AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 | 1

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0004	12-Jul-2004	W32CS532101277	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
USA ENGINEER DISTRICT, JACKSONVILLE PRUDENTIAL OFFICE BLDG 701 SAN MARCO BLVD ATTN: CESAJ-CT JACKSONVILLE FL 32207-8175	W912EP	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. W912EP-04-B-0008
	X	9B. DATED (SEE ITEM 11) 18-May-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [X] is extended, [ ] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Levee 74 North (Remainder), Structure 263, Structure 264, and Structure 256 Repairs, Central and Southern Florida Project, Upper St. John's River Basin, Brevard County, Florida

Any enclosures accompanying this amendment should be inserted in the plans and/or specifications as applicable. All superseded materials should be removed or adequately marked to indicate that they have been superseded.

BID OPENING DATE IS CHANGED FROM JULY 16, 2004 TO JULY 20, 2004. NO FURTHER QUESTIONS CONCERNING THIS SOLICITATION WILL BE ENTERTAINED. BIDDERS SHOULD BASE THEIR BIDS ON INFORMATION AS PROVIDED IN THE SOLICITATION AND AMENDMENTS 0001 THROUGH 0004.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 12-Jul-2004

SF 30 CONTINUATION SHEET

1. SPECIFICATIONS:

Lines where revisions have been made to the text on the enclosed revised or added pages or the text changes have been updated with additions noted with underlined text and deletions noted with line/cross-outs, and pertain only to changes made by this amendment.

The text changes may have necessitated reformatting of subsequent text or pages. If this is the case, those pages have also been issued as amended pages but are not marked with underlined text and line/cross-outs.

SECTION 00010A (LINE ITEMS AND PRICE SCHEDULE): Delete Section 00010A and replace with attached Revised Section 00010A.

SECTION 02331: (LEVEE CONSTRUCTION): Delete Section 02331 and replace with attached Revised Section 02331.

DESCRIPTION CHANGES TO SPECIFICATIONS:

SECTION 01270, paragraph 1.5.3: Change title of paragraph to read:

"Excavation – Trench; C2, Surplus Excavation; and Drainage Canal C-87 (Estimated Quantity) (Line Items 0003, 0004 and 0005))"

Change paragraph 1.5.3.2 Payment to read:

"Payment will be made for excavation and disposal of C-2 surplus material remaining after borrow for levee fill and includes full compensation for all equipment, labor, materials, and incidentals necessary to complete the work specified. No separate payment will be made for stockpiling."

2. DRAWINGS:

Delete Sheet 1/17 and replace with attached revised Sheet 1/17.

SECTION 00010A
LINE ITEMS AND PRICE SCHEDULE

LEVEE 74N (REMAINDER)
STRUCTURE 263, STRUCTURE 264 AND STRUCTURE 256 REPAIRS
CENTRAL AND SOUTHERN FLORIDA PROJECT
UPPER ST. JOHNS RIVER BASIN, FLORIDA

LINE ITEM	DESCRIPTION	QUANTITY	U/M	UNIT PRICE	TOTAL
0001	CLEARING AND GRUBBING (ESTIMATED QUANTITY)	110	AC	$_____	$_____
0002	LEVEE FILL (ESTIMATED QUANTITY)	304,200	CY	$_____	$_____
0003	EXCAVATION - TRENCH (ESTIMATED QUANTITY)	21,500	CY	$_____	$_____
0004	C2, SURPLUS EXCAVATION (ESTIMATED QUANTITY. SEE NOTE 4)	283,100	CY	$_____	$_____
0005	EXCAVATION - DRAINAGE CANAL C-87 (ESTIMATED QUANTITY)	28,400	CY	$_____	$_____
0006	STRUCTURE 256 REPAIRS	1	LUMP SUM		$_____
0007	S-263 CULVERTS IN C-2 CANAL	1	LUMP SUM		$_____
0008	S-264 CULVERTS IN C-86 CANAL	1	LUMP SUM		$_____
0009	GRASSING (ESTIMATED QUANTITY)	72	AC	$_____	$_____
	TOTAL BID (ITEMS 0001 THRU 0009)				$_____

NOTES:

1. BIDDER MUST PRICE ON ALL LINE ITEMS. SEE PROVISION AT 999.214-18 (SECTION 00100).

2. FAILURE TO COMPLETE AND RETURN ALL REQUIRED SUBMISSIONS (SF-1442, SECTION 00010A AND SECTION 00600, AND BID GUARANTEE) COULD RENDER YOUR BID NONRESPONSIVE. SEE PARAGRAPH 999.214-4018 (SECTION 00100).

3. SEE SECTION 00100, "INSTRUCTIONS TO OFFERORS/EVALUATION FACTORS FOR AWARD."

4. THIS QUANTITY IS THE NET DIFFERENCE BETWEEN THE TOTAL EXCAVATION REQUIRED AS SHOWN ON CROSS SECTIONS AND THE COMPACTED FILL. SEE PARAGRAPHS 1.5.3.1 AND 1.5.3.2 OF SECTION 01270 "MEASUREMENT AND PAYMENT"

U/M = UNIT MEASURE CY = CUBIC YARD AC = ACRE

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

02331

LEVEE CONSTRUCTION

-- End of Section Table of Contents --

02331

LEVEE CONSTRUCTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 422	(1963; R 1998) Particle-Size Analysis of Soils
ASTM D 698	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))
ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4253	(1993; R 1996) Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D 4254	(1991; R 1996) Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4643	(1993) Determination of Water (Moisture) Content of Soil by the Microwave Oven Method

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual
EM 1110-1-2909	(01 Aug 96; ch2 01 Jul 98) Geospatial Data and Systems

1.2 DEFINITIONS

1.2.1 Clearing

Clearing shall consist of the felling, trimming, cutting of trees into sections, removal and satisfactory disposal of all above ground and below ground trees and other vegetation, downed timber, snags, slash, brush, garbage, trash, debris, fencing, and other items occurring in the designated areas to be cleared.

1.2.2 Grubbing

Grubbing shall consist of the removal and satisfactory disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. Grubbing also includes filling of holes from the grubbing operation.

1.2.3 Stripping

Stripping shall consist of the removal and satisfactory disposal of crops, weeds, grass, and other vegetative materials from the ground surface to a depth of 6 inches.

1.2.4 Satisfactory Materials

1.2.4.1 Levee Fill

Satisfactory materials for levee fill shall consist of materials classified in accordance with ASTM D 2487 as CL, SC, and SM and shall be free from roots and other organic matter, contamination from hazardous, toxic or radiological substances, trash and debris.

1.2.4.2 Select Fill

Satisfactory materials for select fill shall consist of materials classified in accordance with ASTM D 2487 as SP and SW and shall be free from roots and other organic matter, contamination from hazardous, toxic or radiological substances, trash and debris.

1.2.4.3 Levee Key Fill

Satisfactory materials for levee key fill shall consist of materials classified in accordance with ASTM D 2487 as CL and SC and shall be free from roots and other organic matter, contamination from hazardous, toxic or

radiological substances, trash and debris.

1.2.5 Unsatisfactory Materials

Unsatisfactory materials shall not be used as fill material. Unsatisfactory materials include all other materials that are not defined above as satisfactory materials and rocks or boulders having a dimension greater than 4 inches in any direction.

1.2.6 Embankment

The terms "levee" or "embankment" as used in these specifications are defined as the earth fill portions of the levee structure, including the key trench below the levee structure.

1.2.7 Backfill

Backfill as used in this section is defined as that fill material which cannot be placed around or adjacent to a structure until the structure is completed or until a specified time interval has elapsed after completion.

1.2.8 Excavation

Excavation shall consist of removal of material to the lines and grades shown on the drawings, or as otherwise directed or approved by the Contracting Officer and as described in paragraph EXCAVATION in PART 3 EXECUTION.

1.2.9 Classification of Soils

Materials used to construct the embankment and for backfills shall be classified in accordance with ASTM D 2487 (Unified Soil Classification System).

1.2.9.1 Cohesionless and Cohesive Materials

Cohesionless materials shall include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

1.2.10 Degree of Compaction

1.2.10.1 Levee Fill and Levee Key Fill

Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698, abbreviated hereinafter as percent laboratory maximum density.

1.2.10.2 Select Fill

Degree of compaction shall be expressed as a percentage of the relative density in accordance with ASTM D 4253 and ASTM D 4254.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Excavation; G|COR

Submit a written excavation plan 30 days prior to the beginning of any excavation. Approval of the detailed plan shall be obtained from the Contracting Officer prior to starting the work. If necessary, the plan shall be modified as required to meet field conditions, and the modifications shall be approved prior to use. As a minimum, the plan shall contain, the following:

a. Proposed methods for preventing interference with, or damage to, existing underground or overhead utility lines, trees designated to remain and other man-made facilities or natural features designated to remain within or adjacent to the construction rights-of-way.

b. Provision for coordinating the work with other Contractors working in the construction rights-of-way or on facilities crossing or adjacent to this work.

c. The proposed methods for controlling surface and ground water in the borrow areas, levee key trench, and other required excavations.

d. Stockpiling plan for embankment material before it is transported to the project site showing locations, stockpile heights, slopes, limits, and drainage around the stockpile areas.

e. A complete listing of equipment used for excavation and to transport the excavated material.

f. The Contractor's proposed sequence of work for excavating the borrow areas.

g. The Contractor's proposed road pattern, and plan for implementing dust control measures.

Embankment and Backfill Construction; G|COR. Haul Roads; G|COR

Thirty (30) days prior to commencement of haul road construction or placing embankment and backfill which ever is earlier, the contractor shall submit for approval a Plan of Operations for accomplishing all embankment and backfill construction and for the location and construction of haul roads. This plan shall include but not be limited to the Contractor's proposed sequence of

construction for embankment and backfill items, and methods and types of equipment to be utilized for all embankment and backfill operations, including transporting, placing, and compaction. This plan shall also include the names and addresses of the commercial testing labs which will perform the soil testing and inspection and describe how all required soils testing will be performed.

SD-06 Test Reports

Compaction Control; G|COR

Compaction control test results shall be submitted every 30 calendar days. Reports shall be prepared in accordance with ASTM D 1556. Quality control test results shall be submitted within 2 calendar days after the completion of each test.

1.4 GENERAL CONDITIONS

1.4.1 Lines and Grades

The embankment and backfill shall be constructed to the lines, grades, and cross sections indicated on the drawings, unless otherwise directed by the Contracting Officer. The Government reserves the right to increase or decrease the foundation widths and embankment slopes or to make such other changes in the embankment or backfill sections as may be deemed necessary to produce a safe structure. Changes in quantities resulting from such revisions will not constitute justification for change in contract unit prices, except as provided for in the Variations in Estimated Quantities Clause. Increases in height of section, made to compensate for settlement or consolidation of the embankment material subsequent to the completion of the embankment, will not exceed 3 percent of the height above the foundation at the levee centerline indicated. The end slopes and side slopes of partial fill sections shall not be steeper than one vertical on 3 horizontal, unless otherwise shown on the drawings.

1.4.2 Conduct of the Work

The Contractor shall maintain and protect the embankment and backfill in a satisfactory condition at all times until final completion and acceptance of all work under the Contract. If, in the opinion of the Contracting Officer, the hauling equipment causes horizontal shear planes or slicken sides, rutting, quaking, heaving, cracking, or excessive deformation of the embankment or backfill, the Contractor shall limit the type, load, or travel speed of the hauling equipment on the embankment or backfill. The Contractor may be required to remove, at his own expense, any embankment material placed outside of prescribed slope lines. Any approved embankment or backfill material which is lost in transit or rendered unsuitable after being placed in the embankment or backfill and before final acceptance of the work shall be replaced by the Contractor in a satisfactory manner and no additional payment will be made therefor. The Contractor shall excavate and remove from the embankment or backfill any material which is unsatisfactory and shall also dispose of such material and refill the excavated area as directed, all at no cost to the Government.

1.4.3 Materials

Materials for embankment and backfill construction shall be obtained from the borrow sources indicated on the contract drawings. Materials obtained from required excavations which meet or which can be processed to meet the requirements for levee fill, or any other material required for this project, as specified herein, shall be utilized to the fullest extent possible. All roots, limbs, and wood fragments shall be removed from embankment materials. Materials containing sod, other organic or perishable material, trash, and debris shall not be used in the embankment.

1.4.4 Haul Roads

Haul roads shall be located and constructed within the project boundaries shown on the drawings. Prior to the commencement of construction the contractor shall submit for approval a site plan detailing the location of all haul roads within the project limits. Areas on each side of the borrow haul road corridor shall not be disturbed. Haul roads shall be constructed to maintain the intended traffic, be free draining, and be maintained in condition suitable for two-way passage of over-the-road hauling equipment throughout the contract period. Any haul road which crosses any creek or drainage channel shall be constructed, and maintained by the Contractor so as to not flood either upstream areas by restricting stream flows or flood downstream areas by the release of any stored water in the event that the crossing fails for any cause. Haul roads constructed during the contract duration shall be removed after work is completed and the impacted area restored to its preconstruction conditions.

1.4.5 Ramps and Crossings

Ramps and crossings shall be constructed by the Contractor as necessary for construction. Ramps and crossings shall be constructed only by adding material to the levee crown and slopes. Upon completion of work, ramps shall be removed.

1.4.6 Slides and Foundation Failures

When sliding occurs in any part of the embankment and backfills prescribed in this section after they have been placed, but prior to final acceptance of all work under the contract, the Contractor shall repair the slide as directed by the Contracting Officer. When the slide is caused through the fault of the Contractor, the repair shall be made at no cost to the Government. When the slide is not the fault of the Contractor, an equitable adjustment in the contract price shall be made pursuant to the Contract Clause CHANGES to cover the cost of the repairs.

1.4.7 Protection of Existing Man-Made Facilities and Natural Features

Embankment construction shall be conducted in such a manner as to avoid damage to trees left standing and trees outside the embankment areas, existing buildings, man-made facilities and natural features, with due regard to the safety of employees and others, and in compliance with EM 385-1-1.

1.4.8 Drainage

The Contractor shall not block or restrict the flow in a natural drain, existing culvert, ditch or channel at any time without obtaining prior written approval from the Contracting Officer. This approval shall not relieve the Contractor from responsibility for any damage caused by his operation. The Contractor shall monitor the canal flow and provide sufficient free discharge areas so that conditions are not worsened upstream or downstream by possible floods during construction. Surface water shall be directed away from excavations and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes, and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

1.5 PERMITS

In accordance with Contract Clause PERMITS AND RESPONSIBILITIES, the Contractor shall obtain all necessary permits required for disposal, hauling, erosion control, and burning, and pay all fees associated with permitting and compliance. The Contractor shall comply with the terms of these permits and with the requirements of Section 01355 ENVIRONMENTAL PROTECTION, and this section.

1.6 PROJECT SITE CONDITIONS

1.6.1 Protection of Cultural and Natural Resources

All work and Contractor operations shall comply with the requirements of Section 01355 ENVIRONMENTAL PROTECTION and with the requirements of this section.

1.6.2 Protection of Existing Man-Made Facilities and Natural Features

Trees within the clearing area shall be felled in such a manner as to avoid damage to trees left standing and trees outside the clearing area, existing buildings, man-made facilities and natural features, with due regard to the safety of employees and others, and in compliance with EM 385-1-1. Excavation shall be conducted in such a manner as to avoid damage to trees left standing and trees outside the clearing and excavation area, existing buildings, man-made facilities and natural features, with due regard to the safety of employees and others, and in compliance with EM 385-1-1. Existing utility lines that are shown on the drawings or the locations of which are made known to the Contractor prior to excavation and that are to be retained shall be protected from damage during excavation. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the applicable utility companies in sufficient time for measures to be taken to prevent interruption of the services.

1.6.3 Historical, Archeological, and Cultural Resources

Historical, archeological, and cultural resources within the Contractor's

work limits may exist. If, during construction activities, the Contractor observes items that may have historical or archeological value, such observations shall be reported immediately to the Contracting Officer so that appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent his employees from trespassing on or otherwise damaging such resources.

1.6.4 Subsurface Data

Subsurface soil boring logs are included in these specifications. Samples of the materials obtained from the subsurface investigations may be examined at the Corps of Engineers District Warehouse, 3077 Talleyrand Avenue, Jacksonville, FL, 32206. These data represent subsurface information at the boring locations; however, variations may exist in the subsurface between boring locations. Groundwater levels indicated on the soil boring logs were levels found at the time of exploration. The groundwater table can vary significantly depending on time of year, variation from normal precipitation, and river stage or tide level.

1.7 MERCHANTABLE TIMBER

Merchantable timber remaining within the areas to be cleared on or after the date of award of this contract may be disposed of as the Contractor sees fit, as long as such merchantable timber is either removed from the rights-of-way or is satisfactorily disposed of in accordance with the paragraph DISPOSITION OF CLEARED, GRUBBED, AND STRIPPED MATERIAL DISPOSITION OF EXCAVATED MATERIAL and the Contractor complies with all applicable State and local regulations and laws.

1.8 SEQUENCE OF WORK

1.8.1 Clearing and Grubbing

All clearing and grubbing work shall be completed in advance of embankment construction. In locations where work on drainage structures is performed prior to embankment construction, all clearing and grubbing shall be completed for the structure at least 50 feet on each side of the structure, measured along the levee centerline and 50 feet perpendicular to the structure. If regrowth of vegetation or trees occurs after clearing and grubbing and before placement of embankment, the Contractor will be required to clear and grub again prior to embankment construction.

PART 2 PRODUCTS

2.1 TYPES OF FILL MATERIALS

Select fill, levee fill, and levee key fill shall be obtained from the borrow site provided by the Government and from the required excavation. It should be noted that based on the subsurface investigations performed along the main north/south portion of the levee alignment, a layer of material classified by ASTM D 2487 as SP exists at or near the ground surface. This layer ranges in thickness from less than 1 foot to 7 feet.

As a result, the Contractor should expect that the borrow operations will have to be monitored very closely in order to ensure that this material IS NOT used as levee fill and levee key fill.

PART 3 EXECUTION

3.1 CLEARING

Clearing shall be accomplished within the limits of existing ground to receive embankment and structures, ponding areas, ditches, structures, traverses, channels, riprap, revetment, borrow areas and ramps. Trees, downed timber, snags, slash, brush, garbage, trash, debris, fencing and other items shall be cleared flush with the existing ground surface. Trees and vegetation designated to be left standing or to remain shall be protected from damage from construction operations. Clearing of borrow areas shall be limited to the minimum area required for construction operations.

3.2 GRUBBING

Grubbing shall be accomplished within the limits of existing ground to receive embankment and structures, ponding areas, ditches, structures, traverses, channels, riprap, revetment, borrow areas and ramps. Grubbing shall be accomplished to a depth of at least 1.5 feet below the existing ground surface.

3.3 DISPOSITION OF CLEARED, GRUBBED, AND STRIPPED MATERIAL

Except as otherwise specified or indicated on the drawings, all materials resulting from clearing and grubbing operations shall be transported to the designated areas in C-1 detention areas.

3.3.1 Chipping

All cut timber, down timber, dead timber, branches, and brush may be chipped. The chips shall be hauled to locations approved by the Contracting Officer or removed from site of work.

3.3.2 Removal from Site of Work

The Contractor may elect to remove all or part of the cleared and grubbed materials from the site of the work in accordance with Section 01355 ENVIRONMENTAL PROTECTION. The Contractor shall, at his option, either retain any such materials of value for his own use or dispose of them by sale or otherwise. The Government is not responsible for the protection and safekeeping of any materials retained by the Contractor. Such materials shall be removed from the site of the work before the date of completion of the work.

3.4 DEWATERING AND DIVERSION

Surface and groundwater control shall be accomplished in coordination with the levee key excavation and embankment construction. Surface and/or groundwater control may necessitate the use of temporary diversion ditches,

cofferdams and/or dewatering by the use of pumping. Methods for care of surface water and for controlling the surface and groundwater levels shall be subject to approval of the Contracting Officer. Prior to the placement of any levee fill within the embankment footprint, the levee key excavation along the embankment centerline (from Station 0+00 to Station 165+20) shall be completely dewatered. Once the levee key excavation has been dewatered, fill placement operations may proceed (to grade) with suitable levee key fill material. The elevation of the groundwater table shall be maintained at a point of one foot below the bottom elevation of the required excavation until the backfilling operations have reached the surrounding grade.

3.5 EXCAVATION

Excavation shall consist of removal of material in preparing the foundations to the lines and grades shown on the drawings, removal of material from ditches and channels to the lines and grades shown on the drawings, removal of objectionable materials and obtaining required fill materials from the borrow areas. Blasting will not be permitted. Excluding the C-2 borrow canal, ~~O~~over excavation shall be backfilled to grade with similar over excavated material or satisfactory material and compacted to a density of at least that of the surrounding material.

3.5.1 Over Excavation

3.5.1.1 Outside Limits of Levee Foundation~~s~~ or Structures

Over excavation will ~~not be permitted~~be at Contractor's expense.

3.5.1.2 Within Limits of Levee Foundations or Structures

Over excavation will ~~not~~ be ~~permitted~~at Contractor's expense.

3.5.2 Structures

Excavations for structures shall conform to the dimensions and elevations indicated for each structure. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Satisfactory material removed below the depths indicated without specific direction of the Contracting Officer shall be replaced at no additional cost to the Government and filled in accordance with paragraph OVER EXCAVATION above.

3.5.3 Slopes and Surcharges

Temporary excavation slopes for any channel, structure excavation, or other required excavation shall not be steeper than the specified finished slope or the specified construction slope, as applicable, and subject to the approval of the Contracting Officer. This may be accomplished by benching the temporary slope so that the average slope is not steeper than the specified slope. In addition, no temporary, permanent, or construction slope shall be surcharged with excavated or stockpiled material or with heavy construction equipment which would have the same effect as the surcharge material. The toe of stockpiled material shall be maintained a

minimum distance back from the top of the finished excavation equal to the depth of the excavation. The maximum height of such stockpile without causing instability of the excavation slope shall be determined by the Contractor. Any slide or other adverse conditions caused by failure of the Contractor to maintain these conditions shall be considered the responsibility of the Contractor and remedial measures shall be at the Contractor's expense.

3.5.4 Borrow Areas

Borrow areas shall be excavated to the extent necessary to obtain satisfactory material within the lines and grades as shown on the drawings. The permissible depth in the borrow areas are indicated on the drawings. Borrow areas shall be drained and kept dry during excavation.

3.5.5 Drainage Canal/Ditch Crossings

Wherever the levee alignment crosses an existing drainage canal/ditch (levee stations 24+90, 131+52, 157+30, 183+70, 219+40 and 245+80), the existing ground between these canal banks shall be excavated to a depth of 2 feet for the width of the projected levee base. The material removed from these excavations shall be transported to and disposed of in the designated disposal area. Each excavation shall be performed in the dry. As a result, temporary canal plugs may be required to facilitate the dewatering of that portion of the projected levee base requiring this excavation. Unless otherwise directed, each excavation shall be filled to grade with levee fill material. The fill shall be placed in layers, moistened and compacted in accordance with the applicable provisions of paragraphs PLACEMENT, MOISTURE CONTROL and COMPACTION contained in this section.

3.6 TOLERANCES

3.6.1 Excavation Tolerances

At all points along the bottom and slopes, a tolerance of 6 inches below the lines and grade shown on the contract drawings will be permitted in the final dressing. No points along the excavated surface shall be above or more than 6 inches below the indicated lines and grades. Refer to Section 01270 MEASUREMENT AND PAYMENT for payment limits.

3.6.2 Fill Tolerances

At all points along the crest and slopes, a tolerance of six inches above the lines and grades shown on the contract drawings will be permitted in the final dressing, provided that any excess material is distributed so that the crown drains freely, and there are no abrupt bumps or depressions in the surface or bulges in the width of the crown. No points along the fill surface shall be below the indicated lines and grades. The material placed within these lines and grades does not include topsoil when it is required. Refer to Section 01270 MEASUREMENT AND PAYMENT for payment limits.

3.7 SLIDES

In case sliding occurs in any part of the excavations prescribed in this section after they have been excavated, but prior to final acceptance of all work under the contract, the Contractor shall repair the slide as directed by the Contracting Officer. In case the slide is caused through the fault of the Contractor, it shall be repaired at no cost to the Government. In case the slide is due to no fault of the Contractor, an equitable adjustment in the contract price will be made for the repairs in accordance with the Contract Clause CHANGES.

3.8 SURFACE DRAINAGE OF COMPLETED AREAS

The areas shown on the drawings designated as "GRADE FOR SURFACE DRAINAGE", the borrow areas, and the finished embankment areas shall be graded to the lines and grades shown on the drawings. The surface shall be free from sharp ridges, gullies, potholes, sinkholes, and any other surface irregularities. A tolerance of 0 inches below and 6 inches above the prescribed grade will be allowed provided that the surface drains in the direction as indicated on the drawings.

3.9 MAINTENANCE OF WORK

The Contractor shall maintain all ditch and channel excavations free from leaves, brush, sticks, trash, and other debris until final acceptance of all work under the contract at no additional cost to the Government.

3.10 DISPOSITION OF EXCAVATED MATERIALS

3.10.1 Satisfactory Materials

Satisfactory excavated material shall be incorporated into the embankment as specified. Satisfactory material shall consist of material as defined in paragraph DEFINITIONS, subparagraph SATISFACTORY MATERIALS. When direct placement is not practicable, satisfactory material from the excavation may be stockpiled for subsequent use in parts of the work for which it is specified herein and/or as indicated on the drawings. Satisfactory materials in excess of the quantity necessary to construct backfills and embankments may be sold by the Contractor for profit or disposed of as specified for unsatisfactory materials.

3.10.2 Unsatisfactory Materials

Unsatisfactory materials shall be as defined in paragraph DEFINITIONS, subparagraph UNSATISFACTORY MATERIALS. Unsatisfactory materials from the excavations prescribed in this section shall be permanently disposed of by placing in the disposal area shown on the drawings. The material shall be shaped so that its surface is free from abrupt changes in grade and shall be sloped to drain.

3.11 PREPARATION OF FOUNDATION, PARTIAL FILL SURFACES AND ABUTMENTS

3.11.1 Earth

After grubbing operations have been performed within the limits of the

embankment footprint, the sides of stump holes and other similar cavities or depressions shall be broken down so as to flatten out the slopes, and the sides of the cut or hole shall be scarified to provide bond between the foundation material and the fill. (The slopes and bottom of the required excavation within the limits of the embankment footprint shall be scarified also.) Unless otherwise directed, each depression shall be filled with the same material type that is to be placed immediately above the foundation. The fill shall be placed in layers, moistened, and compacted in accordance with the applicable provisions of paragraphs PLACEMENT, MOISTURE CONTROL, and COMPACTION for the material type. Materials which cannot be compacted by roller equipment because of inadequate clearances shall be compacted with power tampers in accordance with the paragraph COMPACTION for the specific material type. After filling any depressions and the required excavation and immediately prior to placement of compacted fill in any section of the embankment, the foundation of such section shall be loosened thoroughly by scarifying, plowing, discing or harrowing to a minimum depth of 4 inches, and the moisture content shall be adjusted to the amount specified in paragraph MOISTURE CONTROL for the appropriate type of material. Immediately prior to placement of compacted fill on or against the surfaces of any partial fill section, all soft or loose material, and all material containing cracks or gullies, shall be removed. The remaining surface of the partial fill shall be loosened by scarifying, plowing, discing or harrowing to a minimum depth of 4 inches, and the moisture content shall be adjusted as specified in paragraph MOISTURE CONTROL for the appropriate type of material. The surface of the partial fill section upon which fill is to be placed shall then be compacted as hereinafter specified for the appropriate type of fill. No separate payment will be made for loosening and rolling the foundation area or the surfaces of partial fill sections, but the entire cost thereof shall be included in the applicable contract price for fill.

3.11.2 Settlement of Foundation

Settlement of the embankment due to soft foundation soils is expected from Station 255+00 to the end of the job. As a result, the Contractor shall perform core borings to determine the magnitude of the settlement along the levee centerline after the final lift of levee fill has been placed. One core boring shall be taken along the levee centerline at the following stations: 255+00, 260+00, 265+00 and 270+00. These stations shall constitute the settlement measurement stations for the purpose of determining the magnitude of settlement within these limits. The core borings shall be performed within 72 hours after the final cross sections have been taken over the completed levee from station 255+00 to the end of the job. The Contracting Officer must be notified in advance of the drilling operations so that a field representative may observe the drilling.

3.12 PLACEMENT AND SPREADING

3.12.1 General

Prior to beginning embankment placement on the levee foundation the Contractor shall notify the Government that the foundation is ready to receive fill. No fill shall be placed on any part of the embankment foundation until such areas have been inspected and given final approval by

the Contracting Officer.

3.12.1.1 Gradation and Distribution

The gradation and distribution of materials throughout the levee template shall be such that the embankment will be free from lenses, pockets, streaks, and layers of material differing substantially in texture or gradation from surrounding material of the same class. If lenses, pockets, or layers of materials differing substantially in texture or gradation from surrounding material occur in the spread material, the layer shall be mixed by harrowing or any other approved method to blend the materials. During the placing and spreading process, the Contractor shall maintain at all times a force of workers adequate to remove all roots, debris, and oversize stone from all embankment materials. All stones and rock fragments larger than 4 inches in any dimension shall be removed from the fill.

3.12.1.2 Equipment Traffic

Equipment traffic on any embankment zone shall be routed to distribute the compactive effort as much as practicable. Ruts formed in the surface of any layer of spread material will be filled before that material is compacted. If, in the opinion of the Contracting officer, the compacted surface of any layer of material is too smooth to bond properly with the succeeding layer, the surface shall be loosened by scarifying or other approved methods before material from the succeeding layer is placed.

3.12.2 Placement of Embankment and Backfill Against Structures

No embankment or backfill shall be placed on or against concrete less than 7 days after placement or 70 percent of the design strength, without prior approval of the Contracting Officer. Crawler-type tractors, vibratory equipment and other similar compaction equipment shall not be used within 4 feet of any completed or partially completed structure. Compaction within 4 feet of completed or partially completed structures shall be accomplished by the use of mechanical hand tampers, vibrating plates, or other approved methods and equipment. The Contractor shall ensure that compaction operations do not damage any existing utilities. Any damage caused by the Contractor's operation shall be repaired at the Contractor's expense.

3.12.3 Fill Placement in Inundated Areas (Station 246+00 to the End of Job)

In inundated areas, lift thickness control and compaction shall begin as soon as sufficient material has been placed above the water surface to bridge the underlying soft zone. This should occur at a height of 2 to 3 feet above the water surface. In these areas (station 246+00 to the end of job), select fill material shall be used until sufficient material has been placed to safely support tracked compaction equipment.

3.12.4 Fill Placement in Areas Where Peat Exists

An initial lift 2 feet thick shall be placed over the peat. This lift shall be spread evenly and compacted to the extent necessary to support the Contractor's equipment. The Contractor should be aware that equipment with low contact pressure may be required to accomplish this portion of the

work. Lift thickness and compaction control shall begin above the 2-foot level. This operation will displace some of the peat material. As fill placement continues, a wave of displaced peat material may form in front of the levee. This wave of peat shall be removed during the advancement of the levee to prevent overrunning the material within the wave with fill material. This peat material shall be removed and disposed of within the limits of the indicated disposal area.

3.12.5 Select Fill, Levee Fill, and Levee Key Fill

All fill material shall be placed and spread in layers not more than 8 inches in uncompacted thickness, except that within 4 feet of a structure, the uncompacted layer thickness shall be reduced to 6 inches. Layers should be started full out to the slope stakes and shall be carried substantially horizontal and parallel to the levee centerline with sufficient crown or slope to provide satisfactory drainage during construction.

3.13 MOISTURE CONTROL

3.13.1 General

The materials in each layer of the fill shall contain the amount of moisture, within the limits specified below or as directed by the Contracting Officer, necessary to obtain the required compaction. Material that is not within the specified moisture content limits after compaction shall be reworked to obtain the specified moisture content, regardless of density. It should be noted that most of the in-situ material to be removed for levee fill (from the borrow area) will contain a natural moisture content in excess of the optimum moisture contents indicated in these specifications. As a result, the Contractor should expect that extra effort and time will be required (discing, harrowing, etc.) in lowering the moisture content of the excavated suitable material prior to compaction.

3.13.1.1 Insufficient Moisture for Suitable Bond

If the top or contact surfaces of a partial fill section become too dry to permit suitable bond between these surfaces and the additional fill to be placed thereon, the Contractor shall loosen the dried materials by scarifying or discing to such depths as may be directed by the Contracting Officer, shall dampen the loosened material to an acceptable moisture content, and shall compact this layer in accordance with the applicable requirements of paragraph COMPACTION.

3.13.1.2 Excessive Moisture for Suitable Bond

If the top or contact surfaces of a partial fill section become too wet to permit suitable bond between these surfaces and the additional fill to be placed thereon, the wet material shall be scarified and permitted to dry, assisted by discing or harrowing, if necessary, to such depths as may be directed by the contracting officer. The material shall be dried to an acceptable moisture content, and shall be compacted in accordance with the applicable requirements of paragraph COMPACTION.

3.13.1.3 Drying Wet Material

Material that is too wet shall be spread on the embankment and permitted to dry by discing or harrowing, if necessary, until the moisture content is reduced to an amount within the specified limits.

3.13.1.4 Increasing Moisture in Dry Material

The moisture content of material that is too dry should be adjusted on the levee embankment. The Contractor will add water to the fill material and by harrowing, or other approved methods, work the moisture into the material until a uniform distribution of moisture within the specified limits is obtained. Water applied on a layer of fill on the levee embankment shall be accurately controlled in amount so that free water will not appear on the surface during or subsequent to rolling. Should too much water be added to any part of the embankment, the rolling on that section of the embankment shall be delayed until the moisture content of the materials is reduced to an amount within the specified limits. If it is impracticable to obtain the specified moisture content by wetting or drying the material on the fill, the Contractor may be required to pre-wet or dry back the material at the source of excavation or in the borrow area.

3.13.2 Select Fill

The moisture content after compaction shall be within the limits of 2 percentage points above optimum to 3 percentage points below optimum moisture content as determined by ASTM D 698.

3.13.3 Levee Fill and Levee Key Fill

The moisture content after compaction shall be within the limits of 2.5 percentage points above optimum to 3.5 percentage points below optimum moisture content as determined by ASTM D 698.

3.14 COMPACTION

3.14.1 Compaction Equipment

Compaction equipment shall conform to the following requirements and shall be used as prescribed in subsequent paragraphs.

3.14.1.1 Tamping Rollers

Tamping rollers shall be as follows:

a. Towed-Tamping rollers shall consist of a heavy duty double drum unit, with a drum diameter not less than 60 inches, and an individual drum length of not less than 60 inches. The drums shall be capable of being ballasted with water or a combination of sand and water. Each drum shall have staggered feet uniformly spaced over the cylindrical surface such as to provide approximately three tamping feet for each two square feet of drum surface. The tamping feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller and shall have a face area of not less than 5 square inches nor more

than 7 square inches. The roller shall be equipped with cleaning fingers, so designed and attached as to prevent the accumulation of material between the tamping feet, and these cleaning fingers shall be maintained at their full length throughout the periods of use of the roller. The weight of the roller shall not be less than 3500 pounds per foot of linear drum length weighted, and shall not be more than 2000 pounds per foot of drum length empty. The two drums comprising one roller unit shall be yoked such that they will oscillate when traversing uneven surfaces. The design and operation of the tamping roller shall be subject to the approval of the Contracting Officer who shall have the right at any time during the prosecution of the work to direct such repairs to the tamping feet, minor alterations in the roller and variations in the weight as may be found necessary to secure optimum compaction of the earth fill materials. The Contractor may be required to add ballast to the roller to the maximum capacity specified by the manufacturer of the roller. The roller shall be drawn by a crawler-type or a rubber-tired tractor at a speed not to exceed 3.5 miles per hour. The use of the rubber-tired tractor shall be discontinued if the tires leave ruts that prevent uniform compaction by the tamping roller. If tamping rollers are used in tandem, not more than two rollers in tandem will be permitted and in such case, one trip of the tandem rollers over any surface will be considered as two passes. When tamping rollers are used in tandem, the tamper foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the mid-point of the circumferential rows on the forward drums.

b. Self-propelled - Self-propelled tamping rollers may be used in lieu of tractor drawn tamping rollers provided the foot pressure on the tamping feet of the self-propelled roller are approximately the same as the foot pressure on the towed roller. For self-propelled rollers steered with rubber-tired wheels, the tire pressure shall not exceed 40 pounds per square inch. Self-propelled rollers shall be operated at speeds not exceeding 3.5 miles per hour. The Contracting Officer has the authority to limit or eliminate the use of self-propelled rollers if they are found to cause shearing or laminations of the compacted fill.

3.14.1.2 Rubber-tired Rollers

Rubber-tired rollers shall have a minimum of four wheels equipped with pneumatic tires. The tires shall be of such size and ply as to be capable of being operated at tire pressures between 80 and 100 pounds per square inch at an 25,000 pound wheel load. The roller wheels shall be located abreast and so designed that each wheel will carry approximately equal load in traversing uneven ground. The spacing of the wheels shall be such that the distance between the nearest edges of adjacent tires will not be greater than 50 percent of the rated tire width of a single tire at the operating pressure for an 25,000 pound wheel load. The roller shall be provided with a body suitable for ballast loading such that the load per wheel may be varied, as directed by the Contracting Officer, from 18,000 to 25,000 pounds. The roller shall be towed at a speed not to exceed 5 miles per hour. The character and efficiency of this equipment shall be subject to the approval of the Contracting Officer.

3.14.1.3 Hand Operated Compactors

Compaction of material, in areas where it is impracticable to use a roller or tractor compaction shall be performed by the use of approved hand operated power compactors.

a. Power Tampers: Power tampers shall be hand operated equipment capable of compacting material in confined areas. The compactors shall be either an internal combustion or pneumatic activated tamper. Tampers shall have sufficient weight and striking power to produce the specified compaction. The character and efficiency of this equipment shall be subject to the approval of the Contracting Officer.

b. Vibratory Plate Compactor: Vibratory compactors operated by hand in confined areas shall utilize the oscillating cam principal and shall deliver an impact of not less than 2000 pounds at a rate of approximately 2000 impulses per minute. The character and efficiency of this equipment shall be subject to the approval of the Contracting Officer.

3.14.1.4 Crawler-type Tractors

Crawler-type tractors used for spreading or compaction shall weigh not less than 20,000 pounds, shall exert a unit tread pressure of not less than 6 pounds per square inch, and shall not be operated at a speed to exceed 3.5 miles per hour.

3.14.1.5 Sprinkling Equipment

Sprinkling equipment shall consist of tank trucks, pressure distributors or other equipment designed to apply water uniformly and in controlled quantities to variable width of surface.

3.14.1.6 Miscellaneous Equipment

Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders, and other equipment shall be suitable for use in embankment construction and approved by the Contracting Officer. Equipment used for blending fill material shall be capable of penetrating the full loose lift thickness of the specific material type.

3.14.2 Compaction of Levee Fill and Levee Key Fill

After a layer of material has been dumped and spread, it shall be harrowed to break up and blend the fill materials and to obtain uniform moisture distribution. Harrowing shall be performed with a heavy disk plow, or other approved harrow, to the full depth of the layer. When the moisture content and the condition of the layer are satisfactory, the lift shall be compacted to a minimum of 95 percent of the maximum dry density as determined by the Contractor in accordance with ASTM D 698. In areas which are not accessible by roller, the fill shall be placed in layers not more than 4 inches in uncompacted depth and compacted with an approved hand operated compactor to a density equal to that obtained in other areas which

are accessible to rollers. Dumping, spreading, sprinkling, and compacting may be performed at the same time at different points along a section when there is sufficient area to permit these operations to proceed simultaneously. Compaction equipment shall be operated such that the strip being traversed by the roller shall overlap the rolled adjacent strip by not less than 3 feet.

3.14.3 Compaction of Select Fill

After a layer of material has been dumped and spread, it shall be harrowed to break up and blend the fill materials and to obtain uniform moisture distribution. Harrowing shall be performed with a heavy disk plow, or other approved harrow, to the full depth of the layer. When the moisture content and the condition of the layer are satisfactory, the lift shall be compacted to a minimum of 95 percent of hte maximum dry density as determined by the Contractor in accordance with ASTM D 4253 and ASTM D 4254. In areas which are not accessible by roller, the fill shall be placed in layers not more than 4 inches in uncompacted depth and compacted with an approved hand-operated compactor to a density equal to that obtained in other areas which are accessible to rollers. Dumping, spreading, sprinkling, and compacting may be performed at the same time at different point along a section when there is sufficient area to permit these operations to proceed simultaneously. Compaction equipment shall be operated such that the strip being traversed by ther oller shall overlap the rolled adjacent strip by not less than 3 feet.

3.14.4 Compaction Adjacent to Structures and Utilities

Heavy equipment for spreading and compacting fill shall not be operated within 4 feet of structures or utilities, except as otherwise specified herein. Material within 4 feet shall be compacted using appropriate hand operated compactors specified herein.

3.15 FIELD QUALITY CONTROL

3.15.1 Clearing, Grubbing, and Stripping

The Contractor shall establish and maintain quality control for clearing, grubbing, and stripping operations to assure compliance with contract requirements, and maintain records of the quality control for all construction operations including but not limited to the items indicated below. These records, as well as the records of corrective actions taken, shall be furnished to the Government in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

3.15.1.1 Clearing

Station to station limits, transverse clearing limits from applicable centerline; percentage of area complete; types of materials cleared.

3.15.1.2 Grubbing

Station to station limits, transverse grubbing limits from applicable centerline; percentage of area complete; type of material; filling of

grubbed holes.

3.15.1.3 Stripping

Station to station limits, transverse stripping limits from applicable centerline; percentage of area complete; type of material; depth of stripping.

3.15.2 Excavation

The Contractor shall establish and maintain quality control for excavation operations to assure compliance with contract requirements, and maintain records of the Contractor's quality control for all construction operations including but not limited to the following:

a. Lines, grades and tolerances,

b. Segregation of materials,

c. Disposal and/or stockpiling of materials,

d. Unsatisfactory materials,

e. Conditions that may induce seepage or weaken the foundation or embankment,

f. Stability of excavations.

Records of inspections and tests, as well as the records of corrective actions taken, shall be furnished to the Government in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

3.15.3 Embankment

3.15.3.1 General

The Contractor shall establish and maintain field quality control for the foundation preparation and embankment and backfill operations to assure compliance with contract requirements and maintain detailed records of field quality control for all operations including but not limited to the following:

a. Earthwork Equipment. Type, size, number of units and suitability for construction of the prescribed work.

b. Foundation Preparation. Methods of preparing the foundations in advance of embankment and backfill construction and methods for providing drainage of the foundation and partially completed fills.

3.15.3.2 Materials Testing

The contractor shall perform sufficient testing to insure that the fill is being constructed as specified. The testing program specified below shall be considered the minimum acceptable frequency of testing. This does not

relieve the Contractor from the responsibility of performing additional testing, if required to ensure compliance with these specifications.

a. Soil Classification Tests. Soil classification tests shall be performed in accordance with ASTM D 2487. One initial classification test shall be required for each different classification of material to be utilized as embankment fill or backfill. As prescribed in ASTM D 2487, grain size analyses in accordance with ASTM D 422 and Atterberg limits in accordance with ASTM D 4318 shall be performed on each different classification. The Contractor shall submit additional tests for every 5,000 cubic yards of embankment or backfill material.

b. Embankment Material Testing.

(1) Moisture Density Relationships. The moisture-density relations for each different classification of cohesive material utilized shall be determined in accordance with ASTM D 698. Prior to placing any fill material containing cohesive material, a minimum of 5 five-point standard compaction tests shall be performed on representative samples of the material to be used as fill. During fill placement a minimum of one additional moisture-density test shall be performed for every 7,500 cubic yards placed. Additional tests will be required each time a new material is encountered. The moisture-density curves will be compiled to form a family of curves which will be utilized to estimate optimum properties (maximum dry density and optimum moisture content) to be used with field density test.

(2) Water (Moisture) Content Tests. Determination of water content shall be performed in accordance with ASTM D 2216. ASTM D 4643 may be used when rapid moisture content results are needed. All rapid results obtained by ASTM D 4643 shall be confirmed by a test on a duplicate sample performed in accordance with ASTM D 2216. In the event of disagreement between the results, ASTM D 2216 shall govern. One water content test will be performed for each 5,000 cubic yards of material placed. These tests will be in addition to the water content tests performed in conjunction with in-place density tests. Backfill and fills not meeting the required specifications for water content shall be retested after corrective measures have been applied.

(3) In-place Density Testing for Cohesive Materials. The in-place density of the cohesive materials shall be determined in accordance with ASTM D 1556 and ASTM D 2167. At least one (1) in-place density test shall be performed on every 5,000 cubic yards of completed fill with the horizontal locations randomly staggered in the fill. For use with the family of curves to determine the optimum properties of the material, a three-point compaction test shall be performed in conjunction with each in-place density. A portion of the soil from the in-place field density test location shall be used for a three-point compaction test. The minus 3/4-inch portion of the soil shall be subjected to compactive effort using a 6-inch compaction mold in accordance with the procedures presented in ASTM D 698. Fill not meeting the

required specifications for in-place density shall be retested after additional compaction has been completed.

c. Cohesionless Material Testing

(1) Compaction Tests. The Contractor shall run not less than one relative density test for every 4,000 cubic yards of cohesionless fill in accordance with ASTM D 4253 and ASTM D 4254.

(2) In-Place Density Tests. The in-place density of the cohesionless materials shall be determined in accordance with ASTM D 1556. The Contractor shall run not less than one (1) field in-place density test on each lift of material or every 7,500 cubic yards of completed embankment fill or backfill, whichever is less. Horizontal locations shall be randomly staggered in the fill.

d. Additional Testing. The Contracting Officer may request additional tests if there is reason to doubt the adequacy of the compaction, or special compaction procedures are being used, or materials change or if the Contracting Officer determines that the Contractor's testing is inadequate or the Contractor is concentrating backfill and fill operations in a relatively small area.

3.15.3.3 Materials

Suitability of materials for use in embankment and backfill.

3.15.3.4 Fill Placement

Layout, maintaining existing drainage, moisture control, thickness of layers, removal of oversized material, spreading and compaction for embankment and backfill.

3.15.3.5 Grade and Cross Section

Surveys to verify that the dimensions, slopes, lines and grades conform to those shown on the drawings. Surveys to locate core boring locations and elevations to determine foundation settlement.

3.15.3.6 Testing by the Government

During the life of this contract, the Government will perform quality assurance tests.

3.15.3.7 Reporting

On a daily basis, the Contractor shall furnish the inspection records and all material testing results, the quantity of fill placed, as well as the records of corrective action taken, in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

3.16 SURVEYS

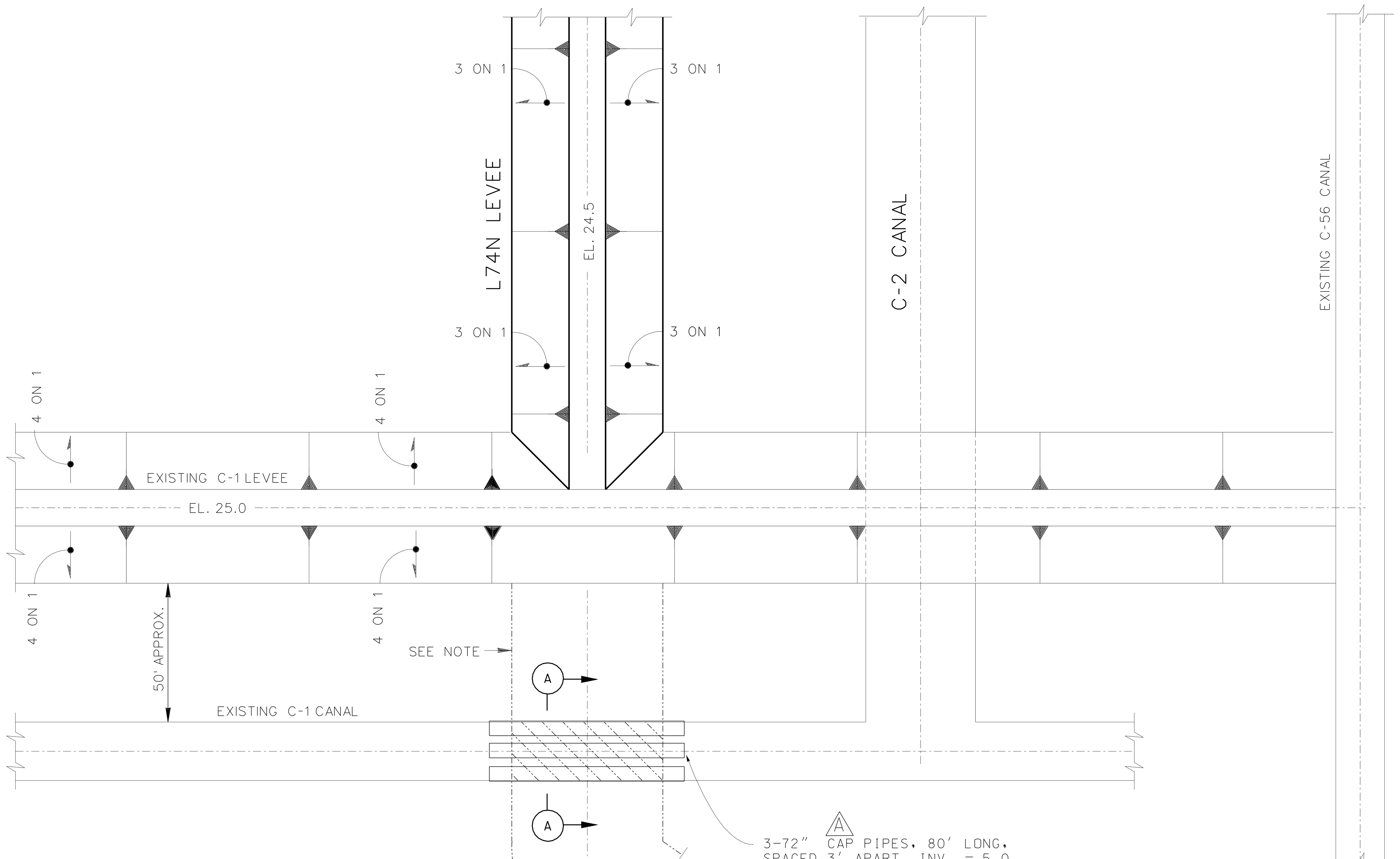
3.16.1 Government Surveys

Surveys will be performed in accordance with the paragraph QUANTITY SURVEYS of Section 00800 and EM 1110-1-2909. The original and final surveys will begin within 48 hours after the Contracting Officer is notified that the Contractor requires the survey. Request original survey after clearing and foundation preparation is complete. Request final survey 30 days prior to final inspections. Cross sections will be taken at every 100-foot station, using 20-foot ranges. When unusual site or geographic conditions exist, additional stations, ranges, and elevations will be taken for greater definition and accuracy. The final survey will be taken at the same stations that were used for the original survey.

3.16.2 Contractor Surveys

Notify the Contracting Officer 48 hours in advance of each intent to perform progress payment surveys. Surveys shall be performed in accordance with the paragraph QUANTITY SURVEYS of Section 00800, EM 1110-1-2909 (Chapter 11), paragraph LAYOUT OF WORK of Section 01110 SUMMARY OF WORK, and Section 01451 CONTRACTOR QUALITY CONTROL. Perform progress payment surveys at the same stations that were used for the original survey.

-- End of Section --



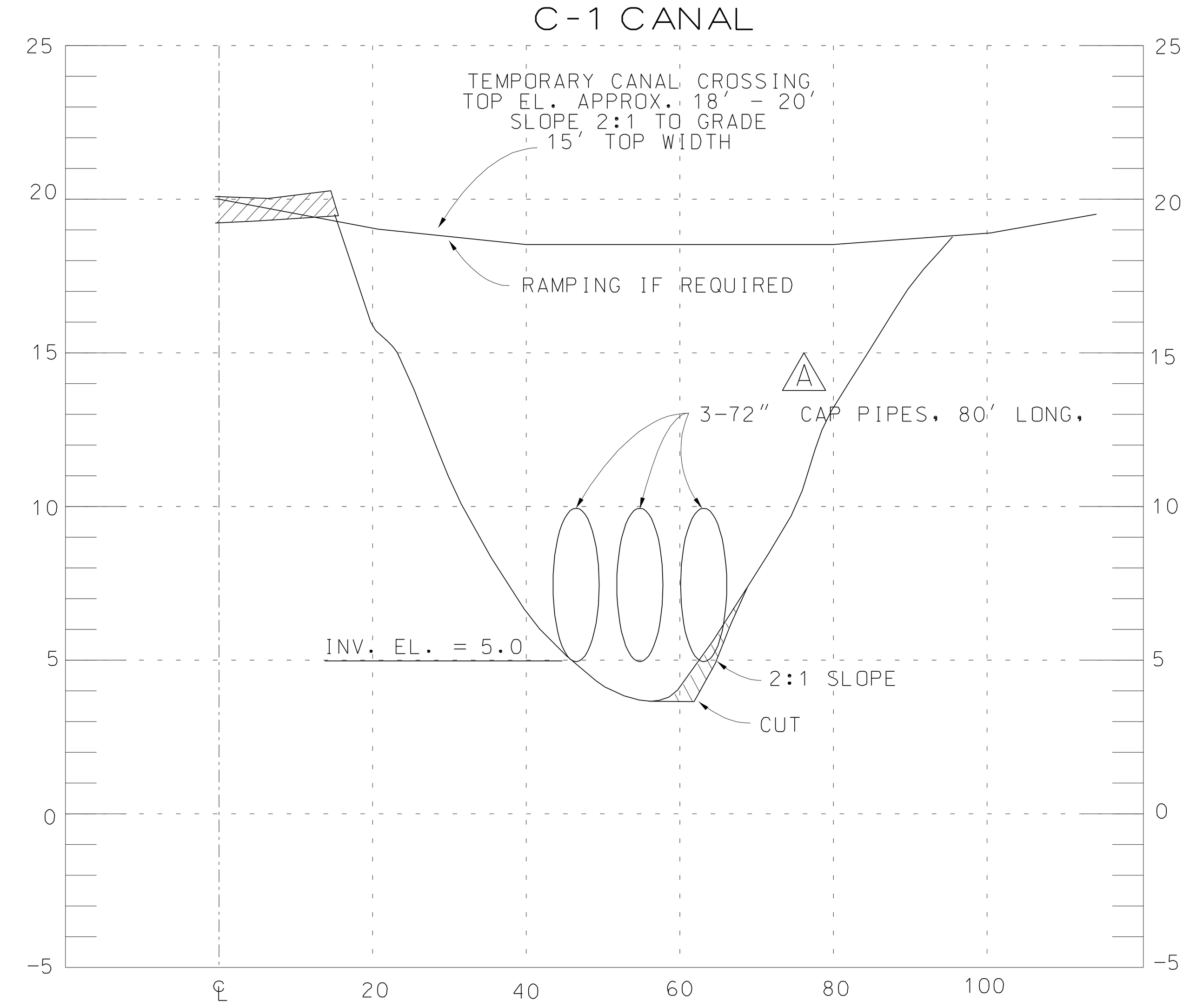
NOTE:

1. CONTRACTOR TO CONSTRUCT TEMPORARY CROSSING OF C-1 CANAL CONNECTING TO EXISTING L74N.
2. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF THE C-1 CANAL TEMPORARY CROSSING WITH THE CONTRACTING OFFICER'S REPRESENTATIVE (COR) IN THE FIELD. THE CONTRACTOR SHALL CONSTRUCT L74N & C-1 TIE-IN AT THE ELEVATIONS AND GRADES SHOWN.
3. ACCESS IS RECOMMENDED FROM EXISTING L74N.

SCHEMATIC DETAIL

N.T.S.

C-1 CANAL



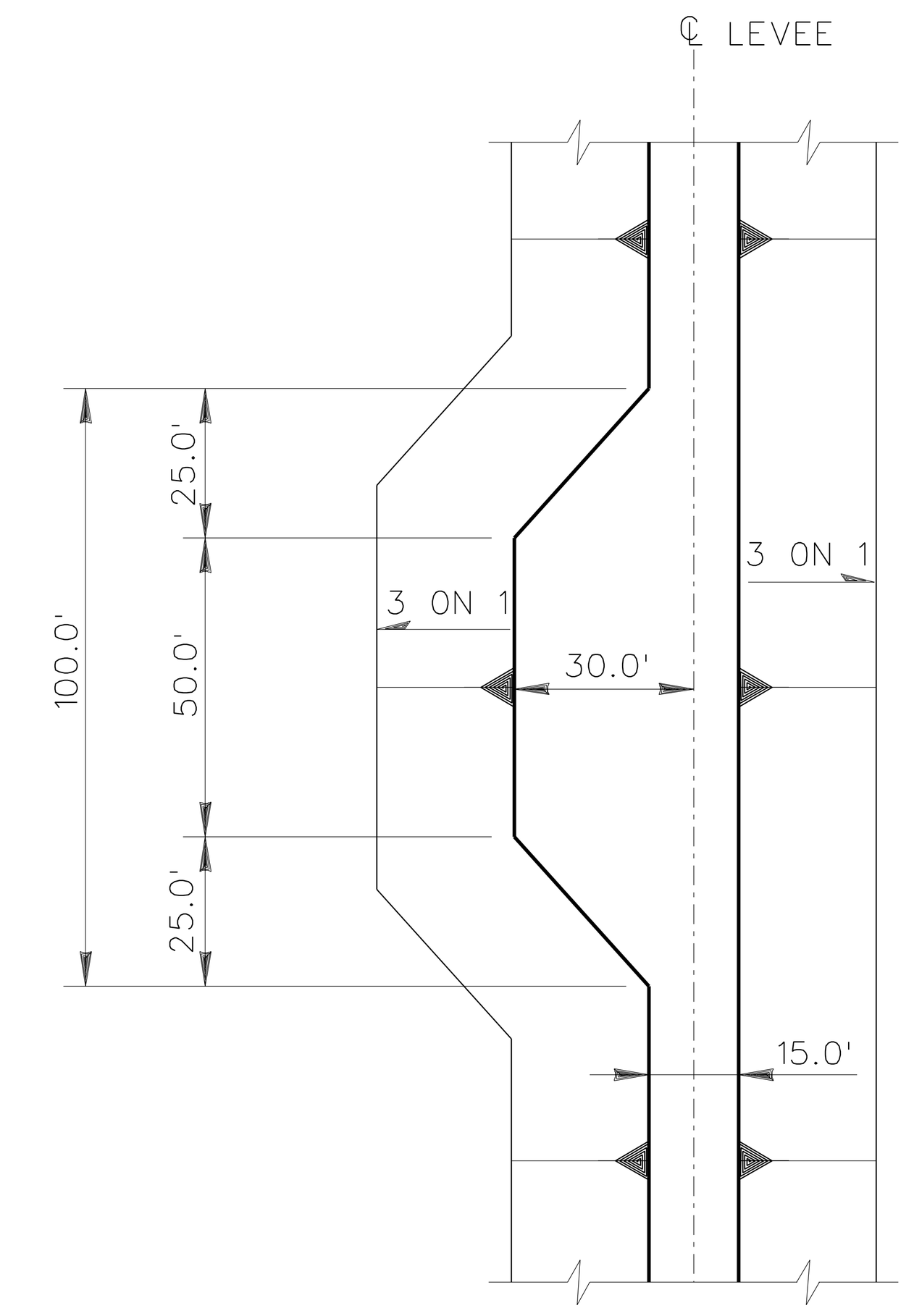
SECTION A-A

N.T.S.

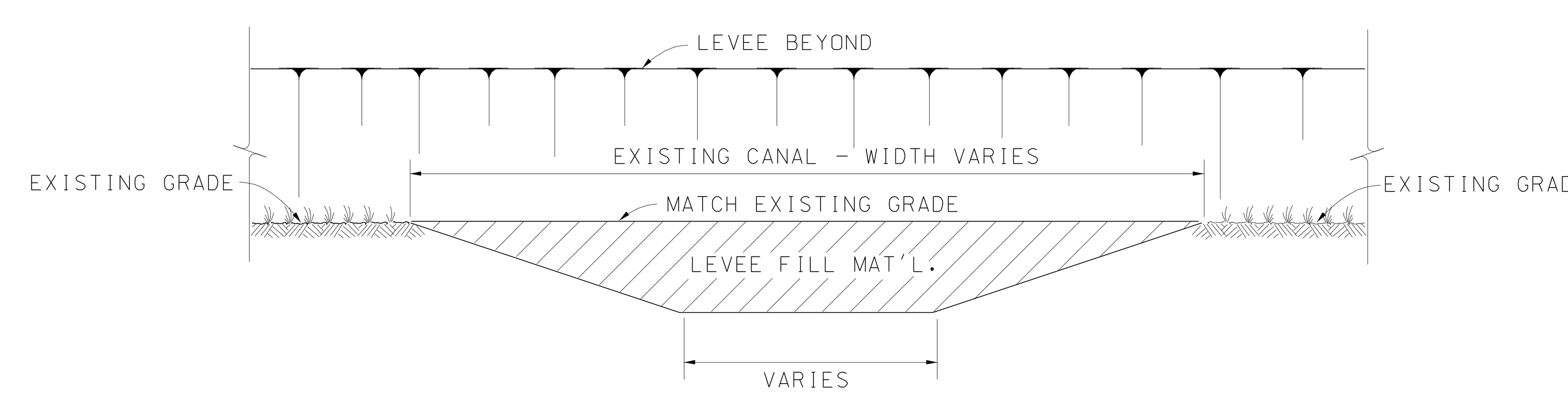
CUT

NOTES:

1. 3' MINIMUM SPACING BETWEEN CULVERTS.
2. USE CLAYEY/SAND MIX FOR FILL MATERIAL.



TURNAROUND DETAIL



TYPICAL DITCH PLUG DETAIL

N.T.S.

NOTES:

1. REMOVE ALL PLANTS, BUSHES AND DEBRIS PRIOR TO FILLING DITCHES.
2. CONTRACTOR NEEDS TO FILL, PLUG, ALL CANALS BETWEEN L74NR AND C-2 BORROW. GRADE TOP OF FILL TO MATCH ADJACENT GRADES TO PROVIDE CONTINUOUS ACCESS BERM ALONG TOE OF LEVEE.

GRAPHIC SCALE

30' 0 30' 60'

US Army Corps of Engineers
Jacksonville District

SAFETY ON THIS JOB DEPENDS ON YOU

No.	Symbol	Zone	Description	Approved
2	A	C2,C4	REVISED TO ACCOMPANY AMENDMENT #0004	

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Inv. No. W912EP-04-B-0008
Designed by: M.R.D. | Dwn by: R.L.N. | Ckd by: | Scale:
File name: SJ5D0117.DGN
Reference files: SJ5BBRDR.DGN
Dated: JUNE 1999
D.O. FILE NO. 490-37,843

CENTRAL AND SOUTHERN FLORIDA PROJECT
UPPER ST. JOHNS RIVER BASIN
LEVEE 74N (REMAINDER), STRUCTURE 263, STRUCTURE 264 AND STRUCTURE 256 REPAIRS
GENERAL
SCHEMATIC, TURNAROUND DETAILS

DRAWING NO.
1/17

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