

Lichtel Associates Professional Corporation
Ann Arbor, Michigan

- APPENDIX B
SPEC C-208

TECHNICAL SPECIFICATION
FOR
FURNISHING, DETAILING, FABRICATING AND DELIVERING
REINFORCING STEEL
FOR THE
CONSUMERS POWER COMPANY
MIDLAND PLANT UNIT 1 AND 2
MIDLAND, MICHIGAN
Consisting of:

1. General Project Requirements 7220-G-1, Rev. 2 | \triangle 10
2. Specific Conditions
3. Form of Proposal
4. General Requirements For Supplier
Quality Assurance Programs 7220-G-20 Rev. 1 | \triangle 10

No.	DATE	REVISIONS	BY	CHEK	APPR
\triangle 10	6/28/77	Revised as noted on Facing Sheet, Incorporated Scns 7001, 7002, 7003	RJM	ALD	RLC
		CANCELLED SCN 6002			
\triangle 9	7-10-76	Rev. as noted on facing Sht., Inc. SCN 6003, 6004, & 6005	F. J. ALD	ALD	RLC
\triangle 8	7-9-76	Revised as noted on facing sheet. Inc. SCN 6001	RJM	ALD	RLC
\triangle 7	10-21-76	Revised as noted on facing sheet. Incorporated SCN 4002 and SCN 4003	ALD	ALD	RLC
\triangle 6	7-16-74	Revised as noted on facing sheet Incorporated SCN 4001	ALD	ALD	RLC
\triangle 5	5-13-74	Revised Section 7.4	ALD	ALD	RLC
\triangle 4	7-10-73	Revised Section 8.3	ALD	ALD	RLC
\triangle 3	3/20/73	Revised & Reissued by BAPC for Proj. Reactivation	ALD	ALD	RLC
\triangle 2	8/19/70	Issued for Purchase	ALD	ALD	RLC
\triangle 1	12/4/69	Issued for Fabrication	ALD	ALD	RLC
\triangle 0	8/11/69	Issued for Bids	ALD	ALD	RLC
\triangle -1	6/9/69	Issued for Review	ALD	ALD	RLC

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 PDR
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Sh. 2	9												

NO.	DATE	REVISIONS	BY	CHK'D	APP'D	NO.	DATE	REVISIONS	BY	CHK'D	APP'D
10	6/20/77	Rev. Shts 1, 11, 2 Add Page 2a	WJW	AKS	RLS						
9	1/23/76	Rev. Shts. 1, 11, 3, 4, 2 & G-321-C	WJW	AKS	RLS						
8	1/21/76	Revised shts 1, 11, 4	WJW	AKS	RLS						
7	12/3/74	Revised Shts 1, 11 2&4	WJW	AKS	RLS						
6	11/2/74	Revised Shts. 1, 11 and 2	WJW	AKS	RLS						
5	10/13/74	Revised Sht. 2	WJW	AKS	RLS						
4	7/1/74	Revised Sp. 3	WJW	AKS	RLS						

BECHTEL CORPORATION


FACING SHEET
 FURNISHING, DETAILING, FABRICATING
 AND DELIVERING REINFORCING STEEL
 CONSUMERS POWER COMPANY
 MIDLAND PLANT UNIT 1 & 2

JOB No 7220
 Specification No.
 7220-C-39

REV. 61
10

1-38

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TECHNICAL SPECIFICATION
FOR
FURNISHING, DETAILING, FABRICATING AND DELIVERING
REINFORCING STEEL
FOR THE
CONSUMERS POWER COMPANY
MIDLAND PLANT UNIT 1 AND 2
MIDLAND, MICHIGAN

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SPECIFIC CONDITIONS
FOR
FURNISHING, DETAILING, FABRICATING AND DELIVERING
REINFORCING STEEL
FOR THE
CONSUMERS POWER COMPANY
MIDLAND PLANT UNITS 1 AND 2
MIDLAND, MICHIGAN

1.0 WORK INCLUDED

The work includes the furnishing of all plant, labor, materials, tools and equipment and the performance of all operations and incidentals necessary to detail, furnish, fabricate and deliver reinforcing steel and wire mesh fabric, as specified herein or as shown on the final design drawings.

2.0 WORK NOT INCLUDED

The following items of work are not included:

- a. Unloading and sorting steel at the jobsite
- b. Placing reinforcing steel and wire mesh fabric
- c. Furnishing chairs, spacers, and tie wire

3.0 ABBREVIATIONS

The abbreviations listed below, when used in these Specific Conditions, shall have the following meanings:

ACI - American Concrete Institute
ASTM - American Society for Testing and Materials

4.0 CODES AND STANDARDS

Except as otherwise specified or shown in the final design drawings, the detailing, fabrication, and tagging of all reinforcing steel shall be in accordance with the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI Standard 315).

5.0 ESTIMATED QUANTITIES

Design drawings for the proposed sizes and quantities of reinforcing steel are incomplete at the time this specification is written. The estimated total tonnage is introduced in the Form of Proposal as an indication of the scope of work and for the purpose of bid comparison. No guarantee is made as to the accuracy of this estimated total tonnage, however total quantities are expected to be accurate within plus or minus 20 percent. The Seller shall make no claim for loss arising from the difference between the actual quantity required and this estimated quantity.

6.0 TIME REQUIREMENTS

6.1 "Deleted"

6.2 Scheduling of individual deliveries shall suit the job requirements. For bidding purposes, the delivery rate shall be assumed to be as shown on the Material Requisition. Actual delivery rates shall be supplied to the Seller as work progresses.

6.3 The Seller shall be responsible for the safe, undamaged delivery to the jobsite of all reinforcing steel supplied under these Specific Conditions. Damaged material may be returned at Seller's expense.

7.0 MATERIAL

7.1 All material shall be new and unused, free from loose rust, scale, or coatings which would reduce or destroy bond. Reinforcing appreciable reduced in cross-section by bending shall not be used.

7.2 Reinforcing bars shall conform to the "Standard Specification for Deformed Billet Steel Bars for Concrete Reinforcement" ASTM A 615-68 or "Standard Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement," ASTM A 615-72 or ASTM A 615 of the latest applicable year. Bar number 11, 14, and 18 shall have a minimum elongation of 7% for a full size 8 inch specimen. Reinforcing bars shall be Grade 40 and Grade 60.

Bar sizes 14 and 18 shall satisfy the requirements of ASTM A 615, Supplementary Requirements S-1, with full sized specimens for bars shipped after May 15, 1977,

7.3 Welded wire fabric for concrete reinforcement shall conform to "Specifications for Welded Steel Wire for Concrete Reinforcement (ASTM A 185-72).

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- 7.4 Reinforcing steel to be mechanically spliced may be sawcut, flamecut, or shearcut; all work shall be in accordance with the following requirements. Flamecut ends shall have the slag removed by chipping, brushing, or grinding. Sawcut ends shall have the burr removed. Shear cutting will be allowed for straight bars only, bent or radius rebars shall not be shearcut. Ends of shearcut bars shall be inspected for shear drag, rebar flattening, bar bending which would prevent proper fit and alignment of the rebar in the splice sleeve. Any damage to the rebar shall be cause for rejection. Plane of cut shall not deviate from the "square" more than "1/8". Bar deformations shall be full size, undamaged, and uninterrupted by trademark or any other identification mark for the last 12 inches on the ends to be spliced.

8.0 TESTS


- 8.1 The Seller shall furnish the Buyer with three certified copies of all mill test reports covering the chemical and physical properties of the reinforcing steel, as described in the referenced specifications and standards. Each delivery shall be identified by its applicable mill test report and heat number.
- 8.2 The Buyer, or the Seller if requested to by the Buyer, will select random samples of the steel delivered to the fabricating shop and/or the job-site for the purpose of making chemical analysis and physical property tests. Such testing shall include sampling from all heat numbers and bar sizes proposed for use on the subject project. Samples will be either taken from the shop by the Buyer, or shall accompany shipment to the job site.
- 8.3 Mill test reports shall be submitted to the Buyer at the time the steel is delivered to the fabricating shop. Buyer's approval of mill test reports is required prior to shipping fabricated material to the job site.
- 8.4 All testing performed by the Buyer or his appointed representative will be done in accordance with Spec 7220-C-208.

9.0 INSPECTION

The work shall include inspection in the fabricating shop by the Contractor's inspectors. The Contractor shall also provide facilities, including drawings, for shop inspection of materials and workmanship as requested by the Buyer.

10.0 DETAIL DRAWINGS

- 10.1 The Buyer will furnish prints of the final design drawings which will give all information required for the shop detailing of the reinforcing steel. The Buyer will also, if requested, furnish duplicate tracings of design drawings to the Seller for his use as placing drawings, provided that the Seller removes the Buyer's identifying title block and approval seals.
- 10.2 The Seller shall submit to the Buyer or his designated representative, for approval, three prints, one reproducible and one "projection wash-off mylar" of each of the placing drawings and accompanying bar lists. The Seller's placing drawings shall be referenced to the Buyer's design drawings. Bar lists shall be referenced to the related placing drawings. A
- 10.3 The Seller's placing drawings and bar lists shall be checked before submission for approval.
- 10.4 The Buyer or his designated representative will review the Seller's placing drawings and bar lists with respect to conformance to the design drawings. One copy will be returned to the Seller approved, or with notations requiring change, within 10 calendar days. In the latter case, the Seller shall make, and clearly mark, such corrections and resubmit the drawings for final approval within 10 calendar days.
- 10.5 Approval of placing drawings and bar lists by the Buyer will not relieve the Seller of responsibility for the completeness and accuracy of all dimensions and details. 8v

- 10.6 Immediately upon approval, one transparency of each drawing shall be furnished to the Buyer or his designated representative for construction use and files.
- 10.7 All reinforcing steel delivered to the jobsite shall be tagged. Tags shall be made of durable material such as TYVEC or approved equal. The life of the tag and its legibility shall last beyond receipt inspection at the jobsite and shall provide traceability to the appropriate heat numbers for a reasonable time in storage. | 

Two tags shall be attached by wire to each bundle of reinforcing steel. Tags should show the grade, mark number, size, length of the bars, and the number of bars in each bundle. A colored tag shall be added to each bundle to differentiate the reinforcing steel for each area.

11.0 SHOP ERRORS

Material improperly detailed or wrongly fabricated, so that its placing in the field necessitates extra work, shall be the responsibility of the Seller. The Seller shall pay the entire cost of replacement or of field corrections, including all shipping costs.

12.0 MEASUREMENT AND PAYMENT

- 12.1 Quantities for payment of reinforcing steel will be measured by the pound of material accepted by the Buyer, calculated on the theoretical lengths of the bars as detailed, and at the theoretical weights as given in the "Standard Specifications for Deformed Billet Steel Bars for Concrete Reinforcement" (ASTM A 615-72). Reinforcing steel will be paid for at the contract price per hundred - weight, which price will include a base price per hundred - weight plus extra charges per hundred - weight for cutting of bars less than mill length, size extras, bending extras, detailing, and freight; special bar end preparation for mechanical splices will be paid on a unit basis of number of bar ends so prepared (i.e. at each mechanical splice, there will be two each bar end preparation units). All prices as listed in the Form of Proposal.

Quantities of welded wire fabric delivered to the jobsite and accepted by the Buyer will be measured by the area covered by welded wire fabric, with no allowance for laps. Based on this area, the weight of such welded wire will be calculated. Welded wire fabric will be paid for at the contract price per hundred - weight, which price will include a base price per hundred - weight plus extra charges for detailing (if any required) and freight; all prices as listed in the Form of Proposal.

- 12.2 The prices paid shall constitute the full compensation to the Seller for furnishing all labor, materials, supplies, tools and equipment and performing all work and incidentals required to furnish, detail, fabricate and deliver the reinforcing steel as specified, as shown on the design drawings, or as described in the Purchase order.

5-21-75
DATE

APPROVALS

MATL. SUPV.

CHK.

DR.

ENG.

DESCRIPTION

REV.

This schedule of drawings and data requirements is to be fulfilled before rendering final invoices. See below for drawings required and dates due. Failure of Vendor to comply with drawing and data requirements may result in order cancellation in the case of initial drawings, or final payment being withheld in the case of final drawings. Drawings are to be forwarded to:

BECHTEL CORPORATION • P. O. Box 2167 • Midland, Michigan 48646
 Attention: J. E. Newgen

IN ADDITION, FORWARD WITH SHIPMENT, ONE SET OF ANY DRAWINGS NECESSARY FOR FIELD INSTALLATION. FORWARD COPY OF LETTER OF TRANSMITTAL TO: BECHTEL CORPORATION, PROCUREMENT DEPARTMENT, P. O. BOX 1000 Ann Arbor, Michigan 48106 ATTENTION: EXPEDITOR NAMED ON PAGE 1 OF PURCHASE ORDER.

TYPE OF DRAWINGS AND OTHER REQUIREMENTS	APPROVAL BEFORE FAB (YES/NO)	KIND OF COPIES	NUMBER REQUIRED	
			INITIAL	FINAL
A OUTLINE DIMENSIONS AND FOUNDATION REQUIREMENTS		TRANSPARENCY PRINTS		
B CROSS SECTION WITH PARTS LISTS WITH PRICES		TRANSPARENCY PRINTS		
C SHOP DETAIL DRAWINGS	Yes	TRANSPARENCY PRINTS	1+1 3	*1 1/9
D CERTIFIED PERFORMANCE DATA AND TEST REPORTS		TRANSPARENCY PRINTS		
E WIRING DIAGRAMS		TRANSPARENCY PRINTS		
F CONTROL LOGIC DIAGRAMS		TRANSPARENCY PRINTS		
G WELDING PROCEDURES		TRANSPARENCY PRINTS		
H CODE CERTIFICATES, INSPECTION AND TEST REPORTS		ORIGINAL COPIES		
J INSTRUCTIONS FOR ERECTION OR INSTALLATION, OPERATION AND MAINTENANCE		MANUALS OF EACH TYPE		
K LIST OF RECOMMENDED SPARE PARTS FOR ONE YEAR'S OPERATION, WITH PRICES		LISTS		
L COMPLETED BECHTEL CORPORATION DATA SHEETS		TRANSPARENCY		
M MATERIAL CERTIFICATIONS				
N MANUFACTURERS QUALITY CONTROL, INSPECTION AND TEST PROCEDURES AND REPORTS				
O				
*Projection Wash-Off Mylar	9			

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

Final drawings must be certified and must show adjacent to the title block, Purchaser's equipment title and number, manufacturer's serial number and purchase order number. Initial transparencies must be made from faultless masters. Final transparencies shall be on wash-off Mylar. Additional drawing requirements will be specified in the Technical Specification.

Initial drawings required within.....days of receipt of firm order. Final drawings required within.....days of receipt of initial drawings, or within.....days of receipt of firm order if no initial drawings are requested. The finalized drawing transmittal requirement dates will be specified in the purchase order and will take precedence over the above.

3 Revised & Reissued by BAPC for Proj. Reac.
 2 Issued for Purchase
 1 Issued for Fabrication
 0 Issued for Bids



Sheet 1
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
DRAWINGS AND DATA REQUIREMENTS
 CONSUMERS POWER COMPANY
 MIDLAND PLANT UNITS 1 AND 2
 REINFORCING STEEL

JOB NO. 7220
 ATTACHMENT TO REQUISITION NUMBER 7220-C-39
 REV. 88
 9

This schedule of drawings and data requirements is to be fulfilled before rendering final invoices. See below for drawings required and dates due. Failure of Vendor to comply with drawing and data requirements may result in order cancellation in the case of initial drawings, or final payment being withheld in the case of final drawings. Drawings are to be forwarded to:

Bechtel Corporation - P. O. Box 2167, Midland, Michigan 48840 
 Attention: J. F. Newgen 

IN ADDITION, FORWARD WITH SHIPMENT, ONE SET OF ANY DRAWINGS NECESSARY FOR FIELD INSTALLATION. FORWARD COPY OF LETTER OF TRANSMITTAL TO: BECTHEL CORPORATION, PROCUREMENT DEPARTMENT, P. O. BOX 1000, Ann Arbor, Michigan 48106. ATTENTION: EXPEDITOR NAMED ON PAGE 1 OF PURCHASE ORDER.

REQUIREMENTS FOR QUALITY ASSURANCE	REFER TO SPEC. PARA:	APPROVAL REQUIRED	KIND OF COPIES	NUMBER REQUIRED	
				INITIAL	FINAL
A MILL TEST REPORTS	8.1		TRANSPARENCY		
			PRINTS	2	6
B QUALIFIED WELDING PROCEDURES (IF ANY)	See Notes 1 & 3	YES** 	TRANSPARENCY	1	
			PRINTS	1	6
C WELDER QUALIF. RECORDS (IF ANY)	See Notes 1 & 3		TRANSPARENCY		
			PRINTS		3
D RECORDS OF WELDS (IF ANY)	See Note 1		TRANSPARENCY		
			PRINTS		3
E QUALITY ASSURANCE MANUAL	See Notes 2 & 3	YES**	TRANSPARENCY		
			PRINTS		3
F			TRANSPARENCY		
			PRINTS		
G			TRANSPARENCY		
H			PRINTS		
J	NOTES: 1) At the time of project reactivation, no welding work is contemplated				
K	2) Original submittal of quality assurance manual to be reviewed and resubmitted in accordance with specification 7220-G-20 requirements				
L	3) A copy of these documents is to be sent to: Bechtel Corporation - P. O. Box 1000 - Ann Arbor, Michigan 48106 - Attention: Project				
M	Engineer, Job No. 7220				
N					
	* Approval before shipment.				
	** Approval before fabrication.				

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

Final drawings must be certified and must show adjacent to the title block, Purchaser's equipment title and number, manufacturer's serial number and purchase order number. Initial transparencies must be made from faultless masters. Final transparencies shall be on wash-off Mylar. Additional drawing requirements will be specified in the Technical Specification.

Initial drawings required within _____ days of receipt of firm order. Final drawings required within _____ days of receipt of initial drawings, or within _____ days of receipt of firm order if no initial drawings are requested. The finalized drawing transmittal requirement dates will be specified in the purchase order and will take precedence over the above.

1 Revised & Released by BAPC for Proc. React.
 2 Issue for Purchase
 1 Issued for Fabrication
 0 ISSUED FOR BIDS

APPROVALS
 DATE
 MTL.
 SUPV.
 CHR.
 DR.
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 0-221 C
 9/13/68



DRAWINGS AND DATA REQUIREMENTS
 CONSUMERS POWER COMPANY
 MIDLAND PLANT UNITS 1 AND 2
 REINFORCING STEEL

JOB NO. 7220	REV 09
ATTACHMENT TO REQUISITION NUMBER 7220-C-39	9