EBASCO SERVICES INCORPORATED

WATERFORD STEAM ELECTRIC STATION - UNIT NO 3

PROCEDURE FOR: EXCAVATION AND BACKFILL	PROCEDURE NUMBER: CP-803

ISSUE SUMMARY

ISSUE/DATE	PREPARED	APPROVED	REMARKS
"A" Draft 11/9/83	E. Stanley		New
"A" Issue 11/23/83	E. Stanley	R. Marshall	

INFORMATION ONLY

NOTATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

ERASCO SERVICES INCORPORATED

WATERFORD STEAM ELECTRIC STATION - UNIT NO. 3

AMENDMENT NO. 1

PROCEDURE FOR:	PROCEDURE NUMBER	ISSUE
EXCAVATION AND BACKFILL	CP-803	A

LEAD CONSTRUCTION ENGINEER — DATE 4/7/84	Q.A. PROGRAM MANAGER — DATE 4/7/84

AMENDMENT EFFECTIVE DATE: 4/1/84

DESCRIPTION OF ADDITIONS/DELETIONS/CHANGES:

(1) Delete 6.2.11
(2) Add the following paragraphs:

6.3 Inspection of Excavation/Backfill activities

6.3.1 Quality Control shall perform inspection of excavation/backfill activities which extend below the water table in class "A" fill. Q.C. shall be notified at this time. Engineering shall perform inspection of excavation/backfill activities which do not extend below the water table. Inspection of excavation/backfill activities in class "A" fill shall be documented on the attached "Excavation/Backfill Inspection Report". (Form CP-803-1)

6.3.2 Engineering shall perform inspection of Excavation/Backfill activities in class "B" fill when determined necessary by the Senior Resident Engineer. Inspection of excavation/backfill activities in class "B" fill shall be documented on the attached "Engineering Inspection Report" (Form No. E-133)

INITIATED BY — DATE 4/7/84

INDICATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

1.0 PURPOSE

1.1 The purpose of this procedure is to ensure that the methods used for excavation, handling of material, placement and compaction of backfill is performed in a manner consistent with the site specification and design drawings.

2.0 SCOPE

2.1 This procedure covers all areas requiring excavation and backfill of Seismic Class I and Nonseismic soil materials.

3.0 REFERENCES

3.1 Ebasco Specification No. LOU 1564.482 - Filter and Backfill Seismic Class I

3.2 Ebasco Specification No. LOU 1564.474 - Specification for Dewatering and Excavation

3.3 IP-3 - Underground Piping

3.4 WQC-1 - Control of Receiving, Handling and Storage of Materials and Soils

3.5 ASTM-D1557 Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop

3.6 ASTM-D2167 Density of Soil in Place by the Rubber Balloon Method.

4.0 DEFINITIONS

4.1 Engineer - Ebasco Constructors

4.2 Class A Backfill Material - Sand with no more than 12% passing the #200 seive (locally known as pumped river sand). This material shall have an in-place relative density of 75 percent (%). The minimum allowable density shall be 95% of Modified Proctor.

4.2.1 Pleistocene clay - use only if filter blanket is disturbed.

4.3 Class B Backfill Material - This material shall be sand. Shell may be contained in this material. The shell shall be sound and amply bedded in the finer materials.

5.0 RESPONSIBILITY

5.1 Senior Resident Engineer or his designee shall be responsible for providing the necessary engineering support and inspection (non-safety only) as required to comply with this procedure and the requirements of the referenced specifications as further defined therein.

5.2 The Construction Superintendent or his designee shall be responsible for the overall implementation of this procedure.

5.3 Site Soil Testing Laboratory shall perform all tests required to support this procedure.

6.0 PROCEDURE

6.1 Excavation

6.1.1 All excavation of existing Class A and/or Class B fill areas shall be coordinated through the Engineer prior to beginning work.

6.1.2 Class A and Class B fill areas will not be excavated below the water table elevation without Engineering inspection of the area for possible dewatering requirements.

6.1.3 Excavation of fill shall be performed in a manner which will not disturb surrounding compacted fill areas or damage existing plant components.

6.1.4 Slopes of open excavations shall be protected from inclement weather or other factors which may cause erosion, undermining of subsurface structures, or other loss of fill material.

6.1.5 Whenever possible, the open cut method of excavation shall be utilized with banks sloped or stepped as required by the nature of the soil.

6.1.6 Sheetpiling or shoring will be used in areas where insufficient area is available for open cuts. All sheetpiling and shoring plans will be submitted to the Engineer for review and approval before proceding with work.

6.1.7 Excavated material expected to be used as backfill will be stockpiled a safe distance away from excavation or will be spread in nearby locations as necessary.

6.1.8 Excavated material unsuitable for use as backfill will be hauled to a spoil area designated by the Engineer.

6.1.9 Rain water or ground water occurring in the excavation will be removed with portable pumps using adequate discharge hose and screens to convey the water into the plant drainage system without disrupting other operations.

6.2 Backfill

6.2.1 Areas to receive backfill shall be free of sod, wood or other foreign matter. The area shall then be leveled and moistened to optimum moisture and compacted until the surface is smooth and free of large amounts of loose material.

6.2.2 When backfill is to be placed on natural ground, strip all sod or top soil to a depth of 6", or a depth necessary to remove unsound material.

6.2.3 When fill is to be placed on previously placed fill which has been in place for several days, the surface shall be moistened as necessary and recompacted.

6.2.4 Moisture content and tests, if required by Ebasco Specification LOU 1564.482, design drawings or the Engineer, shall be performed on excavated area prior to beginning backfill operations.

6.2.5 Should the existing material contain moisture in excess of permissible limits such as ground water, etc., a blanket lift of dry fill material may be placed over the wet fill to soak up excess moisture. The blanket fill shall be compacted by suitable means as approved by the Engineer and then tested to determine the in-place density if possible.

6.2.5.1 If the blanket lift meets the established density requirements, backfilling shall continue in a normal manner.

6.2.5.2 If the blanket lift does not meet the established density requirements, the next lift of material shall be placed and compacted, and the tests of the blanket lift performed by digging back down to the blanket lift to verify the in-place density and integrity of the fill.

6.2.6 Backfill will be placed in 15" maximum loose lifts with each lift being moistened to near optimum moisture and compacted with rollers or, in the case of limited access, with hand propelled tampers.

6.2.7 The in-place density shall be tested in accordance with ASTM-D1556 or ASTM-D2167. A minimum of one density test will be taken for every 20,000 square feet of Class A fill and one for every 40,000 square feet of Class B fill.

6.2.8 Backfill operations shall be halted during inclement weather and, if possible, excavation protected from excess moisture. Before continuing with backfill operations, fill areas exposed to the weather shall be free of all standing water, surface permitted to dry and moisture content of soil tested for excessive moisture.

6.2.9 Equipment used for hauling shall follow different paths over nearby compacted fill areas to aid compaction of entire area and to avoid over compaction of any one area.

6.2.10 Special care shall be exercised when placing and compacting fill near existing plant components and waterproofing to prevent damage to these structures.

6.2.11 Class A backfill shall be inspected per the requirements of WQC-1 and Class B backfill shall be inspected per IP-3.

REVISIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

7.0 ATTACHMENTS

7.1 NONE

EBASCO SERVICES INCORPORATED
WATERFORD UNIT NO. 3

EXCAVATION/BACKFILL INSPECTION REPORT

Inspector _____ Date _____

Fill Area/Location _____ Contr._____ El. _____

Fill Surface Area _____Sq. Ft.

Borrow material released as backfill: Yes _____ No _____

Spreading and Compaction equipment satisfactory: Yes _____ No _____

Base Density Acceptable for Backfill: Yes _____ No _____

Base Slopes Acceptable for Backfill: Yes _____ No _____

Backfilling done in proper sequence: Yes _____ No _____

Fill material properly placed and spread to a maximum loose thickness of 15 inches:

Yes _____ No _____

Lift surface reasonably smooth and free of ridges or grooves: Yes _____ No _____

Hauling equipment using different paths: Yes _____ No _____

Fill Junctions properly treated: Yes _____ No _____

Layer compacted to full width: Yes _____ No _____

Fill material less than 3 inches in size in restricted areas: Yes _____ No _____

Waterproofing membrane protected during backfill operations: Yes _____ No _____

Backfill against waterproofing membrane contains only material less than ¼ inch:

Yes _____ No _____

In-Place density testing properly performed: Yes _____ No _____

Comments: _____

_____

_____

_____

_____

_____

Excavation/Backfill Activities Acceptable _____ _____
Inspector Date

Waste Services Inc. WSIS - Unit 3 Engineering Inspection Report General	Contract No:	Report No:
	Contractor:	Date:

Item(s)/Description: _____

_____

_____

Location (Bldg./Elev./Coord's) _____

_____

Reference Dwgs/Documents: _____

- ☐ In-Process Inspection
- ☐ Final Inspection
- ☐ Safety Related
- ☐ Non-Safety Related

Inspection Details

Form No. E-33	Engineering Inspector	Supervisor	Page of