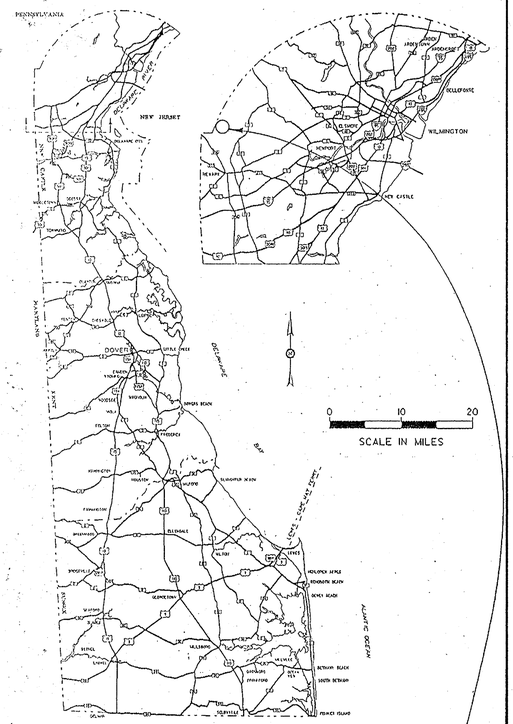
STATE OF DELAWARE



GENERAL LOCATION OF CONTRACT

THE STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION

SPECIFICATION AND CONSTRUCTION PLANS FOR:

BRIDGE 216 CHAMBERS ROCK ROAD (N329)

OVER WHITE CLAY CREEK

CONTRACT NUMBER 93-074-02

FEDERAL AID PROJECT NUMBER N/A

ROADWAY LENGTH 332.27 FEET= 0.0629 MILES
STRUCTURE LENGTH 67.30 FEET= 0.0127 MILES
TOTAL LENGTH 406.00 FEET= 0.0769 MILES

"AS-ACQUIRED PLAN"
This plan accurately depicts the nature and extent of the RIGHT-OF-WAY acquisition under this project.

CONTRACT	COUNTY	M.R. NO.	F.H.W.A. REG. NO.	FEDERAL AID PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
93-074-02	N.C.		3	N/A	1	25

DESIGN DESIGNATION

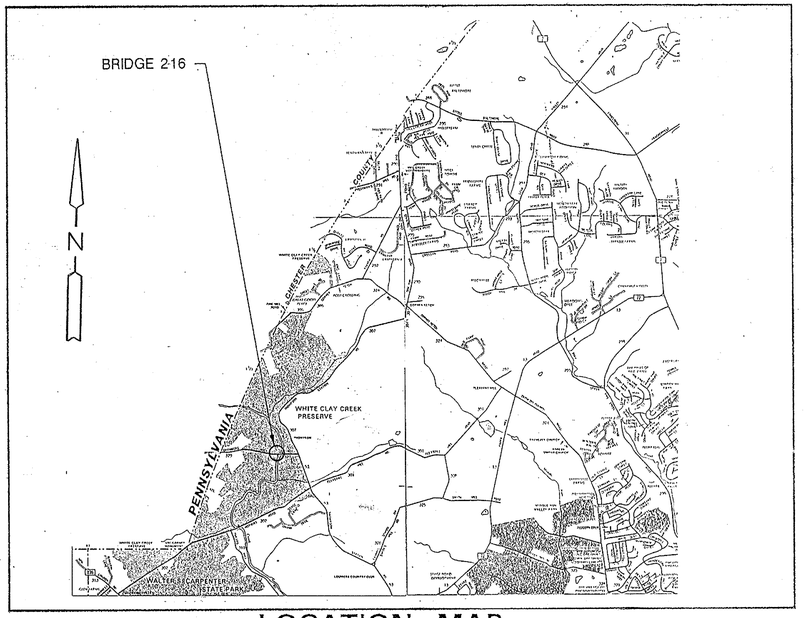
FUNCTIONAL CLASS RURAL LOCAL
TYPE OF CONSTRUCTION BRIDGE REHABILITATION
A.D.T. CURRENT 953 (1992)
A.D.T. PROJECTED 4123 (2010)
D.H.V. PROJECTED 536
DESIGN SPEED 15 MPH
% TRUCKS 10
DIRECTION OF DISTRIBUTION % 70
CLEAR ZONE (S) 10 FT.

SCALES

PLAN SHEET: 1" = ____ Feet
PROFILE SHEET:
Horizontal: 1" = ____ Feet
Vertical: 1" = ____ Feet
DETAIL SHEET: 1" = ____ Feet

INDEX OF SHEETS

SHEET N°	TABLE OF CONTENTS
1	TITLE SHEET
2	GENERAL NOTES AND ROAD CROSS SECTIONS
3	QUANTITY SHEET
4	PLAN & PROFILE SHEET
5	BRIDGE CROSS SECTIONS
6	STEEL FRAMING PLAN
7	STEEL DETAILS SHEET
8-9	TIMBER PLAN, GUARDRAIL, & DETAILS
10	ABUTMENT AND WALL REHABILITATION
11	ABUTMENT AND WALL REINFORCEMENT
12	WALL REINFORCEMENT & MISCELLANEOUS DETAILS
13	REBAR SHEET
14	RIGHT OF WAY SHEET
15-17	EROSION AND SEDIMENT CONTROL
18	DETOUR PLAN
19	BORINGS SHEET
20	GUARDRAIL TO BARRIER CONNECTION (APPROACH TYPE)
21-22	BREAKAWAY CABLE TERMINAL ASSEMBLY
23-25	STANDARD SHEETS G-2-9 G-4-7 G-5



LOCATION MAP

UTILITIES

D.P. & L. AERIAL

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ 19 ____

_____
DIVISION ADMINISTRATOR

DEPARTMENT OF TRANSPORTATION

RECOMMENDED
Dennis M. O'Shea
PROJECT ENGINEER
RECOMMENDED 11/2 19 93
DENNIS M. O'SHEA REGISTERED NO. 8419 DELAWARE PROFESSIONAL ENGINEER
SEAL

RECOMMENDED
Robert B. McCleary
STORMWATER ENGINEER
RECOMMENDED 11/23 19 93
ROBERT BRIAN McCLEARY REGISTERED NO. 8567 DELAWARE PROFESSIONAL ENGINEER
SEAL

RECOMMENDED
ROAD DESIGN ENGINEER
RECOMMENDED _____ 19 ____
SEAL

RECOMMENDED
N T Chaudhri
BRIDGE ENGINEER
RECOMMENDED 11/23/ 19 93
Nathan T. Chaudhri REGISTERED NO. 5743 DELAWARE PROFESSIONAL ENGINEER
SEAL

RECOMMENDED
Chao H. Liu
DESIGN ENGINEER
RECOMMENDED 11/23 19 93
CHAO H. LIU REGISTERED NO. 4274 DELAWARE PROFESSIONAL ENGINEER
SEAL

APPROVED
Raymond M. Harbeson Jr.
CHIEF ENGINEER
APPROVED Nov. 23, 19 93
Raymond M. Harbeson Jr. REGISTERED NO. 4672 DELAWARE PROFESSIONAL ENGINEER
SEAL

GENERAL NOTES

THIS CONTRACT IS TO BE BUILT UNDER THE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED JULY 1985, THE SUPPLEMENTAL SPECIFICATIONS THERETO, THE GENERAL AND PROJECT NOTES, THESE PLANS AND AS AMENDED BY THE SPECIAL PROVISIONS. THE DESIGN CRITERIA USED WAS THE 1992 AASHTO STANDARDS SPECIFICATIONS FOR HIGHWAY BRIDGES, USING "LOAD FACTOR" DESIGN METHOD.

MAINTENANCE OF TRAFFIC
ALL WORK SHALL BE PERFORMED IN A MANNER THAT WILL INSURE THE LEAST PRACTICABLE OBSTRUCTION TO TRAFFIC CONSISTENT WITH SAFETY AND SHALL COMPLY WITH THE DEPARTMENT MANUAL ENTITLED "TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND EMERGENCY OPERATIONS"(AS REVISED IN 1993). ALL CONSTRUCTION SAFETY EQUIPMENT SUCH AS SIGNS, TYPE III BARRICADES, AND DRUMS SHALL MEET THE NEW SPECIFICATIONS. MAINTENANCE OF TRAFFIC SHALL BE AS PER CASE 15-A OF THE MANUAL. THE CONTRACTOR SHALL MAINTAIN AND BE RESPONSIBLE FOR ALL SIGNS AND TRAFFIC CONTROL DEVICES AND SHALL REPLACE ANY SIGNS REMOVED OR DAMAGED DURING CONSTRUCTION. PAYMENT SHALL BE UNDER ITEM NO. 763500 (MAINTENANCE OF TRAFFIC). THE DEPARTMENT WILL APPROVE A DETOUR ROUTE AND PLACE THE DETOUR ROUTE SIGNS. THE CONTRACTOR IS RESPONSIBLE FOR THE REMAINING SIGNING ASSOCIATED WITH THE BRIDGE CLOSURE.

UTILITIES
NOTICE IS GIVEN TO THE CONTRACTOR THAT ALL UTILITIES PLOTTED ON THE PLAN SHEETS ARE FROM THE BEST AVAILABLE INFORMATION. ANY SUCH CONFLICTS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER AND THE UTILITY INVOLVED. THE ENGINEER SHALL DETERMINE THE SOLUTION.

REMOVAL OF OBJECTS AND SHRUBS
THE CONTRACTOR SHALL GIVE TWO (2) WEEKS NOTICE TO THE PROPERTY OWNER WHEN ANY FIXTURE, SHRUB, OR OTHER OBJECT MUST BE REMOVED FROM THE RIGHT OF WAY OR EASEMENT AREA. IF THE OWNER HAS NOT ATTEMPTED TO SALVAGE THIS PROPERTY THE CONTRACTOR SHALL REMOVE IT WITHOUT OBLIGATION. COMPENSATION SHALL BE INCIDENTAL TO THE CONTRACT.

ELEVATIONS AND DIMENSIONS
ELEVATIONS OF NEW BEARING SEATS ARE TO MATCH EXISTING ELEVATIONS AT EACH END OF BEARING. ALL DIMENSIONS WERE TAKEN FROM EXISTING PLANS AND FIELD MEASUREMENTS AND ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE CONSTRUCTION. ALL ELEVATIONS ARE BASED ON AN N.G.S. VERTICAL DATUM (BENCHMARK FOUND ON P. 4).

PROJECT NOTES

LOCATION
BRIDGE REHABILITATION OF BRIDGE I-216 ON RD.329. N.C.

ORDER OF CONSTRUCTION
THE INSTREAM BRIDGE CONSTRUCTION ON THIS CONTRACT SHALL BE BUILT DURING THE OFFSEASON OF TROUT SEASON IN THE WHITE CLAY CREEK (JUNE 1st TO FEB. 28th). ALL CONSTRUCTION WITHIN THE STREAM IS TO STOP ON THE ONSET OF TROUT SEASON (MARCH 1st. TO MAY 31st.) AND SHALL RESUME AFTER MAY 31st.

LOADING
AASHTO HS25-44 OR DELAWARE LEGAL LOAD FOR LIVE LOAD.
50 P.C.F. FOR TIMBER DEAD LOAD.

HYDRAULIC DATA
Q(100) = 6200 cu. ft/s @ AN ELEVATION OF 106.6ft
V(100) = 11.8 ft/s

STRESS GRADE AND TREATMENT
ALL GLUE LAMINATED TIMBER SHALL HAVE A MINIMUM ALLOWABLE BENDING STRESS OF 2400 P.S.I. ALL LUMBER FOR DECK PANELS, STIFFENERS, AND GUARDRAILING SHALL HAVE PRESERVATIVE TREATMENTS OF 5 % PENTACHLOROPHENOL TYPE A TO A RETENTION RATE OF 0.6lbs/cu. ft OF WOOD. THE PROCESS MENTIONED SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE AMERICAN WOOD PRESERVERS ASSOCIATION.

LAMINATED DECK
THE CONTRACTOR SHALL DETERMINE WHETHER THE DECKING PANELS SHALL BE PRE-DRILLED OR DRILLED IN THE FIELD. THE COST FOR FIELD DRILLING SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR SECTION 601503. ALL CUTS, ABRASIONS, AND HOLES BORED AFTER THE TREATMENT SHALL BE SATURATED WITH COPPER NAPTHINATE USING A BRUSH, ROLLER, OR SPRAYER, WHICHEVER IS MOST APPLICABLE.

STEEL STRUCTURES
DUE TO THE ENVIORMENTAL IMPACT OF CLEANING AND PAINTING THE BRIDGE IN THIS AREA (THE WHITE CLAY CREEK PRESERVE), THE CONTRACTOR SHALL REMOVE THE TRUSSES WITHOUT DISMANTLING THE TRUSSES AND ARE TO BE TAKEN TO A PROPER FACILITY FOR REMOVING AND INSTALLING NEW STEEL, CLEANING, AND PAINTING. THIS SHALL BE DONE AFTER THE EXISTING STEEL DECK, STRINGERS, FLOORBEAMS, AND LATERAL BRACINGS HAVE BEEN REMOVED. THE ENGINEER SHALL BE PRESENT AT ALL TIMES DURING THE ACTUAL WORK OF THE TRUSS RESTORATION AT THE FACILITY PROVIDED BY THE CONTRACTOR OR FABRICATOR. A VISUAL INSPECTION SHALL BE CONDUCTED TO DETERMINE THE AMOUNT OF RIVETS THAT ARE TO BE REPLACED WITH BOLTS (ITEM NO. 605578 SPECIAL PROVISIONS) AFTER REMOVAL OF ALL STEEL AS SHOWN ON THE PLAN SHEETS AND BLAST CLEANING OF THE REMAINING STEEL. THE CONTRACTOR OR FABRICATOR IS TO TAKE APPROPRIATE MEASURES WHEN BLAST CLEANING DUE TO LEAD PAINT BEING PRESENT ON THE EXISTING BRIDGE. ALL STEEL DIMENSIONS AND HOLE PATTERNS ARE TO BE VERIFIED IN THE FIELD BEFORE DISMANTLING OF THE BRIDGE BY THE CONTRACTOR OR FABRICATOR. THE EXISTING HISTORICAL PLAQUE ON EAST END OF TRUSS SHALL BE REMOVED AND CLEANED. THE PLAQUE IS TO BE RESET AFTER THE TRUSS HAS BEEN PAINTED. PAYMENT SHALL BE INCIDENTAL TO CONTRACT ITEM 605533. ALL STRUCTURAL STEEL SHALL BE ASTM A709 GR.50 STEEL UNLESS OTHERWISE NOTED. ALL FASTENERS SHALL MEET REQUIREMENTS OF ASTM A325 UNLESS OTHERWISE NOTED.

PORTLAND CEMENT CONCRETE CLASS "A" & "B"
ALL CONCRETE USED SHALL BE FOR SUBSTRUCTURE(F'C= 28 DAY COMPRESSIVE STRENGTH)
CLASS A - (f'c= 4500P.S.I.) ABOVE FOOTING
CLASS B - (f'c= 3000P.S.I.) FOOTING
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE SPECIFICATIONS. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED. THE DRILLING, POINTING, AND NON SHRINK GROUT OF THE ABUTMENTS ARE INCIDENTAL TO THE PRICE OF CONCRETE AND INJECTION GROUT.

ABUTMENTS
ALL PATCHING WORK SHALL BE DONE AFTER THE PRESSURE GROUTING PROCESS IS TO BEGIN. ALL DELAMINATED CONCRETE SHALL BE REMOVED AND PATCHED WITH CLASS "A" CONCRETE, SPALLED CONCRETE SHALL ALSO BE PATCHED WITH CLASS "A" CONCRETE AS WELL. NEW STONE VENEER REINFORCED CONCRETE RETAINING WALLS ARE TO REPLACE EXISTING STONE MASONRY WALLS THAT TIE INTO ABUTMENTS. THE NEW WALLS ARE TO MATCH THE EXISTING IN LENGTH, AND DIRECTION EXCEPT WHERE OTHERWISE NOTED. REMOVAL OF EXISTING STONE MASONRY RETAINING WALLS SHALL BE PAID FOR UNDER CONTRACT BID ITEM 211000. THE NEW REINFORCED CONCRETE STONE VENEER WALLS SHALL BE COATED WITH A CLEAR ANTI GRAFFITI SEALANT WHICH SHALL BE SUBMITTED FOR APPROVAL. COST INCIDENTAL TO ITEM NO. 611500. AFTER BOTH ABUTMENTS HAVE BEEN REHABILITATED, WHITE PIGMENTED PAINT SHALL BE USED TO PAINT BOTH ABUTMENTS FROM THE TOP OF BACKWALLS TO THE BOTTOM OF THE FOOTERS (WHERE EXPOSED) AND SHALL BE SUBMITTED FOR APPROVAL. COST INCIDENTAL TO 602015.

PRESSURE GROUTING EASTSIDE STONE ABUTMENT

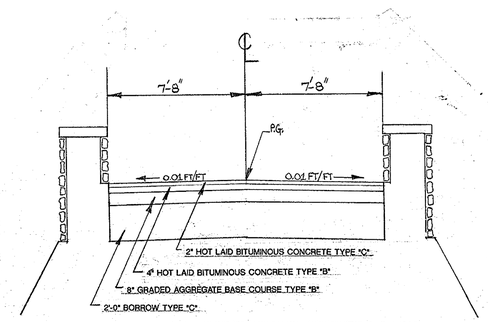
DRILL 3in. BORING HOLES DOWN INTO THE STONE TO FULL DEPTH OF THE ABUTMENT AS LOCATED ON THE PLANS. PRESSURE GROUT INTERIORS OF ABUTMENTS FROM THE TOP. THE GROUT SHALL BE FORCED INTO THE INTERIOR OF THE ABUTMENT THROUGH ALL HOLES SIMULTANEOUSLY. GROUTING OPERATIONS ARE TO BE HALTED WHEN FRESH GROUT APPEARS IN THE STONE CRACKS IN THE TOP OF THE ABUTMENT. IF MOVEMENT OF ANY STONE OR CONCRETE VENEER IN THE FRONT OR SIDES OF THE ABUTMENT AREA IS OBSERVED OR DETECTED OR AN INCREASE IN PRESSURE INDICATES THAT VOIDS HAVE BEEN FILLED, ADDITIONAL GROUT WILL NOT BE PLACED UNTIL ORDERED BY THE ENGINEER.

STONE NOTES

1) STONE FOR VENEER SHALL BE 3 TO 4in. THICK WITH A WALL WIDTH OF 2 ft.
2) MORTAR SHALL CONFORM TO THE REQUIREMENTS OF SECTION 610.08.
3) MORTAR JOINT THICKNESS SHALL BE 1in. TO 1.5in.
4) STONE SHALL BE GRAY TO DARK IGNEOUS OR METAMORPHIC ROCK AND APPROVED BY THE MATERIALS AND RESEARCH SECTION.
5) ONE WALL TIE REQUIRED PER 3 SQ.FT OF SURFACE AREA. USE EXTRA TIES AT ALL CORNERS.
6) ALL WALL TIES SHALL BE EPOXY COATED.
7) STONE MASONRY SHALL BE PAID UNDER ITEM NO. 611500.
8) THE STONE FROM THE EXISTING STONE MASONRY WALLS SHALL BE REUSED IF STONE IS IN STRUCTURAL SOUND CONDITION AS DIRECTED BY THE ENGINEER, AND IF STONE IS AESTHETICALLY COMPATIBLE WITH THE NEW STONE TO BE USED AS DIRECTED BY THE ENGINEER.

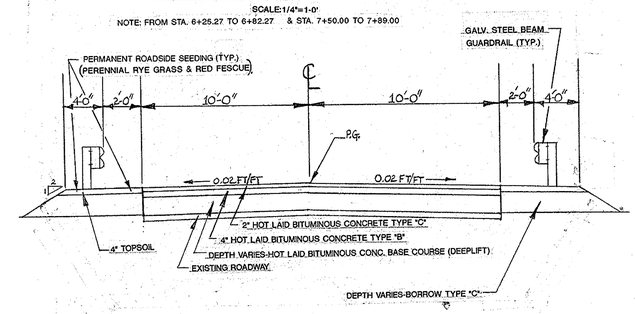
EROSION AND SEDIMENT CONTROL

SEE EROSION AND SEDIMENT CONTROL SHEETS.



TYPICAL ROADWAY SECTION AT BRIDGE

SCALE:1/4"=1-0'
NOTE: FROM STA. 6+25.27 TO 6+82.27 & STA. 7+50.00 TO 7+89.00



TYPICAL ROADWAY SECTION

SCALE: N.T.S.

NOTE: FROM STA. 5+00.00 TO 6+25.27 & STA. 7+89.00 TO 9+06.00

PREL. TRACING _____ DESIGN _____ CHKD. _____

QUANTITY SUMMARY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
93-074-02	NEW CASTLE		3	025

BR216 CHAMBERS ROCK RD (N329)
OVER WHITE CLAY CREEK

ADDENDUMS

ITEM	201000 D	* 202000 D	** 206000 D	207000 D	207500 D	209003 D	210000 D	211000 D	302002 D	302500 D	306000 D	401002 D	401003 D	401501 D	* 601002 D	* 601503 D	* 601504 D	* 602004 D	* 602015 D	602514 D	602516 D	* 604000 D
ITEM TITLE	CLEARING AND GRUBBING	EXCAVATION AND EMBANKMENT	ROCK EXCAVATION FOR STRUCTURES AND TRENCHES	EXCAVATION AND BACKFILL FOR STRUCTURES	COFFERDAMS	BORROW, TYPE C	FURNISHING BORROW TYPE "C" FOR PIPE, UTILITY TRENCH, AND STRUCTURE BACKFILL	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	GRADED AGGREGATE BASE COURSE, TYPE B	DELAWARE NO. 3 STONE	BITUMINOUS CONCRETE BASE COURSE	HOT-MIX, HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE B	HOT-MIX, HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE C	WATERPROOFING MEMBRANE	TIMBER STRUCTURES (TREATED)	GLUE LAMINATED TIMBER DECK	GLUE LAMINATED TIMBER	PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT FOOTING, CLASS B	P.C.C. MASONRY, ABUTMENT, ABOVE FOOTING, CLASS A	REPAIR OF CONCRETE STRUCTURES BY EPOXY INJECTION	GROUTING	BAR REINFORCEMENT, EPOXY COATED
UNIT	L.S.	C.Y.	C.Y.	C.Y.	L.S.	C.Y.	C.Y.	L.S.	SY-IN	TON	TON	TON	TON	S.Y.	MFBM	S.F.	MFBM	C.Y.	C.Y.	GAL.	BAG	POUND
SHEET NO. 0001 FROM STA. 5+00 TO STA. 9+06	L.S.	17	10	389	L.S.	377	239	L.S.	1536	72	145	147	73	124	1.75	1111	2.50	83	119	5	100	33879
TOTAL	L.S.	17	10	389	L.S.	377	239	L.S.	1536	72	145	147	73	124	1.75	1111	2.50	83	119	5	100	33879
PROPOSAL	L.S.	17	10	389	L.S.	377	239	L.S.	1536	72	145	147	73	124	1.75	1111	2.50	83	119	5	100	33879

ITEM	605001 D	605002 D	605522 D	605533 D	605578 D	608000 D	611500 D	712500 D	712505 D	720001 D	725000 D	726000 D	732000 D	734002 D	735006 D	737160 D	737227 D	740001 D	740012 D	740013 D	740500 D	740502 D
ITEM TITLE	STEEL STRUCTURES	STEEL STRUCTURES 23,752 lbs	URETHANE PAINT SYSTEM, EXISTING STEEL	CLEANING EXISTING STEEL STRUCTURES (LEAD BASE)	REPLACING STEEL RIVETS	COARSE AGGREGATE FOR FOUNDATION STABILIZATION AND SUBFOUNDATION BACKFILL	STONE MASONRY	GEOTEXTILES, STABILIZATION	RIPRAP, R-6	GALVANIZED STEEL BEAM GUARDRAIL (STEEL POST)	GUARDRAIL TO BARRIER CONNECTION (APPROACH TYPE)	BREAKAWAY CABLE TERMINAL ASSEMBLY	TOPSOIL (4" DEPTH)	PERMANENT SEEDING ROADSIDE	MULCHING, STRAW	HERBACEOUS PERENNIALS, BULBS, CORMS AND TUBERS	RED OAK (30) 1 3/4-2" CAL., BB	TEMP. EROSION CONTROL, EXCAVATION AND EMBANKMENT	TEMP. EROSION CONTROL, SEEDING	TEMP. EROSION CONTROL, MULCHING, STRAW	EROSION CONTROL, SILT FENCE	EROSION CONTROL, SLOPE DRAIN
UNIT	POUND	L.S.	L.S.	L.S.	EACH	TON	S.F.	S.Y.	S.Y.	L.F.	EACH	EACH	S.Y.	S.Y.	S.Y.	EACH	EACH	C.Y.	S.Y.	S.Y.	L.F.	L.F.
SHEET NO. 0001 FROM STA. 5+00 TO STA. 9+06	500	L.S.	L.S.	L.S.	350	320	1705	76	151	225	4	4	871	871	871	600	10	237	795	795	589	80
TOTAL	500	L.S.	L.S.	L.S.	350	320	1705	76	151	225	4	4	871	871	871	600	10	237	795	795	589	80
PROPOSAL	500	L.S.	L.S.	L.S.	350	320	1705	76	151	225	4	4	871	871	871	600	10	237	795	795	589	80

ITEM	740509 D	741001 D	741002 D	** 742500 D	759002 D	761001 D	762001 D	763000 D	763500 D	734011 D	737216 D	737248 D
ITEM TITLE	EROSION CONTROL REINFORCED SILT FENCE	TREE REMOVAL 6" TO 10.9"	TREE REMOVAL 11" TO 14.9"	FLAGGER, NEW CASTLE COUNTY	FIELD OFFICE, TYPE II	BUTT JOINTS, HOT MIX	SAW CUTTING, HOT MIX	INITIAL EXPENSE	MAINTENANCE OF TRAFFIC	FACILIZATIVE WET BLEND	CHOKEBERRY (Aa) 2-2 1/2" BB/CONT.	DECIDUOUS FLOWERING TREE 3-4' BB/CONT. CA-SILKY DOGWOOD
UNIT	L.F.	EACH	EACH	HOUR	L.S.	S.Y.	L.F.	L.S.	L.S.	S.Y.	EACH	EACH
SHEET NO. 0001 FROM STA. 5+00 TO STA. 9+06	176	10	8	100	L.S.	89	40	L.S.	L.S.	38	11	9
TOTAL	176	10	8	100	L.S.	89	40	L.S.	L.S.	38	11	9
PROPOSAL	176	10	8	100	L.S.	89	40	L.S.	L.S.	38	11	9

REVISIONS

FREL. TRACING CLD 11/93 DESIGN CLD 11/93 CHKD. DMO 11/93

LEGEND

D 100% STATE FUNDED BRIDGE CONSTRUCTION
* FIXED QUANTITY ITEM: REFER TO SECTION 109.06 OF THE STANDARD SPECIFICATIONS
** FIXED PRICE

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.	N/A	4	25

BRIDGE 216 CHAMBERS ROCK RD (N329)
PLAN AND PROFILE

BENCHMARK
B.M. 1 EL. = 107.40 FT.
SPIKE IN 15" TREE, 28.0 FT.
LEFT OF STA. 2+86.00.

CURVE DATA
R = 1500.00'
Δ = 6°-06'-37"
D = 3°-49'-11"
CH = 157.89'
L = 157.97'
NON-TANGENT CURVE

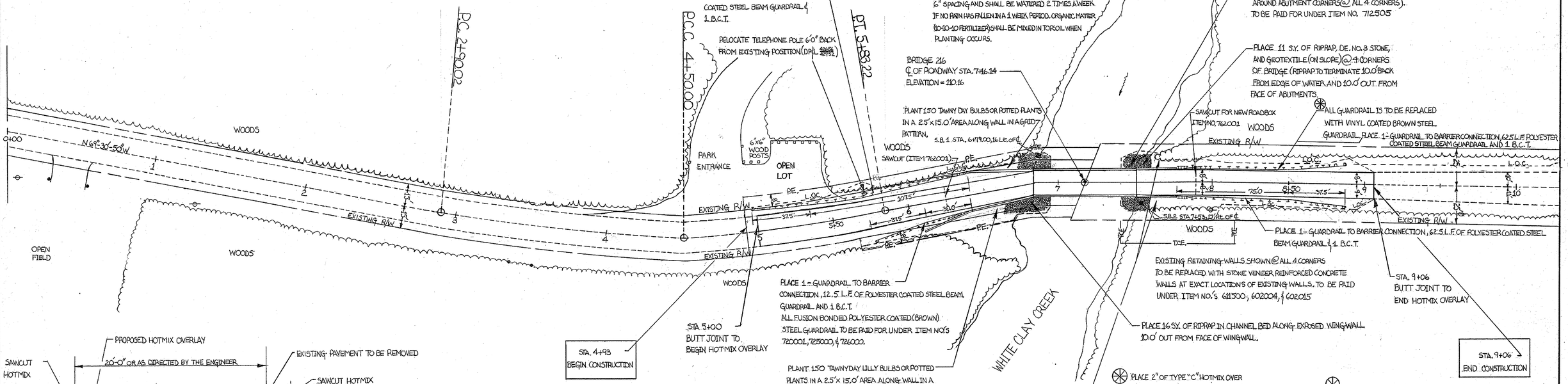
CURVE DATA
R = 1000.00'
Δ = 7°-38'-01"
D = 5°-43'-47"
T = 66.71'
L = 133.23'

N

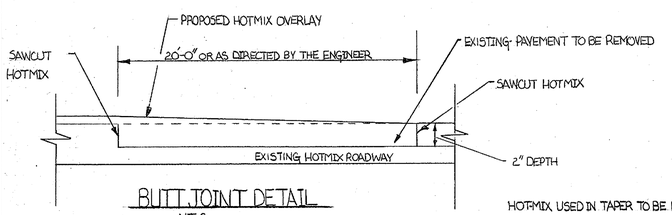
⊗ CLEARING & GRUBBING FOR RETAINING WALLS & T.C.E. AREA SHALL BE PAID UNDER ITEM NO. 201000.
ONLY REMOVE TREES IN T.C.E. THAT WOULD CAUSE AN OBSTRUCTION WHEN REMOVING TRUSSES. TREE REMOVAL TO BE PAID UNDER ITEM NO.'S 741001 & 741002, TREE REPLACEMENT TO BE PAID UNDER ITEM NO. 737227, 737216, & 737248. FACULTATIVE WET BLEND GRASS SEED MIX TO BE SEEDED IN AREA AFTER S/E DEWATERING BASIN IS REMOVED (TO BE PAID FOR UNDER ITEM NO. 734011).

⊗ TAWNYDAY LILLY BULBS OR POTTED PLANTS (DEPENDING ON SEASON) ARE TO BE PLANTED AT THE FACE OF EA. RETAINING WALL 2.5' OUT FROM EA. RETAINING WALL STARTING AT THE TERMINATION POINT OF R-6 RIPRAP. THE BULBS OR POTTED PLANTS SHALL BE PLANTED 4" TO 6" DEEP (IN 4" TOPSOIL ITEM NO. 732000) @ 6" SPACING AND SHALL BE WATERED 2 TIMES A WEEK IF NO RAIN HAS FALLEN IN A 1 WEEK PERIOD. ORGANIC MATTER, (10-10-10 FERTILIZER) SHALL BE MIXED IN TOPSOIL WHEN PLANTING OCCURS.

⊗ TOPSOIL (4") AND PERMANENT ROADSIDE SEEDING SHALL BE PLACED @ ALL 4 SIDES OF RETAINING WALLS AND TO MATCH EXISTING CONTOURS OF THE LAND OR TO HAVE A 2:1 SLOPE. PAID FOR UNDER ITEM NO.'S 732000 & 734002. PERMANENT ROADSIDE SEEDING GRASS MIXTURE SHALL BE PERENNIAL RYEGRASS AND RED FESCUE.

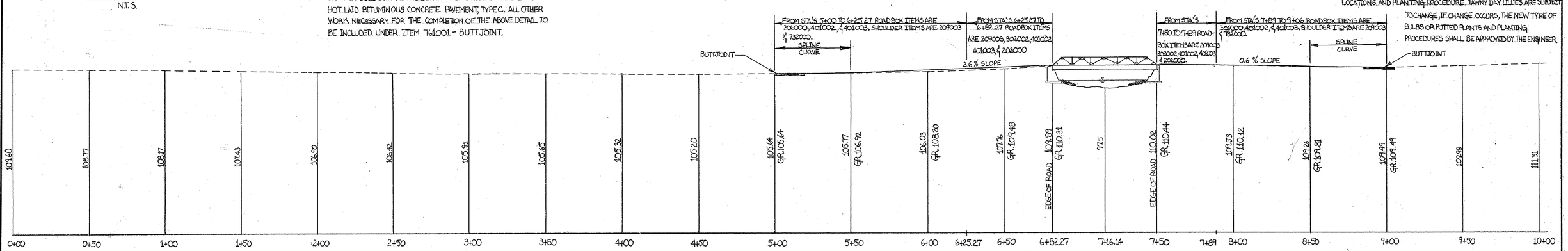


PLAN VIEW
SCALE: 1" = 30'-0".



BUTT JOINT DETAIL
N.T.S.

HOTMIX, USED IN TAPER TO BE PAID FOR UNDER ITEM 401003 - HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE C. ALL OTHER WORK NECESSARY FOR THE COMPLETION OF THE ABOVE DETAIL TO BE INCLUDED UNDER ITEM 761001 - BUTT JOINT.



⊗ RETAINING WALLS NOT SHOWN FOR CLARITY

PROFILE
SCALE: HORIZONTAL - 1" = 30'-0"
VERTICAL - 1" = 30'-0"

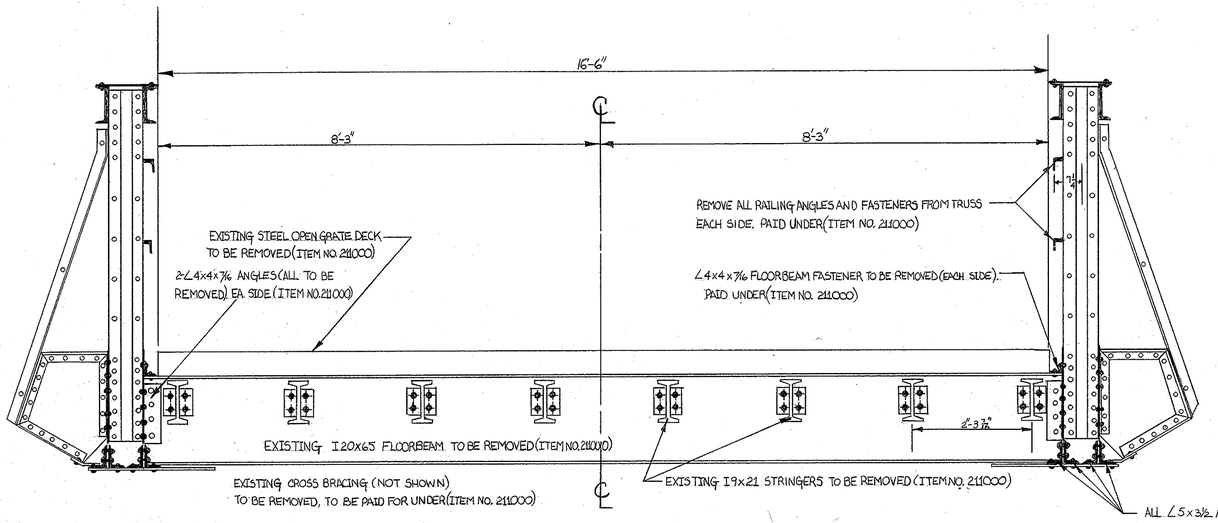
REVISIONS

PRELIM. TRACING CLD 5/93 DESIGN CLD 5/93 CHKD.

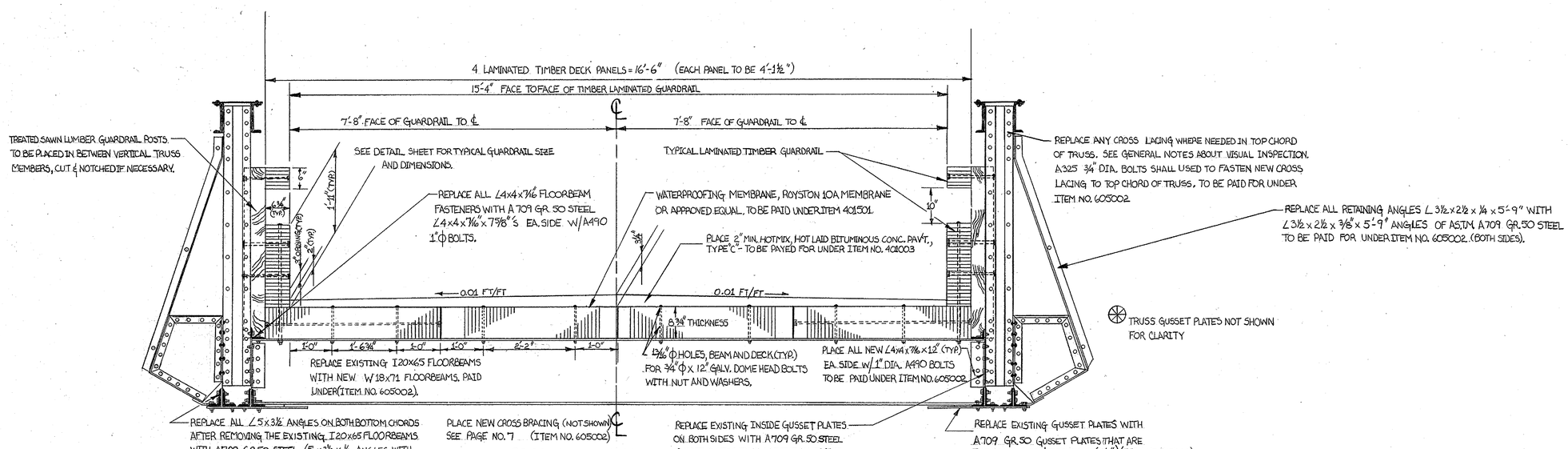
143331

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.	N/A	5	25

BRIDGE 216 CHAMBERS ROCK RD (N329)
BRIDGE CROSS SECTIONS



EXISTING SECTION
SCALE: ¾"=1'-0"



PROPOSED WORK
SCALE: ¾"=1'-0"

NOTES

1) ALL EXISTING STEEL DECKING, STRINGERS, FLOORBEAMS, FLOORBEAM ANGLES, LATERAL BRACINGS, AND ANCHOR BOLTS (TO BE CUT FLUSH) SHALL BE REMOVED. THEN BOTH TRUSSES ARE TO BE TRANSPORTED, WHILE STILL IN TACT, TO A PROPER FACILITY WHERE REMOVAL AND REPLACEMENT OF STEEL, CLEANING AND PAINTING SHALL TAKE PLACE. ANY ADDITIONAL DETERIORATED STEEL AS DIRECTED NECESSARY FOR REMOVAL AND REPLACEMENT BY THE ENGINEER SHALL BE PAID FOR UNDER ITEM NO. 605001.
2) THE FABRICATOR OR CONTRACTOR MUST HAVE CERTIFIED COMPETENT MACHINISTS AND OTHER EXPERIENCED STEEL WORKER PERSONNEL TO WORK ON TRUSSES.
3) THE FABRICATOR MUST FOLLOW ALL LEAD BASE PAINT CONTAINMENT SPECIFICATIONS WHEN REMOVING PAINT.
4) THE CONTRACTOR IS RESPONCIBLE FOR PROPER DISPOSAL OF ALL BLASTED MATERIAL.

5) THE REPLACED AND EXISTING STEEL SHALL BE CLEANED AND PAINTED. TO BE PAID UNDER ITEM NO.'S 605522 AND 605533. THE NEW STEEL REPLACEMENT SECTIONS SHALL MATCH IN SIZE AND SHAPE AS THAT OF THE REMOVED PIECES, EXCEPTAS NOTED. ALL RIVETS THAT ARE LOOSENED OR HEADS REMOVED DURING CLEANING SHALL BE REPLACED WITH ¾"Φ ASTM A325 BOLTS (TYPE 1), WASHERS, AND NUTS. ALL NEW REPLACEMENT STEEL AND FASTENERS SHALL BE PAID UNDER ITEM NO. 605002. ALL NEW REPLACEMENT PIECES FOR ENTIRE BRIDGE SHALL BE CLEANED THOROUGHLY BEFORE PAINTING AND SHALL BE PAINTED ALONG WITH THE EXISTING STEEL STRUCTURE.

6) ALL LAMINATED TIMBER AND HARDWARE SHALL BE PAID FOR UNDER ITEM NO.'S 601503 AND 601504. PRESERVATIVE TREATMENT OF TIMBER SHALL BE PENTACHLOROPHENOL, TYPE "A". (SEE GENERAL NOTES)
ALL SAWN LUMBER (TREATED) SHALL BE PAID FOR UNDER ITEM NO. 601002.

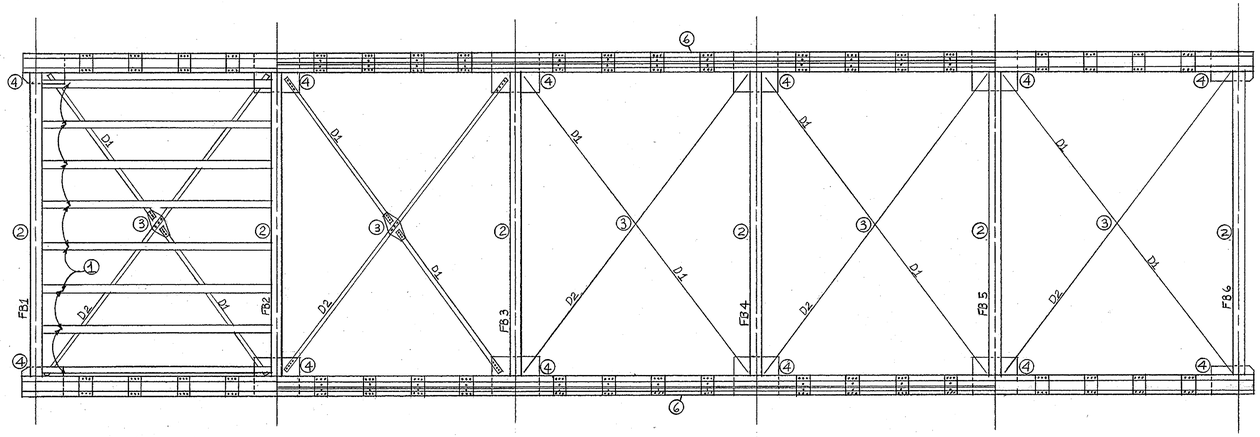
REVISIONS

PREL. TRACING C.L.D. 5/23 DESIGN C.L.D. 5/23 CHKD.

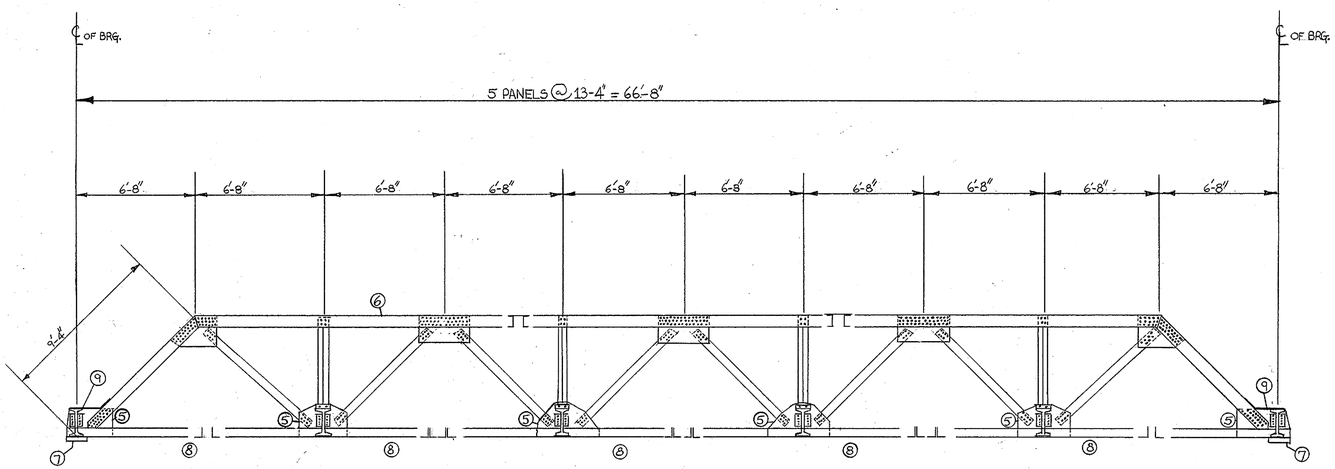
143311

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.		6	25

BRIDGE 216 CHAMBERS ROCK RD (N329)
FRAMING PLAN



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



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

LEGEND :

1. ALL EXISTING STRINGERS (SPANS 1 THRU 5) SHALL BE REMOVED AND NOT REPLACED.
2. ALL EXISTING FLOORBEAMS AND CONNECTING ANGLES SHALL BE REMOVED AND REPLACED WITH NEW WF 18x71 FLOORBEAMS AND CONNECTING ANGLES MARKED FB 1 THRU FB6
3. ALL EXISTING DIAGONAL BRACING SHALL BE REMOVED AND REPLACED WITH ∠ 2½ x 2½ x ⅜ ANGLES A709 GR.50 STRUCTURAL STEEL WITH THE ORIGINAL LENGTHS OF 9'-10" AND 20'-4" (DESIGNATED D1 THRU D2 RESPECTFULLY).
4. ALL EXISTING GUSSET PLATES FOR DIAGONAL BRACING SHALL BE REMOVED AND REPLACED WITH A709 GR. 50 STRUCTURAL STEEL OF THE SAME SHAPES BUT NOT SIZE (SEE STEEL DETAILS SHEET).
5. THE EXISTING INSIDE TRUSS GUSSET PLATES SHALL BE REMOVED AND REPLACED WITH A709 GR. 50 STRUCTURAL STEEL OF THE SAME SIZE AND THICKNESS.
6. THE EXISTING TRUSSES SHALL REMOVED, REHABILITATED, AND RETURNED.
7. THE EXISTING ABUTMENT BEARING SYSTEMS SHALL BE REMOVED AND REPLACED WITH ELASTOMERIC PAD BEARINGS
8. ALL EXISTING ∠ 5" x 3½" x 5/16 & 7/16" ANGLES IN THE BOTTOM CHORD OF THE TRUSS SHALL BE REMOVED AND REPLACED WITH A709 GR.50 STRUCTURAL STEEL ANGLES ∠ 5" x 3½" x ½" WITH APPROPRIATE LENGTHS.
9. ALL TOP BEARING BOX PLATES ARE TO BE REPLACED WITH A709 GR.50 STRUCTURAL STEEL OF THE SAME SIZE, CONTOUR, AND THICKNESS.

NOTE :

1. AFTER ALL NECESSARY REMOVALS, THE EXISTING BRIDGE STEEL SHALL BE CLEANED, TO BE PAID FOR UNDER ITEM NO. 605533.
2. ALL NEW AND EXISTING STEEL, ON THE EXISTING BRIDGE SHALL BE PAINTED, TO BE PAID FOR UNDER ITEM NO. 605522.
3. ALL THE ABOVE ITEMS 1 THRU 9 SHALL BE PAID FOR UNDER ITEM NO.'S 211000 AND 605002.
4. ANY ADDITIONAL DETERIORATED STEEL AS DEEMED NECESSARY BY THE ENGINEER IN THE FIELD, SHALL BE REMOVED AND REPLACED. ALL COST'S SHALL BE INCIDENTAL TO ITEM NO. 605001.
5. ALL EXISTING RIVETS THAT ARE REMOVED, DUE TO THE REMOVAL OF ALL EXISTING STEEL LISTED ABOVE IN LEGEND, SHALL BE PAID FOR UNDER ITEM NO. 211000.
6. THE NEW BOLTS USED TO INCORPORATE THE NEW STEEL WITH THE EXISTING SHALL BE PAID FOR UNDER ITEM NO. 605002.
7. ALL OTHER RIVETS THAT ARE REMOVED DUE TO CLEANING THE EXISTING STEEL, OR AS DEEMED NECESSARY BY THE FIELD ENGINEER SHALL BE PAID FOR UNDER ITEM NO. 605578.
8. AT NO TIME WILL THERE BE ANY WELDING ALLOWED FOR FABRICATION OR ANY KIND OF STEEL ASSEMBLAGE. WELDING IS PROHIBITED FOR THIS PROJECT.
9. TRANSPORT OF TRUSSES TO AND FROM JOBSITE IS TO BE PAID FOR UNDER ITEM NO. 211000 (SEE P. 10).
10. THE BRIDGE (SUPERSTRUCTURE) SHALL BE PAINTED GREEN, PAID UNDER ITEM NO. 605522.

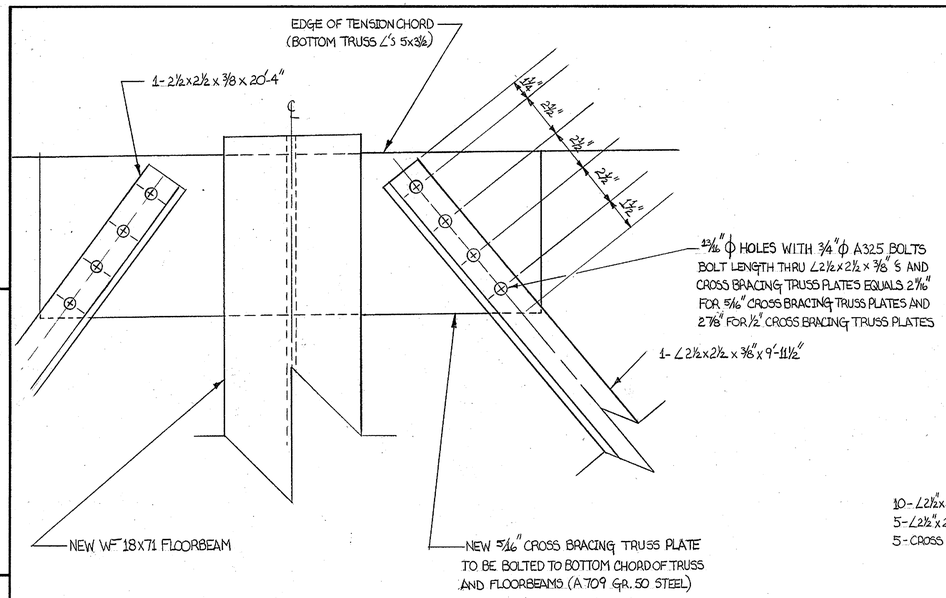
REVISIONS

PREL. TRACING CLD 2/93 DESIGN CLD 2/93 CHKD.

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-0714-02	N.C.		7	25

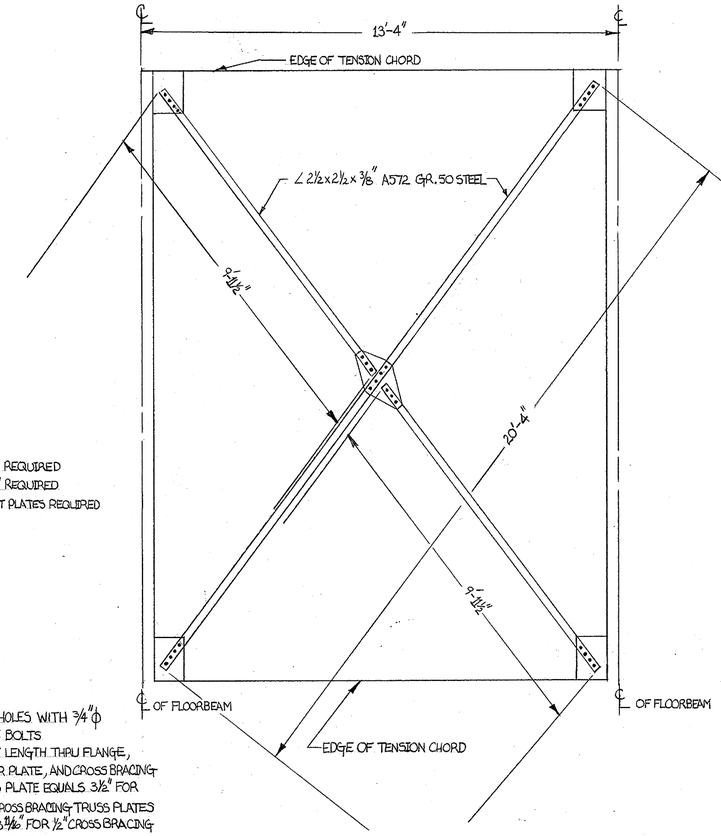
BRIDGE 216 CHAMBERS ROCK RD (N329)

STEEL DETAILS



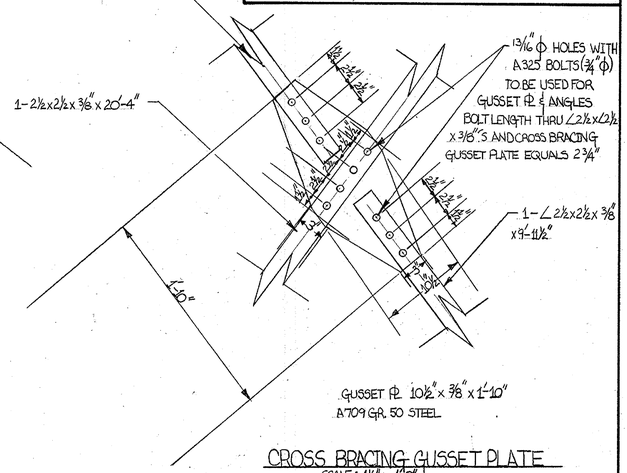
CROSS BRACING TRUSS PLATE SIZES:
2- 20"x½"x2'-5" PLATES AT EACH ABUTMENT (1 @ EACH BRG. 4 IN TOTAL)
4- 29"x5/16"x2'-7" PLATES BETWEEN SPANS 1 1/2 AND 4 1/5
4- 28"x5/16"x2'-8" PLATES BETWEEN SPANS 2 1/3 AND 3 1/4
⊗ ALL CROSS BRACING TRUSS PLATES SHALL BE SHAPED AND HOLE PATTERNED AS ORIGINALS EXCEPT FOR NEW HOLE PATTERNS FOR CROSS BRACING ∠'S AND FILLER PLATES.

CROSS BRACING TRUSS PLATE DETAIL
SCALE: 3" = 1'-0"

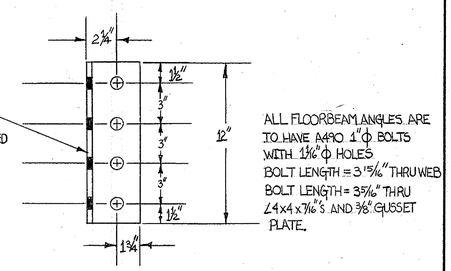


10- ∠2½"x2½"x⅜"x9'-11½" REQUIRED
5- ∠2½"x2½"x⅜"x20'-4" REQUIRED
5- CROSS BRACING GUSSET PLATES REQUIRED

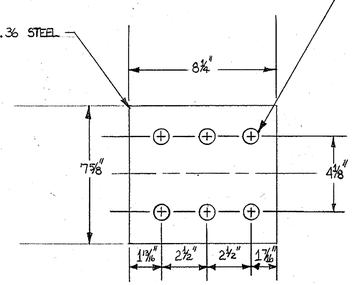
DIAGONAL CROSS BRACING
SCALE: ½" = 1'-0"



CROSS BRACING GUSSET PLATE
SCALE: 1½" = 1'-0"



FLOORBEAM ANGLE
SCALE: 3/16" = 1"



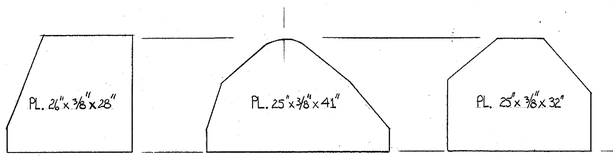
13/16" ϕ HOLES WITH ¾" ϕ
A325 BOLTS
BOLT LENGTH THRU FLANGE,
FILLER PLATE, AND CROSS BRACING
TRUSS PLATE EQUALS 3½" FOR
5/16" CROSS BRACING TRUSS PLATES
AND 3 11/16" FOR ½" CROSS BRACING
TRUSS PLATES
12 FILLER PLATES REQUIRED

FILLER PLATE DETAIL
SCALE: 3" = 1'-0"

NOTE

WHERE MENTIONED, A325 AND A490 BOLTS WILL AUTOMATICALLY INCLUDE 1 TOP WASHER, 1 BOTTOM WASHER AND 1 NUT. ALL A325 BOLTS ARE TO BE TYPE 1 MECHANICALLY GALVANIZED AND PAINTED. ALL A490 BOLTS ARE TO BE PAINTED AS WELL. (ITEM NO. 605522)

CONTRACTOR OR FABRICATOR IS RESPONSIBLE FOR MATCHING EXISTING HOLE PATTERNS OF INSIDE TRUSS GUSSET PLATES TO TRUSS VERTICALS AND DIAGONALS, AND THE NEW FLOORBEAM ANGLE HOLE PATTERN SHALL BE DRILLED OR PUNCHED INTO THE NEW TRUSS GUSSET PLATES



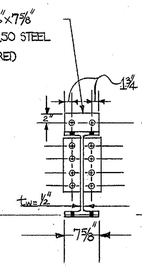
TO BE CONNECTED @ BRG. AREAS (4 REQUIRED)

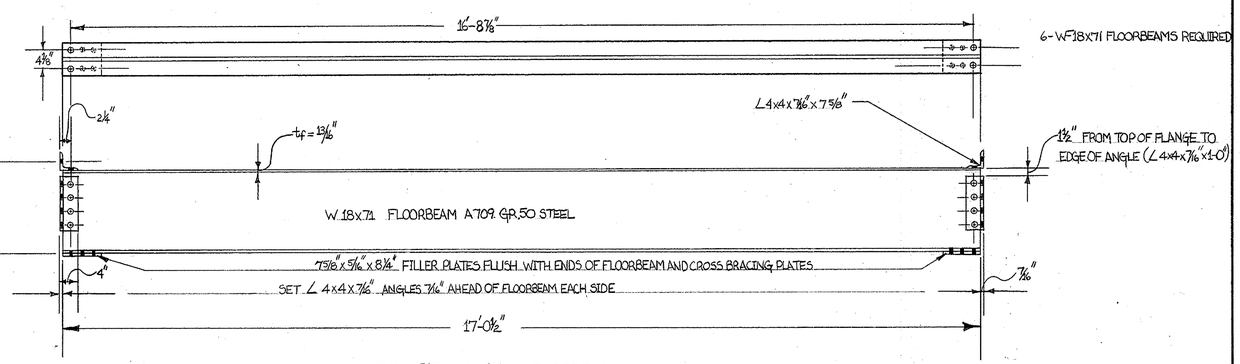
TO BE CONNECTED BETWEEN SPANS 2 1/3 AND 3 1/4. (4 REQUIRED)

TO BE CONNECTED BETWEEN SPANS 1 1/2 AND 4 1/5 (4 REQUIRED)

TRUSS GUSSET PLATES ARE TO BE A709 GR. 50 STEEL

TRUSS GUSSET PLATES
SCALE: ¾" = 1'-0"





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

REVISIONS

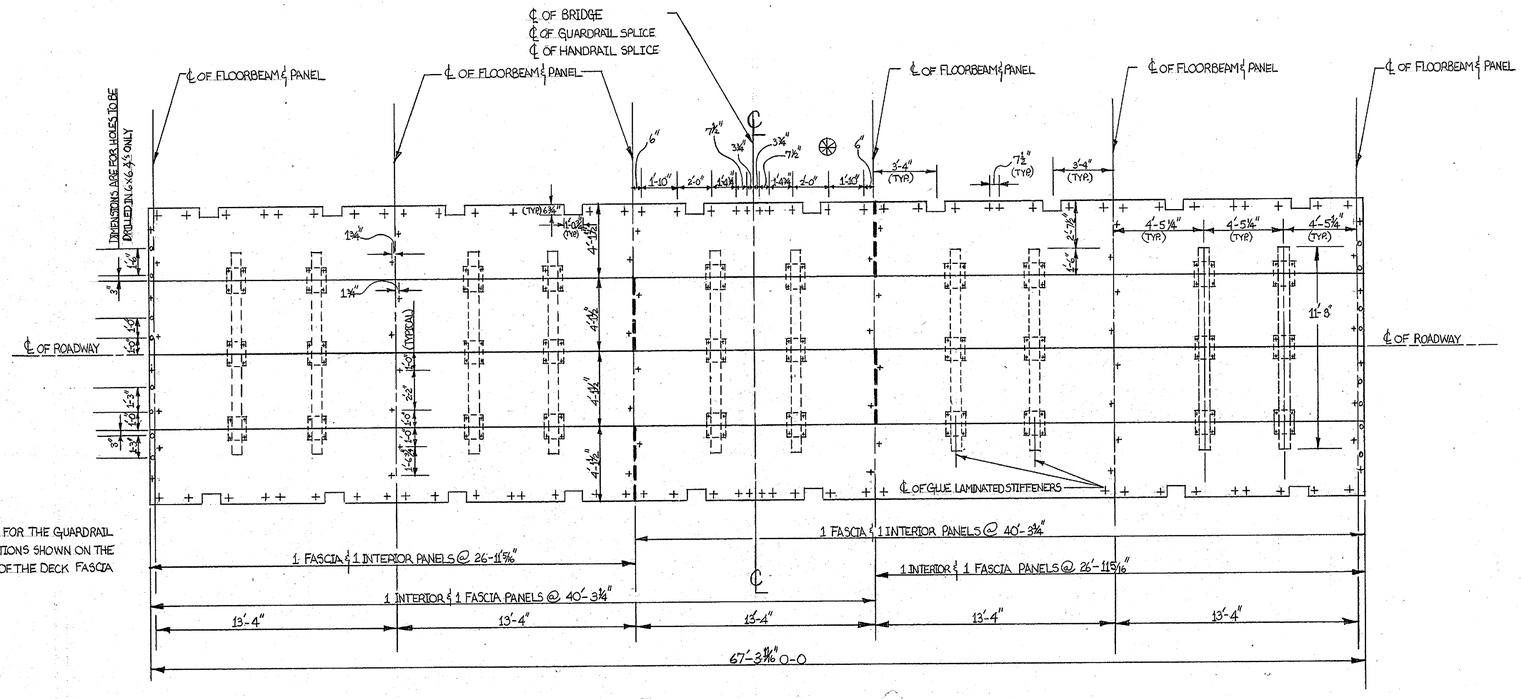
PREL. TRACING C.L.D. 4/92 DESIGN C.L.D. 4/92 CHKD.

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.		8	25

BRIDGE 216 CHAMBERS ROCK RD. (N329)

TIMBER PLAN AND DETAILS

⊛ MEASUREMENTS OF BOLT HOLE PATTERNS ARE TYPICAL FOR ALL SPANS.



NOTES:

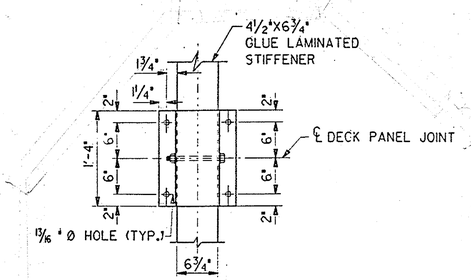
1) ALL HARDWARE SHALL BE GALVANIZED, EXCEPT FOR WASHERS WHICH MAY BE CAST IRON OR MALLEABLE IRON.
2) STEEL PLATES SHALL CONFORM TO ASTM A36 STEEL AND SHALL BE GALVANIZED.
3) ALL HOLES FOR BOLT CONNECTIONS TO THE RAIL POSTS SHALL BE RECESSED.
4) SEE SHEET NO. 9, PLAN DETAIL, FOR SCUPPERS, WHEEL RAIL SPLICE, HAND RAIL SPLICE, AND STIFFENER LOCATIONS.
5) THE CONTRACTOR SHALL NOTIFY HIS SUPPLIERS WEITHER TO DRILL THE HOLES IN THE SHOP OR TO FIELD DRILL HIMSELF.
6) ALL HOLES FOR 3/4" Ø BOLTS SHALL BE 13/16" Ø.
7) THE GLUED LAMINATED DECK PANEL SHALL BE PAID FOR UNDER ITEM NO. 601503. THE GLUED LAMINATED WHEEL RAIL, THE TOP HAND RAIL, AND STIFFENERS SHALL BE PAID FOR UNDER ITEM NO. 601504.

LEGEND:

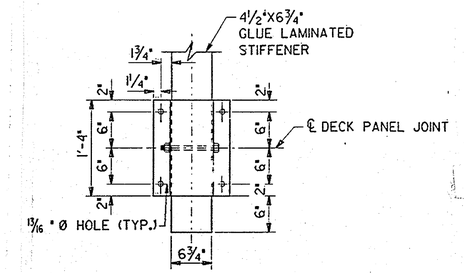
+ DENOTES 13/16" Ø HOLE LOCATION
O DENOTES 11/16" Ø HOLE LOCATION ONLY IN EXPANSION DAM ASSEMBLY.

NOTE

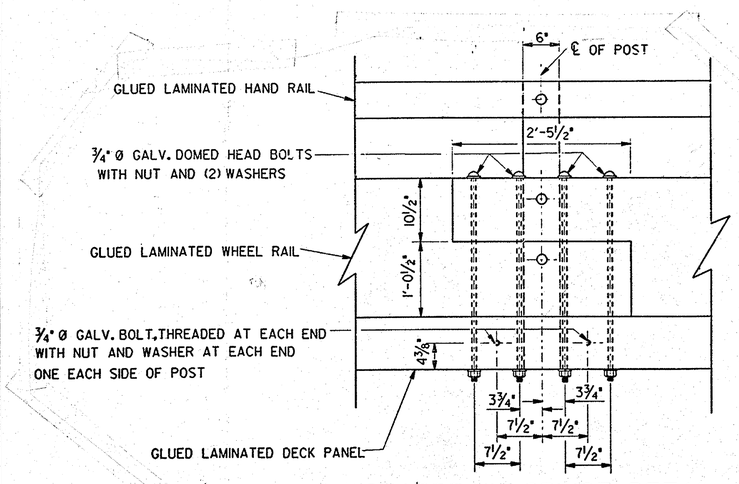
THE HOLE LOCATIONS FOR THE GUARDRAIL SHALL MATCH THE LOCATIONS SHOWN ON THE ON THE OUTSIDE EDGE OF THE DECK FASCIA PANEL.



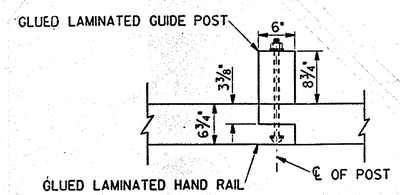
PLAN



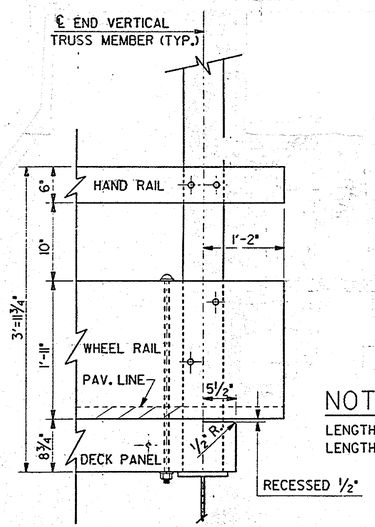
PLAN



GUARDRAIL SPLICE DETAIL



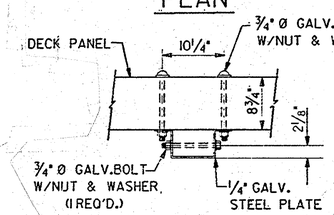
HAND RAIL SPLICE DETAIL



TYPICAL END SECTION

NOTE:

LENGTH OF TOP HAND RAIL = 67'-3 11/16"
LENGTH OF WHEEL RAIL = 67'-3 11/16"



ELEVATION

REVISIONS

PREL. TRACING C.L.D. 2/93 DESIGN C.L.D. 2/93 CHKD.

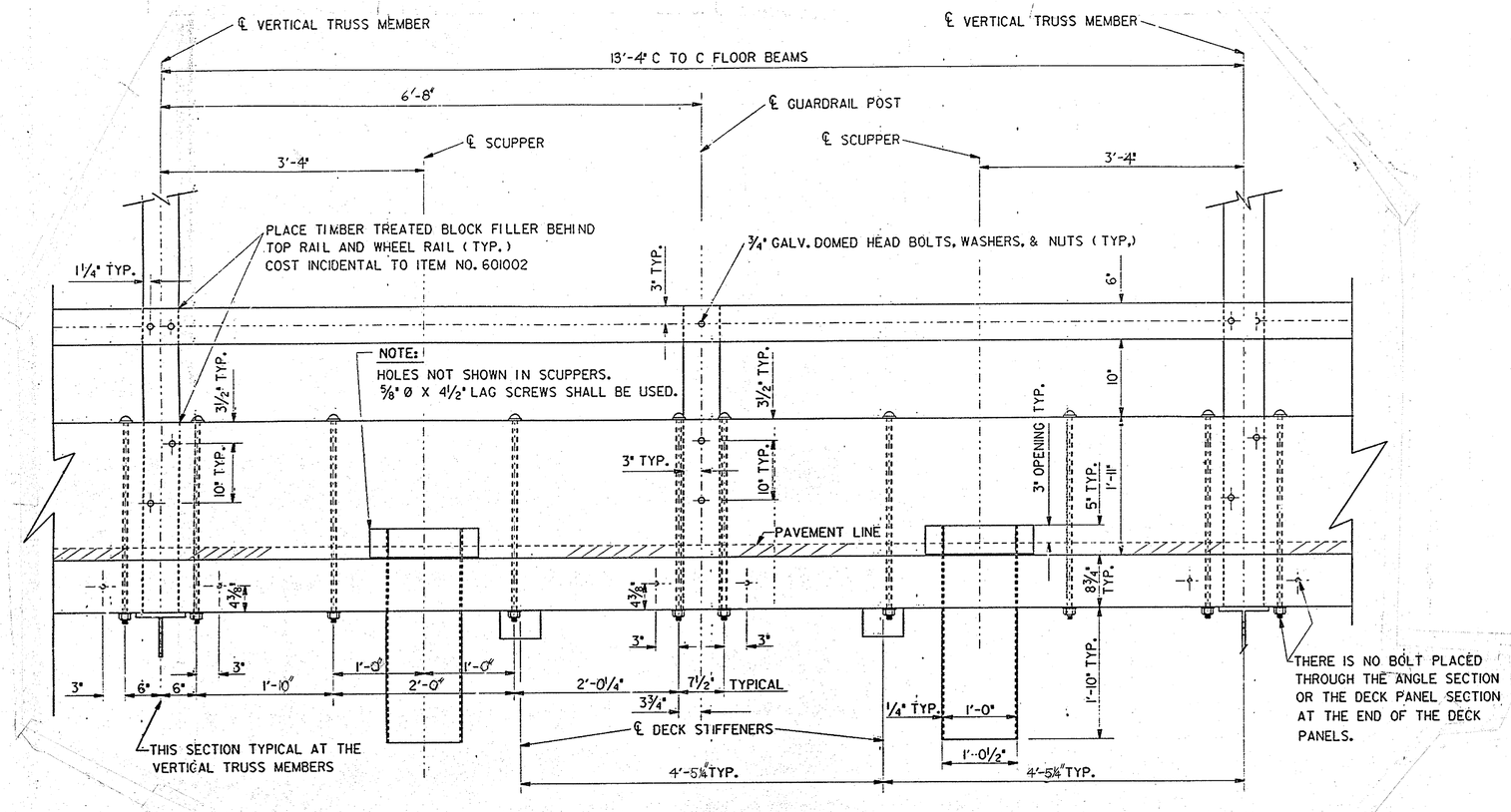
CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.		9	25

BRIDGE 216 CHAMBERS ROCK RD. (N329)

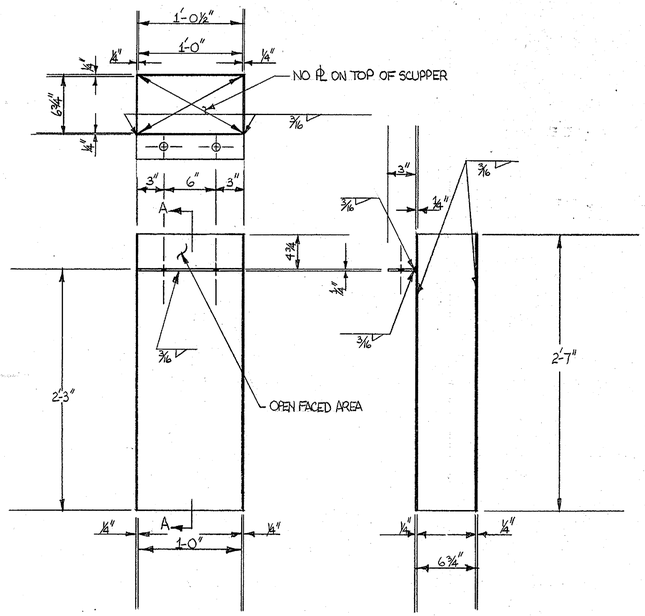
TIMBER GUARDRAIL AND DETAILS

NOTE:

1) 20 SCUPPERS ARE REQUIRED
2) ALL SCUPPERS SHALL BE PAINTED (PAID UNDER ITEM NO. 605522).
3) ALL STEEL PLATES (TO MAKE SCUPPERS) SHALL CONFORM TO ASTM, A36 STEEL.
4) ALL SCUPPERS SHALL BE PAID FOR UNDER ITEM NO. 605002.

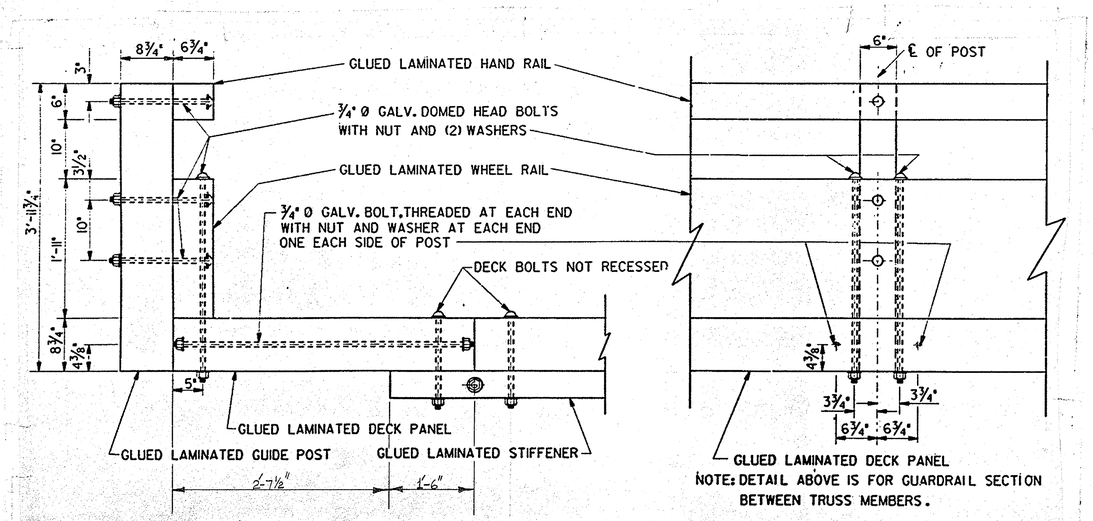


ELEVATION——TYPICAL BETWEEN PANEL MEMBERS



SCUPPER DETAIL
SCALE: 1½" = 1'-0"

SECTION A-A



GUARDRAIL TO DECK TO STIFFENER ATTACHMENT DETAIL

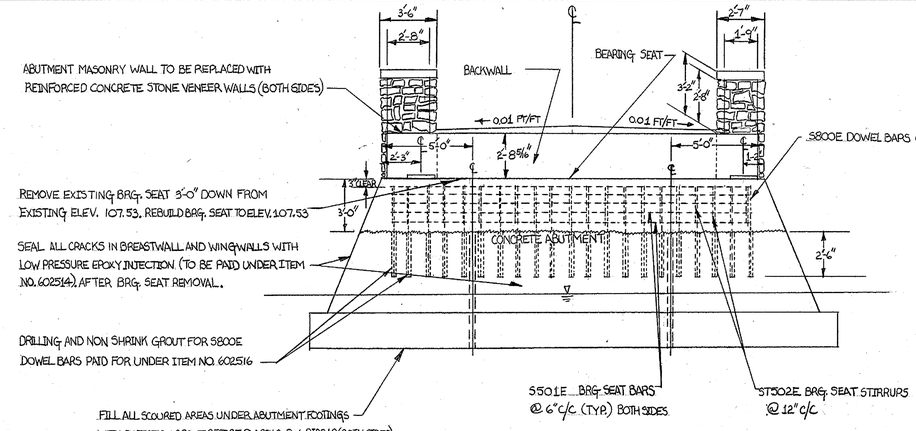
REVISIONS

DESIGN ____ CHKD. ____

PREL. TRACING ____

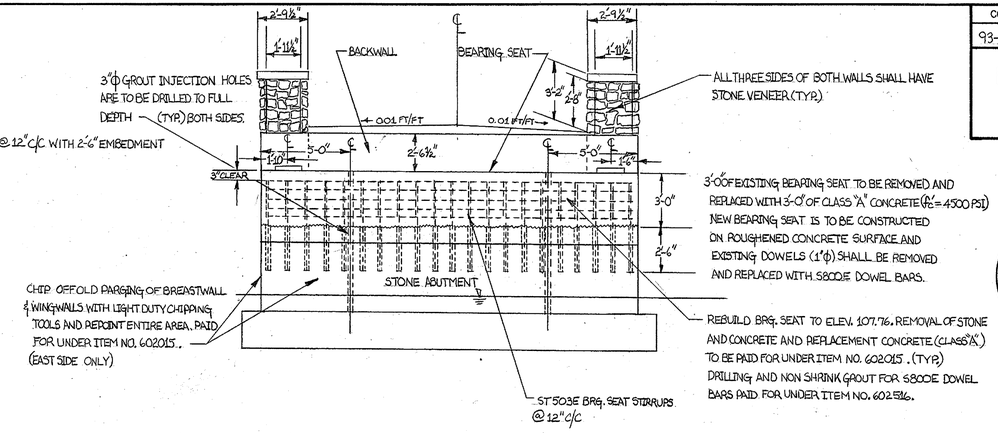
CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.	N/A	10	25

BRIDGE 216 ABUTMENT AND WALL REHABILITATION



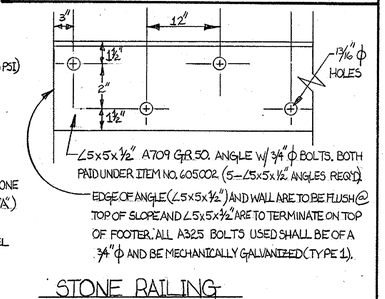
WEST SIDE ABUTMENT (STA. 6+82.27)

SCALE: N.T.S.



EAST SIDE ABUTMENT (STA. 7+50)

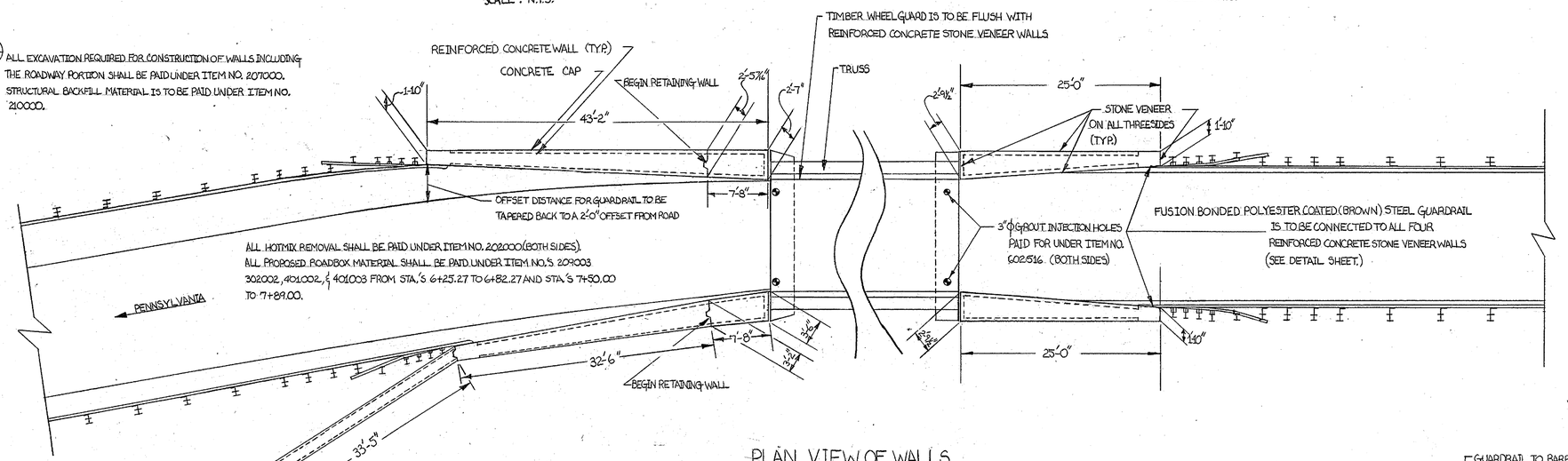
SCALE: N.T.S.



STONE RAILING

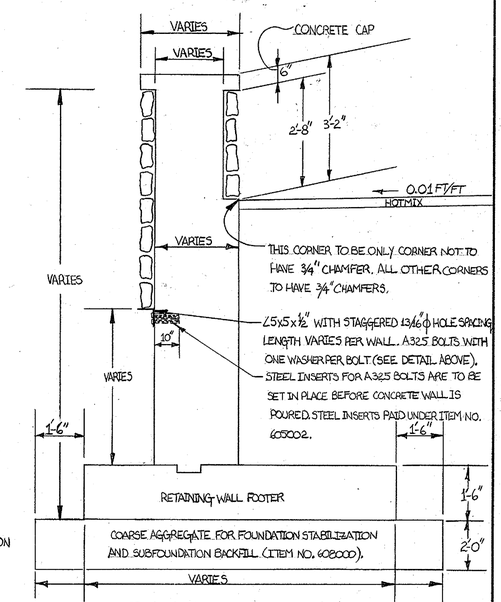
SCALE: N.T.S.

ALL EXCAVATION REQUIRED FOR CONSTRUCTION OF WALLS INCLUDING THE ROADWAY PORTION SHALL BE PAID UNDER ITEM NO. 207000. STRUCTURAL BACKFILL MATERIAL IS TO BE PAID UNDER ITEM NO. 210000.



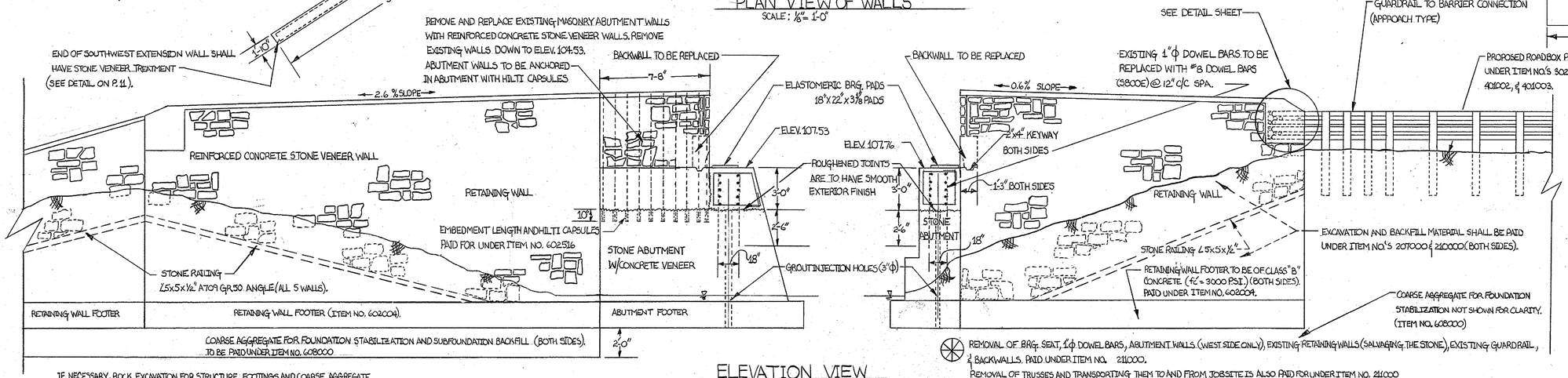
PLAN VIEW OF WALLS

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



RETAINING WALL

SCALE: N.T.S.

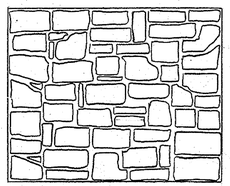


IF NECESSARY, ROCK EXCAVATION FOR STRUCTURE FOOTINGS AND COARSE AGGREGATE SHALL BE PAID UNDER ITEM NO. 206000 (BOTH SIDES).

ELEVATION VIEW

SCALE: N.T.S.

REMOVAL OF BRG. SEAT, 1"ϕ DOWEL BARS, ABUTMENT WALLS (WEST SIDE ONLY), EXISTING RETAINING WALLS (SALVAGING THE STONE), EXISTING GUARDRAIL, & BACKWALLS. PAID UNDER ITEM NO. 211000.
REMOVAL OF TRUSSES AND TRANSPORTING THEM TO AND FROM JOBSITE IS ALSO PAID FOR UNDER ITEM NO. 211000



STONE VENEER SET IN AN UNCOURSED ROUGHLY SQUARED PATTERN (3½"-4" STONE)

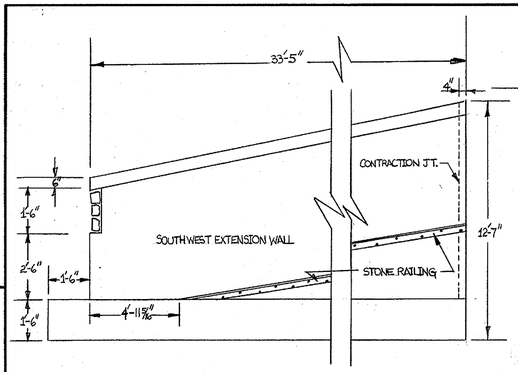
REVISIONS

PREL. TRACING C.L.D. DESIGN C.L.D. 4/93 CHKD. 4/93

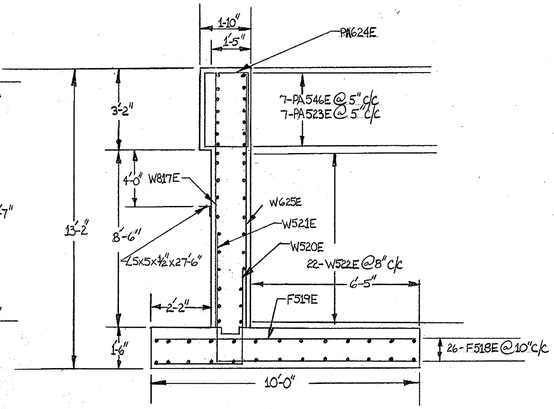
L4S311

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.	N/A	11	25

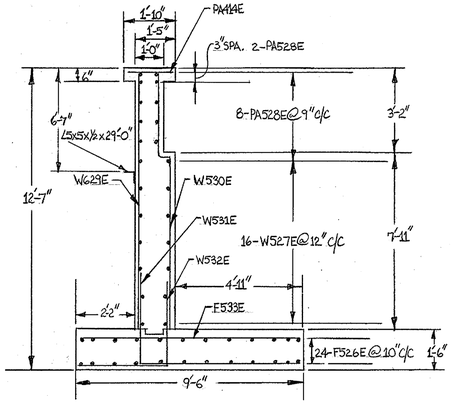
BRIDGE 216 ABUTMENT AND WALL REINFORCEMENT



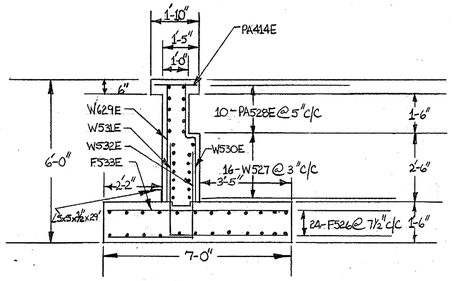
S/W EXTENSION WALL END
SCALE: N.T.S.



SECTION F-F
SCALE: N.T.S.



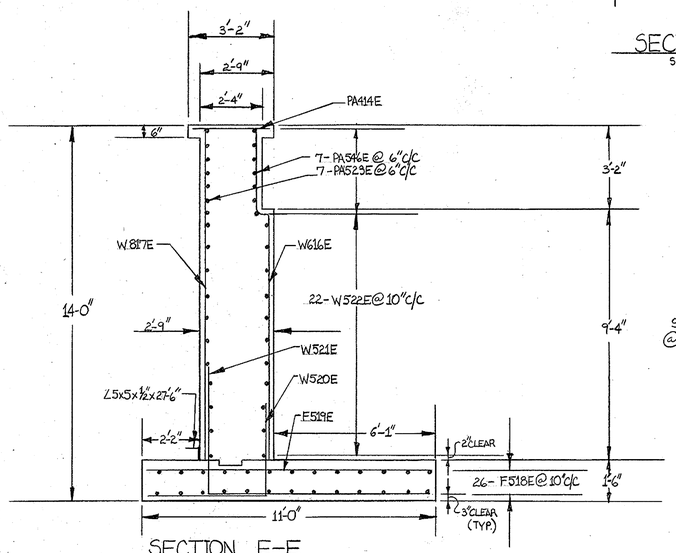
SECTION G-G
SCALE: N.T.S.



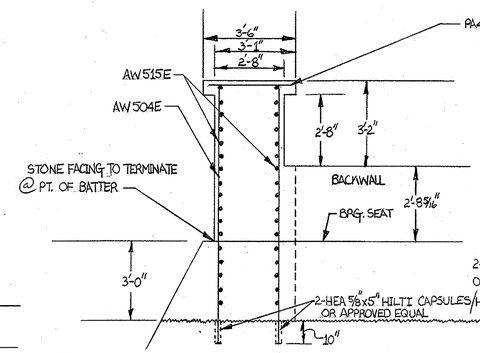
SECTION H-H
SCALE: 3/8" = 1'-0"

NOTE

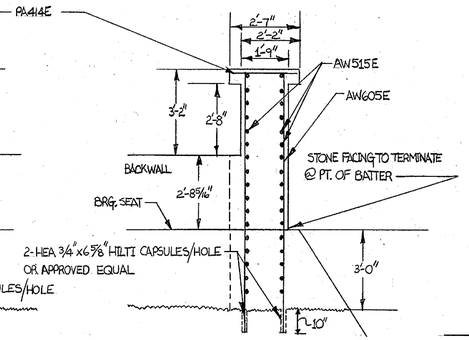
A) W806E TO W512E SHALL HAVE A 42" SPLICE LENGTH.
B) W817E TO W521E SHALL HAVE A 42" SPLICE LENGTH.
C) W629E TO W531E SHALL HAVE A 25" SPLICE LENGTH.
D) W625E & W606E TO W531E SHALL HAVE A 25" SPLICE LENGTH.
E) W625E & W616E TO W520E SHALL HAVE A 25" SPLICE LENGTH
F) W530E TO W532E SHALL HAVE A 15" SPLICE LENGTH.



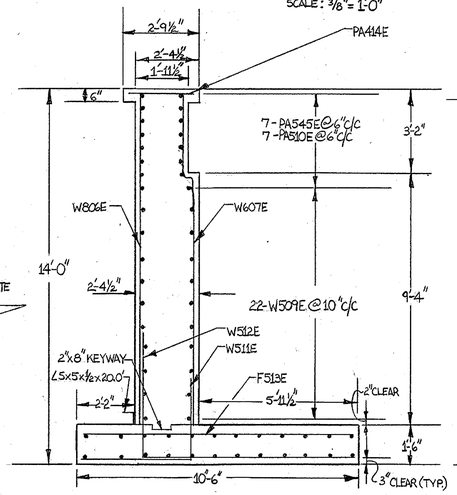
SECTION E-E
SCALE: 3/8" = 1'-0"



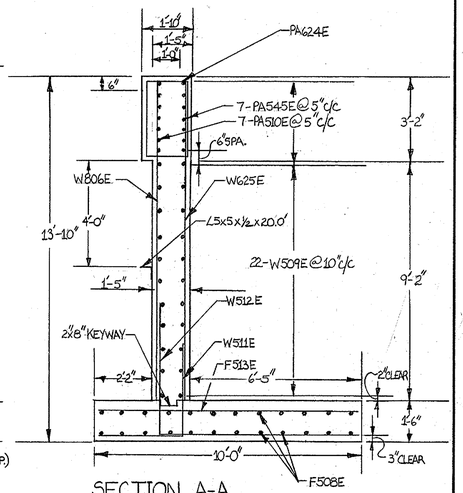
SECTION C-C
S/W ABUTMENT WALL
SCALE: 3/8" = 1'-0"



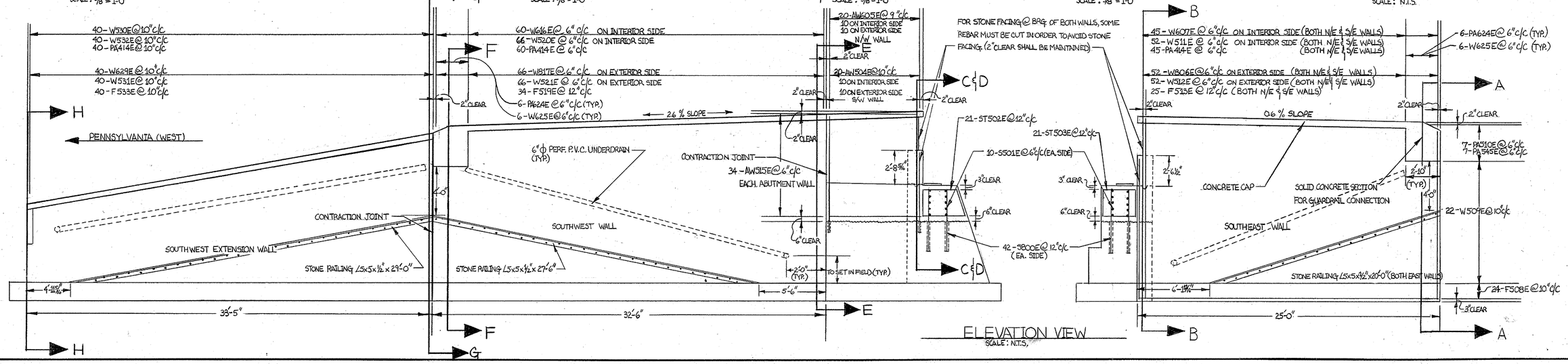
SECTION D-D
N/W ABUTMENT WALL
SCALE: 3/8" = 1'-0"



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



SECTION A-A
SCALE: N.T.S.



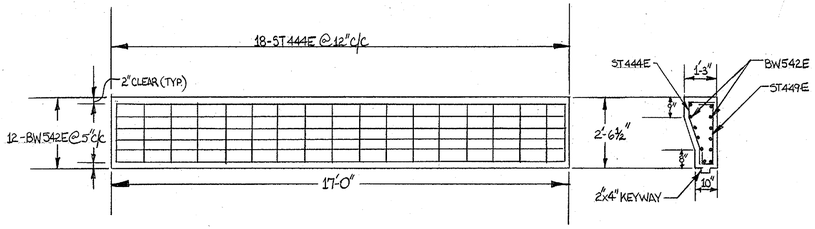
ELEVATION VIEW
SCALE: N.T.S.

REVISIONS

PRELIM. TRACING CLD 8/93 DESIGN CLD 8/93 CHKD.

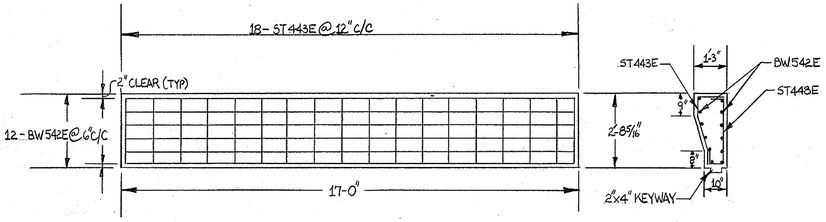
CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
93-074-02	N.C.	N/A	12	25

BRIDGE 216 WALL REINFORCEMENT & MISCELLANEOUS DETAILS



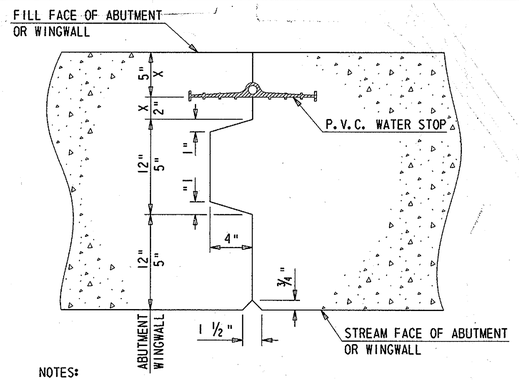
EAST ABUTMENT BACKWALL

SCALE: N.T.S.



WEST ABUTMENT BACKWALL

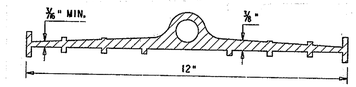
SCALE: N.T.S.



NOTES:
1. "X" SHALL VARY WITH DESIGN DIMENSIONS.
2. REINFORCING SHALL PASS THROUGH CONSTRUCTION JOINT.
3. REINFORCING SHALL NOT PASS THROUGH CONTRACTION JOINT.

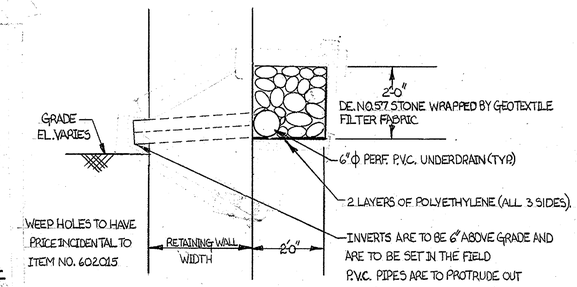
CONTRACTION OR CONSTRUCTION JOINT DETAIL

SCALE: N.T.S.



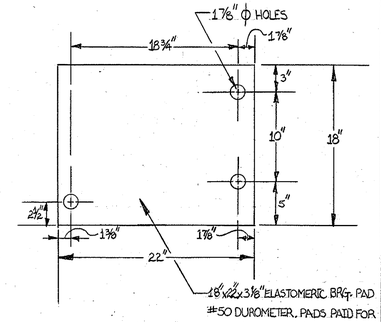
P.V.C. WATER STOP

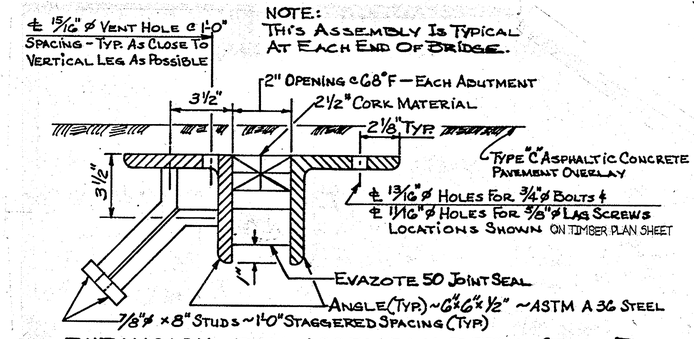
SCALE: N.T.S.



WEEP HOLE DETAIL

SCALE: N.T.S.

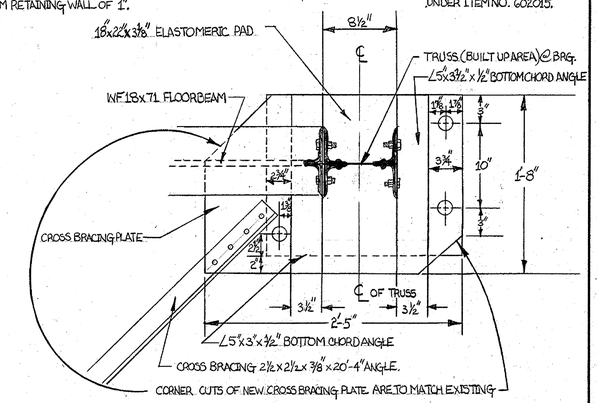


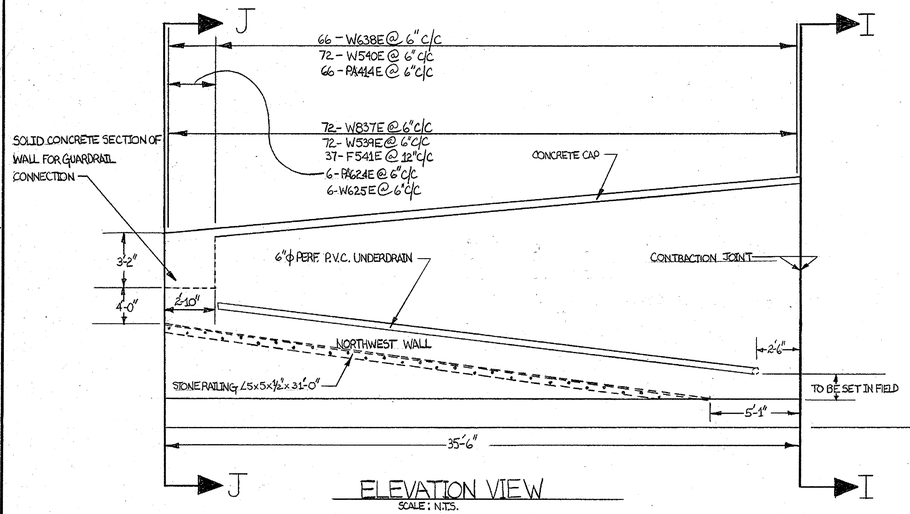


EXPANSION DAM ASSEMBLY DETAIL (FUSION BONDED EPOXY COATED)

ALL MATERIAL SHOWN ABOVE SHALL BE INCIDENTAL TO ITEM Nº 605002

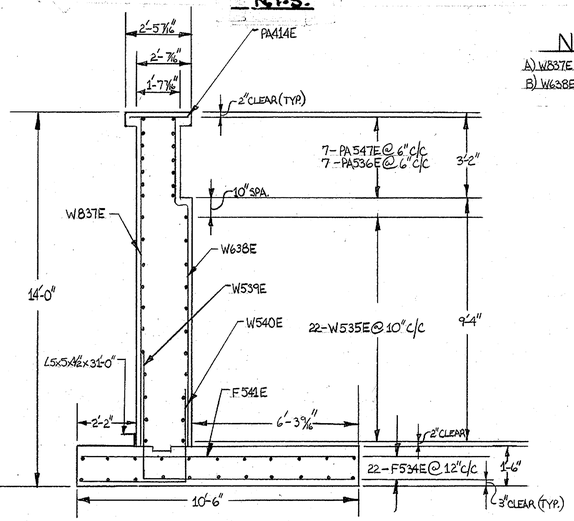
N.T.S.





ELEVATION VIEW

SCALE: N.T.S.

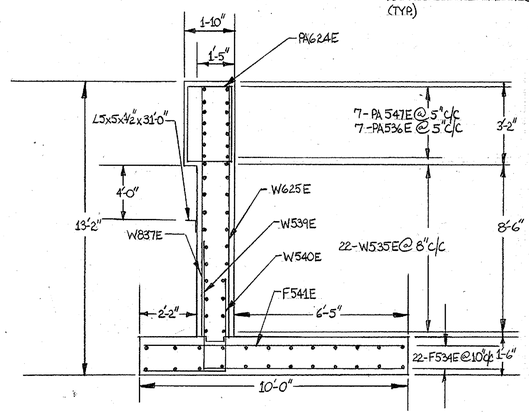


SECTION I-I

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

NOTE

A) W837E TO W539E SHALL HAVE A 42" SPLICE LENGTH.
B) W638E TO W540E SHALL HAVE A 25" SPLICE LENGTH.

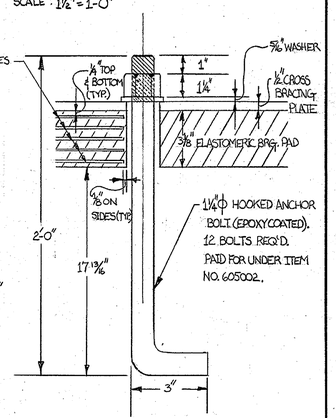


SECTION J-J

SCALE: N.T.S.

BEARING DETAIL

SCALE: 1½" = 1'-0"



HOOKED ANCHOR BOLT DETAIL

SCALE: N.T.S.

REVISIONS

PREL. TRACING C.L.D. 8/93 DESIGN C.L.D. 8/93 CHKD.

(1) MARK NUMBER WITH SUFFIX 'E' DENOTES EPOXY COATED REINFORCING STEEL.

(2) MARK 'LOCATION PREFIXES' ARE AS FOLLOWS: (X)A = ABUTMENT, (X)AS = APPROACH SLAB, (X)F = FOOTING, (X)H = HEADWALL, (X)M = MISC. BARS, (X)PA = PARAPET, (X)P = PIER, (X)S = SLAB, (X)T = TOEWALL, (X)W = WINGWALL - WHERE (X) DENOTES SPECIFIC LOCATION [IF APPLICABLE].

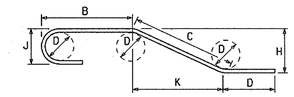
BR. 1-216

SPECIFICATIONS					BENDING DIMENSIONS										
QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F/R	G	H	J	K	O
84	8	5-03 0	S800E	STR		5-03 0									
20	5	20-05 0	S501E	STR		20-05 0									
21	5	11-09 0	ST502E	T7	0-06 0	2-07 0	3-00 0	2-06 0	2-08 0		0-06 0	2-07 0		0-04 0	
21	5	11-06 0	ST503E	T2	0-06 0	2-08 0	2-07 0	2-08 0	2-07 0		0-06 0				
40	5	9-08 0	A504E	STR		9-08 0									
40	6	9-08 0	A605E	STR		9-08 0									
104	8	12-00 0	W806E	STR		12-00 0									
		TO				TO									
		12-02 0				12-02 0									
90	6	12-05 0	W607E	6	0-00 0	9-00 0	0-05 0	3-00 0			0-00 0	0-00 0		0-00 0	12-00 0
		TO				TO									TO
		12-07 0				9-02 0									12-02 0
44	5	24-08 0	F508E	STR		24-08 0									
44	5	24-08 0	W509E	STR		24-08 0									
14	5	24-03 0	PA510E	STR		24-03 0									
104	5	6-07 0	W511E	20		3-04 0	3-03 0	0-00 0							
		TO					TO								
		7-06 2					4-02 2								
104	5	12-03 0	W512E	20		4-09 0	7-06 0	0-00 0							
		TO					TO								
		12-09 0					8-00 0								
50	5	9-08 0	F513E	STR		9-08 0									
		TO				TO									
		10-02 0				10-02 0									
256	4	3-02 0	PA414E	STR		3-02 0									
		TO				TO									
		1-01 0				1-01 0									
68	5	7-04 0	A515E	STR		7-04 0									
60	6	11-11 0	W616E	6	0-00 0	8-04 0	0-05 0	3-02 0			0-00 0	0-00 0		0-00 0	11-11 0
		TO				TO									TO
		12-09 0				9-02 0									12-09 0
66	8	11-06 0	W817E	STR		11-06 0									
		TO				TO									
		12-00 0				12-00 0									
26	5	32-02 0	F518E	STR		32-02 0									
34	5	9-08 0	F519E	STR		9-08 0									
		TO				TO									
		10-08 0				10-08 0									
66	5	6-07 0	W520E	20		3-04 0	3-03 0	0-00 0							
		TO					TO								
		7-11 0					4-07 0								
66	5	12-03 0	W521E	20		4-09 0	7-06 0	0-00 0							
		TO					TO								
		13-03 0					8-06 0								
22	5	32-02 0	W522E	STR		32-02 0									
7	5	31-09 0	PA523E	STR		31-09 0									
24	6	8-02 0	PA624E	T2	0-06 0	1-06 0	2-01 0	1-06 0	2-01 0		0-06 0				
24	6	11-06 0	W625E	STR		11-06 0									
		TO				TO									
		12-03 0				12-03 0									
24	5	33-01 0	F526E	STR		33-01 0									
16	5	33-01 0	W527E	STR		33-01 0									
10	5	32-08 0	PA528E	STR		32-08 0									
40	6	4-04 0	W629E	STR		4-04 0									
		TO				TO									
		10-11 0				10-11 0									
40	5	4-09 0	W530E	6	0-00 0	2-04 0	0-05 0	2-00 0			0-00 0	0-05 0		0-00 0	4-09 0
		TO				TO		TO							TO
		11-04 0				7-09 0		3-02 0							11-04 0
40	5	7-10 0	W531E	20		3-04 0	4-06 0	0-00 0							
		TO					TO								
		9-04 0					6-00 0								
40	5	5-09 0	W532E	20		2-06 0	3-03 0	0-00 0							
40	5	6-08 0	F533E	STR		6-08 0									
		TO				TO									
		9-02 0				9-02 0									

SPECIFICATIONS					BENDING DIMENSIONS										
QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F/R	G	H	J	K	O
22	5	35-02 0	F534E	STR		35-02 0									
22	5	35-02 0	W535E	STR		35-02 0									
7	5	34-09 0	PA536E	STR		34-09 0									
72	8	11-06 0	W837E	STR		11-06 0									
		TO				TO									
		12-04 0				12-04 0									
66	6	11-11 0	W638E	6	0-00 0	8-04 0	0-05 0	3-02 0			0-00 0	0-05 0		0-00 0	11-11 0
		TO				TO									TO
		12-09 0				9-02 0									12-09 0
72	5	12-03 0	W539E	20		4-09 0	7-06 0	0-00 0							
		TO					TO								
		12-09 0					8-00 0								
72	5	6-07 0	W540E	20		3-04 0	3-03 0	0-00 0							
		TO					TO								
		7-02 2					3-10 2								
37	5	9-08 0	F541E	STR		9-08 0									
		TO				TO									
		10-02 0				10-02 0									
24	5	16-08 0	A542E	STR		16-08 0									
18	4	3-09 5	ST443E	23	0-11 0	0-07 0	1-09 3	0-06 0	0-00 0	0-00 0	0-00 0	0-05 0		0-00 0	2-10 1
18	4	3-08 0	ST444E	23	0-11 0	0-07 0	1-08 0	0-06 0	0-00 0	0-00 0	0-00 0	0-05 0		0-00 0	1-05 1
14	5	24-08 0	PA545E	6	0-00 0	21-09 0	0-05 0	2-06 0			0-00 0	0-05 0		0-00 0	24-03 0
7	5	32-02 0	PA546E	6	0-00 0	29-03 0	0-05 0	2-06 0			0-00 0	0-00 0		0-00 0	31-09 0
7	5	35-02 0	PA547E	6	0-00 0	32-03 0	0-05 0	2-06 0			0-00 0	0-05 0		0-00 0	34-09 0
18	4	3-10 1	ST448E	S6	0-00 0	0-06 0	0-06 0	2-04 1			0-06 0				
18	4	3-08 2	ST449E	S6	0-00 0	0-06 0	0-06 0	2-02 2			0-06 0				

NOTES:

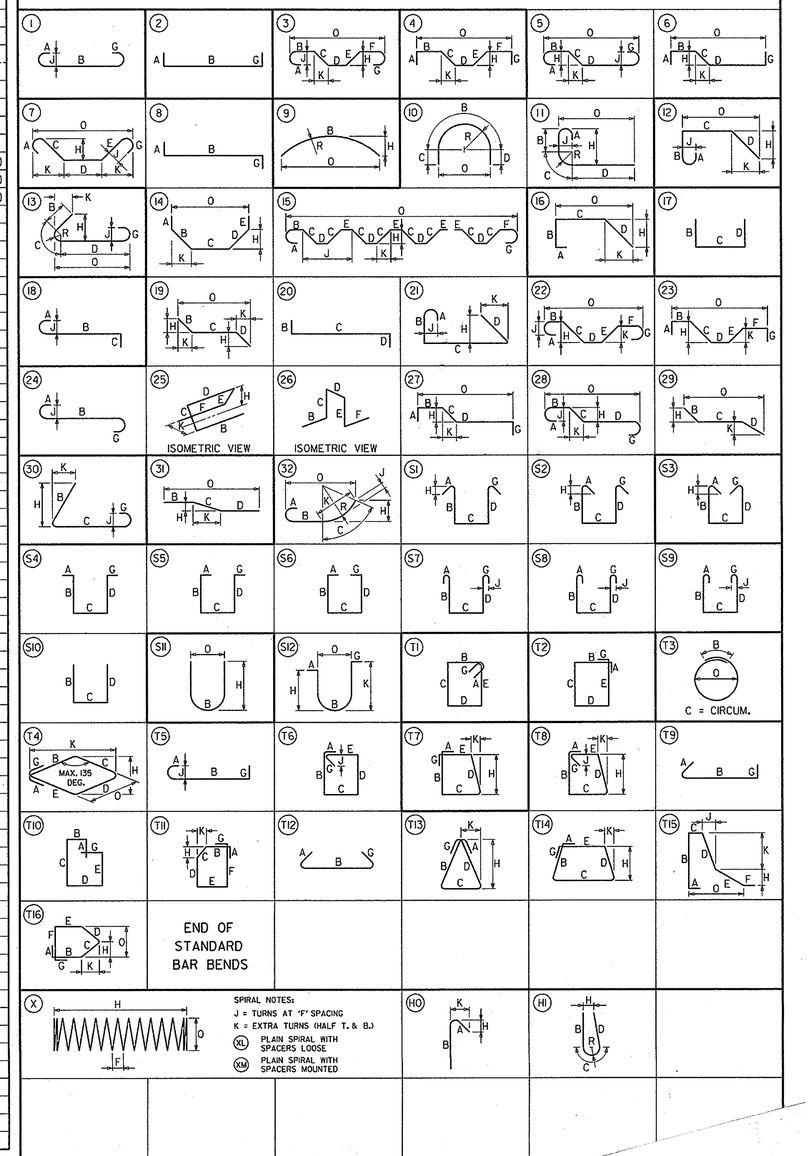
1. STANDARD BAR BENDS INCLUDE ONLY TYPES 1-32, S1-S12, AND T1-T16.
2. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180° AND 135° HOOKS.
3. "J" DIMENSIONS ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
4. WHERE "J" IS NOT SHOWN, "J" WILL BE KEPT EQUAL TO OR LESS THAN "H" ON TRUSS BARS. WHERE "J" CAN EXCEED "H", IT SHOULD BE SHOWN.
5. "H" DIMENSIONS STIRRUPS TO BE SHOWN WHERE NECESSARY TO FIT WITHIN CONCRETE.
6. UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.
7. WHERE SLOPE DIFFERS FROM 45° DIMENSIONS, "H" AND "K" MUST BE SHOWN.
8. WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN STANDARD BENDING TOLERANCES, BENDING DIMENSIONS WHICH REQUIRE CLOSER FABRICATION SHOULD HAVE LIMITS INDICATED.
9. FIGURES IN CIRCLES SHOW TYPES.
10. FOR RECOMMENDED DIAMETER "D", OF BENDS, HOOKS, ETC., SEE 'CRSI' OR 'ACI' TABLES.
11. TYPE S1-S12, T1-T16 APPLY TO BAR SIZES #3 THROUGH #6.



CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
93-074-02	N. C.		13	25

REINFORCING BAR LIST

STANDARD BAR BENDS



REVISIONS

DESIGN _____ CHKD. _____

REL. TRACING _____

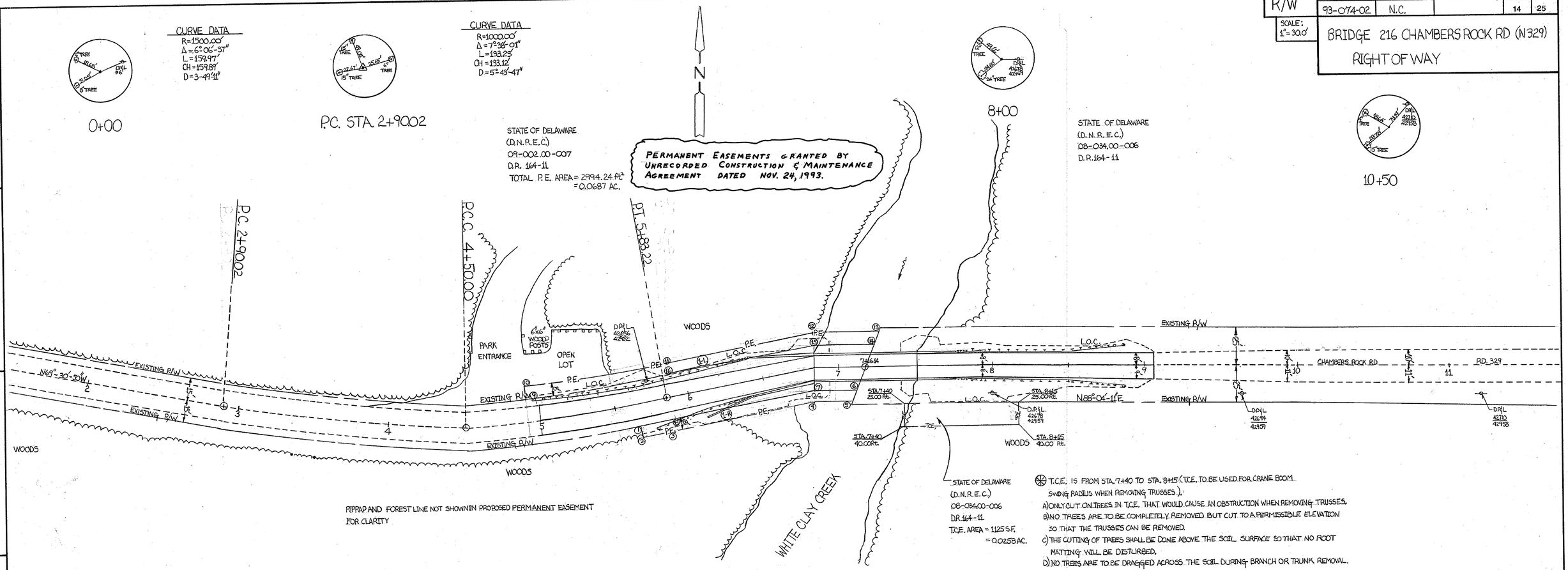
2i312.001BARSHT.DGN

FHWA 0 29 08:37:07 1993 STB CUABSUN 2i312.001BARSHT.DGN

R/W	CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
	93-074-02	N.C.		14	25

SCALE: 1" = 30.0'

BRIDGE 216 CHAMBERS ROCK RD (N329)
RIGHT OF WAY



RIPRAP AND FOREST LINE NOT SHOWN IN PROPOSED PERMANENT EASEMENT FOR CLARITY

⊛ T.C.E. IS FROM STA. 7+40 TO STA. 8+15 (T.C.E. TO BE USED FOR CRANE BOOM SWING RADIUS WHEN REMOVING TRUSSES).

A) ONLY CUT ON TREES IN T.C.E. THAT WOULD CAUSE AN OBSTRUCTION WHEN REMOVING TRUSSES.

B) NO TREES ARE TO BE COMPLETELY REMOVED BUT CUT TO A PERMISSIBLE ELEVATION SO THAT THE TRUSSES CAN BE REMOVED.

C) THE CUTTING OF TREES SHALL BE DONE ABOVE THE SOIL SURFACE SO THAT NO ROOT MATTING WILL BE DISTURBED.

D) NO TREES ARE TO BE DRAGGED ACROSS THE SOIL DURING BRANCH OR TRUNK REMOVAL.

POINT OFFSET DATA

POINT	STATION	OFFSET
1	5+65.00	15.00
2	5+65.00	23.00
3	5+83.22	23.00
4	6+82.27	23.12
5	7+07.55	23.00
6	7+10.54	15.00
7	6+82.27	15.08
8	5+83.22	15.00
9	4+93.00	15.00 L.T.
10	4+93.00	23.00 L.T.
11	5+83.22	23.00 L.T.
12	6+82.27	23.12 L.T.
13	7+24.73	23.00 L.T.
14	7+21.74	15.00 L.T.
15	6+82.27	15.08 L.T.
16	5+83.22	15.00 L.T.

PROPOSED PERMANENT EASEMENT 1-R

PT	TO PT	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
1	2	S0°-05'-52"E	8.00				
2	3			N88-52-56E	18.63	1023.00	18.64
3	4	N 89°-24'-12"E	96.70				
4	5	S 78°-56'-52"E	22.93				
5	6	N11°-03'-08"E	9.05				
6	7	N78°-56'-52"W	26.74				
7	8	S89°-24'-12"W	97.52				
8	1			S88-52-56 W	18.48	1015.00	18.49

AREA = 1124.00 SQ. FT. = 0.0258 AC.

PROPOSED PERMANENT EASEMENT 1-L

PT	TO PT	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
9	10	N 3-17-36 E	8.00				
10	11			S88-00-43E	88.42	977.00	88.45
11	12	N89°-24'-12"E	101.40				
12	13	S78°-56'-52"E	44.81				
13	14	S11-03-08 W	9.05				
14	15	N78°-56'-52"W	41.00				
15	16	S89°-24-12 W	100.58				
16	9			N 88°-00'-43"W	88.84	985.00	88.87

AREA = 1860.00 SQ. FT = 0.0427 AC.

I Certify that all proposed Right-of-Way has been acquired in the name of THE STATE OF DELAWARE, and that these plans accurately depict the nature and extent of RIGHT-OF-WAY acquisition under this project.

"AS-ACQUIRED" PLANS — CHIEF, R/W — 18 Oct 19 93 DATE

RIGHT-OF-WAY SECTION
RECOMMENDED FOR APPROVAL

CHIEF, RIGHT-OF-WAY — 18 Oct 19 93 DATE

ASSIST. TO TECHNICAL SERVICES ENGINEER — Oct. 14, 1993 DATE

REVISIONS

PREL. TRACING CLD 5/93 DESIGN CLD 5/93 CHKD. 5/93

143311

EROSION AND SEDIMENT CONTROL SHEET

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
93-074-02	N.C.		15	25

BRIDGE 216 CHAMBERS ROCK RD (N329)

EROSION AND SEDIMENT CONTROL NOTES

REVISIONS

GENERAL NOTES FOR EROSION AND SEDIMENT CONTROL

1. DESCRIPTION

THIS WORK SHALL CONSIST OF THE APPLICATION OF MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO CONTROL EROSION AND MINIMIZE THE SEDIMENTATION OF RIVERS, STREAMS AND IMPOUNDMENTS (LAKES, RESERVOIRS, BAYS AND COASTAL WATERS). THE MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO THE USE OF BERMS, DIKES, DAMS, SEDIMENT BASINS AND/OR TRAPS, GEOTEXTILES, STONE CHECKS, SILT FENCES, SURFACE ROUGHING, MATS & NETS, AGGREGATE, MULCH, GRASSES, SLOPE DRAINS AND OTHER APPROVED METHODS. EROSION AND SEDIMENT CONTROL MEASURES AS DESCRIBED HEREIN AND APPROVED BY THE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL (DNREC) SHALL BE APPLIED TO ERODIBLE MATERIAL EXPOSED BY ANY ACTIVITY ON THIS PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COORDINATED WITH ALL GROUND DISTURBING CONSTRUCTION ACTIVITY AND SHALL BE CONSTRUCTED CONCURRENT WITH THE COMMENCEMENT OF THE GRADING OPERATION TO ASSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION AND SEDIMENT CONTROL.

2. EROSION CONTROLS

IN ACCORDANCE WITH THE DELAWARE CODE TITLE 7 CHAPTER 40, THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS, THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK 1989, AND THE DELAWARE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED JULY 1985 AND AS AMENDED, THE CONTRACTOR WILL PROVIDE TEMPORARY EROSION CONTROL MEASURES FOR THE PURPOSE OF CORRECTING CONDITIONS THAT DEVELOP DURING CONSTRUCTION OF THE PROJECT AND FOR THE PURPOSE OF PROVIDING CONTINUOUS EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR THE DURATION OF THE PROJECT.

EROSION CONTROL MEASURES (TEMPORARY OR PERMANENT) SHALL BE PLACED AT THE ENDS OF ALL CULVERTS AND BRIDGES IMMEDIATELY AFTER THEY BECOME OPERATIONAL.

GENERAL NOTES 1 & 2

E-1A

3. DEFINITIONS

SEE SECTION 201.01 CLEARING AND GRUBBING - DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

CLEARING: SHALL MEAN THE CLEARING OF TREES, BRUSH, SHRUBS, DOWNED TIMBER, ROTTEN WOOD, RUBBISH, AND ANY OTHER VEGETATION (EXCEPT WHERE EXCLUDED BY THE DEFINITION FOR GRUBBING), AS WELL AS THE REMOVAL OF FENCES AND INCIDENTAL STRUCTURES, ETC.

GRUBBING: SHALL MEAN THE REMOVAL FROM THE GROUND OF STUMPS, ROOTS AND ROOT MAT, BRUSH, FOREST LITTER, ORGANIC MATERIAL, DEBRIS, ETC.

DISTURBED AREA: SHALL MEAN AN AREA WHERE CLEARING, GRUBBING AND/OR GRADING HAS BEEN INITIATED.

STABILIZATION/STABILIZED: (CASE 1) - MEETS THE REQUIREMENTS TO PROCEED WITH THE NEXT GRADING UNIT(S) OR OPERATION WHICH MEANS THE PLACEMENT OF SEED AND MULCH, SOD, OR AS NOTED ON THE PLANS.

(CASE 2) - MEETS THE REQUIREMENT FOR REMOVAL OF THE CONTROLS PLACED DURING CASE 1 AND THAT THE COMPLETE GROWTH OF VEGETATION HAS OCCURED (I.E.: 3" HEIGHT OF PERMANENT GRASS OVER ALL AREAS OR AS OTHERWISE APPROVED BY THE ENGINEER.

GRADING UNIT/GRUBBING UNIT: 20 ACRES MAXIMUM OF CONTIGOUS OR NONCONTIGOUS AREA UNLESS OTHERWISE APPROVED BY THE ENGINEER.

ENGINEER: SEE SECTION 101.23 - DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. DEFINITIONS. (ENGINEER/STORMWATER ENGINEER)

4. CONTRACTOR PAYMENT

THE CONTRACTOR WILL ONLY BE COMPENSATED FOR WORK THAT IS DONE IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, SPECIAL PROVISIONS AND THESE STANDARDS. ANY CORRECTIONS BROUGHT ABOUT BY NON-COMPLIANCE OR ERRORS BY THE CONTRACTOR WILL BE MADE AT HIS EXPENSE.

5. MAINTENANCE

SEDIMENT TRAPS, SEDIMENT BASINS, DITCHES, STRAW BALES, SILT FENCES, STONE OUTLET STRUCTURES, EARTH BERMS, ETC. SHALL BE MAINTAINED DURING THE CONSTRUCTION SEASON AS WELL AS THE WINTER MONTHS AND OTHER TIMES WHEN THE PROJECT IS CLOSED DOWN. THE MAINTENANCE INTERVAL SHALL BE AS SPECIFIED BELOW OR AS DIRECTED BY THE ENGINEER.

TRAPS WILL BE CLEANED WHEN THEY ARE 50% FILLED. SILT FENCE, STONE OUTLET STRUCTURES, AND STRAW BALES SHALL HAVE SEDIMENTATION REMOVED WHEN IT REACHES 50% OF THE HEIGHT OF THE CONTROL DEVICE. THESE SPOILS WILL BE REMOVED TO AN APPROVED SITE AWAY FROM THE TRAP, FENCE ETC.

CONTROLS WILL BE INSPECTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING RAIN STORMS. THE CONTRACTOR SHALL IMMEDIATELY REPAIR CONTROLS WHEN DAMAGED.

ACCESS SHALL BE MAINTAINED TO ALL SEDIMENT CONTROL DEVICES REQUIRING MAINTENANCE UNTIL THOSE CONTROLS ARE NO LONGER REQUIRED.

MAINTENANCE OF THE CONTROL DEVICES IS ESSENTIAL. LACK OF COOPERATION ON THE PART OF THE CONTRACTOR WILL BE CONSIDERED AS A MAJOR VIOLATION TO THE PLAN AND GROUNDS FOR A 'SHUT-DOWN' OF THE PROJECT. NO CLAIMS FOR ADDITIONAL TIME OR MONEY SHALL BE CONSIDERED DUE TO THIS SHUT DOWN.

6. CLEARING AND GRUBBING

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE CLEARING PORTION OR PRIOR TO OF THE GRUBBING PORTION OF THIS OPERATION AS DIRECTED BY THE ENGINEER. GRUBBING SHALL BE RESTRICTED TO THE GRADING UNIT CURRENTLY ACTIVE.

GENERAL NOTES 3 - 6

E-1B

7. STABILIZATION / LIMITS OF DISTURBANCE

OTHER THAN LISTED BELOW, ONE UNIT EQUALING 20 ACRES THAT HAS BEEN CLEARED AND GRUBBED CAN BE ACTIVELY GRADED AT ONE TIME. ONCE GRADING BEGINS IN THE FIRST UNIT, A SECOND UNIT MAY BE GRUBBED. TWO UNITS (ONE GRADED AND ONE GRUBBED) SHALL BE ALLOWED PER GRADING OPERATION. A GRADING OPERATION IS DEFINED AS THE CONTRACTOR'S ABILITY TO PROVIDE ADEQUATE RESOURCES TO PERFORM THE GRADING IN A TIMELY MANNER AND PROVIDE AND MAINTAIN THE PROPER EROSION AND SEDIMENT CONTROL MEASURES. THE ENGINEER WILL BE THE FINAL AUTHORITY IN THIS DETERMINATION. A GRADING UNIT NEED NOT BE 20 CONTIGUOUS ACRES.

ALL APPROPRIATE PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY GRUBBING OPERATION. AREAS ARE TO BE PERMANENTLY OR TEMPORARILY SEEDED AND MULCHED WHEN SITE DEVELOPMENT WORK, GRADING, OR OTHER SOIL DISTURBING ACTIVITIES CEASE TO BE CONTINUOUS FOR A PERIOD IN EXCESS OF 14 CALENDAR DAYS. PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND OTHER SLOPES GREATER THAN 3:1 REQUIRE STABILIZATION WITHIN 7 CALENDAR DAYS IS REQUIRED. ONCE EXCAVATION OR EMBANKMENT REACHES THE ELEVATION OF THE CAPPING MATERIAL OR AGGREGATE, THOSE AREAS IN WHICH PAVING WILL BE PLACED WILL BE EXEMPT FROM THE STABILIZATION REQUIREMENTS*. ROADWAYS AND HAULROADS ACTIVELY BEING USED FOR DAILY CONVEYANCE OF EQUIPMENT WILL ALSO BE EXEMPT FROM THE STABILIZATION REQUIREMENTS. AREAS BETWEEN *TEMPORARY (EDGE) BERMS*, EXCEPT MEDIAN AREAS, NEED NOT BE STABILIZED UPON COMPLETION OF GRADING.

WHEN BALANCING EARTHWORK (BORROW FROM A CUT USED AS FILL AT A LOCATION DISTANT FROM THE CUT), CONSIDERATION WILL BE ALLOWED FOR GREATER THAN ONE UNIT OF GRADING. IN SUCH CASES, ONE UNIT OF CUT AND ONE GRADING UNIT OF FILL WILL BE ALLOWED TO BE GRUBBED AND GRADED. GREATER THAN ONE UNIT OF GRUBBED AND GRADED AREA SHALL BE ALLOWED FOR INTERCHANGE CONSTRUCTION. WHEN WET SOIL CONDITIONS ARE ENCOUNTERED, THE CONTRACTOR WILL BE ALLOWED TO GRUB AND GRADE ANOTHER UNIT PROVIDING THE INITIAL UNIT HAS BEEN PROPERLY STABILIZED.

MORE THAN ONE GRADING UNIT MAY BE ALLOWED WHEN THE CONTRACTOR CAN SHOW ADEQUATE RESOURCES TO PERFORM THE WORK. IF THE CONTRACTOR IS UNABLE TO CONTINUOUSLY PERFORM THE WORK, HE WILL BE NOTIFIED IN WRITING BY THE ENGINEER THAT ALL WORK MUST CEASE AND FIRST STABILIZE THE AREAS THAT EXCEED ONE GRADING UNIT WITHIN 7 CALENDAR DAYS.

8. CONTACT PERSON

THE CONTRACTOR SHALL SUBMIT TO THE DEPARTMENT THE NAME OF THE PERSON WHO IS RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL IMPLEMENTATION AND MAINTENANCE. THIS PERSON SHALL HAVE THE CERTIFICATION OF TRAINING FROM DNREC IN PRACTICES AND PROCEDURES OF EROSION AND SEDIMENT CONTROL.

GENERAL NOTES 7 & 8

E-1C

9. STOCKPILED MATERIAL

SALVAGED TOPSOIL WILL BE PLACED ON WELL DRAINED LAND AWAY FROM LIVE STREAMS AND IN ACCORDANCE WITH APPROVED EROSION AND SEDIMENT CONTROL MEASURES. IT SHALL BE PLACED IN PILES OF NEAT CONFORMATIONS AND SEEDED WITH TEMPORARY SEED AND MULCHED IMMEDIATELY AFTER FINAL SHAPING OF THE PILE IN ACCORDANCE WITH SECTION 740 OF THE DOT STD. SPECS. THE CONTRACTOR WILL PROVIDE AN ADEQUATE QUANTITY OF SILT FENCE TO CONTROL THE PERIMETER OF THE STOCKPILE UNTIL SUCH TIME VEGETATION IS ESTABLISHED. IF HE ELECTS, THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY CONSTRUCT AN EARTH BERM IN LIEU OF SILT FENCE. THE COST FOR THESE CONTROLS WILL BE IN ACCORDANCE WITH THE APPROPRIATE CONTRACT ITEMS.

10. PLAN CHANGES

ANY MODIFICATIONS, REVISIONS, OR CHANGES TO THE APPROVED EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN SHALL BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO THE CHANGES BEING IMPLEMENTED.

11. DEWATERING DISCHARGE

SEDIMENT - LADEN DEWATERING DISCHARGE SHALL BE DIRECTED TO AN APPROVED SEDIMENT TRAPPING MEASURE PRIOR TO RELEASE FROM THE SITE.

12. TEMPORARY SLOPE DRAINS

ALL TEMPORARY SLOPE DRAINS SHALL DISCHARGE INTO SEDIMENT TRAPS, SEDIMENT BASINS, OR DITCHES DISCHARGING INTO TRAPS OR BASINS.

13. SEDIMENT TRAPS

SEDIMENT TRAPS SHALL BE USED IN CONJUNCTION WITH STONE CHECK DAMS, RIPRAP DITCHES, FABRIC-BASED CHANNEL DIVERSIONS AND EARTH DIKES OR IN ANY COMBINATION OF DIVERSIONS, TRAPS OR DAMS.

14. EROSION AND SEDIMENT CONTROL EXCAVATION

THIS ITEM HAS BEEN ESTABLISHED TO INCLUDE THE EXCAVATION, CLEANING AND RESTORATION OF SEDIMENT TRAPS. IT SHALL ALSO INCLUDE THE REMOVAL OF SILT IN AND AROUND SEDIMENT BASINS, SILT FENCES, TEMPORARY STONE OUTLET STRUCTURES, EARTH BERMS, SWALES AND DITCHES. BACKFILLING OF SEDIMENT TRAPS THAT ARE NO LONGER REQUIRED WILL BE INCIDENTAL TO THE INITIAL EXCAVATION.

15. EXCAVATED MATERIAL

MATERIALS EXCAVATED FOR THE CONSTRUCTION AND MAINTENANCE OF SEDIMENT TRAPS SHALL NOT BE STOCKPILED IN THE AREA OF THE TRAP. IT SHALL BE PLACED IN AN EMBANKMENT OR WASTED AS DIRECTED BY THE ENGINEER. EXCAVATION FROM CUTS TO BE USED FOR EMBANKMENTS SHALL NOT BE STOCKPILED UNLESS PERIMETER CONTROLS ARE UTILIZED. COSTS FOR THESE CONTROLS WILL BE BORNE BY THE CONTRACTOR. EMBANKMENT MATERIAL SHALL BE "WETTED" OR "DRIED" AT THE CONTRACTOR'S EXPENSE.

GENERAL NOTES 9 - 15

E-1D

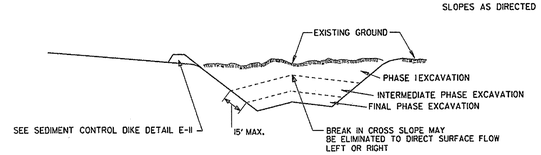
PHASING PLAN: CUT SECTION

EXCAVATION

IF BERM DITCHES ARE TO BE USED IN A CUT SECTION, THEY WILL BE EXCAVATED AND STABILIZED AS THE FIRST ORDER OF BUSINESS. ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN INCREMENTS NOT TO EXCEED 15 FEET AS MEASURED ALONG THE SLOPE. ONCE EXCAVATION WITHIN A GRADING UNIT HAS BEGUN THE OPERATION SHALL BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION IN EXCESS OF 14 CALENDAR CALENDAR DAYS MUST BE APPROVED BY THE ENGINEER.

CONSTRUCTION SEQUENCE:

1) CLEAR AND GRUBB ONLY THOSE AREAS REQUIRED FOR DIKES, SIDE AND OUTLET DITCHES AND REQUIRED EROSION AND SEDIMENT CONTROL MEASURES. CLEARING, BUT NOT GRUBBING, MAY BE DONE IN ADJACENT AREAS FOR CONSTRUCTION ACCESS.
2) EXCAVATE AND STABILIZE BERMS, SIDE AND OUTLET DITCHES.
3) COMPLETE CLEARING AND GRUBBING.
4) PERFORM PHASE 1 EXCAVATION, DRESS, SEED & MULCH SLOPES WITH TEMPORARY SEED & MULCH.
5) PERFORM INTERMEDIATE PHASE(S) EXCAVATION, DRESS, SEED & MULCH SLOPES WITH TEMPORARY SEED & MULCH OVERSEED AND RE-MULCH PHASE 1 SLOPES, IF REQUIRED.
6) PERFORM FINAL PHASE EXCAVATION, DRESS, SEED & MULCH SLOPES WITH PERMANENT SEED & MULCH. STABILIZE SURFACE DRAIN DITCHES, OVERSEED AND RE-MULCH OR RE-FERTLIZE PHASE 1 & 2 SLOPES AS DIRECTED BY THE ENGINEER.



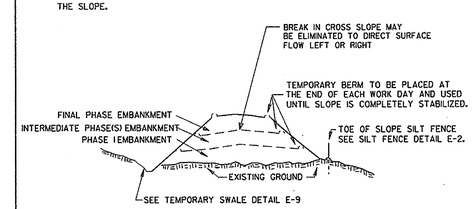
GENERAL NOTES PHASING PLAN

E-1E

PHASING PLAN: FILL SECTION

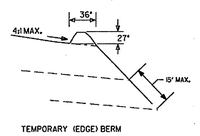
EMBANKMENT

THE FIRST ORDER OF BUSINESS SHALL BE THE CLEARING AND GRUBBING OF ONLY THOSE AREAS REQUIRED FOR THE PLACEMENT OF SILT FENCE, PLACEMENT OF PERIMETER CONTROLS AND THE EXCAVATION AND STABILIZATION OF SIDE DITCHES, ETC. THE EMBANKMENT SHALL BE MADE IN LIFTS MEETING THE HEIGHT REQUIREMENTS IN THE STANDARD SPECIFICATIONS. THE SLOPES SHALL BE STABILIZED IMMEDIATELY FOLLOWING THE COMPLETION OF THE INTERMEDIATE STAGE(S). AT THE END OF EACH WORK DAY TEMPORARY BERMS (EARTH) AND SLOPE DRAINS SHALL BE CONSTRUCTED ALONG THE TOP EDGE(S) OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF. EMBANKMENT SLOPES SHALL BE TRACKED HORIZONTALLY PRIOR TO SEEDING. EACH STABILIZATION PHASE SHALL NOT EXCEED 15 FEET AS MEASURED ALONG THE SLOPE.



CONSTRUCTION SEQUENCE:

1) CLEAR AND GRUBB ONLY THOSE AREAS REQUIRED FOR DIKES, SIDE AND OUTLET DITCHES AND REQUIRED EROSION AND SEDIMENT CONTROL MEASURES. CLEARING, BUT NOT GRUBBING, MAY BE DONE IN ADJACENT AREAS FOR CONSTRUCTION ACCESS.
2) EXCAVATE AND STABILIZE DIKES, SIDE AND OUTLET DITCHES.
3) COMPLETE CLEARING AND GRUBBING.
4) PERFORM PHASE 1 EMBANKMENT, DRESS, SEED & MULCH SLOPES WITH TEMPORARY SEED & MULCH.
5) PERFORM INTERMEDIATE PHASE(S) EMBANKMENT, DRESS, SEED & MULCH SLOPES WITH TEMPORARY SEED & MULCH OVERSEED AND RE-MULCH LOWER SLOPES, IF REQUIRED.
6) PERFORM FINAL PHASE EMBANKMENT, DRESS, SEED & MULCH SLOPES WITH PERMANENT SEED & MULCH. STABILIZE SURFACE DRAIN DITCHES, OVERSEED AND RE-MULCH OR RE-FERTLIZE LOWER SLOPES AS DIRECTED BY THE ENGINEER.



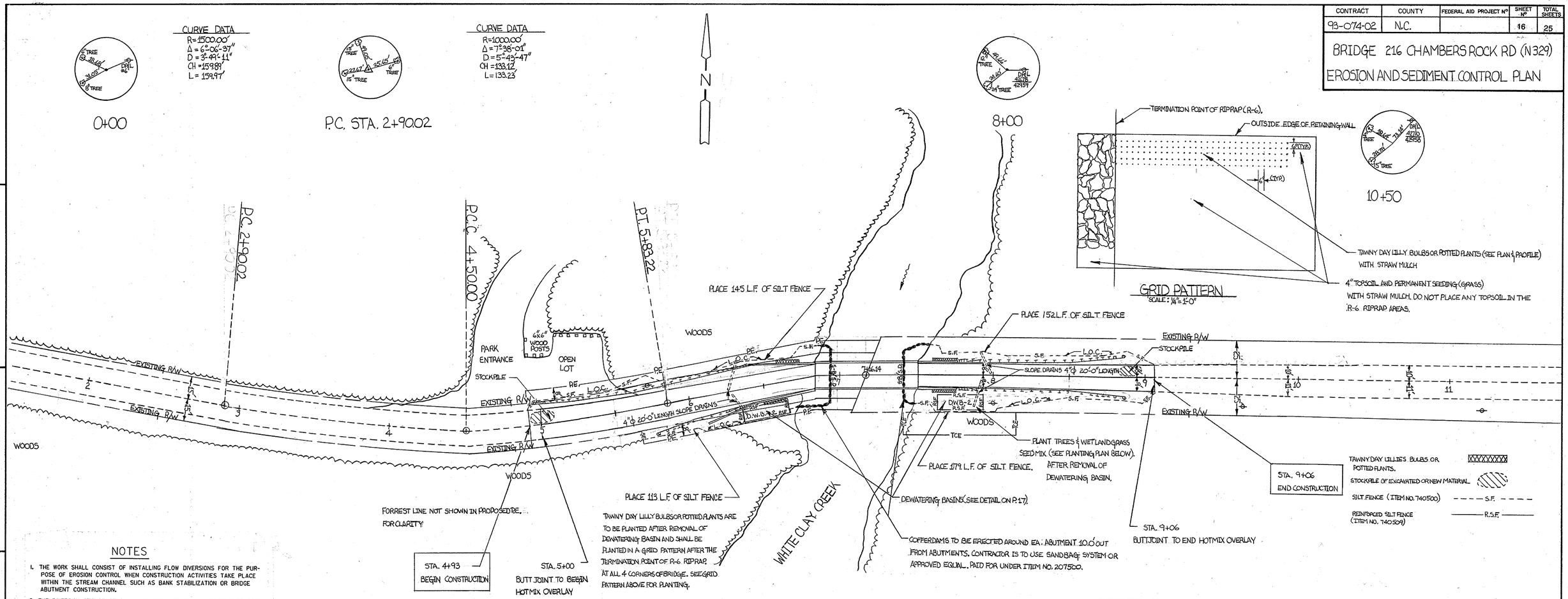
GENERAL NOTES PHASING PLAN

E-1F

CHKD. ____ DESIGN ____ PREL. TRACING ____ JUNE 1, 1990

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
98-074-02	N.C.		16	25

BRIDGE 216 CHAMBERS ROCK RD (N329)
EROSION AND SEDIMENT CONTROL PLAN



NOTES

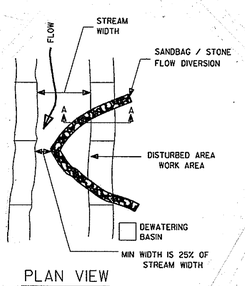
1. THE WORK SHALL CONSIST OF INSTALLING FLOW DIVERSIONS FOR THE PURPOSE OF EROSION CONTROL WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS BANK STABILIZATION OR BRIDGE ABUTMENT CONSTRUCTION.
2. THE DIVERSION STRUCTURE SHALL BE INSTALLED FROM UPSTREAM TO DOWNSTREAM.
3. THE HEIGHT OF THE DIVERSION STRUCTURE SHALL BE ONE HALF THE DISTANCE FROM STREAM BED TO STREAM BANK PLUS ONE FOOT, AS INDICATED ON THE CROSS-SECTION VIEW.
4. ALL EXCAVATION MATERIALS SHALL BE DISPOSED OF IN AN APPROVED DISPOSAL AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS.
5. ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING BASIN PRIOR TO RE-ENTERING THE STREAM.
6. FABRIC SHALL BE OVERLAPPED SUCH THAT THE UPSTREAM PORTION COVERS THE DOWNSTREAM PORTION WITH AT LEAST AN 18-INCH OVERLAP.
7. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE STORMWATER ENGINEER APPROVES THEIR REMOVAL.
8. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR MATERIAL SPECIFICATIONS AND METHOD OF MEASUREMENT AND PAYMENT FOR INITIAL INSTALLATION AND MAINTENANCE.

PLAN VIEW SYMBOL

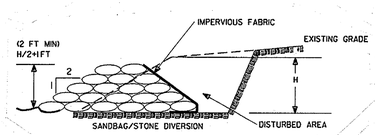
S-B/S.D.

SANDBAG/ STONE DIVERSION

COFFERDAM



PLAN VIEW



SECTION A-A

SEQUENCE OF CONSTRUCTION

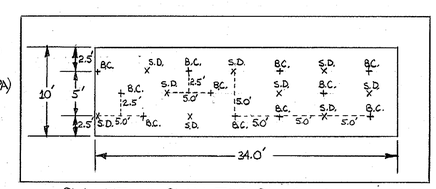
1. PLACE SILT FENCE ON L.O.C. LINES.
2. INSTALL BOTH DEWATERING BASINS (DWB-2).
3. CONSTRUCT BOTH COFFERDAMS.
4. REHABILITATE BOTH ABUTMENTS.
5. BACKFILL ABUTMENTS AND SIDESLOPES WITH TYPE "C" BORROW, REMOVE BOTH DEWATERING BASINS, AND DO FINAL GRADING WITH 4" TOPSOIL, SEEDING, AND MULCHING. (DO NOT PLACE ANY TOPSOIL WHERE THE R-6 RIPRAP IS TO BE PLACED.)
6. PLACE R-6 RIPRAP WITH GEOTEXTILE.
7. PLACE REHABILITATED TRUSSES BACK INTO THEIR ORIGINAL POSITIONS.
8. REMOVE BOTH COFFERDAMS.
9. PLANT TAWNY DAY LILLIES WITH STRAW MULCH.
10. REMOVE SILT FENCE ON ENTIRE JOBSITE.

FORMER DEWATERING BASIN AREA ON S/E CORNER

9 EA.-(S.D.) SILKY DOGWOOD (CORNUS AMOMUM) TO BE PAID FOR UNDER ITEM NO. 737248

11 EA.-(B.C) BLACK CHOKEBERRY TREES (APONIA MELANOCARPA) TO BE PAID FOR UNDER ITEM NO. 737216

38 S.Y. OF FACULTATIVE WET BLEND GRASS SEED MIX TO BE PAID FOR UNDER ITEM NO. 734011. TO BE SEEDED IN THE FORMER DEWATERING BASIN AREA.



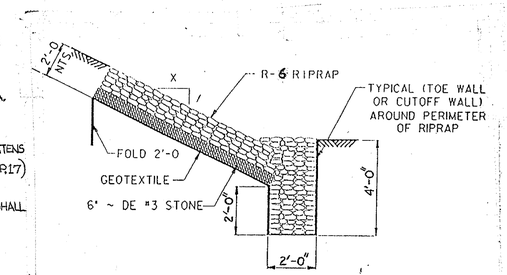
PLANTING PLAN FOR BLACK CHOKEBERRY AND SILKY DOGWOOD TREES (S/E CORNER).
SCALE: 1/8"=1'-0"

NOTES

1) SILT FENCE IS TO TIE INTO COFFERDAMS @ ALL 4 CORNERS.
2) SILT FENCE AROUND DEWATERING BASINS SHALL BE REINFORCED SILT FENCE.
3) STOCKPILING EXCAVATED OR NEW MATERIAL SHALL BE DONE AT A MINIMUM AND SHALL BE LOCATED NEAR THE END OF CONSTRUCTION LIMITS ON BOTH SIDES (SEE PLAN VIEW).
4) TAWNY DAY LILLIES ARE SUBJECT TO CHANGE, IF CHANGE OCCURS, THE NEW TYPE OF BULBS OR POTTED PLANTS AND PLANTING PROCEDURES SHALL BE APPROVED BY THE ENGINEER.
5) DEWATERING BASIN TO BE PAID FOR UNDER EA. INDIVIDUAL ITEMS.
6) THE EROSION CONTROL SLOPE DRAIN DETAIL SHALL BE CONSTRUCTED WHEN EROSION THREATENS ANY SLOPED EMBANKMENTS (SEE DETAIL ON P.17)
7) ALL CONSTRUCTION STAGING EQUIPMENT, STORAGE OF MATERIALS, AND FIELD OFFICE SHALL BE WITHIN THE LIMITS OF CONSTRUCTION SHOWN.

DEWATERING BASIN TYPE 2 — D-W.B.-2

SANDBAG/STONE DIVERSION — S-B/S.D.



TYPICAL RIPRAP DETAIL

N. T. S.

REVISIONS

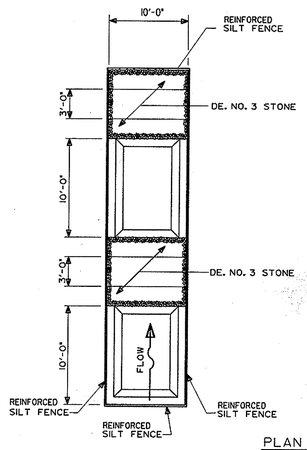
PREL. TRACING CLD 8/93 DESIGN CLD 8/93 CHKD.

BR. 216	CONTRACT	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHTS.
	93-0714-02	N.A.		17	25

BRIDGE 216 CHAMBERS ROCK RD. (N 329)

EROSION AND SEDIMENT DETAILS

REVISIONS



PLAN VIEW

NOTES

1. THE WORK SHALL CONSIST OF THE CONSTRUCTION OF A DEWATERING BASIN FOR THE PURPOSE OF RECEIVING SEDIMENT-LADEN WATER PUMPED FROM A CONSTRUCTION SITE TO ALLOW FILTRATION BEFORE THE WATER RE-ENTERS THE WATERWAY. PUMPING INTO THESE BASINS SHALL CEASE WHEN THE EFFLUENT FROM THE BASIN BECOMES SEDIMENT LADEN. THE BASIN MAY BE BYPASSED IF THE WATER BEING PUMPED IS NON SEDIMENT LADEN AND THERE IS A STABILIZED OUTFALL. SURFACE FLOWS SHALL BE DIVERTED AROUND THIS DEVICE.
2. THE OUTFALL FROM THE BASIN(S) SHALL HAVE A STABILIZED CONVEYANCE TO RECEIVING WATERS.
3. EXCAVATED MATERIALS SHALL BE STORED SUCH THAT SEDIMENTS ARE PREVENTED FROM ENTERING THE WATERWAY; I.E., SEDIMENT PERIMETER CONTROLS MAY BE NECESSARY.
4. EXCAVATED SUBSOIL AND TOPSOIL SHALL BE KEPT SEPARATE AND REPLACED IN THEIR NATURAL ORDER.
5. ANY DEWATERING OF THE CONSTRUCTION AREA SHALL BE FILTERED THROUGH A DEWATERING BASIN PRIOR TO ENTERING THE WATERWAY.
6. THE DEWATERING BASIN SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 2 FEET WITH A FLAT BOTTOM.
7. ONCE THE DEWATERING BASIN BECOMES FILLED TO 1/2 OF THE EXCAVATED DEPTH, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED DISPOSAL AREA.
8. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE ENGINEER APPROVES THEIR REMOVAL. ALL GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ENGINEER.
9. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR MATERIAL SPECIFICATIONS AND METHOD OF MEASUREMENT AND PAYMENT FOR INITIAL INSTALLATION AND MAINTENANCE.

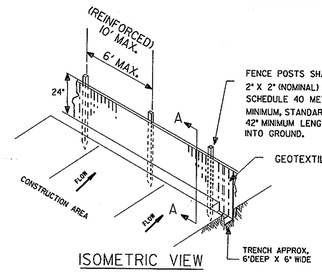
SEE EROSION AND SEDIMENT CONTROL STANDARD E-16B FOR ADDITIONAL NOTES AND DETAILS.

PLAN VIEW SYMBOL

D-W.B.-2

DEWATERING BASIN, TYPE 2

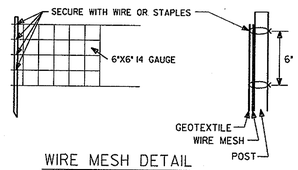
E-16A



ISOMETRIC VIEW

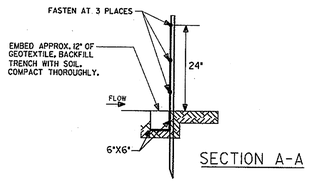
NOTES

1. GEOTEXTILE FABRIC TO BE FASTENED SECURELY TO FENCE POST BY USE OF WIRE TIES OR SPRING STEEL FASTENERS, 3 FASTENERS PER POST MIN.
2. ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE SHALL BE SECURELY FASTENED TO A COMMON POST OR OVERLAPPED 3' (MIN.).
3. THIS DEVICE IS INTENDED TO CONTROL SHEET FLOW ONLY. IT WILL NOT BE USED IN AREAS OF CONCENTRATED FLOW WITH A DRAINAGE AREA OF 1/2 ACRE OR MORE.
4. THIS DETAIL ALSO APPLIES TO REINFORCED SILT FENCE.
5. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR MATERIAL SPECIFICATIONS AND METHOD OF MEASUREMENT AND PAYMENT FOR INSTALLATION AND MAINTENANCE.



WIRE MESH DETAIL

(REINFORCED SILT FENCE ONLY)



SECTION A-A

PLAN VIEW SYMBOL

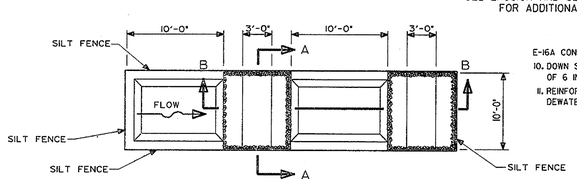
SF. SF.

(REINFORCED) RSF. RSF.

SILT FENCE

E-2

SEE EROSION AND SEDIMENT CONTROL STANDARD E-16A FOR ADDITIONAL NOTES AND DETAILS.

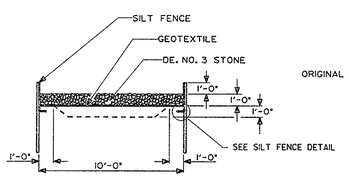


PLAN VIEW

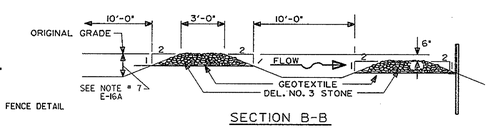
NOTES

E-16A CONTD.

10. DOWN STREAM STONE DAM SHALL BE A MIN. OF 6 INCHES LOWER THAN THE UPSTREAM DAM.
11. REINFORCED SILT FENCE SHALL BE USED FOR DEWATERING BASIN, TYPE 2.



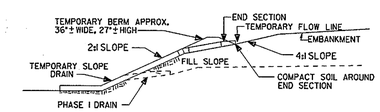
SECTION A-A



SECTION B-B

DEWATERING BASIN, TYPE 2

E-16B

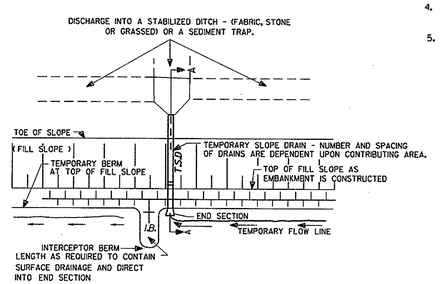


SECTION A-A

(FOR FILL SLOPES)

NOTES

1. ALL DIMENSIONS AND LOCATIONS NOT INDICATED AS ITEMS OR NOT APPEARING ON THIS SHEET OR ON THE PLANS SHALL BE AS DIRECTED BY THE ENGINEER.
2. ALL TEMPORARY SLOPE DRAINS SHALL DISCHARGE INTO THE BACK OF SEDIMENT TRAPS, INTO SEDIMENT BASINS OR DITCHES DISCHARGING INTO TRAPS OR BASINS.
3. TEMPORARY SLOPE DRAIN SHALL BE USED AT THE TOP OF FILL SLOPE AS EMBANKMENT IS CONSTRUCTED TO PREVENT EXCESSIVE EROSION UNTIL SHOULDERS ARE CONSTRUCTED AND THE SLOPES ARE SEEDED AND MULCHED.
4. COMPENSATION FOR EXCAVATION OF BERMS AND TO PLACE SLOPE DRAINS SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR SLOPE DRAINS.
5. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR MATERIAL SPECIFICATIONS AND METHOD OF MEASUREMENT AND PAYMENT FOR INSTALLATION AND MAINTENANCE.



PLAN VIEW

PLAN VIEW SYMBOL

T.S.D.

EROSION CONTROL SLOPE DRAIN

E-12

REVISIONS

CHKD.

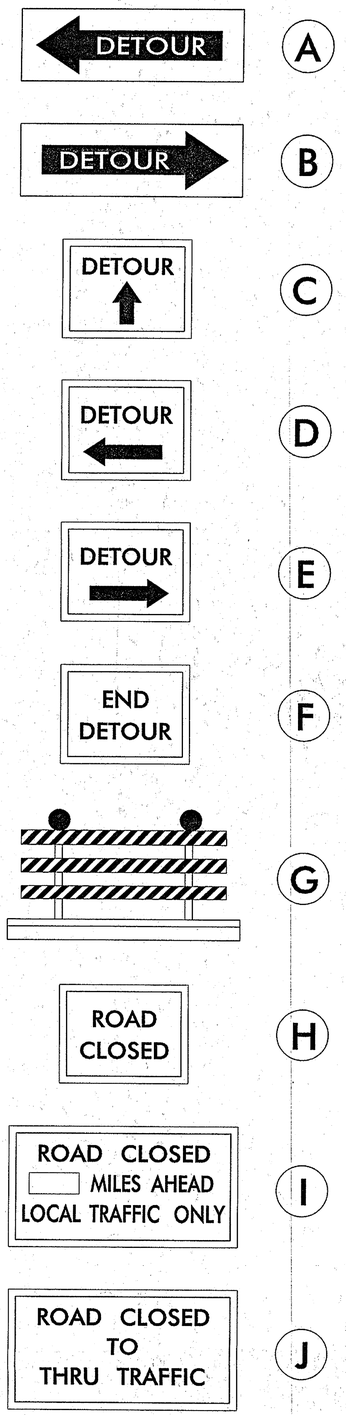
DESIGN

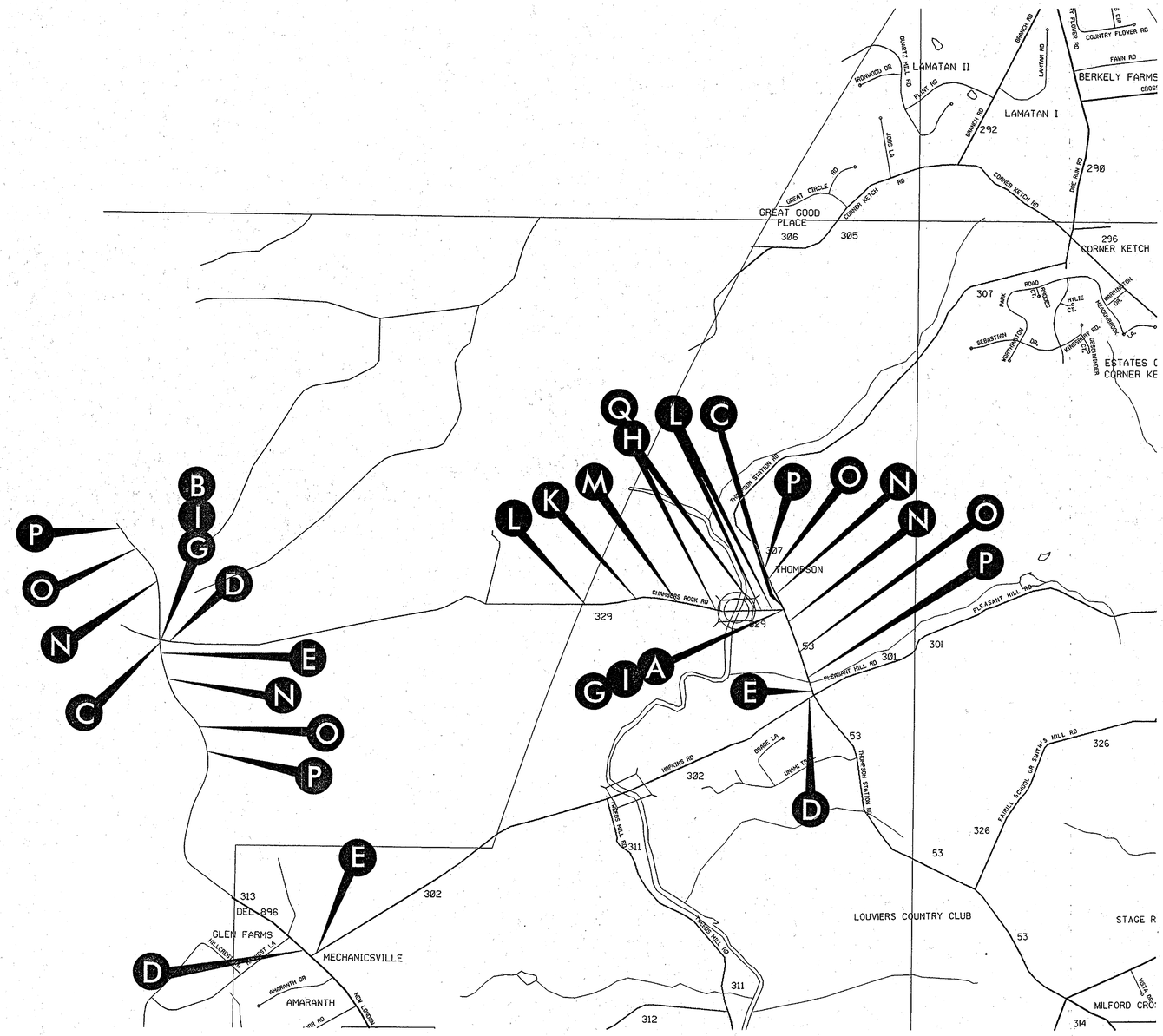
PREL. TRACING

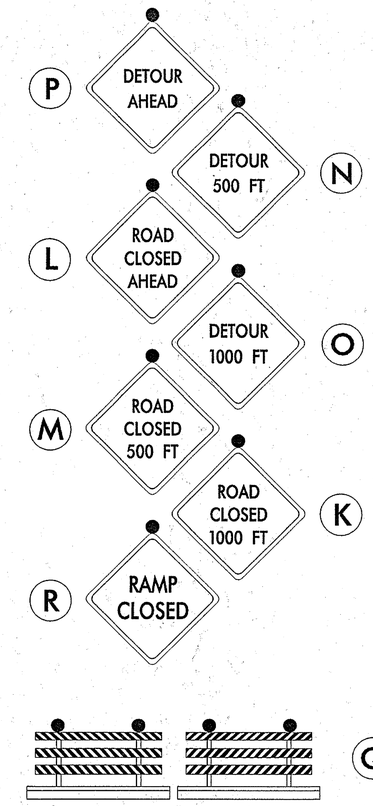
CONTRACT	COUNTY	F.A.P. NO.	SHEET	TOTAL
93-074-02	N.C.		18	25

DETOUR PLAN
(NOT TO SCALE)

BRIDGE 216 ON CHAMBERS ROCK RD.







NOTES

1. SIGNS C,D,E, & F SHALL BE INSTALLED AND MAINTAINED BY TRAFFIC FORCES.
2. THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN "TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY AND EMERGENCY OPERATIONS" MANUAL, FOR LIGHTS, BARRICADES AND SIGNS. (AS PER LATEST REVISION)
3. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF THE DELAWARE TRAFFIC CONTROL MANUAL WILL PREVAIL.
4. SIGNS H THROUGH M, THE WORD (ROAD) SHOULD BE CHANGE TO R/R OR BRIDGE WHERE APPLICABLE.

RECOMMENDED 14 MAY 19__ Christopher A. Lawson

RECOMMENDED _____ 19__ _____

RECOMMENDED _____ 19__ _____

Joseph Vattilana
APPROVED CHIEF SAFETY INSPECTOR — DATE 12 MAY 93

APPROVED TRAFFIC ENGINEER — DATE

PREL. TRACING Christopher Lawson DESIGN Rick Austin

SCALE	CONTRACT	COUNTY	F.A.P. NO.	SHEET	TOTAL SHEETS
1" = 5'-0"	93-074-02	N. C.		19	25

REPLACEMENT OF BRIDGE # 2
16

BORINGS SHEET

B-1

STATION: 6+79,
OFFSET: 6' LT. CENTERLINE
DATE: 05/03/93

SAMPLE NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	REMARKS	CLASS
1	1.0	1	No Sample Recovery		---------
		1			
	2.5	2			
2	3.0	3	Saturated medium dense brown silty fine to		A-2-4 (0)
		3	coarse sand w/trace of gravel.		
	4.5	9			
			18" Recovery		
3	8.0	19	Moist very dense brown coarse sandy gravel	Water @ 6.5'	A-1-a (0)
		30	w/some fine sand, trace of silt.		
	9.5	34			
			10" Recovery		
Run #1	16.0	Core Drilling	Rock (Badly Weathered Fractured Schist) 30" Recovery = 100.0% RQD = 53% (Fair)	RQD = Rock Quality Designation	---------
Run #2	18.5	Core Drilling	Rock (Weathered Schist) 58" Recovery = 96.7% RQD = 50% (Fair)		---------
Run #3	23.5	Core Drilling	Rock (Weathered Schist) 60" Recovery = 100.0% RQD = 38% (Poor)		---------
Run #4	28.5	Core Drilling	Rock (Weathered Schist) 60" Recovery = 100.0% RQD = 60% (Fair)		---------
		(END)			

B-2

STATION: 7+53,
OFFSET: 7' RT. CENTERLINE
DATE: 05/04/93

SAMPLE NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	REMARKS	CLASS
1	1.0	1	Saturated soft grayish brown fine sandy silt		A-4 (0)
		1	w/some coarse sand, trace of gravel.		
	2.5	1			
			18" Recovery		
2	4.0	3	Saturated loose grayish brown silty fine sand		A-2-4 (0)
		4	w/some coarse sand and gravel.		
	5.5	4			
			14" Recovery		
3	7.5	5	Wet dense grayish brown fine to coarse sandy		A-1-b (0)
		15	gravel w/some silt.		
	9.0	29			
			16" Recovery		
4	12.0	100/4"	Moist very dense multicolored fine sandy	Water @ 11.0'	A-1-b (0)
	12.4		gravel w/some silt and coarse sand.		
			5" Recovery		
Run #1	14.5	Core Drilling	Rock (Weathered Badly Fractured Schist) 24" Recovery = 57.1% RQD = 0 (Very Poor)	RQD = Rock Quality Designation	---------
Run #2	18.0	Core Drilling	Rock (Weathered Badly Fractured Schist) 60" Recovery = 100.0% RQD = 22% (Very Poor)		---------
Run #3	23.0	Core Drilling	Rock (Weathered Badly Fractured Schist) 60" Recovery = 100.0% RQD = 48% (Poor)		---------
Run #4	28.0	Core Drilling	Rock (Weathered Schist) 60" Recovery = 100.0% RQD = 38% (Poor)		---------
Run #5	33.0	Core Drilling	Rock (Weathered Schist) 18" Recovery = 100.0% RQD = 78% (Good)		---------
	34.5				
		(END)			

B-3

STATION:
OFFSET:
DATE:

SAMPLE NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	REMARKS	CLASS

NOTES:

1. BORING LOGS MADE BY DELAWARE DIVISION OF HIGHWAYS AS A RESULT OF THEIR SUBSURFACE EXPLORATIONS FROM NOVEMBER 1979 TO FEBRUARY 1980.
2. LOCATIONS OF BORINGS REFERENCED TO ROUTE 273 SURVEY BASELINE.
3. CASING: 3¼INCH HOLLOW AUGER. (WA DENOTES ADVANCING CASING BY WASHING AHEAD)
4. SOIL SAMPLING: 24 INCH SPLIT SPOON SAMPLER, DRIVEN WITH A 140 LB. HAMMER FALLING 30 INCHES.

REFERENCE:

1. FOR HAND AUGER BORING DESCRIPTION, SEE HIGHWAY PROFILE.

THE INFORMATION SHOWN ON THIS SHEET IS BASED ON LIMITED INVESTIGATIONS, AND IS IN NO WAY WARRENTED TO INDICATE THE TRUE CONDITIONS WHICH WILL BE ENCOUNTERED DURING CONSTRUCTION.

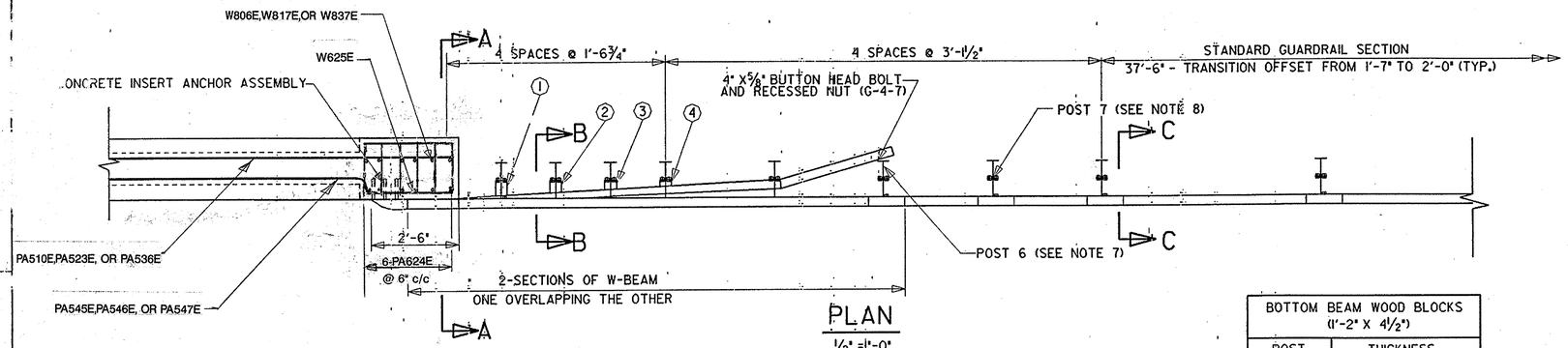
REVISIONS

PREL. TRACING ____ DESIGN ____ CHKD. ____

Fri Jun 11 15:03:41 1993 SYB CDABSON zfa2:plotlr-andy.prf:4

BR.I-216	CONTRACT	COUNTY	F.A.P. NO.	SHEET NO	TOTAL SHTS.
	93-074-02	N.C.	N/A	20	25

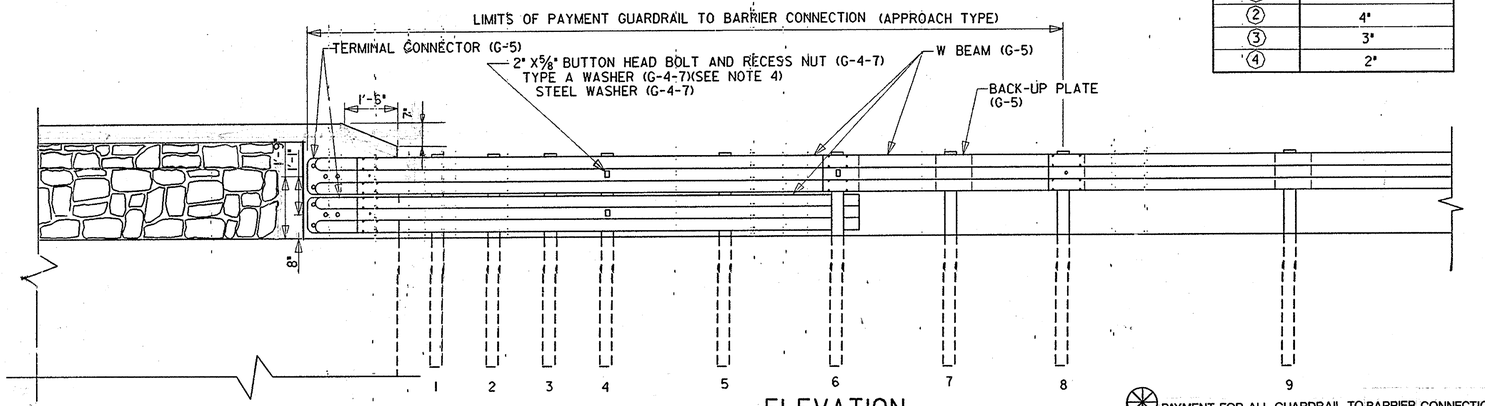
GUARDRAIL TO BARRIER CONNECTION (APPROACH TYPE)



PLAN

½" =1'-0"

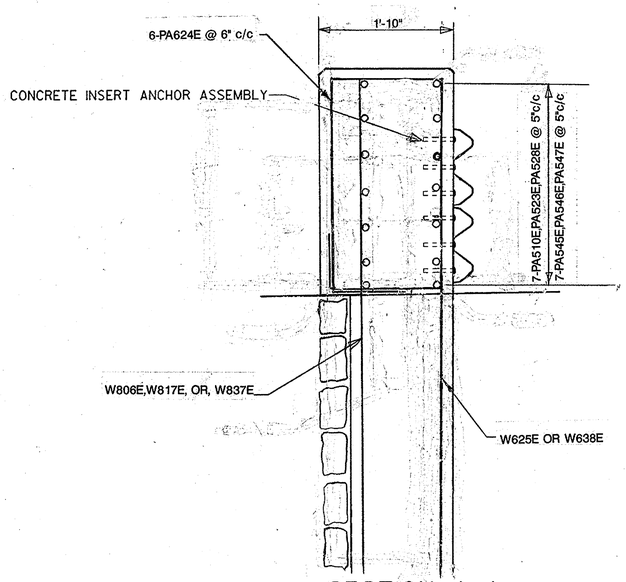
BOTTOM BEAM WOOD BLOCKS (1'-2" X 4½")	
POST	THICKNESS
1	5"
2	4"
3	3"
4	2"



ELEVATION

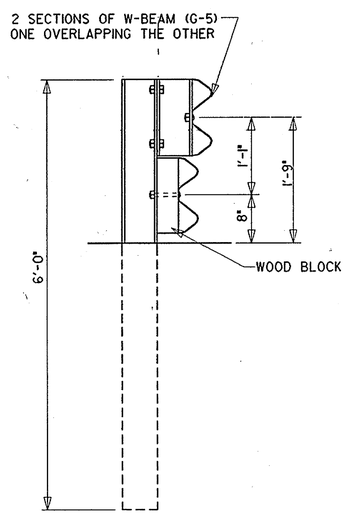
½" =1'-0"

PAYMENT FOR ALL GUARDRAIL TO BARRIER CONNECTIONS (APPROACH TYPE) SHALL BE PAID UNDER ITEM NO. 725000.



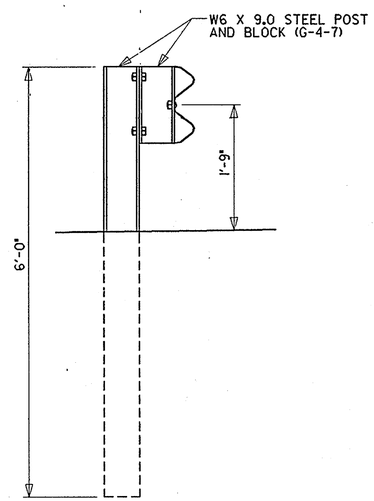
SECTION A-A

N.T.S.



SECTION B-B

1"=1'-0"



SECTION C-C

1"=1'-0"

NOTES:

1. REFERENCES ARE MADE TO STANDARD SHEETS WHERE APPLICABLE.

2. WIRES FOR CONCRETE INSERTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A610, GRADE 1030 AND HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

3. FERRULES FOR CONCRETE INSERTS SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169 (ASTM A108), GRADE 12L14. INSERTS SHALL BE TAPPED TO THE DIMENSIONAL REQUIREMENTS SPECIFIED IN AASHTO M291 (ASTM A563) FOR NUTS RECEIVING POLYESTER COATED BOLTS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 AND SHALL BE THREADED FULL LENGTH. WASHERS SHALL BE MADE OF STEEL AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF ANSI B27.2 TYPE A PLAIN WASHERS.

4. USE OF TYPE A WASHERS IS OPTIONAL.

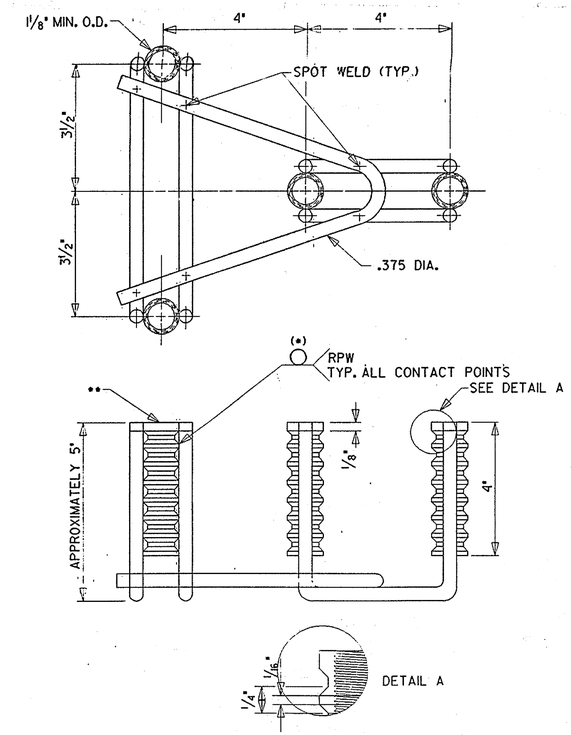
5. BOTTOM BEAM BLOCKS ARE OFFSET DRILLED TO SIT SQUARELY ON THE POST FLANGE. BLOCKS ARE ATTACHED WITH ⅝" CARRIAGE BOLTS

6. THE RUBRAIL MAY BE SHOP BENT IN THE LAST THREE FEET TO FACILITATE INSTALLATION.

7. POSTS 1, 2, 3, 4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER BEAM.

8. AT POST 7 BACK-UP PLATE BOLTED TO BLOCK ONLY.

9. ALL W-BEAM SECTIONS, POSTS, AND BLOCKS, BACK-UP PLATES, TERMINAL CONNECTOR, AND HARDWARE FOR THE GUARDRAIL TO BARRIER CONNECTION (APPROACH TYPE) SHALL BE FUSION BONDED POLYESTER COATED. COATING SHALL CONFORM TO SECTION 605580.



• EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.
•• THREADED STEEL INSERT WITH SOLID BOTTOM TAPPED TO A MINIMUM THREADED DEPTH OF 2½" FOR USE WITH ⅛" - 9 X 2½" GALVANIZED H.S. HEX BOLT AND A ⅝" I.D., 2¼" O.D., 3/32" THK., TYPE A PLAIN WASHER.
FOUR BOLTS AND FOUR WASHERS TO BE PROVIDED WITH EACH ASSEMBLY.

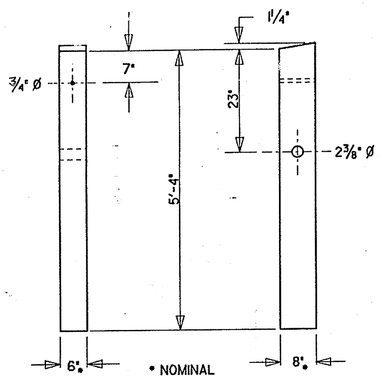
CONCRETE INSERT ANCHOR ASSEMBLY

N.T.S.

DESIGN CHECKED

BR. I-216	CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
	93-074-02	N.C.	N/A	21	25

BREAKAWAY CABLE TERMINAL ASSEMBLY



TIMBER BCT TERMINAL POST

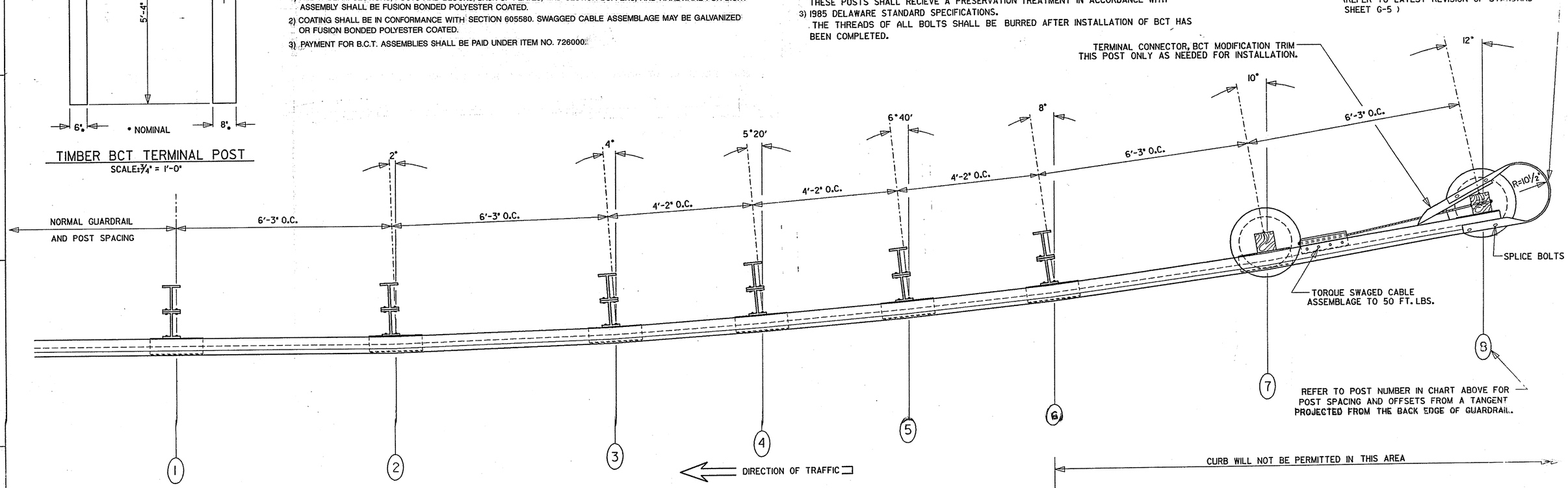
SCALE: ¾" = 1'-0"

POST NO.	1	2	3	4	5	6	7	8
TANGENT DISTANCE	0'-0"	6'-3"	12'-5⅞"	16'-7 11/16"	20'-9 7/16"	24'-11"	31'-1"	37'-2⅝"
OFFSET	0'-0"	0'-1⅜"	0'-5½"	0'-9⅝"	1'-3"	1'-9½"	2'-9½"	4'-0"

1) ALL W-BEAM SECTIONS, POSTS AND BLOCKS, BACK-UP PLATES, END SECTION BUFFERS, AND HARDWARE FOR B.C.T. ASSEMBLY SHALL BE FUSION BONDED POLYESTER COATED.
2) COATING SHALL BE IN CONFORMANCE WITH SECTION 605580. SWAGGED CABLE ASSEMBLAGE MAY BE GALVANIZED OR FUSION BONDED POLYESTER COATED.
3) PAYMENT FOR B.C.T. ASSEMBLIES SHALL BE PAID UNDER ITEM NO. 726000.

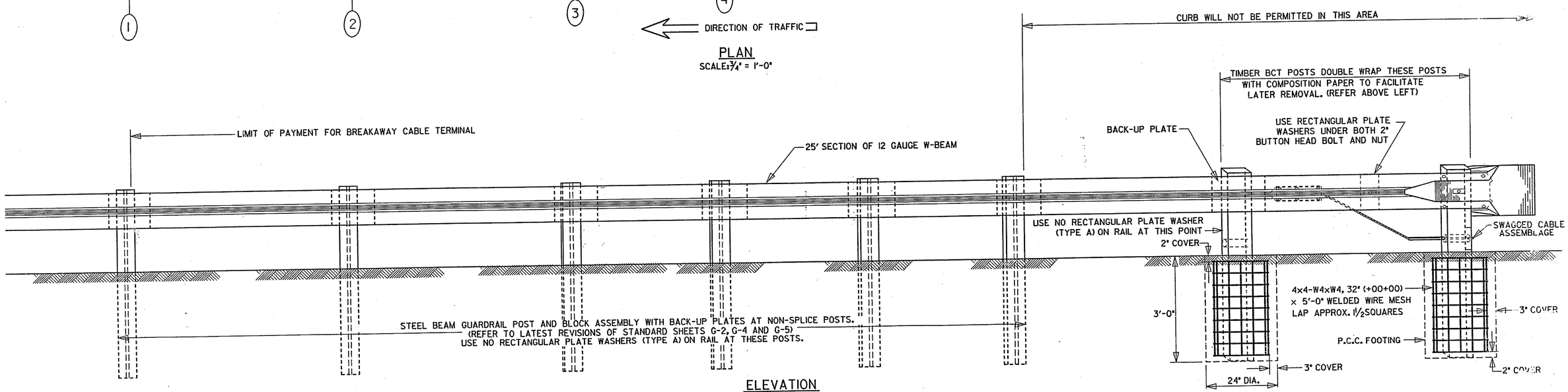
NOTES:

1). THE OFFSET DISTANCES HEREON SHOWN ARE NECESSARY FOR THE BREAKAWAY CABLE TERMINAL TO PERFORM AS INTENDED AND SHALL NOT BE DEVIATED FROM.
2). TIMBER BCT TERMINAL POSTS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE. POSTS SHALL BE ROUGH SAWN OR S4S WITH NOMINAL DIMENSIONS HEREON INDICATED. THESE POSTS SHALL RECIEVE A PRESERVATION TREATMENT IN ACCORDANCE WITH
3) 1985 DELAWARE STANDARD SPECIFICATIONS. THE THREADS OF ALL BOLTS SHALL BE BURRED AFTER INSTALLATION OF BCT HAS BEEN COMPLETED.



PLAN

SCALE: ¾" = 1'-0"



ELEVATION

SCALE: ¾" = 1'-0"

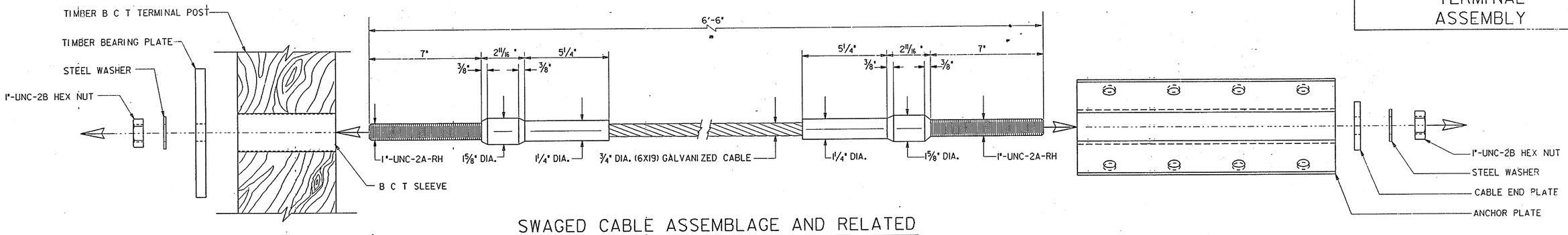
REVISIONS

PRELIMINARY PLAN NOT FOR CONSTRUCTION

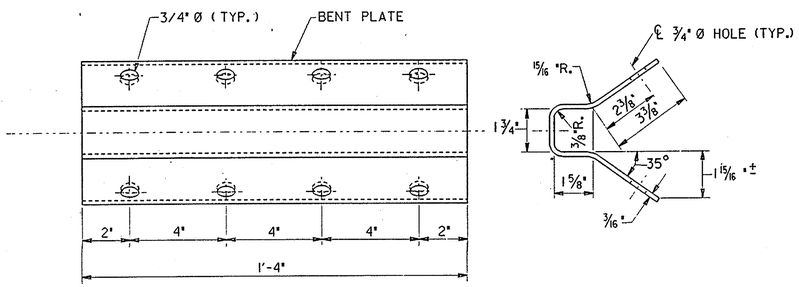
2/23/89 DESIGN KLR CHECKED MAA

BR I-216	CONTRACT	COUNTY	F.A.P. NO.	SHEET NO	TOTAL SHTS.
	93-074-02	N.C.	N/A	22	25

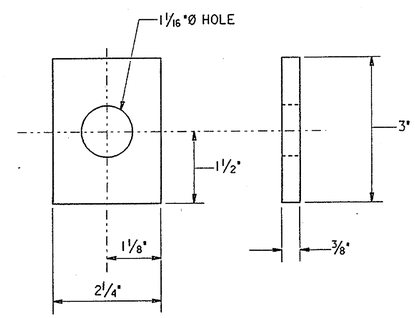
BREAKWAY CABLE TERMINAL ASSEMBLY



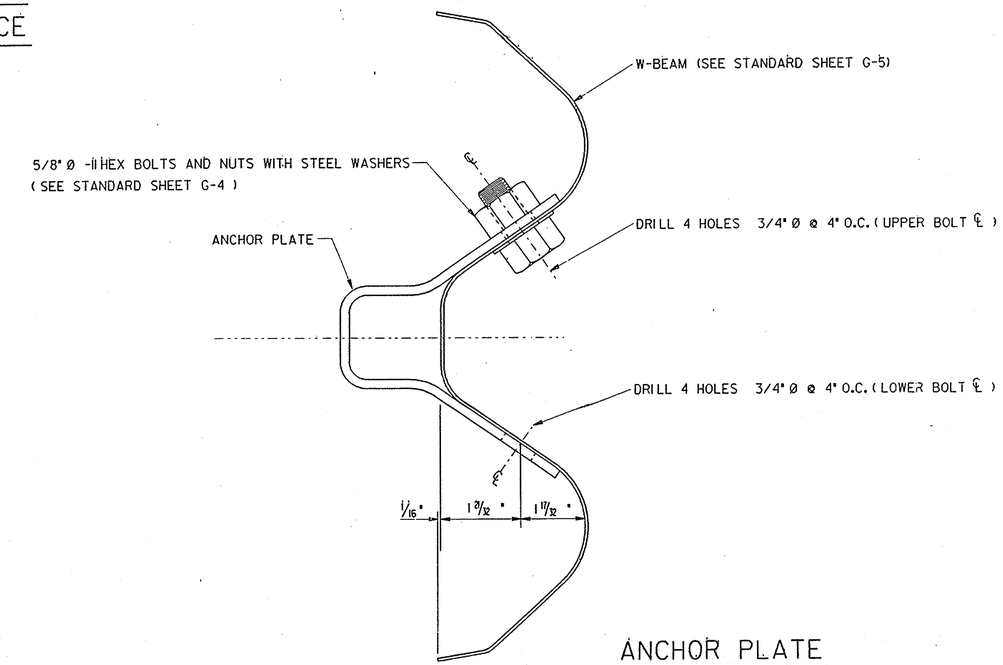
SWAGED CABLE ASSEMBLAGE AND RELATED FASTENER HARDWARE ASSEMBLY SEQUENCE



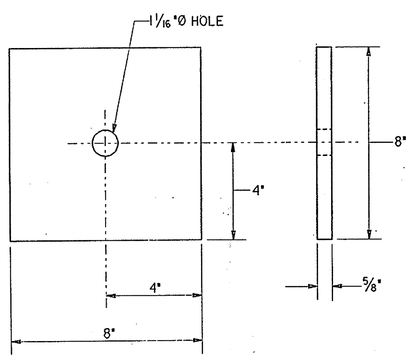
ANCHOR PLATE



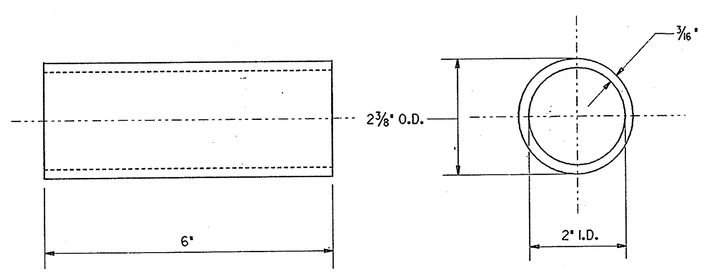
CABLE END PLATE



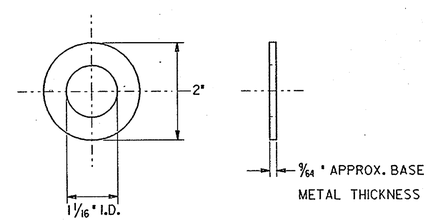
ANCHOR PLATE TO W-BEAM CONNECTION DETAIL



TIMBER BEARING PLATE



B C T SLEEVE



STEEL WASHER

NOTE:
DWG. NOT TO SCALE

REVISIONS

DESIGN ____ CHECKED ____

PRELIMINARY TRACING