

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524WM	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
8.U492109		PE, R/W,	
8.U492111		CONST.	

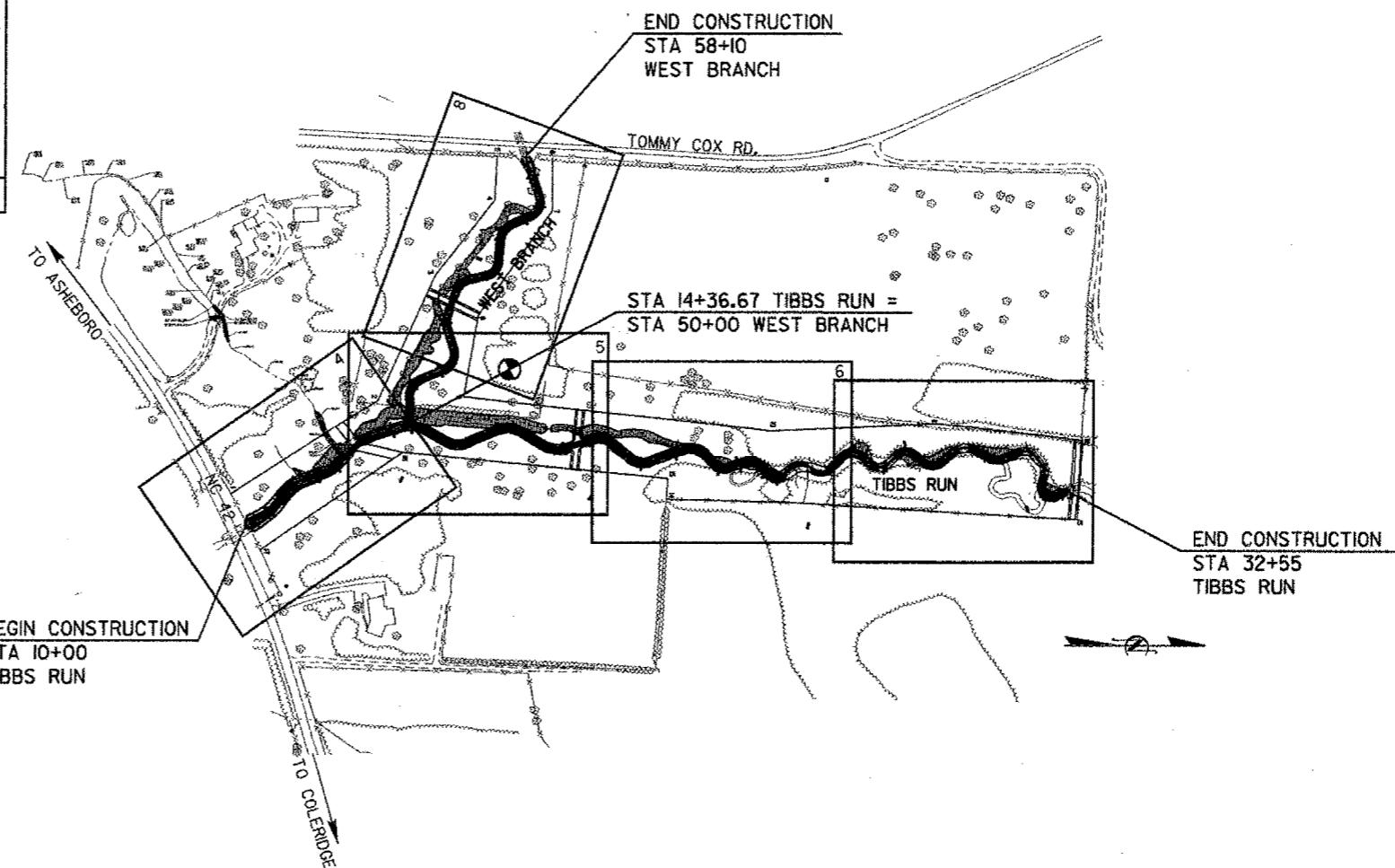
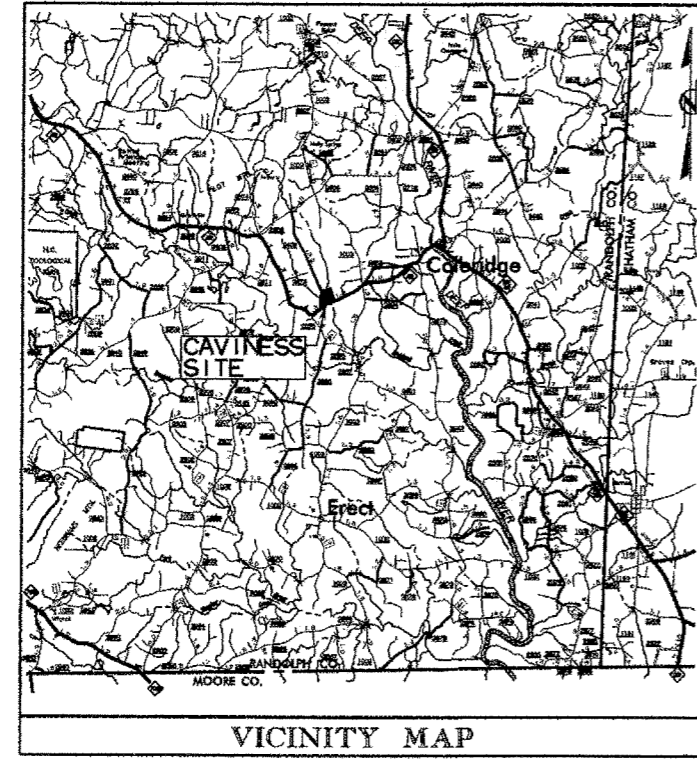
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

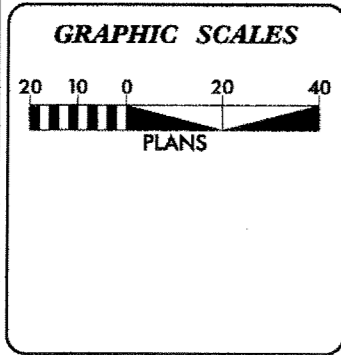
LOCATION: CAVINESS MITIGATION SITE NORTH
OF NC 42, WEST OF COLERIDGE

TYPE OF WORK: STREAM RESTORATION,
GRADING AND DRAINAGE

See Sheet 1-A For Conventional Symbols



N. C. DOT CONTACT: BYRON MOORE



DESIGN DATA

STREAM TYPE:	E4
WIDTH/DEPTH RATIO:	10:1
BANKFULL VELOCITY:	3.4fps
BANKFULL DISCHARGE:	132
ENTRENCHMENT RATIO:	6-12
RADIUS OF CURVE RATIO:	2-3
SINUOSITY:	1.2
BED MATERIAL D ₅₀ :	6mm
BED MATERIAL D ₈₄ :	12mm

PROJECT LENGTH

STREAM LENGTH =	0.58 MILES
CONSERVATION EASEMENT =	9.4 ACRES

Prepared for The North Carolina Department of Transportation
in the office of:
HSM
1305 Napa Dr., Suite 303
Raleigh, NC, 27609
(919) 878-5230

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: _____

LETTING DATE: _____

S. G. GINN, P.E.
PROJECT ENGINEER

HYDRAULICS ENGINEER

7-31-03
P.E.

SIGNATURE: _____

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

P.E.

STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED _____
DIVISION ADMINISTRATOR

DATE _____

PROJECT: 8.U492111 U-2524WM

85/88/54

INDEX OF SHEETS

SHEET NO.	SHEET
1	TITLE SHEET
1A	GENERAL NOTES
1B	CONVENTIONAL SYMBOLS
2	SITE PLAN
2A THRU 2D	TYPICAL SECTIONS AND MISCELLANEOUS DETAILS
3	QUANTITIES
4 THRU 8	PLAN SHEETS
9-II	PROFILE SHEETS
EC-1 THRU EC-2	EROSION CONTROL PLAN
X-1 THRU X-3	CROSS SECTIONS

GENERAL NOTES:

1. THE ROADWAY STANDARDS THAT ARE REFERENCED HEREIN SHALL BE CONSIDERED A PART OF THESE PLANS AS THEY APPEAR IN 'ROADWAY STANDARD DRAWINGS' - HIGHWAY DESIGN BRANCH - NORTH CAROLINA DEPARTMENT OF TRANSPORTATION - RALEIGH, NC, DATED JANUARY 2002 AND THE LATEST REVISION THERETO.
2. ALL CONSERVATION EASEMENT CORNER MARKERS HAVE BEEN PLACED BY OTHERS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION AND EXISTENCE OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
4. CLEARING AND CRUBBING SHALL BE LIMITED TO THAT WHICH IS NECESSARY FOR CONSTRUCTION OF THE CHANNEL AND SHALL BE APPROVED BY THE ENGINEER. SELECT TREE REMOVAL OF CERTAIN TREES OUTSIDE THE CHANNEL BANKS SHALL BE DIRECTED BY THE ENGINEER.
5. DRAINAGE STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL APPLICABLE NCDOT ROADWAY STANDARD DRAWINGS.
6. CONSTRUCTION SHALL BEGIN AT THE UPSTREAM END OF EACH CHANNEL AND PROCEED DOWNSTREAM UNLESS APPROVED OTHERWISE BY THE ENGINEER.
7. CONSTRUCTION OF THE PROPOSED CHANNEL SHALL CONSIST OF EXCAVATION OF CHANNEL SECTION AT THE PROPOSED LOCATION AS INDICATED ON THE PLANS.
8. MATERIAL EXCAVATED FROM THE PROPOSED CHANNEL AND FLOODPLAIN SHALL BE UTILIZED TO BACKFILL THE EXISTING CHANNEL.
9. BED MATERIAL OF THE RIFFLE SHALL CONSIST OF NO. 67 COARSE AGGREGATE BLENDED WITH BED MATERIAL EXCAVATED FROM THE EXISTING CHANNEL.
10. WHERE EXISTING CHANNEL IS NOTED ON PLAN SHEETS TO REMAIN, GRADING OF BED AND BANKS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER 'LUMP SUM GRADING'.
11. CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE AREA INSIDE THE CONSERVATION EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT.
12. THE CONTRACTOR SHALL INSURE THAT THE AREAS DESIGNATED AS WETLANDS ARE NOT IMPACTED BY THE CONSTRUCTION OPERATIONS OR CONSTRUCTION TRAFFIC.
13. WATER LINE SHALL BE 2-INCH DIAMETER BLACK POLYETHYLENE (PE 3408 SDR17) AND SHALL MEET THE REQUIREMENT SPECIFIED IN AWWA C901 AND INSTALLED IN ACCORDANCE WITH SECTION 11.D.4 OF AWWA C901. WATER LINE SHALL BE PLACED A MINIMUM OF 3 FEET BELOW THE NATURAL GROUND SURFACE AND SHALL EXTEND A MINIMUM OF 10 FEET BEYOND THE CONSERVATION EASEMENT BOUNDARY.
14. A 48' WOVEN WIRE FENCE HAS BEEN CONSTRUCTED ALONG THE CONSERVATION EASEMENT BOUNDARY BY THE PROPERTY OWNER. PORTIONS OF THIS FENCE MAY BE REMOVED BY THE CONTRACTOR TO FACILITATE CONSTRUCTION. APPROVAL SHALL BE OBTAINED FROM THE ENGINEER PRIOR TO REMOVAL OF ANY SECTION OF FENCE. A TEMPORARY FENCE OF 4-STRAND BARBED WIRE SHALL BE CONSTRUCTED PRIOR TO REMOVAL OF EXISTING FENCE TO PREVENT CATTLE FROM ENTERING THE CONSERVATION EASEMENT. THE 48' WOVEN WIRE FENCE SHALL BE REPLACED AND REINSTALLED ON THE CONSERVATION EASEMENT BOUNDARY AFTER COMPLETION OF THE CHANNEL CONSTRUCTION.

STD. NO.
840.31
840.32
840.54
866.04

TITLE
CONCRETE JUNCTION BOX
BRICK JUNCTION BOX
MANHOLE FRAME AND COVER
BARBED WIRE FENCE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Edge of Pavement	-----
Curb	-----
Prop. Slope Stakes Cut	-----C-----
Prop. Slope Stakes Fill	-----F-----
Prop. Woven Wire Fence	-----○-----
Prop. Chain Link Fence	-----□-----
Prop. Barbed Wire Fence	-----◇-----
Prop. Wheelchair Ramp	-----WCR-----
Curb Cut for Future Wheelchair Ramp	-----CCFR-----
Exist. Guardrail	-----
Prop. Guardrail	-----
Equality Symbol	-----⊕-----
Pavement Removal	-----⊗-----

RIGHT OF WAY

Baseline Control Point	-----◆-----
Existing Right of Way Marker	-----△-----
Exist. Right of Way Line w/Marker	-----△-----
Prop. Right of Way Line with Proposed	-----▲-----
RW Marker (Iron Pin & Cap)	-----▲-----
Prop. Right of Way Line with Proposed	-----▲-----
(Concrete or Granite) RW Marker	-----▲-----
Exist. Control of Access Line	-----⊙-----
Prop. Control of Access Line	-----⊙-----
Exist. Easement Line	-----E-----
Prop. Temp. Construction Easement Line	-----E-----
Prop. Temp. Drainage Easement Line	-----TDE-----
Prop. Perm. Drainage Easement Line	-----PDE-----

HYDROLOGY

Stream or Body of Water	-----
River Basin Buffer	-----BZ-----
Flow Arrow	-----→-----
Disappearing Stream	-----
Spring	-----
Swamp Marsh	-----
Shoreline	-----
Falls, Rapids	-----
Prop Lateral, Tail, Head Ditches	-----FLW-----

STRUCTURES

MAJOR	
Bridge, Tunnel, or Box Culvert	-----CONC-----
Bridge Wing Wall, Head Wall and End Wall	-----CONC WW-----

MINOR	
Head & End Wall	-----CONC HW-----
Pipe Culvert	-----
Footbridge	-----
Drainage Boxes	-----CB-----
Paved Ditch Gutter	-----

UTILITIES

Exist. Pole	-----●-----
Exist. Power Pole	-----○-----
Prop. Power Pole	-----○-----
Exist. Telephone Pole	-----○-----
Prop. Telephone Pole	-----○-----
Exist. Joint Use Pole	-----⊕-----
Prop. Joint Use Pole	-----⊕-----
Telephone Pedestal	-----T-----
UG Telephone Cable Hand Hold	-----T-----
Cable TV Pedestal	-----C-----
UG TV Cable Hand Hold	-----C-----
UG Power Cable Hand Hold	-----P-----
Hydrant	-----H-----
Satellite Dish	-----S-----
Exist. Water Valve	-----V-----
Sewer Clean Out	-----C-----
Power Manhole	-----P-----
Telephone Booth	-----B-----
Cellular Telephone Tower	-----C-----
Water Manhole	-----W-----
Light Pole	-----L-----
H-Frame Pole	-----H-----
Power Line Tower	-----T-----
Pole with Base	-----P-----
Gas Valve	-----V-----
Gas Meter	-----M-----
Telephone Manhole	-----T-----
Power Transformer	-----P-----
Sanitary Sewer Manhole	-----S-----
Storm Sewer Manhole	-----S-----
Tank; Water, Gas, Oil	-----T-----
Water Tank With Legs	-----T-----
Traffic Signal Junction Box	-----S-----
Fiber Optic Splice Box	-----F-----
Television or Radio Tower	-----T-----
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement	-----TS-----

Recorded Water Line	-----W-----
Designated Water Line (S.U.E.*)	-----W-----
Sanitary Sewer	-----SS-----
Recorded Sanitary Sewer Force Main	-----FSS-----
Designated Sanitary Sewer Force Main(S.U.E.*)	-----FSS-----
Recorded Gas Line	-----G-----
Designated Gas Line (S.U.E.*)	-----G-----
Storm Sewer	-----S-----
Recorded Power Line	-----P-----
Designated Power Line (S.U.E.*)	-----P-----
Recorded Telephone Cable	-----T-----
Designated Telephone Cable (S.U.E.*)	-----T-----
Recorded U/G Telephone Conduit	-----TC-----
Designated U/G Telephone Conduit (S.U.E.*)	-----TC-----
Unknown Utility (S.U.E.*)	-----ZUTL-----
Recorded Television Cable	-----TV-----
Designated Television Cable (S.U.E.*)	-----TV-----
Recorded Fiber Optics Cable	-----FO-----
Designated Fiber Optics Cable (S.U.E.*)	-----FO-----
Exist. Water Meter	-----○-----
UG Test Hole (S.U.E.*)	-----⊕-----
Abandoned According to U/G Record	-----ATTUR-----
End of Information	-----E.O.I.-----

BOUNDARIES & PROPERTIES

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Property Line Symbol	-----P-----
Exist. Iron Pin	-----IP-----
Property Corner	-----C-----
Property Monument	-----M-----
Property Number	-----123-----
Parcel Number	-----6-----
Fence Line	-----X-----
Existing Wetland Boundaries	-----WW & ISBW-----
High Quality Wetland Boundary	-----HLB-----
Medium Quality Wetland Boundaries	-----MQ WLB-----
Low Quality Wetland Boundaries	-----LQ WLB-----
Proposed Wetland Boundaries	-----WLB-----
Existing Endangered Animal Boundaries	-----EAB-----
Existing Endangered Plant Boundaries	-----EPB-----

BUILDINGS & OTHER CULTURE

Buildings	-----
Foundations	-----
Area Outline	-----
Gate	-----
Gas Pump Vent or U/G Tank Cap	-----
Church	-----
School	-----
Park	-----
Cemetery	-----
Dam	-----
Sign	-----
Well	-----
Small Mine	-----
Swimming Pool	-----

TOPOGRAPHY

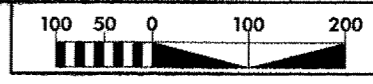
Loose Surface	-----
Hard Surface	-----
Change in Road Surface	-----
Curb	-----
Right of Way Symbol	-----R/W-----
Guard Post	-----GP-----
Paved Walk	-----
Bridge	-----
Box Culvert or Tunnel	-----
Ferry	-----
Culvert	-----
Footbridge	-----
Trail, Footpath	-----
Light House	-----

VEGETATION

Single Tree	-----
Single Shrub	-----
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----VINEYARD-----

RAILROADS

Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----



PROJECT REFERENCE NO.	SHEET NO.
U-2524WM	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1305 NAVAHO DR. SUITE 303 RALEIGH, NC 27609	

TEMPORARY CONSTRUCTION EASEMENT		
CORNER NO.	NORTHING	EASTING
1	1804552.2	682448.6
2	1804423.2	682649.9
3	1804359.7	682606.5
4	1804275.6	682451.9
5	1804196.5	682429.0
6	1803950.9	682273.5
7	1803858.0	682181.8
8	1803823.1	68217.6
9	1803912.8	682306.1
10	1804170.5	682473.5
11	180424.6	682494.7
12	1804319.0	682639.2
13	1804396.2	682692.1
14	1804344.4	682772.9
15	1804060.2	682902.2
16	1803896.2	683032.7
17	1803804.7	683036.7
18	1803816.1	683264.4
19	1803954.6	683264.9
20	1804201.7	683091.1
21	1804375.5	683061.3
22	1804463.8	684385.2
23	1804327.7	684386.8
24	1804286.9	684119.0
25	1804140.4	683936.1
26	1803965.6	683934.5
27	1803966.1	683857.6
28	1803952.0	683855.0
29	1803952.3	683983.4
30	1803833.5	683985.9
31	1804239.5	684139.8
32	1804286.8	684450.5
33	1804606.7	683480.9
34	1804551.8	682883.5
35	1804771.4	682563.7

LEGEND

- STREAM CROSSING
- PROPOSED STREAM CONSTRUCTION
- EXISTING FENCE
- PROPOSED CONSERVATION EASEMENT
- TEMP. CONSTRUCTION EASEMENT
- OVERHEAD ELECTRICAL

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR GPS STATION "CAGEL-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 682166.1330 EASTING: 1804121.9660

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997066

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CAGEL-1" TO EASEMENT CORNER 2 IS N 20°00'41" E 688.024 ft

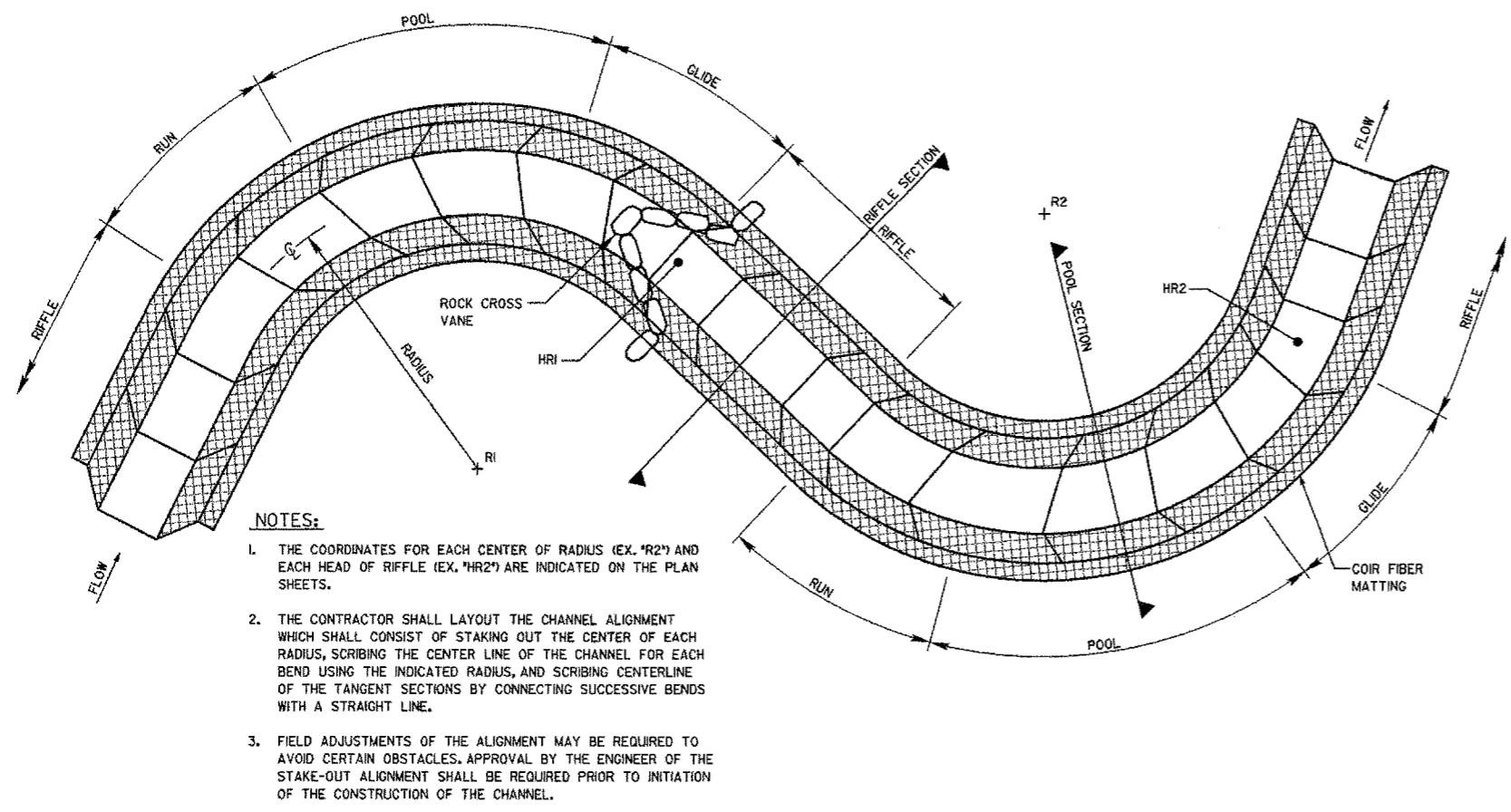
ALL LINEAR DIMENSIONS AND COORDINATES ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

SITE PLAN
CAVINNESS STREAM MITIGATION PLAN

8/17/09
 R:\Projects\2009\U-2524\Drawings\SitePlan\SitePlan.dwg
 13:02:30
 1305 NAVAHO DR. SUITE 303 RALEIGH, NC 27609
 TEL: 919.488.8888 FAX: 919.488.8889
 WWW.HSMMA.COM
 HSMMA ARCHITECTS - ENGINEERS - PLANNERS

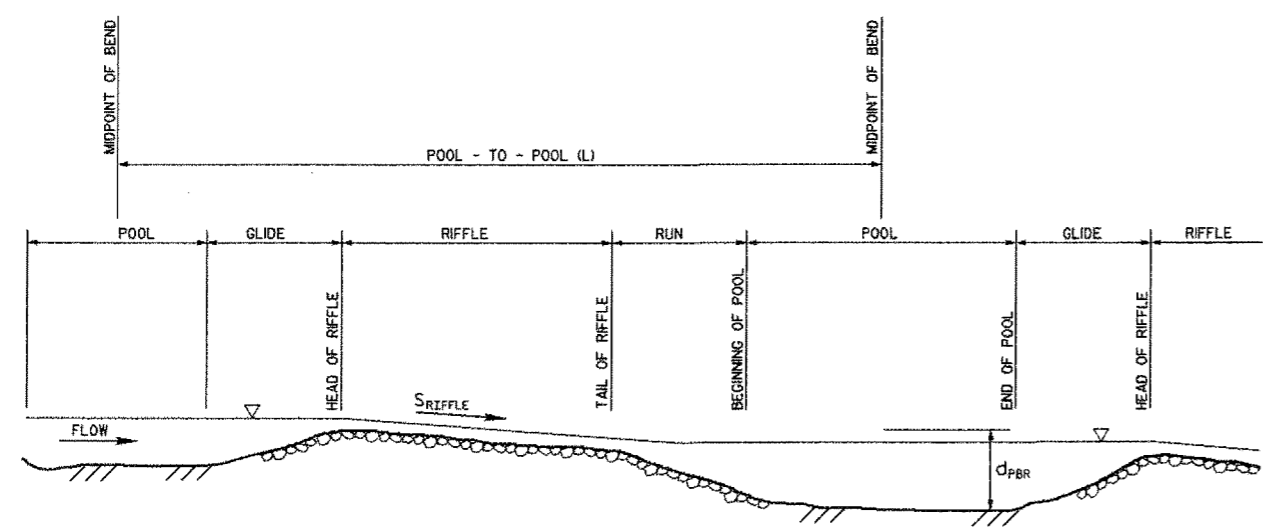
82/03/98

PROJECT REFERENCE NO. U-2524WM	SHEET NO. 2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1805 HAVANA DR. SUITE 503 RALEIGH, NC 27609	



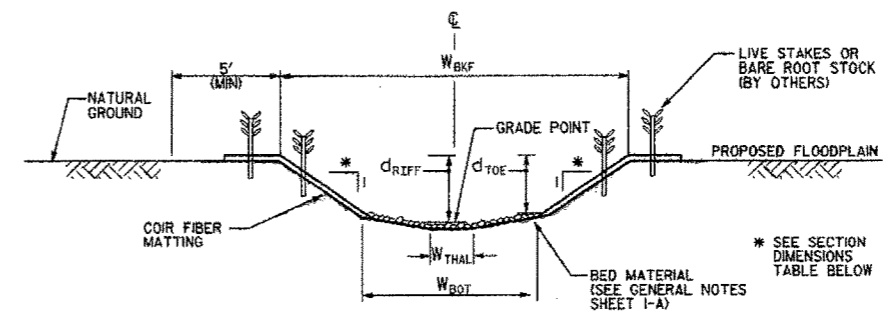
- NOTES:**
1. THE COORDINATES FOR EACH CENTER OF RADIUS (EX. "R2") AND EACH HEAD OF RIFFLE (EX. "HR2") ARE INDICATED ON THE PLAN SHEETS.
 2. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE.
 3. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES. APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.

TYPICAL PLAN
NOT TO SCALE

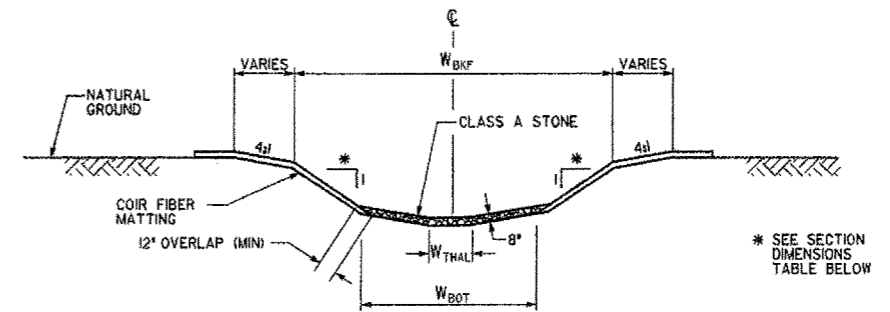


REACH	S _{RIFFLE} (2)	d _{PBR} (ft)
STA 10+00 TO STA 14+36	0.70	2.0
STA 14+36 TO STA 24+00	0.60	1.3
STA 24+00 TO STA 32+30	0.60	1.2
STA 50+00 TO STA 58+10	0.70	1.0

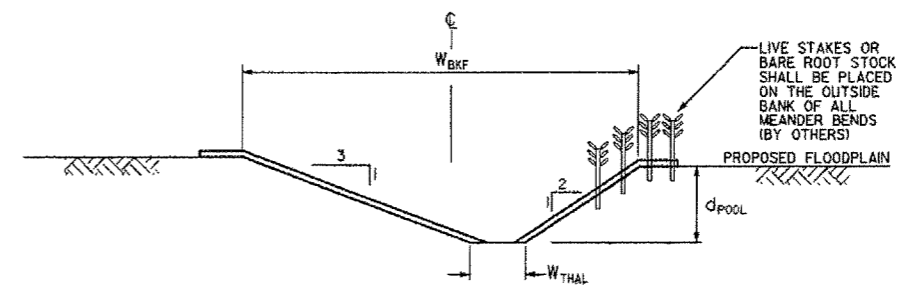
TYPICAL PROFILE
NOT TO SCALE



TYPICAL RIFFLE SECTION
NOT TO SCALE
STA. 13+40 TO STA 32+55
STA. 51+28 TO STA 56+62

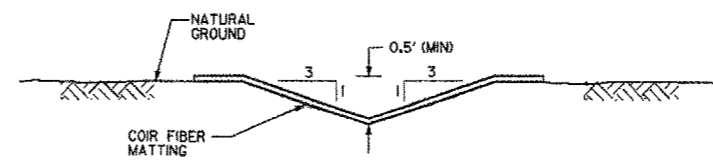


TRANSITION REACH - TYPICAL SECTION
NOT TO SCALE
STA. 10+00 TO STA 12+95
STA. 50+15 TO STA 51+28
STA. 56+62 TO STA 58+10

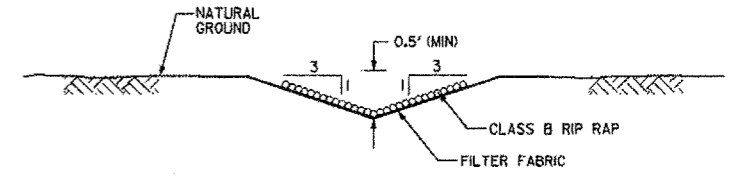


TYPICAL POOL SECTION
NOT TO SCALE

REACH	W _{BKF} (ft)	W _{BOT} (ft)	d _{RIFF} (ft)	d _{TOE} (ft)	d _{POOL} (ft)	W _{THAL} (ft)	BANK SLOPE
STA 10+00 TO STA 14+36	20.5	9.7	3.4	2.7	4.4	2.0	2
STA 14+36 TO STA 24+00	18.0	8.4	3.1	2.4	4.1	2.0	2
STA 24+00 TO STA 32+30	16.5	9.3	3.1	2.4	4.1	2.0	1.5
STA 50+00 TO STA 58+10	16.0	8.8	2.3	1.8	3.1	2.0	2

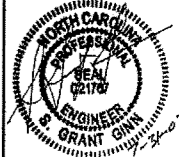


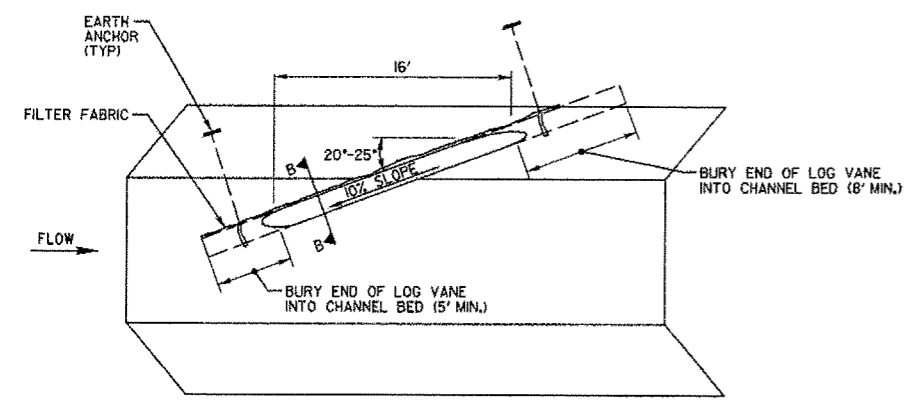
DETAIL 'V' DITCH
NOT TO SCALE
STA. 12+80 LT, 75 L.F.
STA. 13+00 LT, 30 L.F.
STA. 13+00 LT, 100 L.F.
STA. 13+00 LT, 150 L.F.



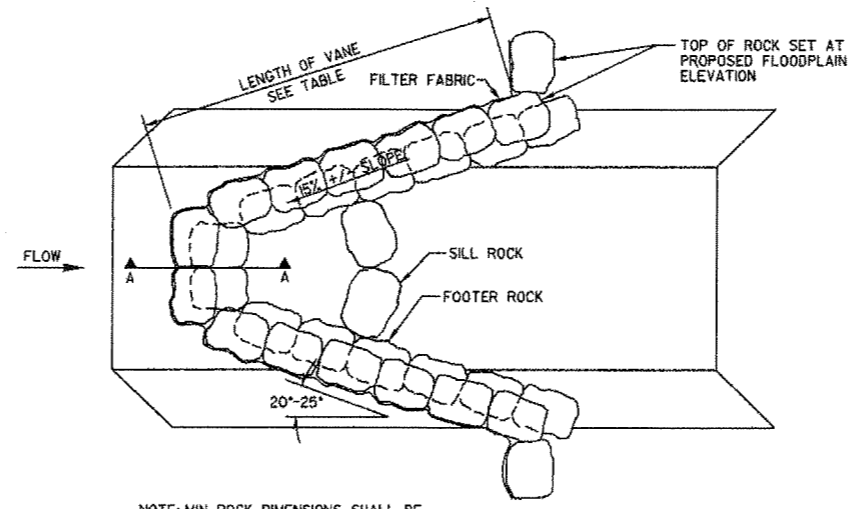
DETAIL 'V' DITCH W/ CLASS B RIP RAP
NOT TO SCALE
STA. 11+75 LT, 35 L.F.
STA. 24+75 RT, 20 L.F.

02/23/99
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 1408.DWG
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PROJECT REFERENCE NO. U-2524WM		SHEET NO. 2B	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
H S M M ARCHITECTS - ENGINEERS - PLANNERS 806 HAYARD DR. SUITE 303 RALEIGH, NC 27609			

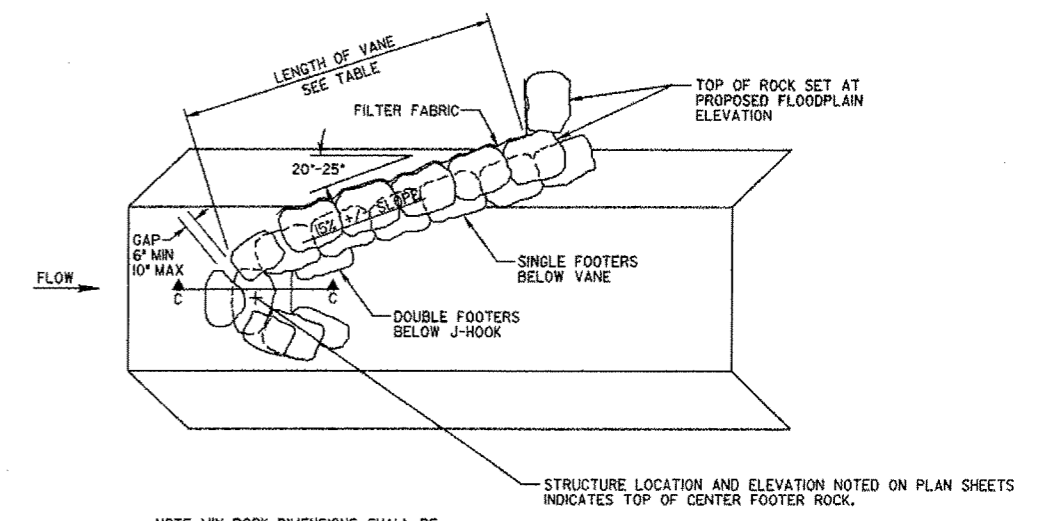


LOG VANE
NOT TO SCALE



NOTE: MIN ROCK DIMENSIONS SHALL BE 3.5' LENGTH X 2.5' WIDTH X 1.8' DEPTH.

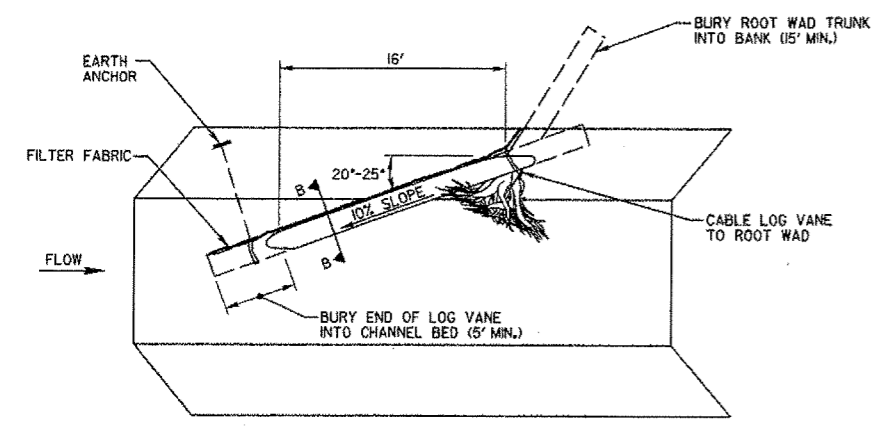
ROCK CROSS VANE - PLAN
NOT TO SCALE



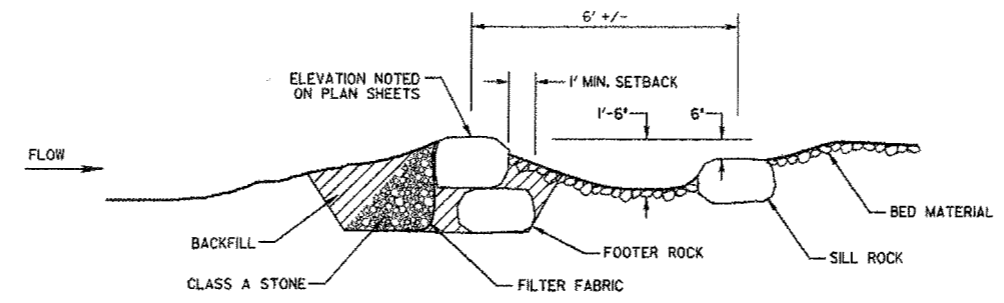
NOTE: MIN ROCK DIMENSIONS SHALL BE 3.5' LENGTH X 2.5' WIDTH X 1.8' DEPTH.

STRUCTURE LOCATION AND ELEVATION NOTED ON PLAN SHEETS INDICATES TOP OF CENTER FOOTER ROCK.

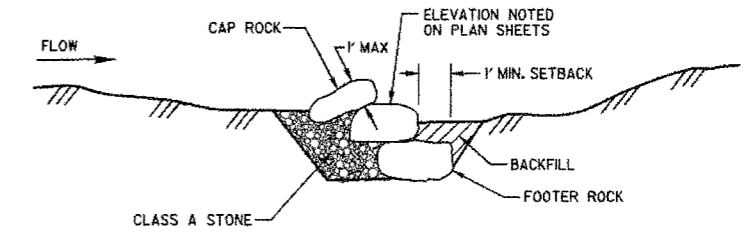
J-HOOK VANE - PLAN
NOT TO SCALE



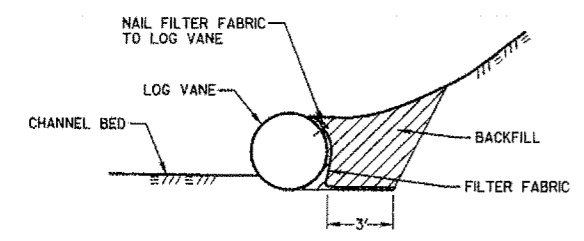
ROOT WAD - LOG VANE
NOT TO SCALE



ROCK CROSS VANE - SECTION A-A
NOT TO SCALE



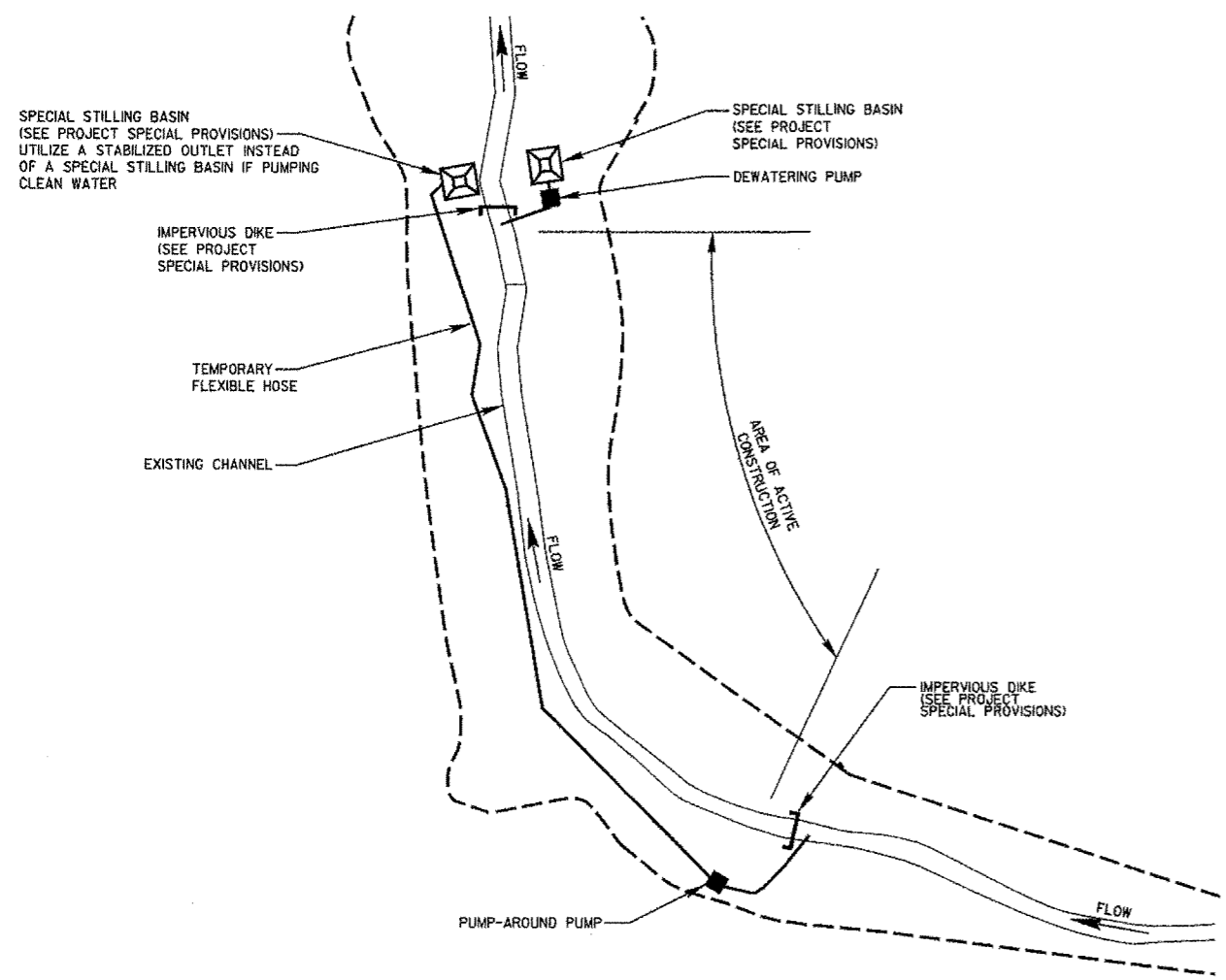
J-HOOK VANE - SECTION C-C
NOT TO SCALE



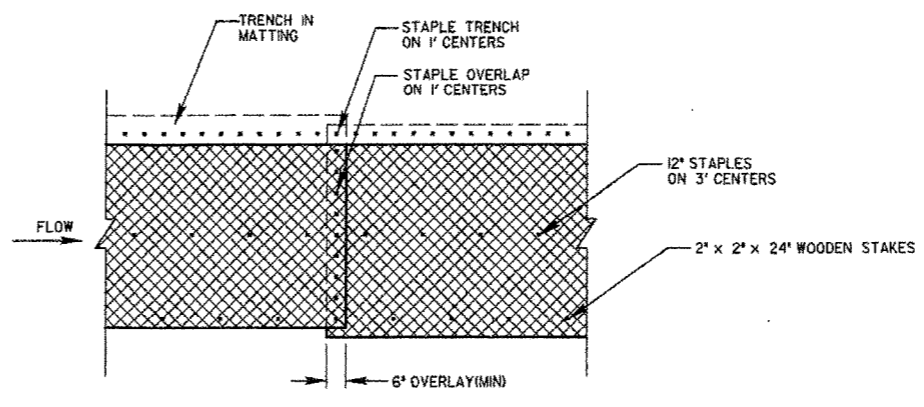
LOG VANE - SECTION B-B
NOT TO SCALE

LENGTH OF VANE	
LOCATIONS	LENGTH
STA 10+00 TO STA 14+36	20
STA 14+36 TO STA 24+00	18
STA 24+00 TO STA 32+30	15
STA 50+00 TO STA 58+00	15

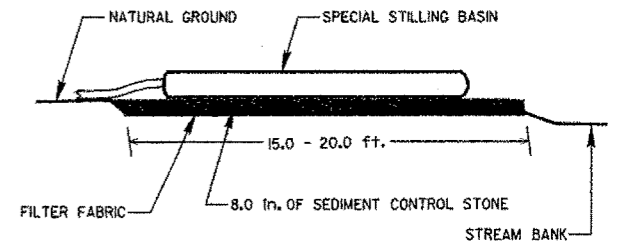
PROJECT REFERENCE NO. U-2524WM		SHEET NO. 2C	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
H S M M		ARCHITECTS - ENGINEERS - PLANNERS	
1805 NAVAHO DR. SUITE 303 RALEIGH, NC 27609			



TYPICAL PUMP-AROUND OPERATION
NOT TO SCALE



COIR FIBER MATTING DETAIL
NOT TO SCALE



NOTE: PROVIDE STABILIZED OUTLET TO STREAMBANK

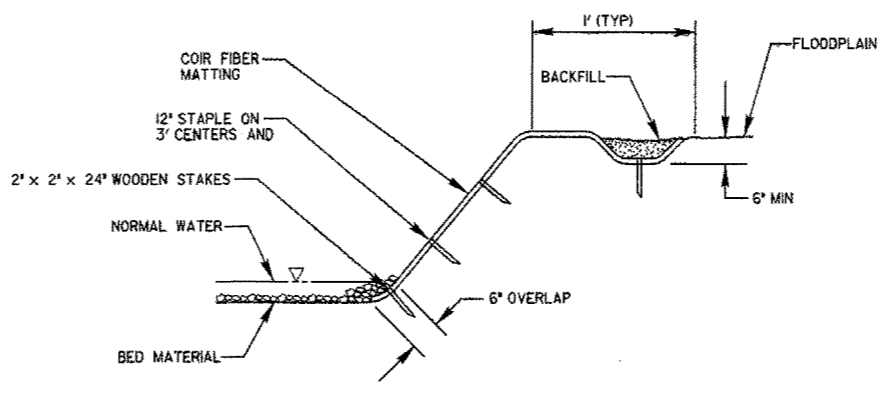
SPECIAL STILLING BASIN WITH ROCK PAD
NOT TO SCALE

NOTES:

- 1) ALL EXCAVATION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
- 2) IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY.
- 3) ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
- 4) MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
- 5) PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.

SEQUENCE OF CONSTRUCTION FOR TYPICAL PUMP-AROUND

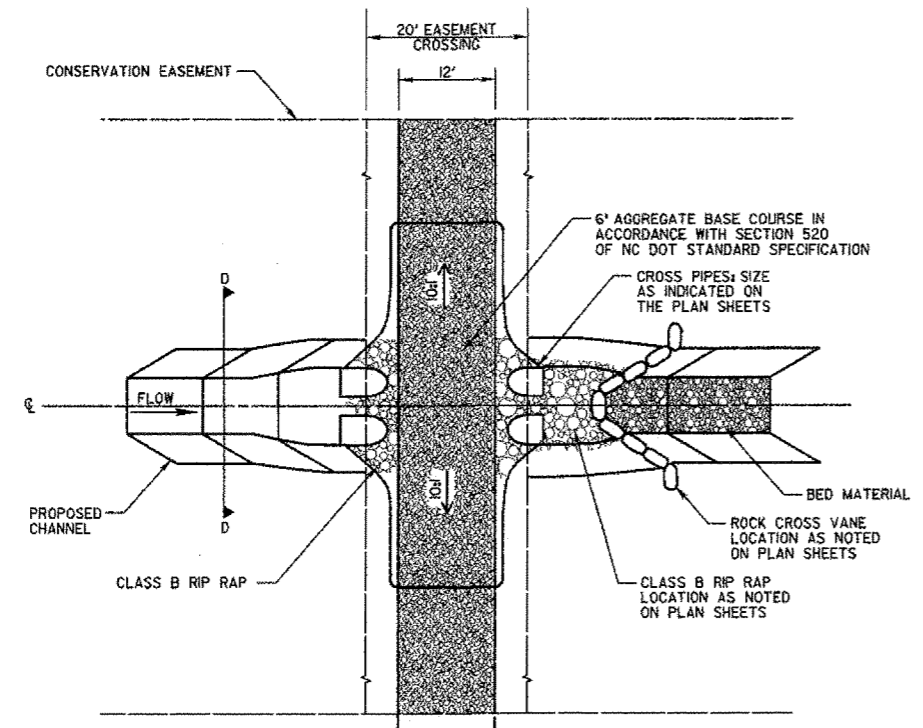
1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA.
5. PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. ALL GRADING AND STABILIZATION MUST BE COMPLETED WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES. THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S).
8. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



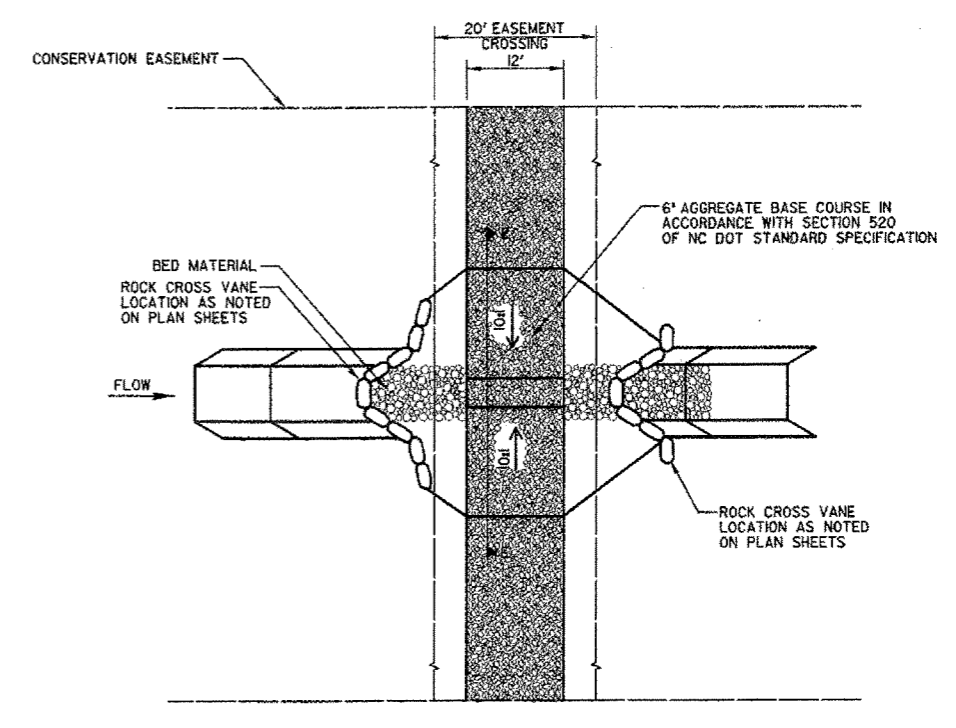
COIR FIBER MATTING SECTION
NOT TO SCALE

1805 NAVAHO DR. SUITE 303 RALEIGH, NC 27609
 TEL: 919/876-1800 FAX: 919/876-1801
 H S M M ARCHITECTS - ENGINEERS - PLANNERS
 PROJECT NO. U-2524WM SHEET NO. 2C
 DATE: 02/03/98

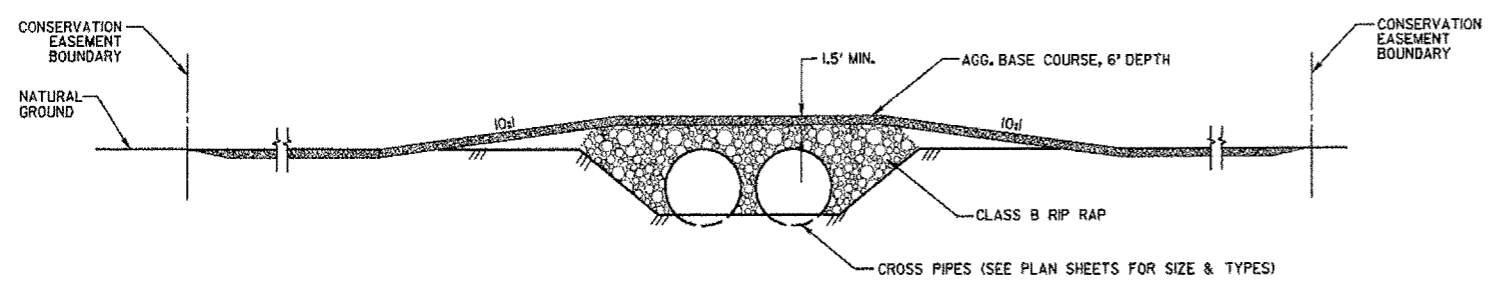
PROJECT REFERENCE NO.	SHEET NO.
U-2524WM	2D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1305 HAYWOOD DR. SUITE 303 RALEIGH, NC 27609	



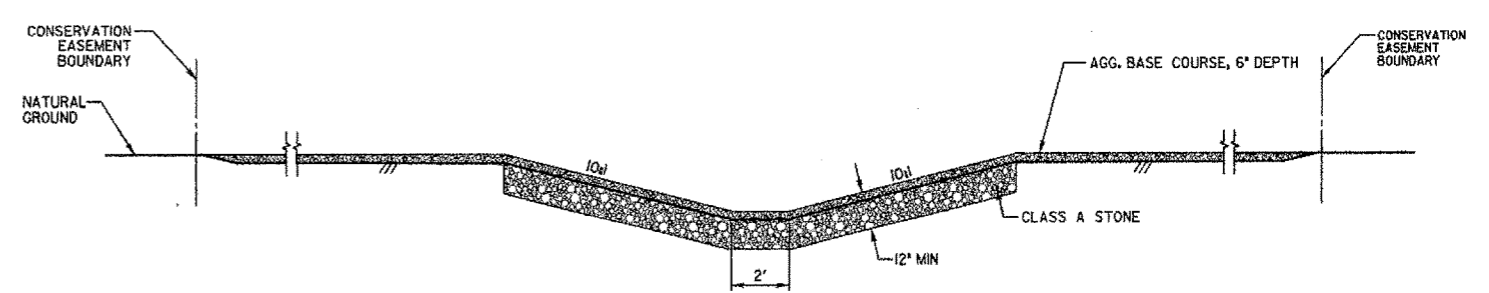
STREAM CROSSING - TYPE I
PLAN VIEW
 NOT TO SCALE



STREAM CROSSING - TYPE II
PLAN VIEW
 NOT TO SCALE



STREAM CROSSING - TYPE I
SECTION D-D
 NOT TO SCALE



STREAM CROSSING - TYPE II
SECTION E-E
 NOT TO SCALE

U:\Projects\2002\2524\Drawings\2524-2D.dwg
 10/26/02
 Grant G. Grant
 Professional Engineer
 License No. 21787
 State of North Carolina
 Expires 7-31-02

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

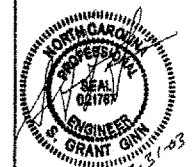
DESC	SECT	QUANTITY	UNIT	ITEM DESCRIPTION
0000100000-N	800	1	LS	Mobilization
0000400000-N	801	1	LS	Construction Surveying
0001010000-N	200	20	EA	Select Tree Removal
0043000000-N	226	LUMP SUM	LS	Grading
0050000000-N	226	6	ACR	Supplementary Clearing and Grubbing
0378000000-E	310	144	LF	24" RC Pipe Culverts, Class III
0756000000-E	310	72	LF	60" BC CS Pipe Culverts, Type B 0.138'
0908000000-E	310	72	LF	58"x 36" BCCS Pipe Arch Culv, Type B
0995000000-E	340	130	LF	Pipe Removal
1121000000-E	520	249	TON	Aggregate Base Course
2286000000-N	840	1	EA	Masonry Drainage Structures
2396000000-E	840	1	EA	Frame with Cover, Std. 840.54
3559000000-E	866	1030	LF	4-Strand Barbed Wire Fence with Posts
3565000000-E	866	4	EA	Double Gates, 48" High, 10' Wide, 20' Opening
3566000000-E	867	920	LF	Woven Wire Fence Reset
3649000000-E	876	59	TON	Plain Rip Rap, Class B
3656000000-E	876	2429	SY	Filter Fabric for Drainage
4400000000-E	110	32	SF	Work Zone Signs (Stationary)
5423000000-E	1510	150	LF	2" PE Water Pipe, SDR 17
6000000000-E	1605	1700	LF	Temporary Silt Fence
6006000000-E	1610	309	TON	Stone for Erosion Control, Class A
6009000000-E	1610	11	TON	Stone for Erosion Control, Class B
6012000000-E	1610	11	TON	Sediment Control Stone
6015000000-E	1615	13.5	ACR	Temporary Mulching
6018000000-E	1620	500	LB	Seed for Temporary Seeding
6021000000-E	1620	2	TON	Fertilizer for Temporary Seeding
6045000000-E	SP	60	LF	Temporary Pipe (36 Inch)
6070000000-N	SP	10	EA	Special Stilling Basin
6084000000-E	1660	13	ACR	Seeding and Mulching
6090000000-E	1661	150	LB	Seed for Repair Seeding
6093000000-E	1661	0.50	TON	Fertilizer for Repair Seeding
6096000000-E	1662	325	LB	Seed for Supplemental Seeding
6108000000-E	1665	3.75	TON	Fertilizer Topdressing
	SP	94	TON	Channel Bed Material
	SP	5460	SY	Coir Fiber Matting
	SP	979	TON	Natural Stone Class Boulder
	SP	500	LF	Safety Fence
	SP	9	EA	Log Vane
	SP	4	EA	Root Wad
	SP	LUMP SUM	LS	Temporary Stream Diversion

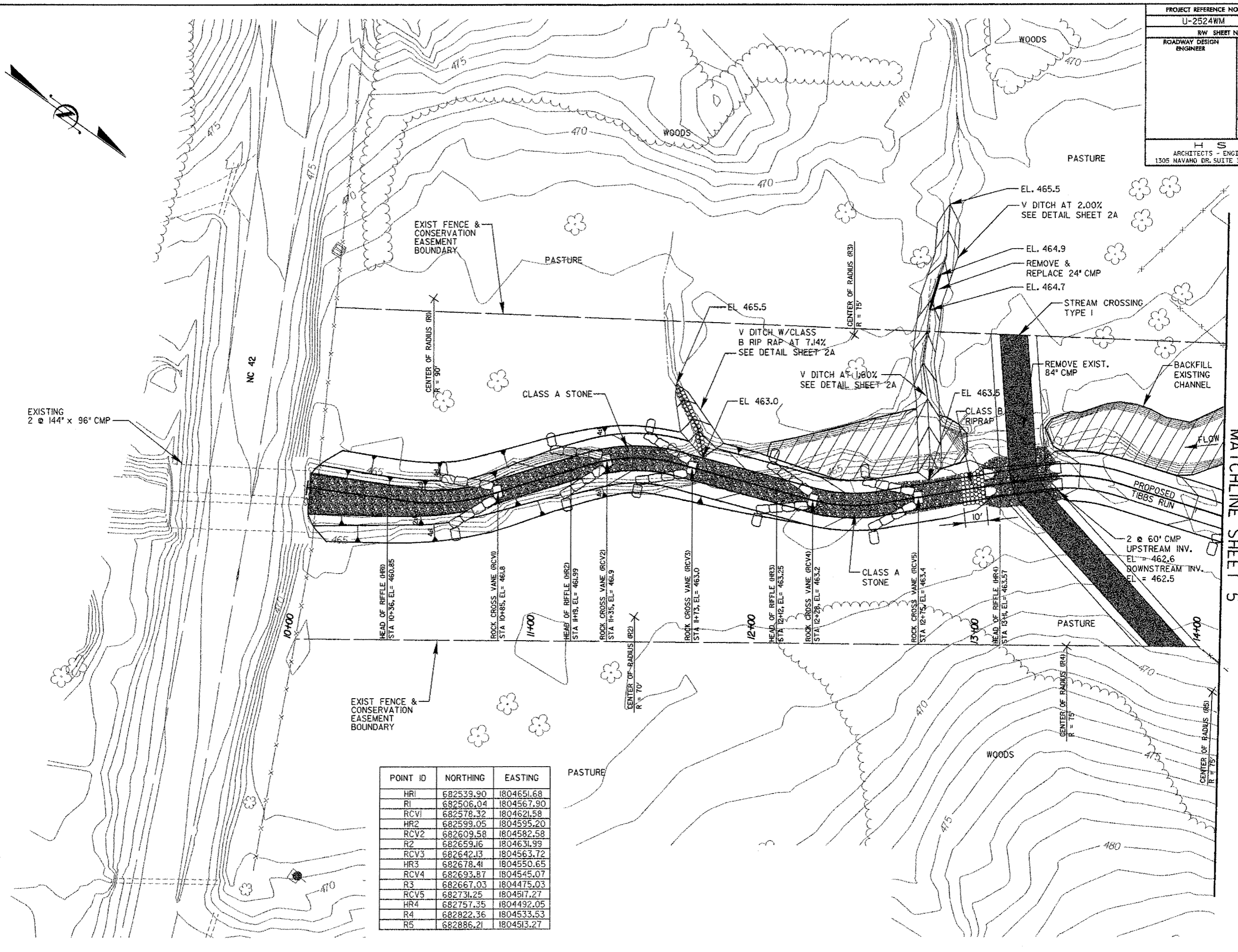
SUMMARY OF EARTHWORK IN CUBIC YARDS

TIBBS RUN				
LOCATION	UNCL. EXCAVATION	EMBT +%	BORROW	WASTE
10+00 TO 10+07	0	0	0	0
10+07 TO 11+55	67	79	12	0
11+55 TO 12+58	141	214	73	0
12+58 TO 14+19	285	376	91	0
14+19 TO 14+54	57	166	109	0
14+54 TO 16+37	259	530	271	0
16+37 TO 17+57	152	401	249	0
17+57 TO 19+29	241	314	73	0
19+29 TO 20+63	195	136	0	59
20+63 TO 22+02	128	131	3	0
22+02 TO 24+54	282	106	0	176
24+54 TO 26+40	122	36	0	86
26+40 TO 28+92	152	108	0	44
28+92 TO 30+77	85	47	0	38
30+77 TO 32+25	65	54	0	11
SUBTOTAL (SUMMARY #1)	2231	2698	881	414
WEST BRANCH				
LOCATION	UNCL. EXCAVATION	EMBT +%	BORROW	WASTE
50+00 TO 52+30	234	237	3	0
52+30 TO 54+12	245	182	0	63
54+12 TO 55+66	242	139	0	103
55+66 TO 57+05	80	47	0	33
57+05 TO 58+00	15	2	0	13
SUBTOTAL (SUMMARY #2)	816	607	3	212
SUBTOTAL (SUMMARY 1 & 2)	3047	3305	884	626
WASTE USED IN LIEU OF BORROW			-626	-626
PROJECT TOTALS	3047	3305	258	0
EST. FOR REPL. TOPSOIL ON BORROW PIT		9	9	0
TOTAL		3314	267	0
SAY	3050	3320	270	0

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING AND CLEARING AND GRUBBING WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR 'GRADING'.

82/2/63/5/5
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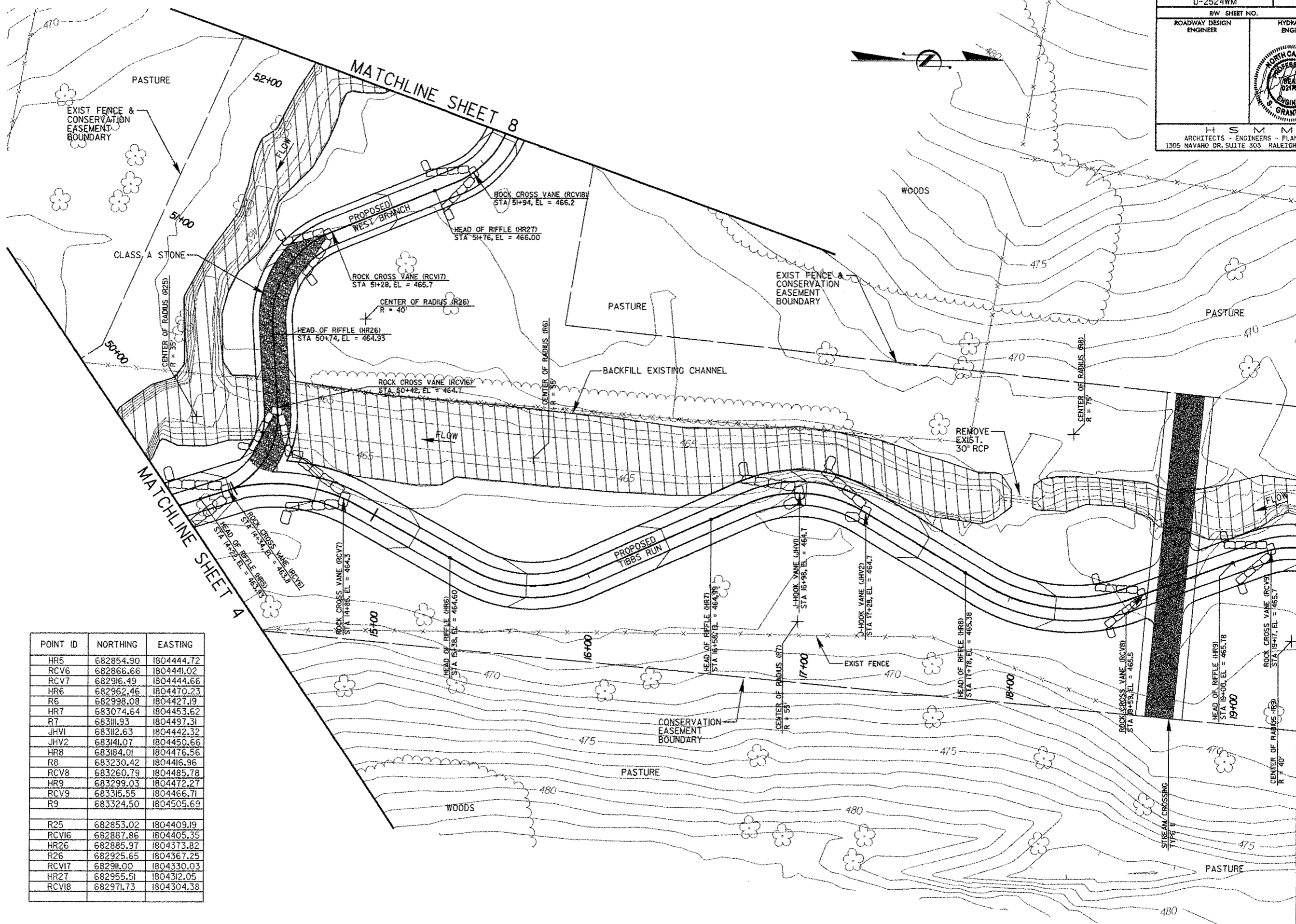
PROJECT REFERENCE NO. U-2524WM	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1305 NAVAHO DR. SUITE 303 RALEIGH, NC 27609	



POINT ID	NORTHING	EASTING
HR1	682539.90	1804651.68
RI	682506.04	1804567.90
RCV1	682578.32	1804621.58
HR2	682599.05	1804595.20
RCV2	682609.58	1804582.58
R2	682659.16	1804631.99
RCV3	682642.13	1804563.72
HR3	682678.41	1804550.65
RCV4	682693.87	1804545.07
R3	682667.03	1804475.03
RCV5	682731.25	1804517.27
HR4	682757.35	1804492.05
R4	682822.36	1804533.53
R5	682886.21	1804513.27

8/17/95
 HSMMArchitects-Engineers-Planners, Inc.
 1305 NAVAHO DRIVE, SUITE 303, RALEIGH, NC 27609
 TEL: (919) 873-1111 FAX: (919) 873-1112
 HSMMArchitects-Engineers-Planners, Inc. is an Equal Opportunity Employer.

MATCHLINE SHEET 5

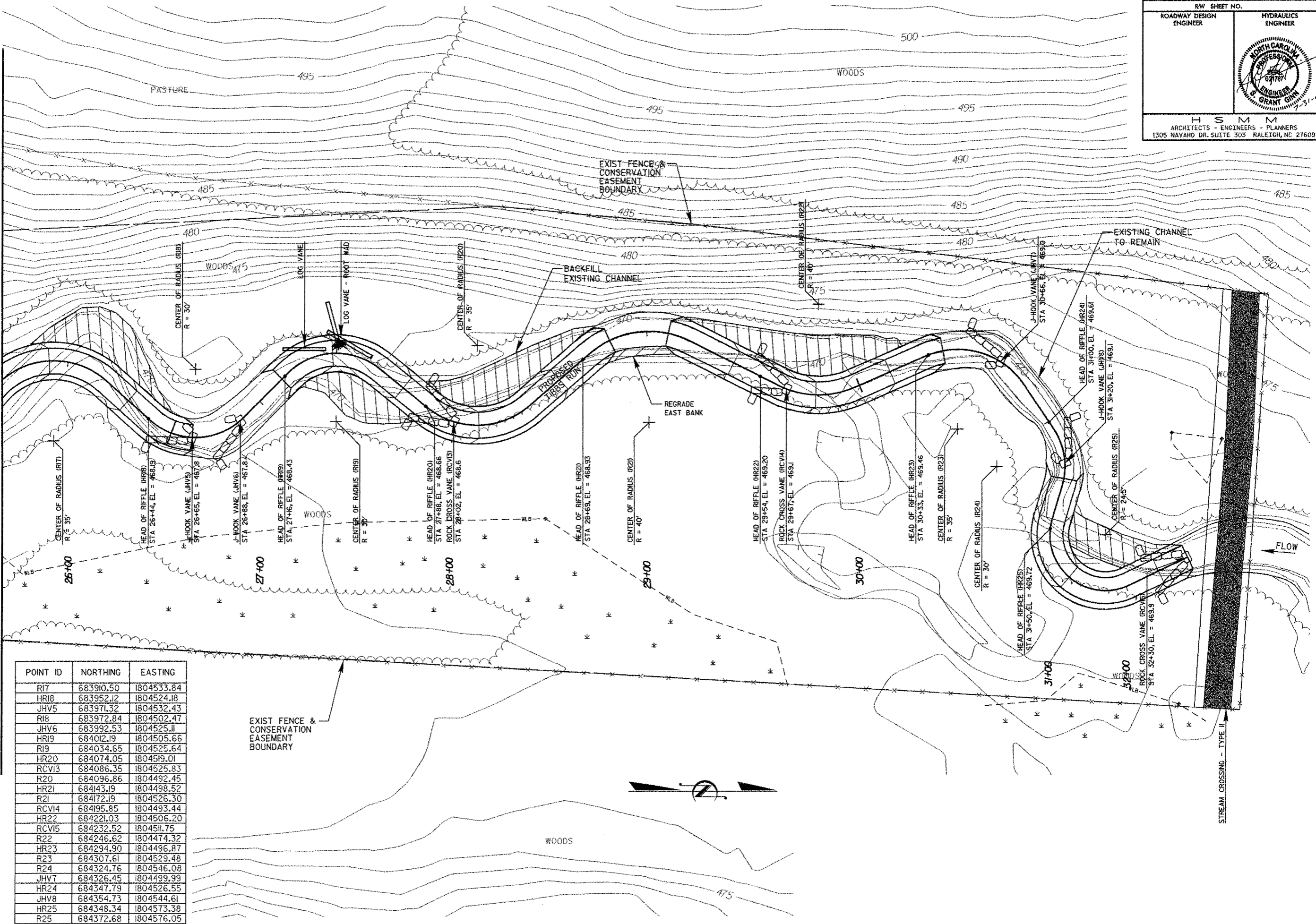


POINT ID	NORTHING	EASTING
HR5	682854.90	1804444.72
RCV6	682866.66	1804441.02
RCV7	682916.49	1804444.66
HR6	682962.46	1804470.23
R6	682998.08	1804427.19
HR7	683074.64	1804453.62
R7	683111.93	1804497.31
JHV1	683112.63	1804442.32
JHV2	683141.07	1804450.66
HR8	683184.01	1804476.56
R8	683230.42	1804416.96
RCV8	683260.79	1804485.78
HR9	683299.03	1804472.27
RCV9	683315.55	1804466.71
R9	683324.50	1804505.69
R25	682853.02	1804409.19
RCV16	682887.86	1804405.35
HR26	682885.97	1804373.82
R26	682925.65	1804367.25
RCV17	682911.00	1804330.03
HR27	682955.51	1804312.05
RCV18	682971.73	1804304.38

8/17/98
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MATCHLINE SHEET 6

MATCHLINE SHEET 6



POINT ID	NORTHING	EASTING
RI7	683910.50	1804533.84
HR18	683952.12	1804524.18
JHV5	683971.32	1804532.43
RI8	683972.84	1804502.47
JHV6	683992.53	1804525.11
HR19	684012.19	1804505.66
RI9	684034.65	1804525.64
HR20	684074.05	1804519.01
RCV13	684086.35	1804525.83
R20	684096.86	1804492.45
HR21	684143.19	1804498.52
R21	684172.19	1804526.30
RCV14	684195.85	1804493.44
HR22	684221.03	1804506.20
RCV15	684232.52	1804511.75
R22	684246.62	1804474.32
HR23	684294.90	1804496.87
R23	684307.61	1804529.48
R24	684324.76	1804546.08
JHV7	684326.45	1804499.99
HR24	684347.79	1804526.55
JHV8	684354.73	1804544.61
HR25	684348.34	1804573.38
R25	684372.68	1804576.05

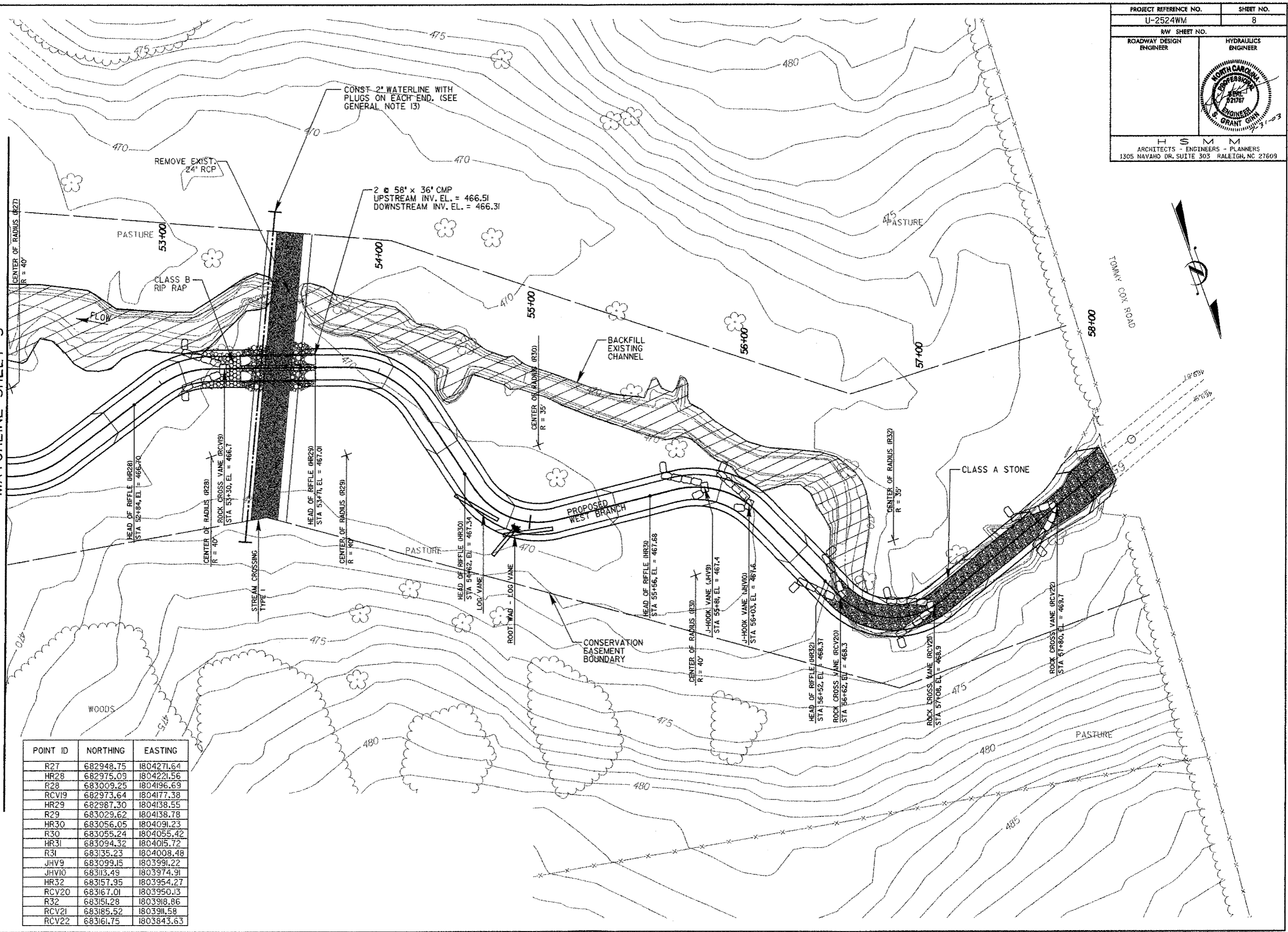
EXIST FENCE & CONSERVATION EASEMENT BOUNDARY

STREAM CROSSING - TYPE II

9/17/99

PROJECT REFERENCE NO.		SHEET NO.	
U-2524WM		8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
H M M ARCHITECTS - ENGINEERS - PLANNERS 1305 NAVAHO DR, SUITE 303 RALEIGH, NC 27609			

MATCHLINE SHEET 5

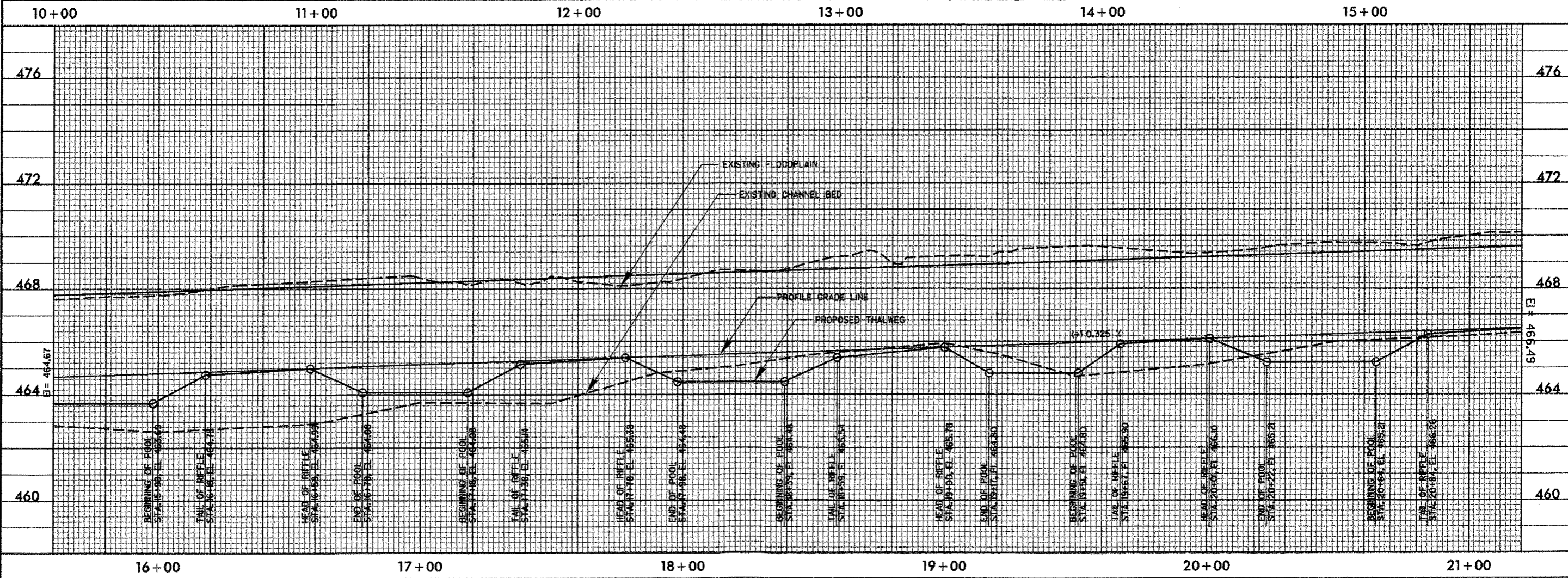
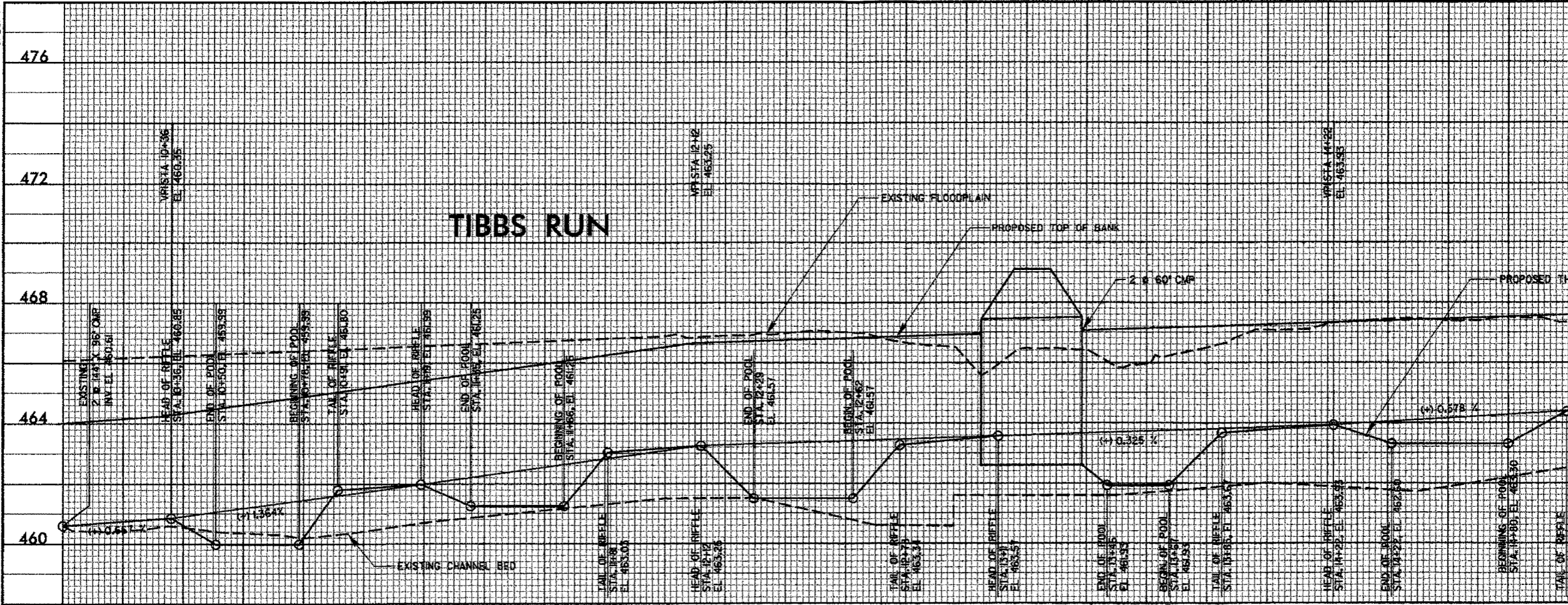


POINT ID	NORTHING	EASTING
R27	682948.75	1804271.64
HR28	682975.09	1804221.56
R28	683009.25	1804196.69
RCV19	682973.64	1804177.38
HR29	682987.30	1804138.55
R29	683029.62	1804138.78
HR30	683056.05	1804091.23
R30	683055.24	1804055.42
HR31	683094.32	1804015.72
R31	683135.23	1804008.48
JHV9	683099.15	1803991.22
JHV10	683113.49	1803974.91
HR32	683157.95	1803954.27
RCV20	683167.01	1803950.13
R32	683151.28	1803918.86
RCV21	683185.52	1803911.58
RCV22	683161.75	1803843.63

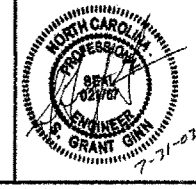
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5/26/99

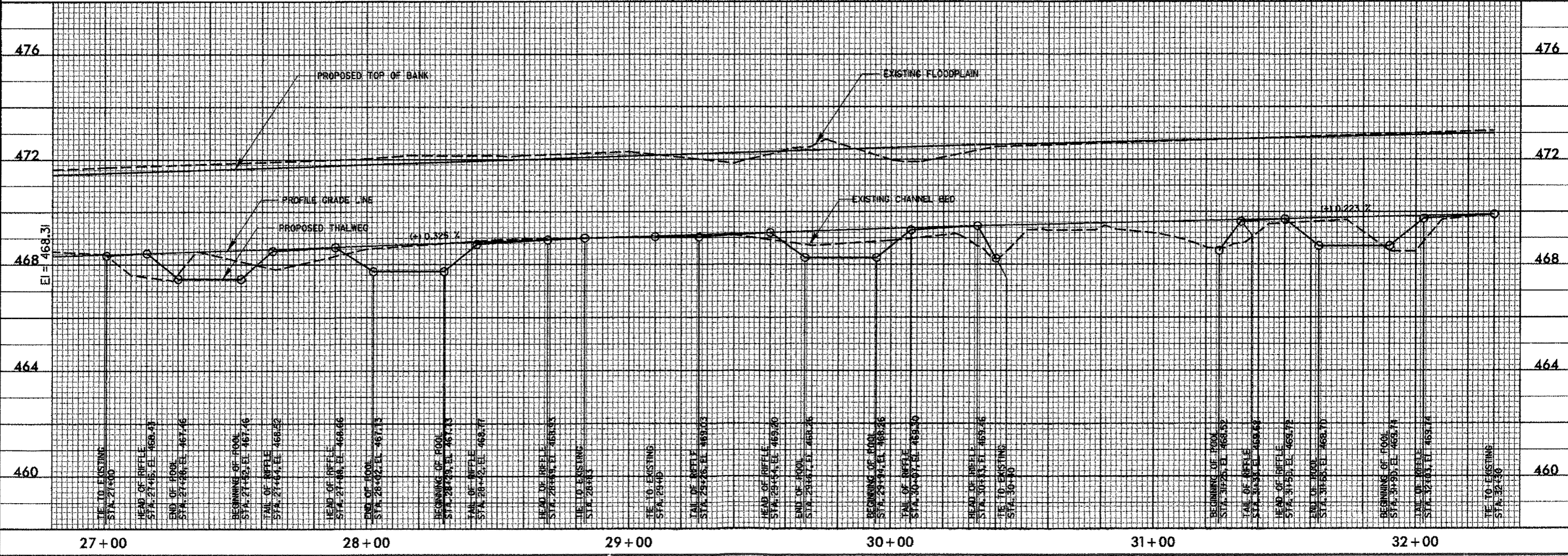
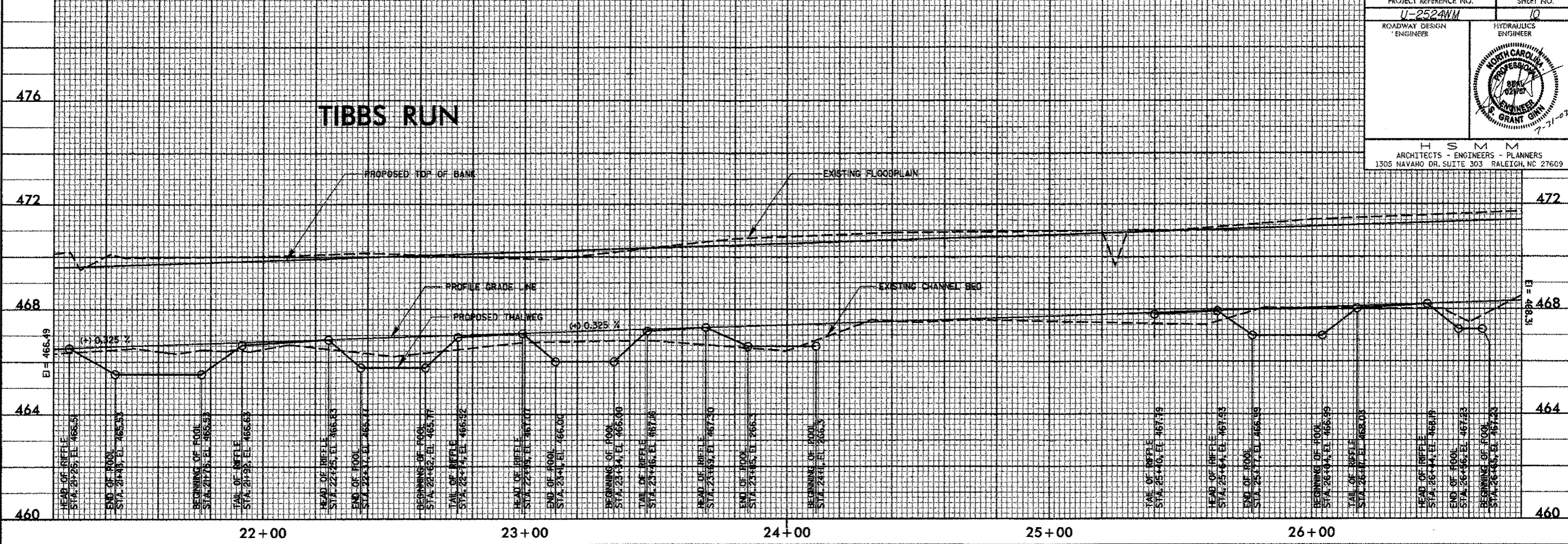
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1305 NAVAHO DR. SUITE 303 RALEIGH, NC 27609	

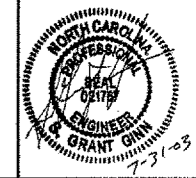


5/28/93

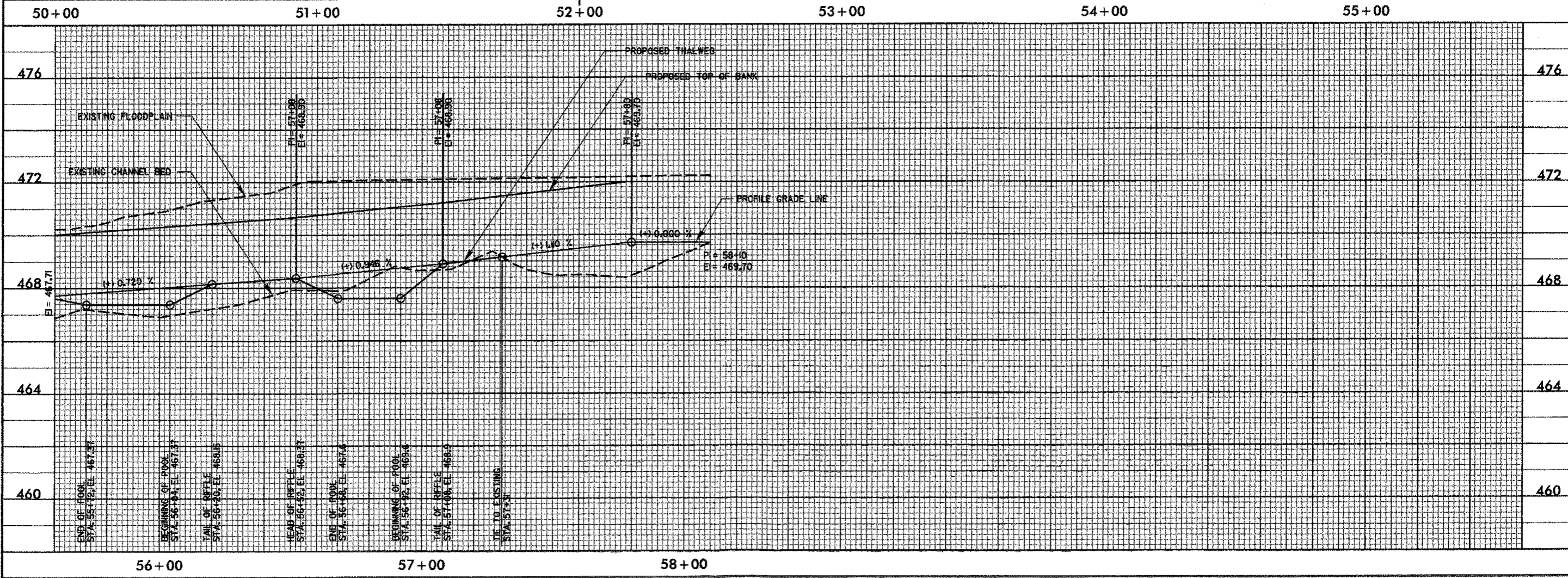
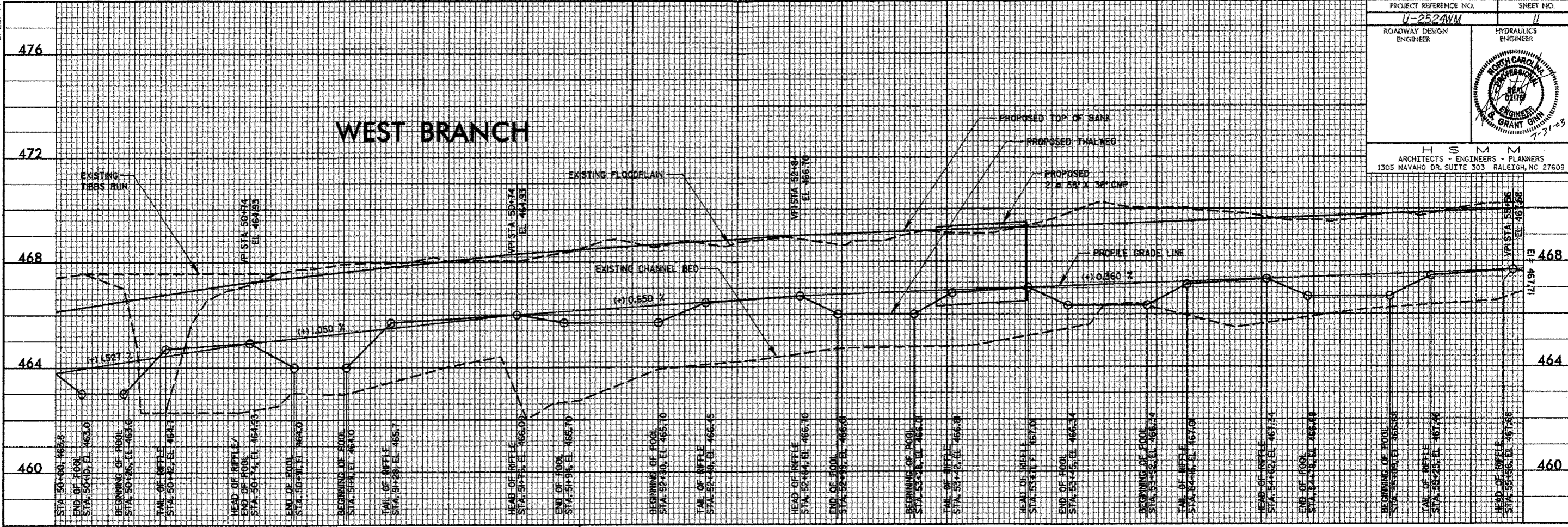
PROJECT REFERENCE NO. U-252ANM	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
H S M M ARCHITECTS - ENGINEERS - PLANNERS 1305 NAVAHO DR. SUITE 303 RALEIGH, NC 27609	

TIBBS RUN





WEST BRANCH



5/28/99

000899

U-2524WM

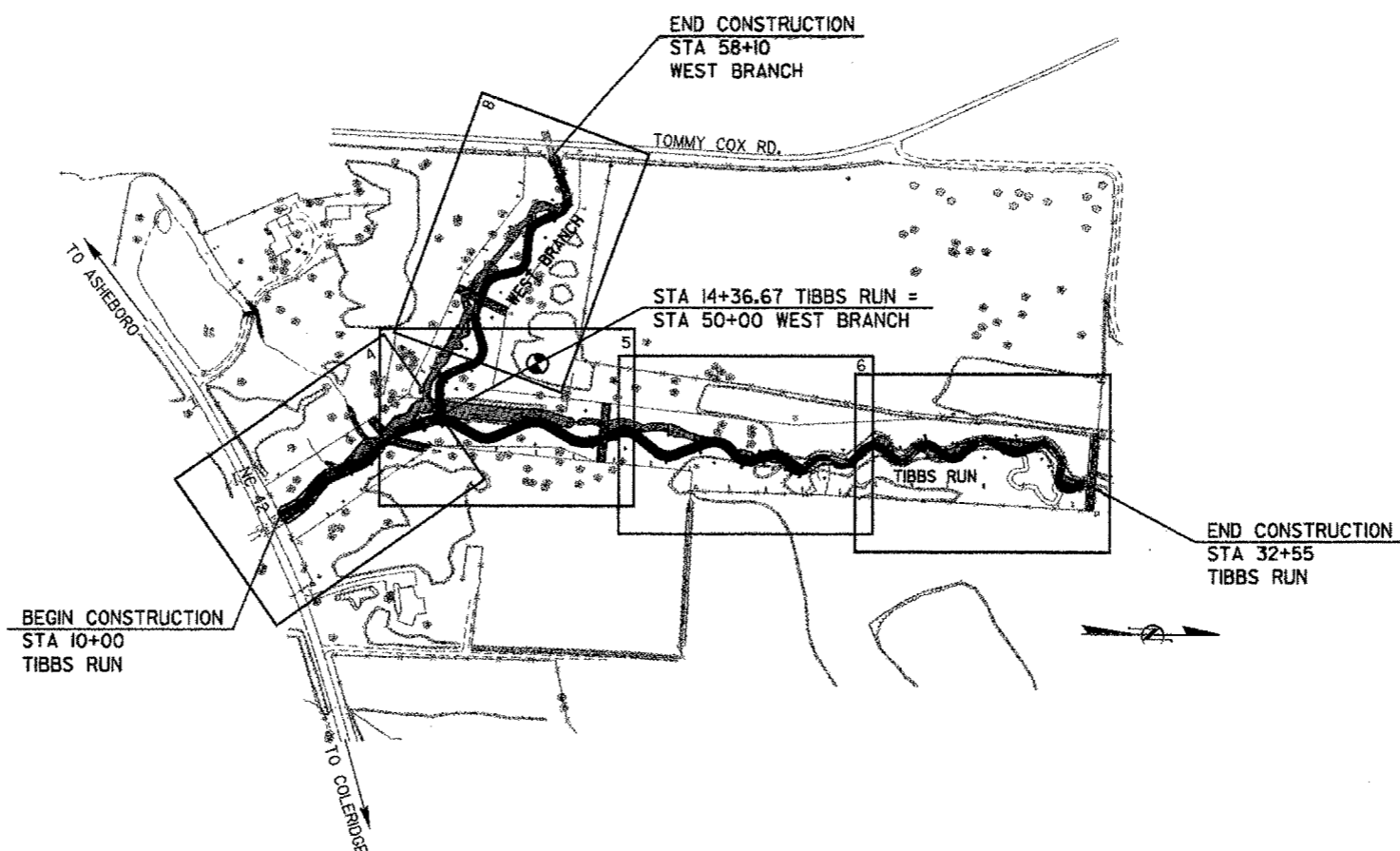
PROJECT: 8.U492111

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
 HIGHWAY EROSION CONTROL

LOCATION: CAVINESS MITIGATION SITE NORTH
 OF NC 42, WEST OF COLERIDGE

TYPE OF WORK: STREAM RESTORATION,
 GRADING AND DRAINAGE



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524WM	EC-1	2
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
8.U492109		PE, R/W,	
8.U492111		CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
	Reforestation	
1650.03	Temporary Silt Ditch	
1650.06	Temporary Diversion	
1606.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1650.01	Riser Basin	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1636.01	Rock Silt Screen	
1630.04	Stilling Basin	
Rock Inlet Sediment Trap:		
1632.01	Type A	A OR A)
1632.02	Type B	B OR B)
1632.03	Type C	C OR C)

THIS PROJECT CONTAINS
 EROSION CONTROL PLANS
 FOR CLEARING AND
 GRUBBING PHASE OF
 CONSTRUCTION.

Prepared in the Office of:
HSMM
 1305 Navaho Dr., Suite 303
 Raleigh, NC 27609
 (919) 878-5250

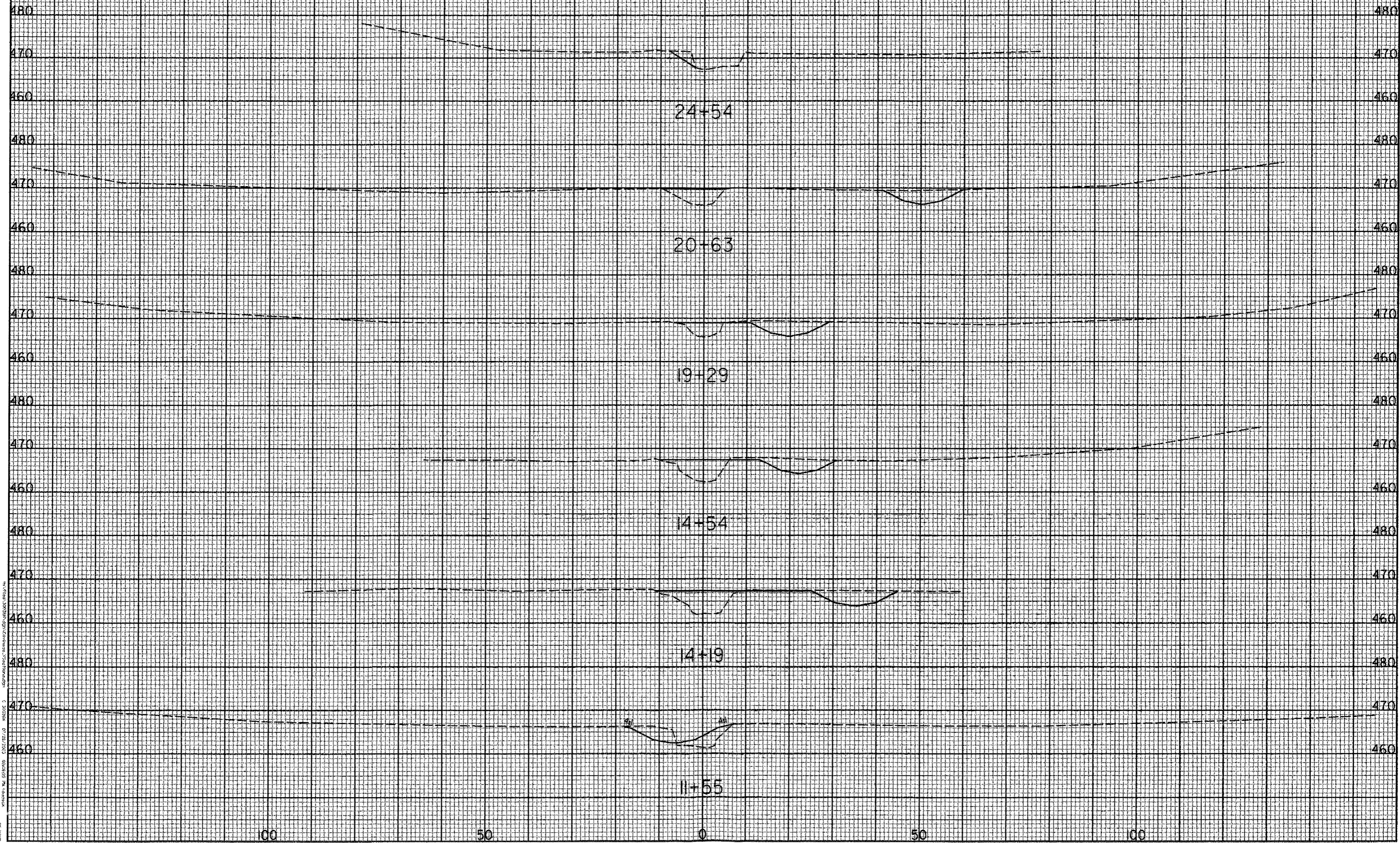
2002 STANDARD SPECIFICATIONS

Roadway Standard Drawings

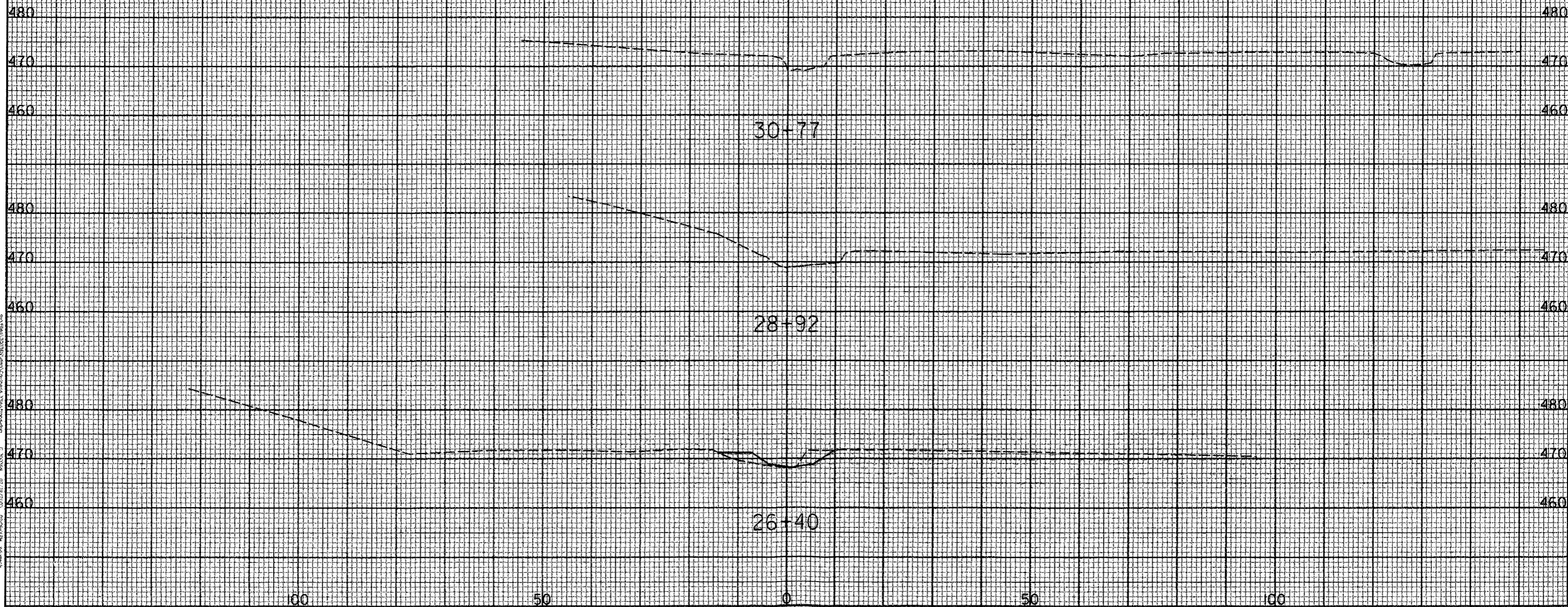
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 29, 2002 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01 Temporary Silt Fence	1632.01 Rock Inlet Sediment Trap Type A
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1622.01 Temporary Berms and Slope Drains	1633.01 Temporary Rock Silt Check Type A
1630.01 Riser Basin	1633.02 Temporary Rock Silt Check Type B
1630.02 Silt Basin Type B	1634.01 Temporary Rock Sediment Dam Type A
1630.03 Temporary Silt Ditch	1634.02 Temporary Rock Sediment Dam Type B
1630.04 Stilling Basin	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.05 Temporary Diversion	1636.01 Rock Silt Screen

22/03/93
PROJECT NO. 2524WM
DATE 03/02/00
SCALE 1"=20'



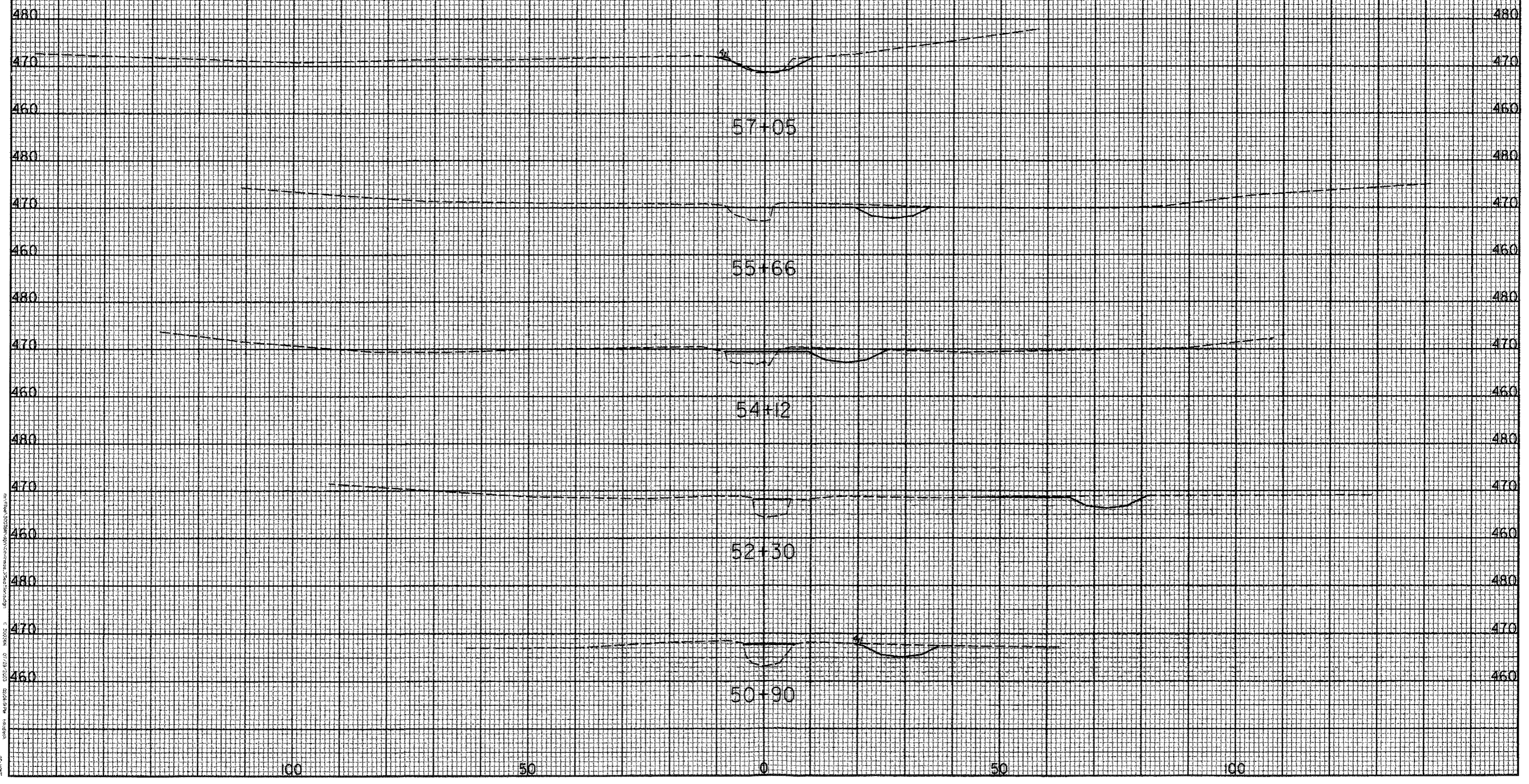
02/02/95



02/02/95
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02/02/95
02/02/95
02/02/95

92793798

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
U-2524WM	X-3	3



BACK UP