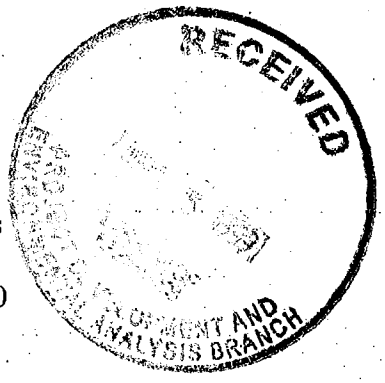
DEPARTMENT OF THE ARMY
Wilmington District, Corps of Engineers
Post Office Box 1890
Wilmington, North Carolina 28402-1890



ACTION ID No. 199505645

April 1, 1999

PUBLIC NOTICE

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT), DIVISION OF HIGHWAYS, Post Office Box 25201, Raleigh, North Carolina 27611-5201, has applied for a Department of the Army (DA) permit pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 TO DISCHARGE DREDGED OR FILL MATERIAL INTO 0.55 ACRES OF SECTION 404 WETLANDS AND MECHANIZE LAND CLEAR 0.11 ACRES OF SECTION 404 WETLANDS ADJACENT TO THE TAR RIVER. THE NCDOT PROPOSES TO REPLACE THE GREEN STREET BRIDGE (SR 1531) AND CONSTRUCT A NEW PARALLEL BRIDGE TO EXTEND PITT STREET ACROSS THE TAR RIVER IN GREENVILLE, PITT COUNTY, NORTH CAROLINA, TIP NO. B-2225, FEDERAL AID PROJECT NO. BRM-6964(1), STATE PROJECT NO. 8.2220601.

BACKGROUND:

NCDOT applied for a nationwide permit to construct the proposed project by application dated August 24, 1995. The Corps of Engineers determined that the proposed project would cause more that minimal impacts to the environment and the project could not be authorized by the nationwide permit. The social, economic, and environmental impacts associated with this project were then described in a Federal Highway Administration Environmental Assessment and Programmatic Section 4(f) Evaluation (EA) dated December 17, 1996. The Federal Highway Administration (FHWA) determined that this project will not have a significant effect on the human environment and issued a FONSI on February 27, 1986. A new DA application was submitted to the Corps of Engineers on March 10, 1999, requesting an individual permit for the proposed work and is the subject of this public notice. Transportation Improvement Program (TIP) B-2225 is scheduled for construction in July 1999.

PROJECT DESCRIPTION:

The following description of the work is taken from data provided by the applicant and from observations made during onsite inspections by a representative of the Corps of Engineers. Plans submitted with the application show that the NCDOT proposes to replace bridge number 411 (Greene Street Bridge) in its existing location with a new two-lane bridge that will accommodate northbound traffic. Pitt Street will be extended across the Tar River with a second two-lane bridge 330 feet upstream of Bridge 411 and will accommodate southbound traffic. During construction of the Pitt Street bridge two-way traffic will remain on the existing Greene Street bridge and during the demolition and reconstruction of the Greene Street bridge traffic will be rerouted onto the new Pitt Street bridge. The proposed Pitt Street bridge will be 944.6 feet long and 37.3 feet wide and the Greene Street bridge will be 872.5 feet long and 37.3 feet wide. This project will also require the construction of temporary rock causeways to provide construction access.

NCDOT proposes to require the contractor to submit a disassembly plan for the existing Green Street bridge that will include location of all temporary bents erected in the river for the purpose of this disassembly. The existing bents located in the Tar River will be removed down to the river bottom by nonshattering means and the pieces removed from the site. No work will occur during the construction moratorium of February 15 through June 30 in order to protect juvenile fish.

Wetland impacts will occur at 4 separate sites with open water impacts occurring at the Greene Street crossing. Of the total 0.66 acres of permanent wetland impacts, 0.36 acres are cypress swamp, 0.2 acres are bottomland hardwoods and 0.1 acre consists of disturbed marsh . In addition, there will be 0.5 acres of temporary fill in jurisdictional wetlands and 0.04 acres of temporary fill in surface waters from the causeways that will provide access for the construction equipment.

NCDOT proposes to mitigate the wetland impacts by restoring, enhancing and preserving wetlands at the Greene Street Mitigation Site located adjacent to the proposed work site. The mitigation plan is attached to this public notice. According to the applicant, the Greene Street Mitigation Site will provide approximately 1.75 acres of creation/restoration, 0.40 acres of enhancement, and 0.95 acres of preservation of upland levee forest and adjacent bottomlands. A detailed discussion of the wetland impacts and respective mitigation is presented in this attached plan.

According to NCDOT, the purpose of the proposed work is to improve level of service, reduce accidents and to relieve traffic congestion in downtown Greenville. A site map is included with this public notice along with the temporary and permanent wetland impacts site maps (Sheets 1 to 12). The EA and the application are available for review at the Washington Regulatory Field Office at 107 Union Drive, Suite 202, Washington, North Carolina.

The State of North Carolina will review this public notice to determine the need for the applicant to obtain any required State authorization. No Department of the Army (DA) permit will be issued until the coordinated State viewpoint on the proposal has been received and reviewed by this agency, nor will a DA permit be issued until the North Carolina Division of Environmental Management (NCDEM) has determined the applicability of a Water Quality Certification as required by PL 92-500.

This application is being considered pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U&.S.C. 1344). Any person may request, in writing within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearing shall state, with particularity, the reasons for holding a public hearing.

The District Engineer has consulted the latest published version of the National Register of Historic Places and found the Parker Through Truss (Greene Street Bridge) to be eligible for the National Register of Historic Places on August 14, 1979. Based on coordination with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation a Memorandum of Agreement (MOA) was prepared which stipulates that NCDOT shall record the Parker Through Truss prior to demolition.

The District Engineer, based on available information, is not aware that the proposed activity will affect species, or their critical habitat, designated as endangered or threatened pursuant to the Endangered Species Act of 1973.

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so the conditions under which it will be allowed to occur, are

therefore determined by the outcome of the general balancing process. That decision should reflect the national concern for both protection and utilization of important resources. All factors which may be relevant to the proposal must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards and flood plain values (in accordance with Executive Order 11988), land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving the placement of dredged or fill materials in waters of the United States, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria, a permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

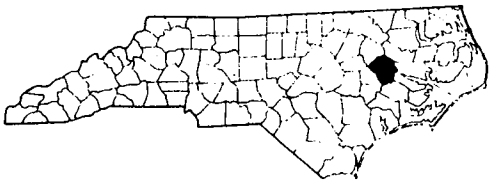
The Corps of Engineers is soliciting comments from the public; Federal, State and local agencies and officials; Indian Tribes and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

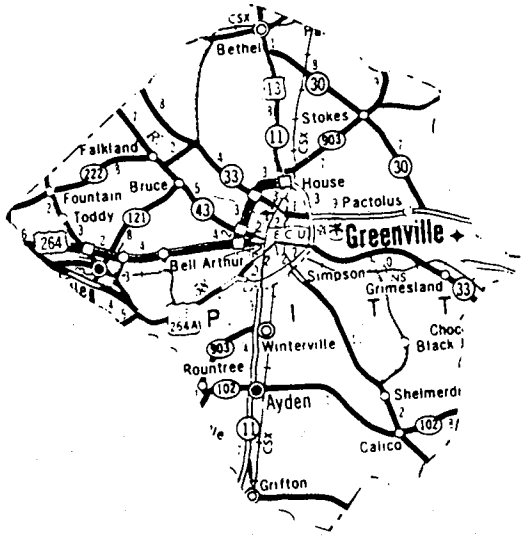
Generally, the decision whether to issue this Department of the Army (DA) permit will not be made until the North Carolina Division of Water Quality (NCDWQ) issues, denies, or waives State certification required by Section 401 of the Clean Water Act. The NCDWQ considers whether or not the proposed activity will comply with Sections 301, 302, 306, and 307 of the Clean Water Act. The application and this public notice for the DA permit serves as application to the NCDWQ for certification.

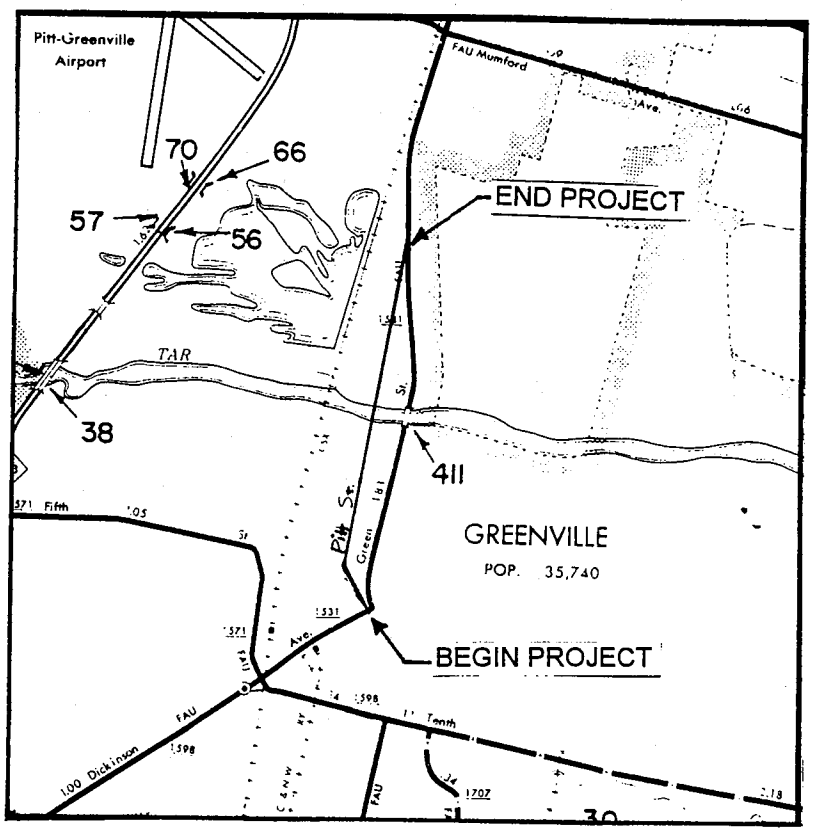
Additional information regarding the Clean Water Act certification may be reviewed at the offices of the North Carolina Division of Water Quality (NCDWQ), at the address specified below. Copies of such materials will be furnished to any person requesting copies upon payment of reproduction costs.

All persons desiring to make comments regarding the application for Clean Water Act certification should do so in writing delivered to the North Carolina Division of Water Quality (NCDWQ), 4401 Reedy Creek Road, Raleigh, North Carolina 27611-7687, **on or before April 12, 1999,** Attention: Mr. John Dorney.

Written comments pertinent to the proposed work, as outlined above, will be received in this office, Attention: Michael F. Bell, Washington Regulatory Field Office, Post Office Box 1000, Washington, North Carolina 27889-1000, until 4:15 p.m., May 1, 1999 at telephone (252)975-1616, extension 26.







SCALE

1 0 1 MILE

VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

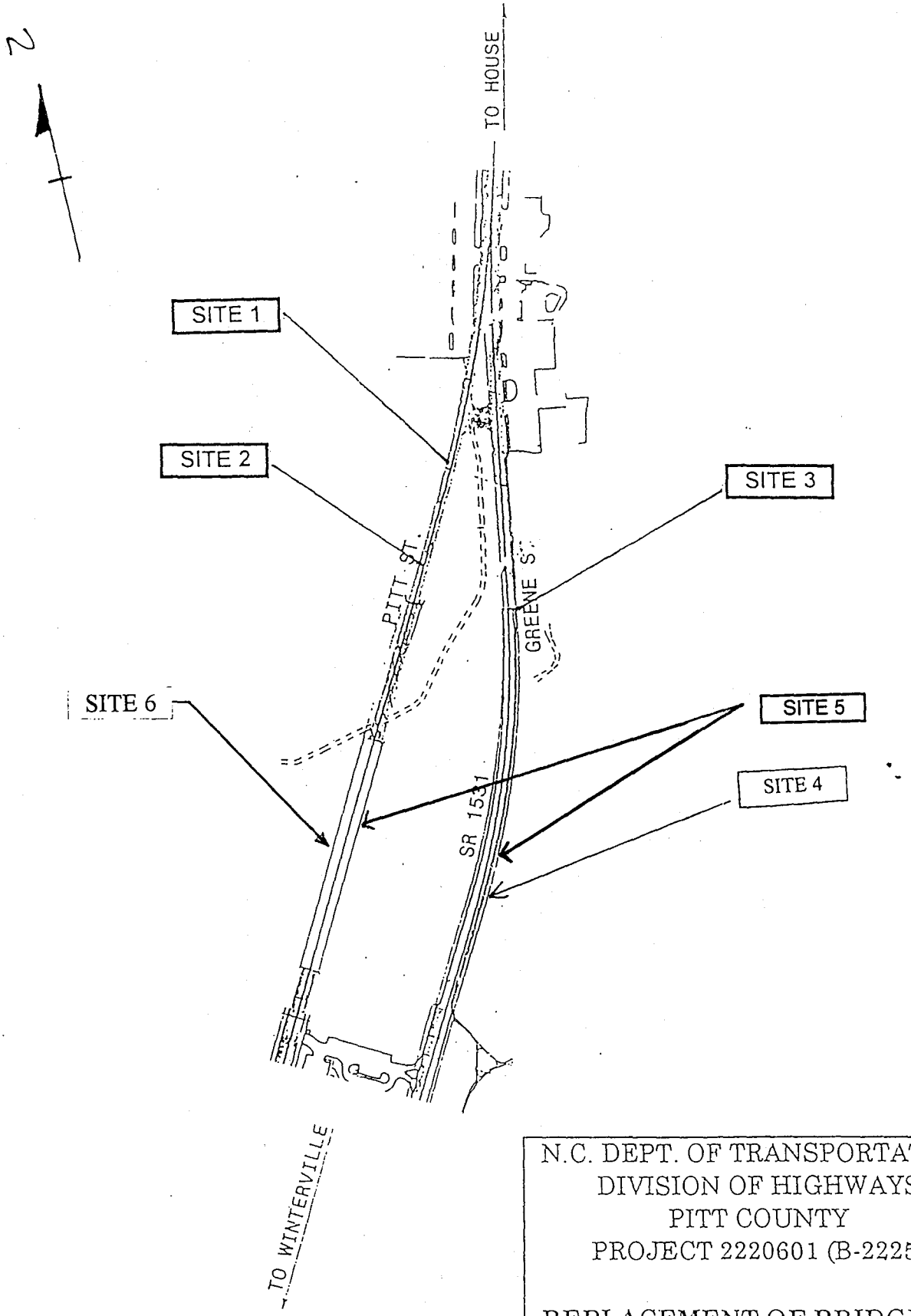
PITT COUNTY

PROJECT: 8.2220601 (B-2225)

REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 1 OF 15

SITE LOCATIONS

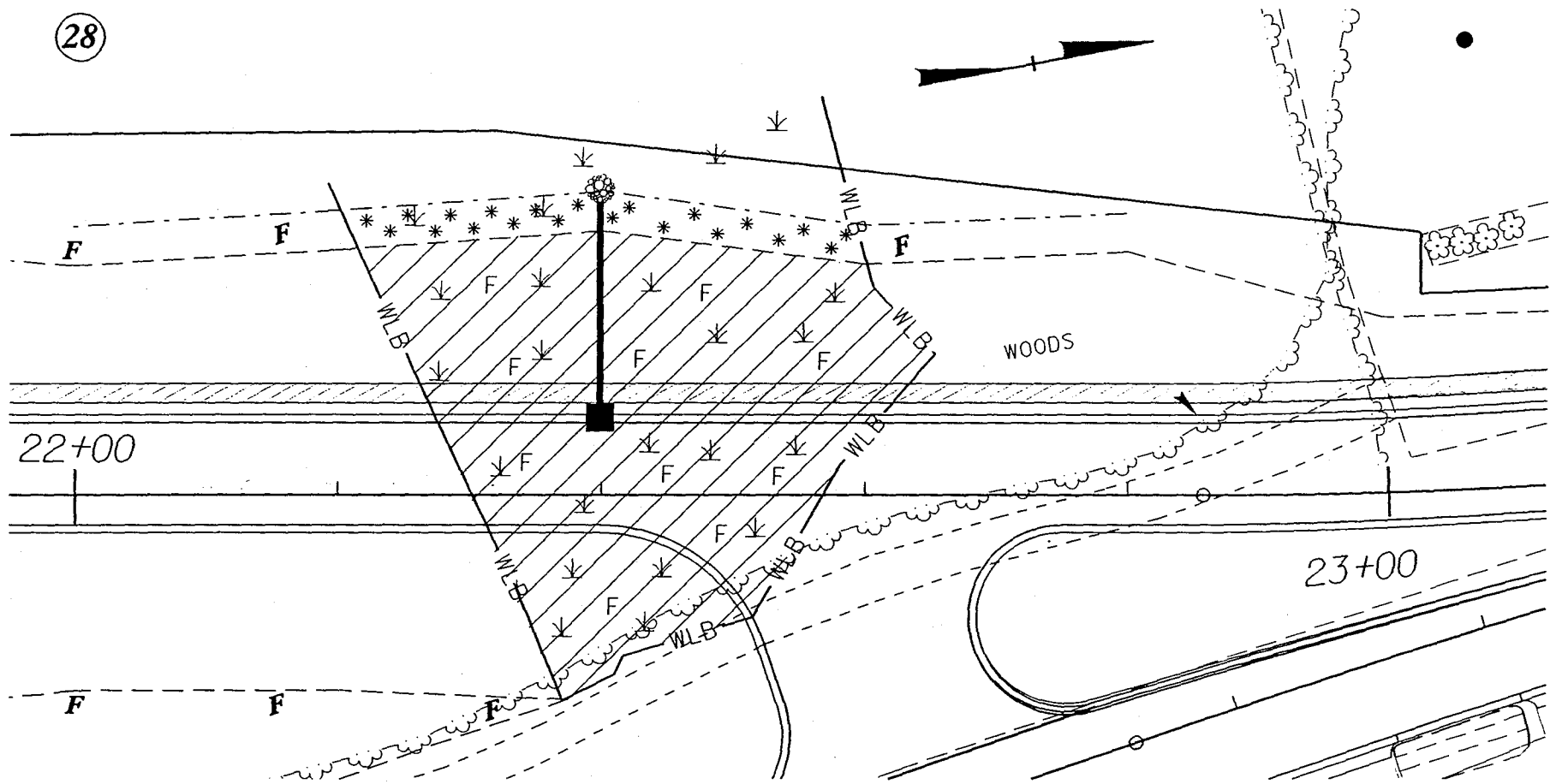


VICINITY MAP SHOWING LOCATION
OF STATE PROJECT 8.2220601

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY
PROJECT 2220601 (B-2225)

REPLACEMENT OF BRIDGE 411

SHEET 2 OF 15 July 1997



SITE I

PLAN VIEW

F F DENOTES FILL IN WETLANDS

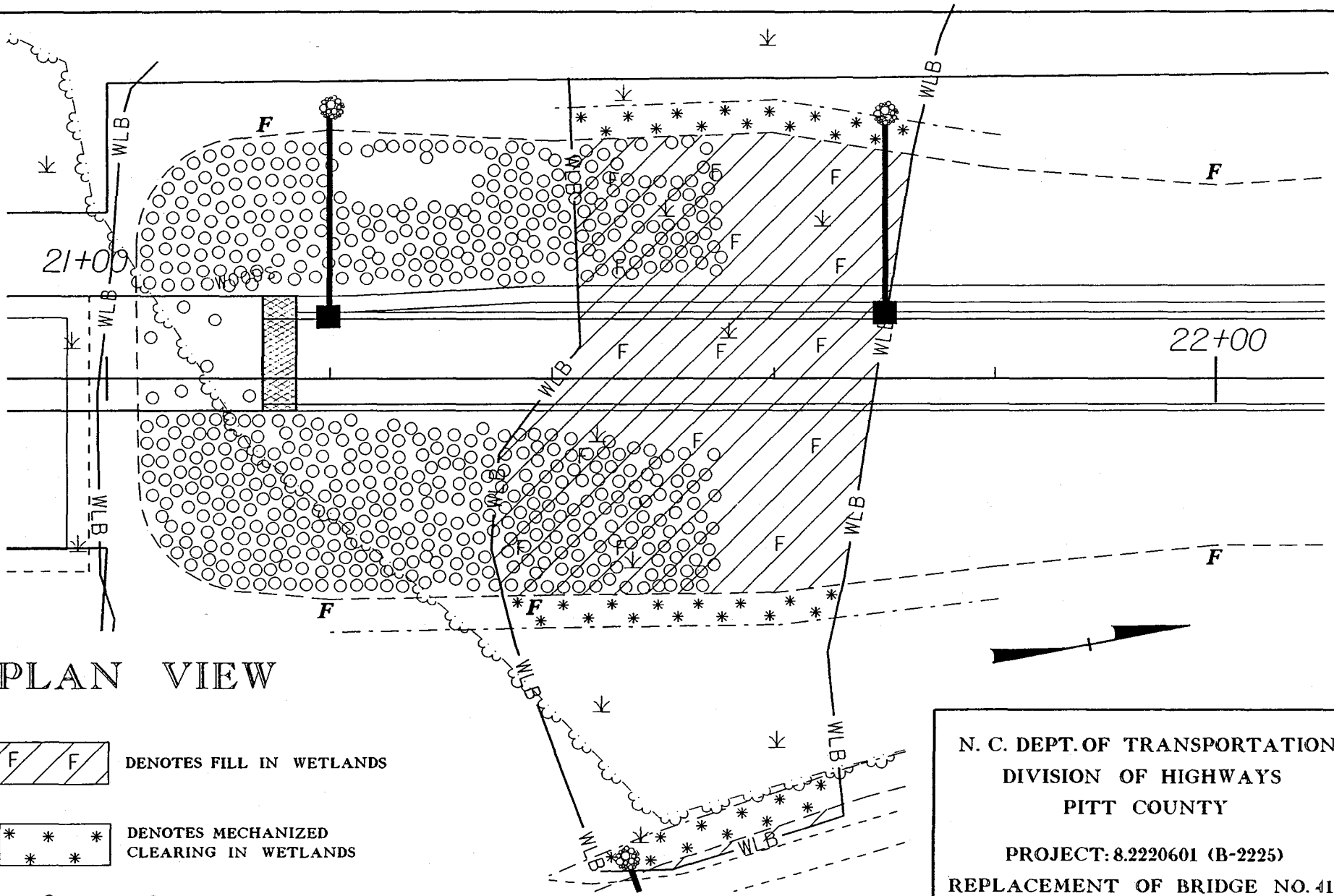
DENOTES MECHANIZED CLEARING IN WETLANDS

5m 0 10m SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 3 OF 15

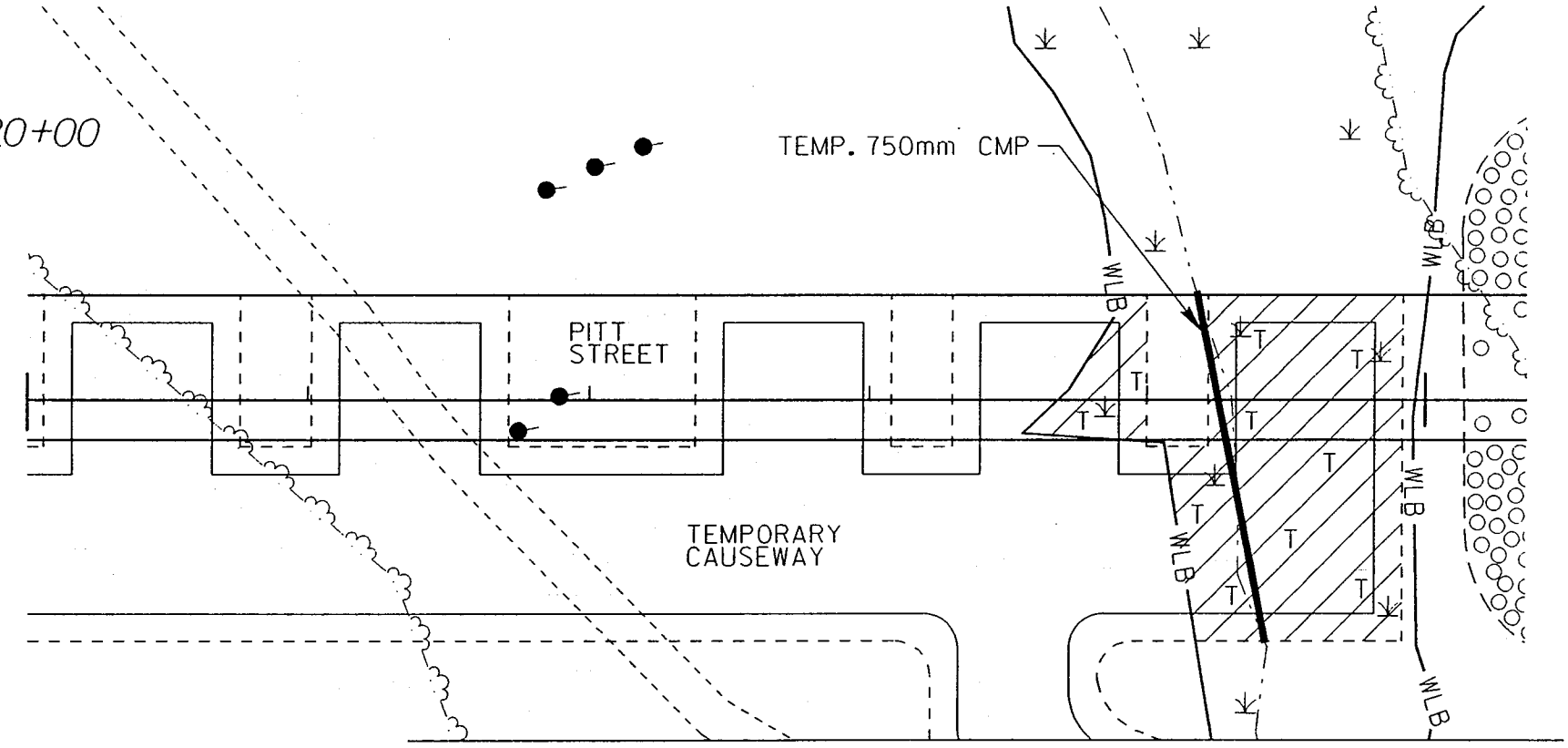


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)

REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 4 OF 15



SITE III

PLAN VIEW

5m 0 10m

SCALE

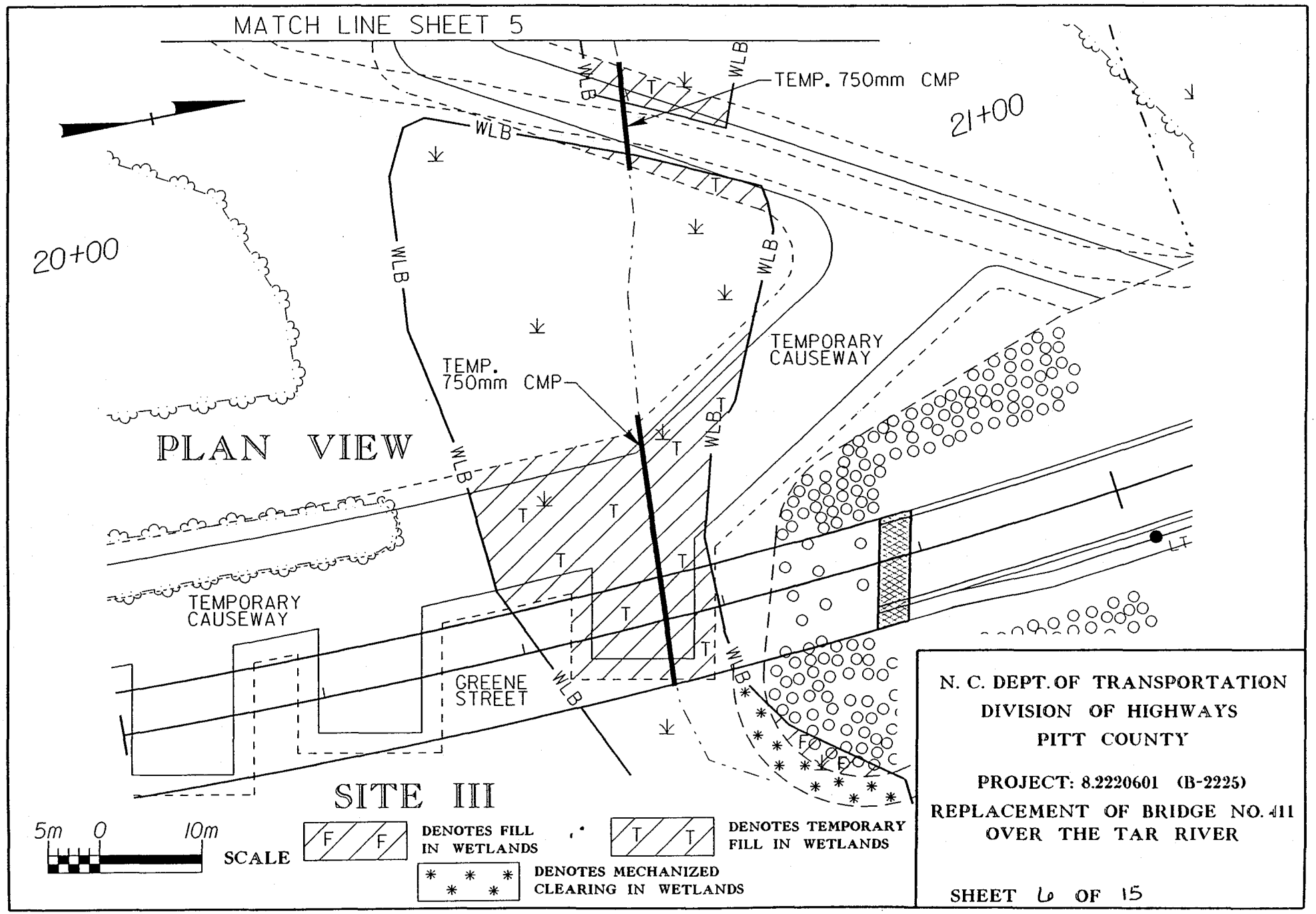
T T DENOTES TEMPORARY FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)

REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

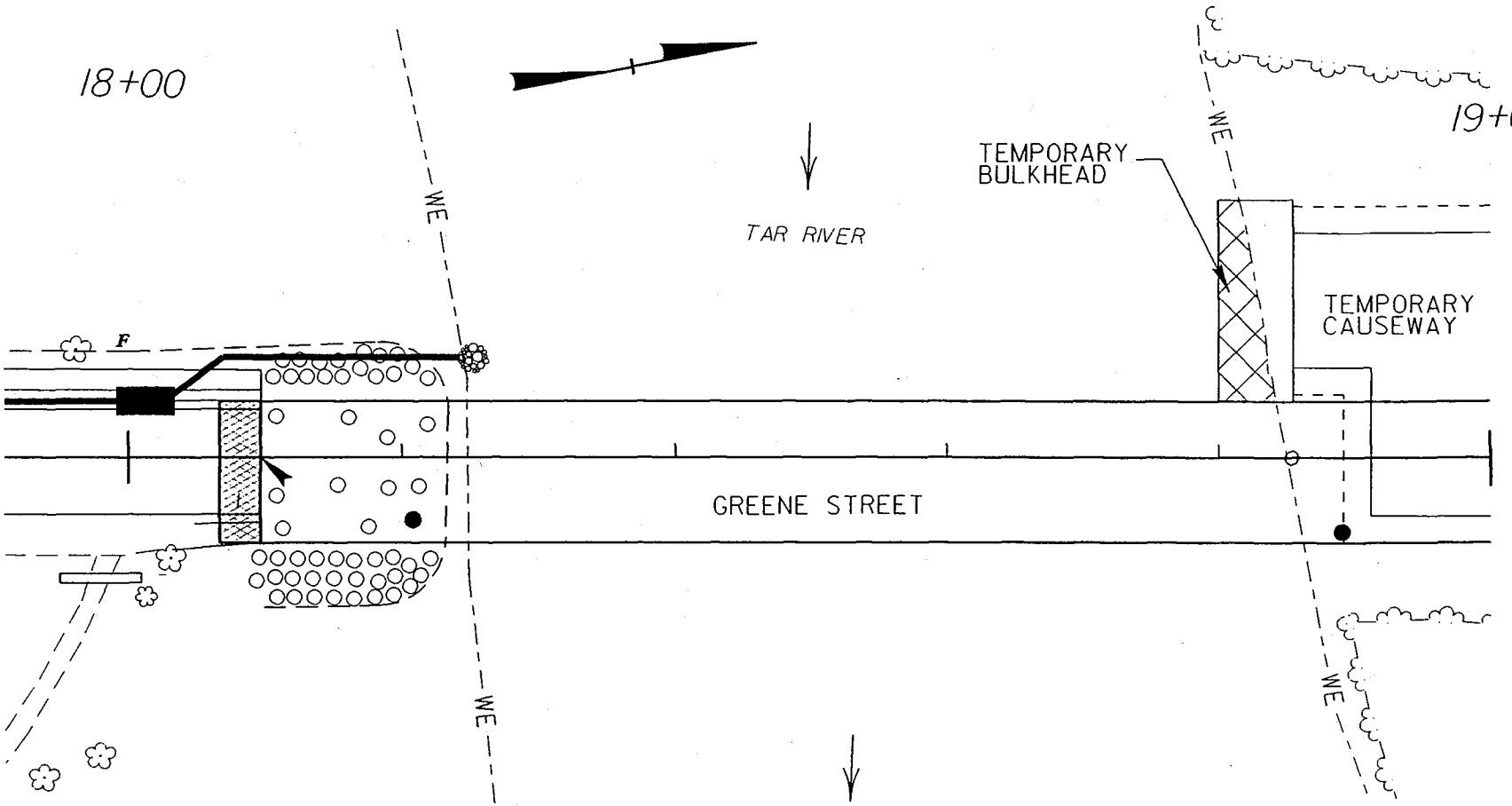
SHEET 5 OF 15



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 6 OF 15



SITE IV

PLAN VIEW

5m 0 10m

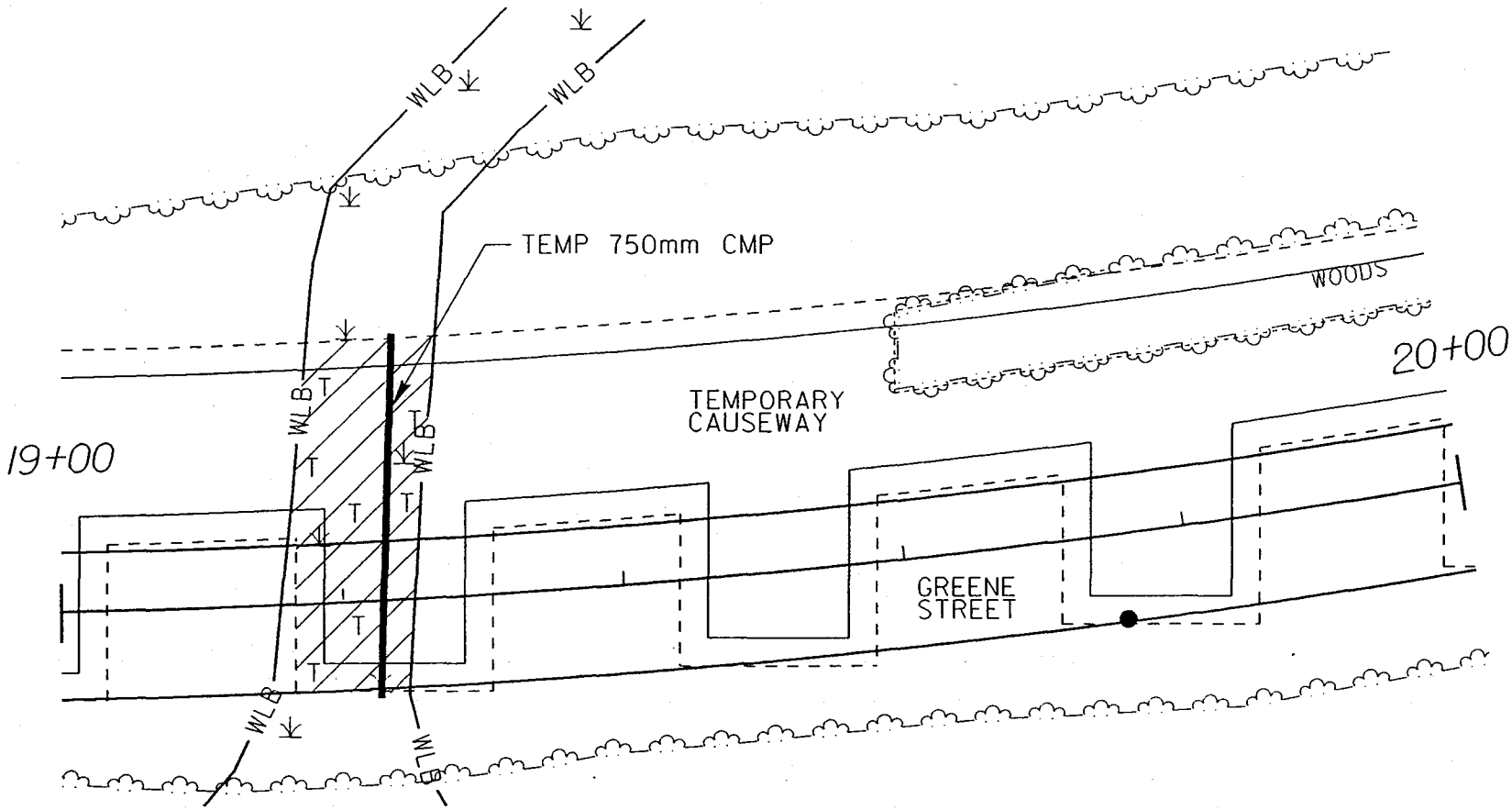
SCALE

DENOTES TEMPORARY
FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 7 OF 15



SITE V

PLAN VIEW

5m 0 10m

SCALE

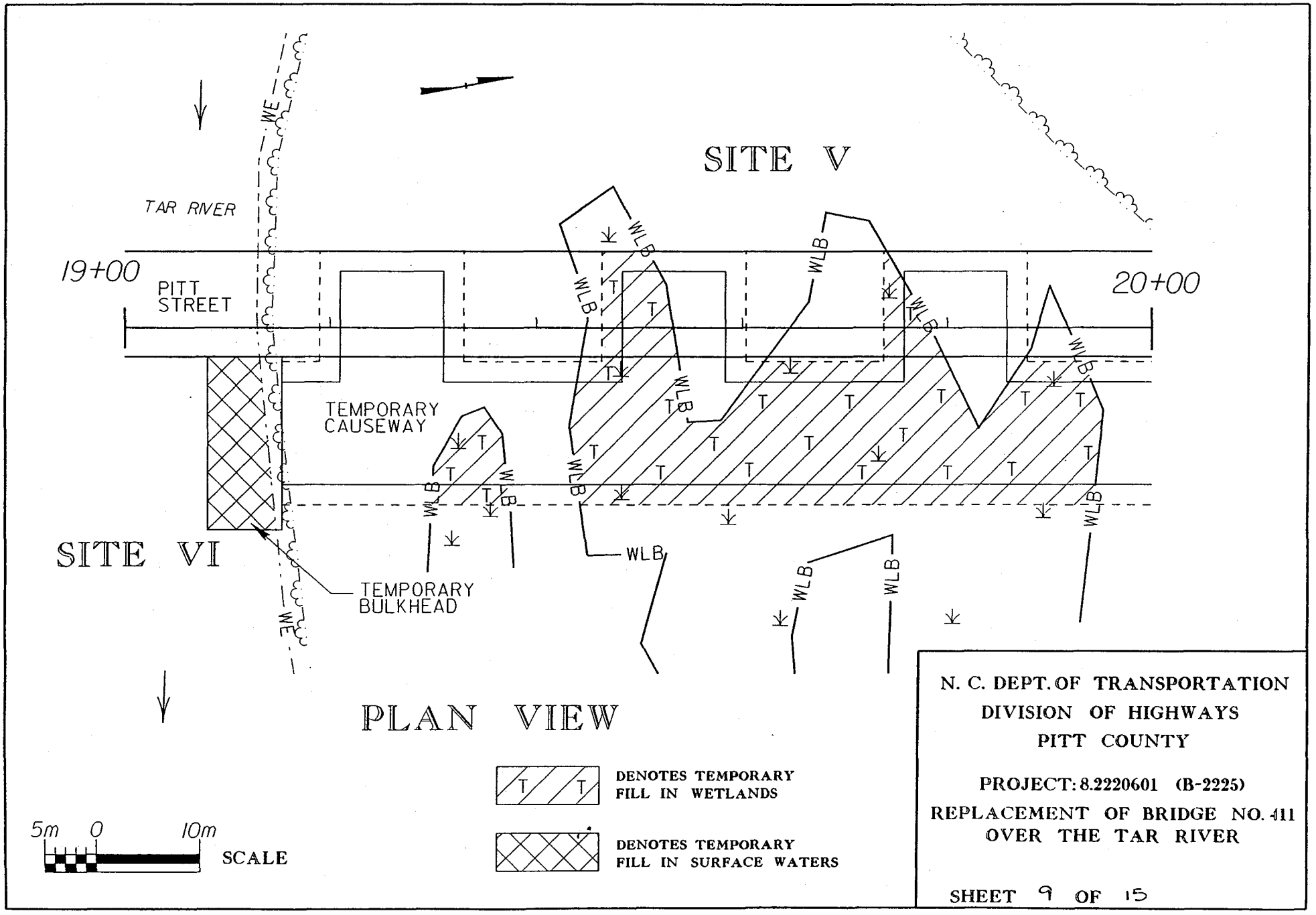
T T' DENOTES TEMPORARY FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)

REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

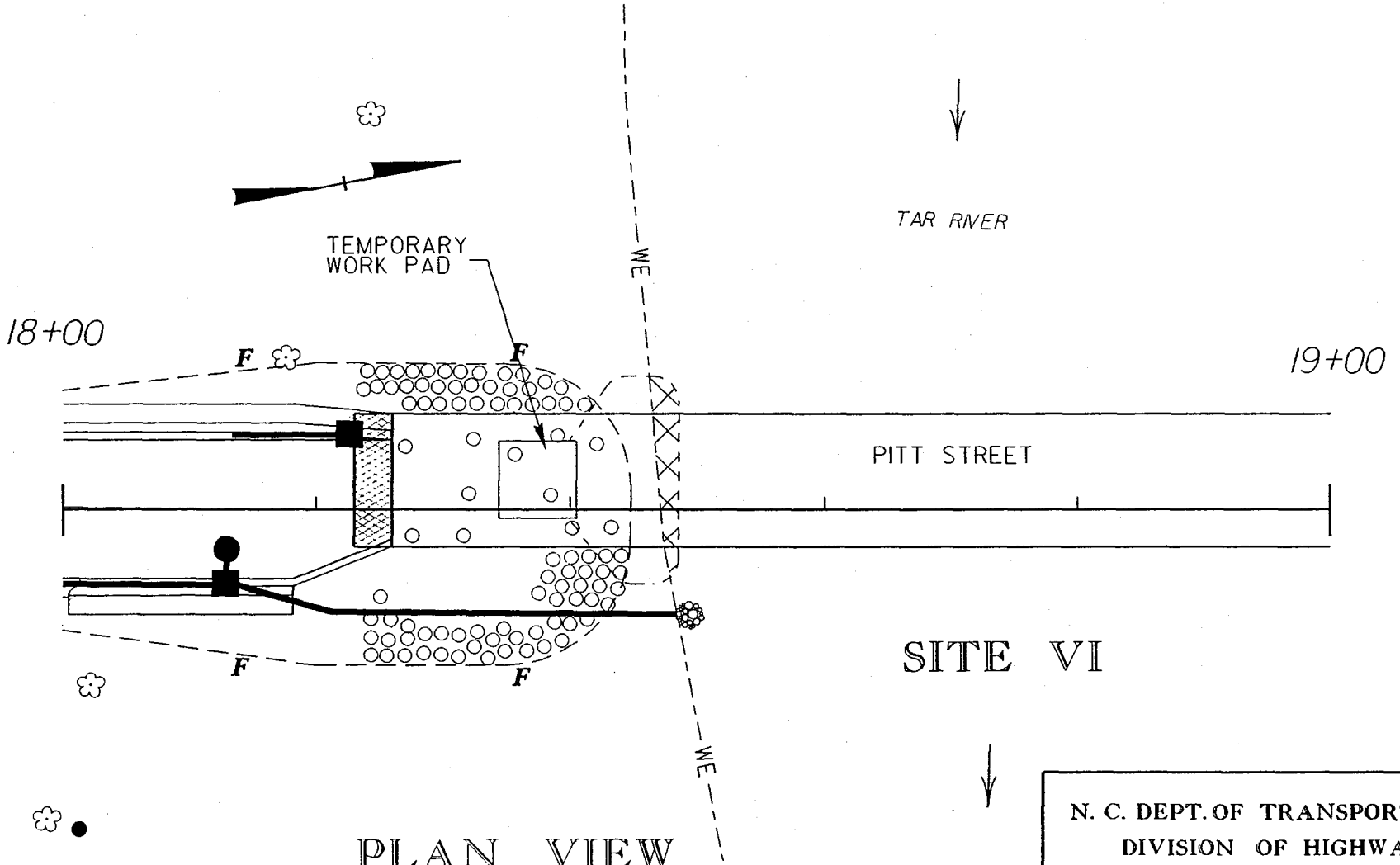
SHEET 8 OF 15



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 9 OF 15



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SCALE

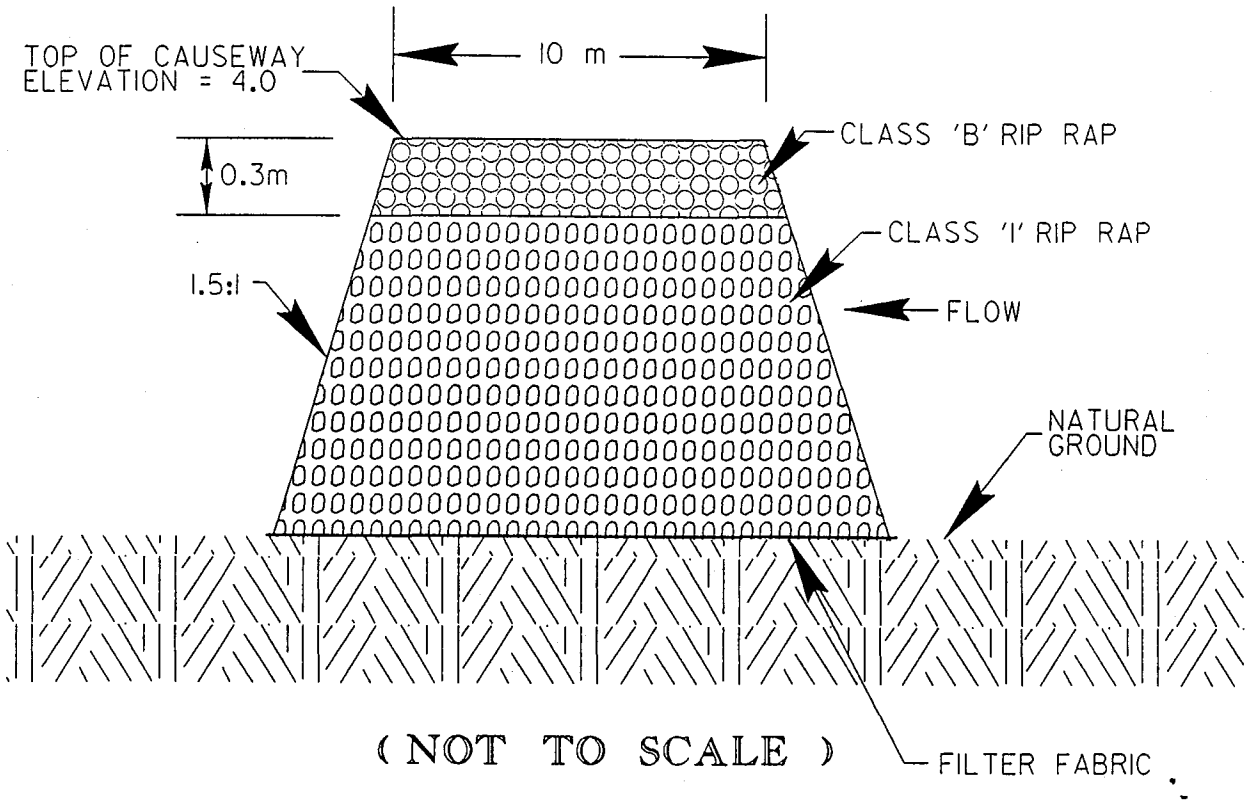
DENOTES TEMPORARY
FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY

PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 10 OF 15

DETAIL OF CAUSEWAY



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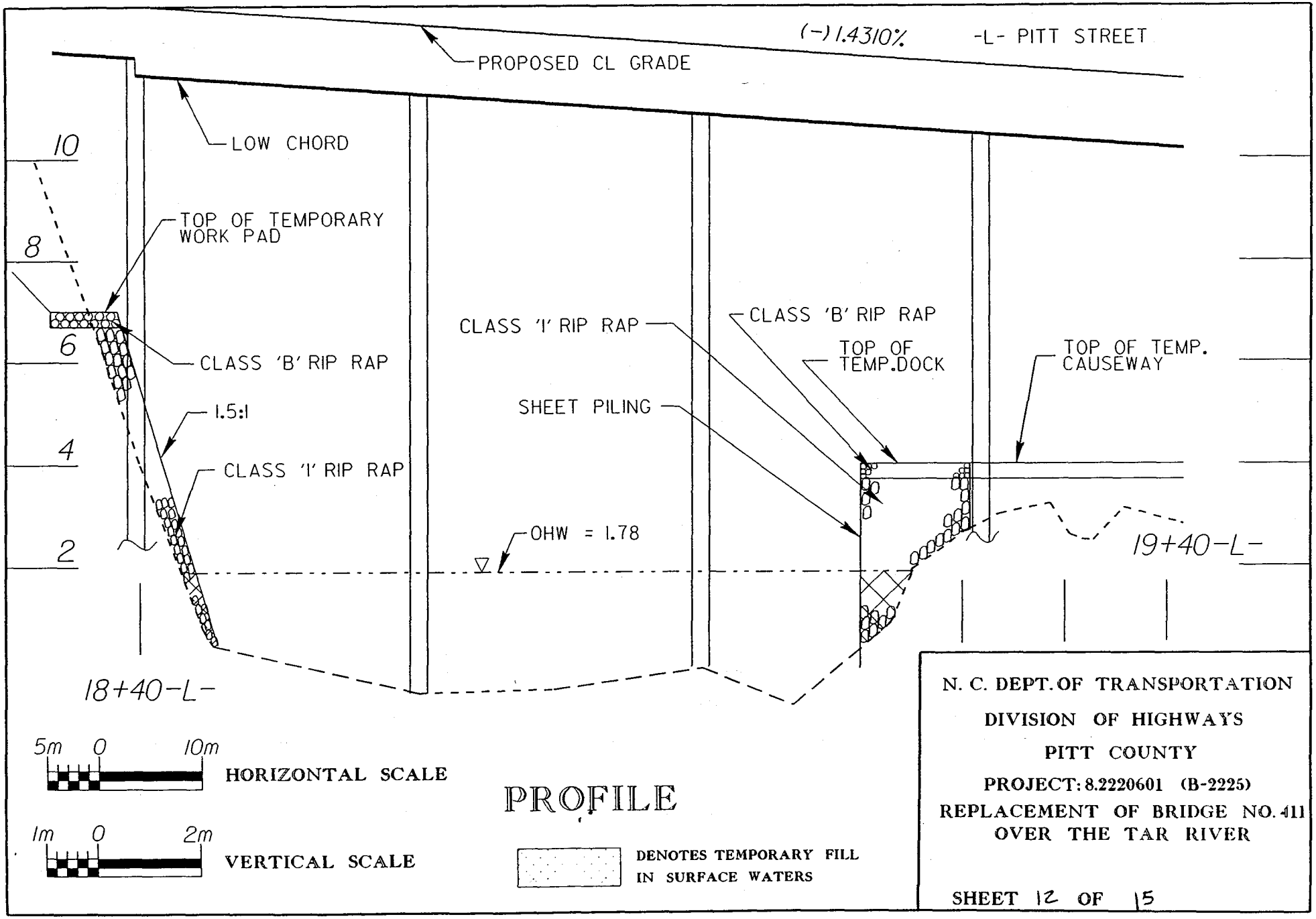
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

PITT COUNTY

PROJECT: 8.2220601 (B-2225)

REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

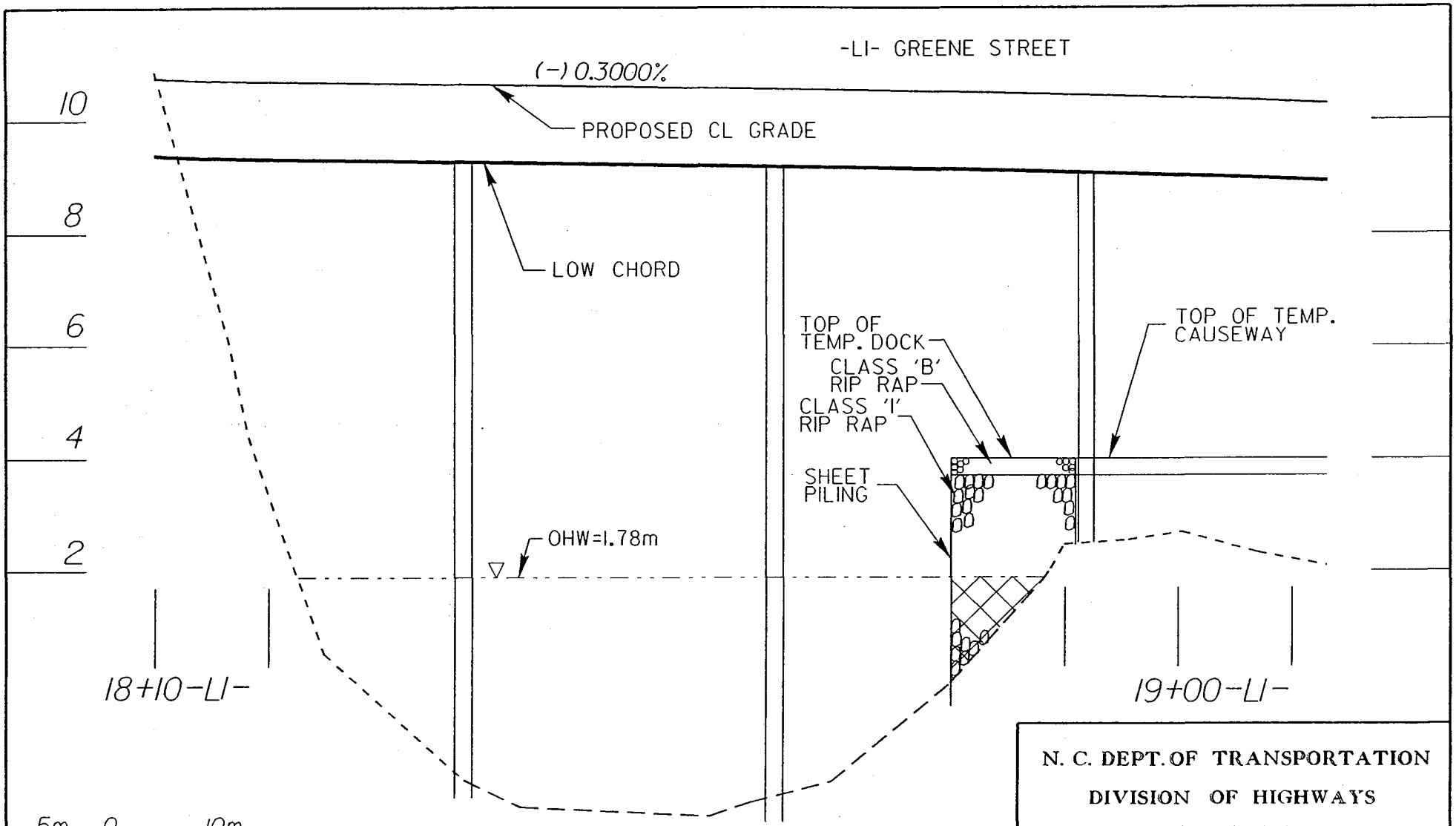
SHEET 11 OF 15



PROFILE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY
PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 12 OF 15



PROFILE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY
PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER

SHEET 13 OF 15

PROPERTY OWNERS

NAME AND ADDRESS
PROJECT NO. 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE 411
PITT COUNTY

SITE NUMBER	PARCEL NUMBER	OWNERS NAME	ADDRESS
1	29	Alma Dudley Heirs	Alma Dudley Heirs c/o Charles T. Dudley 2908 S. Evans Street Greenville, NC 27858
2	29	Alma Dudley Heirs	Alma Dudley Heirs c/o Charles T. Dudley 2908 S. Evans Street Greenville, NC 27858
3	28	Bobby Ray O'Neal	Bobby Ray O'Neal 6168 U.S. 13 Farmville, NC 27828
5	28	Bobby Ray O'Neal	Bobby Ray O'Neal 6168 U.S. 13 Farmville, NC 27828
		Greenville Utilities R/W	City of Greenville c/o Thomas N. Tysinger, P.E. 1500 Beaty Street Greenville, NC 27835

SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size	Fill In Wetlands (ha)	Temp.Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Interchange Isolated Wetland (ha)	Mechanized Clearing (Method III) (ha)	Temp. Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Existing Channel Filled (m)	Relocated Channel (m)	Enclosed Channel (m)
I	22+30 to 22+60 -L-	N/A	0.094				0.012					
II	21+40 to 21+70 -L-	N/A	0.127				0.025					
III	0+80 -L-/20+60 -L1	N/A	0.002	0.1			0.006					
IV	18+80 -L1-	N/A						0.004				
V	9+20 -L-/19+60-L1	N/A		0.104								
VI	18+50 & 19+10 -L-							0.013				
TOTALS:			0.223	0.204	0	0	0.043	0.017	0	0	0	0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
PITT COUNTY
PROJECT: 8.2220601 (B-2225)
REPLACEMENT OF BRIDGE NO. 411
OVER THE TAR RIVER
SHEET 15 OF 15

Compensatory Mitigation Plan for Greene Street Bridge
Pitt County
Bridge Number 411 on SR 1531 and Pitt Street (extension)
TIP Project NumberB-2225
North Carolina State Project Number 8.2220601

Prepared by
Natural Systems Unit II
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
February 1999

1.0 Introduction and Description of Proposed Project

The North Carolina Department of Transportation (NCDOT) proposes to replace the existing Greene Street bridge over the Tar River in Greenville and construct an additional bridge 330 feet upstream, extending Pitt Street across the Tar River. Both bridges will provide one-way traffic flow, circulating northbound and southbound traffic through the central business district of Greenville. Greene Street will provide a two-lane bridge for northbound traffic, while Pitt Street will accommodate two lanes of southbound traffic. Both bridges will provide a 28-foot travelway with two feet allocated for bicycles on the right side of the bridges. In addition, each bridge will have five-foot sidewalks. Environmental impacts associated with this project are considered in several documents. Most recently, the document "Environmental Assessment and Programmatic Section 4(f) Evaluation (1996)" was completed.

2.0 Wetland Resources

2.1 Methodology

Wetlands were delineated by Tim W. Savidge of NCDOT on June 27, 1996 using the "Corps of Engineers Wetlands Delineation Manual" (1987). A total of four wetland sites were identified in the delineation; these were verified by the US Army Corps of Engineers (USACE) on August 27, 1996. Impacts to jurisdictional wetlands were determined to be 0.66 acres. Mechanized clearing in wetlands will account for 0.11 acres of impacts and the remaining 0.55 acres of impacts will be from fill.

2.2 Affected Wetlands

Of the total 0.66 acres of wetland impacts, 0.36 acres are cypress swamp, 0.2 acres are bottomland hardwoods and 0.1 acre consists of graminoid marsh (disturbed, utility right-of-way). Using the "Classification of the Natural Communities of North Carolina - Third Approximation" (Schafale and Weakley 1990), these wetlands are classified as cypress-gum swamp (brownwater subtype), coastal plain levee forest (brownwater subtype) and a regularly disturbed transmission line easement containing shrubby and herbaceous vegetation.

3.0 Mitigation

3.1 Purpose and Goals

Compensatory mitigation to offset the impacts of this project will occur onsite. The NCDOT has purchased 3.1 acres of land between the proposed bridges specifically to be used for mitigation for Project B-2225. A deed containing a boundary description of the property purchased for mitigation is attached.

This mitigation site will provide approximately 1.75 acres of creation/restoration, 0.40 acres of enhancement and 0.95 acres of preservation of upland levee forest and adjacent bottomlands. The premise of mitigation would be to provide a contiguous bottomland hardwood and cypress swamp system in areas where fill had previously been placed and to enhance areas that had been continually altered for utility-line right of way. Because of the proximity of adjacent urban areas, it is important to maintain or increase (by creating,

restoring or enhancing) wetlands in sites such as this, as wetlands provide flood storage and the opportunity for pollutant removal and sediment filtration and retention.

4.0 Site Description

Pockets of bottomland hardwood wetlands occur on the project property among the alluvial levee forest, adjacent to the Tar River. Further from the river, cypress swamp occurs in deeper depressions. Disturbed freshwater marsh and continually maintained higher ground are found throughout the property along utility and bridge right of ways. In general, this area contains only slight changes in elevation with the lower depressions being occupied by cypress swamp and the higher areas adjacent to the river, an alluvial levee system. The property is traversed by a gravel access road and utility lines and structures, all of which will be removed.

4.1 Hydrology

Overbank flooding occurs from the Tar River, although a high berm likely reduces the amount and frequency of overbank flooding from the river into the levee forest. The United States Geological Survey has intermittently collected gage height data from the Tar River at Greenville (station #02084000) at this location. River stage data were collected from 1985 through the middle of September 1990 and again from April 1997 through the present. Gaps often exist in data collection so the precise extent of river flooding is unknown. Overbank flooding was noted on the north side of the river during a site visit on January 29, 1999. The river stage was 10.3 feet when overbank flooding occurred. A review of hydrological data has shown that overbank flooding is a frequent phenomena that occurs frequently during the growing season. On the average, overbank flooding occurred 21 days during the growing season when considering the last six years that data were collected.

Hydrology of the cypress swamp is influenced by a man-made canal located adjacent to the project that flushes water back and forth from the Tar River. Cypress swamps generally have a long hydroperiod, being flooded throughout the winter and episodically in the summer. Adjacent to the project site, beavers have impounded a canal, creating deeper backwaters.

4.2 Vegetation

Wetland communities on the project site include cypress-gum swamp (brownwater subtype), coastal plain levee forest (brownwater subtype) and a regularly disturbed transmission line easement containing shrubby and herbaceous vegetation. Dominant vegetation in and adjacent to the cypress swamp includes trees such as baldcypress (*Taxodium distichum*), American elm (*Ulmus americana*), water ash (*Fraxinus caroliniana*), water hickory (*Carya aquatica*) and swamp cottonwood (*Populus heterophylla).* Ironwood (*Carpinus caroliniana)* is a common understory tree on slightly higher elevations. Several species of shrubs including hawthorn (*Crataegus* sp.) and buttonbush (*Cephalanthus occidentalis)* are present. Dominant vegetation in the levee forest and bottomlands include sycamore (*Platanus occidentalis*), Green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), willow oak (*Quercus phellos*) and water hickory (*Carya aquatica*). The disturbed marsh consists of a variety of grasses, sedges

and herbs with some shrubby growth. The invasive aquatic plant, alligator weed (*Alternanthera philoxeroides*) is also prevalent near a drainage ditch. Regular mowing under utility lines has prevented succession into mature cypress swamp.

4.3 Soils

Two soil types occur within the mitigation site and both are considered to be hydric (USDA 1989). Soils adjacent to the Tar River and within 500 feet are classified as Bibb complex. This mapping series consists of flood plain soils or alluvial deposits consisting of a variety of fine sandy loams. Areas of Bibb soils experience very frequent flooding for brief periods. Beyond 500 feet from the river, the site contains soils classified as Cape Fear loam. These soils are also poorly drained with the soils being frequently flooded for brief periods. Both soil types are rated as 'good' for supporting suitable wildlife habitat (cover and food) including hardwood trees and shrubs (Karnowski et. al 1974).

5.0 Proposed Wetland Mitigation

Mitigated wetlands would support a levee system adjacent to the river that trancends into deeper bottomland hardwoods and cypress swamp with more contiguous flow than is currently present. The mitigation site is comprised of a total of 3.1 acres located between the proposed Pitt Street bridge and Greene Street as depicted in Figure 1. Of this acreage, 2.15 acres are for enhancement and restoration/creation in addition to 0.95 acres of preservation. Figure 2a illustrates existing wetlands and Figure 2b outlines mitigation areas for comparison. The mitigation site encompasses regularly mowed, disturbed right-of-way (from former utility lines) that functions as a fresh water marsh. Once planted, this area would revert to cypress swamp such as that found near the northern end of the project site. Higher areas adjacent to the maintained bridge right-of way would be graded to the elevation of the current bottomlands. Topsoil from higher (non-wet) areas will be stockpiled onsite and later reused for topsoil in the mitigated areas once grading is completed. The stockpiled topsoil will be clearly labeled so that their intended use is known.

The existing gravel road and land adjacent to the bridges would be graded to the elevation of the bottomlands and planted in hardwoods similar to those existing in the bottomlands. There is also a triangular shaped area of non-wetland vegetation that contains predominately invasive Chinese privet (*Ligustrum sinense*) that would be cleared and graded to allow a continuation of bottomland forest. The portion of gravel road adjacent to cypress swamp would be graded and planted as cypress swamp.

5.1 Hydrologic restoration

Mitigation will involve extending existing wetlands by grading non-wet areas to the elevation of the wetland areas. Stockpiled topsoil will be incorporated on top of the graded area. Areas of microtopographic relief will be created throughout the area to be graded. In addition, removal of the gravel access road will provide for a more contiguous overland flow of water. As previously mentioned, overbank flooding from the Tar River is sufficient to create hydrological conditions favorable for successful mitigation.

Figure 1. Greene Street Mitigation Site, Pitt County, B-2225

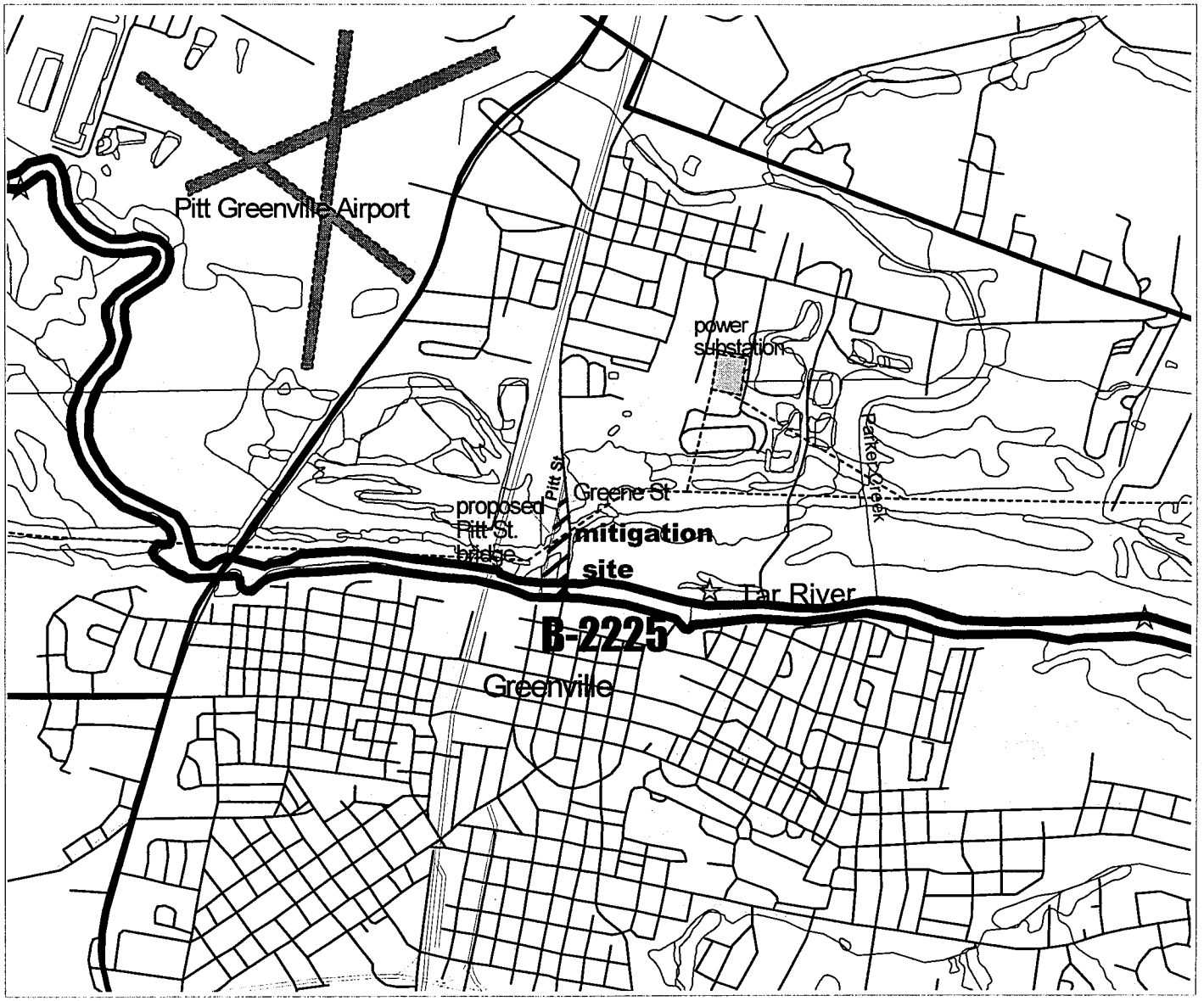
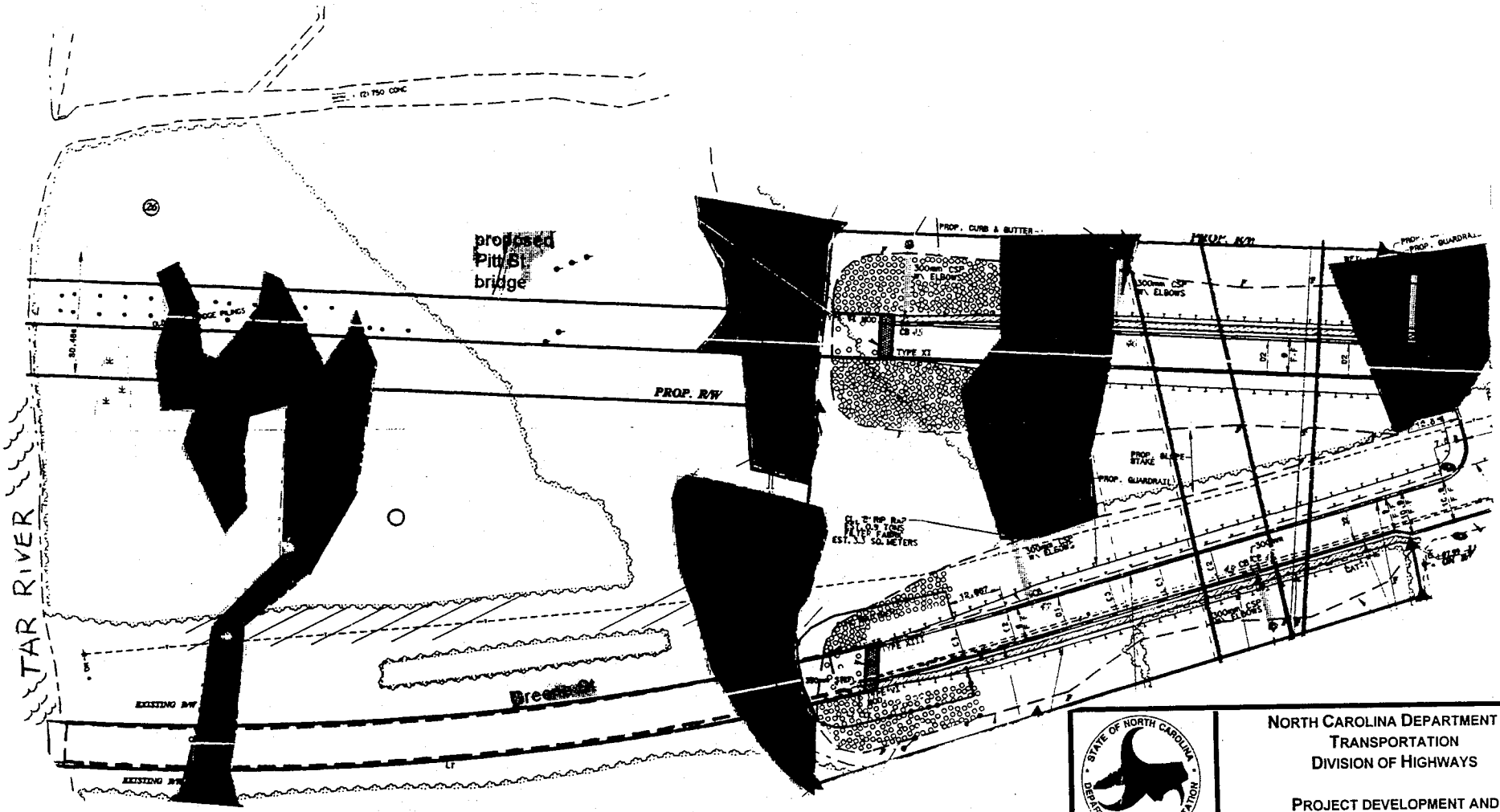


Figure 2a. Existing Wetlands-Greene Street Mitigation Site, Pitt County B-2225



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

PITT COUNTY
GREENE STREET MITIGATION SITE

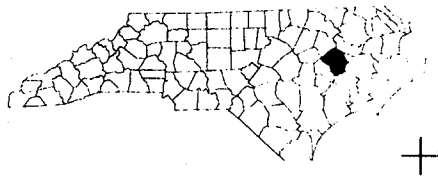


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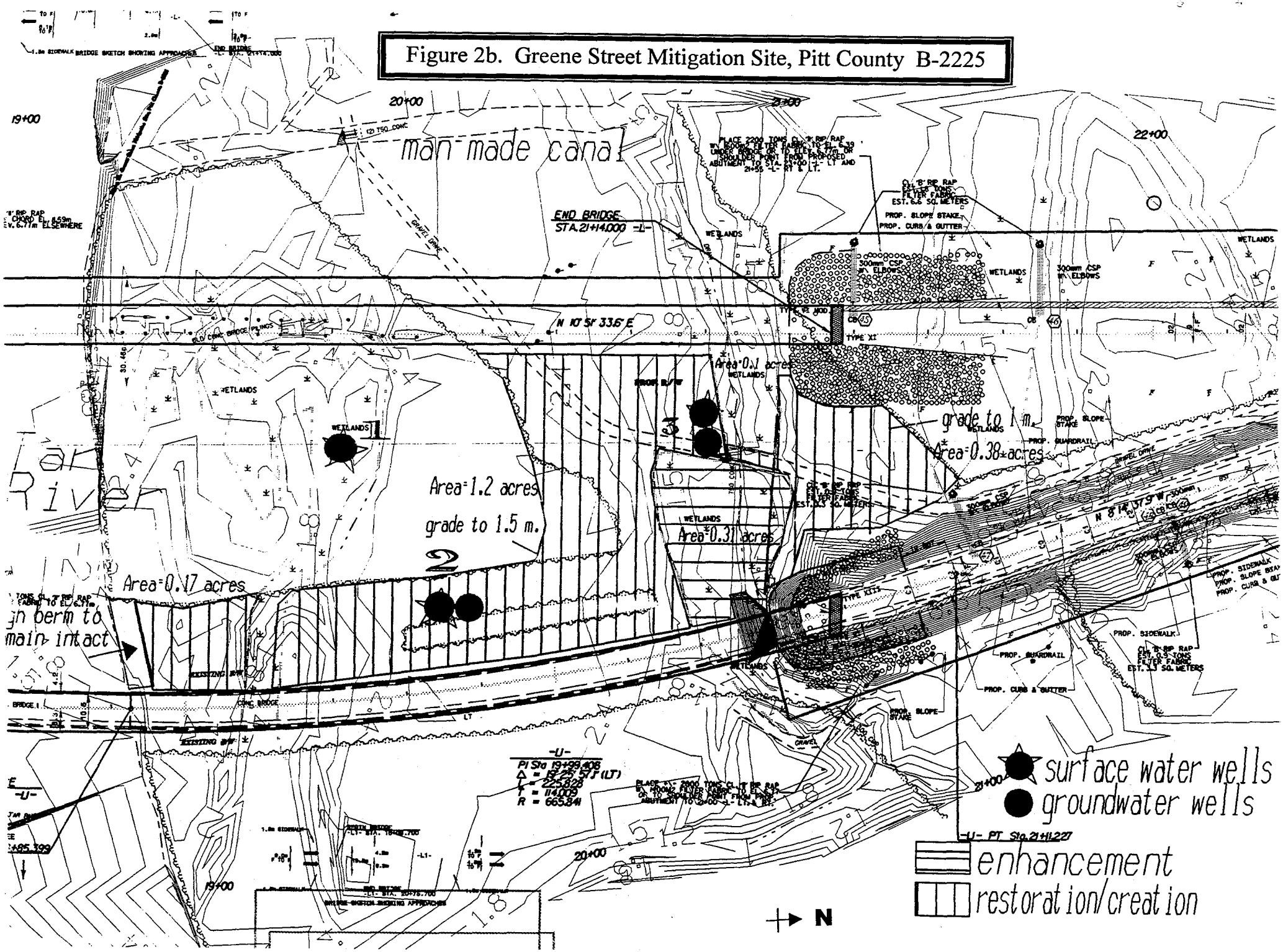
Figure 2b. Greene Street Mitigation Site, Pitt County B-2225



5.2 Plant community restoration

When grading is complete, vegetative communities will match the adjacent wetland with the created/restored levee community grading into a bottomland hardwoods/cypress swamp, toward the north end of the project. Trees such as baldcypress, green ash, water hickory and swamp blackgum (*Nyssa aquatica*) are proposed for planting in the newly created cypress swamp. Several species of shrubs including hawthorn, buttonbush and Virginia willow are present currently, however, it is expected that these shrubs will naturalize in the restored area, therefore we do not propose planting these species. Closer to the river, recommended plantings of tree species include sycamore, green ash, river birch, willow oak and water hickory. These proposed tree species are found onsite and are consistent with the community assemblages described by Schafale and Weakley (1990).

Hardwood trees to be planted will be at least 12 to 18" tall and at least a year old at the time of planting. Trees will be planted on 8-foot centers with a variety of trees in each row to create a mosaic of different types of trees.

5.3 Site considerations

Due to the occurrence of active beavers in the mitigation area, either tree protection or beaver removal may be necessary to insure the survival of trees. In addition, the marsh area has been invaded by Alligator weed (*Alternanthera philoxeroides*), a noxious aquatic plant that may invade higher ground. Two initial sprayings (early summer and late fall) with an appropriate herbicide such as Rodeo may be necessary to reduce the competitiveness of this weed. As canopy cover increases, this aggressive weed will likely become diminished.

Since construction equipment will be active on the mitigation site, problems with soil compaction are likely. After grading and installation of stockpiled topsoil, soil compaction will be corrected (ripped) with the use of subsoiling equipment. Appropriate erosion control measures will be implemented to minimize impacts to water quality. If necessary, the soil will be stabilized with annuals (such as winter rye) to reduce erosion. Topsoil from existing high ground will be stockpiled for inclusion into replanted areas. Since soil fertility varies considerably, fertilizer supplements may be necessary.

6.0 Monitoring plan

6.1 Hydrology

Placement of (40-inch) groundwater monitoring wells will occur 1) in the levee forest depression (bottomlands), 2) in the newly created/restored site adjacent to the bridge and 3) in the created/restored area adjacent to the gravel roadbed (Figure 2b). Surface water monitoring wells will also be placed in the two newly created/restored areas described above. Data from these wells will be collected throughout the year with particular attention paid to the hydrology present during the growing season from March 15 through November 16. Data from created/restored wetlands will be compared to data from the existing wetlands to determine successful hydrologic restoration for bottomland hardwood wetlands. Hydrological success will have occurred if data from the reference well (#1) are comparable to data from the mitigated bottomland hardwoods (well #2) or if

data from the mitigated area demonstrate saturated or inundated conditions within 12 inches of the surface for at least 12.5 percent of the growing season.

Hydrologic data collected from the north end of the mitigation site (well #3) will show successful hydrological restoration for cypress swamp if the site exhibits surface water ponding or saturated/inundated conditions within 12 inches of the surface for at least 12.5 percent of the growing season.

Because of the presence and use of construction equipment onsite, it will be difficult to install and keep in place monitoring wells during the construction phase. Therefore well installation will take place after site grading is complete.

6.2 Vegetation

After planting, two vegetation monitoring plots will be established in mitigated areas that are located adjacent to monitoring wells. One monitoring plot will be located in an area that is (currently) non-wet near the bridge right-of-way and the other monitoring plot will be in the disturbed utility right of way, adjacent to the existing cypress swamp. Monitoring plots will be 50'x50' in size. Plots will be monitored annually by stem counts (# and species per plot) and assessment of plant vigor (healthy, unhealthy) and species composition. Adjustments (additions of plantings) may occur if deemed necessary.

Since vegetation in the mitigated area is to grade from levee forest to bottomland hardwood to deeper cypress swamp, the vegetation of planted trees should match adjacent existing wetlands with success determined at the end of the fifth growing season. Successful plantings will be determined by obtaining at least 260 of the target trees per acre after five years. The target number of 260 trees per acre after five years is determined by a ratio assuming that 680 trees per acre are planted initially. No tree species should dominate more than 20% of the total density. Target species are defined as trees from the list of species to be planted.

7.0 Mitigation Credit Ratios

NCDOT proposes to mitigate for 0.66 acres of impact through a combination of restoration, creation, enhancement and preservation. Three and one tenth acres of land were purchased solely for mitigation of project B-2225 and will be used to compensate for unavoidable impacts to wetlands. Of this land, 2.15 acres will be used for active mitigation: 0.34 acres are to be restored/created as cypress swamp and 0.40 acres are to be enhanced as cypress swamp. Approximately 1.41 acres will be created/restored as bottomland hardwood. Much of the remaining parcel of land (0.95 acres) is forested upland levee with pockets of wetlands and would be more beneficial intact, from an ecological perspective, as branches and root systems of vegetation provide filtration, nutrient adsorption and sediment retention

For this project, NCDOT has exceeded the required ratio for compensatory mitigation. Three and one tenth acres will be used for mitigation of 0.66 acres of impact which yields a mitigation to impacts ratio of greater than 4:1.

8.0 Implementation and Reporting Schedule

Because the mitigation site is contiguous with the project site, restoration and enhancement of the B-2225 bridge site will occur towards completion of the construction phase of the bridges, since soil compaction from heavy equipment and injury to small trees may present problems. Construction and grading of the mitigation site will be initiated immediately after the bridge project is completed. Planting of tree species will take place the following fall/winter. Monitoring of the hydrology and vegetation will be conducted for five years with annual monitoring reports submitted to the appropriate agencies in January of each following year.

9.0 As-built reports

Within 90 days after the mitigation project is completed, a description, photos and as-built plans describing the Greene Street mitigation site will be provided to the appropriate resource agencies. Pertinent information such as the degree of established vegetation, vegetation monitoring plots, data from surface and ground water wells and ground elevations will be included in the as built reports.

10.0 Dispensation of property

NCDOT will retain ownership of the mitigation site and protect it in perpetuity. It is possible that classes from nearby East Carolina University would like to use the area for the study of wetlands.

References

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