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Bechtel Associates Professional Corporation  
Ann Arbor, Michigan

Appendix "M"  
Specification C 205


TECHNICAL SPECIFICATIONS  
FOR  
PURCHASE OF  
TENDON SHEATHING FILLER MATERIAL  
CONSUMERS POWER COMPANY  
MIDLAND PLANT UNITS 1 AND 2  
MIDLAND, MICHIGAN

Consisting of:

1. Technical Specifications
2. Appendix A

No.	DATE	REVISIONS	BY	CHK	APPR
1	10-21-74	Rev. as noted on facing sht; Inc. SCN 9003 & 9004	BM		
2	5-7-79	Rev as noted on facing sht;; Inc SCN 9001 & 9002	DAE		
3	10-16-78	Issued for field use			
4	6-16-78	Issued for Client Review			

ORIGIN	 CONSUMERS POWER COMPANY MIDLAND PLANT UNITS 1 AND 2 MIDLAND, MICHIGAN	72 No. 7220
BAPC		SPEC DES GUIDE No. 3
8405260065 840517 PDR FOIA RICE84-96		7220-C-49(Q)

SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.	SHEET	LATEST REV.
1	3														
11	3														
111	2														
1	1														
2	3														
3	3														
4	2														
5	2														
6	2														
Appx. A															
A-1	3														
Att 1	0														
Sh 1	0														
Sh 2	0														
Sh 3	0														
Sh 4	0														

NO.	DATE	REVISIONS	BY	CHK'D	APP'D	NO.	DATE	REVISIONS	BY	CHK'D	APP'D
3	10/23/79	Revised shts. 1, 2, 3, and sht. 1 of att. 1 deleted att. 2&3	ERM	Q	LHC						
2	5-7-79	Rev shts 1-111, 2-6	DAZ	Q	RLC						
1	10-16-78	Rev shts 1, 11, 1, to 6, ; APP A, Att 2, sht 1	DAZ	Q	RLC						
0	6-16-78	Issued for Client Review	Q	Q	RLC						



**FACING SHEET**  
**MIDLAND PLANT UNITS 1 & 2**  
**PURCHASE OF TENDON SHEATHING**  
**FILLER MATERIAL**

**JOB No. 7220**  
**Specification**  
**7220-C-49(Q)**  
**Sheet 11**

REV.  
**248**  
**3**

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TECHNICAL SPECIFICATION  
FOR  
PURCHASE OF  
TENDON SHEATHING FILLER MATERIAL  
CONSUMERS POWER COMPANY  
MIDLAND PLANT UNITS 1 AND 2  
MIDLAND, MICHIGAN

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APPENDIX

- A Quality Assurance Requirements for Q-Listed  
Materials and Work



## 1.0 SCOPE

The tendon sheathing filler material will be used to fill the space left between the post-tensioned tendons and the tendon sheathing. The purpose is to exclude air and water from the tendon surface and the sheathing void and to prevent the migration of air and water to the tendon surface and the sheathing void during the life of the structure. Therefore, the material provided shall be capable of being contained for a long period of time without any chemical or physical changes or deterioration of its corrosion protection capabilities.

## 2.0 WORK INCLUDED

- 2.1 Furnishing and delivering sheathing filler material for corrosion protection of tendons of the post-tensioning system
- 2.2 Furnishing information and recommendations concerning the necessary equipment and methods required for installation of tendon sheathing filler material
- 2.3 Furnishing documented information for physical and chemical properties, with testing method designations for material proposed

## 3.0 WORK NOT INCLUDED

- 3.1 Installation
- 3.2 Furnishing equipment for installation of filler material
- 3.3 Unloading and field storage of filler material
- 3.4 Field testing of filler material

## 4.0 QUALITY STANDARDS

### 4.1 GENERAL

4.1.1 The Seller shall control the quality of items and services to meet the requirements of this specification, applicable codes and standards, and other procurement documents.

### 4.1.2 REFERENCED CODES AND STANDARDS

<u>Sponsor</u>	<u>Number</u>	<u>Subject</u>
APHA	428	Sulfide Ion in Water

ASTM	D 88-56(1973)	Saybolt Viscosity	3
ASTM	D 92-1972	Flash Points by Cleveland Open Cup	
ASTM	D 512-67(1974)	Chloride Ion in Industrial Water and Industrial Wastewater	
ASTM	D 937-1977	Test for Cone Penetration of Petrolatum	1
ASTM	D 938-1971	Congealing Point of Petroleum Waxes, Including Petrolatum	
ASTM	D 974-64(1977)	Neutralization by Color-Indicator Titration	2
ASTM	D 992-1971	Nitrate Ion in Industrial Water	1

4.1.3 Deleted

## 5.0 SUBMITTALS

### 5.1 STANDARD FORMS

Engineering and quality verification document requirements are summarized on Form G-321-D and are augmented by detailed requirements in this specification.

6.0 MATERIAL

## 6.1 GENERAL REQUIREMENTS

6.1.1 Chemical and physical stability will be maintained for the following conditions:

- a. Temperature range: -30 to 150F
- b. Integrated radiation dose:  $1.0 \times 10^6$  rad
- c. Sustained hydrostatic pressure: 100 psi

6.1.2 Sheathing filler material shall contain corrosion inhibitors or other characteristics which will prevent corrosion of tendons in voids.




6.1.3 Sheathing filler material shall be formulated to prevent leakage under the service temperature range through joints in the sheathing after the pumping operation is completed.

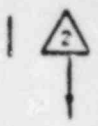
## 6.2 PHYSICAL AND CHEMICAL REQUIREMENTS

## 6.2.1 Physical Limitations

- a. Congealing point: 125F (minimum) in accordance with ASTM D 938
- b. Flash point: 420F (minimum) in accordance with ASTM D 92

6.2.2 Chemical Limitations (allowable maximum in water)

- a. Water soluble chlorides ( $Cl^-$ ):  
2.0 ppm in accordance with ASTM D 512 (limit of accuracy 0.5 ppm) | 
- b. Water soluble nitrates ( $NO_3^-$ ):  
4.0 ppm in accordance with ASTM D 992 (limit of accuracy 0.5 ppm) | 
- c. Water soluble sulfides ( $S^{2-}$ ):  
2.0 ppm in accordance with APHA 428 (limit of accuracy 1.0 ppm) | 



6.2.3 The sheathing filler material shall be compatible with "Viscosity 1702" and "Visconorst 1601 Amber" or approved equal protection coating for the tendons.

An acceptable product that will satisfy the requirements of this specification is:

Visconorst 2090 P4 (Viscosity Oil Company)

6.3 PROPERTIES

6.3.1 Except as designated by the superscript<sup>(1)</sup>, the following physical and chemical properties shall be submitted with each shipment, indicating for each property, as applicable, the ASTM or other testing method used. Properties shall be subject to approval.

Physical Information

Chemical Information

Weight per gallon at 60F

Water soluble nitrates (ppm)

Specific gravity 60F

Water soluble chlorides (ppm)

Congealing point

Water soluble sulfides (ppm)

Flash point

Major organic constituents<sup>(1)</sup>

Viscosity SUS  
at 210F (ASTM D 38)

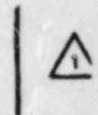
Neutralization number<sup>(1)</sup>



Consistency cone penetration  
at 77F (ASTM D 937)

Thermal coefficient of  
expansion from 50 to 150F<sup>(1)</sup>

6.3.2 The Seller shall furnish with the form of proposal information for all physical and chemical properties listed together with ASTM or other testing method designations for proposed tendon sheathing filler material.



## 6.4 METHOD OF PUMPING

The Seller shall furnish methods for pumping sheathing filler material, size and type of pumps, conveying hoses, and loss of head per 100 feet of length of conveying systems; or supply the kinematic viscosity for a pumping rate of 5 to 20 gpm through a range of temperatures from 20 to 150F. Such methods shall be subject to approval by the Buyer. Maximum temperature for reheating without deleterious effects shall also be specified.

7.0 SHIPPING, HANDLING, AND STORAGE

## 7.1 GENERAL

- 7.1.1 The Seller shall submit manufacturer's recommendations for storing and handling material at the site. Storage requirements shall cover information on sensitivity to moisture, heating, and pumping. These requirements and procedures shall meet the requirements of ANSI N45.2.2, Level D.
- 7.1.2 The Seller shall provide a method for protection of tendon sheathing filler material against contamination in shipping containers.
- 7.1.3 The Seller shall recommend materials and method to be used for removing spilled sheathing filler material from concrete surfaces.

8.0. INSPECTION AND TESTING

## 8.1 GENERAL

- 8.1.1 To verify conformance with the chemical limitations specified in Subparagraph 6.2.2, an independent laboratory will conduct the following test at the Buyer's expense to determine the amount of water soluble chlorides, nitrates, and sulphides.
- 8.1.2 One 4-ounce sample is withdrawn from each 100 drums, tank truck, or rail car.



- 8.1.3 To obtain the sample, a clean positive suction sample tube 2 inches in diameter is inserted approximately 24 inches below the surface of the delivery tank, and the tank and sample container are sealed and marked.
- 8.1.4 The inside (bottom and sides) of a 1-liter beaker is thoroughly coated with 4 ounces of sample material. The coated beaker is filled with distilled water and heated to 100F for 4 hours. The temperature of the beaker shall not exceed 100F. The water extraction is measured, tested, and reported in accordance with Subparagraph 6.2.2.
- 8.1.5 Maximum limits for acceptance of material at jobsite for chlorides ( $Cl^-$ ), nitrates ( $NO_3^-$ ), and sulfides (S) are specified in Subparagraph 6.2.2.
- 8.1.6 Failure of material to meet these tests shall be cause for rejection. The Seller shall bear the cost of satisfactory removal, disposal, and replacement of the material.

9.0 MEASUREMENT FOR PAYMENT

9.1 BASIS FOR MEASUREMENT

Measurement for payment will be based upon the units set forth in the form of proposal.



APPENDIX A

QUALITY ASSURANCE REQUIREMENTS FOR  
Q-LISTED MATERIALS AND WORK

- 1.0 The Buyer shall have free access to all work and shall have the authority to stop work or reject shipment if the specification requirements, including those for documentation, have not been fulfilled.
- 2.0 The Seller shall furnish documentation in accordance with the specifications as summarized and directed by Form G-321-D. To complete Form G-321-D, the Seller shall check in Column 8 which documents are being transmitted, and shall sign Line 21. The Seller shall fill in Lines 13 through 20 as applicable. Entries such as NA (not applicable) and "See attached sheets" are permissible. The completed Form G-321-D is then used for a cover sheet as directed on the back of the form.

ATTACHMENTS

1. Form G-321-D, Engineering and Quality Verification Document

**READ INSTRUCTIONS ON BACK BEFORE FILLING IN FORM**

These requirements for Engineering and Quality Verification Documents are to be fulfilled in accordance with the schedule set forth below.  
Supplier's failure to comply with these requirements may result in order cancellation or withholding of payment until compliance is established.

1. Document Category Number	2. Specification Paragraph Reference	3. Kind of Copies	ENGINEERING DOCUMENTS				QUALITY VERIFICATION DOCUMENTS					12. Remarks	
			4. Quantity Required		5. Prior Approval Required		6. Quantity Required for Release	7. Distribution Code	8. Supplier Conform Check	9. Inspection Release	10. Engineering Review		11. Field QCE Check In
			Initial	Final	Yes	No							
3.0	Appendix A Att. #2	Reproducible	2	2									
		Microfilm				X							
4.1.E	6.4	Reproducible	5	20									
		Microfilm				X							
4.4.E	7.1.2 7.1.1	Reproducible	5	20									
		Microfilm				X							
15.0E	7.1.3	Reproducible	2	2									
		Microfilm				X							
17.1V	6.3.1	Reproducible					2	c					
		Microfilm		N/A									
11.0E	6.3.2	Reproducible	2	2									
		Microfilm				X							
		Reproducible											
		Microfilm											
		Reproducible											
		Microfilm											
		Reproducible											
		Microfilm											
		Reproducible											
		Microfilm											

13. Supplier's Order No.	14. Supplier's Part No.	15. Supplier's Part Name	16. Quantity
17. Buyer's Req. Item No.	18. Buyer's Line/Equip., Tag or Code No.	19. Buyer's Part Name	20. Traceability


21. Supplier's Conformance Statement: We certify that the listed work and required documents meet the requirements of the procuring documents. Supplier: \_\_\_\_\_ Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

22. Inspection Release Statement: Work was released based on satisfactory completion of inspection and review of documentation. Authorized Deviations  YES, Noted under 12, Remarks  NONE. Bechtel Inspector: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

23. Engineering Review Statement: The Quality Verification Documents submitted to Engineering with this form have been reviewed for conformance to the specified requirements and are acceptable. Engineer: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

24. QCE Check-In Statement: This form and the Quality Verification Documents referenced herein have been received and their relationship to the hardware items verified. CONTROL NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ QCE: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

After QCE Check-in Distribute to: Procurement Manager, Field Office Manager, Material Supervisor

 6-321-0 AA REV 2 6/74	Purchase of Tendon Sheathing Filler Material Consumers Power Company Midland Plant - Unit 1 and 2	JOB NO. 7220 P.O./SPEC. NUMBER C-49(Q)
	ENGINEERING AND QUALITY VERIFICATION DOCUMENT REQUIREMENTS	

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**INSTRUCTIONS FOR PREPARING G-321-D**

- A. **PURPOSE:** This is a multi-purpose form to be used by Buyer/Contractor to specifically identify documents required of the supplier to satisfy specification requirements, and is to be used by the supplier as a cover sheet for Quality Verification Documents when submitting them to the Buyer/Contractor.
- B. **GENERAL INFORMATION:** Engineering (E) and Quality Verification (V) Documents are identified by Category number and title in section H. below.
- C. **USE:** A copy of the front of this form shall be completed by the supplier and provided to the Buyer's/Contractor's Inspector along with the applicable Quality Verification Documents for his review prior to release of the unit(s).
- D. **DISTRIBUTION:** All Engineering (E) Documents are to be sent to the Project Engineer at the address shown below (Code a).

When inspection release is completed, the Verification (V) Documents are to be distributed to the respective addresses shown below in accordance with the distribution code specified in Column 7. A copy of the completed Form G-321-D must accompany each "package" of Verification Documents to its destination. Also, a copy of completed Form G-321-D is to be included with the hardware shipment and a copy sent separately to the Project Field Quality Control Engineer at the jobsite.

<p><b>Code a.</b>                  Bechtel Power Corp.                  P.O. Box 2167                  Midland, Michigan 48640                  Attn: Project Field Engineer</p>	<p><b>Code b. With hardware shipment (G-321-D only)</b>                  Bechtel Power Corp.                  3500 E. Miller Road                  Midland, Michigan 48640</p>	<p><b>Code 3. (G-321-D only)</b>                  Bechtel Power Corp.                  P.O. Box 2167                  Midland, Michigan 48640                  Attn: Quality Control Engineer</p>
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**E. DEFINITIONS OF TERMS:** (See also Document Category Definitions G-321-SUP A)

- Supplier** - This is a generic term and is synonymous with the terms seller, vendor, contractor, sub-contractor, sub-supplier, etc.
- Reproducible** - can be legibly duplicated by either microreproduction or electrostatic dry process.
- Microfilm** - 35mm microfilm conforming to the requirements of the procurement documents. When not specified, supplier shall submit his standard for approval.
- Prior Approval Required** - Bechtel approval required prior to use of documents in the design, fabrication, installation, or other work process.
- Initial** - the first submittal of a document in accordance with the schedule mutually agreed to by the Buyer and the supplier.
- Final** - the submittal that reflects the resolution of review comments, or the complete submittal required. Both are to be accepted prior to rendering final payment. Drawings submitted as final must be full size reproducible made from original document. Adjacent to the title block, each drawing must be certified and show Buyer's job title, job number, purchase order number, line, equipment, tag or code number, and the manufacturer's serial number(s).
- Certified** - the dated Signature and Title of an authorized and responsible employee of the supplier.
- N/A** - Not applicable - can be used for individual entries, columns and lines by Project engineering, and for individual entries by the supplier.

**F. BECHTEL ENTRY INSTRUCTIONS**

Entry No.	Information Required
1	Enter Document Category Number.
2	Enter Specification paragraph reference.
3	Make no entry. Relates to kind of copies required.
4	Enter the number of each kind of copy for "initial" or "final" submittals of Engineering Documents.
5	Enter approval requirement by X under "Yes" or "No" column.
6	Enter the number of each kind of copy of Quality Verification Documents required for release of the item or installation.
7	Enter Quality Verification Document distribution code letter in accordance with paragraph D above.
8	Make no entry. For supplier use only.
9	Bechtel Inspector to complete upon release. Sign on line 22.
10	Enter Bechtel Engineering review confirmation. Sign on line 23.
11	Bechtel OCE to complete check-in. Sign on line 24.
12	Enter remarks as appropriate.

**G. SUPPLIER ENTRY INSTRUCTIONS**

Entry No.	Information Required
8	Enter number of pages of each type of Quality Verification Documents being submitted for the unit(s) being released. Sign Statement of Conformance on line 21.
12	Enter remarks as appropriate. When a deviation has occurred, reference the deviation(s) and Buyer/Contractor's authorization in this column, and include the authorization document(s) in the Verification Document Package.
13, 14, 15	Enter information as required.
16	Enter the numbers of units covered by the Quality Verification Documents being submitted. For each requisition item no. being released provide a separate copy of this completed form and the supporting Quality Verification Documents.
17, 18, 19	Enter information as required.
20	Enter identification number(s) traceable to the unit(s) being released, e.g. serial no., heat no. of major component, cable reel no. or other unique designator.

**H. DOCUMENT CATEGORY NUMBERS:** Engineering (E) and Quality Verification (V) Document Requirements as entered in Column 1, and defined in G-321-SUP A Document Category Definitions. For details, see specification paragraph(s) referenced in Column 2.

<p><b>1.0 DRAWINGS (E)</b>                  1.1 Outline Dimensions, Services and Foundation/Mounting Details                  1.2 Assembly Drawings                  1.3 Shop Detail Drawings                  1.4 Wiring Diagrams                  1.5 Control Logic Diagrams                  1.6 P &amp; IDs  <b>2.0 PARTS LIST AND COST (E)</b>  <b>3.0 COMPLETED BECHTEL DATA SHEETS (E)</b>  <b>4.0 INSTRUCTIONS (E)</b>                  4.1 Erection/Installation                  4.2 Operating                  4.3 Maintenance                  4.4 Site Storage and Handling  <b>5.0 SCHEDULES: ENGINEERING AND FABRICATION/ERECTION (E)</b>  <b>6.0 QUALITY ASSURANCE MANUAL/PROCEDURES (E)</b>  <b>7.0 SEISMIC DATA REPORT (E)</b>  <b>8.0 ANALYSIS AND DESIGN REPORT (E)</b>  <b>9.0 ACOUSTIC DATA REPORT (E)</b>  <b>10.0 SAMPLES (E)</b>                  10.1 Typical Quality Verification Documents</p>	<p><b>10.2 Typical Material Used</b>  <b>11.0 MATERIAL DESCRIPTION (E)</b>  <b>12.0 WELDING PROCEDURES AND QUALIFICATIONS (E), AND VERIFICATION REPORTS (V)</b>  <b>13.0 WELD ROD CONTROL PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>14.0 REPAIR PROCEDURES (E), AND MAJOR REPAIR VERIFICATION REPORTS (V)</b>  <b>15.0 CLEANING AND COATING PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>16.0 HEAT TREATMENT PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>17.0 CERTIFIED MATERIAL PROPERTY REPORTS (V)</b>                  17.1 MTR (Certified Material Test Reports)                  17.2 Impact Test Data                  17.3 Ferrite Data                  17.4 Material Certificate of Compliance                  17.5 Electrical Property Reports  <b>18.0 CODE COMPLIANCE (V)</b>  <b>19.0 UT - ULTRASONIC EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)</b></p>	<p><b>20.0 RT - RADIOGRAPHIC EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>21.0 MT - MAGNETIC PARTICLE EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>22.0 PT - LIQUID PENETRANT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>23.0 EDDY CURRENT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>  <b>24.0 PRESSURE TEST - HYDRO, AIR, LEAK, BUBBLE OR VACUUM TEST PROCEDURE (E), AND VERIFICATION REPORTS (V)</b>  <b>25.0 INSPECTION PROCEDURE (E), AND VERIFICATION REPORTS (V)</b>  <b>26.0 PERFORMANCE TEST PROCEDURES (E), AND VERIFICATION REPORTS (V)</b>                  26.1 Mechanical Tests                  26.2 Electrical Tests  <b>27.0 PROTOTYPE TEST REPORT (E &amp; V)</b>  <b>28.0 SUPPLIER SHIPPING PREPARATION PROCEDURE (E)</b></p>
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# ENGINEERING & QUALITY VERIFICATION DOCUMENT CATEGORY DEFINITIONS G-321-D

(E) – Engineering Documents. This term comprises procedures, drawings, specifications, QA plans, prototype qualification test reports, and other similar documents that require Bechtel approval prior to fabrication, or prior to use of the document in the design, fabrication, installation, or other work process. The term is also applied to price lists, and instructional documents for handling, storage, maintenance, etc., that are of informational interest only to project engineering.

(V) – Quality Verification Documents. This term comprises material test reports, heat treatment charts, welding records, NDE results, performance test reports, etc., which demonstrate or certify conformance to the technical or inspection requirements of the procurement documents.

## 1.0 DRAWINGS (E)

- 1.1 Outline Dimensions, Services and Foundation/Mounting Details – Drawings providing external envelope, including lugs, center line(s), location and size for electrical cable, conduit, fluid, and other service connections, isometrics, and details related to foundations and mountings.
- 1.2 Assembly Drawings – Detailed drawings indicating sufficient information to facilitate assembly of the component parts of an equipment item.
- 1.3 Shop Detail Drawings – Drawings which provide sufficient detail to facilitate the fabrication or manufacture of the equipment item. This includes but is not limited to, spool drawings, heat exchanger internal details, internal piping and wiring, cross-section details and architectural details.
- 1.4 Wiring Diagrams – Drawings which show schematic diagrams, equipment internal wiring diagrams, and interconnection wiring diagrams for electrical items.
- 1.5 Control Logic Diagrams – Drawings which show paths which input signals must follow to accomplish the required responses.
- 1.6 P & IDs – Piping and Instrumentation Diagrams which schematically show piping system details and the basic control elements.

2.0 PARTS LIST AND COST (E) – Exploded view with identified parts and recommended spare parts for one year's operation with unit cost.

3.0 COMPLETED BECHTEL DATA SHEETS (E) – Information provided by a supplier on data sheets furnished by Bechtel

## 4.0 INSTRUCTIONS (E)

- 4.1 Erection/Installation – Detailed written procedures, instructions, and drawings required to erect or install material or equipment.
- 4.2 Operating – Detailed written instructions describing how an item or system should be operated.
- 4.3 Maintenance – Detailed written instructions required to disassemble, reassemble and maintain items or systems in an operating condition.
- 4.4 Site Storage and Handling – Detailed written instructions which define the requirements and time period, for lubrication, rotation, heating, lifting or other handling requirements to prevent damage or deterioration during storage and handling at jobsite. This includes return shipping instructions.

5.0 SCHEDULES: ENGINEERING AND FABRICATION/ERECTION (E) – Bar charts, critical path methods, etc., which chronologically detail the sequence of activities.

6.0 QUALITY ASSURANCE MANUAL/PROCEDURES (E) – The document(s) which describe(s) the planned and systematic measures that are used to assure that structures, systems, and components will meet the requirements of the procurement documents.

7.0 SEISMIC DATA REPORT (E) – The analytical or test data which provides data and demonstrates suitability of an item, material, component or system in relation to the conditions imposed by the stated seismic criteria.

8.0 ANALYSIS AND DESIGN REPORT (E) – The analytical data, (stress, electrical loading, fluid dynamics, etc.), which assures that an item satisfies specified requirements.

9.0 ACOUSTIC DATA REPORT (E) – The noise, sound and other acoustic vibration data required by specification.

## 10.0 SAMPLES (E)

10.1 A representative data package which will be submitted for the items purchased as required in the specification.

10.2 A representative example of the material to be used.

11.0 MATERIAL DESCRIPTION (E) – The technical data describing a material which a supplier proposes to use for a specific order. This usually applies to architectural items, e.g., metal siding, decking, doors, paints, coatings.

12.0 WELDING PROCEDURES AND QUALIFICATIONS (E), AND VERIFICATION DOCUMENTS (V) – The welding procedure, specification and supporting qualification records required for welding, hard facing, overlay, brazing and soldering. A verification document of welds performed including the identification of the welder (s), and the procedure (s) used, and certification that the welder (s) were qualified.

13.0 MATERIAL CONTROL PROCEDURES (E) – The procedures for controlling issuance, handling, storage and traceability of material such as weld rod, when required.

14.0 REPAIR PROCEDURES (E), AND MAJOR REPAIR VERIFICATION REPORTS (V) – The procedures for controlling material removal and replacement by welding, brazing, etc., subsequent thermal treatments, and final acceptance inspection. Verification reports may include weld repair locations (maps), material test reports for filler metal, pre-and-post-weld heat treatment records, NDE records, etc. The resolution of whether a repair is major or not is a Bechtel responsibility.

- 15.0 **CLEANING AND COATING PROCEDURES (E), AND VERIFICATION REPORTS (V)** — The procedures for removal of dirt, grease or other surface contamination and includes application of protective coatings. Verification reports include certification of visual examination for surface preparation, surface profile, materials, etc., humidity data, temperature data and coating thickness data as required by the procurement documents.
- 16.0 **HEAT TREATMENT PROCEDURES (E), AND VERIFICATION REPORTS (V)** — The procedures for controlling temperature, time at temperature as a function of thickness, furnace atmosphere, cooling rate and method, etc. Verification reports normally include furnace charts or similar records which identify and certify the item(s) treated, the procedure used, furnace atmosphere, time at temperature, cooling rate, etc. Verification data may be in either narrative or tabular form.
- 17.0 **CERTIFIED MATERIAL PROPERTY REPORTS (V)**
- 17.1 **MTR (Certified Material Test Reports)** — These reports include all chemical, physical, mechanical and electrical property test data required by the material specification and applicable codes. This is applicable to cement, concrete, metals, cable jacket materials, rebar, rebar splices, etc. The certified MTR shall include a statement of conformance that the material meets the specification requirements.
- 17.2 **Impact Test Data** — Results of all Charpy or drop weight tests including specimen configuration, test temperature and fracture data.
- 17.3 **Ferrite Data** — Report of the ferrite percentage for stainless steel materials used, including castings & welding filler metals as deposited.
- 17.4 **Material Certificate of Compliance** — Verification document which certifies conformance to the requirements of the applicable material specification.
- 17.5 **Electrical Property Reports** — Report of electrical characteristics, e.g., dielectric, impedance, resistance, flame test, corona, etc.
- 18.0 **CODE COMPLIANCE (V)** — Verifying documents (such as data Forms U-1, N-2, State, etc.), which are prepared by the manufacturer or installer and certified by the Authorized Code Inspector.
- 19.0 **UT — ULTRASONIC EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Procedures for detection and examination results of presence and certain characteristics of discontinuities and inclusions in materials by the use of high frequency acoustic energy.
- 20.0 **RT — RADIOGRAPHIC EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Procedures for detection and examination results of presence and certain characteristics of discontinuities and inclusions in materials by x-ray or gamma-ray exposure of photographic film.
- 21.0 **MT — MAGNETIC PARTICLE EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Procedures for detection and examination results of surface (or near surface) discontinuities in magnetic materials by distortion of an applied magnetic field.
- 22.0 **PT — LIQUID PENETRANT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Procedures for detection and examination results of surface discontinuities in materials by application of a penetrating liquid in conjunction with suitable developing techniques.
- 23.0 **EDDY CURRENT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Procedures for detection and examination results of discontinuities in material by distortion of an applied electromagnetic field.
- 24.0 **PRESSURE TEST — HYDRO, AIR, LEAK, BUBBLE OR VACUUM TEST PROCEDURE (E), AND VERIFICATION REPORTS (V)** — Procedures for performing hydrostatic or pneumatic structural integrity and leakage tests.
- 25.0 **INSPECTION PROCEDURE (E), AND VERIFICATION REPORTS (V)** — Organized process followed for the purpose of determining that specified requirements (dimensions, properties, performance results, etc.) are met. Documented findings resulting from an inspection are included in the verification report.
- 26.0 **PERFORMANCE TEST PROCEDURES (E), AND VERIFICATION REPORTS (V)** — Tests performed to demonstrate that functional design and operational parameters are met and the report of the test results.
- 26.1 **Mechanical Tests**, e.g., pump performance data, valve stroking, load, temperature rise, calibration, environmental, etc.
- 26.2 **Electrical Tests**, e.g., load, impulse, overload, continuity, voltage, temperature rise, calibration, saturation, loss, etc.
- 27.0 **PROTOTYPE TEST REPORTS (E & V)** — Report of a test which is performed on a standard or typical example of equipment, material or item, and is not required for each item produced in order to substantiate the acceptability of equal items. This normally includes tests which may, or could be expected to, result in damage to the item(s) tested.
- 28.0 **SUPPLIER SHIPPING PREPARATION PROCEDURE (E)** — The procedure used by a supplier to prepare finished materials or equipment for shipment from his facility to the jobsite.

Appendix A  
Attachment 1  
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