

QUALITY PROGRAM
FOR
UNDERPINNING
ACTIVITIES

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QUALITY PLAN FOR UNDERPINNING ACTIVITIES

PURPOSE

PRESENT QUALITY PLANS, FOR THE UNDERPINNING ACTIVITIES TO HIGHLIGHT ORGANIZATIONS INVOLVED, SPECIFIC RESPONSIBILITIES AND THEIR INTERFACING THOSE UNIQUE ACTIVITIES OR REQUIREMENTS THAT GO BEYOND THE ESTABLISHED QUALITY PROGRAMS COMPREHENSIVE TOTAL QUALITY INVOLVEMENT AND CONTROLS ON THE QUALITY RELATED ACTIVITIES

PROVIDE A STATUS ON:

STAFFING OF THE QUALITY ORGANIZATIONS
IMPLEMENTATION OF THE QUALITY PLAN

PROVIDE AN OPPORTUNITY FOR FACE TO FACE COMMUNICATION ON THE UNDERPINNING QUALITY PROGRAM

OUTLINE OF THE PRESENTATION

CPCO AND BECHTEL ORGANIZATIONS

SUBCONTRACTOR AND CONSULTANT ORGANIZATIONS

QUALITY PLAN CONTENT

DESIGN CONTROL FOR UNDERPINNING ACTIVITIES

DESIGN DOCUMENT INTERFACE FLOW CHART

PROCEDURE REVIEW APPROVAL/FLOW CHART

QUALITY RELATED ACTIVITIES LIST

SUBCONTRACTOR REQUIRED "Q" PROCEDURES

STAFFING OF QUALITY ORGANIZATIONS

ADDITIONAL QUALITY PROGRAM DOCUMENTS REQUIRED TO SUPPORT
THE UNDERPINNING WORK

SUMMARY AND CONCLUSION

CPCO AND BECHTEL ORGANIZATIONAL ELEMENTS

THE EXISTING COMPANY ORGANIZATIONS AS PROVIDED BY ORGANIZATIONAL CHARTS AND DESCRIPTIONS IN THE TOPICAL REPORTS AND LOWER TIER DOCUMENTS REMAIN FULLY APPLICABLE

ORGANIZATIONS INVOLVED IN THE UNDERPINNING

- CPCO PROJECT MANAGEMENT
- CPCO DESIGN PRODUCTION
- CPCO SITE MANAGEMENT
- BECHTEL PROJECT MANAGEMENT
- BECHTEL PROJECT ENGINEERING
- BECHTEL PROJECT GEOTECHNICAL ENGINEER
- BECHTEL CONSTRUCTION (REMEDIAL SOILS GROUP)
- GEOTECH SERVICES
- RESIDENT GEOTECHNICAL ENGINEER
- BECHTEL QUALITY CONTROL (QC)
- MIDLAND PROJECT QUALITY ASSURANCE DEPARTMENT (MPQAD)

THE QUALITY PLAN FOR UNDERPINNING ACTIVITIES PROVIDES A BRIEF SCOPE STATEMENT FOR EACH ORGANIZATION AS RELATED TO THE UNDERPINNING ACTIVITY

ORGANIZATIONS

SUBCONTRACTORS AND CONSULTANTS

SUBCONTRACTORS/CONSULTANTS

SCOPE OF DUTIES

MUESER, RUTLEDGE, JOHNSON
AND DESIMONE

DESIGN INPUT FOR THE UNDERPINNING OF THE
SERVICE WATER PUMP STRUCTURE UNDER A
TECHNICAL SERVICE AGREEMENT

ALSO, CONSULTANT FOR THE UNDERPINNING OF
THE AUXILIARY BUILDING UNDER A TECHNICAL
SERVICE AGREEMENT

SPENCER, WHITE AND
PRENTIS, INC (PROPOSED)

SUBCONTRACTOR FOR THE UNDERPINNING OF THE
SERVICE WATER PUMP STRUCTURE

MERGENTIME CORP/HANSON
ENGINEERS, INC

JOINT VENTURE TO PROVIDE DESIGN INPUT FOR
THE UNDERPINNING OF THE AUXILIARY BUILDING
UNDER A TECHNICAL SERVICE AGREEMENT

MERGENTIME CONST CORP

SUBCONTRACTOR FOR THE UNDERPINNING OF
THE AUXILIARY BUILDING

ORGANIZATIONS
SUBCONTRACTORS AND CONSULTANTS
(CONT)

SUBCONTRACTOR/CONSULTANTS

SCOPE OF DUTIES

WISS, JANNEY, ELSTNER AND
ASSOCIATES, INC

PROVIDE THE DESIGN FOR THE SETTLEMENT
MONITORING EQUIPMENT, PROCURES THE
MONITORING EQUIPMENT, INSPECTS THE
INSTALLATION OF THE MONITORING EQUIPMENT,
AND PROVIDE DATA TO PROJECT ENGINEERING

U S TESTING COMPANY, INC

SUBCONTRACTOR FOR TESTING CONCRETE
PRODUCTION MATERIALS (CEMENT, FLYASH,
WATER, AGGREGATES), SOILS, CONCRETE,
GROUT, FINES MONITORING OF SOIL PARTICLES,
TENSILE TESTING OF REINFORCING STEEL AND
REINFORCING SPLICES.

REMEDIAL SOILS WORK QUALITY PROGRAM

- **CPCo QUALITY ASSURANCE PROGRAM
MANUAL FOR NUCLEAR POWER PLANTS**
 - **Volume I - Policies (Topical CPC-1-A)**
 - **Volume II - Procedures for Design and
Construction**

- **BQ-TOP-1, REVISION 1A**
 - **Bechtel Nuclear Quality Assurance Manual**

QUALITY PLAN CONTENT

PROVIDES ORGANIZATIONAL RESPONSIBILITIES AND RELATIONSHIPS

ESTABLISHES A SPECIFIC Q-LIST OF DESIGNATED QUALITY ACTIVITIES

PROVIDES A NARRATIVE OF THE MAJOR PROGRAM ELEMENTS

PROVIDES UNIQUE QUALITY PROGRAMMATIC CONTROLS WHICH ARE NOT IN THE STANDARD EXISTING PROJECT QUALITY PROGRAMS

PROVIDES ADDITIONAL DEFINITION TO THE QUALITY REQUIREMENTS IN THE TECHNICAL SPECIFICATIONS

PROVIDES A LIST OF THE SPECIFIC SAFETY RELATED (Q) PROCEDURES THE SUBCONTRACTOR MUST PROVIDE FOR PROJECT REVIEW, APPROVAL AND RELEASE

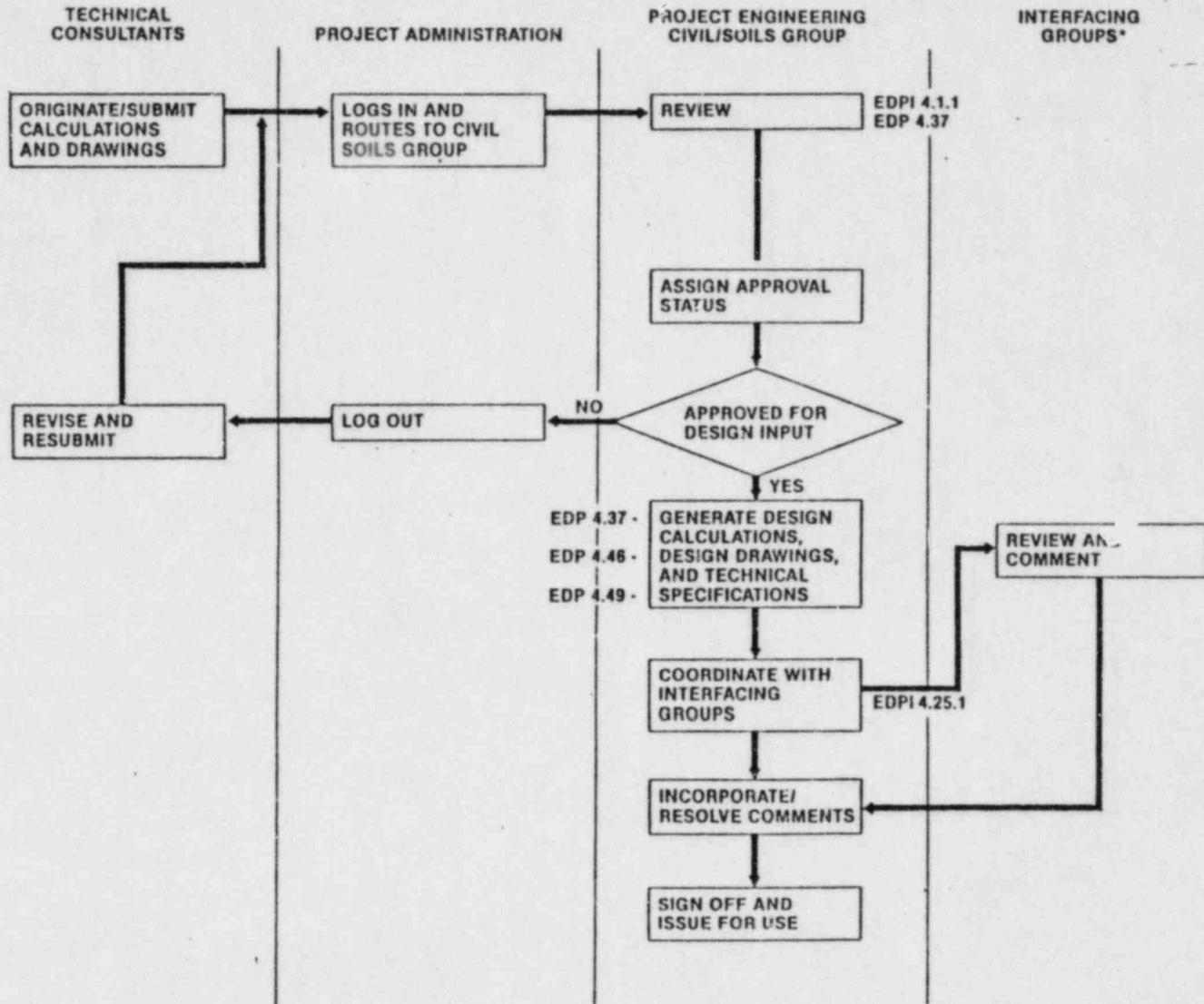
DESIGN CONTROL FOR UNDERPINNING ACTIVITIES

QUALITY PLAN FOR UNDERPINNING ACTIVITIES PROVIDES A DETAILED DESCRIPTION OF THE DESIGN CONTROL PROCESS AND REFERENCES THE DETAIL PROCEDURES CONTROLLING THE BECHTEL AND CPCO DEPARTMENT PROCEDURES

QUALITY PLAN INCORPORATED IN EACH SPECIFICATION PROVIDES THE DETAIL FLOW PROCESS FOR PREPARATION REVIEW AND RELEASE OF DESIGN DOCUMENTS

UNDERPINNING SUBCONTRACTOR(S) WILL BE REQUIRED TO HAVE A PROCEDURE TO CONTROL THE PROJECT ISSUED DESIGN DOCUMENTS AND PROCEDURES

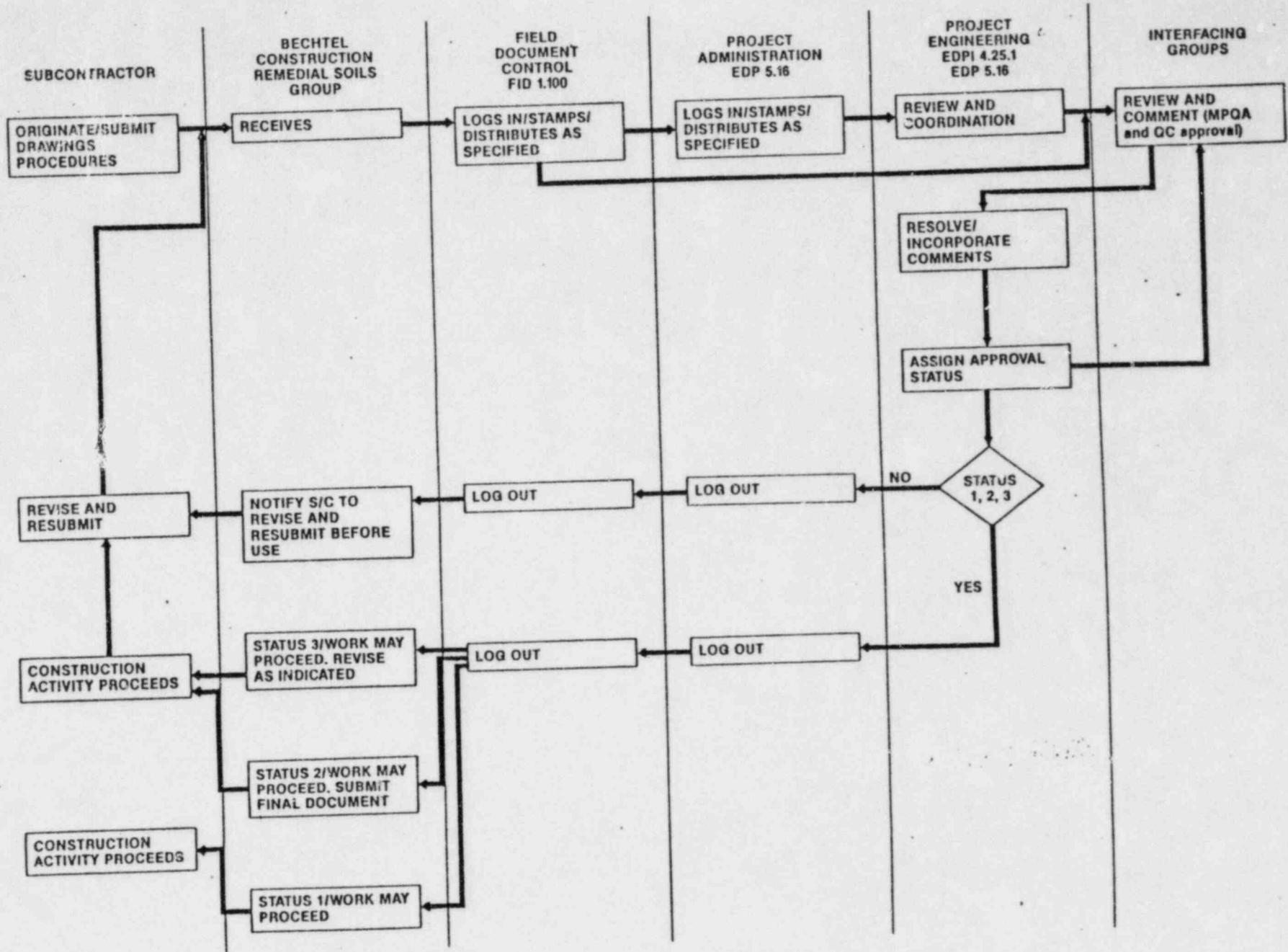
DESIGN DOCUMENT INTERFACE FLOWCHART



*INTERFACING GROUPS (as defined by EDPI 4.25.1 or approved alternate)

- DISCIPLINE ENGINEERING GROUPS
- CHIEF ENGINEER (per EDP 4.34)
- GEOTECHNICAL SERVICES
- CONSULTANTS
- QUALITY ENGINEERING (drawings and specifications)
- MPQA (drawings and specifications)

PROCEDURE REVIEW/APPROVAL FLOWCHART



Procedures To Be Submitted By The Subcontractor

Organization Responsible For Procedure Review & Approval

9A

Procedure for general underpinning - This procedure shall include the overall concept of the work involved, including the interface of all the operations listed below.

Procedure for load transfer.

Procedure for placement of lean concrete backfill in shafts and tunnel.

Procedure for installation of (including mixing) and pressure grouting.

Procedure for placement of pier concrete.

Procedure for acquiring and maintaining calibration of jacks and gages.

Procedure for mechanical splicing of reinforcement.

Procedure for threading of reinforcing steel.

Procedure for installation of anchor bolts and rock anchors.

Procedure for installation of compressible material.

Procedure for placing reinforcement including bending steel reinforcement (hot and cold).

Procedure for core drilling.

	X	0	0	X	X	0
	Proj Eng	Resident Geotech	Bechtel Construction RSG	Bechtel Quality Control	MPOAD	Technical Consultant
Procedure for general underpinning - This procedure shall include the overall concept of the work involved, including the interface of all the operations listed below.	X	0	0	X	X	0
Procedure for load transfer.	X	0	0	X	X	0
Procedure for placement of lean concrete backfill in shafts and tunnel.	X		0	X	X	
Procedure for installation of (including mixing) and pressure grouting.	X		0	X	X	
Procedure for placement of pier concrete.	X		0	X	X	
Procedure for acquiring and maintaining calibration of jacks and gages.	X		0	X	X	
Procedure for mechanical splicing of reinforcement.	X		0	X	X	
Procedure for threading of reinforcing steel.	X		0	X	X	
Procedure for installation of anchor bolts and rock anchors.	X		0	X	X	
Procedure for installation of compressible material.	X		0	X	X	
Procedure for placing reinforcement including bending steel reinforcement (hot and cold).	X		0	X	X	
Procedure for core drilling.	X		0	X	X	

LEGEND

REVIEW & APPROVAL - X

REVIEW & COMMENT - 0
as applicable

Procedures To Be Submitted By The Subcontractor

Organization Responsible For Procedure Review & Approval

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	Proj Eng	Resident Geotech	Bechtel Construction RSG	Bechtel Quality Control	MPQAD	Technical Consultant
Procedure for concrete repairs.	X		0	X	X	
Procedure for excavation "Q" structures and the installation of lagging.	X	0	0	X	X	
Procedure for protection of underground utilities	X		0	X	X	
Procedure for preparing, submitting, and revising Q procedures.	X		0	X	X	
Procedure for handling, storing, and controlling Contractor-furnished materials.	X		0	X	X	
Procedure for design document control.	X		0	0	X	
Procedures for interface and coordination between the Subcontractor and the Contractor for activities covered by the QA Program.	X	0	0	0	X	
Procedure for construction of temporary supports including grillage.	X		0	X	X	0
Procedure for welding.	X		0	X	X	
Procedure for certifying subcontractor personnel specifically for AWS welding and mechanical splices.	X		0	X	X	
Procedure for Training Program of subcontractor personnel for the Q-Procedures covering the subcontractor scope of work.	X		0	X	X	

LEGEND

REVIEW & APPROVAL - X

REVIEW & COMMENT - 0
as applicable

QUALITY RELATED (Q-LISTED ACTIVITIES)

1. DOCUMENT SUBMITTAL, INTERFACE AND CONTROL (1)
2. PROCURING Q-LISTED ITEMS AND MATERIALS
3. STORAGE, HANDLING AND CONTROL OF Q-LISTED MATERIALS (1)
4. FURNISHING AND INSTALLATION OF LAGGING AND BRACING UNDER "Q" STRUCTURES (1)
5. EXCAVATION LIMITS, CONTROL AND SEQUENCE UNDER "Q" STRUCTURES (1)
6. CRACK MAPPING AND EVALUATION
7. CALIBRATION, MAINTENANCE, CONTROL AND INSTALLATION OF GAGES AND SETTLEMENT MONITORING INSTRUMENTATION
8. MONITORING OF BUILDING MOVEMENT INSTRUMENTATION AND PIER PRESSURE GAGES
9. FINES MONITORING OF DEWATERING WELLS IN "Q" AREAS
10. LOCATION AND PROTECTION OF "Q" UTILITIES (1)
11. GEOTECHNICAL ACCEPTANCE OF SUBGRADE
12. FABRICATION OF STEEL GRILLAGE FOR TEMPORARY SUPPORTS FOR "Q" STRUCTURES (2) (1)
13. FABRICATIONS AND INSTALLATION OF TEMPORARY SUPPORTS FOR "Q" STRUCTURES (2) (1)
14. WELDING OF TEMPORARY AND PERMANENT SUPPORTS FOR "Q" STRUCTURES (2) (1)

- (1) SUBCONTRACTOR HAS TO HAVE PROCEDURES
- (2) APPLY ONLY TO AUXILIARY BUILDING UNDERPINNING

QUALITY RELATED (Q-LISTED ACTIVITIES)
(CONTINUED)

15. FABRICATION AND INSTALLATION OF REINFORCING STEEL (1)
16. CERTIFICATION OF PERSONNEL PERFORMING SPLICES (1)
17. THREADING OF REINFORCING STEEL AND INSTALLATION OF MECHANICAL SPLICES (1)
18. DRILLING IN "Q" STRUCTURES FOR THE INSTALLATION OF ANCHOR BOLTS, ROCK ANCHORS AND DEWATERING WELLS (1)
19. INSTALLATION (1) AND INSPECTION OF ANCHOR BOLTS AND ROCK ANCHORS
20. COMPRESSIBLE MATERIAL CONFIGURATION AND INSTALLATION (1)
21. TESTING OF REINFORCING STEEL AND MECHANICAL SPLICES
22. INSTALLATION (1) INSPECTION AND TESTING OF STRUCTURAL CONCRETE, LEAN CONCRETE, GROUT AND DRYPACK
23. REPAIR OF CONCRETE IN "Q" STRUCTURES (1)
24. CALIBRATING, MAINTAINING, INSTALLING AND CONTROLLING OF HYDRAULIC JACKS AND PRESSURE GAGES (1)
25. LOAD TRANSFER ACTIVITIES (1)
26. BACKFILLING (1) AND ACCEPTANCE TESTING FOR ACCESS SHAFTS AND TUNNELS IN "Q" AREAS

- (1) SUBCONTRACTOR HAS TO HAVE PROCEDURES
- (2) APPLY ONLY TO AUXILIARY BUILDING UNDERPINNING

SUBCONTRACTOR REQUIRED "Q" PROCEDURES
(CONTINUED)

PROCEDURE FOR PLACING REINFORCEMENT INCLUDING BENDING STEEL
REINFORCEMENT (HOT AND COLD)

PROCEDURE FOR CORE DRILLING

PROCEDURE FOR CONCRETE REPAIRS

PROCEDURE FOR EXCAVATION "Q" STRUCTURES AND THE INSTALLATION
OF LAGGING

PROCEDURE FOR PROTECTION OF UNDERGROUND UTILITIES

PROCEDURE FOR PREPARING, SUBMITTING AND REVISING Q PROCEDURES

PROCEDURE FOR HANDLING, STORING, AND CONTROLLING CONTRACTOR-
FURNISHED MATERIALS

PROCEDURE FOR DESIGN DOCUMENT CONTROL

PROCEDURES FOR INTERFACE AND COORDINATION BETWEEN THE SUBCONTRACTOR
AND THE CONTRACTOR FOR ACTIVITIES COVERED BY THE QA PROGRAM

PROCEDURE FOR CONSTRUCTION OF TEMPORARY SUPPORTS INCLUDING GRILLAGE

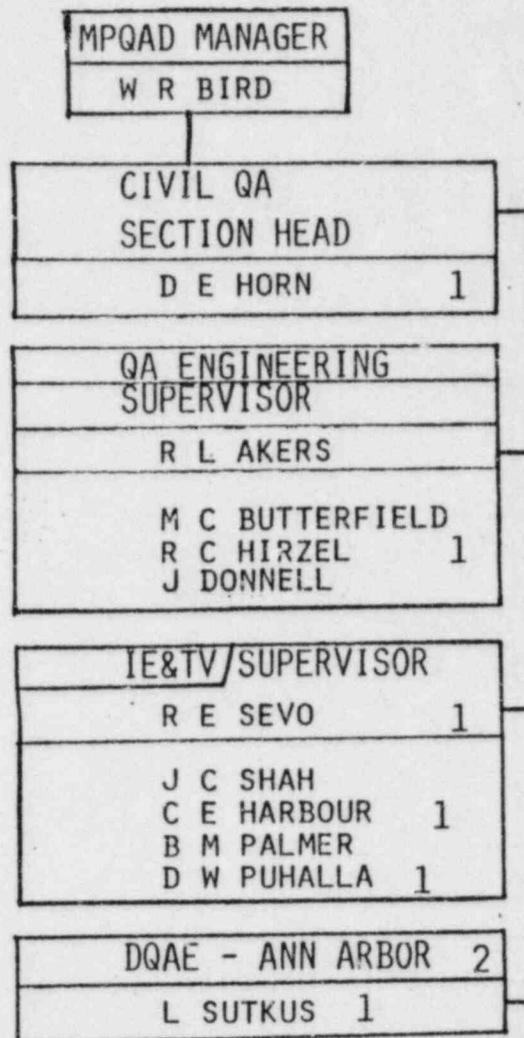
PROCEDURE FOR WELDING

PROCEDURE FOR CERTIFYING SUBCONTRACTOR PERSONNEL SPECIFICALLY FOR
AWS WELDING AND MECHANICAL SPLICES

PROCEDURE FOR TRAINING PROGRAM OF SUBCONTRACTOR PERSONNEL FOR THE
Q-PROCEDURES COVERING THE SUBCONTRACTORS SCOPE OF WORK

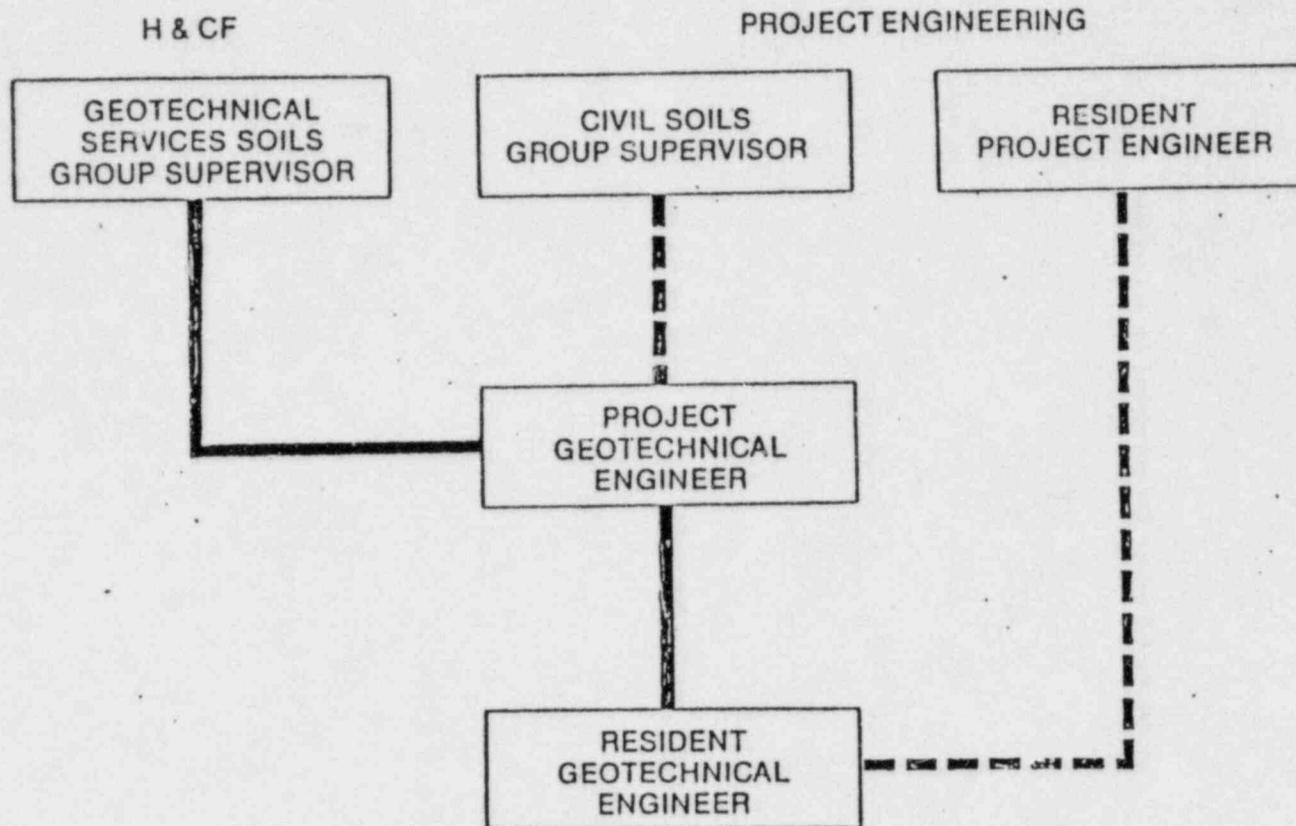
ORGANIZATION CHART OF MPQAD IN SUPPORT OF UNDERPINNING

MIDLAND PROJECT OFFICE



- 1 THOSE INDIVIDUALS WHOSE PRIMARY RESPONSIBILITIES AND TIME ARE FOR SUPPORT OF THE UNDERPINNING WORK
- 2 ADMINISTRATIVELY UNDER QUALITY ENGINEERING SERVICES SECTION

GEOTECHNICAL SUPPORT



— PROJECT DIRECTION
- - - TECHNICAL AND ADMINISTRATIVE DIRECTION

QUALITY PROGRAM DOCUMENTS

QUALITY PROGRAM DOCUMENTS THAT WILL BE REVISED OR PREPARED TO IMPLEMENT PROGRAM CHANGES IN RESPONSE TO THE QUALITY PLANS

EDPI - 4.25.1 DESIGN INTERFACE CONTROL
(OR APPROVED ALTERNATE)

EDPI - 2.14.8 RESIDENT GEOTECHNICAL ENGINEER FOR MIDLAND REMEDIAL
UNDERPINNING OPERATIONS

EDP - 5.16 SUPPLIER DOCUMENT CONTROL

FPD - 1.000 DESIGN DOCUMENT AND CORRESPONDENCE CONTROL
(OR APPROVED ALTERNATE)

SPECIFICATION C-198 - QUALITY PLAN FOR SETTLEMENT MONITORING AND
INSTRUMENTATION

FINALIZE INDOCTRINATION AND PROGRAMMATIC TRAINING OF SUBCONTRACTOR PERSONNEL

SUMMARY

REVIEWED THE MAJOR ELEMENTS OF THE QUALITY PLANS

PROVIDED THE STATUS OF IMPLEMENTATION OF THESE PLANS

EMPHASIZED THE UNIQUE ASPECTS OF THESE ACTIVITIES AND THE WAYS THE
QUALITY PROGRAM RESPONDS TO THESE ASPECTS

RSCA2

July 23 Deep Q
July 27 Fire main
July 28 Ross finds Deep Q
July 29 Stop work
Aug 4 Ross finds fire line excavation:

QC Super - E. Jones

Bechtel hire

Doc. review

FCR/FCM → NCR

NCR → WH

Not all that bad.

Latest

Hold it out.

R5CA2

Fri.

Wheeler: Fire line work started July 28/29, 82
until Aug 10, 82

All work stopped Aug 10 because of alleged violation of Board Order and situation with deep Q direct.

Im not sure that Wornick was at the Aug 11, 82 "enforcement only"

Mooney C.C. not informed that there was a violation of Board Order because of dissent among the NRC

→ Page 13. 2nd report: Mooney told Weil that he didn't remember - but corrected it at hearing. In hearing discrepancy (Mooney always tells truth)