



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 11, 2012

MEMORANDUM TO: Mr. Michael Pettyjohn, PE
Division 11 Engineer

FROM: Philip S. Harris, III, P.E., Unit Head
Natural Environment Unit
Project Development and Environmental Analysis Branch

SUBJECT: Watauga and Caldwell Counties, Widening of US 321 from SR
1500 (Blackberry Road) to US 221 at Blowing Rock; State Project
No. 6.739001T; NCDOT Division 11; WBS Element No.
34402.2.6; TIP No. R-2237C.

E. L. Justice

Attached are the modifications to the U.S. Army Corps of Engineers Section 404 Individual Permit and the N.C. Division of Water Quality Section 401 Water Quality Certification for the above referenced project. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at:
<http://www.ncdot.gov/doh/preconstruct/pe/neu/permit.html>

Cc: w/o attachment (see website for attachments):

Mr. Heath Slaughter, Division Environmental Officer
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design Unit
Mr. Dewayne Sykes, P.E. Utilities Unit
Dr. David Chang, P.E., Hydraulics Unit
Mr. Art McMillan, P.E., Highway Design Branch
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Ms. Jennifer Harris, P.E., PDEA Western Region Unit Head
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch

PROJECT COMMITMENTS

US 321 Improvements Project
From SR 1500 (Blackberry Road) to US 221
Blowing Rock
Caldwell and Watauga Counties
State Project No. 6.739001T
WBS 34402.1.1
TIP Project R-2237C

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Roadway Design

Plan Review. NCDOT will provide preliminary roadway design plans at approximately 25 percent, 50 percent, and 80 percent of completion to the Blowing Rock Town Board and the State Historic Preservation Officer (SHPO) for review and comment. A set at each of these stages of completion also will be placed in the Blowing Rock Town Library for public review and comment.

Guardrail. Where guardrail is required, the NCDOT will install approved wooden-faced guardrail where it can be installed and meet safety requirements. If, during final design, locations are identified where wooden-faced guardrail cannot be installed, or where, in order to meet safety requirements, installation would cause an undesirable increase in project right of way to provide necessary roadside clear areas, the NCDOT will coordinate with the Town (and the SHPO within the Green Park Historic District) to find an acceptable guardrail alternative prior to finalizing the plans.

Lane Width. The width of lanes within the limits of the Green Park Historic District will be limited to 11-foot; 12-foot lanes will be constructed elsewhere along the project.

Current design plans reflect this.

Goforth Road. The NCDOT will terminate Goforth Road just east of US 321 rather than rebuild its intersection with US 321.

Current design plans reflect this.

Median. The NCDOT will not construct a median within the limits of the Green Park Historic District. The NCDOT will not construct a median between Green Hill Road and US 321 Business in order to narrow the footprint of the proposed improvement.

Current design plans reflect this.

Sidewalks. The NCDOT will provide a sidewalk, five feet in width, on the east side of US 321 from Green Hill Road to US 321 Business (which includes the part of the project within the historic district) so that the west side berm may be used for more concentrated landscaping. The NCDOT will fund and construct sidewalks on both sides of US 321 from US 321 Business to Possum Hollow Road. Pedestrian crossings (crosswalks and/or pedestrian signals) may be provided at signalized intersections.

Current design plans reflect this. Bring to the attention of the RTE (or appropriate party).

Emergency Vehicle Access. The NCDOT will rebuild the emergency vehicle access at The Pines (a residential subdivision), or replace it with something that will serve the same function. The goal is to insure that emergency vehicles can access the subdivision directly from US 321 since the neighborhood streets and turning radii are too narrow for emergency vehicles to navigate.

Current design plans reflect this. NCDOT will provide a driveway cut, a grassed slope flat enough for an emergency vehicle to drive up, and a replacement gate.

Fire/EMS Crossover. The NCDOT will provide an emergency crossover (with pavers that will allow grass to grow through them) at the planned Fire/EMS station (parcel no. 1504 on the Corridor Public Hearing Map). This crossover will permit volunteer fire fighters to turn left into the station and fire trucks to turn left out of the station. No signal of any kind will be provided at this location, but it will be signed for emergency use only.

Current design plans reflect this. Bring to the attention of the ATE (or appropriate party).

Retaining Wall to Reduce Wetland Impact. A retaining wall will be used to reduce the 0.07-acre impact on wetlands associated with jurisdictional crossing 2. The retaining wall will be included in the area of design stations 679+00 to 681+00. At the other locations where jurisdictional areas will be affected, the design depicted in the EIS minimizes impacts.

No retaining wall is proposed, and the entire wetland being counted as a take. Hydraulics and Roadway Design have discussed the changes in this area with the Merger Team at Concurrence Points 4B and 4C to everyone's satisfaction.

Highway Lighting. The NCDOT will not install highway lighting within the limits of the Green Park Historic District. If the Town wants highway lighting outside of the Green Park Historic District, the Town will purchase, install, and maintain the roadway lighting equipment of its choice. The NCDOT will reimburse the Town for the cost of said roadway lights. The NCDOT will coordinate with the Town to ensure American Association of State Highway and Transportation Officials' (AASHTO) lighting requirements are met. The NCDOT's Utility Agent will handle any right of way encroachment associated with Town lighting. If right of way and berm widths are not wide enough to accommodate poles outside the clear zone, breakaway poles will be required. Any breakaway or non-breakaway light poles will be placed behind the sidewalk.

Blue Ridge Electric Membership Corp will install wiring and bases for any pedestrian lighting desired by the Town of Blowing Rock. Blue Ridge will also install any roadway lighting desired by the Town. Blue Ridge is currently developing plans for both pedestrian lights and roadway

lighting for NCDOT review, and then subsequently for Town review. If lighting that meets DOT standards is too much for the Town, the Town may decide not to install.

Stone Walls. The NCDOT will replace all existing stone walls within the Town of Blowing Rock's limits (including the Green Park Historic District) removed by the undertaking with new in-kind stone walls. All other retaining walls along the undertaking within the town limits will be formed concrete walls with simulated masonry surface treatment. The surface treatment will be designed to resemble the existing stone walls in the historic district (e.g., the low wall in front of the Green Park Inn). The appearance of the surface treatment will be coordinated with the Town, and a sample of the surface treatment will be fabricated for the Town's and the SHPO's comment and the NCDOT's approval prior to permanent installation on the project.

Need to work out with contracting staff how best to put this in the contract documents. This would not be the first time this has been done. Contract office can write special provisions for the walls that do not get addressed by some other business unit (i.e. Geotechnical, Structure Design, etc.).

Blowing Rock Country Club Golf Course. The NCDOT will construct a retaining wall on the east side of US 321 at the Blowing Rock Country Club (Hole No. 4) in order to minimize impacts to the course.

Current design plans reflect this.

Tree Preservation. The NCDOT will make a special effort to preserve trees of particular value identified by the Town that are outside the clear recovery area. Any trees within 14 feet of the face of curb would need to meet the NCDOT guidelines for plantings before they could be preserved.

The Town has to date not identified what trees have particular value. The minutes from the December 2007 meeting gave the Town till May 9, 2008 to do this. On August 24, 2010, the Town further indicated they did not have concerns about any particular trees. The Blowing Rock Country Club has asked that we preserve the trees alongside the course where it borders the project.

Traffic Engineering Branch

Plan Review. NCDOT will provide preliminary traffic control plans, preliminary pavement marking plans, and preliminary signing plans to the Blowing Rock Town Board and the SHPO for review and comment. A set will also be placed in the Blowing Rock Town Library for public review and comment.

The TCP/TMP will be completed for the October 2010 PLFI. The TCP/TMP will utilize temporary pavement, temporary shoring and temporary barrier/guardrail during construction, so that the majority of the project can be constructed away from traffic. However, flagging operations, lane closures, off-site detours and stopping traffic (15 minutes or less) will be utilized as required during construction.

(update 5-17-11): TMP has been completed and we are waiting for Temporary Shoring Data to insert into TMP and Roadway Construction Quantities to determine ICTs.

Signal Poles. NCDOT will use standard mast-arm signal poles for traffic signals, including the one(s) proposed in the Green Park Historic District. If the Town of Blowing chooses a decorative mast arm pole that exceeds the cost of the NCDOT-standard mast-arm pole, then the Town will pay the incremental cost difference.

Coordinated Signal System. The NCDOT will design and install a coordinated traffic signal system as part of the undertaking.

The ITS Signals Communications Squad (Neil Avery) will have our plans turned in on schedule. The Division has agreed to use wireless communications to interconnect the signals on this project. We are scheduled to do our radio field tests week of 10-18-10.

Fog Safety Study. The NCDOT will evaluate flashing warning lights, pavement markers, rumble strips and/or stripes, delineation, warning signs, and/or lighting that would be appropriate to increase safety and improve driver behavior during fog occurrences. The plans submitted by the NCDOT to the SHPO and the Town for review will show the results of the NCDOT's evaluation and the resulting recommendations.

Signs. The Town will identify locations where proposed signs may create an aesthetic concern. The NCDOT will coordinate with the Town to establish the number, size, and placement of signs to the degree that the *Manual on Uniform Traffic Control Devices* allows.

Restriction of Traffic Detours from US 321 to US 321 Business (Main Street). If a decision is made to restrict traffic detours on this stretch of Main Street, it must be carefully articulated in the contractor documents (bid package). The NCDOT will discuss this matter with the Town of Blowing Rock during final design development to decide on appropriate restrictions to include.

Update (5-17-2011): The project has been divided into two Areas. Area I is from just south of the intersection of US 321 & US 321 Bus to the end of the project. Area II is from that intersection south to the beginning of the project. Lane Closure Time Restrictions (including Holidays/Special Events), Blasting Times and off-site detours for both blasting and -Y- line constructions was discussed with representatives of the Town of Blowing Rock & Division 11 on 10-19-2010 and with the Division at the PLFI on 4-24-2011 (Note: The Town of Blowing Rock representatives elected not to attend the TMP review).

The revised times for Blasting are as follows:

Area I & II - Tuesday & Thursday between 11:00 am to 3:00 pm.

Area II, from beginning of project to the Green Park Historic District (approximately Sta. 400+00 +/- -L-) – Either Monday or Wednesday (limited to one day per week) between 7:00 pm to 5:00 am the next morning.

There may be other times that portions of US 321 Bus will temporary be utilized as an off-site detour to construct proposed Sunset Dr. (-Y13-) and West Cornish Dr. (-Y14-).

Note: The off-site restrictions/durations will have Liquidated Damages associated with each operation.

Speed Limit. The speed limit within the Green Park Historic District will be posted 35 mph after construction of the Preferred Alternative.

The default speed limit in the Town Limits is 35 mph, barring any petition from the Town for something higher. The design speed for the entire project is 40 mph, with some design exceptions. The current NCDOT recommendation is to continue the 35 mph speed limit south of the Town Limits to the project terminus at Blackberry Road.

Roadside Environmental Unit

Plan Review. NCDOT will provide preliminary post-construction landscape design plans and preliminary sedimentation and erosion control plans to the Blowing Rock Town Board and the SHPO for review and comment. A set of each will also be placed in the Blowing Rock Town Library for public review and comment.

Jeff Lackey ok with this as of 9/3/10. Town said no need to send erosion and sedimentation control plans for review in a Dec 2010 email.

Post Construction Landscape Plan. The NCDOT will design and implement a post-construction landscape plan that will include the following elements:

- A median on US 321 from US 321 Business to the project terminus at Possum Hollow Road. The median will either be vegetated or decorative concrete (the Town's choice). If the median is vegetated, it will be planted with vegetation of the NCDOT's choosing that is both cold-hardy and salt-hardy where safety conditions allow. If the median is to be decorative concrete, then the aesthetic details will be coordinated with the Town, and a sample will be fabricated for the Town's review and comment and the NCDOT's approval prior to permanent installation on the project.
- Decorative pedestrian lights (i.e., "coach" lights), the style of which is to be agreed to by the Town, the SHPO, and the NCDOT, at selected locations within the Town limits. All decorative pedestrian light locations within the NCDOT right of way (e.g., in areas of more concentrated landscaping) must be approved the Special Design Section of the NCDOT's Roadway Design Unit. The NCDOT will pay for the lighting equipment and installation, and the NCDOT will install the lights as part of the landscape plan implementation. The NCDOT may choose to do a two-phase post-construction landscape implementation. The first phase would be the hardscape elements, which would include pedestrian lights, to be overseen by the Resident Engineer. The second phase would be the landscape design and development, which would be overseen by the Roadside Environmental Unit. The Town will assume ownership of the lights and will pay for utility (electricity) costs.
- Broader areas of more concentrated landscaping where right of way, roadway elements, terrain, and safety conditions allow.
- Plantings planned in accordance with the NCDOT's *Guidelines for Planting within Highway Right-of-Way*.
- Design and construction of a park on Business/Main Street at US 321 (near Shoppes on the Parkway). The park construction will be part of the landscape contract, which will be

awarded to a landscape contractor after the roadway construction contract is complete. The NCDOT will convey its interest in this property to the Town, and the Town will assume maintenance for the park.

- The blueberry bushes near Rock Road will be relocated or replaced if they are in the right of way of the Preferred Alternative.

MEDIAN TREATMENT: Town has not yet indicated their desire. Closure needs to be reached. Jeff Lackey is coordinating with the Town.

PEDESTRIAN LIGHTS: For pedestrian lights proposed along the project, Blue Ridge Electric Membership Corps will install the wiring and boxes for these prior to project construction. BREMCO's engineer is preparing pedestrian light plans now. NCDOT will review the plans, and once NCDOT approves, the Town will review the plans. If the Town wants different lighting levels, etc., than what the plans specify, NCDOT, the Town, and BREMCO will discuss. BREMCO's engineer will need to identify areas where pedestrian lights are proposed adjacent to retaining walls. There may not be enough room in those areas for the light bases.

Utilities Coordination Unit

Utilities. The NCDOT will place existing overhead utility lines (electrical, telephone, and cable television) underground between Green Hill Road and Possum Hollow Road.

Blue Ridge Electric Membership Corps will place the overhead utilities underground. NCDOT will reimburse for the cost of relocating the utilities. Coordination between the Town, Blue Ridge, and NCDOT is currently underway.

Division 11

Unanticipated Discovery of Archaeological Resources. In accordance with Title 36 of the *Code of Federal Regulations*, Section 800.11(a), and prior to initiation of construction activities, the NCDOT will ensure preparation of a plan of action should archaeological or architectural resources be inadvertently or accidentally discovered during the construction phase of the project. The plan will provide for an assessment of the significance of the discovery in consultation amongst the NCDOT, the USACE, and the SHPO. Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

Blasting. The NCDOT and the contractor will limit blasting to specific times. Those times will be posted on the aforementioned project website. In addition, blasting activities will be announced to the media as to be outlined in the PIP.

Contract office can include Intermediate Contract Time special provision to limit the times during which the contractor can blast. Posting to the project website and announcement to the media will be the Divisions (Resident Engineer) responsibility.

Dust Minimization. The NCDOT and the contractor will utilize a truck to periodically spray water on dry, exposed soil to control dust to the greatest extent possible.

Article 107-13(E) of the 2006 NCDOT Standard Specifications (page 1-66) requires the contractor to control dust on all projects so this should already be covered.

Reseeding Exposed Dirt. In accordance with the NCDOT's Best Management Practices for Protection of Surface Waters, the NCDOT and the contractor will seed exposed soil with grass in order to control run-off, erosion, and dust.

This is a standard practice and should be handled by Roadside Environmental Unit

Covered Truck Beds. The NCDOT will require all construction trucks traveling at speeds greater than 25 mph to cover their truck beds in order to reduce the amount of dust and debris.

Contract Office will include a provision to address this.

Staging Areas. The NCDOT will not permit staging areas within the Green Park Historic District. The NCDOT may permit overnight parking of equipment and storage of materials, associated with current construction needs, within the construction right-of-way limits along any part of the project corridor.

Contract Office will include a provision telling the contractor that staging areas are not permitted in the Historic District. Division personnel (Resident Engineer) will need to address with the Contractor where overnight parking may be permitted.

Waste Sites, Borrow Pits, and Construction Offices. The NCDOT will not permit waste deposits, borrow pits, or construction offices within the Green Park Historic District.

Contract Office will include a provision to address this.

Pre-Construction Surveys. The NCDOT will conduct pre-construction surveys of all structures adjacent to US 321 within the historic district to record a "before" condition so that any construction-related damage can be accurately identified.

Will be put in contract blasting provisions.

Contact with Resident Engineer. The NCDOT's construction project manager will be the Resident Engineer. He or she is the only individual with the authority to stop construction. Citizens may directly contact the Resident Engineer (and assistants) with questions or concerns so that the Resident Engineer can immediately address any project concerns.

Division will likely designate an individual through CEI contract to be the community liaison.

Construction Unit

"Smart Zone" Techniques. The NCDOT will use "Smart Zone" techniques in the maintenance of traffic during construction. These techniques may include methods such as advance notification of delays, lane closures, real time monitoring, and the use of Digital Message Systems. In

addition, the NCDOT will maintain a website that will provide information on anticipated delays based on scheduled construction activities.

Jesse Gilstrap will be POC for this item. The TCP/TMP will utilize CMS, DMS (if available), Advance Warning signs, detour signing, etc. during the construction of this project. Note: The last sentence will be covered under the Project Website commitment. (Jesse Gilstrap)

Public Information Plan. The NCDOT's Construction Unit IMPACT Public Information Program will work with the Town of Blowing Rock to develop an appropriate public information plan (PIP).

"Kick-Off" Meeting. As part of the PIP, the NCDOT will hold a pre-construction "kick-off" meeting to introduce the contractor and the construction process to area residents.

Project Website. The NCDOT will develop, maintain, and consistently update a project website to provide current information about the schedule and development of the project, project progress, project contact information, and notification of any anticipated delays based on scheduled construction activities.

See "Smart Zone Techniques" commitment.

Geotechnical Unit

Development of Vibration Monitoring Plan. The NCDOT will develop a vibration monitoring plan for the project, to include on-site research during final design as well as monitoring during construction. The recommendations of the plan will be provided to the USACE, the SHPO, the Town, and other parties concurring with the MOA for their comments prior to adoption of the plan.

Hired blasting expert.

Baseline Studies. On-site research, done prior to construction, will measure existing vibration exposure, determine sensitivity of nearby structures, and assign thresholds accordingly.

Hired blasting expert.

Vibration Monitoring. Vibration monitoring will be conducted on key structures within the historic district (to be recommended in the aforementioned vibration monitoring plan). When a reading exceeds an established threshold, an alarm will sound and anyone who hears it, e.g., property owners/staff or contractor personnel, will immediately contact the NCDOT's Resident Engineer.

Hired blasting expert.

Project Development and Environmental Analysis Branch

Historic Resources Documentation

Green Park Historic District. Prior to the initiation of construction activities, the NCDOT will record the existing conditions of the Green Park Historic District and its surroundings in accordance with the Historic Structures and Landscape Recordation Plan contained in the Appendix of the Memorandum of Agreement for the Preferred Alternative. This will include a video to document US 321 and the surrounding landscape and structures within the historic district, as well as keying the locations of the filming to an aerial photograph of the historic district adjacent to US 321.

The video recordation is complete. The filmed locations in the video have not yet been tied to a map; discussions about how to practically achieve this are underway.

Individual Structures. Prior to the initiation of construction activities, the NCDOT will record the existing conditions of the following structures and their immediate surroundings in accordance with the Historic Structures and Landscape Recordation Plan. The structures are: the Green Park Inn, Cottage No. 21 (as referred to in the 1994 National Register Nomination), and the A.G. Jonas Cottage.

The recordation of the individual structures is complete.

Existing Stone Walls. Prior to the initiation of construction activities, the NCDOT will record the existing stone walls along US 321 within the historic district. The NCDOT will replace all existing stone walls within the town limits removed by the project with new in-kind stone walls.

The recordation of the stone walls is complete.

Blowing Rock Country Club Golf Course Hole Number 4. Prior to the initiation of construction activities, the NCDOT will record the existing conditions of hole number 4 in accordance with the Historic Structures and Landscape Recordation Plan.

Blowing Rock Country Club Golf course Hole Number 4 has been recorded and the photos have been delivered to SHPO. Video should be completed by the end of July 2011.

Other Mitigation at Individual Properties

Green Park Inn. The NCDOT, in consultation with SHPO and the property owners, will develop measures to reduce the Adverse Effect of the undertaking on the Green Park Inn. These measures may include, but are not limited to the following:

- Replacement of the existing stone walls;
- Replacement of the existing sidewalk;
- Reconfiguration of the existing parking lot;
- Sound abatement/buffering; and/or
- Landscaping.

The new owner has contacted Mary Pope Furr / HEU, and she provided him the MOA, the MOU, and some key contacts. He has not followed up. Per Mary Pope, the burden is on the property owner to approach us about additional mitigation that may be needed.

A.G. Jonas Cottage. The NCDOT, in consultation with SHPO and the property owners, will develop measures to reduce the Adverse Effect of the undertaking on the A.G. Jonas Cottage. These measures may include, but are not limited to the following:

- Construction of a retaining wall;
- Construction of a privacy fence;
- Sound abatement/buffering; and/or
- Landscaping.

Being worked out (some) as part of ROW negotiations. Fence or no fence still being worked out. Retaining wall is in.

Cottage No.21 (as referred to in the 1994 National Register Nomination). In the event that this property is not determined to be a relocation in the final design, the NCDOT, in consultation with the SHPO, and the property owners, will develop measures to reduce the adverse effect of the undertaking on Cottage No.21. These measures may include, but are not limited to the following:

- Providing alternative access to the property;
- Construction of a retaining wall; and/or
- Landscaping.

Cottage No. 21 is a relocation.

Bollinger-Hartley House. The NCDOT will construct a retaining wall at the Bollinger-Hartley House to minimize the project's impact on that property. Landscaping on the Bollinger-Hartley House property will be discussed with the SHPO and the property owners and will be included in the post-construction landscape plan.

Retaining wall is in Design Plans.

Issue Resolution

Dispute Resolution Related to the Memorandum of Agreement. Should the North Carolina SHPO object within (30) days to any plans or documentation provided for review pursuant to the Section 106 Memorandum of Agreement, the NCDOT will consult with the SHPO to resolve the objection. If the USACE or the SHPO determines that the objection cannot be resolved, the USACE will forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

- Provide the USACE with recommendations that the USACE will take into account in reaching a final decision regarding the dispute, or
- Notify the USACE that it will comment pursuant to Title 36 of the *Code of Federal Regulations*, Section 800.7(c) and proceed to comment. Any Council comment provided in

response to such a request will be taken into account by the USACE in accordance with Title 36 of the Code of *Federal Regulations*, Section 800.7 (c) (4) with reference to the subject of the dispute.

Issue Resolution Related to the Memorandum of Understanding. The NCDOT and the Town recognize that engineering constraints may arise and engineering standards may change between the date of the MOU and the time of project completion. Should an engineering issue arise that complicates the fulfillment of any of the measures contained in the MOU, the NCDOT will initiate discussions with the Town to resolve the issue.

Stream Construction Moratoriums

During final design, NCDOT will coordinate with the North Carolina Wildlife Resources Commission on moratoriums for in-stream construction activities and land disturbance within 25 feet of trout and bass waters.

A condition for a trout moratorium is included in the "Comments From Permitting" section of this Greensheet.

COMMITMENTS FROM PERMITTING

Division 11 Construction Unit / Roadside Environmental Unit

The permittee shall use Design Standards for Sensitive Watersheds [15A NCAC 4B.0124(a)-(e)] in areas draining to Tr waters. However, due to the size of the project, NCDOT shall not be required to meet 15A NCAC 4B.0124(a) regarding the maximum amount of uncovered acres. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover shall be planted on all bare soil within 15 business days of ground disturbing activities to provide erosion control.

All channel relocations will be constructed in a dry work area and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized, and must be approved on site by NCDWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. All stream banks shall be matted with coir fiber matting. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Note: Regarding this condition (the 401 Water Quality Certification Condition #6), pursuant to an e.mail dated March 18, 2011, from Amy Euliss with the NCDWQ (attached), a 50-foot buffer is not a requirement on the stream relocations for R-2237C.

For the 283 linear feet of streams being-impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native vegetation.

The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability.

At Sites 1, 2, 6, 10, and 11, pipe burial is not required. For all other sites, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambanks or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. **If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.**

To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.

All conditions of the attached October 18, 2010, North Carolina Wildlife Resources Commission Letter are included as commitments for this project including Conditions 1 & 2 which state, respectively: "Sediment and erosion control measures shall adhere to the Design Standards for Sensitive Watersheds and be strictly maintained until project completion"; and "In-stream work and land disturbance within the 25-foot wide buffer zone are prohibited during the trout spawning seasons of October 15 through April 15 to protect the egg and fry stages of trout".

Division 11 Construction Unit & HEU

NCDOT shall abide by all stipulations identified in the Memorandum of Agreement between the United States Army Corp of Engineers and the North Carolina State Historic Preservation Officer, executed 15 November 2004, copy attached and identified as Exhibit C.

If the permittee discovers any previously unknown historic or archaeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Corp of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager who will initiate the required State/Federal coordination.

Natural Environment Unit

~~Compensatory mitigation for the unavoidable impacts to 1,646 linear feet of stream and 0.10 acre of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated November 23, 2010, from William D. Gilmore, EEP Director. Pursuant to the In Lieu Fee Instrument signed July 28, 2010,~~

~~between the State of North Carolina, EEP and the US Army Corps of Engineers, the EEP will provide 1,910 linear feet of restoration equivalent cold water stream channel and 0.26 acre of riparian wetland restoration equivalent in the Yadkin River basin (Hydrologic Cataloging Unit 03040101); and 1,250 linear feet of restoration equivalent cold water stream channel and 0.12 acre of riparian wetland restoration equivalent in the New River basin (Hydrologic Cataloging Unit 05050001) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.~~

COMMITMENTS FROM PERMIT MODIFICATION

Division 11 & Construction Unit

All work authorized by this permit must be performed in strict compliance with the attached plans, Exhibit B, and Exhibit F, which are part of this permit. These plans reflect the original proposal, Exhibit B; and the modification request of June 18, 2012, as shown in Exhibit F. Only the attached modification plans reflect approved changes to the original plans, therefore any additional deviations from the original plans are not approved per this modification and any further modification to the plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

Natural Environment Section

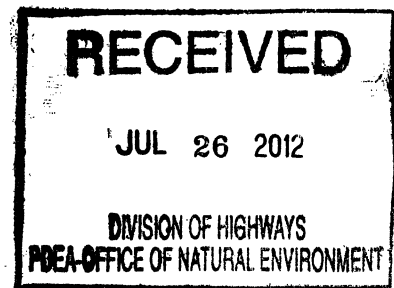
Compensatory mitigation for the unavoidable impacts to 1,691 linear feet of stream and 0.19 acre of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated November 23, 2010, from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, EEP and the US Army Corps of Engineers, the EEP will provide 1,910 linear feet of restoration equivalent cold water stream channel and 0.26 acre of riparian wetland restoration equivalent in the Yadkin River basin (Hydrologic Cataloging Unit 03040101); and **1,340 linear feet of restoration equivalent cold water stream channel** and 0.12 acre of riparian wetland restoration equivalent in the New River basin (Hydrologic Cataloging Unit 05050001) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

July 24, 2012



Regulatory Division/1145

Action ID: SAW-2002-31262

Dr. Gregory J. Thorpe, Ph.D.
Planning and Environmental Branch
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, NC 27699-1598

Dear Dr. Thorpe:

Reference the Department of the Army (DA) permit issued on May 26, 2011 which authorized the placement of fill material into 1,646 linear feet of streams and 0.19 acres of wetlands. Additional temporary impacts to 283 linear feet of streams were also authorized to facilitate the widening and improving of US 321 between SR 1500, Blackberry Road, and US 221 at Blowing Rock in Watauga and Caldwell Counties, North Carolina. This project was identified as TIP R-2237C.

Reference is also made to your letter dated June 18, 2012, requesting a modification to the aquatic impacts, plans, and subsequent compensatory mitigation at Site #XII within your DA permit. You have requested a total increase in permanent impacts of 45 linear feet of stream channel and 0.01-acre of wetland. In addition, this proposal contains a decrease in temporary stream impacts resulting in a total of 21 linear feet at Site #XII. Modified plans for this site were attached to your June 18, 2012, letter.

We have completed our evaluation of your request and concur with your request for a change in impacts, plans, and mitigation associated with your referenced DA permit. Please note that "*Special Condition, b*" of your permit is modified to read:

All work authorized by this permit must be performed in strict compliance with the attached plans, Exhibit B, and Exhibit F which are part of this permit. These plans reflect the original proposal, Exhibit B; and the modification request of June 18, 2012, as shown in Exhibit F. Only the attached modification plans reflect approved changes to the original plans, therefore any additional deviations from the original plans are not approved per this modification and any further modification to the plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

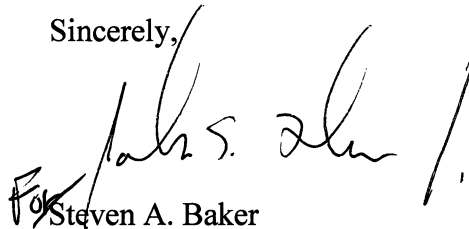
In addition, please note that "*Special Condition, f*" of your permit is modified to read:

Compensatory mitigation for the unavoidable impacts to ~~1,646~~ ^{1,691} linear feet of stream and 0.19 acre of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letters dated November 23, 2010, and June 7, 2012, from William D. Gilmore, EEP Director and Michael Ellison, EEP Deputy Director, respectively. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 1,910 linear feet of restoration equivalent cold water stream channel and 0.26 acre of riparian wetland restoration equivalent in the Yadkin River basin (Hydrologic Cataloging Unit 03040101); and 1,340 linear feet of restoration equivalent cold water stream channel and 0.12 acre of riparian wetland restoration equivalent in the New River Basin (Hydrologic Cataloging Unit 05050001) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

1,691 (see attached e-mail, dated 8-2-12)
MS

It is understood that all other conditions of the permit, including the permit expiration date, remain applicable. Should you have questions, contact Mr. Monte Matthews, Raleigh Regulatory Field Office at telephone (919) 554-4884, Extension 30.

Sincerely,



Steven A. Baker
Colonel, U.S. Army
District Commander

Enclosures

Copy Furnished w/enclosures:

Mr. Heath Slaughter
NCDOT, Division 11
Post Office Box 250
North Wilkesboro, NC 28659

Copy Furnished w/o enclosures:

Ms. Amy Euliss
North Carolina Department of
Environmental and Natural Resources
585 Waughtown Street
Winston-Salem, NC 27107

Barrett, William A

From: Matthews, Monte K SAW <Monte.K.Matthews@usace.army.mil>
Sent: Thursday, August 02, 2012 3:07 PM
To: Barrett, William A
Cc: Matthews, Monte K SAW
Subject: RE: R-2237C (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hello Bill;

Since this condition pertains only to the amount of mitigation NCEEP needs to provide, I'm not overly concerned that the impact amount didn't change by the amount of increase shown within the modification request (increased from 1,646 lf to 1,691 lf). As long as this condition properly reflects the appropriate mitigation amount we are good.

The other items in the modification letter pertain to the increase in impacts and changes to the plans and were approved as requested.

I'll place this email in the file to track this discussion.

Monte Matthews
Regulatory Project Manager
US Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
919-554-4884 x 30

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at <http://per2.nwp.usace.army.mil/survey.html> to complete the survey online.

-----Original Message-----

From: Barrett, William A [mailto:wabarrett@ncdot.gov]
Sent: Thursday, August 02, 2012 2:38 PM
To: Matthews, Monte K SAW
Subject: R-2237C

Monte,

I left you a voice message to give me a call to discuss "Special Condition f" in the Permit Modification recently issued for R-2237C. To give you a summary of the item to discuss, I offering the following:

It appears that the linear feet of unavoidable impacts was not changed in the condition, as it still lists "1,646" that was in the condition in the original permit (1st sentence of condition). With the additional impacts at Site XII, the total impacts

have increased from 1,646 lf to 1,691 lf. So, I'm wondering how best to deal with that. Additionally, the total amount of stream impact that requires mitigation is 1,625 lf.

Because we are not mitigating for all of the permanent impacts, I'm thinking the 1st sentence may be better expressed as something like:

Compensatory mitigation for the unavoidable impacts to ~~1,640~~ 1,625 linear feet of stream (of the 1,691 total linear feet of unavoidable stream impacts) and 0.19 acre of riparian wetland impact.....

That way, when adding up the numbers further down in the condition, it makes sense that they don't add up to 2X the total impact, but do correctly add up to 2X the amount of impacts that require mitigation. Does that make sense?

Let me know what you think of the suggestion and how best to proceed.

THANKS

Bill

When one tugs at a single thing in nature, he finds it attached to the rest of the world. - John Muir

William A. Barrett
Environmental Program Consultant
N.C. Department of Transportation
PDEA - Natural Environment Section
phone: 919-707-6103
e.mail: wabarrett@ncdot.gov <<mailto:wabarrett@ncdot.gov>>

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

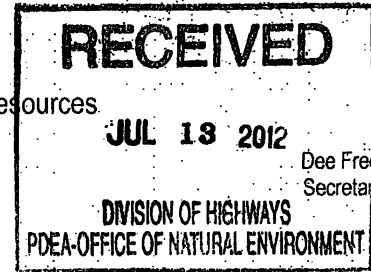


North Carolina Department of Environment and Natural Resources

Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

July 10, 2012



Dee Freeman
Secretary

Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed widening of US 321 from 1500 Blackberry Road to US221 at Blowing Rock in Watauga County, State Project No. 6.739001T, WBS Element No. 34402.2.2, TIP No. R-2237C, NCDWQ Project No. 2010-0752 v. 2

Dear Dr. Thorpe:

Attached hereto is a modification of Certification No. 3852 issued to The North Carolina Department of Transportation (NCDOT) dated September 3, 2010, and revised on February 23, 2011.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Charles Wakild
Director

Attachments

cc: Monte Matthews, US Army Corps of Engineers, Raleigh Field Office (electronic copy only)
Heath Slaughter, Division 11 Environmental Officer (electronic copy only)
Marla Chambers, NC Wildlife Resources Commission (electronic copy only)
Beth Harmon, Ecosystem Enhancement Program (electronic copy only)
Wetlands/ 401 Transportation Permitting Unit
File Copy

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6488
Internet: www.ncwaterquality.org

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One
North Carolina
Naturally

**Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act
with ADDITIONAL CONDITIONS**

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to permanently impact an additional 45 linear feet of stream, reduce temporary impacts by 24 linear feet, and temporarily impact an additional 0.01 acres of wetlands in Watauga County. The project shall be constructed pursuant to the modification dated received June 26, 2012 with updated plans received electronically on July 10, 2012. The authorized impacts are as described below:

Stream Impacts in the New River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
Original approved impacts at Site 11				45	45	0
New revised impacts with this approval at Site 11			45	21	66	0
Total revised impacts			45	21	66	0

Total Revised Stream Impacts for Site 11: 66 linear feet

Wetland Impacts in the New River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
Original approved impacts at Site 12		0					0
New revised impacts with this approval at Site 12		0.01					0.01
Total revised impacts		0.01					0.01

Total Revised Wetland Impacts for Site 11: 0.01 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the **New River Basin** in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your modified application dated received June 26, 2012 with additional information dated received July 10, 2012. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated June 26, 2012, and July 10, 2012 still apply except where superceded by this certification. Should your project change, you are required to notify NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

1. This modification is applicable only to the additional proposed activities. All of the authorized activities and conditions of certification associated with the original Water Quality Certification dated March 9, 2011 and revised May 5, 2011 still apply except where superceded by this certification.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.

The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-431-3000, Facsimile: (919)-431-3100

A copy of the petition must also be served on DENR as follows:

Mr. William Cary, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 10th day of July 2012

DIVISION OF WATER QUALITY



for Charles Wakild
Director



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Charles Wakild, P.E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

NCDWQ Project No.: _____ County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to NCDWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6488
Internet: www.ncwaterquality.org





June 7, 2012

Mr. Gregory J. Thorpe, Ph.D.
 Environmental Management Director
 Project Development and Environmental Analysis Unit
 North Carolina Department of Transportation
 1548 Mail Service Center
 Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-2237C, US 321 from SR 1500 (Blackberry Road) to US 221 at Blowing Rock, Watauga and Caldwell Counties

References: USACE 404 Individual Permit issued May 25, 2011 (USACE Action ID 2002-31262)

NCDWQ 401 Water Quality Certification issued March 9, 2011 with Correction issued May 26, 2011 (NCDWQ Project ID 2010-0752)

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the additional stream mitigation for the subject project. Based on the information supplied by you on June 1, 2012, the additional impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

Table 1 – Additional Impacts

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1 (3:1)	Zone 2 (1.5:1)
Impacts (feet/acres)	45	0	0	0	0	0	0	0

This impact and associated mitigation need were not projected by the NCDOT in the 2012 impact data. EEP is currently providing stream and riparian wetland for the impacts associated with this project located in New 05050001 and Yadkin 03040101 as required by the 404 and 401 permits that were issued in 2011, as shown in the below table (in mitigation credits):

Table 2 – Total Revised Impacts and Mitigation Credits Provided from EEP

Impact Type	Permitted Impacts	Mitigation Provided by EEP per Issued Permits (Credits)	Additional Impact (for approval)	Revised Total Impacts
New 05050001				
Stream	625	1,250	45.0 (Cold)	670
Riparian Wetland	0.06	0.12	0	0.06
Yadkin 03040101				
Stream	955	1,910	0	955
Riparian Wetland	0.13	0.26	0	0.13

EEP commits to providing the additional compensatory stream mitigation credits to offset all of the impacts located in the New River basin (CU 05050001) associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,



Michael Ellison
 EEP Deputy Director

Cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
 Mr. David Wainwright, NC Division of Water Quality – Wetlands/401 Unit
 File: R-2237C Additional

RECEIVED
 34402.1.1 FE
 34402.2.6 R/W
 JUN 02 2011
 RALEIGH REGULATORY FIELD OFFICE

DIVISION OF HIGHWAYS

CALDWELL & WATAUGA COUNTIES

LOCATION: US 321 FROM SR 1500 (BLACKBERRY ROAD)
 TO US 221 AT BLOWING ROCK

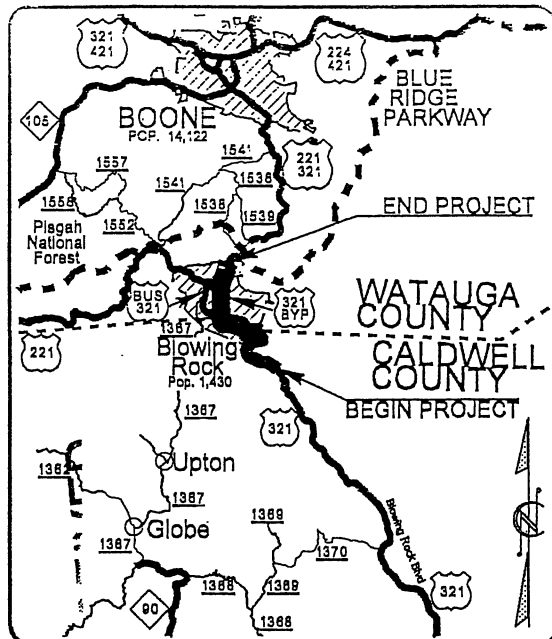
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT, RETAINING WALLS,
 AND SIGNALS

RECEIVED

OCT 18 2010

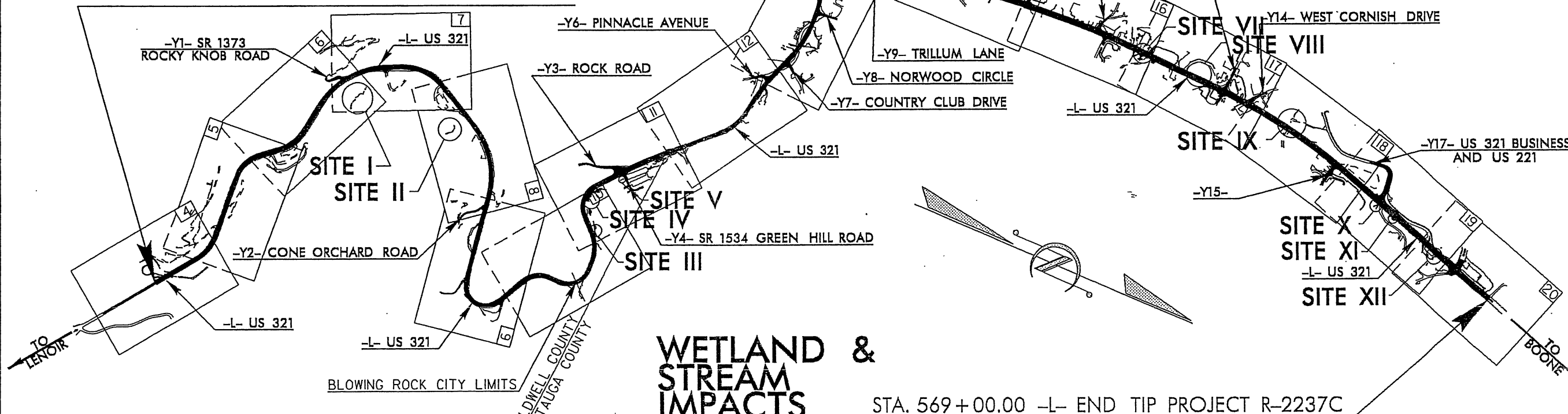
Regulatory Branch

EXHIBIT B



VICINITY MAP

STA. 356+50.00 -L- BEGIN TIP PROJECT R-2237C



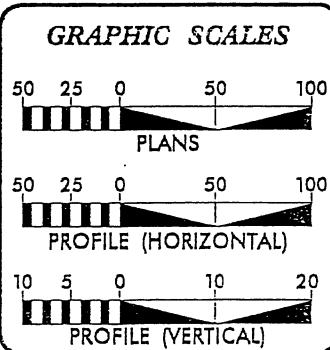
WETLAND & STREAM IMPACTS

STA. 569+00.00 -L- END TIP PROJECT R-2237C

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF BLOWING ROCK
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

CONTRACT: R-2237C



DESIGN DATA

ADT 2006 =	18,935
ADT 2025 =	27,450
DHV =	7 %
D =	60 %
T =	8 % *
V =	50 MPH
* TTST 3% + DUAL 5%	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2237C	=	4.025 MILES
TOTAL LENGTH OF TIP PROJECT R-2237C	=	4.025 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 JUNE 27, 2008

LETTING DATE:
 OCTOBER 19, 2010

G. E. BREW, PE
 PROJECT ENGINEER

W. T. BEST
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

SYSTEMS TIME\$\$\$\$\$
 DGN\$\$\$\$\$
 USERNAME\$\$\$\$\$

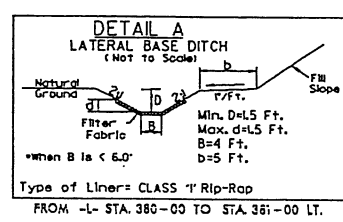
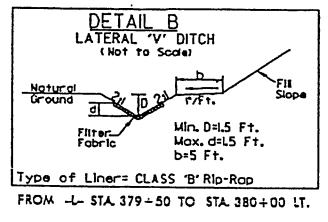
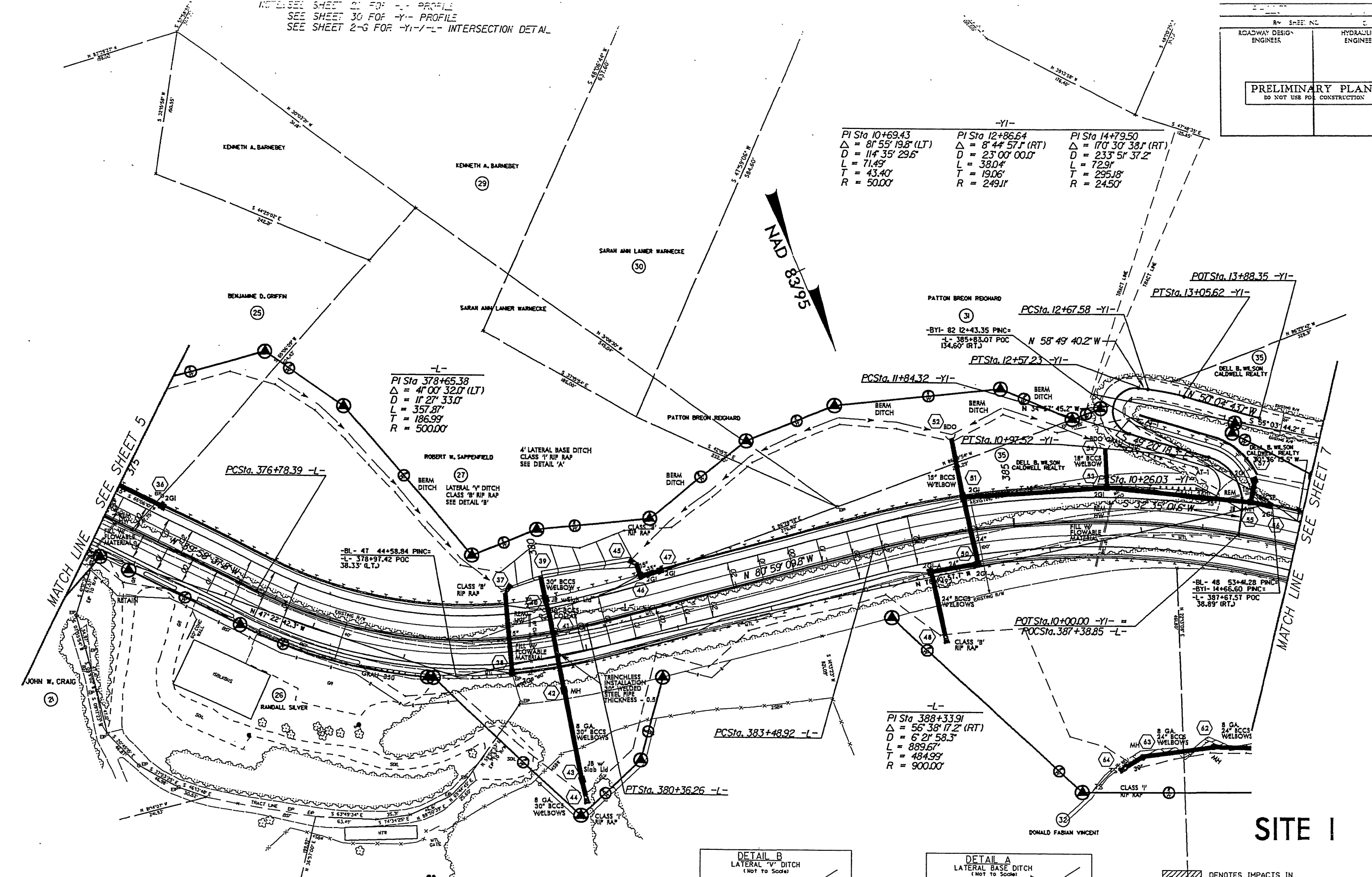
NOTE: SEE SHEET 2-G FOR -L- PROFILE
 SEE SHEET 3-G FOR -YI- PROFILE
 SEE SHEET 2-G FOR -YI-/-L- INTERSECTION DETAIL

R= SHEET: NC	C
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	

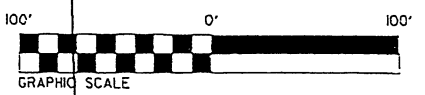
-YI-		
PI Sta 10+69.43 Δ = 81° 55' 19.8" (LT) D = 114' 35" 29.6" L = 71.49' T = 43.40' R = 500.00'	PI Sta 12+86.64 Δ = 8° 44' 57.1" (RT) D = 23' 00" 00.0" L = 38.04' T = 19.06' R = 249.11'	PI Sta 14+79.50 Δ = 170° 30' 38.1" (RT) D = 233' 51" 37.2" L = 72.91' T = 295.18' R = 2450'

-L-	
PI Sta 378+65.38 Δ = 41° 00' 32.0" (LT) D = 11' 27" 33.0" L = 357.87' T = 186.99' R = 500.00'	

-L-	
PI Sta 388+33.91 Δ = 56° 38' 17.2" (RT) D = 6' 21" 58.3" L = 889.67' T = 484.99' R = 900.00'	



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS

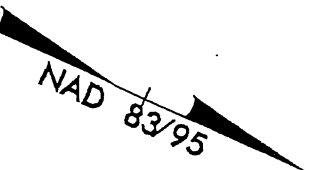
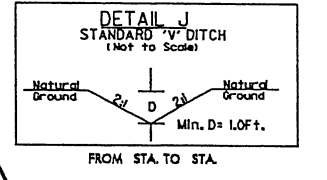
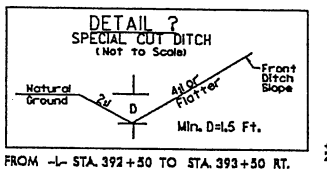
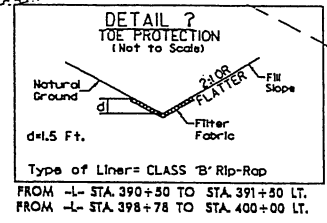
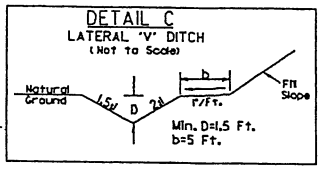
MATCH LINE SEE SHEET 5

MATCH LINE SEE SHEET 7

SITE I

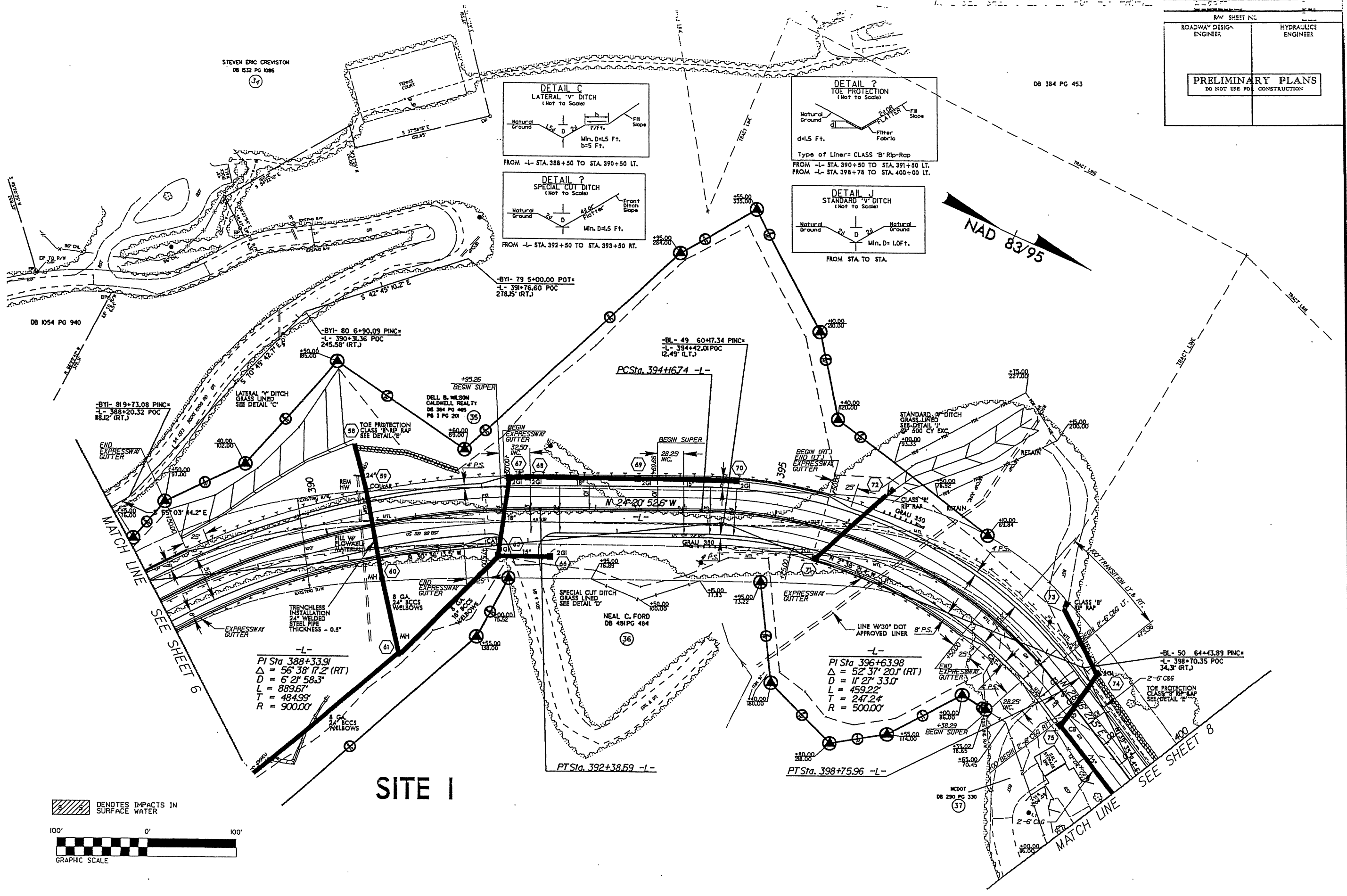
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

DB 384 PG 453

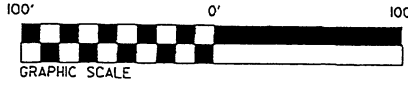


Right of Way: This revision consists of adding temporary construction easement to Parcel 37.

REVISIONS



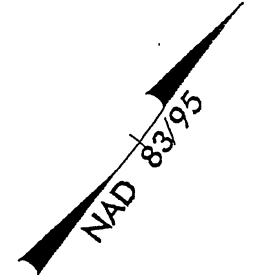
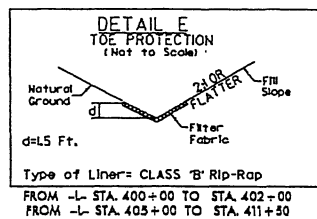
/// DENOTES IMPACTS IN SURFACE WATER



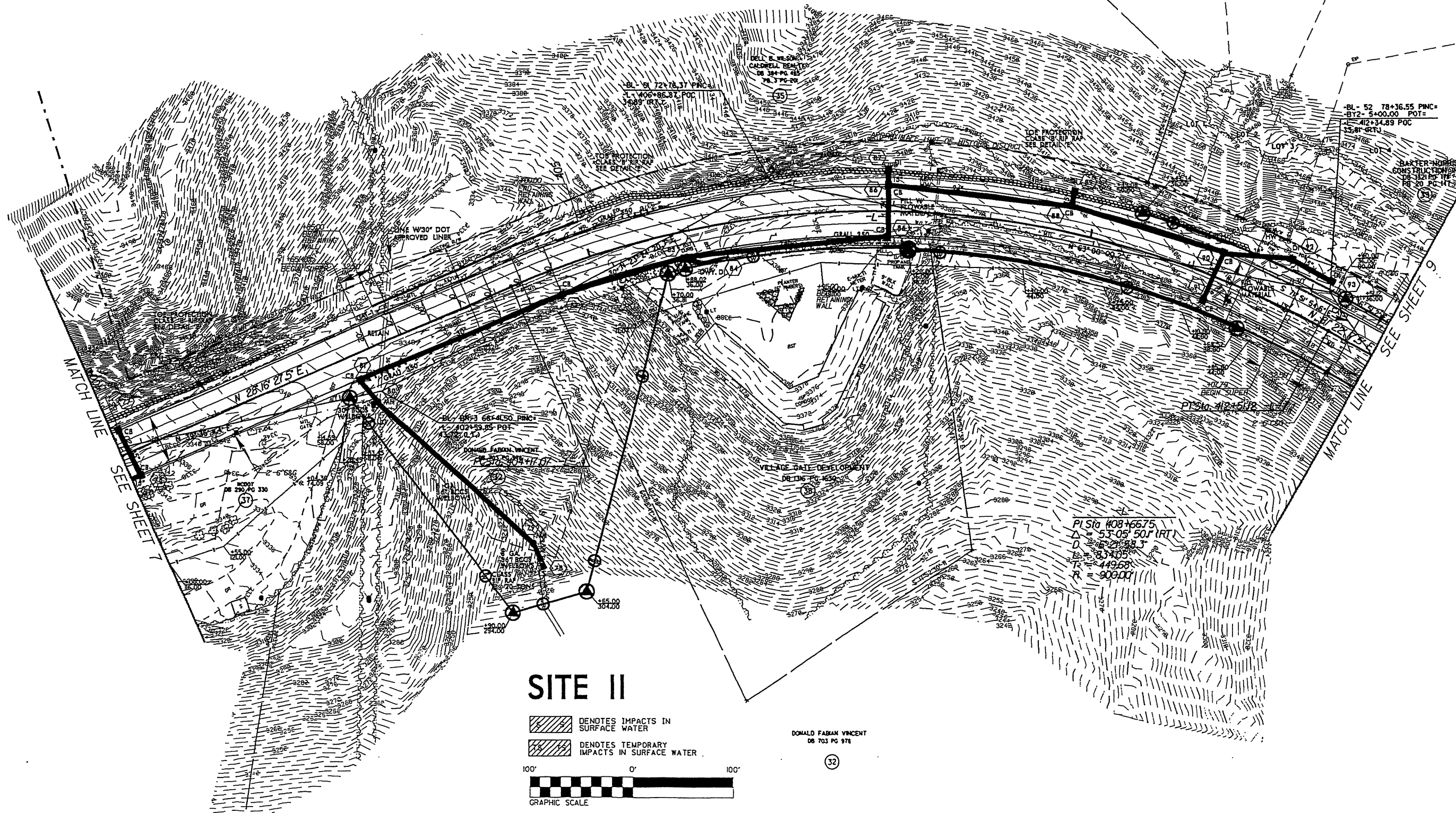
SITE I

*****SYN*****
*****LIGN*****
*****DATE*****

E-2025	
RD SHEET NO.	2
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	

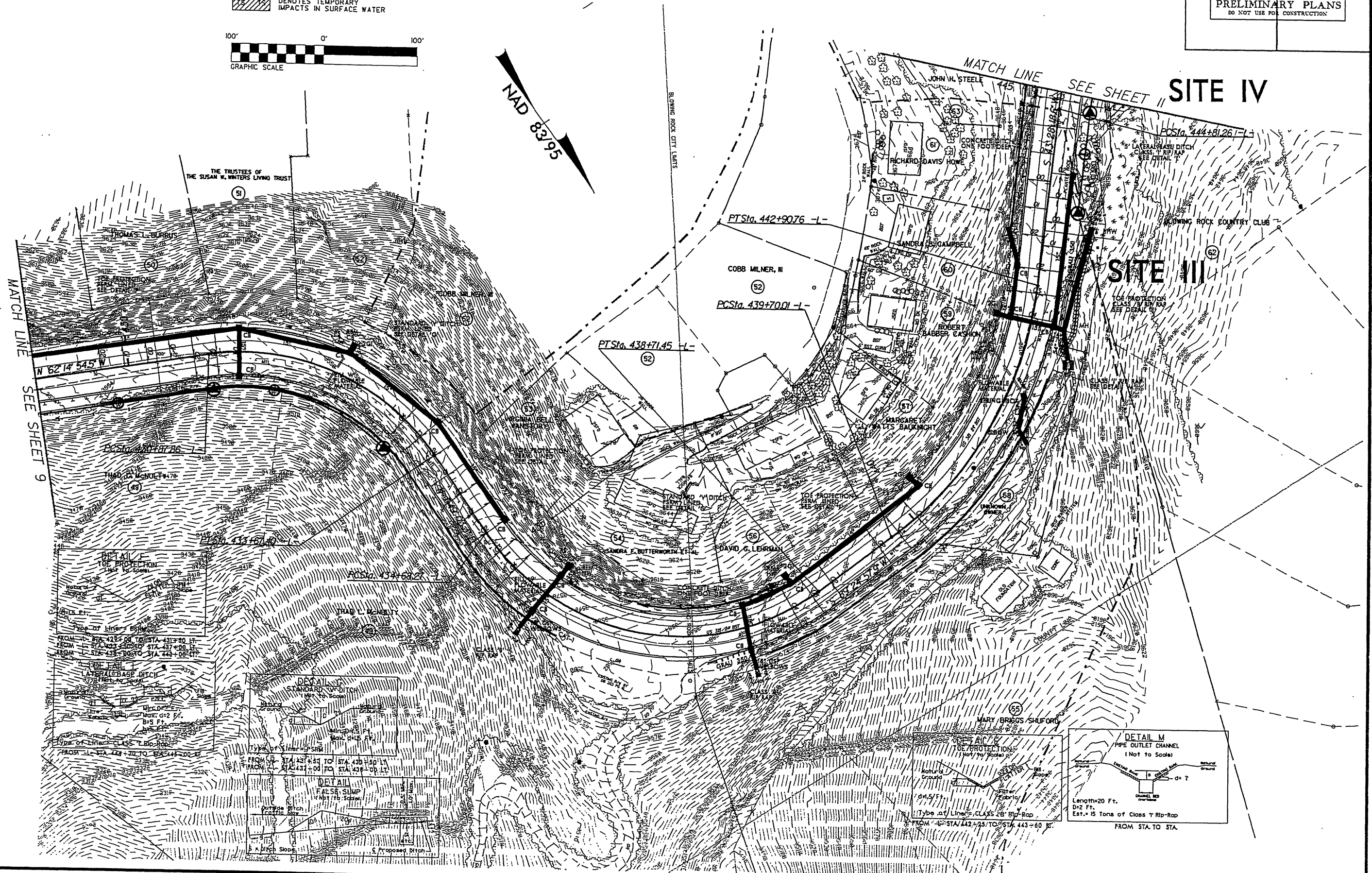
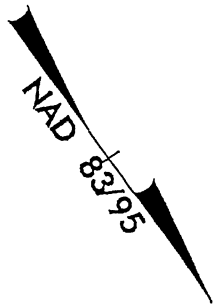
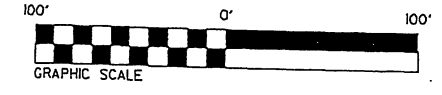


REVISIONS
Right of Way: This revision consists of adding temporary construction easement to Parcel 37.



E-2337	
RDW SHEET NO	IC
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

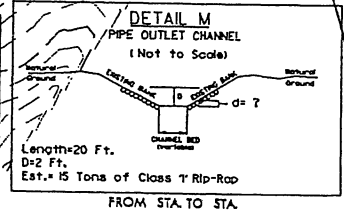
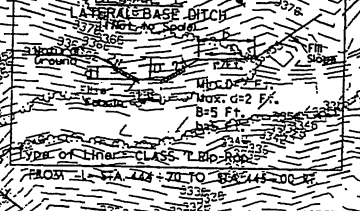


MATCH LINE SEE SHEET 9

MATCH LINE SEE SHEET II

SITE IV

SITE III



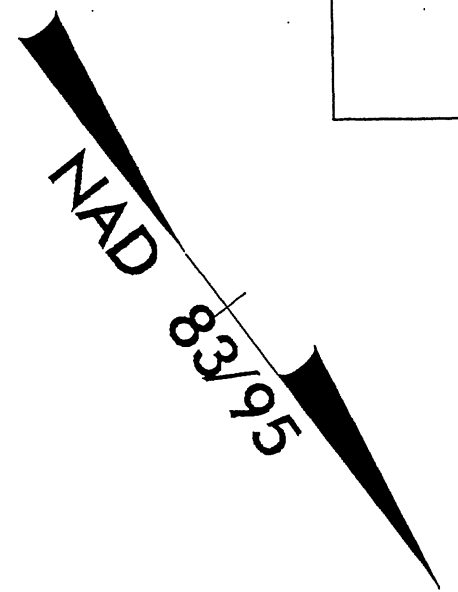
*****LINE*****

F-225		K
RAW SHEET NO.		IC
ROADWAY DESIGN-ENGINEER	HYDRAULICS ENGINEER	

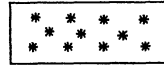

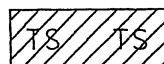

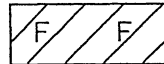
SITE IV

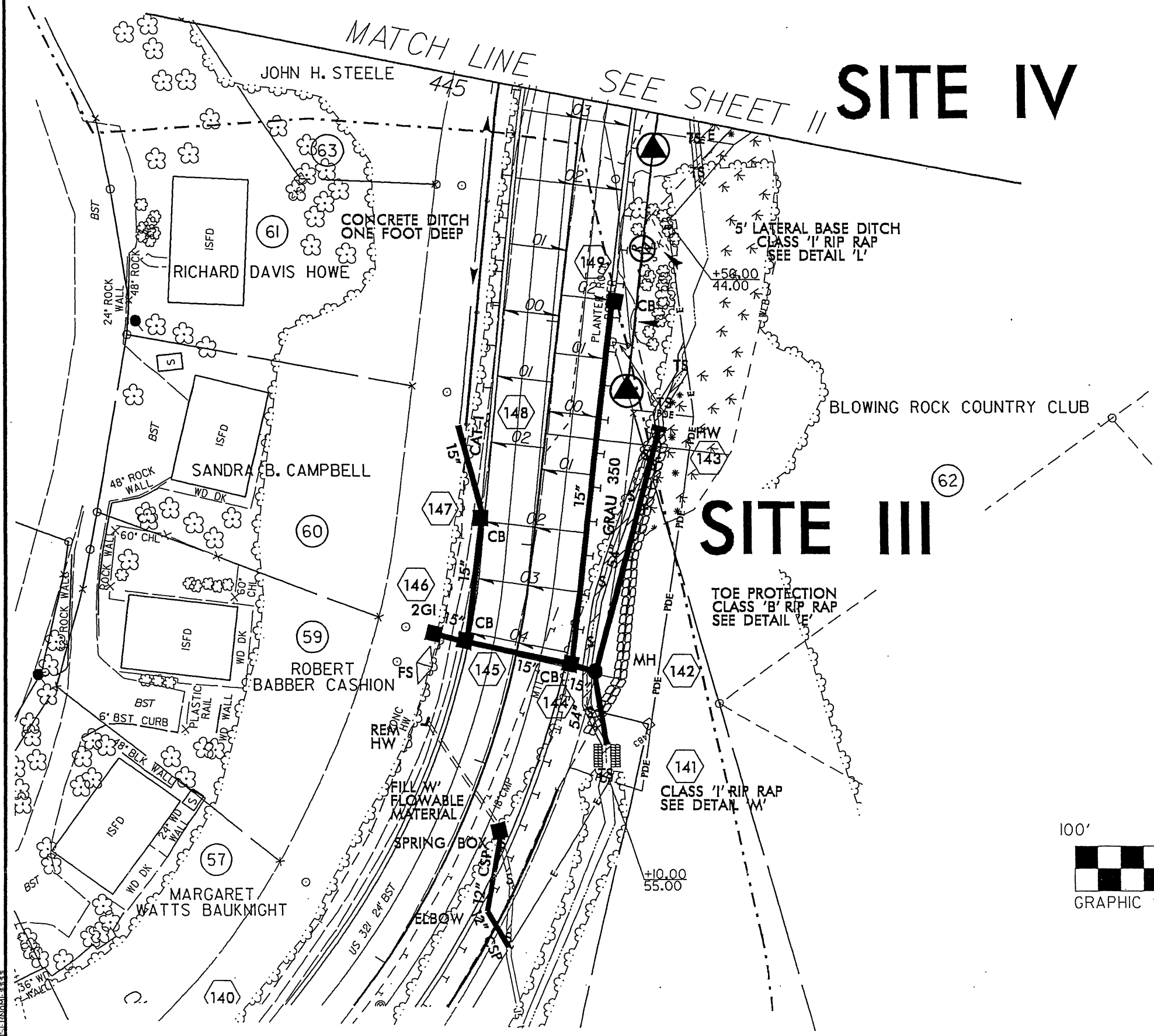
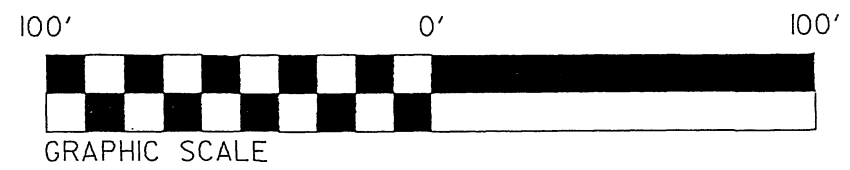
SEE SHEET II

MATCH LINE



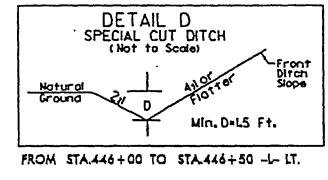
SITE III

-  DENOTES MECHANIZED CLEARING
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES FILL IN WETLAND

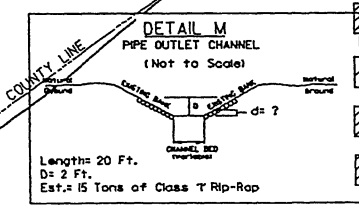
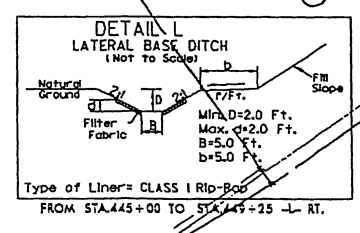
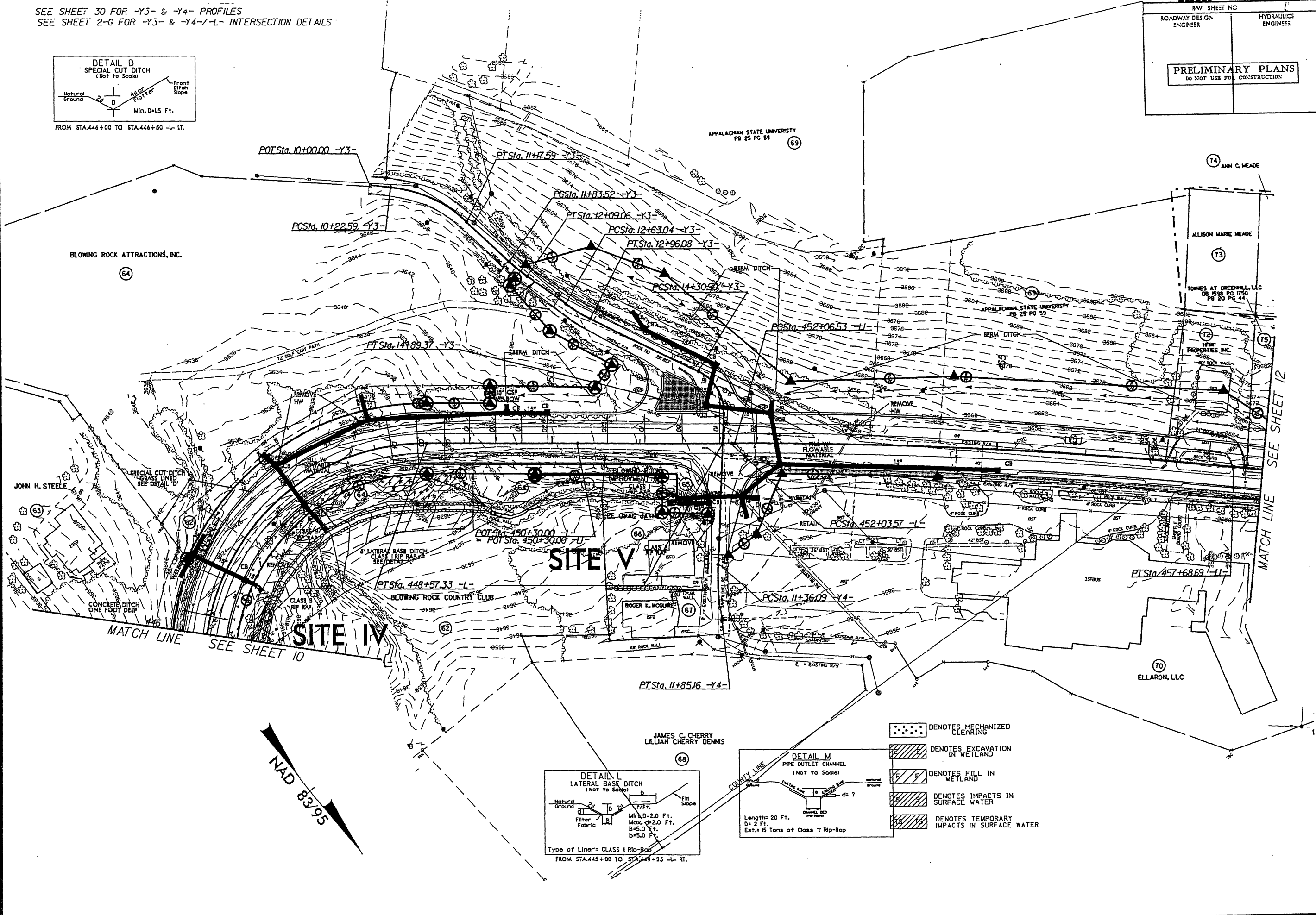


SEE SHEET 30 FOR -Y3- & -Y4- PROFILES
 SEE SHEET 2-G FOR -Y3- & -Y4-/L- INTERSECTION DETAILS

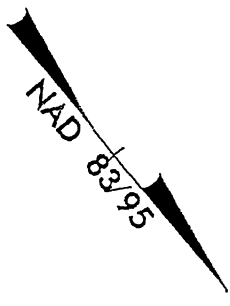
PROJECT NO. 2237
 RAW SHEET NO. _____
 ROADWAY DESIGN ENGINEER _____ HYDRAULICS ENGINEER _____
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION



REVISIONS
 THE REVISION CONSISTS OF CHANGING THE RIGHT OF WAY ON PARCEL 69.



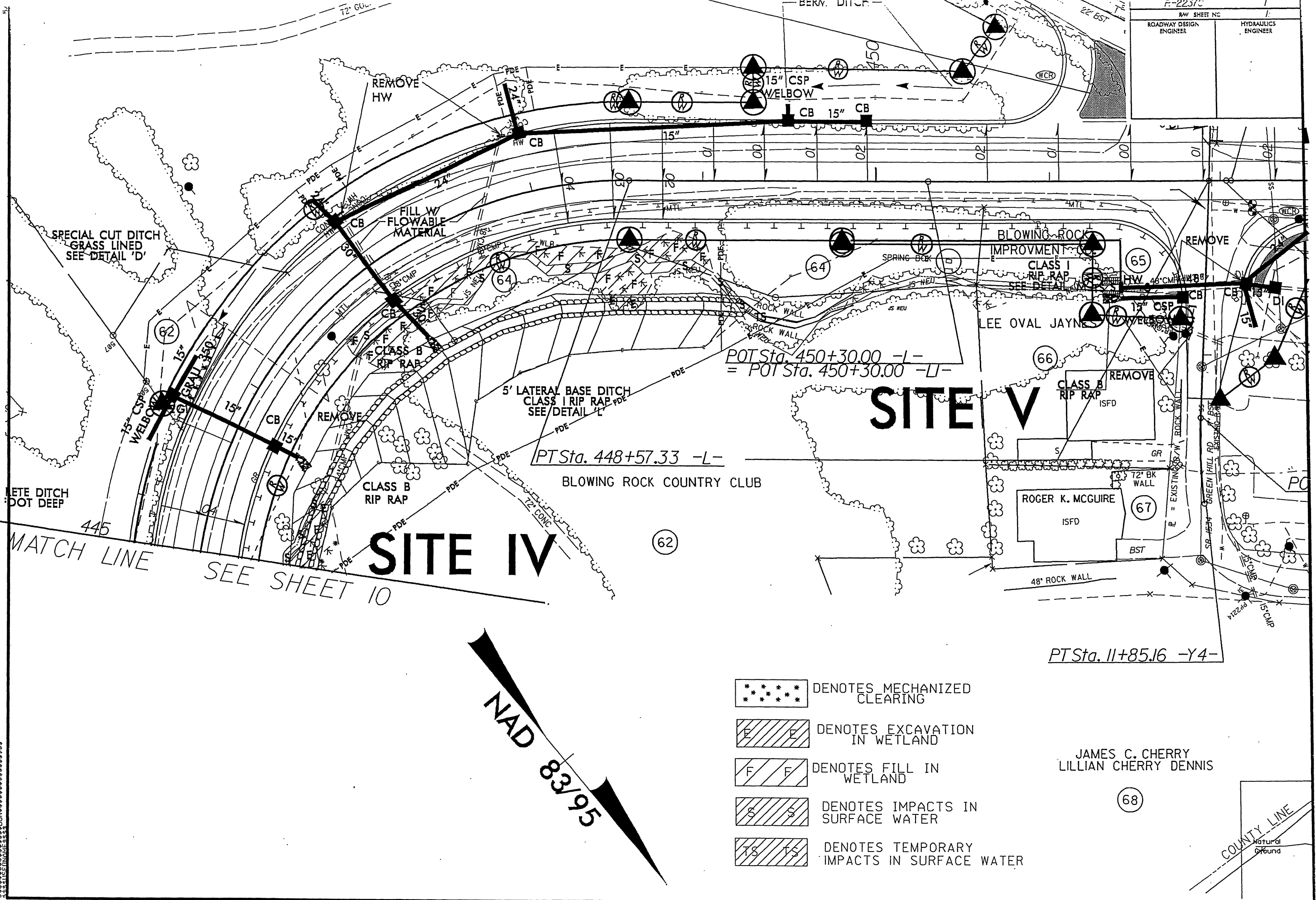
- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

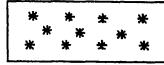
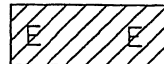
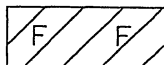

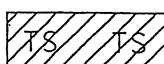


*****SYSTEMS DESIGN*****

MATCH LINE SEE SHEET 12

MATCH LINE SEE SHEET 10

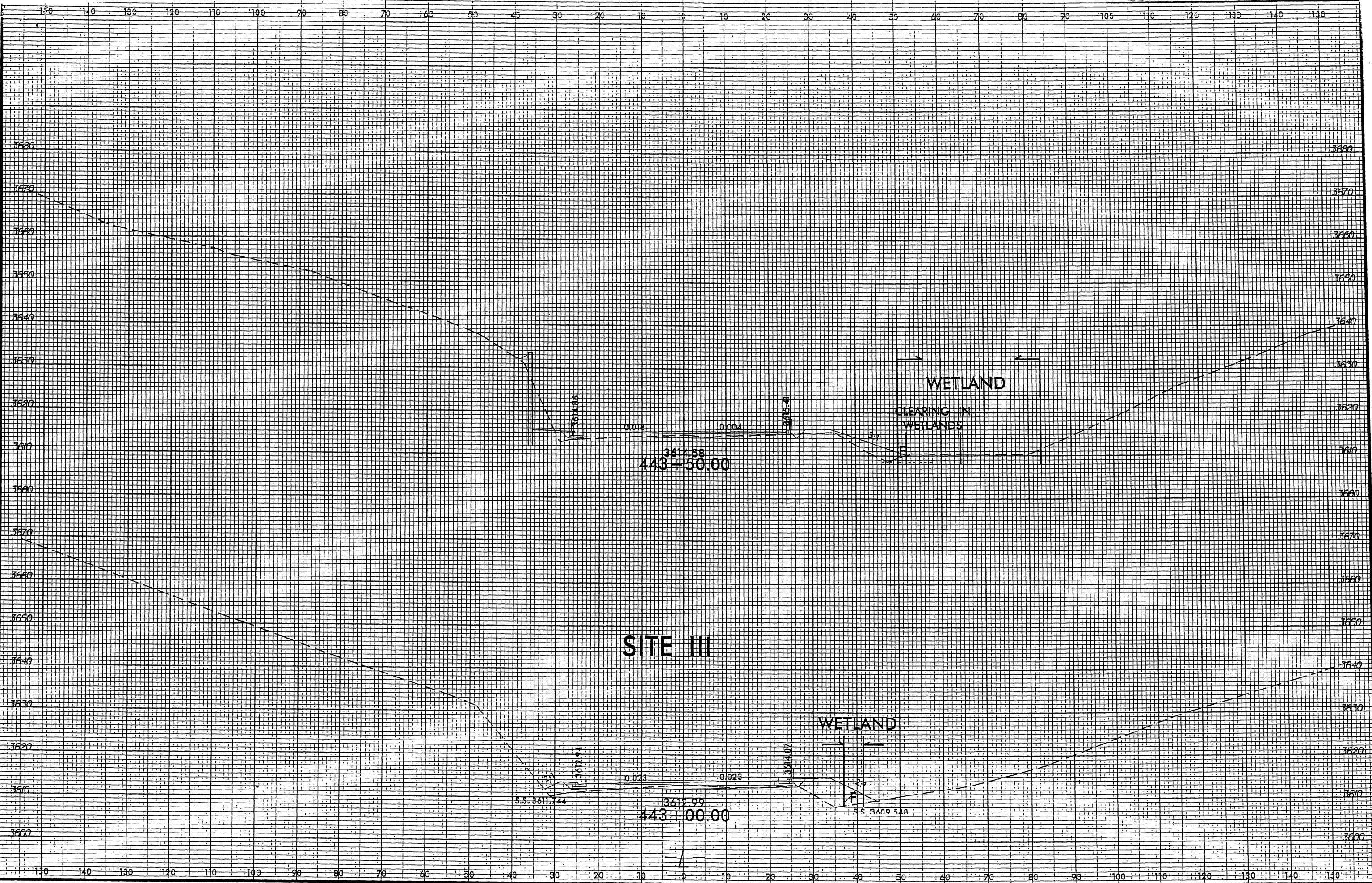


-  DENOTES MECHANIZED CLEARING
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES FILL IN WETLAND
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

JAMES C. CHERRY
 LILLIAN CHERRY DENNIS

(68)

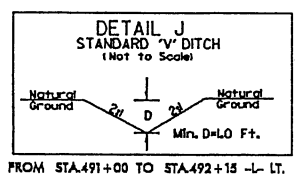
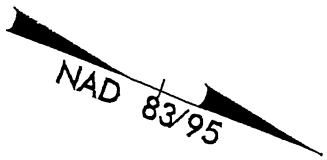
COUNTY LINE
 Natural Ground



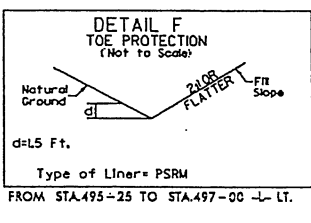
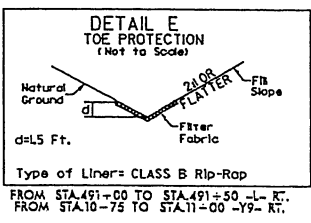
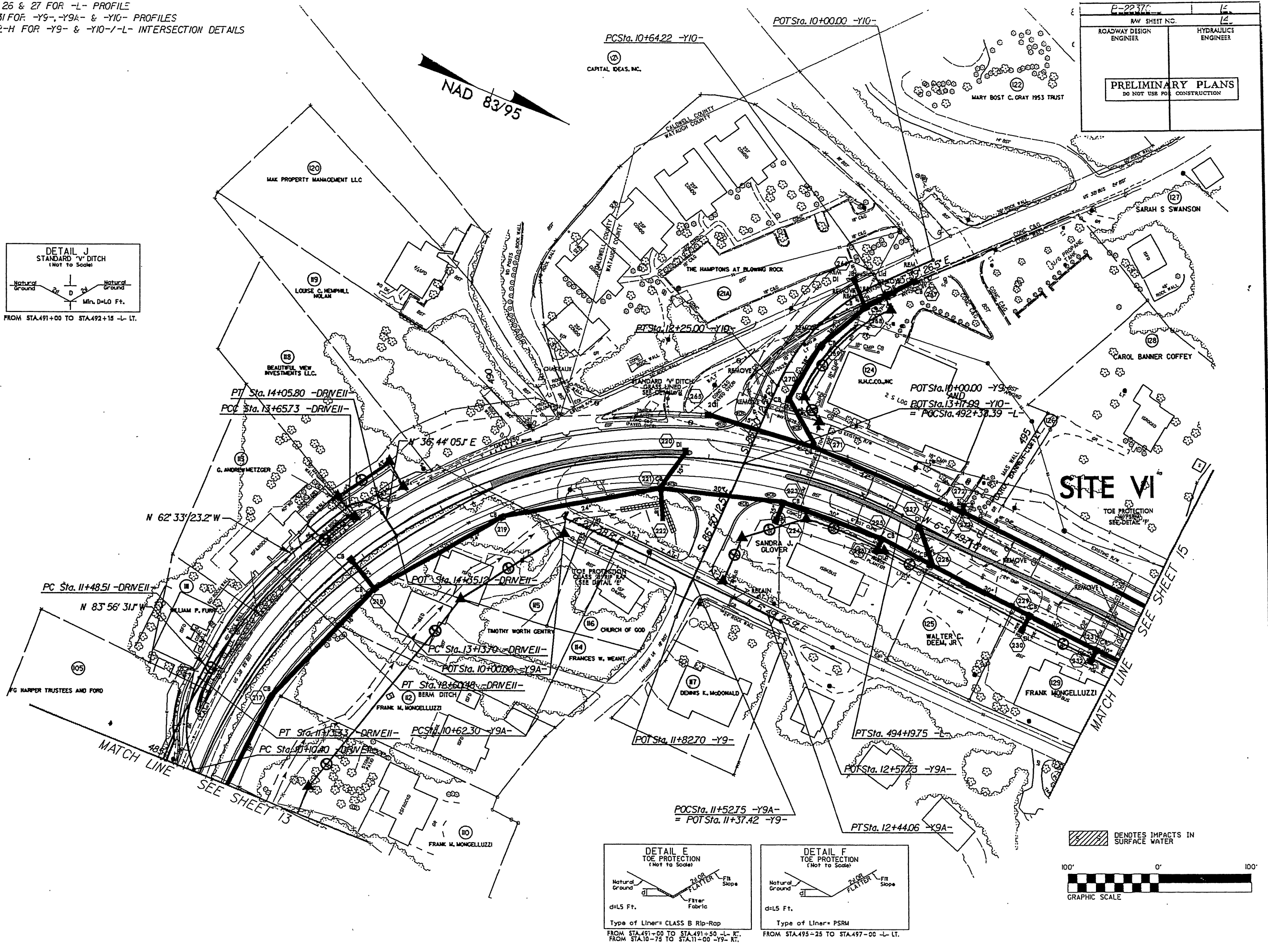
 SYSTEM TIME *****
 2008/01/15 10:00:00
 3614.58

NOTE: SEE SHEETS 26 & 27 FOR -L- PROFILE
 SEE SHEET 31 FOR -Y9-, -Y9A- & -Y10- PROFILES
 SEE SHEET 2-H FOR -Y9- & -Y10-/L- INTERSECTION DETAILS

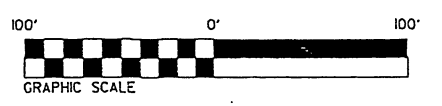
E-2237C	
RAW SHEET NO. 16	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



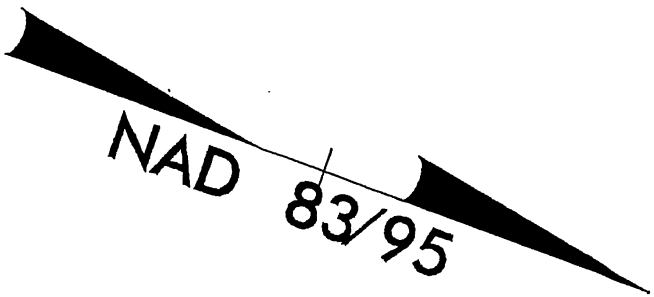
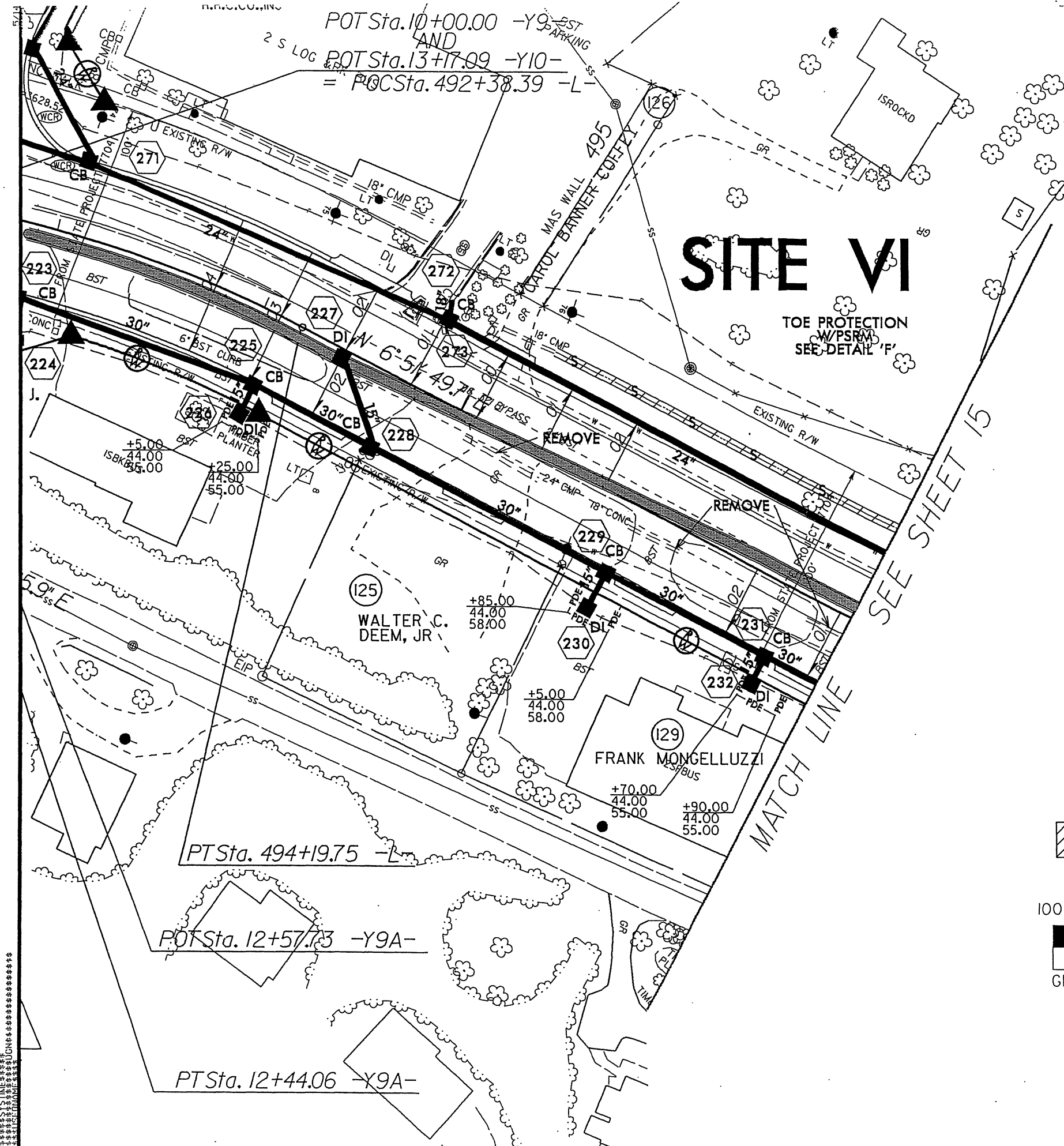
REVISIONS



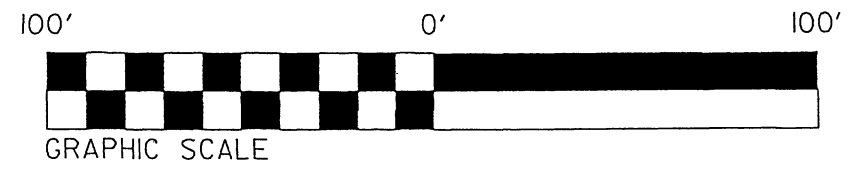
/// DENOTES IMPACTS IN SURFACE WATER



R-2237C		14
MW SHEET NO.		14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	



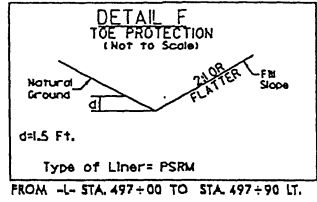
 DENOTES IMPACTS IN SURFACE WATER



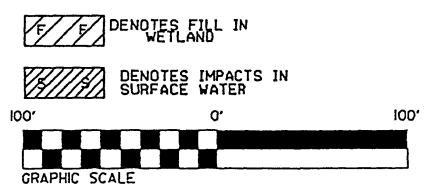
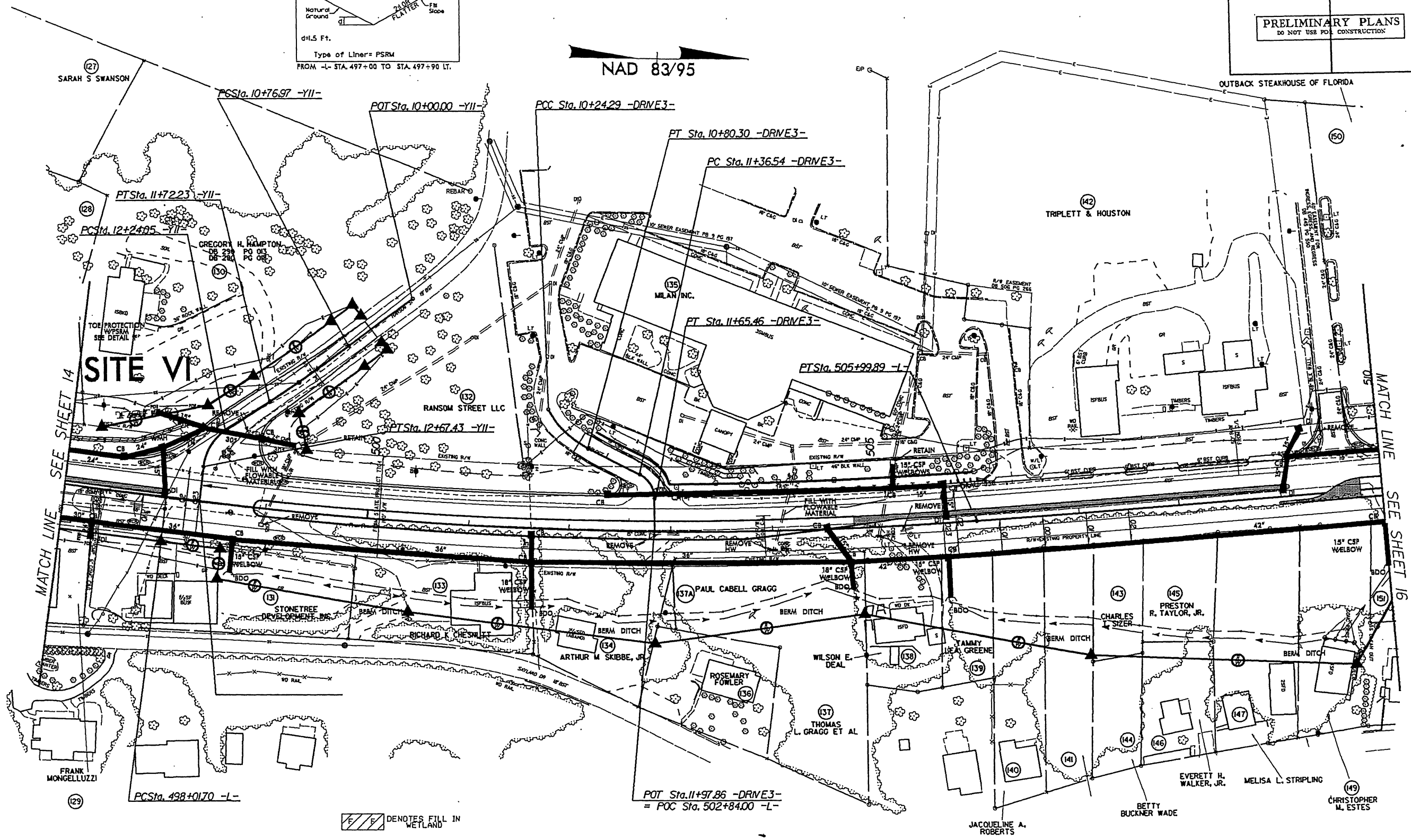
 SYSTEM TIME *****

NOTE: SEE SHEET 27 FOR -L- PROFILE
 SEE SHEET 31 FOR -YII- PROFILE
 SEE SHEET 2-H FOR -YII-/L- INTERSECTION DETAIL
 SEE SHEET 33 FOR -DRVE3- PROFILE

P-22370	
RAW SHEET NO.	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



NAD 83/95



REVISIONS

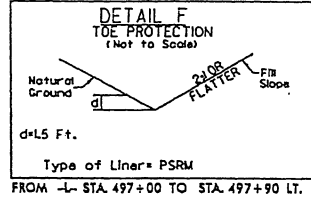
MATCH LINE SEE SHEET 14

MATCH LINE SEE SHEET 16

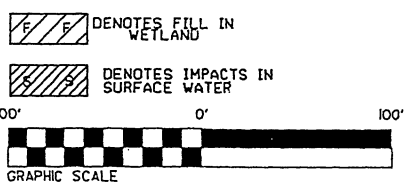
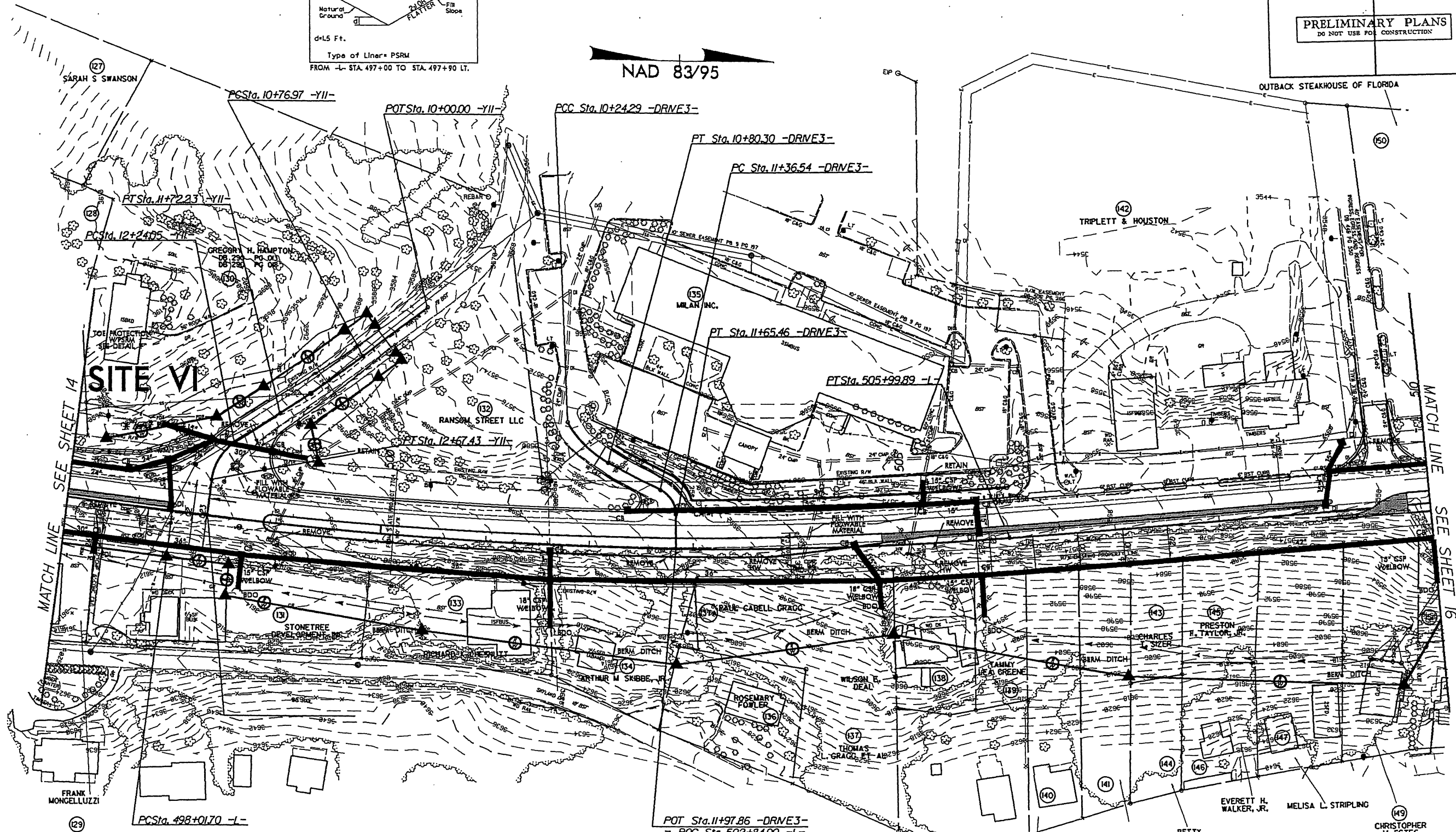
*****SYTIME*****

NOTE: SEE SHEET 27 FOR -L- PROFILE
 SEE SHEET 31 FOR -YII- PROFILE
 SEE SHEET 2-H FOR -YII-/-L- INTERSECTION DETAIL
 SEE SHEET 33 FOR -DRVE3- PROFILE

R-2237C		15
RWY SHEET NO.		15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



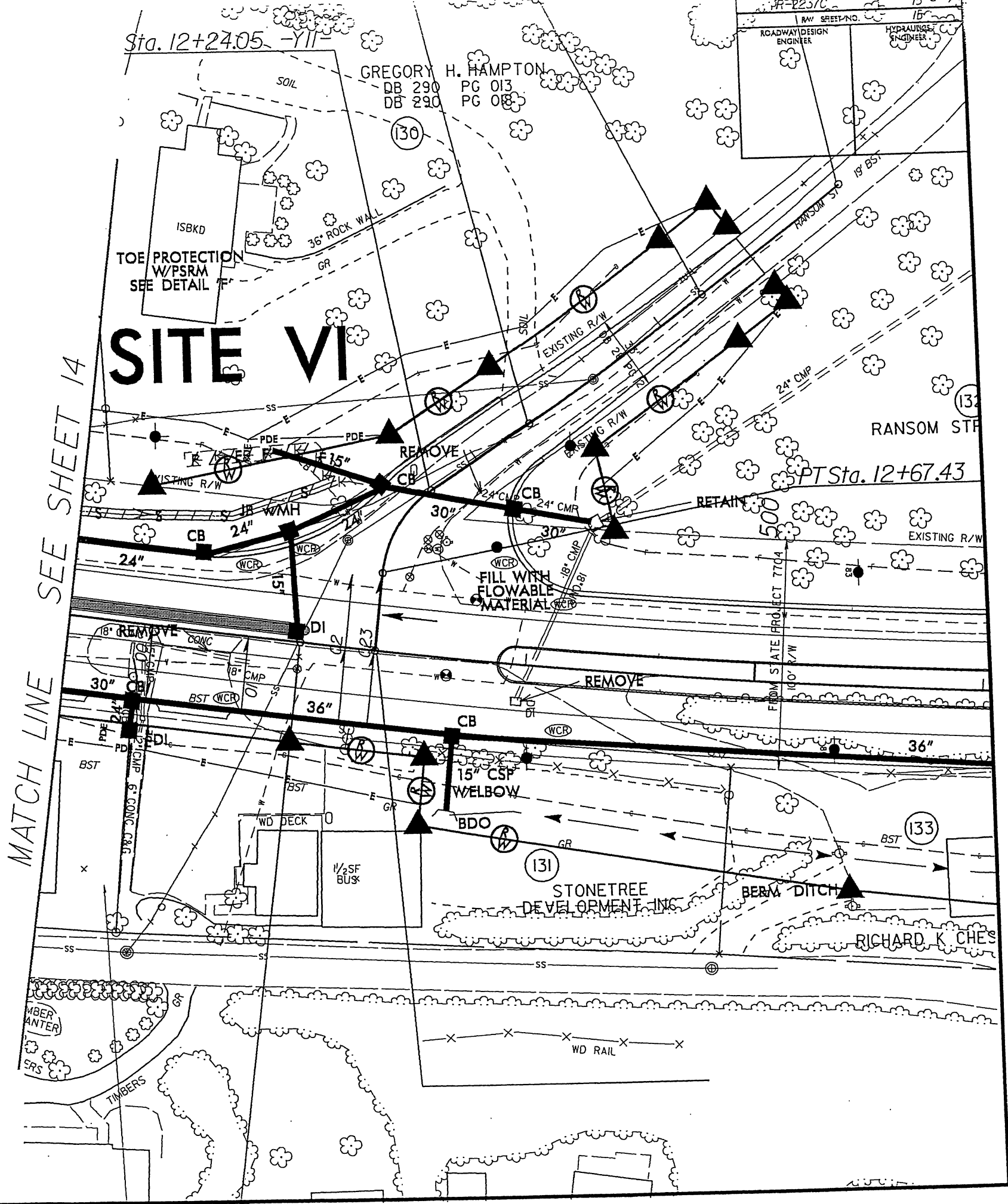
NAD 83/95



REVISIONS

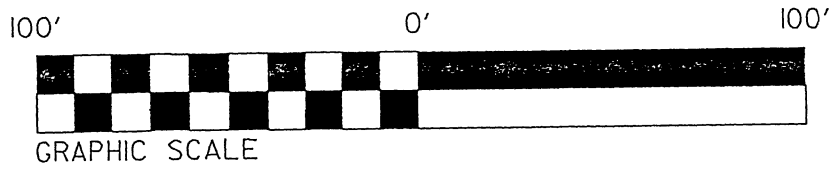
1. DATE: 11/15/11
 2. TIME: 10:00 AM
 3. BY: J. G. [unreadable]
 4. CHECKED BY: [unreadable]
 5. APPROVED BY: [unreadable]

NAD 83/95



 DENOTES FILL IN WETLAND

 DENOTES IMPACTS IN SURFACE WATER

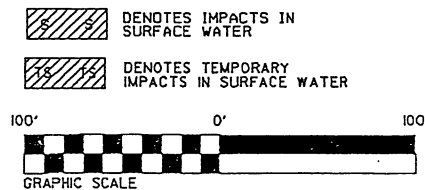
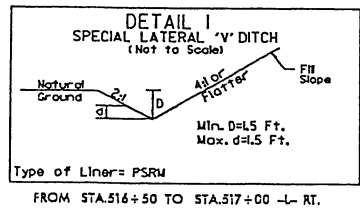
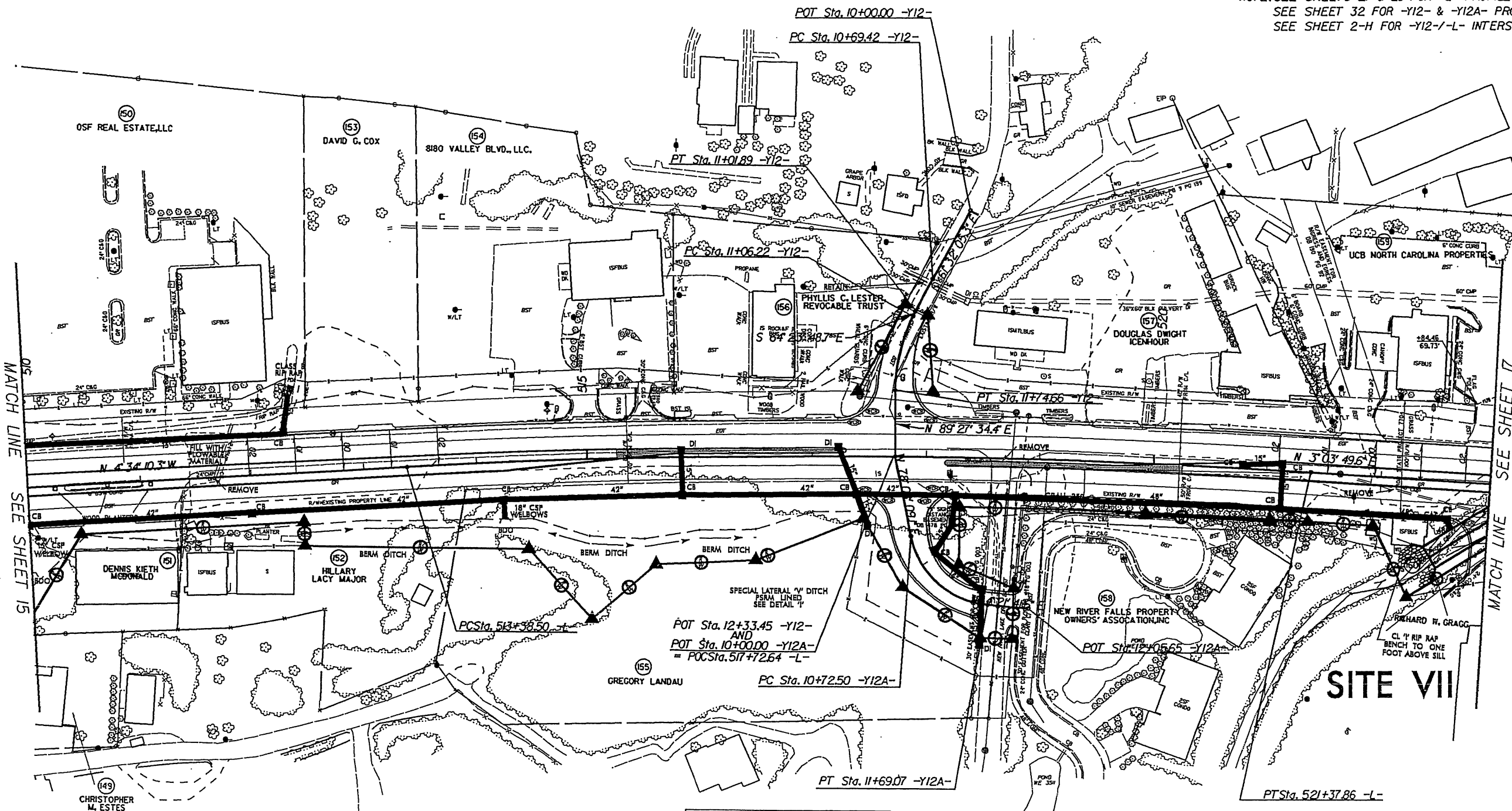


*****SYTIME*****

P-2237C	
RD SHEET NO.	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/95

NOTE: SEE SHEETS 27 & 28 FOR -L- PROFILE
SEE SHEET 32 FOR -Y12- & -Y12A- PROFILE
SEE SHEET 2-H FOR -Y12-/-L- INTERSECTION DETAIL



REVISIONS

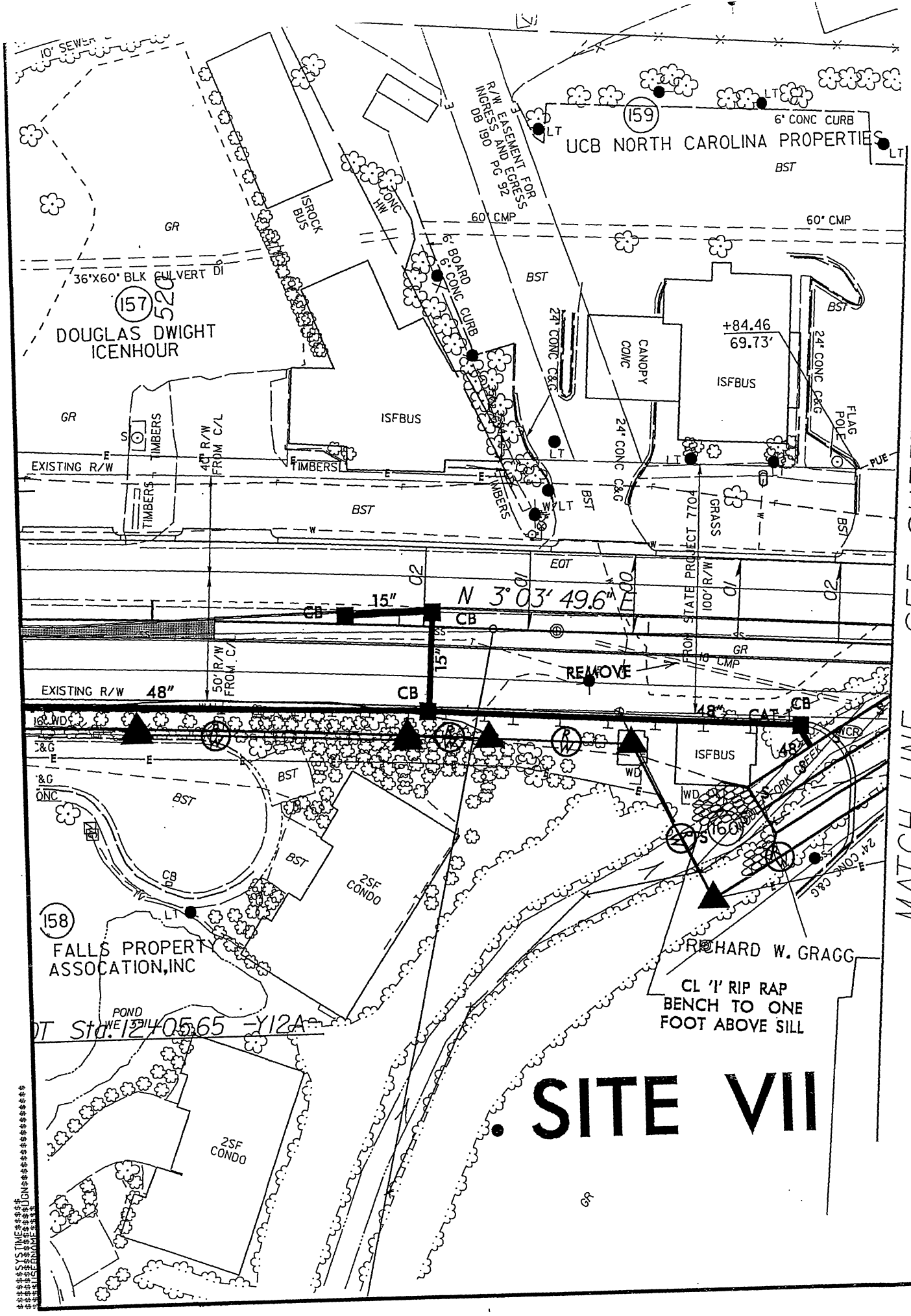
MATCH LINE SEE SHEET 15

MATCH LINE SEE SHEET 17

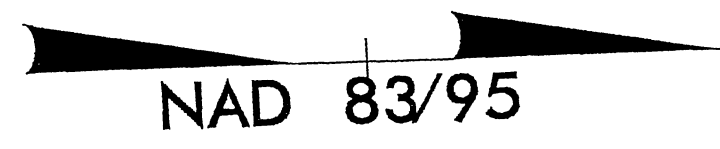
SITE VII

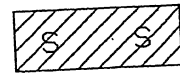
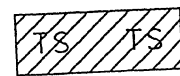
SYSTEM CONDITIONS

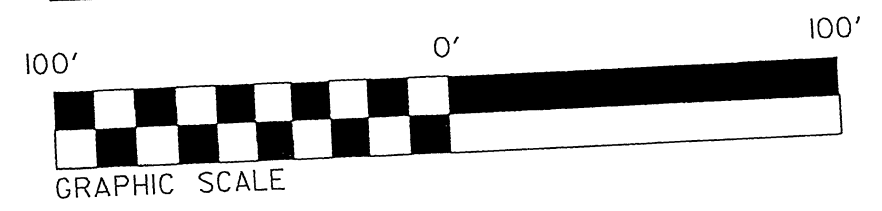
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
-------------------------	---------------------



MATCH LINE SEE SHEET 17



-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

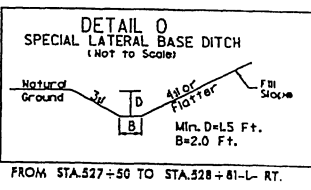
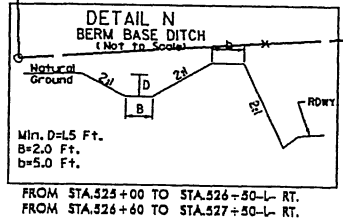
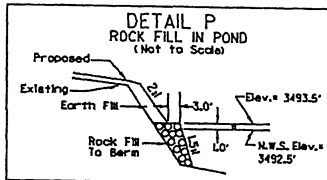


SITE VII

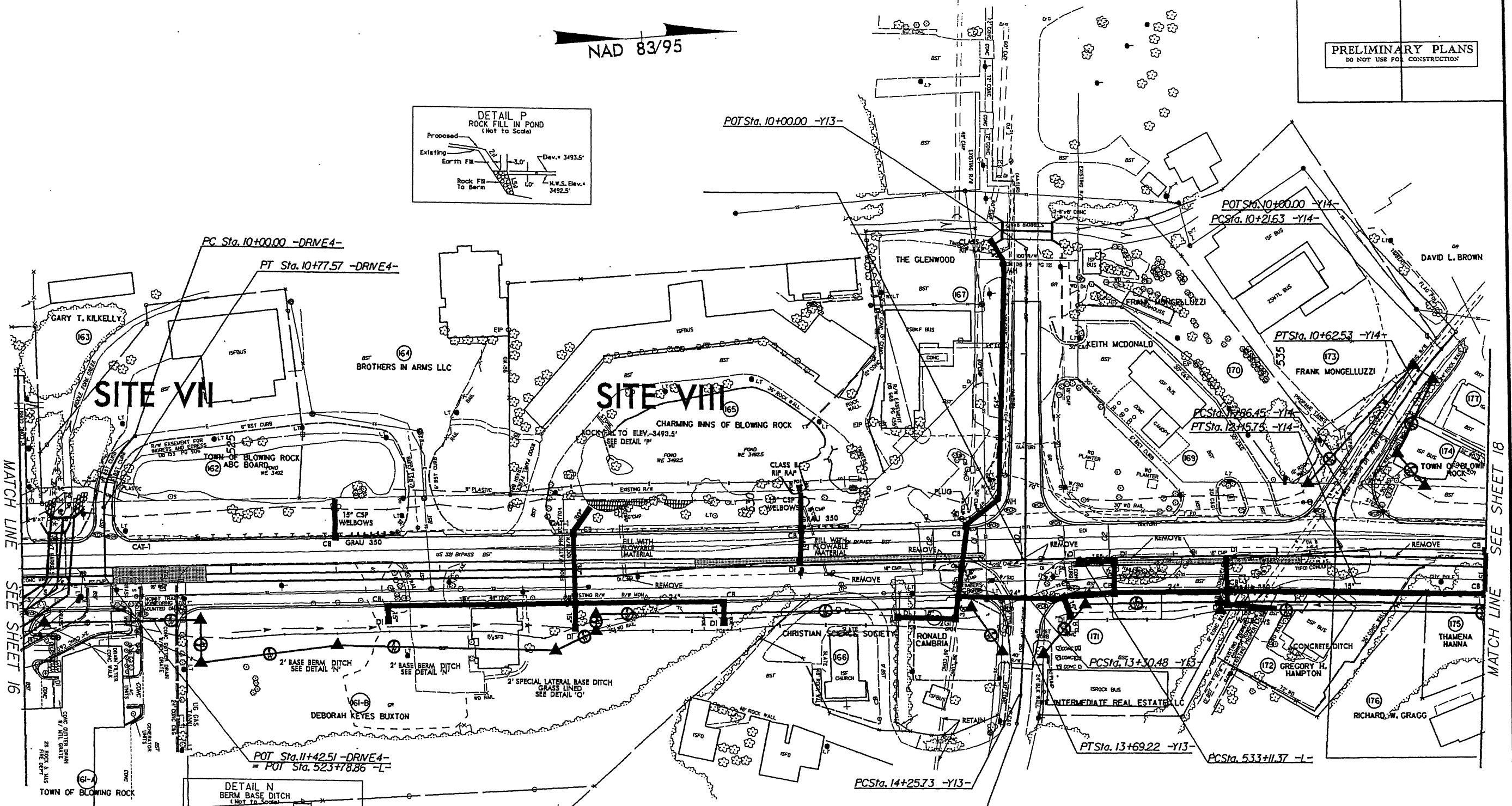
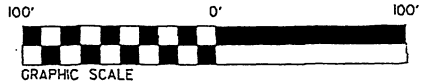
SEE SHEET 32 FOR -Y13- & -Y14- PROFILE
 SEE SHEET 2-1 FOR -Y13- & -Y14- / -L- INTERSECTION DETAILS
 SEE SHEET 38 FOR -DRNE4- PROFILE

PROJECT REFERENCE NO. E-22370		SHEET NO. 17	
RDW SHEET NO. 17			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

NAD 83/95



- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS

MATCH LINE SEE SHEET 16

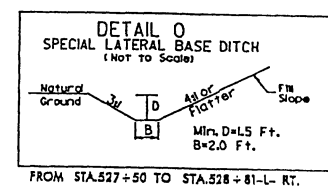
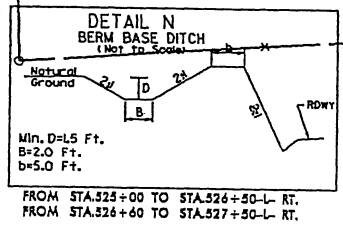
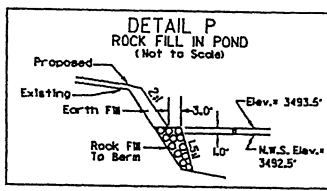
MATCH LINE SEE SHEET 18

*****SYSDRAWING*****

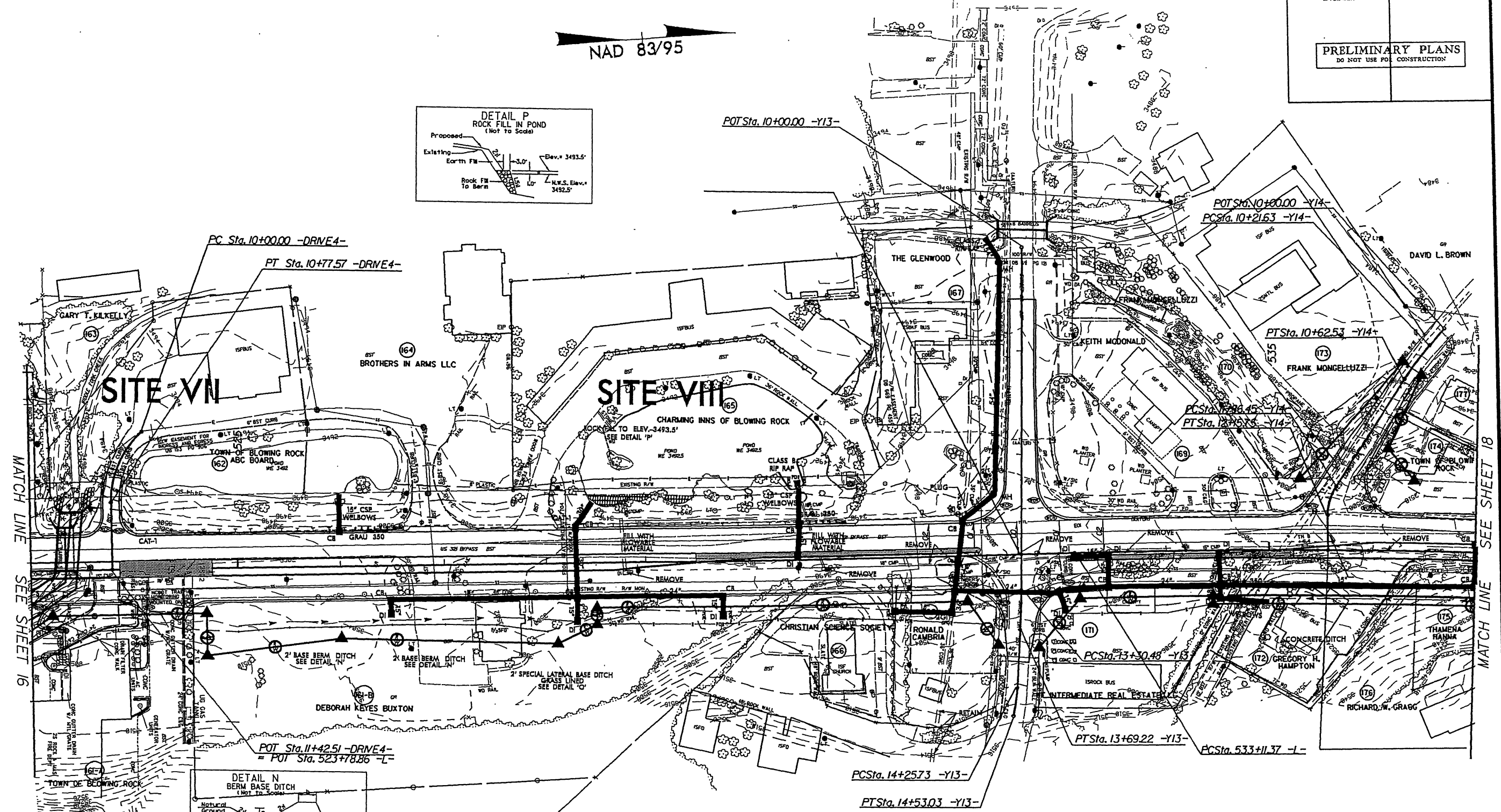
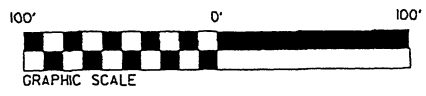
SEE SHEET 2-1 FOR -Y13- & -Y14-/L- INTERSECTION DETAILS
 SEE SHEET 38 FOR -DRVE4- PROFILE

PROJECT REFERENCE NO. R-2237C		SHEET NO. 17	
RDW SHEET NO. 17		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		CONSTRUCTION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

NAD 83/95



- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS

MATCH LINE SEE SHEET 16

MATCH LINE SEE SHEET 18

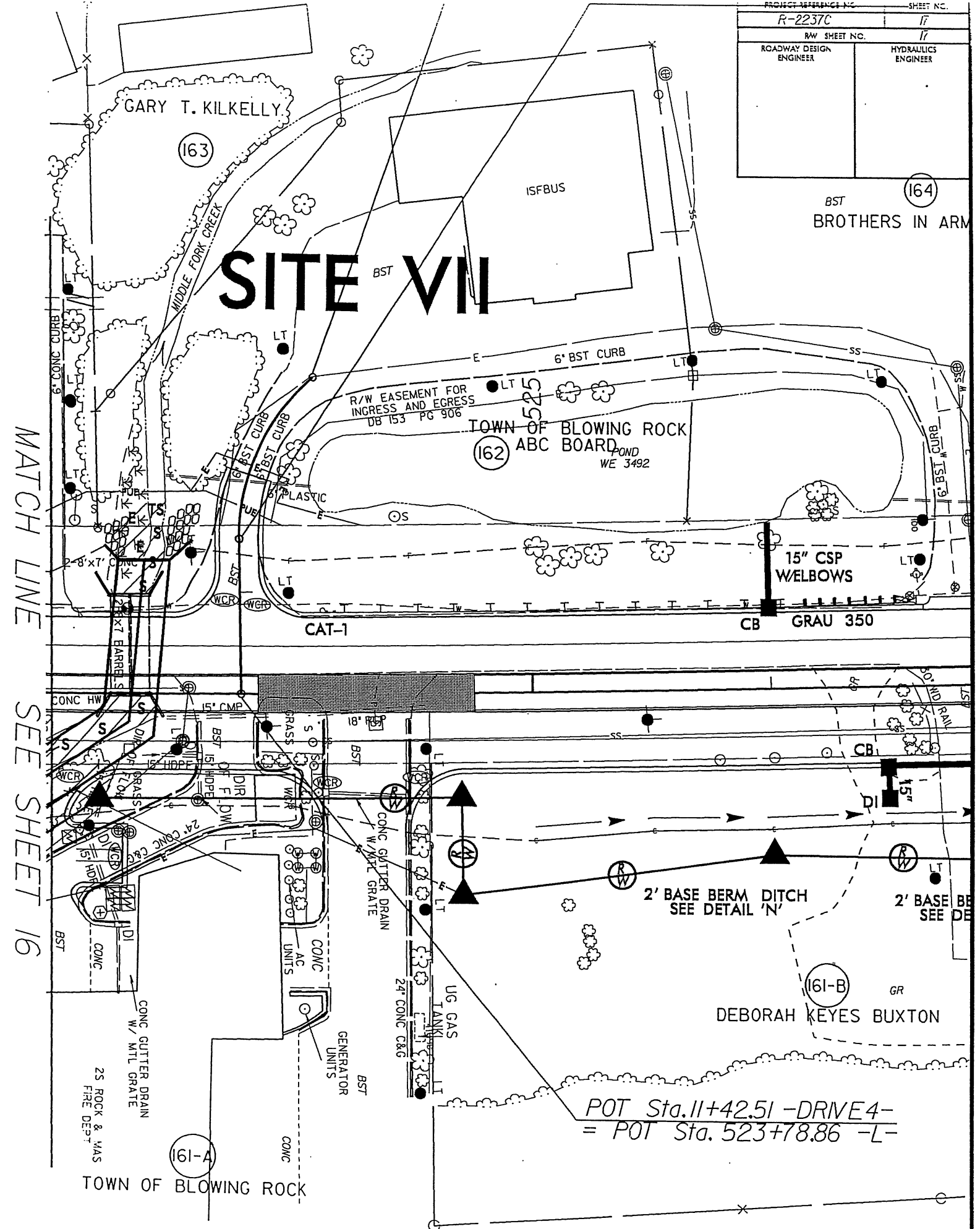
 SYSTEMS, INC.

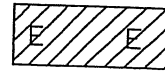
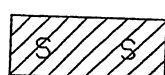
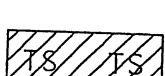
NAD 83/95

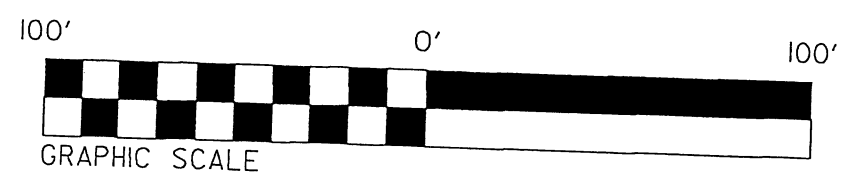
PROJECT REFERENCE NO. R-2237C	SHEET NO. 17
RAW SHEET NO. 17	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BST (164)
BROTHERS IN ARM

SITE VII



-  DENOTES EXCAVATION IN WETLAND
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



MATCH LINE SEE SHEET 16

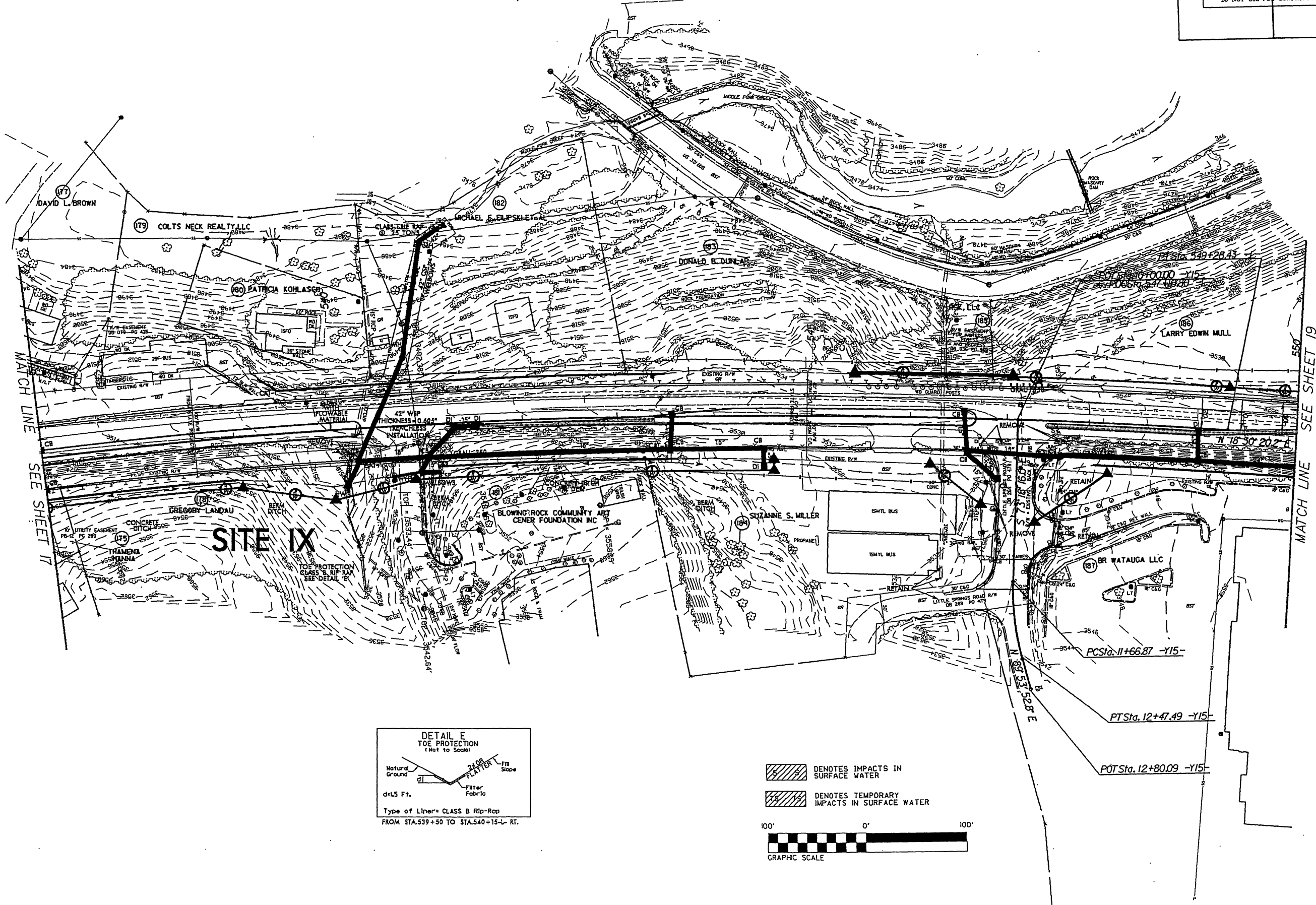
POT Sta. 11+42.51 -DRIVE 4-
= POT Sta. 523+78.86 -L-

*****UNION*****

NOTE: SEE SHEETS 28 & 29 FOR -L- PROFILE
 SEE SHEET 32 FOR -Y15- PROFILE
 SEE SHEET 2-1 FOR -Y15-/-L- INTERSECTION DETAIL

PROJECT NO. E-2237C		18
RAW SHEET NO.		18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

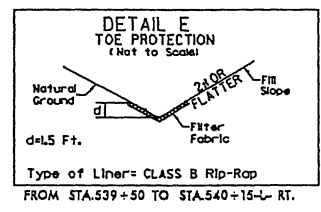
NAD 83/95



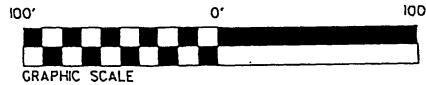
REVISIONS

MATCH LINE SEE SHEET 17

MATCH LINE SEE SHEET 19



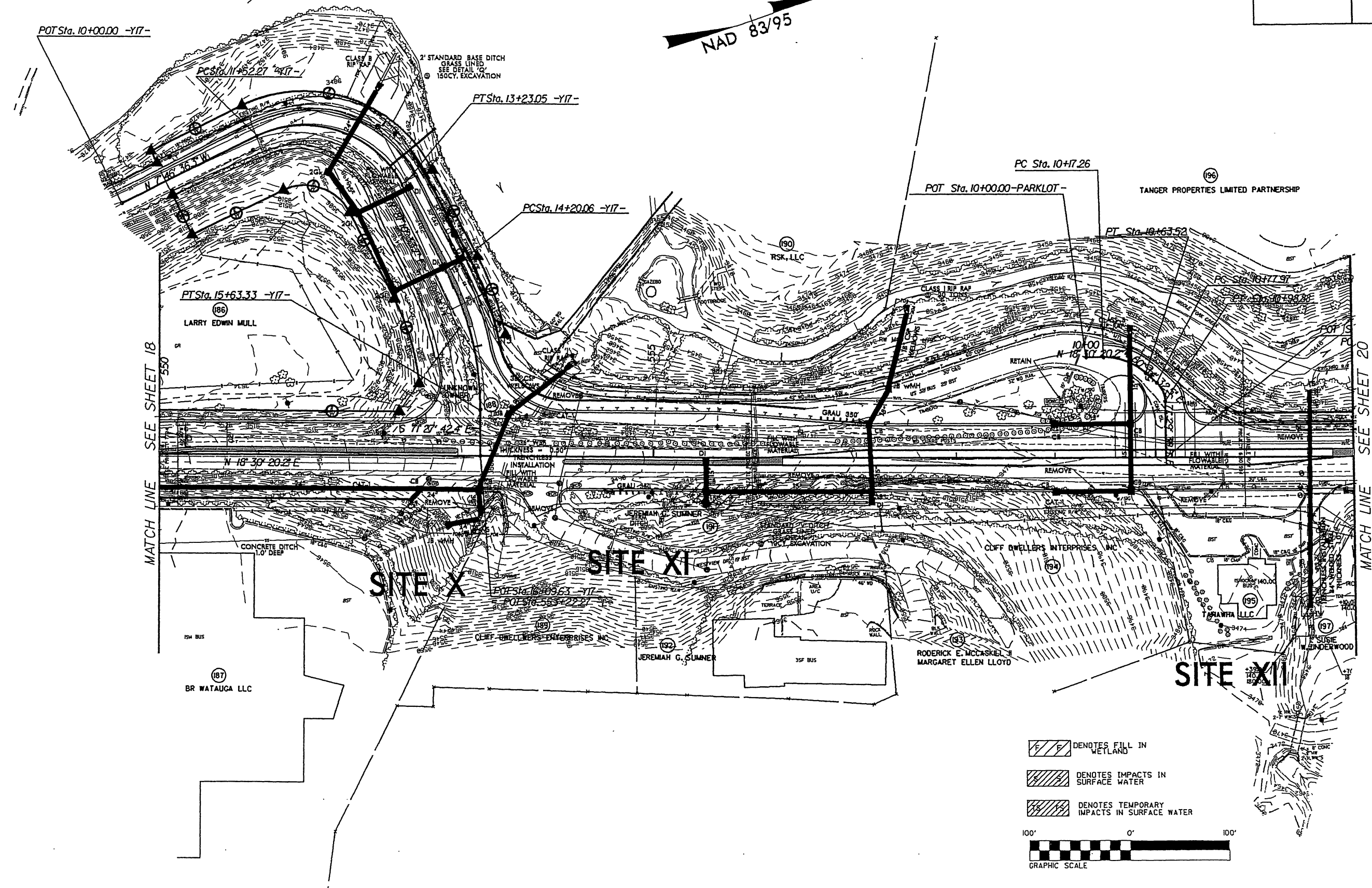
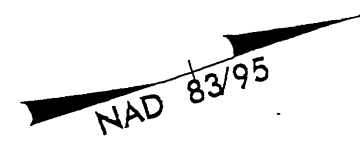
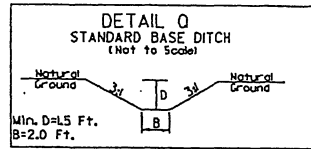
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



*****SYSTEMS*****
 *****DESIGN*****
 *****DRAWING*****

NOTE: SEE SHEET 29 FOR -L- PROFILE
 SEE SHEET 33 FOR -Y17- PROFILE
 SEE SHEET 2-1 FOR -Y17-/-L- INTERSECTION DETAIL

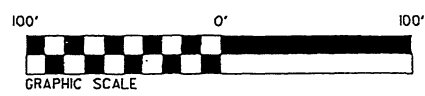
PROJECT REFERENCE NO. P-2237C	SHEET NO. 19
RAW SHEET NO. 19	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE SEE SHEET 18

MATCH LINE SEE SHEET 20

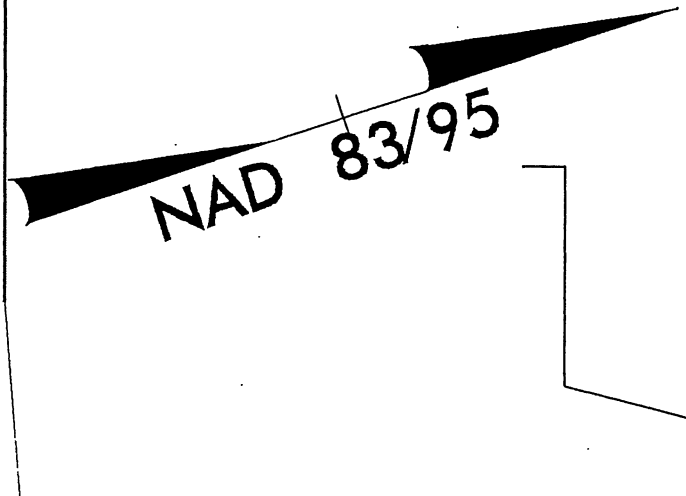
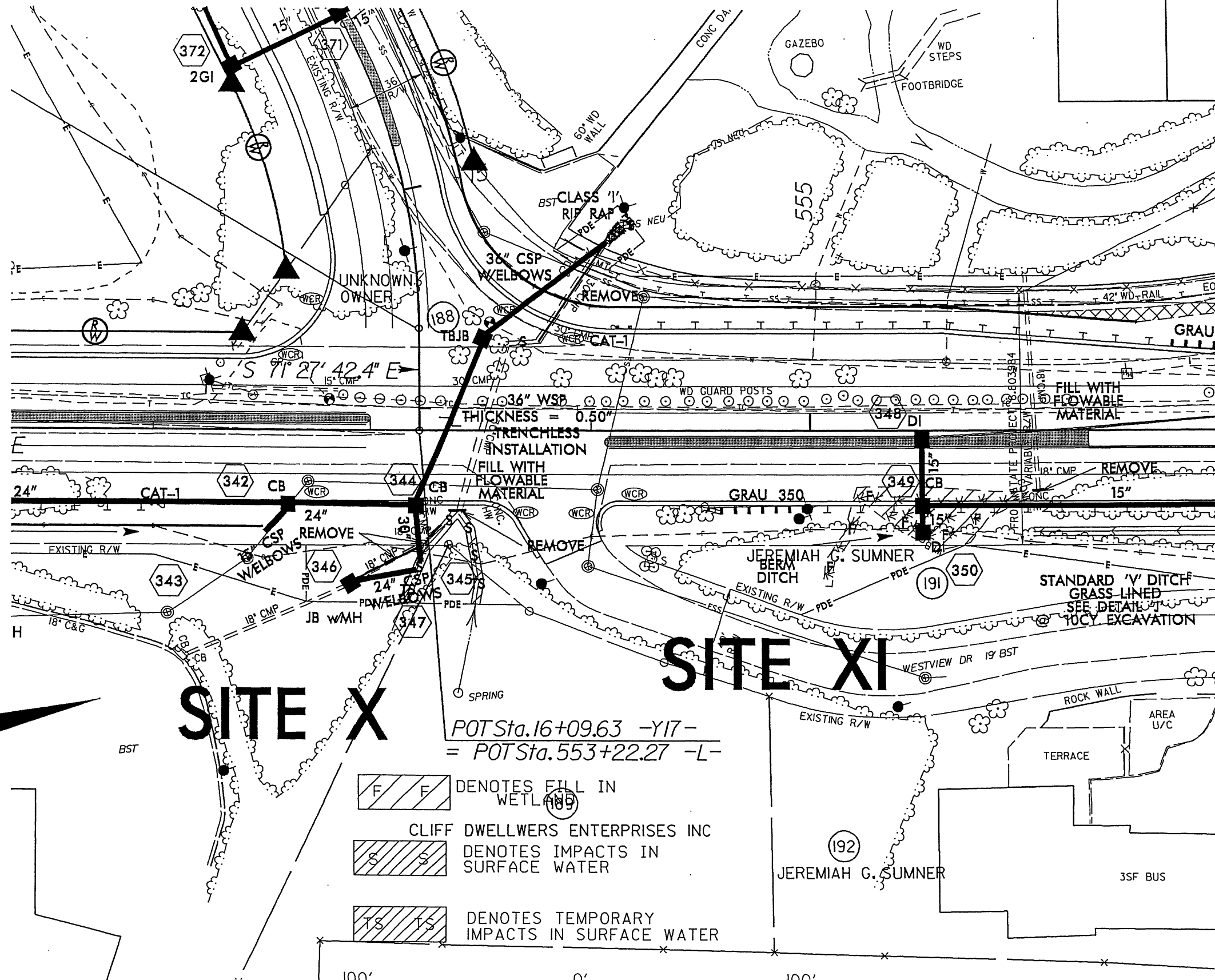
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



*****SYTIME*****
 *****DGN*****

R-2237C		19
RW SHEET NO.		19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

MATCH LINE SEE SHEET 18

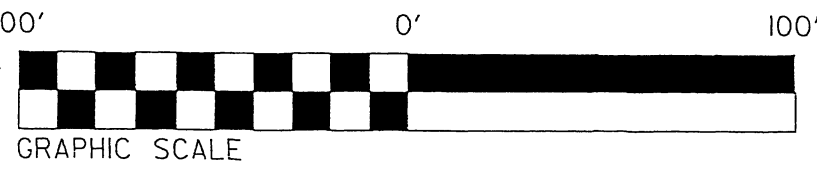


SITE X

SITE XI

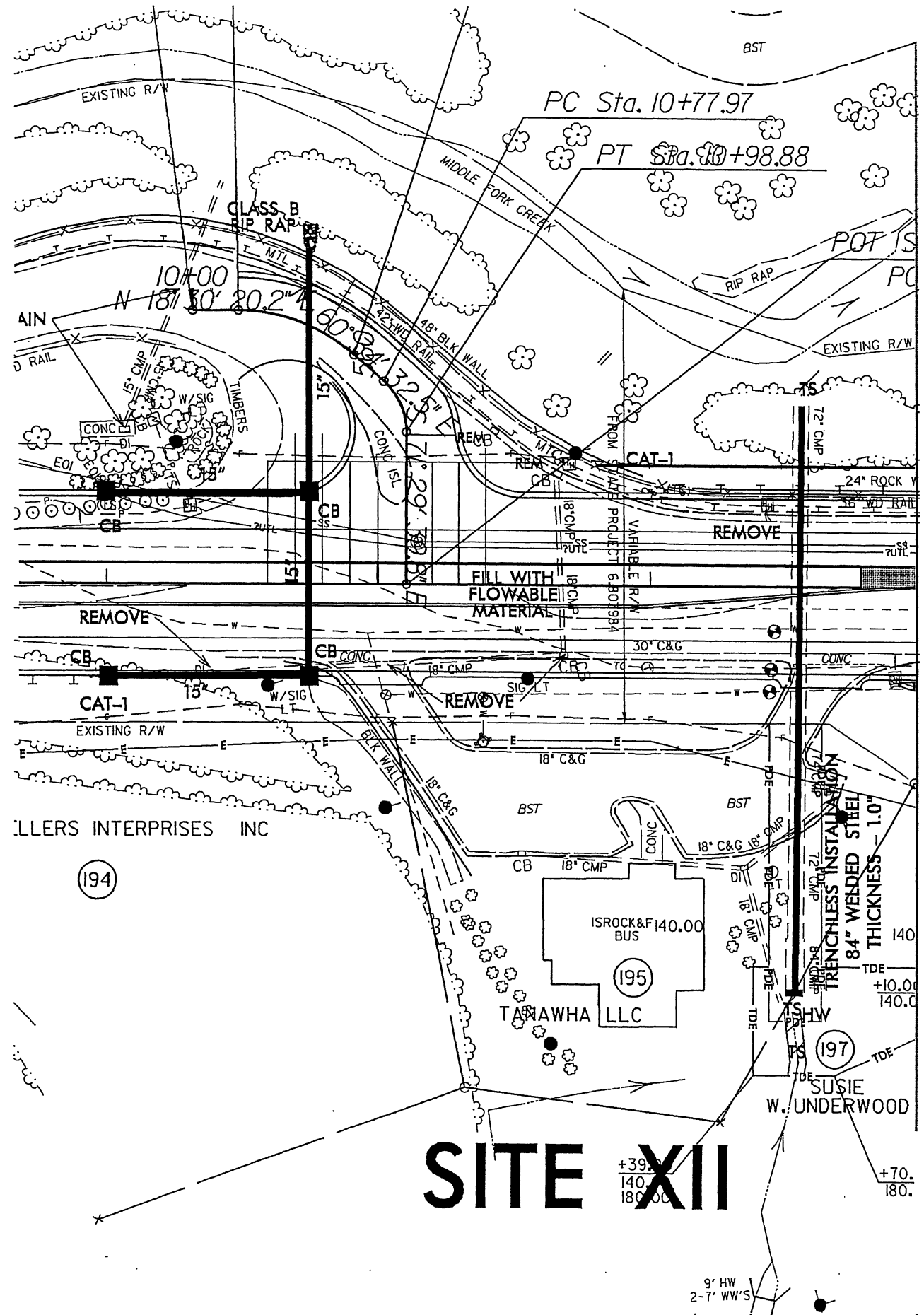
POT Sta. 16+09.63 -Y17-
= POT Sta. 553+22.27 -L-

- DENOTES FILL IN WETLAND
- CLIFF DWELLERS ENTERPRISES INC DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

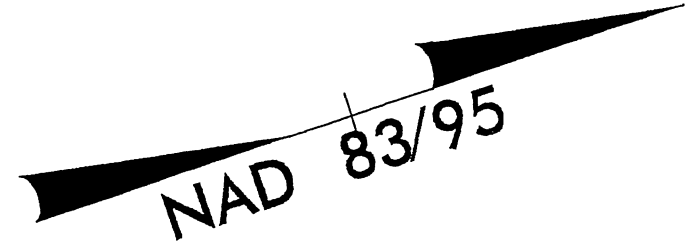


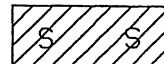
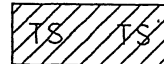
*****SYSTEM TIME*****

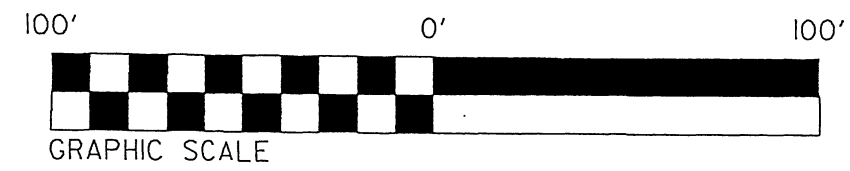
PROJECT REFERENCE NO.	SHEET NO.
R-2237C	19
RAW SHEET NO.	
19	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE SEE SHEET 20



-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SITE XII

*****SYSTECH DESIGN*****

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
32	DONALD FABIAN VINCENT	315 CAMELTOWN HILL RD. DANVILLE, PA 17821
36	NEAL C. FORD	4708 BILLS LANE LENOIR, NC 28645
62	BLOWING ROCK COUNTRY CLUB	P.O. BOX 628 BLOWING ROCK, NC 28605
65	BLOWING ROCK IMPROVEMENT CO.	P.O. BOX 905 BLOWING ROCK, NC 28605
66	LEE OVAL JAYNES	314 HUFFMAN ST. MORGANTON, NC 28655
	NCDOT	P.O. BOX 250 NORTH WILKESBORO, NC 28659
130	GEORGE H. HAMPTON	P.O. BOX 1849 BLOWING ROCK, NC 28605
160	RICHARD W. GRAGG	P.O. BOX 12 BLOWING ROCK, NC 28605
161-A	TOWN OF BLOWING ROCK	1036 MAIN ST. BLOWING ROCK, NC 28605
162	TOWN OF BLOWING ROCK ABC BOARD	7960 VALLEY BLVD. BLOWING ROCK, NC 28605
164	BROTHERS IN ARMS LLC	226 MULBERRY ST. NW LENOIR, NC 28645
165	CHARMING INNS OF BLOWING ROCK	18 BROAD ST. (SUITE 400) CHARLESTON, SC 29401
178	GREGORY LANDAU	16425 COLLINS AVE. (APT. 291) NORTH MIAMI BEACH, FL 33160
181	BLOWING ROCK COMMUNITY ART CENTER FOUNDATION INC.	P.O. BOX 1009 BLOWING ROCK, NC 28605

NCDOT
DIVISION OF HIGHWAYS
CALDWELL/ WATAUGA CO.
PROJECT: 34402.1.1 (R-2237C)
US 321 FROM SR 1500
TO US 221 AT
BLOWING ROCK

SHEET OF 1/24/09

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
182	MICHAEL FILIPSKI	7890 EVERSFIELD RD. STOKESDALE, NC 27357
187	BR WATAUGA LLC	600 GREEN VALLEY RD. (SUITE 202) GREENSBORO, NC 27404
189	CLIFF DWELLERS ENTERPRISES INC.	5885 N. ROSE BARK WAY BEVERLY HILLS, FL 33465
191	JEREMIAH G. SUMNER	P.O. BOX 2125 BLOWING ROCK, NC 28605
195	TANAWHA LLC	P.O. BOX 2701 BLOWING ROCK, NC 28605
197	SUSIE W. UNDERWOOD	148 POSSUM HOLLOW RD. BLOWING ROCK, NC 28605

NCDOT
DIVISION OF HIGHWAYS
CALDWELL/ WATAUGA CO.
PROJECT: 34402.1.1 (R-2237C)
US 321 FROM SR 1500
TO US 221 AT
BLOWING ROCK

SHEET OF 11/24/09

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS							
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing In Wetlands (ac)	Hand Clearing In Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)		
I	385+70 TO 389+45 -L-	24" CSP								0.02	<0.01	294	36	
II	403+30 -L-	36" CSP								0.01	<0.01	119	33	
III	442+00 TO 444+00 -L-	54" RCP BANK STABILIZATION FILL IN STREAM	0.01		0.02					0.01	0.01	150	43	
IV	444+65 TO 449+50 -L-		0.07		0.02					0.03	0.01	317	46	
V	451+40 -L-	BANK STABILIZATION								<0.01	<0.01	22	6	
VI	495+20 TO 498+15 -L-		0.01							0.03		294		
VII	523+33.5 -L-	2 @ 11"X8" RCBC BANK STABILIZATION			0.01					0.04	0.01	128	26	
VIII	528+40 TO 530+50 -L-	30" RCP 15" CSP				NON-JURISDICTIONAL								
TOTALS:			0.09		0.03	0.03				0.15	0.04	1429	190	

AJN/Revised 3/31/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CALDWELL/WATAUGA COUNTIES
WBS - 34402.1.1 (R-2237C)

SHEET

10/5/2010

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS							
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing In Wetlands (ac)	Hand Clearing In Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)		
IX	540+20 -L-	42" WELDED STEEL PIPE								0.01	<0.01	133	10	
X	553+50 -L-	30" RCP								0.01	<0.01	59	19	
XI	555+50 -L-	15" RCP	0.04							<0.01	<0.01	25	19	
XII	561+56 -L-	84" WELDED STEEL PIPE											45	
TOTALS:			0.04							0.02	0.02	217	93	
GRAND TOTALS			0.13		0.03	0.03				0.17	0.05	1646	283	

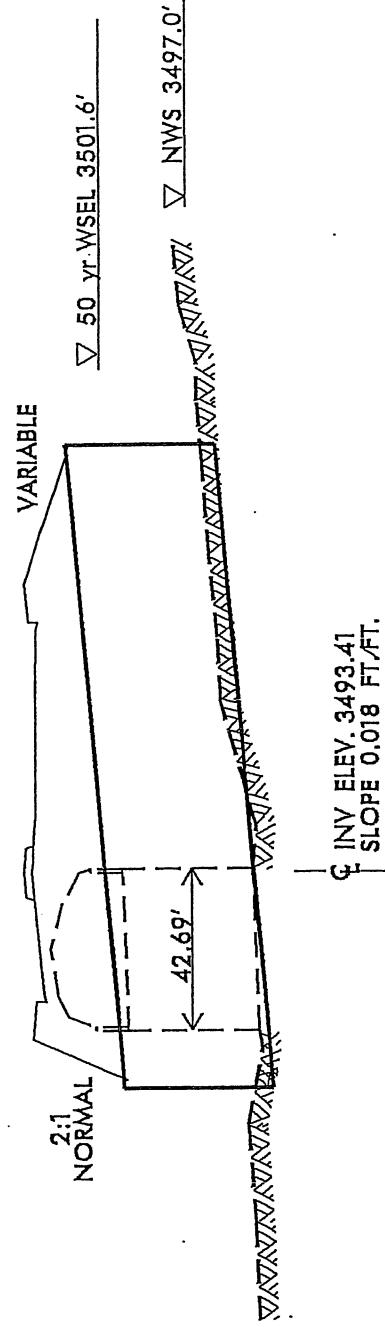
AJN/Revised 3/31/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CALDWELL/WATAUGA COUNTIES
WBS - 34402.1.1 (R-2237C)

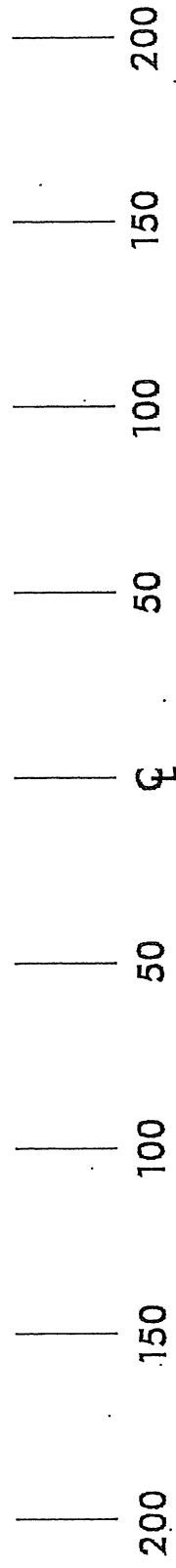
SHEET

10/5/2010

523+33.51 -L-
 2 @ 11' X 8' RCBC
 GRADE PT. ELEV. 3505.26'
 SKEW = 96



NOTE: BURY INLET
 AND OUTLET ONE FOOT. PLACE
 SILLS IN INLET AND OUTLET
 ACROSS BOTH BARRELS.

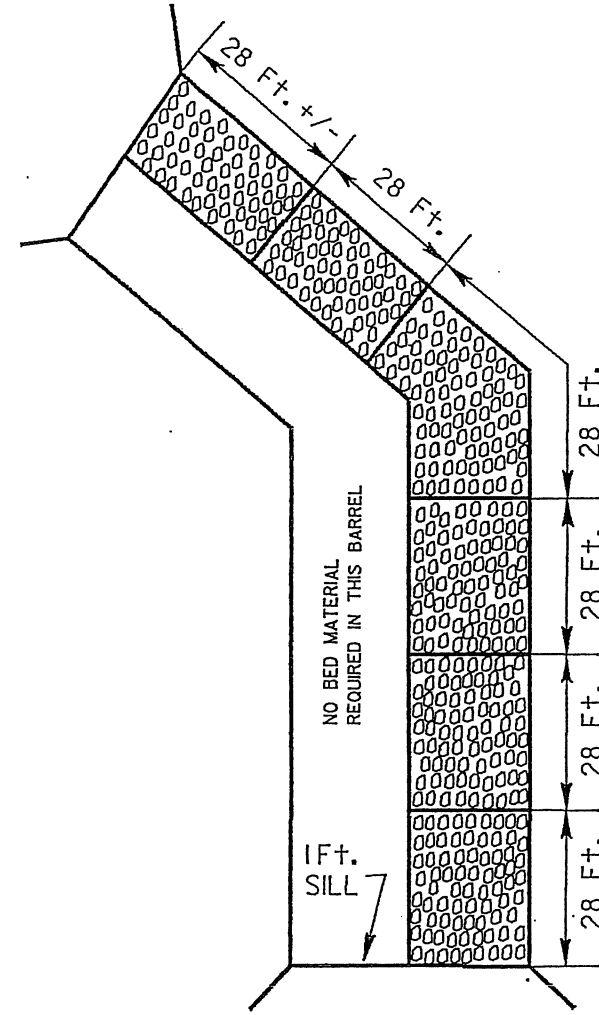


PROFILE

SITE VII

NCDOT
 DIVISION OF HIGHWAYS
 CALDWELL/WATAUGA CO.
 PROJECT: 34402.L1 (R-2237C)
 US 321 FROM SR 1500 TO
 US 221 AT BLOWING ROCK

SHEET 1 OF 5

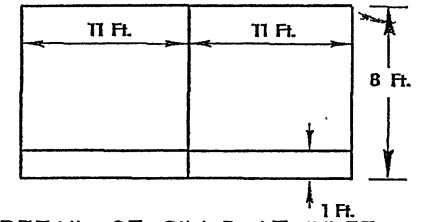


DETAIL OF SILLS

-L- STA. 523 +33.51
 2 @ 11 Ft. X 8 Ft. RCBC
 MIDDLE FORK
 (not to scale)

NOTES:

1. Bed material placed in the culvert shall be natural stone with a gradation size similar to that of Class 'B' riprap. Bed material is subject to approval by the Engineer.
2. Sills are to be 1.0 Ft. wide and cast separately and attached by dowels.
3. Top of sill should match stream bed elevation in stream.

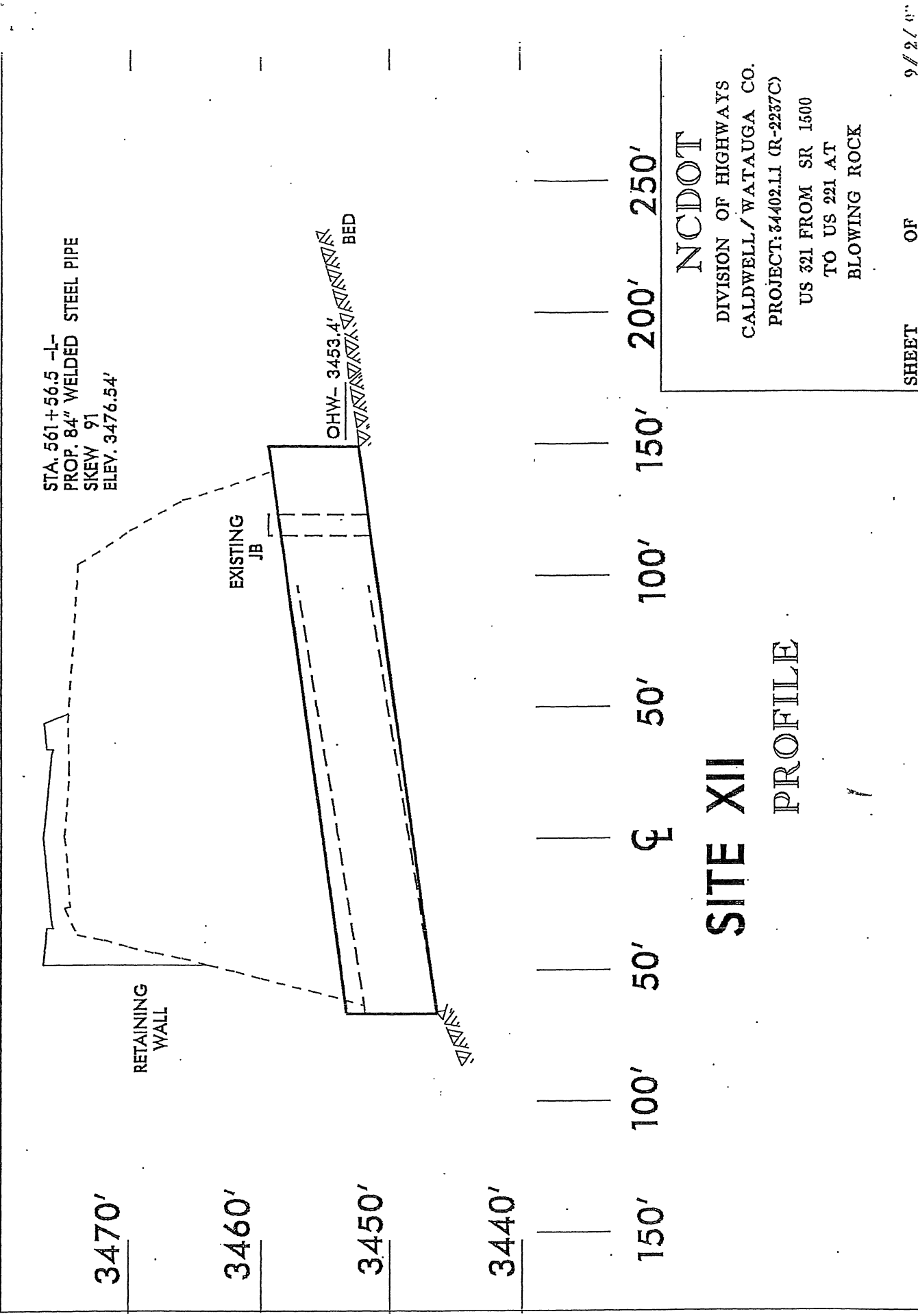


DETAIL OF SILLS AT INLET
 AND OUTLET
 (not to scale)

NCDOT

DIVISION OF HIGHWAYS
 WATAUGA COUNTY
 PROJECT: 34402.L1 (R-2237C)
 US 321 FROM SR 1500
 TO US 221 AT
 BLOWING ROCK

SHEET 1 OF 5 9/30/09

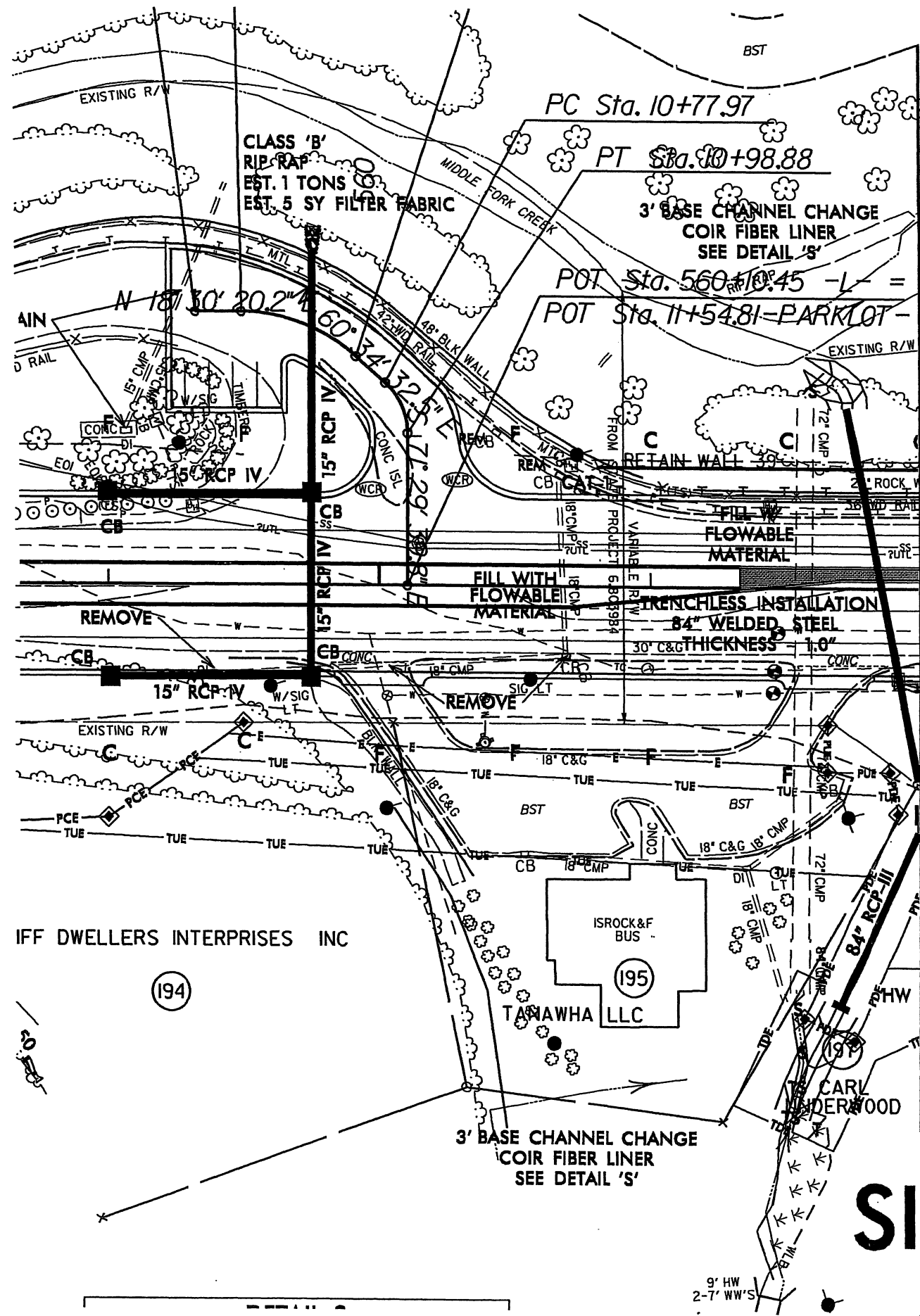


**SITE XII
PROFILE**

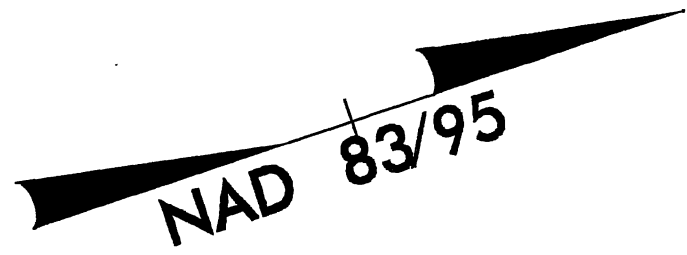
NCDOT
 DIVISION OF HIGHWAYS
 CALDWELL/WATAUGA CO.
 PROJECT: 34402.11 (R-2237C)
 US 321 FROM SR 1500
 TO US 221 AT
 BLOWING ROCK

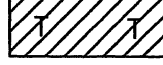


RW SHEET NO. 19	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

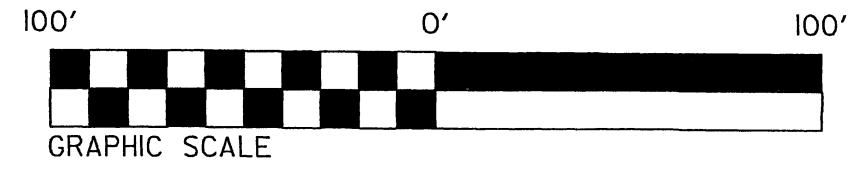
MODIFICATION (June 2012)
 Permit Drawing
 Sheet 4 of 4



MATCH LINE SEE SHEET 20



-  DENOTES TEMPORARY FILL IN WETLAND
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SITE XII

IFF DWELLERS INTERPRISES INC

(194)

ISROCK&F BUS

(195)

TAWAWHA LLC

CARL UNDERWOOD

9' HW
2-7' WW'S

*****SYTIME*****

5/14/12

PROJECT REFERENCE NO.	SHEET NO.
R-2237C	19
R/W SHEET NO.	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT SET ONLY AS TO THE REVISIONS.	NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT SET ONLY AS TO THE REVISIONS.
THIS DOCUMENT ORIGINALLY DESIGNED AND DRAWN BY:	THIS DOCUMENT ORIGINALLY DESIGNED AND DRAWN BY:
CHRISTY L. BROWN, PE	HARVEY T. BROWN, PE
DATE: 5-18-12	DATE: 5-18-12
THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS.	THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS.

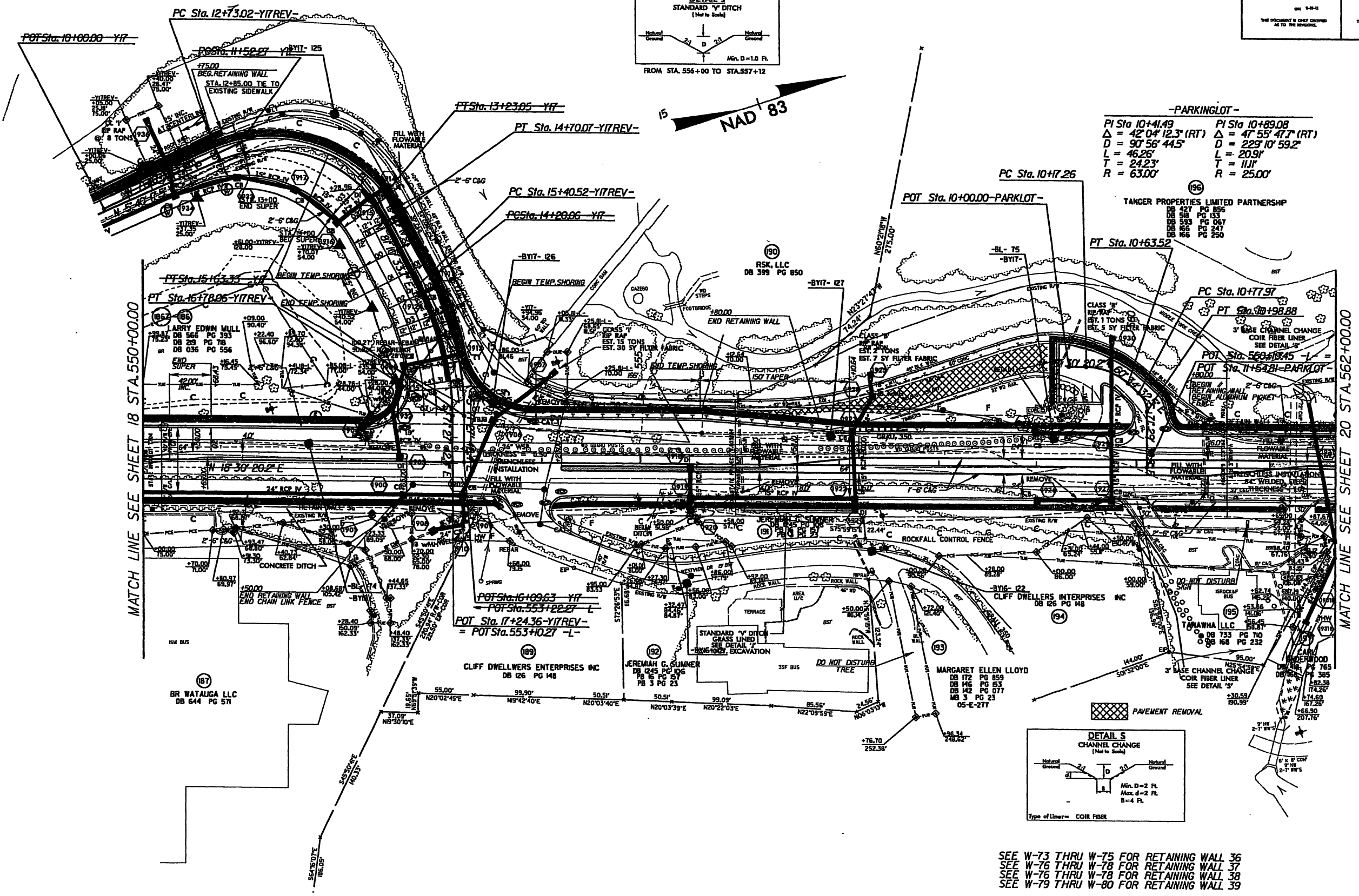
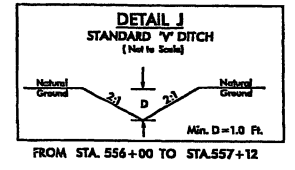
-Y17-

PI Sta 12+60.28	PI Sta 14+93.08
$\Delta = 88^{\circ} 57' 09.5''$ (RT)	$\Delta = 27^{\circ} 21' 43.9''$ (RT)
D = 52' 05" 13.5'	D = 19' 05" 54.9'
L = 170.70'	L = 143.27'
T = 100.01'	T = 73.03'
R = 10.00'	R = 300.00'

-Y17REV-

PI Sta 13+96.06	PI Sta 16+10.63
$\Delta = 86^{\circ} 50' 51.1''$ (RT)	$\Delta = 27^{\circ} 21' 43.9''$ (RT)
D = 44' 04" 25.2'	D = 19' 53" 39.7'
L = 197.05'	L = 137.54'
T = 123.04'	T = 70.11'
R = 130.00'	R = 288.00'

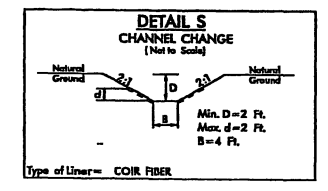
NOTE: SEE SHEET 29 FOR -L- PROFILE
 SEE SHEET 33 FOR -Y17- PROFILE
 SEE SHEET 2-1 FOR -Y17-/-L- INTERSECTION DETAIL



REVISIONS

Const. Revisions: Realigned -Y17- (-Y17REV-) and revised drainage. WTB 5/19/2012
 R/W Revisions: Revised P.U.E., T.U.E., and T.D.E. on Parcel 195.187 due drainage pipe relocation. WTB 5/16/2012

DC: JUN-2012 01:11
 R/W: 11:58:53 AM 5/14/12
 path: 19.dgn



SEE W-73 THRU W-75 FOR RETAINING WALL 36
 SEE W-76 THRU W-78 FOR RETAINING WALL 37
 SEE W-76 THRU W-78 FOR RETAINING WALL 38
 SEE W-79 THRU W-80 FOR RETAINING WALL 39