CHATHAM COUNTY PURCHASING DEPARTMENT

ADDENDUM NO. 2 TO 12-0040-4

FOR: PIPEMAKERS CANAL WIDENING PHASE II SECTION 2 DRAINAGE IMPROVEMENTS

PLEASE SEE THE FOLLOWING FOR ADDITIONS, CLARIFICATIONS AND/OR CHANGES:

1. PreBid Meeting Minutes (2 pages)

2. Q/A and specification clarifications (6 pages)

3. Force Main Relocation Plan Sheets (5 pages)

4. Notice of Proposed Construction or Alteration instructions and FAA Form 7460.1 (5 sheets)

5. Revised Plan View Sheets (Plan Sheets 8 thru 13) (6 sheets)

6. Technical Specification Section 02200 - *Earthwork* (5 sheets)

7. Revised Bid Sheets (5 sheets) NOTE: Replace current Bid Sheets with the attached *Revised* Sheets.

8. Overview map sheet of Airport area (1 sheet)

THE BID OPENING REMAINS :

2PM, TUESDAY, JULY 10, 2012.

THE BIDDER IS RESPONSIBLE FOR MAKING THE NECESSARY CHANGES AND MUST ACKNOWLEDGE RECEIPT OF ADDENDUM.

6-27-12
DATE

ROBERT E. MARSHALL
SENIOR PROCUREMENT SPECIALIST
CHATHAM COUNTY

Pipemakers Phase 2-Section 2 Pre Bid Meeting Minutes
Thursday June 14, 2012
2:00 p.m. Chatham County Purchasing

Sign in sheets were passed around for all attendees to sign in. Bob Marshall introduced himself and stated he would be handling the procurement of this project for Chatham County. Bob introduced Bill Uhl with Chatham County Engineering as the project manager. Bob introduced Tim Baumgartner and Ben Lockhart with EMC Engineering as Chatham County's engineering consultant for the project.

Bids are due on July 10, 2012 by 2:00 p.m. at the Chatham County Purchasing Office on Eisenhower Drive. The electronic clock at the purchasing office is the clock that will be used to determine when bids are received. No bids will be received after 2:00 p.m. on July 10, 2012. Bidders are responsible for making sure their bids are in to Purchasing on time.

To bid the project as a general contractor you must be on the plan holders list. The Chatham County website has information for obtaining plans to bid the project.

After the pre bid meeting all questions must be submitted to Bob Marshall in writing. Questions may be faxed or e-mailed to Bob. The deadline for submitting questions is July 3, 2012 (1 week prior to the bid date) at 2:00 p.m. No questions will be received after this time.

MWBE participation for the project is 30% since SPLOST funds are being used. Arneja Riley can be contacted directly for any questions regarding the MWBE participation for the project.

Bob Marshall reminded everyone that bids the project as a general contractor has to fill out all of the county provided forms in the bid package. Failure to not fill out all of the required forms will result in a bid not being considered due to it not being responsive.

Bill Uhl gave an overview of the project which included the following items:

- Long linear project with limited access. The project consists of widening and or relocating a segment of the canal on airport property at the west end of runway 10. The canal between Bourne Avenue and Dean Forrest Road will be widened. It is anticipated that the project will begin at the ARFF Bridge at the upstream end of the project and proceed downstream to Dean Forrest Road.
- Contractor will have to comply with FAA guidelines with regards to height of equipment used.
- There is a 35 ft. m.s.l. height requirement for equipment working around the runway and taxiways. This height is approximate and will depend on FAA approval.
- No work will be allowed when the ILS is in operation. All equipment will be removed when the ILS is in use except in areas allowed by the FAA.
- Water flow may be encountered in the canal during the construction of the project. Contractor will have to bypass water flows in the canal during construction.
- Liquidated damages will be assessed if the project is not complete on time.
- Project has 3 reaches which consist of a base bid and 2 add alternates.
- The GA Power line crossings at the end of Bourne Avenue will not be de-energized. Contractors will need to plan work accordingly to work around these lines.
- There is an elevated sanitary forcemain that will have to be relocated. Chatham County anticipates being able to make the new connections with interruption of service. Additional information regarding the forcemain will be issued by addendum.

Pipemakers Phase 2-Section 2 Pre Bid Meeting Minutes
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- Bidders will be required to adhere to their submitted list of subcontractors. No switching of sub-contractors will be allowed once construction begins
- The Corps of Engineers permit for the project requires the monitoring of historic artifacts. Site visits will be made periodically during the project by a representative of Chatham County.
- The contractor will be required to prepare the NOI, NOT, and perform daily and weekly NPDES inspections.
- Access to property will be via Dean Forest Road, Distribution Drive and Ida J. Gadsen Drive. Any damage to these roads or the existing force main under Ida J. Gadsen Drive will be the responsibility of the contractor.
- The contractor that is awarded the project will be required to prepare preconstruction videos, pictures and any other documentation to document existing conditions prior to construction.
- The GA Air National Guard cable shown on the drawings has been de activated and will not have to be relocated.
- There are two soils reports available in the bid package for contractors use.
- Silt fence will be in place prior to any tree removal or clearing operations. Trees that are cut down will not be chipped up and spread over the project site.
- FAA Form 7460-1 will be filled out by the contractors and submitted with their bid. Additional information to fill out this form will be issued by addendum.
- The FAA will use the Form 7460-1 to determine limitations for working around the airfield. These limitations can include but are not limited to working around the ILS, equipment heights, and Part 77 imaginary surfaces.
- A site visit will be scheduled for the week of June 25, 2012.

The meeting adjourned around 3:00 p.m. Copies of the sign in sheet were provided to bidders who wanted them.

Pipemakers Canal
Phase 2 Section 2 Drainage Improvements
Addendum #2
June 26, 2012

The following are responses to questions received from contractors for the above referenced project.

1. Question: Specifications refer to a section 1500 but there is not a section 1500 in the documents. Please make this section available.

   Answer: There is no section 01500 any references to 01500 are for 01600 supplemental special conditions.

2. Question: Specification 1650 requires and describes an office for the engineer/Owner. The Project description and Special conditions item 15 says no office is required. Which is correct?

   Answer: No office will be required at the project site.

3. Question: Plans show on sheet 4 a construction access for construction across Airport Property. The specification descriptions of available access points do not list this particular access. May this access to product support road be used for access and hauling of excavation and fill?

   Answer: The 35' r/w shown on Sheet 4 at the Perimeter Road is not going to be acquired by Chatham County and will not be available for an access point.

4. Question: Are quantities for construction of the two construction and maintenance roads that are not adjacent and parallel to the canal that are shown on sheet 4 included in the bid quantities for like items of the roads adjacent to the canal?

   Answer: The proposed access roads at Perimeter Road and at Interstate 95 are not part of the project. Bid quantities for these roads are not included.

5. Question: Plans depict the force main relocation as a directional bore. The detail for construction uses ductile iron pipe through a casing. Which is correct?

   Answer: Sheet 17 of the drawings shows a 10" force main and 16" water line to be installed by others. Sheet 17 has 2 notes that pertain to the installation of these utility lines. These two utility lines will not be installed as outlined by the drawings and notes on sheet 17. Drawings are attached that show how the force main will be relocated. The force main connections shall be performed by taking it out of service. The procedure for making the force main connections by taking it out of service is generally described as follows:

   A. Install all force main, casing, valves, and fittings up to the tie in points on each end of the force main.
   B. Pressure test new force main.
   C. Have all necessary materials and equipment at the job site to make both connections at each end of the force main simultaneously.

D. Take the existing force main out of service. The force main can be taken out of service for up to 5 hours on a Saturday or Sunday during the daytime. A three day written advance notice will be required by the contractor prior to taking the force main out of service. The operator of the lift station will notify the users of the sewer system one day in advance when the lift station will be taken out of service in order to draw the station down to allow for maximum storage in the wet well. At minimum of three vac-trucks of the largest size available will be required to be present at the lift station to remove sewage as needed. One contractor employee will be present to monitor the lift station site while it is out of service.

E. Once the force main is out of service work shall be performed continuously to make the connections at each end of the force main simultaneously.

F. Prior to performing the forcemain connections the contractor shall submit a plan to the owner for review. The plan shall include the following at a minimum.

- Date tie in work will be performed
- Anticipated start time on tie in date work will be performed
- Spill prevention plan (includes how to remove sewage from force main)
- Emergency contact phone numbers

Shop drawings will be required for all materials used for the force main relocation. The contractor's price to relocate the force main includes all necessary labor, materials, and supervision to relocate the force main as shown. The cost for the three vac-trucks and disposal of sewage during the 5 hour shut down period is included in the contractor's relocation price. Any cost associated with the vac-trucks after the 5 hour shut down period shall be at the cost of the contractor.

6. Question: Plan sheet 17 has a depiction of the force main relocation that seems to indicate the requirement for taping sleeves and valves on each end, air release valves on each end and possibly line stops on each end. Please clarify what each of these symbols are on this drawing as the description of work calls for sleeve tie ins with a line shut down.

   Answer: See response to item 5

7. Question: Two places in the specs give the contract allowed time for the base bid and the alternates. They seem to be in conflict. If the base bid and alternate one is awarded at the same time is the total allowed time 420 days? If the base bid and both alternates are awarded at the same time is the allowed time 660 days? If the answer is no, please clarify the total days allowed for each possible award combination.

   Answer: The contract time will be as follows:

Base bid with no Add Alternates	180 calendar days
Base bid with Add Alternate 1 only	420 calendar days
Base bid with Add Alternate 1 and 2	540 calendar days

8. Question: The existing canal in the realignment area is to be filled. The documents refer to cleaning this canal, undercutting portions for the bottom, and placing geo-grid prior to placing the fill. Will this work be paid for by the units for these items in the bid form?

   Answer: Cleaning of the canal (removal of debris, vegetation, and silt) will be part of the contractor's price for clearing. The geogrid quantity in the base bid is included for placement in the bottom of the existing canal. Portions of the canal as directed by the county will be cleaned and de-mucked prior to filling. Quantities will be measured for payment based on unit prices in the bid form.

9. Question: How will the filling of the existing canal in the base bid be paid for?

   Answer: The contractor's excavation price will include excavation, hauling away of unsuitable and excess material and using suitable fill from the new canal excavation to fill the existing canal.

10. Question: If the base bid canal filling is to be done with excavation from the realignment it will be difficult to use this same unit price for the excavation in the alternates due to the difference in percentage of excavation to be hauled off site. Must this item be bid at the same price for all three areas?

    Answer: The price for excavation in the base bid will include excavation of the new canal, filling the existing canal with excavated material and hauling the remainder of the excavated material off site. The price for excavation in Add Alternates 1 and 2 will include excavation of the canal and hauling the material off site. The excavation price for the base bid and Add Alternates may be different based on reuse of material or hauling it offsite for disposal. The excavation price for Add Alternates 1 and 2 will be the same.

11. FAA Form 7460-1 as outlined in section 01650 of the specifications is attached. A completed copy of this form shall be submitted with each contractor's bid. The contractor that is awarded the project will be required to submit the filled out Form 7460-1 to the FAA upon notification from Chatham County that they will be awarded the project in order to have FAA approval when construction begins. Information is attached for bidders to use to fill out the form 7460-1

12. Section 02200 Earthwork:

    Attached is a revised earthwork specification. Special attention should be noted for the suitable and unsuitable materials and requirements for review and testing of samples prior to placement. Any fill material that is placed prior to approval shall be removed at the contractor's expense.

13. Bid Schedule:

    A revised bid schedule is attached. Add Alternates 1 and 2 have been revised to show the installation of new curb and gutter at Dean Forrest Road. Add Alternate 1 also includes revisions for the force main relocation. The base bid schedule has been revised to not include the GA Air National Guard utility line relocation.

14. Silt fence installation prior to clearing and logging operations:

    Silt fence will be required to be installed and to have passed the initial erosion control inspection prior to beginning any logging (cutting, clearing, etc.) to remove trees with in the project limits along the canal.

15. Cut trees that fall in the canal:

    The contractor may allow trees to fall into the canal as they are cut. Any trees that fall into the canal shall be removed from the canal at the end of each work day that tree cutting is performed.

16. Dust Control:

    Dust control will be required as shown on the erosion and sediment control plans for all parts of the project including roads, excavation areas, and stockpile areas.

17. Runway Protection Zone:

    Attached is a drawing that has been provided by the Savannah Airport that shows the Runway Protection Zone (RPZ). The RPZ is depicted by a blue dashed line on the drawing and labeled RPZ. At the end of each workday all equipment must be removed from the RPZ.

18. Question: There are two box culvert locations. The bid item for the culvert headwalls is described with the inclusion of aprons. Are there aprons at the upstream and downstream ends of both of the culverts?

    Answer: Concrete aprons are to be constructed on the upstream and downstream ends of both box culverts.

19. Question: There is about 40 feet of curb and gutter to place on Dean Forest Road but there is no bid item for it. Where should this cost be included?

    Answer: The bid schedules for Add Alternate 1 and Add Alternate 2 have been revised to include a pay item for curb and gutter on Dean Forest Road.

20. As discussed at the pre bid meeting an office trailer is not required.

21. GA Air National Guard Line:

    The GA Air National Guard electric line near Station 344+75 has been deactivated. The base bid schedule has been revised to not include this work.

22. The contractor shall abide by applicable load limits on all roads.

23. The contractor shall perform a survey of the project prior to beginning construction to document the condition of all existing features. The documentation shall include 3"x5" construction pictures in a photo album, and description of project conditions with dates.

24. All pipe headwalls shall be placed perpendicular to the canal unless directed otherwise by the owner.

25. ILS Requirements:

    ILS requirements will be determined when the FAA performs the 7460-1 study. There may or may not be effects on the ILS system depending on the results of the 7460-1 study. The contractor that is awarded the contract shall have to abide by the results of the study. The critical area for the ILS represented on the runway protection zone exhibit. Other areas may be specified by the FAA.

26. The select fill shown in the base bid is included for the construction of the access roads along the canal as needed. This pay item is not to be used for filling in the existing canal.

27. The estimated maximum height limit for any items (equipment, stockpiles, etc.) where the canal will be realigned is 35 ft. m.s.l. The final height limit will be determined when the FAA performs the 7460-1 study.

28. The GA Power lines at the end of Bourne Avenue will not be de-energized during the construction of the project. The contactor shall plan their work around these lines accordingly and follow all necessary safety procedures when working around power lines.

29. The grinding up of cut down trees and leaving the chips on site will not be allowed.

30. Object Free Area Requirements:

    The contractor shall take note of the object free area in the construction plans. Entry into this area is not allowed except as approved by the airport authority.

31. Question: The poor conditions of the Tide gates inside the Georgia Ports Authority makes controlling the incoming tide and outgoing rain events difficult. Will any repair to the tide gates be performed prior to the construction of this project?

    Answer: The tide gates are not in "poor condition." Like all mechanical systems they are subject to temporary failures which should be expected but cannot be anticipated.

32. Question: Load limits on roads was stressed at the pre-bid meeting. What is the proper contact/phone number to obtain road load limits in the vicinity of the project?

    Answer: The contractor should contact the respective local jurisdictions [GDOT, City of Pooler, City of Savannah]. There are no load limits imposed by Chatham County along the existing canal access roads. The contractor must simply restore what is damaged.

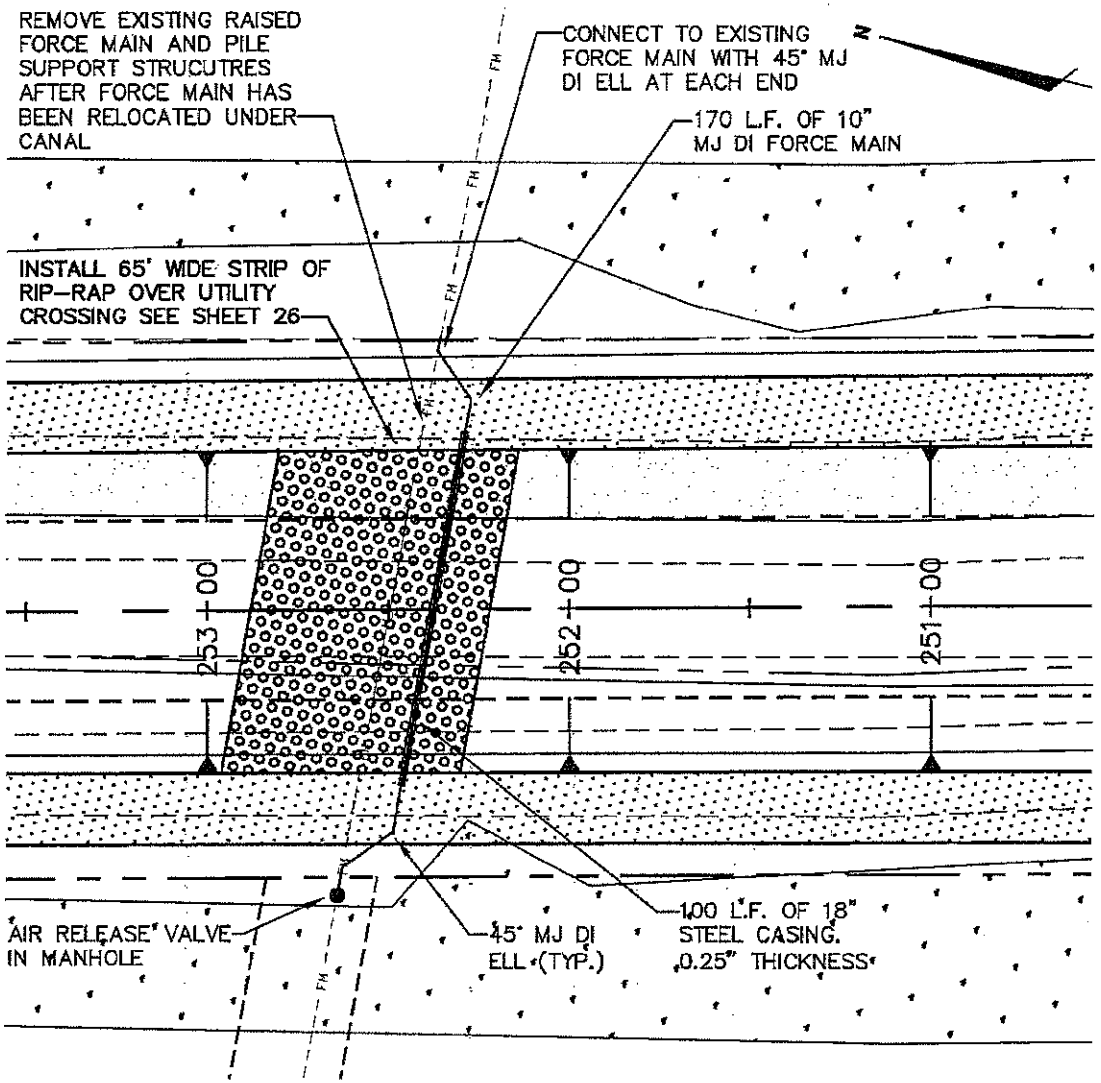
33. Question: There is quite a lot of existing revetment mattress at the north end of the base bid limits. There is minor regrading shown in this area. Is it the intent to remove this mattress?

    Answer: There is no existing revetment mattress at the north end of the base bid limits that is shown to be removed.

34. Pre-bid meeting minutes are attached.

35. Question: Clearing and grubbing is a unit price item and therefore requires the unit prices bid for Reach 2 and Reach 3 to be the same unit price as Reach 1. Cost for the reaches are not relative to each other due to the large area of unwooded space in reach 1. In what bid item should we put the additional cost for the heavier clearing in Reach 2 and Reach 3?

    Answer: The clearing and grubbing prices for reach 2 and reach 3 will be required to be the same. The clearing and grubbing price for reach 1 due to the large area of unwooded space should be less than the other two reaches and may be quoted as such.



50' 25' 0' 50'

GRAPHIC SCALE: 1"=50'-0"

SHEET 1 OF 5

EMC ENGINEERING SERVICES, INC.
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CIVIL MARINE ENVIRONMENTAL

ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORCE MAIN RELOCATION PLAN
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING

CHATHAM COUTNY GEORGIA
Prepared for:
CHATHAM COUNTY GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=50'
DATE:	6-22-12

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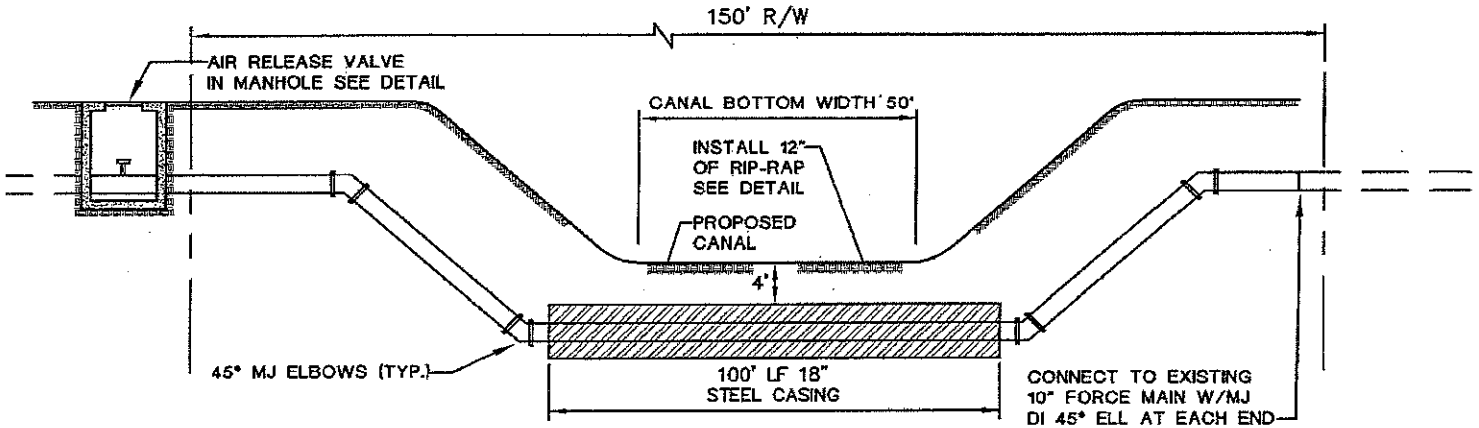

FORCEMAIN RELOCATION NOTES:

1. ALL FORCEMAIN WORK SHALL BE COORDINATED WITH THE FORCEMAIN OWNER.
2. ALL MATERIALS (PIPE FITTINGS, VALVES ETC.) SHALL BE IN ACCORDANCE WITH SECTION 2558 OF THE SPECIFICATIONS.
3. CONTRACTOR SHALL LAY AND PRESSURE TEST THE NEW FORCEMAIN PRIOR TO CONNECTING TO THE EXISTING FORCEMAIN.
4. CONTRACTOR SHALL HAVE ALL NECESSARY MATERIALS AT THE JOBSITE TO MAKE THE NEW CONNECTIONS PRIOR TO TAKING THE FORCEMAIN OUT OF SERVICE. ONCE THE EXISTING FORCEMAIN IS TAKEN OUT OF SERVICE THE CONTRACTOR SHALL WORK CONTINUOUSLY TO MAKE BOTH OF THE NEW CONNECTIONS SIMULTANEOUSLY IN ORDER TO MINIMIZE THE TIME THE FORCEMAIN IS OUT OF SERVICE.
5. UPON COMPLETION OF MAKING THE NEW FORCEMAIN CONNECTIONS THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING FORCEMAIN AND PILING.

FORCE MAIN RELOCATION DETAIL

NOT TO SCALE

SHEET 2 OF 5

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ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORCE MAIN RELOCATION PLAN
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING

CHATHAM COUTNY GEORGIA
Prepared for:
CHATHAM COUNTY GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=50'
DATE:	6-22-12

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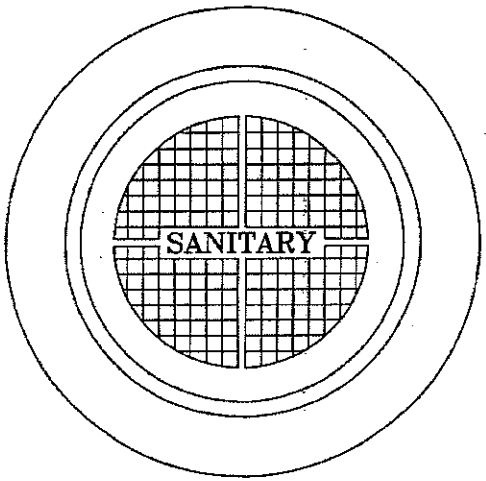
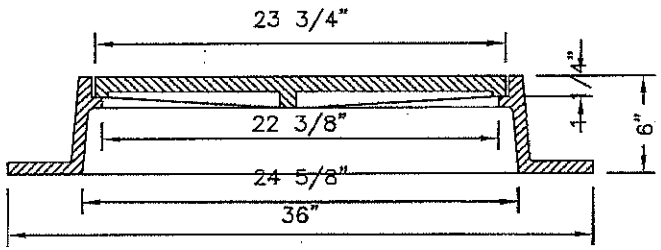


PLAN



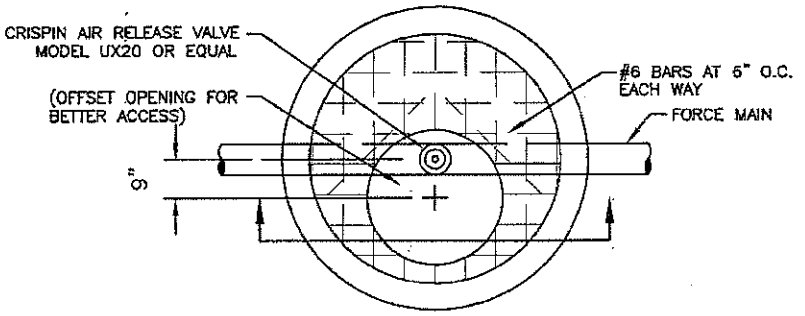
SECTION

NOTE:

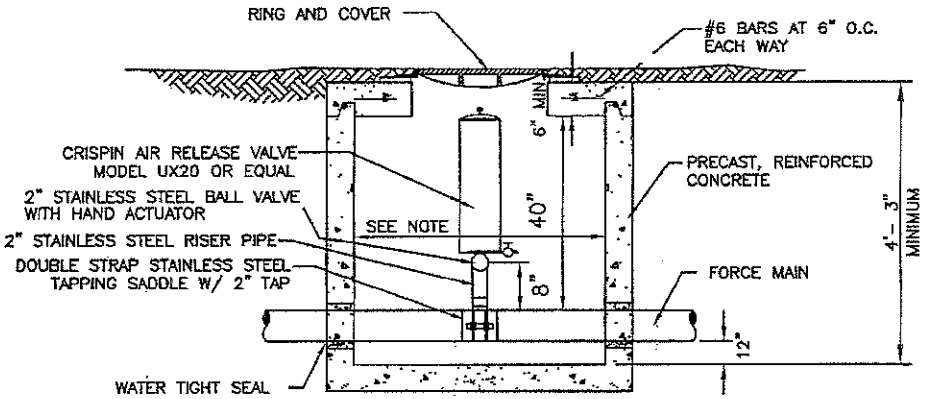
MANHOLE RING & COVER SHALL BE HEAVY DUTY RATED EQUAL TO U.S. FOUNDRY CO. USF 195-ORS. TOTAL WEIGHT 325# TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED 2½"-3" LETTER HEIGHT "SANITARY" (NON VENTED). MANHOLE RING SHALL INCLUDE A WATERTIGHT GASKET. STACKING CLEATS ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

MANHOLE RING AND COVER

NOT TO SCALE



PLAN



SECTION

NOTE:
≤ 8" FORCEMAIN PIPE, USE 4.0' DIA. MANHOLE
10" &12" FORCEMAIN PIPE, USE 6.0' DIA MANHOLE

AIR RELEASE VALVE IN MANHOLE

NOT TO SCALE

SHEET 3 OF 5

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CIVIL MARINE ENVIRONMENTAL

ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORCE MAIN RELOCATION PLAN
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING

CHATHAM COUTNY GEORGIA
Prepared for:
CHATHAM COUNTY GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=50'
DATE:	6-22-12

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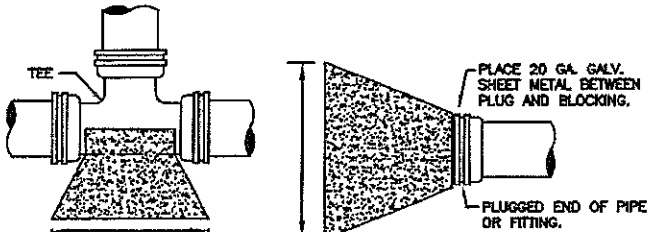

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-9" x 1'-9"
4"	2'-0" x 2'-0"
6"	2'-6" x 2'-6"
8"	3'-0" x 3'-0"
10"	3'-4" x 3'-4"
12"	4'-0" x 4'-0"

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-9" x 1'-9"
4"	2'-0" x 2'-0"
6"	2'-6" x 2'-6"
8"	3'-0" x 3'-0"
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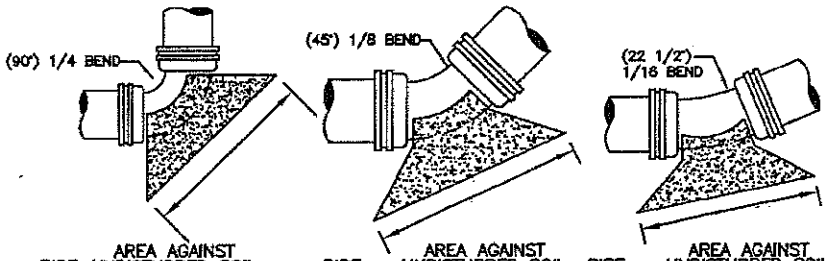

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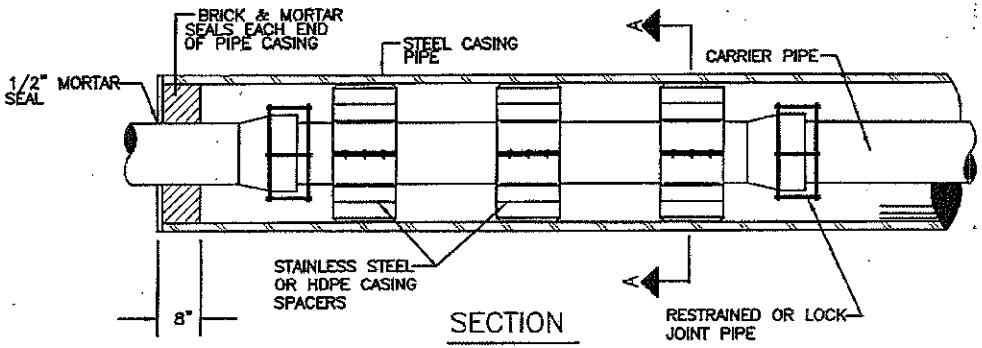
6"	3'-0" x 3'-0"
8"	3'-6" x 3'-6"
10"	3'-10" x 3'-10"
12"	4'-6" x 4'-6"

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-6" x 1'-6"
4"	1'-6" x 1'-6"
6"	2'-0" x 2'-0"
8"	2'-8" x 2'-8"
10"	2'-11" x 2'-11"
12"	3'-2" x 3'-2"

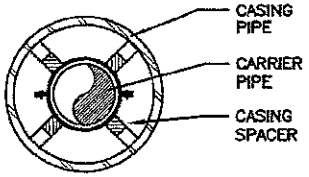
PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-0" x 1'-0"
6"	1'-6" x 1'-6"
8"	1'-8" x 1'-8"
10"	1'-10" x 1'-10"
12"	2'-0" x 2'-0"

NOTE:
WHEN MECHANICAL JOINTS ARE USED PROTECT BOLTS AND THREADS FROM CONCRETE.

THRUST BLOCKING
NOT TO SCALE



SECTION



SECTION A–A

NOTES:

1. CASING SPACERS SHALL BE PLACED ON 6' CENTERS MINIMUM.
2. ALL RAILROAD CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH AMERICAN RAILWAY ENGINEERING ASSOCIATION REGULATIONS, UNDER PART 5, PIPELINES (LATEST EDITION) AND PERMIT REQUIREMENTS.
3. ALL HIGHWAY CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH GA. D.O.T. REGULATIONS & PERMIT REQUIREMENTS.

STEEL CASING INSTALLATION
NOT TO SCALE

SHEET 4 OF 5

EMC ENGINEERING SERVICES, INC.
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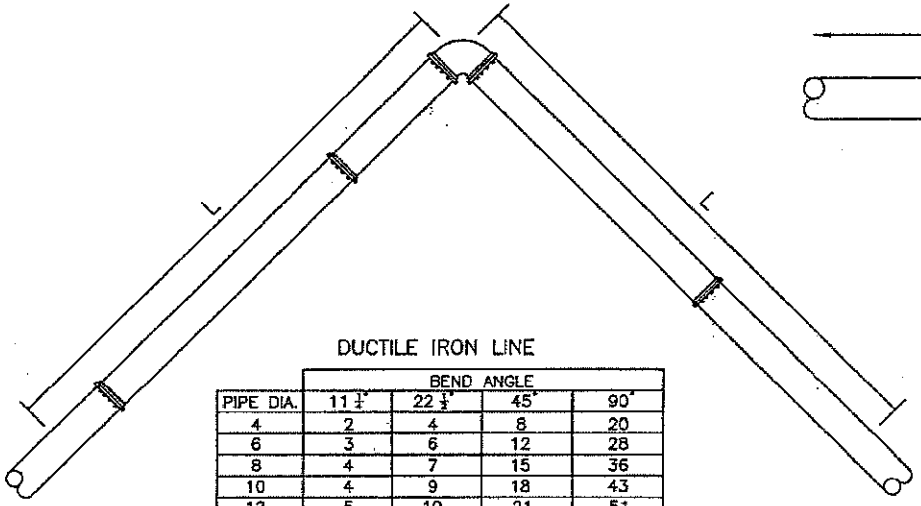
ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORCE MAIN RELOCATION PLAN
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING

CHATHAM COUTNY GEORGIA
Prepared for:
CHATHAM COUNTY GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=50'
DATE:	6-22-12

D:\2000\P\00015373\dwg\base 02 3-6-12.dwg 6/25/2012 2:31:27 PM EDT



DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90°
4	2	4	8	20
6	3	6	12	28
8	4	7	15	36
10	4	9	18	43
12	5	10	21	51
16	6	13	27	65
20	8	16	33	79
24	9	18	38	92

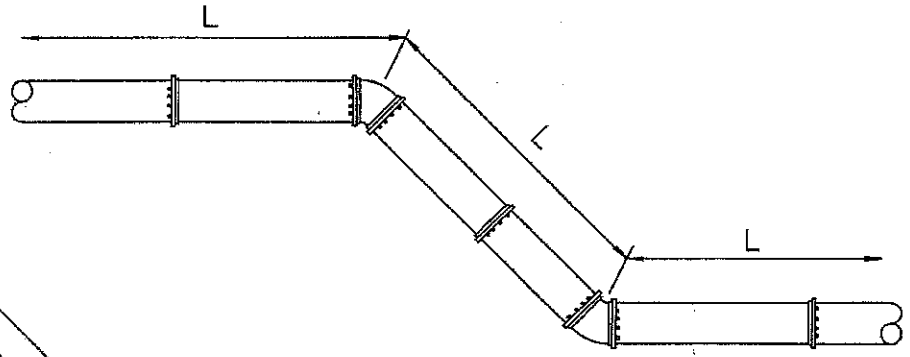
MINIMUM RESTRAINED LENGTH (L)

PVC LINE

PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90
4	3	6	12	29
6	4	8	17	41
8	5	11	22	53
10	6	13	26	64
12	7	15	31	75
16	10	19	39	94
20	12	23	47	113
24	13	26	55	131

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

HORIZONTAL BEND RESTRIANT
NOT TO SCALE



DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90°
4	3	6	12	28
6	4	8	17	40
8	4	10	22	52
10	5	12	26	62
12	6	15	30	73
16	7	19	39	94
20	11	23	47	114
24	13	26	55	132

MINIMUM RESTRAINED LENGTH (L)

PVC LINE

PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90°
4	5	10	22	52
6	7	15	30	74
8	9	19	40	96
10	11	23	48	115
12	13	27	56	136
16	21	43	88	–
20	26	52	107	–
24	30	61	125	–

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

VERTICAL BEND RESTRIANT
NOT TO SCALE

SHEET 5 OF 5

EMC ENGINEERING SERVICES, INC.
POST OFFICE BOX 8101
23 EAST CHARLTON STREET
SAVANNAH, GEORGIA 31412
CIVIL MARINE ENVIRONMENTAL
PHONE: (912) 644-3200
FAX: (912) 233-4580
savannah@emc-eng.com

ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORCE MAIN RELOCATION PLAN
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING

CHATHAM COUTNY GEORGIA
Prepared for:
CHATHAM COUNTY GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
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SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=50'
DATE:	6-22-12

D:\2000\P\00015373\dwg\base_02_3-6-12.dwg 6/25/2012 2:31:27 PM EDT

NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

§ 77.7 Form and time of notice.

(a) If you are required to file notice under §77.9, you must submit to the FAA a completed FAA Form 7460–1, Notice of Proposed Construction or Alteration. FAA Form 7460–1 is available at FAA regional offices and on the Internet.

(b) You must submit this form at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest.

(c) If you propose construction or alteration that is also subject to the licensing requirements of the Federal Communications Commission (FCC), you must submit notice to the FAA on or before the date that the application is filed with the FCC.

(d) If you propose construction or alteration to an existing structure that exceeds 2,000 ft. in height above ground level (AGL), the FAA presumes it to be a hazard to air navigation that results in an inefficient use of airspace. You must include details explaining both why the proposal would not constitute a hazard to air navigation and why it would not cause an inefficient use of airspace.

(e) The 45-day advance notice requirement is waived if immediate construction or alteration is required because of an emergency involving essential public services, public health, or public safety. You may provide notice to the FAA by any available, expeditious means. You must file a completed FAA Form 7460–1 within 5 days of the initial notice to the FAA. Outside normal business hours, the nearest flight service station will accept emergency notices.

§ 77.9 Construction or alteration requiring notice.

If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:

(a) Any construction or alteration that is more than 200 ft. AGL at its site.

(b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.

(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.

(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section.

(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.

(d) Any construction or alteration on any of the following airports and heliports:

(1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;

(2) A military airport under construction, or an airport under construction that will be available for public use;

(3) An airport operated by a Federal agency or the DOD.

(4) An airport or heliport with at least one FAA-approved instrument approach procedure.

(e) You do not need to file notice for construction or alteration of:

(1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;

(2) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device meeting FAA-approved siting criteria or an appropriate military service siting criteria on military airports, the location and height of which are fixed by its functional purpose;

(3) Any construction or alteration for which notice is required by any other FAA regulation.

(4) Any antenna structure of 20 feet or less in height, except one that would increase the height of another antenna structure.

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
2601 Meacham Boulevard
Fort Worth, TX 76193
Fax: (817) 321-7765
Phone: (817) 321-7750

Website: https://oeaaa.faa.gov

INSTRUCTIONS FOR COMPLETING FAA FORM 7460-1

PLEASE TYPE or PRINT

ITEM #1. Please include the name, address and phone number of a personal contact point as well as the company name.

ITEM #2. Please include the name, address and phone number of a personal contact point as well as the company name.

ITEM #3. New Construction would be a structure that has not yet been built.

Alteration is a change to an existing structure such as the addition of a side mounted antenna, a change to the marking and lighting, a change to power and/or frequency, or a change to the height. The nature of the alteration shall be included in ITEM #21 "Complete Description of Proposal".

Existing would be a correction to the latitude and/or longitude, a correction to the height, or if filing on an existing structure which has never been studied by the FAA. The reason for the notice shall be included in ITEM #21 "Complete Description of Proposal".

ITEM #4. If Permanent, so indicate. If Temporary, such as a crane or drilling derrick, enters the estimated length of time the temporary structure will be up.

ITEM #5. Enter the date that construction is expected to start and the date that construction should be completed.

ITEM #6. Please indicate the type of structure. DO NOT LEAVE BLANK.

ITEM #7. In the event that obstruction marking and lighting is required, please indicate type desired. If no preference, check "other" and indicate "no preference" DO NOT LEAVE BLANK. NOTE: High intensity lighting shall be used only for structures over 500' AGL. In the absence of high intensity lighting for structures over 500' AGL, marking is also required.

ITEM #8. If this is an existing tower that has been registered with the FCC, enter the FCC Antenna Structure Registration number here.

ITEM #9 and #10. Latitude and longitude must be geographic coordinates, accurate to within the nearest second or to the nearest hundredth of a second if known. Latitude and longitude derived solely from a hand-held G P S instrument is NOT acceptable. A hand-held GPS is only accurate to within 100 meters (328 feet) 95 percent of the time. This data, when plotted, should match the site depiction submitted under ITEM #20.

ITEM #11. NAD 83 is preferred; however, latitude and longitude may be submitted in NAD 27. Also, in some geographic areas where NAD 27 and NAD 83 are not available other datum may be used. It is important to know which datum is used. DO NOT LEAVE BLANK.
ITEM #12. Enter the name of the nearest city and state to the site. If the structure is or will be in a city, enter the name of that city and state.

ITEM #13. Enter the full name of the nearest public-use (not private-use) airport or heliport or military airport or heliport to the site.

ITEM #14. Enter the distance from the airport or heliport listed in #13 to the structure.

ITEM #15. Enter the direction from the airport or heliport listed in #13 to the structure.

ITEM #16. Enter the site elevation above mean sea level and expressed in whole feet rounded to the nearest foot (e.g. 17'3" rounds to 17', 17'6" rounds to 18'). This data should match the ground contour elevations for site depiction submitted under ITEM #20.
ITEM #17. Enter the total structure height above ground level in whole feet rounded to the next highest foot (e.g. 17'3" rounds to 18'). The total structure height shall include anything mounted on top of the structure, such as antennas, obstruction lights, lightning rods, etc.

ITEM #18. Enter the overall height above mean sea level and expressed in whole feet. This will be the total of ITEM #16 + ITEM #17.

ITEM #19. If an FAA aeronautical study was previously conducted, enter the previous study number.

ITEM #20. Enter the relationship of the structure to roads, airports, prominent terrain, existing structures, etc. Attach an 8-1/2" x 11" non-reduced copy of the appropriate 7.5 minute U.S. Geological Survey (USGS) Quadrangle Map MARKED WITH A PRECISE INDICATION OF THE SITE LOCATION. To obtain maps, contact USGS at 1-888-275-8747 or via internet at "http://store.usgs.gov". If available, attach a copy of a documented site survey with the surveyor's certification stating the amount of vertical and horizontal accuracy in feet.

ITEM #21.

- For transmitting stations, include maximum effective radiated power (ERP) and all frequencies.
- For antennas, include the type of antenna and center of radiation (Attach the antenna pattern, if available).
- For microwave, include azimuth relative to true north.
- For overhead wires or transmission lines, include size and configuration of wires and their supporting structures (Attach depiction).
- For each pole/support, include coordinates, site elevation, and structure height above ground level or water.
- For buildings, include site orientation, coordinates of each corner, dimensions, and construction materials.
- For alterations, explain the alteration thoroughly.
- For existing structures, thoroughly explain the reason for notifying the FAA (e.g. corrections, no record or previous study, etc.).

Filing this information with the FAA does not relieve the sponsor of this construction or alteration from complying with any other federal, state or local rules or regulations. If you are not sure what other rules or regulations apply to your proposal, contact local/state aviation's and zoning authorities.

Paperwork Reduction Work Act Statement: This information is collected to evaluate the effect of proposed construction or alteration on air navigation and is not confidential. Providing this information is mandatory for anyone proposing construction or alteration that meets or exceeds the criteria contained in 14 CFR, part 77. We estimate that the burden of this collection is an average 19 minutes per response. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection is 2120-0001. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

Pipemakers Canal
Phase 2 Section 2 Drainage Improvements
FAA Form 7460-1
June 26, 2012

As outlined in item 11 of Addendum #2 the following information is being provided for contractors to fill out and submit FAA Form 7460-1 with their bid.

Items 1 and 2: To be filled out by the contractor

Item 3: New construction box should be checked

Item 4: Temporary box should be checked. Time will be 6 months 0 days

Item 5: Use a beginning date of October 1, 2012 and an ending date of March 31, 2013

Item 6: The other box should be checked. Drainage canal should be placed in the blank by the other box

Item 7: The other box should be checked and indicate "No Preference"

Item 8: There is no FCC Antenna structure

Item 9: Latitude 32° 7' 39.46" N

Item 10: Longitude 81° 13' 20.42" W

Item 11: The NAD 83 box should be checked

Item 12: Pooler GA is nearest to the project

Item 13: Savannah Hilton Head International Airport is the nearest public use airport

Item 14: The canal is 4900 feet from the airport terminal and 1285 feet from the west end of runway 10

Item 15: The canal is located to the south west of the airport terminal and runway.

Item 16: The site elevation above mean sea level ranges from 10 to 16 feet. The vertical datum is 1988.

Item 17: The structure height will be zero

Item 18: Overall height will be 16 feet

Item 19: An aeronautical study has not been previously conducted

Item 20: The proposed project is to widen and realign the Pipemakers Canal. The project is located on the Savannah Hilton Head Airport to the south and west of runway 10 and to the east of Interstate 95. A USGS quadrangle map showing the location of the site is attached. An exhibit showing the project working limits is attached. Construction drawings that have been signed and sealed by a licensed engineer are attached.

Item 21: The proposed project is to excavate 5,100 linear feet of new Pipemakers Canal and fill in the existing Pipemakers Canal. The new canal will be located further to the west and south of the existing canal. The new canal is being constructed because portions

of the existing canal are located in the runway/taxiway object free zone. Sheets 3, 8, 9, 10, and 11 of the construction plans are attached and show the location and proposed construction of the project. No buildings, overhead wires and or transmission lines with support structures, antennas, or transmitting stations are being constructed.

*Contractors need to add to Item 21 as needed a description that includes height above ground of equipment that will be used to construct the project.

Please Type or Print on This Form

Form Approved OMB No.2120-0001
Expiration Date: 6/30/2012

U.S. Department of Transportation
Federal Aviation Administration

Failure To Provide All Requested Information May Delay Processing of Your Notice

Notice of Proposed Construction or Alteration

FOR FAA USE ONLY
Aeronautical Study Number

1. Sponsor *(person, company, etc. proposing this action):*
Attn. of:
Name:
Address:
City: State: Zip:
Telephone: Fax:

2. Sponsor's Representative *(if other than #1):*
Attn. of:
Name:
Address:
City: State: Zip:
Telephone: Fax:

3. Notice of: ☐ New Construction ☐ Alteration ☐ Existing

4. Duration: ☐ Permanent ☐ Temporary (___ months, ___ days)

5. Work Schedule: Beginning End

6. Type: ☐ Antenna Tower ☐ Crane ☐ Building ☐ Power Line
☐ Landfill ☐ Water Tank ☐ Other

7. Marking/Painting and/or Lighting Preferred:
☐ Red Lights and Paint ☐ Dual - Red and Medium Intensity
☐ White-Medium Intensity ☐ Dual - Red and high Intensity
☐ White -High Intensity ☐ Other

8. FCC Antenna Structure Registration Number *(if applicable):*

9. Latitude: ° ' "

10. Longitude: ° ' "

11. Datum: ☐ NAD 83 ☐ NAD 27 ☐ Other

12. Nearest: City: State:

13. Nearest *Public-use* *(not private-use)* or Military Airport or Heliport:

14. Distance from #13. to Structure:

15. Direction from #13. to Structure:

16. Site Elevation *(AMSL)*: ft.

17. Total Structure Height *(AGL)*: ft.

18. Overall Height (#16 + #17) *(AMSL)*: ft.

19. Previous FAA Aeronautical Study Number *(if applicable)*:
-OE

20. Description of Location: *(Attach a USGS 7.5 minute Quadrangle Map with the precise site marked and any certified survey)*

21. Complete Description of Proposal:

Frequency/Power (kW)	

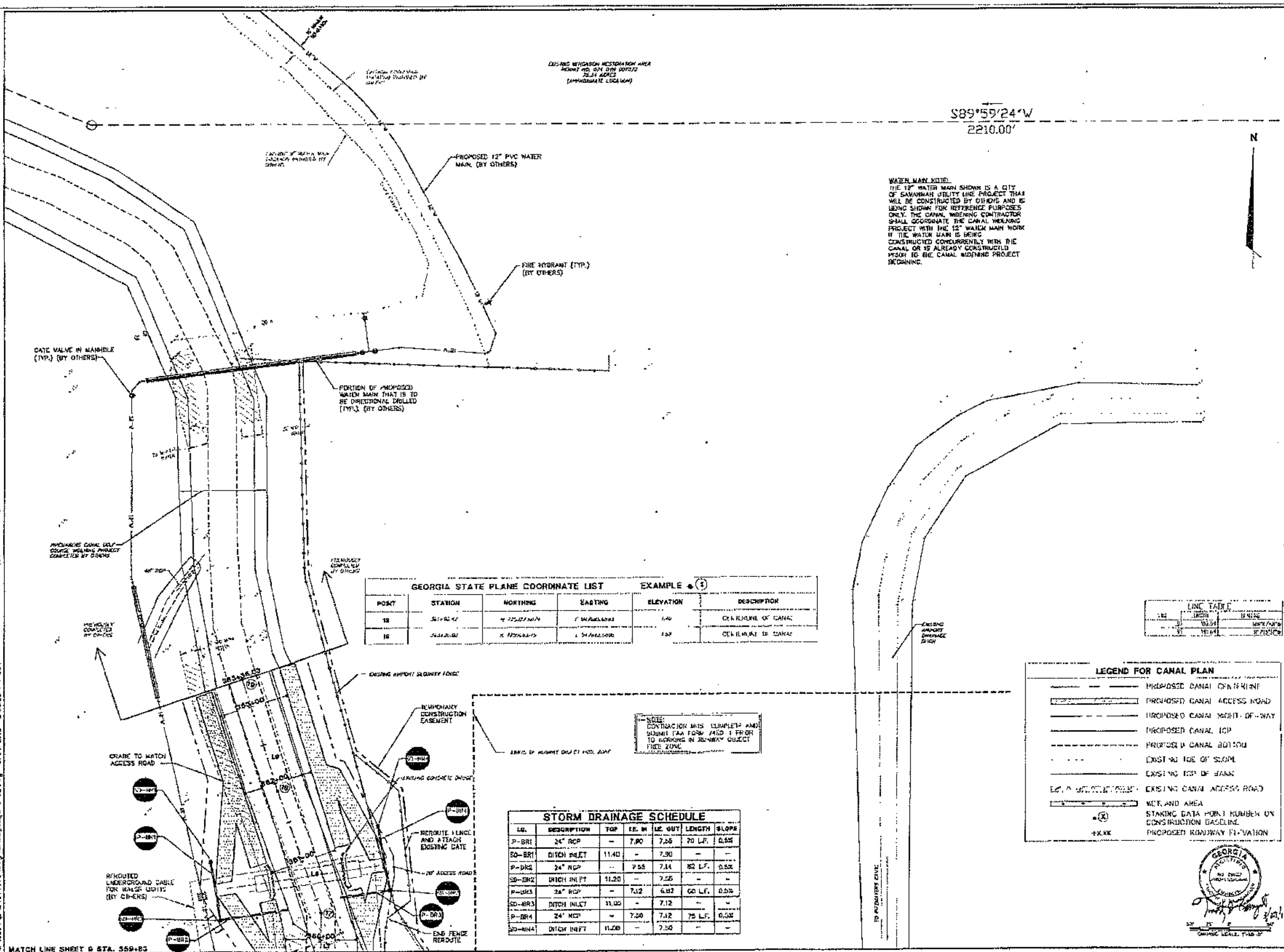
Notice is required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice requirements of part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to 49 U.S.C., Section 46301(a)

I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light the structure in accordance with established marking & lighting standards as necessary.

Date	Typed or Printed Name and Title of Person Filing Notice	Signature

FAA Form 7460-1 (2-12) Supersedes Previous Edition

NSN: 0052-00-012-0009



WATER MAIN NOTE:
THE 12" WATER MAIN SHOWN IS A CITY OF SAVANNAH UTILITY LINE PROJECT THAT WILL BE CONSTRUCTED BY OTHERS AND IS BEING SHOWN FOR REFERENCE PURPOSES ONLY. THE CANAL WIDENING CONTRACTOR SHALL COORDINATE THE CANAL WIDENING PROJECT WITH THE 12" WATER MAIN WORK IF THE WATER MAIN IS BEING CONSTRUCTED CONCURRENTLY WITH THE CANAL OR IS ALREADY CONSTRUCTED PRIOR TO THE CANAL WIDENING PROJECT BEGINNING.

NOTE:
CONTRACTOR MUST COMPLETE AND SUBMIT FAA FORM 7460-1 PRIOR TO WORKING IN RUNWAY OBJECT FREE ZONE.

GEORGIA STATE PLANE COORDINATE LIST EXAMPLE ◆(1)

POINT	STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
15	[illegible]	[illegible]	[illegible]	[illegible]	CENTERLINE OF CANAL
16	[illegible]	[illegible]	[illegible]	[illegible]	CENTERLINE OF CANAL

STORM DRAINAGE SCHEDULE

I.D.	DESCRIPTION	TOP	I.E. IN	I.E. OUT	LENGTH	SLOPE
P-BR1	24" RCP	–	7.90	7.55	70 L.F.	0.5%
SD-BR1	DITCH INLET	11.40	–	7.90	–	–
P-BR2	24" RCP	–	7.55	7.14	82 L.F.	0.5%
SD-BR2	DITCH INLET	11.20	–	7.55	–	–
P-BR3	24" RCP	–	7.12	6.82	60 L.F.	0.5%
SD-BR3	DITCH INLET	11.00	–	7.12	–	–
P-BR4	24" RCP	–	7.50	7.12	75 L.F.	0.5%
SD-BR4	DITCH INLET	11.00	–	7.50	–	–

LINE TABLE

LINE	LENGTH	BEARING
L1	[illegible]	[illegible]
L2	[illegible]	[illegible]

LEGEND FOR CANAL PLAN

- PROPOSED CANAL CENTERLINE
- PROPOSED CANAL ACCESS ROAD
- PROPOSED CANAL RIGHT-OF-WAY
- PROPOSED CANAL TOP
- PROPOSED CANAL BOTTOM
- EXISTING TOE OF SLOPE
- EXISTING TOP OF BANK
- EXISTING CANAL ACCESS ROAD
- WETLAND AREA
- ◆(X) STAKING DATA POINT NUMBER ON CONSTRUCTION BASELINE
- +X.XX PROPOSED ROADWAY ELEVATION

REVISIONS	
NUMBER	DATE

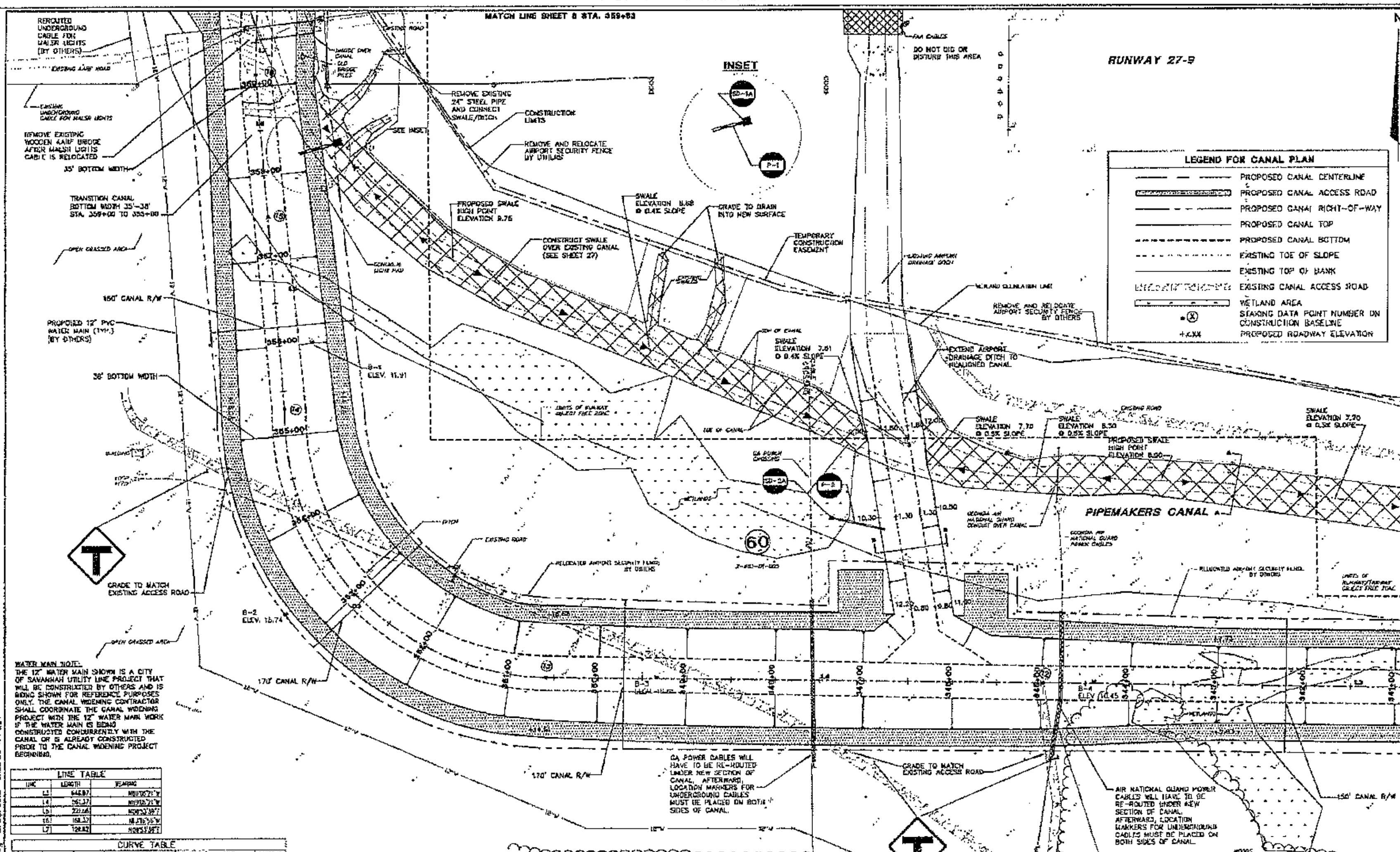
DESIGN	WH
CHECKED	APP/CS
DRAWN	JDH
DATE	MAY 2005
SCALE	1" = 50'
PROJECT	04-9449.7E

PIPEMAKERS CANAL REALIGNMENT
PLAN VIEW
STA. 363+36 TO STA. 359+83

PIPEMAKER'S CANAL WIDENING PROJECT
PHASE 2-SECTION 2
PREPARED FOR:
CHATHAM COUNTY, GEORGIA

EMC ENGINEERING SERVICES, INC.

SHEET 8 OF 37



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LINE TABLE

LINE	LENGTH	BEARING
L3	646.87	N01°05'21"W
L4	561.37	N01°05'21"W
L5	221.46	N09°53'39"E
L6	161.37	N1°16'56"W
L7	128.82	N09°53'39"E

CURVE TABLE

CURVE	LENGTH	RADIUS	CHORD DIRECTION	CHORD	DELTA	TANGENT
C3	471.24	300.00	S46°00'21"E	424.26	90°00'00"	300.00

GEORGIA STATE PLANE COORDINATE LIST EXAMPLE ● (1)

POINT	STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
12	344+07.77	N 774867.3672	E 944637.0467	0.67	CENTERLINE OF CANAL
13	350+33.14	N 774876.5467	E 945013.2679	0.60	CENTERLINE OF CANAL
14	353+30.30	N 775161.1915	E 947770.9156	4.10	CENTERLINE OF CANAL
15	357+01.94	N 775161.1913	E 947770.5156	1.24	CENTERLINE OF CANAL
16	359+47.26	N 775536.733	E 947737.1385	1.20	CENTERLINE OF CANAL
17	360+52.66	N 775674.3611	E 947739.0916	1.37	CENTERLINE OF CANAL

**NOTE: CONTRACTOR MUST NOTIFY GEORGIA POWER COMPANY TO ORGANIZE THE RELOCATION OF POWER CABLES

STORM DRAINAGE SCHEDULE

I.D.	DESCRIPTION	TOP	I.E. IN	I.E. OUT	LENGTH	SLOPE
P-1	36" RCP	-	4.50	4.28	44 L.F.	0.5%
SD-1A	DITCH INLET	9.00	-	4.50	-	-
P-2	24" RCP	-	8.00	5.70	50 L.F.	0.5%
SD-2A	DITCH INLET	5.50	-	6.00	-	-

CABLE TO BE 3FT MIN. BELOW A 4' WIDE x 6" THICK CONCRETE SLAB. CONCRETE SLAB MUST BE A MINIMUM OF 6" BELOW THE CANAL INVERT.

NOTES:
CONTRACTOR MUST COMPLETE AND SUBMIT FAA FORM 7460-1 PRIOR TO WORKING IN RUNWAY OBJECT FREE ZONE.

ACCESS FROM AIRPORT GATE 25 ON BOURNE AVENUE SEE SHEET 4

EXISTING ROAD TO GATE 25 ON BOURNE AVENUE

CABLE TO BE 3FT MIN. BELOW A 4' WIDE x 6" THICK CONCRETE SLAB. CONCRETE SLAB MUST BE A MINIMUM OF 6" BELOW THE CANAL INVERT.

**NOTE: CONTRACTOR MUST NOTIFY THE AIR NATIONAL GUARD ON DUTY BEFORE CUTTING OFF POWER CONTACT JACK WATERS AT (912)966-8226

NOTES:
BI-AXIAL GEOGRID TENSAR BX 1200 MUST BE USED:
1. DURING CONSTRUCTION OF THE ACCESS ROAD OVER LOW AREAS
2. WHERE ACCESS ROAD IS TO BE CONSTRUCTED OVER OLD CANAL
3. WITH ACCESS ROAD CONSTRUCTION BETWEEN STATIONS 338+00 TO 225+00.

IF THE CONTRACTOR BELIEVES GEOGRID SHOULD BE USED FOR SLOPE AND/OR ROAD STABILITY, THE ENGINEER SHOULD BE CALLED TO VERIFY ITS USE.

3/28/12

PIPEMAKERS CANAL REALIGNMENT
PLAN VIEW
STA. 359+83 TO STA. 340+81

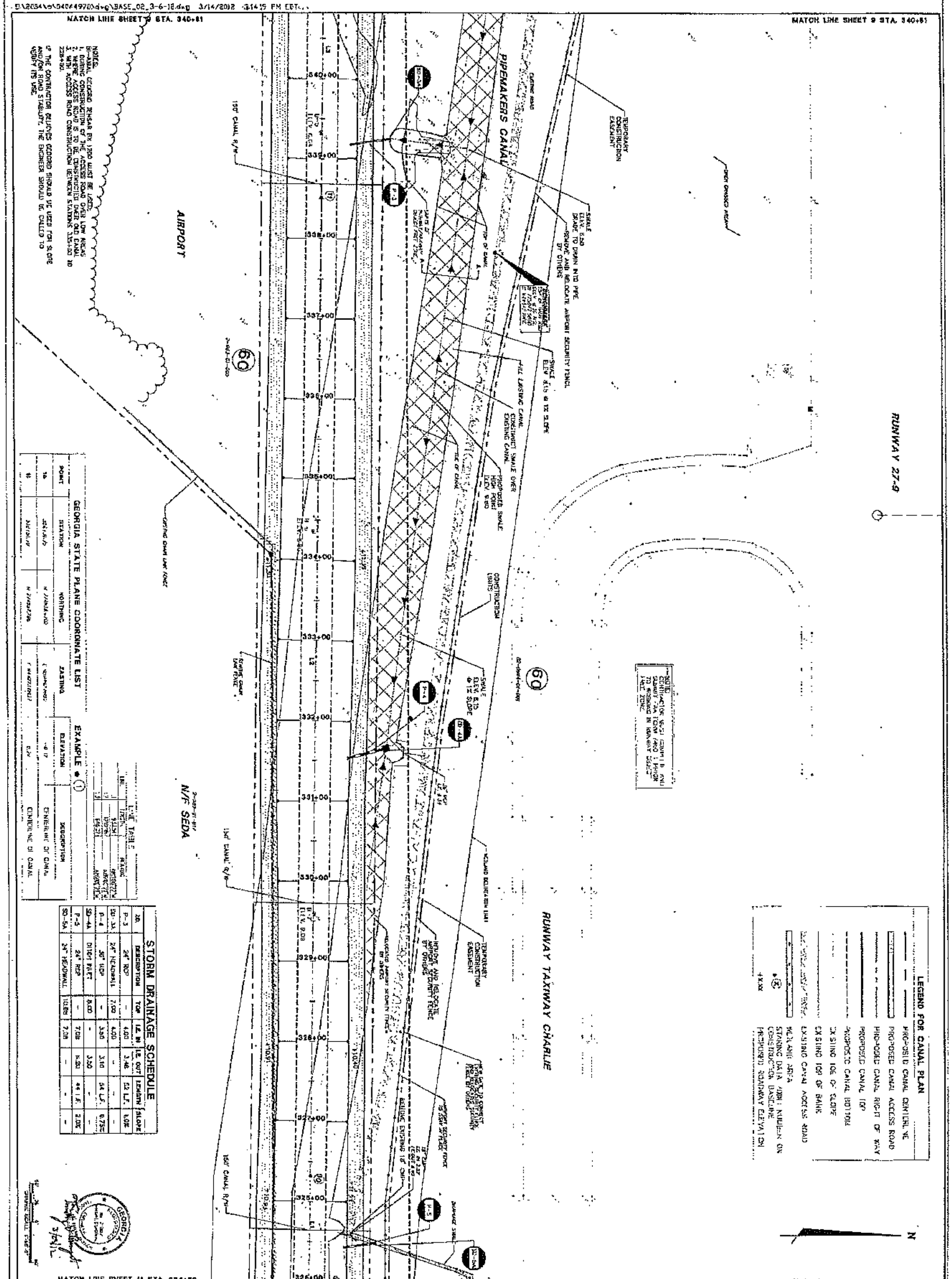
PIPEMAKER'S CANAL WIDENING PROJECT
PHASE 2-SECTION 2
PREPARED FOR:
CHATHAM COUNTY, GEORGIA

EMC ENGINEERING SERVICES, INC.

REVISIONS	
NUMBER	DATE

DESIGN: WJH
GRAPHICS: AA/CCS
REVIEW: TDG
DATE: MAY 2004
SCALE: 1" = 50'
PROJECT: 04-044970

SHEET: 9 OF 37



STORM DRAINAGE SCHEDULE

ID.	DESCRIPTION	TOP	I.E. IN	I.E. OUT	LENGTH	SLOPE
P-3	24" RCP	-	4.00	3.46	52 L.F.	1.0%
SD-3A	24" HEADWALL	7.00	4.00	-	-	-
P-4	36" RCP	-	3.50	3.10	54 L.F.	0.75%
SD-4A	DITCH INLET	8.00	-	3.50	-	-
P-5	24" RCP	-	7.08	6.20	44 L.F.	2.0%
SD-5A	24" HEADWALL	10.08	7.08	-	-	-

PIPEMAKERS CANAL REALIGNMENT

PLAN VIEW

STA. 340+81 TO STA. 324+80

PIPEMAKER'S CANAL WIDENING PROJECT
PHASE 2-SECTION 2
PREPARED FOR:
CHATHAM COUNTY, GEORGIA

EMC ENGINEERING SERVICES, INC.

SHEET 10 OF 37

MATCH LINE SHEET 10 STA. 324+80

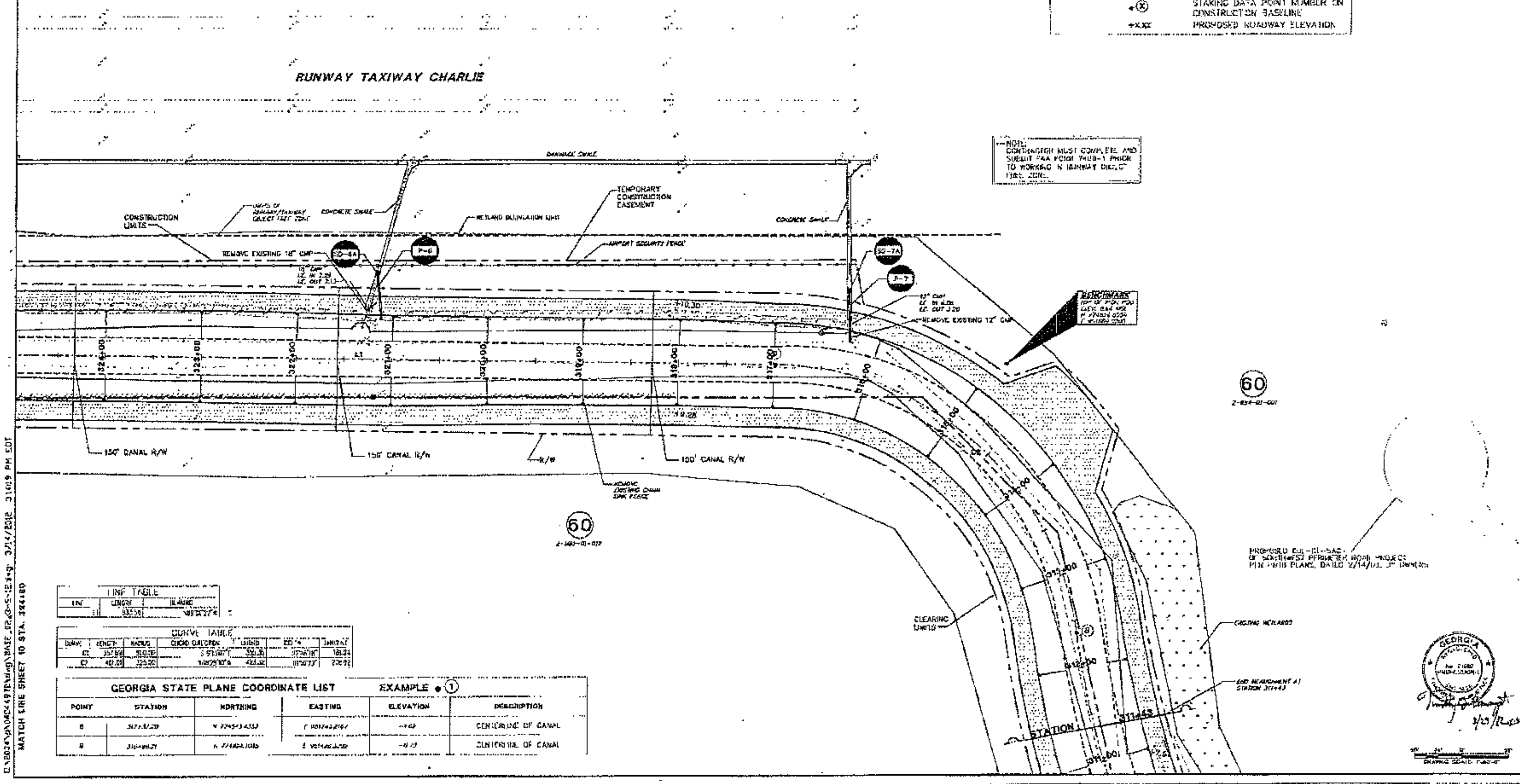
STORM DRAINAGE SCHEDULE						
I.D.	DESCRIPTION	TOP/THROAT	I.E. IN	I.E. OUT	LENGTH	SLOPE
P-6	24" RCP	-	4.59	4.21	42 L.F.	0.9%
SD-6A	ROOF INLET	8.52/8.09	4.59	-	-	-
P-7	24" RCP	-	6.33	5.09	52 L.F.	2.2%
SD-7A	ROOF INLET	10.66/9.83	6.33	-	-	-

NOTES:
BI-AXIAL GEOGRID TENSAR BX 1200 MUST BE USED.
1. DURING CONSTRUCTION OF THE ACCESS ROAD OVER LOW AREAS
2. WHERE ACCESS ROAD IS TO BE CONSTRUCTED OVER OLD CANAL
3. WITH ACCESS ROAD CONSTRUCTION BETWEEN STATIONS 325+00 TO 328+00.

IF THE CONTRACTOR BELIEVES GEOGRID SHOULD BE USED FOR SLOPE AND/OR ROAD STABILITY, THE ENGINEER SHOULD BE CALLED TO VERIFY ITS USE.

LEGEND FOR CANAL PLAN

- PROPOSED CANAL CENTERLINE
- PROPOSED CANAL ACCESS ROAD
- PROPOSED CANAL RIGHT-OF-WAY
- PROPOSED CANAL TOP
- PROPOSED CANAL BOTTOM
- EXISTING TOE OF SLOPE
- EXISTING TOP OF BANK
- EXISTING CANAL ACCESS ROAD
- WETLAND AREA
- STAKING DATA POINT NUMBER ON CONSTRUCTION BASELINE
- +X.XX PROPOSED ROADWAY ELEVATION



LINE TABLE		
LINE	LENGTH	BEARING
L1	[illegible]	[illegible]

CURVE TABLE						
CURVE	LENGTH	RADIUS	CHORD DIRECTION	CHORD	DELTA	TANGENT
C1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

GEORGIA STATE PLANE COORDINATE LIST — EXAMPLE ● ①

POINT	STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
8	[illegible]	[illegible]	[illegible]	[illegible]	CENTERLINE OF CANAL
9	[illegible]	[illegible]	[illegible]	[illegible]	CENTERLINE OF CANAL

MATCH LINE SHEET 10 STA. 324+80

EMC ENGINEERING SERVICES, INC.

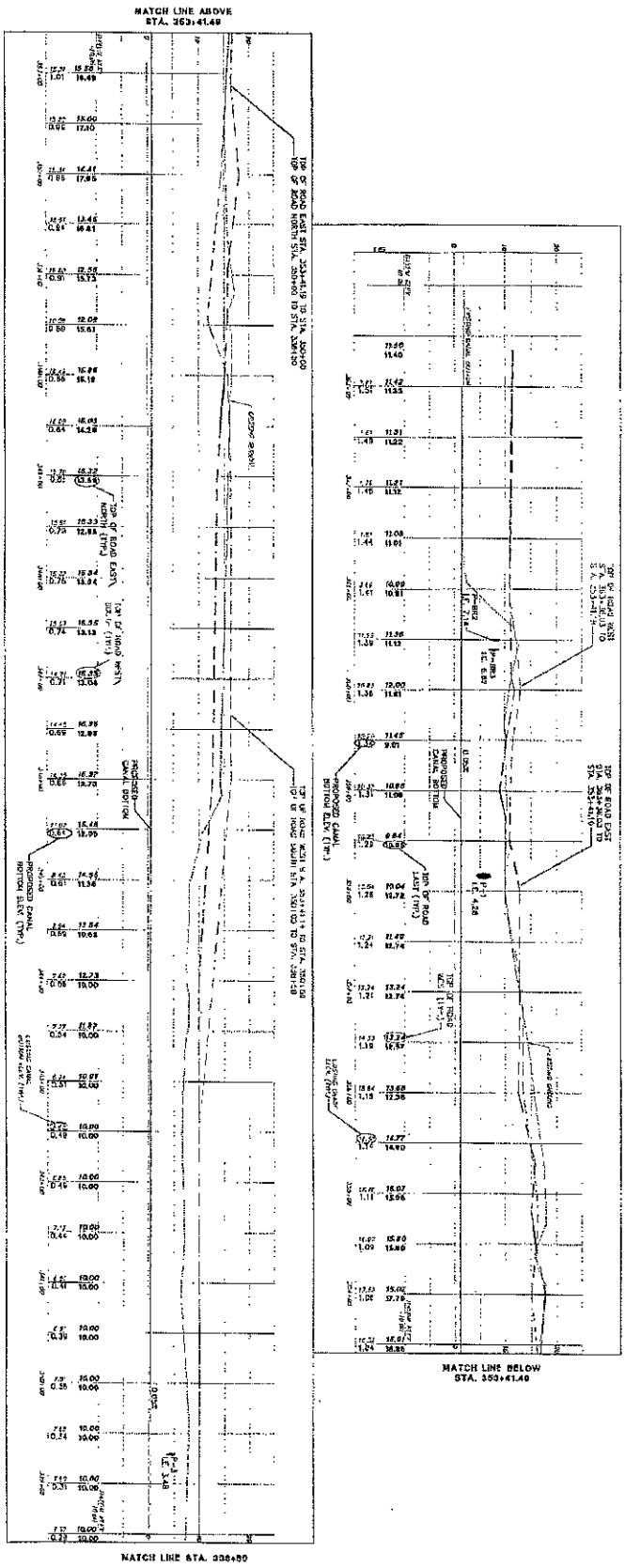
PIPEMAKER'S CANAL WIDENING PROJECT
PHASE 2-SECTION 2
PREPARED FOR:
CHATHAM COUNTY, GEORGIA

PIPEMAKERS CANAL REALIGNMENT
PLAN VIEW
STA. 324+80 TO STA. 311+43

REVISIONS	
NUMBER	DATE

DESIGN	[illegible]
GRAPHICS	BARLOS
REVIEW	[illegible]
DATE	MAY 2006
SCALE	[illegible]
PROJECT NO.	[illegible]

SHEET 11 OF 57

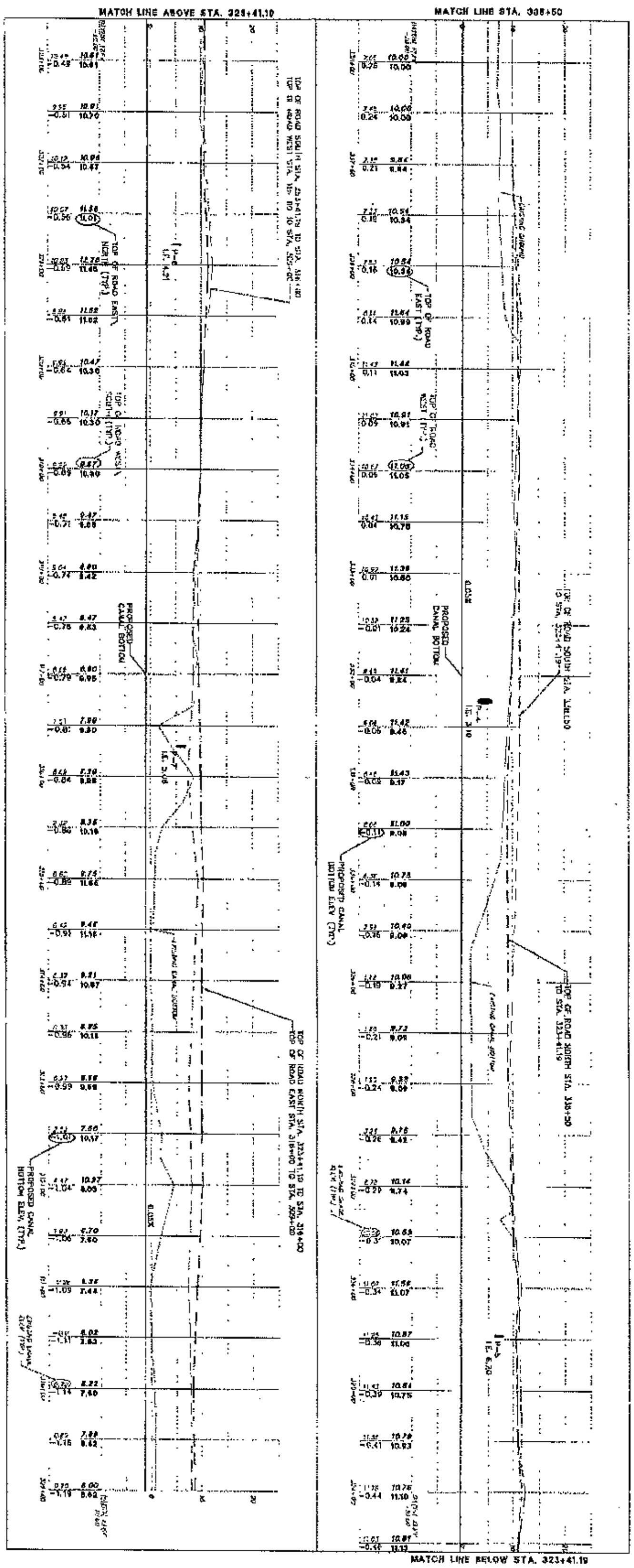


PIPEMAKERS CANAL REALIGNMENT
CANAL AND ACCESS ROAD
PROFILE STA. 353+36 TO 338+50

PIPEMAKER'S CANAL
WIDENING PROJECT
PHASE 2-SECTION 2
PREPARED FOR:
CHATHAM COUNTY, GEORGIA

EMC ENGINEERING SERVICES, INC.

SHEET 12 OF 17

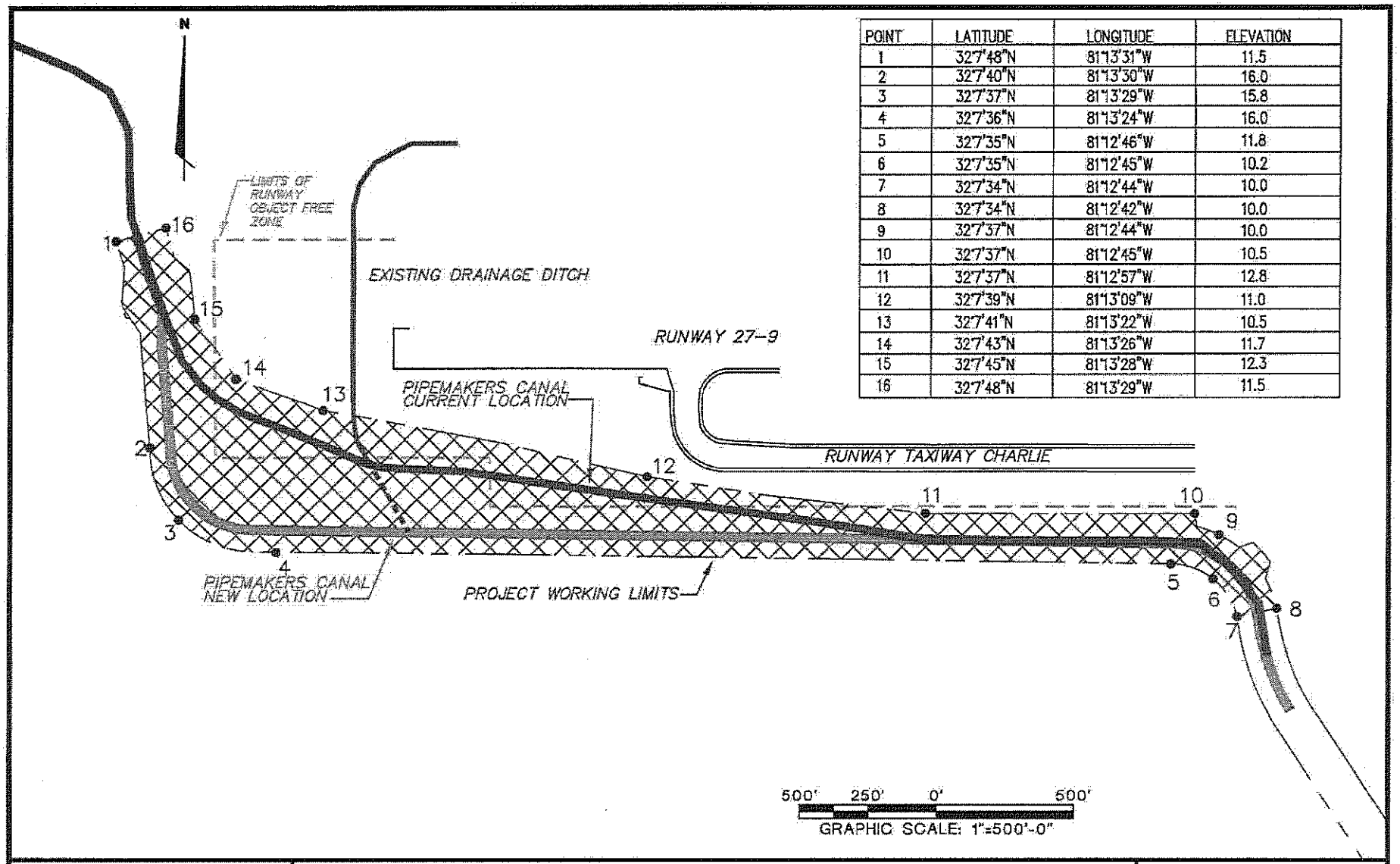


SCALE

HORIZONTAL 1" = 50'
VERTICAL 1" = 10'

PIPEMAKERS CANAL REALIGNMENT CANAL AND ACCESS ROAD PROFILE STA. 338+50 TO 309+00	PIPEMAKER'S CANAL WIDENING PROJECT PHASE 2-SECTION 2 PREPARED FOR: CHATHAM COUNTY, GEORGIA	EMC ENGINEERING SERVICES, INC.

SHEET 13 OF 37



POINT	LATITUDE	LONGITUDE	ELEVATION
1	32°7'48"N	81°13'31"W	11.5
2	32°7'40"N	81°13'30"W	16.0
3	32°7'37"N	81°13'29"W	15.8
4	32°7'36"N	81°13'24"W	16.0
5	32°7'35"N	81°12'46"W	11.8
6	32°7'35"N	81°12'45"W	10.2
7	32°7'34"N	81°12'44"W	10.0
8	32°7'34"N	81°12'42"W	10.0
9	32°7'37"N	81°12'44"W	10.0
10	32°7'37"N	81°12'45"W	10.5
11	32°7'37"N	81°12'57"W	12.8
12	32°7'39"N	81°13'09"W	11.0
13	32°7'41"N	81°13'22"W	10.5
14	32°7'43"N	81°13'26"W	11.7
15	32°7'45"N	81°13'28"W	12.3
16	32°7'48"N	81°13'29"W	11.5

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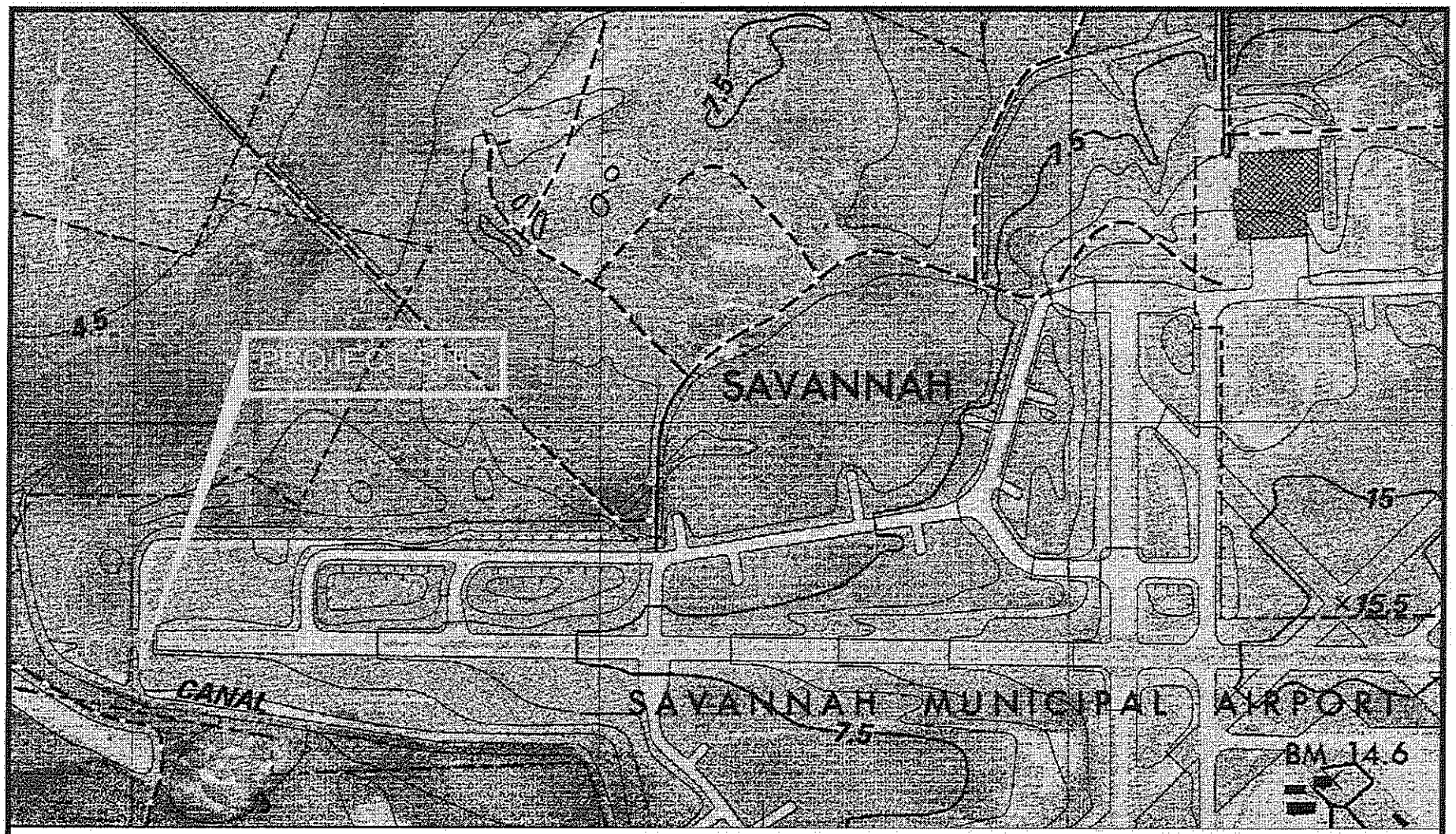
FAX: (912) 233-4580
savannah@emc-eng.com
CIVIL MARINE ENVIRONMENTAL
ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, STATESBORO & VALDOSTA

FORM 7460-1 PROJECT WORKING LIMITS EXHIBIT
PIPEMAKERS CANAL PHASE 2 SECTION 2 WIDENING PROJECT
CHATHAM COUNTY, GEORGIA
Prepared for:
CHATHAM COUNTY, GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	BWL
SCALE:	1"=500'
DATE:	6-26-12

D:\2004\p\04044970\dwg\Form 7460-1 working limits 6-20-12.dwg 6/26/2012 9:37:04 AM EDT



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CIVIL MARINE ENVIRONMENTAL

ALBANY, ATLANTA, AUGUSTA, BRUNSWICK, COLUMBUS, SAVANNAH STATESBORO & VALDOSTA

FORM 7460-1 USGS QUADRANGLE EXHIBIT
PIPEMAKERS CANAL
PHASE 2 SECTION 2 WIDENING
CHATHAM COUNTY, GEORGIA
Prepared for:
CHATHAM COUNTY, GEORGIA

PROJECT NO.:	10-0107
DRAWN BY:	BWL
DESIGNED BY:	BWL
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	TDB
SCALE:	1"=1000'
DATE:	6-19-12

D:\2010\P\100107 Pipemaker's Canal Ph2 Sect 1 Widening Construction\dwg\FAA 7460-1 Quad exhibit.dwg 6/26/2012 9:34:17 AM EDT

SECTION 02200
EARTHWORK

PART 1 - PRODUCTS

1.01 MATERIALS:

A. General: Where the terms "approved", "suitable", "unsuitable" and similar designations are used in specifications section pertaining to earthwork, it means earth or material designated as being approved, suitable or unsuitable for their intended use by the Engineer.

B. Suitable Soil Materials are defined as those complying with ASTM D-2487 soil classification groups: SM, SW, SC, and SP.

- Fill material that will be used in undercut areas under the proposed access roads shall be SM, SW, or SP.
- Fill material that will be used to construct any access roads on raised fill shall be SC.
- Backfill in pipe or culvert trenches shall be SC

C. Unsuitable Soil Materials are defined as those complying with ASTM D-2487 soil classification groups GC, MH, ML, CL, CH, OL, OH, PT. Clays, silts, and organic soils will be considered as unsuitable materials. Excess water in materials will be a basis for establishing unsuitable material regardless of gradation.

D. Backfill and Fill Materials shall be suitable soil materials, free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter. Suitable materials for earth fill shall generally be composed of sands, clay-sand and silt-sand mixtures with less than 25% fines passing the #200 sieve.

Prior to placement of any fill material the contractor shall submit samples for review and approval. The samples will be analyzed by the owner's testing lab for approval prior to placement. Any fill material that is placed prior to approval shall be removed at the contractor's expense.

PART 2 - EXECUTION

2.01 TOP SOIL

A. Contractor shall strip and stockpile topsoil.

B. Topsoil shall be placed to a depth of 4" over all disturbed areas.

C. Any remaining topsoil will be hauled off site and disposed of at the Contractor's expense.

D. Additional topsoil shall meet Georgia Department of Transportation Specification 893.1. Any additional topsoil which is required to repair disturbed areas and complete the contract shall be provided by the Contractor at his expense.

2.02 EXCAVATION

A. Excavation is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.

B. All excavation shall be in conformity with the lines, grades and cross sections shown on the Plans or established by the Engineer. All suitable material removed in the excavation shall be used as far as practicable in formation of embankment, subgrades and shoulders and at such other places as may be indicated on the drawings or directed by the Engineer.

C. Unauthorized Excavation consists of removal or loosening of materials beyond indicated subgrade elevations or dimensions without specific directions of the Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, and as specified herein shall be at Contractor's expense.

Under footings, foundation bases, or retaining walls, fill unauthorized excavations by extending indicated bottom elevation of footing or base to the bottom of the excavation, without altering required top elevation.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by the Engineer.

D. Additional Excavation: When excavation has reached required subgrade elevations and unsuitable materials exist, carry excavations deeper and replace excavated materials as directed by the Engineer. Dispose of unsuitable material as directed by the Engineer.

The Contractor shall dispose of unsuitable and surplus materials except where the Engineer permits the use of such fill slopes, or unless specific disposal areas are shown on the Plans.

E. Dewatering: Prevent surface water and subsurface or ground water flowing into excavations and from flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water to prevent softening of roadway subgrades and foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

The Contractor will be responsible for all damage incurred in handling water conditions.

F. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and to minimize erosion. Locate and retain soil materials away from edge of excavations. Do not store within drip-line of trees indicated to remain.

G. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending of sufficient distance from footings and foundations to permit placing and removal of concrete framework, installations to permit placing and removal of concrete framework, installation of services, other constructions, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

H. Proper drainage shall be maintained at all times.

I. Perform excavation within drip-line of large trees to remain by hand or by other means which will result in (1) cleanly twisting, tearing, breakage or other injury to roots remaining on the tree. Protect existing trees and shrubs that are outside the clearing limits at all times during earthwork operations. No trees beyond the clearing limits shall be removed without prior approval of the Owner.

2.03 BORROW

A. Shall be excavated and hauled by the Contractor from his own sources and shall meet the requirements as specified.

B. Borrow shall be procured by the Contractor.

C. Contractor shall bear all expenses in developing borrow sources including drying material, haul roads, excavation and hauling.

2.04 GROUND SURFACE PREPARATION FOR FILL

A. All vegetation such as roots, brush, heavy sods, heavy growth of grass, decayed vegetation matter, rubbish, and other unsuitable material within the areas to be filled shall be stripped and removed prior to beginning the fill operation.

B. Sloped ground surfaces steeper than 1 vertical to 4 horizontal, on which fill is to be placed shall be plowed, stepped, benched or broken up as directed, in such a manner that the fill material will bond with the existing surface.

C. Surfaces on which fill is to be placed and compacted shall be plowed, wetted or dried as may be required to obtain the specified compaction.

2.05 BACKFILL/FILL PLACEMENT OPERATIONS:

A. During the placement and compaction of backfill, the contractor shall take all necessary measures to place backfill and compact it at the proper moisture content so that there will be no pumping of the backfill during placement. No fill shall be placed on top of any fill material that is found to be pumping even if the fill that is being placed is meeting and passing the compaction requirements. If any fill is found to be pumping, it shall be stabilized by the contractor at no additional cost or time to the Owner before placing the next lift. Any backfill lifts shall be no more than 12" but shall not exceed the capacity of compaction equipment.

2.06 FINISH GRADING

A. All areas covered by the project including excavated and filled sections and adjacent transition areas shall be smooth graded and free from irregular surface changes.

B. Degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations, supplemented with hand raking and finishing, except as otherwise specified.

C. The finished surface of unpaved areas shall be not more than 0.05' feet above or below the established grade or designed cross-section. Grading shall be done in order that no ponding will occur.

D. Ditches shall be finished smooth to reduce erosion and permit adequate drainage.

2.07 DISPOSAL OF WASTE MATERIAL

A. All vegetation, roots, brush, sod, broken pavements, curb and gutter, rubbish, and other unsuitable or surplus material stripped or removed from the limits of construction shall be legally disposed of by the Contractor.

2.08 PROTECTION

A. The Contractor shall be responsible for protection of low grade utilities shown on the drawings or indicated to him by the Owner at all times during earthwork operations.

B. Graded areas shall be protected from traffic, erosion, settlement, or any washing away that may occur from any cause prior to acceptance.

C. Any repair or reestablishment of grades prior to final acceptance shall be at the Contractors expense.

PART 3 - TESTING

3.01 COMPACTION TESTING

A. General: Compaction of earth fill and all pavement subgrades shall be performed to the percentage of maximum standard of dry densities and to the depths as indicated below:

B. Roadway Subgrades: 100% Standard (ASTM Test D-698) Compact top 12" in Parking areas and top 15" in Driveways.

C. Subgrades under pavement removed and replaced for utility installations: 100% Standard (ASTM Test D-698) to 12 inch depth.

D. Fill under all structures, slabs, and backfill behind walls: 98% Standard (ASTM Test D-698).

1. Subgrade below Sidewalks and Curb and Gutters: 97% Standard (ASTM Test D-698) Compact top 6 inches.

2. Unpaved Areas to be grassed, sodded or landscaped: 90% Standard (ASTM Test D-698) full depth.

All other areas not described above: as directed by the Engineer.

E. Moisture Control: All compaction shall be performed at material moisture contents within 3 percentage points, plus or minus, of optimum. Where subgrade

or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. Remove, and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by dicing, harrowing or pulverizing until moisture content to a satisfactory value.

F. Field Density Tests: Tests shall be made in accordance with ASTM Method D-1556 and/or ASTM 2922. Minimum testing frequency shall be based on the most stringent of the following requirements (as applicable). Additional tests may be required by the Engineer in areas he deems critical.

- One every layer of fill,
- One every 200 cubic yards of fill,
- One every 250 square yards of roadway subgrade of fill,
- One every building subgrade
- Areas where degree of compaction is in question

If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, additional compaction and testing will be required.

PIPEMAKERS CANAL PHASE 2, SECTION 2
EMC PROJECT NO. 04-0449
BASE BID SCHEDULE

Base Bid: Reach 1 Sta. 311+43 to Sta. 363+36 Airport realignment and widening — Revised June 25, 2012

Division I. Canal Widening

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE
A. SITEWORK					
1	Mobilization (Less than 2% of Job)	1	LS		
2	Earthwork				
	2A. Excavation and Disposal	113,700	CY		
	2B. Select Fill In Place	12,000	CY		
3	Clearing and Grubbing	34	ACRES		
4	Demolition	1	LS		
				SUBTOTAL	
B. EROSION CONTROL					
5	Silt Fence	15,100	LF		
6	Rip Rap w/ Concrete	125	SY		
7	Construction Exits	2	EA		
8	Jute mesh	80,000	SY		
9	Grassing	126,000	SY		
10	8" Revetment liner for slope protection	300	SY		
11	Maintenance of Erosion Control	6	MONTH		
12	Deduction for non-conformance with sediment and erosion control requirements. This deduction shall be calculated based on the number of daily occurrences of non-compliance	0	EA	-$300.00	
				SUBTOTAL	
C. STORM DRAINAGE					
13	24" RCP	540	LF		
14	36" RCP	98	LF		
15	Roof Inlet	2	EA		
16	Ditch Inlet	7	EA		
17	24" Headwall	4	EA		
18	36" Headwall	1	EA		
19	Remove and Replace unsuitable material as directed by the Engineer	500	CY		
				SUBTOTAL	
D. MISCELLANEOUS ITEMS					
20	Place concrete slab and markers over relocated GA Power line near Sta. 347+50	1	LS		
21	Remove and Relocate existing gate near Sta. 360+75	1	EA		
22	Installation of Road Signs	3	EA		
23	6" Access road stone base with filter fabric	19,285	SY		
24	Geogrid (Tensar BX 1200)	52,000	SY		
25	Install Filter Fabric Under Access Road	27,000	SY		
26	Demucking as directed by the Engineer	18,135	CY		
27	Select Fill In Place as result of demucking as directed by engineer in item 27	18,135	CY		
28	Construction staking for the project. All construction staking must be performed under the direction of a land surveyor that is registered in the state of Georgia.	1	LS		
29	Special Conditions	1	LS		
				SUBTOTAL	
				TOTAL BASE BID	

PIPEMAKERS CANAL PHASE 2, SECTION 2 WIDENING
EMC PROJECT NO. 04-0449
ADD ALTERNATE 1 BID SCHEDULE

Add Alternate 1: Reach 2 Sta. 216+00 to Sta. 311+43 South\West side of canal — Revised June 25, 2012

Division I. Canal Widening

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE
A. SITEWORK					
1	Mobilization (Less than 2% of Job)	1	LS		
2	Earthwork				
	2A. Excavation and Disposal	107,250	CY		
	2B. Select Fill in Place	14,000	CY		
3	Clearing and Grubbing	17	ACRES		
4	Demolition	1	LS		
				SUBTOTAL	
B. EROSION CONTROL					
5	Silt Fence	20,000	LF		
6	Rip Rap w\Concrete	1,000	SY		
7	Construction Exits	2	EA		
8	Jute mesh	76,000	SY		
9	Grassing	76,000	SY		
10	Maintenance of Erosion Control	8	MONTH		
11	Deduction for non-conformance with sediment and erosion control requirements. This deduction shall be calculated based on the number of daily occurrences of non-compliance	0	EA	-$300.00	
				SUBTOTAL	
C. STORM DRAINAGE					
12	24" RCP	184	LF		
13	30" RCP	57	LF		
14	48" RCP	86	LF		
15	7'x5' Box Culvert	100	LF		
16	24" Headwall	5	EA		
17	48" Headwall	2	EA		
18	7'x5' Headwall (wingwalls, parapet, and apron)	4	EA		
19	30" Flared end Section	1	EA		
20	Remove and Replace unsuitable material as directed by the Engineer	1,000	CY		
				SUBTOTAL	
D. MISCELLANEOUS ITEMS					
21	Install rip rap over utility line crossings	1,250	SY		
22	Install new Fence Gate	1	EA		
23	6" Access road stone base with filter fabric	16,000	SY		
24	Geogrid (Tensar BX 1200)	32,000	SY		
25	Install Filter Fabric Under Access Road	24,000	SY		
26	Demucking as directed by the Engineer	16,500	CY		
27	Select Fill in Place as result of demucking as directed by engineer in item 27	16,500	CY		
28	Construction staking for the project. All construction staking must be performed under the direction of a land surveyor that is registered in the state of Georgia.	1	LS		
29	Construct Driveway Aprons at HWY 307	2	EA		
30	Install curb and gutter at HWY 307. Curb and gutter to match exisitng and be in accordance with GDOT standards.	50	LF		
31	Construct low water crossings at locations directed by engineer or owner	5	EA		
32	Special Conditions	1	LS		
				SUBTOTAL	

Add Alternate 1: Reach 2 Sta. 216+00 to Sta. 311+43 South\West side of canal Revised June 25, 2012

E. FORCE MAIN RELOCATION					
ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE
33	10" Ductile iron force main w\fittings	190	LF		
34	Air release valve in manhole	1	EA		
35	20" steel casing	100	LF		
36	Force main connection: Connect to existing force main as outlined in item 5 of addendum 2.	1	LS		
37	Remove and dispose of existing force main including pipe support structures and wooden piers	1	LS		
				SUBTOTAL	
				TOTAL ADD ALTERNATE 1	

PIPEMAKERS CANAL PHASE 2, SECTION 2 WIDENING
EMC PROJECT NO. 04-0449
ADD ALTERNATE 2 BID SCHEDULE

Add Alternate 2: Reach 3 Sta. 216+00 to Sta. 311+43 North\East side of canal — Revised June 25, 2012

Division I. Canal Widening

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE
A. SITEWORK					
1	Mobilization (Less than 2% of Job)	1	LS		
2	Earthwork				
	2A. Excavation and Disposal	40,750	CY		
	2B. Select Fill In Place	10,750	CY		
3	Clearing and Grubbing	17	ACRES		
4	Demolition	1	LS		
				SUBTOTAL	
B. EROSION CONTROL					
5	Silt Fence	19,100	LF		
6	Rip Rap w\Concrete	315	SY		
7	Construction Exits	2	EA		
8	Jute mesh	75,000	SY		
9	Grassing	75,000	SY		
10	Maintenance of Erosion Control	8	MONTH		
11	Deduction for non-conformance with sediment and erosion control requirements. This deduction shall be calculated based on the number of daily occurrences of non-compliance	0	EA	-$300.00	
				SUBTOTAL	
C. STORM DRAINAGE					
12	24" RCP	55	LF		
13	30" RCP	72	LF		
14	42" RCP	40	LF		
15	48" RCP	135	LF		
16	54" RCP	96	LF		
17	24" Flared end section	1	EA		
18	30" Headwall	2	EA		
19	42" Headwall	1	EA		
20	48" Headwall	3	EA		
21	54" Headwall	2	EA		
22	Remove and Replace unsuitable material as directed by the Engineer	500	CY		
				SUBTOTAL	
D. MISCELLANEOUS ITEMS					
23	Removal of Chain Link Fence	1,870	LF		
24	Install new Fence Gate	1	EA		
25	Install New Fence	530	LF		
26	6" Access road stone base with filter fabric	16,000	SY		
27	Geogrid (Tensar BX 1200)	32,000	SY		
28	Install Filter Fabric Under Access Road	24,000	SY		
29	Demucking as directed by the Engineer	16,500	CY		
30	Select Fill In Place as result of demucking as directed by engineer in item 28	16,500	CY		
31	Construction staking for the project. All construction staking must be performed under the direction of a land surveyor that is registered in the state of Georgia.	1	LS		
32	Construct Driveway Aprons at HWY 307	1	EA		
33	Install curb and gutter at HWY 307. Curb and gutter to match exisitng and be in accordance with GDOT standards.	50	LF		
34	Construct low water crossings at locations directed by engineer or owner	5	EA		
35	Special Conditions	1	LS		
				SUBTOTAL	
				TOTAL ADD ALTERNATE 2	

PIPEMAKERS CANAL PHASE 2, SECTION 2
EMC PROJECT NO. 04-0449
BID SUMMARY PAGE

BASE BID: REACH 1 _____

ADD ALTERNATE 1: REACH 2 _____

ADD ALTERNATE 2: REACH 3 _____

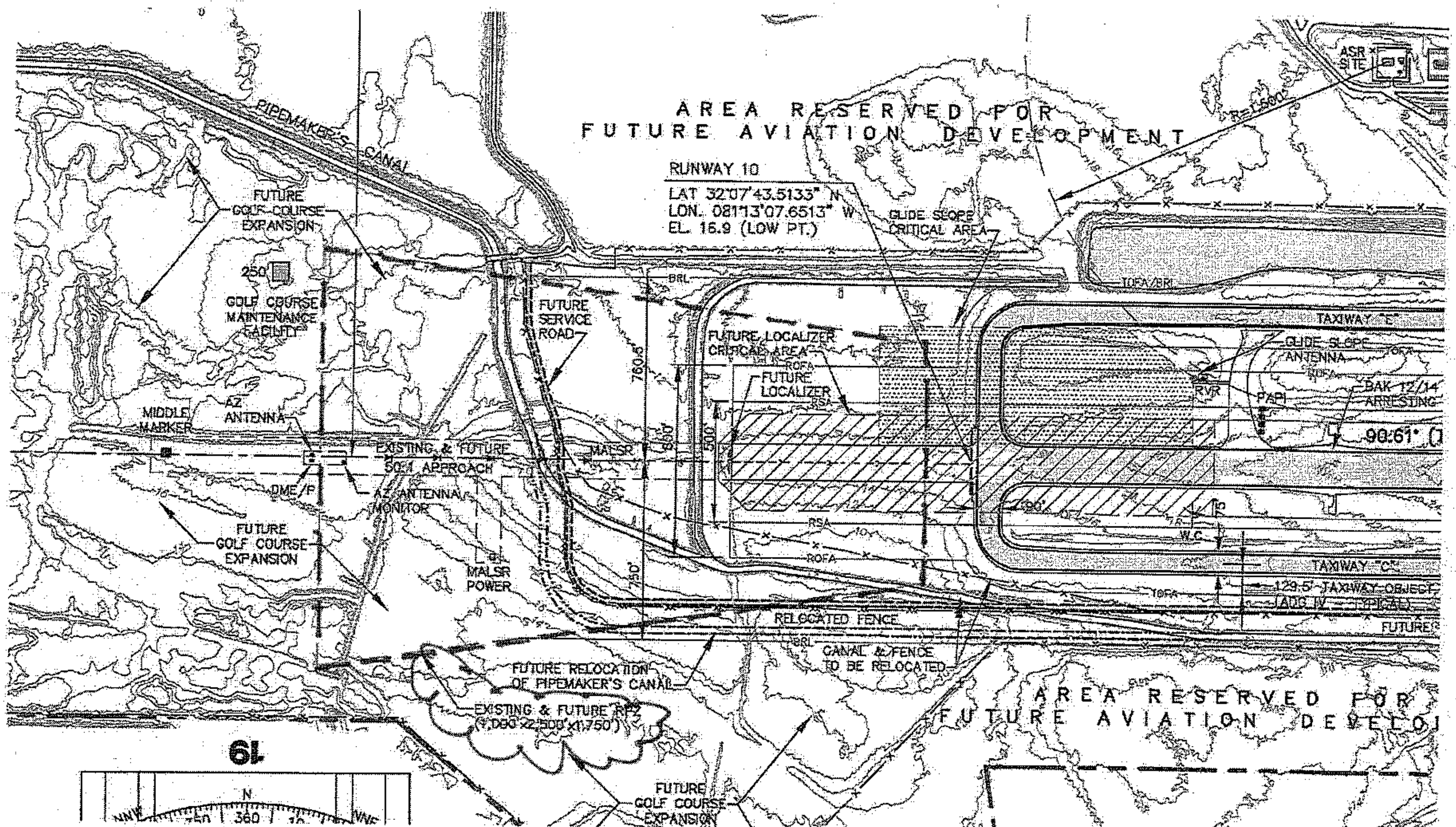
GRAND TOTAL _____

_____
NAME \ TITLE

_____
COMPANY

_____
ADDRESS

_____
PHONE\ \FAX NO'S


AREA RESERVED FOR
FUTURE AVIATION DEVELOPMENT
RUNWAY 10
LAT 32°07'43.5133" N
LON. 081°13'07.6513" W
EL. 16.9 (LOW PT.)
GLIDE SLOPE CRITICAL AREA
ASR SITE
PIPEMAKER'S CANAL
FUTURE GOLF COURSE EXPANSION
250
GOLF COURSE MAINTENANCE FACILITY
FUTURE SERVICE ROAD
760.5'
800'
500'
750'
FUTURE LOCALIZER CRITICAL AREA
FUTURE LOCALIZER
ROFA
RSA
MIDDLE MARKER
AZ ANTENNA
EXISTING & FUTURE 50:1 APPROACH
MALSR
DME/P
AZ ANTENNA MONITOR
MALSR POWER
TAXIWAY "E"
GLIDE SLOPE ANTENNA
RVR
PAPI
BAK 12/14 ARRESTING
TAXIWAY "C"
129.5' TAXIWAY OBJECT (ADG IV - TYPICAL)
W.C.
TOFA
TOFA/BRL
BRL
RELOCATED FENCE
CANAL & FENCE TO BE RELOCATED
FUTURE RELOCATION OF PIPEMAKER'S CANAL
EXISTING & FUTURE RPZ
19
N
360