CONTRACT: C201902 ID: R-3833A

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	SHEET NUMBERS PLAN	PROFILE	XSECT
-L-	14+25.00 – 230+00.00	4–19	25–32	
-Y1-	12+00 – 14+83	4	33	
-Y2-	12+85 – 15+57	5	33	
-Y3-	11+95 – 14+14	7	33	
-Y4-	13+50 – 14+80	7	33	
-Y5-	11+25 – 12+13	8	33	
-Y6-	10+40 – 14+95	8	34	
-Y7-	12+00 – 17+80	10	34	
-Y8-	10+00 – 14+02	10	34	
-Y9-	10+41 – 13+85	11	34	
-Y10	10+39 – 12+15	12	35	
-Y11-	10+39 – 13+27	13	35	
-Y12-	11+65 – 12+68	15,20	35	
-Y13-	12+25 – 34+00	15,20,21	36	
-Y14-	12+00 – 14+26	15	35	
-Y15-	12+00 – 14+25	15	35	
-Y16-	10+90 – 14+95	16	37	
-Y17-	10+46 – 13+75	17	37	
-Y18-	9+85 – 14+51	17	37	
-Y19-	11+42 – 46+50	19,22,23,24	38–39	
-Y20-	10+36 – 11+20	21	36	
-Y21-	10+12 – 10+98	20	36	

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

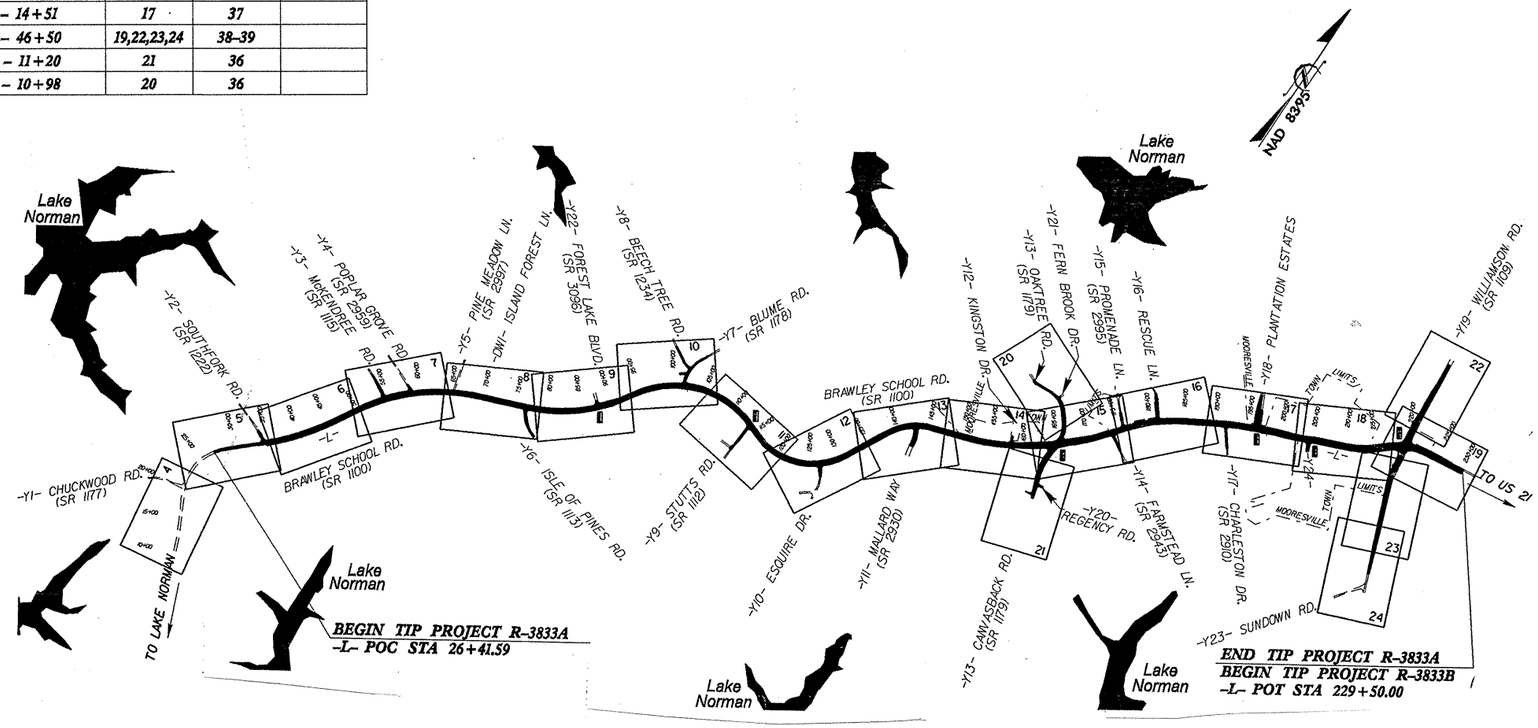
ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34554.1.1 (R-3833A) F.A. PROJ. STP-150(11)

COUNTY IREDELL

PROJECT DESCRIPTION SR 1100 (BRAWLEY SCHOOL RD.) FROM SR 1177 (CHUCKWOOD RD.) TO EAST OF SR 1109 (WILLIAMSON RD.)

INVENTORY



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3833A	1	39

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34554.1.1	STP-150(11)	PE
34554.2.2	STP-150(20)	R/W, UTILITIES
34554.3.1	STP-1100	CONSTRUCTION

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL
J.K STICKNEY
C.L. SMITH
H.K. WISE

INVESTIGATED BY J.E. BEVERLY
CHECKED BY C.B. LITTLE
SUBMITTED BY C.B. LITTLE
DATE FEBRUARY 2006

NORTH CAROLINA LICENSED SEAL 1104 GEOLOGIST CLINTON B. LITTLE 2-20-06

DRAWN BY: J.E. BEVERLY

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

TIP PROJECT: R-3833A

CONTRACT:

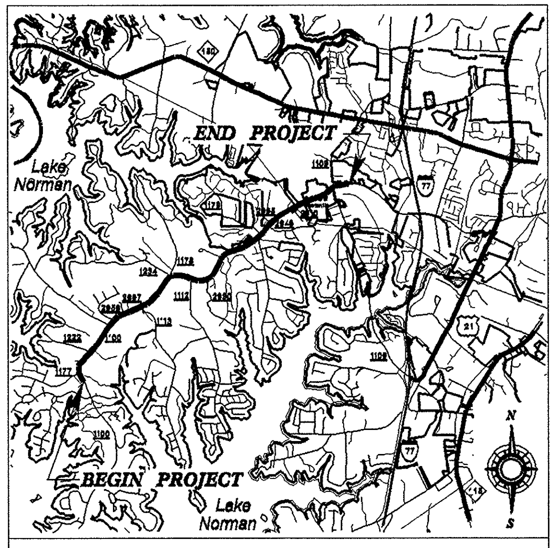
See Sheet 1-A For Index of Sheets

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3833A	1A	39

STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION
34554.1.1	STP-150(11)	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY



VICINITY MAP

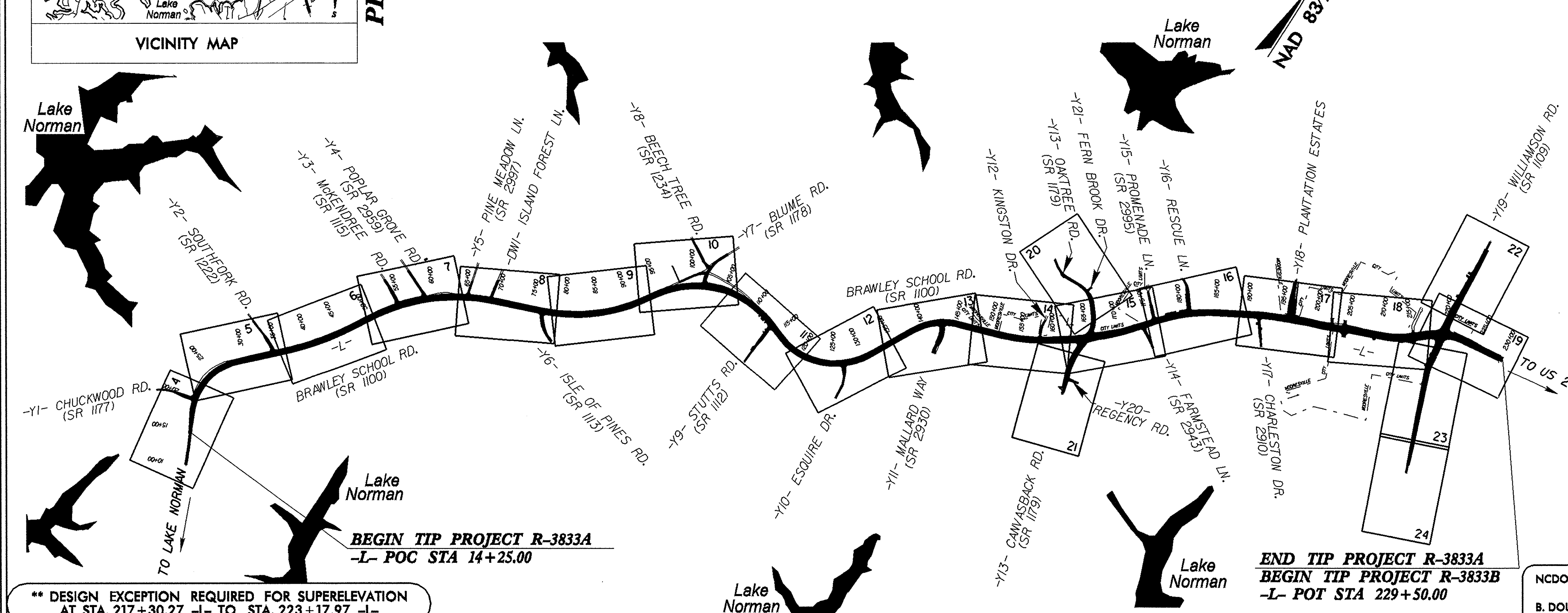
PRE-FDFI SUBMITTAL

LOCATION: ***SR 1100 (BRAWLEY SCHOOL RD.) FROM SR 1177 (CHUCKWOOD ROAD) TO EAST OF SR 1109 (WILLIAMSON ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, SIGNALS, AND SIGNING***

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



** DESIGN EXCEPTION REQUIRED FOR SUPERELEVATION AT STA. 217+30.27 -L- TO STA. 223+17.97 -L-

THIS PROJECT IS PARTIALLY WITHIN THE MOORESVILLE CITY LIMITS.

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

NCDOT CONTACT:
B. DOUG TAYLOR, PE
PROJECT ENGINEER
ROADWAY DESIGN UNIT

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 31,880
ADT 2028 = 42,610
DHV = 10 %
D = 60 %
T = 6 % *
V = 50 MPH **
* (TTST 2% + DUAL 4%)

PROJECT LENGTH

LENGTH OF TIP PROJECT R-3833A	= 4.077 mi.
TOTAL LENGTH OF TIP PROJECT R-3833A	= 4.077 mi.

Prepared for:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

Prepared by:
MA ENGINEERING CONSULTANTS, INC.
598 E. CHATHAM STREET, SUITE 137
CARY, NORTH CAROLINA 27511
(919) 297-0220

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2006

LETTING DATE:
FEBRUARY 19, 2008

BURKE EVANS, PE
PROJECT ENGINEER

TONY MILLER, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT DPT DMT VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS

- S - BULK SAMPLE
- SS - SPLIT SPOON SAMPLE
- ST - SHELBY TUBE SAMPLE
- RS - ROCK SAMPLE
- RT - RECOMPACTED TRIAXIAL SAMPLE
- CBR - CALIFORNIA BEARING RATIO SAMPLE

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
W - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] OTHER _____
- [ ] OTHER _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [X] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] OTHER _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] OTHER _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK:

ELEVATION: FT.

NOTES:

REVISED 03/07/05

Sheet 2A

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

LYNDO TIPPETT
SECRETARY

February 7, 2006

STATE PROJECT: 34554.1.1 (R-3833A)
F.A. PROJECT: STP – 150(11)
COUNTY: Iredell
DESCRIPTION: SR 1100 (Brawley School Rd.) from SR 1177 (Chuckwood Rd.) to East of SR 1109 (Williamson Rd.)

SUBJECT: Geotechnical Report - Inventory

This report presents the findings of the Geotechnical Investigation for the proposed widening of Brawley School Rd. (SR 1100). Stations encompassing the main alignment are from -L- station 14+25 to 230+00. The project trends from southwest to northeast through urban Iredell County ending in the city limits of Mooresville.

The geotechnical field investigation for this project was conducted in October of 2005. An ATV mounted CME 550X drill machine with hollow stem augers, and automatic drop hammer was utilized to perform test borings along the proposed -L- alignment. Boring data was limited along connecting -Y- lines so soil descriptions were determined from both visual inspection and interpretation of -L- line boring data. The following survey lines are addressed in this inventory report:

Line	Station
-L-	14+25 – 230+00
-Y1-	12+00 - 14+83
-Y2-	12+85 – 15+57
-Y3-	11+95 – 14+14
-Y4-	13+50 – 14+80
-Y5-	11+25 – 12+13
-Y6-	10+40 – 14+95
-Y7-	12+00 – 17+80
-Y9-	10+41 – 13+85
-Y10-	10+39 – 12+15
-Y11-	10+39 – 13+27
-Y12-	11+65 – 12+68
-Y13-	12+25 – 34+00
-Y14-	12+00 – 14+26

Line	Station
-Y15-	12+00 – 14+25
-Y16-	10+90 – 14+95
-Y17-	10+46 – 13+75
-Y18-	9+85 – 14+51
-Y19	11+42 – 46+50
-Y20-	10+36 – 11+20
-Y21-	10+12 – 10+98

Areas of Special Geotechnical Interest:

1. *Groundwater:*

The presence of groundwater was not detected in any of our boring locations. When felt by hand soils could be described as dry to moist.

2. *Rock:*

No rock was encountered during the course of this investigation.

3. *High PI Soils:* (PI's Greater than 26)

High PI clay soils were encountered in 10 separate boring instances during the course of this investigation. High PI values ranged from 27 – 43 with the typical high PI average being in the upper 20's to low 30 PI range.

The following is a list of areas known to contain High PI clays:

Station Range	Depth Interval (feet)	High PI Range (27+)
-L- 24+00 – 26+00	0.0 – 6.0	31
-L- 29+50 – 37+00	0.0 – 6.0	27 – 43
-L- 73+00 – 78+00	0.0 – 6.0	28 – 35
-L- 102+00 – 106+00	0.0 – 6.0	28
-L- 112+00 – 116+50	0.0 – 6.0	27
-L- 134+50 – 138+50	0.0 – 6.0	39
-L- 142+00 – 146+00	0.0 – 5.0	27
-L- 170+50 – 175+00	0.0 – 6.0	27
-Y6- 10+40 – 14+95	0.0 – 5.5	28
-Y9- 10+41 – 13+85	0.0 – 5.5	27
-Y11- 10+39 – 13+27	0.0 – 5.0	27

4. *Alluvial Soils / Wet Areas:*

There are no creeks or water crossings that bisect this widening project therefore no alluvial soils or wet areas were noted.

Physiography/Geology:

The project area is located in southern Iredell County beginning in proximity to Lake Norman and trending to the northeast into the city limits of Mooresville. The area topography is flat to gently rolling, surrounded by residential and business structures and heavily populated in the Mooresville area. Approximate elevation range is 820 – 870 feet along the project corridor.

Geologically this site is part of the Charlotte Belt and is underlain by Cenezoic age biotite gneiss rock.

Soil Properties:

1. *Residual Soils:*
These soils are derived from in place weathering of parent materials. They occur in a variety of consistencies, classifications, and stratigraphic sequences. Residual soils are further subdivided into clays, silts, and sands.

Clays mostly consist of medium stiff to stiff silty sandy clay in the AASHTO classifications of A-7-5, A-7-6, and A-6. The occurrence of clay soils is common both as near surface soils and subsoils. Clay soils are well drained, and dry to moist to the touch. They have a plasticity index of 12 to 43 and corresponding liquid limit range of 27 to 85.

Silts were noted as both near surface soils and subsoils. Silts consist of medium stiff to stiff micaceous clayey sandy silt and occur only in the A-5 AASHTO Classification. These soils are well drained, with a dry to moist feel.

Sands encountered on the project were of the A-2-4 AASHTO Classification and occur only as subsoils. Sands generally consist of medium dense to dense micaceous silty sand in the A-2-4, and A-2-5 AASHTO Classifications. Sands were typically moist to the touch.

2. *Alluvial Soils:*

Alluvial soils originate from water transportation and deposition in a floodplain environment. With the exception of man made ditches and drainage features no such conditions exist along this project. Therefore there are no alluvial soils to discuss.

3. *Fill Soils:*

Roadway fill soils are present beneath Brawley School Rd. and connecting -Y- lines. Heavy traffic and utilities made borings in and adjacent to roadway fill unfeasible. The existing road and connectors appear in reasonably good condition.

Artificial fill was noted in one location at the beginning of the project right of -L- stations 22+00 to 26+00. The fill material was noted up to 15 feet in thickness and consists of medium stiff silty sandy clay (A-7-5, A-7-6). The fill material may be the result of a water line installation in this area.

Sheet 2B

Rock Properties:

Rock is defined as that material which refuses penetration of power augers and / or achieves SPT refusal. Rock was not encountered during the course of this investigation.

Wells:

During the course of this investigation many wells were noted, however most appear to be outside of the proposed construction limits. Know well locations which fall within construction boundaries are listed below. It should however be noted that some wells might have gone undetected at this time.

-L- 55+60, 45' RT
-L- 61+10, -CL-
-L- 98+55, 60' LT
-L- 99+90, 70' LT
-L- 167+65, 40' RT
-Y12- 167+65, 40' RT

Respectfully Submitted,

J.E. Beverly, Project Geologist

J E Beverly

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

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.

PROJECT: R-3833A 34554.1.1 COUNTY: IREDELL DATE: March 18, 2008 COMPUTED BY: DBE SHEET: 3 OF 39

STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
PHASE I (EB SIDE OF EXISTING SR 1100)														
-L- 26+41.59 TO 56+00.00	2,914				2,914	17,260		17,260	20,712	17,798				
SUBTOTAL	2,914				2,914	17,260		17,260	20,712	17,798				
-L- 56+00.00 TO 76+00	657				657	10,127		10,127	12,152	11,495				
SUBTOTAL	657				657	10,127		10,127	12,152	11,495				
-L- 76+00.00 TO 95+50	918				918	4,610		4,610	5,532	4,614				
-Y6- 10+40.37 TO 14+95.00	1,391				1,391	200		200	240			1,151		1,151
SUBTOTAL	2,309				2,309	4,810		4,810	5,772	4,614		1,151		1,151
-L- 95+50.00 TO 125+00	781				781	17,726		17,726	21,271	20,490				
-Y9- 10+41.35 TO 13+85.00	1,486				1,486	50		50	60			1,426		1,426
SUBTOTAL	2,267				2,267	17,776		17,776	21,331	20,490		1,426		1,426
-L- 125+00.00 TO 145+00	686				686	4,908		4,908	5,890	5,204				
-Y10- 10+39.50 TO 12+15.00	478				478	69		69	83			395		395
-Y11- 10+39.61 TO 13+27.00	853				853	235		235	282			571		571
SUBTOTAL	2,017				2,017	5,212		5,212	6,255	5,204		966		966
-L- 145+00.00 TO 165+00	324				324	15,967		15,967	19,160	18,836				
-Y13- 25+15.89 TO 34+00	1,018				1,018	12,834		12,834	15,401	14,383				
-Y20- 10+36.48 TO 11+20	227				227							227		227
SUBTOTAL	1,569				1,569	28,801		28,801	34,561	33,219		227		227
-L- 165+00.00 TO 195+00	4,436				4,436	19,453		19,453	23,344	18,908				
-Y14- 10+40.22 TO 13+00	893				893	55		55	66			827		827
-Y17- 10+46.67 TO 13+75	61				61	656		656	787	726				
SUBTOTAL	5,390				5,390	20,164		20,164	24,197	19,634		827		827
-L- 195+00.00 TO 219+50	985				985	8,541		8,541	10,249	9,264				
-Y19- 26+26.45 TO 46+50 (SB SIDE OF EXISTING SR 1109)	3,149				3,149	936		936	1,123			2,026		2,026
-Y24- 10+51.50 TO 11+78	8				8	591		591	709	701				
SUBTOTAL	4,142				4,142	10,068		10,068	12,081	9,965		2,026		2,026
-L- 219+50.00 TO 229+50	5				5	13,163		13,163	15,796	15,791				
-Y19- 26+26.45 TO 46+50 (NB SIDE OF EXISTING SR 1109)	286				286	2,956		2,956	3,547	3,261				
SUBTOTAL	291				291	16,119		16,119	19,343	19,052				
PHASE I SUBTOTAL	21,556				21,556	130,337		130,337	156,404	141,471		6,623		6,623
WASTE TO REPLACE BORROW										-6,623		-6,623		-6,623
PHASE I TOTAL	**21,556**				**21,556**	**130,337**		**130,337**	**156,404**	**134,848**		**0**		**0**
PHASE II (WB SIDE OF EXISTING SR 1100)														
-L- 26+41.59 TO 56+00.00	433				433	2,592		2,592	3,110	2,677				
-Y2- 13+72.17 TO 15+57.37	107				107	58		58	70			37		37
-Y3- 10+00.00 TO 14+14.45	2,103				2,103	31		31	37			2,066		2,066
SUBTOTAL	2,643				2,643	2,681		2,681	3,217	2,677		2,103		2,103
-L- 56+00.00 TO 76+00	1,481				1,481	1,738		1,738	2,086	605				
-Y4- 13+50.00 TO 14+80.07	41				41	237		237	284	243				
-Y5- 11+25.00 TO 12+13.28	24				24	101		101	121	97				
-DW1- 11+50.00 TO 12+80.26	146				146	56		56	67			79		79
SUBTOTAL	1,692				1,692	2,132		2,132	2,558	945		79		79
-L- 76+00.00 TO 95+50	775				775	3,251		3,251	3,901	3,126				
-Y22- 10+76.74 TO 11+26.74	29				29	31		31	37	8				
SUBTOTAL	804				804	3,282		3,282	3,938	3,134				
-L- 95+50.00 TO 125+00	3,695				3,695	3,324		3,324	3,989	294				
-Y7- 12+00.00 TO 17+80.88	450				450	2,903		2,903	3,484	3,034				
-Y8- 10+00.00 TO 14+02.90	154				154	1,522		1,522	1,826	1,672				
SUBTOTAL	4,299				4,299	7,749		7,749	9,299	5,000				
-L- 125+00.00 TO 145+00	330				330	3,772		3,772	4,526	4,196				
SUBTOTAL	330				330	3,772		3,772	4,526	4,196				
-L- 145+00.00 TO 165+00	587				587	2,802		2,802	3,362	2,775				
-Y12- 11+65.00 TO 12+68.67	69				69	35		35	42			27		27
-Y13- 12+25.00 TO 23+98.79	850				850	2,190		2,190	2,628	1,778				
-Y21- 10+12.00 TO 10+98.00	16				16	25		25	30	14				
SUBTOTAL	1,522				1,522	5,052		5,052	6,062	4,567		27		27
-L- 165+00.00 TO 195+00	500				500	5,470		5,470	6,564	6,064				
-Y15- 12+00.00 TO 14+26.91	12				12	205		205	246	234				
-Y16- 10+90.00 TO 14+95.45	278				278	135		135	162			116		116
SUBTOTAL	790				790	5,810		5,810	6,972	6,298		116		116
-L- 195+00.00 TO 219+50	1,464				1,464	4,401		4,401	5,281	3,817				
-Y19- 11+42.81 TO 25+36.29 (SB SIDE OF EXISTING SR 1109)	125				125	2,174		2,174	2,609	2,484				
-Y18- 9+85.00 TO 14+51.24	890				890	402		402	482			408		408
SUBTOTAL	2,479				2,479	6,977		6,977	8,372	6,301		408		408
-L- 219+50.00 TO 229+50	95				95	2,656		2,656	3,187	3,092				
-Y19- 11+42.81 TO 25+36.29 (NB SIDE OF EXISTING SR 1109)	711				711	6,124		6,124	7,349	6,638				
SUBTOTAL	806				806	8,780		8,780	10,536	9,730				
PHASE II SUBTOTAL	15,365				15,365	46,235		46,235	55,480	42,848		2,733		2,733
WASTE TO REPLACE BORROW										-2,733		-2,733		-2,733
PHASE II TOTAL	**15,365**				**15,365**	**46,235**		**46,235**	**55,480**	**40,115**		**0**		**0**
PROJECT SUBTOTAL (PHASE I+II)	**36,921**				**36,921**	**176,572**		**176,572**	**211,884**	**174,963**				
ESTIMATED LOSS DUE TO CLEARING & GRUBBING	-14,300				-14,300					14,300				
ESTIMATED SHOULDER MATERIAL						790		790	948	948				
PROJECT TOTAL	**22,621**				**22,621**	**177,362**		**177,362**	**212,832**	**190,211**				
ESTIMATE 5% TO REPLACE TOPSOIL ON BORROW PITS										**9,511**				
GRAND TOTAL (CUBIC YARDS)	**22,621**				**22,621**	**177,362**		**177,362**	**212,832**	**199,722**				
SAY (CUBIC YARDS)	**22,700**				**22,700**	**177,400**		**177,400**	**212,900**	**200,000**				

SELECT GRANULAR MATERIAL (CLASS II OR III) = 2,000 CY (CONTINGENCY PER 'GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS' LETTER DATED FEBRUARY 13, 2006)

ESTIMATED UNDERCUT = 2,000 CY (CONTINGENCY PER 'GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS' LETTER DATED FEBRUARY 13, 2006)

ESTIMATED GRADE POINT UNDERCUT = 3,950 CY (CONTINGENCY PER 'GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS' LETTER DATED FEBRUARY 13, 2006)

ESTIMATED SHALLOW UNDERCUT = 5,500 CY (CONTINGENCY PER 'GEOTECHNICAL RECOMMENDATIONSFOR PAVEMENT DESIGN' LETTER DATED MAY 19, 2006)

-L- & -Y13- & -Y19- PAVEMENT STRUCTURE VOLUME = 17150 CY

ESTIMATED DDE = 750 CY

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	4

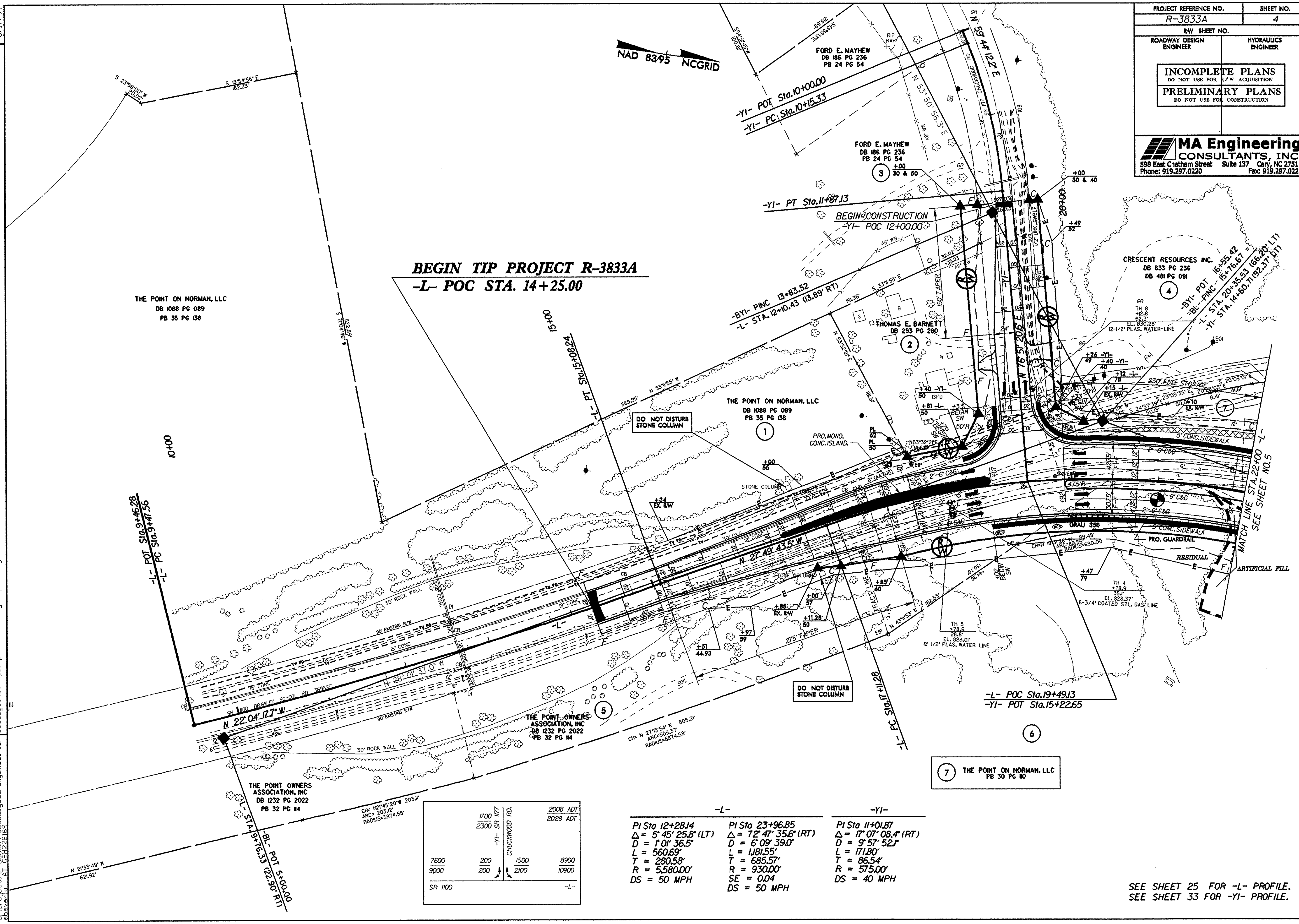
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



1700 / 2300	SR 1177 -Y1- CHUCKWOOD RD.	2008 ADT / 2028 ADT
7600 / 9000	200 / 200	1500 / 2100 · 8900 / 10900
SR 1100		-L-

-L-		-Y1-
PI Sta 12+28.14	PI Sta 23+96.85	PI Sta 11+01.87
Δ = 5° 45' 25.8" (LT)	Δ = 72° 47' 35.6" (RT)	Δ = 17° 07' 08.4" (RT)
D = 1° 01' 36.5"	D = 6° 09' 39.0"	D = 9° 57' 52.1"
L = 560.69'	L = 1,181.55'	L = 171.80'
T = 280.58'	T = 685.57'	T = 86.54'
R = 5,580.00'	R = 930.00'	R = 575.00'
DS = 50 MPH	SE = 0.04	DS = 40 MPH
	DS = 50 MPH	

SEE SHEET 25 FOR -L- PROFILE.
SEE SHEET 33 FOR -Y1- PROFILE.

07-FEB-2006 08:41
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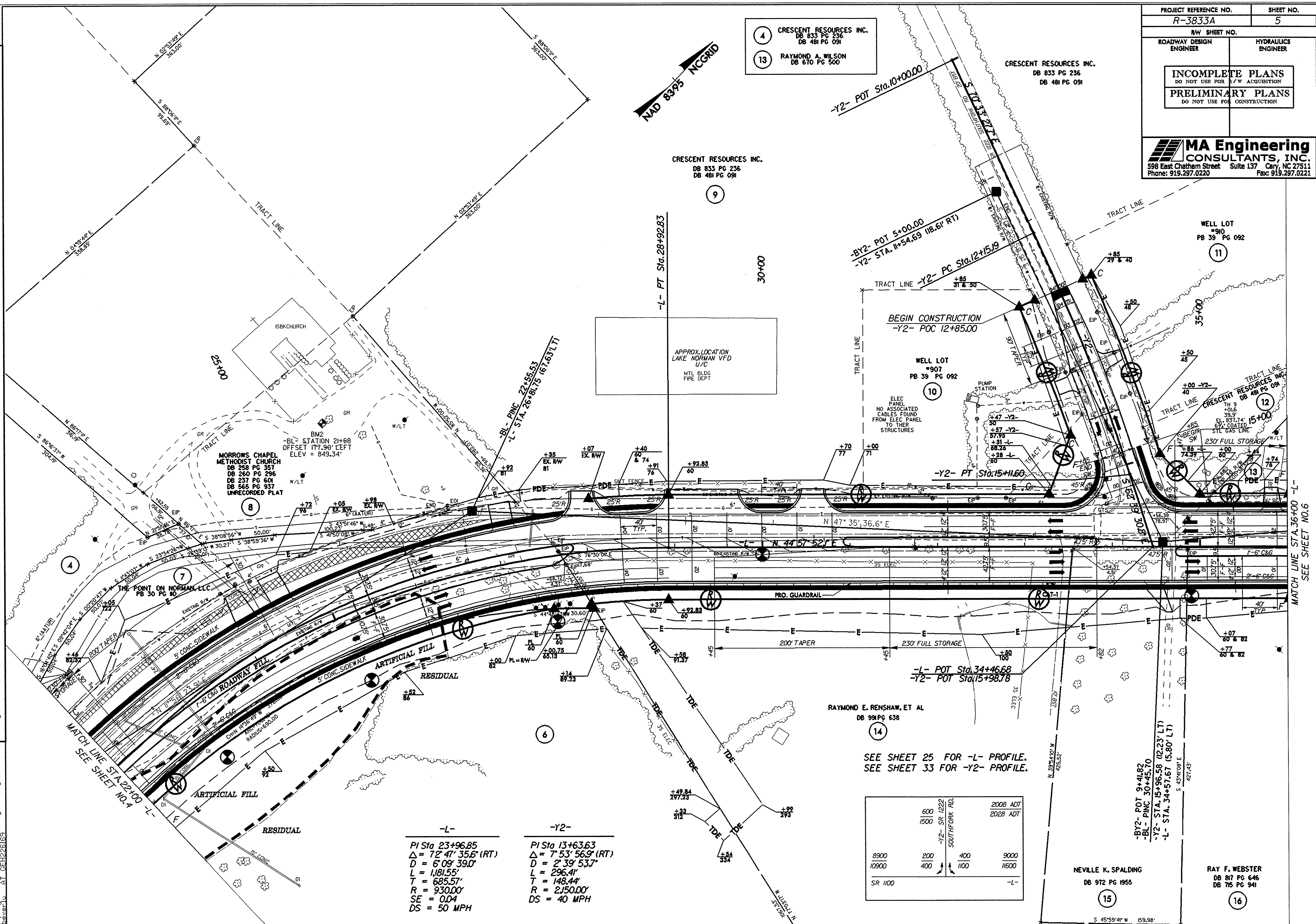
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS



SEE SHEET 25 FOR -L- PROFILE.
SEE SHEET 33 FOR -Y2- PROFILE.

-L-	-Y2-
PI Sta 23+96.85	PI Sta 13+63.63
Δ = 72° 47' 35.6" (RT)	Δ = 7° 53' 56.9" (RT)
D = 6° 09' 39.0"	D = 2° 39' 53.7"
L = 1,181.55'	L = 296.41'
T = 685.57'	T = 148.44'
R = 930.00'	R = 2,150.00'
SE = 0.04	DS = 40 MPH
DS = 50 MPH	

	600 / 1500	-Y2- SR 1222 SOUTHFORK RD.		2008 ADT / 2028 ADT
8900 / 10900	200 / 400		400 / 1100	9000 / 11600
SR 1100				-L-

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	6

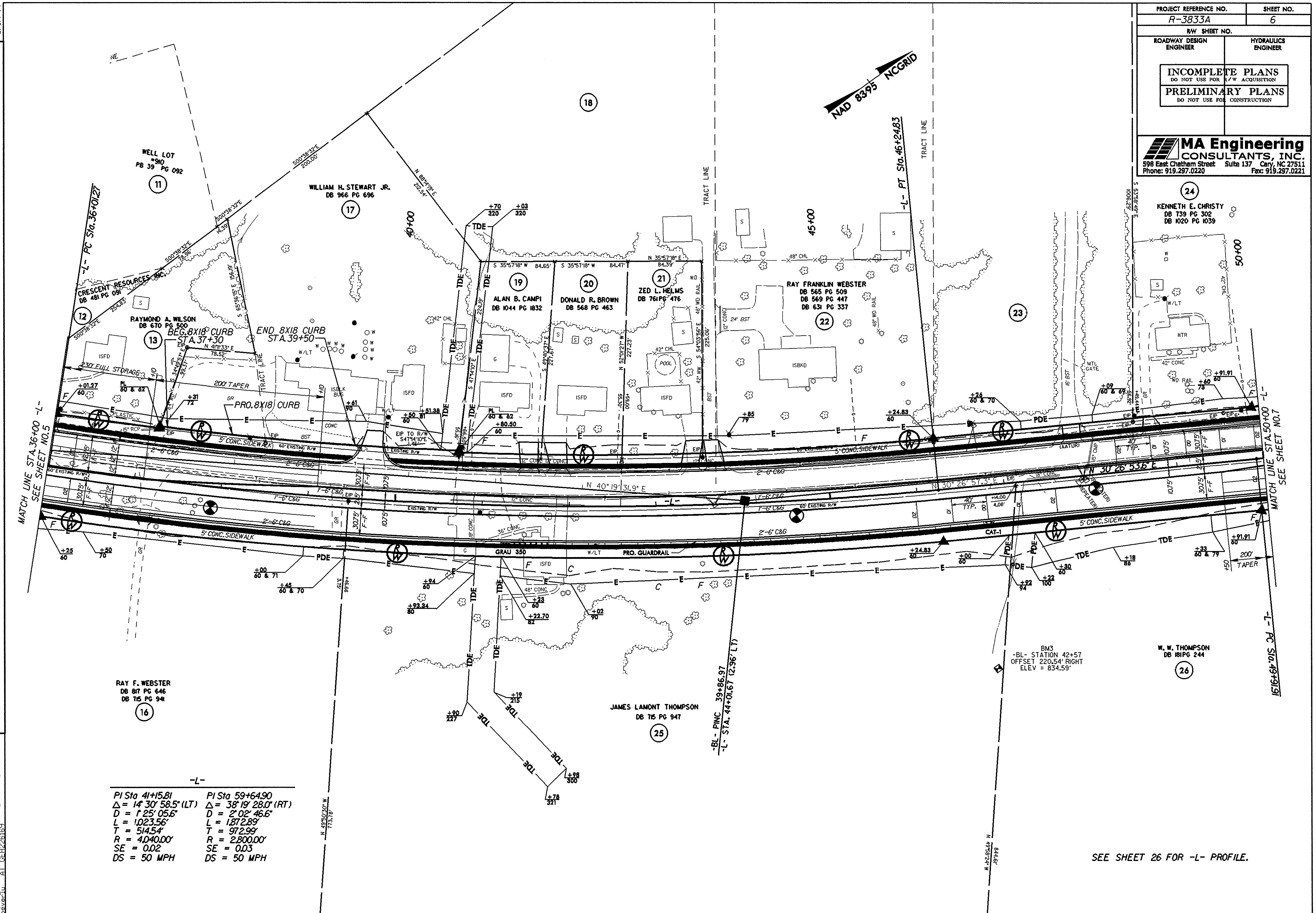
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



-L-

PI Sta 41+15.81	PI Sta 59+64.90
Δ = 14° 30' 58.5" (LT)	Δ = 38° 19' 28.0" (RT)
D = 1° 25' 05.6"	D = 2° 02' 46.6"
L = 1,023.56'	L = 1,872.89'
T = 514.54'	T = 972.99'
R = 4,040.00'	R = 2,800.00'
SE = 0.02	SE = 0.03
DS = 50 MPH	DS = 50 MPH

SEE SHEET 26 FOR -L- PROFILE.

REVISIONS

8/17/99

07-FEB-2006 09:54
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PROJECT REFERENCE NO.	SHEET NO.
R-3833A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NAD 83/95 NCGRID

REVISIONS 8/17/99

-Y3- POT Sta.10+00.00
-BY3- POT 5+00.00
-Y3- STA. 10+99.43 (15.75' LT)
-Y3- PC Sta.11+40.38
-Y3- PT Sta.13+10.31
-L- POC Sta.54+38.36
-Y3- POT Sta.14+54.31
-Y4- POT Sta.10+00.00
-BY4- POT 5+00.00
-Y4- STA. 10+17.21 (15.43' LT)
-L- POC Sta.58+73.52
-Y4- POT Sta. 15+23.41
-BL- PINC 57+13.61
-BY4- PINC 8+60.73
-Y4- STA. 13+76.62 (115.32' RT)
-BL- PINC 57+83.47
-L- STA. 61+09.96 (48.20' LT)
-BL- PINC 49+82.92 =
-BY3- POT 8+14.82
-L- STA. 53+93.80 (38.29' LT)
-Y3- STA. 14+10.63 (39.63' RT)

DANIEL R. WEAVER
DB 927 PG 1835
PB 015 PG 025

RICHARD E. ANDERSON
DB 800 PG 153
PB 015 PG 025

GLORIA HINSON
DB 1256 PG 1497

CRESCENT RESOURCES INC.
DB 481 PG 086

JAMES ROBERT STEVENSON
DB 808 PG 447

CECIL A. WYATT
DB 623 PG 857
DB 647 PG 635
DB 659 PG 481
PB 015 PG 025

KENNETH E. CHRISTY
DB 739 PG 302
DB 1020 PG 1059

EDITH BALLARD MAYHEW HEIRS
DB 557 PG 075

NINA C. MAYHEW
DB 767 PG 094
WB 99E PG 200

MARK ALLEN FOUTS
DB 767 PG 096

REUBEN V. WATTS
DB 1291 PG 1173

GENI S. CRENSHAW, ET AL
DB 1201 PG 010
PB 35 PG 60

RICHARD F. ABERNATHY
DB 551 PG 060
PB 35 PG 60

W. W. THOMPSON
DB 181 PG 244

SANDY G. BROWN
DB 1133 PG 2044

DINA KAY HINSON
DB 966 PG 287
PB 23 PG 157

HISTORIC PROPERTY

SR 1100 BRAWLEY SCHOOL RD 22' BST

MATCH LINE STA 50+00 -L-
SEE SHEET NO.6

MATCH LINE STA 64+00 -L-
SEE SHEET NO.8

-L-
PI Sta 59+64.90
Δ = 38° 19' 28.0" (RT)
D = 2° 02' 46.6"
L = 1,872.89'
T = 972.99'
R = 2,800.00'
SE = 0.03
DS = 50 MPH

-Y3-
PI Sta 12+25.47
Δ = 7° 29' 22.0" (RT)
D = 4° 24' 26.5"
L = 169.93'
T = 85.09'
R = 1,300.00'
SE = 0.04
DS = 40 MPH

		-Y3- SR 1115 MCKENDREE RD.		2008 ADT / 2028 ADT
2800 / 3700				
9000 / 11600	200 / 400		2600 / 3300	11400 / 14500
SR 1100				-L-

		-Y4- SR 2959 POPLAR GR. RD.		2008 ADT / 2028 ADT
500 / 1100				
11400 / 14500	200 / 200		300 / 900	11500 / 15100
SR 1100				-L-

SEE SHEET 26 FOR -L- PROFILE.
SEE SHEET 33 FOR -Y3- PROFILE.
SEE SHEET 33 FOR -Y4- PROFILE.

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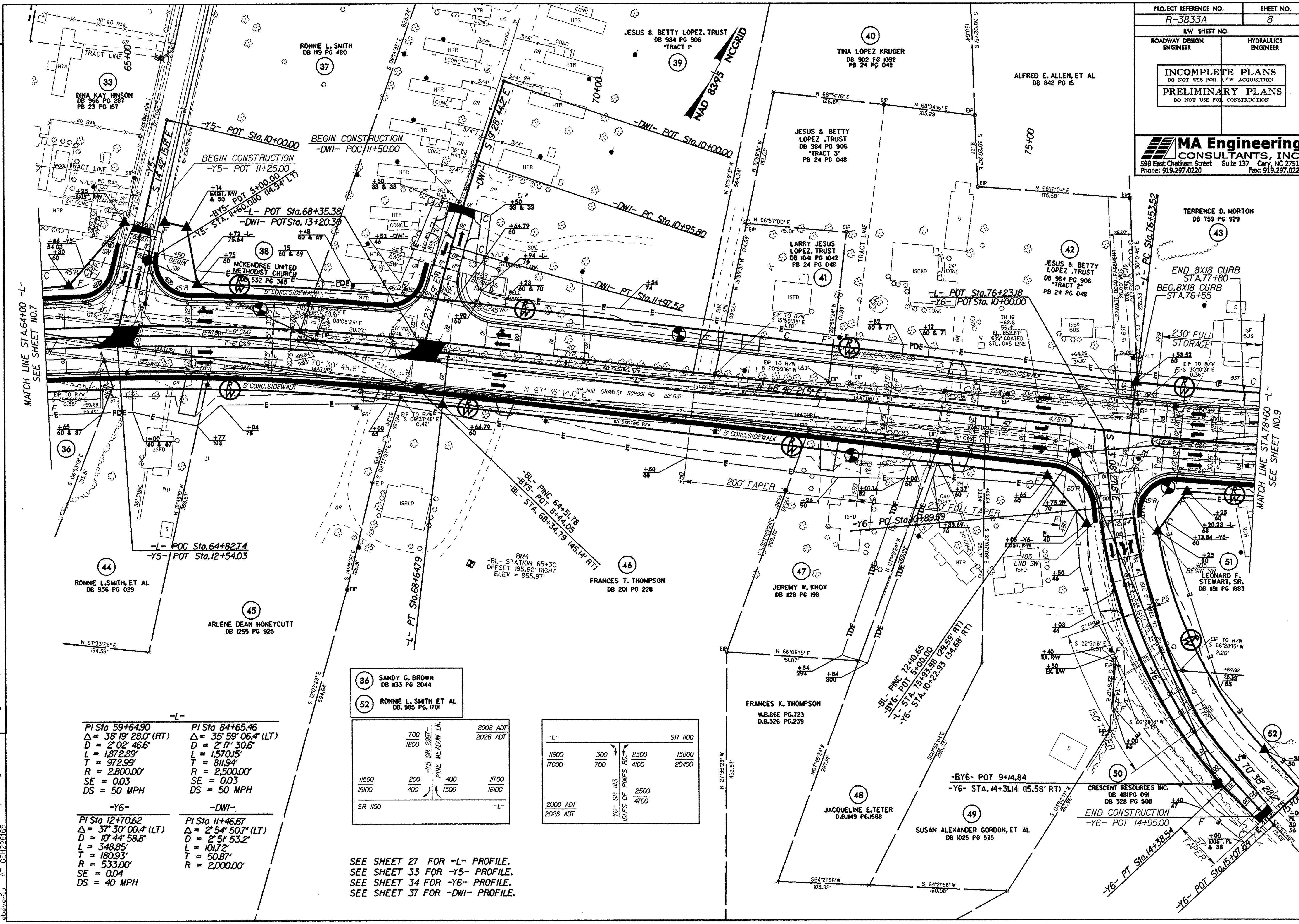
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



36	SANDY G. BROWN DB 1133 PG 2044
52	RONNIE L. SMITH ET AL DB. 985 PG. 1701

-L-

PI Sta 59+64.90
Δ = 38° 19' 28.0" (RT)
D = 2° 02' 46.6"
L = 1,872.89'
T = 972.99'
R = 2,800.00'
SE = 0.03
DS = 50 MPH

PI Sta 84+65.46
Δ = 35° 59' 06.4" (LT)
D = 2° 17' 30.6"
L = 1,570.15'
T = 811.94'
R = 2,500.00'
SE = 0.03
DS = 50 MPH

-Y6-

PI Sta 12+70.62
Δ = 37° 30' 00.4" (LT)
D = 10° 44' 58.8"
L = 348.85'
T = 180.93'
R = 533.00'
SE = 0.04
DS = 40 MPH

-DWI-

PI Sta 11+46.67
Δ = 2° 54' 50.7" (LT)
D = 2° 51' 53.2"
L = 101.72'
T = 50.87'
R = 2,000.00'

2008 ADT / 2028 ADT — -Y5- SR 2997 PINE MEADOW LN. at SR 1100 -L-: 700/1800; 11500/15100; 200/400; 400/1300; 11700/16100

-L- SR 1100 at -Y6- SR 1113 ISLES OF PINES RD. (2008 ADT / 2028 ADT): 11900/17000; 300/700; 2300/4100; 13800/20400; 2500/4700

SEE SHEET 27 FOR -L- PROFILE.
SEE SHEET 33 FOR -Y5- PROFILE.
SEE SHEET 34 FOR -Y6- PROFILE.
SEE SHEET 37 FOR -DWI- PROFILE.

REVISIONS

8/17/99

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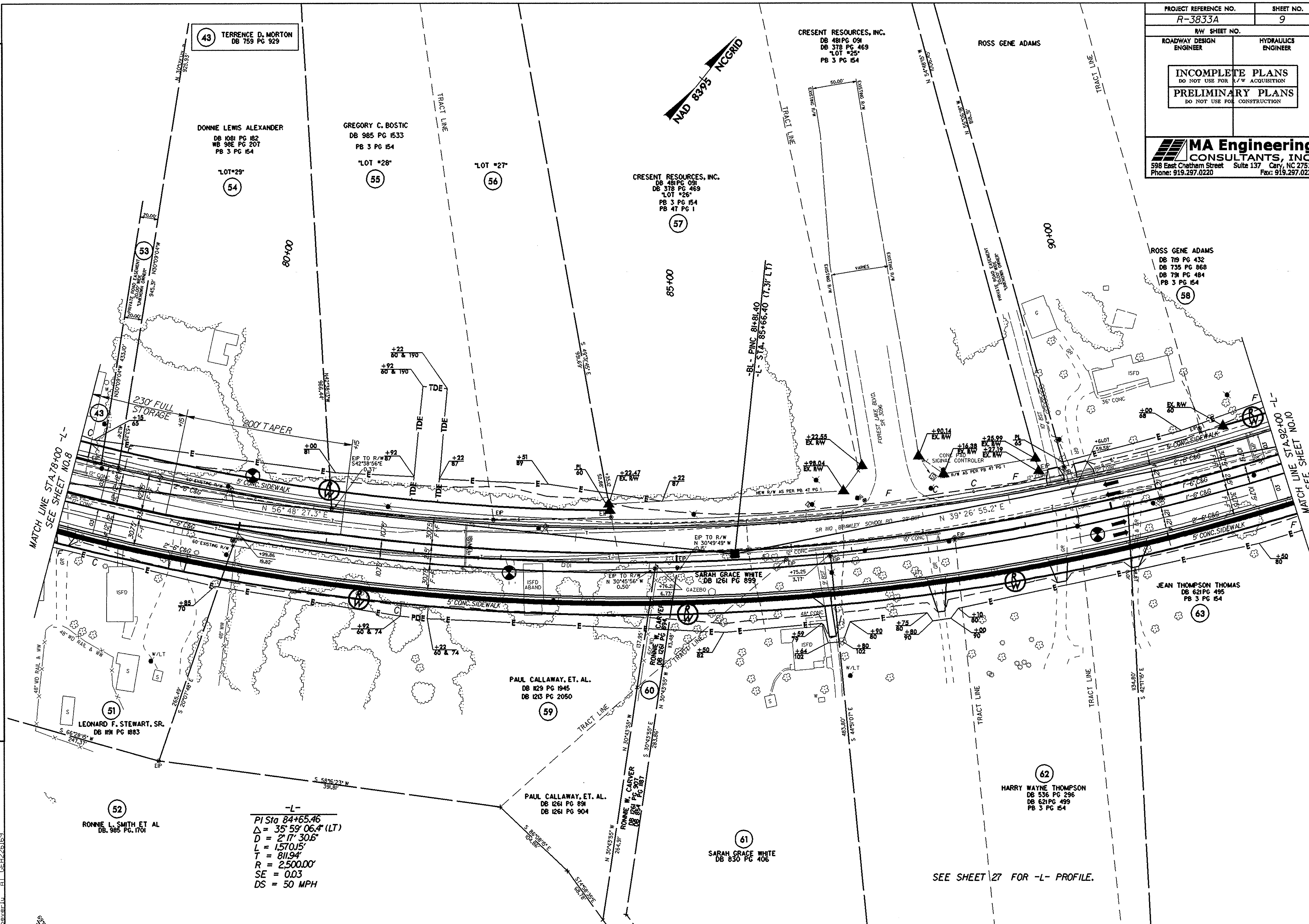
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



-L-
PI Sta 84+65.46
Δ = 35° 59' 06.4" (LT)
D = 2° 17' 30.6"
L = 1,570.15'
T = 811.94'
R = 2,500.00'
SE = 0.03
DS = 50 MPH

SEE SHEET 27 FOR -L- PROFILE.

8/17/99

07-FEB-2006 08:59

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

-L-

PI Sta 84+65.46
Δ = 35° 59' 06.4" (LT)
D = 2° 17' 30.6"
L = 1,570.15'
T = 811.94'
R = 2,500.00'
SE = 0.03
DS = 50 MPH

PI Sta 105+56.83
Δ = 77° 31' 51.9" (RT)
D = 4° 01' 14.7"
L = 1,928.27'
T = 1,144.32'
R = 1,425.00'
SE = 0.04
DS = 50 MPH

-DW2-

PI Sta 11+55.22
Δ = 29° 27' 30.6" (RT)
D = 14° 49' 45.7"
L = 198.65'
T = 101.57'
R = 386.37'

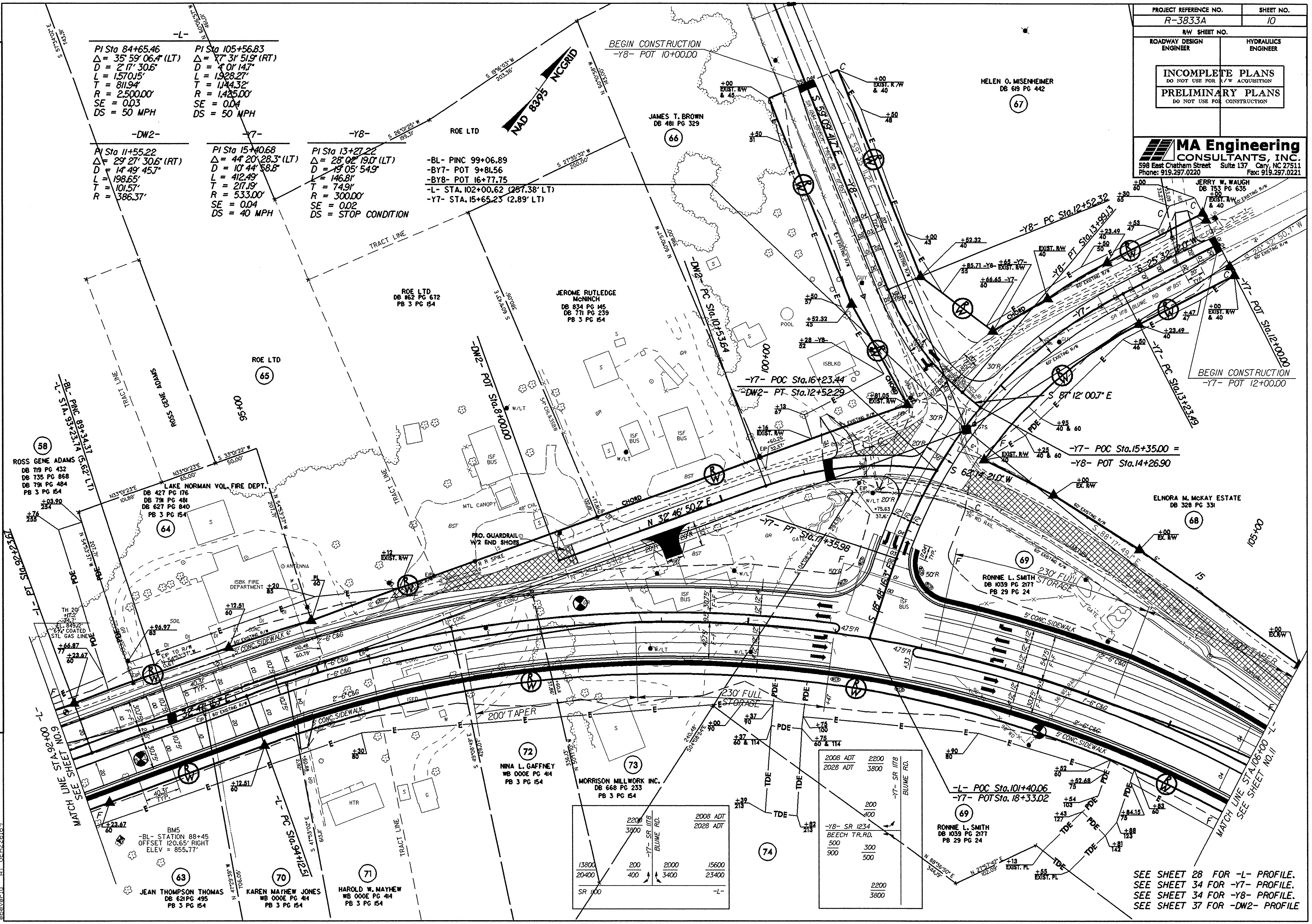
-Y7-

PI Sta 15+40.68
Δ = 44° 20' 28.3" (LT)
D = 10° 44' 58.8"
L = 412.49'
T = 217.19'
R = 533.00'
SE = 0.04
DS = 40 MPH

-Y8-

PI Sta 13+27.22
Δ = 28° 02' 19.0" (LT)
D = 19° 05' 54.9"
L = 146.81'
T = 74.91'
R = 300.00'
SE = 0.02
DS = STOP CONDITION

-BL- PINC 99+06.89
-BY7- POT 9+81.56
-BY8- POT 16+77.75
-L- STA. 102+00.62 (257.38' LT)
-Y7- STA. 15+65.23 (2.89' LT)



13800 / 20400	200 / 400	2000 / 3400	15600 / 23400
SR 1100	-Y7- SR 1178 BLUME RD. 2200 / 3800		2008 ADT / 2028 ADT -L-

2008 ADT / 2028 ADT	2200 / 3800	-Y7- SR 1178 BLUME RD.
-Y8- SR 1234 BEECH TR.RD.	200 / 400	
500 / 900	300 / 500	
	2200 / 3800	

SEE SHEET 28 FOR -L- PROFILE.
SEE SHEET 34 FOR -Y7- PROFILE.
SEE SHEET 34 FOR -Y8- PROFILE.
SEE SHEET 37 FOR -DW2- PROFILE

REVISIONS

8/17/99

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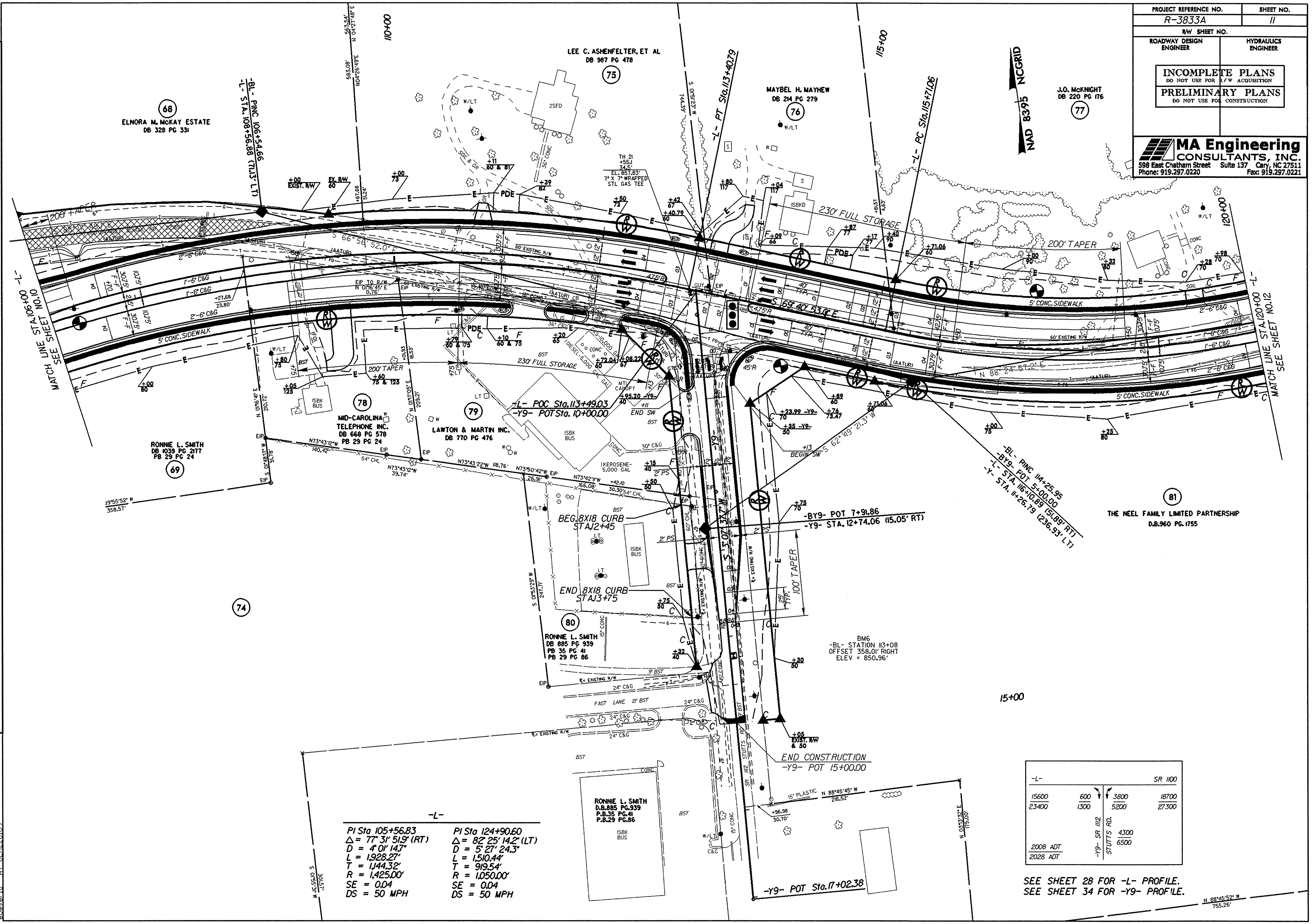
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



-L-

PI Sta 105+56.83	PI Sta 124+90.60
Δ = 77° 31' 51.9" (RT)	Δ = 82° 25' 14.2" (LT)
D = 4° 01' 14.7"	D = 5° 27' 24.3"
L = 1,928.27'	L = 1,510.44'
T = 1,144.32'	T = 919.54'
R = 1,425.00'	R = 1,050.00'
SE = 0.04	SE = 0.04
DS = 50 MPH	DS = 50 MPH

-L-				SR 1100
15600 / 23400	600 / 1300	-Y9- SR 1112 STUTTS RD.	3800 / 5200	18700 / 27300
2008 ADT / 2028 ADT			4300 / 6500	

SEE SHEET 28 FOR -L- PROFILE.
SEE SHEET 34 FOR -Y9- PROFILE.

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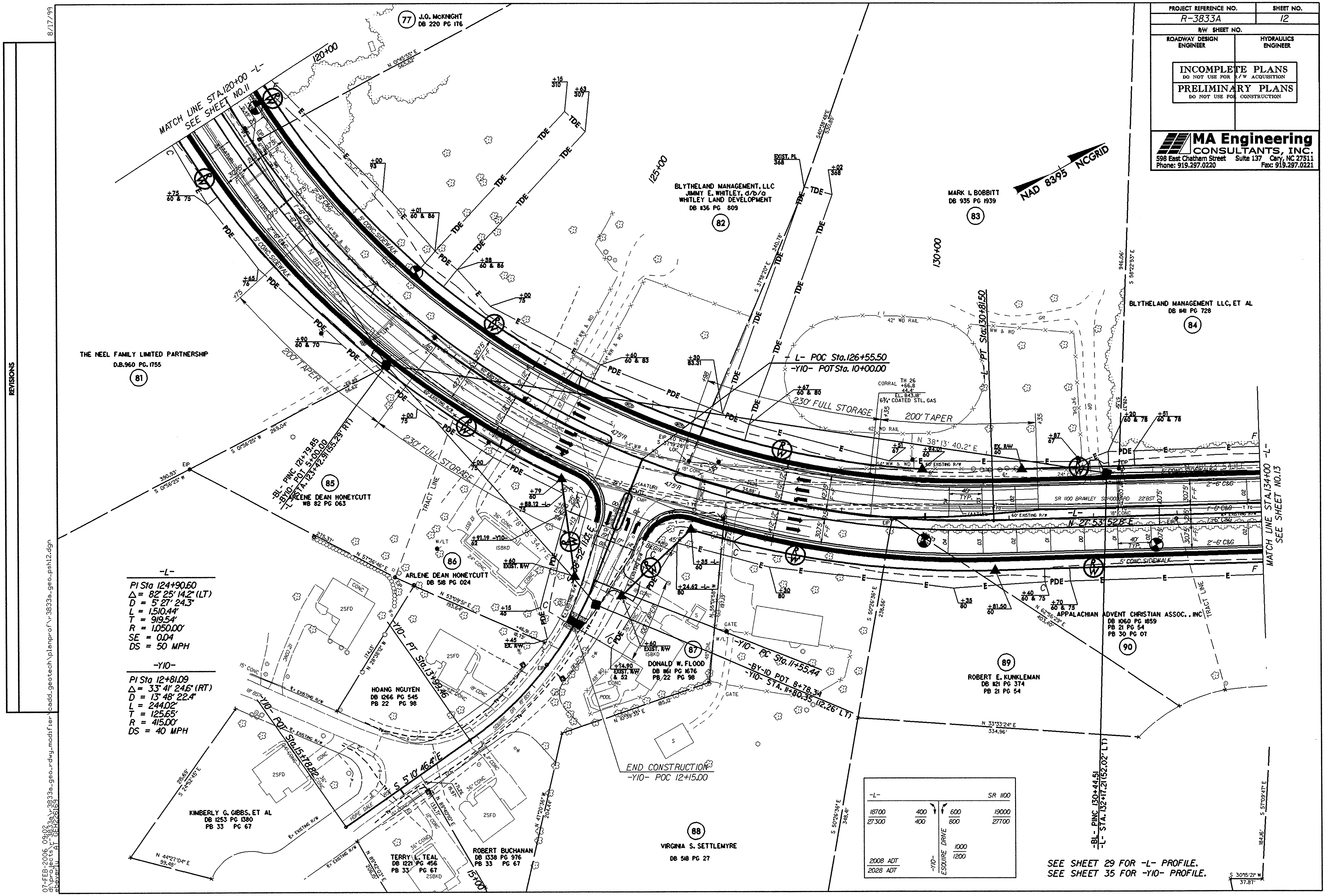


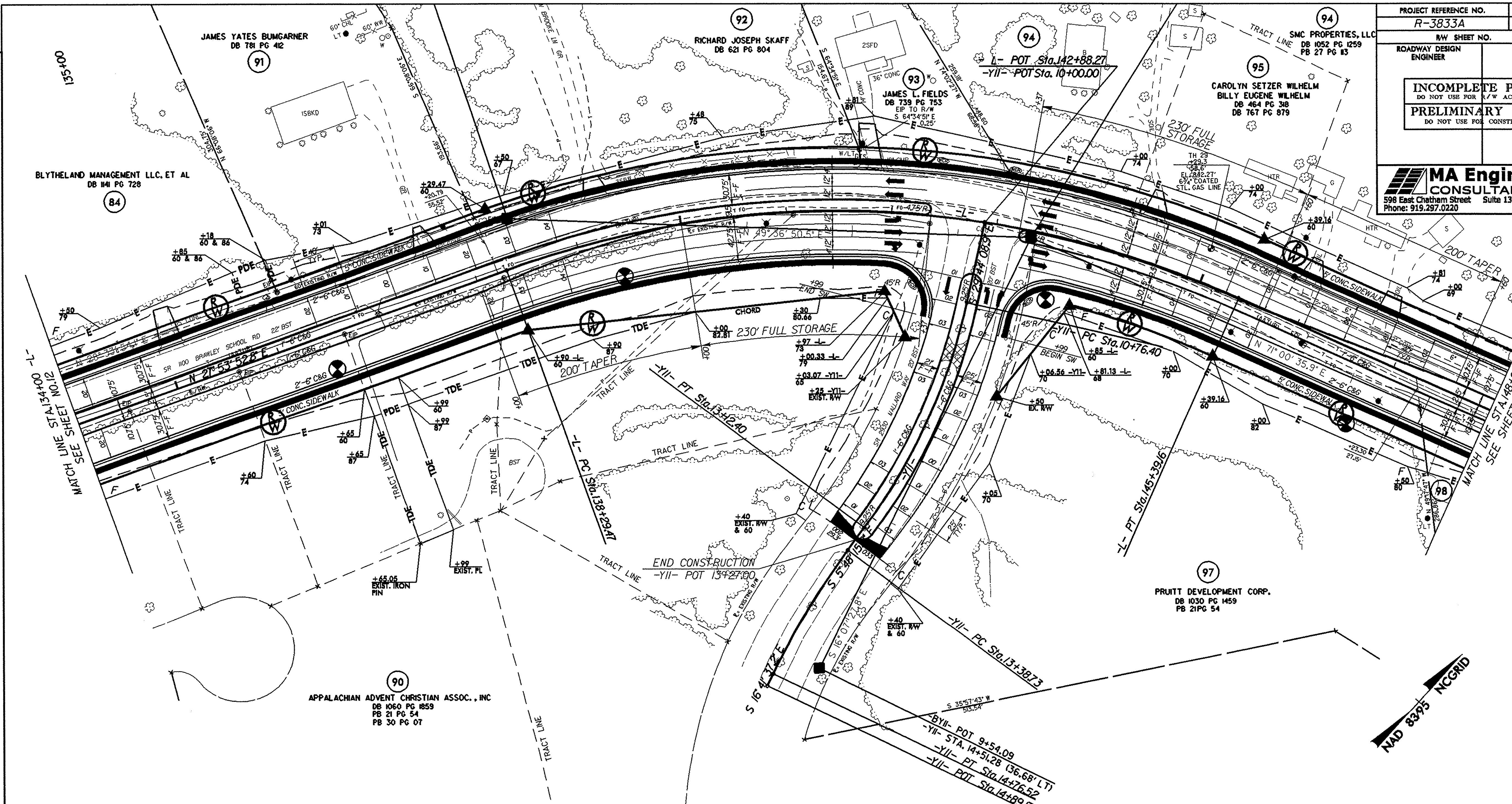
PROJECT REFERENCE NO.
SHEET NO.
R-3833A
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NAD 83/95 NCGRID
REVISIONS
MATCH LINE STA.120+00 -L- SEE SHEET NO.11
MATCH LINE STA.134+00 -L- SEE SHEET NO.13
J.O. McKNIGHT DB 220 PG 176
77
BLYTHELAND MANAGEMENT, LLC JIMMY E. WHITLEY, d/b/a WHITLEY LAND DEVELOPMENT DB 1136 PG 809
82
MARK L BOBBITT DB 935 PG 1939
83
BLYTHELAND MANAGEMENT LLC, ET AL DB 1141 PG 728
84
THE NEEL FAMILY LIMITED PARTNERSHIP D.B.960 PG.1755
81
ARLENE DEAN HONEYCUTT WB 82 PG 063
85
ARLENE DEAN HONEYCUTT DB 518 PG 024
86
DONALD W. FLOOD DB 1161 PG 1676 PB 22 PG 98
87
VIRGINIA S. SETTLEMYRE DB 518 PG 27
88
ROBERT E. KUNKLEMAN DB 1121 PG 374 PB 21 PG 54
89
APPALACHIAN ADVENT CHRISTIAN ASSOC., INC DB 1060 PG 1859 PB 21 PG 54 PB 30 PG 07
90
HOANG NGUYEN DB 1266 PG 545 PB 22 PG 98
KIMBERLY G. GIBBS, ET AL DB 1253 PG 1380 PB 33 PG 67
TERRY L. TEAL DB 1221 PG 456 PB 33 PG 67
ROBERT BUCHANAN DB 1338 PG 976 PB 33 PG 67
-L- POC Sta.126+55.50
-Y10- POT Sta. 10+00.00
-BL- PINC 121+79.85
-BY10- POT 5+00.00
-L- STA. 123+42.91 (55.29' RT)
-Y10- PT Sta.13+99.46
-Y10- POT Sta.15+78.82
-Y10- PC Sta. 11+55.44
-BY-10 POT 8+78.34
-Y10- STA. 11+80.35 (12.26' LT)
-L- PT Sta.130+81.50
-BL- PINC 130+44.51
-L- STA. 132+17.21 (52.02' LT)
END CONSTRUCTION
-Y10- POC 12+15.00
230' FULL STORAGE
200' TAPER
SR 1100 BRAWLEY SCHOOL RD
N 27°53'52.8" E
5' CONC. SIDEWALK
-L-
PI Sta 124+90.60
Δ = 82°25'14.2" (LT)
D = 5°27'24.3"
L = 1,510.44'
T = 919.54'
R = 1,050.00'
SE = 0.04
DS = 50 MPH
-Y10-
PI Sta 12+81.09
Δ = 33°41'24.6" (RT)
D = 13°48'22.4"
L = 244.02'
T = 125.65'
R = 415.00'
DS = 40 MPH
-L- SR 1100
18700 400 600 19000
27300 400 800 27700
1000
1200
2008 ADT
2028 ADT
-Y10- ESQUIRE DRIVE
SEE SHEET 29 FOR -L- PROFILE.
SEE SHEET 35 FOR -Y10- PROFILE.
8/17/99
07-FEB-2006 09:02

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

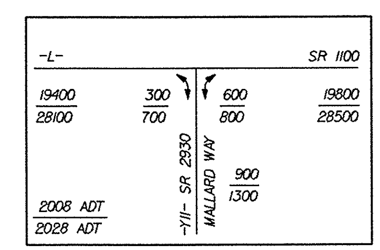
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



BM7
-BL- STATION 139+11
OFFSET 565.05' RIGHT
ELEV = 805.55'

-L-	-Y11-	
PI Sta 142+02.60	PI Sta 11+96.15	PI Sta 14+07.83
Δ = 43° 43' 22.3" (RT)	Δ = 23° 55' 53.7" (RT)	Δ = 10° 53' 22.0" (LT)
D = 6° 09' 39.0"	D = 10° 08' 27.0"	D = 7° 54' 10.3"
L = 709.69'	L = 235.99'	L = 137.79'
T = 373.13'	T = 119.74'	T = 69.10'
R = 930.00'	R = 565.00'	R = 725.00'
SE = 0.04	SE = 0.04	DS = 40 MPH
DS = 50 MPH	DS = 40 MPH	



S35°48'59"W
245.58'
S35°48'59"W
104.71'
TDE

96	SMC PROPERTIES, LLC DB 1052 PG 1259 PB 27 PG 113
98	KAMCO INC. DB 701 PG 565 DB 764 PG 294 PB 23 PG 178

SEE SHEET 29 FOR -L- PROFILE.
SEE SHEET 35 FOR -Y11- PROFILE.

REVISIONS

07-FEB-2006 09:03
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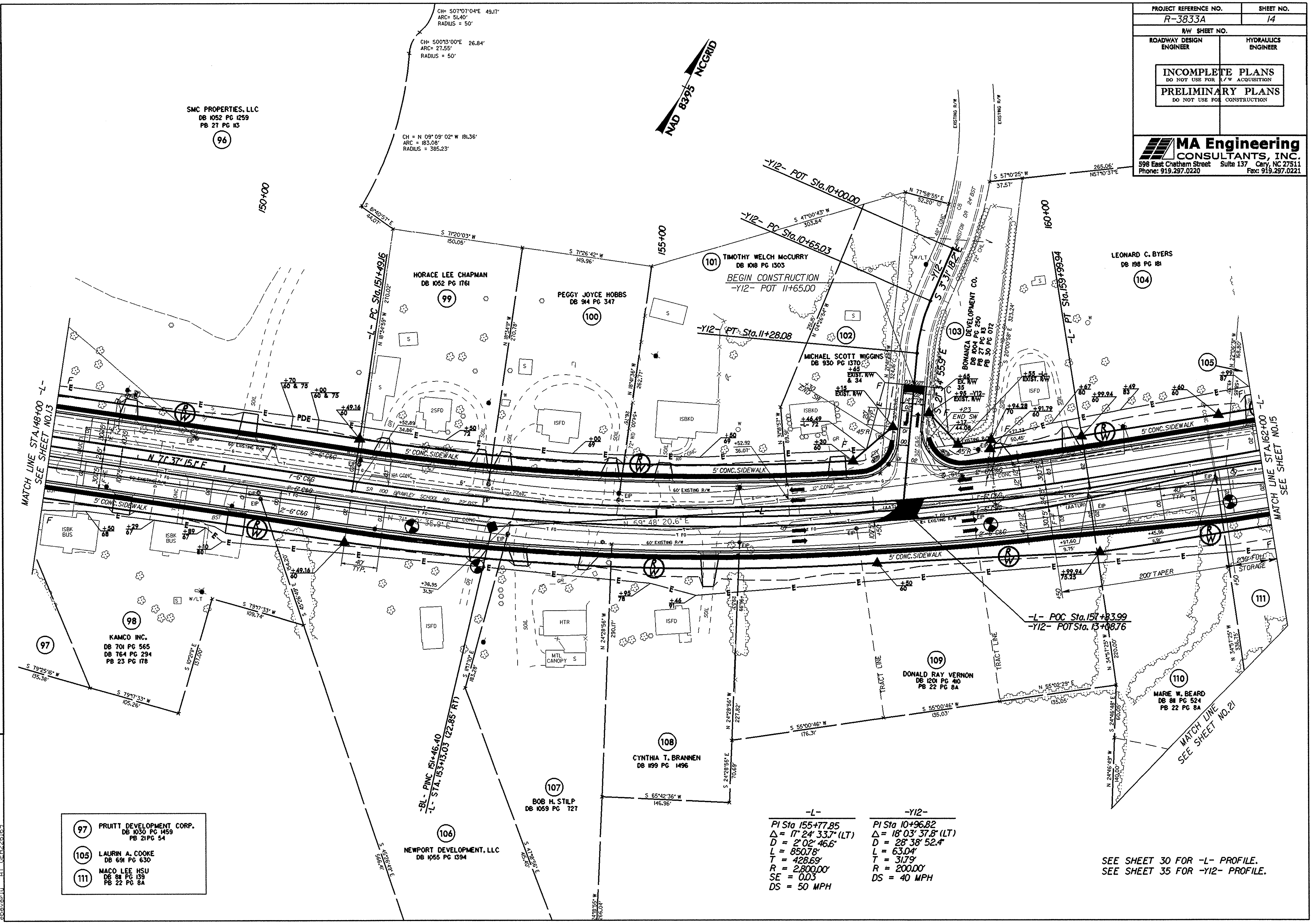
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

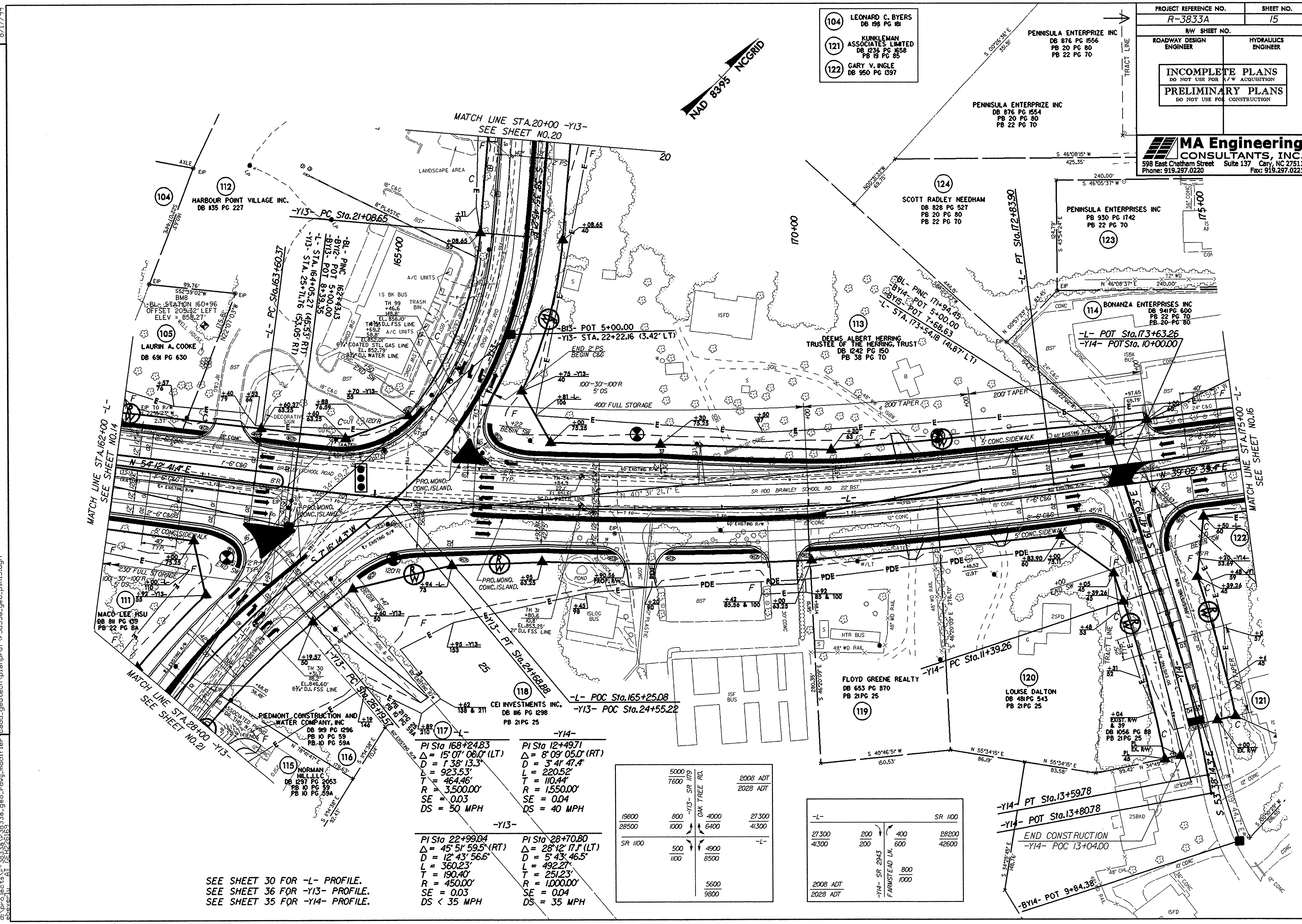


97	PRUITT DEVELOPMENT CORP. DB 1030 PG 1459 PB 21 PG 54
105	LAURIN A. COOKE DB 691 PG 630
111	MACO LEE HSU DB 811 PG 139 PB 22 PG 8A

-L-	-Y12-
PI Sta 155+77.85	PI Sta 10+96.82
Δ = 17° 24' 33.7" (LT)	Δ = 18° 03' 37.8" (LT)
D = 2° 02' 46.6"	D = 28° 38' 52.4"
L = 850.78'	L = 63.04'
T = 428.69'	T = 31.79'
R = 2,800.00'	R = 200.00'
SE = 0.03	DS = 40 MPH
DS = 50 MPH	

SEE SHEET 30 FOR -L- PROFILE.
SEE SHEET 35 FOR -Y12- PROFILE.

07-FEB-2006 09:06
r3833a_geo_psh14.dgn



MATCH LINE STA.20+00 -Y13- SEE SHEET NO.20
MATCH LINE STA.162+00 -L- SEE SHEET NO.14
MATCH LINE STA.175+00 -L- SEE SHEET NO.16
MATCH LINE STA.28+00 -Y13- SEE SHEET NO.21
NAD 83/95 NCGRID
SR 1100 BRAWLEY SCHOOL RD
HARBOUR POINT VILLAGE INC. DB 1135 PG 227
LAURIN A. COOKE DB 691 PG 630
MACO LEE HSU DB 811 PG 139 PB 22 PG 8A
DEEMS ALBERT HERRING TRUSTEE OF THE HERRING TRUST DB 1242 PG 150 PB 38 PG 70
SCOTT RADLEY NEEDHAM DB 828 PG 527 PB 20 PG 80 PB 22 PG 70
PENINSULA ENTERPRISES INC PB 930 PG 1742 PB 22 PG 70
BONANZA ENTERPRISES INC DB 941 PG 600 PB 22 PG 70 PB 20 PG 80
CEI INVESTMENTS INC. DB 1116 PG 1298 PB 21 PG 25
FLOYD GREENE REALTY DB 653 PG 870 PB 21 PG 25
LOUISE DALTON DB 481 PG 543 PB 21 PG 25
PIEDMONT CONSTRUCTION AND WATER COMPANY, INC DB 919 PG 1296 PB 10 PG 59 PB 10 PG 59A
NORMAN HILL, LLC DB 1297 PG 2053 PB 10 PG 59 PB 10 PG 59A
-L- PC Sta.163+60.37
-L- POT Sta.173+63.26
-Y14- POT Sta.10+00.00
-L- POC Sta.165+25.08
-Y13- POC Sta.24+55.22
-Y13- PC Sta.21+08.65
-Y13- PT Sta.24+68.88
-Y13- PC Sta.26+19.57
-Y14- PC Sta.11+39.26
-Y14- PT Sta.13+59.78
-Y14- POT Sta.13+80.78
END CONSTRUCTION -Y14- POC 13+04.00
-BY14- POT 9+84.38
-B13- POT 5+00.00 -Y13- STA. 22+22.16 (3.42' LT)
400' FULL STORAGE
200' TAPER
5' CONC. SIDEWALK

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	15

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

(104) LEONARD C. BYERS DB 198 PG 181
(121) KUNKLEMAN ASSOCIATES LIMITED DB 1236 PG 1658 PB 19 PG 85
(122) GARY V. INGLE DB 950 PG 1397

-L-

PI Sta 168+24.83
Δ = 15°07' 06.0" (LT)
D = 1°38' 13.3"
L = 923.53'
T = 464.46'
R = 3,500.00'
SE = 0.03
DS = 50 MPH

-Y14-

PI Sta 12+49.71
Δ = 8°09' 05.0" (RT)
D = 3°41' 47.4"
L = 220.52'
T = 110.44'
R = 1,550.00'
SE = 0.04
DS = 40 MPH

-Y13-

PI Sta 22+99.04
Δ = 45°51' 59.5" (RT)
D = 12°43' 56.6"
L = 360.23'
T = 190.40'
R = 450.00'
SE = 0.03
DS < 35 MPH

PI Sta 28+70.80
Δ = 28°12' 17.1" (LT)
D = 5°43' 46.5"
L = 492.27'
T = 251.23'
R = 1,000.00'
SE = 0.04
DS = 35 MPH

SEE SHEET 30 FOR -L- PROFILE.
SEE SHEET 36 FOR -Y13- PROFILE.
SEE SHEET 35 FOR -Y14- PROFILE.

REVISIONS

8/17/99

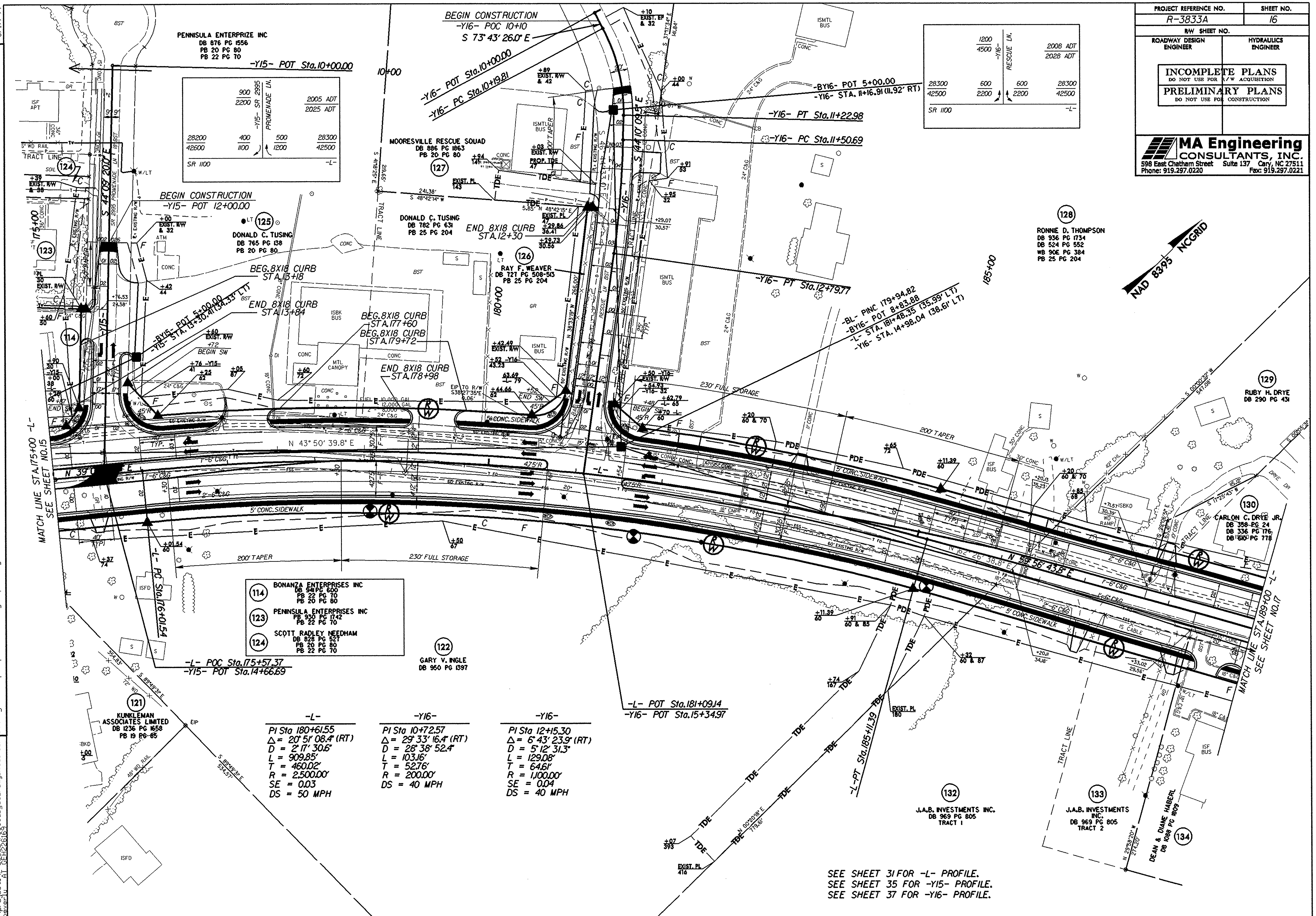
07-FEB-2006 09:07

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221


BEGIN CONSTRUCTION
-Y16- POC 10+10
S 73° 43' 26.0" E
-Y16- POT Sta.10+00.00
-Y16- PC Sta.10+19.81
-Y15- POT Sta.10+00.00
BEGIN CONSTRUCTION
-Y15- POT 12+00.00
PENNISULA ENTERPRIZE INC
DB 876 PG 1556
PB 20 PG 80
PB 22 PG 70
MOORESVILLE RESCUE SQUAD
DB 886 PG 1863
PB 20 PG 80
DONALD C. TUSING
DB 765 PG 138
PB 20 PG 80
DONALD C. TUSING
DB 782 PG 631
PB 25 PG 204
RAY F. WEAVER
DB 727 PG 508-513
PB 25 PG 204
RONNIE D. THOMPSON
DB 936 PG 1734
DB 524 PG 552
WB 90E PG 384
PB 25 PG 204
RUBY H. DRYE
DB 290 PG 431
CARLON C. DRYE JR.
DB 358 PG 24
DB 336 PG 176
DB 610 PG 778
GARY V. INGLE
DB 950 PG 1397
KUNKLEMAN ASSOCIATES LIMITED
DB 1236 PG 1658
PB 19 PG 65
J.A.B. INVESTMENTS INC.
DB 969 PG 805
TRACT 1
J.A.B. INVESTMENTS INC.
DB 969 PG 805
TRACT 2
DEAN & DIANE HABERL
DB 1088 PG 1809
-BY16- POT 5+00.00
-Y16- STA. 11+16.91 (11.92' RT)
-Y16- PT Sta.11+22.98
-Y16- PC Sta.11+50.69
-Y16- PT Sta.12+79.77
END 8X18 CURB
STA.12+30
BEG.8X18 CURB
STA.13+18
END 8X18 CURB
STA.13+84
BEG.8X18 CURB
STA.177+60
BEG.8X18 CURB
STA.179+72
END 8X18 CURB
STA.178+98
-BY15- POT 5+00.00
-Y15- STA. 13+30.41 (34.33' LT)
-BL- PINC 179+94.82
-BY16- POT 8+83.88
-L- STA. 181+48.35 (35.99' LT)
-Y16- STA. 14+98.04 (38.61' LT)
N 43° 50' 39.8" E
N 59° 56' 43.8" E
200' TAPER
230' FULL STORAGE
5' CONC. SIDEWALK
-L- PC Sta.176+01.54
-L- POC Sta.175+57.37
-Y15- POT Sta.14+66.69
-L- POT Sta.181+09.14
-Y16- POT Sta.15+34.97
-L- PT Sta.185+11.39
MATCH LINE STA.175+00 -L- SEE SHEET NO.15
MATCH LINE STA.189+00 -L- SEE SHEET NO.17
NAD 83/95 NCGRID
8/17/99

114	BONANZA ENTERPRISES INC	DB 941 PG 600, PB 22 PG 70, PB 20 PG 80
123	PENINSULA ENTERPRISES INC	PB 930 PG 1742, PB 22 PG 70
124	SCOTT RADLEY NEEDHAM	DB 828 PG 527, PB 20 PG 80, PB 22 PG 70

-L-	-Y16-	-Y16-
PI Sta 180+61.55	PI Sta 10+72.57	PI Sta 12+15.30
Δ = 20° 51' 08.4" (RT)	Δ = 29° 33' 16.4" (RT)	Δ = 6° 43' 23.9" (RT)
D = 2° 17' 30.6"	D = 28° 38' 52.4"	D = 5° 12' 31.3"
L = 909.85'	L = 103.16'	L = 129.08'
T = 460.02'	T = 52.76'	T = 64.61'
R = 2,500.00'	R = 200.00'	R = 1,100.00'
SE = 0.03	DS = 40 MPH	SE = 0.04
DS = 50 MPH		DS = 40 MPH

SEE SHEET 31 FOR -L- PROFILE.
SEE SHEET 35 FOR -Y15- PROFILE.
SEE SHEET 37 FOR -Y16- PROFILE.

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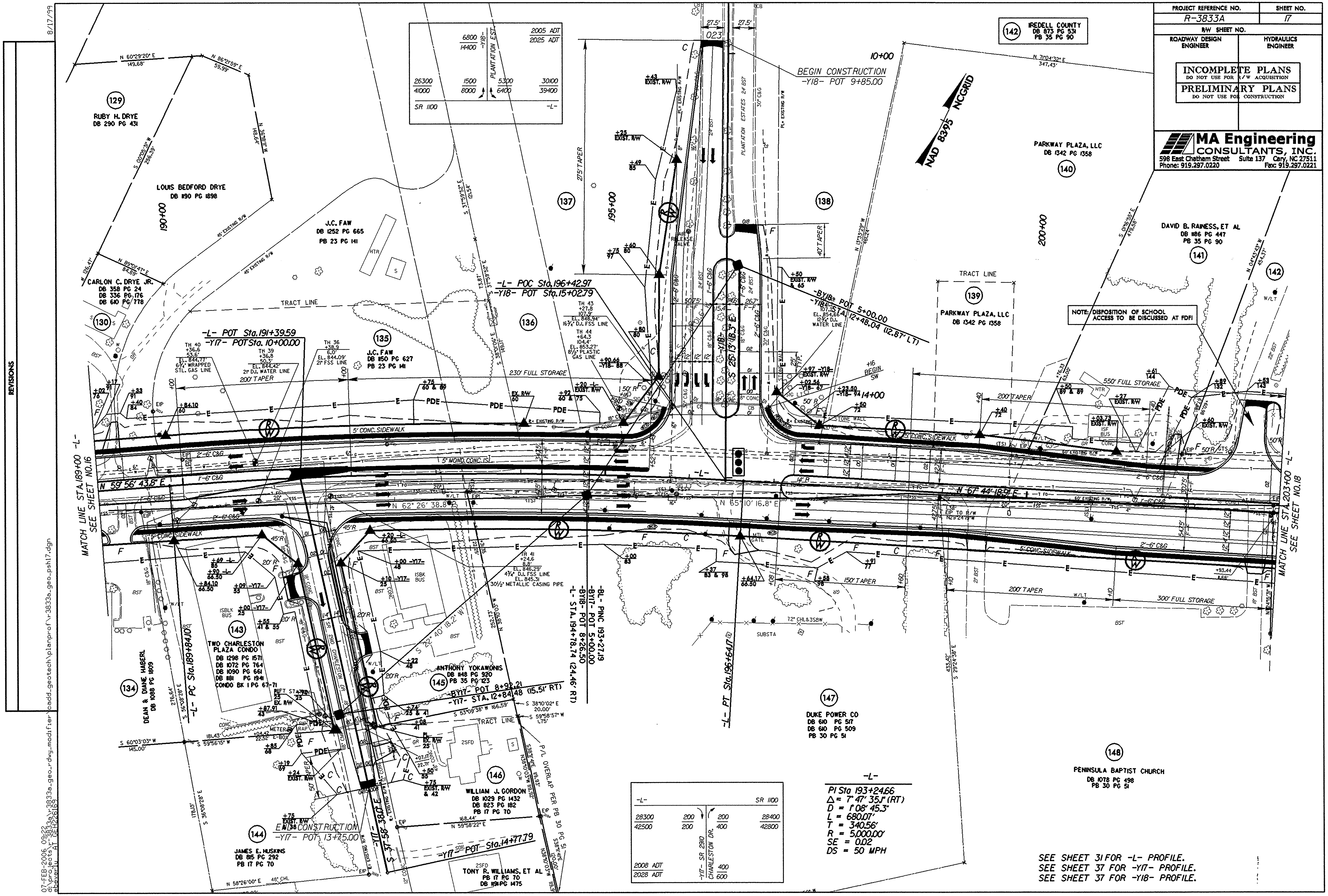

PROJECT REFERENCE NO. R-3833A
SHEET NO. 17
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
REVISIONS
8/17/99
NAD 83/95 NCGRID
BEGIN CONSTRUCTION -Y18- POT 9+85.00
END CONSTRUCTION -Y17- POT 13+75.00
-L- POC Sta.196+42.97 -Y18- POT Sta.15+02.79
-L- POT Sta.191+39.59 -Y17- POT Sta. 10+00.00
-BY18- POT 5+00.00 -Y18- STA. 12+48.04 (12.87' LT)
-BY17- POT 8+92.21 -Y17- STA. 12+84.48 (15.51' RT)
-BL- PINC 193+27.19 -BY17- POT 8+26.50 -BY18- POT 5+00.00 -L- STA. 194+18.74 (24.46' RT)
-L- PC Sta.189+84.10
-L- PT Sta.196+64.17
-Y17- POT Sta.14+77.79
MATCH LINE STA.189+00 -L- SEE SHEET NO.16
MATCH LINE STA.203+00 -L- SEE SHEET NO.18
N 59° 56' 43.8" E
N 62° 26' 38.8" E
N 65° 10' 16.8" E
N 67° 44' 18.9" E
S 37° 58' 38.0" E
PLANTATION ESTATES
CHARLESTON DR.
SR 1100
NOTE: DISPOSITION OF SCHOOL ACCESS TO BE DISCUSSED AT FDFI
P/L OVERLAP PER PB 30 PG 51
129 RUBY H. DRYE DB 290 PG 431
LOUIS BEDFORD DRYE DB 1190 PG 1898
130 CARLON C. DRYE JR. DB 358 PG 24 DB 336 PG 176 DB 610 PG 778
135 J.C. FAW DB 1150 PG 627 PB 23 PG 141
136 J.C. FAW DB 1252 PG 665 PB 23 PG 141
137
138
139 PARKWAY PLAZA, LLC DB 1342 PG 1358
140 PARKWAY PLAZA, LLC DB 1342 PG 1358
141 DAVID B. RAINESS, ET AL DB 1186 PG 447 PB 35 PG 90
142 IREDELL COUNTY DB 873 PG 531 PB 35 PG 90
143 TWO CHARLESTON PLAZA CONDO DB 1298 PG 1571 DB 1072 PG 764 DB 1090 PG 661 DB 1181 PG 1941 CONDO BK 1 PG 67-71
134 DEAN & DIANE HABERL DB 1088 PG 1809
144 JAMES E. HUSKINS DB 815 PG 292 PB 17 PG 70
145 ANTHONY YOKAWONIS DB 1148 PG 920 PB 35 PG 123
146 WILLIAM J. GORDON DB 1029 PG 1432 DB 823 PG 182 PB 17 PG 70
TONY R. WILLIAMS, ET AL PB 17 PG 70 DB 1191 PG 1475
147 DUKE POWER CO DB 610 PG 517 DB 610 PG 509 PB 30 PG 51
148 PENINSULA BAPTIST CHURCH DB 1078 PG 498 PB 30 PG 51
-L-
PI Sta 193+24.66
Δ = 7° 47' 35.1" (RT)
D = 1° 08' 45.3"
L = 680.07'
T = 340.56'
R = 5,000.00'
SE = 0.02
DS = 50 MPH
SEE SHEET 31 FOR -L- PROFILE.
SEE SHEET 37 FOR -Y17- PROFILE.
SEE SHEET 37 FOR -Y18- PROFILE.
07-FEB-2006 09:22

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	18

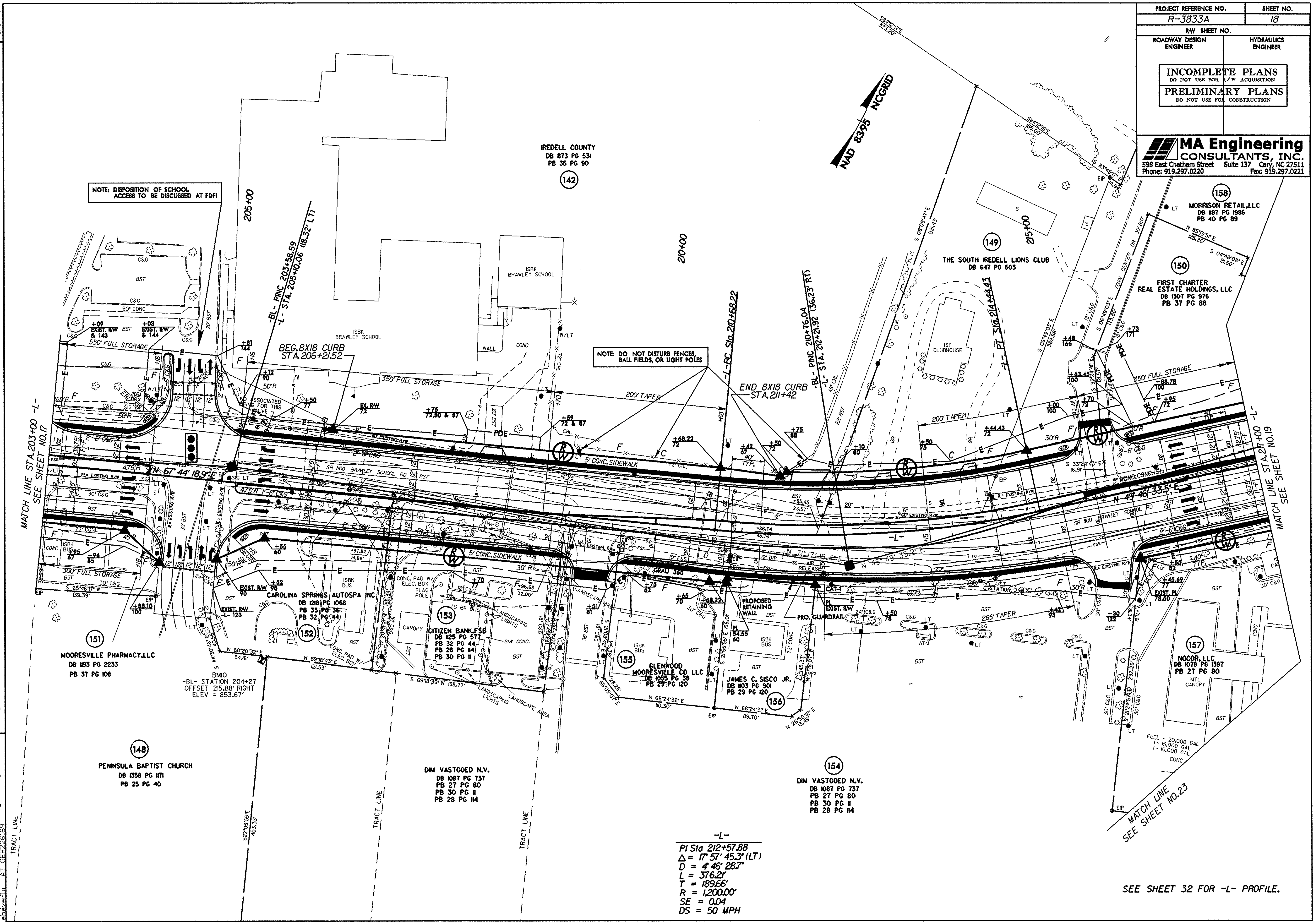
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



-L-
PI Sta 212+57.88
Δ = 17° 57' 45.3" (LT)
D = 4° 46' 28.7"
L = 376.21'
T = 189.66'
R = 1,200.00'
SE = 0.04
DS = 50 MPH

SEE SHEET 32 FOR -L- PROFILE.

REVISIONS

8/17/99

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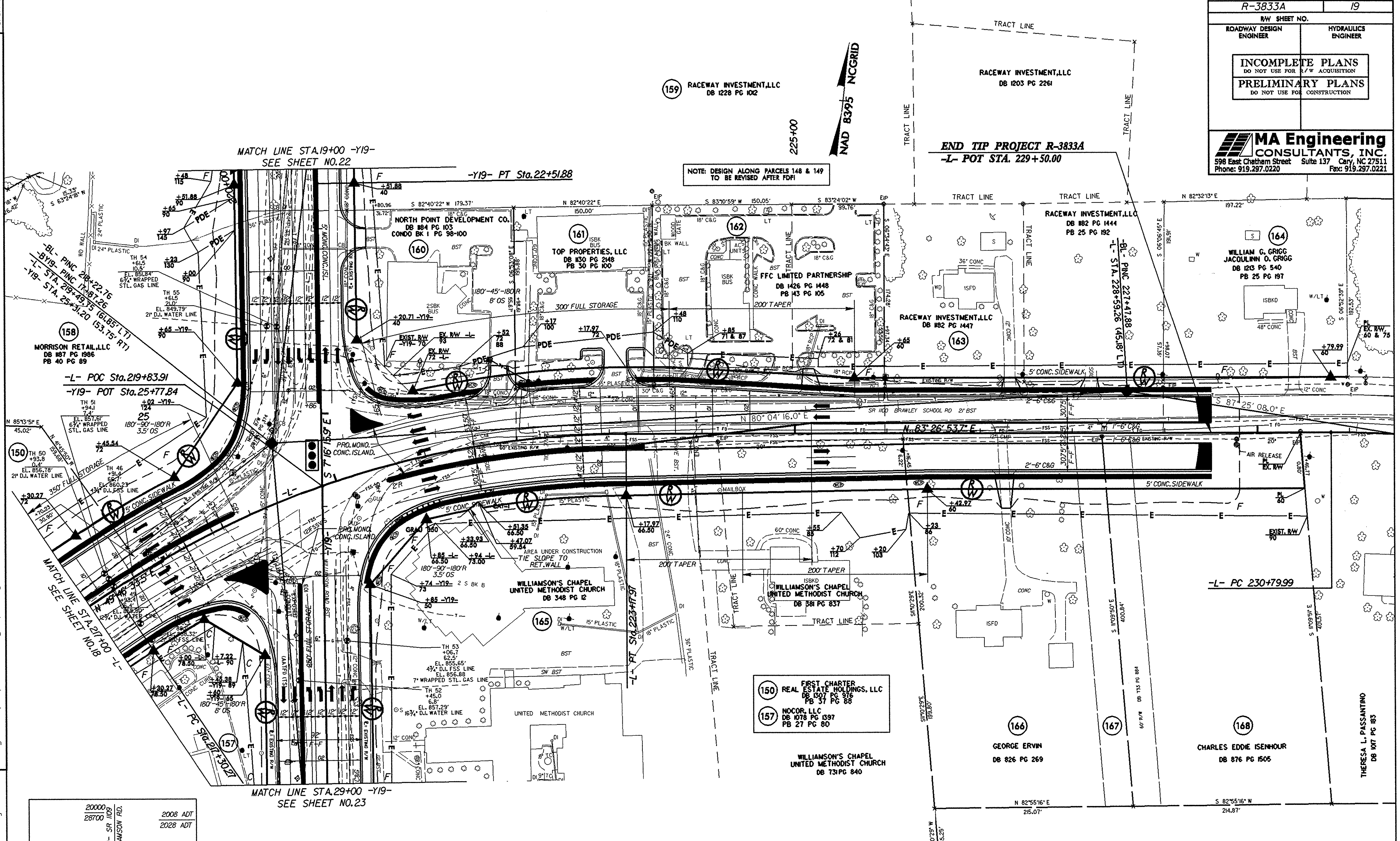
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

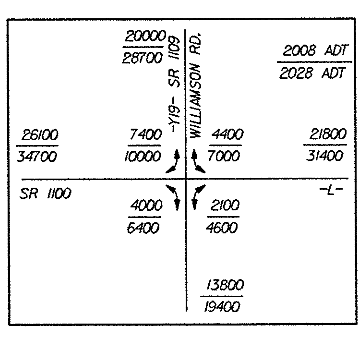
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS



MATCH LINE STA.19+00 -Y19-
SEE SHEET NO.22
-Y19- PT Sta.22+51.88
END TIP PROJECT R-3833A
-L- POT STA. 229+50.00
NOTE: DESIGN ALONG PARCELS 148 & 149 TO BE REVISED AFTER FDFI
NAD 83/95 NCGRID
225+00
RACEWAY INVESTMENT,LLC DB 1228 PG 1012
RACEWAY INVESTMENT,LLC DB 1203 PG 2261
TRACT LINE
NORTH POINT DEVELOPMENT CO. DB 1184 PG 103 CONDO BK 1 PG 98-100
TOP PROPERTIES, LLC DB 1130 PG 2148 PB 30 PG 100
FFC LIMITED PARTNERSHIP DB 1426 PG 1448 PB 143 PG 105
RACEWAY INVESTMENT,LLC DB 1182 PG 1444 PB 25 PG 192
RACEWAY INVESTMENT,LLC DB 1182 PG 1447
WILLIAM C. GRIGG JACQUELINN O. GRIGG DB 1213 PG 540 PB 25 PG 197
-BL- PINC 227+47.88
-L- STA. 228+59.26 (45.18' LT)
-BL- PINC 218+22.76
-BY19- PINC 17+87.26
-L- STA. 219+49.75 (61.85' LT)
-Y19- STA. 25+31.20 (53.75' RT)
MORRISON RETAIL,LLC DB 1187 PG 1986 PB 40 PG 89
-L- POC Sta.219+83.91
-Y19- POT Sta.25+77.84
SR 1100 BRAWLEY SCHOOL RD 21' BST
N 80° 04' 16.0" E
N 83° 26' 53.7" E
S 87° 25' 08.0" E
5' CONC.SIDEWALK
300' FULL STORAGE
350' FULL STORAGE
200' TAPER
AREA UNDER CONSTRUCTION
TIE SLOPE TO RET. WALL
WILLIAMSON'S CHAPEL UNITED METHODIST CHURCH DB 348 PG 12
WILLIAMSON'S CHAPEL UNITED METHODIST CHURCH DB 381 PG 837
UNITED METHODIST CHURCH
-L- PT Sta.223+17.97
-L- PC 230+79.99
MATCH LINE STA.217+00 -L-
SEE SHEET NO.18
-L- PC Sta.217+30.27
MATCH LINE STA.29+00 -Y19-
SEE SHEET NO.23
150 FIRST CHARTER REAL ESTATE HOLDINGS, LLC DB 1307 PG 976 PB 37 PG 88
157 NOCOR, LLC DB 1078 PG 1397 PB 27 PG 80
WILLIAMSON'S CHAPEL UNITED METHODIST CHURCH DB 731 PG 840
GEORGE ERVIN DB 826 PG 269
CHARLES EDDIE ISENHOUR DB 876 PG 1505
THERESA L. PASSANTINO DB 1017 PG 183
N 82°55'16" E 215.07'
S 82°55'16" W 214.87'
N 11°10'29" W 365.25'



SEE SHEET 32 FOR -L- PROFILE.
SEE SHEET 38 FOR -Y19- PROFILE.

-L-		-Y19-	
PI Sta 220+32.88	PI Sta 235+75.80	PI Sta 21+17.55	PI Sta 30+94.24
Δ = 33° 40' 20.2" (RT)	Δ = 38° 22' 09.6" (RT)	Δ = 2° 03' 09.7" (LT)	Δ = 13° 22' 09.3" (LT)
D = 5° 43' 46.5"	D = 4° 01' 14.7"	D = 0° 45' 50.2"	D = 3° 49' 11.0"
L = 587.69'	L = 954.28'	L = 268.70'	L = 350.01'
T = 302.61'	T = 495.81'	T = 134.36'	T = 175.80'
R = 1,000.00'	R = 1,425.00'	R = 7,500.00'	R = 1,500.00'
SE = 0.02*	SE = 0.04	SE = NC	SE = 0.04
DS = 50 MPH	DS = 50 MPH	DS = 50 MPH	DS = 50 MPH

* DESIGN EXCEPTION REQUIRED FOR SUPERELEVATION

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-3833A	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

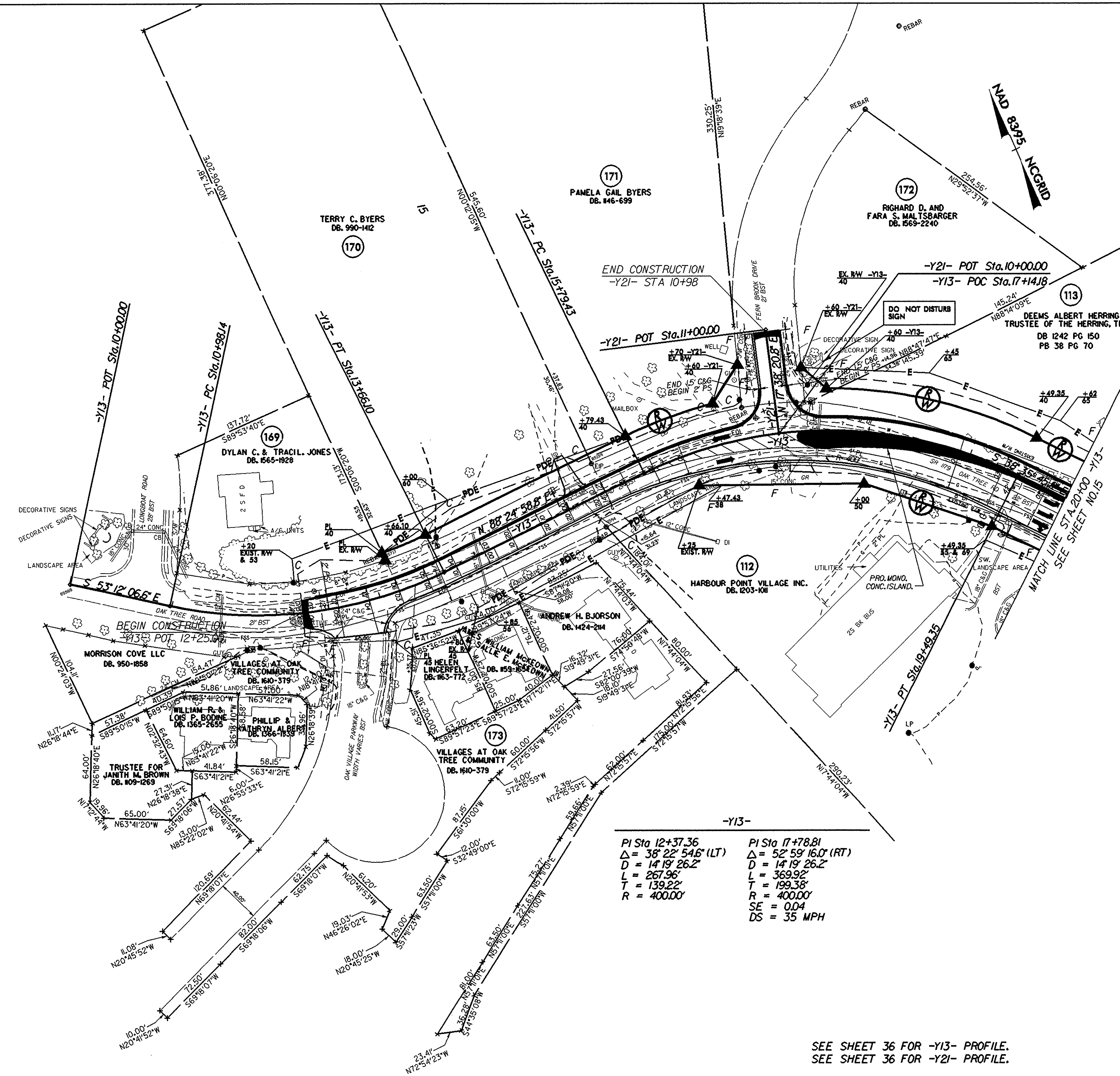
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS

8/17/99



-Y13-

PI Sta 12+37.36	PI Sta 17+78.81
Δ = 38° 22' 54.6" (LT)	Δ = 52° 59' 16.0" (RT)
D = 14° 19' 26.2"	D = 14° 19' 26.2"
L = 267.96'	L = 369.92'
T = 139.22'	T = 199.38'
R = 400.00'	R = 400.00'
	SE = 0.04
	DS = 35 MPH

SEE SHEET 36 FOR -Y13- PROFILE.
SEE SHEET 36 FOR -Y21- PROFILE.

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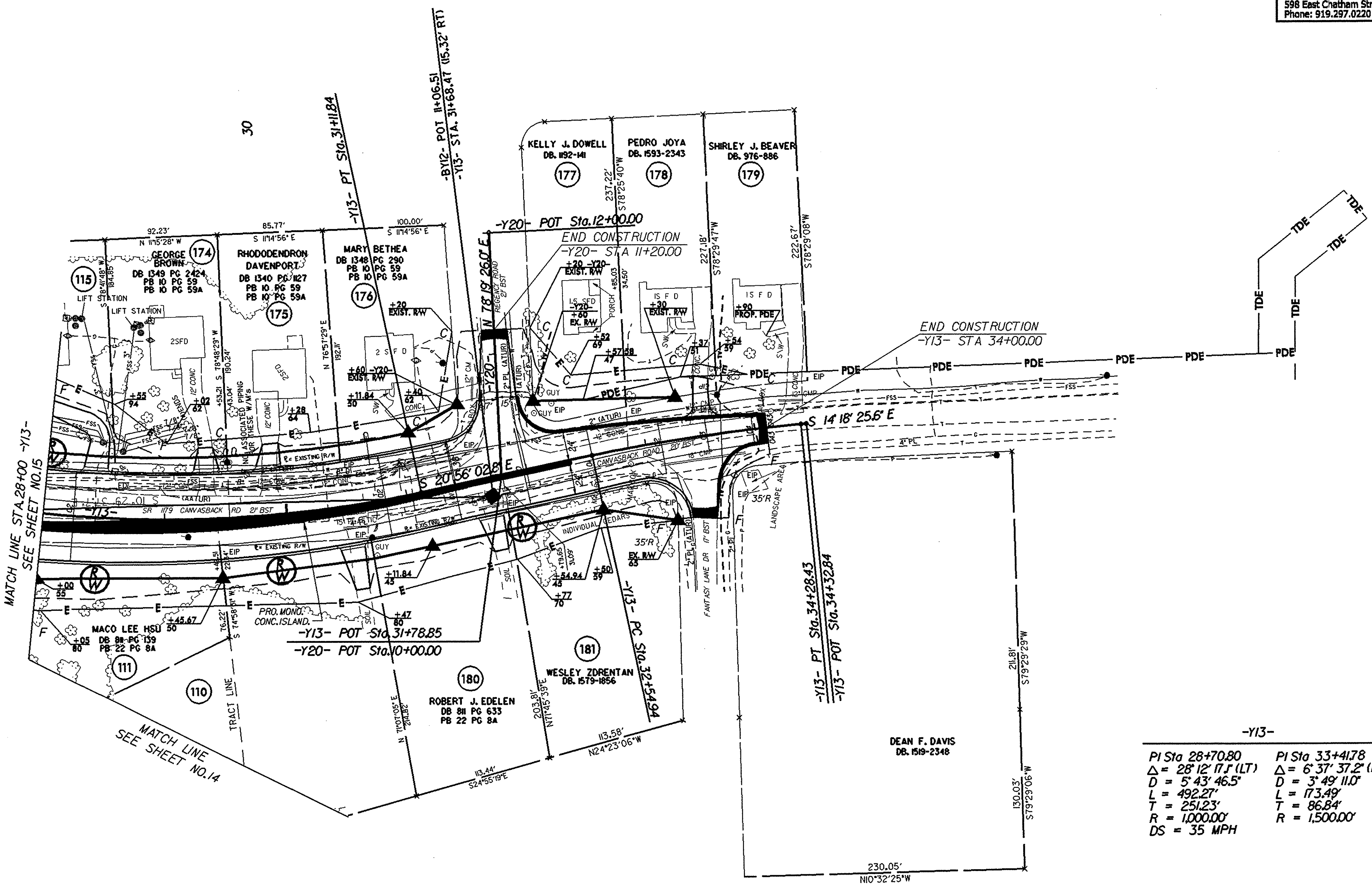
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



-Y13-

PI Sta 28+70.80	PI Sta 33+41.78
Δ = 28° 12' 17.5" (LT)	Δ = 6° 37' 37.2" (RT)
D = 5° 43' 46.5"	D = 3° 49' 11.0"
L = 492.27'	L = 173.49'
T = 251.23'	T = 86.84'
R = 1,000.00'	R = 1,500.00'
DS = 35 MPH	

SEE SHEET 36 FOR -Y13- PROFILE.
SEE SHEET 36 FOR -Y20- PROFILE.

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

8/17/99

REVISIONS

NAD 8395 NCGRID

-Y19-

PI Sta 13+01.98
Δ = 2° 15' 45.4" (RT)
D = 0° 42' 39.1"
L = 318.29'
T = 159.16'
R = 8,060.00'
SE = NC
DS = 50 MPH

PI Sta 21+17.55
Δ = 2° 03' 09.7" (LT)
D = 0° 45' 50.2"
L = 268.70'
T = 134.36'
R = 7,500.00'
SE = NC
DS = 50 MPH

-Y19- PC Sta.10+00.00

-Y19- STA 11+42.81

BEGIN CONSTRUCTION -Y19- STA 11+42.81

-B119- POT 5+00.00
-Y19- STA. 12+52.89 (23.85' RT)

-Y19- PC Sta.19+83.18

-B119- PINC 10+86.97
-Y19- STA. 18+36.62 (36.12' LT)

-Y19- PT Sta.14+16.10

MATCH LINE STA.19+00 -Y19-
SEE SHEET NO.19

SEE SHEET 38 FOR -Y19- PROFILE.

RACEWAY INVESTMENT,LLC
DB 1228 PG 1008

LAKE NORMAN COUNTRY INC.
DB. 938-1887
182

ALLAN BARWICK
DB. 1589-783

DA DEVELOPMENT CO. LLC
DB. 1003-1042

KENNETH CHARNOCK
DB. 1060-1813
183

RACEWAY INVESTMENT,LLC
DB 1208 PG 2067

RACEWAY INVESTMENT,LLC
DB 1199 PG 1244

RACEWAY INVESTMENT,LLC
DB 1228 PG 1012
159

TRIANGLE PROPERTIES ASSOCIATES,LLC, ET AL
DB 1316 PG 118
PB 40 PG 89
186

MORRISON RETAIL,LLC
DB 1187 PG 1986
PB 40 PG 89
158

ESC MORRISON LLC
D.B. 1187-1986
184

ESC MORRISON LLC
D.B. 1187-1986
185

ESC MORRISON LLC
DB. 1448-1600

WALLACE INDEPENDENCE PROPERTIES, ET AL
DB 1354 PG 128
PB 40 PG 89
187

J.M. WALLACE LAND COMPANY
DB 1354 PG 123
PB 40 PG 89
187

PROPOSED RETAINING WALL

PROP. GUARDRAIL

SR 1109 WILLIAMSON RD

WILLIAMSON ROAD

TRACT LINE

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PROJECT REFERENCE NO.	SHEET NO.
R-3833A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

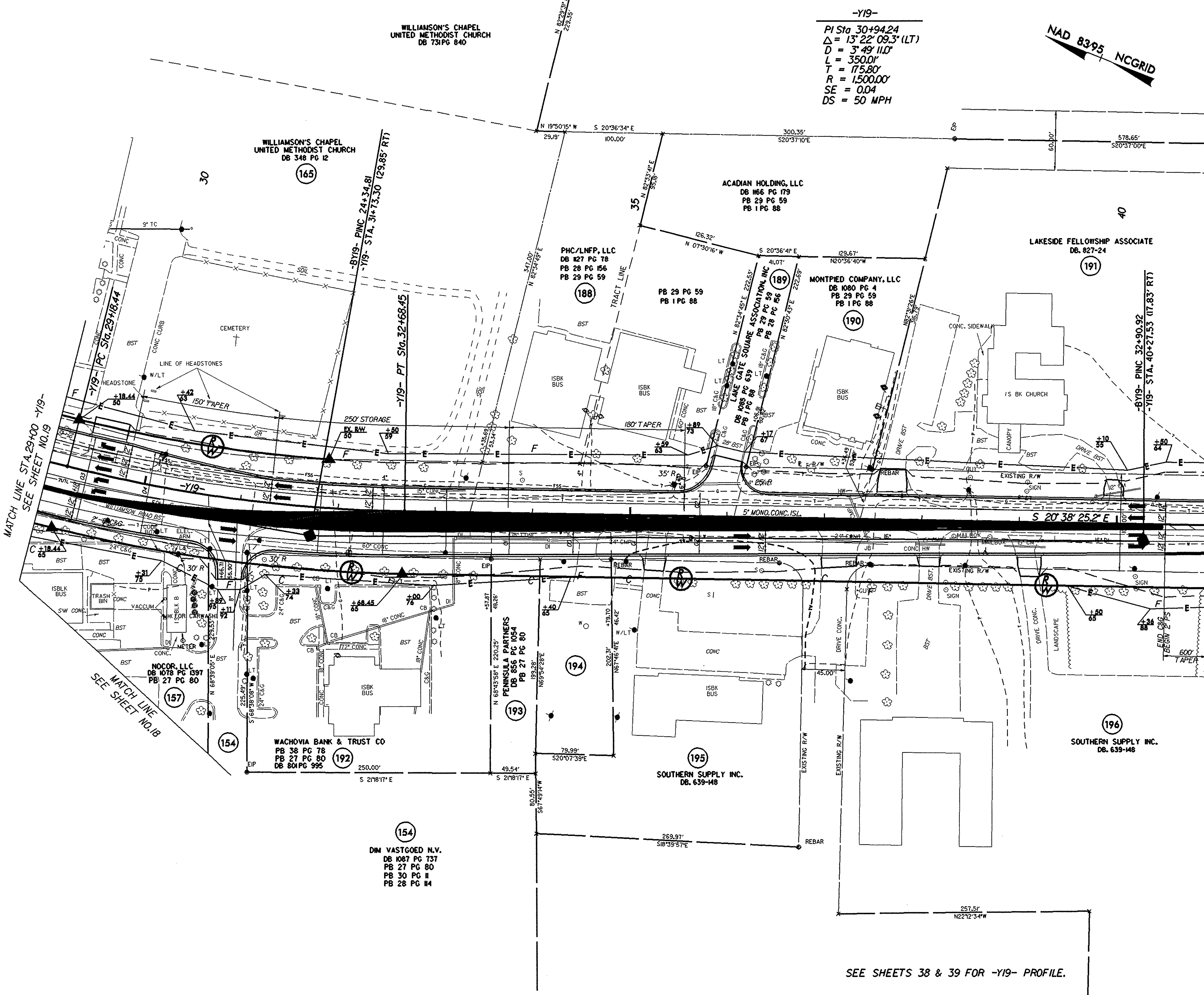
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS

8/17/99


-Y19-
PI Sta 30+94.24
Δ = 13° 22' 09.3" (LT)
D = 3° 49' 11.0"
L = 350.01'
T = 175.80'
R = 1,500.00'
SE = 0.04
DS = 50 MPH
NAD 83/95 NCGRID
WILLIAMSON'S CHAPEL UNITED METHODIST CHURCH DB 731 PG 840
WILLIAMSON'S CHAPEL UNITED METHODIST CHURCH DB 348 PG 12
165
ACADIAN HOLDING, LLC DB 1166 PG 179 PB 29 PG 59 PB 1 PG 88
PHC/LNFP, LLC DB 1127 PG 78 PB 28 PG 156 PB 29 PG 59
188
PB 29 PG 59 PB 1 PG 88
LAKE GATE SQUARE ASSOCIATION, INC DB 1085 PG 639 PB 29 PG 59 PB 28 PG 156
189
MONTPIED COMPANY, LLC DB 1080 PG 4 PB 29 PG 59 PB 1 PG 88
190
LAKESIDE FELLOWSHIP ASSOCIATE DB. 827-24
191
CEMETERY
LINE OF HEADSTONES
-BY19- PINC 24+34.81
-Y19- STA. 31+73.30 (29.85' RT)
-Y19- PC Sta. 29+18.44
-Y19- PT Sta. 32+68.45
-BY19- PINC 32+90.92
-Y19- STA. 40+27.53 (17.83' RT)
MATCH LINE STA. 29+00 -Y19- SEE SHEET NO. 19
MATCH LINE STA. 41+00 -Y19- SEE SHEET NO. 24
MATCH LINE SEE SHEET NO. 18
150' TAPER
250' STORAGE
180' TAPER
600' TAPER
S 20° 38' 25.2" E
5' MONO. CONC. ISL.
EXISTING R/W
ISBK BUS
IS BK CHURCH
NOCOR, LLC DB 1078 PG 1397 PB 27 PG 80
157
154
WACHOVIA BANK & TRUST CO PB 38 PG 78 PB 27 PG 80 DB 801 PG 995
192
PENINSULA PARTNERS DB 856 PG 1054 PB 27 PG 80
193
194
195
SOUTHERN SUPPLY INC. DB. 639-148
196
SOUTHERN SUPPLY INC. DB. 639-148
154
DIM VASTGOED N.V. DB 1087 PG 737 PB 27 PG 80 PB 30 PG 11 PB 28 PG 114
SEE SHEETS 38 & 39 FOR -Y19- PROFILE.

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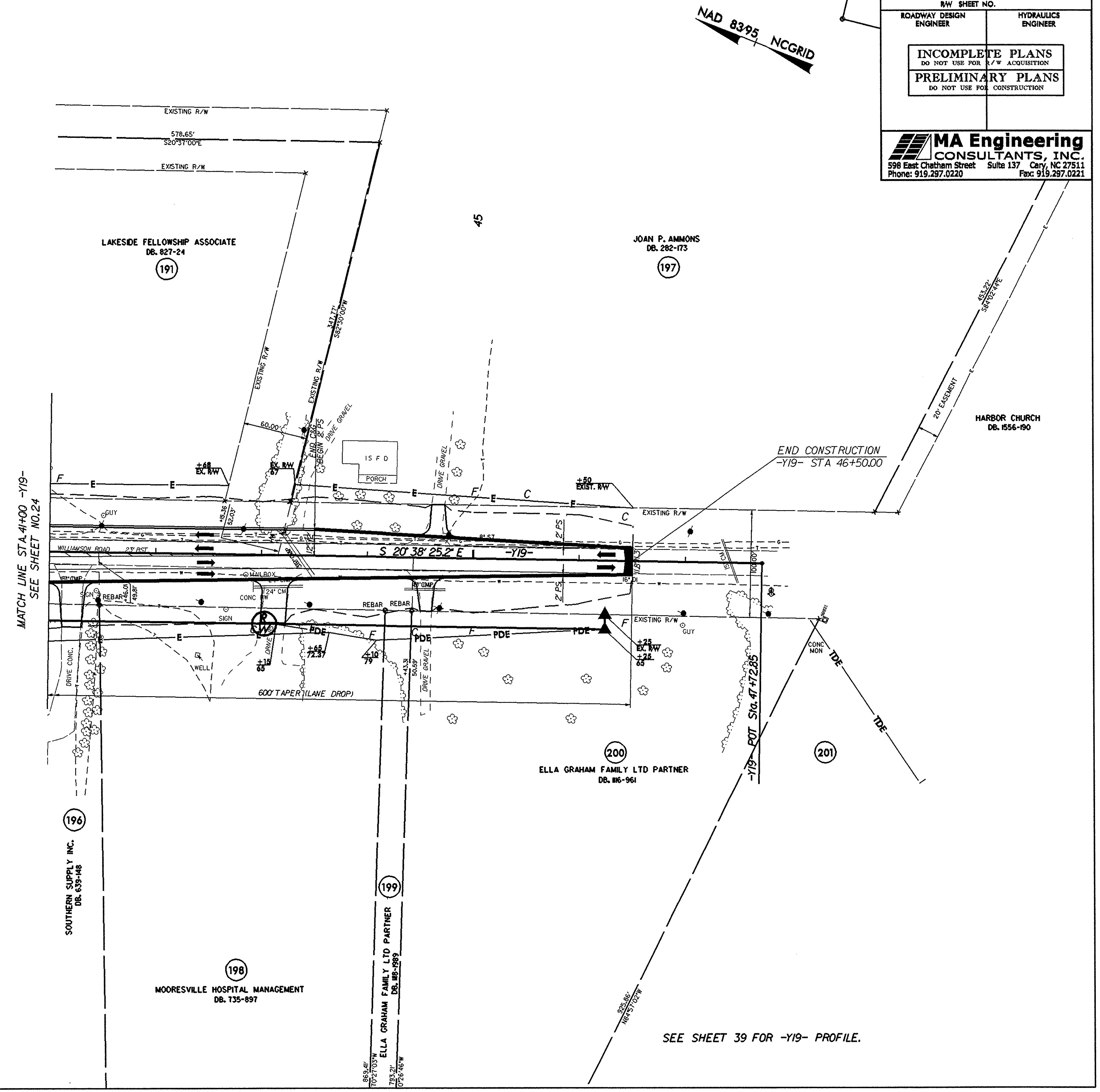
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



SEE SHEET 39 FOR -Y19- PROFILE.

REVISIONS

8/17/99

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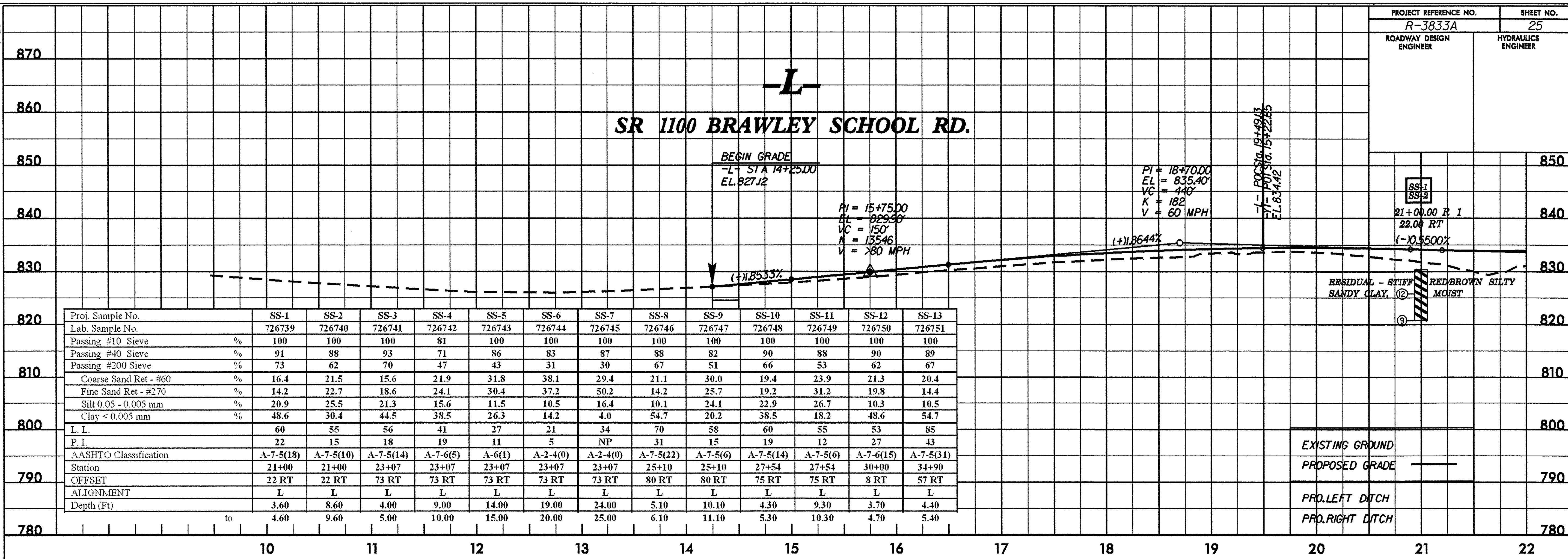
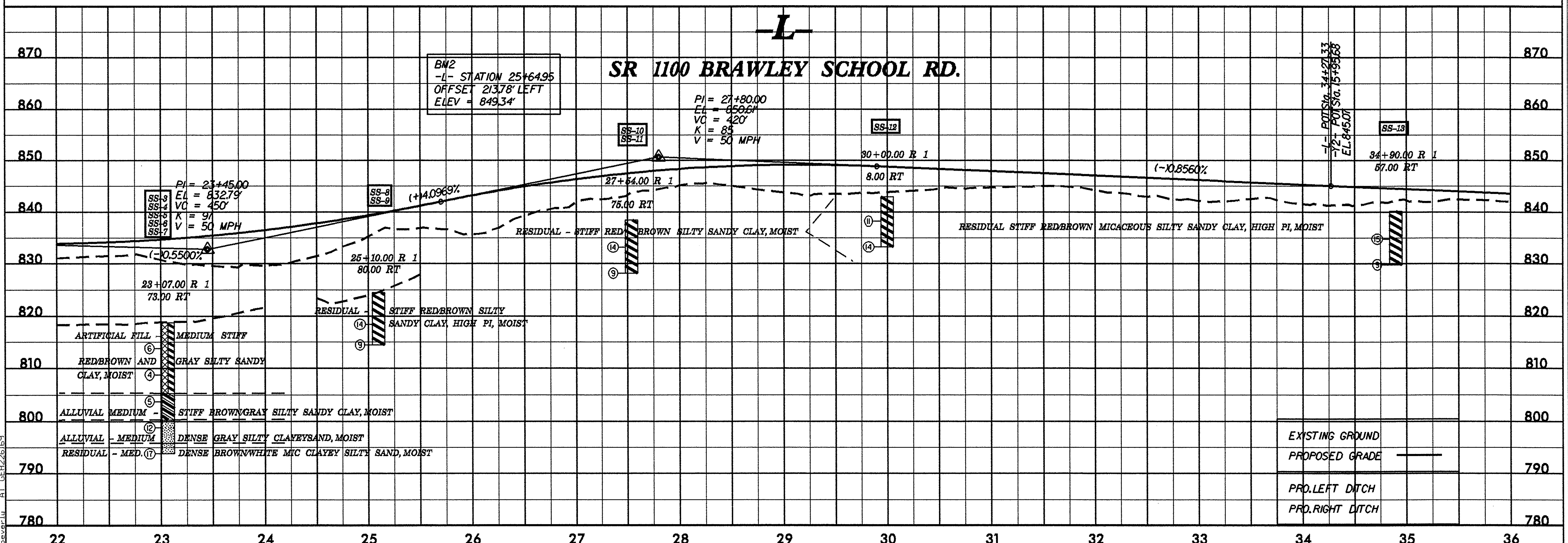
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



Proj. Sample No.		SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	SS-12	SS-13
Lab. Sample No.		726739	726740	726741	726742	726743	726744	726745	726746	726747	726748	726749	726750	726751
Passing #10 Sieve	%	100	100	100	81	100	100	100	100	100	100	100	100	100
Passing #40 Sieve	%	91	88	93	71	86	83	87	88	82	90	88	90	89
Passing #200 Sieve	%	73	62	70	47	43	31	30	67	51	66	53	62	67
Coarse Sand Ret - #60	%	16.4	21.5	15.6	21.9	31.8	38.1	29.4	21.1	30.0	19.4	23.9	21.3	20.4
Fine Sand Ret - #270	%	14.2	22.7	18.6	24.1	30.4	37.2	50.2	14.2	25.7	19.2	31.2	19.8	14.4
Silt 0.05 - 0.005 mm	%	20.9	25.5	21.3	15.6	11.5	10.5	16.4	10.1	24.1	22.9	26.7	10.3	10.5
Clay < 0.005 mm	%	48.6	30.4	44.5	38.5	26.3	14.2	4.0	54.7	20.2	38.5	18.2	48.6	54.7
L. L.		60	55	56	41	27	21	34	70	58	60	55	53	85
P. I.		22	15	18	19	11	5	NP	31	15	19	12	27	43
AASHTO Classification		A-7-5(18)	A-7-5(10)	A-7-5(14)	A-7-6(5)	A-6(1)	A-2-4(0)	A-2-4(0)	A-7-5(22)	A-7-5(6)	A-7-5(14)	A-7-5(6)	A-7-6(15)	A-7-5(31)
Station		21+00	21+00	23+07	23+07	23+07	23+07	23+07	25+10	25+10	27+54	27+54	30+00	34+90
OFFSET		22 RT	22 RT	73 RT	73 RT	73 RT	73 RT	73 RT	80 RT	80 RT	75 RT	75 RT	8 RT	57 RT
ALIGNMENT		L	L	L	L	L	L	L	L	L	L	L	L	L
Depth (Ft)		3.60	8.60	4.00	9.00	14.00	19.00	24.00	5.10	10.10	4.30	9.30	3.70	4.40
	to	4.60	9.60	5.00	10.00	15.00	20.00	25.00	6.10	11.10	5.30	10.30	4.70	5.40



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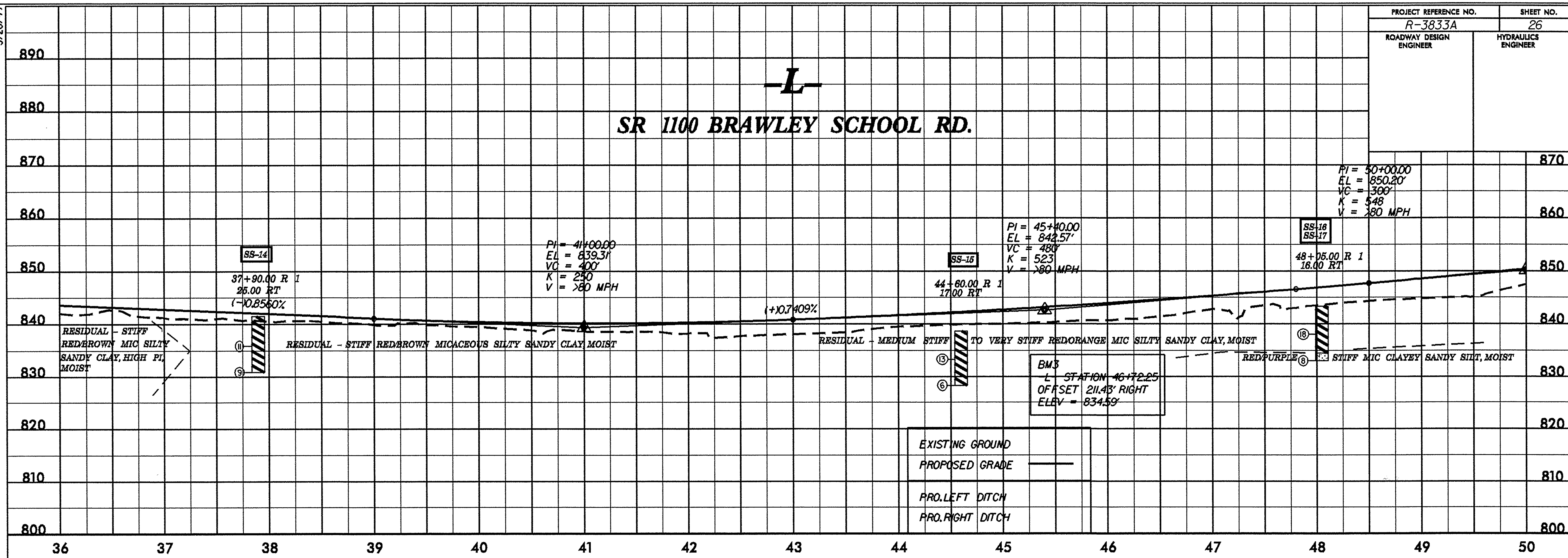
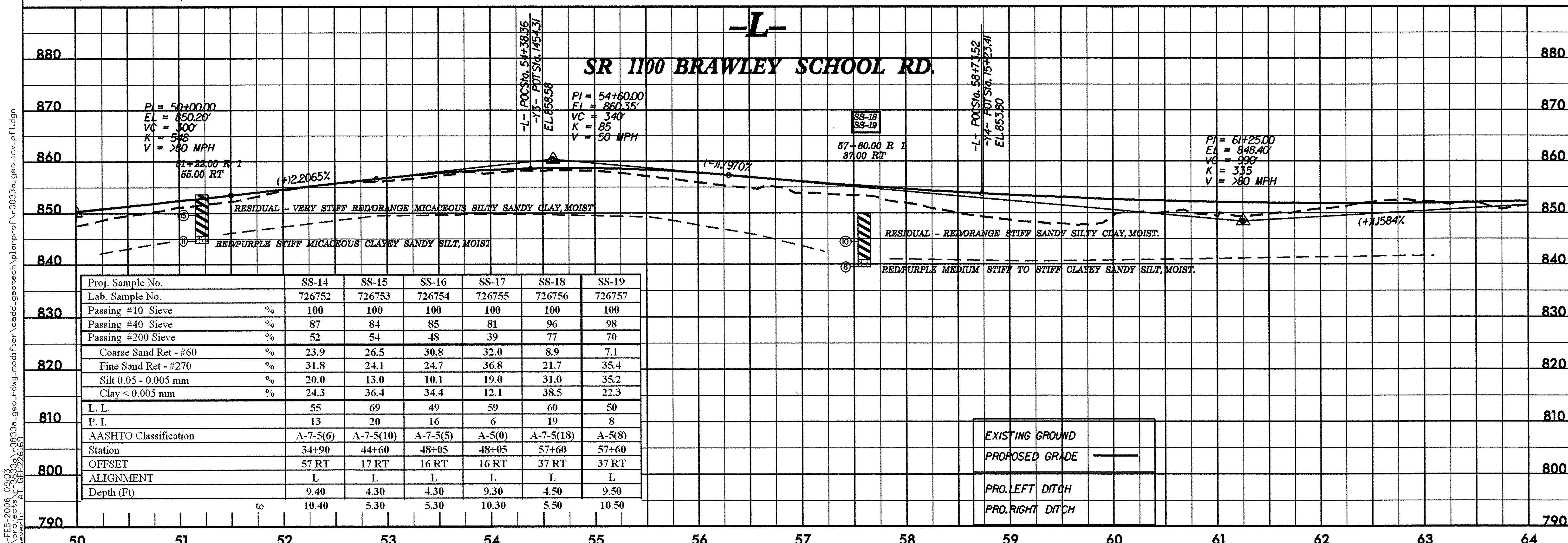
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER





Proj. Sample No.		SS-14	SS-15	SS-16	SS-17	SS-18	SS-19
Lab. Sample No.		726752	726753	726754	726755	726756	726757
Passing #10 Sieve	%	100	100	100	100	100	100
Passing #40 Sieve	%	87	84	85	81	96	98
Passing #200 Sieve	%	52	54	48	39	77	70
Coarse Sand Ret - #60	%	23.9	26.5	30.8	32.0	8.9	7.1
Fine Sand Ret - #270	%	31.8	24.1	24.7	36.8	21.7	35.4
Silt 0.05 - 0.005 mm	%	20.0	13.0	10.1	19.0	31.0	35.2
Clay < 0.005 mm	%	24.3	36.4	34.4	12.1	38.5	22.3
L. L.		55	69	49	59	60	50
P. I.		13	20	16	6	19	8
AASHTO Classification		A-7-5(6)	A-7-5(10)	A-7-5(5)	A-5(0)	A-7-5(18)	A-5(8)
Station		34+90	44+60	48+05	48+05	57+60	57+60
OFFSET		57 RT	17 RT	16 RT	16 RT	37 RT	37 RT
ALIGNMENT		L	L	L	L	L	L
Depth (Ft)		9.40	4.30	4.30	9.30	4.50	9.50
	to	10.40	5.30	5.30	10.30	5.50	10.50

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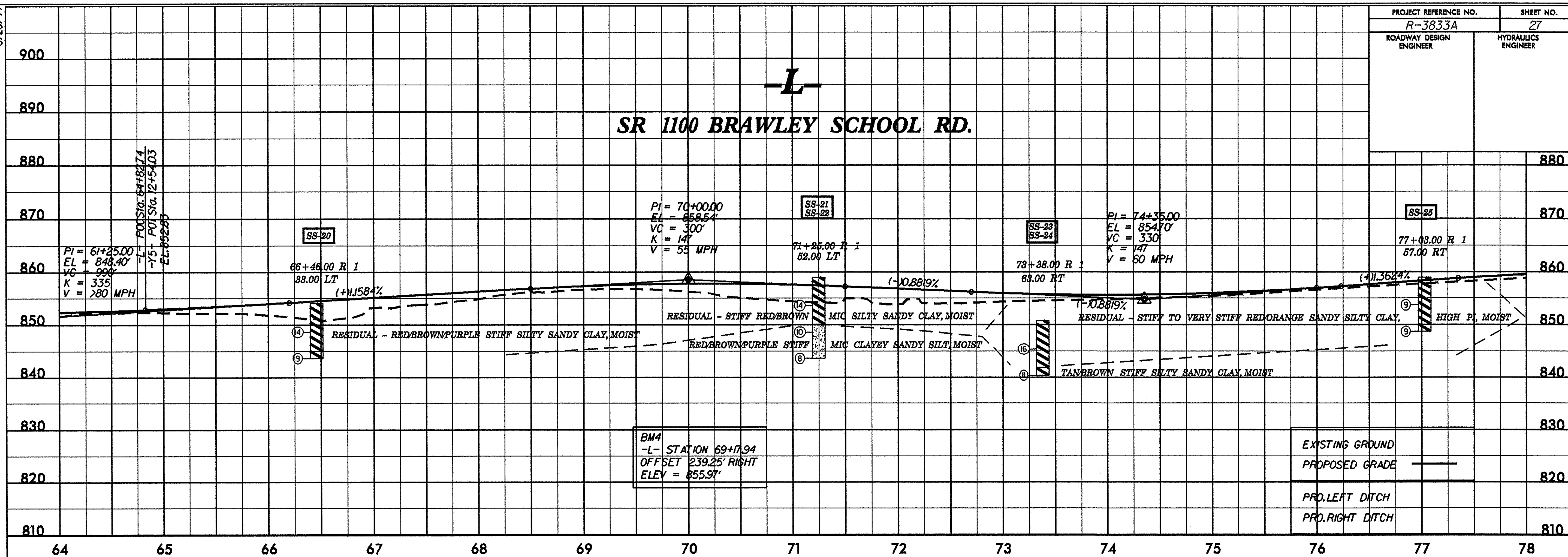
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

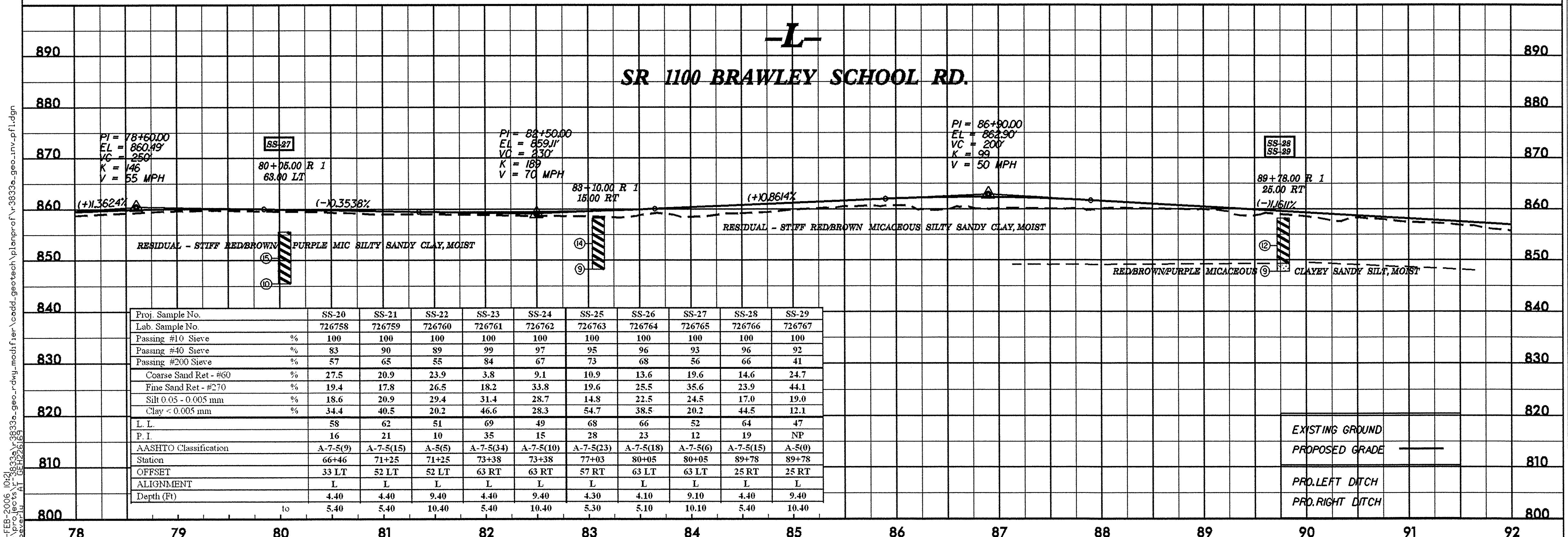
-L-

SR 1100 BRAWLEY SCHOOL RD.



-L-

SR 1100 BRAWLEY SCHOOL RD.



Proj. Sample No.		SS-20	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28	SS-29
Lab. Sample No.		726758	726759	726760	726761	726762	726763	726764	726765	726766	726767
Passing #10 Sieve	%	100	100	100	100	100	100	100	100	100	100
Passing #40 Sieve	%	83	90	89	99	97	95	96	93	96	92
Passing #200 Sieve	%	57	65	55	84	67	73	68	56	66	41
Coarse Sand Ret - #60	%	27.5	20.9	23.9	3.8	9.1	10.9	13.6	19.6	14.6	24.7
Fine Sand Ret - #270	%	19.4	17.8	26.5	18.2	33.8	19.6	25.5	35.6	23.9	44.1
Silt 0.05 - 0.005 mm	%	18.6	20.9	29.4	31.4	28.7	14.8	22.5	24.5	17.0	19.0
Clay < 0.005 mm	%	34.4	40.5	20.2	46.6	28.3	54.7	38.5	20.2	44.5	12.1
L. L.		58	62	51	69	49	68	66	52	64	47
P. I.		16	21	10	35	15	28	23	12	19	NP
AASHTO Classification		A-7-5(9)	A-7-5(15)	A-5(5)	A-7-5(34)	A-7-5(10)	A-7-5(23)	A-7-5(18)	A-7-5(6)	A-7-5(15)	A-5(0)
Station		66+46	71+25	71+25	73+38	73+38	77+03	80+05	80+05	89+78	89+78
OFFSET		33 LT	52 LT	52 LT	63 RT	63 RT	57 RT	63 LT	63 LT	25 RT	25 RT
ALIGNMENT		L	L	L	L	L	L	L	L	L	L
Depth (Ft)		4.40	4.40	9.40	4.40	9.40	4.30	4.10	9.10	4.40	9.40
	to	5.40	5.40	10.40	5.40	10.40	5.30	5.10	10.10	5.40	10.40

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L- SR 1100 BRAWLEY SCHOOL RD.

SS-30
92+74.00 R 1
26.00 RT
(-)1.1611%
RESIDUAL - RED/BROWN STIFF MICACEOUS SILTY SANDY CLAY, MOIST
TAN/ORANGE MEDIUM STIFF MICACEOUS CLAYEY SANDY SILT, MOIST.

SS-31
98+08.00 R 1
26.00 LT

PI = 100+00.00
EL = 847.69'
VC = 1,000'
K = 417
V = >80 MPH

-L- POSSIG. 101+89.53
-Y8- POT SIG. 16+72.38
EL. 856.47'

SS-32
SS-33
103+60.00 R 1
58.00 RT
(+)0.9341%
RESIDUAL - RED/BROWN VERY STIFF MIC SILTY SANDY CLAY, HIGH PI, MOIST
RED/TAN/ORANGE (14) STIFF SILTY SANDY CLAY, MOIST

Proj. Sample No.		SS-30	SS-31	SS-32	SS-33	SS-34	SS-35	SS-36	SS-37	SS-38	SS-39	SS-40
Lab. Sample No.		726768	726769	726770	726771	726772	726773	726774	726775	726776	726777	726778
Passing #10 Sieve	%	100	100	100	100	100	100	100	100	100	100	100
Passing #40 Sieve	%	88	93	85	82	87	84	93	86	89	81	70
Passing #200 Sieve	%	39	65	44	36	60	47	67	35	62	35	27
Coarse Sand Ret - #60	%	28.3	16.8	36.2	38.1	21.9	28.5	16.2	31.0	20.9	34.2	44.7
Fine Sand Ret - #270	%	39.7	23.3	21.7	28.9	23.7	31.4	19.8	40.3	20.9	37.4	35.8
Silt 0.05 - 0.005 mm	%	11.7	19.4	5.7	6.7	18.0	19.8	11.3	10.5	9.7	10.1	11.3
Clay < 0.005 mm	%	20.2	40.5	36.4	26.3	36.4	20.2	52.6	18.2	48.6	18.2	8.1
L. L.		50	68	56	39	63	54	73	52	69	32	36
P. I.		5	23	28	20	21	7	27	NP	25	3	NP
AASHTO Classification		A-5(0)	A-7-5(17)	A-7-6(8)	A-6(2)	A-7-5(13)	A-5(2)	A-7-5(21)	A-2-5(0)	A-7-5(16)	A-2-4(0)	A-2-4(0)
Station		92+74	98+08	103+60	103+60	106+30	106+30	114+62	114+60	117+44	117+44	117+44
OFFSET		26 RT	25 LT	58 RT	58 RT	10 RT	10 RT	65 RT	65 RT	67 LT	67 LT	67 LT
ALIGNMENT		L	L	L	L	L	L	L	L	L	L	L
Depth (Ft)		9.40	4.00	4.20	9.20	4.70	9.70	4.40	9.40	5.00	10.00	15.00
	to	10.40	5.00	5.20	10.20	5.70	10.70	5.40	10.40	6.00	11.00	16.00

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

SS-34
SS-35
106+30.00 R 1
10.00 RT
(+)0.9341%
RESIDUAL - RED/ORANGE STIFF SILTY SANDY CLAY, MOIST
TAN/YELLOW MEDIUM STIFF MICACEOUS CLAYEY SANDY SILT, MOIST.

PI = 108+65.00
EL = 855.77'
VC = 370'
K = 343
V = >80 MPH

(+)2.0142%
RESIDUAL - RED/BROWN VERY STIFF MIC SILTY SANDY CLAY, HIGH PI MOIST
RED/PURPLE MEDIUM DENSE (10) SILTY CLAYEY SAND, MOIST

-L- POSSIG. 113+49.50
-Y9- POT SIG. 10+00.00
EL. 865.10

SS-36
SS-37
114+62.00 R 1
65.00 RT

PI = 116+40.00
EL = 871.38'
VC = 850'
K = 211
V = 65 MPH

SS-38
SS-39
117+44.00 R 1
67.00 LT
(-)2.0092%
RESIDUAL - RED/BROWN VERY STIFF MIC SILTY SANDY CLAY, MOIST
TAN/YELLOW/RED (12) MEDIUM DENSE MIC SILTY CLAYEY SAND, MOIST
GRAY/WHITE (38) DENSE MICACEOUS CLAYEY SILTY SAND, MOIST

BM6
-L- STATION 114+77.65
OFFSET 403.06' RIGHT
ELEV = 850.96'

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-3833A	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

SR 1100 BRAWLEY SCHOOL RD.

Proj. Sample No.		SS-41	SS-42	SS-43	SS-44
Lab. Sample No.		726779	726780	726781	726782
Passing #10 Sieve	%	100	100	100	100
Passing #40 Sieve	%	99	85	89	83
Passing #200 Sieve	%	76	62	62	40
Coarse Sand Ret - #60	%	3.8	22.7	20.2	32.2
Fine Sand Ret - #270	%	32.2	20.6	21.7	34.2
Silt 0.05 - 0.005 mm	%	23.5	12.1	9.5	9.3
Clay < 0.005 mm	%	40.5	44.5	48.6	24.3
L. L.		70	63	70	61
P. I.		17	19	24	9
AASHTO Classification		A-7-5(19)	A-7-5(13)	A-7-5(16)	A-5(1)
Station		120+17	123+00	130+00	130+00
OFFSET		37 LT	52 LT	25 RT	25 RT
ALIGNMENT		L	L	L	L
Depth (Ft)		8.60	4.00	4.30	9.30
	to	9.60	5.00	5.30	10.30

SS-41

120+17.00 R 1
37.00 LT

(-)2.0092%

SS-42

123+00.00 R 1
52.00 LT

PI = 124+00.00
EL = 856.11'
VC = 150'
K = 280
V = 70 MPH

(-)2.5860%

PI = 126+15.00
EL = 850.55'
VC = 230'
K = 101
V = 50 MPH

SS-43
SS-44

130+00.00 R 1
25.00 RT

(-)0.3143%

132+74.00 R 1
35.00 RT

(-)1.9178%

RESIDUAL - RED/BROWN STIFF MICACEOUS SILTY SANDY CLAY, MOIST

RED/PURPLE MEDIUM ⑩ DENSE SILTY CLAYEY SAND, MOIST.

RESIDUAL - RED/BROWN ⑬ STIFF MICACEOUS SILTY SANDY CLAY, MOIST

RED/ORANGE STIFF MIC ⑫ CLAYEY SANDY SILT, MOIST

-L- PROJ Sta. 126+55.50
-Y10- POT Sta. 10+00.00
EL. 850.70

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

-L-

SR 1100 BRAWLEY SCHOOL RD.

PI = 134+50.00
EL = 840.71'
VC = 320'
K = 134
V = 55 MPH

SS-46
SS-47

136+47.00 R 1
33.00 RT

(-)1.9178%

SS-48

139+37.00 R 1
37.00 RT

(+)0.4650%

PI = 144+50.00
EL = 845.38'
VC = 230'
K = 192
V = 70 MPH

SS-48A
SS-49

143+60.00 R 1
60.00 RT

SS-50
SS-51

146+80.00 R 1
67.00 RT

(+)1.6333%

RESIDUAL - RED/BROWN VERY STIFF MIC SILTY SANDY CLAY, HIGH PI, MOIST

RED/ORANGE STIFF MIC ⑨ CLAYEY SANDY SILT MOIST.

RESIDUAL - RED/BROWN STIFF MIC SILTY SANDY CLAY, MOIST.

RED/ORANGE STIFF ⑩ MICACEOUS CLAYEY SANDY SILT, MOIST

RESIDUAL - RED/BROWN VERY STIFF MIC SILTY SANDY CLAY, HIGH PI MOIST

RED/PURPLE STIFF MICACEOUS ⑧ CLAYEY SANDY SILT, MOIST

RESIDUAL - RED/BROWN STIFF MIC CLAYEY SANDY SILT, MOIST

RED/ORANGE STIFF MIC SILTY ⑨ SANDY CLAY, MOIST

-L- PROJ Sta. 142+88.27
-Y11- POT Sta. 10+00.00
EL. 844.61

Proj. Sample No.		SS-46	SS-47	SS-48	SS-48A	SS-49	SS-50	SS-51
Passing #10 Sieve	%	100	100	100	100	100	100	100
Passing #40 Sieve	%	89	88	87	90	82	87	82
Passing #200 Sieve	%	66	58	62	64	43	52	46
Coarse Sand Ret - #60	%	20.6	22.2	21.8	20.2	32.1	25.3	30.5
Fine Sand Ret - #270	%	15.6	26.7	20.6	19.6	31.3	29.7	30.5
Silt 0.05 - 0.005 mm	%	13.3	22.8	19.2	17.8	22.4	18.8	16.8
Clay < 0.005 mm	%	50.5	28.3	38.4	42.4	14.1	26.3	22.2
L. L.		75	61	58	69	47	60	56
P. I.		39	7	21	27	8	8	11
AASHTO Classification		A-7-5(26)	A-5(6)	A-7-5(13)	A-7-5(18)	A-5(1)	A-5(4)	A-7-5(3)
Station		136+47	136+47	131+37	143+60	143+60	146+80	146+80
OFFSET		33 RT	33 RT	37 RT	60 RT	60 RT	67 RT	67 RT
ALIGNMENT		L	L	L	L	L	L	L
Depth (Ft)		4.90	9.40	4.20	4.00	9.00	3.80	8.80
	to	5.40	10.40	5.20	5.00	10.00	4.80	9.80

BM7
-L- STATION 139+01.66
OFFSET 566.95' RIGHT
ELEV = 805.55'

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

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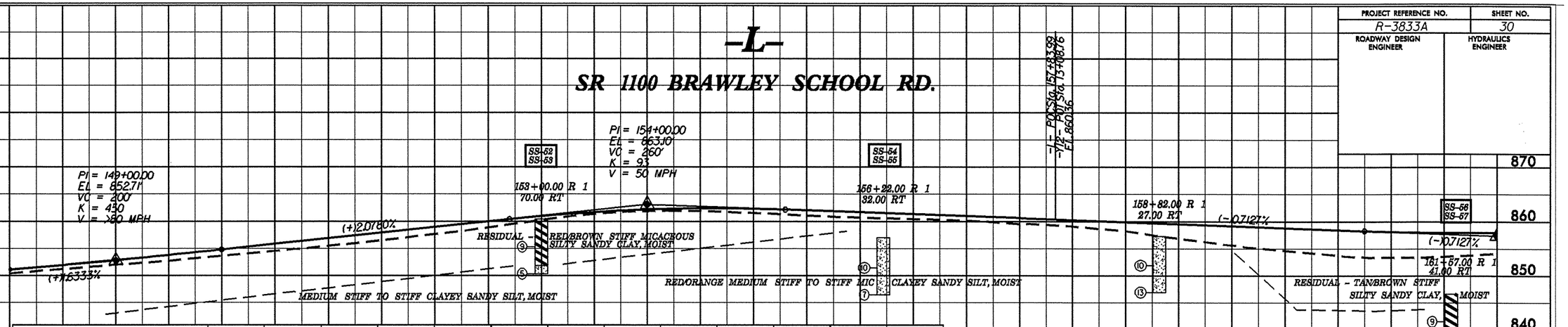
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

SR 1100 BRAWLEY SCHOOL RD.

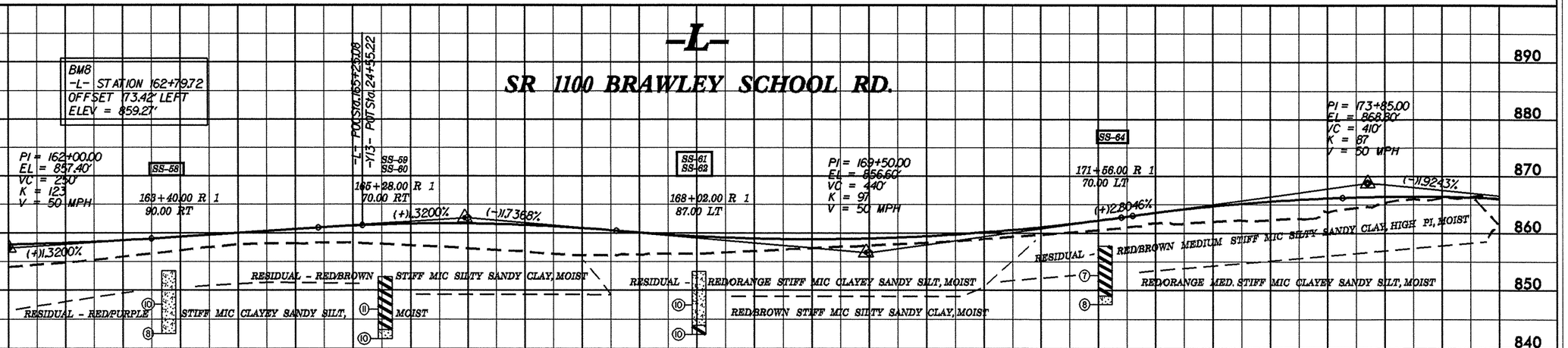


Proj. Sample No.		SS-52	SS-53	SS-54	SS-55	SS-56	SS-57	SS-58	SS-59	SS-60	SS-61	SS-62	SS-63	SS-64
Passing #10 Sieve	%	100	100	100	100	100	100	100	100	100	100	100	100	100
Passing #40 Sieve	%	92	85	91	87	90	84	87	86	84	91	91	90	83
Passing #200 Sieve	%	61	46	57	49	64	38	52	60	57	52	56	61	44
Coarse Sand Ret - #60	%	18.8	27.9	19.4	23.8	20.4	31.9	24.6	23.0	24.4	23.2	20.4	22.0	31.3
Fine Sand Ret - #270	%	24.4	34.1	30.5	37.0	18.0	36.8	29.5	21.8	28.9	30.1	28.9	22.4	30.3
Silt 0.05 - 0.005 mm	%	18.4	21.8	21.8	25.1	15.2	19.2	21.6	22.8	30.5	16.4	16.4	19.2	18.2
Clay < 0.005 mm	%	38.4	16.2	28.3	14.1	46.5	12.1	24.2	32.3	16.2	30.3	34.3	36.4	20.2
L. L.		66	54	56	53	64	46	50	62	46	58	63	64	45
P. I.		19	NP	9	6	26	8	3	18	4	7	15	27	NP
AASHTO Classification		A-7-5(13)	A-5(0)	A-5(6)	A-5(2)	A-7-5(17)	A-5(0)	A-5(2)	A-7-5(11)	A-5(3)	A-5(4)	A-7-5(9)	A-7-5(16)	A-5(0)
Station		153+00	153+00	156+22	156+22	161+57	161+57	163+40	165+28	165+28	168+02	168+02	171+56	171+56
OFFSET		70 RT	70 RT	32 RT	32 RT	41 RT	41 RT	90 RT	70 RT	70 RT	87 LT	87 LT	70 RT	70 LT
ALIGNMENT		L	L	L	L	L	L	L	L	L	L	L	L	L
Depth (Ft)		4.10	9.10	4.60	9.60	4.10	9.10	4.80	4.60	9.60	4.80	9.80	4.20	9.20
	to	5.10	10.10	5.60	10.60	5.10	10.10	5.80	5.60	10.60	5.80	10.80	5.20	10.20

EXISTING GROUND
PROPOSED GRADE
PRO.LEFT DITCH
PRO.RIGHT DITCH

-L-

SR 1100 BRAWLEY SCHOOL RD.



EXISTING GROUND
PROPOSED GRADE
PRO.LEFT DITCH
PRO.RIGHT DITCH

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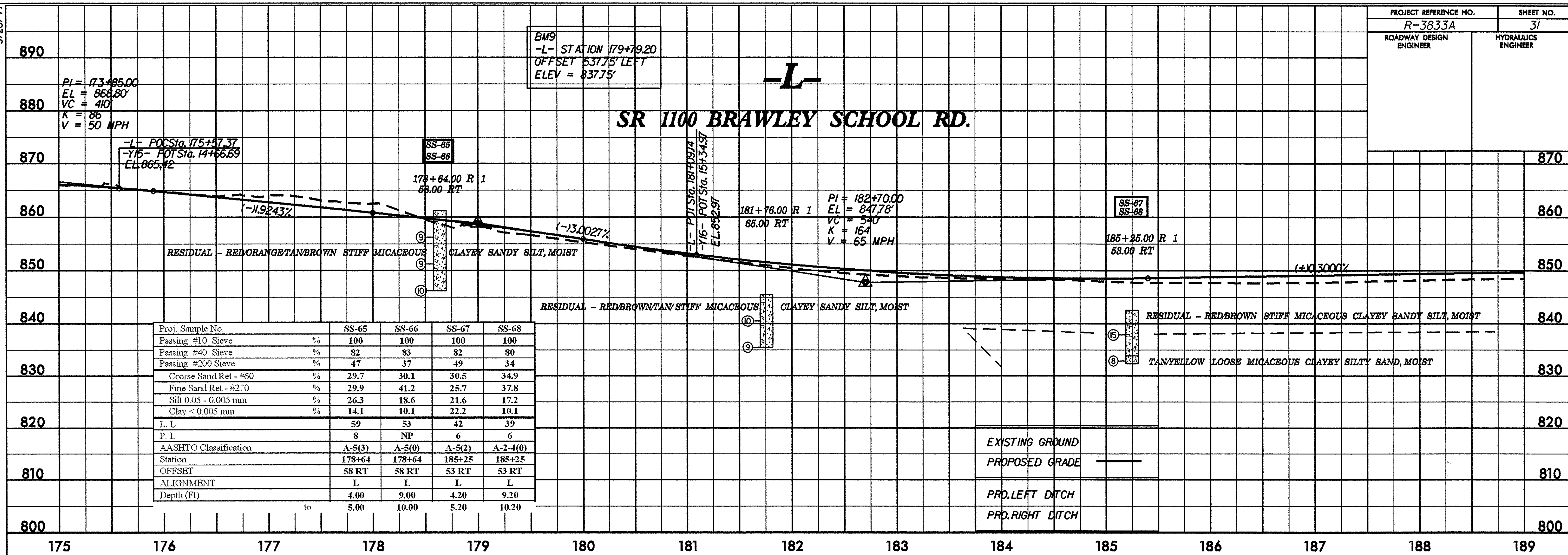
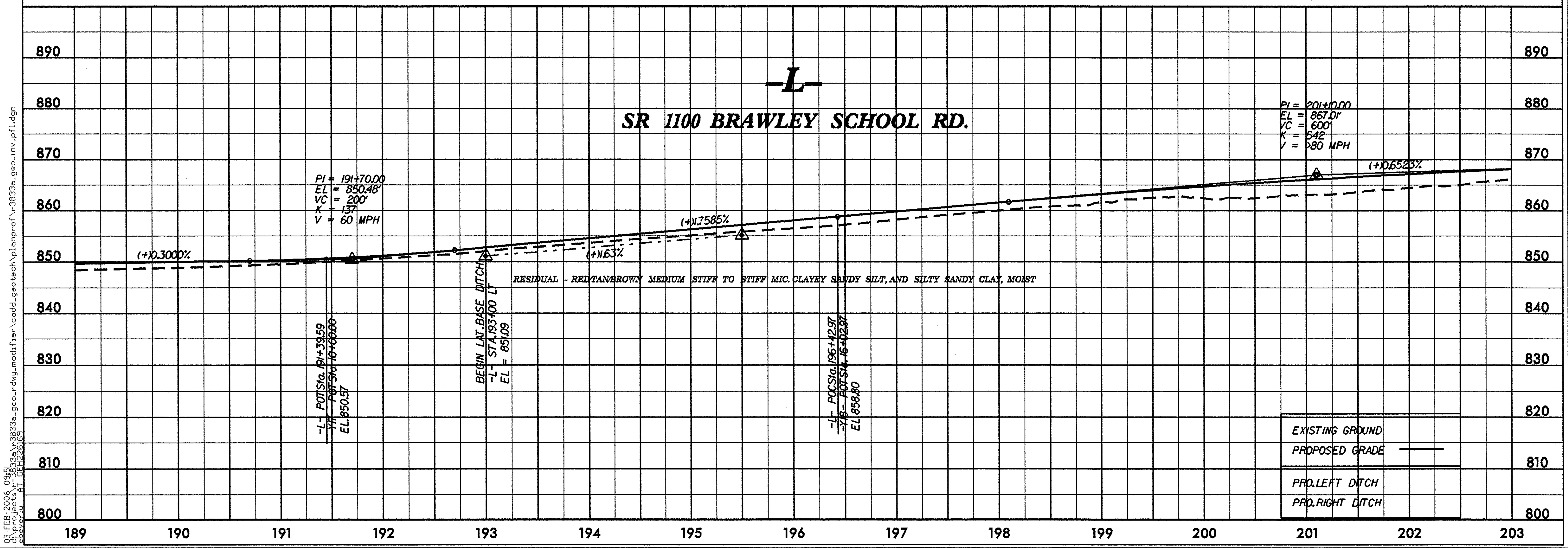
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



Proj. Sample No.		SS-65	SS-66	SS-67	SS-68
Passing #10 Sieve	%	100	100	100	100
Passing #40 Sieve	%	82	83	82	80
Passing #200 Sieve	%	47	37	49	34
Coarse Sand Ret - #60	%	29.7	30.1	30.5	34.9
Fine Sand Ret - #270	%	29.9	41.2	25.7	37.8
Silt 0.05 - 0.005 mm	%	26.3	18.6	21.6	17.2
Clay < 0.005 mm	%	14.1	10.1	22.2	10.1
L. L		59	53	42	39
P. I.		8	NP	6	6
AASHTO Classification		A-5(3)	A-5(0)	A-5(2)	A-2-4(0)
Station		178+64	178+64	185+25	185+25
OFFSET		58 RT	58 RT	53 RT	53 RT
ALIGNMENT		L	L	L	L
Depth (Ft)		4.00	9.00	4.20	9.20
	to	5.00	10.00	5.20	10.20



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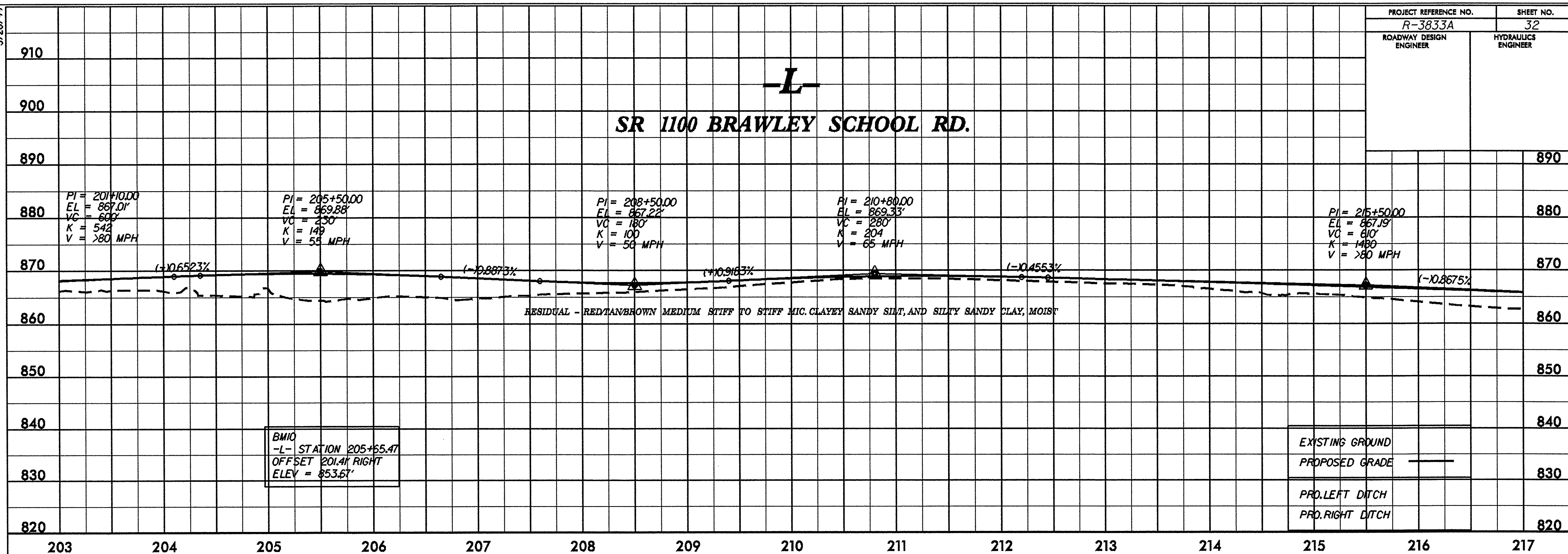
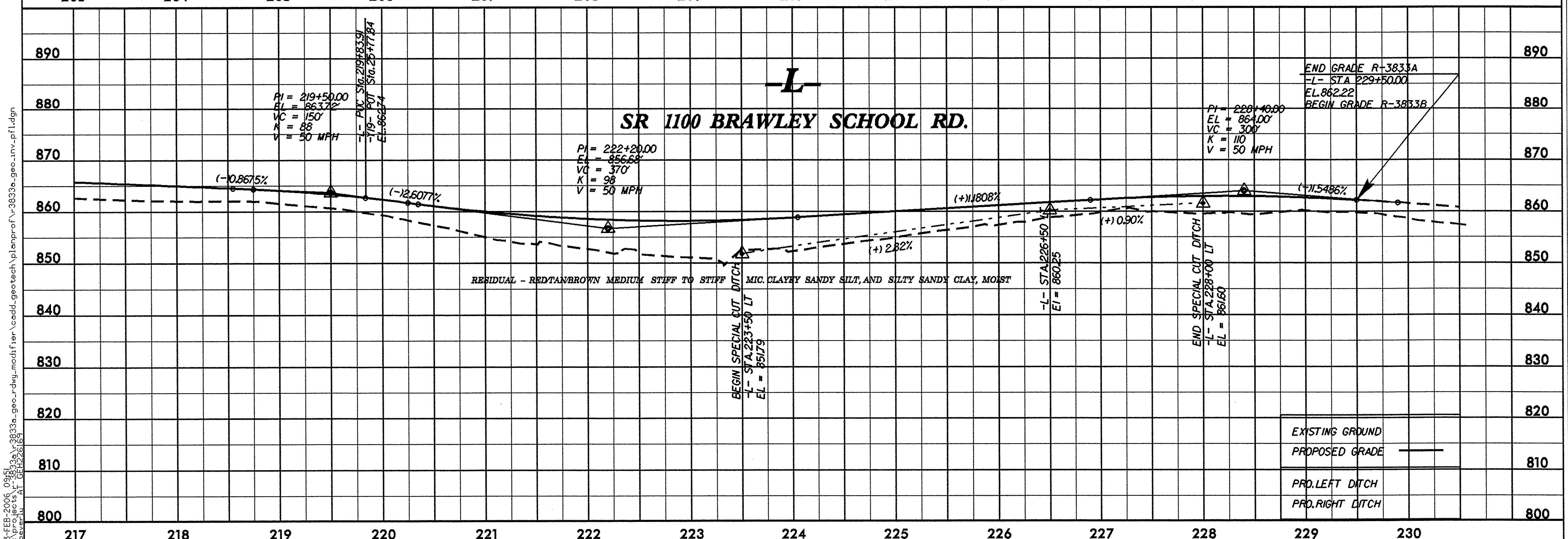
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5/28/99





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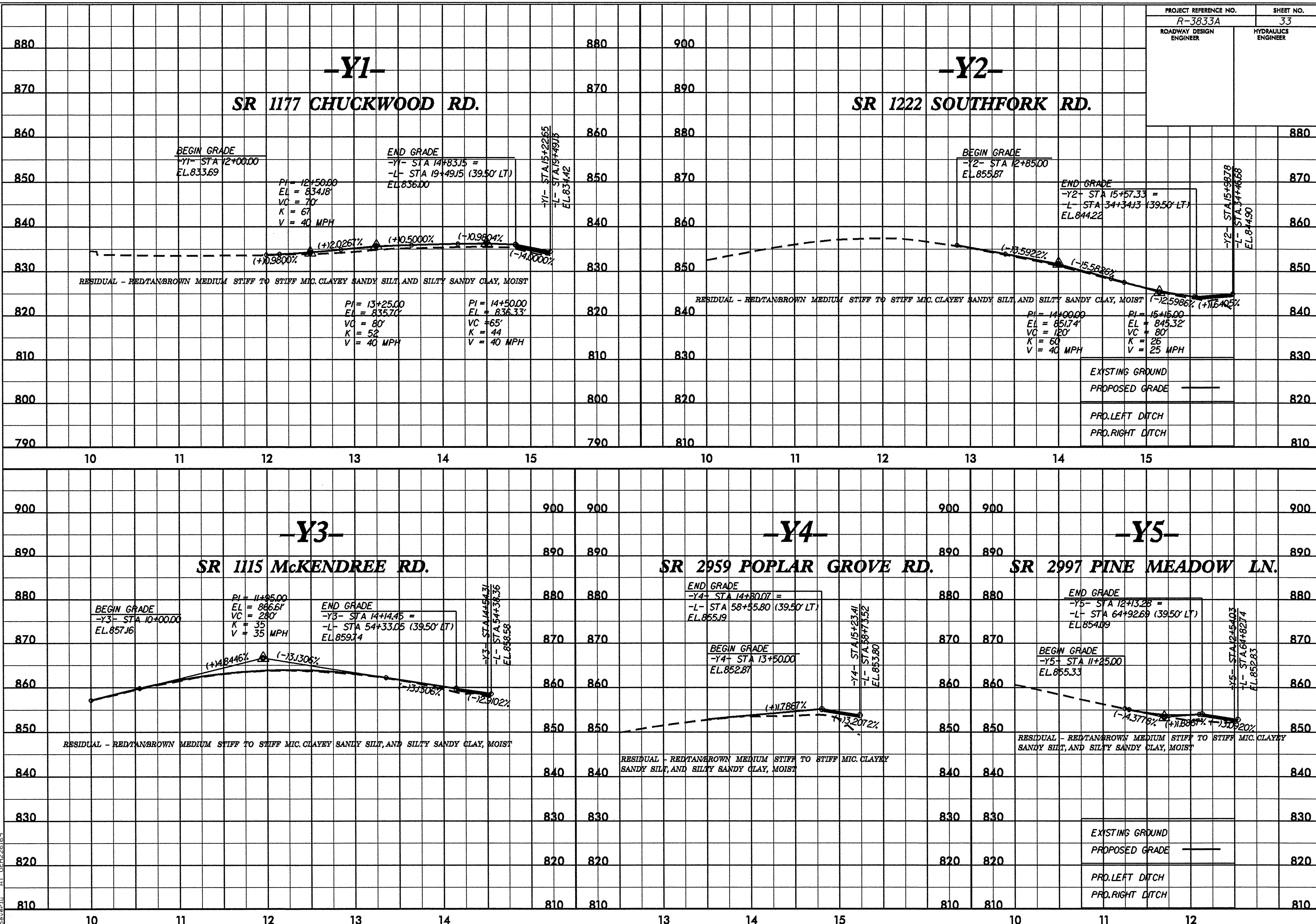
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5/28/99



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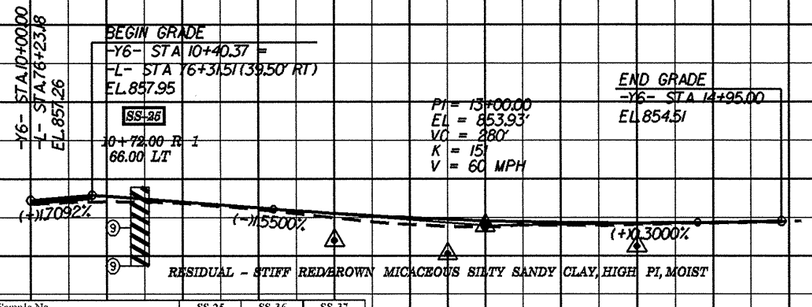
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-Y6-

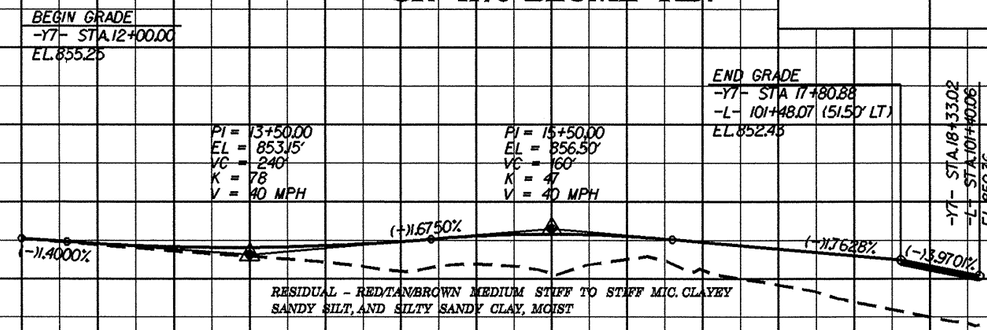
SR 1113 ISLE OF PINES RD.



Proj. Sample No.		SS-25	SS-36	SS-37
Passing #10 Sieve	%	100	100	100
Passing #40 Sieve	%	95	93	86
Passing #200 Sieve	%	73	67	35
Coarse Sand Ret - #60	%	10.9	16.2	31.0
Fine Sand Ret - #270	%	19.6	19.8	40.3
Silt 0.05 - 0.005 mm	%	14.8	11.3	10.5
Clay < 0.005 mm	%	54.7	52.6	18.2
L. L.		68	73	52
P. I		28	27	NP
AASHTO Classification		A-7-5(23)	A-7-5(21)	A-2-5(0)
Station		77+03	114+62	114+60
OFFSET		57 RT	65 RT	65 RT
ALIGNMENT		L	L	L
Depth (Ft)		4.30	4.40	9.40
	to	5.30	5.40	10.40

-Y7-

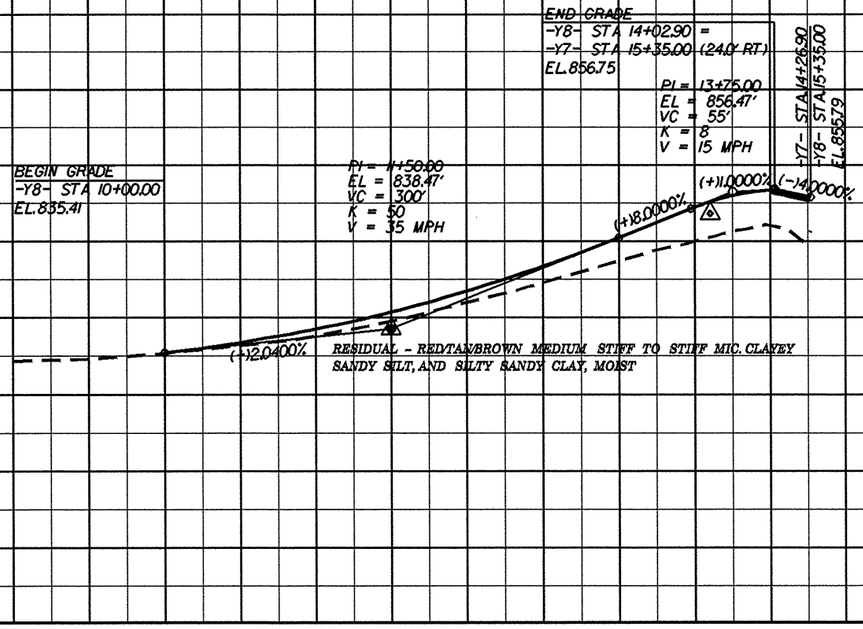
SR 1178 BLUME RD.



PRO. LEFT DITCH — EXISTING GROUND
PRO. RIGHT DITCH — PROPOSED GRADE

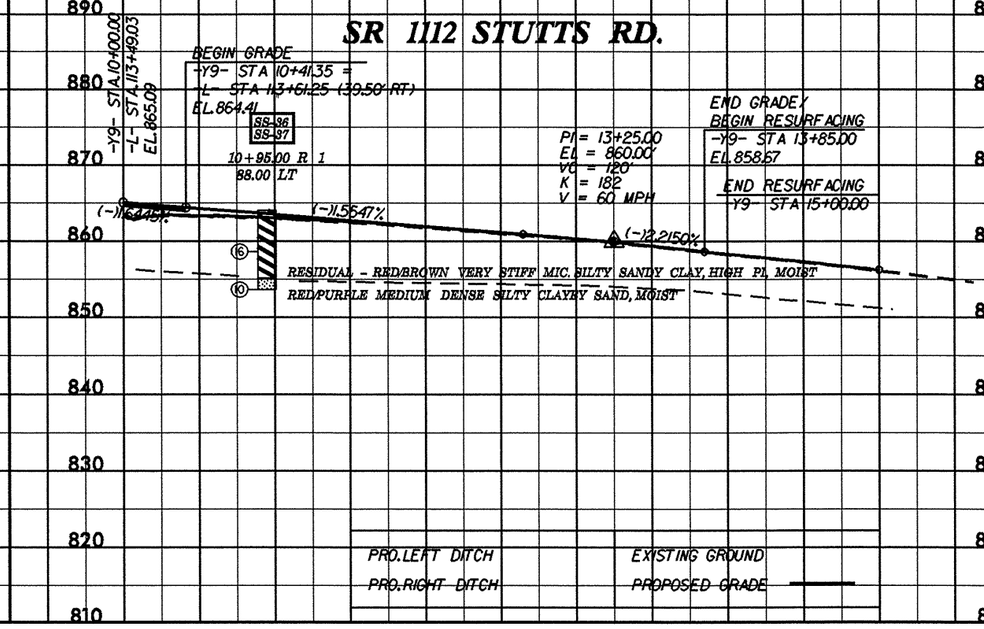
-Y8-

SR 1234 BEECH TREE RD.



-Y9-

SR 1112 STUTTS RD.



PRO. LEFT DITCH — EXISTING GROUND
PRO. RIGHT DITCH — PROPOSED GRADE

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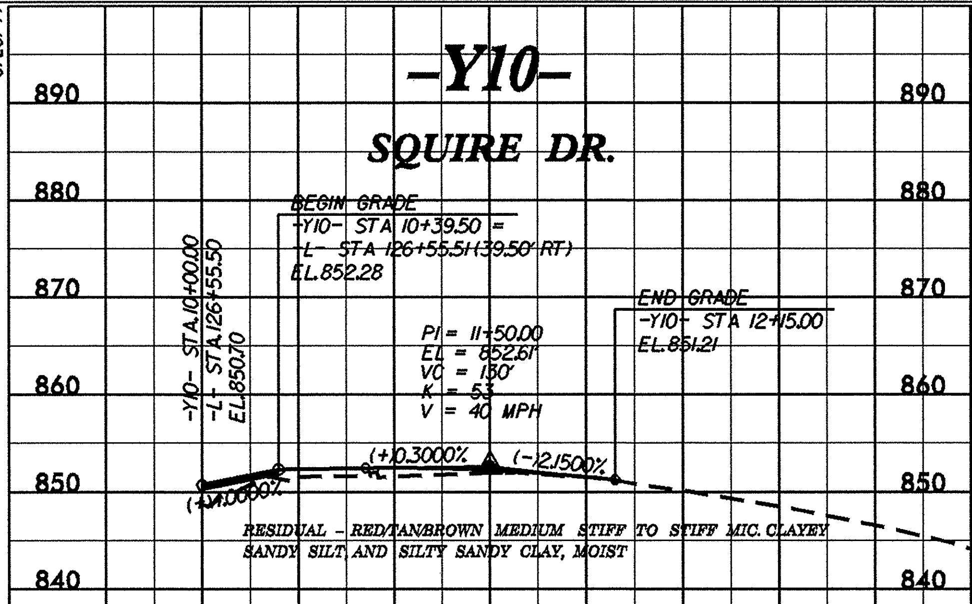
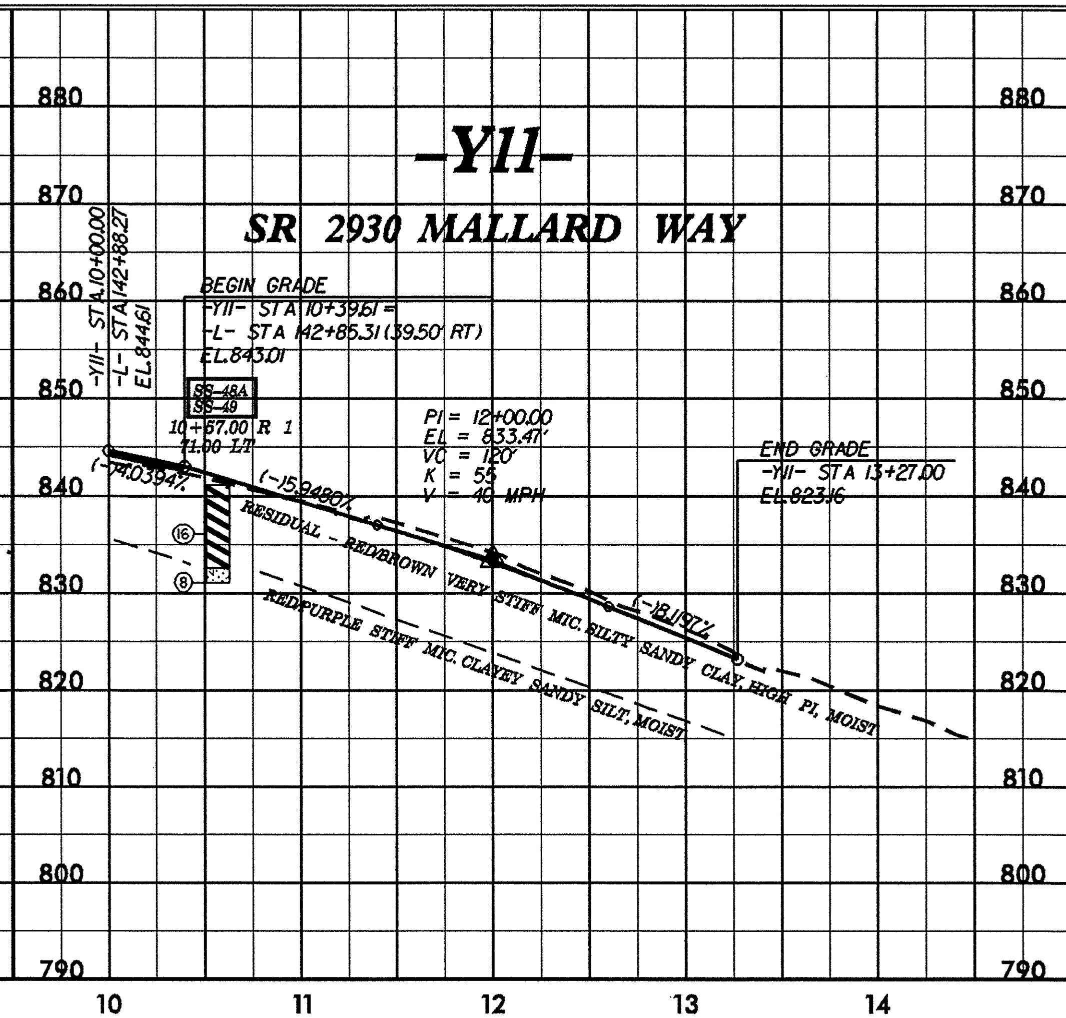
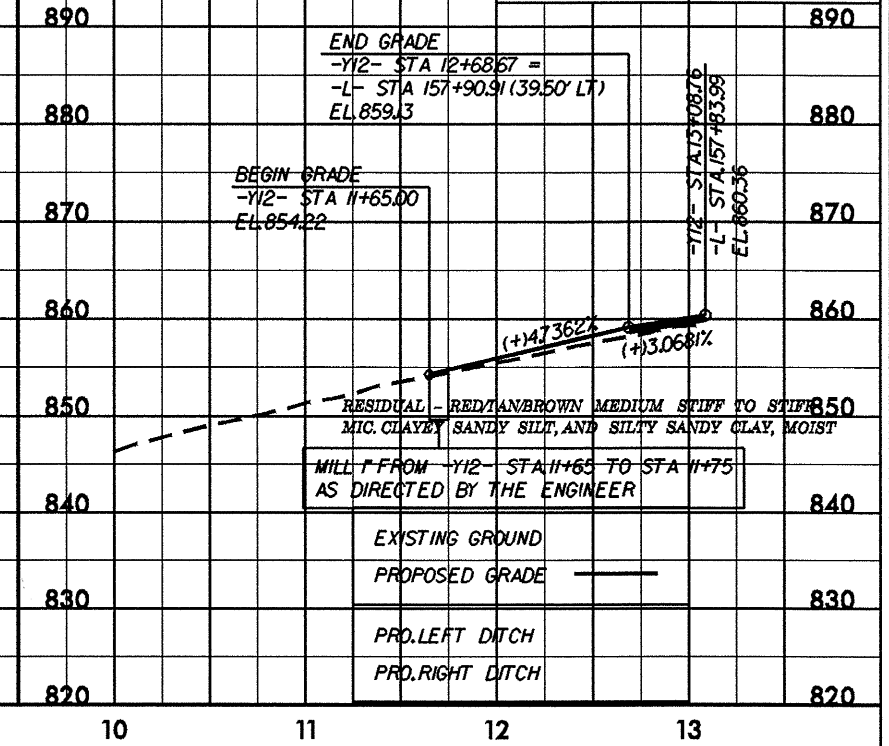
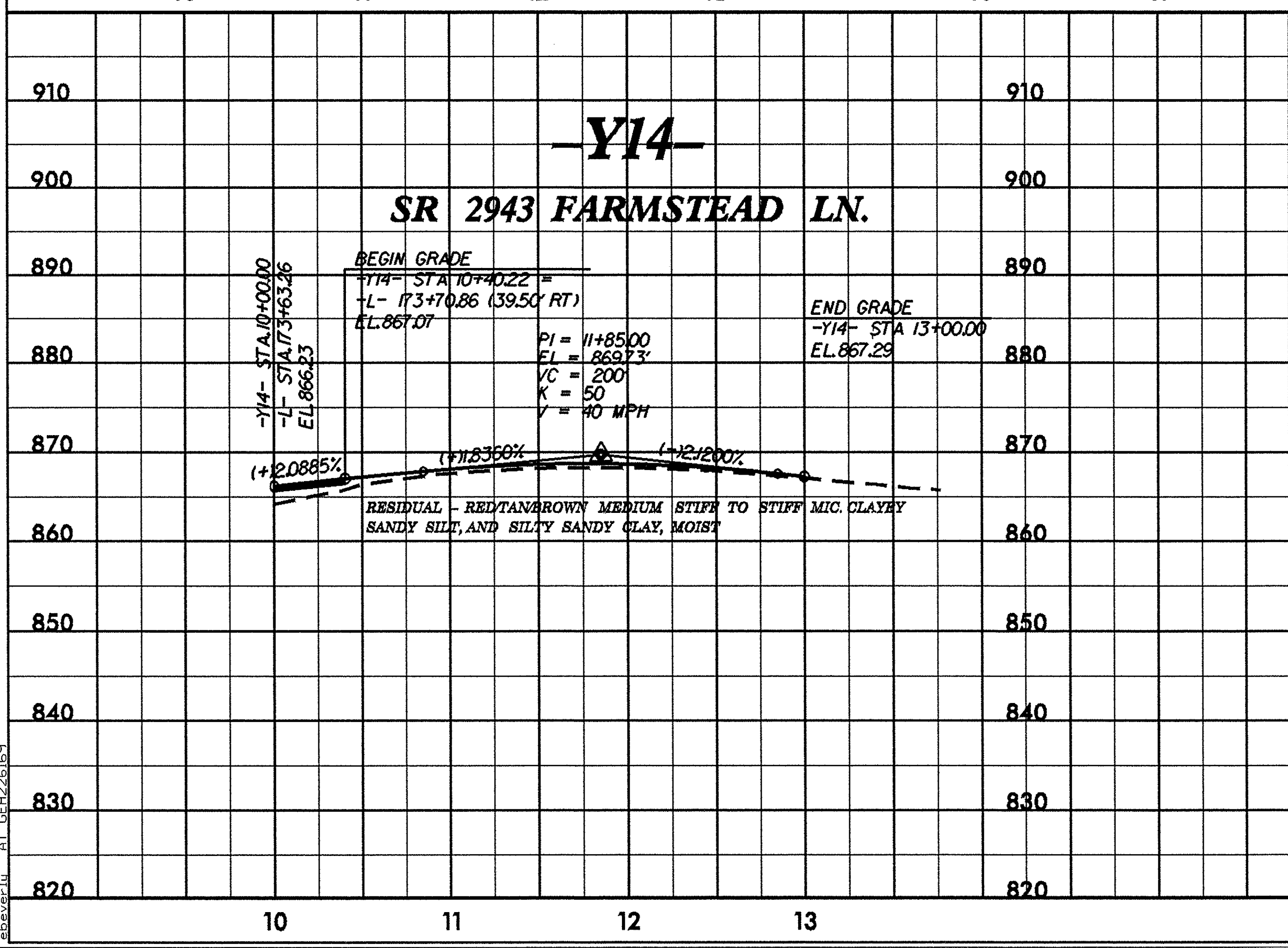
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

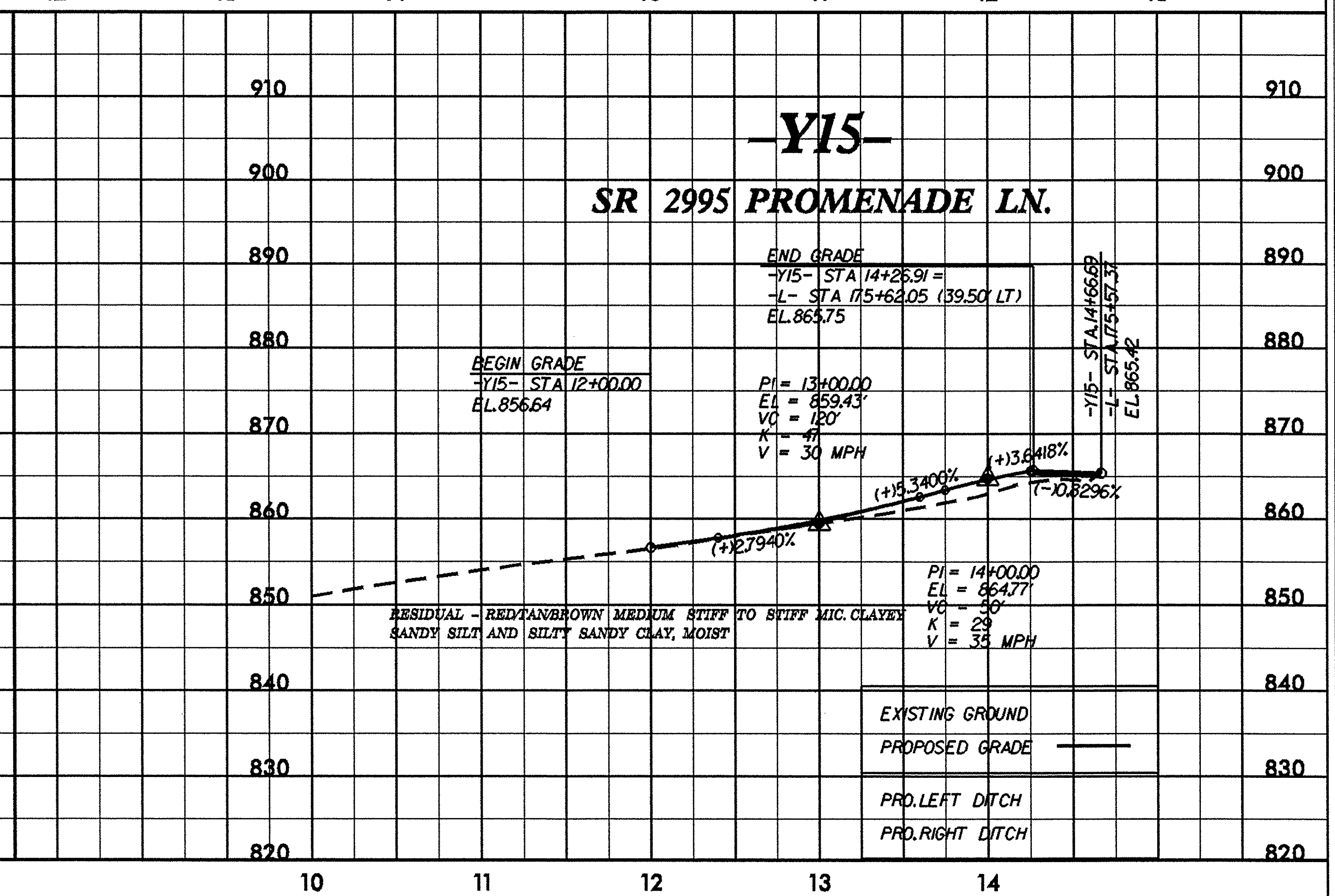


Proj. Sample No.		SS-48A	SS-49
Passing #10 Sieve	%	100	100
Passing #40 Sieve	%	90	82
Passing #200 Sieve	%	64	43
Coarse Sand Ret - #60	%	20.2	32.1
Fine Sand Ret - #270	%	19.6	31.3
Silt 0.05 - 0.005 mm	%	17.8	22.4
Clay < 0.005 mm	%	42.4	14.1
L. L.		69	47
P. I		27	8
AASHTO Classification		A-7-5(18)	A-5(1)
Station		143+60	143+60
OFFSET		60 RT	60 RT
ALIGNMENT		L	L
Depth (Ft)		4.00	9.00
	to	5.00	10.00









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PROJECT REFERENCE NO.	SHEET NO.
R-3833A	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-Y13-

SR 1179 OAKTREE RD./ CANVASBACK RD.

BEGIN GRADE
-Y13- STA 12+25.00
EL.842.36

(-)1.1700%

PI = 14+25.00
EL = 840.02'
VC = 330'
K = 67
V = 40 MPH

(+)3.7333%

PI = 16+95.00
EL = 850.10'
VC = 150'
K = 46
V = 40 MPH

(+)0.5000%

PI = 19+35.00
EL = 851.30'
VC = 170'
K = 69
V = 40 MPH

(+)2.9581%

(+)0.3000%

END GRADE
-Y13- STA 23+98.79 =
-L- STA 165+61.09 (42.75' LT)
EL.860.40

PI = 22+25.00
EL = 859.88'
VC = 100'
K = 38
V = 35 MPH

RESIDUAL - RED/TAN/BROWN MEDIUM STIFF TO STIFF MIC. CLAYEY SANDY SILT AND SILTY SANDY CLAY, MOIST

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

-Y13-

SR 1179 OAKTREE RD./ CANVASBACK RD.

-Y13- STA 24+55.32
-L- STA 165+25.08
EL. 861.51

END GRADE
-Y13- STA 25+15.89 =
-L- STA 164+81.31 (42.75' LT)
EL.862.38

PI = 26+20.00
EL = 863.00
VC = 208'
K = 29
V = 35 MPH

SS-59
SS-60

(+)1.9670%

(+)1.4340%

(+)1.6000%

25+01.00 R 1
52.00 LT

(-)6.4859%

PI = 28+70.00
EL = 846.79'
VC = 292'
K = 64
V = 40 MPH

(-)1.9233%

END GRADE
-Y13- STA 34+00.00
EL.836.22

PI = 33+00.00
EL = 838.52'
VC = 200'
K = 531
V > 80 MPH

(-)2.3000%

RESIDUAL - RED/BROWN STIFF MIC. SILTY SANDY CLAY, MOIST

RED/PURPLE STIFF MIC. CLAYEY SANDY SILT, MOIST

Proj. Sample No.		SS-59	SS-60
Passing #10 Sieve	%	100	100
Passing #40 Sieve	%	86	84
Passing #200 Sieve	%	60	57
Coarse Sand Ret - #60	%	23.0	24.4
Fine Sand Ret - #270	%	21.8	28.9
Silt 0.05 - 0.005 mm	%	22.8	30.5
Clay < 0.005 mm	%	32.3	16.2
L. L.		62	46
P. I.		18	4
AASHTO Classification		A-7-5(11)	A-5(3)
Station		165+28	165+28
OFFSET		70 RT	70 RT
ALIGNMENT		L	L
Depth (Ft)		4.60	9.60
	to	5.60	10.60

EXISTING GROUND
PROPOSED GRADE
PRO. LEFT DITCH
PRO. RIGHT DITCH

-Y20- REGENCY RD.

-Y20- STA.10+00
-Y13- STA.31+78.85
EL.840.85

BEGIN GRADE
-Y20- STA 10+36.48 =
-Y13- 31+84.72 (36.00' LT)
EL.840.66

PI = 10+76.37
EL = 840.45'
VC = 78'
K = 53
V = 40 MPH

(-)0.52%

(-)0.52%

END GRADE
-Y20- STA 11+20.00
EL.839.58

(-)2.0000%

-Y21- FERN BROOK DR.

-Y21- STA.10+00
-Y13- STA.17+14.18
EL.849.66

BEGIN GRADE
-Y21- STA 10+12.00 =
-Y13- 17+14.16 (12.00' LT)
EL.850.34

PI = 10+25.50
EL = 850.20'
VC = 27'
K = 3
V = 15 MPH

(+)4.00%

(-)1.00%

END GRADE
-Y21- STA 10+98.00
EL.843.68

(-)9.0000%

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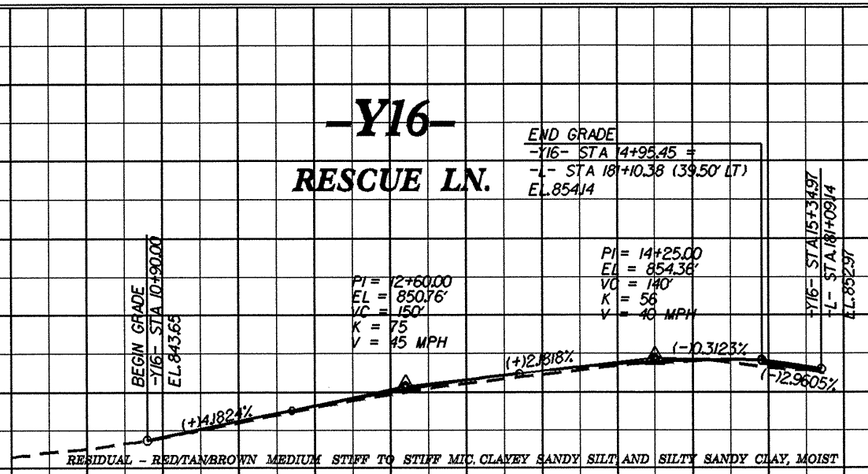
PROJECT REFERENCE NO.	SHEET NO.
R-3833A	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

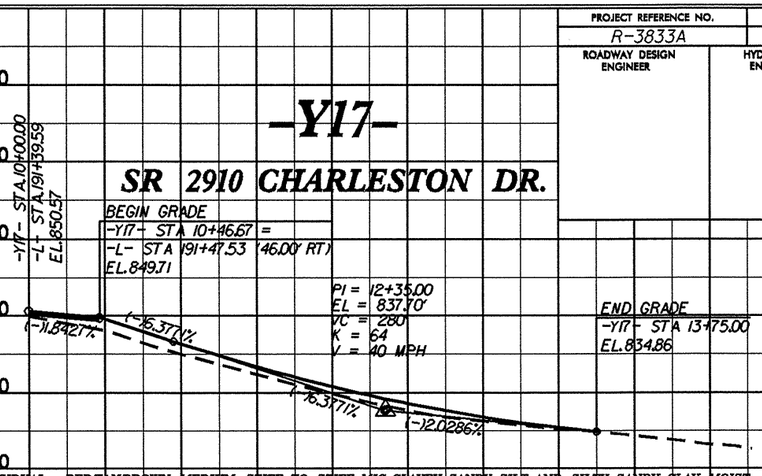
-Y16-

RESCUE LN.



-Y17-

SR 2910 CHARLESTON DR.



EXISTING GROUND

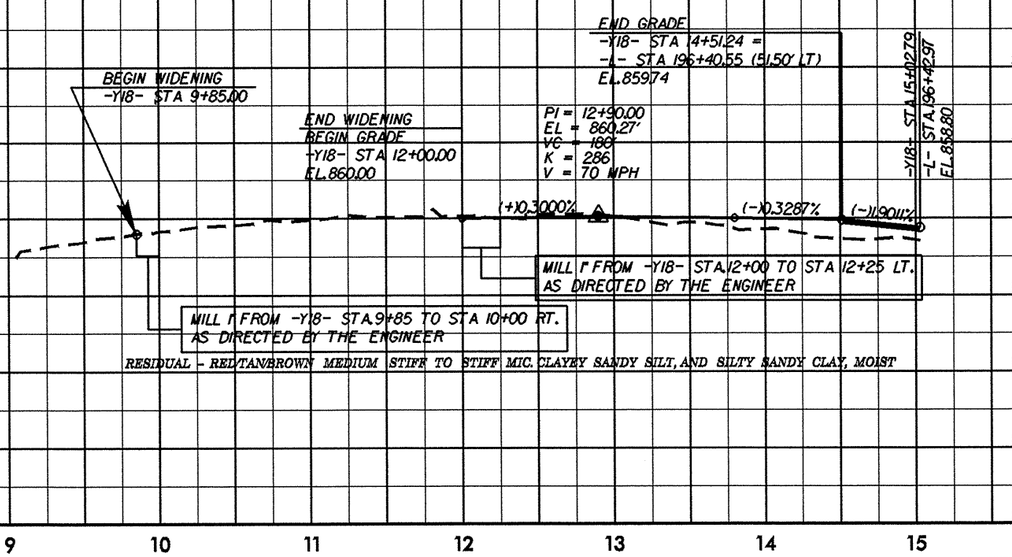
PROPOSED GRADE ——

PRO. LEFT DITCH

PRO. RIGHT DITCH

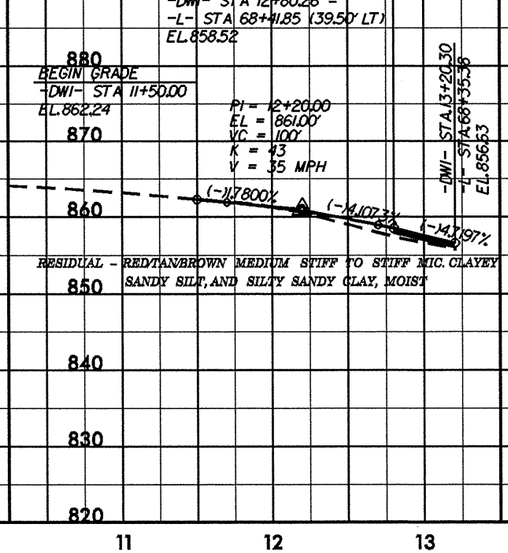
-Y18-

PLANTATION ESTATES



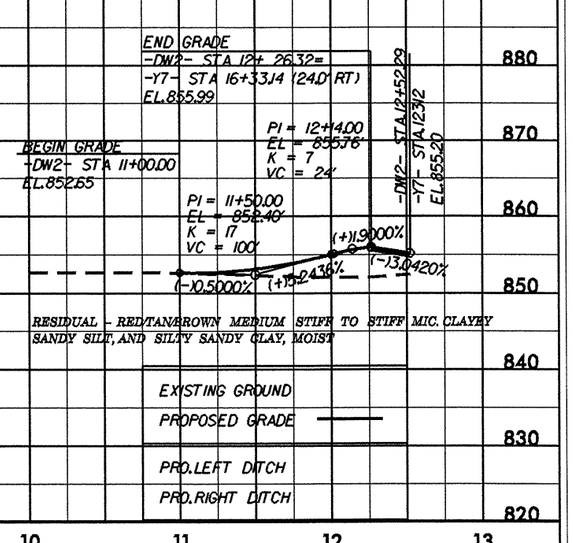
-DW1-

ISLAND FOREST LN.



-DW2-

EX. BRAWLEY SCH. RD.

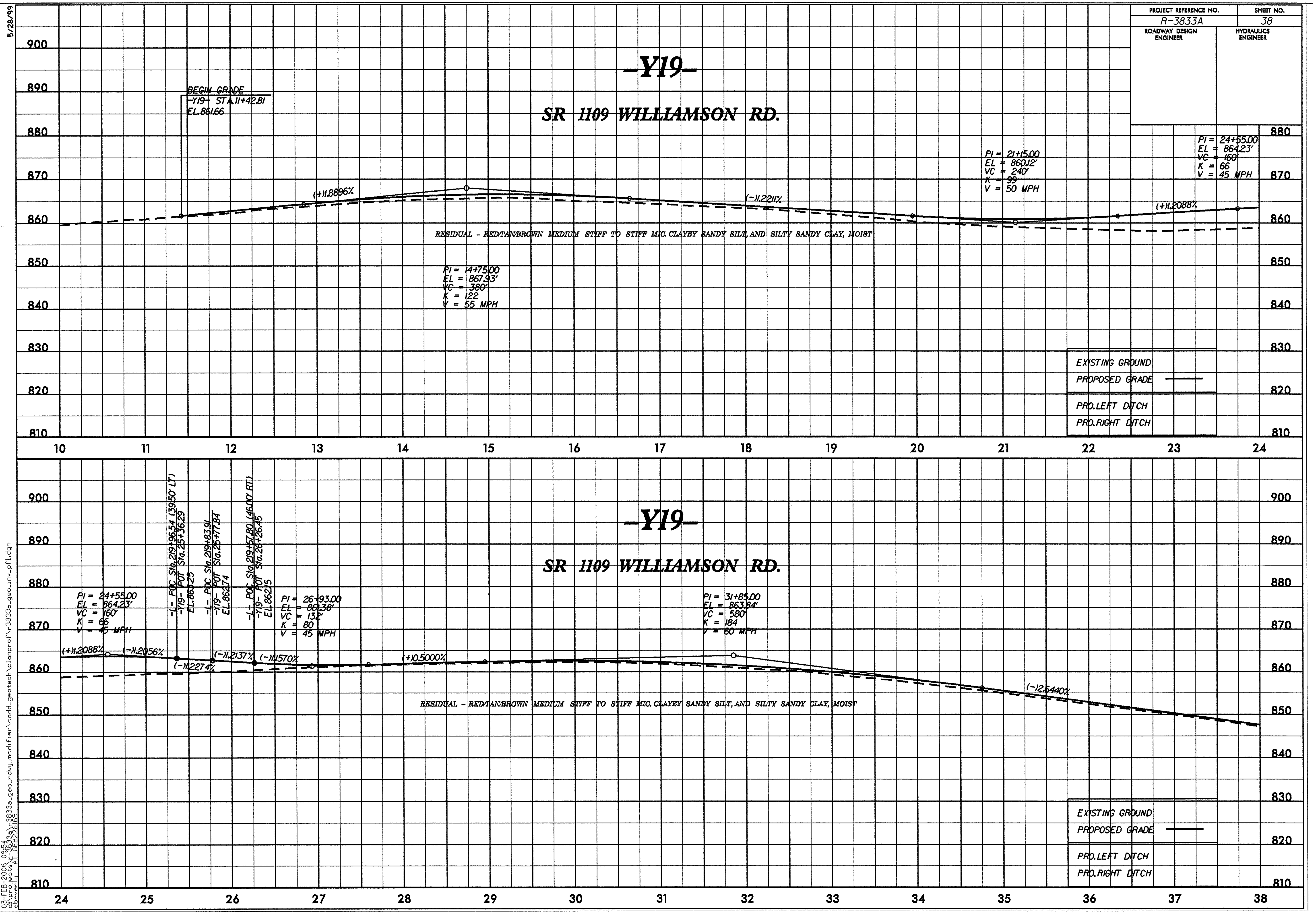


EXISTING GROUND

PROPOSED GRADE ——

PRO. LEFT DITCH

PRO. RIGHT DITCH


PROJECT REFERENCE NO.
R-3833A
SHEET NO.
38
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
5/28/99
-Y19-
SR 1109 WILLIAMSON RD.
BEGIN GRADE
-Y19- STA.11+42.81
EL.861.66
(+)1.8896%
(-)1.2211%
(+)1.2088%
PI = 14+75.00
EL = 867.93'
VC = 380'
K = 122
V = 55 MPH
PI = 21+15.00
EL = 860.12'
VC = 240'
K = 99
V = 50 MPH
PI = 24+55.00
EL = 864.23'
VC = 160'
K = 66
V = 45 MPH
RESIDUAL - RED/TAN/BROWN MEDIUM STIFF TO STIFF MIC. CLAYEY SANDY SILT, AND SILTY SANDY CLAY, MOIST
EXISTING GROUND
PROPOSED GRADE
PRO.LEFT DITCH
PRO.RIGHT DITCH
900
890
880
870
860
850
840
830
820
810
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
-Y19-
SR 1109 WILLIAMSON RD.
PI = 24+55.00
EL = 864.23'
VC = 160'
K = 66
V = 45 MPH
-L- POC Sta.219+96.54 (39.50' LT)
-Y19- POT Sta.25+36.29
EL.863.25
-L- POC Sta.219+83.91
-Y19- POT Sta.25+77.84
EL.862.74
-L- POC Sta.219+57.80 (46.00' RT)
-Y19- POT Sta.26+26.45
EL.862.15
PI = 26+93.00
EL = 861.38'
VC = 132'
K = 80
V = 45 MPH
(+)1.2088%
(-)1.2056%
(-)1.2274%
(-)1.2137%
(-)1.1570%
(+)0.5000%
PI = 31+85.00
EL = 863.84'
VC = 580'
K = 184
V = 60 MPH
(-)2.5440%
RESIDUAL - RED/TAN/BROWN MEDIUM STIFF TO STIFF MIC. CLAYEY SANDY SILT, AND SILTY SANDY CLAY, MOIST
EXISTING GROUND
PROPOSED GRADE
PRO.LEFT DITCH
PRO.RIGHT DITCH
900
890
880
870
860
850
840
830
820
810
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PROJECT REFERENCE NO.	SHEET NO.
R-3833A	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-Y19-

SR 1109 WILLIAMSON RD.

EXISTING GROUND

PROPOSED GRADE

PRO. LEFT DITCH

PRO. RIGHT DITCH

BEGIN SPECIAL CUT DITCH
-Y19- STA. 40+20 RT
EL = 835.89

-Y19- STA. 41+00 RT
EL = 835.55

END SPECIAL CUT DITCH

END GRADE
-Y19- STA 46+50
EL. 824.84

PI = 45+50.00
EL = 827.75
VC = 150'
K = 555
V > 80 MPH

(-)0.425%
(-)2.60
(-)2.6440%
(-)14.125%
(-)12.9140%
(-)1.97%
(-)14.48%
L=200'

-Y19- STA. 48+05 RT
EL = 815.96

END LAT. BASE DITCH
-Y19- STA. 49+25 18.5' RT
EL = 807.00

RESIDUAL - RED TAN/BROWN MEDIUM STIFF TO STIFF MIC. CLAYEY SANDY SILT, AND SILTY SANDY CLAY, MOIST

880 870 860 850 840 830 820 810 800 790

38 39 40 41 42 43 44 45 46 47 48 49 50

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