

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Conventional Symbols

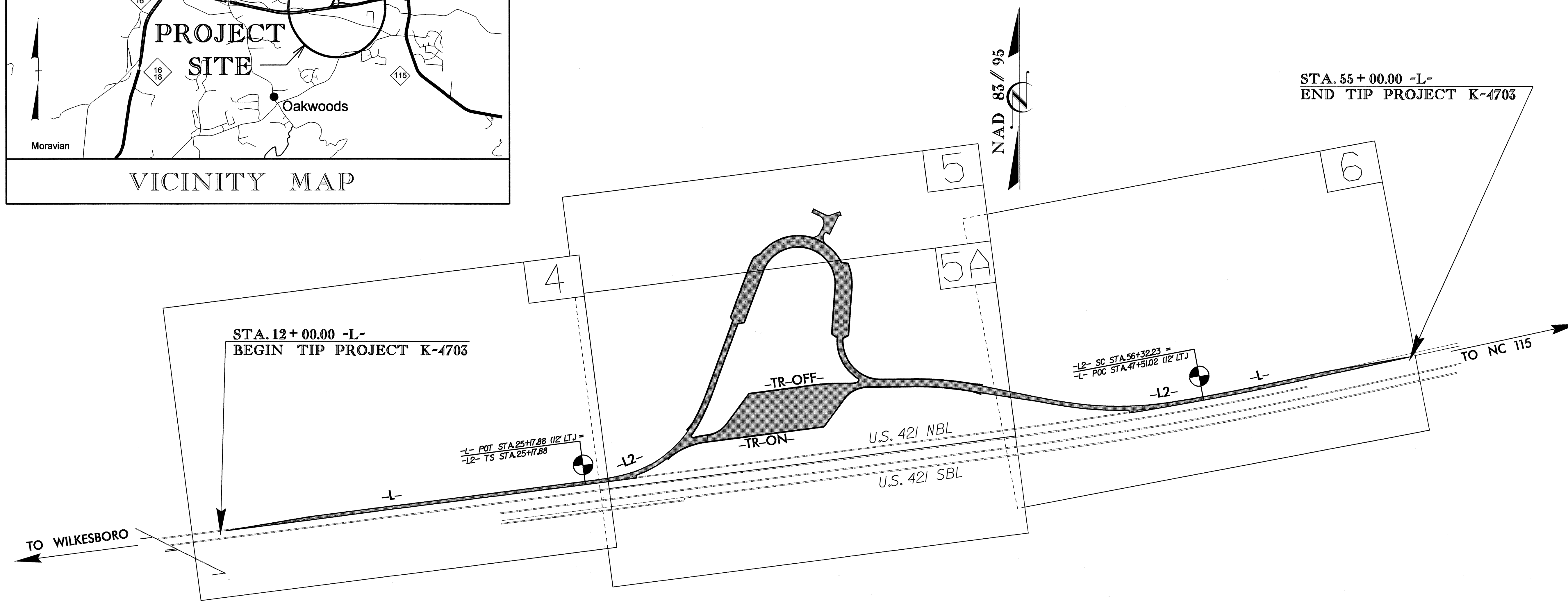
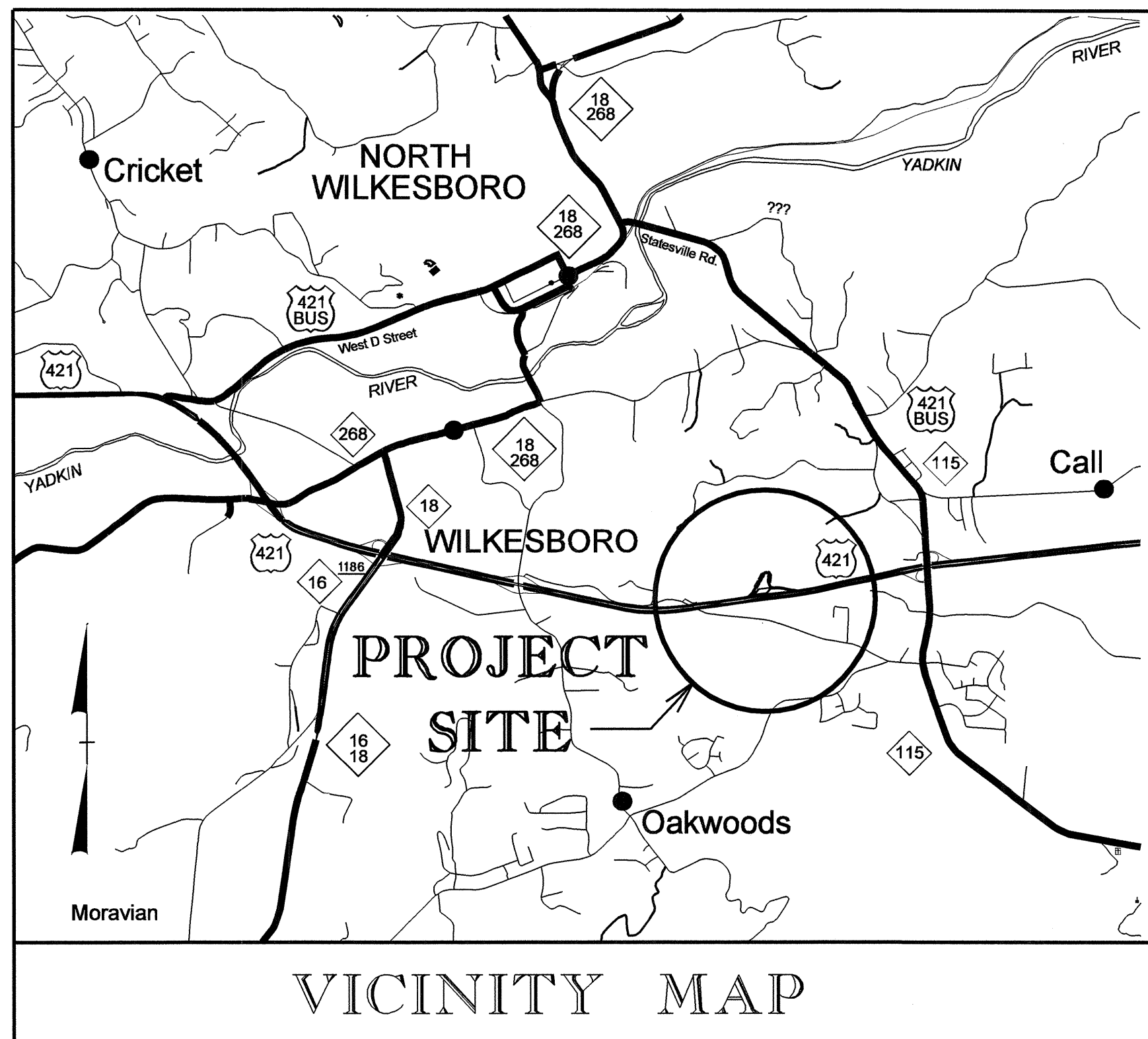
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WILKES COUNTY**

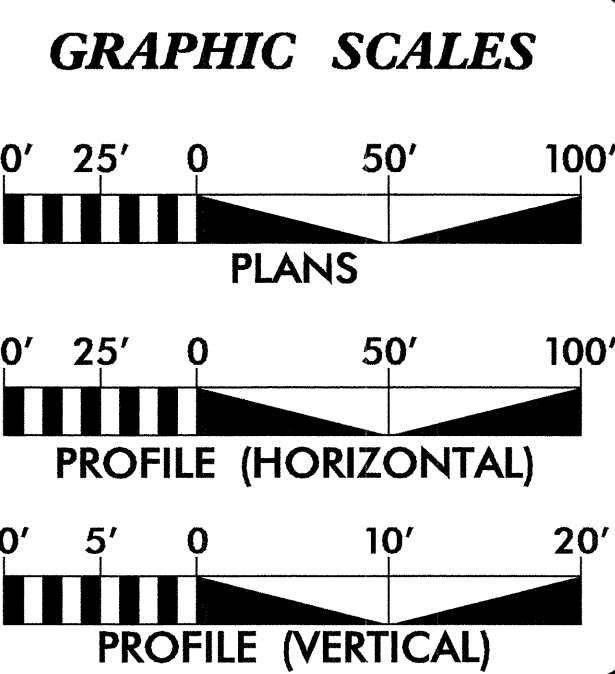
LOCATION: NEW REST AREA - NORTHBOUND US 421  
WEST OF NC 115

TYPE OF WORK: GRADING, PAVING, DRAINAGE, LIGHTING, REST AREA AND FACILITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	K-4703	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36401.1.1	NHS-421(32)	PE	
36401.2.1	NHS-421(32)	CONST.	



NOTE: THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO RAMPS.



**DESIGN DATA**

ADT 2007 =	1000
ADT 2030 =	1500
DHV =	11 %
D =	100 %
T =	32% *
V =	20MPH
FUNC. CLASS. =	REST AREA
* TTST 28%	DUAL 4%

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT K-4703 =	0.981 MILES
TOTAL LENGTH OF TIP PROJECT K-4703 =	0.981 MILES

Prepared In the Office of:

**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr.  
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	NA
LETTING DATE:	NOVEMBER 20, 2007
	ROGER D. THOMAS, P.E. PROJECT ENGINEER
	MICHAEL W. LITTLE, P.E. PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

*Joseph W. D...*  
SEAL 14482  
ENGINEER

**ROADWAY DESIGN ENGINEER**

*Michael W. Little*  
SEAL 22557  
ENGINEER

9/24/07

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

*Aut M. Miller*  
P.E.  
STATE HIGHWAY DESIGN ENGINEER

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CONTRACT: C201679 TIP PROJECT: K-4703

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEETS
2 THRU 2-B	TYPICAL SECTIONS
2-C	PROFILE OF DITCH AND STREAMS
2-D	DETAILS OF STEP POOL, CONSTRUCTED RIFFLE, ROCK CROSS VANE, AND NATURAL ROCK ENERGY DISSIPATER
2-E	SPLITTER BOX DETAILS
2-F	DETAIL OF OUTLET HAZARDOUS SPILL BASIN
2-G	DETAIL OF OUTLET CONTROL STRUCTURE FOR HAZARDOUS SPILL BASIN
2-H	SPLITTER BOX DETAILS
2-I	BIO-RETENTION DETAIL
2-J	DETAIL OF OUTLET CONTROL STRUCTURE FOR BIO-RETENTION BASIN
2-K	DETAILS OF 10MM IMPERVIOUS PLASTIC AND UNDERDRAIN CLEANOUT
2-L	DETAIL OF ANCHORAGE FOR FRAMES
3 (3 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-C	DRAINAGE SUMMARY
3-D	SUMMARIES OF GUARDRAIL, EARTHWORK, 2'-6" CURB AND GUTTER, SHOULDER BERM GUTTER, AND PAVEMENT REMOVAL
3-E	BIO-RETENTION BASIN SUMMARIES
4 THRU 6	PLAN SHEETS
7 THRU 10	PROFILE SHEETS
TCP-1 THRU TCP-5	TRAFFIC CONTROL PLANS
PM-1 THRU PM-2	PAVEMENT MARKING PLANS
E-1 THRU E-3	ELECTRICAL PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-15	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-38	CROSS-SECTIONS
REST AREA / VISITORS CENTER	
L-1 THRU L-25	LANDSCAPE
SU-1	SITE UTILITY
C-1 THRU C-4	ARCHITECTURAL
A0.00 THRU A7.04	ARCHITECTURAL
S0.01 THRU S5.03	ARCH. STRUCTURAL
P0.00 THRU P5.02	ARCH. PLUMBING
M0.00 THRU M6.01	ARCH. MECHANICAL
E-1 THRU E-7	ARCH. ELECTRICAL

GENERAL NOTES: 2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-18-06

GRADE LINE:  
GRADING AND SURFACING:  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:  
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02.

BERM DITCHES:  
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS IN PLANS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:  
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:  
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:  
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:  
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:  
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:  
UTILITY OWNERS ON THIS PROJECT ARE DUKE POWER,  
TOWNS OF WILKESBORO AND NORTH WILKESBORO  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:  
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

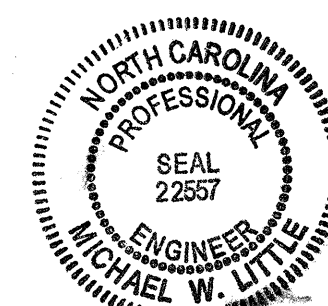
WHEELCHAIR RAMPS:  
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.08	Concrete 'L' Endwall for Single Pipe Culverts - 40"x31" thru 66"x51" Pipe Arch
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.41	Spring Box - Concrete or Brick
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.05	Wheelchair Ramp - Curb Cut
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
862.01	Guardrail Placement
862.02	Guardrail Installation
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

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\$\$\$USERNAME\$\$\$



*Michael W. Little*  
9/11/07



**Note: Not to Scale**

\*S.U.E. = *Subsurface Utility Engineering*

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**BOUNDARIES AND PROPERTY:**

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	⊗
Property Monument	⊠
Parcel/Sequence Number	(23)
Existing Fence Line	⊗
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	⊠
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing High Quality Wetland Boundary	----- HD WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or UG Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	⊗
Foundation	⊠
Area Outline	⊠
Cemetery	⊠
Building	⊠
School	⊠
Church	⊠
Dam	⊠

**HYDROLOGY:**

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
River Basin Buffer	-----
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Swamp Marsh	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	○
Switch	⊠
RR Abandoned	-----
RR Dismantled	-----

**RIGHT OF WAY:**

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	⊗
Proposed Right of Way Line with Concrete or Granite Marker	⊗
Existing Control of Access	⊠
Proposed Control of Access	⊠
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----

**ROADS AND RELATED FEATURES:**

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Wheel Chair Ramp	-----
Curb Cut for Future Wheel Chair Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊙
Pavement Removal	-----

**VEGETATION:**

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

**EXISTING STRUCTURES:**

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

**UTILITIES:**

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
UG Power Cable Hand Hole	⊠
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

**TELEPHONE:**

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
UG Telephone Cable Hand Hole	⊠
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

**WATER:**

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊙
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

**TV:**

TV Satellite Dish	⊠
TV Pedestal	⊠
TV Tower	⊗
UG TV Cable Hand Hole	⊠
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

**GAS:**

Gas Valve	◇
Gas Meter	⊙
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

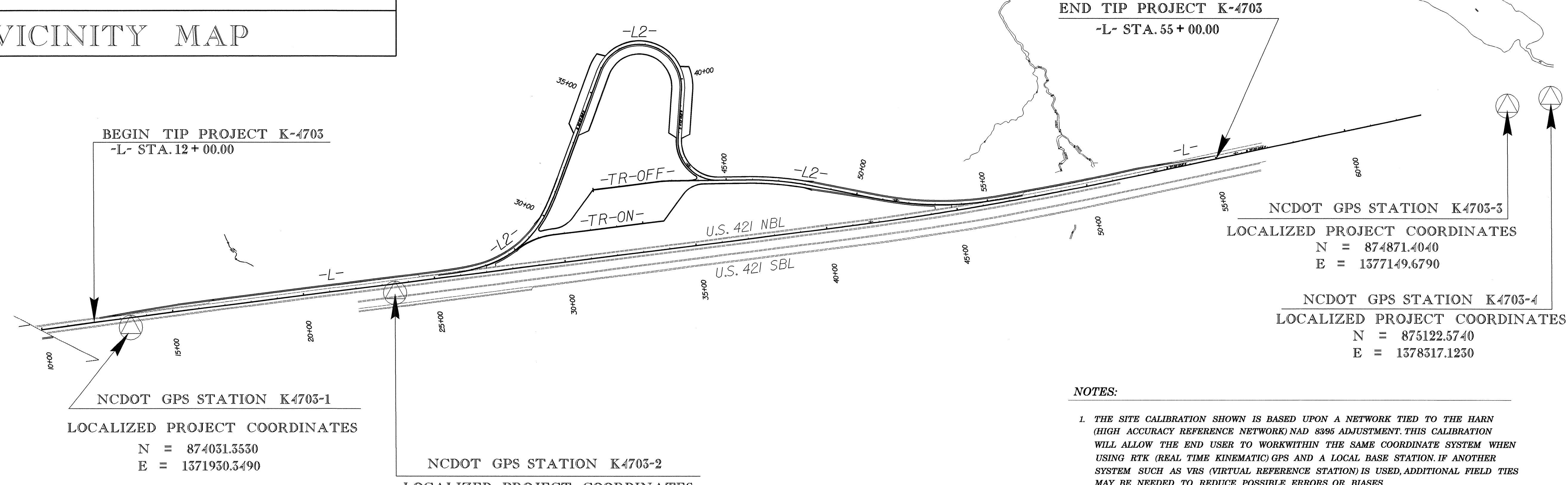
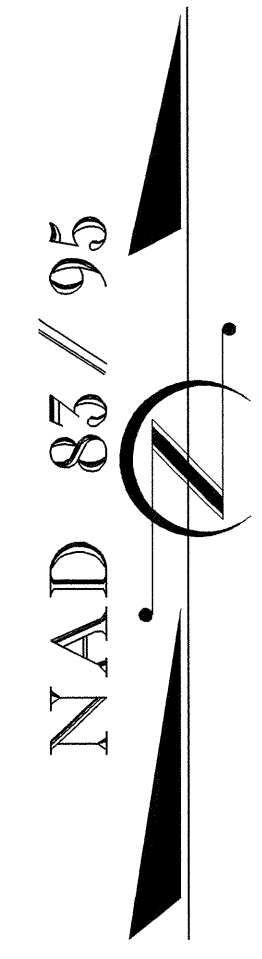
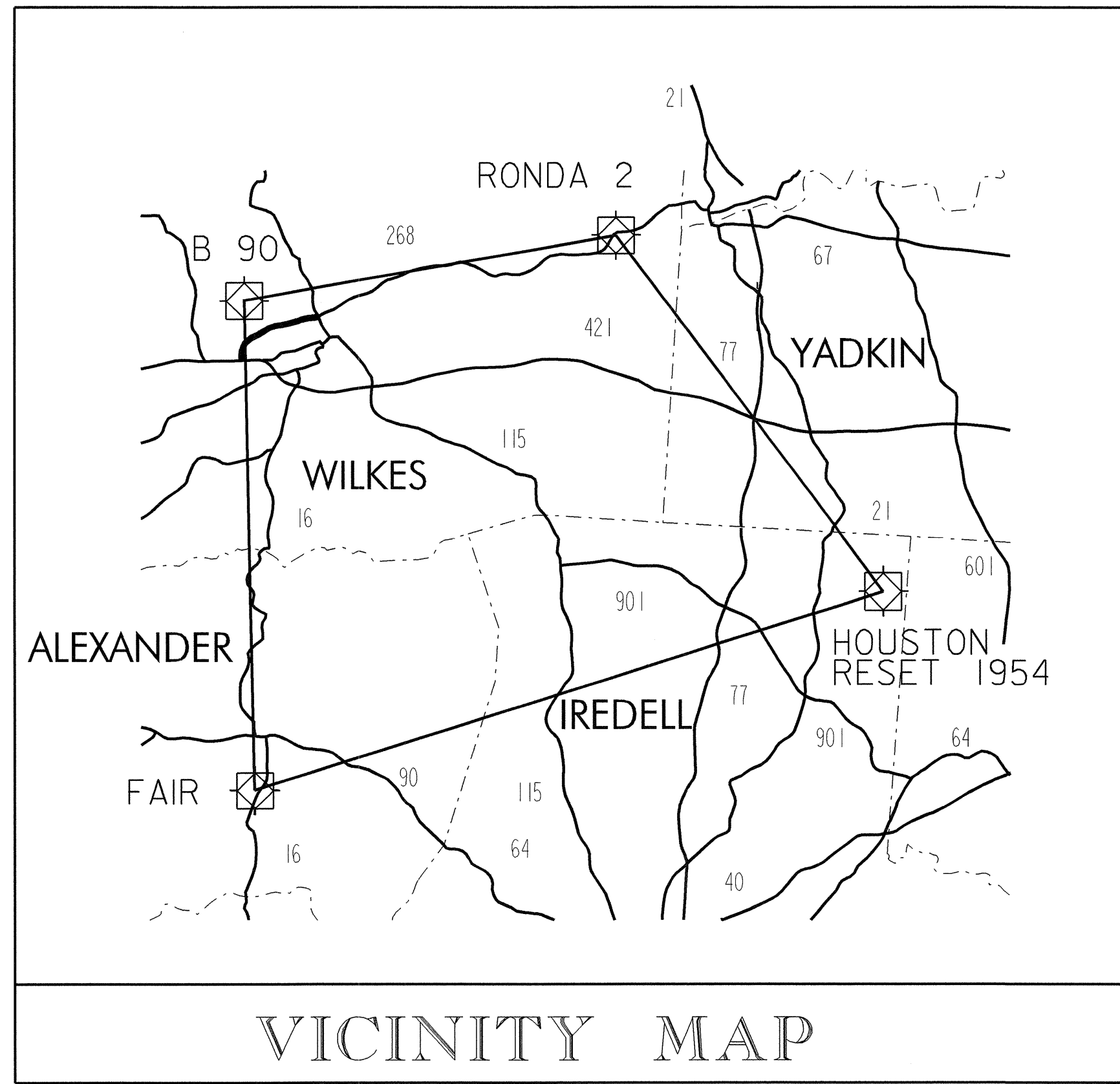
**SANITARY SEWER:**

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊙
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

**MISCELLANEOUS:**

Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	-----
UG Tank; Water, Gas, Oil	⊠
A/G Tank; Water, Gas, Oil	⊠
UG Test Hole (S.U.E.*)	⊙
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# SURVEY CONTROL SHEET K-4703



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "K4703-2"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
NORTHING: 874159.9110(±) EASTING: 1372931.4040(±)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999426733

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "K4703-2" TO -L- STATION 12+00.00 IS  
S 84°24'52" W 1144.89'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

- NOTES:**
1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
  2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)  
THE FILES TO BE FOUND ARE AS FOLLOWS:  
K-4703\_ls\_GPSCALIB\_070205.HTML  
K-4703\_ls\_WGS84\_070205.TXT  
K-4703\_ls\_LOCAL\_070205.TXT  
K-4703\_ls\_CONTROL\_070605.TXT
- THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION  
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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# SURVEY CONTROL SHEET K-4703

PROJECT REFERENCE NO.	SHEET NO.
K-4703	1-D
Location and Surveys	

### GPS CALIBRATION REPORT

PROJECT : K4703

TIP NUMBER K-4703  
 USER NAME RGMILLER DATE & TIME 10:19:44 AM  
 3/18/2004  
 COORDINATE SYSTEM US STATE PLANE ZONE NORTH CAROLINA  
 1983(AT GROUND) 3200  
 HORIZONTAL DATUM NAD 1983 (CONUS)  
 VERTICAL DATUM NAVD88 GEOID MODEL GEOID03 (CONUS) NC  
 SUB GRID  
 COORDINATE UNITS US SURVEY FEET  
 DISTANCE UNITS US SURVEY FEET  
 HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION  
 LOCALIZED AROUND K4703-2  
 LATITUDE 36°08'00.16345"N  
 LONGITUDE 81°07'24.90169"W  
 SITE SCALE FACTOR 1.0000573300  
 HEIGHT 1015.549SFT

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED COORDINATE SYSTEM WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS DERIVED. PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF THE TWO SYSTEMS. THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING CONSTRUCTION LAYOUT.

DATUM TRANSFORMATION PARAMETERS  
 DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION  
 UPDATED DEFAULT PROJECTION NOT REQUESTED

#### HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER 864440.943SFT  
 EASTING COORDINATE OF ROTATION CENTER 1391037.847SFT  
 ROTATION ABOUT THE CENTER POINT 0°00'00"  
 TRANSLATION NORTH -0.007SFT  
 TRANSLATION EAST -0.003SFT  
 SCALE FACTOR 1.00000005

#### VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT 874031.353SFT  
 EASTING COORDINATE OF ORIGIN POINT 1371930.348SFT  
 VERTICAL SEPARATION AT ORIGIN -0.023SFT  
 SLOPE NORTH -0.087PPM  
 SLOPE EAST -0.836PPM

#### GEOID MODEL DEFINITION

GEOID03 (CONUS) NC SUB GRID

#### RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

	SUMMARY	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL		0.007SFT	0.001	RONDA 2 GPS
VERTICAL		0.016SFT	0.002	RONDA 2 GPS
THREE-DIMENSIONAL		0.017SFT	0.003	RONDA 2 GPS

#### POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT K4703-1 GPS LATITUDE 36°07'58.68065"N LONGITUDE 81°07'37.06801"W HEIGHT 996.247SFT	NORTHING 874031.353SFT EASTING 1371930.348SFT ELEVATION 1104.724SFT HORZ ERROR 0.001SFT VERT ERROR 0.001SFT 3D ERROR 0.002SFT	POINT K4703-1 NORTHING 874031.353SFT EASTING 1371930.349SFT ELEVATION 1104.725SFT UTILIZED HORZ AND VERT ADJUSTED
POINT K4703-2 GPS LATITUDE 36°08'00.16350"N LONGITUDE 81°07'24.90166"W HEIGHT 1015.571SFT	NORTHING 874159.911SFT EASTING 1372931.403SFT ELEVATION 1124.060SFT HORZ ERROR 0.001SFT VERT ERROR 0.002SFT 3D ERROR 0.002SFT	POINT K4703-2 NORTHING 874159.911SFT EASTING 1372931.404SFT ELEVATION 1124.062SFT UTILIZED HORZ AND VERT ADJUSTED

POINT K4703-3 GPS LATITUDE 36°08'08.08665"N LONGITUDE 81°06'33.67733"W HEIGHT 1013.824SFT	NORTHING 874871.404SFT EASTING 1377149.680SFT ELEVATION 1122.369SFT HORZ ERROR 0.000SFT VERT ERROR 0.004SFT 3D ERROR 0.004SFT	POINT K4703-3 NORTHING 874871.404SFT EASTING 1377149.679SFT ELEVATION 1122.374SFT UTILIZED HORZ AND VERT ADJUSTED
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POINT K4703-4 GPS LATITUDE 36°08'10.81482"N LONGITUDE 81°06'19.51409"W HEIGHT 1040.931SFT	NORTHING 875122.575SFT EASTING 1378317.124SFT ELEVATION 1149.493SFT HORZ ERROR 0.002SFT VERT ERROR 0.005SFT 3D ERROR 0.005SFT	POINT K4703-4 NORTHING 875122.574SFT EASTING 1378317.123SFT ELEVATION 1149.497SFT UTILIZED HORZ AND VERT ADJUSTED
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POINT B 90 GPS LATITUDE 36°11'00.72155"N LONGITUDE 81°12'22.91593"W HEIGHT 1227.609SFT	NORTHING 892948.360SFT EASTING 1348895.312SFT ELEVATION 1335.606SFT HORZ ERROR 0.003SFT VERT ERROR 0.005SFT 3D ERROR 0.006SFT	POINT B 90 NORTHING 892948.362SFT EASTING 1348895.315SFT ELEVATION 1335.611SFT UTILIZED HORZ AND VERT CONTROL
---	--	---

POINT RONDA 2 GPS LATITUDE 36°13'57.89849"N LONGITUDE 80°55'14.88755"W HEIGHT 1033.310SFT	NORTHING 909111.397SFT EASTING 1433505.930SFT ELEVATION 1142.606SFT HORZ ERROR 0.007SFT VERT ERROR 0.016SFT 3D ERROR 0.017SFT	POINT RONDA 2 NORTHING 909111.404SFT EASTING 1433505.929SFT ELEVATION 1142.590SFT UTILIZED HORZ AND VERT CONTROL
--	--	--

POINT HOUSTON RESET GP LATITUDE 36°01'00.76265"N LONGITUDE 80°42'49.48472"W HEIGHT 937.813SFT	NORTHING 829414.557SFT EASTING 1493212.946SFT ELEVATION 1046.054SFT HORZ ERROR 0.006SFT VERT ERROR 0.007SFT 3D ERROR 0.010SFT	POINT HOUSTON RESET NORTHING 829414.553SFT EASTING 1493212.941SFT ELEVATION 1046.061SFT UTILIZED HORZ AND VERT CONTROL
--	--	--

POINT FAIR GPS LATITUDE 35°53'22.84485"N LONGITUDE 81°11'11.89806"W HEIGHT 1064.950SFT	NORTHING 785867.937SFT EASTING 1352360.008SFT ELEVATION 1171.660SFT HORZ ERROR 0.005SFT VERT ERROR 0.009SFT 3D ERROR 0.010SFT	POINT FAIR NORTHING 785867.933SFT EASTING 1352360.011SFT ELEVATION 1171.651SFT UTILIZED HORZ AND VERT CONTROL
---	--	---

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "K4703-2"  
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 874159.9110(++) EASTING: 1372931.4040(++)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999426733  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "K4703-2" TO -L- STATION 12+00.00 IS  
 S 84°24'52" W 1144.89'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

#### NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 K-4703\_ls\_GPSCALIB\_070205.HTML  
 K-4703\_ls\_WGS84\_070205.TXT  
 K-4703\_ls\_LOCAL\_070205.TXT  
 K-4703\_ls\_CONTROL\_070605.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

- ⊕ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION. SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

# SURVEY CONTROL SHEET K-4703

PROJECT REFERENCE NO. K-4703	SHEET NO. 1-E
Location and Surveys	

-BL- POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
K47031	GPS K4703-1	874031.3530	1371930.3490	1104.72'	13+35.10	34.56' RT
K47032	GPS K4703-2	874159.9110	1372931.4040	1124.06'	23+44.38	34.17' RT
BL5	BL5	874246.5892	1373626.4728	1123.78'	30+44.83	36.46' RT
BL6	BL6	874348.1874	1374415.7126	1110.84'	38+40.58	35.92' RT
BL7	BL7	874494.7712	1375390.8181	1093.95'	48+24.57	37.78' RT
BL8	BL8	874681.1572	1376270.2836	1101.67'	57+22.72	36.99' RT
K47033	GPS K4703-3	874871.4040	1377149.6790	1122.37'	OUTSIDE PROJECT LIMITS	
K47034	GPS K4703-4	875122.5740	1378317.1230	1149.50'	OUTSIDE PROJECT LIMITS	

\*\*\*\*\*  
 BM#1 ELEVATION = 1137.26'  
 N 873951. E 1372307.  
 -L- STATION 16+98 163' RIGHT  
 TOP OF R/W MON. AT NE FENCE CORNER  
 IN R/W FENCE  
 \*\*\*\*\*

\*\*\*\*\*  
 BM#2 ELEVATION = 1121.41'  
 N 874215. E 1374094.  
 -L- STATION 35+05 128' RIGHT  
 8" SPIKE IN BASE OF  
 10" POPLAR TREE  
 \*\*\*\*\*

\*\*\*\*\*  
 BM#3 ELEVATION = 1107.78'  
 N 874547. E 1376126.  
 -L- STATION 55+53 137' RIGHT  
 8" SPIKE IN BASE OF  
 10" POPLAR TREE  
 \*\*\*\*\*

### NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:

- K4703\_ls\_GPSCALIB\_070205.HTML
- K4703\_ls\_WGS84\_070205.TXT
- K4703\_ls\_LOCAL\_070205.TXT
- K4703\_ls\_CONTROL\_070605.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

© INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "K4703-2"  
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 874159.9110(ft) EASTING: 1372931.4040(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT  
 (GROUND TO GRID) IS: 0.9999426733  
 THE N.C. LAMBERT GRID BEARING AND  
 LOCALIZED HORIZONTAL GROUND DISTANCE FROM  
 "K4703-2" TO -L- STATION 12+00.00 IS  
 S 84°24'52" W 1144.89'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

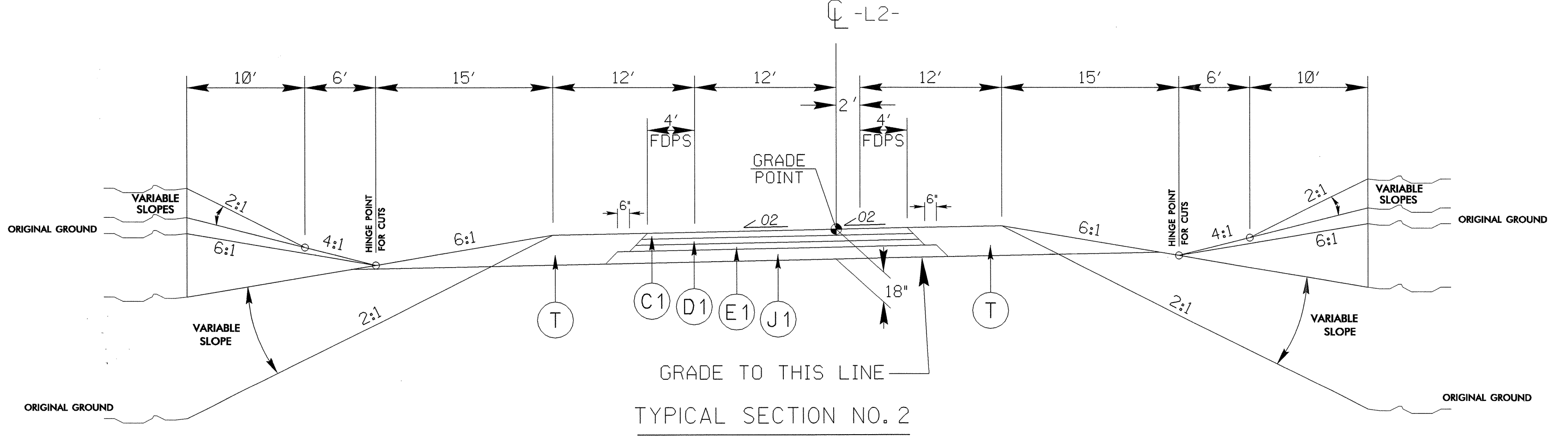
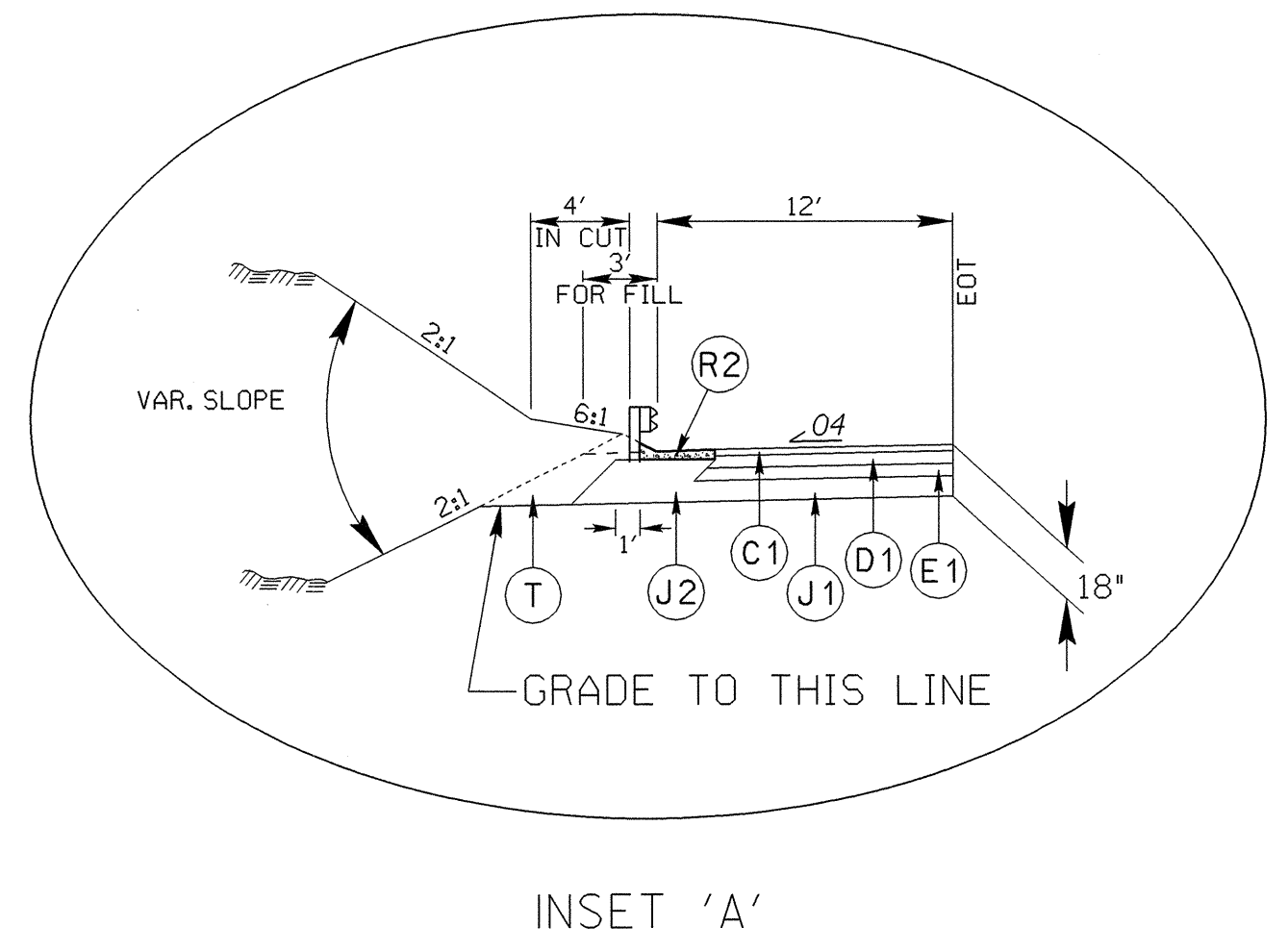
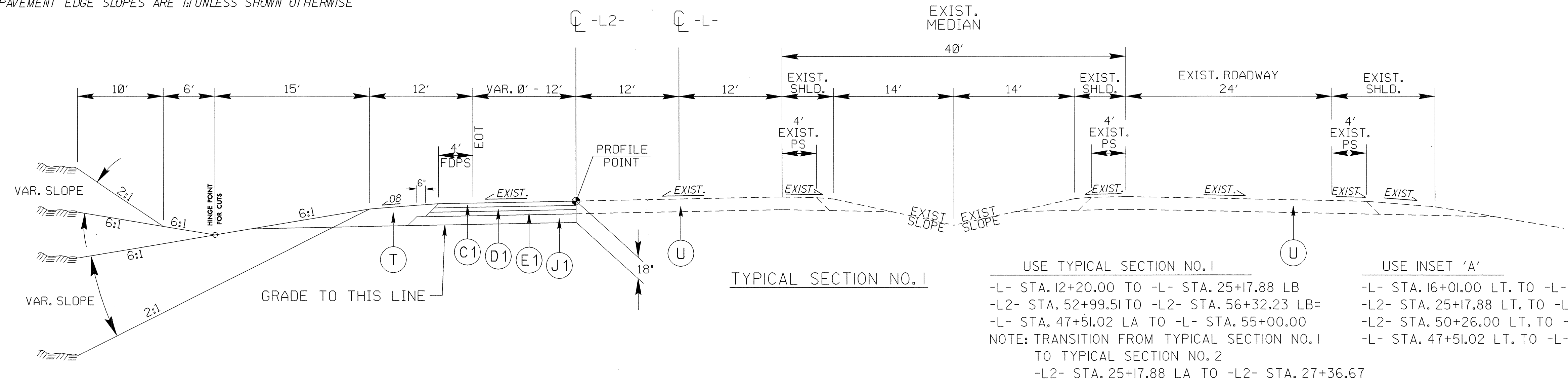
6/2/99

PROJECT REFERENCE NO. K-4703	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 

Michael W. Little  
11/3/07

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB & GUTTER
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	R2	CONCRETE SHOULDER BERM GUTTER
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.	T	EARTH MATERIAL
J1	PROP. 8" AGGREGATE BASE COURSE	U	EXISTING PAVEMENT
J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE		

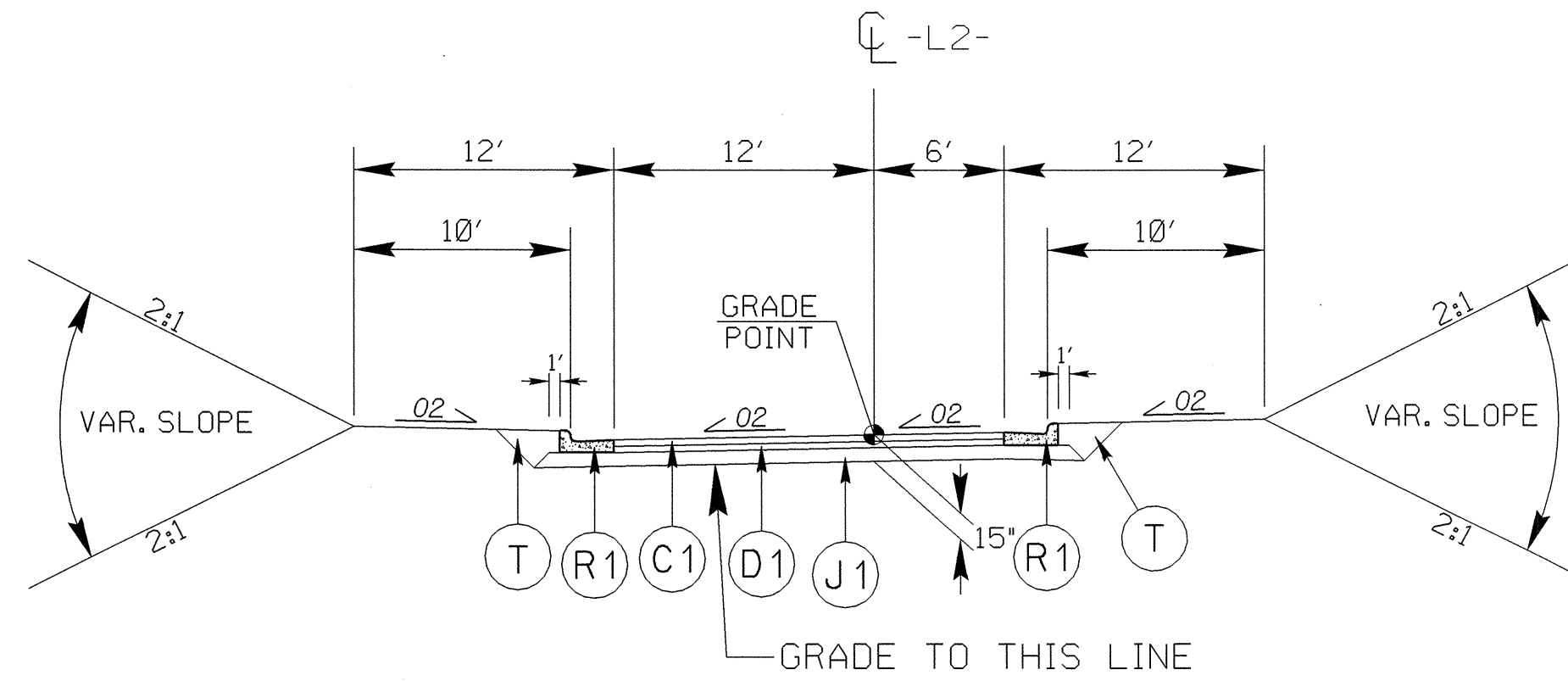
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



03-JUL-2007 08:01  
 6:54:05 PM  
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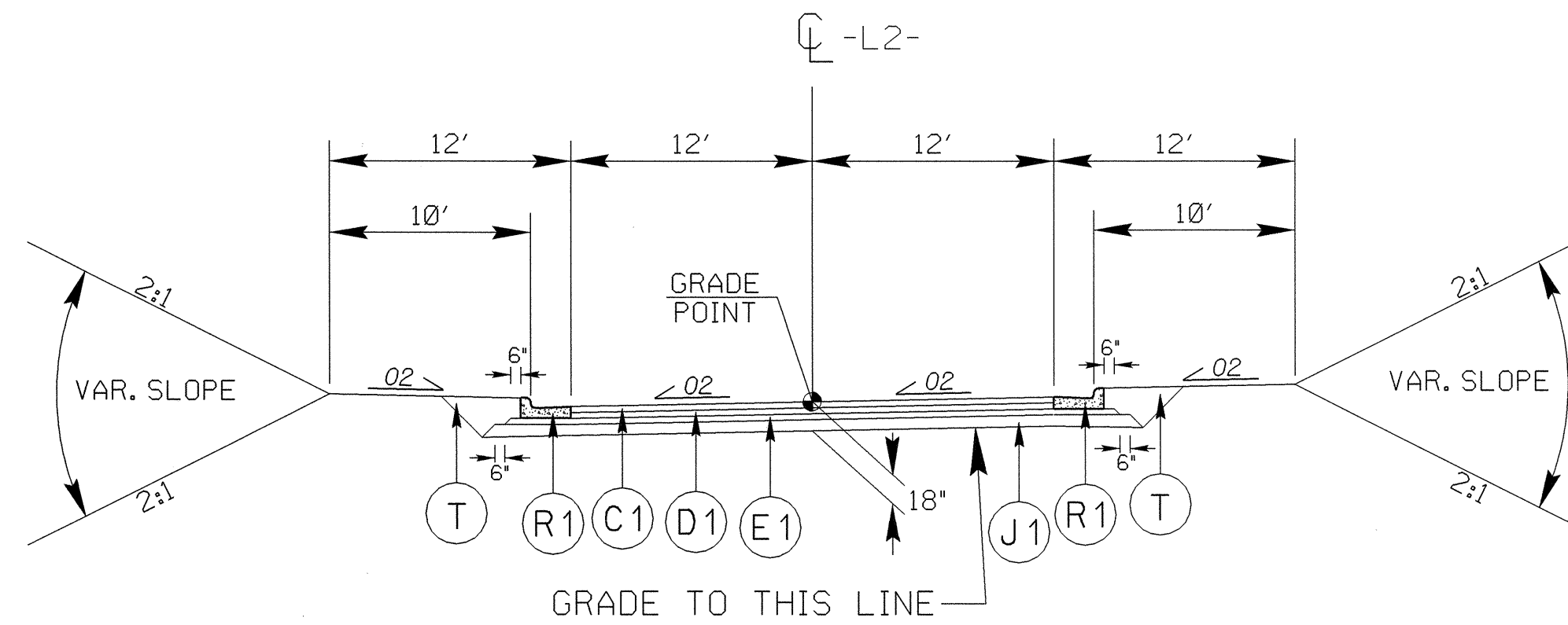
PAVEMENT SCHEDULE	
C1	3" S9.5B
D1	4" I19.0B
E1	3" B25.0B
J1	8" ABC
J2	VAR. ABC
R1	2'-6" CONC. C&G
R2	CONC. SBG
T	EARTH MATERIAL



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L2- STA. 29+50.00 TO -L2- STA. 33+88.32  
 -L2- STA. 42+10.33 TO -L2- STA. 43+80.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-L2- STA. 43+80.00 TO -L2- STA. 48+30.37

NOTE: TRANSITION FROM TYPICAL SECTION NO. 4 TO TYPICAL SECTION NO. 2  
 -L2- STA. 48+30.37 TO -L2- STA. 50+30.43

PROJECT REFERENCE NO. K-4703	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 

*Handwritten signature and date:*  
 7/13/07





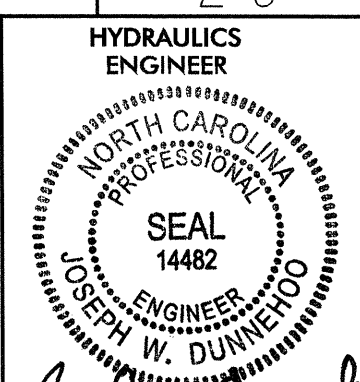
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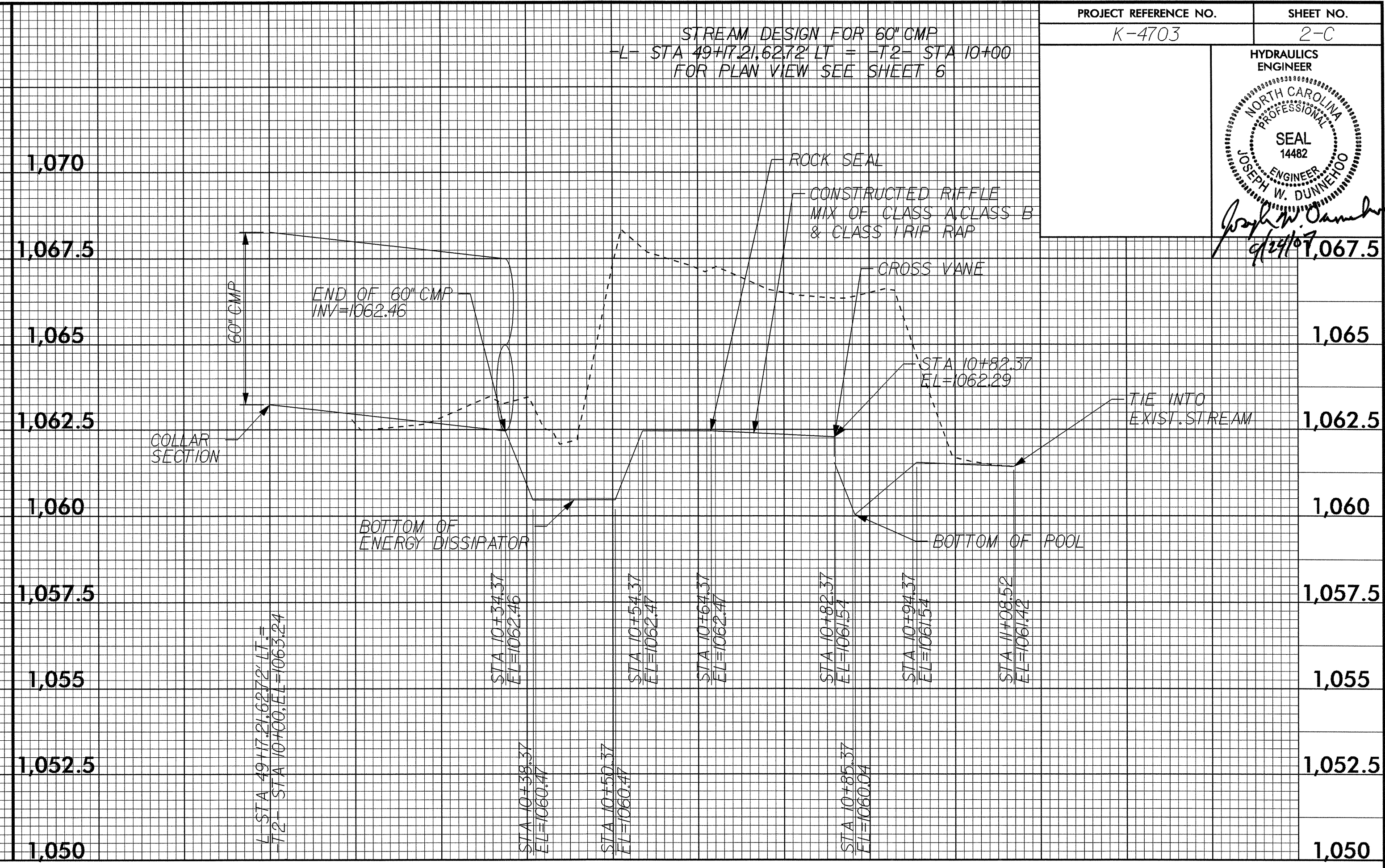
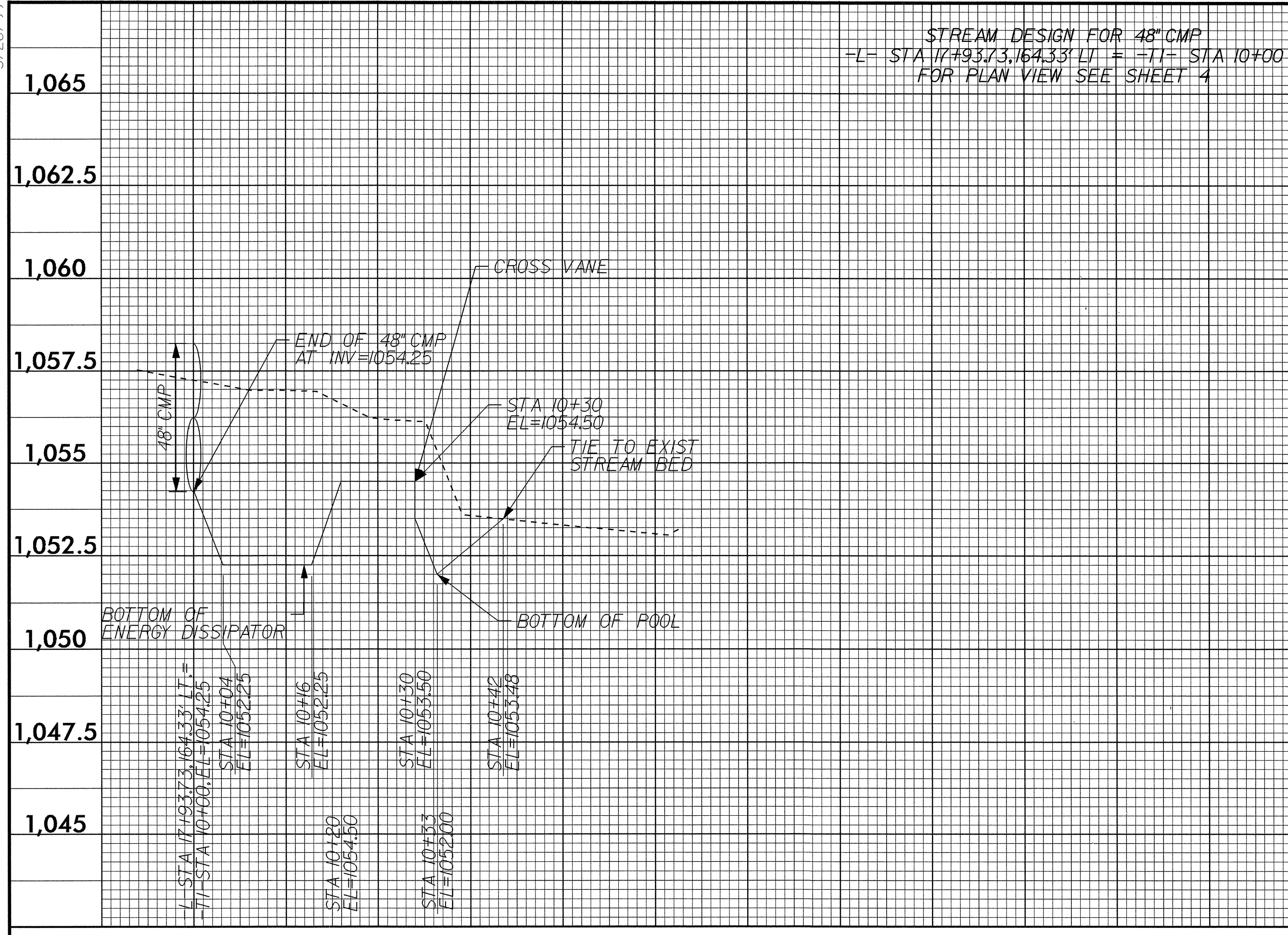
STREAM DESIGN FOR 48" CMP  
-L- STA 17+93.73, 164.33' LT = -11- STA 10+00  
FOR PLAN VIEW SEE SHEET 4

STREAM DESIGN FOR 60" CMP  
-L- STA 49+17.21, 62.72' LT = -12- STA 10+00  
FOR PLAN VIEW SEE SHEET 6

PROJECT REFERENCE NO. K-4703 SHEET NO. 2-C

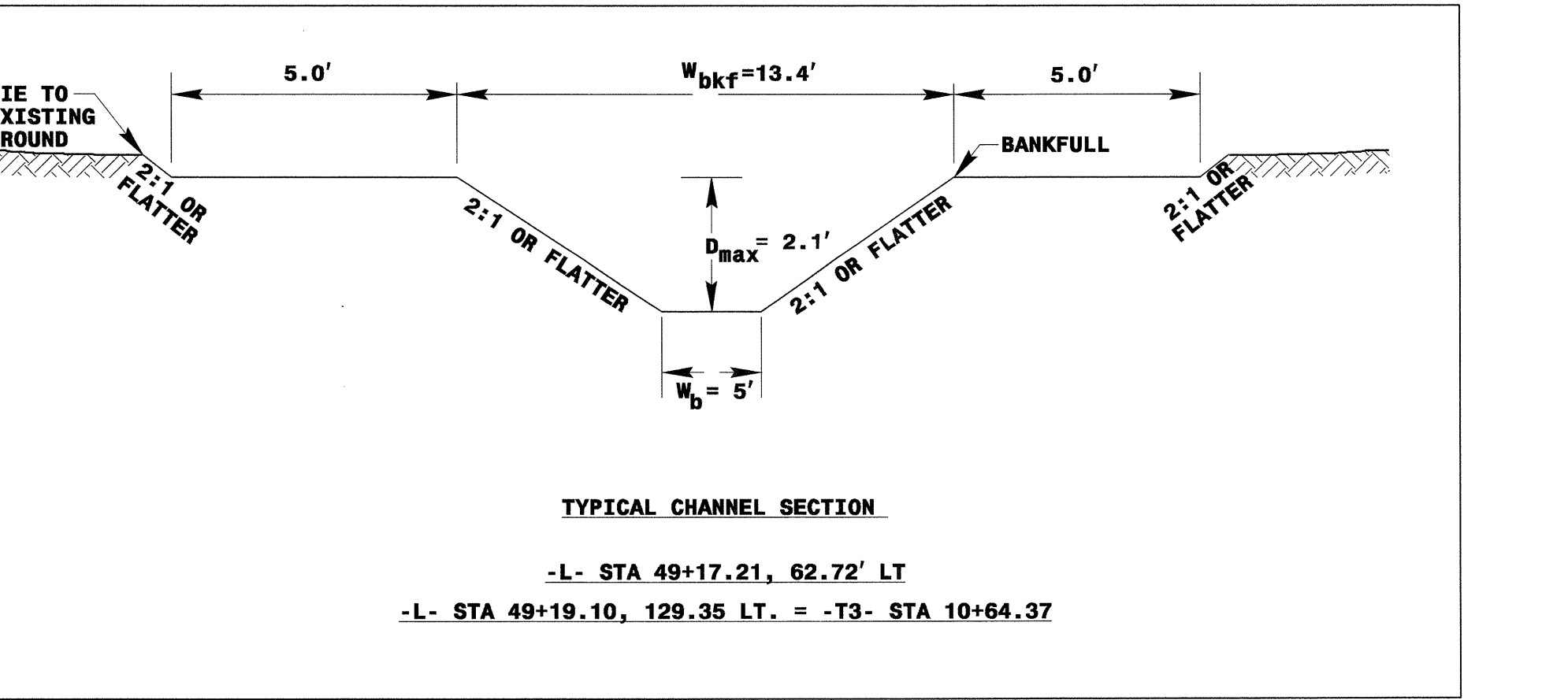
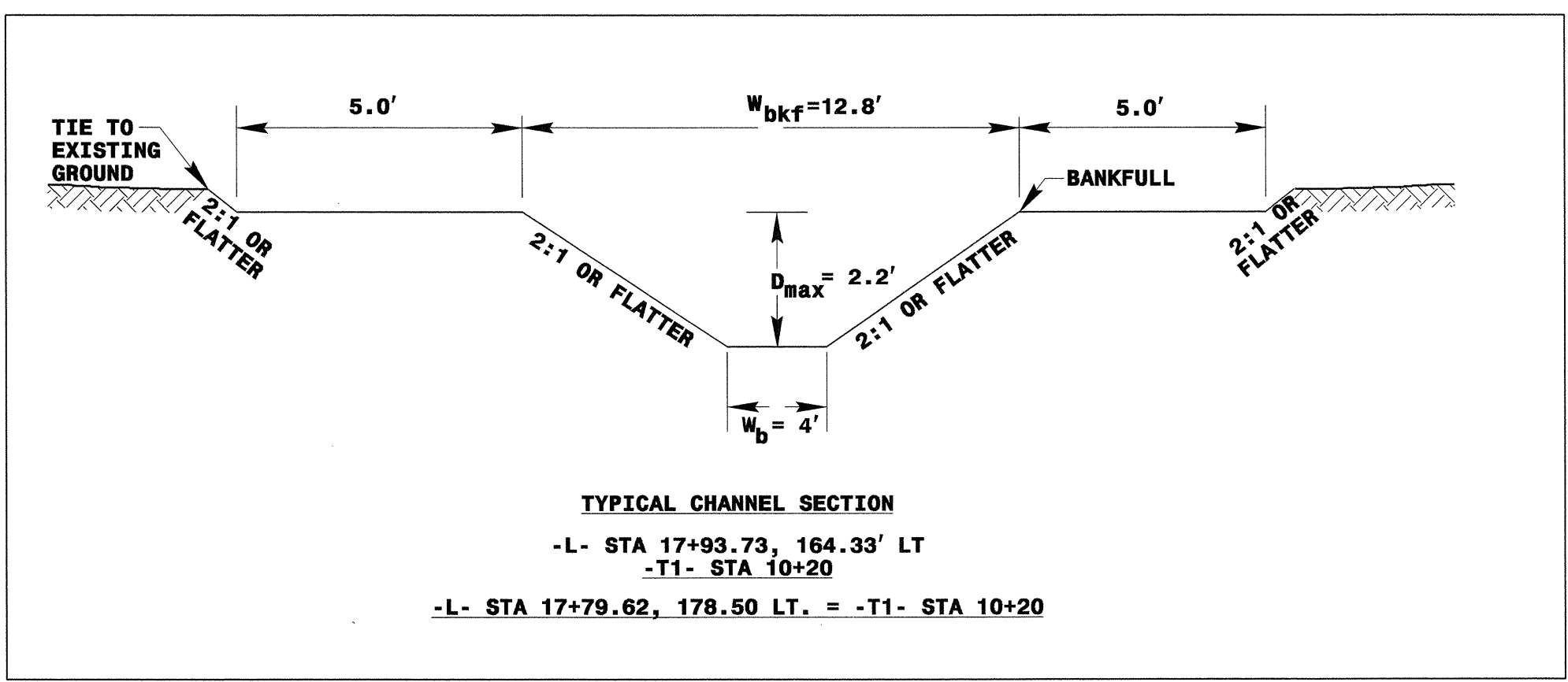
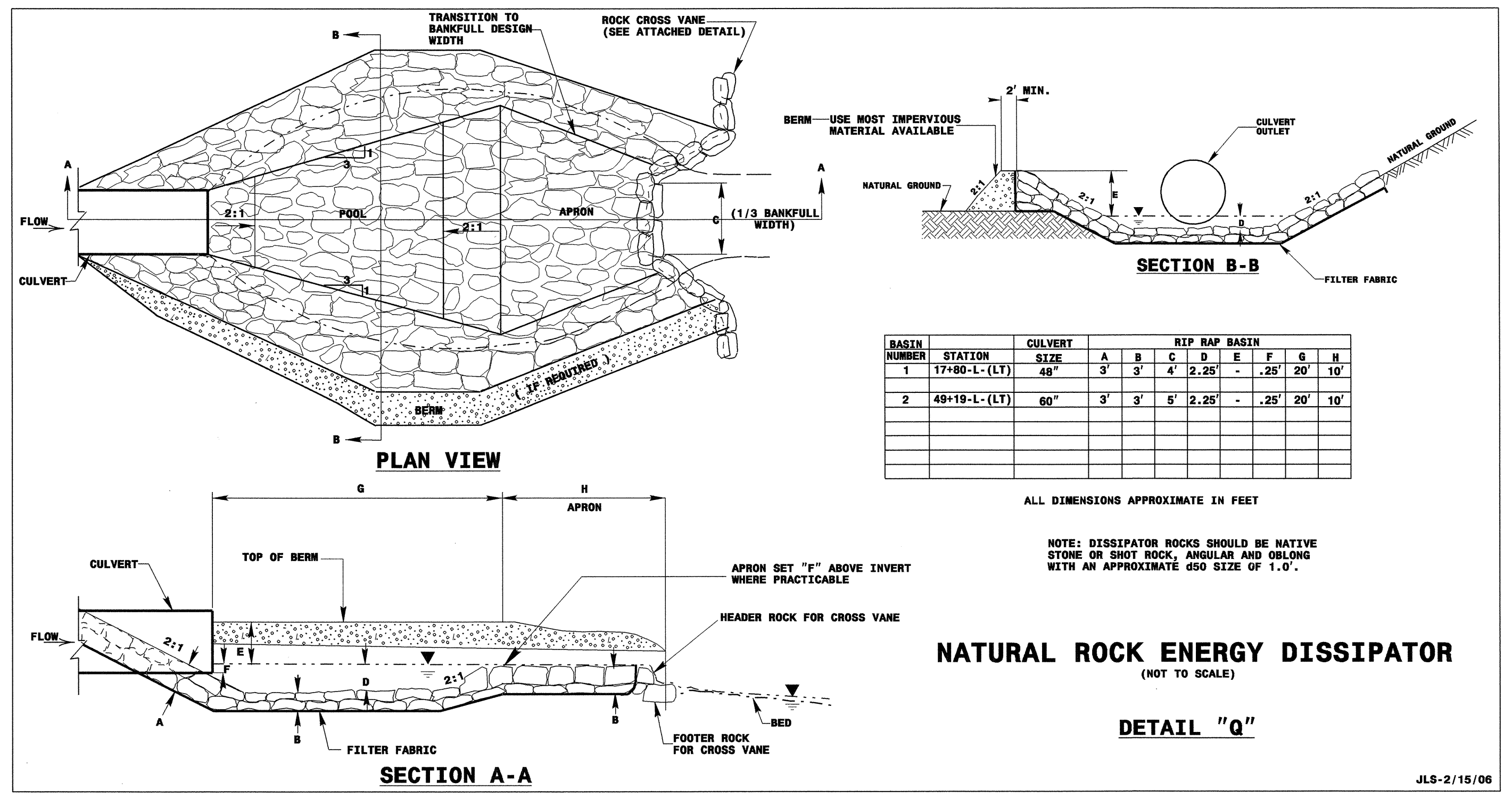
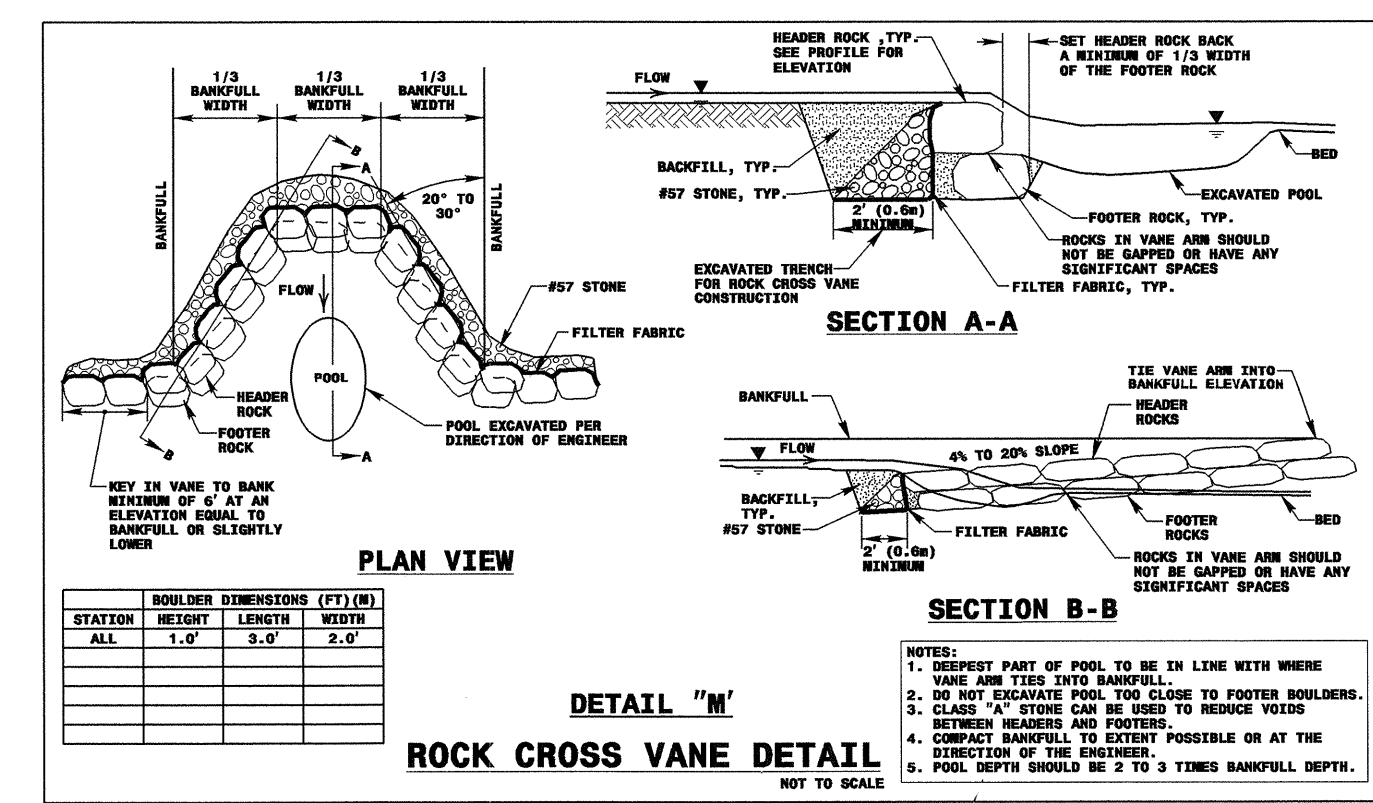
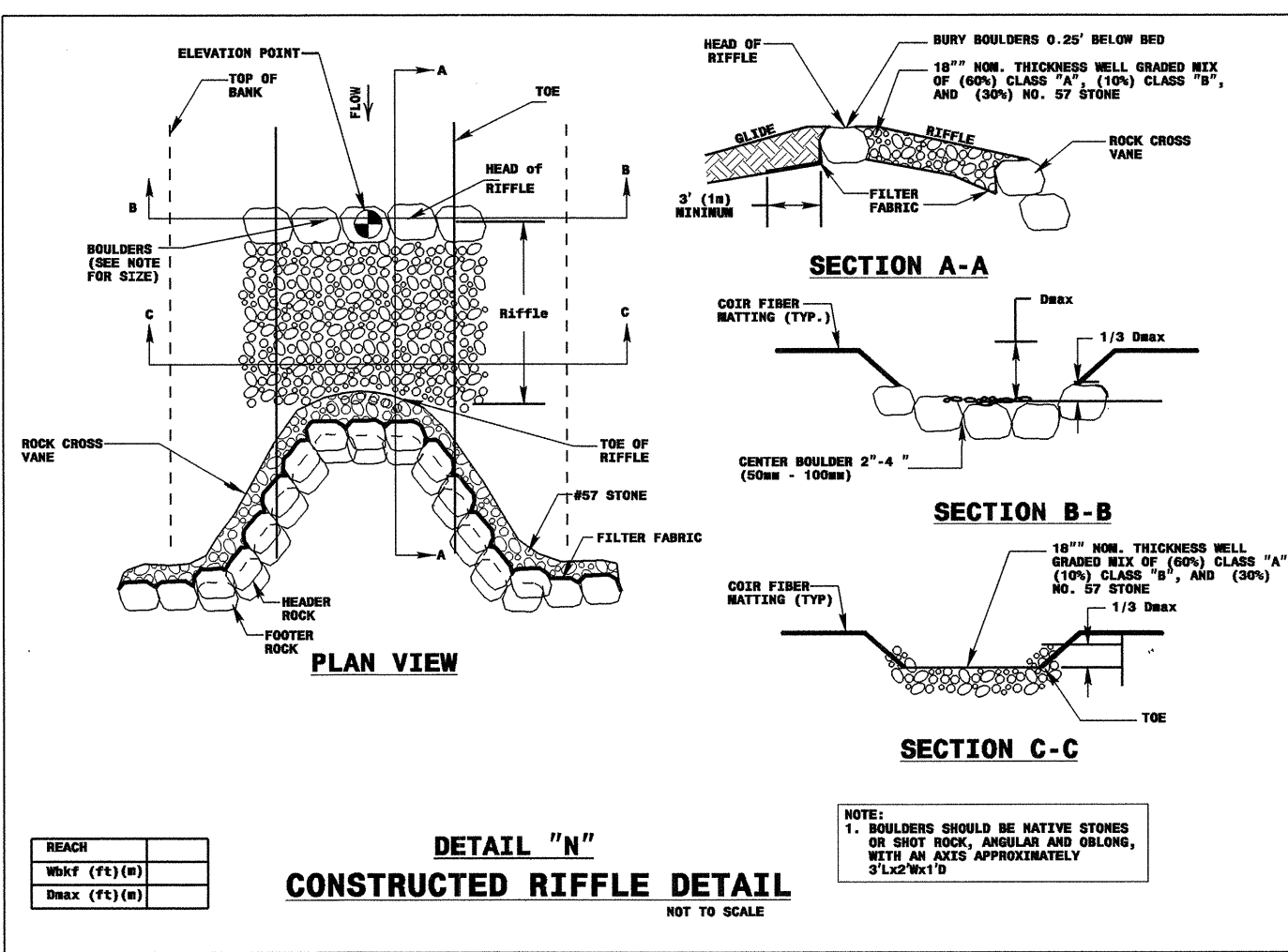
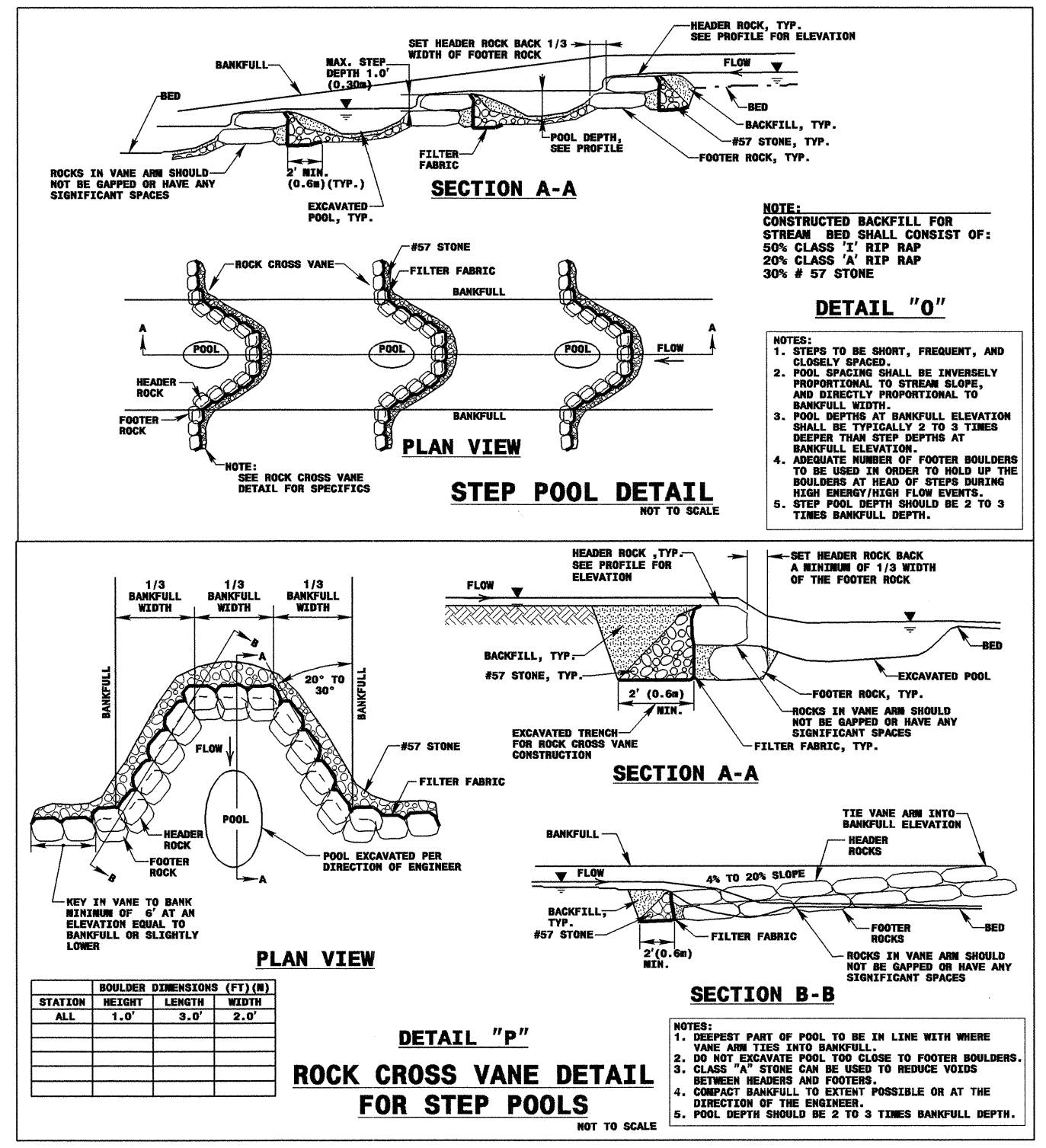


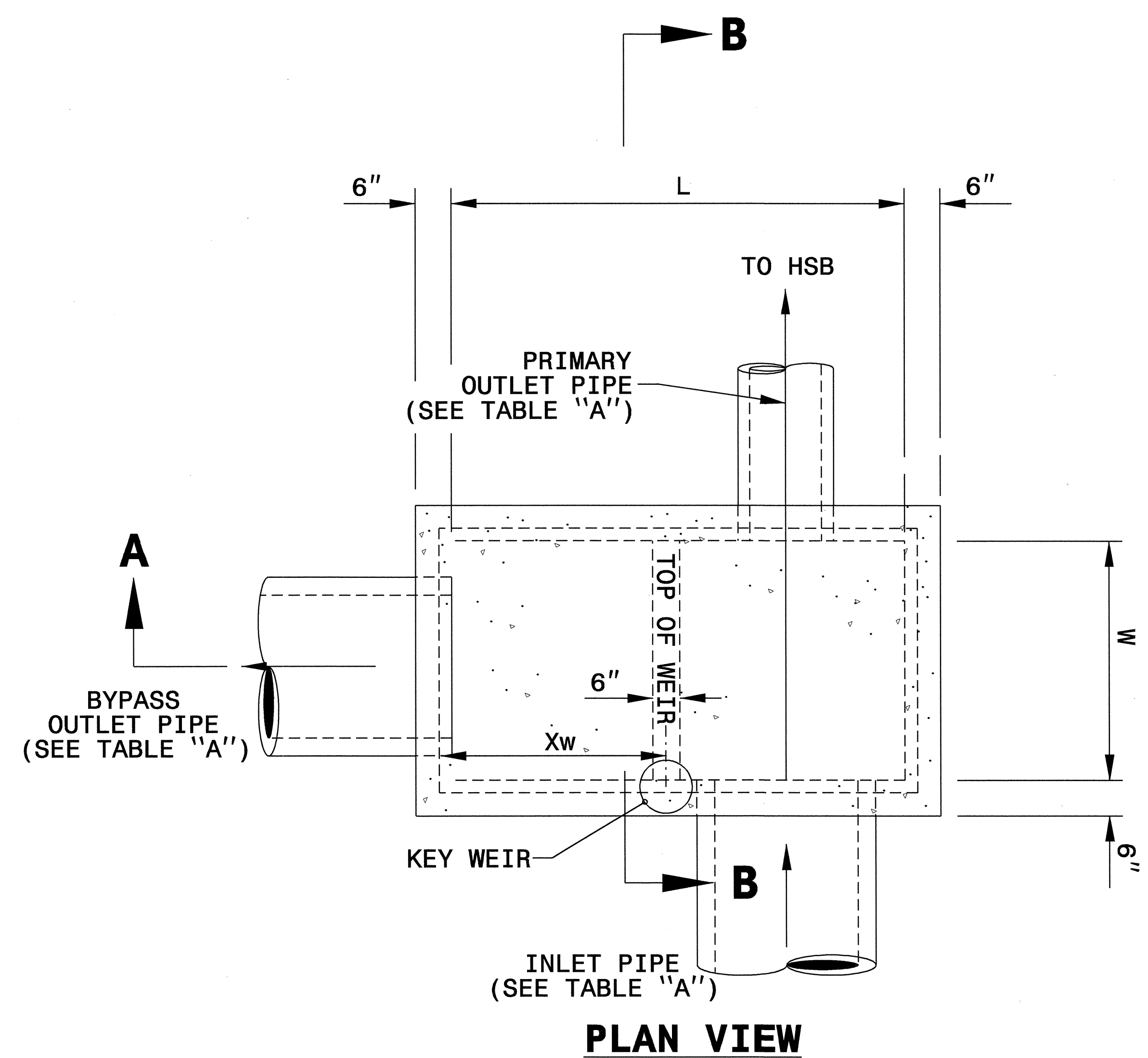
Joseph W. Dunne  
7/27/07



VERTICAL: 1"=2.5'  
HORIZONTAL: 1"=12.5'

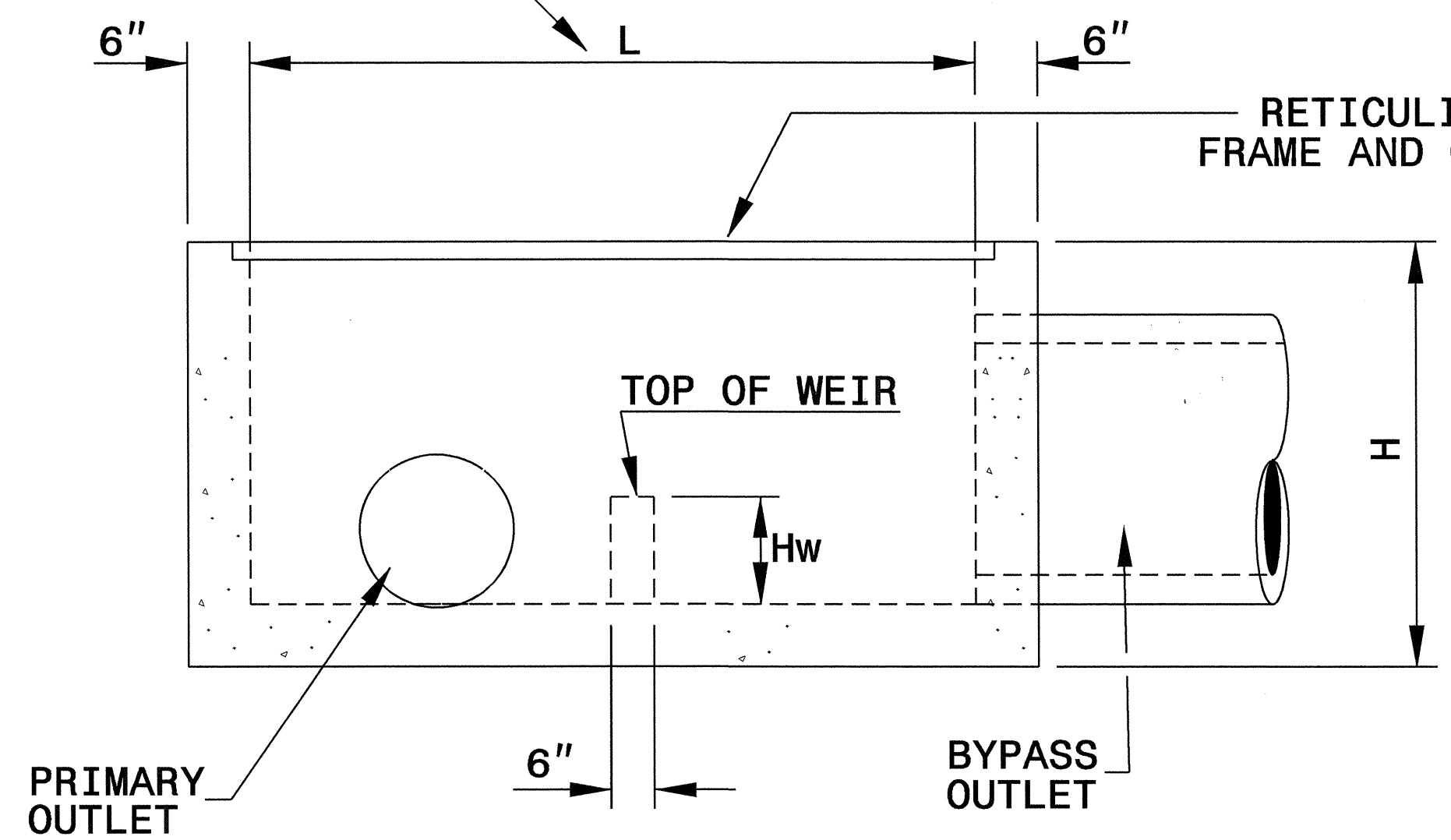






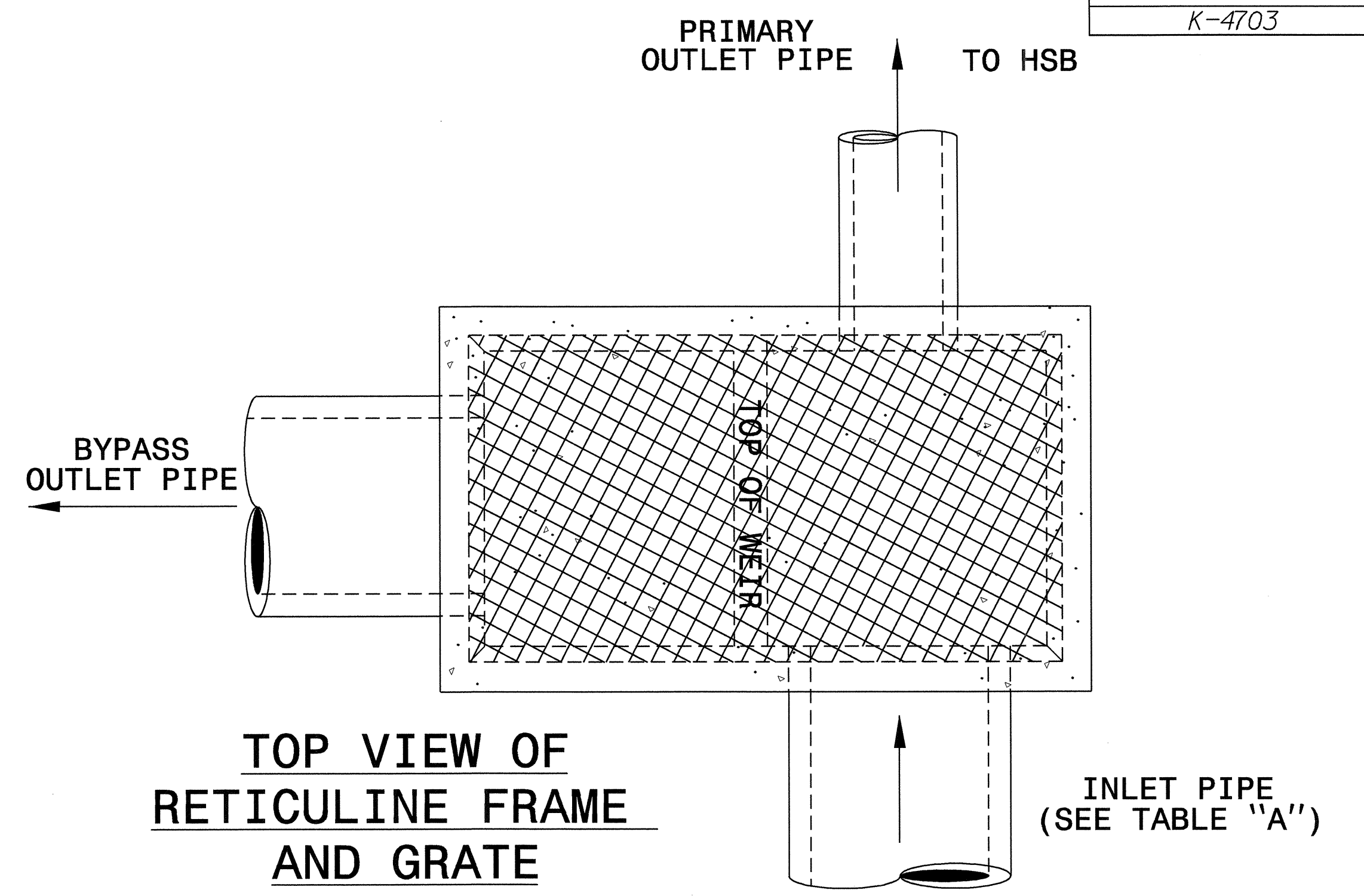
**PLAN VIEW**

SEE TABLE "B" FOR BOX DIMENSIONS & ELEVATIONS



**VIEW A-A**

NOTE: (SEE TABLE "B" FOR WEIR HEIGHT & LOCATION)

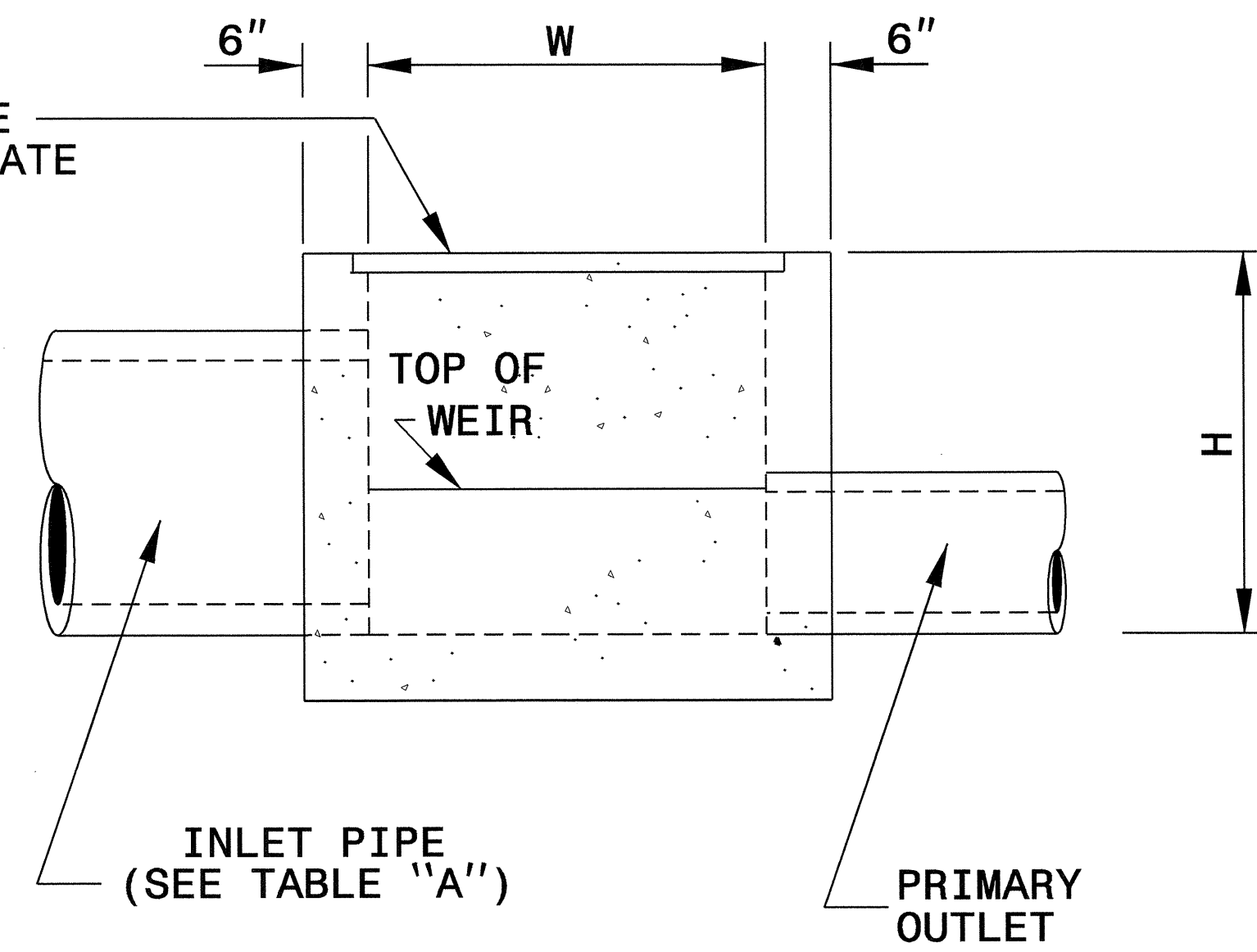


**TOP VIEW OF RETICULINE FRAME AND GRATE**

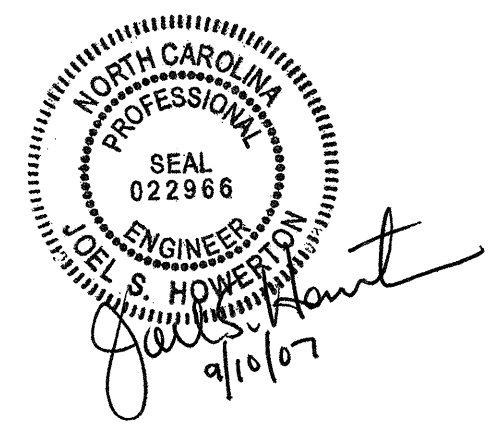
TABLE "A"							
PIPE SIZE AND INVERT ELEVATION							
BASIN	INLET PIPE DIA.	PRIMARY OUTLET PIPE DIA.	SECONDARY OUTLET PIPE DIA.	INLET PIPE INV. ELEV.	PRIMARY OUTLET PIPE INV. ELEV.	SECONDARY OUTLET PIPE INV.ELEV.	CONCRETE QTY. (YD. <sup>3</sup> )
Sta. 29+88-L2- (44.47 Lt)	24"	15"	18"	1126.59'	1126.59'	1126.59'	3.2

TABLE "B"							
BOX AND WEIR SIZE & INVERT ELEVATION							
BASIN	BOX DIMENSIONS			BOX INVERT ELEV.	TOP OF BOX INVERT ELEV.	WEIR HEIGHT (Hw)	WEIR LOCATION (Xw)
	L	W	H				
Sta. 29+88-L2- (44.47 Lt)	8'	4'	5.21'	1126.59'	1131.80'	27.5"	4'

- NOTES:
- USE CLASS 'B' CONCRETE THROUGHOUT.
  - PLACE STEPS IN ALL STRUCTURES OVER 3' IN HEIGHT IN ACCORDANCE WITH STD.NO. 840.66. (12" ON CENTERS)
  - RETICULINE FRAMES AND GRATES TO BE APPROVED BY THE ENGINEER.
  - USE REBAR PLACEMENT AND QUANTITIES AS SHOWN BY THE ENGINEER.
  - USE REBAR PLACEMENT AS SHOWN IN STD.NO. 840.31.



**VIEW B-B**



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STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

**SPLITTER BOX  
DETAILS**

ORIGINAL BY: TSpell	DATE: Jan.16,2006
MODIFIED BY: jwunnehoo	DATE: 6-5-07
CHECKED BY:	DATE:
FILE SPEC.: r:\hydraulics\k4703_splitter_box.dgn	

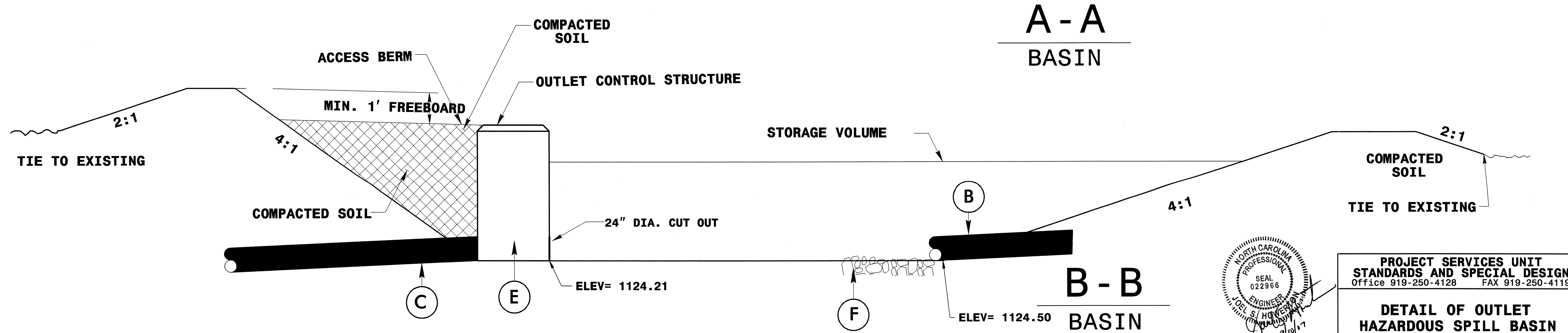
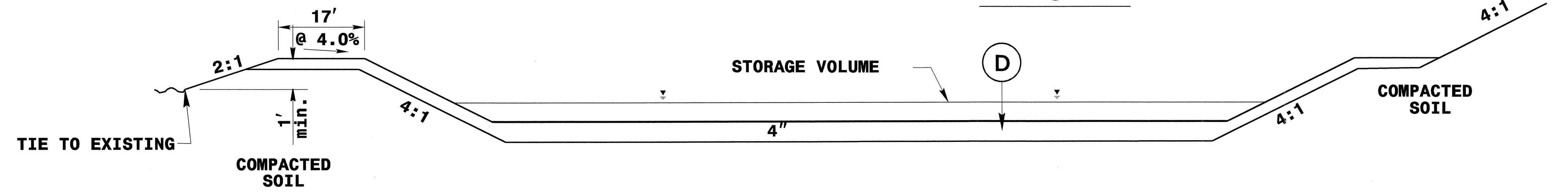
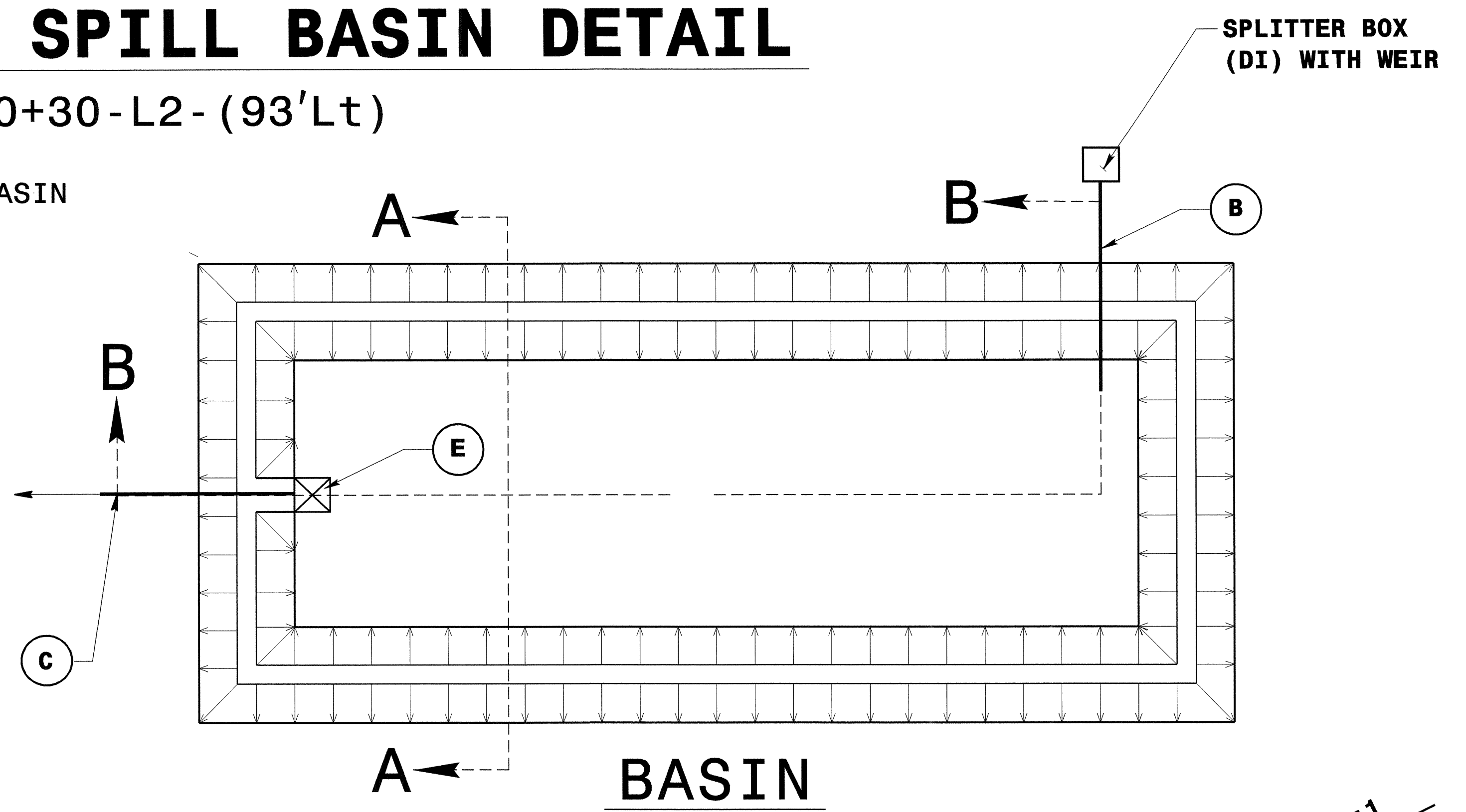
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19-JUL-2007 07:20  
K:\PROJECTS\K4703\rdy\_2e\_h.dgn  
\$\$\$\$\$USER\$\$\$\$\$

MATERIALS	
(B)	15" RCP INLET PIPE
(C)	24" RCP OUTFALL PIPE
(D)	TOP SOIL AND BERMUDA SOD
(E)	OUTLET CONTROL STRUCTURE (SEE SPECIAL DETAIL)
(F)	CLASS B RIP RAP

# HAZARDOUS SPILL BASIN DETAIL

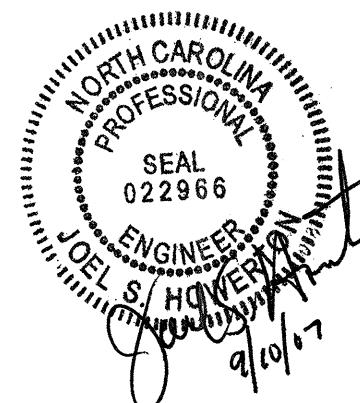
Sta. 30+30-L2- (93'Lt)

**NOTE:**  
SEE PLAN SHEET #5 FOR SHAPE AND SIZE OF BASIN  
SURFACE AREA AT ELEV. 1124.5 = 1866 SF.  
SURFACE AREA AT ELEV. 1127.5 = 4462 SF.



## TYPICAL SECTIONS

\*NOT TO SCALE



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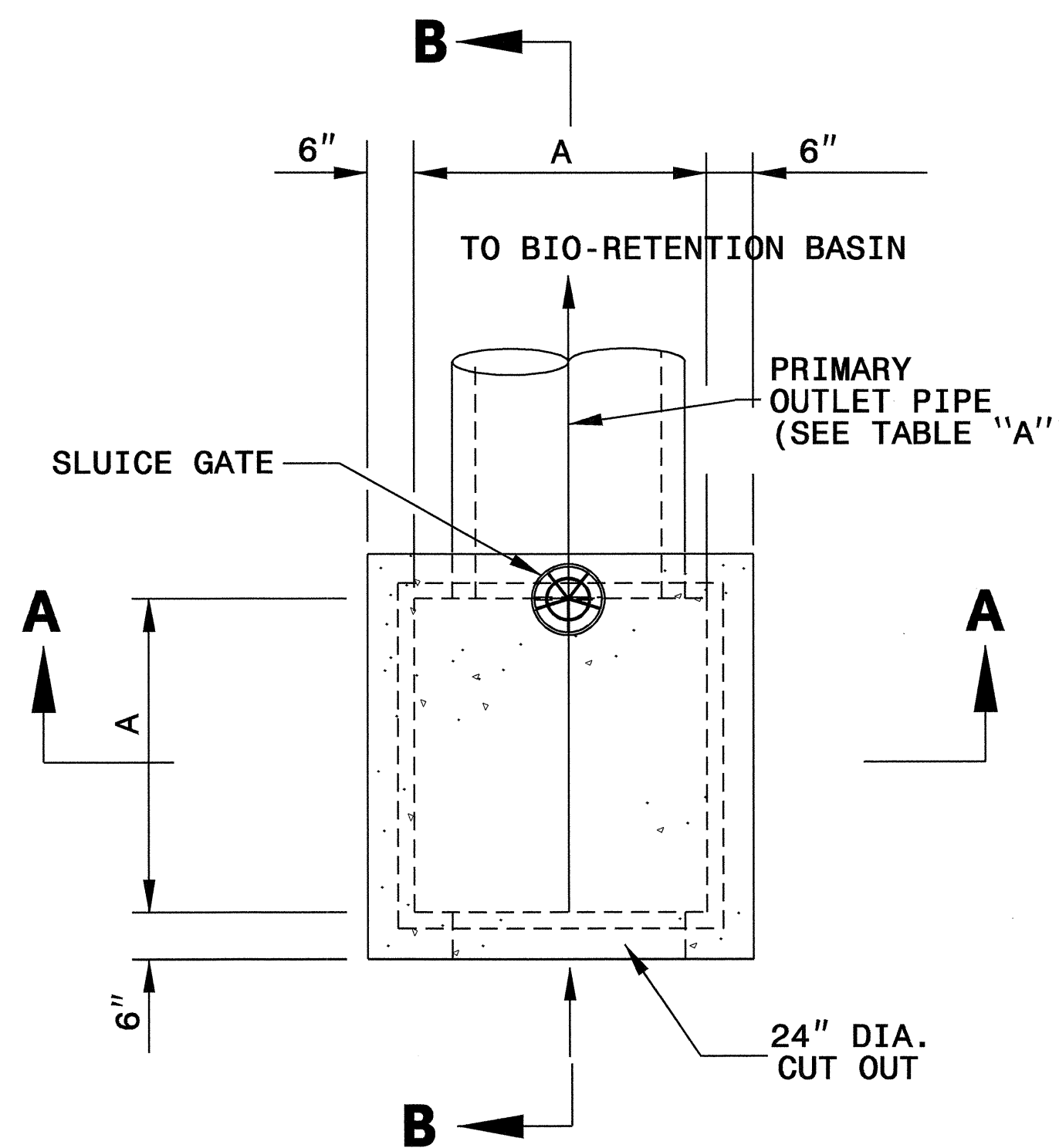
### DETAIL OF OUTLET HAZARDOUS SPILL BASIN

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: jwdunneho DATE: 2-19-07  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: k4703\_hazardous\_spill\_retention\_basin.dgn

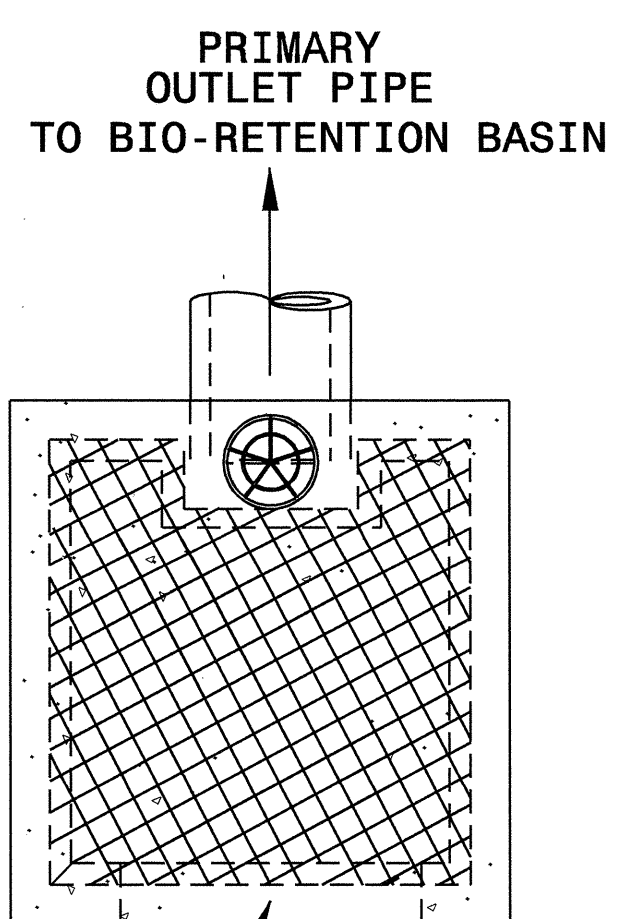
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19-JUL-2007 07:20  
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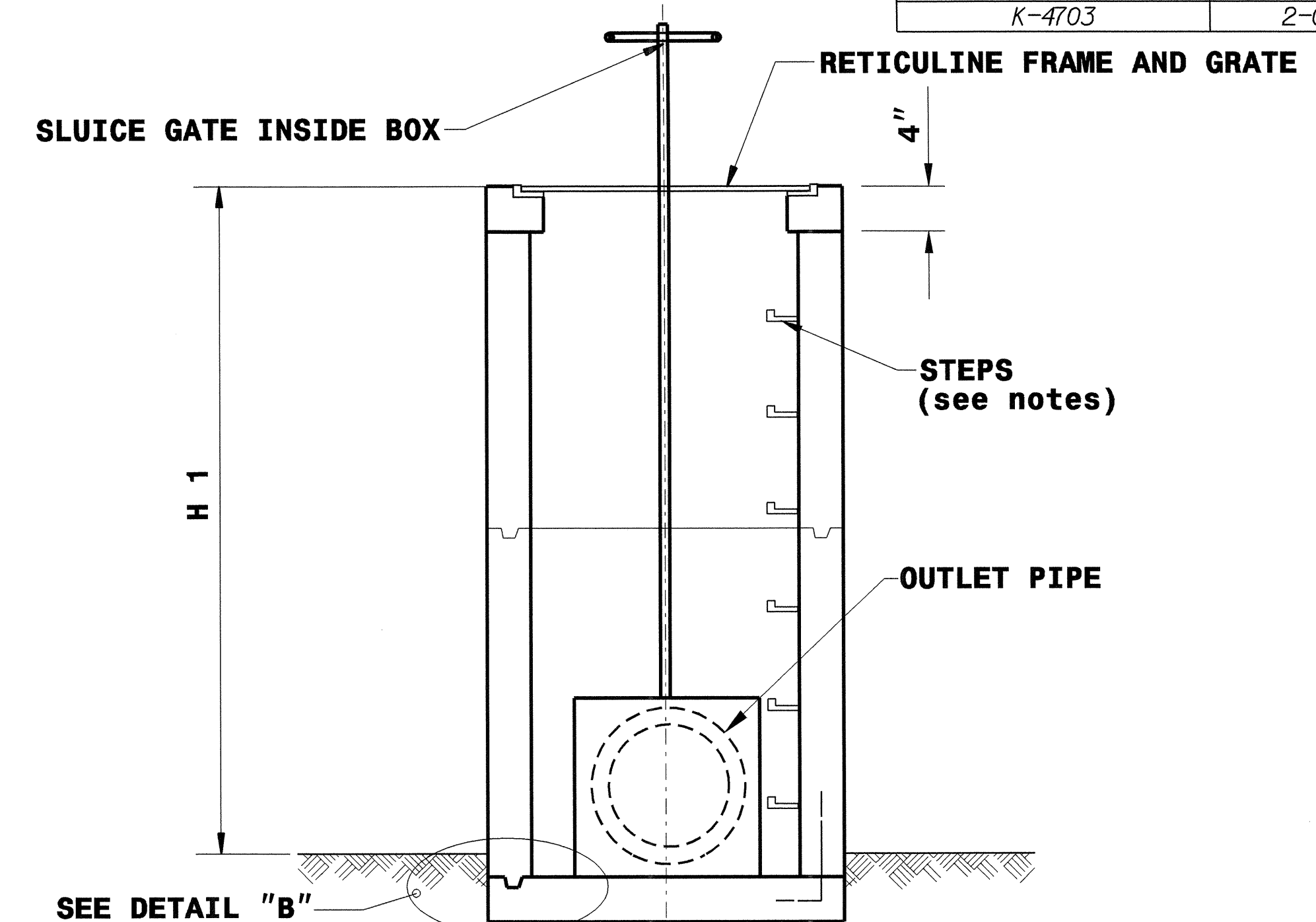




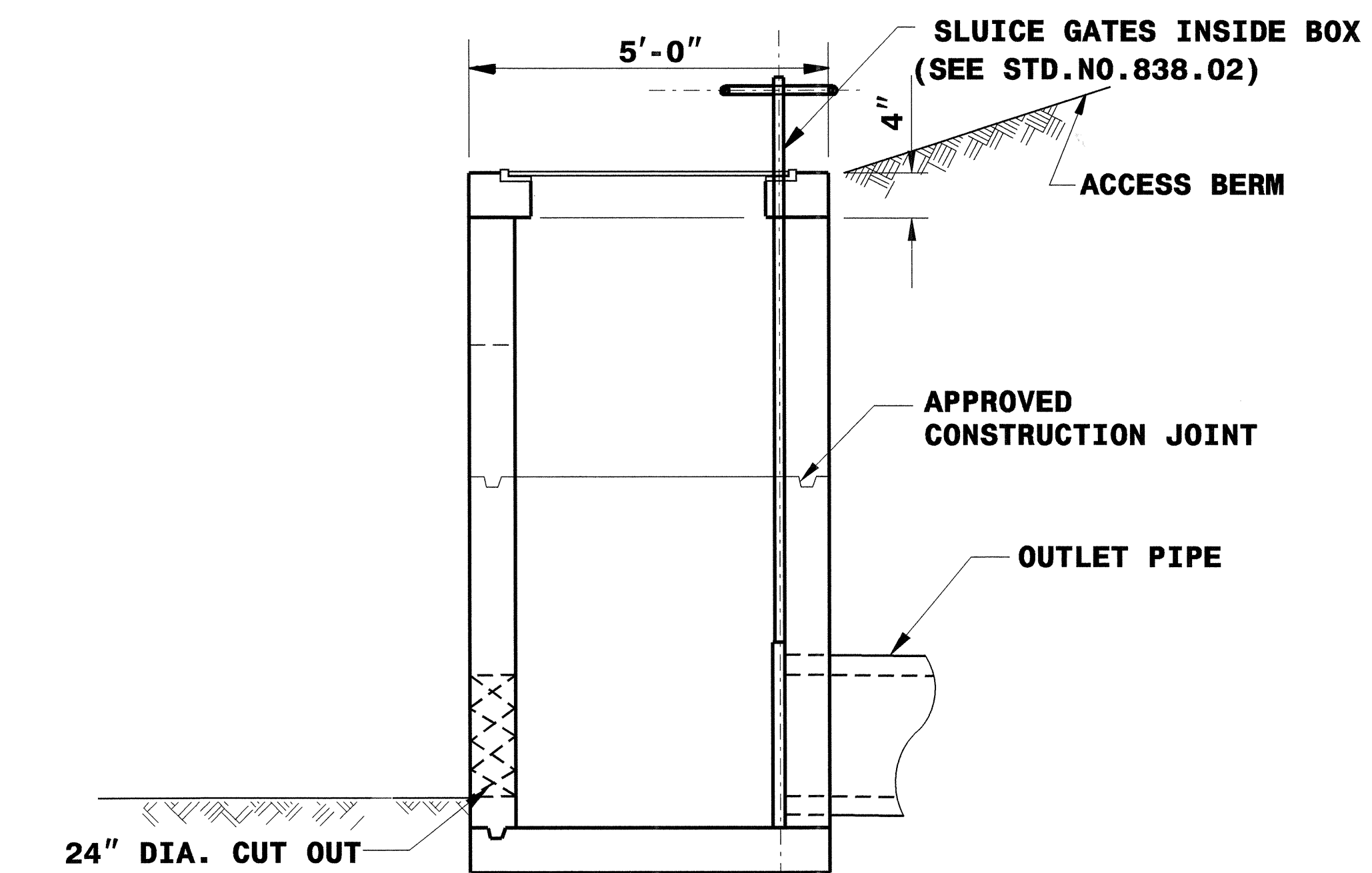
PLAN VIEW



TOP VIEW OF RETICULINE FRAME AND GRATE WITH SLUICE GATE



VIEW A-A



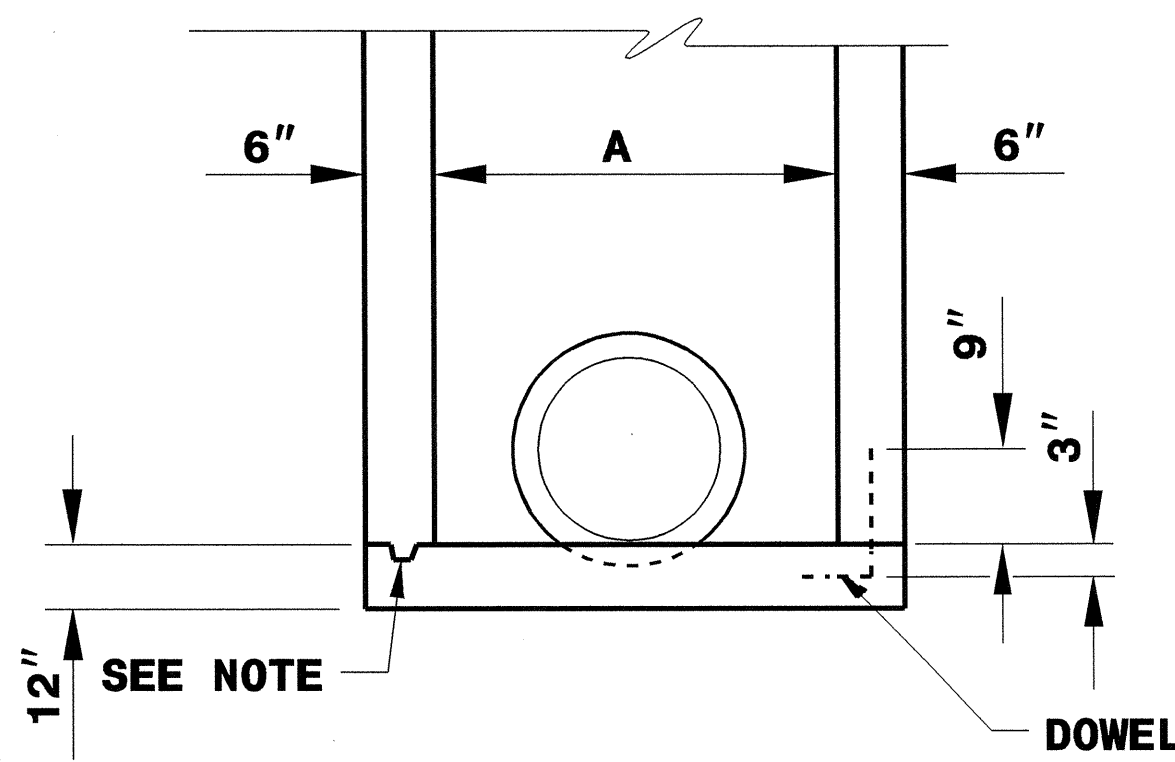
VIEW B-B

TABLE "A"

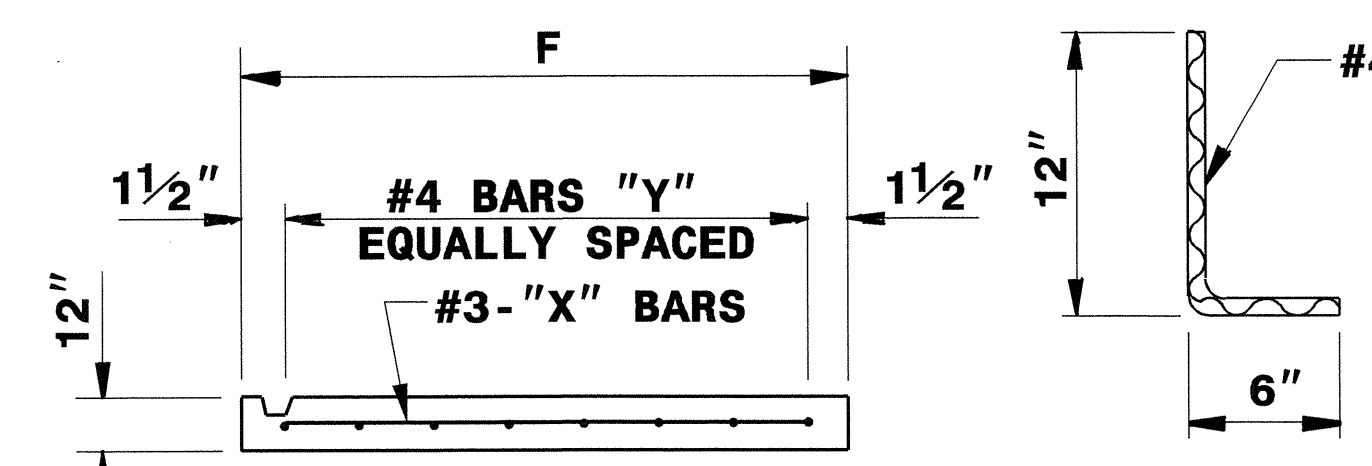
MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE							
BASIN	OUTLET PIPE D	OUTLET PIPE INVERT	BOX HEIGHT H1	TOP OF GRATE ELEV.	BOTTOM OF BOX	24" CUT OUT INVERT	POOL BASIN ELEV.
Sta. 30+30-L2- (93'Lt)	24"	1124.21	3.5	1127.21	1123.71	1124.21	1125.98

PIPE D	"A"	BARS-X		BARS-Y		"F"	TOTAL CONCRETE QUANTITIES
		QTY.	LENGTH	QTY.	LENGTH		
24"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	1.9 CU.YDS.

- GENERAL NOTES:**
- \* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
  - \* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
  - \* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
  - \* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
  - \* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
  - \* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
  - \* FOR 8'-0" IN HEIGHT OR LESS USE 8 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 8 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
  - \* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



DETAIL 'B'



BOTTOM SLAB

DOWEL

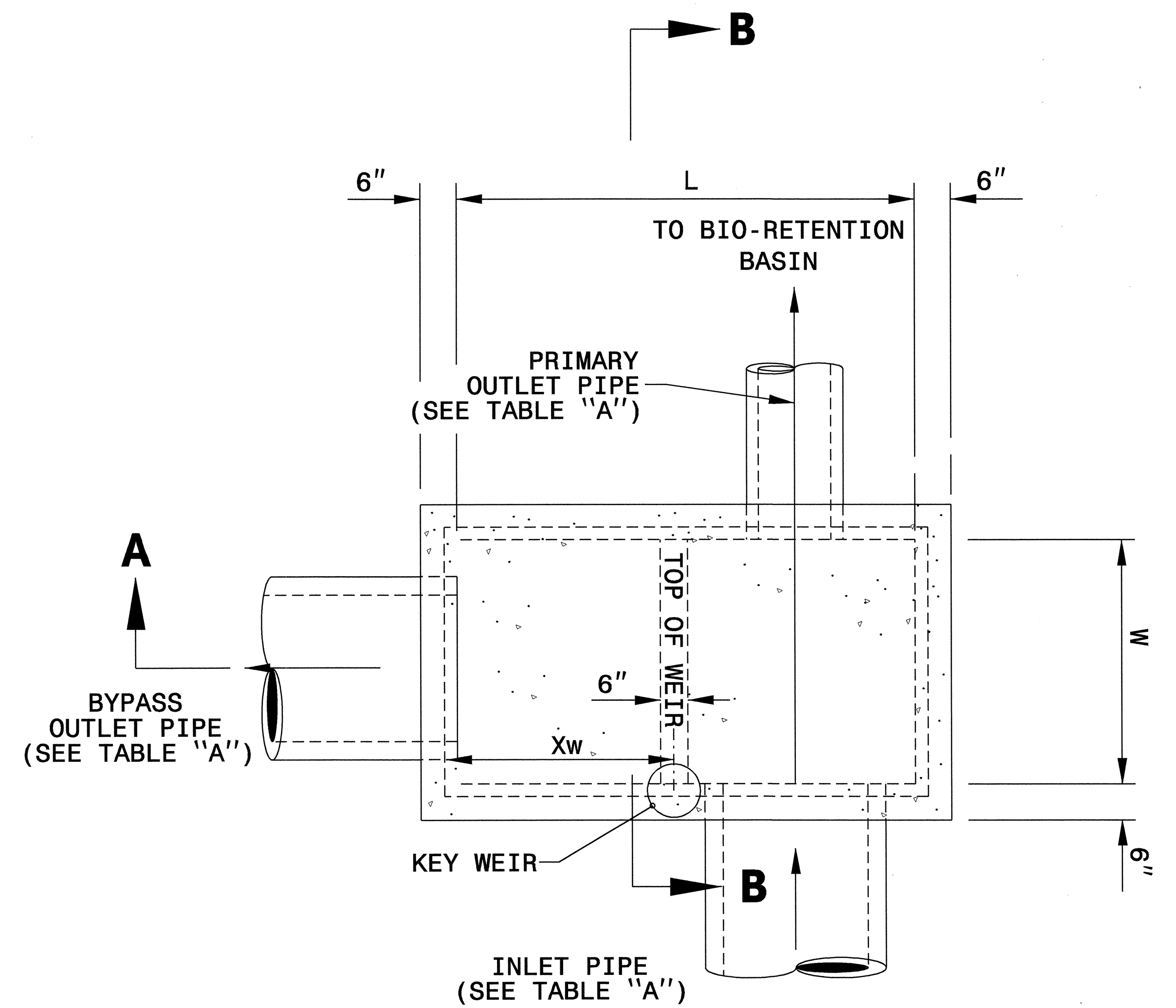


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STANDARDS AND SPECIAL DESIGN**  
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**DETAIL OF OUTLET CONTROL STRUCTURE FOR HAZARDOUS SPILL BASIN**

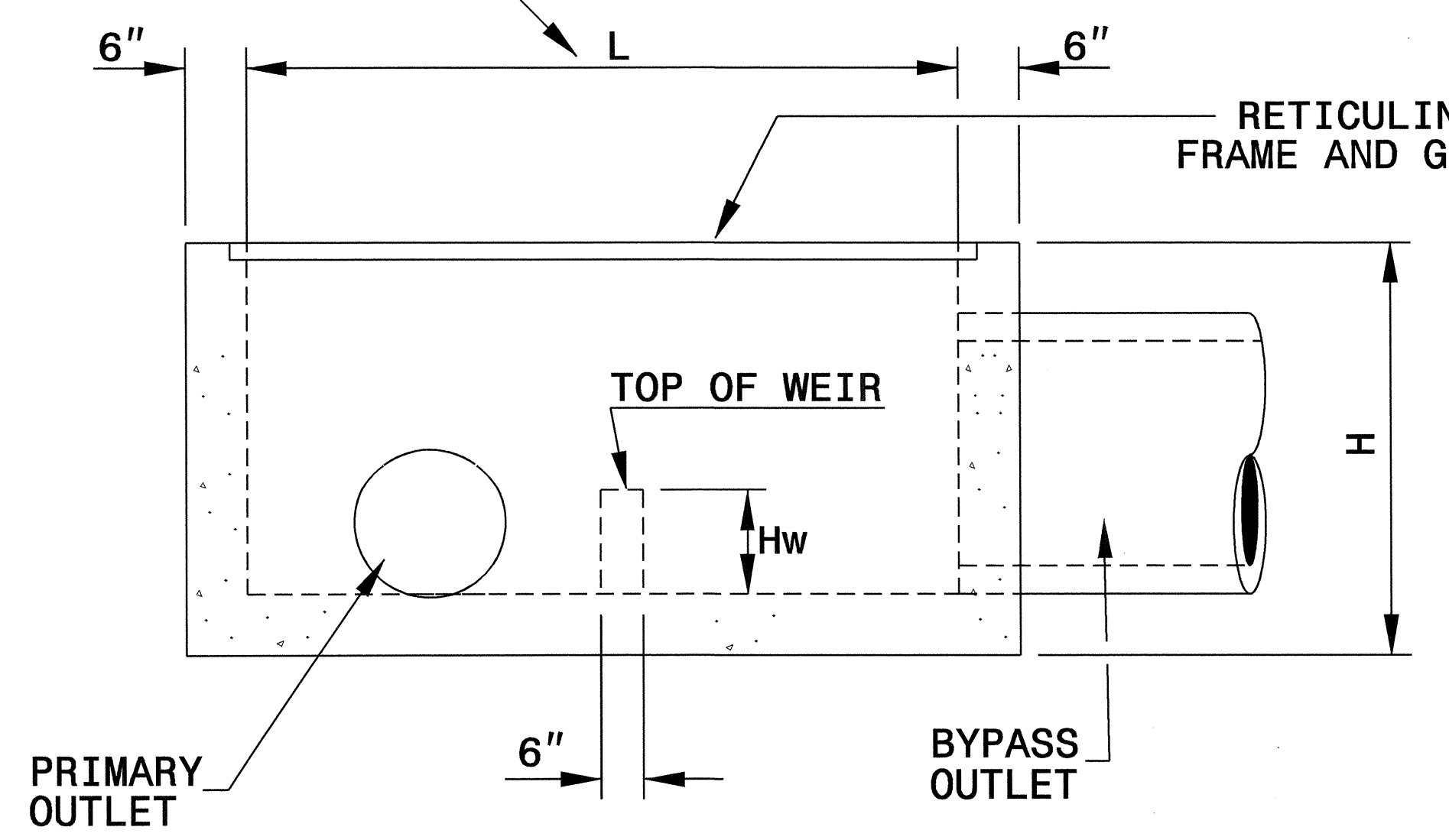
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 MODIFIED BY: jwdunneho DATE: 2-19-07  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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19-JUL-2007 07:20  
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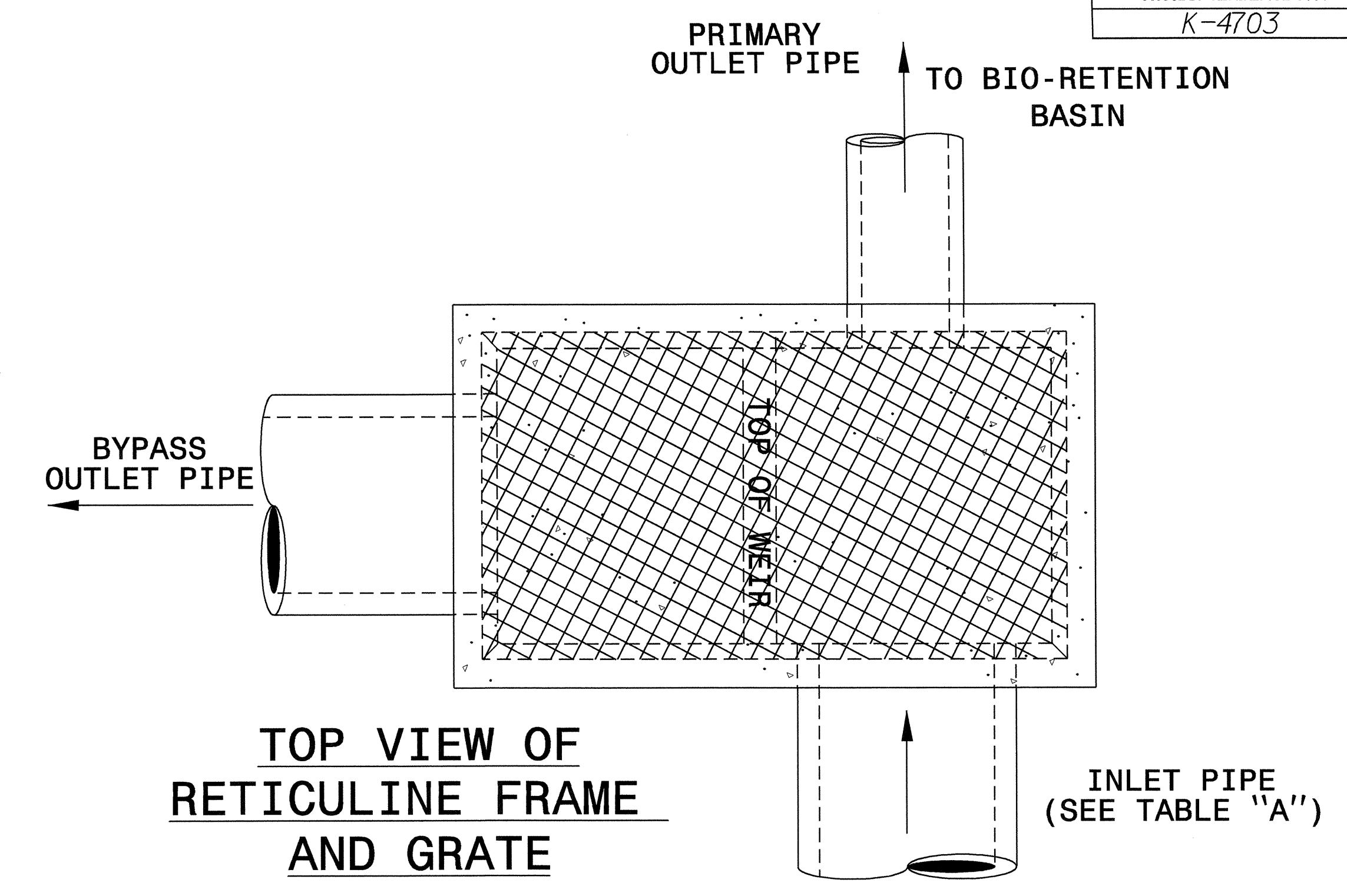


**PLAN VIEW**

SEE TABLE "B" FOR BOX DIMENSIONS & ELEVATIONS



**VIEW A-A**  
NOTE: (SEE TABLE "B" FOR WEIR HEIGHT & LOCATION)



**TOP VIEW OF RETICULINE FRAME AND GRATE**

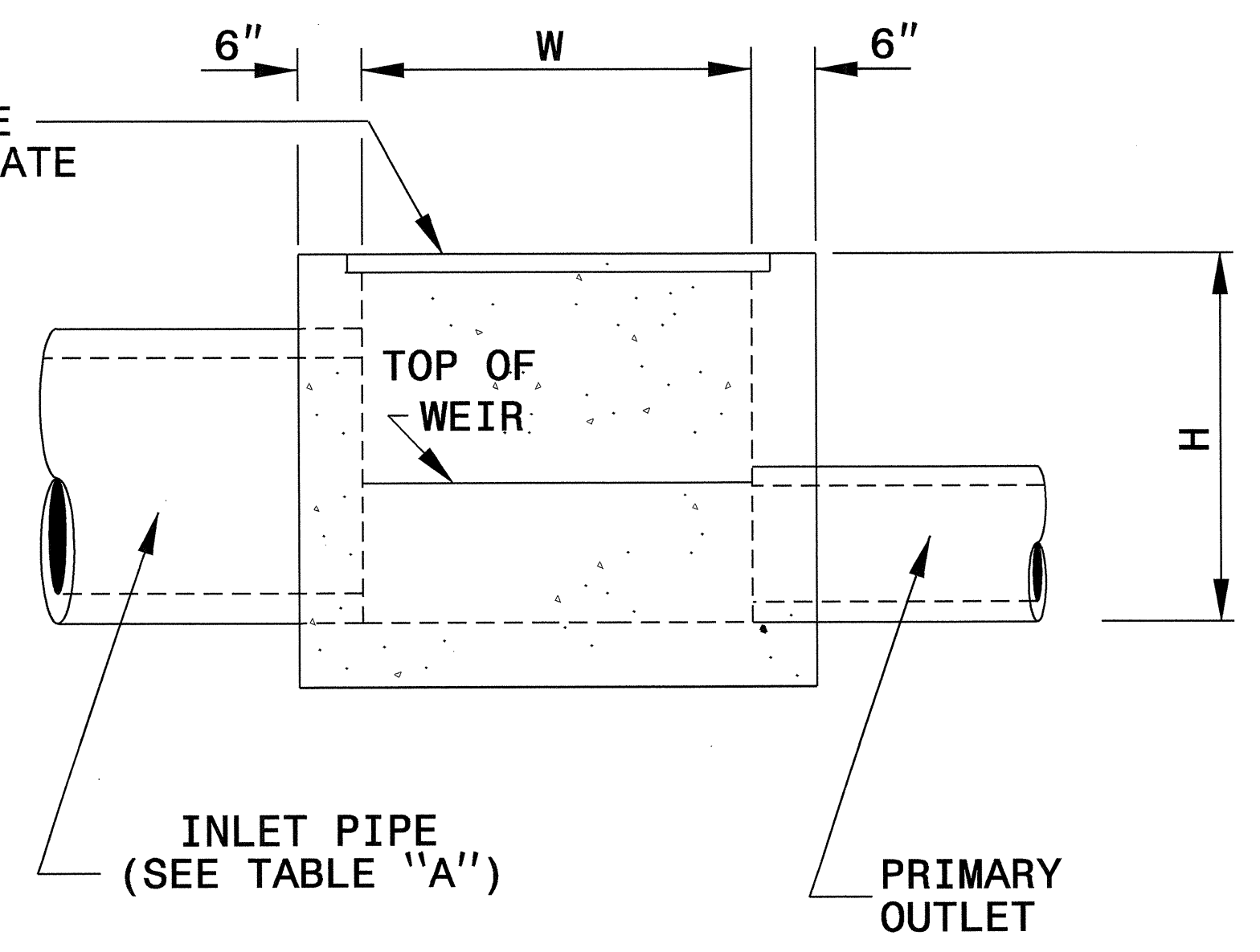
**TABLE "A"**  
**PIPE SIZE AND INVERT ELEVATION**

BASIN	INLET PIPE DIA.	PRIMARY OUTLET PIPE DIA.	SECONDARY OUTLET PIPE DIA.	INLET PIPE INV. ELEV.	PRIMARY OUTLET PIPE INV. ELEV.	SECONDARY OUTLET PIPE INV. ELEV.	CONCRETE QTY. (YD. <sup>3</sup> )
Sta. 31+75-L2- (53.15 Lt)	24"	15"	24"	1125.69'	1125.69'	1125.69'	3.2

**TABLE "B"**  
**BOX AND WEIR SIZE & INVERT ELEVATION**

BASIN	BOX DIMENSIONS			BOX INVERT ELEV.	TOP OF BOX INVERT ELEV.	WEIR HEIGHT ( Hw )	WEIR LOCATION ( Xw )
	L	W	H				
Sta. 31+75-L2- (53.15 Lt)	8'	4'	5.52'	1125.69'	1131.21'	29"	4'

- NOTES:**
- USE CLASS 'B' CONCRETE THROUGHOUT.
  - PLACE STEPS IN ALL STRUCTURES OVER 3' IN HEIGHT IN ACCORDANCE WITH STD.NO. 840.66. (12" ON CENTERS)
  - RETICULINE FRAMES AND GRATES TO BE APPROVED BY THE ENGINEER.
  - USE REBAR PLACEMENT AND QUANTITIES AS SHOWN BY THE ENGINEER.
  - USE REBAR PLACEMENT AS SHOWN IN STD.NO. 840.31.



**VIEW B-B**



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**SPLITTER BOX  
DETAILS**

ORIGINAL BY: TSpell DATE: Jan. 16, 2006  
 MODIFIED BY: jwdunne DATE: 6-5-07  
 CHECKED BY: DATE:  
 FILE SPEC.: r:\hydraulics\k4703\_splitter\_box.dgn

5/14/99  
19-JUL-2007 07:20:4703.rdy\_2e.tcdgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

### MATERIALS

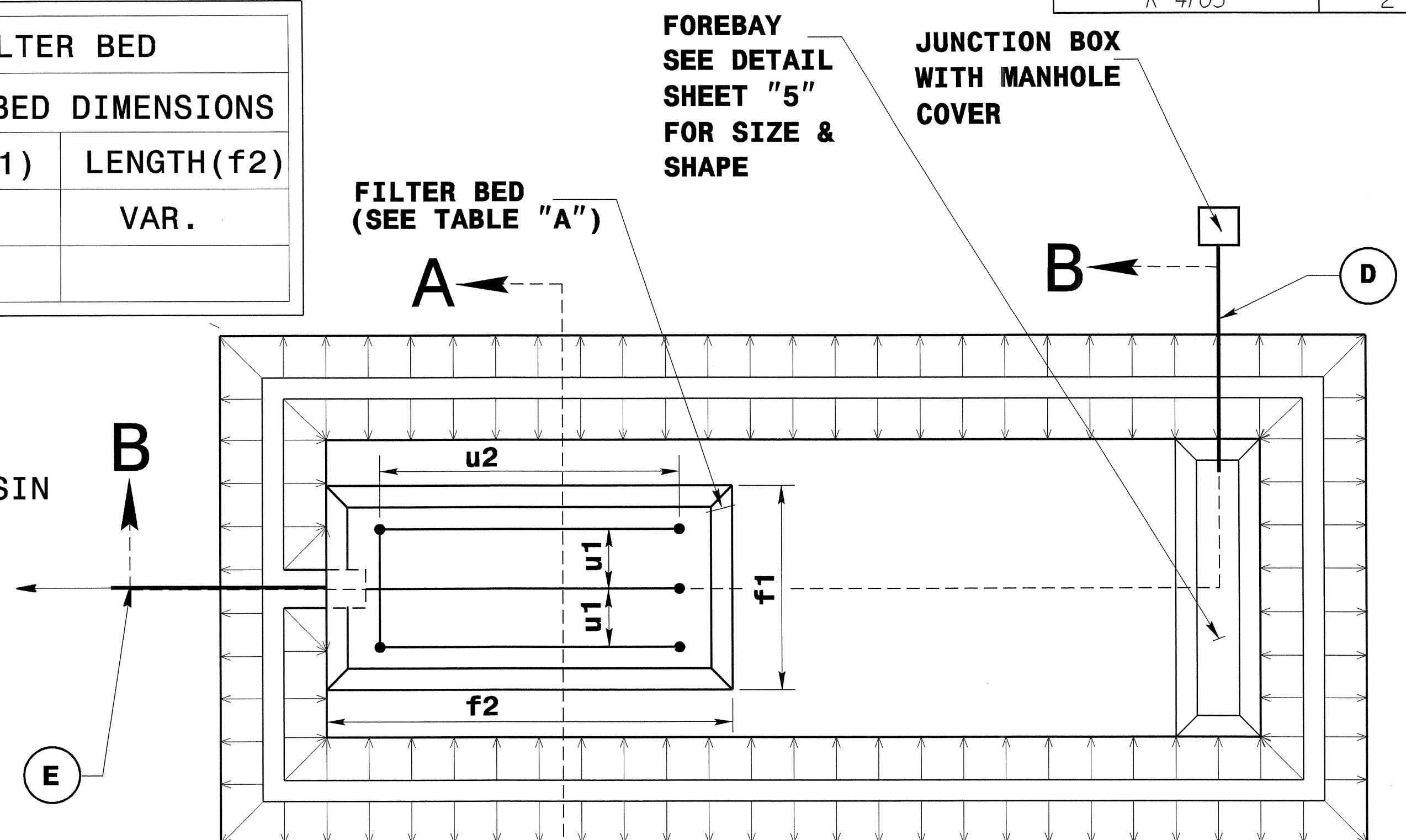
A	GEOTEXTILE FABRIC
B	POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
C	
D	15" RCP INLET PIPE
E	24" RCP OUTFALL PIPE
F	6" PERFORATED HDPE D/W W/ FILTER SOCK
G	6" HDPE D/W SOLID CLEANOUT PIPE
H	PRECAST DI BOX (SEE BOX SUMMARY)
I	ENGINEERED SOIL (85%-88% SAND, 8%-12% FINES (SILT & CLAY), 3%-5% ORGANICS) TO BE APPROVED BY ENGINEER
J	12 MONTH AGED HARDWOOD MULCH
K	CREEK STONE FOR FOREBAY
L	WASH STONE NO. 57 AS PER NCDOT SPEC.

BASIN	UNDERDRAIN DIMENSIONS		FILTER BED DIMENSIONS	
	SPACING (u1)	LENGTH (u2)	WIDTH (f1)	LENGTH (f2)
WESTBOUND	10 FT.	130 FT.	VAR.	VAR.

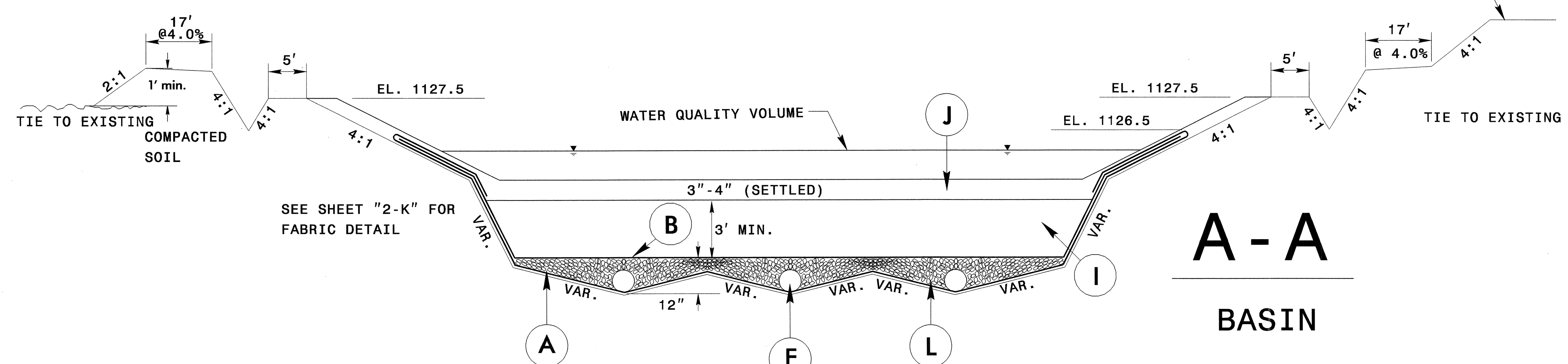
TABLE "A"

**NOTE:**

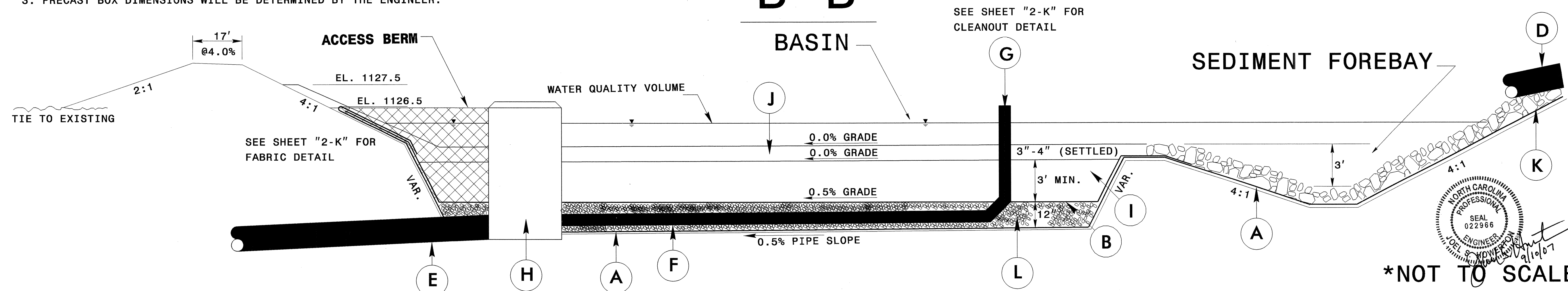
SEE PLAN SHEET #5 FOR SHAPE AND SIZE OF BASIN AND LENGTH OF UNDERDRAIN PIPES.  
 ENGINEERED SOIL SURFACE AREA AT ELEV. 1123.0= 1434 SF.  
 BOTTOM OF BASIN SURFACE AREA AT ELEV. 1123.0= 16565 SF.



### BIO-RETENTION DETAIL



### B-B



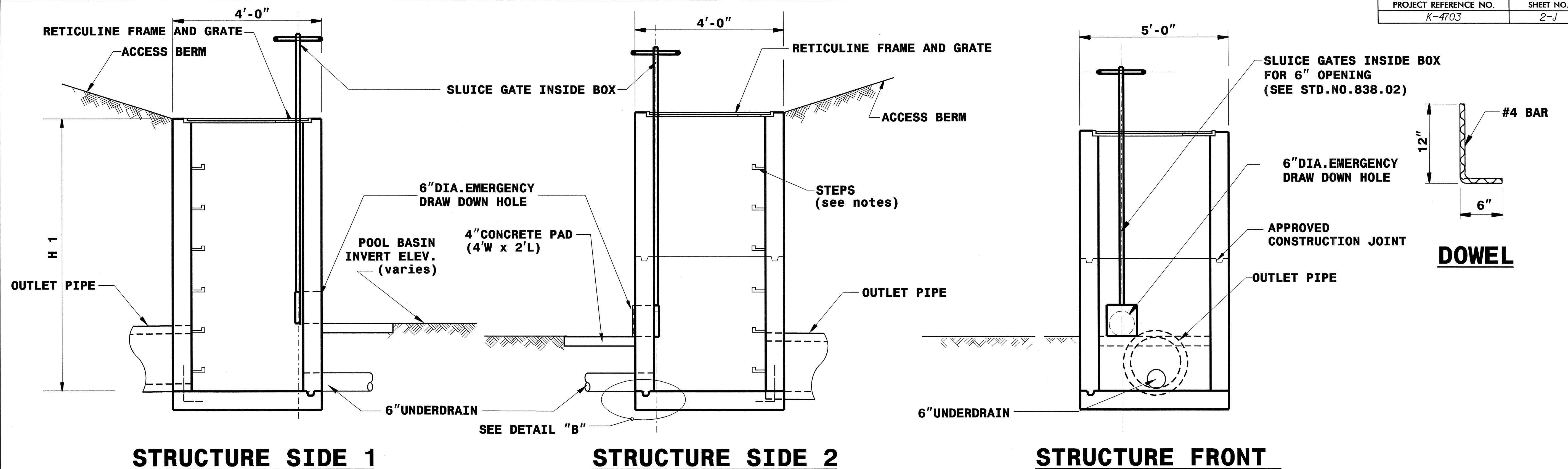
- NOTES**
1. ENTIRE BASIN AND SEDIMENT FOREBAY WILL BE LINED WITH FILTER FABRIC.
  2. BASIN AND FOREBAY DIMENSIONS WILL VARY (AS DIRECTED BY THE ENGINEER).
  3. PRECAST BOX DIMENSIONS WILL BE DETERMINED BY THE ENGINEER.



\*NOT TO SCALE

19-JUL-2007 07:20 k-4703\_rdy\_21.dgn





**STRUCTURE SIDE 1**

**STRUCTURE SIDE 2**

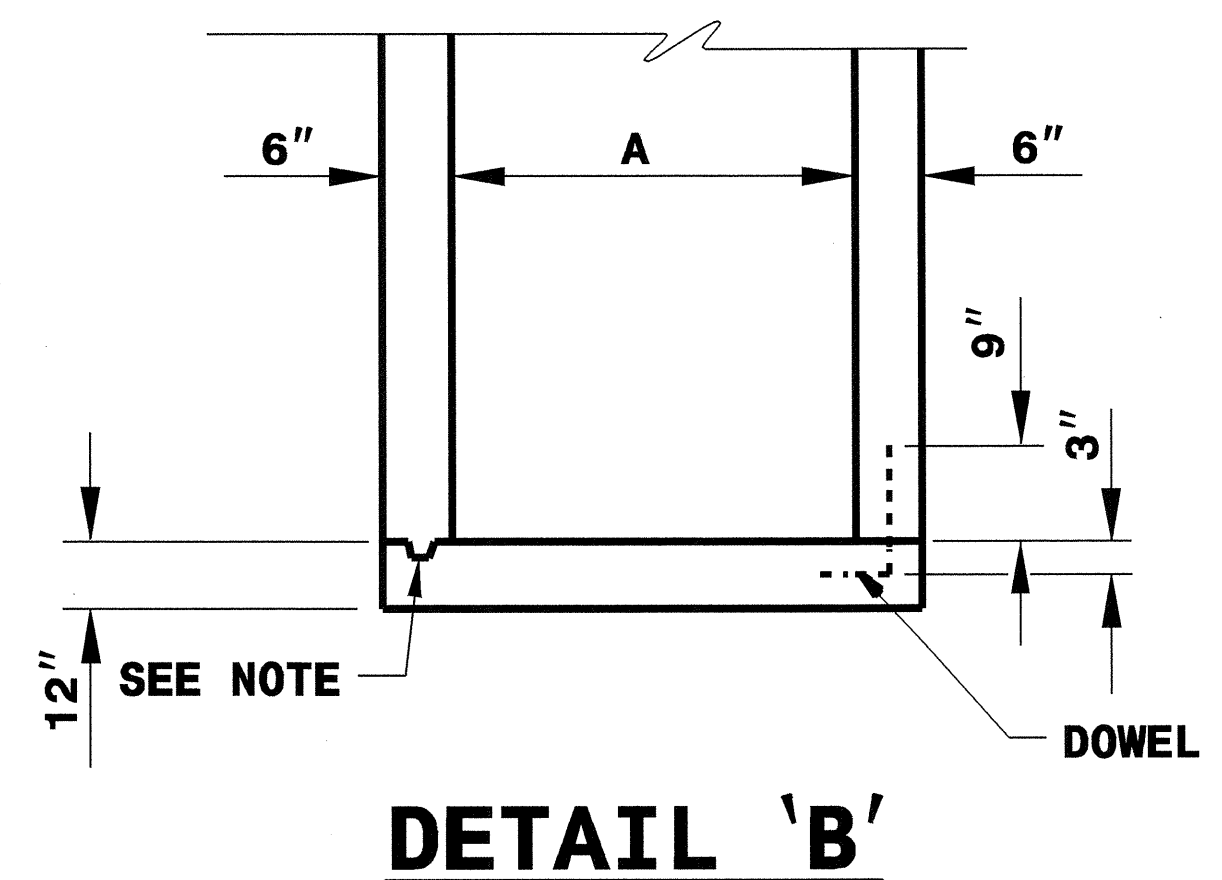
**STRUCTURE FRONT**

**TABLE "A"**

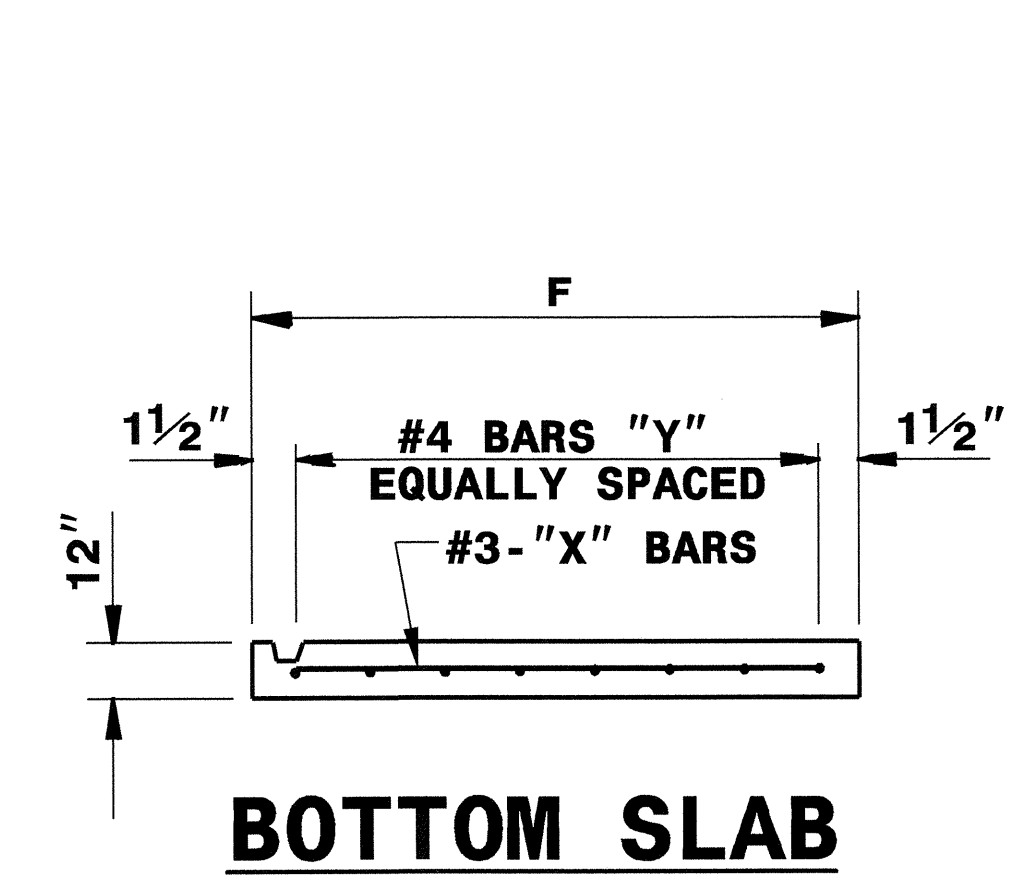
MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE												
BASIN	PIPE D	OUTLET BOX PIPE HEIGHT INVERT H1	TOP OF GRATE ELEV.	UNDER DRAIN INVERT	ORFICE PLATE OPENING INVERT	POOL BASIN ELEV. @ PAD ELEV.	WEIR DIMENSIONS					
							W1	W2	W3	W4	W1 EL	W2 EL
Sta. 33+84-L2- (165 Lt)	24"	1117.10'	8.00'	1125.10'	1117.62'	1123.0'						

PIPE D	"A"	BARS-X		BARS-Y		"F"	TOTAL CONCRETE QUANTITIES
		QTY.	LENGTH	QTY.	LENGTH		
24"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	4.4 CU.YDS.

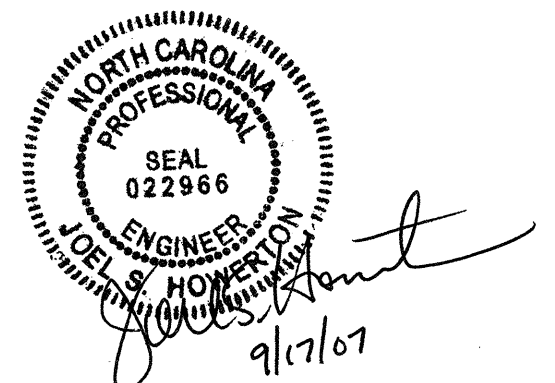
- GENERAL NOTES:**
- \* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
  - \* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
  - \* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
  - \* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
  - \* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
  - \* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
  - \* FOR 8'-0" IN HEIGHT OR LESS USE 8 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 8 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
  - \* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



**DETAIL 'B'**



**BOTTOM SLAB**



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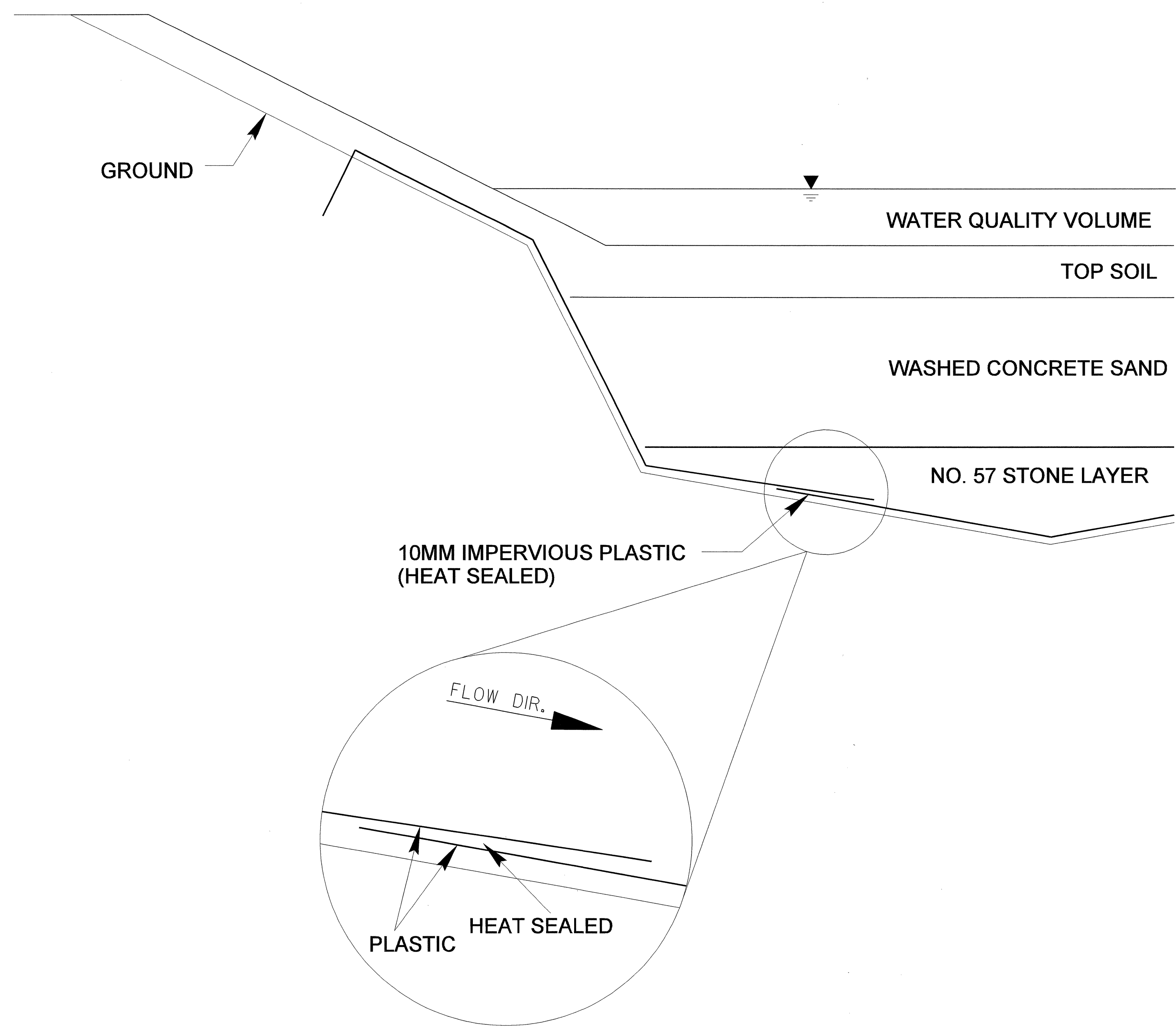
**DETAIL OF OUTLET CONTROL  
STRUCTURE FOR  
BIO-RETENTION BASIN**

ORIGINAL BY:	DATE:
MODIFIED BY: jwdunneho	DATE: 6-5-07
CHECKED BY:	DATE:
FILE SPEC.: r:\hydraulics\k4703 bio-retention typ.dgn	

13-SEP-2007 11:45 AM C:\OS2\WORK\K4703.rdy-21-j.dgn

# DETAILS

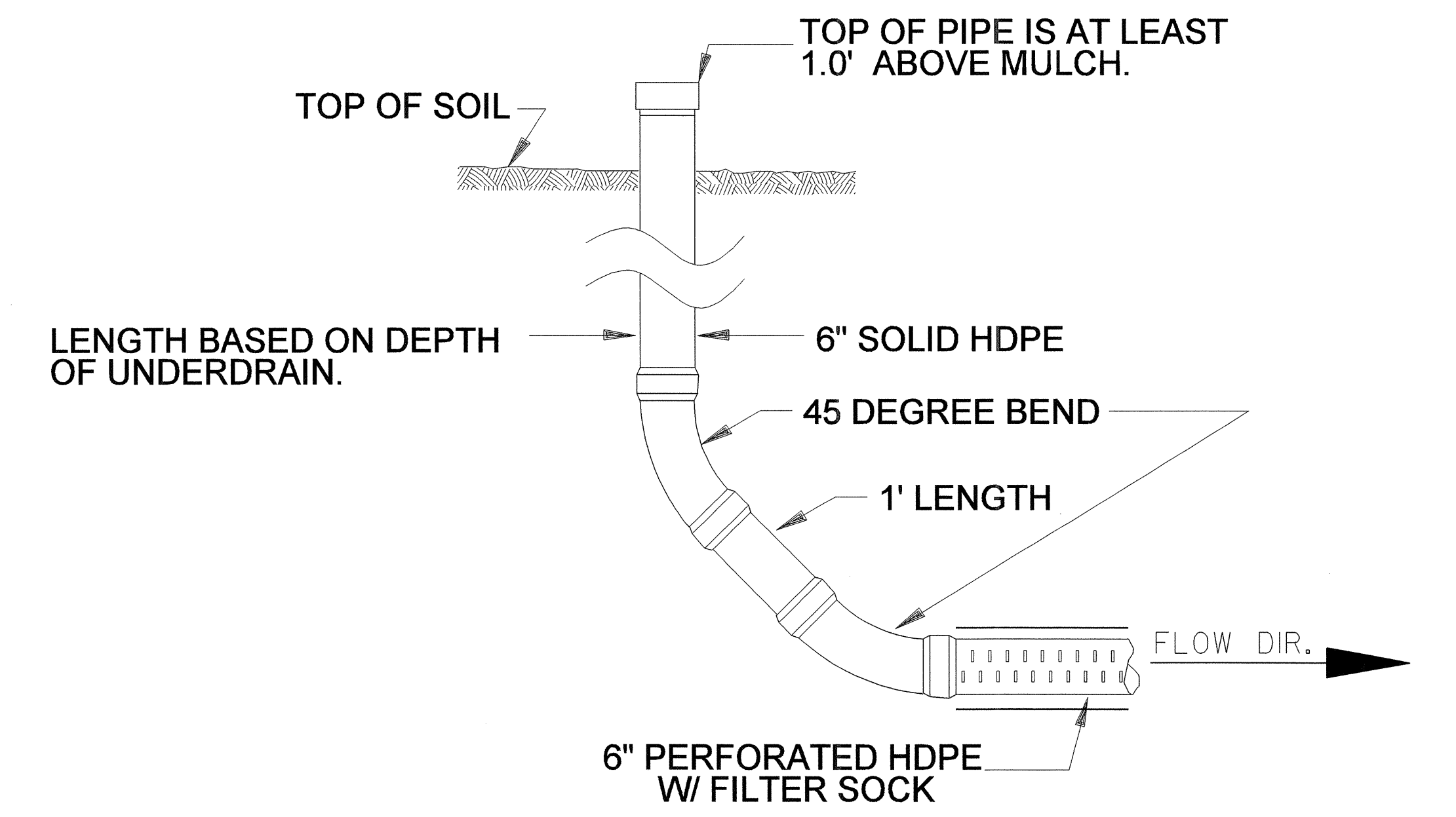
## 10MM IMPERVIOUS PLASTIC



- NOTES:
1. PLASTIC LINING SHOULD EXTEND UP THE BANK TO A ELEVATION OF 1 FOOT HIGHER THAN THE TOP OF THE CONTROL OUTLET STRUCTURE.
  2. EDGE OF PLASTIC LINING SHOULD BE KEY-IN TO THE GROUND AT A MINIMUM DEPTH OF 1.5 FEET.
  3. PLASTIC LINING JOINTS SHOULD BE HEAT SEALED TO PREVENT LEAKAGE.

\*NOT TO SCALE

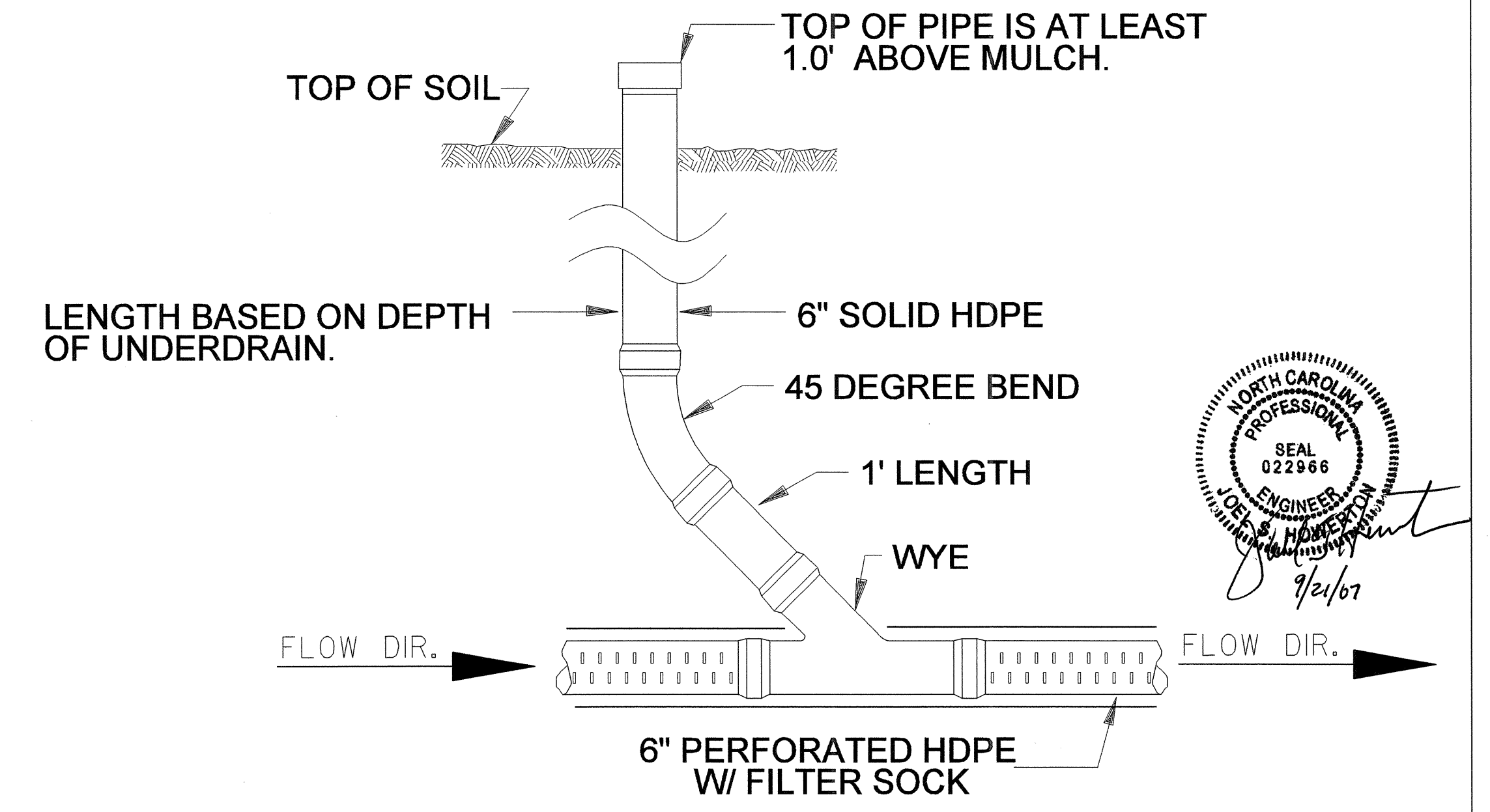
## END CLEANOUT



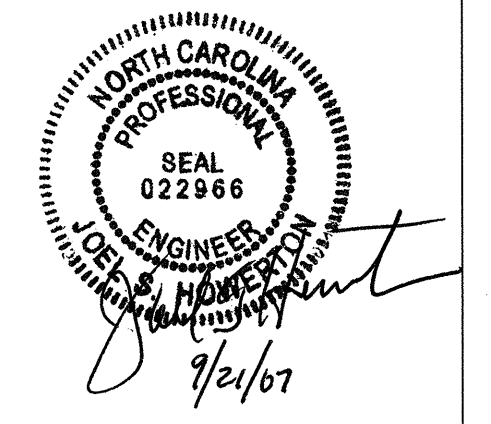
NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED \*NOT TO SCALE

## MIDWAY CLEANOUT

(USED ON AS NEEDED BASIS, AS DIRECTED BY THE ENGINEER)



NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED \*NOT TO SCALE



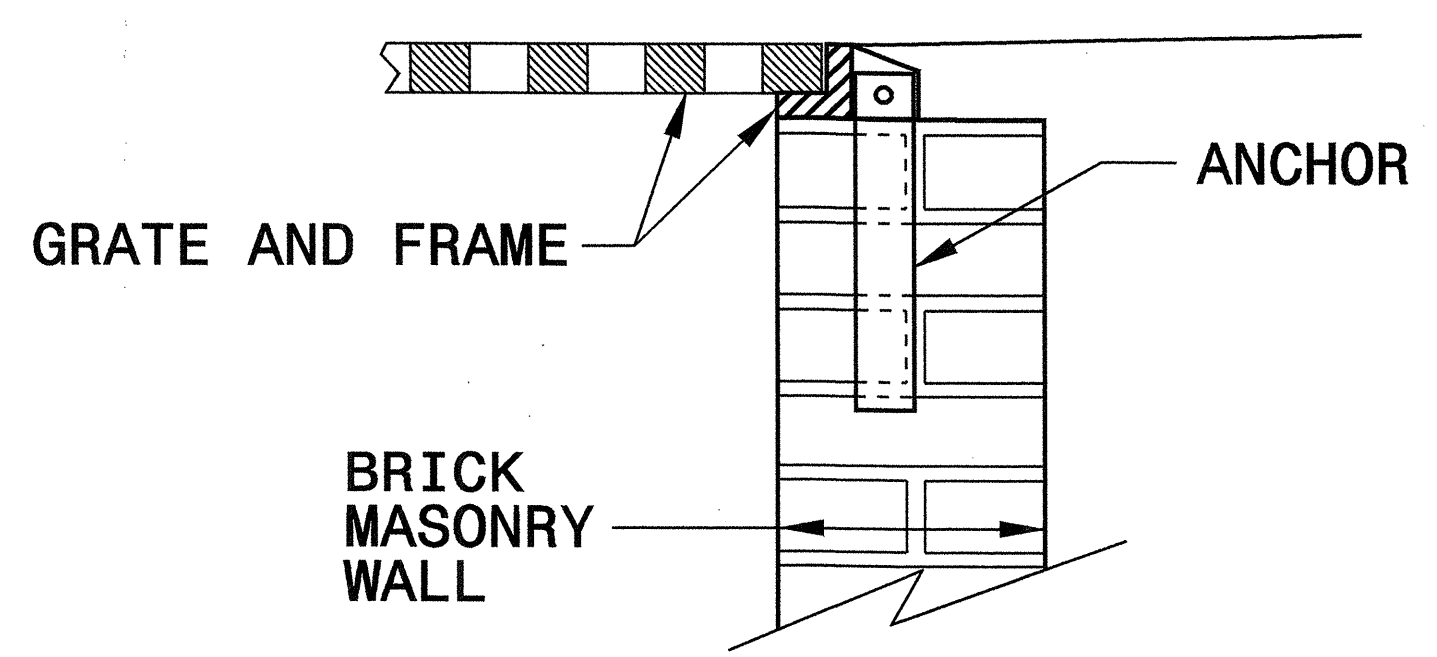
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 \$\$\$USERNAME\$\$\$



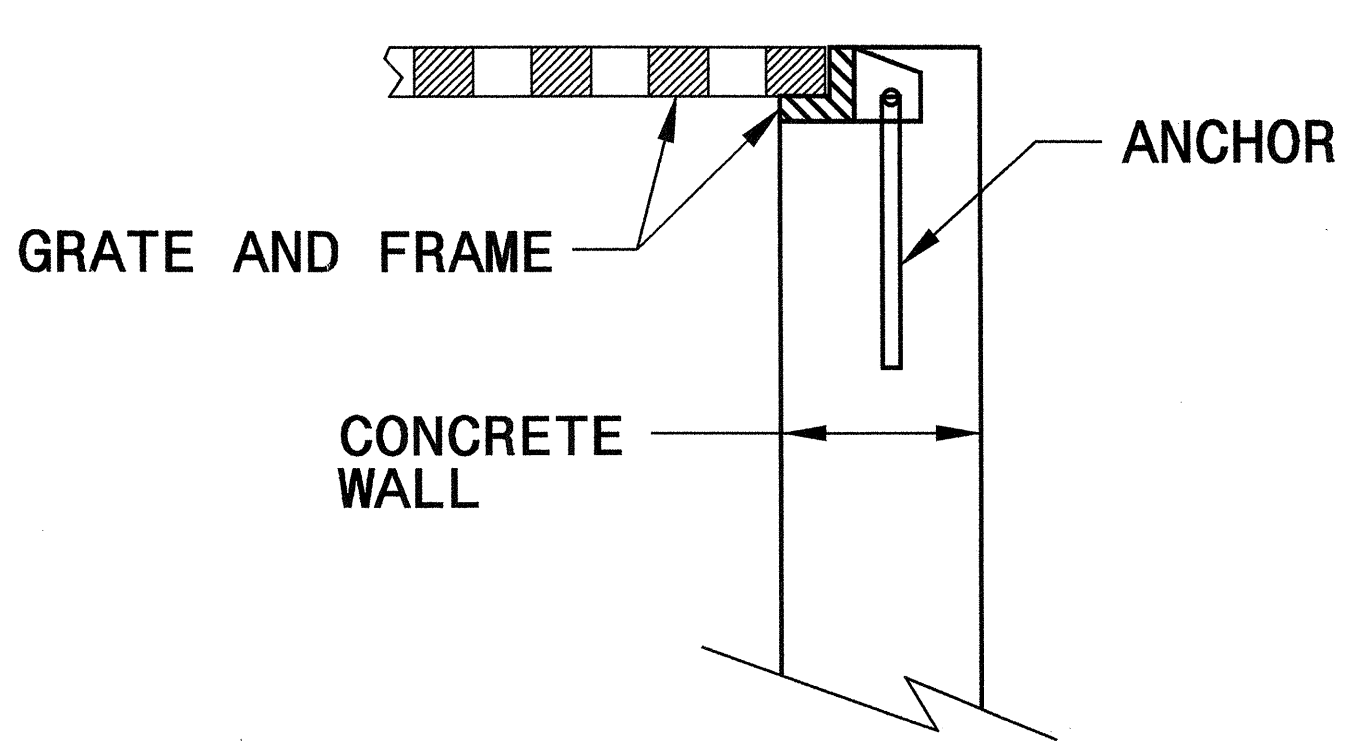
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

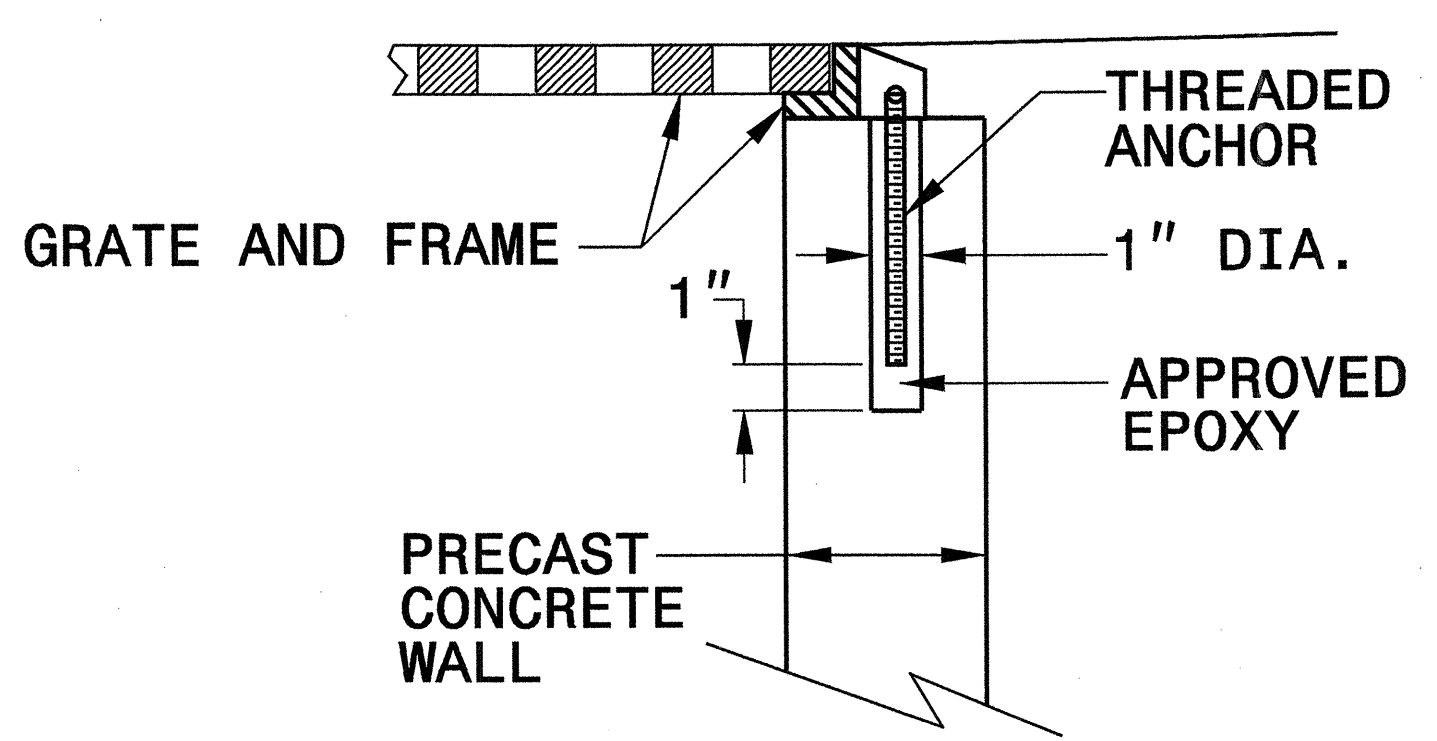
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



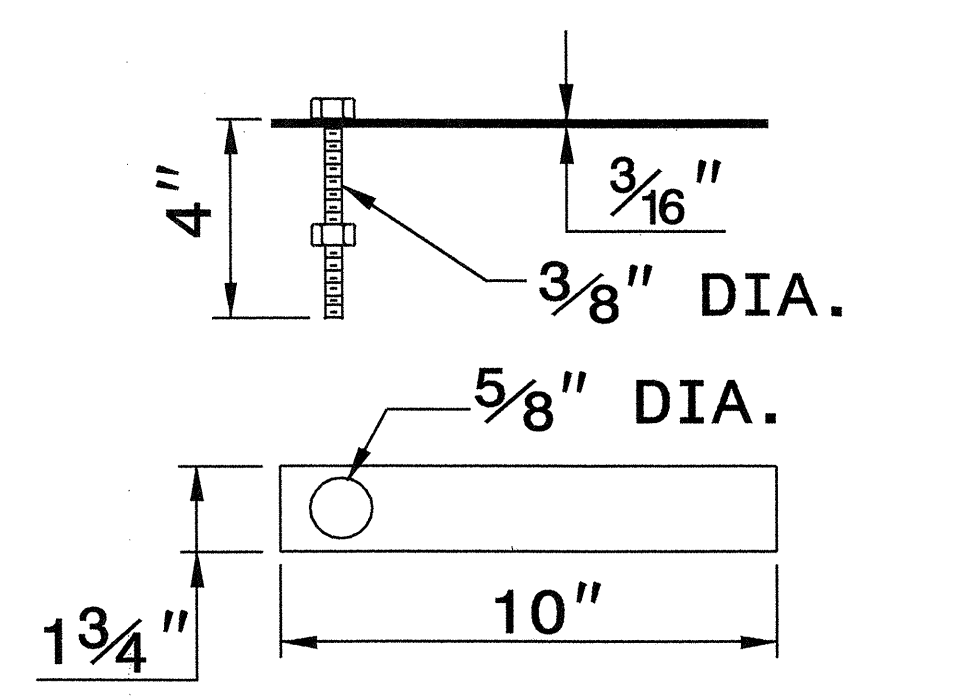
**CONCRETE CONSTRUCTION**



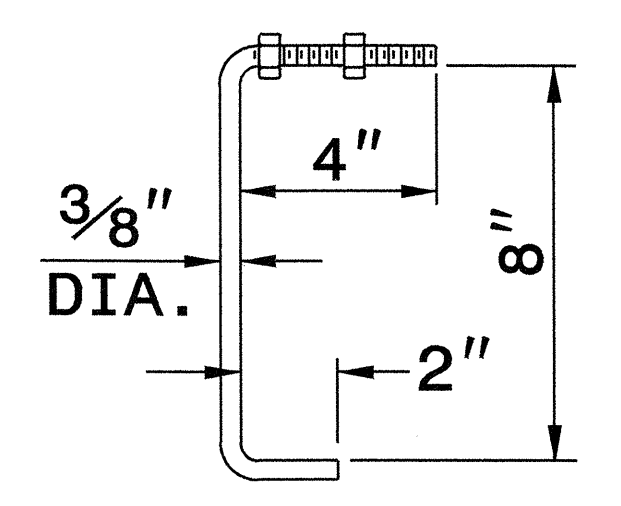
**PRECAST CONCRETE CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET**

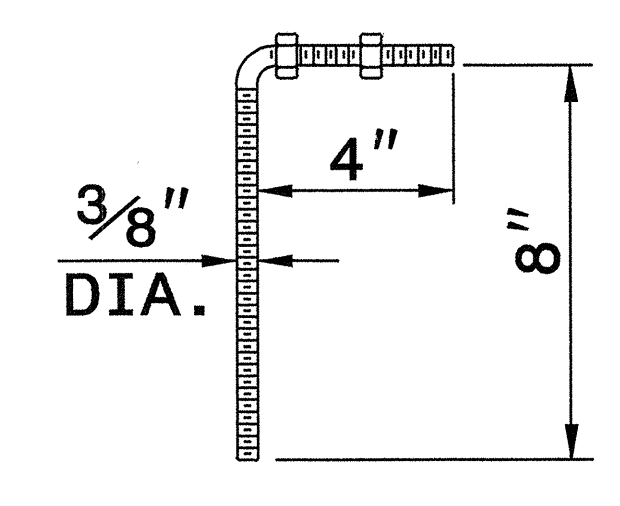
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



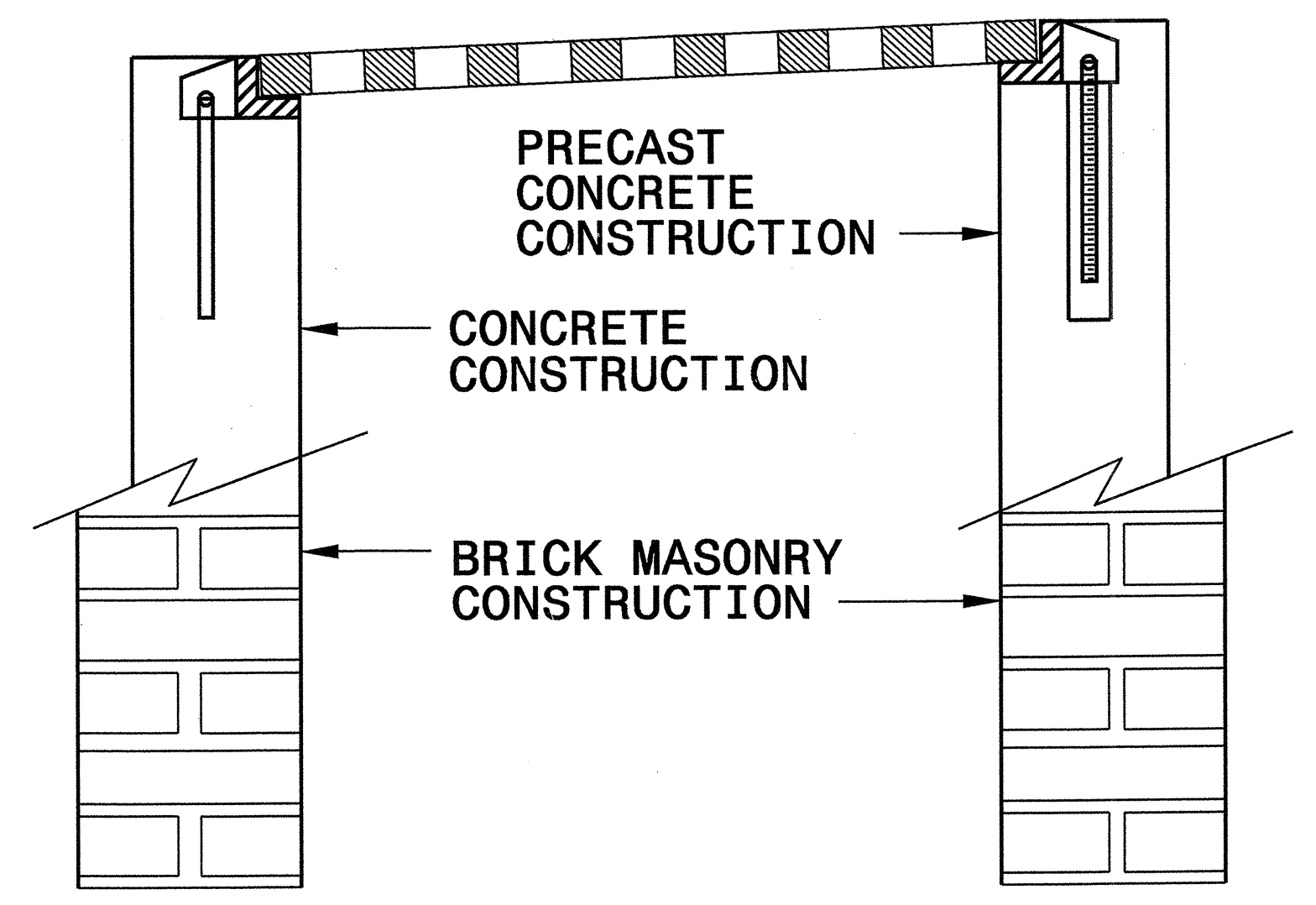
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



**CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**PRECAST CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

01-MAR-2007 09:04  
s:\contracts\contract\special details\encard\stds\06 stds to special details\840D25 anchorage for frames\0840d25.dgn  
J:\power\ton AI P5212260



**PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
MODIFIED BY: E.E. WARD DATE: 9/25/06  
CHECKED BY: DATE:  
FILE SPEC.:

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201679

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION															
0022000000-E	225	165,000	CY	UNCLASSIFIED EXCAVATION															
0050000000-E	226	2	ACR	SUPPLEMENTARY CLEARING & GRUB-BING															
0057000000-E	226	300	CY	UNDERCUT EXCAVATION	2209000000-E	838	1.5	CY	ENDWALLS	4400000000-E	1110	112	SF	WORK ZONE SIGNS (STATIONARY)	6006000000-E	1610	300	TON	STONE FOR EROSION CONTROL, CLASS A
0063000000-N	SP	Lump Sum		GRADING	2253000000-E	840	2.85	CY	PIPE COLLARS	4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)	6009000000-E	1610	1,085	TON	STONE FOR EROSION CONTROL, CLASS B
0080000000-E	SP	100	TON	CLASS IV SUBGRADE STABILIZATION	2286000000-N	840	51	EA	MASONRY DRAINAGE STRUCTURES	4410000000-E	1110	20	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	6012000000-E	1610	665	TON	SEDIMENT CONTROL STONE
0134000000-E	240	60,100	CY	DRAINAGE DITCH EXCAVATION	2308000000-E	840	48.57	LF	MASONRY DRAINAGE STRUCTURES	4415000000-N	1115	1	EA	FLASHING ARROW PANELS, TYPE C	6015000000-E	1615	20	ACR	TEMPORARY MULCHING
0141000000-E	240	310	LF	BERM DITCH CONSTRUCTION	2352000000-N	840	12	EA	FRAME WITH GRATE, STD 840.*** (840.20)	4420000000-N	1120	1	EA	CHANGEABLE MESSAGE SIGN	6018000000-E	1620	400	LB	SEED FOR TEMPORARY SEEDING
0195000000-E	265	100	CY	SELECT GRANULAR MATERIAL	2354000000-N	840	8	EA	FRAME WITH GRATE, STD 840.22	4430000000-N	1130	125	EA	DRUMS	6021000000-E	1620	1.75	TON	FERTILIZER FOR TEMPORARY SEEDING
0196000000-E	270	100	SY	FABRIC FOR SOIL STABILIZATION	2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24	4445000000-E	1145	24	LF	BARRICADES (TYPE III)	6024000000-E	1622	900	LF	TEMPORARY SLOPE DRAINS
0234000000-E	SP	2,163	CY	GENERIC GRADING ITEM ENGINEERED SOIL MIX	2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	4480000000-N	1165	1	EA	TMLA	6027000000-N	1622	14	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
0241000000-E	SP	40,700	SY	GENERIC GRADING ITEM GEOTEXTILE FABRIC	2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	4685000000-E	1205	3,911	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	6029000000-E	SP	1,050	LF	SAFETY FENCE
0241000000-E	SP	22,500	SY	GENERIC GRADING ITEM POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC	2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	4695000000-E	1205	2,343	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	6030000000-E	1630	7,210	CY	SILT EXCAVATION
0318000000-E	300	530	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	2374000000-N	840	10	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	4710000000-E	1205	218	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	6036000000-E	1631	5,600	SY	MATting FOR EROSION CONTROL
0536000000-E	SP	160	LF	*** HDPE PIPE CULVERTS (6")	2396000000-N	840	5	EA	FRAME WITH COVER, STD 840.54	4725000000-E	1205	9	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	6037000000-E	SP	115	SY	COIR FIBER MAT
0684000000-E	310	264	LF	*** BIT COAT CS PIPE CULVERTS, TYPE B ***** THICK (8", 0.064")	2462000000-E	SP	2	EA	*** SLUICE GATE (24")	4847100000-E	1205	4,339	LF	POLYUREA PAVEMENT MARKING LINES (6", *****) (STANDARD GLASS BEADS)	6042000000-E	1632	750	LF	1/4" HARDWARE CLOTH
0708000000-E	310	588	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	2473000000-N	SP	4	EA	GENERIC DRAINAGE ITEM RETICULINE FRAME & GRATE	4847120000-E	1205	672	LF	POLYUREA PAVEMENT MARKING LINES (12", *****) (STANDARD GLASS BEADS)	6071030000-E	SP	630	LF	COIR FIBER BAFFLES
0714000000-E	310	108	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	2535000000-E	846	80.5	LF	***X*** CONCRETE CURB (6" X 12")	4847220000-N	1205	3	EA	POLYUREA PAVEMENT MARKING SYMBOL (***** (STANDARD GLASS BEADS)	6071050000-E	SP	5	EA	*** SKIMMER (1-1/2")
0732000000-E	310	44	LF	36" BIT COAT CS PIPE CULVERTS, TYPE B 0.079" THICK	2549000000-E	846	5,600	LF	2'-6" CONCRETE CURB & GUTTER					6071050000-E	SP	4	EA	*** SKIMMER (2-1/2")	
0738000000-E	310	40	LF	42" BIT COAT CS PIPE CULVERTS, TYPE B 0.109" THICK	2556000000-E	846	2,660	LF	SHOULDER BERM GUTTER	4855000000-E	1205	1,000	LF	REMOVAL OF PAVEMENT MARKING LINES (6")	6071050000-E	SP	1	EA	*** SKIMMER (5")
0744000000-E	310	48	LF	48" BIT COAT CS PIPE CULVERTS, TYPE B 0.109" THICK	2591000000-E	848	1,253	SY	4" CONCRETE SIDEWALK	4905000000-N	1253	91	EA	SNOWPLOWABLE PAVEMENT MARKERS	6084000000-E	1660	18	ACR	SEEDING & MULCHING
0756000000-E	310	36	LF	60" BIT COAT CS PIPE CULVERTS, TYPE B 0.138" THICK	2605000000-N	848	3	EA	CONCRETE WHEELCHAIR RAMPS	5070000000-N	1405	29	EA	STANDARD FOUNDATION ***** (R1)	6087000000-E	1660	6.5	ACR	MOWING
0804000000-E	310	2	EA	*** BIT COAT CS PIPE ELBOWS, TYPE B ***** THICK (36", 0.079")	2612000000-E	848	460	SY	6" CONCRETE DRIVEWAY	5155000000-E	1409	60	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")	6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
0806000000-E	310	14	EA	15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK	2619000000-E	850	11	SY	4" CONCRETE PAVED DITCH	5155000000-E	1409	135	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (3")	6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
0807000000-E	310	2	EA	18" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK	3045000000-E	862	37.5	LF	STEEL BM GUARDRAIL, SHOP CURVED	5155000000-E	1409	45	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (4")	6096000000-E	1662	275	LB	SEED FOR SUPPLEMENTAL SEEDING
0986000000-E	SP	660	LF	GENERIC PIPE ITEM 6" HDPE PIPE CULVERTS, PERFORATED	3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS	5155000000-E	1409	45	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (4")	6102000000-E	1664	3,860	SY	SODDING
0992000000-E	SP	14	EA	GENERIC PIPE ITEM 6" 45 DEG ELBOWS HDPE	3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1	5185000000-E	1410	140	LF	** #2 W/G FEEDER CIRCUIT ***** CONDUIT (2, 1-1/2")	6108000000-E	1665	13	TON	FERTILIZER TOPDRESSING
0992000000-E	SP	7	EA	GENERIC PIPE ITEM 6" CAPS HDPE	3210000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	5205000000-E	1410	1,880	LF	** #8 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	6114000000-N	SP	5.5	HR	SPECIALIZED HAND MOWING
0992000000-E	SP	9	EA	GENERIC PIPE ITEM 6" COUPLERS HDPE	3360000000-E	863	1,930	LF	REMOVE EXISTING GUARDRAIL	5215000000-E	1410	775	LF	** #4 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	6117000000-N	SP	54	EA	RESPONSE FOR EROSION CONTROL
0992000000-E	SP	4	EA	GENERIC PIPE ITEM 6" Y JOINT HDPE	3509000000-E	866	310	EA	WOVEN WIRE FENCE, 47" FABRIC	5220000000-E	1410	3,615	LF	** #2 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	6135000000-E	SP	6.3	ACR	GENERIC EROSION CONTROL ITEM NATIVE GRASS APPLICATION
0995000000-E	340	374	LF	PIPE REMOVAL	3628000000-E	876	700	TON	RIP RAP, CLASS I	5240000000-N	1411	4	EA	ELECTRICAL JUNCTION BOXES ***** (PC12)	6210000000-N	1670	20	EA	ACER RUBRUM, RED MAPLE, 2-2 1/2" CAL., B&B OR CONT.
1077000000-E	SP	950	TON	#57 STONE	3635000000-E	876	320	TON	RIP RAP, CLASS II	5240000000-N	1411	9	EA	ELECTRICAL JUNCTION BOXES ***** (PC18)	6210000000-N	1670	14	EA	ACER RUBRUM, RED MAPLE, 6-8" MIN. 3/4" CAL., B&B OR CONT.
1121000000-E	520	11,800	TON	AGGREGATE BASE COURSE	3642000000-E	876	55	TON	RIP RAP, CLASS A	5240000000-N	1411	9	EA	ELECTRICAL JUNCTION BOXES ***** (PC30)	6245000000-N	1670	7	EA	CERCIS CANADENSIS, REDBUD, 3-4" B&B OR CONT.
1220000000-E	545	100	TON	INCIDENTAL STONE BASE	3649000000-E	876	330	TON	RIP RAP, CLASS B	5240000000-N	1411	2	EA	ELECTRICAL JUNCTION BOXES ***** (PC30)	6245000000-N	1670	8	EA	CERCIS CANADENSIS, REDBUD, 5-6", B&B OR CONT.
1489000000-E	610	3,950	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	3651000000-E	SP	60	TON	BOULDERS	5240000000-N	1411	2	EA	ELECTRICAL JUNCTION BOXES ***** (PC30)	6255000000-N	1670	3	EA	CHIONANTHUS VIRGINICUS, FRINGE TREE, 3-4" B&B OR CONT.
1498000000-E	610	5,000	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	3656000000-E	876	4,150	SY	FILTER FABRIC FOR DRAINAGE	5260000000-N	SP	Lump Sum		GENERIC LIGHTING ITEM LOW VOLTAGE LIGHT SYSTEM	6305000000-N	1670	12	EA	FAGUS GRANDIFOLIA, AMERICAN BEECH, 6-8" MIN. 3/4" CAL., B&B OR CONT.
1519000000-E	610	3,700	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	4048000000-E	902	4	CY	REINFORCED CONCRETE SIGN FOUNDATIONS	5270000000-N	SP	29	EA	GENERIC LIGHTING ITEM DAVIT STYLE LIGHT STANDARD, MH 35" SA 6'	6335000000-N	1670	31	EA	HALESIA CAROLINA, CAROLINA SILVERBELL, 6-8" MIN. 3/4" CAL., B&B OR CONT.
1560000000-E	620	630	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	4066000000-E	903	2,398	LB	SUPPORTS, BREAKAWAY STEEL BEAM	5270000000-N	SP	21	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C2	6380000000-N	1670	20	EA	ILEX OPACA, AMERICAN HOLLY, 4-5", N
2000000000-N	806	15	EA	RIGHT OF WAY MARKERS	4072000000-E	903	352	LF	SUPPORTS, 3-LB STEEL U-CHANNEL	5270000000-N	SP	8	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6410000000-N	1670	20	EA	JUNIPERUS VIRGINIANA, EASTERN RED CEDAR, 3-4" LS
2022000000-E	815	44.8	CY	SUBDRAIN EXCAVATION	4078000000-E	903	1	EA	SUPPORTS, 2-LB STEEL U-CHANNEL	5270000000-N	SP	1	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6410000000-N	1670	14	EA	JUNIPERUS VIRGINIANA, EASTERN RED CEDAR, 6-7", B&B, LS
2033000000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE	4096000000-N	904	1	EA	SIGN ERECTION, TYPE D	5270000000-N	SP	1	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE	4102000000-N	904	21	EA	SIGN ERECTION, TYPE E	5270000000-N	SP	1	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
2055000000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS	4110000000-N	904	4	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	5270000000-N	SP	23	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET	4114000000-N	904	1	EA	SIGN ERECTION, MILEMARKERS	5270000000-N	SP	11	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)	4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)	5270000000-N	SP	12	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
					4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (B)	5270000000-N	SP	23	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
					4138000000-N	907	2	EA	DISPOSAL OF SUPPORT, STEEL BEAM	5270000000-N	SP	23	EA	GENERIC LIGHTING ITEM LGT STD LUMINAIRE, 250W, HPS, TYPE C3	6445000000-N	1670	12	EA	LIQUIDAMBAR STYRACIFLUA, SWEETGUM, 'ROTUNDILOBA' 2-2 1/2" CAL., B&B
					4155000000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6000000000-E	1605	3,500	LF	TEMPORARY SILT FENCE	6510000000-N	1670	34	EA	OXYDENDRUM ARBOREUM, SOURWOOD, 1 1/2-2" CAL., B&B OR CONT

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# STATE OF NORTH CAROLINA SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
664000000-N	1670	1,444	EA	GENERIC PLANTING ITEM SPOROBOLIS HETEROLEPIS, PRAIRIE DROPSSEED, 2 1/4" SQ.POT, TRAY OF 32	697000000-N	SP	9	EA	GENERIC REST AREA ITEM 3/4" GATE VALVE AND BOX
664000000-N	1670	11	EA	GENERIC PLANTING ITEM SPOROBOLIS HETEROLEPIS, PRAIRIE DROPSSEED, 3 1/2" - 4" POT, TRAY OF 18	697000000-N	SP	4	EA	GENERIC REST AREA ITEM 4" SANITARY SEWER CLEANOUT
664000000-N	1670	1	EA	GENERIC PLANTING ITEM STEWARTIA OVATA, MOUNTAIN STEWARTIA, 5-6', B&B OR CONT.	697000000-N	SP	4	EA	GENERIC REST AREA ITEM DEPRESSED CURB
664000000-N	1670	1	EA	GENERIC PLANTING ITEM STYRAX AMERICANA, AMERICAN SNOWBELL 6-8', MIN. 3/4" CAL., B&B OR CONT.	697000000-N	SP	1	EA	GENERIC REST AREA ITEM FLAGPOLE
664000000-N	1670	2	EA	GENERIC PLANTING ITEM THUJA OCCIDENTALIS 'DEGROOTS SPIRE' AMERICAN ARBORVITAE, 5-6', LS	697000000-N	SP	3	EA	GENERIC REST AREA ITEM IRRIGATION HYDRANT
664000000-N	1670	3	EA	GENERIC PLANTING ITEM THUJA OCCIDENTALIS 'GOLDEN TUFFET' AMERICAN ARBORVITAE, 15-18", LS	697000000-N	SP	7	EA	GENERIC REST AREA ITEM LOG BENCH
664000000-N	1670	1	EA	GENERIC PLANTING ITEM THUJA OCCIDENTALIS 'TECHY GOLD' AMERICAN ARBORVITAE, 5-6', LS	697000000-N	SP	5	EA	GENERIC REST AREA ITEM NATURE TRAIL LANDING CONSTRUCTION
664000000-N	1670	4	EA	GENERIC PLANTING ITEM THUJA OCCIDENTALIS, AMERICAN ARBORVITAE 6-7', B&B, LS	697000000-N	SP	15	EA	GENERIC REST AREA ITEM NATURE TRAIL STEPS
664000000-N	1670	15	EA	GENERIC PLANTING ITEM TRADESCANTIA VIRGINIANA, VIRGINIA SPIDERWORT, 4" POT OR QT. CONT -DEEP	697000000-N	SP	189	EA	GENERIC REST AREA ITEM PLACEMENT OF BOULDER OR LARGE FLAT STONE
664000000-N	1670	3	EA	GENERIC PLANTING ITEM TSUGA CANADENSIS 'COLE'S PROSTRATE' CANADIAN HEMLOCK 18-24", LS	697000000-N	SP	3	EA	GENERIC REST AREA ITEM SPOT LIGHT
664000000-N	1670	1	EA	GENERIC PLANTING ITEM TSUGA CANADENSIS 'JEDDELOH' CANADIAN HEMLOCK 18-24", LS	697000000-N	SP	16	EA	GENERIC REST AREA ITEM TRASH RECEPTACLE
664000000-N	1670	2	EA	GENERIC PLANTING ITEM TSUGA CANADENSIS 'STOCKMAN'S DWARF' CANADIAN HEMLOCK 18-24", LS	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM ELECTRICAL INSTALLATION FOR THE REST AREA/VISITOR CENTER BUILDING
664000000-N	1670	19	EA	GENERIC PLANTING ITEM TSUGA CANADENSIS, CANADIAN HEMLOCK 3-4' LS	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM GEN. CONSTRUCTION OF REST AREA/VISITOR CENTER BUILDING
664000000-N	1670	8	EA	GENERIC PLANTING ITEM TSUGA CANADENSIS, CANADIAN HEMLOCK 6-7', B&B, LS	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM HVAC INSTALLATION FOR THE REST AREA/VISITOR CENTER BUILDING
664000000-N	1670	13	EA	GENERIC PLANTING ITEM ULMUS ALATA, WINGED ELM 6-8', MIN. 3/4" CAL., B&B OR CONT.	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM LANDSCAPE GRADING
664000000-N	1670	107	EA	GENERIC PLANTING ITEM VERNONIA NOVEBORACENSIS, NEW YORK IRONWEED, 4" POT OR QT. CONT. -DEEP	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM NATURE TRAIL CROSSING (TOTAL OF 4 CROSSINGS)
664000000-N	1670	134	EA	GENERIC PLANTING ITEM VIBURNUM ACERIFOLIUM, MAPLELEAF VIBURNUM, 18-24", MIN. #3 CONT	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM PLUMBING INSTALLATION FOR THE REST AREA/VISITOR CENTER BUILDING
665000000-E	1670	1,229	CY	MULCH FOR PLANTING	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM SPECIAL REST AREA SIGNAGE
665500000-E	1670	186	M/G	WATER FOR PLANTING	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM STONE RETAINING WALL
666500000-E	1670	7,755	SY	POSTEMERGENT HERBICIDAL TREATMENT FOR PLANT BEDS	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM STORAGE BUILDING
667000000-E	1670	7,755	SY	PREEMERGENT HERBICIDAL TREATMENT FOR PLANT BEDS	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM TELEPHONE PEDESTAL
667700000-E	SP	110	TON	GENERIC PLANTING ITEM CREEK STONE FOR FOREBAY	697500000-N	SP	Lump Sum		GENERIC REST AREA ITEM MAINTENANCE BUILDING
667700000-E	SP	54	TON	GENERIC PLANTING ITEM SPILLWAY CREEK STONE	698000000-E	SP	1,874	LF	GENERIC REST AREA ITEM 1" PVC WATER PIPE, SCH-80
668000000-E	SP	295	CY	GENERIC PLANTING ITEM 12 MONTH AGED HARDWOOD MULCH	698000000-E	SP	485	LF	GENERIC REST AREA ITEM 1" SLEEVE FOR UNDERGROUND ELEC/PHONE SERVICE (SCH-40 PVC)
690000000-E	SP	343	CY	TOPSOIL	698000000-E	SP	152	LF	GENERIC REST AREA ITEM 3" PVC WATER PIPE, SCH-80
690500000-N	SP	5	EA	PICNIC TABLE, TERRAZZO & STEEL	698000000-E	SP	35	LF	GENERIC REST AREA ITEM 3/4" PVC WATER PIPE, SCH-80
691000000-N	SP	3	EA	PICNIC SHELTER, SINGLE PICNIC TABLE	698000000-E	SP	292	LF	GENERIC REST AREA ITEM 4" PVC DUCT
694500000-E	SP	4	EA	3/4" POST TYPE YARD HYDRANT	698000000-E	SP	555	LF	GENERIC REST AREA ITEM 4" PVC/ABS -DWV, SCH 40 DRAIN PIPE
697000000-N	SP	7	EA	GENERIC REST AREA ITEM 1" GATE VALVE AND BOX	698000000-E	SP	140	LF	GENERIC REST AREA ITEM 6" DUCTILE IRON GRAVITY SEWER
697000000-N	SP	1	EA	GENERIC REST AREA ITEM 3" GATE VALVE AND BOX	698000000-E	SP	89	LF	GENERIC REST AREA ITEM 6" PVC (SDR-35) GRAVITY SEWER
					698000000-E	SP	96	LF	GENERIC REST AREA ITEM 6" PVC/ABS -DWV, SCH 40 DRAIN PIPE
					698000000-E	SP	2,985	LF	GENERIC REST AREA ITEM NATURE TRAIL CONSTRUCTION
					698000000-E	SP	1,750	LF	GENERIC REST AREA ITEM TREE PROTECTION FENCE
					698200000-E	SP	376	SF	GENERIC REST AREA ITEM COBBLESTONE WALKWAY

ItemNumber	Sec #	Quantity	Unit	Description
037800000-E AA1	310	892	LF	24" RC PIPE CULVERTS, CLASS III
*** OR ***				
036600000-E AA2	310	208	LF	15" RC PIPE CULVERTS, CLASS III
037200000-E AA2	310	76	LF	18" RC PIPE CULVERTS, CLASS III
037800000-E AA2	310	104	LF	24" RC PIPE CULVERTS, CLASS III
053600000-E AA2	SP	1,496	LF	**** HDPE PIPE CULVERTS (15")
053600000-E AA2	SP	1,304	LF	**** HDPE PIPE CULVERTS (18")
053600000-E AA2	SP	788	LF	**** HDPE PIPE CULVERTS (24")
*** OR ***				
036600000-E AA3	310	208	LF	15" RC PIPE CULVERTS, CLASS III
037200000-E AA3	310	76	LF	18" RC PIPE CULVERTS, CLASS III
037800000-E AA3	310	104	LF	24" RC PIPE CULVERTS, CLASS III
054000000-E AA3	SP	1,496	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15")
054000000-E AA3	SP	1,304	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (18")
054000000-E AA3	SP	788	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (24")
***** END SCHEDULE AA *****				

***** BEGIN SCHEDULE AA *****				
***** (3 ALTERNATES) *****				
036600000-E AA1	310	1,704	LF	15" RC PIPE CULVERTS, CLASS III
037200000-E AA1	310	1,380	LF	18" RC PIPE CULVERTS, CLASS III















"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.  
 G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA  
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**GUARDRAIL SUMMARY**

BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM EOL (Feet)	SHOULDER WIDTH (Feet)	FLARE LENGTH		W		ANCHORS		REMARKS
			STRAIGHT (Feet)	SHOP CURVED (Feet)	DBL. FACED (Feet)	APPROACH END	TRAILING END			APPROACH END (Ft.)	TRAILING END (Ft.)	APPROACH END (Ft.)	TRAILING END (Ft.)	CAT-1	AT-1	
-L- 15+94.75	-L- 25+17.88 LB =	LT.	924.13 Ft.				15+94.75	12	12					1		
-L2- 25+17.88 LA	-L2- 29+00.00	LT.	382.12 Ft.	37.50 Ft.			29+00.00	12	12						1	
-L2- 50+19.75	-L2- 56+32.23 LB =	LT.	612.48 Ft.				50+19.75	12	12							TIE TO EXISTING GUARDRAIL
-L- 47+51.02 LA	-L- 55+00.00	LT.	748.98 Ft.				55+00.00	12	12							
SUBTOTAL			2667.71 Ft.	37.50 Ft.										2	1	
LESS ANCHOR DEDUCTIONS																
CAT-1			2 @ 6.25 Ft.													
AT-1			1 @ 6.25 Ft.													
SUBTOTAL			-18.75 Ft.													
PROJECT TOTAL			2648.96 Ft.	37.50 Ft.												
SAY			2650.00 Ft.	37.50 Ft.												
ADDITIONAL GUARDRAIL POSTS			10 EA.													

**SUMMARY OF 2'-6" CURB & GUTTER IN FEET**

	BEGINING STATION	ENDING STATION	LOCATION	LENGTH
Mainline	-L2- STA. 29+52.88	-L2- STA. 38+21.00	LT.	898.00
	-L2- STA. 38+77.39	-L2- STA. 48+30.37	LT.	980.00
	-L2- STA. 50+26.00	-L2- STA. 56+32.23	RT.	1,392.00
	-L2- STA. 44+70.15	-L2- STA. 48+30.37	RT.	360.00
Truck Parking	-TR-ON- STA. 10+00.00	-TR-ON- STA. 15+79.35	RT.	578.00
	-TR-ON- STA. 11+12.00	-TR-ON- STA. 13+29.35	LT.	290.00
	-TR-OFF- STA. 10+00.00	-TR-OFF- STA. 13+95.00	LT.	403.00
	-TR-OFF- STA. 12+53.96	-TR-OFF- STA. 14+76.44	RT.	270.00
Planting Islands	-L2- STA. 34+45.62	-L2- STA. 34+66.67	RT.	52.00
	-L2- STA. 35+35.62	-L2- STA. 35+56.70	RT.	52.00
	-L2- STA. 36+34.26	-L2- STA. 36+67.81	RT.	63.00
	-L2- STA. 39+47.74	-L2- STA. 39+76.77	RT.	61.00
	-L2- STA. 40+38.84	-L2- STA. 40+60.26	RT.	50.00
	-L2- STA. 40+39.46	-L2- STA. 40+60.26	LT.	50.00
	-L2- STA. 41+29.17	-L2- STA. 41+50.26	RT.	50.00
	-L2- STA. 41+29.17	-L2- STA. 41+50.26	LT.	50.00
TOTAL				5,599.00
SAY				5,600.00

**SUMMARY OF SHOULDER BERM GUTTER IN FEET**

BEGINING STATION	ENDING STATION	LOCATION	LENGTH
-L- STA. 16+01.00	-L- STA. 25+17.88	LT.	916.88
-L2- STA. 25+17.88	-L2- STA. 29+00.00	LT.	382.12
-L2- STA. 50+26.00	-L2- STA. 56+32.23	LT.	606.23
-L- STA. 47+51.02	-L- STA. 55+00.00	LT.	748.98
TOTAL			2,654.21
SAY			2,660.00

**SUMMARY OF EARTHWORK IN CUBIC YARDS**

STATION TO STATION	UNCLASSIFIED EXCAVATION	EMBANKMENT + %	BORROW	WASTE
-L- STA. 12+00.00 TO -L- STA. 55+00.00	81,306	31,386		49,920
-L2- STA. 30+00.00 TO -L2- STA. 44+00.00	51,508	7,404		44,104
AREA INTERIOR TO PARKING AREAS	37,019	1,258		35,761
PROJECT SUBTOTAL	169,833	40,048		129,785
LOSS OF UNCLASSIFIED EXCAVATION DUE TO CLEARING & GRUBBING	-5,000		0	-5,000
PROJECT TOTAL	164,833	40,048		124,785
SAY	165,000 CY			

EST. UNDERCUT EXCAVATION = 300 Cubic Yards  
 DDE = 60,100 Cubic Yards

**SUMMARY OF PAVEMENT REMOVAL IN SQUARE YARDS**

LOCATION	ASPHALT REMOVAL
-L- STA. 12+20.00 TO -L- STA. 16+40.00 (LT.)	140.00
-L- STA. 16+40.00 TO -L- STA. 24+43.00 (LT.)	892.22
-L- STA. 24+43.00 TO -L- STA. 27+36.00 (LT.)	97.67
-L- STA. 44+18.00 TO -L- STA. 47+58.00 (LT.)	113.33
-L- STA. 47+58.00 TO -L- STA. 55+00.00 (LT.)	824.44
PROJECT TOTAL	2,067.66
SAY	2,100.00

**NOTE:** Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only.  
 Shoulder borrow, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the contract lump sum price for "Grading".



STATE OF NORTH CAROLINA  
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**BIO-RETENTION & HAZARDOUS SPILL BASIN SUMMARIES**

<b>PIPE QUANTITIES</b>			
TYPE	SIZE	QUANTITY	
		LENGTH	NO. OF 20' SECT.
SOLID HDPE	12"		
SOLID HDPE	15"		
SOLID HDPE	6"	160'	8
PERFORATED HDPE	6"	660'	33

<b>PIPE JOINTS &amp; CAPS</b>			
TYPE	SIZE		
	6"	12"	15"
HDPE 'Y' JOINT	4		
45° ELBOWS	14		
COUPLERS	9		
CAPS	7		

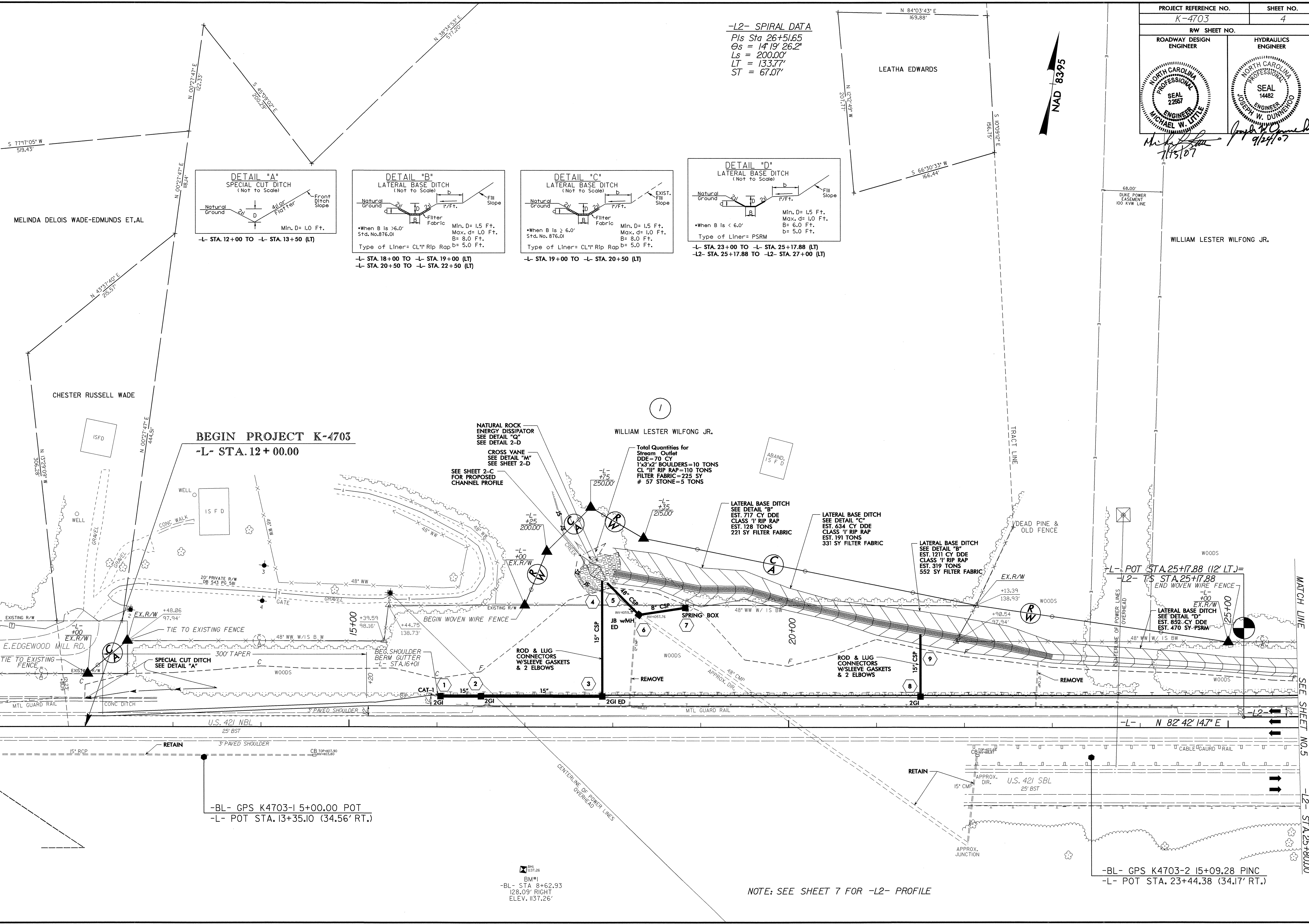
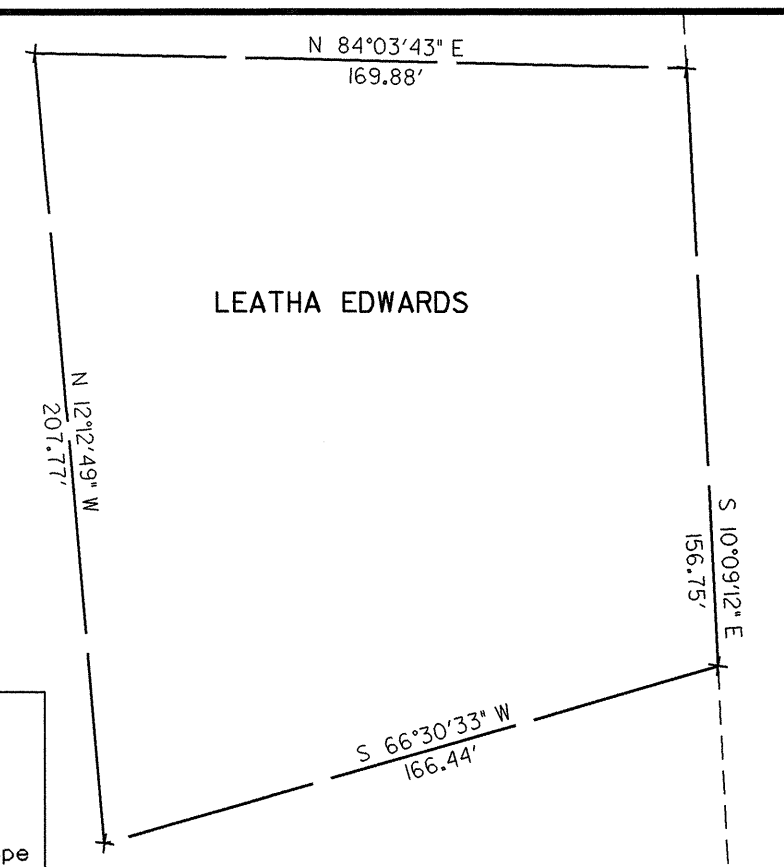
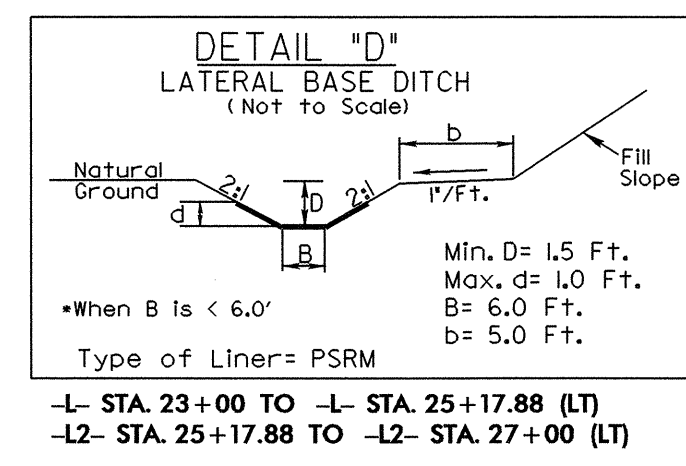
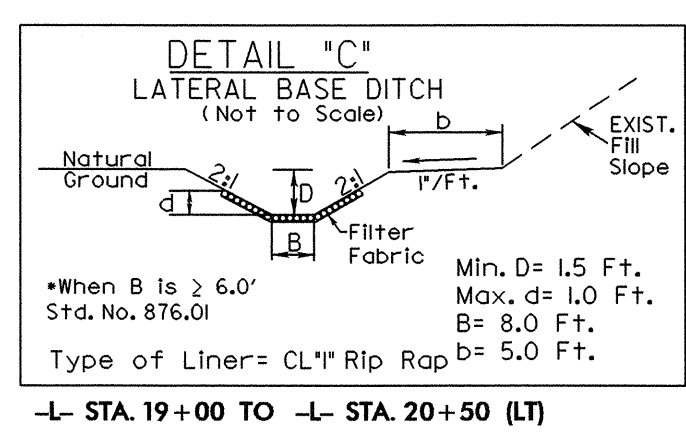
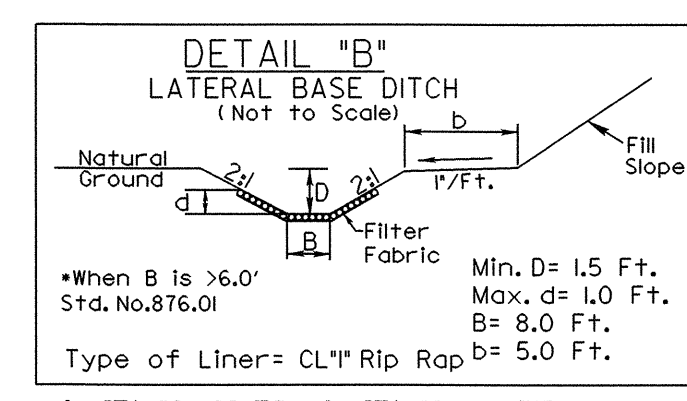
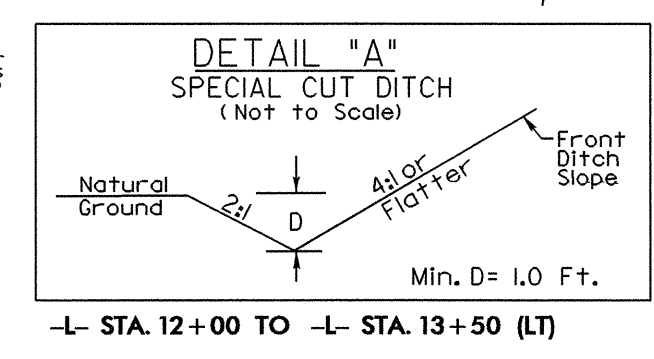
<b>OTHER MATERIALS</b>		
TYPE	QUANTITY	UNIT
GEOTEXTILE FABRIC	40700	SF
POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE	22500	SF
WASH STONE NO. 57	829	TON
ENGINEERED SOIL (85%-88% SAND 8%-12% FINES (SILT & CLAY) 3%-5% ORGANIC) TO BE APPROVED BY THE ENGINEER	2163	CY
12 MONTH AGED HARDWOOD MULCH	295	CY
CREEK STONE FOR FOREBAY	110	TON
CONCRETE	1	CY
SLUICE GATE	2	EA
RETICULINE FRAME AND GRATE	4	EA

<b>DDE EARTHWORK</b>		
TYPE	QUANTITY	UNIT
CUT	54361	CY
FILL	0	CY

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PROJECT REFERENCE NO. K-4703	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
MICHAEL W. LITTLE JOSEPH W. DUNNE 9/24/07	

**-L2- SPIRAL DATA**  
 Pls Sta 26+51.65  
 $\theta_s = 14^{\circ}19'26.2''$   
 $L_s = 200.00'$   
 $LT = 133.77'$   
 $ST = 67.07'$



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BM#1  
 -BL- STA 8+62.93  
 128.09' RIGHT  
 ELEV. 1137.26'

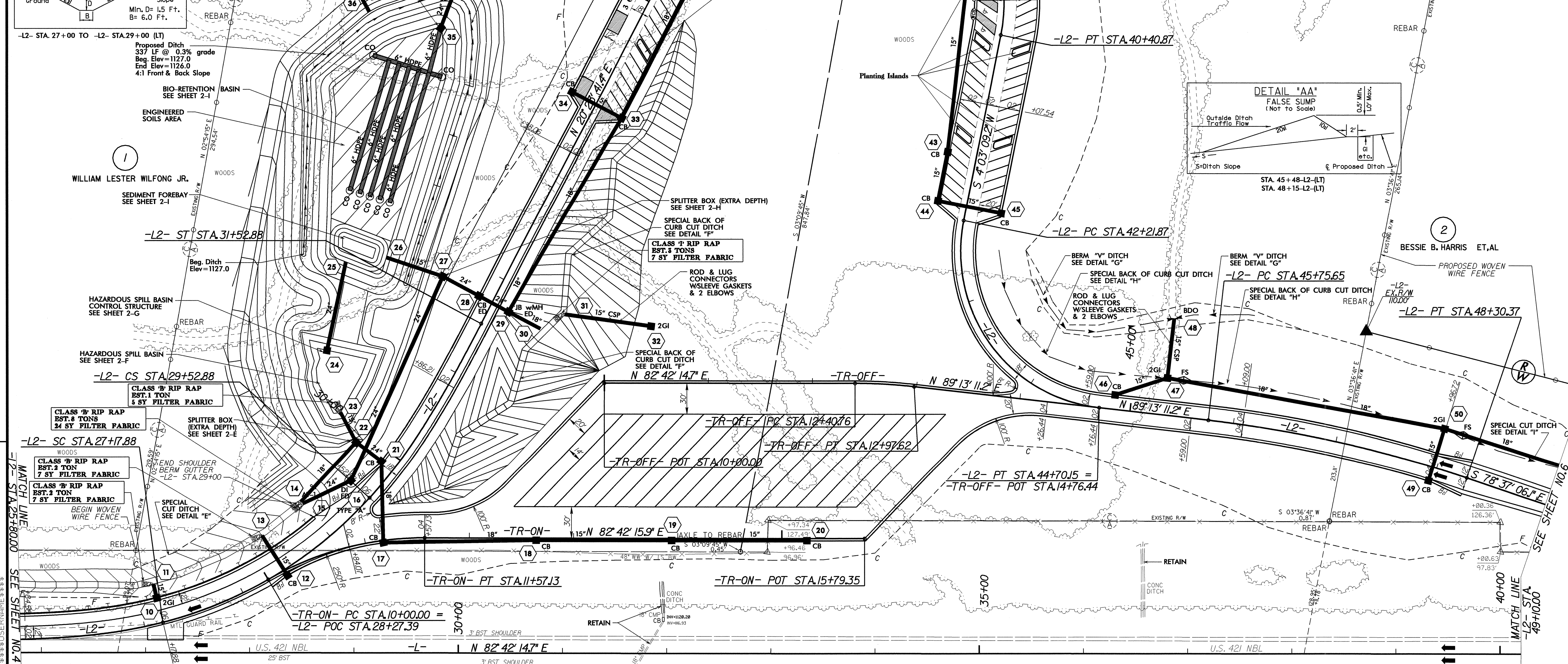
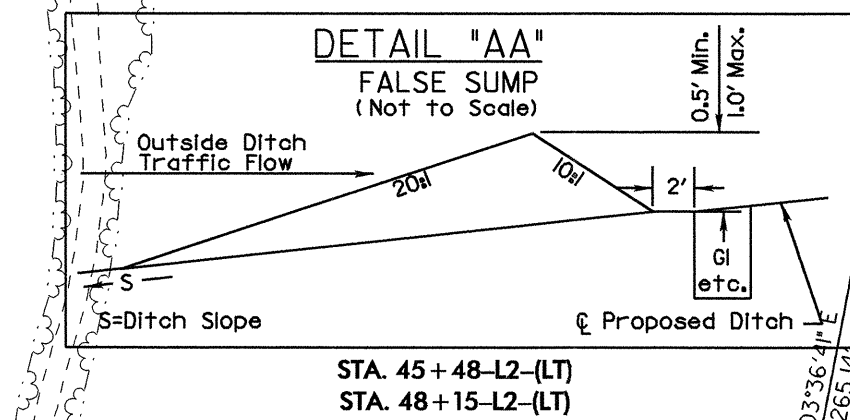
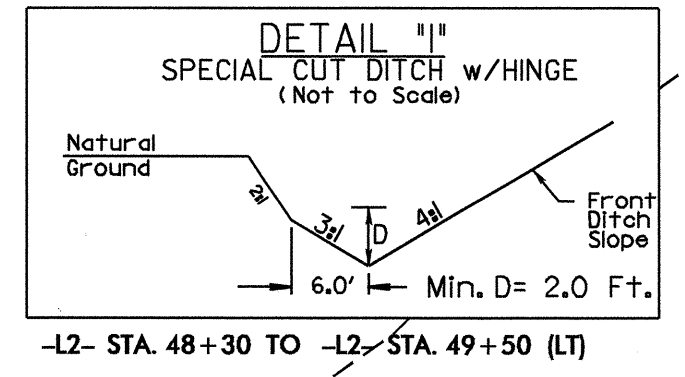
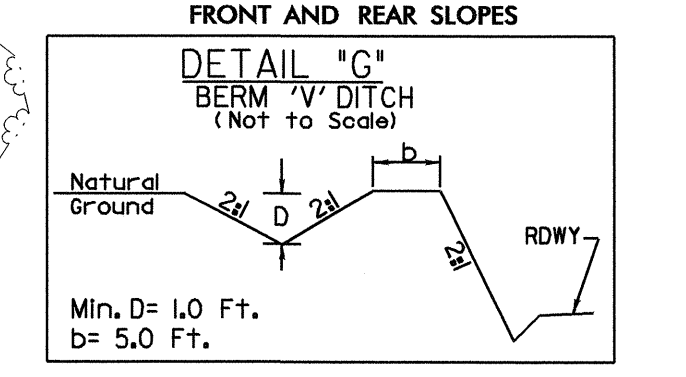
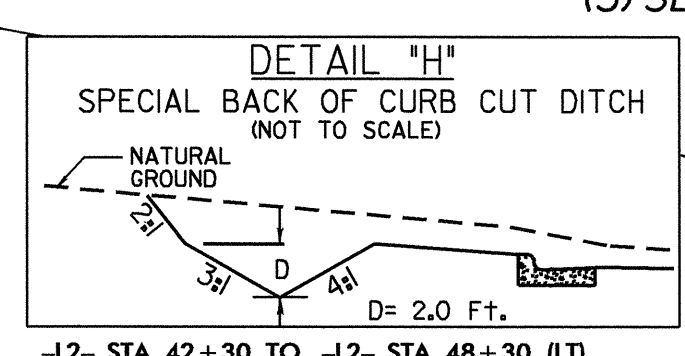
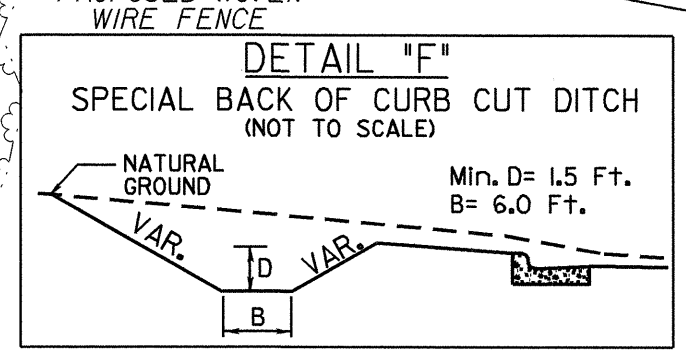
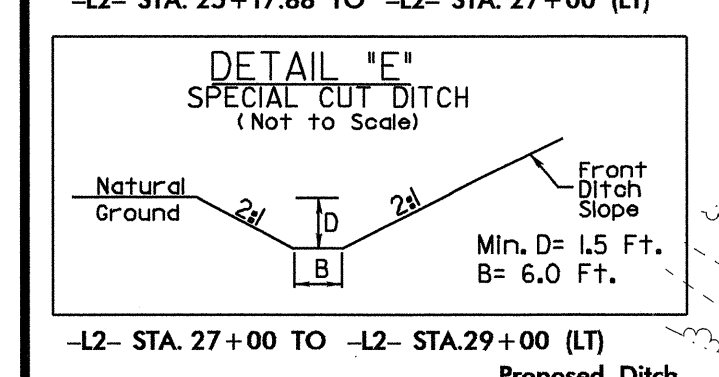
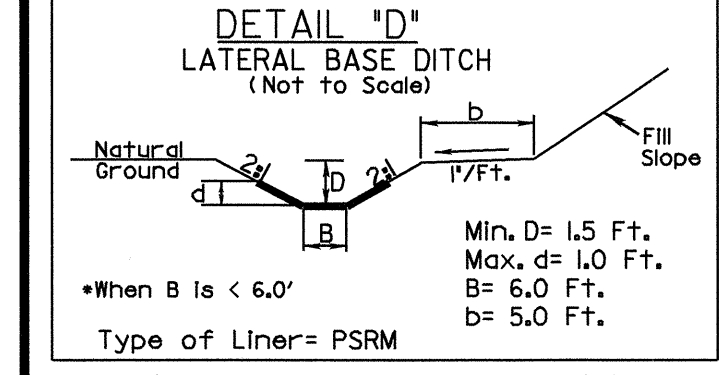


**-L2- CURVE DATA**

PIs Sta 26+51.65 $\Delta s = 14' 19" 26.2"$ $L_s = 200.00'$ $LT = 133.77'$ $ST = 67.07'$	PI Sta 28+38.88 $\Delta = 33' 39" 40.9" (LT)$ $D = 14' 19" 26.2"$ $L = 235.00'$ $T = 121.00'$ $R = 400.00'$ SE = SEE PLANS
PIs Sta 30+19.95 $\Delta s = 14' 19" 26.2"$ $L_s = 200.00'$ $LT = 133.77'$ $ST = 67.07'$	PI Sta 43+85.09 $\Delta = 94' 49" 57.9" (LT)$ $D = 38' 11" 49.9"$ $L = 248.27'$ $T = 163.22'$ $R = 150.00'$ SE = SEE PLANS
PI Sta 46+98.15 $\Delta = 163' 39" 27.7" (RT)$ $D = 35' 48" 35.5"$ $L = 457.02'$ $T = 114.30'$ $R = 160.00'$ SE = SEE PLANS	PI Sta 47+03.49 $\Delta = 12' 09" 42.6" (RT)$ $D = 4' 46" 28.7"$ $L = 254.72'$ $T = 127.84'$ $R = 1,200.00'$ SE = SEE PLANS

NOTES: (1) SEE SHEETS 8 & 9 FOR -L2- PROFILE  
 (2) SEE SHEET 10 FOR -TR-ON-, -TR-OFF-, & -PAD- PROFILES  
 (3) SEE SHEET 5-A FOR -TR-ON- & -TR-OFF- ALIGNMENT INFORMATION  
 (4) SEE SHEET L-4 FOR -PAD- LAYOUT  
 (5) SEE SHEET L-2I FOR PLANTING ISLANDS DETAILS

PROJECT REFERENCE NO. K-4703	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22557 MICHAEL W. LITTLE 9/28/07	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 14482 JOSEPH W. DUMERIL 9/28/07



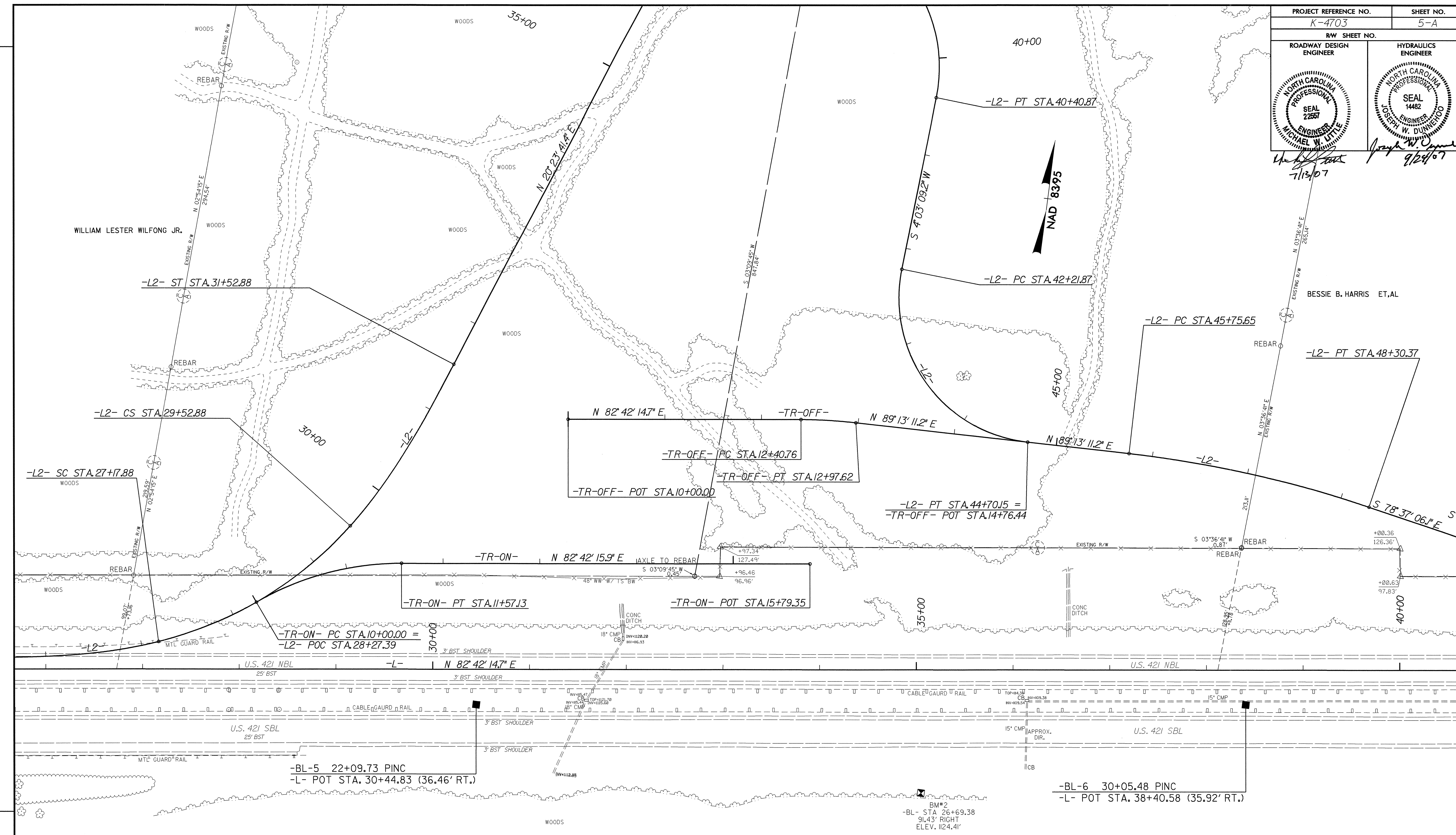
REVISIONS

28-SEP-2007 09:01 14703.rdy.pst5.dgn  
 \$\$\$\$\$\$PERM\$ \$\$\$\$\$\$

SEE SHEET NO. 6  
 MATCH LINE  
 -L2- STA. 49+00.00



7/13/07  
9/24/07



REVISIONS

**-L2- CURVE DATA**

Pls Sta 26+51.65 Δs = 14° 19' 26.2" Ls = 200.00' LT = 133.77' ST = 67.07'	PI Sta 28+38.88 Δ = 33° 39' 40.9" (LT) D = 14° 19' 26.2" L = 235.00' T = 121.00' R = 400.00' SE = SEE PLANS	Pls Sta 30+19.95 Δs = 14° 19' 26.2" Ls = 200.00' LT = 133.77' ST = 67.07'
PI Sta 43+85.09 Δ = 94° 49' 57.9" (LT) D = 38° 11' 49.9" L = 248.27' T = 163.22' R = 150.00'	PI Sta 46+98.15 Δ = 163° 39' 27.7" (RT) D = 35° 48' 35.5" L = 457.02' T = 1114.30' R = 160.00' SE = SEE PLANS	PI Sta 47+03.49 Δ = 12° 09' 42.6" (RT) D = 4° 46' 28.7" L = 254.72' T = 127.84' R = 1,200.00'

**-TR-ON- CURVE DATA**

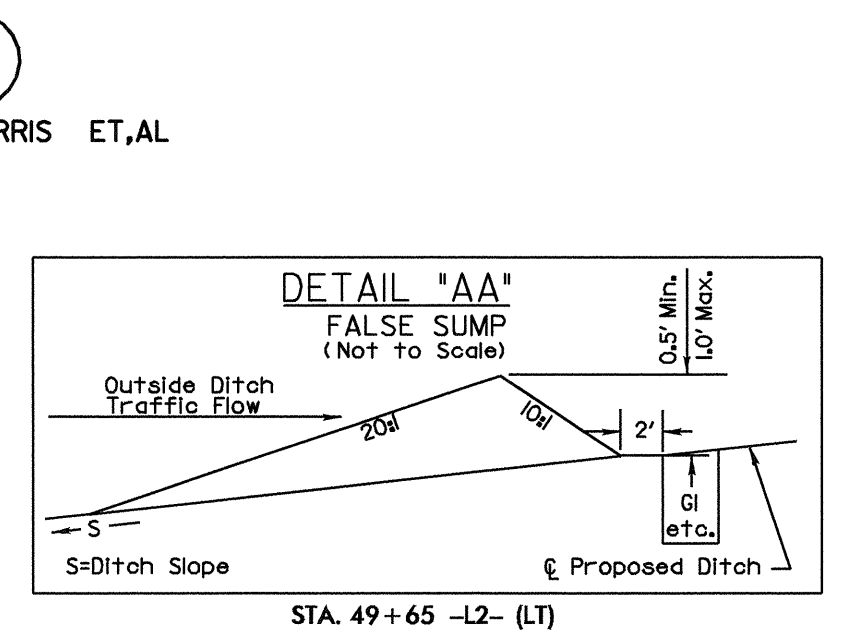
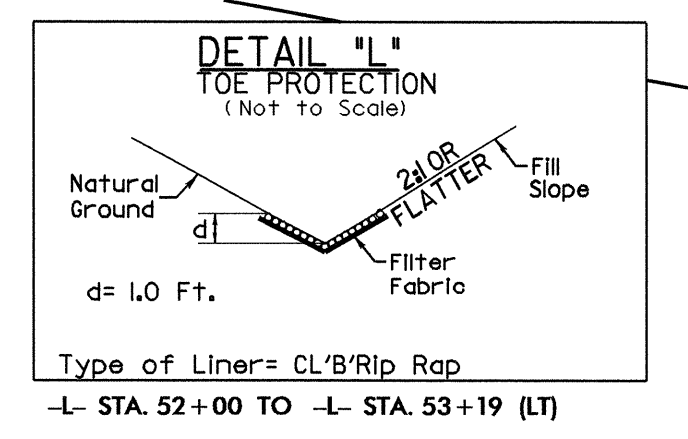
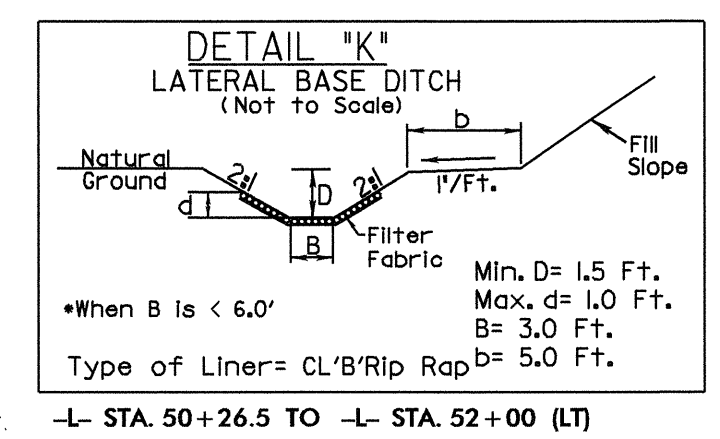
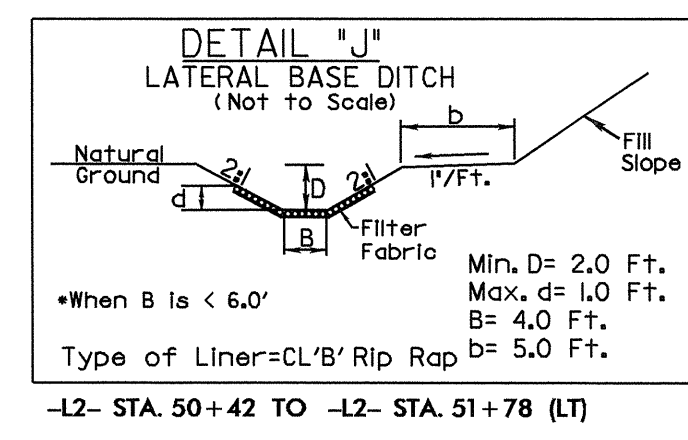
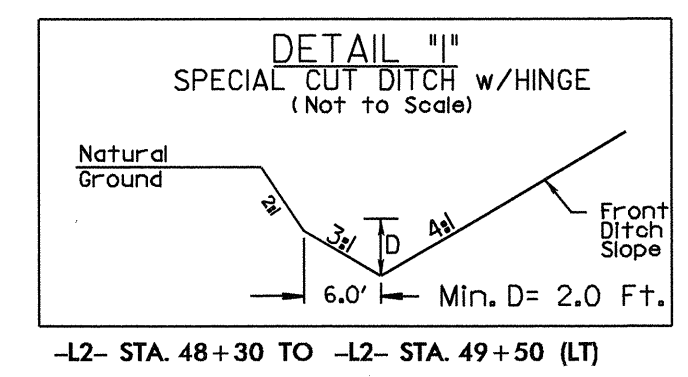
PI Sta 10+80.41 Δ = 30° 00' 37.0" (RT) D = 19° 05' 54.9" L = 157.13' T = 80.41' R = 300.00' SE = SEE PLANS	<b>-TR-OFF- CURVE DATA</b>
	PI Sta 12+69.22 Δ = 6° 30' 56.5" (RT) D = 11° 27' 33.0" L = 56.86' T = 28.46' R = 500.00' SE = SEE PLANS

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\$\$\$\$\$USER\$\$\$\$\$



**-L2- CURVE DATA**

Pls Sta	PI Sta	Pls Sta	PI Sta
51+17.74	53+08.73	55+04.80	58+14.24
$\Delta = 4' 46'' 28.7''$	$\Delta = 1' 50'' 06.5''$ (LT)	$\Delta = 0' 27'' 30.0''$	$\Delta = 1' 40'' 12.3''$ (LT)
$L_s = 200.00'$	$D = 4' 46'' 28.7''$	$\Delta_s = 4' 46'' 30.5''$	$D = 0' 27'' 31.7''$
$LT = 133.38'$	$L = 247.87'$	$L_s = 200.00'$	$L = 364.01'$
$ST = 66.71'$	$T = 124.38'$	$LT = 127.55'$	$T = 182.02'$
	$R = 1,200.00'$	$ST = 72.57'$	$R = 12,488.00'$
	$SE = \text{SEE PLANS}$		$SE = \text{SEE PLANS}$

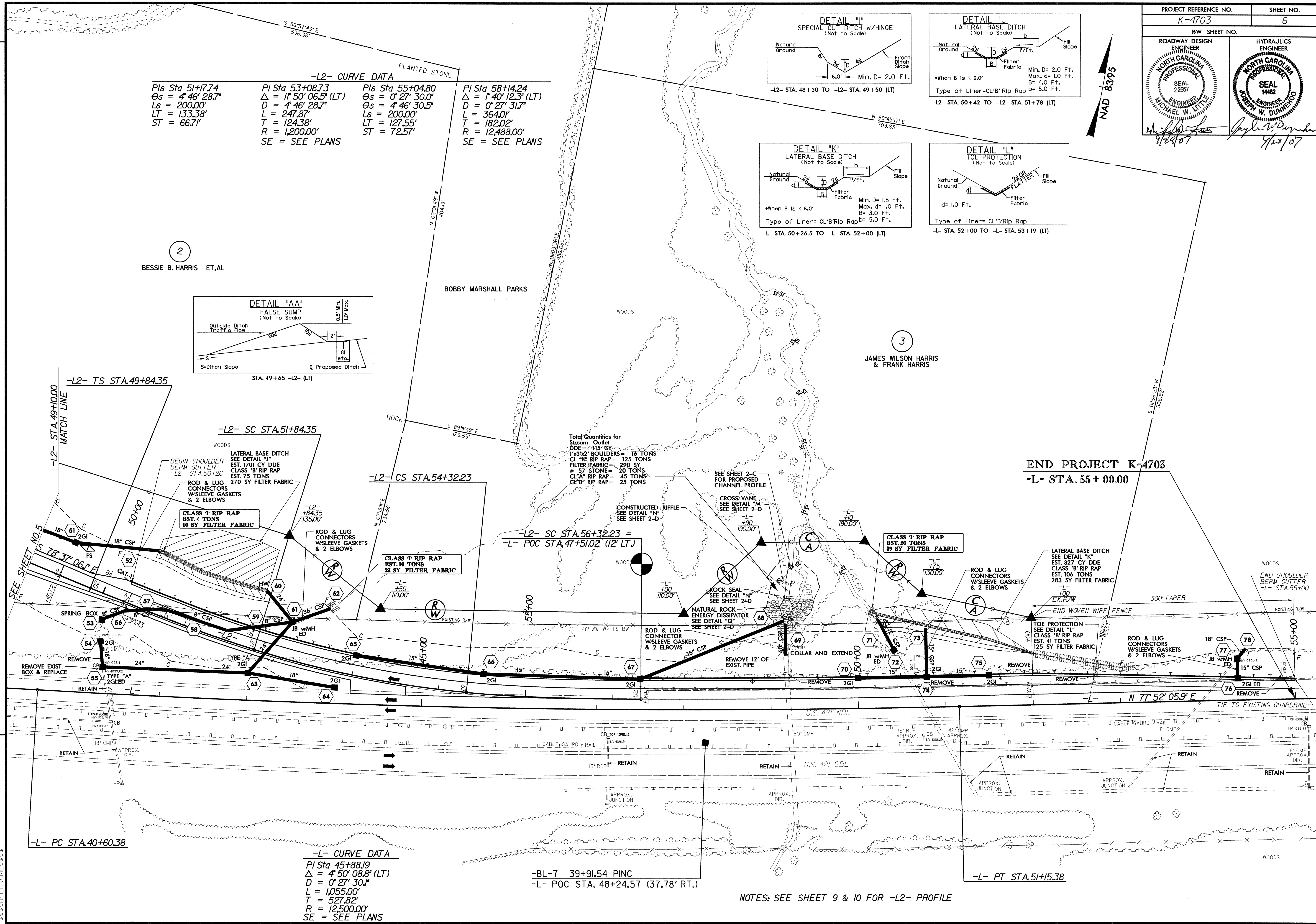


2  
BESSIE B. HARRIS ET,AL

3  
JAMES WILSON HARRIS & FRANK HARRIS

**Total Quantities for Stream Outlet**  
DDE = 115' CY  
1 1/2" BOULDERS = 16 TONS  
CL "H" RIP RAP = 125 TONS  
FILTER FABRIC = 250 SY  
# 57 STONE = 20 TONS  
CL "A" RIP RAP = 45 TONS  
CL "B" RIP RAP = 25 TONS

**END PROJECT K-4703**  
-L- STA. 55+00.00



**-L- CURVE DATA**

PI Sta 45+88.19
$\Delta = 4' 50'' 08.8''$ (LT)
$D = 0' 27'' 30.1''$
$L = 1,055.00'$
$T = 527.82'$
$R = 12,500.00'$
$SE = \text{SEE PLANS}$

-BL-7 39+91.54 PINC  
-L- POC STA. 48+24.57 (37.78' RT.)

NOTES: SEE SHEET 9 & 10 FOR -L2- PROFILE

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\$\$\$\$\$SYERRA\$\$\$\$\$



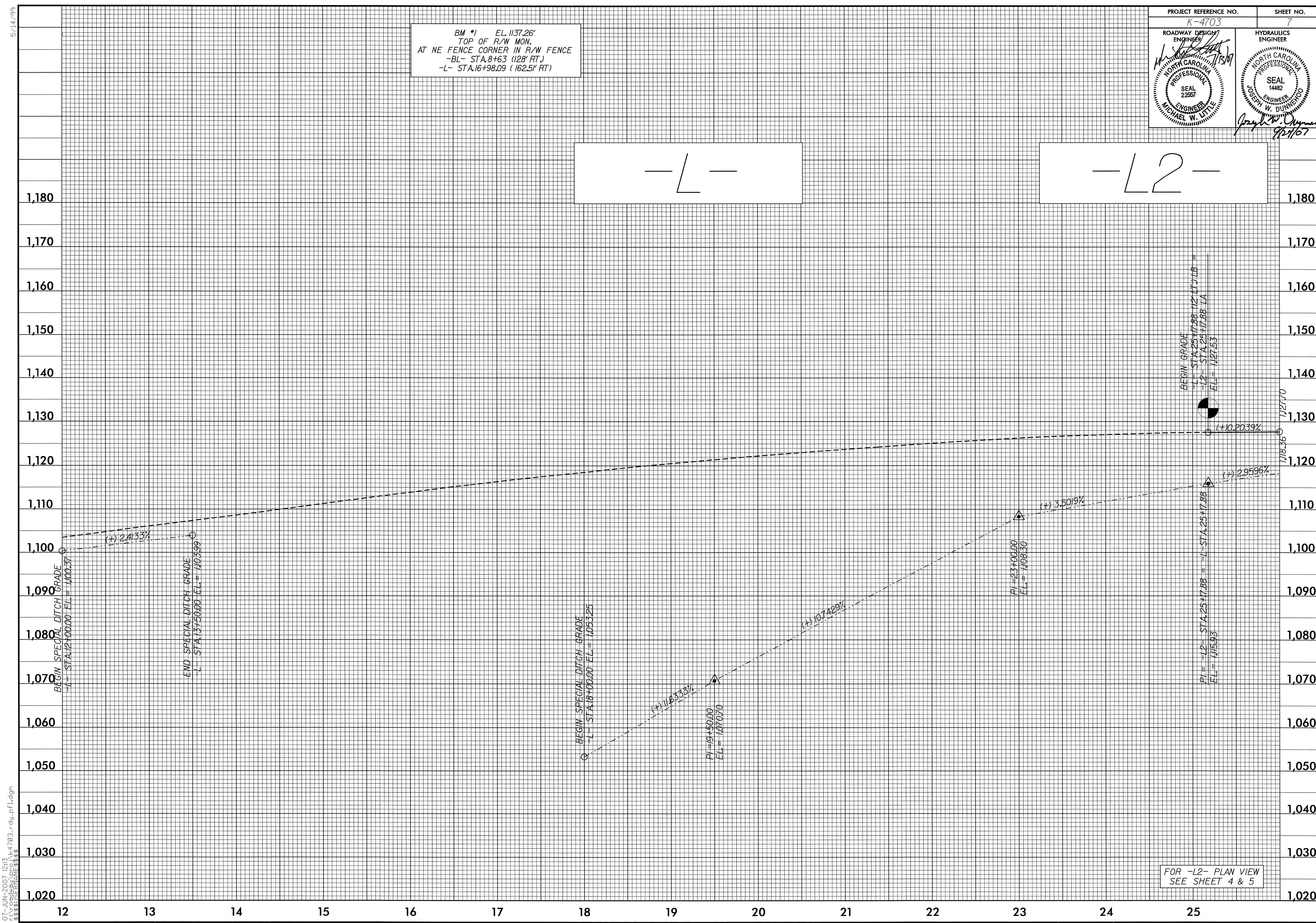
5/14/99

BM \*1 EL. 1137.26'  
TOP OF R/W MON.  
AT NE FENCE CORNER IN R/W FENCE  
-BL- STA. 8+63 (128' RT.)  
-L- STA. 16+98.09 (162.5' RT.)

PROJECT REFERENCE NO. K-4703	SHEET NO. 7
ROADWAY DESIGN ENGINEER <i>[Signature]</i> NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22857 MICHAEL W. LITTLE	HYDRAULICS ENGINEER <i>[Signature]</i> NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14482 JOSEPH W. DUNNELOD

-L-

-L2-



07-JUN-2007 12:13  
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\*\*\*\*\*SUSPENDED\*\*\*\*\*

FOR -L2- PLAN VIEW  
SEE SHEET 4 & 5

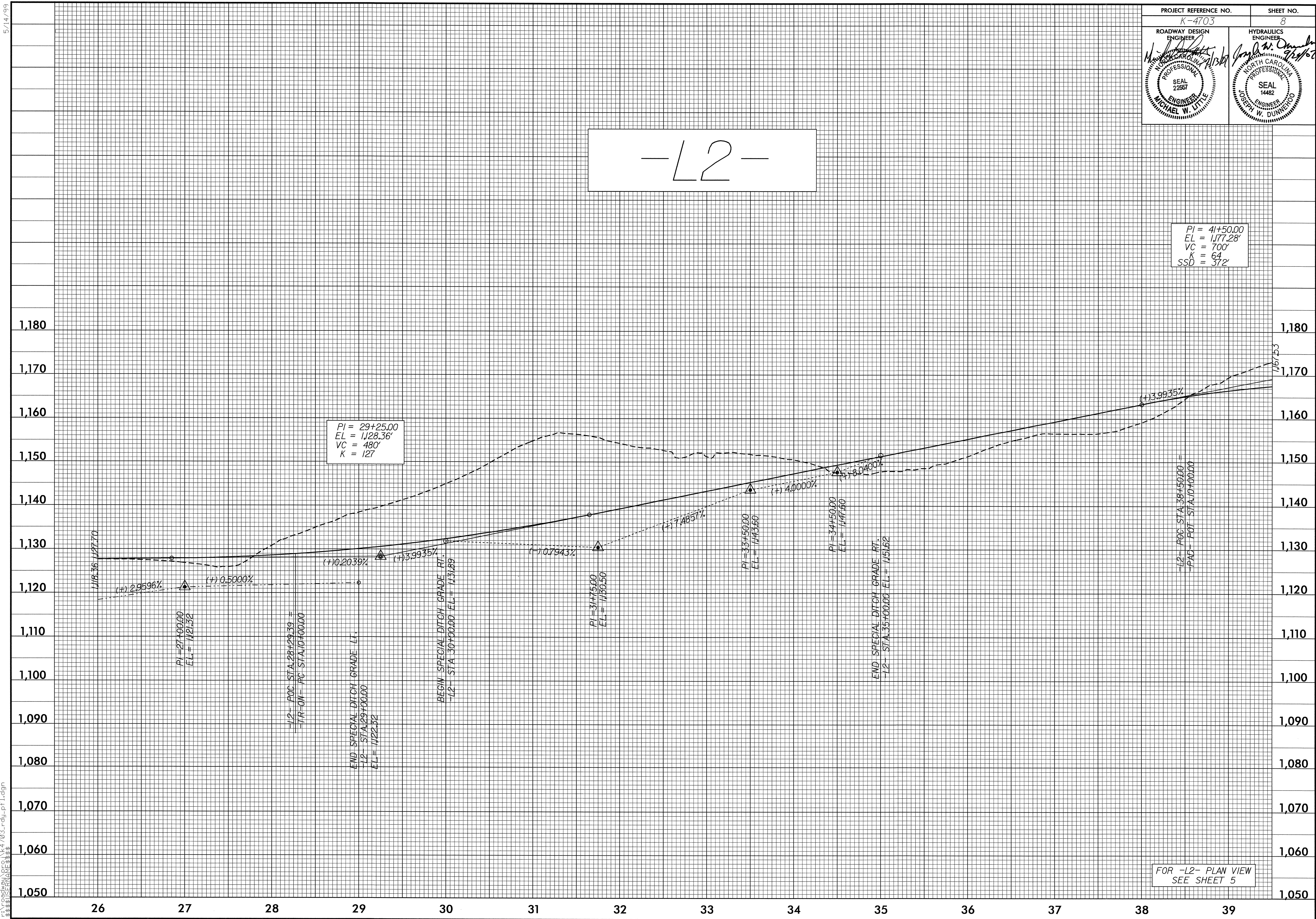


5/14/99

PROJECT REFERENCE NO. K-4703	SHEET NO. 8
ROADWAY DESIGN ENGINEER <i>Michael W. Little</i>	HYDRAULICS ENGINEER <i>Joseph W. Dunne</i>
PROFESSIONAL SEAL 2251 MICHAEL W. LITTLE	PROFESSIONAL SEAL 1448 JOSEPH W. DUNNE

-L2-

PI = 41+50.00  
EL = 1177.28'  
VC = 700'  
K = 64  
SSD = 372'



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FOR -L2- PLAN VIEW  
SEE SHEET 5



5/14/99

PROJECT REFERENCE NO. K-4703	SHEET NO. 9
ROADWAY DESIGN ENGINEER <i>Michael W. Little</i> NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22587	HYDRAULICS ENGINEER <i>Joseph W. Dunning</i> NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14482

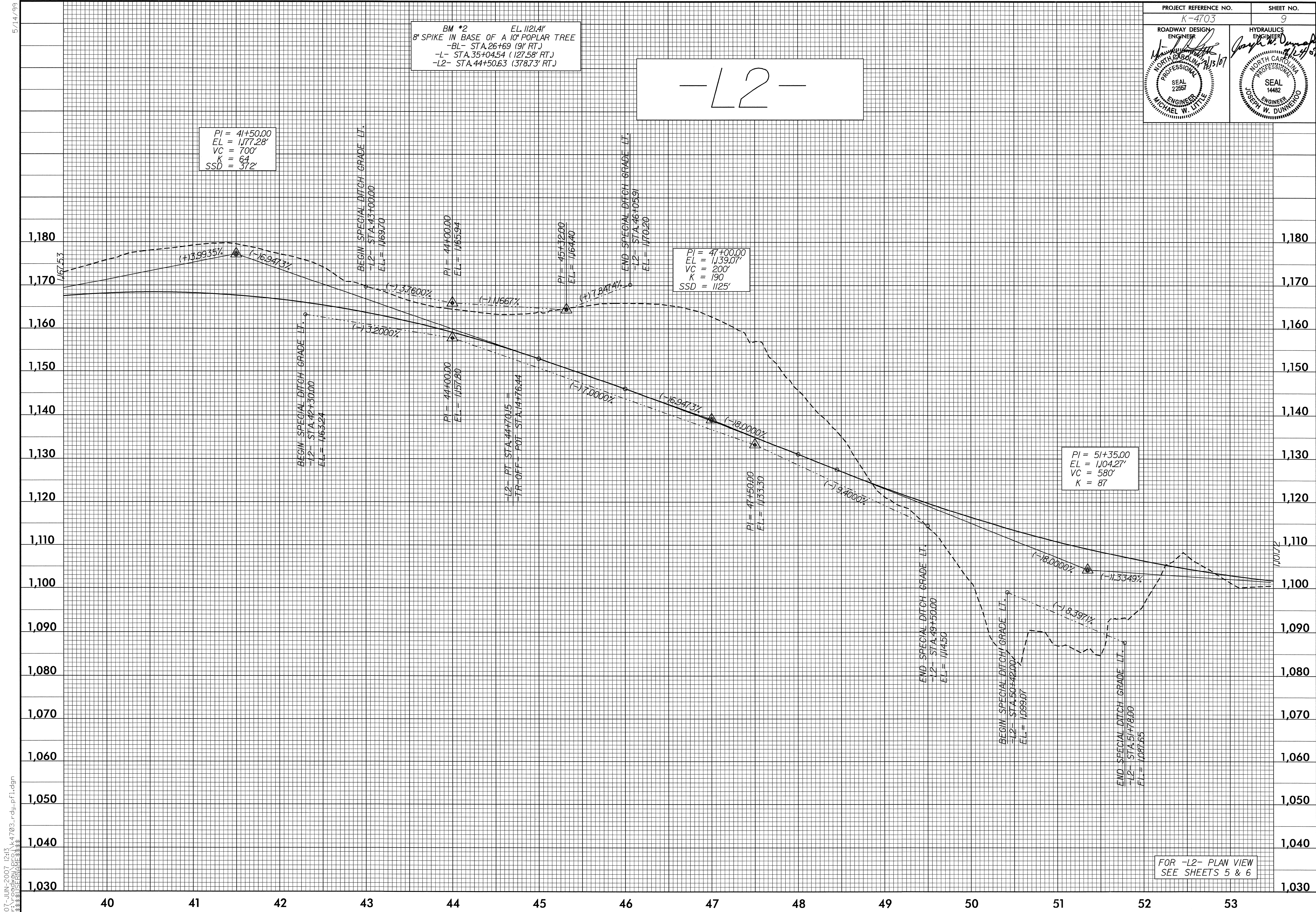
BM \*2 EL 1121.41'  
8" SPIKE IN BASE OF A 10" POPLAR TREE  
-BL- STA.26+69 (91' RT.)  
-L- STA.35+04.54 (127.58' RT.)  
-L2- STA.44+50.63 (378.73' RT.)

-L2-

PI = 41+50.00  
EL = 1,177.28'  
VC = 700'  
K = 64  
SSD = 372'

PI = 47+00.00  
EL = 1,139.07'  
VC = 200'  
K = 190  
SSD = 1125'

PI = 51+35.00  
EL = 1,104.27'  
VC = 580'  
K = 87



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FOR -L2- PLAN VIEW  
SEE SHEETS 5 & 6



5/28/99  
 19-111-2007\_0750  
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PROJECT REFERENCE NO. K-4703	SHEET NO. 10
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22557 MICHAEL W. LITTLE ENGINEER 7/19/02	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 14482 JOSEPH W. DUNNEID ENGINEER 7/19/02

