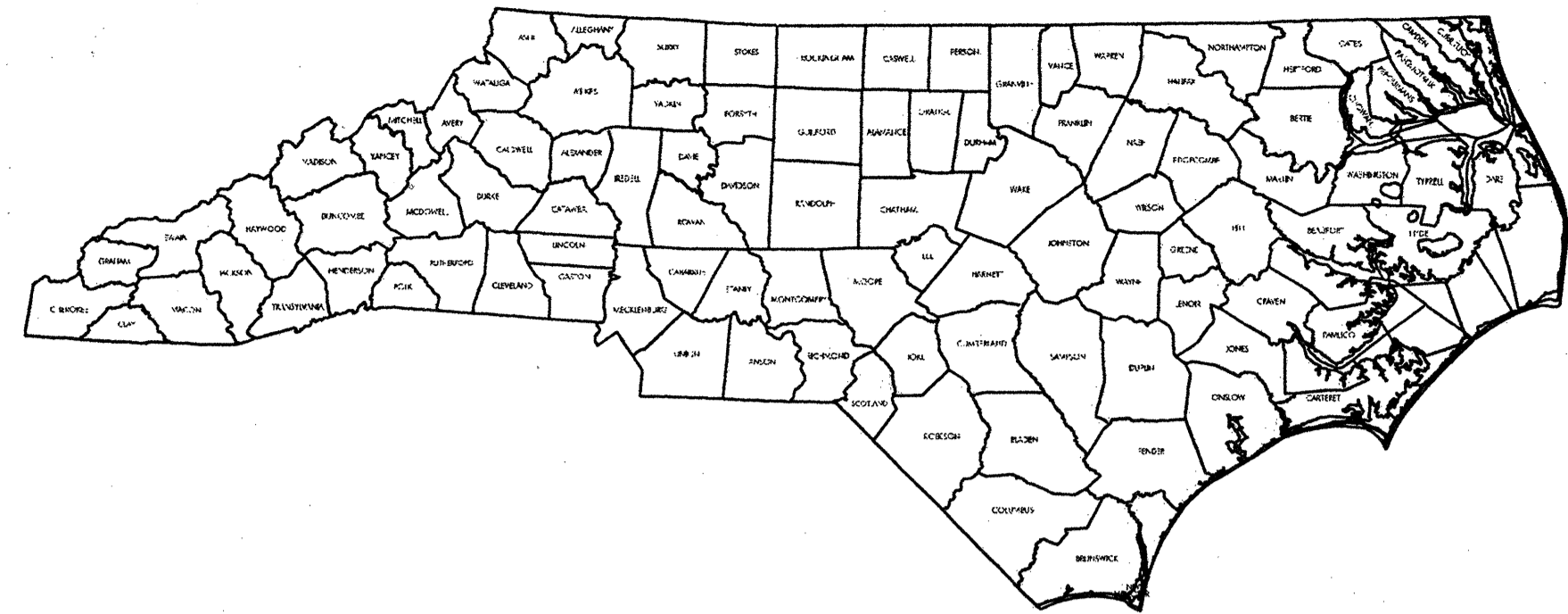


PROJECT: 15B.13.12

CONTRACT NO: C202787



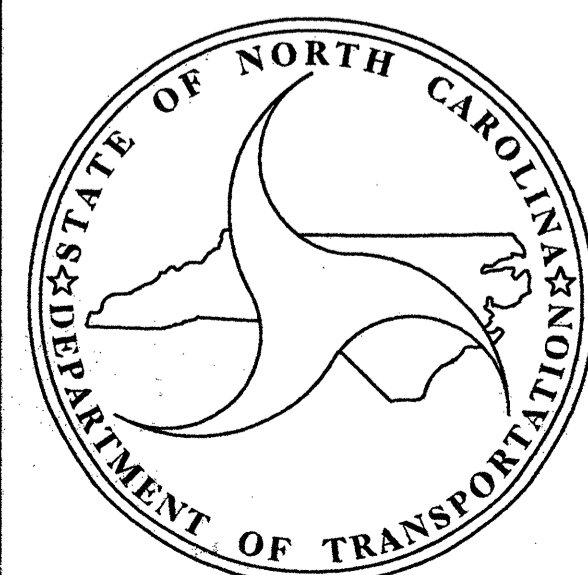
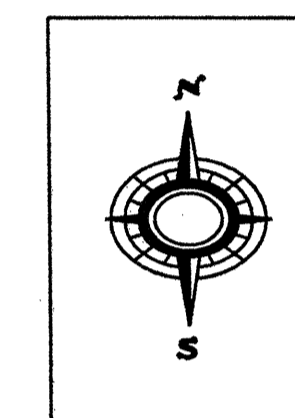
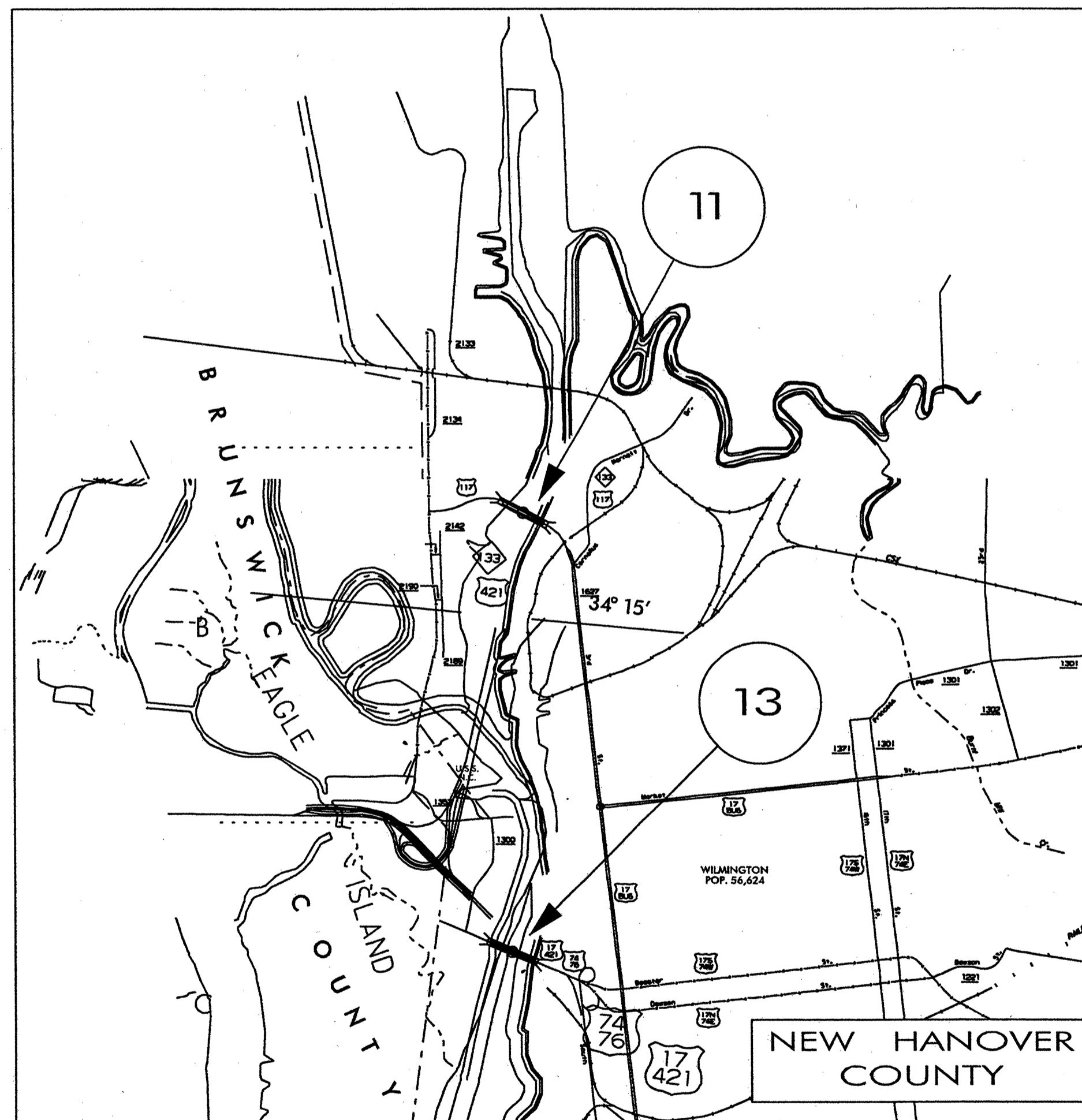
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**NEW HANOVER
COUNTY**

LOCATION: BRIDGE #11 US 117 ACROSS NORTH
EAST CAPE FEAR RIVER, BRIDGE #13
US 17, 74, 76, 421 ACROSS CAPE FEAR RIVER

TYPE OF WORK: MECHANICAL AND ELECTRICAL
REPAIRS

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------------------|-----------------------------|-------------|--------------|
| N.C. | 15B.13.12 | 1 | |
| STATE PROJECT NO. | F. A. PROJ. NO. | DESCRIPTION | |
| 15B.13.10 | N/A | PE | |
| 15B.13.12 | N/A | CONSTR | |
| | | | |
| | | | |
| | | | |
| | | | |



PROJECT LENGTH

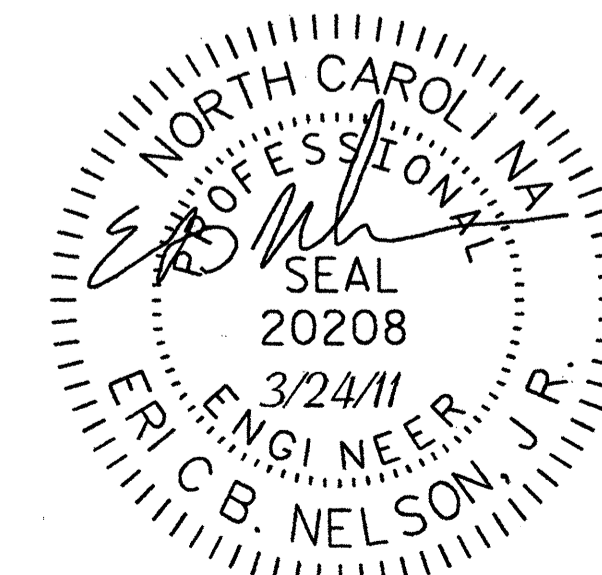
Prepared in the Office of:
BRIDGE MANAGEMENT UNIT
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 21, 2011

DAN HOLDERMAN, PE
STATE BRIDGE
MANAGEMENT ENGINEER

MIKE SUMMERS
BRIDGE MANAGEMENT
PROJECT MANAGER



RICK NELSON, PE
DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE

WILMINGTON, NORTH CAROLINA

MECHANICAL AND ELECTRICAL REPAIRS

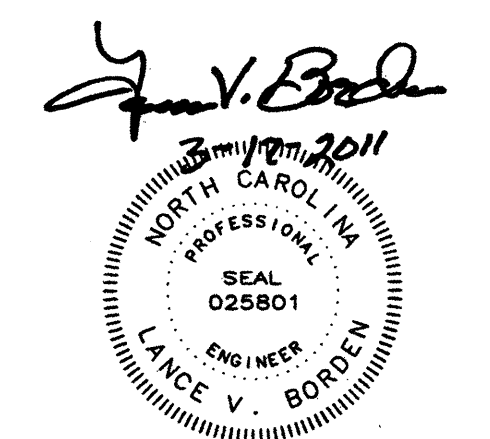
MARCH 2011

INDEX OF SHEETS

| SHEET NO. | SHEET NAME |
|-----------|--------------------------------------|
| 1 | TITLE SHEET |
| 2 | SUMMARY OF QUANTITIES |
| 2A | INDEX OF SHEETS AND LIST OF DRAWINGS |

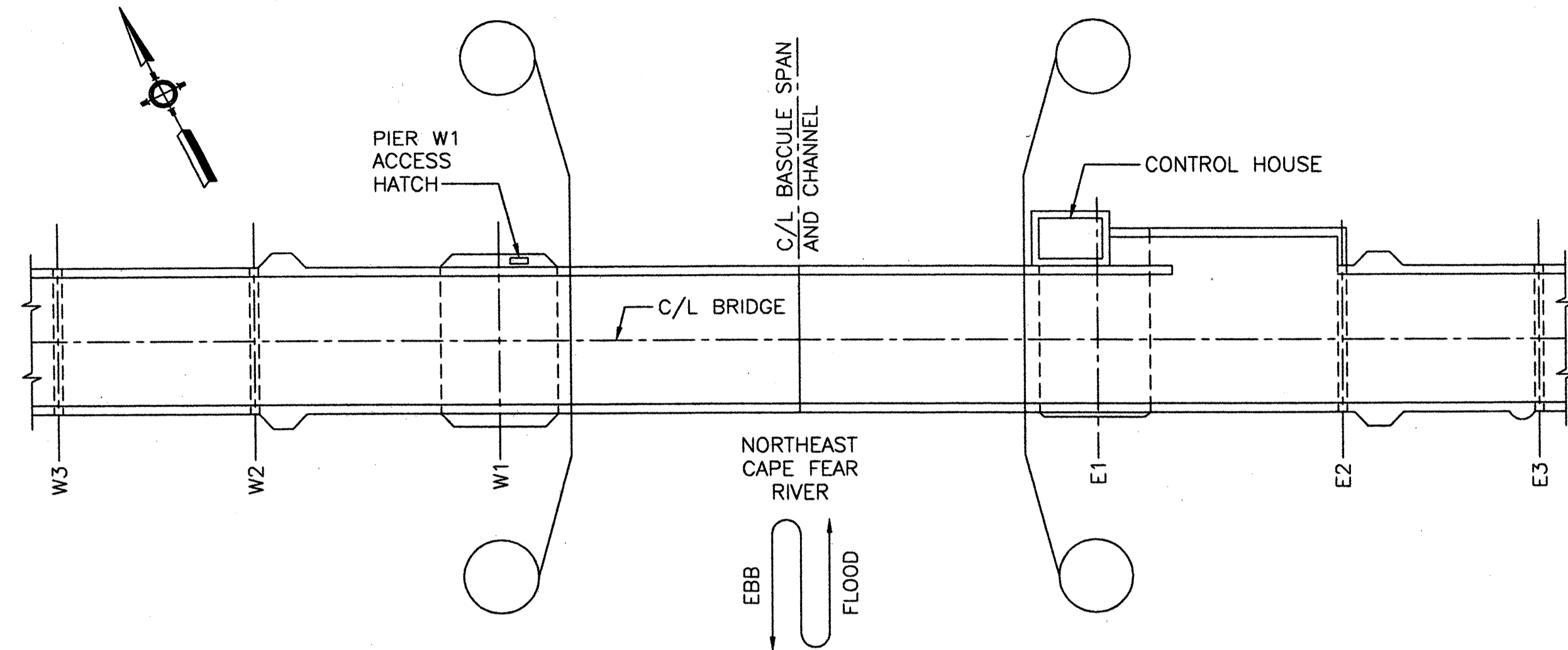
LIST OF DRAWINGS

| DRAWING NO. | SHEET NAME | DRAWING NO. | SHEET NAME | DRAWING NO. | SHEET NAME |
|-------------|--|-------------|---|-------------|---|
| 1 (GPB) | GENERAL PLAN AND ELEVATION (BASCULE BRIDGE) | 27 (EB1) | ELECTRICAL GENERAL NOTES BASCULE BRIDGE - 1 | 51 (GPEL) | GENERAL PLAN AND ELEVATION (MEMORIAL LIFT BRIDGE) |
| 2 (MB1) | EXISTING MECHANICAL LAYOUT | 28 (EB2) | ELECTRICAL GENERAL NOTES BASCULE BRIDGE - 2 | 52 (ML1) | LIVE LOAD BEARING REHABILITATION - 1 |
| 3 (MB2) | EXISTING CENTER LOCK REMOVAL | 29 (EB3) | ELECTRICAL PLANS AND DETAILS - 1 | 53 (ML2) | LIVE LOAD BEARING REHABILITATION - 2 |
| 4 (MB3) | NEW CENTER LOCK - LAYOUT | 30 (EB4) | ELECTRICAL PLANS AND DETAILS - 2 | 54 (ML3) | LIVE LOAD BEARING REHABILITATION - 3 |
| 5 (MB4) | NEW CENTER LOCK - COMPONENTS | 31 (EB5) | ELECTRICAL PLANS AND DETAILS - 3 | 55 (ML4) | NEW MAIN AND AUXILIARY COUNTERWEIGHT ROPES |
| 6 (MB5) | NEW CENTER LOCK - GUIDE AND RECEIVER DETAILS | 32 (EB6) | ELECTRICAL PLANS AND DETAILS - 4 | 56 (ML5) | ROPE ATTACHMENTS AT MAIN COUNTERWEIGHT |
| 7 (MB6) | NEW CENTER LOCK - SUPPORT DETAILS | 33 (EB7) | ELECTRICAL PLANS AND DETAILS - 5 | 57 (ML6) | ROPE ATTACHMENTS AT SPAN LIFTING GIRDER |
| 8 (MB7) | TEMPORARY CENTER LOCK | 34 (EB8) | ELECTRICAL PLANS AND DETAILS - 6 | 58 (ML7) | JACKING OF LIFT SPAN |
| 9 (MB8) | EXISTING LIVE LOAD SPAN LOCK REMOVAL | 35 (EB9) | ELECTRICAL PLANS AND DETAILS - 7 | 59 (ML8) | ROPE ATTACHMENTS FOR AUXILIARY COUNTERWEIGHT |
| 10 (MB9) | NEW LIVE LOAD SPAN LOCK - LAYOUT | 36 (EB10) | ELECTRICAL SCHEMATICS - 1 | 60 (ML9) | AUXILIARY COUNTERWEIGHT ASSEMBLY |
| 11 (MB10) | NEW LIVE LOAD SPAN LOCK - DETAILS 1 | 37 (EB11) | ELECTRICAL SCHEMATICS - 2 | 61 (ML10) | REFERENCE DRAWING - SHEAVES AND SHAFTS |
| 12 (MB11) | NEW LIVE LOAD SPAN LOCK - DETAILS 2 | 38 (EB12) | ELECTRICAL SCHEMATICS - 3 | 62 (ML11) | REFERENCE DRAWING - ROPE CONNECTIONS |
| 13 (MB12) | NEW LIVE LOAD SPAN LOCK - DETAILS 3 | 39 (EB13) | ELECTRICAL SCHEMATICS - 4 | 63 (ML12) | REFERENCE DRAWING - AUXILIARY COUNTERWEIGHT |
| 14 (MB13) | NEW LIVE LOAD SPAN LOCK - DETAILS 4 | 40 (EB14) | ELECTRICAL SCHEMATICS - 5 | 64 (TCP-1) | TRAFFIC CONTROL PLAN - 1 |
| 15 (MB14) | NEW LIVE LOAD SPAN LOCK - DETAILS 5 | 41 (EB15) | ELECTRICAL SCHEMATICS - 6 | 65 (TCP-2) | TRAFFIC CONTROL PLAN - 2 |
| 16 (MB15) | NEW AUXILIARY DRIVE - LAYOUT | 42 (EB16) | ELECTRICAL SCHEMATICS - 7 | 66 (TCP-3) | TRAFFIC CONTROL PLAN - 3 |
| 17 (MB16) | NEW AUXILIARY DRIVE - DETAILS | 43 (EB17) | ELECTRICAL SCHEMATICS - 8 | 67 (TCP-4) | TRAFFIC CONTROL PLAN - 4 |
| 18 (MB17) | NEW AUXILIARY DRIVE - SHIFTER COUPLING | 44 (EB18) | NEW AUXILIARY DRIVE CONTROLS | 68 (TCP-5) | TRAFFIC CONTROL PLAN - 5 |
| 19 (MB18) | NEW AUXILIARY DRIVE - SUPPORTS | 45 (EB19) | CONDUIT LAYOUT - 1 | 69 (TCP-6) | TRAFFIC CONTROL PLAN - 6 |
| 20 (MB19) | NEW OPEN GEARING COVER - DETAILS | 46 (EB20) | CONDUIT LAYOUT - 2 | 70 (TCP-7) | TRAFFIC CONTROL PLAN - 7 |
| 21 (MB20) | EXISTING AIR BUFFER | 47 (EB21) | CONDUIT AND WIRING TABULATION - 1 | 71 (TCP-8) | TRAFFIC CONTROL PLAN - 8 |
| 22 (MB21) | AIR BUFFER REHABILITATION | 48 (EB22) | CONDUIT AND WIRING TABULATION - 2 | 72 (TCP-8A) | TRAFFIC CONTROL PLAN - 8A |
| 23 (MB22) | OPEN GEARING FRAME ANCHOR BOLT REPLACEMENT - 1 | 49 (EB23) | TERMINAL CABINETS AND JUNCTION BOXES | 73 (TCP-9) | TRAFFIC CONTROL PLAN - 9 |
| 24 (MB23) | OPEN GEARING FRAME ANCHOR BOLT REPLACEMENT - 2 | 50 (EB24) | ELECTRICAL EQUIPMENT SCHEDULE | 74 (TCP-9A) | TRAFFIC CONTROL PLAN - 9A |
| 25 (MB24) | OPEN GEARING FRAME ANCHOR BOLT REPLACEMENT - 3 | | | 75 (TCP-10) | TRAFFIC CONTROL PLAN - 10 |
| 26 (MB25) | SPAN DRIVE BRAKE REPLACEMENT | | | | |



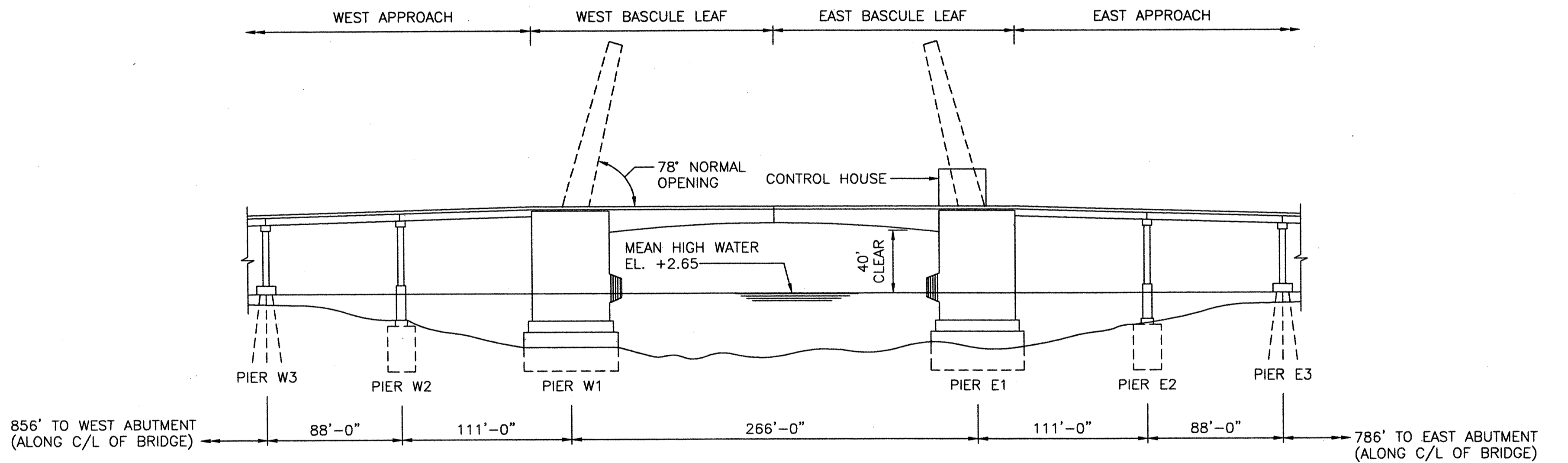
SCOPE OF MECHANICAL WORK

1. REPLACEMENT OF ALL EXISTING CENTER LOCK COMPONENTS WITH NEW AND INSTALLATION OF TEMPORARY LOCKS.
2. REPLACEMENT OF EXISTING LIVE LOAD SPAN LOCK COMPONENTS AS SHOWN ON PLANS WITH NEW.
3. REPLACEMENT OF EXISTING AUXILIARY DRIVE COMPONENTS WITH NEW.
4. REPLACEMENT OF EXISTING OPEN GEARING COVERS WITH NEW.
5. REPLACEMENT OF EXISTING AIR BUFFER BUSHINGS, FILTERS, GAGES, PIPING, AND FITTINGS.
6. REHABILITATION OF OPEN GEARING FRAME ANCHOR BOLTS.
7. MAINTAINING OF SPAN BALANCE WITHIN SPECIFIED BALANCE RANGE DURING CONSTRUCTION.
8. REPLACEMENT OF EXISTING SPAN DRIVE BRAKES AND WITH NEW.



PLAN

SCALE: 1" = 50'-0"

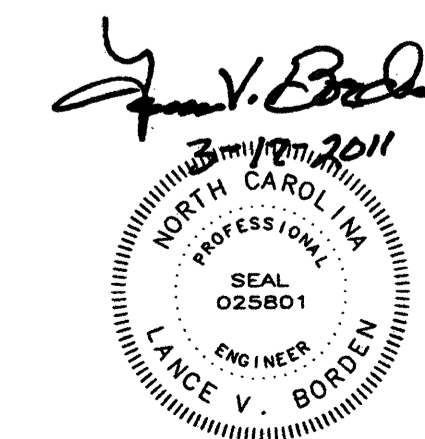


ELEVATION

SCALE: 1" = 50'-0"

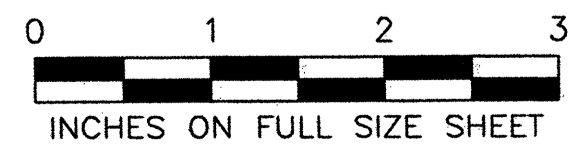
WARNING

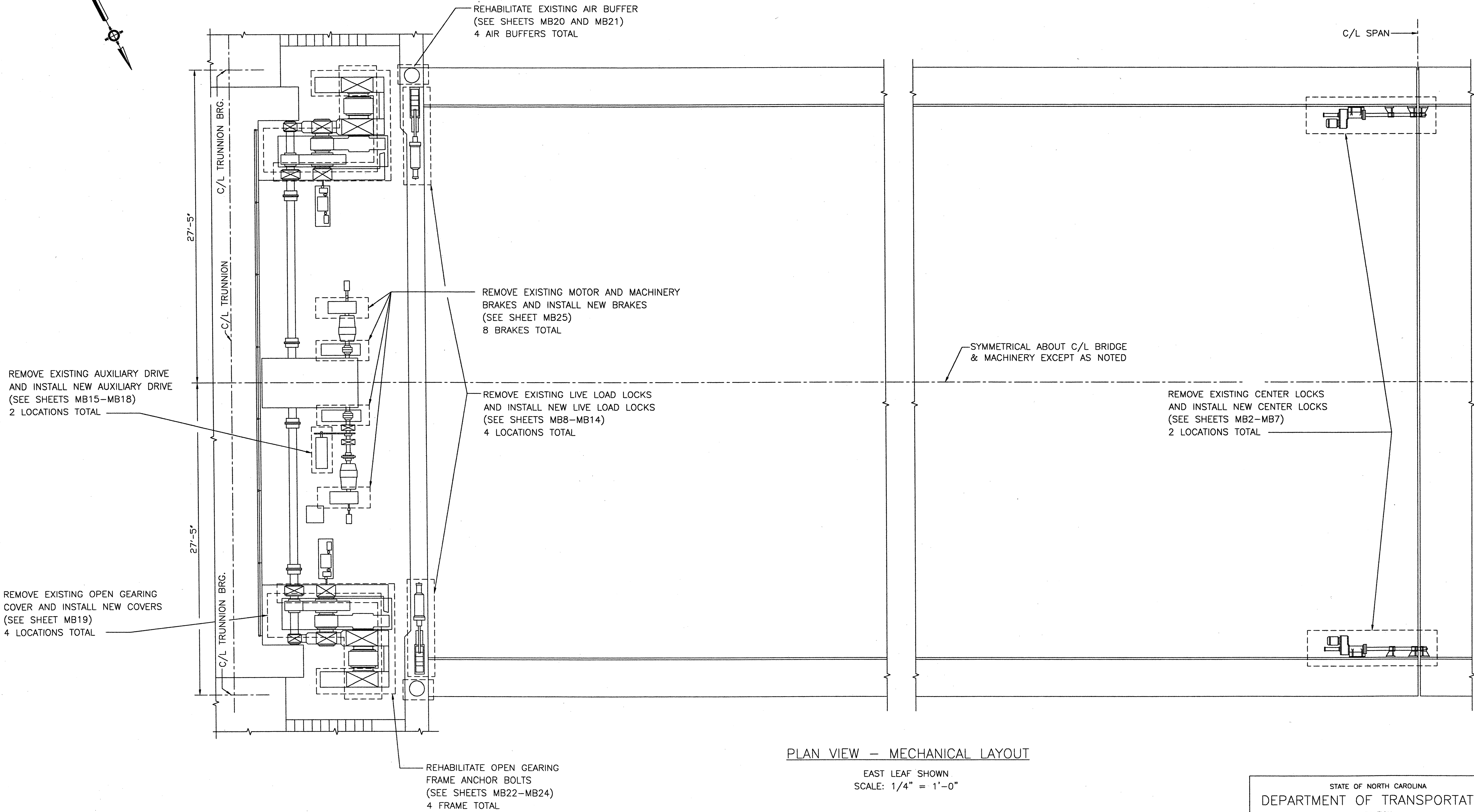
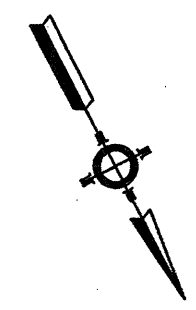
THE PAINT SYSTEM OF THE EXISTING BRIDGE STRUCTURE MAY CONTAIN LEAD AND/OR OTHER HEAVY METALS. ANY CONTAINMENT, ABATEMENT, AND/OR OTHER MEASURES NECESSITATED BY THE CONTRACTOR'S ACTIVITIES SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR.



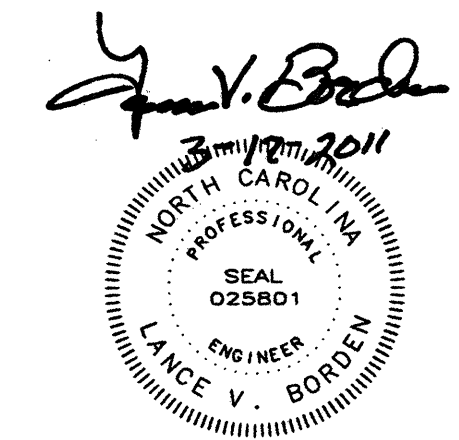
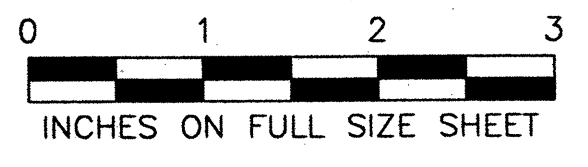
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 CAPE FEAR BASCULE BRIDGE
 AND MEMORIAL LIFT BRIDGE
 WILMINGTON, NORTH CAROLINA
 GENERAL PLAN AND ELEVATION
 (BASCULE BRIDGE)

| | | | |
|----------|--------------|-----------------|------------|
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | D.M. BARRETT | DRAWING NO. | 1 OF 63 |
| DRAWN BY | | E.A. RICKENBACH | |
| SCALE | | AS NOTED | |



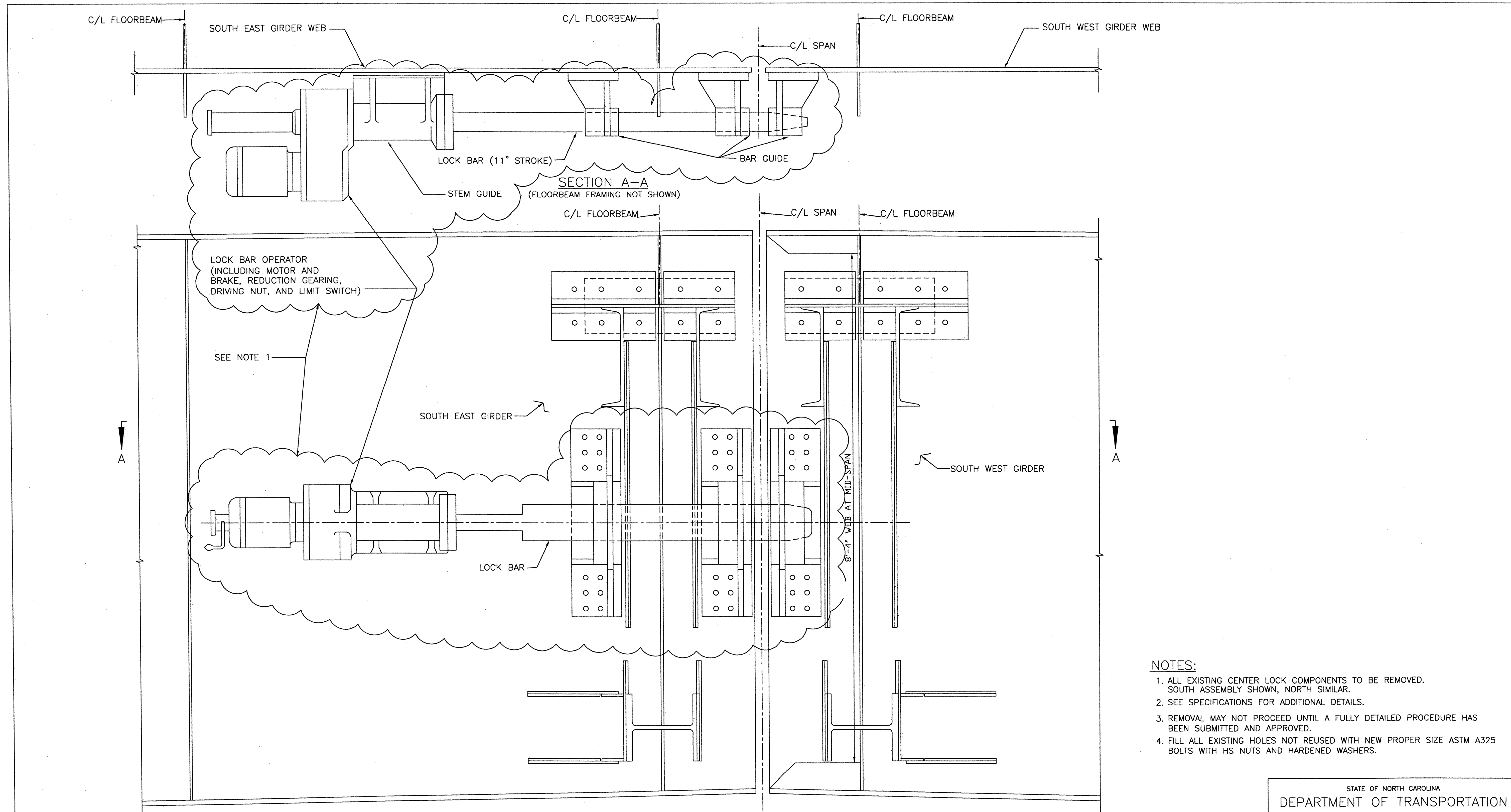


PLAN VIEW - MECHANICAL LAYOUT
EAST LEAF SHOWN
SCALE: 1/4" = 1'-0"



| | | | |
|--|--|---------------------------|--|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| EXISTING MECHANICAL LAYOUT | | | |
| DESIGNED D.M. BARRETT | | DRAWN BY E. A. RICKENBACH | |
| CHECKED J.W. NEWMAN | | SCALE AS NOTED | |
| DETAILED D.M. BARRETT | | DATE MARCH 2011 | |
| CHECKED J.W. NEWMAN | | DRAWING NO. 2 OF 63 | |

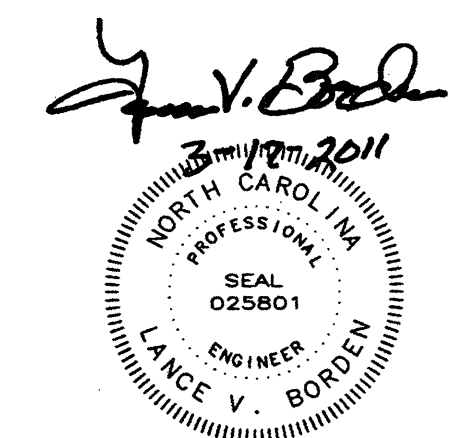
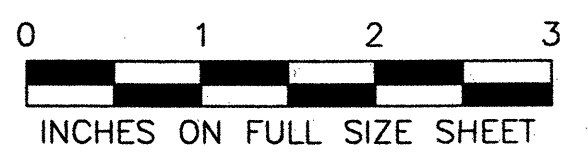
2-MB1-ENCL.DWG



ELEVATION
 EXISTING CENTER LOCK ASSEMBLY
 (FLOORBEAM FRAMING NOT SHOWN)
 SCALE: 1 1/2" = 1'-0"

NOTES:

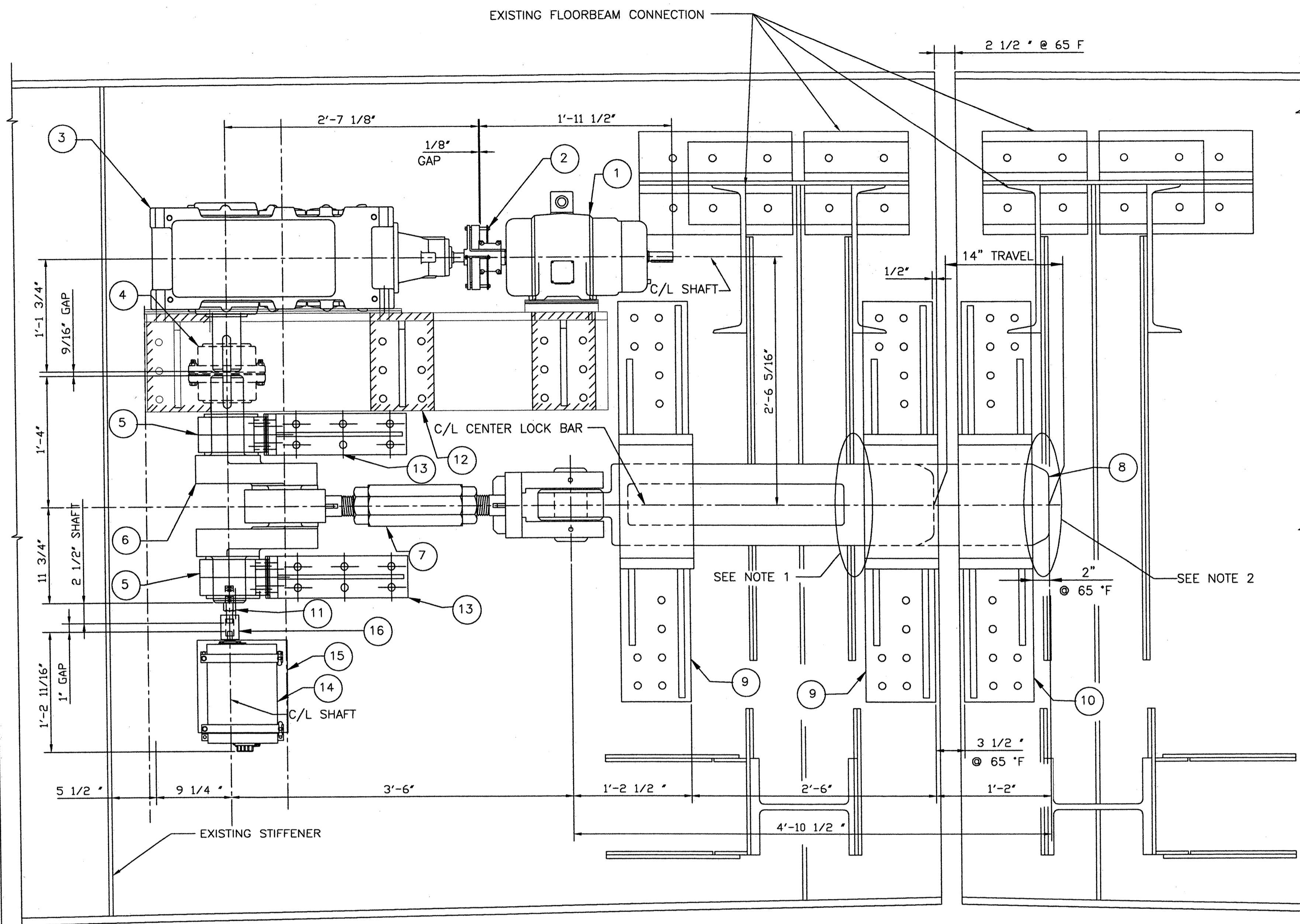
1. ALL EXISTING CENTER LOCK COMPONENTS TO BE REMOVED. SOUTH ASSEMBLY SHOWN, NORTH SIMILAR.
2. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
3. REMOVAL MAY NOT PROCEED UNTIL A FULLY DETAILED PROCEDURE HAS BEEN SUBMITTED AND APPROVED.
4. FILL ALL EXISTING HOLES NOT REUSED WITH NEW PROPER SIZE ASTM A325 BOLTS WITH HS NUTS AND HARDENED WASHERS.



| | | | |
|--|-----------------|---------------------|---------------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| EXISTING CENTER LOCK REMOVAL | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DATE MARCH 2011 | CHECKED J.W. NEWMAN | DRAWING NO. 3 OF 63 |

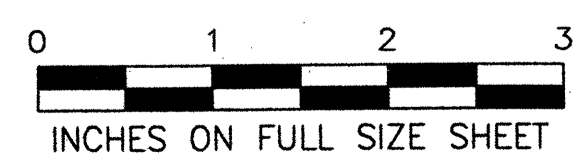
3-MB2-ECL-R.DWG

MB2



ELEVATION
NEW CENTER LOCK LAYOUT

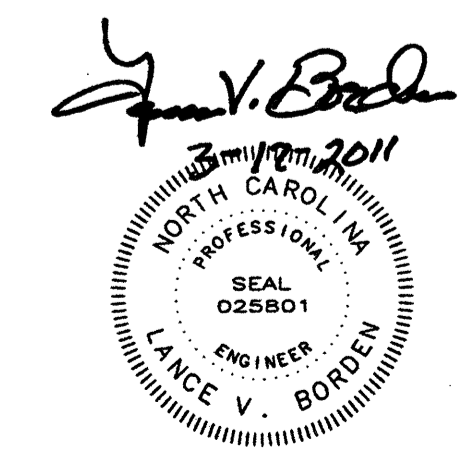
SCALE: 1 1/2" = 1'-0"
ELEVATION VIEW - SOUTH SHOWN,
NORTH OPPOSITE HAND



| MACHINERY SCHEDULE | | | |
|--------------------|----------------|--|-----------|
| MACH'Y NO. | NO. REQ'D. | UNIT DESCRIPTION | SHEET NO. |
| 1 | 3 (1 SPARE) | NEW CENTER LOCK BRAKE MOTOR, BY REULAND ELECTRIC, 3 HP, 900 RPM, TENV, NEMA DESIGN D, HOIST DUTY AC, WITH REULAND ELECTRIC 25 FT-LBS BRAKE, 215X FRAME, EXTENDED SHAFT FOR HAND CRANK, AND MICROSWITCH ASSEMBLY. | - |
| 2 | 2 | NEW TORQUE LIMITING COUPLING, BY THE FALK CORPORATION, TYPE T41, SIZE 1030T, SET FOR 315 IN-LBS TORQUE. WITH ASTM A668, CLASS G KEYS TO MATCH STANDARD KEYWAYS ON BRAKE MOTOR AND GEAR REDUCER. | - |
| 3 | 2 | NEW RIGHT ANGLE GEAR REDUCER, BY SUMITOMO MACHINERY CORPORATION OF AMERICA, MODEL 9040, QUADRUPLE REDUCTION, RATIO 140:1 WITH OUTDOOR BREATHER AND HIGH BUILD EPOXY PAINT. FOR LUBRICATION PIPING, WHEN VIEWED FROM HIGH SPEED SHAFT SIDE AND THE VERTICAL SHAFT DOWN, ONE UNIT TO HAVE PIPING ON THE LEFT AND ONE UNIT TO HAVE PIPING ON THE RIGHT. BREATHER POSITIONED TO ALLOW FOR 80 DEGREES OF ROTATION WHEN MOUNTED ON BRIDGE. | - |
| 4 | 2 | NEW DOUBLE ENGAGEMENT COUPLING, BY THE FALK CORPORATION, GEAR TYPE GV10, SIZE 1030GV, 107,100 IN-LB TORQUE RATING, WITH SHROUDED BOLTS AND WITH AISI 1045 HEAT TREATED TO 250-300 BHN KEYS TO MATCH KEYWAYS ON GEAR REDUCER AND CRANK SHAFT. | - |
| 5 | 4 | NEW CRANK SHAFT BEARINGS, MODEL NUMBER SMCB-16 BY STEWARD MACHINE CO., WITH CUSTOM RADIUS AND GREASE GROOVES ON ONE SIDE. | MB4 |
| 6 | 2 | NEW CRANK SHAFT. | MB4 |
| 7 | 2 | NEW TURNBUCKLE AND CRANK SHAFT ASSEMBLY. | MB4 |
| 8 | 2 | NEW CENTER LOCK BAR. | MB4 |
| 9 | 4 | NEW CENTER LOCK GUIDES. | MB5 |
| 10 | 2 | NEW CENTER LOCK RECEIVER. | MB5 |
| 11 | 2 | NEW STUB SHAFT FOR ROTARY CAM LIMIT SWITCH. | MB5 |
| 12 | 2 | NEW GEAR REDUCER AND BRAKE MOTOR SUPPORT. | MB6 |
| 13 | 4 | NEW CRANK SHAFT BEARING SUPPORT. | MB6 |
| 14 | 2 | NEW ROTARY CAM LIMIT SWITCH WITH 8 CAMS, BY GEMCO, SPDT SWITCHES, CONTACTS RATED 10A AT 120 VAC., NEMA 4/4X TYPE 316 STAINLESS STEEL HOUSING, CAMS ADJUSTABLE WITHOUT TOOLS, SETABLE FROM 4 TO 356 DEGREES. | - |
| 15 | 2 | NEW ROTARY CAM LIMIT SWITCH SUPPORT. | MB6 |
| 16 | 2 | NEW STAINLESS STEEL COUPLING BY HELICAL MODEL MC7C-225-24-20 TO MATCH SHAFTS. | - |

NOTES:

- EXISTING CUTOUTS IN GUSSET PLATES (AND GIRDER STIFFENER BETWEEN THE PLATES) MAY NEED TO BE ENLARGED TO PROVIDE MINIMUM 1/2" AND MAXIMUM 1" CLEARANCE WITH NEW LARGER LOCK BAR.
- ONE NEW CUTOUT (FOR EACH LOCK BAR) IN WEST LEAF GUSSET PLATES REQUIRED WITH MINIMUM 1/2" AND MAXIMUM 1" CLEARANCE WITH NEW LOCK BAR.
- CUTOUTS SHALL BE MADE BY MECHANICAL MEANS ONLY AFTER PROCEDURE IS SUBMITTED TO OWNER AND APPROVED.
- PROVIDE NEW STAINLESS STEEL DEBRIS COVERS TO COMPLETELY COVER THE TOP OF THE CENTER LOCK BARS BETWEEN GUIDES. CONCEPT TO BE SUBMITTED TO OWNER FOR APPROVAL. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
- THE EXISTING LIVE LOAD SHOES SHALL BE ADJUSTED BY INSTALLING OR REMOVING SHIMS TO THE TOP SHOE TO ACHIEVE CONTACT ON BOTH SIDES OF EACH LIVE LOAD ASSEMBLY. THIS ADJUSTMENT SHALL BE COORDINATED WITH THE ROADWAY PROFILE AND ADJUSTMENT OF THE SHIMS FOR THE EXISTING CENTER LOCK RECEIVERS. EACH LIVE LOAD ADJUSTMENT SHALL BE SUBMITTED AND APPROVED BY THE NCDOT REPRESENTATIVE BEFORE THE ADJUSTMENT IS MADE.
- A TEMPORARY SPAN LOCK ASSEMBLY IS DETAILED ON SHEET MB7. INSTALLATION IS REQUIRED BEFORE REMOVAL OF ANY EXISTING CENTER LOCK GUIDES, RECEIVERS, OR LOCK BARS.

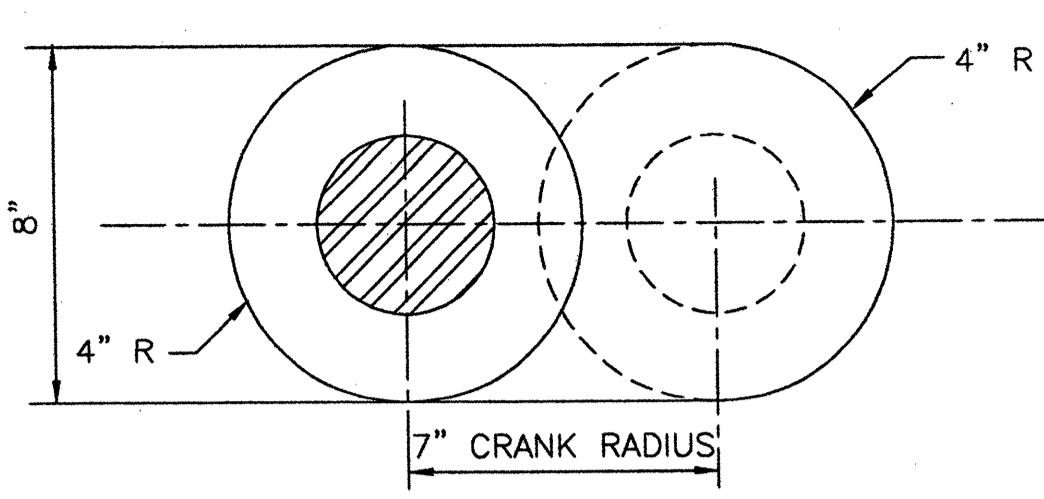


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
NEW CENTER LOCK - LAYOUT

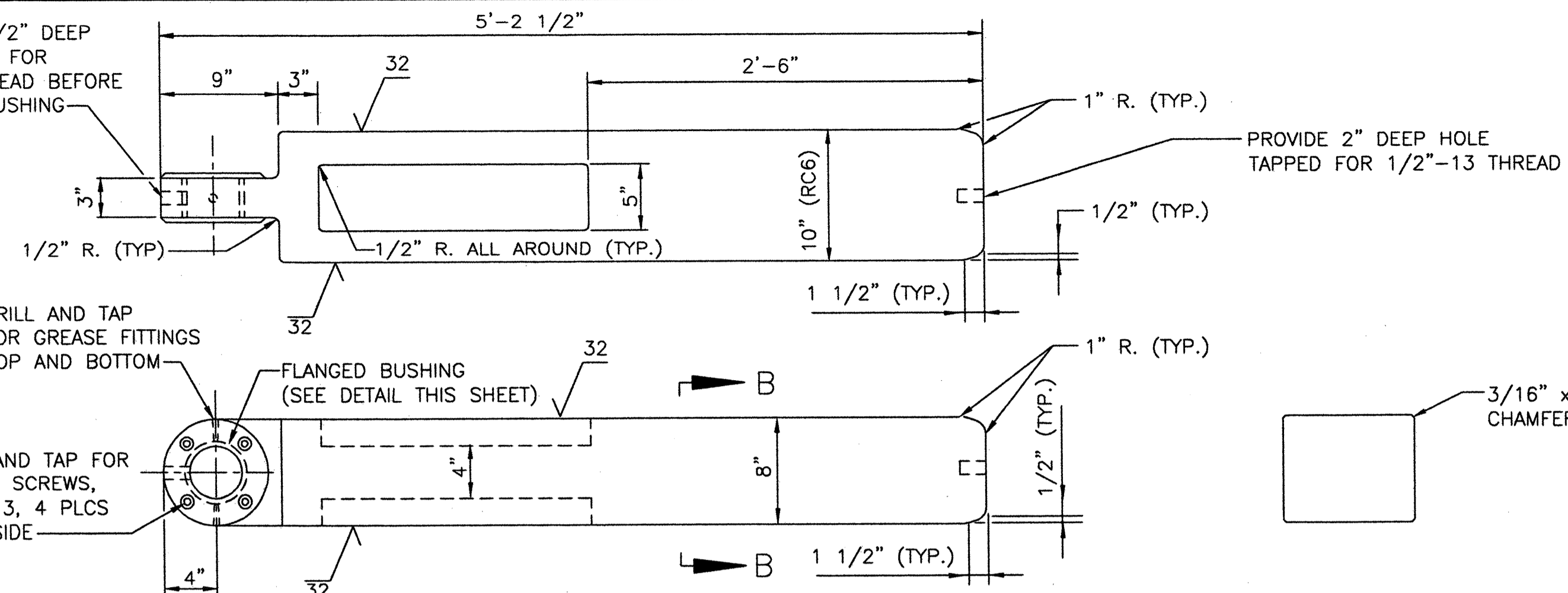
| | | | | | |
|----------|--------------|----------|--------------|-------------|------------|
| DESIGNED | D.M. BARRETT | DETAILED | D.M. BARRETT | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | CHECKED | E.A. SAMPLE | DRAWING NO. | 4 OF 63 |

MB3

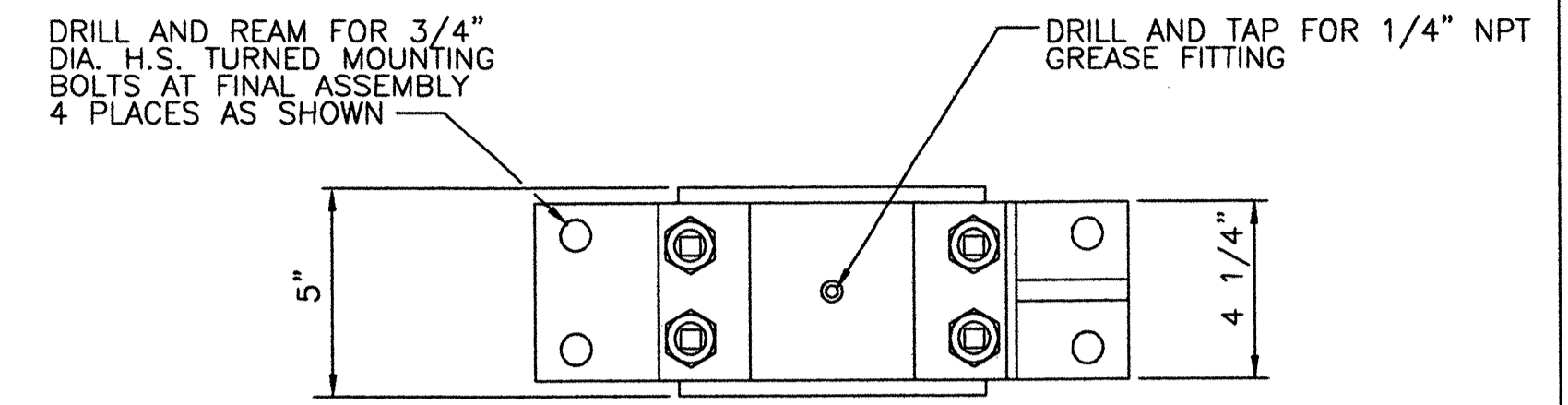
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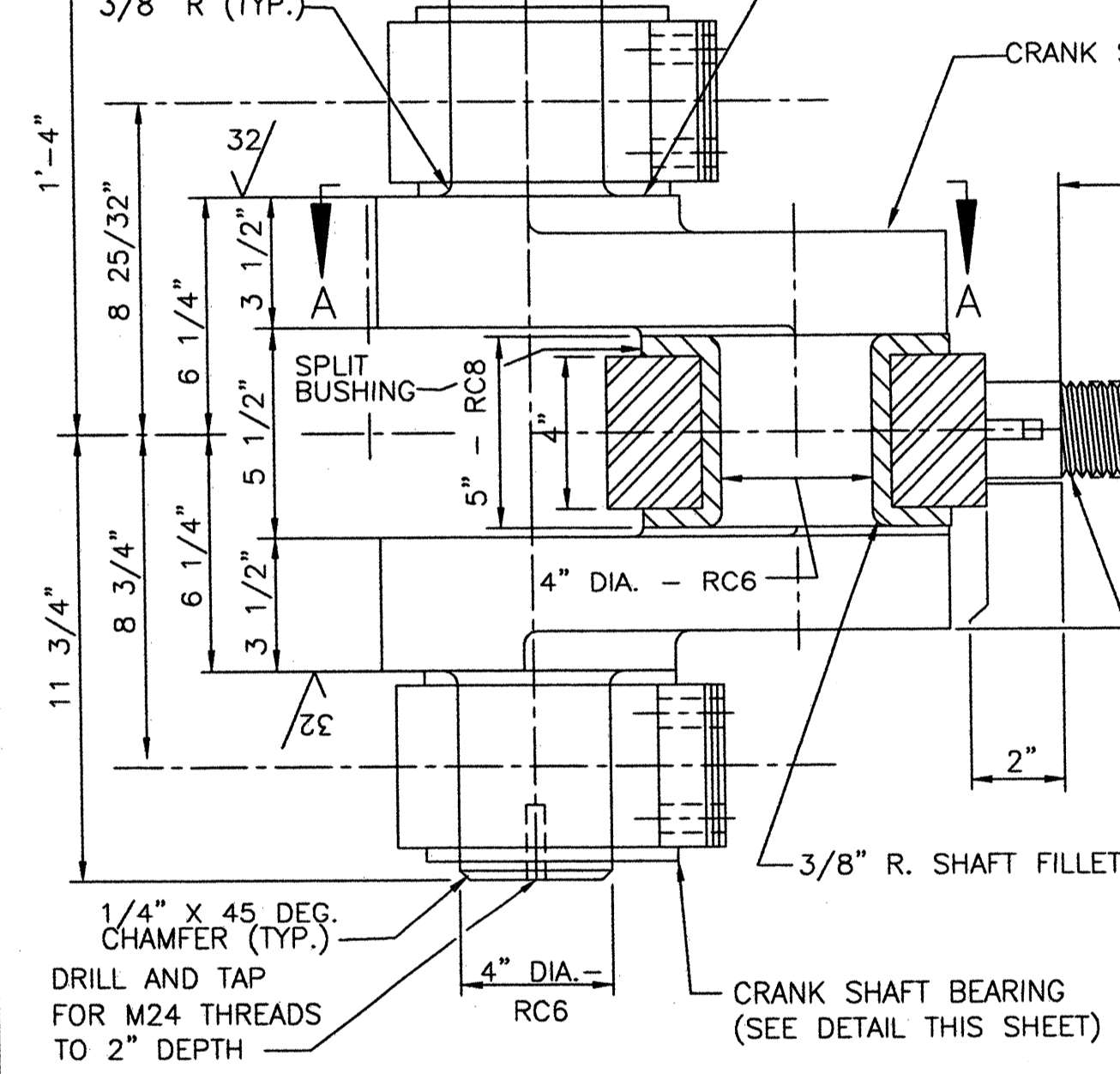
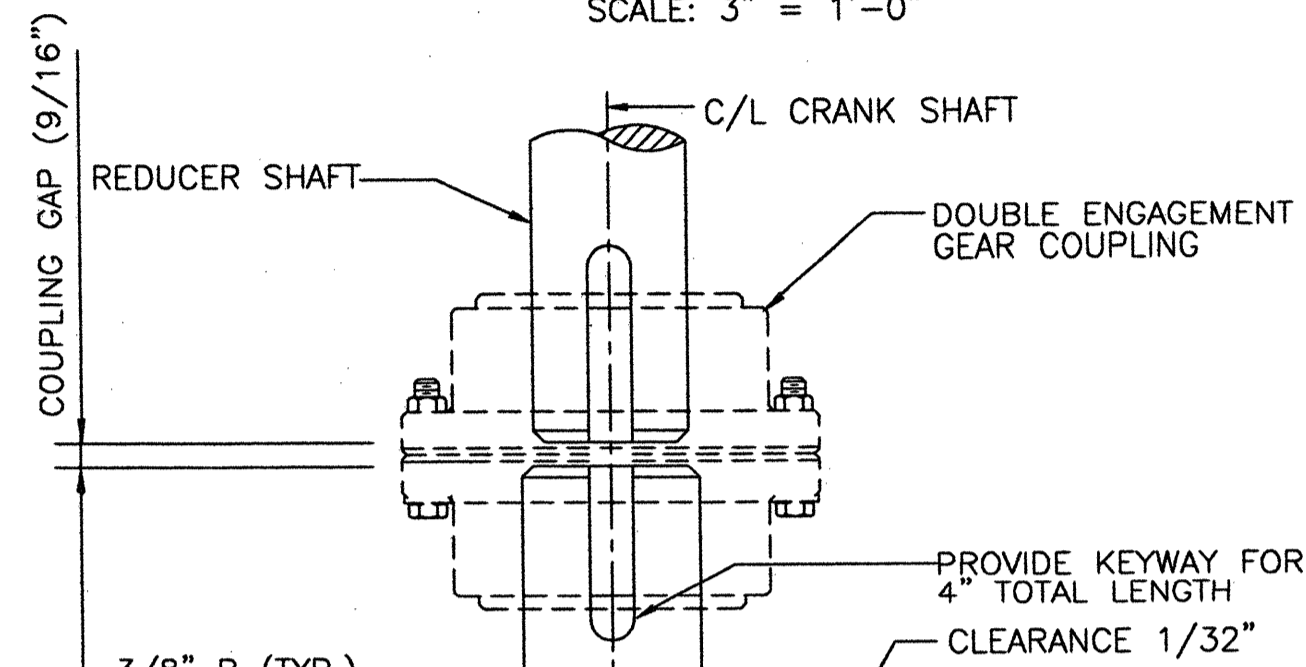
SECTION A-A
SCALE: 3" = 1'-0"



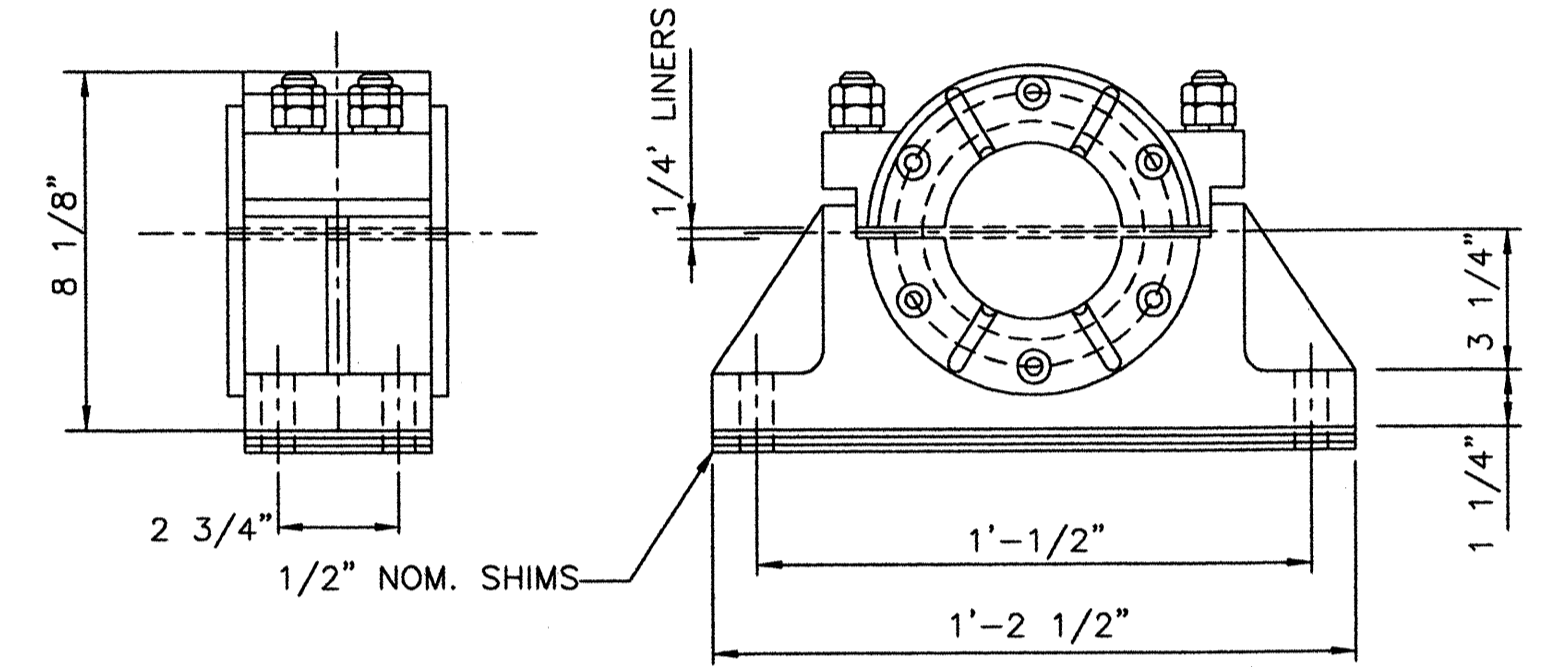
CENTER LOCK BAR
SCALE: 1 1/2" = 1'-0"
MATERIAL
LOCK BAR: ASTM A668 CLASS K



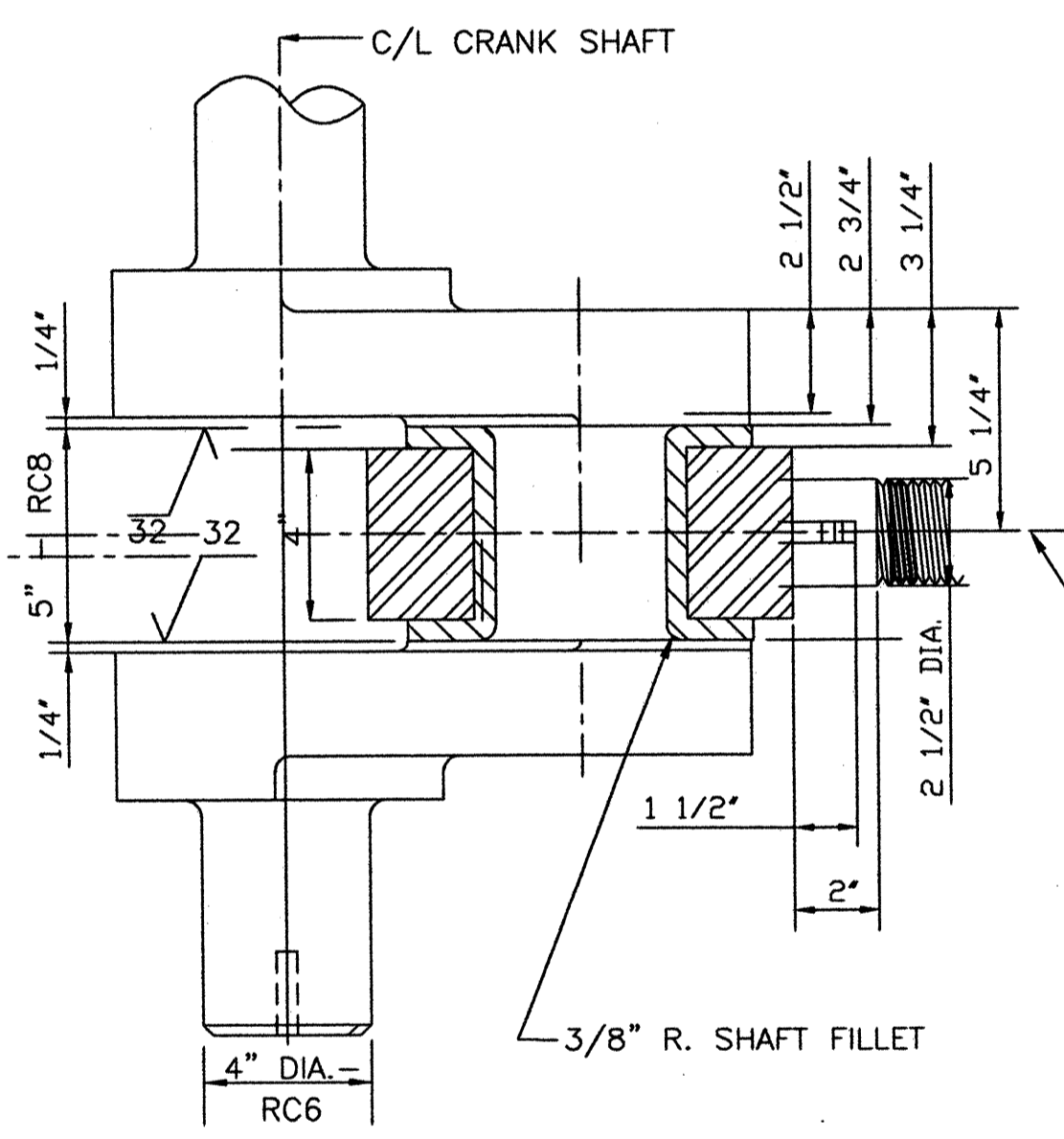
SECTION B-B
SCALE: 1 1/2" = 1'-0"



CRANK SHAFT ASSEMBLY
SCALE: 3" = 1'-0"
MATERIAL:
CRANK SHAFT: ASTM A668 CLASS M
TURNBUCKLE AND PIN: AISI 4140 H.R.
BUSHING: ASTM B22 UNS NO. C93700
ALL OTHER MATERIAL: ASTM A588, HSLA STEEL



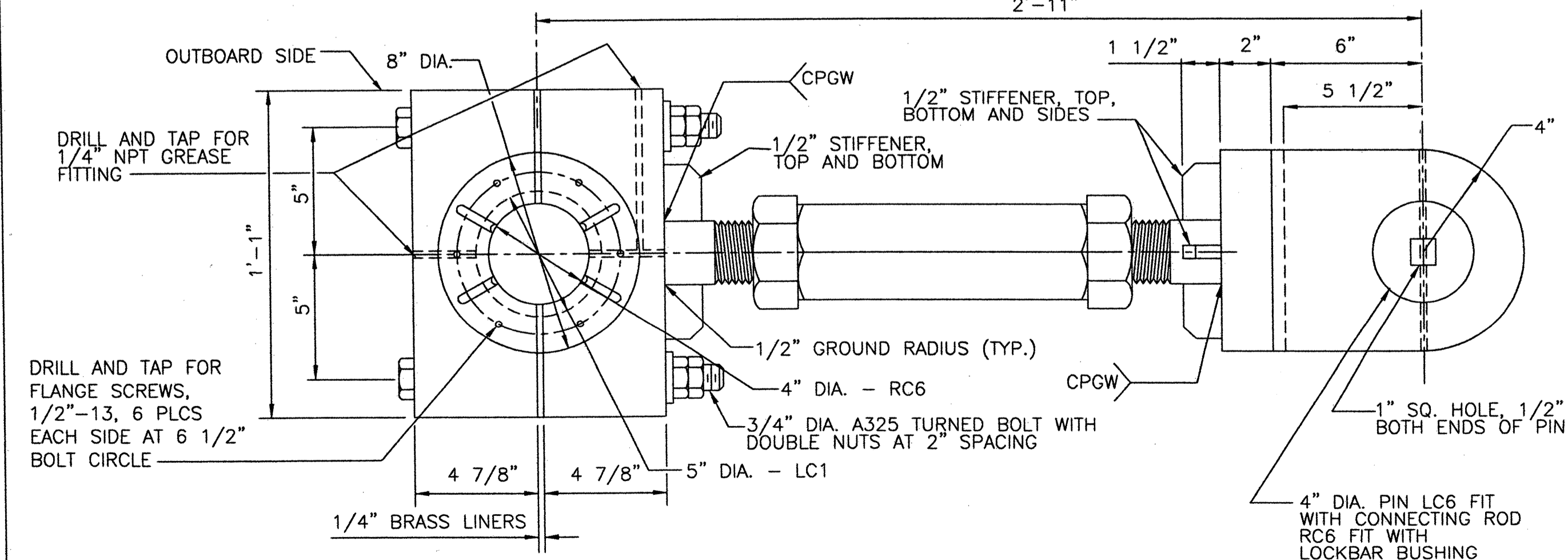
CRANK SHAFT BEARING DETAIL
SCALE: 3" = 1'-0"
MATERIAL
BASE AND CAP: ASTM A36 OR ASTM A27, GRADE 70-36
BUSHING: ASTM B22 UNS NO. C91100, 1/2" THICK
BOLTS: ASTM A490



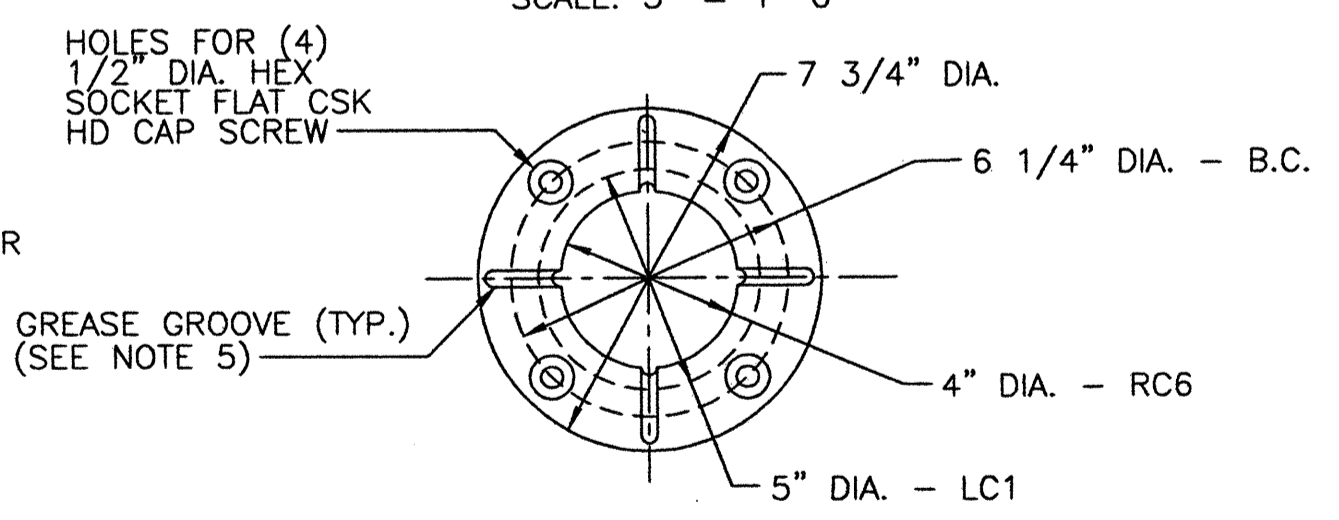
ADDITIONAL CRANK SHAFT DETAIL
SCALE: 3" = 1'-0"

NOTES:

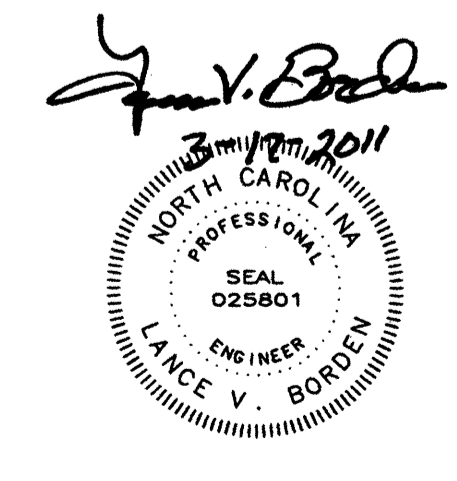
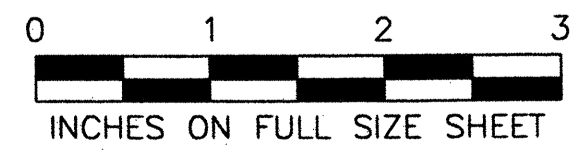
- ALL SPLIT BEARING GREASE GROOVES SHALL BE 1/8" WIDE AND 1/16" DEEP WITH ALL CORNERS AND EDGES ROUNDED TO 1/16" R. THE GREASE GROOVE SHALL BE CUT 1/2" FROM THE ENDS OF THE BEARING AND FORM A FIGURE EIGHT OVER THE ENTIRE JOURNAL SURFACE WITH ONE INTERSECTION AT THE GREASE PORT. THE CORNER OF THE BEARING AT A FILLET SHALL BE ROUNDED THE FILLET RADIUS PLUS 1/8" AT THE SPLIT. THE SHIM PACK SHALL BE CUT 1/4" BACK FROM THE JOURNAL SURFACE BETWEEN THE GREASE GROOVES. EACH BEARING SHALL BE DRILLED AND TAPPED FOR 1/4" STEEL PIPE, ADAPTER AND GREASE FITTING.
- ALL WELDMENTS SHALL BE STRESS RELIEVED BY HEAT PRIOR TO FINAL MACHINING.
- MAXIMUM WIDTH ACROSS CORNERS FOR TURNBUCKLE 4 1/2", 3 7/8" ACROSS FLATS.
- HEX SOCKET FLAT CSK HEAD CAP SCREWS TO BE RECESSED 1/8".
- FLANGED BUSHINGS TO HAVE 1/8" WIDE AND 1/16" DEEP GROOVES WITH CORNERS AND EDGES ROUNDED TO 1/16" R. I.D. GROOVES TO BE DOUBLE SPIRAL. THRUST FACE GROOVES TO TIE INTO I.D. GROOVES.
- ALL BUSHINGS TO HAVE 32 MICROINCH FINISH AT JOURNAL AND THRUST AREAS AND 125 MICROINCH FINISH AT NON-SLIDING AREAS.



TURNBUCKLE (CONNECTING ROD)
SCALE: 3" = 1'-0"

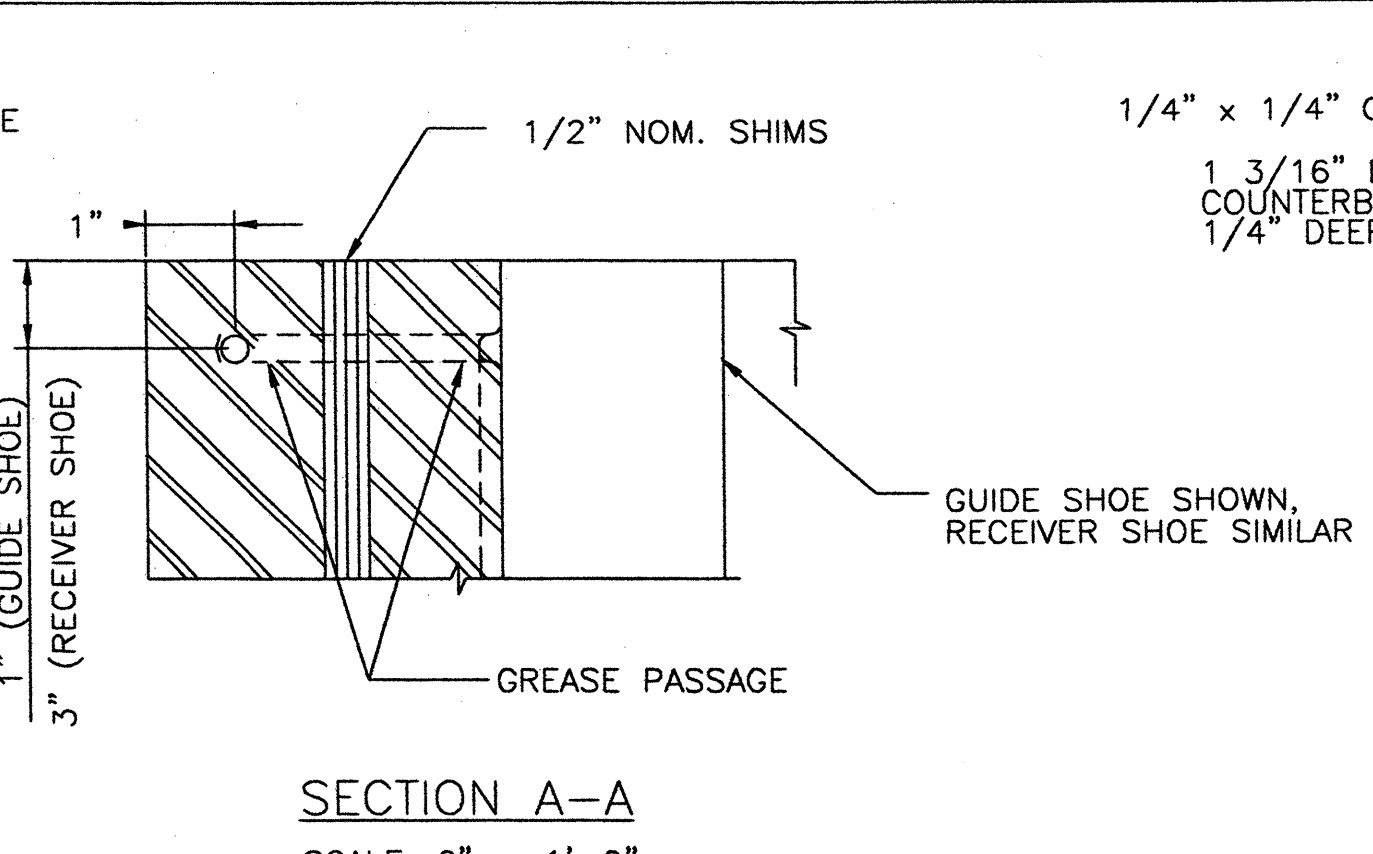
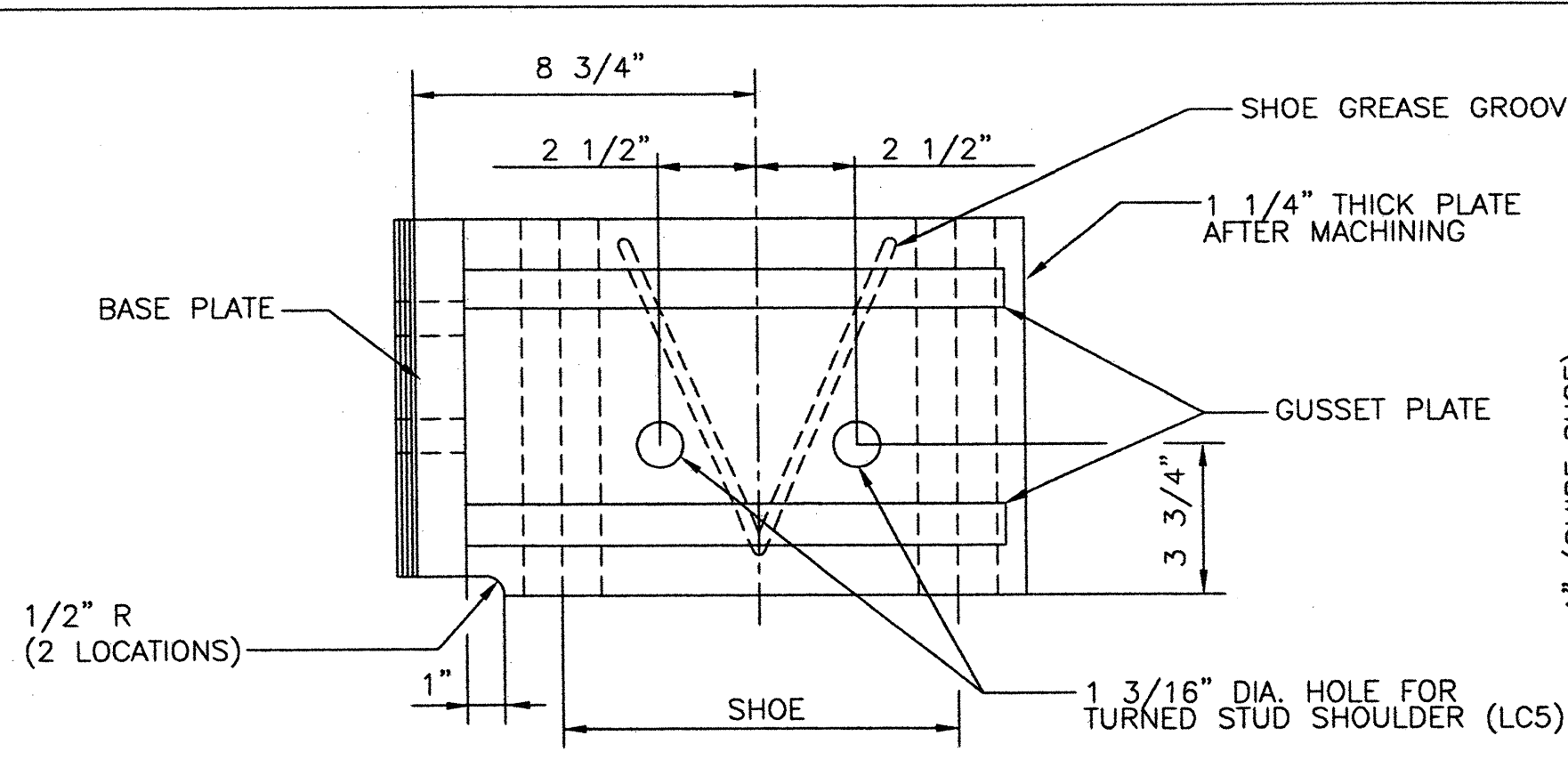


FLANGED BUSHING DETAIL
SCALE: 3" = 1'-0"
MATERIAL
ASTM B22 UNS NO. C93700

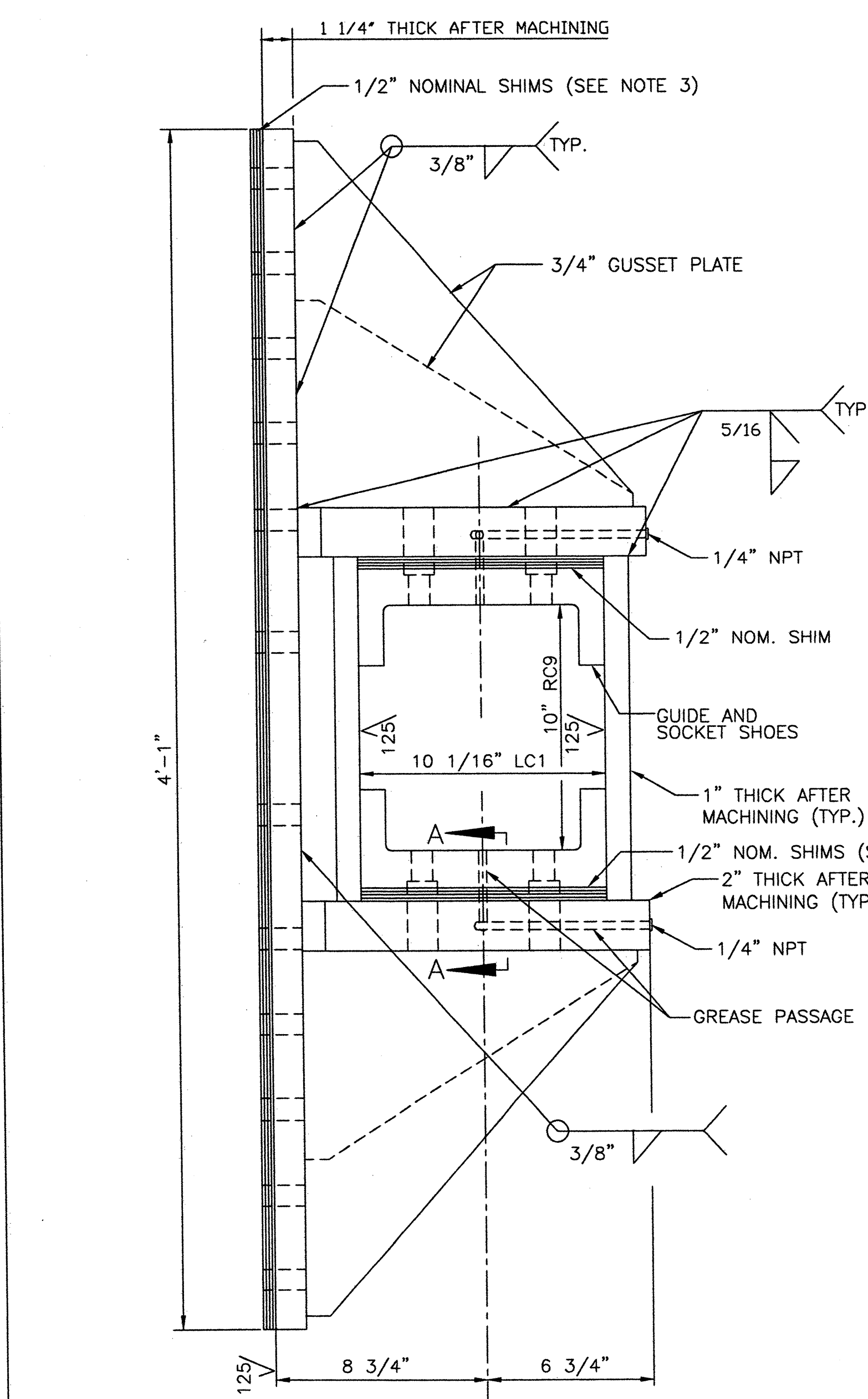


| | | | |
|--|-----------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA NEW CENTER LOCK - COMPONENTS | | | |
| DESIGNED | D.M. BARRETT | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | DRAWING NO. | 5 OF 63 |
| DRAWN BY | E.A. RICKENBACH | SCALE | AS NOTED |

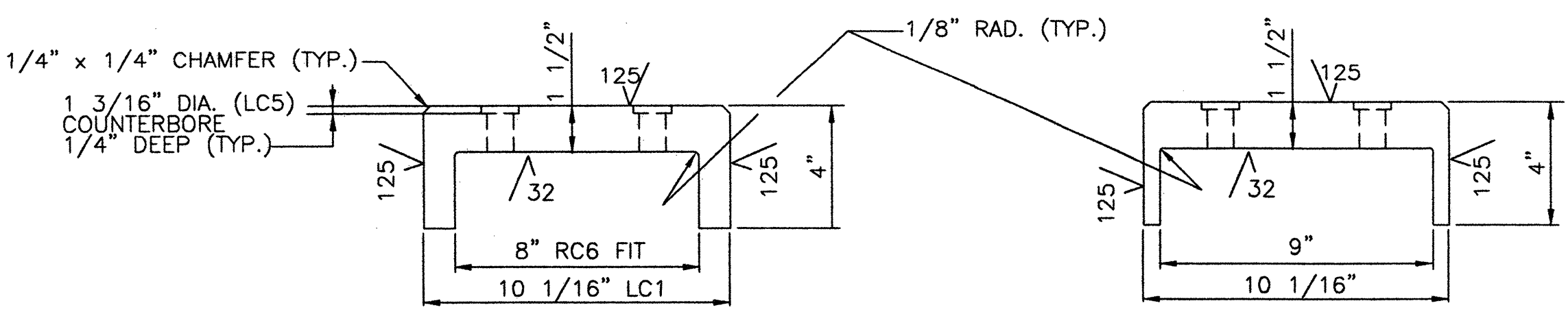
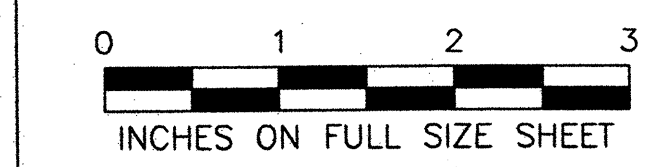
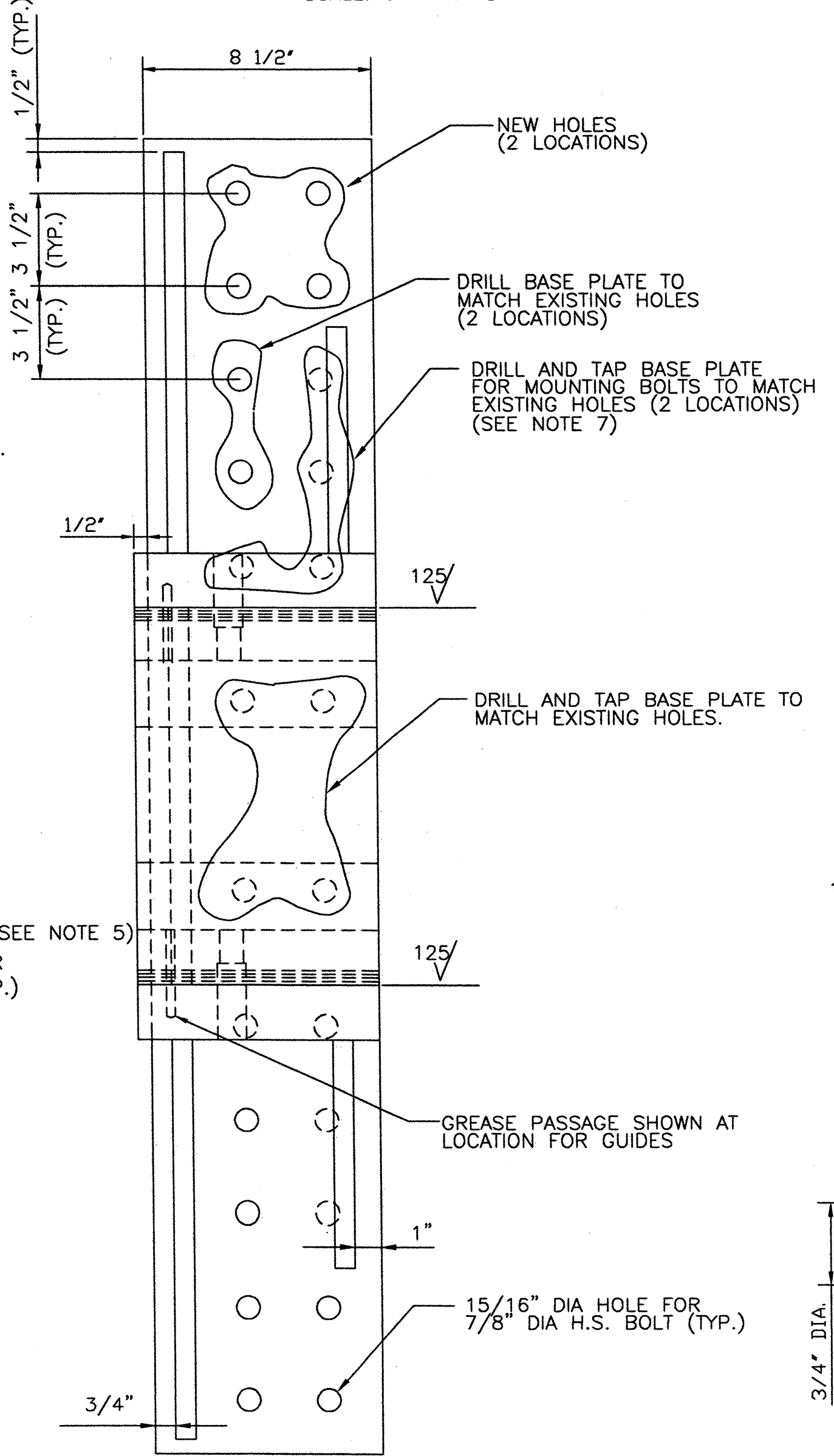
5-MB4-NCLC.DWG



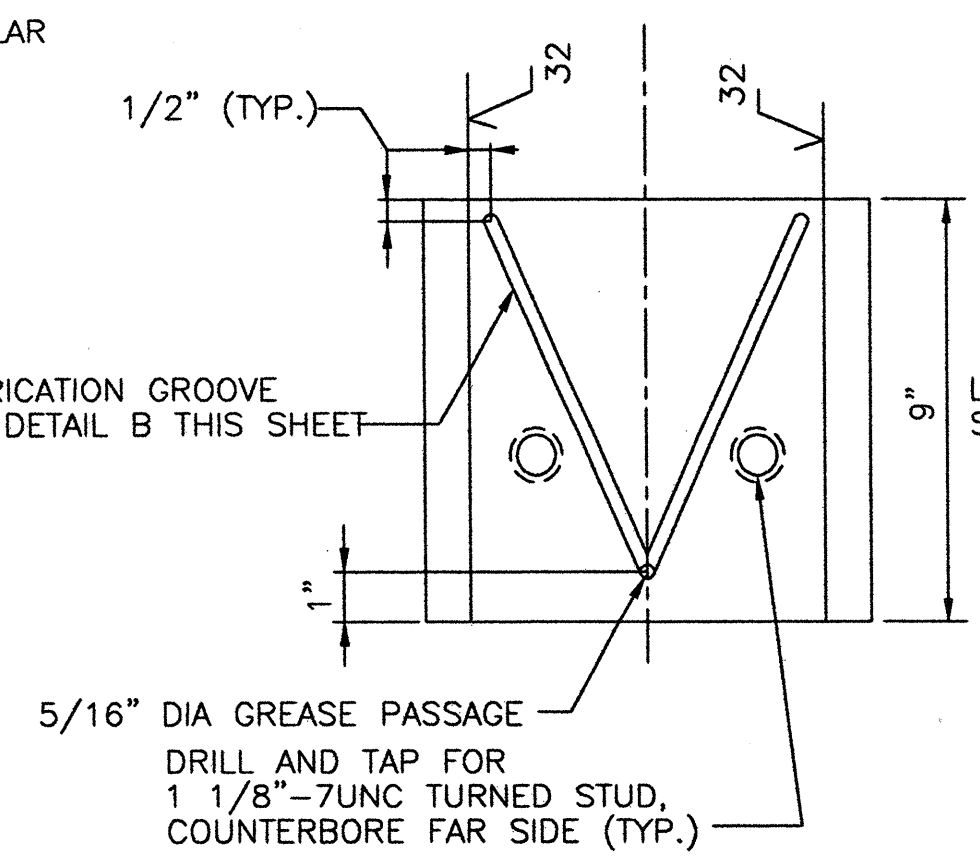
SECTION A-A
SCALE: 6" = 1'-0"



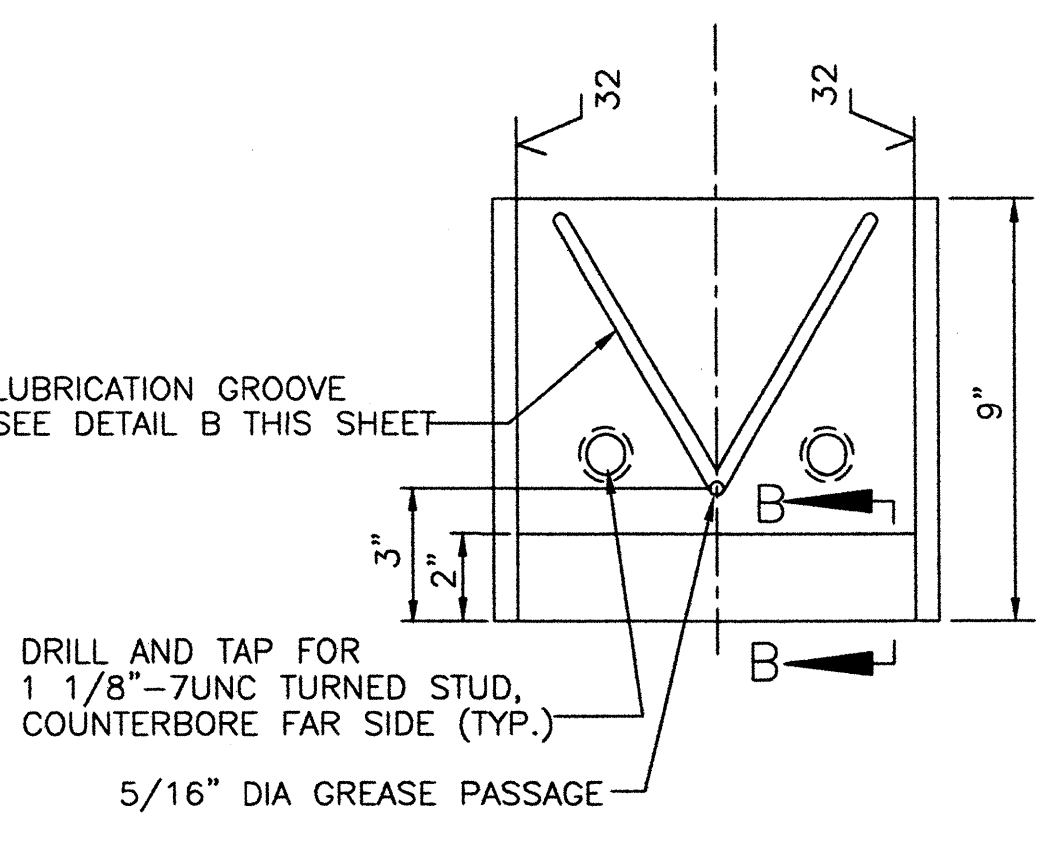
CENTER LOCK GUIDES
AND RECEIVER
SCALE: 3" = 1'-0"
MATERIAL
ASTM A588, HSLA STEEL



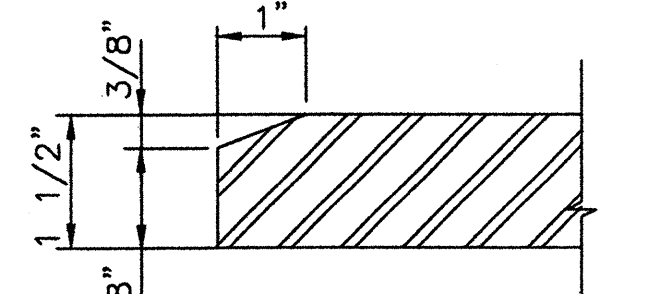
SHOE DETAIL
SCALE: 3" = 1'-0"
MATERIAL
SHOE: ASTM B22 UNS NO. C86300



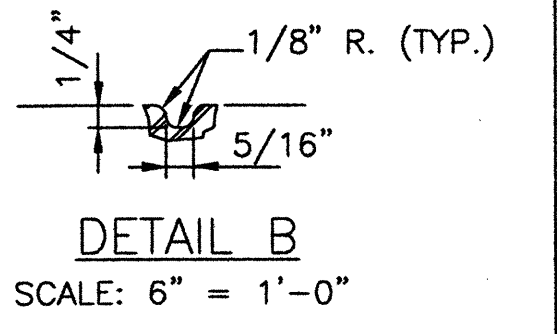
GUIDE SHOE
8 REQUIRED



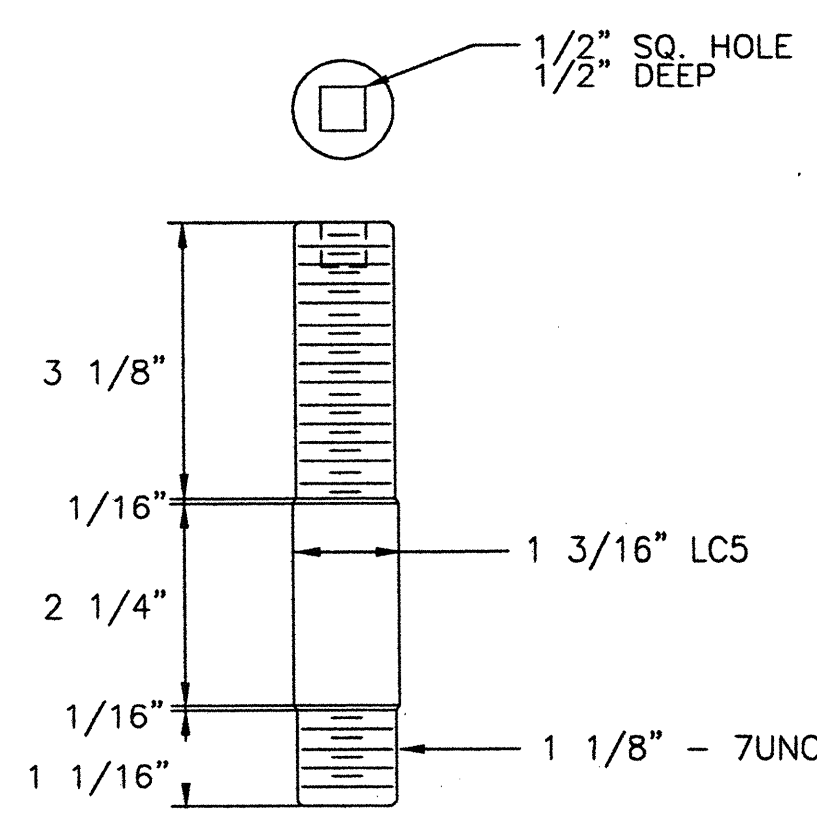
RECEIVER SHOE
4 REQUIRED



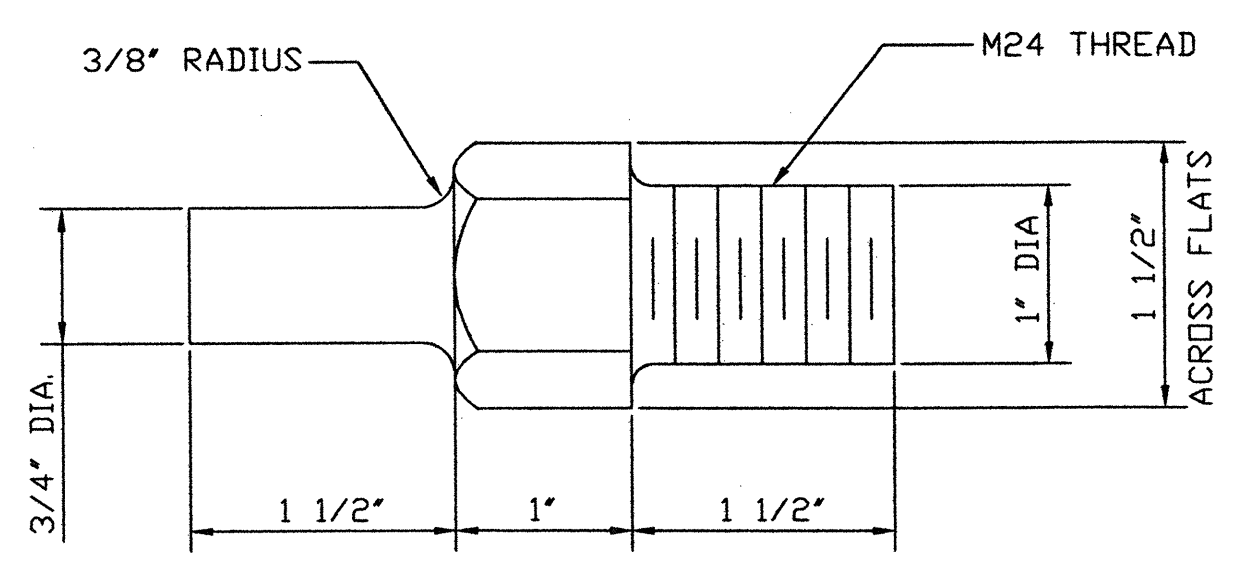
SECTION B-B
SCALE: 6" = 1'-0"



DETAIL B
SCALE: 6" = 1'-0"



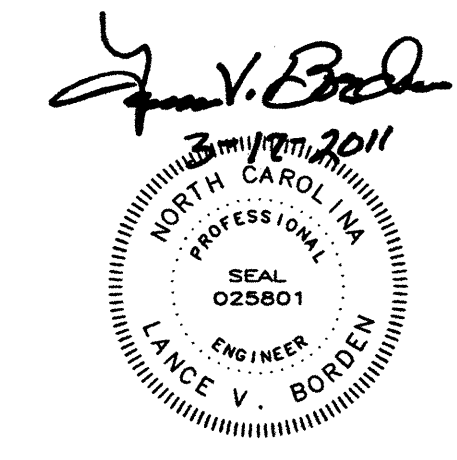
TURNED STUD DETAIL
SCALE: 6" = 1'-0"
24 REQUIRED
MATERIAL: ASTM A449



SHAFT FOR ROTARY CAM UNIT
SCALE: 1" = 1"
MATERIAL: AISI 4140 H.R.

NOTES:

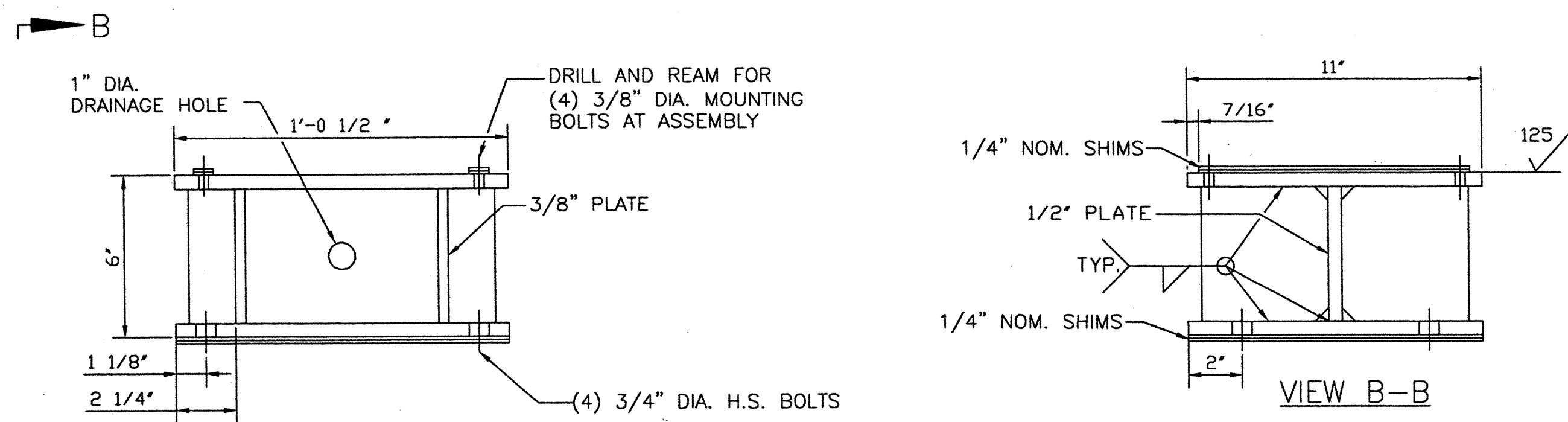
- ALL WELDMENTS SHALL BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
- GREASE PASSAGES MUST BE CONNECTED WITH RIGIDLY MOUNTED STAINLESS STEEL TUBING TO GREASE FITTINGS ADJACENT TO MAINTENANCE WALKWAYS AND SECURED AGAINST VIBRATION.
- ADDITIONAL 1/2" SHIM PLATES MAY BE REQUIRED AT SEVERAL LOCATIONS SUCH AS SOUTH RECEIVER MOUNTING. LONGER MOUNTING BOLTS MAY BE REQUIRED.
- LOCATION OF MOUNTING HOLES FOR GUIDES AND RECEIVERS SHALL CENTER ON FINAL CENTER LOCK BAR LOCATIONS. NOTE: THERE IS SIGNIFICANT VARIATION IN VERTICAL POSITION FOR EXISTING GUIDES AND RECEIVERS.
- EIGHT ADDITIONAL 1/8" SHIMS TO BE SUPPLIED FOR EACH GUIDE AND RECEIVER FOR ADJUSTMENT OF THE BASE PLATE AND FUTURE WEAR OF GUIDE AND RECEIVER SHOES.
- GUIDES AND RECEIVERS SHALL BE ASSEMBLED IN THE SHOP WITH NOMINAL SHIMS TO VERIFY FIT WITH NEW CENTER LOCK BAR.
- DRILLED AND TAPPED HOLES IN 1 1/4" PLATE NOT TO PENETRATE THE PLATE.
- PROVIDE DOUBLE NUTS AND HARDENED WASHERS FOR TURNED STUDS.



| | | | |
|---|--------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA NEW CENTER LOCK - GUIDE AND RECEIVER DETAILS | | | |
| DESIGNED | D.M. BARRETT | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | DRAWING NO. | 6 OF 63 |

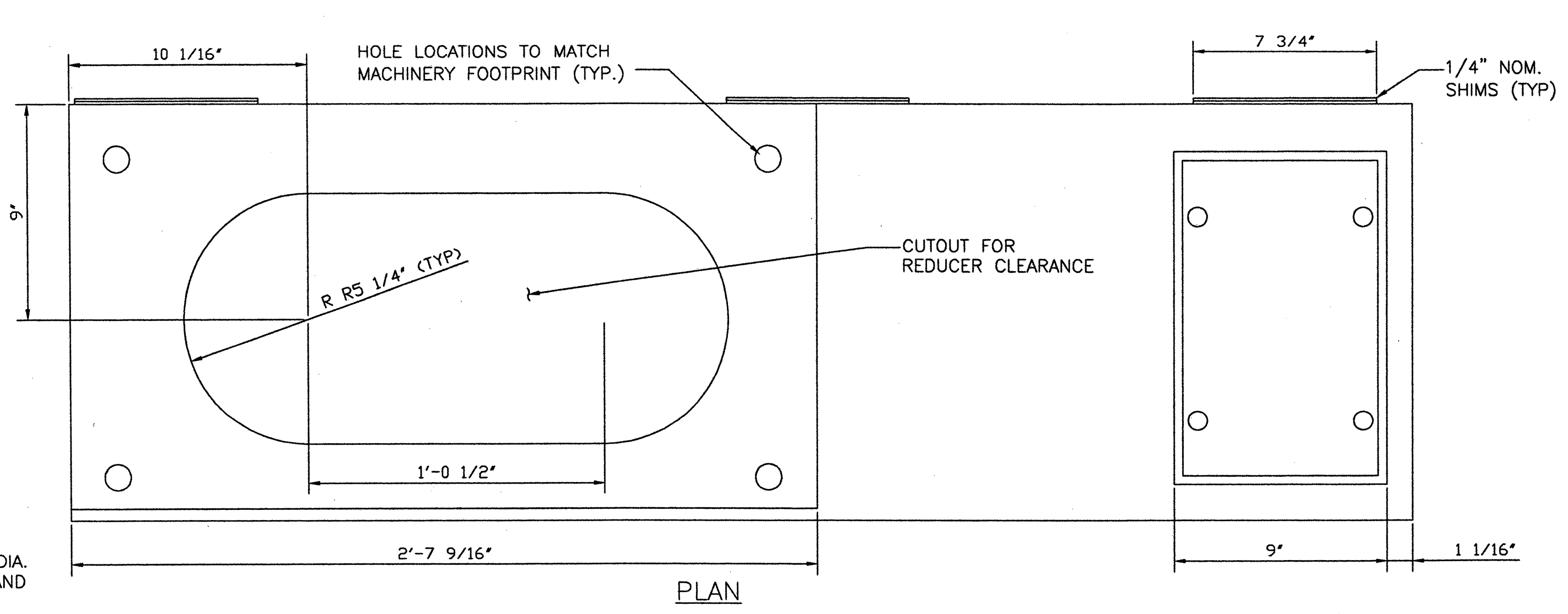
MB5

6-MB5-INCL0RD.DWG

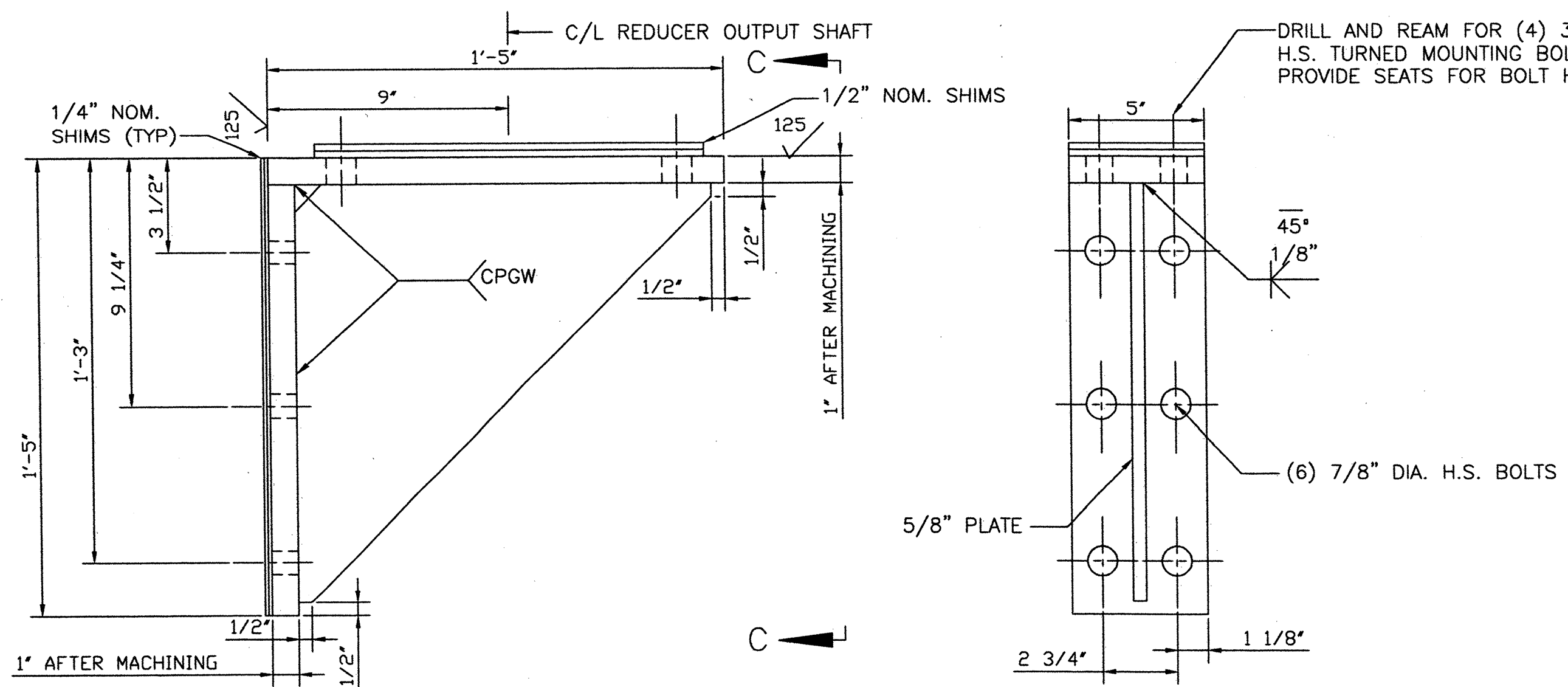


ROTARY CAM LIMIT SWITCH SUPPORT

SCALE: 3' = 1'-0"
 MATERIAL: ASTM A36
 QUANTITY: 2 TOTAL

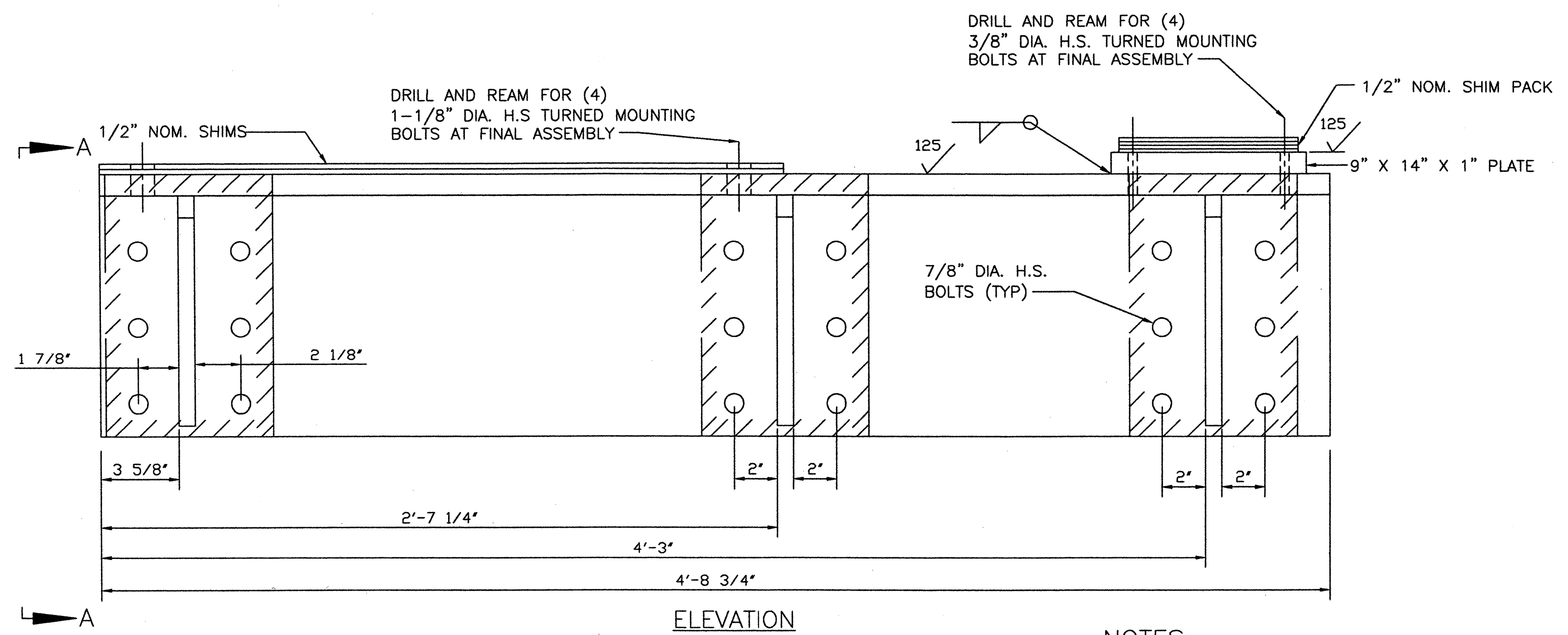


PLAN



CRANK SHAFT BEARING SUPPORT

SCALE: 3' = 1'-0"
 MATERIAL: ASTM A588, HSLA STEEL
 QUANTITY: 4 TOTAL

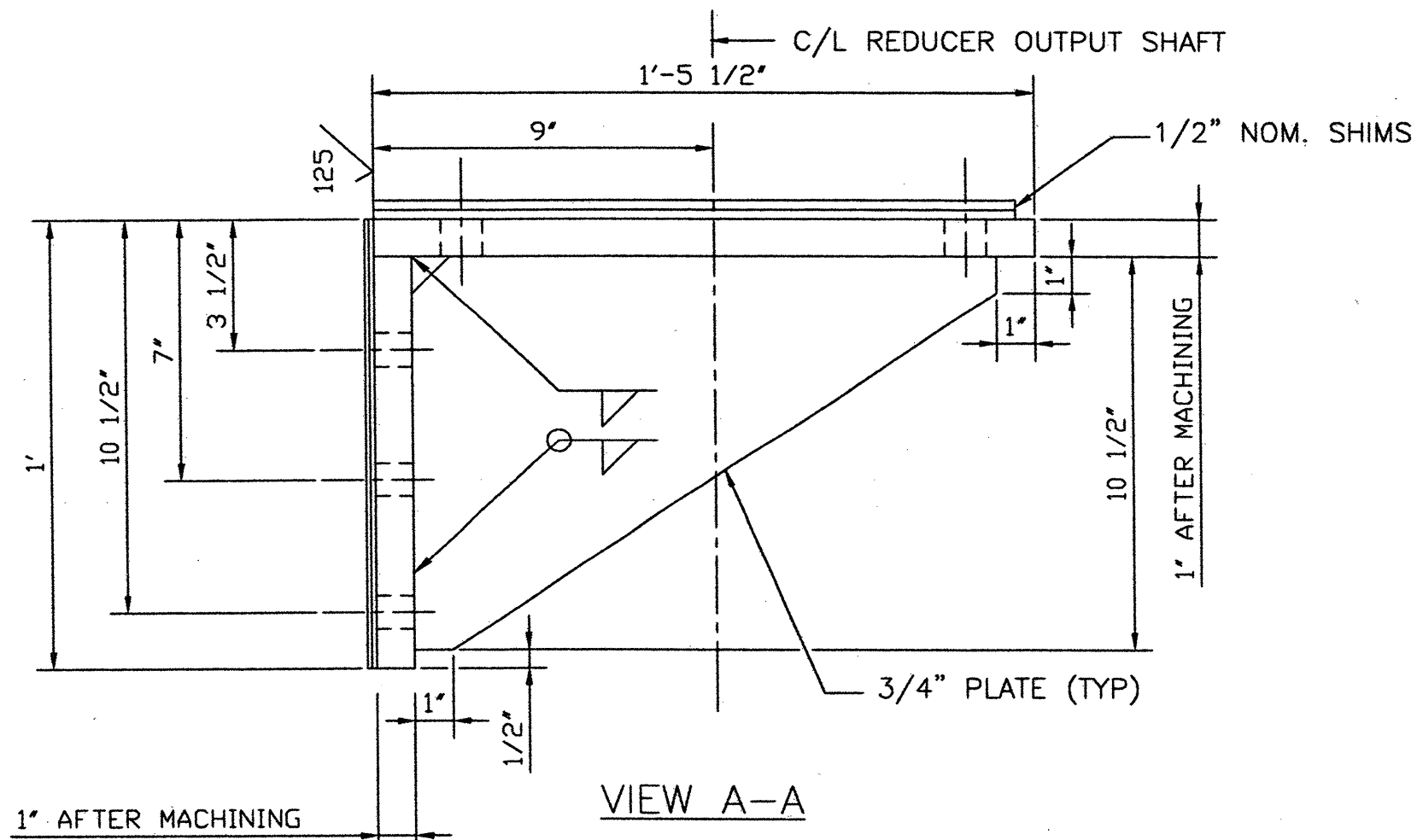


ELEVATION

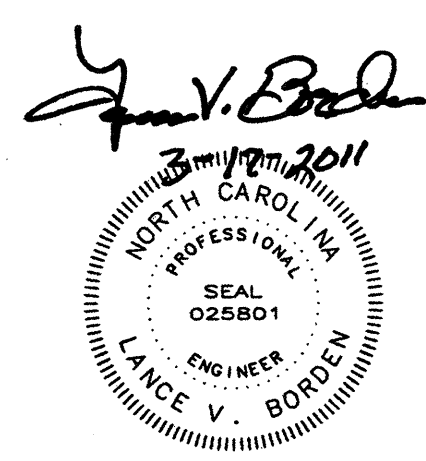
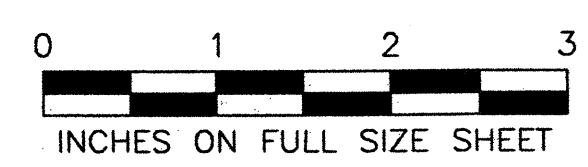
REDUCER AND BRAKE MOTOR SUPPORT

SCALE: 3' = 1'-0"
 MATERIAL: ASTM A36
 QUANTITY: 2 TOTAL

NOTES:
 1. ALL WELDMENTS SHALL BE STRESSED RELIEVED BY HEAT PRIOR TO MACHINING.

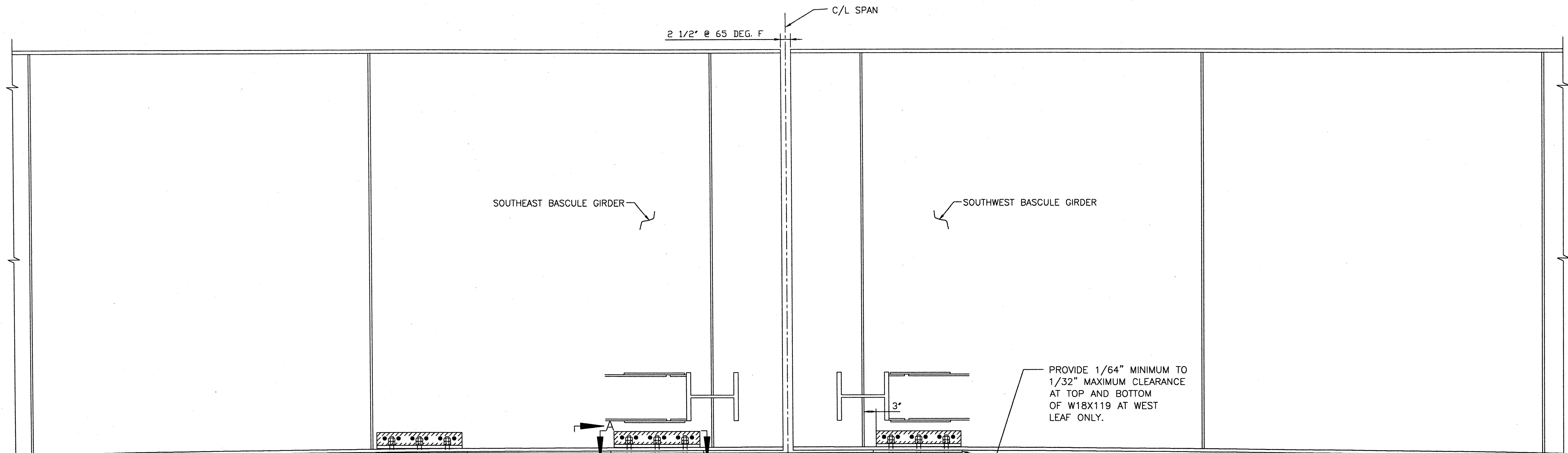


VIEW A-A



| | | | |
|--|--------------|-------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BAScule BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW CENTER LOCK - SUPPORT DETAILS | | | |
| DESIGNED | D.M. BARRETT | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | DRAWING NO. | 7 OF 63 |

MB6



C/L SPAN
2 1/2' @ 65 DEG. F

SOUTHEAST BASCULE GIRDER

SOUTHWEST BASCULE GIRDER

PROVIDE 1/64" MINIMUM TO 1/32" MAXIMUM CLEARANCE AT TOP AND BOTTOM OF W18X119 AT WEST LEAF ONLY.

HOLES FOR 1" DIA. BOLT RODS TO BE LONG SLOTTED HOLES IN W18X119 TO ALLOW FOR THERMAL EXPANSION AT WEST LEAF ONLY.

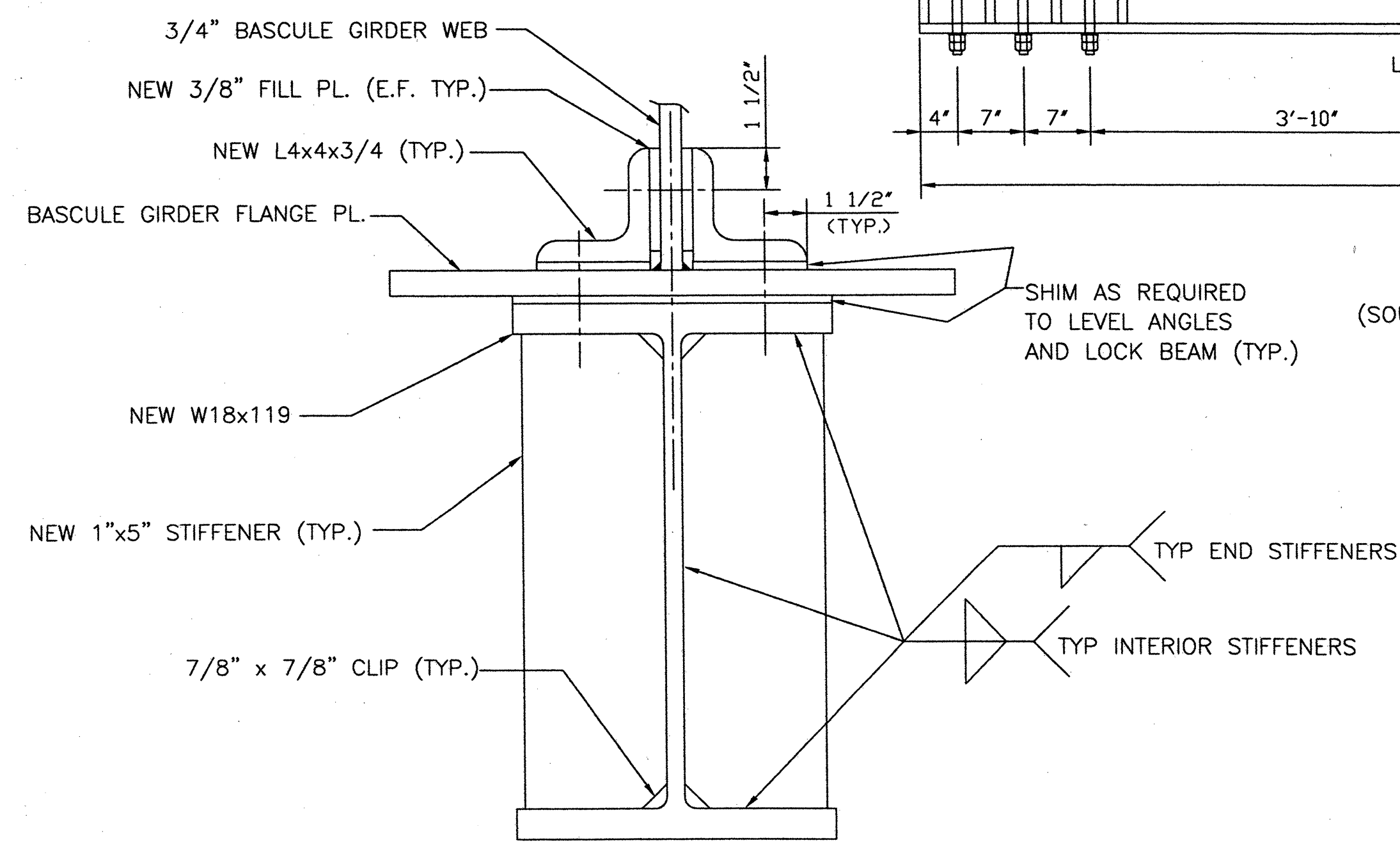
NEW 1" DIA. BOLT ROD WITH DOUBLE HS NUTS AND HARDENED WASHERS (TYP.)

NEW 1'-10" X 11 1/4" X 1" THICK PLATE WITH HOLES FOR 1" DIA. BOLT RODS.

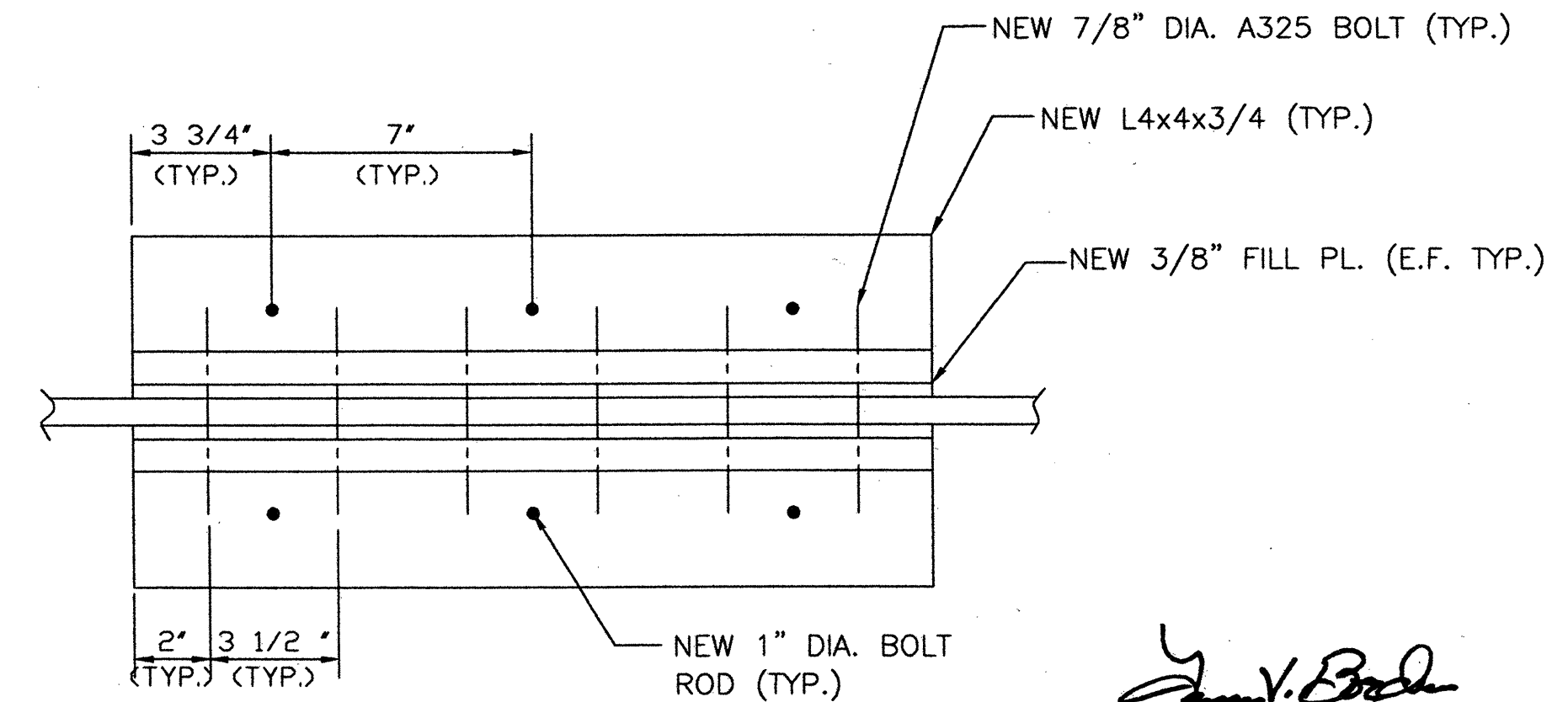
ELEVATION
SCALE 1" = 1'-0"
(FLOORBEAM AND FRAMING NOT SHOWN)
(SOUTH GIRDER SHOWN, NORTH GIRDER SIMILAR)

NOTES:

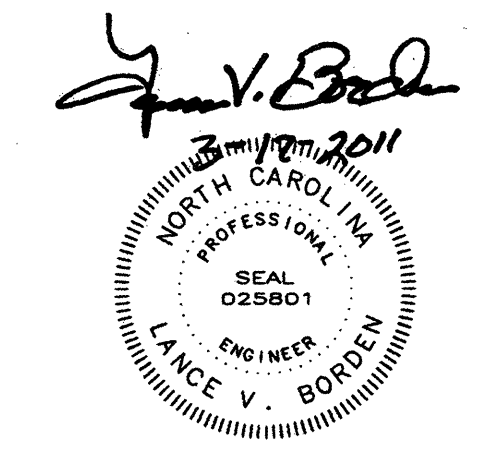
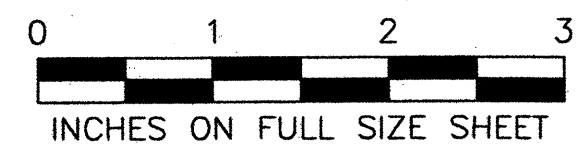
1. BOLT RODS SHALL BE ASTM F1554 GRADE 55 WITH HS NUTS AND HARDENED WASHERS.
2. ALL BOLTS SHALL BE ASTM A325 WITH HS NUTS AND HARDENED WASHERS.
3. ALL STEEL SHAPES AND PLATES SHALL BE ASTM A572 GRADE 50 OR ASTM A588.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING TRAFFIC CONTROL RESTRICTING VEHICULAR TRAFFIC SPEED TO 30 MPH ON THE BASCULE SPAN WHILE TEMPORARY CENTER LOCKS ARE IN PLACE.
5. UPON COMPLETION OF WORK, REMOVE ALL STEEL SHAPES AND PLATES AND FILL ALL OPEN HOLES WITH NEW PROPER SIZE ASTM A325 BOLTS WITH HS NUTS AND HARDENED WASHERS. REUSING FASTENERS FROM TEMPORARY CENTER LOCK MATERIAL IS NOT PERMITTED.
6. POSITION SLOTS IN W18X119 TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION.



SECTION A-A
SCALE: 3" = 1'-0"



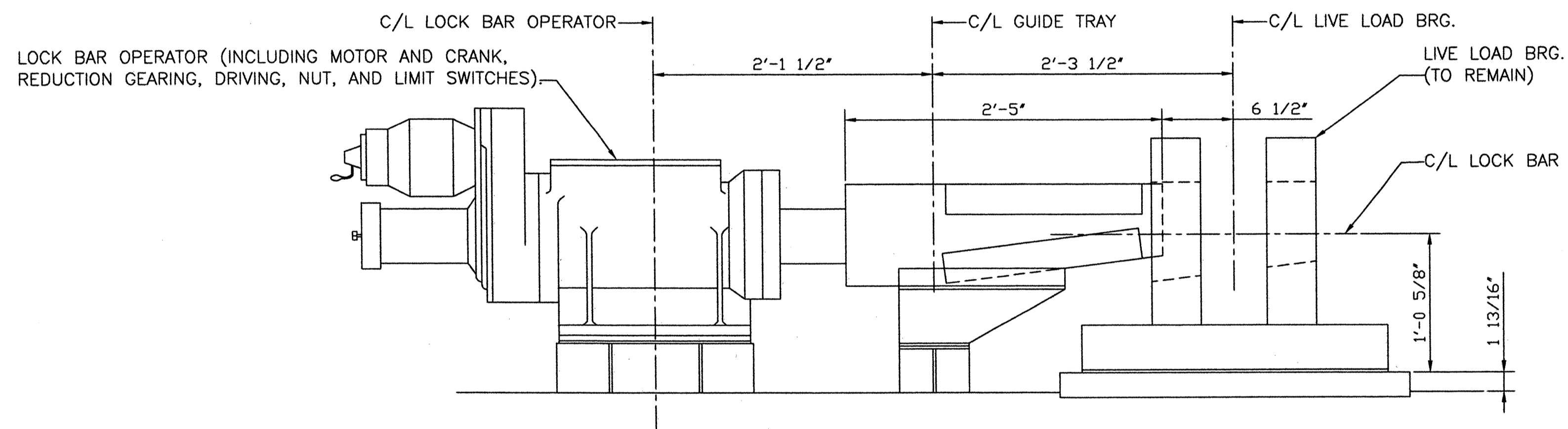
SECTION B-B
SCALE: 3" = 1'-0"



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|--|--------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| TEMPORARY CENTER LOCK | | | |
| DESIGNED | D.B. IRWIN | DATE | MARCH 2011 |
| CHECKED | A.M. BRODSKY | DRAWING NO. | B OF 63 |

MB7

B-MB7-TCL.DWG



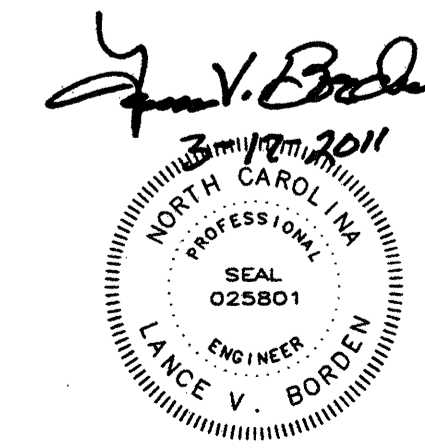
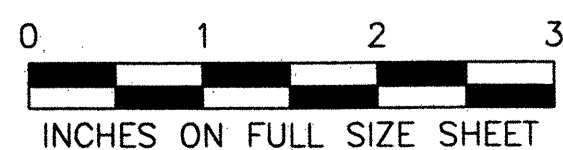
ELEVATION
EXISTING LIVE LOAD SPAN LOCK ASSEMBLY

SCALE: 1 1/2" = 1'-0"

NOTES:

1. ALL EXISTING LIVE LOAD SPAN LOCK COMPONENTS TO BE REMOVED (EXCEPT FOR THE LIVE LOAD BEARINGS).

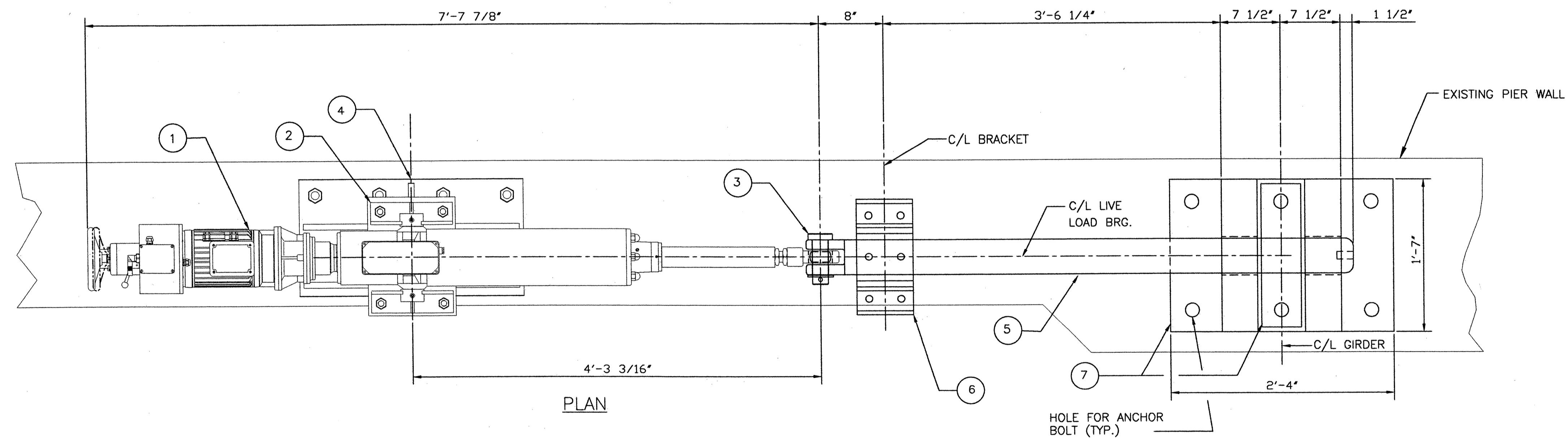
9-MB-ELLSR.DWG



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|---|--|--------------------------|--|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA EXISTING LIVE LOAD SPAN LOCK REMOVAL | | | |
| DESIGNED D.M. BARRETT | | DRAWN BY E.A. RICKENBACH | |
| CHECKED G.L. FOREST | | SCALE AS NOTED | |
| DETAILED D.M. BARRETT | | DATE MARCH 2011 | |
| CHECKED G.L. FOREST | | DRAWING NO. 9 OF 63 | |

MB8

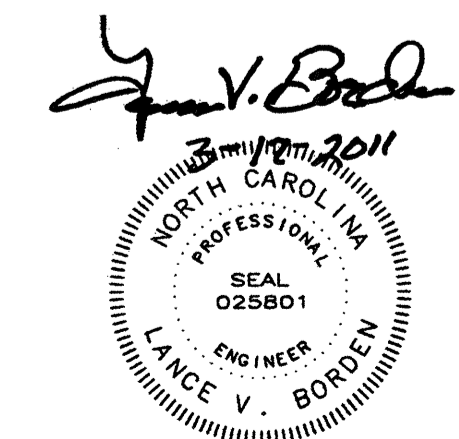
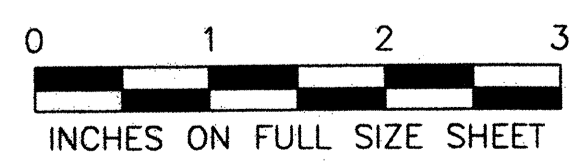
| MACHINERY SCHEDULE | | | |
|--------------------|----------------|---|-----------|
| MACH'Y NO. | NO. REQ'D. | UNIT DESCRIPTION | SHEET NO. |
| 1 | 5 (1 SPARE) | NEW LIVE LOAD SPAN LOCK ACTUATOR, BY RACO INTERNATIONAL, SIZE 7, WITH 1800 RPM TENV GEARMOTOR, BRAKE, LATERAL ACCESSORY HOUSING D, STROKE OF 15.7 INCHES AT 1.9 IN/SEC. WITH 6750 LBS. NOMINAL THRUST, AND OVERSTROKE PROTECTION AND TWO PAIRS OF ADJUSTABLE STROKE LIMIT SWITCHES. | MB13 |
| 2 | 4 | NEW TRUNNION BRACKETS BY RACO INTERNATIONAL | MB13 |
| 3 | 4 | NEW PIN. | MB10 |
| 4 | 4 | NEW TRUNNION BRACKET SUPPORT | MB14 |
| 5 | 8 | NEW LIVE LOAD SPAN LOCK BAR. | MB10 |
| 6 | 4 | NEW LIVE LOAD SPAN LOCK GUIDE AND SUPPORT. | MB12 |
| 7 | 4 | REMACHINED LIVE LOAD BEARING. | MB11 |



PLAN
 LIVE LOAD SPAN LOCK LAYOUT
 SCALE: 1 1/2" = 1'-0"
 PLAN VIEW - NE OR SW SHOWN,
 NW AND SE OPPOSITE HAND.

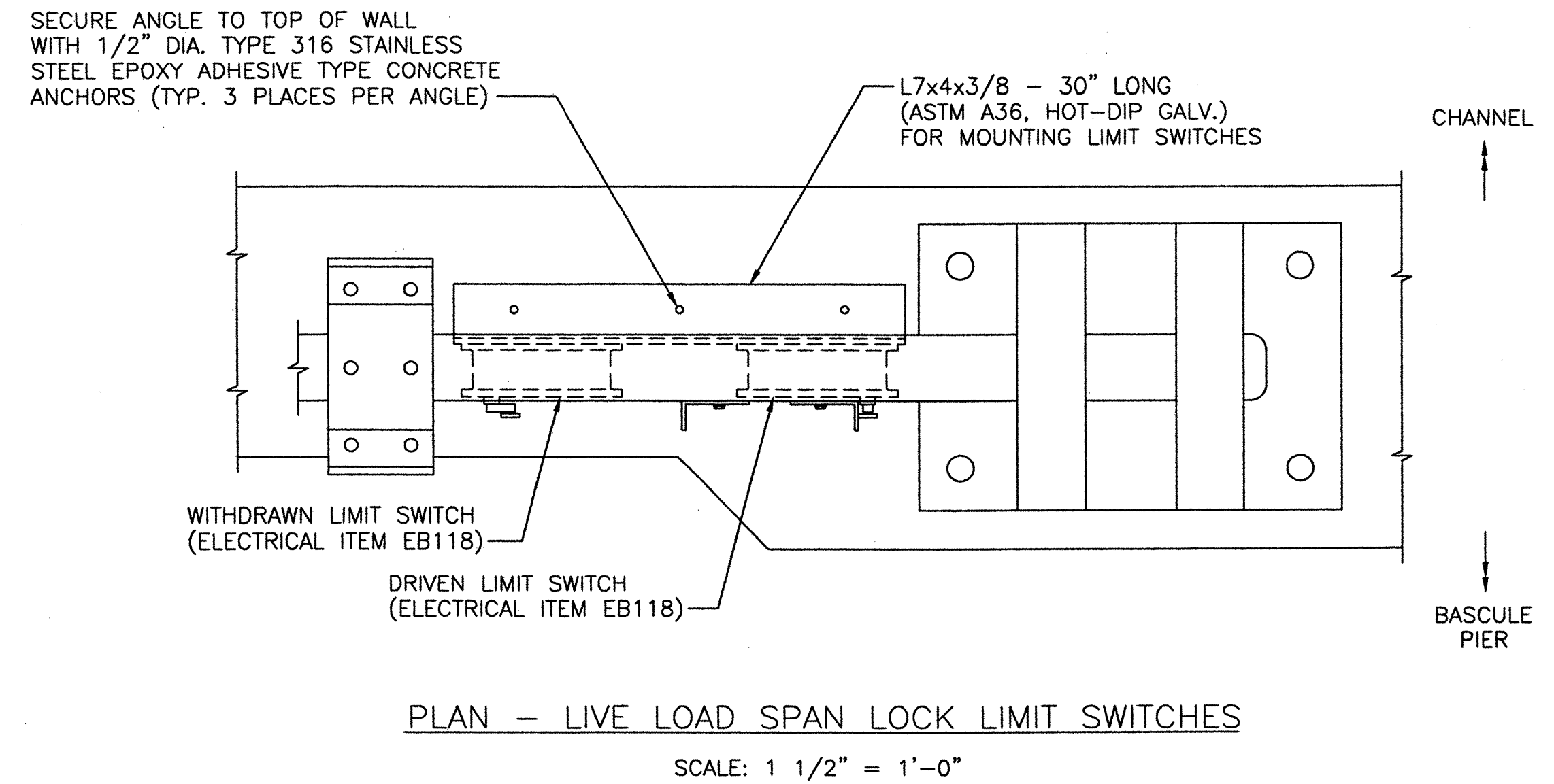
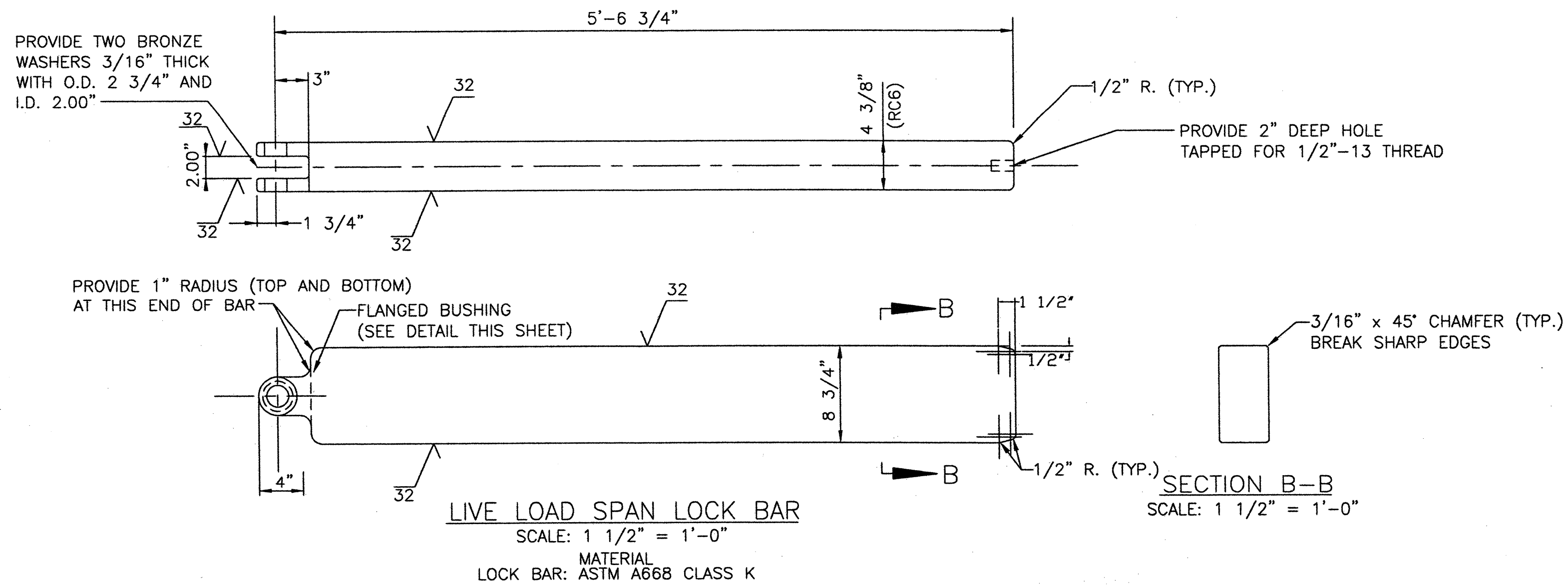
NOTES:

1. PROVIDE STAINLESS STEEL DEBRIS COVERS TO COMPLETELY COVER TOP OF NEW LIVE LOAD SPAN LOCK BAR, SIMILAR TO EXISTING COVERS.
2. THE LOCATION OF THE TRUNNION BRACKET POSITIONS THE REQUIRED STROKE IN THE CENTER OF THE AVAILABLE STROKE.
3. THE CONTRACTOR SHALL PROVIDE AN ACCESS LADDER FOR EACH LIVE LOAD SPAN LOCK ACTUATOR. THE LADDER SHALL BE INSTALLED ONLY AFTER THE LOCATION AND LADDER STYLE HAVE BEEN APPROVED BY NCDOT.
4. THE ACTUATOR LOCATION IS WITH 2" OF RESERVE STROKE. THE LOCK BAR IS SHOWN IN THE DRIVEN POSITION.

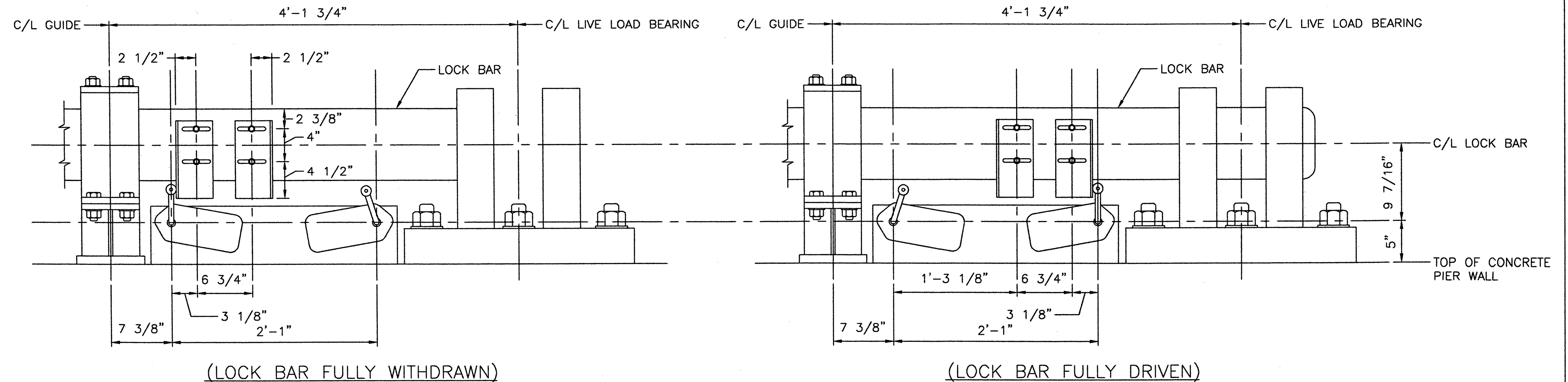
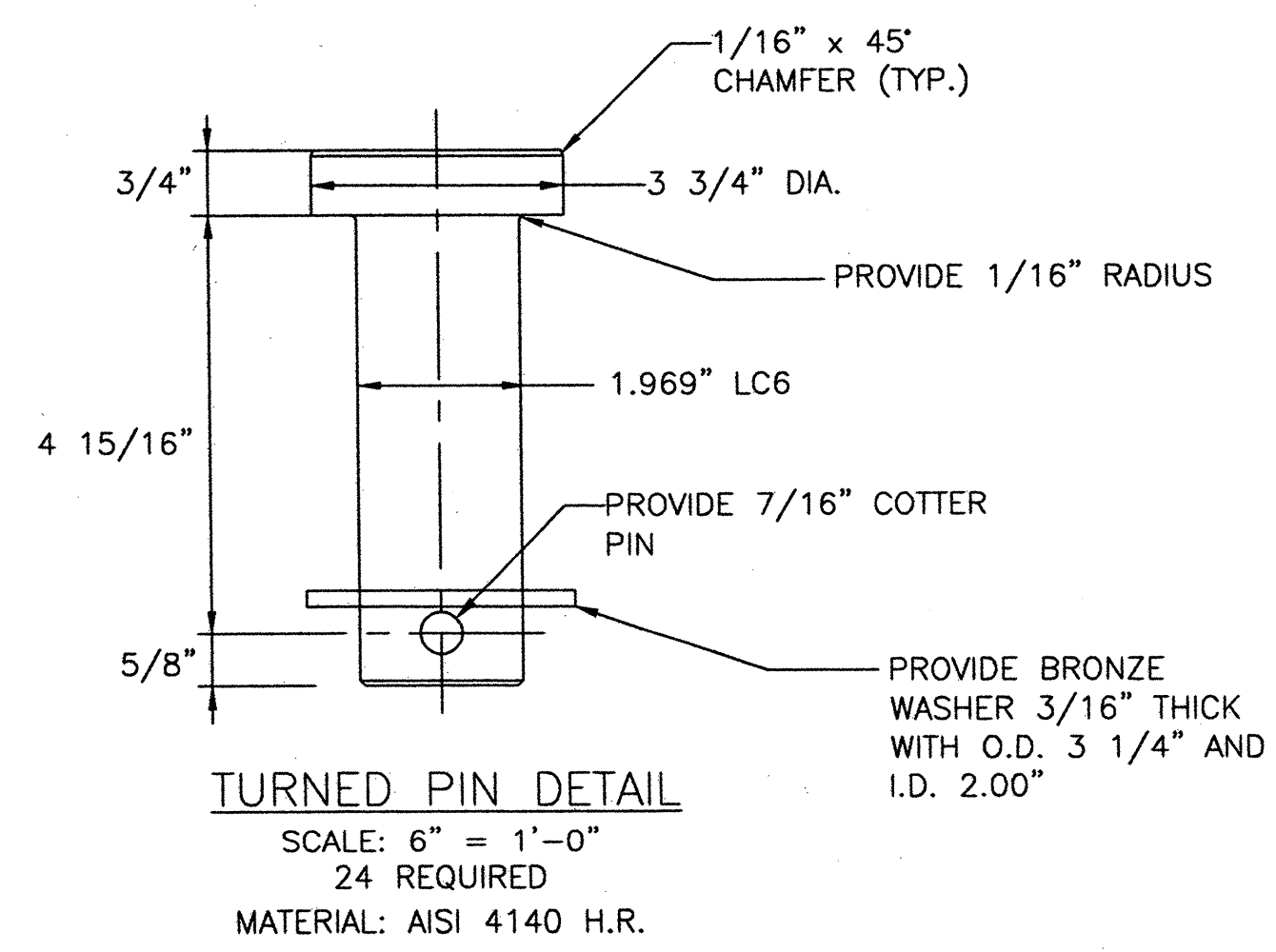


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|--|-----------------------|----------------------|-----|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW LIVE LOAD SPAN LOCK - LAYOUT | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DETAILED D.M. BARRETT | DATE MARCH 2011 | MB9 |
| CHECKED L.V. BORDEN | CHECKED L.V. BORDEN | DRAWING NO. 10 OF 63 | |

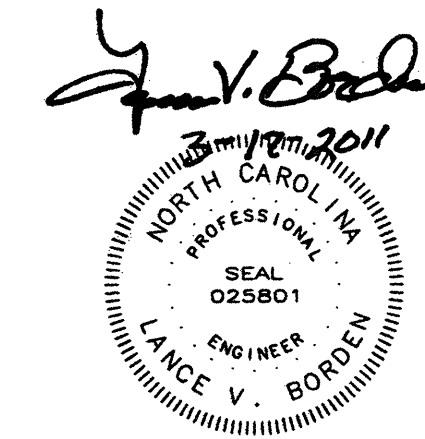
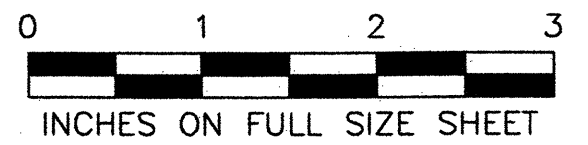
10-MB9-NLSL.DWG



TYPICAL NORTHEAST AND SOUTHWEST LIVE LOAD SPAN LOCKS. NORTHWEST AND SOUTHEAST LIVE LOAD SPAN LOCKS OPPOSITE HAND. VIEW SHOWS LOCK BAR FULLY DRIVEN.

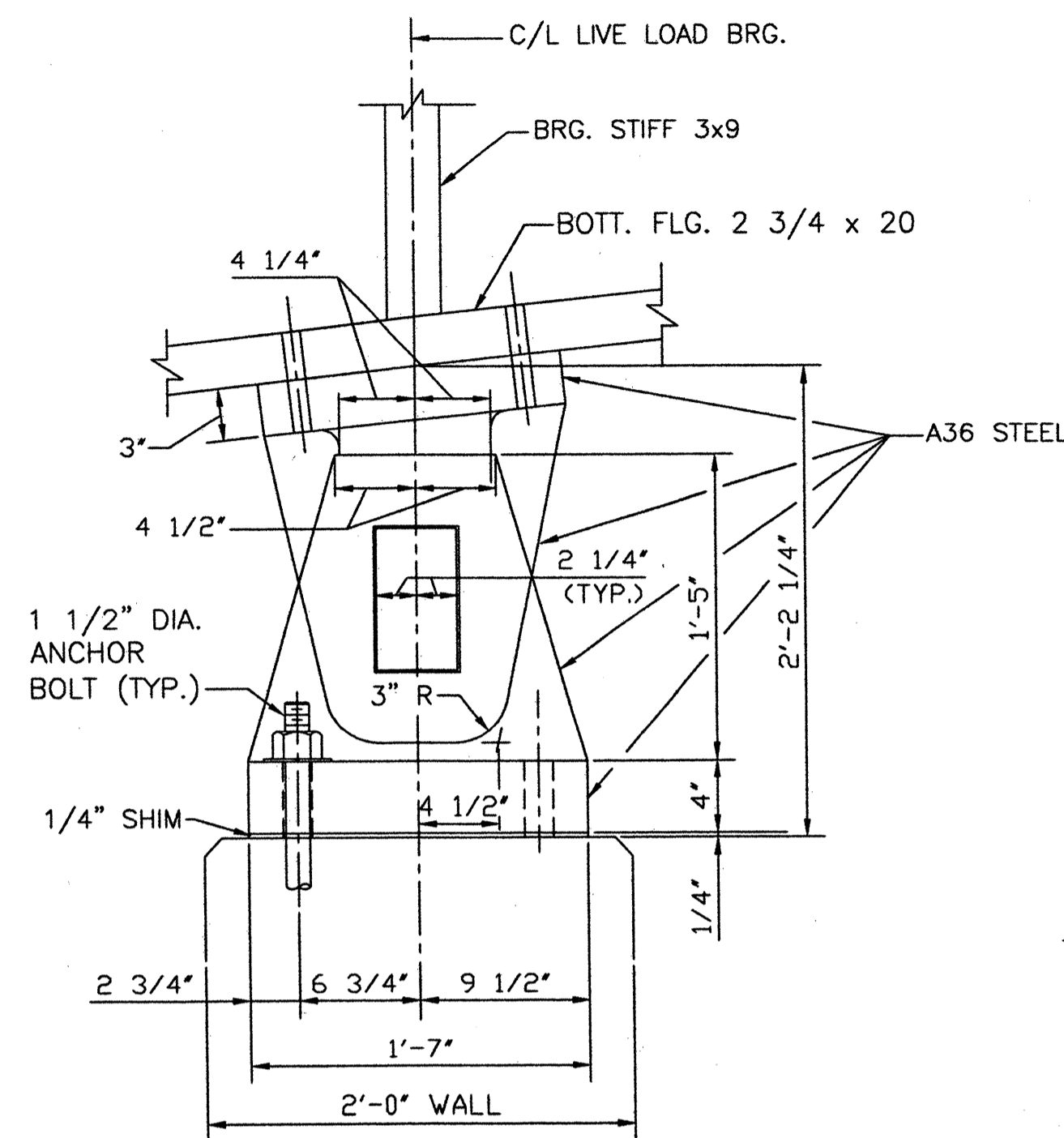


TYPICAL NORTHEAST AND SOUTHWEST LIVE LOAD SPAN LOCKS. NORTHWEST AND SOUTHEAST LIVE LOAD SPAN LOCKS OPPOSITE HAND. LIMIT SWITCH BODIES SHALL BE INSTALLED AT 10 DEGREES FROM HORIZONTAL AS SHOWN. TRIP PLATES ARE 4 1/2" x 2" x 1/4" BENT PLATES (TYPE 316 STAINLESS STEEL), WITH TWO 7/16" x 3" SLOTTED HOLES EACH AS SHOWN. HOLES TAPPED FOR 3/8"-16 BOLTS SHALL BE PROVIDED IN THE LOCK BAR AS SHOWN FOR MOUNTING THE TRIP PLATES. TRIP PLATE MOUNTING BOLTS SHALL BE TYPE 316 STAINLESS STEEL AND PROVIDED WITH LOCKWASHERS. TRIP PLATES ARE SHOWN SET AT THEIR NOMINAL POSITIONS, BUT SHALL BE FIELD ADJUSTED AS REQUIRED. SEE ELECTRICAL ITEM EB118 FOR LIMIT SWITCHES. LIMIT SWITCHES SHALL BE MOUNTED WITH TYPE 316 STAINLESS STEEL HARDWARE.

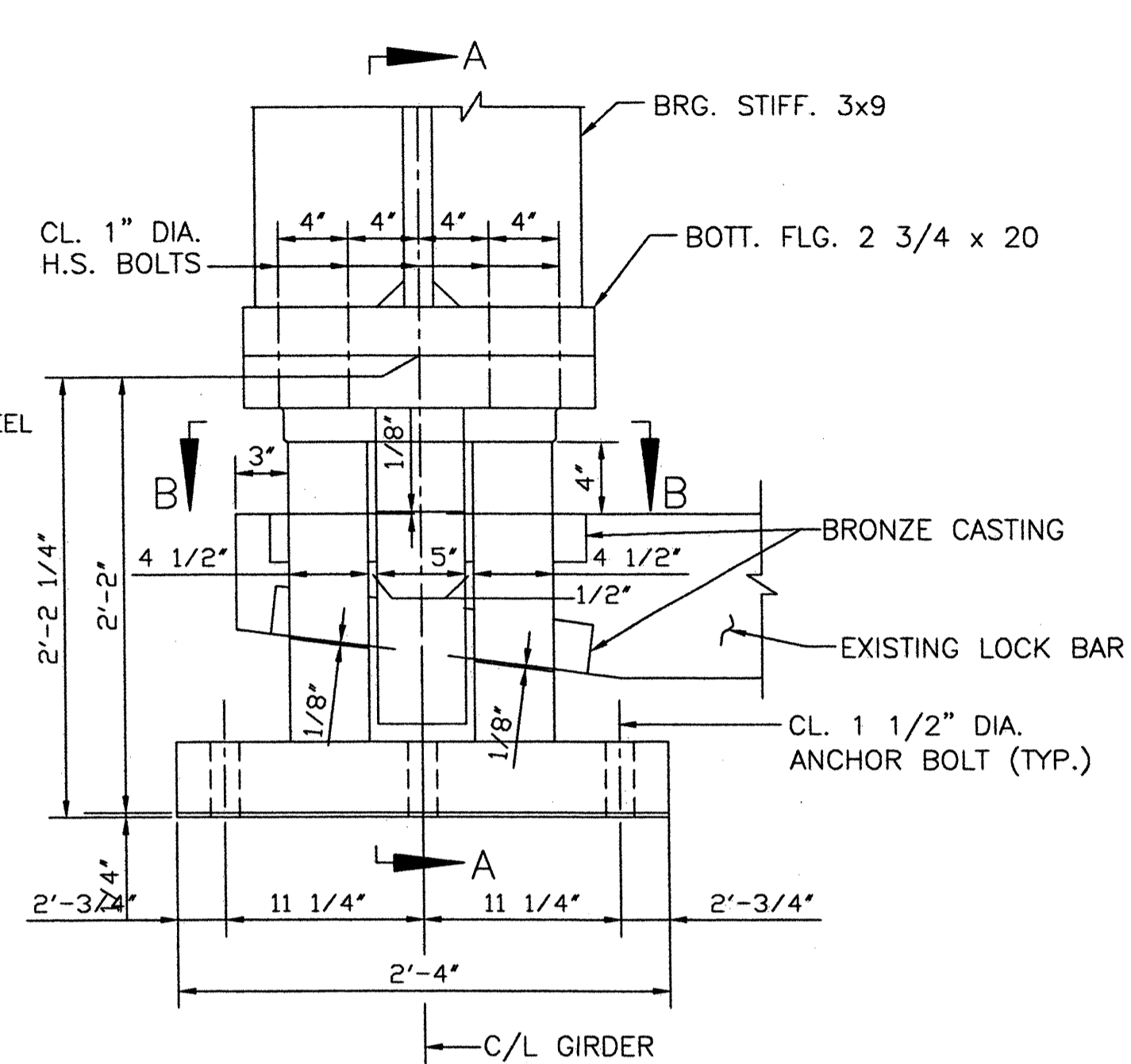


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|--|-----------------------|----------------------|--|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW LIVE LOAD SPAN LOCK - DETAILS 1 | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DETAILED D.M. BARRETT | DATE MARCH 2011 | |
| CHECKED L.V. BORDEN | CHECKED L.V. BORDEN | DRAWING NO. 11 OF 63 | |

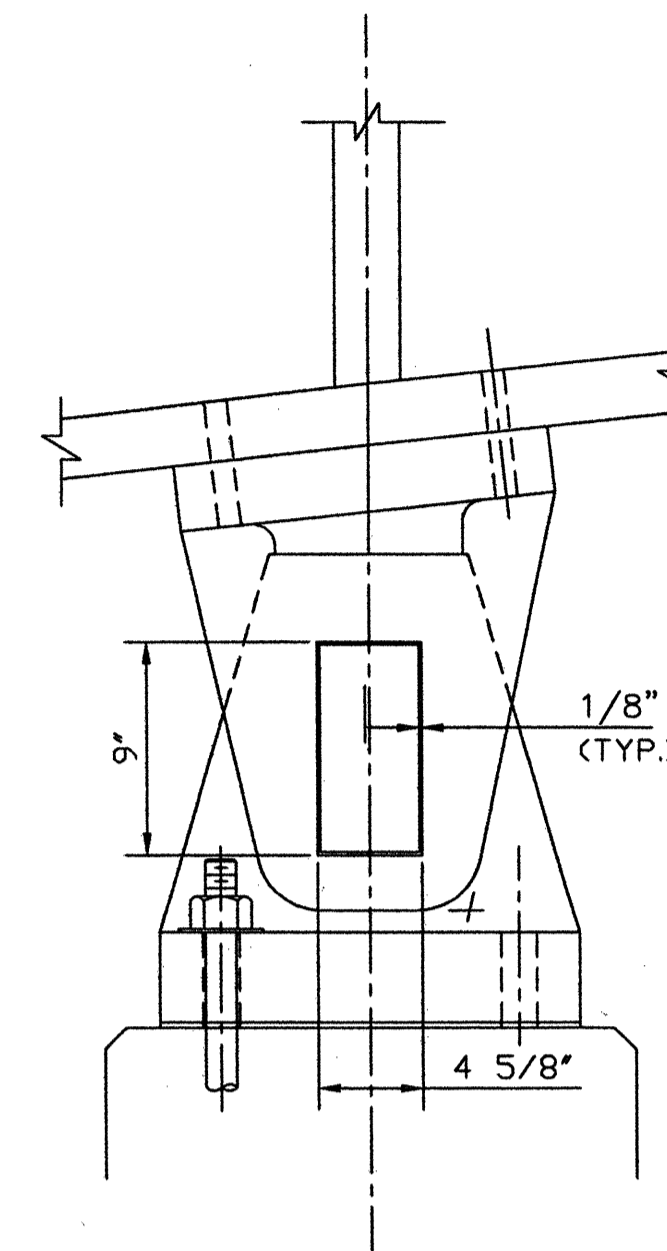
11-MB10-NLSLDI.DWG



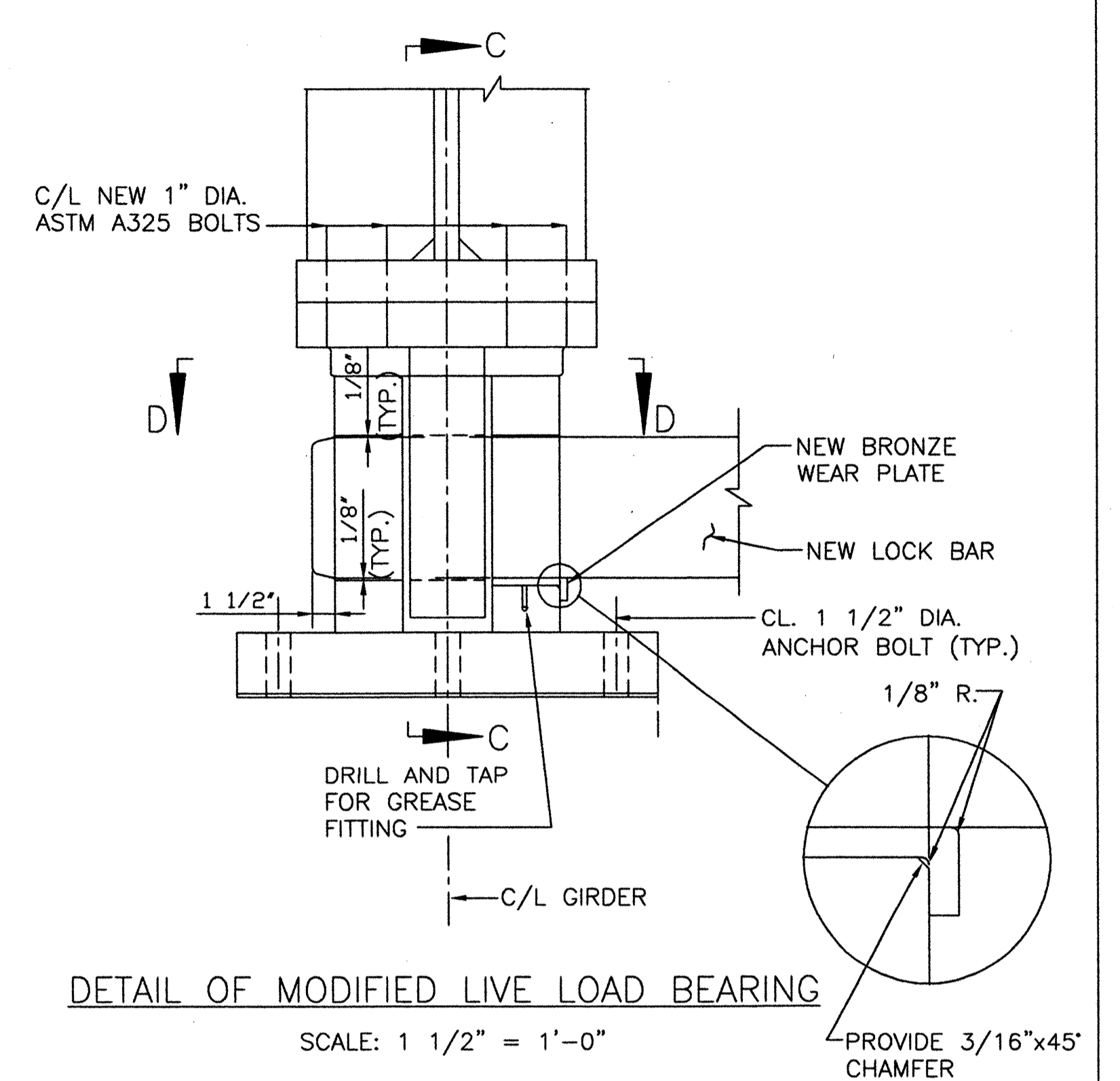
SECTION A-A
SCALE: 1 1/2" = 1'-0"



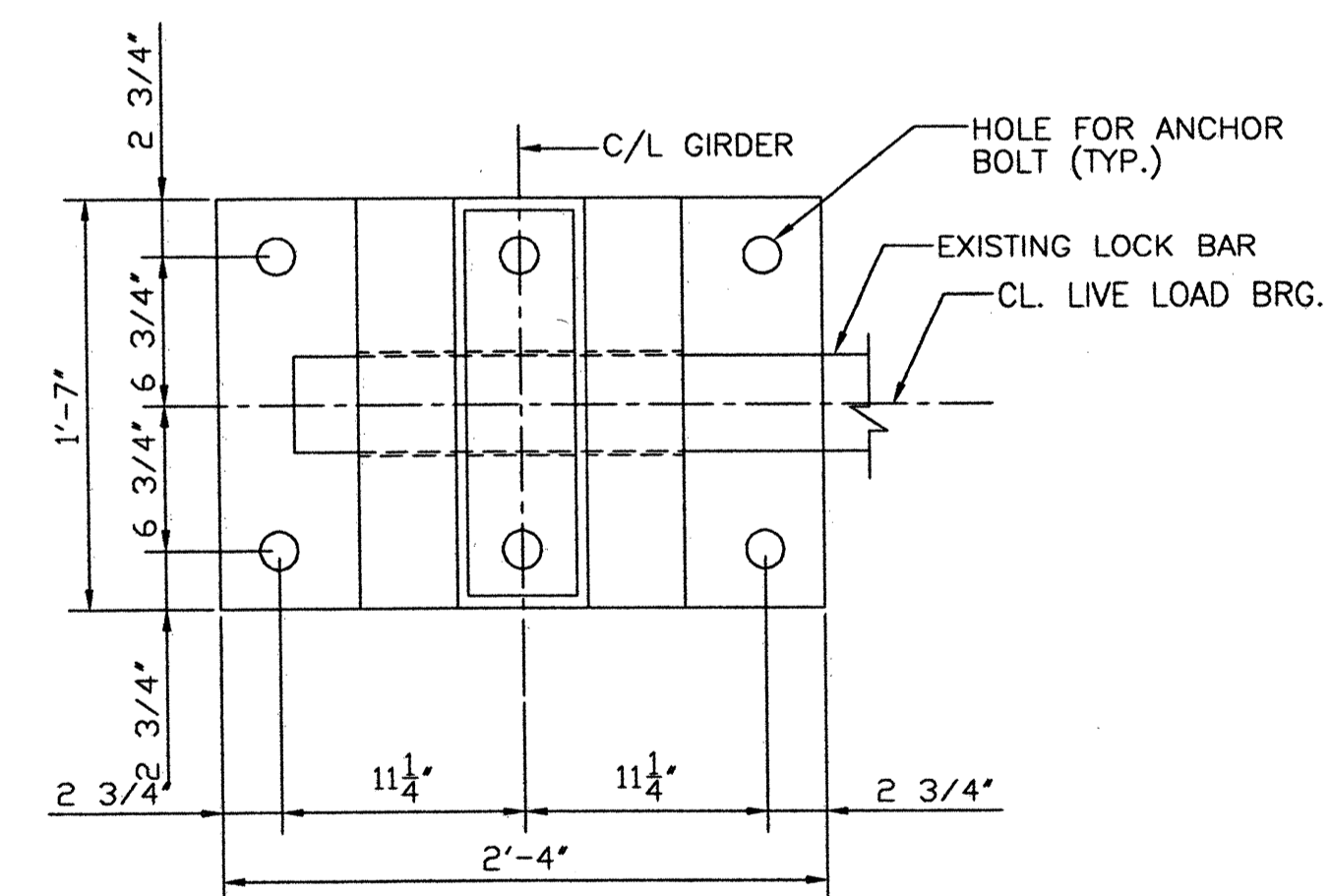
DETAIL OF EXISTING LIVE LOAD BEARING
SCALE: 1 1/2" = 1'-0"



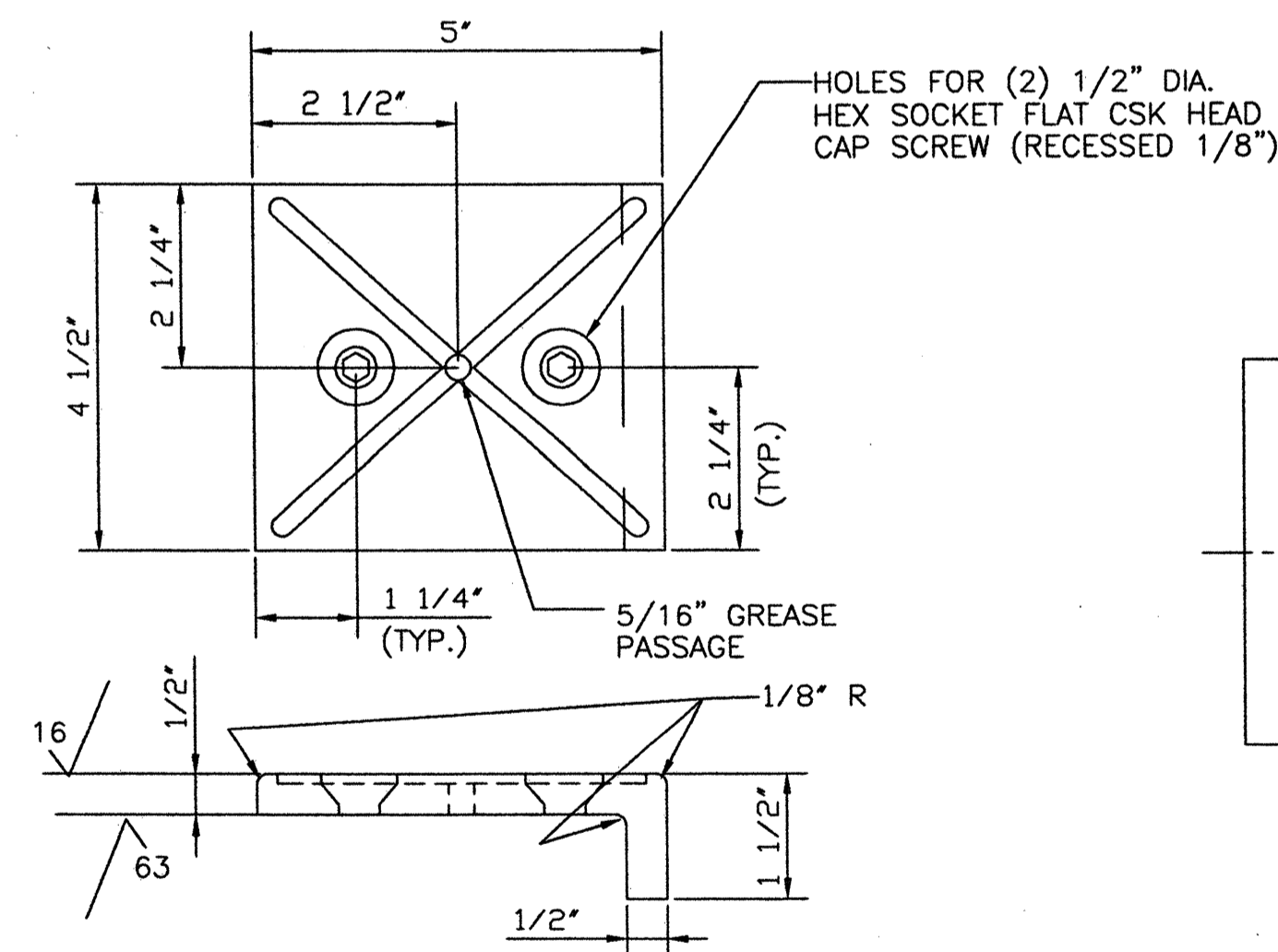
SECTION C-C
SCALE: 1 1/2" = 1'-0"



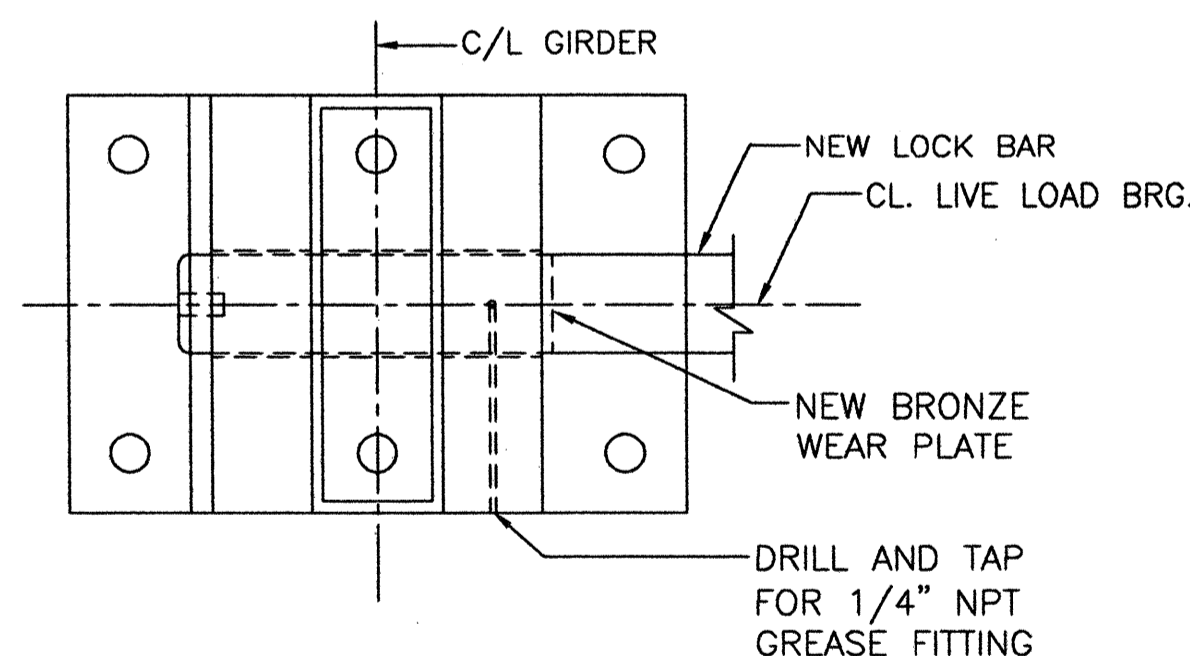
DETAIL OF MODIFIED LIVE LOAD BEARING
SCALE: 1 1/2" = 1'-0"



SECTION B-B
SCALE: 1 1/2" = 1'-0"



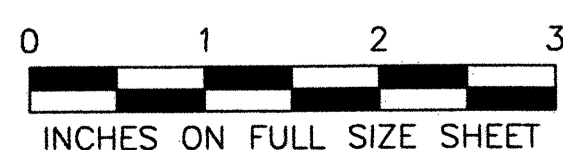
NEW BRONZE WEAR PLATE
SCALE: 6" = 1'-0"
MATERIAL: ASTM B22, UNS NO. C86300
FINISH ALL SURFACES TO 125 UNLESS NOTED OTHERWISE



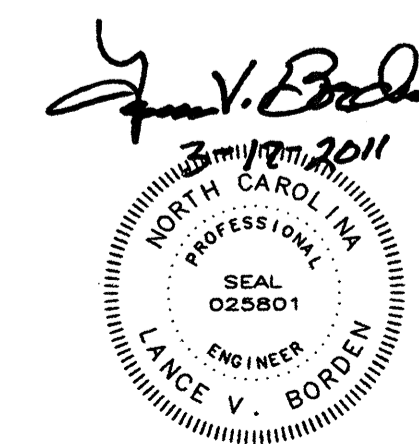
SECTION D-D
SCALE: 1 1/2" = 1'-0"

NOTES:

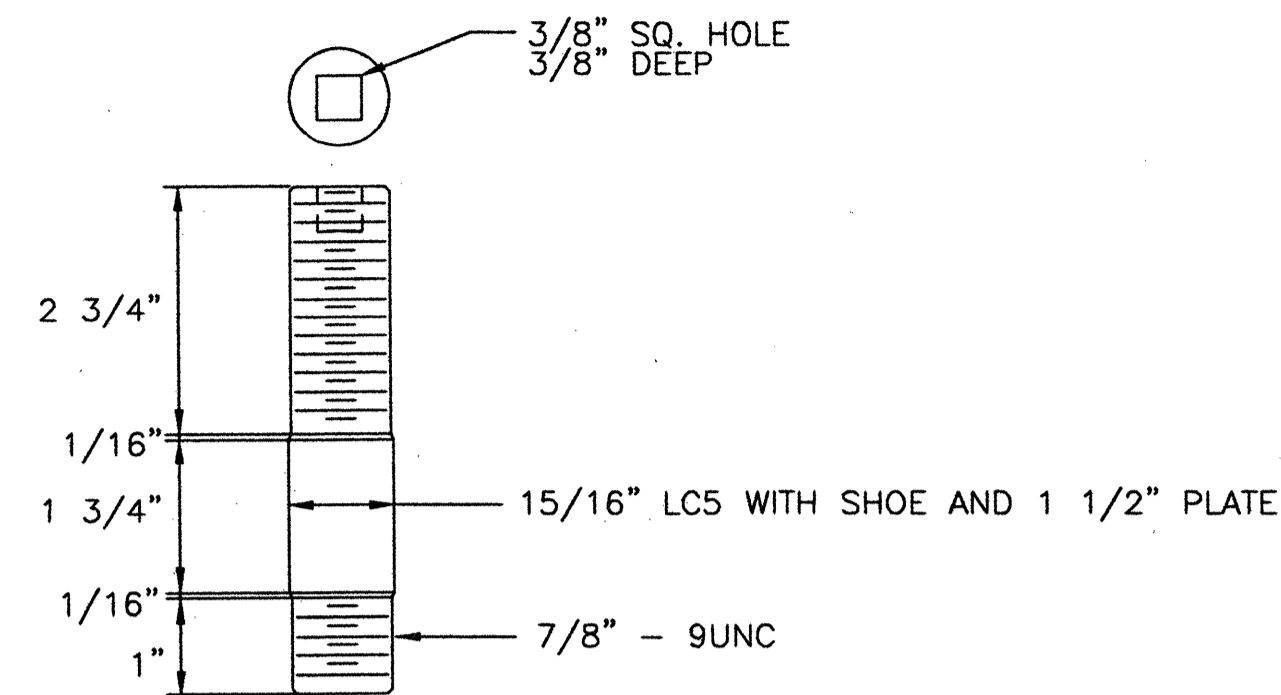
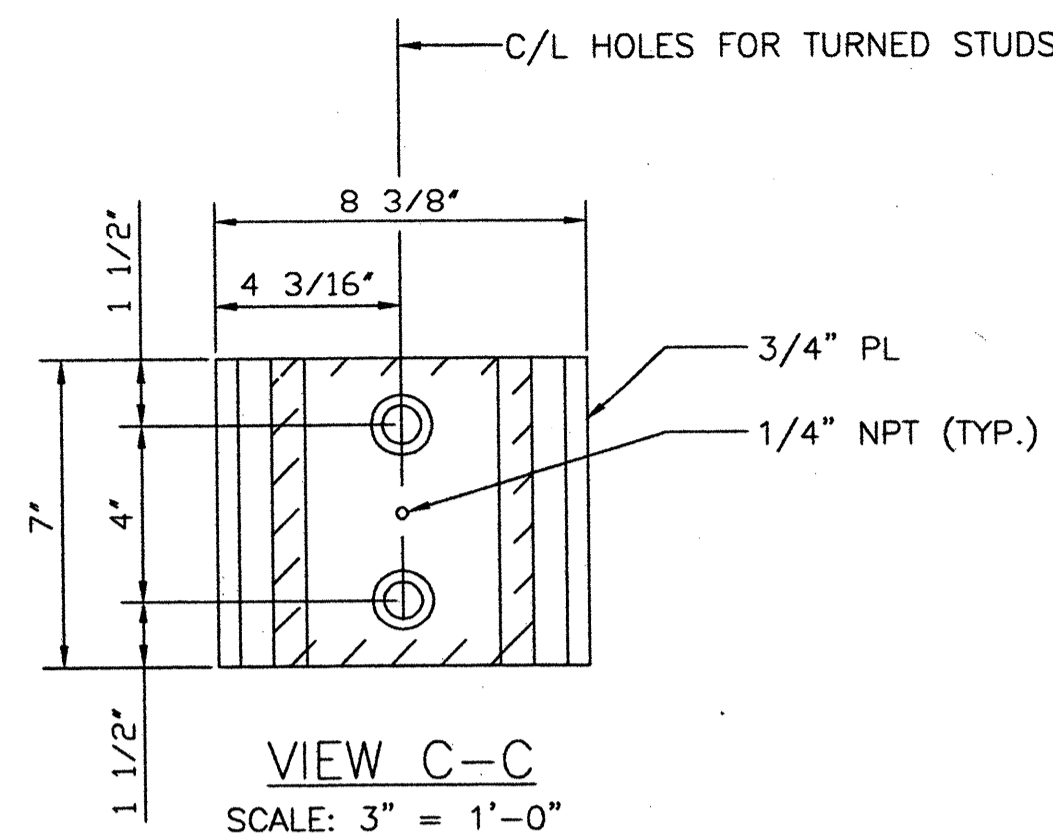
1. THE MACHINING OF THE LIVE LOAD BEARINGS IS TO BE CONDUCTED IN PLACE. ALL MACHINED SURFACES TO BE 125 MICROINCH OR BETTER UNLESS OTHERWISE NOTED.
2. THE 4 1/2" WIDTH OF SLOT SHOWN IS TO BE WIDENED TO THE FIRST CLEAN VERTICAL SURFACE ON EACH SIDE (3 LOCATIONS PER LIVE LOAD BEARING).
3. NEW BRONZE WEAR PLATE GREASE GROOVES TO BE 1/4" WIDE AND 1/8" DEEP WITH CORNERS AND EDGES ROUNDED TO 1/16" RADIUS.
4. NEW 1" DIAMETER ASTM A325 BOLTS AND NUTS (8 PER LIVE LOAD BEARING) AT THE BOTTOM FLANGE WILL BE REQUIRED AFTER SHIMMING OF LIVE LOAD BEARINGS IS COMPLETED AND APPROVED.
5. BOTH LIVE LOAD BEARINGS SHALL REMAIN IN SERVICE AT ALL TIMES.



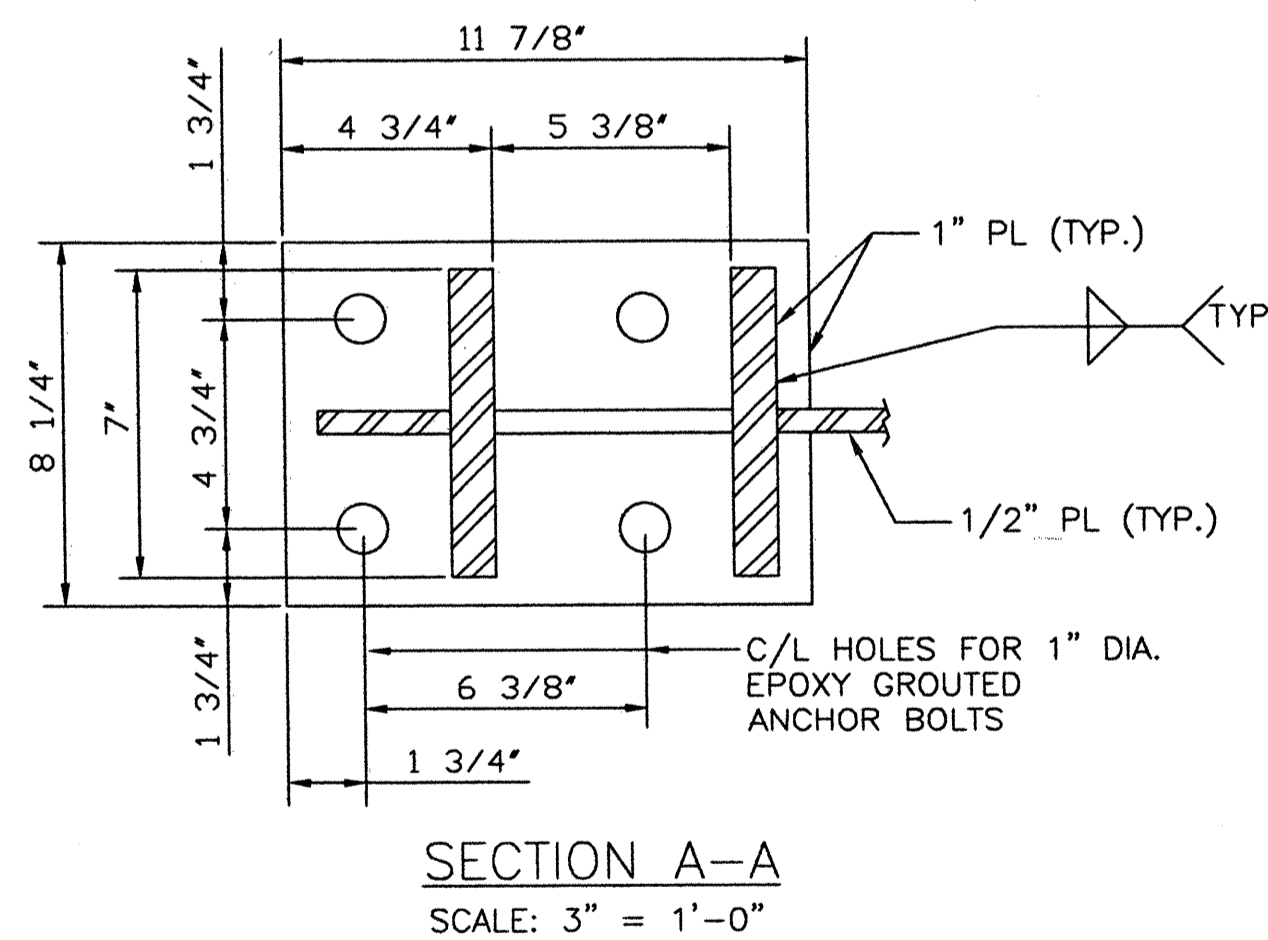
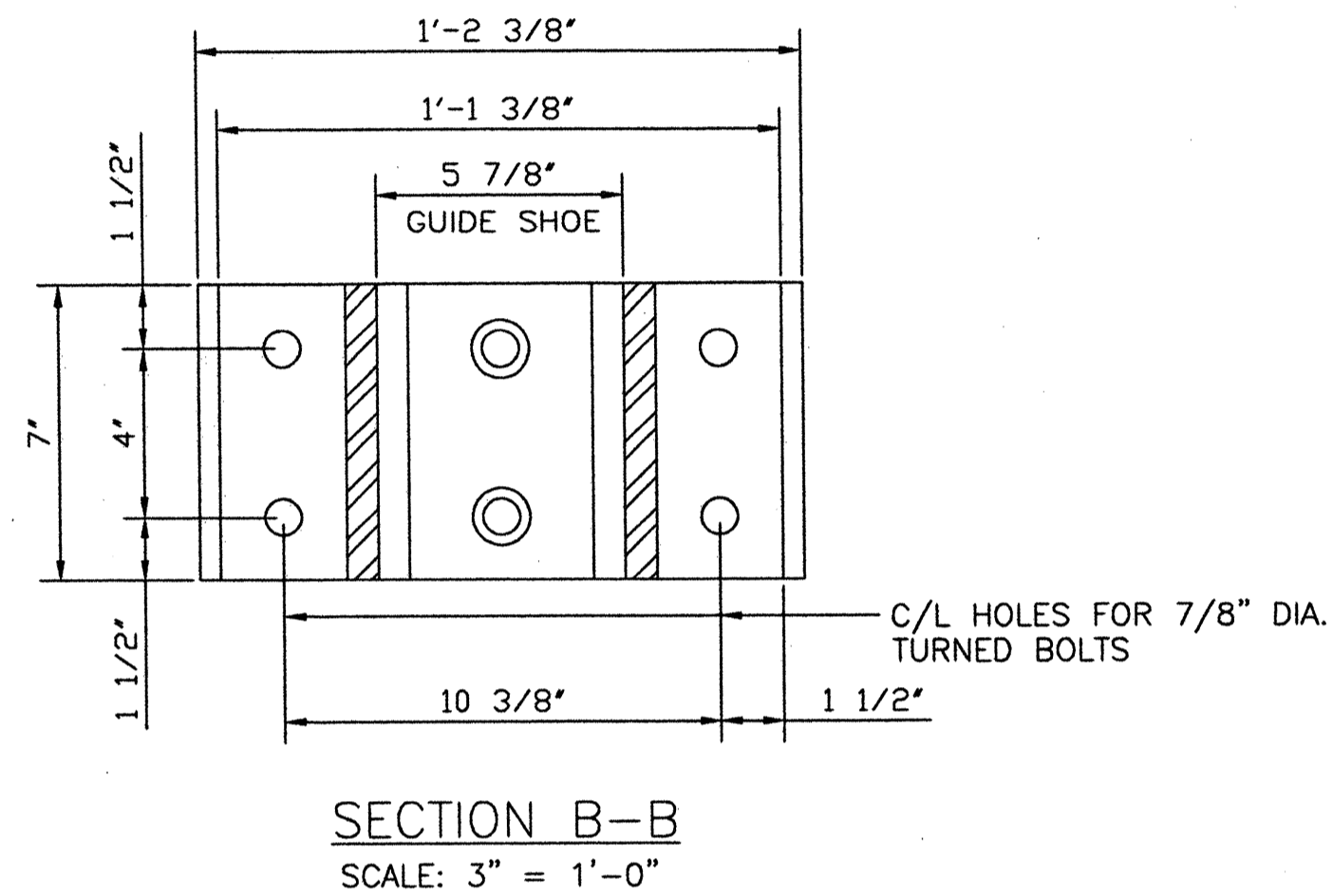
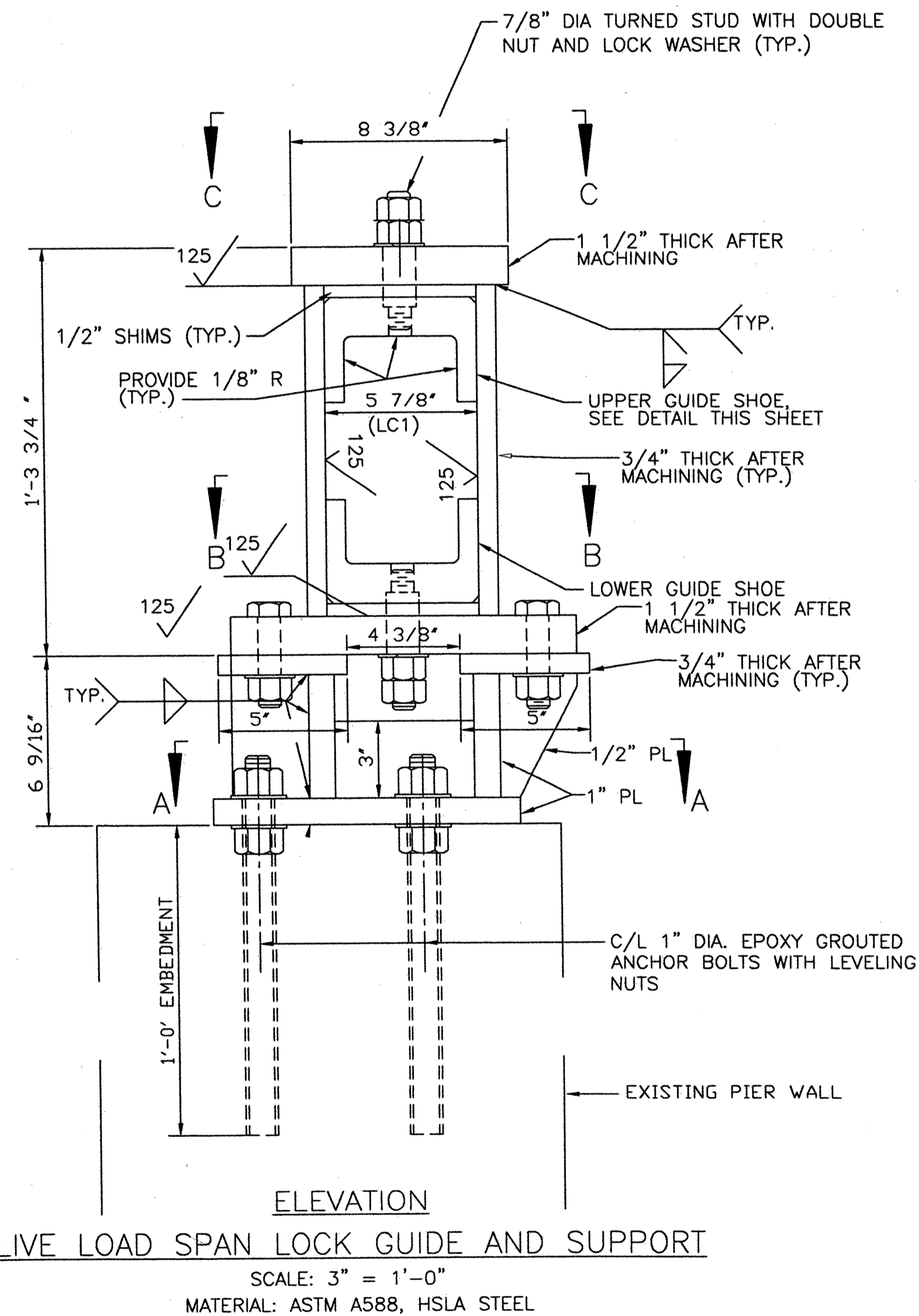
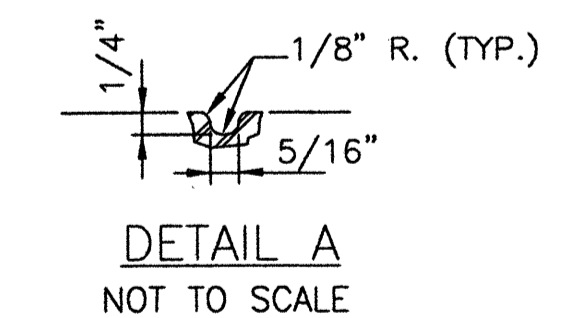
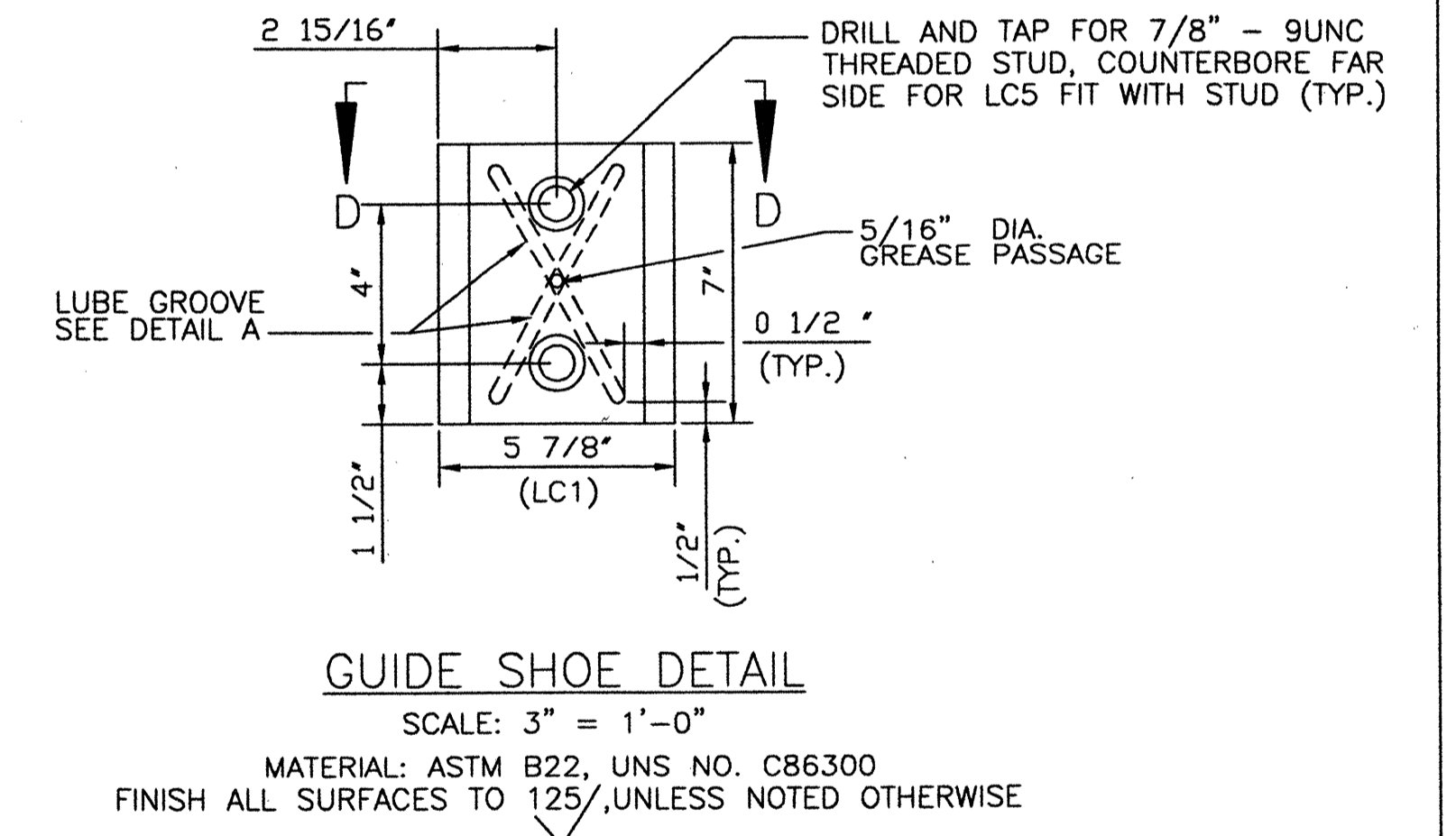
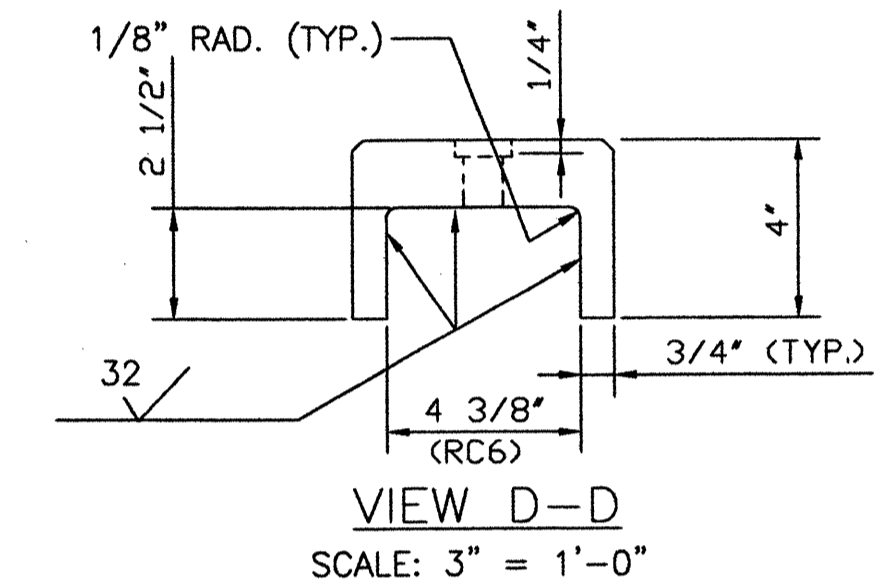
12-MB11-NSSSD2.DWG



| | | | |
|--|-----------------------|----------------------|------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA NEW LIVE LOAD SPAN LOCK - DETAILS 2 | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DETAILED D.M. BARRETT | DATE MARCH 2011 | MB11 |
| CHECKED G.L. FOREST | CHECKED G.L. FOREST | DRAWING NO. 12 OF 63 | |

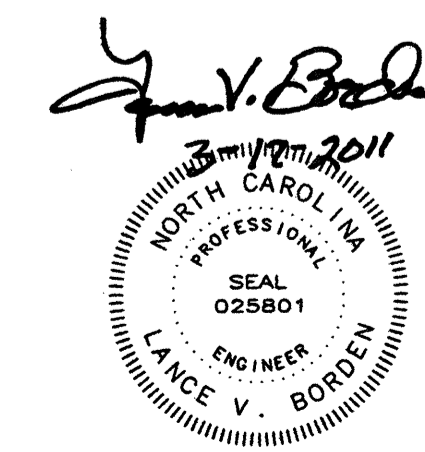


TURNED STUD DETAIL
NOT TO SCALE
16 REQUIRED
MATERIAL: ASTM A449



NOTES:

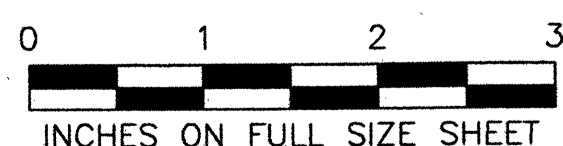
1. ALL ITEMS NEW UNLESS NOTED OTHERWISE.
2. ALL WELDMENTS SHALL BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
3. VERTICAL FIT WITH NEW LOCK BAR TO BE 1/8" ± 0.030.
4. GREASE PASSAGES FOR TOP AND BOTTOM GUIDE SHOES TO BE RUN TO CONVENIENT LOCATION FOR MAINTENANCE PERSONNEL.
5. TURNED STUD THREAD LENGTH MUST BE OPTIMIZED AFTER FINAL ALIGNMENT TO PROVIDE CLEARANCE AT BOTTOM GUIDE SHOE.

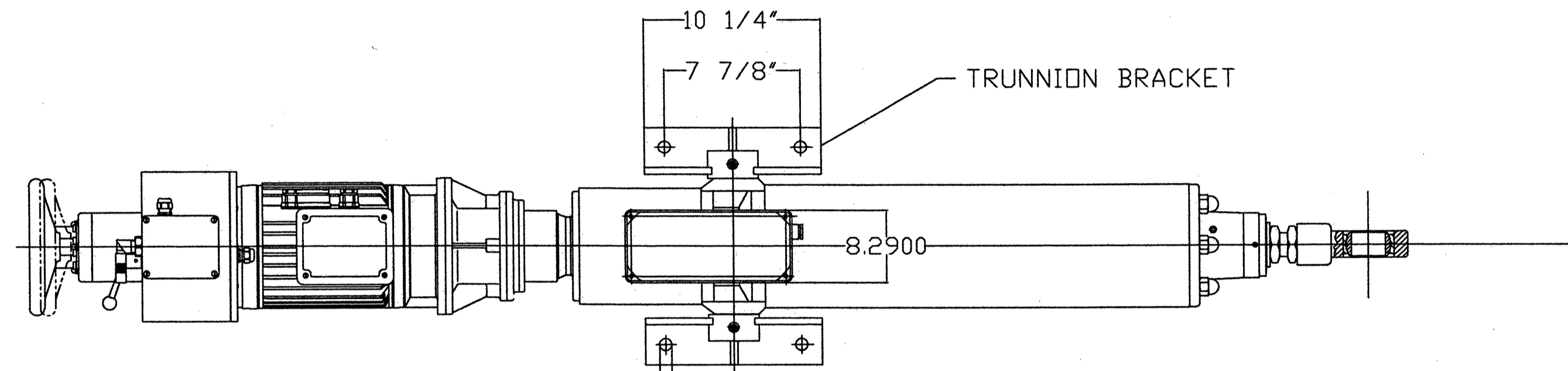


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BAScule BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
NEW LIVE LOAD SPAN LOCK -
DETAILS 3

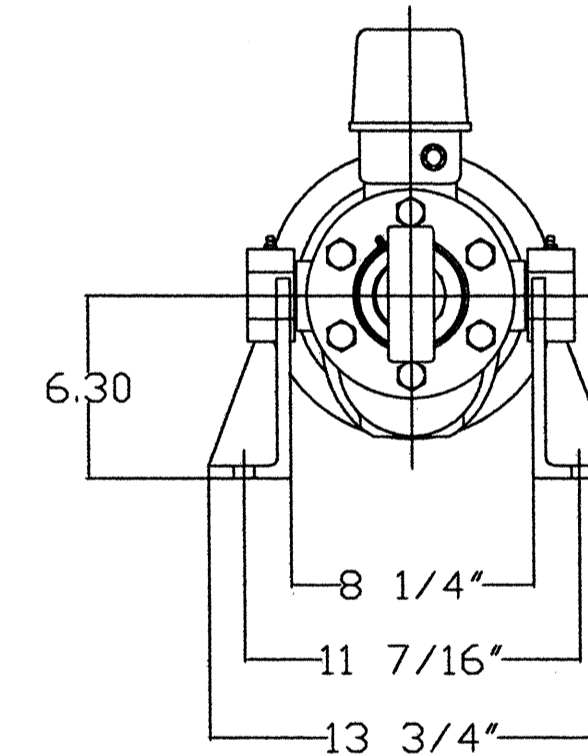
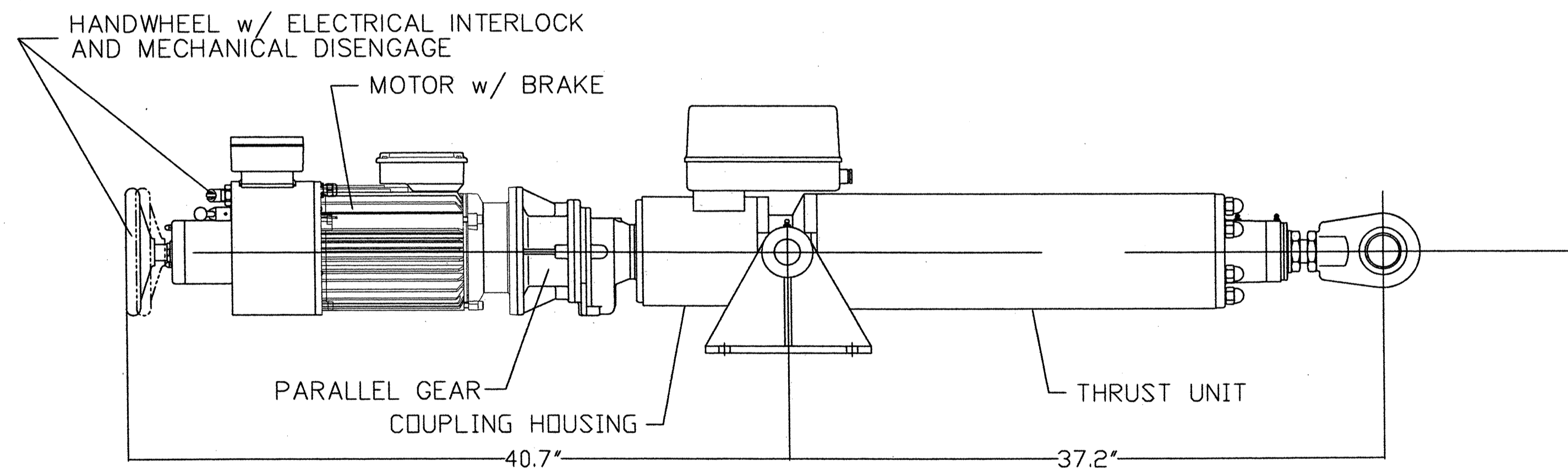
| | | | | | |
|----------|--------------|----------|--------------|-------------|------------|
| DESIGNED | G.L. FOREST | DETAILED | G.L. FOREST | DATE | MARCH 2011 |
| CHECKED | D.M. BARRETT | CHECKED | D.M. BARRETT | DRAWING NO. | 13 OF 63 |

MB12





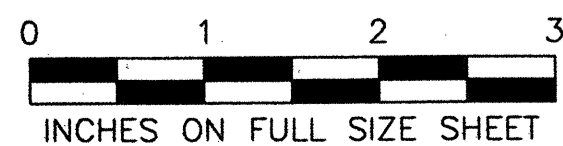
REAM FOR 3/4" A325 TURNED BOLTS AT FINAL ALIGNMENT



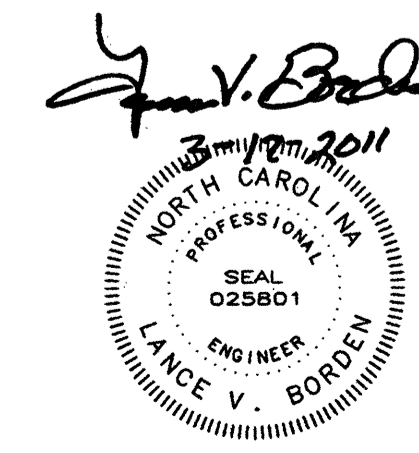
PLAN
LIVE LOAD SPAN LOCK ACTUATOR
SCALE: 1" = 1'-0"

NOTES:

1. THIS DRAWING IS PROVIDED FOR REFERENCE ONLY. ACTUATOR DIMENSIONS MUST BE VERIFIED BEFORE ORDERING. THE ACTUATOR IS SHOWN IN FULLY RETRACTED POSITION.
2. THE CONTRACTOR SHALL PROVIDE AN ACCESS LADDER FOR EACH LIVE LOAD SPAN LOCK SUPPORT. THE LADDER SHALL BE INSTALLED ONLY AFTER THE LOCATION AND LADDER STYLE HAVE BEEN APPROVED BY NCDOT.



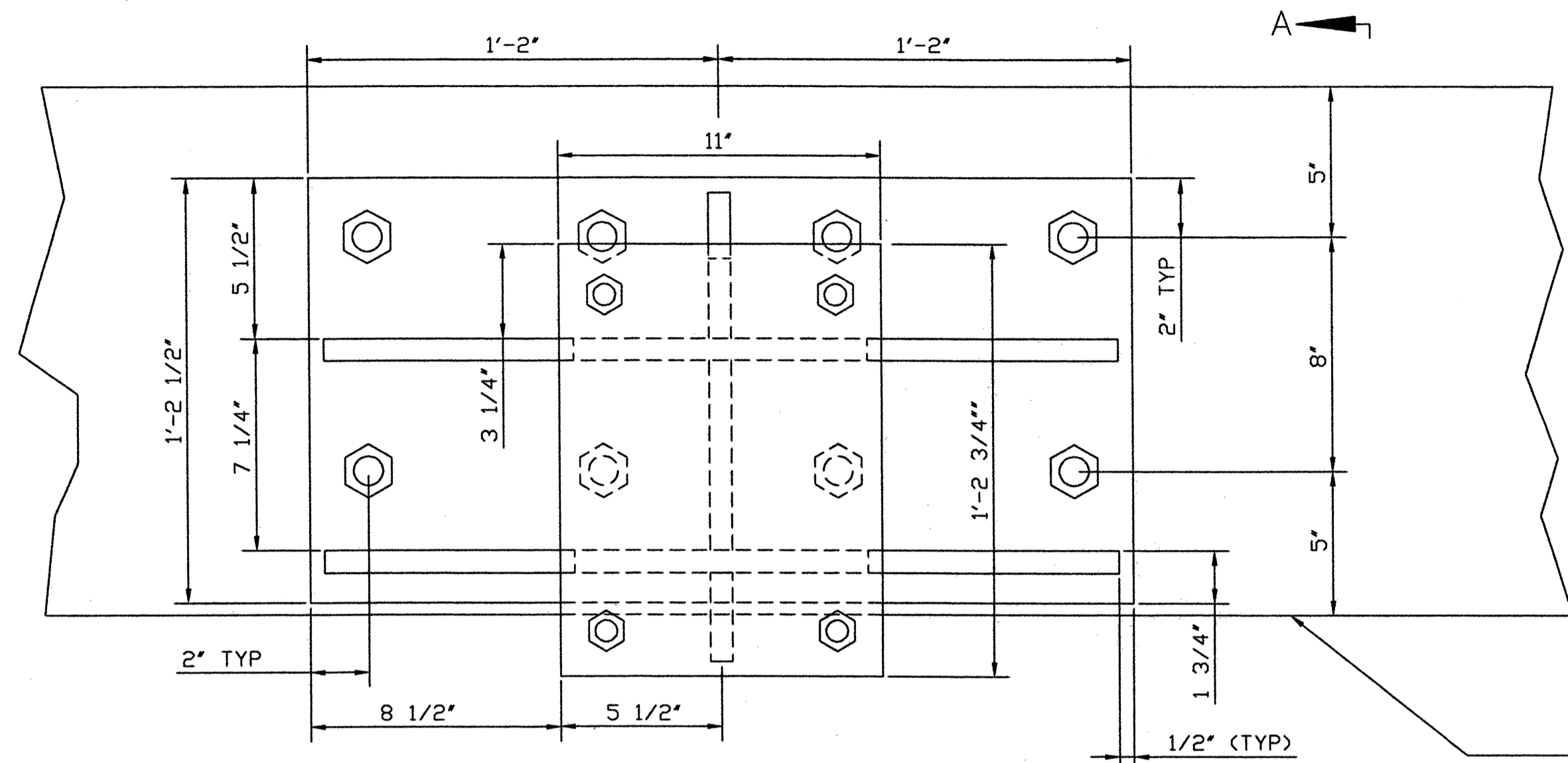
INCHES ON FULL SIZE SHEET



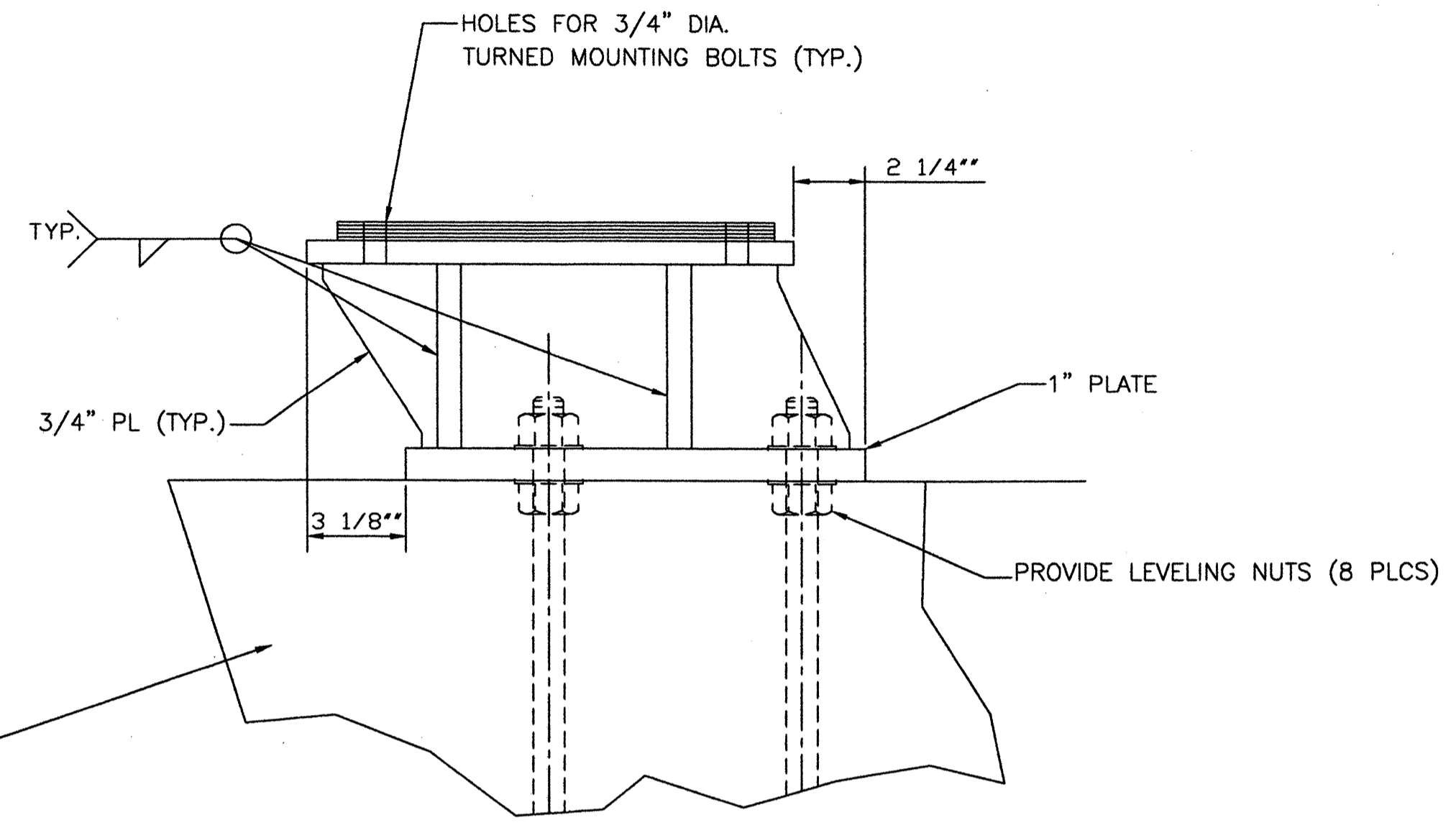
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
NEW LIVE LOAD SPAN LOCK -
DETAILS 4

| | |
|--------------------------|----------------------|
| DRAWN BY E.A. RICKENBACH | |
| SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DATE MARCH 2011 |
| CHECKED L.V. BORDEN | DRAWING NO. 14 OF 63 |

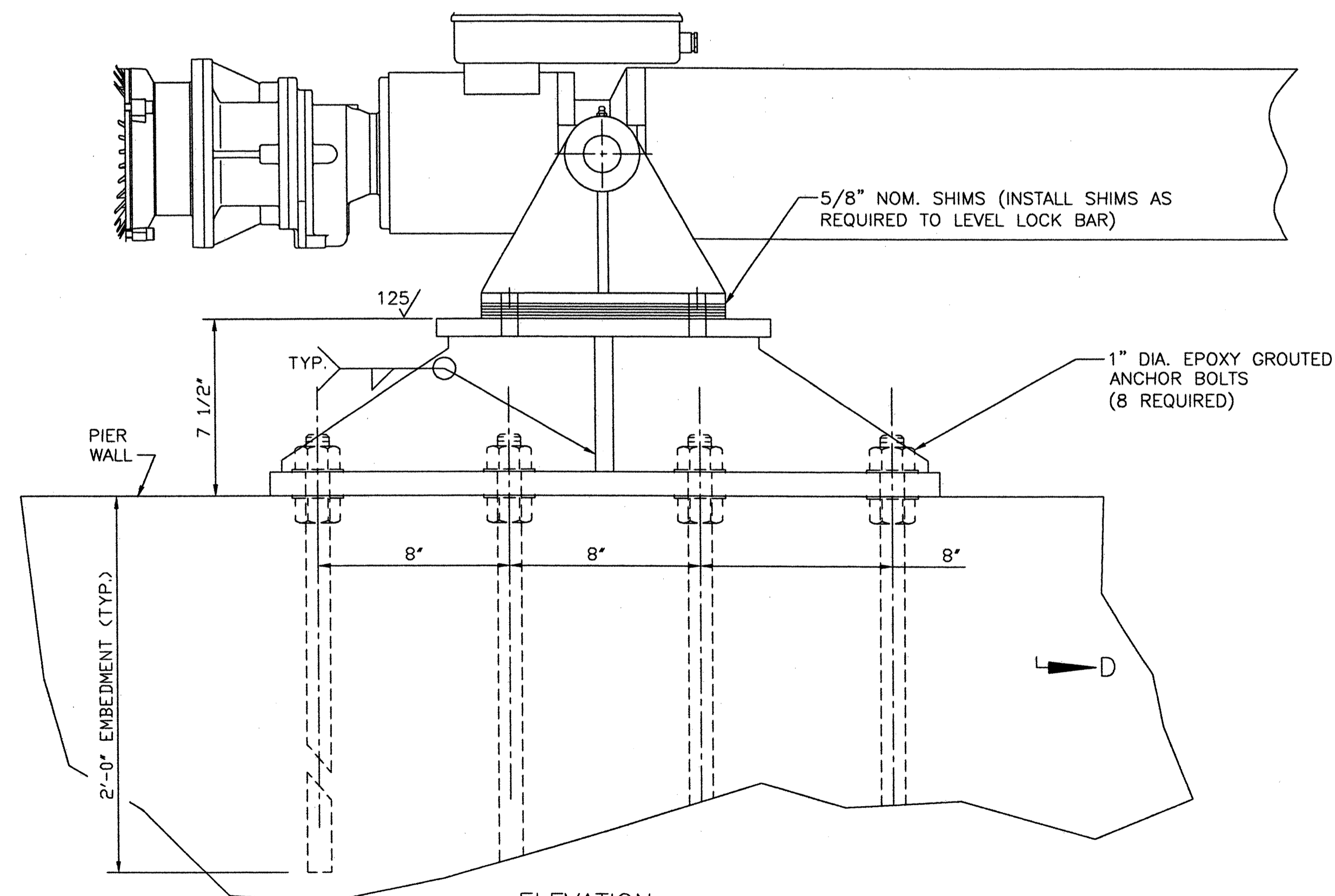
MB13



PLAN
NEW TRUNNION SUPPORT BRACKET
SCALE: 3" = 1'-0"



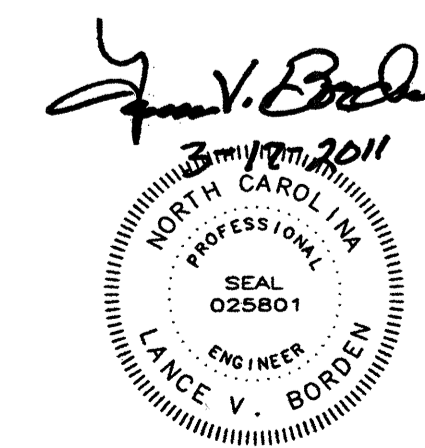
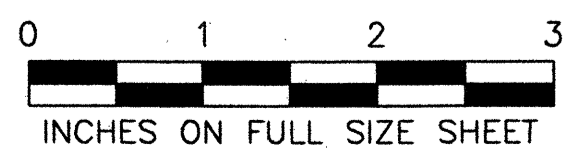
SECTION A-A
SCALE: 3" = 1'-0"



ELEVATION
NEW TRUNNION SUPPORT BRACKET
SCALE: 3" = 1'-0"

NOTES:

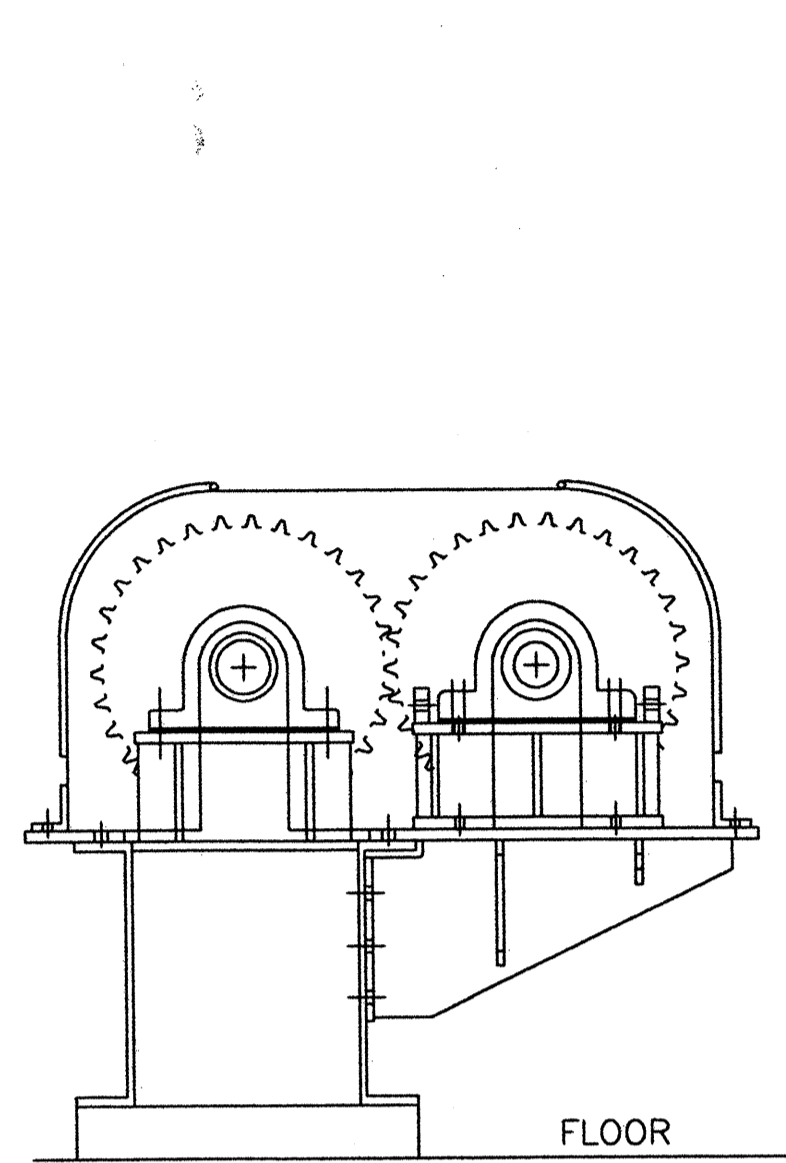
1. ALL STEEL PLATES AND SHAPES SHALL BE ASTM A36.
2. ALL GROUTED ANCHOR BOLTS AND ANCHOR RODS SHALL BE ASTM F1554 GRADE 55 WITH HS NUTS AND HARDENED WASHERS.
3. ALL OTHER FASTENERS SHALL BE ASTM A325 WITH HS NUTS AND HARDENED WASHERS.
4. ALL NEW STEEL SHALL BE PAINTED WITH A PAINT SYSTEM APPROVED BY NCDOT.
5. ALL WELDMENTS SHALL BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
6. MOUNTING BOLTS FOR ACTUATOR TO BE DRILLED UNDERSIZED AND NOT REAMED UNTIL FINAL ALIGNMENT IS ACHIEVED.



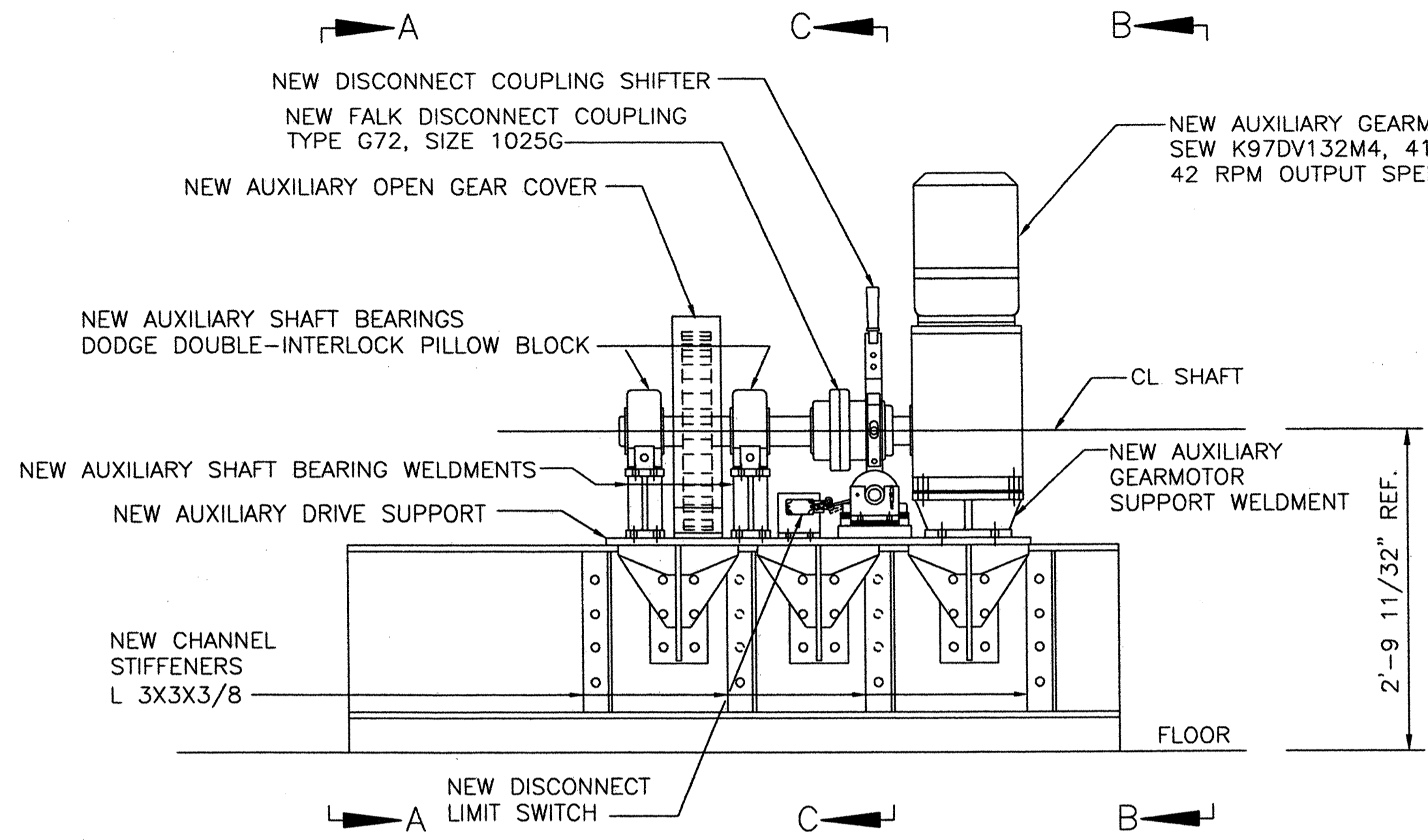
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
NEW LIVE LOAD SPAN LOCK -
DETAILS 5

| | |
|--------------------------|----------------------|
| DRAWN BY E.A. RICKENBACH | |
| SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DATE MARCH 2011 |
| DETAILED D.M. BARRETT | CHECKED L.V. BORDEN |
| CHECKED L.V. BORDEN | DRAWING NO. 15 OF 63 |

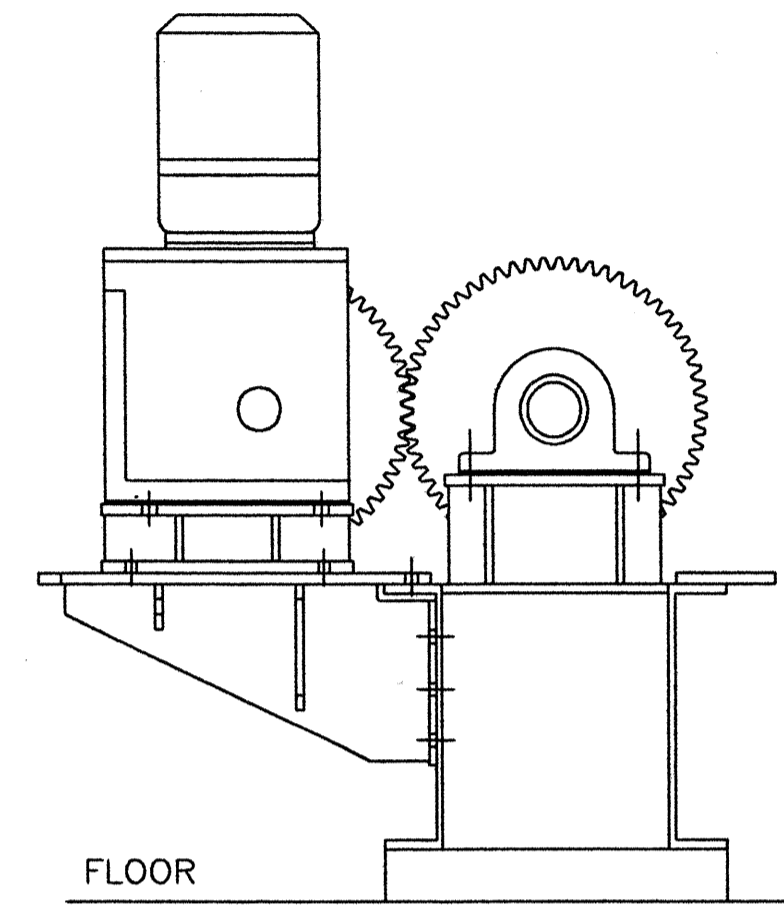
15-MB14-NLSUSD5.DWG



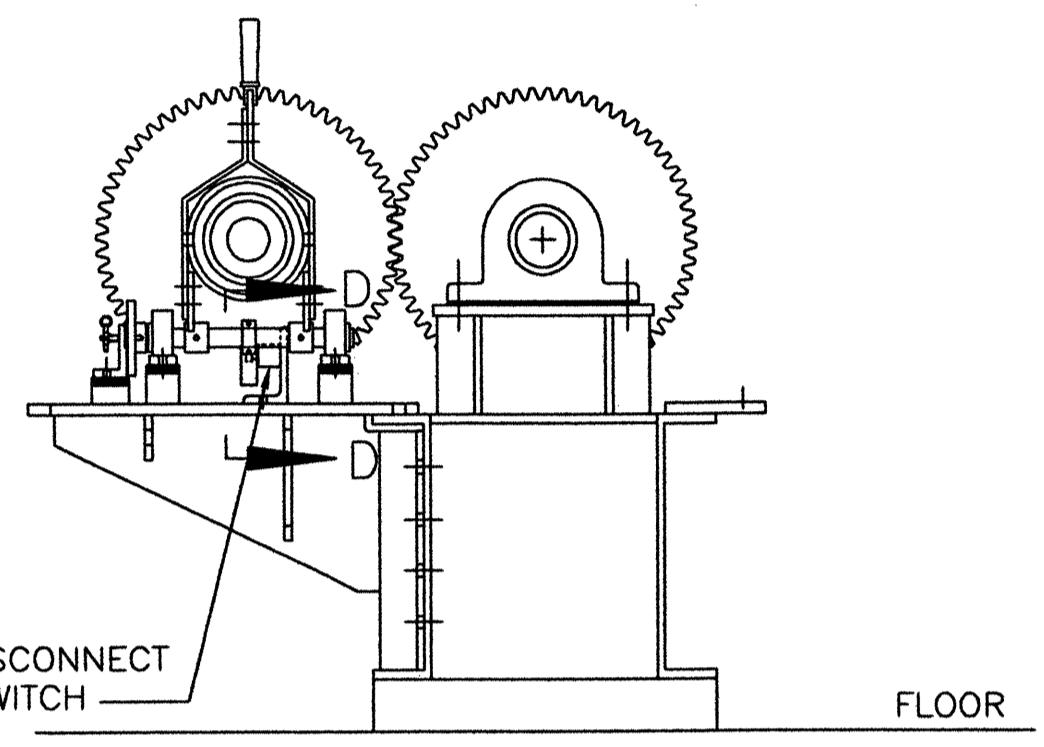
VIEW A-A
SCALE: 1" = 1'-0"



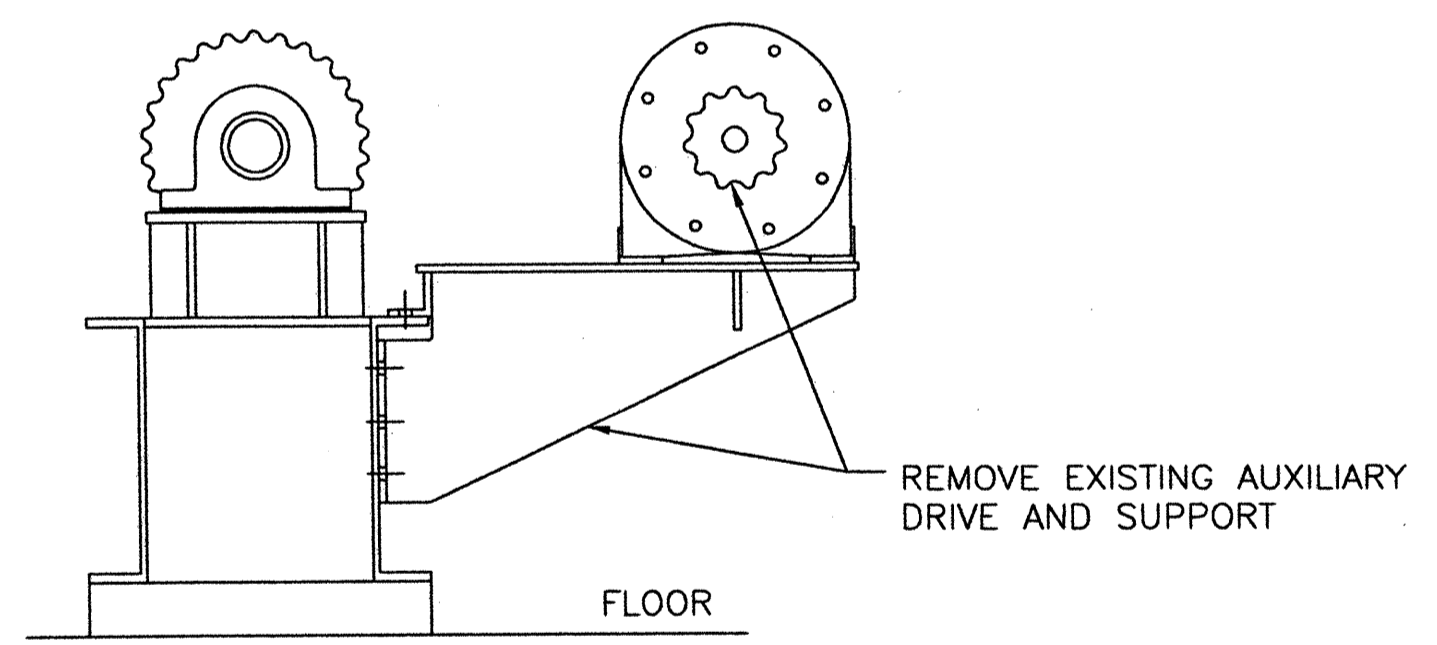
ELEVATION
SCALE: 1" = 1'-0"



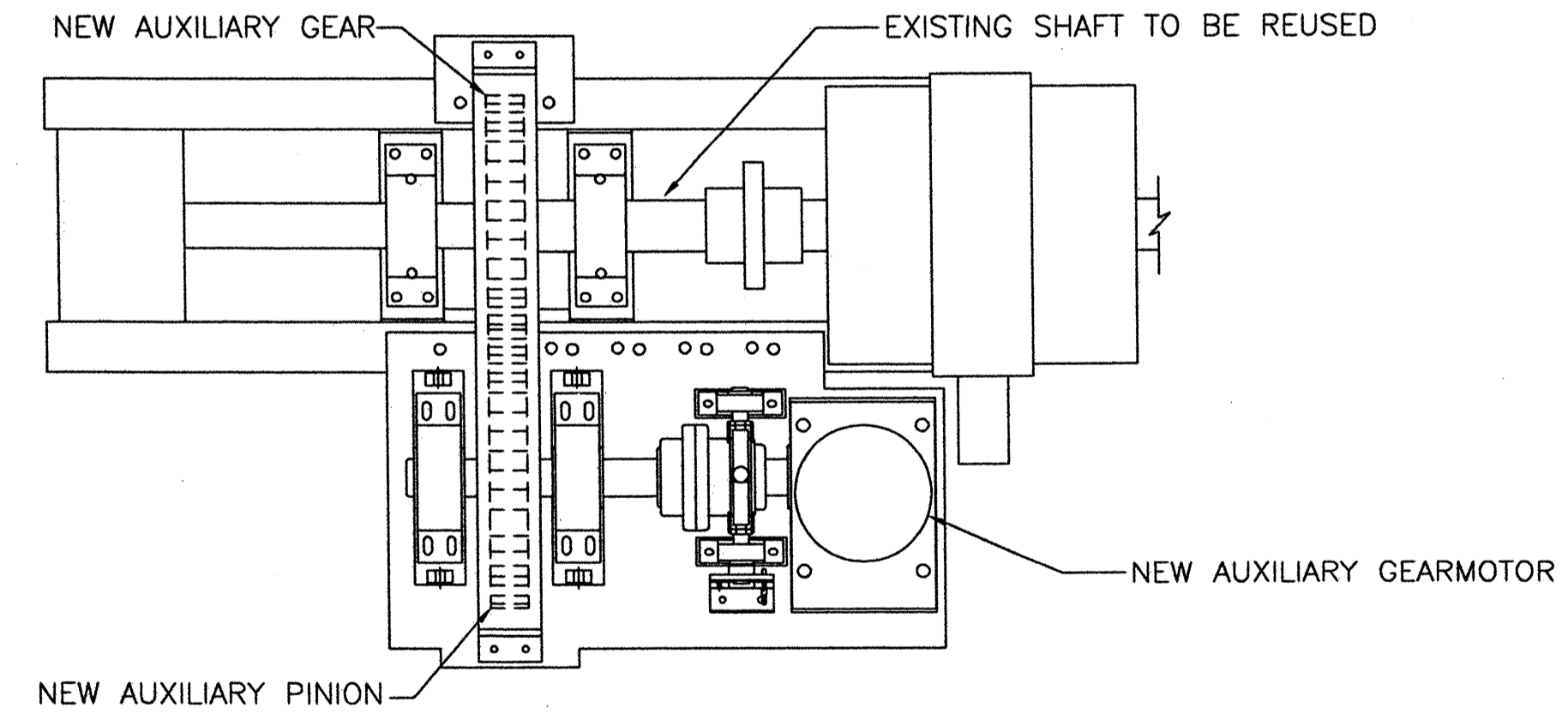
VIEW B-B
SCALE: 1" = 1'-0"
(GEAR COVER NOT SHOWN)



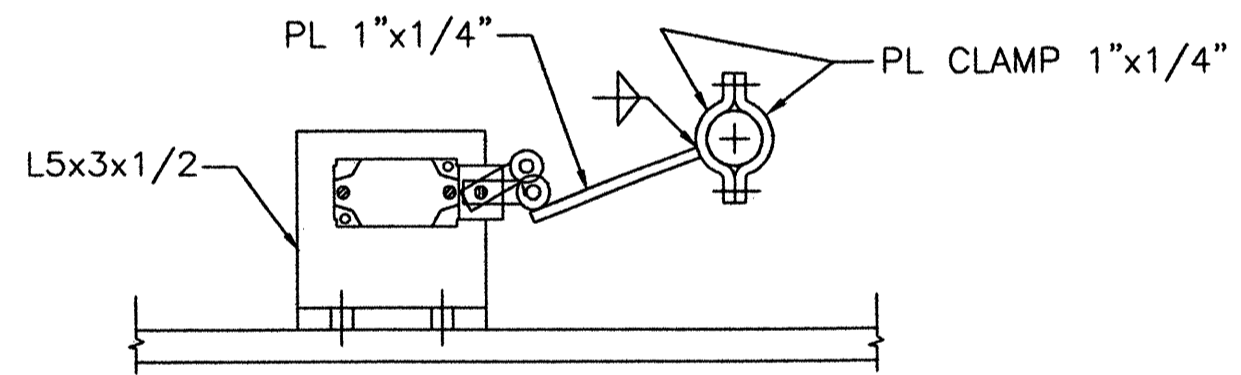
SECTION C-C
SCALE: 1" = 1'-0"
(GEAR COVER NOT SHOWN)



VIEW A-A
SCALE: 1" = 1'-0"
(EXISTING)

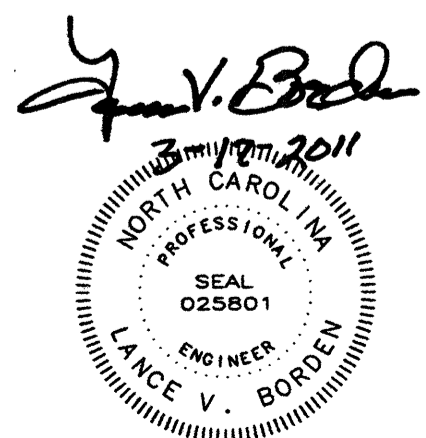
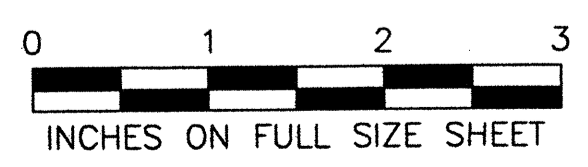


PLAN
AUXILIARY DRIVE SYSTEM
SCALE: 1" = 1'-0"



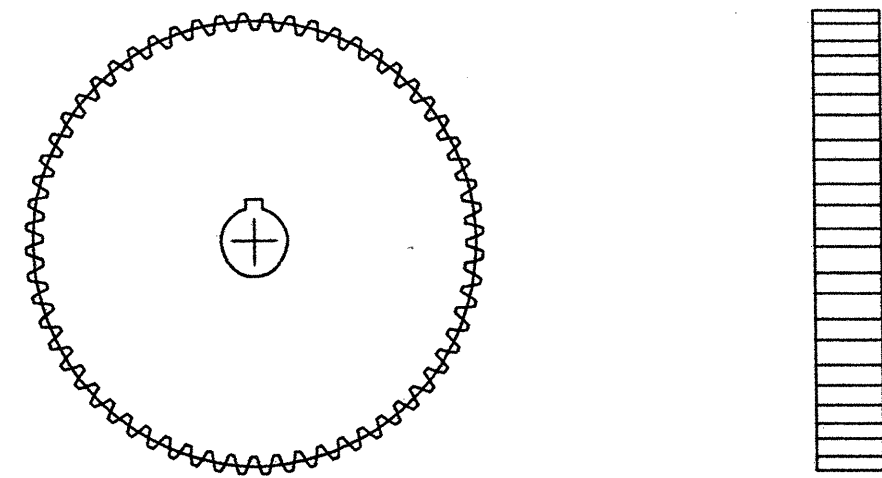
SECTION D-D
SCALE 3" 1'-0"

- NOTES:
- EXISTING AUXILIARY DRIVE COMPONENTS AND SUPPORT TO BE REMOVED, SEE VIEW A-A (EXISTING).



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|--|-----------------------|----------------------|--|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW AUXILIARY DRIVE - LAYOUT | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED A.M. BRODSKY | DETAILED A.M. BRODSKY | DATE MARCH 2011 | |
| CHECKED E.A. SAMPLE | CHECKED E.A. SAMPLE | DRAWING NO. 16 OF 63 | |

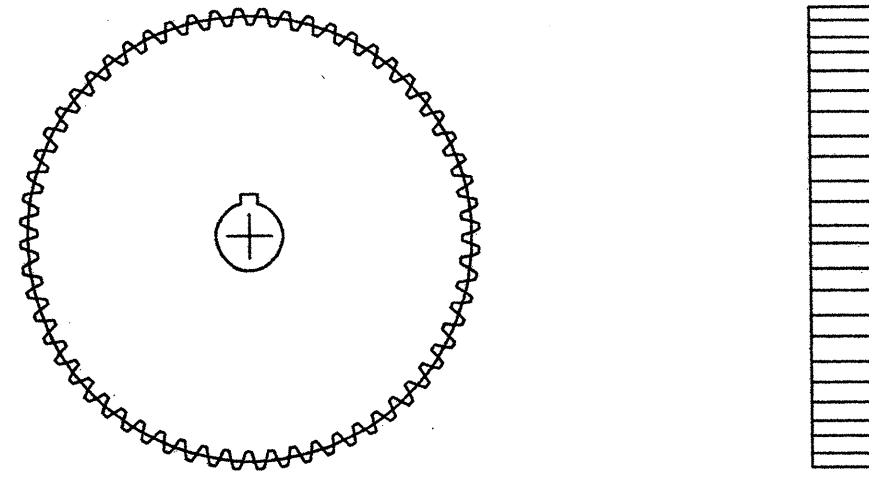
16-MB15-IND.DWG



NEW AUXILIARY GEAR

SCALE: 1 1/2" = 1'-0"

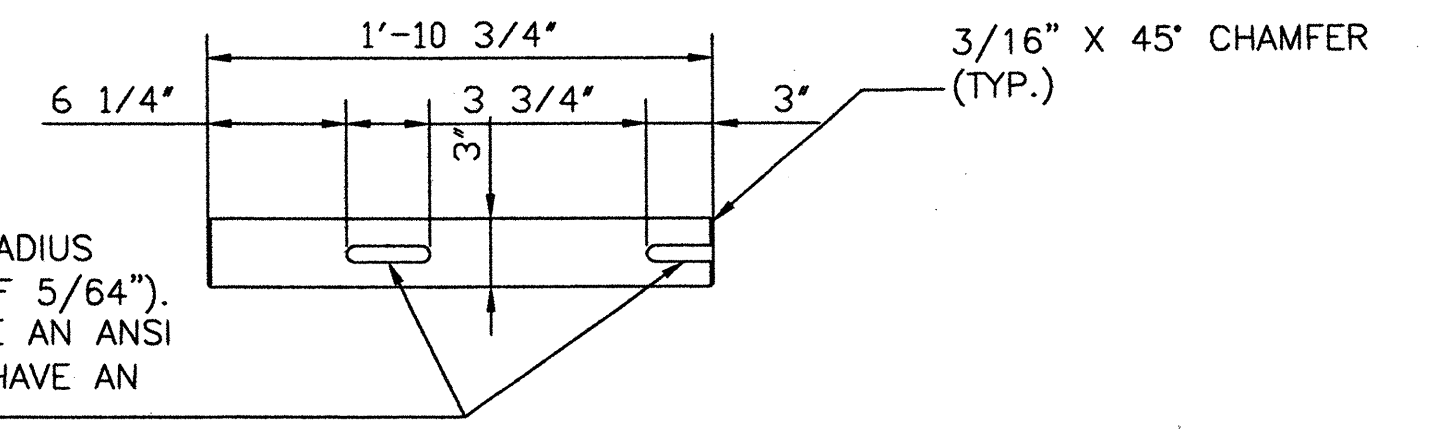
QUANTITY: 2
 AGMA QUALITY # 8 OR HIGHER (PER AGMA 2000 - A88)
 MATERIAL: A668-CLASS G OR EQUIVALENT WITH MINIMUM HARDNESS 200BHN
 PITCH DIAMETER: 20"
 DIAMETRAL PITCH: 3"
 FACE WIDTH: 3"
 # TEETH: 60
 PRESSURE ANGLE: 20°
 TOOTH TYPE: FULL DEPTH
 BORE: 3-5/8" (PROVIDE ANSI FN2 FIT WITH EXISTING SHAFT)
 BREAK ALL SHARP EDGES



NEW AUXILIARY PINION

SCALE: 1 1/2" = 1'-0"

QUANTITY: 2
 AGMA QUALITY # 8 OR HIGHER (PER AGMA 2000 - A88)
 MATERIAL: A668-CLASS G OR EQUIVALENT WITH MINIMUM HARDNESS 200BHN
 PITCH DIAMETER: 20"
 DIAMETRAL PITCH: 3"
 FACE WIDTH: 3"
 # TEETH: 60
 PRESSURE ANGLE: 20°
 TOOTH TYPE: FULL DEPTH
 BORE: 3" (PROVIDE ANSI FN2 FIT WITH NEW SHAFT)
 BREAK ALL SHARP EDGES

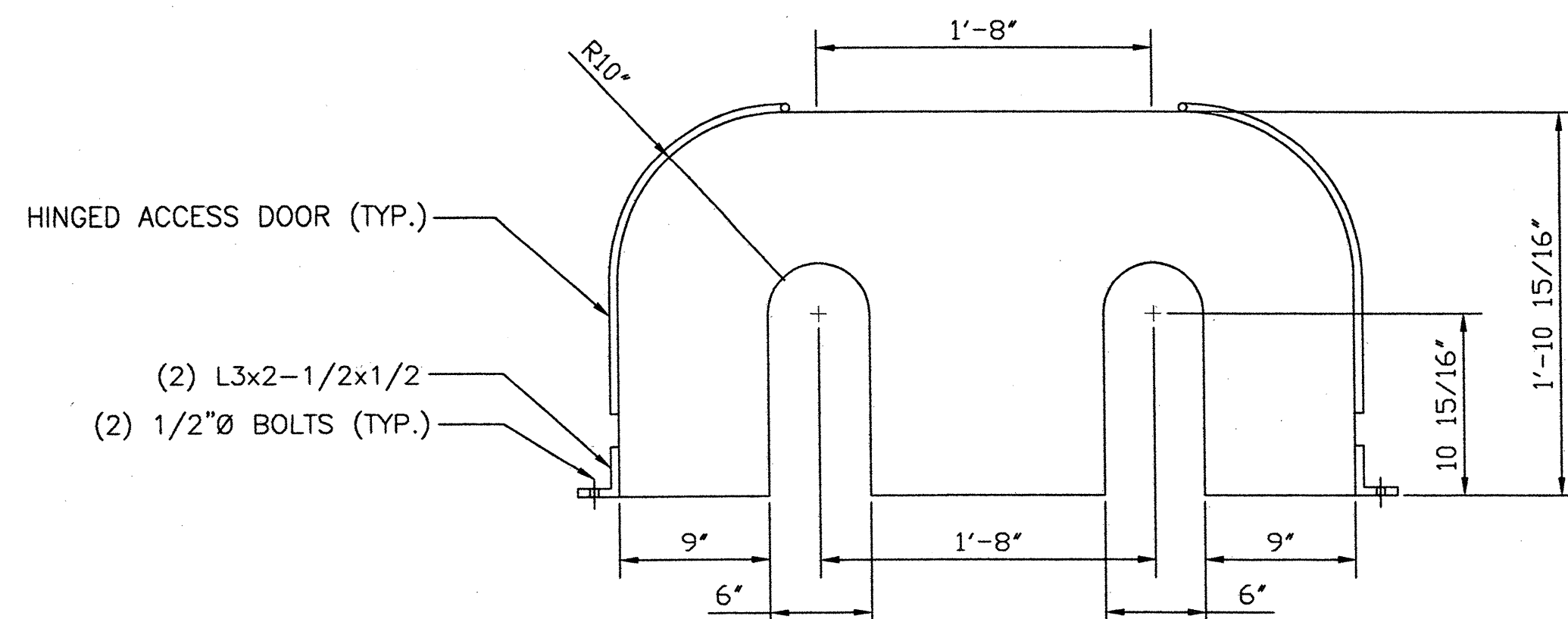
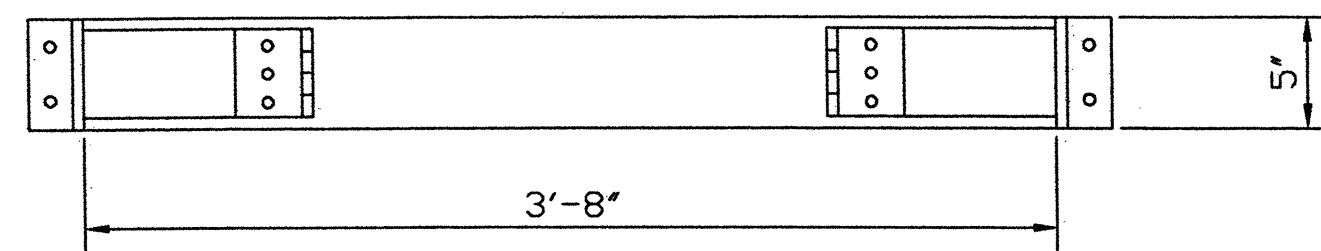


KEYWAY 3/4" WIDE X 3/8" DEEP
 WITH FILLETS IN KEYSEATS OF 1/16" RADIUS
 (KEYS TO HAVE MATCHING CHAMFERS OF 5/64").
 THE SIDES OF THE KEYWAY SHALL HAVE AN ANSI
 FN2 FIT AND THE TOP/BOTTOM SHALL HAVE AN
 ANSI LC4 FIT WITH THE KEY.

NEW AUXILIARY PINION SHAFT

SCALE: 1 1/2" = 1'-0"

MATERIAL: AISI 4140 OR EQUAL, WITH
 75,000 PSI MINIMUM YIELD STRENGTH
 QUANTITY: 2

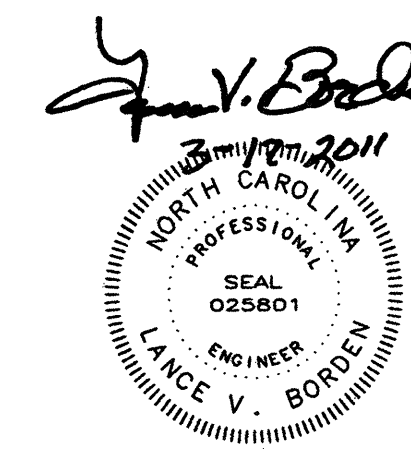
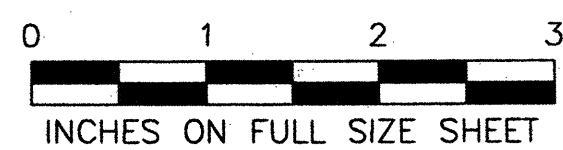


OPEN GEARING COVER

SCALE: 1 1/2" = 1'-0"
 MATERIAL: FABRICATED FROM 10GA STAINLESS STEEL UNLESS NOTED OTHERWISE
 QUANTITY: 2 REQUIRED

NOTES:

- BEFORE MOUNTING THE NEW AUXILIARY GEAR ON THE EXISTING SHAFT, A PROCEDURE MUST BE SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER'S REPRESENTATIVE. THE PROCEDURE SHALL INCLUDE DETAILED STEPS FOR REMOVAL OF THE EXISTING SHAFT, REMOVAL OF THE EXISTING SPROCKET AND BEARINGS, AND INSTALLATION OF THE NEW AUXILIARY GEAR AND KEY.
- TWO THREADED STUDS TO BE WELDED TO THE OPEN GEAR COVER FOR SECURING OF EACH HINGED DOOR. WING NUTS FOR SECURING DOORS AND ALL MOUNTING HARDWARE TO BE STAINLESS STEEL.

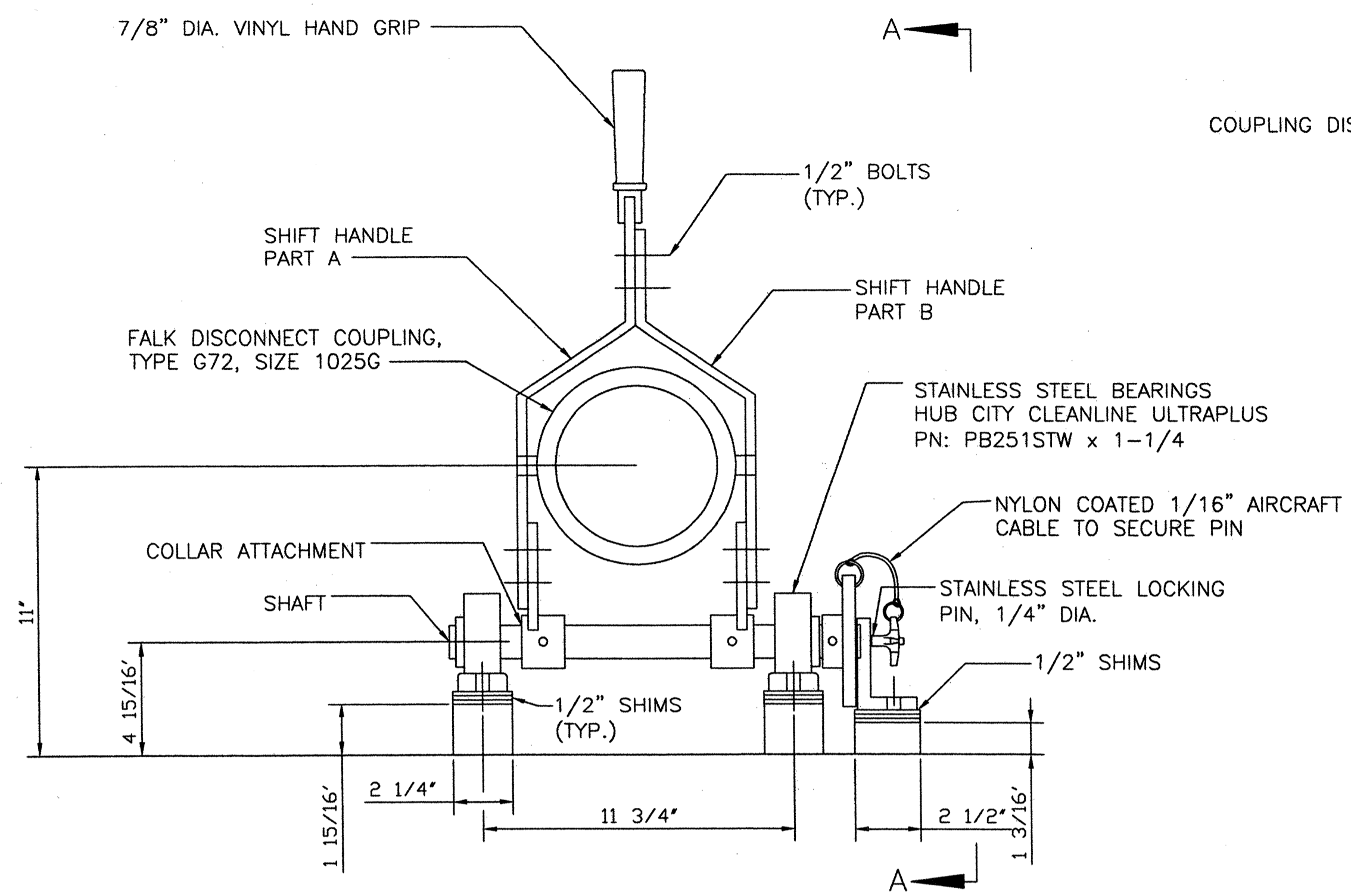


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

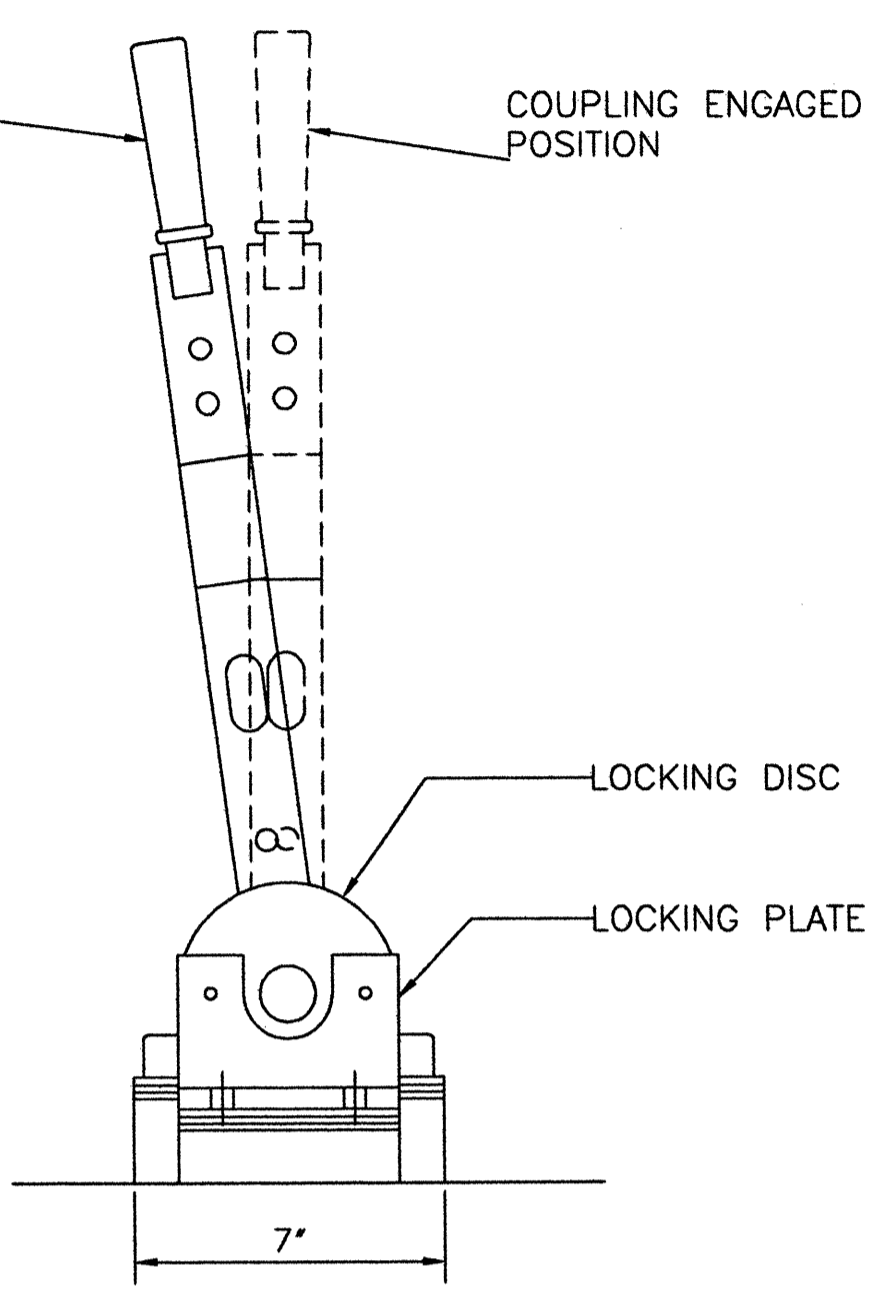
CAPE FEAR BASCULE BRIDGE
 AND MEMORIAL LIFT BRIDGE
 WILMINGTON, NORTH CAROLINA

NEW AUXILIARY DRIVE - DETAILS

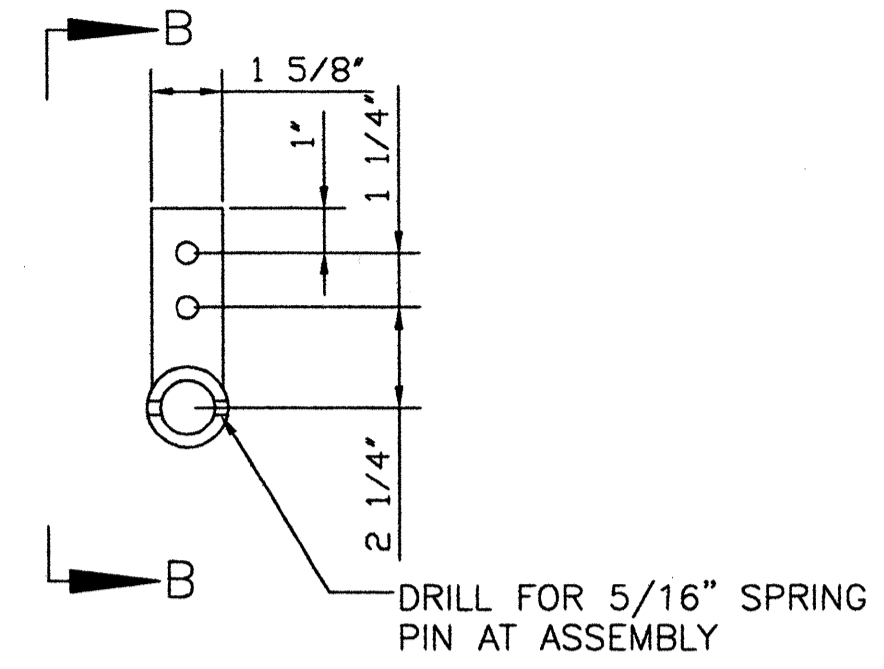
| | | | | | |
|----------|--------------|----------|--------------|-------------|-----------------|
| DESIGNED | A.M. BRODSKY | DETAILED | A.M. BRODSKY | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | CHECKED | E.A. SAMPLE | DRAWING NO. | 17 OF 63 |
| | | | | DRAWN BY | E.A. RICKENBACH |
| | | | | SCALE | AS NOTED |



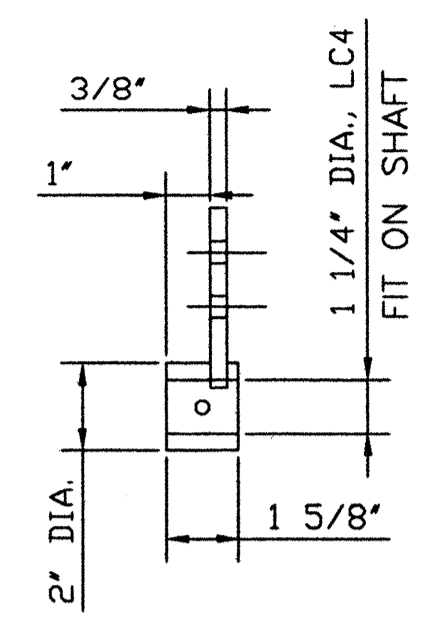
SHIFTER COUPLING HANDLE
SCALE: 3" = 1'-0"



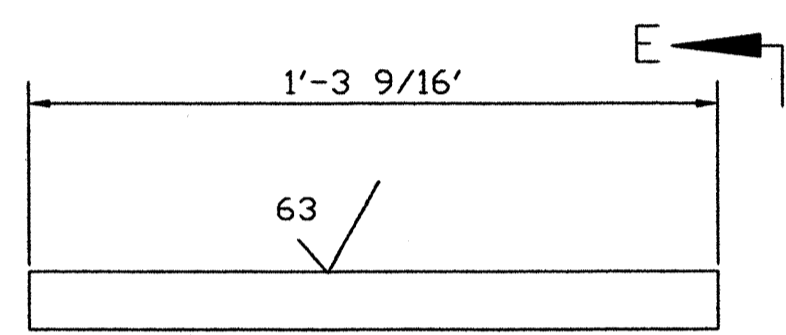
VIEW A-A
SCALE: 3" = 1'-0"



COLLAR ATTACHMENT
SCALE: 3" = 1'-0"

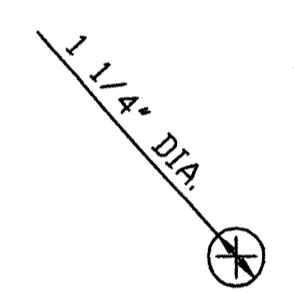


VIEW B-B
SCALE: 3" = 1'-0"

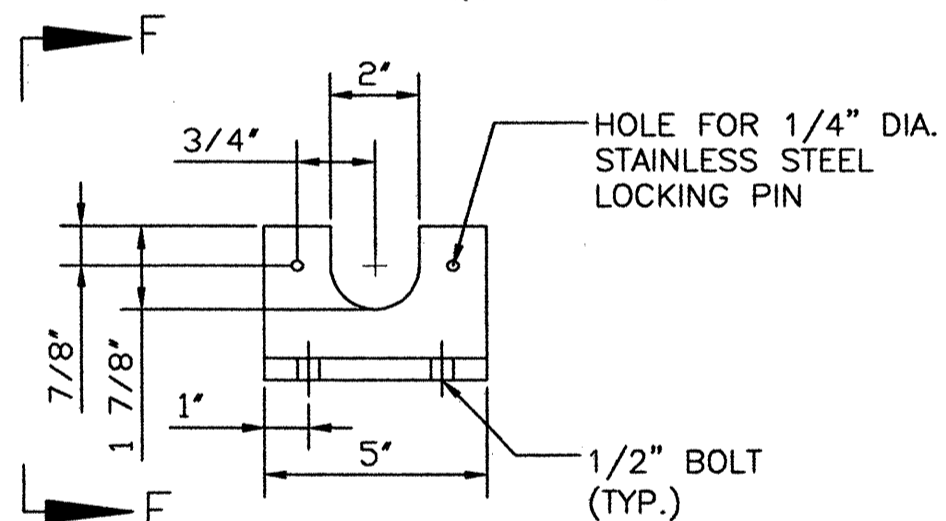


SHAFT

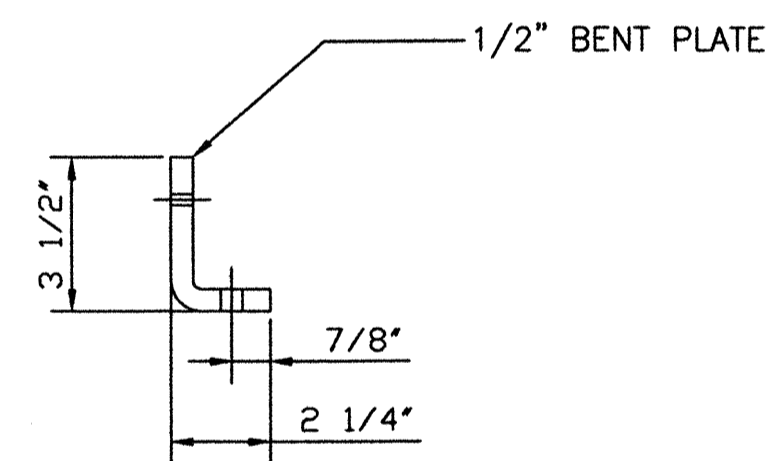
SCALE: 3" = 1'-0"
MATERIAL: AISI 4140 OR EQUAL, WITH 75,000 PSI MINIMUM YIELD STRENGTH
QUANTITY: 2



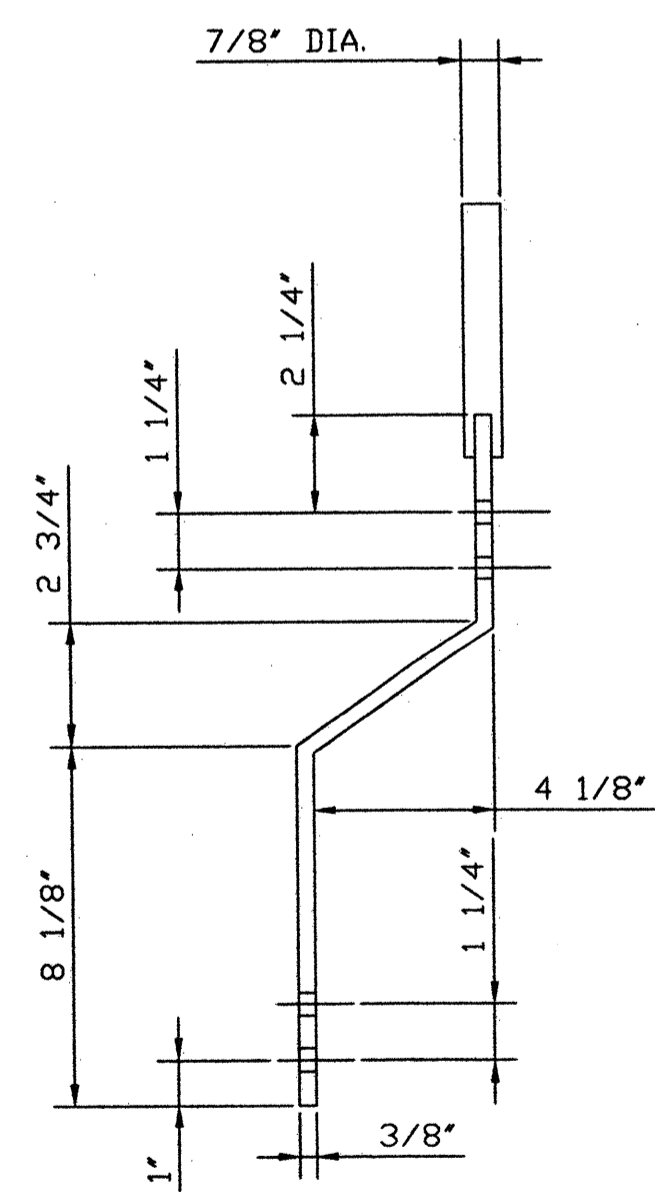
VIEW E-E
SCALE: 3" = 1'-0"



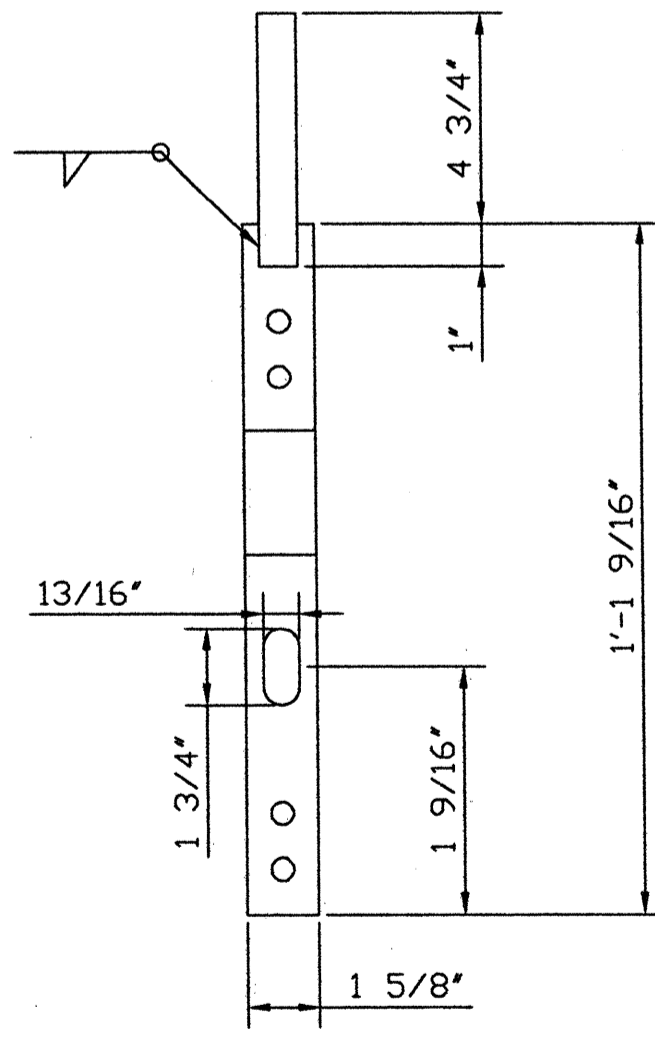
LOCKING PLATE
SCALE: 3" = 1'-0"



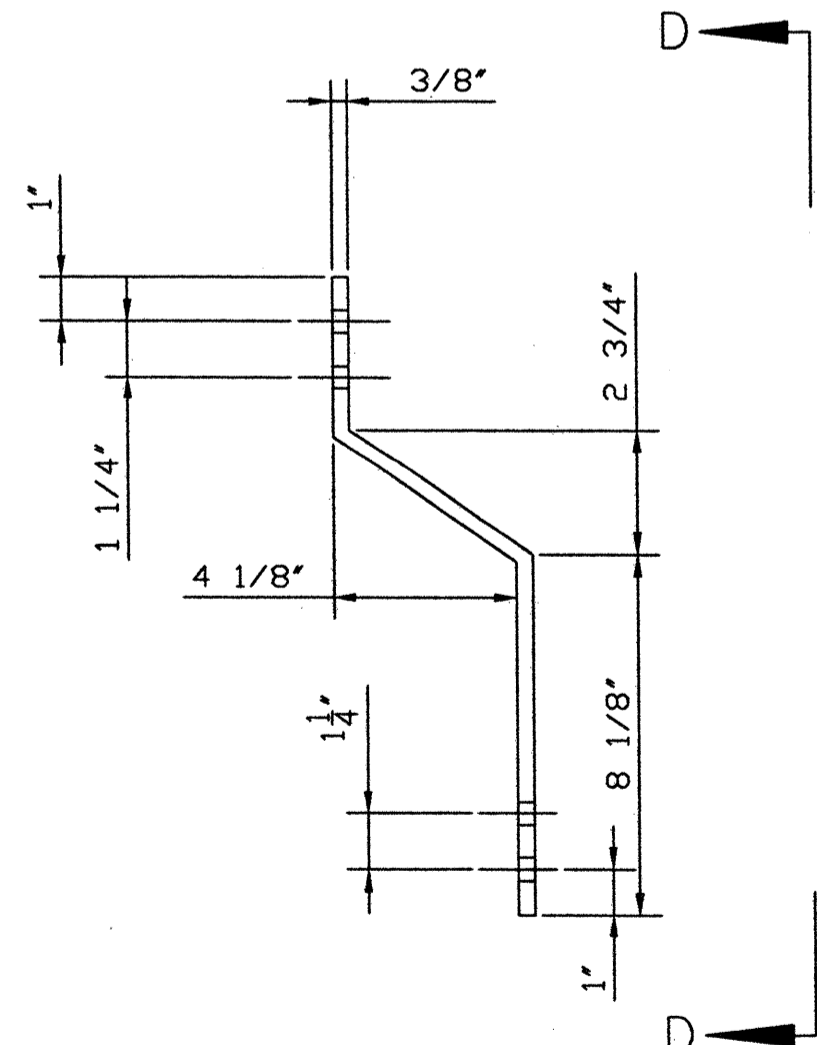
VIEW F-F
SCALE: 3" = 1'-0"



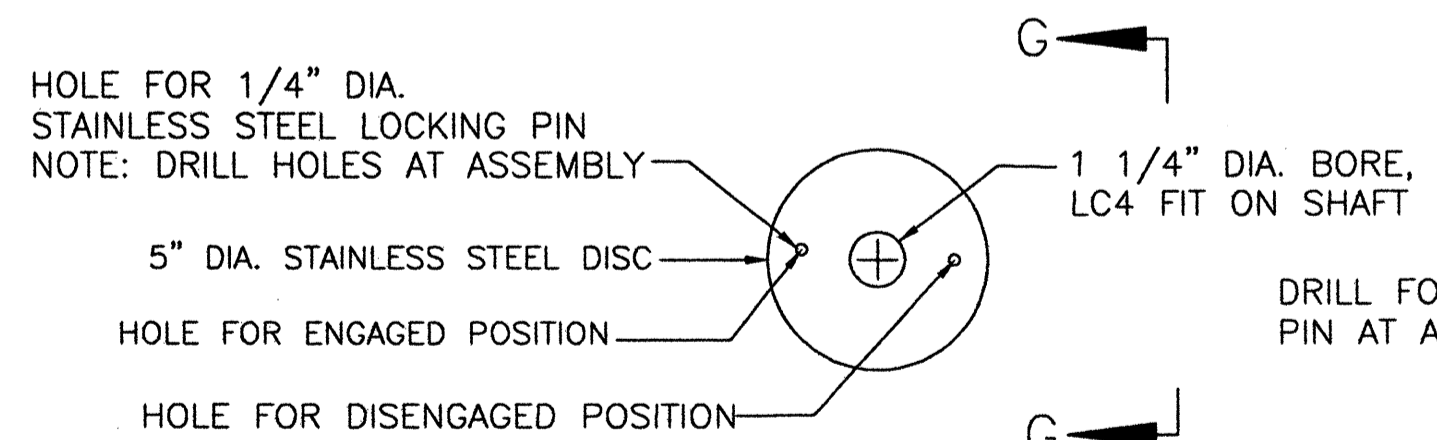
SHIFT HANDLE PART A
SCALE: 3" = 1'-0"



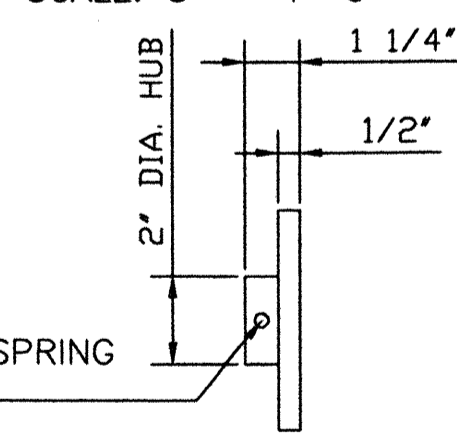
VIEW C-C
SCALE: 3" = 1'-0"



VIEW D-D
SCALE: 3" = 1'-0"

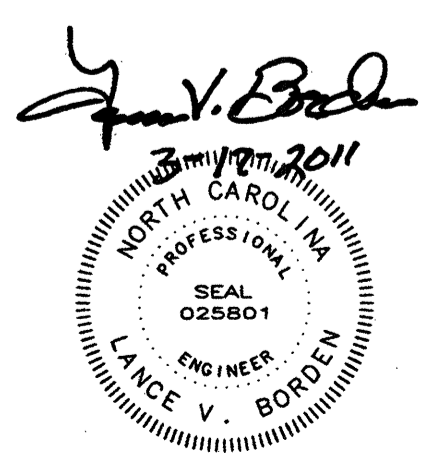
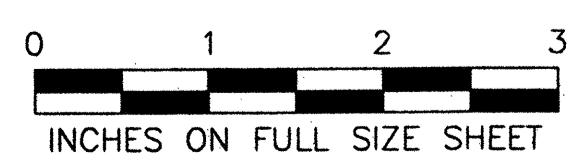


LOCKING DISC
SCALE: 3" = 1'-0"



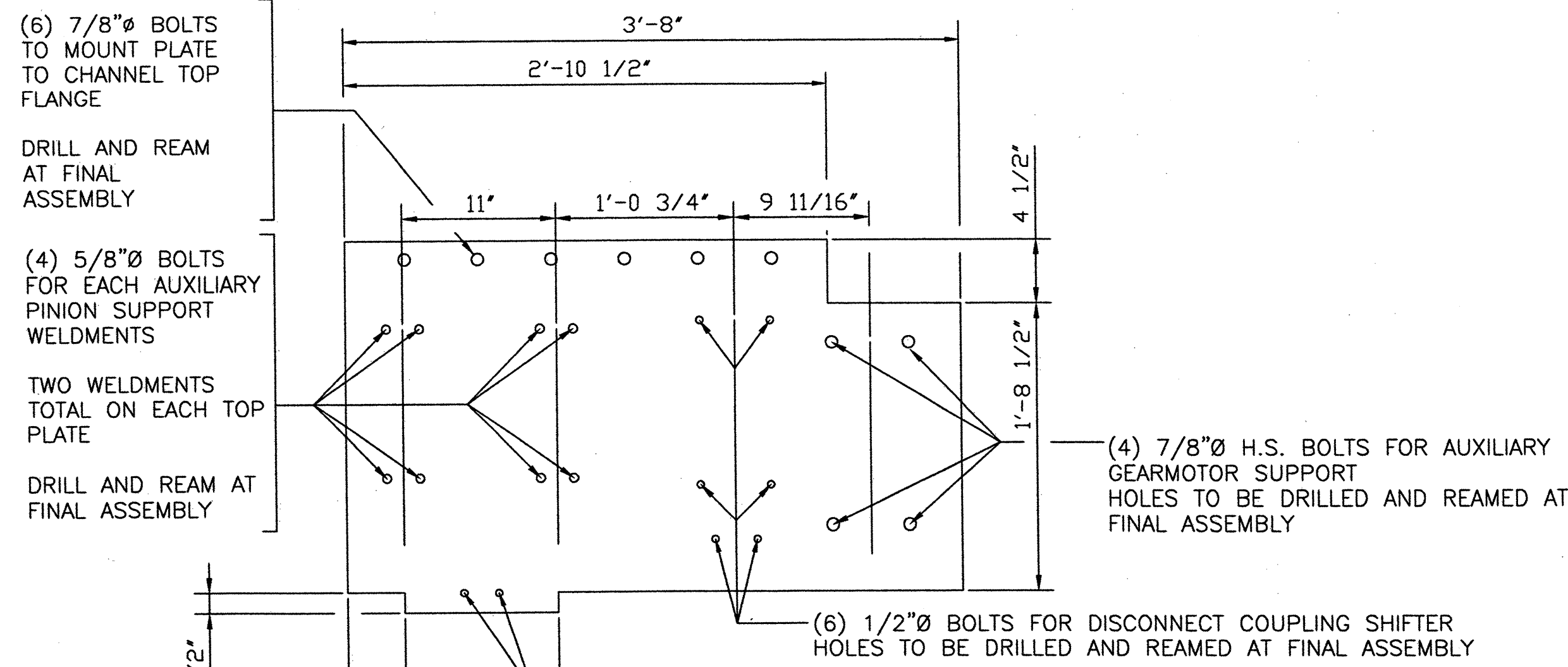
VIEW G-G
SCALE: 3" = 1'-0"

SHIFTER COUPLING HANDLE DETAILS
SCALE: 3" = 1'-0"

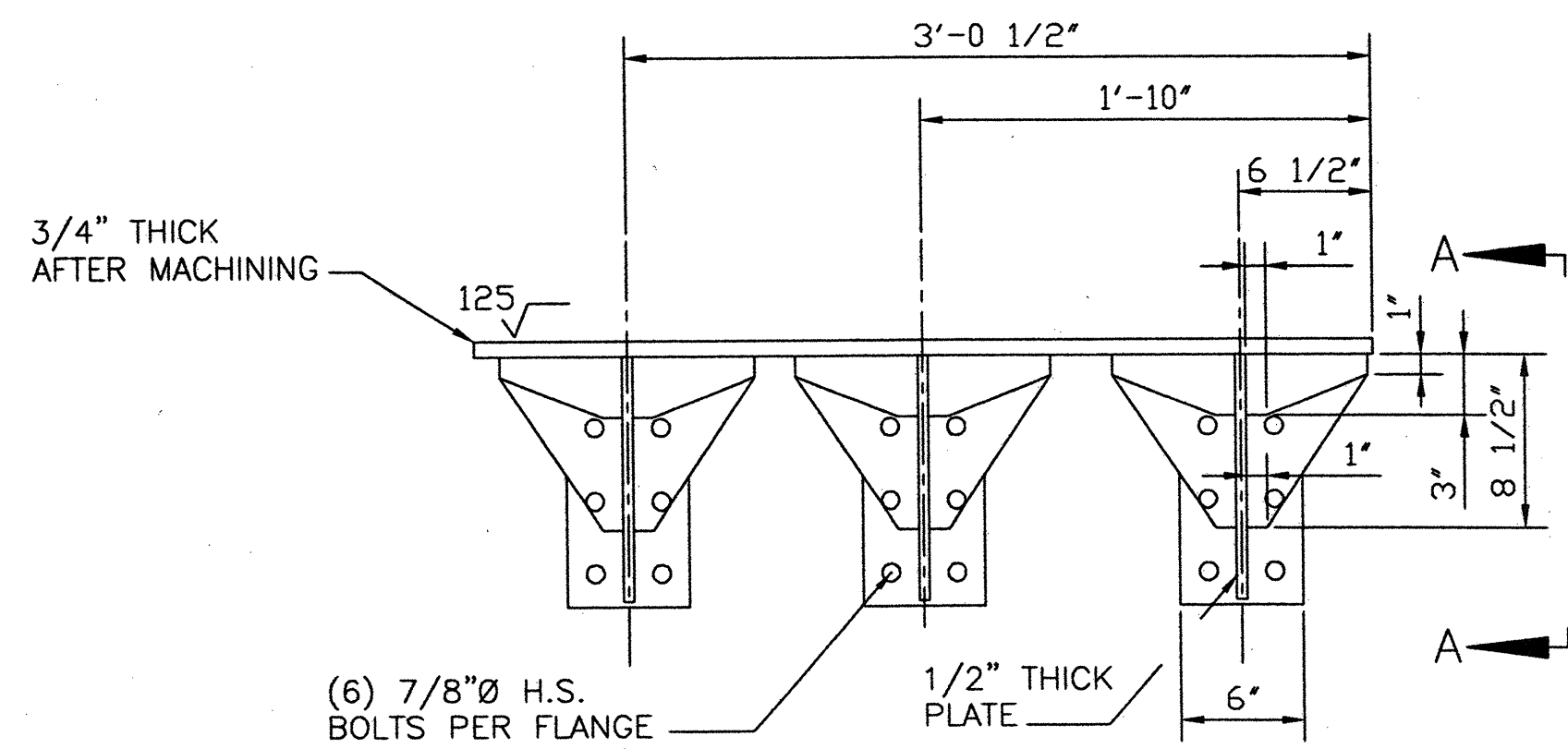


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|---|-----------------|-------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| NEW AUXILIARY DRIVE-SHIFTER COUPLING | | | |
| DRAWN BY | E.A. RICKENBACH | SCALE | AS NOTED |
| DESIGNED | A.M. BRODSKY | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | DRAWING NO. | 18 OF 63 |

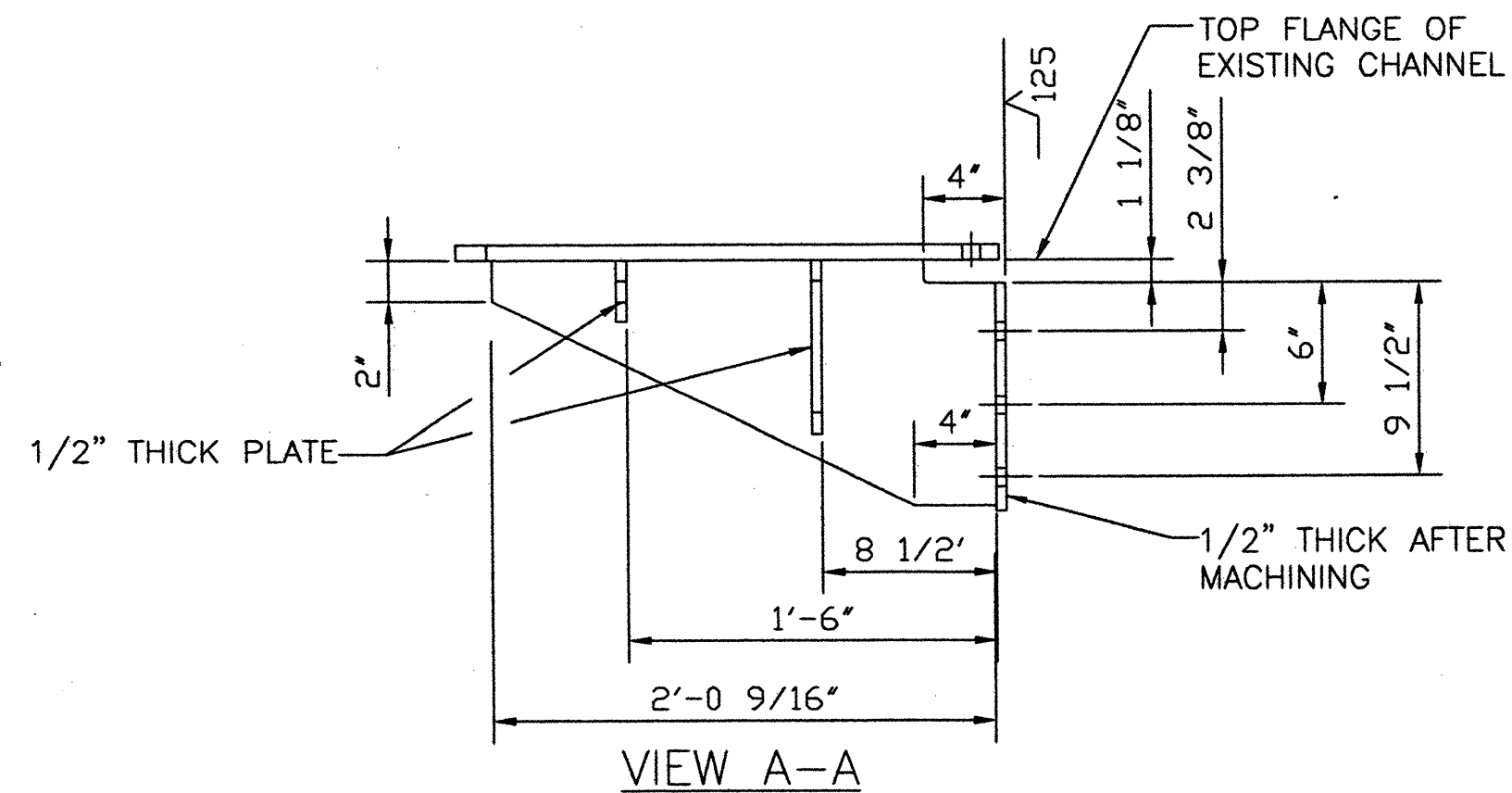
18-MB17-INDSC.DWG



PLAN



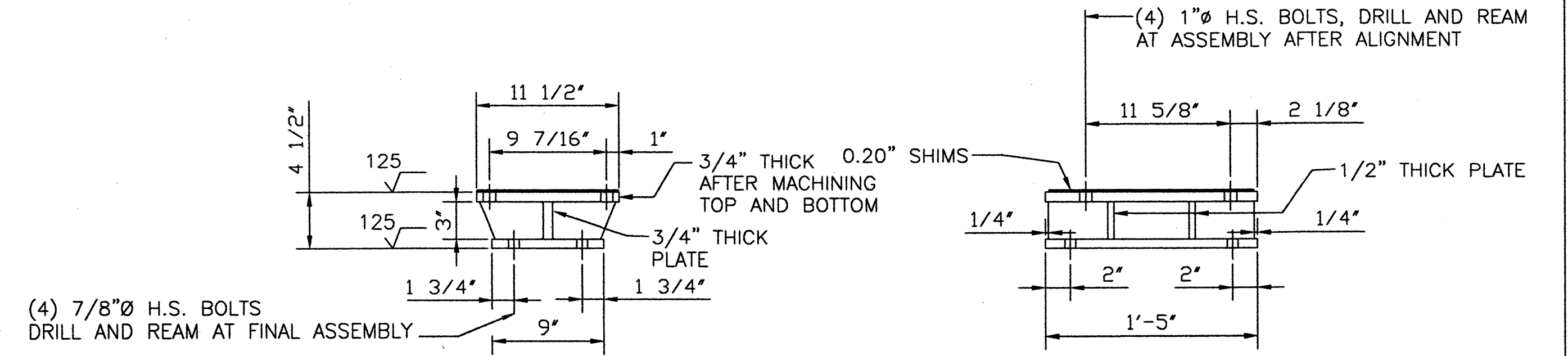
ELEVATION



VIEW A-A

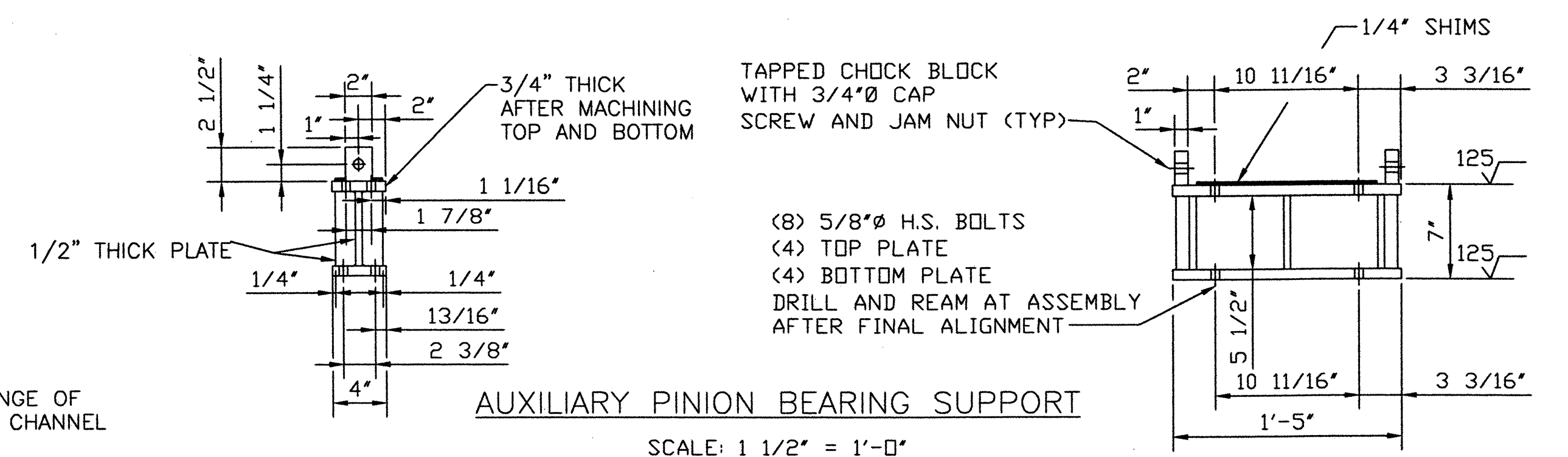
AUXILIARY DRIVE SUPPORT

SCALE: 1 1/2" = 1'-0"
 MATERIAL: ASTM A588 HSLA STEEL
 QUANTITY: 2 REQUIRED



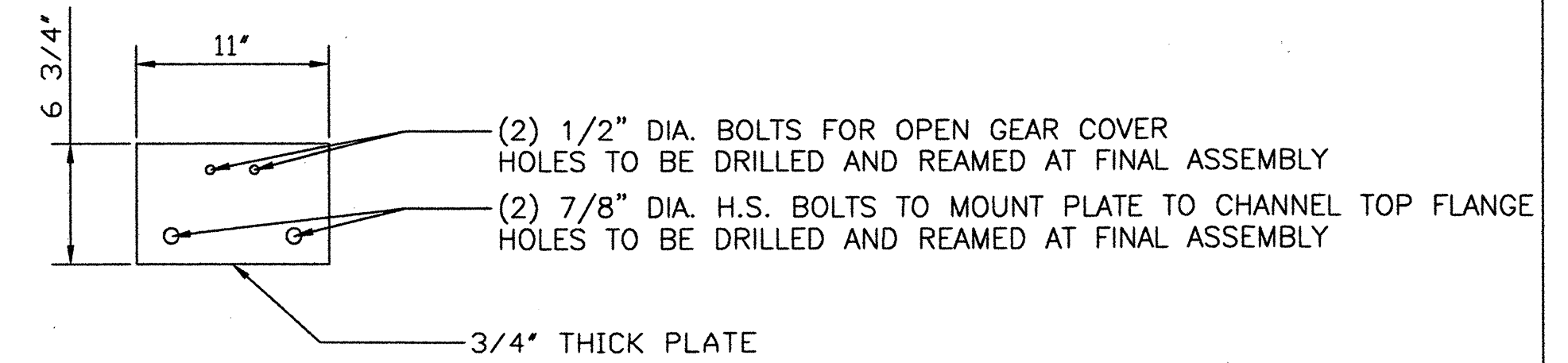
AUXILIARY GEARMOTOR SUPPORT

SCALE: 1 1/2" = 1'-0"
 MATERIAL: ASTM A588 HSLA STEEL
 QUANTITY: 2 REQUIRED



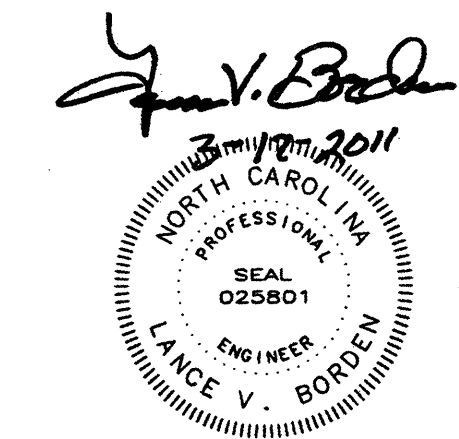
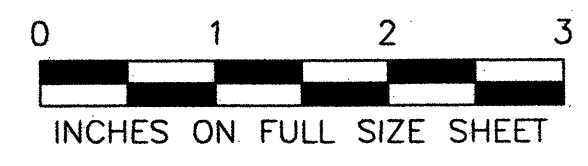
AUXILIARY PINION BEARING SUPPORT

SCALE: 1 1/2" = 1'-0"
 MATERIAL: ASTM A588 HSLA STEEL
 QUANTITY: 4 REQUIRED, 2 PER AUXILIARY DRIVE SUPPORT

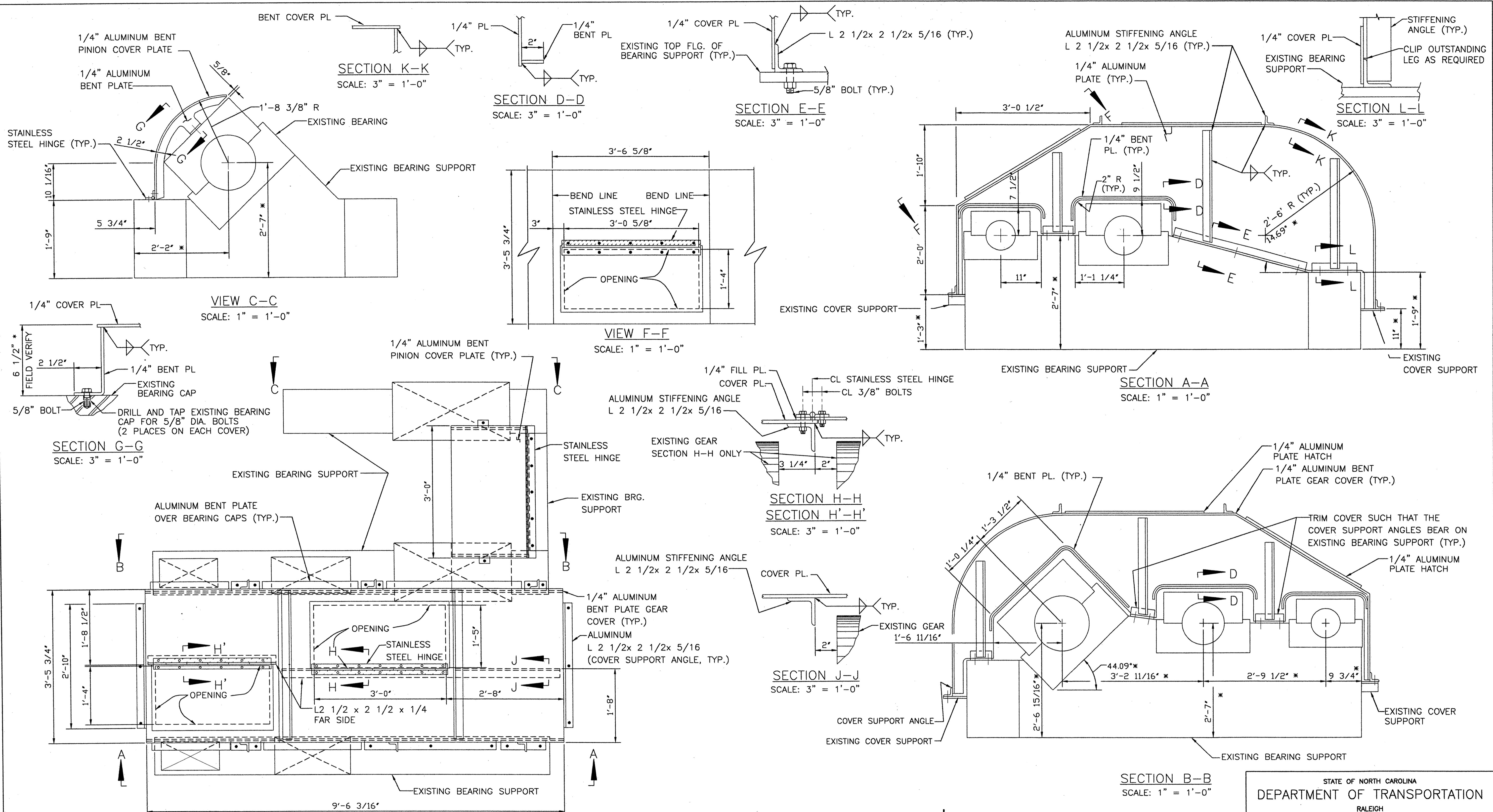


OPEN GEAR COVER SUPPORT PLATE

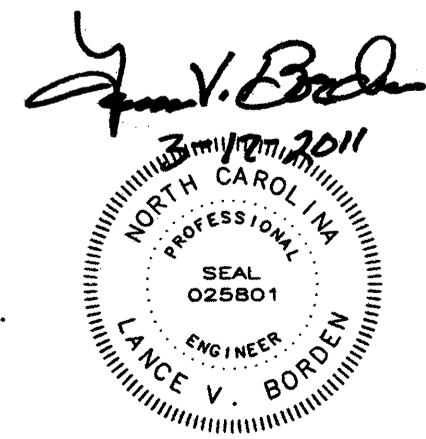
SCALE: 1 1/2" = 1'-0"
 MATERIAL: ASTM A588 HSLA STEEL
 QUANTITY: 2 REQUIRED



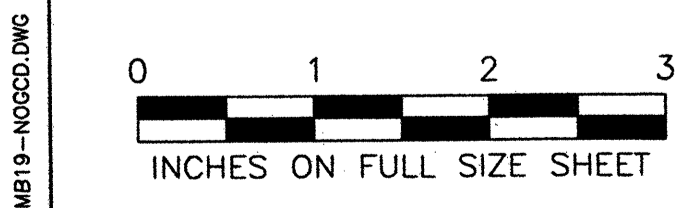
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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW AUXILIARY DRIVE - SUPPORTS | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED A.M. BRODSKY | DATE MARCH 2011 | MB18 | |
| CHECKED E.A. SAMPLE | DRAWING NO. 19 OF 63 | | |



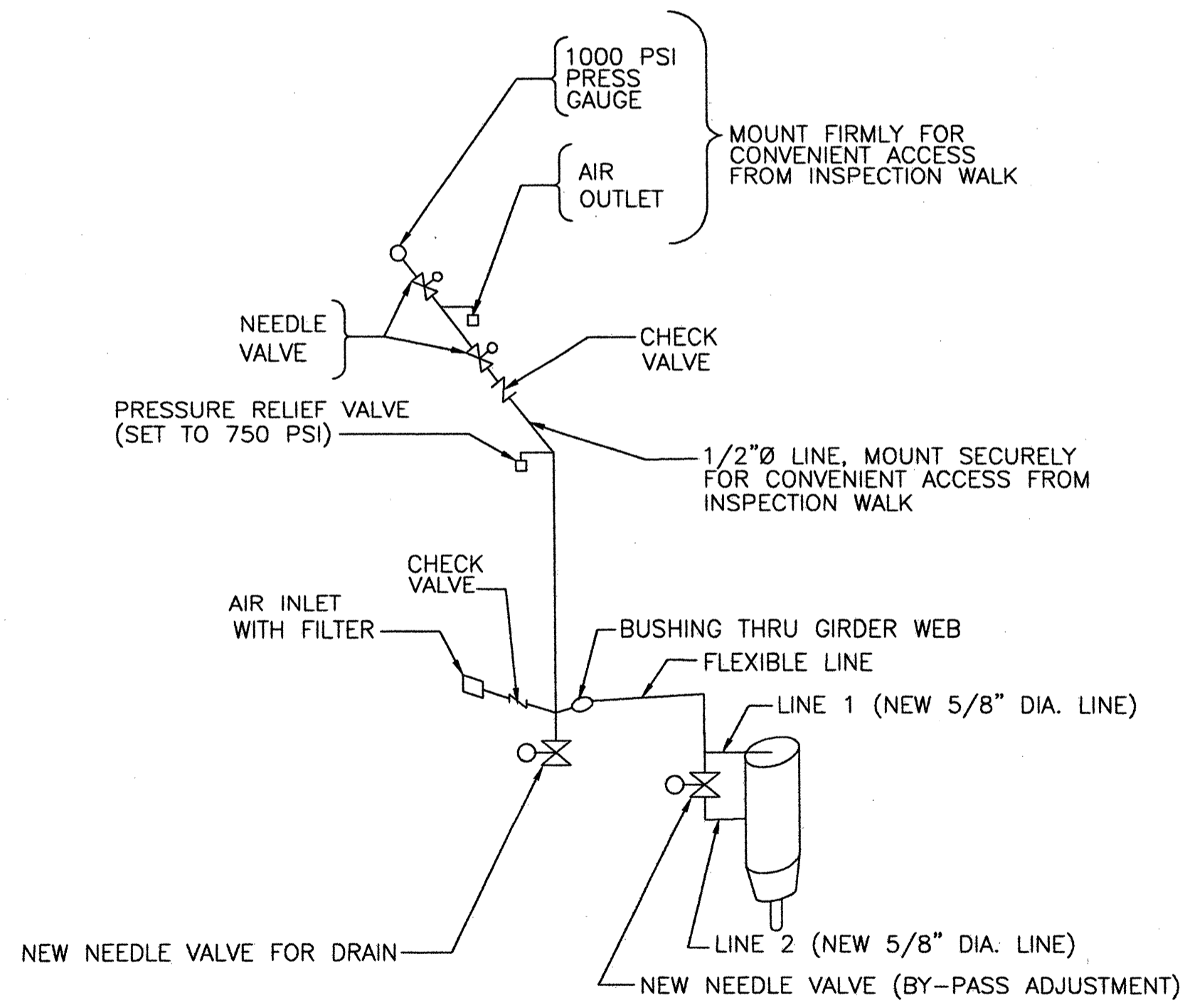
- NOTES:**
- * DIMENSIONS PROVIDED AS REFERENCE ONLY, FIELD VERIFY.
 - ALL ITEMS NEW, UNLESS NOTED OTHERWISE.
 - EXISTING GEARING COVERS TO BE REMOVED.
 - COVER MATERIAL TO BE ALUMINUM, ASTM B308.
 - FASTENERS TO BE STAINLESS STEEL, ASTM F593, GROUP 2 - ALLOY 316.
 - HINGES TO BE TYPE 304 STAINLESS STEEL PIANO HINGES, McMASTERS-CARR PART NO. 1582A434, OR APPROVED EQUAL.



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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW OPEN GEARING COVER - DETAILS | | | |
| DESIGNED | G.L. FOREST | DATE | MARCH 2011 |
| CHECKED | E.A. SAMPLE | DRAWING NO. | 20 OF 63 |



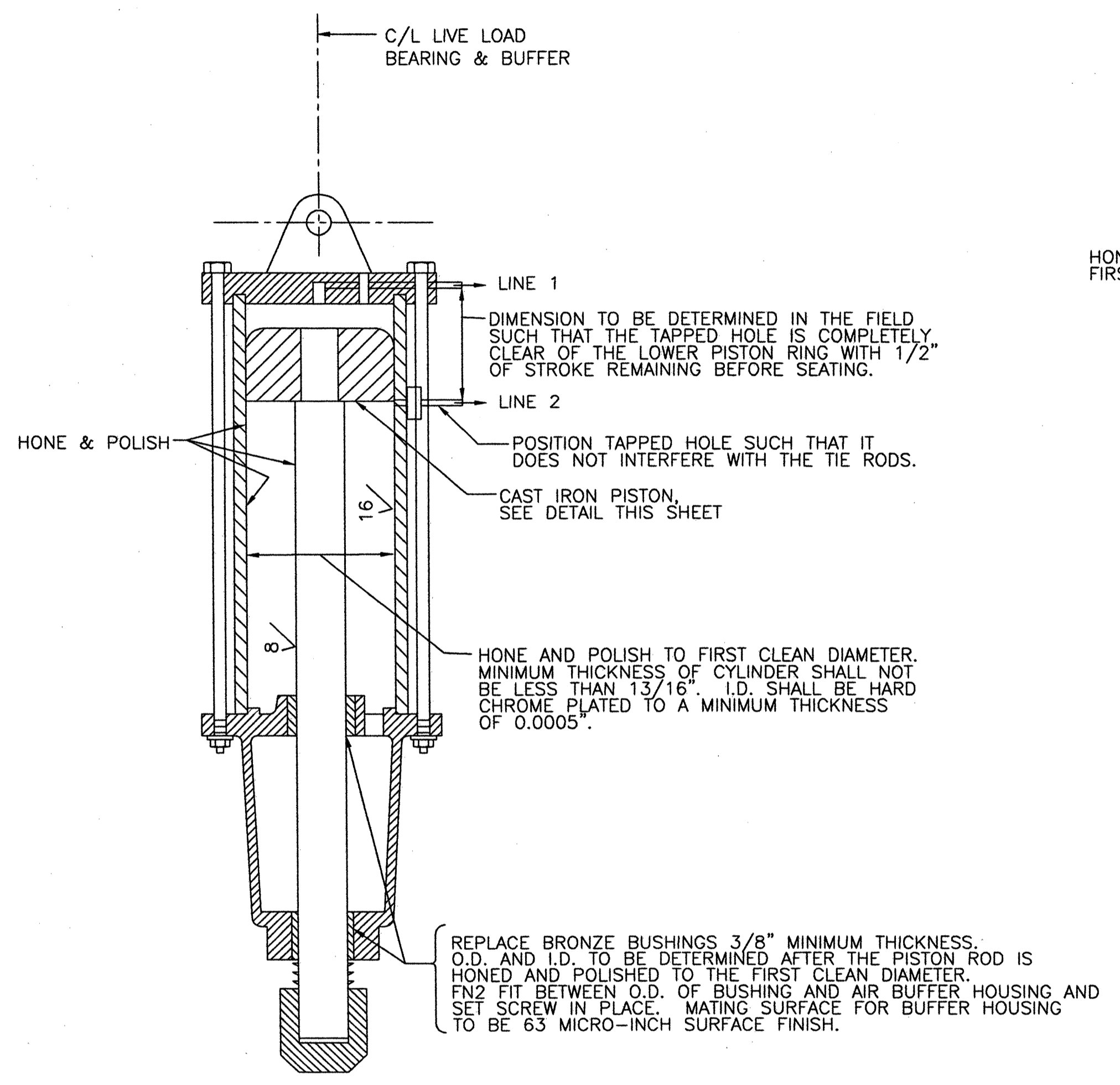
20-MB19-NOCCD.DWG



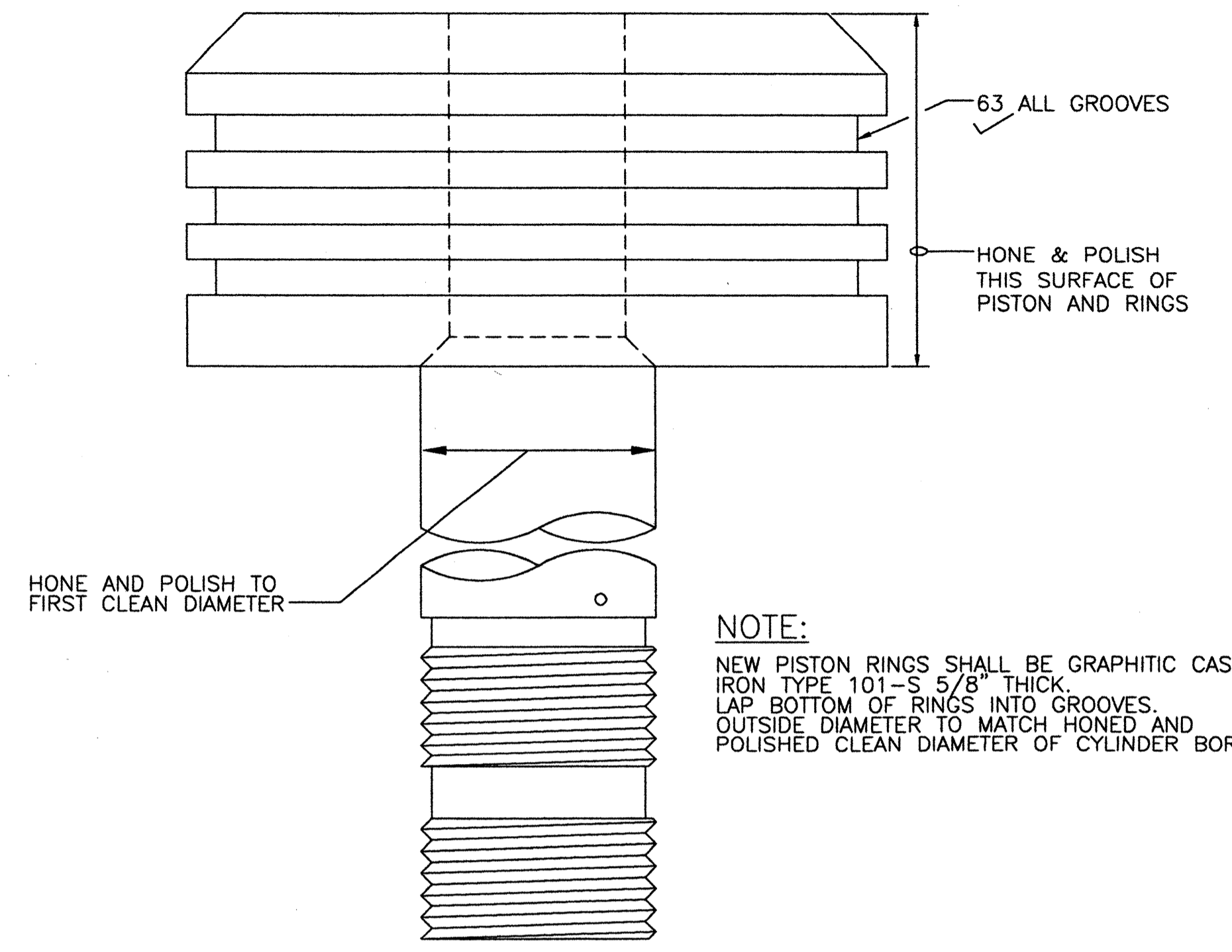
SCHMATIC
TYPICAL LEAF BUFFER SYSTEM

SCALE: NONE
QUANTITY: FOUR

NOTE:
REPLACE ALL EXISTING FITTINGS, LINES AND VALVES WITH NEW STAINLESS STEEL COMPONENTS RATED AT 1500 PSI MINIMUM.



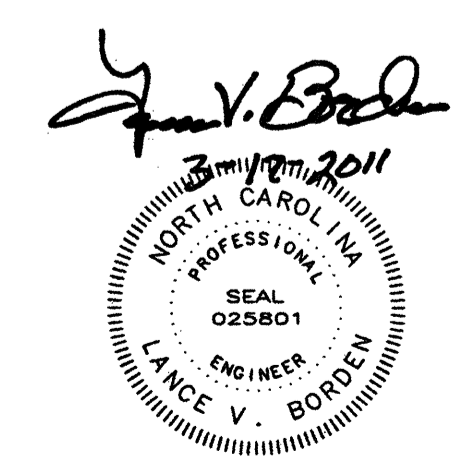
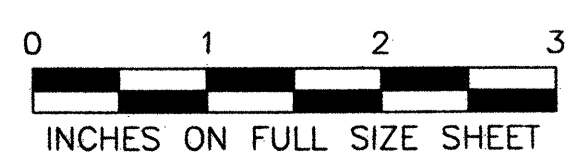
AIR BUFFER DETAIL
SCALE: 1 1/2" = 1'-0"



PISTON DETAIL
SCALE: 6" = 1'-0"

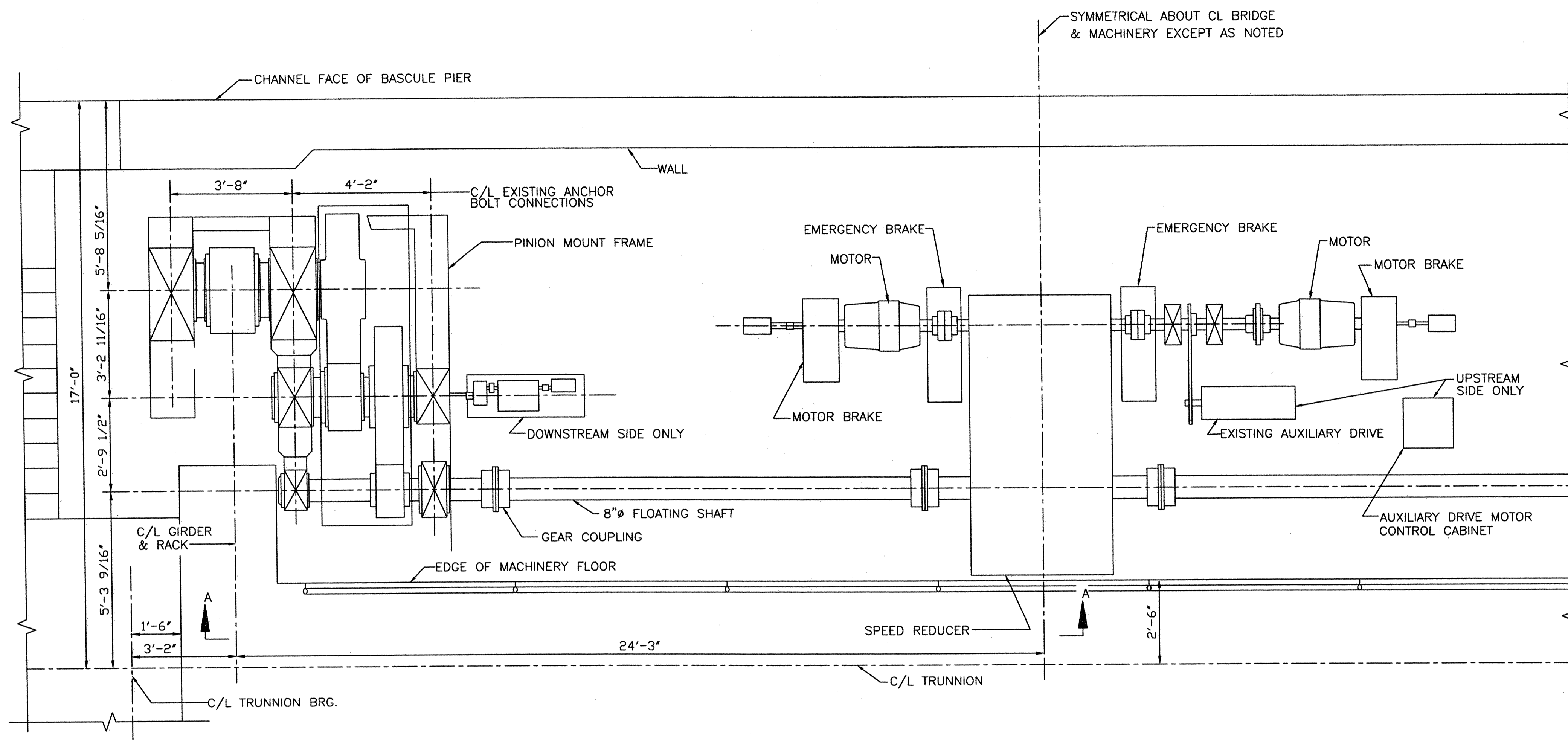
NOTE:
NEW PISTON RINGS SHALL BE GRAPHITIC CAST IRON TYPE 101-S 5/8" THICK. LAP BOTTOM OF RINGS INTO GROOVES. OUTSIDE DIAMETER TO MATCH HONED AND POLISHED CLEAN DIAMETER OF CYLINDER BORE.

- NOTES:**
1. FOR SCOPE OF WORK, SEE DWG. NO. M1.
 2. ALL BUFFER FITTINGS AND LINES SHALL HAVE MINIMUM CAPACITY OF 1500 PSI.
 3. SELF LUBRICATING BRONZE BUSHINGS SHALL BE OILITE BRONZE, ASTM B438, GRADE 1, TYPE II OR APPROVED EQUAL.
 4. ALL BUSHINGS SHALL BE SECURED IN POSITION ADEQUATE TO INSURE AGAINST DISLODGEMENT DURING OPERATION.
 5. ALL EXISTING COMPONENTS TO BE REUSED SHALL BE SAND BLASTED WITH SSPC SURFACE PREP SP6 COMMERCIAL BLAST CLEANING.
 6. SEE SPECIFICATIONS FOR PRIMING AND PAINTING DETAILS. ALL COMPONENTS TO BE THOROUGHLY CLEANED, PRIMED AND PAINTED EXCEPT SLIDING SURFACES.
 7. PROVIDE LADDER BOLTED TO PIER WALL ADJACENT TO AIR BUFFER LOCATION FOR ACCESS DURING ADJUSTMENTS AND MAINTENANCE. LADDER LOCATION, TYPE, AND MOUNTING DETAILS TO BE SUBMITTED AND APPROVED BY NCDOT BEFORE INSTALLATION.

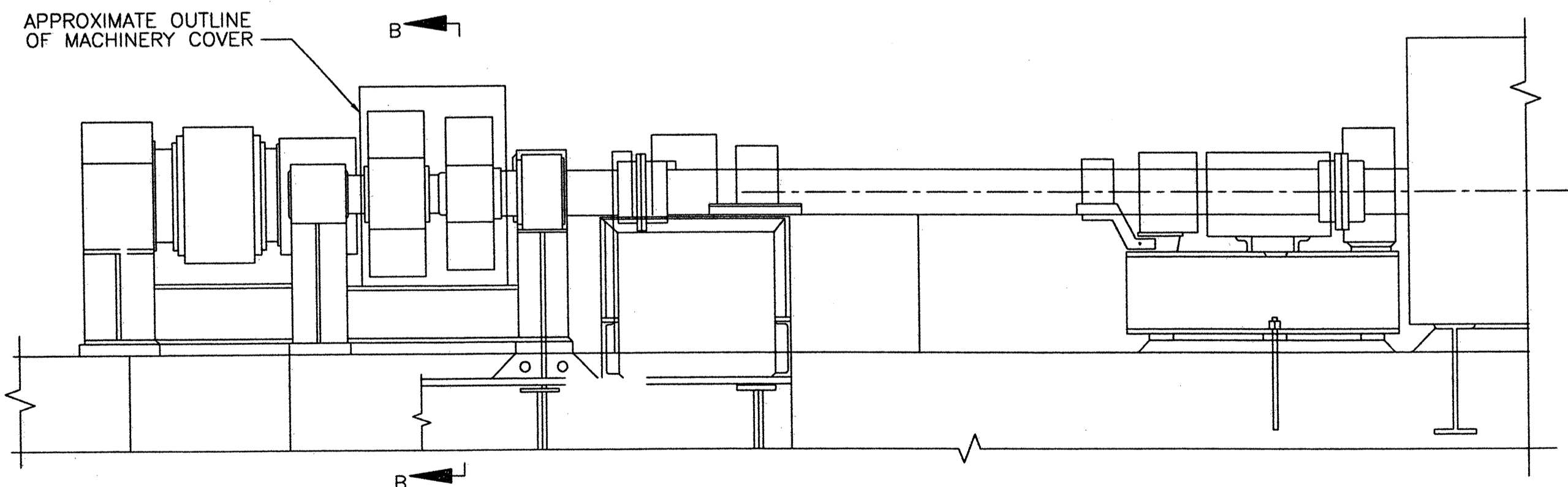


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| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| AIR BUFFER REHABILITATION | | | |
| DRAWN BY E.A. RICKENBACH | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DETAILED A.M. BRODSKY | DATE MARCH 2011 | |
| CHECKED G.L. FOREST | CHECKED G.L. FOREST | DRAWING NO. 22 OF 63 | |

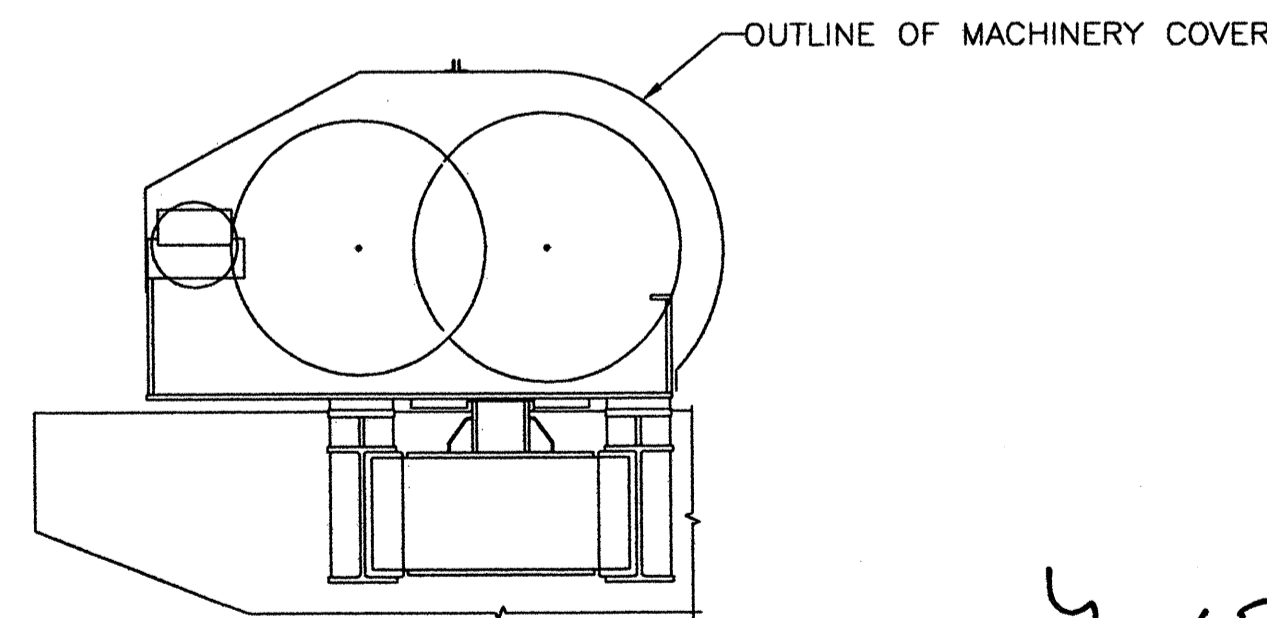
22-MB21-ABR.DWG



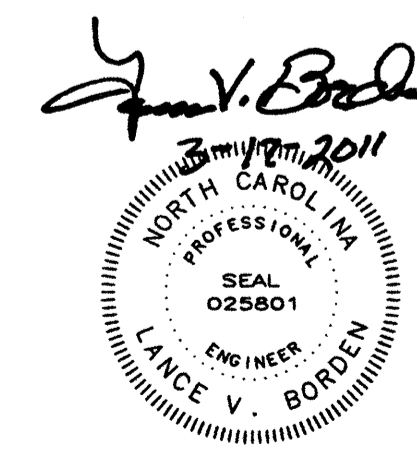
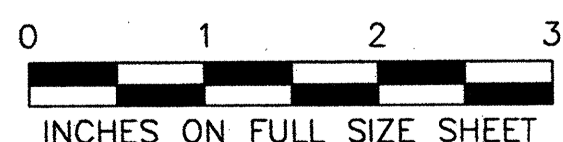
PLAN OF EXISTING OPERATING MACHINERY
SCALE: 1/2" = 1'-0"



SECTION A-A
SCALE: 1/2" = 1'-0"



SECTION B-B
SCALE: 1/2" = 1'-0"



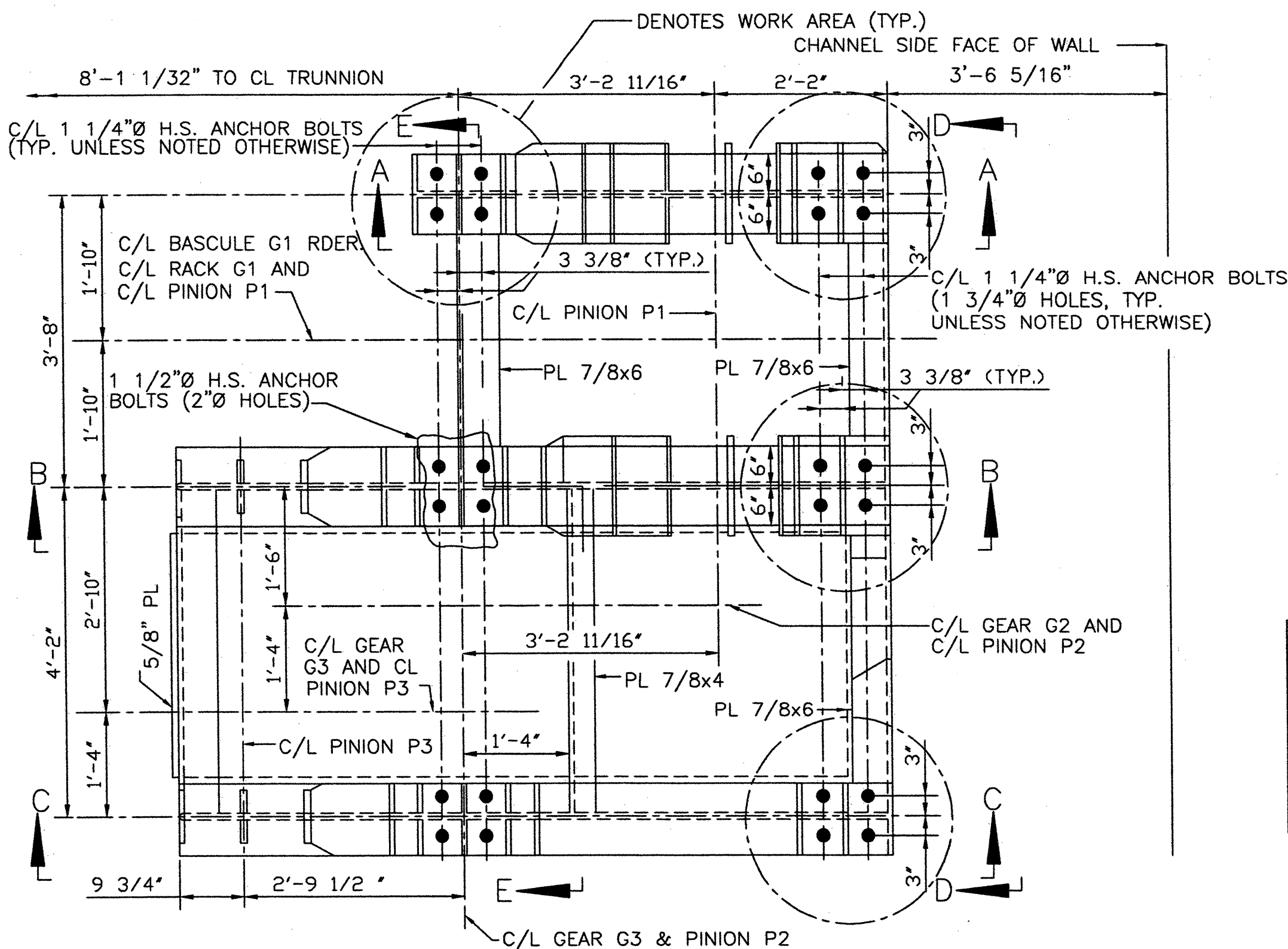
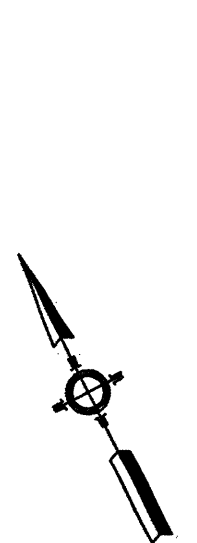
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
OPEN GEARING FRAME ANCHOR BOLT
REPLACEMENT - 1

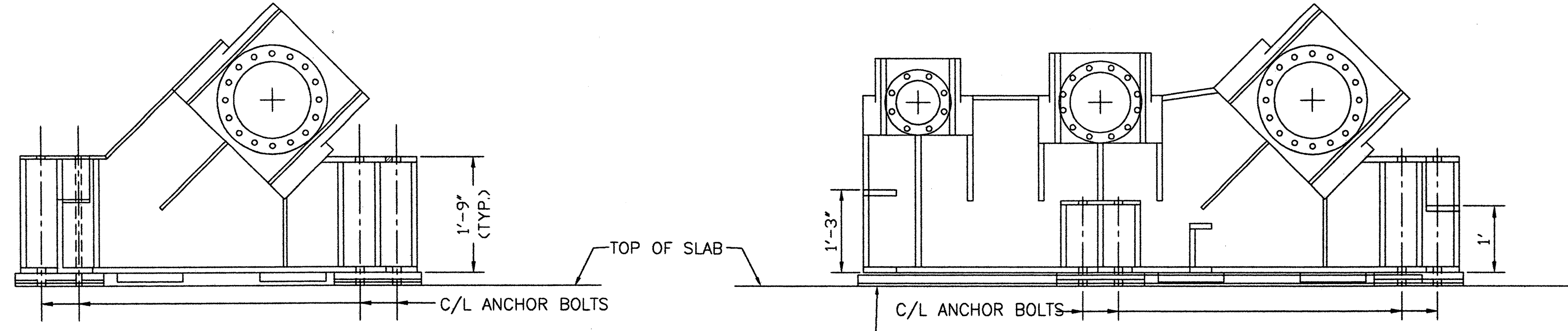
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| DESIGNED | D.B. IRWIN | DETAILED | D.B. IRWIN | DATE | MARCH 2011 |
| CHECKED | H. BUI | CHECKED | H. BUI | DRAWING NO. | 23 OF 63 |

DRAWN BY E. A. RICKENBACH
SCALE AS NOTED

23-MB22-00FABRI.DWG

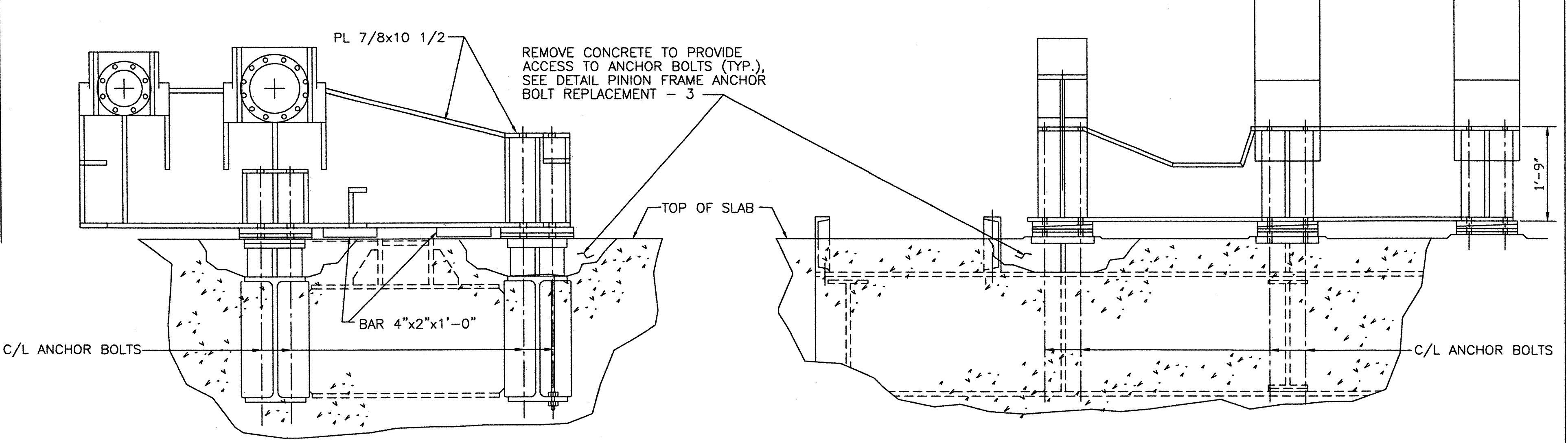


PLAN - EXISTING PINION MOUNTS
(NORTHWEST LAYOUT SHOWN,
OTHERS SIMILAR)
(GRILLAGE NOT SHOWN,
SEE SECTIONS C-C AND D-D FOR DETAILS)



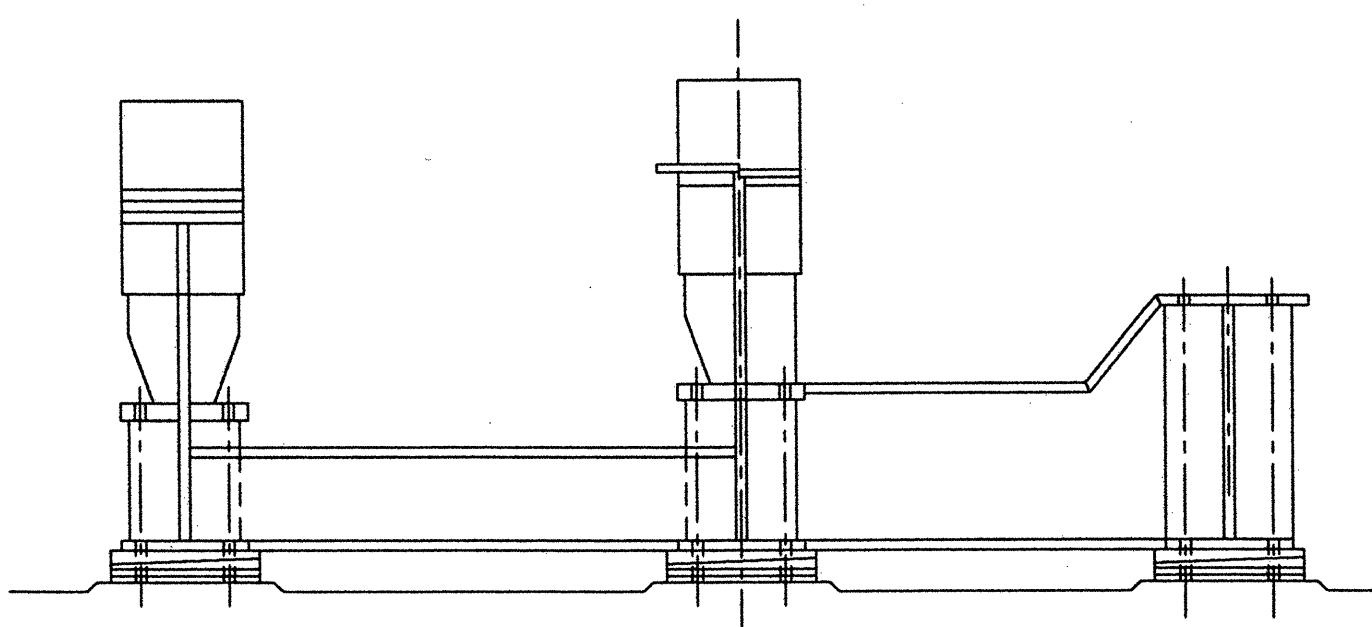
SECTION A-A

SECTION B-B

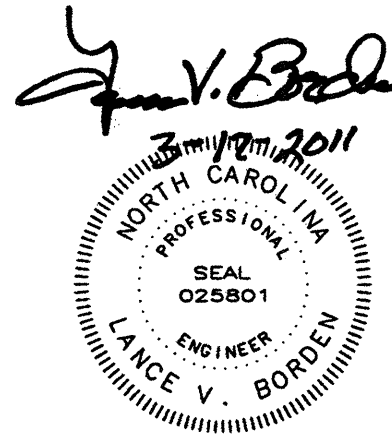
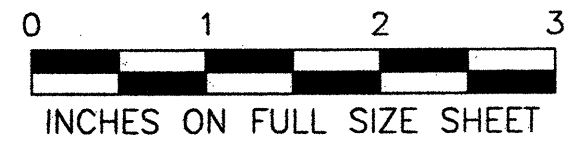


SECTION C-C

VIEW D-D



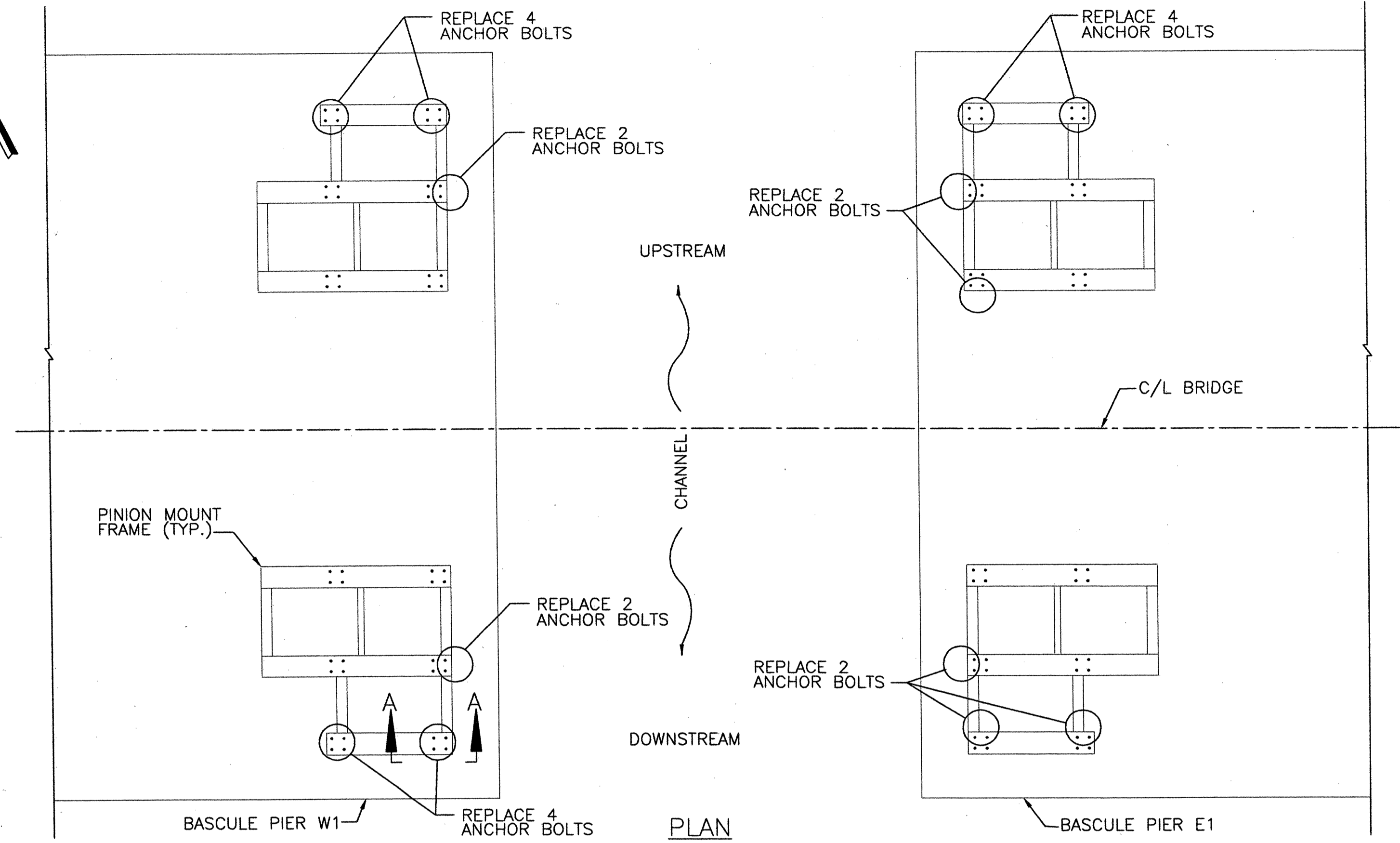
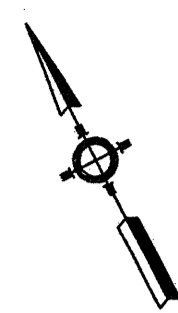
SECTION E-E



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
OPEN GEARING FRAME ANCHOR BOLT
REPLACEMENT - 2

| | | | |
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| DESIGNED | D.B. IRWIN | DATE | MARCH 2011 |
| CHECKED | H. BUI | DRAWING NO. | 24 OF 63 |
| DRAWN BY | E.A. RICKENBACH | SCALE | AS NOTED |

24-MB23-05FABRC.DWG



PLAN
PINION FRAME ANCHOR BOLT LAYOUT
NOT TO SCALE
(38 TOTAL TO BE REPLACED)

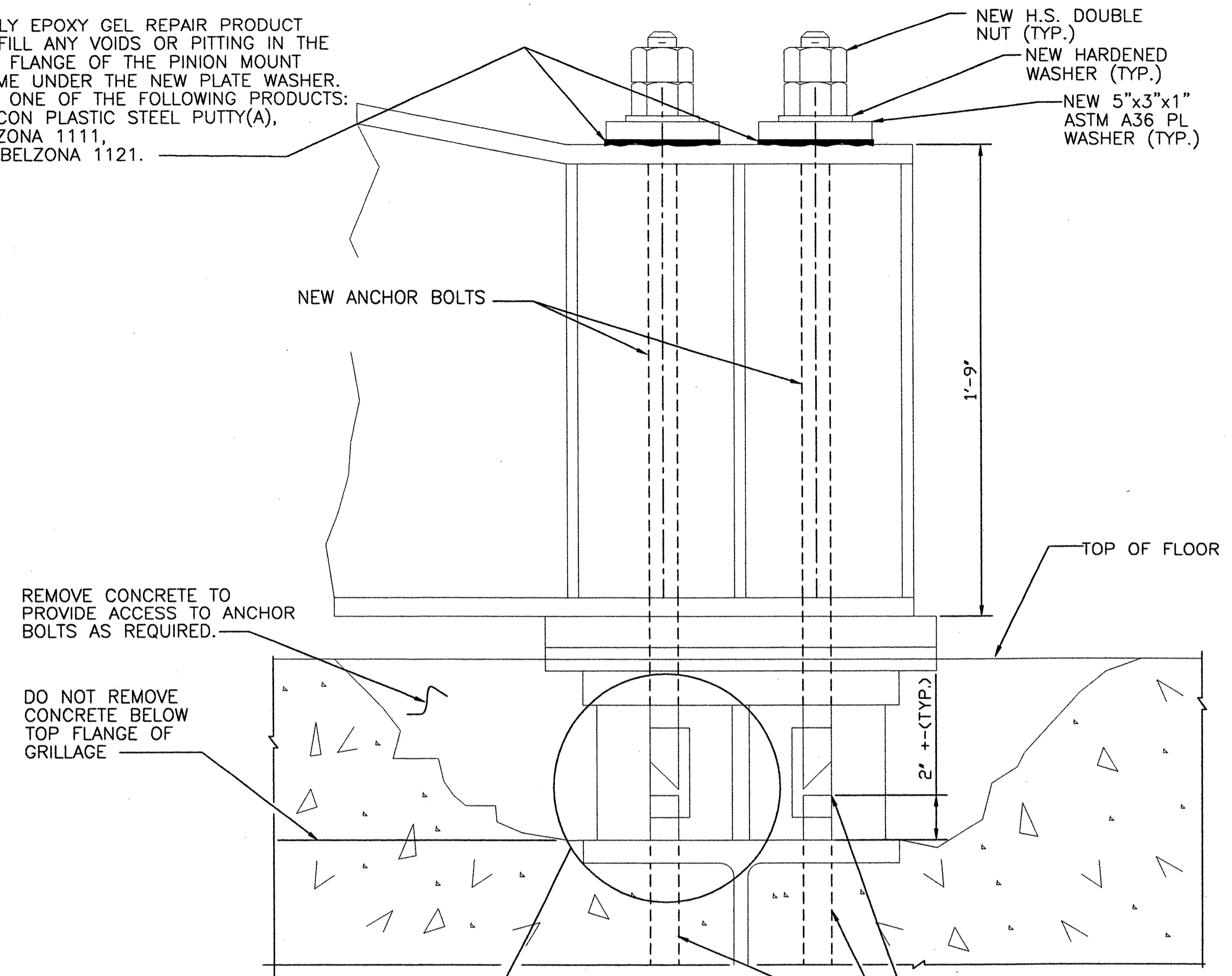
WELDING NOTES

1. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE AASHTO/AWS BRIDGE WELDING CODE D1.5-2008 (BWC).
2. THE EXISTING ANCHOR BOLT MATERIAL, THE SPECIFIED NEW ANCHOR BOLT EXTENSIONS, AND THE 1/2" BACKER PLATE ARE CONSIDERED APPROVED BASE METALS. THEREFORE, THE VARIOUS PROCEDURE QUALIFICATION TESTS AND WELDABILITY INVESTIGATION TESTING REQUIRED BY CLAUSE 5 OF THE BWC ARE NOT NECESSARY FOR THIS WORK. HOWEVER, THE CONTRACTOR IS REQUIRED TO PREPARE AND SUBMIT FOR APPROVAL BY THE ENGINEER, A COMPLETE WELDING PROCEDURE SPECIFICATION (WPS) FORM DOCUMENTING ALL WELDING VARIABLES PROPOSED FOR THE WORK. SUITABLE FORMS ARE INCLUDED IN ANNEX L OF THE BWC.
3. ALL WELDING SHALL BE PERFORMED USING THE SHIELDED METAL-ARC WELDING (SMAW) PROCESS UTILIZING ELECTRODES CLASSIFIED AS E7018H4.
4. ALL SURFACES TO BE WELDED, INCLUDING THE BACKER PLATE, SHALL BE PREHEATED TO 250 DEGREES F PRIOR TO WELDING, INCLUDING TACK WELDING.
5. ALL COMPLETED WELDS SHALL BE RADIOGRAPHIC TESTED (RT) IN ACCORDANCE WITH CLAUSE 6 OF THE BWC. WELD QUALITY SHALL MEET THE REQUIREMENTS OF CLAUSE 6.26 OF THE BWC USING TENSILE STRESS CRITERIA.
6. PRIOR TO UNDERTAKING ANY WORK ON THE STRUCTURE, THE CONTRACTOR SHALL PERFORM THREE (3) TEST WELDS UNDER CONTROLLED CONDITIONS SIMILAR TO THE CONDITIONS TO BE ENCOUNTERED IN THE FIELD. RESTRAINTS ON ACCESS FOR THE WELDERS MUST BE DUPLICATED BASED UPON ANTICIPATED TECHNIQUES TO BE EMPLOYED TO PERFORM THE WORK ON THE JOBSITE. ANCHOR BOLT AND BACKER PLATE MATERIAL USED TO PREPARE THE TEST WELDS MUST BE THE SAME AS THE NEW MATERIALS TO BE USED ON THE WORK. TEST WELDS SHALL BE MADE USING THE WPS AND ELECTRODES PROPOSED FOR THE WORK. ALL THREE (3) TEST WELDS SHALL BE RT INSPECTED AS SPECIFIED ABOVE AND SHALL MEET THE WELD QUALITY AS SPECIFIED. IN ADDITION, ONE (1) TEST WELD SHALL BE TENSION TESTED TO FAILURE BY A SUITABLE INDEPENDENT TESTING LABORATORY. MINIMUM TENSILE STRENGTH SHALL BE AT LEAST EQUAL TO THE TENSILE STRENGTH OF AN UN-WELDED SECTION OF THE SAME BAR USED TO MANUFACTURE THE NEW ANCHOR BOLT EXTENSIONS.

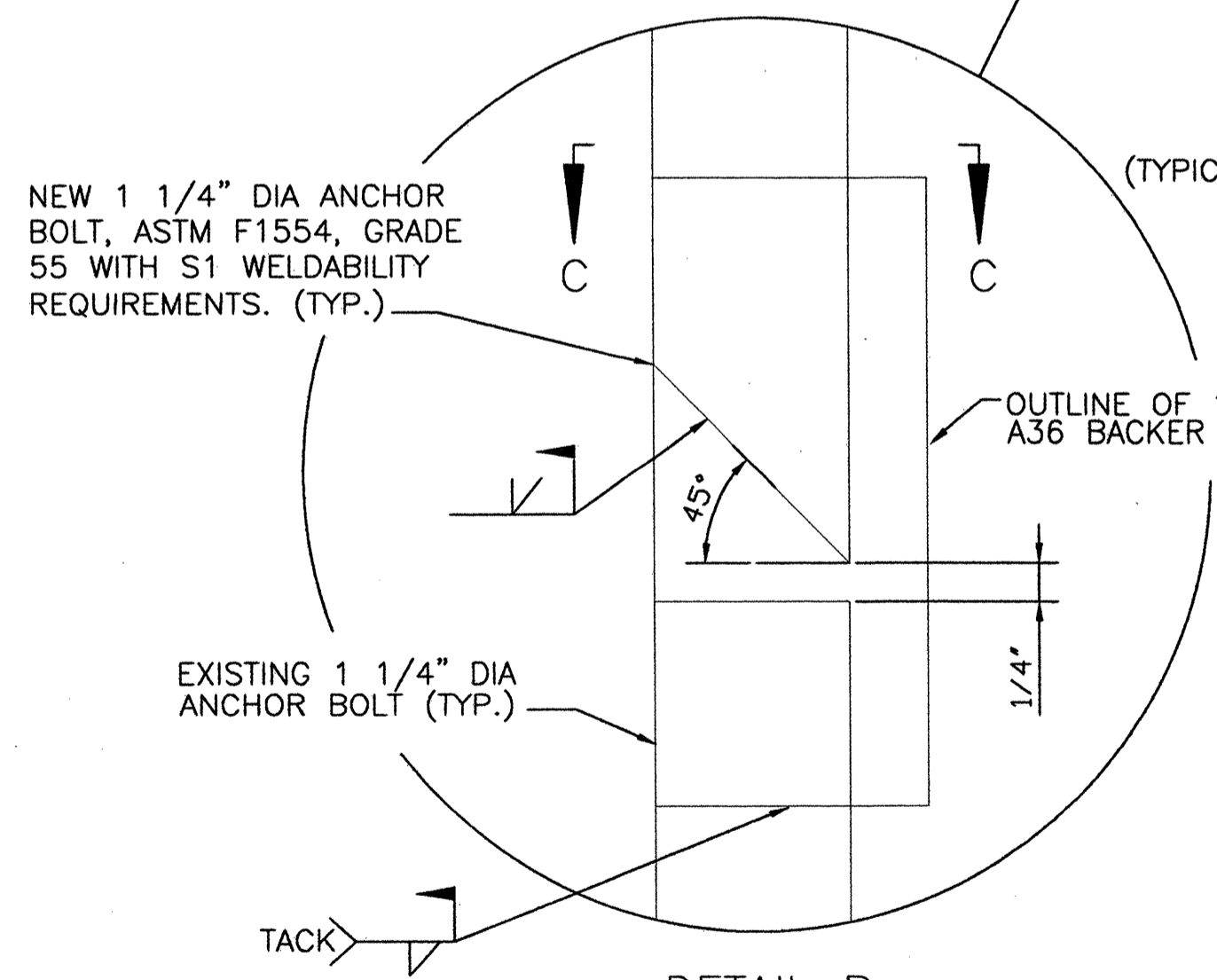
GENERAL PROCEDURE

1. BEFORE STARTING WORK, CLEAN THE AREA AROUND THE PINION MOUNT FRAMES TO REMOVE ALL GREASE AND DEBRIS FROM THE FRAMES AND THE CONCRETE FLOOR.
2. REMOVE CONCRETE TO THE LIMITS SHOWN TO PROVIDE ACCESS TO THE ANCHOR BOLTS SPECIFIED FOR REPLACEMENT.
3. REPLACE THE ANCHOR BOLTS FOLLOWING THE WELDING PROCEDURE AND DETAILS SHOWN ON THIS SHEET. WORK IS PERMITTED ON ONLY ONE ANCHOR BOLT AT ANY TIME. WORK MAY PROGRESS TO ANOTHER BOLT ONLY AFTER THE WELD HAS PASSED RADIOGRAPHIC TESTING AND THE BOLT IS TIGHTENED. THE BRIDGE SHALL NOT BE OPERATED IF A BOLT IS CUT AND NOT YET WELDED, RADIOGRAPHIC TESTED, AND TIGHTENED.
4. AFTER COMPLETION OF ALL WELDING, CLEAN AND PAINT THE PINION MOUNT FRAMES AND ALL NEW STEEL WITH A PAINT SYSTEM APPROVED BY NCDOT.
5. APPLY AN EPOXY BONDING ADHESIVE CONFORMING TO ASTM C881, TYPE II, GRADE 2 TO THE SURFACES OF THE EXCAVATED CONCRETE AND FILL THE EXCAVATIONS WITH A NON-SHRINK CEMENTITIOUS GROUT EXTENDED WITH AN EQUAL VOLUME OF CLEAN AGGREGATE OF 1/2" MAXIMUM SIZE.

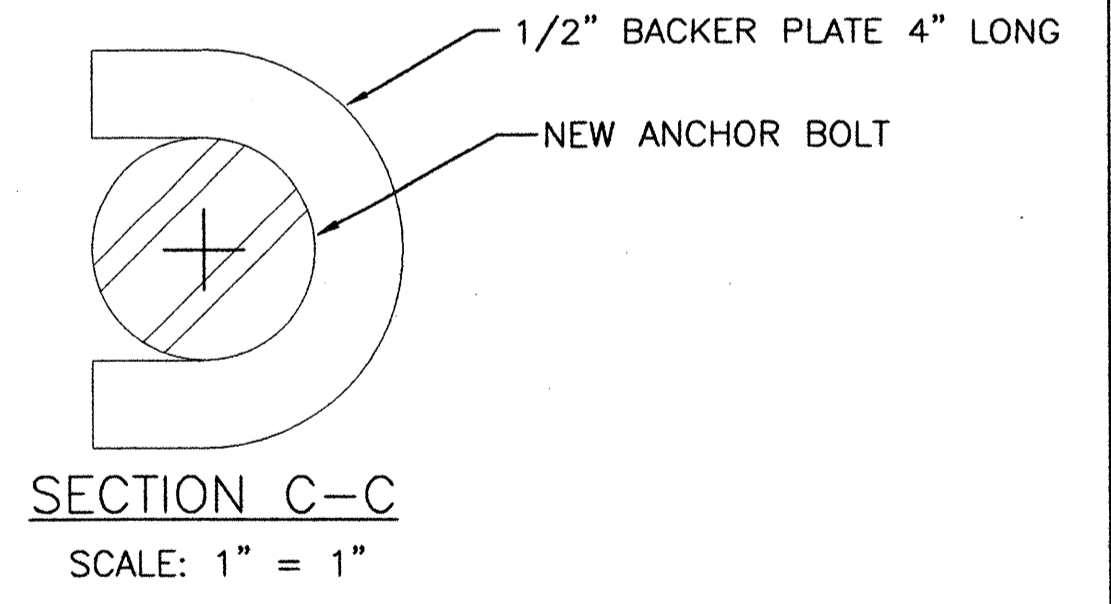
APPLY EPOXY GEL REPAIR PRODUCT TO FILL ANY VOIDS OR PITTING IN THE TOP FLANGE OF THE PINION MOUNT FRAME UNDER THE NEW PLATE WASHER. USE ONE OF THE FOLLOWING PRODUCTS: DEVCON PLASTIC STEEL PUTTY(A), BELZONA 1111, OR BELZONA 1121.



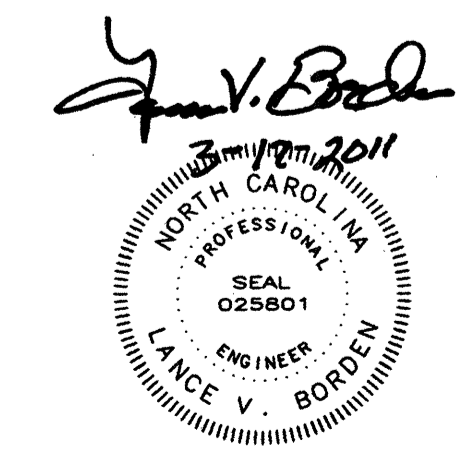
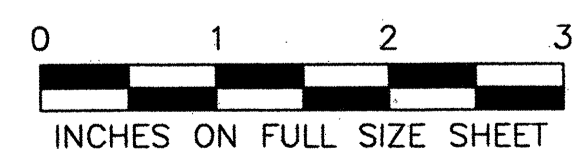
SECTION A-A
SCALE: 3" = 1'-0"
(TYPICAL ANCHOR BOLT REPLACEMENT)



DETAIL B
SCALE: 1" = 1"

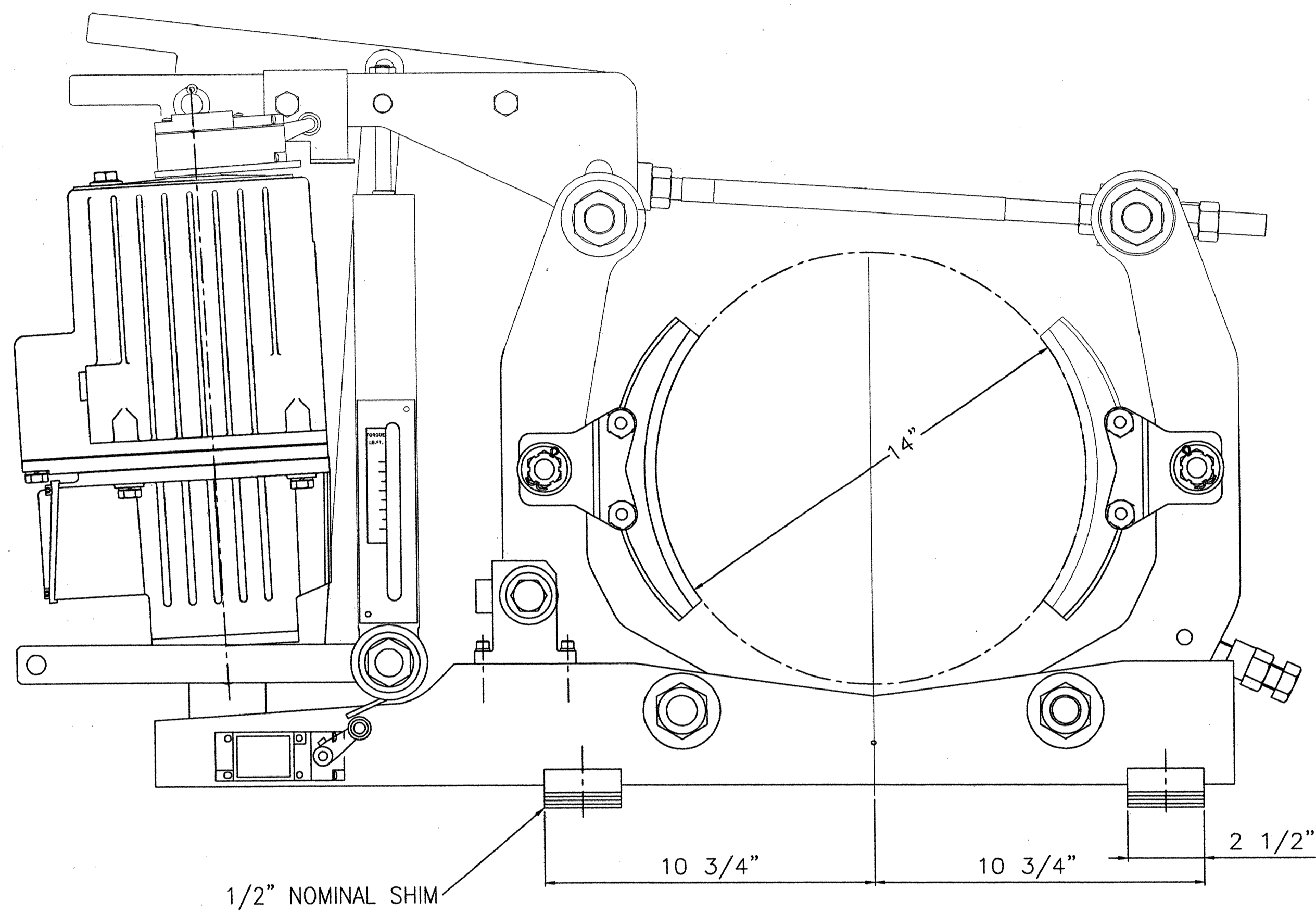


SECTION C-C
SCALE: 1" = 1"



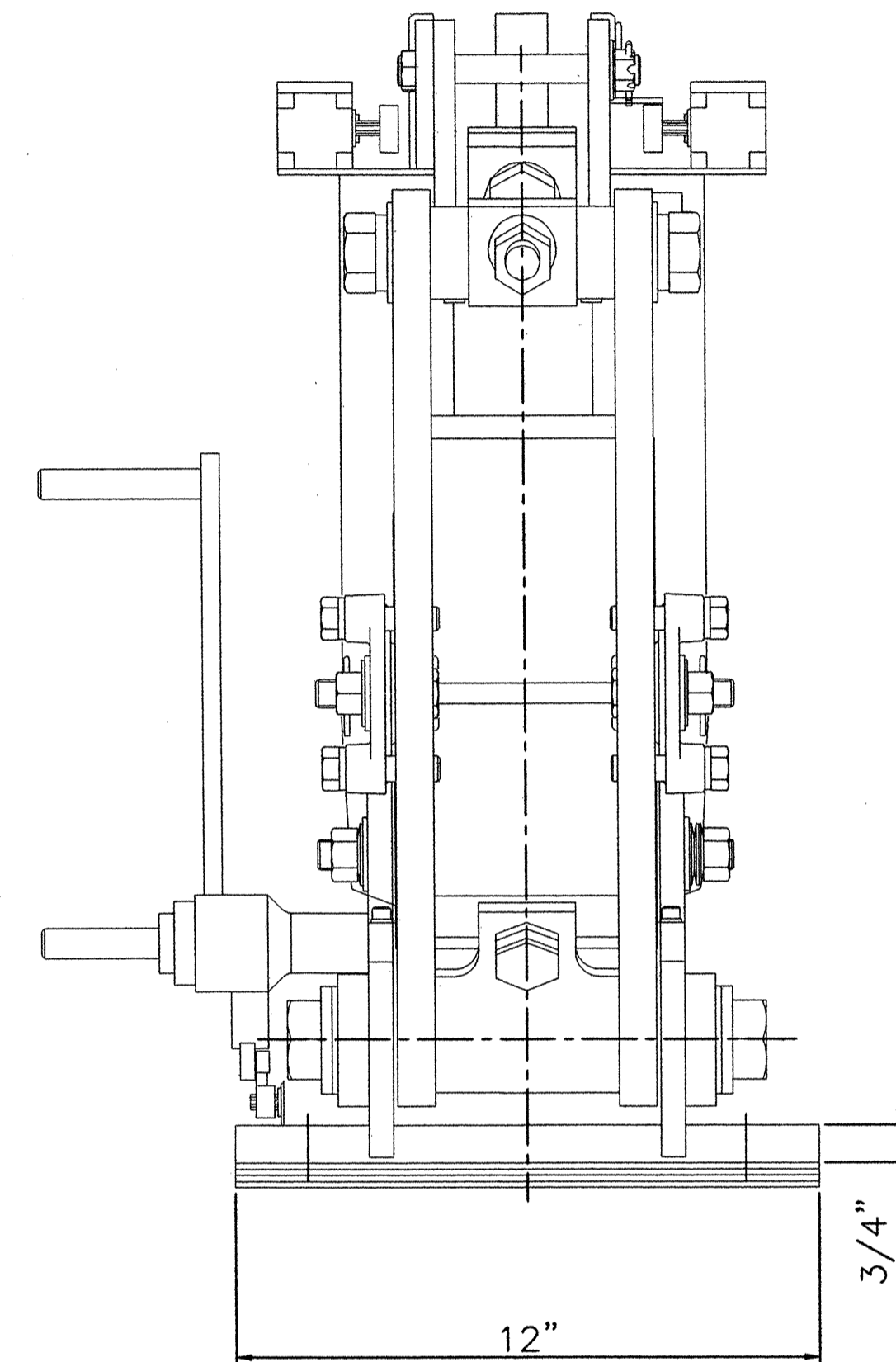
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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| OPEN GEARING FRAME ANCHOR BOLT REPLACEMENT - 3 | | | |
| DESIGNED D.B. IRWIN | | DRAWN BY E.A. RICKENBACH | |
| CHECKED H. BUI | | SCALE AS NOTED | |
| DATE MARCH 2011 | | DATE MARCH 2011 | |
| CHECKED H. BUI | | DRAWING NO. 25 OF 63 | |

MB24



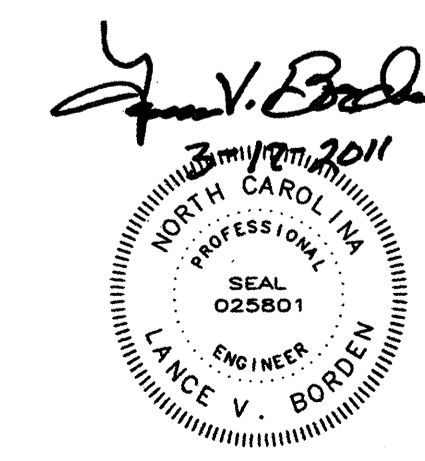
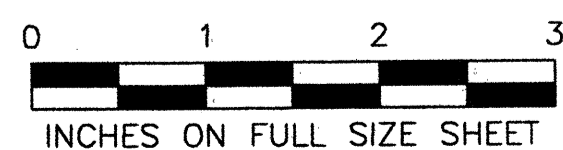
14" MBTE ED80/6 (LHR)(3LS)SHOE BRAKE
DROP-IN (GE IC9516)

MAX.TORQUE: 800 lb.ft.



NOTES:

1. MOUNTING BOLT HOLES TO BE DRILLED BASED ON FIELD MEASUREMENTS.
2. ALL DIMENSIONS ON EXISTING BRAKES TO BE FIELD VERIFIED FOR PROPER FIT WITH NEW BRAKES BEFORE NEW BRAKES ARE ORDERED. ALL EXISTING BRAKES AND BRAKE LOCATIONS MAY NOT BE IDENTICAL.
3. NEW BRAKES TO BE SUPPLIED WITH STAINLESS STEEL COVERS MODIFIED FOR MANUAL HAND RELEASE.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
SPAN DRIVE BRAKE REPLACEMENT

| | | | |
|-----------------------|-----------------------|----------------------|--|
| DRAWN BY D.M. BARRETT | | SCALE AS NOTED | |
| DESIGNED D.M. BARRETT | DETAILED D.M. BARRETT | DATE MARCH 2011 | |
| CHECKED A.M. BRODSKY | CHECKED A.M. BRODSKY | DRAWING NO. 26 OF 63 | |

26-MB25-SDBR.DWG

ELECTRICAL GENERAL NOTES (BASCULE BRIDGE)

1. GENERAL

- 1.01 ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (2008 EDITION), THE NORTH CAROLINA ELECTRICAL CODE (2008 EDITION), THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES (LATEST EDITION), THE AASHTO LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS (LATEST EDITION), AND ALL APPLICABLE STATE AND/OR LOCAL CODES.
- 1.02 FOR THE PURPOSES OF APPLYING THE NATIONAL ELECTRICAL CODE, THE FOLLOWING LOCATION DEFINITIONS SHALL APPLY.
 - (1) DRY LOCATIONS: INSIDE THE CONTROL HOUSE CONTROL ROOM, RESTROOM, ELECTRICAL ROOM, AND GENERATOR ROOM.
 - (2) DAMP LOCATIONS: INSIDE THE CONTROL HOUSE WORK ROOM, AND FUEL TANK ROOM.
 - (3) WET LOCATIONS: ANY LOCATION NOT DEFINED AS DRY OR DAMP, INCLUDING WITHIN THE BASCULE PIERS.
- 1.03 ALL EQUIPMENT, RACEWAYS, WIRING, ETC. SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER IN ACCORDANCE WITH NECA 1 (STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING), AND WITHOUT VIOLATING ANY REQUIRED CLEAR WORKING SPACE (NEC 110.26).
- 1.04 IN NO WAY SHALL THESE PLANS BE INTERPRETED AS REQUIRING A VIOLATION OF THE NATIONAL ELECTRICAL CODE, OR ANY OTHER APPLICABLE FEDERAL, STATE, OR LOCAL CODE OR REGULATION. IN ANY CASE OF DISPUTE BETWEEN THESE PLANS AND THE NATIONAL ELECTRICAL CODE, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.
- 1.05 THE INSTALLATION OF ALL EQUIPMENT AND MATERIALS SHALL COMPLY WITH THEIR RESPECTIVE MANUFACTURERS' RECOMMENDATIONS AND INSTALLATION PROCEDURES.
- 1.06 THE CONTRACTOR IS EXPECTED TO DELIVER A COMPLETE, WORKING, AND SAFE ELECTRICAL SYSTEM.
- 1.07 VARIATIONS FROM THESE PLANS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL CHANGES SHALL BE REFLECTED IN THE AS-BUILT DRAWINGS.
- 1.08 IN ADDITION TO THE MATERIALS, COMPONENTS, AND EQUIPMENT SHOWN ON THE PLANS, PROVIDE ALL RACEWAYS, JUNCTION AND PULL BOXES, FITTINGS, CONDUCTORS, CONNECTORS, AND OTHER ITEMS REQUIRED TO PROVIDE A COMPLETE, FUNCTIONAL, AND SAFE INSTALLATION.
- 1.09 THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR VERIFICATION OF ALL RELEVANT DIMENSIONS, EQUIPMENT SPECIFICATIONS, ELECTRICAL LOADS, CIRCUIT LOADS, AND SIMILAR INFORMATION PRIOR TO PURCHASE AND/OR FABRICATION OF EQUIPMENT OR MATERIALS. EQUIPMENT RATINGS AND/OR WIRE SIZES SHOWN ON THE PLANS SHALL BE INCREASED WHERE REQUIRED BY THE LOADS SERVED.
- 1.10 THE CONTRACTOR SHALL INVESTIGATE AND/OR VERIFY THE LOCATIONS OF ALL EXISTING FACILITIES, ABOVE GROUND AND UNDERGROUND, PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
- 1.11 THE CONTRACTOR SHALL CAREFULLY TRACE, LOCATE, IDENTIFY, AND DOCUMENT ALL EXISTING EQUIPMENT, CONDUCTORS, RACEWAYS, AND OTHER ITEMS WHICH ARE EXISTING AND TO REMAIN IN PLACE, BE RE-ROUTED, OR BE RELOCATED. THE CONTRACTOR SHALL EXERCISE CARE NOT TO DAMAGE OR OTHERWISE DISTURB ANY ITEMS WHICH ARE EXISTING AND TO REMAIN IN PLACE.
- 1.12 NUMBERS IN PARENTHESES ASSOCIATED WITH EQUIPMENT REFER TO ITEM NUMBERS IN THE EQUIPMENT SCHEDULES.
- 1.13 ALL EQUIPMENT, RACEWAYS, WIRING, ETC. SHOWN ON THESE PLANS, OR OTHERWISE REQUIRED, SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE.
- 1.14 LOCATIONS OF RACEWAYS, CABLES, AND EQUIPMENT SHOWN ARE DIAGRAMMATIC ONLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND SUBJECT TO THE APPROVAL OF THE ENGINEER.
- 1.15 DO NOT CUT, DRILL, OR WELD ANY STRUCTURAL MEMBER WITHOUT THE EXPLICIT PERMISSION OF THE ENGINEER ON A CASE-BY-CASE BASIS.
- 1.15 THE EXISTING BRIDGE NAVIGATION LIGHTING SYSTEM SHALL REMAIN OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TEMPORARY NAVIGATION LIGHTS AND WIRING AS NECESSARY TO MEET THIS REQUIREMENT.

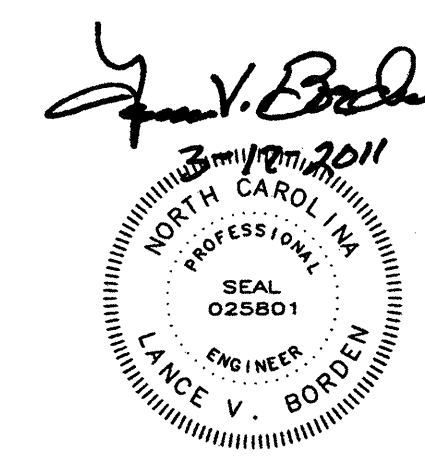
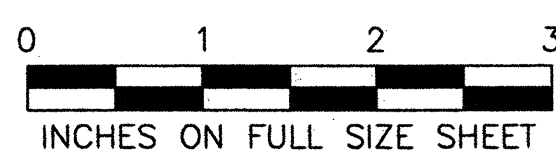
2. WIRING MATERIALS & METHODS

- 2.01 UNLESS EXPLICITLY INDICATED OTHERWISE, ONLY THE FOLLOWING WIRING METHODS ARE PERMITTED.
 - GENERAL
 - 1. PLASTIC COATED STEEL RIGID METAL CONDUIT (RMC)
 - 2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)
 - FOR NEW LIGHTING AND RECEPTACLE CIRCUITS IN THE BASCULE PIERS
 - 1. RIGID NONMETALLIC CONDUIT (RNC) - SCH 40 PVC
 - 2. LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC)
- 2.02 THE USE OF FLEXIBLE CONDUIT SHALL BE LIMITED TO THE FOLLOWING.
 - 1. FOR FINAL CONNECTIONS TO MOTORS AND SIMILAR EQUIPMENT SUBJECT TO VIBRATION, LENGTHS SHALL NOT BE LESS THAN 18 INCHES, BUT SHALL NOT EXCEED 36 INCHES.
 - 2. WHERE FLEXIBILITY IS REQUIRED. LENGTHS SHALL NOT EXCEED 18 INCHES, UNLESS EXPLICITLY INDICATED OTHERWISE OR WITH THE SPECIAL PERMISSION OF THE ENGINEER.
 - 3. AS MAY BE OTHERWISE SPECIFICALLY SHOWN IN THESE PLANS.
 - 4. FLEXIBLE CONDUIT SHALL NOT BE USED IN LIEU OF BENDS IN RIGID CONDUIT, EXCEPT WITH THE SPECIAL PERMISSION OF THE ENGINEER.
 - 5. FOR FLEXIBLE CONDUIT CONNECTIONS BETWEEN TWO SECTIONS OF RIGID CONDUIT, PROVIDE A CONDUIT BODY ON AT LEAST ONE SIDE OF THE FLEXIBLE CONDUIT.
- 2.03 ALUMINUM CONDUITS, BOXES, ENCLOSURES, ETC. SHALL BE ISOLATED FROM CONCRETE AND/OR STRUCTURAL STEEL WITH NEOPRENE SHIMS. GALVANIZED CONDUITS, BOXES, ENCLOSURES, ETC. SHALL BE ISOLATED FROM UNPAINTED STEEL WITH NEOPRENE SHIMS.
- 2.04 RIGID CONDUITS SHALL BE SUPPORTED WITHIN 18 INCHES OF ALL TERMINATIONS AND AT REGULAR INTERVALS NOT TO EXCEED 6 FEET. FLEXIBLE CONDUITS SHALL BE SUPPORTED WITHIN 12 INCHES OF ALL TERMINATIONS AND AT REGULAR INTERVALS NOT TO EXCEED 3 FEET.
- 2.05 ALL CONDUIT CONNECTIONS TO BOXES AND ENCLOSURES WHICH DO NOT HAVE INTEGRAL THREADED HUBS SHALL UTILIZE WEATHERPROOF GROUNDING TYPE HUBS OR CONNECTORS. ALL HUBS AND CONNECTORS SHALL HAVE INSULATED THROATS OR BE PROVIDED WITH INSULATED BUSHINGS.
- 2.06 ANY CONDUIT ROUTINGS SHOWN ON THESE PLANS ARE CONCEPTUAL ONLY. ACTUAL ROUTINGS SHALL BE DETERMINED BY THE CONTRACTOR BASED ON ACTUAL CONDITIONS AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
- 2.07 ALL CONDUCTORS SHALL BE STRANDED COPPER TYPE XHHW-2, EXCEPT WHERE SHOWN OTHERWISE ON THE PLANS. THE MINIMUM SIZE FOR FIELD POWER AND CONTROL WIRING SHALL BE 12 AWG.
- 2.08 SUPPORT CABLES IN VERTICAL RACEWAYS IN ACCORDANCE WITH NEC 300.19 WITH CABLE SUPPORTS INSTALLED AT TERMINAL CABINETS AND/OR PULL BOXES.
- 2.09 NEUTRAL CONDUCTORS SHALL NOT BE SHARED BETWEEN MULTIPLE BRANCH CIRCUITS, EXCEPT FOR DESIGNATED MULTIWIRED LIGHTING AND RECEPTACLE CIRCUITS WHERE CLEARLY SHOWN ON THE PLANS.
- 2.10 MINIMUM CONDUIT SIZE SHALL BE 3/4 INCH, EXCEPT THAT 1/2 INCH SHALL BE PERMITTED FOR FLEXIBLE CONDUIT CONNECTIONS TO LUMINAIRES.
- 2.11 WIRING IN ENCLOSURES, CABINETS, BOXES, ETC. SHALL BE NEATLY ROUTED, AND BUNDLED WITH PVC CABLE TIES OR PLACED IN NON-METALLIC WIRING TROUGHS.
- 2.12 SPARE AND UN-TERMINATED CONDUCTORS SHALL BE CAPPED, OR CONNECTED TO SPARE TERMINAL BLOCKS WHERE AVAILABLE, AND CLEARLY IDENTIFIED. ONE FULL TURN OF SLACK FOR ALL SPARE CONDUCTORS SHALL BE PROVIDED IN ALL ENCLOSURES, CABINETS, BOXES, ETC.
- 2.13 ONE FULL TURN OF SLACK SHALL BE PROVIDED FOR ALL CONDUCTORS IN ALL PULL BOXES, JUNCTION BOXES, AND TERMINAL CABINETS.
- 2.14 RACEWAYS CROSSING EXPANSION JOINTS, OR OTHERWISE SUBJECT TO MOVEMENT, SHALL BE PROVIDED WITH EXPANSION AND/OR DEFLECTION FITTINGS, OR OTHER APPROVED MEANS, TO COMPENSATE FOR SUCH MOVEMENT. EACH SUCH EXPANSION AND/OR DEFLECTION MEANS SHALL BE PROVIDED WITH AN EXTERNAL COPPER BONDING JUMPER, SIZED 6 AWG MINIMUM.

- 2.15 CONDUCTORS SPLICES SHALL BE MADE ONLY IN JUNCTION BOXES, OUTLET OR DEVICE BOXES, AND EQUIPMENT ENCLOSURES. SPLICES SHALL BE MADE ONLY ON TERMINAL BLOCKS, EXCEPT FOR SPLICES AT LUMINAIRES AND WIRING DEVICES WHICH SHALL UTILIZE INSULATED SET-SCREW TYPE, OR SIMILAR APPROVED, CONNECTORS. TWIST-ON (WIRENUT) TYPE CONNECTORS SHALL NOT BE USED. TERMINAL BLOCKS SHALL NOT HAVE MORE THAN TWO CONDUCTORS PER TERMINAL.
- 2.16 LAYOUT OF TERMINAL BLOCKS IN JUNCTION BOXES AND TERMINAL CABINETS SHALL COMPLY WITH THE REQUIREMENTS FOR WIRE BENDING SPACE GIVEN IN NEC 312.6, EXCEPT THAT THE MINIMUM SPACE PERMITTED SHALL BE 2 INCHES. PROPOSED LAYOUTS, INCLUDING ANTICIPATED LOCATIONS AND SIZES OF KNOCKOUTS, SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
- 2.17 A CONDUIT BODY OR BOX SHALL BE PROVIDED ON AT LEAST ONE SIDE OF ALL FLEXIBLE CONDUITS.
- 2.18 ALL RACEWAYS SHALL BE ARRANGED TO DRAIN. CONDUIT DRAINS SHALL BE INSTALLED IN A CONDUIT BODY AT THE LOW POINT OF ALL RUNS.
- 2.19 UNLESS SPECIFICALLY INDICATED OTHERWISE, CONDUIT AND CABLE ENTRANCES IN DAMP AND WET LOCATIONS SHALL BE MADE ONLY IN THE BOTTOM OF CABINETS AND/OR ENCLOSURES.
- 2.20 CONDUCTORS WITH GREEN COLORED INSULATION MAY BE USED ONLY FOR GROUNDING CONDUCTORS. RE-IDENTIFICATION OF CONDUCTORS WITH GREEN COLORED INSULATION, SUCH AS WITH COLORED TAPE, IS NOT PERMITTED.

3. GROUNDING & BONDING

- 3.01 ALL CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED EQUAL TO THE CIRCUIT CONDUCTORS, EXCEPT WHERE SHOWN OTHERWISE ON THE PLANS.
- 3.02 GROUNDING TYPE HUBS AND CONNECTORS SHALL BE CONNECTED TO THE EQUIPMENT GROUNDING CONDUCTOR(S) CONTAINED WITHIN THEIR ASSOCIATED CONDUIT OR CABLE.
- 3.03 ALL GROUNDING CONDUCTORS WITHIN AN EQUIPMENT ENCLOSURE OR TERMINAL CABINET SHALL BE TERMINATED ON A COMMON UNINSULATED GROUNDING BAR.



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| STATE OF NORTH CAROLINA | | | |
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| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL GENERAL NOTES BASCULE BRIDGE - 1 | | | |
| DRAWN BY N.E. ALGER | | SCALE AS NOTED | |
| DESIGNED N.E. ALGER | DETAILED N.E. ALGER | DATE MARCH 2011 | EB1 |
| CHECKED Q.C. TON | CHECKED Q.C. TON | DRAWING NO. 27 OF 63 | |

ELECTRICAL GENERAL NOTES (BASCULE BRIDGE) (CONTINUED)

4. IDENTIFICATION

- 4.01 ALL CONDUCTORS SHALL BE UNIQUELY IDENTIFIED AND CLEARLY LABELED WITH MACHINE PRINTED, WEATHERPROOF, NON-SHRINK SLEEVE TYPE LABELS.
- 4.02 ALL TERMINAL BLOCKS SHALL BE CLEARLY LABELED, AT EACH TERMINAL POSITION, WITH ENGRAVED PLASTIC WEATHERPROOF LABELS (WHITE TEXT ON BLACK BACKGROUND) ATTACHED WITH STAINLESS STEEL HARDWARE.
- 4.03 ALL ELECTRICAL EQUIPMENT ENCLOSURES, PULL AND JUNCTION BOXES, AND SIMILAR ITEMS SHALL BE CLEARLY LABELED WITH ENGRAVED PLASTIC WEATHERPROOF LABELS (WHITE TEXT ON BLACK BACKGROUND) ATTACHED WITH STAINLESS STEEL HARDWARE.

3. MISCELLANEOUS MATERIALS & METHODS

- 3.01 UNLESS NOTED OTHERWISE FOR A SPECIFIC APPLICATION, ALL BOLTS, NUTS, WASHERS, AND SIMILAR HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
- 3.02 UNLESS NOTED OTHERWISE FOR A SPECIFIC APPLICATION, ALL CONCRETE ANCHORS SHALL BE EITHER EPOXY ADHESIVE TYPE OR WEDGE STUD TYPE. ALL CONCRETE ANCHORS SHALL BE TYPE 316 STAINLESS STEEL.
- 3.03 ALL BOLTED, AND SIMILAR, CONNECTIONS SHALL UTILIZE LOCK WASHERS. CONNECTIONS WHICH DO NOT PERMIT THE USE OF LOCK WASHERS SHALL UTILIZE AN APPROVED MEDIUM STRENGTH THREADLOCKING ADHESIVE.
- 3.04 SUPPORTS FOR ELECTRICAL EQUIPMENT SHALL BE FABRICATED FROM TYPE 316 STAINLESS STEEL OR TYPE A36 STEEL (HOT-DIP GALVANIZED AFTER FABRICATION).
- 3.05 THE OPERATING HANDLE(S) OF ALL MANUALLY OPERABLE DEVICES SHALL NOT BE LESS THAN 2 FEET, NOR MORE THAN 6'-7", ABOVE THE FLOOR.
- 3.06 EQUIPMENT ENCLOSURES, CABINETS, BOXES, AND SIMILAR ITEMS SHALL BE INSTALLED PLUMB AND SECURELY FASTENED IN PLACE.

6. REMOVALS, SALVAGE, & DISPOSAL

- 6.01 EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE, ONLY EXISTING CONCRETE EMBEDDED RACEWAYS AND BOXES MAY BE ABANDONED IN PLACE. EXISTING UNDERGROUND RACEWAYS, UNDERGROUND BOXES, AND OTHER EQUIPMENT SHALL NOT BE ABANDONED IN PLACE, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.

EXISTING CONCRETE EMBEDDED RACEWAYS WHICH ARE TO BE ABANDONED IN PLACE SHALL HAVE ALL CONDUCTORS REMOVED, BE GROUND FLUSH WITH THE CONCRETE, AND FILLED WITH NON-SHRINK GROUT FLUSH WITH THE CONCRETE.

EXISTING CONCRETE EMBEDDED BOXES WHICH ARE TO BE ABANDONED IN PLACE SHALL HAVE ALL CONDUCTORS REMOVED AND BE COVERED WITH A NEW BLANK GALVANIZED STEEL COVER.

- 6.02 THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR PROPER DISPOSAL OF REMOVED EQUIPMENT AND MATERIALS IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

7. WORKING DRAWINGS & SUBMITTALS

- 7.01 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED WORKING DRAWINGS AND PRODUCT SUBMITTALS, WORKING IN COOPERATION AND COMMUNICATION WITH THE ENGINEER IN ORDER TO PROVIDE A COMPLETE, FUNCTIONAL, AND SAFE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS AND INTENTS OF THESE PLANS, THE SPECIFICATIONS, THE CONTRACT DOCUMENTS, AND ALL APPLICABLE CODES.
- 7.02 ALL REQUIRED WORKING DRAWINGS AND PRODUCT DESCRIPTIVE DATA SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL. SUCH ITEMS MUST BE APPROVED BY THE PROJECT ENGINEER PRIOR TO PURCHASE OF THE RELATED MATERIALS AND/OR UNDERTAKING OF THE RELATED WORK.
- 7.03 SUBMIT COMPLETE DESCRIPTIVE DATA FOR EACH ITEM OF EQUIPMENT AND MATERIAL.
- 7.04 WIRING DIAGRAMS AND SCHEMATICS PROVIDED IN THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR DEVELOPING ALL REQUIRED DIAGRAMS, INCLUDING FIELD INTERCONNECTION DIAGRAMS.
- 7.05 WIRING LAYOUTS AND TABULATIONS PROVIDED IN THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR DEVELOPING THE ACTUAL LAYOUTS AND TABULATIONS.
- 7.06 THE CONTRACTOR SHALL DEVELOP ALL FINAL MOUNTING DETAILS FOR ALL EQUIPMENT. SUCH DETAILS SHALL COMPLY WITH ANY TYPICAL DETAILS SHOWN ON THESE PLANS.

8. DOCUMENTATION OF EXISTING WIRING

- 8.01 THE CONTRACTOR SHALL TRACE, MARK, AND DOCUMENT EXISTING WIRING AT THE MACHINERY DECKS AND ON THE BASCULE SPANS PRIOR TO BEGINNING REPLACEMENT OF ANY WIRING, CONDUITS, OR BOXES IN THESE AREAS. THIS PREPARATION IS NECESSARY IN ORDER TO ENSURE THAT THE NEW WIRING WILL CORRECTLY REPLICATE THE EXISTING WIRING WHICH IS TO BE REPLACED.

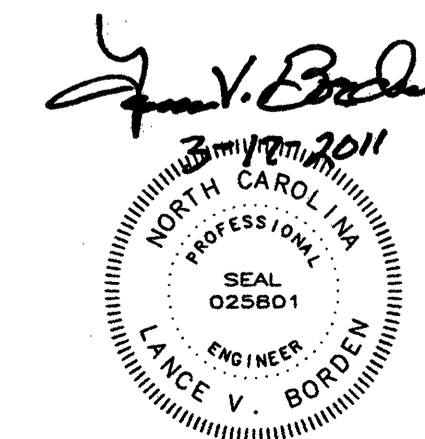
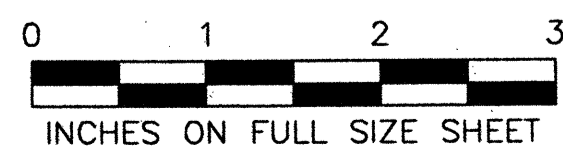
ALL EXISTING WIRING TO BE REPLACED SHALL BE POSITIVELY TRACED FROM END TO END TO DETERMINE EXISTING CONNECTIONS AT BOTH ENDS.

AS EACH WIRE IS TRACED, IT SHALL BE MARKED AT BOTH ENDS WITH NEW ADHESIVE MARKERS. IF THE WIRE IN QUESTION IS ALREADY MARKED, THE EXISTING MARKERS SHALL BE RETAINED AND THE NEW MARKERS ADDED IN SUCH A MANNER THAT THE TWO ARE DISTINGUISHABLE. THE NUMBERS ON THE NEW MARKERS SHALL BE PRECEDED WITH A DISTINGUISHING CHARACTER (SUCH AS +) TO CLEARLY DIFFERENTIATE THE NEW MARKERS FROM ANY EXISTING MARKERS.

THE WIRE NUMBERS (BOTH EXISTING AND NEW) AND CONNECTIONS AT EACH END SHALL BE CAREFULLY AND NEATLY DOCUMENTED.

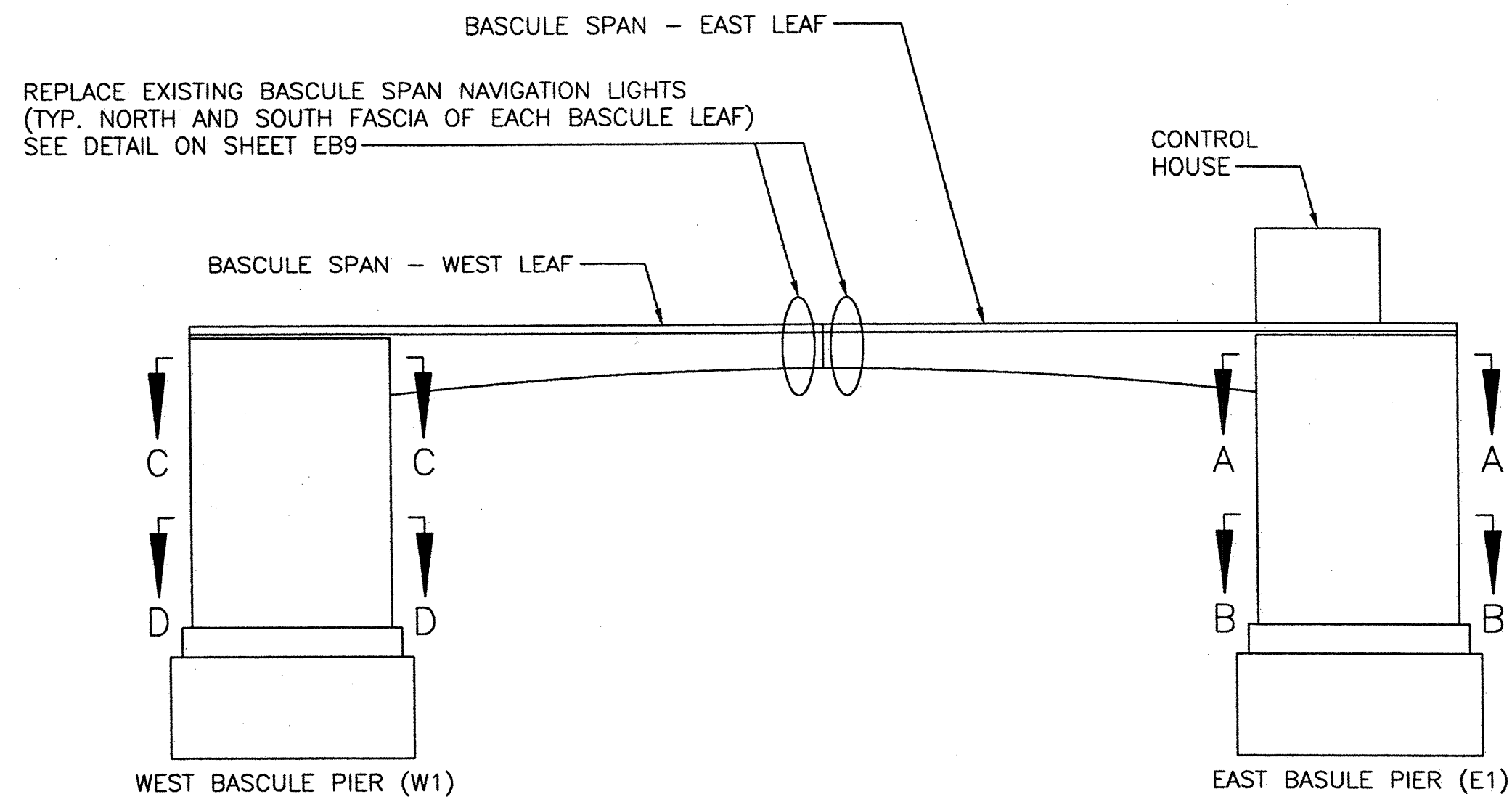
FOR ALL TERMINAL CABINETS AND JUNCTION BOXES, A SKETCH SHOWING THE RELATIVE LAYOUTS OF THE EXISTING TERMINALS SHALL BE PRODUCED. EACH TERMINAL SHALL CLEARLY IDENTIFY THE NUMBERS (BOTH EXISTING AND NEW) OF ANY WIRES CONNECTED TO IT.

- 8.02 AFTER THE TRACING, MARKING, AND DOCUMENTATION ARE COMPLETE, THE CONTRACTOR SHALL SUBMIT THE RESULTING DOCUMENTATION TO THE ENGINEER, WHO WILL REVIEW IT FOR COMPLETENESS AND GENERAL ACCEPTABILITY. THE CONTRACTOR MAY NOT PROCEED WITH REPLACEMENT OF ANY WIRING, CONDUITS, OR BOXES IN THESE AREAS UNTIL THE ENGINEER HAS REVIEWED AND APPROVED THIS DOCUMENTATION.
- 8.03 THE CONTRACTOR SHALL USE THE RESULTING DOCUMENTATION AS A GUIDE IN MAKING CONNECTIONS BETWEEN NEW WIRING AND EXISTING WIRING AND EQUIPMENT.
- 8.04 THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR ENSURING THE CORRECT CONNECTION OF ALL NEW WIRING, AND THAT BRIDGE OPERATION AFTER REPLACEMENT OF ANY WIRING IS THE SAME AS IT WAS BEFORE REPLACEMENT. IN ADDITION TO THE WIRING SHOWN ON THESE SHEETS, THE CONTRACTOR SHALL PROVIDE AND INSTALL ANY ADDITIONAL WIRING (AND ALSO INCLUDING CONDUITS, BOXES, AND RELATED ITEMS) AS MAY BE NECESSARY TO REPLICATE THE EXISTING WIRING WHICH IS TO BE REPLACED.



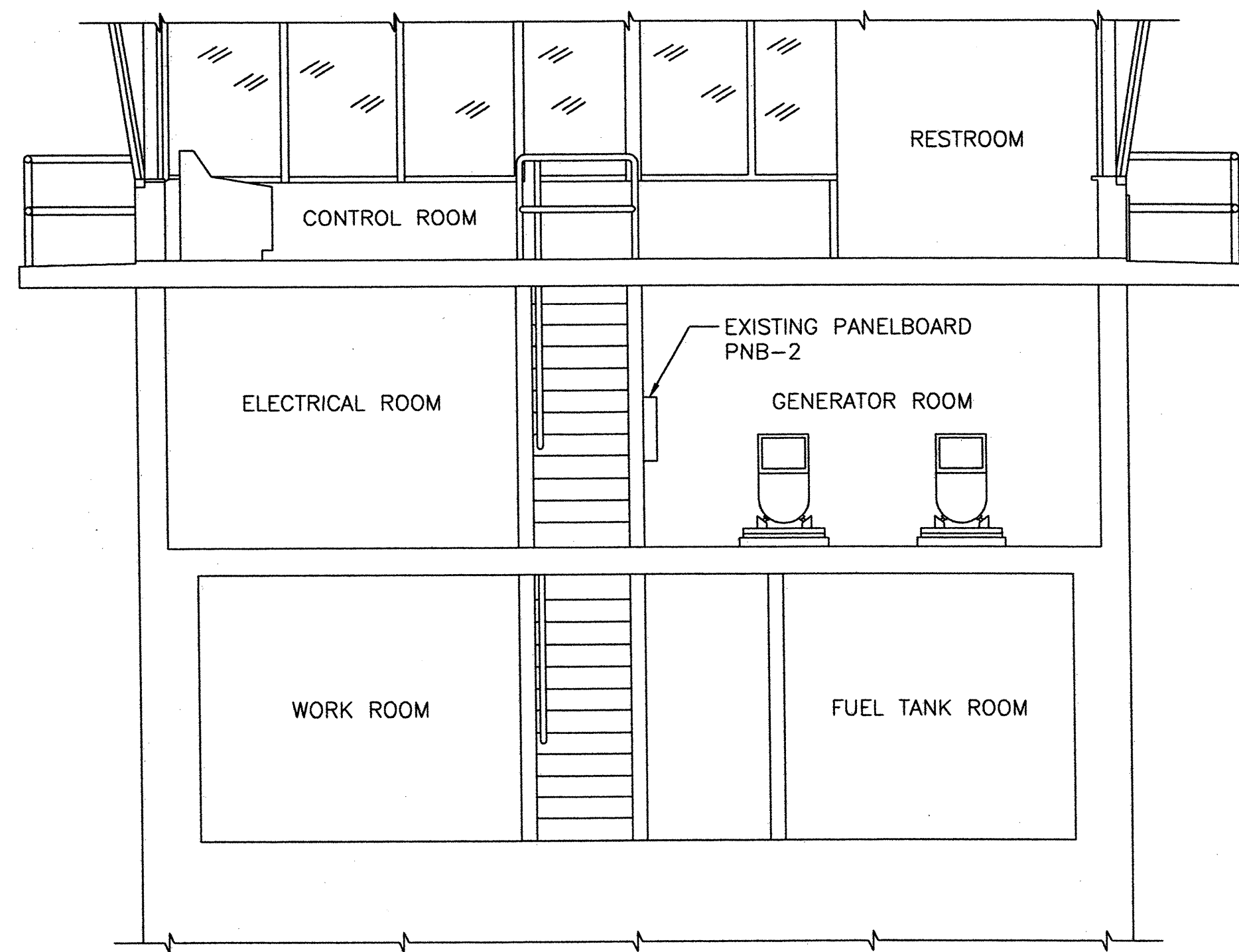
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| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL GENERAL NOTES BASCULE BRIDGE - 2 | | | |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON |
| DATE | | MARCH 2011 | |
| DRAWING NO. | | 28 OF 63 | |

EB2



SIMPLIFIED ELEVATION - BASCULE PIERS AND SPANS

SCALE: NONE

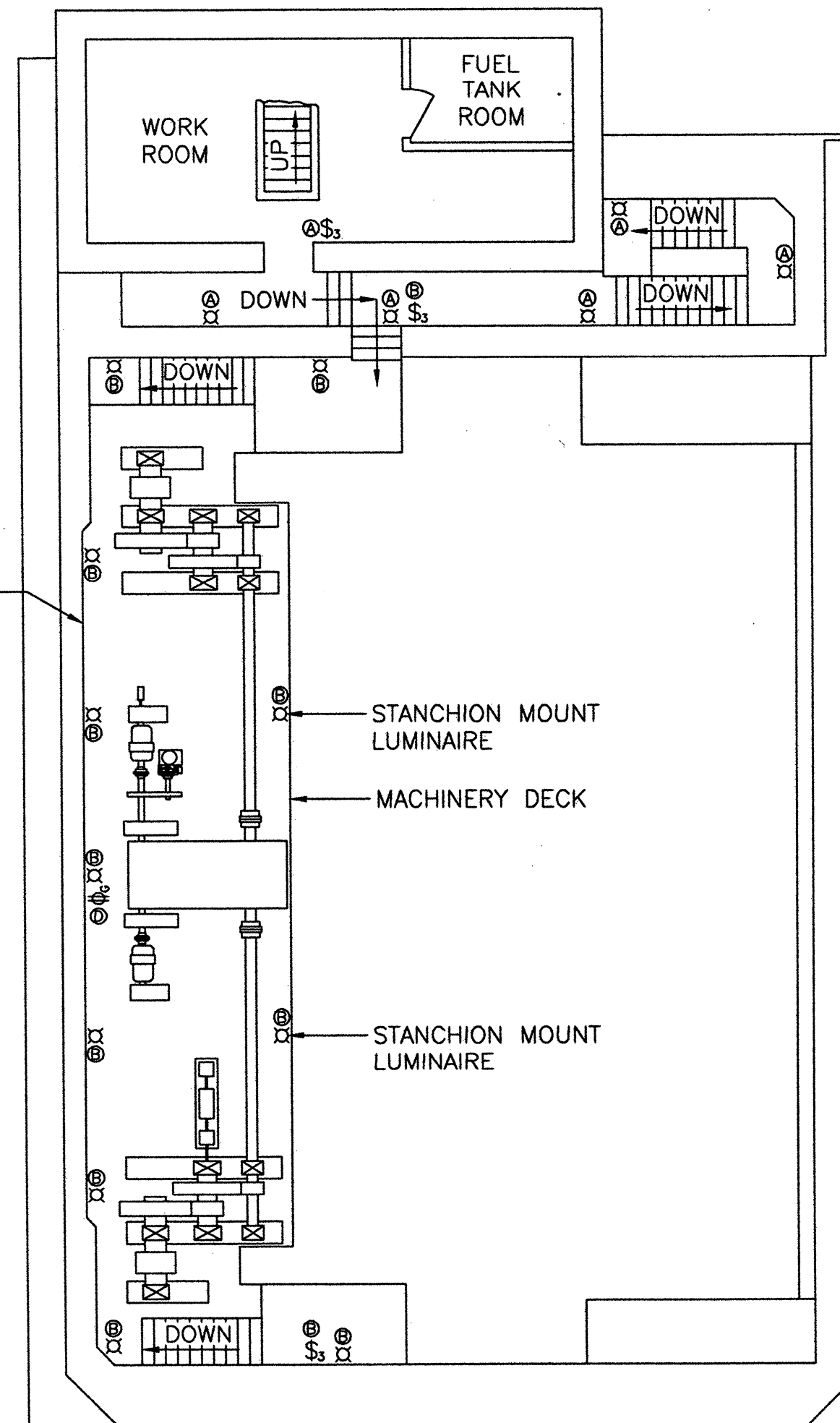


PARTIAL SECTION THROUGH CONTROL HOUSE

SCALE: 1/4" = 1'-0"

NOTE: NOT ALL FEATURES AND EQUIPMENT SHOWN.

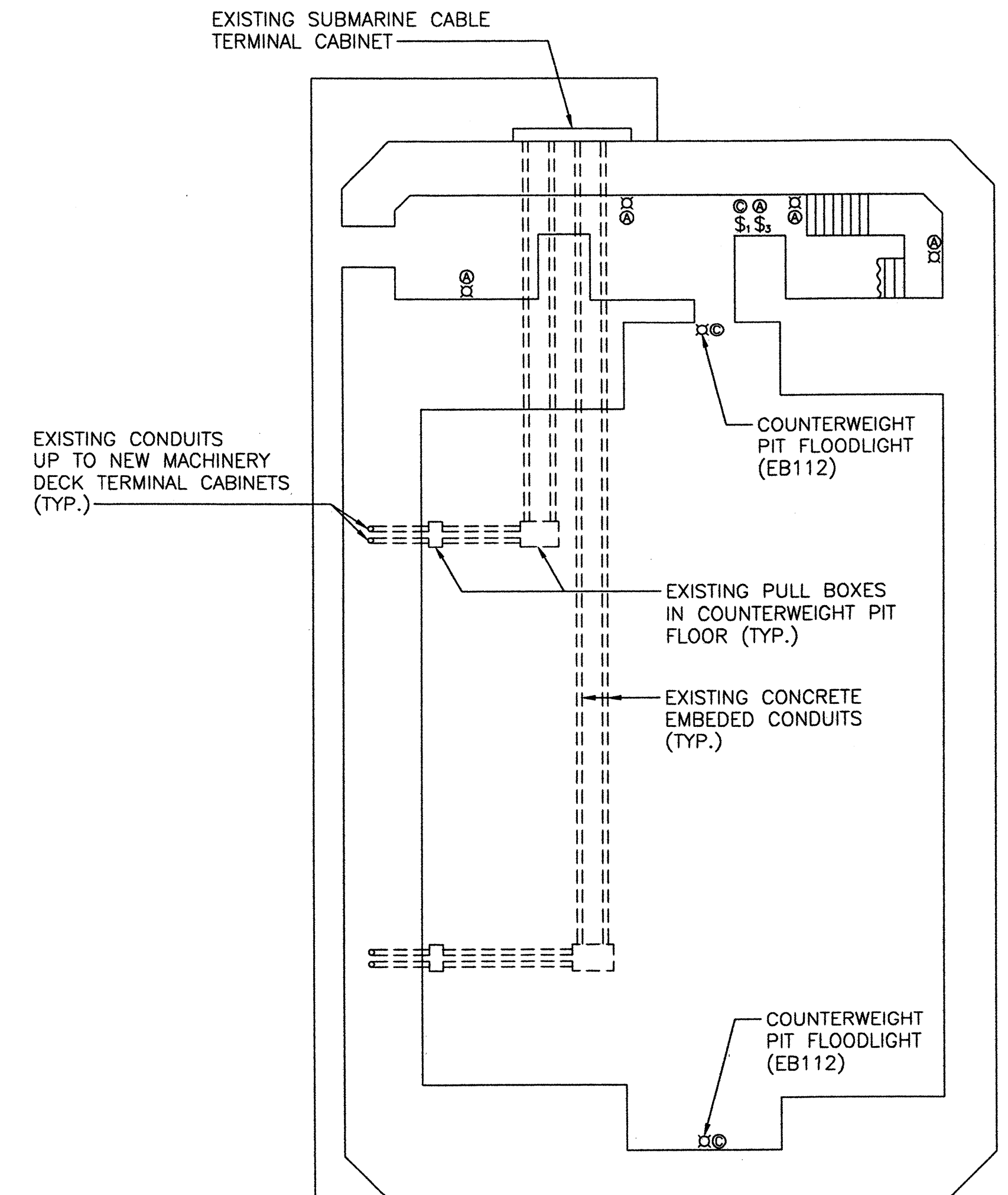
SEE DETAILS ON SHEET EB6 FOR WALL MOUNTED ELECTRICAL EQUIPMENT



SECTION A-A

SCALE: 1/8" = 1'-0"

NOTE: NOT ALL FEATURES AND EQUIPMENT SHOWN.



SECTION B-B

SCALE: 1/8" = 1'-0"

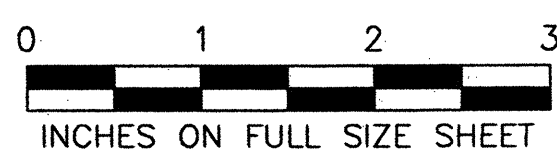
NOTE: NOT ALL FEATURES AND EQUIPMENT SHOWN.

DEVICE LEGEND

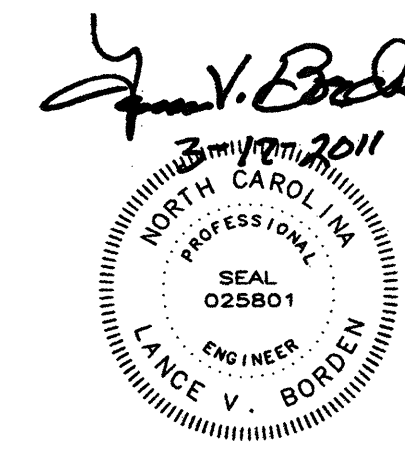
- \$1 SINGLE POLE SWITCH (EB113)
- \$3 THREE WAY SWITCH (EB113)
- ⊠ LUMINAIRE (TYPE AS INDICATED)
- ⊕ GFCI RECEPTACLE (EB114)
- ⊙ LETTER INDICATES DEVICES ON A COMMON CIRCUIT

NOTES:

1. ALL ELECTRICAL ITEMS ARE NEW EXCEPT AS NOTED.
2. ALL LUMINAIRES ARE VAPORTIGHT INCANDESCENT TYPE EB111 EXCEPT AS NOTED.
3. SEE SHEET EB4 FOR SECTIONS C-C AND D-D.
4. SEE SHEET EB5 FOR DETAILS OF MACHINERY DECK.



29-EB3-EP01.DWG



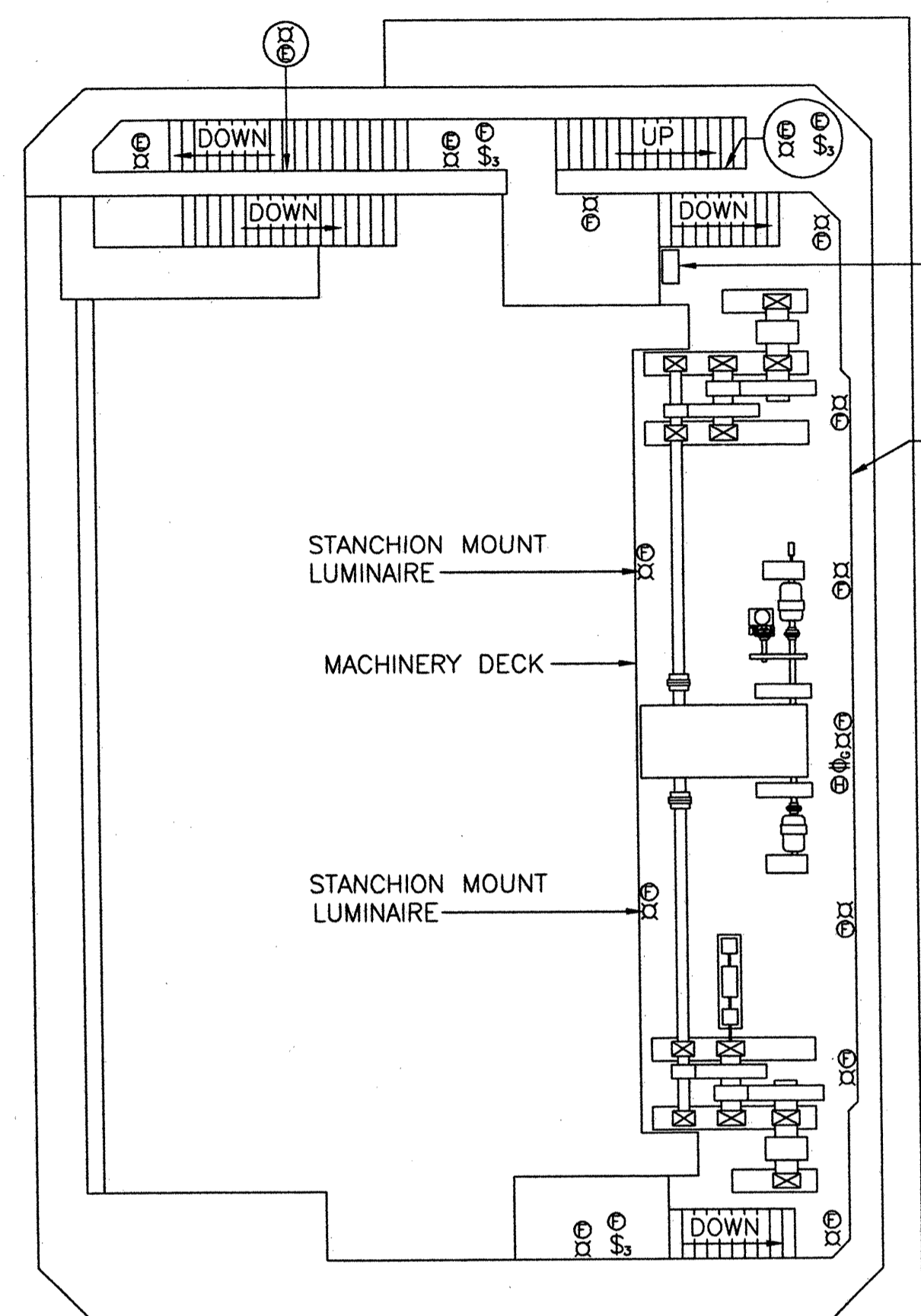
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA

ELECTRICAL PLANS AND DETAILS - 1

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| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DRAWING NO. 29 OF 63 | | | |

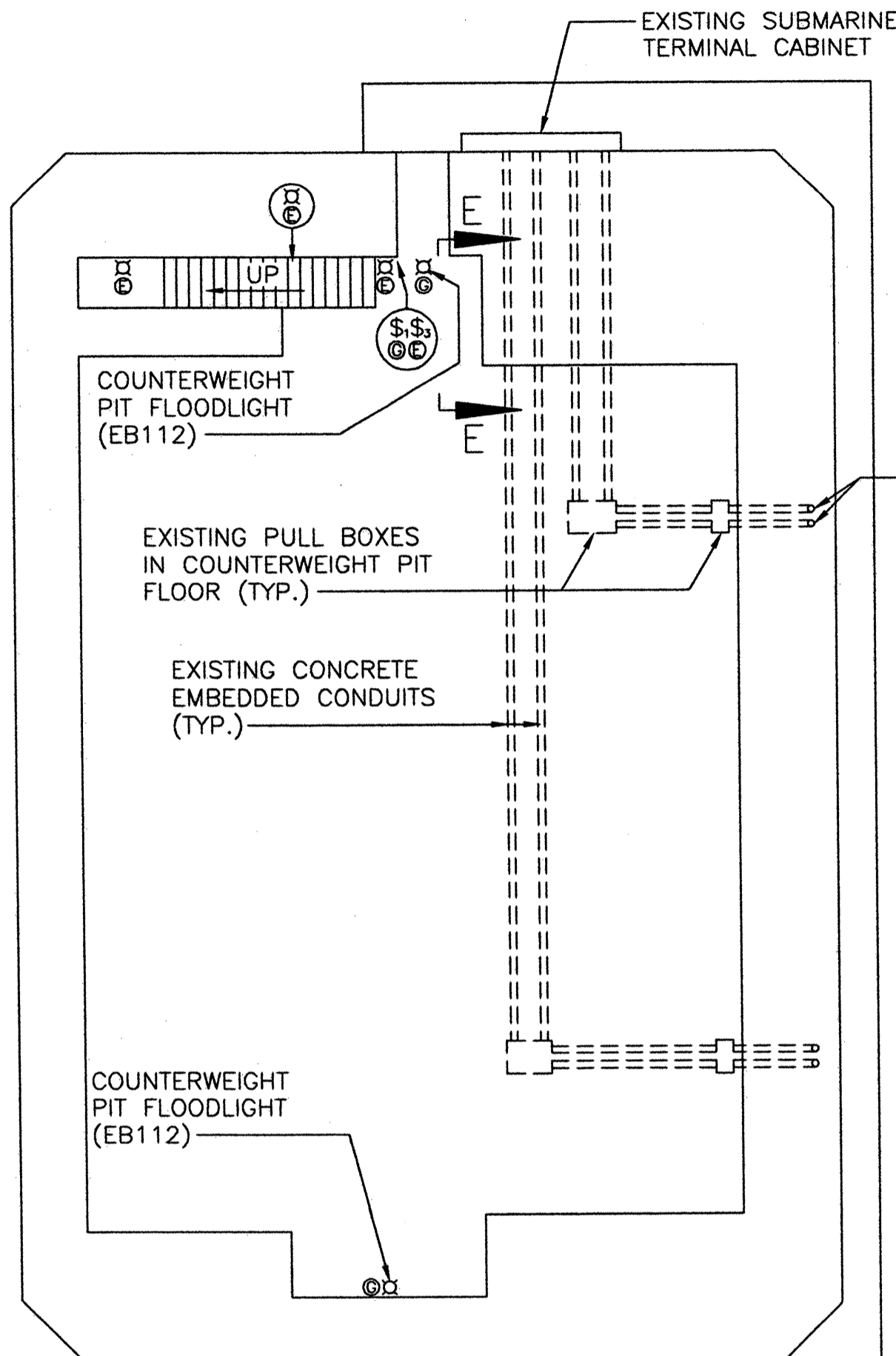
EB3



SECTION C-C

SCALE: 1/8" = 1'-0"

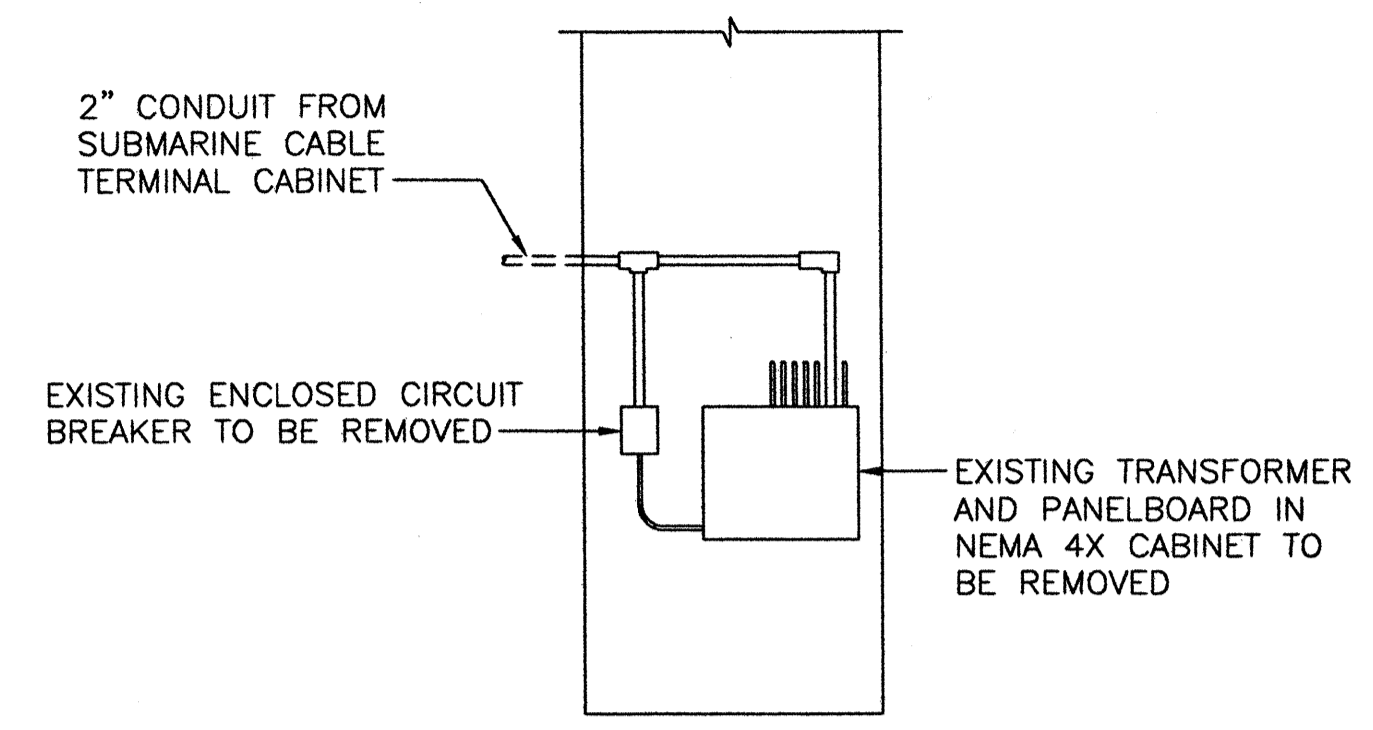
NOTE: NOT ALL FEATURES AND EQUIPMENT SHOWN.



SECTION D-D

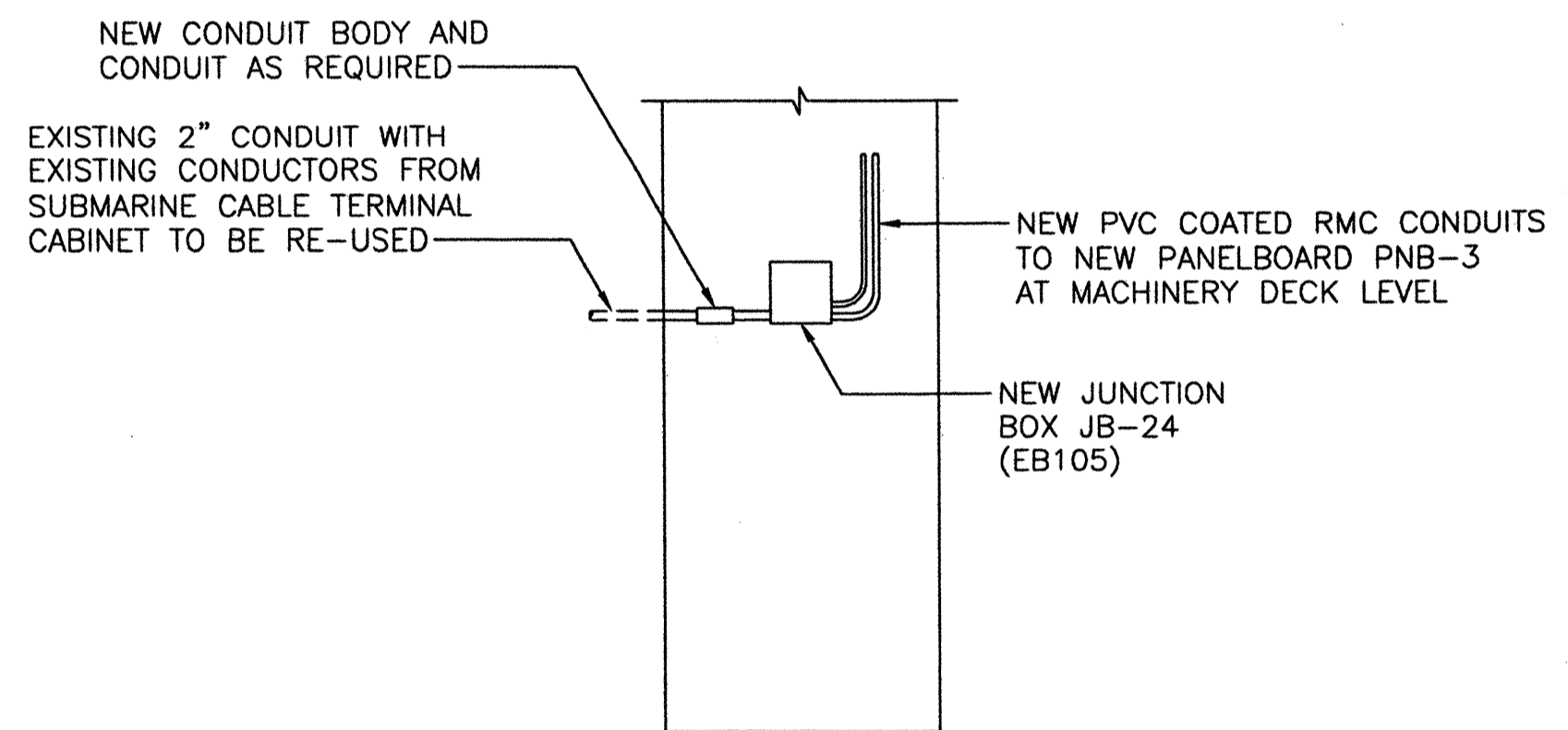
SCALE: 1/8" = 1'-0"

NOTE: NOT ALL FEATURES AND EQUIPMENT SHOWN.



SECTION E-E - EXISTING

SCALE: 1/4" = 1'-0"



SECTION E-E - NEW

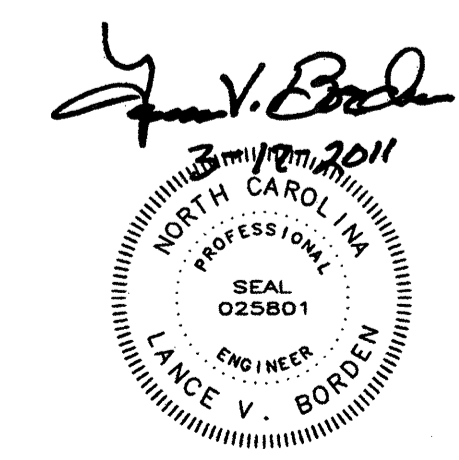
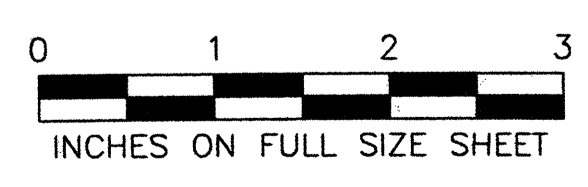
SCALE: 1/4" = 1'-0"

DEVICE LEGEND

- \$ SINGLE POLE SWITCH (EB113)
- \$ THREE WAY SWITCH (EB113)
- ⊗ LUMINAIRE (TYPE AS INDICATED)
- ⊕ GFCI RECEPTACLE (EB114)
- ⊙ LETTER INDICATES DEVICES ON A COMMON CIRCUIT

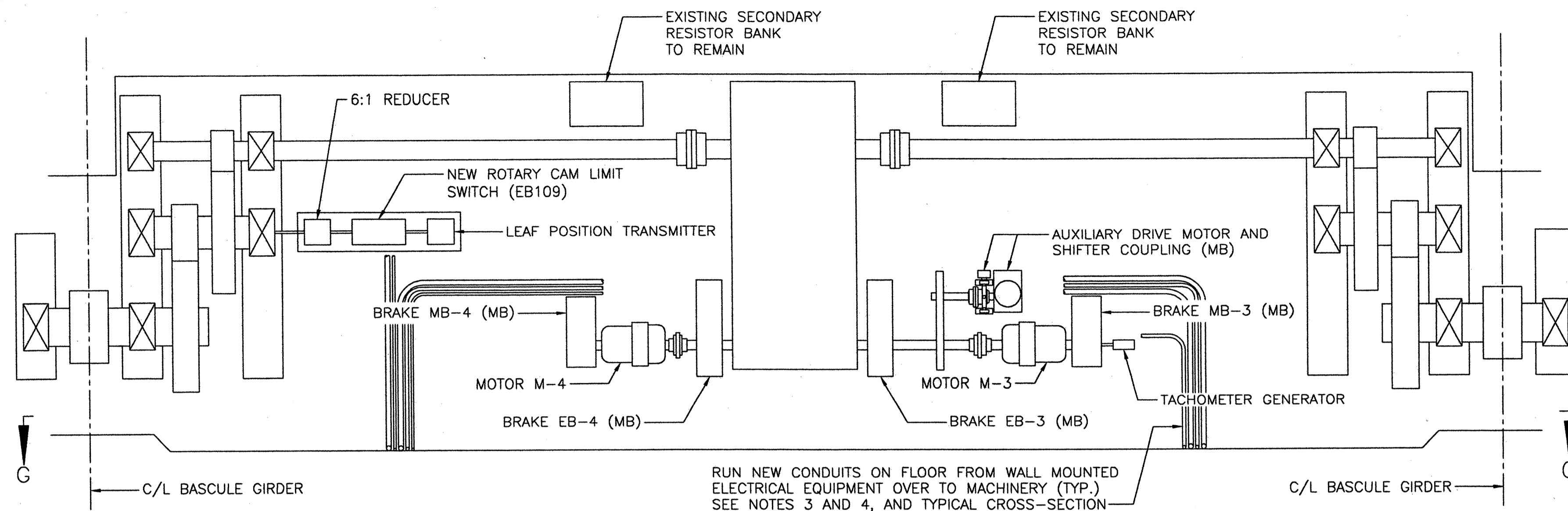
NOTES:

1. ALL ELECTRICAL ITEMS ARE NEW EXCEPT AS NOTED.
2. ALL LUMINAIRES ARE VAPORTIGHT INCANDESCENT TYPE (EB111) EXCEPT AS NOTED.
3. SEE SHEET EB3 FOR LOCATIONS OF SECTIONS C-C AND D-D.
3. SEE SHEET EB4 FOR DETAILS OF MACHINERY DECK.



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| ELECTRICAL PLANS AND DETAILS - 2 | | | |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER |
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| DATE | | MARCH 2011 | |
| DRAWING NO. | | 30 OF 63 | |

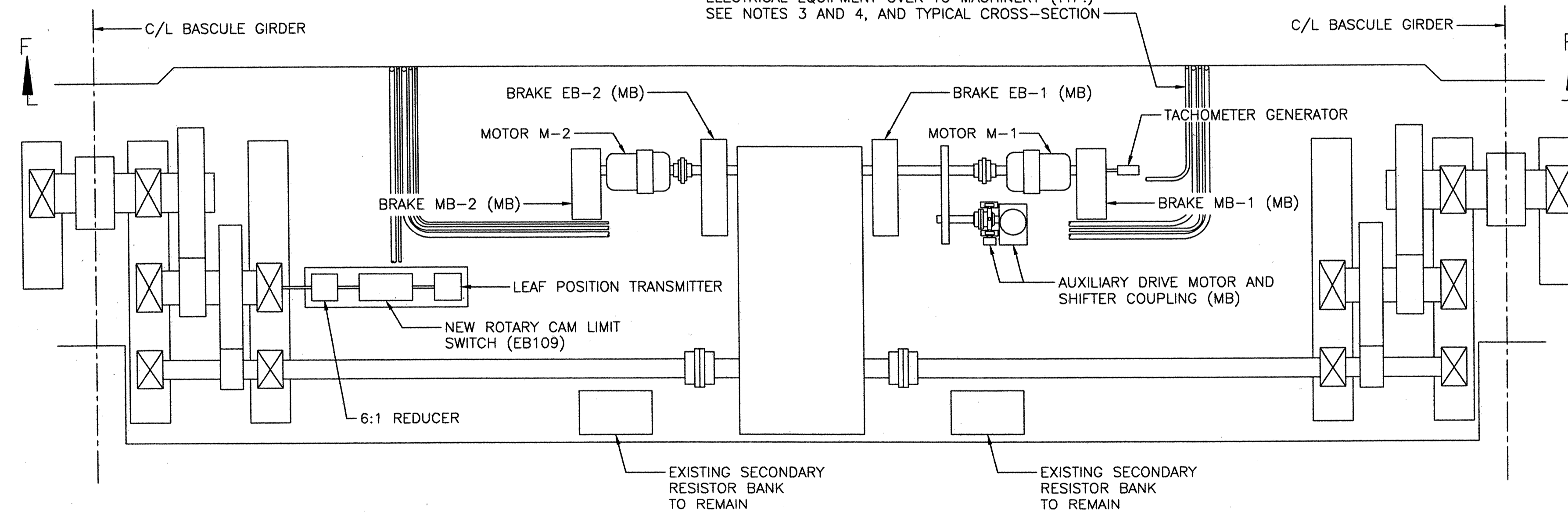
EB4



MACHINERY DECK ELECTRICAL LAYOUT - WEST BASCULE PIER (W1)

SCALE: 3/8" = 1'-0"

RUN NEW CONDUITS ON FLOOR FROM WALL MOUNTED ELECTRICAL EQUIPMENT OVER TO MACHINERY (TYP.) SEE NOTES 3 AND 4, AND TYPICAL CROSS-SECTION

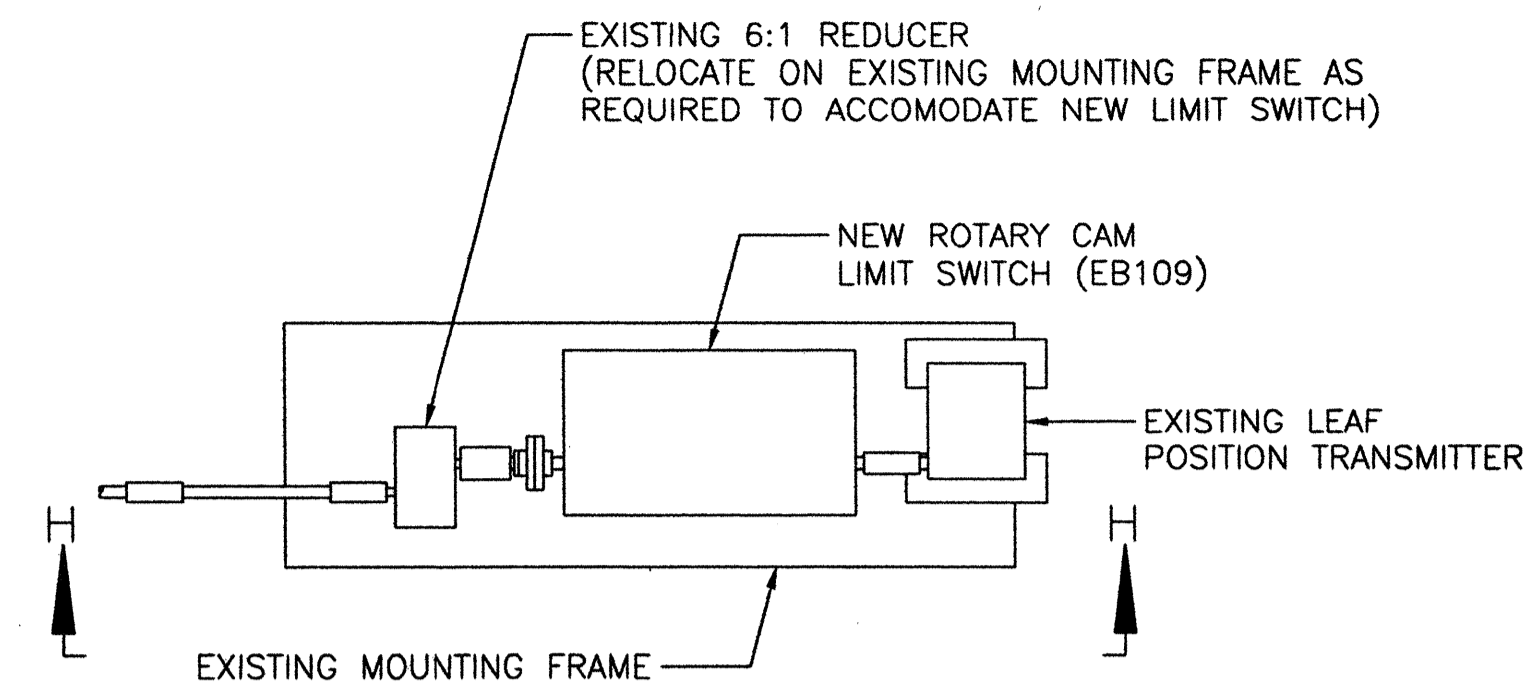
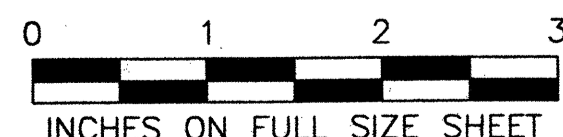


MACHINERY DECK ELECTRICAL LAYOUT - EAST BASCULE PIER (E1)

SCALE: 3/8" = 1'-0"

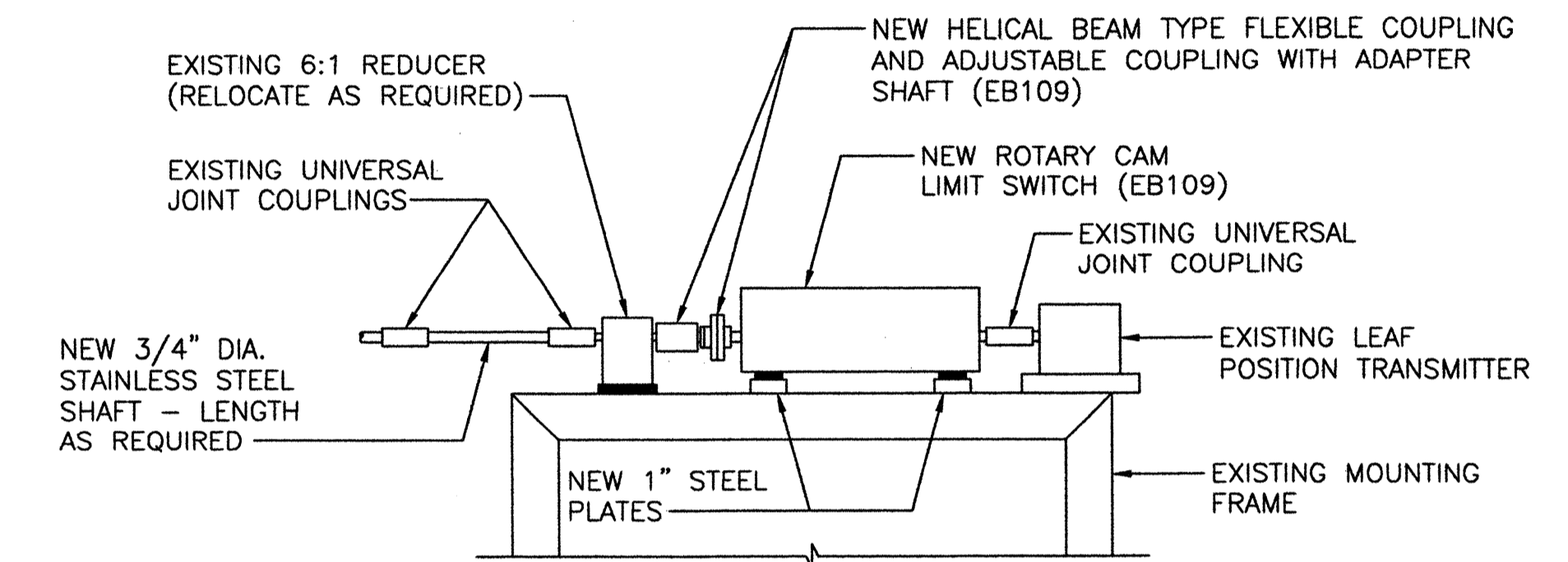
NOTES:

- ITEMS MARKED WITH "EB" NUMBERS ARE NEW ELECTRICAL EQUIPMENT. ITEMS MARKED WITH (MB) ARE NEW MECHANICAL ITEMS; REFER TO THE MECHANICAL PLANS. ALL OTHER ITEMS ARE EXISTING TO REMAIN.
- SEE SHEET E6 FOR SECTIONS F-F AND G-G.
- CONDUIT ARRANGEMENT SHOWN IS CONCEPTUAL; ACTUAL ARRANGEMENT SHALL BE DETERMINED BY THE CONTRACTOR. CONDUIT ROUTING SHALL GENERALLY BE AS SHOWN.
- CONDUITS ON MACHINERY DECK FLOOR SHALL BE COVERED BY A NEW WALKWAY. SEE TYPICAL CROSS SECTION ON THIS SHEET.
- CONCRETE ENCASED CONDUITS AT VARIOUS LOCATIONS ON THE MACHINERY DECK WHICH ARE TO BE ABANDONED DUE TO INSTALLATION OF NEW CONDUITS SHALL BE CUT-OFF FLUSH WITH THE CONCRETE AND CAPPED WITH NON-SHRINK GROUT.
- ALL NEW RIGID CONDUITS AT MACHINERY DECK SHALL BE PVC COATED RMC; ALL NEW FLEXIBLE CONDUITS SHALL BE LFMC.



TYPICAL DETAIL - NEW ROTARY CAM LIMIT SWITCH

SCALE: NONE



SECTION H-H

SCALE: NONE

SHIM REDUCER AND NEW LIMIT SWITCH WITH STAINLESS STEEL SHIMS AS REQUIRED FOR PROPER ALIGNMENT OF ALL COMPONENTS. MECHANICAL INSTALLATION AND ALIGNMENT OF ALL COMPONENTS SHALL BE BY PROPERLY QUALIFIED MACHINISTS.

YELLOW MOLDED FIBERGLASS GRATING 1-1/2" HEIGHT, 1-1/2" SQUARE MESH, UV RESISTANT, WITH NON-SLIP QUARTZ GRIT SURFACE

6" x 1-11/16" x 3/8" FIBERGLASS STRUCTURAL CHANNEL

CONCRETE MACHINERY DECK FLOOR 1/2" DIA. WEDGE STUD TYPE CONCRETE ANCHOR WITH MATCHING WASHER AND HEX NUT AT MAX 12" CENTERS (TYP.)

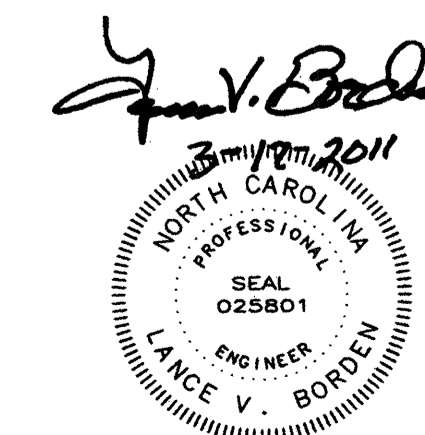
FASTEN GRATING TO CHANNELS WITH STAINLESS STEEL HARDWARE PER MANUFACTURER'S RECOMMENDATIONS

CONDUITS MOUNTED ON METAL FRAMING STRUT WITH COMPATIBLE CLAMPS (TYP.) SECURE STRUT TO FLOOR WITH 1/4" DIA. WEDGE STUD TYPE CONCRETE ANCHORS

TYPICAL CROSS-SECTION - CONDUITS ON FLOOR

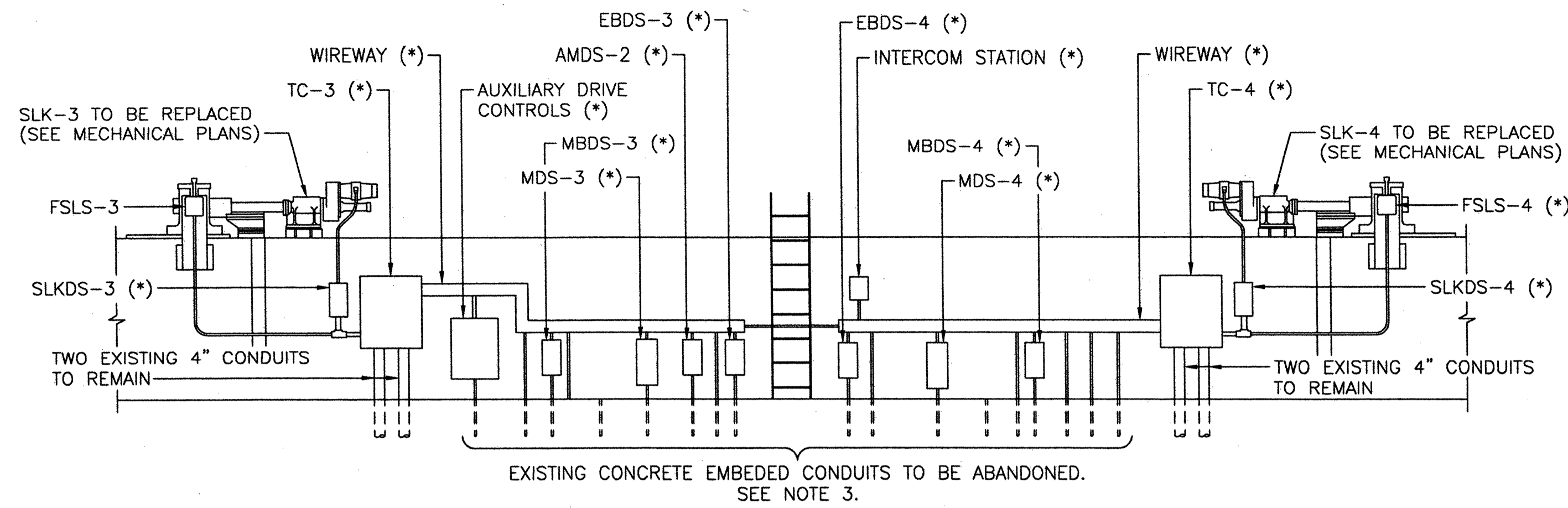
SCALE: 1-1/2" = 1'-0"

FIBERGLASS GRATING AND CHANNEL SHALL BE AS MANUFACTURED BY MCNICHOLS COMPANY (TAMPA, FL), OR APPROVED EQUAL. METAL FRAMING STRUT AND CONDUIT CLAMPS SHALL BE TYPE 316 STAINLESS STEEL, SIMILAR TO COOPER B-LINE B22.



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| WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL PLANS AND DETAILS - 3 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 31 OF 63 |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 31 OF 63 |

31-EB5-EPD3.DWG

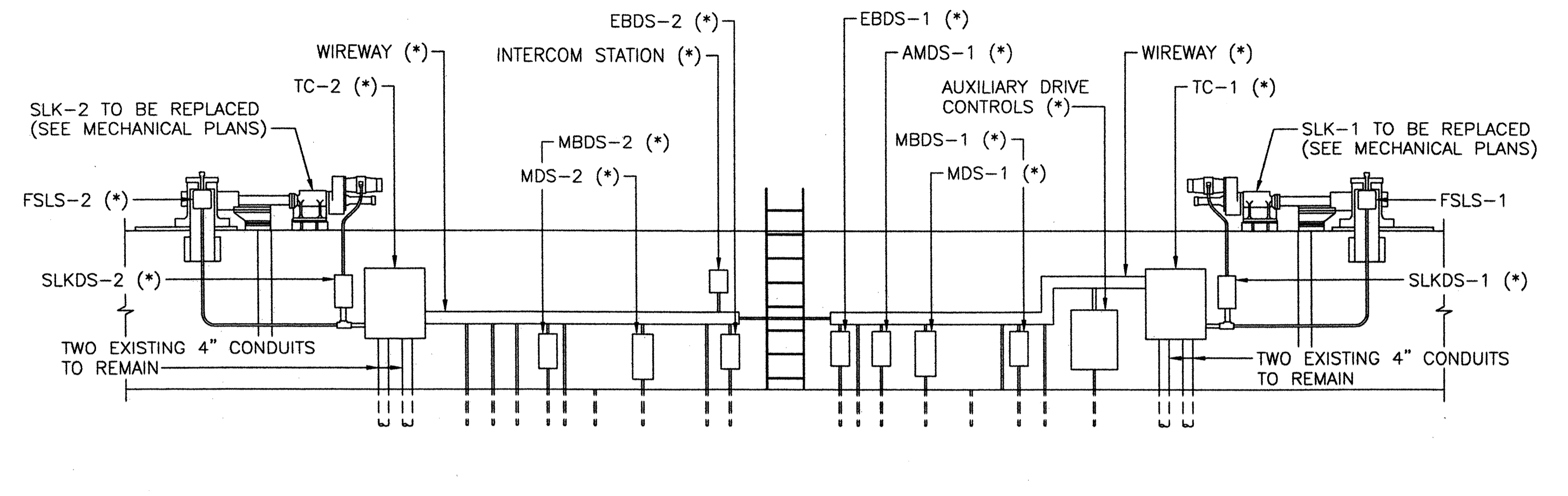


SECTION G-G - EXISTING

SCALE: 1/4" = 1'-0"

ITEMS MARKED WITH (*) ARE TO BE REMOVED. ALL CONDUITS SHOWN SHALL BE REMOVED, EXCEPT FOR THE EXISTING 4" CONDUITS ENTERING THE BOTTOM OF TERMINAL CABINETS TC-3 AND -4.

EXISTING LIGHTS AND RECEPTACLES TO BE REMOVED ARE NOT SHOWN.

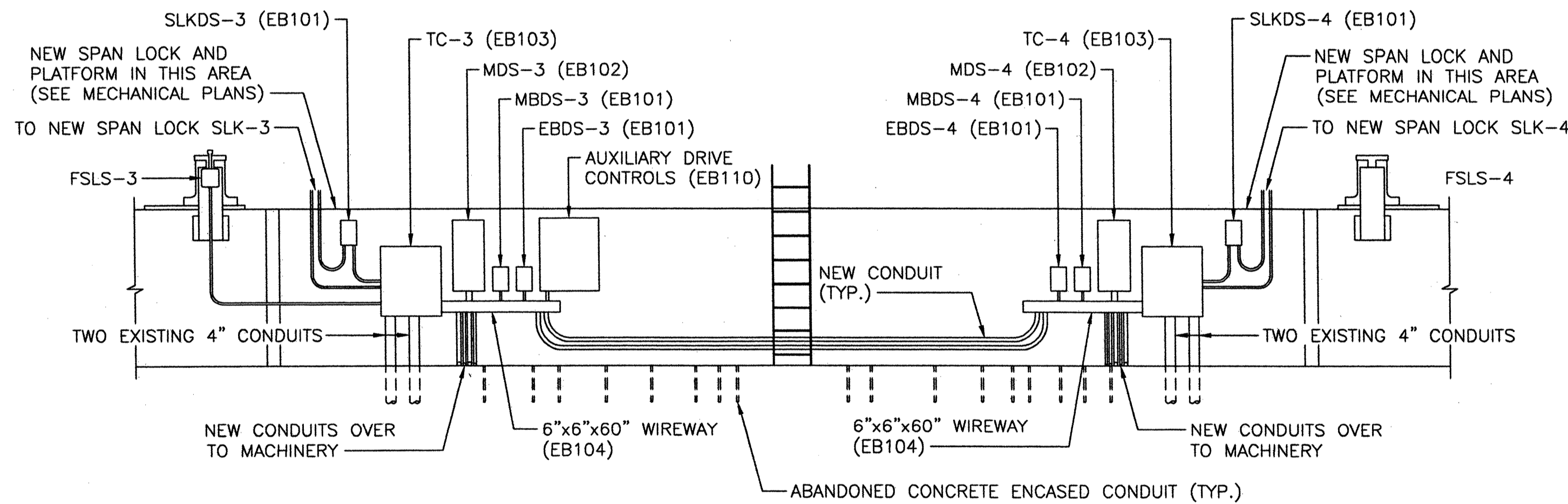


SECTION F-F - EXISTING

SCALE: 1/4" = 1'-0"

ITEMS MARKED WITH (*) ARE TO BE REMOVED. ALL CONDUITS SHOWN SHALL BE REMOVED, EXCEPT FOR THE EXISTING 4" CONDUITS ENTERING THE BOTTOM OF TERMINAL CABINETS TC-1 AND -2.

EXISTING LIGHTS AND RECEPTACLES TO BE REMOVED ARE NOT SHOWN.

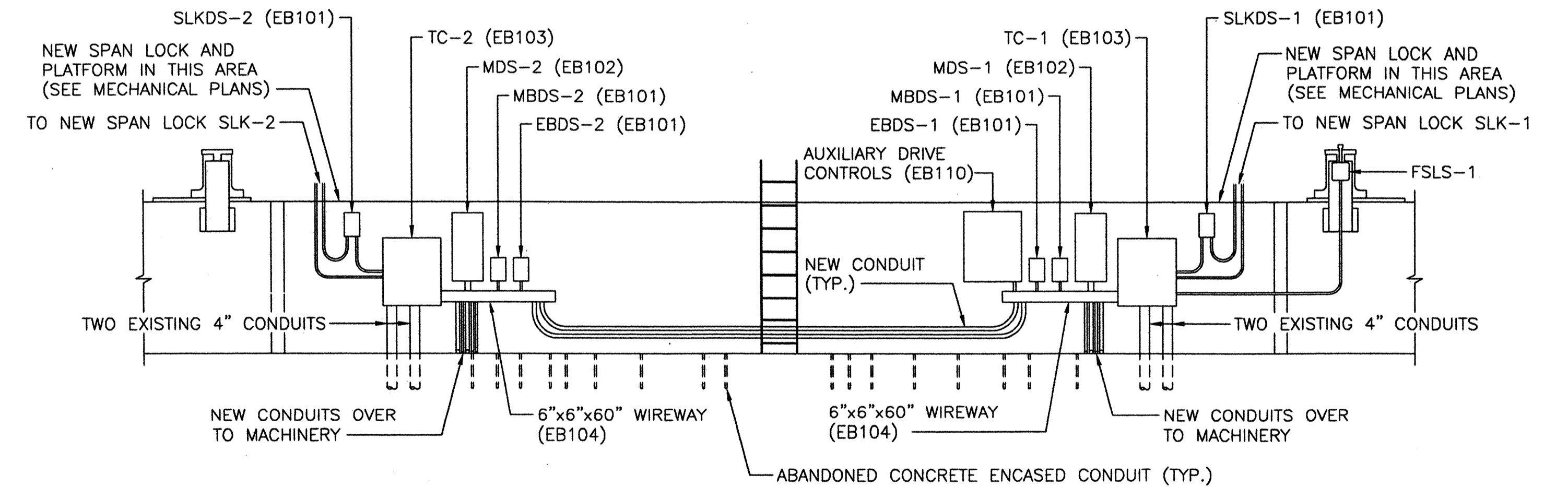


SECTION G-G - NEW

SCALE: 1/4" = 1'-0"

ITEMS MARKED WITH "EB" NUMBERS ARE NEW ELECTRICAL EQUIPMENT. ITEMS MARKED WITH (MB) ARE MECHANICAL ITEMS; REFER TO THE MECHANICAL PLANS. ALL OTHER ITEMS ARE EXISTING TO REMAIN. ALL CONDUITS ARE NEW, EXCEPT AS NOTED.

NEW LIGHTS AND RECEPTACLES ARE NOT SHOWN.



SECTION F-F - NEW

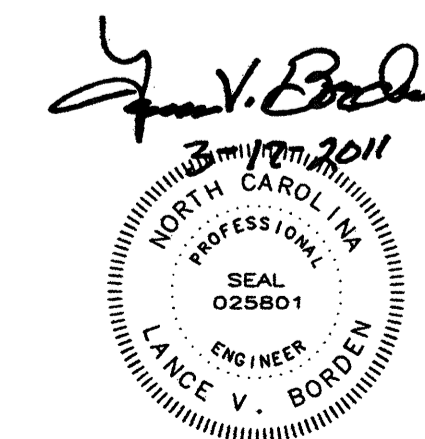
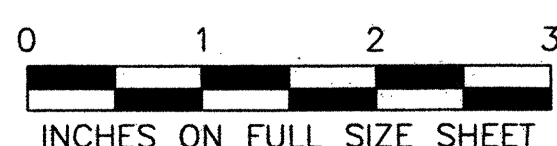
SCALE: 1/4" = 1'-0"

ITEMS MARKED WITH "EB" NUMBERS ARE NEW ELECTRICAL EQUIPMENT. ITEMS MARKED WITH (MB) ARE MECHANICAL ITEMS; REFER TO THE MECHANICAL PLANS. ALL OTHER ITEMS ARE EXISTING TO REMAIN. ALL CONDUITS ARE NEW, EXCEPT AS NOTED.

NEW LIGHTS AND RECEPTACLES ARE NOT SHOWN.

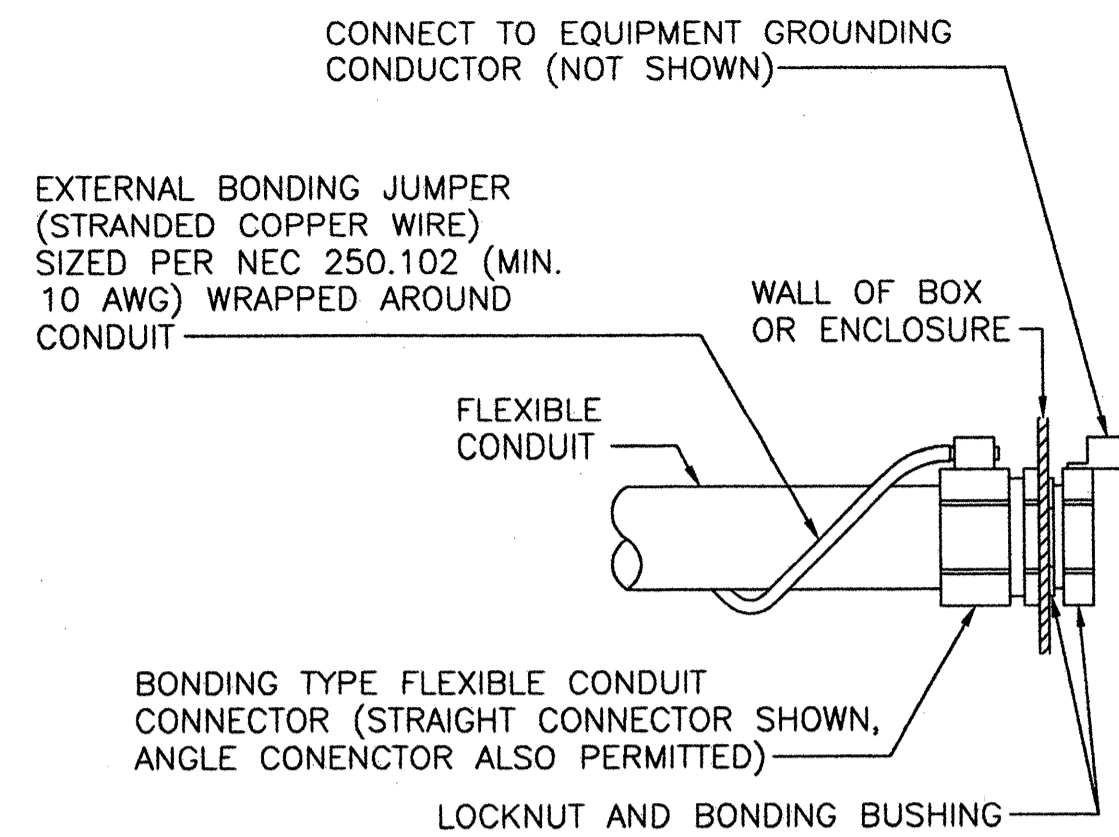
NOTES:

- SEE SHEET EB5 FOR LOCATIONS OF SECTIONS F-F AND G-G.
- ARRANGEMENTS OF NEW ELECTRICAL EQUIPMENT AND CONDUITS SHOWN ARE CONCEPTUAL; ACTUAL ARRANGEMENTS SHALL BE DETERMINED BY THE CONTRACTOR.
- CONCRETE ENCASED CONDUITS WHICH ARE TO BE ABANDONED SHALL BE CUT-OFF FLUSH WITH THE CONCRETE AND CAPPED WITH NON-SHRINK GROUT.
- ALL NEW RIGID CONDUITS AT MACHINERY DECK SHALL BE PVC COATED RMC; ALL NEW FLEXIBLE CONDUITS SHALL BE LFMC.
- SEE SHEET EB19 FOR DEVICE DESIGNATIONS.

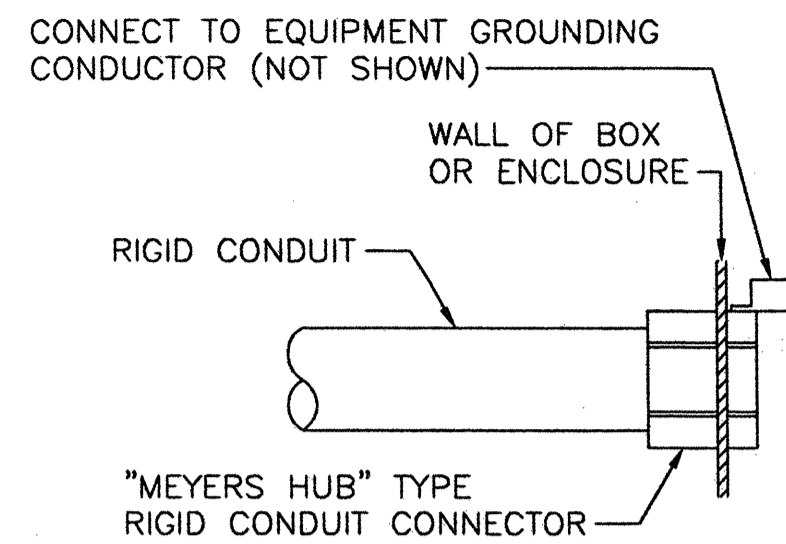


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|---|------------|-------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL PLANS AND DETAILS - 4 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 32 OF 63 |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |

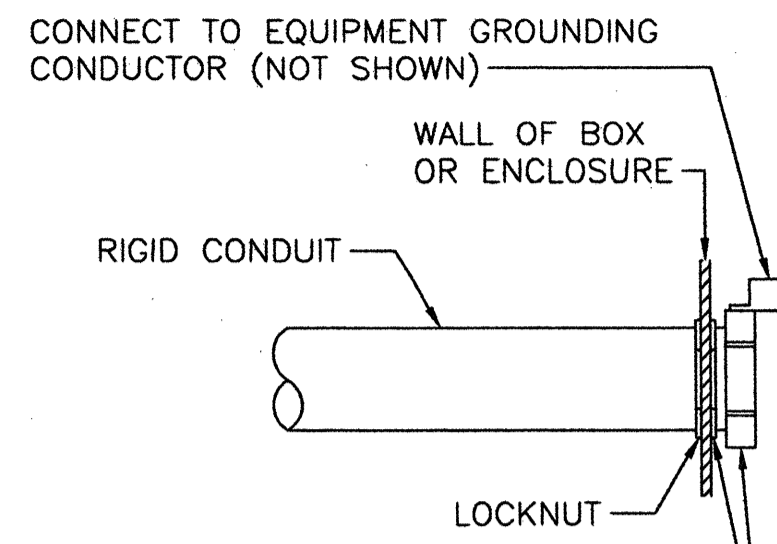
32-EBE-EPD.DWG



FLEXIBLE CONDUIT
(ALL LOCATIONS)



RIGID CONDUIT
(DAMP OR WET LOCATIONS)



RIGID CONDUIT
(DRY LOCATIONS)

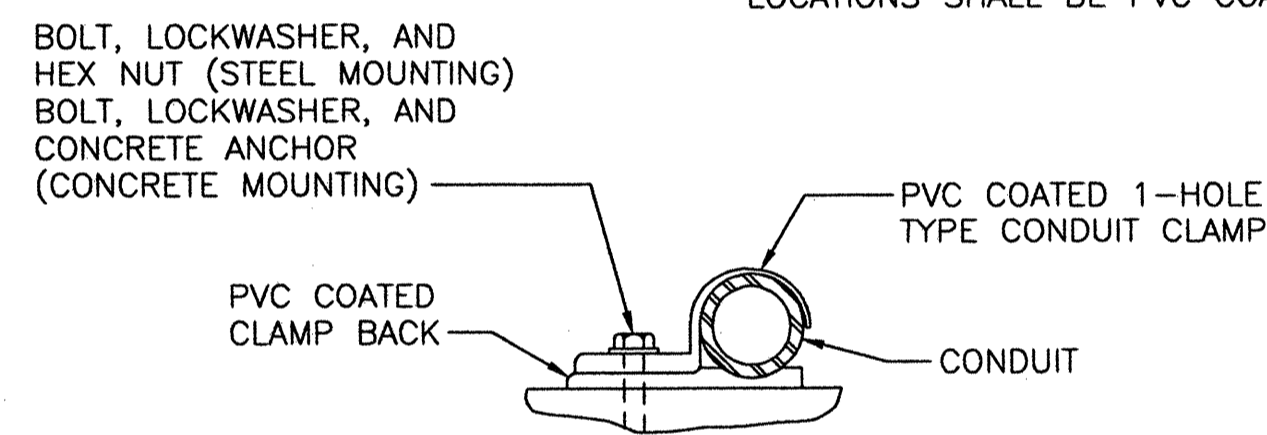
TYPICAL DETAILS - CONDUIT TERMINATIONS

SCALE: NONE

TERMINATIONS SHOWN ARE FOR BOXES OR ENCLOSURES WITHOUT INTEGRAL THREADED HUBS. TERMINATIONS FOR BOXES OR ENCLOSURES WITH INTEGRAL THREADED HUBS ARE SIMILAR, BUT WITHOUT LOCKNUTS, BONDING BUSHINGS, OR "MEYERS HUBS".

TERMINATIONS SHOWN ARE FOR TYPE RMC OR LFMC CONDUIT. TERMINATIONS FOR TYPE RNC OR LFNC ARE SIMILAR, BUT WITHOUT BONDING FITTINGS OR BUSHINGS.

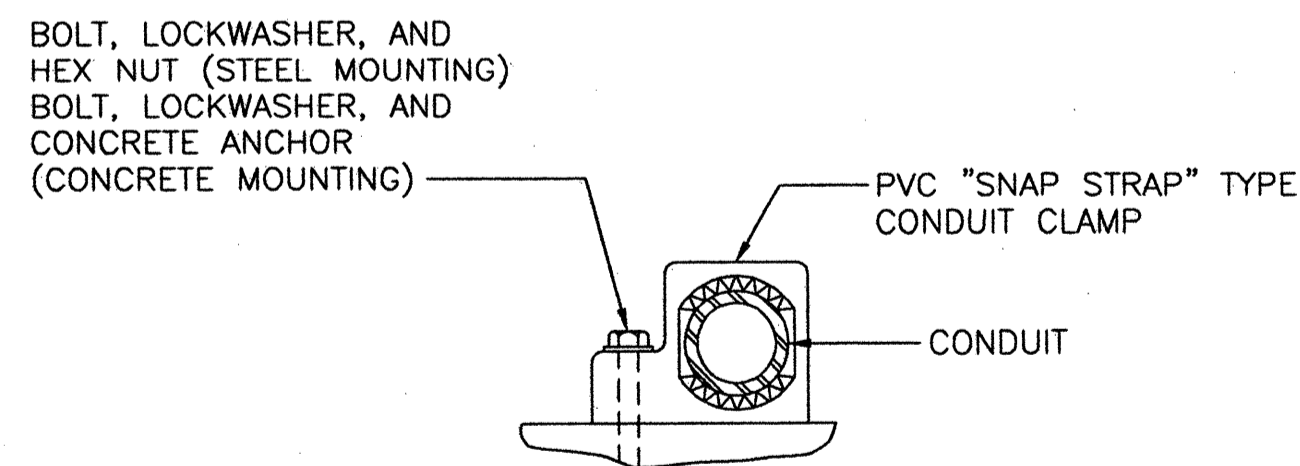
FITTINGS FOR USE WITH PVC COATED RMC CONDUIT SHALL BE PVC COATED. FITTINGS FOR USE WITH LFMC CONDUIT IN WET LOCATIONS SHALL BE PVC COATED. FITTINGS FOR USE WITH RNC OR LFNC CONDUIT SHALL BE NON-METALLIC.



TYPICAL DETAIL - CONDUIT CLAMP
FOR TYPE RMC & LFMC CONDUIT

SCALE: NONE

ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.



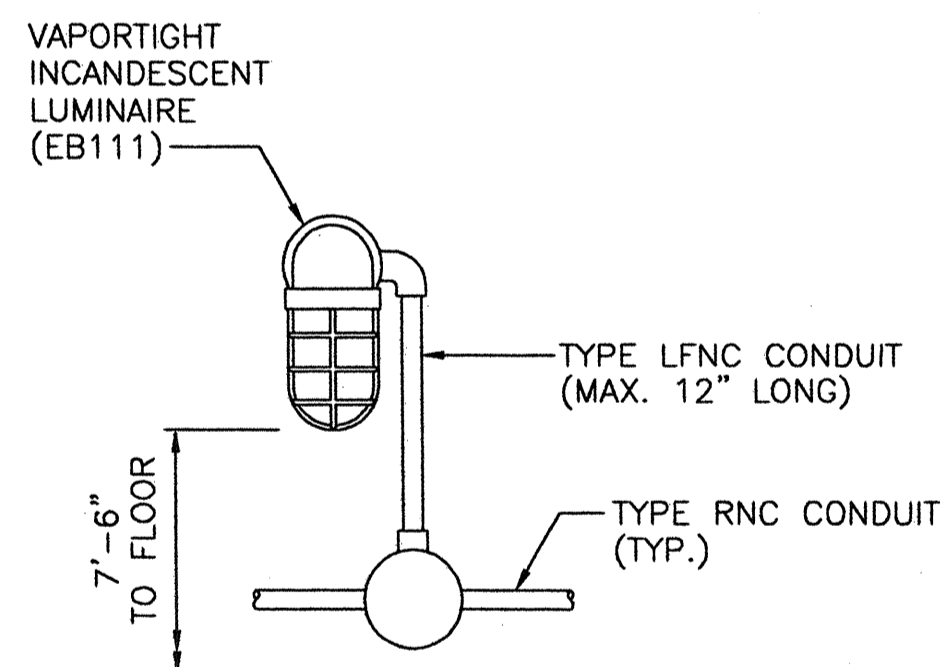
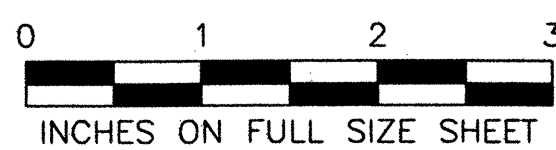
TYPICAL DETAIL - CONDUIT CLAMP
FOR TYPE RNC & LFNC CONDUIT

SCALE: NONE

ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

NOTES:

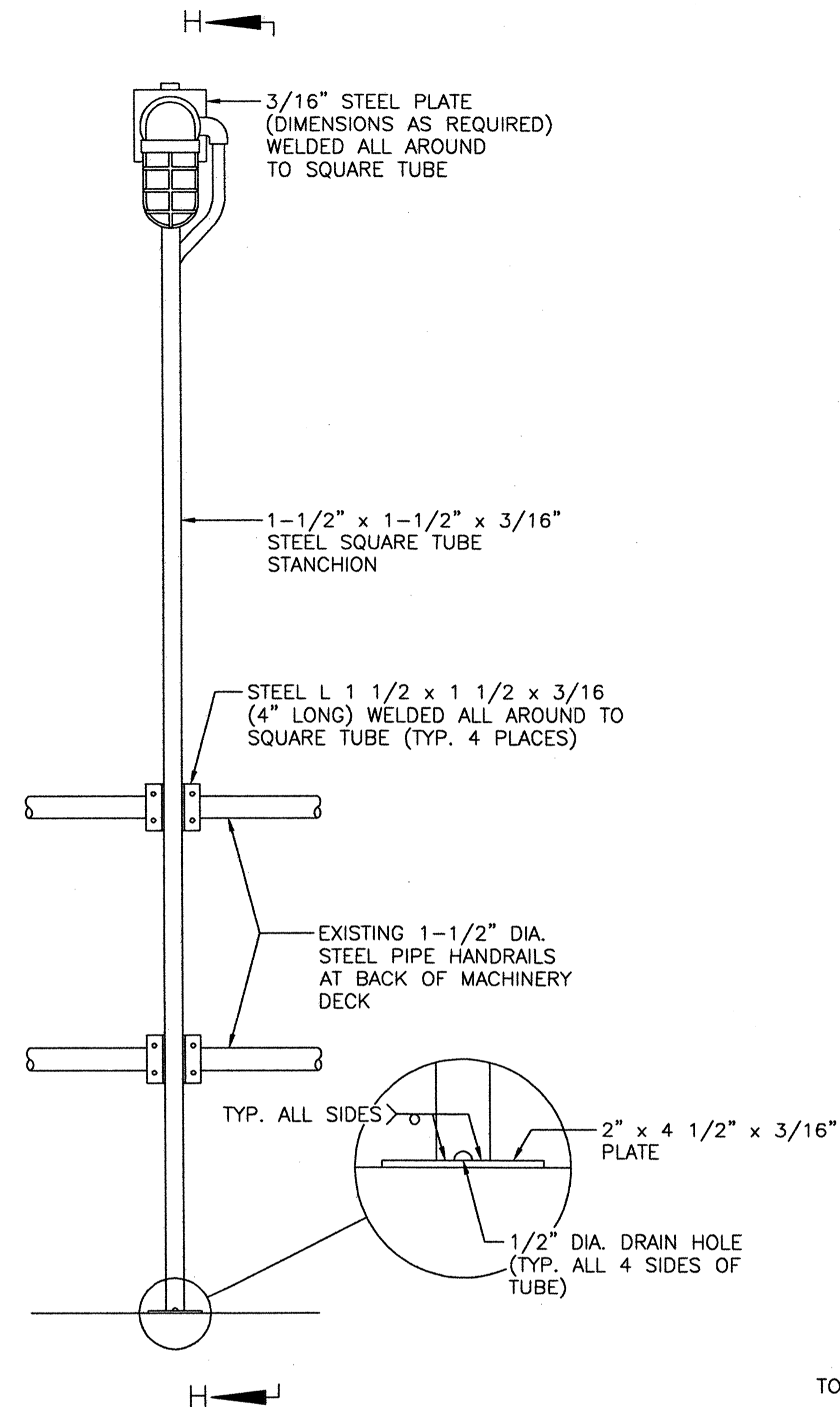
- OBTAIN PERMISSION FROM THE ENGINEER PRIOR TO DRILLING OR CUTTING ANY STRUCTURAL ELEMENT.



TYPICAL DETAIL - WALL MOUNTED
LUMINAIRE

SCALE: NONE

ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

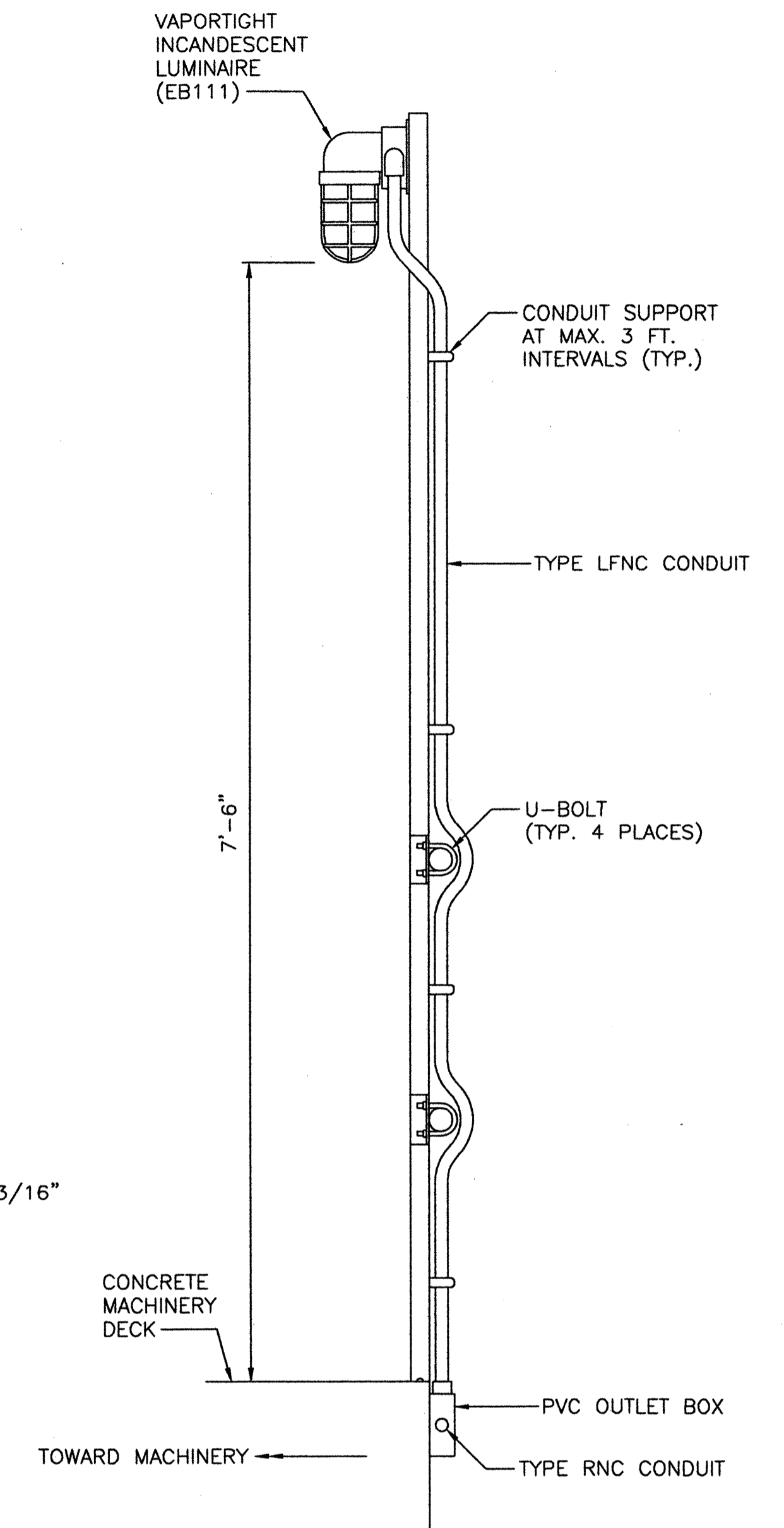


TYPICAL DETAIL - MACHINERY PLATFORM
STANCHION MOUNTED LUMINAIRE

SCALE: NONE

COMPLETE STANCHION ASSEMBLY, INCLUDING PLATES AND ANGLES, SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.

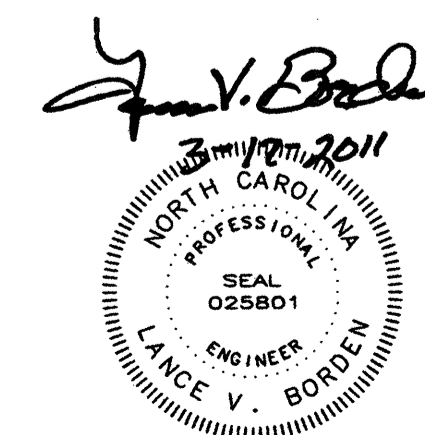
SQUARE TUBE, PLATE, AND ANGLES SHALL BE TYPE A36, OR EQUIVALENT, STEEL.



SECTION H-H

SCALE: NONE

U-BOLTS AND LUMINAIRE MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.



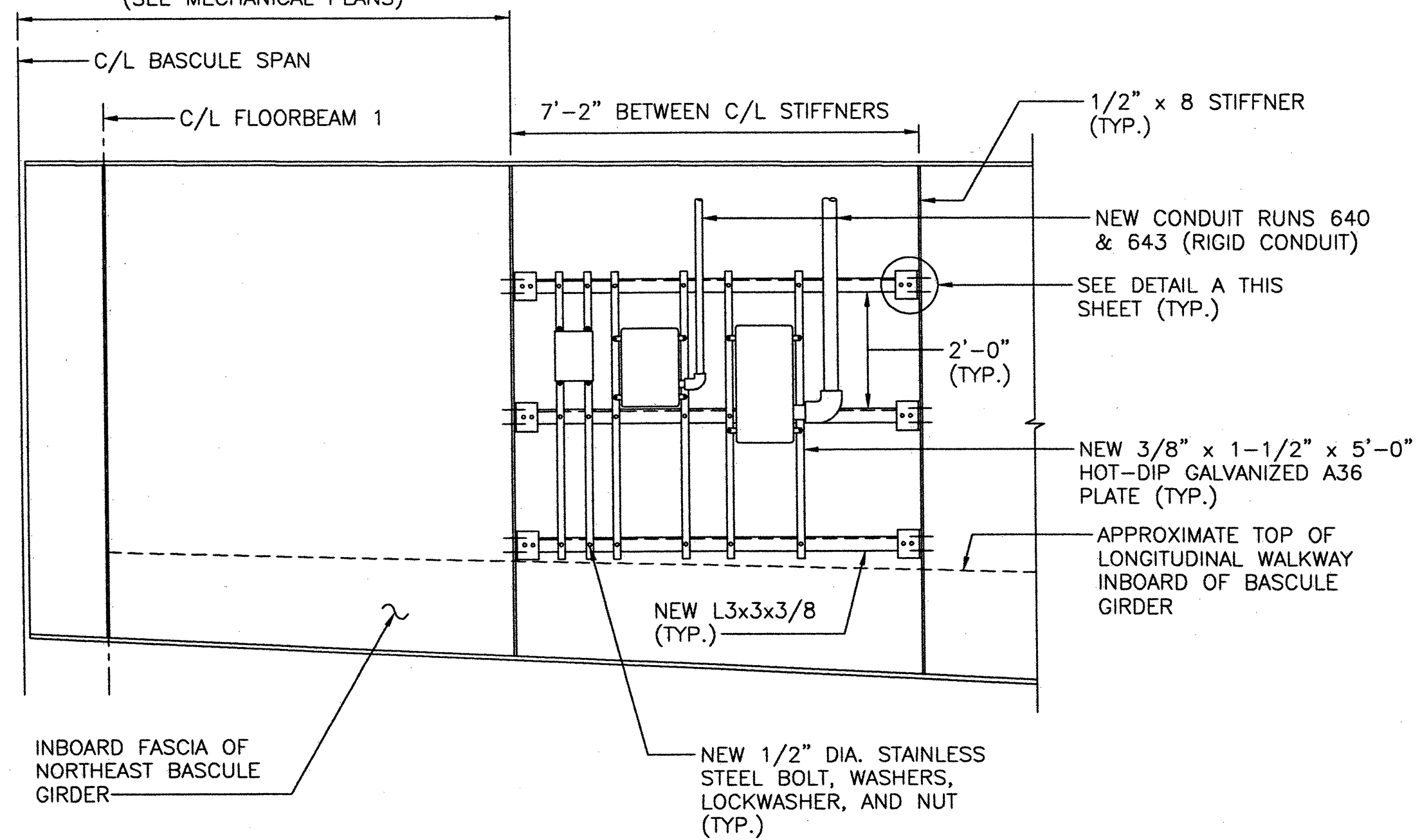
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA

ELECTRICAL PLANS AND DETAILS - 5

| | | | |
|----------|------------|-------------|------------|
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 33 OF 63 |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |

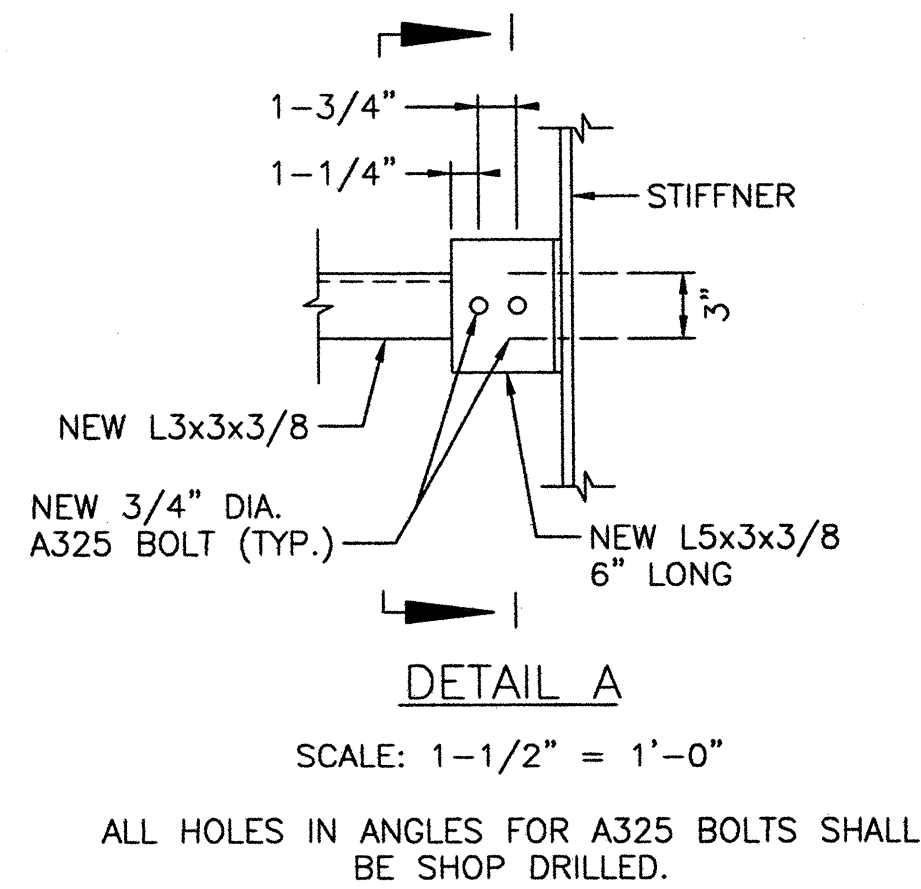
EXISTING CENTER LOCK MACHINER IN THIS AREA TO BE REPLACED WITH NEW (SEE MECHANICAL PLANS)



ELEVATION - CENTER LOCK ELECTRICAL EQUIPMENT

SCALE: 1/2" = 1'-0"

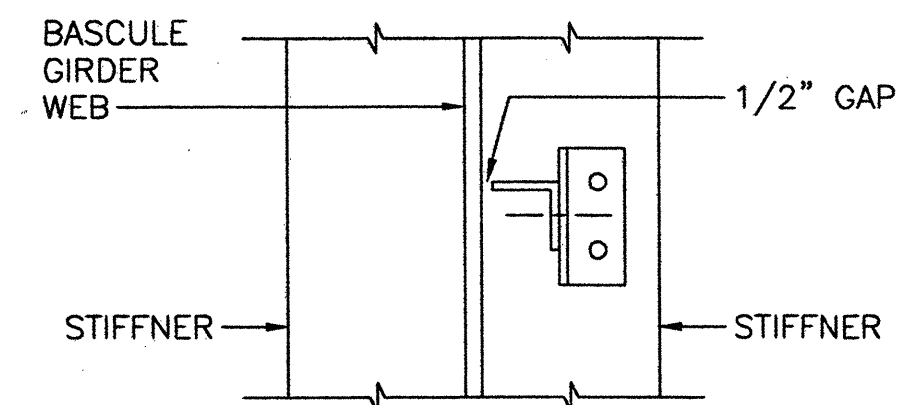
EQUIPMENT AT NORTHEAST BASCULE GIRDER SHOWN. EQUIPMENT AT SOUTHEAST BASCULE GIRDER SIMILAR, BUT OPPOSITE HAND. NOT ALL CONDUITS SHOWN. EXCEPT AS NOTED, ALL CONDUIT CONNECTIONS BETWEEN BOXES, ENCLOSURES, AND EQUIPMENT SHOWN IN THIS VIEW SHALL UTILIZE TYPE LFMC CONDUIT. ACTUAL ARRANGEMENT OF EQUIPMENT AND CONDUITS TO BE DETERMINED BY THE CONTRACTOR.



DETAIL A

SCALE: 1-1/2" = 1'-0"

ALL HOLES IN ANGLES FOR A325 BOLTS SHALL BE SHOP DRILLED.

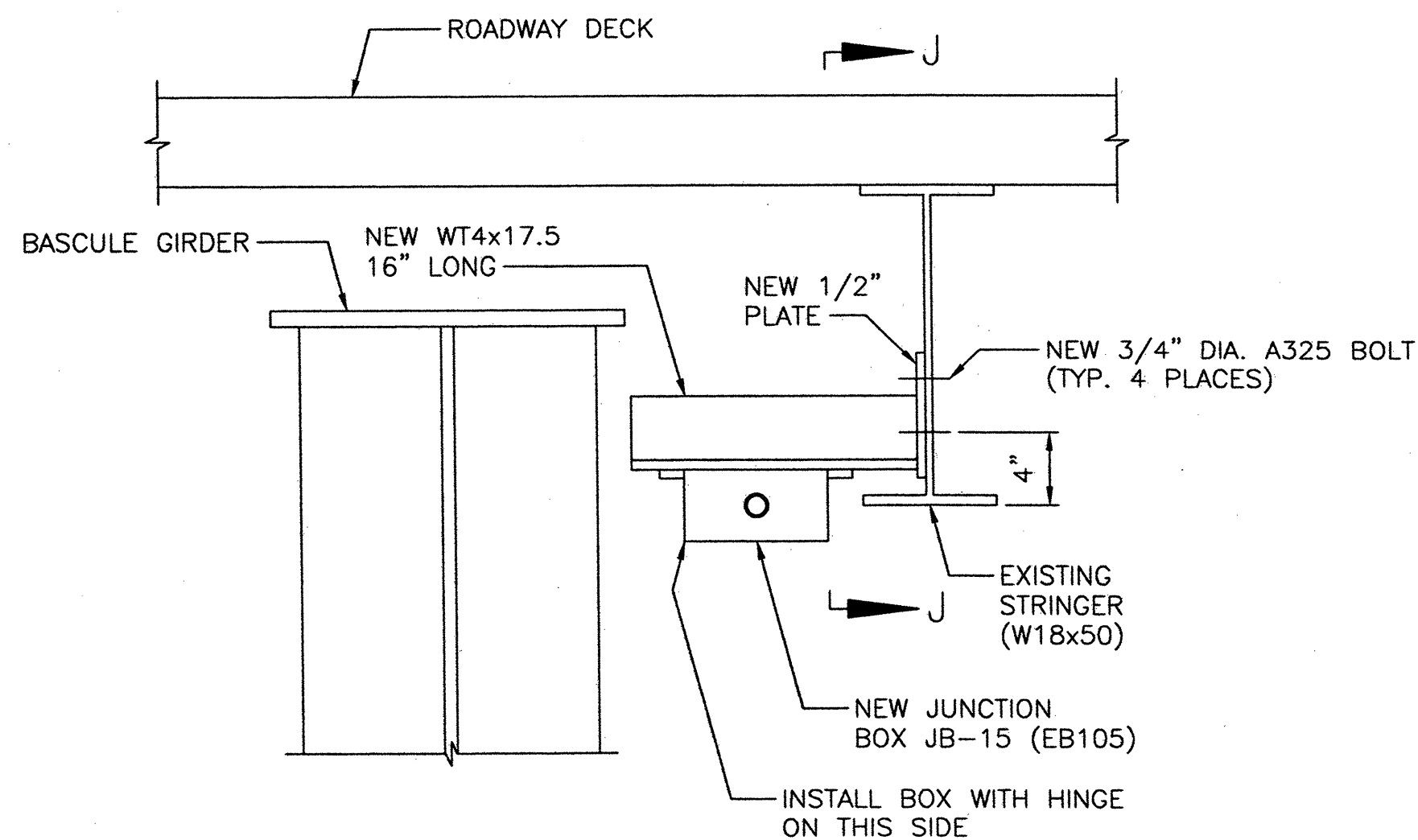


SECTION I-I

SCALE: 1-1/2" = 1'-0"

NOTES:

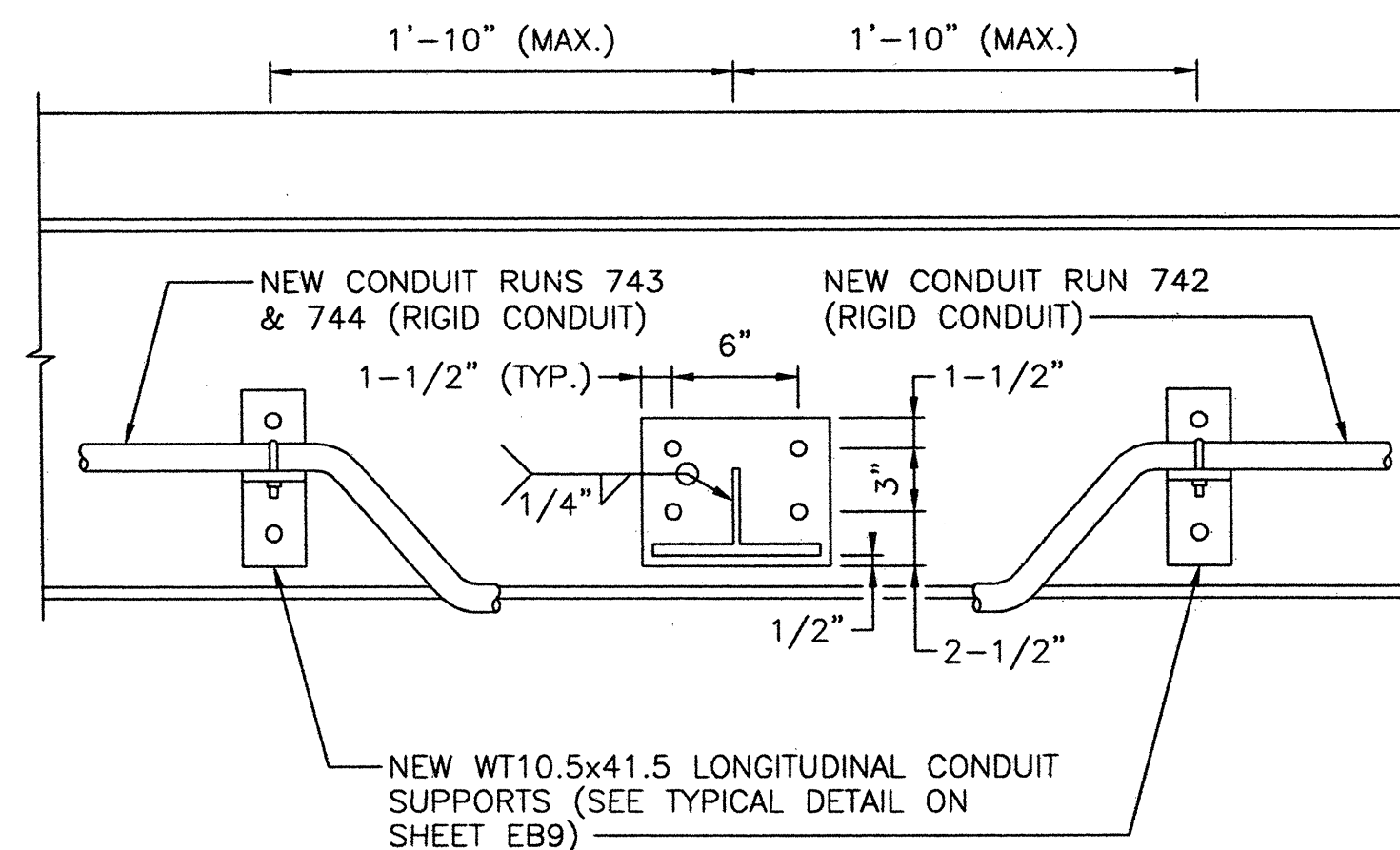
1. PRIOR TO STARTING WORK, THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS OF THE EXISTING STRUCTURE.
2. ALL WORK RELATED TO THE INSTALLATION OF NEW STRUCTURAL STEEL ELEMENTS (ANGLES, TEES, PLATES, ETC.) SHOWN ON THIS SHEET SHALL CONFORM TO THE REQUIREMENTS OF SECTION 440 (STEEL STRUCTURES) OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, AND BE PERFORMED BY QUALIFIED IRONWORKERS. ALL STRUCTURAL ELEMENTS SHALL BE SHOP AND FIELD PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 442 (PAINTING STEEL STRUCTURES), EXCEPT WHERE HOT-DIP GALVANIZED.
3. UNLESS OTHERWISE NOTED, ALL STEEL PLATES AND SHAPES SHOWN ON THIS SHEET SHALL CONFORM TO ASTM A709, GRADE 50W. ASTM A588 MAY BE SUBSTITUTED FOR A709, GRADE 50W WITH THE APPROVAL OF THE ENGINEER AND AT NO ADDITIONAL COST TO THE DEPARTMENT. CVN TESTING IS NOT REQUIRED.
4. WHERE A325 BOLTS ARE INDICATED, THEY SHALL BE TYPE 3, WITH A563 GRADE C3 HEAVY HEX NUTS AND F436, TYPE 3 HARDENED WASHERS. A325 BOLTS, NUTS, AND WASHERS SHALL BE HOT-DIP GALVANIZED.
5. WHERE STAINLESS STEEL BOLTS AND/OR OTHER HARDWARE IS INDICATED, THEY SHALL BE TYPE 316. ALL ELECTRICAL BOXES AND OTHER EQUIPMENT SHALL BE MOUNTED USING STAINLESS STEEL BOLTS, NUTS, WASHERS, AND LOCKWASHERS.
6. PRIOR TO FASTENING NEW STRUCTURAL ELEMENTS TO EXISTING BRIDGE STRUCTURAL ELEMENTS, CLEAN AND RE-PAIN THE AREA ON THE EXISTING STRUCTURE WHICH WILL BE IN CONTACT WITH THE NEW ELEMENT. CLEANING SHALL BE WITH POWER TOOLS TO SSPC SP11 TO REMOVE RUST AND POOR COATING. NEW PAINT SHALL BE A THICK EPOXY MASTIC TOPCOAT (CARBOMASTIC 15 AS MANUFACTURED BY CARBOLINE, OR APPROVED EQUAL). NOTE THAT THE EXISTING STRUCTURE PAINT SYSTEM MAY BE LEAD BASED.
7. ALL RIGID CONDUIT ON BASCULE SPAN SHALL BE PVC COATED TYPE RMC; ALL FLEXIBLE CONDUIT SHALL BE TYPE LFMC.



DETAIL - JB-15 MOUNTING

SCALE: 1-1/2" = 1'-0"

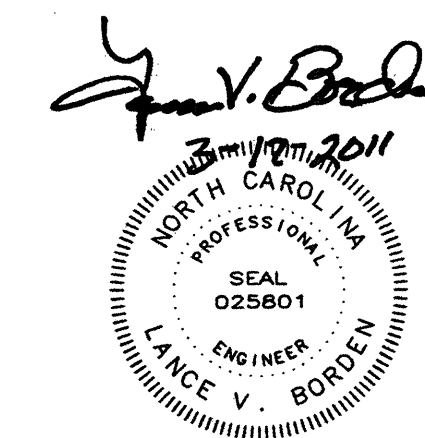
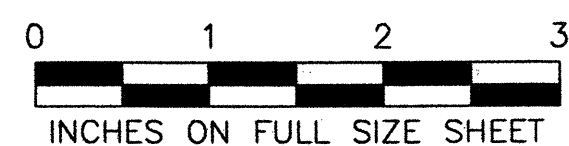
PLATE AND WT SHALL BE SHOP DRILLED FOR ALL REQUIRED HOLES (A325 BOLTS AND BOX MOUNTING BOLTS)



SECTION J-J

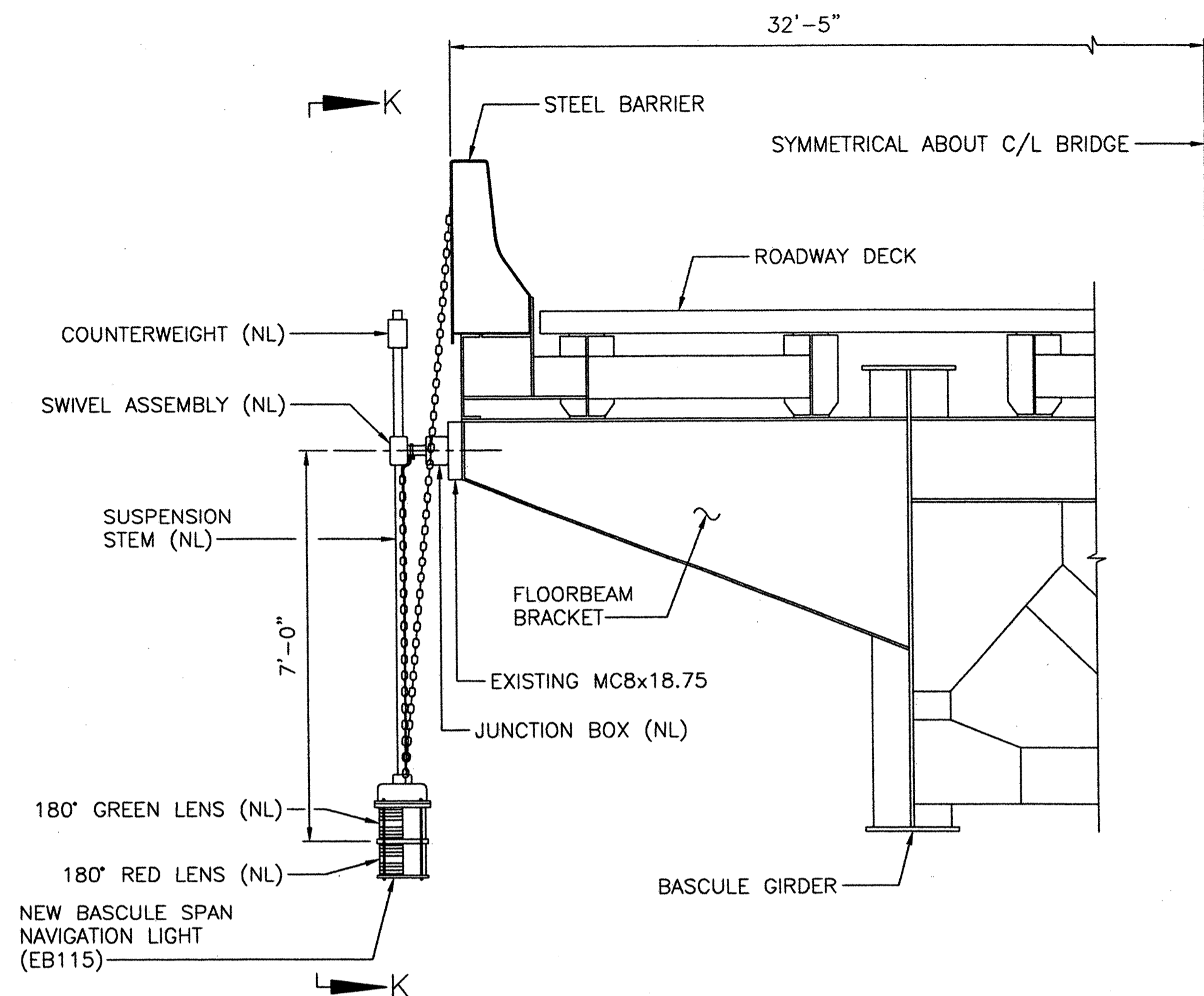
SCALE: 1-1/2" = 1'-0"

JUNCTION BOX NOT SHOWN FOR CLARITY.



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| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL PLANS AND DETAILS - 6 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DRAWING NO. 34 OF 63 | | | |

34-EBB-EP06.DWG

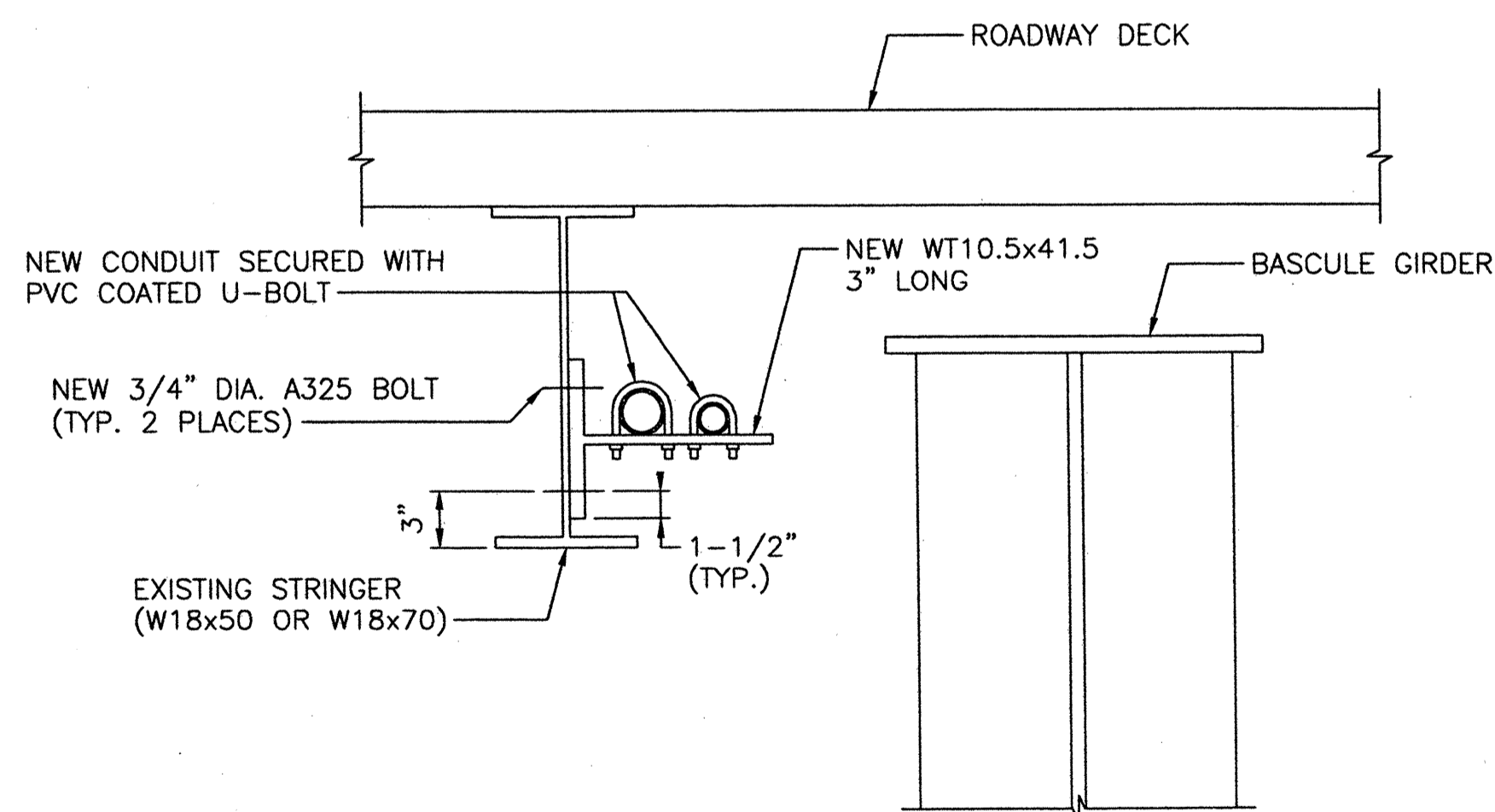


PARTIAL CROSS SECTION - BASCULE LEAF AT FLOORBEAM 1

SCALE: 1/2" = 1'-0"

VIEW IS LOOKING TOWARD CENTERLINE OF BASCULE SPAN. TYPICAL BOTH BASCULE LEAVES. CENTER LOCKS, CONDUITS, JUNCTION BOXES, WALKWAYS, AND SIMILAR ITEMS NOT SHOWN.

ITEMS MARKED (NL) SHALL BE SUPPLIED AS PART OF THE NEW NAVIGATION LIGHT.

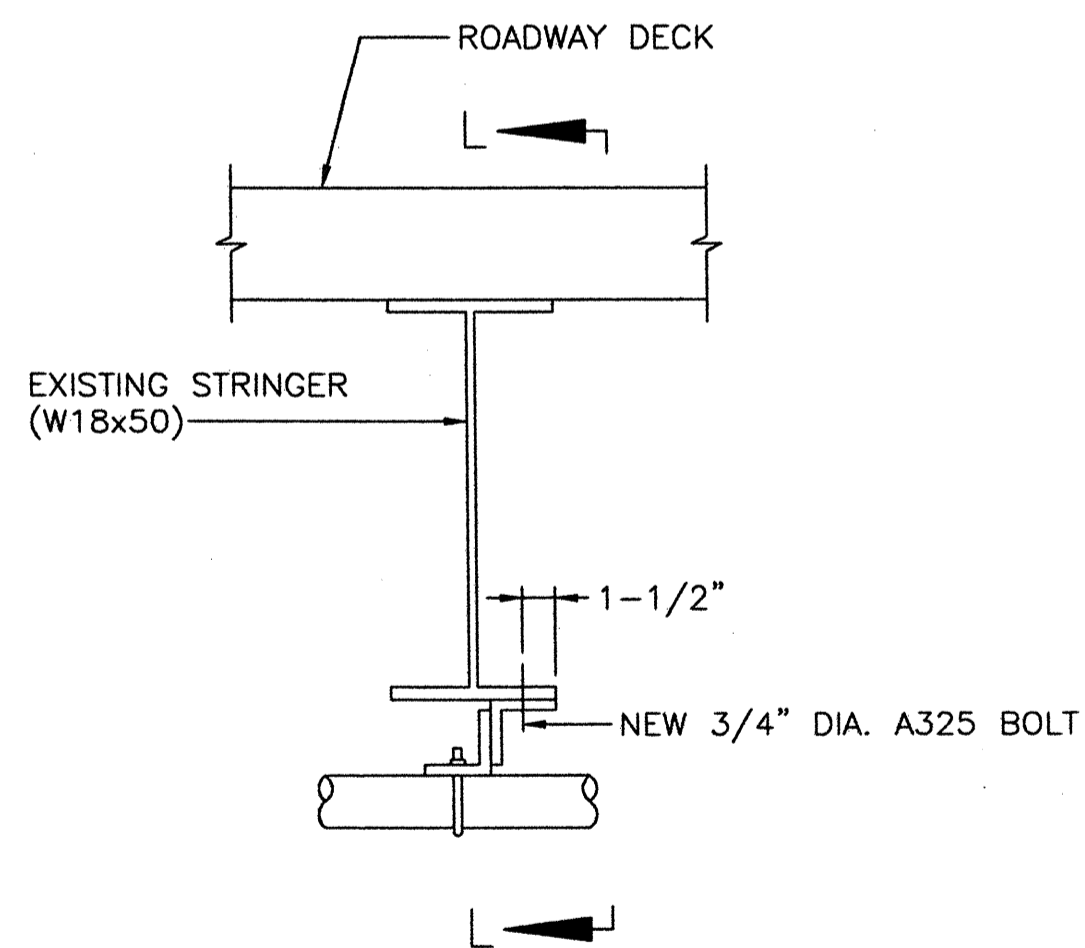


TYPICAL DETAIL - LONGITUDINAL BASCULE SPAN CONDUITS SUPPORT

SCALE: 1-1/2" = 1'-0"

ANGLES SHALL BE SHOP DRILLED FOR ALL REQUIRED HOLES (A325 BOLTS AND U-BOLTS).

INSTALL AT MAXIMUM 5 FOOT INTERVALS; APPROXIMATELY 50 LOCATIONS (CONTRACTOR TO FIELD DETERMINE EXACT REQUIRED QUANTITY).

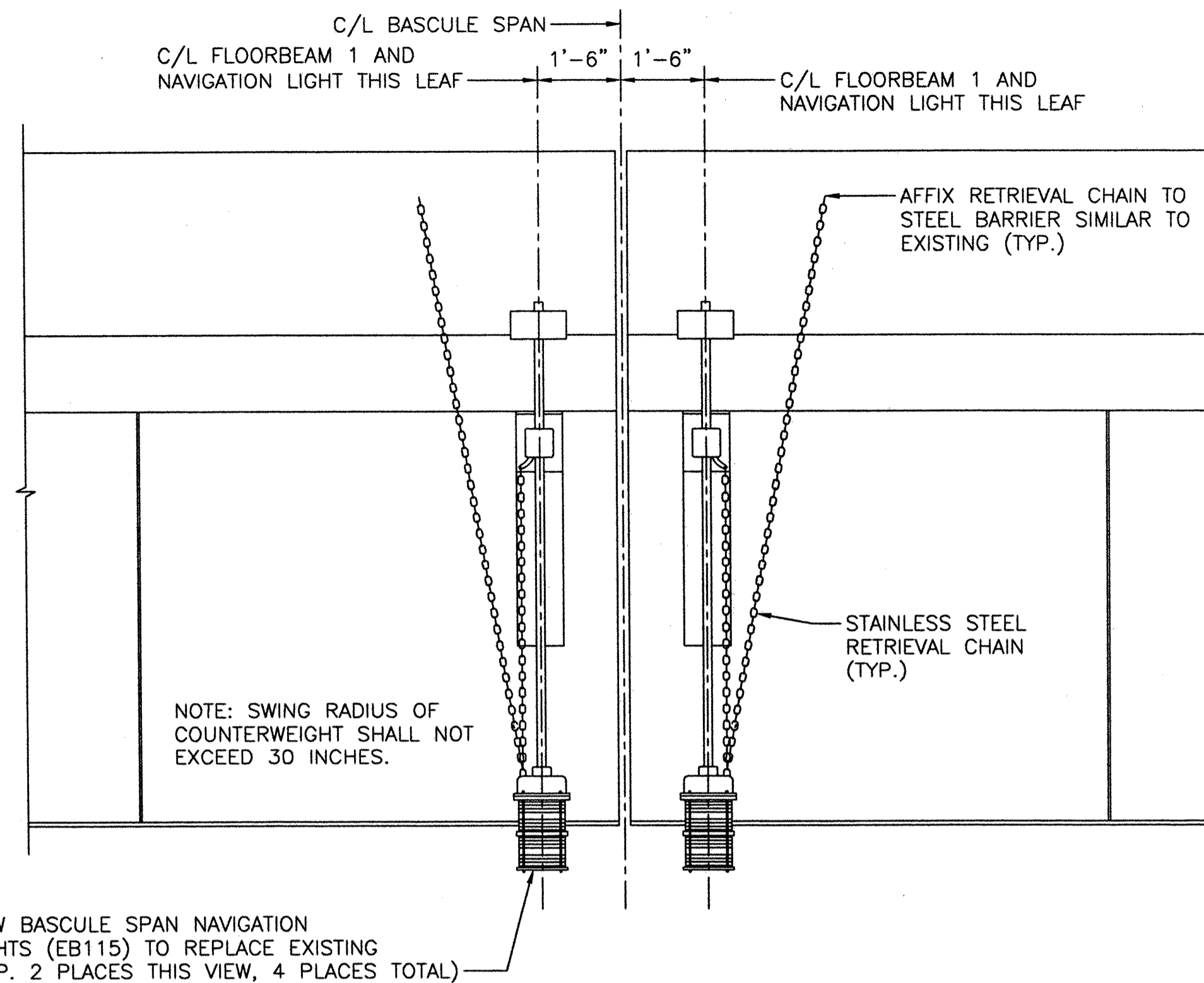


TYPICAL DETAIL - TRANSVERSE BASCULE SPAN CONDUITS SUPPORT

SCALE: 1-1/2" = 1'-0"

ANGLES SHALL BE SHOP DRILLED FOR ALL REQUIRED HOLES (A325 BOLTS AND U-BOLTS).

INSTALL AT EACH STRINGER; APPROXIMATELY 32 LOCATIONS (CONTRACTOR TO FIELD DETERMINE EXACT REQUIRED QUANTITY).



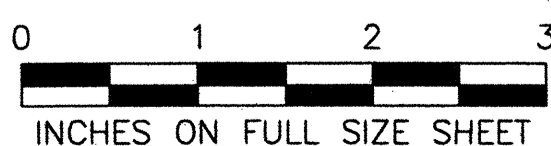
VIEW K-K

SCALE: 1/2" = 1'-0"

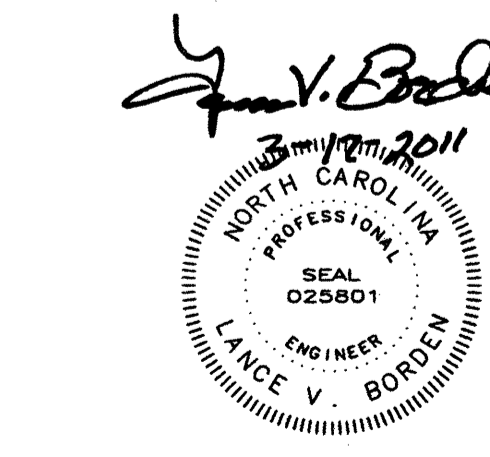
CONDUITS TO NAVIGATION LIGHTS NOT SHOWN.

NOTES:

1. NOTES 1 THRU 7 (INCLUSIVE) ON SHEET EBB SHALL APPLY TO THIS SHEET ALSO.
2. CONTRACTOR SHALL PROVIDE TEMPORARY NAVIGATION LIGHTS AND ASSOCIATED WIRING AS REQUIRED TO MAINTAIN NAVIGATION LIGHTING OF THE BASCULE SPAN LEAVES DURING REPLACEMENT OF THE EXISTING NAVIGATION LIGHTS AND WIRING. SEE GENERAL NOTE 1.16 ON SHEET EB1.

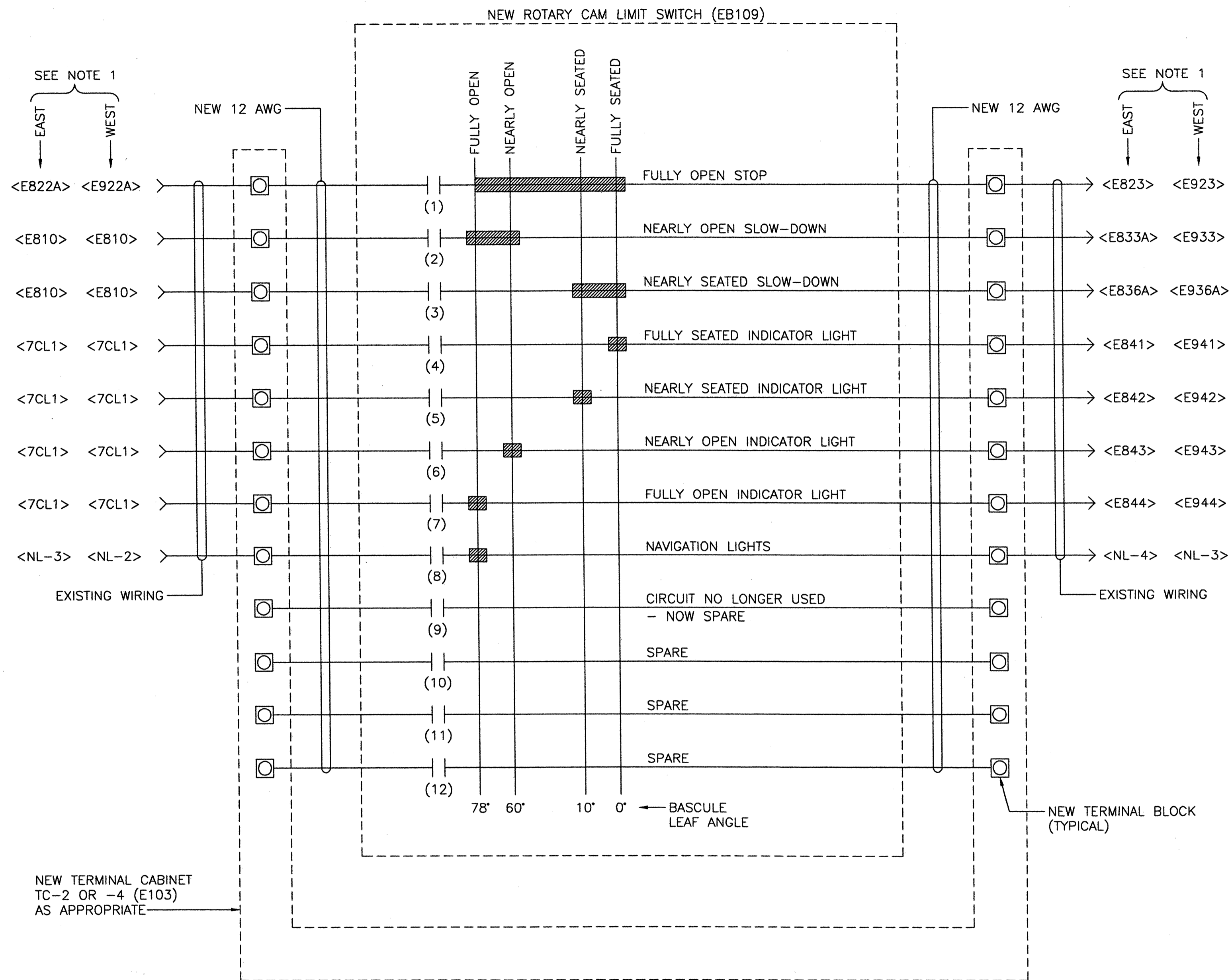


35-ENG-EPD.DWG



EB9

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| STATE OF NORTH CAROLINA | | | | | |
| DEPARTMENT OF TRANSPORTATION | | | | | |
| RALEIGH | | | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | | | |
| ELECTRICAL PLANS AND DETAILS - 7 | | | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 | DRAWN BY | N.E. ALGER |
| CHECKED | Q.C. TON | SCALE | AS NOTED | | |
| | | CHECKED | Q.C. TON | DRAWING NO. | 35 OF 63 |

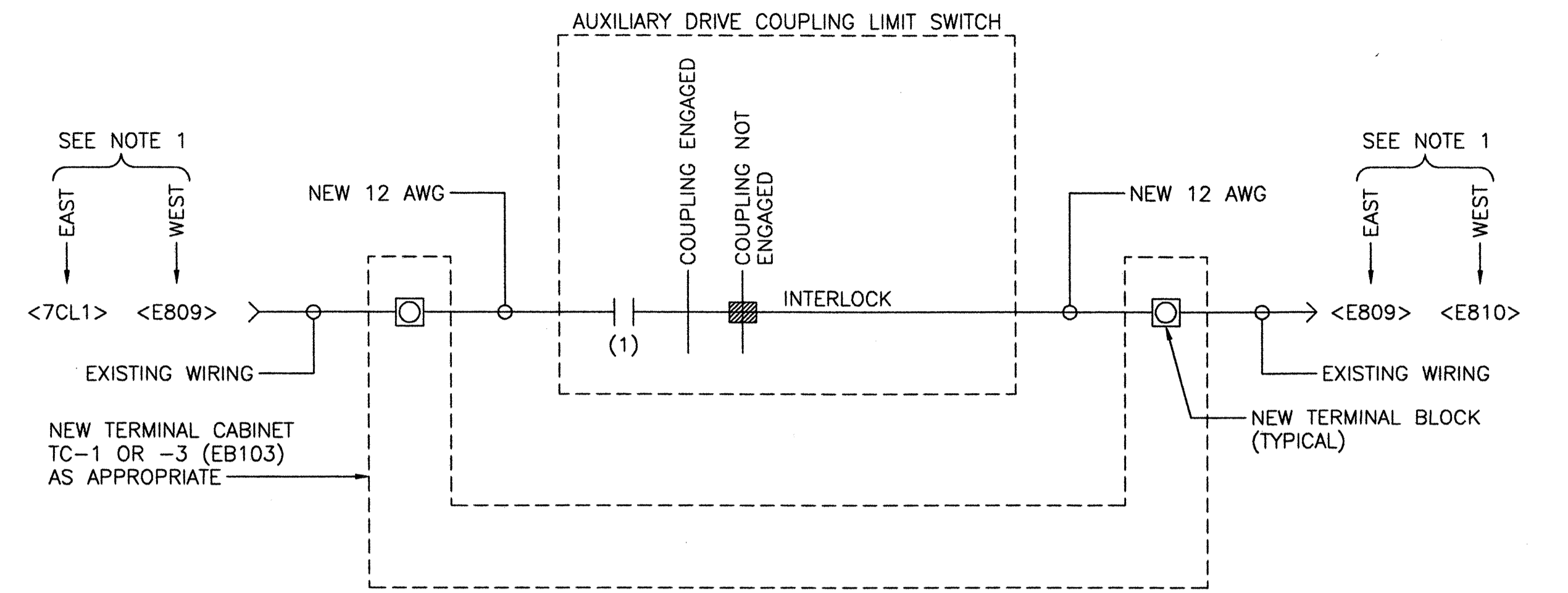


TYPICAL WIRING - NEW ROTARY CAM LIMIT SWITCHES

SCALE: NONE

NOTES:

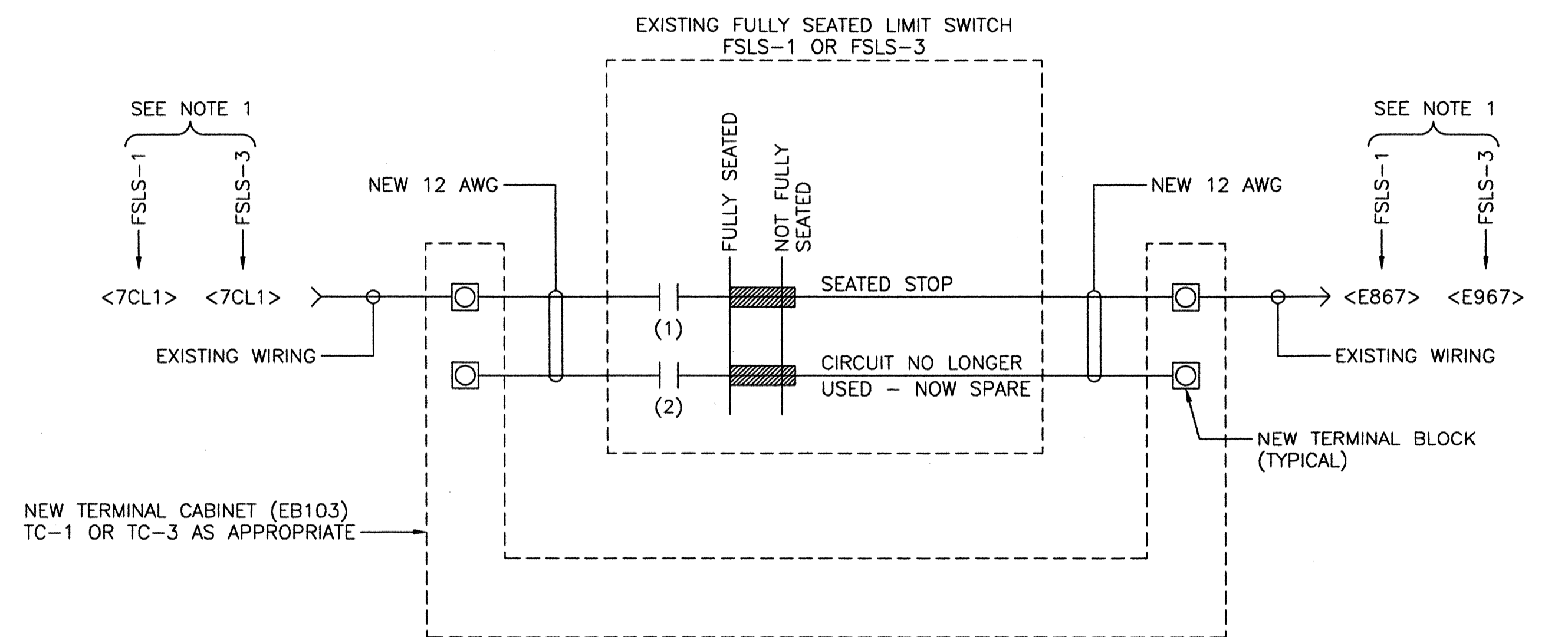
1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.



TYPICAL WIRING - AUXILIARY DRIVE COUPLING LIMIT SWITCH

SCALE: NONE

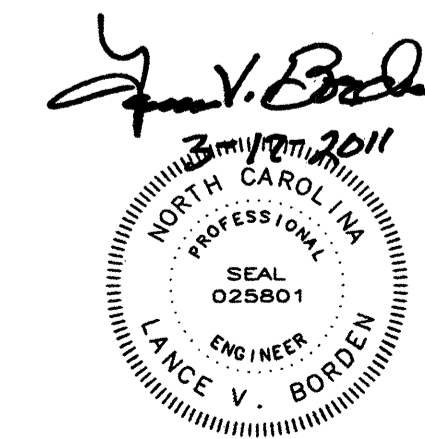
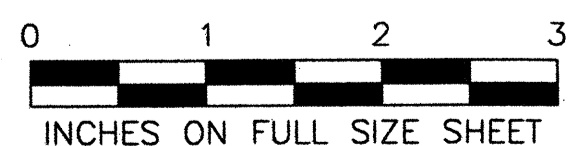
LIMIT SWITCHES ARE PROVIDED WITH AUXILIARY DRIVE COUPLING ASSEMBLIES; SEE MECHANICAL PLANS.



TYPICAL WIRING - FULLY SEATED LIMIT SWITCHES

SCALE: NONE

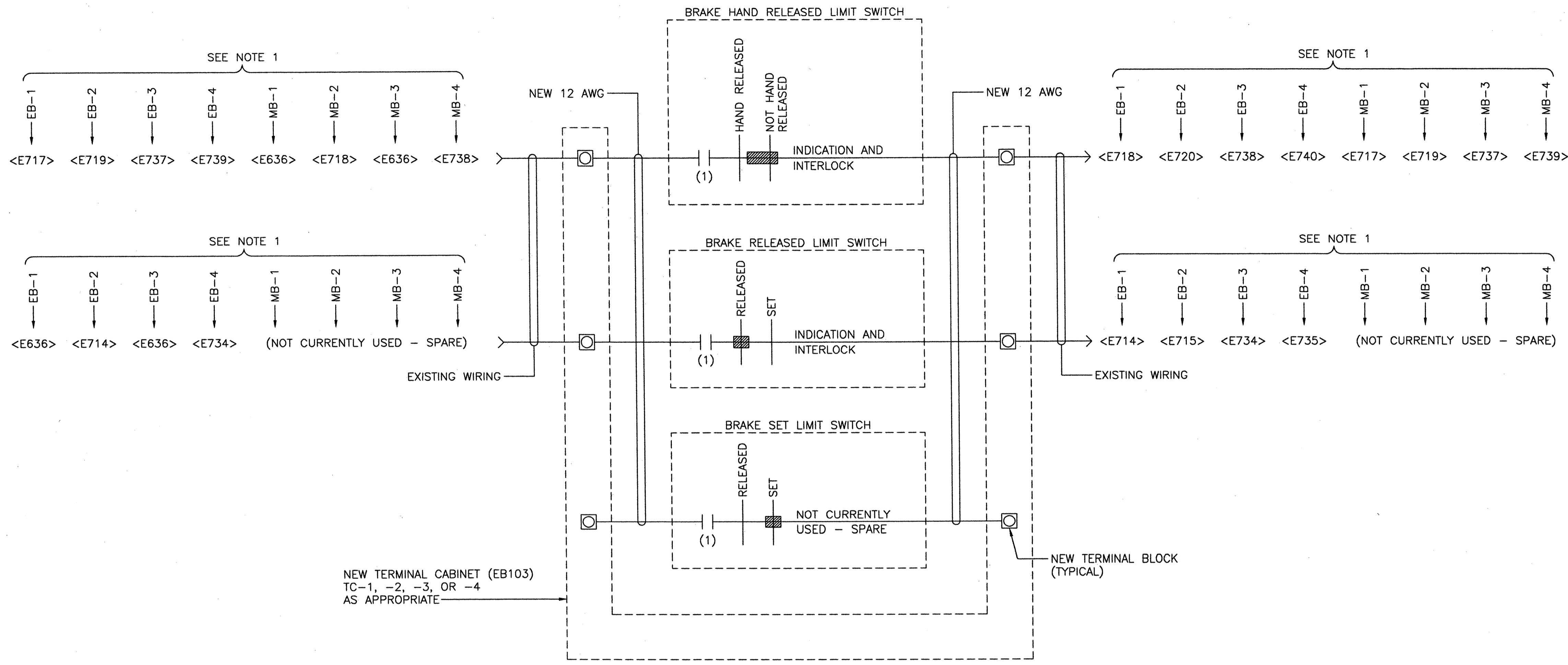
ONLY LIMIT SWITCHES FLS-1 AND FLS-3 ARE TO REMAIN AND BE RE-WIRED; LIMIT SWITCHES FLS-2 AND FLS-4 ARE TO BE REMOVED.



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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL SCHEMATICS - 1 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 36 OF 63 |

EB10

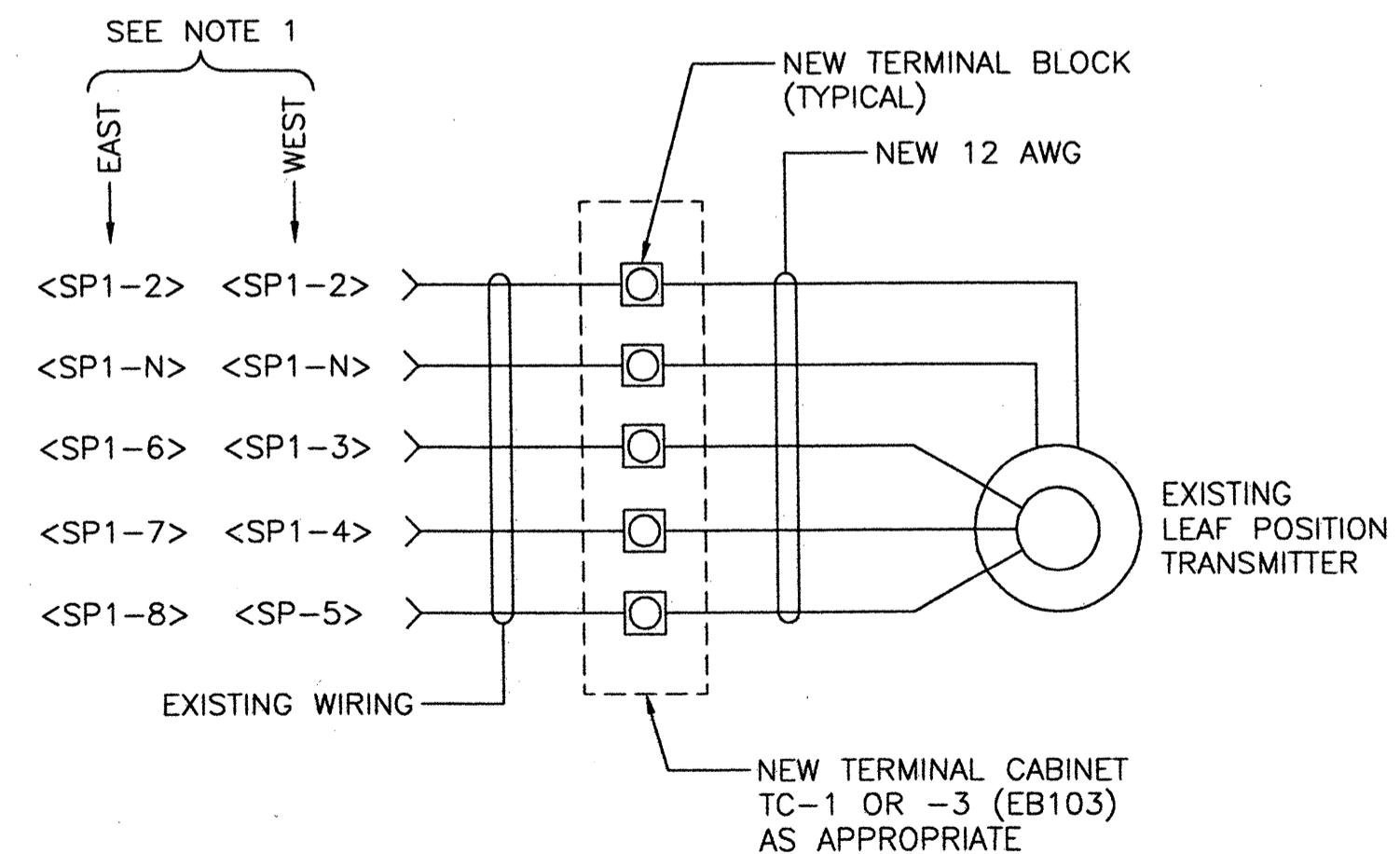
36-EB10-ES1.DWG



TYPICAL WIRING - BRAKE LIMIT SWITCHES

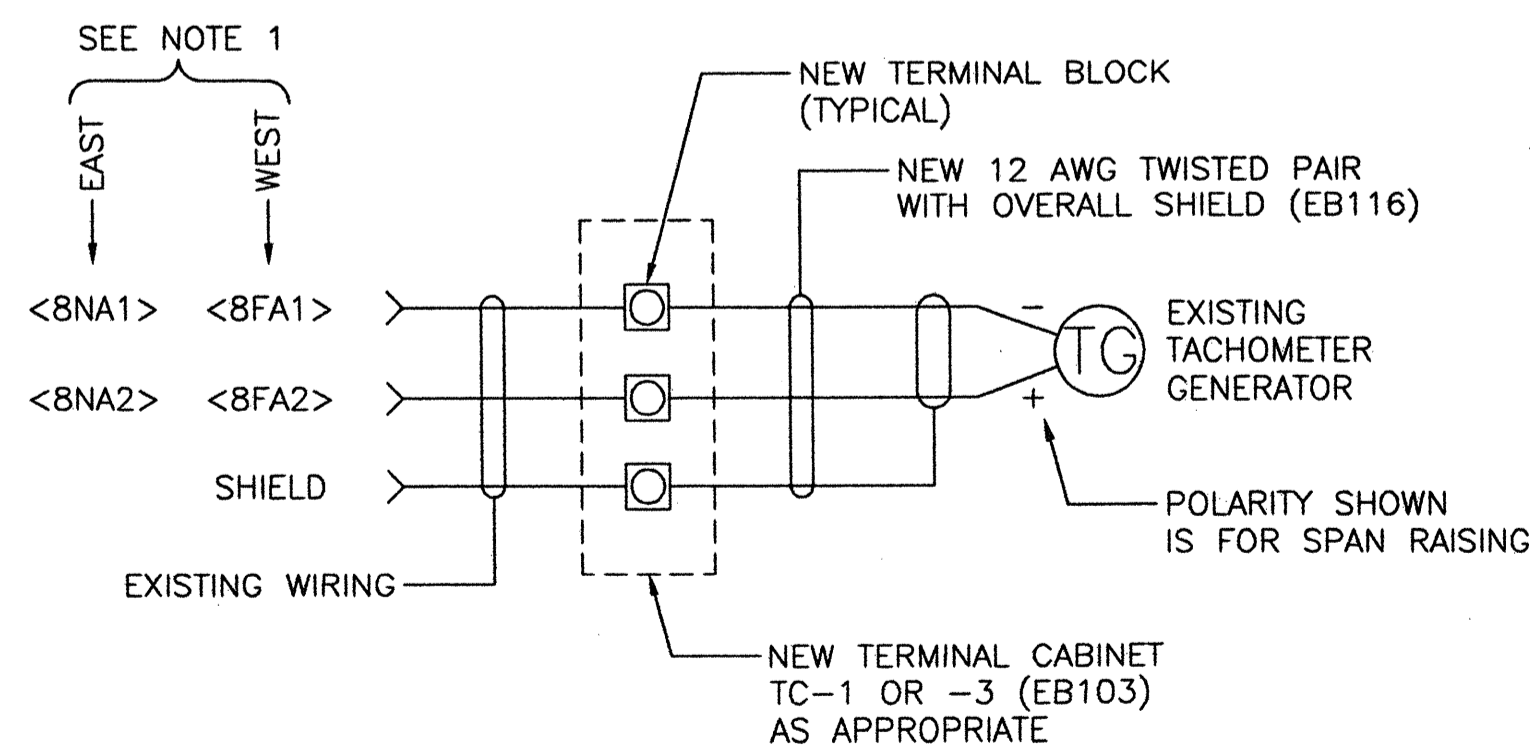
SCALE: NONE

LIMIT SWITCHES ARE PROVIDED WITH BRAKES; SEE MECHANICAL PLANS.



TYPICAL WIRING - LEAF POSITION TRANSMITTERS

SCALE: NONE

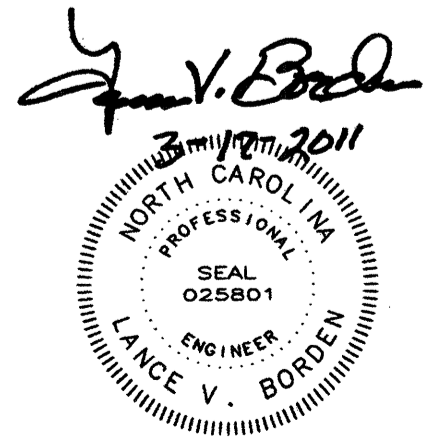
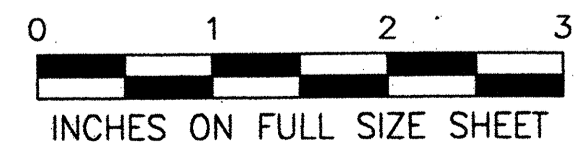


TYPICAL WIRING - TACHOMETERS

SCALE: NONE

NOTES:

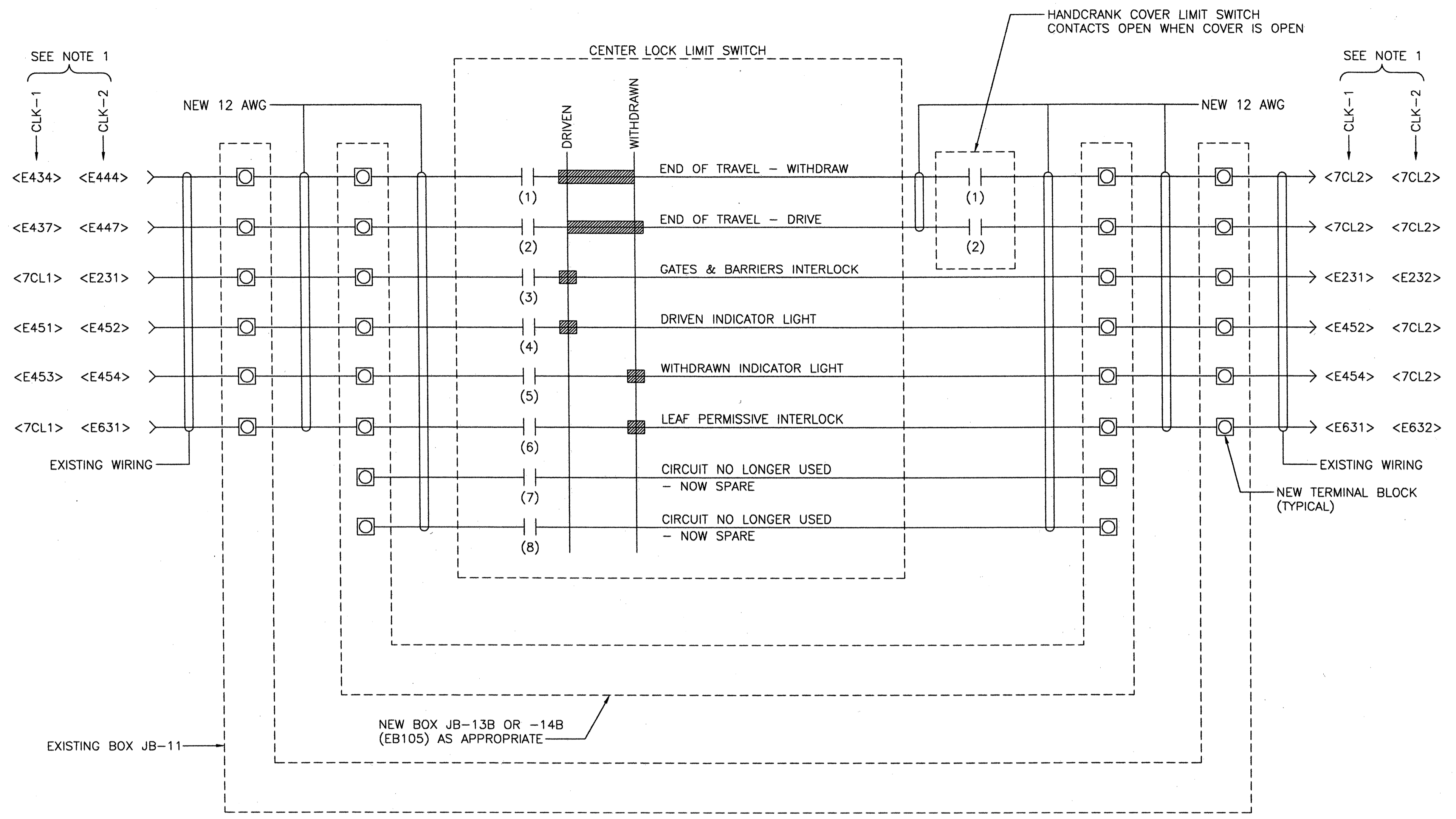
1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.



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| STATE OF NORTH CAROLINA | | | |
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| WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL SCHEMATICS - 2 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 37 OF 63 |

EB11

37-EB11-ES2.DWG



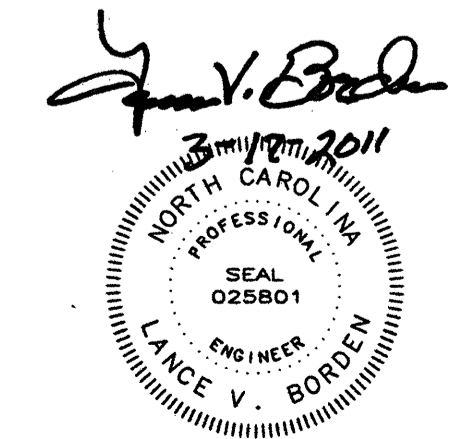
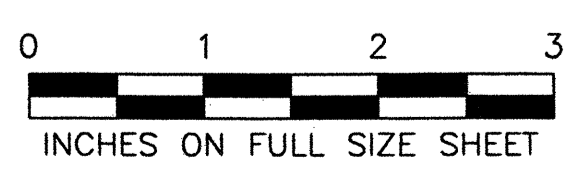
TYPICAL WIRING - CENTER LOCK LIMIT SWITCHES

SCALE: NONE

LIMIT SWITCHES ARE PROVIDED WITH CENTER LOCK ASSEMBLIES; SEE MECHANICAL PLANS.

NOTES:

1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.

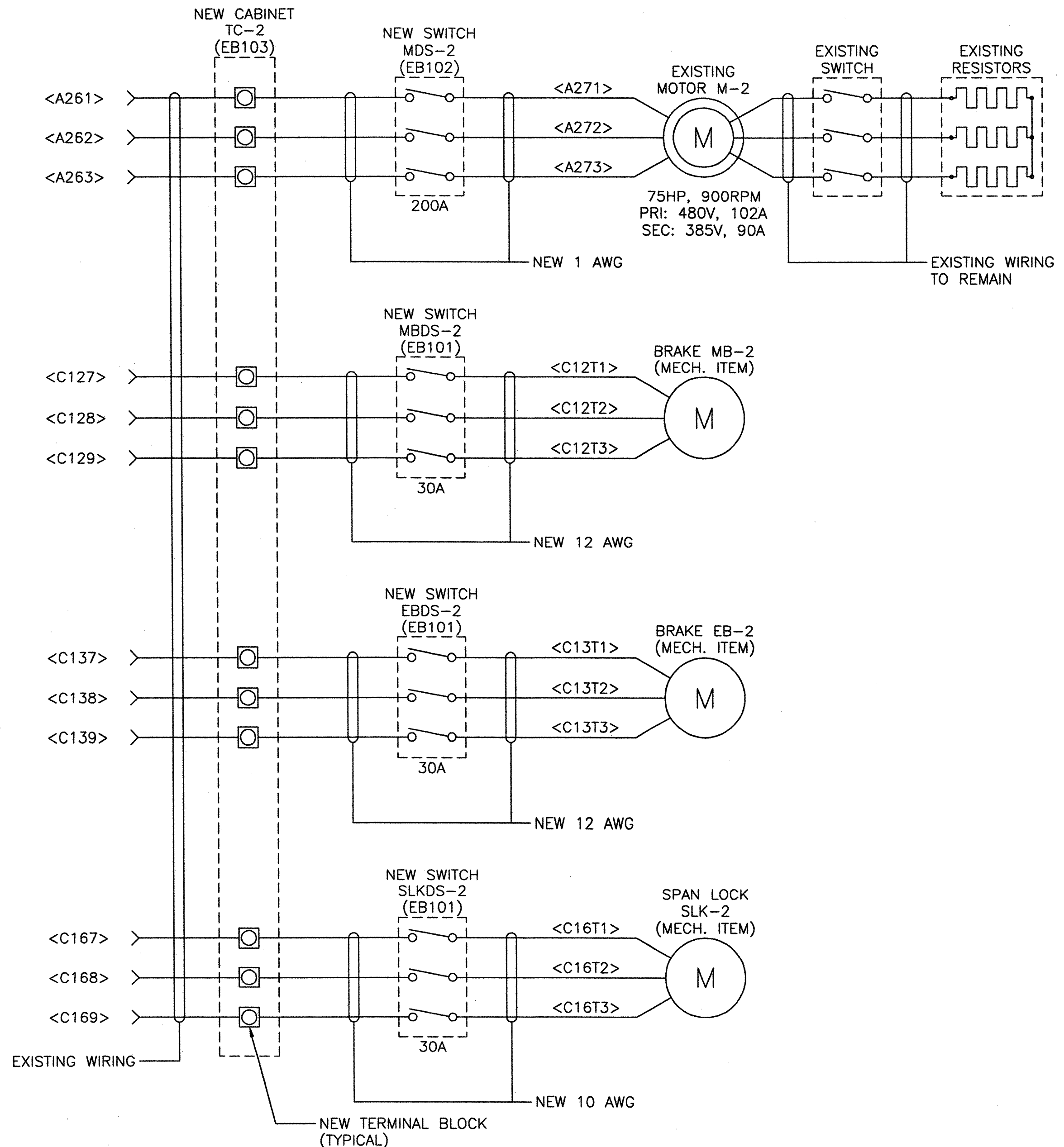
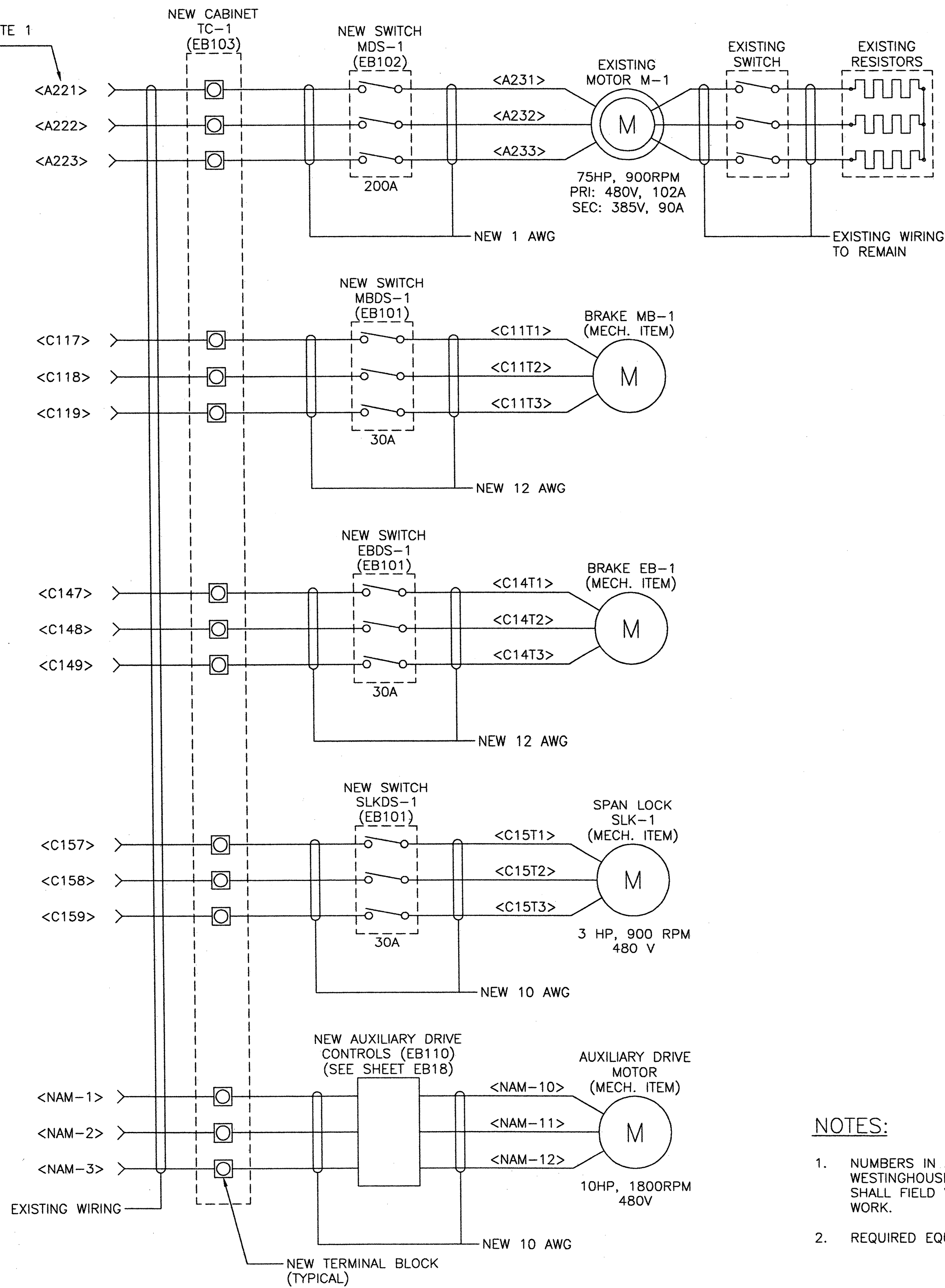


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 CAPE FEAR BASCULE BRIDGE
 AND MEMORIAL LIFT BRIDGE
 WILMINGTON, NORTH CAROLINA
 ELECTRICAL SCHEMATICS - 3

| | | | | | |
|----------|------------|----------|------------|-------------|------------|
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON | DRAWING NO. | 38 OF 63 |
| DRAWN BY | | | N.E. ALGER | | |
| SCALE | | | AS NOTED | | |

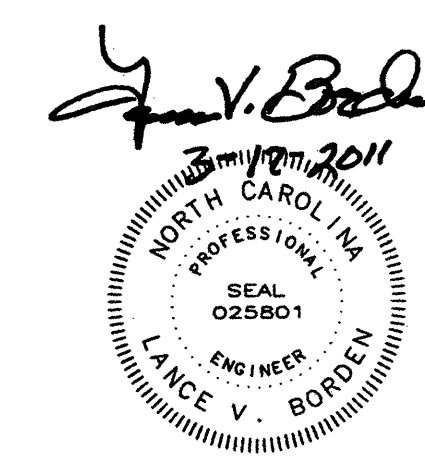
3B-EB12-ESS.DWG

SEE NOTE 1 (TYP.)

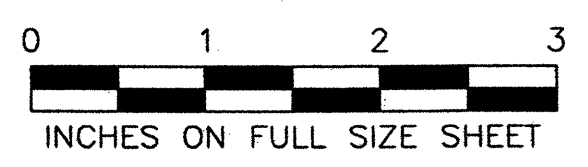


NOTES:

1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.



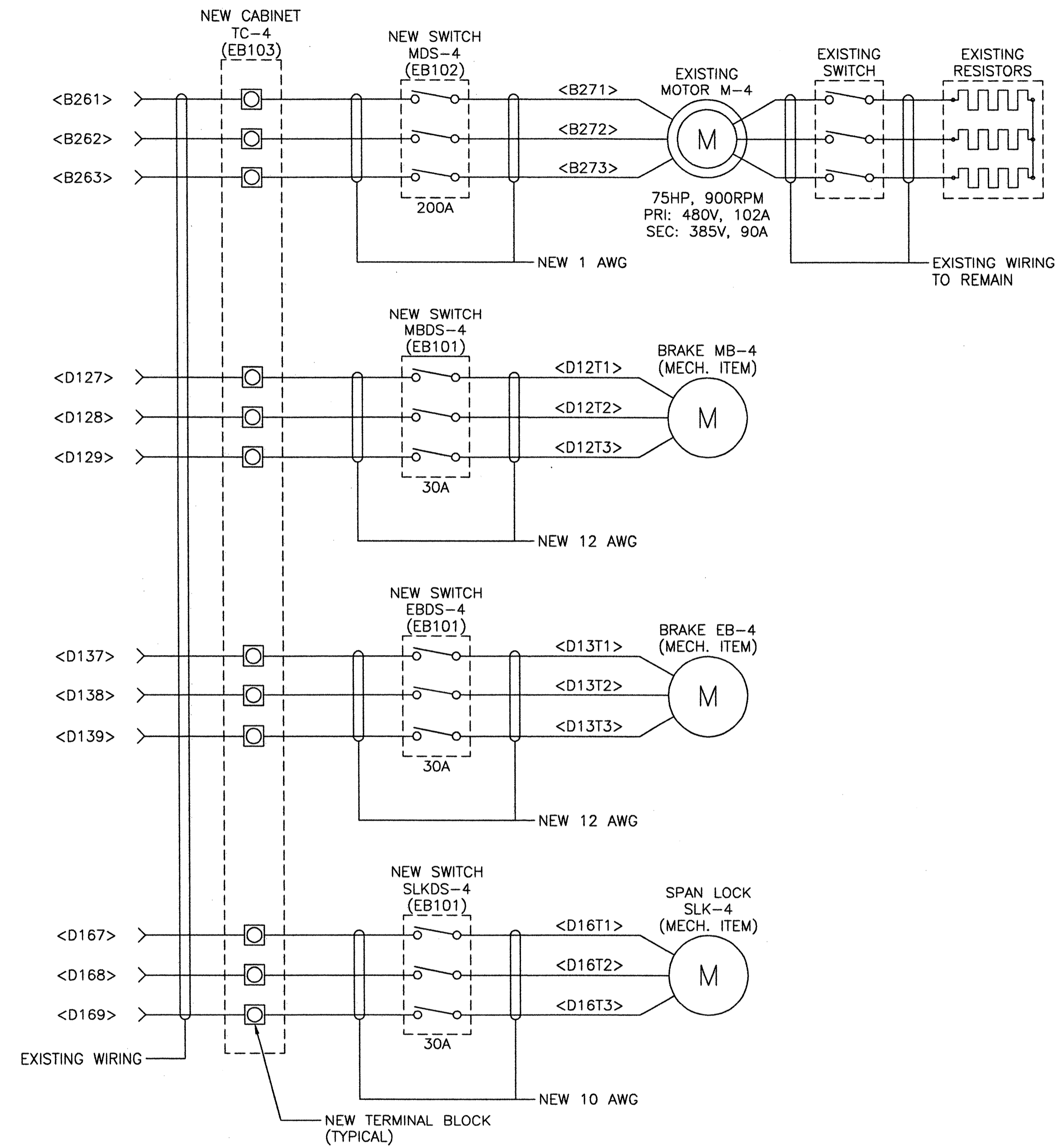
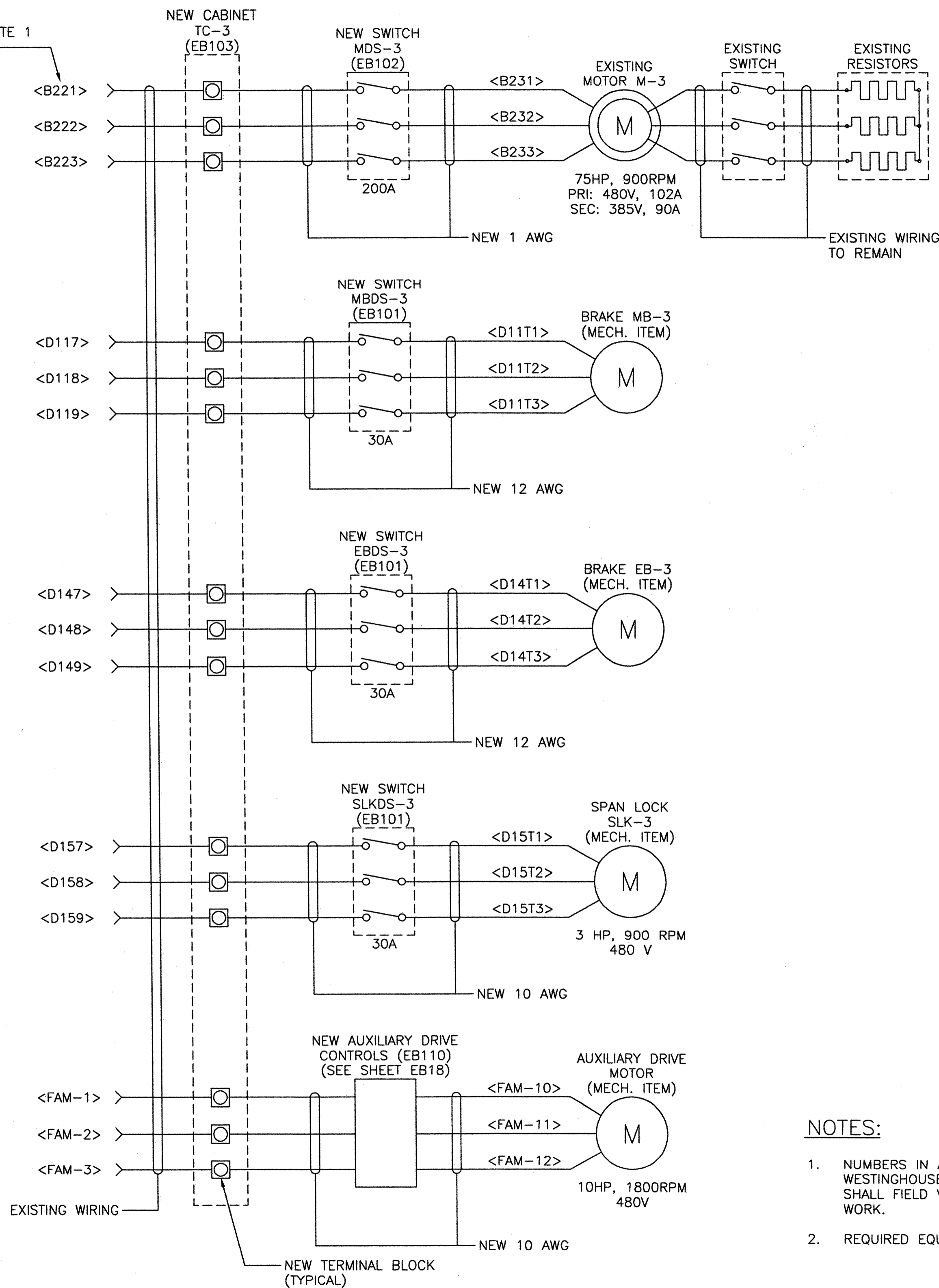
| | | | |
|--|------------|-------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL SCHEMATICS - 5 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 40 OF 63 |



40-EB14-ESS.DWG

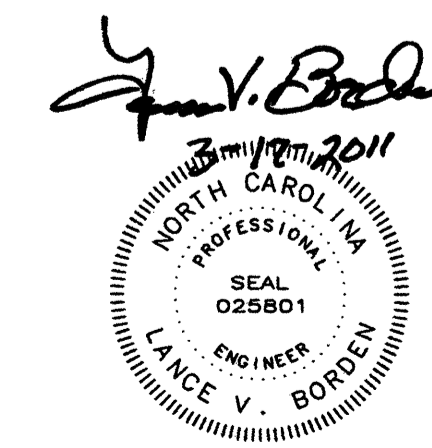
EB14

SEE NOTE 1
(TYP.)

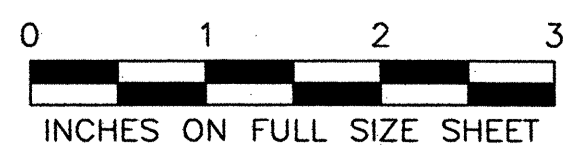


NOTES:

- NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
- REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.

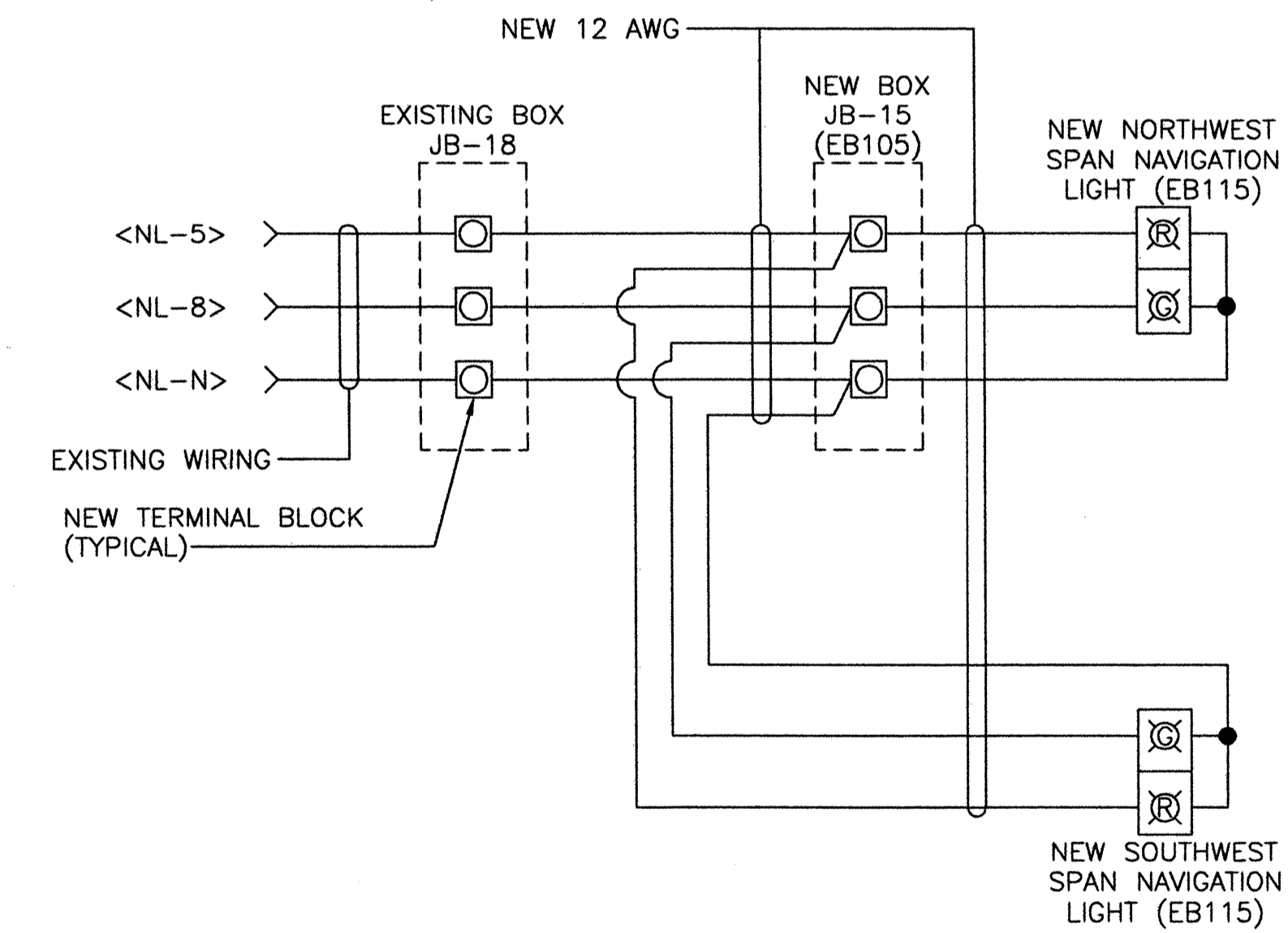
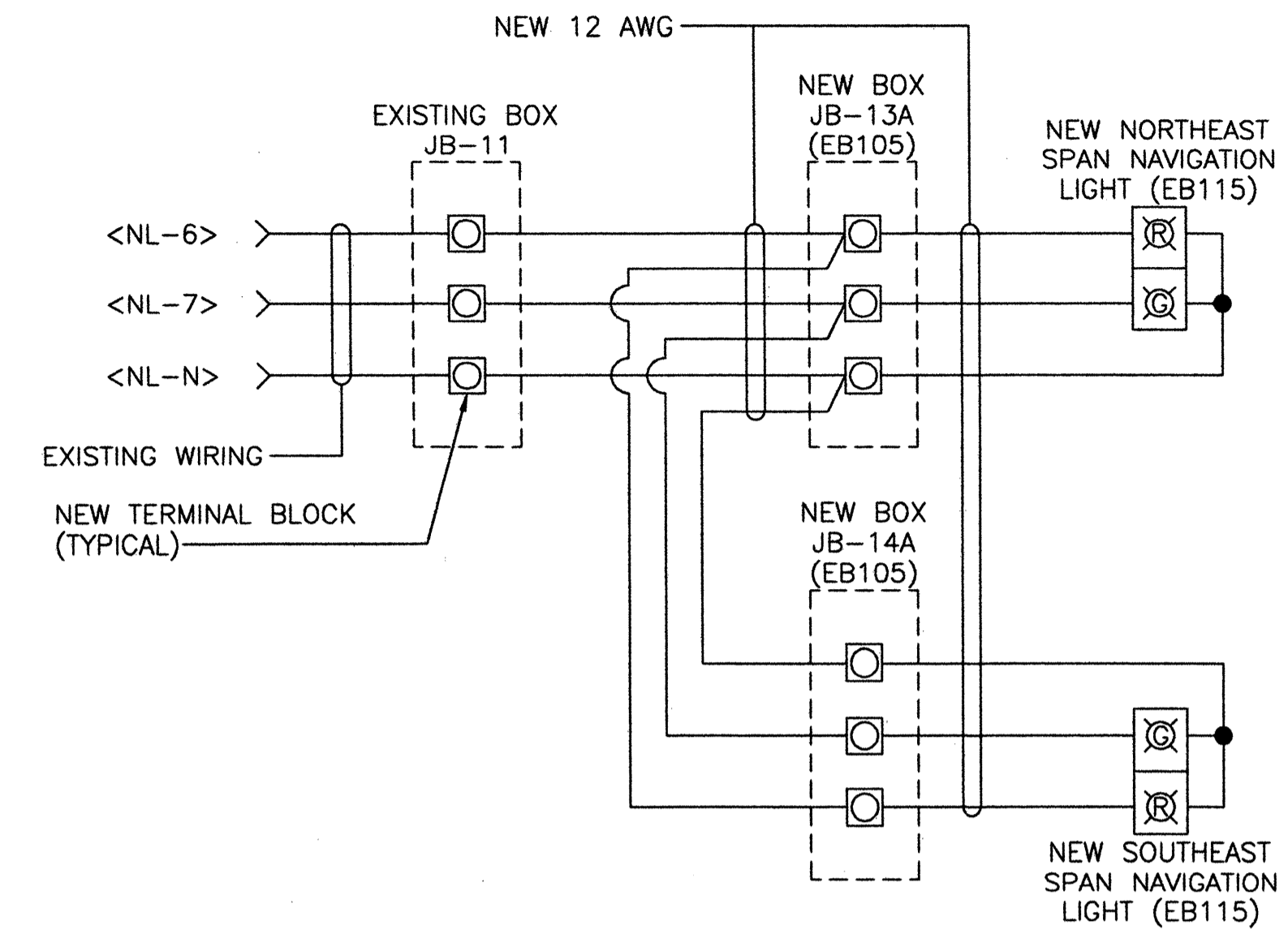
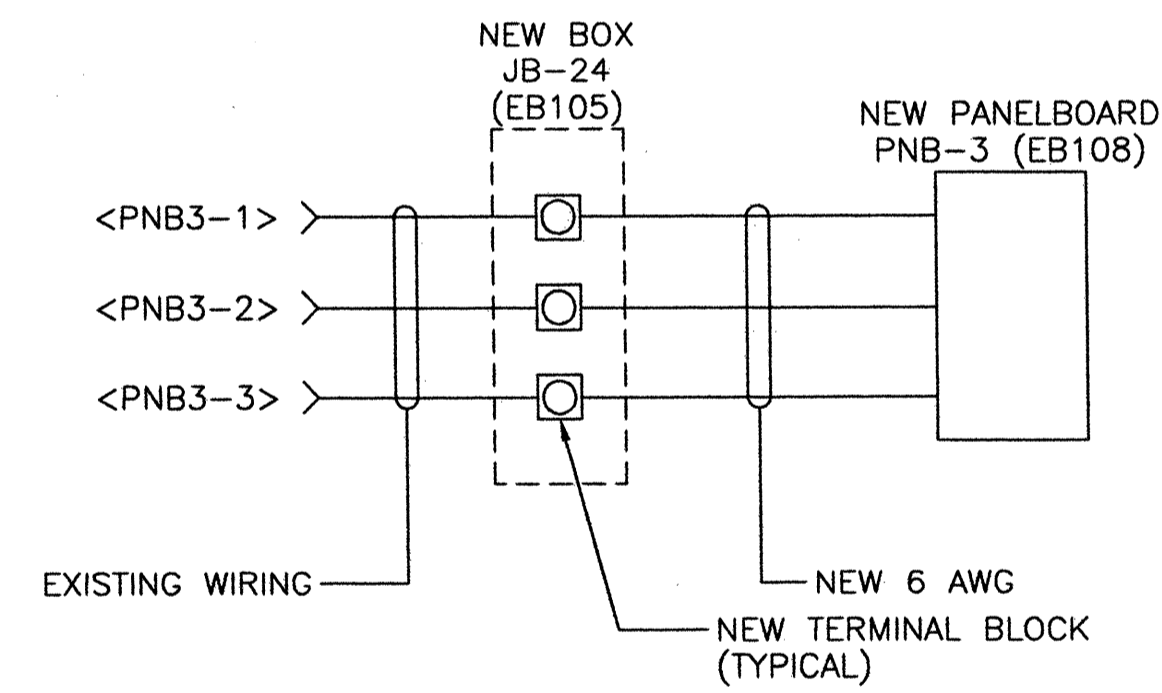
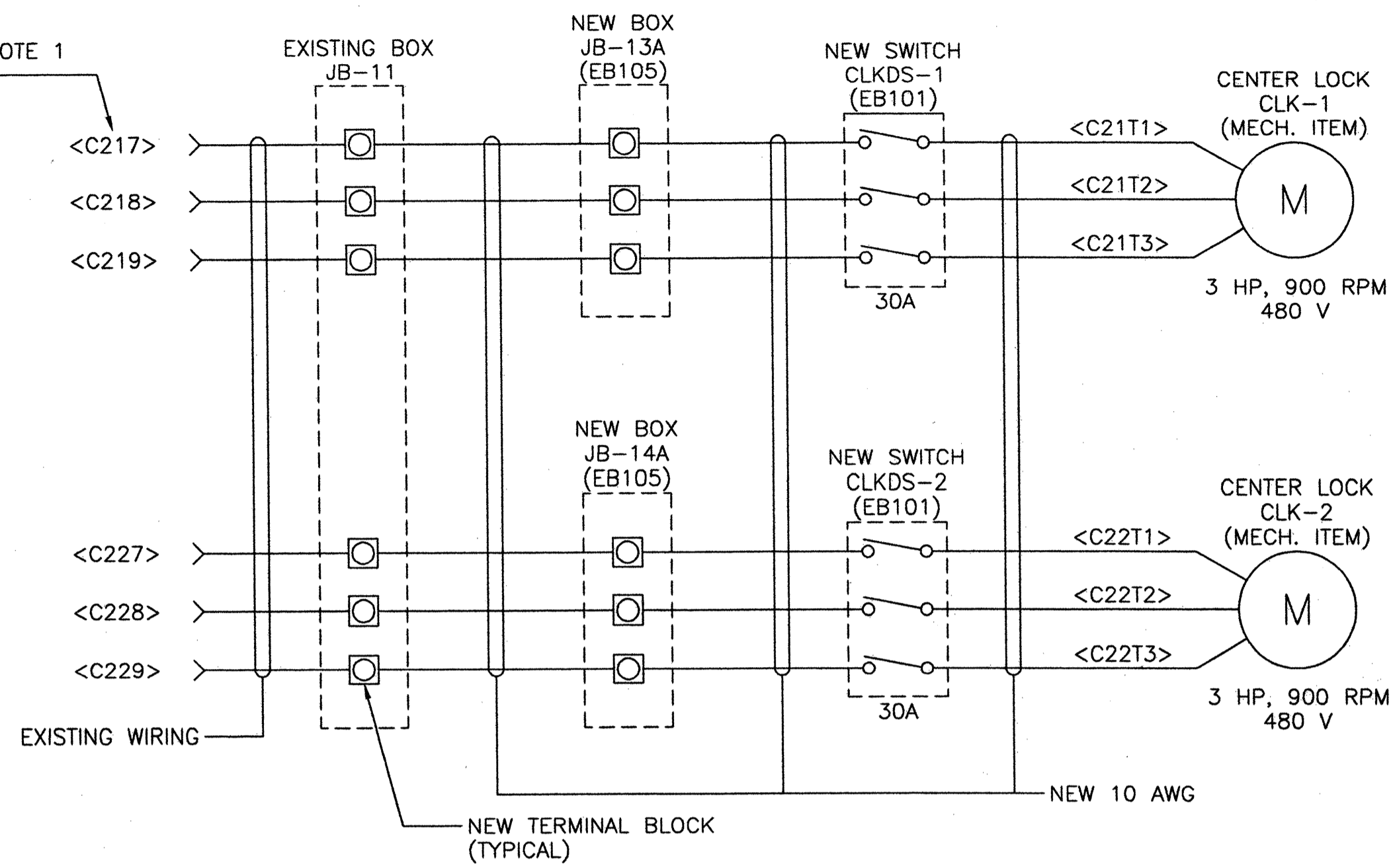


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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL SCHEMATICS - 6 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 41 OF 63 |



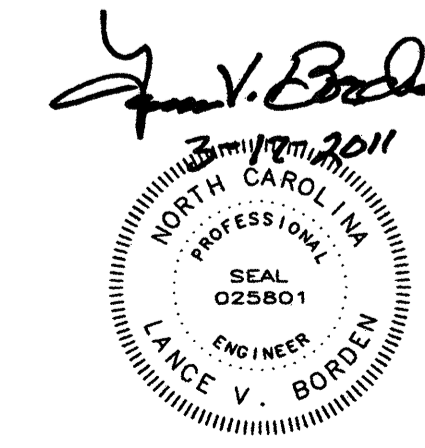
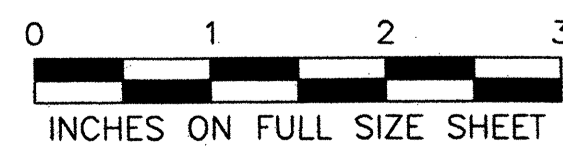
41-EB15-ES56.DWG

SEE NOTE 1
(TYP.)



NOTES:

1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.



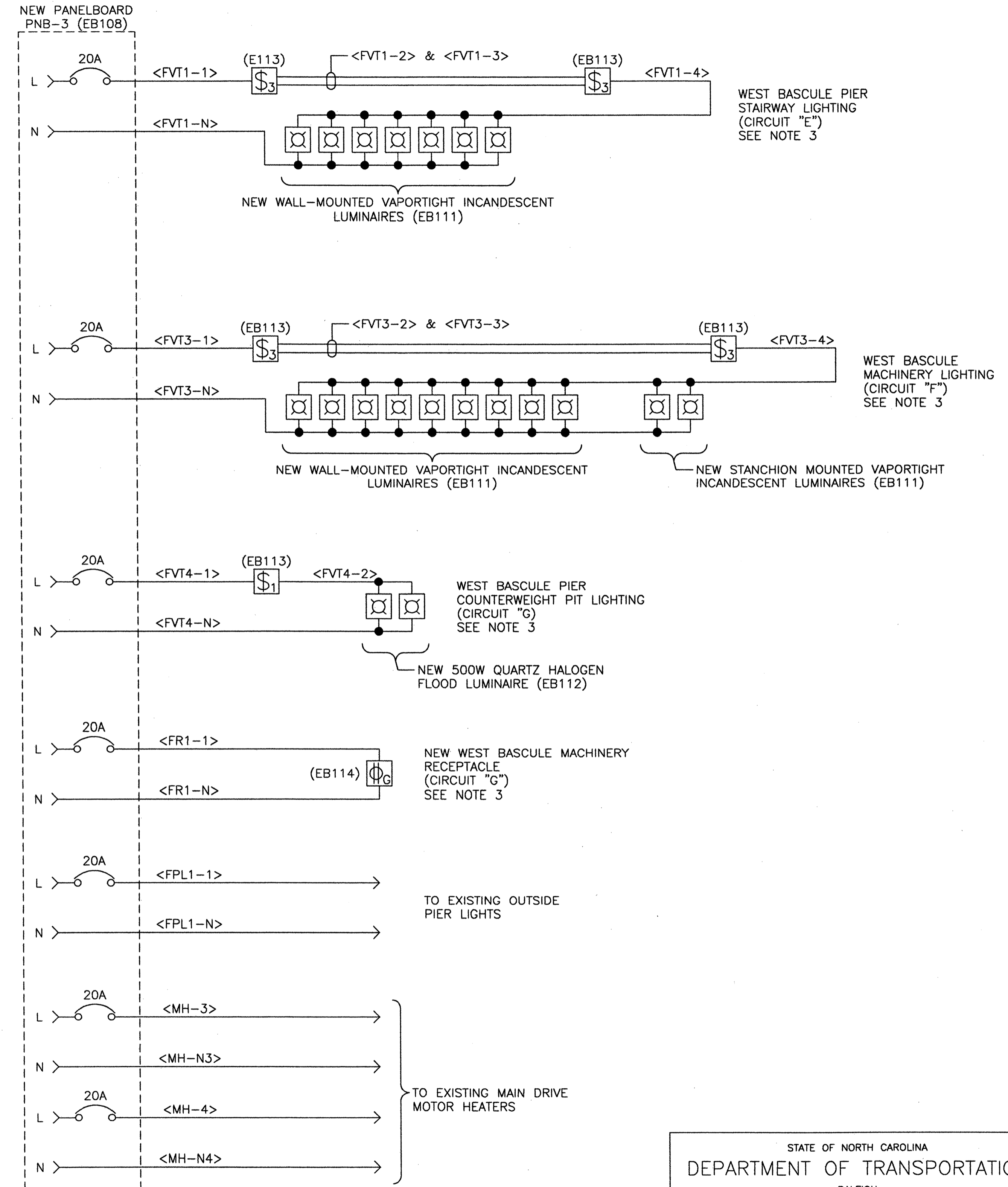
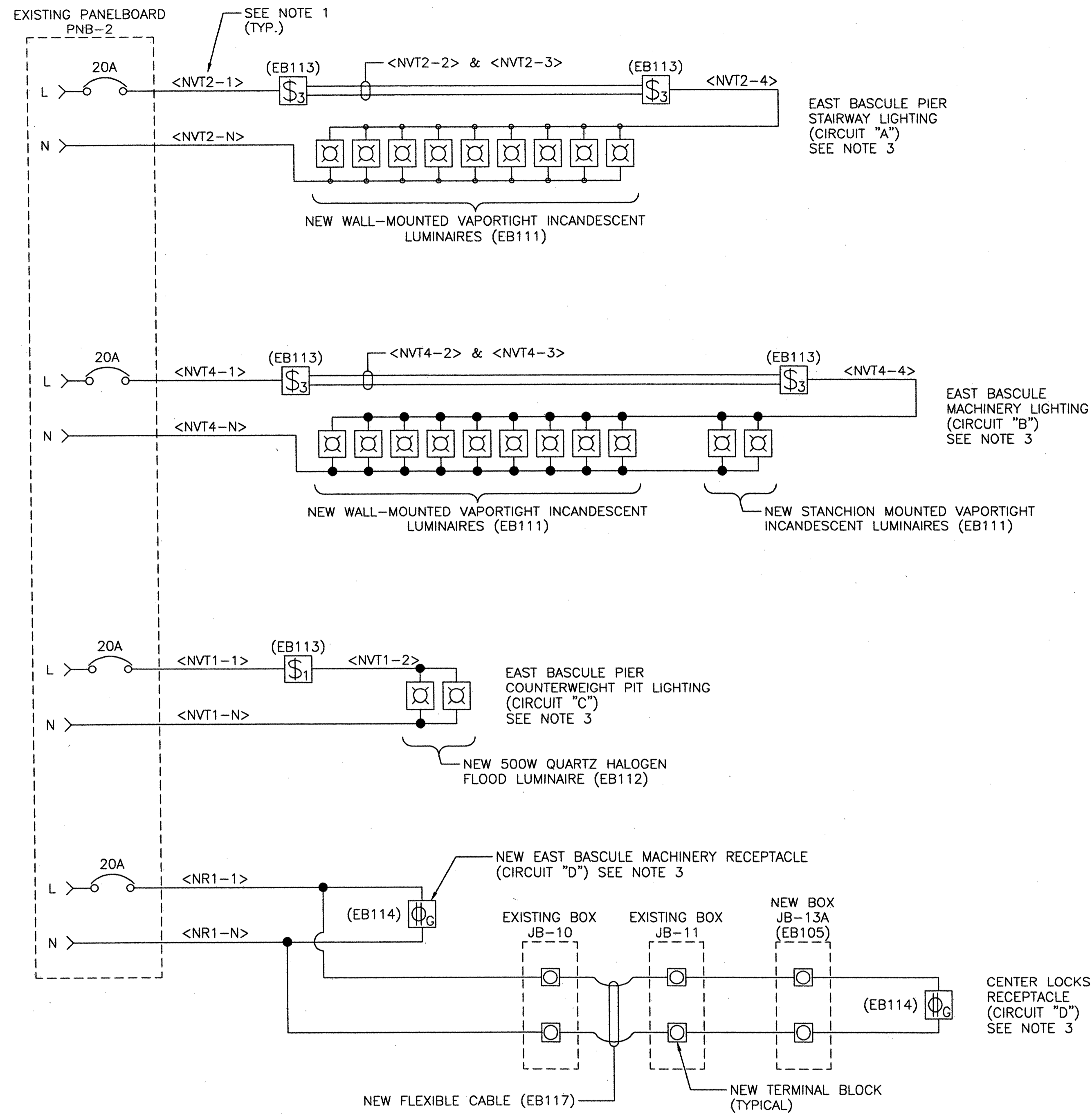
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA

ELECTRICAL SCHEMATICS - 7

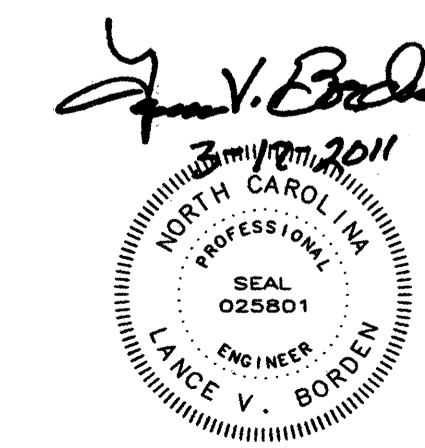
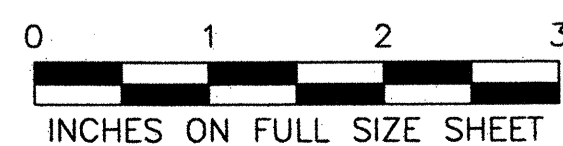
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|----------|------------|----------|------------|-------------|------------|
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON | DRAWING NO. | 42 OF 63 |

EB16



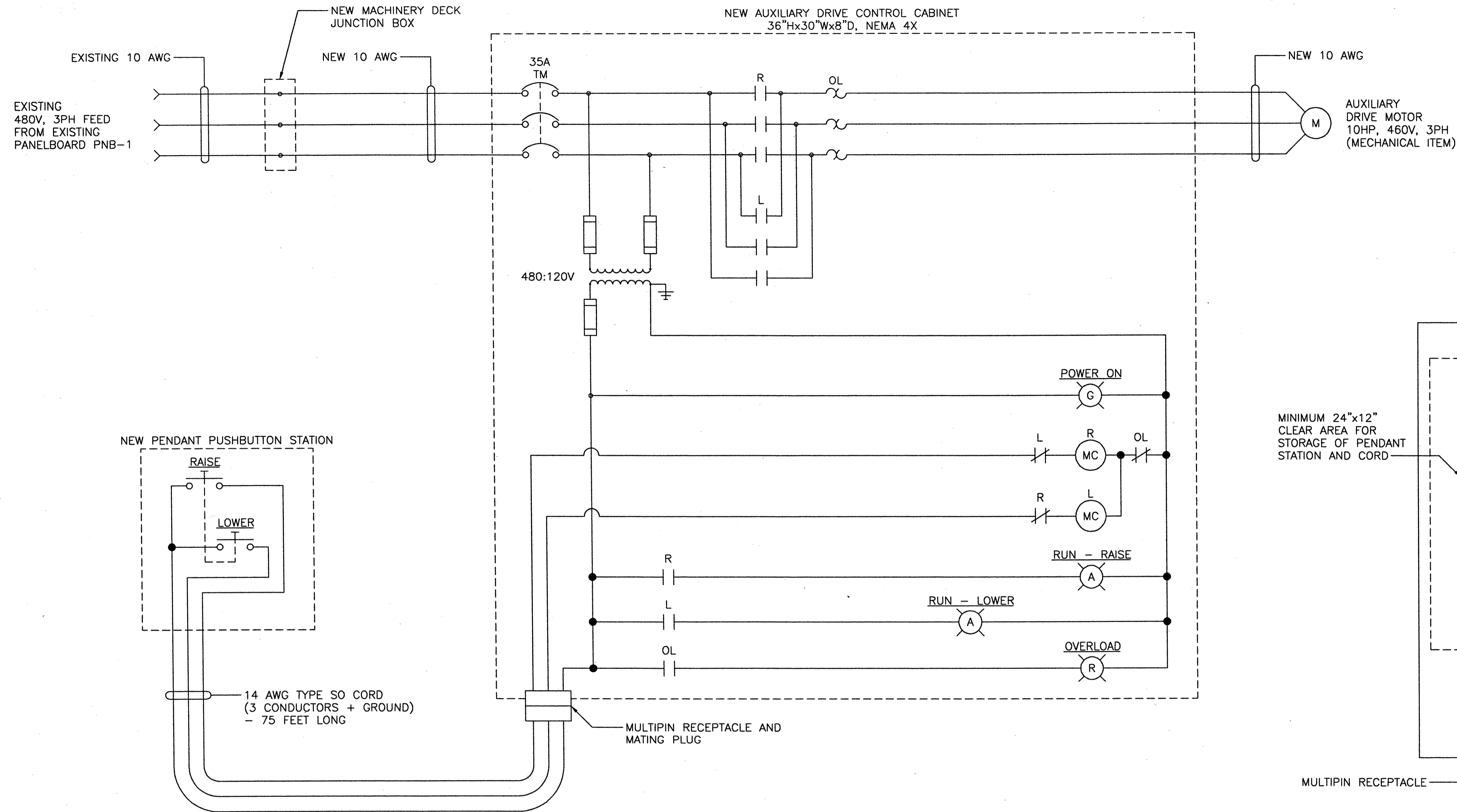
NOTES:

1. NUMBERS IN ANGLE BRACKETS ARE EXISTING WIRE NUMBERS BASED ON WESTINGHOUSE ELECTRICAL SYSTEM SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY NUMBERING BEFORE PROCEEDING WITH ANY RELATED WORK.
2. REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.
3. ALL WIRING FOR LIGHTING AND RECEPTACLE CIRCUITS IS NEW, MINIMUM 12 AWG.



| | | | |
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| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL SCHEMATICS - 8 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 43 OF 63 |

EB17

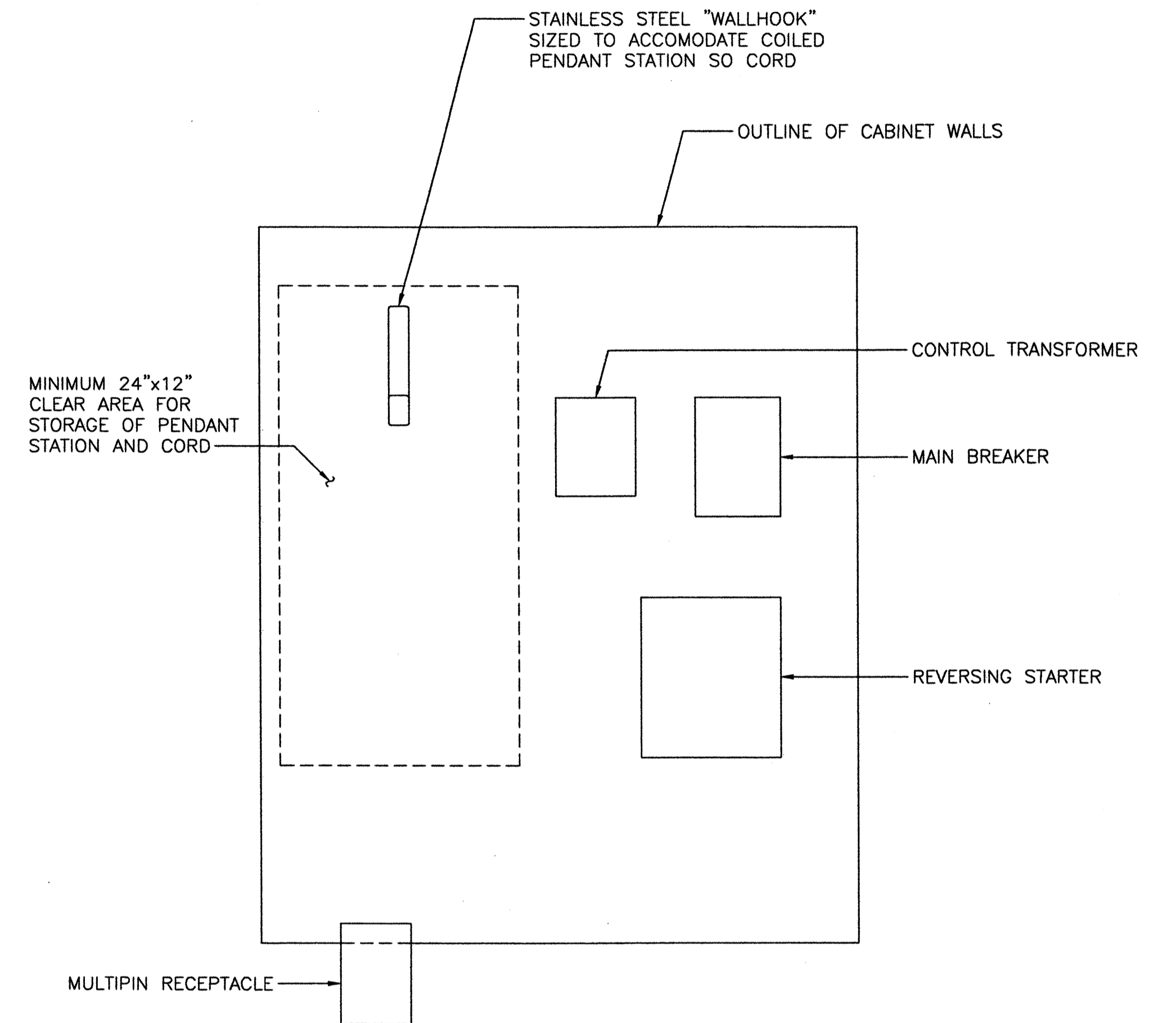


NEW AUXILIARY DRIVE CONTROL - SCHEMATIC

SCALE: NONE

TYPICAL NEW NEARSHORE AND FARSHORE CONTROLS.

(EB110)



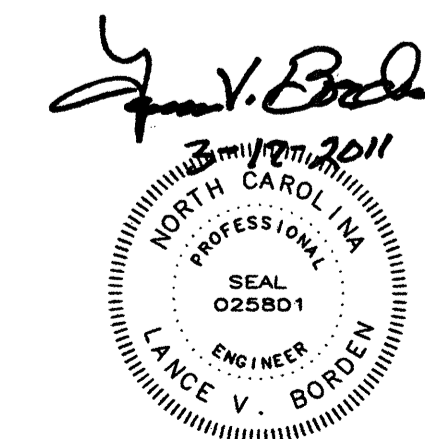
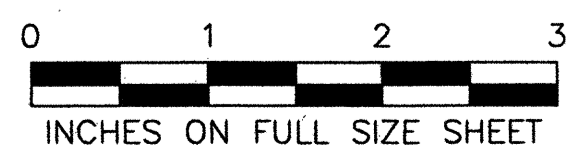
NEW AUXILIARY DRIVE CONTROL - CABINET LAYOUT

SCALE: NONE

TYPICAL NEW NEARSHORE AND FARSHORE CONTROLS.

NOTES:

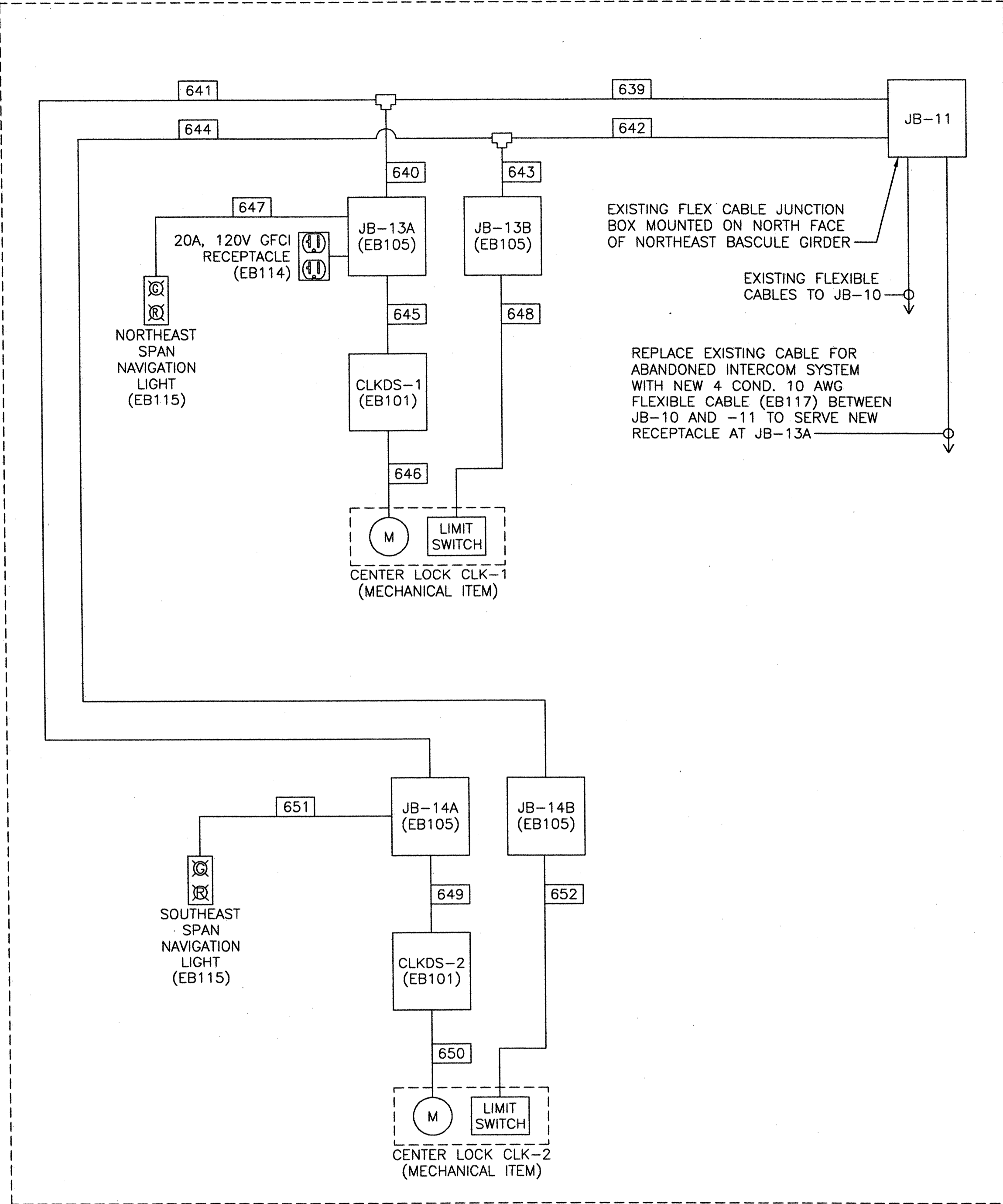
- CONTROLS FOR THE NEARSHORE AUXILIARY DRIVE ARE SHOWN. CONTROLS FOR THE FARSHORE AUXILIARY DRIVE ARE SIMILAR.
- ALL ITEMS SHOWN ARE NEW, EXCEPT FOR THE AUXILIARY DRIVE MOTOR.
- REQUIRED EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN.
- ALL WIRING, INCLUDING CABINET INTERNAL WIRING, SHALL BE TYPE XHHW-2. MINIMUM SIZE SHALL BE 14 AWG.
- CIRCUIT BREAKER SHALL BE THERMAL-MAGNETIC MOLDED CASE TYPE. STARTER SHALL BE FULL VOLTAGE REVERSING TYPE, NEMA SIZE 1. PILOT LIGHTS SHALL BE 30MM, TYPE 4/4X/13, PUSH-TO-TEST, WITH LED LAMPS. PILOT LIGHTS SHALL BE MOUNTED ON THE CABINET COVER. TERMINAL BLOCKS SHALL BE HEAVY DUTY, PHENOLIC INSULATED, WITH BOX TYPE LUGS. CABINET SHALL BE NEMA 4X TYPE 316 STAINLESS STEEL WITH FLANGE MOUNTED OPERATOR FOR MAIN BREAKER. CABINET SHALL BE PROVIDED WITH BREATHER AND DRAIN.
- PENDANT PUSHBUTTON STATION SHALL BE RATED NEMA 4X, WITH TWO MECHANICALLY INTERLOCKED PUSHBUTTONS.
- MULTIPIN RECEPTACLE AND MATING PLUG SHALL CONSIST OF SPRING LOADED SILVER-NICKEL CONTACTS IN POLYESTER HOUSINGS RATED NEMA 4X. A LATCHING PAWL SHALL HOLD THE RECEPTACLE AND PLUG TOGETHER WHEN ENGAGED. RECEPTACLE SHALL BE EQUIPPED WITH A FLIP-OPEN COVER AND BE MOUNTED IN THE BOTTOM WALL OF THE CABINET. PLUG SHALL BE MOUNTED IN A POLYESTER HANDLE ON THE END OF THE PENDANT STATION SO CORD.



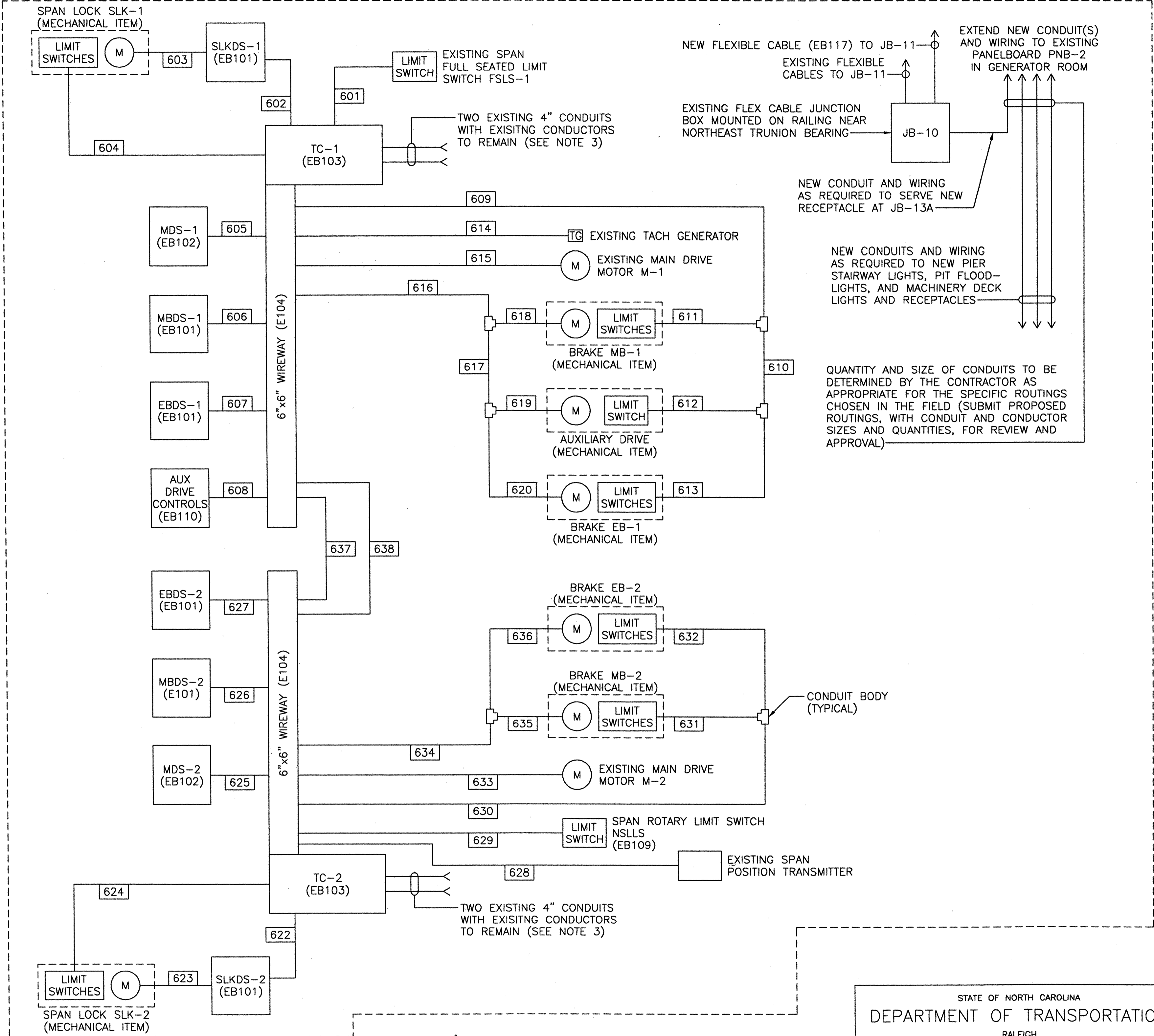
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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| NEW AUXILIARY DRIVE CONTROLS | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON |
| DRAWN BY | | N.E. ALGER | |
| SCALE | | AS NOTED | |
| DRAWING NO. 44 OF 63 | | | |

44-EB18-WDC.DWG

EAST BASCULE LEAF



EAST BASCULE PIER (PIER E1)

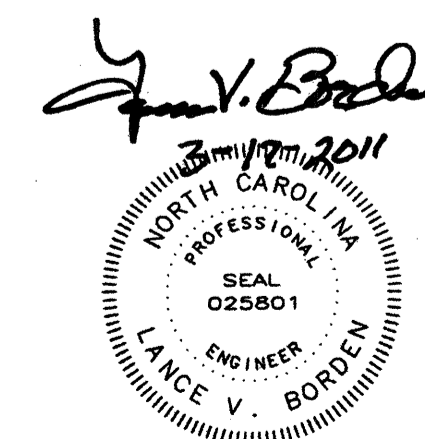
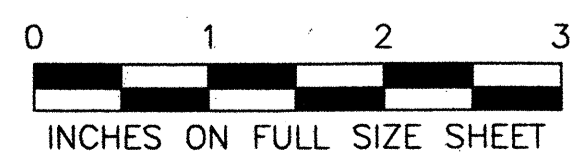


NOTES:

1. THIS LAYOUT IS DIAGRAMMATIC, AND IS NOT INTENDED TO SHOW CONDUIT AND/OR EQUIPMENT IN THEIR EXACT PHYSICAL LOCATIONS OR RELATIONSHIPS.
2. ALL CONDUITS AND EQUIPMENT SHOWN ON THIS SHEET ARE NEW EXCEPT AS NOTED.
3. THE EXISTING CONDUCTORS ENTERING TERMINAL CABINETS TC-1 AND -2 VIA THE EXISTING 4" CONDUITS ARE TO REMAIN AND BE CONNECTED TO THE NEW WIRING ACCORDING TO THEIR EXISTING CONNECTIONS.

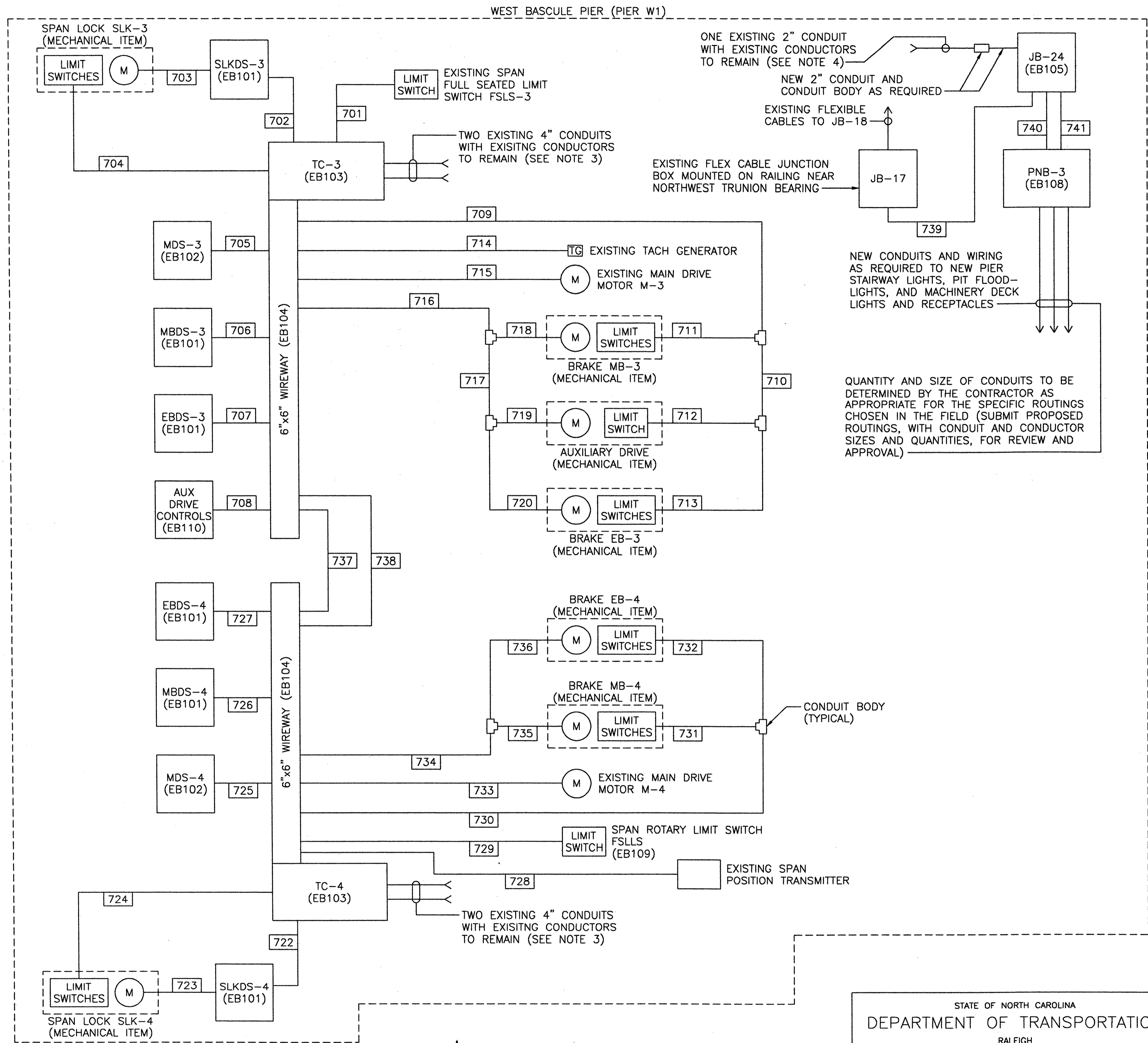
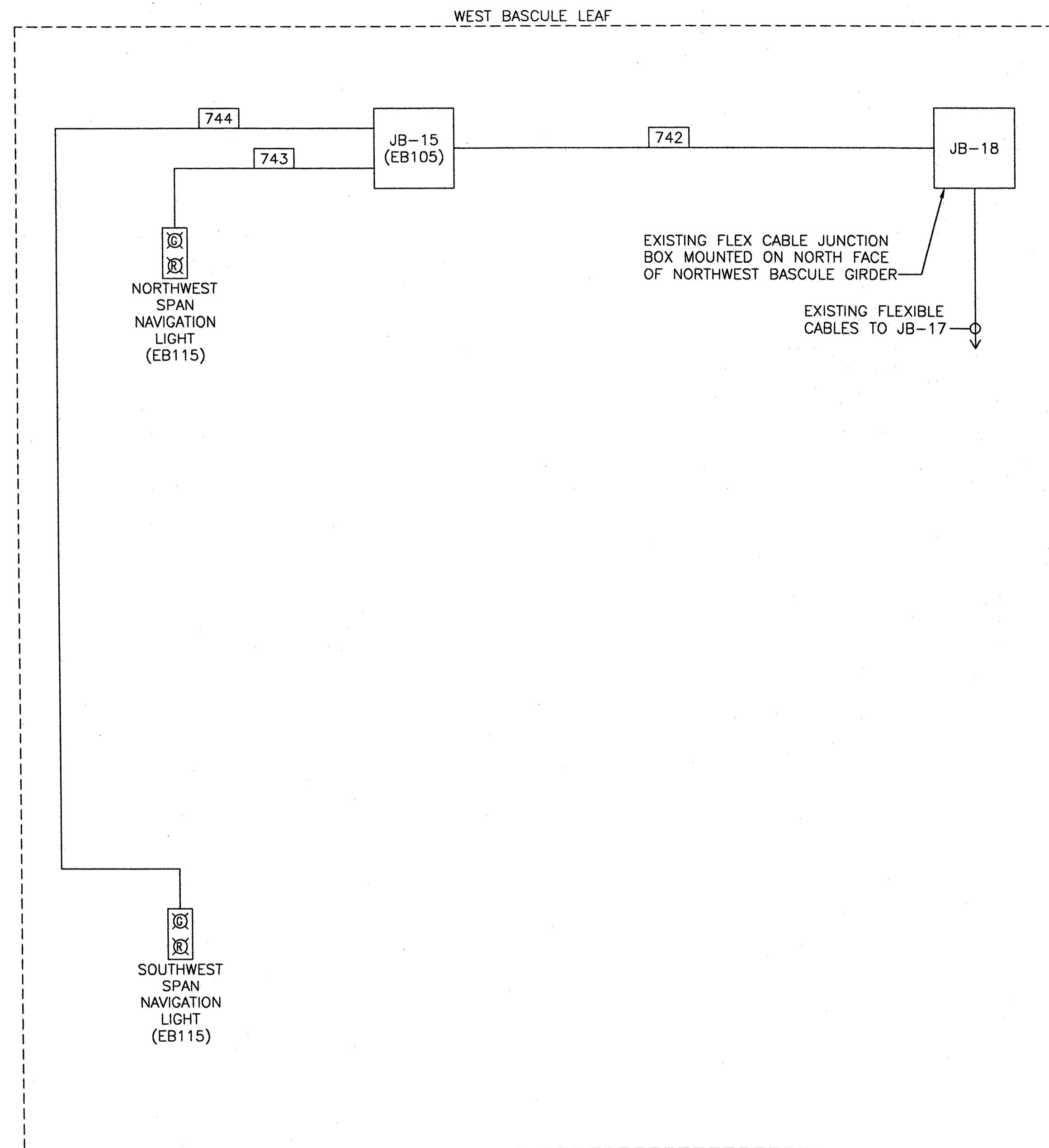
DEVICE DESIGNATIONS:

| | |
|-------|-----------------------------------|
| AMDS | AUXILIARY MOTOR DISCONNECT SWITCH |
| CLK | CENTER LOCK |
| CLKDS | CENTER LOCK DISCONNECT SWITCH |
| EBDS | EMERGENCY BRAKE DISCONNECT SWITCH |
| FSLLS | FULLY SEATED LIMIT SWITCH |
| FSLLS | FAR SIDE LEAF LIMIT SWITCH |
| JB | JUNCTION BOX |
| MDS | MOTOR DISCONNECT SWITCH |
| MBDS | MOTOR BRAKE DISCONNECT SWITCH |
| NSLLS | NEAR SIDE LEAF LIMIT SWITCH |
| SLK | SPAN LOCK |
| SLKDS | SPAN LOCK DISCONNECT SWITCH |
| TC | TERMINAL CABINET |



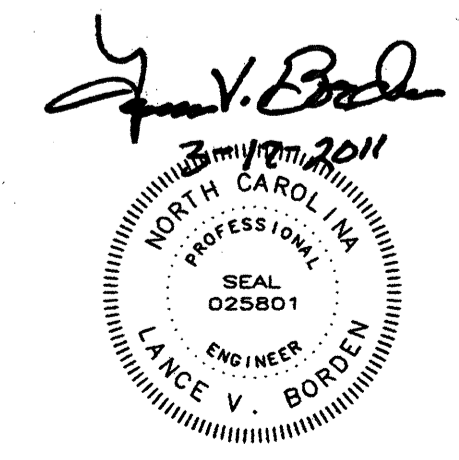
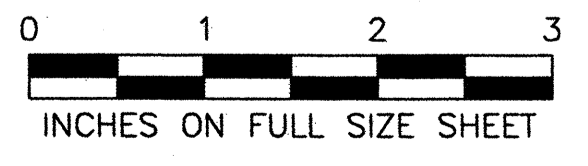
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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| CONDUIT LAYOUT - 1 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 45 OF 63 |

45-EB-9-CL.DWG



NOTES:

1. THIS LAYOUT IS DIAGRAMMATIC, AND IS NOT INTENDED TO SHOW CONDUIT AND/OR EQUIPMENT IN THEIR EXACT PHYSICAL LOCATIONS OR RELATIONSHIPS.
2. ALL CONDUITS AND EQUIPMENT SHOWN ON THIS SHEET ARE NEW EXCEPT AS NOTED.
3. THE EXISTING CONDUCTORS ENTERING TERMINAL CABINETS TC-3 AND -4 VIA THE EXISTING 4" CONDUITS ARE TO REMAIN AND BE CONNECTED TO THE NEW WIRING ACCORDING TO THEIR EXISTING CONNECTIONS.
4. THE EXISTING CONDUCTORS WITHIN THIS CONDUIT ARE TO REMAIN AND BE CONNECTED TO THE NEW WIRING ACCORDING TO THEIR EXISTING CONNECTIONS.
5. SEE SHEET EB19 FOR DEVICE DESIGNATIONS.



| | | | |
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| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| CONDUIT LAYOUT - 2 | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 46 OF 63 |
| DRAWN BY | N.E. ALGER | SCALE | AS NOTED |
| DETAILED | N.E. ALGER | CHECKED | Q.C. TON |

28-EB20-CC.DWG

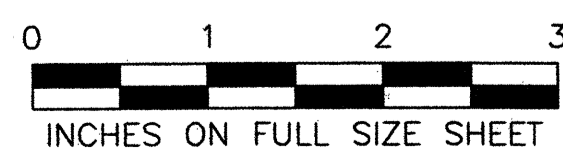
EB20

| BRIDGE WIRING TABULATION - EAST | | | | |
|---------------------------------|--------------------|-------------|--------|---------------------------------------|
| RUN NUMBER | CONDUIT TRADE SIZE | CONDUCTORS | | SERVING |
| | | CIRCUIT | GROUND | |
| 601 | 3/4 | (4) 12 AWG | 12 AWG | FULLY SEATED LIMIT SWITCH FLSL-1 |
| 602 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH SLKDS-1 |
| 603 | 3/4 | (3) 10 AWG | 10 AWG | SPAN LOCK SLK-1 MOTOR |
| 604 | 1-1/4 | (30) 12 AWG | 12 AWG | SPAN LOCK SLK-1 LIMIT SWITCHES |
| 605 | 2 | (3) 1 AWG | 6 AWG | SWITCH MDS-1 |
| | | (3) 1 AWG | 6 AWG | MOTOR M-1 |
| 606 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH MBDS-1 |
| | | (3) 12 AWG | 12 AWG | BRAKE MB-1 |
| 607 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH EBDS-1 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-1 |
| 608 | 1 | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE CONTROLS |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 609 | 1-1/4 | (6) 12 AWG | 12 AWG | BRAKE MB-1 LIMIT SWITCHES |
| | | (6) 12 AWG | 12 AWG | BRAKE EB-1 LIMIT SWITCHES |
| | | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 610 | 1-1/4 | (6) 12 AWG | 12 AWG | BRAKE EB-1 LIMIT SWITCHES |
| | | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 611 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE MB-1 LIMIT SWITCHES |
| 612 | 3/4 | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 613 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE EB-1 LIMIT SWITCHES |
| 614 | 1 | NOTE 1 | 12 AWG | TACHOMETER GENERATOR |
| 615 | 1-1/2 | (3) 1 AWG | 6 AWG | MOTOR M-1 |
| | | (2) 10 AWG | | MOTOR WINDING HEATERS |
| 616 | 1 | (3) 12 AWG | 12 AWG | BRAKE MB-1 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-1 |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 617 | 1 | (3) 12 AWG | 12 AWG | BRAKE EB-1 |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 618 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-1 |
| 619 | 3/4 | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 620 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE EB-1 |
| 621 | NOT USED | | | |
| 622 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH SLKDS-2 |
| 623 | 3/4 | (3) 10 AWG | 10 AWG | SPAN LOCK SLK-2 MOTOR |
| 624 | 1-1/4 | (30) 12 AWG | 12 AWG | SPAN LOCK SLK-2 LIMIT SWITCHES |
| 625 | 2 | (3) 1 AWG | 6 AWG | SWITCH MDS-2 |
| | | (3) 1 AWG | 6 AWG | MOTOR M-2 |
| 626 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH MBDS-2 |
| | | (3) 12 AWG | 12 AWG | BRAKE MB-2 |
| 627 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH EBDS-2 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-2 |
| 628 | 3/4 | (5) 12 AWG | 12 AWG | SPAN POSITION TRANSMITTER |
| 629 | 1-1/4 | (24) 12 AWG | 12 AWG | SPAN ROTARY CAM LIMIT SWITCH |
| 630 | 1 | (6) 12 AWG | 12 AWG | BRAKE MB-2 LIMIT SWITCHES |
| | | (6) 12 AWG | 12 AWG | BRAKE EB-2 LIMIT SWITCHES |

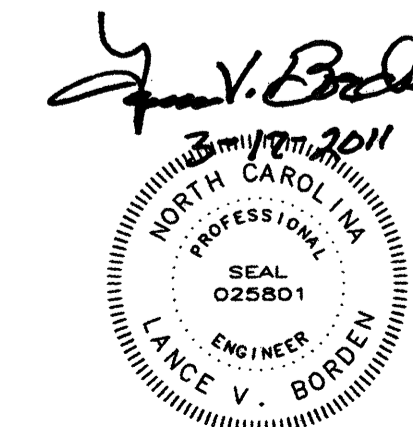
| BRIDGE WIRING TABULATION - EAST (CONTINUED) | | | | |
|---|--------------------|-------------|------------|---|
| RUN NUMBER | CONDUIT TRADE SIZE | CONDUCTORS | | SERVING |
| | | CIRCUIT | GROUND | |
| 631 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE MB-2 LIMIT SWITCHES |
| 632 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE EB-2 LIMIT SWITCHES |
| 633 | 1-1/2 | (3) 1 AWG | 6 AWG | MOTOR M-2 |
| | | (2) 10 AWG | | MOTOR WINDING HEATERS |
| 634 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-2 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-2 |
| 635 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-2 |
| 636 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE EB-2 |
| 637 | 1-1/2 | (9) 10 AWG | 10 AWG | POWER INTERCONNECTIONS AS REQUIRED |
| 638 | 1-1/2 | (20) 12 AWG | 12 AWG | CONTROL INTERCONNECTIONS AS REQUIRED |
| 639 | 1-1/4 | (3) 10 AWG | 10 AWG | SWITCH CLKDS-1 |
| | | (3) 10 AWG | | SWITCH CLKDS-2 |
| | | (3) 10 AWG | | SPAN NAVIGATION LIGHTS |
| | | (2) 10 AWG | | JB-13A RECEPTACLE |
| 640 | 1-1/4 | (6) 10 AWG | (2) 10 AWG | SPARE |
| | | (3) 10 AWG | | SWITCH CLKDS-1 |
| | | (6) 10 AWG | | SPAN NAVIGATION LIGHTS |
| | | (2) 10 AWG | | JB-13A RECEPTACLE |
| 641 | 1 | (3) 10 AWG | 10 AWG | SPARE |
| | | (3) 10 AWG | | SWITCH CLKDS-2 |
| | | (3) 10 AWG | | SPAN NAVIGATION LIGHTS |
| 642 | 2 | (20) 12 AWG | 12 AWG | CENTER LOCK CLK-1 CONTROL |
| | | (20) 12 AWG | | CENTER LOCK CLK-2 CONTROL |
| 643 | 2 | (20) 12 AWG | 12 AWG | CENTER LOCK CLK-1 CONTROL |
| | | (20) 12 AWG | | CENTER LOCK CLK-2 CONTROL (FROM JB-11 TO JB-13B) |
| 644 | 1-1/4 | (20) 12 AWG | 12 AWG | CENTER LOCK CLK-2 CONTROL |
| | | (20) 12 AWG | | CENTER LOCK CLK-2 CONTROL (FROM JB-13B TO JB-14B) |
| 645 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH CLKDS-1 |
| 646 | 3/4 | (3) 10 AWG | 10 AWG | CENTER LOCK CLK-1 MOTOR |
| 647 | 3/4 | (3) 10 AWG | 10 AWG | NORTHEAST SPAN NAVIGATION LIGHT |
| 648 | 1-1/4 | (16) 12 AWG | 12 AWG | CENTER LOCK CLK-1 LIMIT SWITCH |
| 649 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH CLKDS-2 |
| 650 | 3/4 | (3) 10 AWG | 10 AWG | CENTER LOCK CLK-2 MOTOR |
| 651 | 3/4 | (3) 10 AWG | 10 AWG | SOUTHEAST SPAN NAVIGATION LIGHT |
| 652 | 1-1/4 | (16) 12 AWG | 12 AWG | CENTER LOCK CLK-2 LIMIT SWITCH |

NOTES:

- ONE 12 AWG TWISTED PAIR WITH OVERALL SHIELD. (ITEM EB116)
- SEE SHEET EB19 FOR EAST SIDE CONDUIT LAYOUT DIAGRAM.



47-EB21-CWT.DWG



| | | | |
|--|------------|----------------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| CONDUIT AND WIRING TABULATION - 1 | | | |
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON |
| DRAWN BY N.E. ALGER | | SCALE AS NOTED | |
| DATE MARCH 2011 | | DRAWING NO. 47 OF 63 | |

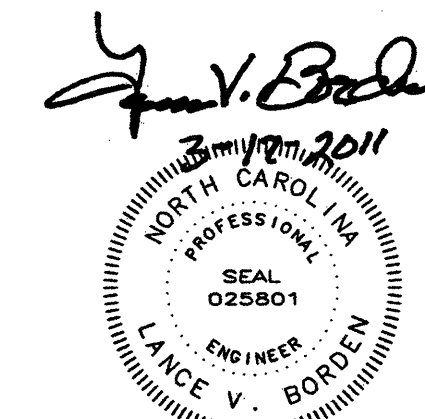
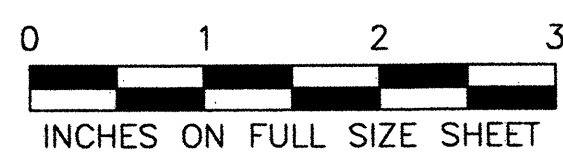
EB21

| BRIDGE WIRING TABULATION -- WEST | | | | |
|----------------------------------|--------------------|-------------|--------|---------------------------------------|
| RUN NUMBER | CONDUIT TRADE SIZE | CONDUCTORS | | SERVING |
| | | CIRCUIT | GROUND | |
| 701 | 3/4 | (4) 12 AWG | 12 AWG | FULLY SEATED LIMIT SWITCH FSLs-3 |
| 702 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH SLKDS-3 |
| 703 | 3/4 | (3) 10 AWG | 10 AWG | SPAN LOCK SLK-3 MOTOR |
| 704 | 1-1/4 | (30) 12 AWG | 12 AWG | SPAN LOCK SLK-3 LIMIT SWITCHES |
| 705 | 2 | (3) 1 AWG | 6 AWG | SWITCH MDS-3 |
| | | (3) 1 AWG | 6 AWG | MOTOR M-3 |
| 706 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH MBDS-3 |
| | | (3) 12 AWG | 12 AWG | BRAKE MB-3 |
| 707 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH EBDS-3 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-3 |
| 708 | 1 | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE CONTROLS |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 709 | 1-1/4 | (6) 12 AWG | 12 AWG | BRAKE MB-3 LIMIT SWITCHES |
| | | (6) 12 AWG | 12 AWG | BRAKE EB-3 LIMIT SWITCHES |
| | | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 710 | 1-1/4 | (6) 12 AWG | 12 AWG | BRAKE EB-3 LIMIT SWITCHES |
| | | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 711 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE MB-3 LIMIT SWITCHES |
| 712 | 3/4 | (4) 12 AWG | 12 AWG | AUXILIARY DRIVE COUPLING LIMIT SWITCH |
| 713 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE EB-3 LIMIT SWITCHES |
| 714 | 1 | NOTE 1 | 12 AWG | TACHOMETER GENERATOR |
| 715 | 1-1/2 | (3) 1 AWG | 6 AWG | MOTOR M-3 |
| | | (2) 10 AWG | | MOTOR WINDING HEATERS |
| 716 | 1 | (3) 12 AWG | 12 AWG | BRAKE MB-3 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-3 |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 717 | 1 | (3) 12 AWG | 12 AWG | BRAKE EB-3 |
| | | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 718 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-3 |
| 719 | 3/4 | (3) 10 AWG | 10 AWG | AUXILIARY DRIVE MOTOR |
| 720 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE EB-3 |
| 721 | NOT USED | | | |
| 722 | 3/4 | (3) 10 AWG | 10 AWG | SWITCH SLKDS-4 |
| 723 | 3/4 | (3) 10 AWG | 10 AWG | SPAN LOCK SLK-4 MOTOR |
| 724 | 1-1/4 | (30) 12 AWG | 12 AWG | SPAN LOCK SLK-4 LIMIT SWITCHES |
| 725 | 2 | (3) 1 AWG | 6 AWG | SWITCH MDS-4 |
| | | (3) 1 AWG | 6 AWG | MOTOR M-4 |
| 726 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH MBDS-4 |
| | | (3) 12 AWG | 12 AWG | BRAKE MB-4 |
| 727 | 3/4 | (3) 12 AWG | 12 AWG | SWITCH EBDS-4 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-4 |
| 728 | 3/4 | (5) 12 AWG | 12 AWG | SPAN POSITION TRANSMITTER |
| 729 | 1-1/4 | (24) 12 AWG | 12 AWG | SPAN ROTARY CAM LIMIT SWITCH |
| 730 | 1 | (6) 12 AWG | 12 AWG | BRAKE MB-4 LIMIT SWITCHES |
| | | (6) 12 AWG | 12 AWG | BRAKE EB-4 LIMIT SWITCHES |

| BRIDGE WIRING TABULATION -- WEST (CONTINUED) | | | | |
|--|--------------------|-------------|--------|--|
| RUN NUMBER | CONDUIT TRADE SIZE | CONDUCTORS | | SERVING |
| | | CIRCUIT | GROUND | |
| 731 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE MB-4 LIMIT SWITCHES |
| 732 | 3/4 | (6) 12 AWG | 12 AWG | BRAKE EB-4 LIMIT SWITCHES |
| 733 | 1-1/2 | (3) 1 AWG | 6 AWG | MOTOR M-4 |
| | | (2) 10 AWG | | MOTOR WINDING HEATERS |
| 734 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-4 |
| | | (3) 12 AWG | 12 AWG | BRAKE EB-4 |
| 735 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE MB-4 |
| 736 | 3/4 | (3) 12 AWG | 12 AWG | BRAKE EB-4 |
| 737 | 1-1/2 | (9) 10 AWG | 10 AWG | POWER INTERCONNECTIONS AS REQ'D |
| 738 | 1-1/2 | (20) 12 AWG | 12 AWG | CONTROL INTERCONNECTIONS AS REQ'D |
| 739 | 3/4 | (3) 10 AWG | 10 AWG | SPAN NAVIGATION LIGHTS |
| 740 | 1 | (3) 6 AWG | 6 AWG | FEED TO PNB-3 |
| 741 | 1-1/4 | (12) 10 AWG | 10 AWG | RE-FEED TO EXISTING-TO-REMAIN CIRCUITS |
| 742 | 1 | (3) 10 AWG | 10 AWG | SPAN NAVIGATION LIGHTS |
| | | (3) 10 AWG | | SPARE |
| 744 | 3/4 | (3) 10 AWG | 10 AWG | NORTHWEST SPAN NAVIGATION LIGHT |
| 745 | 3/4 | (3) 10 AWG | 10 AWG | SOUTHWEST SPAN NAVIGATION LIGHT |

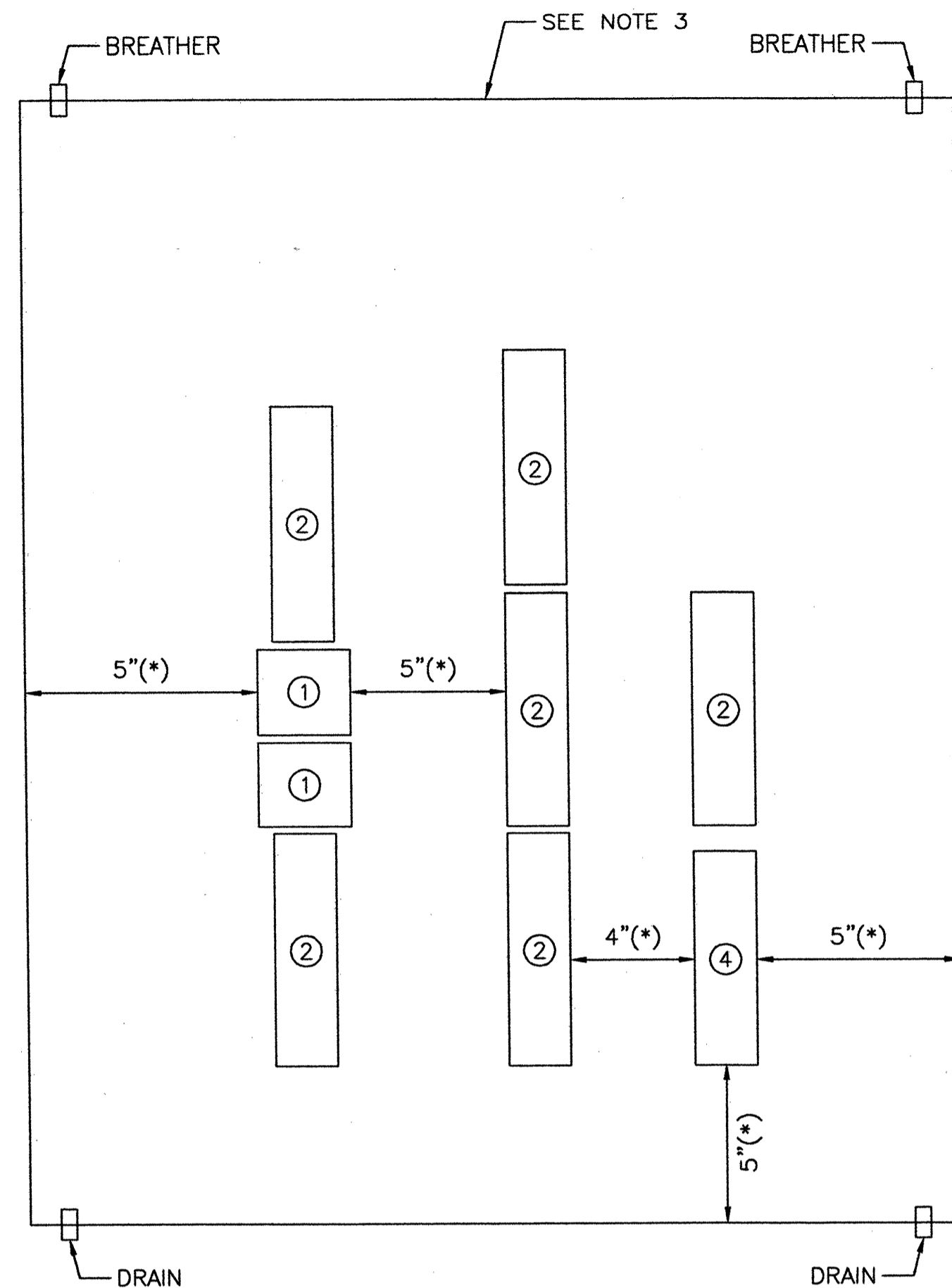
NOTES:

- ONE 12 AWG TWISTED PAIR WITH OVERALL SHIELD. (ITEM EB116)
- SEE SHEET EB19 FOR EAST SIDE CONDUIT LAYOUT DIAGRAM.



| | | | |
|--|------------|----------------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| CONDUIT AND WIRING TABULATION - 2 | | | |
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER |
| CHECKED | Q.C. TON | CHECKED | Q.C. TON |
| DRAWN BY N.E. ALGER | | SCALE AS NOTED | |
| DATE MARCH 2011 | | DRAWING NO. 48 OF 63 | |

48-EB22-CWT2.DWG



LAYOUT -- NEW TYPICAL MACHINERY DECK
TERMINAL CABINET

SCALE: NONE

TYPICAL OF NEW CABINETS TC-1, -2, -3, AND -4.

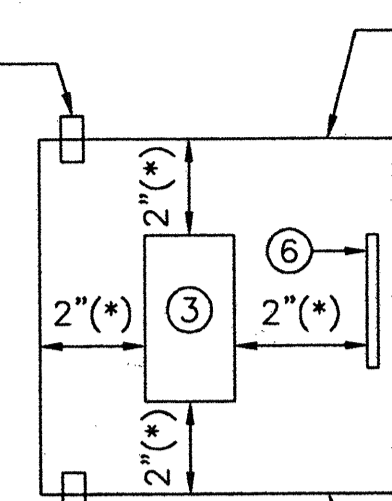
ITEM EB103

BOX IS 36"Hx30"Wx12"D.

NOTES:

- LAYOUT SHOWN FOR THE NEW MACHINERY DECK TERMINAL CABINETS IS CONCEPTUAL. THE ACTUAL LAYOUT SHALL BE AS REQUIRED TO PERMIT EXISTING CONDUCTORS WHICH ARE TO BE RE-USED TO REACH THEIR RESPECTIVE TERMINALS, AND SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. THE ACTUAL LAYOUT SHALL CONFORM TO THE MINIMUM SPACINGS NOTED.
- (*) INDICATES MINIMUM REQUIRED SPACING, NOT AN ACTUAL DIMENSION.
- CONDUIT ENTRANCES SHALL NOT BE MADE IN THE TOP WALLS OF THE INDICATED BOXES.
- THESE BOXES SHALL INCLUDE FACTORY MADE BOSSED, DRILLED, AND TAPPED HOLES FOR ALL REQUIRED CONDUITS, PLUS ONE SPARE HOLE FOR A 1" CONDUIT.
- PRIOR TO ORDERING ANY BOXES, SUBMIT FOR APPROVAL DIMENSIONED DRAWINGS SHOWING THE LAYOUT OF ALL REQUIRED TERMINAL BLOCKS (BASED ON THE DIMENSIONS OF THE ACTUAL SUPPLIED TERMINAL BLOCKS) AND GROUND BARS. DRAWINGS SHALL ALSO SHOW THE LOCATIONS AND SIZES OF ALL REQUIRED CONDUIT HOLES, LOCATIONS OF BREATHERS AND DRAINS, AND ALL OTHER SIGNIFICANT FEATURES.

BREATHER SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE BACK WALL



DRAIN SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE COVER

HUB FOR ONE 1" DIA. CONDUIT IN THIS WALL

HUBS FOR TWO 3/4" DIA. AND ONE 1" DIA. CONDUITS IN THIS WALL (1" DIA. CONDUIT HOLE IS SPARE)

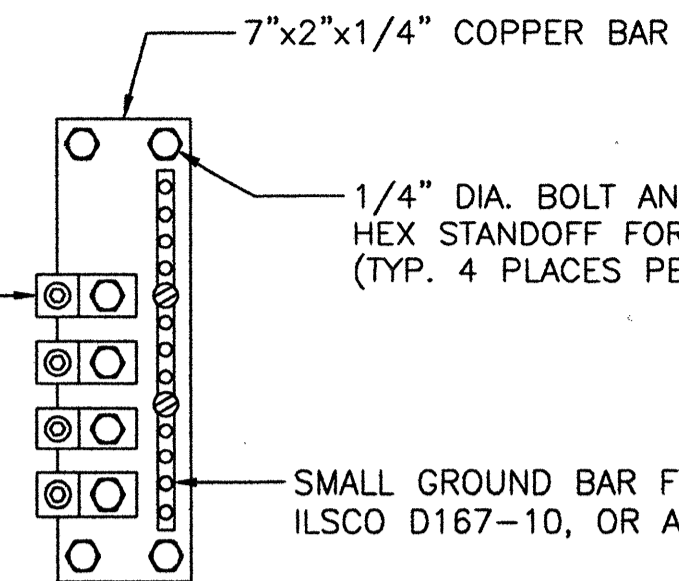
LAYOUT -- NEW JUNCTION
BOX JB-15

SCALE: NONE

ITEM EB105

BOX IS 8"Hx8"Wx4"D.
SEE NOTE 4.

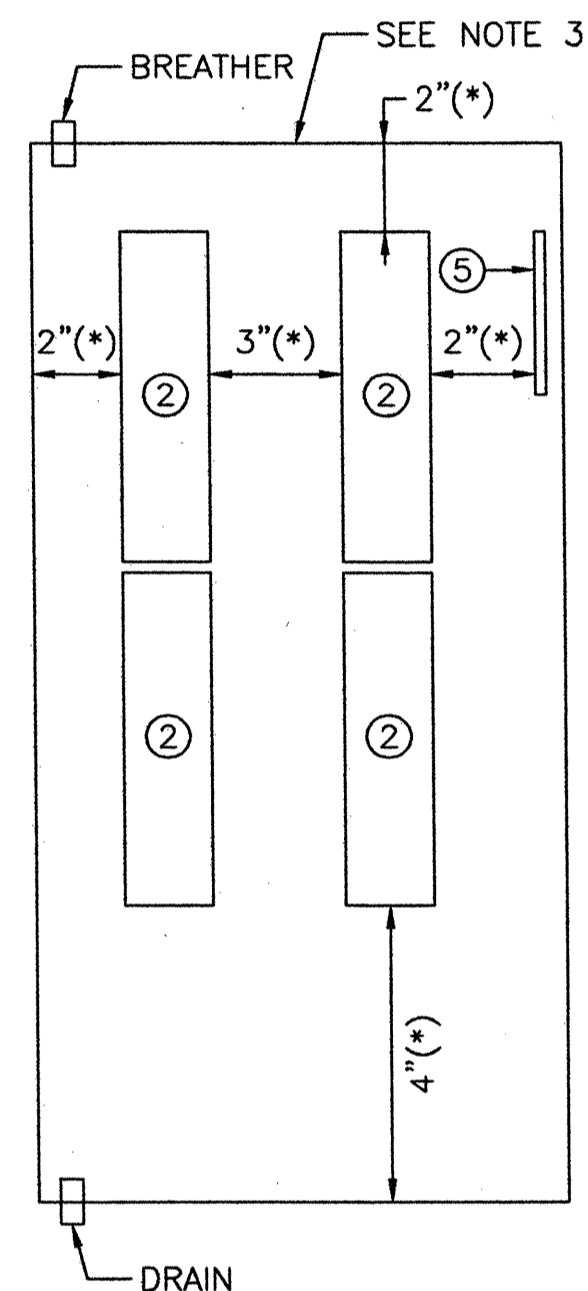
MECHANICAL LUG FOR (1) 14-2/0 AWG
ILSCO TA-2/0, OR APPROVED EQUAL
(TYP. 4 PLACES PER ASSEMBLY)



DETAIL -- LARGE GROUND BAR ASSEMBLY

SCALE: NONE

ALL HARDWARE SHALL BE TYPE 316 STAINLESS STEEL. ALL BOLTED CONNECTIONS SHALL UTILIZE LOCKWASHERS.

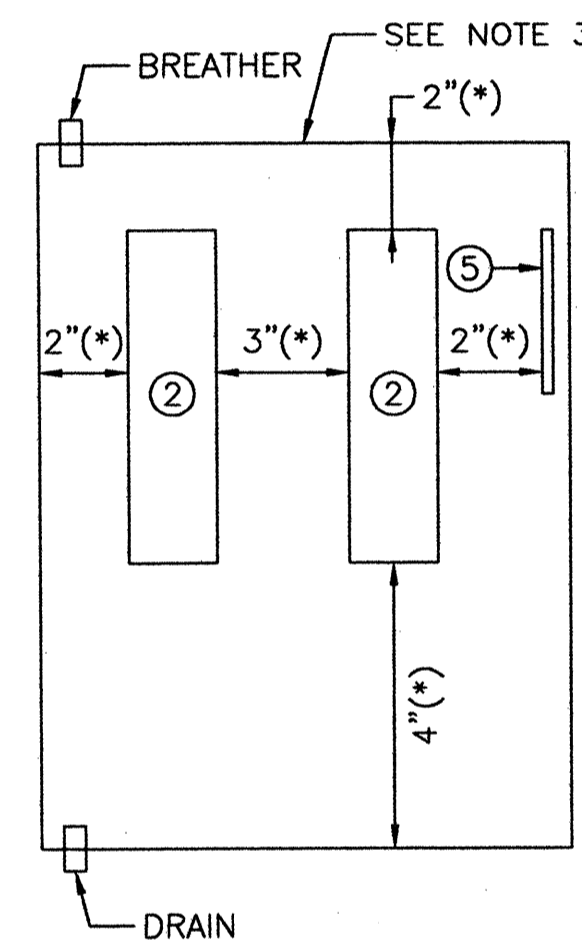


LAYOUT -- NEW JUNCTION
BOX JB-13A

SCALE: NONE

ITEM EB105

BOX IS 24"Hx12"Wx6"D.
SEE NOTE 4.

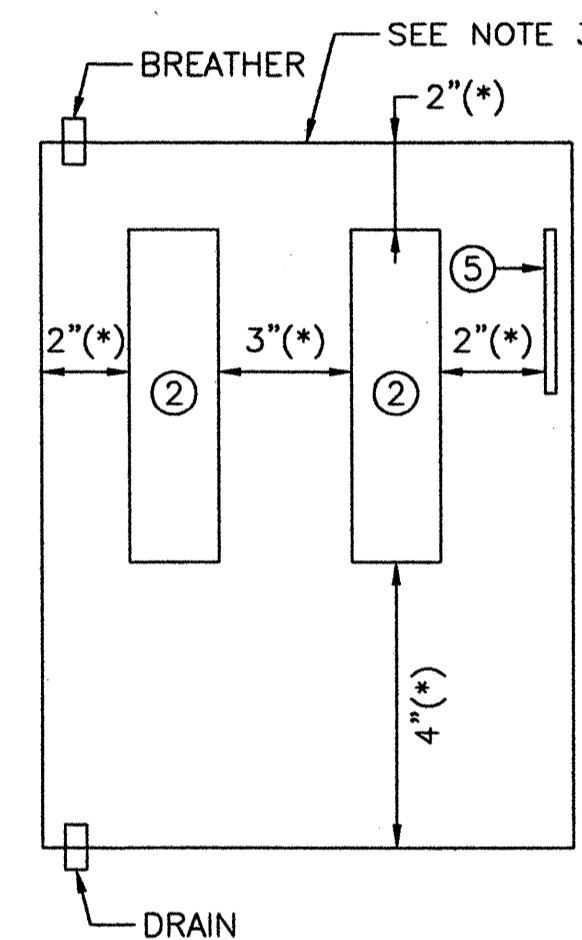


LAYOUT -- NEW JUNCTION
BOX JB-13B

SCALE: NONE

ITEM EB105

BOX IS 16"Hx12"Wx6"D.
SEE NOTE 4.

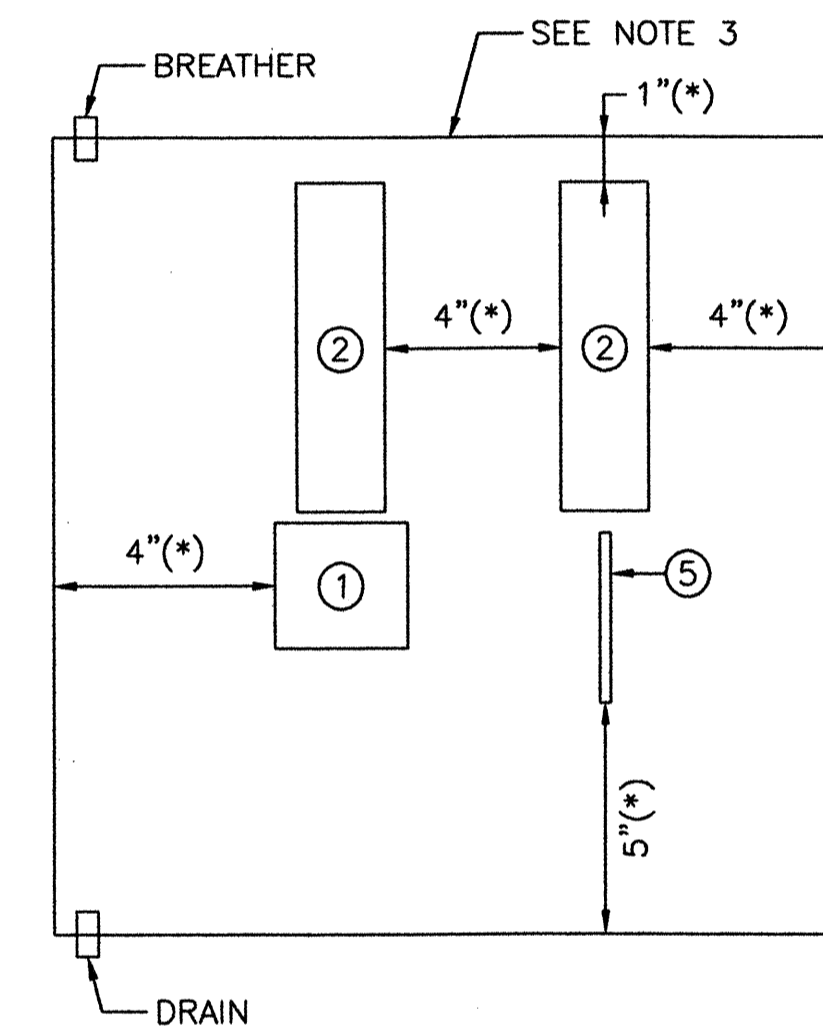


LAYOUT -- NEW JUNCTION
BOXES JB-14A & -14B

SCALE: NONE

ITEM EB105

BOX IS 16"Hx12"Wx6"D.
SEE NOTE 4.



LAYOUT -- NEW JUNCTION
BOX JB-24

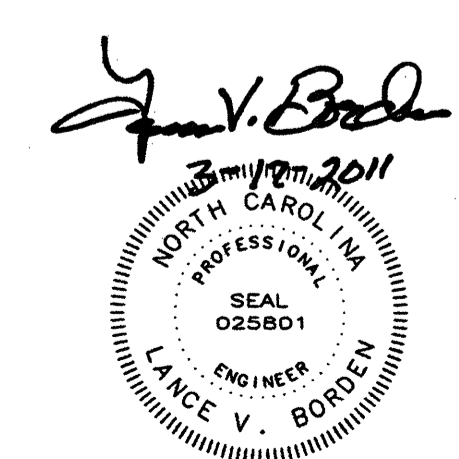
SCALE: NONE

ITEM EB105

BOX IS 18"Hx18"Wx8"D.
SEE NOTE 4.

TERMINAL BLOCK LEGEND

- LARGE TERMINAL BLOCK. 3 POLES. 14-2/0 AWG. (EB107)
- SMALL TERMINAL BLOCK. 12 POLES. 18-4 AWG. (EB106)
- SMALL TERMINAL BLOCK. 6 POLES. 18-4 AWG. (EB106)
- LARGE GROUND BAR ASSEMBLY. SEE DETAIL THIS SHEET.
- SMALL GROUND BAR. (7) 14-6 AWG. ILSCO D167-6, OR APPROVED EQUAL.
- SMALL GROUND BAR. (5) 14-6 AWG. ILSCO D167-4, OR APPROVED EQUAL.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

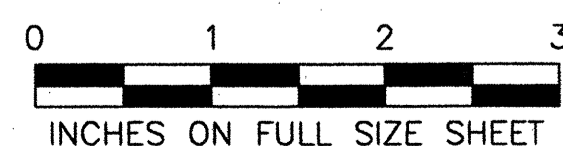
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
TERMINAL CABINETS
AND JUNCTION BOXES

DRAWN BY N.E. ALGER

SCALE AS NOTED

DATE MARCH 2011

DRAWING NO. 49 OF 63

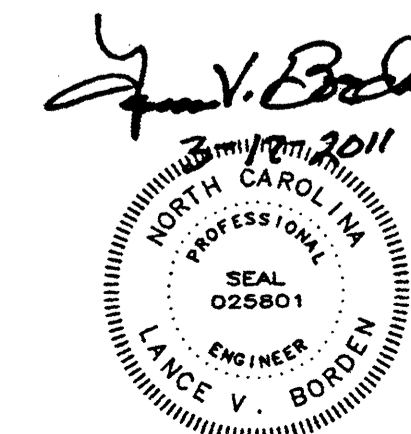
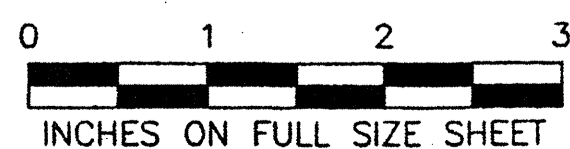


| ELECTRICAL EQUIPMENT SCHEDULE | | | | | |
|-------------------------------|----------|---------------------------------|---------------------------|-------------------------|--|
| ITEM NUMBER | QUANTITY | ITEM NAME | MANUFACTURER OR SUPPLIER | CATALOG NUMBER OR MODEL | DESCRIPTION |
| EB101 | 14 | 30A DISCONNECT SWITCH | CUTLER-HAMMER | DH361UWK | HEAVY DUTY, SINGLE THROW, NON-FUSED SAFETY SWITCH. UL LISTED. 3 POLE, 600VAC, 30A, 20HP (AT 480VAC, 3PH). NEMA 4X STAINLESS STEEL (TYPE 316) ENCLOSURE WITH VIEWING WINDOW OVER SWITCH BLADES. 10KA SYMMETRICAL SHORT CIRCUIT AT 480VAC. |
| EB102 | 4 | 200A DISCONNECT SWITCH | CUTLER-HAMMER | DH364UWK | HEAVY DUTY, SINGLE THROW, NON-FUSED SAFETY SWITCH. UL LISTED. 3 POLE, 600VAC, 200A, 125HP (AT 480VAC, 3PH). NEMA 4X STAINLESS STEEL (TYPE 316) ENCLOSURE WITH VIEWING WINDOW OVER SWITCH BLADES. 10KA SYMMETRICAL SHORT CIRCUIT AT 480VAC. |
| EB103 | 4 | MACHINERY DECK TERMINAL CABINET | HOFFMAN | A-36H3012SS6LP | NEMA 4X STAINLESS STEEL (TYPE 316) WALL MOUNT JUNCTION BOX. UL LISTED. 36" HIGH, 30" WIDE, 12" DEEP. CONTINUOUSLY HINGED, CLAMPED COVER. 14 GAUGE BODY. STAINLESS STEEL BREATHERS AND DRAINS. STAINLESS STEEL INNER PANEL WITH TERMINAL BLOCKS AS INDICATED. SEE ELECTRICAL GENERAL NOTE 2.16. |
| EB104 | 4 | WIREWAY | HOFFMAN | CUSTOM | NEMA 4X STAINLESS STEEL (TYPE 316) FEED-THROUGH WIREWAY. 6"x6" CROSS-SECTION, 60" LONG. HINGED, CLAMPED COVER. 16 GAUGE BODY. WITH CLOSURE PLATE, BOX CONNECTOR, SUPPORT BRACKETS FOR WALL MOUNTING, AND ALL OTHER NECESSARY HARDWARE. |
| EB105 | 6 | JUNCTION BOX | O-Z/GEDNEY | YW-A | NEMA 4 CAST ALUMINUM BOX JUNCTION BOX. UL LISTED. DIMENSIONS AS INDICATED. STAINLESS STEEL COVER HINGE AND CLAMP BOLTS. EXTERNAL CAST MOUNTING LUGS. FACTORY SUPPLIED BOSSED, DRILLED, AND TAPPED CONDUIT HOLES AS REQUIRED. STAINLESS STEEL DRAIN AND BREATHER IN DRILLED AND TAPPED HOLES. ALUMINUM INNER PANEL WITH TERMINAL BLOCKS AS INDICATED. SEE ELECTRICAL GENERAL NOTE 2.16. |
| EB106 | AS REQ'D | SMALL TERMINAL BLOCK | MARATHON SPECIAL PRODUCTS | 985 GP | HEAVY DUTY TERMINAL BLOCK. UL RECOGNIZED. 600V, 85A, 150C. TIN PLATED ALUMINUM BOX TYPE LUGS WITH NICKEL PLATED STEEL SCREWS FOR VARIOUS COMBINATIONS OF 18 AWG - 4 AWG COPPER CONDUCTORS. PHENOLIC BASE. NUMBER OF POLES AS INDICATED. |
| EB107 | AS REQ'D | LARGE TERMINAL BLOCK | MARATHON SPECIAL PRODUCTS | 1423572 | HEAVY DUTY 3 POLE TERMINAL BLOCK. UL RECOGNIZED. 600V, 175A, 90C. TIN PLATED COPPER OR ALUMINUM SCREW LUGS WITH ONE OPENING PER POLE FOR 14 AWG - 2/0 AWG COPPER CONDUCTORS. PHENOLIC BASE. |
| EB108 | 1 | PANELBOARD PNB-3 | CUTLER-HAMMER | P48G28T15P | MINI-POWER CENTER CONSISTING OF A DRY TYPE TRANSFORMER AND CIRCUIT BREAKER TYPE BRANCH CIRCUIT PANELBOARD. UL LISTED. 480:208Y/120VAC, 3 PHASE, 15KVA. WITH TWELVE 20A, 1 POLE BRANCH CIRCUIT BREAKERS. NEMA 3R ENCLOSURE. PANELBOARD SHALL BE MOUNTED INSIDE A NEMA 4X STAINLESS STEEL CABINET (SEE BELOW). |
| | | | HOFFMAN | A-48H3612SS6LP | NEMA 4X STAINLESS STEEL (TYPE 316) WALL MOUNT JUNCTION BOX. UL LISTED. 48" HIGH, 36" WIDE, 12" DEEP. CONTINUOUSLY HINGED, CLAMPED COVER. 14 GAUGE BODY. STAINLESS STEEL BREATHERS AND DRAINS. STAINLESS STEEL INNER PANEL. |

| ELECTRICAL EQUIPMENT SCHEDULE (CONTINUED) | | | | | |
|---|----------|--------------------------------------|-------------------------------|--------------------------|--|
| ITEM NUMBER | QUANTITY | ITEM NAME | MANUFACTURER OR SUPPLIER | CATALOG NUMBER OR MODEL | DESCRIPTION |
| EB109 | 2 | BASCULE LEAF ROTARY CAM LIMIT SWITCH | GEMCO | 1980-412-D-SP-X | ROTARY CAM LIMIT SWITCH. SINGLE TURN. 12 CAMS, SPDT SWITCHES. CONTACTS RATED 10A AT 120VAC. NEMA 4/4X STAINLESS STEEL (TYPE 316) HOUSING. REAR SHAFT EXTENSION. CAMS ADJUSTABLE WITHOUT TOOLS, SETTABLE FROM 4 TO 356 DEGREES. |
| | | | HELICAL PRODUCTS COMPANY | MC7C | HELICAL BEAM TYPE FLEXIBLE COUPLING. STAINLESS STEEL. INTEGRAL CLAMP ATTACHMENT. BORE(S) AND KEYWAY(S) TO MATCH SHAFTS. MISALIGNMENT CAPACITY: 5 DEGREES ANGULAR, 0.030 INCHES PARALLEL OFFSET, 0.010 INCHES AXIAL. |
| | | | GEMCO | 3001 | DIRECT DRIVE ADJUSTABLE COUPLING WITH BORE TO MATCH ROTARY CAM SWITCH INPUT SHAFT. INFINITELY ADJUSTABLE, WITH 50:1 ADJUSTMENT RATIO. |
| EB110 | 2 | AUXILIARY DRIVE CONTROLS | CUSTOM | CUSTOM | CONTROLS FOR AUXILIARY DRIVE MOTOR, WITH ALL CHARACTERISTICS AS SHOWN. |
| EB111 | 38 | VAPORTIGHT INCANDESCENT LUMINAIRE | HUBBELL INDUSTRIAL LIGHTING | NVB15GG-LT | ENCLOSED AND GASKETED WALLMOUNT INCANDESCENT LUMINAIRE. UL LISTED (1598). 120VAC. MAX 150W LAMP. NEMA 3 AND 4X GLASS FILLED (30%) THERMOPLASTIC POLYESTER BODY, GUARD, AND SPLICE BOX. GLASS GLOBE. SUITABLE FOR 90C SUPPLY WIRE. WITH 100W ROUGH-SERVICE LAMP. |
| EB112 | 4 | COUNTERWEIGHT PIT FLOODLIGHT | PAULUHN | QA1605 | QUARTZ HALOGEN FLOODLIGHT. UL LISTED (1598A - MARINE OUTSIDE TYPE SALTWATER). 120VAC. 500W LAMP. IP66 COPPER FREE ALUMINUM HOUSING WITH OVEN-CURED POLYESTER POWDER COAT FINISH. ONE-PIECE HIGH TEMPERATURE SILICONE GASKET. THERMAL AND SHOCK RESISTANT HIGH IMPACT TEMPERED GLASS LENS. HAMMERTONE ALUMINUM REFLECTOR. SPRING LOADED LAMPHOLDER. STAINLESS STEEL HARDWARE AND WIRE GUARD. WITH 500W LAMP. |
| EB113 | 10 | LIGHT SWITCH | HUBBELL | HBL1221BLK HBL1223BLK | HEAVY DUTY SPECIFICATION GRADE, AC SWITCH. UL LISTED. 120-277VAC, 20A. SINGLE POLE OR THREE-WAY AS REQUIRED. |
| EB114 | 3 | GFCI RECEPTACLE | HUBBELL | GF5362GYA | HEAVY DUTY SPECIFICATION GRADE DUPLEX AC GFCI RECEPTACLE. UL LISTED. 120VAC, 20A, NEMA 5-20R. |
| EB115 | 4 | BASCULE SPAN NAVIGATION LIGHT | B&B ROADWAY | BS | WATERWAY NAVIGATION LIGHT FOR MARKING BASCULE SPANS. 180 DEGREE, 200MM O.D., GREEN FRESNEL LENS ABOVE 180 DEGREE, 200MM O.D., RED FRESNEL LENS. 120VAC, MINIMUM 840 CANDELAS LED LAMPS. CAST ALUMINUM HOUSING AND SWIVEL MOUNTING BASE WITH ANTI-SWING BRAKE. GALVANIZED SCH40 STEEL PIPE STEM. STAINLESS STEEL (TYPE 316) RETRIEVAL CHAIN. GALVANIZED STEEL PLATE COUNTERWEIGHT. JUNCTION BOX MATCHING MOUNTING BASE FOOTPRINT. |
| EB116 | AS REQ'D | TACHOMETER CABLE | BELDEN | 3103A | TYPE TC INSTRUMENTATION CABLE. UL LISTED. ONE 12 AWG PAIR, STRANDED (7X20) COPPER CONDUCTORS. OVERALL 100% COVERAGE FOIL SHIELD AND DRAIN WIRE. 600V PVC/NYLON INSULATION. OIL AND UV RESISTANT PVC OUTER JACKET. |
| EB117 | AS REQ'D | FLEXIBLE CABLE | AMERICAN INSULATED WIRE CORP. | 20734 | TYPE SOOW FLEXIBLE CORD. UL LISTED. FOUR 10 AWG STRANDED (104X30) COPPER CONDUCTORS. 600V EPDM INSULATION AND CPE JACKET, RATED 90C. WEATHER, WATER, SUNLIGHT, OIL, AND FLAME RESISTANT. |
| EB118 | 8 | LIVE LOAD SPAN LOCK LIMIT SWITCH | NAMCO | E4800-20140 | HEAVY DUTY LEVER ARM LIMIT SWITCH. FOUR CIRCUITS (2 N.O. AND 2 N.C.). CONTACTS RATED 20A AT 120VAC. NEMA 4X, 6P, 7, AND 9 CAST BRONZE HOUSING. -40C TO +90C SERVICE. CW AND CCW OPERATION. |
| | | | | EL150-58901 | SIDE ROLLER TYPE OPERATING LEVER COMPATIBLE WITH LIMIT SWITCH. 4 INCH BRONZE ARM AND 1 1/4 INCH DIAMETER NYLON ROLLER. |

NOTES:

- THESE EQUIPMENT SCHEDULES DO NOT NECESSARILY PROVIDE AN EXHAUSTIVE LISTING OF ALL EQUIPMENT REQUIRED.
- REFERENCE TO A SPECIFIC MANUFACTURER'S NAME AND/OR CATALOG NUMBER IS INTENDED TO DENOTE THE QUALITY AND CHARACTERISTICS OF THE EQUIPMENT AND MATERIAL AND NOT TO SPECIFICALLY EXCLUDE OTHER ACCEPTABLE PRODUCTS, BUT ANY SUBSTITUTIONS TO REFERENCED ITEMS MUST BE APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL CONFIRM ALL QUANTITIES AND THE AVAILABILITY OF ALL SPECIFIED ITEMS.

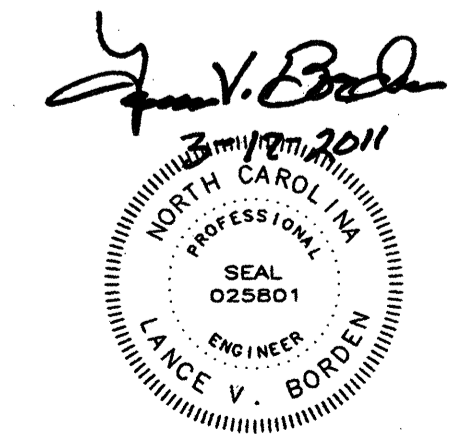
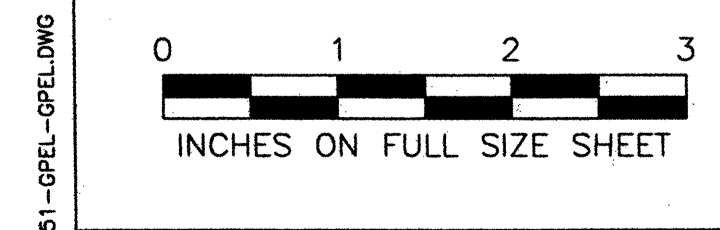
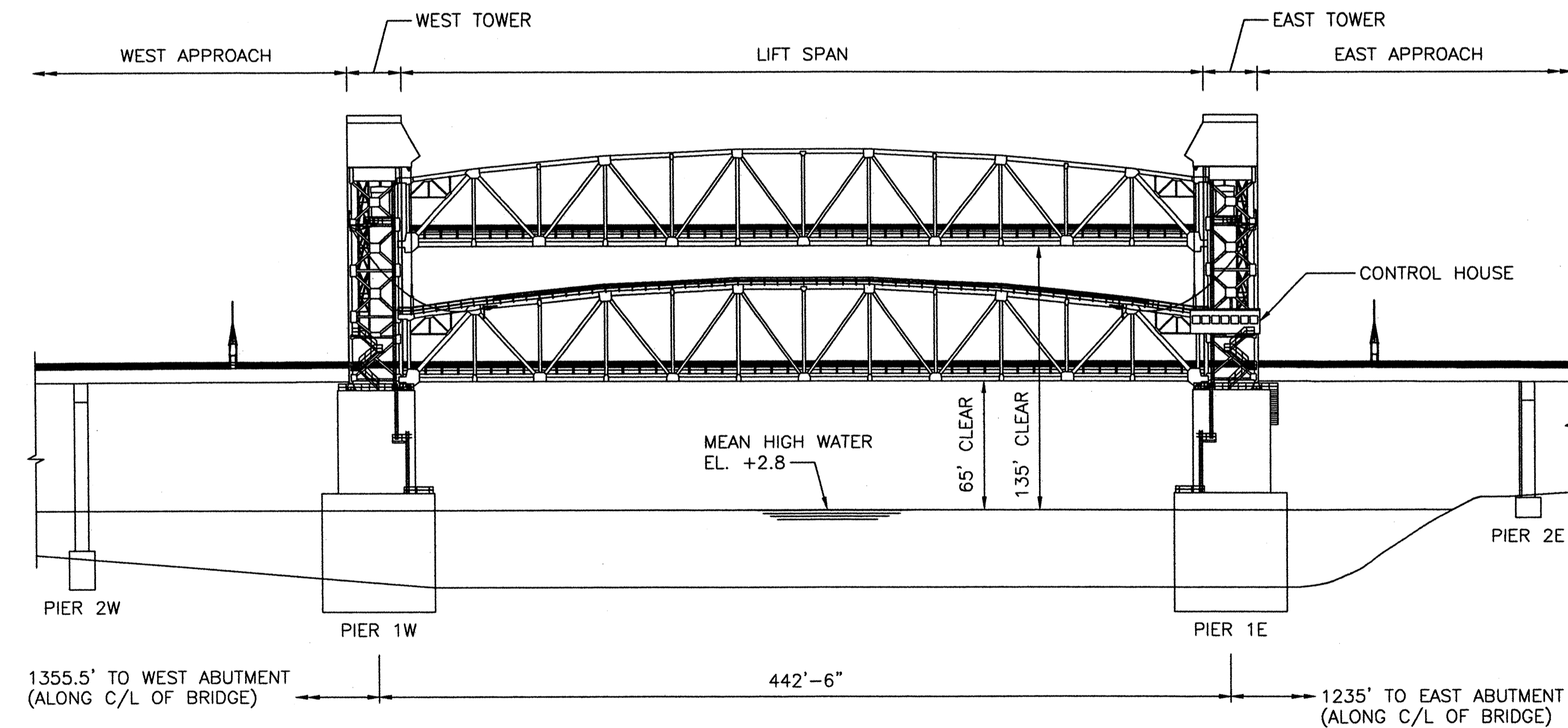
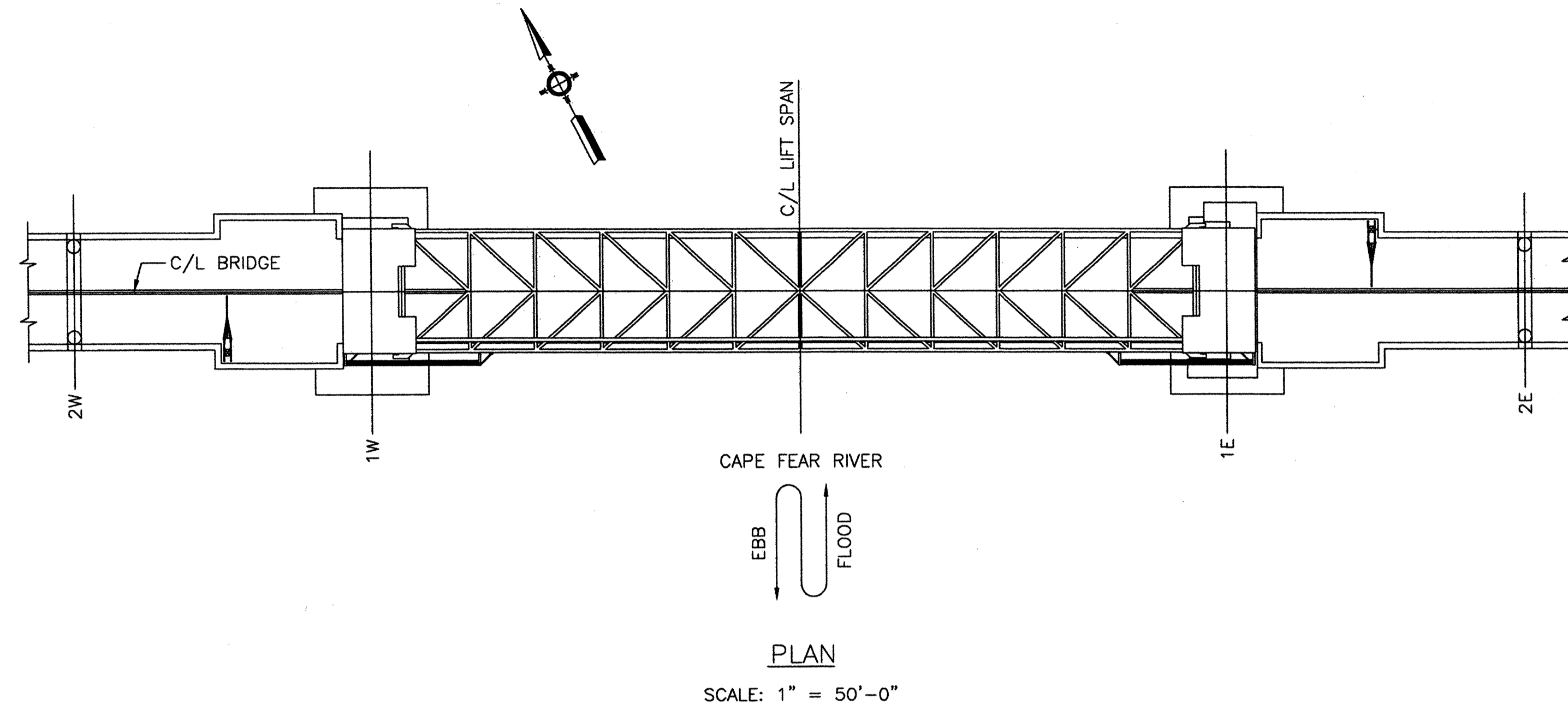


| | | | |
|---|------------|-------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE | | | |
| WILMINGTON, NORTH CAROLINA | | | |
| ELECTRICAL EQUIPMENT SCHEDULE | | | |
| DESIGNED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | Q.C. TON | DRAWING NO. | 50 OF 63 |

EB24

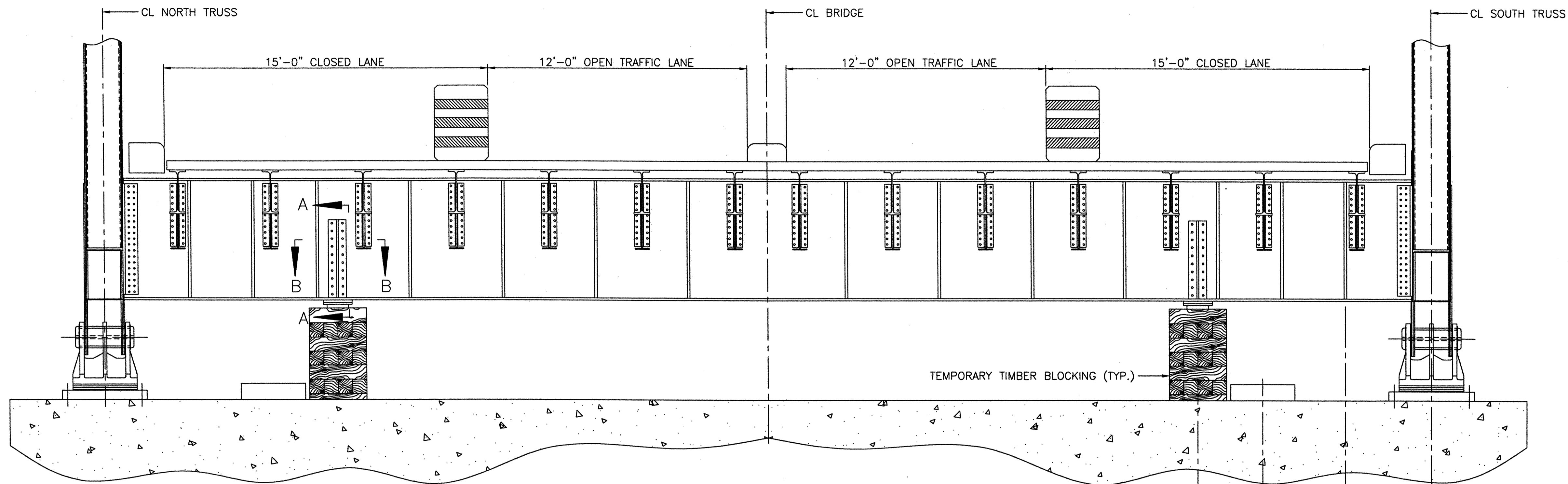
SCOPE OF MECHANICAL WORK

1. REHABILITATION OF THE EXISTING LIVE LOAD BEARINGS, CONSISTING OF REMOVAL OF EACH ASSEMBLY, REPLACEMENT OF
2. REPLACEMENT OF EXISTING MAIN COUNTERWEIGHT AND AUXILIARY COUNTERWEIGHT WIRE ROPES.
3. REMOVAL OF ALL OLD LUBRICANT, DEBRIS, ETC. FROM ALL MAIN AND AUXILIARY WIRE ROPE SHEAVE GROOVES, ROPE GUIDES, ROPE DEFLECTORS, CONNECTION RODS AND ATTACHMENT POINTS TO SSPC-SP1 AND SSPC-SP3 CONDITION, SEE SPECIAL PROVISIONS.
4. ALL INCIDENTAL WORK RELATED TO THE ITEMS LISTED ABOVE, AS WELL AS ALL MISCELLANEOUS WORK SHOWN OR IMPLIED HEREIN.
5. FOR ADDITIONAL REQUIREMENTS, SEE SHEETS ML1 THROUGH ML12 AND THE SPECIAL PROVISIONS.

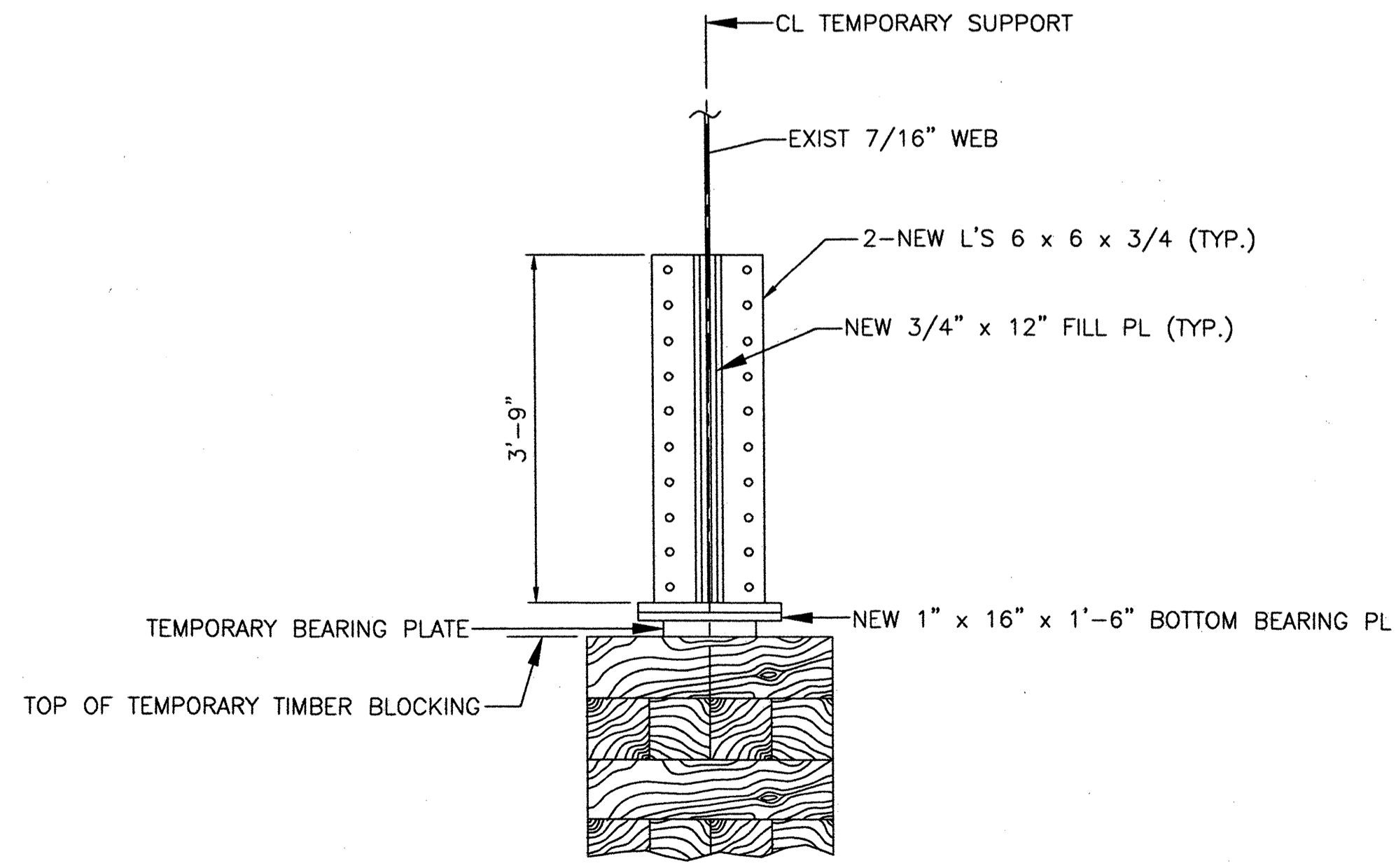
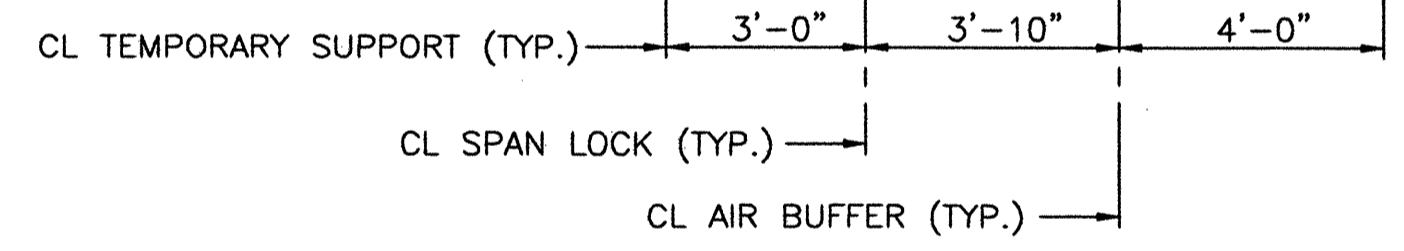


| | | | | | |
|--|------------|----------|------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA GENERAL PLAN AND ELEVATION (MEMORIAL LIFT BRIDGE) | | | | | |
| | | | | DRAWN BY | N.E. ALGER |
| | | | | SCALE | AS NOTED |
| DESIGNED | N.E. ALGER | DETAILED | N.E. ALGER | DATE | MARCH 2011 |
| CHECKED | C.D. VOGT | CHECKED | C.D. VOGT | DRAWING NO. | 51 OF 63 |

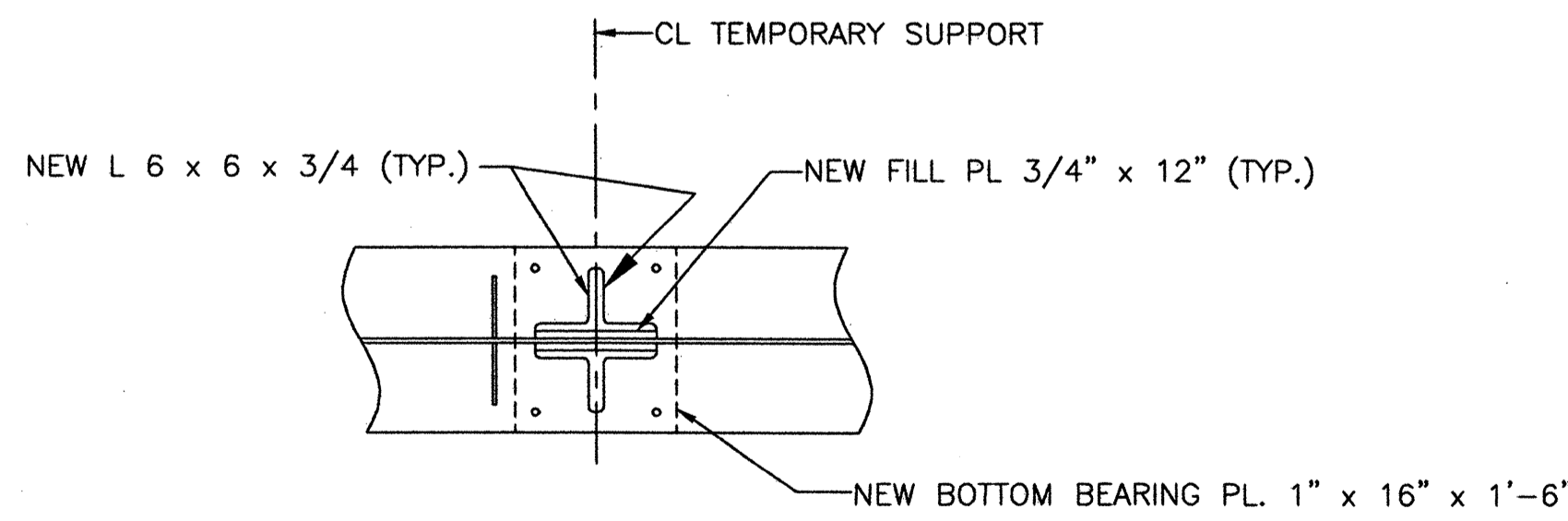
51-GPEL-GPEL.DWG



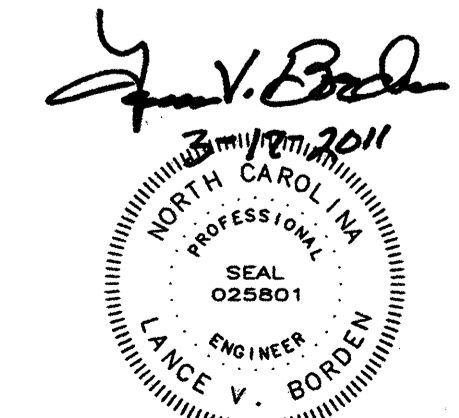
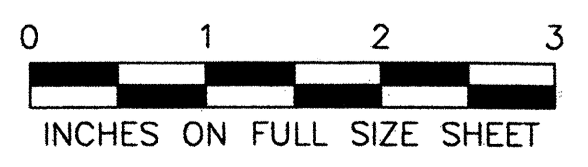
ELEVATION END FLOORBEAM
 SCALE: 3/8" = 1'-0"
 (PANEL POINT L0 SHOWN, PANEL POINT L0' SIMILAR)



SECTION A-A
 SCALE: 3/4" = 1'-0"



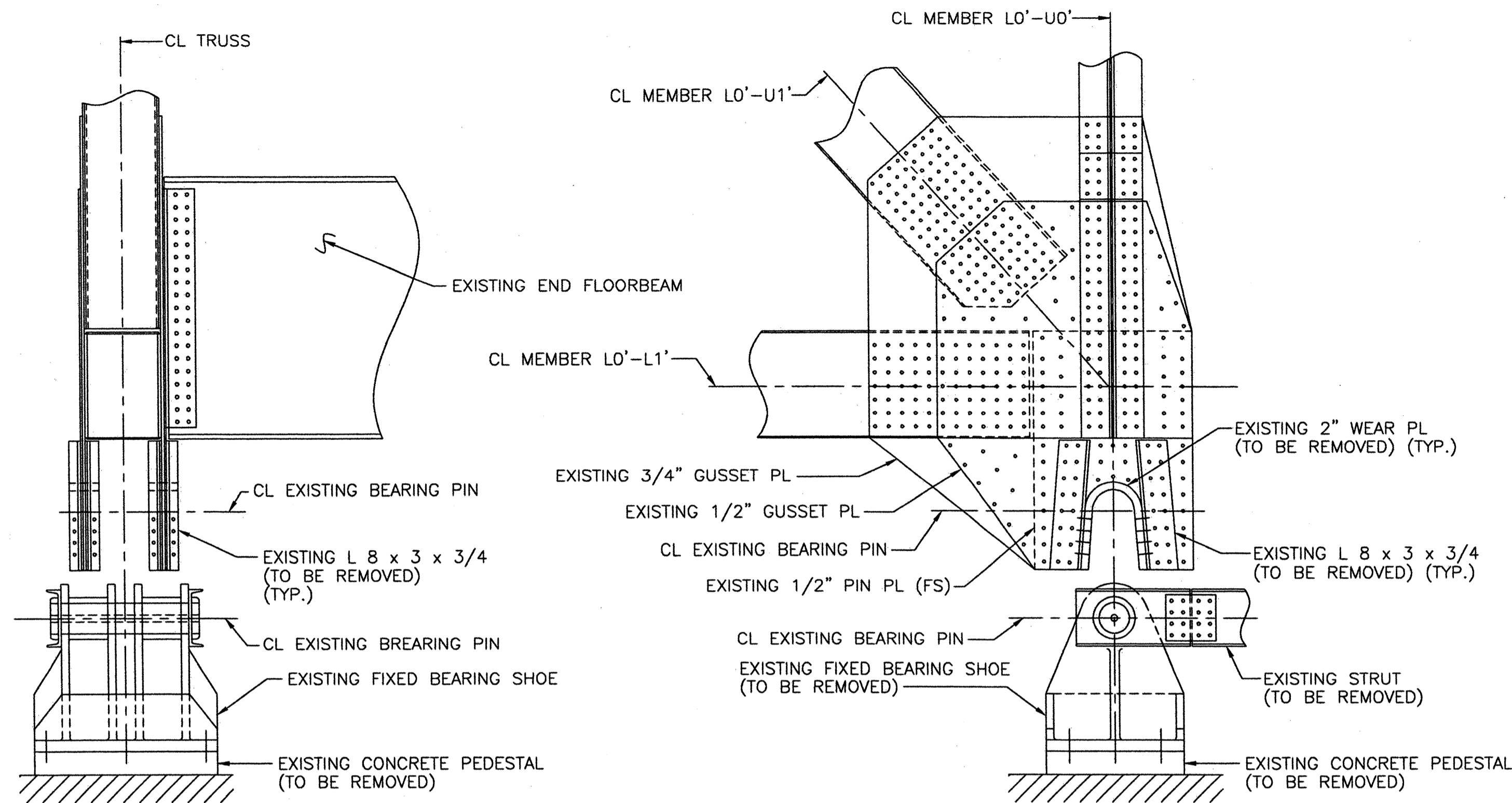
SECTION B-B
 SCALE: 3/4" = 1'-0"



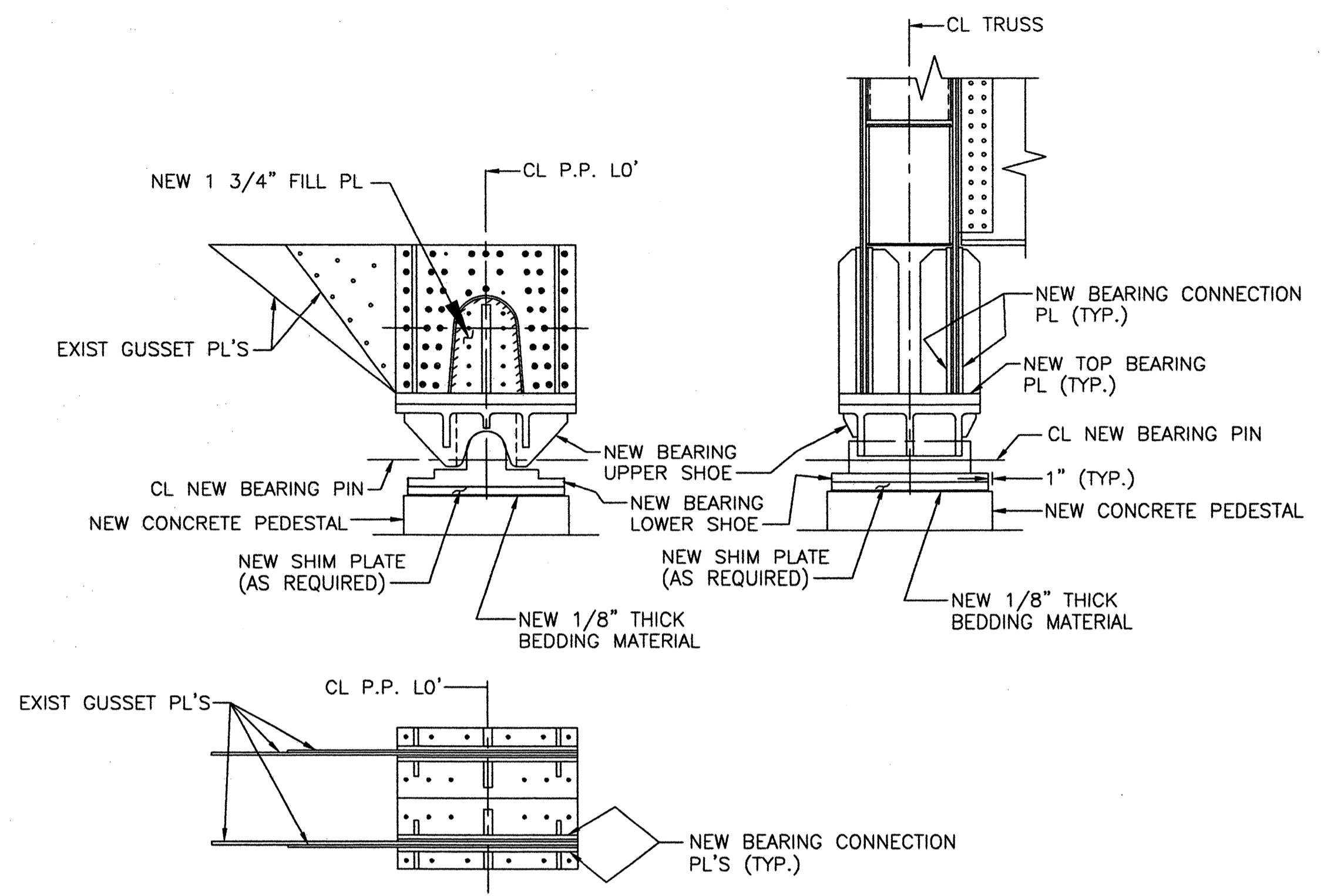
| | | | |
|---|-------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA LIVE LOAD BEARING REHABILITATION - 1 | | | |
| DESIGNED | C.P. AHLKOG | DETAILED | L.R. LENTZ |
| CHECKED | K.W. JOHNS | CHECKED | K.W. JOHNS |
| DRAWN BY | L.R. LENTZ | DATE | MARCH 2011 |
| SCALE | AS NOTED | DRAWING NO. | 52 OF 63 |

ML1

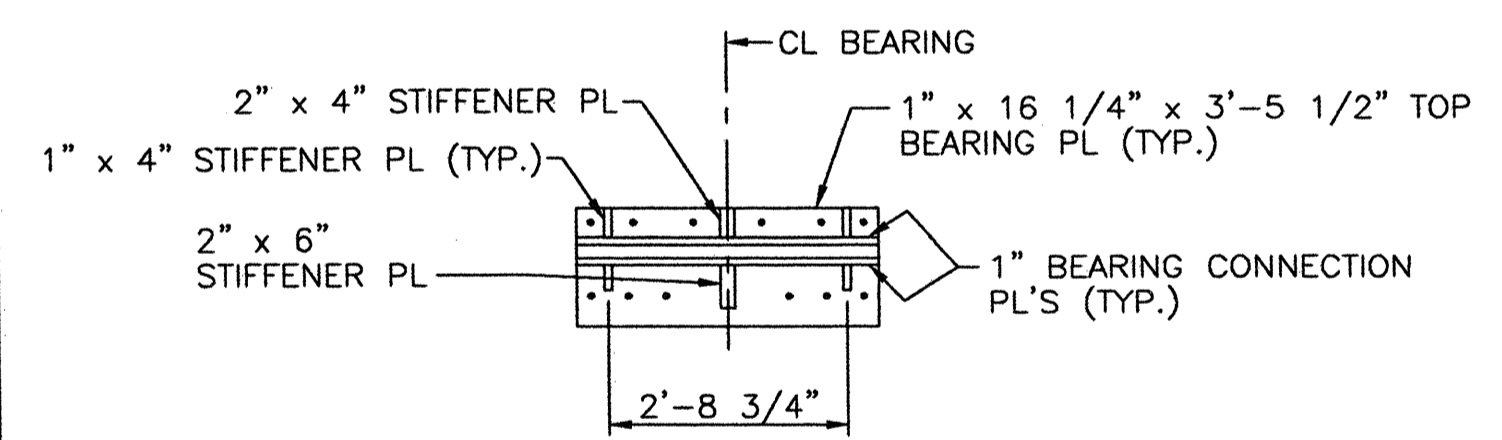
52-ML-LBR1.DWG



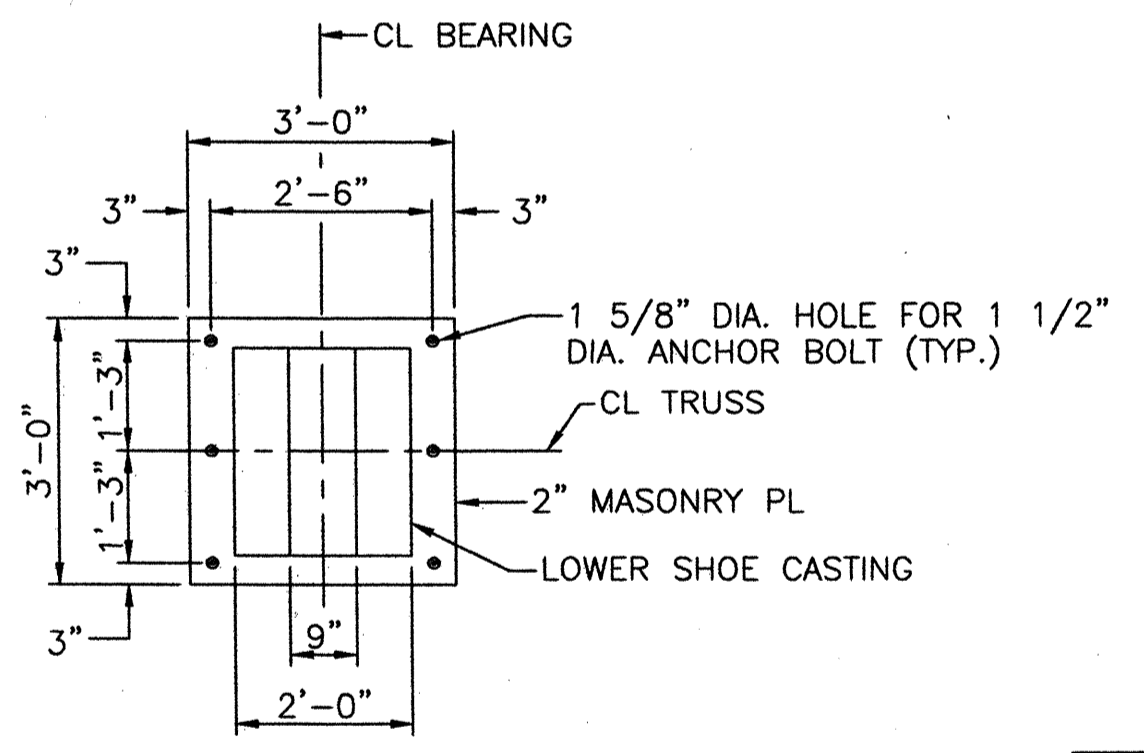
EXISTING FIXED BEARING - LO'
SCALE: 1/2" = 1'-0"



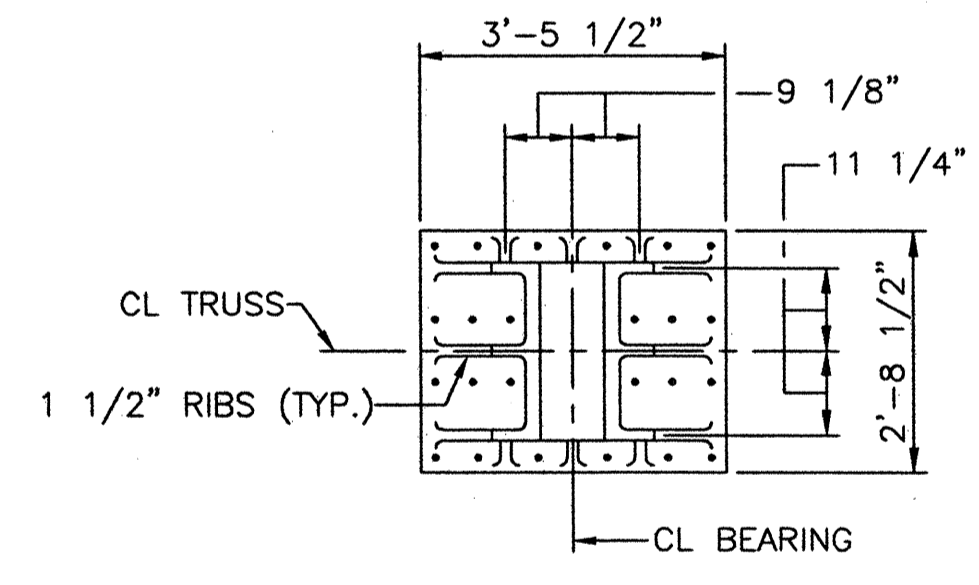
NEW FIXED BEARING - LO'
SCALE: 1/2" = 1'-0"



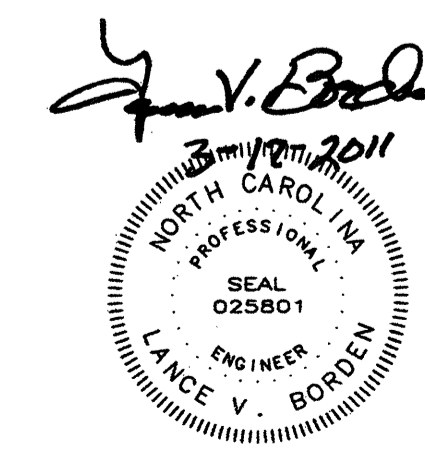
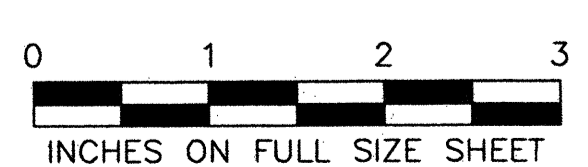
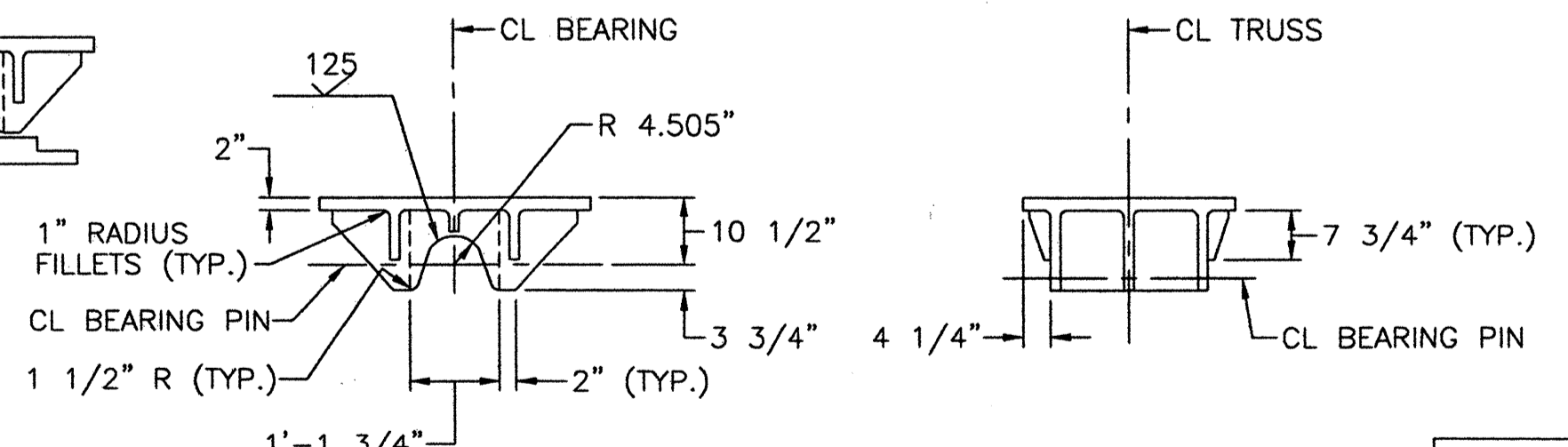
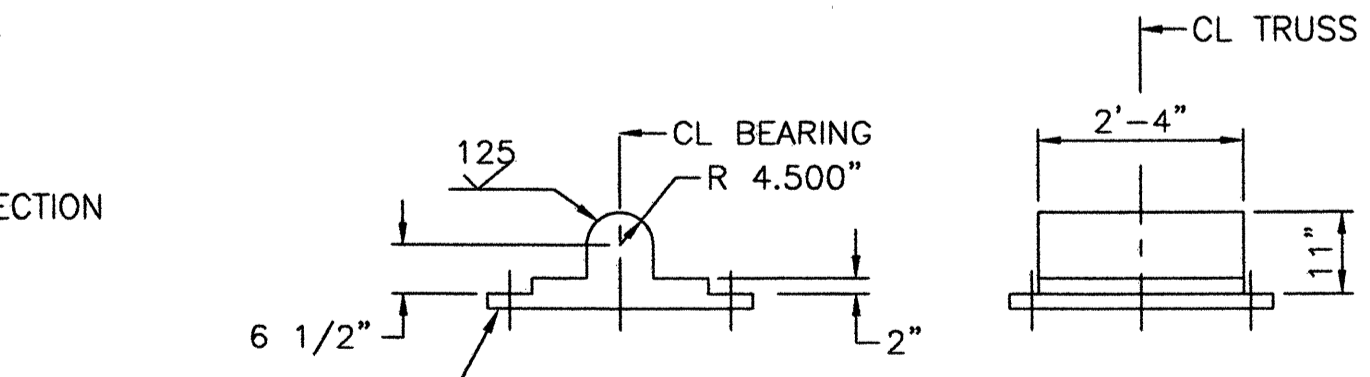
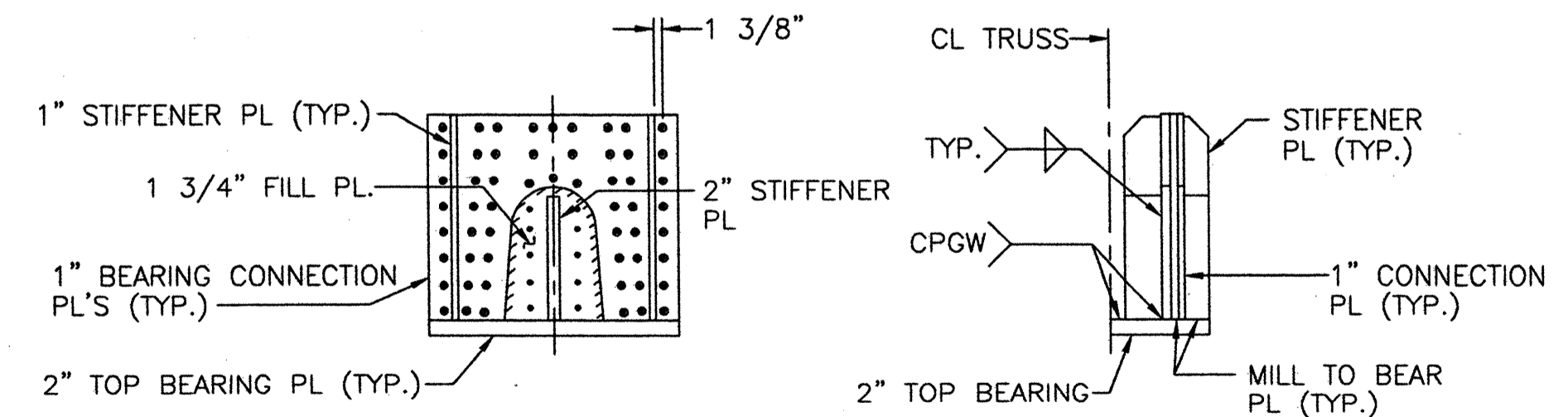
NEW BEARING DIAPHRAGM
SCALE: 1/2" = 1'-0"



NEW BEARING LOWER SHOE
SCALE: 1/2" = 1'-0"

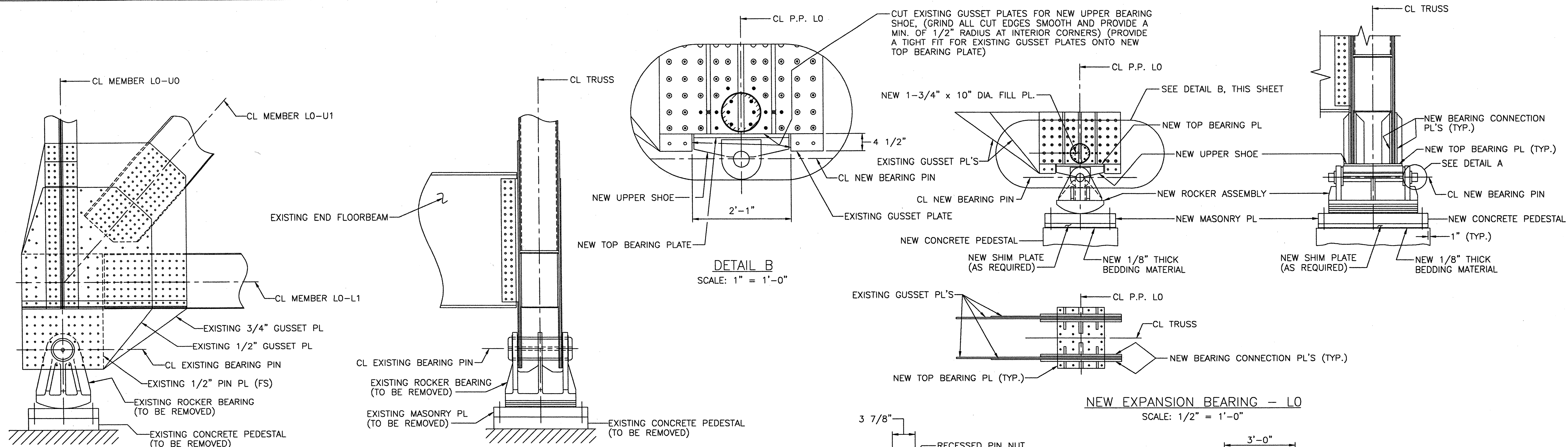


NEW BEARING UPPER SHOE
SCALE: 1/2" = 1'-0"

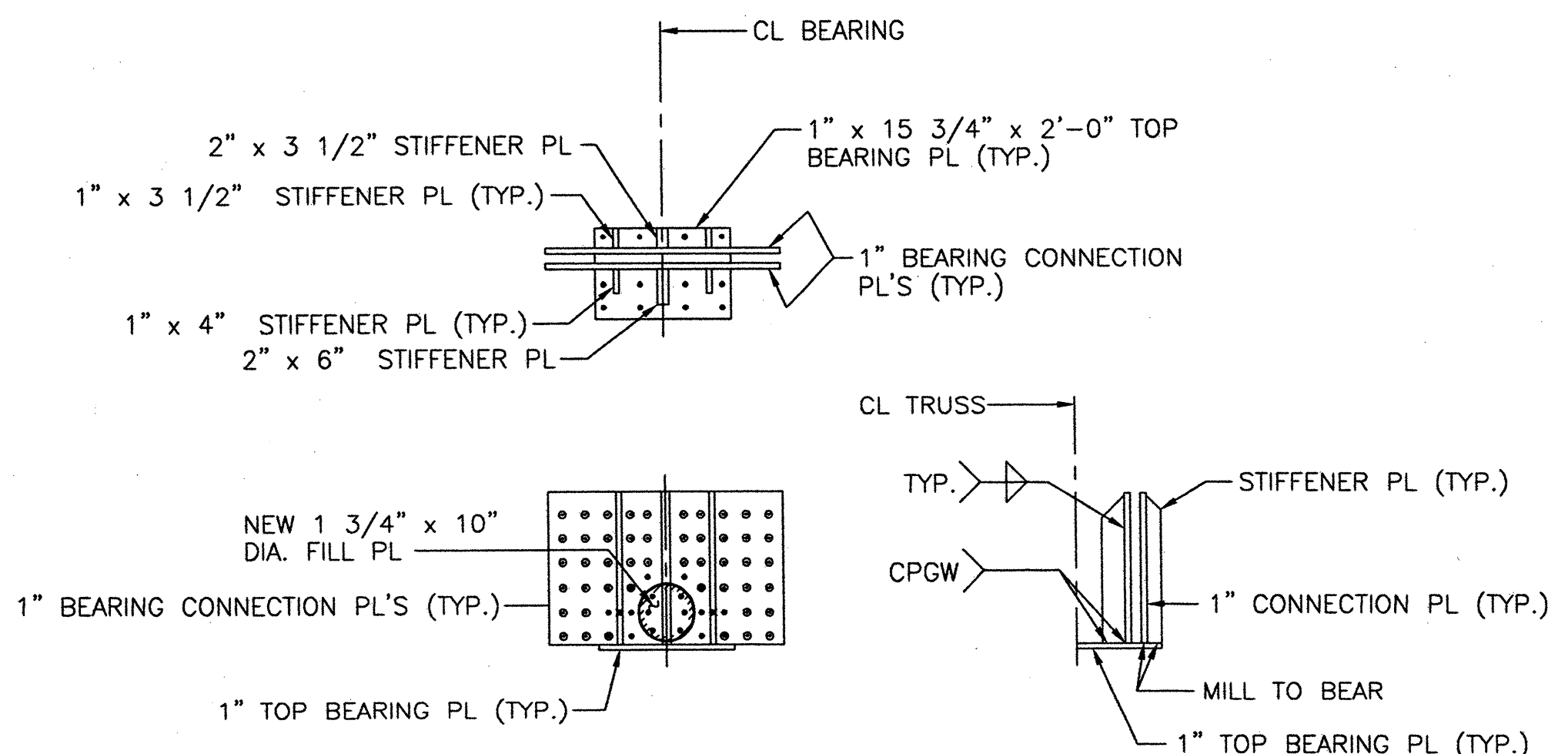


| | | | |
|---|---------------|------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA LIVE LOAD BEARING REHABILITATION - 2 | | | |
| DESIGNED | C.P. AHLSSKOG | DETAILED | L.R. LENTZ |
| CHECKED | K.W. JOHNS | CHECKED | K.W. JOHNS |
| DRAWN BY | | L.R. LENTZ | |
| SCALE | | AS NOTED | |
| DATE | | MARCH 2011 | |
| DRAWING NO. | | 53 OF 63 | |

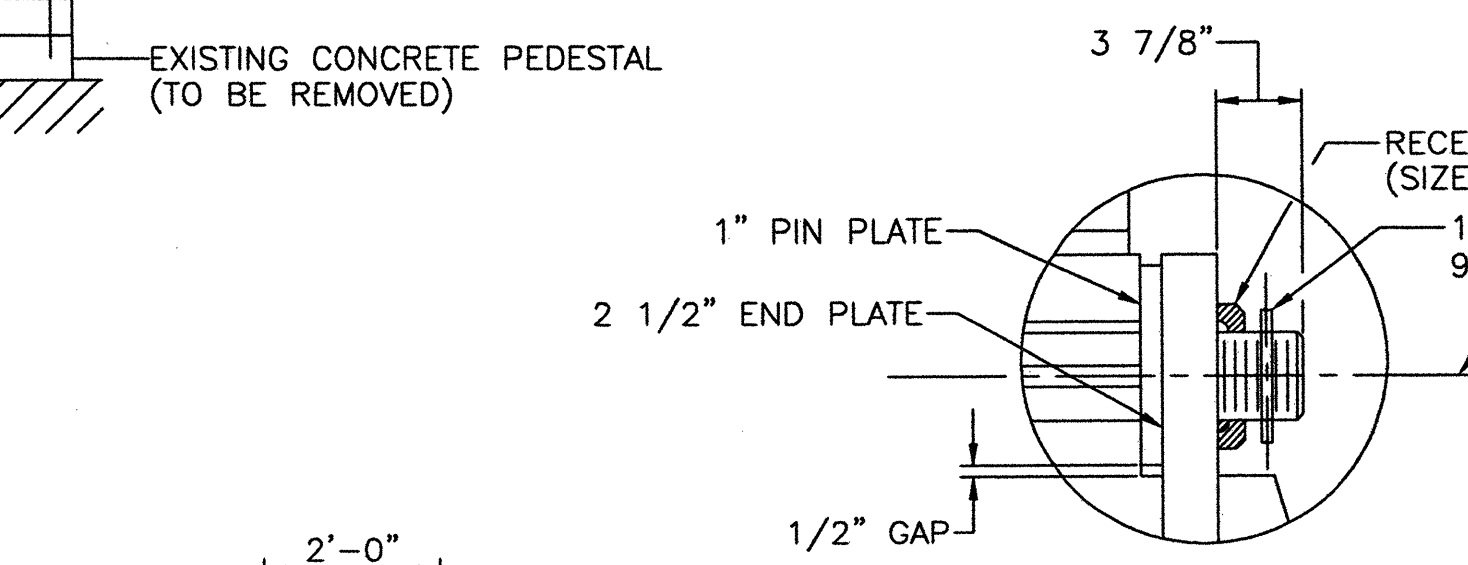
53-ML2-LIBR2.DWG



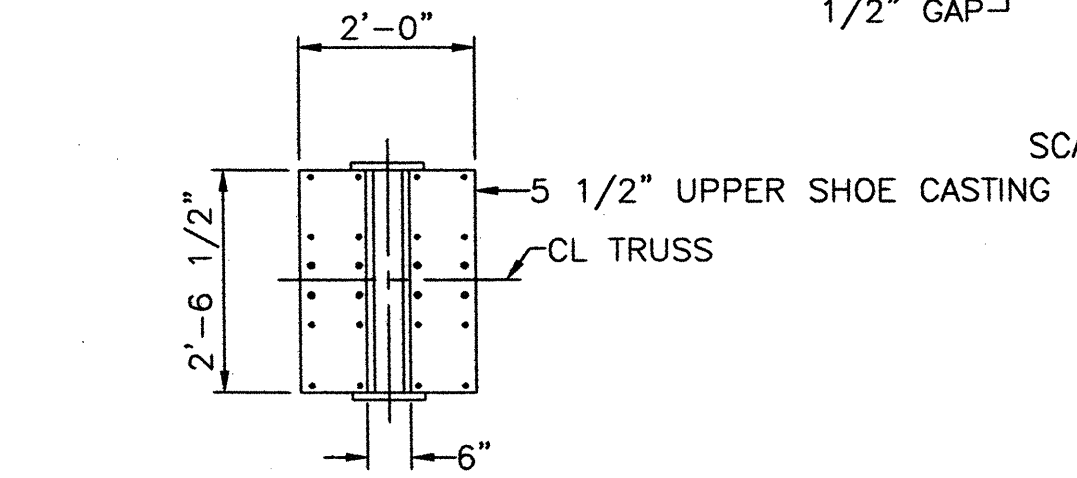
EXISTING EXPANSION BEARING - LO
SCALE: 1/2" = 1'-0"



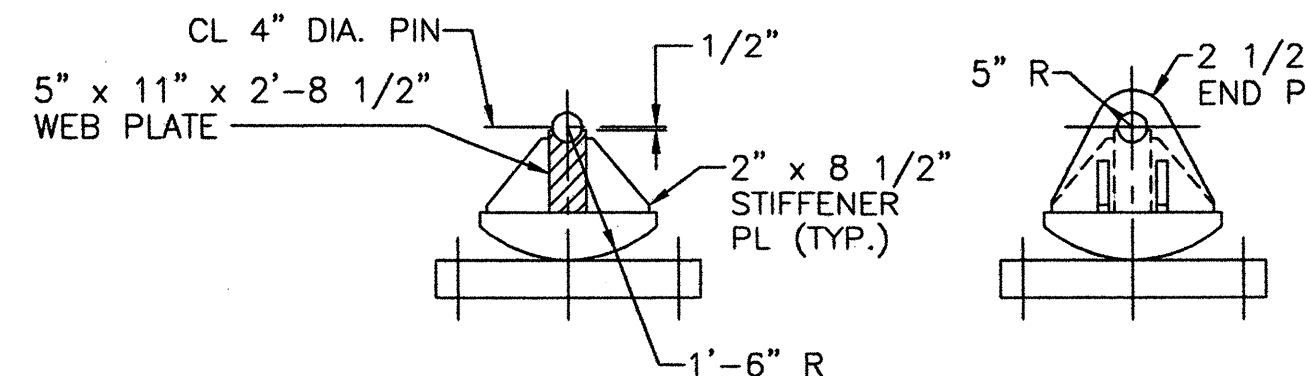
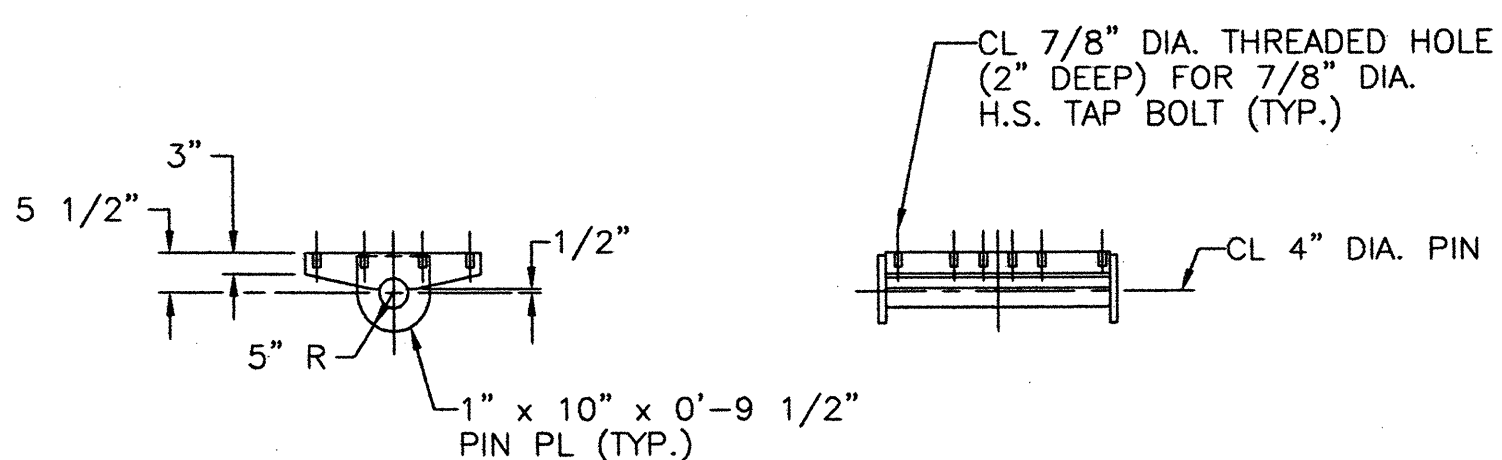
NEW BEARING CONNECTION PLATES
SCALE: 1/2" = 1'-0"



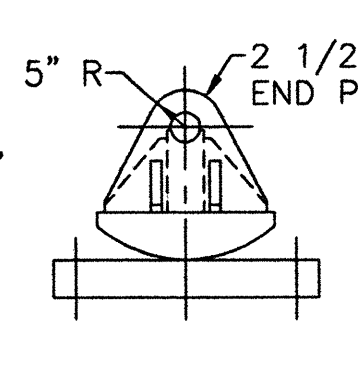
DETAIL A
SCALE: 1 1/2" = 1'-0"



NEW BEARING UPPER SHOE
SCALE: 1/2" = 1'-0"

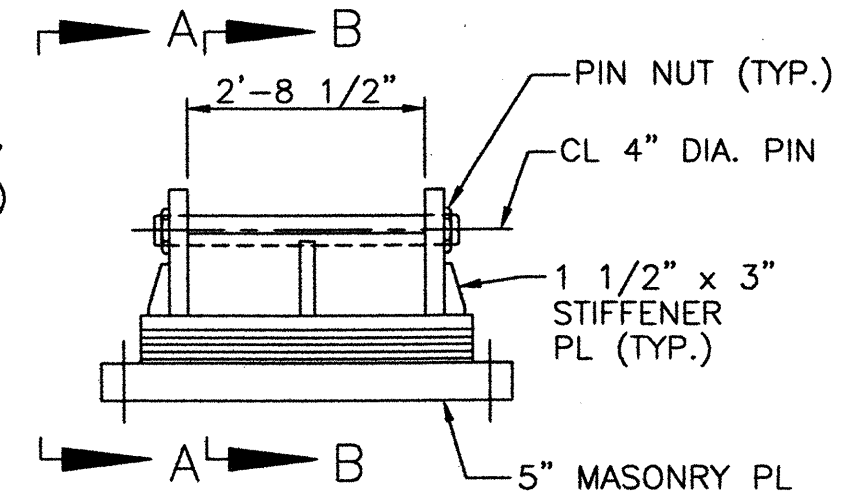
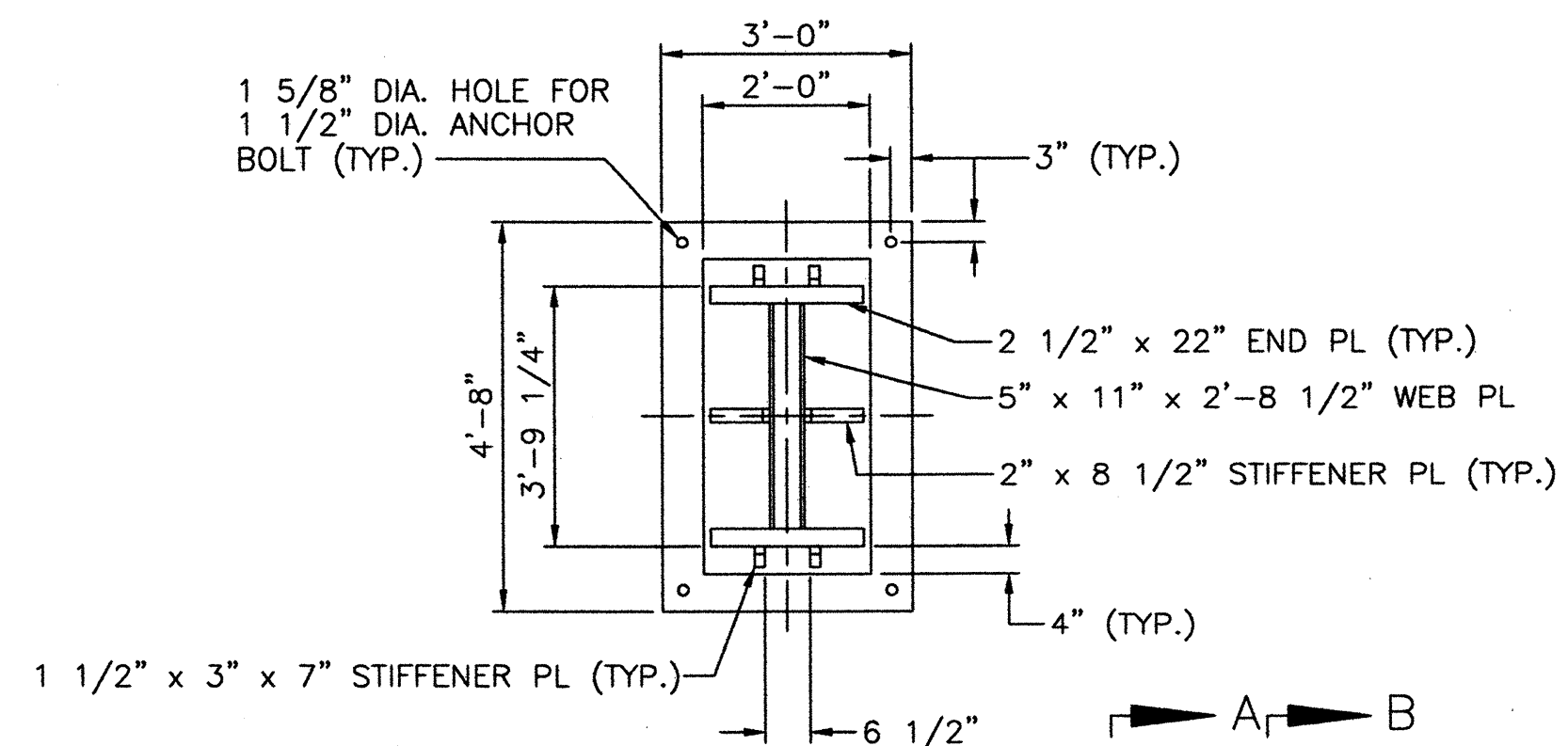


SECTION B-B
SCALE: 1/2" = 1'-0"

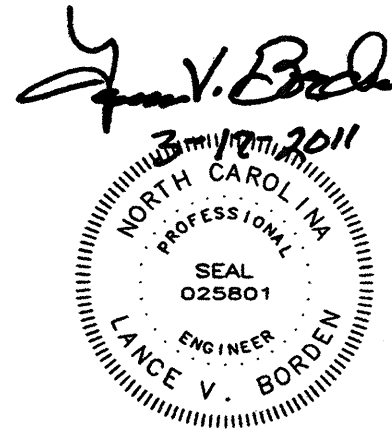
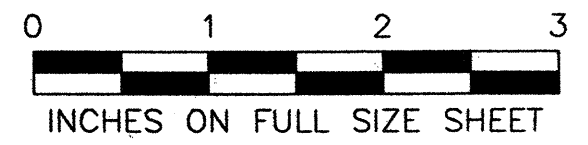


SECTION A-A
SCALE: 1/2" = 1'-0"

NEW EXPANSION BEARING - LO
SCALE: 1/2" = 1'-0"



NEW BEARING ROCKER ASSEMBLY

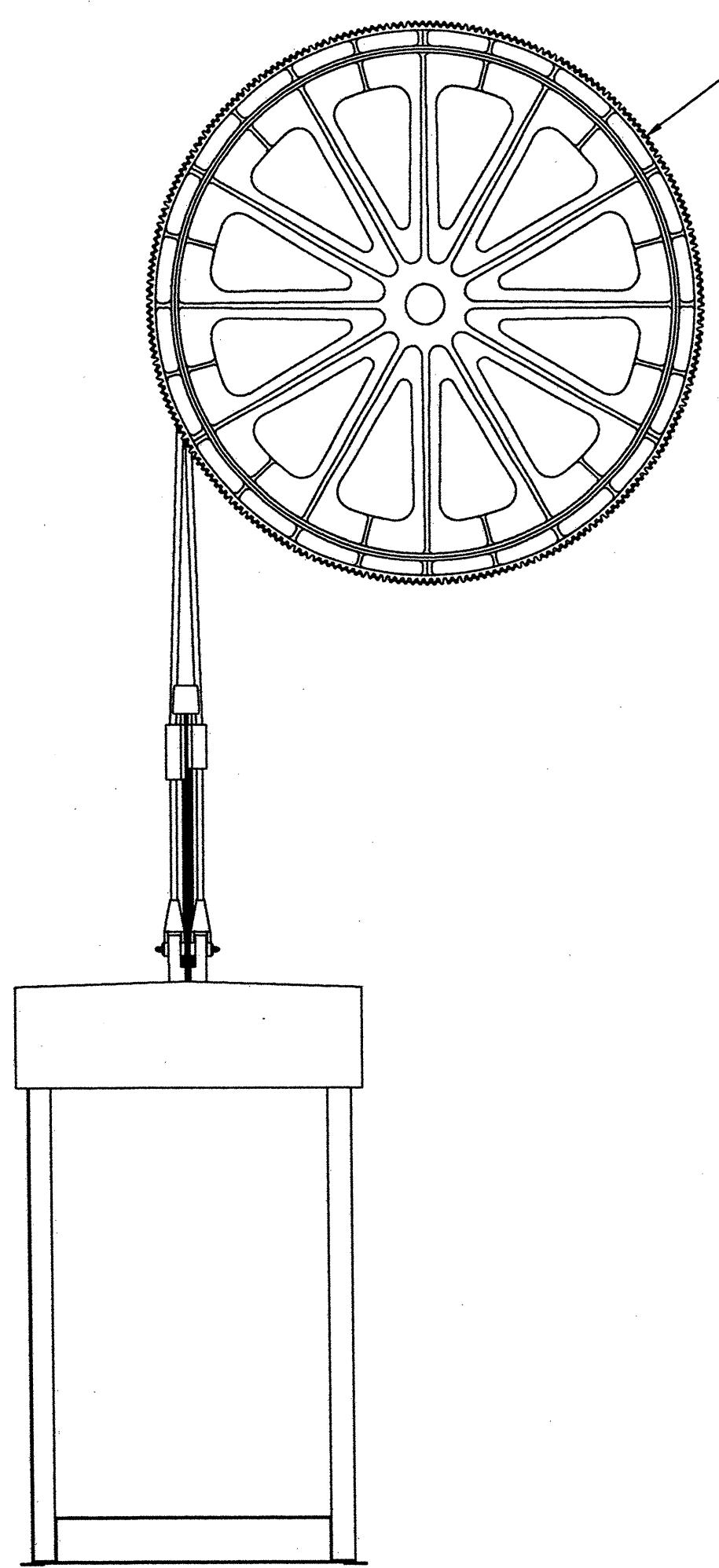


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
LIVE LOAD BEARING
REHABILITATION - 3

| | | | | | |
|----------|---------------|----------|------------|-------------|------------|
| DESIGNED | C.P. AHLSSKOG | DETAILED | L.R. LENTZ | DATE | MARCH 2011 |
| CHECKED | K.W. JOHNS | CHECKED | K.W. JOHNS | DRAWING NO. | 54 OF 63 |

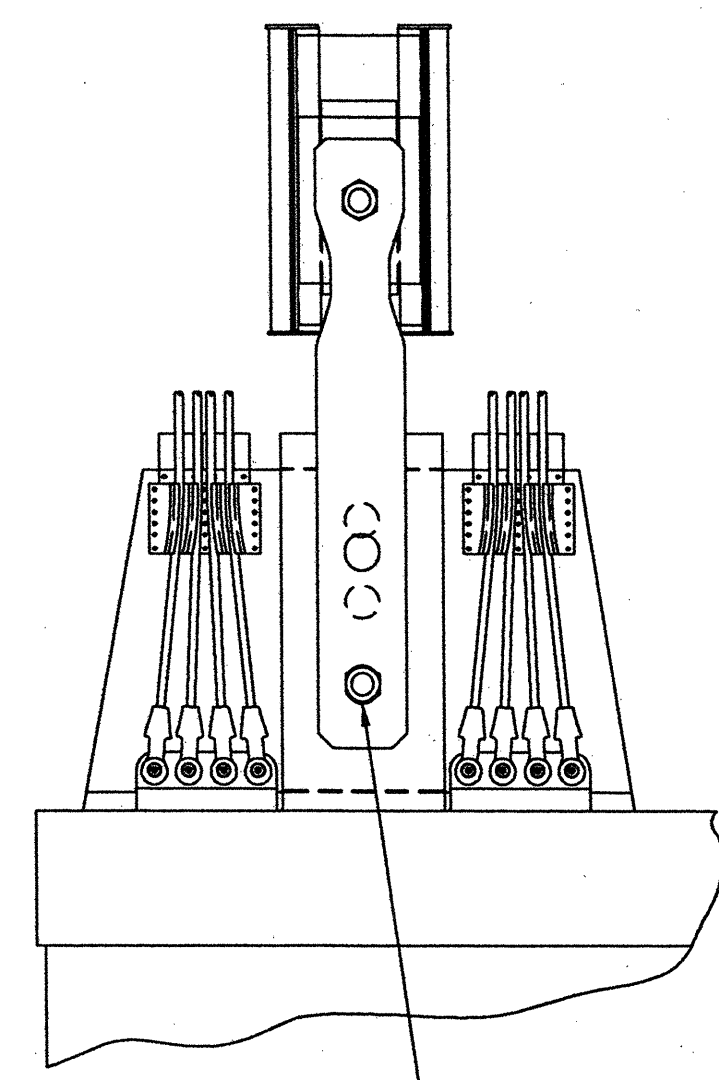
ML3

54-ML3-LBR3.DWG



MAIN COUNTERWEIGHT SHEAVE

A

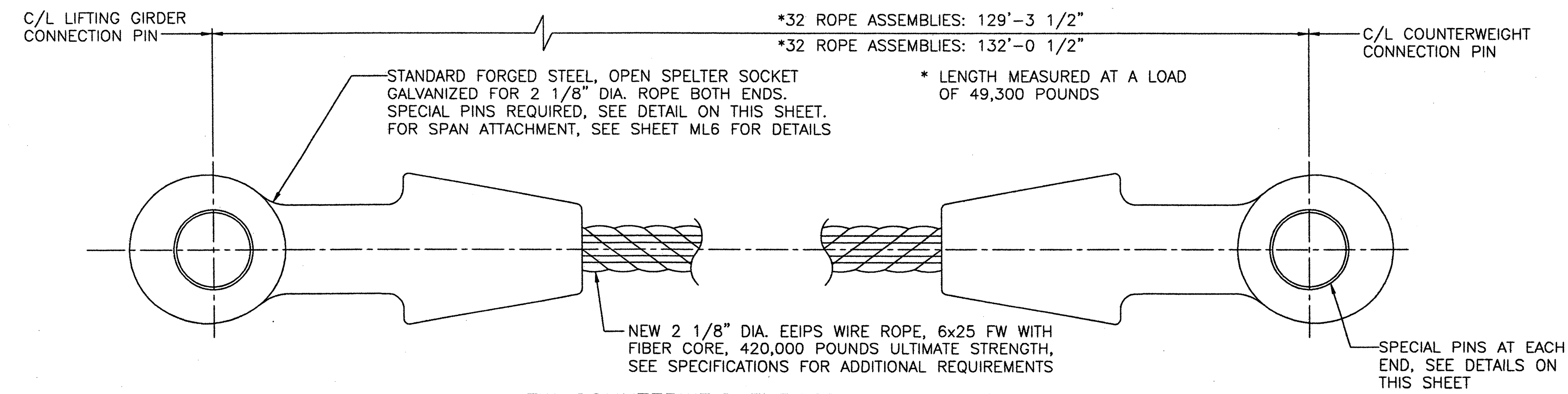


TO SUSPEND COUNTERWEIGHT FROM HANGER PLATES, JACK SPAN TO ALIGN HOLES IN HANGERS AND COUNTERWEIGHT; INSTALL LOWER HANGER PIN AND NUTS - 4 PLACES. SEE SPECIFICATIONS ALSO. SEE PIN DETAIL ON SHEET ML5 IF EXISTING CANNOT BE LOCATED.

VIEW A-A

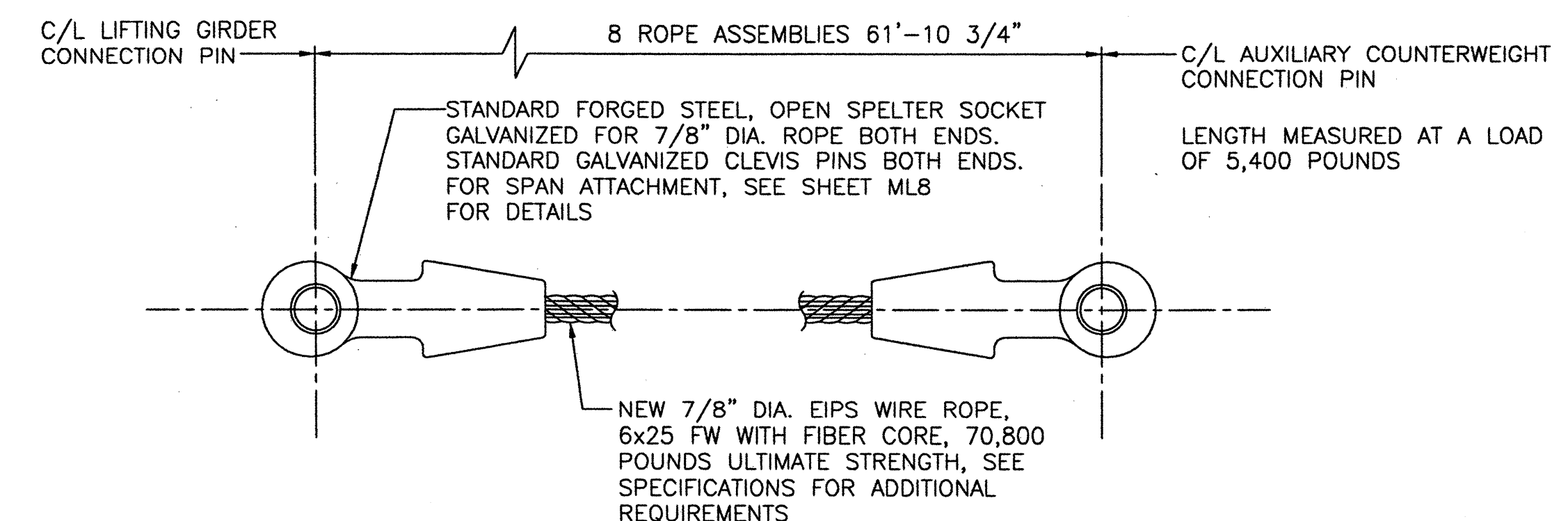
SCALE: 1/4" = 1'-0"
ONE (1) CORNER OF MAIN COUNTERWEIGHT SHOWN

MAIN COUNTERWEIGHT
SCALE: 1/4" = 1'-0"



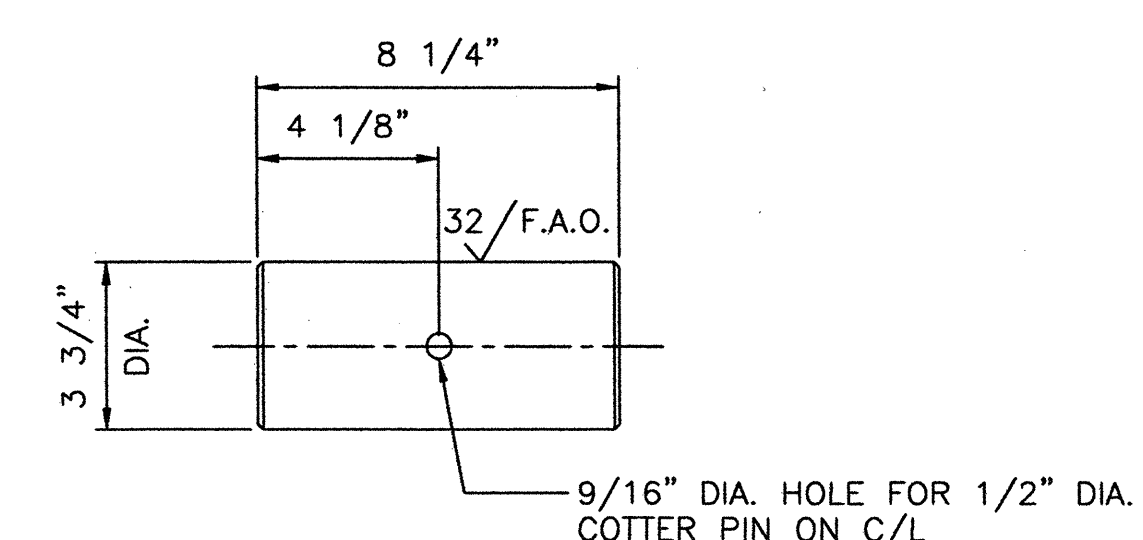
NEW COUNTERWEIGHT ROPE AND SOCKETS

SCALE: 3" = 1'-0"



NEW AUXILIARY COUNTERWEIGHT ROPE AND SOCKETS

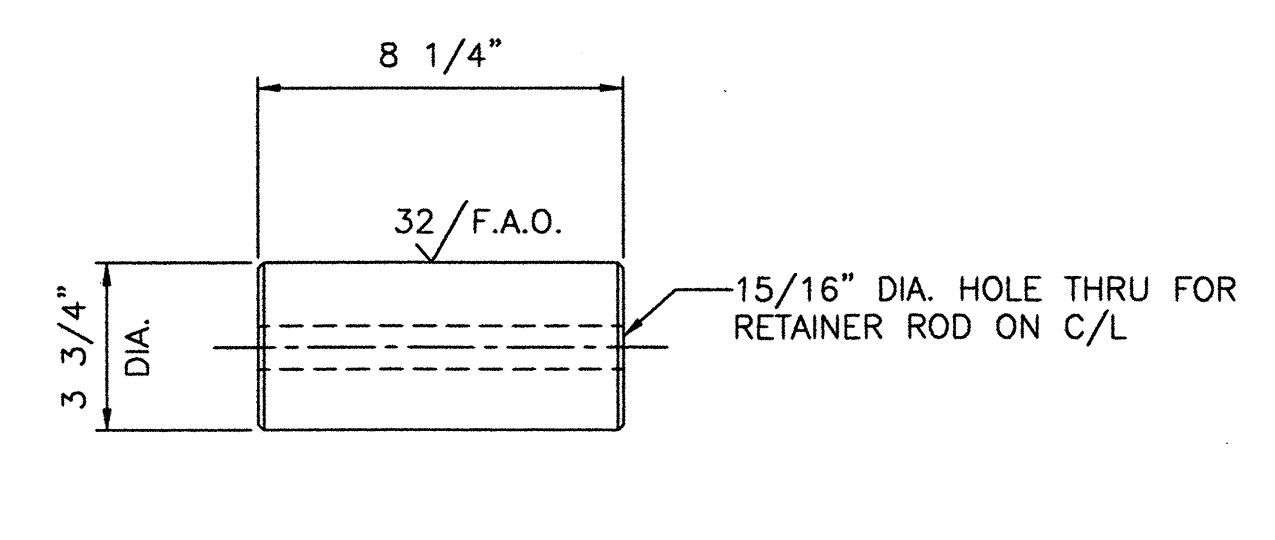
SCALE: 3" = 1'-0"



NEW PIN FOR LIFTING GIRDER CONNECTION

SCALE: 3" = 1'-0"
(64 REQUIRED)

MATERIAL:
STAINLESS STEEL, ASTM A276,
TYPE 410, CONDITION H



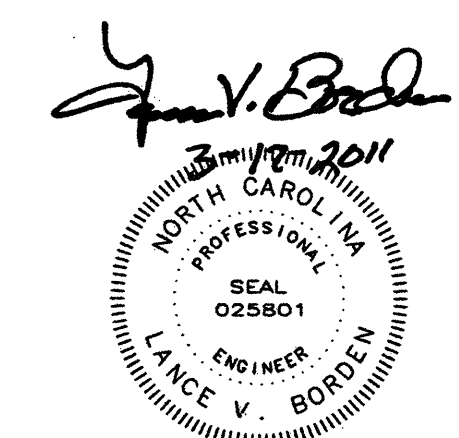
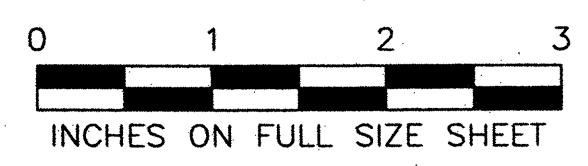
NEW PIN FOR COUNTERWEIGHT CONNECTION

SCALE: 3" = 1'-0"
(64 REQUIRED)

MATERIAL:
STAINLESS STEEL, ASTM A276,
TYPE 410, CONDITION H

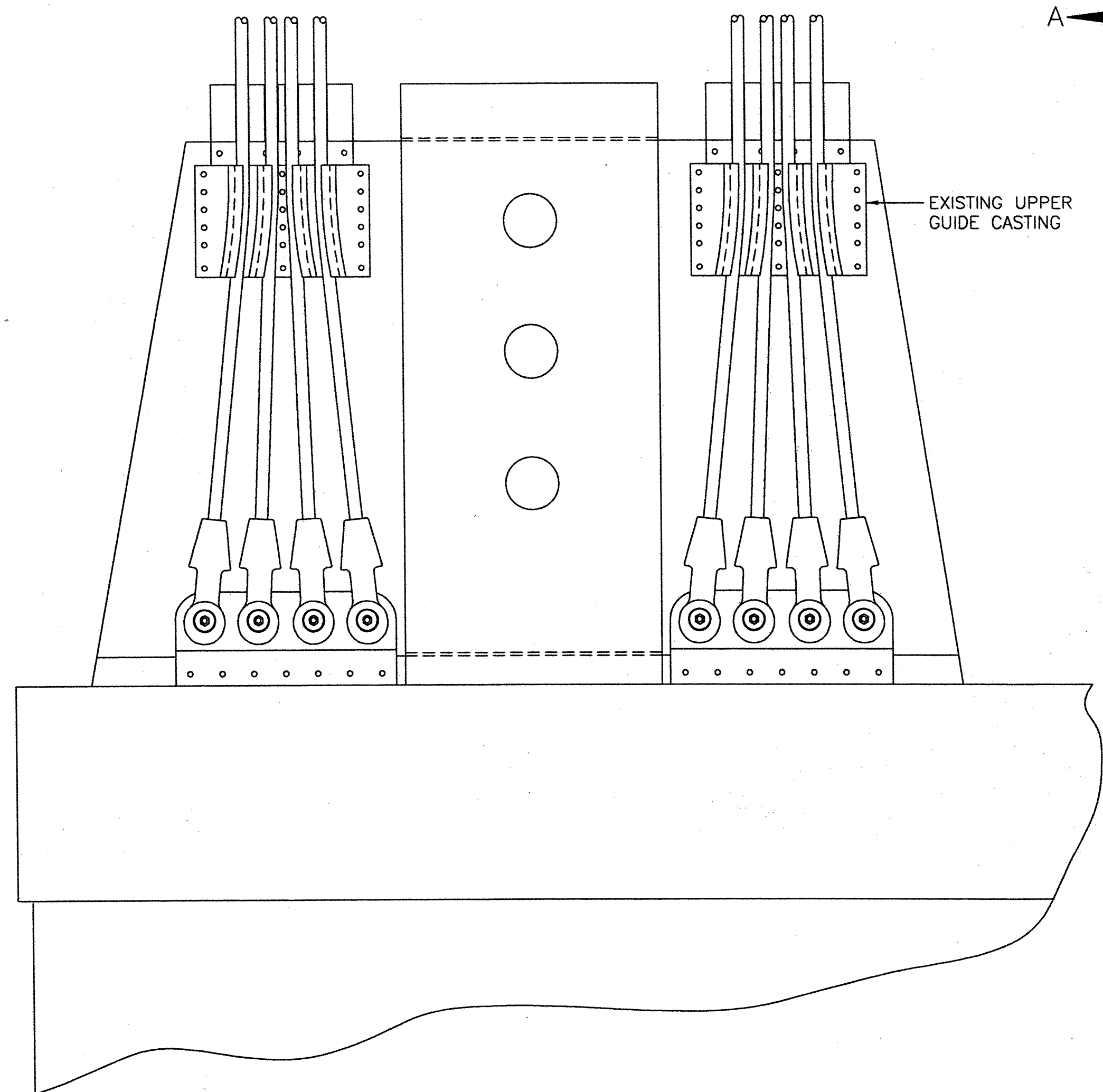
NOTES:

1. CONTRACTOR SHOULD NOTE THAT THE NEW COUNTERWEIGHT ROPE LENGTHS ARE PER THE ORIGINAL DESIGN. THE JACKING PLAN MUST ACCOUNT FOR THE EXISTING ROPE STRETCH PLUS THE RELAXED STATE OF THE NEW ROPES. THE RELAXED STATE IS ESTIMATED TO REQUIRE 4 INCHES OF JACKING. THE JACKING REQUIRED FOR THE EXISTING ROPE STRETCH WILL BE DETERMINED BY THE CONTRACTOR'S FIELD MEASUREMENTS OF THE EXISTING ROPE LENGTHS AND COUNTERWEIGHT HANGER HOLE LOCATIONS.
2. CONTRACTOR MUST VERIFY AND SUBMIT ALL EXISTING ROPE LENGTHS IN THE FIELD TO AN ACCURACY OF $\pm 1/4"$.
3. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF COUNTERWEIGHT ROPES.
4. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
5. CONTRACTOR SHALL REMOVE ALL OLD LUBRICANT, DEBRIS, ETC. FROM EXISTING COUNTERWEIGHT SHEAVE GROOVES BEFORE INSTALLATION OF NEW ROPES.



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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA NEW MAIN AND AUXILIARY COUNTERWEIGHT ROPES | | | |
| DESIGNED | D.L. MILLER | DATE | MARCH 2011 |
| CHECKED | A.M. BRODSKY | CHECKED | R.L. REED |
| DRAWN BY | R.L. REED | SCALE | AS NOTED |
| DRAWING NO. 55 OF 63 | | ML4 | |

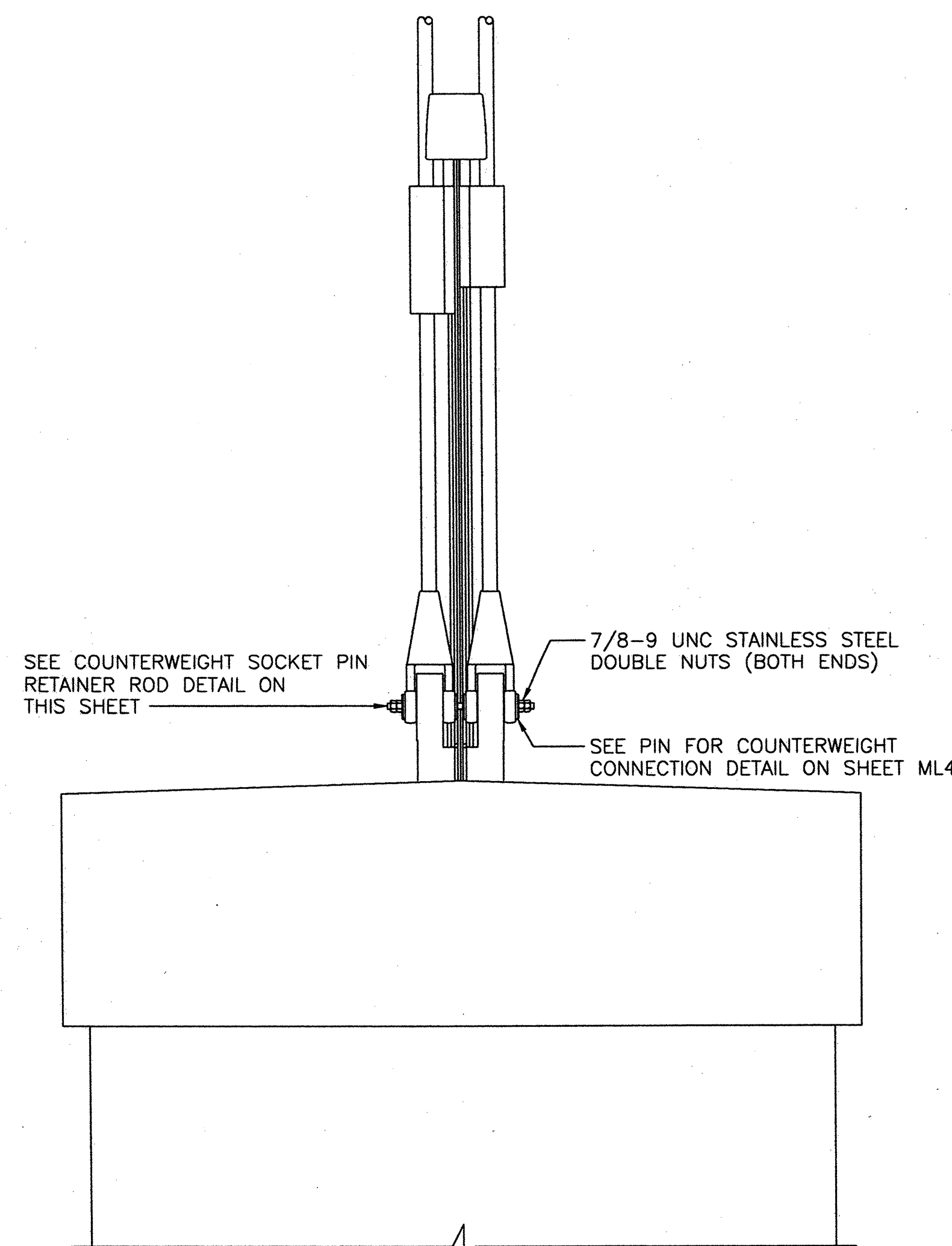
55-ML4-NMACR.DWG



ELEVATION
MAIN COUNTERWEIGHT ROPE CONNECTION

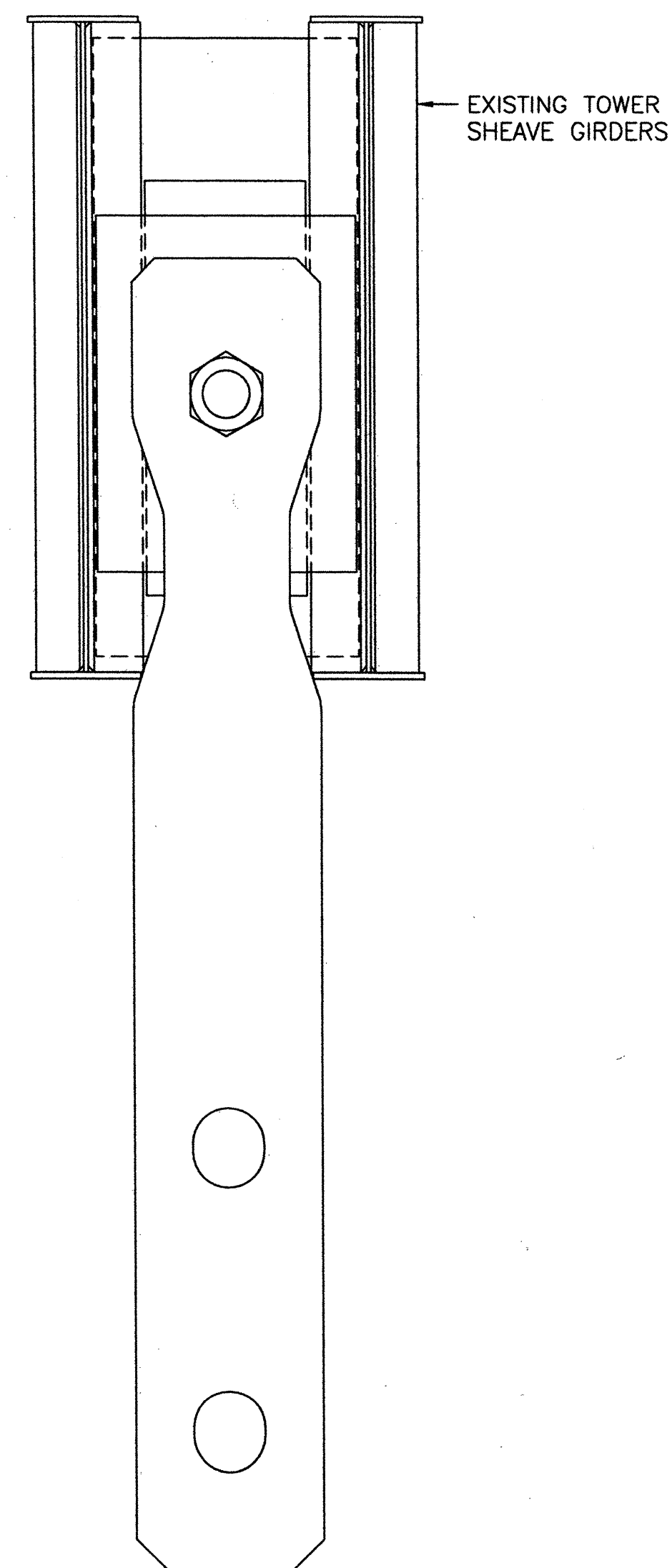
SCALE: 3/4" = 1'-0"

A



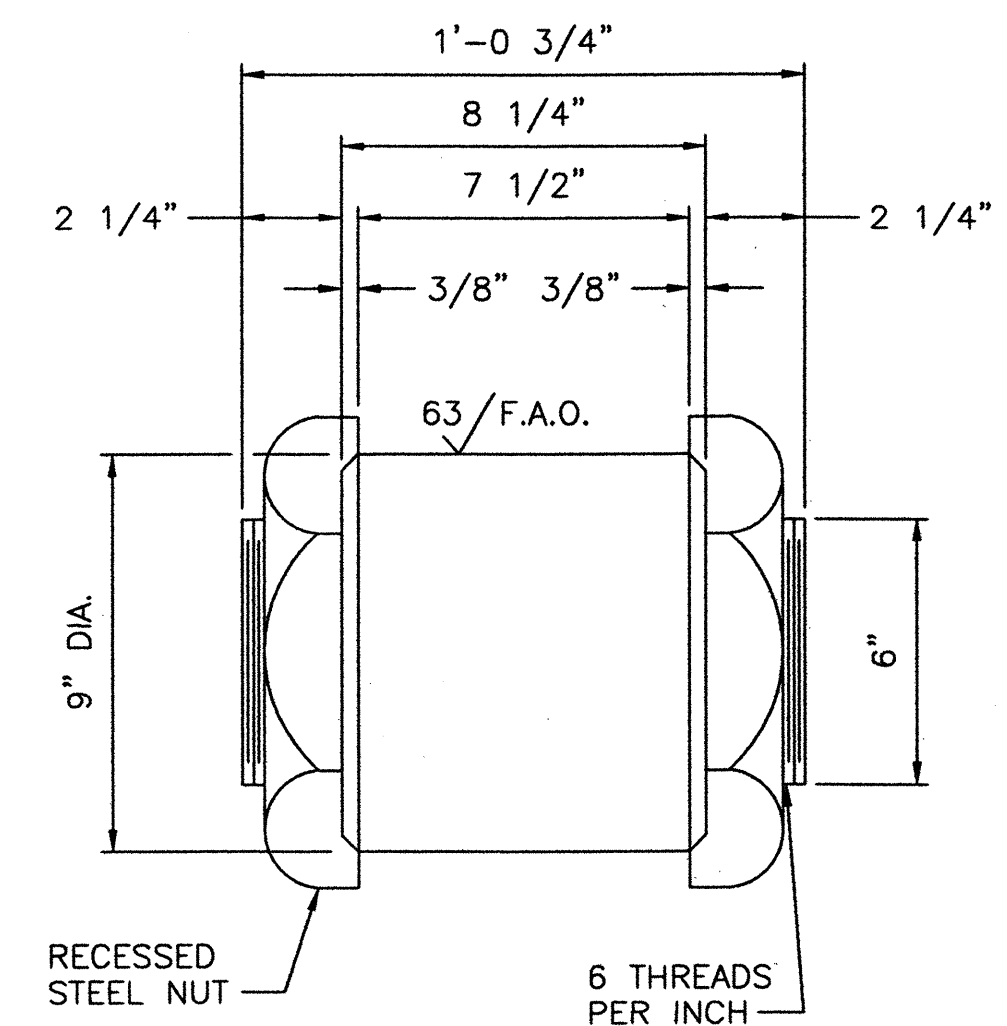
VIEW A-A

SCALE: 3/4" = 1'-0"



EXISTING MAIN COUNTERWEIGHT HANGERS

SCALE: 3/4" = 1'-0"



LOWER HANGER PIN DETAIL

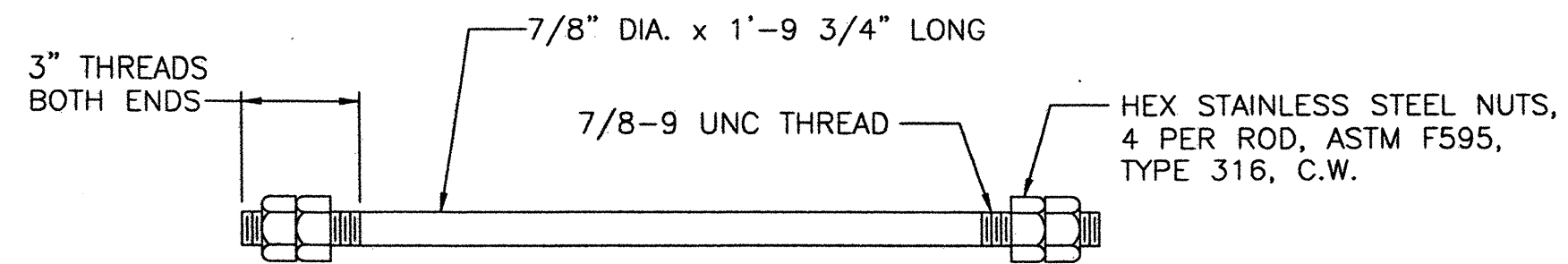
SCALE: 3" = 1'-0"

NOTE: 4 OF THESE PINS ARE REQUIRED FOR HANGING THE MAIN COUNTERWEIGHTS. IF EXISTING PINS ARE AVAILABLE, USE THEM. IF NOT, THE CONTRACTOR MUST FABRICATE THE HANGER PIN AND NUTS.

MATERIAL: FORGED STEEL, ASTM A668, CLASS D OR EQUAL.

NOTES:

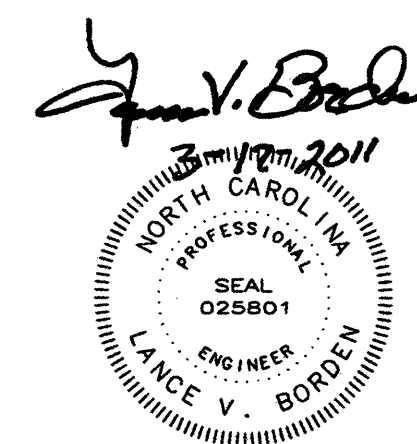
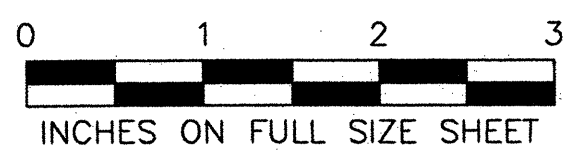
1. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF COUNTERWEIGHT ROPES.
2. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
3. CONTRACTOR SHALL REMOVE OLD LUBRICANT, DEBRIS, ETC. FROM ALL EXISTING UPPER GUIDE CASTINGS.



NEW COUNTERWEIGHT SOCKET PIN RETAINER ROD

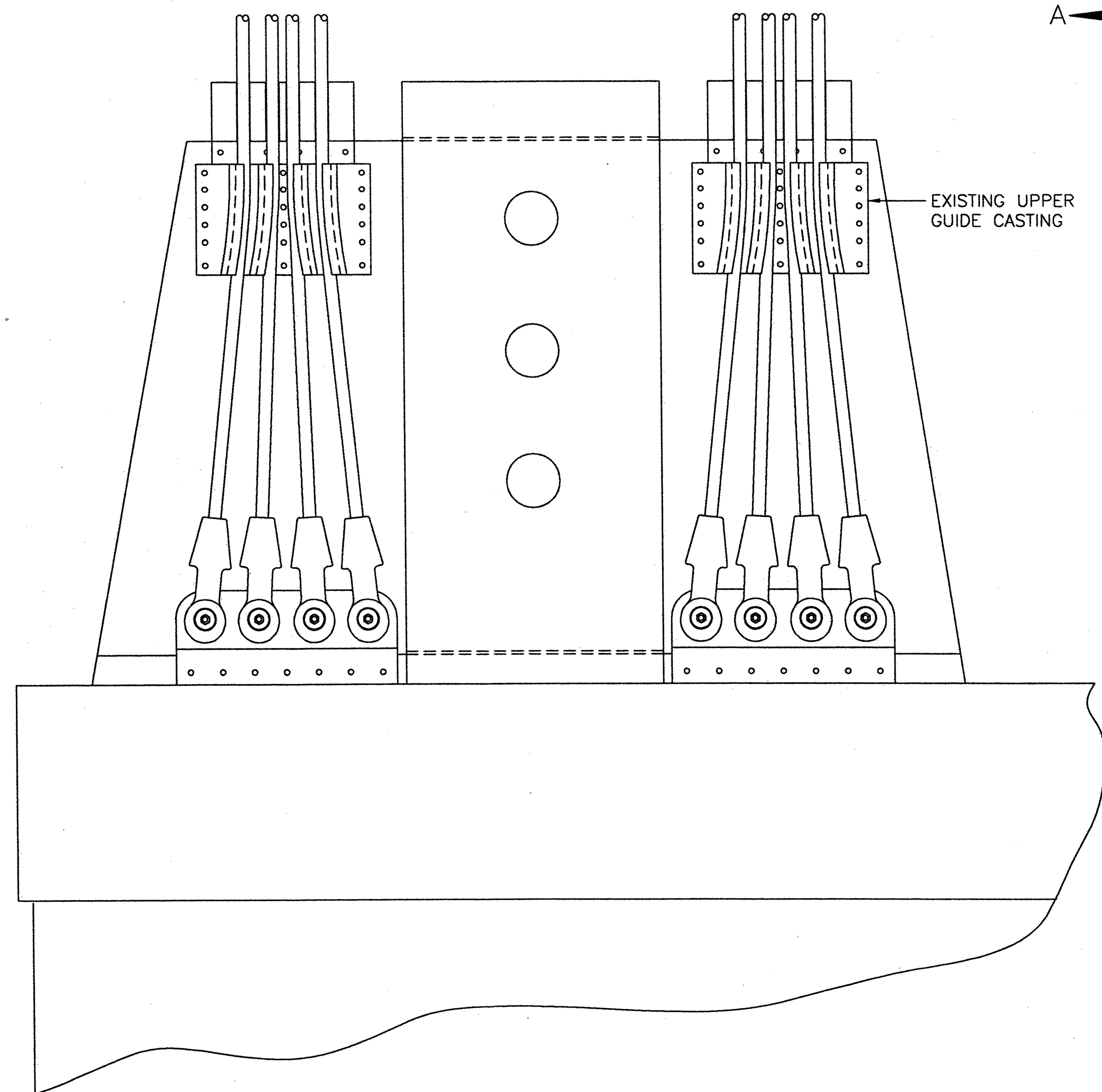
SCALE: 3" = 1'-0"
(32 REQUIRED)

STAINLESS STEEL ASTM F593, TYPE 316, CONDITION SH2

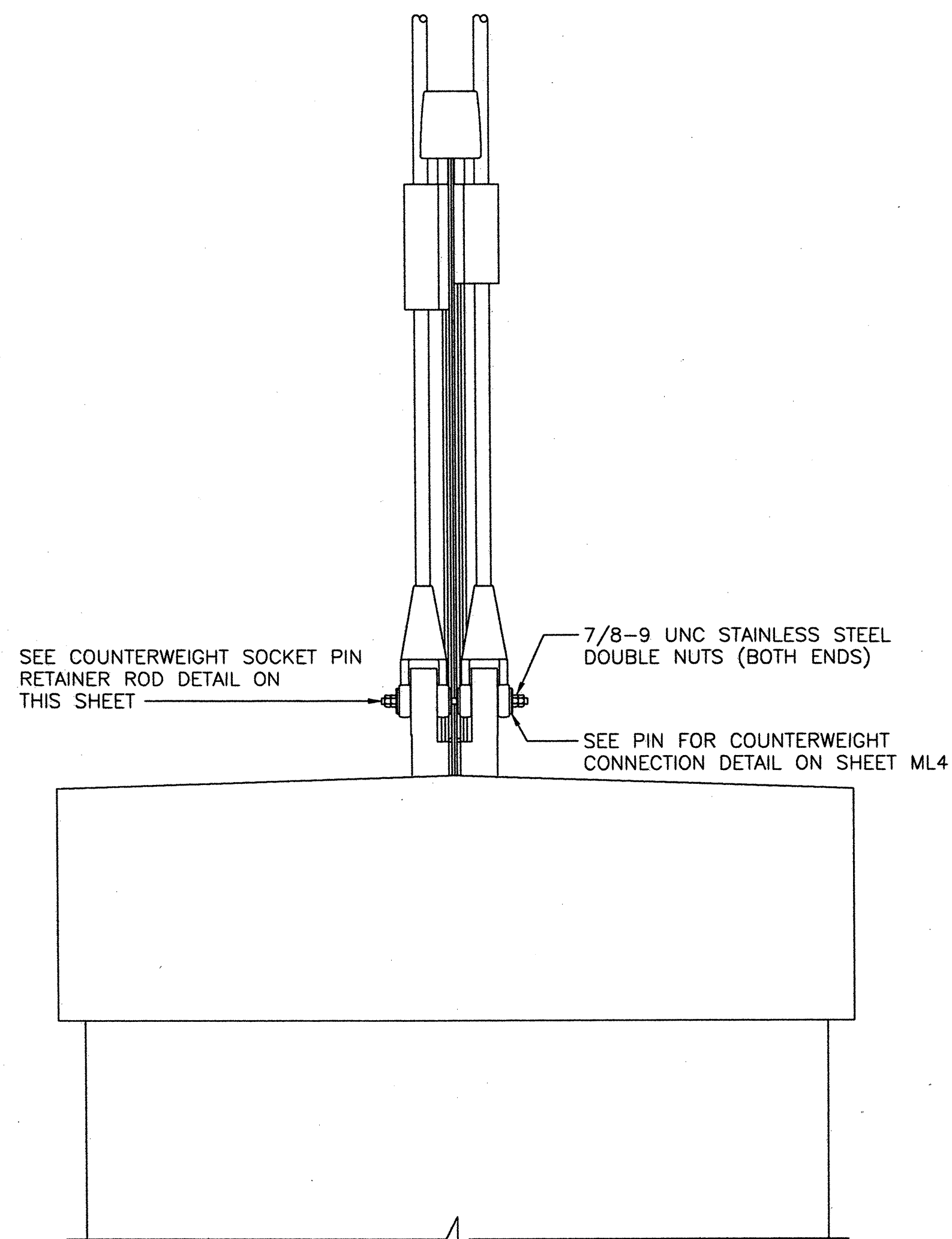


| | | | |
|---|--------------------|----------------------|--------------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA ROPE ATTACHMENTS AT MAIN COUNTERWEIGHT | | | |
| DRAWN BY: R.L. REED | | SCALE: AS NOTED | |
| DESIGNED: D.L. MILLER | DATE: MARCH 2011 | DATE: MARCH 2011 | DATE: MARCH 2011 |
| CHECKED: A.M. BRODSKY | CHECKED: R.L. REED | CHECKED: R.L. REED | CHECKED: R.L. REED |
| DRAWING NO. 56 OF 63 | | DRAWING NO. 56 OF 63 | |

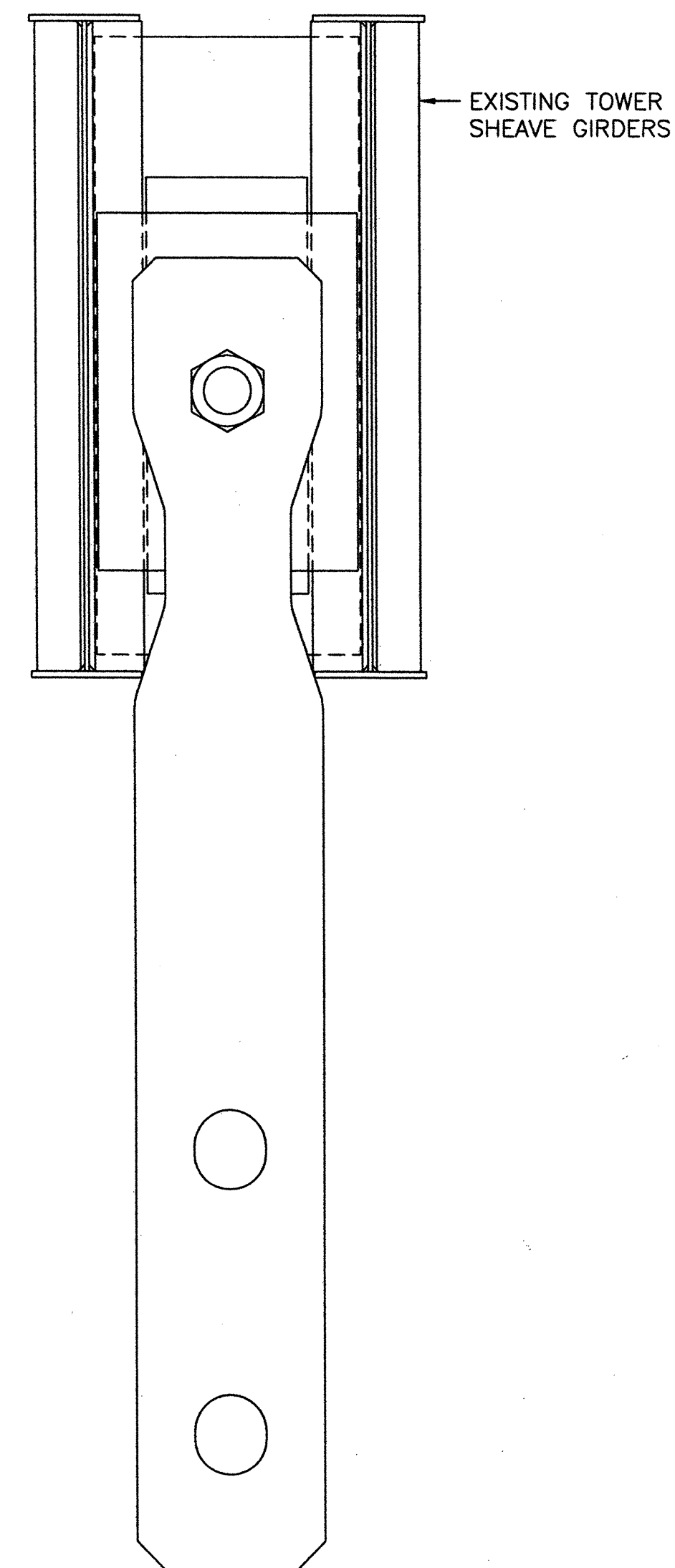
56-ML5-RAMC.DWG



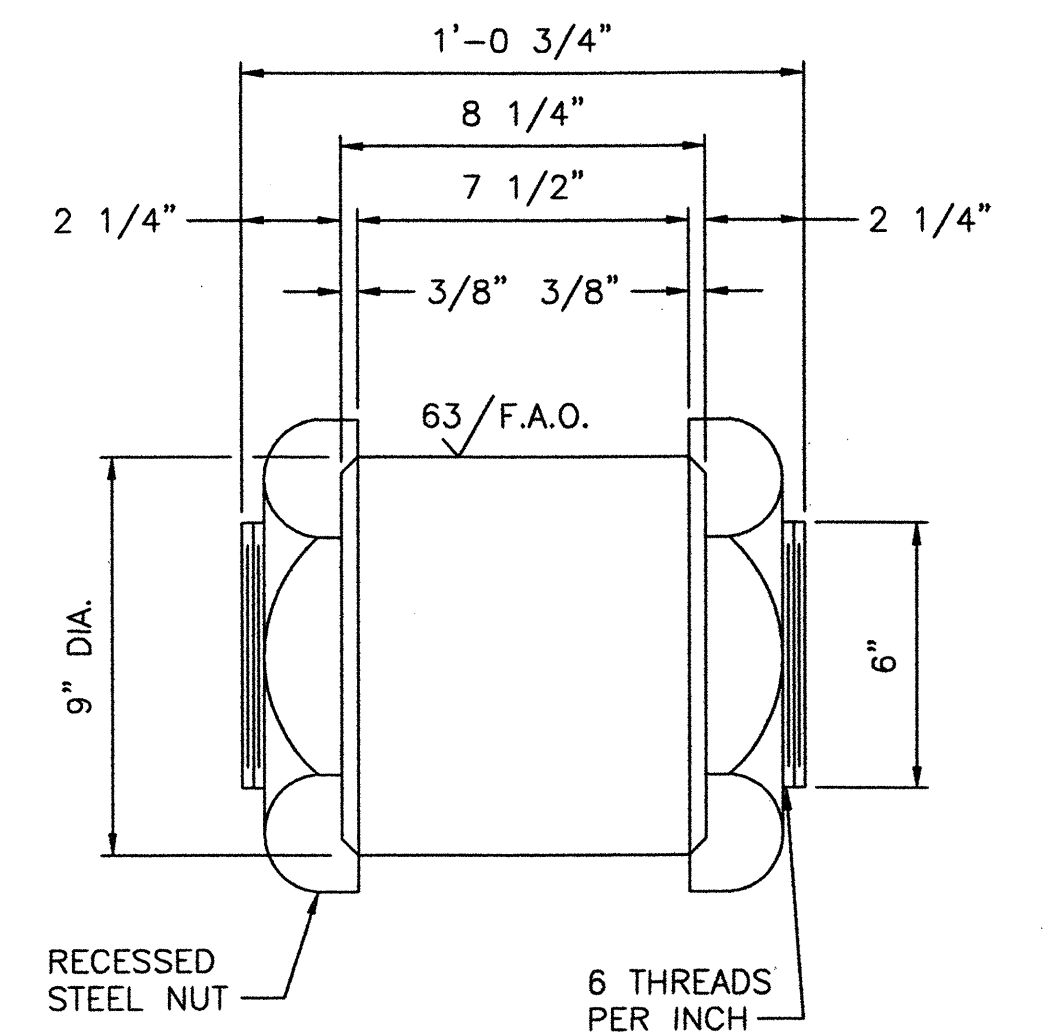
ELEVATION
MAIN COUNTERWEIGHT ROPE CONNECTION
 SCALE: 3/4" = 1'-0"



VIEW A-A
 SCALE: 3/4" = 1'-0"



EXISTING MAIN COUNTERWEIGHT HANGERS
 SCALE: 3/4" = 1'-0"



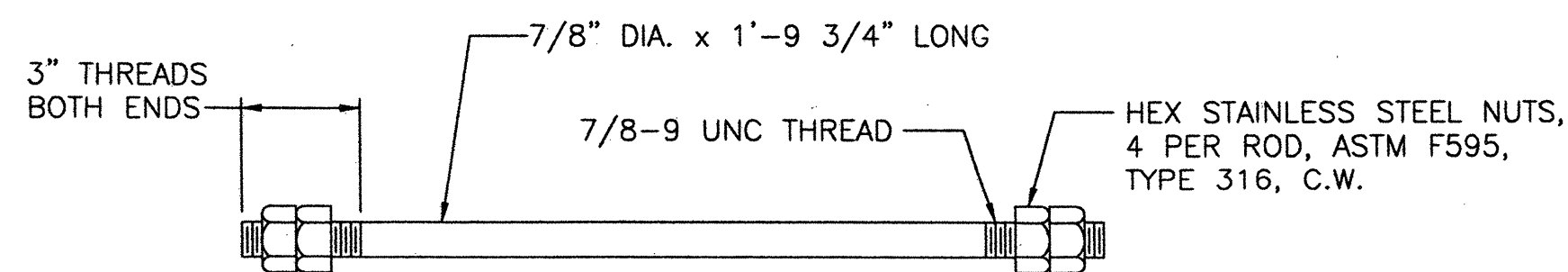
LOWER HANGER PIN DETAIL
 SCALE: 3" = 1'-0"

NOTE: 4 OF THESE PINS ARE REQUIRED FOR HANGING THE MAIN COUNTERWEIGHTS. IF EXISTING PINS ARE AVAILABLE, USE THEM. IF NOT, THE CONTRACTOR MUST FABRICATE THE HANGER PIN AND NUTS.

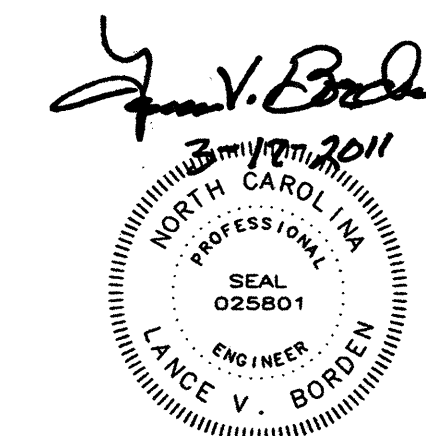
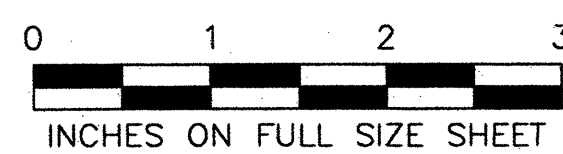
MATERIAL: FORGED STEEL, ASTM A668, CLASS D OR EQUAL.

NOTES:

1. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF COUNTERWEIGHT ROPES.
2. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
3. CONTRACTOR SHALL REMOVE OLD LUBRICANT, DEBRIS, ETC. FROM ALL EXISTING UPPER GUIDE CASTINGS.

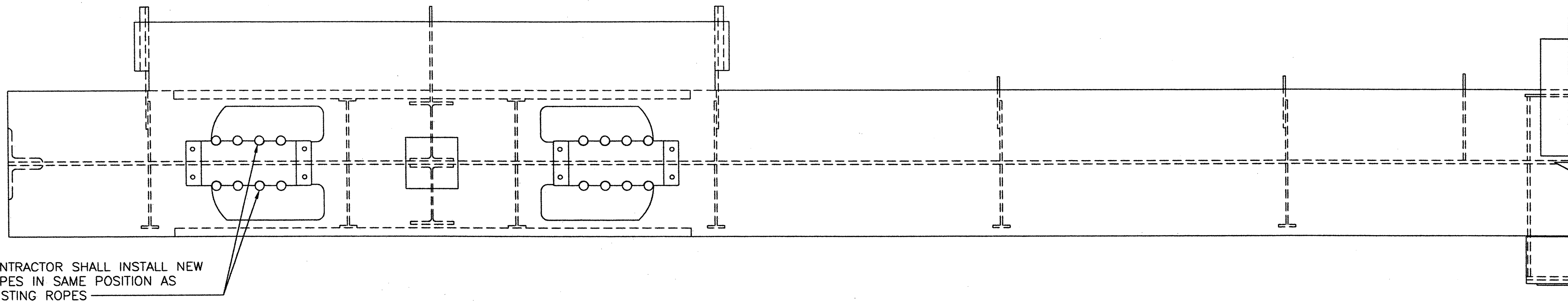


NEW COUNTERWEIGHT SOCKET PIN RETAINER ROD
 SCALE: 3" = 1'-0"
 (32 REQUIRED)
 STAINLESS STEEL ASTM F593, TYPE 316, CONDITION SH2

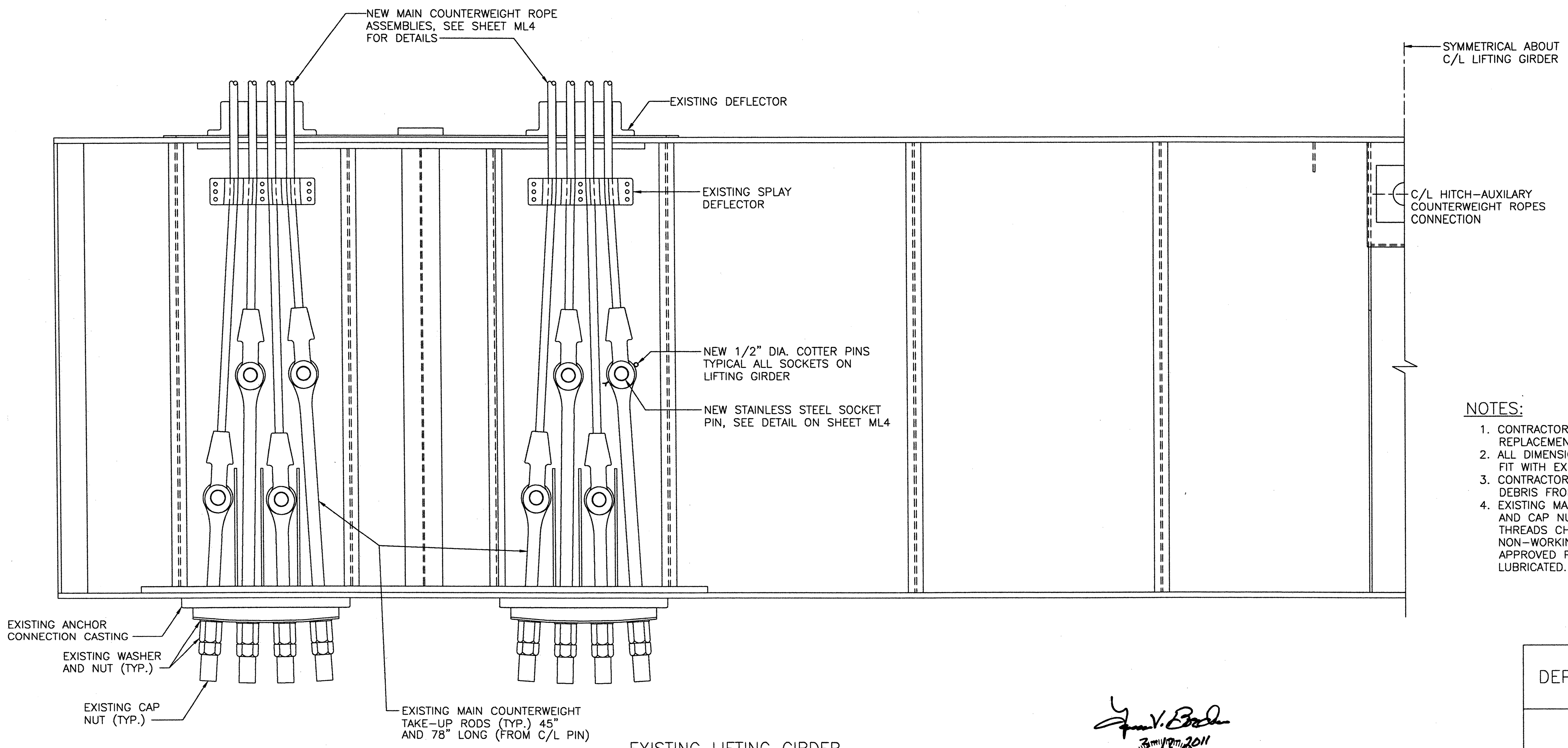


| | | | |
|---|-------------------|----------------------|--|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA ROPE ATTACHMENTS AT MAIN COUNTERWEIGHT | | | |
| DRAWN BY R.L. REED | | SCALE AS NOTED | |
| DESIGNED D.L. MILLER | DATE MARCH 2011 | DRAWING NO. 56 OF 63 | |
| CHECKED A.M. BRODSKY | CHECKED R.L. REED | | |

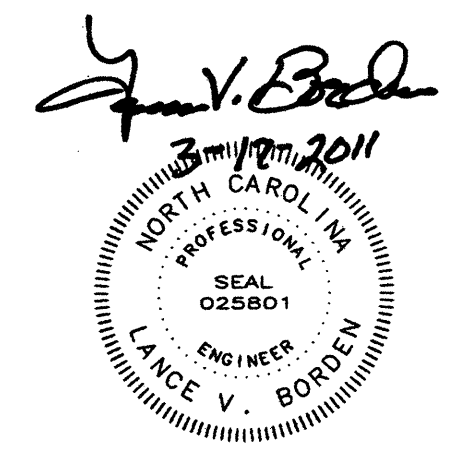
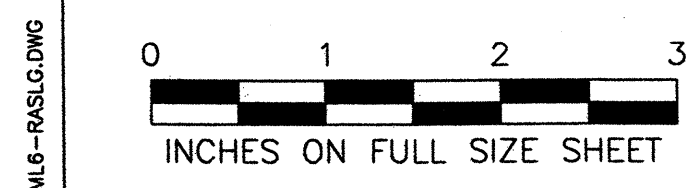
ML5



PLAN
SCALE: 3/4" = 1'-0"

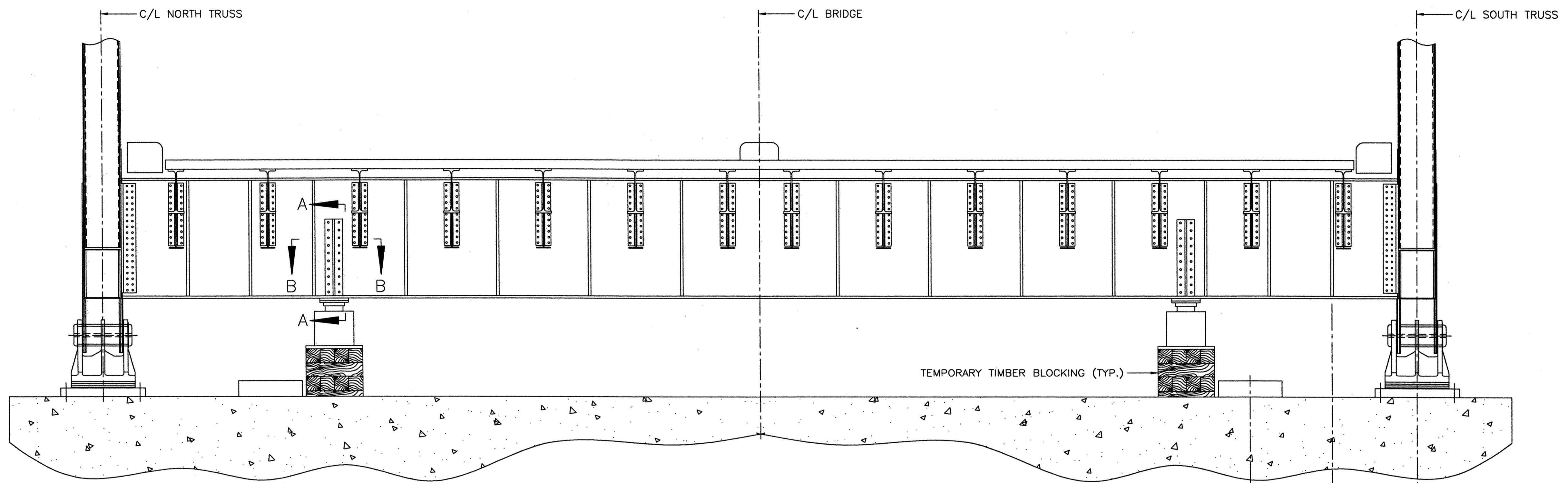


- NOTES:**
1. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF COUNTERWEIGHT ROPES.
 2. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
 3. CONTRACTOR SHALL REMOVE ALL OLD LUBRICANT AND DEBRIS FROM EXISTING SPLAY DEFLECTORS.
 4. EXISTING MAIN COUNTERWEIGHT TAKE-UP RODS, NUTS, AND CAP NUTS TO BE REMOVED, CLEANED, AND THREADS CHASED FULL LENGTH BEFORE REINSTALLATION. NON-WORKING SURFACES TO BE PAINTED WITH APPROVED PAINT SYSTEM AND THREADS TO BE WELL LUBRICATED.



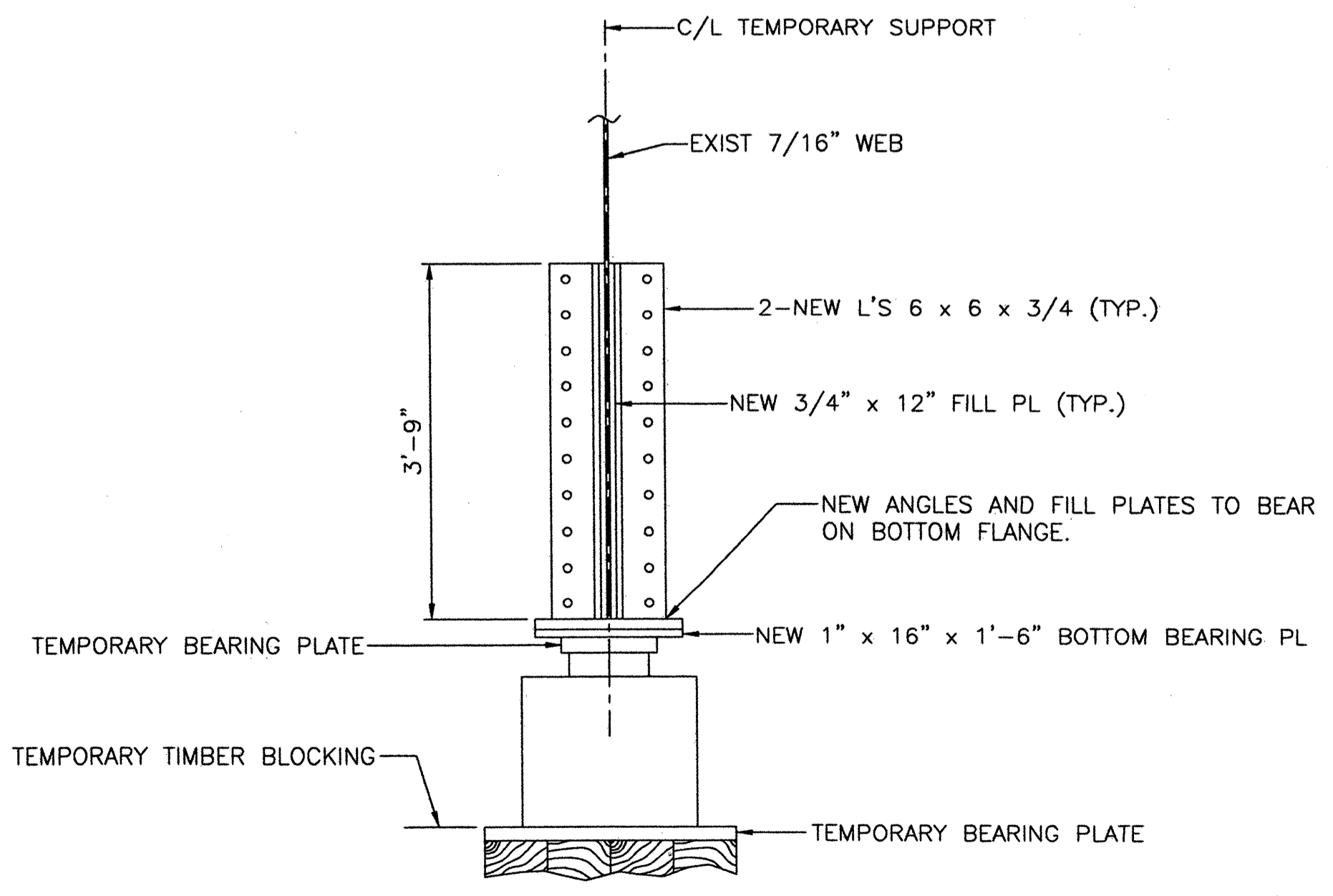
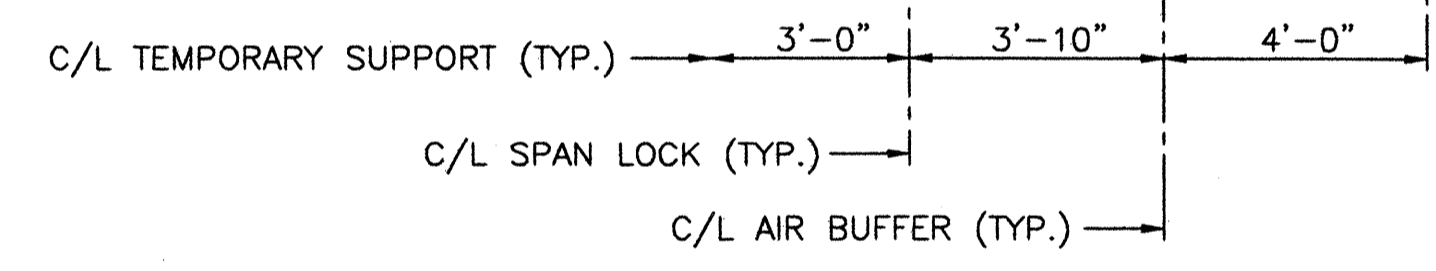
| | | | |
|--|--------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA ROPE ATTACHMENTS AT SPAN LIFTING GIRDER | | | |
| DESIGNED | D.L. MILLER | DATE | MARCH 2011 |
| CHECKED | A.M. BRODSKY | DRAWING NO. | 57 OF 63 |
| DRAWN BY | R.L. REED | SCALE | AS NOTED |
| DETAILED | R.L. REED | DATE | MARCH 2011 |
| CHECKED | R.L. REED | DRAWING NO. | 57 OF 63 |

ML6



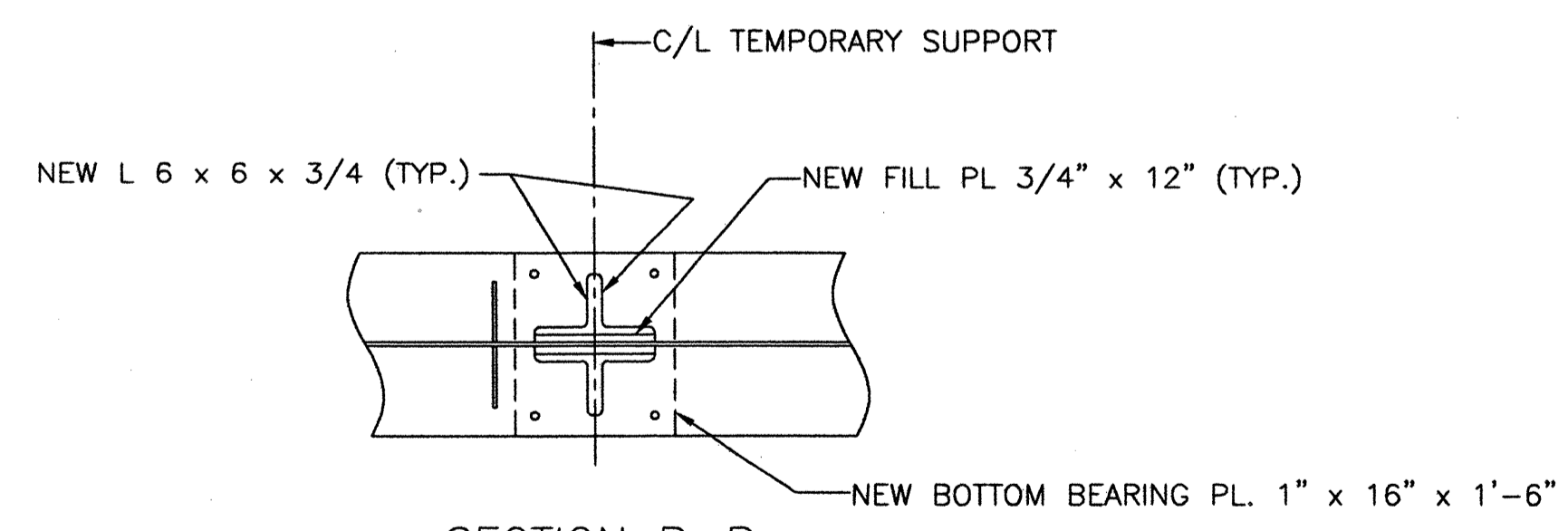
ELEVATION END FLOORBEAM

SCALE: 3/8" = 1'-0"
(PANEL POINT L0 SHOWN, PANEL POINT L0' SIMILAR)



SECTION A-A

SCALE: 3/4" = 1'-0"

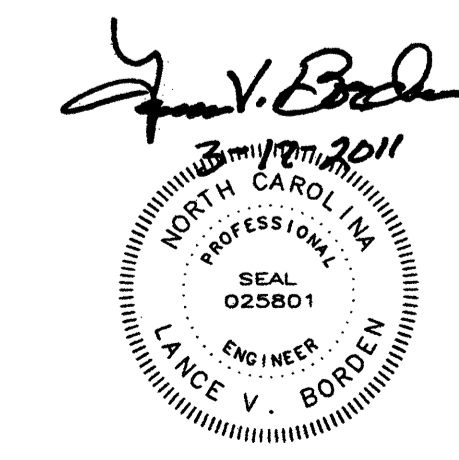
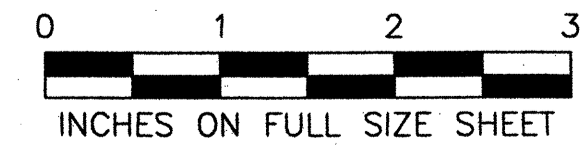


SECTION B-B

SCALE: 3/4" = 1'-0"

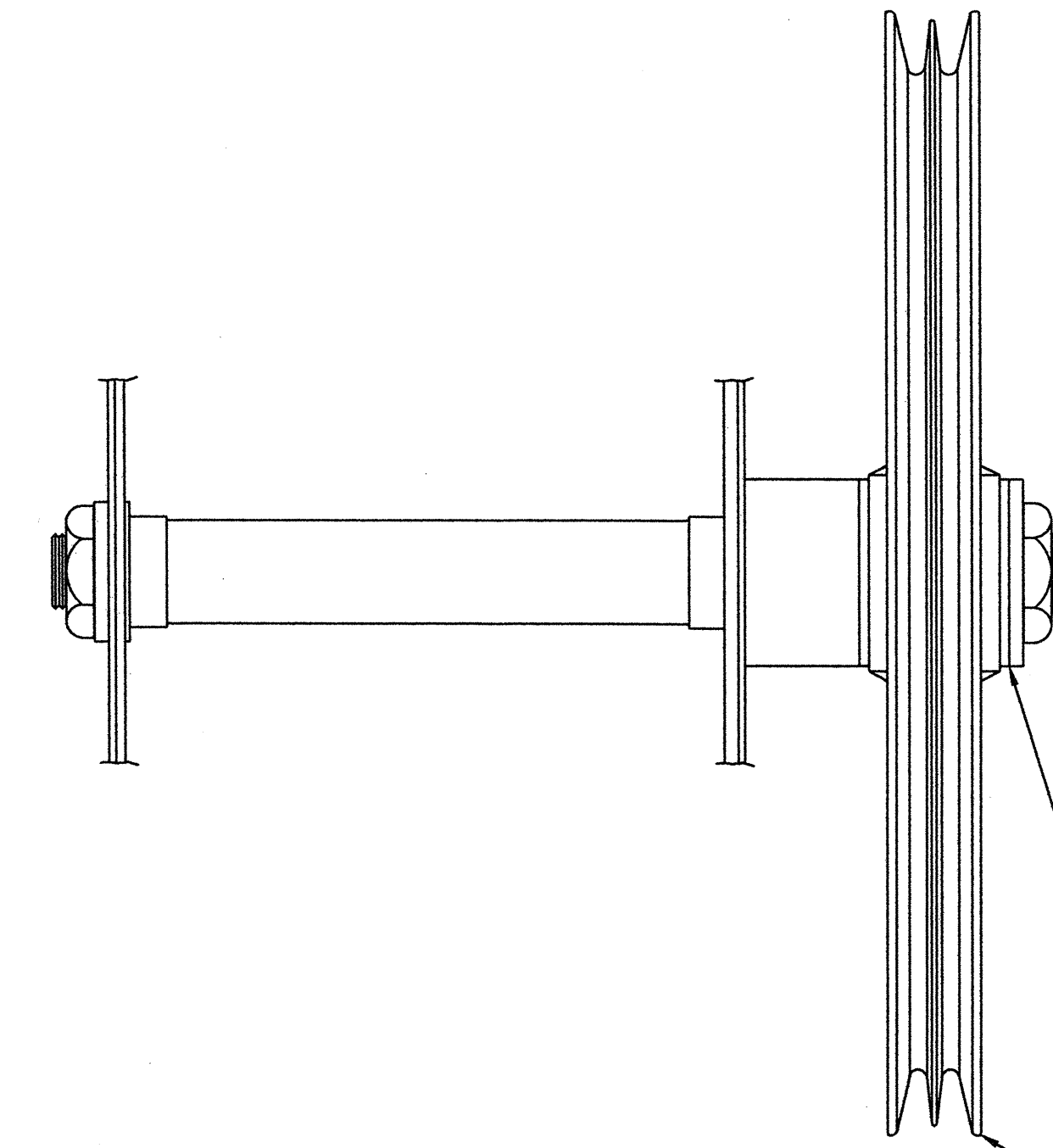
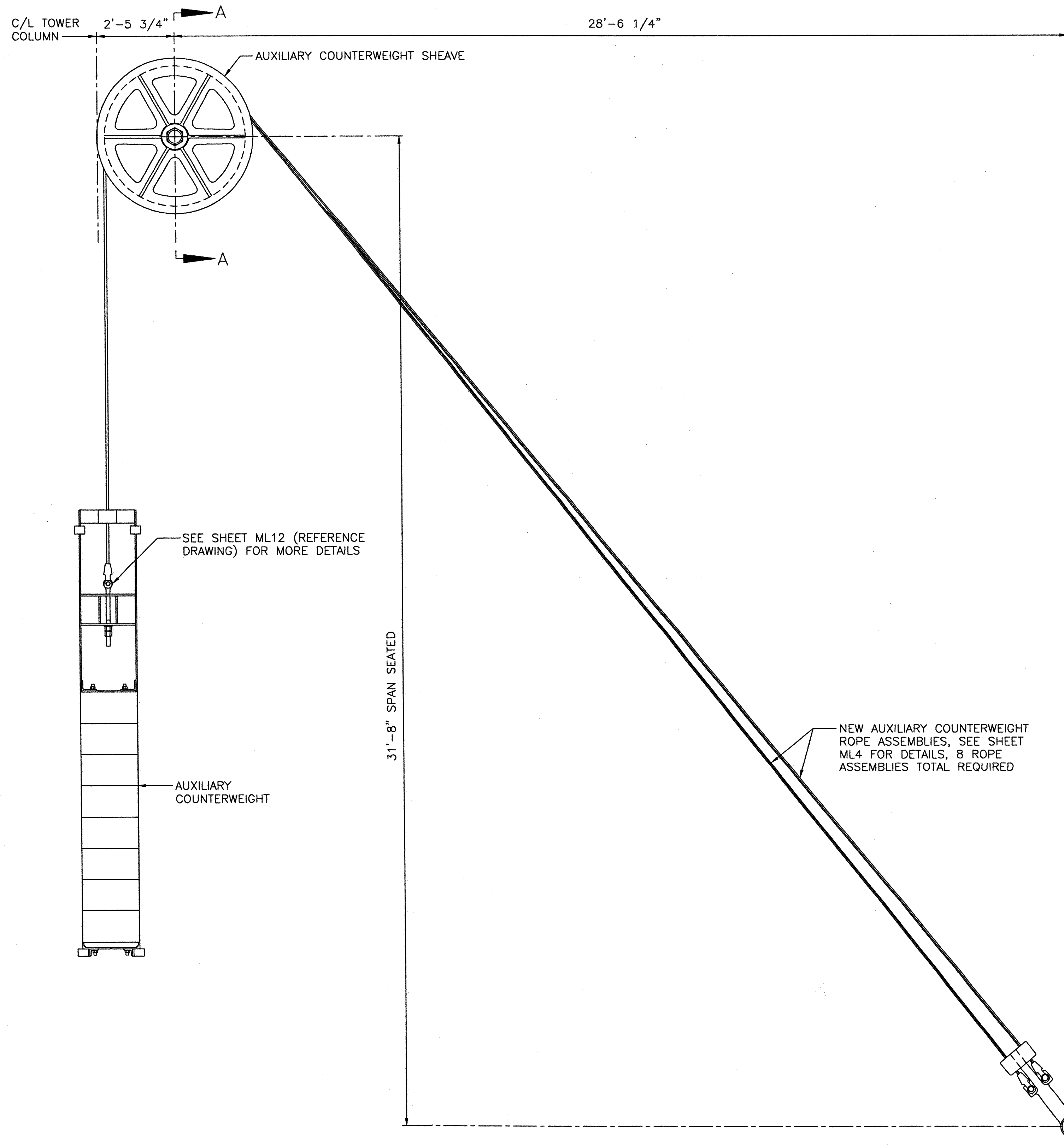
NOTES:

1. ALL CALCULATIONS, JACKING HYDRAULIC DIAGRAM, AND JACKING PROCEDURE SHALL BE PREPARED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA.
2. FOR REFERENCE, THE TOTAL LIFT SPAN WEIGHT IS APPROXIMATELY 3,160,000 LBS.



| | | | |
|--|--------------|-------------|-----------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA | | | |
| JACKING OF LIFT SPAN | | | |
| DESIGNED | C.P. AHLKOG | DETAILED | R.L. REED |
| CHECKED | D.M. BARRETT | CHECKED | R.L. REED |
| DATE | MARCH 2011 | DRAWING NO. | 58 OF 63 |
| DRAWN BY | R.L. REED | SCALE | AS NOTED |

58-ML7-JLS.DWG



SECTION A-A
 SCALE: 1 1/2" = 1'-0"
 EXISTING AUXILIARY COUNTERWEIGHT ROPE SHEAVE
 AT TOWER (TYPICAL 4 LOCATIONS)

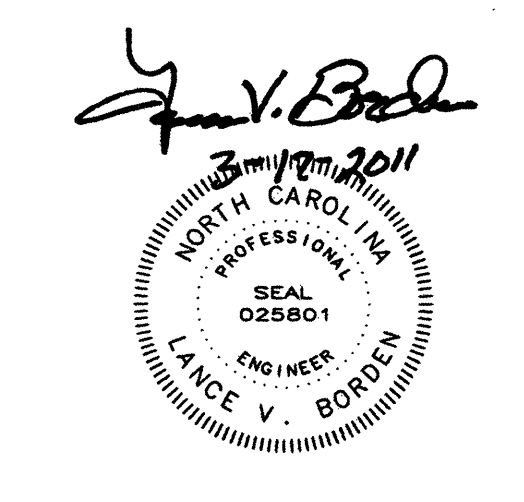
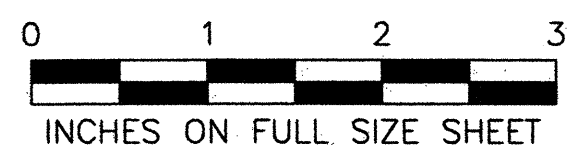
SEE SHEET ML10 (REFERENCE
 DRAWING) FOR MORE DETAILS

NEW AUXILIARY COUNTERWEIGHT
 ROPE ASSEMBLIES, SEE SHEET
 ML4 FOR DETAILS, 8 ROPE
 ASSEMBLIES TOTAL REQUIRED

NOTES:

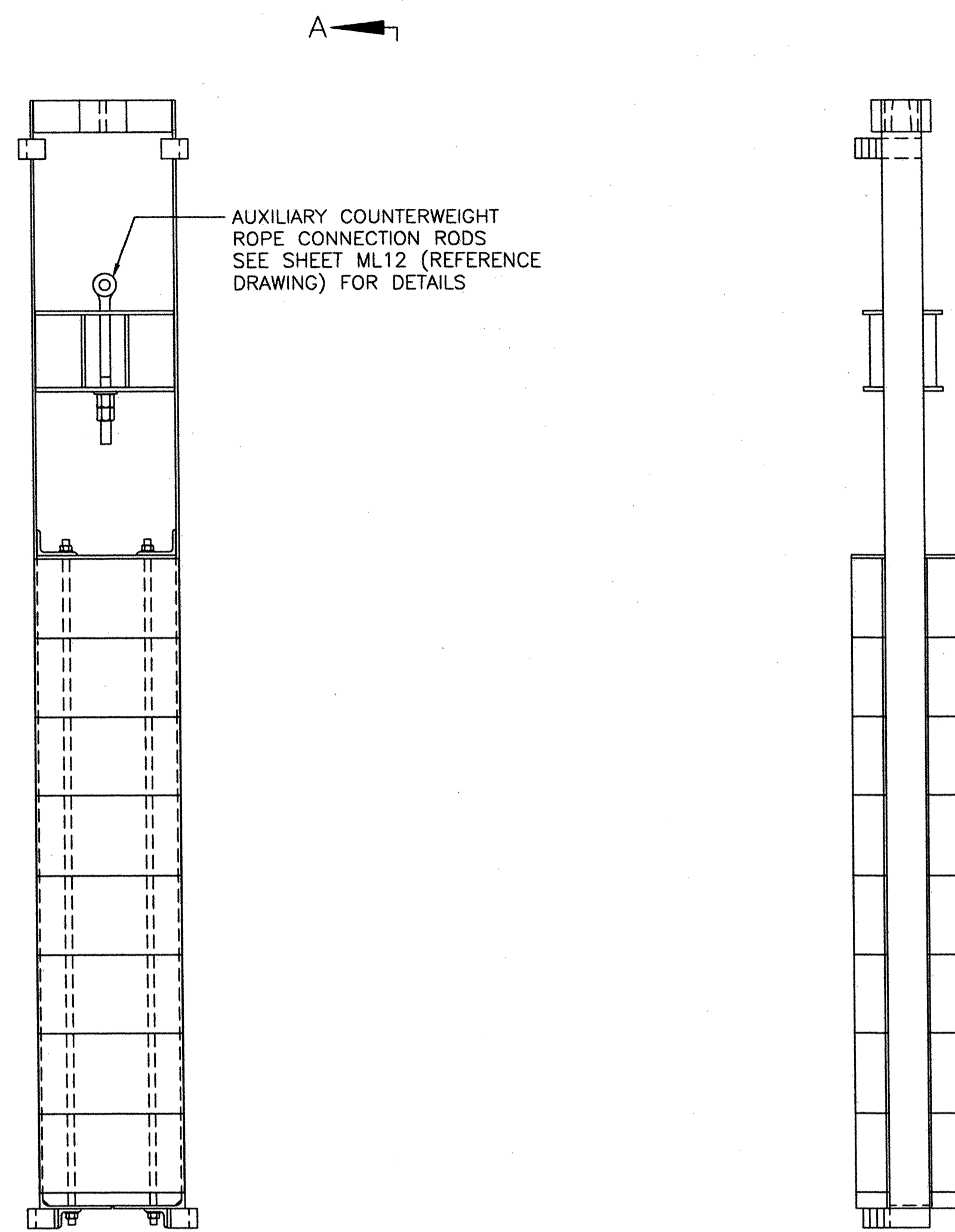
1. CONTRACTOR MUST VERIFY AND SUBMIT ALL EXISTING ROPE LENGTHS AND PROPOSED NEW ROPE LENGTHS FOR APPROVAL. EXISTING ROPE LENGTHS MUST HAVE AN ACCURACY OF ± 1/4".
2. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF COUNTERWEIGHT ROPES.
3. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
4. CONTRACTOR SHALL REMOVE ALL OLD LUBRICANT, DEBRIS, ETC. FROM EXISTING AUXILIARY COUNTERWEIGHT SHEAVES BEFORE INSTALLATION OF NEW ROPES.
5. EXISTING AUXILIARY COUNTERWEIGHT TAKE-UP RODS AND NUTS TO BE REMOVED, CLEANED, AND THREADS CHASED FULL LENGTH BEFORE REINSTALLATION. NON-WORKING SURFACES TO BE PAINTED WITH APPROVED PAINT SYSTEM AND THREADS TO BE WELL LUBRICATED.

NEW AUXILIARY COUNTERWEIGHT ROPE ASSEMBLY
 SCALE: 1/2" = 1'-0"



| | | | |
|---|--------------------|----------------------|------------|
| STATE OF NORTH CAROLINA | | | |
| DEPARTMENT OF TRANSPORTATION | | | |
| RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA ROPE ATTACHMENTS FOR AUXILIARY COUNTERWEIGHT | | | |
| DRAWN BY R.L. REED | | SCALE AS NOTED | |
| DESIGNED D.L. MILLER | DETAILED R.L. REED | DATE | MARCH 2011 |
| CHECKED A.M. BRODSKY | CHECKED R.L. REED | DRAWING NO. 59 OF 63 | |

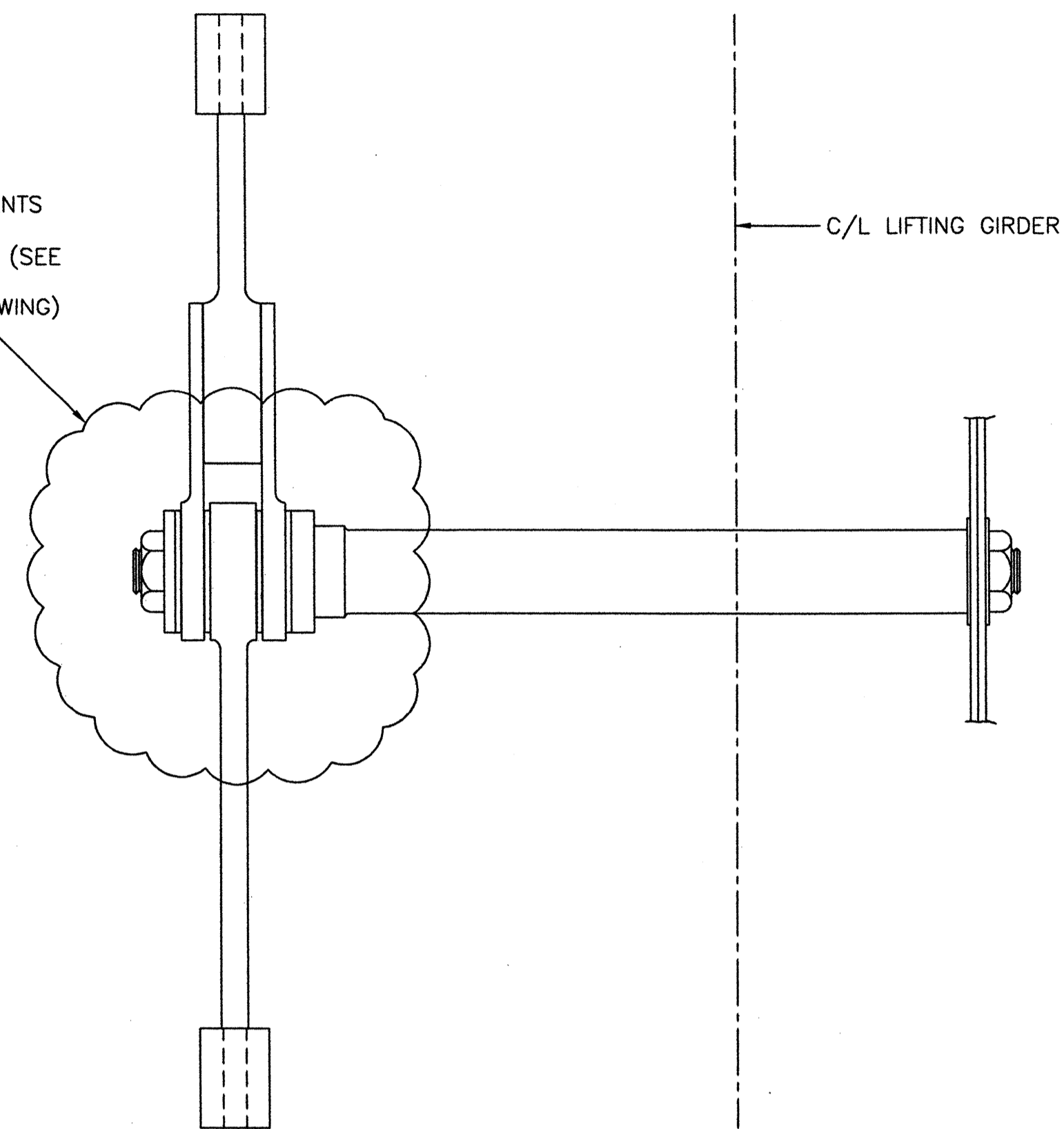
58-MB-RAC.DWG



EXISTING AUXILIARY COUNTERWEIGHT (4 LOCATIONS)
 ELEVATION
 SCALE: 3/4" = 1'-0"

VIEW A-A
 SCALE: 3/4" = 1'-0"

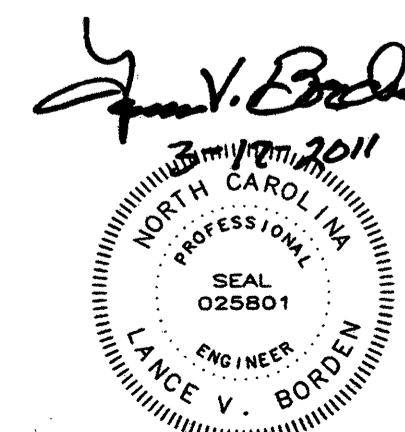
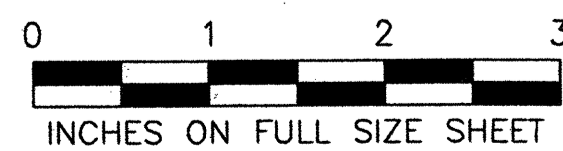
AFTER REMOVAL OF AUXILIARY COUNTERWEIGHT ROPES, DISASSEMBLE, CLEAN AND LUBRICATE ROTATING COMPONENTS AND SLIDING SURFACES. REASSEMBLE FOR NEW ROPES (SEE NOTES 3 AND 4). ALSO, SEE SHEET ML11 (REFERENCE DRAWING) FOR MORE DETAILS



ARM SHAFT AND HITCH CONNECTION AT SPAN LIFTING GIRDER FOR AUXILIARY COUNTERWEIGHT (2 LOCATIONS)
 SCALE: 1 1/2" = 1'-0"

NOTES:

1. AUXILIARY COUNTERWEIGHT SHOWN FOR REFERENCE ONLY.
2. EACH AUXILIARY COUNTERWEIGHT WEIGHS APPROXIMATELY 10,800 POUNDS.
3. CONTRACTOR SHALL REMOVE ALL OLD LUBRICANT, DEBRIS, ETC. FROM AUXILIARY COUNTERWEIGHT GUIDES AND THE ARM SHAFT AND HITCH CONNECTION.
4. THE ARM SHAFT AND HITCH CONNECTION SHALL BE THOROUGHLY LUBRICATED WITH ROPES REMOVED.



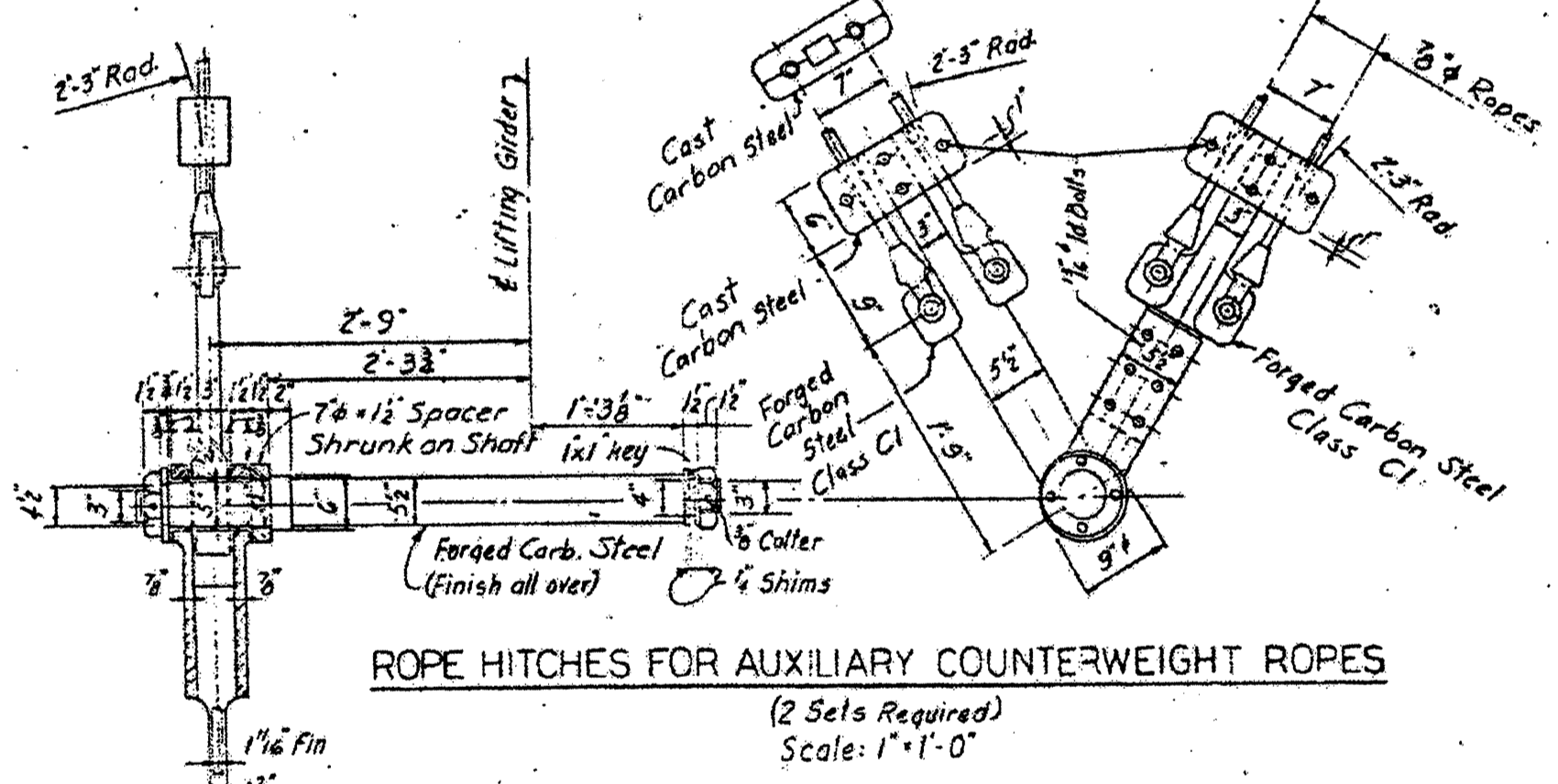
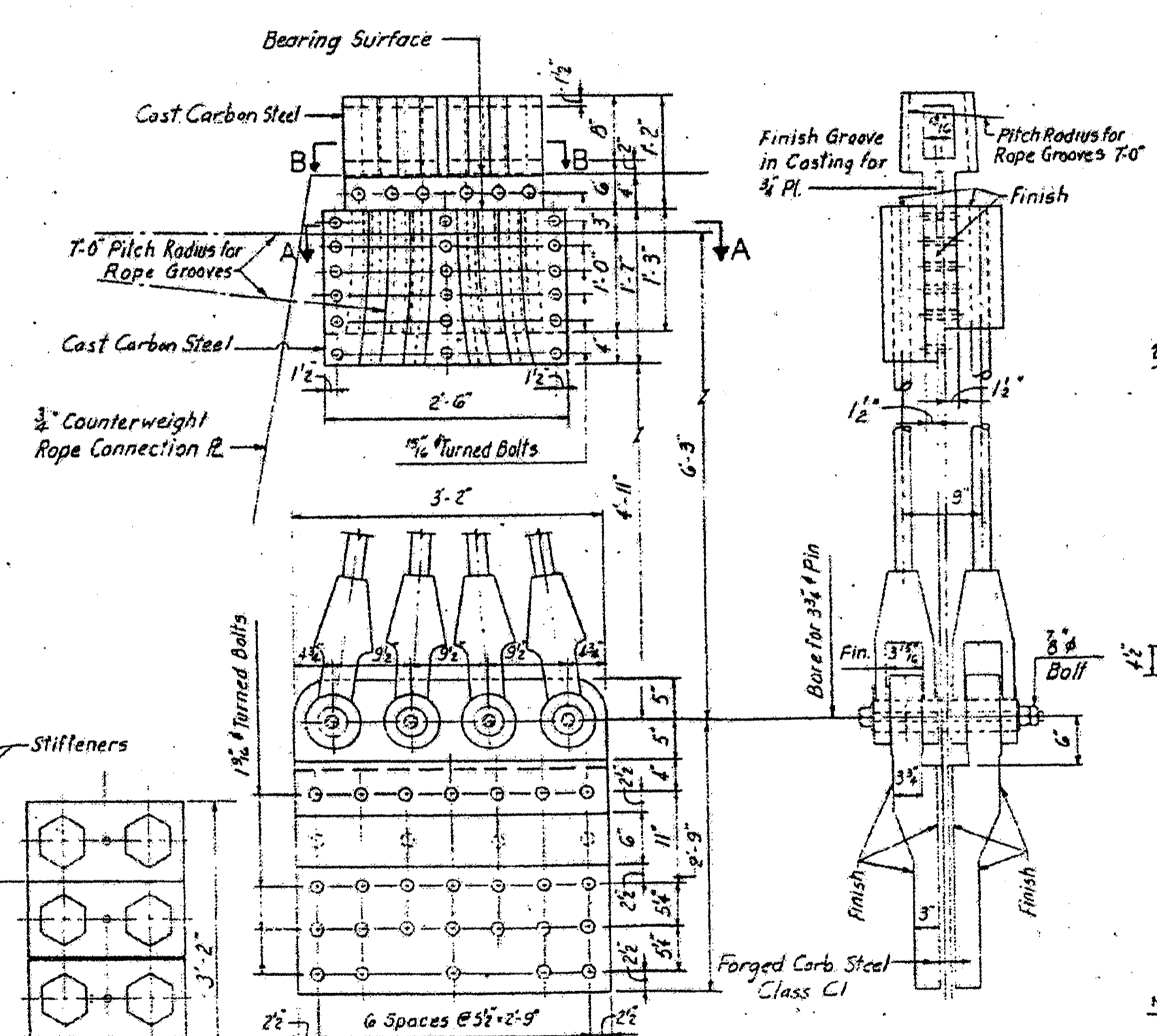
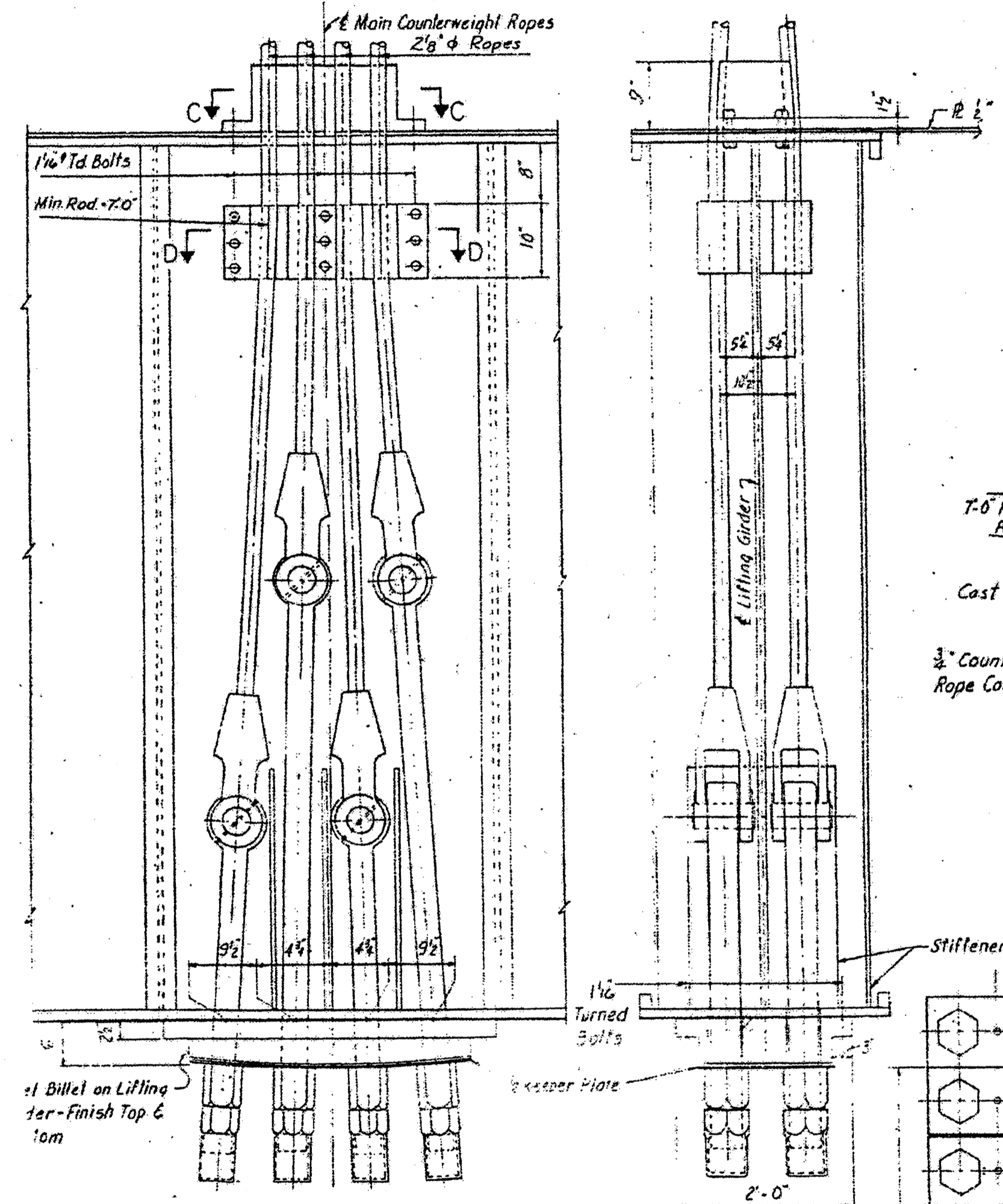
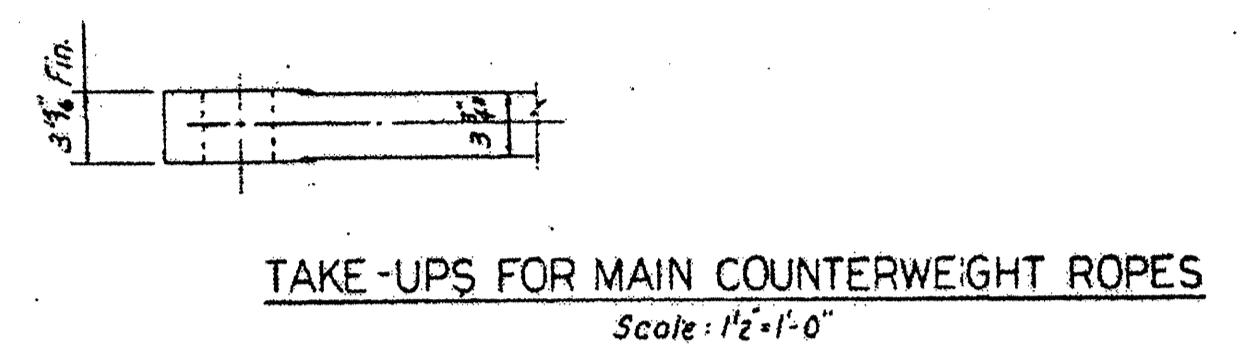
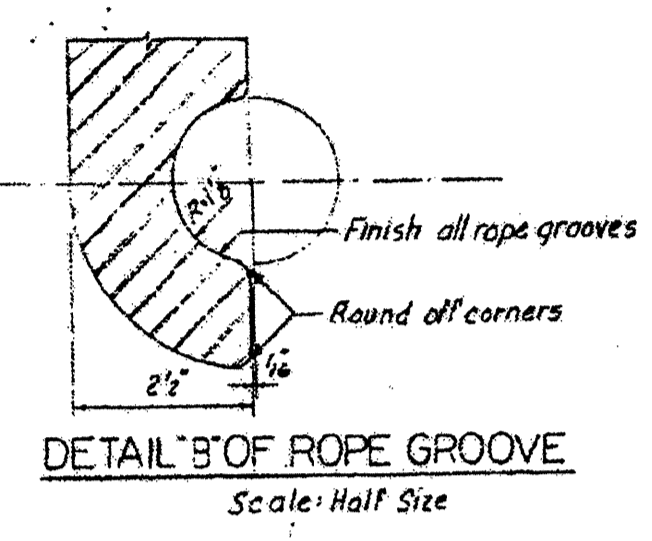
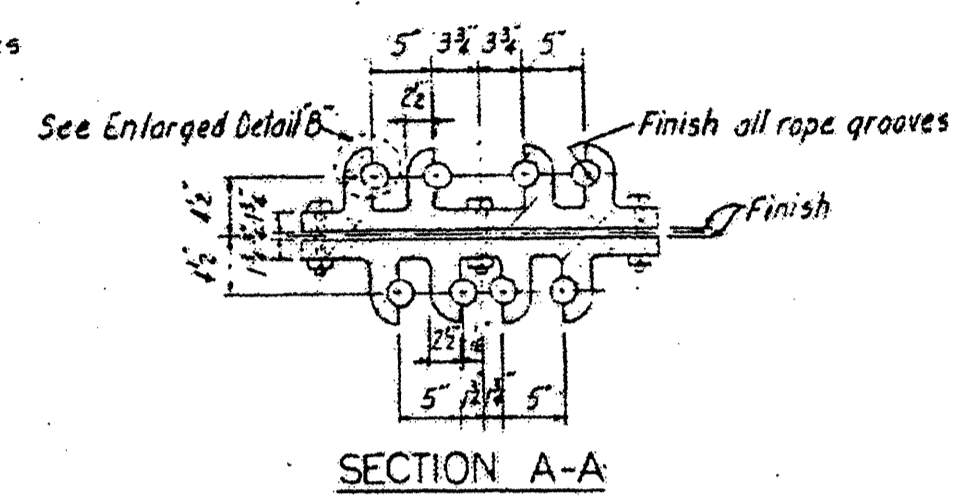
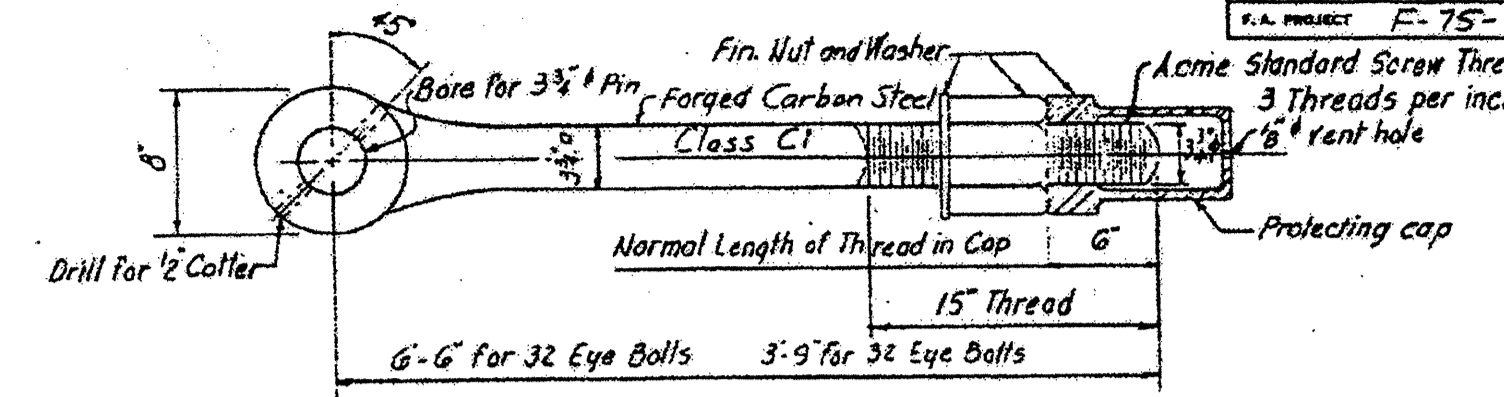
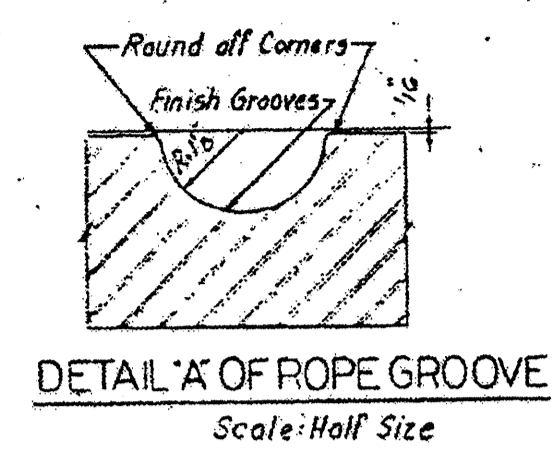
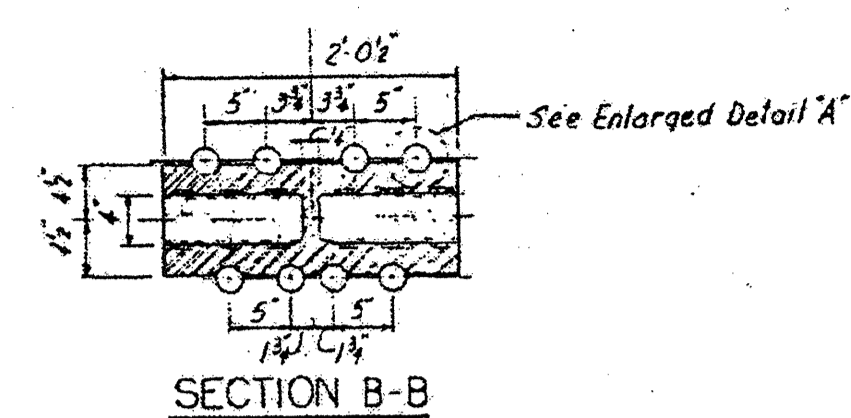
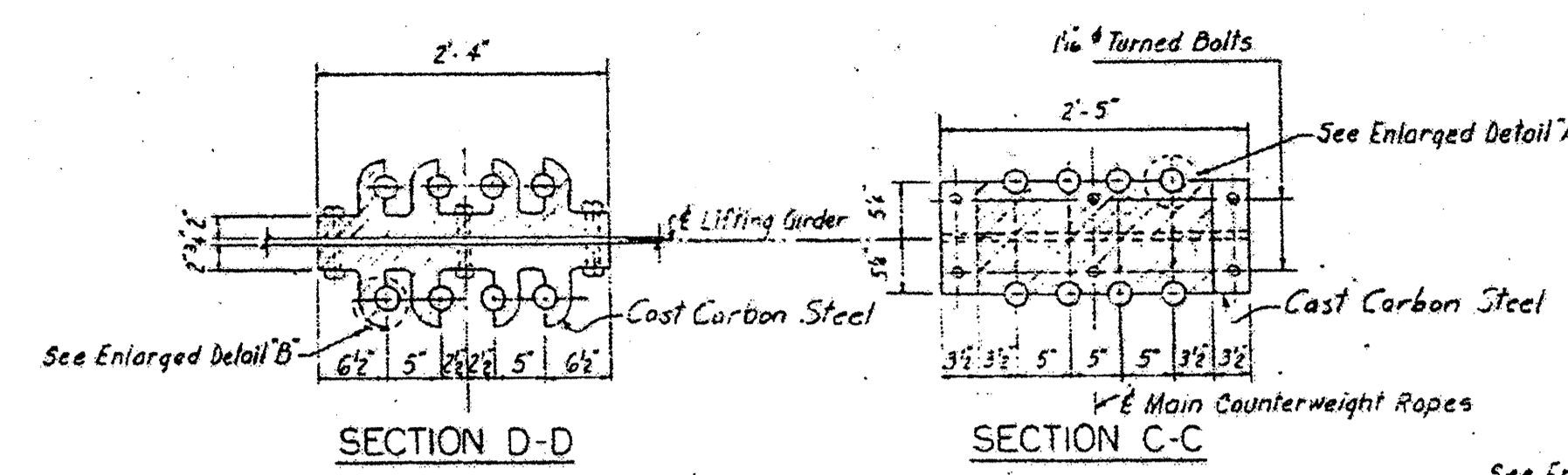
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CAPE FEAR BASCULE BRIDGE
 AND MEMORIAL LIFT BRIDGE
 WILMINGTON, NORTH CAROLINA
 AUXILIARY COUNTERWEIGHT
 ASSEMBLY

| | | | |
|----------|--------------|-------------|------------|
| DESIGNED | D.L. MILLER | DATE | MARCH 2011 |
| CHECKED | A.M. BRODSKY | DRAWING NO. | 60 OF 63 |
| DRAWN BY | | R.L. REED | |
| SCALE | | AS NOTED | |
| CHECKED | | R.L. REED | |

ML9

| | | |
|---------------------|-------|-------------|
| FED. ROAD DIST. NO. | STATE | PROJECT NO. |
| 5 | N.C. | 8.1355105 |
| P.A. PROJECT | | E-75-2(B) |

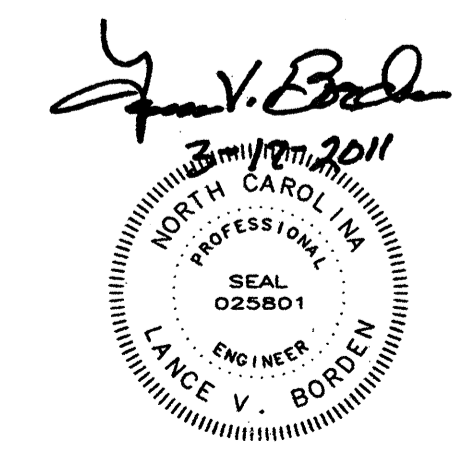
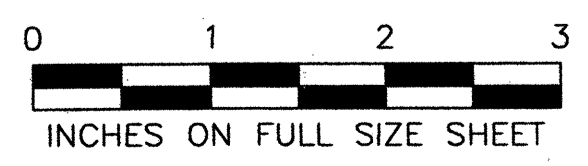


NOTES:
1. For additional details of Lifting Girder, see Sheet No. 14.
2. For details of Main Counterweights, see Sheet No. 31.

PROJECT No. 8.1355105
NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
CAPE FEAR RIVER CROSSING
AT WILMINGTON
LIFT BRIDGE SUPERSTRUCTURE
ROPE CONNECTIONS

PARSONS, BRINCKERHOFF, QUADE & DOUGLAS, INC. DATE: March, 1967
NEW YORK SHEET NO. 36 OF 67

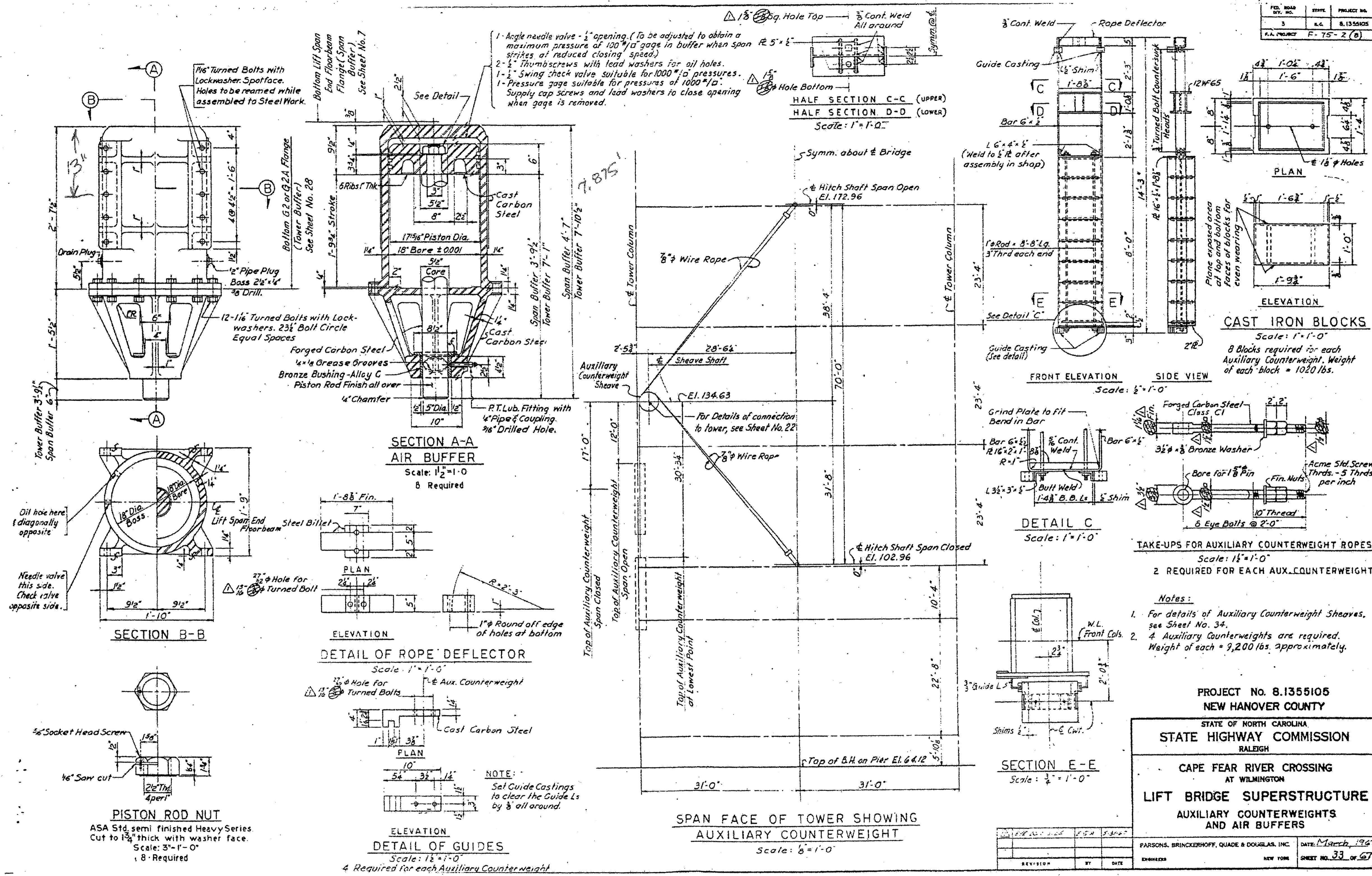
REFERENCE DRAWING FROM ORIGINAL DESIGN - INCLUDED FOR REFERENCE PURPOSES ONLY. ALL DIMENSIONS MUST BE FIELD VERIFIED.



| | | | |
|---|--------------|-------------|------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | |
| CAPE FEAR BASCULE BRIDGE AND MEMORIAL LIFT BRIDGE WILMINGTON, NORTH CAROLINA REFERENCE DRAWING - ROPE CONNECTIONS | | | |
| DESIGNED | D.M. BARRETT | DATE | MARCH 2011 |
| CHECKED | D.M. BARRETT | DATE | MARCH 2011 |
| DRAWN BY | E.J. POE | DRAWING NO. | 62 OF 63 |
| SCALE | AS NOTED | | |

ML11

| | | |
|---------------------|-------|-------------|
| FED. ROAD DIST. NO. | STATE | PROJECT NO. |
| 3 | N.C. | 8.1355105 |
| P.A. PROJECT | | F-75-2 (B) |



REFERENCE DRAWING FROM ORIGINAL DESIGN - INCLUDED FOR REFERENCE PURPOSES ONLY.

ALL DIMENSIONS MUST BE FIELD VERIFIED.

PROJECT NO. 8.1355105
NEW HANOVER COUNTY

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

CAPE FEAR RIVER CROSSING
AT WILMINGTON

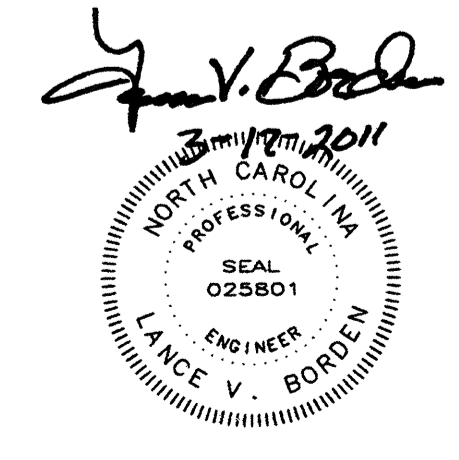
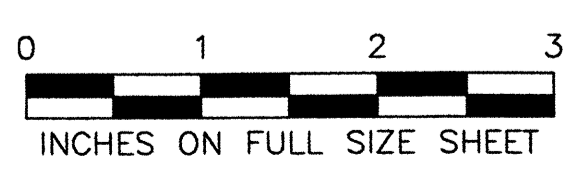
LIFT BRIDGE SUPERSTRUCTURE
AUXILIARY COUNTERWEIGHTS
AND AIR BUFFERS

| | | | |
|----------|--------------|------|------------|
| DESIGNED | D.M. BARRETT | DATE | March 1967 |
| CHECKED | D.M. BARRETT | DATE | March 1967 |
| BY | | DATE | |
| DATE | | DATE | |

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAPE FEAR BASCULE BRIDGE
AND MEMORIAL LIFT BRIDGE
WILMINGTON, NORTH CAROLINA
REFERENCE DRAWING -
AUXILIARY COUNTERWEIGHTS

| | |
|-------------|------------|
| DRAWN BY | E.J. POE |
| SCALE | AS NOTED |
| DATE | MARCH 2011 |
| DRAWING NO. | 63 OF 63 |



ML12

63-M-12-REF-AC-DWG

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| | |
|-----------------------------|-----------|
| STATE PROJECT REFERENCE NO. | SHEET NO. |
| 15B.13.12 | TCP-1 |

**PLAN FOR PROPOSED
TRAFFIC CONTROL, MARKING & DELINEATION
NEW HANOVER COUNTY**

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE |
|----------|---------------------------------|
| 1101.02 | TEMPORARY LANE CLOSURES |
| 1101.03 | TEMPORARY ROAD CLOSURES |
| 1101.11 | TRAFFIC CONTROL DESIGN TABLES |
| 1110.02 | PORTABLE WORK ZONE SIGNS |
| 1115.01 | FLASHING ARROW PANELS |
| 1130.01 | DRUMS |
| 1145.01 | BARRICADES |
| 1165.01 | TRUCK MOUNTED IMPACT ATTENUATOR |

INDEX OF SHEETS

| SHEET NO. | TITLE |
|-------------------|---|
| TCP-1 | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, INDEX OF SHEETS AND PHASING |
| TCP-2 | GENERAL NOTES |
| TCP-3, 4 & 5 | ISABEL HOLMES BRIDGE LANE CLOSURES |
| TCP-6 & 7 | ISABEL HOLMES BRIDGE & US 74 CLOSURE & DETOUR |
| TCP-8, 8A, 9 & 9A | CAPE FEAR MEMORIAL BRIDGE & US 76 CLOSURE & DETOUR |
| TCP-10 | CAPE FEAR MEMORIAL BRIDGE LANE CLOSURES |
| TCP-11 | WORK ZONE ADVANCE WARNING SIGNS FOR CAPE FEAR MEMORIAL BRIDGE |

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW

TRAFFIC CONTROL DEVICES

- TYPE III BARRICADE
- DRUM
- FLASHING ARROW PANEL (TYPE C)
- STATIONARY SIGN
- PORTABLE SIGN
- CHANGEABLE MESSAGE SIGN
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)

PROJECT PHASING

NOTE: CONTRACTOR MAY WORK ON BOTH THE ISABEL HOLMES BRIDGE AND THE CAPE FEAR MEMORIAL BRIDGE AT THE SAME TIME, HOWEVER, ONLY ONE BRIDGE LOCATION MAY BE CLOSED AT ONE TIME.

NOTE: CONTRACTOR SHALL ONLY BE ALLOWED TO CLOSE EACH BRIDGE TWO TIMES. CLOSURES DO NOT HAVE TO BE CONSECUTIVE WEEKENDS. SEE SHEET TCP-2, GENERAL NOTE "C" FOR ROAD/BRIDGE LOCATION CLOSURE RESTRICTIONS AND GENERAL NOTE "B" FOR HOLIDAY/SPECIAL EVENT RESTRICTIONS.

STEP 1: PERFORM ALL WORK AS SHOWN IN THE CONTRACT AND CONSTRUCTION PLANS IN ACCORDANCE WITH ALL COAST GUARD REGULATIONS & REQUIREMENTS.

ALL LANE CLOSURES AND ROAD CLOSURES SHALL BE IN ACCORDANCE WITH THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES - JULY 2006" AND THE FOLLOWING TCP SHEETS AS REQUIRED.

FOR THE ISABEL HOLMES BRIDGE (US 74):

- TCP-2 (GENERAL NOTES)
- TCP-3, 4 & 5 (LANE CLOSURES)
- TCP-6 & 7 (ROADWAY/BRIDGE CLOSURE & DETOUR)

FOR THE CAPE FEAR MEMORIAL BRIDGE (US 76):

- TCP-2 (GENERAL NOTES)
- TCP-8, 8A, 9 & 9A (ROADWAY/BRIDGE CLOSURE & DETOUR)
- TCP-10 (LANE CLOSURES)

TCP-11 (WORK ZONE ADVANCE WARNING SIGNS)

NOTE: INSTALL PORTABLE SIGNS ONLY WHEN WORK IS BEING PERFORMED WITH OR WITHOUT A LANE CLOSURE ON US 76. DO NOT INSTALL THE PORTABLE SIGNS WHEN US 76 IS CLOSED.

STEP 2: REMOVE ALL TRAFFIC CONTROL DEVICES FOR LANE CLOSURES AND/OR ROAD CLOSURES AS DIRECTED BY THE ENGINEER AND RETURN TRAFFIC BACK TO ITS EXISTING LANE/TRAFFIC CONFIGURATION AT THE END OF EACH WORK PERIOD.

PROJECT: 15B.13.12

I:\0-MAR-2010\07453\DOT\DESIGN\GROUPS-WZTC\CC\TMU\WZTC\Design\Group3\Squad3B\SpecialProjects\Div 3\New Hanover\Traffic\NE Cape Fear Bridge-TCP-1.dgn
snr:een AT TE244733

| | |
|--------------------------------|---|
| APPROVED: _____ DATE: _____ | PLAN PREPARED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT |
| SEAL | J. S. Bourne, P.E. TRAFFIC CONTROL ENGINEER |
| | G. L. Gettier, P.E. TRAFFIC CONTROL PROJECT ENGINEER |
| | J. W. Gilstrap TRAFFIC CONTROL PROJECT DESIGN ENGINEER |
| | S. N. Green TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN |

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR AS DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS (NOTE: CONTRACTOR SHALL NOT HAVE LANE CLOSURES IN THE SAME DIRECTION ON BOTH BRIDGES AT THE SAME TIME.):

| ROAD NAME | DAY AND TIME RESTRICTIONS |
|------------------|---|
| 1. US 74 & US 76 | MONDAY THRU FRIDAY 6:00AM TO 9:00AM AND 3:00 PM TO 7:00 PM |

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

| ROAD NAME | HOLIDAY |
|------------------|---|
| 1. US 74 & US 76 | <ol style="list-style-type: none"> FOR ANY UNEXPECTED OCCURRENCE THAT CREATE UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 AM DECEMBER 31st TO 9:00 AM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 AM THE FOLLOWING TUESDAY. FOR EASTER, BETWEEN THE HOURS OF 6:00 AM THURSDAY AND 9:00 AM MONDAY. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 AM THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS. FOR AZALEA FESTIVAL, BETWEEN THE HOURS OF 3:00 PM THE TUESDAY BEFORE THE WEEKEND OF THE AZALEA FESTIVAL AND 9:00 AM THE MONDAY AFTER THE WEEKEND OF THE AZALEA FESTIVAL. |

C) DO NOT CLOSE ROADS AS FOLLOWS (NOTE: CONTRACTOR SHALL BE ALLOWED TO CLOSE EACH BRIDGE LOCATION TWICE, HOWEVER, ONLY ONE BRIDGE LOCATION MAY BE CLOSED AT ONE TIME.):

| ROAD NAME | DAY AND TIME RESTRICTIONS |
|-------------------------------------|-------------------------------------|
| 1. US 74, ISABEL HOLMES BRIDGE | 5:00 AM MONDAY THRU 9:00 PM FRIDAY |
| 2. US 76, CAPE FEAR MEMORIAL BRIDGE | 5:00 AM MONDAY THRU 11:00 PM FRIDAY |

D) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- E) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING DETAILS ON SHEETS TCP-3, TCP-4 & TCP-5 AND ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

TRAFFIC PATTERN ALTERATIONS

- H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- I) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- J) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

- K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- L) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT.
- M) PLACE TYPE III BARRICADES WITH "ROAD CLOSED" SIGN R11-2 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- N) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS) PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 100 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

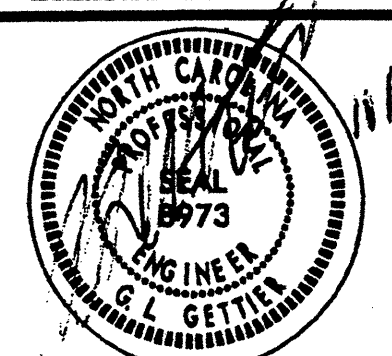
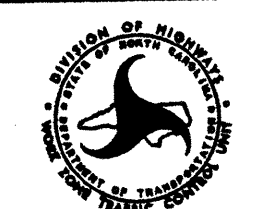
MISCELLANEOUS

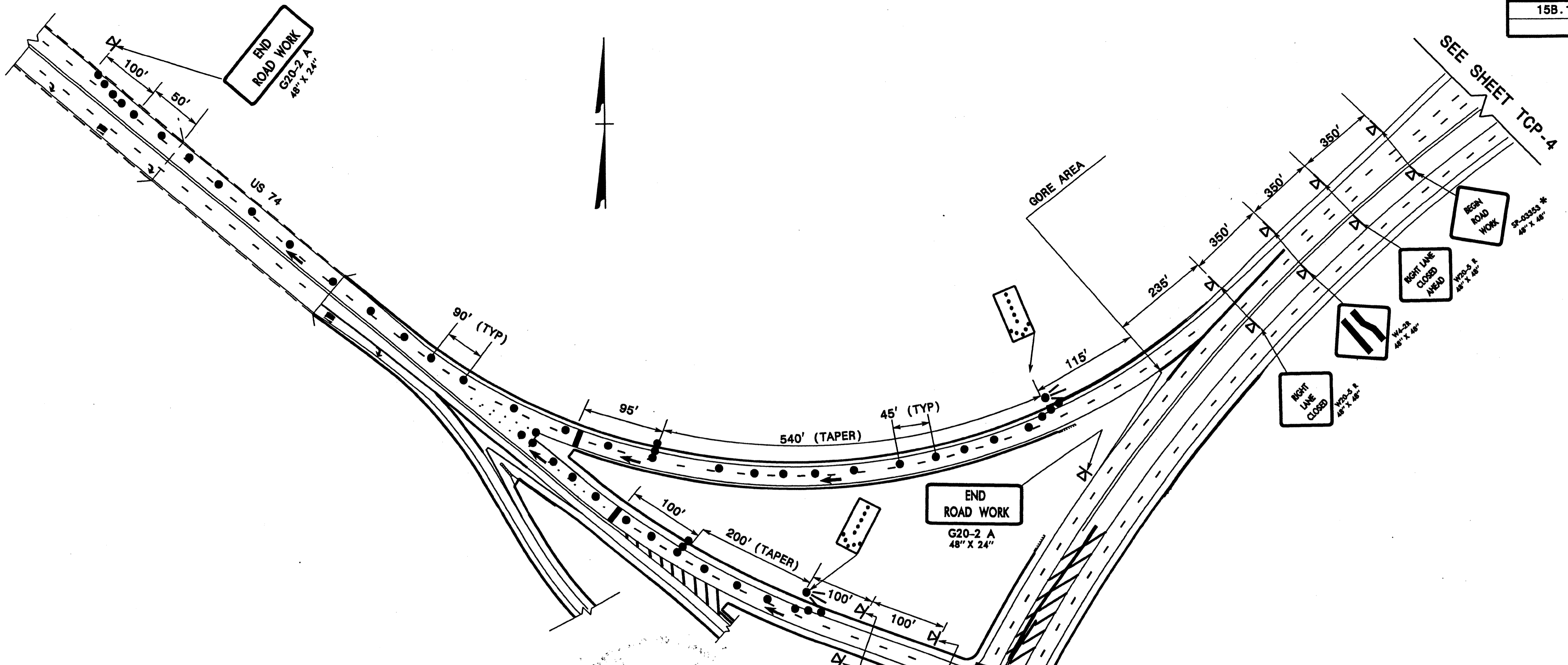
- O) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS, AS DIRECTED BY THE ENGINEER.
- P) RETURN TRAFFIC BACK TO ITS EXISTING LANE/TRAFFIC CONFIGURATION AT THE END OF EACH WORK PERIOD.
- Q) COORDINATE WITH THE ENGINEER TO UTILIZE OVERHEAD DYNAMIC MESSAGE SIGNS (DMS), IF AVAILABLE, FOR ADVANCE WARNING TO MOTORIST OF IMPENDING & ACTUAL ROADWAY/BRIDGE CLOSURES.
- R) INSTALL CHANGEABLE MESSAGE SIGNS (CMS) AT LEAST 10 FT FROM THE EDGE OF THE TRAVEL LANE AND IN ADVANCE OF THE PORTABLE WORK ZONE SIGNS AS SHOWN IN THE TRAFFIC CONTROL PLANS, OR AS APPROVED BY THE ENGINEER, ONE WEEK PRIOR TO THE ROADWAY/BRIDGE BEING CLOSED TO INFORM THE TRAVELLING PUBLIC OF THE IMPENDING CLOSURE. SEE BELOW FOR SUGGESTED MESSAGES.

| MESSAGE NO.1 | MESSAGE NO. 2 |
|--------------------------|---------------------|
| MEMORIAL BRIDGE TO CLOSE | 11PM FRI TO 5AM MON |
| US 76 BRIDGE TO CLOSE | 11PM FRI TO 5AM MON |
| ISABEL BRIDGE TO CLOSE | 9PM FRI TO 5AM MON |
| US 74 BRIDGE TO CLOSE | 9PM FRI TO 5AM MON |

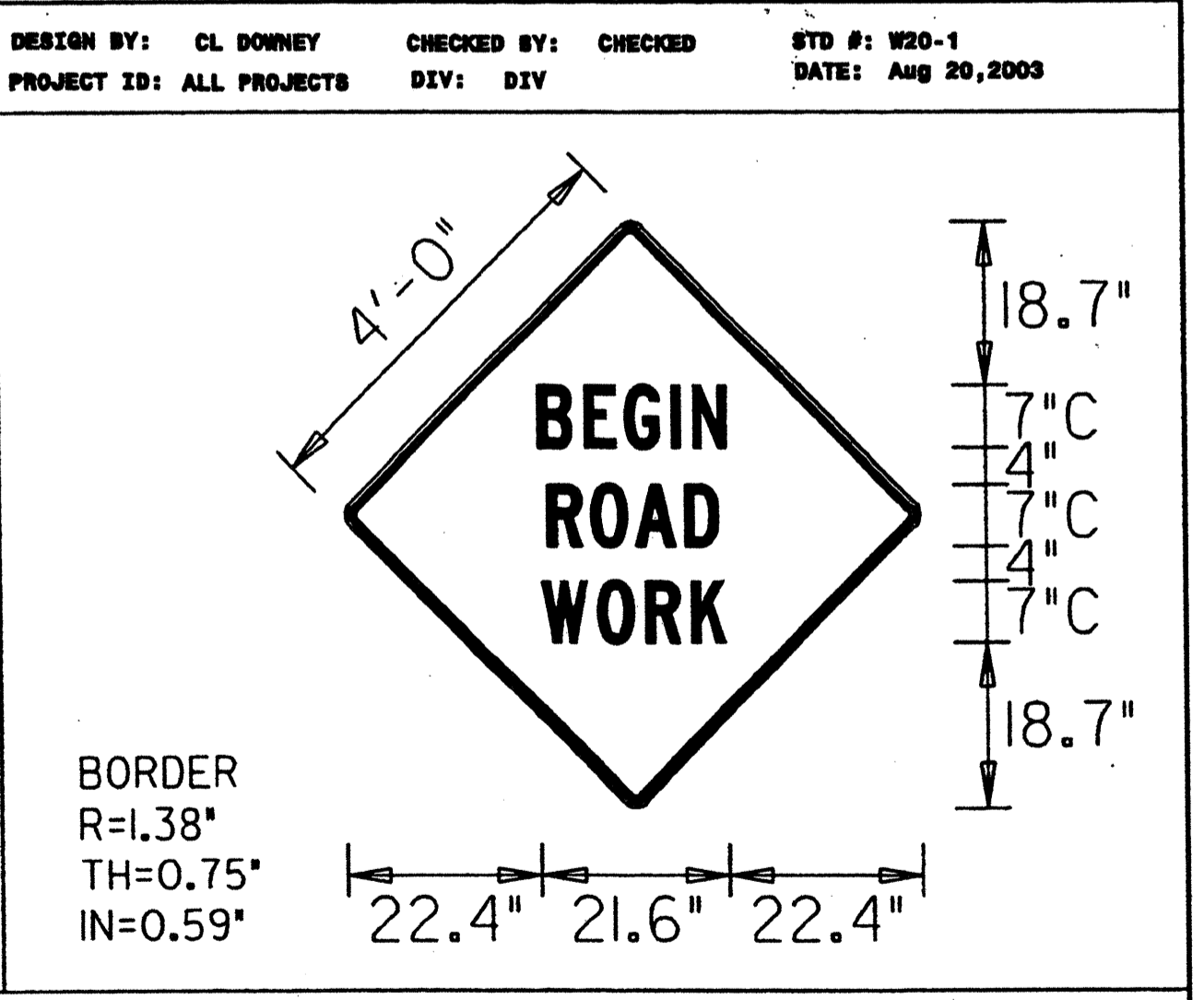
- S) WHEN CHANGEABLE MESSAGE SIGNS (CMS) ARE NOT IN USE, THEY SHALL EITHER BE REMOVED OR TURNED OFF AND THE DISPLAY PANEL TURNED PARALLEL TO TRAFFIC.

I:\MAR-2011\0450
 \DOT\DESIGN\GROUPS-W\ZTC\DesignGroup3\Squad3B\SpecialProjects\Div 3\New Hanover\Traffic\TC-TCP-2.dgn
 snr:een AT 12:44:33

| | | | |
|---|----------------|---|-----------|
| APPROVED: _____ | DATE: _____ | PROJECT NOTES | |
|  | SCALE: NONE |  | REVISIONS |
| | DATE: 1/11 | | |
| | DWG. BY: SNG | | |
| | DESIGN BY: JWG | | |
| REVIEWED BY: JWG | | | |



| | |
|-------------------------|--|
| SIGN NUMBER: SP-03383 | BACKG. COLOR: Fluorescent Orange |
| TYPE: PORTABLE | COPY COLOR: Black |
| QUANTITY: SEE PLANS | |
| SIGN WIDTH: 4'-0" | |
| HEIGHT: 4'-0" | |
| TOTAL AREA: 16.0 Sq.Ft. | |
| BORDER TYPE: FLUSH | |
| RECESS: 0.50" | |
| WIDTH: 0.75" | |
| RADII: 1.38" | |
| NO. Z BARS: N/A | MAT'L: composite or substrate roll-up. |
| LENGTH: N/A | |



NOTES

- Legend and border shall be direct applied non-reflective sheeting.
- Background shall be Type VII, VIII or IX (prismatic) retroreflective sheeting.

| LETTER POSITIONS | | | | | | | | | | | Series/Size |
|---|---|---|---|---|---|--|--|--|--|--|-------------|
| Letter spacings are to start of next letter | | | | | | | | | | | Text Length |
| | B | E | G | I | H | | | | | | 21.6 |
| | R | O | A | D | | | | | | | 19.6 |
| | W | O | R | K | | | | | | | 21.2 |

Spacing Factor is 1 unless specified otherwise

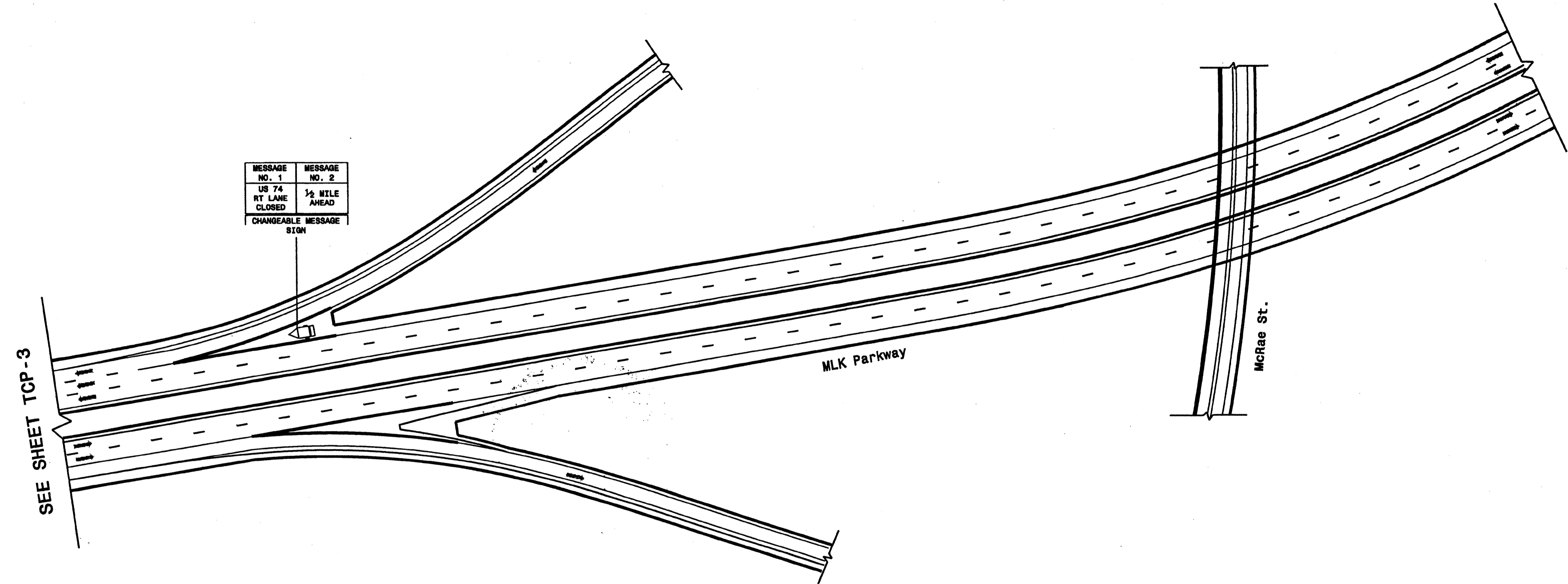
REFER TO ROADWAY STANDARD DRAWINGS 1101.02, SHEET 3 OF 9, FOR RIGHT LANE CLOSURE

APPROVED: _____ DATE: _____

ISABEL HOLMES BRIDGE
LANE CLOSURE DETAIL

| | | |
|------------------|--|-----------|
| SCALE: NONE | | REVISIONS |
| DATE: 3-07 | | |
| DWG. BY: JS | | |
| DESIGN BY: JS | | |
| REVIEWED BY: JWG | | |

09-MAR-2011 12:20
 \\DOT\DRSG070\GROUPS-WZTCCC\TMA\WZTC\Des\gn\Group3\Special Projects\Div 3\New Hanover\Traffic\TC\TCP-3.dgn
 sngreen AT TEL24733



| | |
|-------------------------|----------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 |
| US 74 RT LANE CLOSED | 1/2 MILE AHEAD |
| CHANGEABLE MESSAGE SIGN | |

SEE SHEET TCP-3

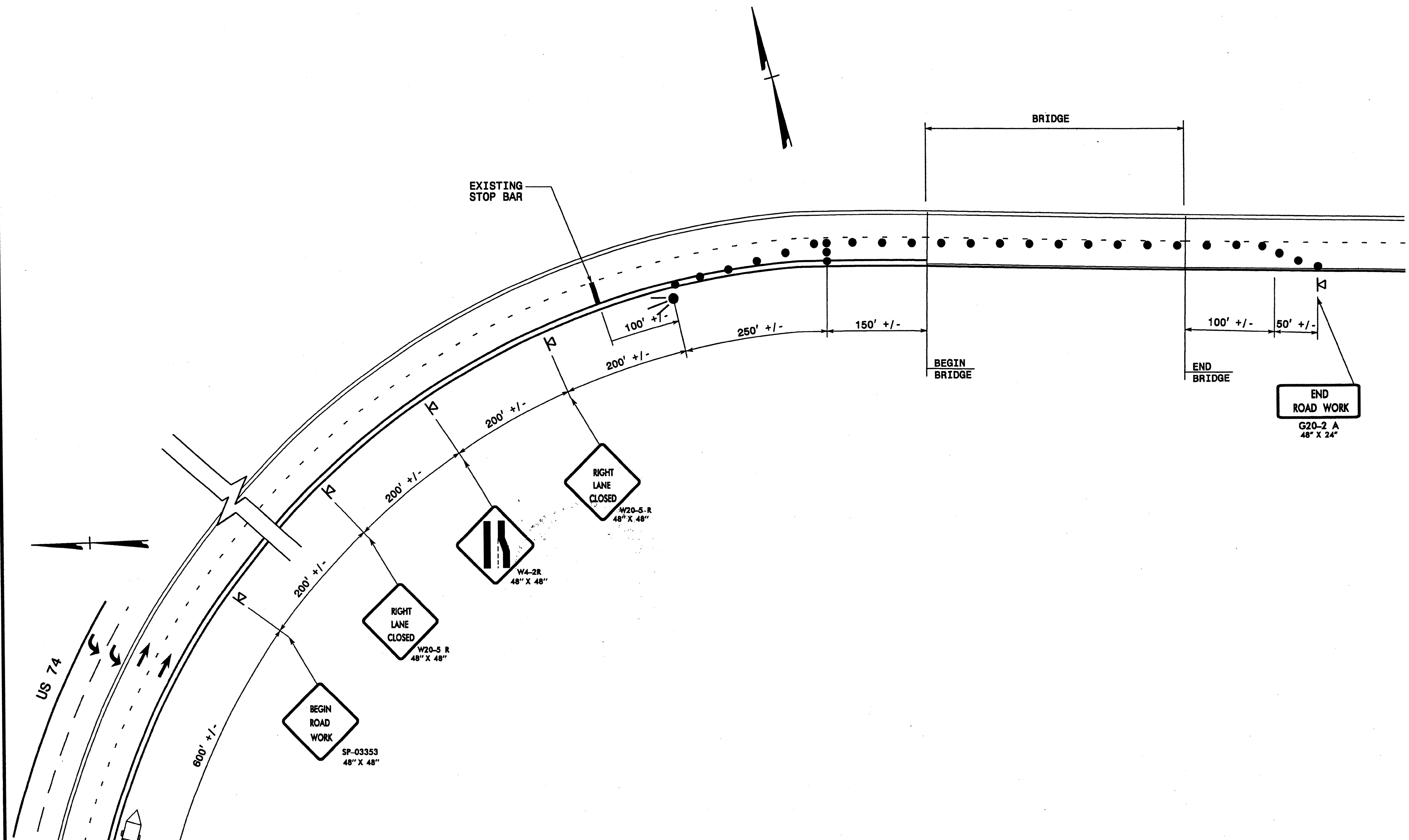
MLK Parkway

McRae St.

REFER TO ROADWAY STANDARD DRAWINGS 1101.02, SHEET 3 OF 9, FOR RIGHT LANE CLOSURE

09-MAR-2011 12:22
 \\DOT\DFSR001\GROUPS-WZTCCC\TMU\WZTC\DesignGroup3\Squad3B\SpecialProjects\Div 3\New Hanover\Traffic\NE Cape Fear Bridge-TCP\TC-TCP-4.dgn
 sqgreen AT TE244733

| | | | |
|------------------|---------------|---|-----------|
| APPROVED: _____ | DATE: _____ | ISABEL HOLMES BRIDGE LANE CLOSURE DETAIL | |
| | | | |
| SCALE: NONE | DATE: 1/11 | | REVISIONS |
| DWG. BY: JS | DESIGN BY: JS | | |
| REVIEWED BY: JWG | | | |



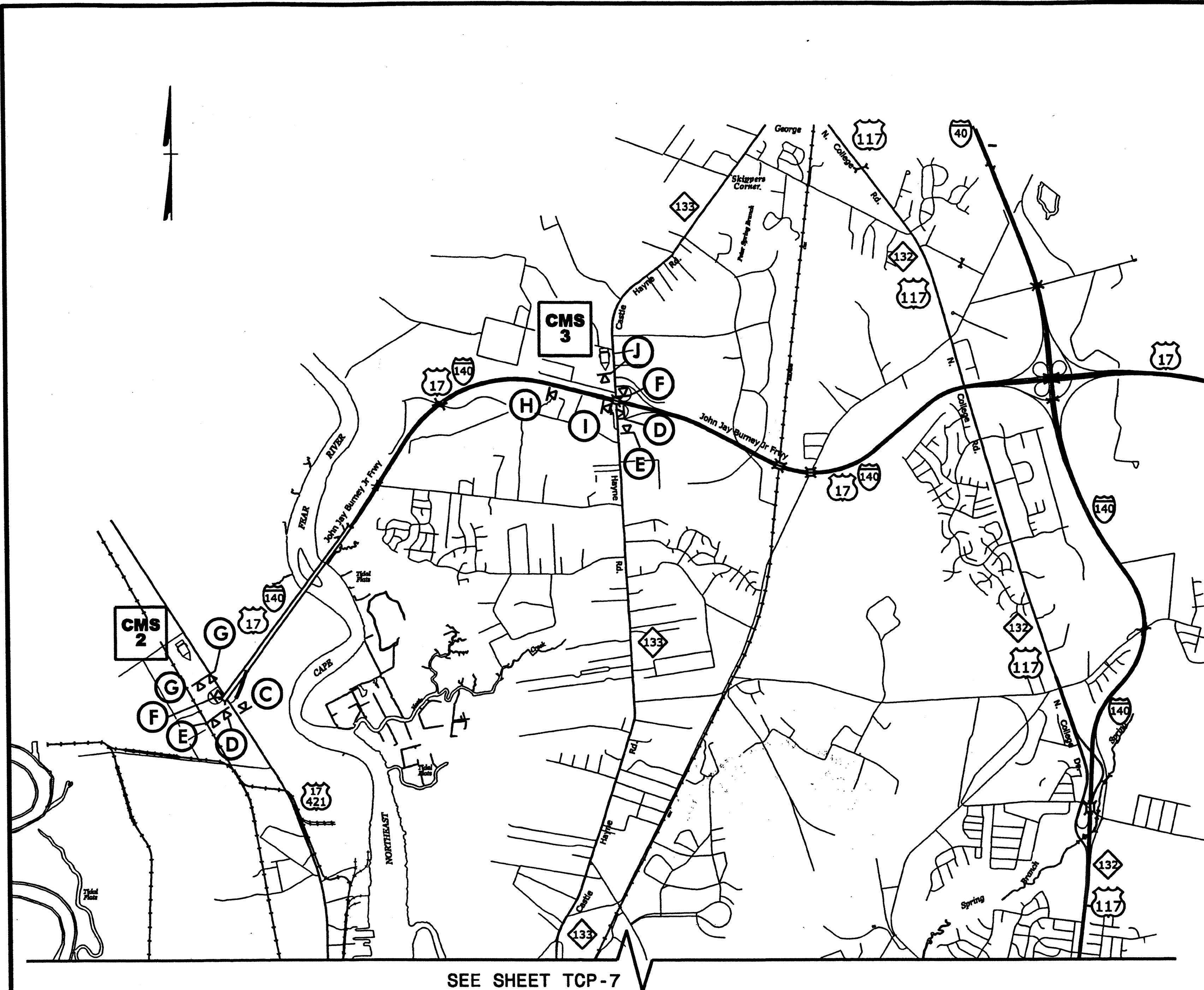
09-MAR-2011 12:23
 \\DOT\OF\SR001\GROUPS-WZTCC\TMU\WZTC\Design\Group3\Squad3B\Special\Projects\Div 3\New Honover\Traffic\NE Cape Fear Bridge-TCP\TC-TCP-5.dgn
 sngreen AT TE244733

NC 133/
US 17/421

| | |
|-------------------------|---------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 |
| RT. LANE CLOSED | MERGE LEFT |
| 1/3 MILE | |
| CHANGEABLE MESSAGE SIGN | |

| | | | |
|--------------|-------|---|-----------|
| APPROVED: | DATE: | ISABEL HOLMES BRIDGE LANE CLOSURE DETAIL | |
| | | | |
| SCALE: | NONE | | REVISIONS |
| DATE: | 1/11 | | |
| DWG. BY: | SNG | | |
| DESIGN BY: | SNG | | |
| REVIEWED BY: | JWG | | |

09-MAR-2011 12:26
 \\DOT\SR00101\GROUPS-WZTCC\TMU\WZTC\DesignGroup3\SpecialProjects\Div 3\New Hanover\Traffic\NE Cape Fear Bridge\TCP\TC-TCP-6-7.dgn
 AT: TE244733
 SNG:een



SEE SHEET TCP-7

CHANGEABLE MESSAGE SIGN MESSAGES
FOR BRIDGE CLOSURE

| CMS 2 | |
|----------------------|-------------------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 |
| ISABEL BRIDGE CLOSED | FOLLOW I 140 E NEXT LFT |

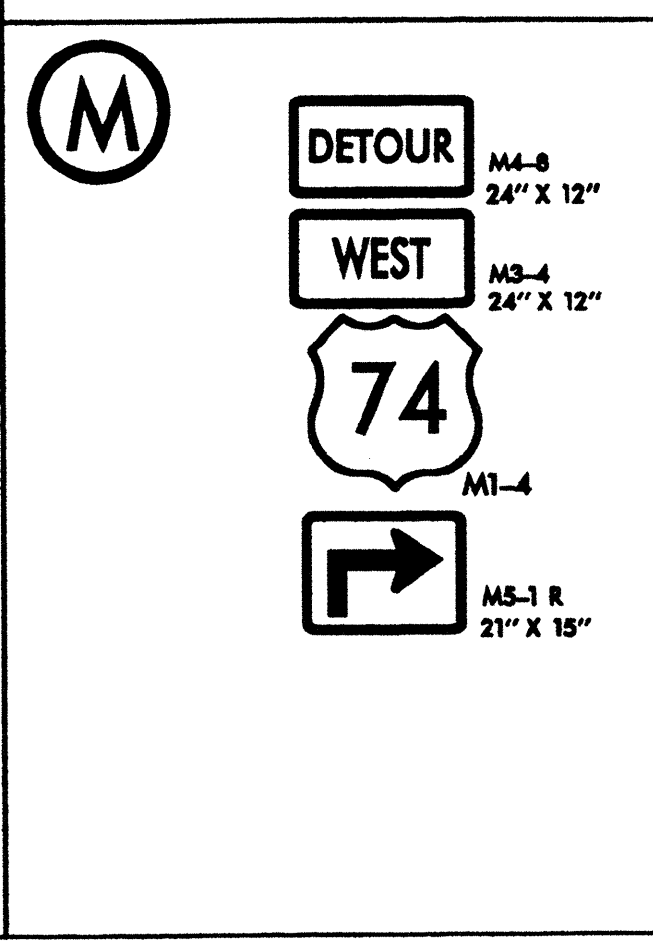
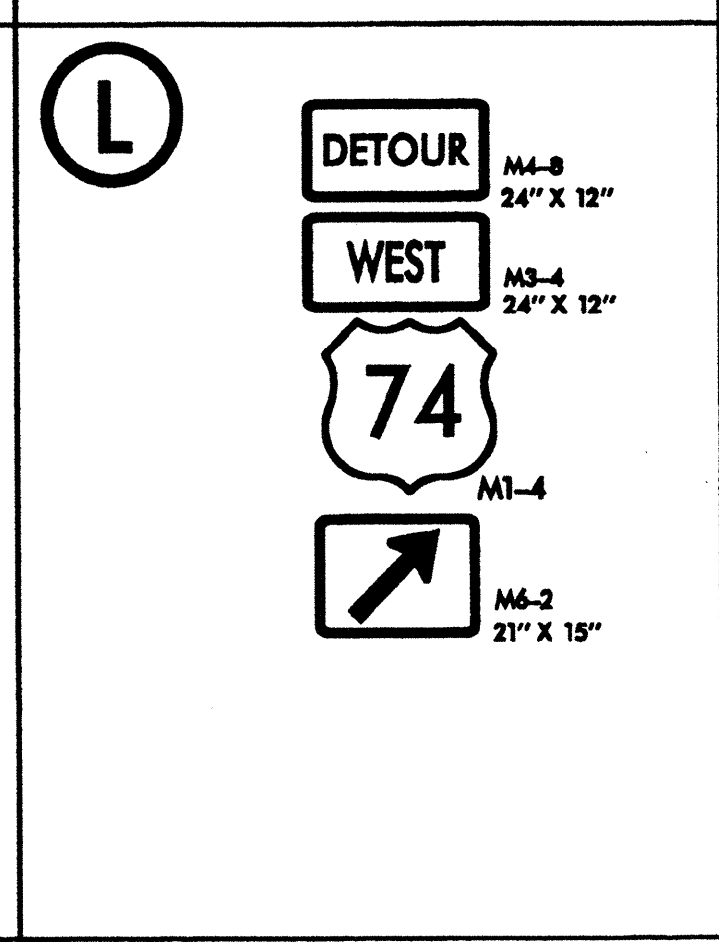
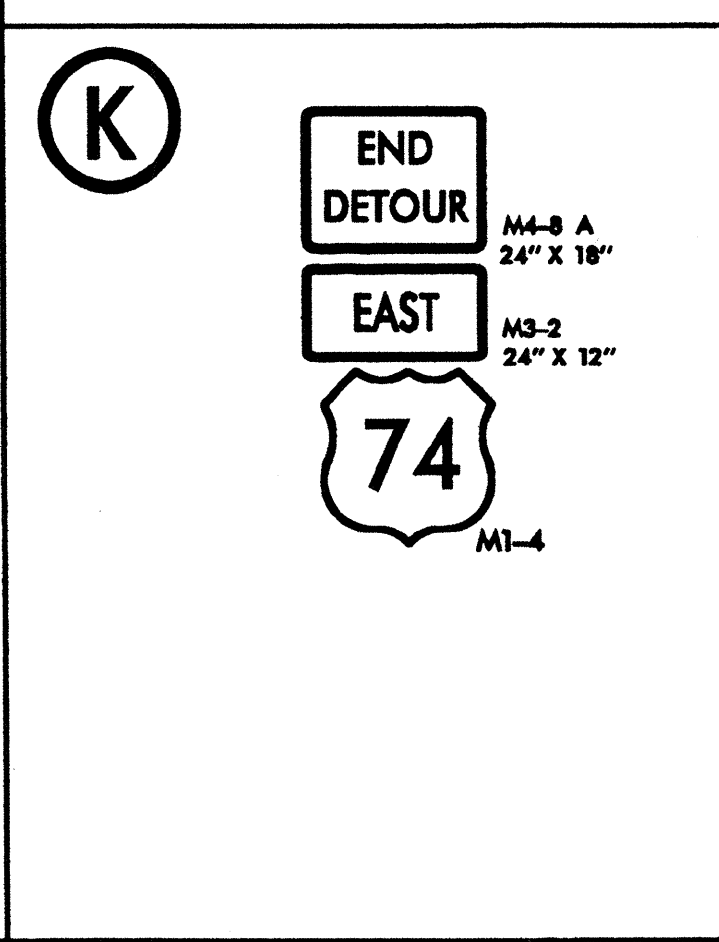
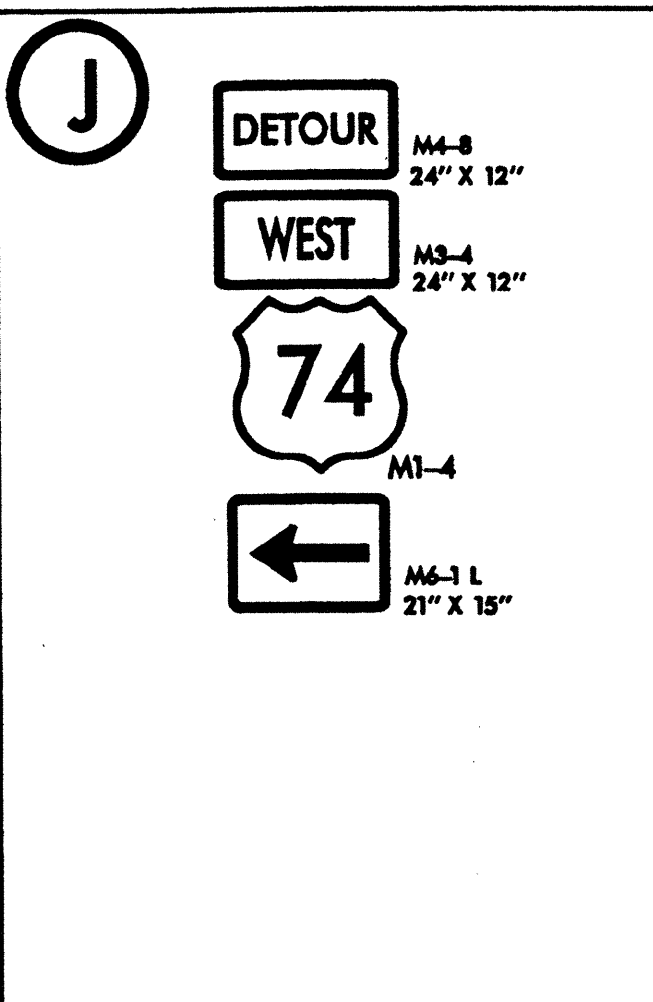
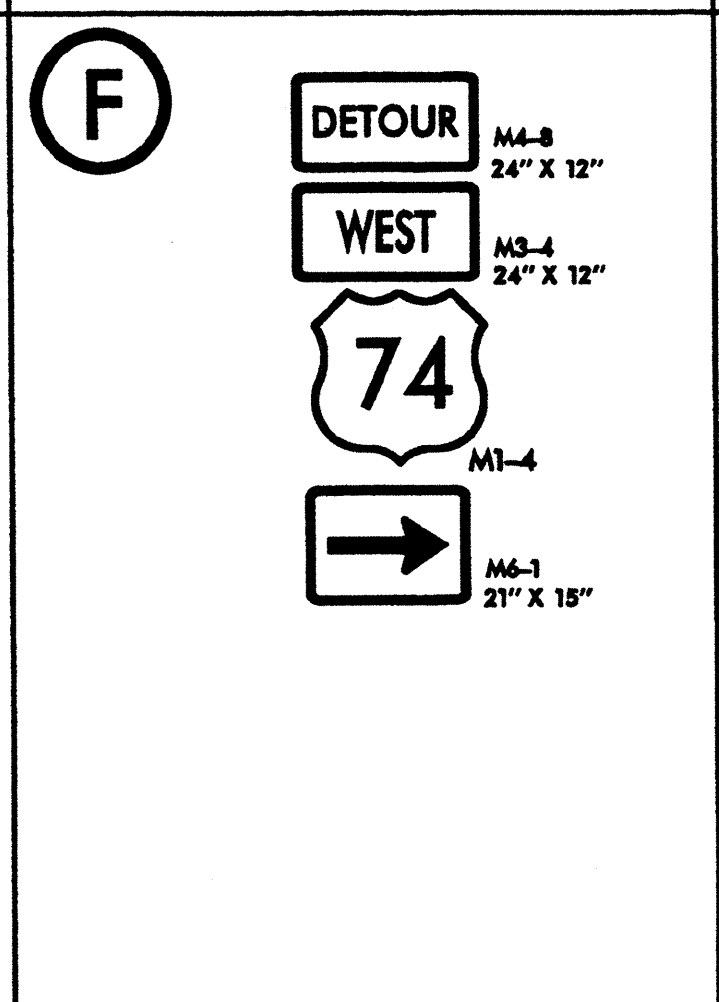
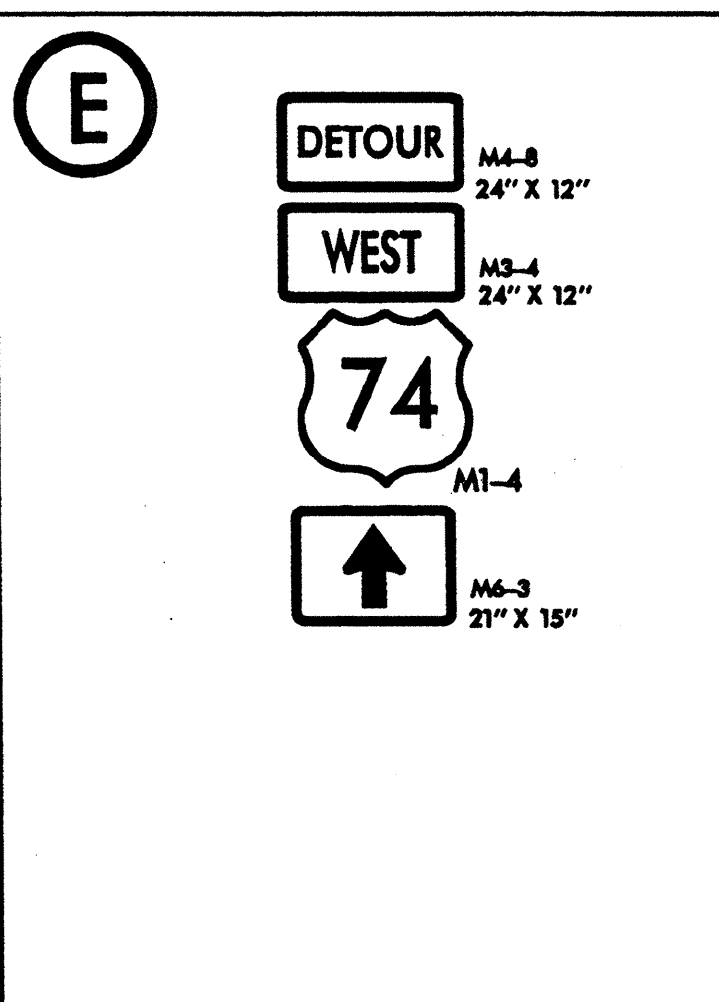
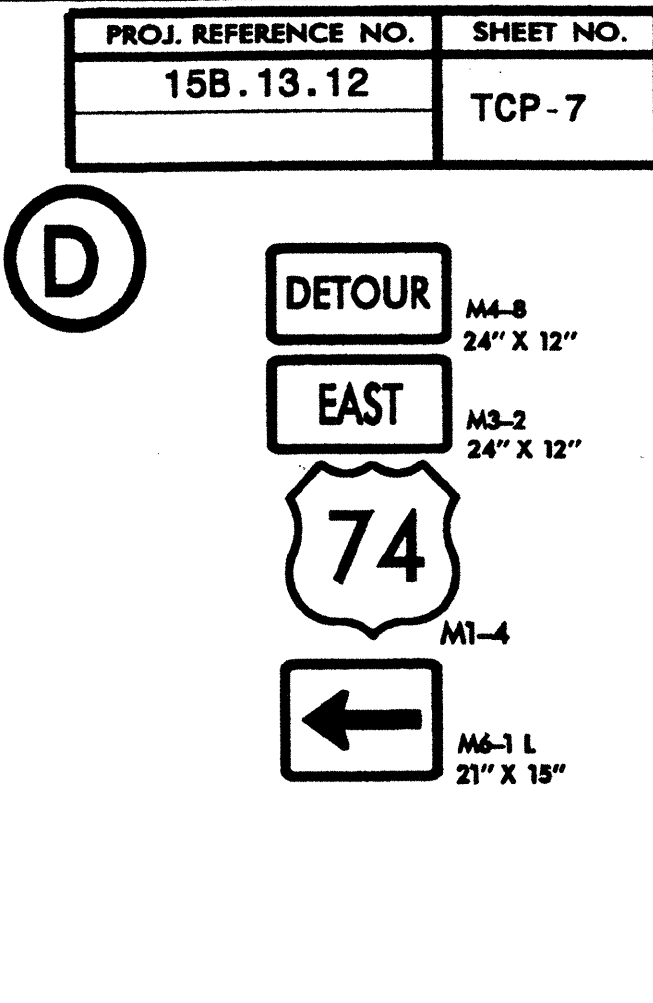
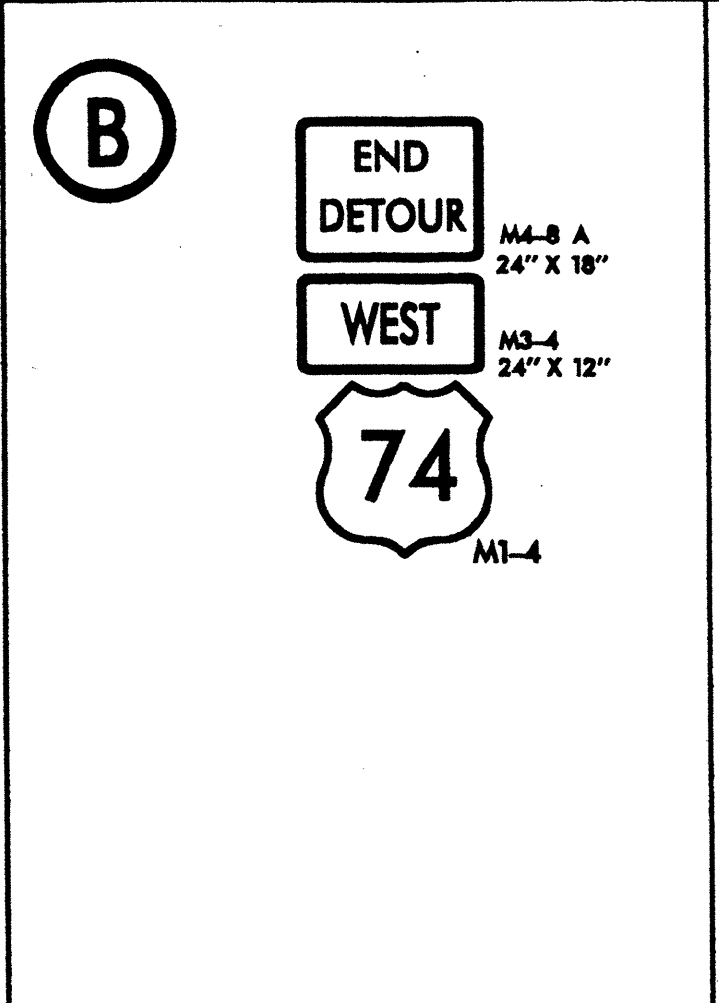
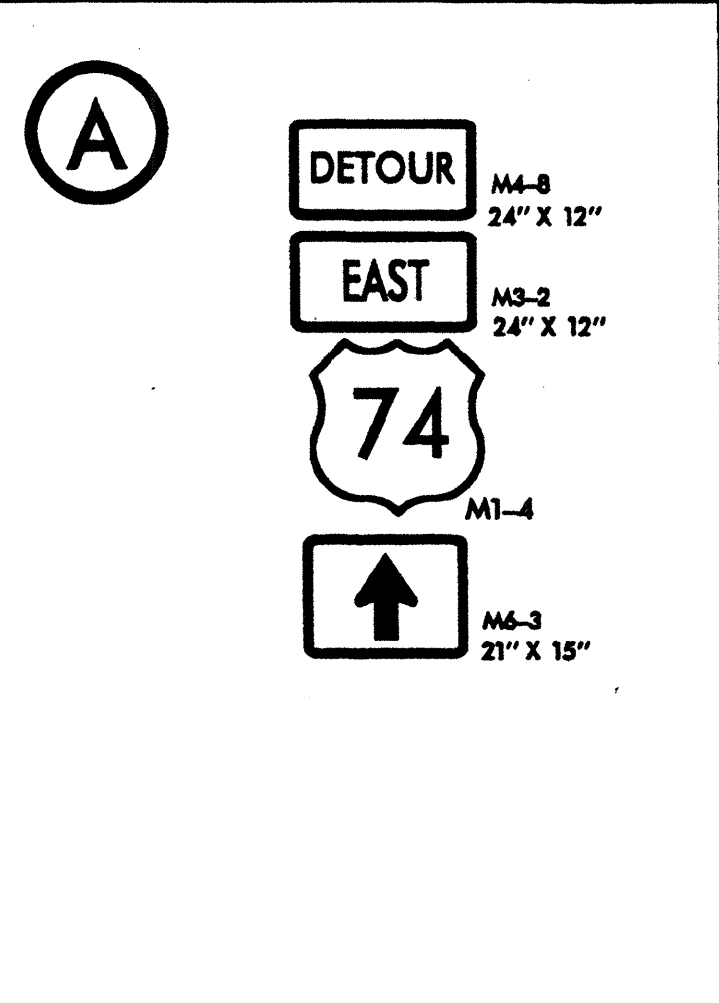
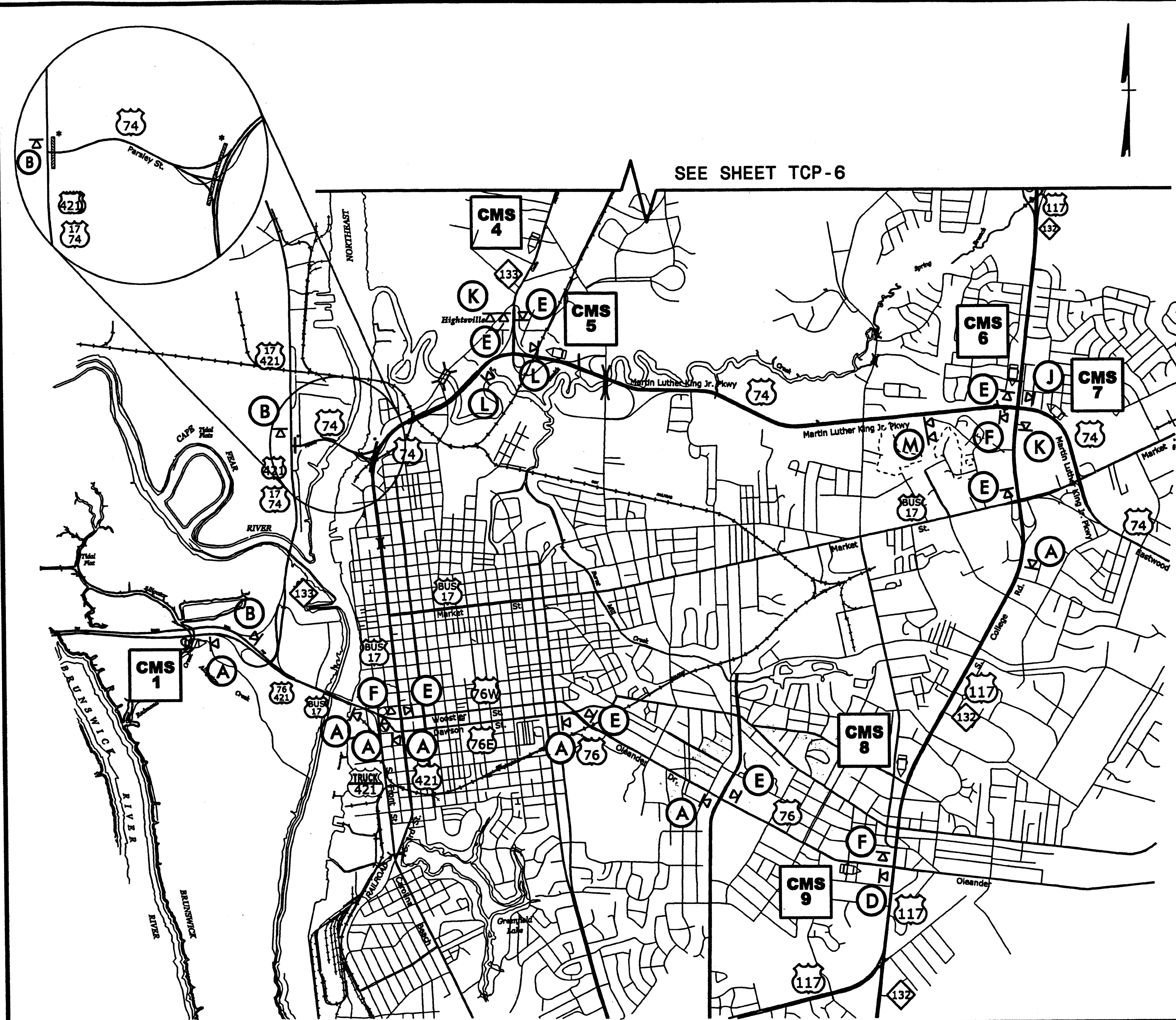
| CMS 3 | |
|----------------------|-------------------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 |
| ISABEL BRIDGE CLOSED | FOLLOW I 140 W NEXT LFT |

| | |
|---|---|
| <p>PROJ. REFERENCE NO. 15B.13.12</p> <p>SHEET NO. TCP-6</p> | |
| <p>C</p> <p>DETOUR EAST 74 →</p> <p>M4-8 24" X 12"</p> <p>M3-2 24" X 12"</p> <p>M1-4</p> <p>M6-1 21" X 15"</p> | <p>D</p> <p>DETOUR EAST 74 ←</p> <p>M4-8 24" X 12"</p> <p>M3-2 24" X 12"</p> <p>M1-4</p> <p>M6-1 L 21" X 15"</p> |
| <p>F</p> <p>DETOUR WEST 74 →</p> <p>M4-8 24" X 12"</p> <p>M3-4 24" X 12"</p> <p>M1-4</p> <p>M6-1 21" X 15"</p> | <p>G</p> <p>DETOUR EAST 74 ←</p> <p>M4-8 24" X 12"</p> <p>M3-2 24" X 12"</p> <p>M1-4</p> <p>M6-1 21" X 15"</p> |
| <p>I</p> <p>DETOUR EAST 74 ↗</p> <p>M4-8 24" X 12"</p> <p>M3-2 24" X 12"</p> <p>M1-4</p> <p>M6-2 21" X 15"</p> | <p>J</p> <p>DETOUR WEST 74 ←</p> <p>M4-8 24" X 12"</p> <p>M3-4 24" X 12"</p> <p>M1-4</p> <p>M6-1 L 21" X 15"</p> |
| <p>E</p> <p>DETOUR WEST 74 ↑</p> <p>M4-8 24" X 12"</p> <p>M3-4 24" X 12"</p> <p>M1-4</p> <p>M6-3 21" X 15"</p> | <p>H</p> <p>DETOUR EAST 74 ↘</p> <p>M4-8 24" X 12"</p> <p>M3-2 24" X 12"</p> <p>M1-4</p> <p>M6-1 R 21" X 15"</p> |

NOTES:

* ALL ROAD CLOSURE SIGNS AND DETOUR SIGNS SHALL BE PORTABLE.

| | | | |
|------------------|----------------|---|-----------|
| APPROVED: _____ | DATE: _____ | ISABEL HOLMOES BRIDGE & US 74 CLOSURE & DETOUR | |
| | | | |
| SCALE: NONE | DATE: 1/11 | | REVISIONS |
| DWG. BY: SNG | DESIGN BY: SNG | | |
| REVIEWED BY: JWG | | | |
| | | | |



CHANGEABLE MESSAGE SIGN MESSAGES
FOR BRIDGE CLOSURE

CMS 1

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|----------------------|-------------------|
| ISABEL BRIDGE CLOSED | FOLLOW US 76 EAST |

CMS 4

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|----------------------|-------------------|
| ISABEL BRIDGE CLOSED | FOLLOW US 74 EAST |

CMS 5

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|----------------------|-------------------------|
| ISABEL BRIDGE CLOSED | FOLLOW US 133 W NEXT RT |

CMS 6

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|----------------------|---------------------|
| ISABEL BRIDGE CLOSED | FOLLOW US 117 SOUTH |

CMS 7

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|----------------------|--------------------------|
| ISABEL BRIDGE CLOSED | FOLLOW US 117 S NEXT LFT |

CMS 8

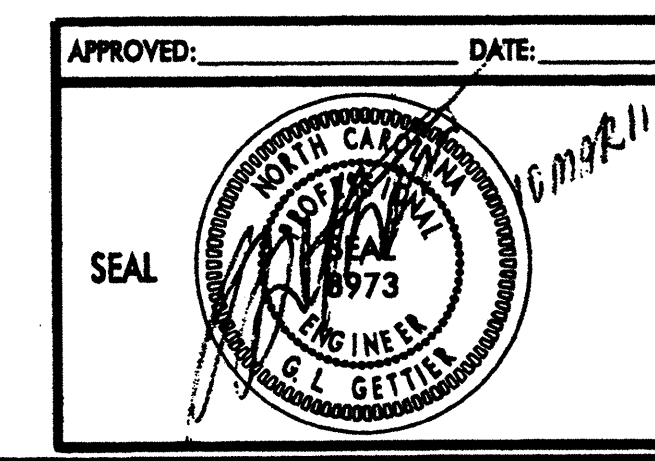
| MESSAGE NO. 1 | MESSAGE NO. 2 |
|------------------------|-------------------|
| US 74 W DETOUR NEXT RT | FOLLOW US 76 WEST |

CMS 9

| MESSAGE NO. 1 | MESSAGE NO. 2 |
|-------------------------|---------------------|
| US 74 E DETOUR NEXT LFT | FOLLOW US 117 NORTH |

NOTES:

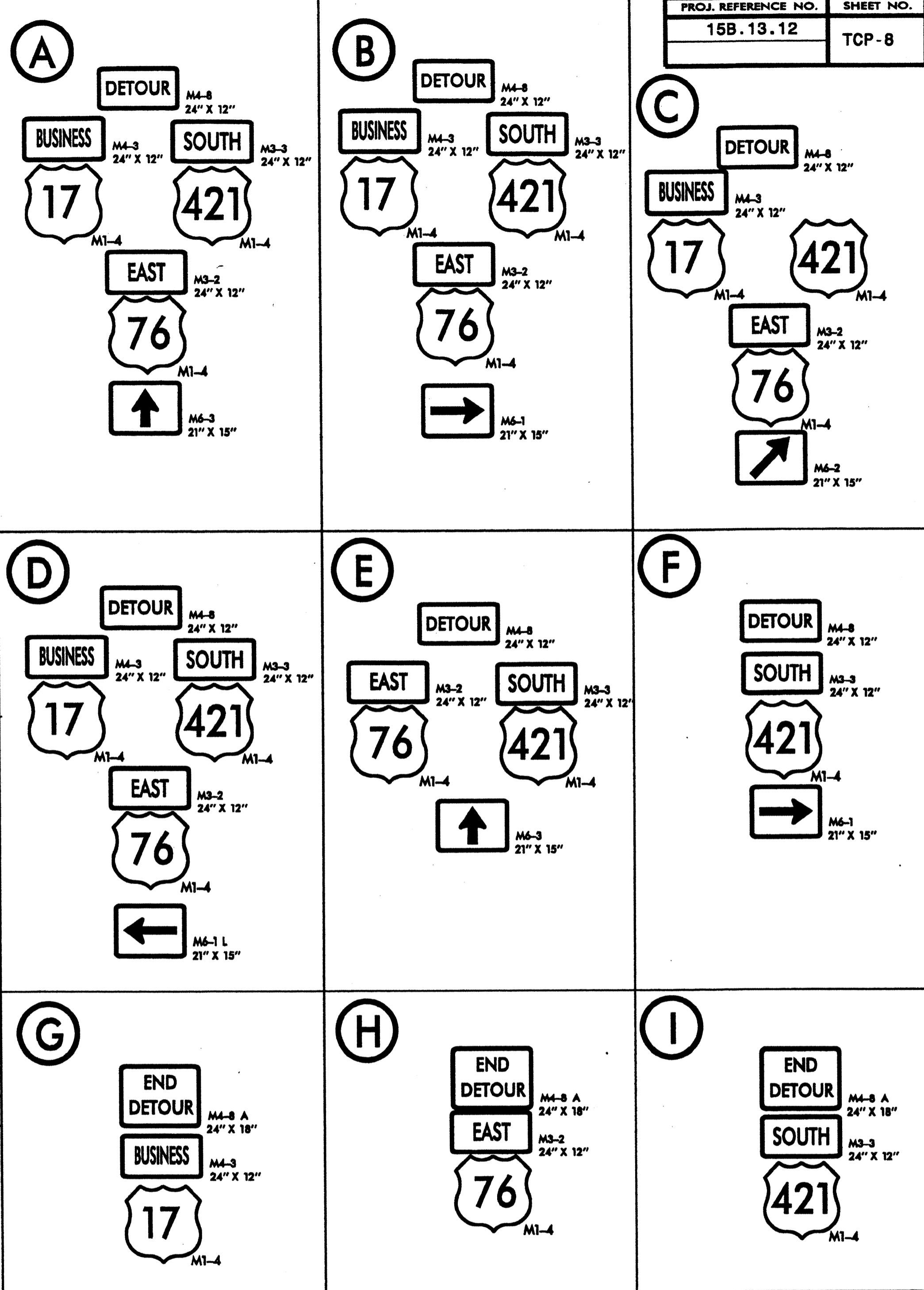
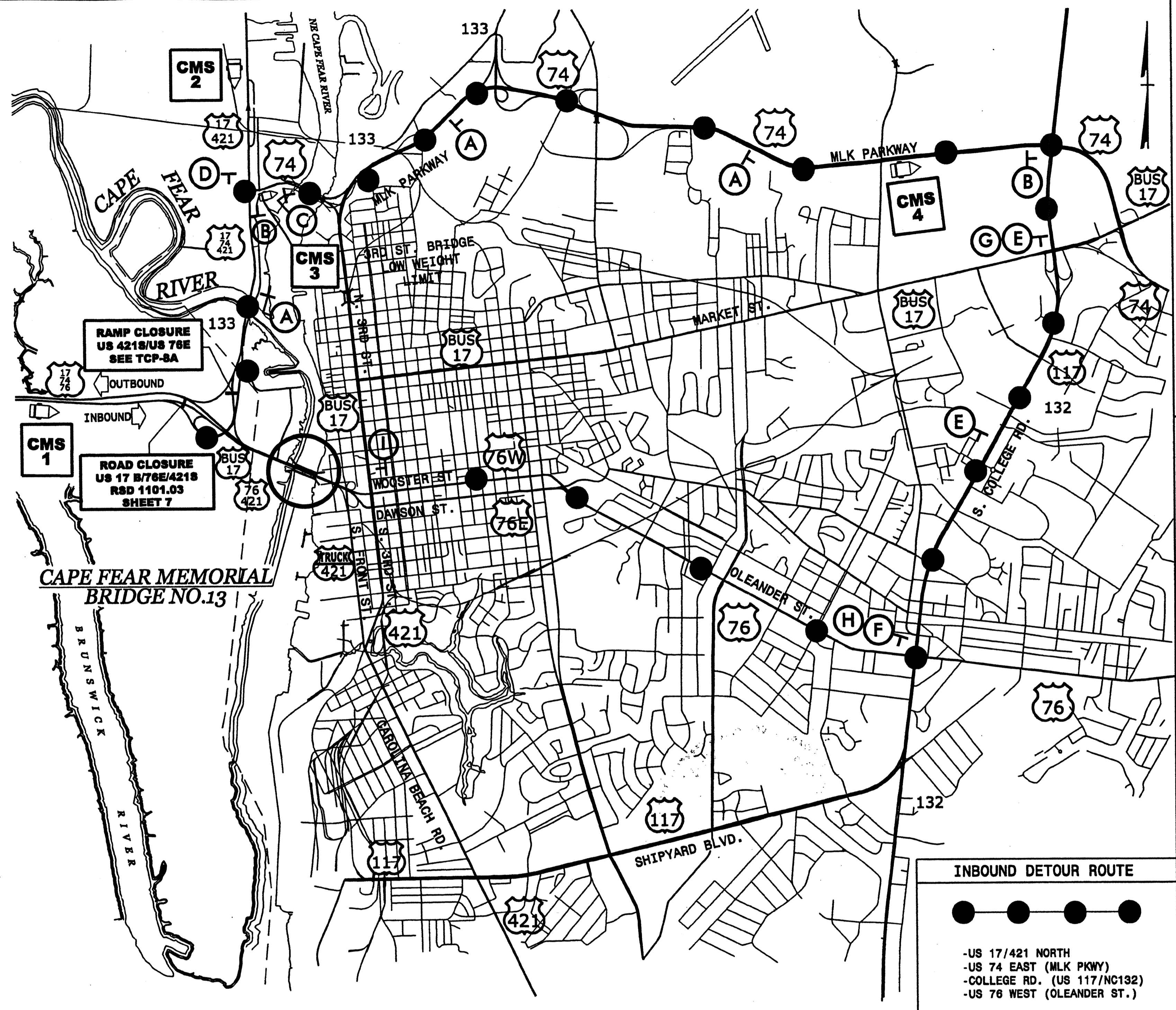
* USE RSD 1101.03, SHEET 2 OF 9 TO CLOSE US 74/NE CAPE FEAR BRIDGE. ALL ROAD CLOSURE SIGNS AND DETOUR SIGNS SHALL BE PORTABLE.



ISABEL HOLMES BRIDGE & US 74
CLOSURE & DETOUR

| SCALE: NONE | | <table border="1"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table> | REVISIONS | | | | | | | |
|------------------|--|--|-----------|--|--|--|--|--|--|--|
| REVISIONS | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| DATE: 1/11 | | | | | | | | | | |
| DESIGN BY: SNG | | | | | | | | | | |
| REVIEWED BY: JWC | | | | | | | | | | |

Q:\MAR-2010\CON GROUPS-WZTCCC\T.M.U.WZTC\Design\Group3\New Hanover\Traffic\NE Cape Fear Bridge-TCP\TC-TCP-7.dgn
 S:\MAR-2010\CON GROUPS-WZTCCC\T.M.U.WZTC\Design\Group3\New Hanover\Traffic\NE Cape Fear Bridge-TCP\TC-TCP-7.dgn
 S:\MAR-2010\CON GROUPS-WZTCCC\T.M.U.WZTC\Design\Group3\New Hanover\Traffic\NE Cape Fear Bridge-TCP\TC-TCP-7.dgn



CHANGEABLE MESSAGE SIGN MESSAGES
FOR INBOUND BRIDGE CLOSURE

| CMS 1 | | | CMS 2 | | | CMS 3 | | | CMS 4 | | |
|------------------------|--------------------------|--------------------|--------------------------|---------------|------------------|--------------------------|-------------------|-------------------|--------------------------|-------------------|---------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 |
| MEMORIAL BRIDGE CLOSED | 17 BUS 76 EAST 421 SOUTH | DETOUR VIA 74 EAST | 17 BUS 76 EAST 421 SOUTH | EXIT CLOSED | DETOUR NEXT LEFT | 17 BUS 76 EAST 421 SOUTH | DETOUR EXIT RIGHT | FOLLOW US 74 EAST | 17 BUS 76 EAST 421 SOUTH | DETOUR NEXT RIGHT | |

EXAMPLE MESSAGES FOR PERIODS JUST PRIOR TO BRIDGE CLOSURE

| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 |
|---------------|-------------------------|------------------|
| NEXT TUESDAY | MEMORIAL BRIDGE CLOSURE | 7 P.M. TO 6 A.M. |

INBOUND ROAD CLOSURE IMPLEMENTATION SEQUENCE

1. APPLY INBOUND CMS ROAD CLOSURE MESSAGES AND UNCOVER DETOUR ROUTE SIGNS.
2. CLOSE INBOUND US 17 BUS, US 76 EAST AND US 421 SOUTH ROADWAY IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.03, SHEET 7.
3. CLOSE US 421 SOUTH/US 76 EAST RAMP.

NOTE:
ALL ROAD CLOSURE SIGNS AND DETOUR SIGNS SHALL BE PORTABLE

APPROVED: _____ DATE: _____

CAPE FEAR MEMORIAL BRIDGE NO. 13
INBOUND BRIDGE CLOSURE
DETOUR ROUTE

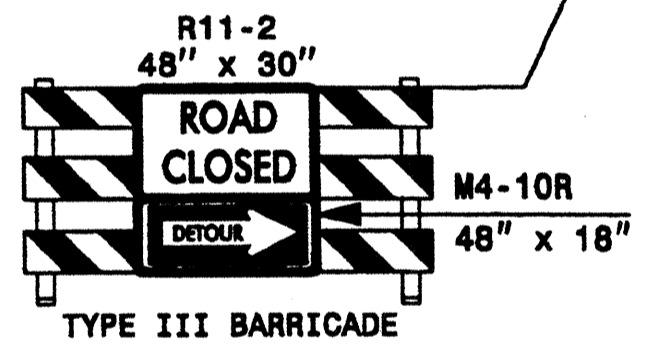
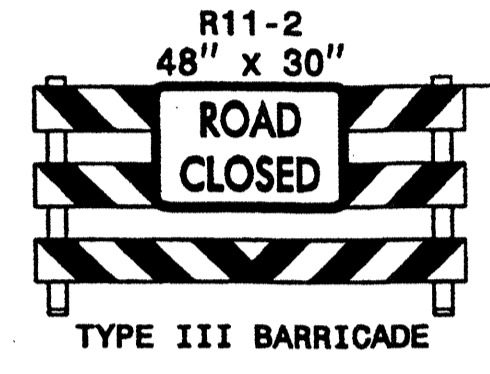
SCALE: NONE
DATE: 11/01
DWG. BY: SNG
DESIGN BY: SNG
REVIEWED BY: JWG

REVISIONS

SEAL: [Professional Engineer Seal for G.L. Gettler, No. 8973]

06-FEB-2011 08:45
 Q:\DATA\PROJECTS\TRAFFIC\GROUPS-WZTCC\TMU\WZTC\Design\Group3\Squad3B\Special\Projects\Div 3\New Hanover\Traffic\TCP-TCP-8.dgn
 sngreen AT 12/24/13

CLOSE RAMP
US 421 SOUTH US 17 SOUTH
USING DRUMS & BARRICADES

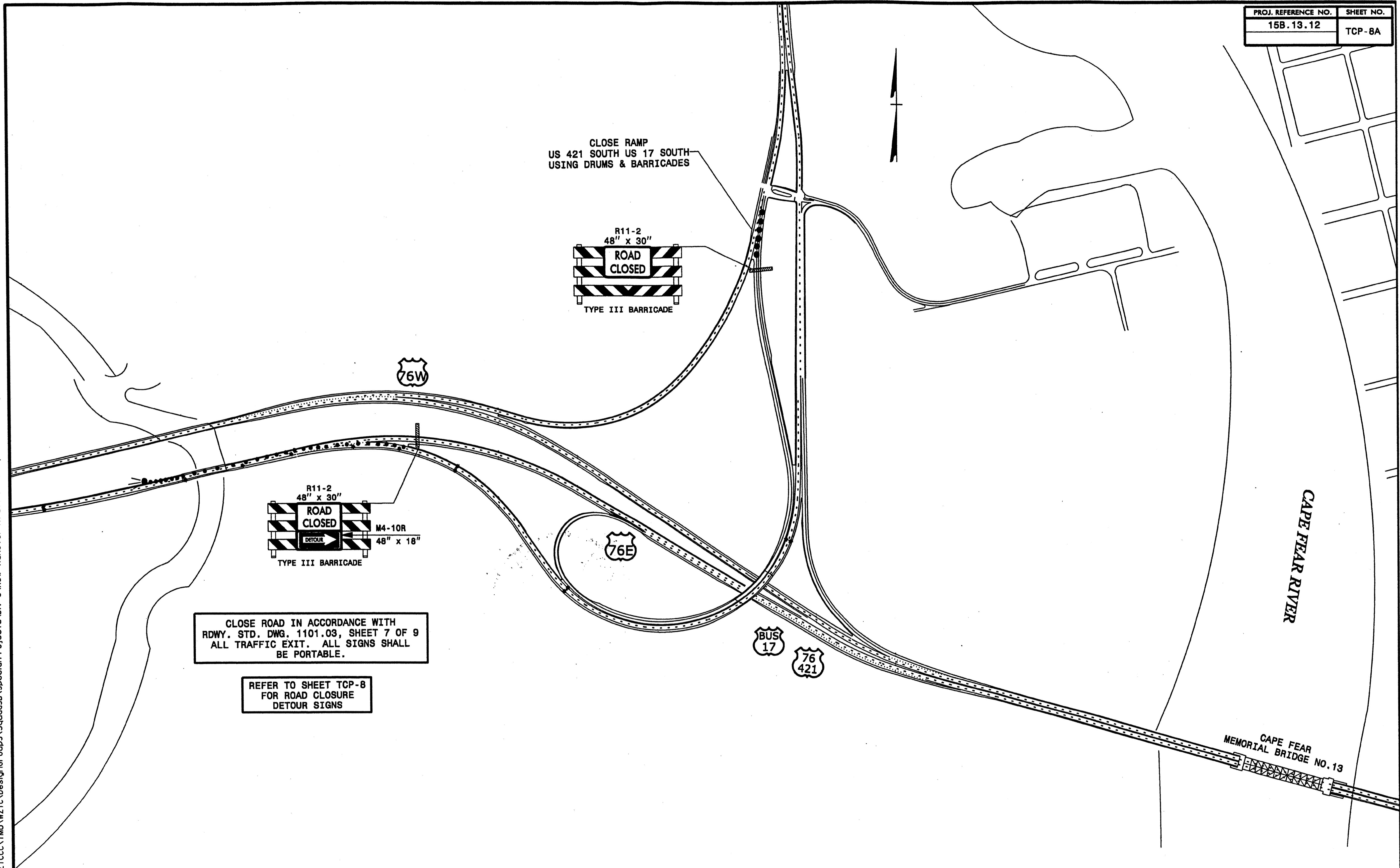


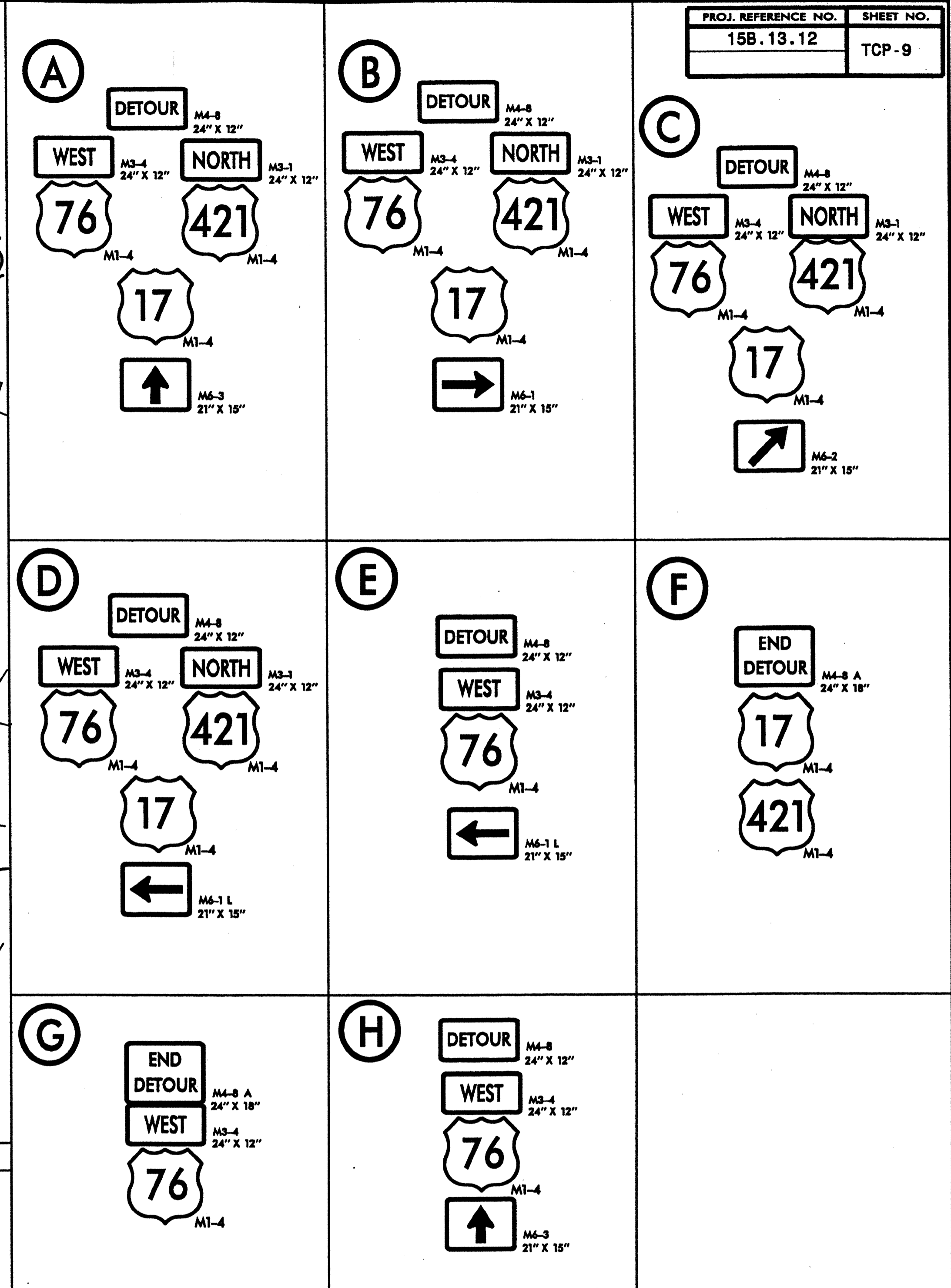
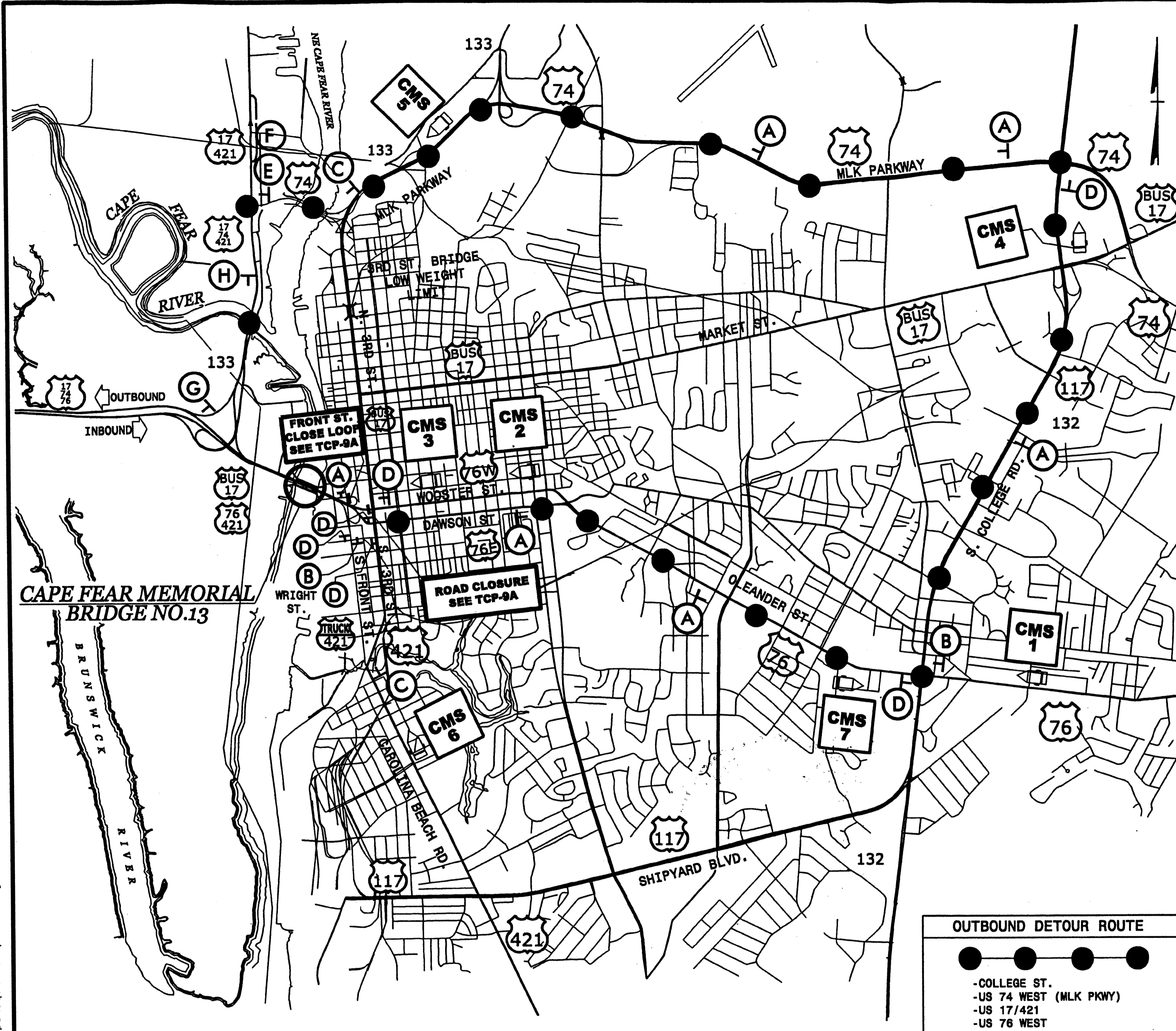
CLOSE ROAD IN ACCORDANCE WITH
RDWY. STD. DWG. 1101.03, SHEET 7 OF 9
ALL TRAFFIC EXIT. ALL SIGNS SHALL
BE PORTABLE.

REFER TO SHEET TCP-8
FOR ROAD CLOSURE
DETOUR SIGNS

08-FEB-2010 08:52
\\DOT\SR00101\GROUPS-WZTCC\TMU\WZTC\Design\oup3\Squad3B\Special Projects\Div 3\New Hanover\Traffic\NE Cape Fear Bridge-TCP-TCP-8A.dgn
sngreen AT TE244733

| | | |
|-----------------------------|--|--|
| APPROVED: _____ DATE: _____ | INBOUND US 17 BUS/76 EAST/421 SOUTH ROAD CLOSURE DETAIL | |
| | SCALE: NONE | |
| | DATE: 11/01 | |
| | DWG. BY: SNG | |
| | DESIGN BY: SNG | |
| REVIEWED BY: JWG | REVISIONS | |





CHANGEABLE MESSAGE SIGN MESSAGES FOR OUTBOUND BRIDGE CLOSURE

| CMS 1 | CMS 2 | CMS 3 | CMS 4 | CMS 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------|-------------------------|---------------|------------------------|-------------------------|-------------------|--|---------------|---------------|---------------|------------------------|-----------------|-------------------------|---|---|---------------|---------------|------------------------|---------------|------------------------|---|---------------|---------------|---------------|---------------|------------------|--------------|--|---------------|---------------|---------------|---------------|-------------------|--|
| <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>MEMORIAL BRIDGE CLOSED</td><td>US 17 76 WEST</td><td>DETOUR NEXT RIGHT</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR NEXT RIGHT | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>ROAD CLOSED</td><td>NO THRU TRAFFIC</td><td>DETOUR USE LEFT LANE</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | ROAD CLOSED | NO THRU TRAFFIC | DETOUR USE LEFT LANE | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>MEMORIAL BRIDGE CLOSED</td><td>US 17 76 WEST</td><td>DETOUR USE LEFT LANE</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR USE LEFT LANE | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>US 17 76 WEST</td><td>DETOUR NEXT LEFT</td><td>USE MLK PKWY</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | US 17 76 WEST | DETOUR NEXT LEFT | USE MLK PKWY | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>US 17 76 WEST</td><td>DETOUR NEXT RIGHT</td><td></td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | US 17 76 WEST | DETOUR NEXT RIGHT | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR NEXT RIGHT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ROAD CLOSED | NO THRU TRAFFIC | DETOUR USE LEFT LANE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR USE LEFT LANE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| US 17 76 WEST | DETOUR NEXT LEFT | USE MLK PKWY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| US 17 76 WEST | DETOUR NEXT RIGHT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>NEXT TUESDAY</td><td>MEMORIAL BRIDGE CLOSURE</td><td>7 P.M. TO 6 A.M.</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | NEXT TUESDAY | MEMORIAL BRIDGE CLOSURE | 7 P.M. TO 6 A.M. | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>MEMORIAL BRIDGE CLOSED</td><td>US 17 76 WEST</td><td>DETOUR RIGHT ON 76 EAST</td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR RIGHT ON 76 EAST | | <table border="1"> <tr><th>MESSAGE NO. 1</th><th>MESSAGE NO. 2</th><th>MESSAGE NO. 3</th></tr> <tr><td>US 17 76 WEST</td><td>DETOUR LEFT ON COLLEGE</td><td></td></tr> </table> | MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | US 17 76 WEST | DETOUR LEFT ON COLLEGE | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEXT TUESDAY | MEMORIAL BRIDGE CLOSURE | 7 P.M. TO 6 A.M. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MEMORIAL BRIDGE CLOSED | US 17 76 WEST | DETOUR RIGHT ON 76 EAST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| US 17 76 WEST | DETOUR LEFT ON COLLEGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- OUTBOUND ROAD CLOSURE IMPLEMENTATION SEQUENCE
1. APPLY OUTBOUND CMS ROAD CLOSURE MESSAGES AND UNCOVER DETOUR ROUTE SIGNS.
 2. CLOSE OUTBOUND US 76 WEST AND US 421 NORTH AT 3RD STREET AS SHOWN ON SHEET TCP-9A.
 3. CLOSE FRONT STREET LOOP.
- NOTE:
ALL ROAD CLOSURE SIGNS AND DETOUR SIGNS SHALL BE PORTABLE

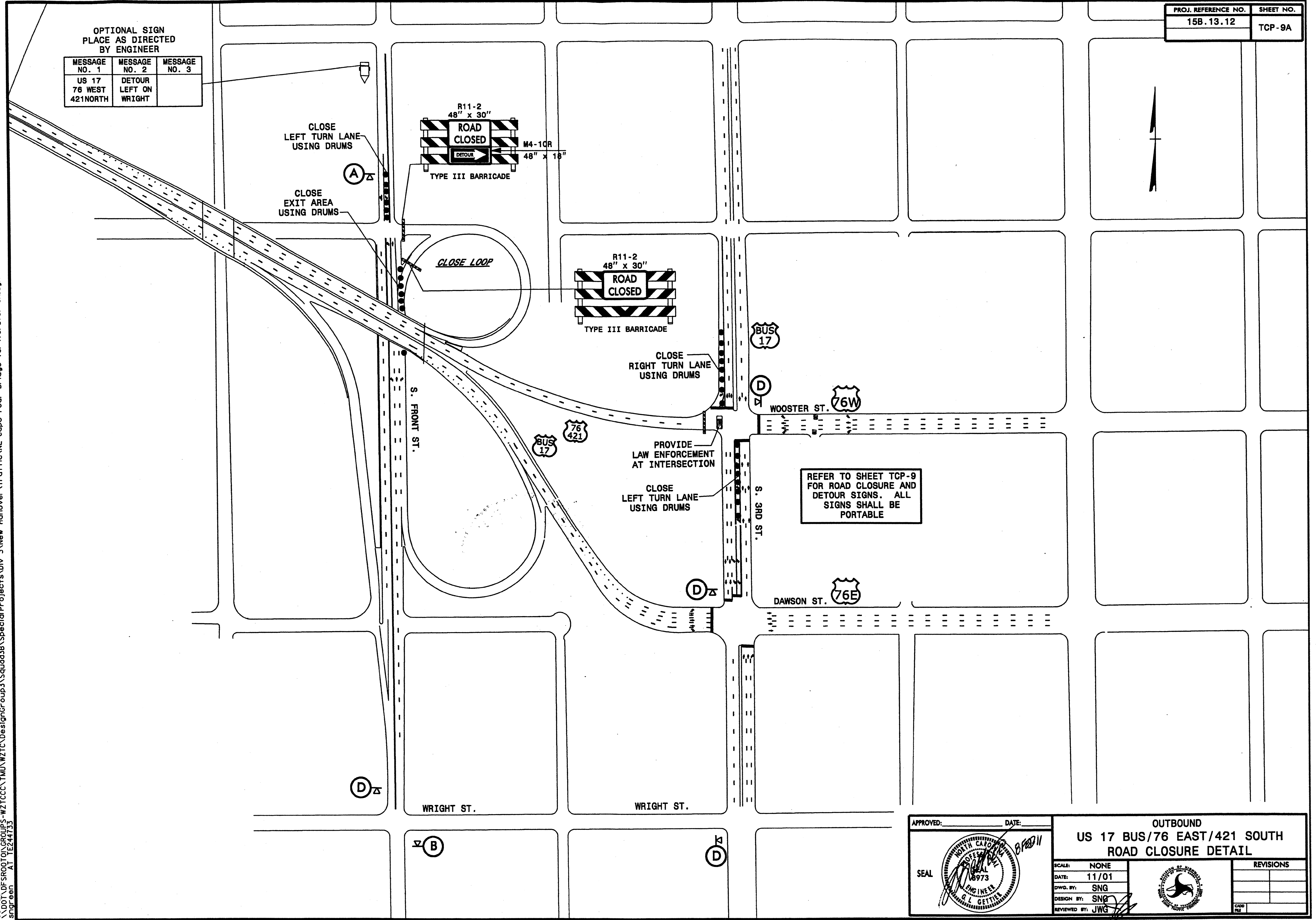
| | | |
|-----------------------------|---|-----------|
| APPROVED: _____ DATE: _____ | CAPE FEAR MEMORIAL BRIDGE NO. 13 OUTBOUND BRIDGE CLOSURE DETOUR ROUTE | |
| | SCALE: NONE | REVISIONS |
| | DATE: 11/01 | |
| | DWG. BY: SNG | |
| | DESIGN BY: SNG REVIEWED BY: JWG | |

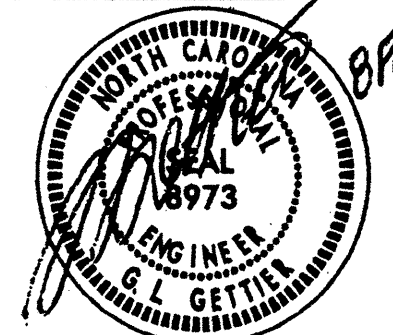
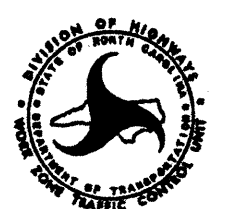
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 SNG

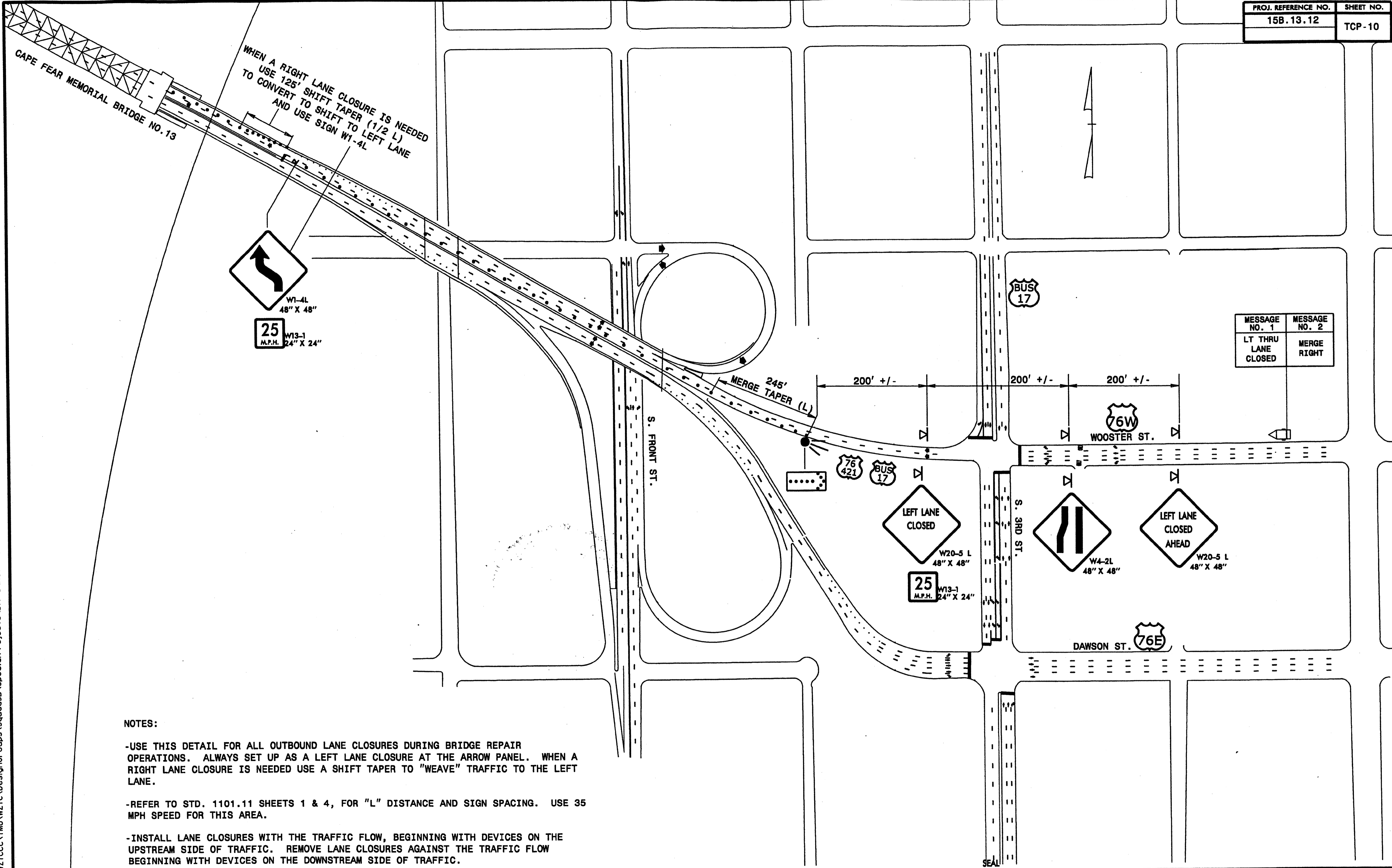
OPTIONAL SIGN
PLACE AS DIRECTED
BY ENGINEER

| MESSAGE NO. 1 | MESSAGE NO. 2 | MESSAGE NO. 3 |
|------------------------------|-----------------------------|---------------|
| US 17 76 WEST 421NORTH | DETOUR LEFT ON WRIGHT | |

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|--|---|--|--|--|--|--|--|--|--|
| APPROVED: _____ DATE: _____  | OUTBOUND US 17 BUS/76 EAST/421 SOUTH ROAD CLOSURE DETAIL | | REVISIONS <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> | | | | | | |
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| | | | | | | | | | |
| SCALE: NONE DATE: 11/01 DWG. BY: SNG DESIGN BY: SNG REVIEWED BY: JWG |  | | CHECKED BY: _____ DATE: _____ | | | | | | |



NOTES:

- USE THIS DETAIL FOR ALL OUTBOUND LANE CLOSURES DURING BRIDGE REPAIR OPERATIONS. ALWAYS SET UP AS A LEFT LANE CLOSURE AT THE ARROW PANEL. WHEN A RIGHT LANE CLOSURE IS NEEDED USE A SHIFT TAPER TO "WEAVE" TRAFFIC TO THE LEFT LANE.
- REFER TO STD. 1101.11 SHEETS 1 & 4, FOR "L" DISTANCE AND SIGN SPACING. USE 35 MPH SPEED FOR THIS AREA.
- INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
- ARROW PANEL MAY BE PLACED IN THE MERGE TAPER IF IT CAN NOT BE PLACED ON THE SHOULDER.
- PLACE DRUMS AT A MAXIMUM SPACING OF 35' IN TAPERS, AND A MAXIMUM SPACING OF 70' ALONG THE WORK AREA.
- USE ROADWAY STANDARD DRAWING 1101.02, SHEET 3 FOR LANE CLOSURE ON US 76 EB.

| | |
|---------------------|---------------|
| MESSAGE NO. 1 | MESSAGE NO. 2 |
| LT THRU LANE CLOSED | MERGE RIGHT |

| APPROVED: _____ DATE: _____ | CAPE FEAR MEMORIAL BRIDGE LANE CLOSURE DETAIL | | | | | | | | | |
|-----------------------------|--|--|-----------|--|--|--|--|--|--|--|
| | | | | | | | | | | |
| SCALE: NONE | DATE: 11/01 | <table border="1"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table> | REVISIONS | | | | | | | |
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| DWG. BY: SNG | DESIGN BY: SNG | | | | | | | | | |
| REVIEWED BY: JWG | | | | | | | | | | |
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