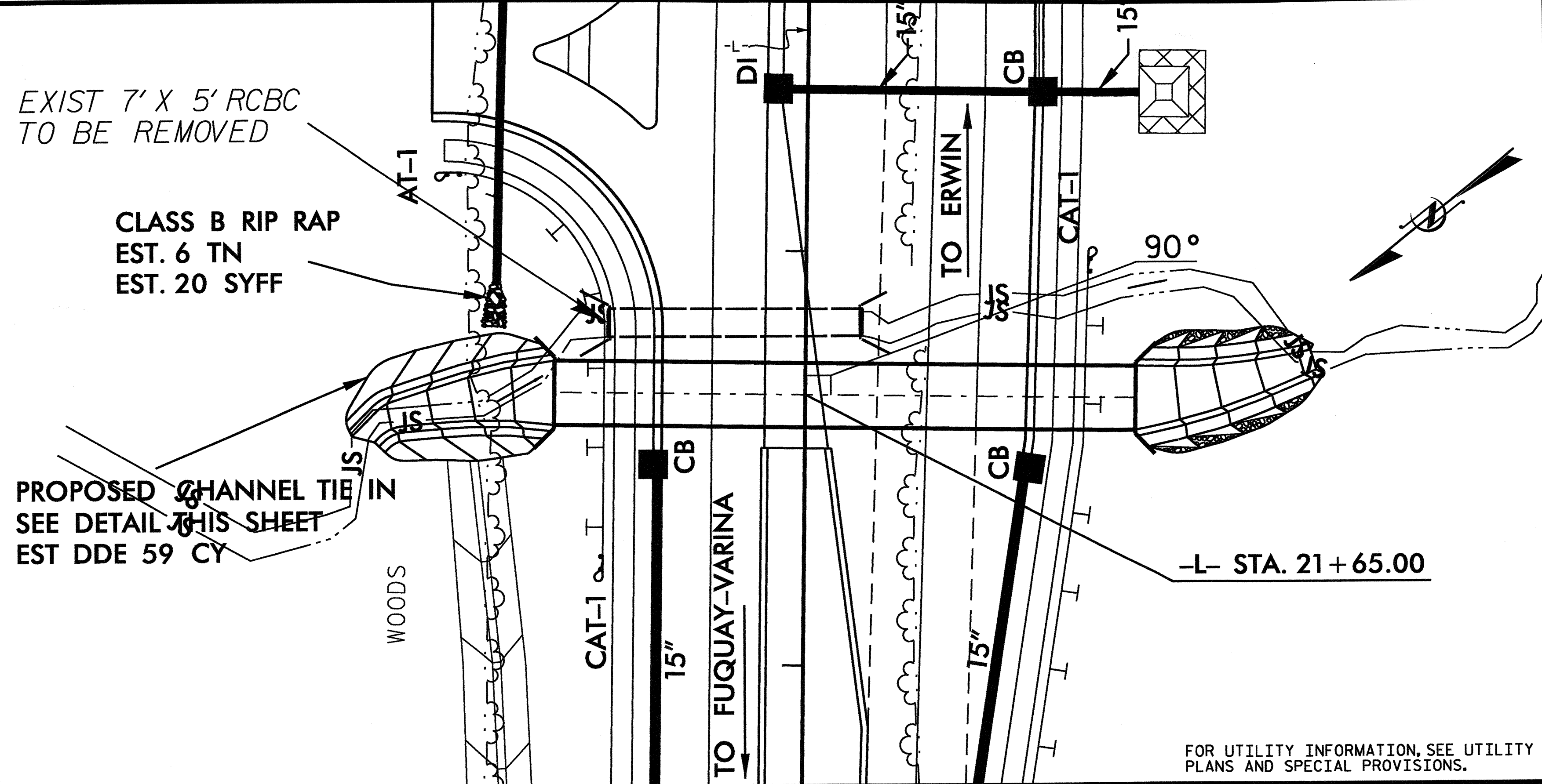
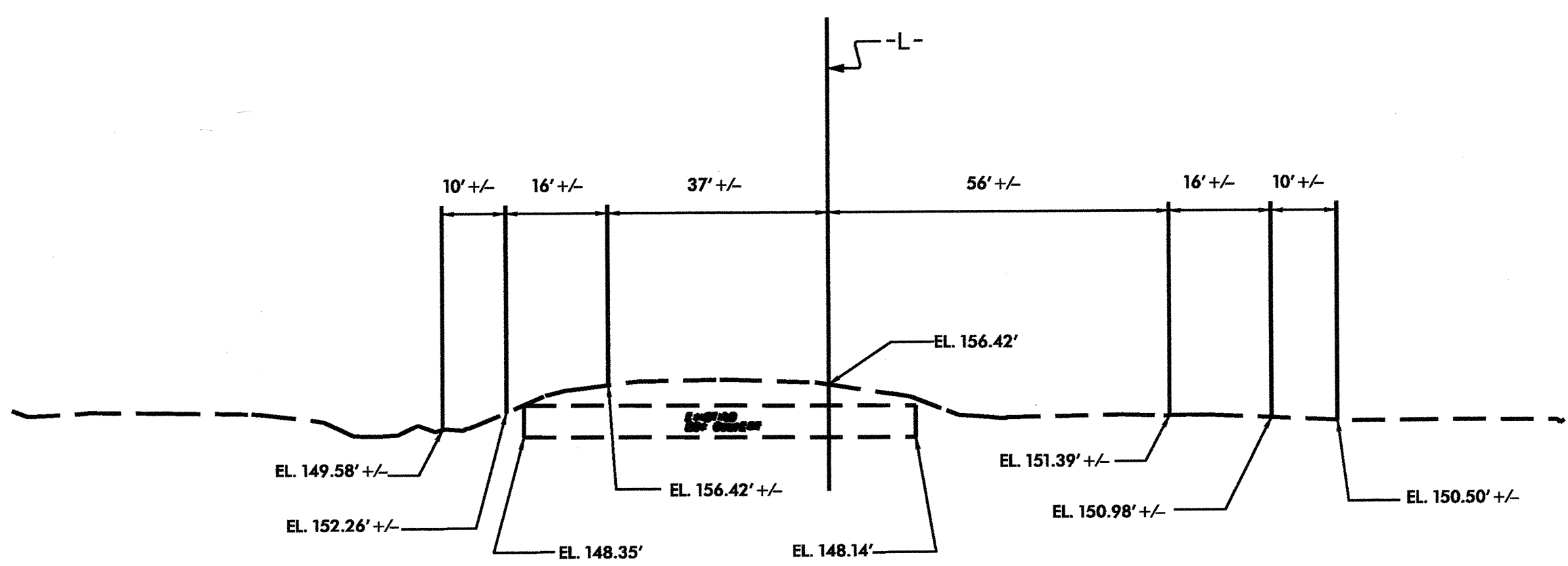


BM#1 R/R SPIKE IN BASE OF 10" PINE -L- STA 12+95.31 73.96' LT ELEV=162.96'



LOCATION SKETCH



PROFILE ALONG CULVERT

GRADE DATA

GRADE PT. EL. @ STA. 21+65.00 -L- = 158.01'
 BED EL. @ STA. 21+65.00 -L- = 147.19'
 ROADWAY SLOPES = 3:1

HYDRAULIC DATA

DESIGN DISCHARGE = 657 ft³/sec
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 154.92'
 DRAINAGE AREA = 0.55 SQ. MI.
 BASIC DISCHARGE (Q100) = 765 ft³/sec
 BASIC HIGH WATER ELEVATION = 155.55'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 945 ft³/sec
 FREQUENCY OF OVERTOPPING FLOOD = 500 YR.+
 OVERTOPPING FLOOD ELEVATION = 158.00'

TOTAL STRUCTURE QUANTITIES

REMOVAL OF EXISTING STRUCTURE	----- LUMP SUM
CULVERT EXCAVATION	----- LUMP SUM
ALUMINUM BOX CULVERT	----- LUMP SUM
FOUNDATION MATERIAL	----- 290 TONS
CULVERT BACKFILL	----- 863 TONS

NOTES

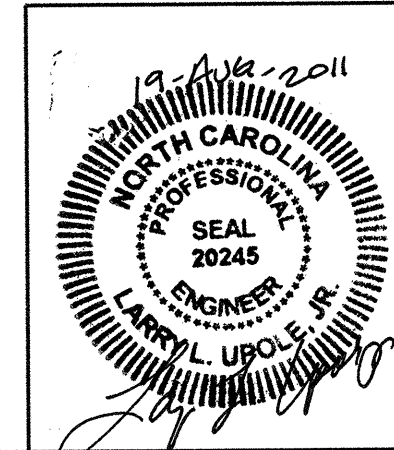
- MINIMUM LIVE LOAD = HS25 OR ALTERNATE LOADING.
- CULVERT IS TO BE DESIGNED FOR A MINIMUM FILL DEPTH OF 8.83' AND A MAXIMUM FILL DEPTH OF 10.61'.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- FOR ALUMINUM BOX CULVERT, SEE SPECIAL PROVISIONS.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JULY 2006.
- THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY. THE SUPPLIER SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12, AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.
- UNLESS OTHERWISE INDICATED, THE SUPPLIER SHALL DESIGN, DETAIL, AND FURNISH ALL STRUCTURAL ELEMENTS AND HARDWARE.
- GUARDRAIL POST LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ENSURE ADEQUATE COVER FOR INSTALLATION.
- THE EXISTING STRUCTURE, CONSISTING OF ONE 7' X 5' BOX CULVERT AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. R-5185
 HARNETT COUNTY
 STATION: 21+65.00

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

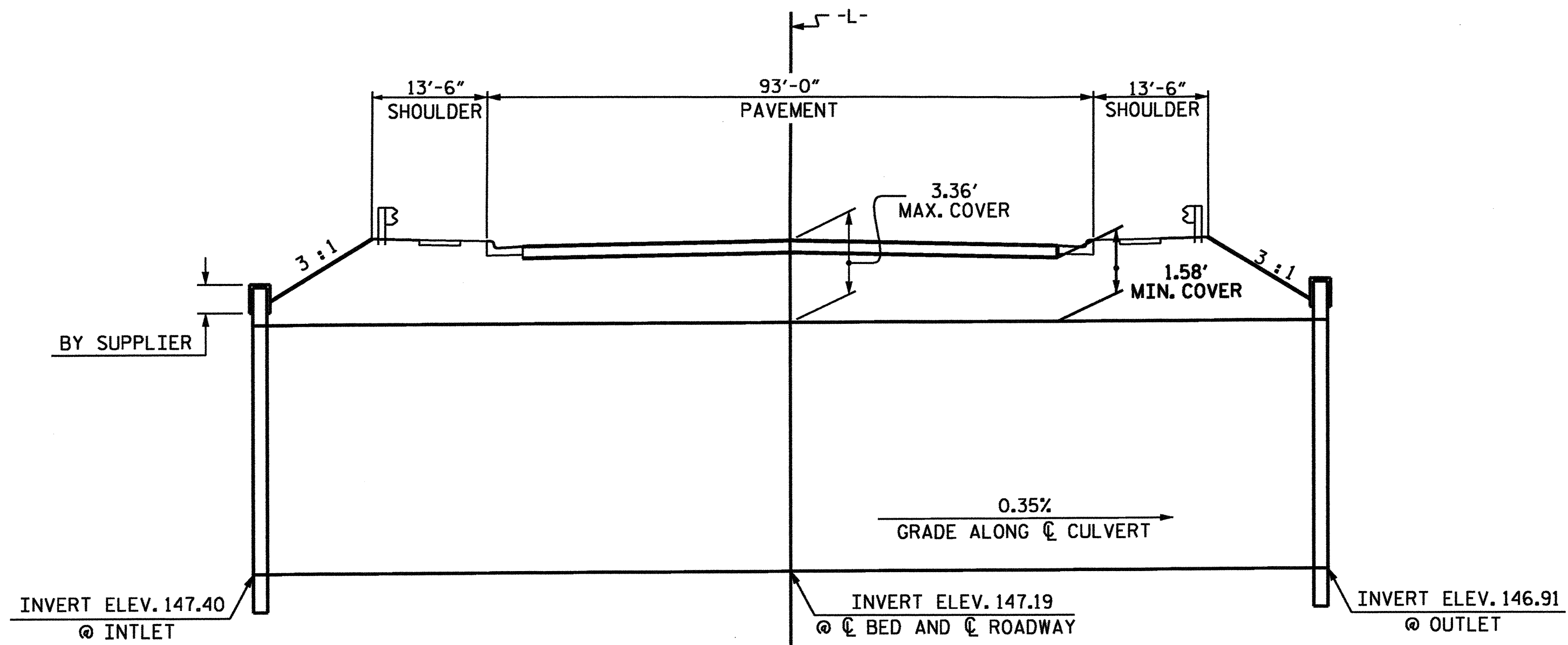
**SINGLE 15'-6" X 7'-3"
 ALUMINUM BOX CULVERT
 90°**



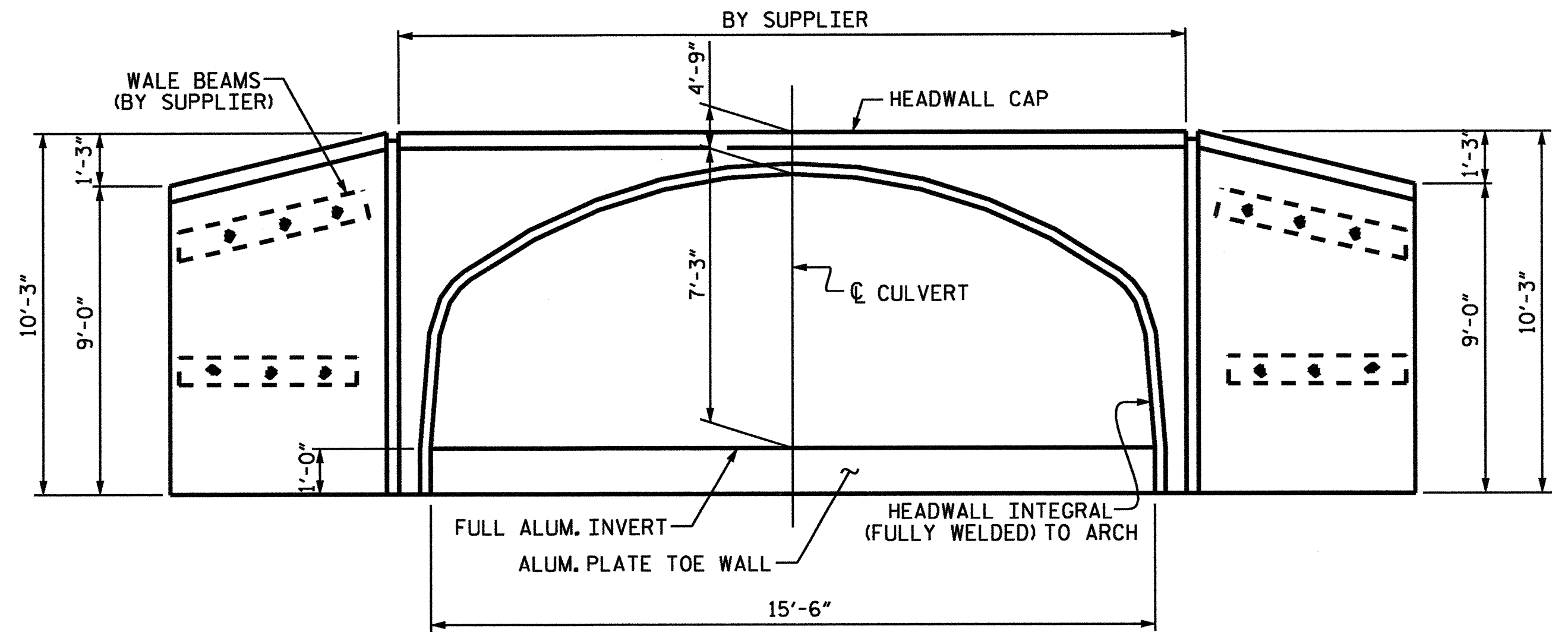
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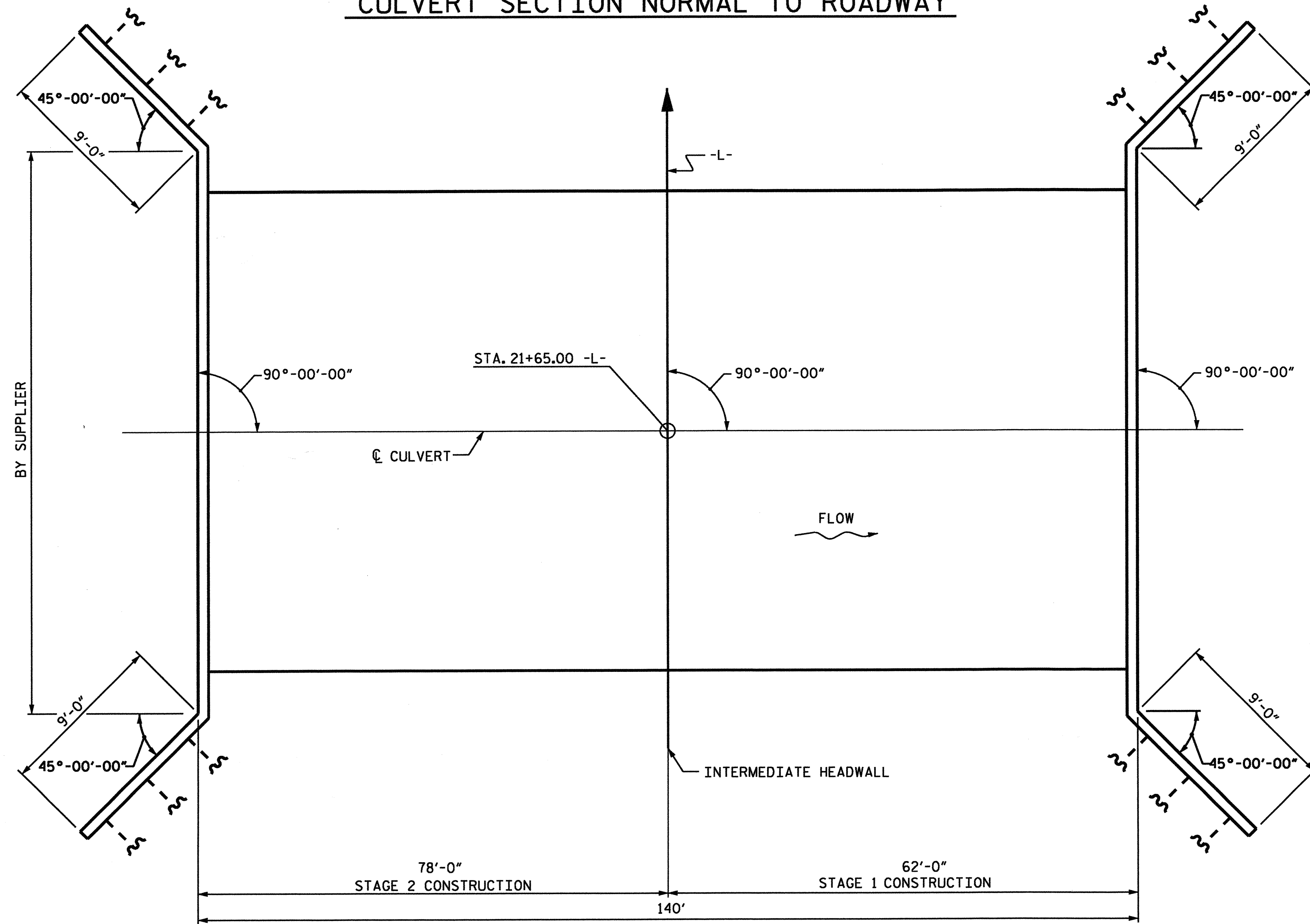
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 CHECKED BY : LU/SP DATE : AUG 2011



CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION



PLAN VIEW

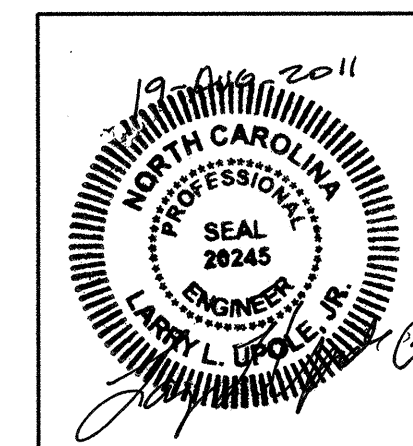
NOT TO SCALE

PROJECT NO. R-5185
 HARNETT COUNTY
 STATION: 21+65.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ALUMINUM BOX CULVERT
 SINGLE BARREL
 @ 90°

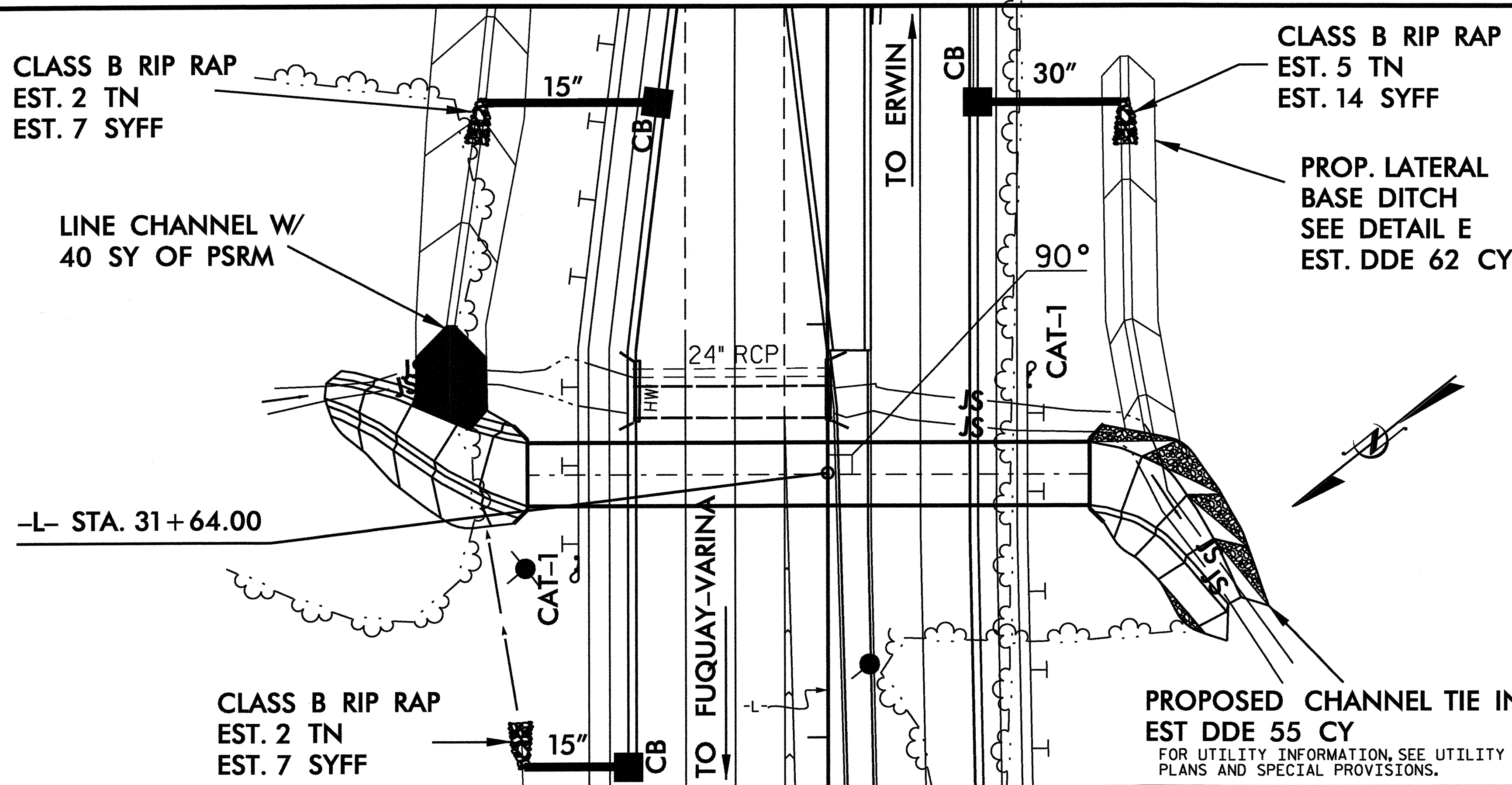


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 *****DGN*****
 jnbutler AT DGCAD241999

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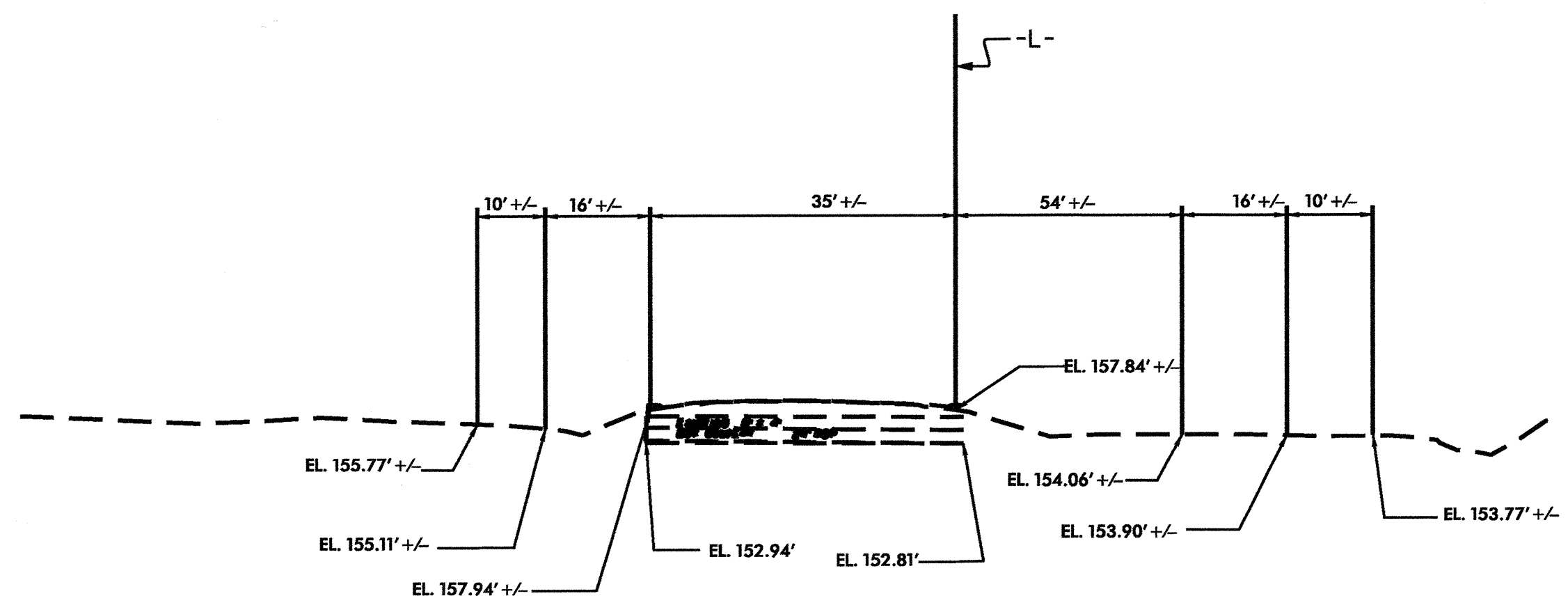
BM#2 R/R SPIKE IN BASE OF 6" TWIN GUM -L- STA 44+21.38 135.10' LT ELEV=169.33'



LOCATION SKETCH

NOTES

- MINIMUM LIVE LOAD = HS25 OR ALTERNATE LOADING.
- CULVERT IS TO BE DESIGNED FOR A MINIMUM FILL DEPTH OF 8.21' AND A MAXIMUM FILL DEPTH OF 10.73'.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- FOR ALUMINUM BOX CULVERT, SEE SPECIAL PROVISIONS.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JULY 2006.
- THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY. THE SUPPLIER SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12, AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.
- UNLESS OTHERWISE INDICATED, THE SUPPLIER SHALL DESIGN, DETAIL, AND FURNISH ALL STRUCTURAL ELEMENTS AND HARDWARE.
- GUARDRAIL POST LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ENSURE ADEQUATE COVER FOR INSTALLATION.
- THE EXISTING STRUCTURE, CONSISTING OF ONE 8' X 4' CONCRETE BOX CULVERT AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.



PROFILE ALONG CULVERT

GRADE DATA

GRADE PT. EL. @ STA. 31+64.00 -L- = 161.53'
 BED EL. @ STA. 31+64.00 -L- = 151.02'
 ROADWAY SLOPES = 3:1

HYDRAULIC DATA

DESIGN DISCHARGE = 519 ft³/sec
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 157.87'
 DRAINAGE AREA = 0.36 SQ. MI.
 BASIC DISCHARGE (Q100) = 607 ft³/sec
 BASIC HIGH WATER ELEVATION = 158.45'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 855 ft³/sec
 FREQUENCY OF OVERTOPPING FLOOD = 500 YR.+
 OVERTOPPING FLOOD ELEVATION = 161.50'

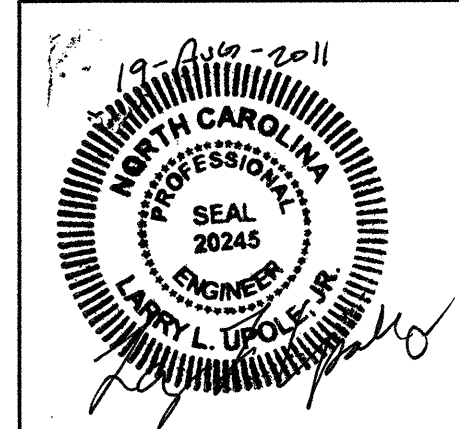
TOTAL STRUCTURE QUANTITIES

REMOVAL OF EXISTING STRUCTURE	----- LUMP SUM
CULVERT EXCAVATION	----- LUMP SUM
ALUMINUM BOX CULVERT	----- LUMP SUM
FOUNDATION MATERIAL	----- 250 TONS
CULVERT BACKFILL	----- 750 TONS

PROJECT NO. R-5185
HARNETT COUNTY
 STATION: 31+64.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SINGLE 15'-4" X 6'-5"
 ALUMINUM BOX CULVERT
 90°



REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			4

DRAWN BY : HAL/NB DATE : AUG 2011
 CHECKED BY : LU/SP DATE : AUG 2011

