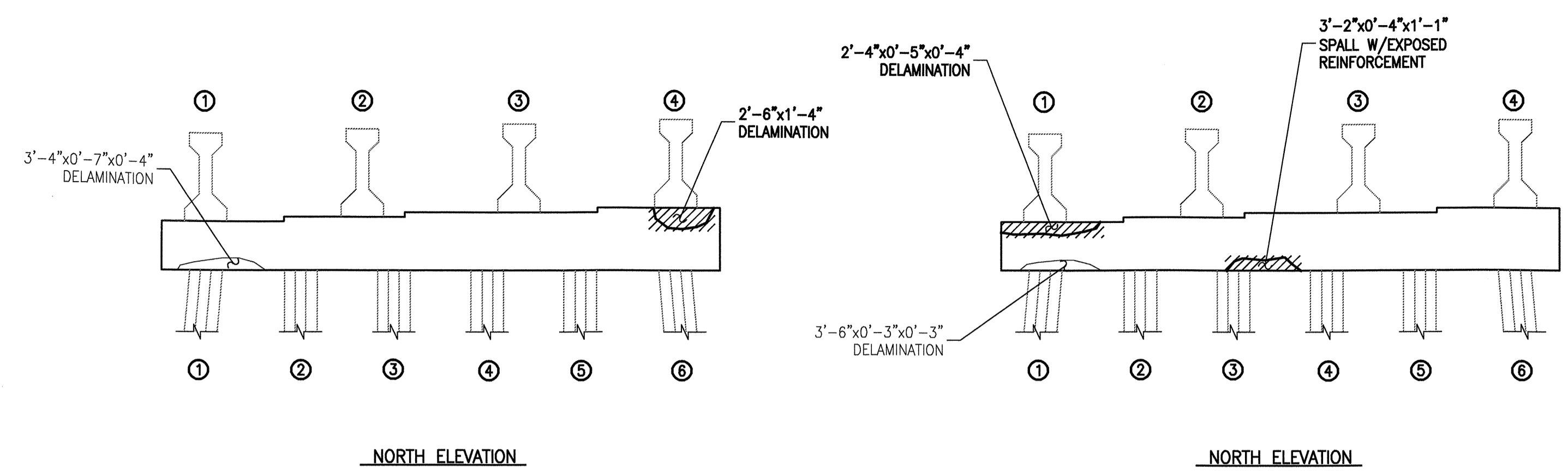
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	1
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	7
EPOXY MORTAR (FORMED)	CF	-

## BENT #91

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	1
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	6
EPOXY MORTAR (FORMED)	CF	-

## BENT #92

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	4
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	12
EPOXY MORTAR (FORMED)	CF	-



NORTH ELEVATION

NORTH ELEVATION

NORTH ELEVATION



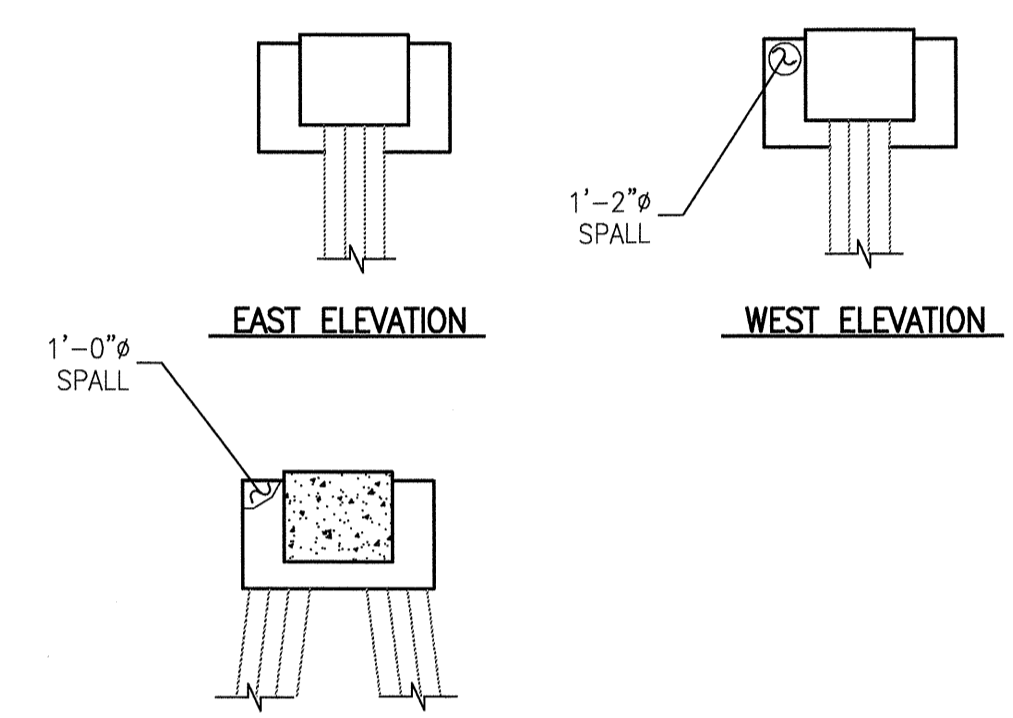
EAST ELEVATION

WEST ELEVATION



EAST ELEVATION

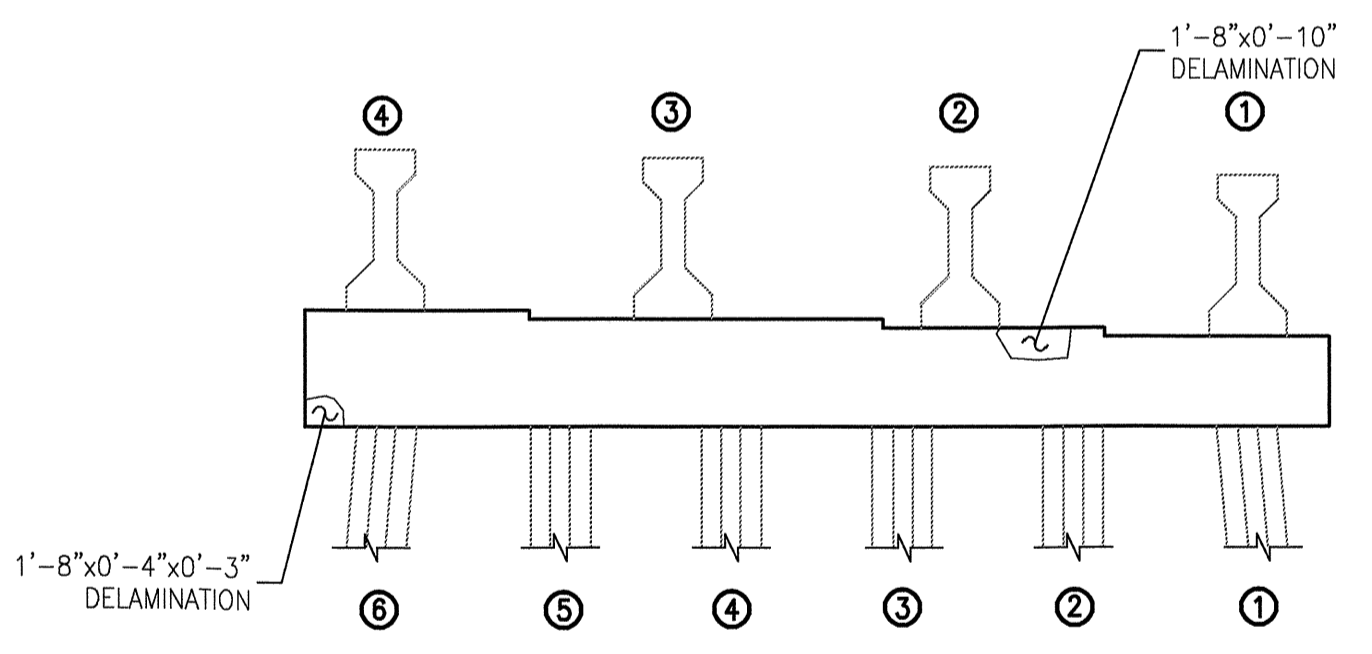
WEST ELEVATION



EAST ELEVATION

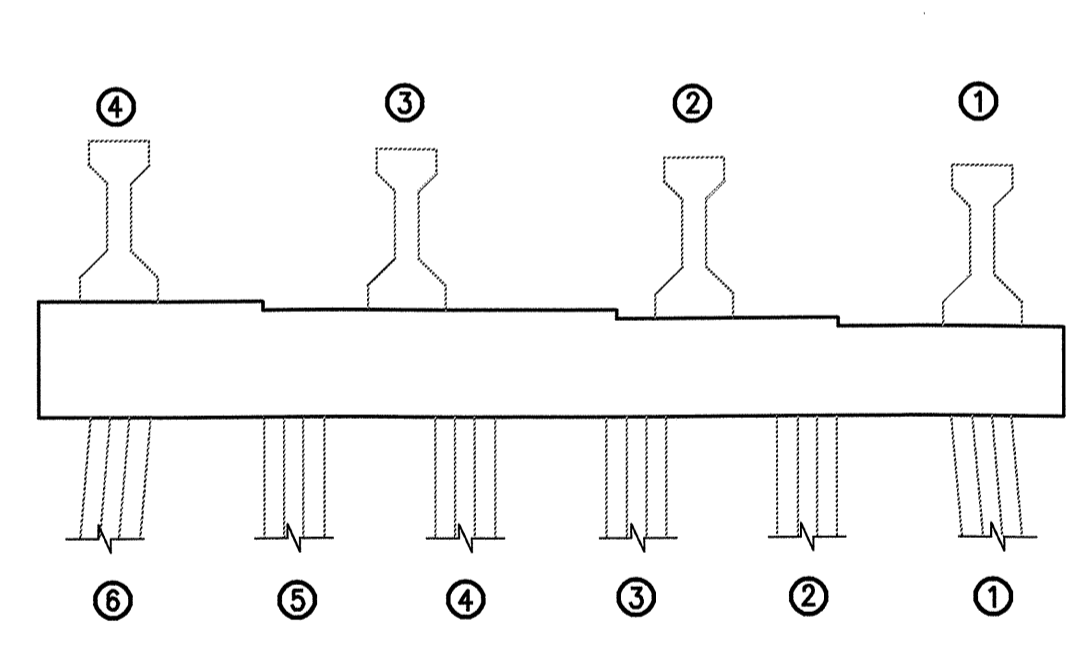
WEST ELEVATION

SECTION A-A



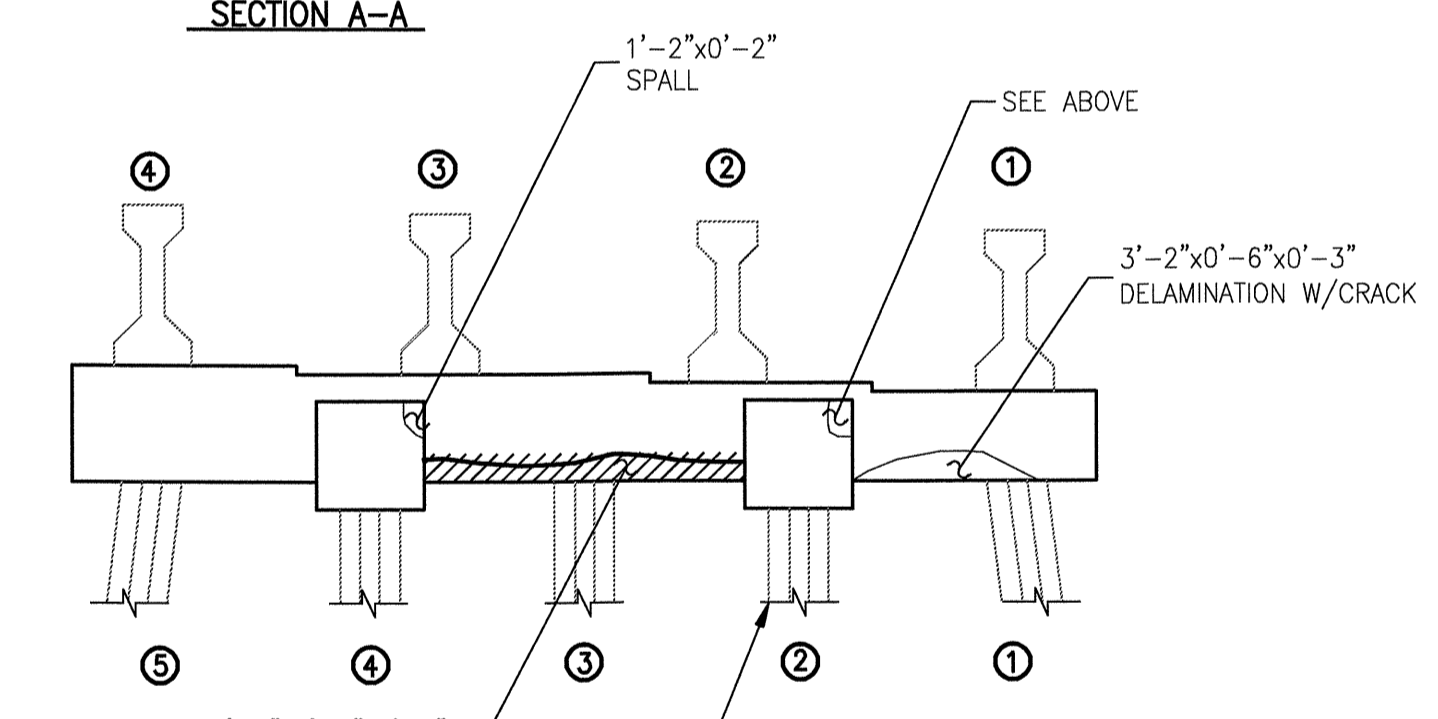
SOUTH ELEVATION

**BENT #90**



SOUTH ELEVATION

**BENT #91**

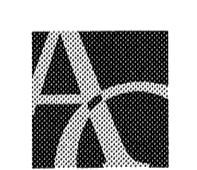


SOUTH ELEVATION

**BENT #92**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

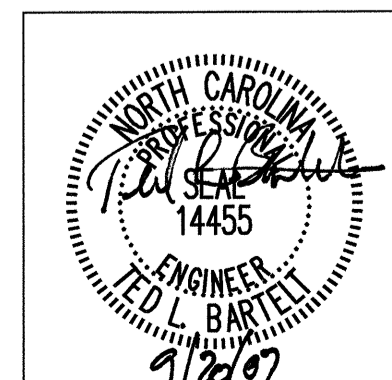
PLAN PREPARED BY:



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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #90-#92



DRAWN BY: G.R. COLS DATE: 4/28/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO. 97
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

# BILL OF MATERIAL

## BENT #93

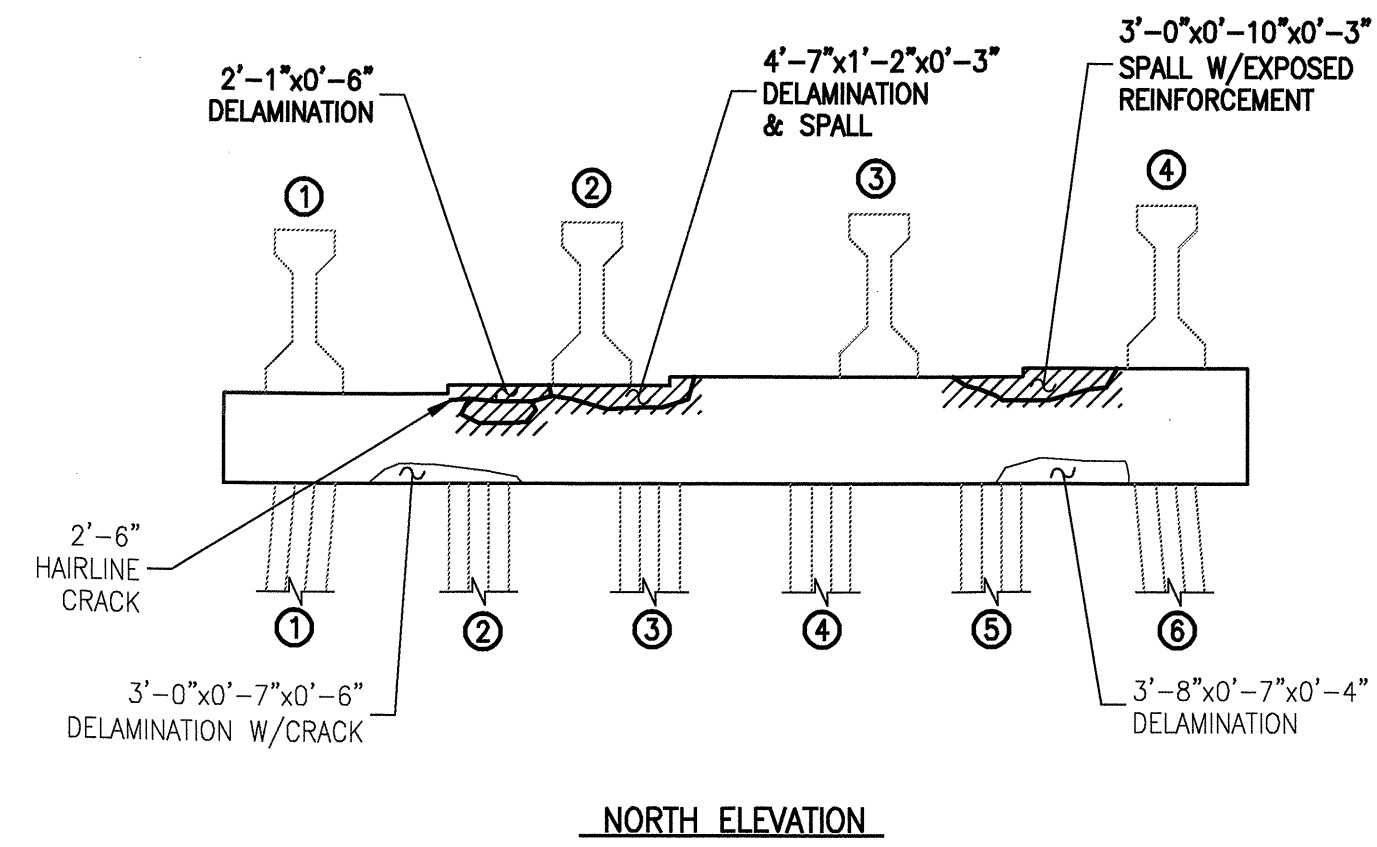
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	3
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	19
EPOXY MORTAR (FORMED)	CF	-

## BENT #94

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	1
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	-
EPOXY MORTAR (FORMED)	CF	-

## BENT #95

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	5
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	8
EPOXY MORTAR (FORMED)	CF	-

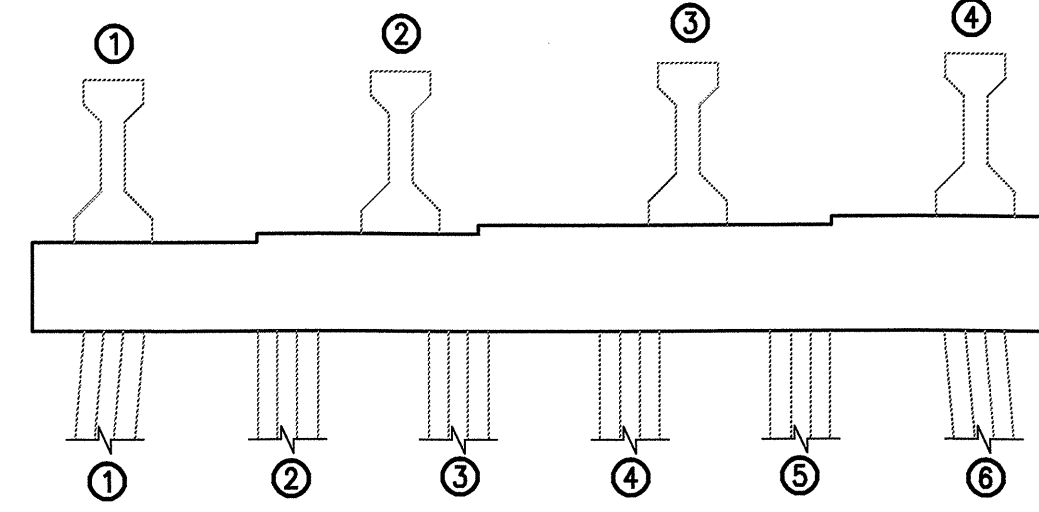


NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION

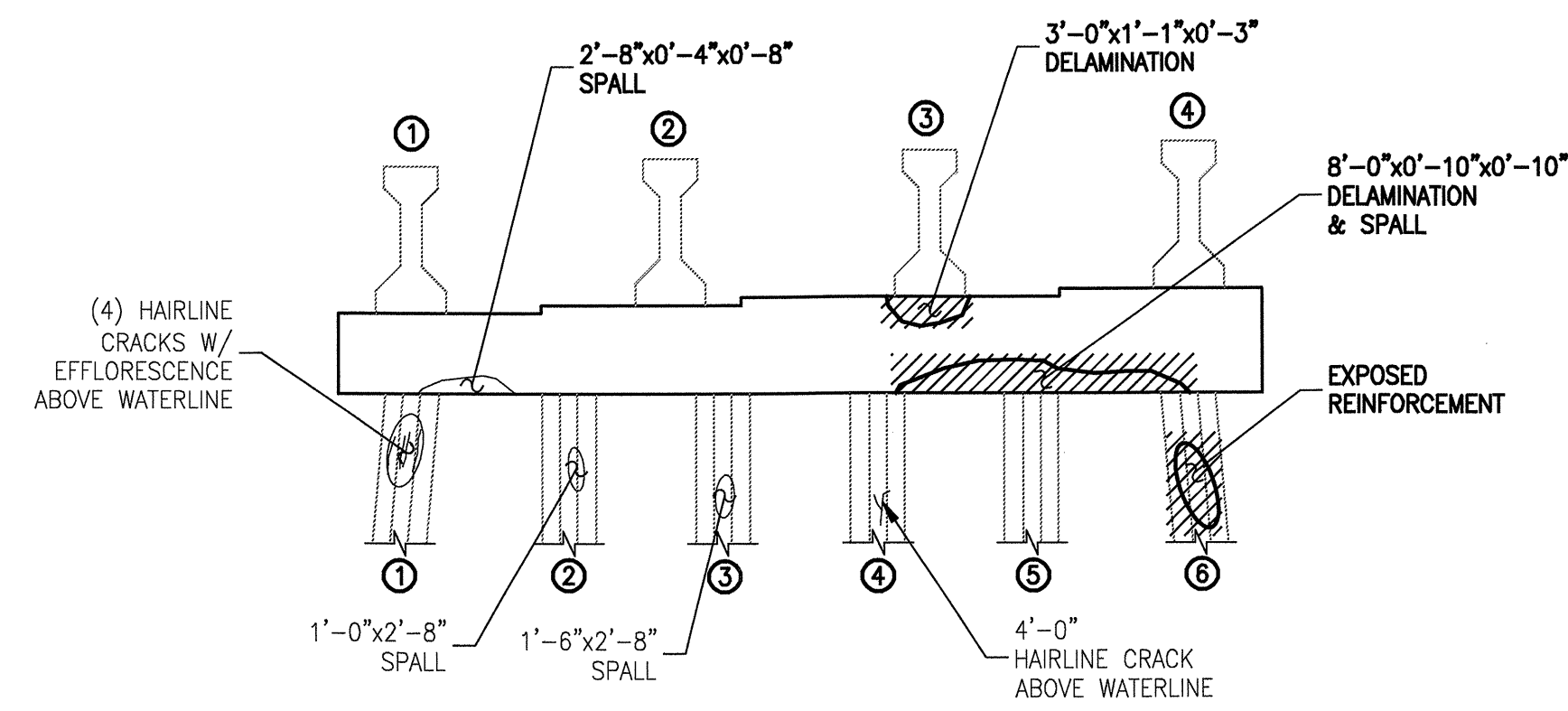


NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION

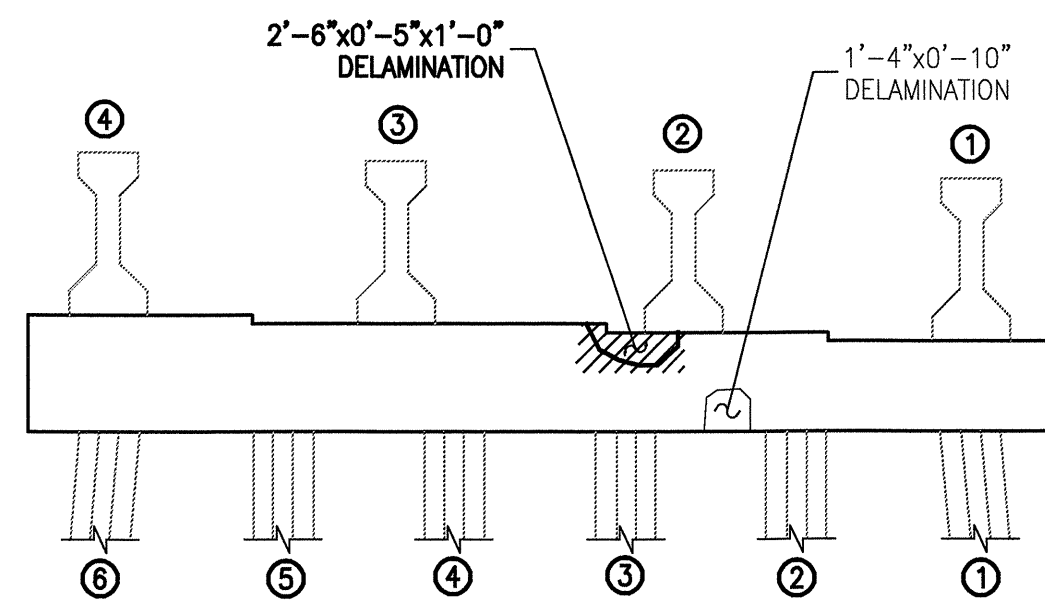


NORTH ELEVATION



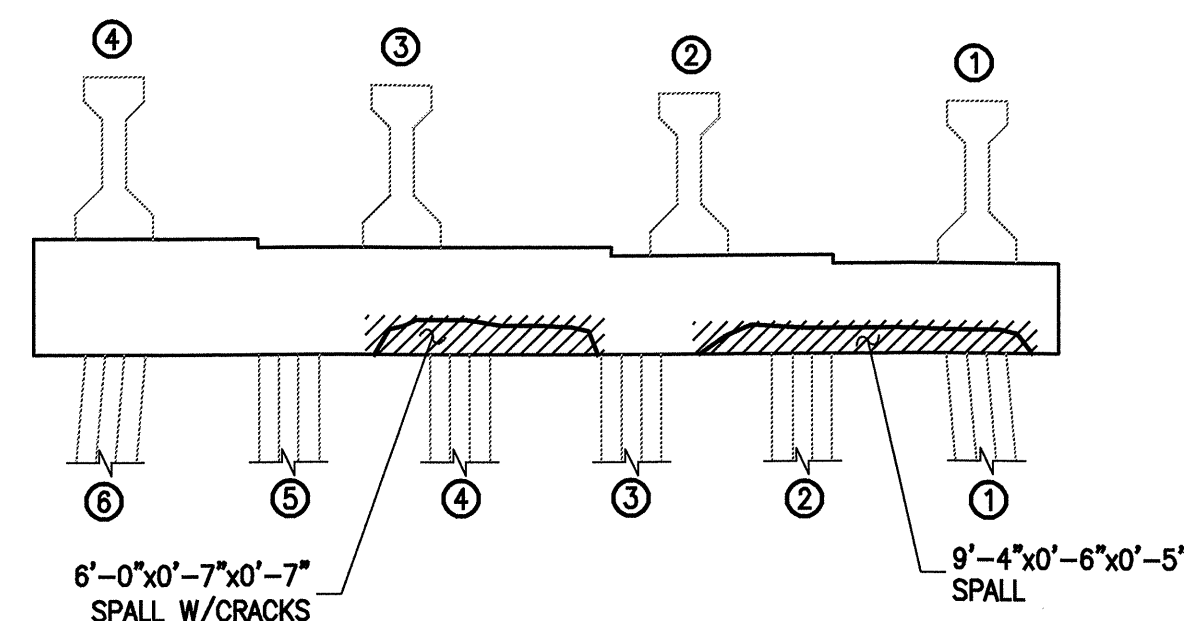
EAST ELEVATION

WEST ELEVATION



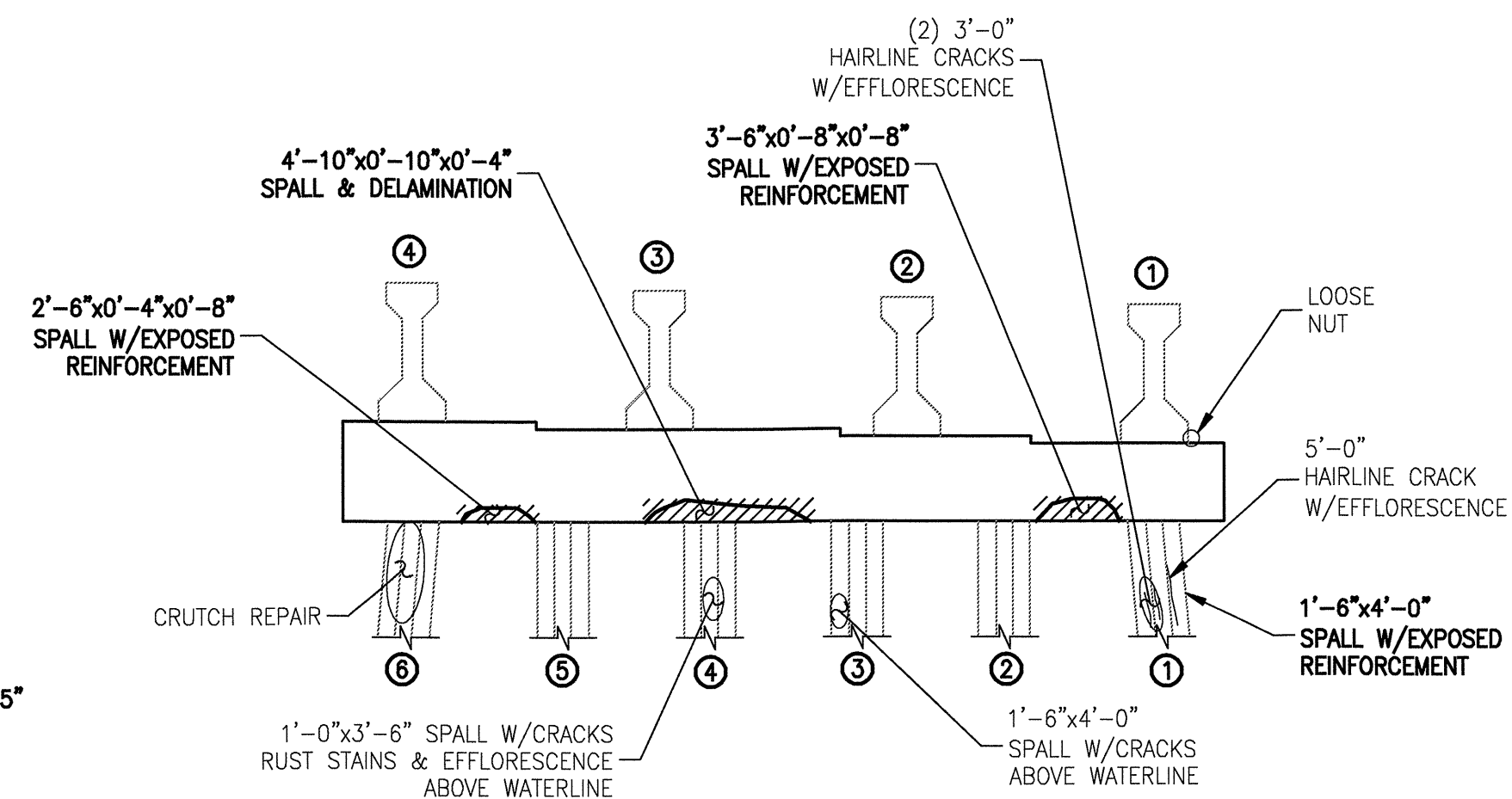
SOUTH ELEVATION

**BENT #93**



SOUTH ELEVATION

**BENT #94**



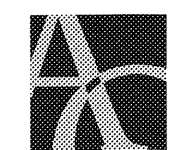
SOUTH ELEVATION

**BENT #95**

### KEY

- DENOTES GENERAL AREA OF REPAIR
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

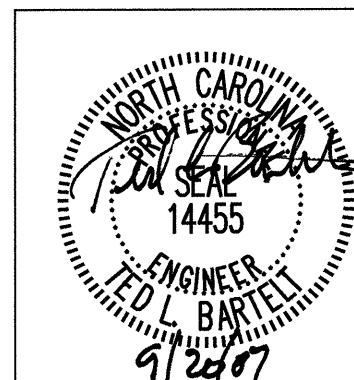


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 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #93-#95



REVISIONS						SHEET NO. 98
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07



# BILL OF MATERIAL

## BENT #96

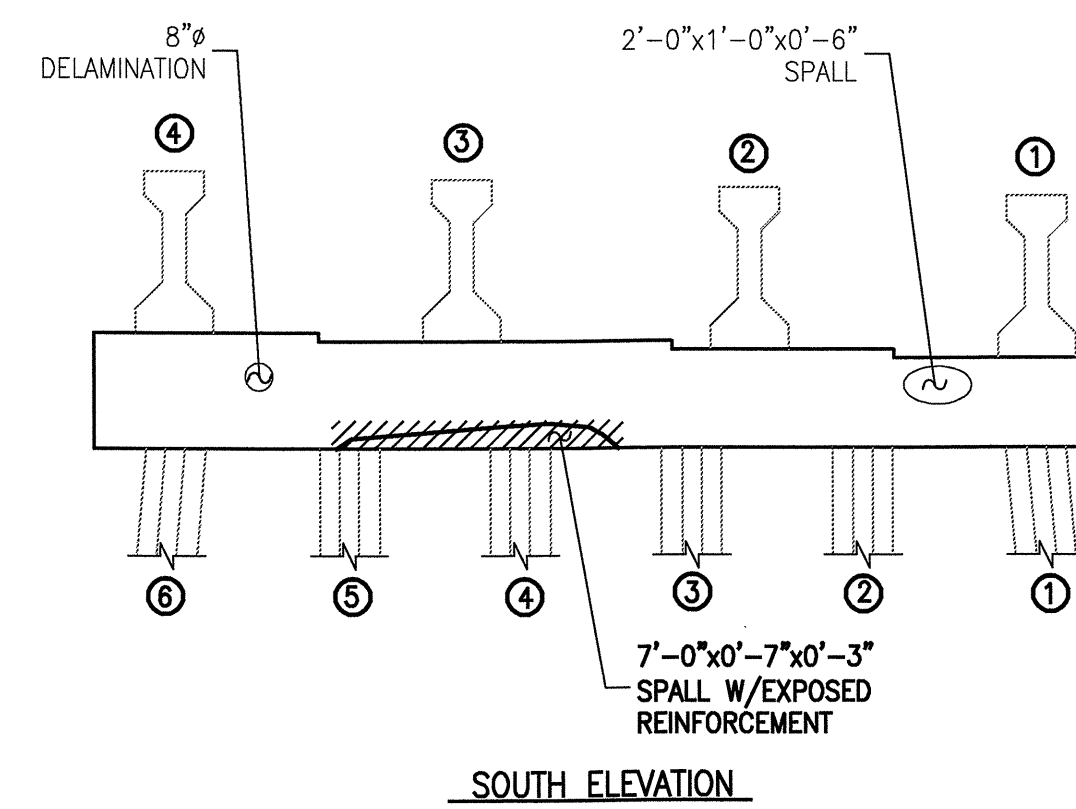
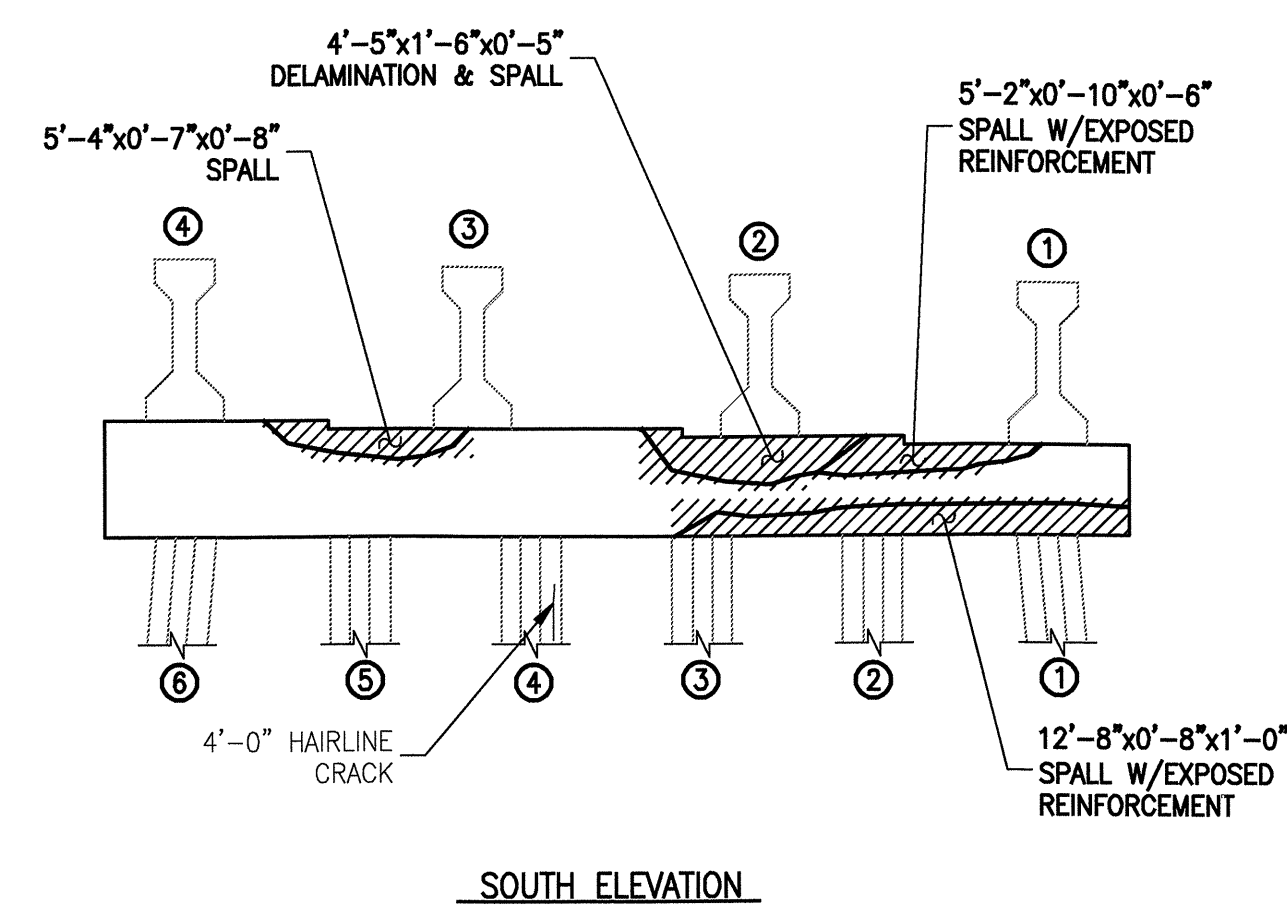
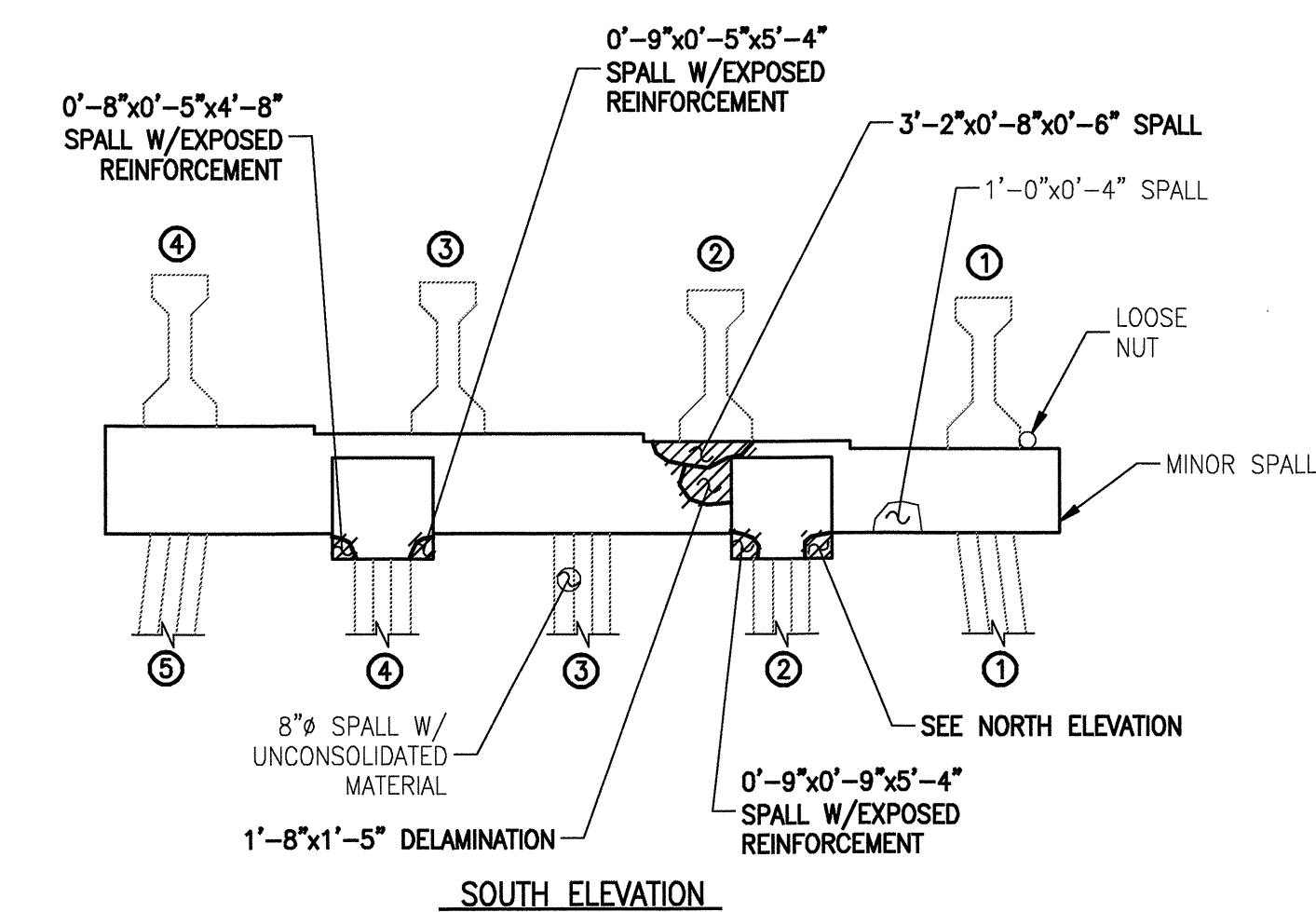
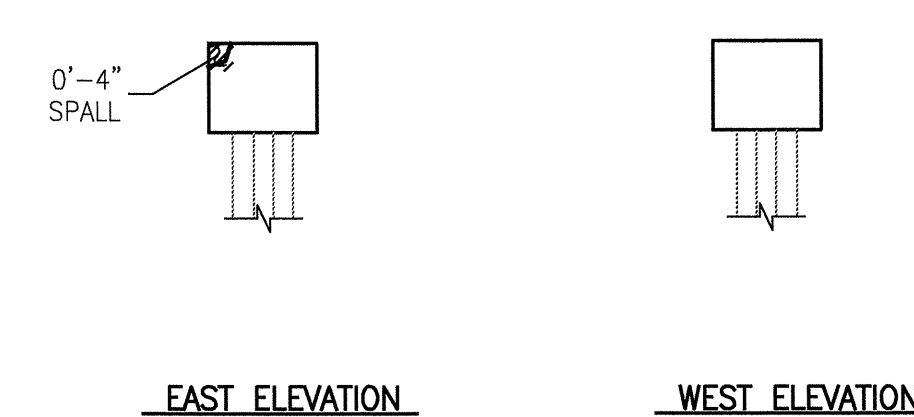
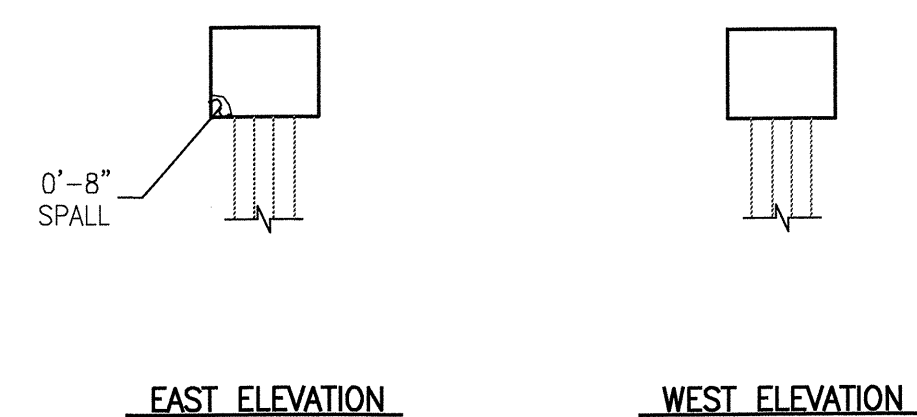
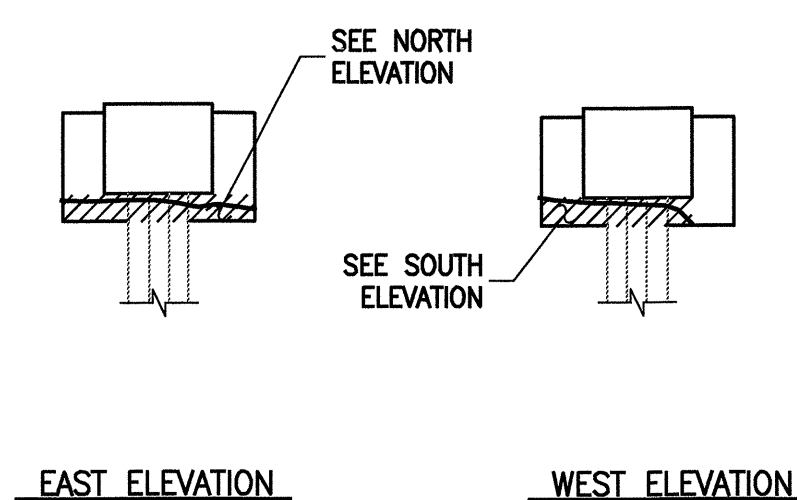
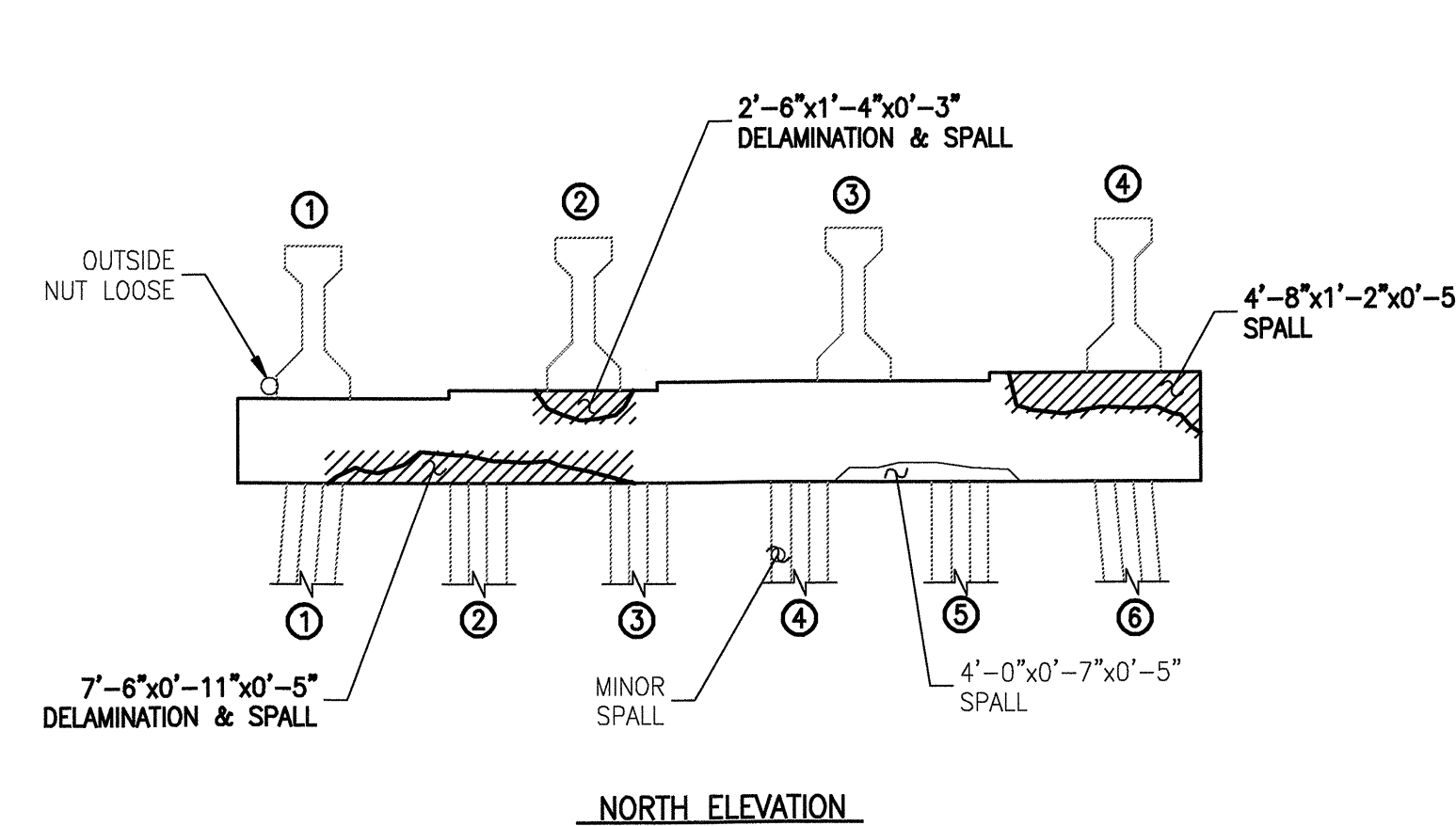
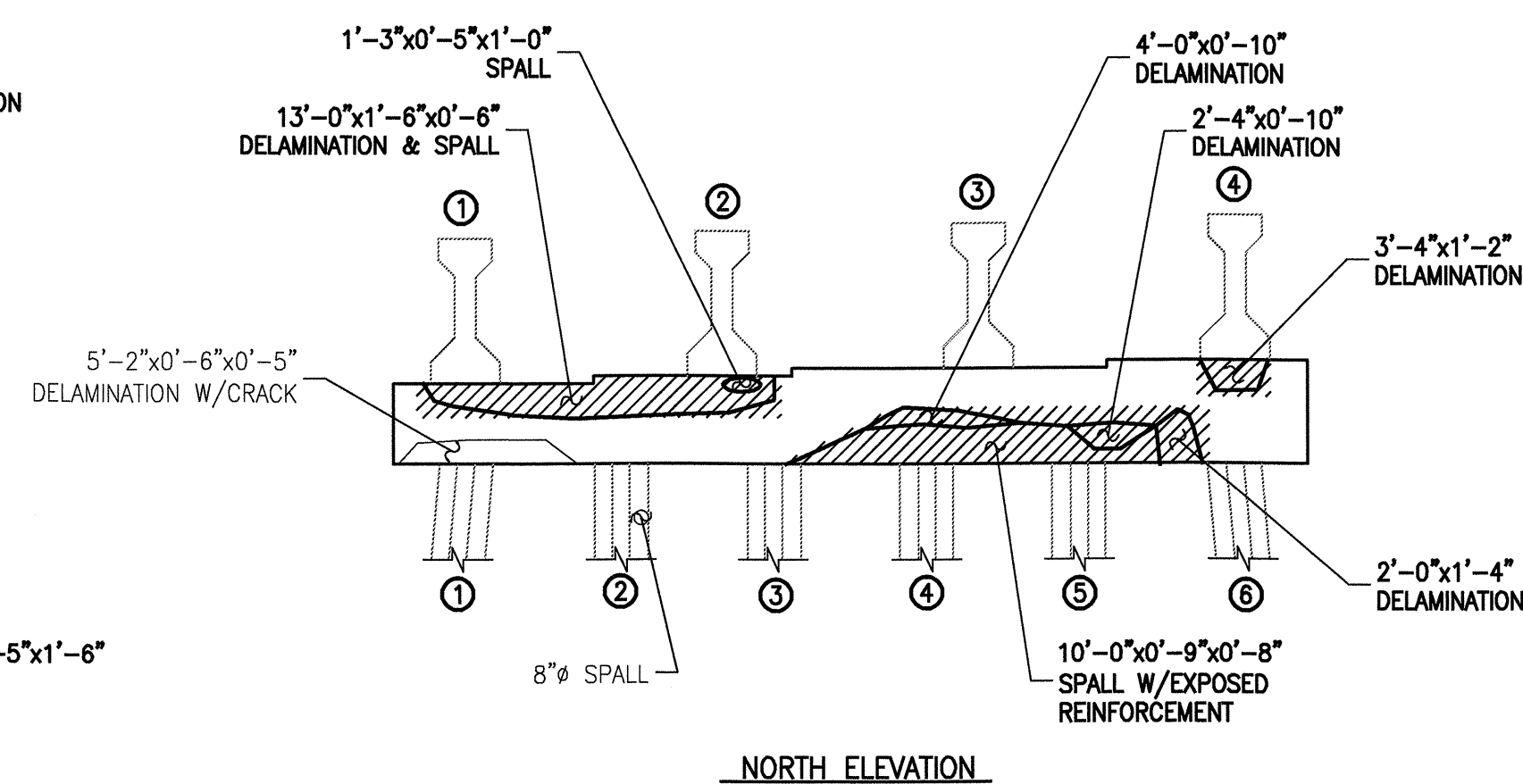
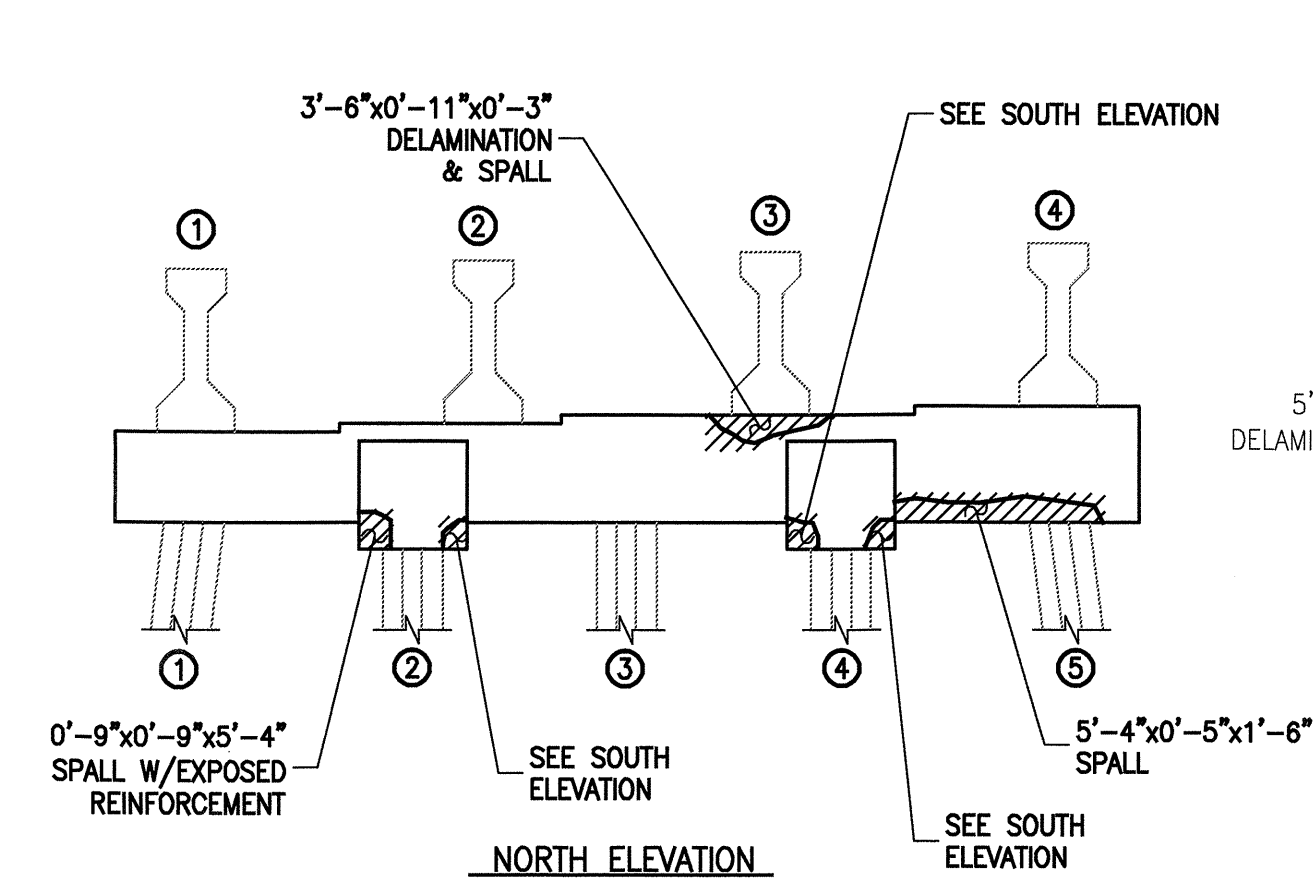
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	4
OVERHEAD SHOTCRETE	CF	9
ADDITIONAL REINFORCING	LBS	18
EPOXY MORTAR (FORMED)	CF	-

## BENT #97

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	18
OVERHEAD SHOTCRETE	CF	8
ADDITIONAL REINFORCING	LBS	84
EPOXY MORTAR (FORMED)	CF	-

## BENT #98

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	4
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	19
EPOXY MORTAR (FORMED)	CF	-



**BENT #96**

**BENT #97**

**BENT #98**

### KEY

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

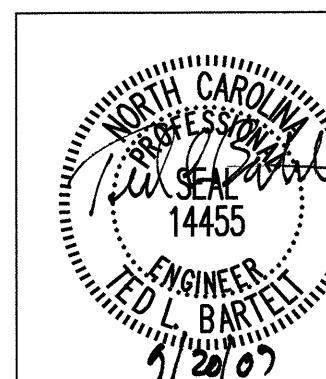


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

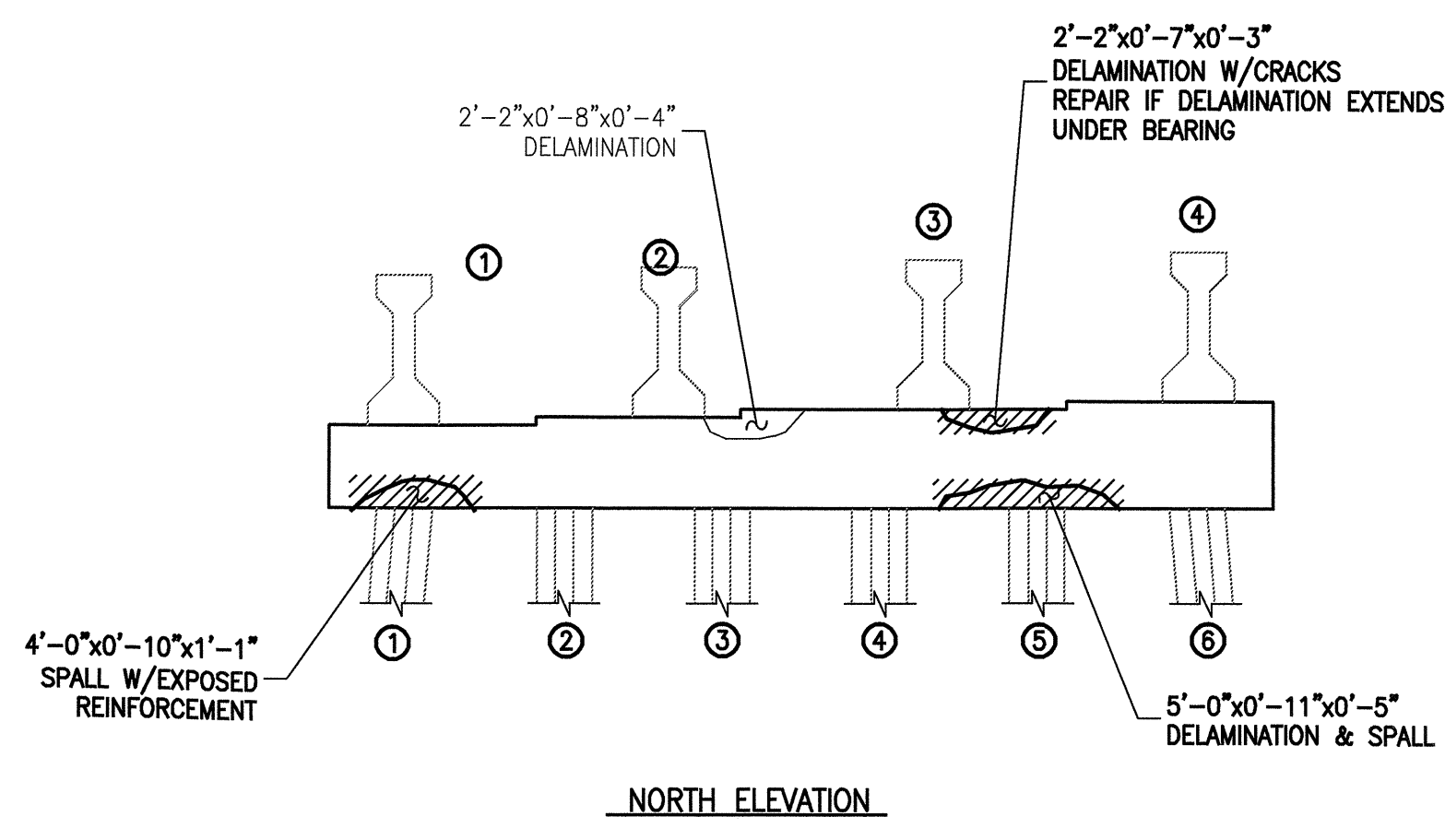
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #96-#98

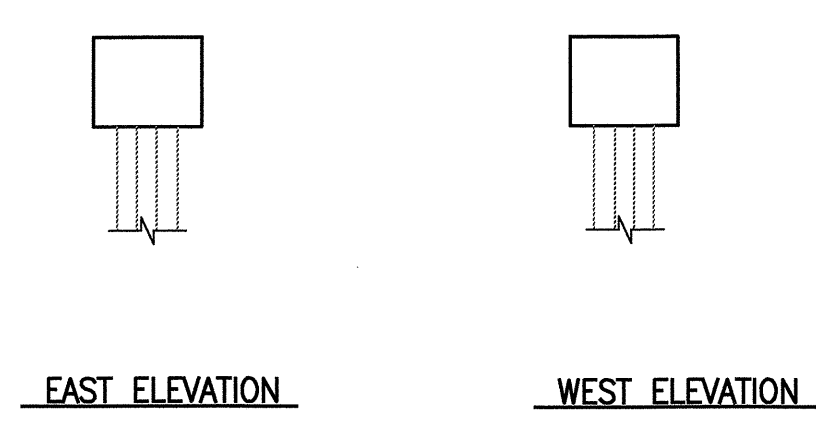


DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

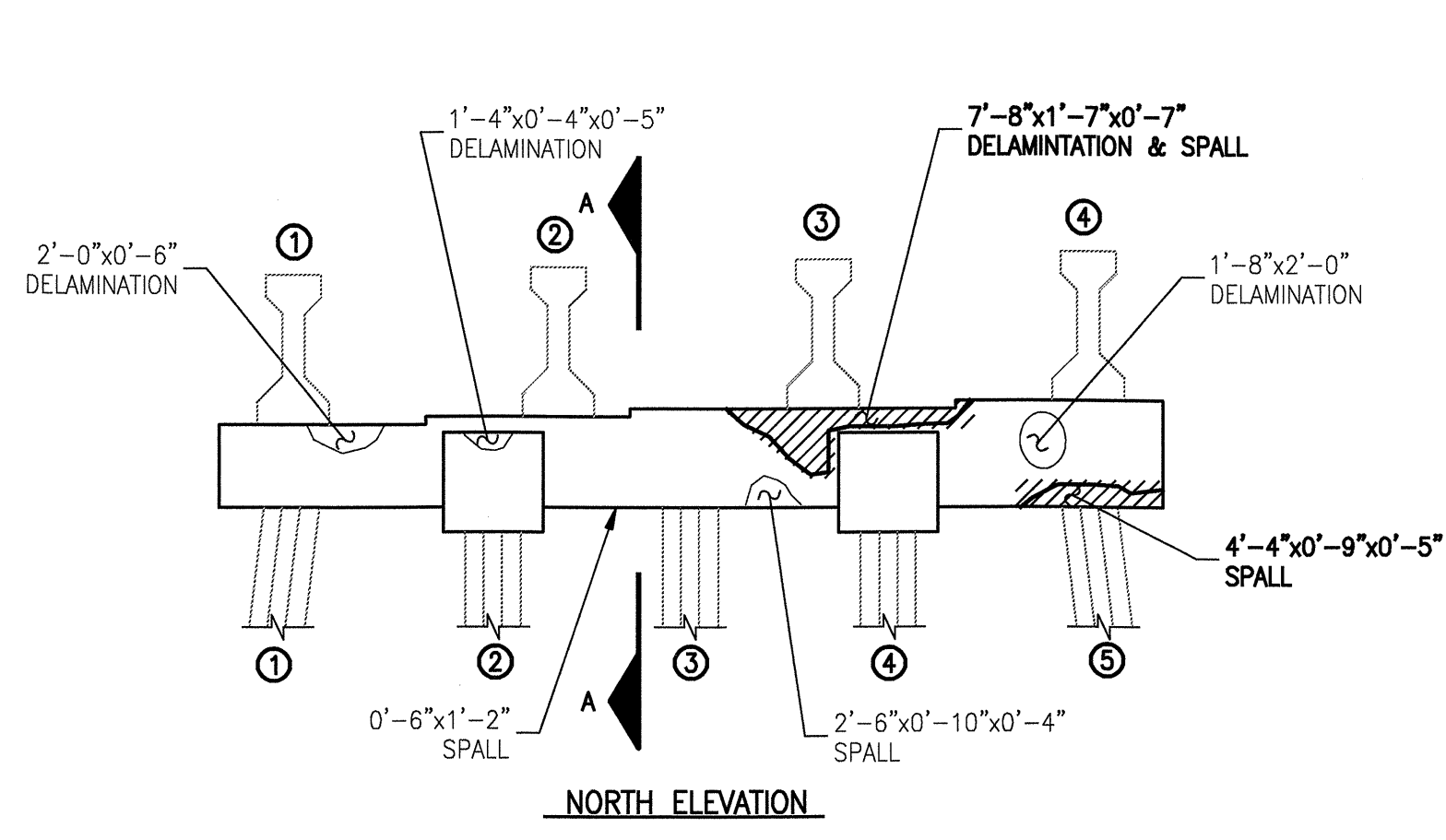
REVISIONS						SHEET NO. 99
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



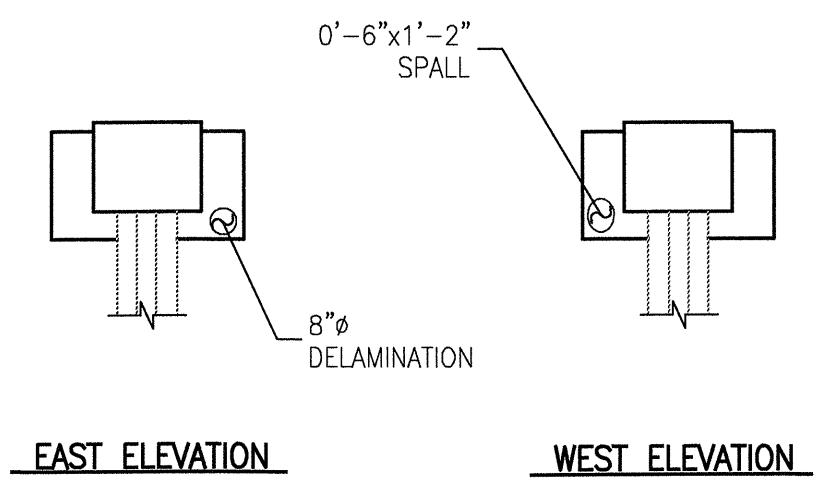
NORTH ELEVATION



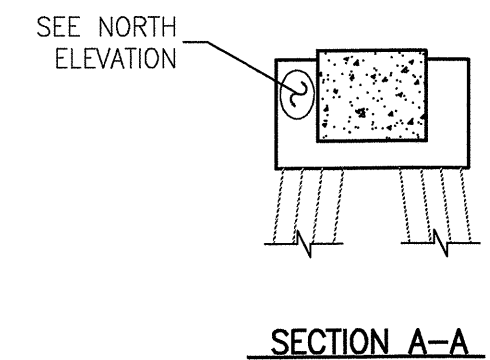
EAST ELEVATION WEST ELEVATION



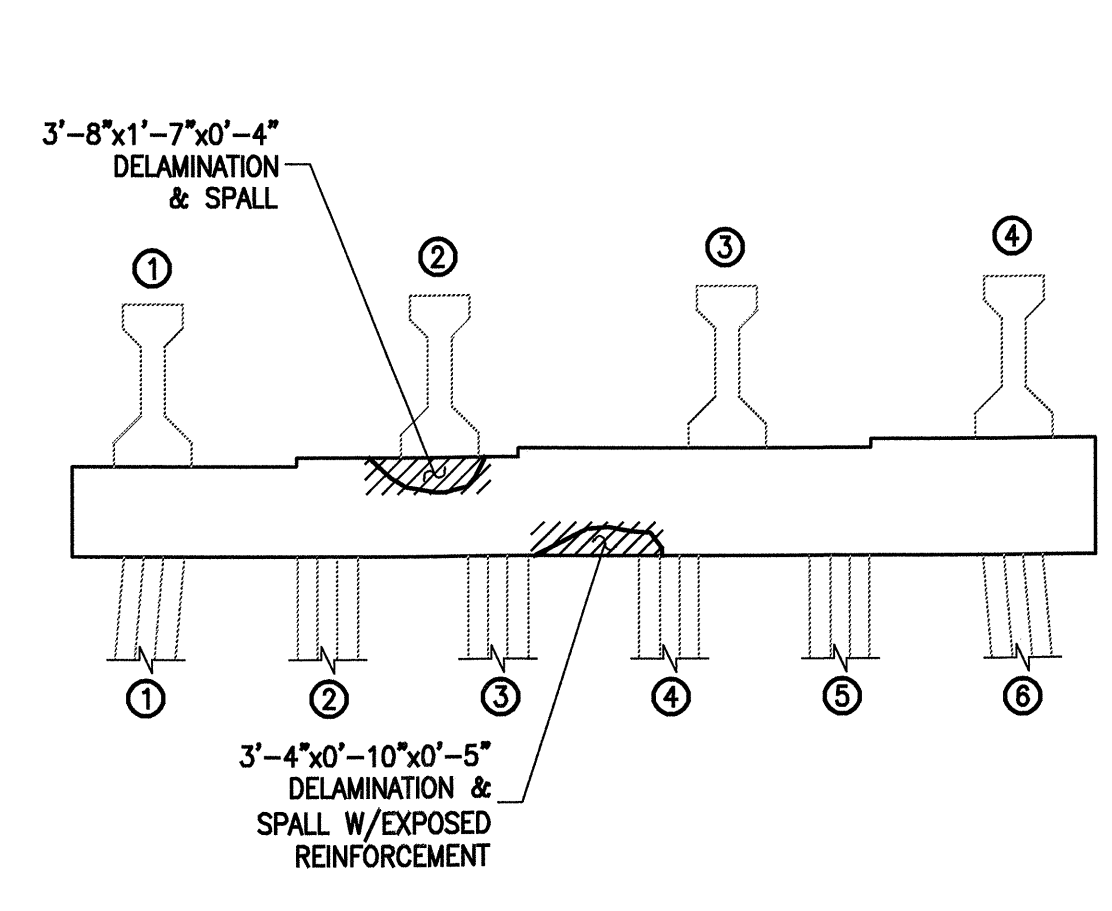
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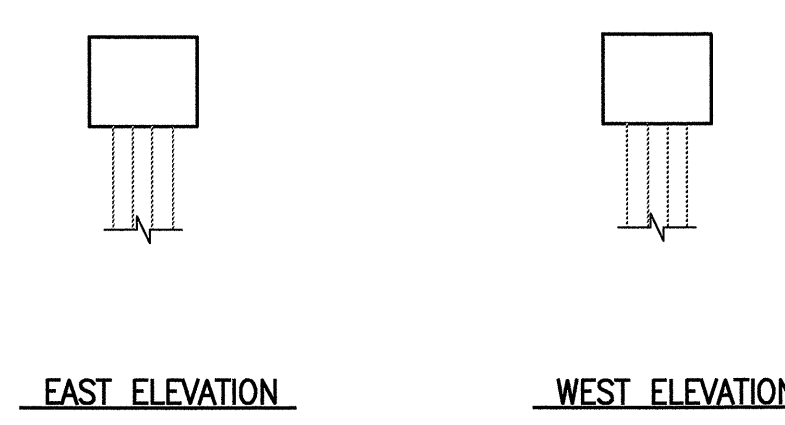
EAST ELEVATION WEST ELEVATION



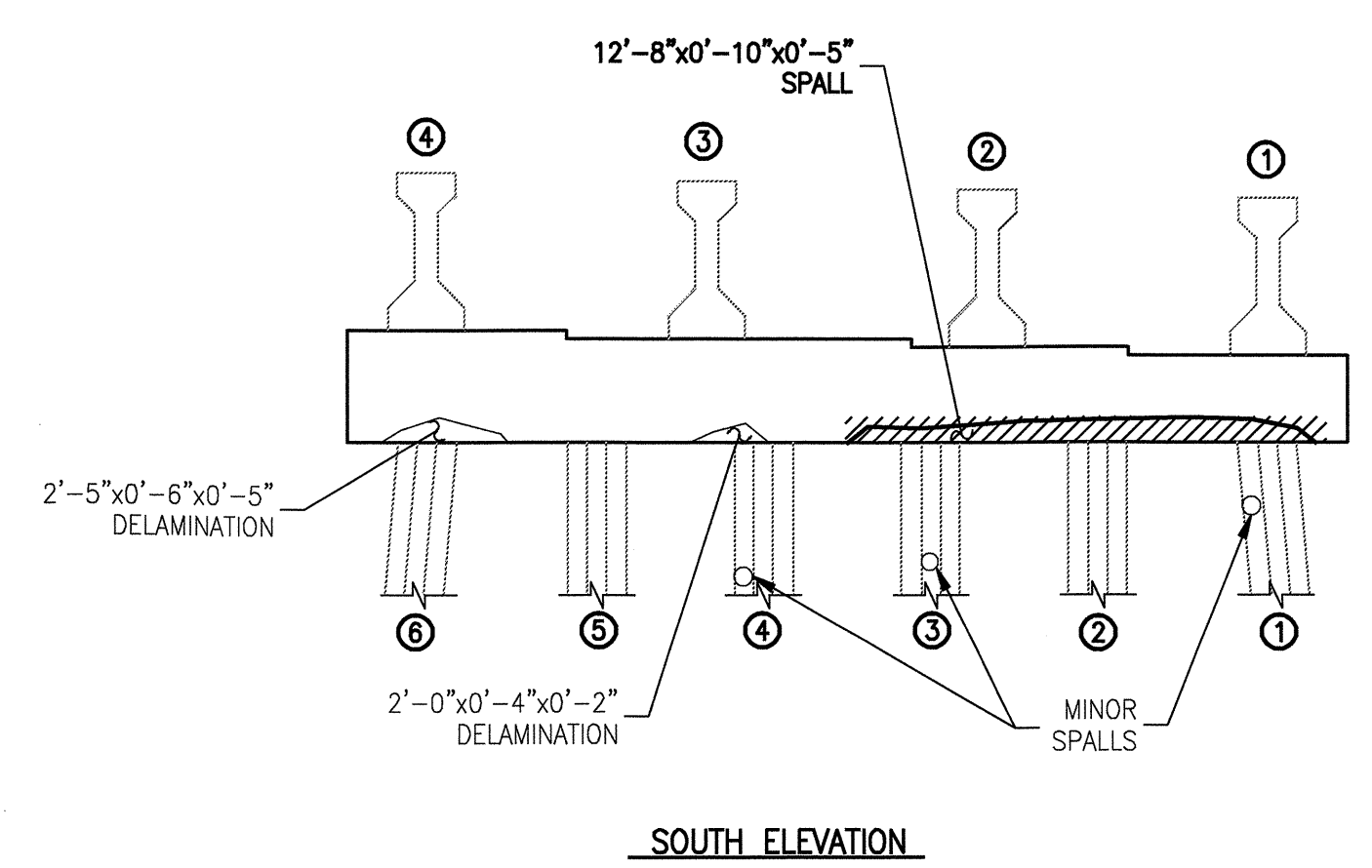
SECTION A-A



NORTH ELEVATION

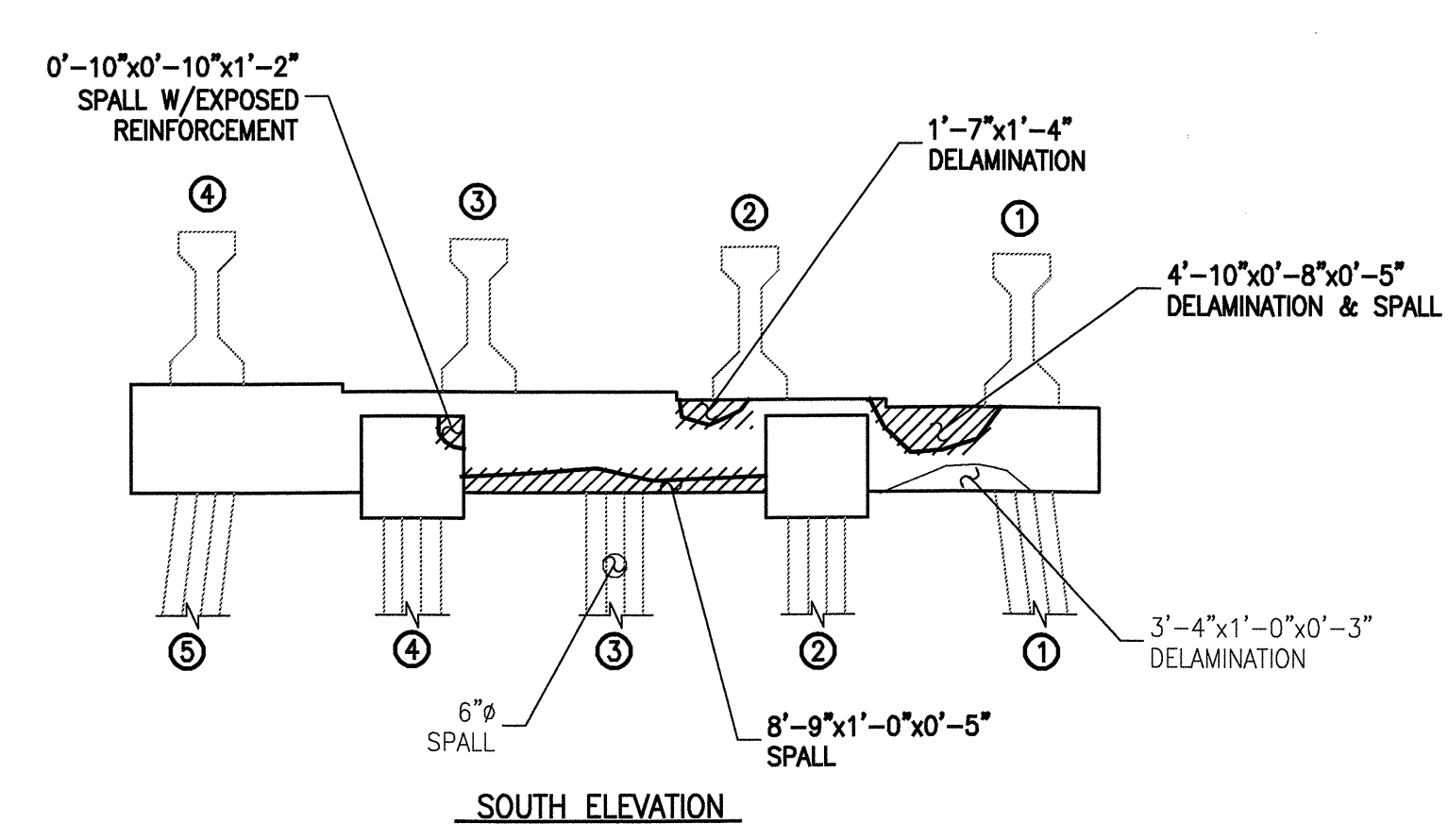


EAST ELEVATION WEST ELEVATION



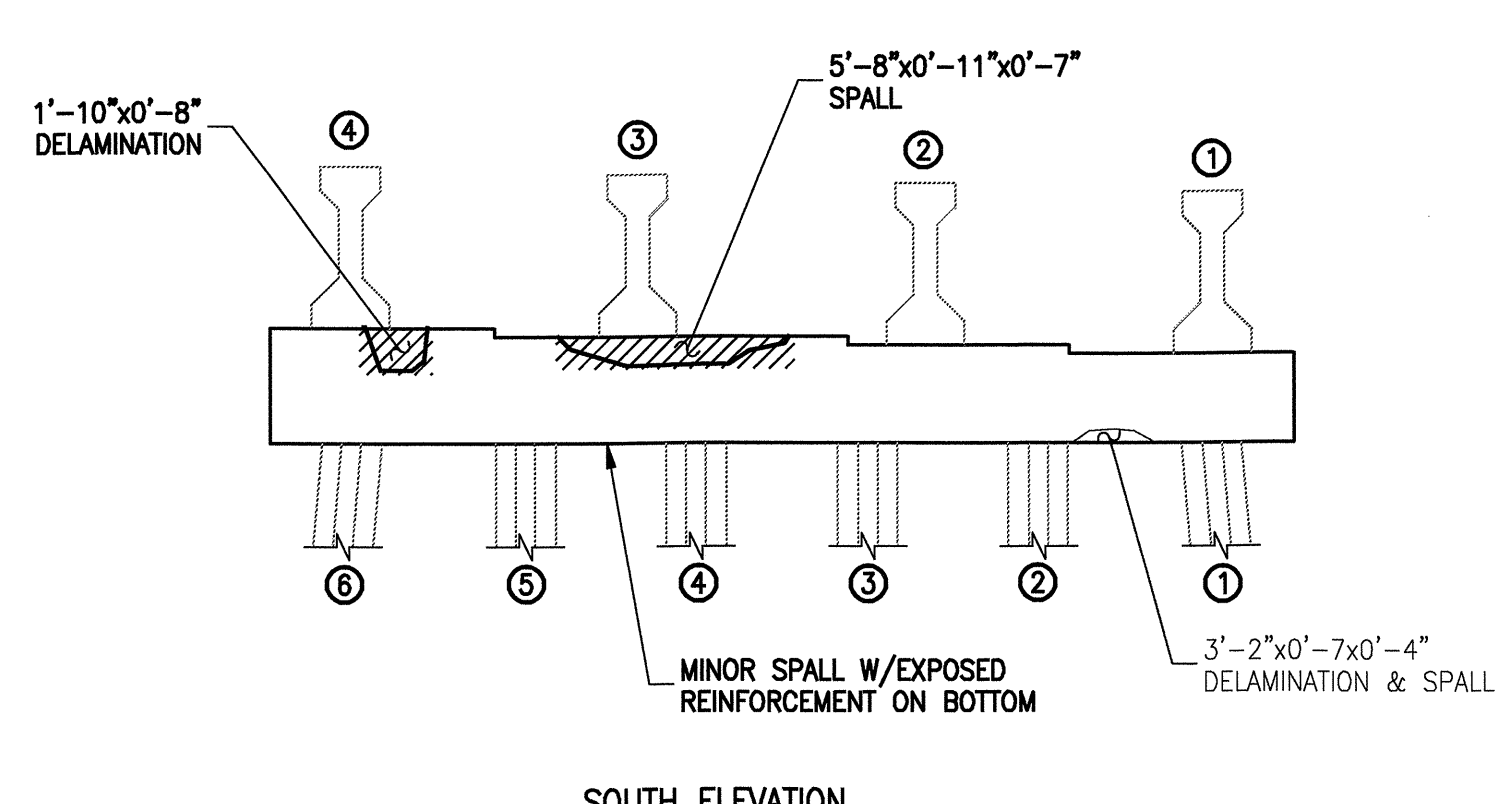
SOUTH ELEVATION

BENT #99



SOUTH ELEVATION

BENT #100



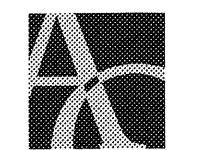
SOUTH ELEVATION

BENT #101

BILL OF MATERIAL			
BENT #99			
REPAIR TYPE	UNIT	QUANTITIES	
		ACTUAL	
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	3	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	6	
EPOXY MORTAR (FORMED)	CF	-	
BENT #100			
REPAIR TYPE	UNIT	QUANTITIES	
		ACTUAL	
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	11	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	43	
EPOXY MORTAR (FORMED)	CF	-	
BENT #101			
REPAIR TYPE	UNIT	QUANTITIES	
		ACTUAL	
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	5	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	30	
EPOXY MORTAR (FORMED)	CF	-	

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

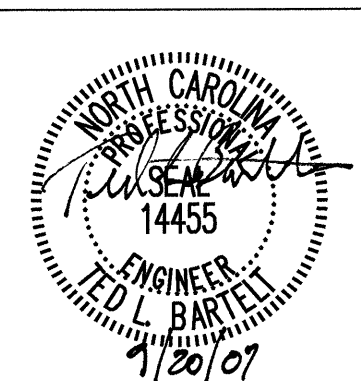
PLAN PREPARED BY:



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PROJECT NO. B-5014  
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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #99-#101



DRAWN BY: G.R. COLS DATE: 4/28/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO. 100
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

# BILL OF MATERIAL

## BENT #102

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	6
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	41
EPOXY MORTAR (FORMED)	CF	-



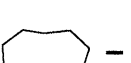
## BENT #103

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	12
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	51
EPOXY MORTAR (FORMED)	CF	-

## BENT #104

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	17
OVERHEAD SHOTCRETE	CF	7
ADDITIONAL REINFORCING	LBS	58
EPOXY MORTAR (FORMED)	CF	-

### KEY

-  - DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
-  - GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
-  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

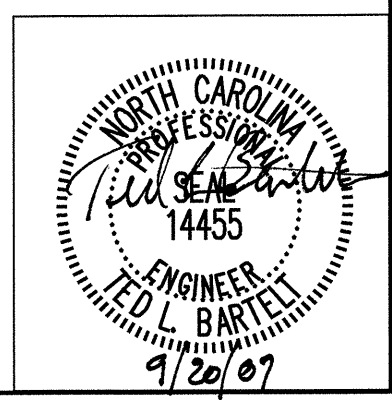
PLAN PREPARED BY:



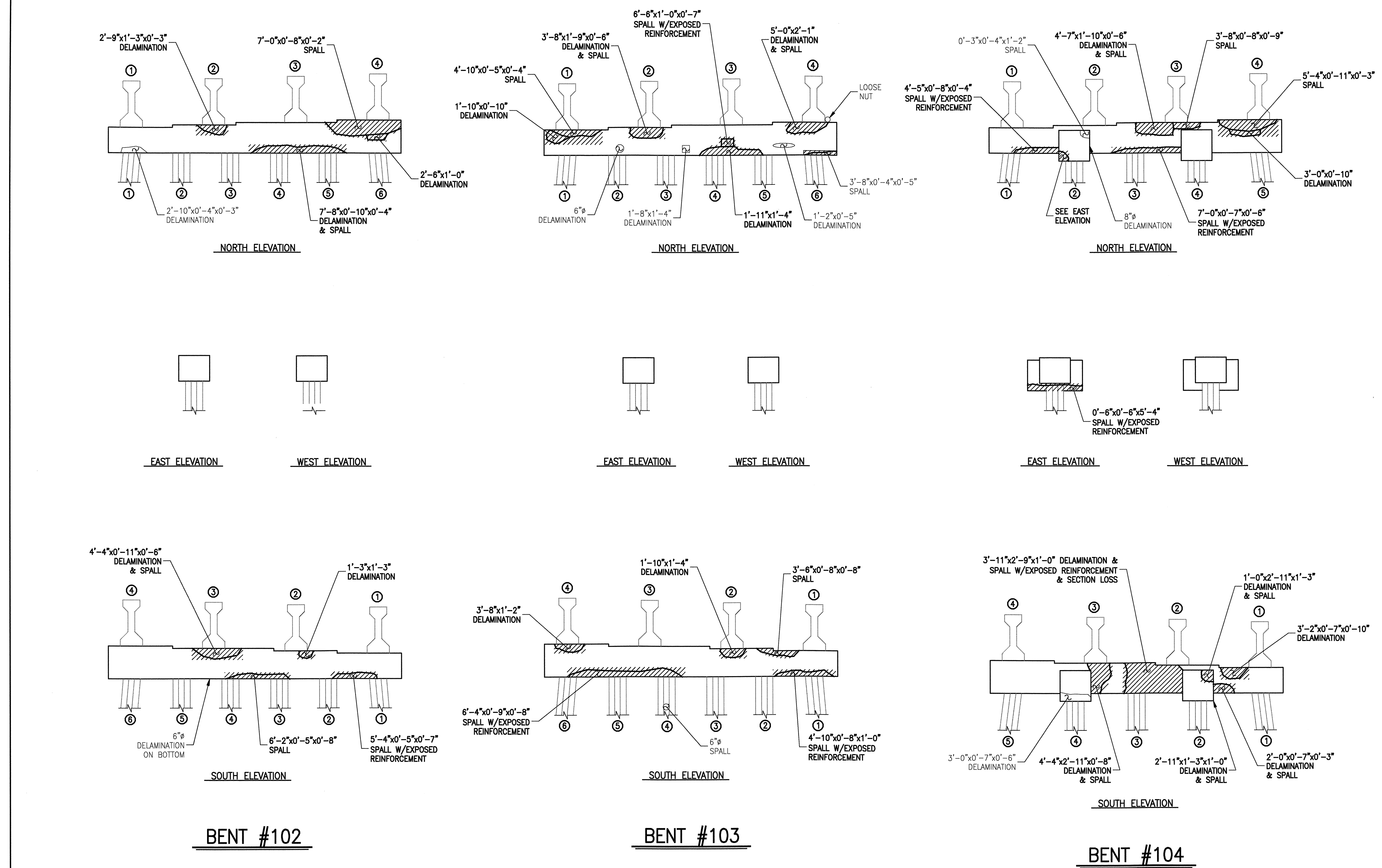
**ALPHA & OMEGA GROUP**  
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PROJECT NO. B-5014  
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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #102-#104**



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	101
1			3			TOTAL SHEETS
2			4			166

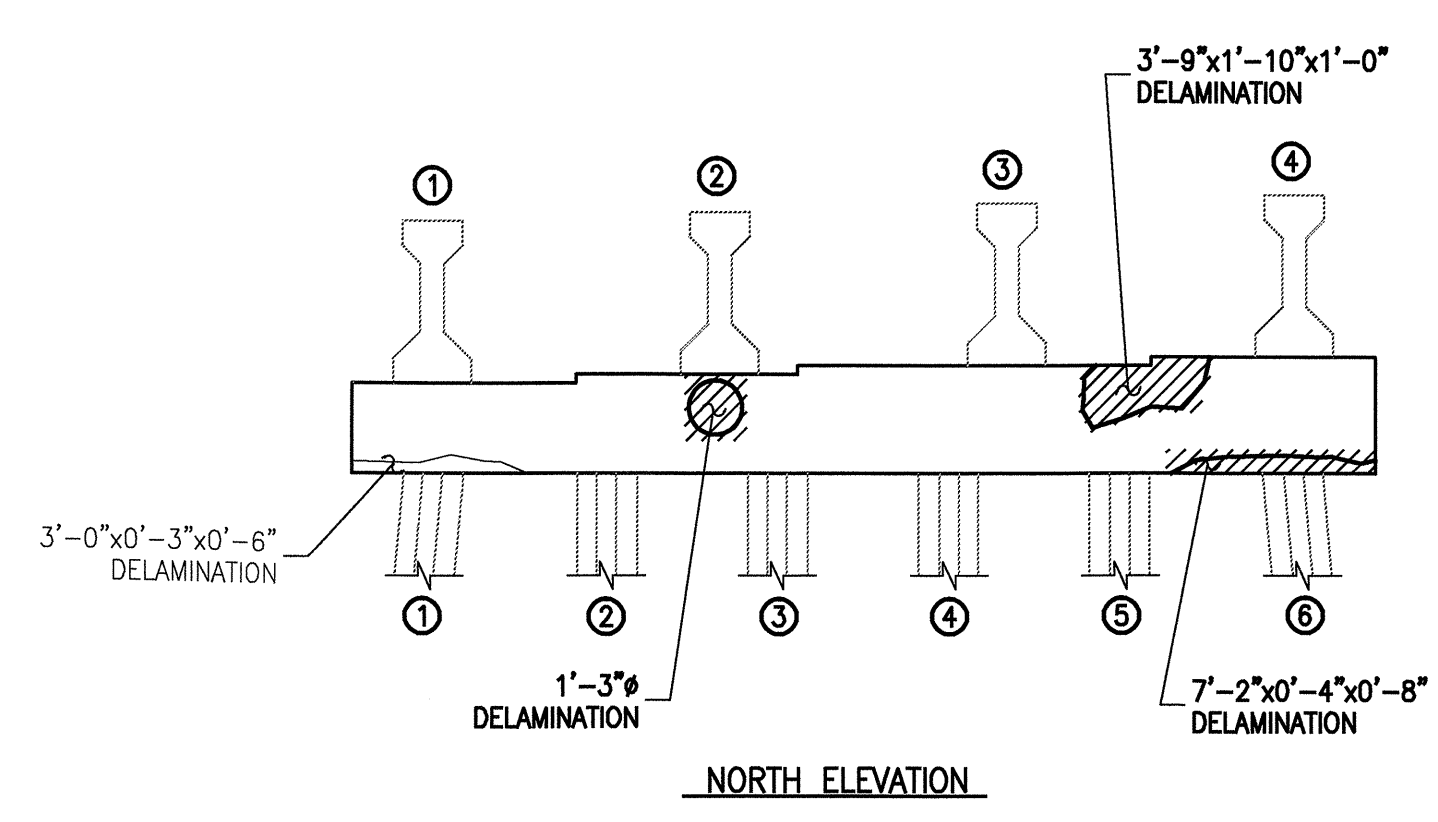


DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

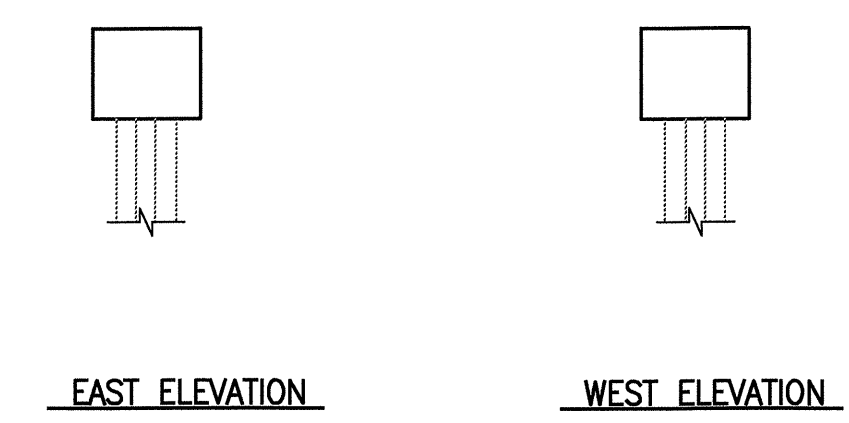


### BILL OF MATERIAL

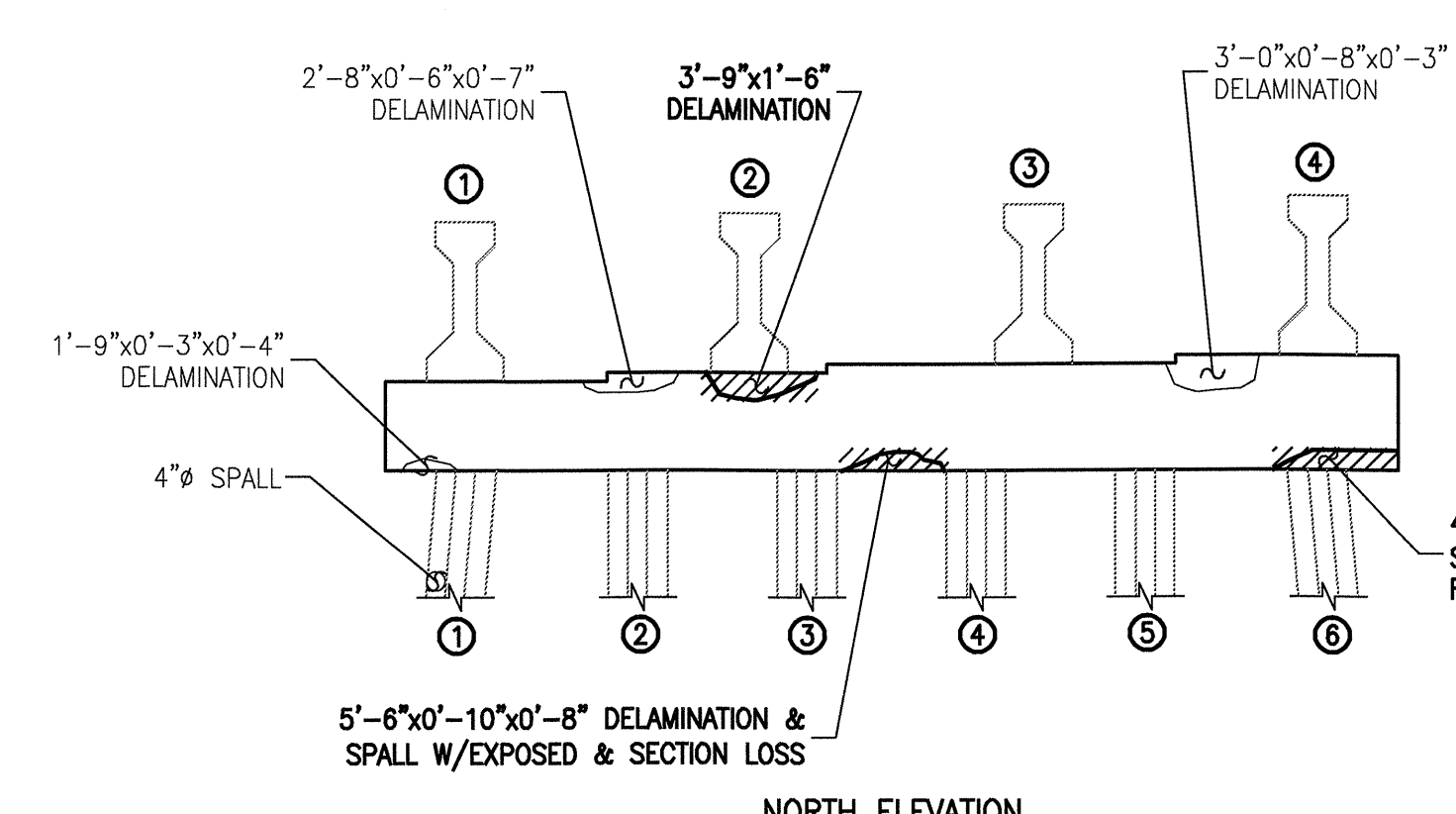
BENT #105			
REPAIR TYPE	QUANTITIES		
	UNIT	QUANTITY	ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	5	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	17	
EPOXY MORTAR (FORMED)	CF	-	
BENT #106			
REPAIR TYPE	QUANTITIES		
	UNIT	QUANTITY	ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	9	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	40	
EPOXY MORTAR (FORMED)	CF	-	
BENT #107			
REPAIR TYPE	QUANTITIES		
	UNIT	QUANTITY	ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	6	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	47	
EPOXY MORTAR (FORMED)	CF	-	



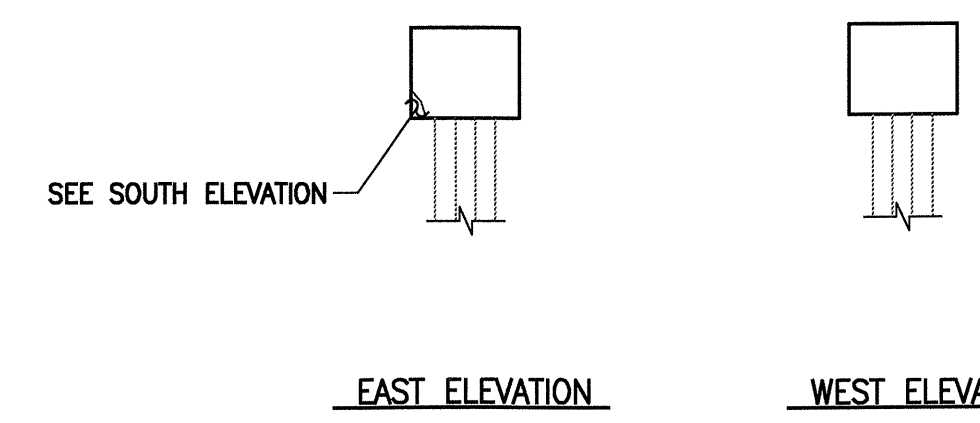
NORTH ELEVATION



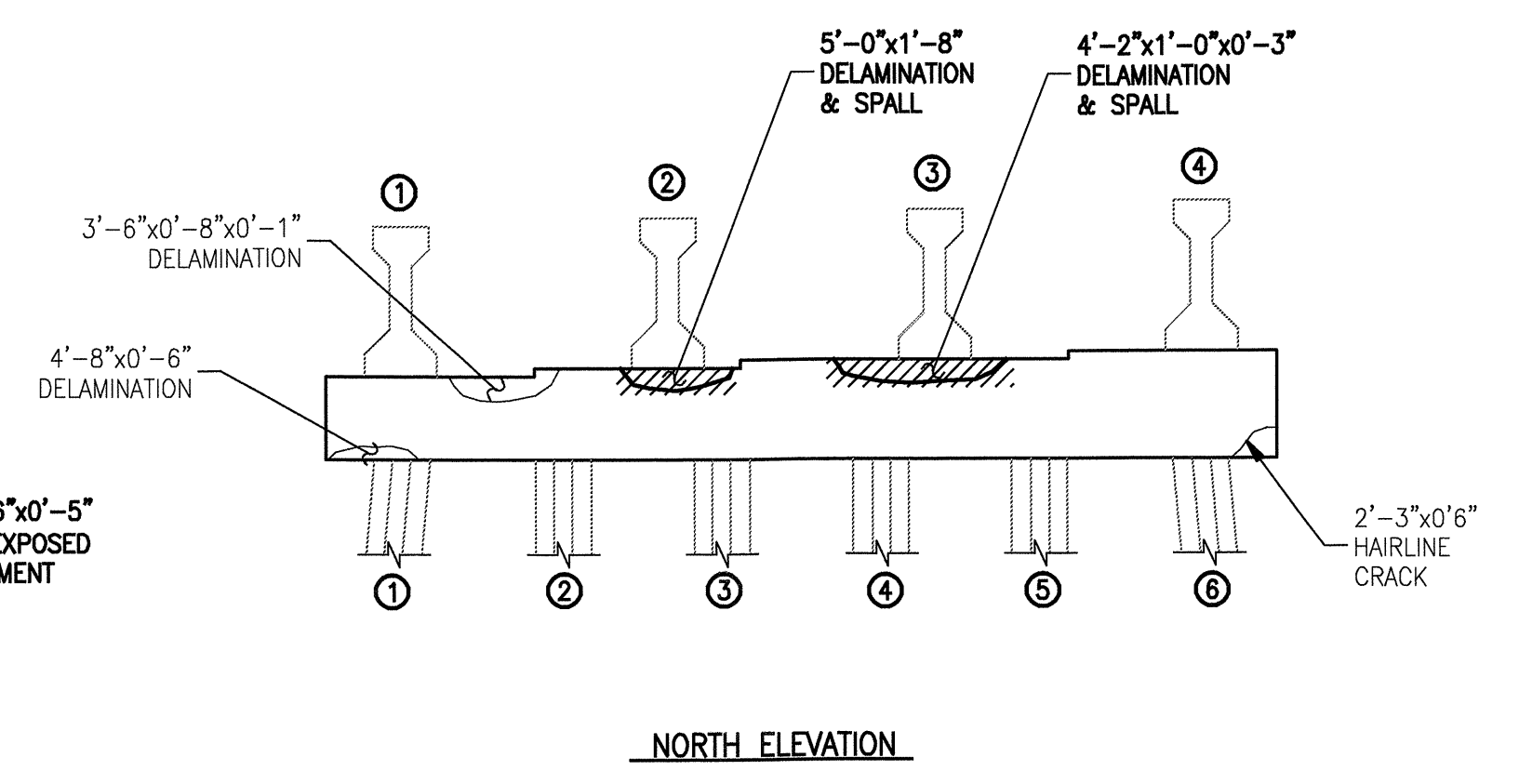
EAST ELEVATION WEST ELEVATION



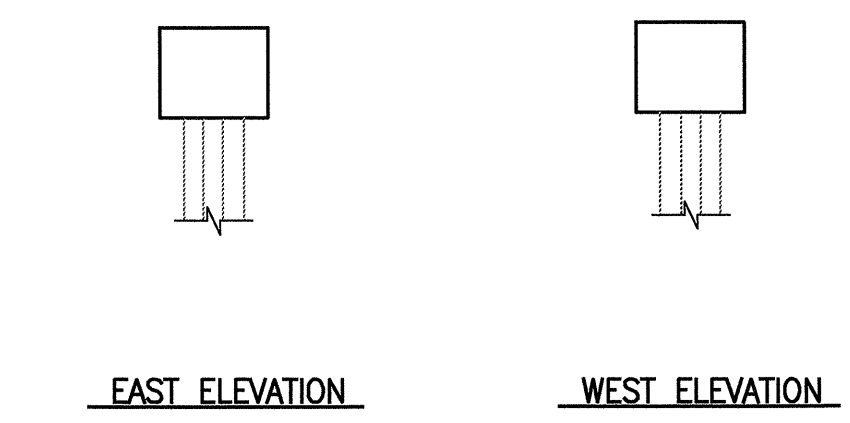
NORTH ELEVATION



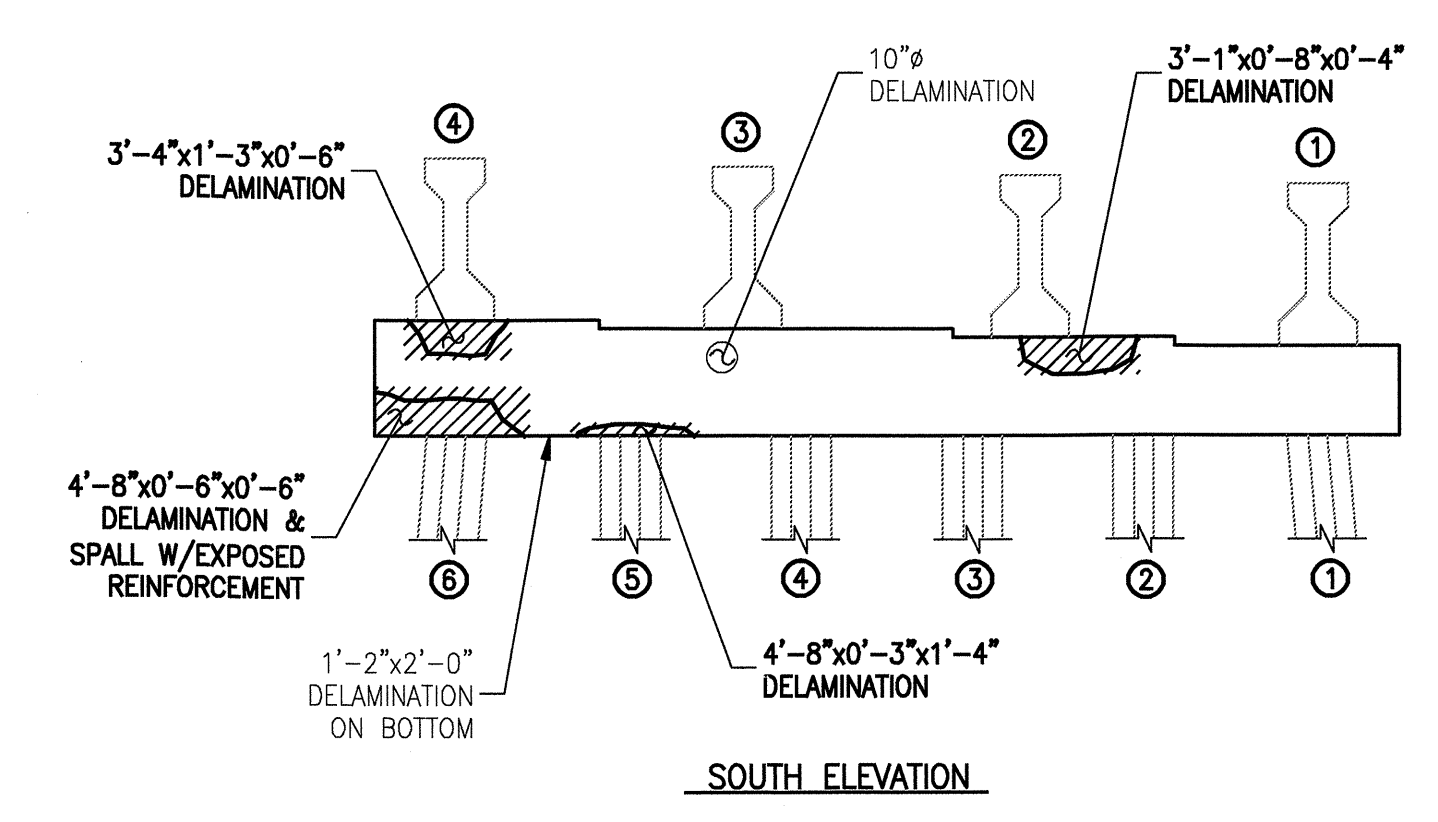
EAST ELEVATION WEST ELEVATION



NORTH ELEVATION

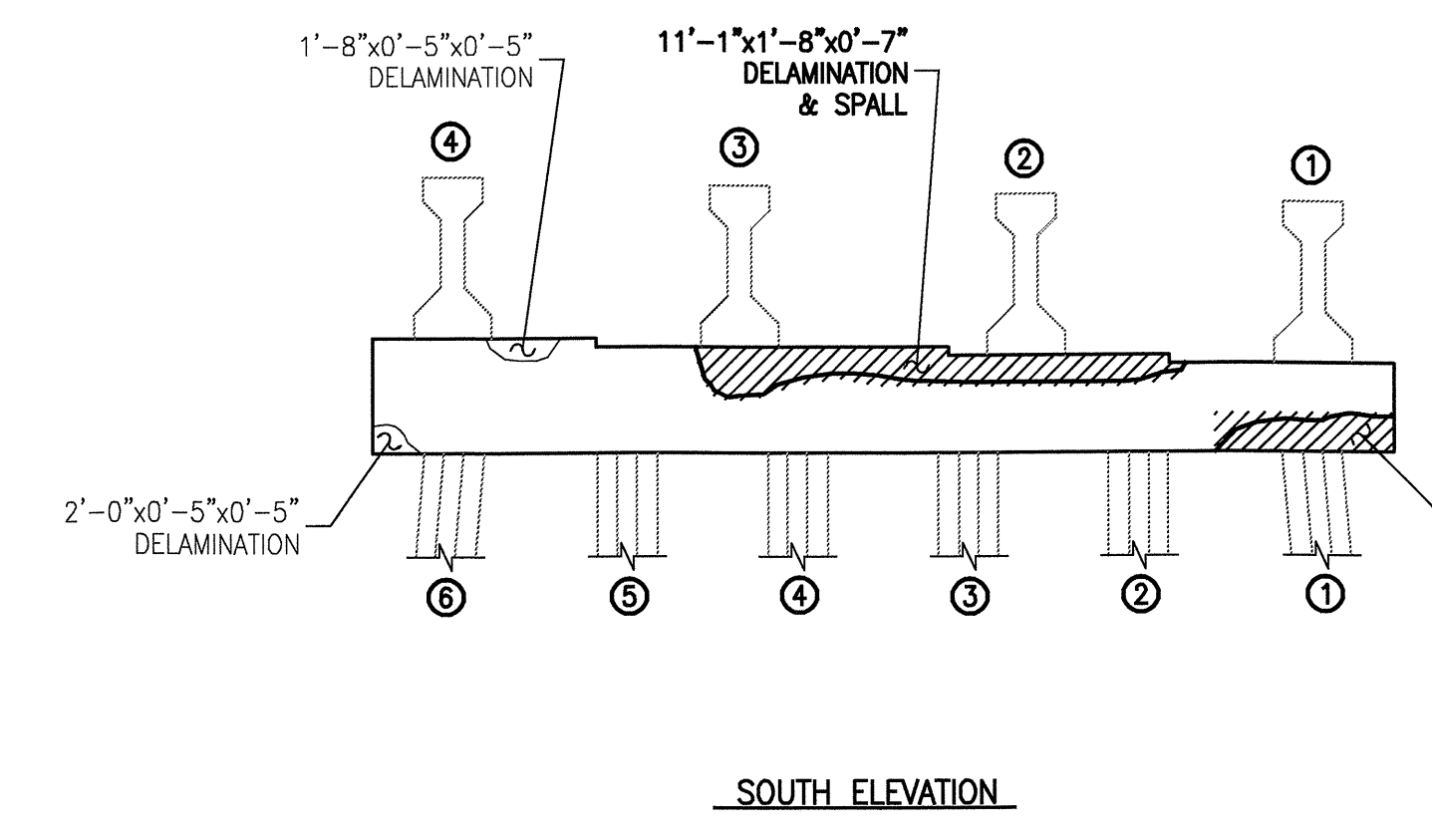


EAST ELEVATION WEST ELEVATION



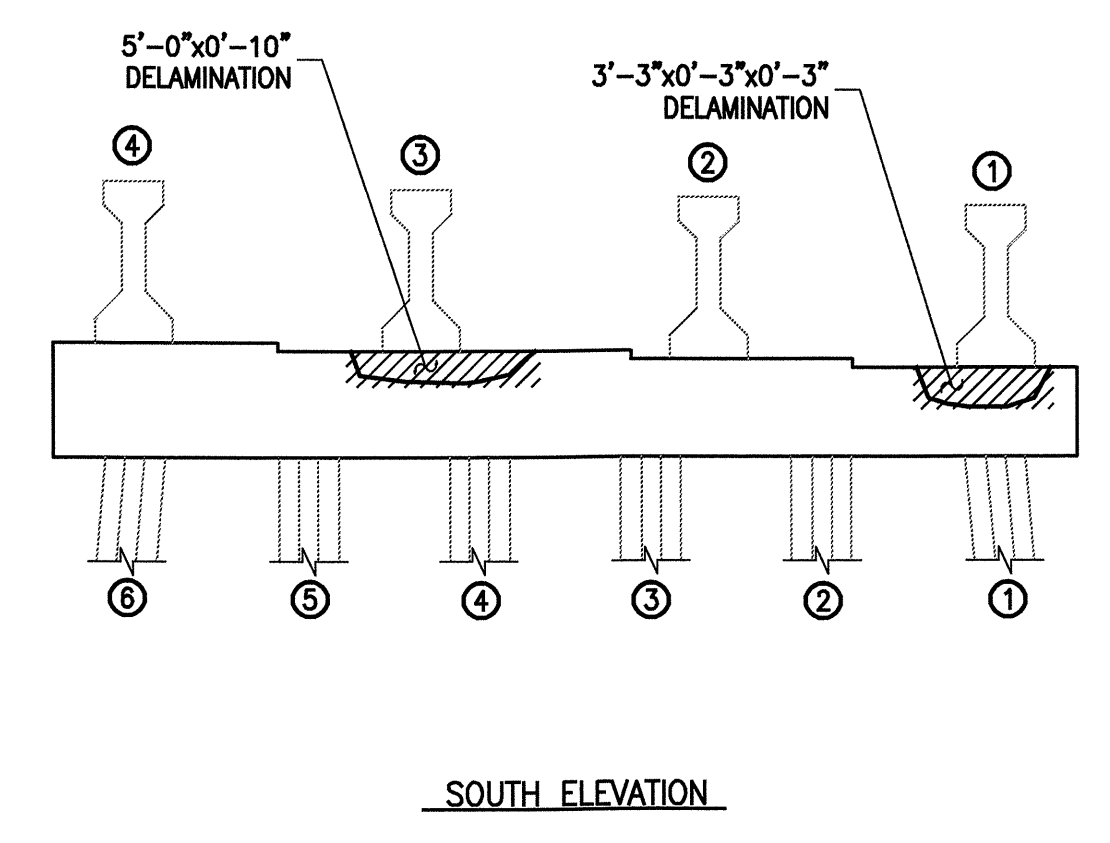
SOUTH ELEVATION

BENT #105



SOUTH ELEVATION

BENT #106

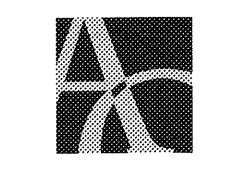


SOUTH ELEVATION

BENT #107

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

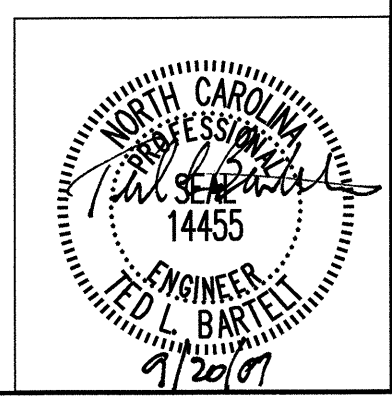
PLAN PREPARED BY:



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 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com  
 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #105-#107



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO. 102
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

# BILL OF MATERIAL

## BENT #108

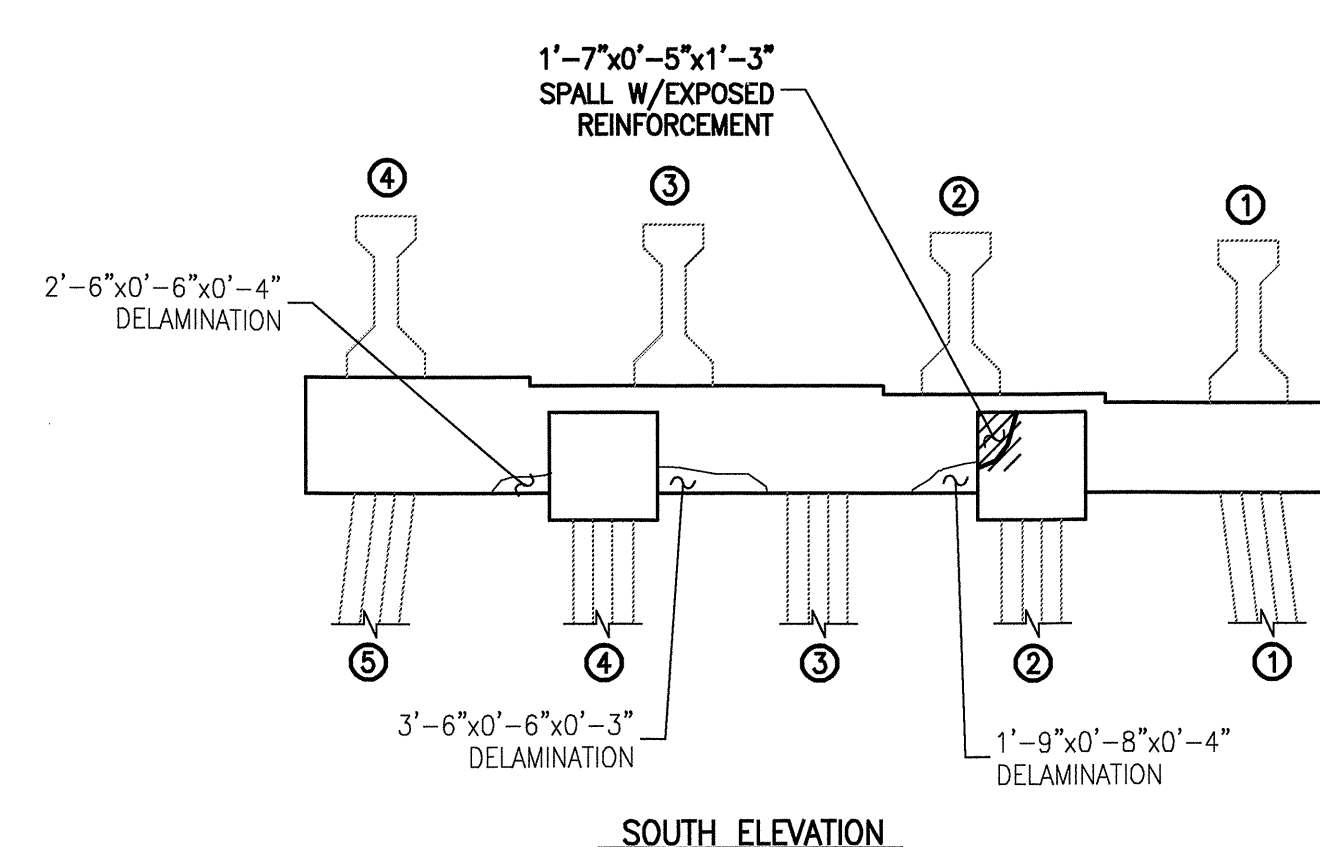
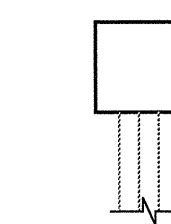
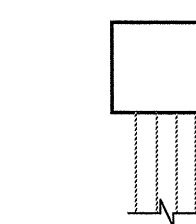
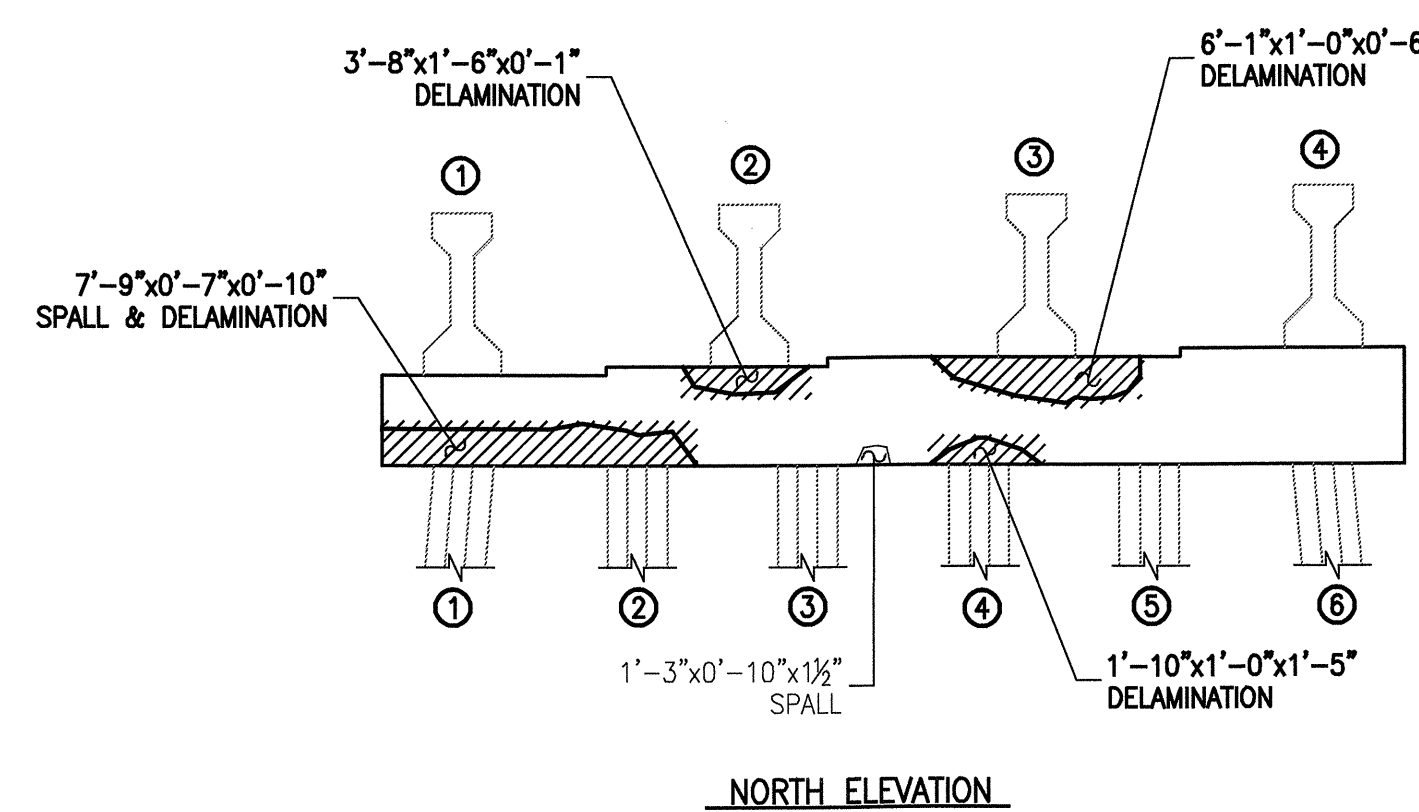
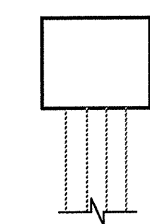
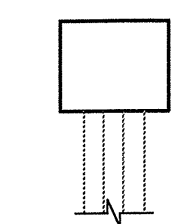
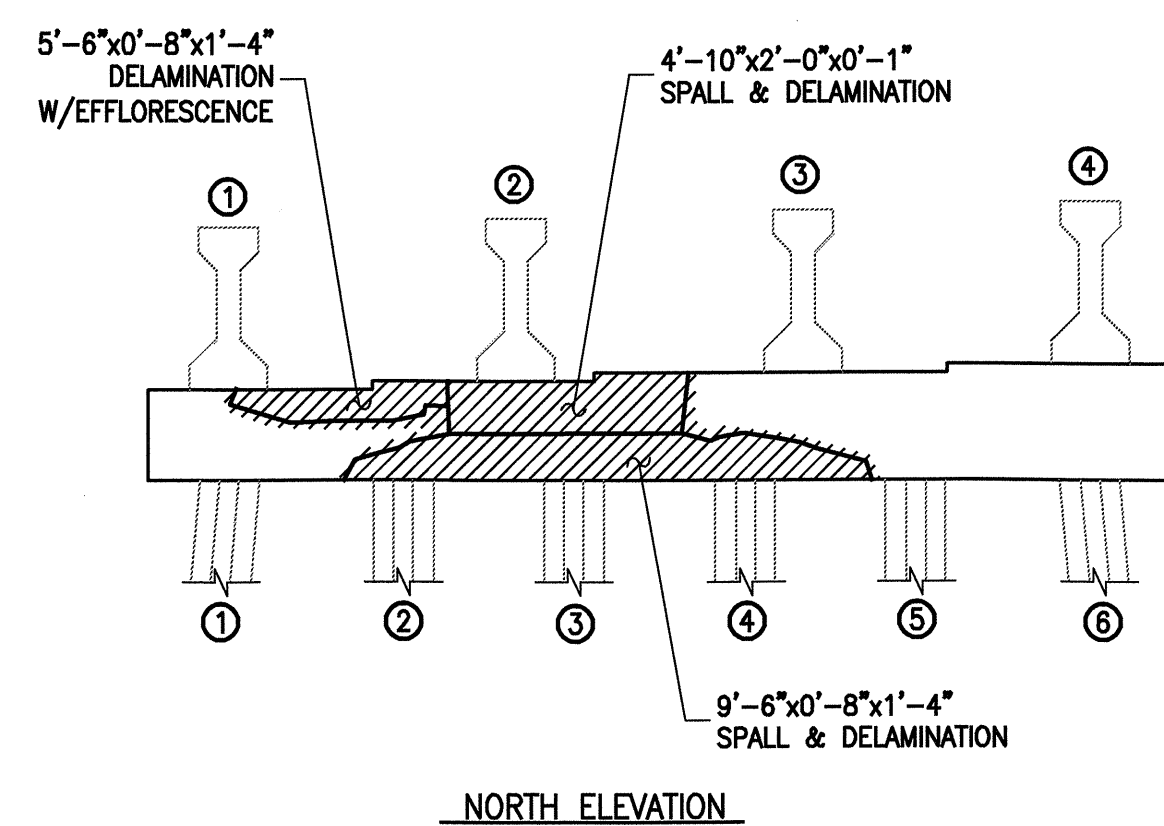
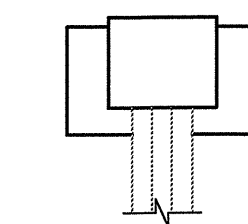
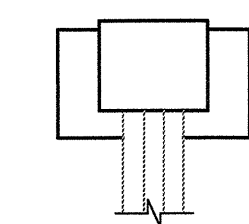
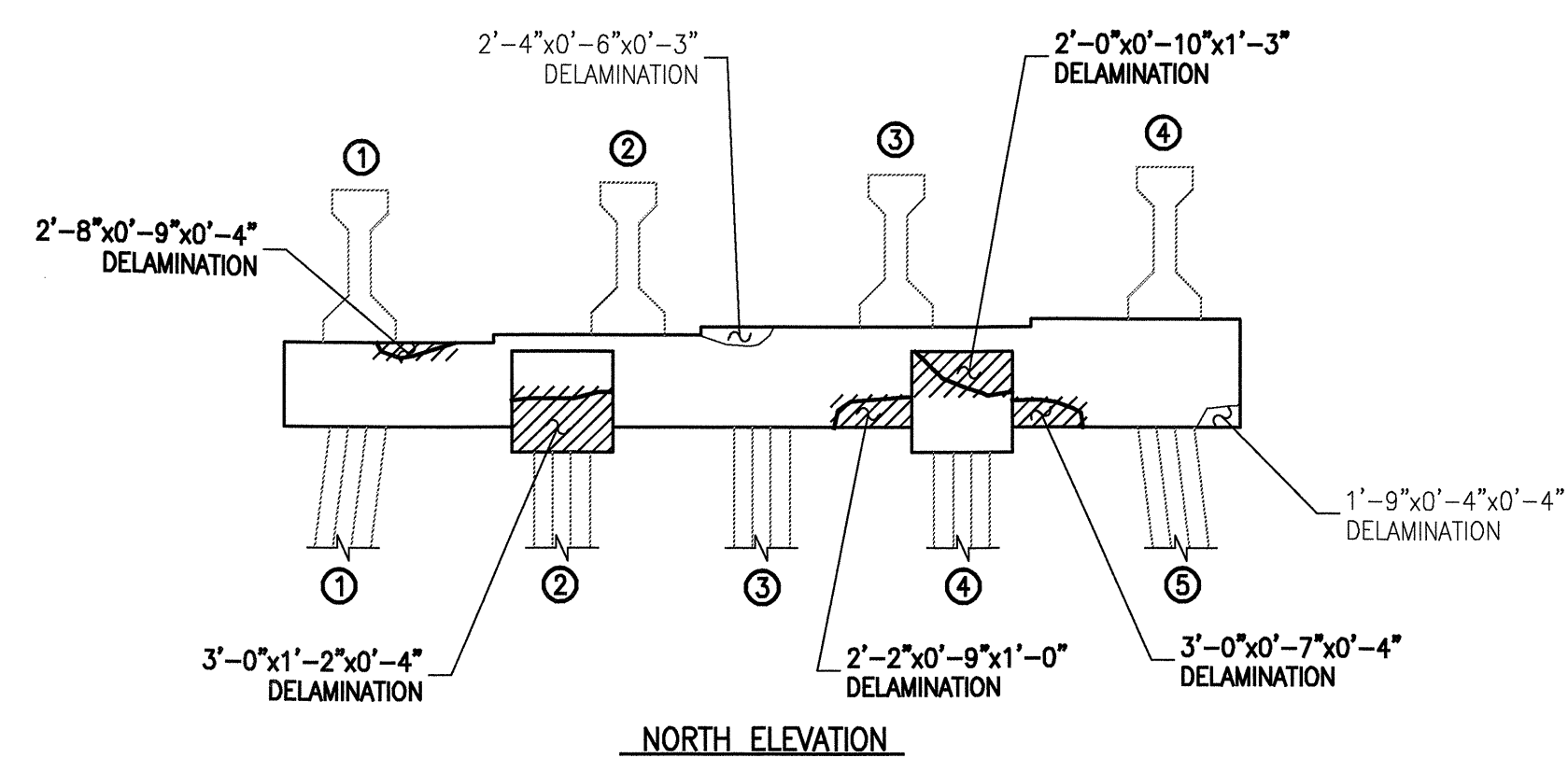
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	3
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	7
EPOXY MORTAR (FORMED)	CF	-

## BENT #109

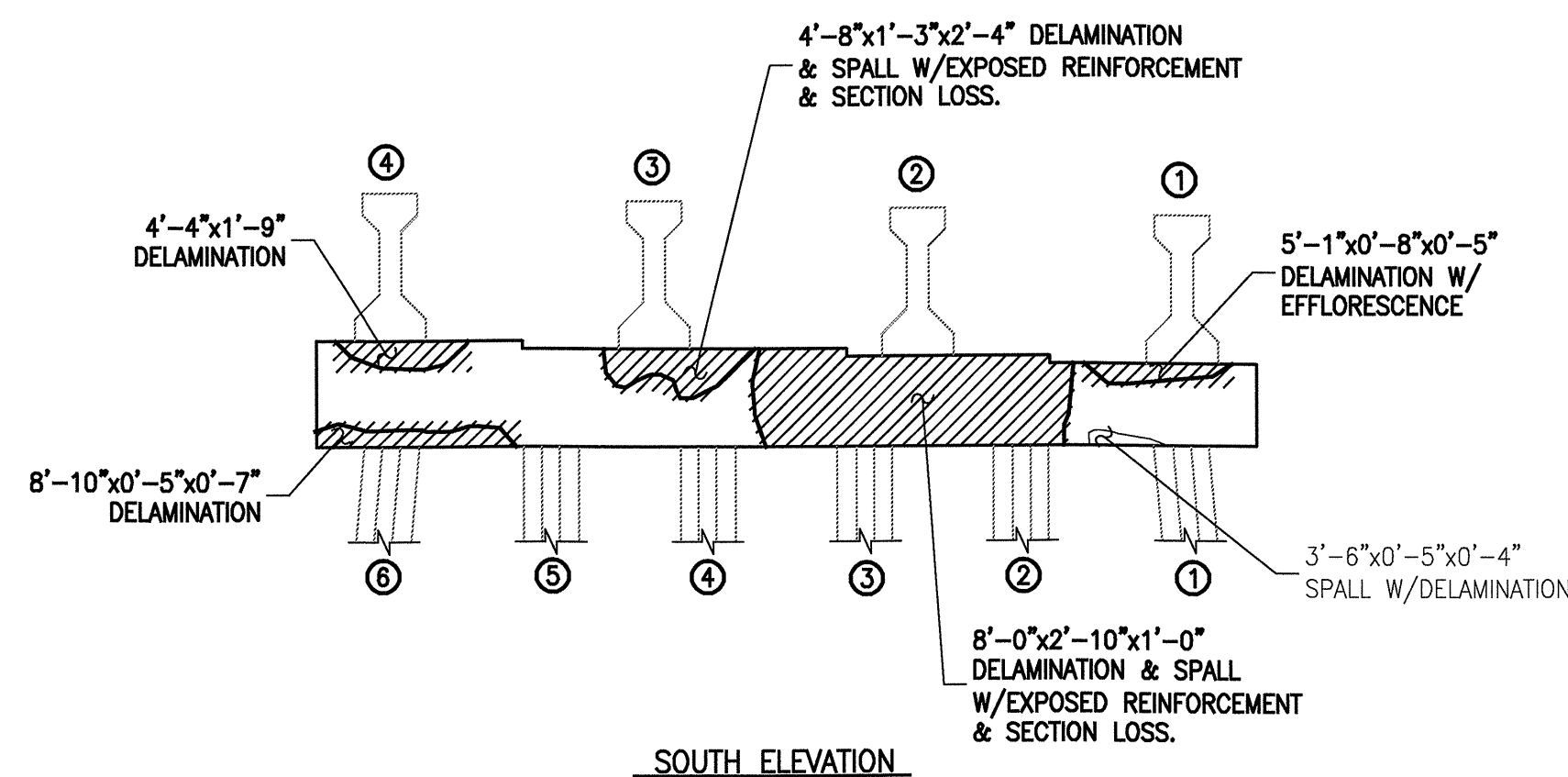
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	6
VERTICAL SHOTCRETE	CF	18
OVERHEAD SHOTCRETE	CF	10
ADDITIONAL REINFORCING	LBS	87
EPOXY MORTAR (FORMED)	CF	-

## BENT #110

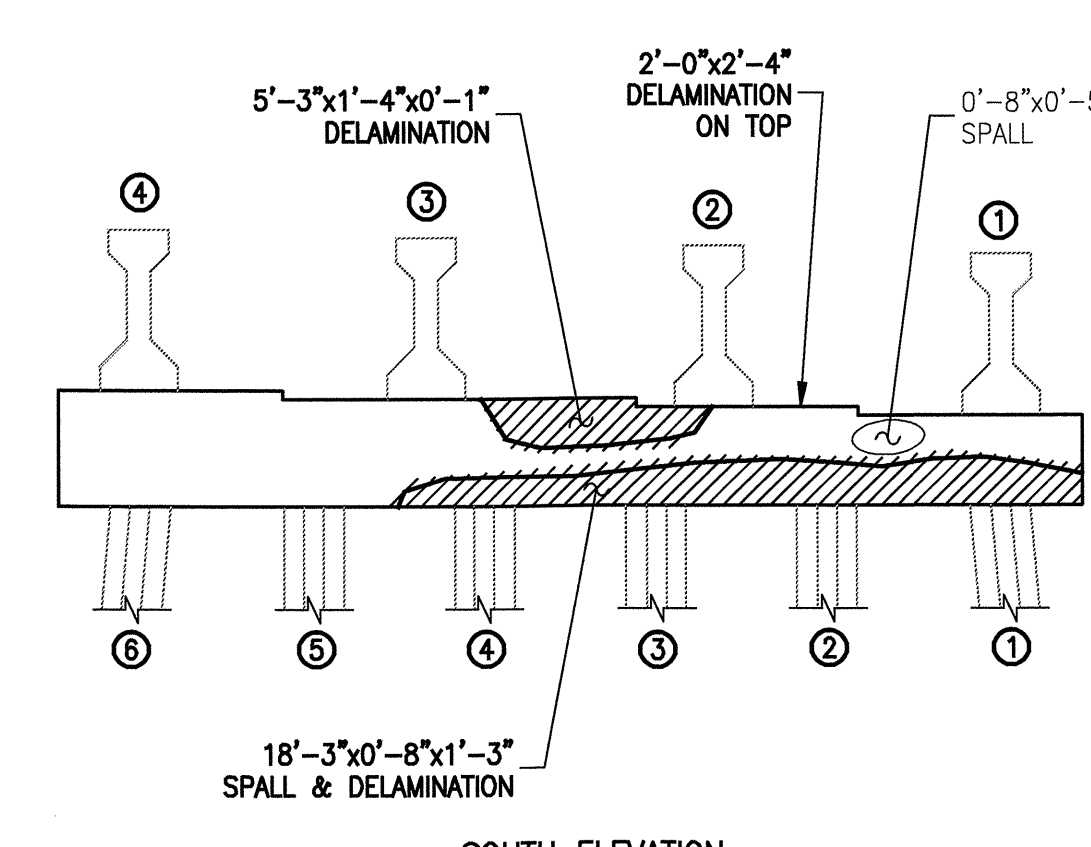
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	13
OVERHEAD SHOTCRETE	CF	12
ADDITIONAL REINFORCING	LBS	40
EPOXY MORTAR (FORMED)	CF	-



**BENT #108**



**BENT #109**



**BENT #110**

### KEY

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



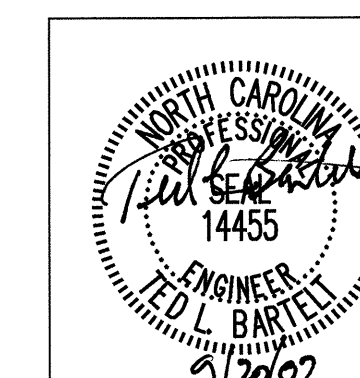
**ALPHA & OMEGA GROUP**  
CIVIL & STRUCTURAL ENGINEERS

4911 Green Road Suite 107 Raleigh, NC 27616  
Phone 919 981 0310 Fax 919 981 0431  
Email info@aogroup.com www.aogroup.com  
AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BONNER BRIDGE REPAIR  
LOW LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #108-#110



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

**BILL OF MATERIAL**

**BENT #111**

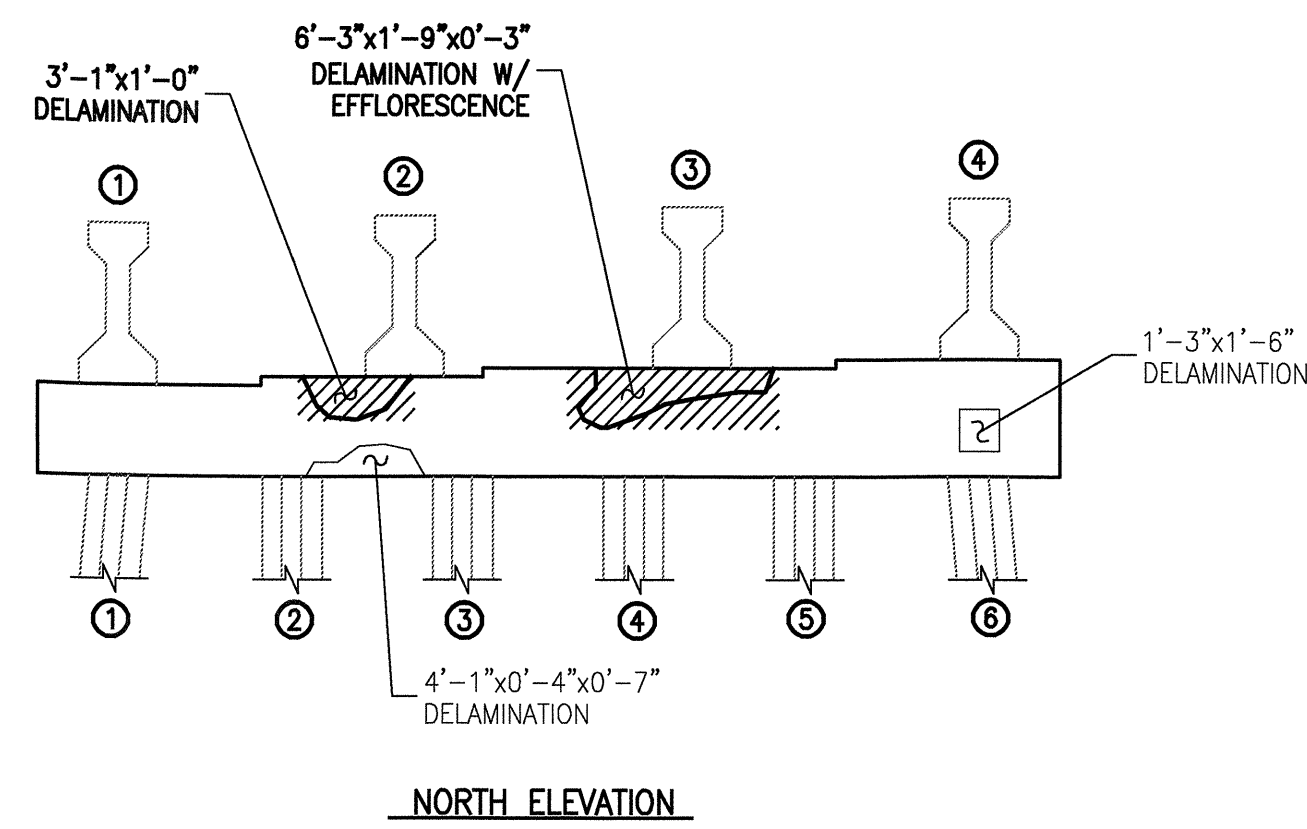
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	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	6
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	33
EPOXY MORTAR (FORMED)	CF	-

**BENT #112**

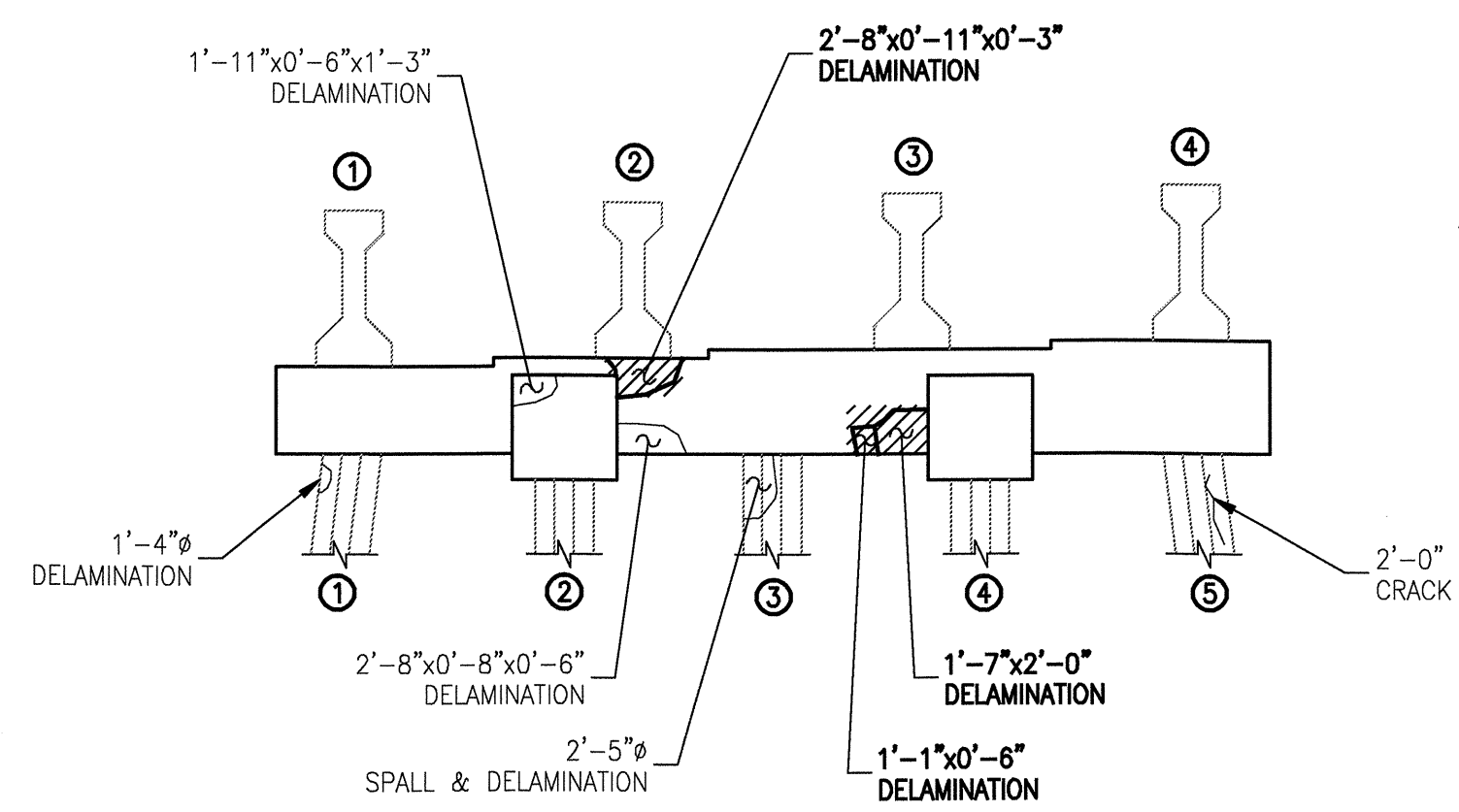
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	3
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	27
EPOXY MORTAR (FORMED)	CF	-

**BENT #113**

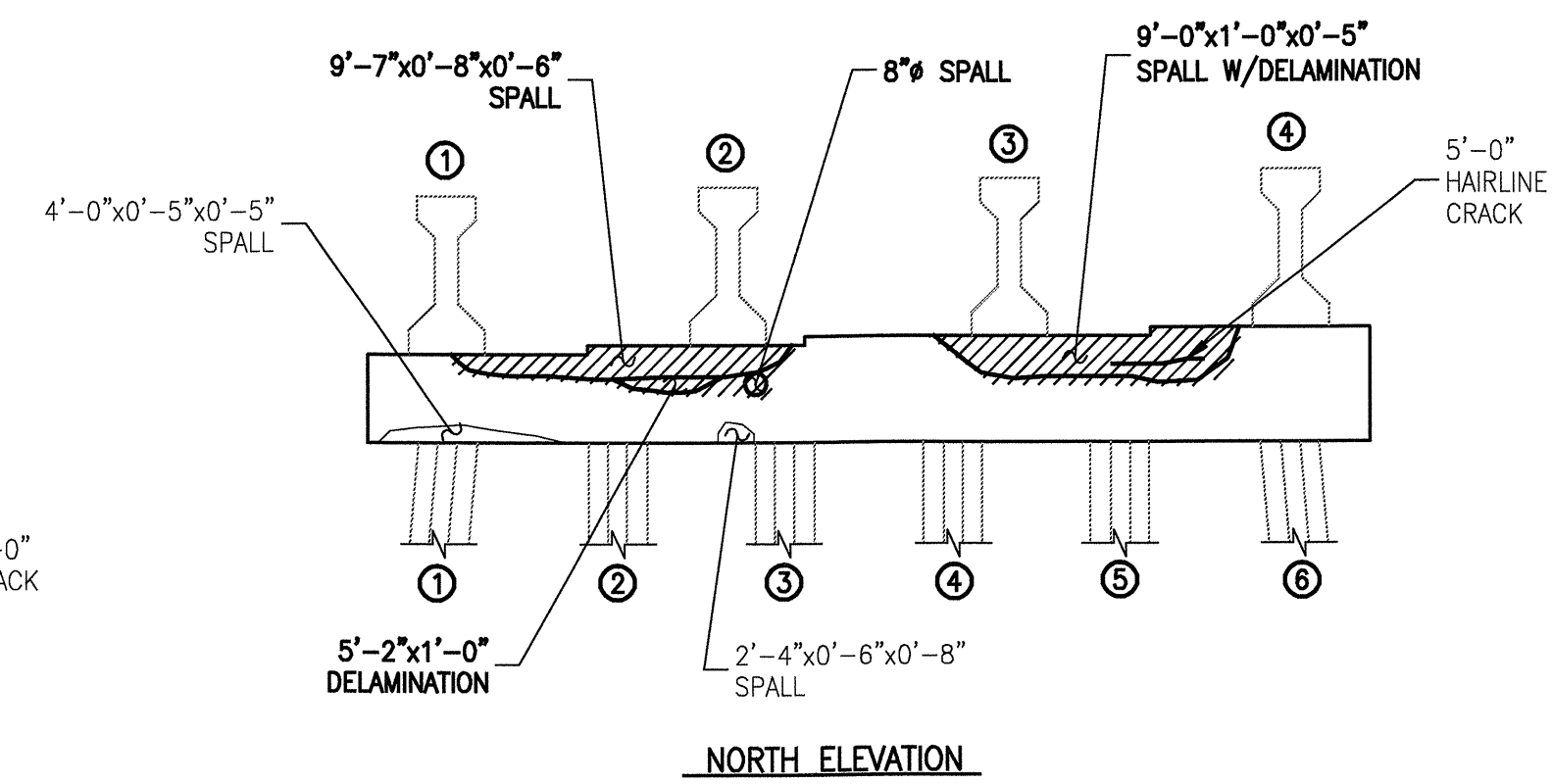
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	13
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	78
EPOXY MORTAR (FORMED)	CF	-



NORTH ELEVATION



NORTH ELEVATION



NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION



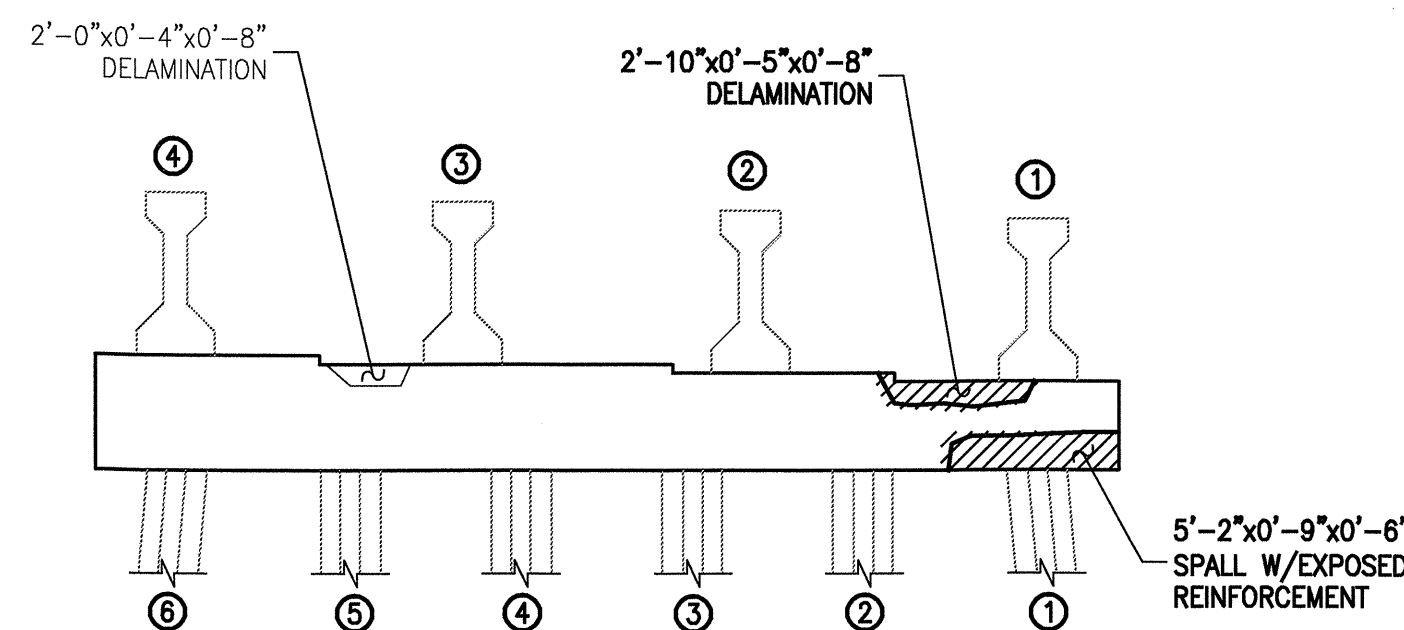
EAST ELEVATION

WEST ELEVATION



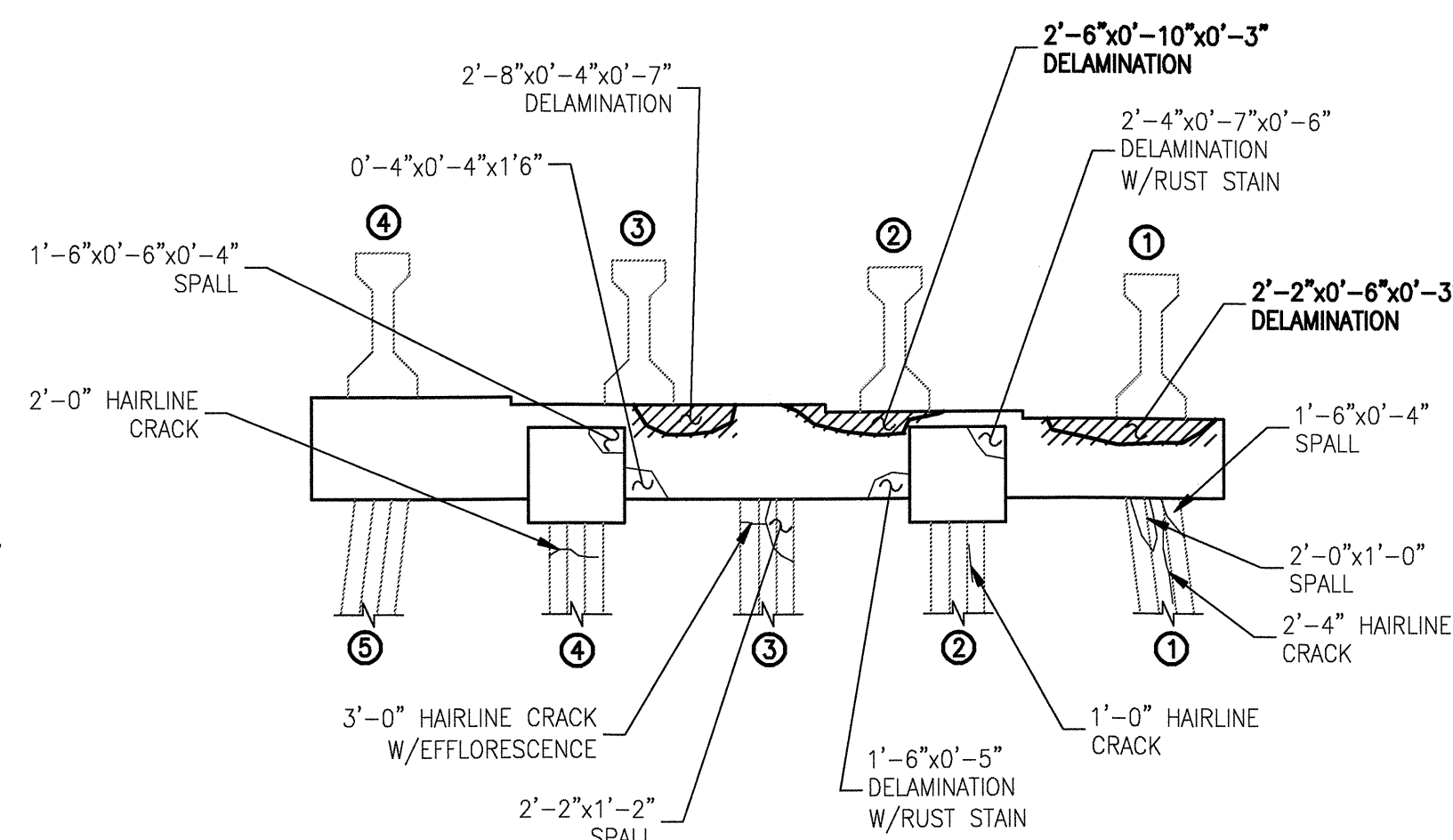
EAST ELEVATION

WEST ELEVATION



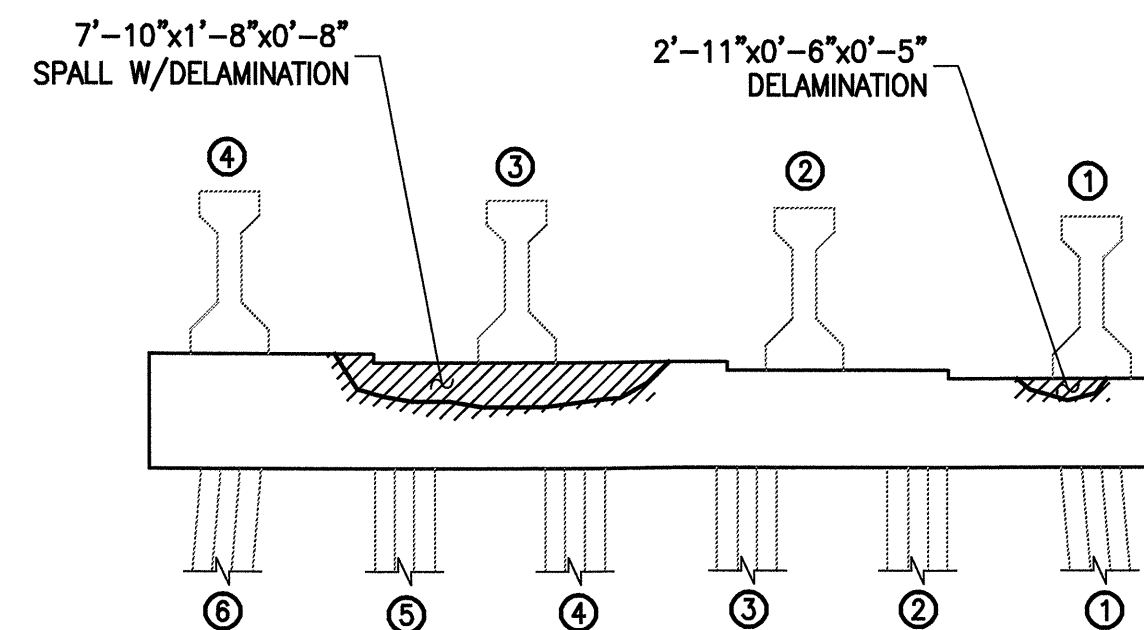
SOUTH ELEVATION

**BENT #111**



SOUTH ELEVATION

**BENT #112**



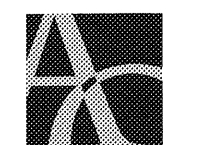
SOUTH ELEVATION

**BENT #113**

**KEY**

- DENOTES GENERAL AREA OF REPAIR
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9"x8'-1"x0'-6"$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

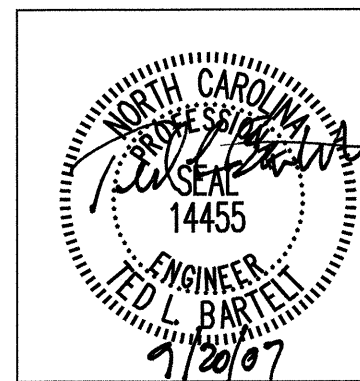


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

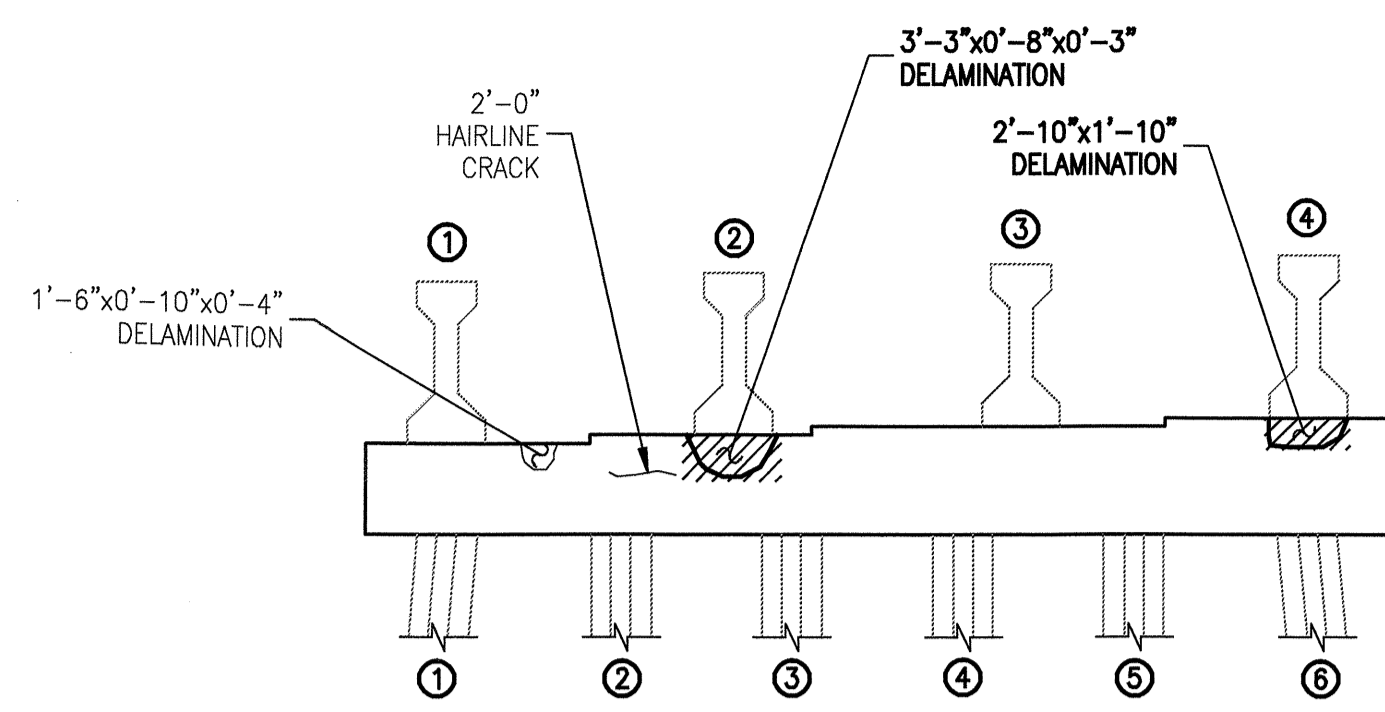
BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #111-#113



DRAWN BY: G.R. COLS DATE: 4/28/07  
 CHECKED BY: T.L. BARTELT DATE: 5/16/07

REVISIONS						SHEET NO. 104
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



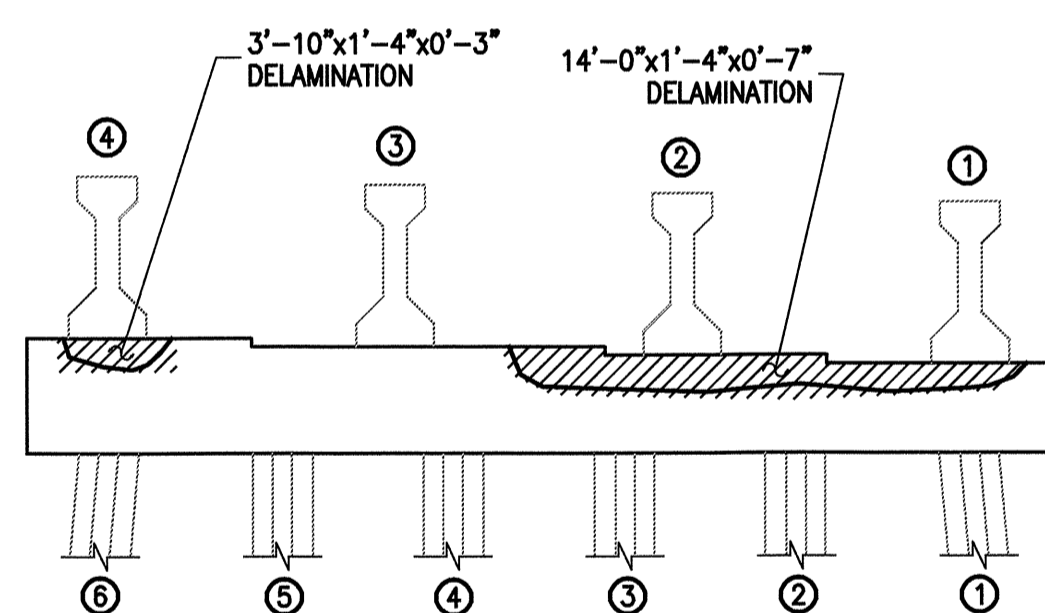


NORTH ELEVATION



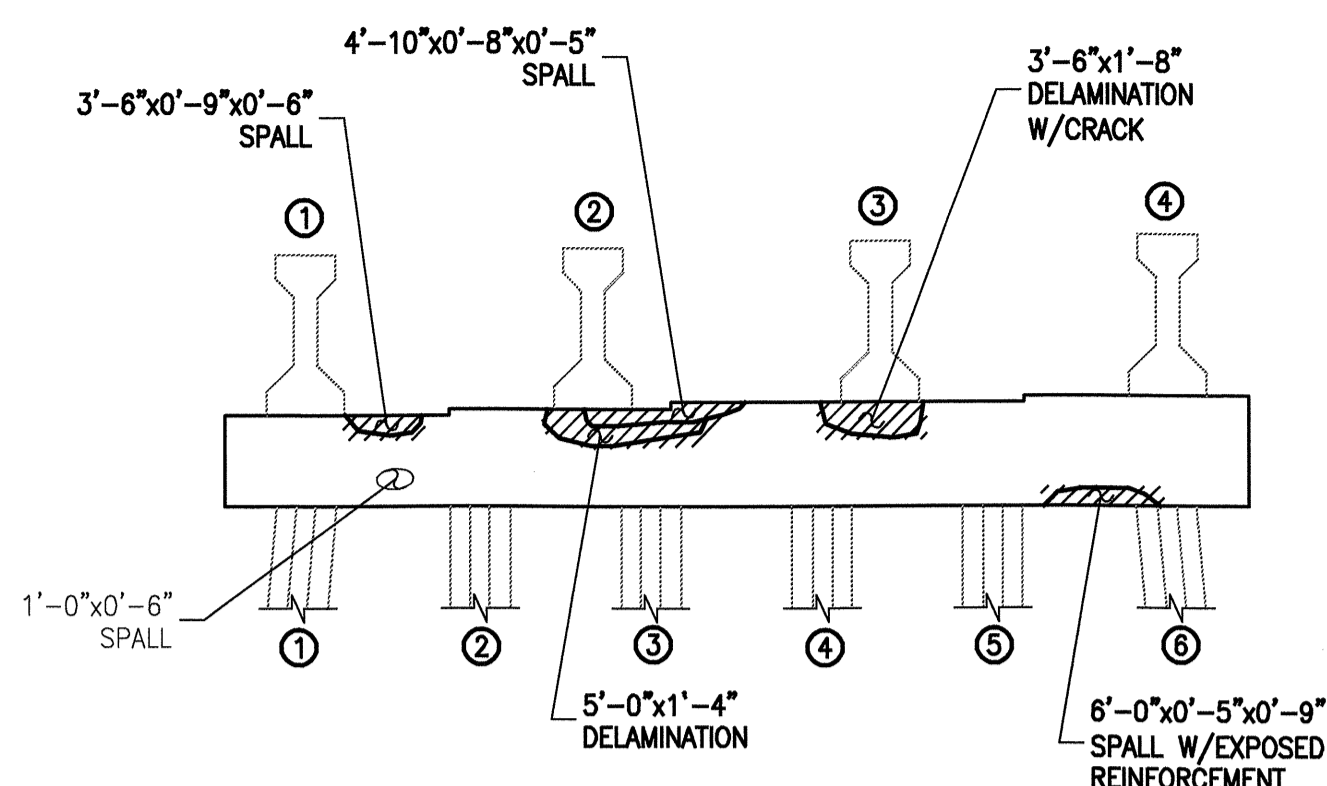
EAST ELEVATION

WEST ELEVATION



SOUTH ELEVATION

**BENT #114**

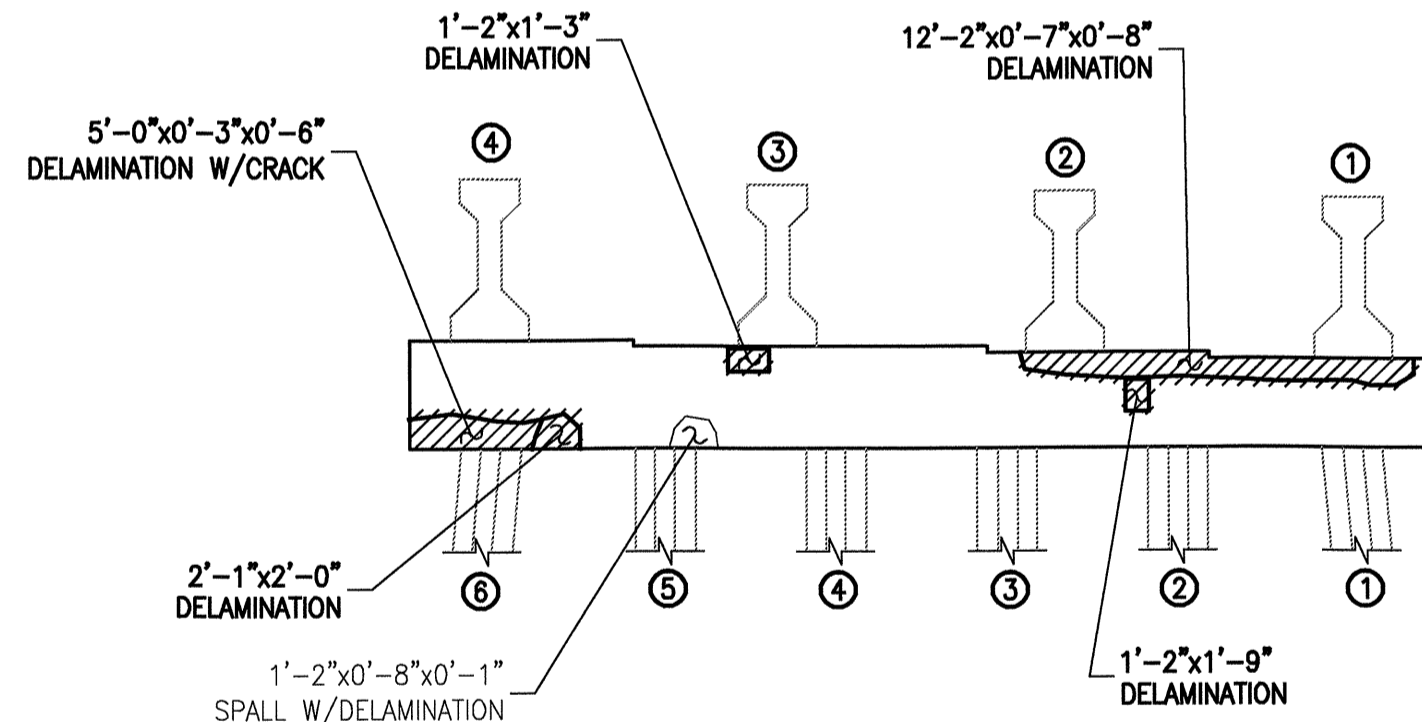


NORTH ELEVATION



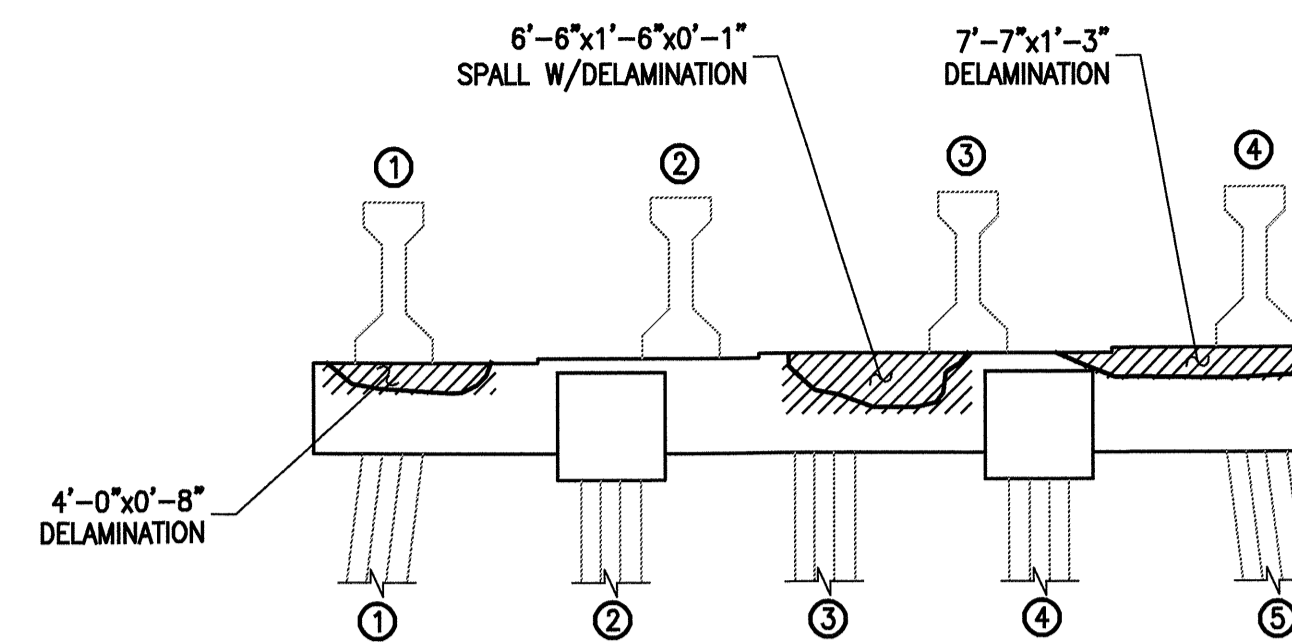
EAST ELEVATION

WEST ELEVATION



SOUTH ELEVATION

**BENT #115**

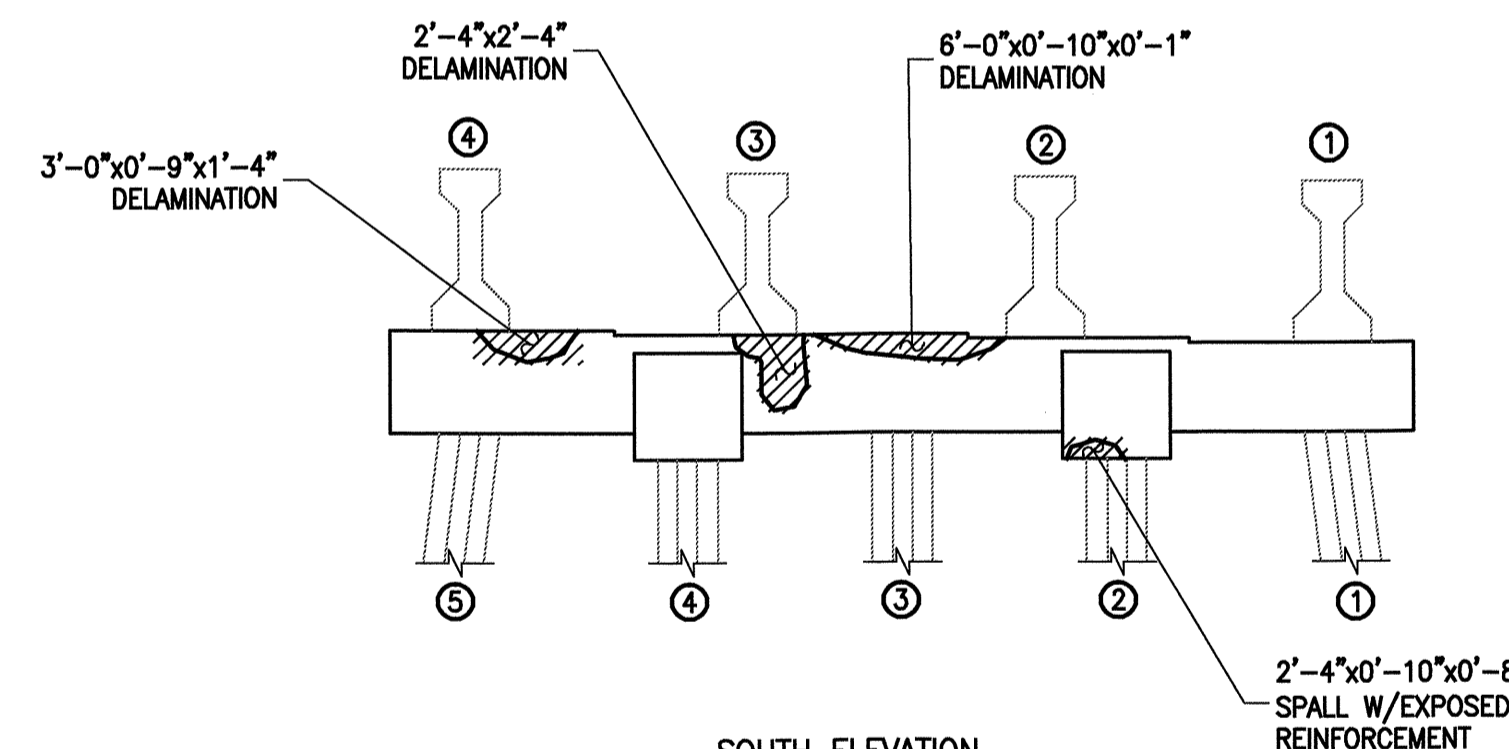


NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION



SOUTH ELEVATION

**BENT #116**

**BILL OF MATERIAL**

BENT #114			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	11	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	64	
EPOXY MORTAR (FORMED)	CF	-	
BENT #115			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	12	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	58	
EPOXY MORTAR (FORMED)	CF	-	
BENT #116			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	12	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	52	
EPOXY MORTAR (FORMED)	CF	-	

**KEY**

- DENOTES GENERAL AREA OF REPAIR
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9"x8'-1"x0'-6"$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

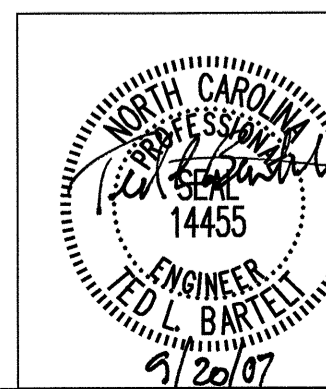


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PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #114-#116



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO. 105
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

**BILL OF MATERIAL**

**BENT #117**

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	11
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	75
EPOXY MORTAR (FORMED)	CF	-

**BENT #118**

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	13
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	71
EPOXY MORTAR (FORMED)	CF	-

**BENT #119**

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	11
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	64
EPOXY MORTAR (FORMED)	CF	-

**KEY**

- DENOTES GENERAL AREA OF REPAIR
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) x (VERT) x (DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) x (VERT) x (DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ) x (VERT) x (DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



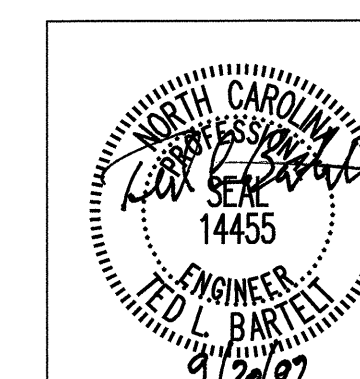
**ALPHA & OMEGA GROUP**  
CIVIL & STRUCTURAL ENGINEERS

4911 Green Road Suite 107 Raleigh, NC 27616  
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Email info@aogroup.com www.aogroup.com  
AOG PROJ. NO. 2007.015

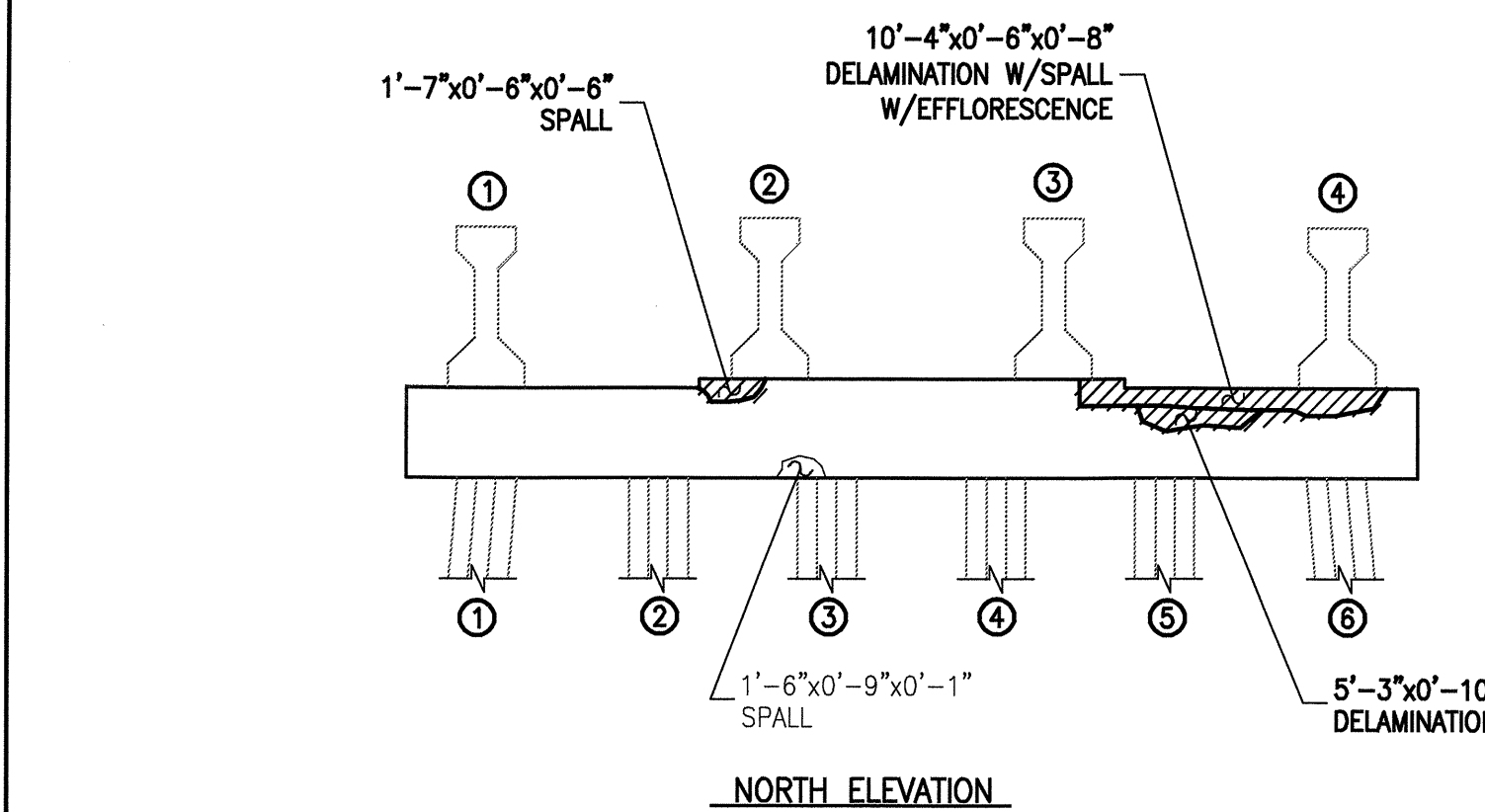
PROJECT NO. B-5014  
DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BONNER BRIDGE REPAIR  
LOW LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #117-#119

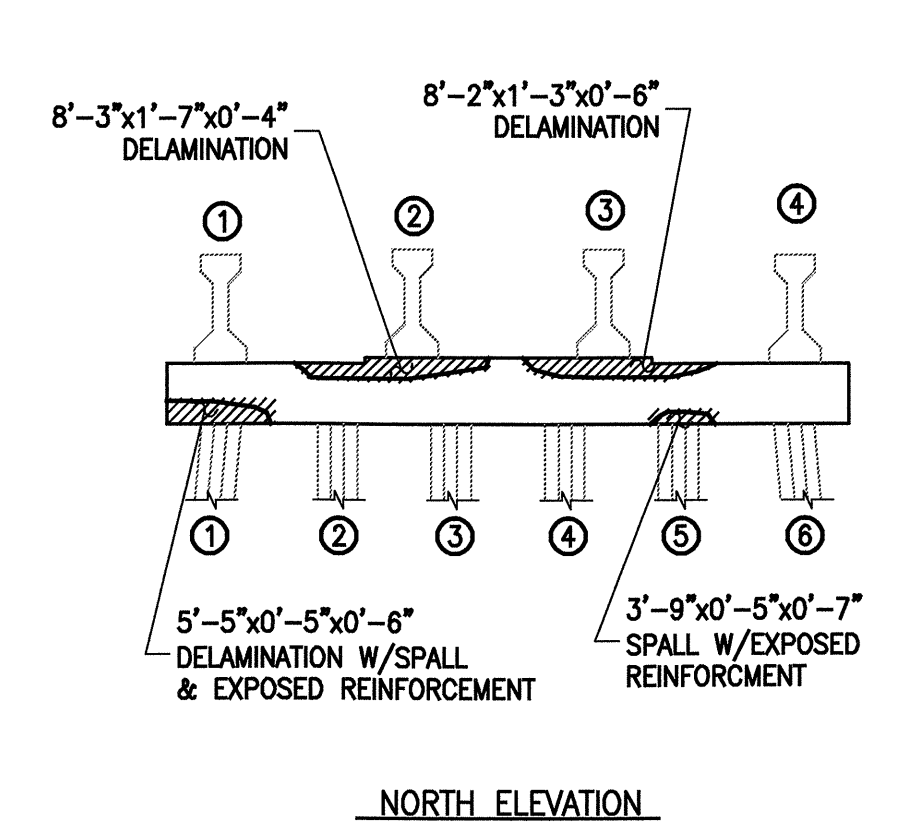


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166



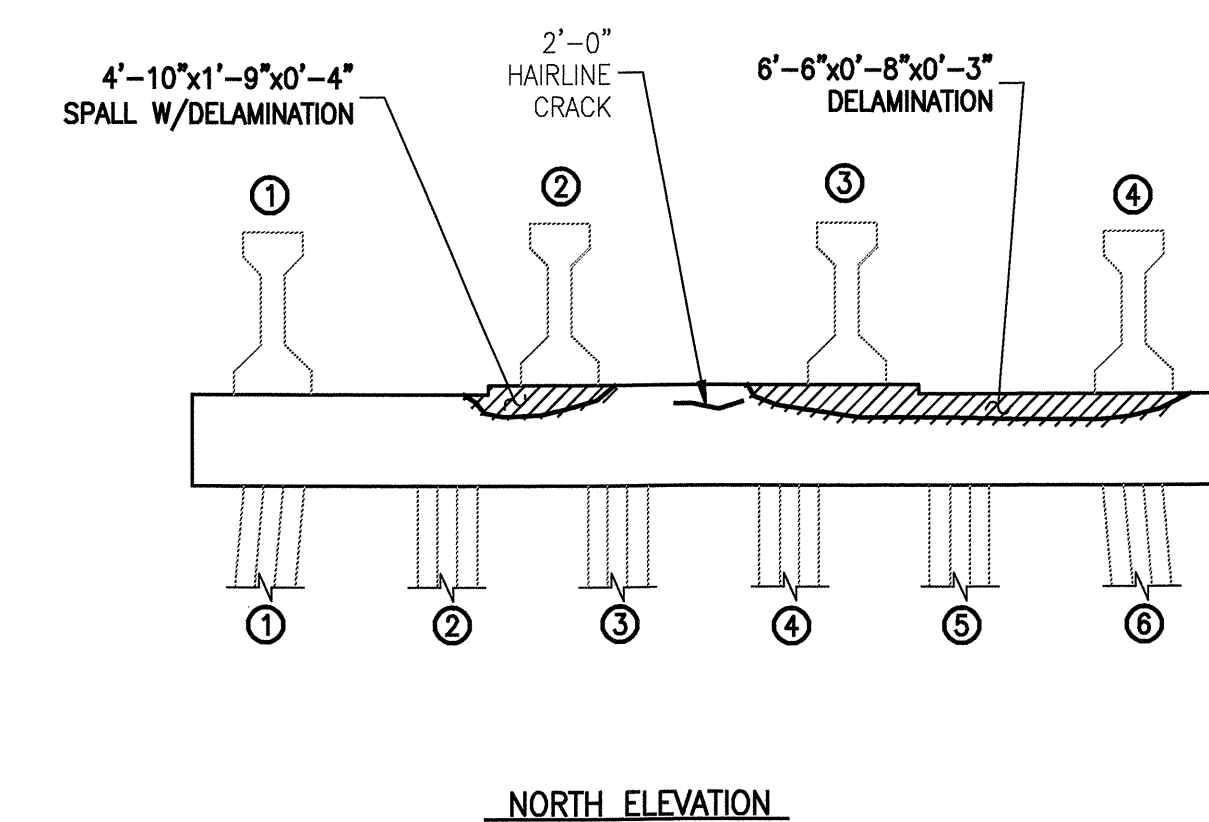
NORTH ELEVATION

EAST ELEVATION      WEST ELEVATION



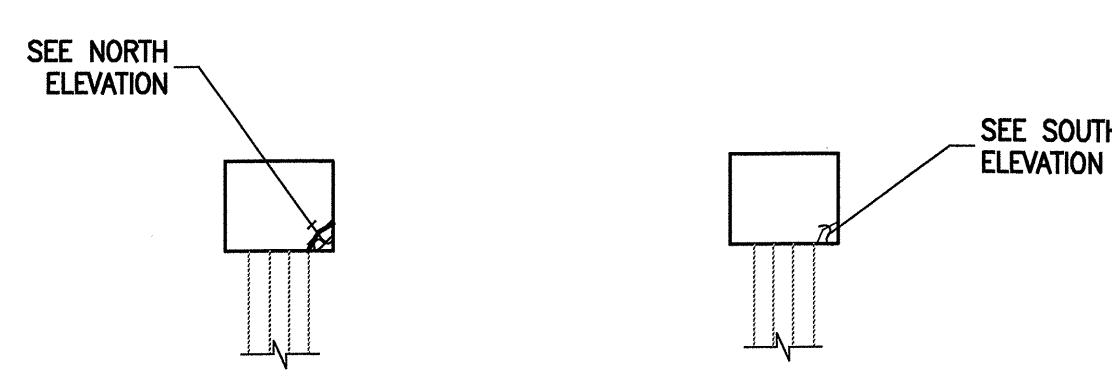
NORTH ELEVATION

EAST ELEVATION      WEST ELEVATION

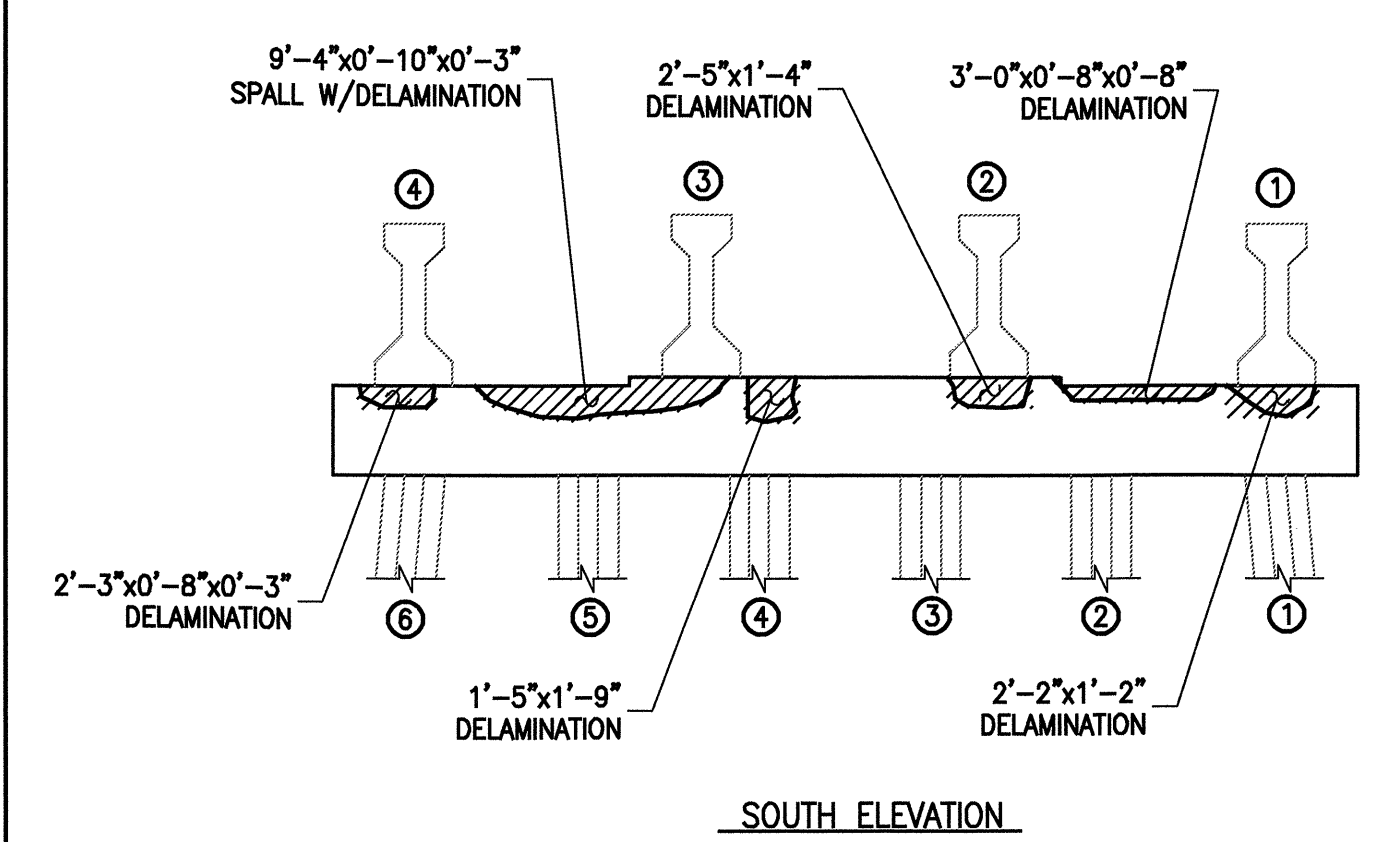


NORTH ELEVATION

EAST ELEVATION      WEST ELEVATION

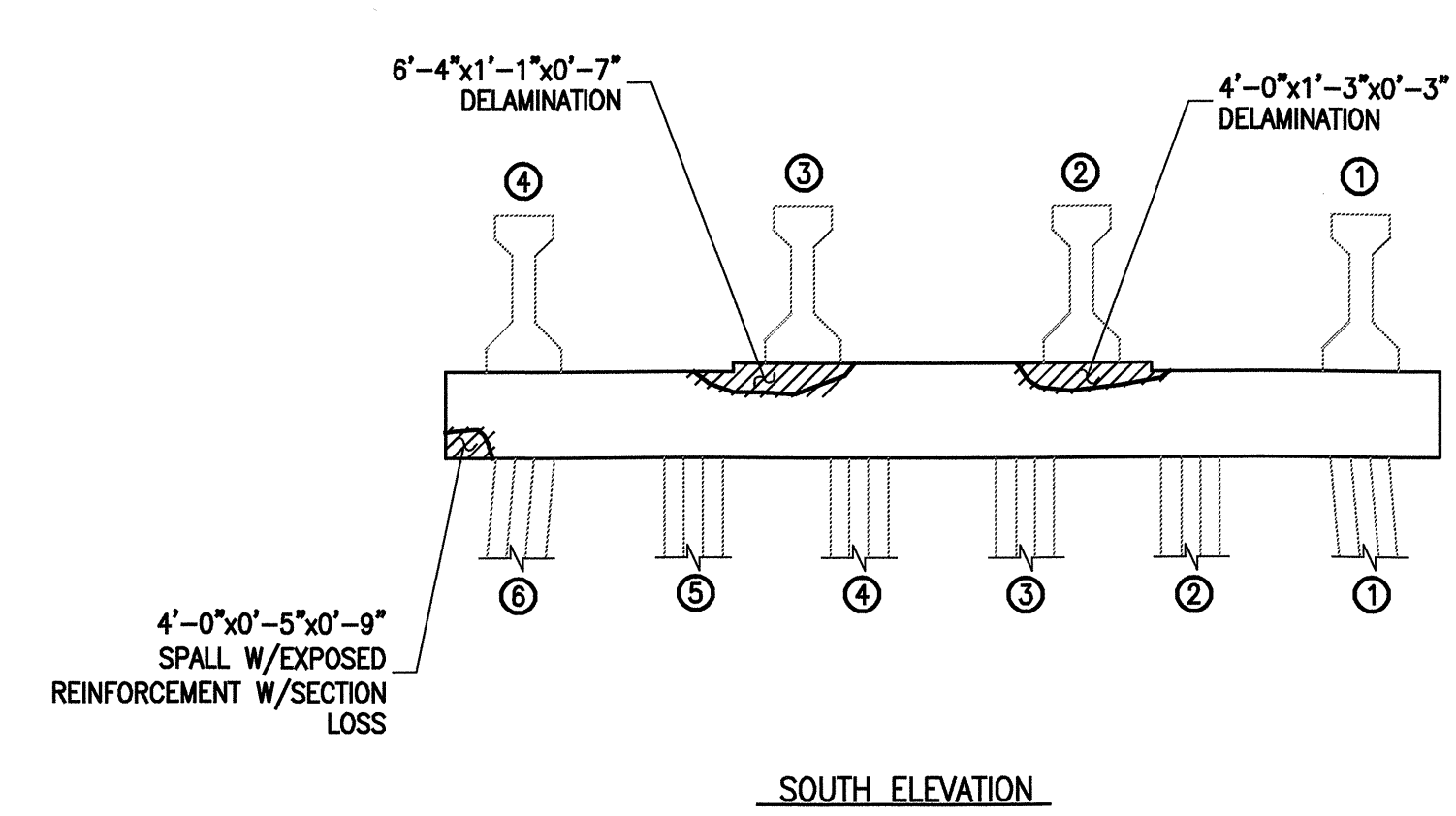


EAST ELEVATION      WEST ELEVATION



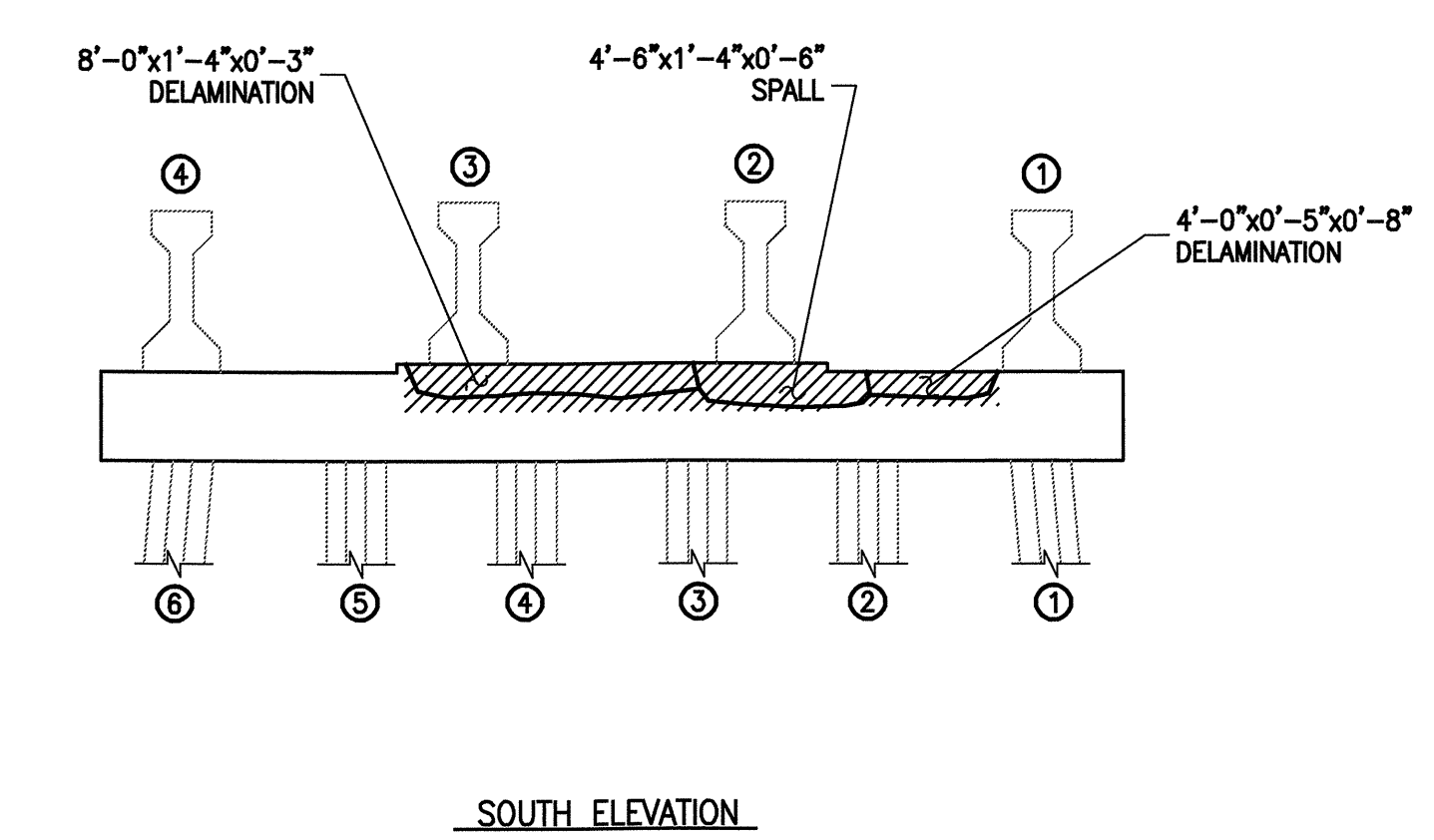
SOUTH ELEVATION

BENT #117



SOUTH ELEVATION

BENT #118

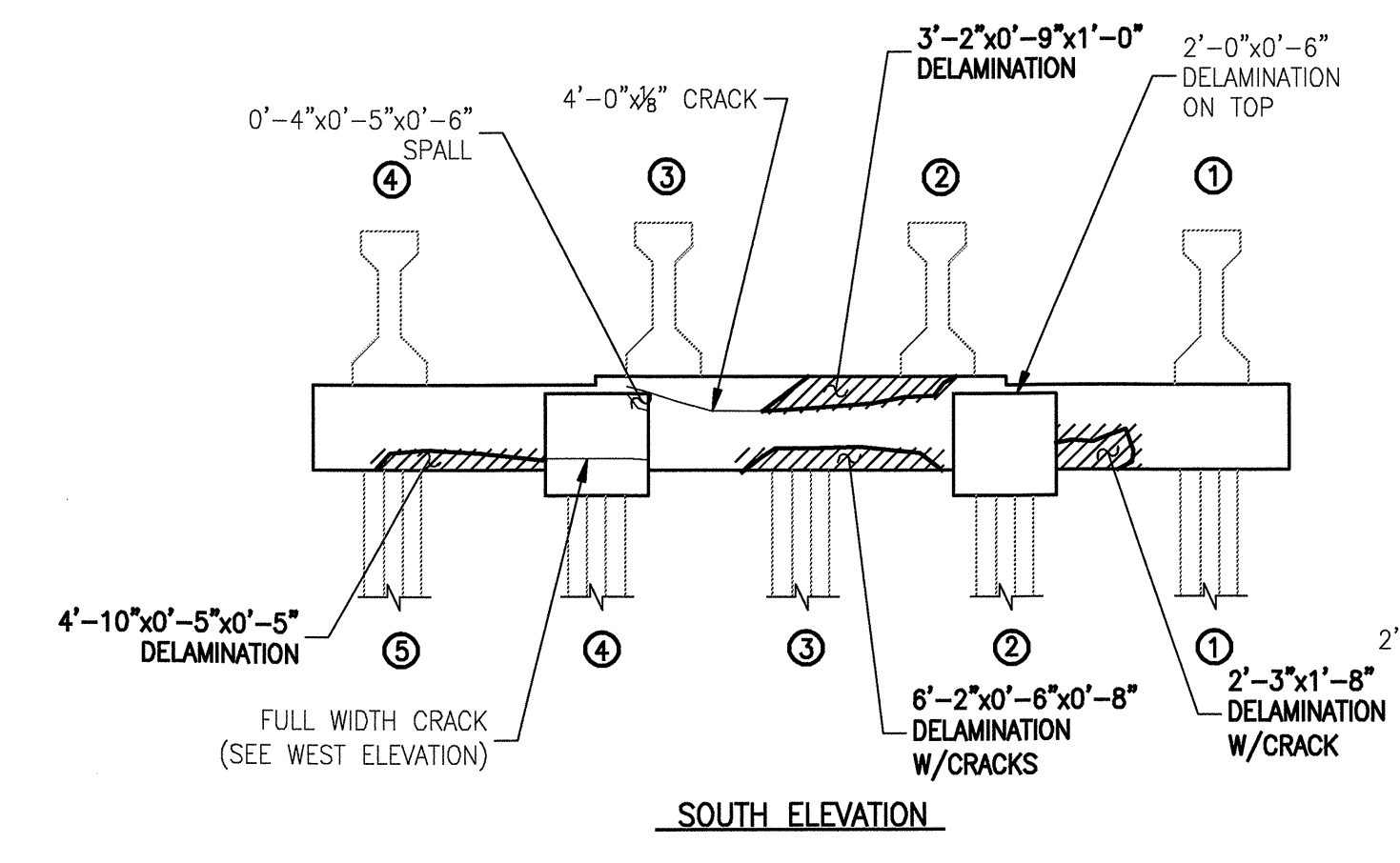
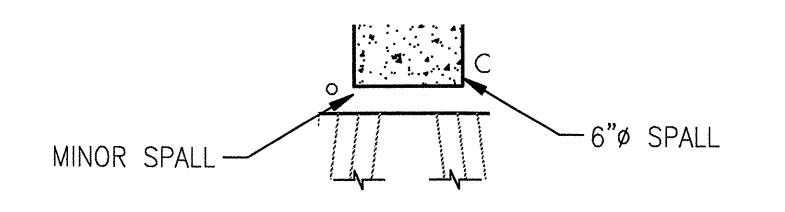
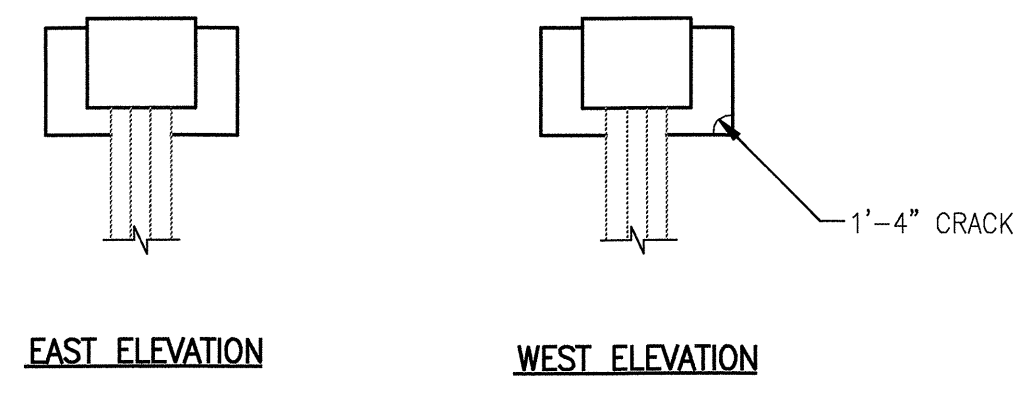
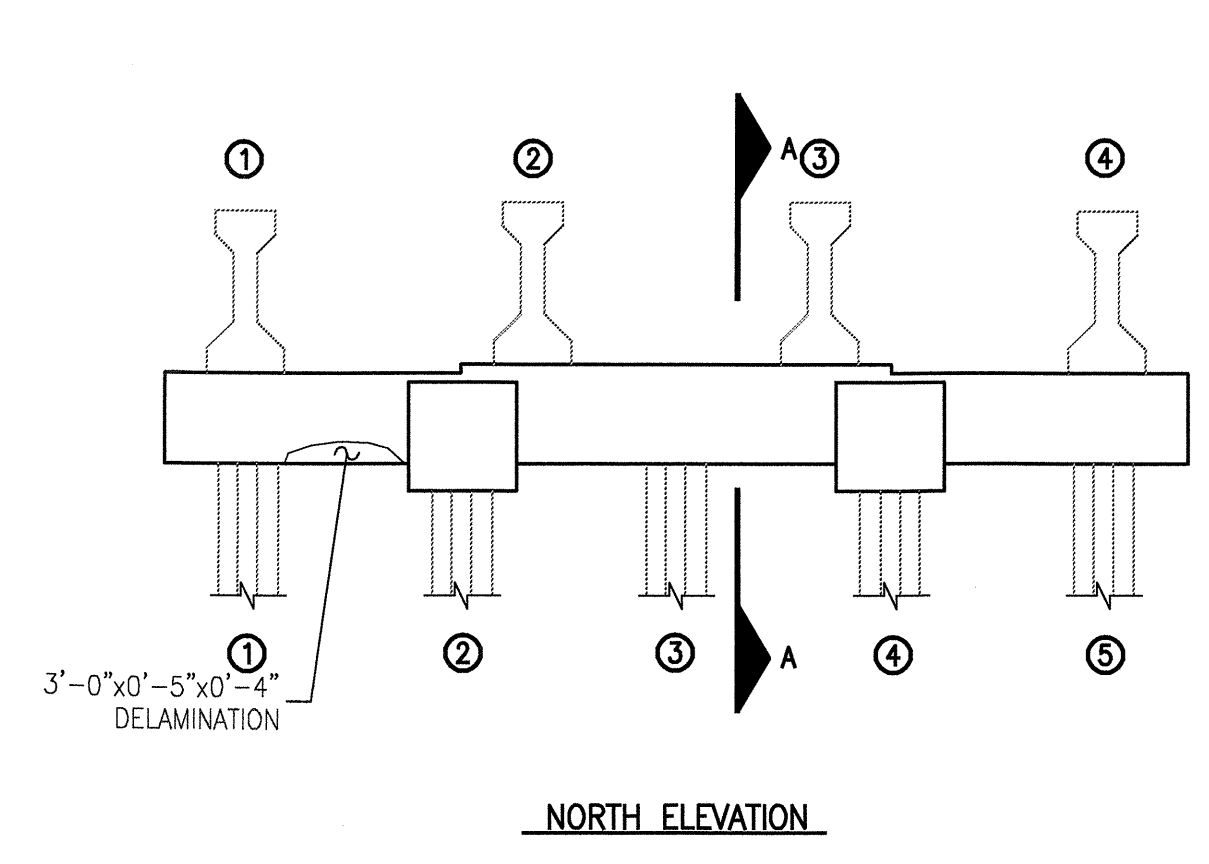


SOUTH ELEVATION

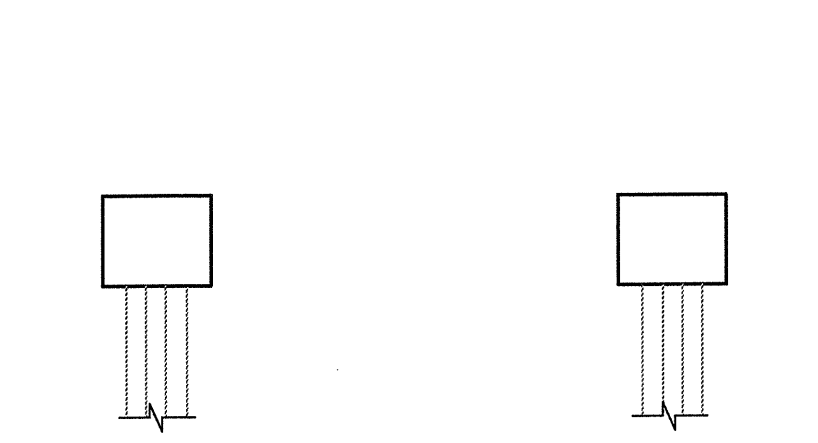
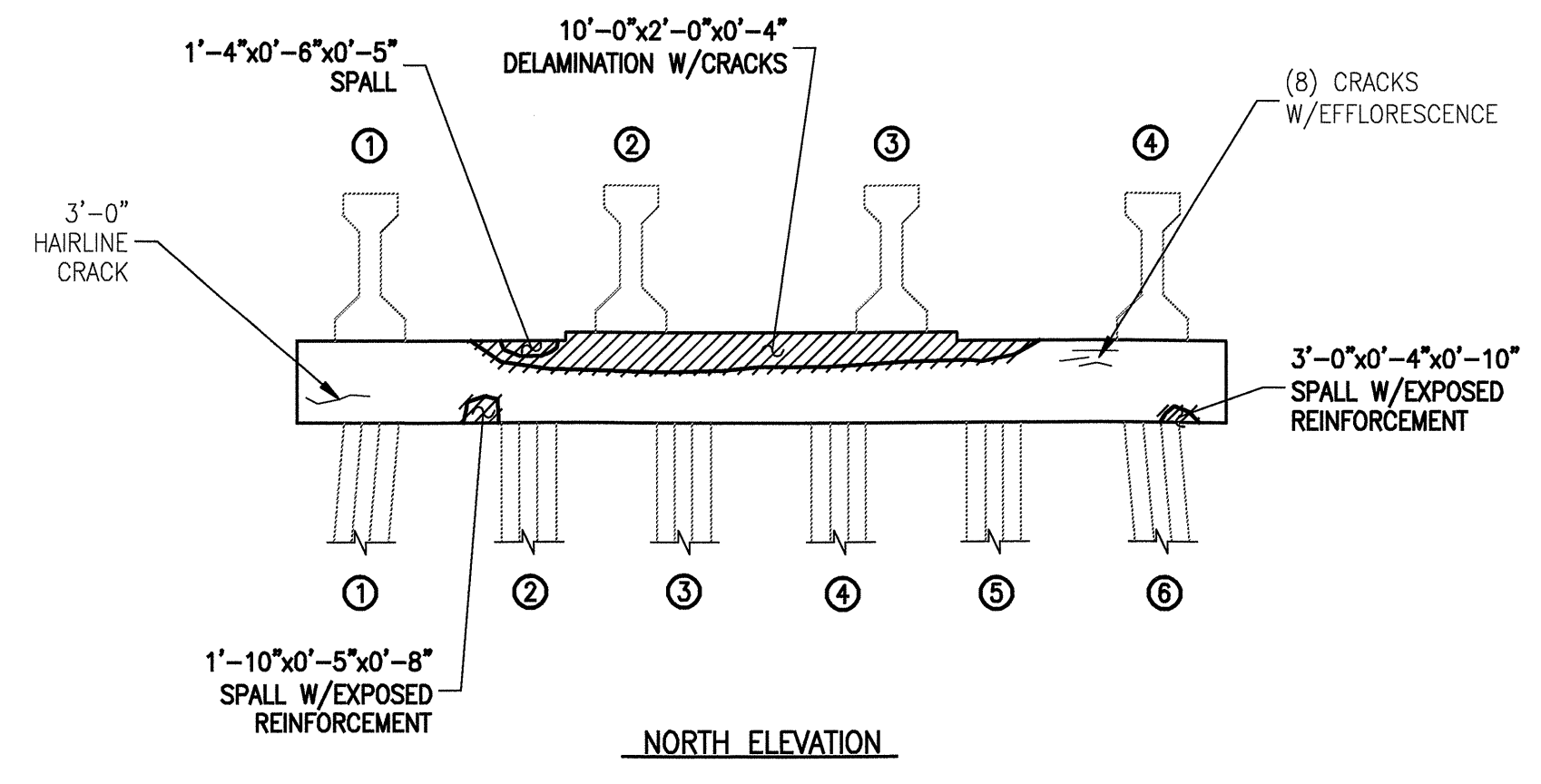
BENT #119

DRAWN BY: G.R. COLS DATE: 4/26/07  
CHECKED BY: T.L. BARTELT DATE: 5/18/07

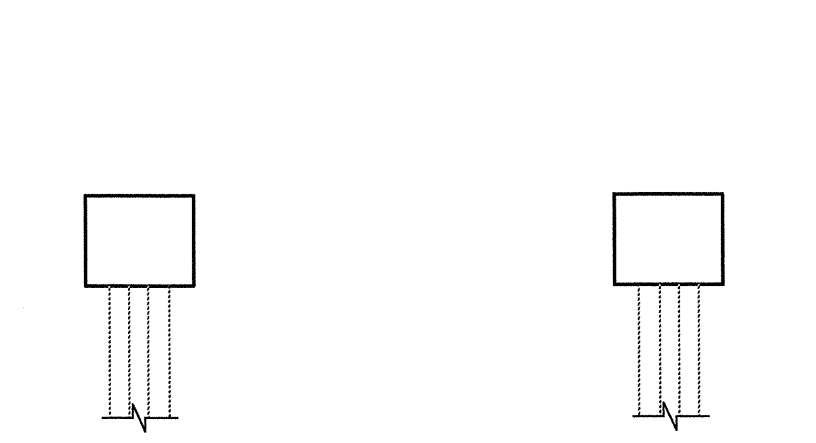
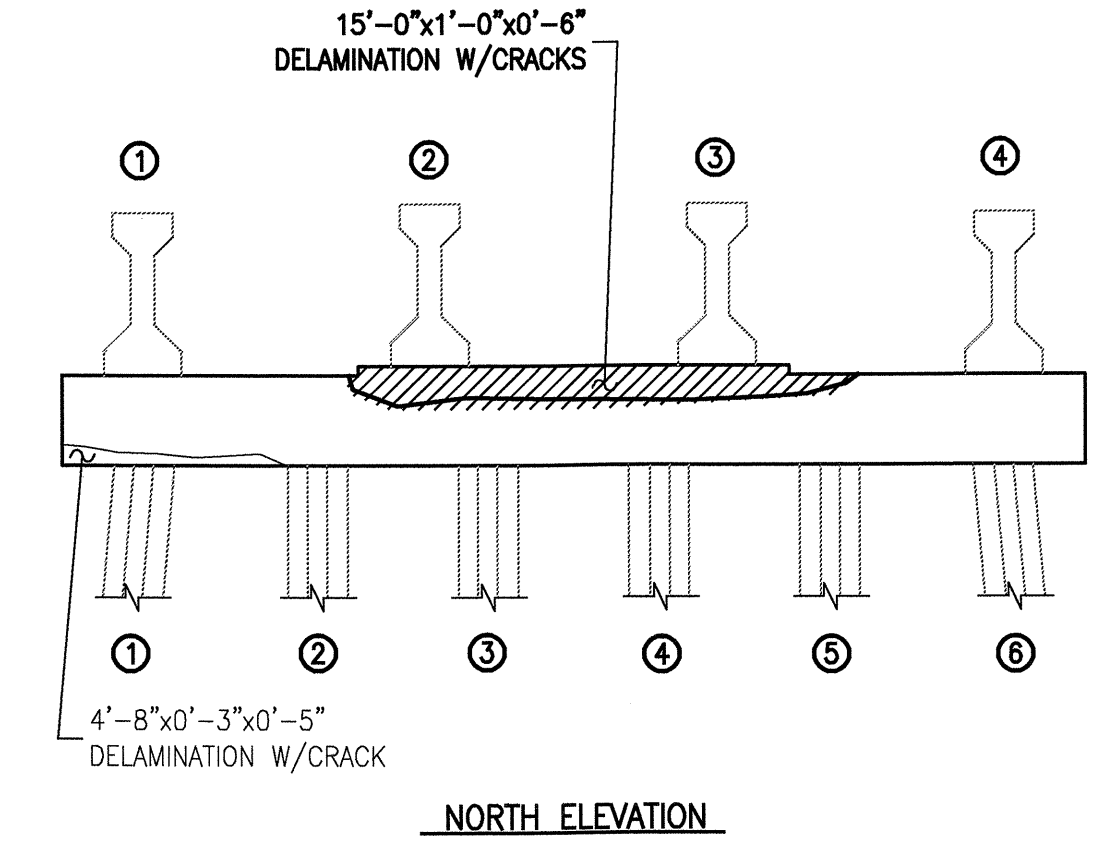
BILL OF MATERIAL			
BENT #120			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	2	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	8	
EPOXY MORTAR (FORMED)	CF	-	
BENT #121			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	12	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	53	
EPOXY MORTAR (FORMED)	CF	-	
BENT #122			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	13	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	102	
EPOXY MORTAR (FORMED)	CF	-	



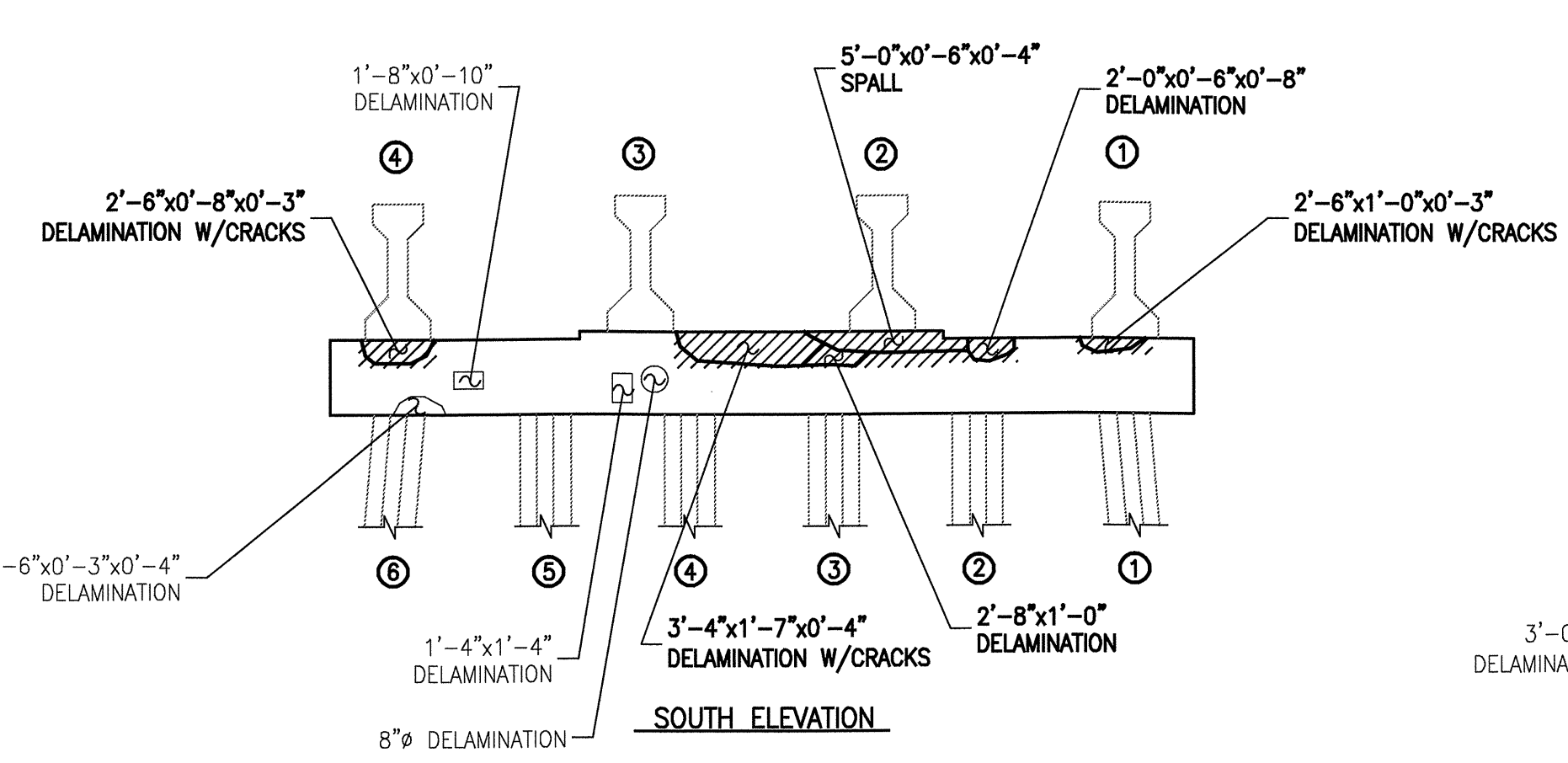
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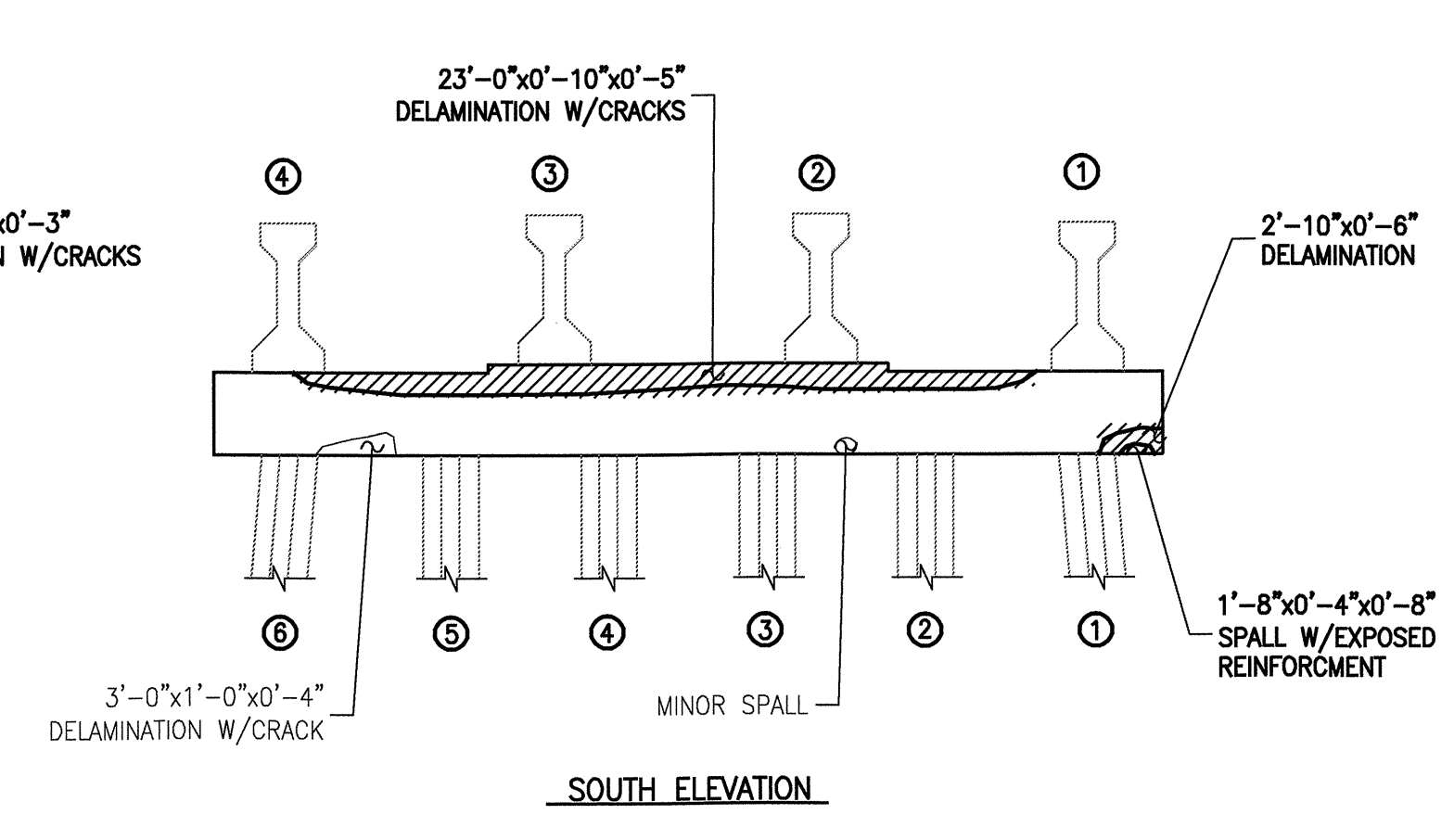
**BENT #121**



**BENT #122**



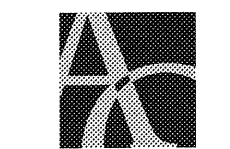
**BENT #121**



**BENT #122**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

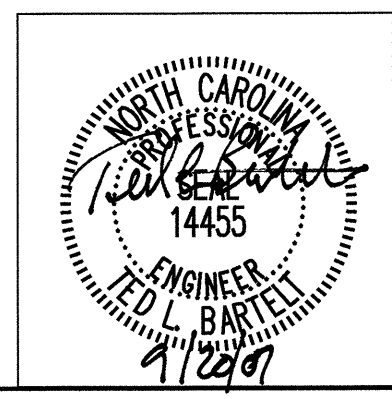
PLAN PREPARED BY:



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PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #120-#122



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: T.L. BARTELT DATE: 5/18/07

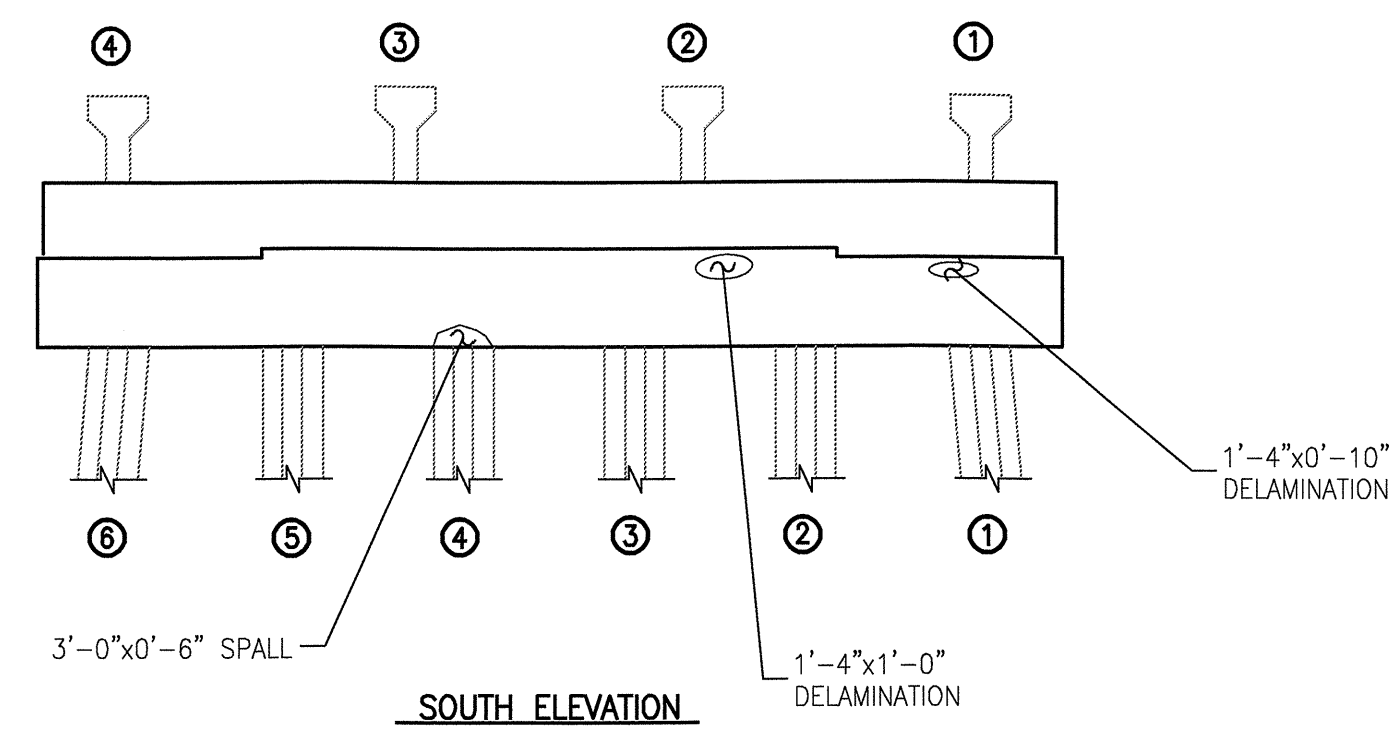
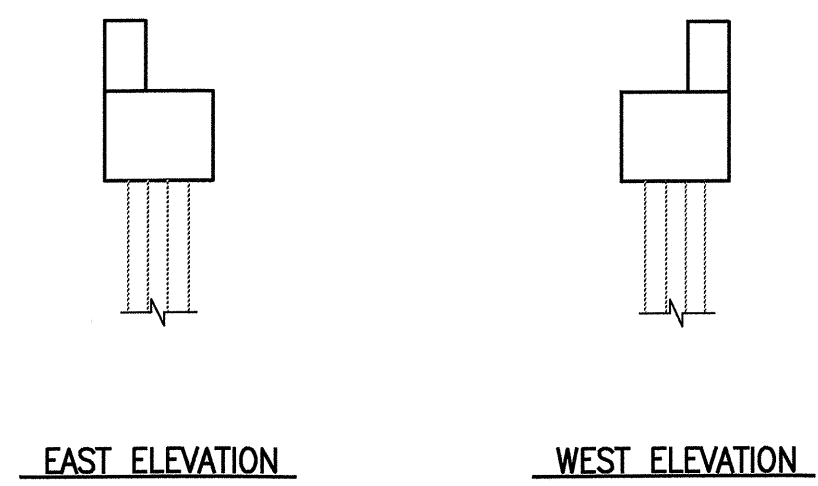
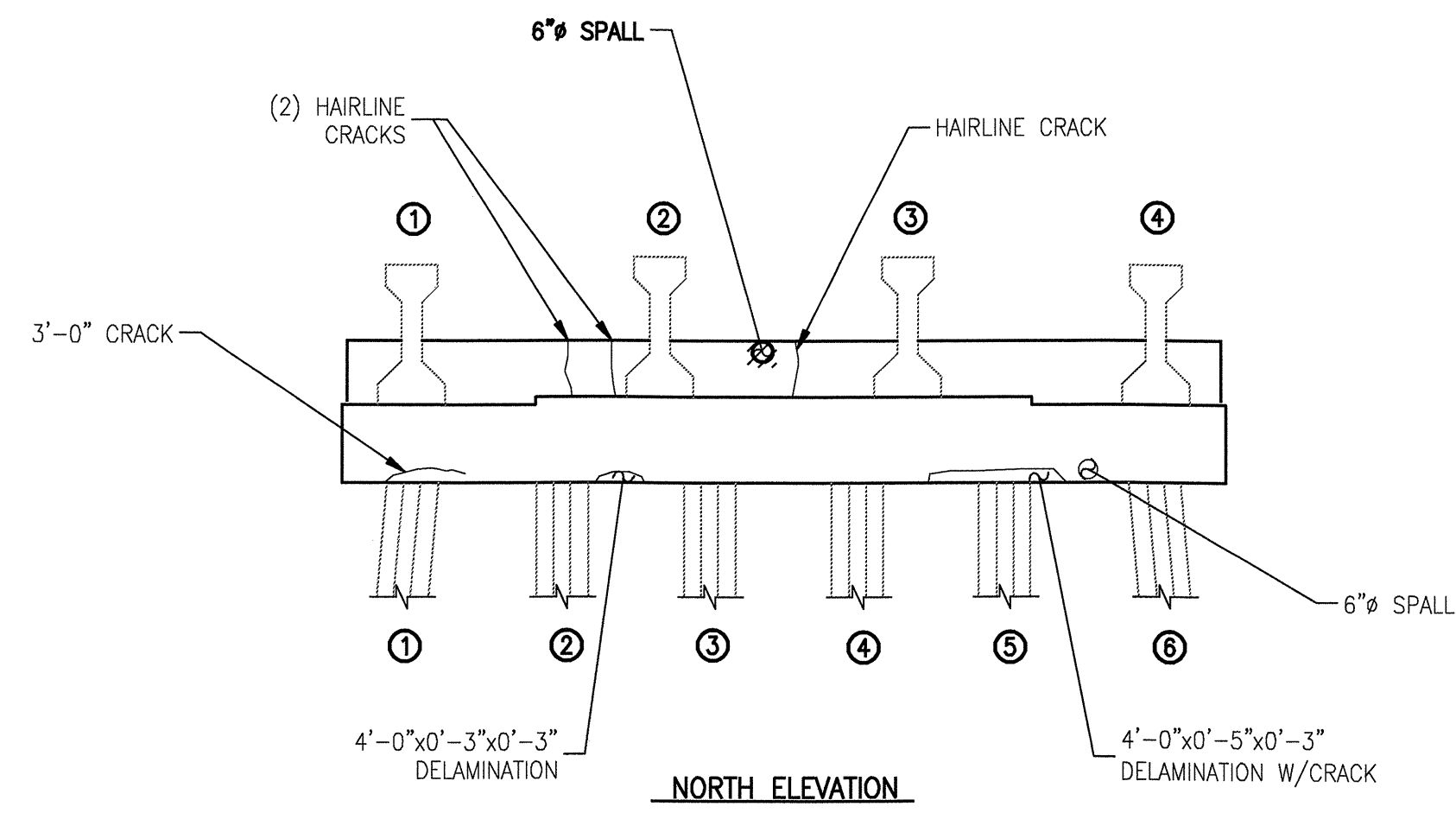
REVISIONS						SHEET NO. 107
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



# BILL OF MATERIAL

**BENT #123**

REPAIR TYPE	QUANTITIES		
	UNIT	—	ACTUAL
HORIZONTAL SHOTCRETE	CF	—	
VERTICAL SHOTCRETE	CF	1	
OVERHEAD SHOTCRETE	CF	—	
ADDITIONAL REINFORCING	LBS	—	
EPOXY MORTAR (FORMED)	CF	—	



**BENT #123**

## KEY

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



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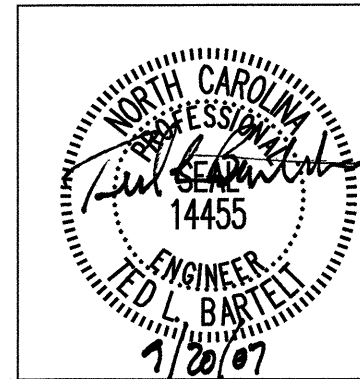
PROJECT NO. B-5014

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BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #123



DRAWN BY: G.R. COLS DATE: 4/26/07  
 CHECKED BY: I.L. BARTELT DATE: 5/18/07

REVISIONS						SHEET NO. 108
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

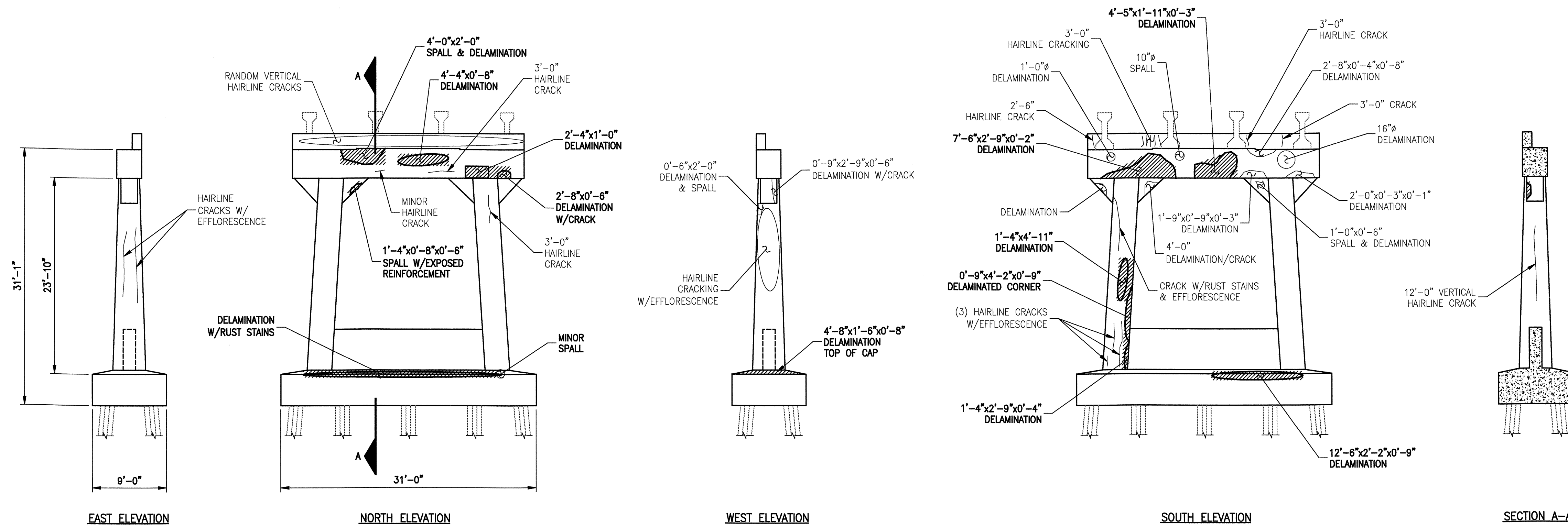
# BILL OF MATERIAL

## BENT #129

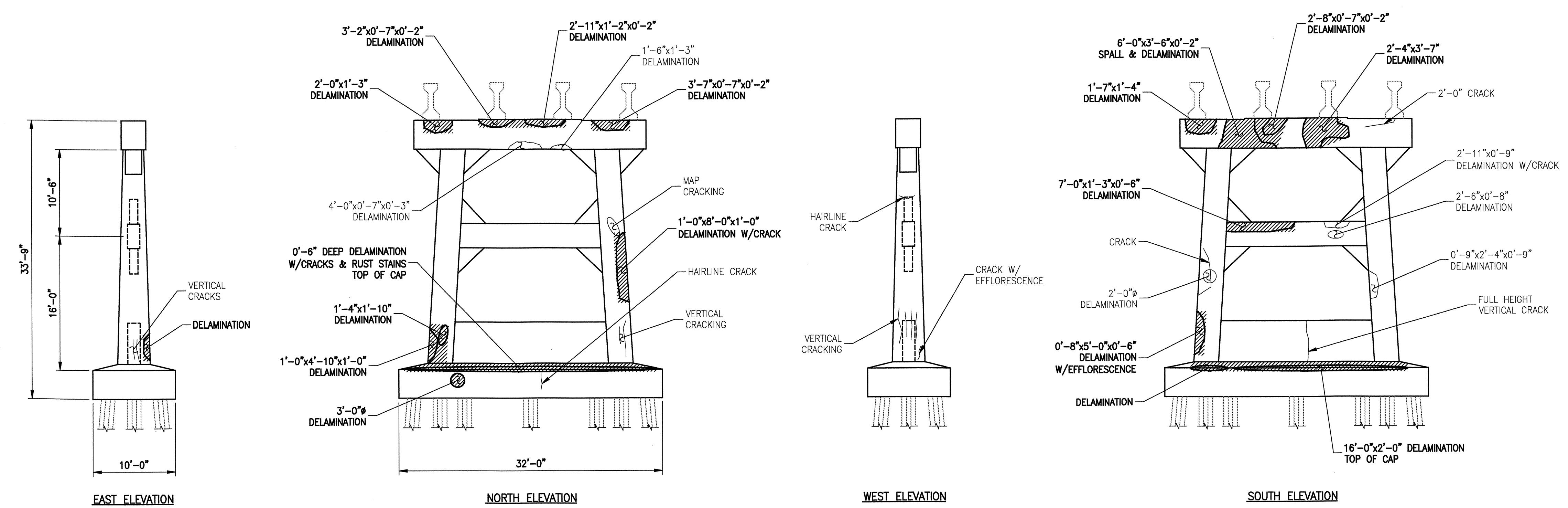
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	37
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	11
POURED CONC. REPAIR	CF	-

## BENT #130

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	178
VERTICAL SHOTCRETE	CF	22
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	49
POURED CONC. REPAIR	CF	-



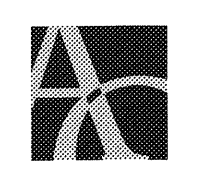
**BENT #129**



**BENT #130**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

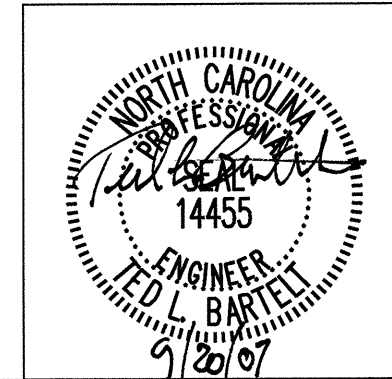
PLAN PREPARED BY:



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PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #129-#130



DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO. 109
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

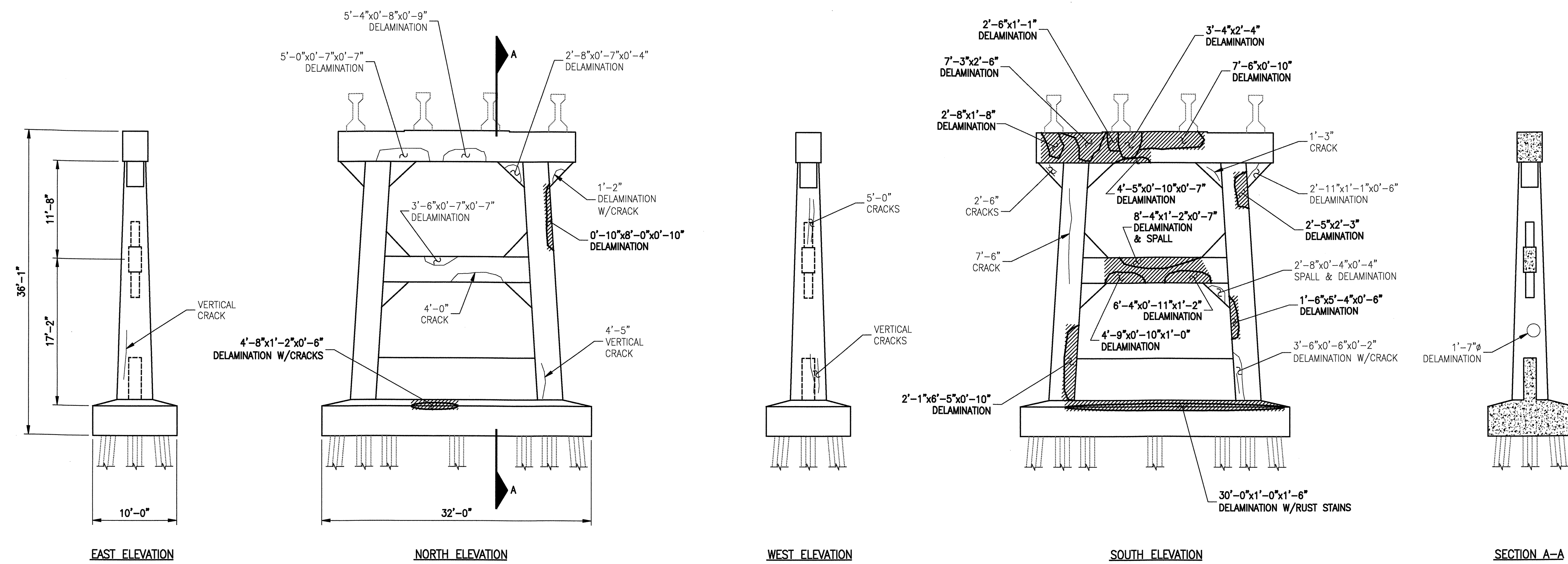
# BILL OF MATERIAL

## BENT #131

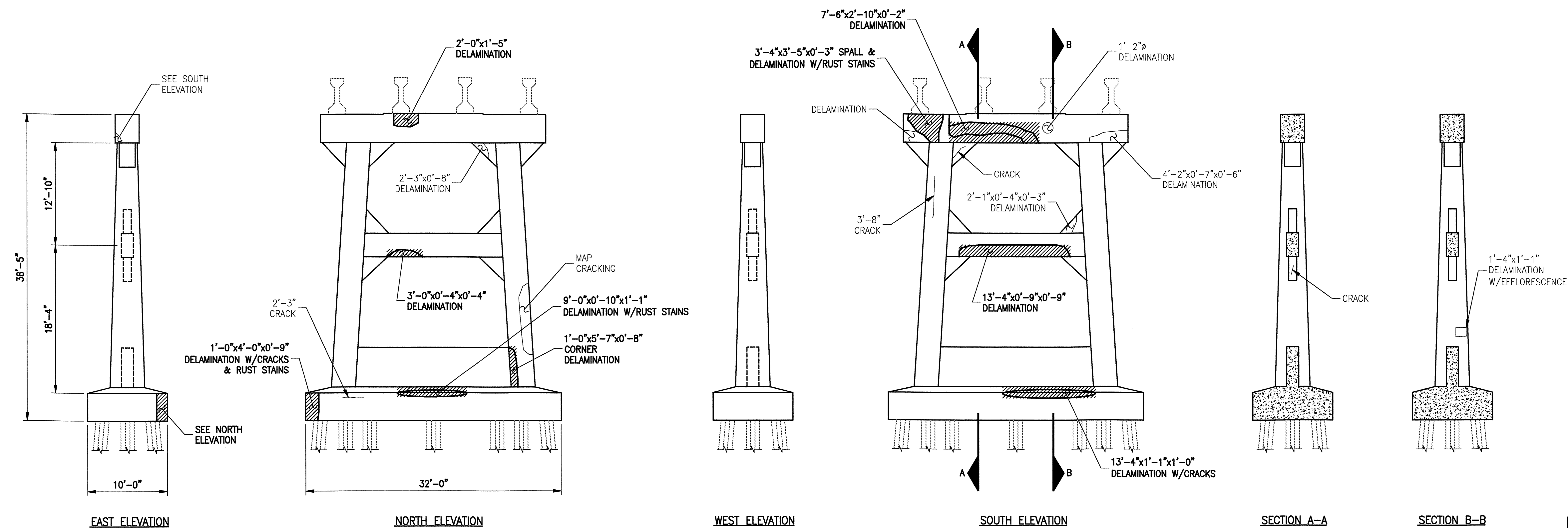
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	15
VERTICAL SHOTCRETE	CF	60
OVERHEAD SHOTCRETE	CF	7
ADDITIONAL REINFORCING	LBS	55
POURED CONC. REPAIR	CF	-

## BENT #132

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	6
VERTICAL SHOTCRETE	CF	31
OVERHEAD SHOTCRETE	CF	6
ADDITIONAL REINFORCING	LBS	19
POURED CONC. REPAIR	CF	3



## BENT #131



## BENT #132

### KEY

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

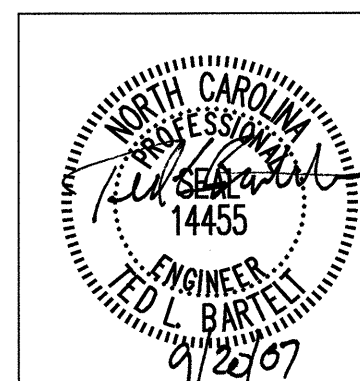


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PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #131-#132



DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO. 110
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166



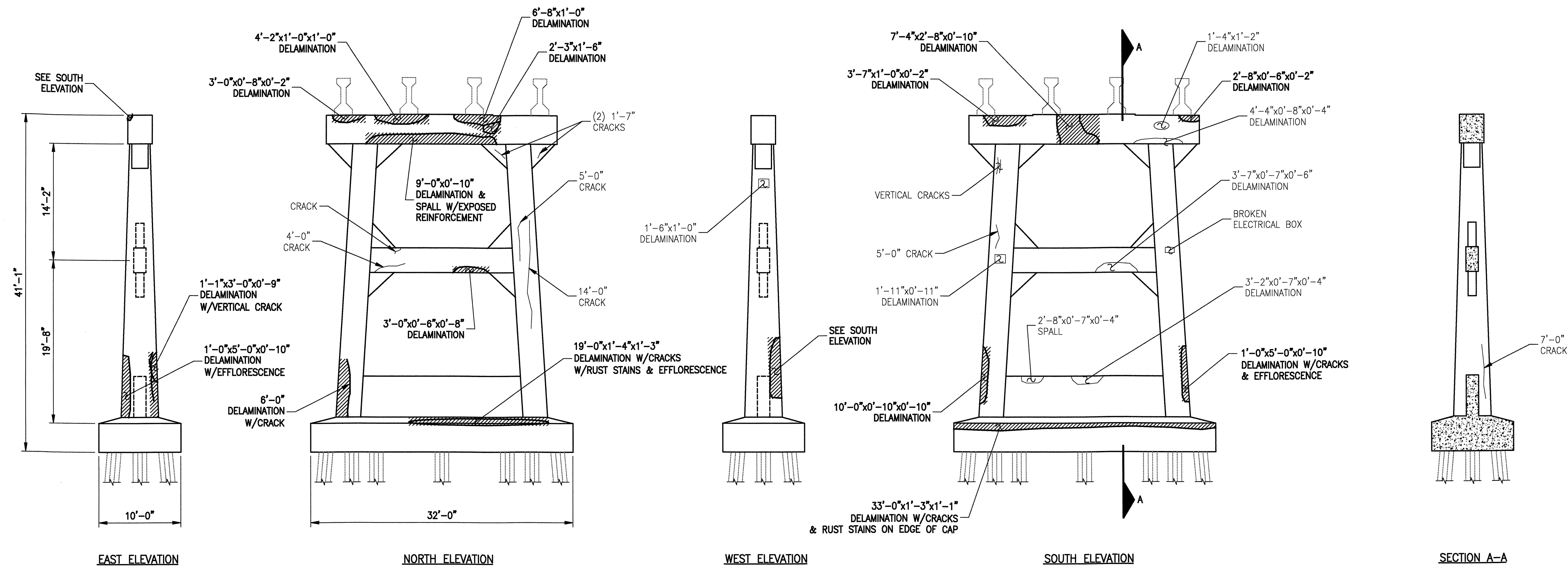
# BILL OF MATERIAL

## BENT #133

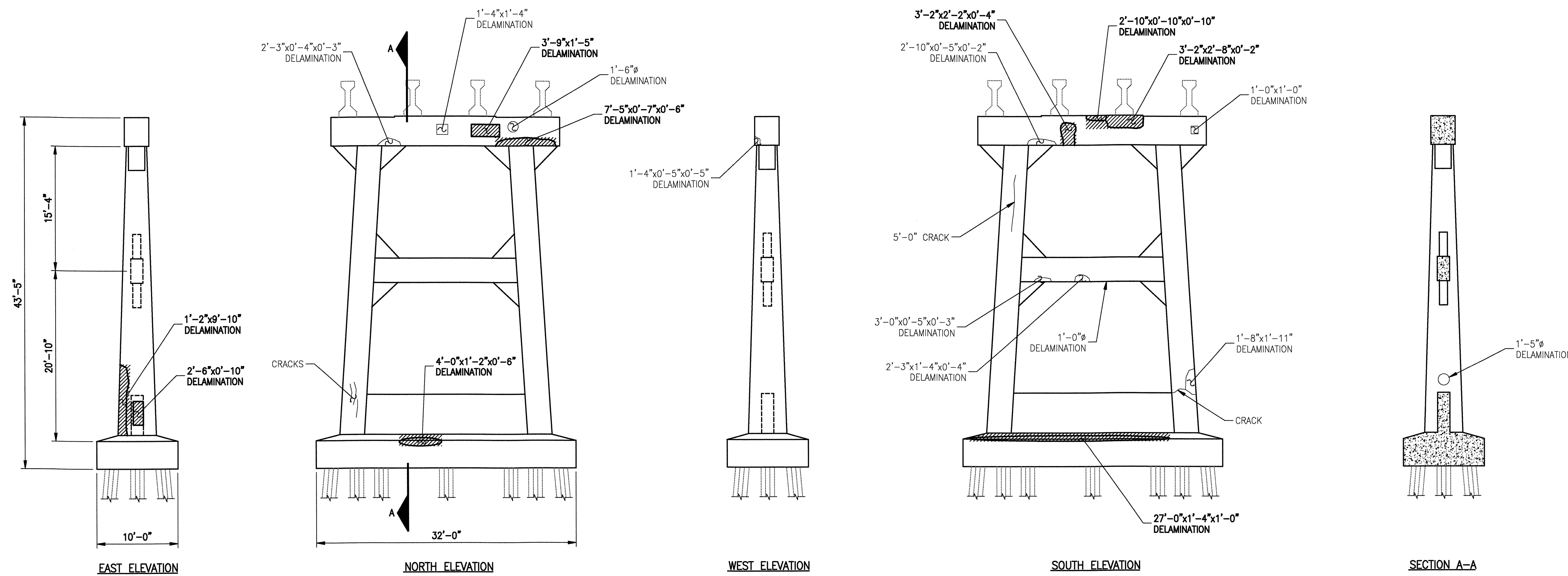
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	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	11
VERTICAL SHOTCRETE	CF	73
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	73
POURED CONC. REPAIR	CF	-

## BENT #134

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	7
VERTICAL SHOTCRETE	CF	35
OVERHEAD SHOTCRETE	CF	2
ADDITIONAL REINFORCING	LBS	8
POURED CONC. REPAIR	CF	-



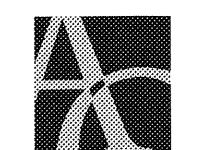
**BENT #133**



**BENT #134**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



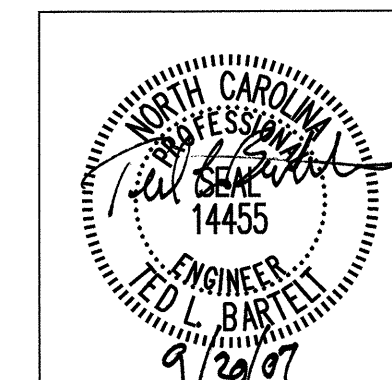
**ALPHA & OMEGA GROUP**  
CIVIL & STRUCTURAL ENGINEERS

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AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BONNER BRIDGE REPAIR  
HIGH LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #133-#134

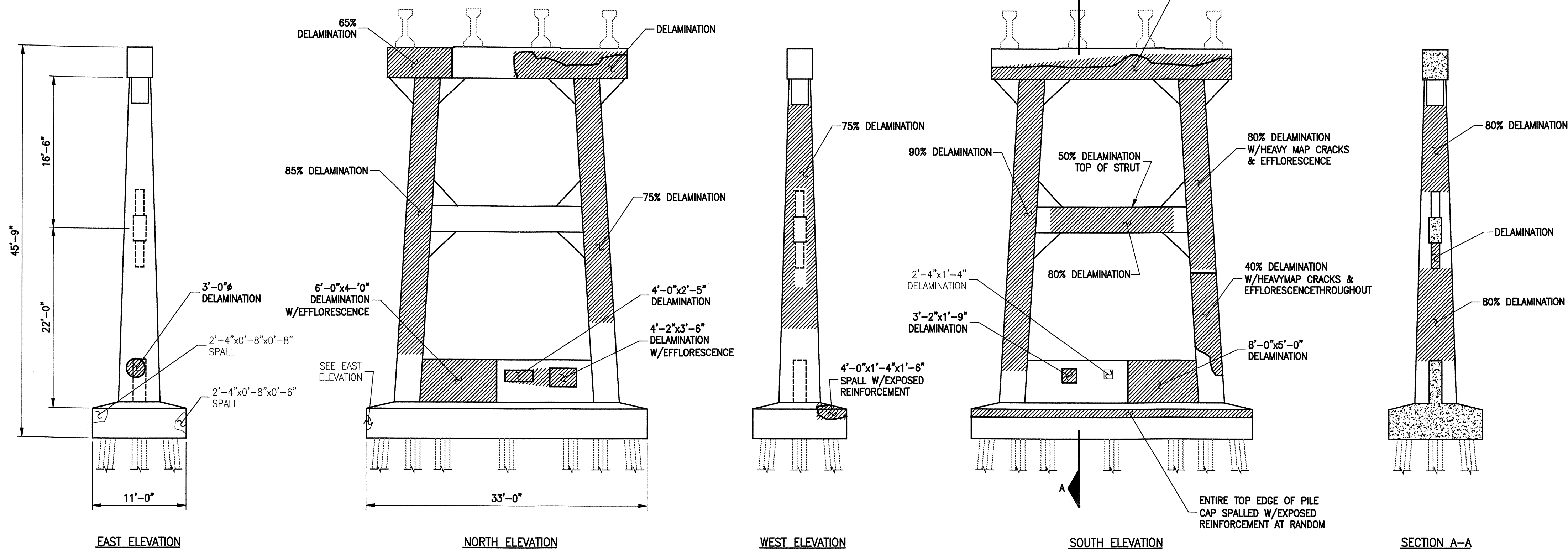


DRAWN BY: F.P. THOMPSON DATE: 4/07  
CHECKED BY: R.C. LARSON DATE: 5/07

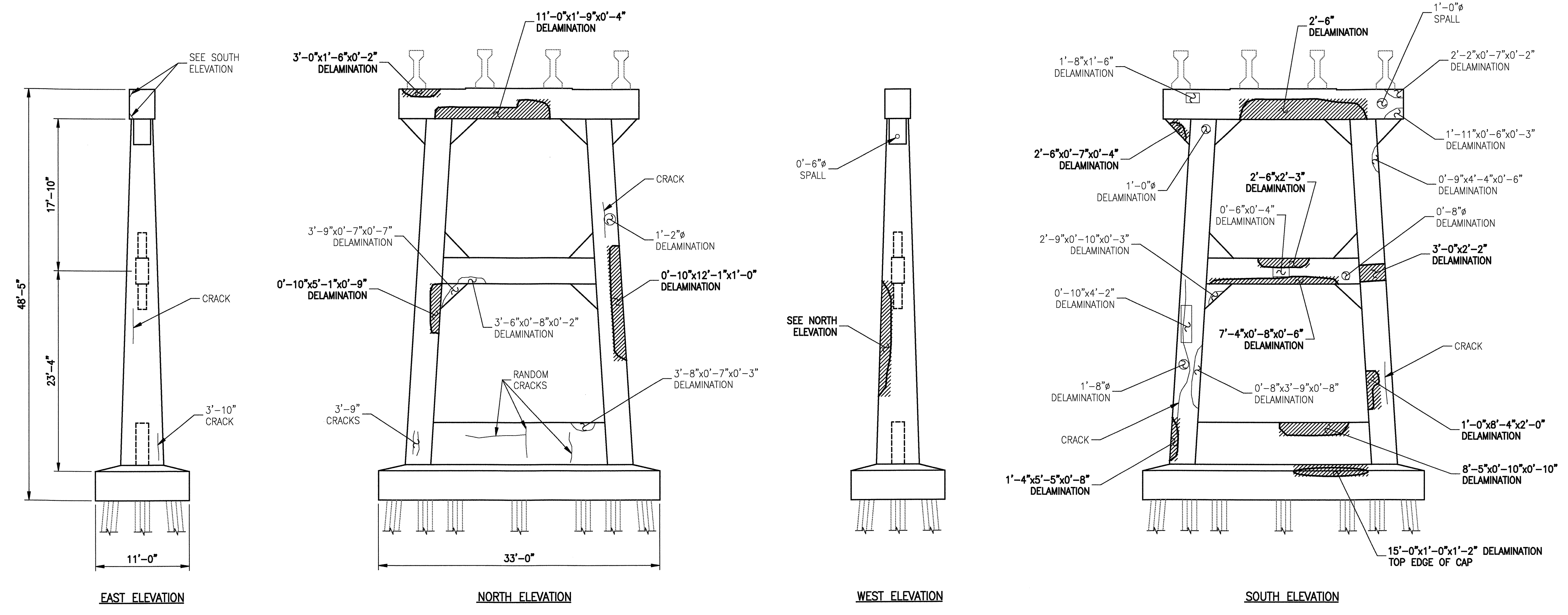
REVISIONS						SHEET NO. 111
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

**BILL OF MATERIAL**

BENT #135			
REPAIR TYPE	UNIT	QUANTITIES	
			ACTUAL
HORIZONTAL SHOTCRETE	CF	2	
VERTICAL SHOTCRETE	CF	410	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	12	
POURED CONC. REPAIR	CF	-	
BENT #136			
REPAIR TYPE	UNIT	QUANTITIES	
			ACTUAL
HORIZONTAL SHOTCRETE	CF	6	
VERTICAL SHOTCRETE	CF	58	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	8	
POURED CONC. REPAIR	CF	-	



**BENT #135**



**BENT #136**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

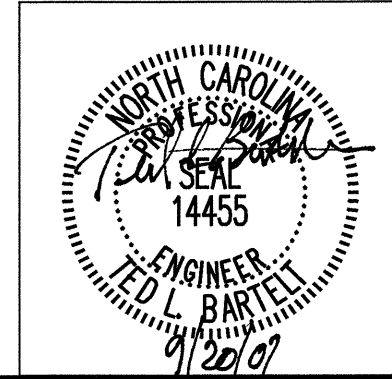
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 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #135-#136**

DRAWN BY: F.P. THOMPSON DATE: 4/07  
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2			4		

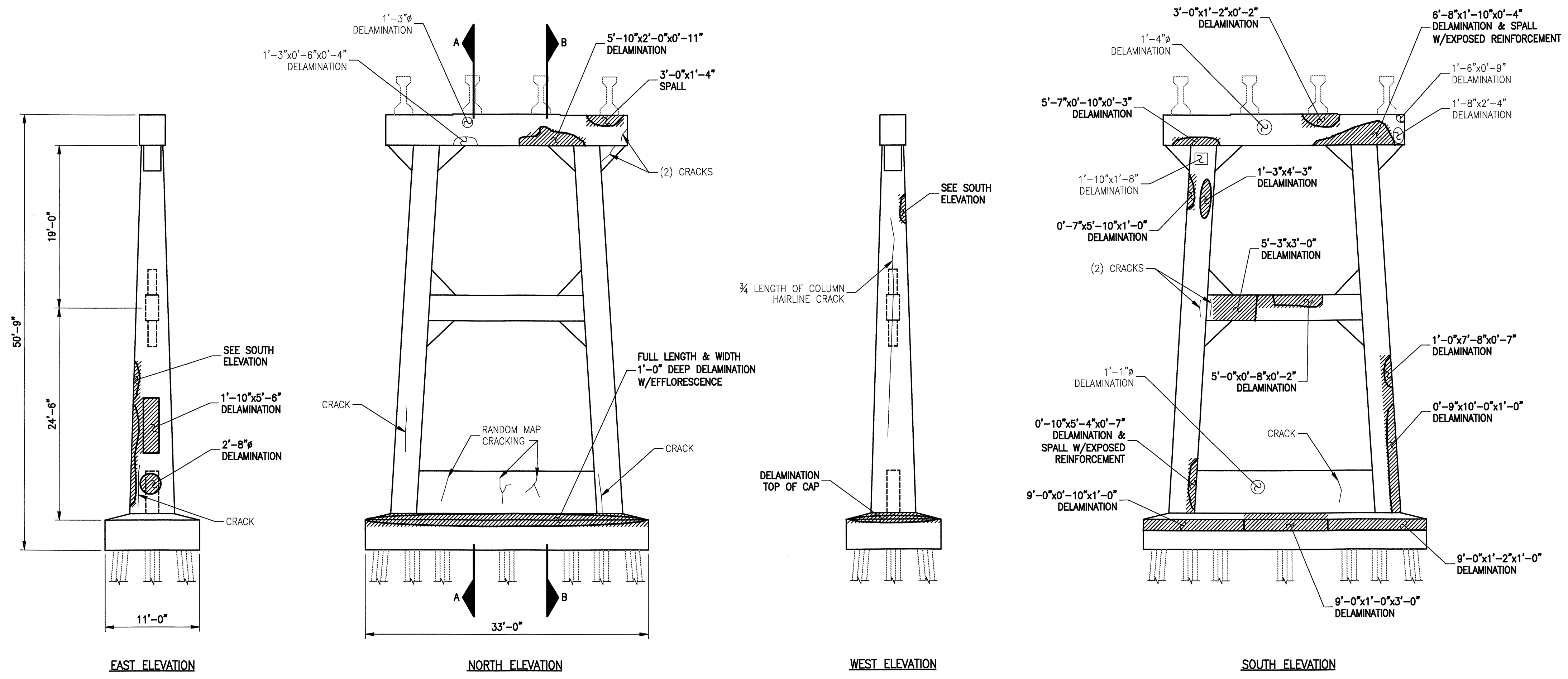
TOTAL SHEETS: 166



**BILL OF MATERIAL**

**BENT #137**

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	24
VERTICAL SHOTCRETE	CF	250
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	16
POURED CONC. REPAIR	CF	-



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

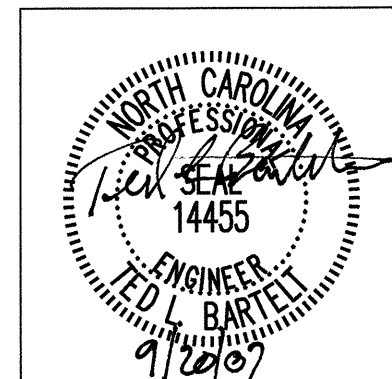
PLAN PREPARED BY:



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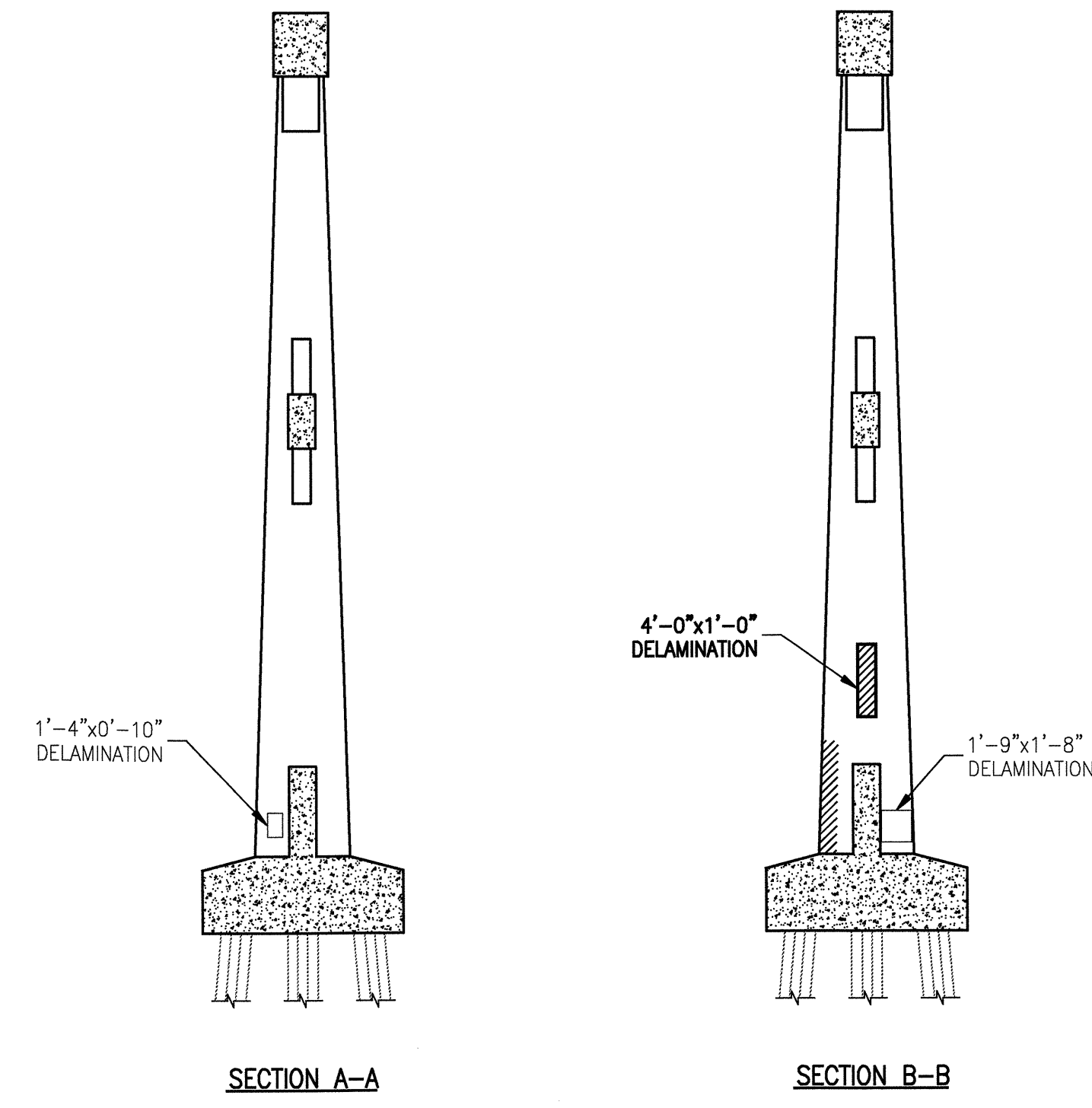
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 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #137



REVISIONS						SHEET NO. 113
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

**BENT #137**

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

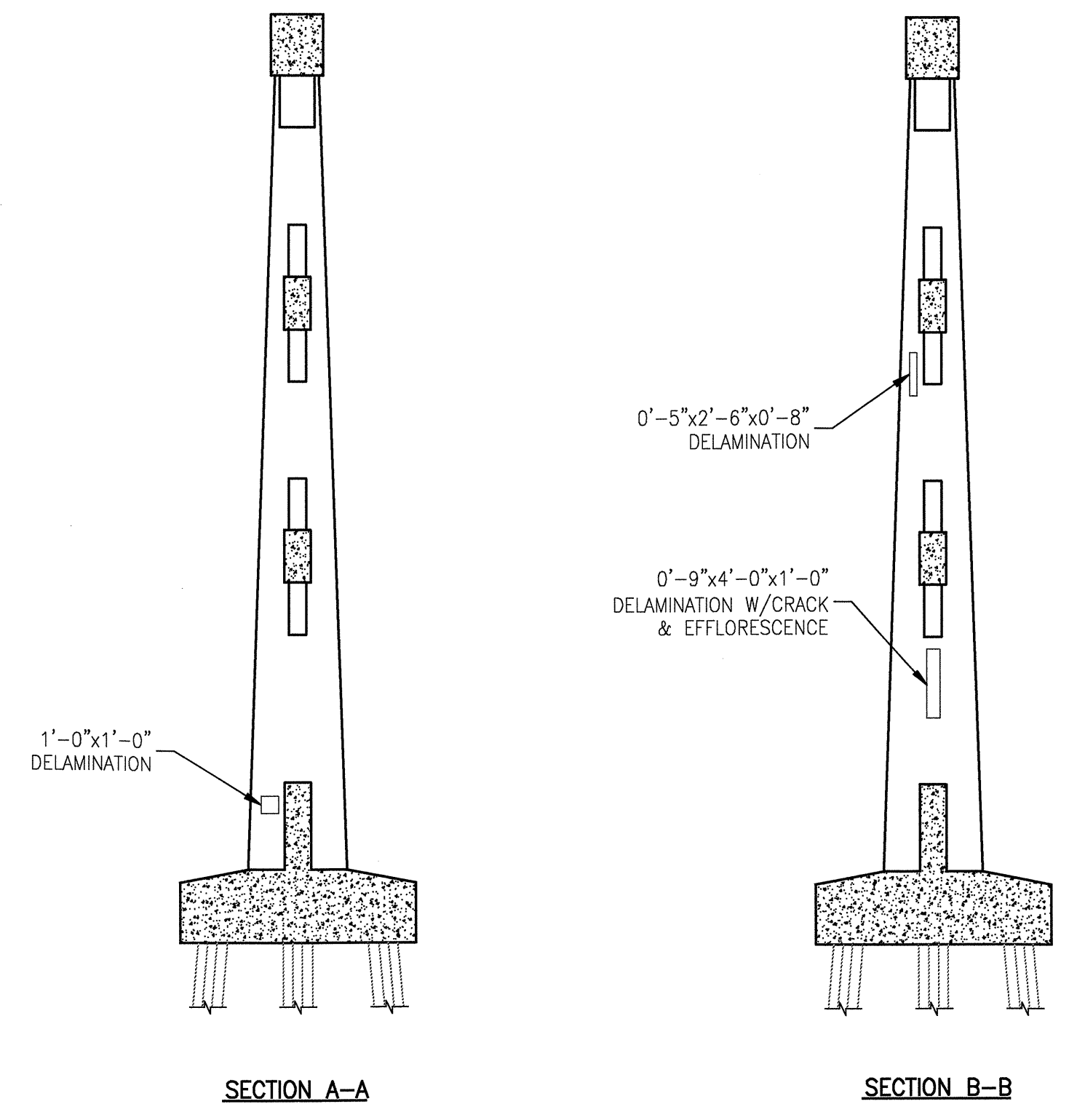
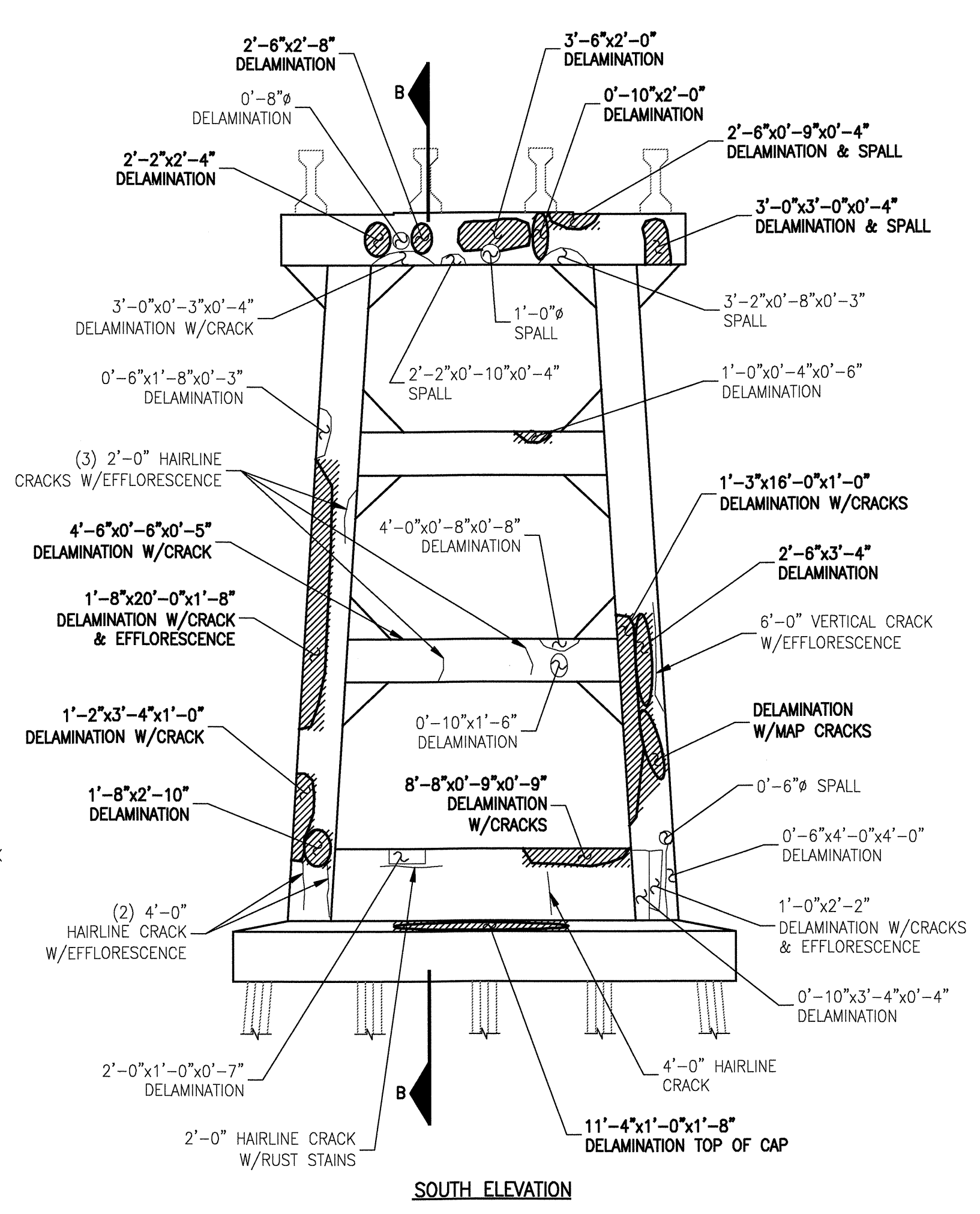
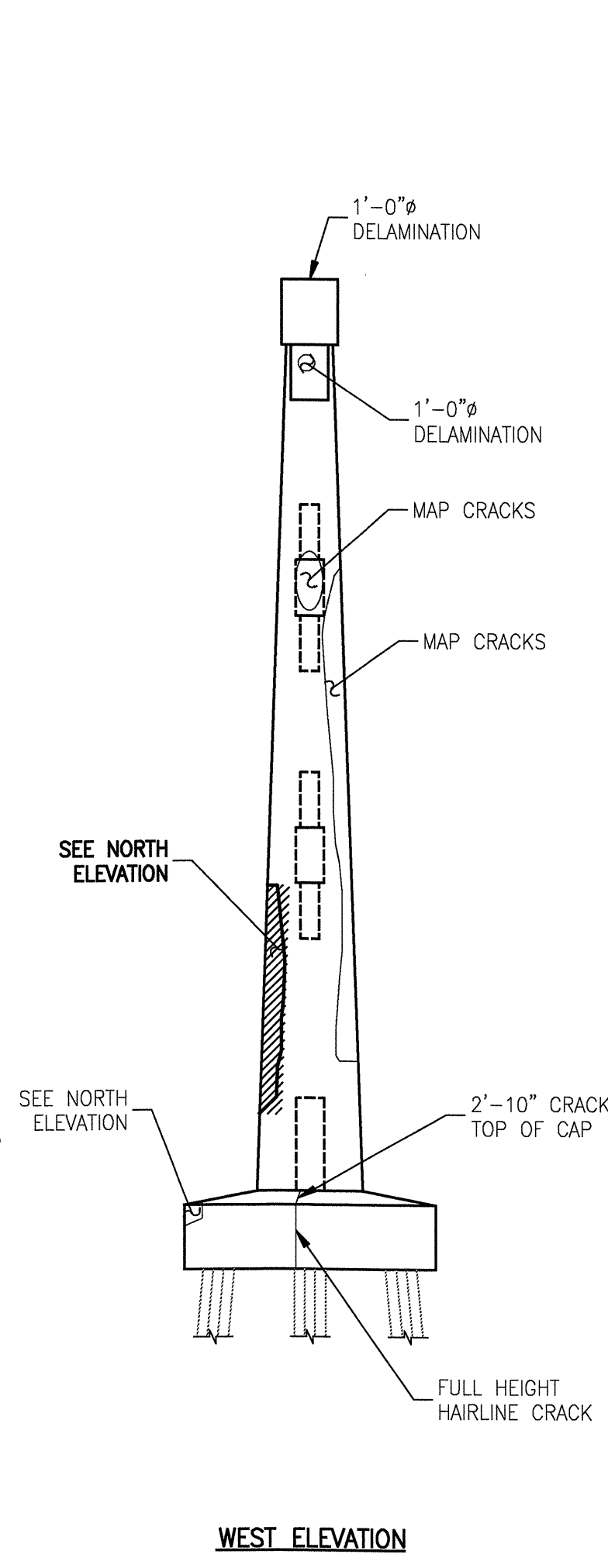
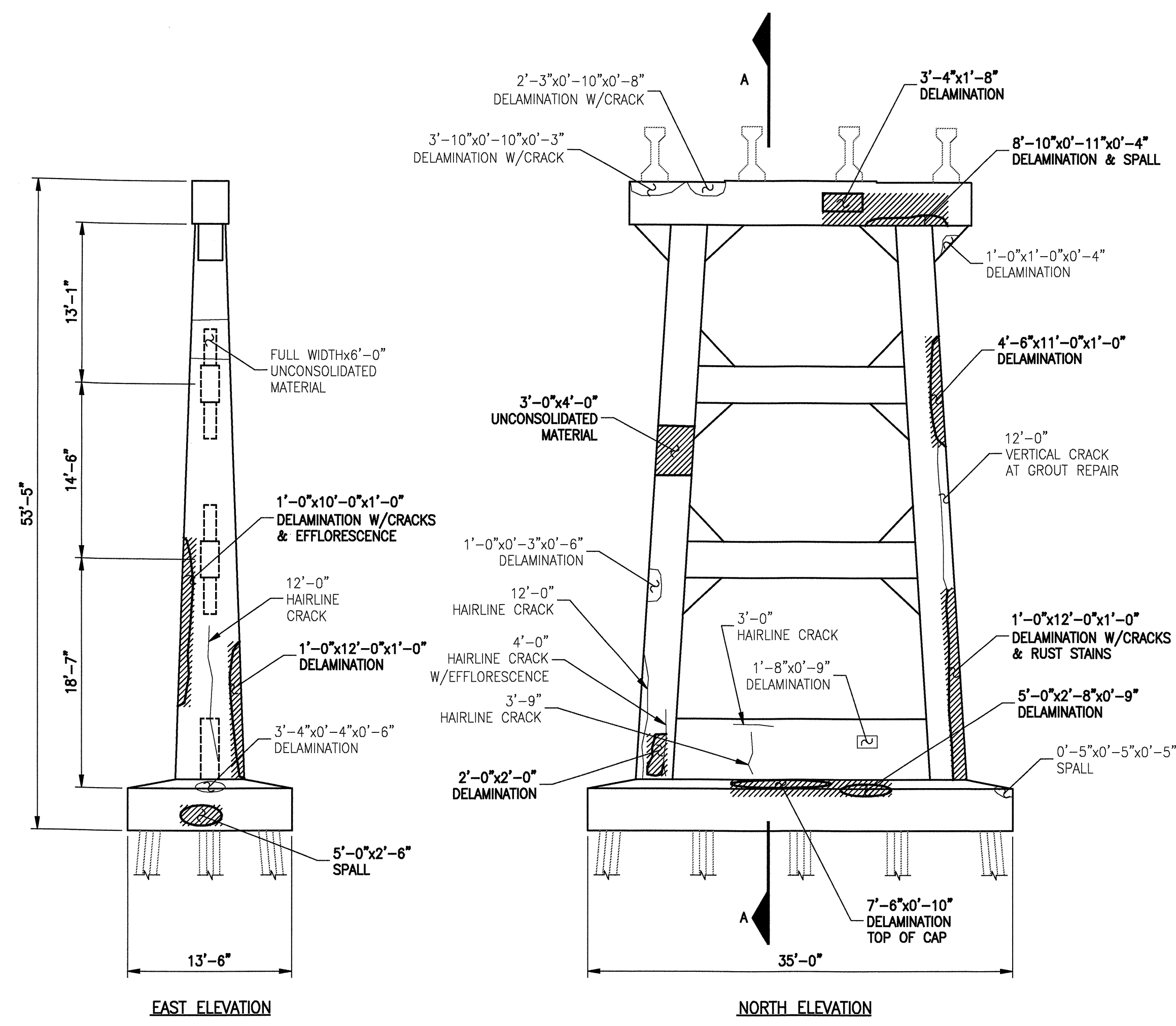




# BILL OF MATERIAL

BENT #138

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	12
VERTICAL SHOTCRETE	CF	157
OVERHEAD SHOTCRETE	CF	3
ADDITIONAL REINFORCING	LBS	17
POURED CONC. REPAIR	CF	6



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

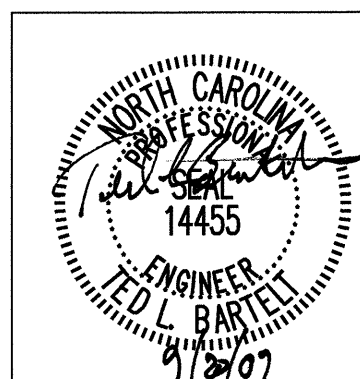
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #138



## BENT #138

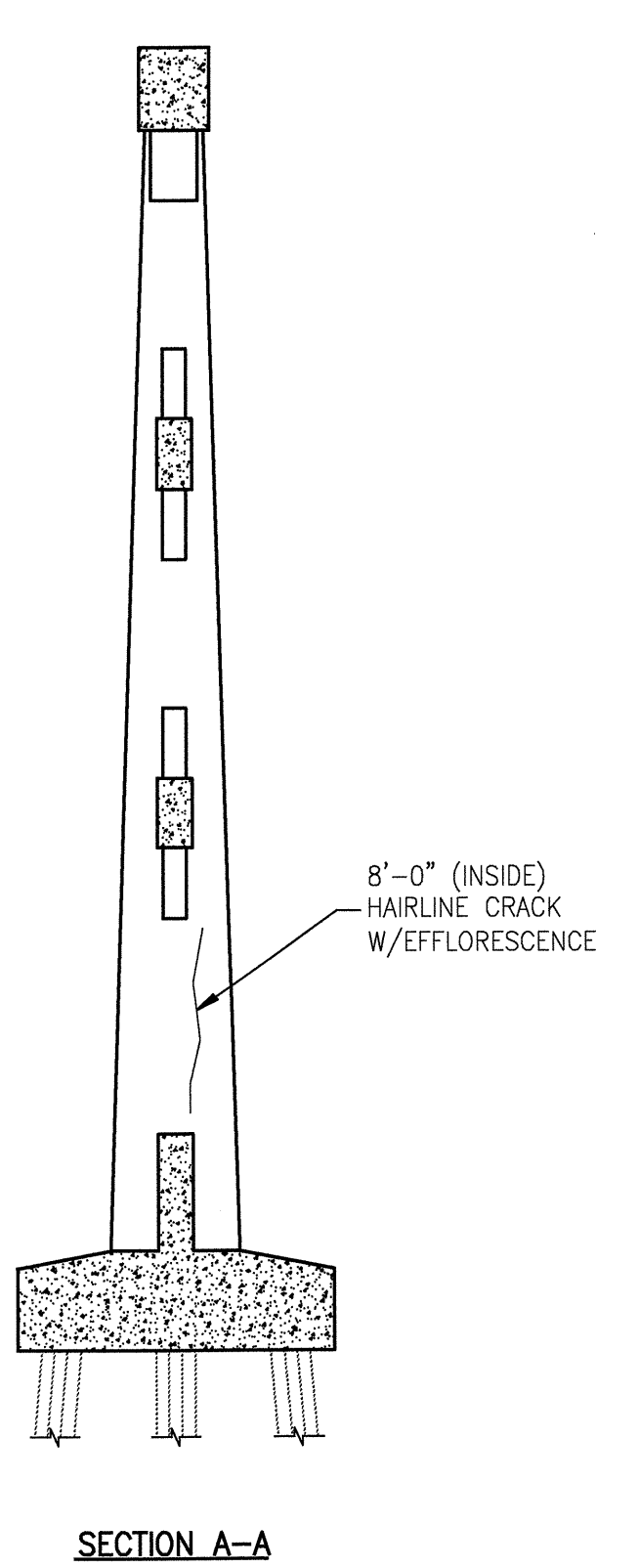
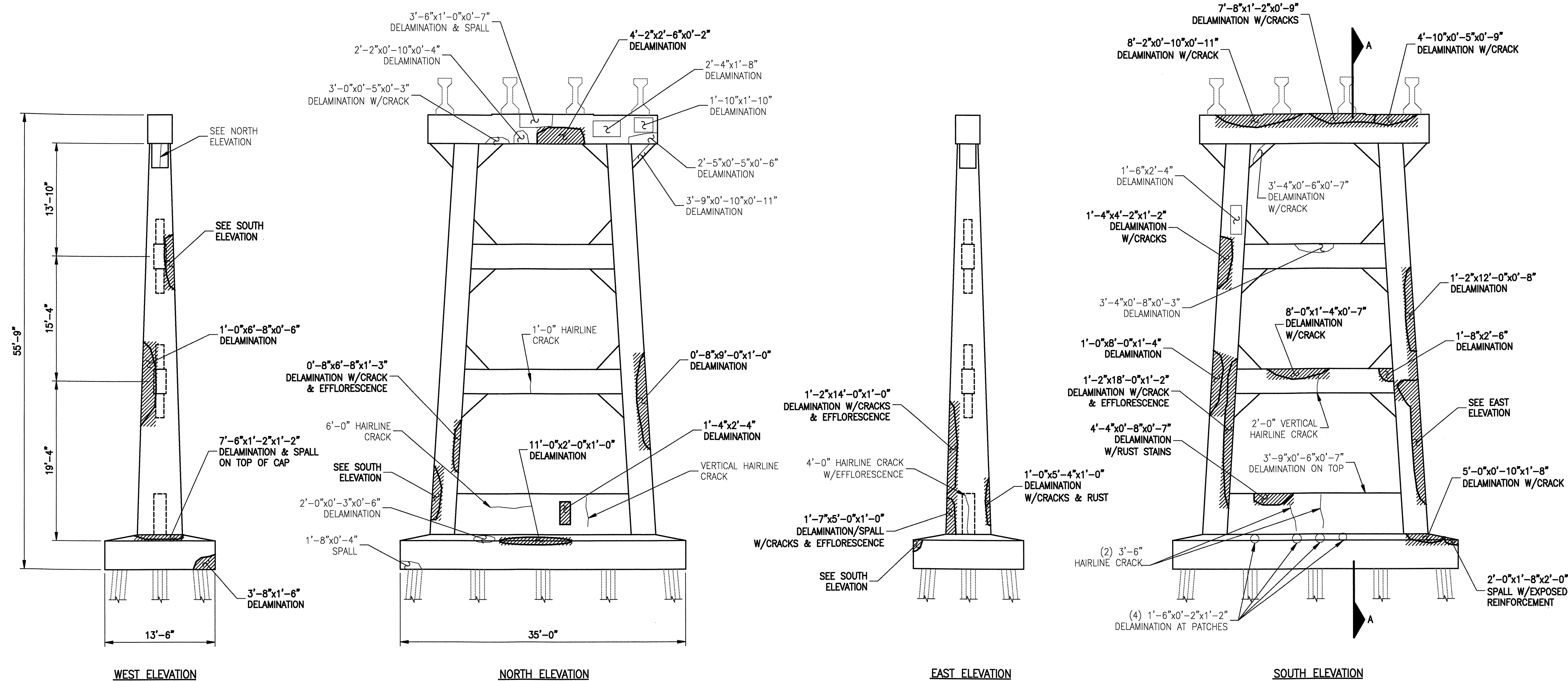
DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

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NO.	BY:	DATE:	NO.	BY:	DATE:	114
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

BENT #139

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	12
VERTICAL SHOTCRETE	CF	111
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	65
POURED CONC. REPAIR	CF	3



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9"x8'-1"x0'-6"$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

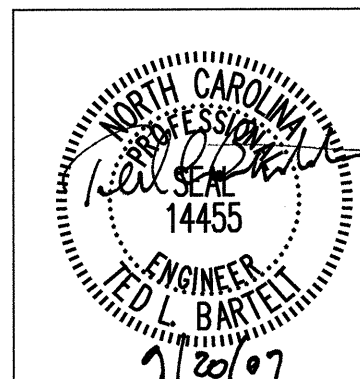
PLAN PREPARED BY:



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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY \_\_\_\_\_  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #139



## BENT #139

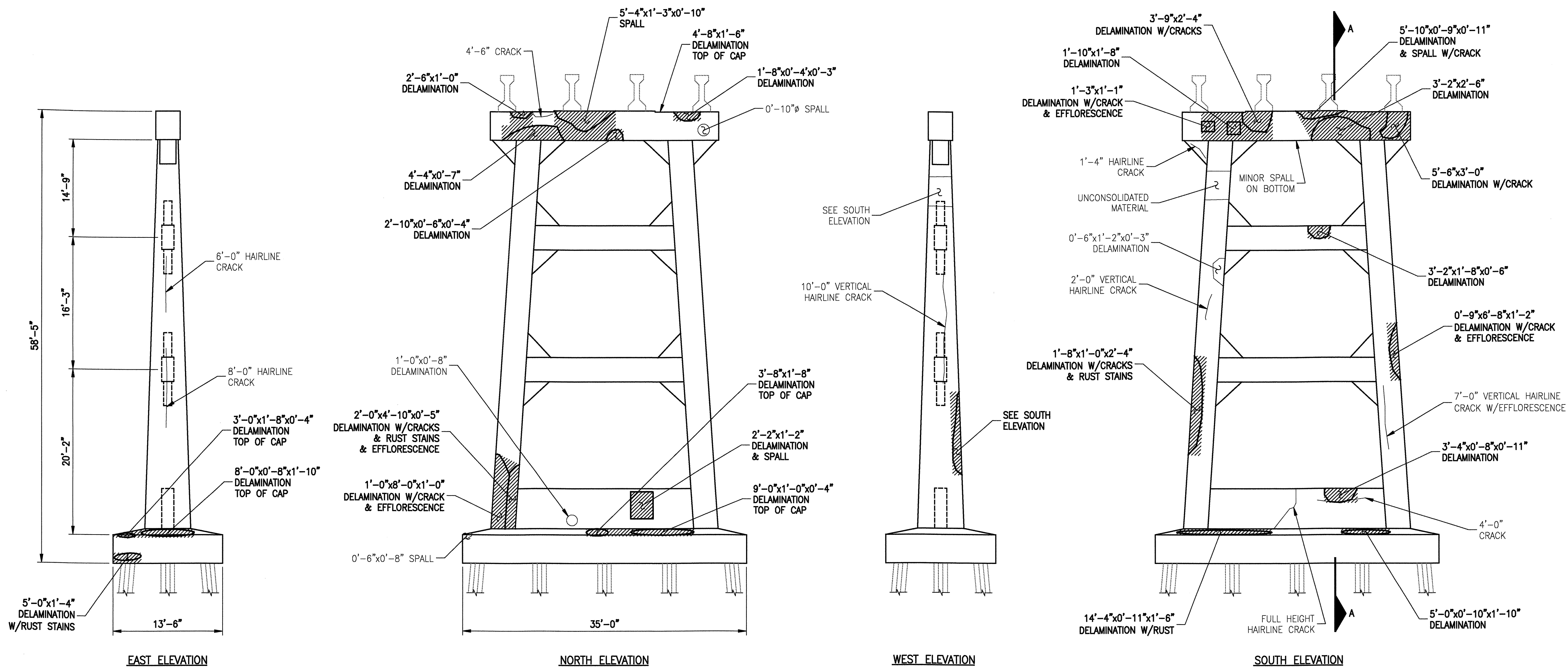
DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	115
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

BENT #140

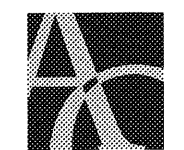
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	16
VERTICAL SHOTCRETE	CF	67
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	61
POURED CONC. REPAIR	CF	-



## KEY

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



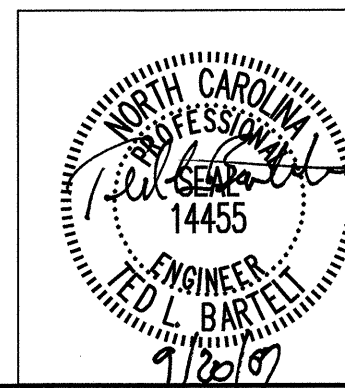
**ALPHA & OMEGA GROUP**  
CIVIL & STRUCTURAL ENGINEERS

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DEPARTMENT OF TRANSPORTATION  
RALEIGH

BONNER BRIDGE REPAIR  
HIGH LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #140



## BENT #140

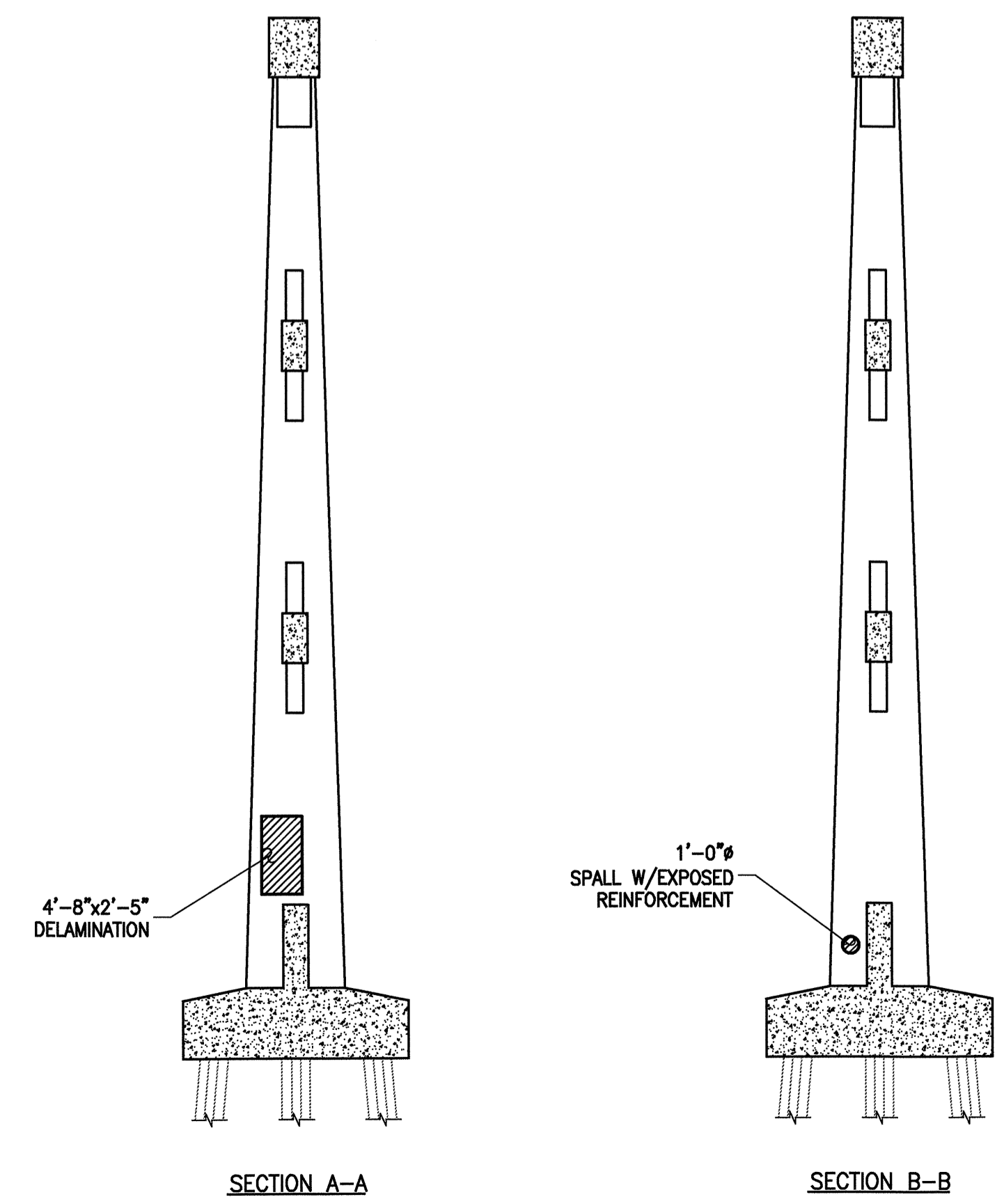
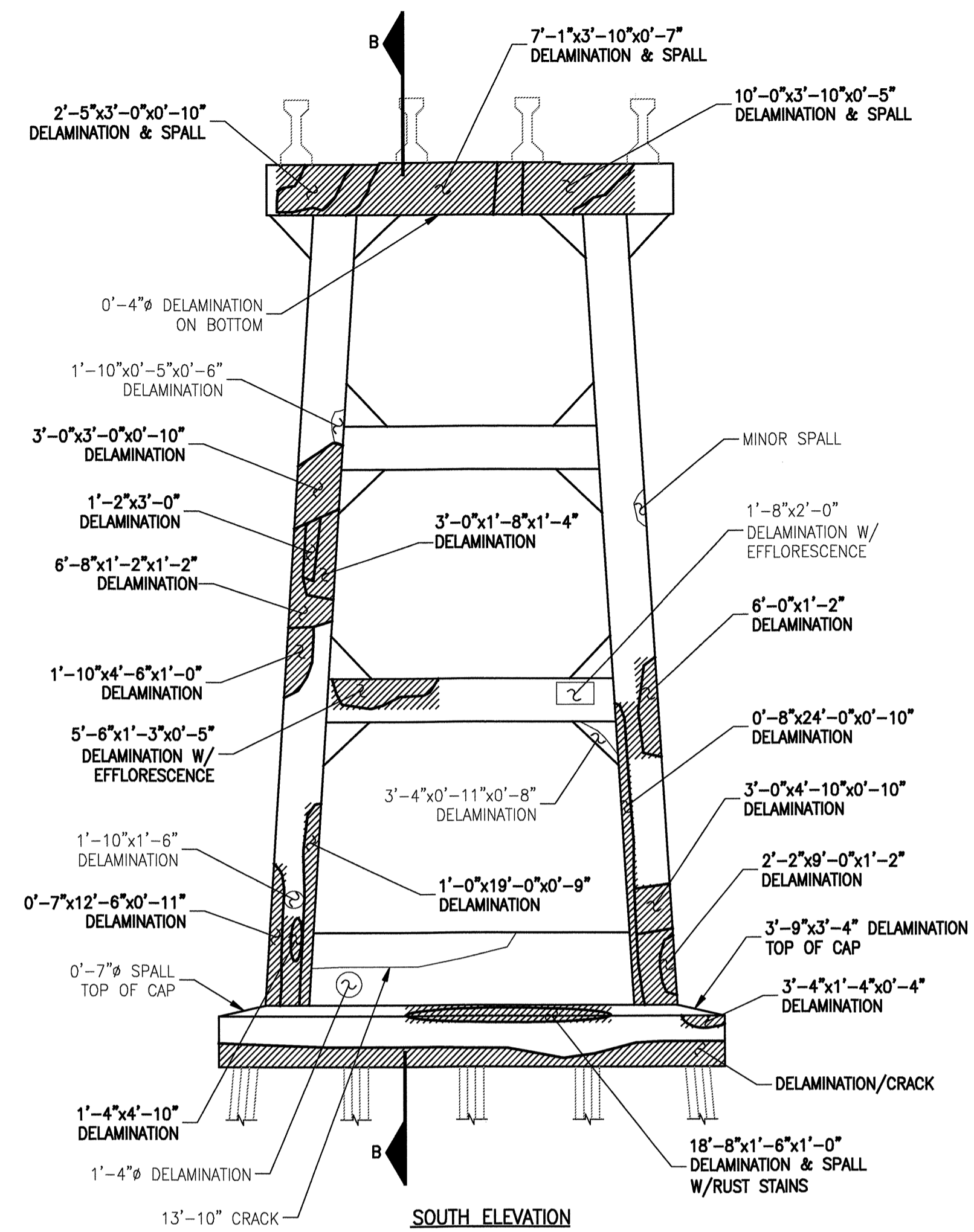
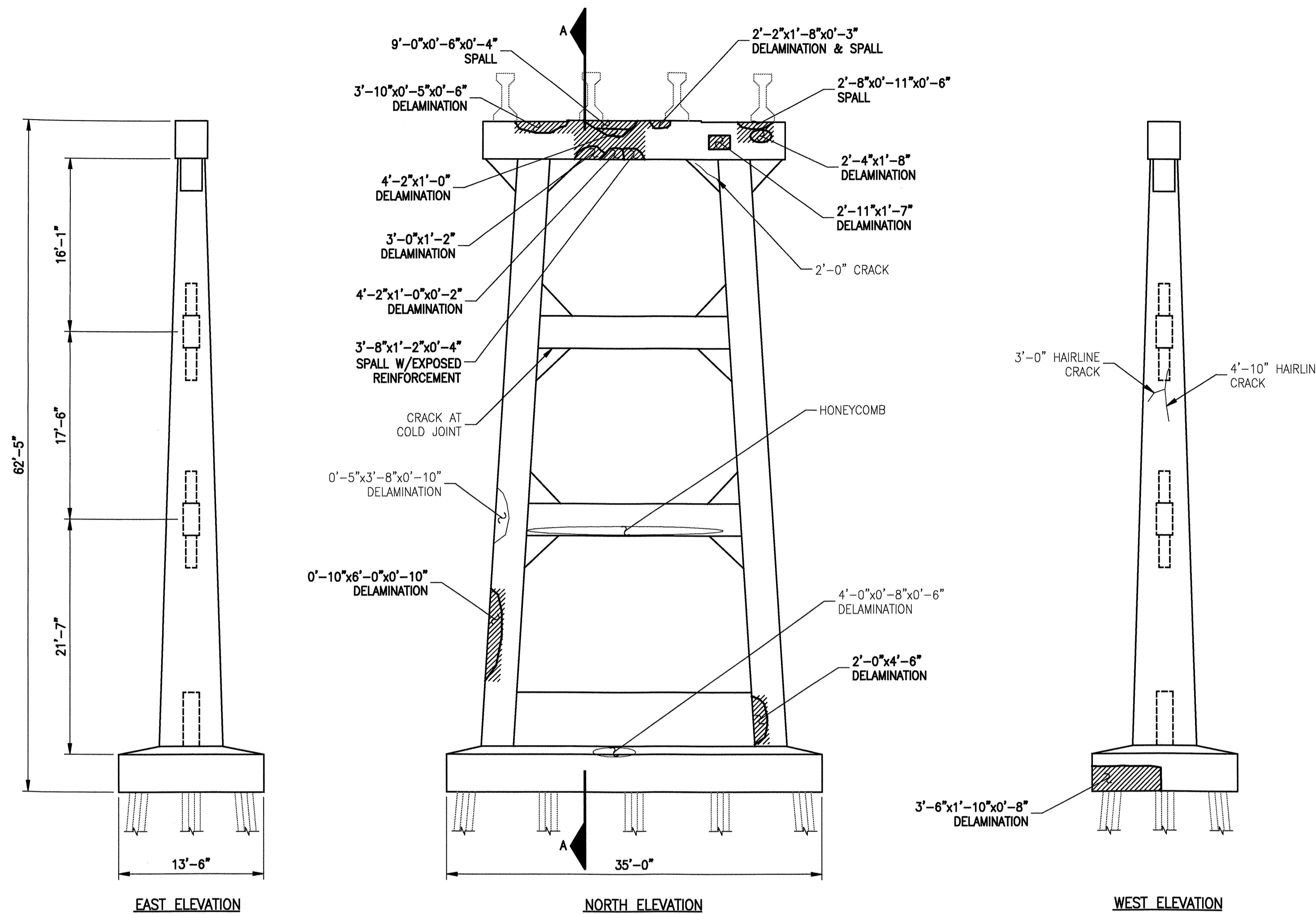
DRAWN BY: F.P. THOMPSON DATE: 4/07  
CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166





BILL OF MATERIAL			
BENT #142			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	137	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	279	
POURED CONC. REPAIR	CF	50	



**BENT #142**

- KEY**
- [Hatched Area] - DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - [Dashed Outline] - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - [Dotted Outline] - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

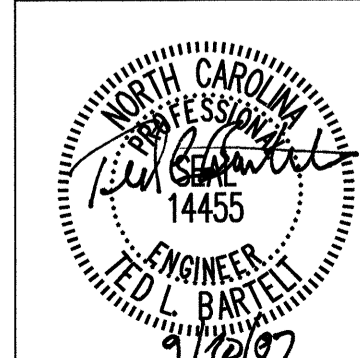
PLAN PREPARED BY:



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 AGG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #142



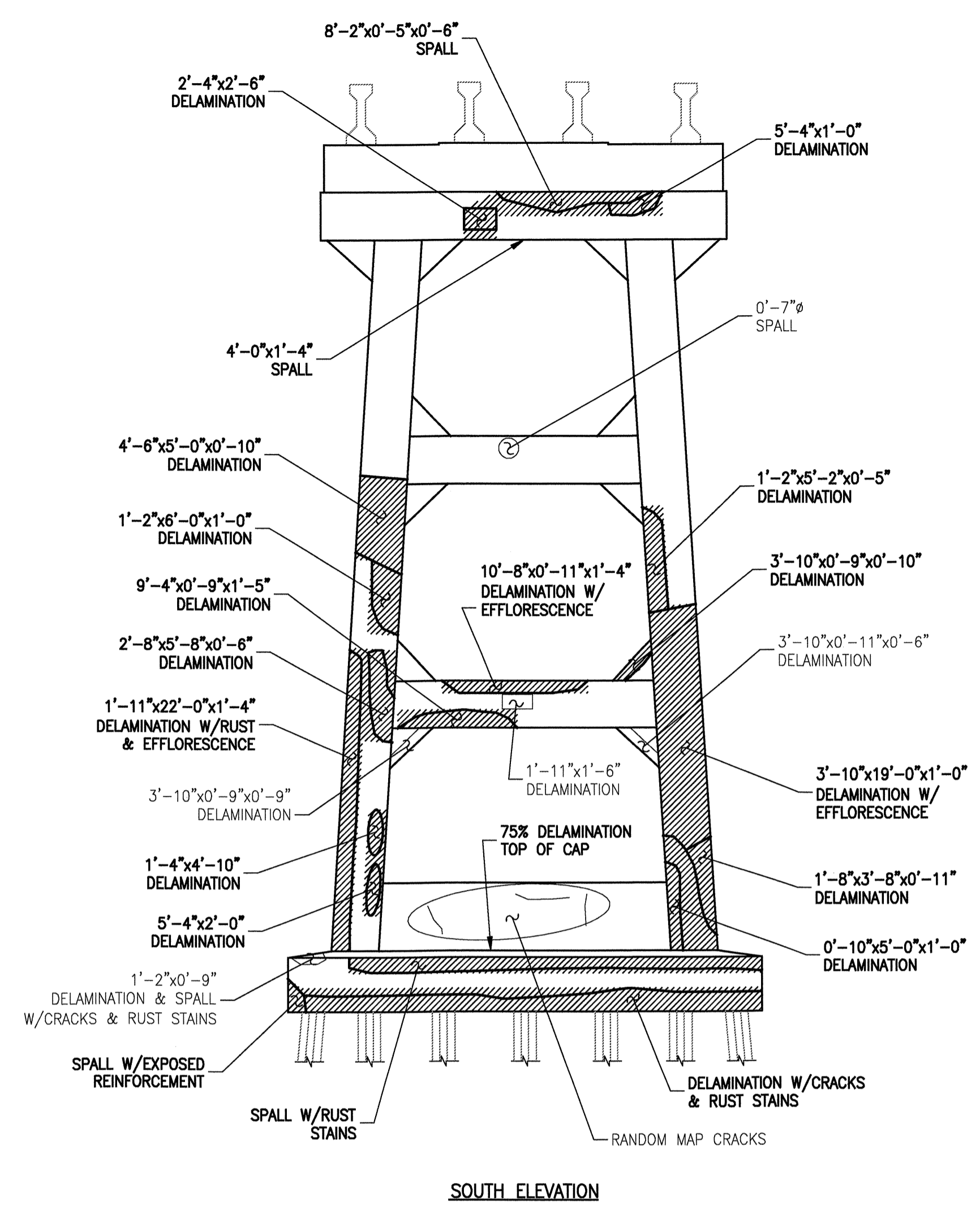
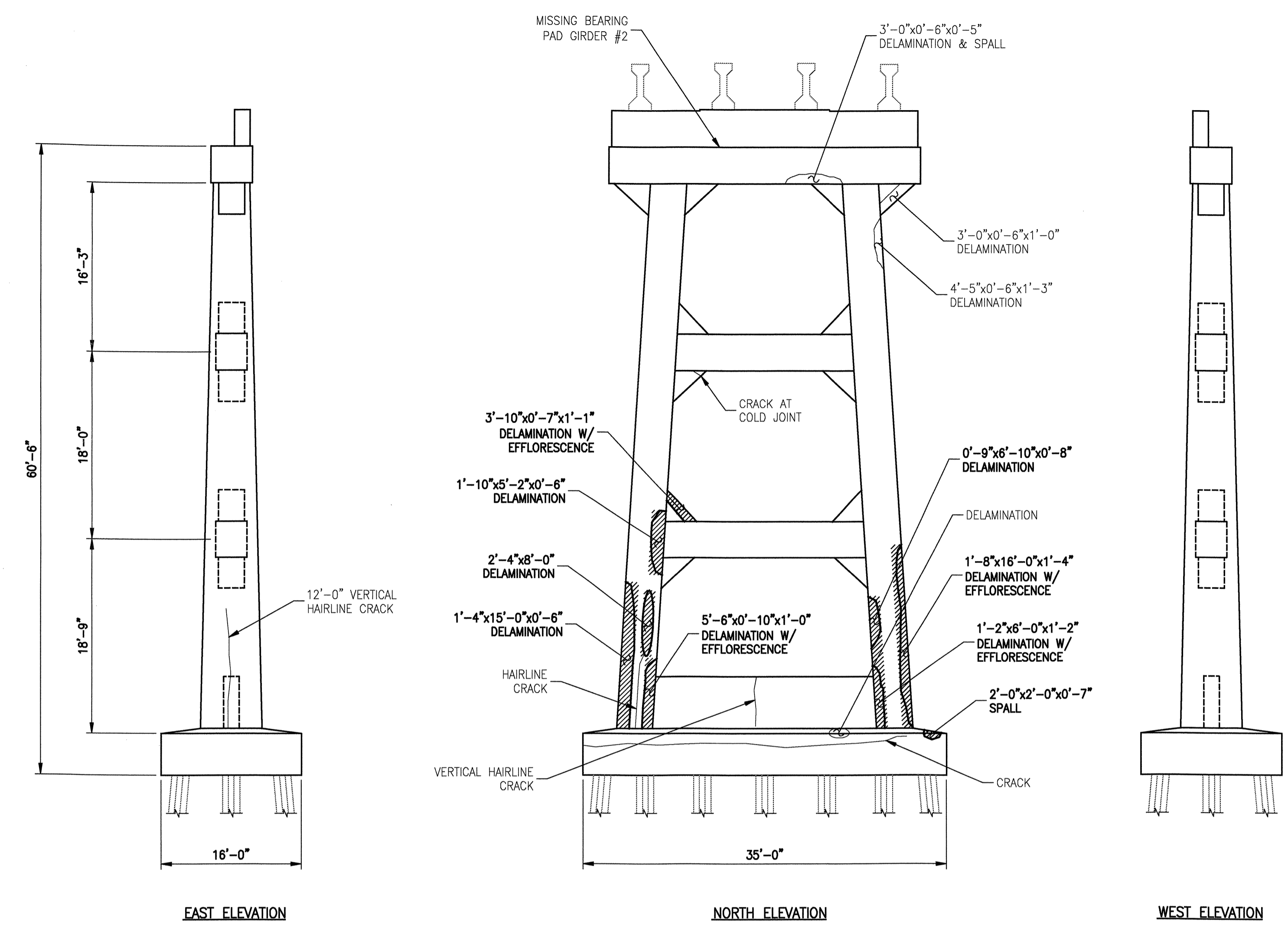
DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

# BILL OF MATERIAL

## BENT #143

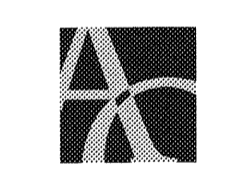
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	208
VERTICAL SHOTCRETE	CF	189
OVERHEAD SHOTCRETE	CF	7
ADDITIONAL REINFORCING	LBS	124
POURED CONC. REPAIR	CF	24



### BENT #143

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9"x8'-1"x0'-6"$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9"x8'-1"x0'-6"$  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

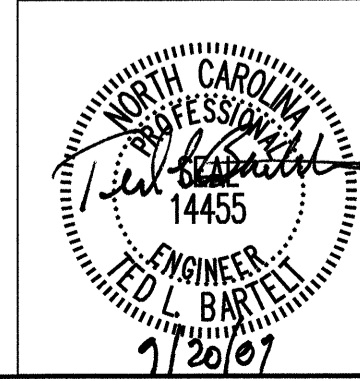
PLAN PREPARED BY:



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 4911 Green Road Suite 107 Raleigh, NC 27616  
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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #143



DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

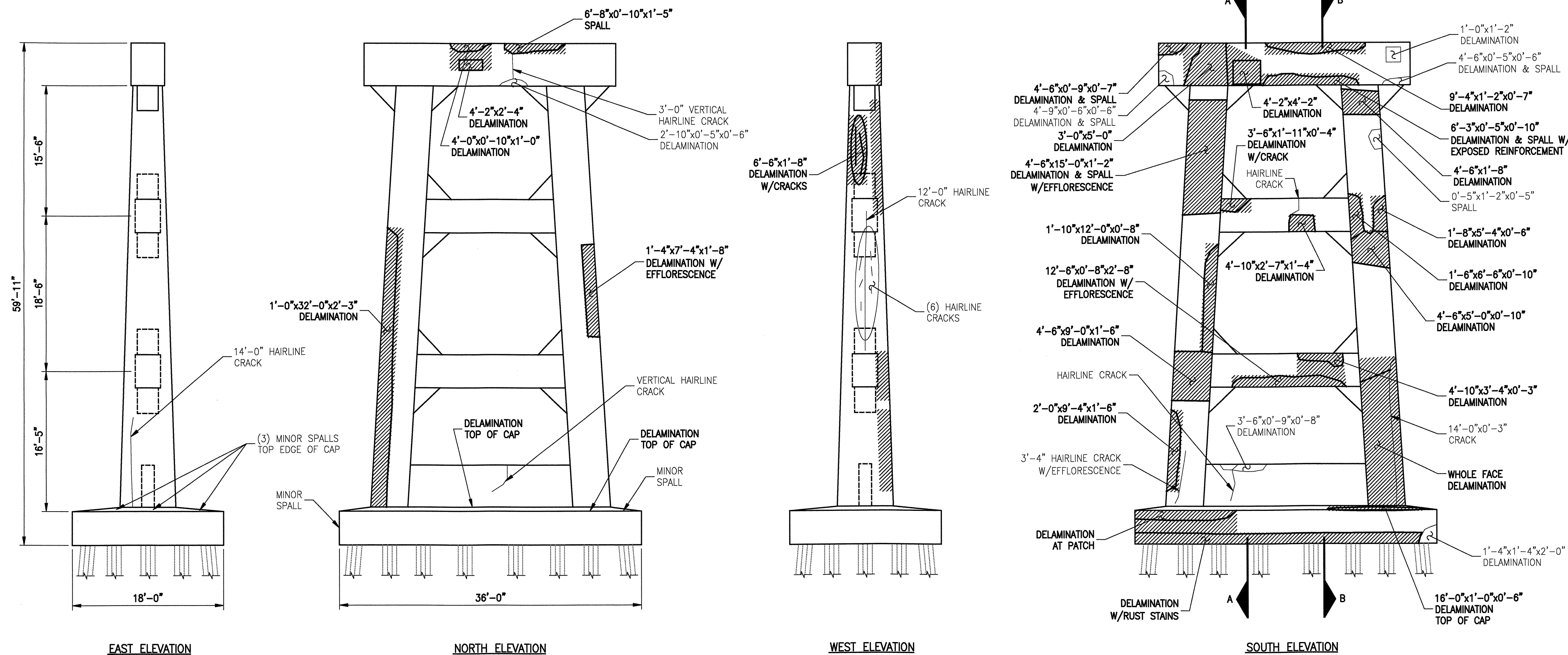
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1			3			TOTAL SHEETS 166
2			4			



# BILL OF MATERIAL

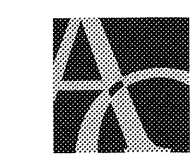
BENT #144

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	15
VERTICAL SHOTCRETE	CF	254
OVERHEAD SHOTCRETE	CF	22
ADDITIONAL REINFORCING	LBS	152
POURED CONC. REPAIR	CF	17



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

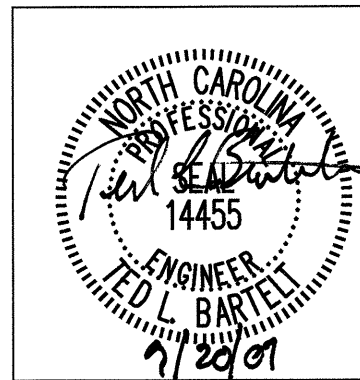
PLAN PREPARED BY:



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PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

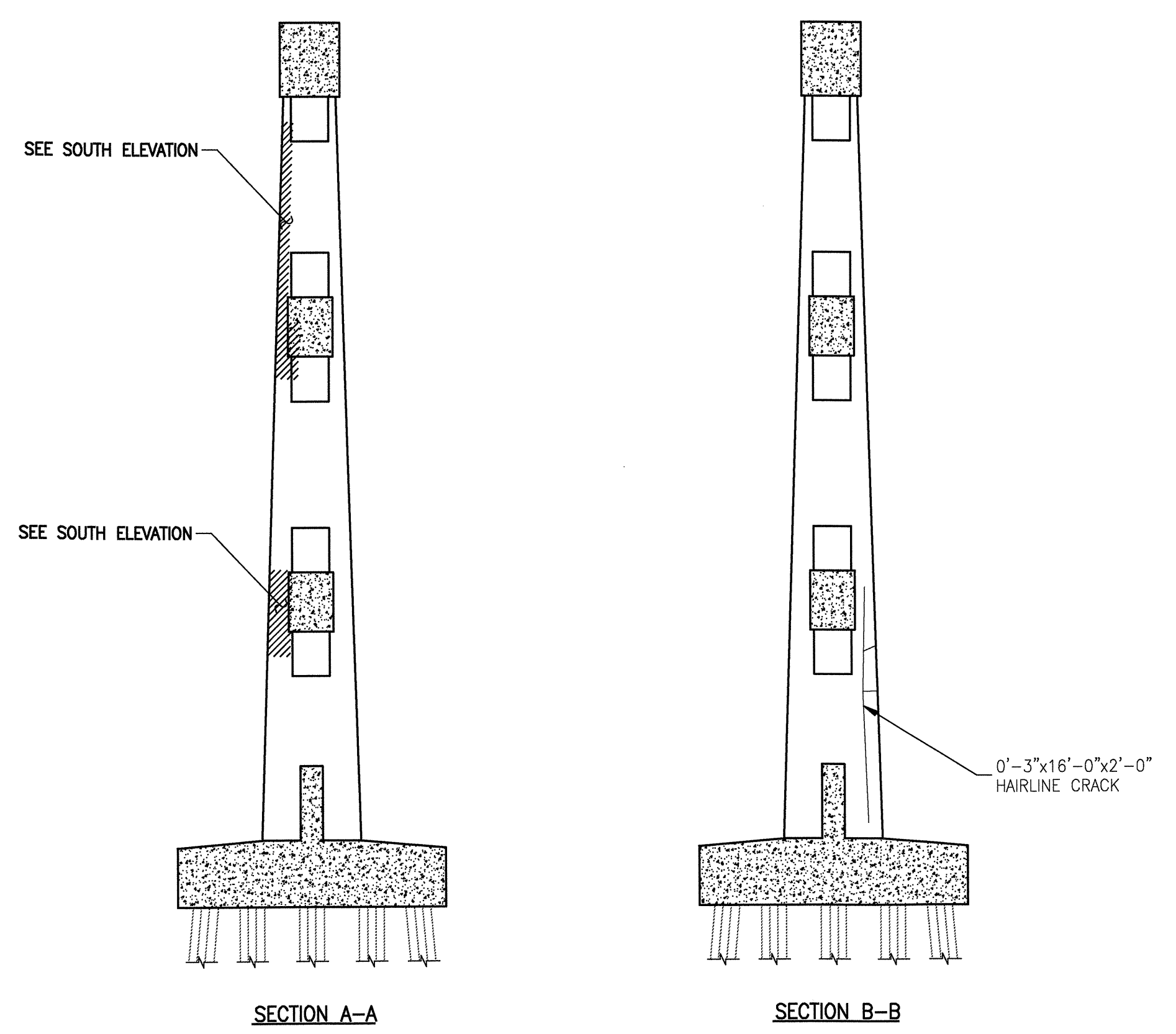
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #144



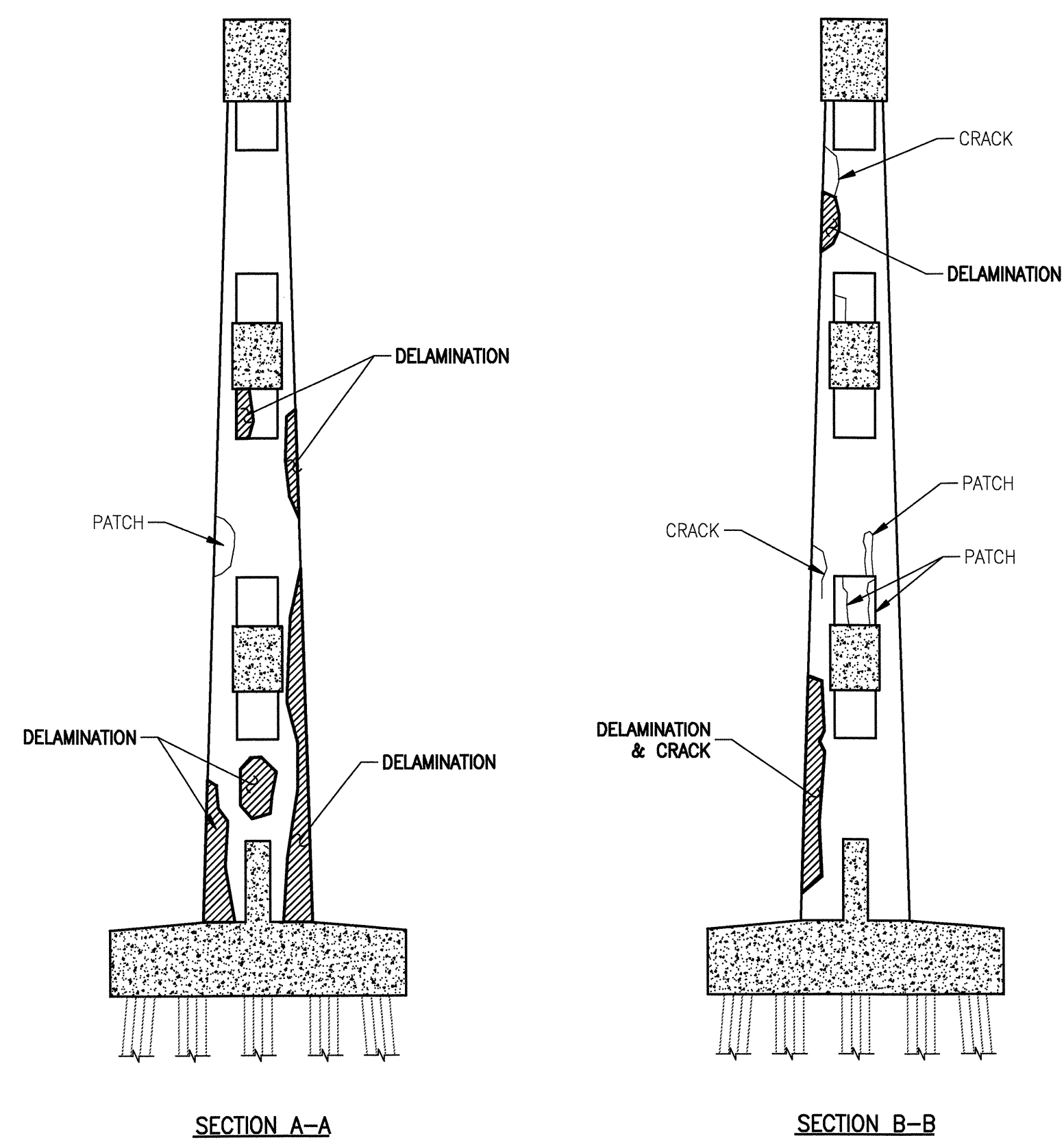
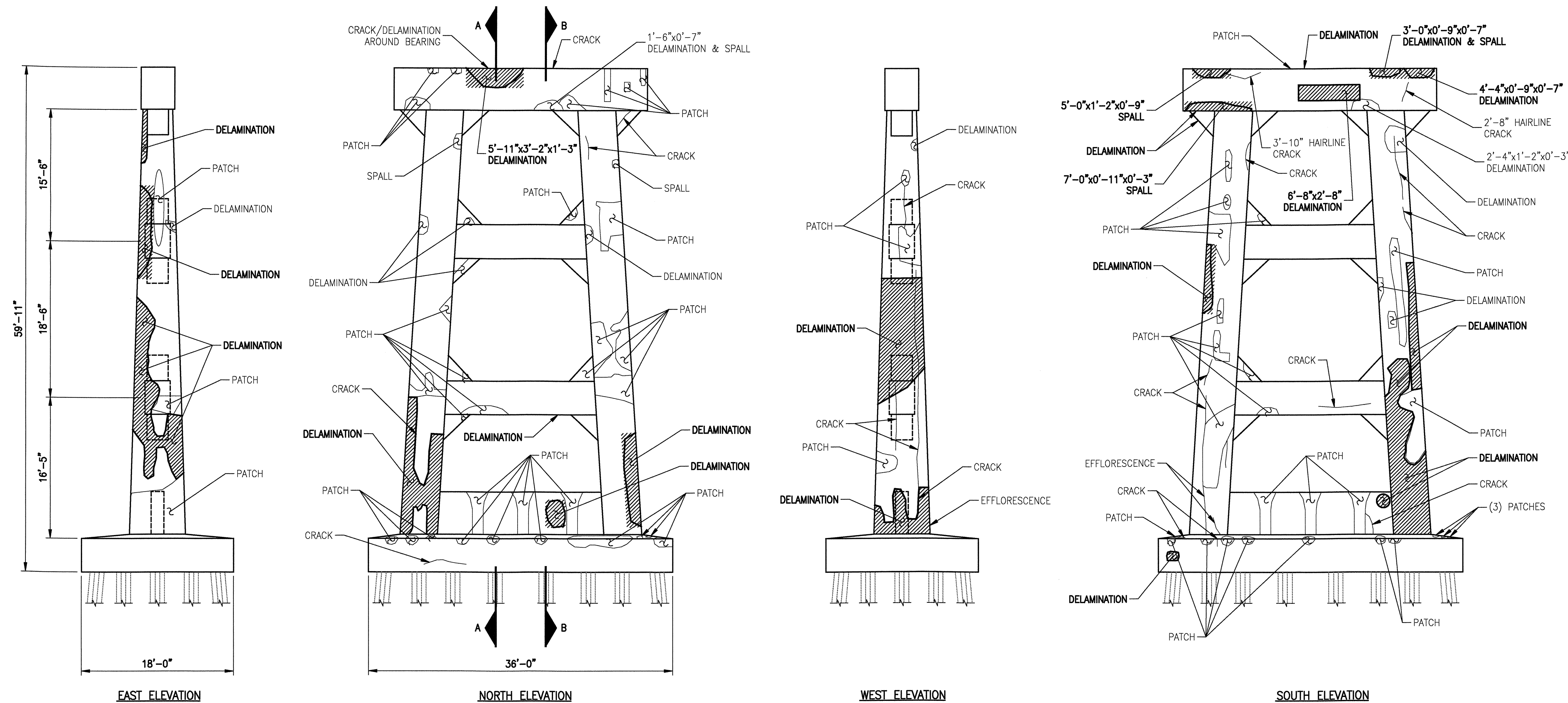
REVISIONS						SHEET NO. 120
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

## BENT #144



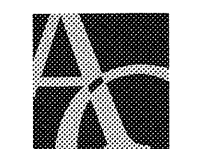
BILL OF MATERIAL			
BENT #145			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	2	
VERTICAL SHOTCRETE	CF	227	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	49	
POURED CONC. REPAIR	CF	1	



**BENT #145**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

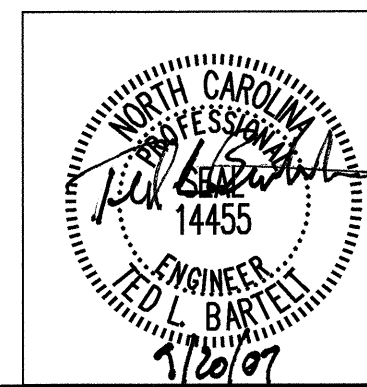


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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #145

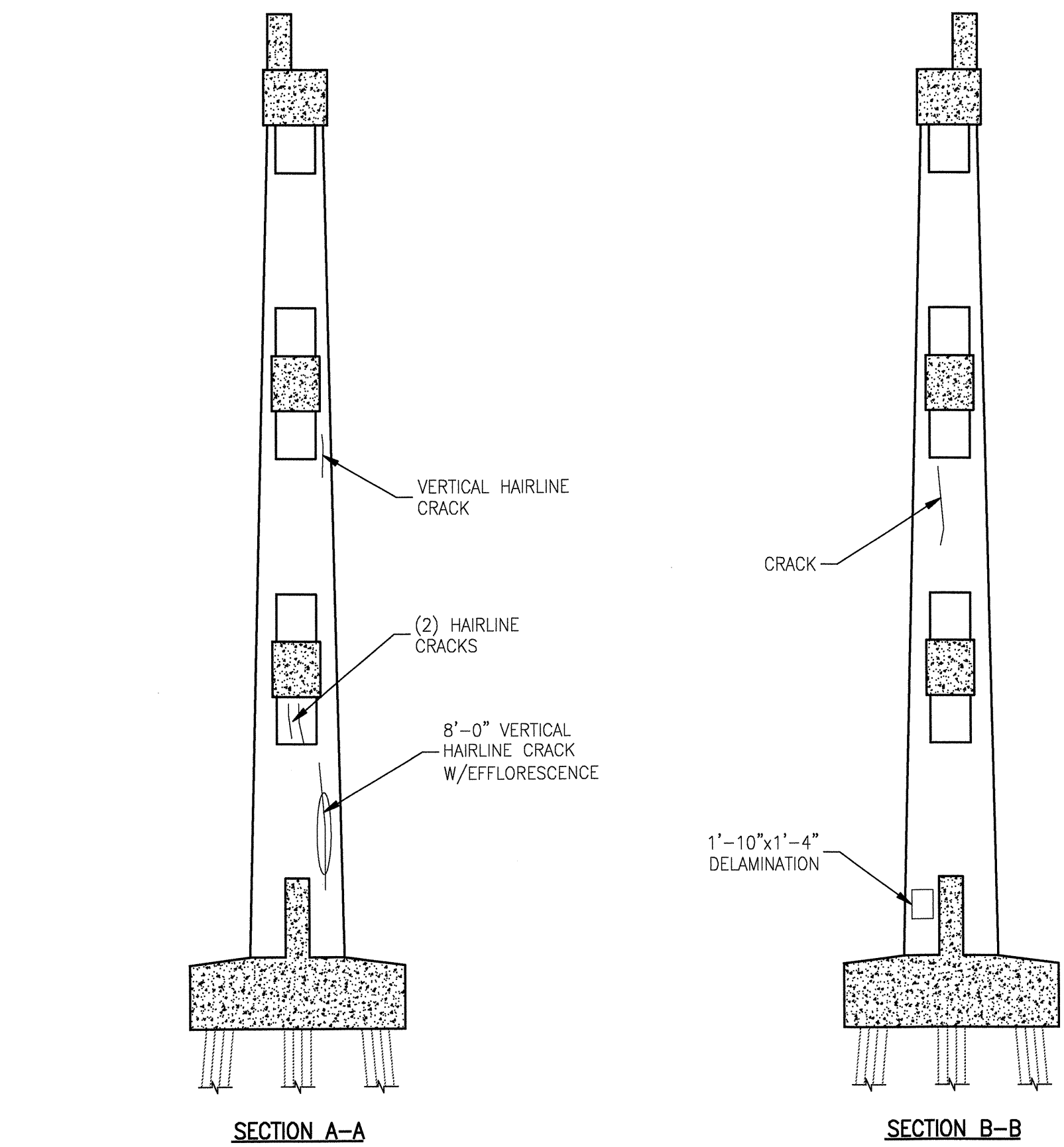
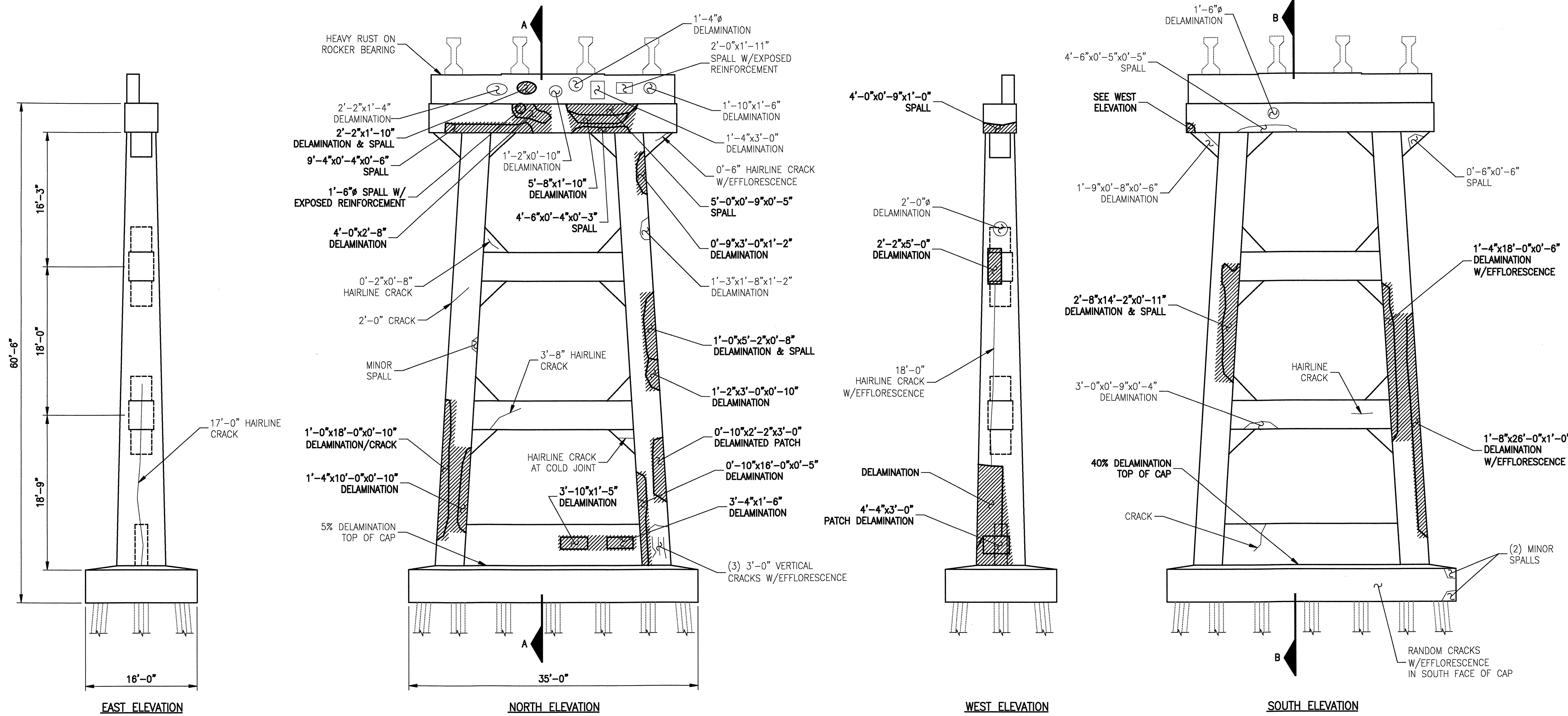


REVISIONS						SHEET NO. 121
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

DRAWN BY: F.P. THOMPSON DATE: 3/07  
 CHECKED BY: R.C. LARSON DATE: 5/07



BILL OF MATERIAL			
BENT #146			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	91	
VERTICAL SHOTCRETE	CF	155	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	-	
POURED CONC. REPAIR	CF	5	



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

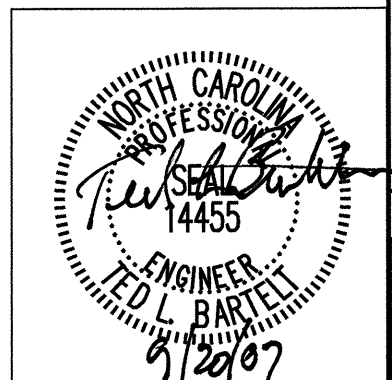


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STATE OF NORTH CAROLINA  
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**BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #146**



REVISIONS						SHEET NO. 122
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

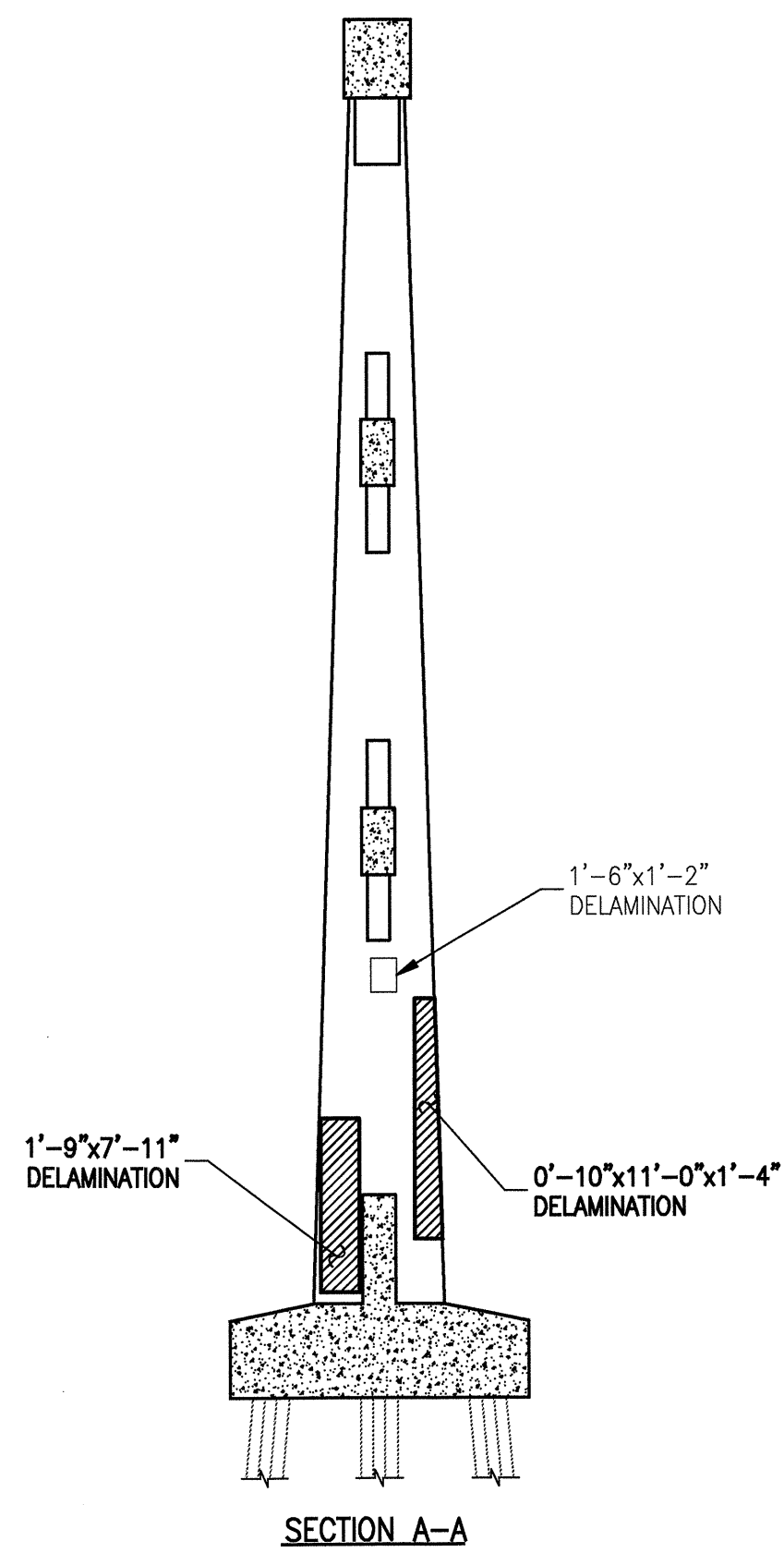
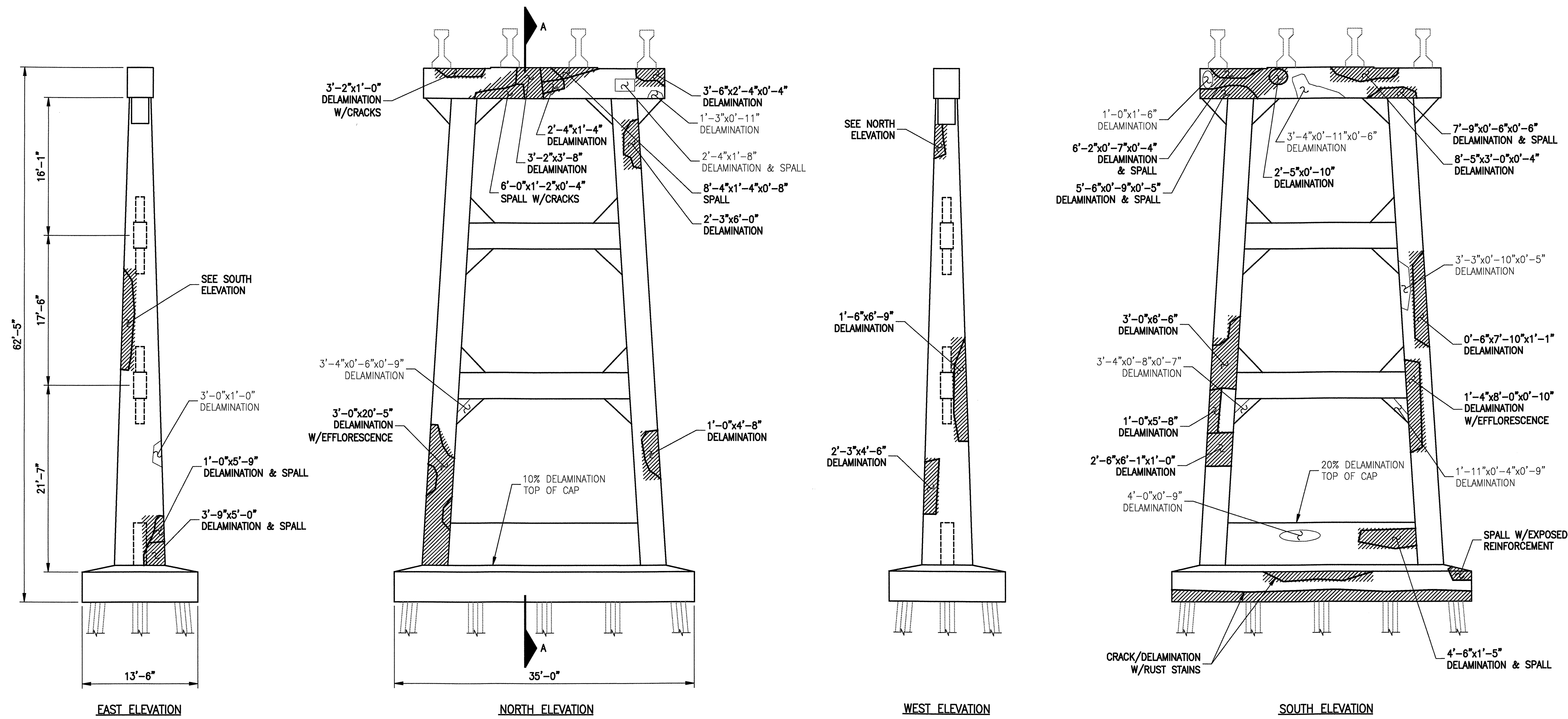
**BENT #146**



# BILL OF MATERIAL

BENT #147

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	149
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	193
POURED CONC. REPAIR	CF	26



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) $\times$ (VERT) $\times$ (DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ) $\times$ (VERT) $\times$ (DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

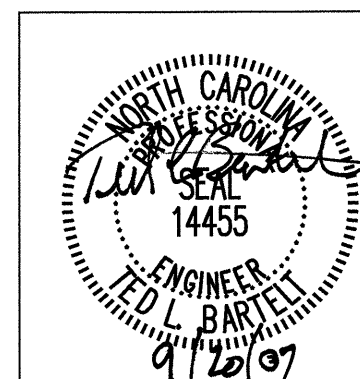


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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #147

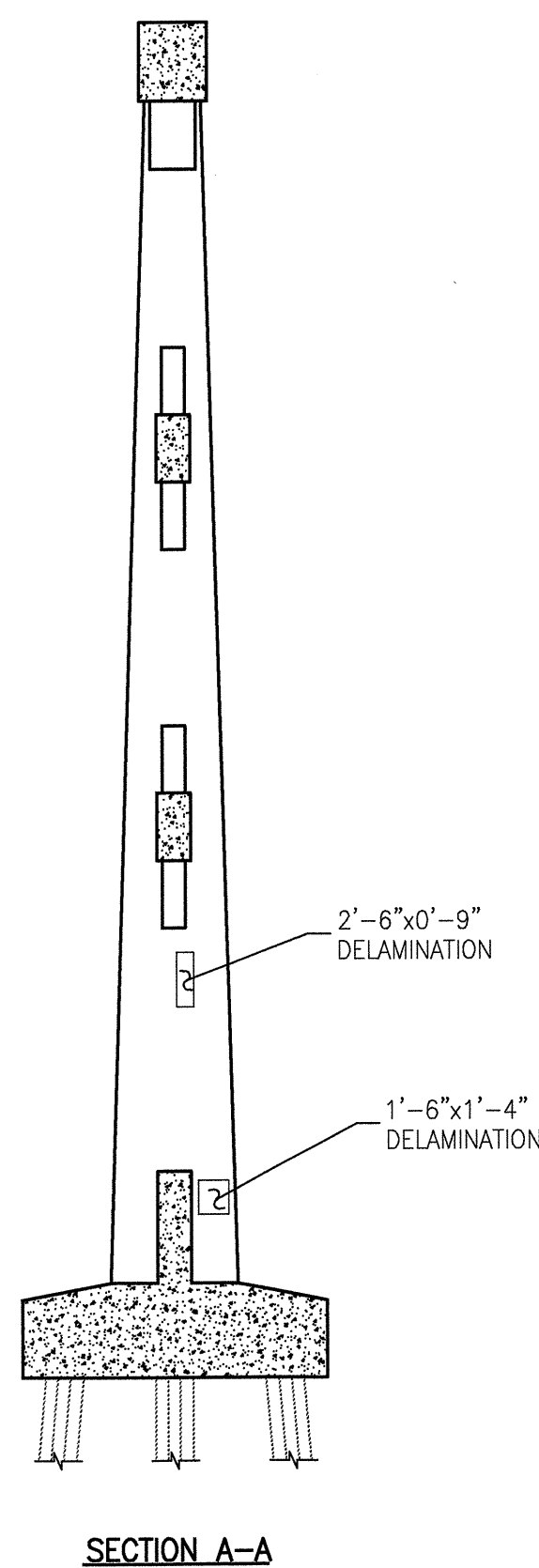
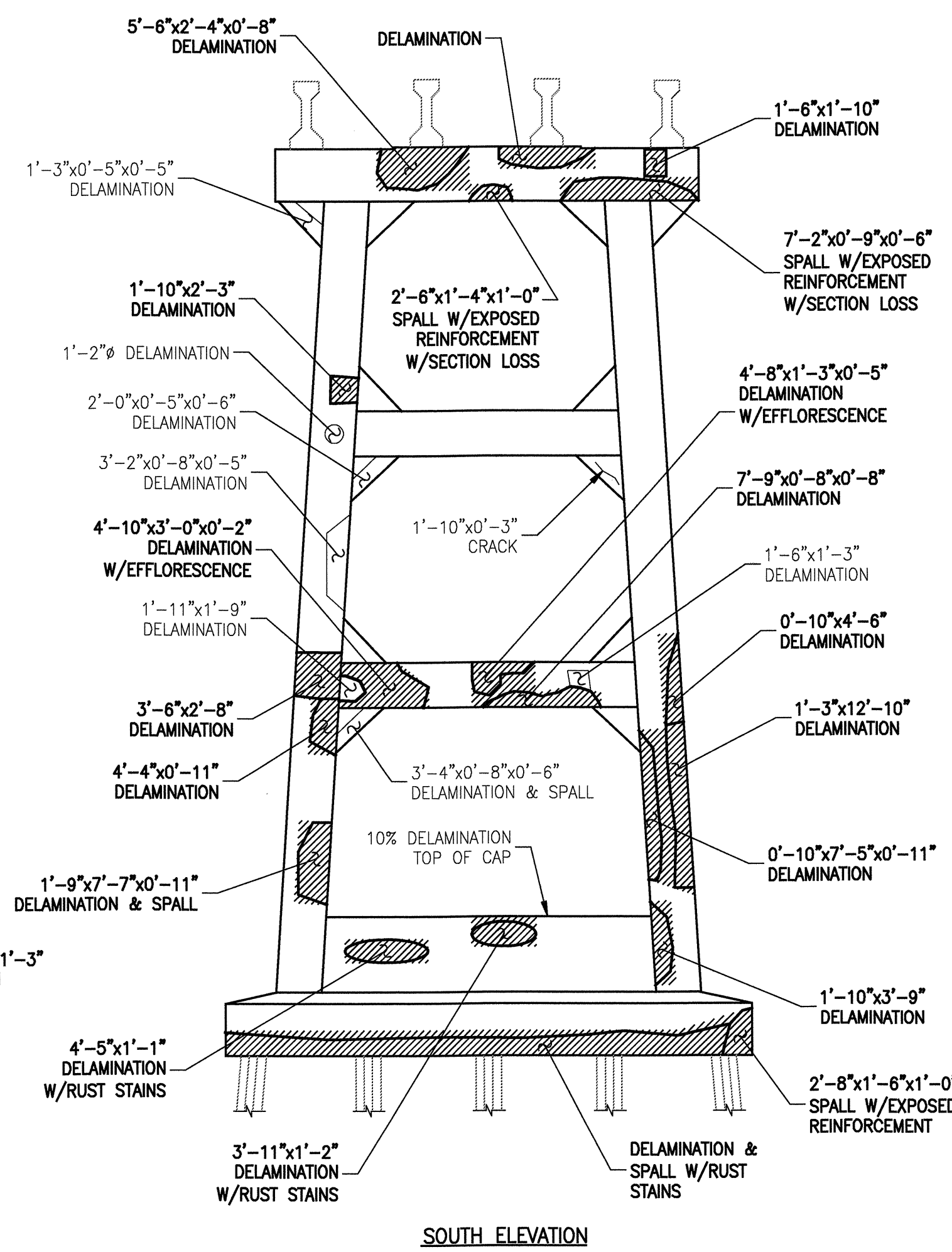
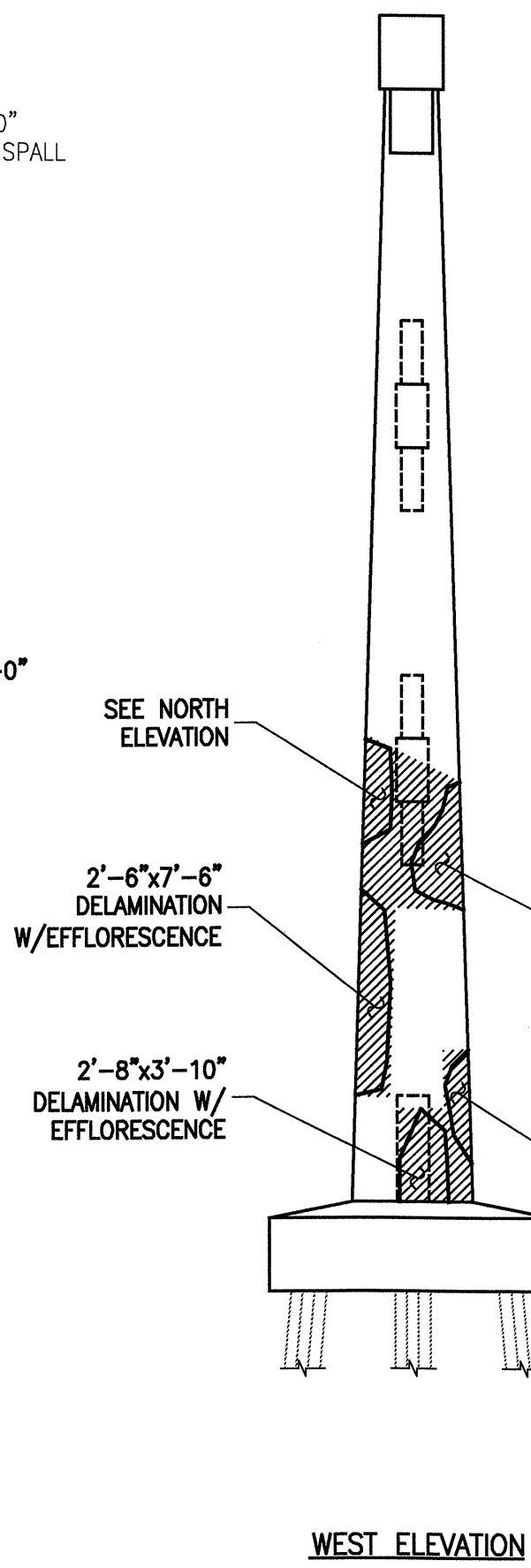
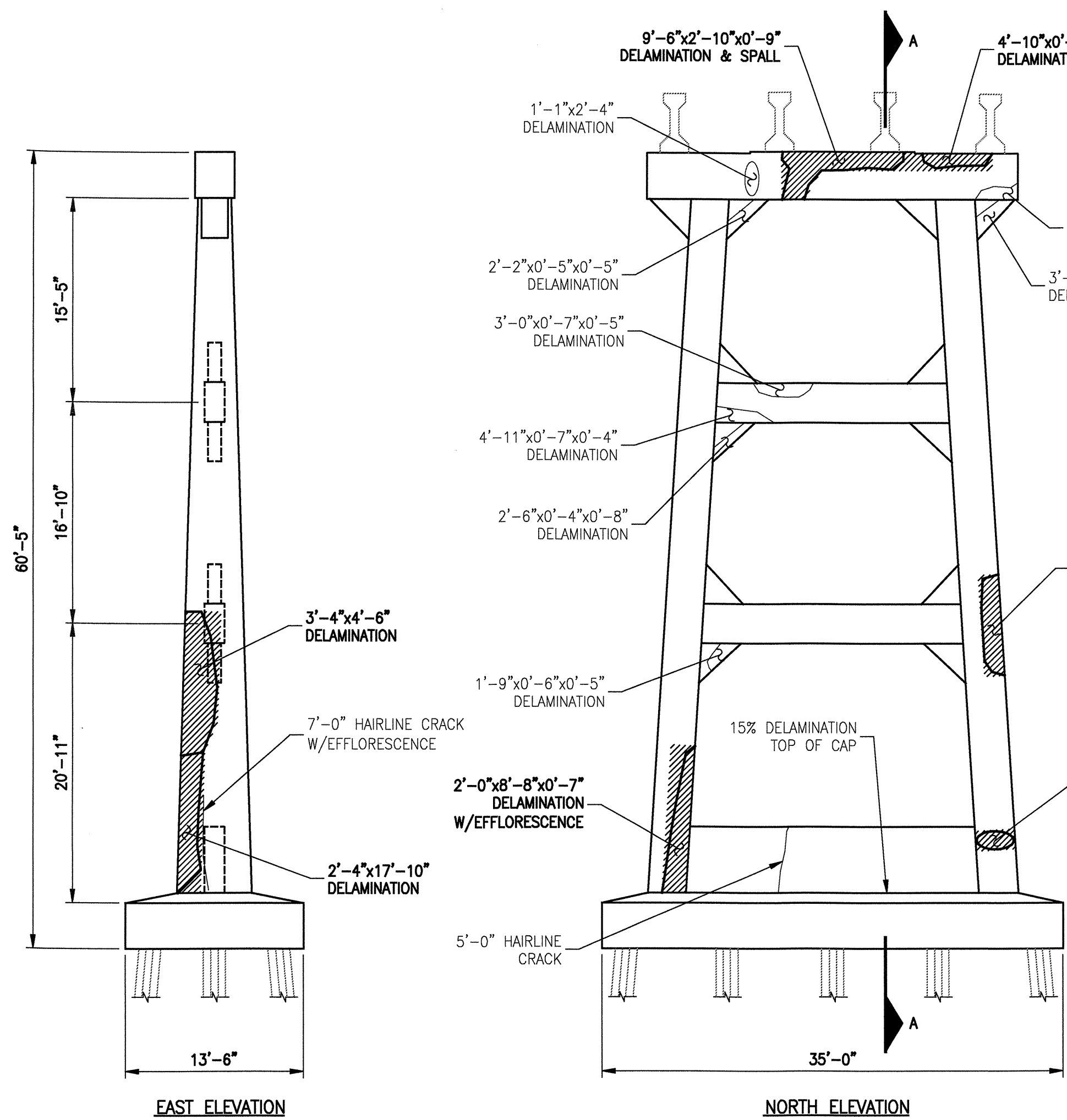


**BENT #147**

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

BILL OF MATERIAL			
BENT #148			
REPAIR TYPE	UNIT	QUANTITIES	
			ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	128	
OVERHEAD SHOTCRETE	CF	6	
ADDITIONAL REINFORCING	LBS	167	
POURED CONC. REPAIR	CF	26	



**BENT #148**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

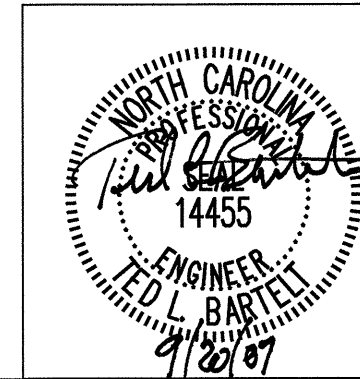
PLAN PREPARED BY:



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PROJECT NO. B-5014  
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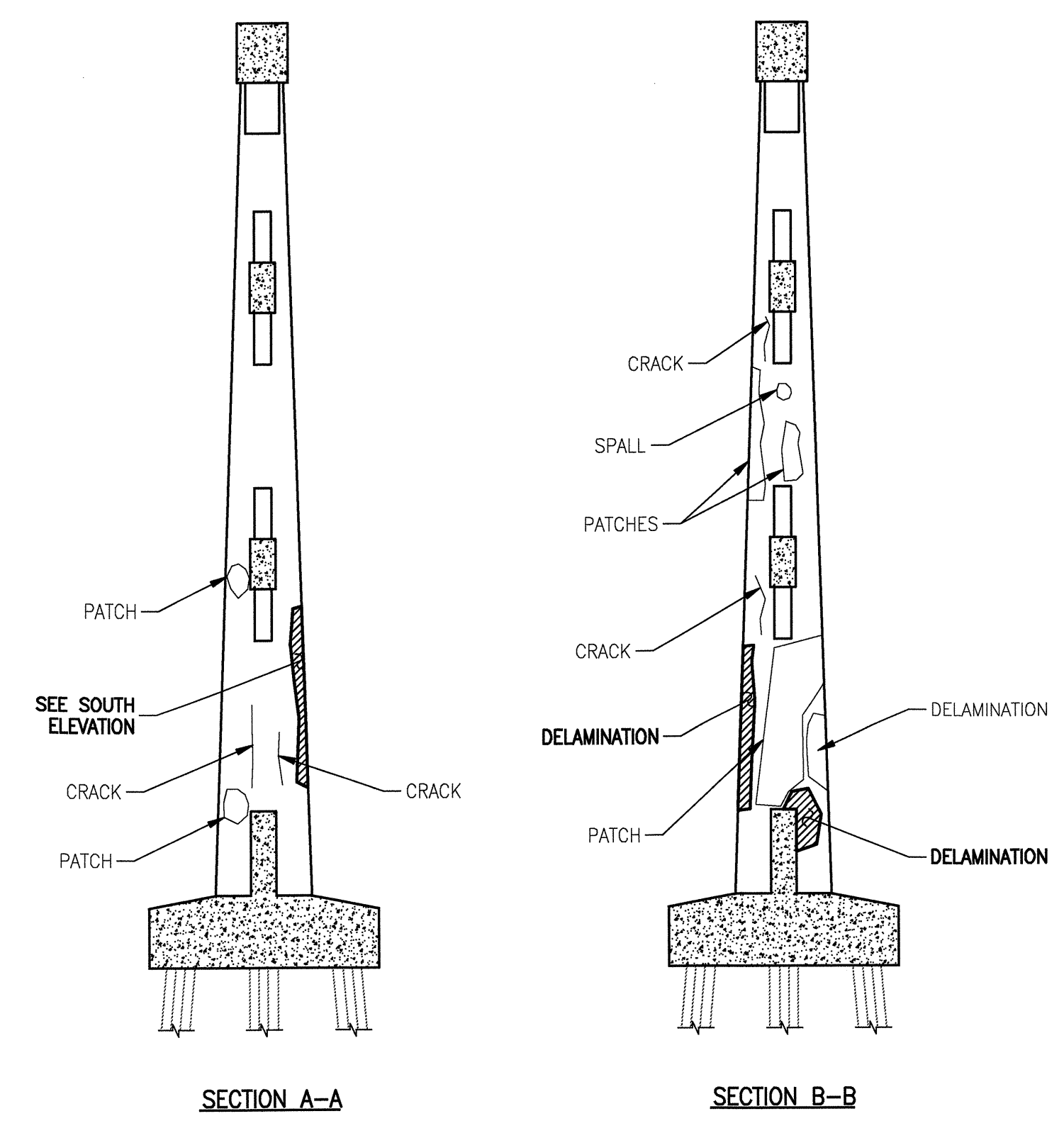
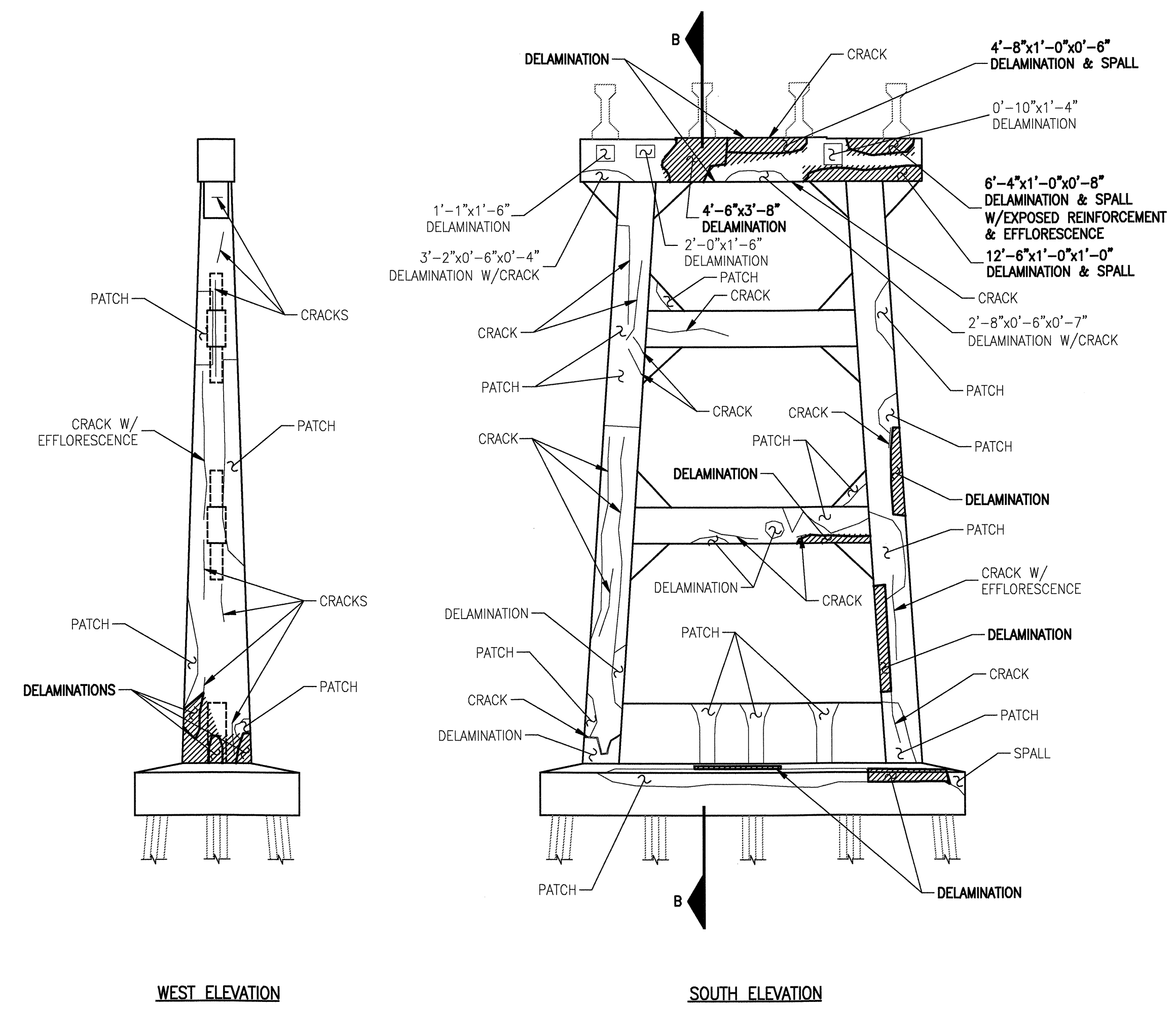
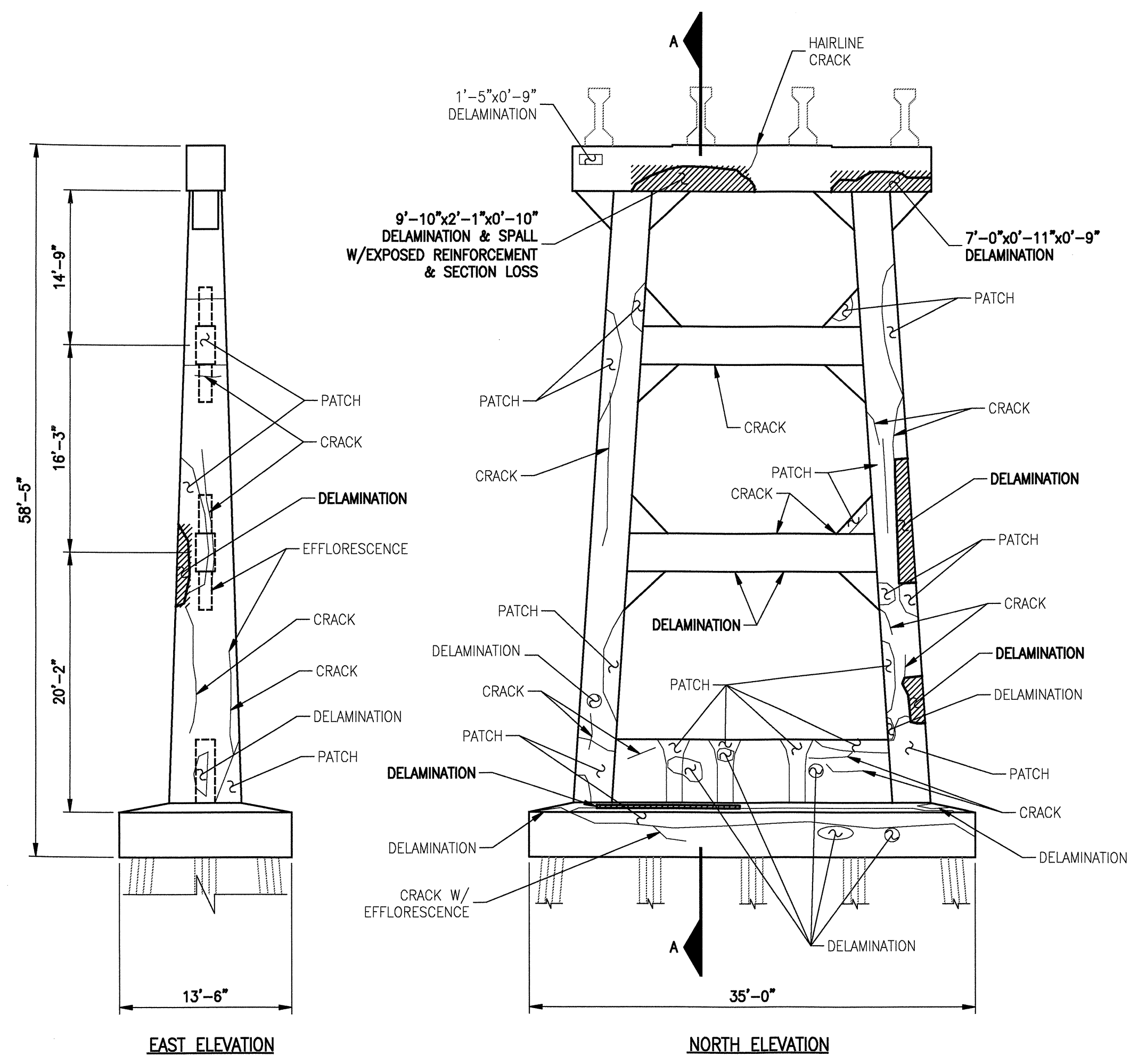
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #148



DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	124
1			3			TOTAL SHEETS
2			4			166

BILL OF MATERIAL			
BENT #149			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	25	
VERTICAL SHOTCRETE	CF	87	
OVERHEAD SHOTCRETE	CF	13	
ADDITIONAL REINFORCING	LBS	41	
POURED CONC. REPAIR	CF	-	



- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

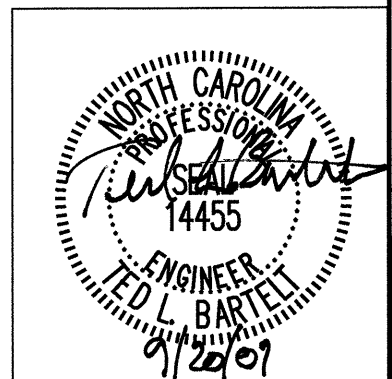
PLAN PREPARED BY:

**ALPHA & OMEGA GROUP**  
 CIVIL & STRUCTURAL ENGINEERS  
 4911 Green Road Suite 107 Raleigh, NC 27616  
 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com  
 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #149**



REVISIONS						SHEET NO. 125
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

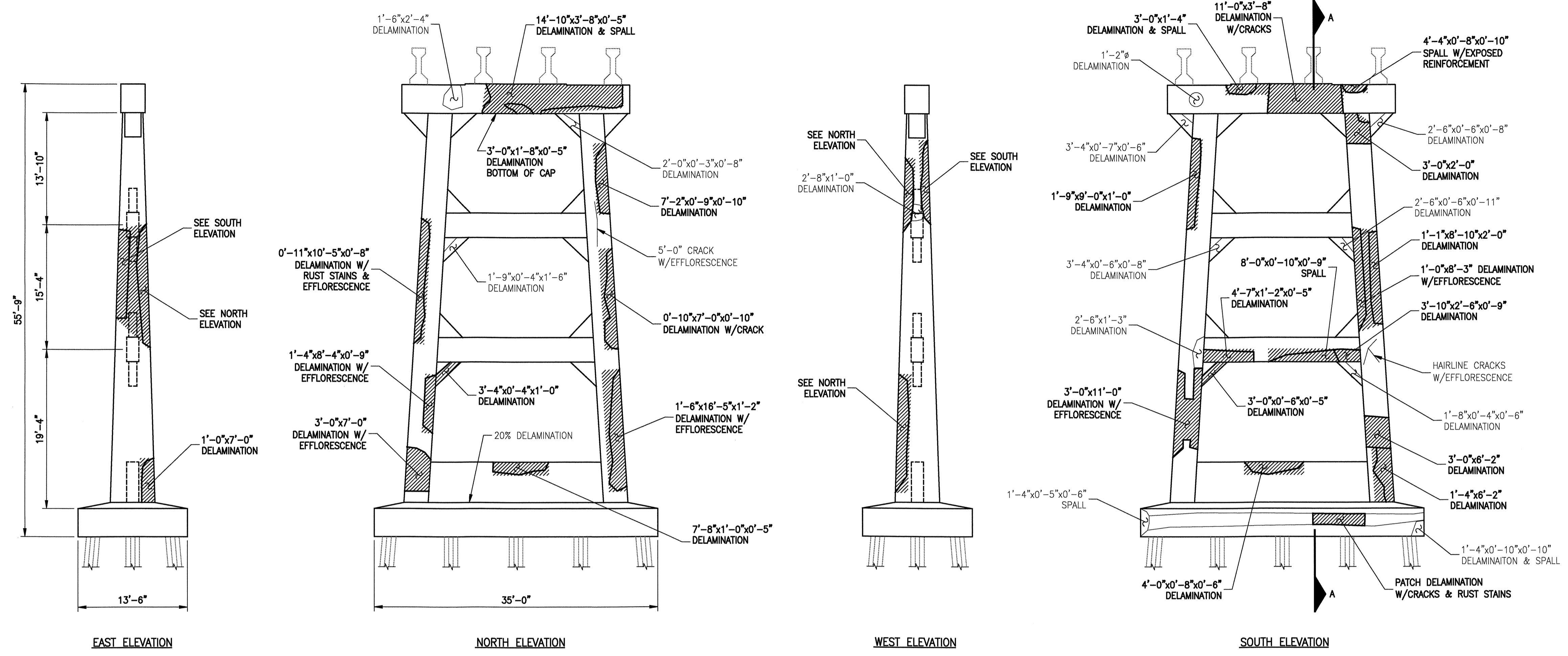
**BENT #149**



# BILL OF MATERIAL

BENT #150

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	159
OVERHEAD SHOTCRETE	CF	13
ADDITIONAL REINFORCING	LBS	77
POURED CONC. REPAIR	CF	4



- KEY**
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  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
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  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
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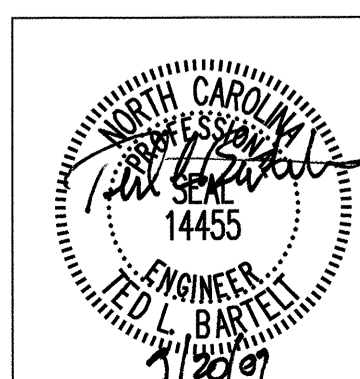
PLAN PREPARED BY:



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PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #150

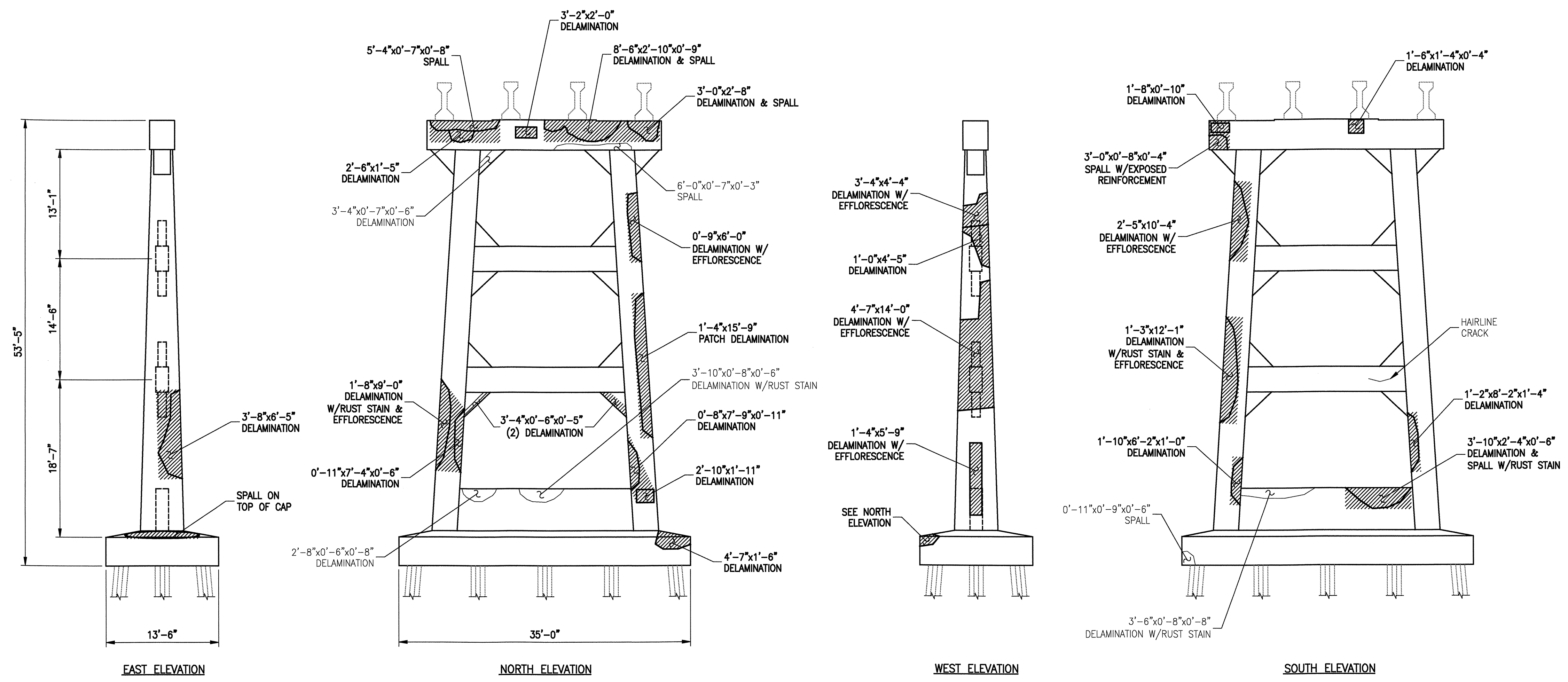


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	126
1			3			TOTAL SHEETS
2			4			166

## BENT #150

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

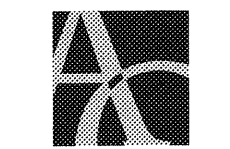
BILL OF MATERIAL			
BENT #151			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	19	
VERTICAL SHOTCRETE	CF	148	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	49	
POURED CONC. REPAIR	CF	-	



**BENT #151**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

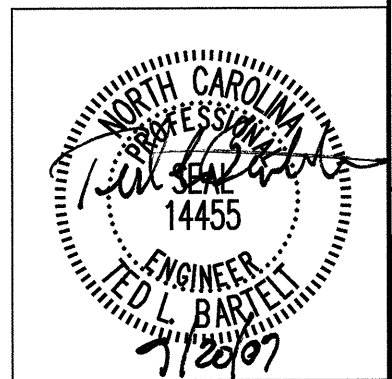
PLAN PREPARED BY:



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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #151

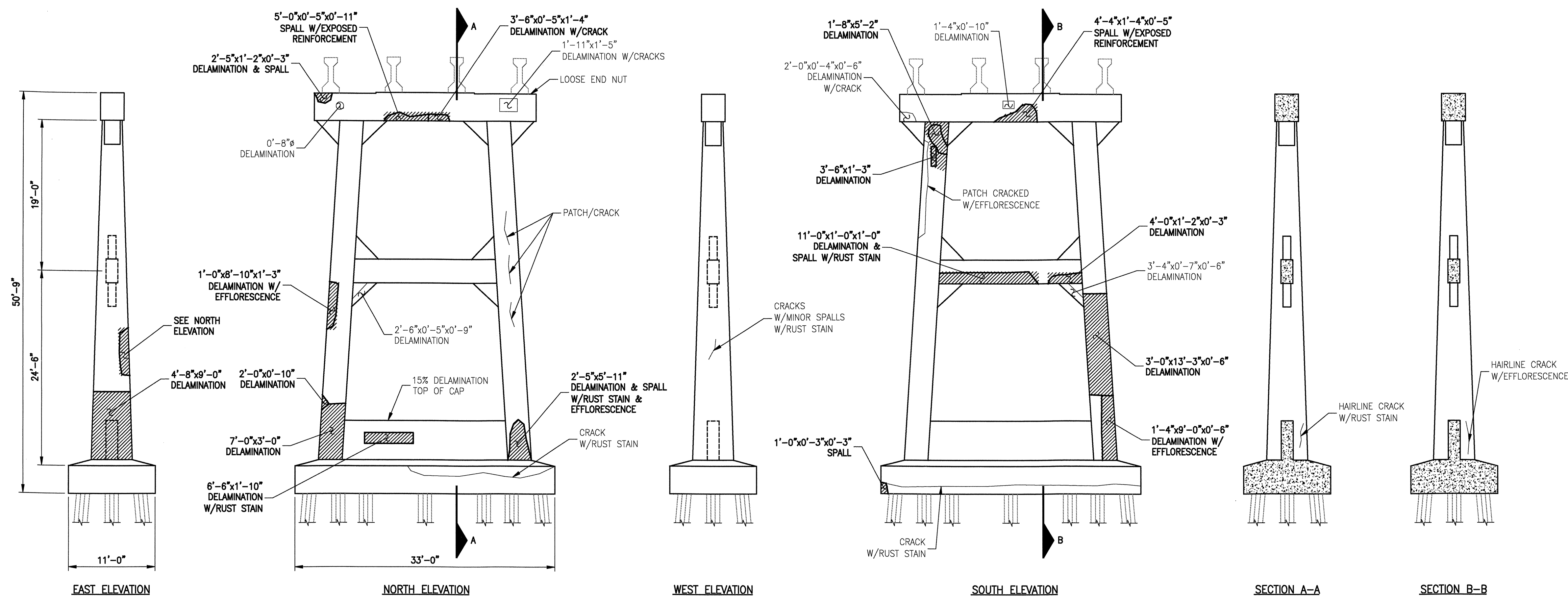


DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: R.C. LARSON DATE: 5/07

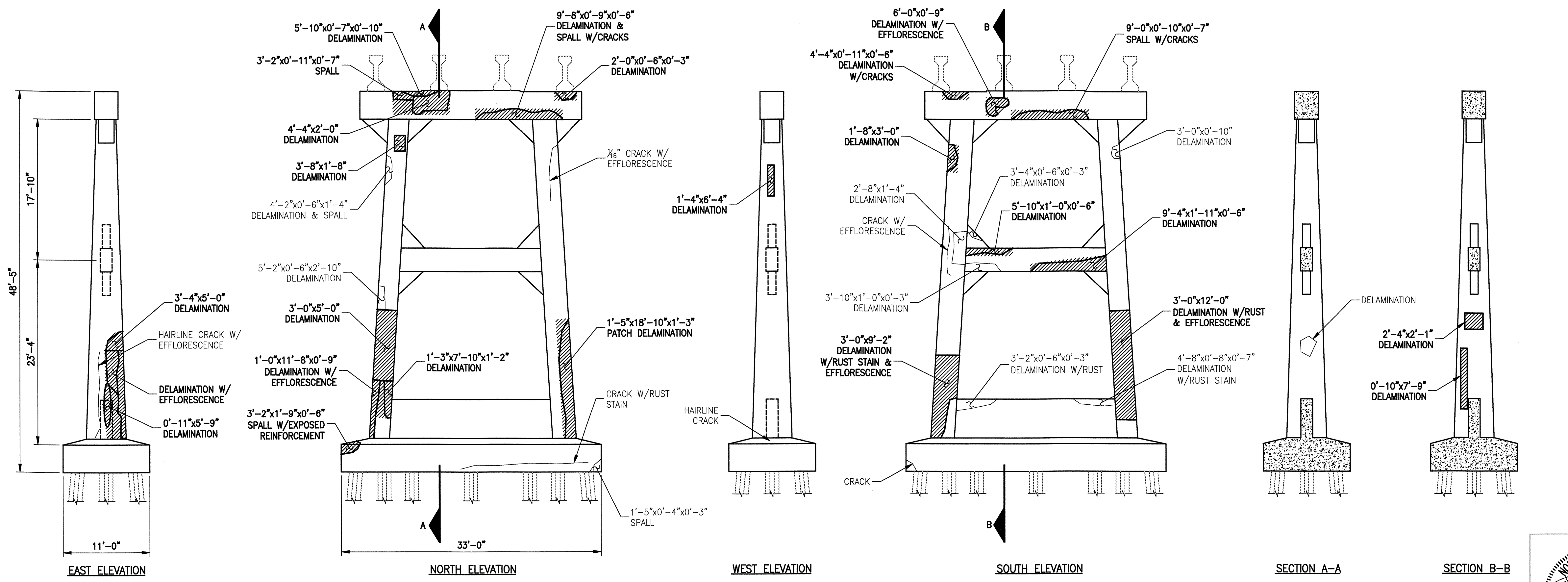
REVISIONS						SHEET NO. 127
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



BILL OF MATERIAL			
BENT #152			
REPAIR TYPE	QUANTITIES		ACTUAL
	UNIT		
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	92	
OVERHEAD SHOTCRETE	CF	11	
ADDITIONAL REINFORCING	LBS	6	
POURED CONC. REPAIR	CF	-	
BENT #153			
REPAIR TYPE	QUANTITIES		ACTUAL
	UNIT		
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	126	
OVERHEAD SHOTCRETE	CF	7	
ADDITIONAL REINFORCING	LBS	33	
POURED CONC. REPAIR	CF	-	



**BENT #152**



**BENT #153**

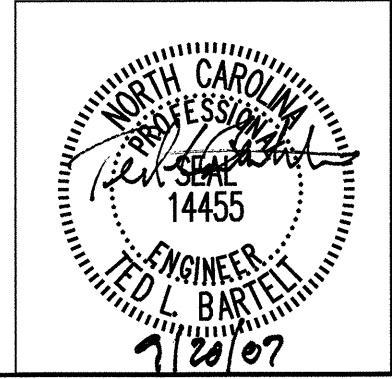
GENERAL NOTE:  
1. EAST BOTTOM WALL DELAMINATED 1'-0" AROUND INSIDE EDGE (BOTH SIDES)

- KEY**
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  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:  
  
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DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BONNER BRIDGE REPAIR  
HIGH LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #152-#153



DRAWN BY: F.P. THOMPSON DATE: 4/07  
CHECKED BY: R.C. LARSON DATE: 5/07

REVISIONS				SHEET NO.
NO.	BY:	DATE:		
1		3		TOTAL SHEETS
2		4		166



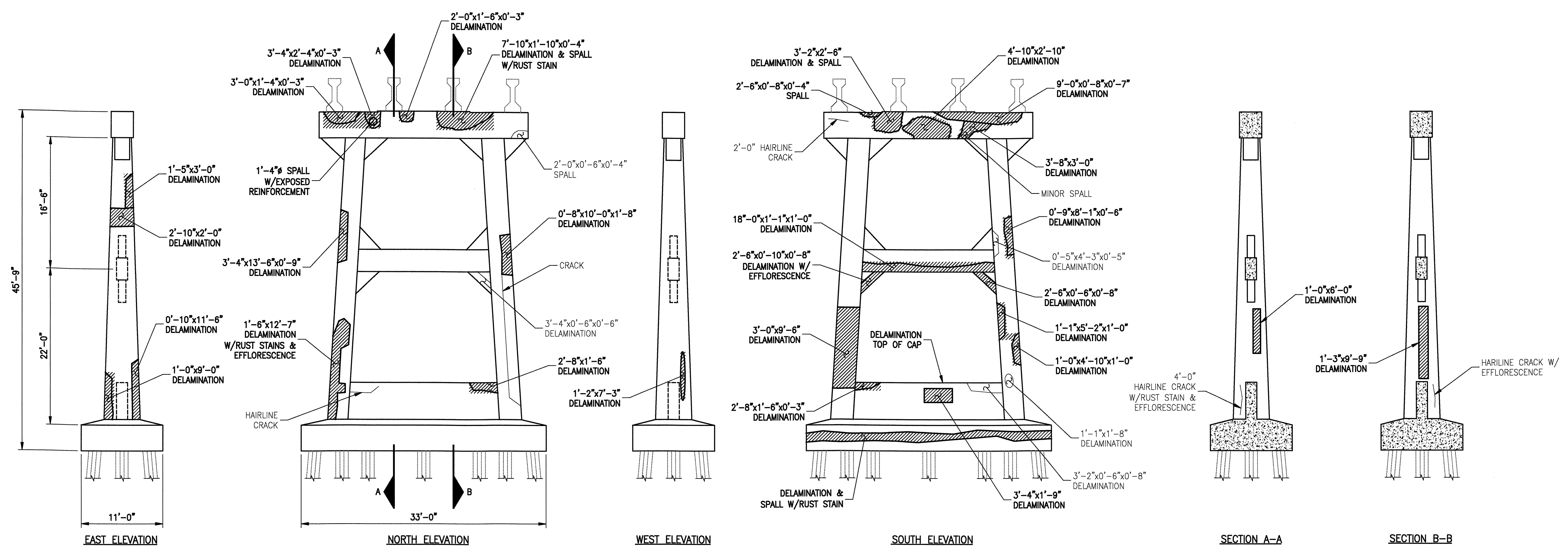
# BILL OF MATERIAL

## BENT #154

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	132
OVERHEAD SHOTCRETE	CF	11
ADDITIONAL REINFORCING	LBS	67
POURED CONC. REPAIR	CF	17

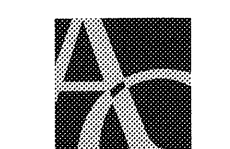
## BENT #155

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	117
OVERHEAD SHOTCRETE	CF	4
ADDITIONAL REINFORCING	LBS	7
POURED CONC. REPAIR	CF	-



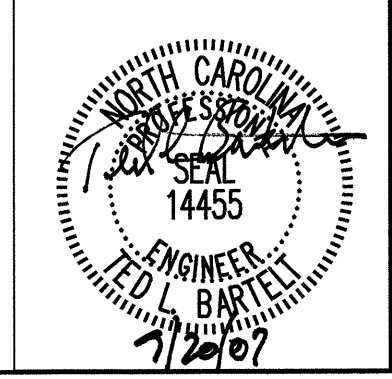
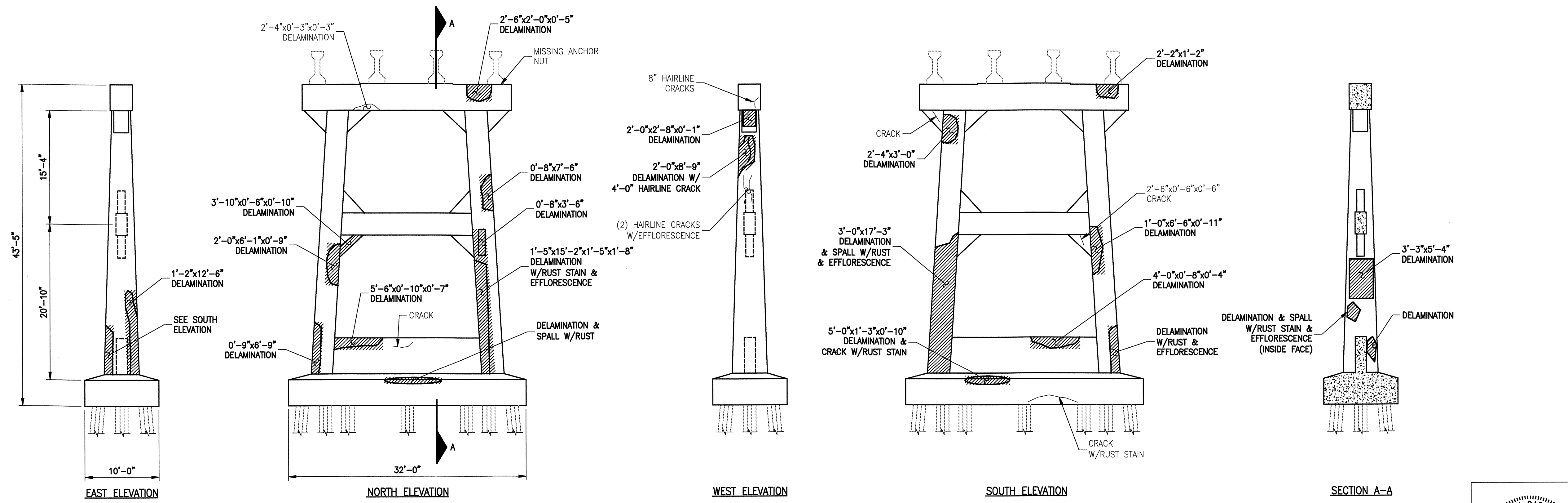
- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11



DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: T.G. ZEBLO DATE: 5/07

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #154-#155**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	129
1			3			TOTAL SHEETS
2			4			166





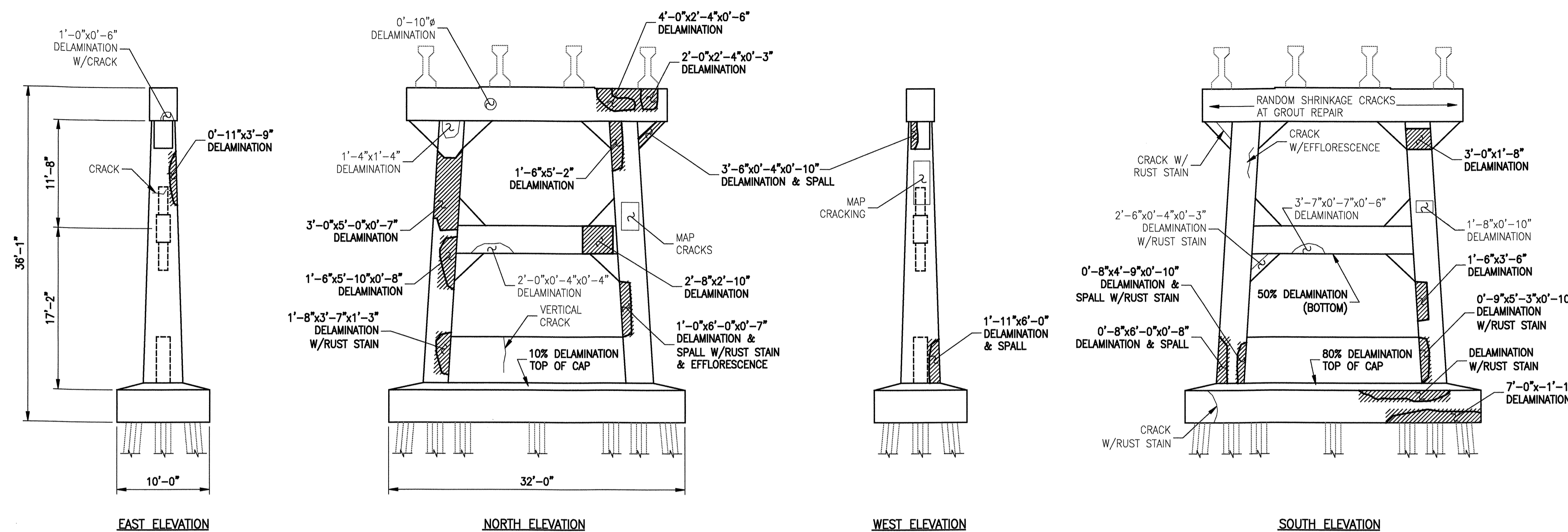
# BILL OF MATERIAL

## BENT #158

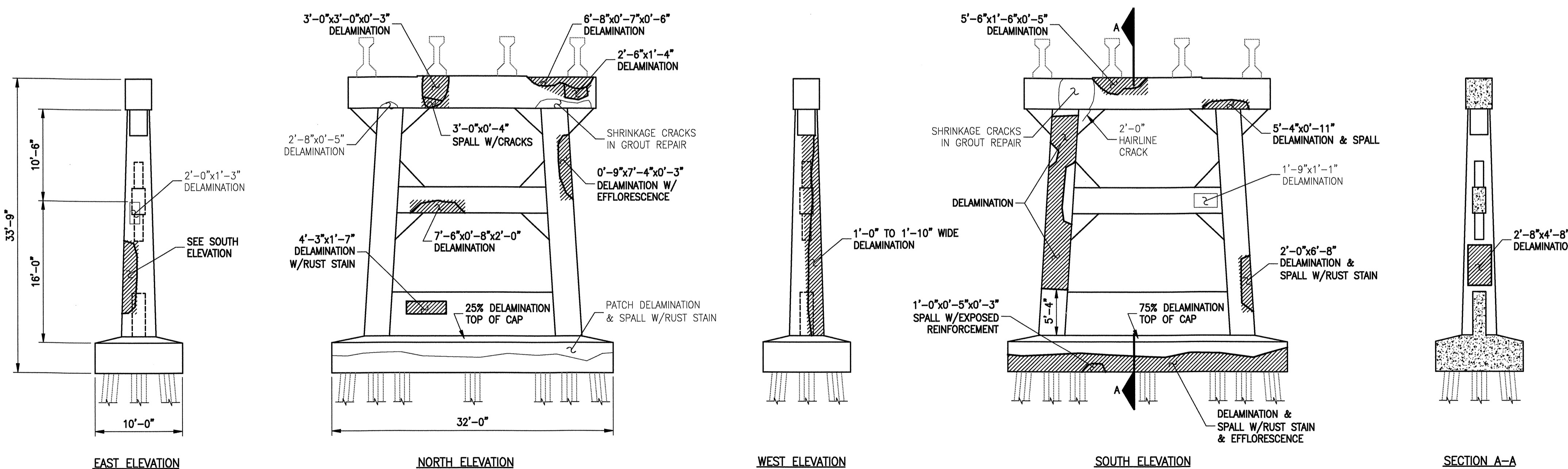
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	57
VERTICAL SHOTCRETE	CF	57
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	24
POURED CONC. REPAIR	CF	4

## BENT #159

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	50
VERTICAL SHOTCRETE	CF	79
OVERHEAD SHOTCRETE	CF	8
ADDITIONAL REINFORCING	LBS	115
POURED CONC. REPAIR	CF	26



**BENT #158**



**BENT #159**

### KEY

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- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
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- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

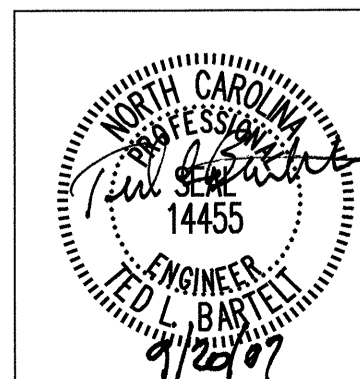


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PROJECT NO. B-5014  
 DARE COUNTY  
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

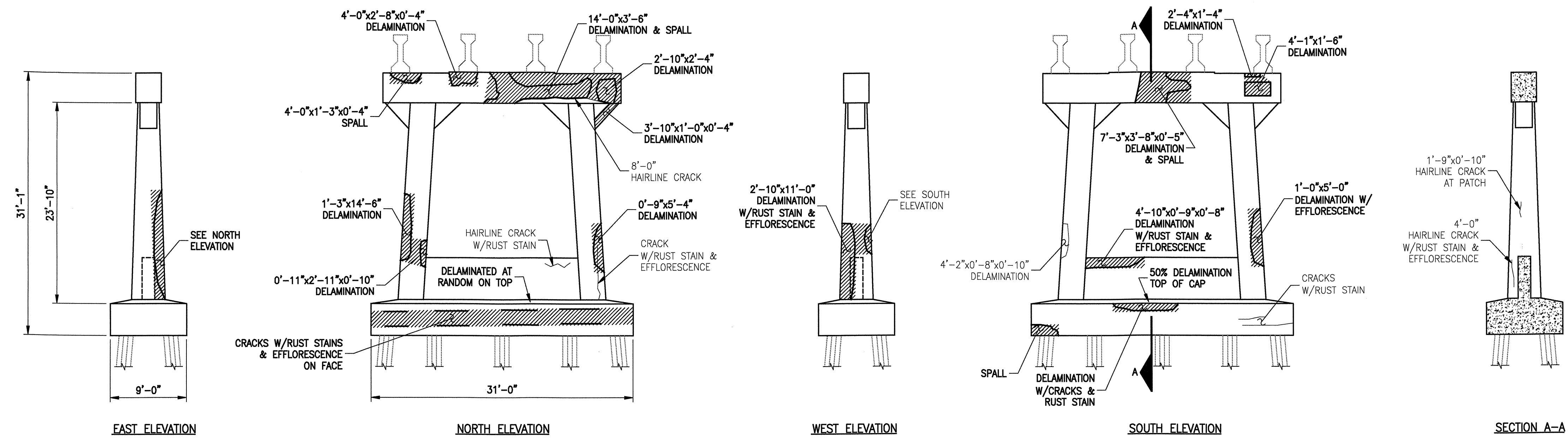
BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #158-#159



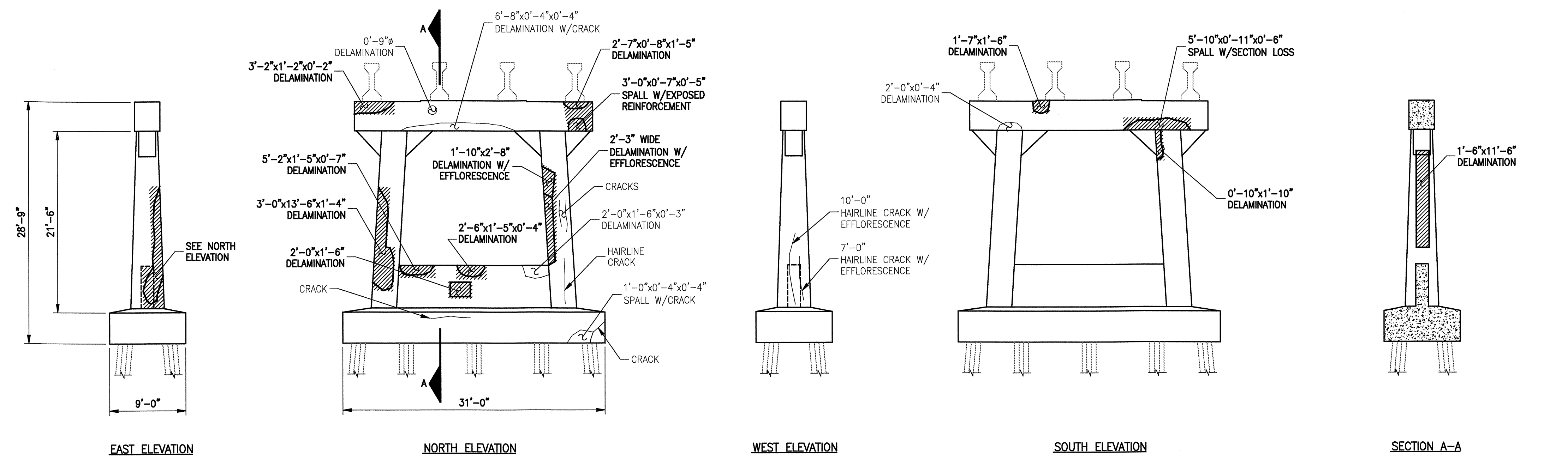
REVISIONS						SHEET NO. 131
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 166
2			4			



BILL OF MATERIAL			
BENT #160			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	68	
VERTICAL SHOTCRETE	CF	73	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	44	
POURED CONC. REPAIR	CF	36	
BENT #161			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	66	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	20	
POURED CONC. REPAIR	CF	-	



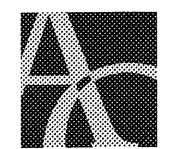
**BENT #160**



**BENT #161**

- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
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  - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:

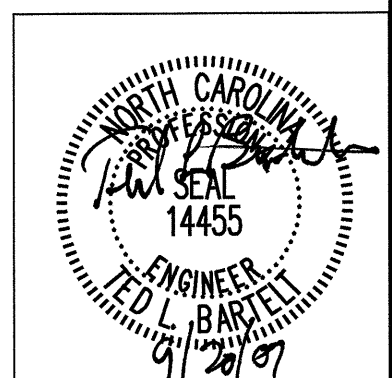


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 RALEIGH

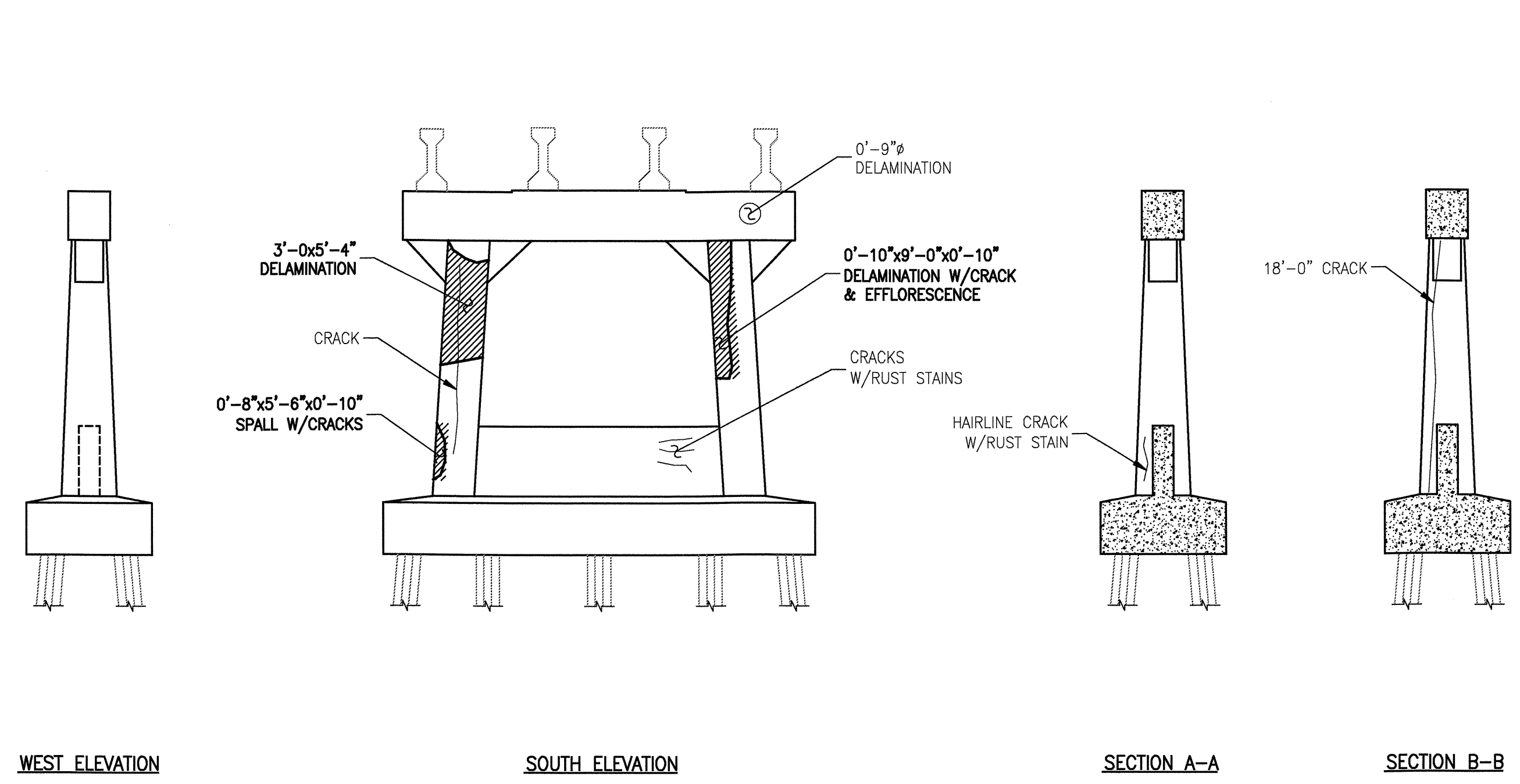
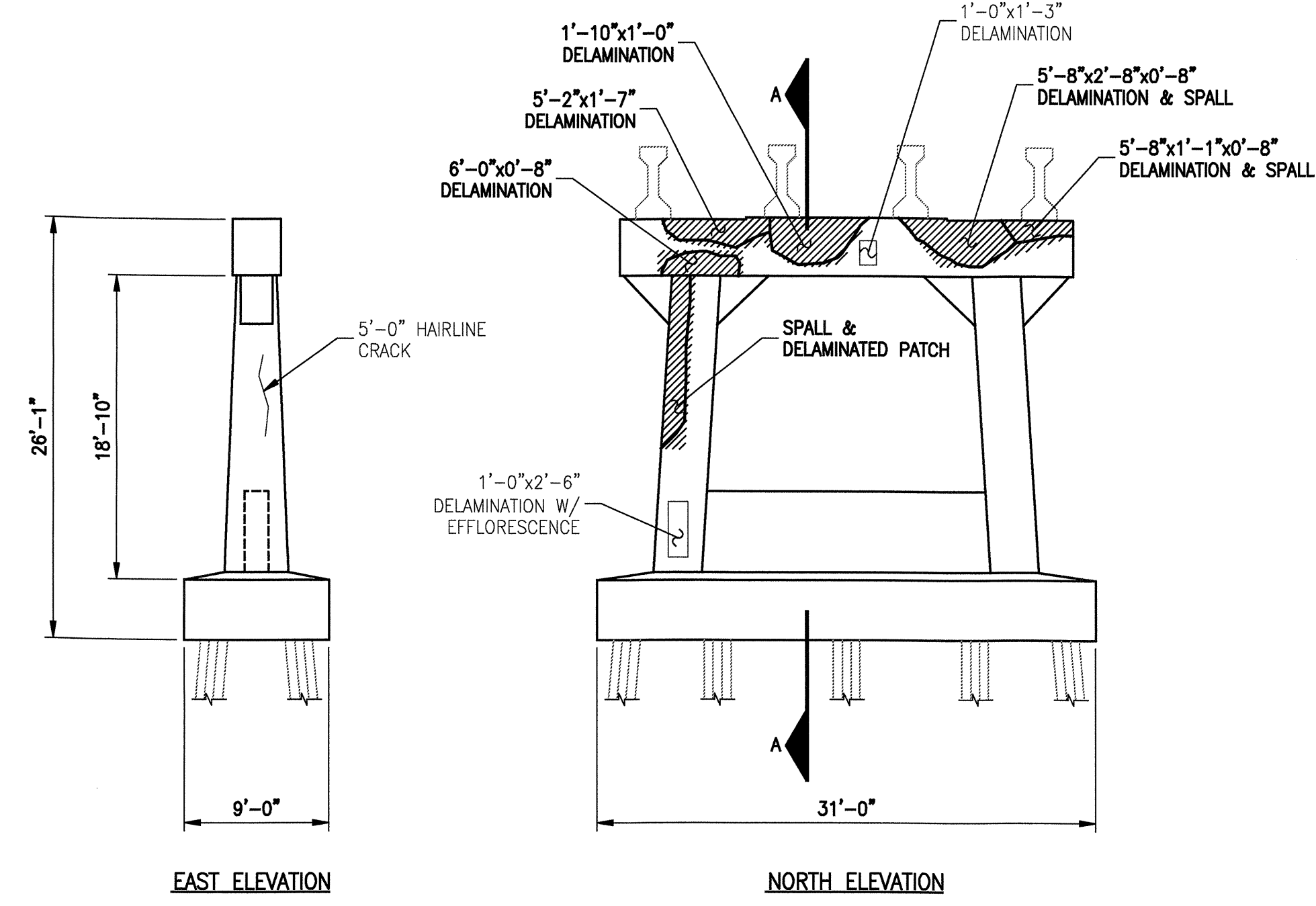
**BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #160-#161**



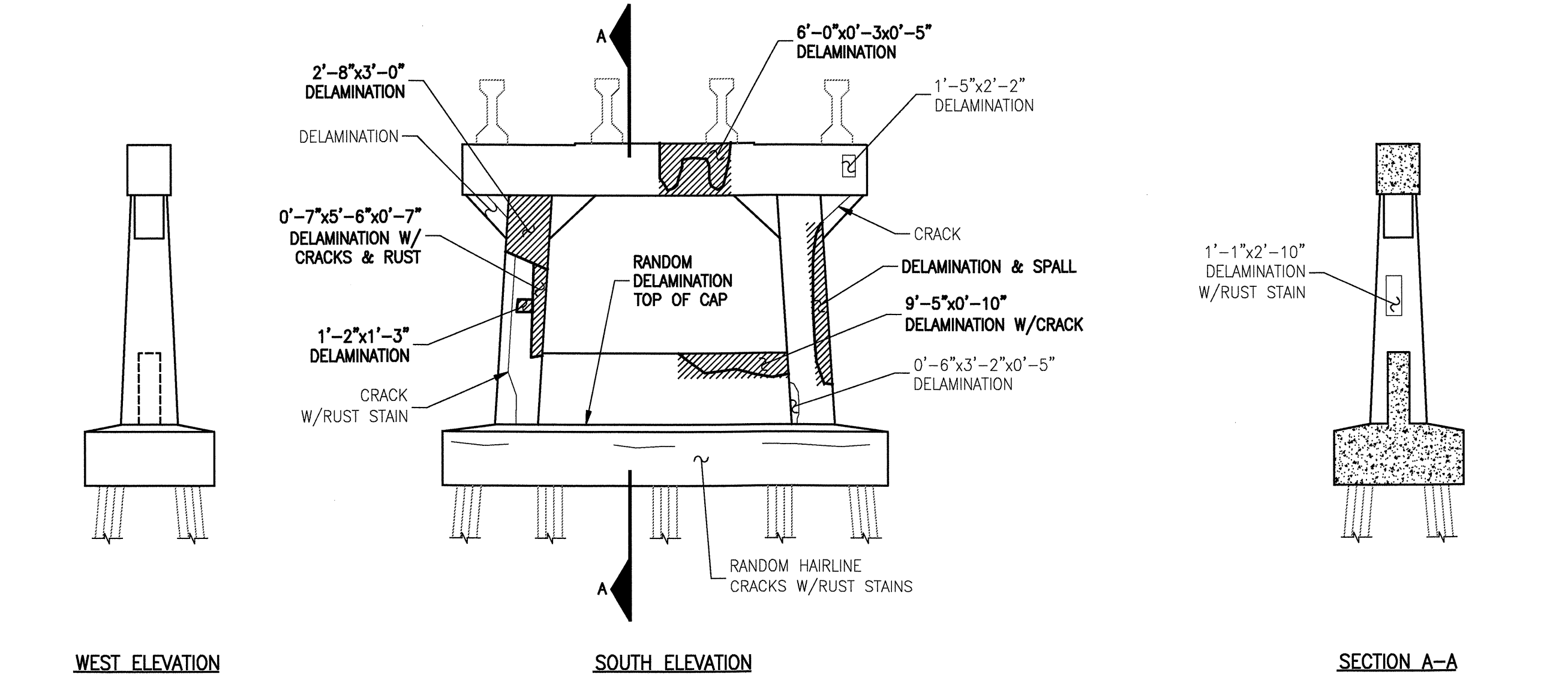
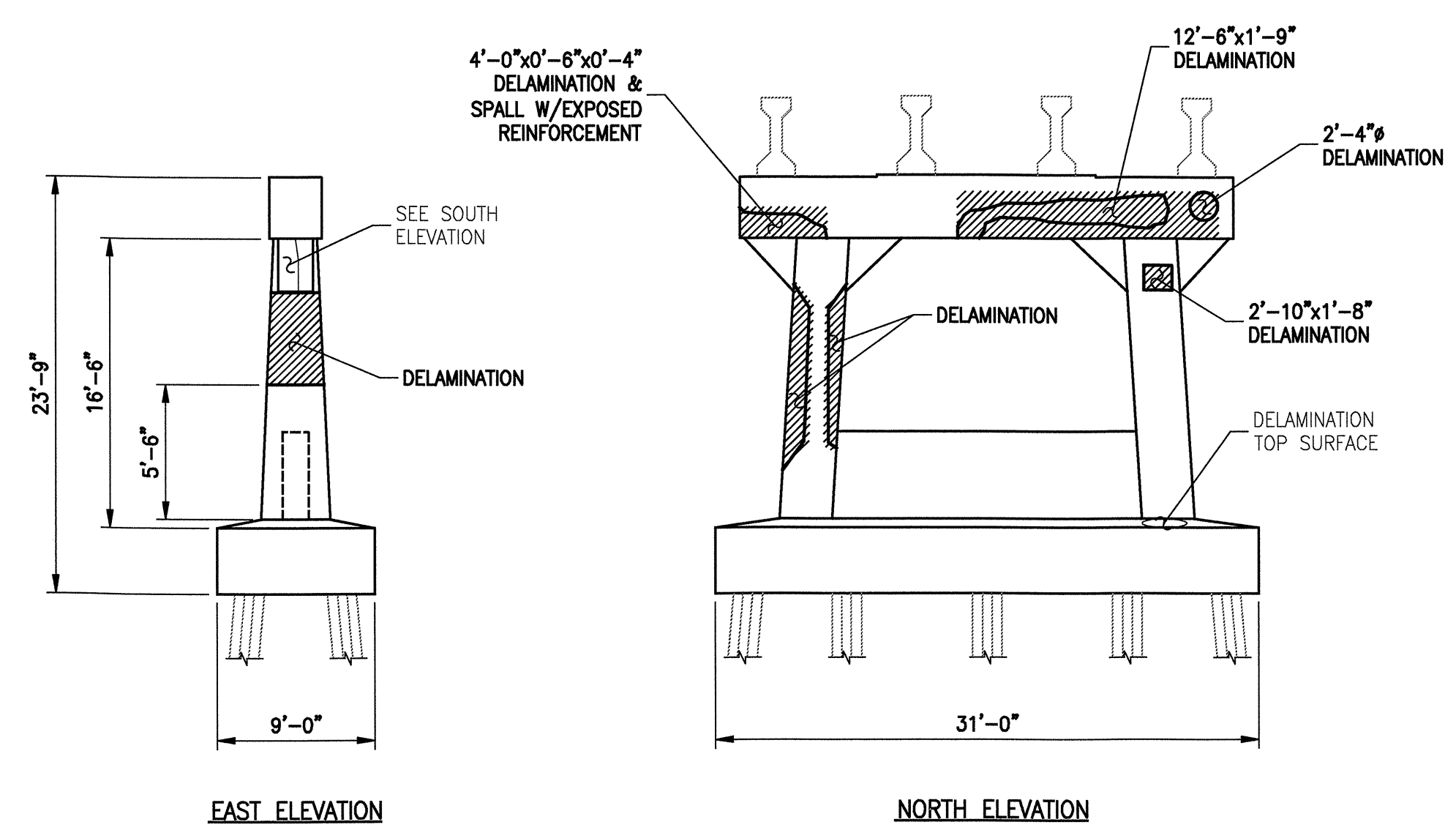
DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: T.G. ZEBLO DATE: 5/07

REVISIONS						SHEET NO. 132
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

BILL OF MATERIAL			
BENT #162			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	39	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	49	
POURED CONC. REPAIR	CF	-	
BENT #163			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	55	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	16	
POURED CONC. REPAIR	CF	-	



**BENT #162**



**BENT #163**

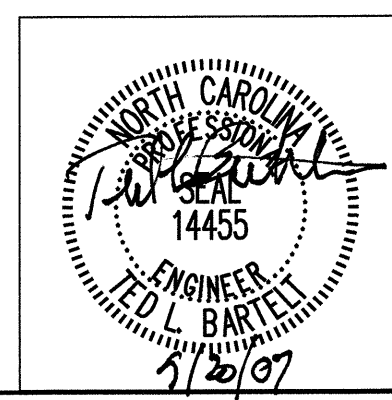
- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
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 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #162-#163

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: T.G. ZEBLO DATE: 5/07



REVISIONS						SHEET NO. 133
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166



# BILL OF MATERIAL

## BENT #164

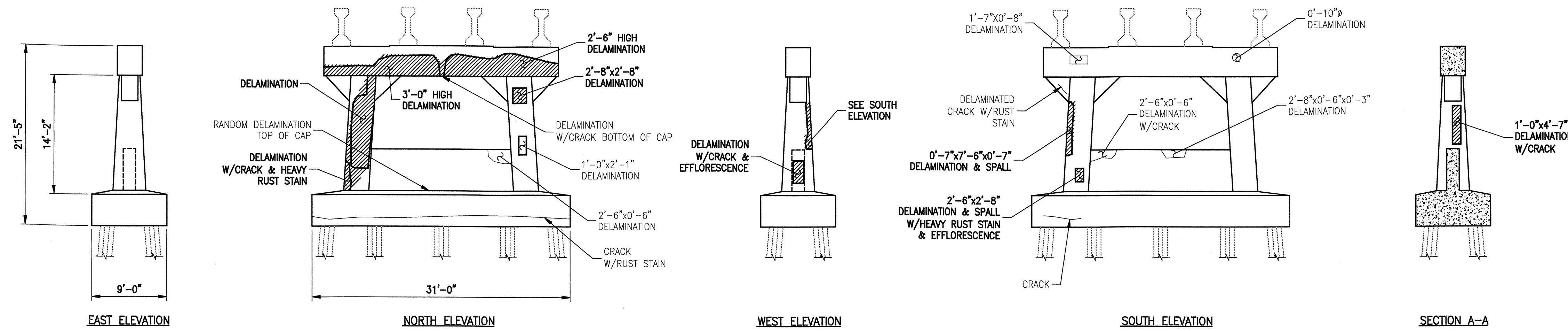
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	59	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	-	
POURED CONC. REPAIR	CF	-	

## BENT #165

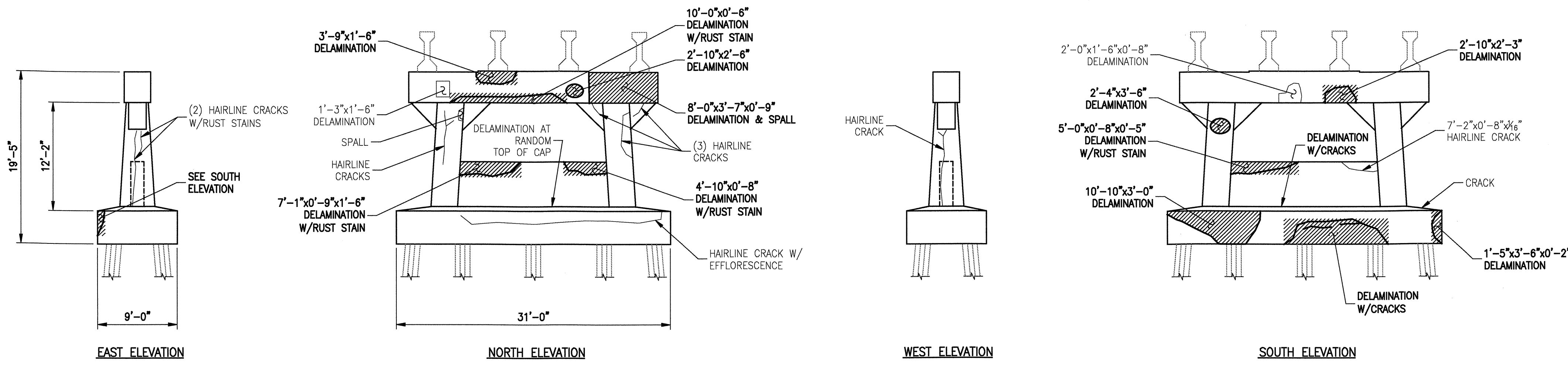
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	4	
VERTICAL SHOTCRETE	CF	29	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	49	
POURED CONC. REPAIR	CF	15	

## BENT #166

REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	24	
OVERHEAD SHOTCRETE	CF	3	
ADDITIONAL REINFORCING	LBS	35	
POURED CONC. REPAIR	CF	2	



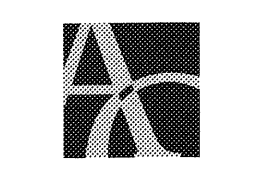
**BENT #164**



**BENT #165**

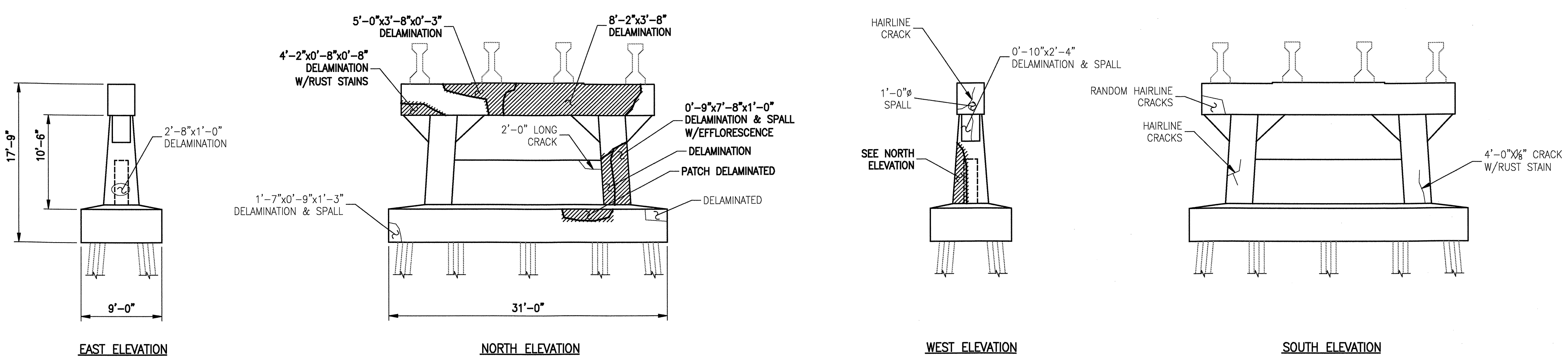
- KEY**
- DENOTES GENERAL AREA OF REPAIR
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
  - GENERAL SHAPE OF DEFICIENCY
  - 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
  - GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
  - 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

PLAN PREPARED BY:



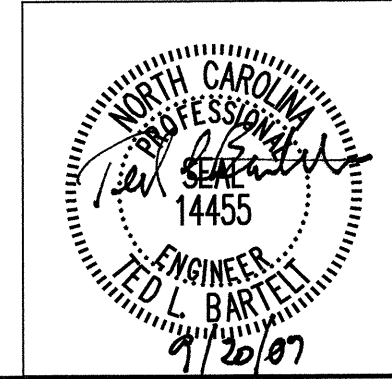
**ALPHA & OMEGA GROUP**  
 CIVIL & STRUCTURAL ENGINEERS  
 4911 Green Road Suite 107 Raleigh, NC 27616  
 Phone 919 981 0319 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com  
 AOG PROJ. NO. 2007.015

PROJECT NO. B-5014  
 DARE                      COUNTY  
 BRIDGE NO. 11



**BENT #166**

DRAWN BY: F.P. THOMPSON DATE: 4/07  
 CHECKED BY: T.G. ZEBLO DATE: 5/07



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BONNER BRIDGE REPAIR  
 HIGH LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #164-#166

REVISIONS						SHEET NO. 134
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166



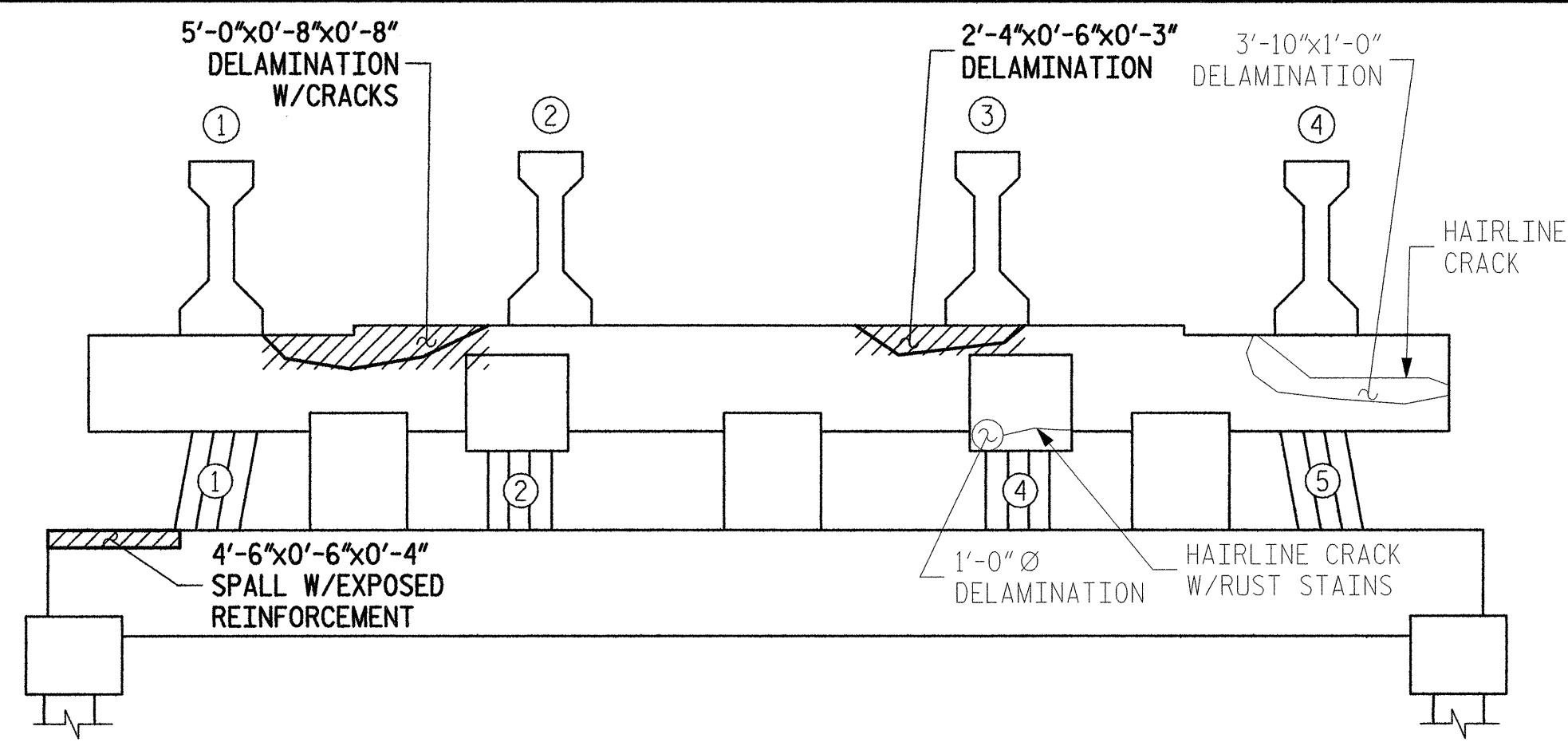
# BILL OF MATERIAL

## BENT #167

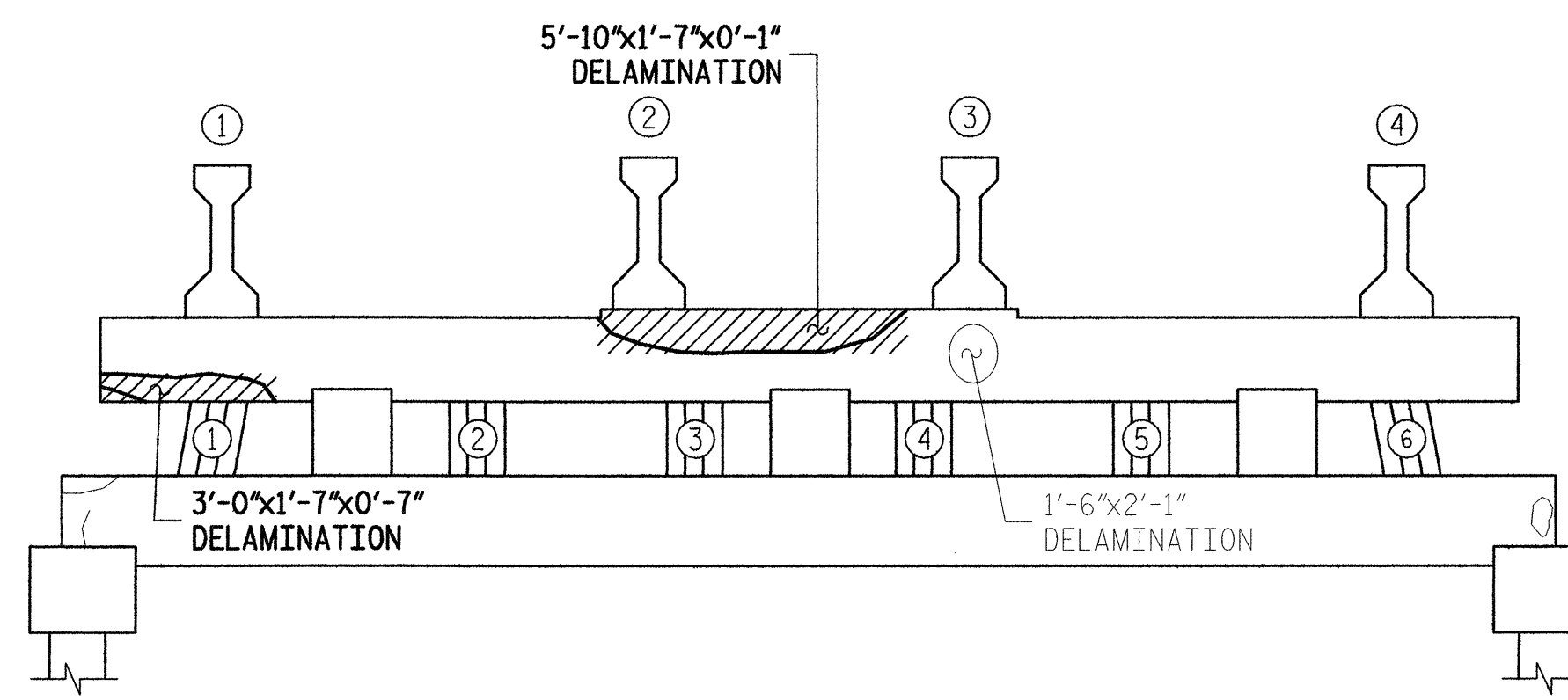
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	7	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	18	
EPOXY MORTAR (FORMED)	CF	5	

## BENT #168

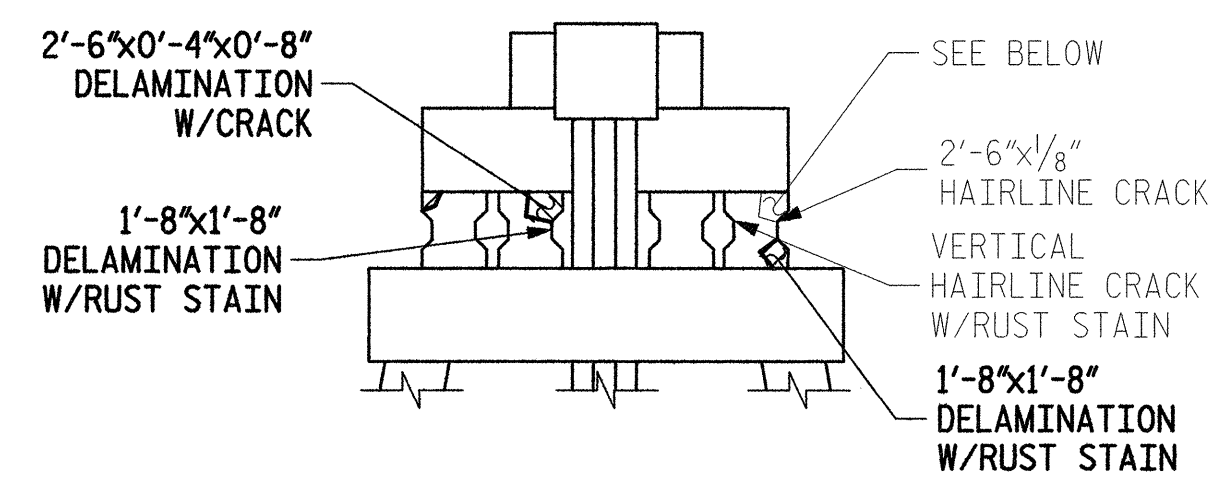
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	7	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	16	
EPOXY MORTAR (FORMED)	CF	13	



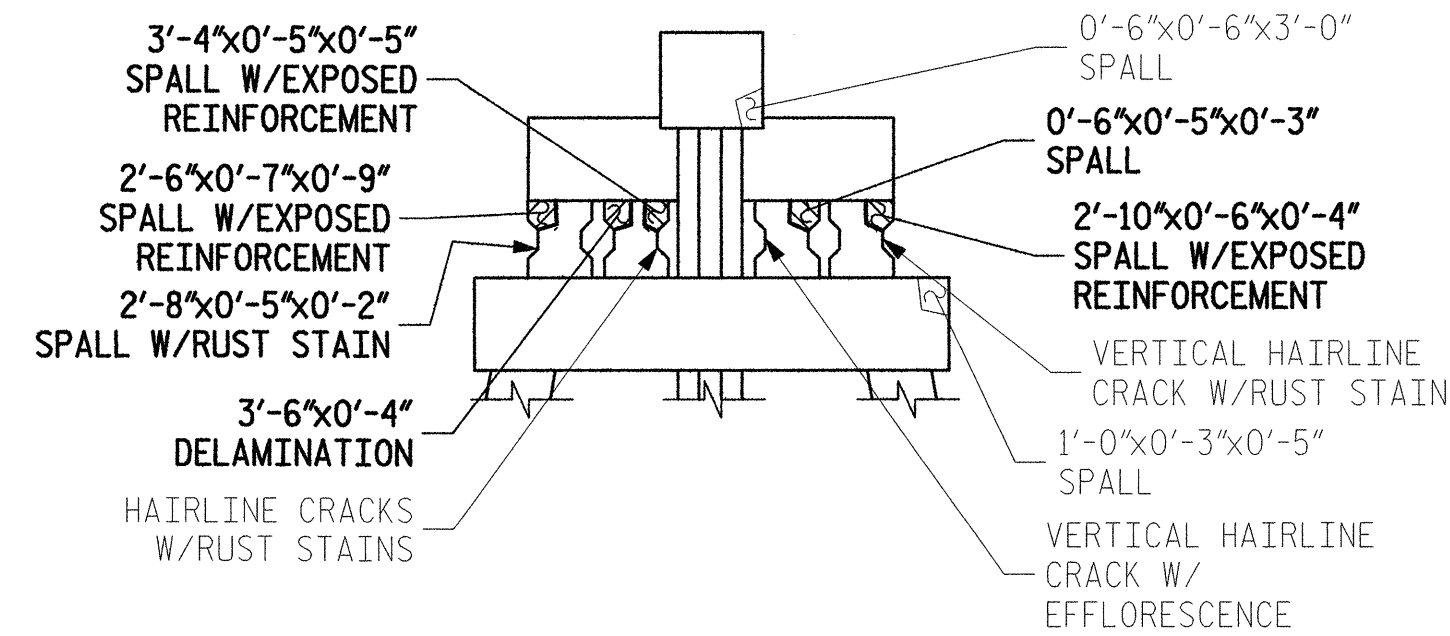
NORTH ELEVATION



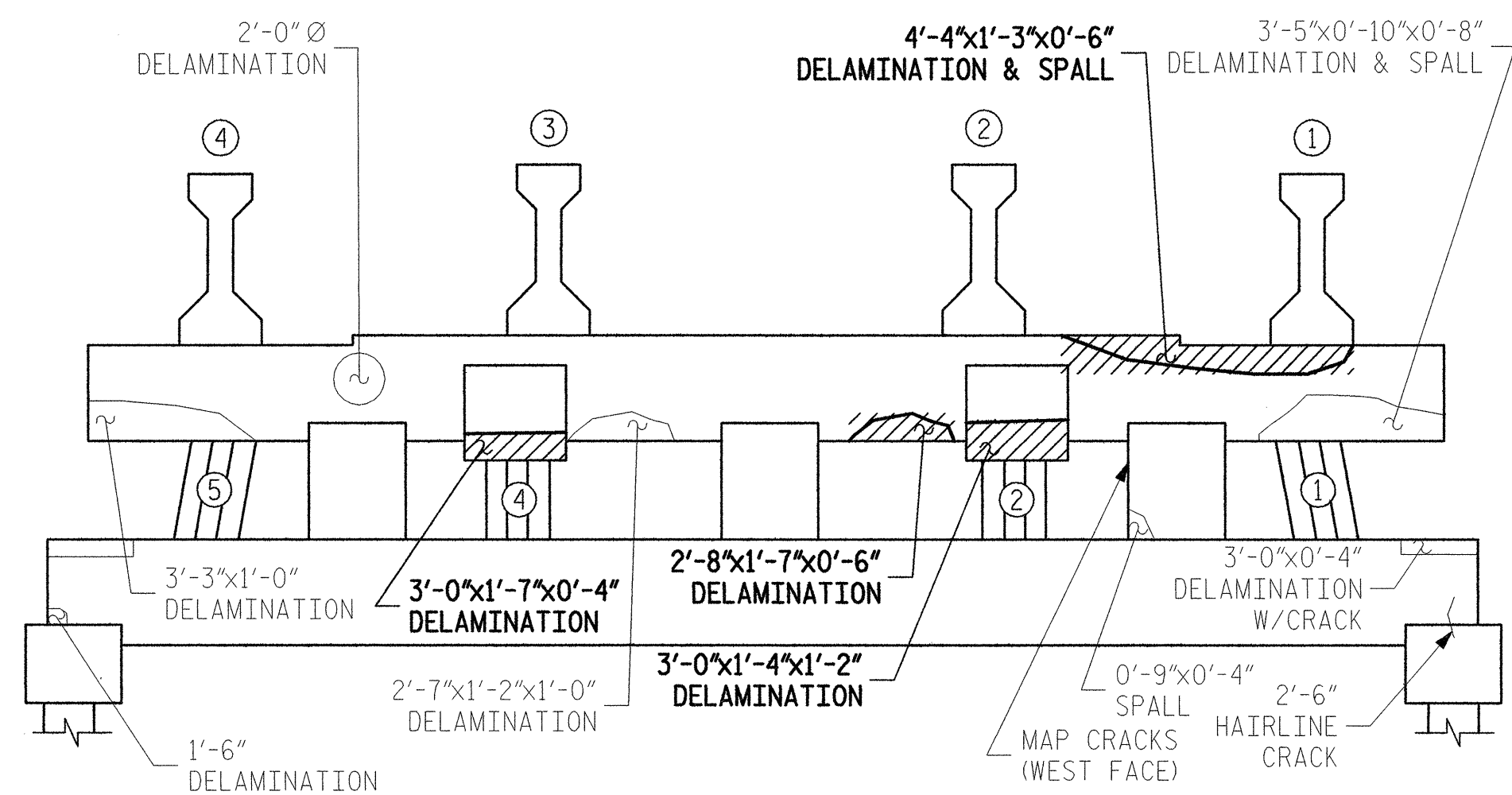
NORTH ELEVATION



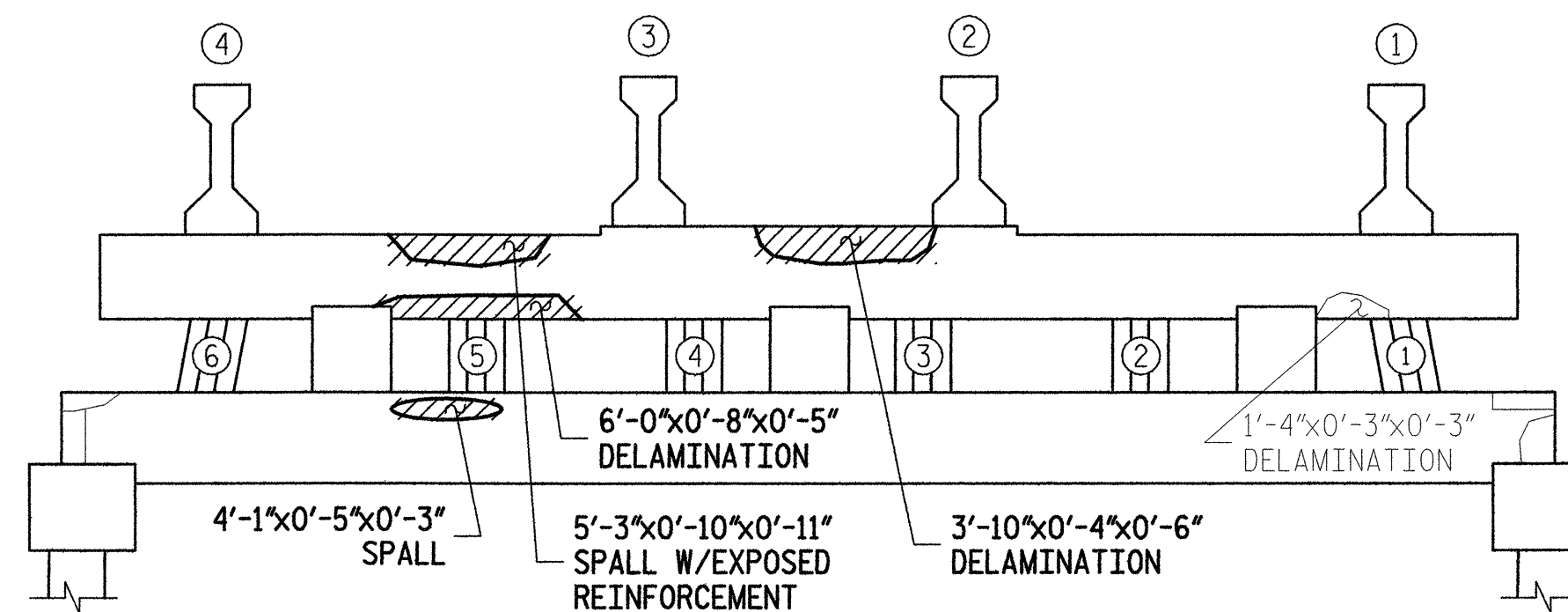
EAST ELEVATION



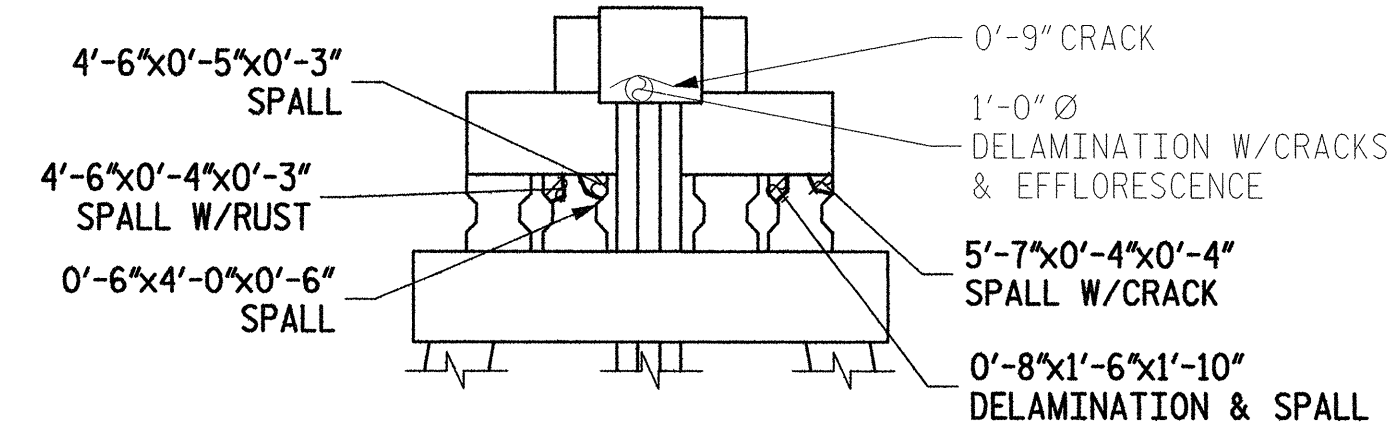
EAST ELEVATION



SOUTH ELEVATION

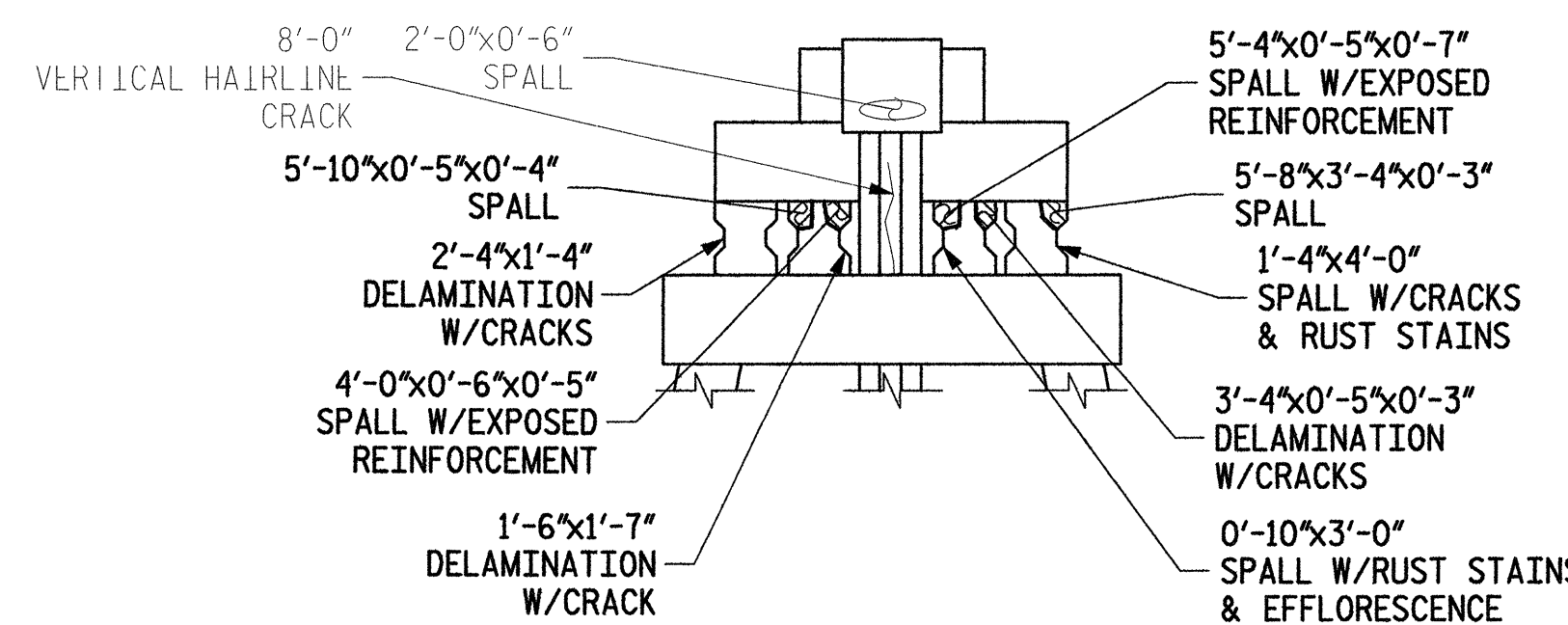


SOUTH ELEVATION



WEST ELEVATION

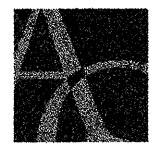
## BENT #167



WEST ELEVATION

## BENT #168

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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 4911 Green Road, Suite 107, Raleigh, NC 27616  
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 Email info@aogroup.com www.aogroup.com

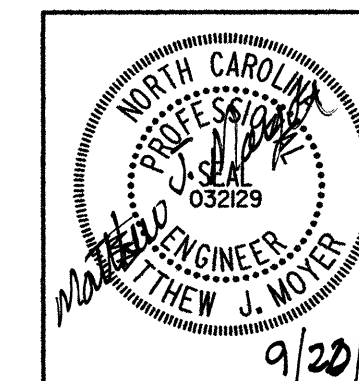
PLANS PREPARED BY



PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

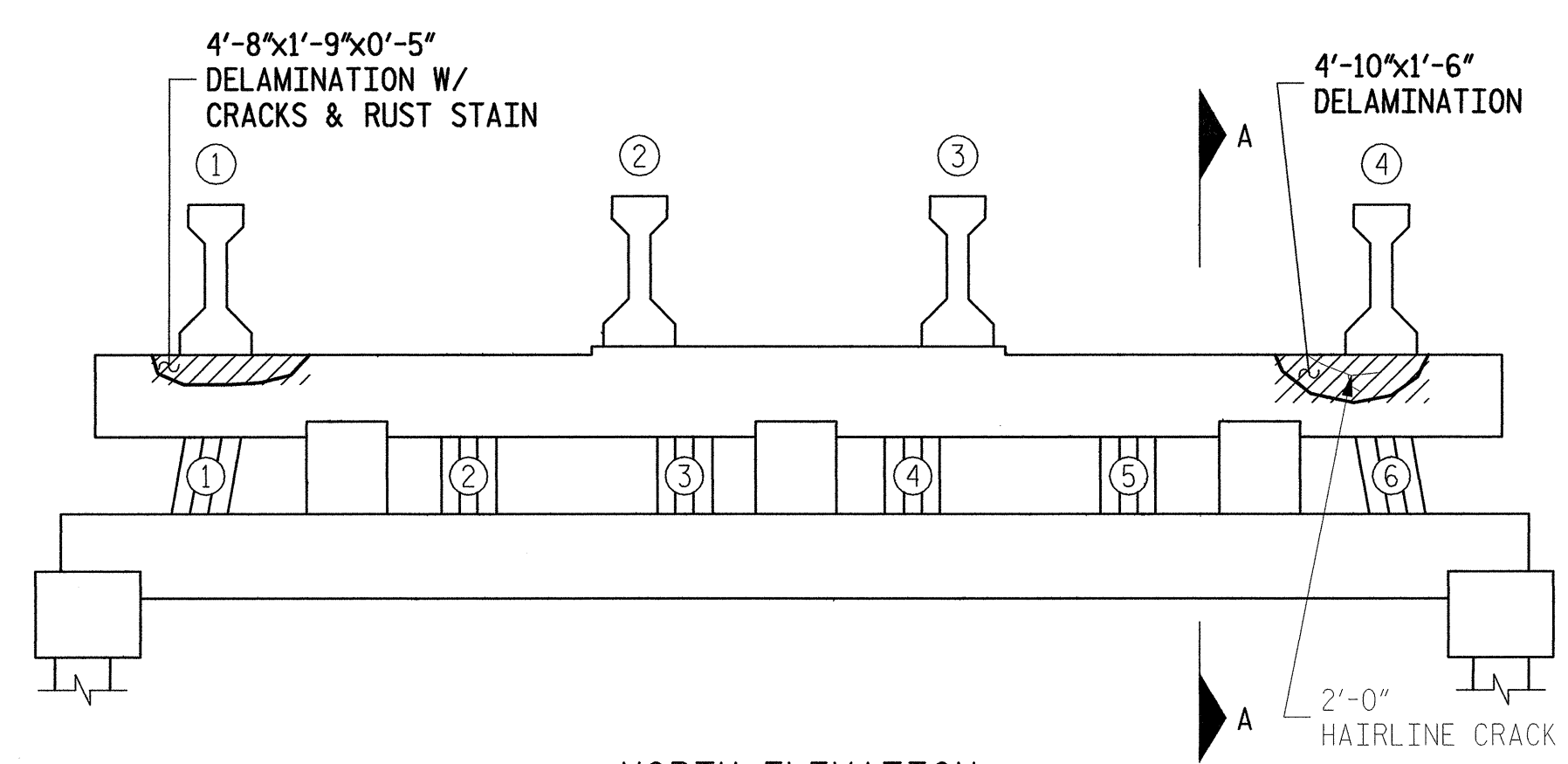
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #167 & #168

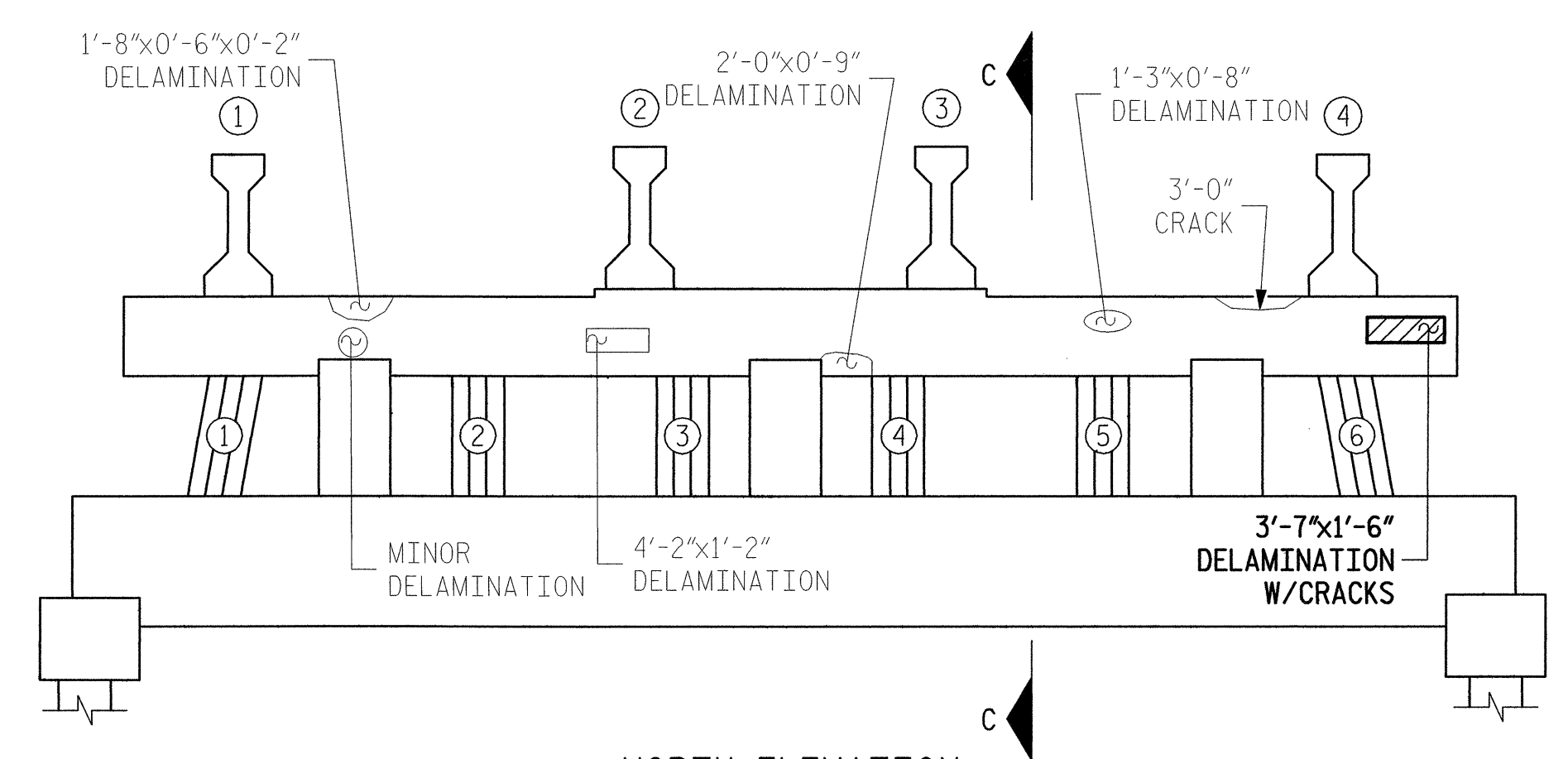


REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		135
2			4		TOTAL SHEETS 166

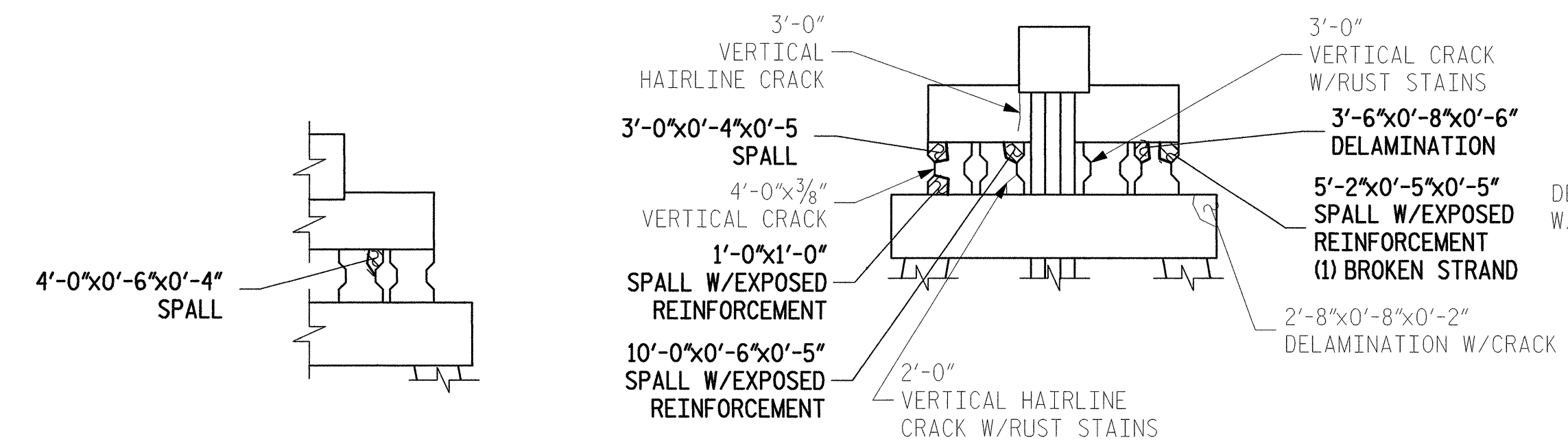
BILL OF MATERIAL			
BENT #169			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	5	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	12	
EPOXY MORTAR (FORMED)	CF	13	
BENT #170			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	2	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	-	
EPOXY MORTAR (FORMED)	CF	11	



NORTH ELEVATION

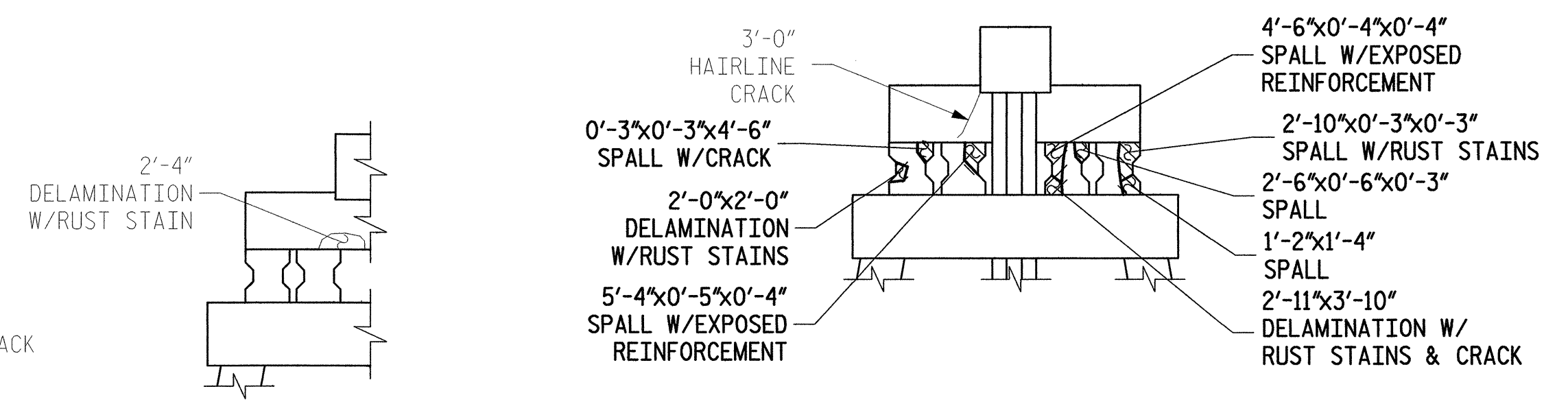


NORTH ELEVATION



SECTION A-A

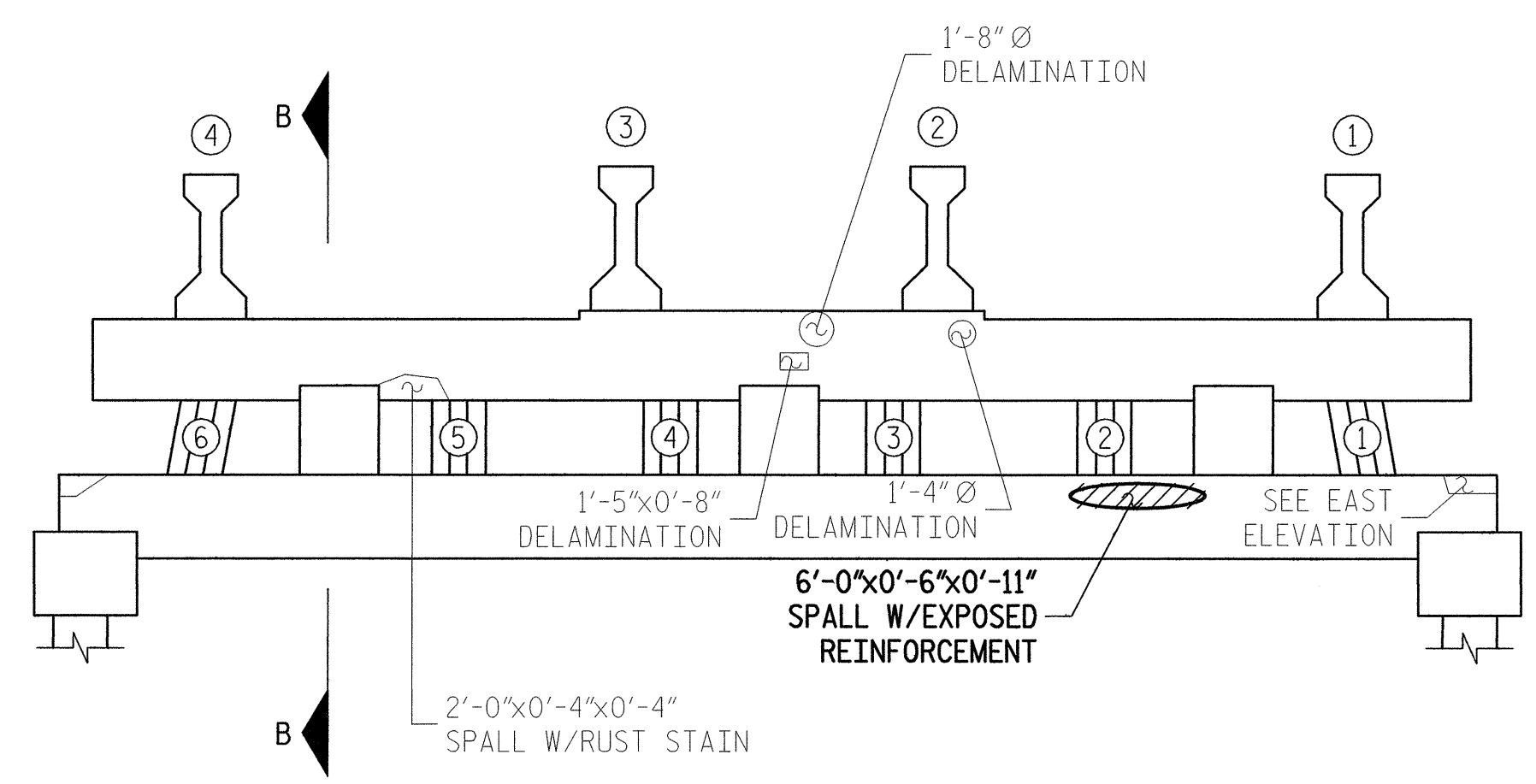
EAST ELEVATION



SECTION C-C

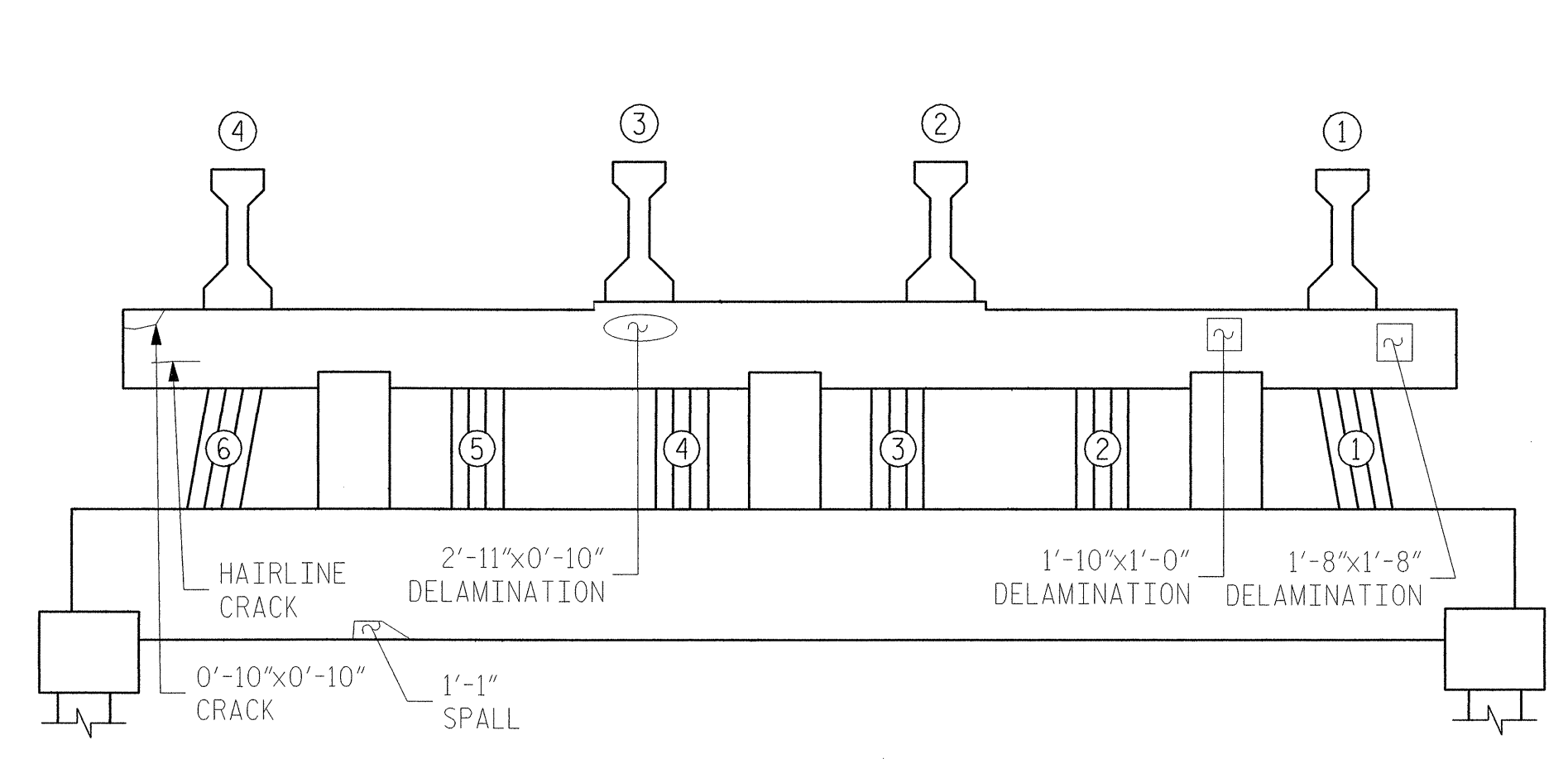
EAST ELEVATION

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



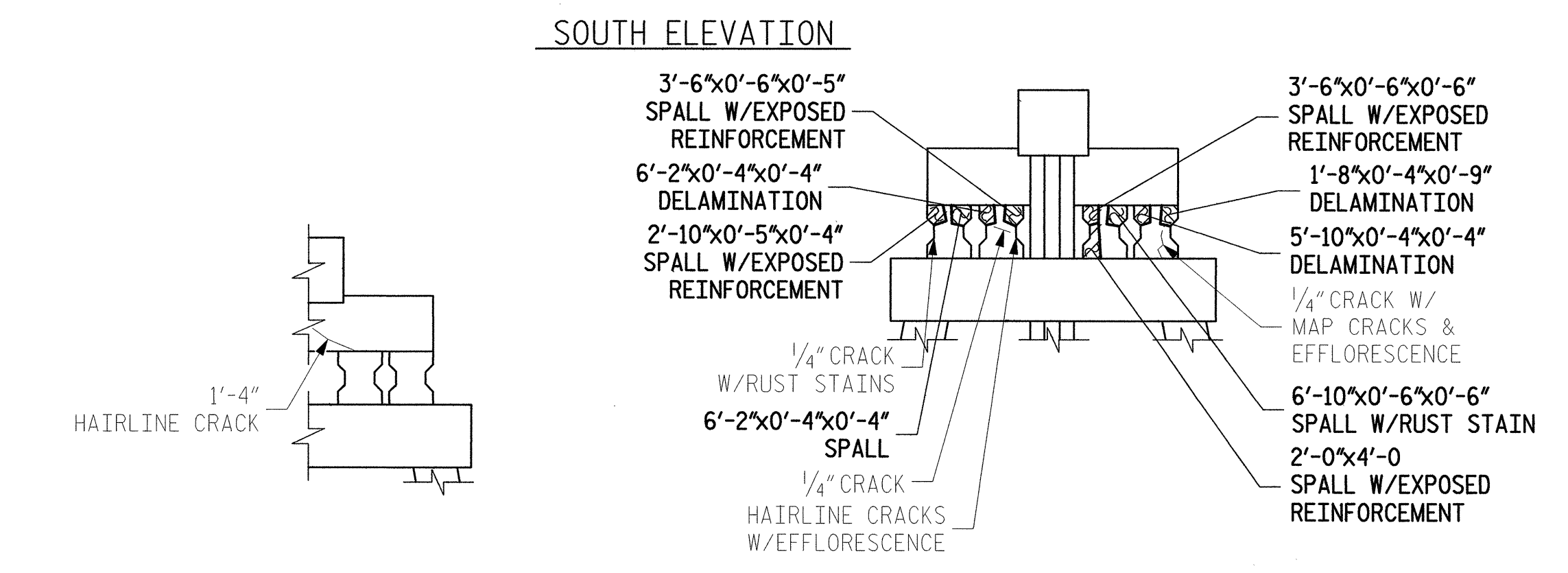
SOUTH ELEVATION

WEST ELEVATION

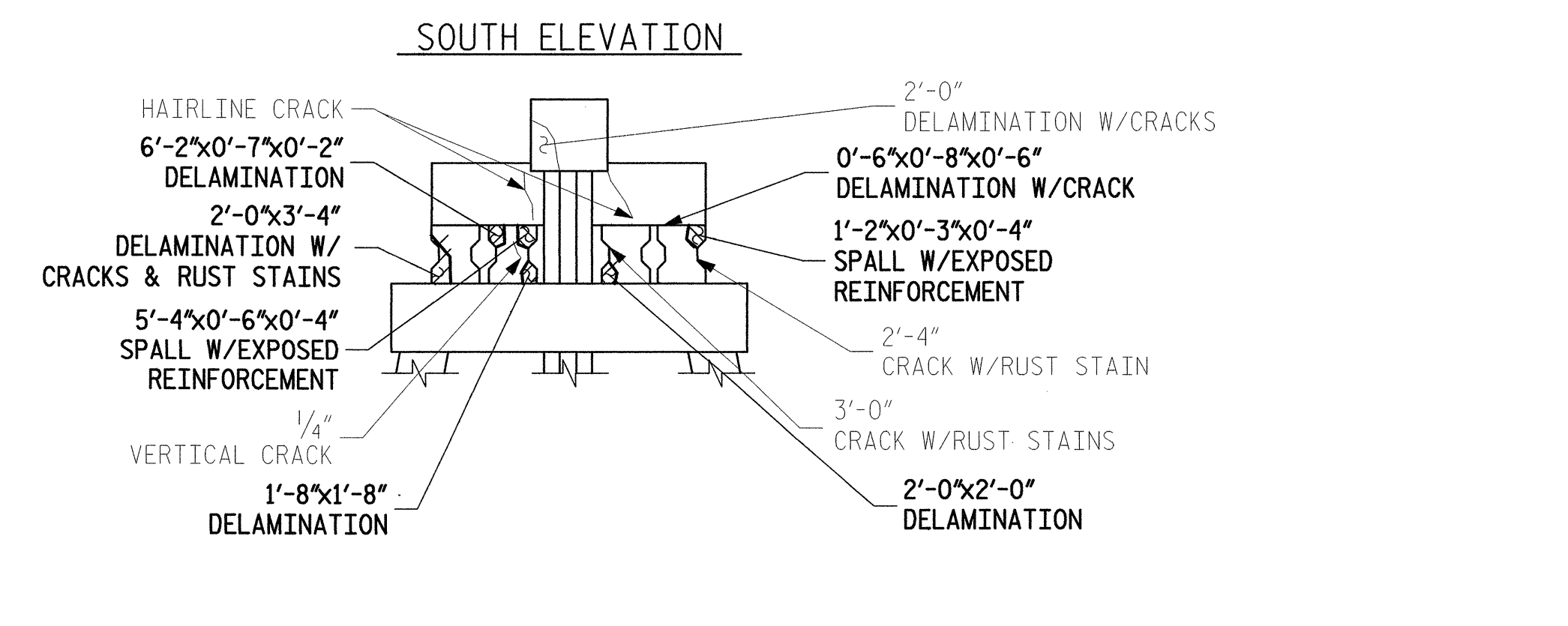


SOUTH ELEVATION

WEST ELEVATION



SECTION B-B



SECTION C-C

BENT #169

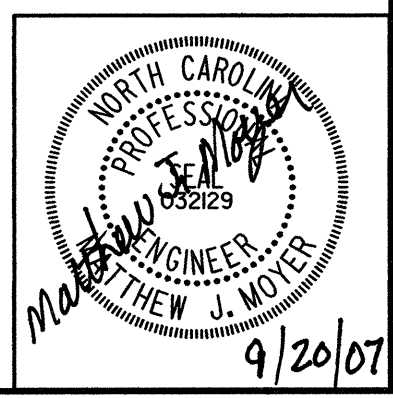
BENT #170

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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
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 (919) 851-6066

PROJECT NO. B-5014  
 COUNTY DARE  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #169 & #170



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			136
2			4			TOTAL SHEETS 166

FILE NAME: S:\NC\Bommer\Bent169-170\169-170.dgn  
 7:34:45 AM Ko & Associates, P.C.  
 9/18/2007

DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



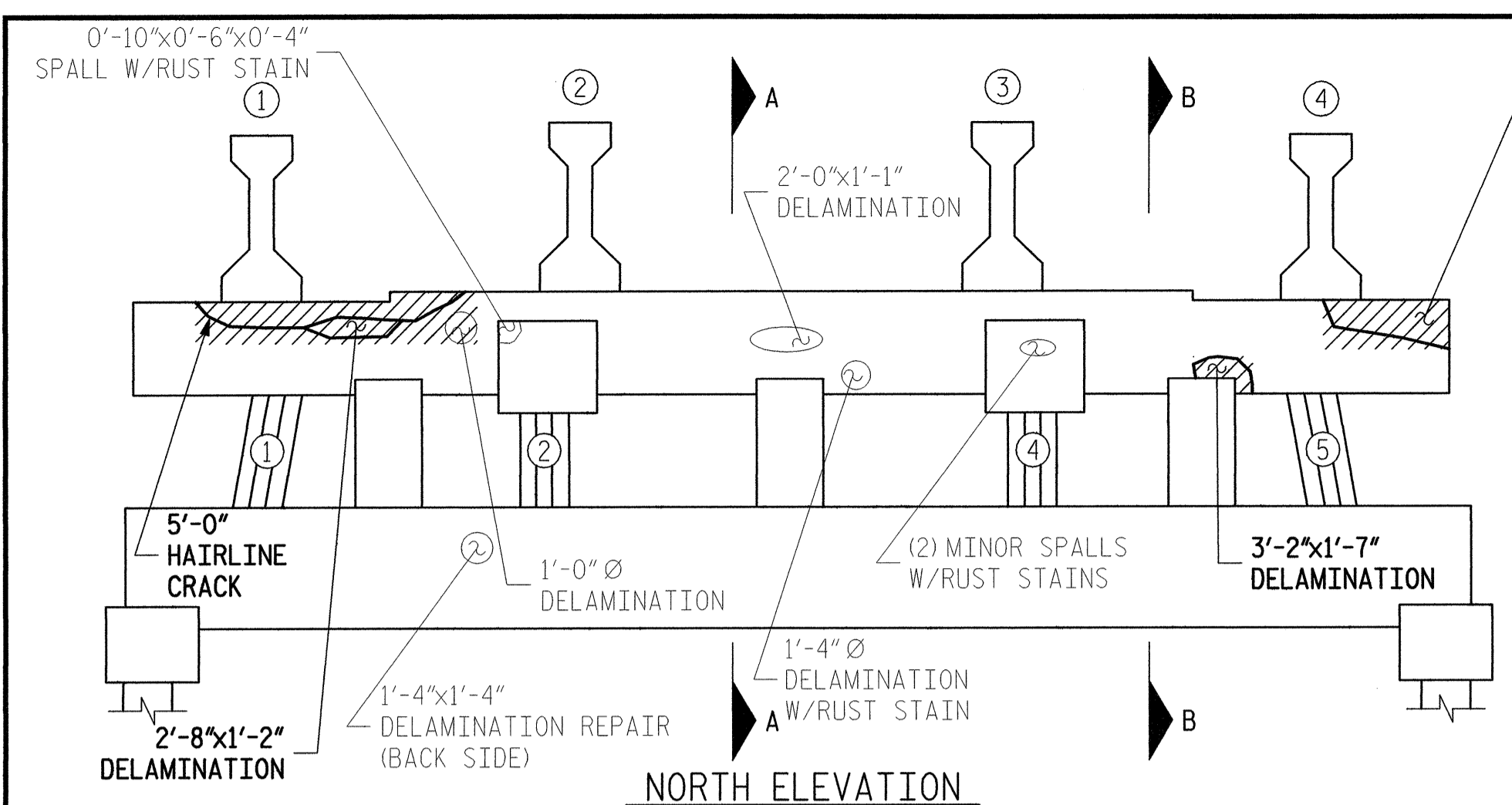
# BILL OF MATERIAL

## BENT #171

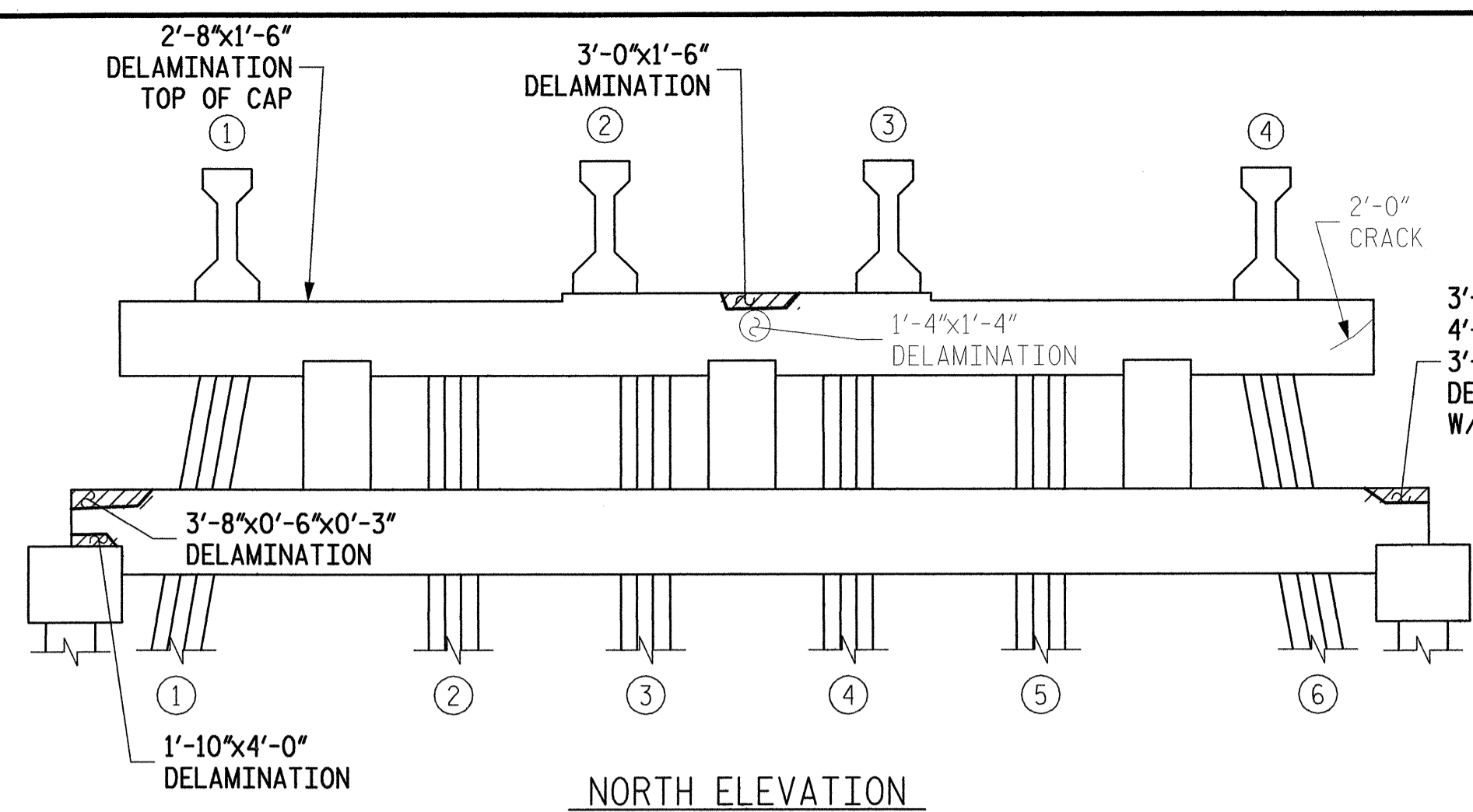
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	9
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	9
EPOXY MORTAR (FORMED)	CF	13

## BENT #172

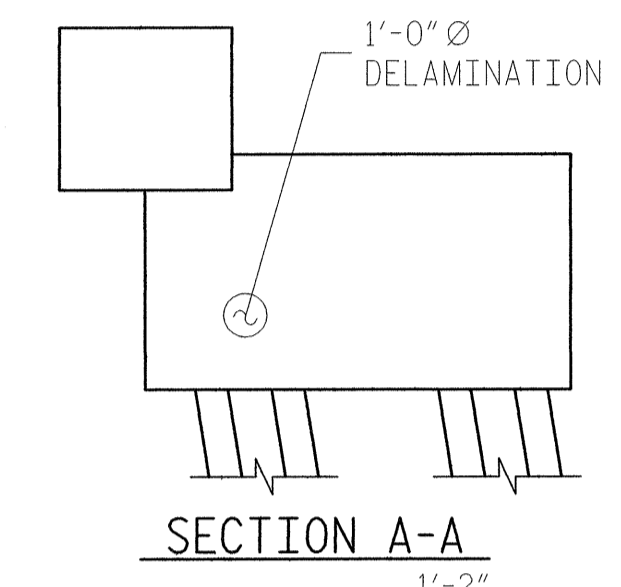
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	1
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	-
EPOXY MORTAR (FORMED)	CF	13



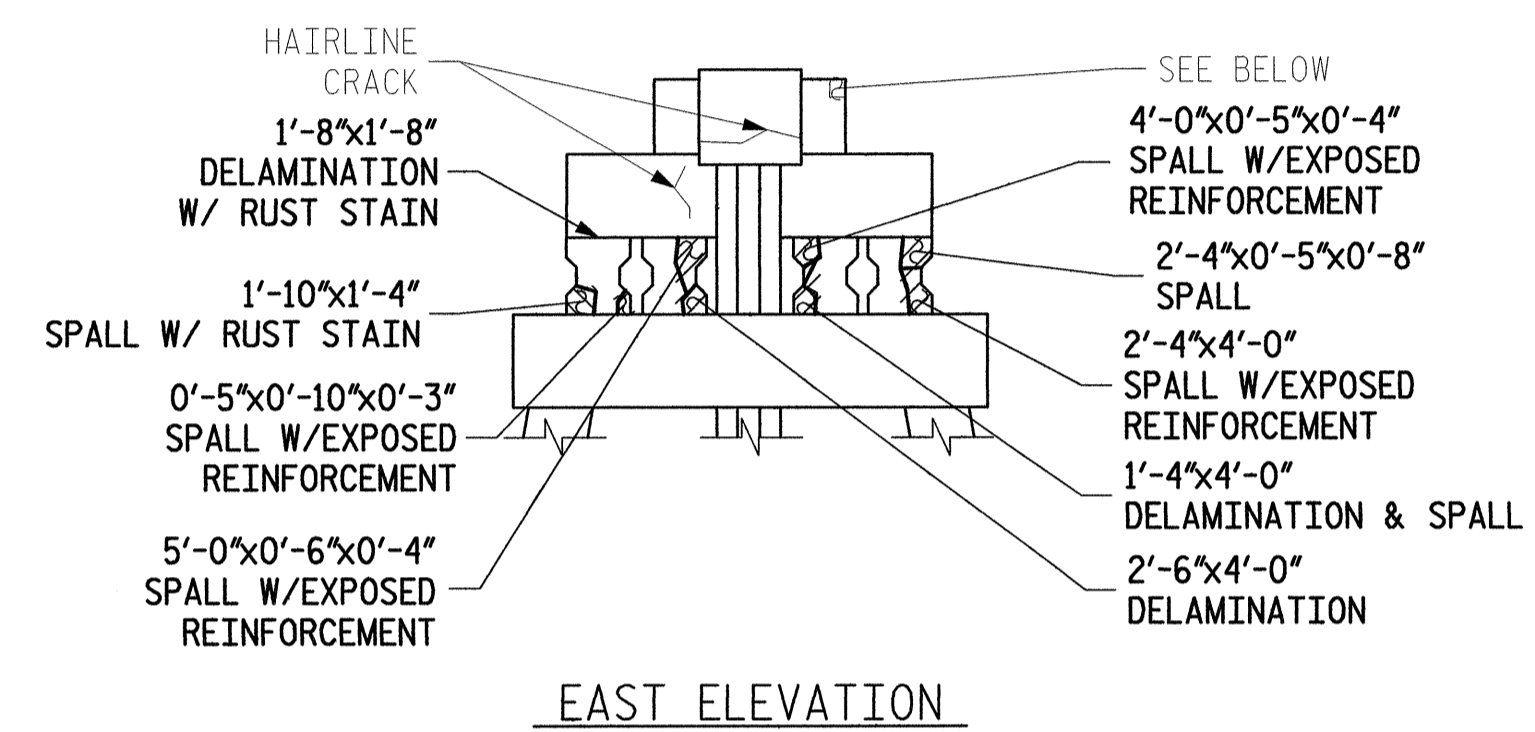
NORTH ELEVATION



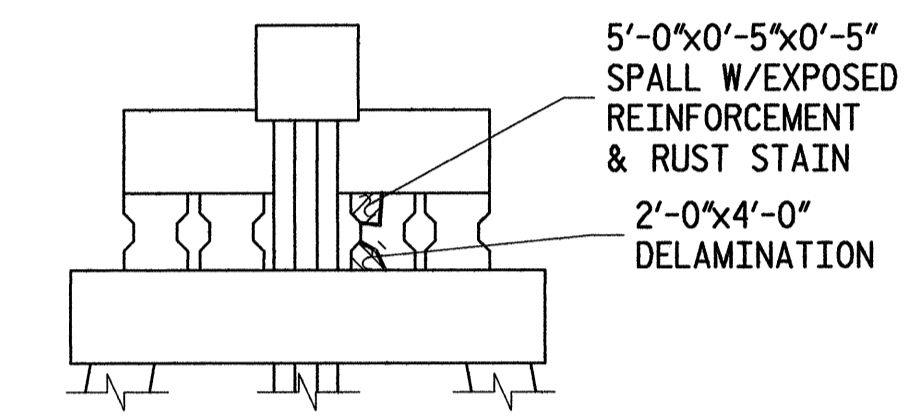
NORTH ELEVATION



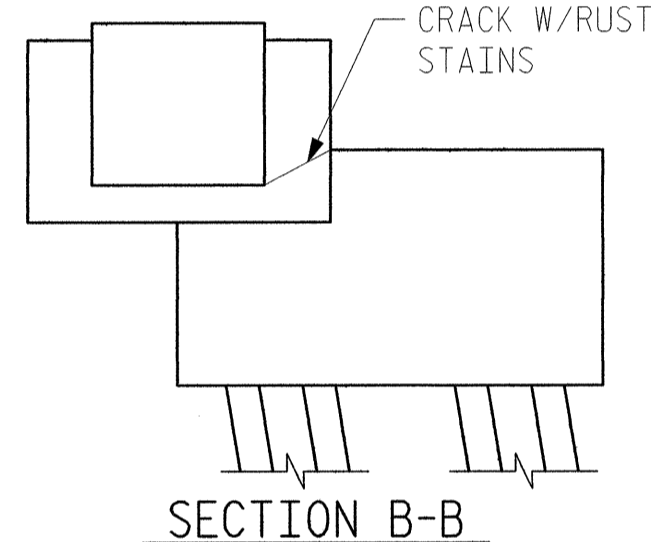
SECTION A-A



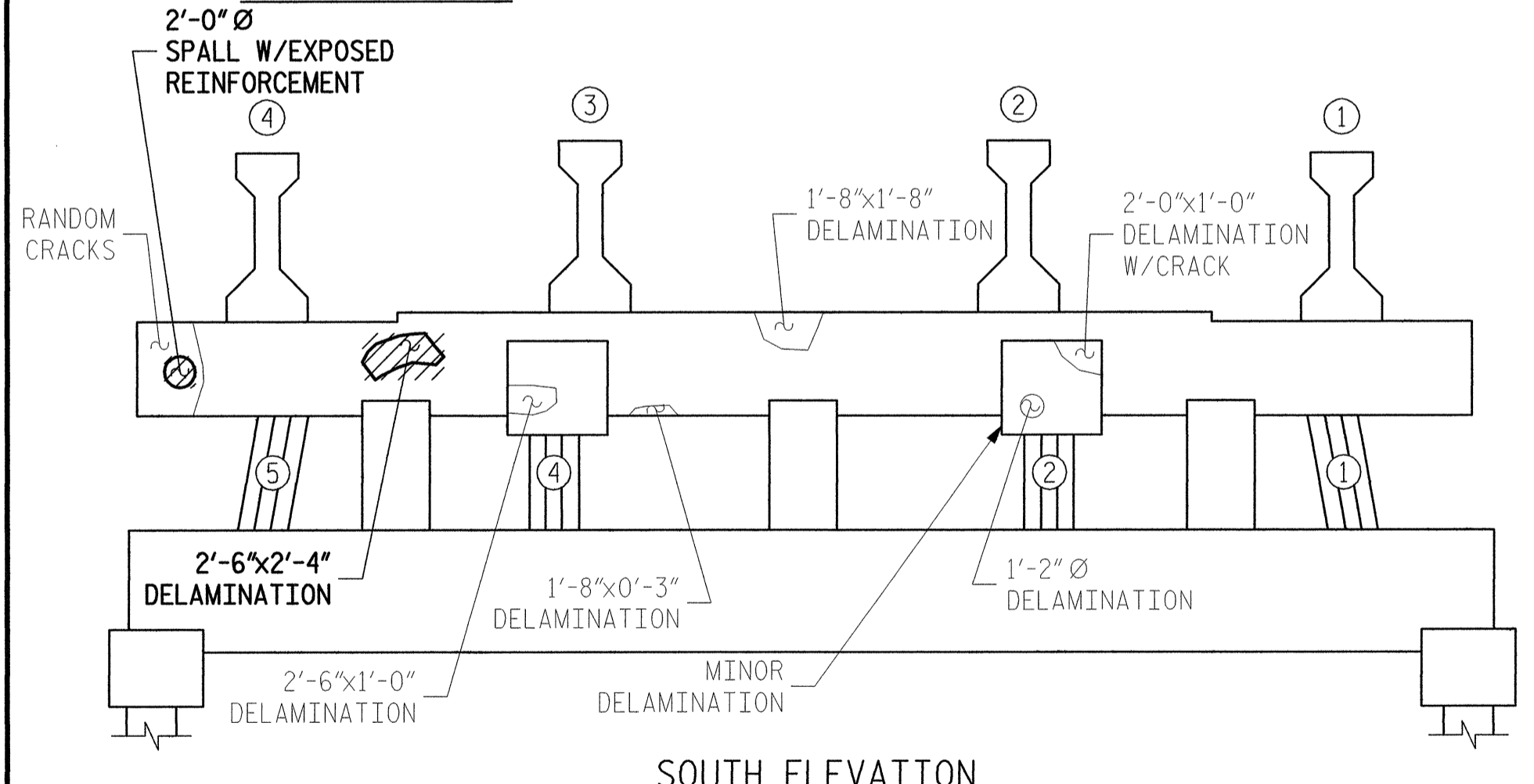
EAST ELEVATION



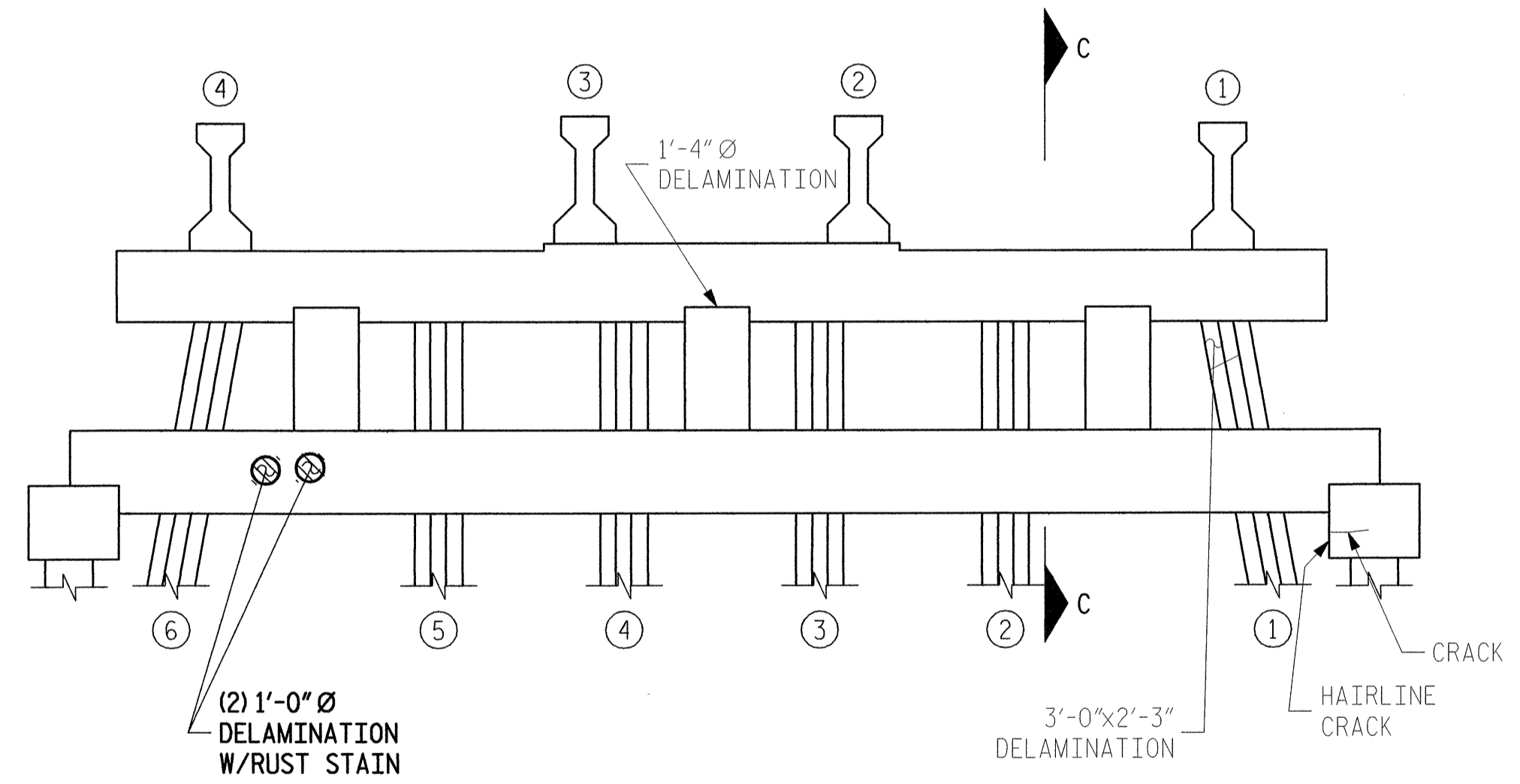
EAST ELEVATION



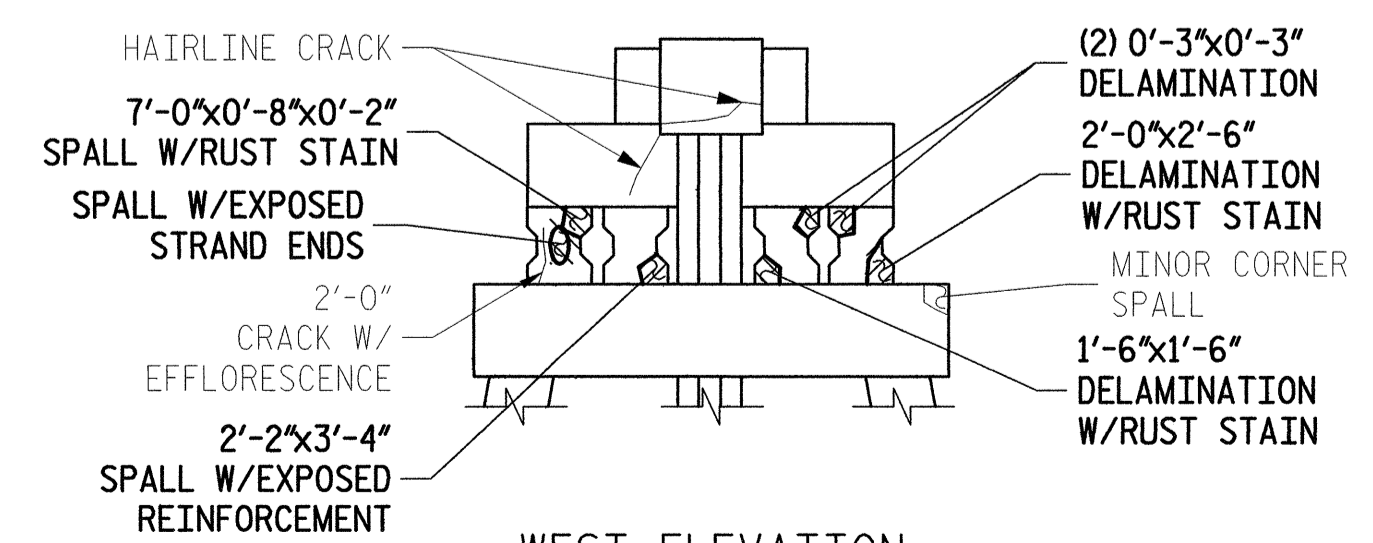
SECTION B-B



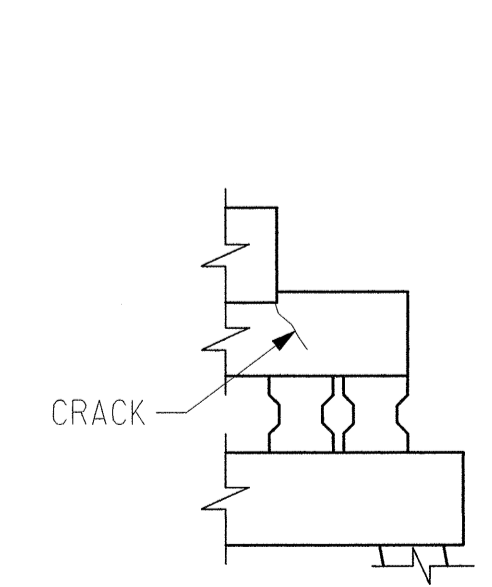
SOUTH ELEVATION



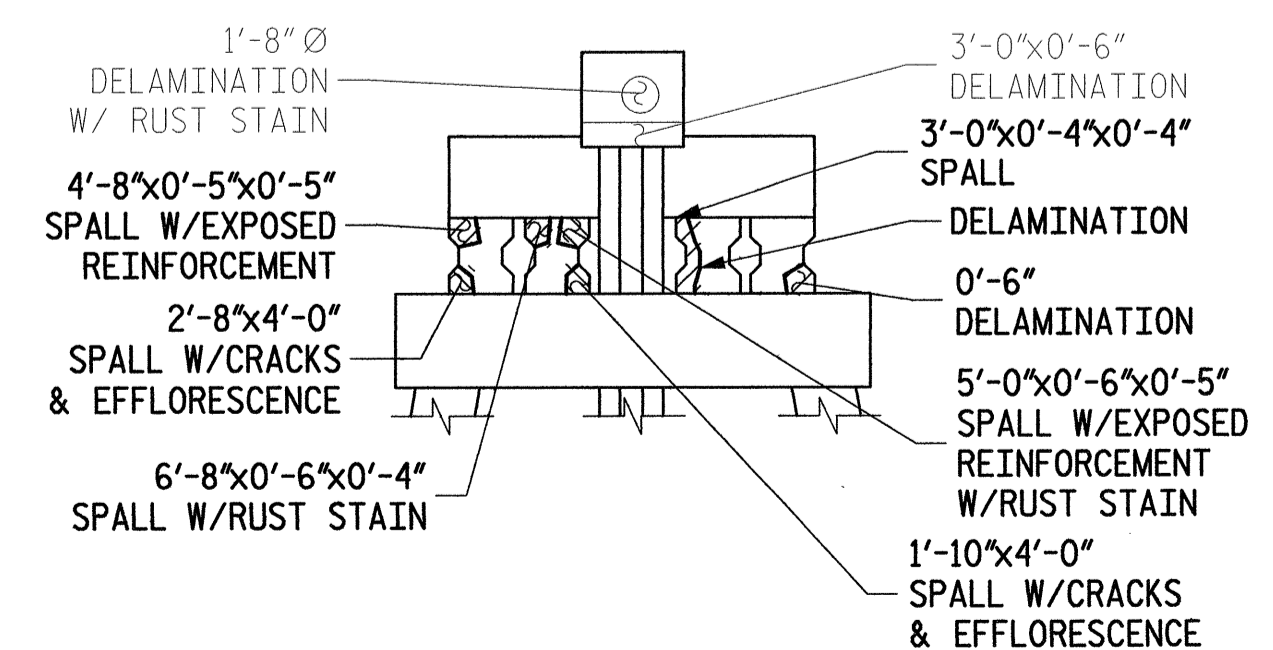
SOUTH ELEVATION



WEST ELEVATION  
BENT #171

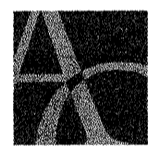


SECTION C-C



WEST ELEVATION  
BENT #172

- DENOTES GENERAL AREA OF REPAIR
- 0'-9'x8'-1'x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9'x8'-1'x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9'x8'-1'x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

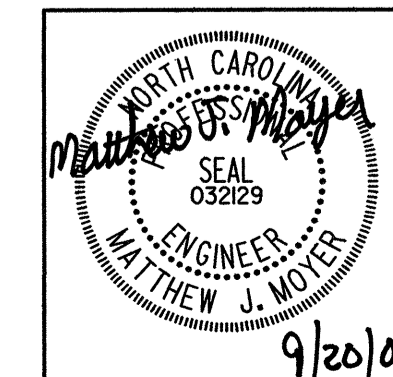


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Email info@aogroup.com www.aogroup.com

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**KO & ASSOCIATES, P.C.**  
Consulting Engineers  
101 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606  
(919) 881-6066

PROJECT NO. B-5014  
DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**BONNER BRIDGE REPAIR**  
LOW LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT(S) #171 & #172

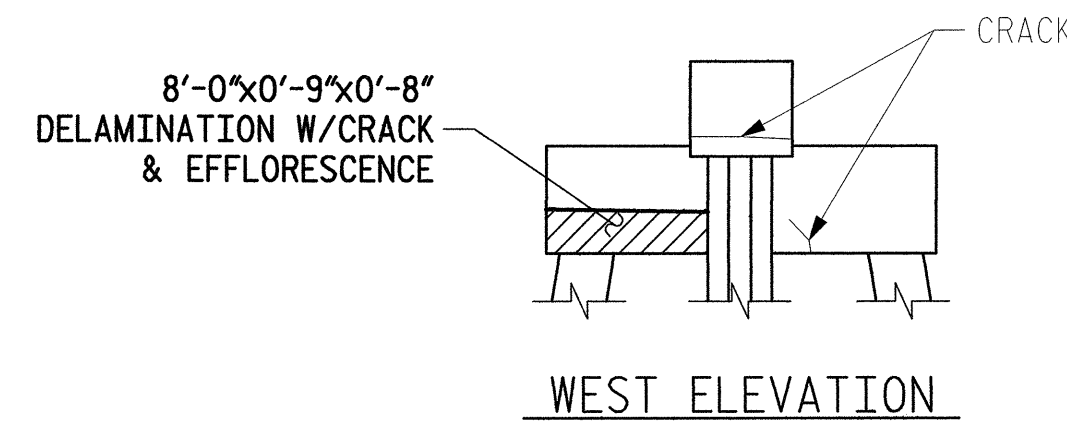
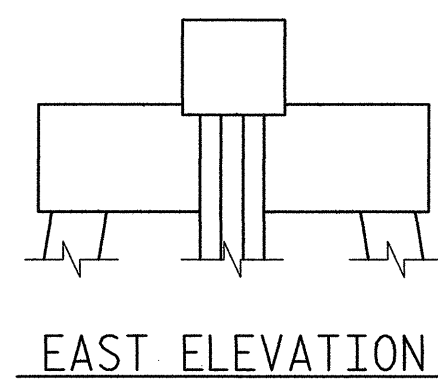
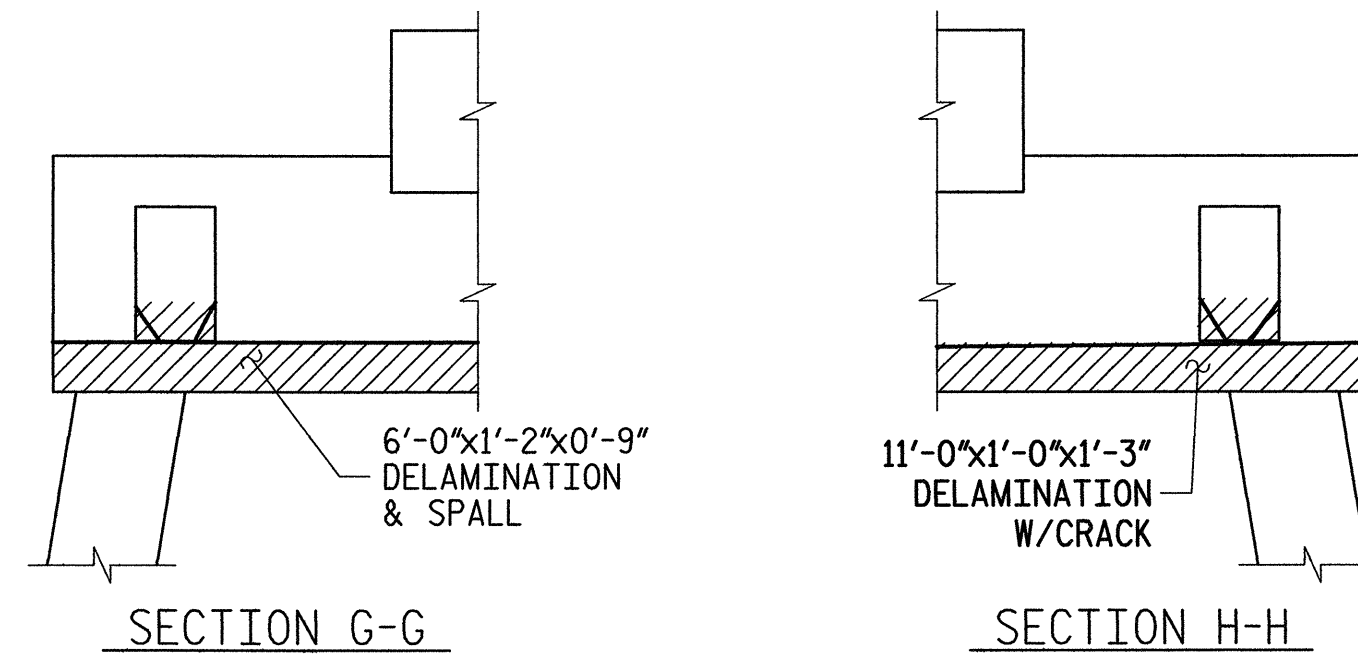
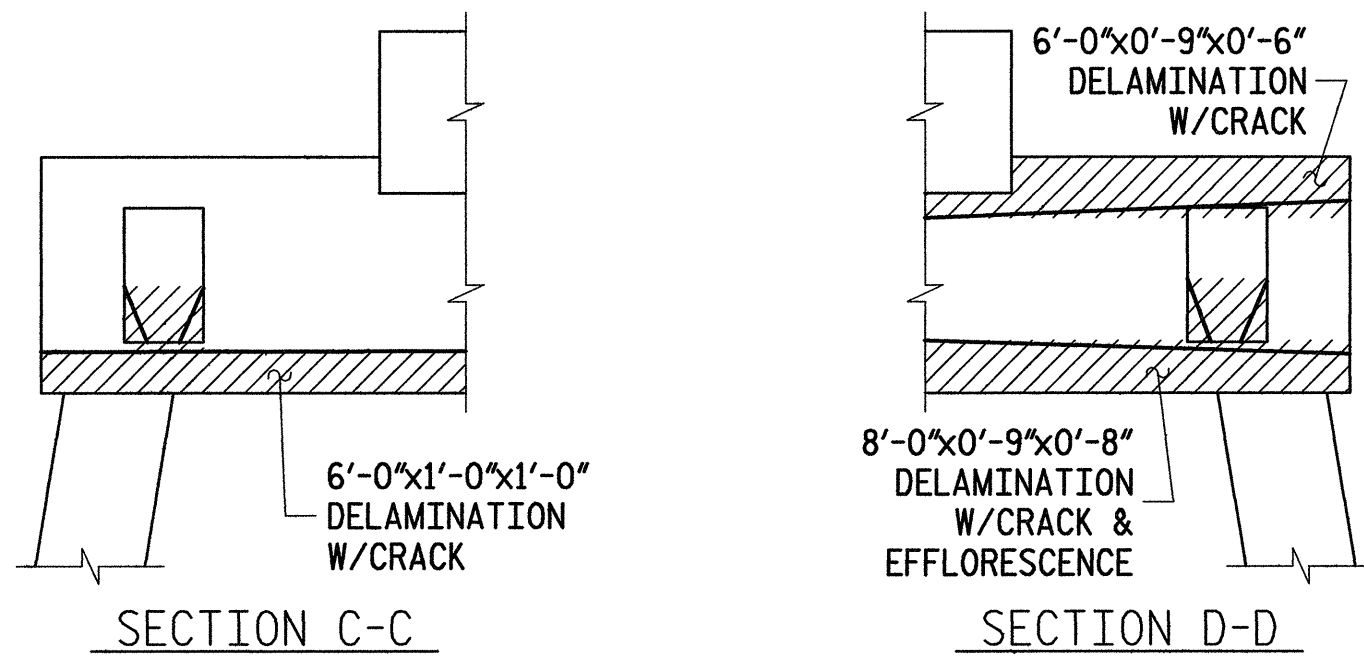
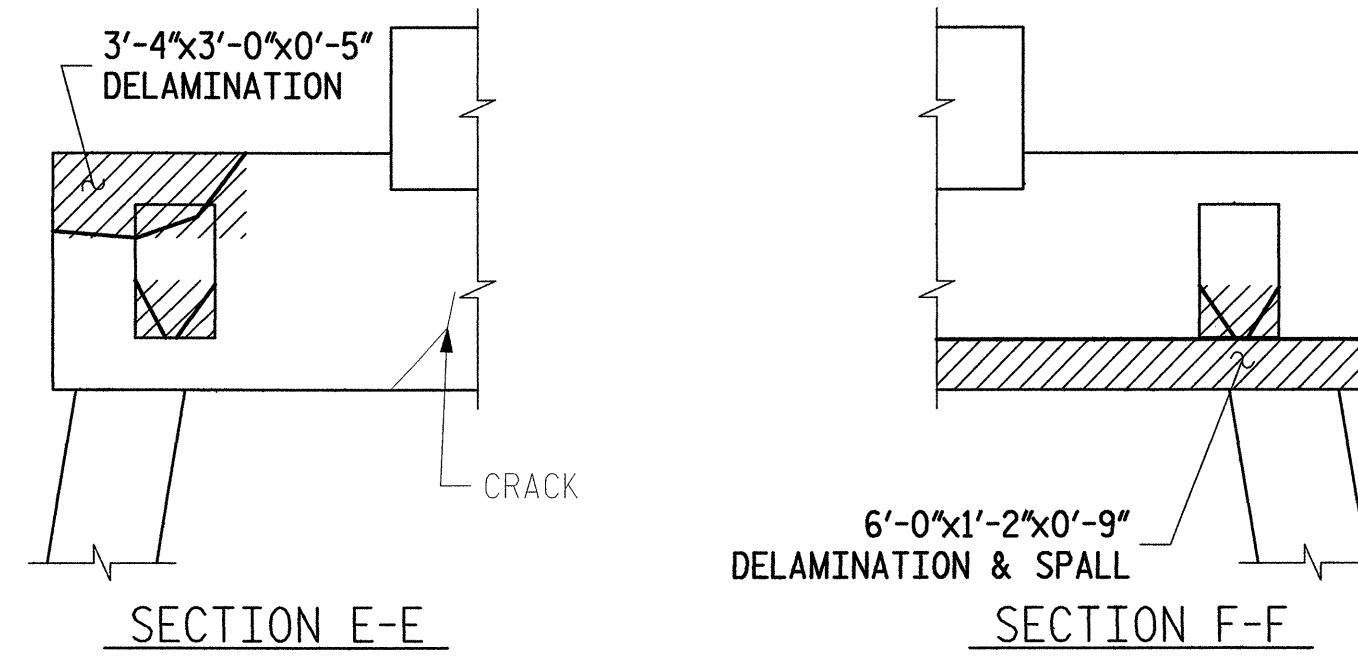
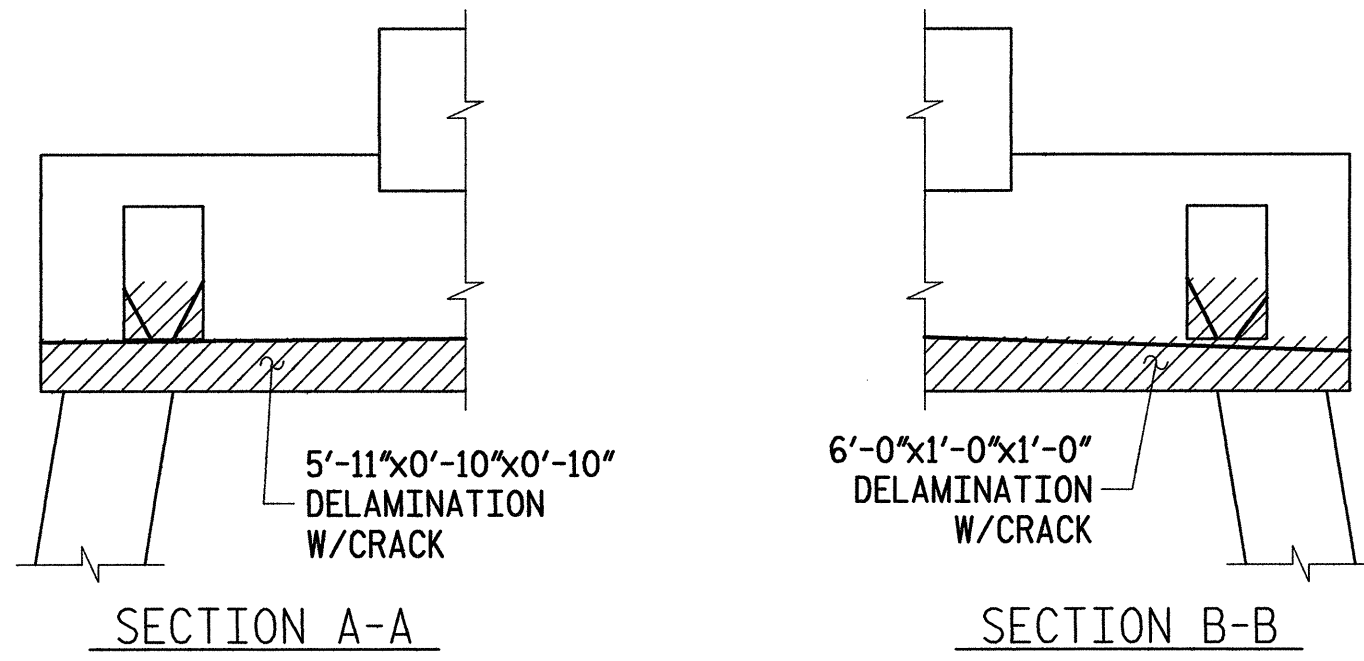
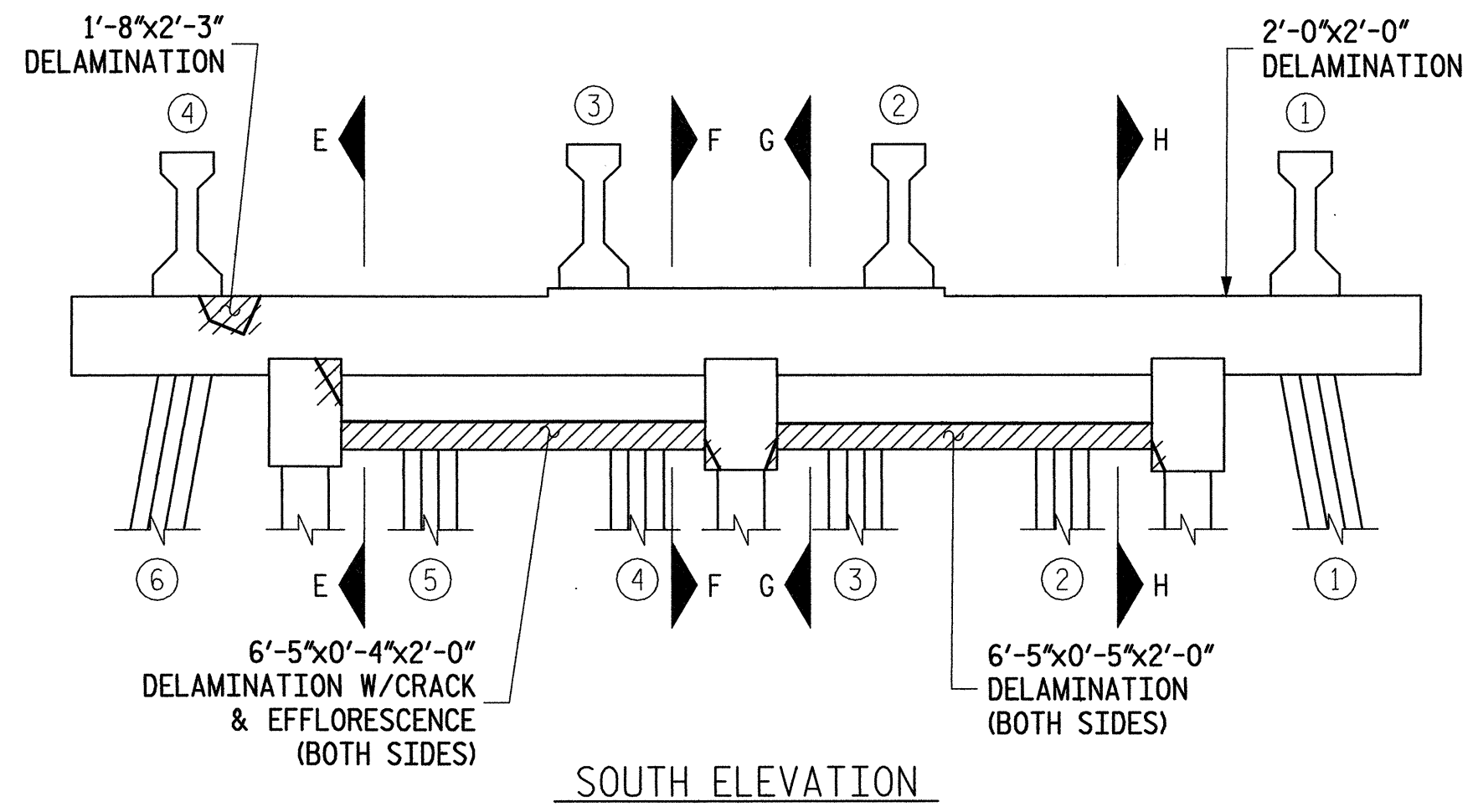
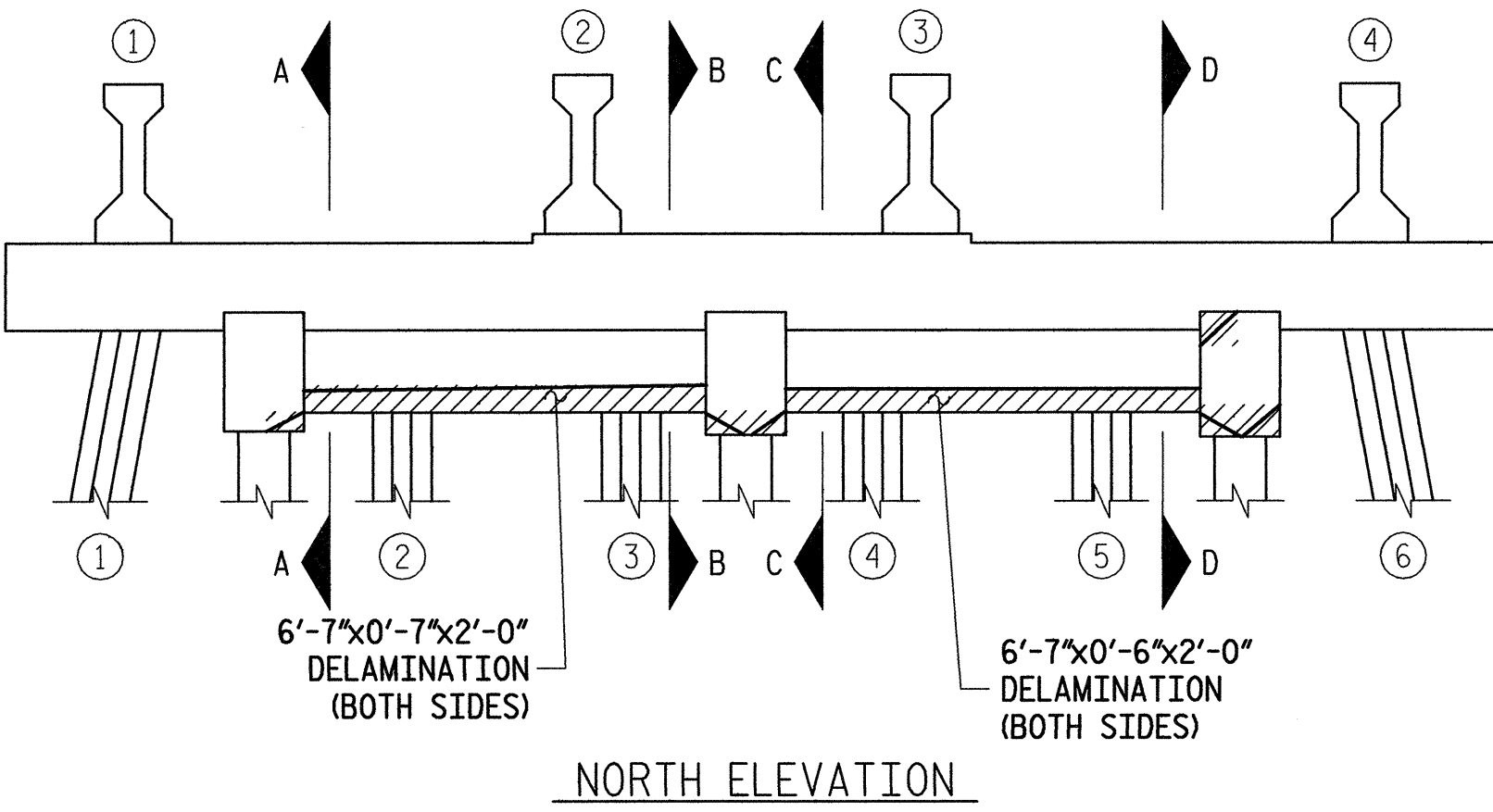


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			137
2			4			166

FILE NAME: S:\NC\Bonne-Vign-Um-1171-14172.dgn  
 8/8/2007 9:18/2007  
 B.E. LANNING  
 M.J. MOYER

DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007





**BENT #173**

BILL OF MATERIAL			
BENT #173			
REPAIR TYPE	UNIT	QUANTITIES	
			ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	15	
OVERHEAD SHOTCRETE	CF	56	
ADDITIONAL REINFORCING	LBS	-	
EPOXY MORTAR (FORMED)	CF	-	

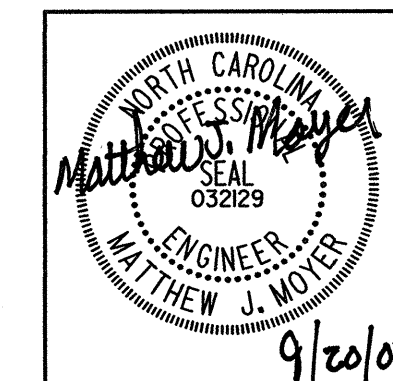
- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

**ALPHA & OMEGA GROUP**  
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 Phone: 919.981.0310 Fax: 919.981.0451  
 Email: info@aogroup.com www.aogroup.com

PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
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 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #173



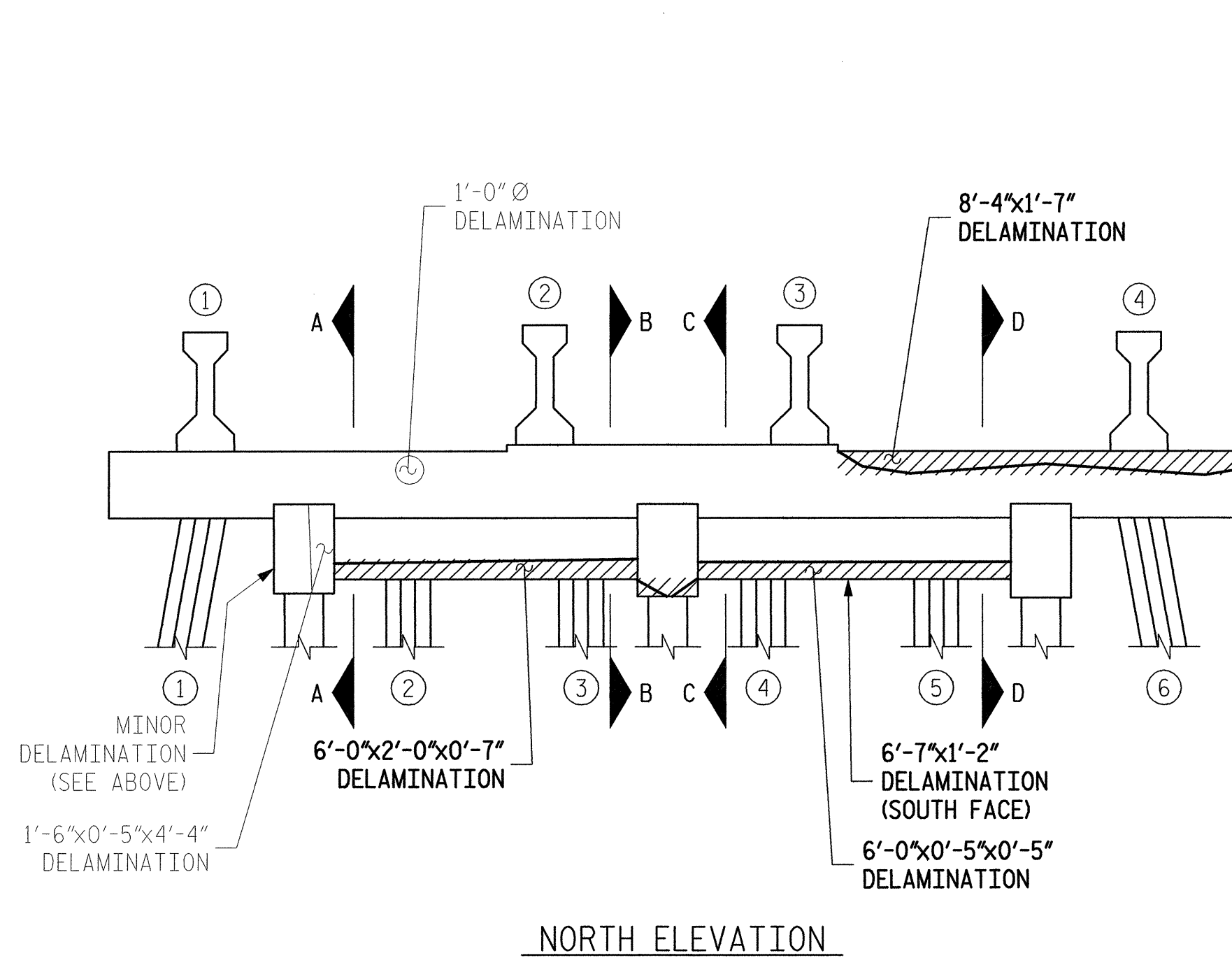
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		138
2			4		166

FILE NAME: S:\NC\Bent#173\Bent#173.dgn  
 PLOT: 9/18/2007 8:07:54 AM Ko & Associates, P.C.  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

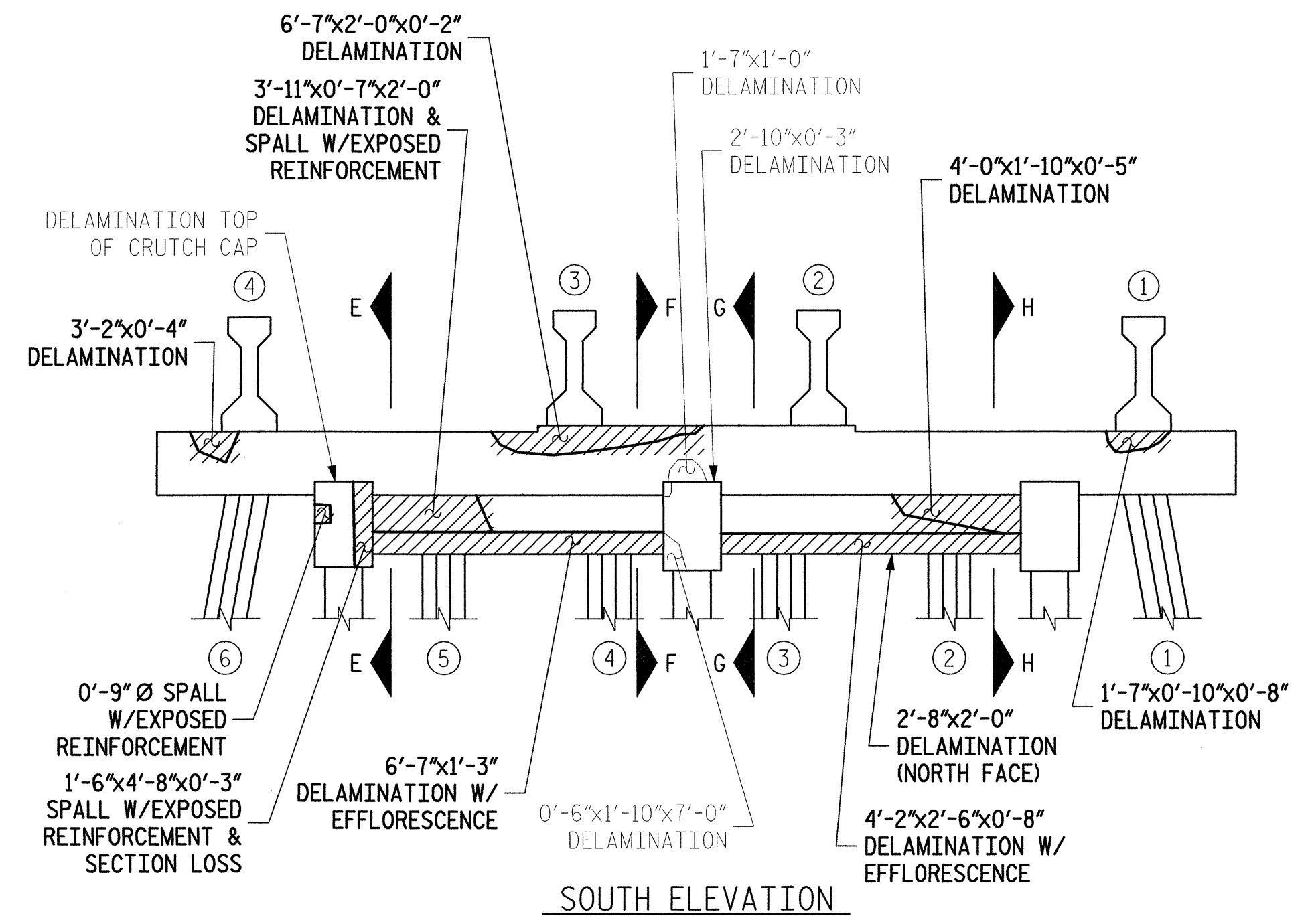
# BILL OF MATERIAL

BENT #174

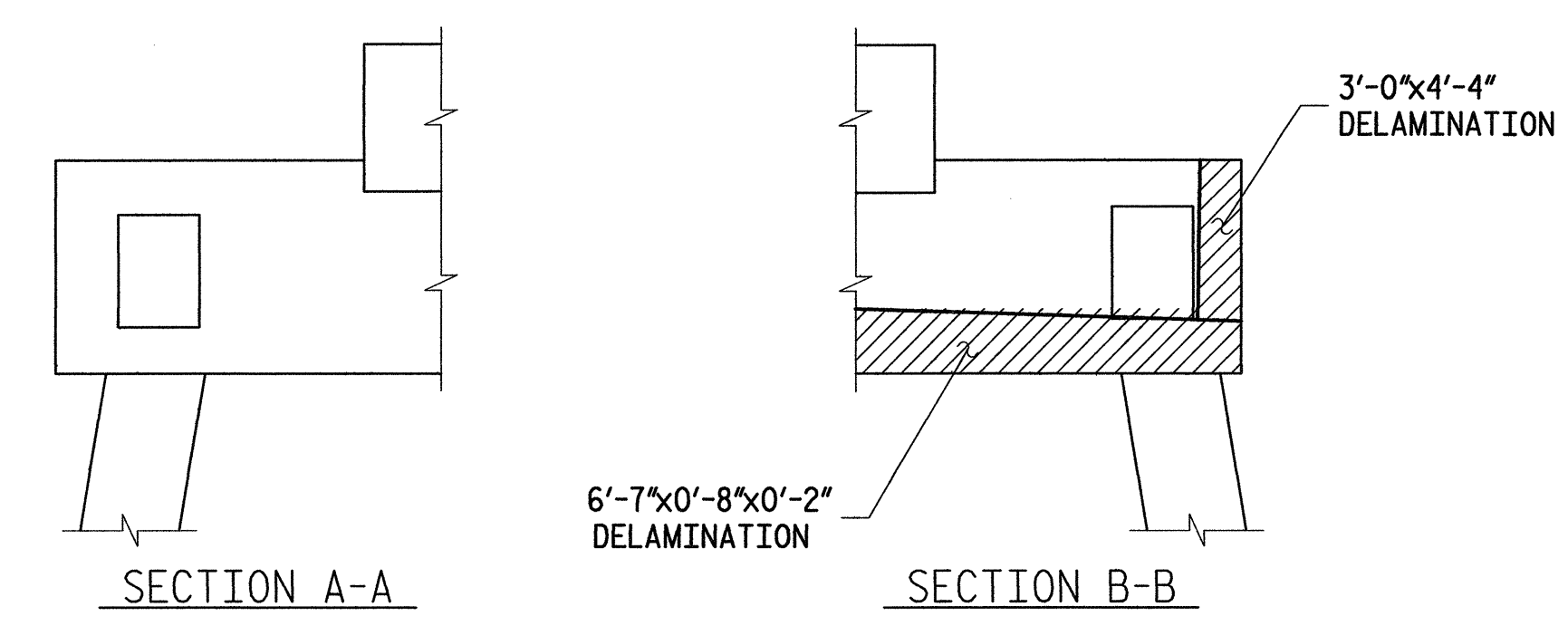
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	3	
VERTICAL SHOTCRETE	CF	43	
OVERHEAD SHOTCRETE	CF	11	
ADDITIONAL REINFORCING	LBS	53	
EPOXY MORTAR (FORMED)	CF	-	



NORTH ELEVATION

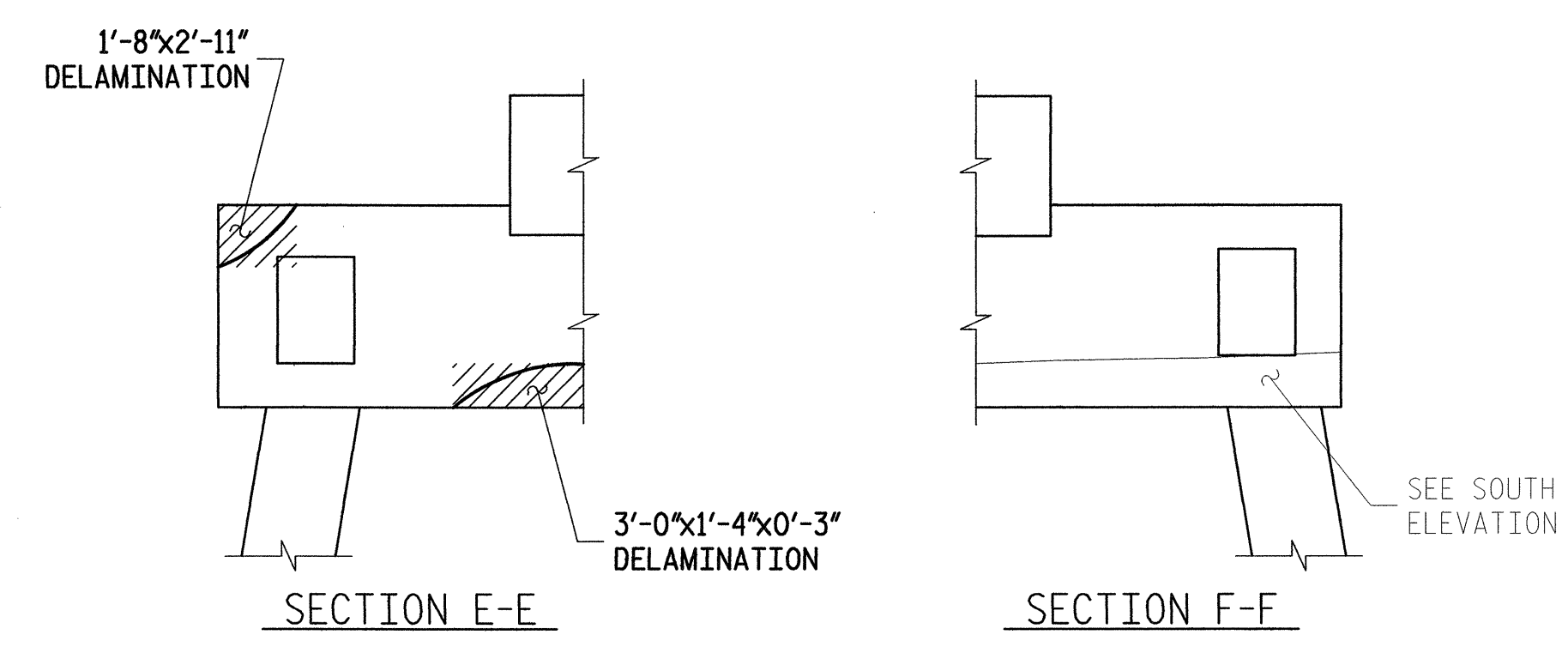


SOUTH ELEVATION



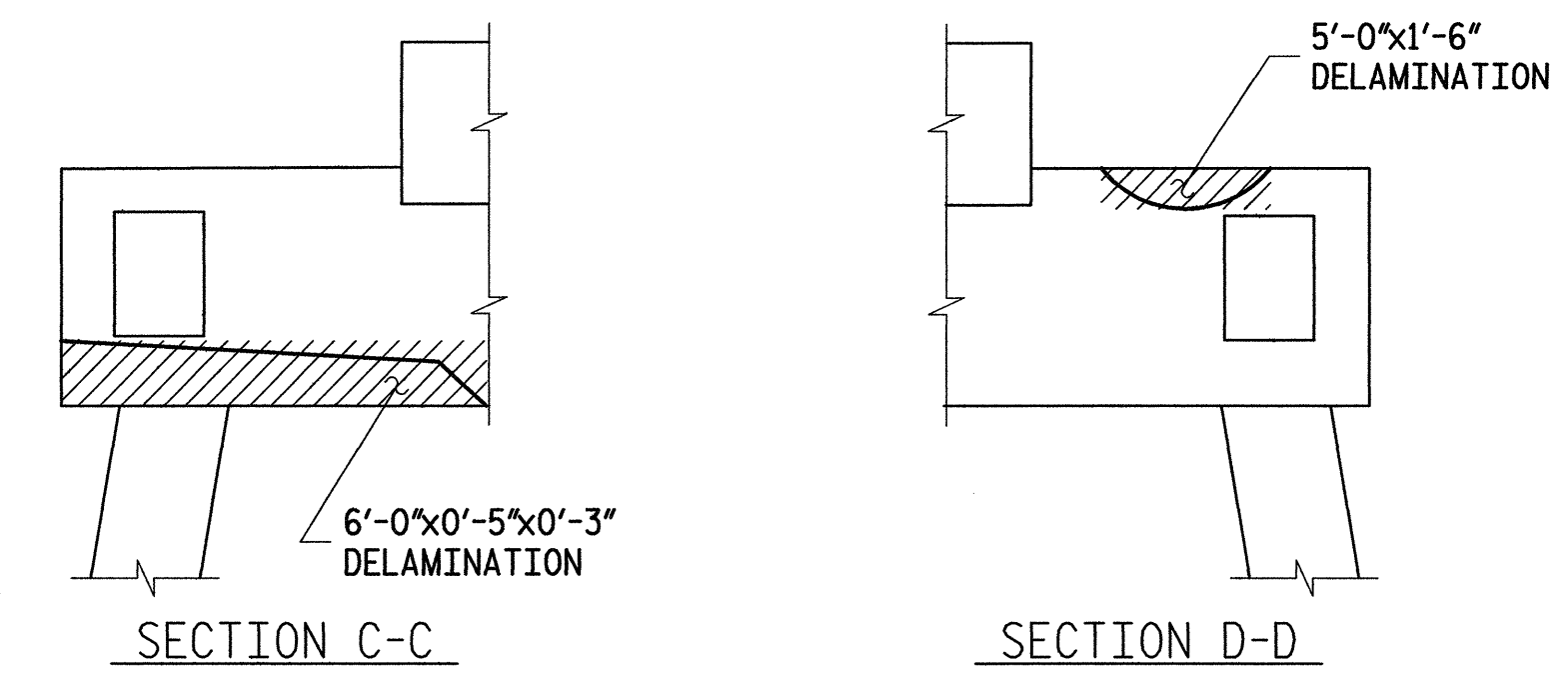
SECTION A-A

SECTION B-B



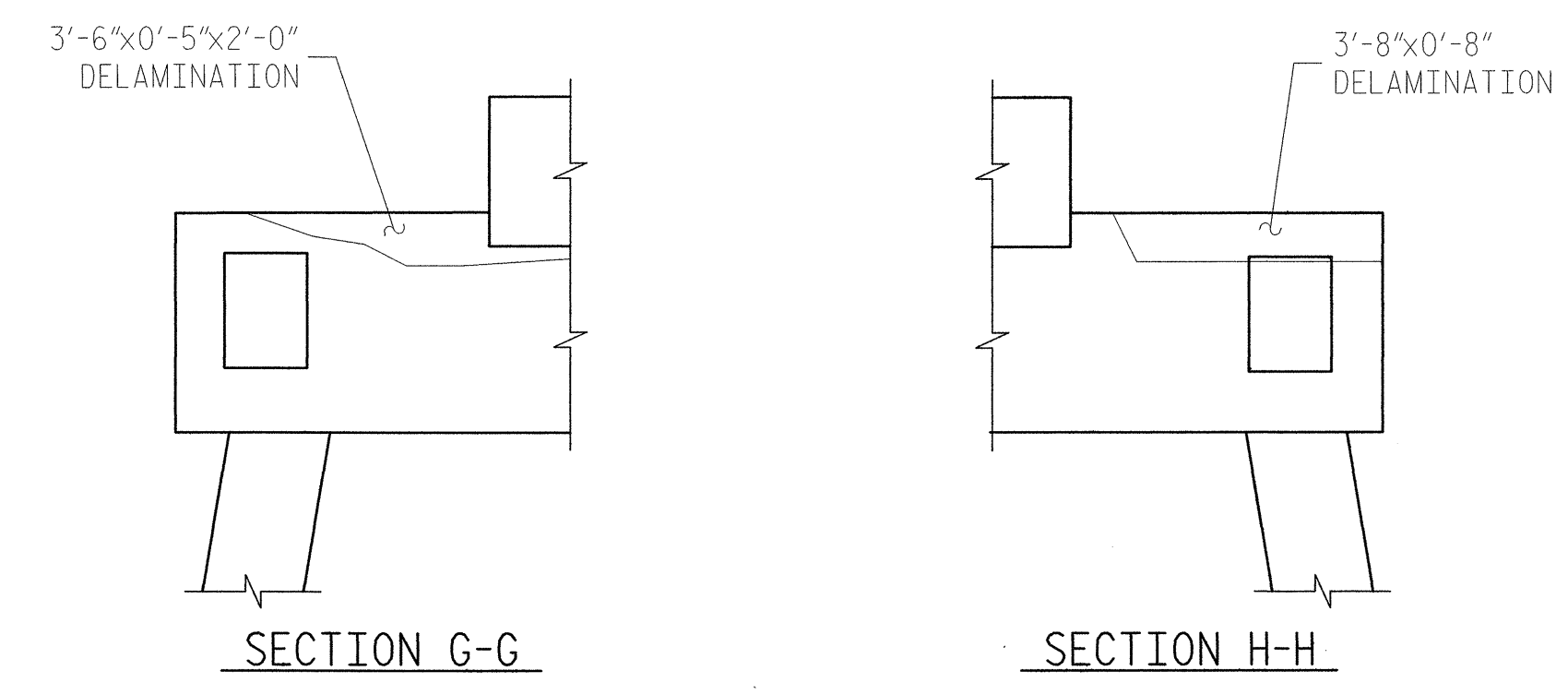
SECTION E-E

SECTION F-F



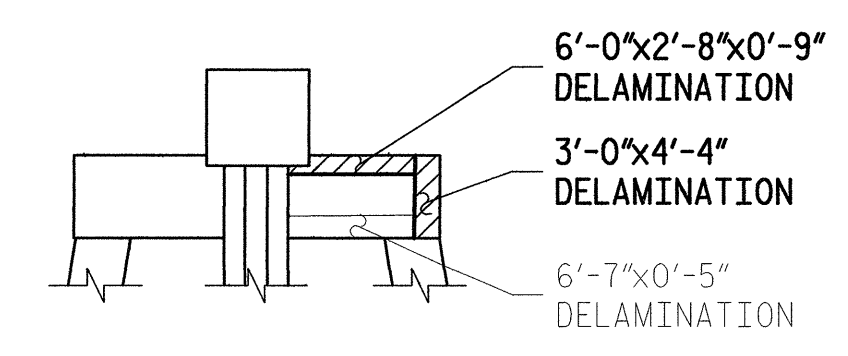
SECTION C-C

SECTION D-D

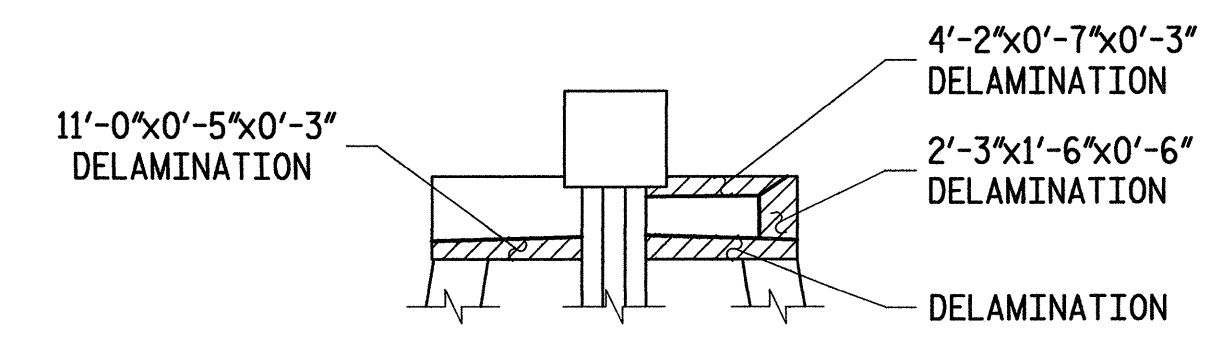


SECTION G-G

SECTION H-H



EAST ELEVATION



WEST ELEVATION

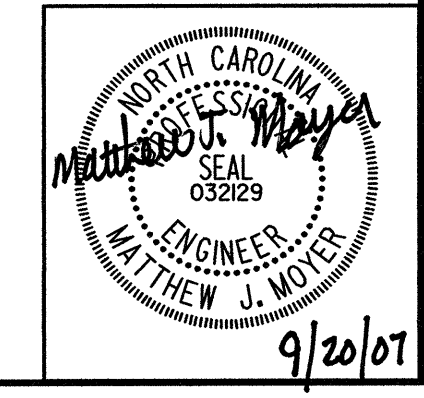
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

**ALPHA & OMEGA GROUP**  
 CIVIL & STRUCTURAL ENGINEERS  
 4911 Green Road, Suite 107, Raleigh, NC 27616  
 Phone 919 981 0310 Fax 919 981 0451  
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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUH DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #174



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			139
2			4			TOTAL SHEETS 166

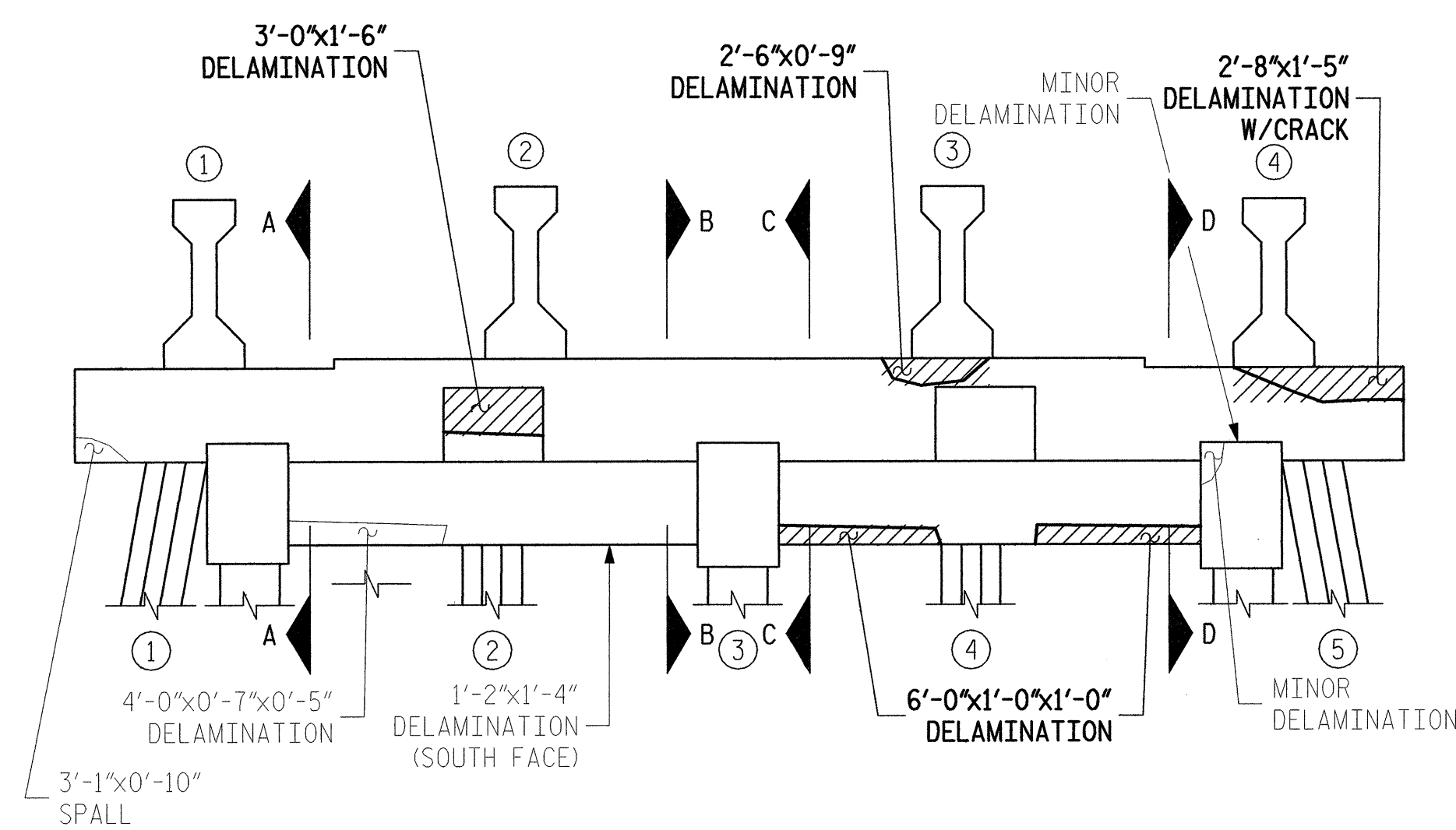
## BENT #174

PL01, 9/18/2007  
 B:\822 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bonner\174\174.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

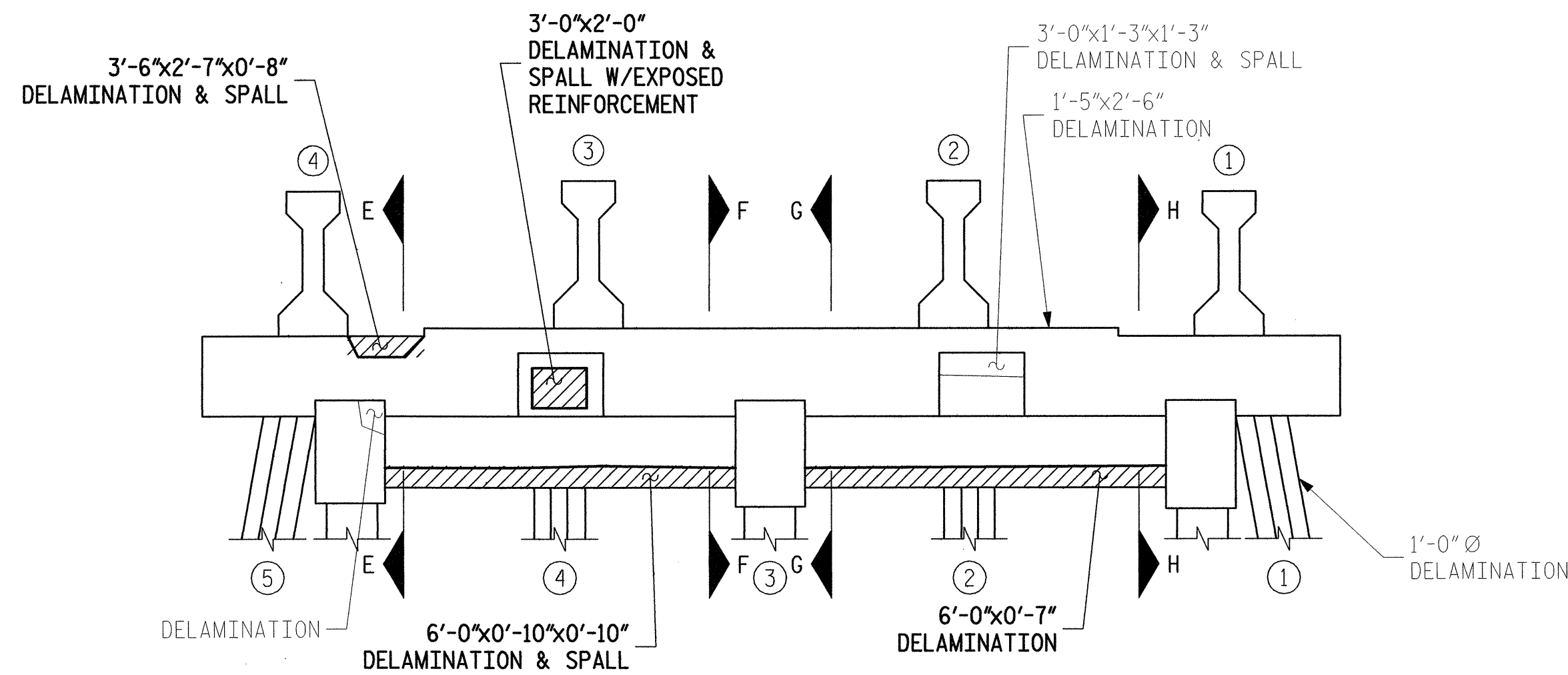
# BILL OF MATERIAL

BENT #175

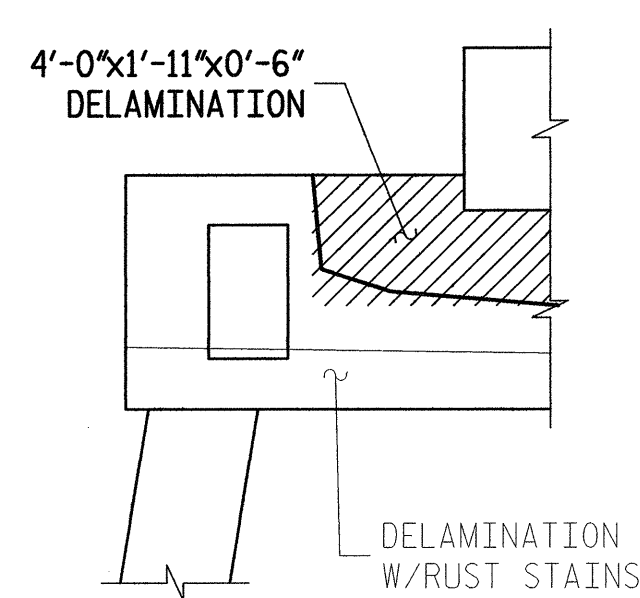
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	2
VERTICAL SHOTCRETE	CF	51
OVERHEAD SHOTCRETE	CF	29
ADDITIONAL REINFORCING	LBS	14
EPOXY MORTAR (FORMED)	CF	-



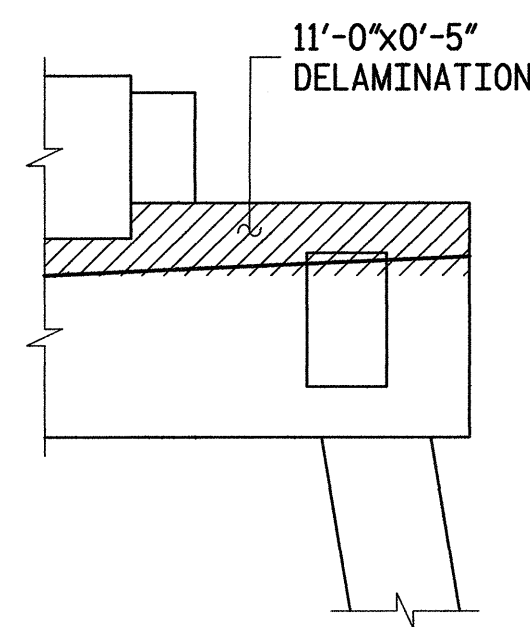
NORTH ELEVATION



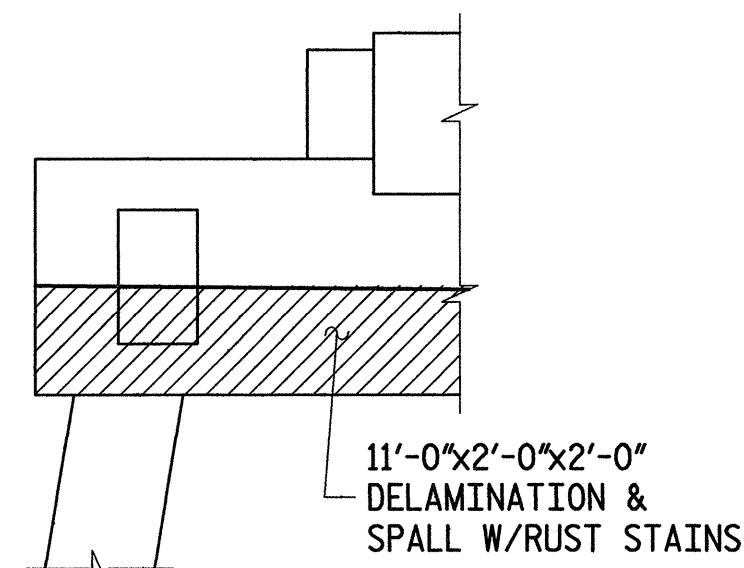
SOUTH ELEVATION



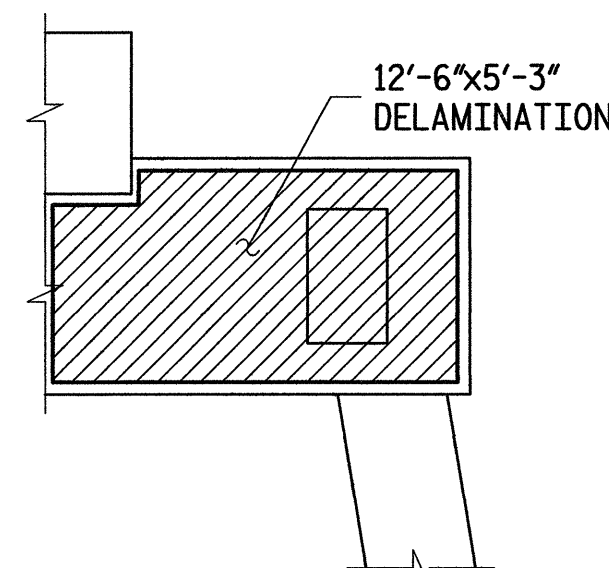
SECTION A-A



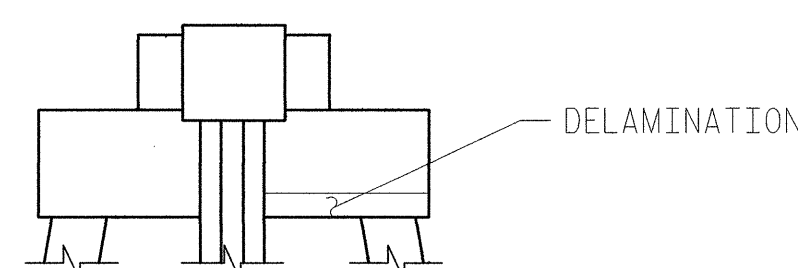
SECTION B-B



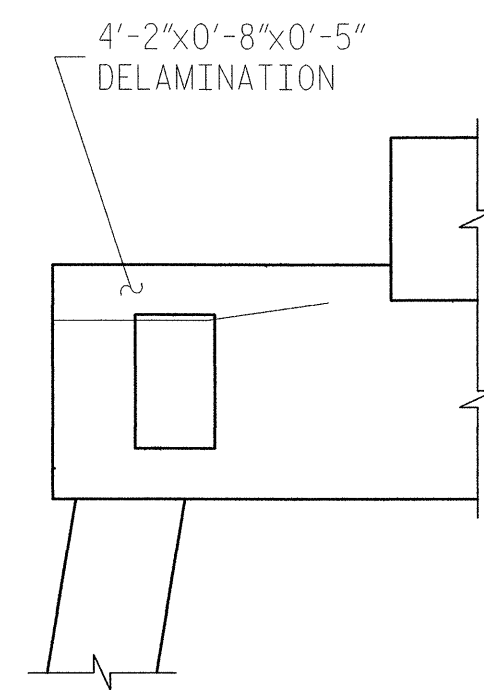
SECTION C-C



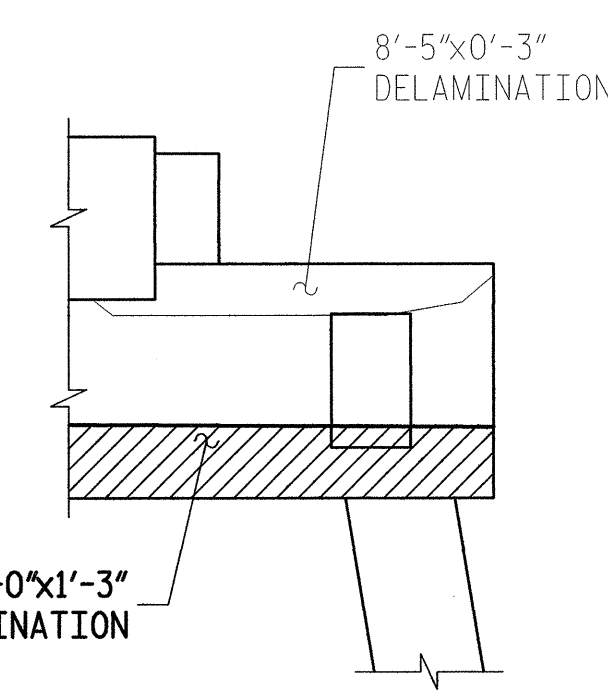
SECTION D-D



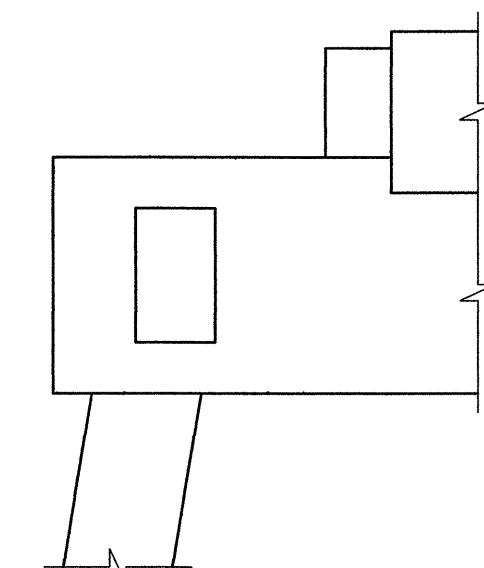
EAST ELEVATION



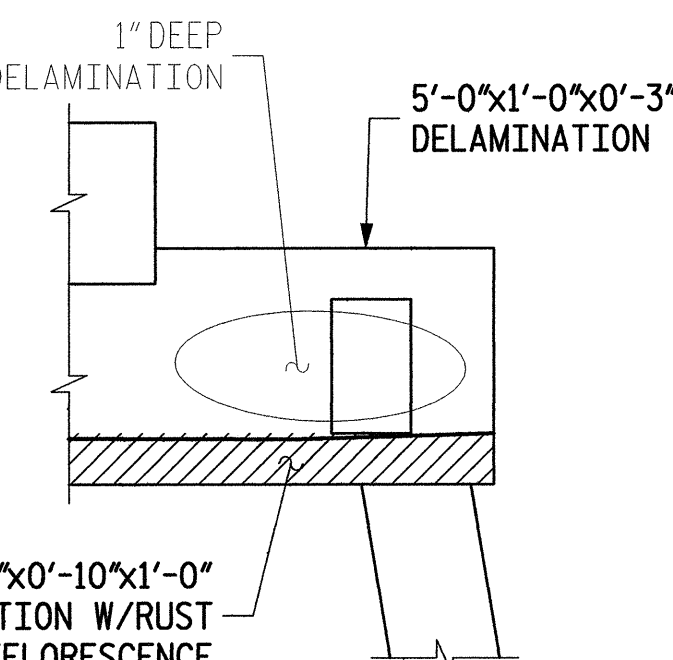
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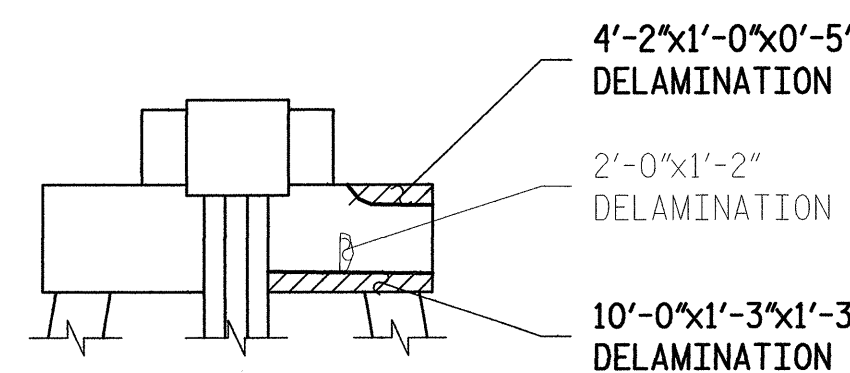
SECTION F-F



SECTION G-G

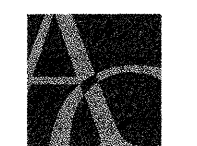


SECTION H-H



WEST ELEVATION

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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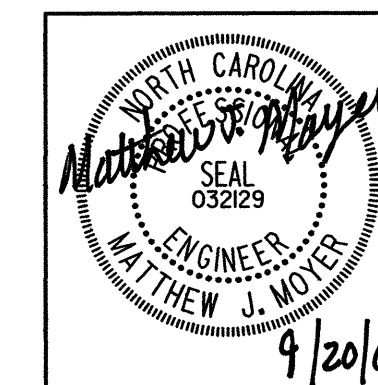
PLANS PREPARED BY

**KO & ASSOCIATES, P.C.**  
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PROJECT NO. B-5014  
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 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #175



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
1			3		140
2			4		TOTAL SHEETS 166

**BENT #175**

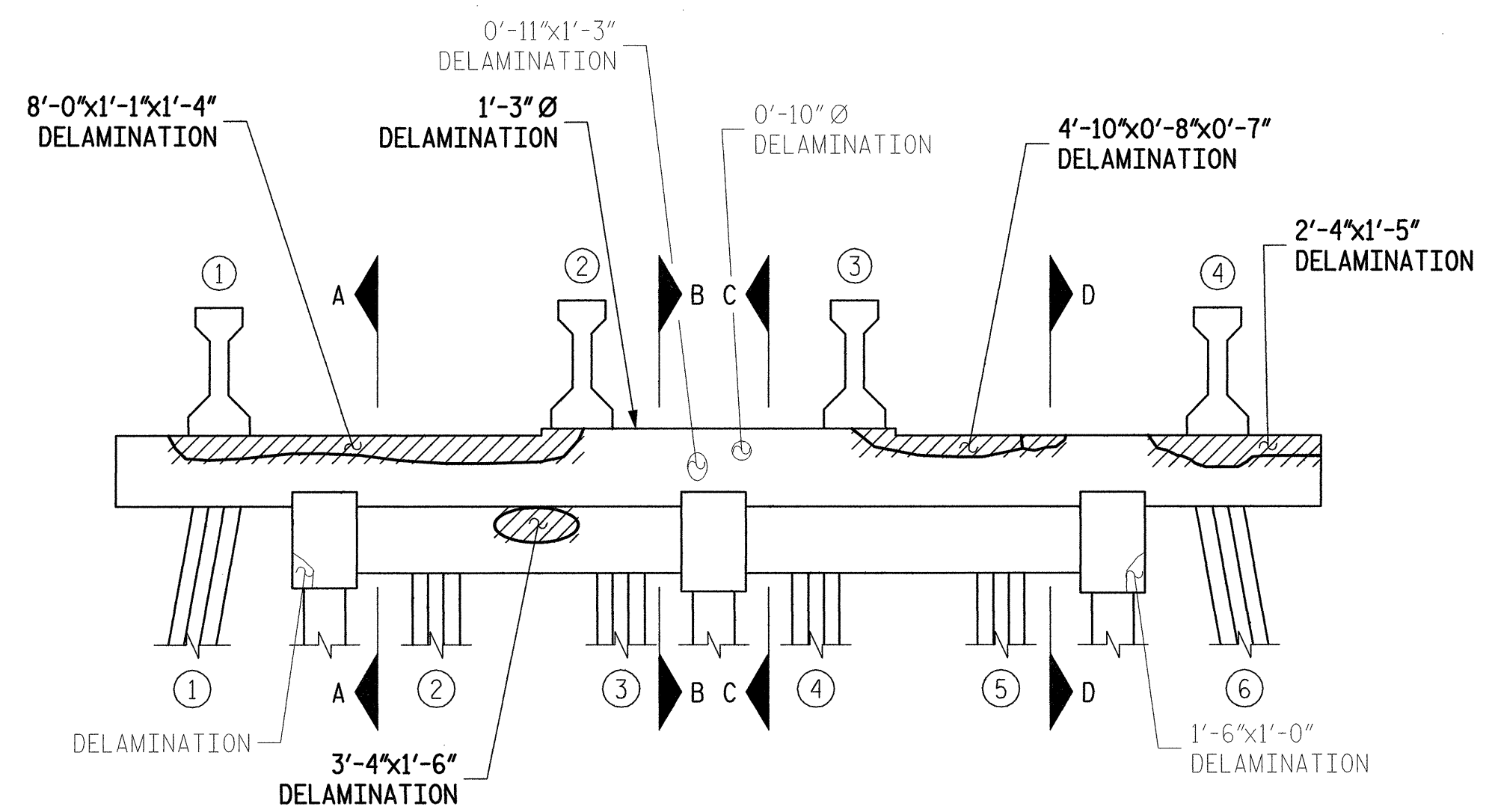
PL01: 9/18/2007 8:08:45 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bent#175\Bent#175.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



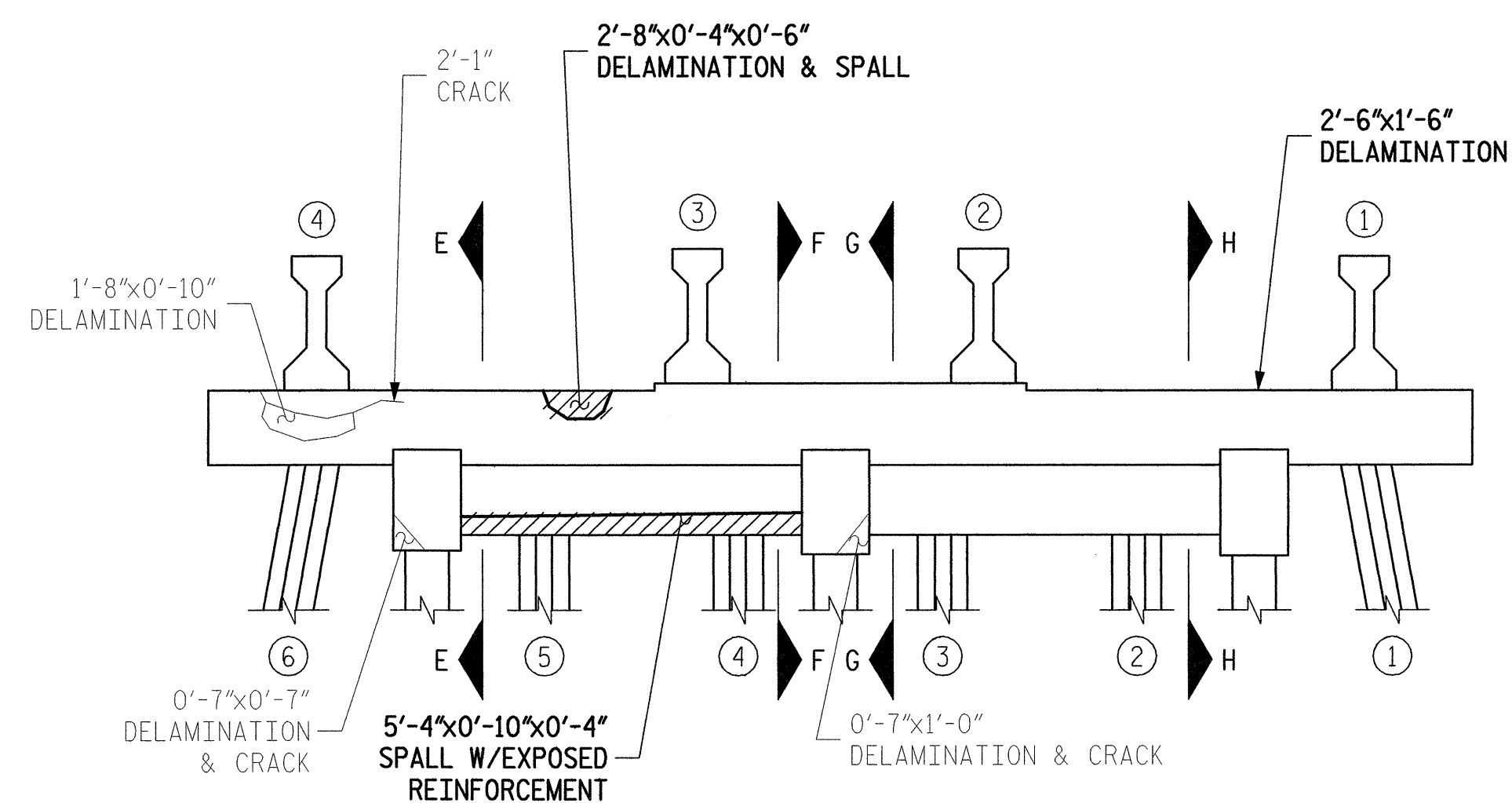
# BILL OF MATERIAL

BENT #176

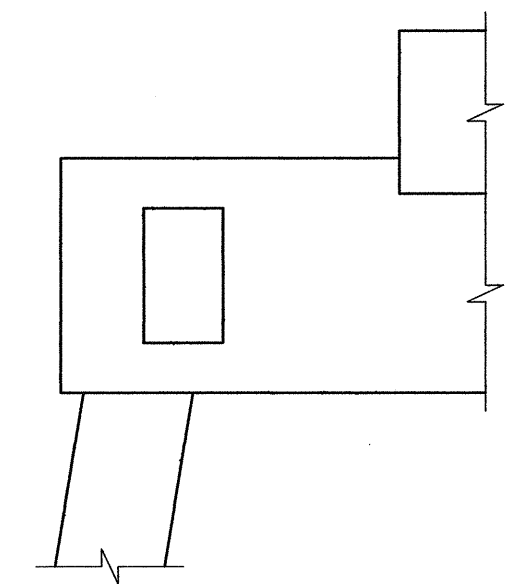
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	4
VERTICAL SHOTCRETE	CF	16
OVERHEAD SHOTCRETE	CF	13
ADDITIONAL REINFORCING	LBS	41
EPOXY MORTAR (FORMED)	CF	-



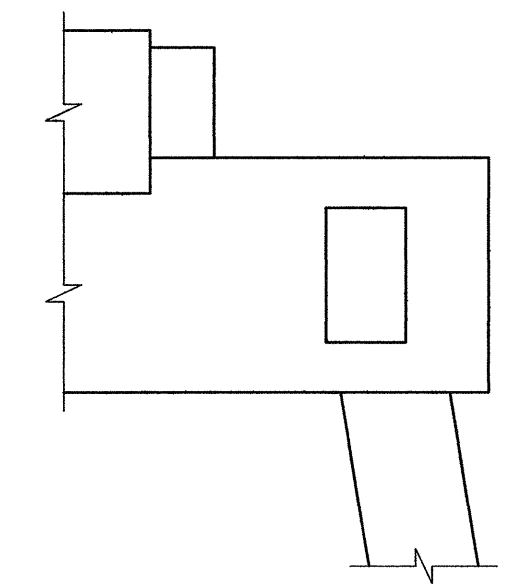
NORTH ELEVATION



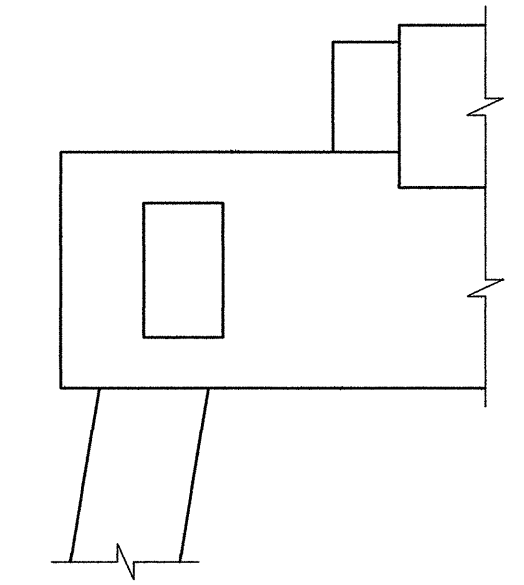
SOUTH ELEVATION



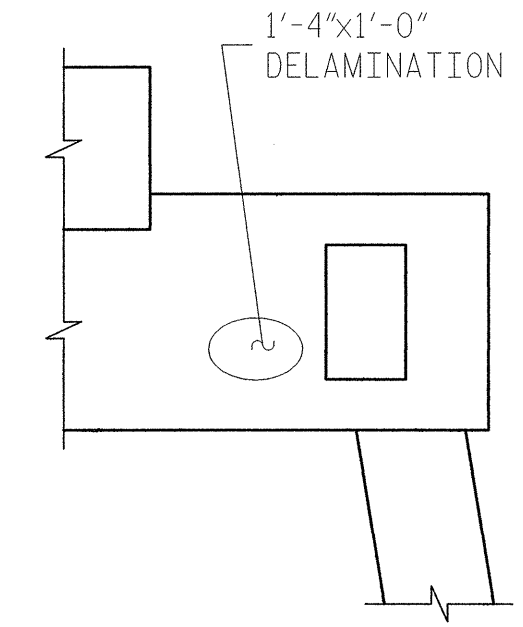
SECTION A-A



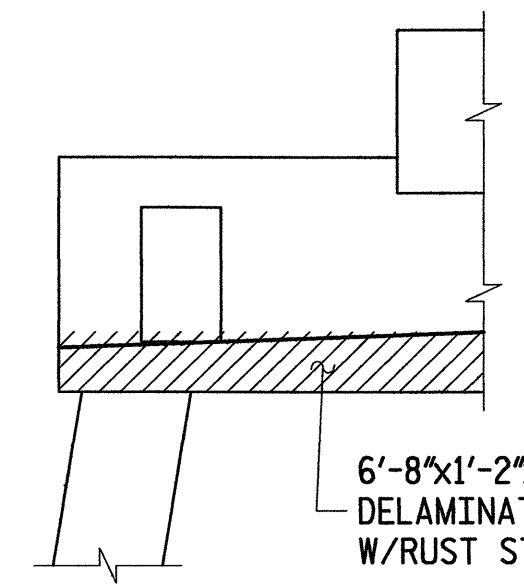
SECTION B-B



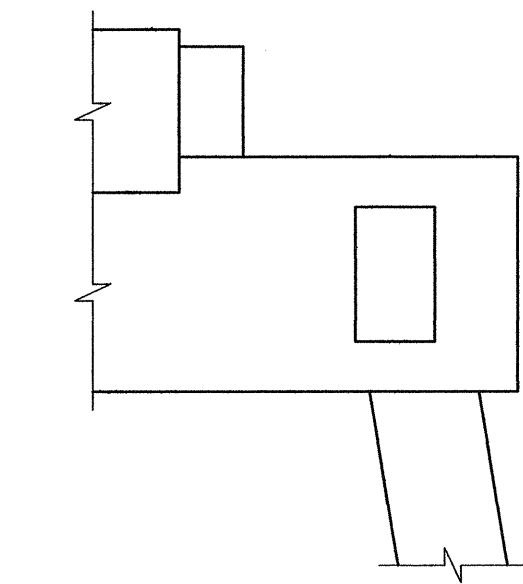
SECTION C-C



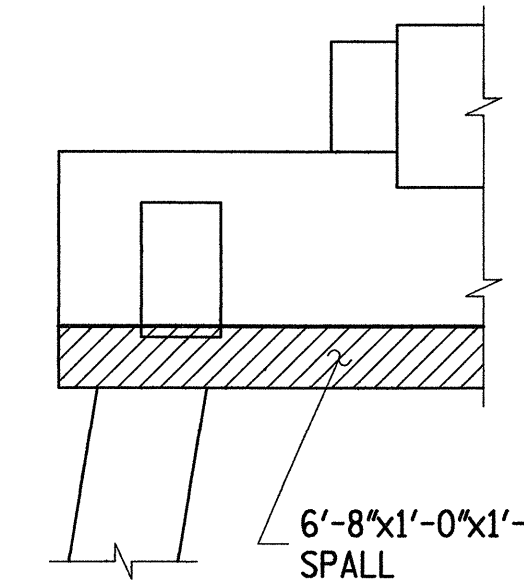
SECTION D-D



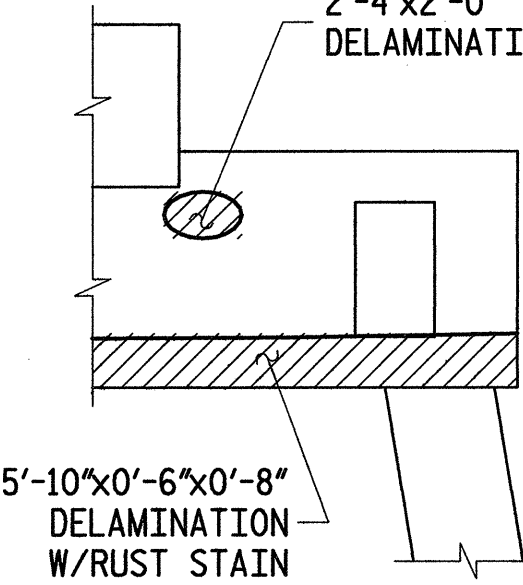
SECTION E-E



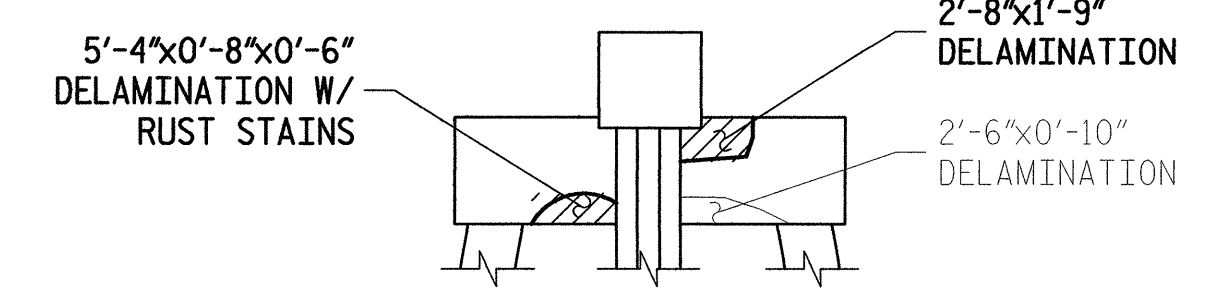
SECTION F-F



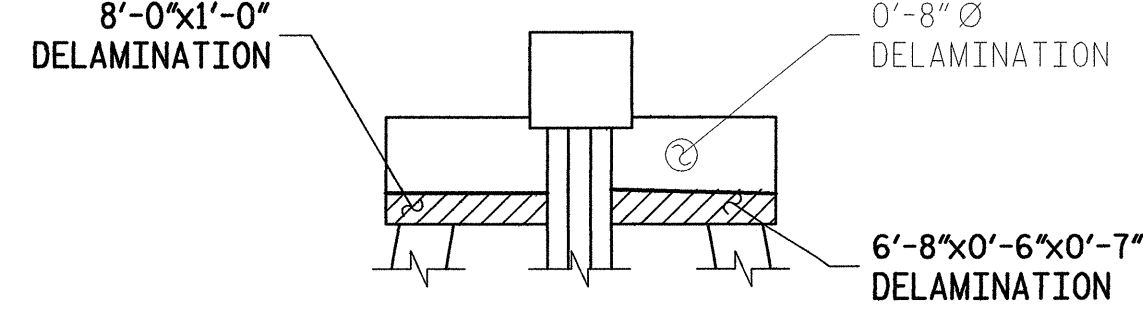
SECTION G-G



SECTION H-H



EAST ELEVATION



WEST ELEVATION

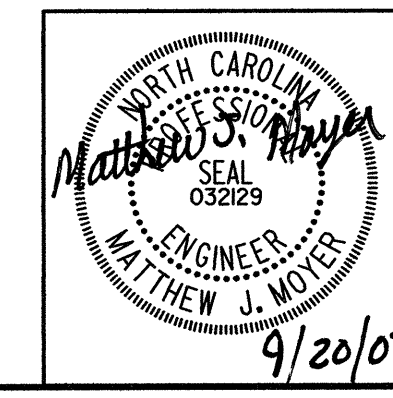
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
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 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #176



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	141
1			3			TOTAL SHEETS
2			4			166

## BENT #176

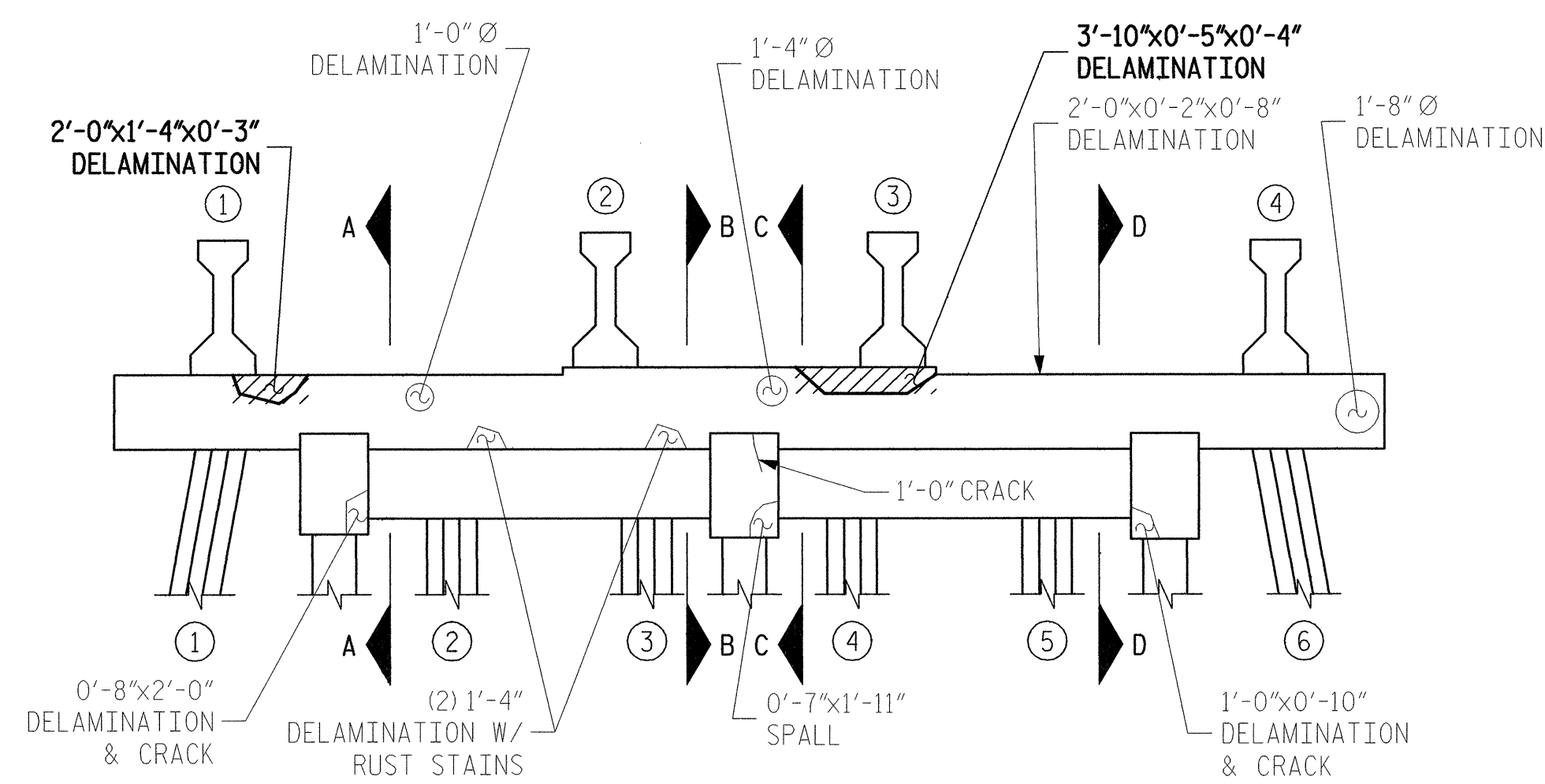
PLOT: 9/18/2007 8:08:42 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bonner\Upn\Upn-176.dgn

DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

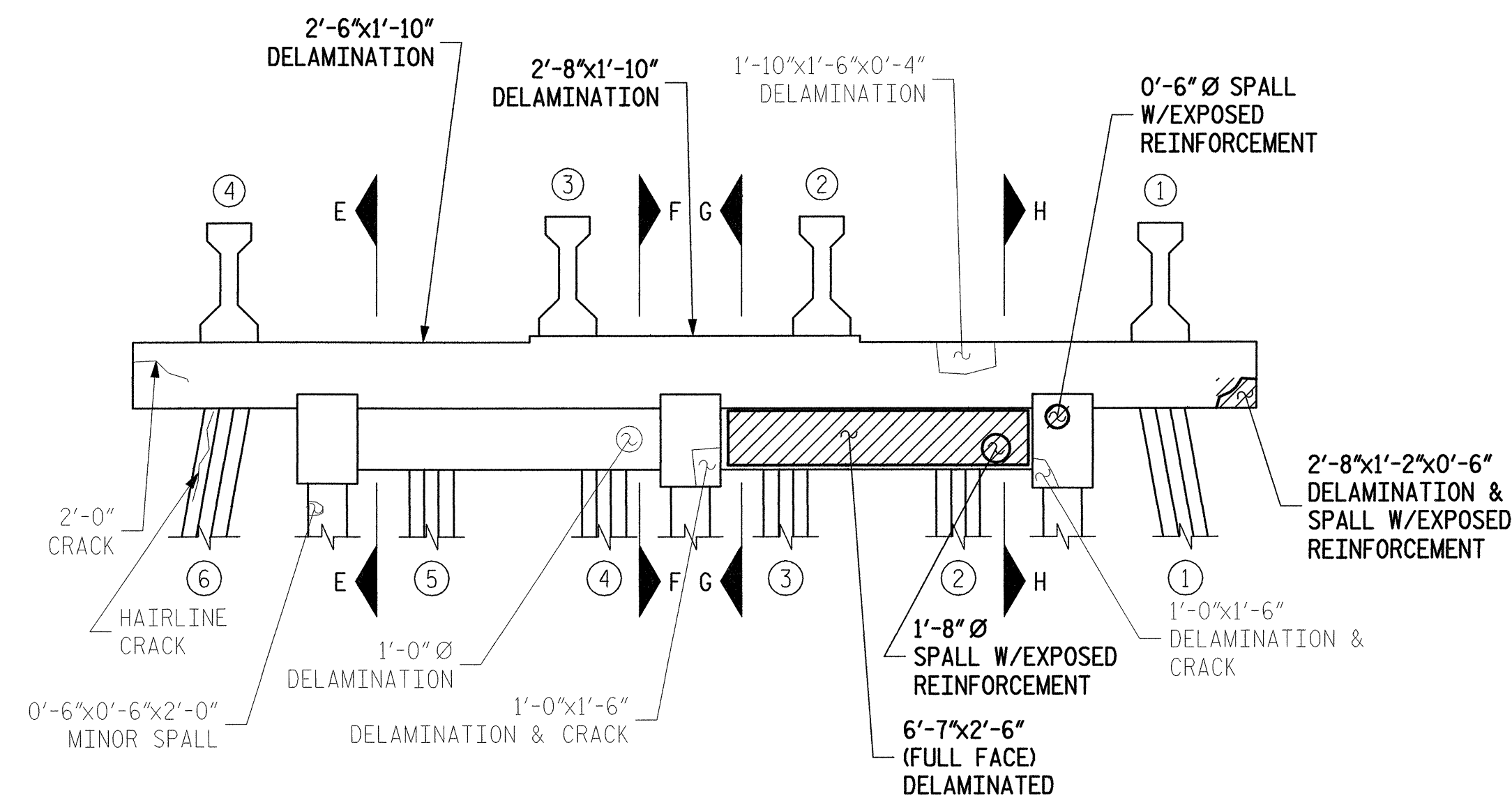
# BILL OF MATERIAL

BENT #177

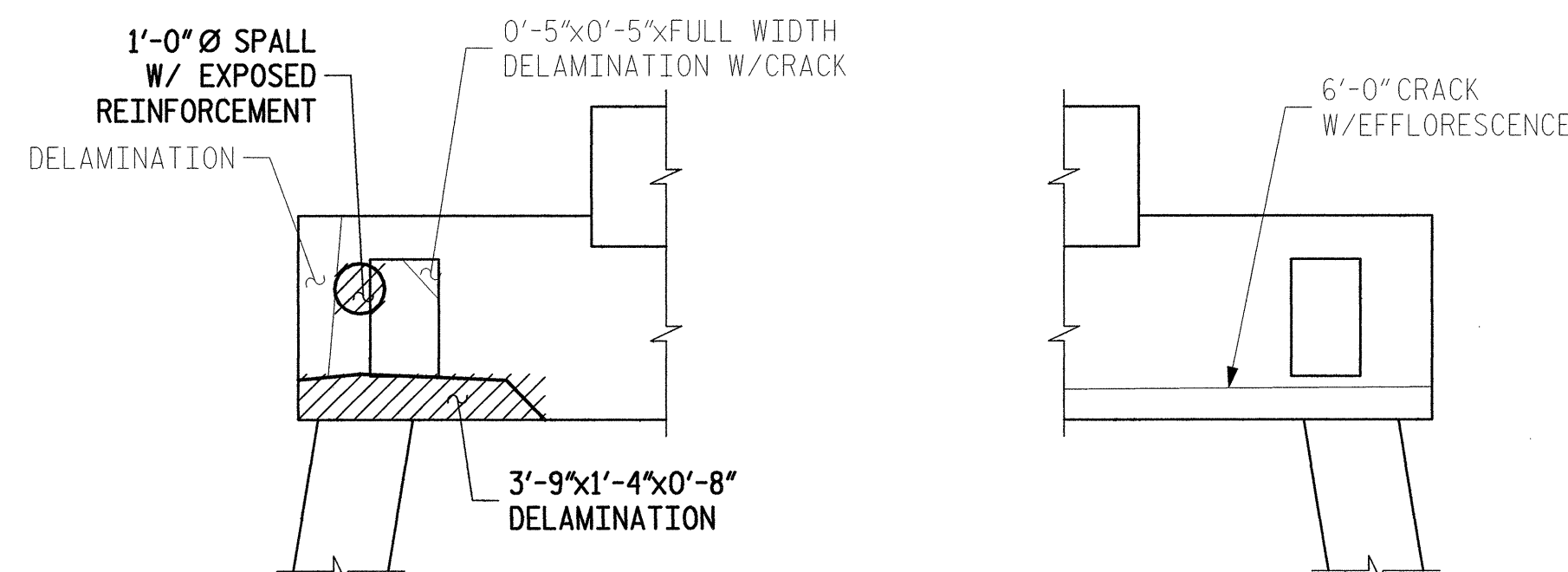
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	3	
VERTICAL SHOTCRETE	CF	21	
OVERHEAD SHOTCRETE	CF	13	
ADDITIONAL REINFORCING	LBS	16	
EPOXY MORTAR (FORMED)	CF	-	



NORTH ELEVATION

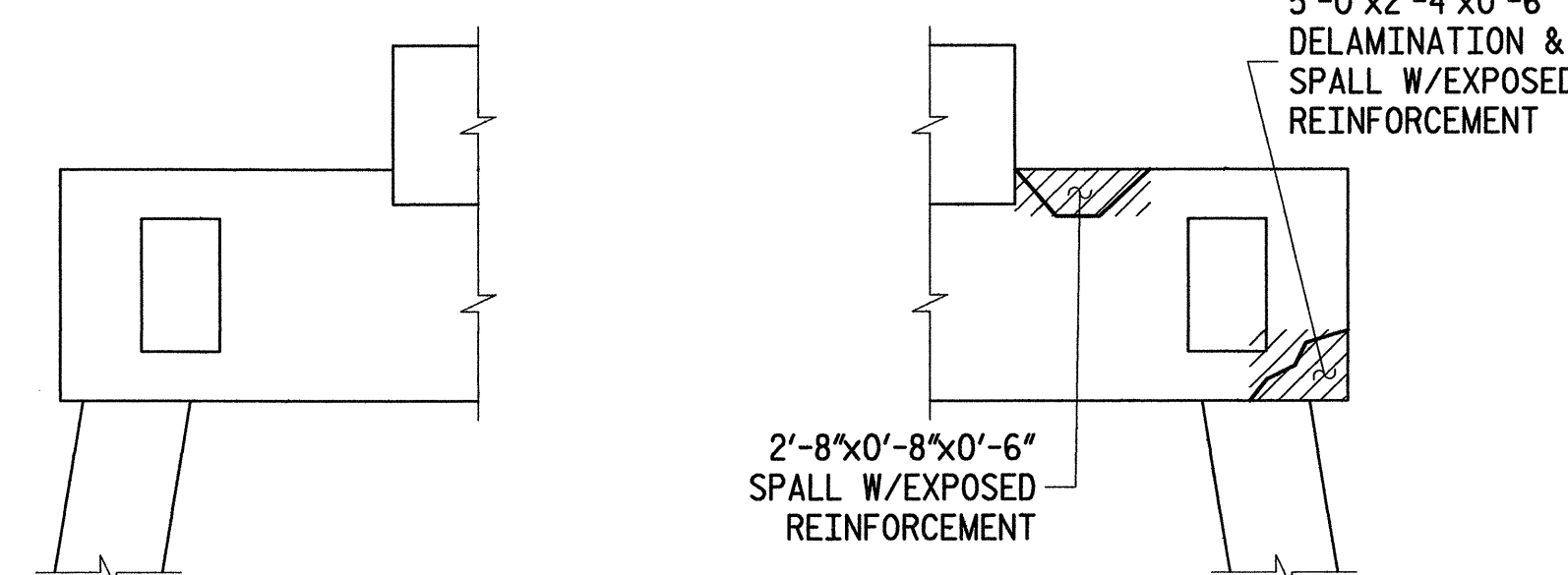


SOUTH ELEVATION



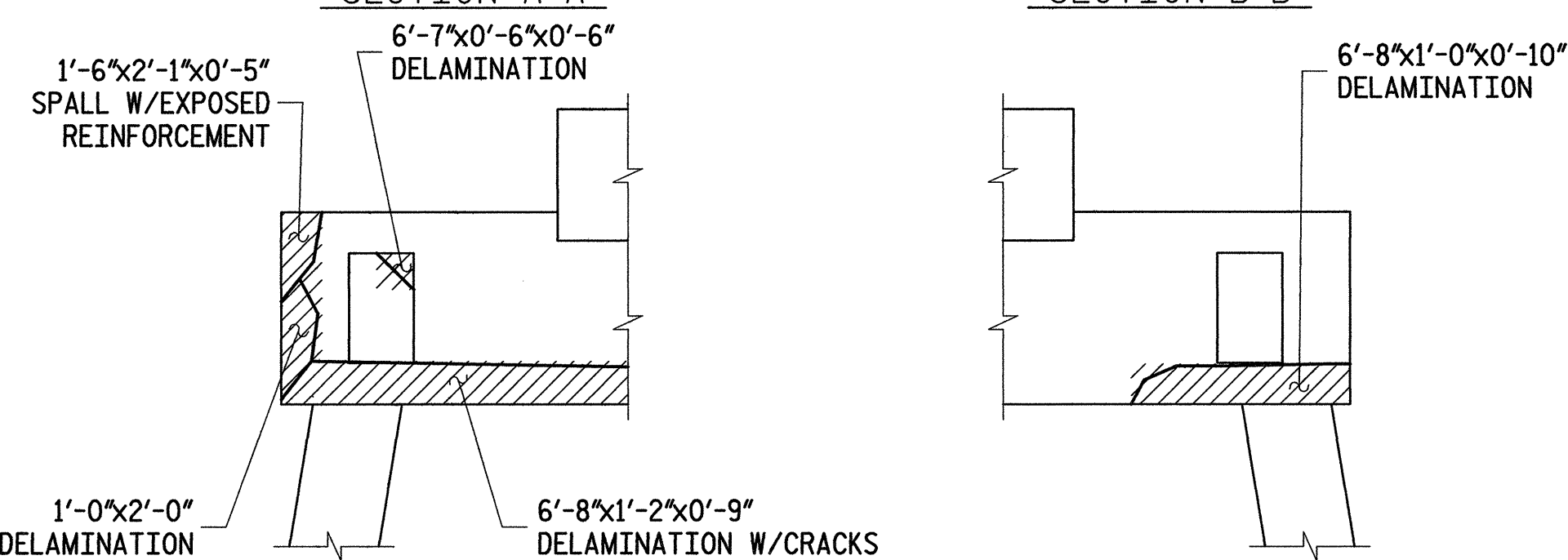
SECTION A-A

SECTION B-B



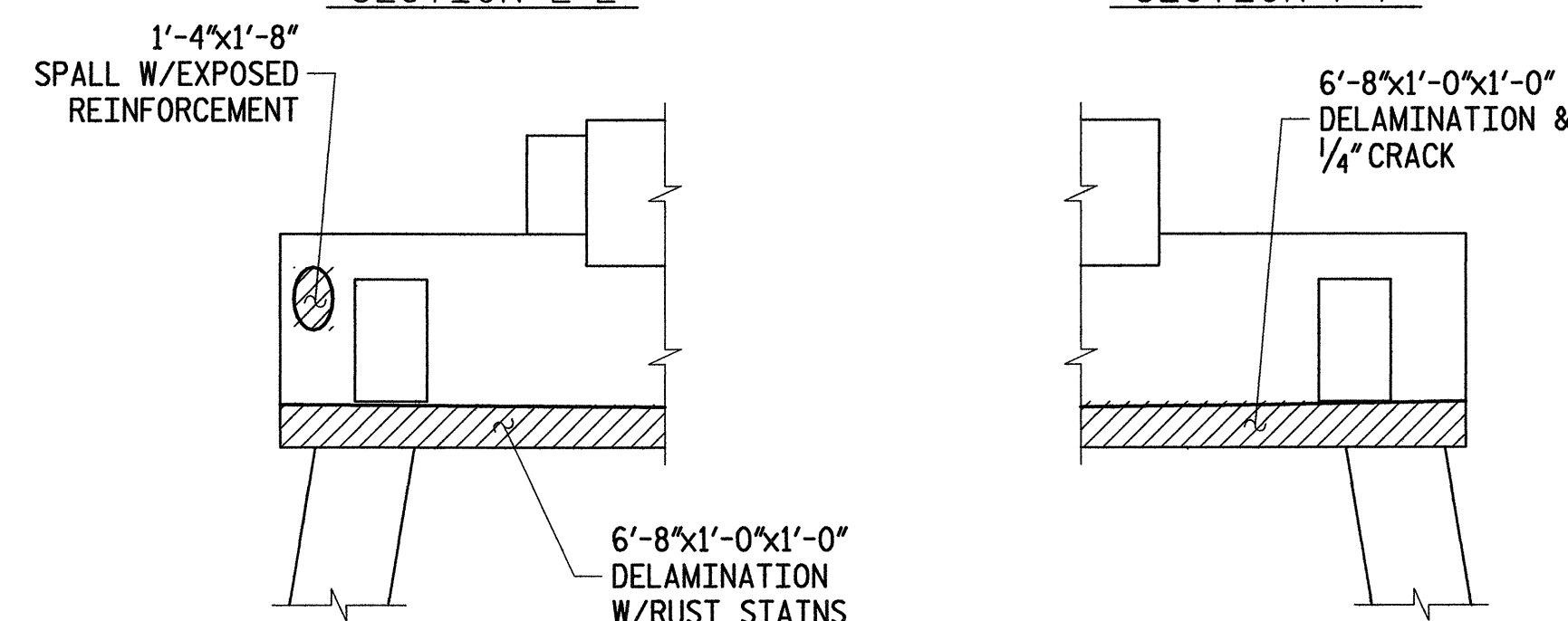
SECTION E-E

SECTION F-F



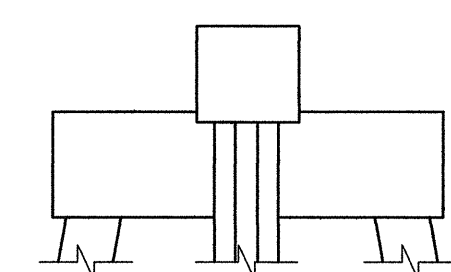
SECTION C-C

SECTION D-D

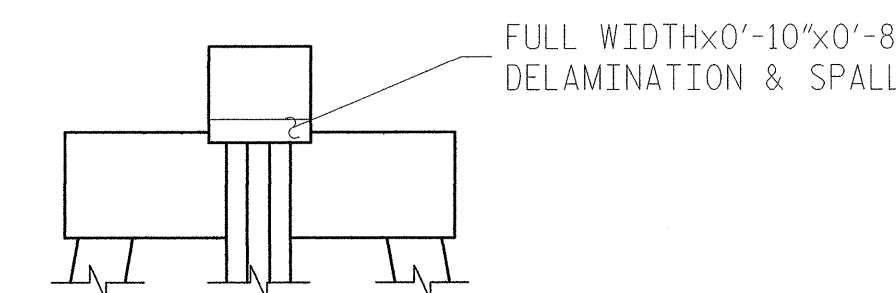


SECTION G-G

SECTION H-H



EAST ELEVATION



WEST ELEVATION

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

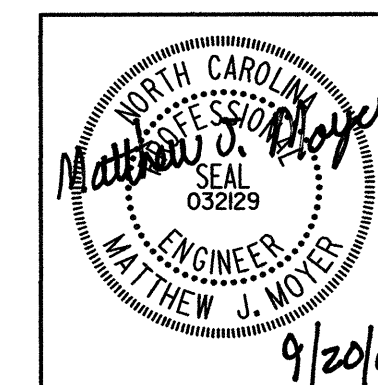
**ALPHA & OMEGA GROUP**  
 CIVIL & STRUCTURAL ENGINEERS  
 4911 Green Road Suite 107 Raleigh, NC 27616  
 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com

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 (919) 853-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #177



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			142
2			4			166

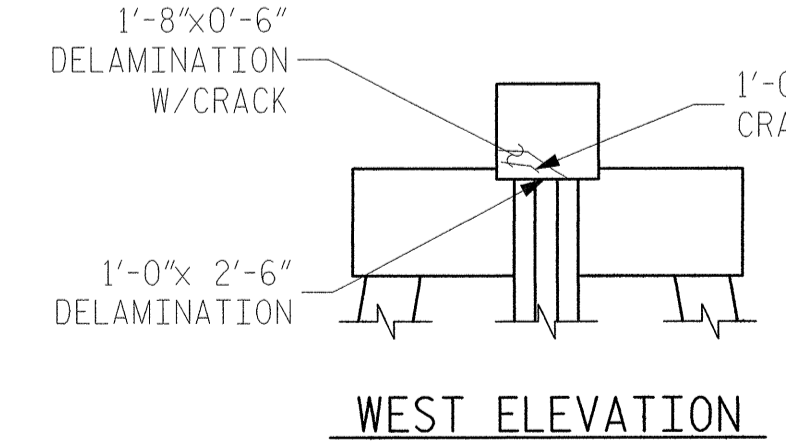
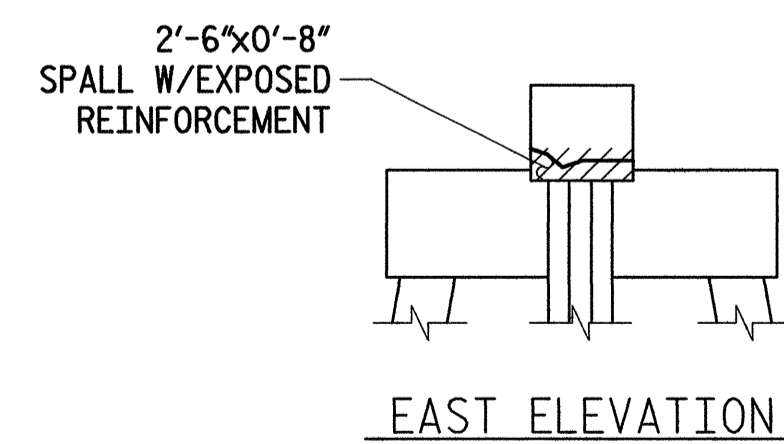
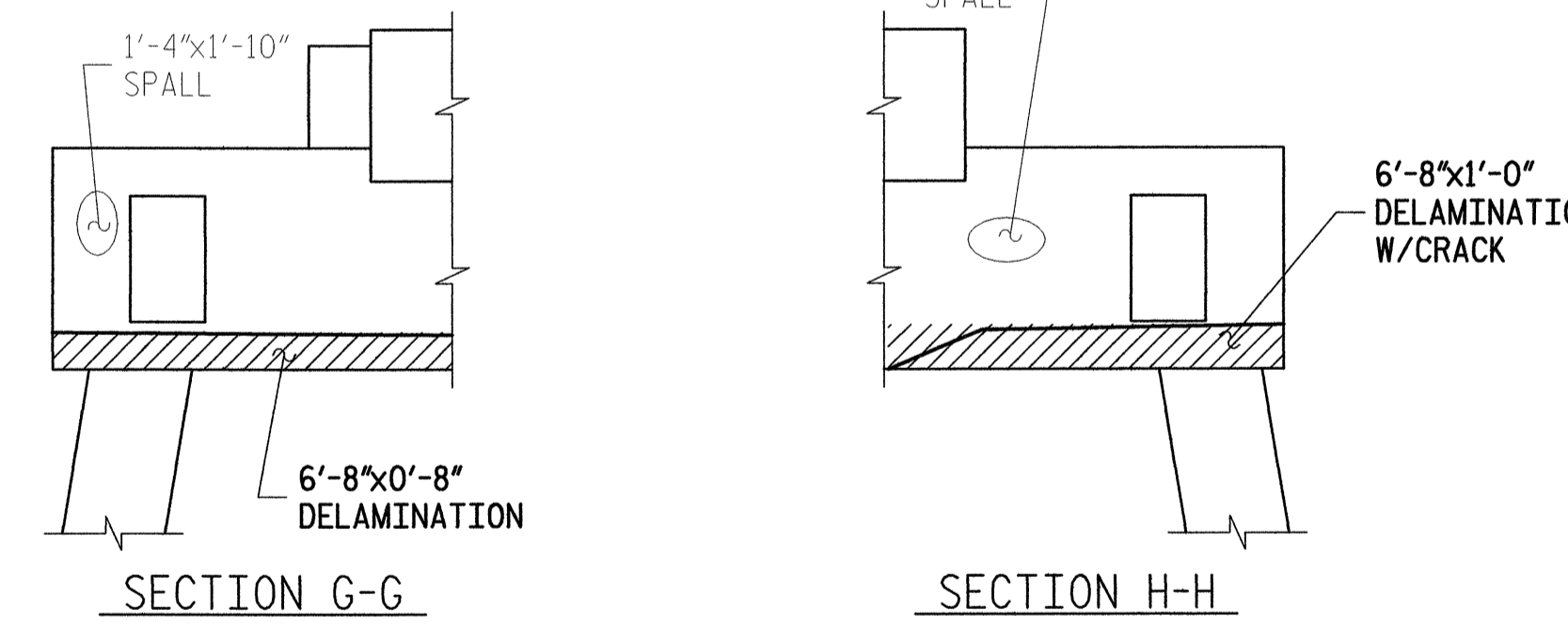
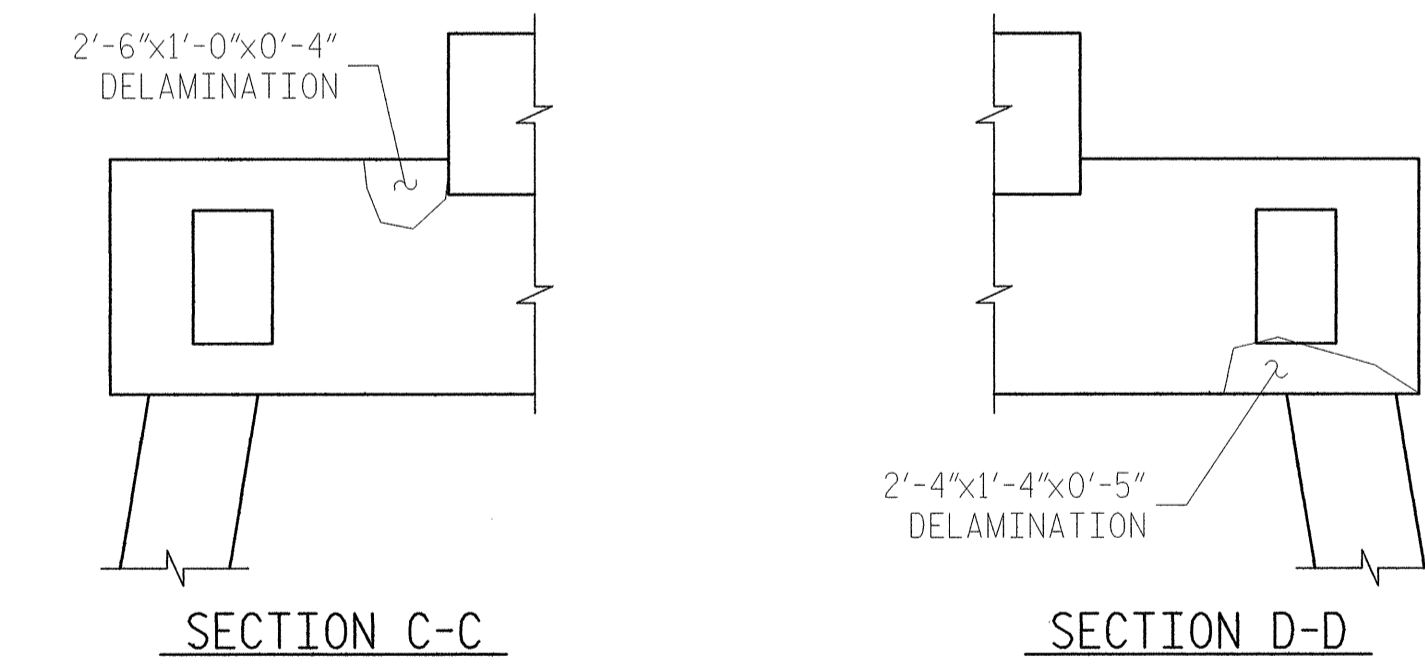
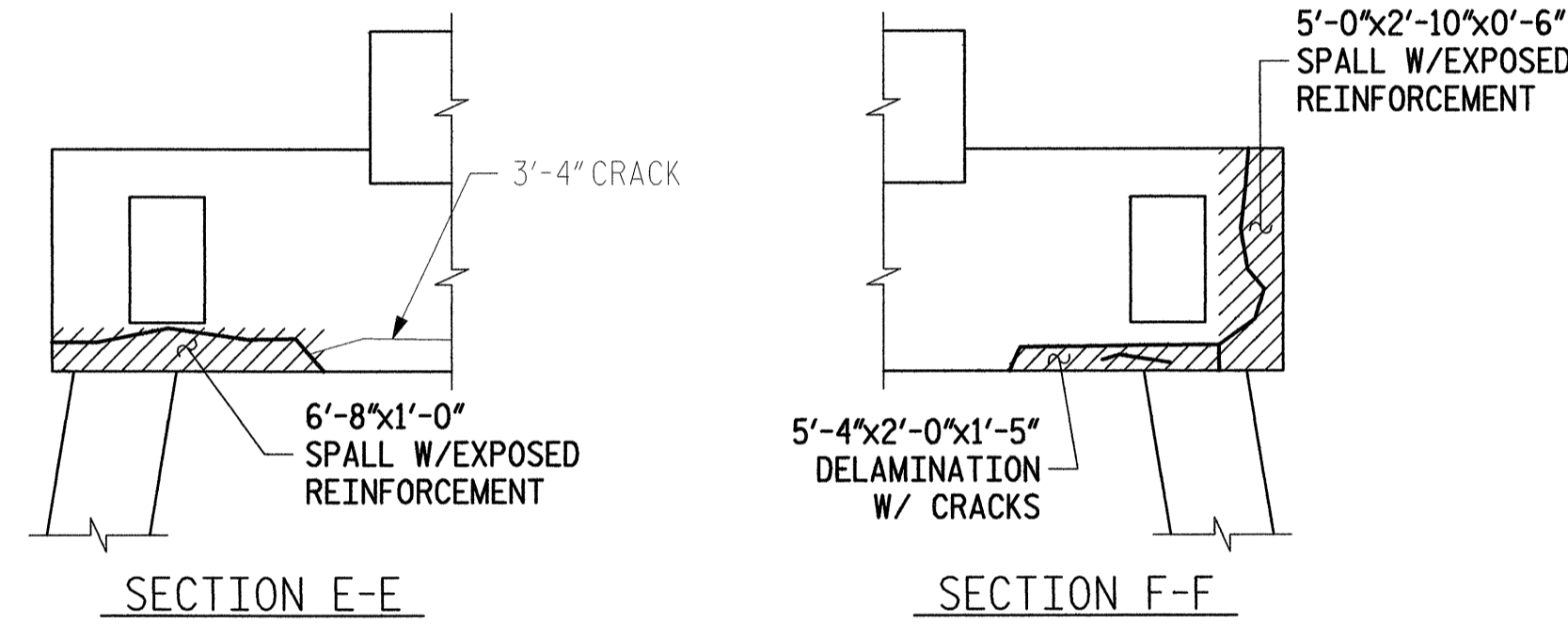
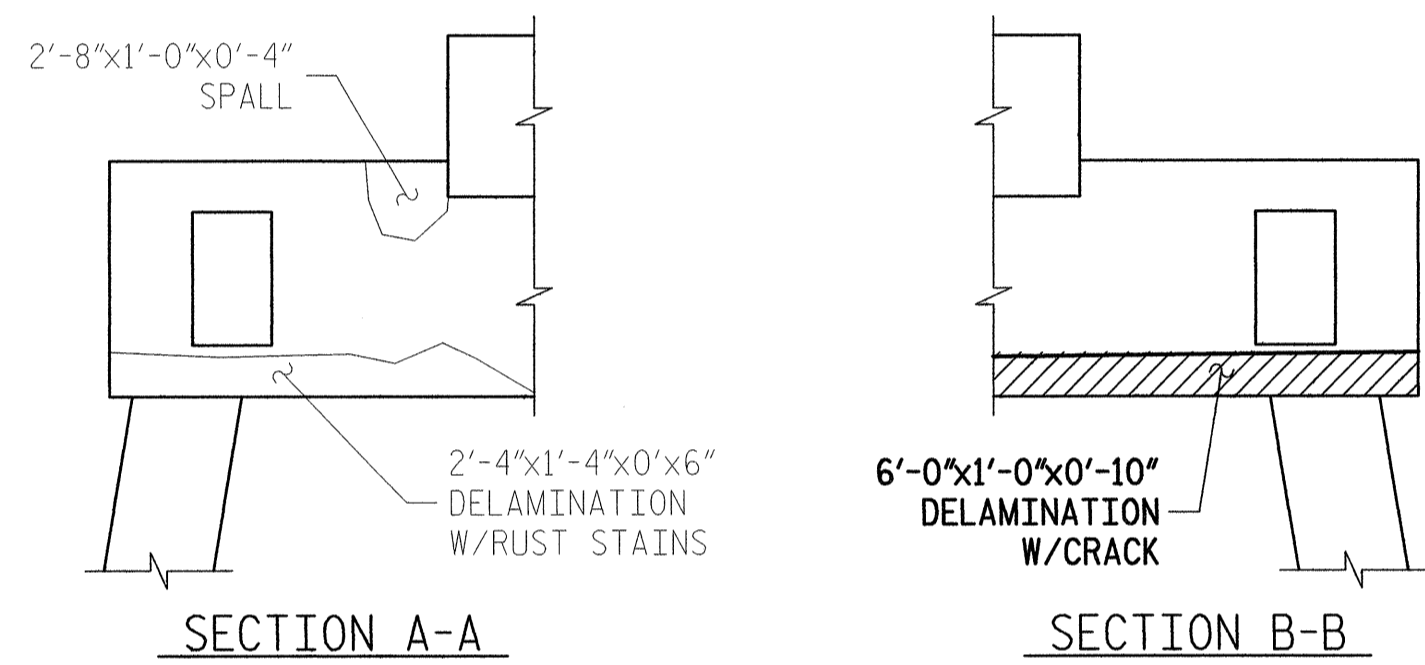
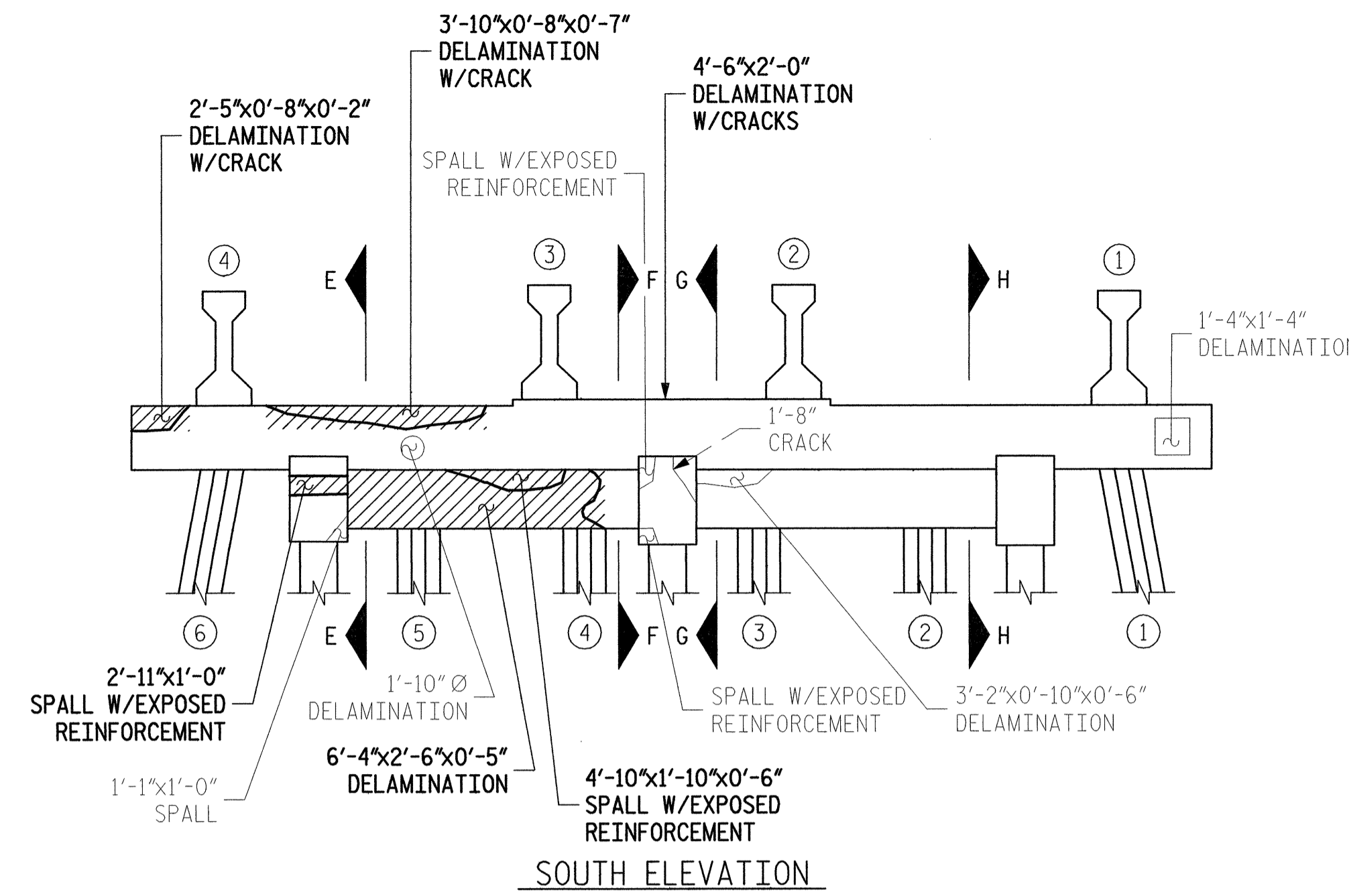
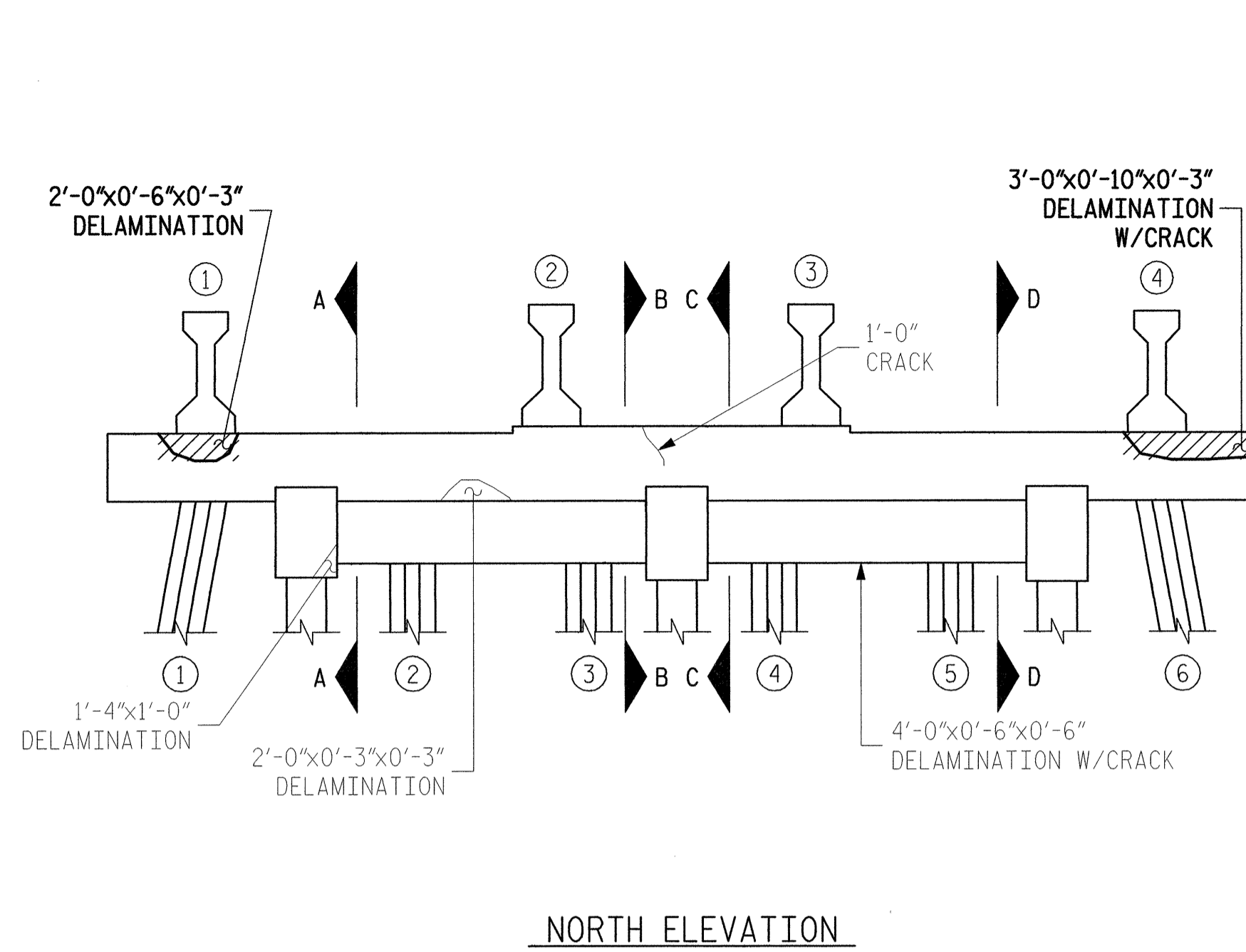
## BENT #177

PL01, 9/18/2007 8:03:31 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bent#177.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

# BILL OF MATERIAL

BENT #178

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	3
VERTICAL SHOTCRETE	CF	19
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	13
EPOXY MORTAR (FORMED)	CF	-



- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

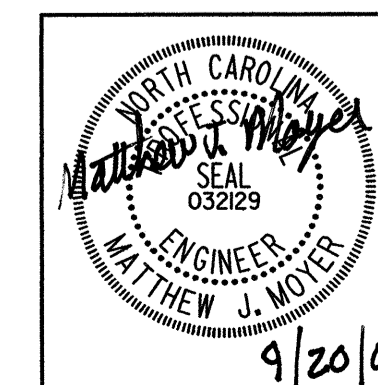
**ALPHA & OMEGA GROUP**  
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PROJECT NO. B-5014  
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #178



REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			143
2			4			166

## BENT #178

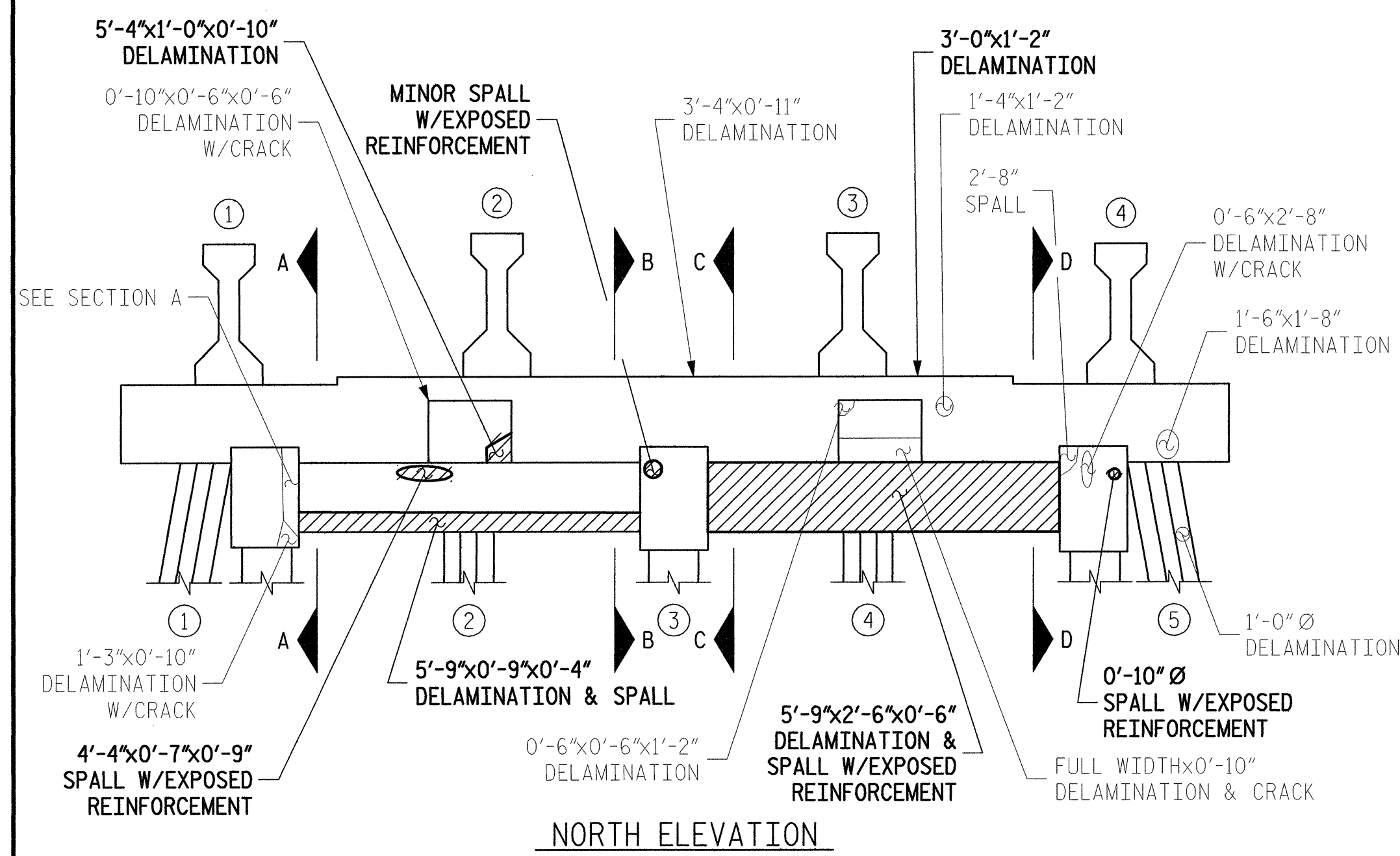
PL01: 9/18/2007 8:44:08 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bomen\sign\brn\_bent178.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



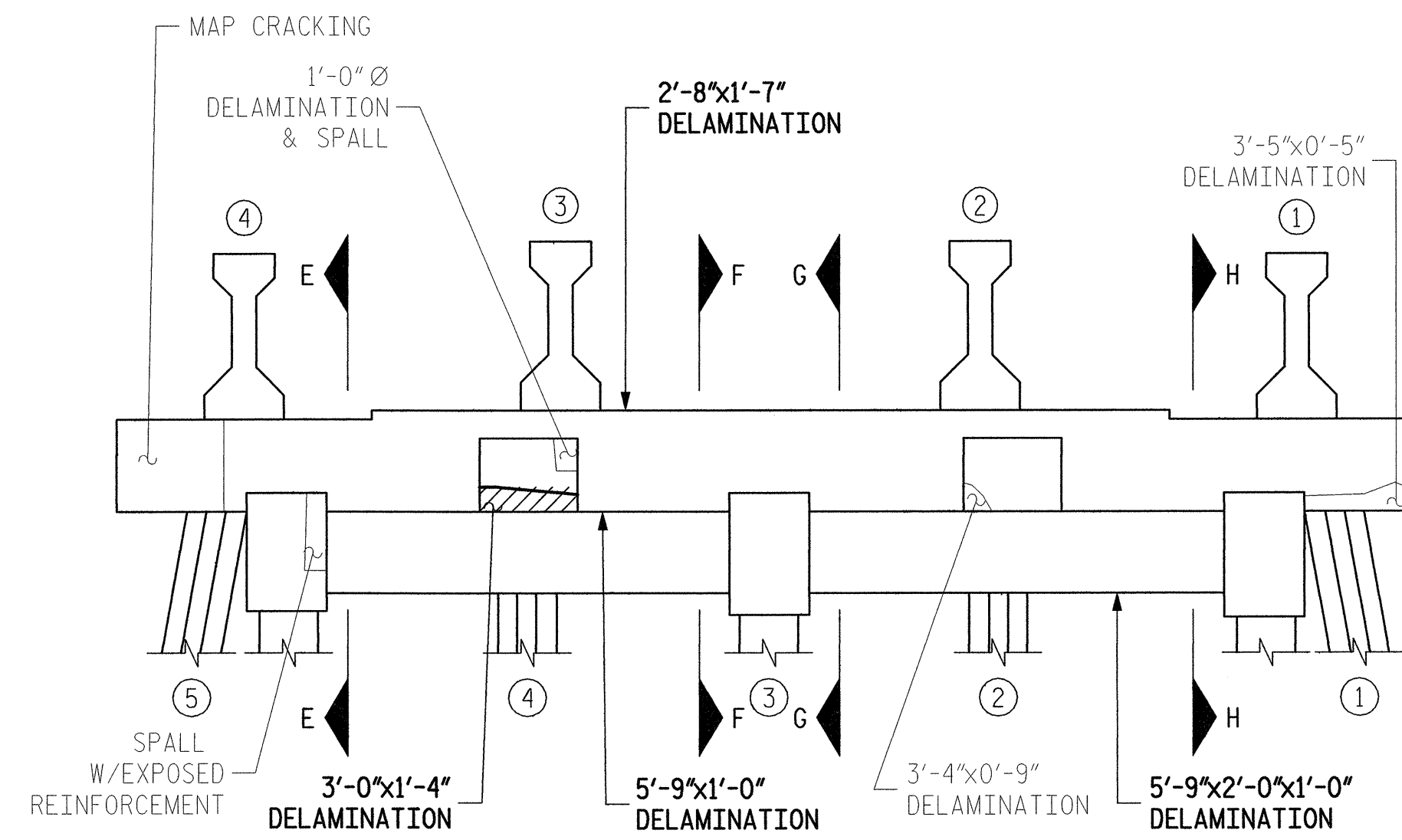
# BILL OF MATERIAL

BENT #179

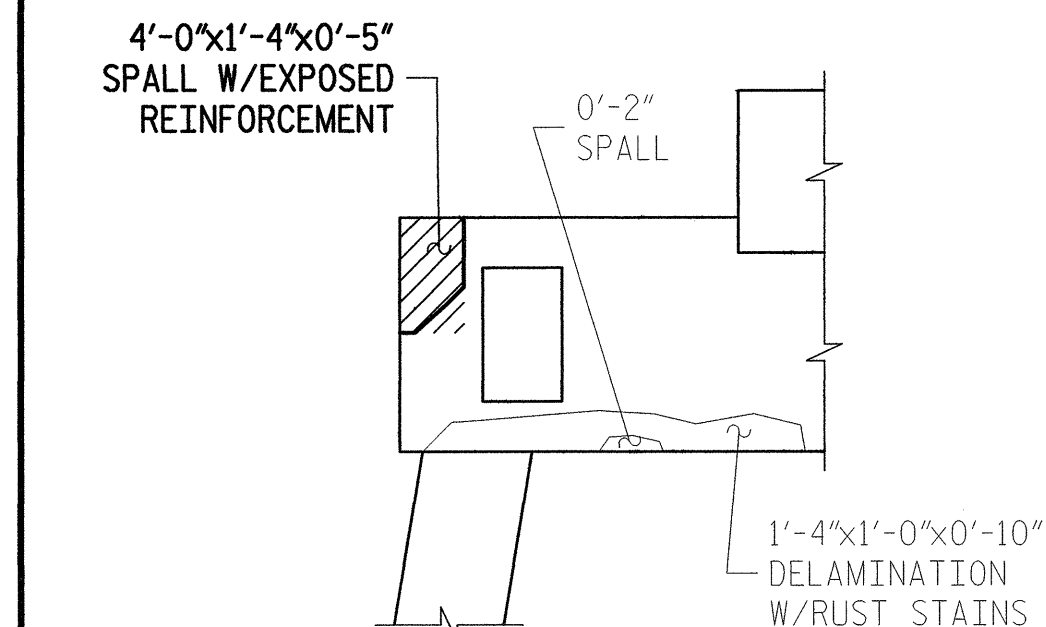
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	3
VERTICAL SHOTCRETE	CF	37
OVERHEAD SHOTCRETE	CF	25
ADDITIONAL REINFORCING	LBS	-
EPOXY MORTAR (FORMED)	CF	-



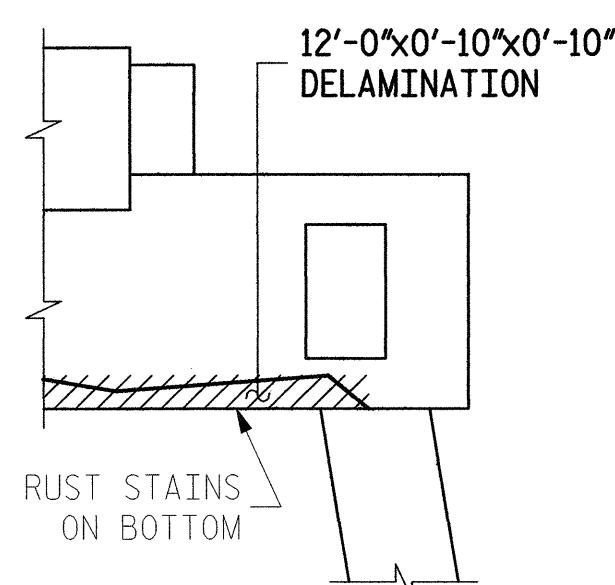
NORTH ELEVATION



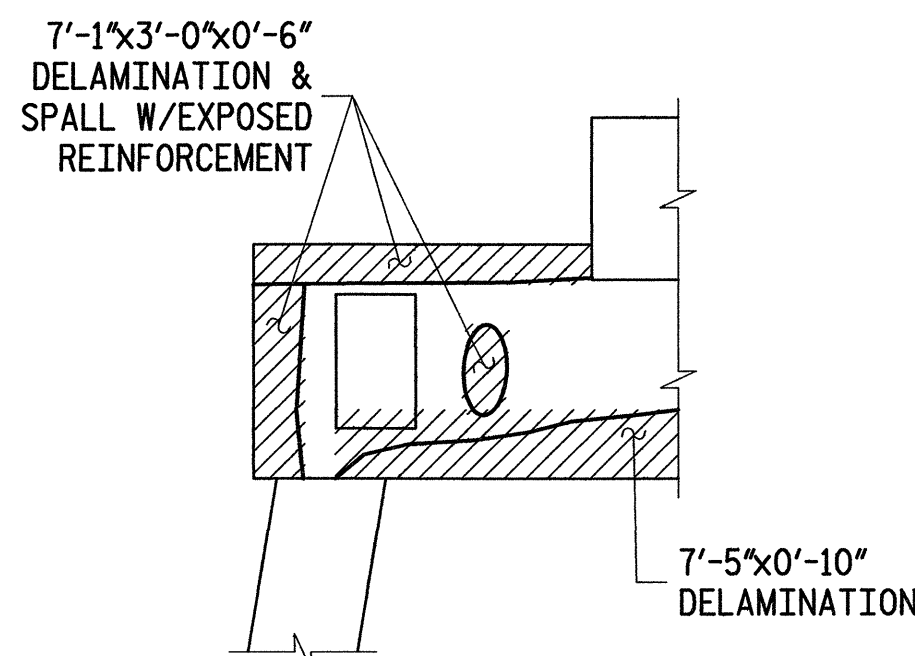
SOUTH ELEVATION



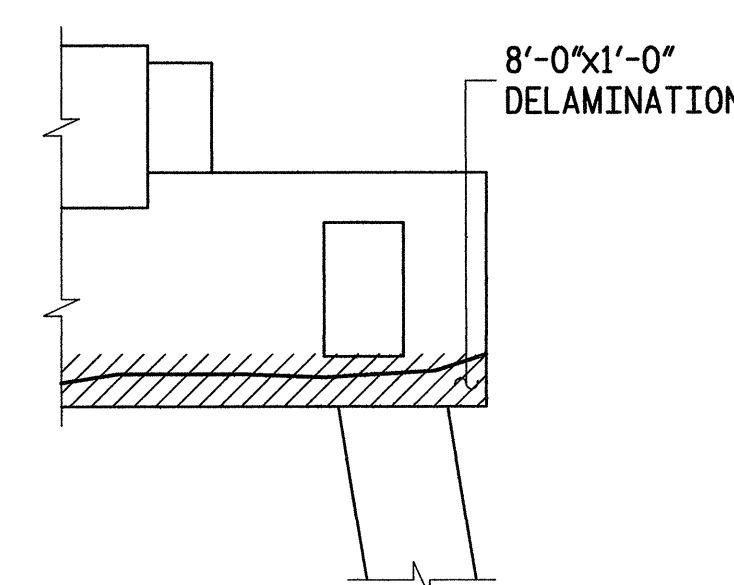
SECTION A-A



SECTION B-B

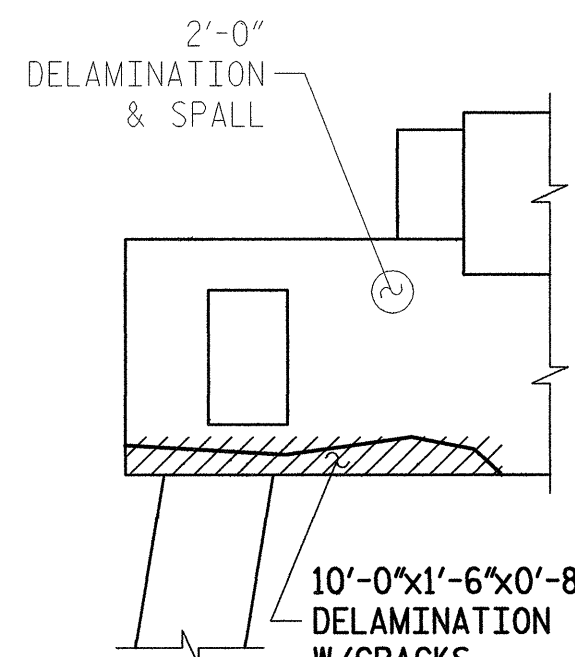


SECTION E-E

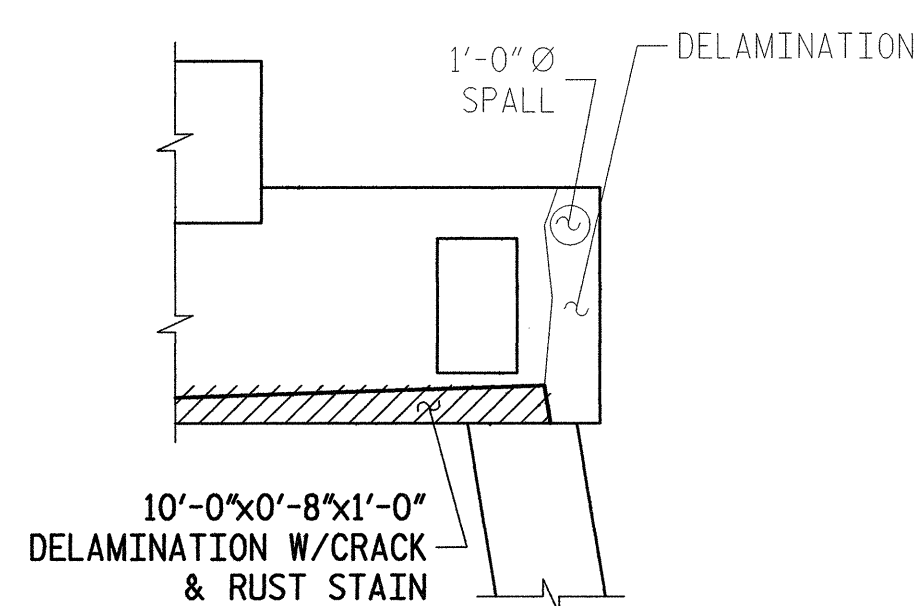


SECTION F-F

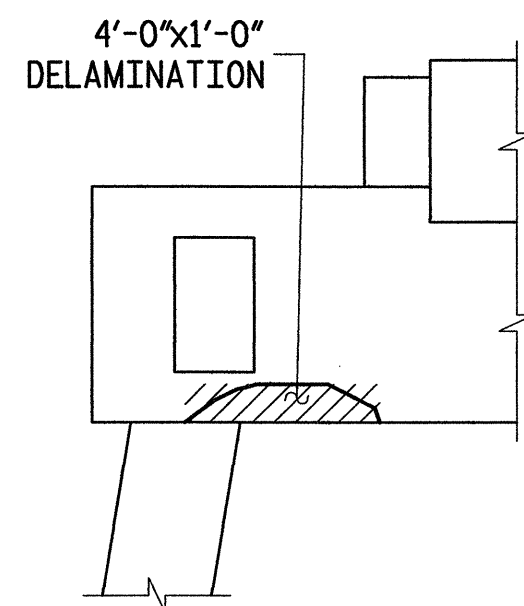
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



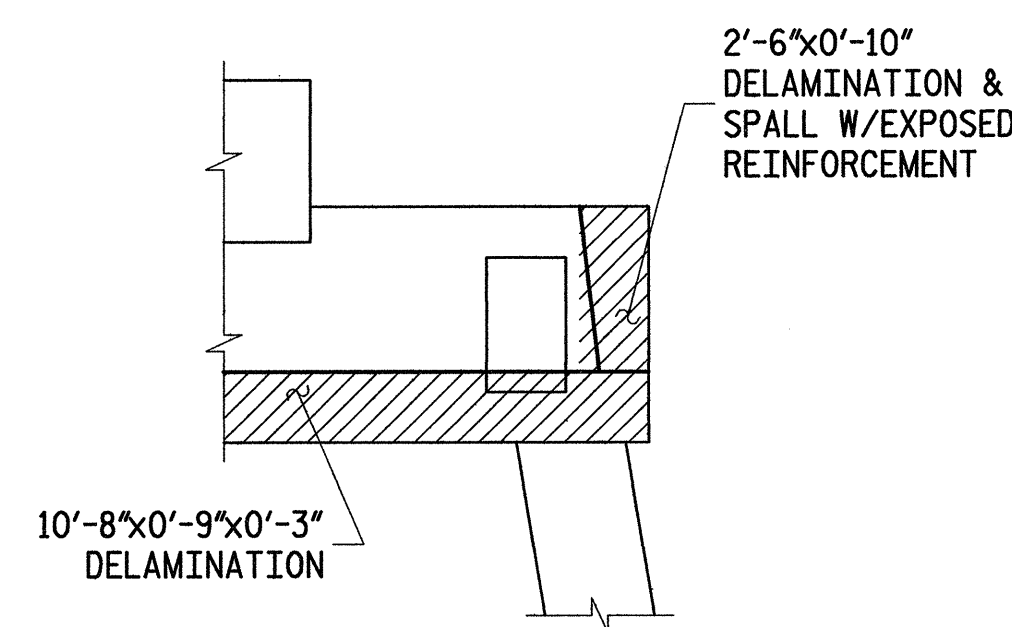
SECTION C-C



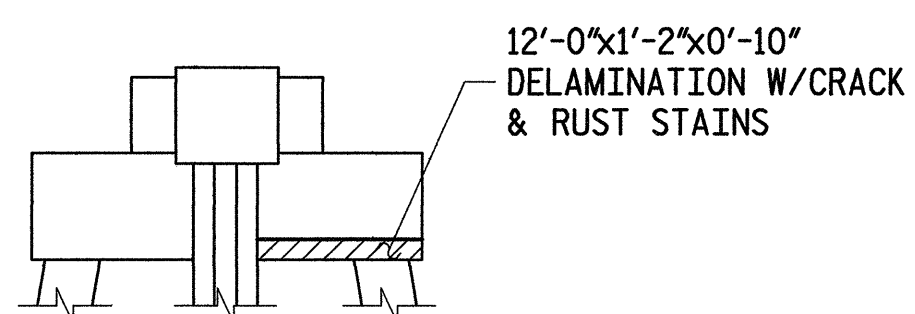
SECTION D-D



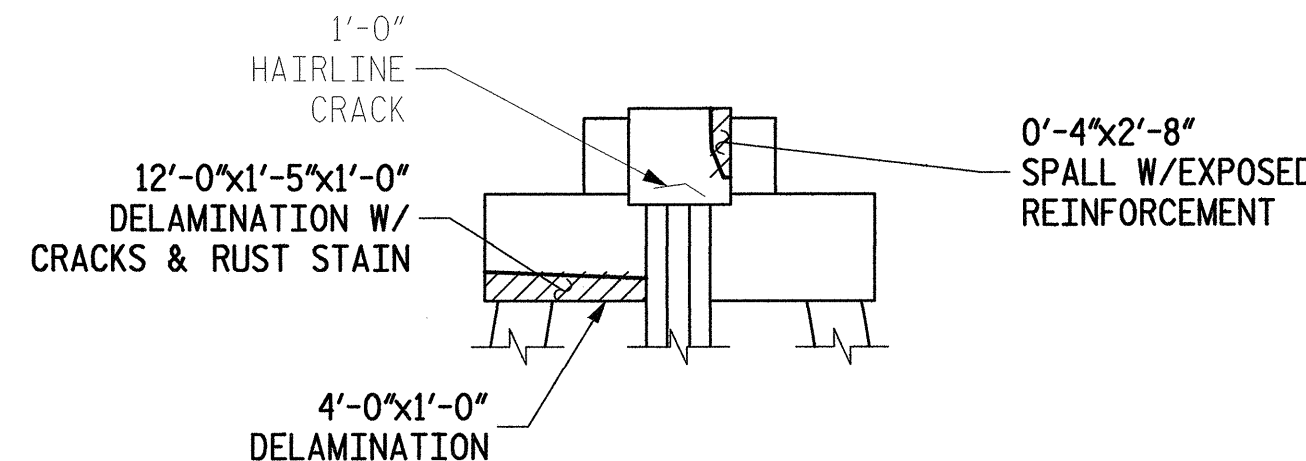
SECTION G-G



SECTION H-H



EAST ELEVATION



WEST ELEVATION

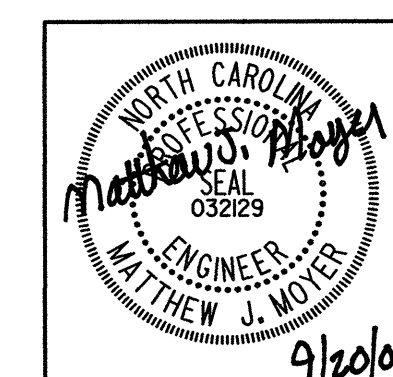
## BENT #179

**ALPHA & OMEGA GROUP**  
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 4911 Green Road Suite 107 Raleigh, NC 27616  
 Phone: 919 981 0310 Fax: 919 981 0451  
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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #179



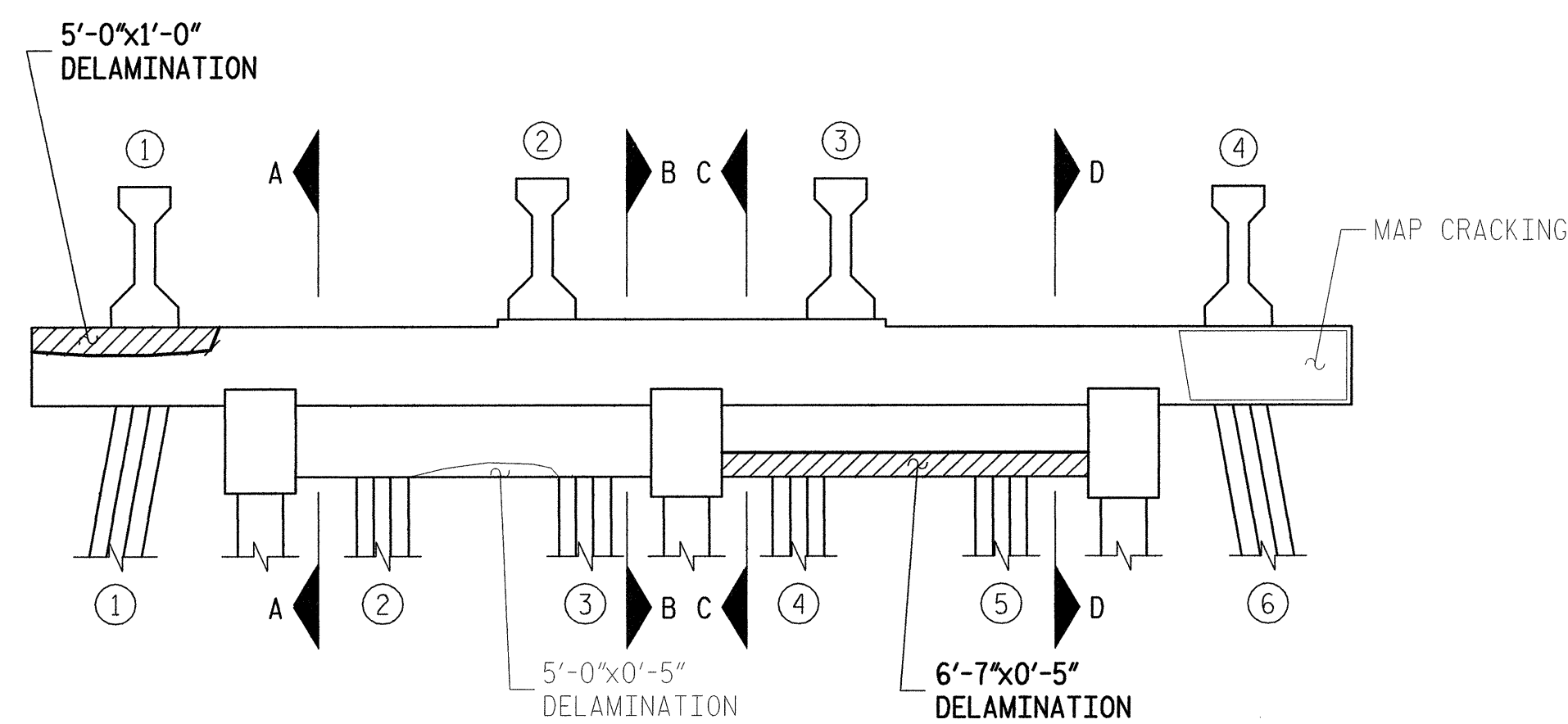
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
1			3		144
2			4		TOTAL SHEETS 166

FILE NAME: S:\NC\Bentman\Bentman-B179.dgn  
 PLOT: 9/18/2007 8:44:50 AM Ko & Associates, P.C.  
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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

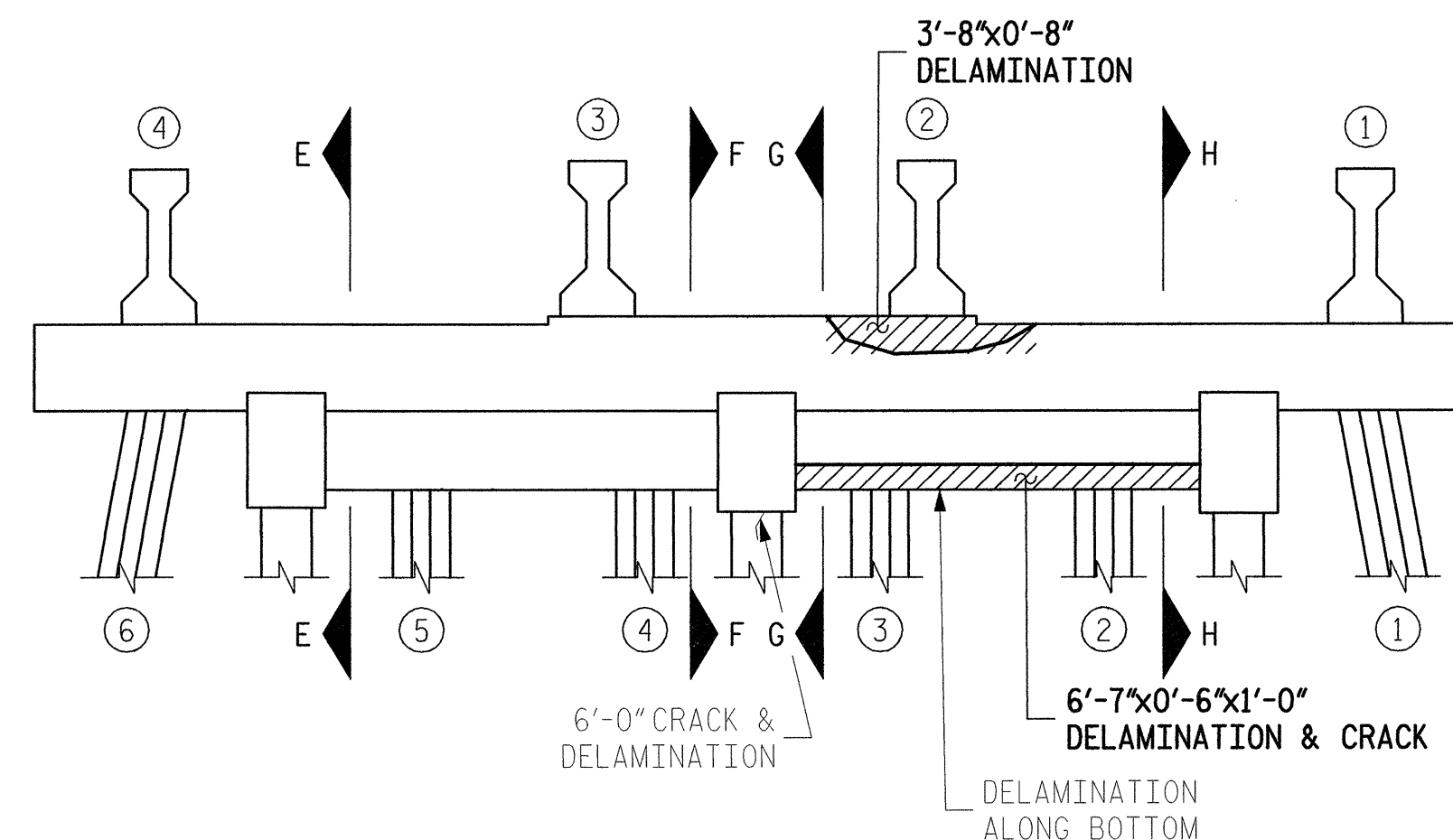
# BILL OF MATERIAL

BENT #180

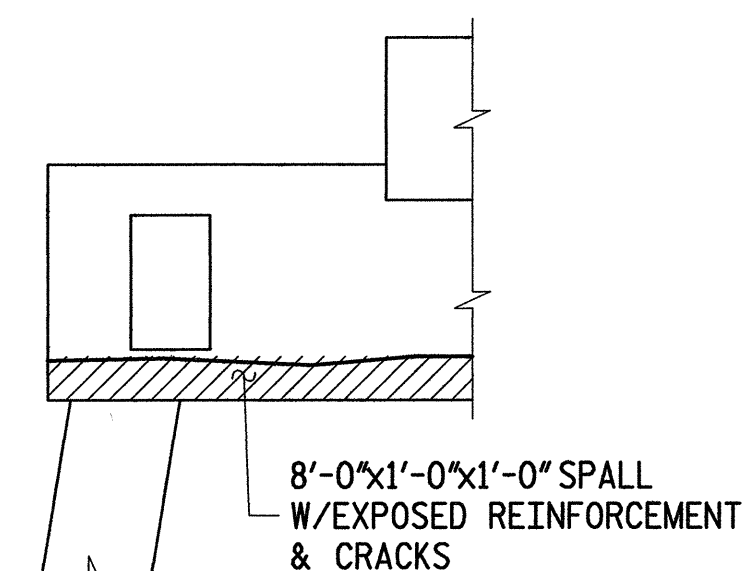
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	20	
OVERHEAD SHOTCRETE	CF	15	
ADDITIONAL REINFORCING	LBS	13	
EPOXY MORTAR (FORMED)	CF	-	



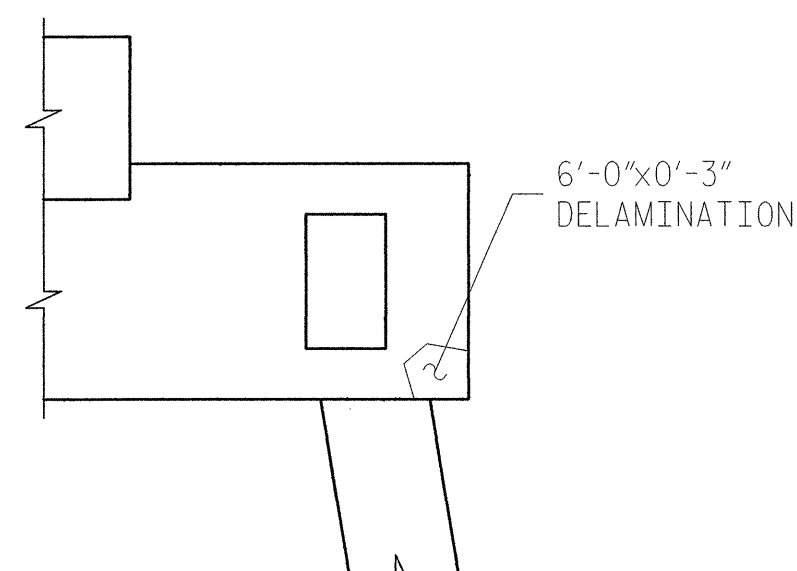
NORTH ELEVATION



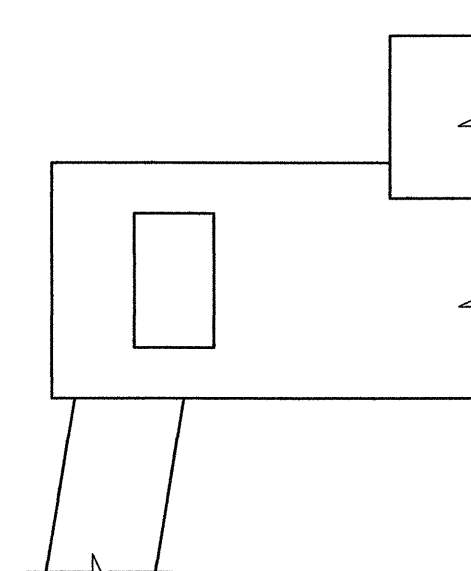
SOUTH ELEVATION



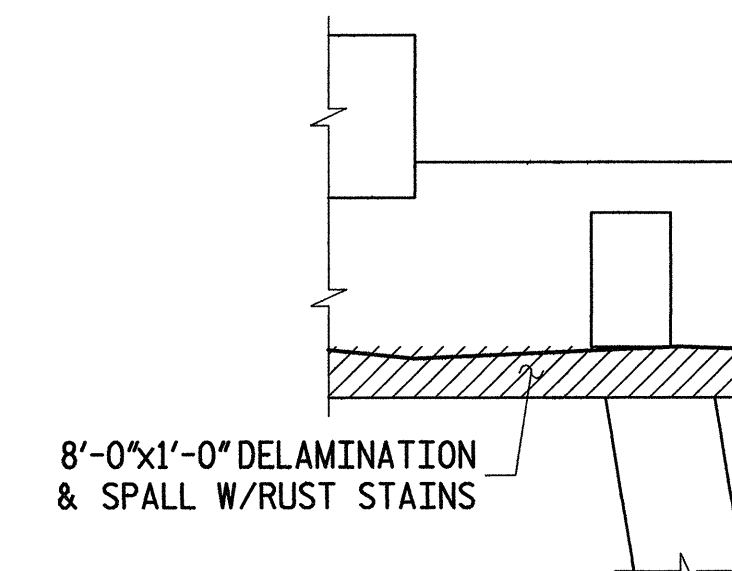
SECTION A-A



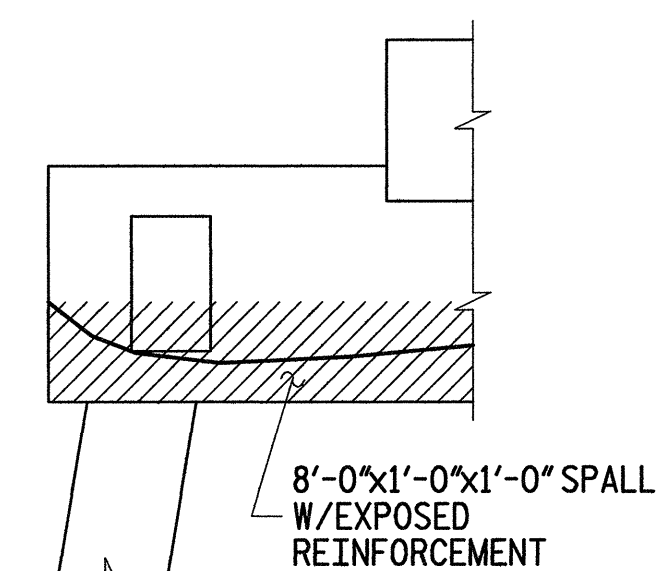
SECTION B-B



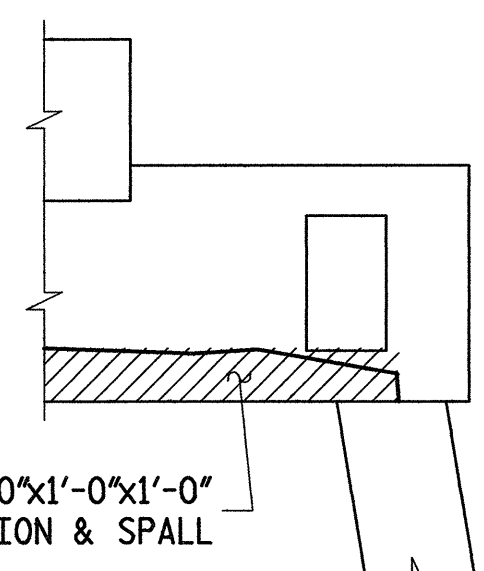
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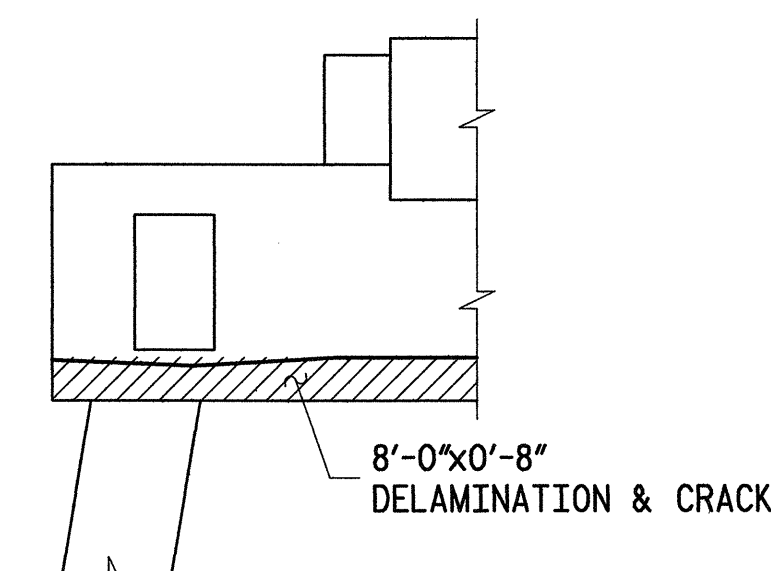
SECTION F-F



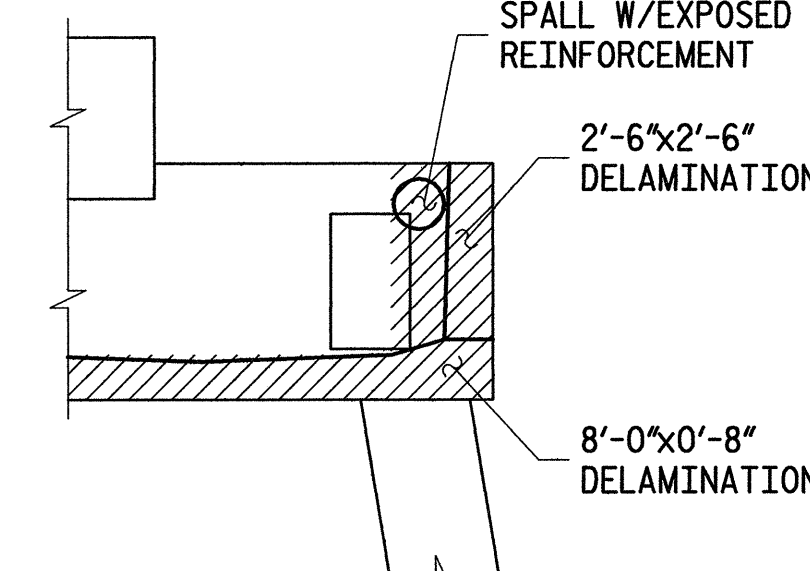
SECTION C-C



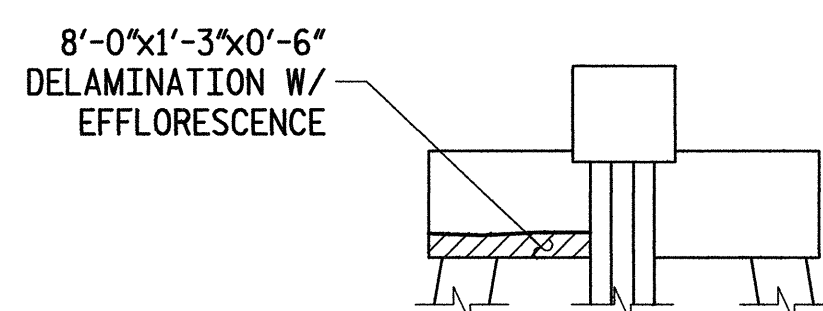
SECTION D-D



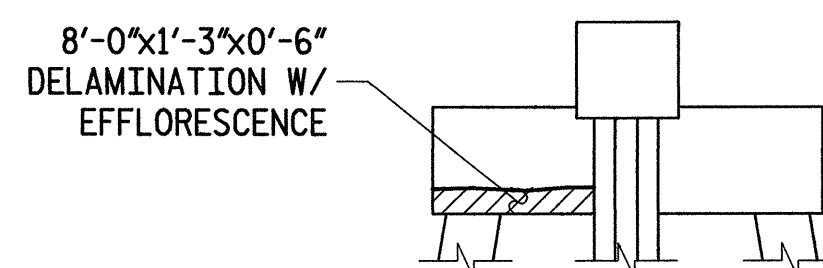
SECTION G-G



SECTION H-H



EAST ELEVATION



WEST ELEVATION

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



**ALPHA & OMEGA GROUP**  
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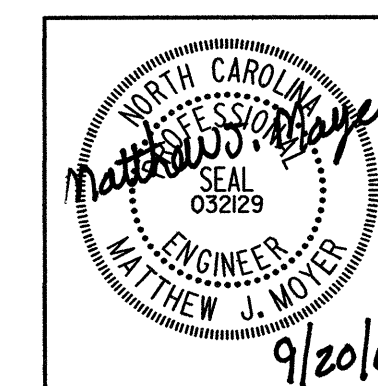
PLANS PREPARED BY

**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #180



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

145  
 TOTAL SHEETS  
 166

## BENT #180

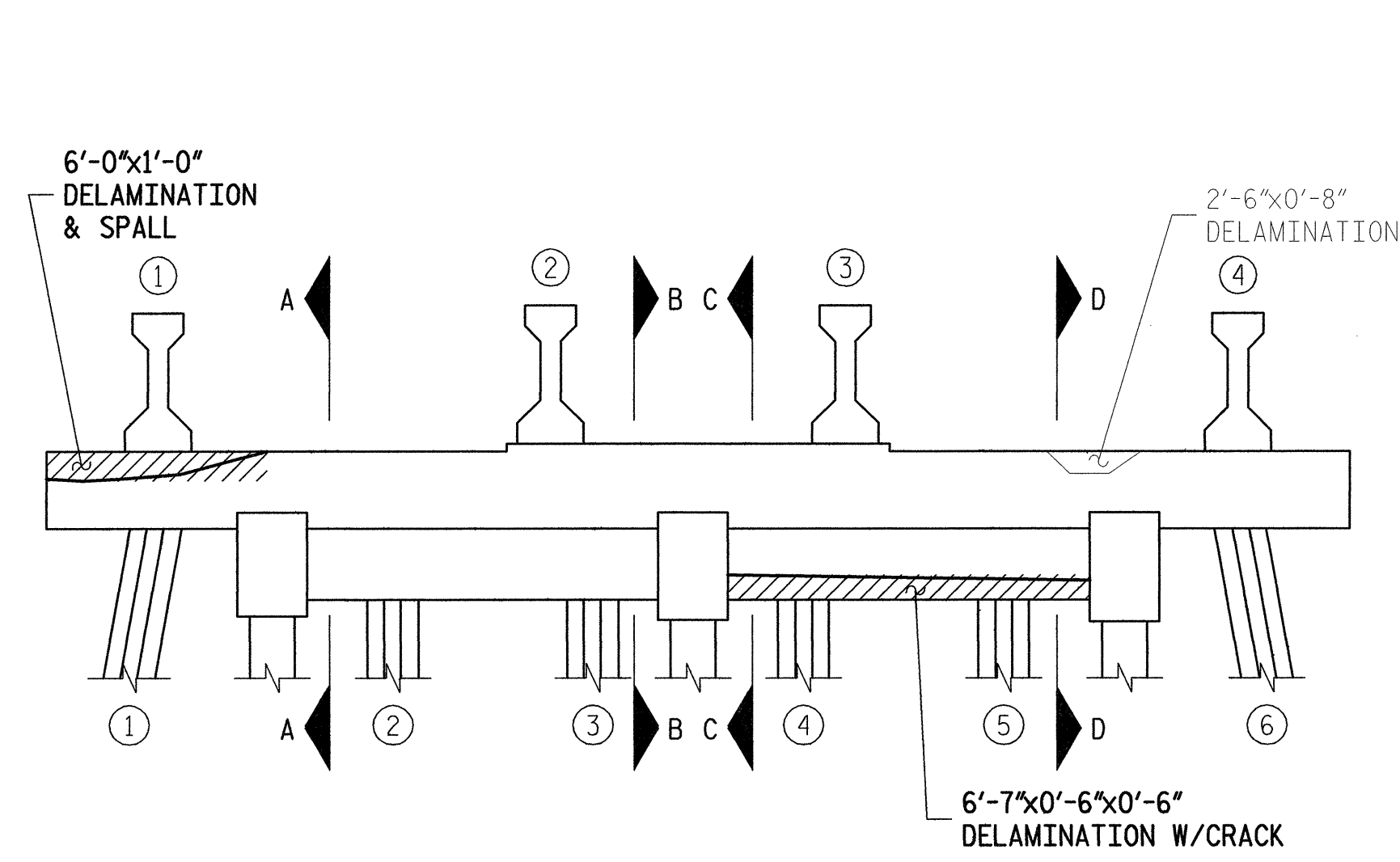
PLOT1: 9/18/2007 8:46:21 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bentman\Jm\Bent-180\Bent.dgn

DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

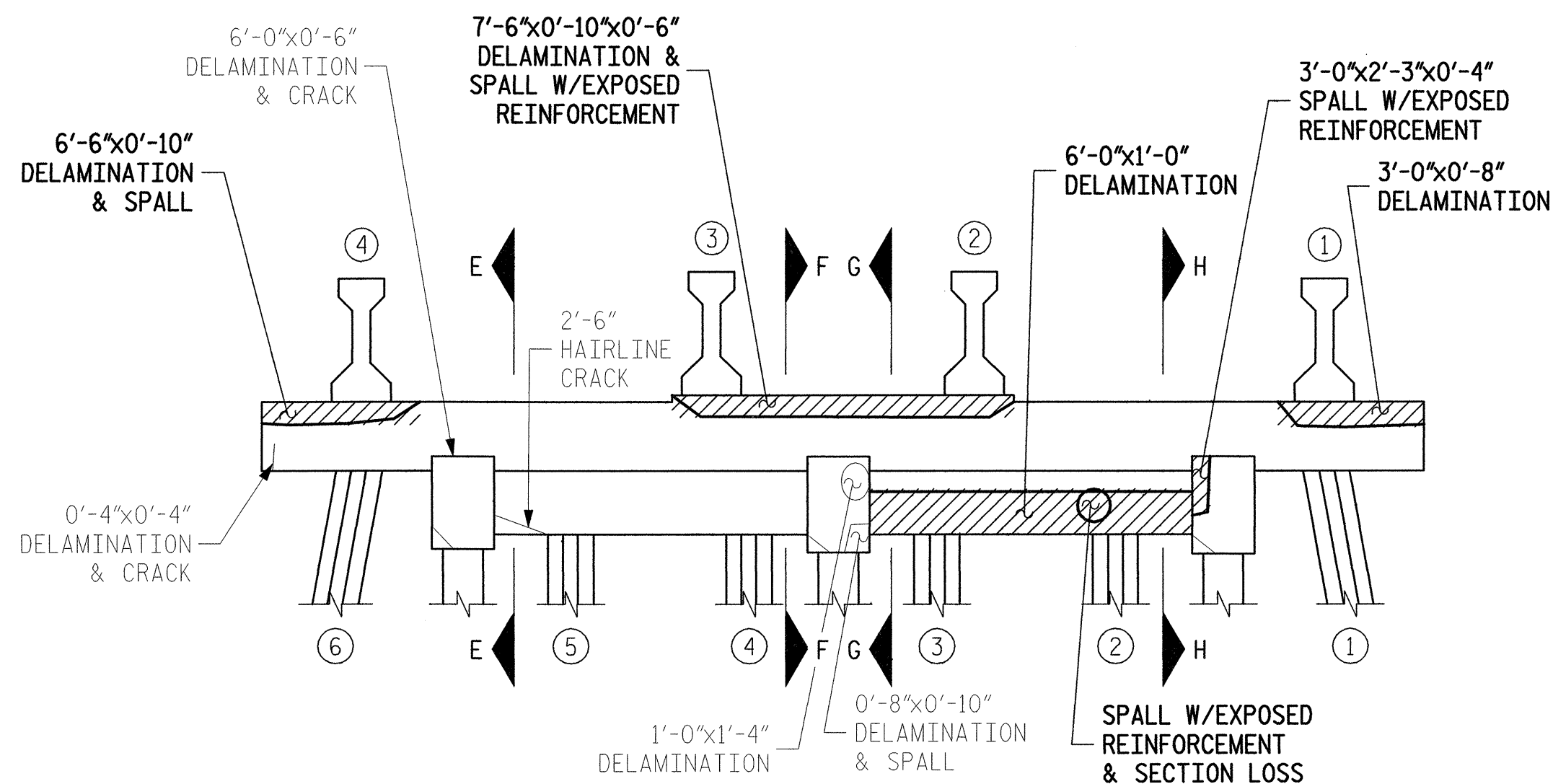
# BILL OF MATERIAL

BENT #181

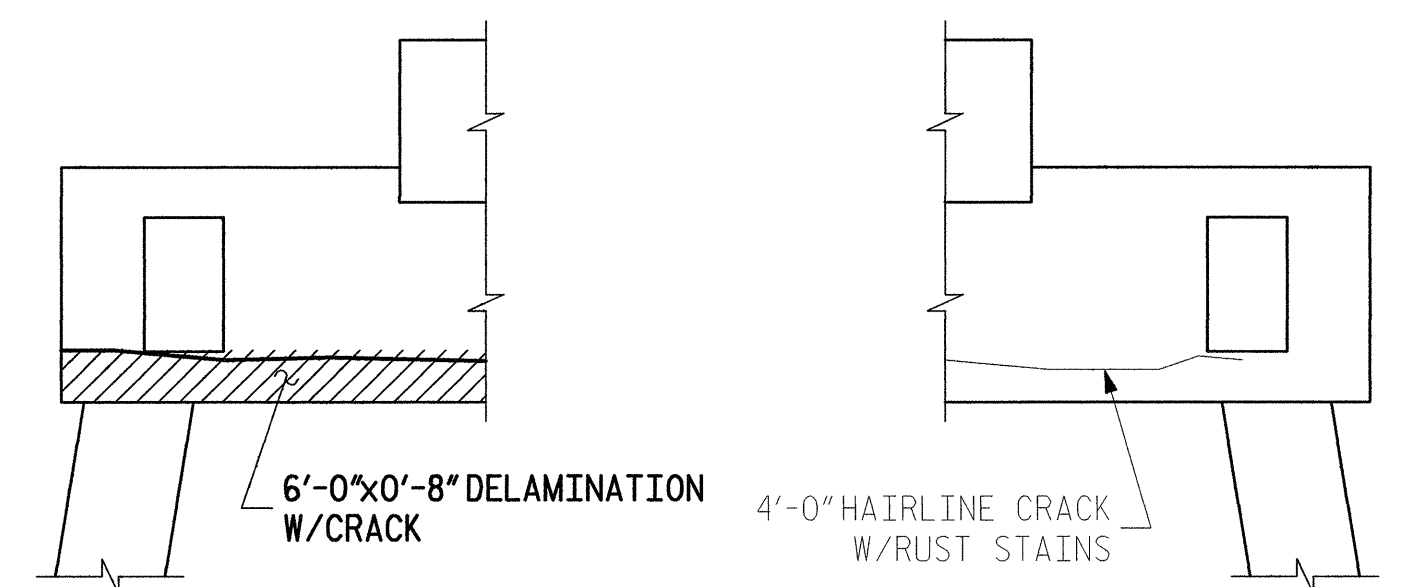
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	16
OVERHEAD SHOTCRETE	CF	5
ADDITIONAL REINFORCING	LBS	61
EPOXY MORTAR (FORMED)	CF	-



NORTH ELEVATION

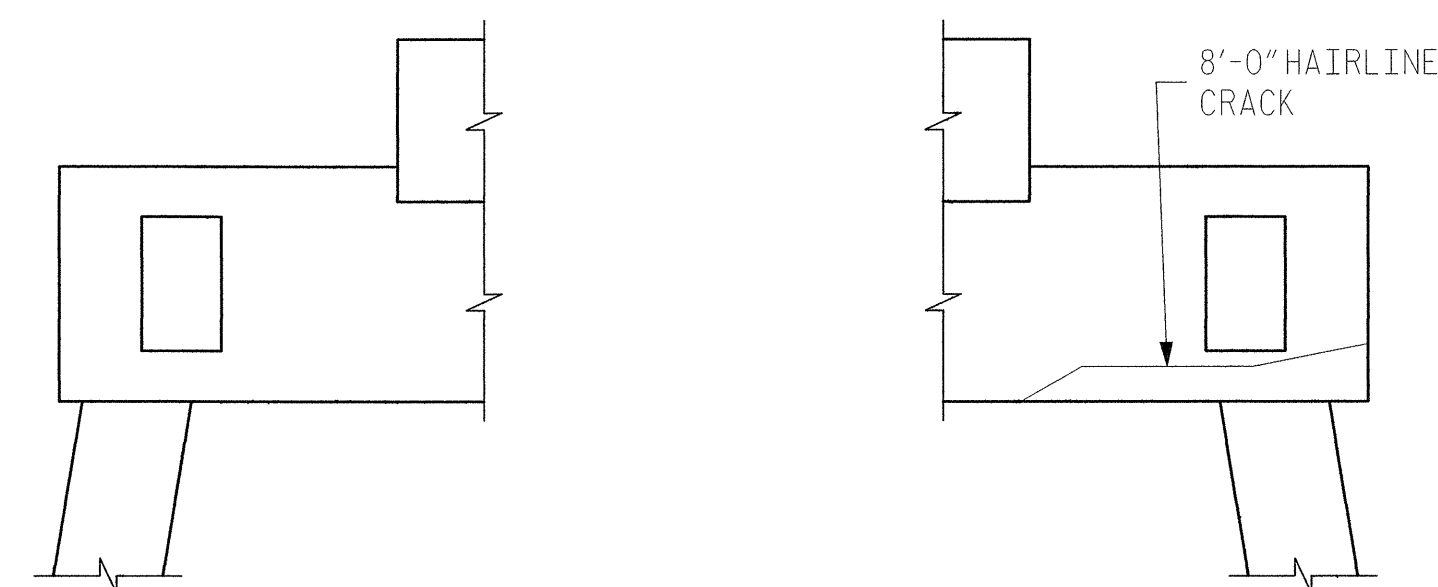


SOUTH ELEVATION



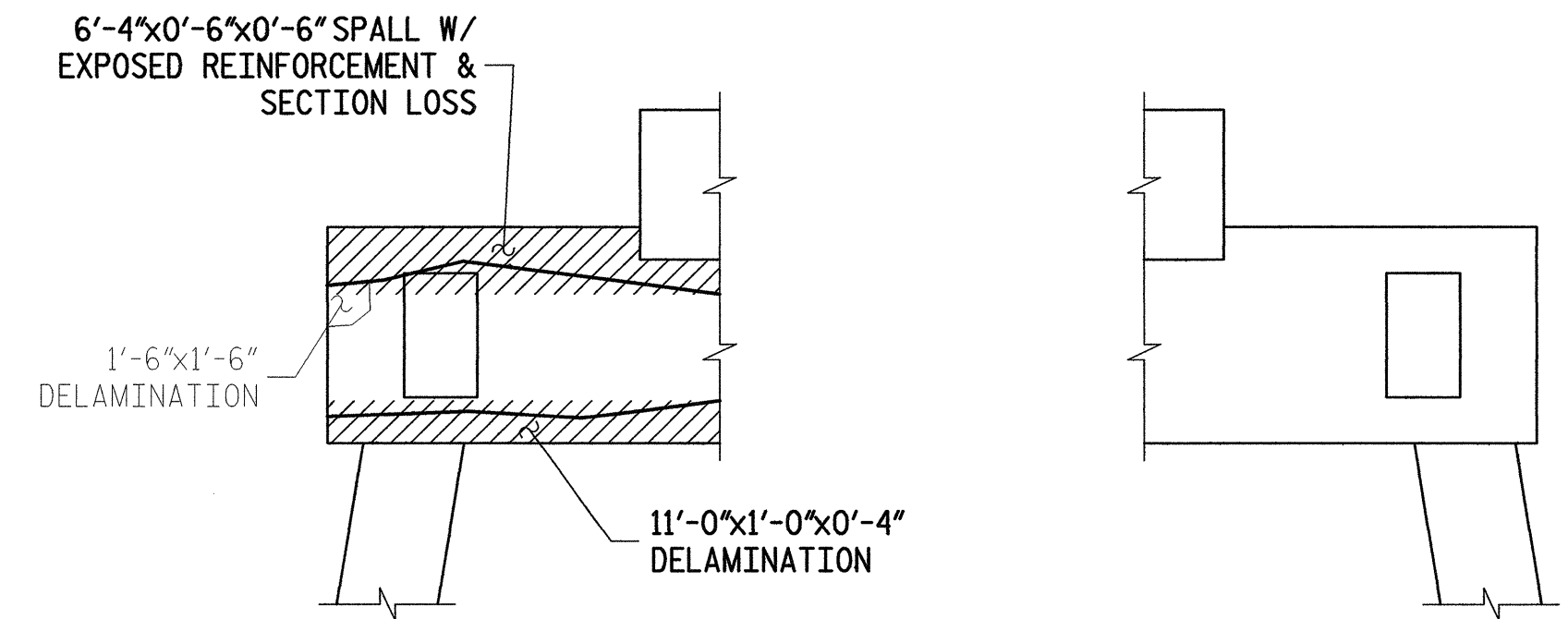
SECTION A-A

SECTION B-B



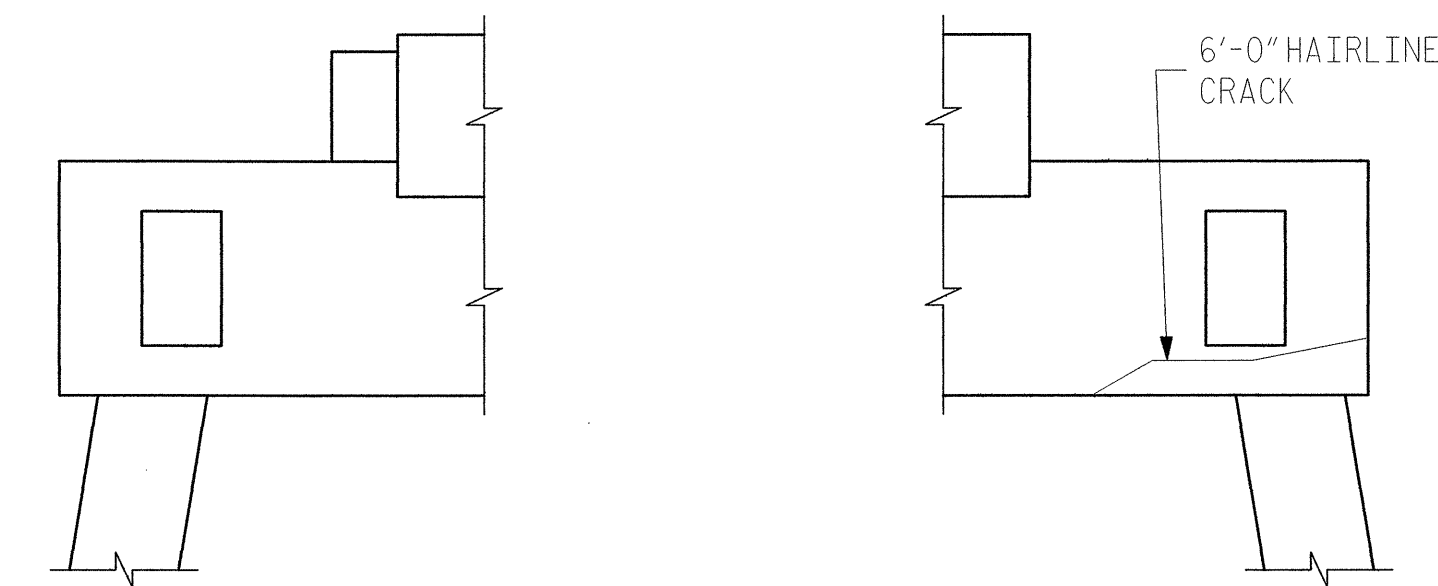
SECTION E-E

SECTION F-F



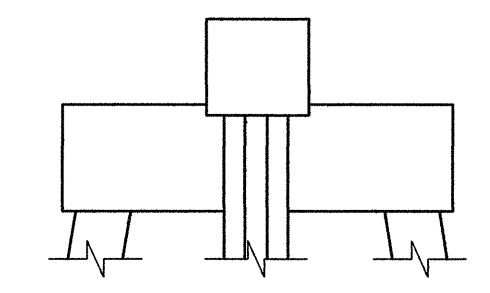
SECTION C-C

SECTION D-D

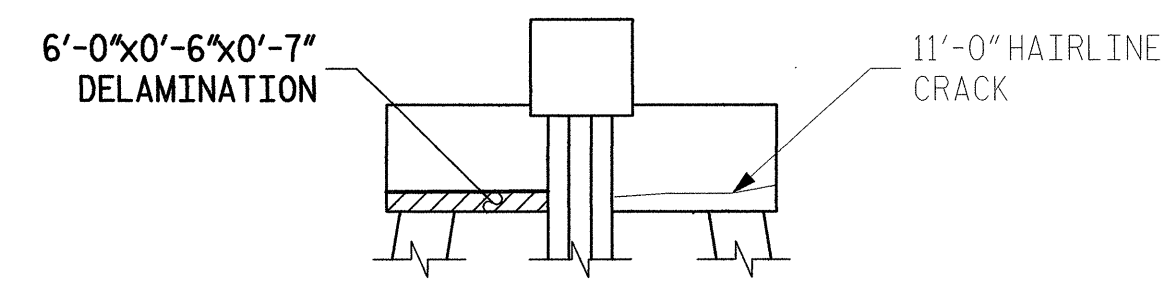


SECTION G-G

SECTION H-H



EAST ELEVATION



WEST ELEVATION

## BENT #181

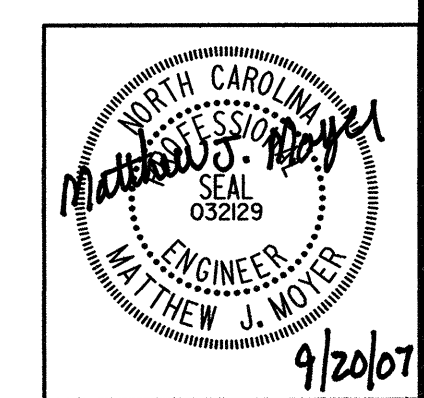
- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

**ALPHA & OMEGA GROUP**  
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 Consulting Engineers  
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 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #181



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 166

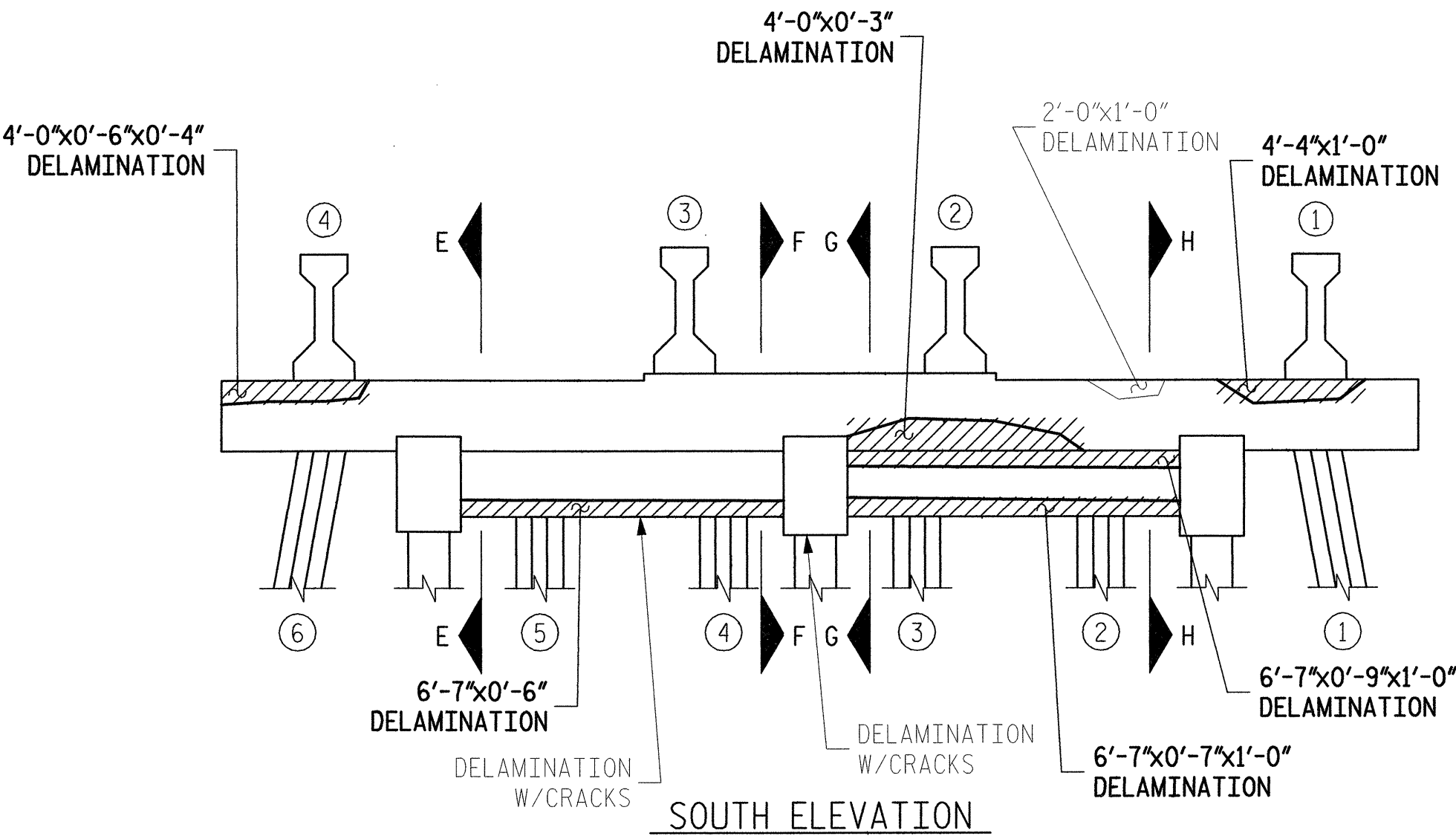
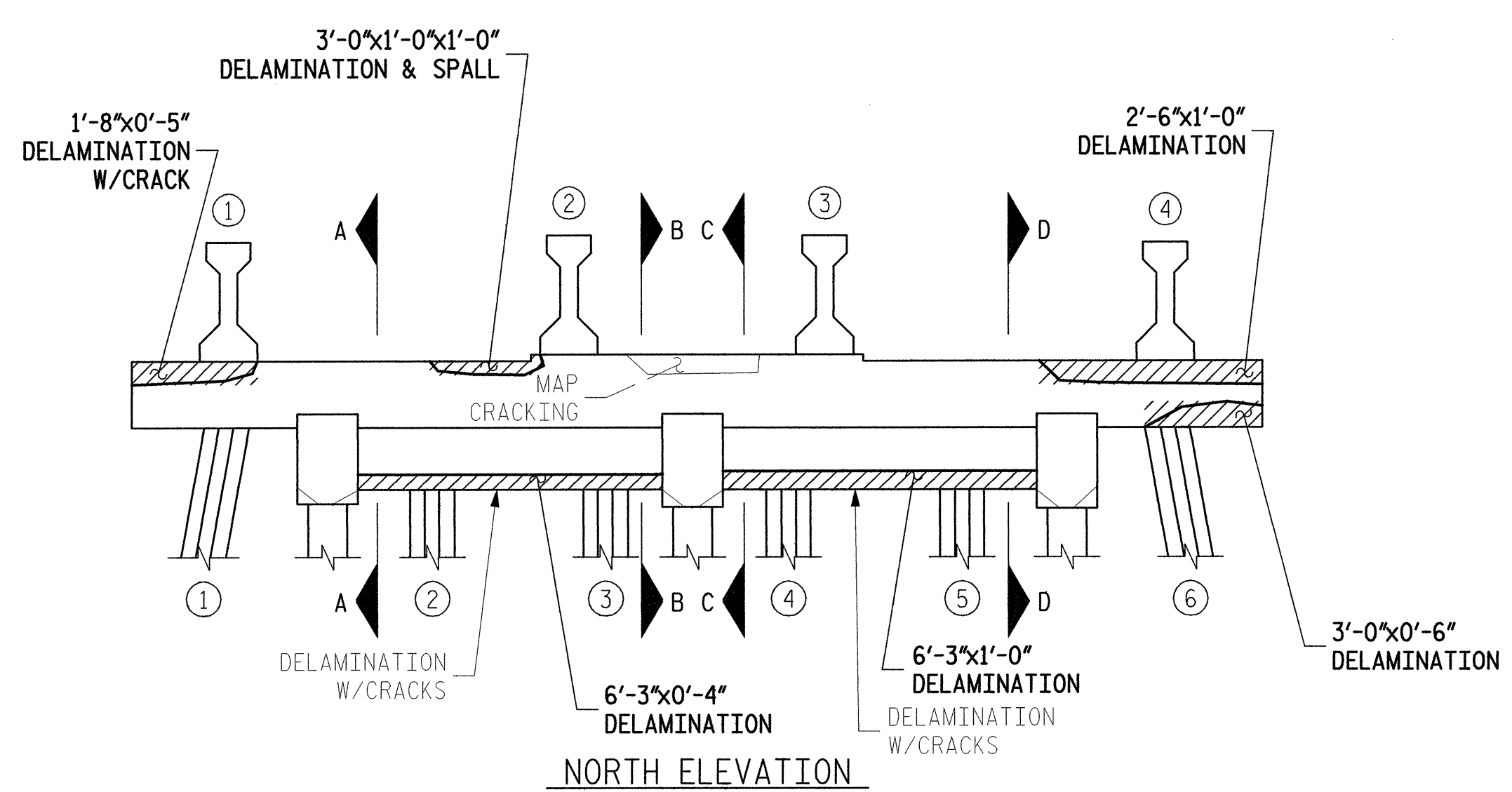
PL01: 9/18/2007 8:46:42 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\bbm\m\jgm\181\181.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



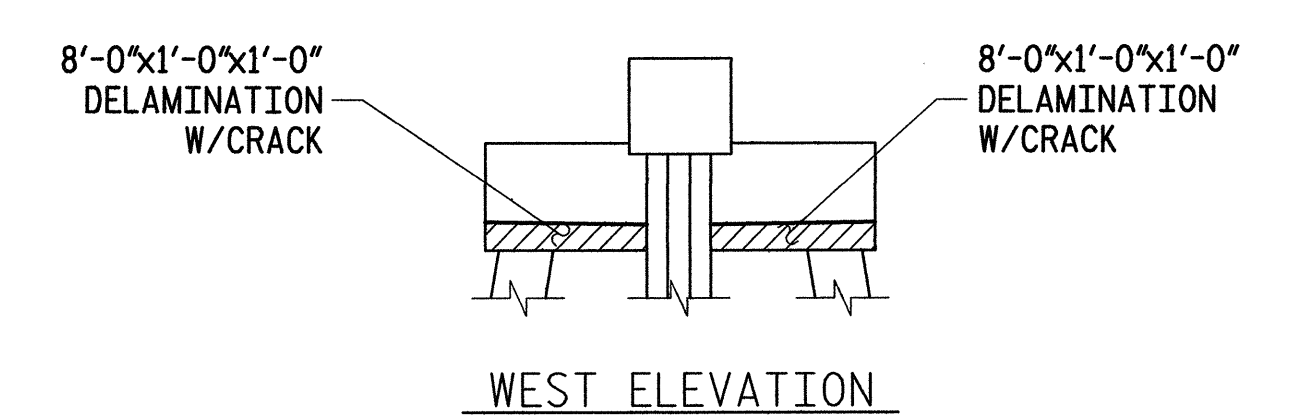
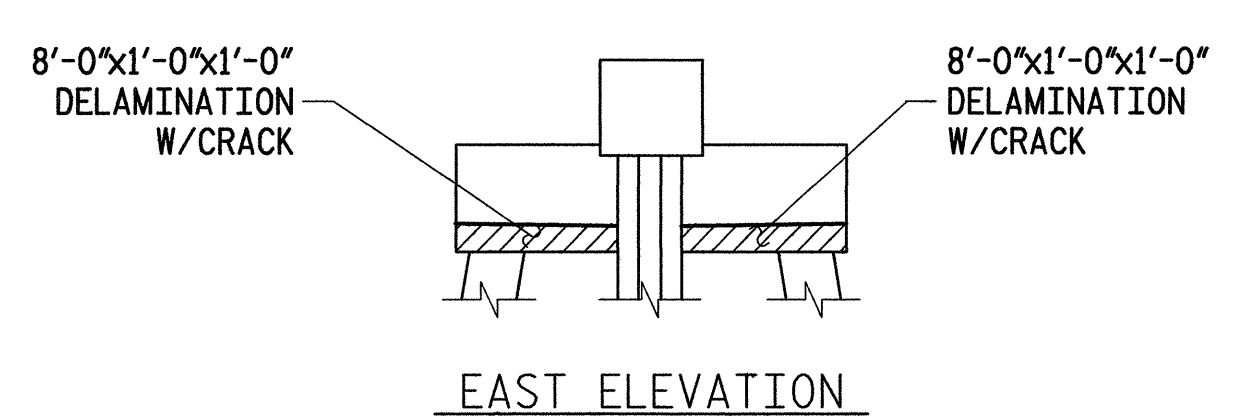
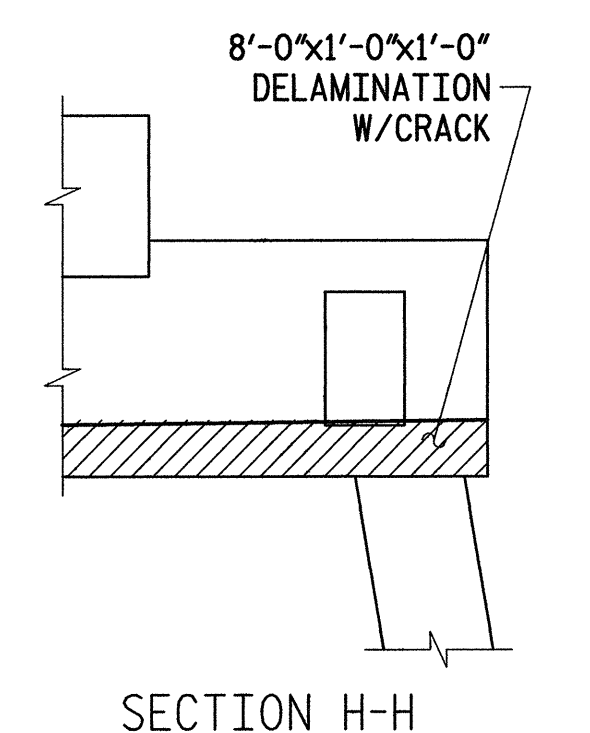
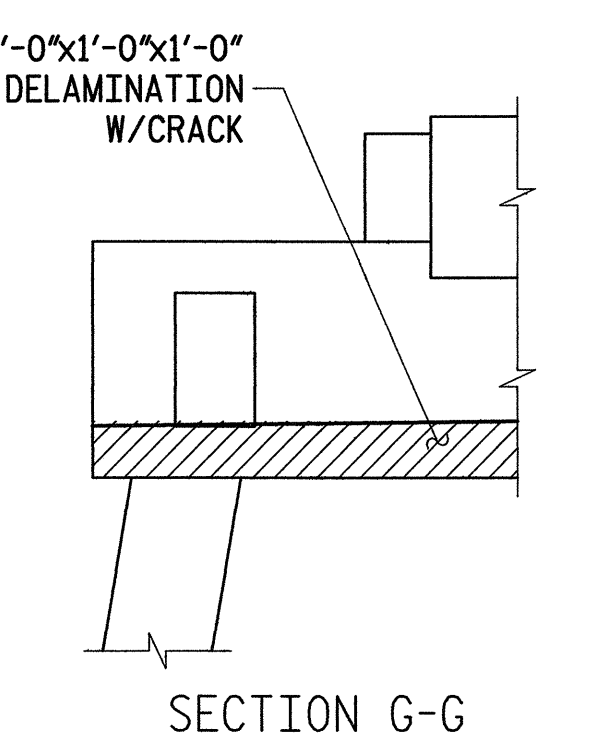
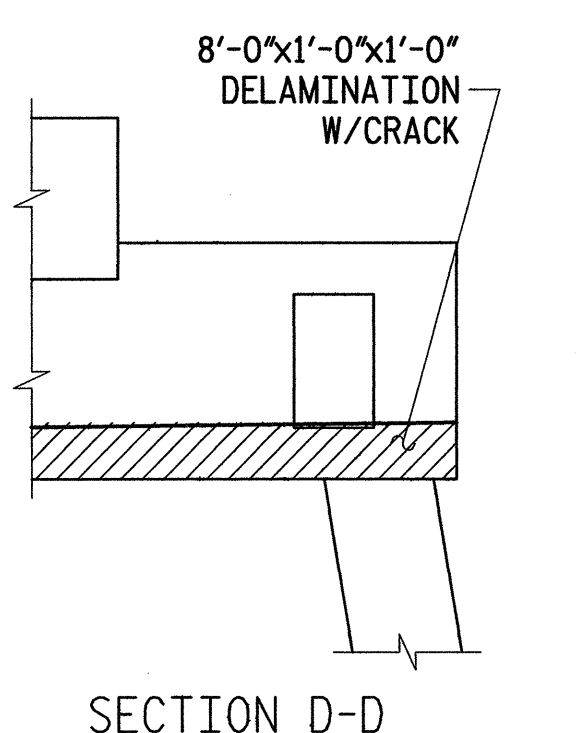
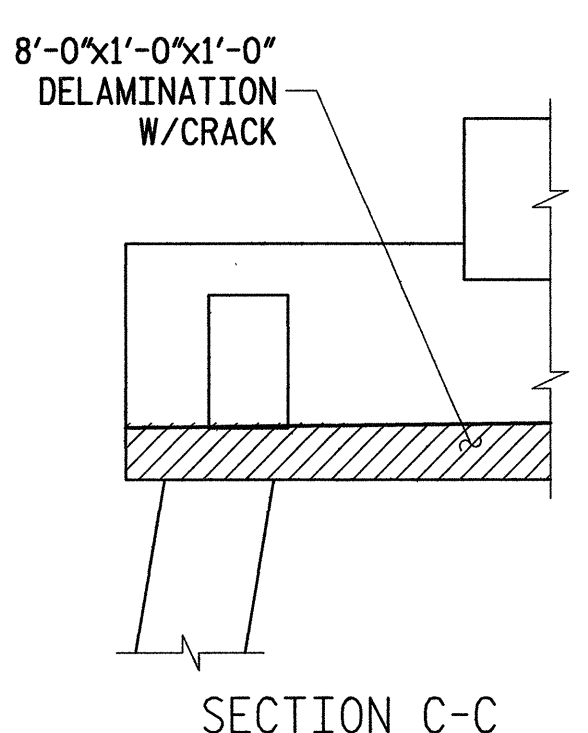
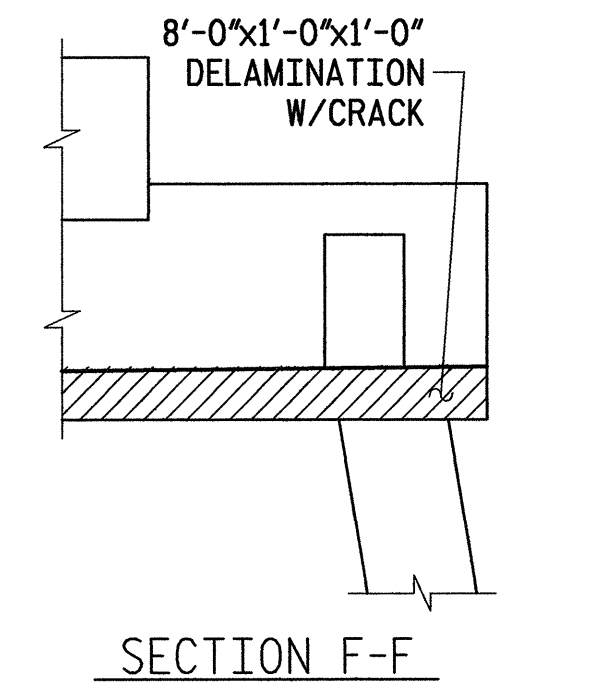
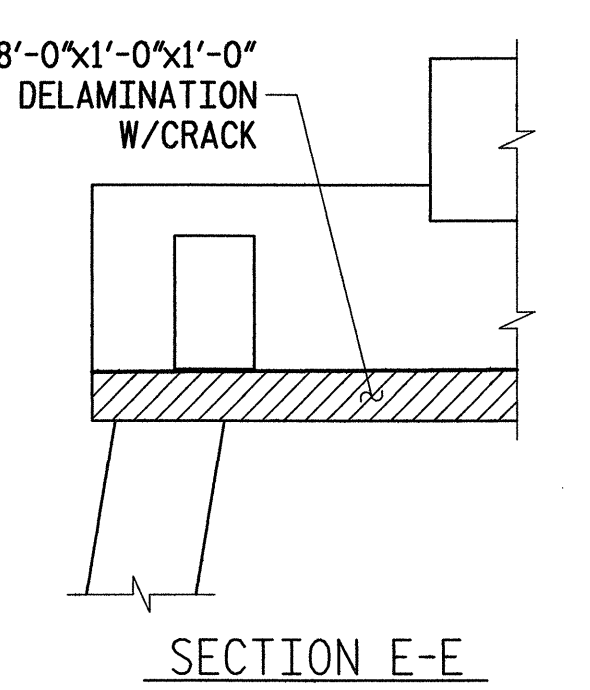
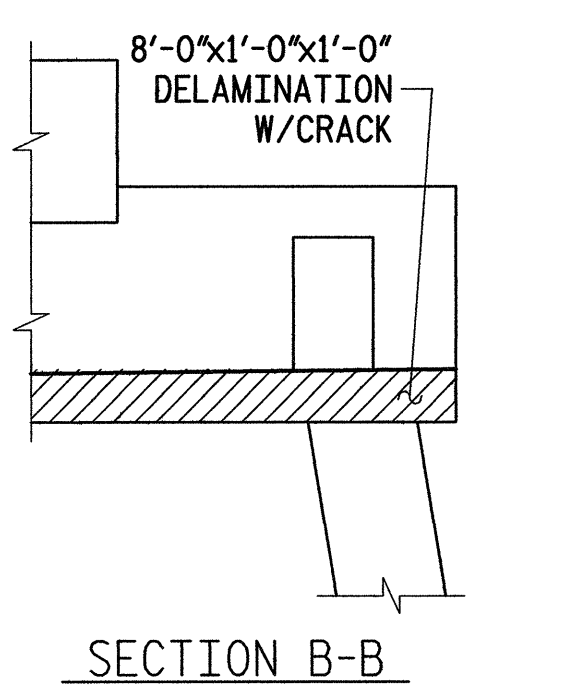
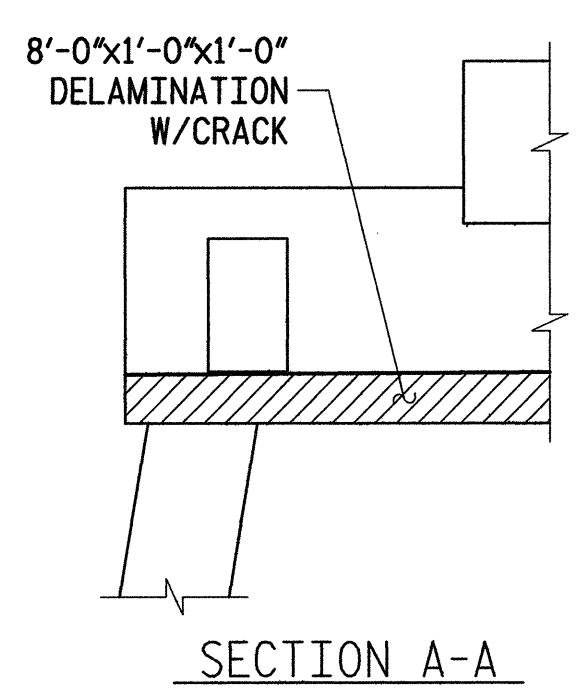
# BILL OF MATERIAL

BENT #182

REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	26
OVERHEAD SHOTCRETE	CF	42
ADDITIONAL REINFORCING	LBS	41
EPOXY MORTAR (FORMED)	CF	-



- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

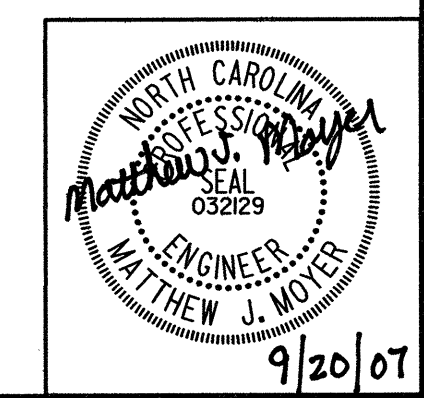


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 Phone 919 981 0310 Fax 919 981 0451  
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PLANS PREPARED BY  
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 Consulting Engineers  
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PROJECT NO. B-5014  
 DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #182



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
1			3		147
2			4		TOTAL SHEETS 166

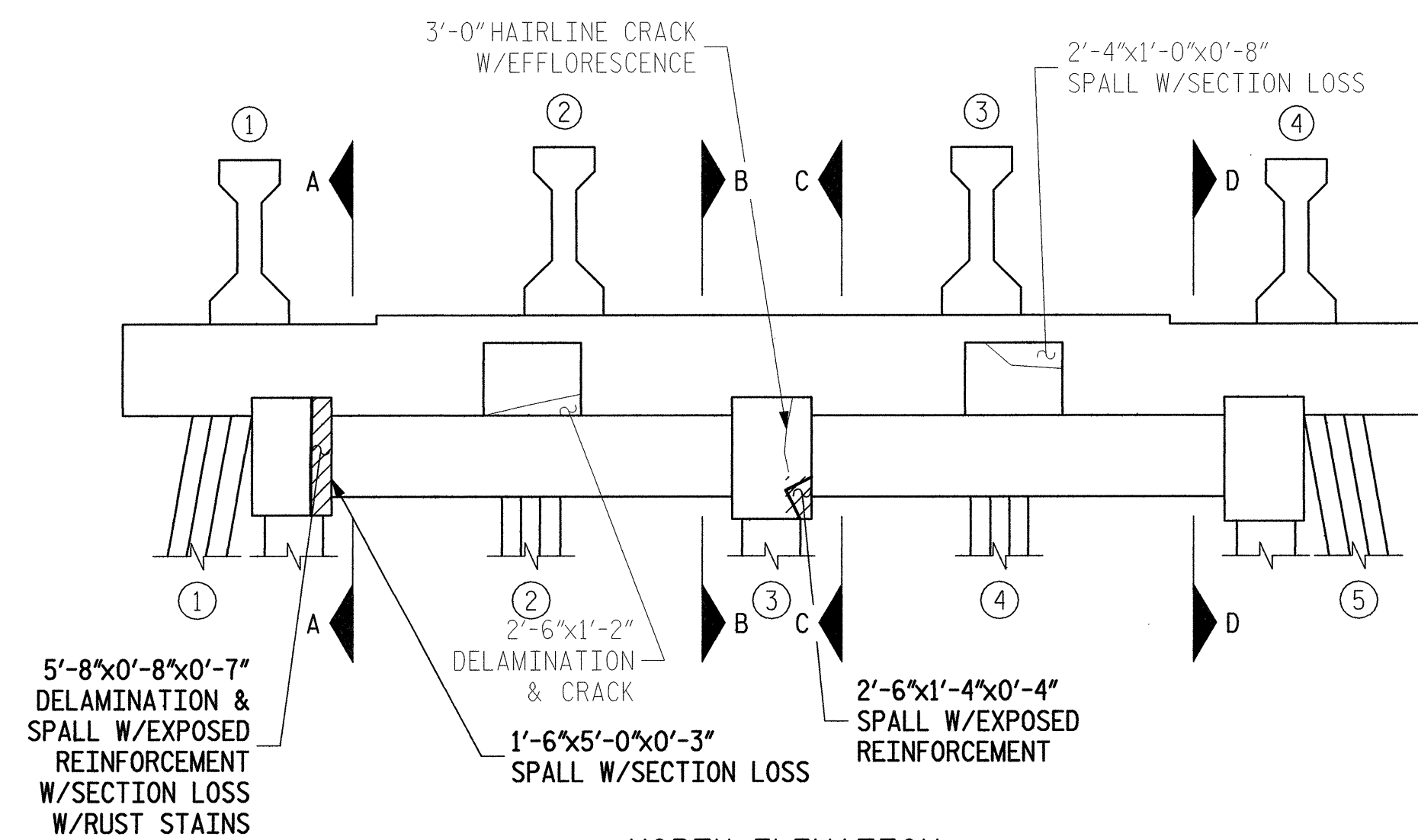
## BENT #182

PL01: 9/18/2007 8:47:44 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bent#182\Bent#182.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

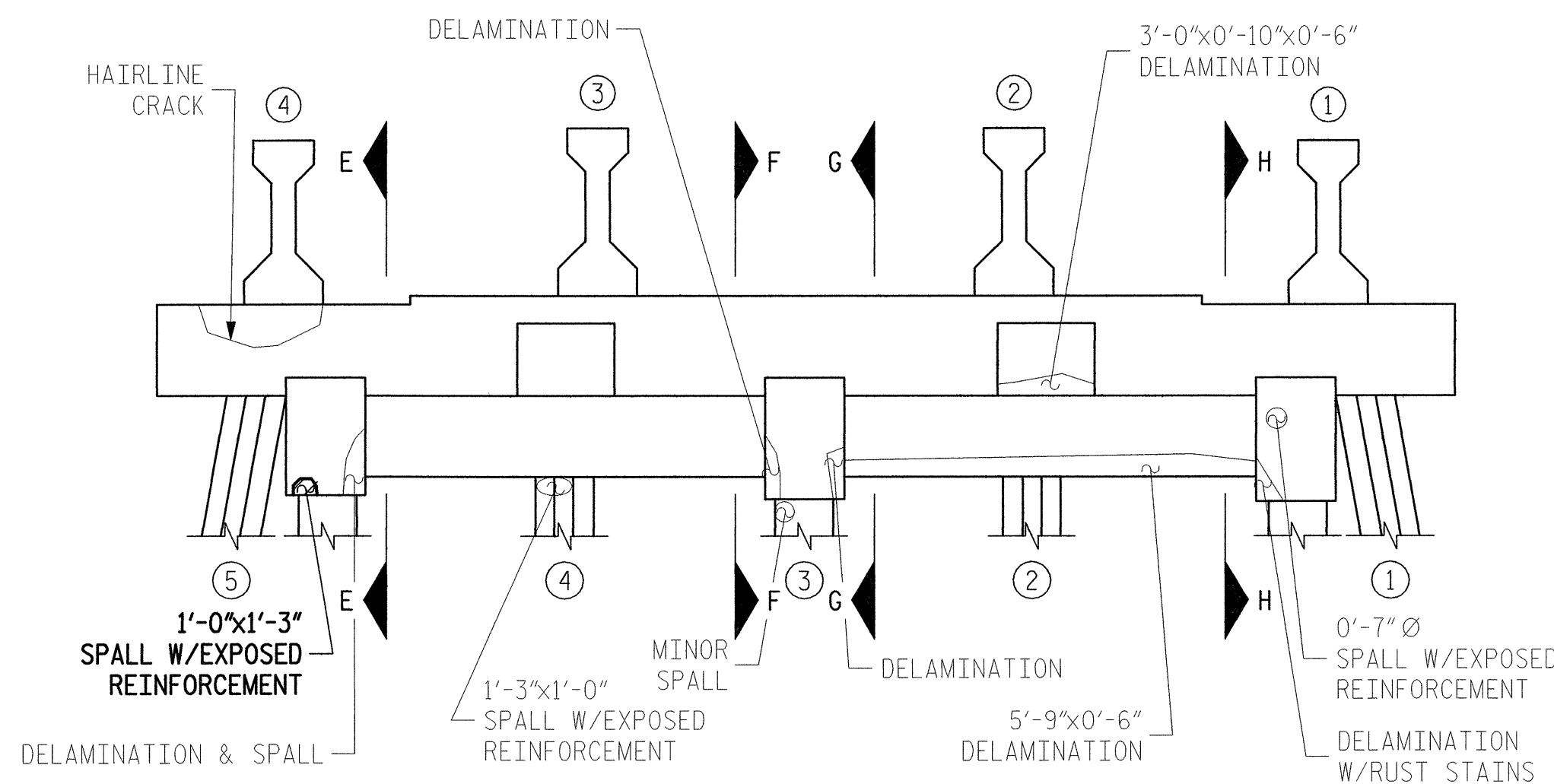
# BILL OF MATERIAL

BENT #183

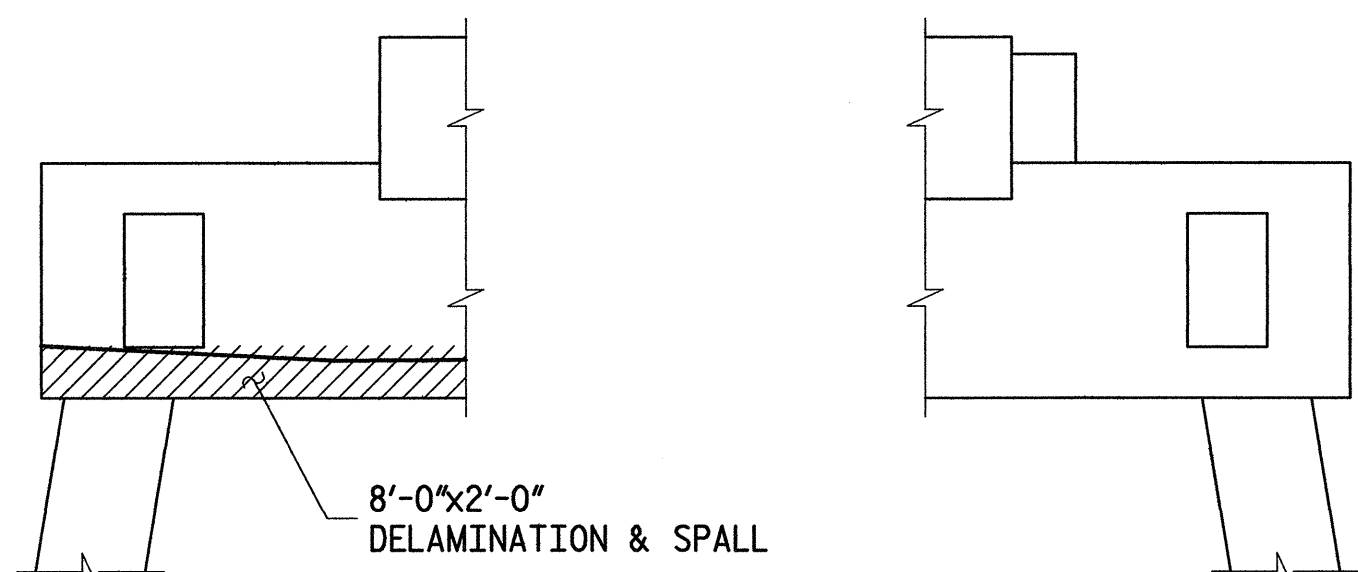
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	-
VERTICAL SHOTCRETE	CF	17
OVERHEAD SHOTCRETE	CF	12
ADDITIONAL REINFORCING	LBS	-
EPOXY MORTAR (FORMED)	CF	-



NORTH ELEVATION

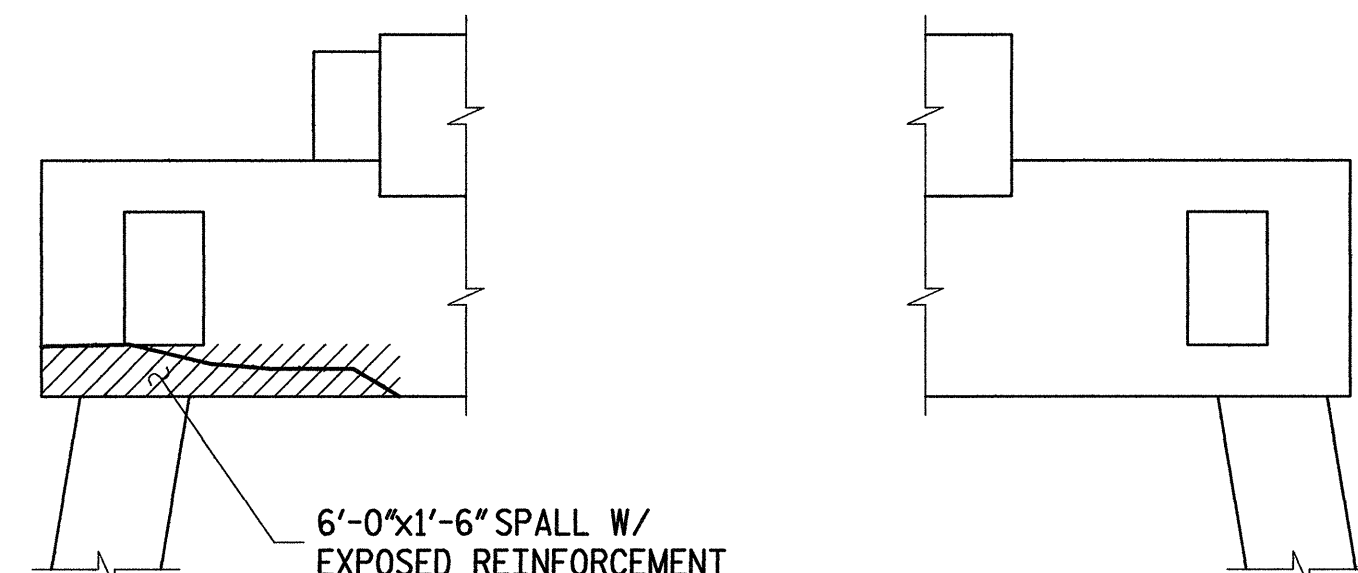


SOUTH ELEVATION



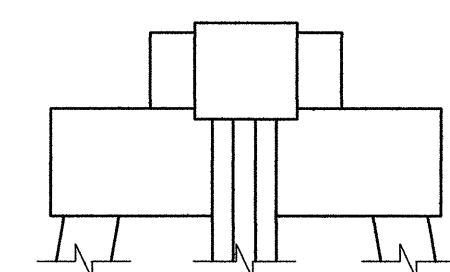
SECTION A-A

SECTION B-B

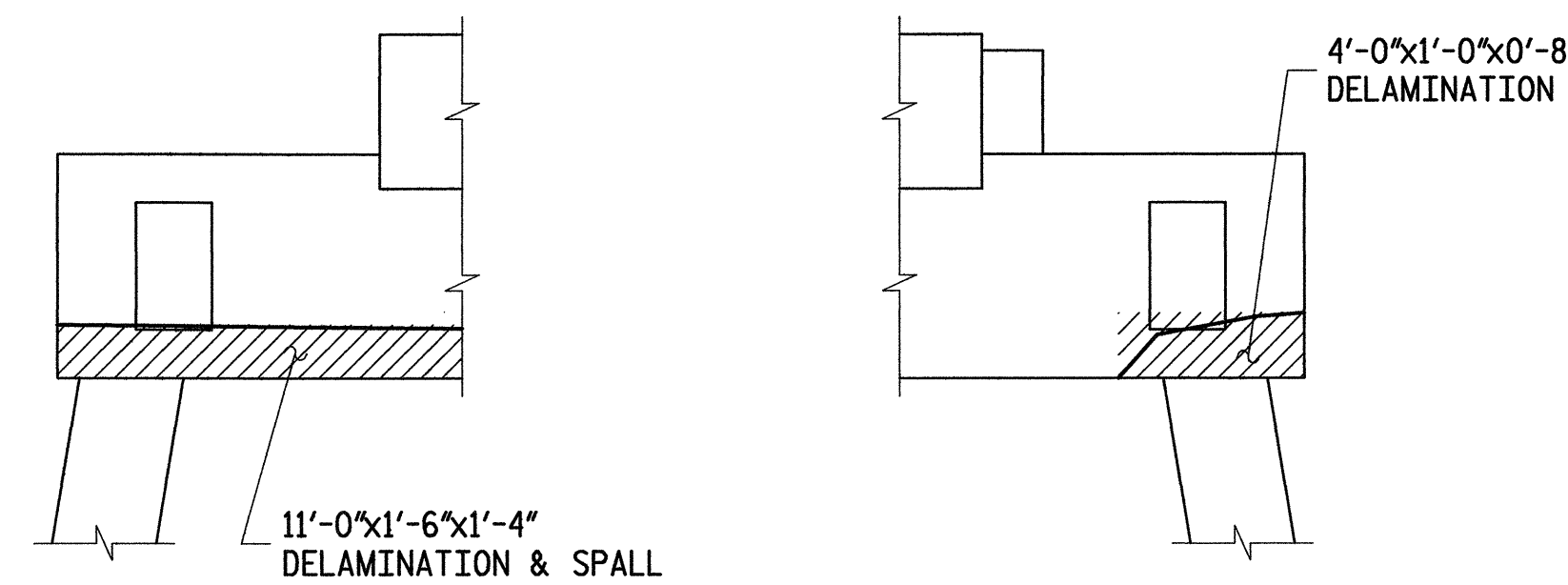


SECTION C-C

SECTION D-D

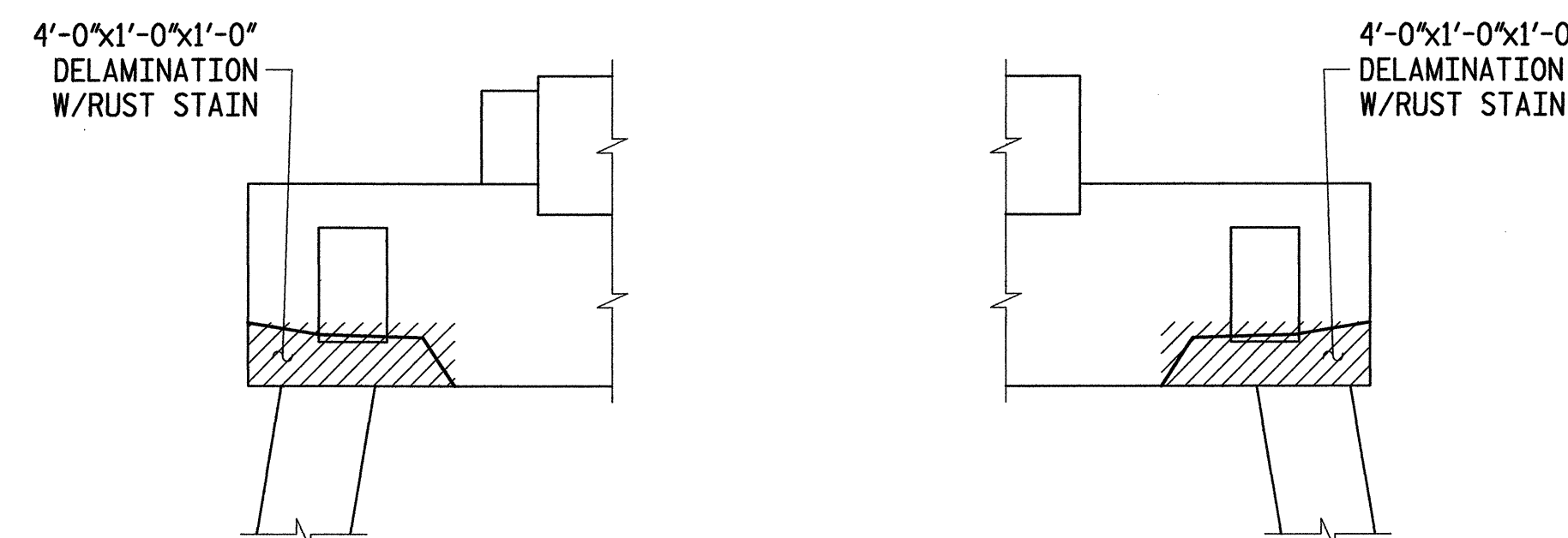


EAST ELEVATION



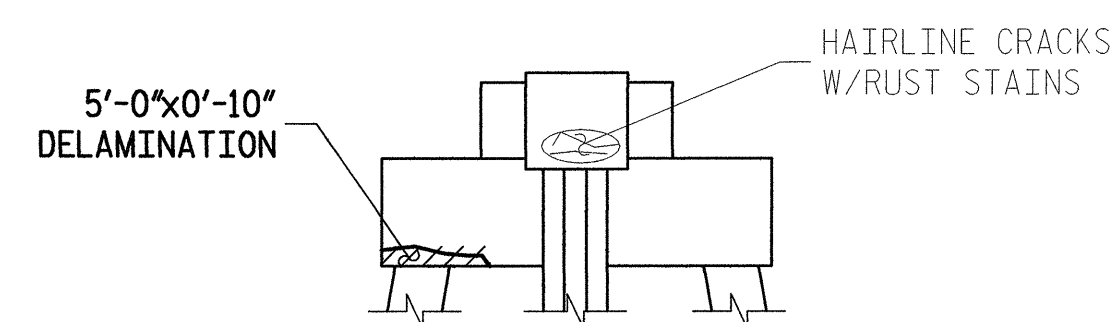
SECTION E-E

SECTION F-F



SECTION G-G

SECTION H-H



WEST ELEVATION

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

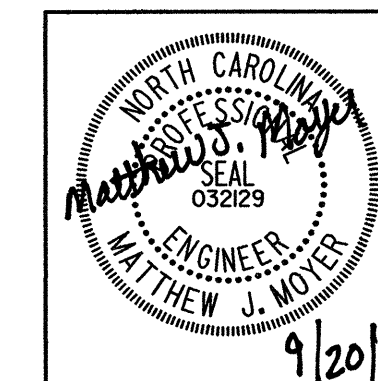
**ALPHA & OMEGA GROUP**  
 CIVIL & STRUCTURAL ENGINEERS  
 4911 Green Road, Suite 107, Raleigh, NC 27616  
 Phone 919 981 0310 Fax 919 981 0451  
 Email info@aogroup.com www.aogroup.com

PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 1011 SCHAUH DR., SUITE #202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #183



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			148
2			4			166

**BENT #183**

PL01: 9/18/2007 8:48:15 AM Ko & Associates, P.C.  
 FILE NAME: S:\NC\Bent#183\Bent#183.dgn  
 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

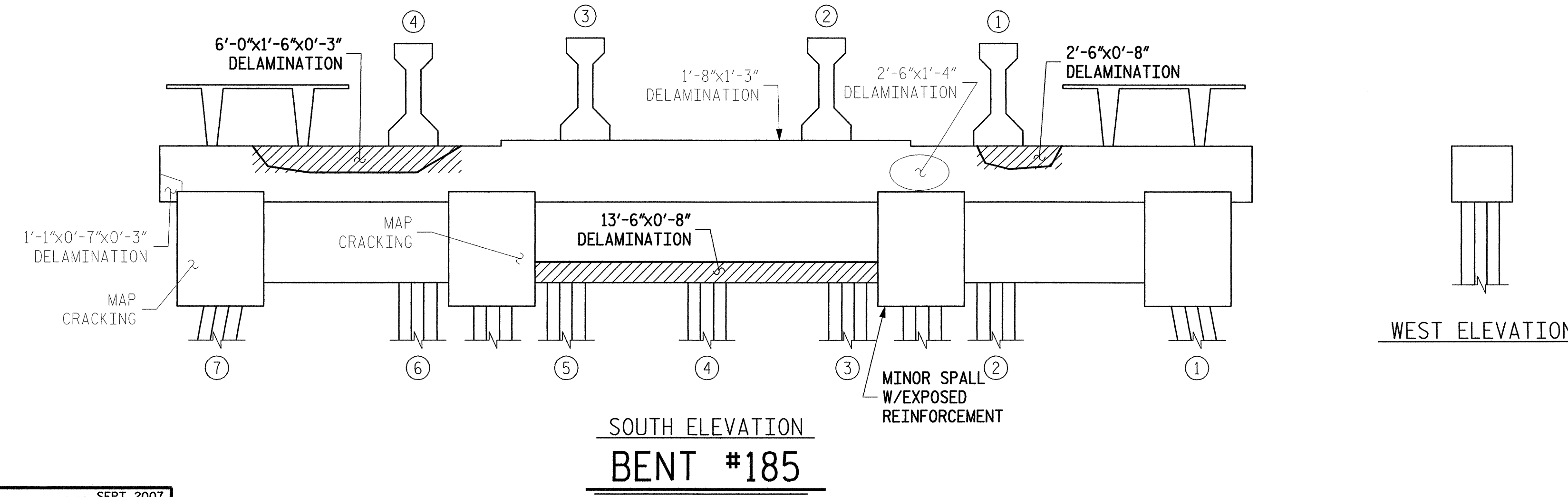
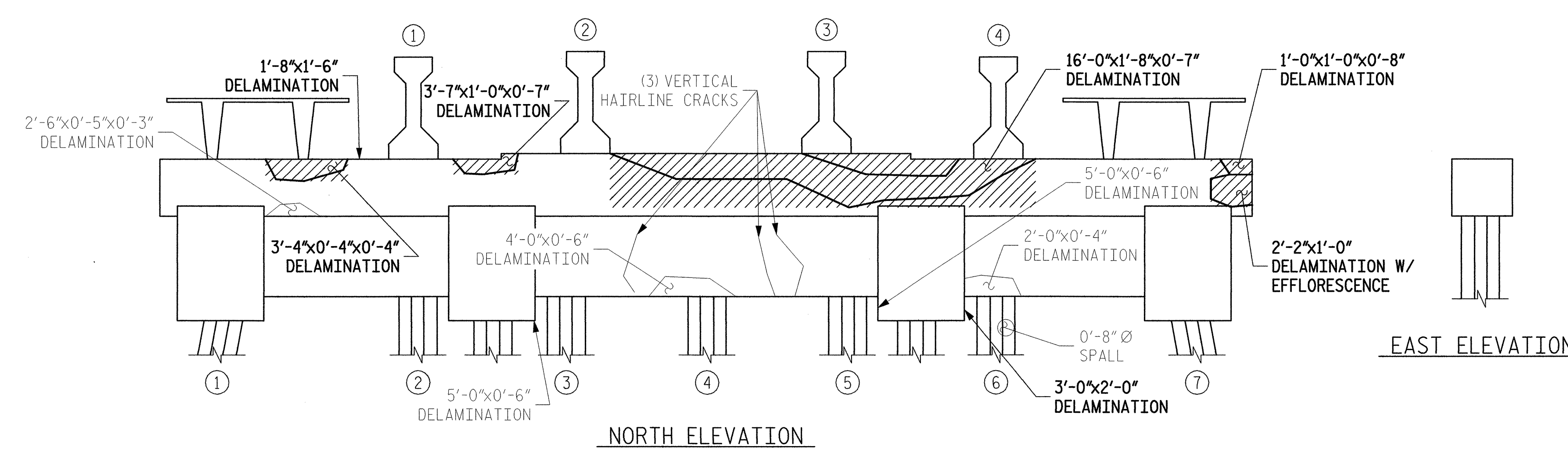
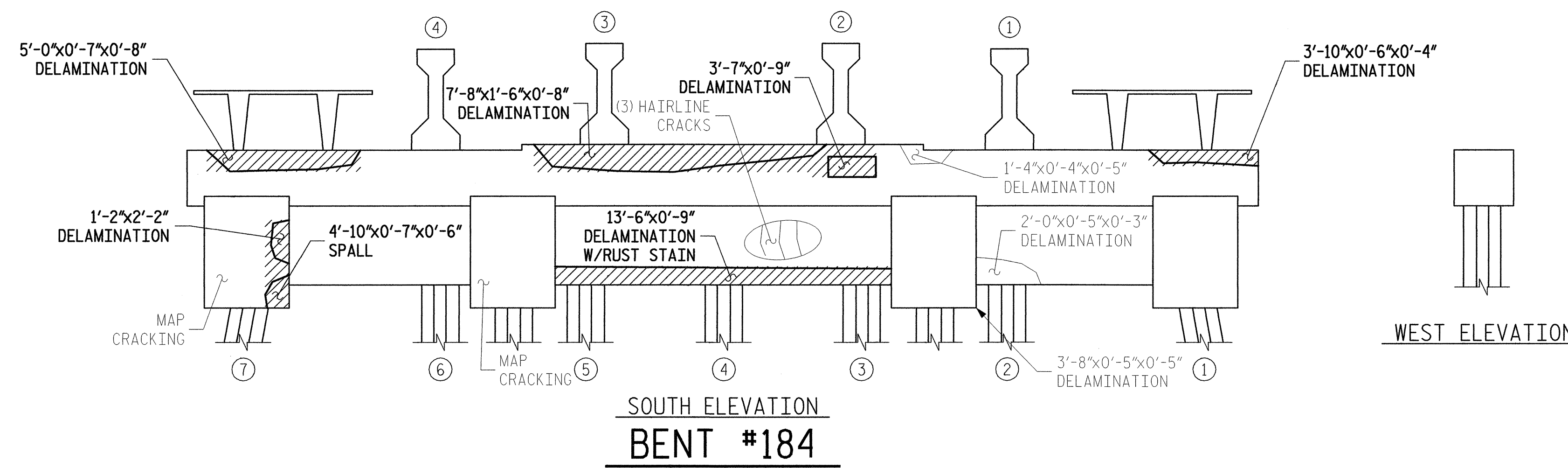
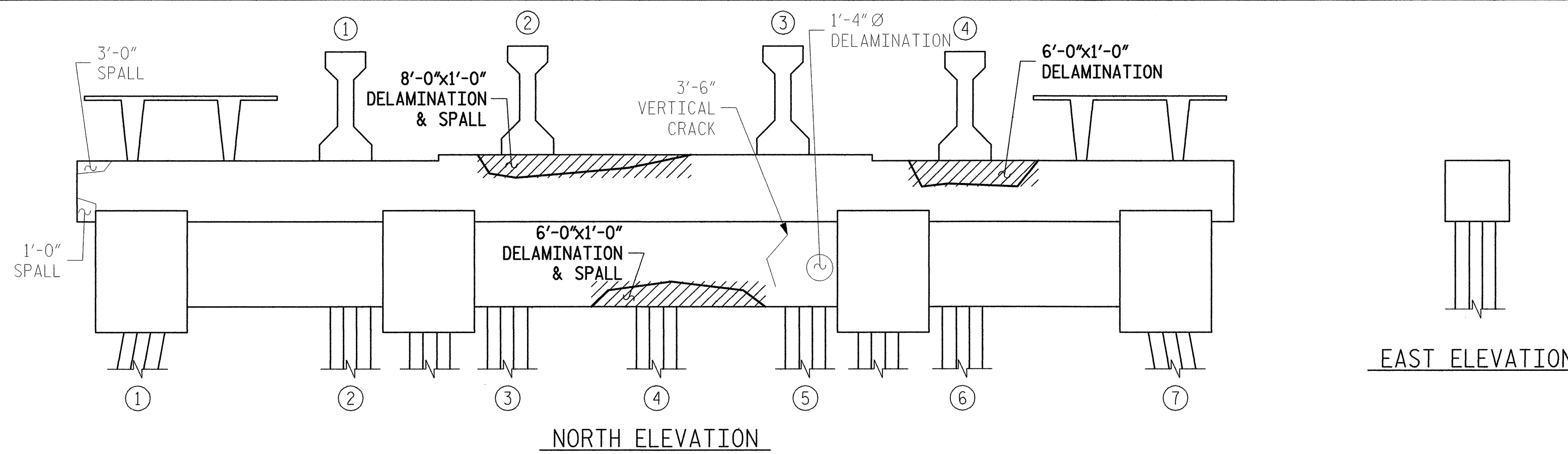
# BILL OF MATERIAL

## BENT #184

REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	18	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	81	
EPOXY MORTAR (FORMED)	CF	-	

## BENT #185

REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	21	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	84	
EPOXY MORTAR (FORMED)	CF	-	



- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

**ALPHA & OMEGA GROUP**  
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 Phone 919 981 0310 Fax 919 981 0451  
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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAU DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

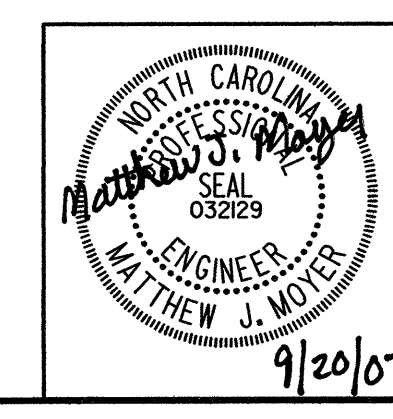
PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #184 & #185

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 166

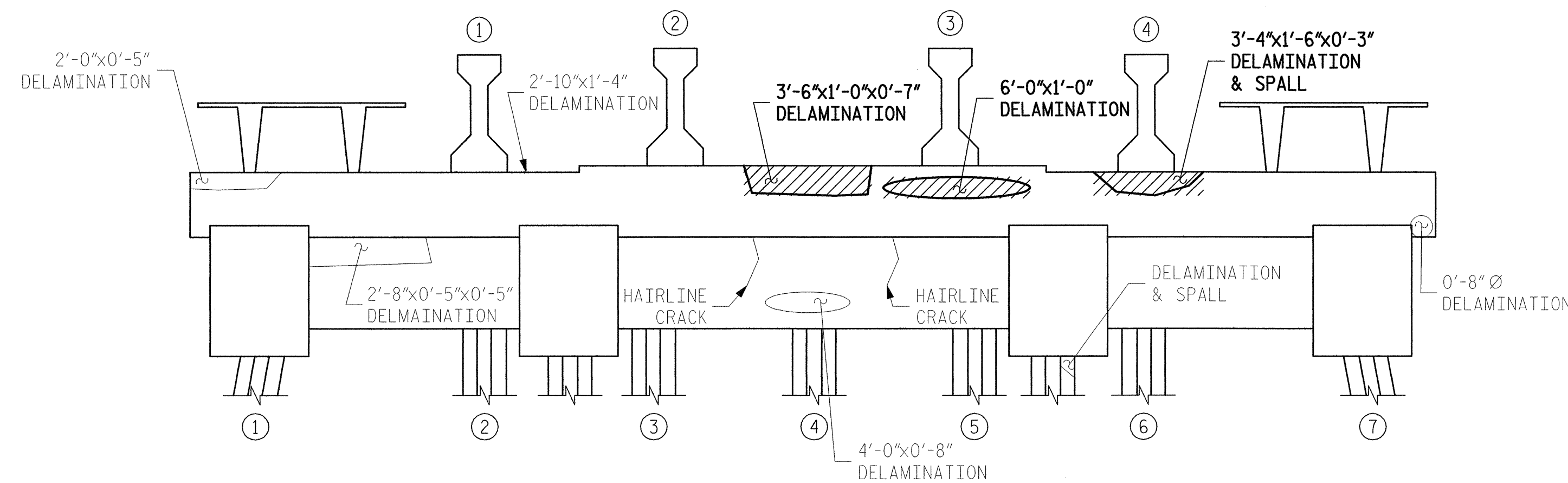




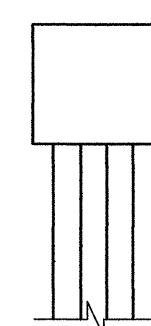
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BENT #186

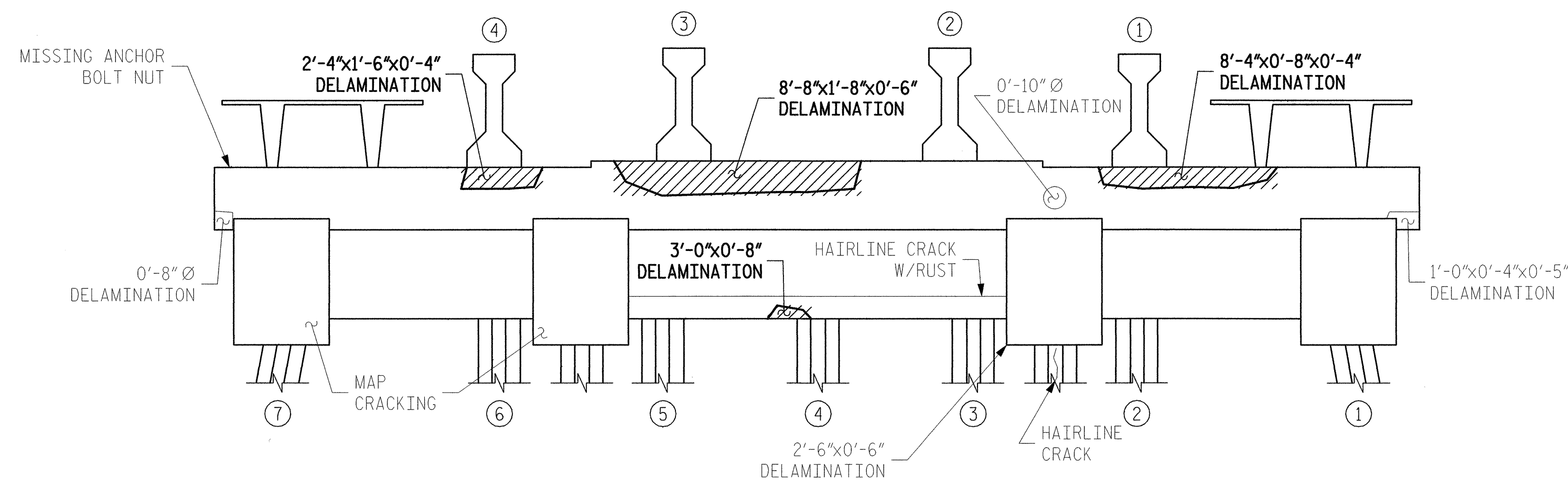
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	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	14	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	61	
EPOXY MORTAR (FORMED)	CF	-	



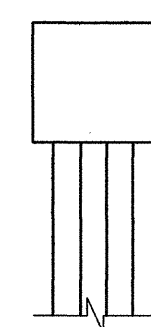
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

## BENT #186

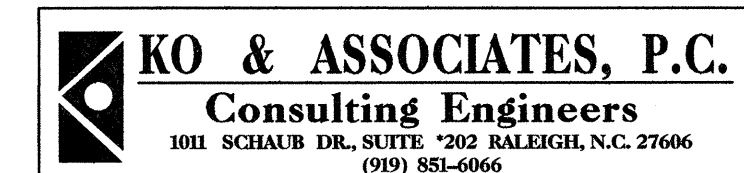
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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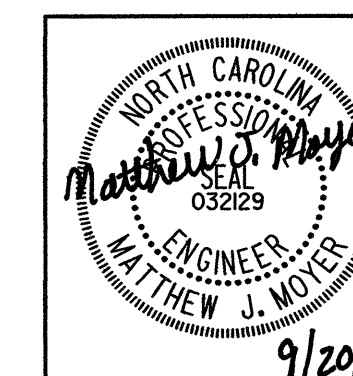
PLANS PREPARED BY



PROJECT NO. B-5014  
DARE COUNTY  
BRIDGE NO. 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**BONNER BRIDGE REPAIR**  
LOW LEVEL SUBSTRUCTURE  
REPAIR LOCATIONS  
BENT #186



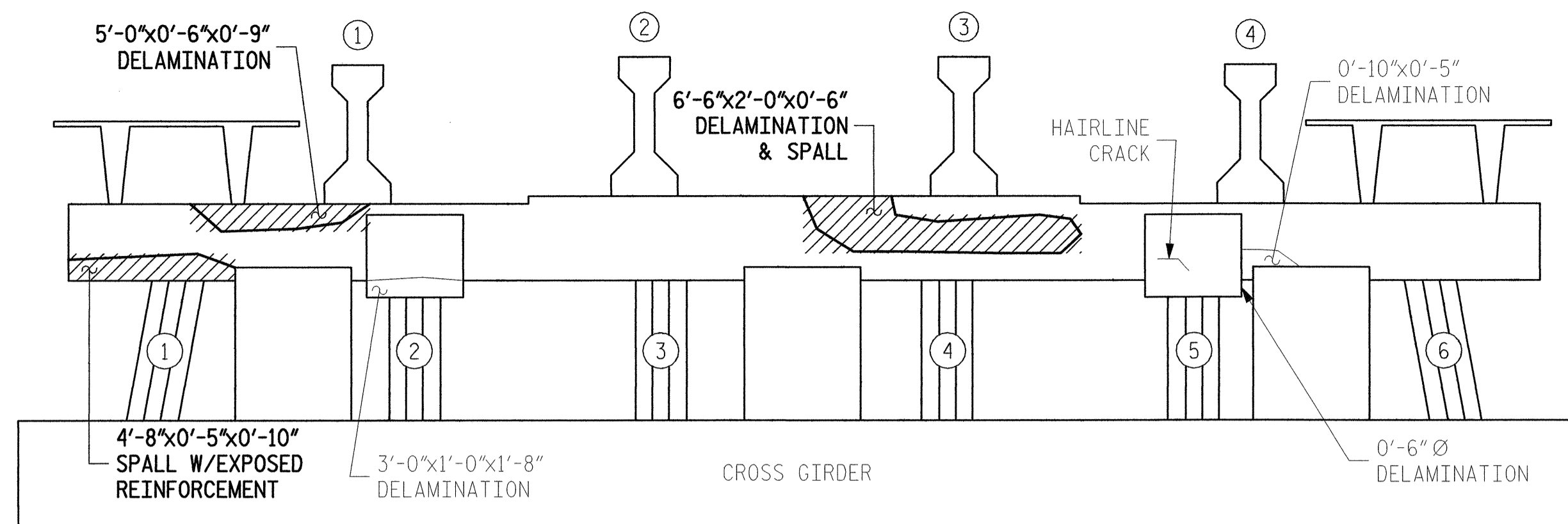
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			166

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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

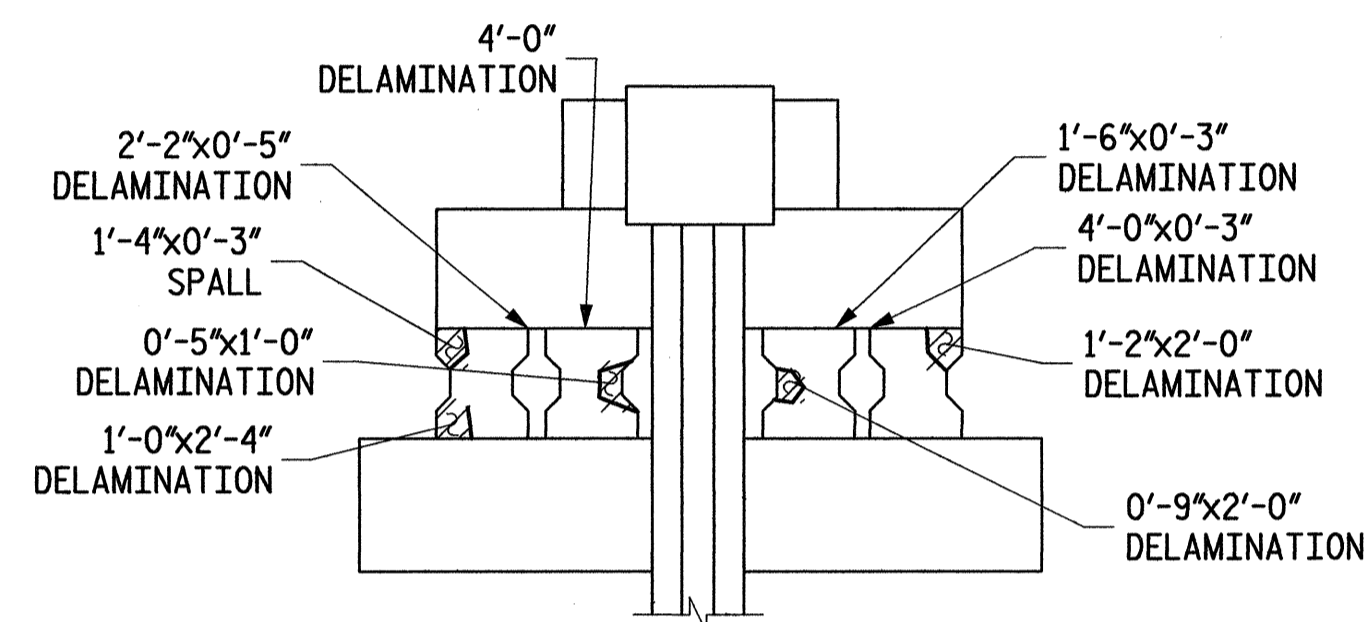
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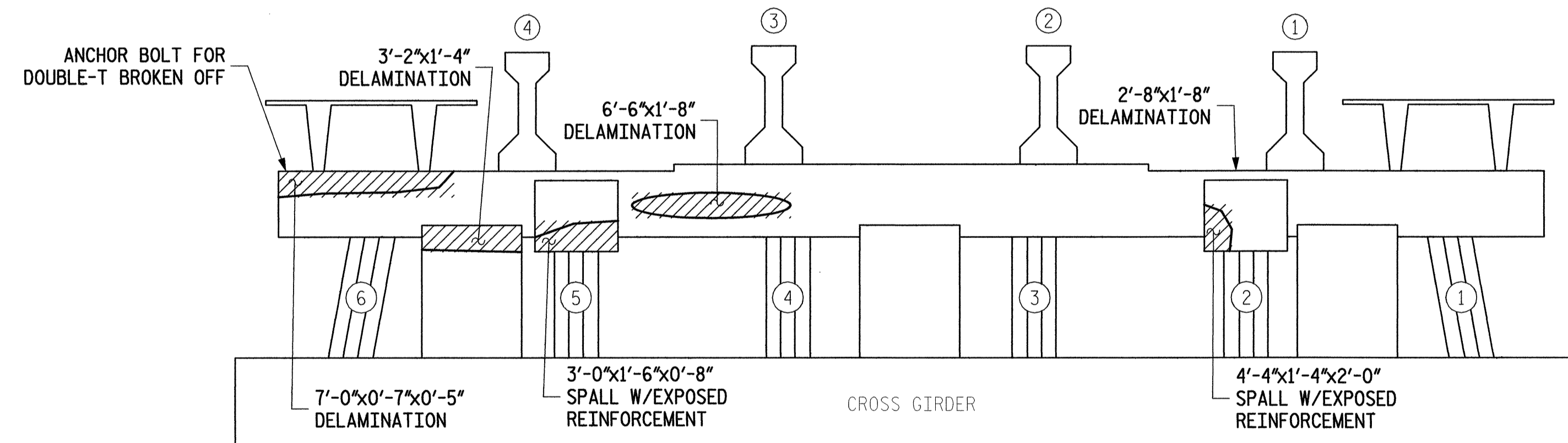
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	2	
VERTICAL SHOTCRETE	CF	15	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	49	
EPOXY MORTAR (FORMED)	CF	6	



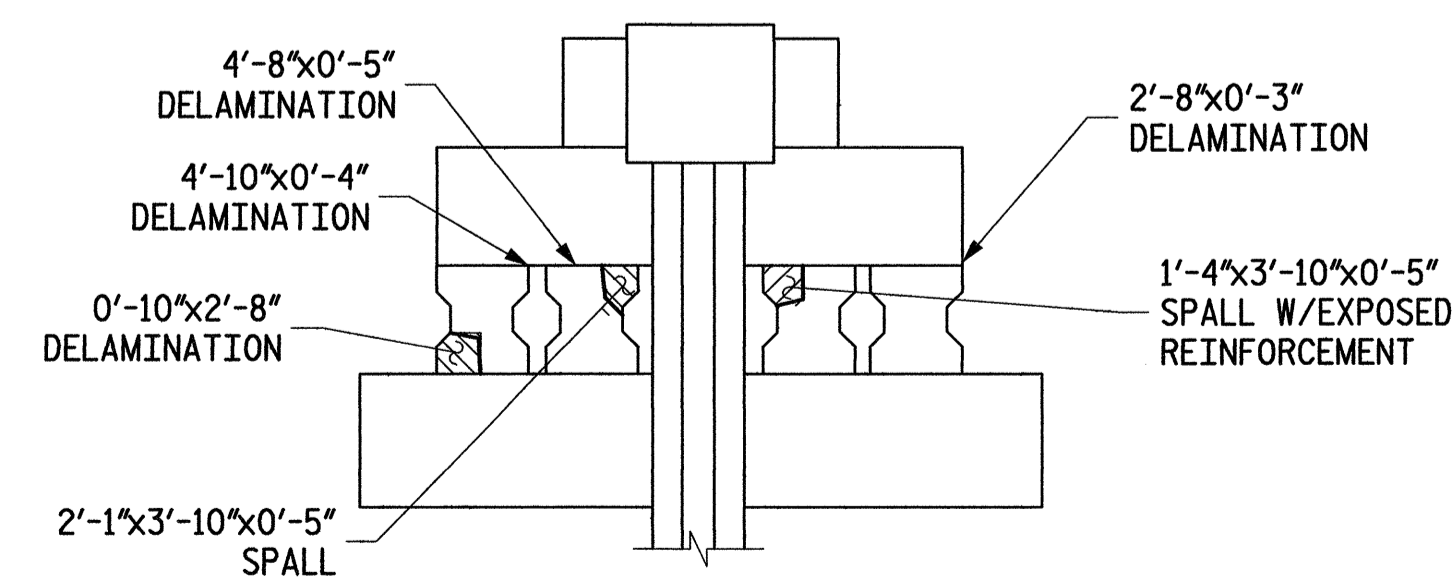
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

BENT #187

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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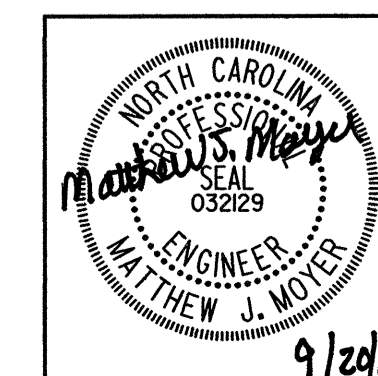
PLANS PREPARED BY

**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #187



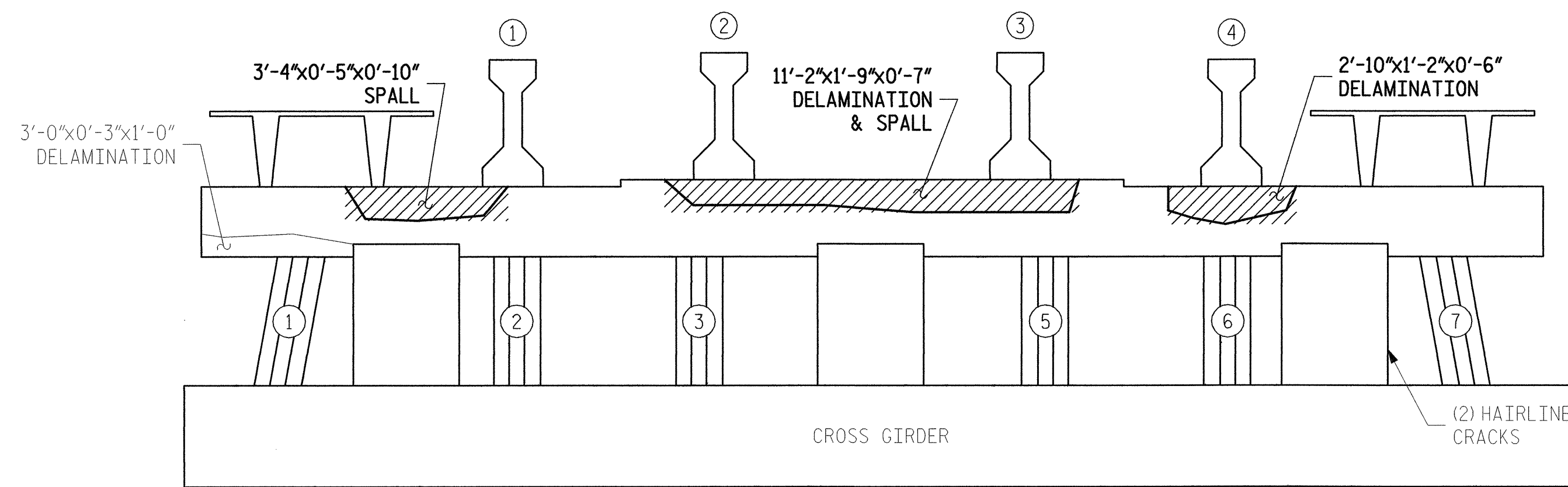
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			151
2			4			166

9/24/07

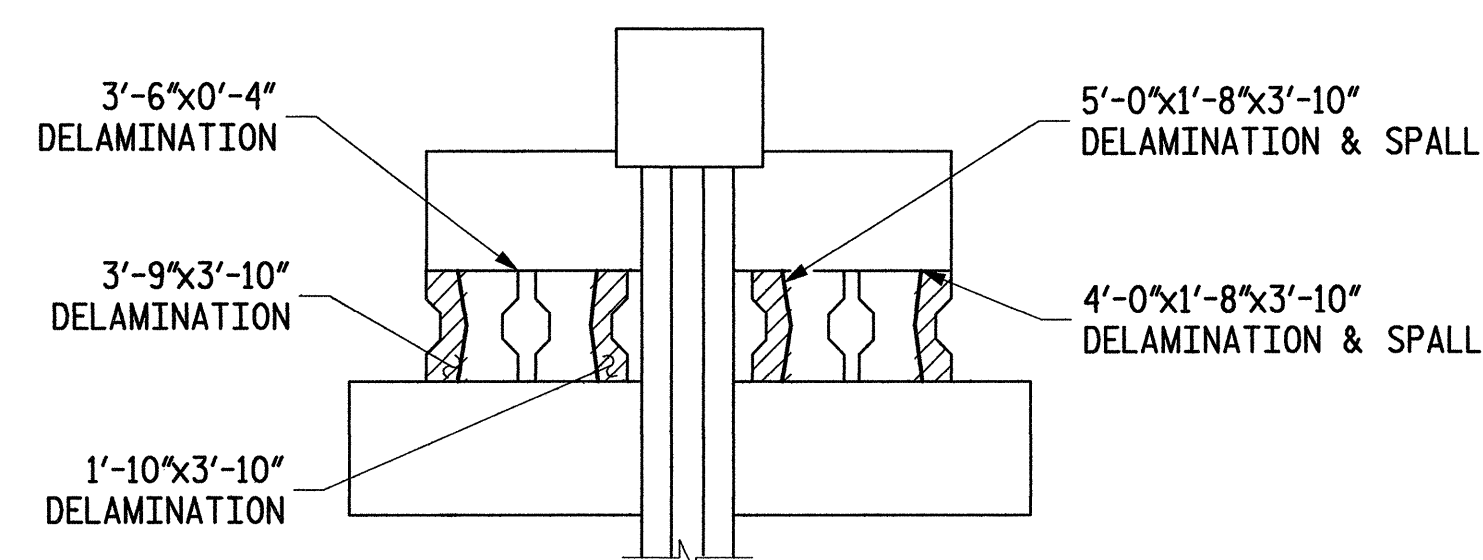
# BILL OF MATERIAL

BENT #188

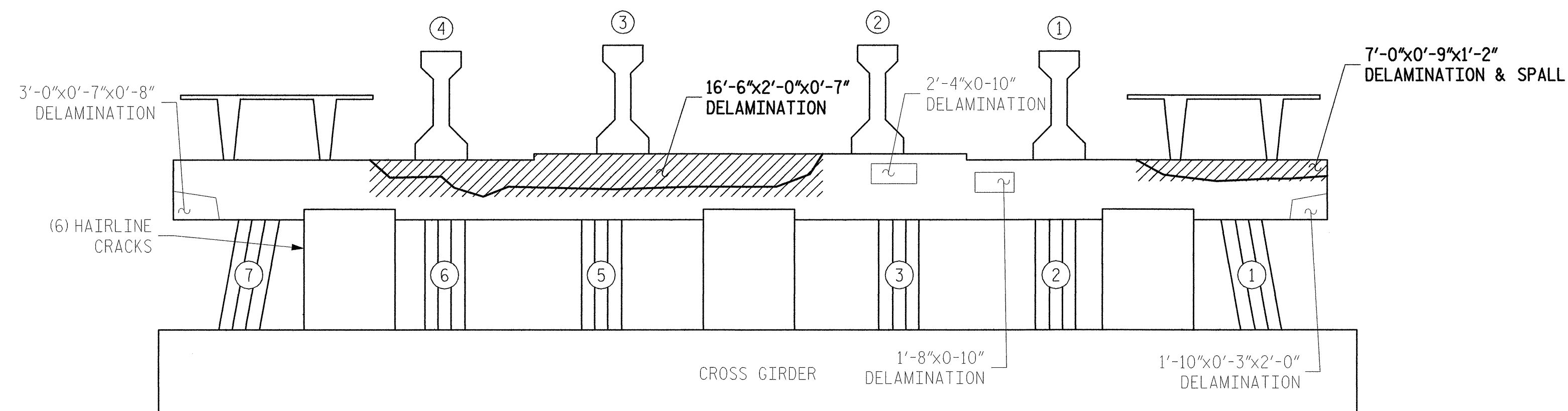
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	3
VERTICAL SHOTCRETE	CF	23
OVERHEAD SHOTCRETE	CF	-
ADDITIONAL REINFORCING	LBS	109
EPOXY MORTAR (FORMED)	CF	31



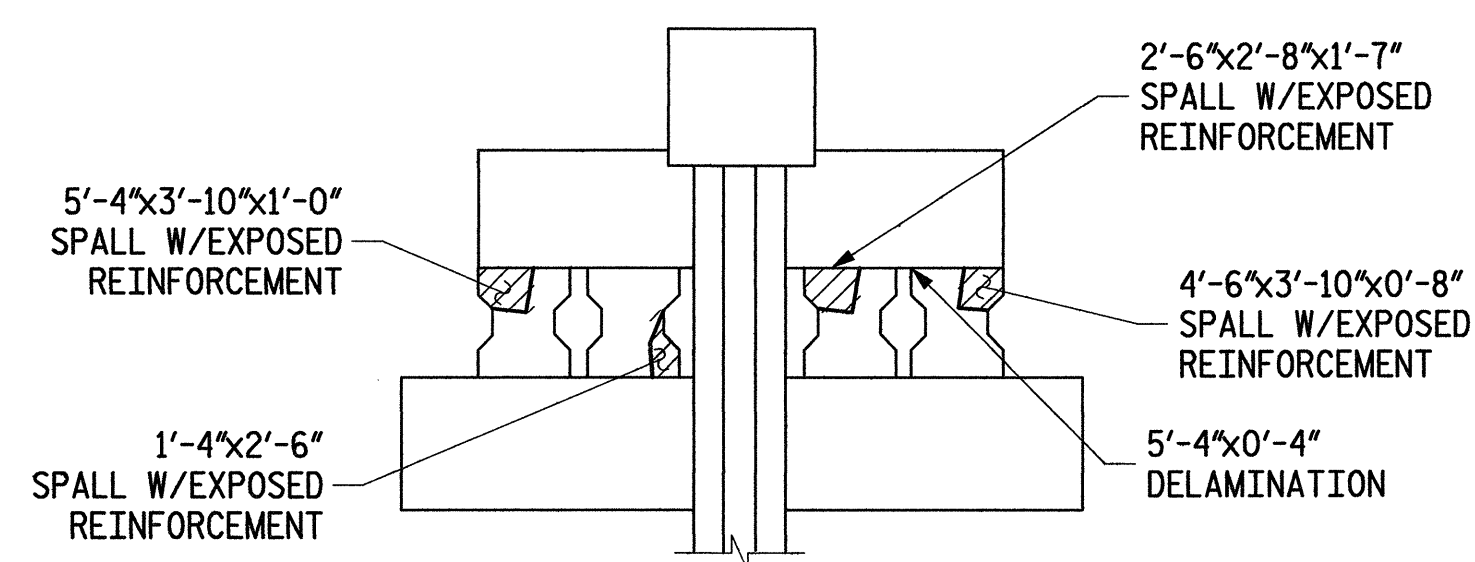
NORTH ELEVATION



EAST ELEVATION



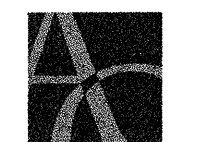
SOUTH ELEVATION



WEST ELEVATION

BENT #188

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



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 4911 Green Road, Suite 107, Raleigh, NC 27616  
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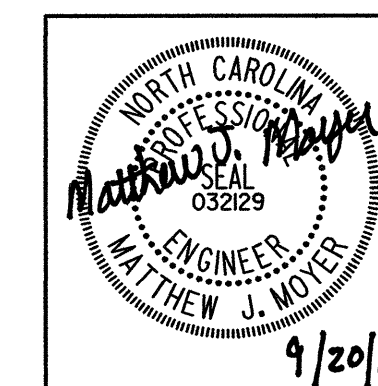
PLANS PREPARED BY

**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 1011 SCHAUB DR., SUITE #202 RALEIGH, N.C. 27606  
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PROJECT NO. B-5014  
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 BRIDGE NO. 11

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 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #188



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
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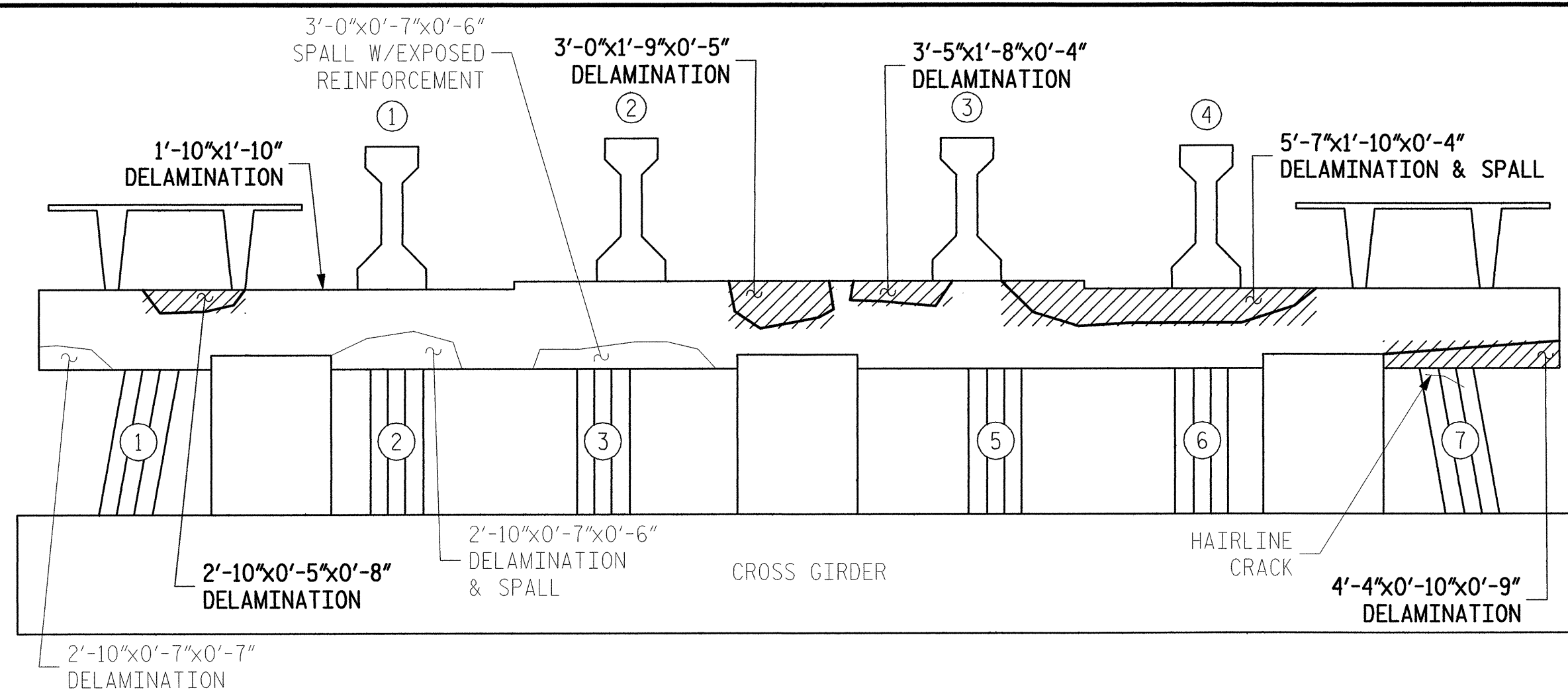
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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



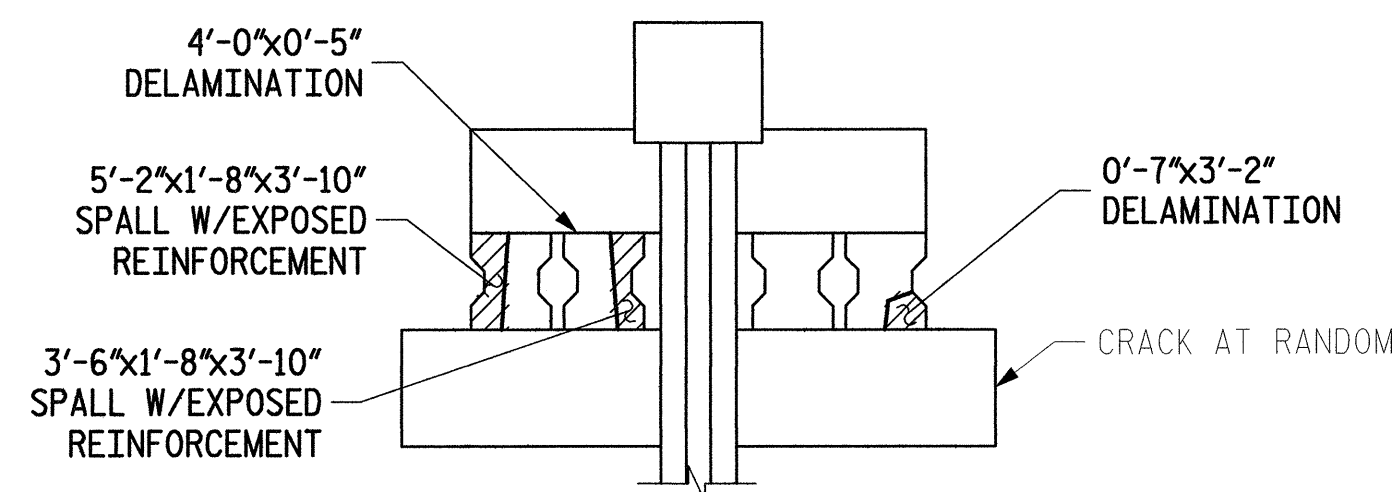
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BENT #189

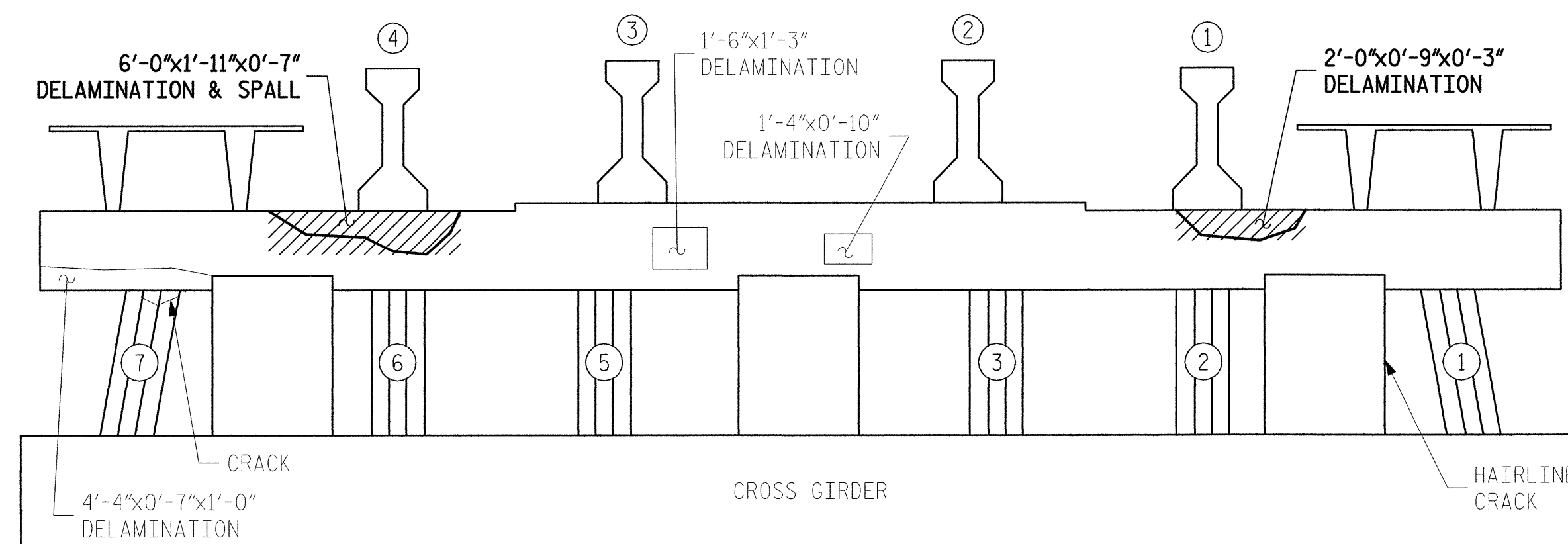
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	UNIT	PLANNED	ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	13	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	53	
EPOXY MORTAR (FORMED)	CF	26	



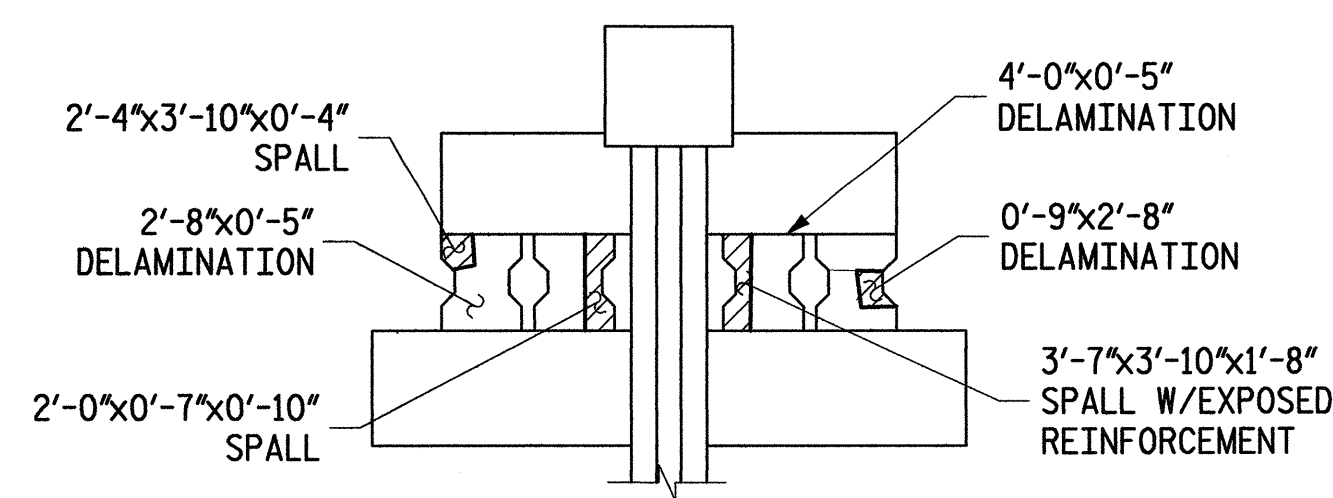
NORTH ELEVATION



EAST ELEVATION



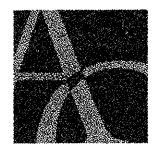
SOUTH ELEVATION



WEST ELEVATION

**BENT #189**

- DENOTES GENERAL AREA OF REPAIR
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- $0'-9'' \times 8'-1'' \times 0'-6''$  - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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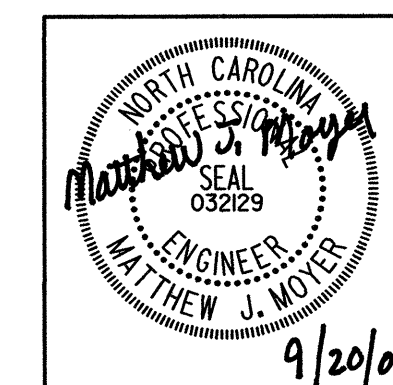
PLANS PREPARED BY



PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #189



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			166

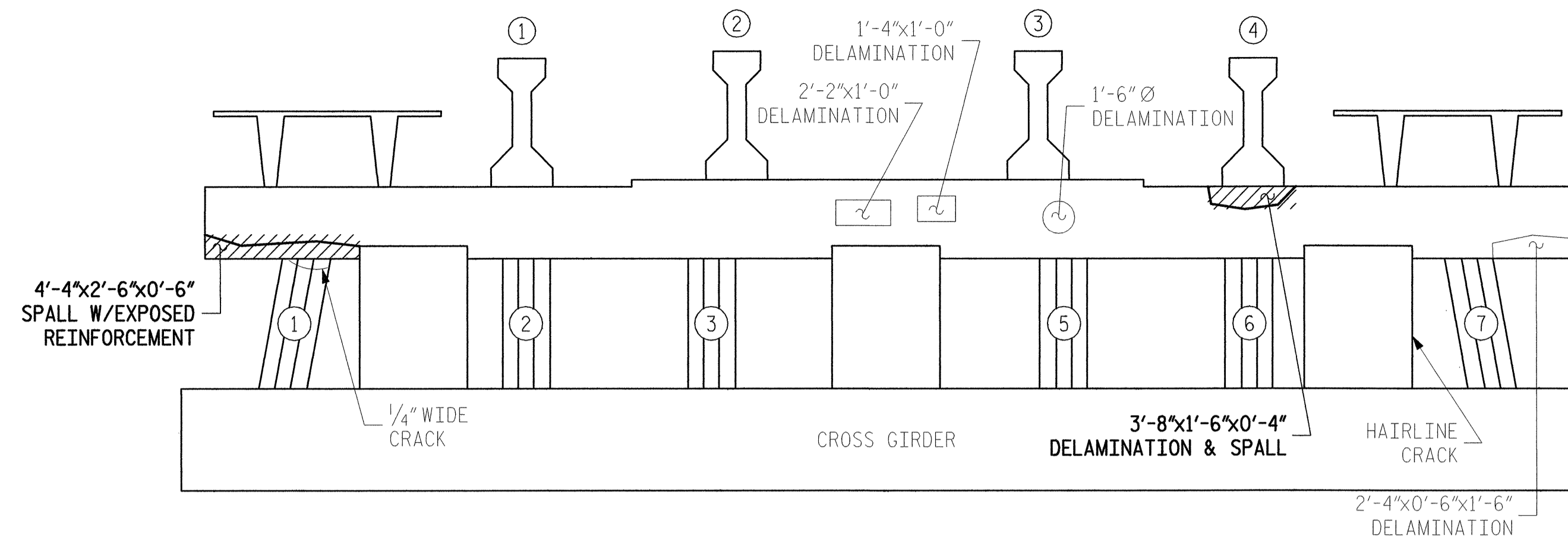
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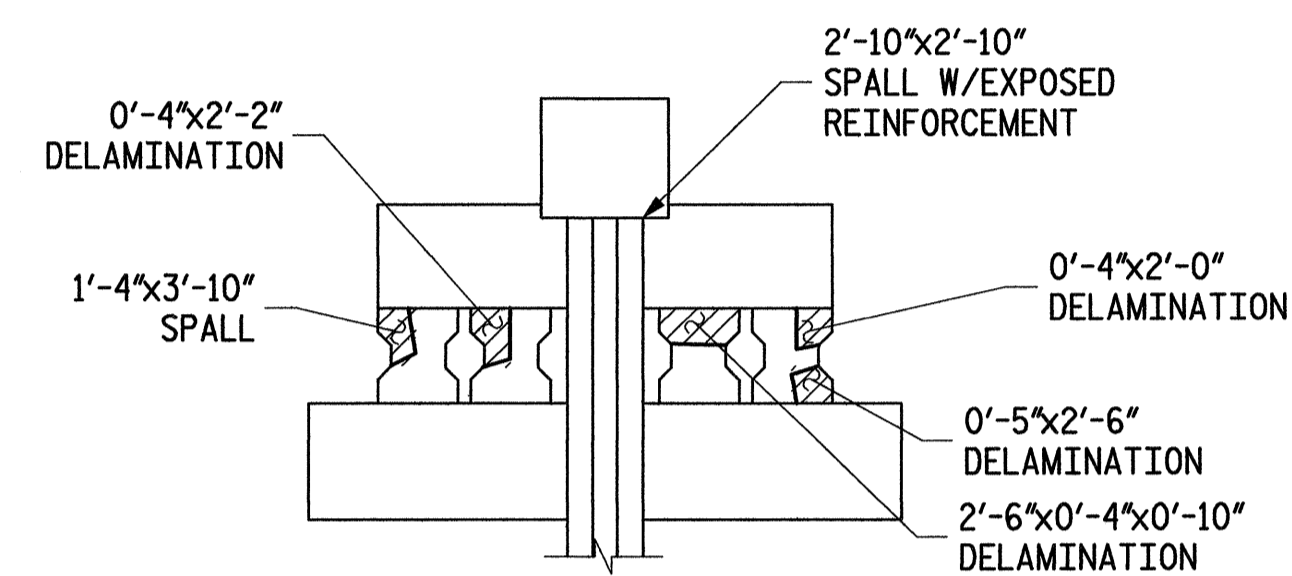
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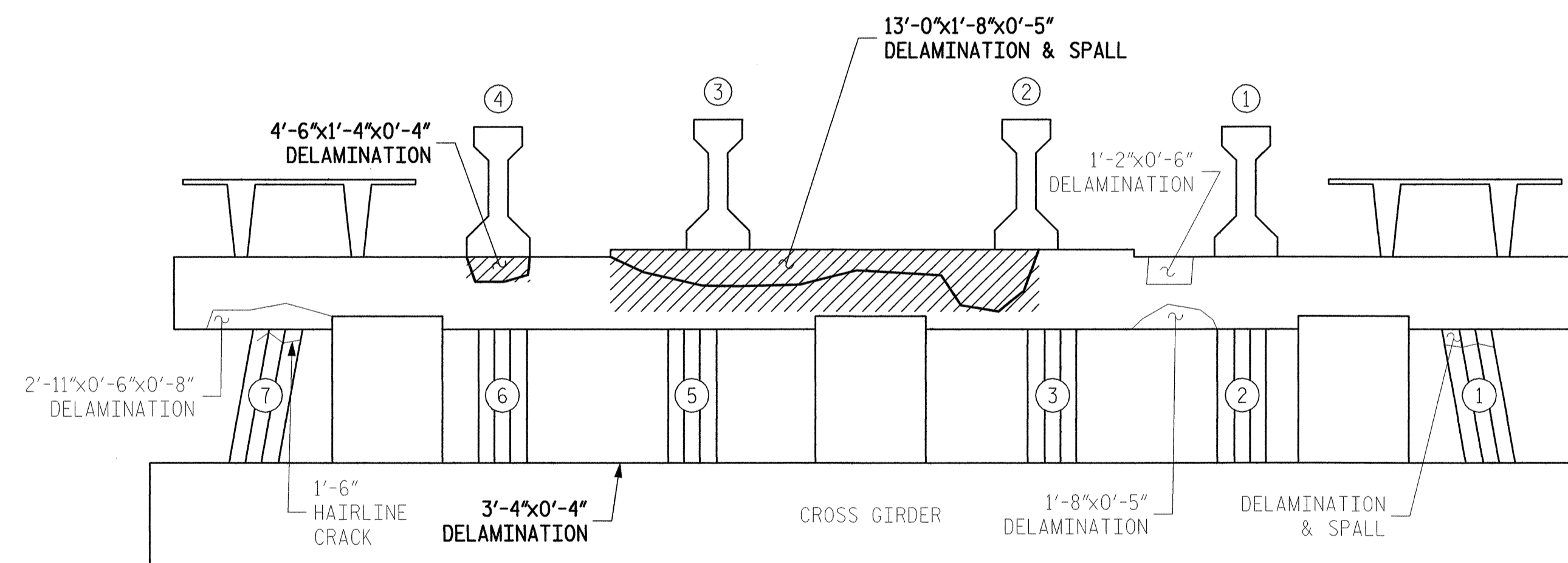
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	14	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	57	
EPOXY MORTAR (FORMED)	CF	5	



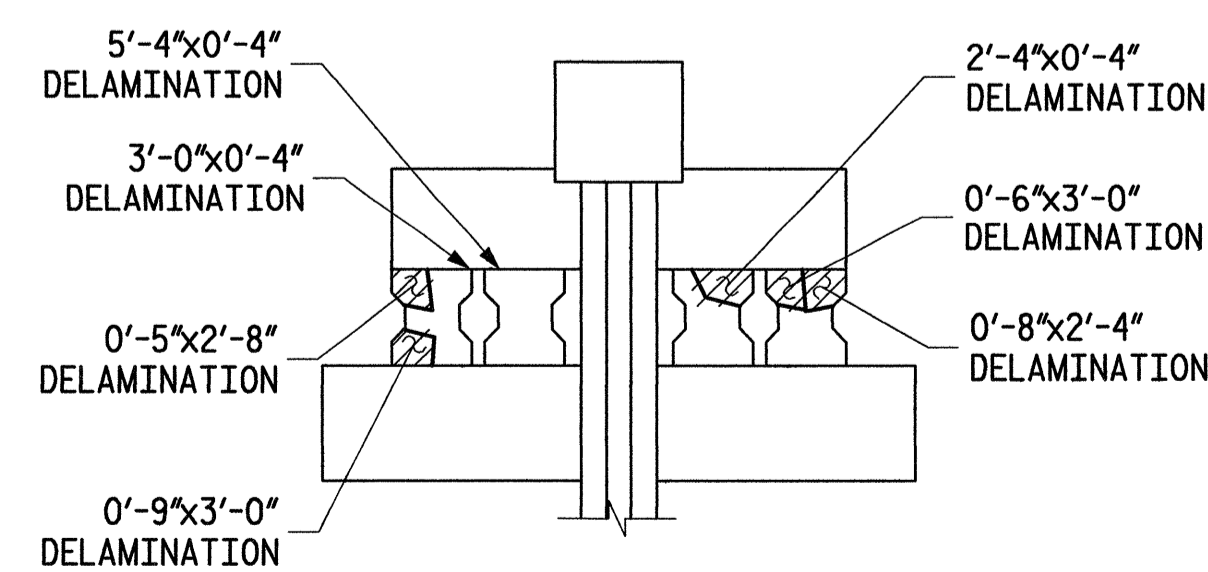
NORTH ELEVATION



EAST ELEVATION



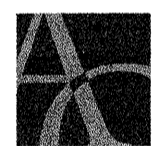
SOUTH ELEVATION



WEST ELEVATION

**BENT #190**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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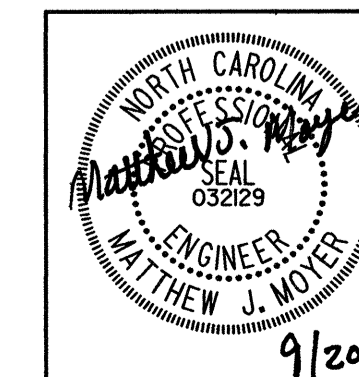
PLANS PREPARED BY



PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #190



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			166

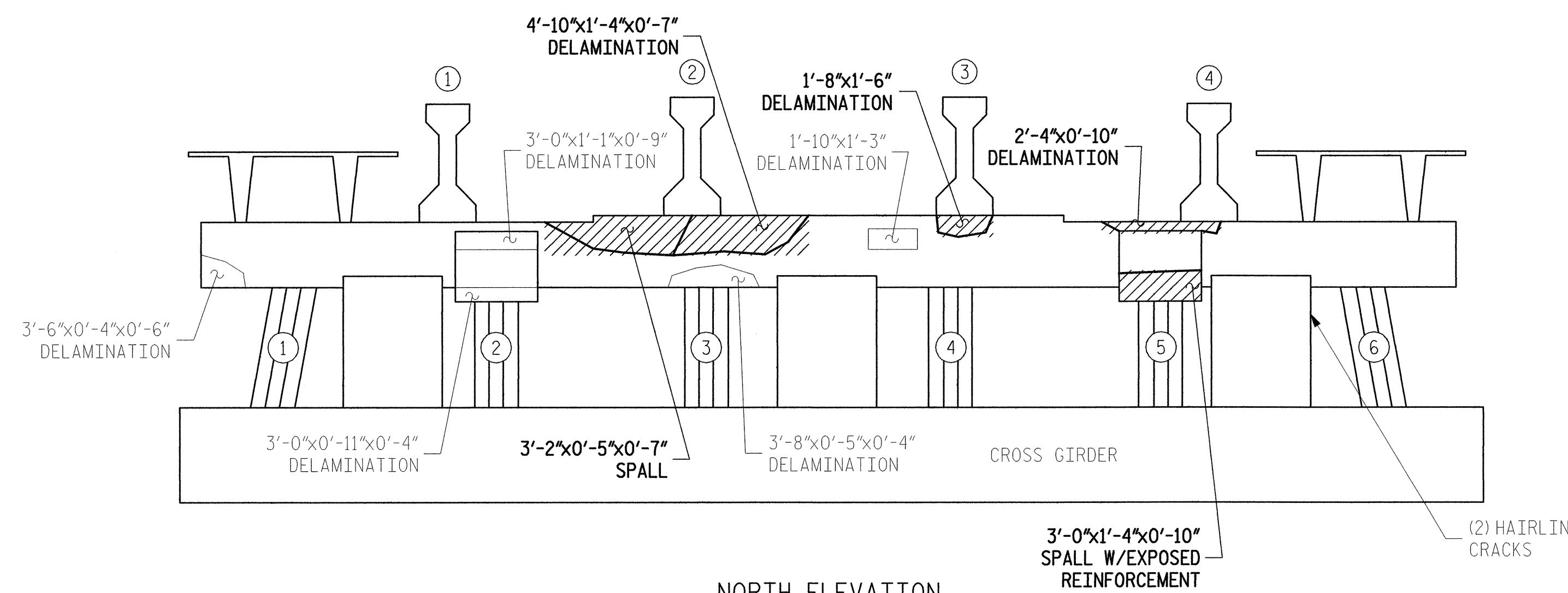
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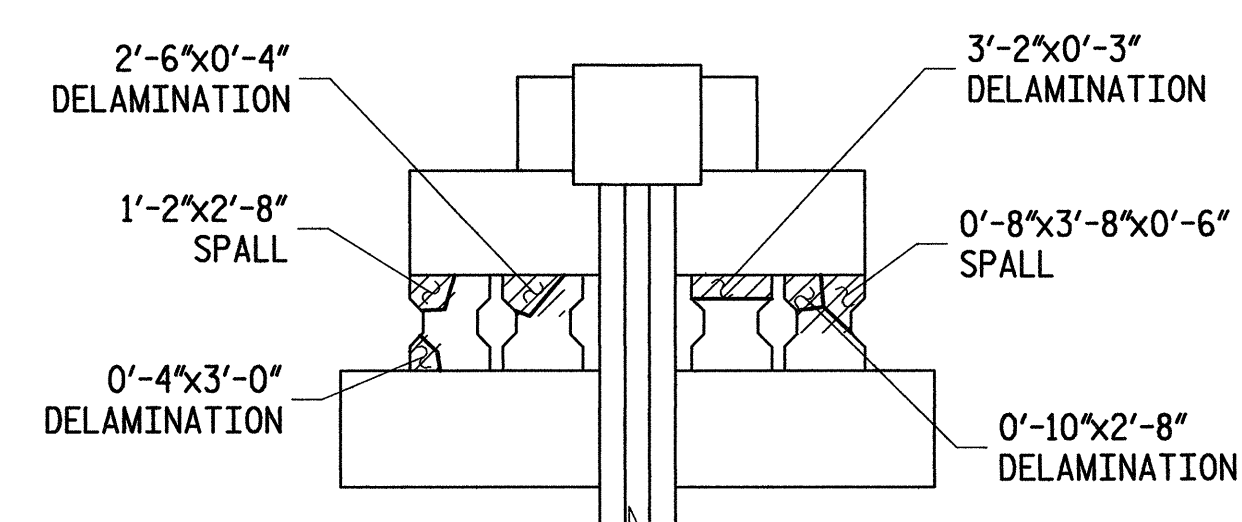
# BILL OF MATERIAL

BENT #191

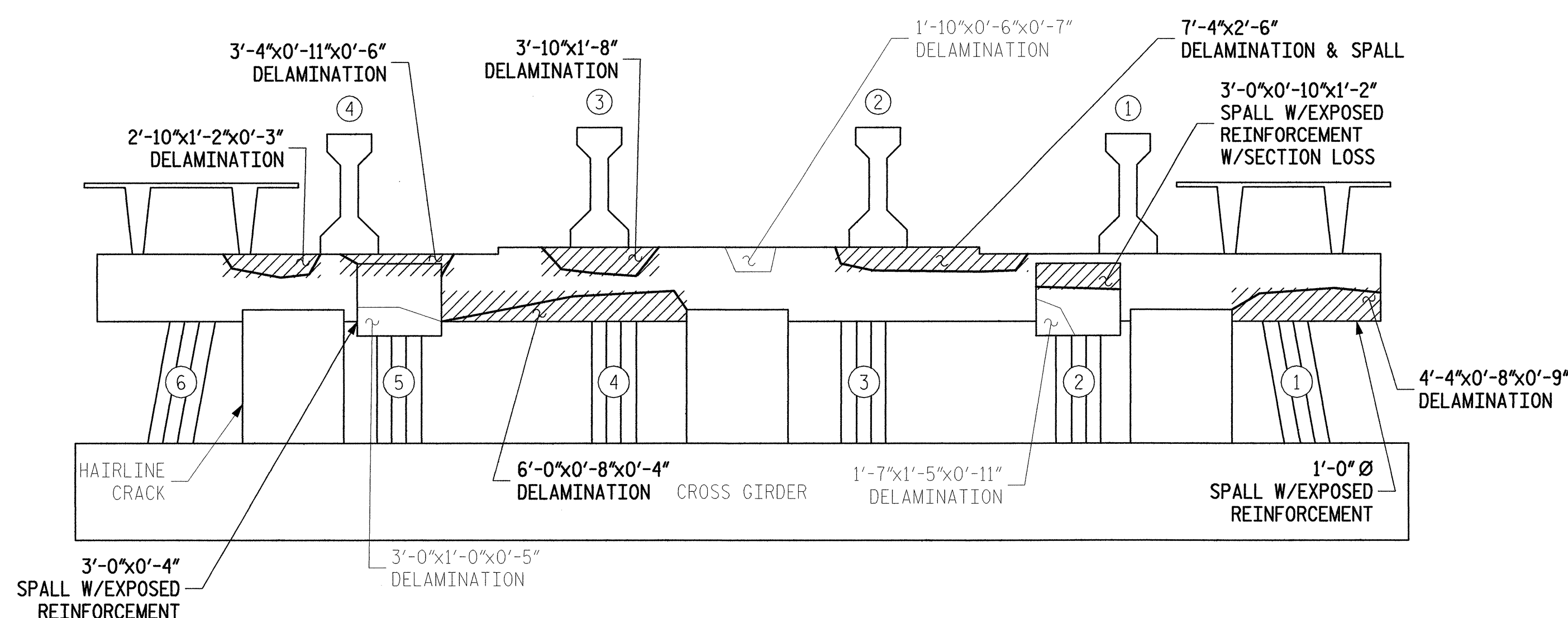
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	29	
OVERHEAD SHOTCRETE	CF	4	
ADDITIONAL REINFORCING	LBS	38	
EPOXY MORTAR (FORMED)	CF	10	



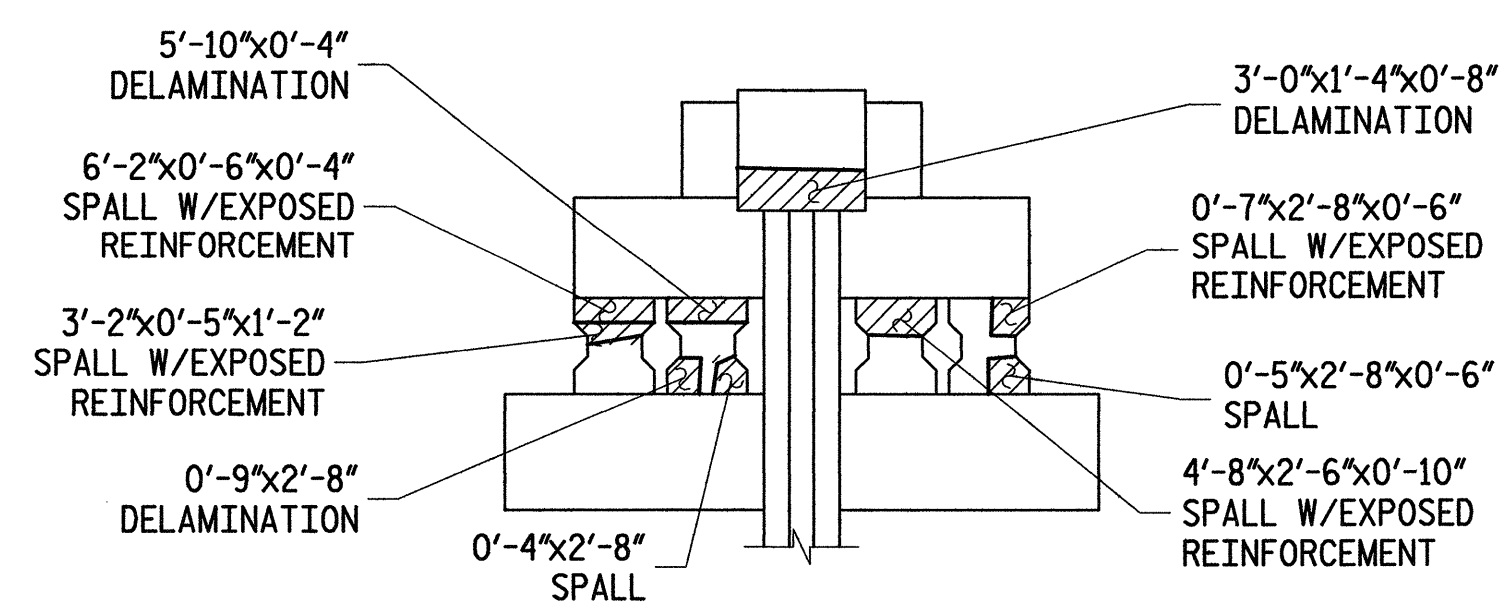
NORTH ELEVATION



EAST ELEVATION



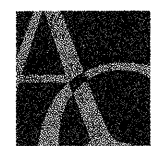
SOUTH ELEVATION



WEST ELEVATION

BENT #191

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

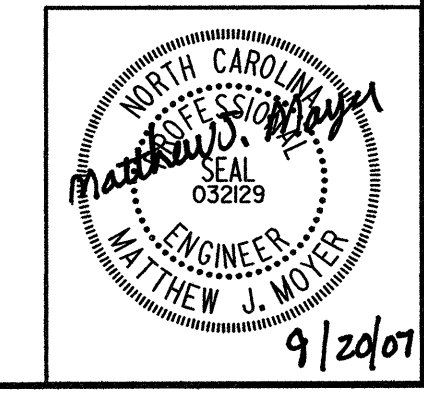


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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUB DR., SUITE #202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #191



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			155
2			4			TOTAL SHEETS 166

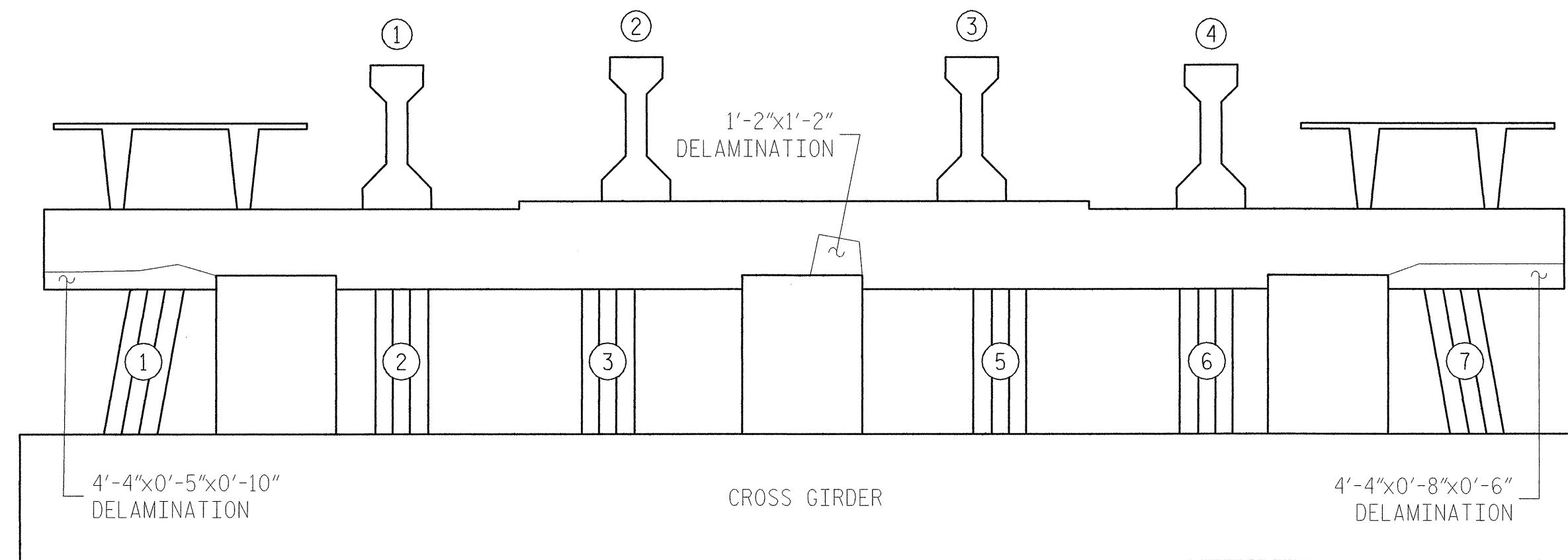
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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



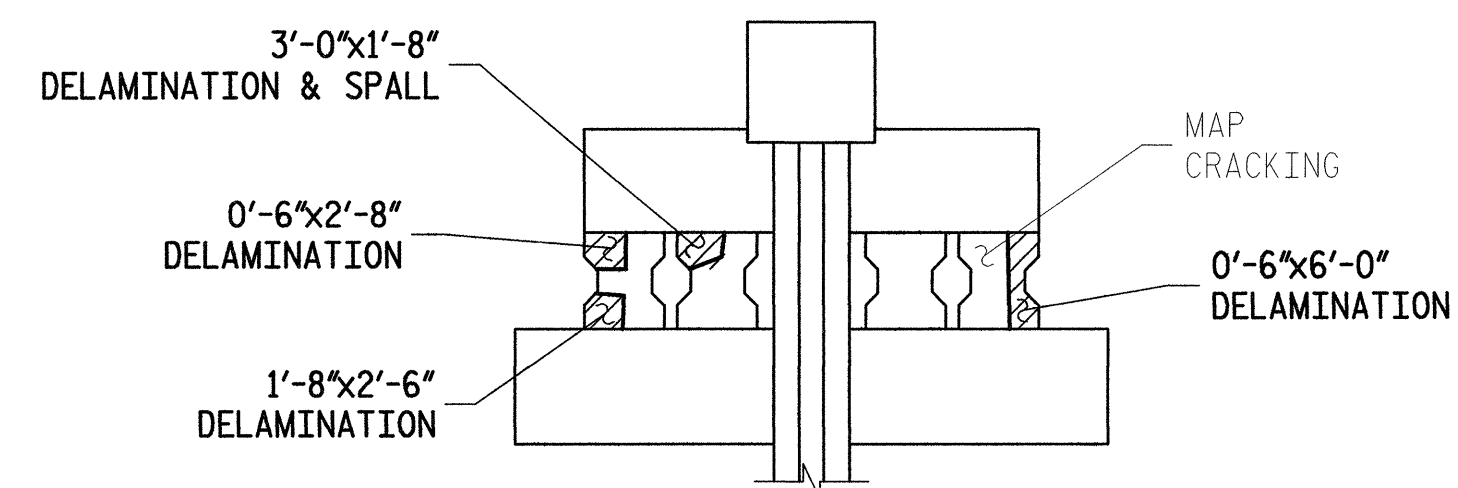
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BENT #192

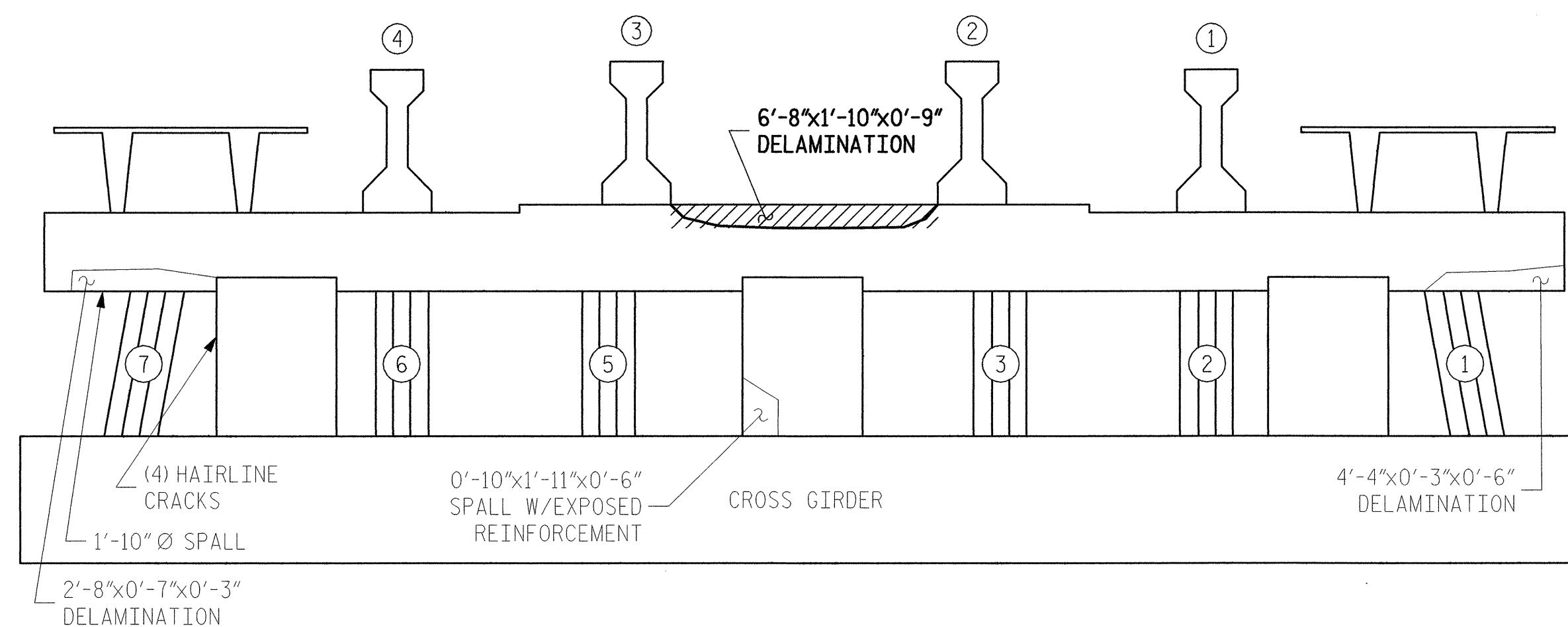
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	4	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	-	
EPOXY MORTAR (FORMED)	CF	4	



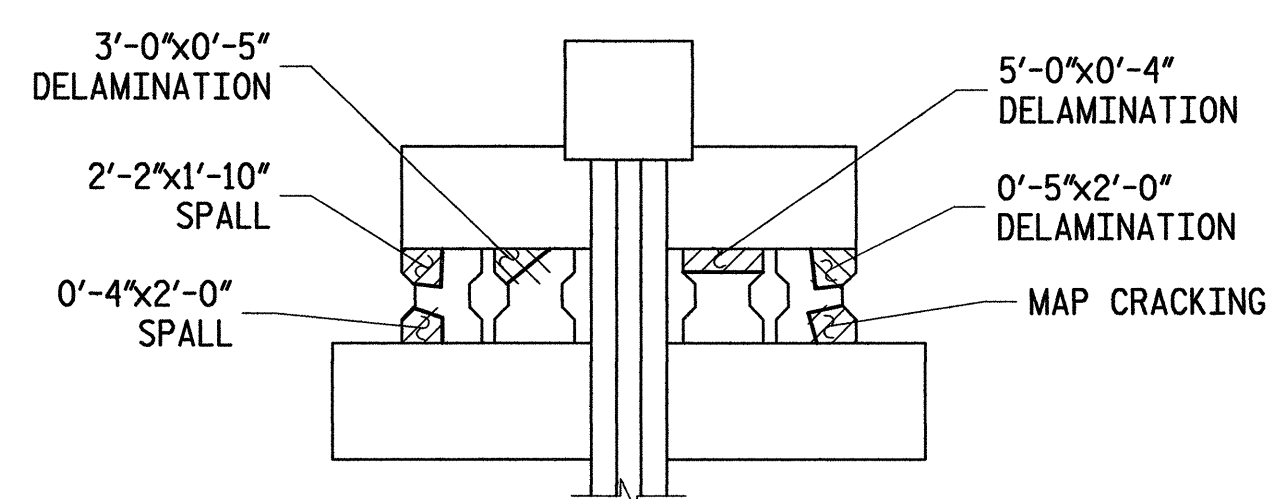
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #192**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



**ALPHA & OMEGA GROUP**  
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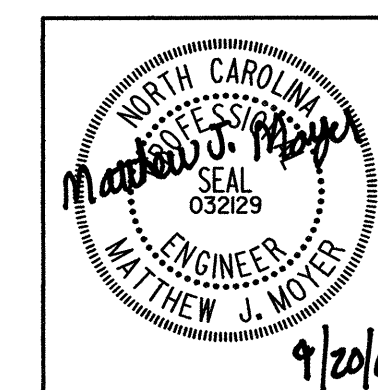
PLANS PREPARED BY

**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAU DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #192



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			156
2			4			166

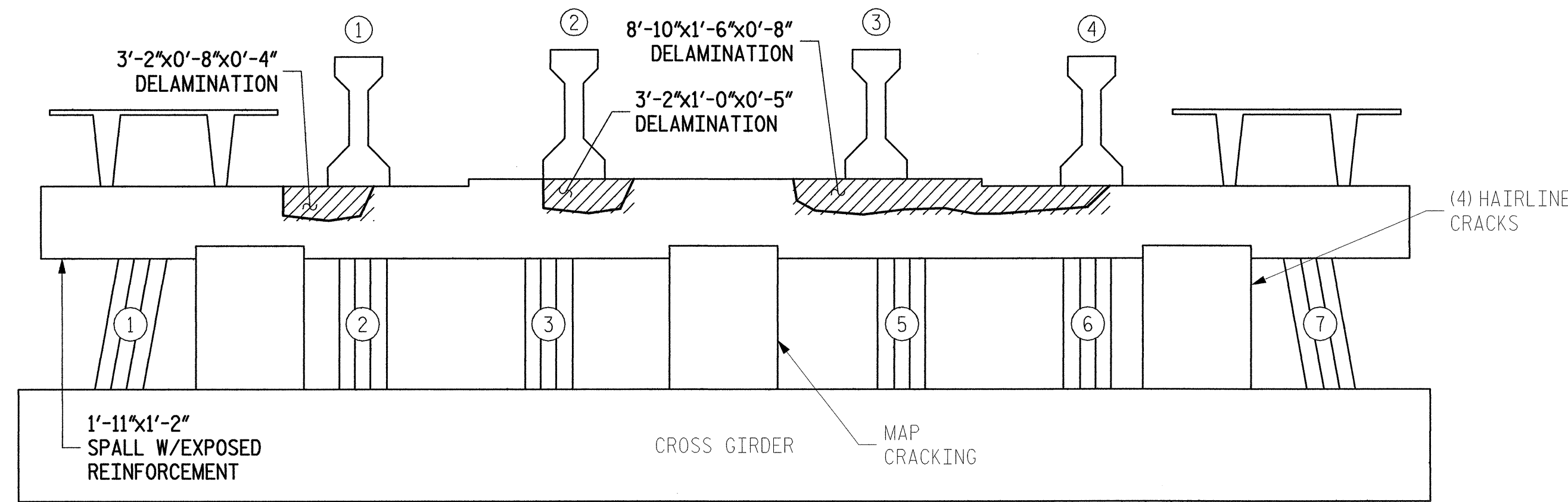
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DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

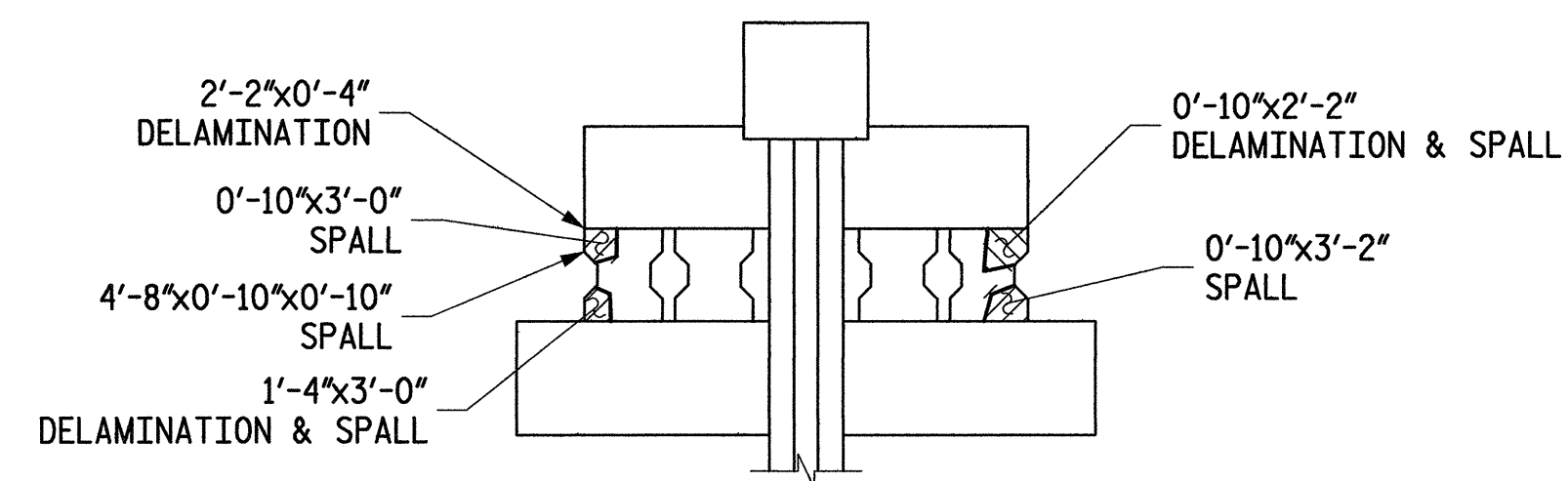
# BILL OF MATERIAL

BENT #193

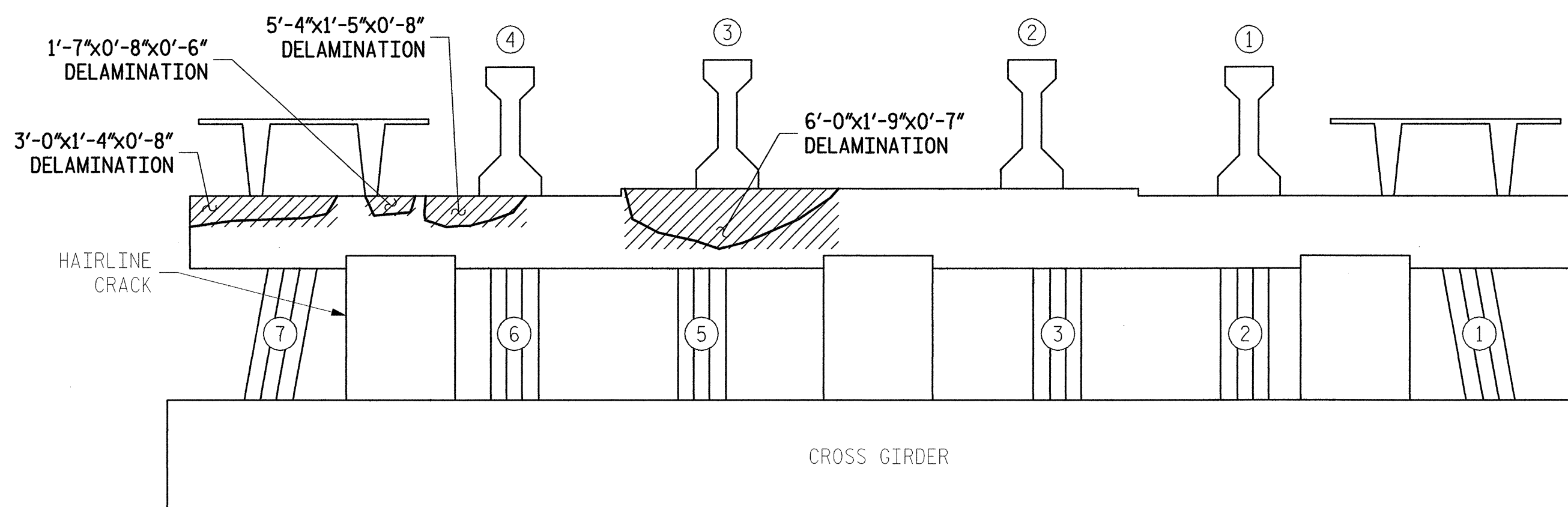
REPAIR TYPE	QUANTITIES	
	UNIT	ACTUAL
HORIZONTAL SHOTCRETE	CF	1
VERTICAL SHOTCRETE	CF	15
OVERHEAD SHOTCRETE	CF	1
ADDITIONAL REINFORCING	LBS	83
EPOXY MORTAR (FORMED)	CF	10



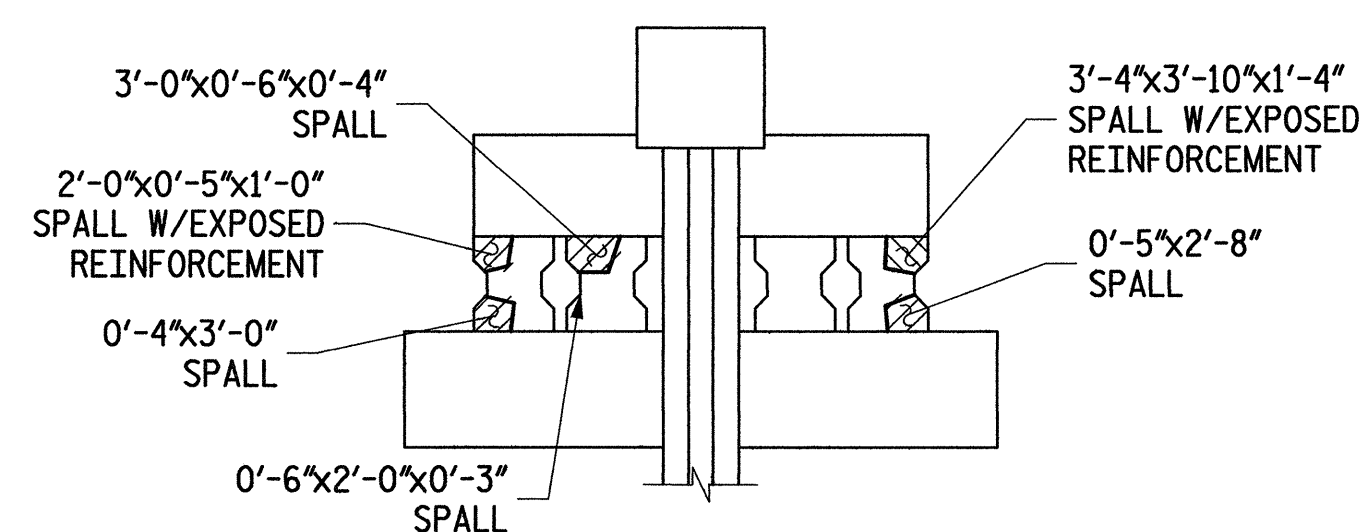
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #193**

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



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 Email: info@aogroup.com www.aogroup.com

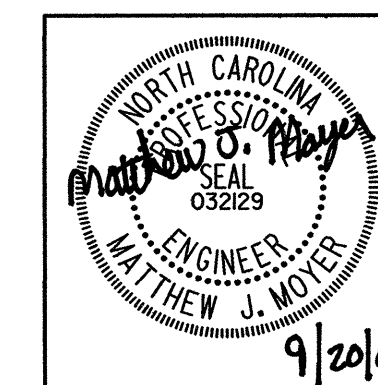
PLANS PREPARED BY

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 (919) 851-6066

PROJECT NO. B-5014  
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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #193



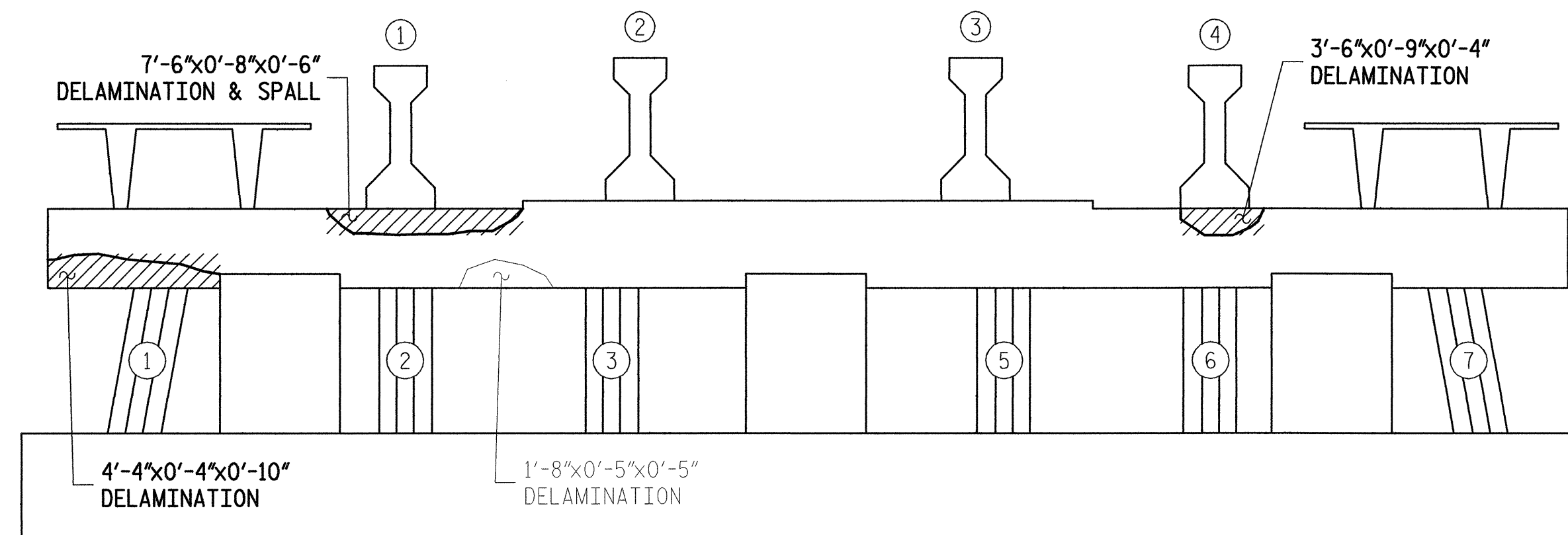
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

157  
 TOTAL SHEETS  
 166

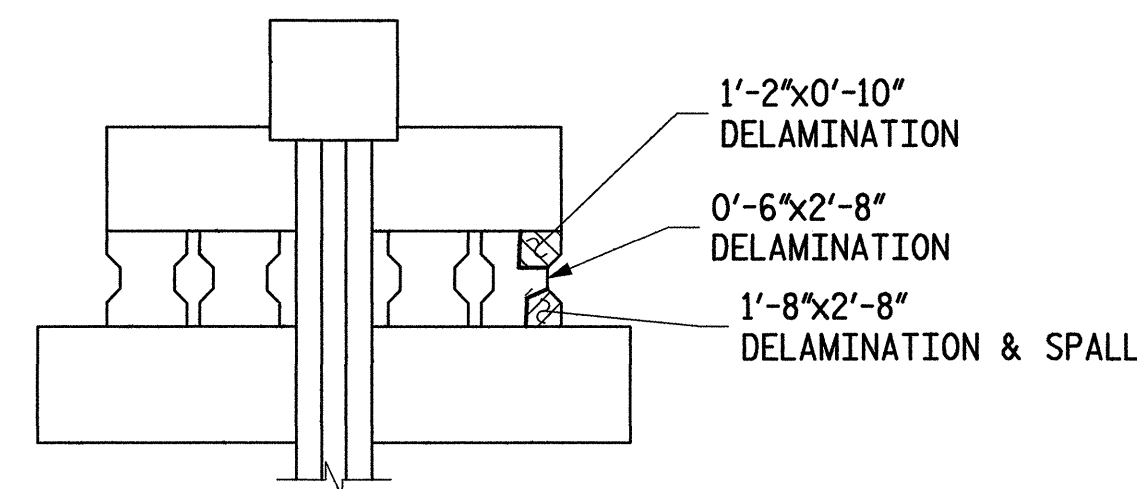
# BILL OF MATERIAL

BENT #194

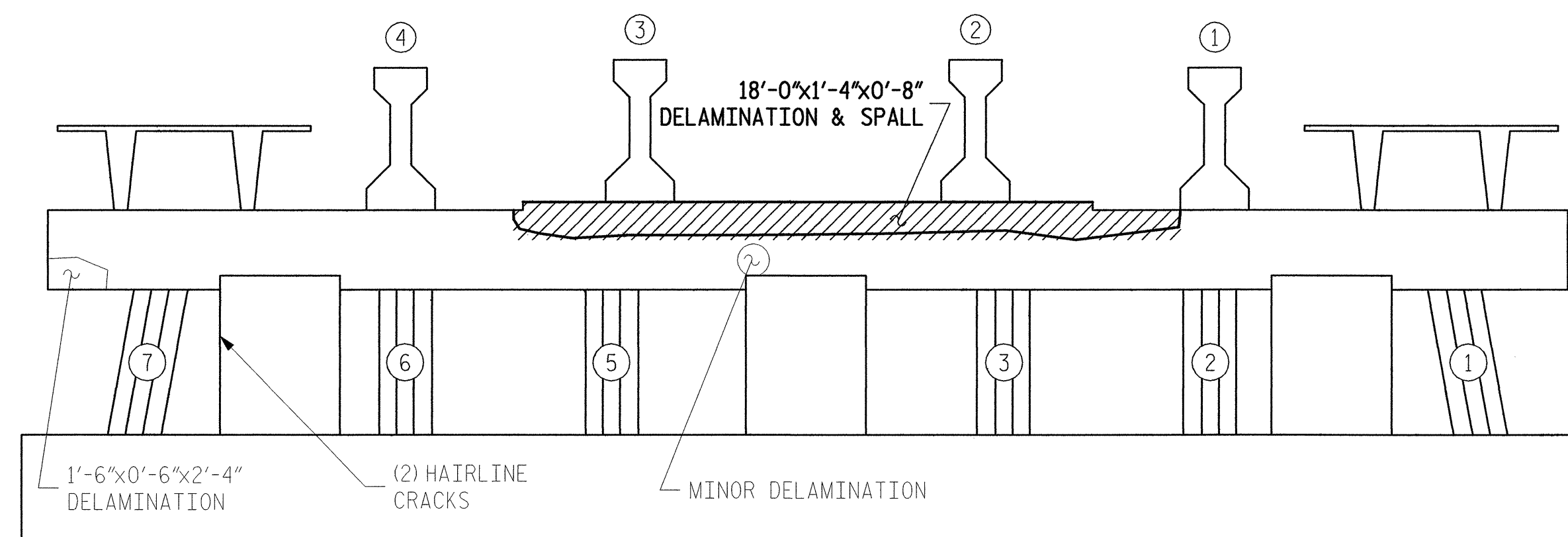
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	12	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	77	
EPOXY MORTAR (FORMED)	CF	7	



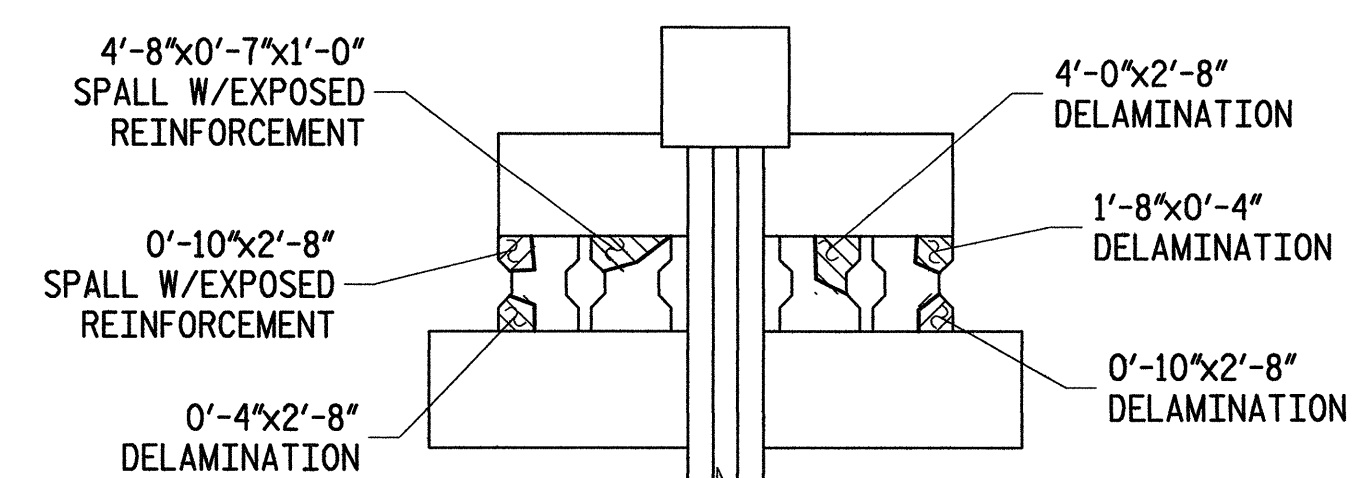
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #194**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



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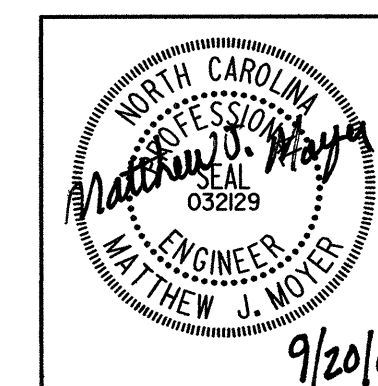
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PROJECT NO. B-5014  
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 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #194



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			158
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PLOT1: 9/18/2007 8:52:57 AM Ko & Associates, P.C.  
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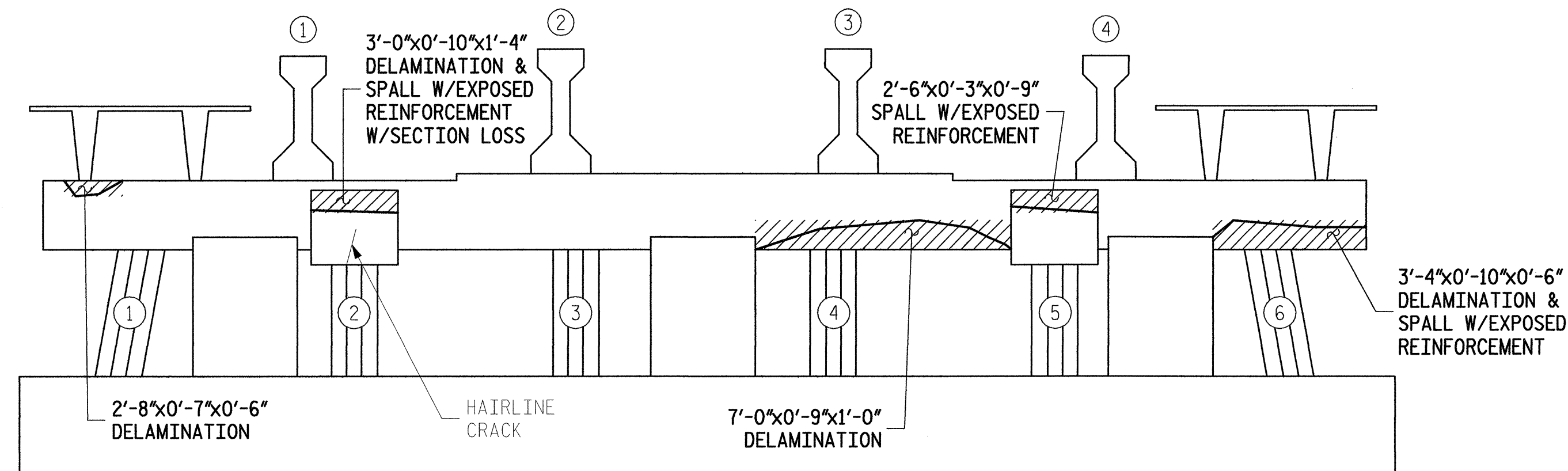
DRAWN BY B.E. LANNING DATE SEPT. 2007  
 CHECKED BY M.J. MOYER DATE SEPT. 2007



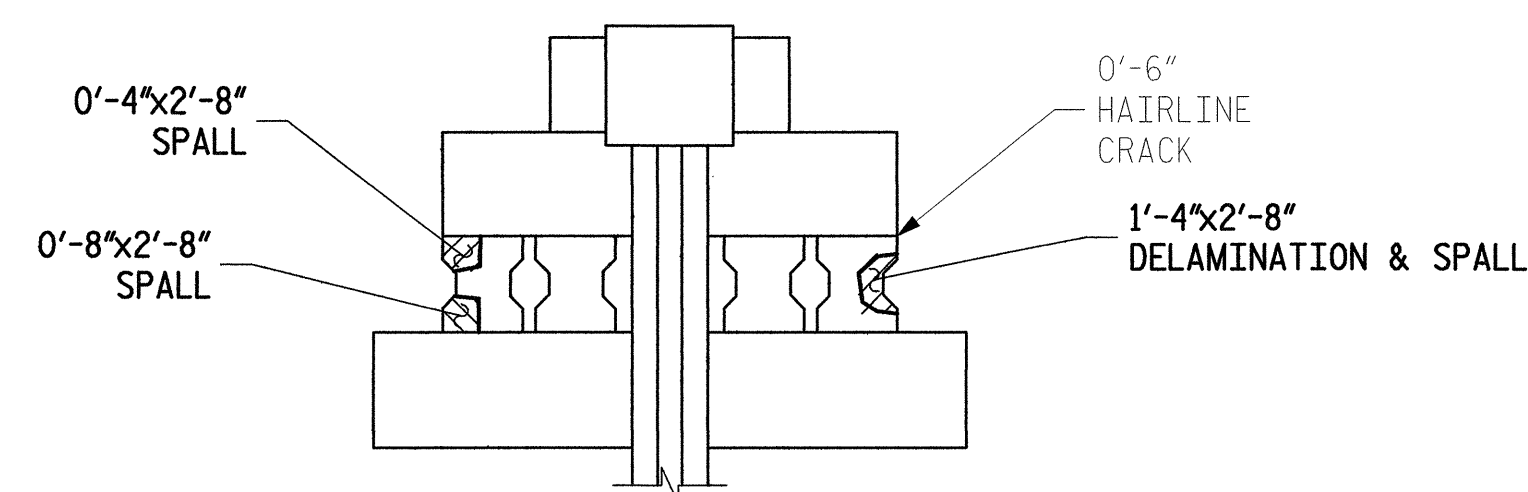
# BILL OF MATERIAL

BENT #195

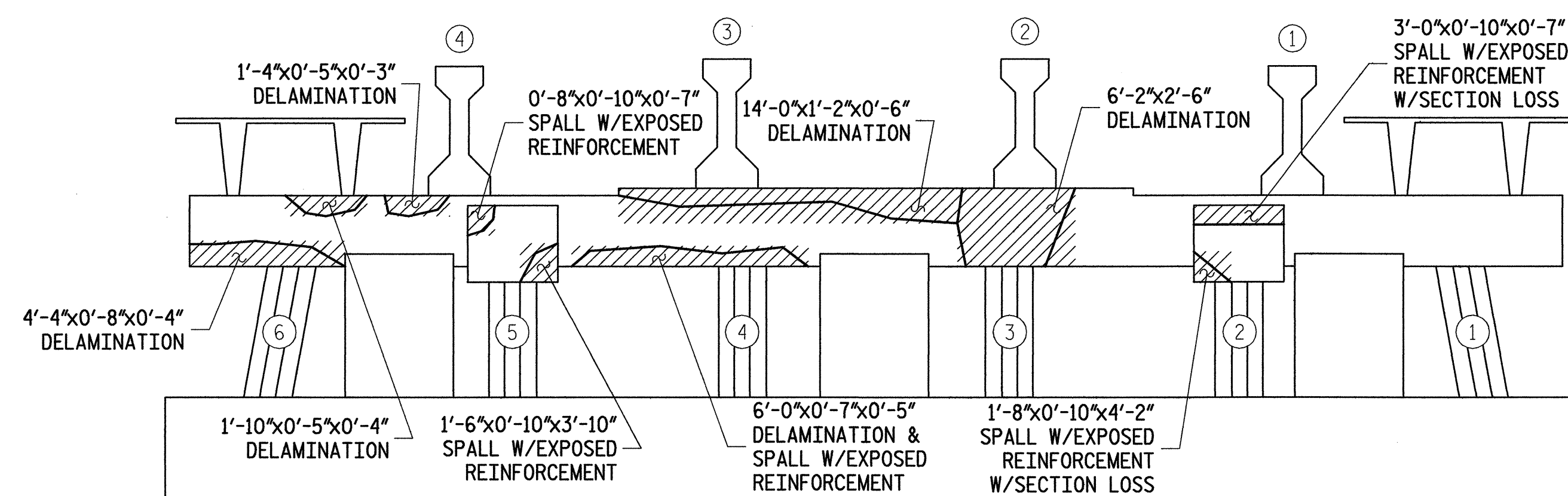
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	17	
OVERHEAD SHOTCRETE	CF	10	
ADDITIONAL REINFORCING	LBS	53	
EPOXY MORTAR (FORMED)	CF	6	



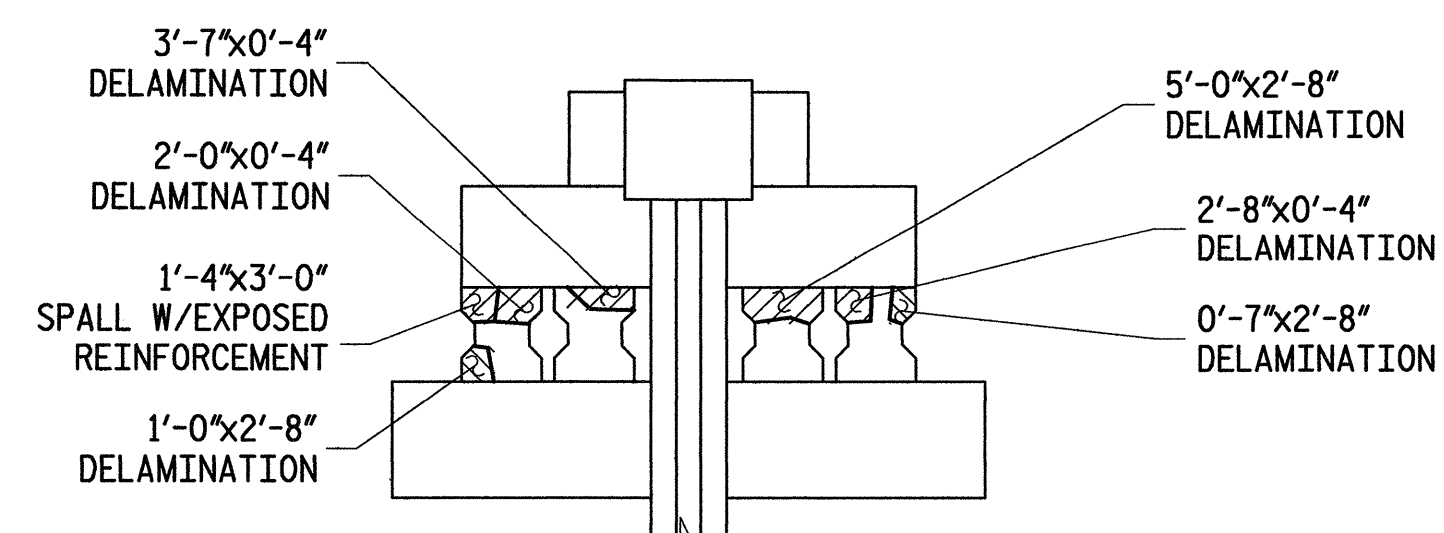
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

BENT #195

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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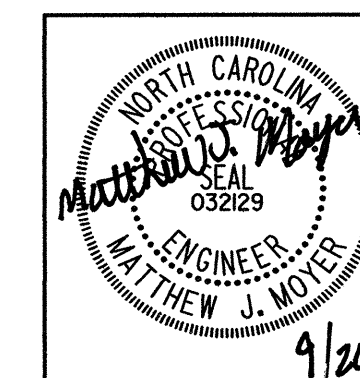
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PROJECT NO. B-5014  
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #195



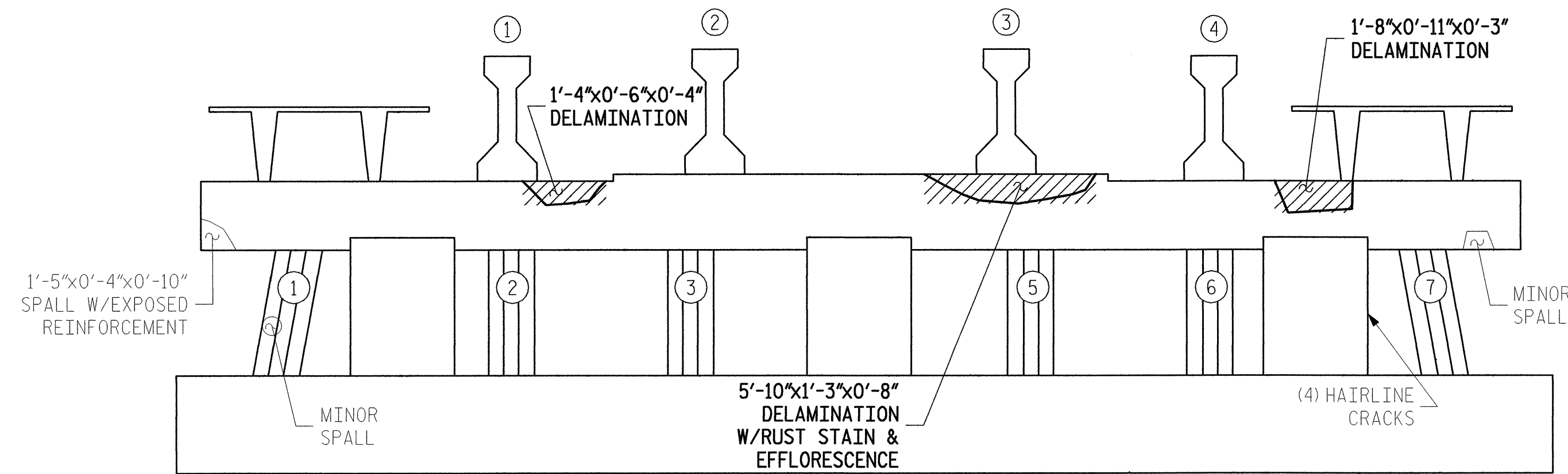
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

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 DRAWN BY: B.E. LANNING DATE: SEPT. 2007  
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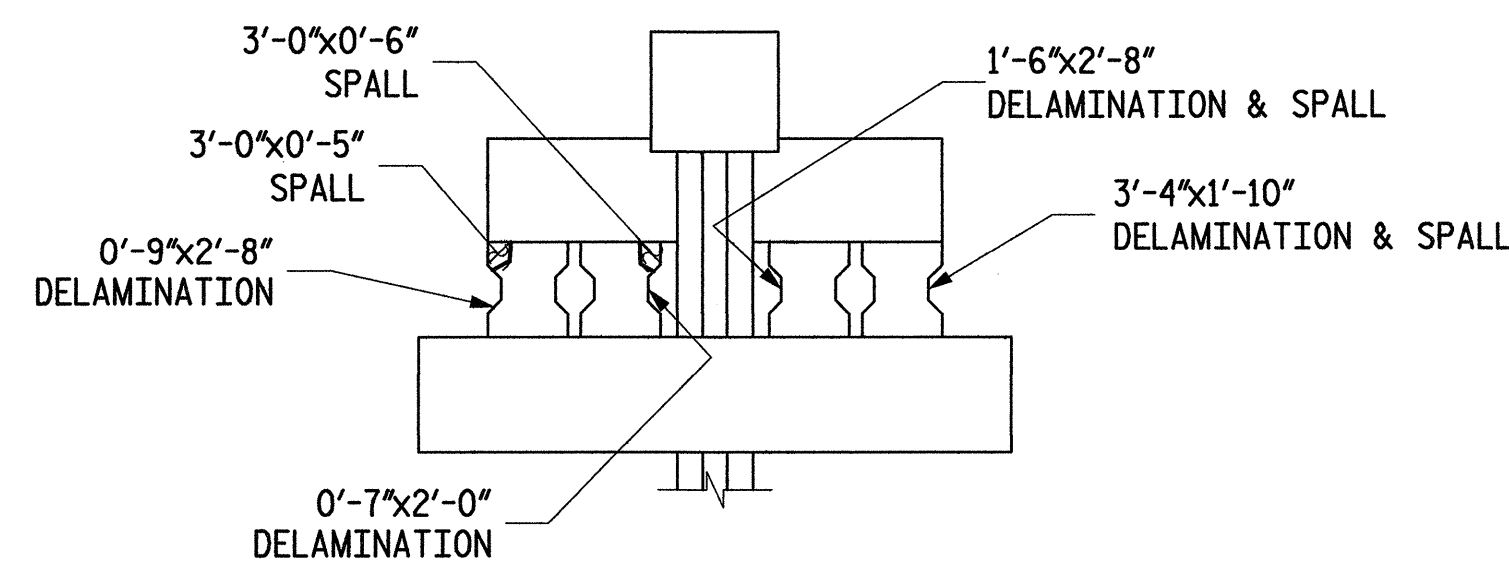
# BILL OF MATERIAL

BENT #196

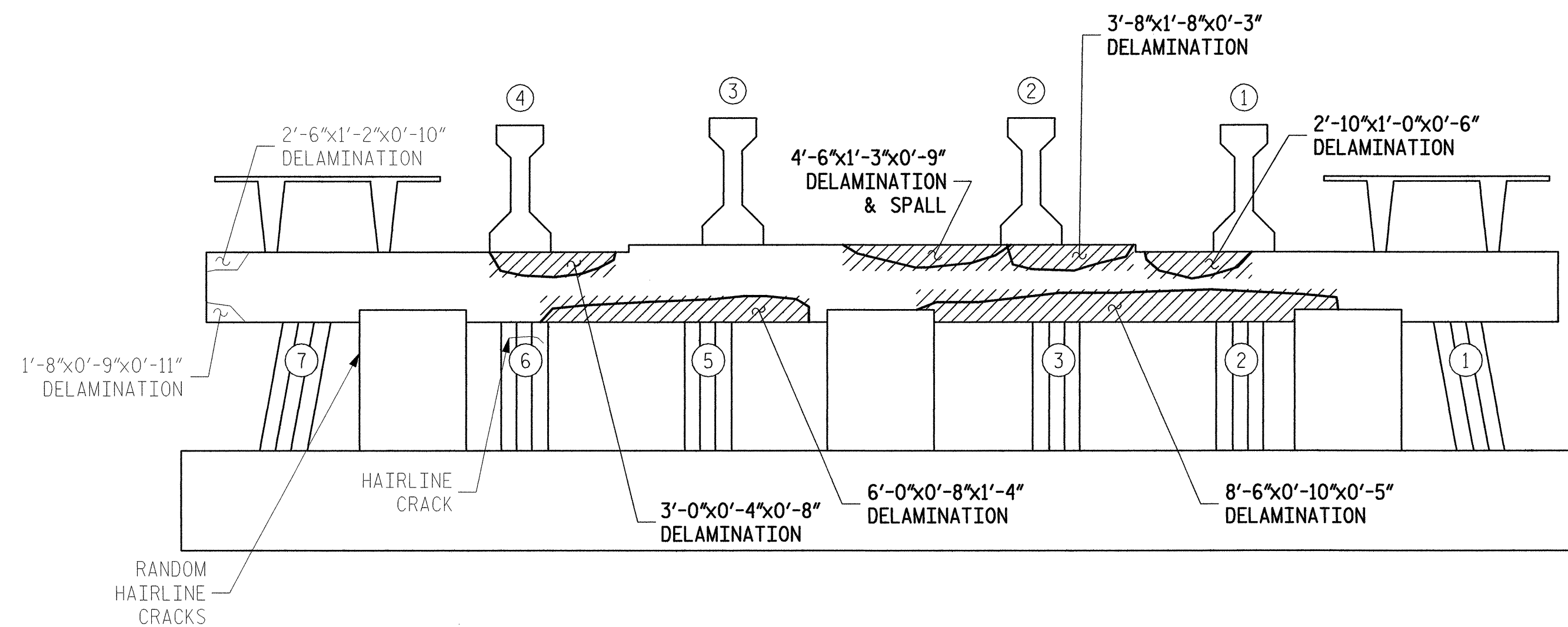
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	11	
OVERHEAD SHOTCRETE	CF	5	
ADDITIONAL REINFORCING	LBS	61	
EPOXY MORTAR (FORMED)	CF	8	



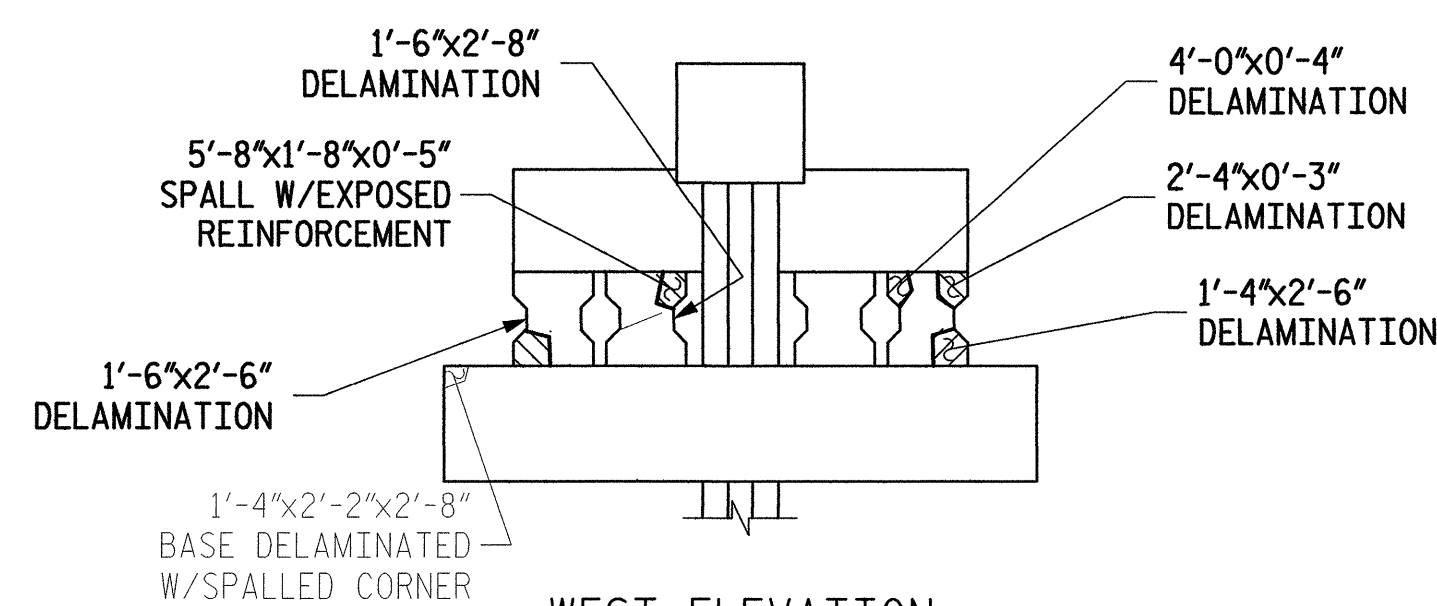
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

BENT #196

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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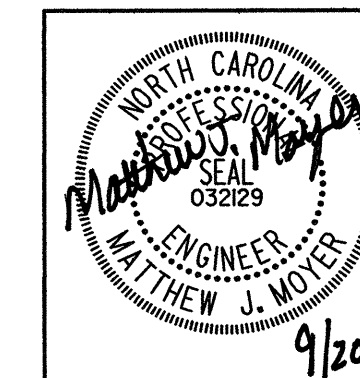
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 \_\_\_\_\_ DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #196



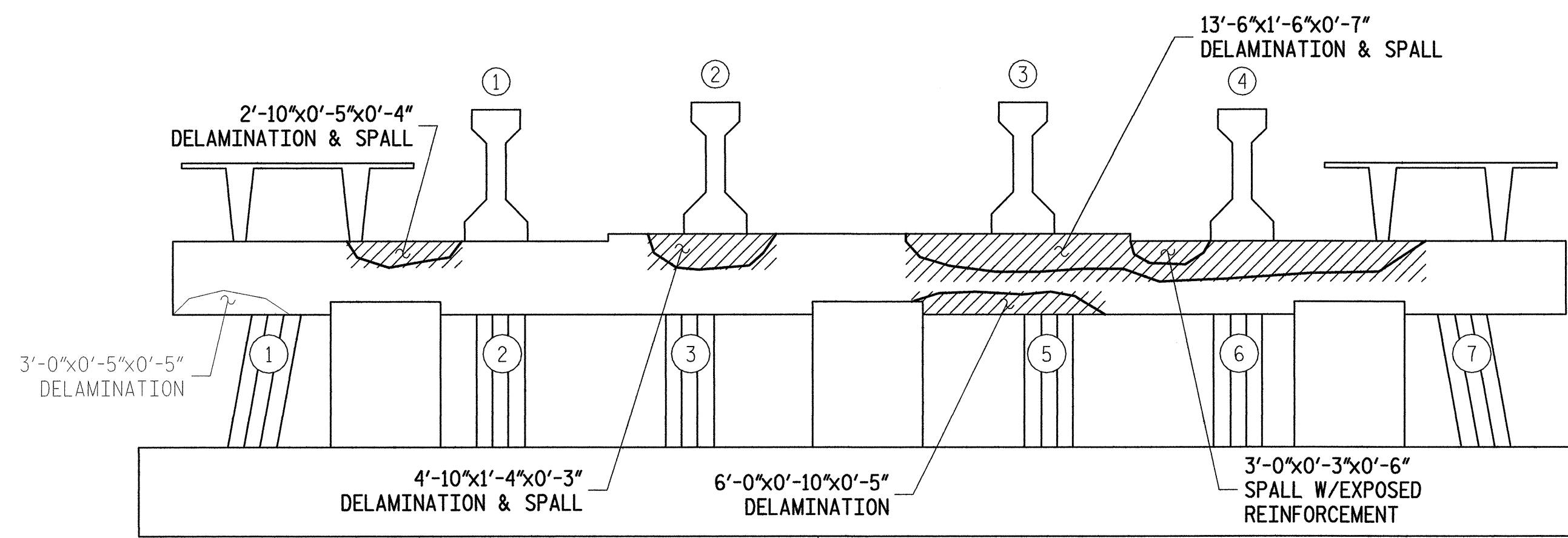
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			166

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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

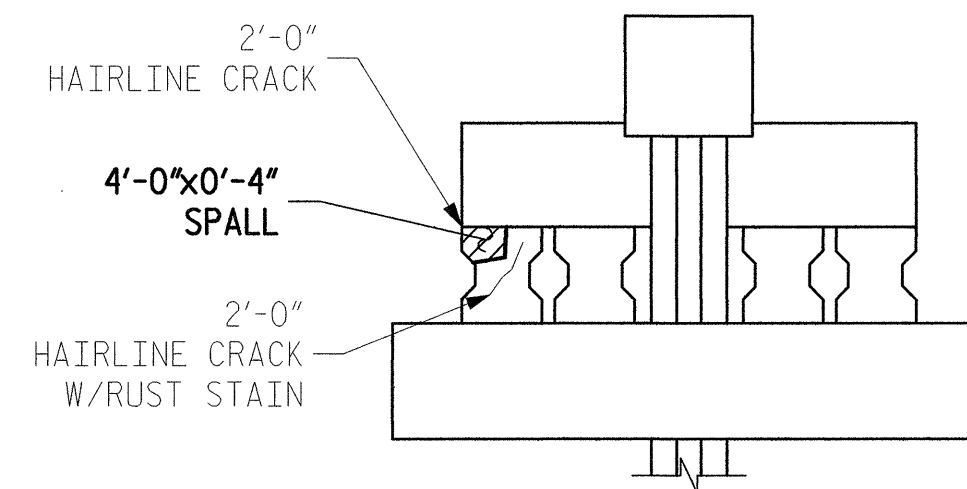
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BENT #197

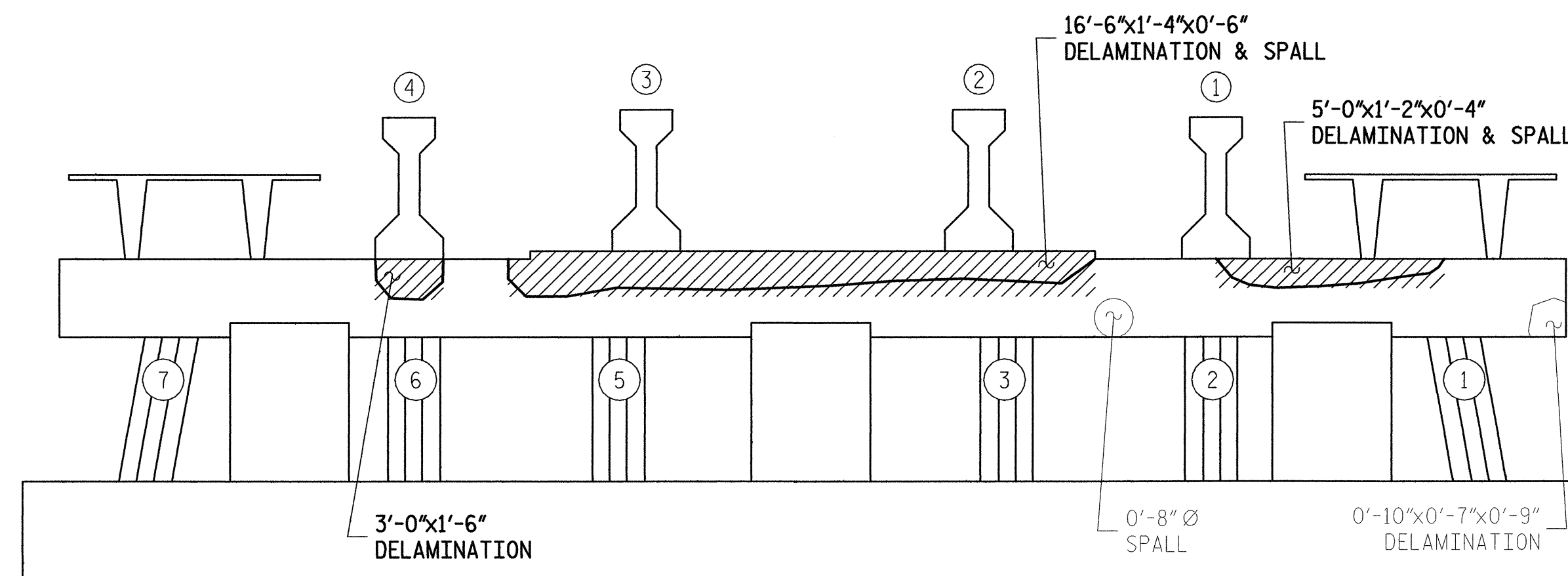
REPAIR TYPE	QUANTITIES		ACTUAL
	UNIT		
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	22	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	114	
EPOXY MORTAR (FORMED)	CF	5	



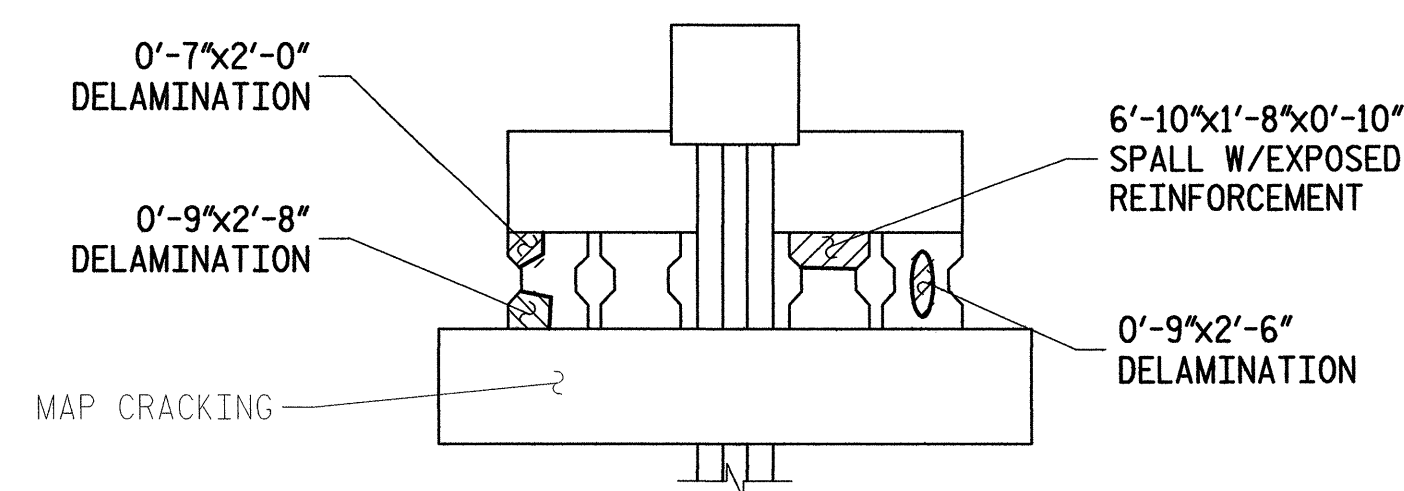
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #197**

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



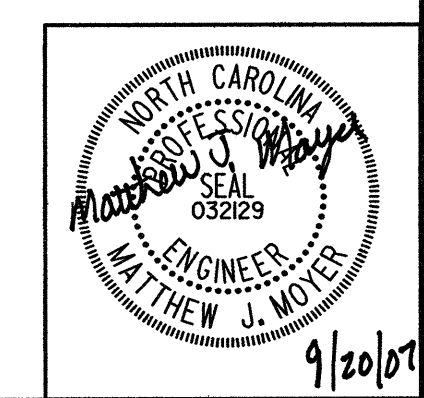
**ALPHA & OMEGA GROUP**  
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PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #197



REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

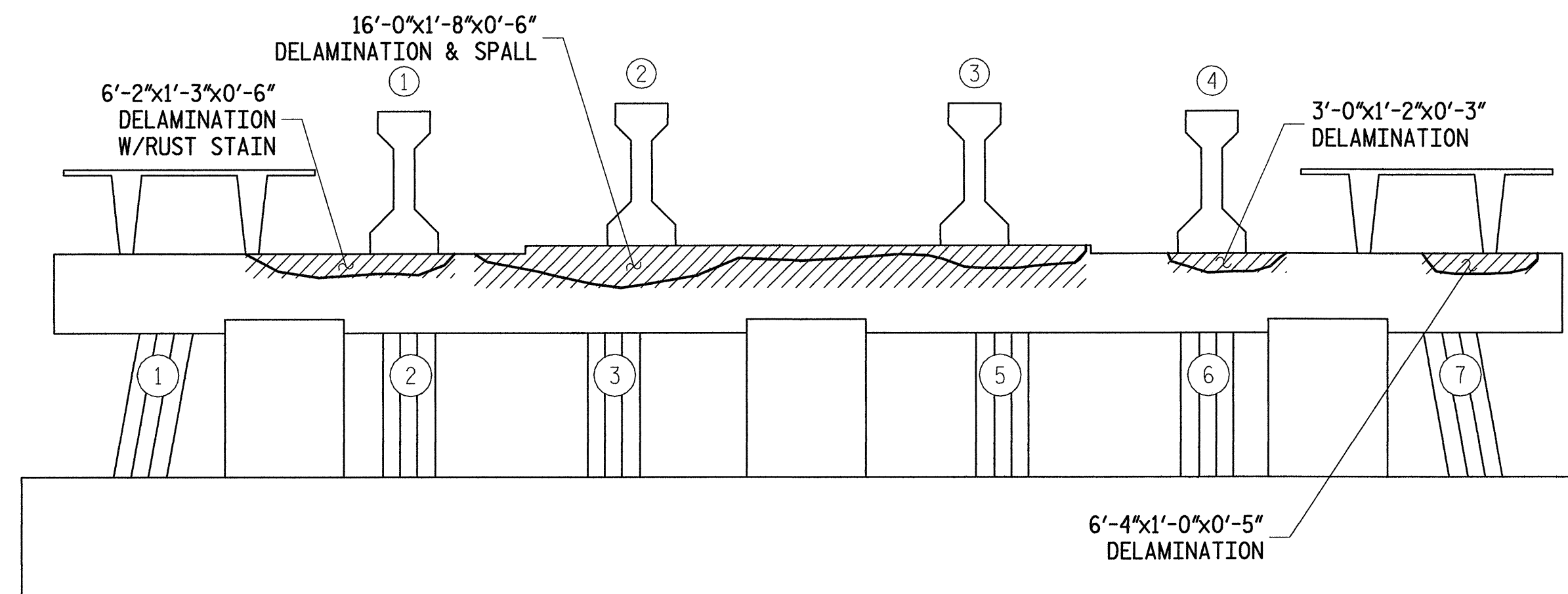
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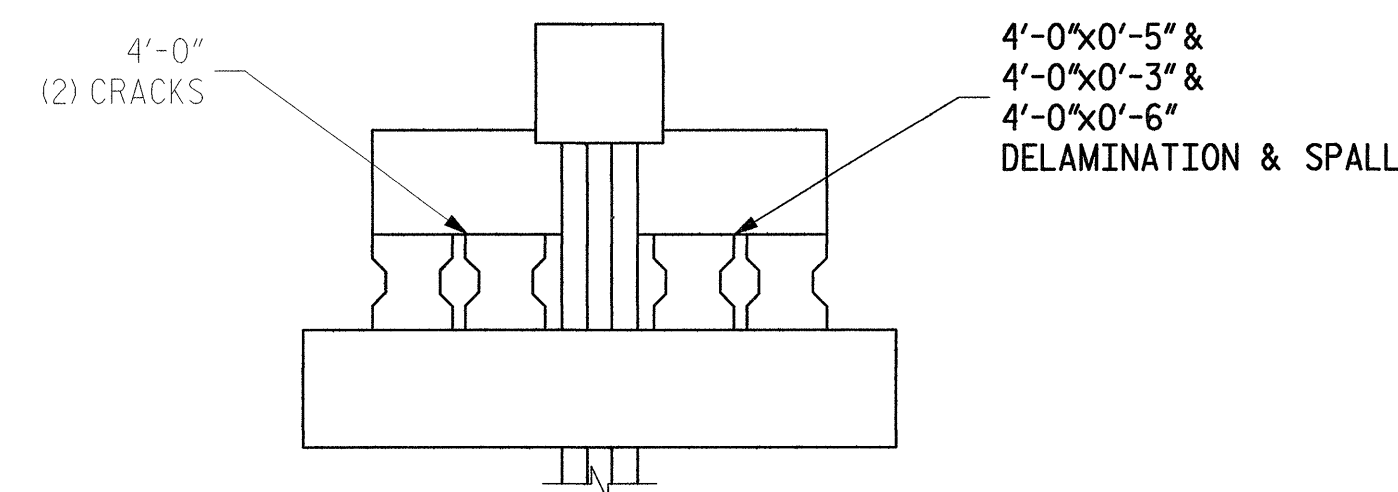
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BENT #198

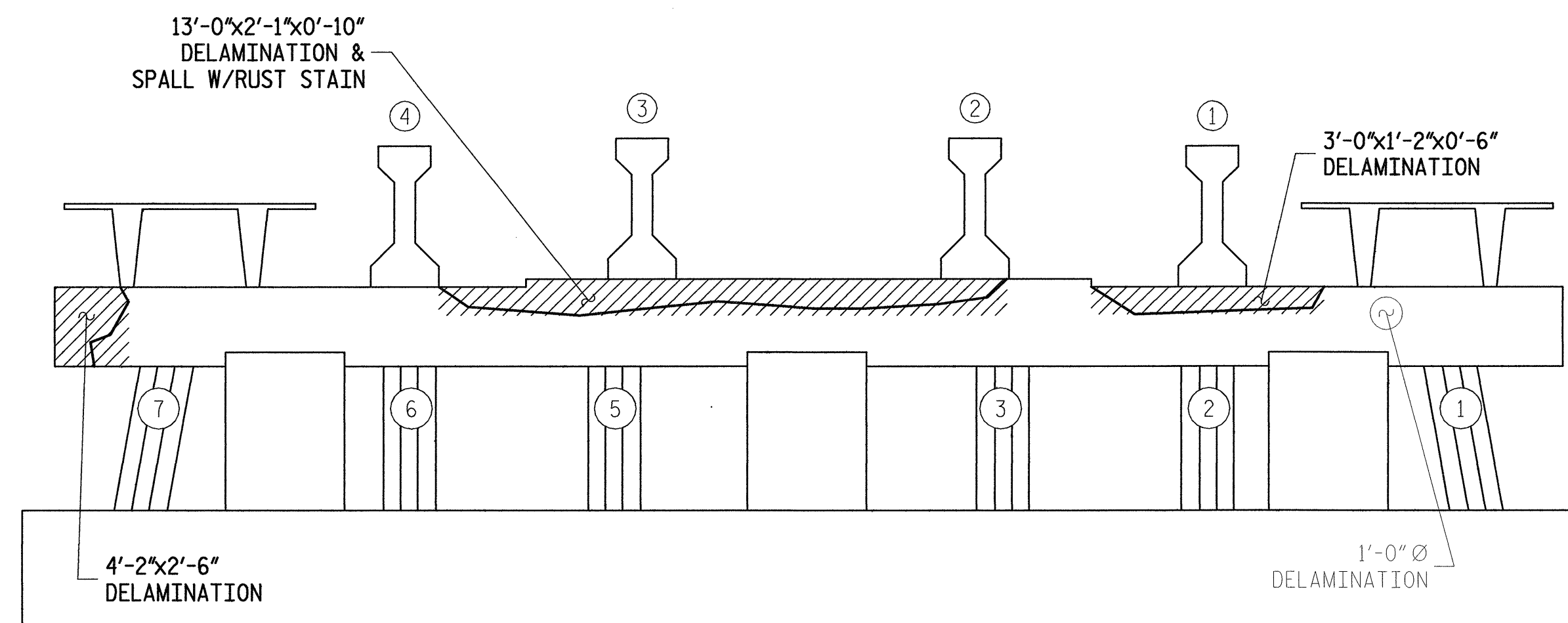
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	31	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	127	
EPOXY MORTAR (FORMED)	CF	2	



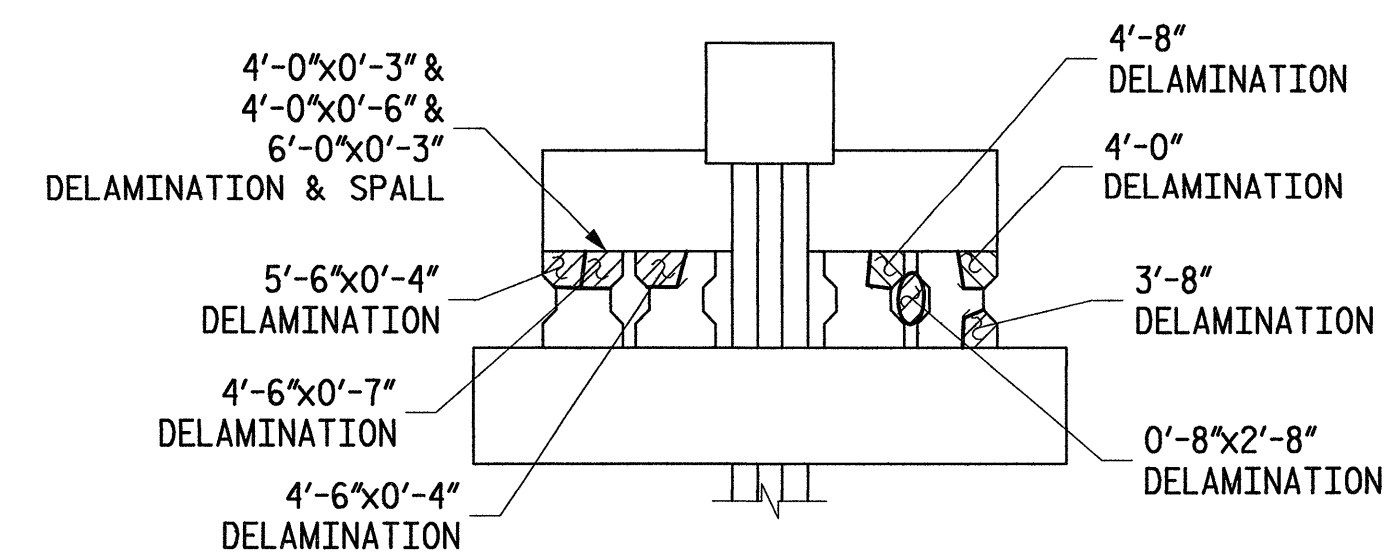
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

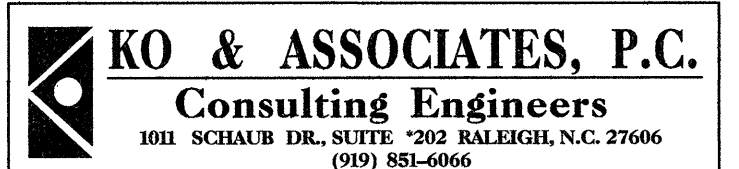
BENT #198

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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 Email: info@aogroup.com www.aogroup.com

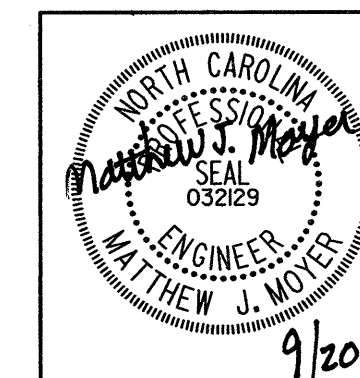
PLANS PREPARED BY



PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #198

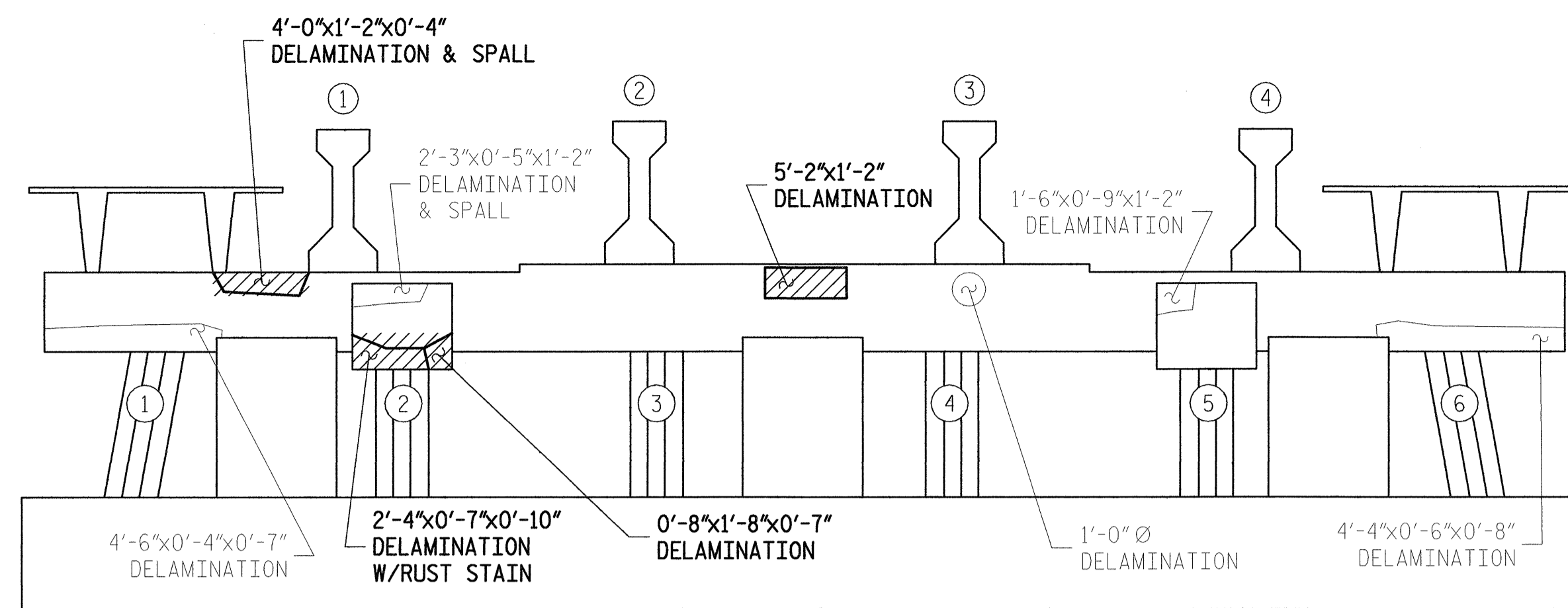


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			162
2			4			TOTAL SHEETS 166

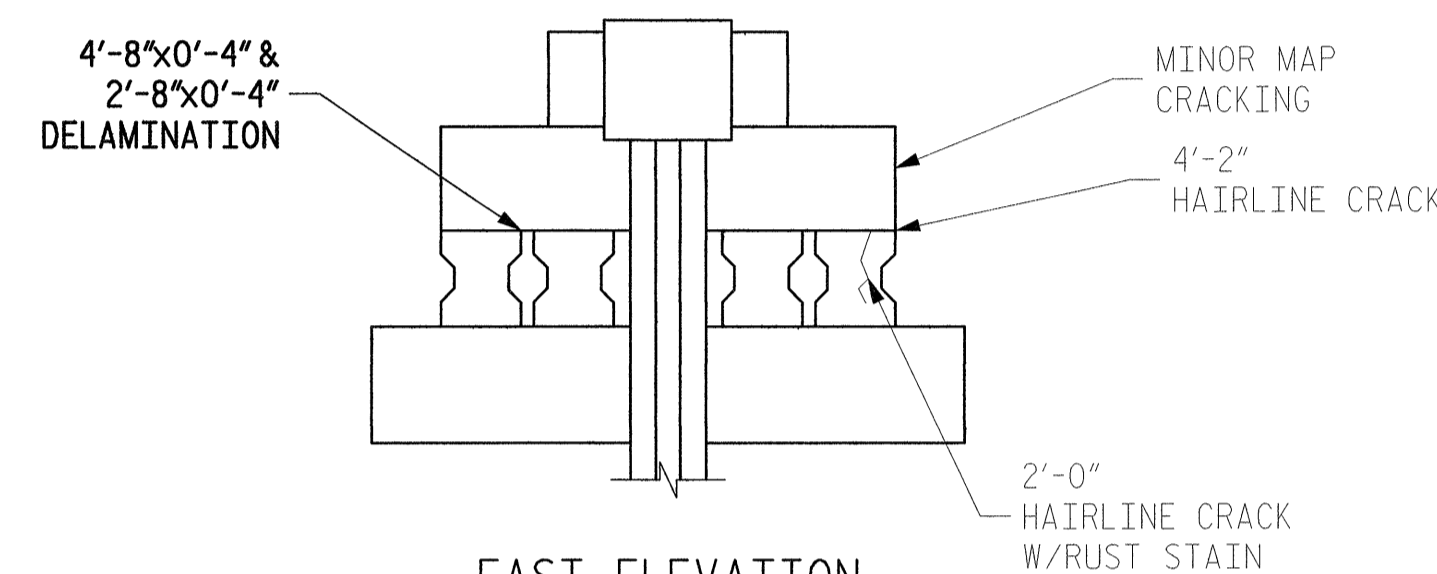
# BILL OF MATERIAL

BENT #199

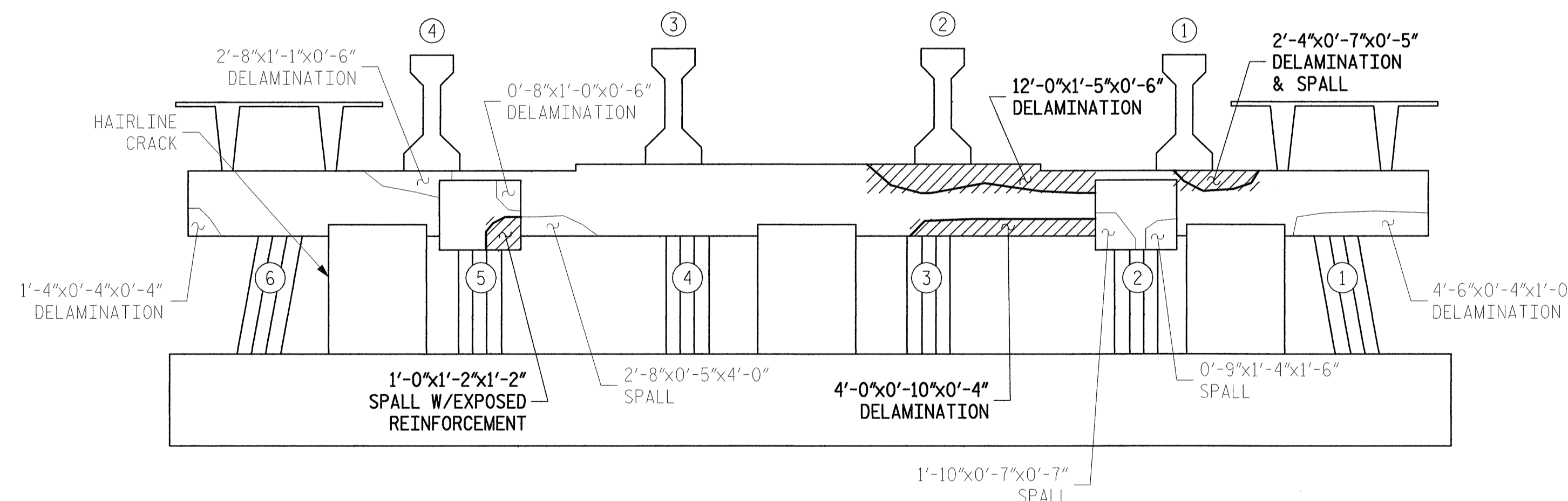
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	11	
OVERHEAD SHOTCRETE	CF	2	
ADDITIONAL REINFORCING	LBS	49	
EPOXY MORTAR (FORMED)	CF	1	



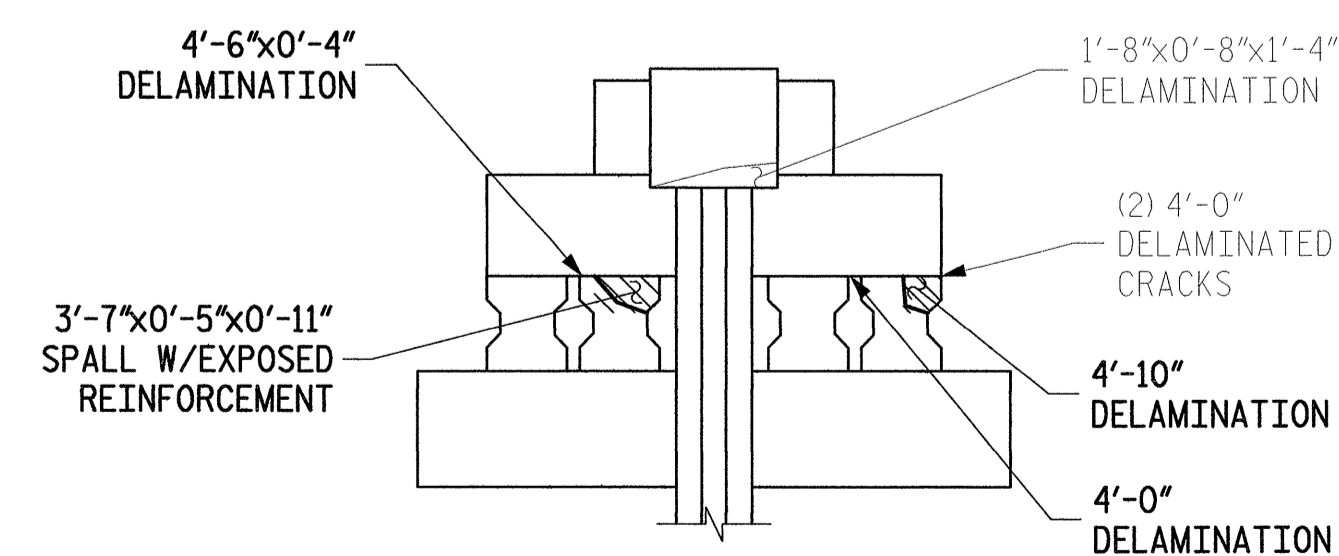
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #199**

- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT



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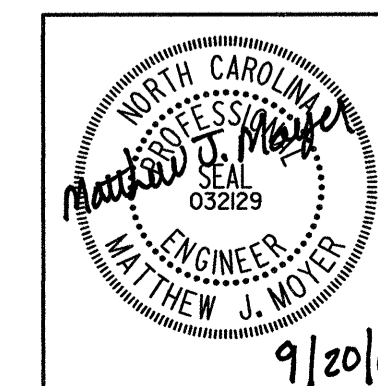
PLANS PREPARED BY

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 Consulting Engineers  
 101 SCHAU DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

PROJECT NO. B-5014  
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 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
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 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #199



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			163
2			4			166

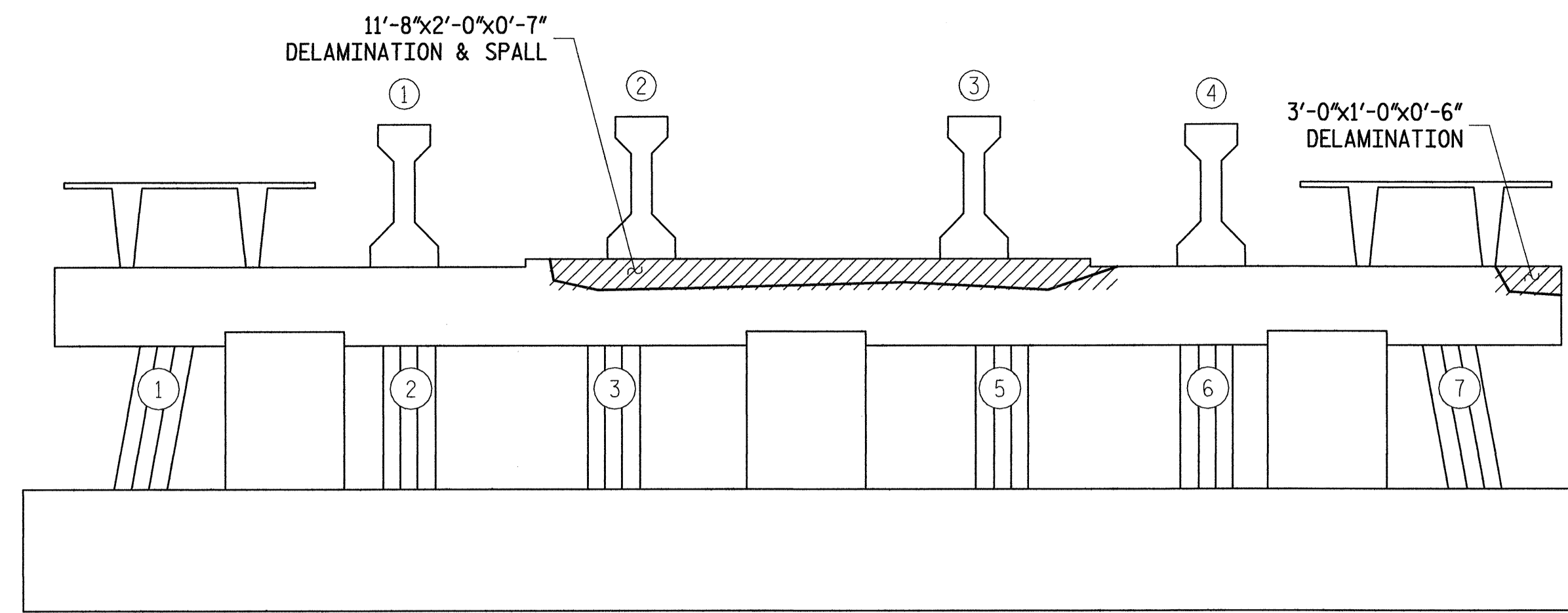
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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007

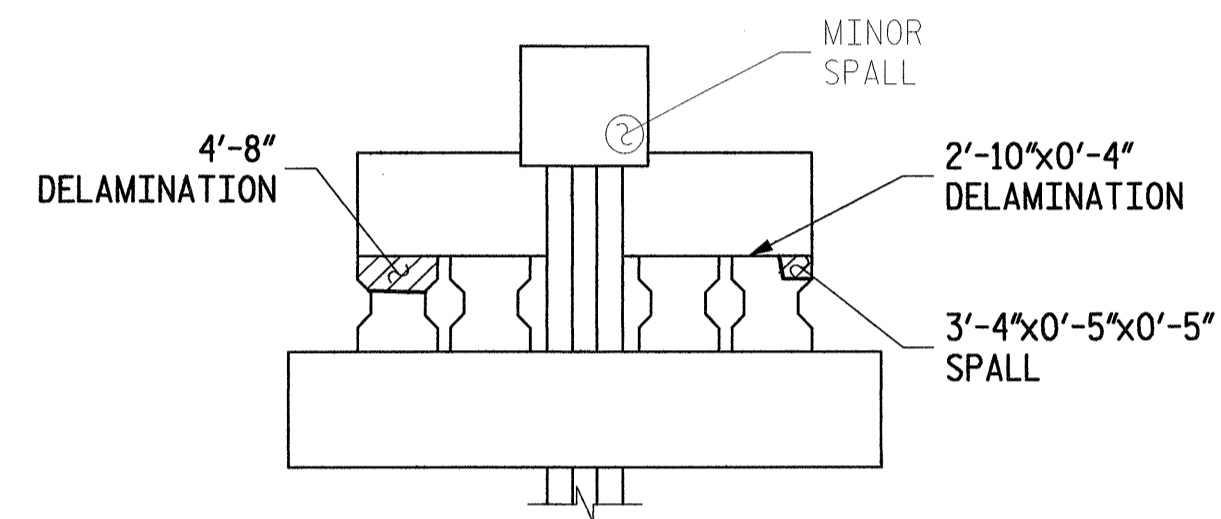
# BILL OF MATERIAL

BENT #200

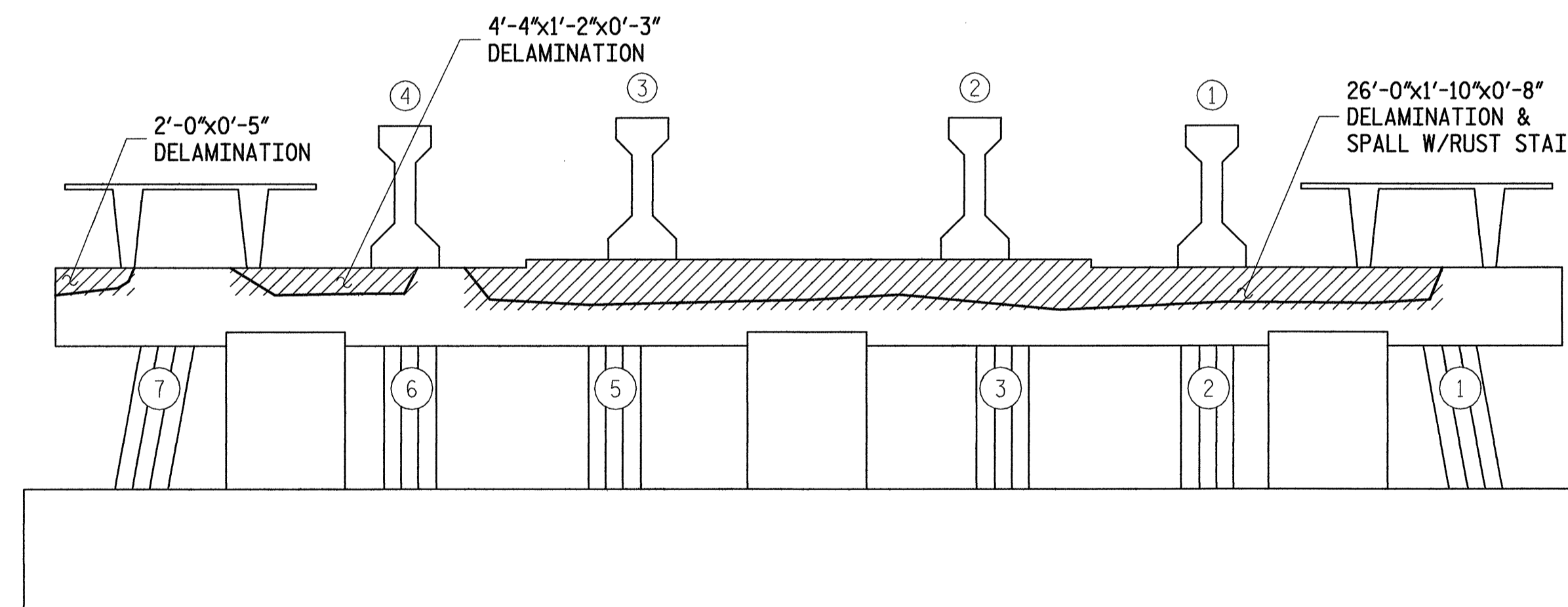
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	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	2	
VERTICAL SHOTCRETE	CF	29	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	120	
EPOXY MORTAR (FORMED)	CF	1	



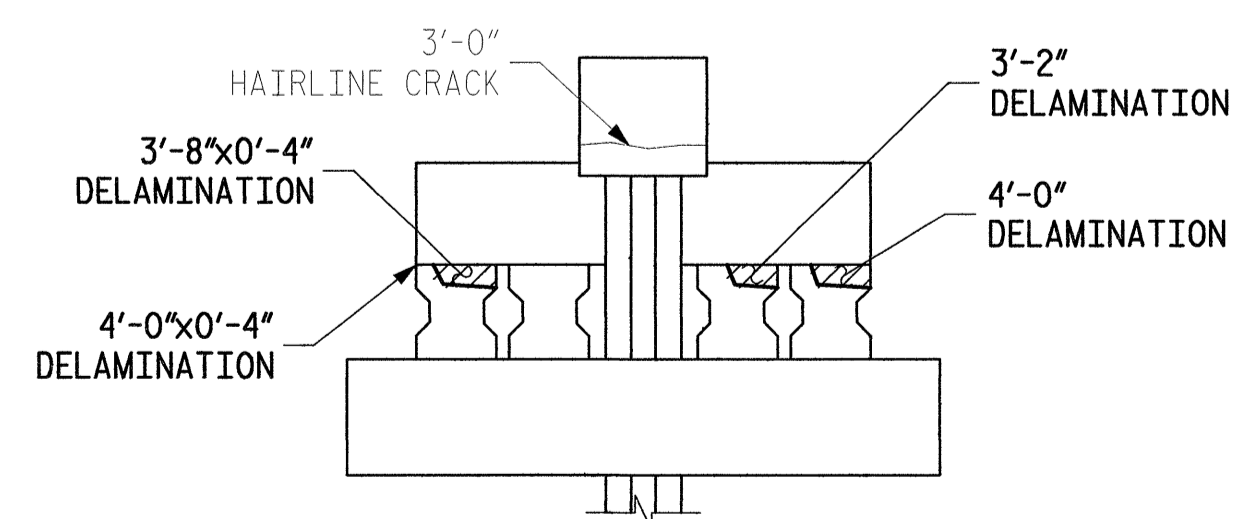
NORTH ELEVATION



EAST ELEVATION



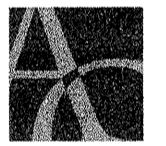
SOUTH ELEVATION



WEST ELEVATION

**BENT #200**

- DENOTES GENERAL AREA OF REPAIR
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT



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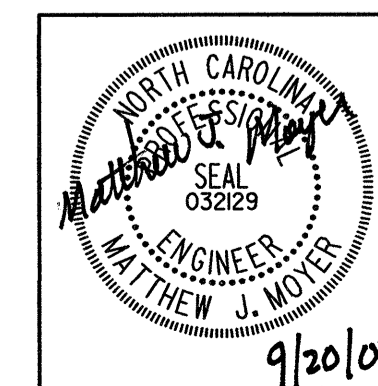
PLANS PREPARED BY



PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #200

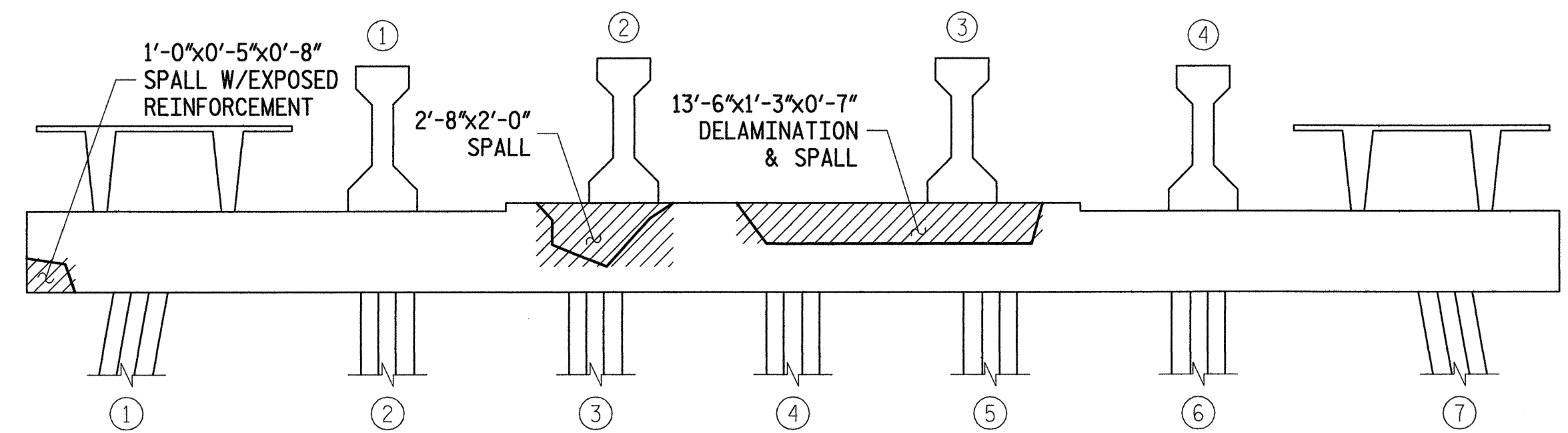


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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			166

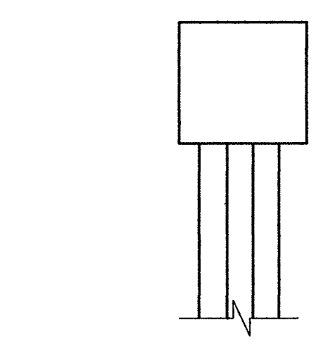
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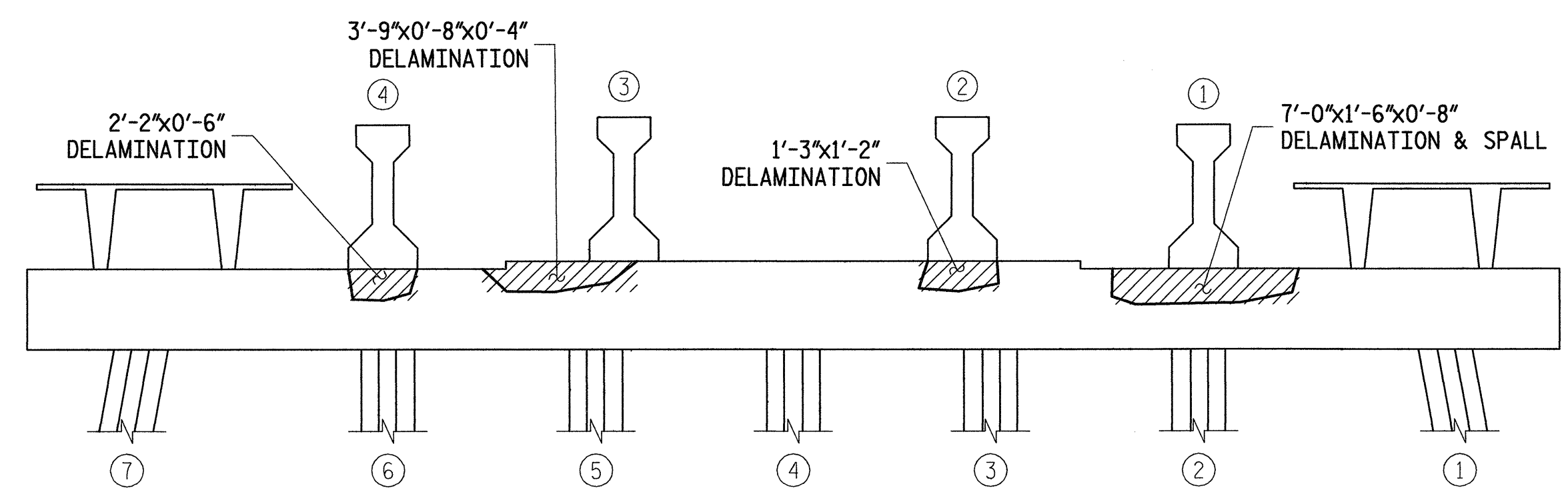




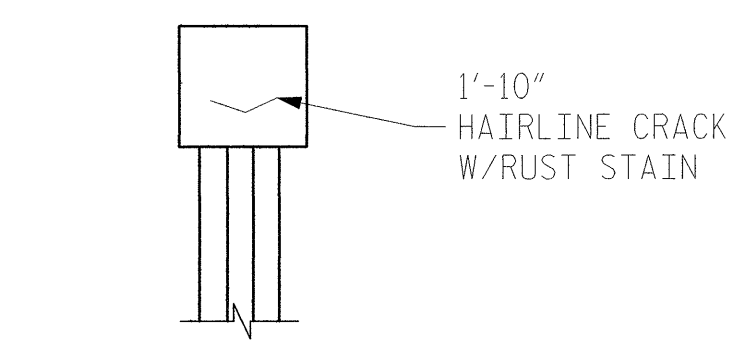
NORTH ELEVATION



EAST ELEVATION

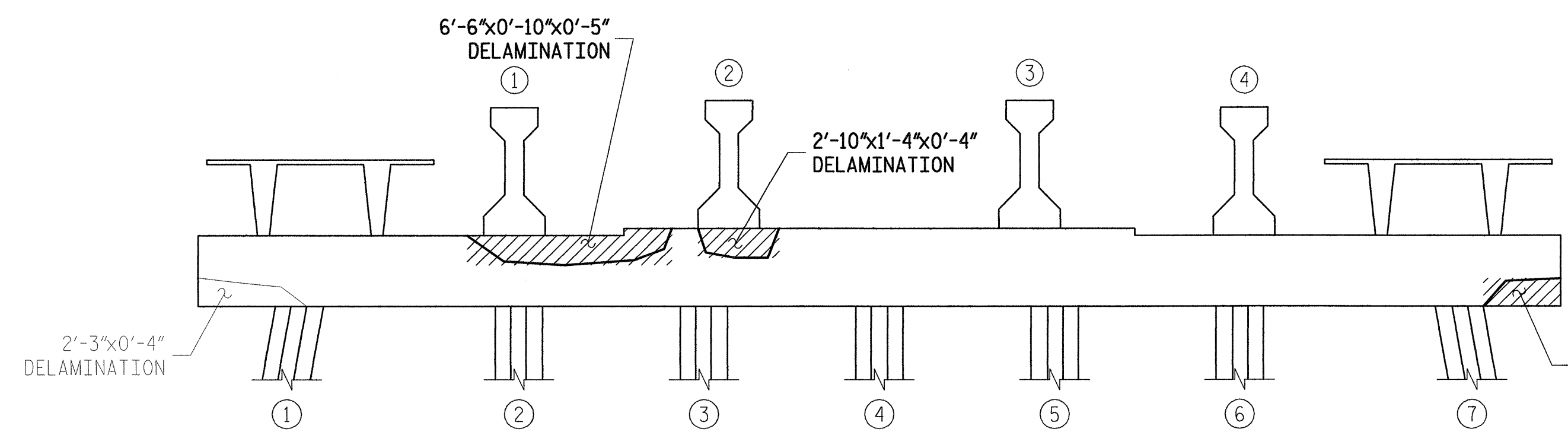


SOUTH ELEVATION

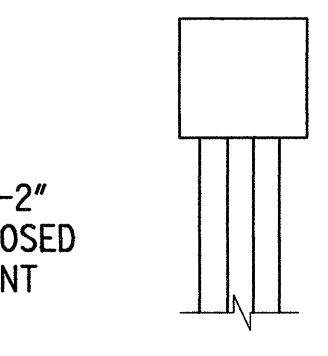


WEST ELEVATION

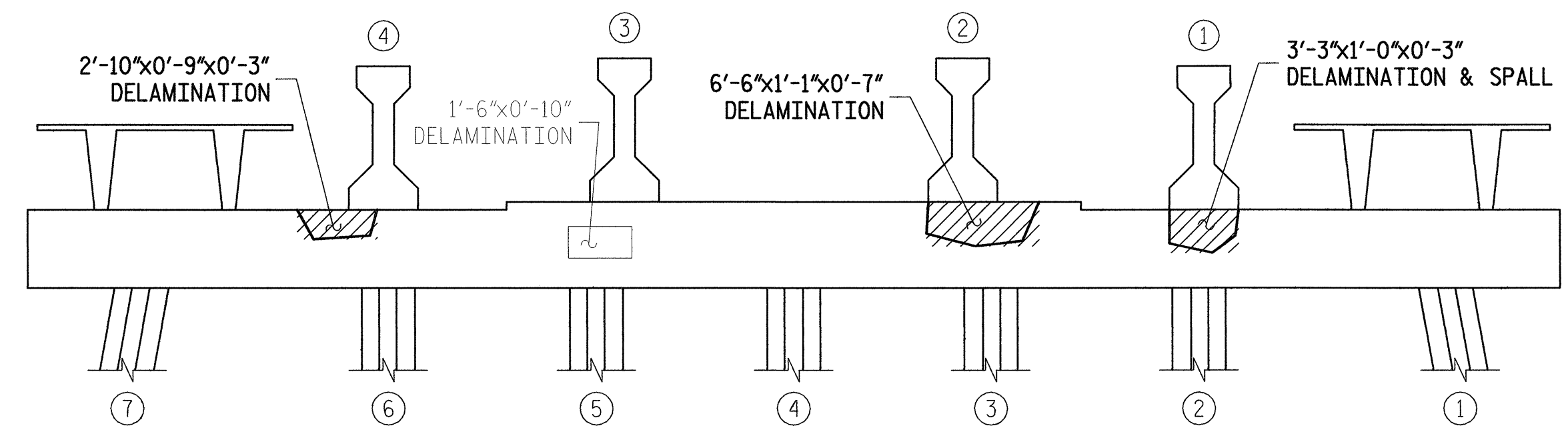
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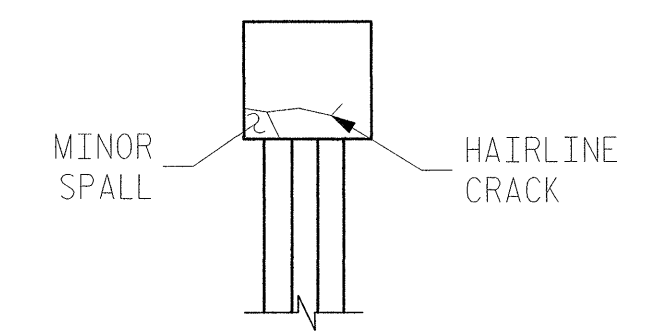
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

**BENT #202**

BILL OF MATERIAL			
BENT #201			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	14	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	65	
EPOXY MORTAR (FORMED)	CF	-	
BENT #202			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	8	
OVERHEAD SHOTCRETE	CF	1	
ADDITIONAL REINFORCING	LBS	59	
EPOXY MORTAR (FORMED)	CF	-	

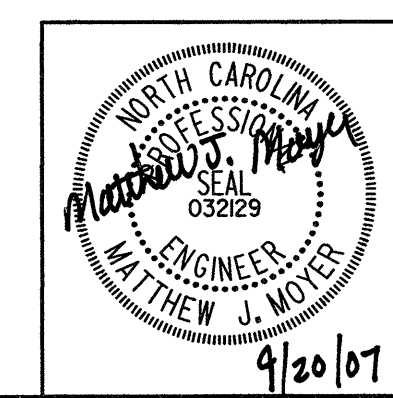
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED (HORIZ)x(VERT)x(DEPTH) NOT REPAIRED IN THIS CONTRACT

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PLANS PREPARED BY  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606  
 (919) 851-6066

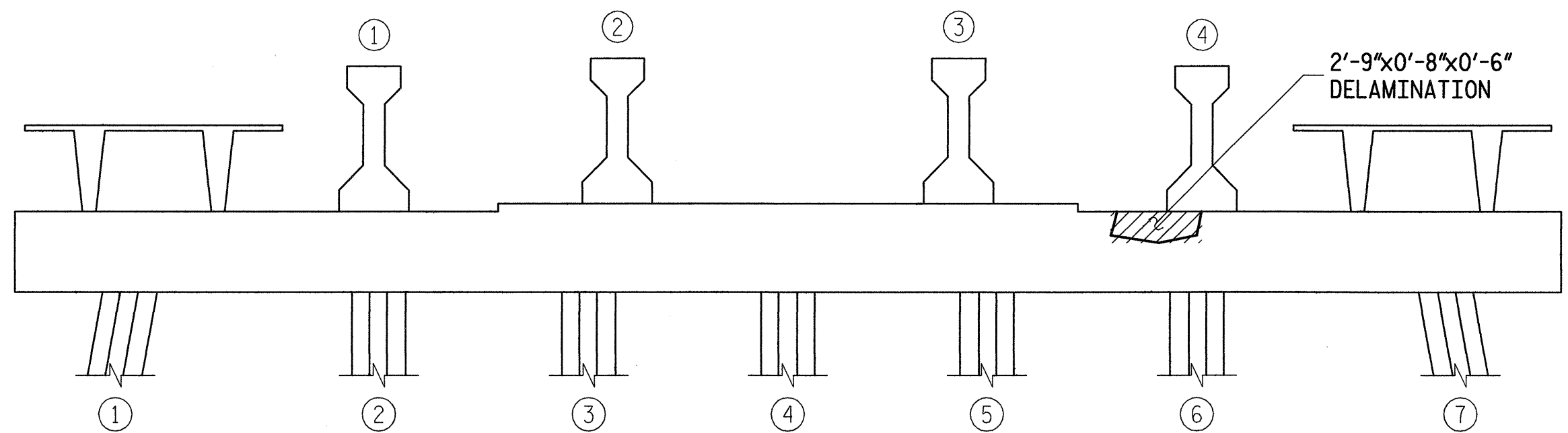
PROJECT NO. B-5014  
 DARE COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT(S) #201 & #202

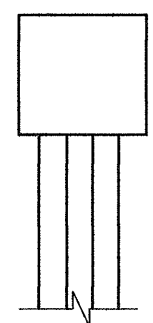


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			166

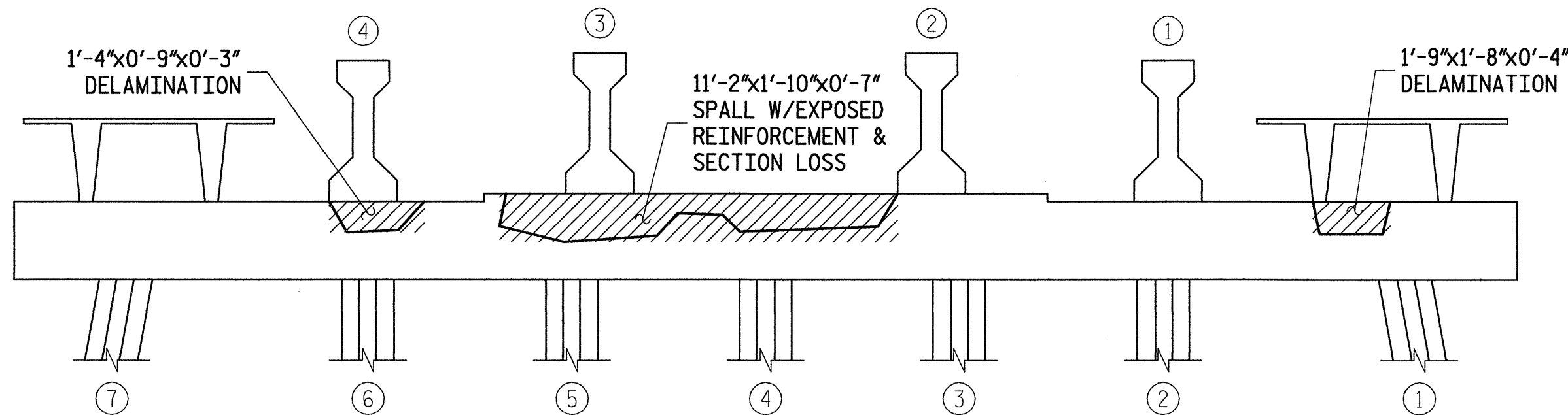
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 CHECKED BY: M.J. MOYER DATE: SEPT. 2007



NORTH ELEVATION

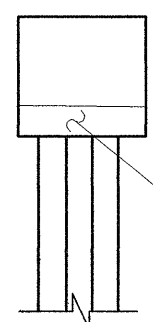


EAST ELEVATION

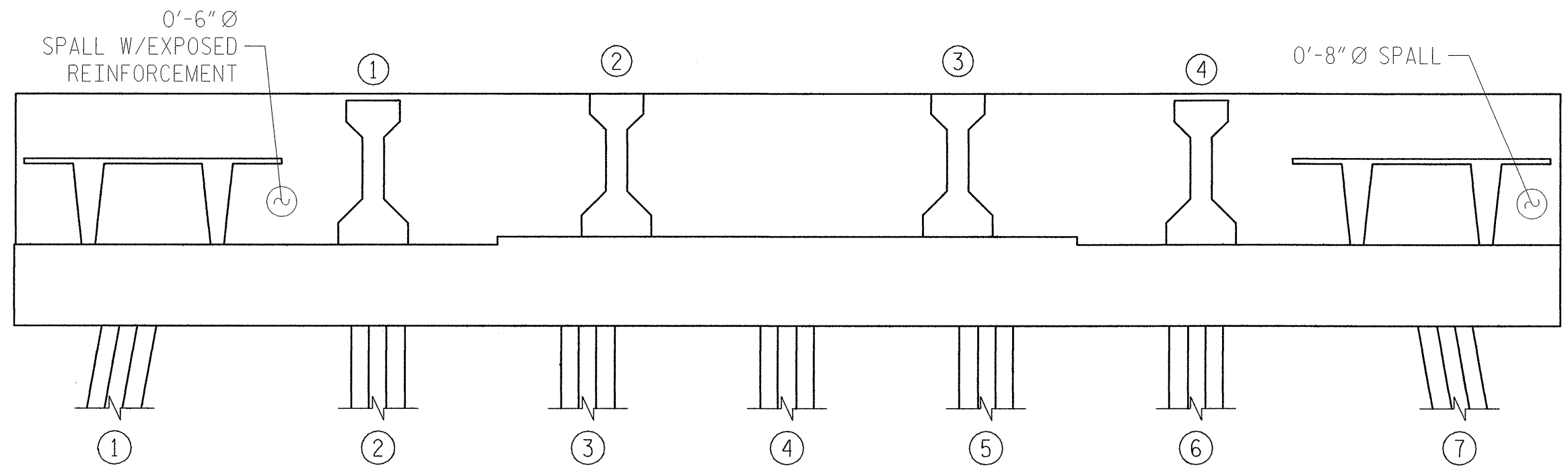


SOUTH ELEVATION

**BENT #203**

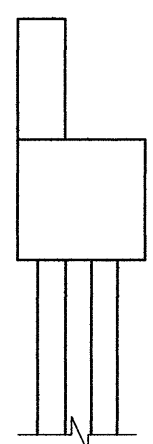


WEST ELEVATION



NORTH ELEVATION

**END BENT #2**



EAST ELEVATION

BILL OF MATERIAL			
BENT #203			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	1	
VERTICAL SHOTCRETE	CF	10	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	45	
EPOXY MORTAR (FORMED)	CF	-	
END BENT #2			
REPAIR TYPE	QUANTITIES		
	UNIT		ACTUAL
HORIZONTAL SHOTCRETE	CF	-	
VERTICAL SHOTCRETE	CF	-	
OVERHEAD SHOTCRETE	CF	-	
ADDITIONAL REINFORCING	LBS	-	
EPOXY MORTAR (FORMED)	CF	-	

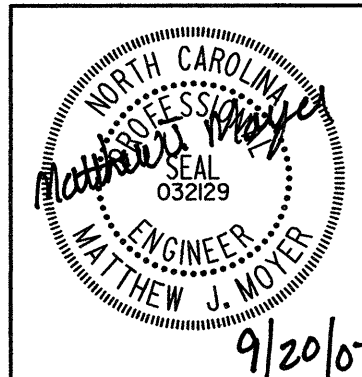
- DENOTES GENERAL AREA OF REPAIR
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION
- GENERAL SHAPE OF DEFICIENCY
- 0'-9"x8'-1"x0'-6" - DENOTES FIELD MEASURED AREA (HORIZ)x(VERT)x(DEPTH) IN 4/06 INSPECTION NOT REPAIRED IN THIS CONTRACT
- GENERAL SHAPE OF DEFICIENCY NOT REPAIRED IN THIS CONTRACT
- 0'-9"x8'-1"x0'-6" - DENOTES AREA PREVIOUSLY REPAIRED NOT REPAIRED IN THIS CONTRACT

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PROJECT NO. B-5014  
 \_\_\_\_\_ DARE \_\_\_\_\_ COUNTY  
 BRIDGE NO. 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BONNER BRIDGE REPAIR**  
 LOW LEVEL SUBSTRUCTURE  
 REPAIR LOCATIONS  
 BENT #203 & END BENT #2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			166
2			4			TOTAL SHEETS 166

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 CHECKED BY M.J. MOYER DATE SEPT. 2007

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.  
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.  
IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.  
DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.  
WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".  
EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.  
PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.  
WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.  
METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN