

Beaufort County, South Carolina
DEVELOPMENT PERMIT
Zoning and Development Administration

Permit Number 3692

Zone LT (POD)

Date Issued 6/21/00

Development Name ST. JOHN'S LUTHERAN CHURCH

Development Address/Location SC HWY 802 LADY'S ISL.

District/Map/Parcel Number 200-18-268/33A Acreage 6.75 Type of Development INSTITUTIONAL

THIS PERMIT CERTIFIES THAT THE ABOVE NAMED DEVELOPMENT
HAS MET AND IS IN ACCORDANCE WITH THE BEAUFORT COUNTY
ZONING AND DEVELOPMENT STANDARDS ORDINANCE.

BY: [Signature]

Zoning and Development Administrator

CONDITIONS OF PERMIT APPROVAL:

1. All tree aeration systems and tree protection barriers must be constructed first and authorization to proceed requested and granted prior to further site work and issuance of a Beaufort County Building Permit. Upon completion of tree aeration systems and barriers, applicants should contact the County Engineers Office to request an inspection and authorization to proceed.
2. All permits expire two(2) years from the date of approval unless substantial improvement has occurred.
3. Subdivision approvals are for construction of infrastructure only unless infrastructure bonding has been posted and accepted and Final Approval certified on the final subdivision plat.
4. Subdivision plats may not be recorded and sale of lots is not permitted until Final Approval is affixed and certified on the final subdivision plat and the plat duly recorded by the Registrar of Mesne Conveyances.
5. Commercial, Industrial and Institutional projects may not be occupied until a Final Certificate of Compliance has been issued. The developer nor agents should request a final certificate of compliance inspection until all site work has been completed. The County Engineers office should be contacted for all inspections.
6. Any deviations from the approved plans must be approved by the DRT prior to construction.
7. A tree survival bond is required for all trees planted or relocated on site prior to Certificate of Compliance.
8. Subdivision infrastructure bonding is for a maximum of one (1) year. In order to obtain release of bond, all infrastructure must be completed within one year and a final Certificate of Compliance inspection requested.
9. All bonding shall be in the form of Cash, Certified Check or Irrevocable Bank Letter of Credit.

**BEAUFORT COUNTY
ZONING & DEVELOPMENT STANDARDS ORDINANCE
-MULTI FAMILY AND NONRESIDENTIAL FINAL PLAN APPLICATION-**

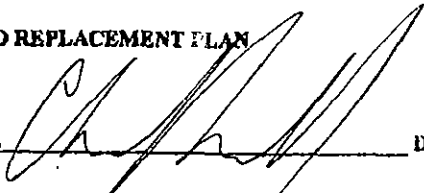
PERMIT # 3692

DATE ACCEPTED 5/30/00	RECEIVED BY HAA	FILING FEE 695.00 920.00	DRAINAGE IMPACT FEE N/A	RECEIPT # 461719	ZONING PDD	OVERLAY DISTRICT RPOD/MCOD
PROJECT NAME St. John's Lutheran Church				PROJECT TYPE INSTITUTIONAL		
APPLICANT (DEVELOPER) NAME, ADDRESS, PHONE# John's Lutheran Church			PROPERTY OWNER NAME, ADDRESS, PHONE# (SAME) PH# 524-3461			
PROJECT LOCATION Hwy 802	PIN 200-018-268 AMP 33A	LAND AREA(ACRES) 6.75	BUILDING AREA 11,693	FIRE DISTRICT LADY'S ISH.		

- FINAL PLAN INFORMATION REQUIRED -

- SIX BLACK LINE COPIES OF THE DEVELOPMENT SITE PLAN WITH INFRASTRUCTURE CONSTRUCTION DRAWINGS
- VICINITY MAP SHOWING PROJECT LOCATION, NORTH ARROW, GRAPHIC SCALE AND DATE
- DEVELOPMENT PROPERTY BOUNDARY LINES WITH BEARINGS AND DISTANCES
- EXISTING ROADS, STREETS, HIGHWAYS ON OR ADJACENT TO PROPERTY (NAME, NUMBER, RIGHT OF WAY WIDTH)
- EXISTING DRAINAGE DITCHES, CANALS, WATER COURSES ON OR ADJACENT TO PROPERTY
- EXISTING BUILDINGS, STRUCTURES AND FACILITIES ON THE DEVELOPMENT PROPERTY
- EXISTING ELECTRIC, TELEPHONE, GAS, WATER, SEWER UTILITY LINES ON OR ADJACENT TO THE PROPERTY
- ADJACENT PROPERTY EXISTING LAND USES AND PROPERTY OWNER NAMES
- NARRATIVE DESCRIBING NATURE & SCOPE OF PROJECT
- WETLANDS BOUNDARY DETERMINATION & CERTIFICATION
- PROTECTED RESOURCES SITE CAPACITY ANALYSIS (ART. 5)
- TREE SURVEY & INDICATION OF REQUESTED TREE REMOVAL
- TREE PROTECTION ZONES & PROPOSED TREE PROTECTION METHODS
- TREE PLANTING AND REPLACEMENT PLAN
- ARCHAEOLOGICAL SITE DETERMINATION FROM PLANNING
- EXISTING AND PROPOSED FIRE HYDRANT LOCATIONS
- PROPOSED ACCESS TO EXISTING ROADS, CIRCULATION ROUTES, PARKING SPACE LAYOUT & DIMENSIONS
- TRAFFIC IMPACT ANALYSIS
- PROPOSED SETBACKS, BUFFERS, OPEN SPACE AREAS AND LANDSCAPED AREAS
- TOPOGRAPHIC SURVEY, DRAINAGE PLAN, CALCULATIONS AND BMP ANALYSIS
- FINAL WATER SUPPLY & SEWAGE DISPOSAL PLANS
- FINAL DESIGN & LAYOUT OF UNDERGROUND ELECTRIC, TELEPHONE, GAS & CABLE TV UTILITY LINES
- LETTERS OF CAPABILITY & COMMITMENT TO SERVE WATER, SEWER, UNDERGROUND ELECTRIC & TELEPHONE FROM THE AFFECTED AGENCIES
- FINAL HEALTH DEPARTMENT PERMITS OR APPROVALS FOR WATER AND SEWER SYSTEMS
- OCRM PERMITS AND APPROVALS
- CORRIDOR REVIEW BOARD APPROVAL
- SCDOT ENCROACHMENT PERMIT
- FIRE SAFETY STANDARDS APPROVAL BY FIRE OFFICIAL
- OTHER APPLICABLE AGENCY PERMITS OR APPROVALS

APPLICANT'S SIGNATURE

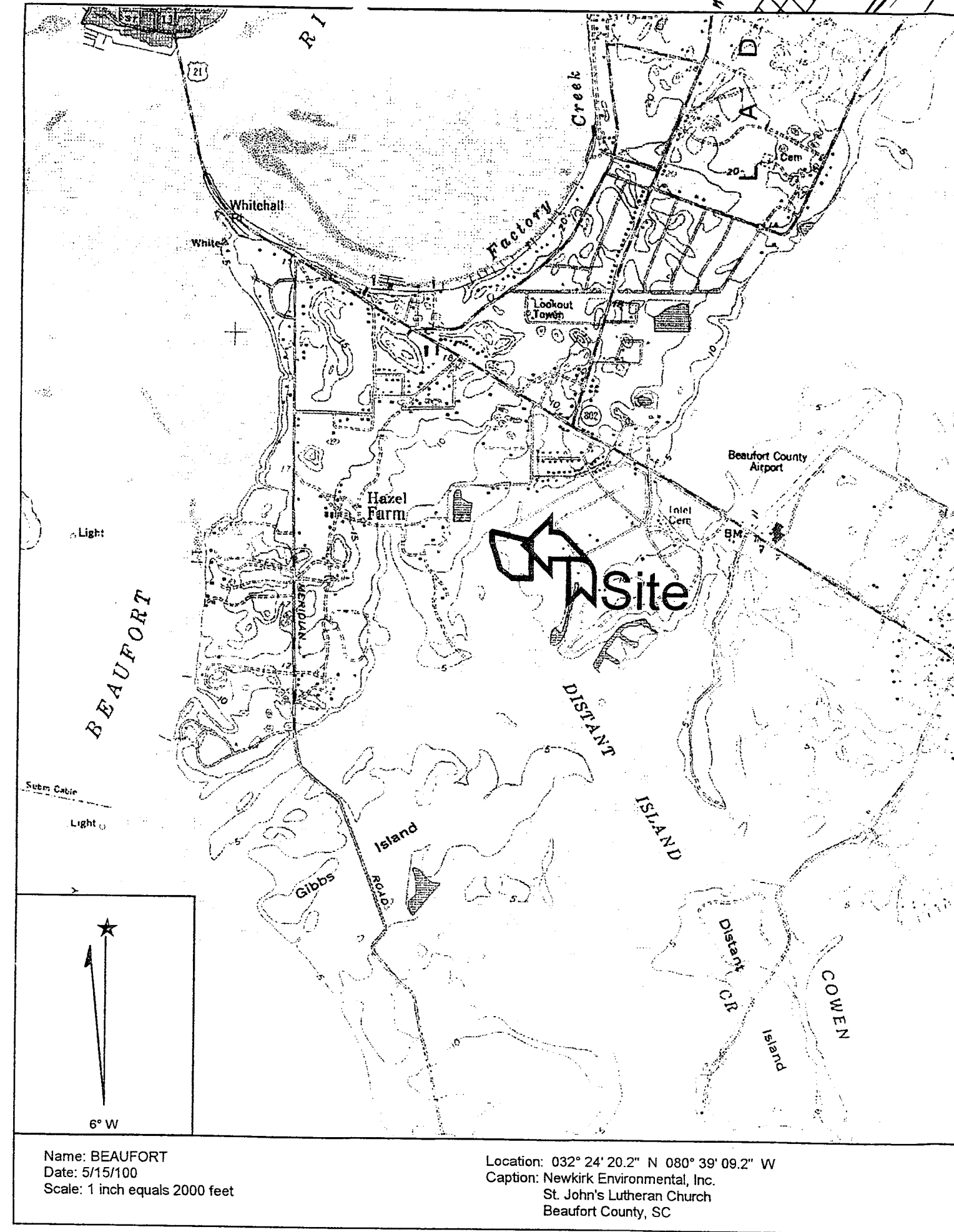


DATE

5/30/00

REVIEW DATE

Prelims - 6/14/00
Final - 6/21/00



VICINITY MAP:
NOT TO SCALE

NOTES:

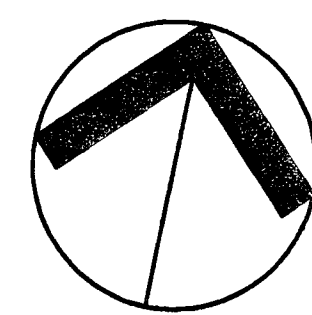
ALL OF THE KEY TREES AROUND THE BUILDING, PARKING AREAS AND DRIVEWAY SHOULD BE CAREED FOR BEFORE CONSTRUCTION BEGINS. PRUNING, LIQUID FERTILIZING, MULCHING AND PROTECTIVE TREE FENCING SHOULD BE DONE AS SOON AFTER CLEARING AS POSSIBLE. A SECOND APPLICATION OF FERTILIZER SHOULD FOLLOW ONCE BUILDING IS COMPLETE. SEE TREE PRESERVATION SPECIFICATIONS FOR DETAILS.

DEVELOPMENT SUMMARY:

SITE ACREAGE 6.75 AC.
BUILDING 11,600 SQ.FT.
PARKING REQUIRED 100 MAX. - 80 MIN.
PARKING PROVIDED 16
HC PARKING 4

LEGEND:

EXISTING TREE TO REMAIN ● 1970
EXISTING TREE TO BE REMOVED ✕ 1970

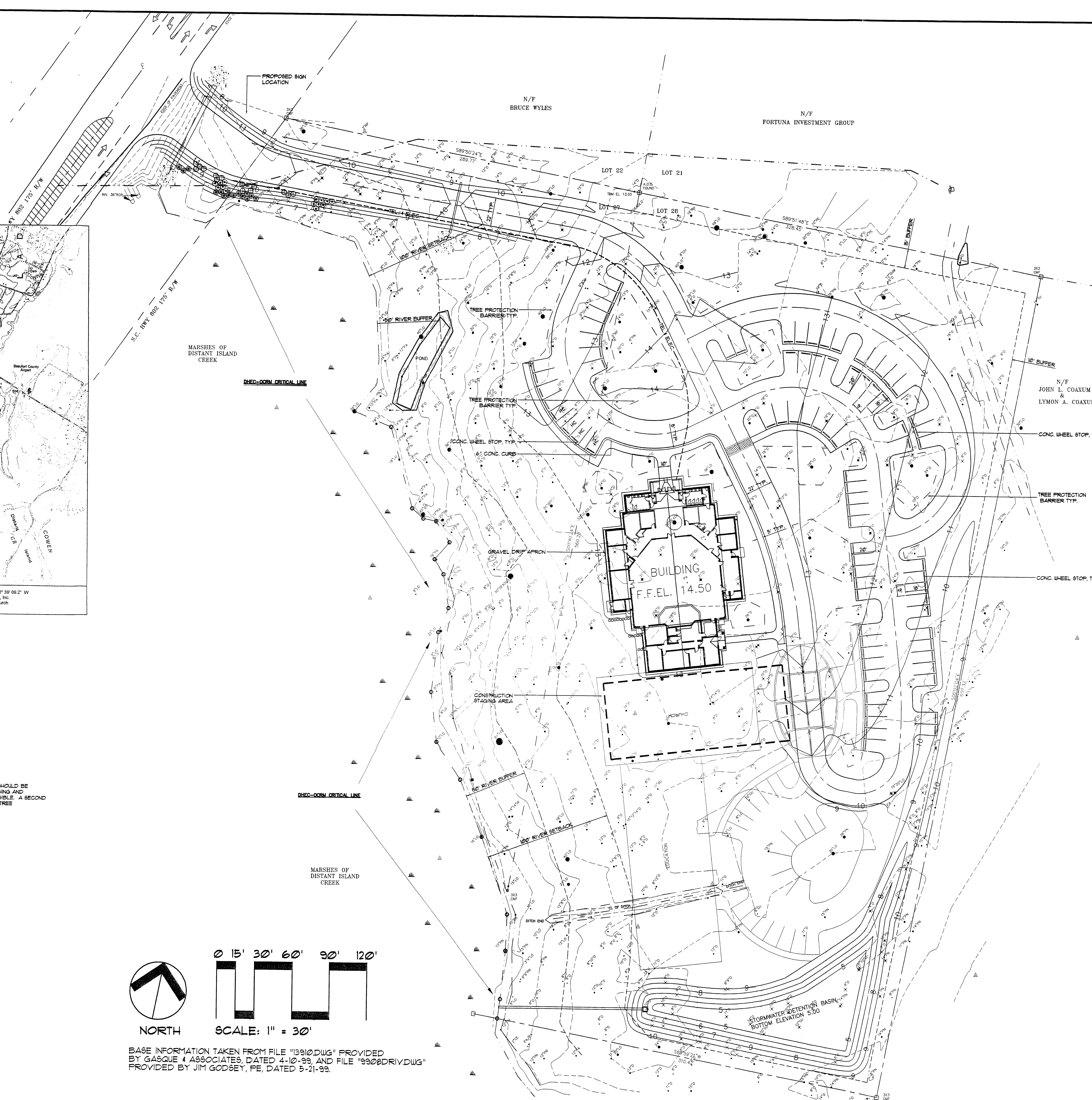


NORTH



SCALE: 1" = 30'

BASE INFORMATION TAKEN FROM FILE "13910.DWG" PROVIDED BY GASQUE & ASSOCIATES, DATED 4-10-99, AND FILE "9908DRIV.DWG" PROVIDED BY JIM GODSEY, PE, DATED 5-21-99.



Wood+Partners Inc.
Landscape Architects
Land Planners

Indigo Building 17 Lafayette Place P.O. Box 23846 Hilton Head Island, SC 29925
803.991.9510 Fax: 803.991.7068 <http://www.designaccordium.com>

LANDSCAPE DEVELOPMENT PLANS
FOR
St. John's Lutheran Church
PREPARED FOR
St. John's Lutheran Church
Beaufort County, South Carolina

SHEET TITLE:
SITE PLAN

PROJECT NO.:	99999.018
DATE DRAWN:	5/30/09
DRAWN BY:	CD
CHECKED BY:	EE
REVISIONS:	
DATE	REVISIONS

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SHEET NUMBER:
1
OF 3

St. John's Evangelical Lutheran Church
Landscape Costs

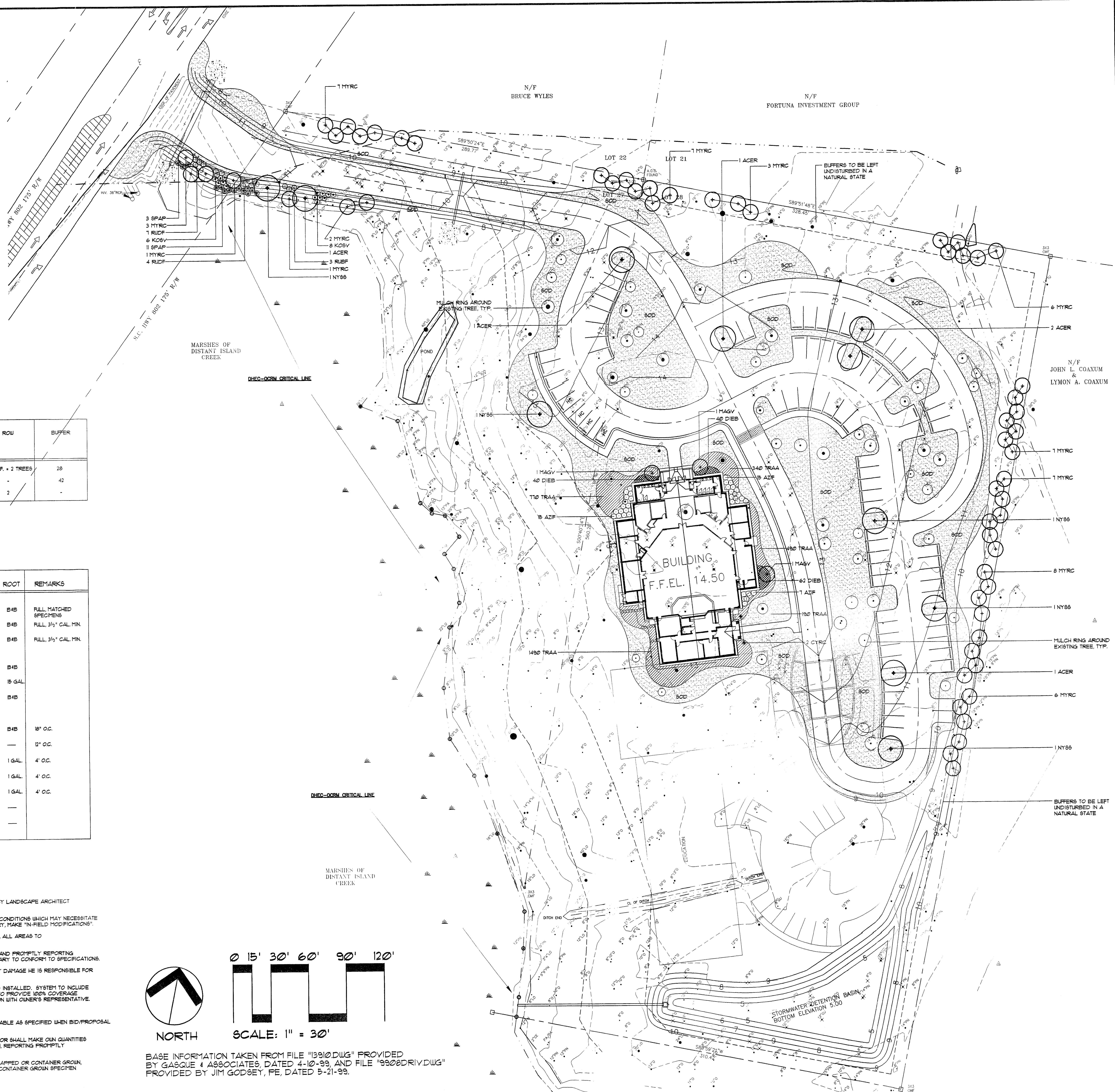
Quantity	Material Name	Size	Cost per plant
	TREES		
3	Magnolia - Sweet Bay	6-8'	\$300.00
10	Acer Rubun	8-10' 2.5 Cal	\$550.00
5	Sawtooth Oak	12-14' 3.5 Cal	\$550.00
		SUB TOTAL	\$9,150.00
	SHRUBS		
30	Azaleas Duc De Rohan	15 Gal	\$95.00
2	Cycas Revolta	4-5' 15 Gal	\$250.00
51	Wax Myrtle	15 Gal	\$95.00
		SUB TOTAL	\$8,195.00
	GROUND COVERS		
142	Yellow African Iris	12-15"	\$6.00
3280	Asiatic Jasmine	Pint	\$3.00
14	Black Eyed Susan	12-15" -1 Gal	\$8.00
14	Salt Marsh Mallow	12-15" - 1 Gal	\$10.00
14	Saltmeadow Cordgrass	12-15" - 1 Gal	\$10.00
		SUB TOTAL	\$11,084.00
		TOTAL COST	\$28,429.00

LANDSCAPE DEVELOPMENT PLANS
FOR
St. John's Lutheran Church
PREPARED FOR
St. John's Lutheran Church
Beaufort County, South Carolina

SHEET TITLE:
PLANTING PLAN

PROJECT NO.: 99999.019
DATE DRAWN: 5/30/00
DRAWN BY: CD
CHECKED BY: EE
REVISIONS:
DATE: REVISIONS:

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St. John's Evangelical Lutheran Church

P.O. Box 70368
157 Lady's Island Drive
Beaufort, South Carolina 29902

voice (843) 524-3461
e-mail stjohnsluth@islc.net

fax (843) 524-5950
web site www.stjohnsbeaufort.org

Rev. Louie F. Lanford, III

Pastor

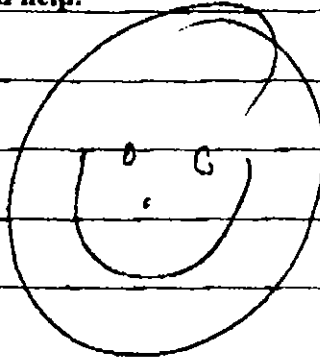
FAX

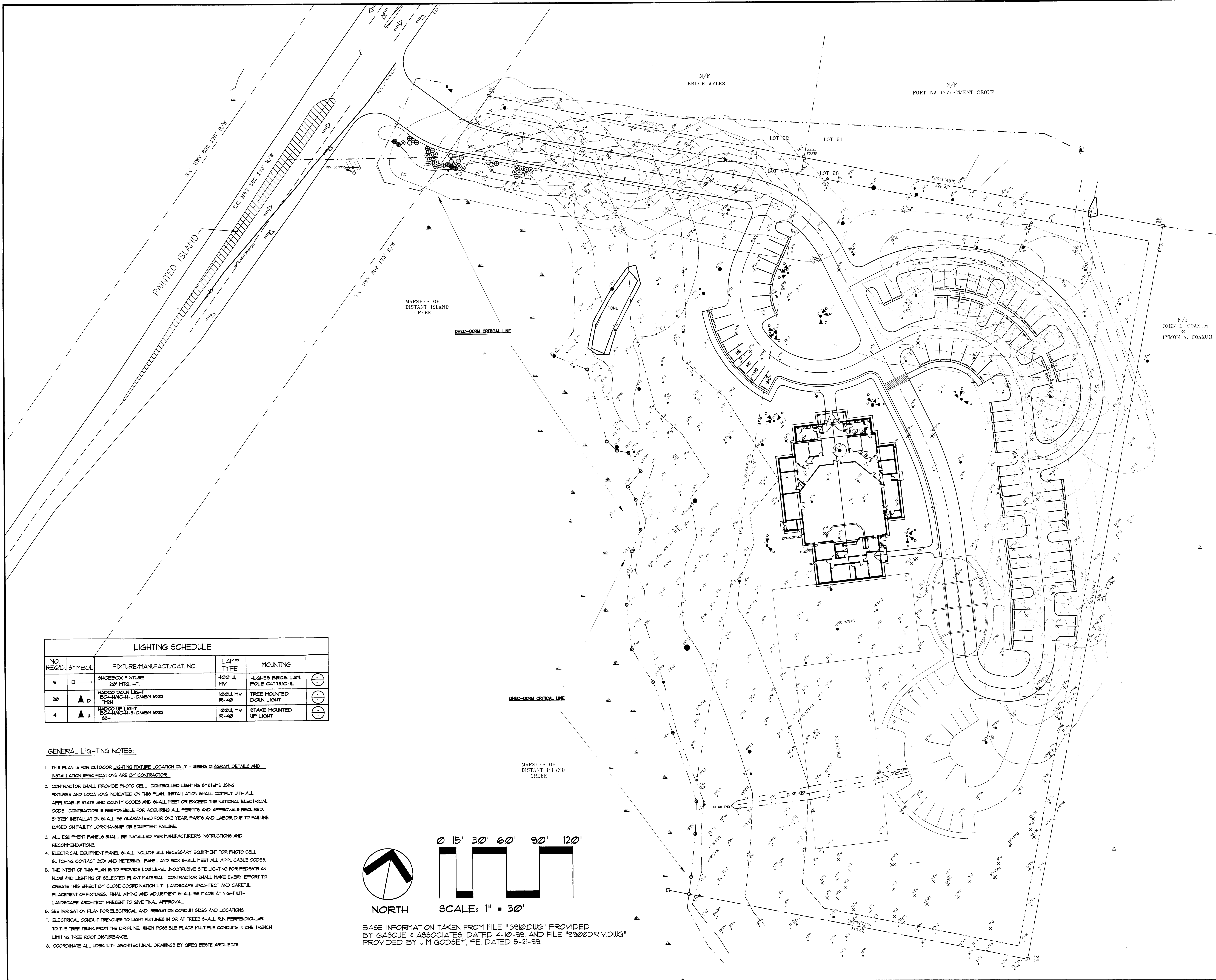
TO: Hillary
FAX NUMBER: 470-2784
FROM: Vicki M. Young
FAX NUMBER: (843) 524-5950
DATE: November 14, 2001
RE: Landscape Bond
PAGES: 2, INCLUDING THIS COVER SHEET

COMMENTS:

Hillary, we are going to bond this. Please let me know how much and what I need to do from
this end to get the bond in motion. Can you also help me with the correct wording. Is there
A special form that I need to take to the insurance company?

I thank you so much for your patience and help.



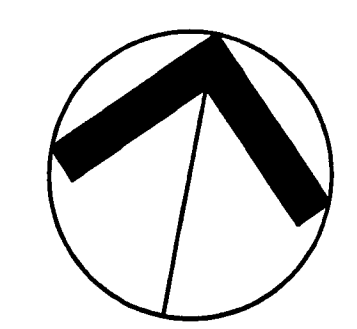


LIGHTING SCHEDULE

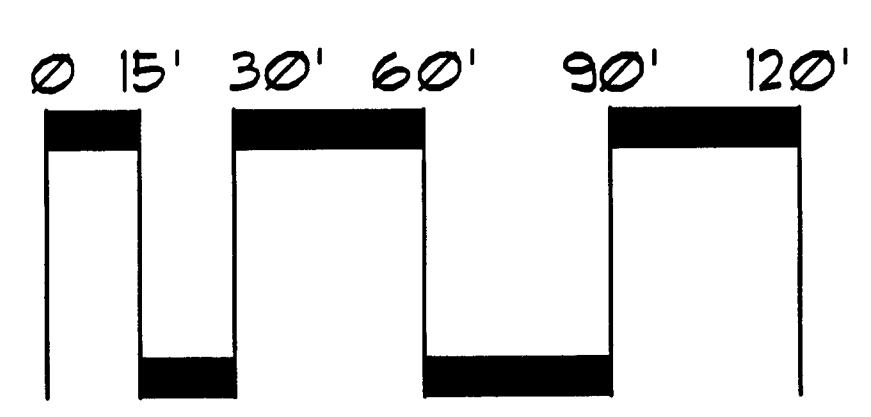
NO. REQ'D	SYMBOL	FIXTURE/MANUFACT./CAT. NO.	LAMP TYPE	MOUNTING	
9	□	SHADEBOX FIXTURE 22' HTG. HT.	400 W. MV	HUGHES BROS. LAMP POLE CAT33C-L	⊖
20	▲ D	HADCO DOWN LIGHT BC4-H/AC-H-L-O/ABM 1002 175H	100W, MV R-40	TREE MOUNTED DOWN LIGHT	⊖
4	▲ U	HADCO UP LIGHT BC4-H/AC-H-S-O/ABM 1002 85H	100W, MV R-40	STAKE MOUNTED UP LIGHT	⊖

GENERAL LIGHTING NOTES:

1. THIS PLAN IS FOR OUTDOOR LIGHTING FIXTURE LOCATION ONLY - WIRING DIAGRAM, DETAILS AND INSTALLATION SPECIFICATIONS ARE BY CONTRACTOR.
2. CONTRACTOR SHALL PROVIDE PHOTO CELL. CONTROLLED LIGHTING SYSTEMS USING FIXTURES AND LOCATIONS INDICATED ON THIS PLAN. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE STATE AND COUNTY CODES AND SHALL MEET OR EXCEED THE NATIONAL ELECTRICAL CODE. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL PERMITS AND APPROVALS REQUIRED. SYSTEM INSTALLATION SHALL BE GUARANTEED FOR ONE YEAR, PARTS AND LABOR, DUE TO FAILURE BASED ON FAULTY WORKMANSHIP OR EQUIPMENT FAILURE.
3. ALL EQUIPMENT PANELS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
4. ELECTRICAL EQUIPMENT PANEL SHALL INCLUDE ALL NECESSARY EQUIPMENT FOR PHOTO CELL SWITCHING CONTACT BOX AND METERING. PANEL AND BOX SHALL MEET ALL APPLICABLE CODES.
5. THE INTENT OF THIS PLAN IS TO PROVIDE LOW LEVEL UNOBTRUSIVE SITE LIGHTING FOR PEDESTRIAN FLOW AND LIGHTING OF SELECTED PLANT MATERIAL. CONTRACTOR SHALL MAKE EVERY EFFORT TO CREATE THIS EFFECT BY CLOSE COORDINATION WITH LANDSCAPE ARCHITECT AND CAREFUL PLACEMENT OF FIXTURES. FINAL AIMING AND ADJUSTMENT SHALL BE MADE AT NIGHT WITH LANDSCAPE ARCHITECT PRESENT TO GIVE FINAL APPROVAL.
6. SEE IRRIGATION PLAN FOR ELECTRICAL AND IRRIGATION CONDUIT SIZES AND LOCATIONS.
7. ELECTRICAL CONDUIT TRENCHES TO LIGHT FIXTURES IN OR AT TREES SHALL RUN PERPENDICULAR TO THE TREE TRUNK FROM THE DRIFLINE. WHEN POSSIBLE PLACE MULTIPLE CONDUITS IN ONE TRENCH LIMITING TREE ROOT DISTURBANCE.
8. COORDINATE ALL WORK WITH ARCHITECTURAL DRAWINGS BY GREG BESTE ARCHITECTS.



NORTH



SCALE: 1" = 30'

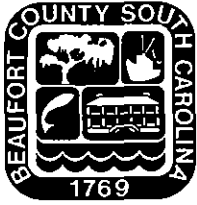
BASE INFORMATION TAKEN FROM FILE "13910.DWG" PROVIDED BY GASQUE & ASSOCIATES, DATED 4-10-99, AND FILE "9308DRIV.DWG" PROVIDED BY JIM GODSEY, PE, DATED 5-21-99.

LANDSCAPE DEVELOPMENT PLANS
FOR
St. John's Lutheran Church
PREPARED FOR
St. John's Lutheran Church
Beaufort County, South Carolina

SHEET TITLE:
LIGHTING PLAN

PROJECT NO.:	99999.019
DATE DRAWN:	5/30/00
DRAWN BY:	CO
CHECKED BY:	EE
REVISIONS:	
DATE	REVISIONS

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COUNTY COUNCIL OF BEAUFORT COUNTY
Beaufort County Development & Services Division
Multi Government Center • 100 Ribaut Road
Post Office Drawer 1228, Beaufort, SC 29901-1228
FAX (843) 470-2686

Robert E. Klink, P.E.
County Engineer
Ph. 470-2625

Authur L. Cummings, C.B.O.
Building Codes Director
Ph. 470-2684

Dan Morgan
G.I.S. Coordinator
Ph. 470-2660

Planning Director
Ph. 470-2724

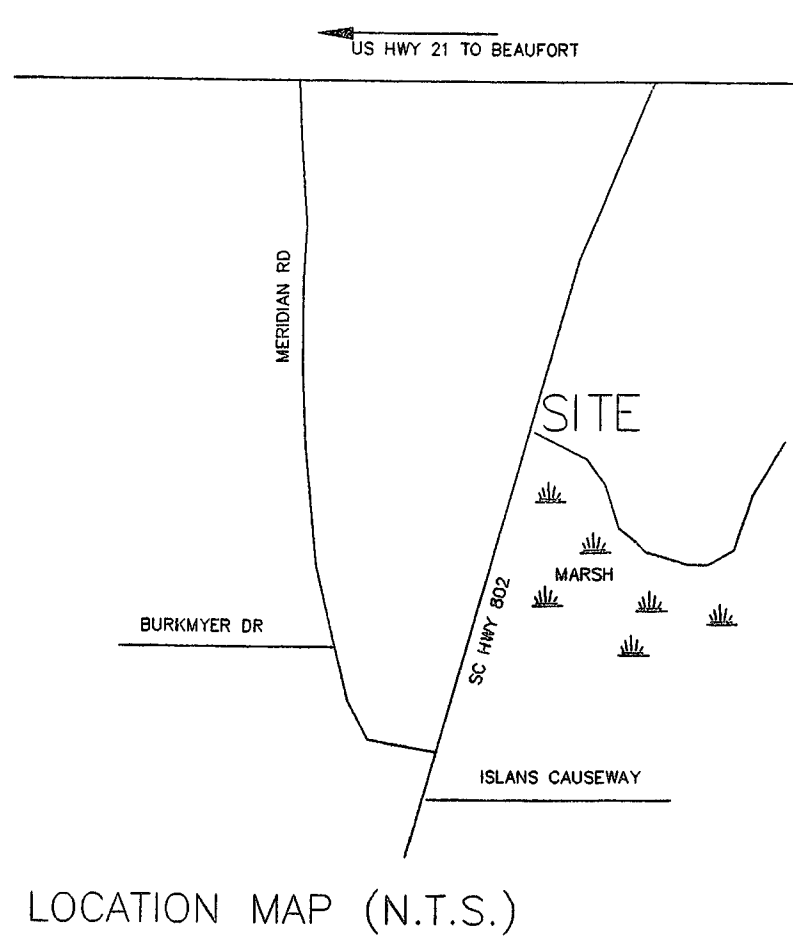
Walter R. Fielding
Zoning & Development Administrator
Ph. 470-2781

To: St. John's Lutheran Church
From: Zoning & Development Administrator
Subj: Final Plan Approval -- St. John's Lutheran Church
Date: June 26, 2000

On Wednesday, June 21, 2000, the Development Review Team approved Final Plan for the St. John's Lutheran Church project. Should you have additional questions or desire further guidance concerning your application, contact the Zoning & Development Office at extension (843) 470-2780 or 470-2781.

WRF

C: Members, Development Review Team



LINE	DIRECTION	DISTANCE
L1	S07°48'28"W	15.34'
L2	N05°58'21"E	33.73'
L3	S02°10'51"W	28.55'
L4	N19°48'58"W	42.66'
L5	N21°51'44"W	48.91'
L6	S33°33'45"E	34.78'
L7	N06°28'36"E	40.04'
L8	N08°58'28"E	47.42'
L9	S22°26'32"W	20.55'
L10	N09°00'00"W	28.81'
L11	N31°48'00"W	13.56'
L12	S40°48'43"W	17.80'
L13	N33°25'04"W	18.87'
L14	N79°08'00"W	10.46'
L15	N48°28'17"W	12.11'
L16	N15°22'59"W	68.50'
L17	N88°41'13"W	31.70'
L18	S38°54'44"W	26.03'
L19	S04°34'17"W	19.63'
L20	N03°15'38"W	53.59'
L21	N24°27'45"W	42.88'
L22	N74°02'01"W	6.34'
L23	N74°57'51"W	38.08'
L24	S56°31'17"W	25.92'

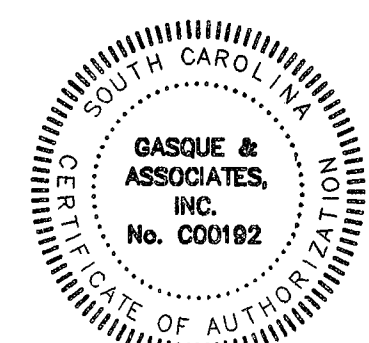
CODE	COMMON NAME	BOTANICAL NAME
PN	PINE	Pinus spp.
LO	LIVE OAK	Quercus virginiana
O	OAK	Quercus spp.
MAG	SOUTHERN MAGNOLIA	Magnolia grandiflora
PA	PALMETTO	Sabal palmetto
SUB	SUGARBERRY	Celtis occidentalis
EL	ELM	Ulmus spp.
H	HICKORY	Carya spp.
BAY	BAY MAGNOLIA	Gardenia spp.
WX	WAX MYRTLE	Myrica cerifera
CH	CHERRY	Prunus spp.
CE	EASTERN RED CEDAR	Juniperus virginiana
TA	CHINESE TALLOW-TREE	Sapium sebiferum
PD	YELLOW POPLAR	Liriodendron tulipifera
B	BIRCH	Betula spp.
CY	BALDCYPRESS	Taxodium distichum
SY	AMERICAN SYCAMORE	Platanus occidentalis
PE	PECAN	Carya illinoensis
CR	CRAPMYRTLE	Lopastroemia indica
FR	FRUIT TREE	
MP	MAPLE	Morus spp.
DW	DOGWOOD	Cornus florida
GUM	GUM	
UNK	UNKNOWN	

DHEC-OCRM CRITICAL LINE
 THE AREA SHOWN ON THIS PLAT IS A GENERAL REPRESENTATION OF DHEC-OCRM PERMIT AUTHORITY ON THE SUBJECT PROPERTY. CRITICAL AREAS, BY THEIR NATURE, ARE DYNAMIC AND SUBJECT TO CHANGE OVER TIME. BY GENERALLY DELINEATING THE PERMIT AUTHORITY OF THE DHEC-OCRM, THE OFFICE OF OCRM IN NO WAY MAKES THE RIGHT TO ASSERT PERMIT JURISDICTION IN ANY CRITICAL AREA ON THE SUBJECT PROPERTY WHETHER SHOWN OR NOT. ALL PROPERTY OWNERS OR PROSPECTIVE BUYERS ARE ADVISED TO HAVE THE LINE CHECKED BY CIVIL ENGINEERS PRIOR TO CONSTRUCTION OR CLOSING ON THE SALE OF THIS PROPERTY.

SIGNATURE _____ DATE _____
 THE CRITICAL LINE SHOWN ON THIS PLAT IS VALID FOR THREE YEARS FROM THE DATE OF THIS SIGNATURE, SUBJECT TO THE CAUTIONARY LANGUAGE ABOVE.

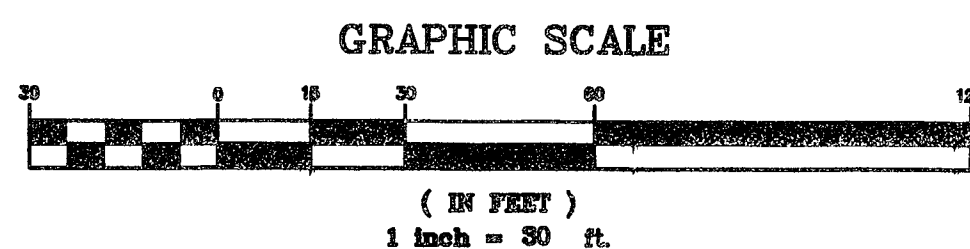
- NOTES:**
- 1.) THE BEARINGS SHOWN HEREON ARE MAGNETIC AND AS SUCH ARE SUBJECT TO LOCAL ATTRACTION.
 - 2.) THE PRESENCE OR ABSENCE OF U.S. ARMY CORPS OF ENGINEERS JURISDICTIONAL WETLANDS IS UNDETERMINED AS OF THE DATE OF THIS SURVEY.
 - 3.) PUBLIC WATER & SEWER
 - 4.) METHOD OF AREA CALCULATION BASED ON COORDINATE METHOD.
 - 5.) THIS PROPERTY LIES IN FLOOD ZONE A-9 EL. 13.00 AS DETERMINED BY F.E.M.A. FIRM COMM- PANEL NUMBER 450025 0100 D, DATED 09/29/86 (INDEX DATE 11/04/92)

- REFERENCES:**
- 1.) T.M.S. 200-018-268 & 33A
 - 2.) PLAT BY NIELS CHRISTENSEN DATED _____ PLAT BOOK _____ PLAT COUNTY _____



David E. Gasque, R.L.S.
 S.C. Registration Number 10506

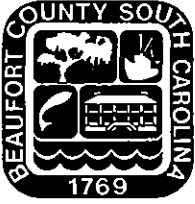
GASQUE & ASSOCIATES INC.
 LAND SURVEYORS - PLANNERS
 703 BLADEN STREET, BEAUFORT, S.C.
 P.O. BOX 1363, BEAUFORT, S.C.
 (843) 522-1798



TREE & TOPOGRAPHICAL SURVEY
 PORTION OF LOTS 27 & 28
 SECTION 16, 1S-1W
 PREPARED FOR
 ST. JOHN'S LUTHERN CHURCH
 LADY'S ISLAND
 BEAUFORT COUNTY S.C.

DATE 04/10/99 SCALE 1"=30'

SHEET 2 OF 2
 JOB# 13910 F.B.# NA DRAWN BY DESJ 3



COUNTY COUNCIL OF BEAUFORT COUNTY
Beaufort County Development & Services Division
Multi Government Center • 100 Ribaut Road
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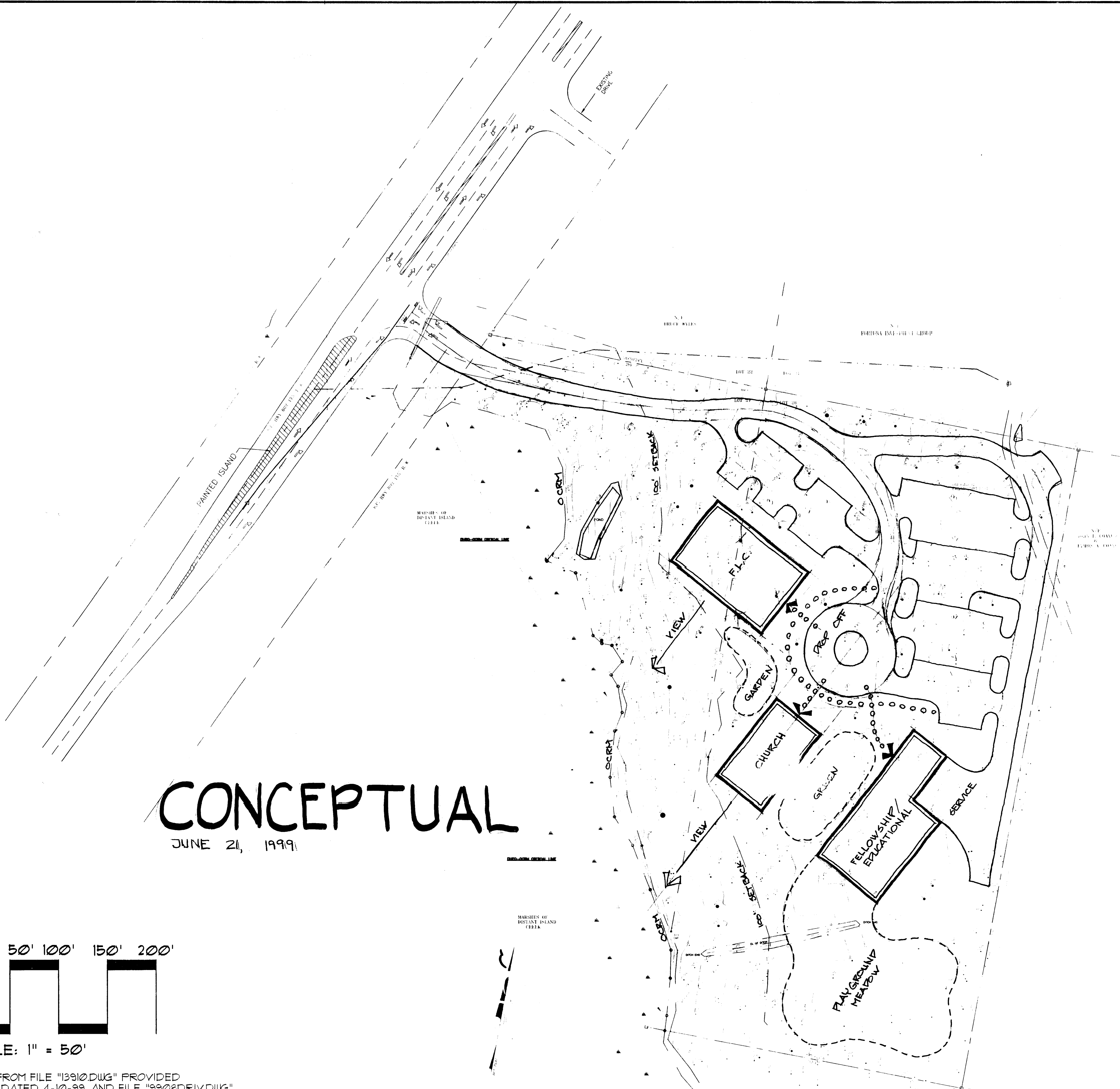
Walter R. Fielding
Zoning & Development Administrator
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To: St. John's Lutheran Church
From: Zoning & Development Administrator
Subj: Preliminary Review – St. John's Lutheran Church
Date: June 26, 2000

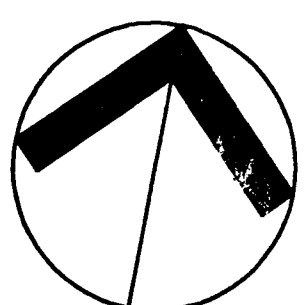
On Wednesday, June 14, 2000, the Development Review Team agreed the Preliminary Plan for the St. John's Lutheran Church project appeared ready for Final submission. Please contact the Zoning & Development Office at extension (843) 470-2780 or 470-2781 if additional information and permitting guidance is required.

WRF

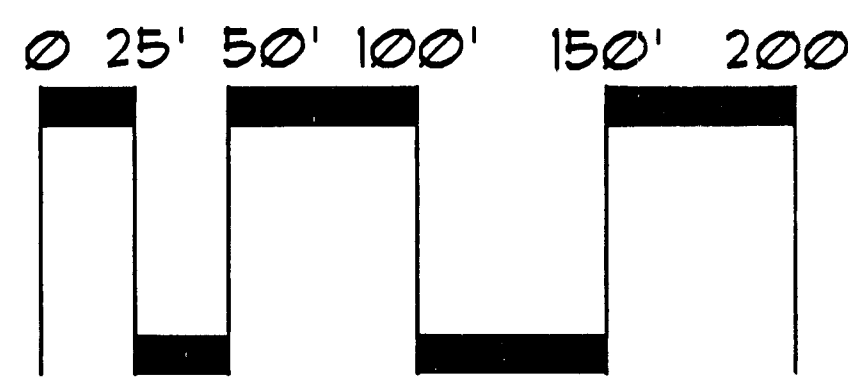
C: Members, Development Review Team



CONCEPTUAL
JUNE 21, 1999



NORTH



SCALE: 1" = 50'

BASE INFORMATION TAKEN FROM FILE "13910.DWG" PROVIDED BY GASQUE & ASSOCIATES, DATED 4-10-99, AND FILE "9908DRIV.DWG" PROVIDED BY JIM GODSEY, PE, DATED 5-21-99.

Wood+Partners Inc.
WPI
Landscape Architects
Land Planners

Tridigic Building #7, Lenoirville Plaza #P.C. Box 20000, Hilton Head Island, SC 29926
803-887-9510 Fax: 803-887-7000 <http://www.woodpartners.com>

Conceptual Site Plan
FOR
St. John's Lutheran Church
PREPARED FOR
St. John's Lutheran Church
Beaufort, South Carolina

SHEET TITLE:
St. John's Lutheran Church
Conceptual Site Plan

PROJECT NO.: 99990210
DATE DRAWN: 5-26-99
DRAWN BY: wpb
CHECKED BY: EE
REVISIONS:

DATE	REVISIONS

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SHEET NUMBER:
1
OF 1



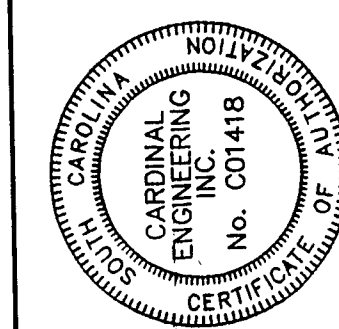
PROJECT NARRATIVE
ST. JOHNS LUTHERAN CHURCH
BEAUFORT, SC
March 14, 2000

St. Johns Lutheran Church proposes construction of a Family Life Center (11,600 sq.ft.), Sanctuary (8,800 sq.ft. and Fellowship/Education Building (12,000 sq.ft.).

The project site is on a 6.75 acre tract on the south side of Highway 208 +/- 1 mile from the intersection of Highway 208 and Highway. 21.

The tract is zoned Professional Office Development. This is a Permitted.

The proposed project will meet all applicable requirements of the ZDSO.



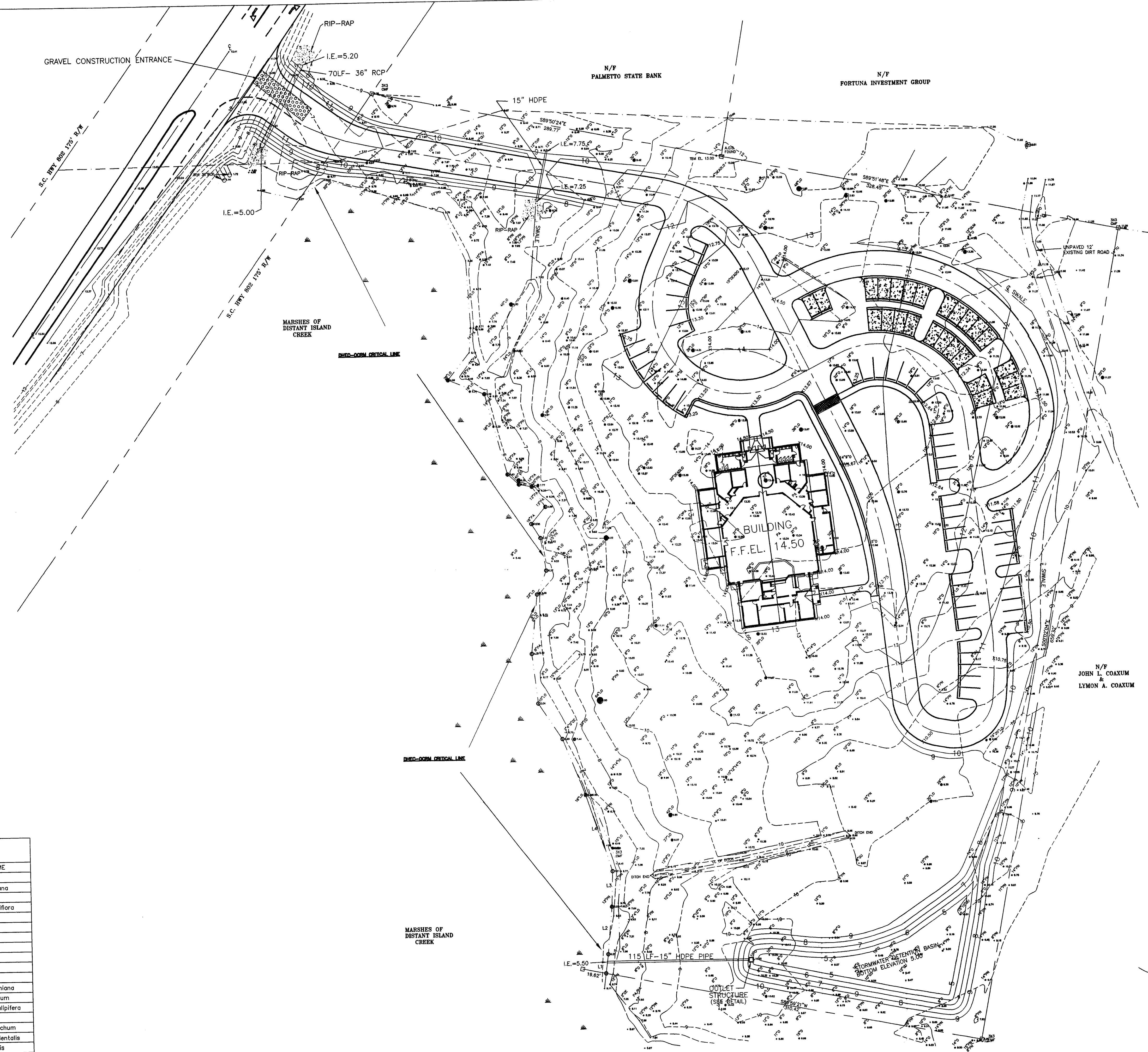
Date: 3/17/2000
By: JG 3/17/2000
JG 3/17/2000
Issued for:
X Review
X Permitting
Bidding
Construction
As Built

ST. JOHN'S LUTHERAN CHURCH
HWY. 802, LADY'S ISLAND, SC
GRADING & DRAINAGE PLAN

Drafter JG
Designer JG
Checker YS

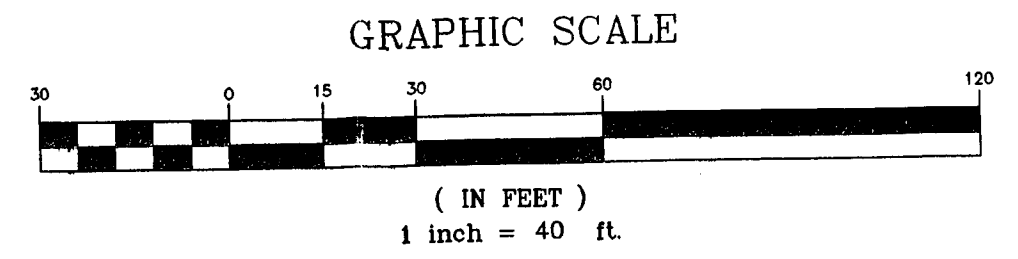
Project No. A.SJL.001

Sheet of



TREE LEGEND

CODE	COMMON NAME	BOTANICAL NAME
PN	PINE	Pinus spp.
LO	LIVE OAK	Quercus virginiana
O	OAK	Quercus spp.
MAG	SOUTHERN MAGNOLIA	Magnolia grandiflora
PA	PALMETTO	Sabal palmetto
SUB	SUGARBERRY	Celtis laevigata
EL	ELM	Ulmus spp.
HI	HICKORY	Carya spp.
BAY	BAY MAGNOLIA	Gordonia spp.
WK	WAX MYRTLE	Myrica cerifera
CH	CHERRY	Prunus spp.
CE	EASTERN RED CEDAR	Juniperus virginiana
TA	CHINESE TALLOW-TREE	Sapium sebiferum
PO	YELLOW POPLAR	Liriodendron tulipifera
BI	BIRCH	Betula spp.
CY	BALDCYPRESS	Taxodium distichum
SY	AMERICAN SYCAMORE	Platanus occidentalis
PE	PECAN	Carya illinoensis
CR	CRAPEMYRTLE	Lagerstroemia indica
FR	FRUIT TREE	
MP	MAPLE	Morus spp.
DW	DOGWOOD	Cornus florida
GUM	GUM	
UNK	UNKNOWN	



LEGEND

---	EXISTING CONTOUR
---	FINISHED CONTOUR
•	EXISTING SPOT ELEVATION
•	FINISHED SPOT ELEVATION

J.G. Coakley, Cardinal Engineering, Inc. 4/12/00 3:04 PM Grade4.dwg

May 30 00 02:44p

Lady's Island Fire Depart 843-525-7689

p.1

**BEAUFORT COUNTY DEVELOPMENT STANDARDS ORDINANCE
-FIRE SAFETY STANDARDS APPROVAL FORM-**

APPLICANT (DEVELOPER) NAME, ADDRESS			ZONE:
ST. JOHN'S LUTHERAN CHURCH Hwy. 802 LADY'S ISLAND, SC			524-3461
PROJECT NAME		TYPE	LOCATION
ST. JOHN'S LUTHERAN CHURCH			
DISTRICT #	MAP #	PARCEL #	# LOTS/UNITS
	200-018-	268	33A
LAND AREA	BUILDING AREA	HEIGHT (FINISHED GRADE TO ROOF EAVES)	
6.75 Ac.	12,000 SF	30'	
NUMBER OF BUILDINGS	HEIGHT (FINISHED GRADE TO BOTTOM OF HIGHEST WINDOW)		
ONE	12'		
FIRE DISTRICT		FIRE OFFICIAL	
LADY'S ISLAND / ST. HELENA		CLAYTON ELLIS	

BASED ON A REVIEW OF THE SITE PLAN AND INFORMATION SUBMITTED BY THE APPLICANT, I HEREBY

- APPROVE
- APPROVE WITH CONDITIONS
- DISAPPROVE
- PRELIMINARY
- FINAL


 (FIRE OFFICIAL)

May 30 - 00
 DATE

CONDITIONS:

CERTIFICATION OF COMPLIANCE

DATE INSPECTION REQUESTED _____ ZONING/DEVELOP. PERMIT # _____

BASED ON AN INSPECTION OF THE SUBJECT PROJECT:

- THE FOLLOWING DEFICIENCIES OR CORRECTIONS ARE NOTED & MUST BE ADDRESSED
- THE COMPLETED PROJECT IS IN COMPLIANCE WITH THE FIRE SAFETY STANDARDS OF THE ZONING & DEVELOPMENT STANDARDS ORDINANCE

(FIRE OFFICIAL)

DATE



COUNTY COUNCIL OF BEAUFORT COUNTY
BEAUFORT COUNTY PLANNING DEPARTMENT
Multi Government Center • 100 Ribaut Road, Room 260
Post Office Drawer 1228, Beaufort, SC 29901-1228
Phone: (843) 470-2724 • FAX: (843) 470-2686

June 19, 2000

Mr. Jim Godsey
Cardinal Engineering Inc.
920 Bay Street
Beaufort, SC 29902

RE: St. John's Lutheran Church
Archaeological Permit of Approval

Dear Jim:

I am writing in response to your request for an archaeology review, as required in Section 6.5.1(I) of the Beaufort County Development Standards Ordinance, for the St. John's Lutheran Church project.

An extensive examination of existing documentation has been conducted. The documents examined include the *Cartographic Survey of Historic Sites in Beaufort County, South Carolina*; *A Comprehensive Bibliography of South Carolina Archaeology*; copies on file with Beaufort County of the topographic maps located at the South Carolina Institute of Archaeology and Anthropology that identify all the recorded archaeological sites in Beaufort County; copies of the records of all the archaeological properties listed in the National Register of Historic Places in Beaufort County; and all other documentation maintained by the Beaufort County Planning Department regarding archaeological and historic resources. In addition, we have consulted with South Carolina State Historic Preservation Office Compliance Archaeologists.

It is the opinion of the Planning Office that any proposed development will have no effect on any archaeological resources listed in, or eligible for listing in, the National Register of Historic Places. Therefore I am authorized by the Planning Director to issue you a Permit of Approval certifying that no archaeological resources will be affected by this project.

We request, however, that you cease work to notify this office immediately if archaeological or paleontological materials are encountered prior to or during construction. Archaeological remains consist of any materials one hundred years or older made, or altered, by man which remain from past historic or prehistoric times. Examples include pottery fragments, metal, wood, arrowheads, stone implements or tools, human burials, historic docks, structures, or non-recent vessel remains. Paleontological remains consist of prehistoric animal remains, original or fossilized, such as teeth, tusks, bone, or entire skeleton.

If I can be of further assistance please call me at 843/470-2727.

Sincerely,

Ian D. Hill
Historic Preservationist

cc: Hillary Austin

BEAUFORT-JASPER WATER AND SEWER AUTHORITY
Water and Wastewater Capacity Commitment Form

Project Name: St. John's Lutheran Church

Location: 802 Lady's Blows BJWSA Project # 00-34

District _____ TMS _____ Parcel# _____

AVAILABILITY

- Water capacity is available to this project. A water main extension is/is not required for this project.
- Wastewater capacity is available to this project. A wastewater collection system extension is/is not required for this project.
- Water is not available from our resources.
- Sewerage is not available from our resources.

Date Reviewed

Project Coordinator

COMMITMENT

We have committed water capacity to serve this project.

We have committed wastewater capacity for this project.

Water: 4350 g.p.d.

Sewer: 900 g.p.d.

5/24/00
Date Reviewed

Mary Medders
Project Coordinator

c. Customer Representative
Mary Medders

r:mary\availabl.01



May 16, 2000

Mr. Chris Darnell
Wood and Partners
P. O. Box 23949
Hilton Head Island, SC 29925

RE: St. John Lutheran Church
SC Hwy 802, Lady's Island

Dear Mr. Darnell:

South Carolina Electric & Gas Company will be able to provide underground electric service to the above referenced development. **Costs associated with providing underground service will be determined when a finalized plat is submitted to our office for engineering.**

Please fill out the enclosed **Project Information Sheet** and return it to me within five working days. Please send me a finalized site plan of this development at least two months prior to the construction date so that all engineering requirements can be met.

Service will be installed on an "as needed" basis according to the existing sales policy at the time of construction.

I am looking forward to working with you on this project. If I may be of any further assistance, please do not hesitate to call me at 843.525.7742.

Sincerely,

Kerry A. Bunton
Customer Service Engineering

KAB/

South Carolina Electric & Gas Co.
Robert Smalls Pkwy.
Office Drawer 1168
Columbia, South Carolina
29201-1168

803.525.7797
803.525.7700
www.sceandg.com



P.O. Drawer 1659
Beaufort, SC 29901-1659

May 23, 2000

Chris Darnell
Wood & Partners Inc.
P.O. Box 23949
Hilton Head Island, South Carolina 29925

RE: St. John's Lutheran Church

Dear Mr. Darnell:

Sprint Telephone will provide telephone facilities to the proposed development in accordance with our standard practices and tariff on file with the South Carolina Public Service Commission.

A two (2) inch PVC conduit, from the area designated for telephone equipment to a point one foot beyond the paving for the proposed buildings, will be required to provide telephone service in the proposed buildings.

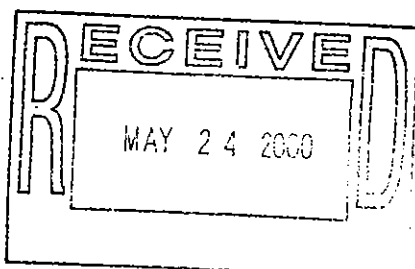
Sprint Telephone will require two (2) copies of your final plans, as approved by the Beaufort County Development Review Committee, before telephone service can be provided. Please provide this office with your final plans as soon as possible. This is very crucial for our 911 System. It is also requested that this office be notified thirty (30) days prior to start of construction.

Sincerely,

SPRINT

R. David Stiles

Network Engineer II



CALCULATION 1: Determine Base Site Area	
Enter gross site area as determined by actual survey.	6.75 ac.
Subtract land within existing roads' ultimate rights-of-way; or land within major utilities' rights-of-way (minimum 50 foot width within subject property).	- 0 ac.
Subtract land cut off from use by railroad, highway, or water body.	- 0 ac.
Subtract all existing natural water bodies and tidal wetlands.	- 0 ac.
Subtract land previously dedicated as open space.	- 0 ac.
Equals Base Site Area.	= 6.75 ac.

CALCULATION 2: Measure all natural resources in the Base Site Area and enter in the Acres Measured Column 2. If resources overlap, measure only that resource with the highest resource protection ratio. These numbers provide each resource's area of land. Multiply by Resource Protection Ratio for the district (Column 3, 4, or 5) and insert result in Column 6.					
Column 1 Protected Resource	Column 2 Acres Measured	Multiply Column 2 by Resource Protection Ratio			Column 6 Protected Land
		Column 3 R, RQ, RC districts	Column 4 S, CS districts	Column 5 All other districts	
Non-Tidal Wetlands		1.00	0.80	0.60	
Beach-Dune		1.00	1.00	1.00	
Headwaters Buffer (RQD only)		1.00	1.00	1.00	Reserved.
River Buffer	1.87	1.00	1.00	1.00	1.87
Maritime Forest		0.70	0.65	0.60	
Mixed Upland Forest, Mature		0.55	0.45	0.20	
Pine Forest, Mature		0.40	0.30	0.20	
Mixed Upland Forest, Young		0.25	0.20	0.10	
Endangered Species Areas		1.00	1.00	1.00	
CALCULATION 3: Total Resource Land equals the sum of all Protected Resources listed above. Enter this figure to the right: =	1.87				
CALCULATION 4: Total Protected Resource Land equals sum of Column 6 at right: =					1.87

**SECTION 05.140 STEP 4: CALCULATION OF RESIDENTIAL/
NON-RESIDENTIAL CAPACITY**

Tables 05.141 and 05.142 provide the procedures for calculating residential or non-residential use capacity of a site based on protected resources. Where the site is in more than one zoning district, or where the site is to be developed for both residential and non-residential uses, separate calculations are required. Final capacity calculations shall be rounded down to a whole dwelling unit (du) or square footage.

Table 05.141 RESIDENTIAL USE CAPACITY CALCULATION		
Calculation 1:	Take Base Site Area (Table 05.130, Calculation 1)	= ac.

	Subtract Total Resource Land (Table 05.130, Calculation 3)	-	ac.
	Equals Total Unrestricted Land	=	
	Enter Protected Resource Land (Table 05.130, Calculation 4)		
Calculation 2:	Enter Base Site Area (Table 05.130, Calculation 1)		ac.
	Multiply by Minimum Open Space Ratio (Table 04.110)	x	
	Equals Minimum District Required Open Space	=	ac.
Calculation 3:	Enter Base Site Area (Table 05.130, Calculation 1)		ac.
	Subtract Protected Resource Land (Calculation 1 or 2, whichever is greater)	-	ac.
	Equals Net Buildable Site Area	=	ac.
	Multiply by Maximum Net Density (Table 04.110)	x	
	Equals Site Specific Maximum Density Yield	=	du's
Calculation 4:	Enter Base Site Area (Table 05.130, Calculation 1)		
	Multiply by Maximum Gross Density (Table 04.110)	x	
	Equals District Maximum Density Yield	=	du's
Calculation 5:	Maximum Yield for Site (Calculation 3 or 4, whichever is less)	=	du's

Table 05.142 NON-RESIDENTIAL USE CAPACITY CALCULATION			
Calculation 1:	Enter Base Site Area (Table 05.130, Calculation 1)		6.75 ac.
	Subtract Protected Resource Land (Table 05.130, Calculation 4)		- 1.87 ac.
	Equals Buildable Land, Site		= 4.88 ac.
Calculation 2:	Enter Base Site Area (Calculation 1)		6.75 ac.
	Multiply by Minimum Landscape Surface Ratio (Table 04.110)	x	.5
	Equals Minimum Landscaped Area		= 3.37 ac.
Calculation 3:	Enter Base Site Area (Calculation 1)		6.75 ac.
	Subtract Minimum Landscaped Area (Calculation 2)		- 3.37
	Equals Buildable Land, District		= 3.38 ac.
Calculation 4:	Enter Calculation 1 or 3, whichever is less		3.38 ac.
	Multiply by Maximum Net Floor Area Ratio (Table 04.110)	x	.53
	Equals Maximum Floor Area in acres		= 1.79 ac.
		x	43,560
	Multiply by 43,560 to determine Maximum Floor Area in square feet		= 78,033 sf.
Calculation 5:	Minimum Landscaped Surface Calculation 1 (Total Protected Land) or Calculation 2 (Minimum Landscaped Area), whichever is greater)		= 4.88 ac.

DIVISION 05.200



OFFICE OF OCEAN & COASTAL
RESOURCE MANAGEMENT
13 Newcastle Street, PO Box 587
Beaufort, SC 29901

February 286, 2000

St. John's Luthern Church
980 Ribaut Road
Beaufort, SC 29902

Post-It® Fax Note	767*	Date	3-7	# of Pages	1
To	CHRIS	From	JIM		
Co./Dept.		Co.			
Phone #		Phone #	521-3000		
Fax #	651-7080	Fax #	521-3011		

Re: St. John's Luthern Church
P/N#: 07-00-02-03
Beaufort County
Stormwater

Dear Sir:

The staff of the Bureau of Ocean and Coastal Resource Management (OCRM) certifies that the plans submitted for the above referenced project, dated **February 10, 2000**, meet the minimum requirements of the S.C. Storm Water Management and Sediment Reduction Act. This project is also found to be consistent with the S. C. Coastal Zone Management Program. This land disturbance permit is contingent on the following special conditions:

- (a) The OCRM staff must be notified at least seven (7) days prior to actual land disturbance in order to arrange sediment/erosion control inspections.
- (b) The responsible day-to-day contact must have a OCRM stamped set of plans on site at all times.
- (c) Prior to final project approval, a registered professional responsible for construction will submit a statement certifying that construction is complete and in accordance with approved plans and specifications. OCRM staff will then conduct a final site inspection for design compliance.
- (d) The person responsible for maintenance shall perform or cause to be performed preventive maintenance of all completed storm water management practices to ensure proper functioning. OCRM will conduct periodic maintenance inspections.
- (e) Approved plans remain valid for five (5) years from the date of an approval. Extensions or renewals of the plan approvals may be granted by the OCRM upon written request by the person responsible for the land disturbing activity.

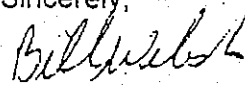
Page 2

(f) This approval is only applicable for the plans that were submitted for this project. Any additional construction or grading beyond the scope of these plans is not authorized.

(g) No freshwater wetlands, as determined by the U. S. Army Corps of Engineers, shall be disturbed or altered without Corps authorization.

Failure to comply with any of the conditions of this permit may result in enforcement actions and/or penalties. The receipt of this permit does not relieve you of the responsibility of acquiring any other state, federal or local permits that may be required. Interested parties are provided ten days from receipt of this letter to appeal the action of the OCRM.

Sincerely,



Billy Webster
Engineer Associate III

cc: Mr. Stephen Snyder
Mr. Joseph Fersner, PE
Mr. Yan Seiner

BW/swc/bw

APPLICATION FOR ENCROACHMENT PERMIT

No. S-07-000031

(ENCROACHMENT PERMIT OTHER THAN A PUBLIC UTILITY)

APPLICANT: **St. John's Lutheran Church**
 AND **960 Ribaut Road**
Beaufort, SC 29902
 ADDRESS:
 TELEPHONE NUMBER: **843-524-3461**

COUNTY: **Beaufort County**
 ROAD/ROUTE: **Highway 302**
 ROAD NAME:

1. The undersigned applicant hereby applies to the South Carolina Department of Transportation (SCDOT) for a permit for encroachment on State Highway Right of Way as shown and described below:
2. Type of Encroachment: **Driveway**
3. Description of location: **On the south side of Hwy. 302, approximately 1 mile east of the McTeer Bridge.**

(Attach sketch indicating roadway features such as: pavement width, shoulder width, sidewalk and curb and gutter location, significant drainage structure, north arrow, right of way width, and location of the proposed encroachment with respect to the roadway centerline and the nearest intersecting road on the State system.)

4. The undersigned applicant hereby requests the SCDOT to permit encroachment on the Department right of way as described herein. It is expressly understood that the encroachment, if and when constructed, shall be installed in accordance with the sketch attached hereto and made a part hereof. The applicant agrees to comply with and be bound by the Department's "A Policy for Accommodating Utilities on Highways Rights of Way" and "Standard Specifications for Highway Construction" (made a part hereof by reference) on file in the Utility Office of the Department, and all general provisions on the reverse hereof and special provisions below or attached hereto during the installation, operation and maintenance of said encroachment within the Department Right of Way. The applicant hereby further agrees, and binds his heirs, successors, assigns, to assume any and all liability this Department might otherwise have in connection with accidents or injuries to persons, or damage to property, including the highway, that may be caused by the construction, maintenance, use, moving or removing, of the physical appurtenances contemplated herein and agrees to indemnify this Department for any liability incurred or injury or damage sustained by reason of the past, present, or future existence of said appurtenances.

APPLICANT NAME: Harvey Cassiano DATE: 1-19-2000
 (PLEASE PRINT OR TYPE)
 APPLICANT SIGNATURE: [Signature] TITLE: CHAIRMAN, BUILDING COMMITTEE

In compliance with your request and subject to all the provisions, terms, conditions and restrictions stated in the application, general provisions on the reverse hereof, and special provisions below or attached hereto, the Department approves the request. This permit shall become null and void unless the work contemplated herein shall have been completed prior to 01/24/01.

SPECIAL PROVISIONS:

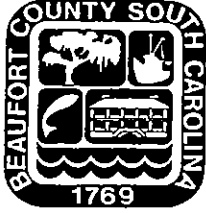
(Special Provisions Attached)
 04 07 28 32 36 38

- * The ditches and/or shoulders disturbed during this installation shall be re-established to proper grade, original cross section, stabilized, and all drain pipes cleared.
- * Performance bond number B-713953, copy attached, will remain in force pending the satisfactory completion of this project documented by a letter from the SCDOT.
- * The shoulders and ditches will be grass seeded in accordance with the attached seeding schedule.

01/21/00 DATE RECEIVED BY [Signature] DATE FORWARDED [Signature] W.M. Mulligan [Signature] SCDOT APPROVAL DATE 01/24/00

DATE RECEIVED BY [Signature] DATE FORWARDED [Signature]

RESIDENT MAINTENANCE ENGINEER STATE HIGHWAY ENGINEER
 DISTRICT ENGINEERING ADMINISTRATOR DISTRICT MAINT./CONSTRUCTION ENGINEER



COUNTY COUNCIL OF BEAUFORT COUNTY
BEAUFORT COUNTY PLANNING DEPARTMENT
Multi Government Center • 100 Ribaut Road, Room 260
Post Office Drawer 1228, Beaufort, SC 29901-1228
Phone: (843) 470-2724 • FAX: (843) 470-2686

May 30, 2000

Chris Darnell, Landscape Architect
Wood and Partners, Inc.
7 Lafayette Place
Hilton Head, SC 29925

RE: St. John's Lutheran Church

Dear Mr. Darnell:

This is to confirm that the Northern Beaufort County Corridor Review Board (CRB) has approved the above referenced project on SC 802 on Lady's Island. The next step in the process is to submit the project to the Development Review Team (DRT) which also must approve the site plan and landscaping.

Sincerely yours,

Robert Merchant
Development Review Planner

cc: Walter Fielding, Zoning Administrator



Letter of Transmittal

To: D.R.T.
Of: Beaufort County

Date: May 30, 2000
Project: St. Johns Lutheran Church
Project #: 99019
Re:

WE ARE SENDING THE ATTACHED VIA: HAND DELIVERY

Copy of Letter Prints Plans Color Plots _____

TRANSMITTED FOR: FOR YOUR USE

If there is a discrepancy in the information listed, please contact WPI within 3 calendar days from receipt.

<u>Copies</u>	<u>Date</u>	<u>Description</u>
6	5/30/00	Site Plan, Planting Plan & Lighting Plan
1	3/14/00	Narrative
1		Existing Conditions photo board
1		Site Capacity Analysis
1		Tree Preservation Plan
1		Letters of commitment to serve: SCE&G, Sprint and Beaufort-Jasper Water and Sewer
1		Wetland Determination, OCRM Permit and SCDOT Encroachment Permit
1		CRB approval letter

Remarks: Please find the above respectfully submitted for preliminary DRT review. If you have any questions or need additional information please let me know. Thank you.

Review Prehim - 6/14/00
Final - 6/21/00

Signed: Chris Darnell

Copy to:

NOTIFICATION OF JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers
Charleston District

Action ID: SAC 01-2000-0811 County BEAUFORT

Property Owner/Authorized Agent ST JOHN'S LUTHERAN CHURCH

Address 1/0 NEWKIRK ENV T 340 EISENHOWER DR SANM, VALE GA 31406

Telephone Number

Size and Location of Property D. OF AC OFF SC HWY 002 AS PER PLAT:

ST JOHN'S LUTHERAN CHURCH / HWY 002, LADY'S ISLAND, SC / CRITICAL LINE
WETLANDS DELINEATION PREPARED BY X GODSEY, DATED 5-15-00

Indicate Which of the Following Apply to the Property:

Jurisdictional Determination ("JD") Needed

There are areas within the jurisdiction of the Corps which we strongly suggest should be delineated and surveyed. The surveyed boundaries must be verified by our staff before the Corps will make a final determination.

Large or Commercial Tracts

Because of the size of your property and our present workload, our identification and delineation of the jurisdictional areas cannot be accomplished in a timely manner. You may wish to employ a consultant to obtain a more timely delineation. Once your consultant has flagged the jurisdictional areas, Corps staff will review it, and if it is accurate, we strongly recommend that you have the line surveyed for final approval by the Corps. The Corps will not make a final JD without an approved survey.

JD Finished

X The jurisdictional areas have been delineated, and the limits of Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this JD may be relied upon for a period not to exceed five years from the date of this notification.

No Wetlands

There are no areas which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this JD may be relied upon for a period not to exceed five years from the date of this notification.

Coastal Zone

The property is located in the South Carolina Coastal Zone. In addition to any above requirements, you should contact the S. C. DHEC Office of Ocean and Coastal Resource Management at 1-843-744-5838 for their requirements.

Placement of dredged material or fill material in waters of the U.S. without a Department of the Army permit or exemption may result in injunctive relief (restoration) and substantial civil penalties under Section 309 of the Clean Water Act (33 USC 1319). A permit is not required for work restricted entirely to existing high ground. If you have any questions regarding the limits of our jurisdiction, what constitutes a regulated activity, or our regulatory program in general, please contact us at 1-800-208-2054 or 1-843-727-4330.

Property owner/Authorized Agent Signature

Handwritten signature of Ashley W. Smith

Project Manager Signature

Date 26 May 00

Survey Plat or Field Sketch of described property and the JD must be attached to the Yellow (File) copy of this form

**Tree Preservation
St. John's Lutheran Church
Lady's Island, South Carolina**

Prepared for: Mr. Chris Darnell
Wood & Partners
P.O. Box 23949
Hilton Head Island, SC 29925

Prepared by: Gary R. Mullane, ASCA
Mullane Associates
P.O. Box 22828
Hilton Head Island, SC 29925

phone: 843-689-3087
fax: 843-689-6961
e-mail: Treenetwks@aol.com

April 3, 2000

Mullane Associates
Tree & Horticultural
C O N S U L T I N G

159 Dillon Road
P.O. Box 22828
Hilton Head, SC 29925
843 803-689-3087
FAX 803-689-6961
843

April 3, 2000

Mr. Chris Darnell
Wood & Partners
P.O. Box 23949
Hilton Head Island, SC 29925

Dear Mr. Darnell:

I have inspected the trees at St. John's Lutheran Church on Lady's Island and would like to submit the following report. The purpose of my inspection was to determine the condition of the trees on the site. I conducted a visual ground inspection of the trees that are highlighted in your plans. These trees were along the driveway, parking lots and the building.

The site consists mostly of live oak, water oak, laurel oak and pine. The trees are in good condition at this time. There is a normal amount of dead limbs, split limbs and vines that you would expect to find in a forest. Several of the trees are dead and should be removed.

I have included information of some of the trees to be saved, tree preservation construction guidelines and specifications for pruning, liquid fertilizing, mulching and tree protection fencing.

Trees go through dramatic environmental changes when land is cleared and buildings are built. Grade changes, clearing, wind direction; sunlight and natural vegetation are some of the changes that the trees must overcome. With proper care and planning, most trees can survive these environmental changes. The tree preservation methods and practices that I recommend have been successful in saving thousands of trees.

If you have any questions please contact me so that we may review them. I hope that this meets your approval, as I am sure that you will be satisfied with our work.

Yours truly,



Gary R. Mullane, ASCA
Registered Consulting Arborist

Tree Preservation

St. John's Lutheran Church

Lady's Island, South Carolina

1. **36" Live Oak left of the entrance:** This tree is 70% decayed in the main trunk. It is a hazard tree and should be removed during clearing.
2. **Dead oak within building footprint:** This tree is dead and should be removed.
3. **26" Water Oak in front of building:** This tree leans toward where the building will be. The main trunk or large limbs may interfere with the walls of the building. When construction is completed, this tree will be standing between the building, sidewalks and the driveway. The root system will be severely damaged during construction. This will be a small area for a tree this species and size to live. It is my experience water oaks this size will not survive the construction and will have to be removed at some point. I suggest that this tree be *removed to avoid future problems.*
4. **Limbs over building footprint:** Limbs that will interfere with the building or construction equipment should be removed before construction begins. Once the building lines are established these can be easily identified and removed.
5. **Tree care before, during and post construction:** All of the key trees around the building, parking areas and driveway should be cared for before construction begins. Pruning, liquid fertilizing, mulching and protective tree fencing should be done as soon after clearing as possible. I have included specifications for tree care for your review.

CONSTRUCTION GUIDELINES FOR TREE PRESERVATION

Pre-construction:

1. Prune trees according to specifications
DO NOT USE WOUND DRESSING OR TREE PAINT
2. Remove vines as necessary
3. Liquid fertilize as specified
4. Install protective fencing as specified
5. Spread 3" of shredded organic mulch under trees to be saved

During construction:

1. Maintain protective fencing throughout construction
2. Keep construction material away from trees
3. Do not store or clean material under trees
4. Do not trench under drip line of trees
5. Water trees as specified by the tree consultant
6. Monitor condition of trees

Post construction:

1. Second liquid fertilizer application
2. Add mulch as needed
3. Monitor condition of trees

Pruning Specifications

In 1995, the American National Standards Institute's (ANSI A300-1995) standards "*for Tree Care Operations*" were adopted for tree pruning. These standards replaced the National Arborist Associations (NAA) *Pruning Standards*. Within the tree industry, these are simply called the "A300" pruning standards

The address is:

American National Standards Institute
11 West 42nd Street
New York, New York 10036

The sections of A300 which I specify for the tree care at the Church are within Section 5.3 Mature tree pruning, 5.3.3.2 Maintenance pruning:

a) *Crown cleaning*: Crown cleaning shall consist of the selective removal of one or more of the following items: dead, dying, diseased, weak branches and watersprouts (sucker growth) from the tree's crown.

All dead limbs 1" and larger are to be removed.

Low limbs interfering with vehicular traffic are to be raised

The canopy of the tree should be left intact.

Timing of tree pruning: It has been my experience that the best time to prune and care for the trees are **before** the construction begins. Caring for the trees in the pre-construction phase serves several purposes. The tree crews usually have easier access to the trees. The trees will look better once more construction crews enter the site, this shows the contractors and workers the intent of the developer to save trees and makes them more aware of the importance of the trees. It is easier to spot problems and monitor the trees if they begin the project in good condition. Most importantly, is the fact that the trees seem to adapt to the change in environment better when the entire tree maintenance program is started in the pre-construction phase of development.

Tree paint or wound dressing should NOT be used on trees. These materials have proven to be of no benefit to trees. Arborists should not use spikes or cleats of any kind while pruning the trees.

The *Tree-Pruning Guidelines*, published by the International Society of Arboriculture should be followed.

Liquid fertilizing Specifications

It is essential that a liquid fertilizing program be initiated to help save these trees. Liquid fertilizer will replenish nutrients that will be lost during construction. A liquid fertilizer with a formula of 32-7-7 or equivalent should be used. In addition, Plant Health Care's Mycortree Injectable with PHC Biopak Biostimulant should be added to the fertilizer mixture. This will replace mycorrhizae spores that were lost during the clearing operation. Labels for both are included. Several applications should be made. The first application should be after the site is cleared and tree fencing is established. Two applications per year should be applied until the tree is again growing vigorously. The tree should be monitored so that you know how they are recovering.

I have found that an aggressive liquid fertilizing program provides the trees with the best chance to survive. I have never had any adverse reactions from the trees with this program. A fertilizer high in nitrogen and low in salt is ideal for live oak trees. Since I recommend fertilizing twice a year, spring and fall, the fertilizer labeled mixing rate should be cut in half.

The reason that I prefer to recommend liquid fertilizing application methods to other methods is that during the liquid fertilizer application several good things are done:

1. The liquid fertilizer mixture is applied in a solution that is readily available to the roots of the trees.
2. The trees are watered at the same time with a deep penetrating probe.
3. The pressure from the water pump aerates the soil and fractures compacted soil.

Mulch Specifications

Spreading organic mulch beneath trees on construction sites is one of the most important preservation practices that can be done for them. Mulch also can act as protection for roots that must be traversed by trucks and equipment on a site. The mulch should be spread at a depth of about 3" within the tree fence lines.

The mulch should be natural blended mulch. Many kinds of mulch can be used. Some of which are: pine bark; shredded oak; pine chips; wood chips and recycled yard waste. Any one of these or the best available can be used. Pinestraw should not be used as it will not benefit the trees as the other mulches will.

Benefits of using mulch on construction sites: (or for trees everywhere)

- Water Conservation
- Increase soil vitality
- Erosion control
- Moderate soil temperature
- Increase soil aeration
- Improve moisture retention
- Reduce plant injury
- Reduce soil compaction
- Increase surface root development
- Easy to spread
- It can be left under trees
- Reduce herbicide usage
- Natural appearance

Tree protection fencing

Tree protection fencing should be installed immediately after clearing is completed. It is imperative to make sure that the contractor and all the sub-contractors are aware of the importance of these trees. Ideally, the fencing should be installed as indicated in my diagrams. I have provided diagrams for installation of tree protection fences. This has become a common task for contractors. The fence lines can be altered as construction progresses through the site, but the tree consultant or landscape architect should be notified before any fencing is moved.

Purpose of the Tree Protection Fences:

- Prevent damage to the tree trunks
- Protect the root system
- Reduce/eliminate soil compaction
- Keep contaminants away from tree roots
- Keep material storage away from trees
- Provide safe area from construction equipment
- Protect low hanging limbs

Mullane Associates

Mullane Associates is, a tree and horticultural consulting firm located on Hilton Head Island, South Carolina. It is well known for its tree preservation projects throughout the state. Mullane Associates is qualified to provide tree consultation in numerous tree-related areas of interest. Their experience ranges from tree preservation on construction sites through golf course tree management and even saving single trees.

Mullane Associates has received two Excellence in Arboriculture Awards. The National Arborist Association, Inc presents the Excellence in Arboriculture Award. It is given to companies that display outstanding arboriculture initiative and knowledge.

The first Award was in conjunction with Marriott Ownership Resorts, Inc.'s Grande Ocean Resort on Hilton Head Island. The project entailed saving over three hundred live oak trees during demolition of the old Hilton Inn and then during construction of the Grande Ocean Resort.

The second Award was given for tree preservation at Disney's Hilton Head Island Resort. This was an eighteen-acre island connected by a bridge to Hilton Head. Thirty-two buildings were constructed among hundreds of pine and oak trees.

Mullane Associates also has performed tree management plans for towns, cemeteries, resorts and golf courses. It is presently involved in the tree preservation of the Oatland Island Educational Center in Savannah, Georgia.

In addition, Mullane Associates is the tree consultant for Augusta National Golf Course. This world-renowned course is lined with stately pines that require special care to make certain that they remain as green as the course.

Principal Consultant: Gary R. Mullane

Gary is a graduate of the University of Massachusetts. He earned a degree in Arboriculture and Park Management. Gary is known nationally for his creative tree preservation techniques. He has spoken at several national conventions and has authored articles for publication. Gary also has appeared in court as an expert witness for tree related cases on numerous occasions.

His interests in promoting tree care nationally have earned him national recognition. He is a past-president of the National Arborist Association, Inc. and is presently vice-president of the American Society of Consulting Arborists. He is also an Honorary Life member of the International Society of Arboriculture.

GARY R. MULLANE

TREE CONSULTANT

PROFESSIONAL HISTORY:

- 1993 - Present: Organic Recycling Center, Hilton Head Island, SC
- 1991 - Present: Mullane Associates, Hilton Head Island, SC
- 1989 - Present: President of Low Country Tree Care, Hilton Head Island, SC
- 1976-1989: Vice-Pres. Hawthorne Bros. Tree Service, NY
- 1971-1976: President Mullane Tree Service, New York
- 1969-1971: Sales Rep. Landscape Foresters, New York

EDUCATIONAL HISTORY:

- 1969: Graduated from University of Massachusetts
Degree in Arboriculture and Park Management
- 1966: Graduated from Westlake High School, New York

PROFESSIONAL AFFILIATIONS:

- National Arborist Association (NAA) - since 1971
 - President 1994
 - Board of Director 1987 - 1990
 - Treas. 1991; Vice-Pres. 1992; Pres. Elect 1993
- National Arborist Foundation - Trustee 1988-1991
- American Society of Consulting Arborists - since 1982
 - Board of Directors - 1998, Treas. 1999, Vice President 2000
- International Society of Arboriculture (ISA) - since 1969
- New York State Pesticide Users Council - 1984-1988
- Golf Course Superintendents Association - 1988, 1989
- Westchester County Football Officials Assoc. - 1978-89
 - New York, Board of Directors 1986-1989
- Hilton Head Island Beautification Committee - 1991- 1997
- Council of Tree & Landscape Appraisers - 1993 - 1995
- ISA General Chairman of International Conference on Hilton Head Island - 1995

AWARDS:

- 1986- Gold Leaf Award from the New England Chapter of the ISA for outstanding Arbor Day activity in New England
- 1991- Award from National Arborist Foundation for years of support
- 1995- Honorary Life Membership in International Society of Arboriculture
- 1996- NAA Excellence in Arboriculture "Grand Award" for tree preservation at Marriott's Grande Ocean Resort, Hilton Head Island, SC
- 1997- NAA Freeman Parr Award for Outstanding Communication Achievement
- 1998- NAA Excellence in Arboriculture "Award of Distinction" for tree preservation at Disney's Hilton Head Island Resort.
- 1998- Town of Hilton Head Island, Town Council - Citizen Award for serving on the Island Beautification Committee

EXPERT WITNESS: Appeared in court as arboriculture expert on numerous occasions in insurance, casualty, trespass, appraisal and environmental related cases.



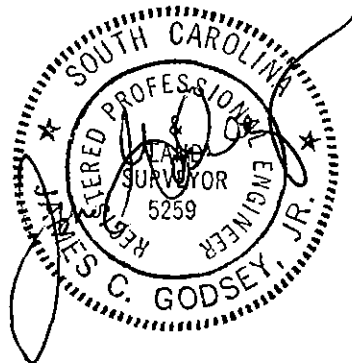


CARDINAL
engineering, inc.

STORM DRAINAGE CALCULATIONS
FOR
ST. JOHN'S LUTHERAN CHURCH
ON
S.C. HIGHWAY 802
LADY'S ISLAND, SC

OWNER

St. John's Lutheran Church
980 Ribaut Road
Beaufort, SC 29902
(843)524-3461



Project No. SJL.001
Revised April 13, 2000

ST. JOHN'S LUTHERAN CHURCH DRAINAGE CALCULATIONS

April 13, 2000

TABLE OF CONTENTS

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Stormwater Drainage Calculations Summary	2
Location Map	3
Soils Map	4
USGS Quad Map	5
BMP Worksheet	6

Appendix A - Predevelopment Drainage Calculations

Appendix B - Postdevelopment Drainage Calculations

PROJECT NARRATIVE

INTRODUCTION

The project site is located on the east side of S. C Highway 802 approximately 2,700 feet north of the intersection of S.C. Highway 802 and Meridian Road on Lady's Island. The site consists of a wooded tract of land totaling 6.75 acres. The site is gently sloping with elevations ranging from 6' to 15' above M.S.L. Slopes average about 1%.

The site is adjacent to the marshes of Distant Island Creek, the receiving water body, which flows in an southeasterly direction into the Beaufort River about two miles southeast of the site.

PREDEVELOPMENT SITE CONDITIONS

According to the "Soil Survey of Beaufort and Jasper Counties" published by the USDA Natural Resources Conservation Service, the predominant soil type found on the project site is Ridgeland (Rd). This soil is described as somewhat poorly drained and moderately to moderately rapidly permeable. This soil fall into hydrologic soil group "D".

POSTDEVELOPMENT SITE CONDITIONS

Site development will include the construction of a multi-purpose building totaling about 12,000 SF with asphalt parking areas and drives, concrete sidewalks and a stormwater detention basin with an outflow control structure.

The total disturbed area will be 2.39 acres.

STORMWATER DETENTION SYSTEM

The stormwater detention basin, as designed, has a peak storage volume of 22,832 cubic feet. The first inch of stormwater runoff volume from the built-upon portion of the project site totals 8,685 cubic feet. The first half inch of runoff from the entire project site totals 12,252 Cf. The detention basin is designed to limit postdevelopment stormwater outflow from the project site to a rate that does not exceed the uncontrolled predevelopment outflow rate for the 25 year design storm event and to retain the first half inch of stormwater runoff from the built-upon portion of the site. Drainage calculations show that the proposed stormwater drainage system, as shown on the plans, meets and exceeds this design criteria .

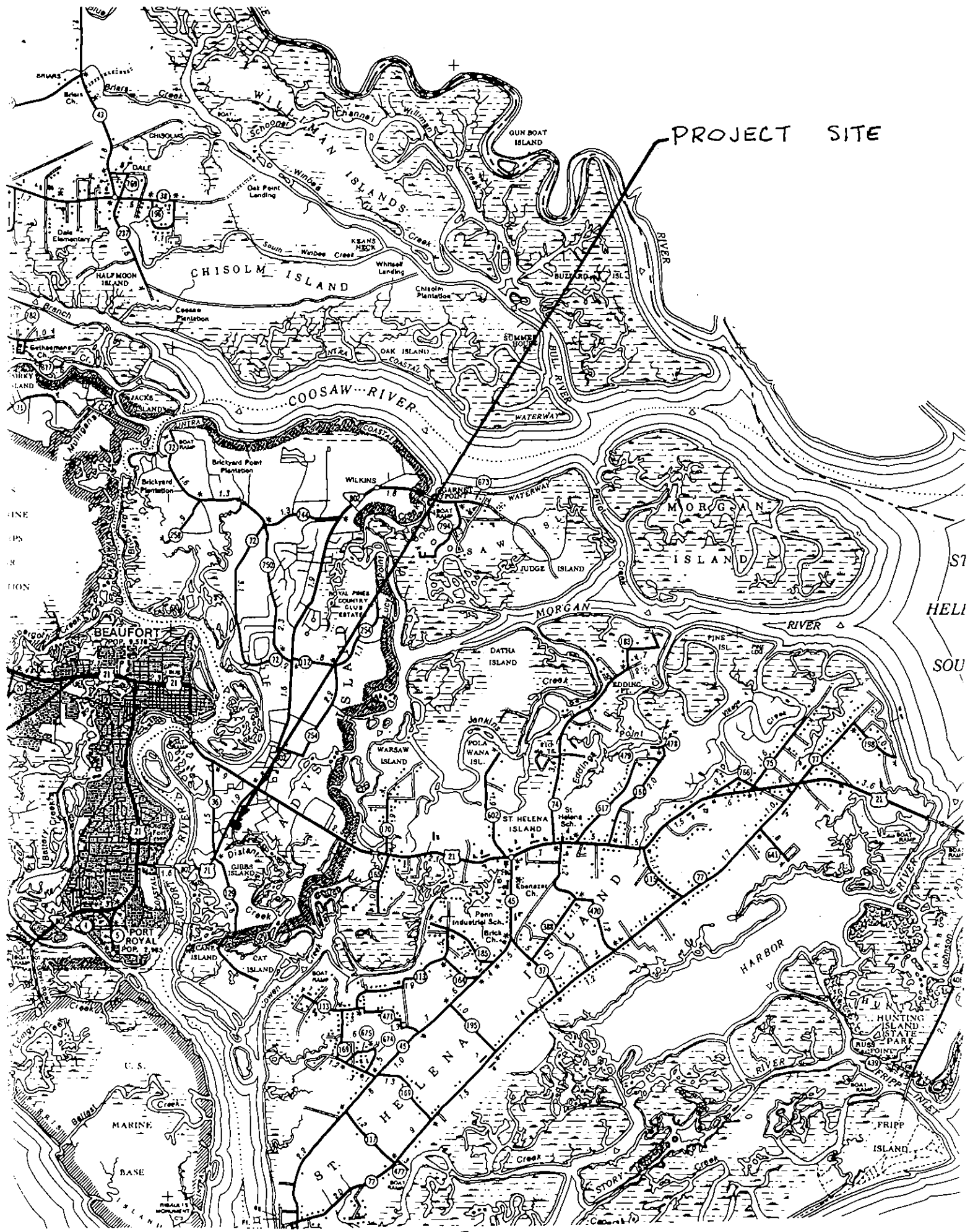
Stormwater BMP's will include a detention basin with controlled discharge, silt fencing, landscaping, grassing and careful consideration of slopes and grades.

Please refer to the drainage calculations in the appendix for details.

STORM DRAINAGE CALCULATIONS SUMMARY
FOR
ST. JOHN'S LUTHERAN CHURCH

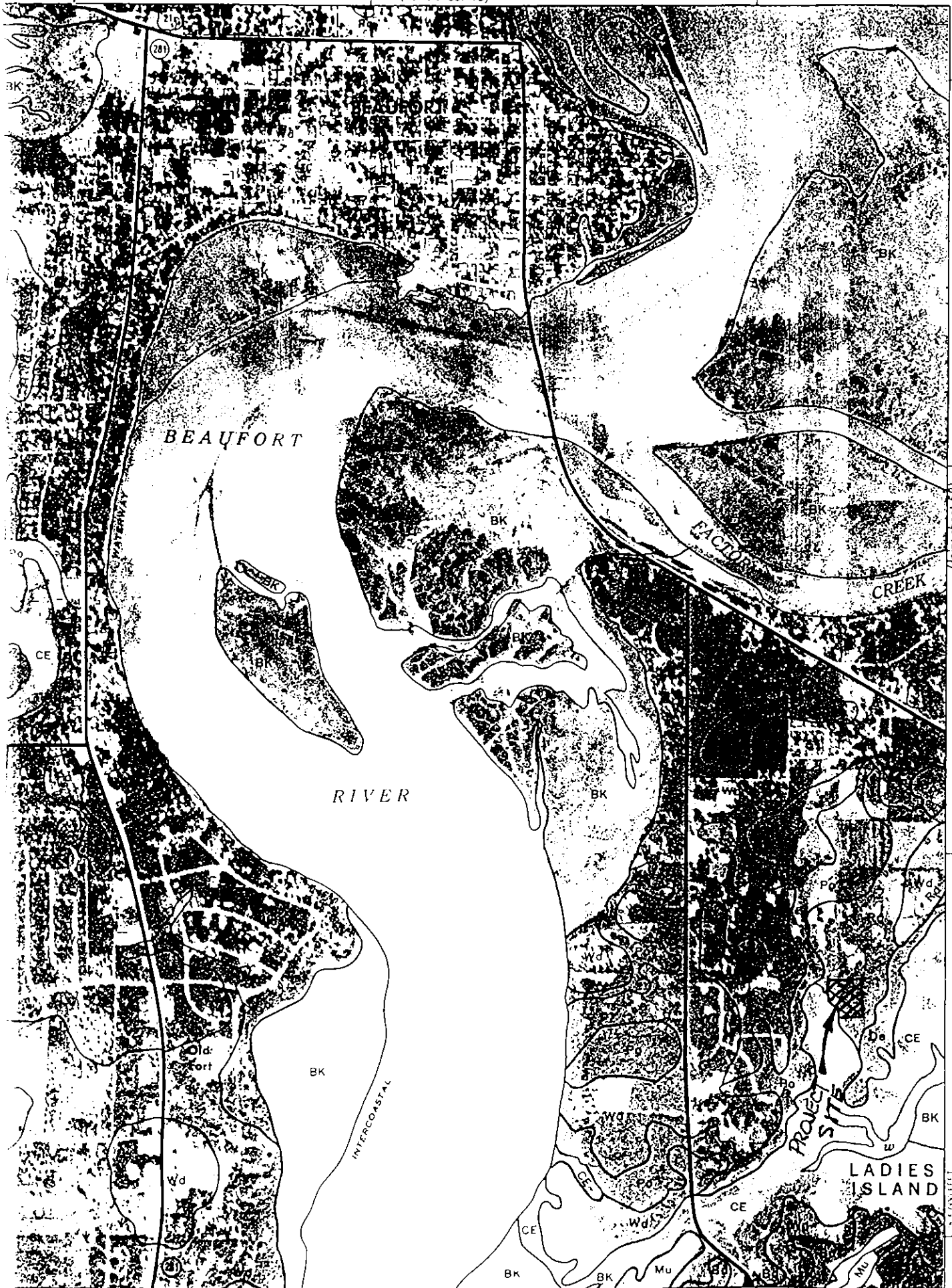
HIGHWAY 802
LADY'S ISLAND, SC

2 YEAR UNCONTROLLED PREDEVELOPMENT RUNOFF	7.70 CFS
10 YEAR UNCONTROLLED PREDEVELOPMENT RUNOFF	14.64 CFS
25 YEAR UNCONTROLLED PREDEVELOPMENT RUNOFF	18.38 CFS
2 YEAR POSTDEVELOPMENT RUNOFF (WITH DETENTION)	6.36 CFS
10 YEAR POSTDEVELOPMENT RUNOFF (WITH DETENTION)	13.67 CFS
25 YEAR POSTDEVELOPMENT RUNOFF (WITH DETENTION)	17.67 CFS
STORMWATER DETENTION BASIN STORAGE VOLUME	22,832 CF
VOLUME REQUIRED FOR THE FIRST INCH OF RUNOFF FROM THE BUILT-UPON PORTION OF THE SITE	8,685 CF
VOLUME REQUIRED FOR THE FIRST HALF INCH OF RUNOFF FROM THE ENTIRE SITE	12,252 CF

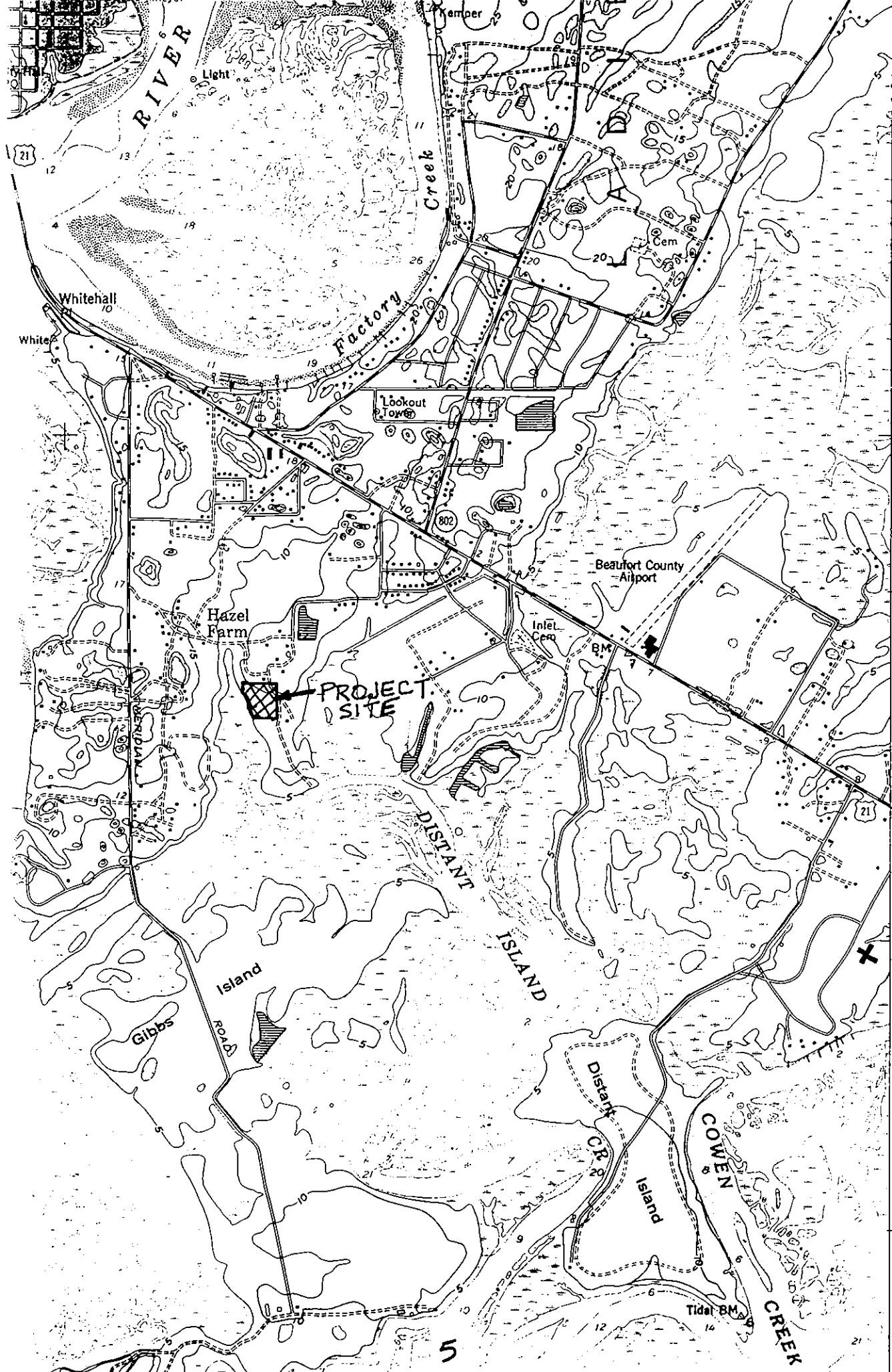


PROJECT SITE

(Joins sheet 48)



(Joins sheet 67)



3588
3587
25'
3586
3584
3583
3582000m N.

FROGMORE 3 MI.
END OF ROAD 16 MI.

PROJECT SITE

Whitehall
Light
Factory Creek
Lookout Tower
Hazel Farm
Beaufort County Airport
Inlet Cem
BM
Distant Island
Gibbs Island
Distant Cr.
Cowen Creek
Tidal BM

Bmp worksheet - St. John's Lutheran Church, April 13, 2000

Site Area	7 acres	Asite
Impervious Developed Area	2 acres	Adevimp
Pervious Developed Area	1 acres	Adevperv
Dedicated Open Space	4 acres	Adepop
Imperviousness of Developed Area	85 %	Idev
Base Required Pollutant Removal	61 %	Rbase
Required Total Phosphorus Removal	13 %	Rreq
Primary BMP type	Wet Detention	
Assumed Primary BMP Total Phosphorus Removal	60 %	Epri
Percent of area that is served by Primary BMP	79 %	Spri
Calculated Primary BMP Removal	47 %	Rpri

APPENDIX A

**PREDEVELOPMENT DRAINAGE CALCULATIONS
FOR
2 YEAR STORM
10 YEAR STORM
25 YEAR STORM**

SUBCATCHMENT 1 Predevelopment Runoff

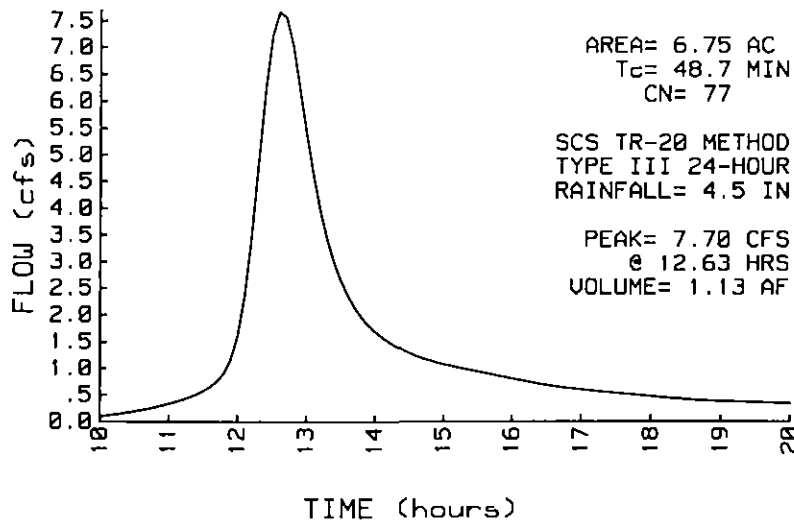
PEAK= 7.70 CFS @ 12.63 HRS, VOLUME= 1.13 AF

<u>ACRES</u>	<u>CN</u>	
6.75	77	woodland

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 4.5 IN
 SPAN= 10-20 HRS, dt=.1 HRS

<u>Method</u>	<u>Comment</u>	<u>Tc (min)</u>
TR-55 SHEET FLOW		46.0
Woods: Light underbrush	n=.4 L=300' P2=4.5 in s=.0175 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW		2.7
Woodland	Kv=5 L=106' s=.0175 '/' V=.66 fps	
Total Length= 406 ft		Total Tc= 48.7

**SUBCATCHMENT 1 RUNOFF
 Predevelopment Runoff**



SUBCATCHMENT 1 Predevelopment Runoff

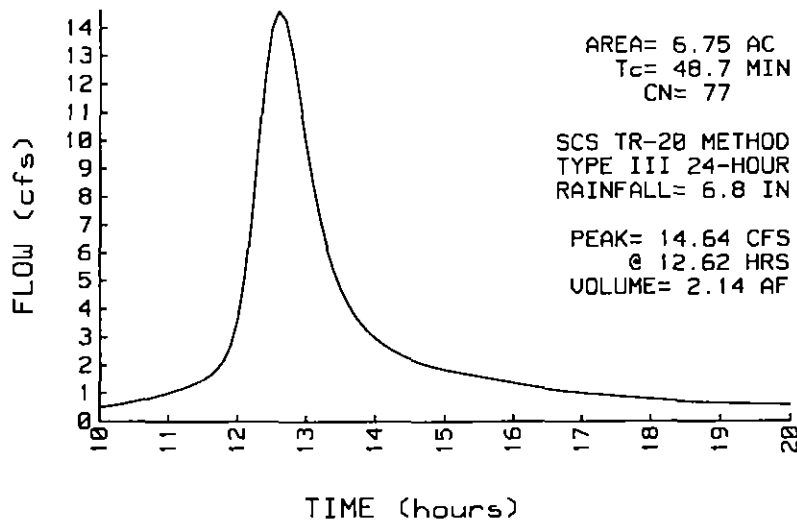
PEAK= 14.64 CFS @ 12.62 HRS, VOLUME= 2.14 AF

ACRES	CN	
6.75	77	woodland

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 6.8 IN
 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		46.0
Woods: Light underbrush	n=.4 L=300' P2=4.5 in s=.0175 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW		2.7
Woodland	Kv=5 L=106' s=.0175 '/' V=.66 fps	
Total Length= 406 ft		Total Tc= 48.7

**SUBCATCHMENT 1 RUNOFF
 Predevelopment Runoff**



TYPE III 24-HOUR RAINFALL= 8.0 IN, 25 YEAR STORM

Prepared by Jim Godsey, P.E.

9 Feb 00

HydroCAD 4.52 001026 (c) 1986-1996 Applied Microcomputer Systems

SUBCATCHMENT 1 Predevelopment Runoff

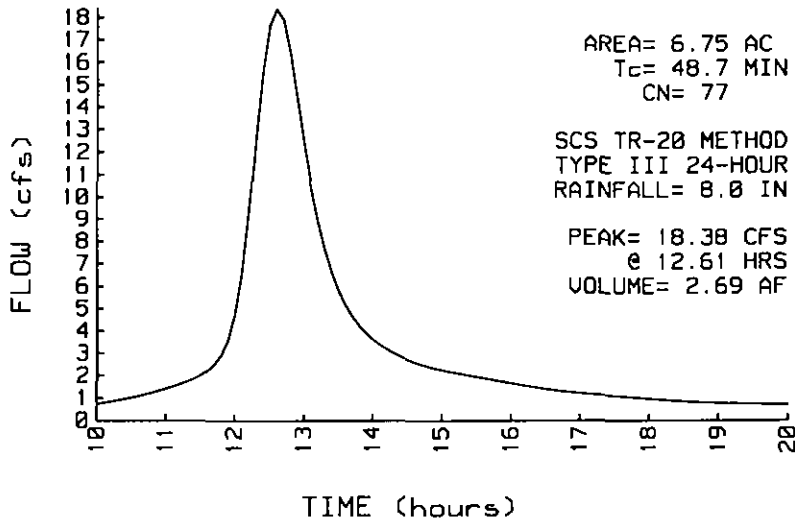
PEAK= 18.38 CFS @ 12.61 HRS, VOLUME= 2.69 AF

<u>ACRES</u>	<u>CN</u>	
6.75	77	woodland

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 8.0 IN
 SPAN= 10-20 HRS, dt=.1 HRS

<u>Method</u>	<u>Comment</u>	<u>Tc (min)</u>
TR-55 SHEET FLOW		46.0
Woods: Light underbrush	n=.4 L=300' P2=4.5 in s=.0175 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW		2.7
Woodland	Kv=5 L=106' s=.0175 '/' V=.66 fps	
Total Length= 406 ft		Total Tc= 48.7

**SUBCATCHMENT 1 RUNOFF
 Predevelopment Runoff**



APPENDIX B

**POSTDEVELOPMENT DRAINAGE CALCULATIONS
FOR
2 YEAR STORM
10 YEAR STORM
25 YEAR STORM**

Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 1 postdevelopment runoff

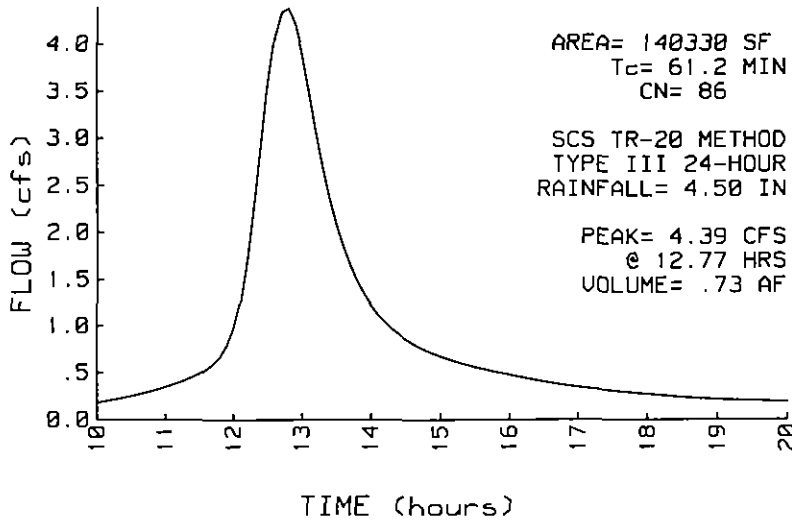
PEAK= 4.39 CFS @ 12.77 HRS, VOLUME= .73 AF

SQ-FT	CN	
61875.00	98	impervious
78455.00	77	pervious
140330.00	86	

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 4.50 IN
 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		61.2
n=.4 L=265'	P2=4.5 in s=.0067 '/'	

SUBCATCHMENT 1 RUNOFF
 postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 2 postdevelopment runoff

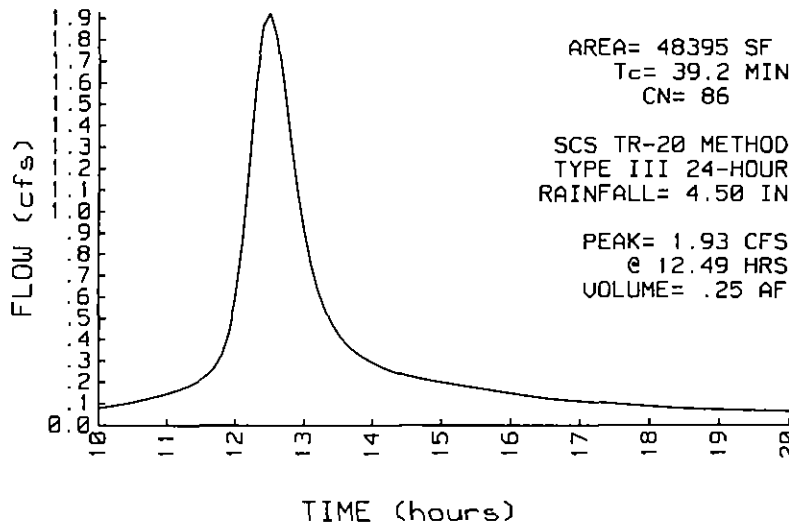
PEAK= 1.93 CFS @ 12.49 HRS, VOLUME= .25 AF

SQ-FT	CN	
20855.00	98	impervious
27540.00	77	pervious
48395.00	86	

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 4.50 IN
 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240'	P2=4.5 in s=.0167 '/'	

SUBCATCHMENT 2 RUNOFF
 postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 3 **postdevelopment runoff**

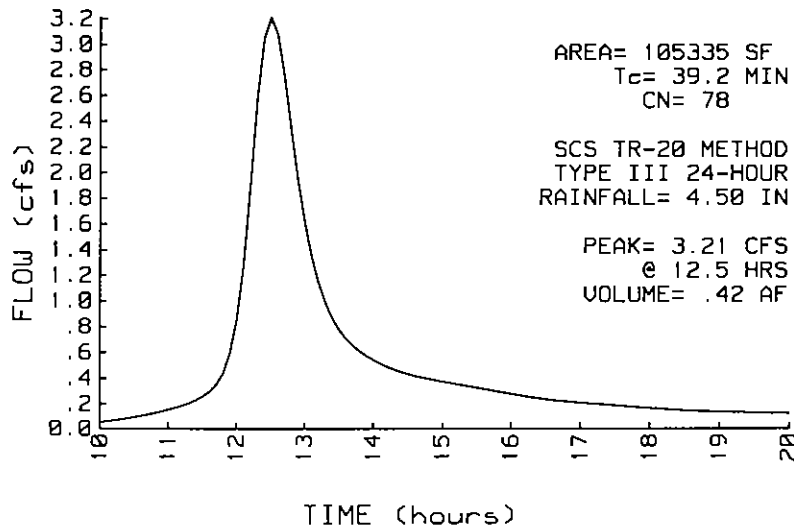
PEAK= 3.21 CFS @ 12.50 HRS, VOLUME= .42 AF

SQ-FT	CN	
6220.00	98	impervious
99115.00	77	pervious
105335.00	78	

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 4.50 IN
 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240'	P2=4.5 in s=.0167 '/'	

SUBCATCHMENT 3 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

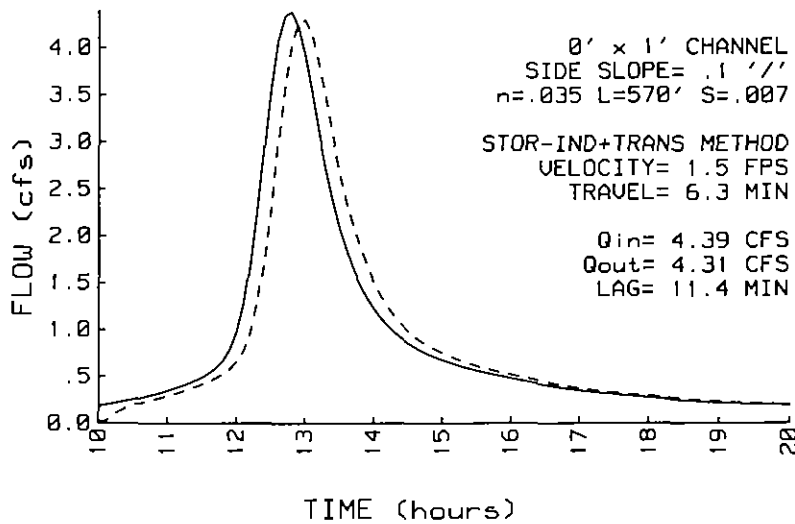
HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

REACH 1

Qin = 4.39 CFS @ 12.77 HRS, VOLUME= .73 AF
 Qout= 4.31 CFS @ 12.96 HRS, VOLUME= .72 AF, ATTEN= 2%, LAG= 11.4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	0' x 1' CHANNEL	STOR-IND+TRANS METHOD
0.00	0.00	0.00	SIDE SLOPE= .1 '/'	PEAK DEPTH= .53 FT
.10	.10	.05	n= .035	PEAK VELOCITY= 1.5 FPS
.20	.40	.31	LENGTH= 570 FT	TRAVEL TIME = 6.3 MIN
.30	.90	.90	SLOPE= .007 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.43	1.85	2.35		
.60	3.60	5.71		
.80	6.40	12.30		
1.00	10.00	22.30		

REACH 1 INFLOW & OUTFLOW



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

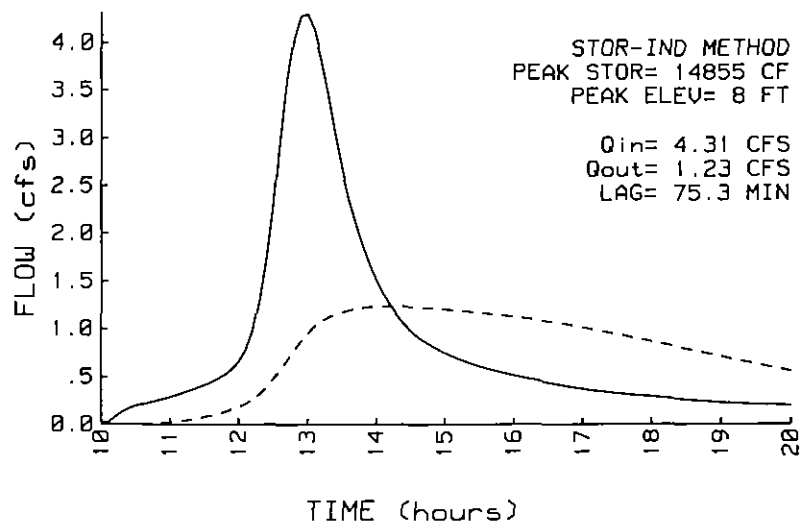
POND 1 **New Detention Basin**

Q_{in} = 4.31 CFS @ 12.96 HRS, VOLUME= .72 AF
 Q_{out} = 1.23 CFS @ 14.21 HRS, VOLUME= .63 AF, ATTEN= 71%, LAG= 75.3 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
6.0	5919	0	0	PEAK STORAGE = 14855 CF
7.5	8081	10500	10500	PEAK ELEVATION= 8.0 FT
9.0	10965	14285	24785	FLOOD ELEVATION= 9.0 FT
				START ELEVATION= 6.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				Tdet= 149.5 MIN (.63 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	6.0'	6" ORIFICE/GRATE $Q = .6 \pi r^2 \text{SQR}(2g) \text{SQR}(H-r)$ (Use H/2 if H<d)
2	P	8.0'	2' SHARP-CRESTED RECTANGULAR WEIR $Q = C L H^{1.5}$ C=3.27+.4 H/1 L=Length-2(.1 H)

POND 1 INFLOW & OUTFLOW
New Detention Basin



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 4.50 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

POND 2

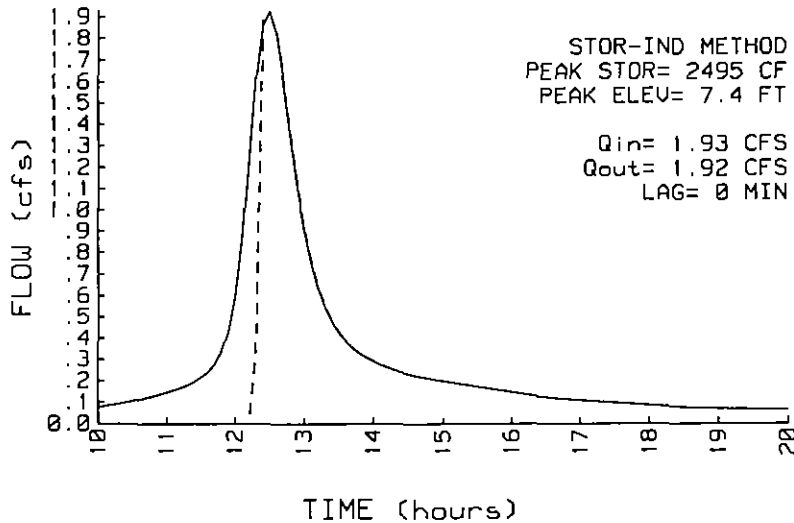
Existing Detention Basin

Qin = 1.93 CFS @ 12.49 HRS, VOLUME= .25 AF
 Qout= 1.92 CFS @ 12.48 HRS, VOLUME= .19 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
5.0	727	0	0	PEAK STORAGE = 2495 CF
7.0	1188	1915	1915	PEAK ELEVATION= 7.4 FT
7.5	1419	652	2567	FLOOD ELEVATION= 7.5 FT
				START ELEVATION= 5.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				3 x FINER ROUTING
				Tdet= 87 MIN (.19 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	7.4'	50' BROAD-CRESTED RECTANGULAR WEIR X 1.81 $Q=C L H^{1.5}$ C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 2 INFLOW & OUTFLOW
 Existing Detention Basin



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 1 **postdevelopment runoff**

PEAK= 7.44 CFS @ 12.76 HRS, VOLUME= 1.24 AF

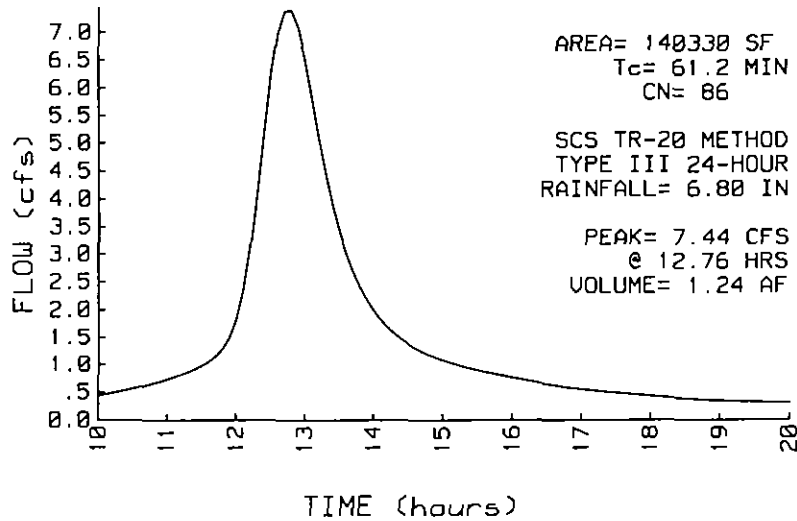
SQ-FT	CN
61875.00	98
78455.00	77
140330.00	86

impervious
pervious

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 6.80 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		61.2
n=.4 L=265' P2=4.5 in s=.0067 '/'		

SUBCATCHMENT 1 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 2 postdevelopment runoff

PEAK= 3.26 CFS @ 12.48 HRS, VOLUME= .43 AF

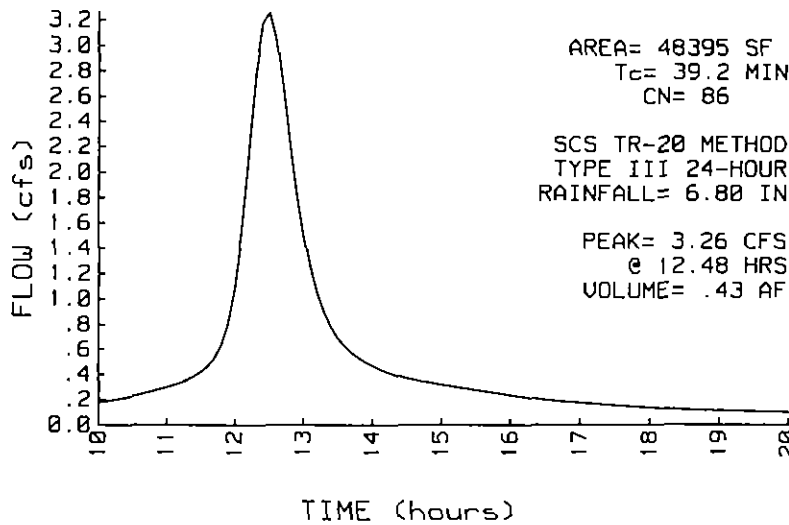
SQ-FT	CN
20855.00	98
27540.00	77
48395.00	86

impervious
pervious

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 6.80 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240'	P2=4.5 in s=.0167 '/'	

SUBCATCHMENT 2 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 3 postdevelopment runoff

PEAK= 6.02 CFS @ 12.49 HRS, VOLUME= .79 AF

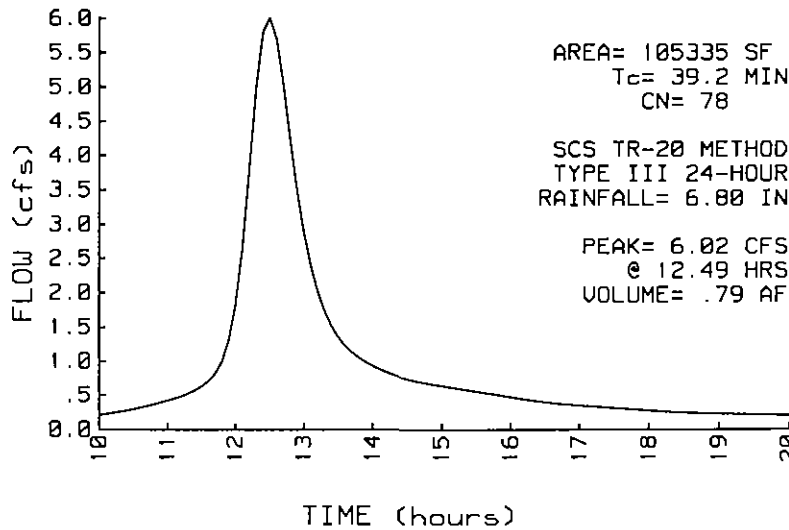
SQ-FT	CN
6220.00	98
99115.00	77
105335.00	78

impervious
pervious

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 6.80 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240' P2=4.5 in s=.0167 '/'		

SUBCATCHMENT 3 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

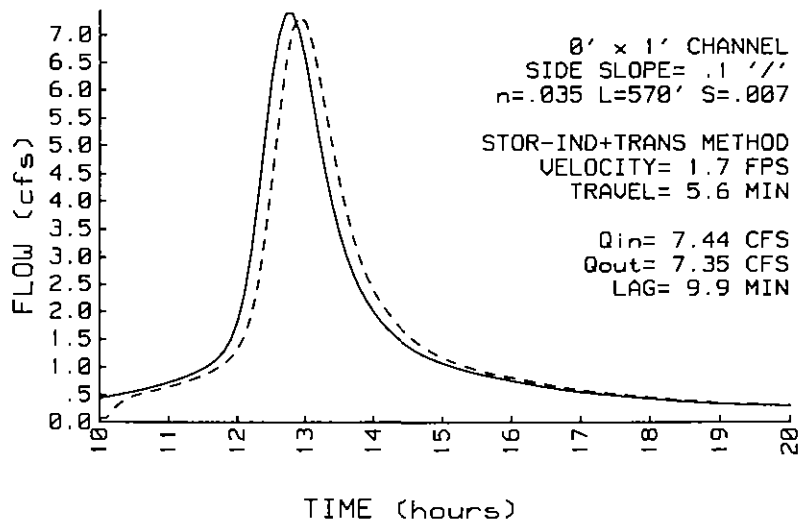
REACH 1

Qin = 7.44 CFS @ 12.76 HRS, VOLUME= 1.24 AF

Qout= 7.35 CFS @ 12.92 HRS, VOLUME= 1.23 AF, ATTEN= 1%, LAG= 9.9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	0' x 1' CHANNEL	STOR-IND+TRANS METHOD
0.00	0.00	0.00	SIDE SLOPE= .1 '/'	PEAK DEPTH= .65 FT
.10	.10	.05	n= .035	PEAK VELOCITY= 1.7 FPS
.20	.40	.31	LENGTH= 570 FT	TRAVEL TIME = 5.6 MIN
.30	.90	.90	SLOPE= .007 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.43	1.85	2.35		
.60	3.60	5.71		
.80	6.40	12.30		
1.00	10.00	22.30		

REACH 1 INFLOW & OUTFLOW



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

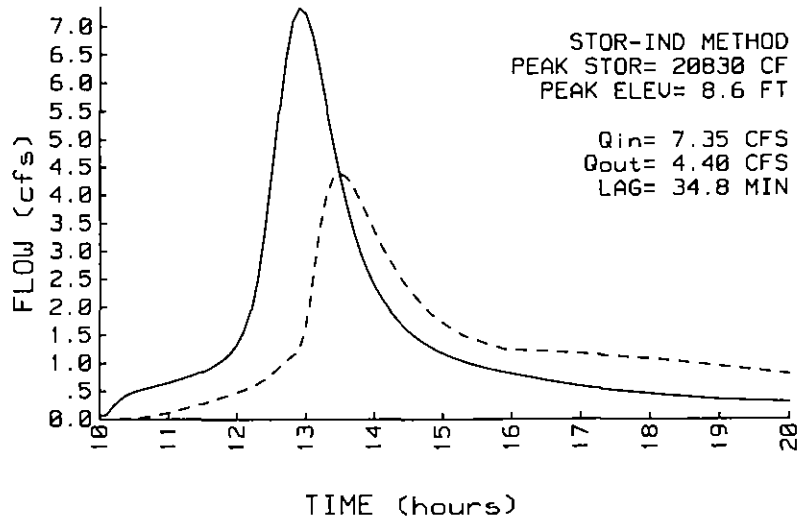
POND 1 **New Detention Basin**

Qin = 7.35 CFS @ 12.92 HRS, VOLUME= 1.23 AF
 Qout= 4.40 CFS @ 13.50 HRS, VOLUME= 1.07 AF, ATTEN= 40%, LAG= 34.8 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
6.0	5919	0	0	PEAK STORAGE = 20830 CF
7.5	8081	10500	10500	PEAK ELEVATION= 8.6 FT
9.0	10965	14285	24785	FLOOD ELEVATION= 9.0 FT
				START ELEVATION= 6.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				Tdet= 118.9 MIN (1.06 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	6.0'	6" ORIFICE/GRATE $Q = .6 \pi r^2 \text{SQR}(2g) \text{SQR}(H-r)$ (Use H/2 if H<d)
2	P	8.0'	2' SHARP-CRESTED RECTANGULAR WEIR $Q = C L H^{1.5}$ C=3.27+.4 H/1 L=Length-2(.1 H)

POND 1 INFLOW & OUTFLOW
 New Detention Basin



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 6.80 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

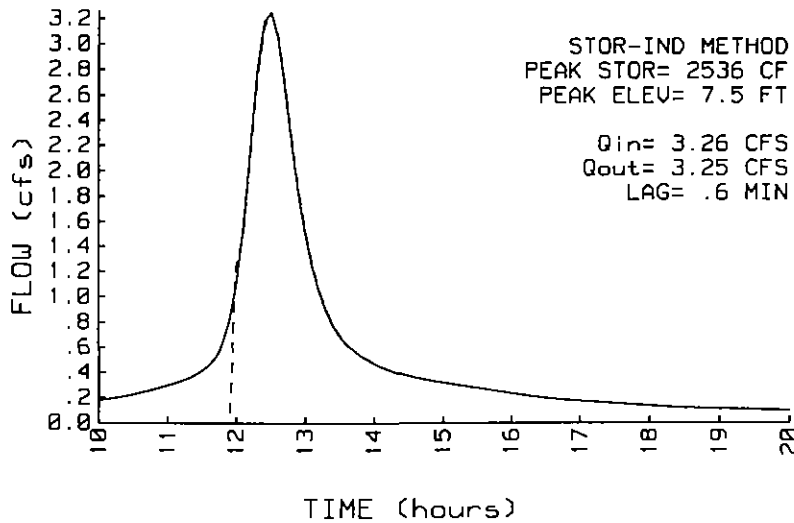
POND 2 Existing Detention Basin

Qin = 3.26 CFS @ 12.48 HRS, VOLUME= .43 AF
 Qout= 3.25 CFS @ 12.49 HRS, VOLUME= .37 AF, ATTEN= 0%, LAG= .6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
5.0	727	0	0	PEAK STORAGE = 2536 CF
7.0	1188	1915	1915	PEAK ELEVATION= 7.5 FT
7.5	1419	652	2567	FLOOD ELEVATION= 7.5 FT
				START ELEVATION= 5.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				3 x FINER ROUTING
				Tdet= 55.3 MIN (.37 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	7.4'	50' BROAD-CRESTED RECTANGULAR WEIR X 1.81 $Q=C L H^{1.5}$ C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 2 INFLOW & OUTFLOW
Existing Detention Basin



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 1 postdevelopment runoff

PEAK= 9.03 CFS @ 12.75 HRS, VOLUME= 1.50 AF

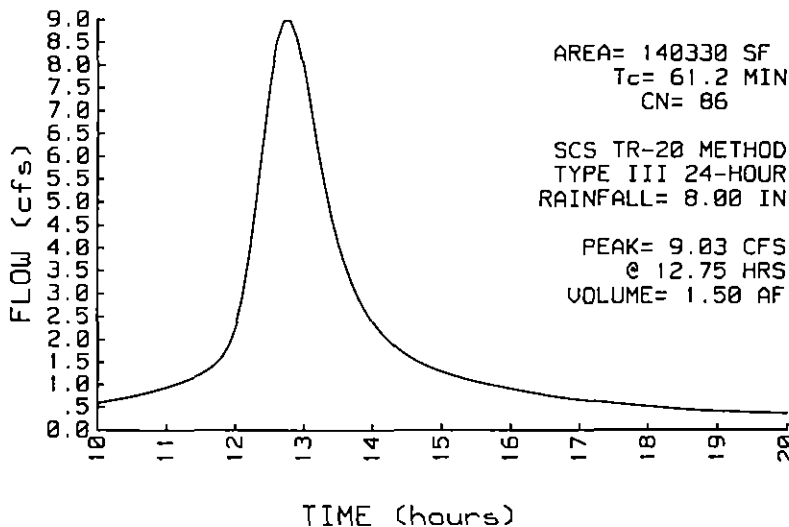
SQ-FT	CN
61875.00	98
78455.00	77
140330.00	86

impervious
pervious

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 8.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		61.2
n=.4 L=265'	P2=4.5 in s=.0067 '/'	

SUBCATCHMENT 1 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 2 postdevelopment runoff

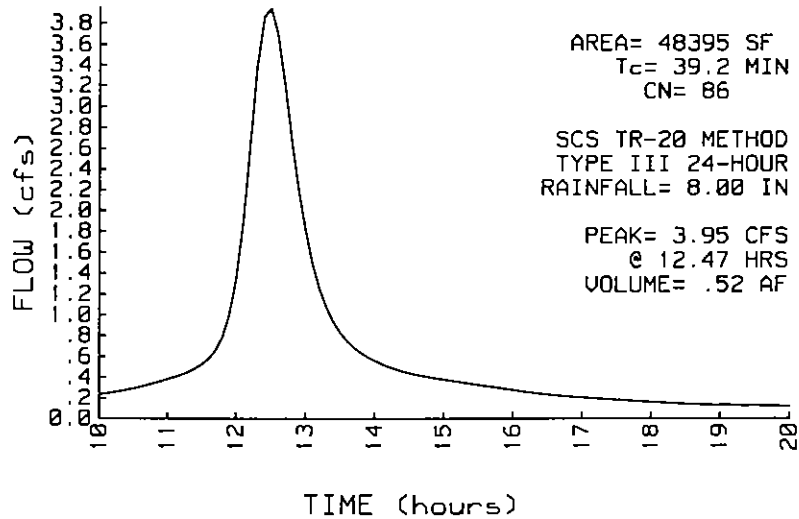
PEAK= 3.95 CFS @ 12.47 HRS, VOLUME= .52 AF

SQ-FT	CN	
20855.00	98	impervious
27540.00	77	pervious
48395.00	86	

SCS TR-20 METHOD
 TYPE III 24-HOUR
 RAINFALL= 8.00 IN
 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240' P2=4.5 in s=.0167 '/'		

SUBCATCHMENT 2 RUNOFF
 postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 3 postdevelopment runoff

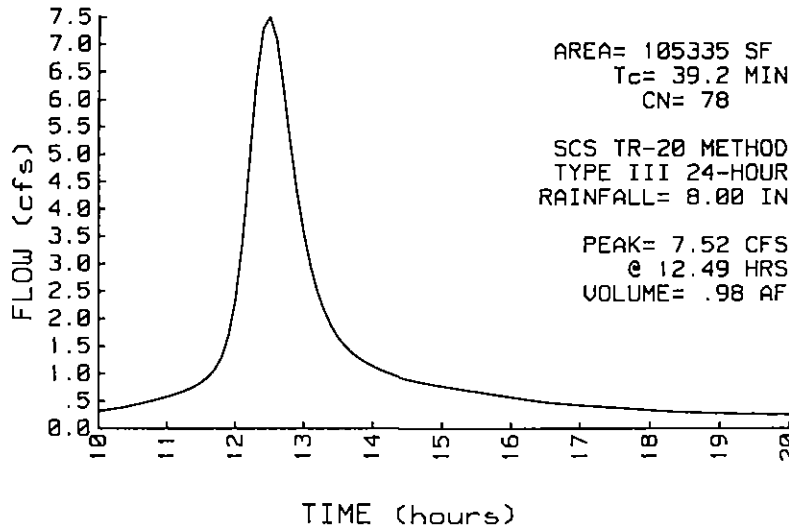
PEAK= 7.52 CFS @ 12.49 HRS, VOLUME= .98 AF

SQ-FT	CN	
6220.00	98	impervious
99115.00	77	pervious
105335.00	78	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 8.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW		39.2
n=.4 L=240' P2=4.5 in s=.0167 '/'		

SUBCATCHMENT 3 RUNOFF
postdevelopment runoff



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

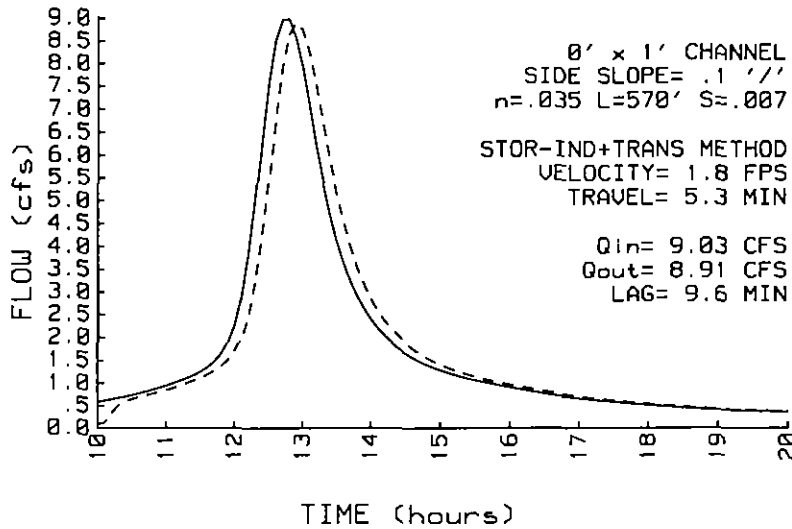
REACH 1

Qin = 9.03 CFS @ 12.75 HRS, VOLUME= 1.50 AF

Qout= 8.91 CFS @ 12.91 HRS, VOLUME= 1.50 AF, ATTEN= 1%, LAG= 9.6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	0' x 1' CHANNEL	STOR-IND+TRANS METHOD
0.00	0.00	0.00	SIDE SLOPE= .1 '/'	PEAK DEPTH= .70 FT
.10	.10	.05	n= .035	PEAK VELOCITY= 1.8 FPS
.20	.40	.31	LENGTH= 570 FT	TRAVEL TIME = 5.3 MIN
.30	.90	.90	SLOPE= .007 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.43	1.85	2.35		
.60	3.60	5.71		
.80	6.40	12.30		
1.00	10.00	22.30		

REACH 1 INFLOW & OUTFLOW



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

HydroCAD 5.11 001565 (c) 1986-1999 Applied Microcomputer Systems

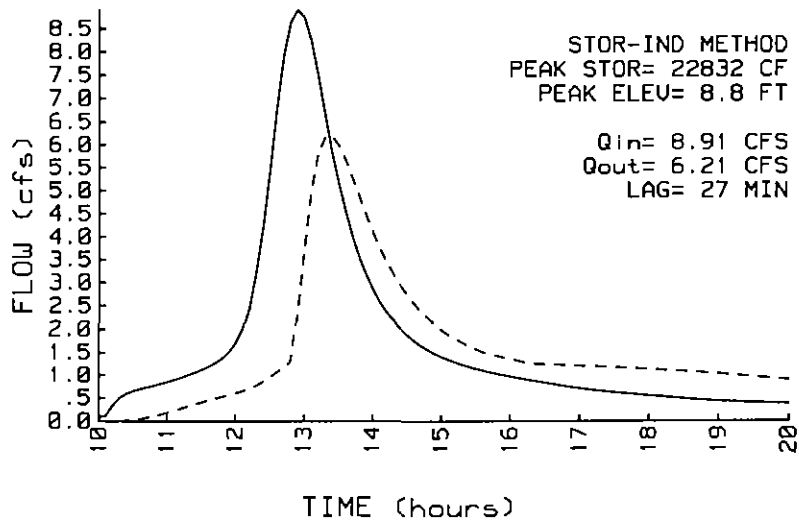
POND 1 **New Detention Basin**

Qin = 8.91 CFS @ 12.91 HRS, VOLUME= 1.50 AF
 Qout= 6.21 CFS @ 13.36 HRS, VOLUME= 1.32 AF, ATTEN= 30%, LAG= 27.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
6.0	5919	0	0	PEAK STORAGE = 22832 CF
7.5	8081	10500	10500	PEAK ELEVATION= 8.8 FT
9.0	10965	14285	24785	FLOOD ELEVATION= 9.0 FT
				START ELEVATION= 6.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				Tdet= 105.3 MIN (1.3 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	6.0'	6" ORIFICE/GRATE $Q = .6 \text{ PI } r^2 \text{ SQR}(2g) \text{ SQR}(H-r)$ (Use H/2 if H<d)
2	P	8.0'	2' SHARP-CRESTED RECTANGULAR WEIR $Q = C L H^{1.5}$ C=3.27+.4 H/1 L=Length-2(.1 H)

POND 1 INFLOW & OUTFLOW
 New Detention Basin



Data for St. John's Lutheran Church Postdevelopment

TYPE III 24-HOUR RAINFALL= 8.00 IN

Prepared by Cardinal Engineering, Inc.

13 Apr 00

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POND 2

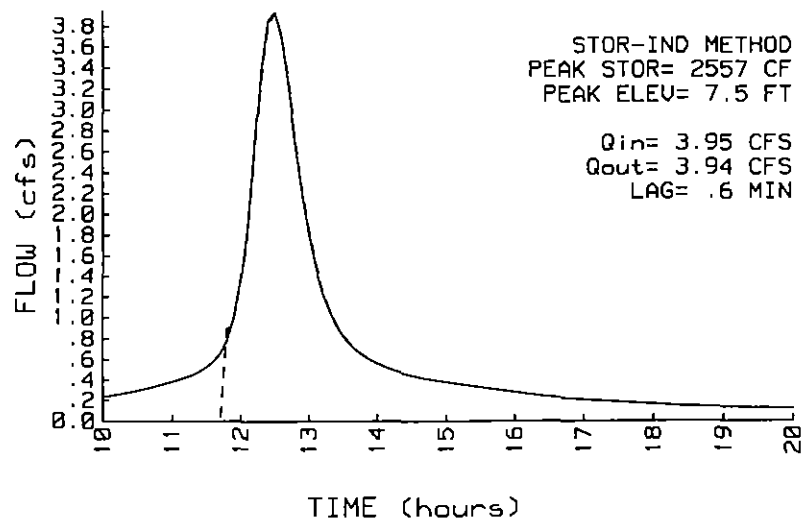
Existing Detention Basin

Qin = 3.95 CFS @ 12.47 HRS, VOLUME= .52 AF
 Qout= 3.94 CFS @ 12.48 HRS, VOLUME= .46 AF, ATTEN= 0%, LAG= .6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD
5.0	727	0	0	PEAK STORAGE = 2557 CF
7.0	1188	1915	1915	PEAK ELEVATION= 7.5 FT
7.5	1419	652	2567	FLOOD ELEVATION= 7.5 FT
				START ELEVATION= 5.0 FT
				SPAN= 10-20 HRS, dt=.1 HRS
				3 x FINER ROUTING
				Tdet= 46.8 MIN (.46 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	7.4'	50' BROAD-CRESTED RECTANGULAR WEIR X 1.81 $Q=C L H^{1.5}$ C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 2 INFLOW & OUTFLOW
Existing Detention Basin





CARDINAL
engineering, inc.

November 1, 1999

Mr. Walter R. Fielding, Zoning and Development Administrator
Beaufort County Zoning and Development Department
100 Ribaut Road
Beaufort, SC 29902

Re: Conceptual review for St. John' Lutheran Church

Dear Mr. Fielding:

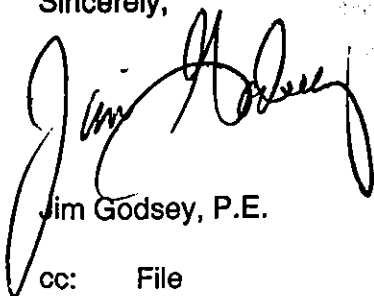
Please find enclosed, four site plans and narratives for the above referenced project.

We request that this project be placed on the agenda for the next available DRT meeting for a Conceptual Approval Review.

If you have questions or need additional information, please let us know.

Thank you.

Sincerely,



Jim Godsey, P.E.

cc: File

enc.



**PROJECT NARRATIVE
ST. JOHNS LUTHERAN CHURCH
BEAUFORT, SC**

St. Johns Lutheran Church proposes construction of a Family Life Center (11,600 sq.ft.), Sanctuary (8,800 sq.ft. and Fellowship/Education Building (12,000 sq.ft.).

The project site is on a 6.75 acre tract on the south side of Highway 208 +/- 1 mile from the intersection of Highway 208 and Highway. 21.

The tract is zoned Community Preservation. This is a "Permitted Use with Limited Review".

The proposed project will meet all applicable requirements of the ZDSO.