153

Held Sheila

91055673

NO LIEN CONSTRUCTION CONTRACT

STATE OF INDIANA
LAKE COUNTY
FILED

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ROBERT [illegible]

It is specifically agreed by and between LEVER BROTHERS COMPANY, hereinafter referred to as "Lever" or "Owner", and J.W. THOMPSON CO. hereinafter referred to as "Contractor," as follows:

1. Lever has issued to Contractor Purchase Order No. H-101125 to furnish a dehumidification system to provide conditioned air to the Binacchi presses in building 15 in conformity with the terms, conditions and documents set forth therein, a copy of said Purchase Order being attached hereto as Exhibit "A" and specifically made a part hereof.

2. That said Construction Contract shall be performed at the property of Lever in Hammond, Indiana, and commonly known as 1200 Calumet Avenue, and legally described as per Exhibit "B" attached hereto and specifically made a part hereof.

3. That as part of the consideration for the Contract, it is to be performed on a NO LIEN CONTRACT BASIS, as provided by the provisions of said Purchase Order and by the provisions of GC-3 General Conditions-Contract Work which has been executed and approved by the Contractor.

4. That this document shall be recorded with the Office of the Recorder of Lake County, Indiana, and pursuant to the provisions of Indiana Code 32-8-3-1 shall serve as notice to any and all contractors, subcontractors, mechanics, journeymen, laborers, or persons that NO LIEN shall attach to the real estate, building, structure or any other improvement of the Owner arising out of the performing of labor upon, furnishing materials or machinery for or doing business with the Owner or the Contractor under this Contract or upon said property.

IN WITNESS WHEREOF, the parties have caused this Contract to be executed by their duly authorized representatives

$15.00

and to become effective upon the 31st day of October, 1991.

LEVER BROTHERS COMPANY

By: Frank S Walters

Printed Name: Frank S. Walters

Title: Vice President - Purchasing

ATTEST:

By: Thomas J. Hoolihan

Printed Name: Thomas J. Hoolihan

Title: Secretary

J.W. THOMPSON CO.

By: Kevin P. Hill

Printed Name: Kevin P. Hill

Title: Sales Manager

ATTEST:

By:

Printed Name: James Wehrwein

Title: Sales Engineer

STATE OF NEW YORK)
)
COUNTY OF NEW YORK)

Before me, a Notary Public, in and for said County and State, personally appeared Frank S. Walters and Thomas J. Hoolihan, the Vice President - Purchasing and Secretary, respectively, of LEVER BROTHERS COMPANY, as its duly authorized officers and representatives and acknowledged the execution of this Contract.

Dated this 24th day of October, 1991.

Teresa W. Low
Notary Public

My Commission Expires:

February 28, 1992

Authorized in: New York County.

TERESA W. LOW
Notary Public, State of New York
No. 4787858
Qualified in Putnam County
Certificate Filed in New York County
Commission Expires February 28, 1992

STATE OF MISSOURI)
)
COUNTY OF JACKSON)

Before me, a Notary Public, in and for said County and State, personally appeared Kevin P. Hill and James Wehrwein the Sales Manager and Sales Engineer, respectively, of J.W. THOMPSON CO., s its duly authorized officers and representatives and acknowledged the execution of this Contract.

Dated this 31st day of October, 1991.

Patricia S. Parker
Notary Public

My Commission Expires:

5-18-92

County of Residence:

JACKSON

This instrument prepared by William H. Eichhorn, Esq., Eichhorn, Eichhorn & Link, 200 Russell Street, Hammond, Indiana 46325-6328 (219) 931-0560.

ORDERED FOR: BUILDING 15 | NAME: SCHLEGEL | DIVISION | DEPARTMENT | CHARGE TO ACCOUNT

H-270-01 - 9/75

LEVER BROTHERS COMPANY
(INCORPORATED)

PURCHASE ORDER NO. H 101125

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

SHIP MATERIAL OR PERFORM SERVICES AS DESCRIBED BELOW ACCORDING TO TERMS AND CONDITIONS PRINTED ON FACE AND REVERSE SIDE HEREOF.

TO: J.W. THOMPSON CO.
10550 MARTY, SUITE 201
OVERLAND PARK, KS 66212

DELIVER TO: 1200 CALUMET AVENUE
HAMMOND, IN 46320

CONTROL NO. _____

PLEASE MAIL INVOICE IN DUPLICATE AND BILL OF LADING TO LEVER BROS AT THIS ADDRESS ⇧

DATE OF ORDER	DELIVERY REQUIRED	TERMS
10/31/91	02-01-92	NET 30

SHIP VIA	F.O.B.
T/T	INSTALLED

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
01	1	LOT		PROJECT #91-004 COMPLETE TURNKEY PURCHASE AND INSTALLATION OF A DEHUMIDIFICATION SYSTEM TO PROVIDE CONDITIONED AIR TO THE BINACCHI PRESSES IN BUILDING 15 IN ACCORDANCE WITH PROJECT #91-004 SPECIFICATIONS INCLUDING EQUIPMENT, INSTALLATION, AND DELIVERY AS SPELLED OUT IN YOUR PROPOSAL DOCUMENTS SUBMITTED 09-23-91. EQUIPMENT @ $288,000.00 INSTALLATION @ $115,000.00 FREIGHT @ $8,600.00 LEVER BROTHERS COMPANY SPECIFICATION #91-004 TITLED "PRESS DEHUMIDIFICATION" SHALL FORM THE LEGAL RELATIONSHIP BETWEEN THE PARTIES. NO OTHER TERMS SHALL APPLY UNLESS AGREED TO IN WRITING BETWEEN THE PARTIES. TIME OF DELIVERY IS OF THE ESSENCE. NOTE: THIS IS A "NO LIEN CONTRACT" AND ALL WORK PERFORMED AND MATERIALS FURNISHED ARE PURSUANT TO A "NO LIEN CONTRACT" WHICH WILL BE RECORDED WITH THE OFFICE OF THE RECORDER OF LAKE COUNTY, INDIANA. THE TERMS AND CONDITIONS AS STATED IN SPECIFICATION #91-004 SHALL NOT BE VARIED, SUPPLEMENTED, QUALIFIED, OR INTERPRETED BY ANY PRIOR COURSE OF DEALING BETWEEN THE PARTIES. THE TERMS AND CONDITIONS CONTAINED HEREIN SHALL DETERMINE THE LEGAL RELATIONSHIP OF THE PARTIES.	411600.	$411600.00

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL TERMS AND CONDITIONS CONTAINED ON THE FACE HEREOF AND ON THE REVERSE SIDE OF ORIGINAL —

PLEASE EXECUTE AND RETURN PROMPTLY

82849

Kevin P. Kell
BY (AUTHORIZED SIGNATURE)

JW THOMPSON CO. | 10/31/91
FOR (FIRM NAME) DATE

ACKNOWLEDGMENT

PURCHASED BY

AUTHORIZED SIGNATURE

F. S. WALTERS
(PURCHASING VICE PRESIDENT)

H-270-01 - 9/75

ORDERED FOR: BUILDING 19 | NAME: SCHLEGEL | DIVISION | DEPART

LEVER BROTHERS COMPANY
(INCORPORATED)

PURCHASE ORDER NO. H 101125

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

SHIP MATERIAL OR PERFORM SERVICES, AS DESCRIBED BELOW ACCORDING TO TERMS AND CONDITIONS PRINTED ON FACE AND REVERSE SIDE HEREOF

DELIVER TO: 1200 CALUMET AVENUE
HAMMOND, IN 46320

TO: J.W. THOMPSON CO.
10550 HARTY, SUITE 201
OVERLAND PARK, KS 66212

CONTROL NO. _____

PLEASE MAIL INVOICE, IN DUPLICATE, AND BILL OF LADING TO LEVER BROS. AT THIS ADDRESS ⇧

DATE OF ORDER	DELIVERY REQUIRED	TERMS
10/31/91	02-01-92	NET 30
SHIP VIA		**F.O.B.**
T/T		INSTALLED

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				21.0 LIENS:		
				CONTRACTOR ON HIS OWN BEHALF AND (INSOFAR AS HE IS ABLE TO CONTRACT IN THAT PARTICULAR) ON BEHALF OF ALL OF HIS SUBCONTRACTORS AND SUPPLIERS OF MATERIAL AND LABOR HEREBY EXPRESSLY WAIVES THE BENEFITS OF THE MECHANICS LIEN LAWS OF THE STATE IN WHICH THE EQUIPMENT AND MACHINERY, BEING INSTALLED, ERECTED, OR REPAIRED, IS LOCATED. THE CONTRACTOR HEREBY AGREES TO PROCURE FROM EACH AND EVERY ONE OF HIS SUBCONTRACTORS AND SUPPLIERS OF MATERIAL OR LABOR A RELEASE OF ANY CLAIM TO MECHANICS LIEN WHICH THEY OR ANY OF THEM MAY HAVE UNDER THE MECHANICS LIEN LAWS OF THE STATE IN WHICH THE EQUIPMENT AND MACHINERY, BEING CONSTRUCTED, ERECTED, OR REPAIRED, IS LOCATED AND IN ADDITION AGREES TO FURNISH THE OWNER WITH EACH AND EVERY OTHER DOCUMENT, AFFIDAVIT OR ASSURANCE WHICH, IN THE OPINION OF THE OWNER, IS NECESSARY OR APPROPRIATE TO INSURE THE OWNER IMMUNITY FROM MECHANICS LIENS ON ACCOUNT OF ANYTHING DONE BY CONTRACTOR, OR THOSE ACTING UNDER HIM OR HIS SUBCONTRACTORS IN CARRYING OUT THE TERMS OF THE CONTRACT AND ANY AND ALL WORK ORDERS FOR ADDITIONS THERETO, ALL AS A CONDITION OF PAYMENTS BY THE OWNER ON ACCOUNT OF THIS CONTRACT, OR ON ACCOUNT OF ANY OF SAID WORK ORDERS FOR ADDITIONS THERETO. PAYMENTS MADE BY THE OWNER WITHOUT REQUIRING STRICT COMPLIANCE WITH THE TERMS OF THIS PARAGRAPH SHALL NOT BE CONSTRUED AS A WAIVER BY THE OWNER OF THE RIGHT TO INSIST UPON SUCH COMPLIANCE AS A CONDITION OF LATER PAYMENTS.		

2

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL TERMS AND CONDITIONS CONTAINED ON THE FACE HEREOF AND ON THE REVERSE SIDE OF ORIGINAL —

PLEASE EXECUTE AND RETURN PROMPTLY

82850

Kevin P. Hall
BY (AUTHORIZED SIGNATURE)

JW THOMPSON CO. | 10/31/91
FOR (FIRM NAME) | DATE

ACKNOWLEDGMENT

PURCHASED BY

AUTHORIZED SIGNATURE

F. S. WALTERS
(PURCHASING VICE PRESIDENT)

ORDERED FOR	NAME	DIVISION	DEPARTMENT	CHARGE TO ACCOUNT
BUILDING 5	SCHLEGEL			

H-270-01 - 9/75

LEVER BROTHERS COMPANY
(INCORPORATED)

PURCHASE ORDER NO. H 101125

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

SHIP MATERIAL OR PERFORM SERVICES, AS DESCRIBED BELOW ACCORDING TO TERMS AND CONDITIONS PRINTED ON FACE AND REVERSE SIDE HEREOF.

DELIVER TO: 1200 CALUMET AVENUE
HAMMOND, IN 46320

TO: J.W. THOMPSON CO.
10550 MARTY, SUITE 201
OVERLAND PARK, KS 66212

CONTROL NO. _____

PLEASE MAIL INVOICE IN DUPLICATE AND BILL OF LADING TO LEVER BROS AT THIS ADDRESS ⇧

DATE OF ORDER	DELIVERY REQUIRED	TERMS
10/3/91	02-01-92	NET 30
SHIP VIA		**F.O.B.**
T/T		INSTALLED

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				IF AT ANY TIME THERE SHALL BE EVIDENCE OF THE EXISTENCE, WHETHER OR NOT SAME HAS BEEN ASSERTED, OF ANY LIEN OR CLAIM ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THE CONTRACT FOR WHICH THE OWNER OR REPRESENTATIVES OF THE OWNER OR ANY PROPERTY OF EITHER OR ANY PROPERTY INSTALLED ON THE PREMISES MIGHT BE OR BECOME LIABLE, THEN THE OWNER SHALL HAVE THE RIGHT TO RETAIN OUT OF ANY PAYMENT THEN DUE OR THEREAFTER TO BECOME DUE, IN ADDITION TO THE AMOUNTS SET FORTH IN THE CONTRACT, AN AMOUNT SUFFICIENT TO DISCHARGE SUCH LIEN OR SATISFY SUCH CLAIM AND TO REIMBURSE THE OWNER AND/OR THE REPRESENTATIVES OF THE OWNER FOR ALL COSTS AND EXPENSES IN CONNECTION THEREWITH, INCLUDING REASONABLE ATTORNEY'S FEES; AND THE OWNER AT ITS SOLE DISCRETION, SHALL HAVE THE RIGHT TO SO APPLY ANY AMOUNTS SO RETAINED IF THE CONTRACTOR DOES NOT HAVE SAID LIEN OR CLAIM DISCHARGED OR SATISFIED WITHIN TEN (10) DAYS AFTER NOTICE. NEITHER THE FINAL PAYMENT NOR ANY PART OF THE RETAINED PERCENTAGE SHALL BECOME DUE UNTIL THE CONTRACTOR SHALL DELIVER TO THE OWNER A COMPLETE RELEASE OF ALL LIENS ARISING OUT OF THE CONTRACT, OR RECEIPTS IN FULL IN LIEU THEREOF AND AN AFFIDAVIT THAT, SO FAR AS HE HAS KNOWLEDGE OR INFORMATION, THE RELEASES AND RECEIPTS COVER ALL THE LABOR AND MATERIAL FOR WHICH A LIEN COULD BE FILED. CONTRACTOR SHALL, IF ANY SUBCONTRACTOR REFUSES TO FURNISH A RELEASE OR RECEIPT IN FULL, FURNISH A BOND SATISFACTORY TO THE OWNER TO INDEMNIFY IT AGAINST ANY AND ALL LIENS OR CLAIMS WHICH MAY AT ANY TIME BE FILED OR ASSERTED BY SUCH SUBCONTRACTOR.		

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL TERMS AND CONDITIONS CONTAINED ON THE FACE HEREOF AND ON THE REVERSE SIDE OF ORIGINAL —

PLEASE EXECUTE AND RETURN PROMPTLY

82851

Kevin P. Kell
BY (AUTHORIZED SIGNATURE)

JW THOMPSON CO. | 10/31/91
FOR (FIRM NAME) | DATE

ACKNOWLEDGMENT

PURCHASED BY

AUTHORIZED SIGNATURE

F. S. WALTERS
(PURCHASING VICE PRESIDENT)

ORDERED FOR: BUILDING 4 | NAME: SCHLEGEL | DIVISION | DEPARTMENT | CHARGE TO ACCOUNT

H-270-01 - 9/75

LEVER BROTHERS COMPANY
(INCORPORATED)

PURCHASE ORDER NO. H 101125

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

SHIP MATERIAL OR PERFORM SERVICES, AS DESCRIBED BELOW ACCORDING TO TERMS AND CONDITIONS PRINTED ON FACE AND REVERSE SIDE HEREOF.

TO: J.W. THOMPSON CO.
10550 HARTY, SUITE 201
OVERLAND PARK, KS 66212

DELIVER TO: 1200 CALUMET AVENUE
HAMMOND, IN 46320

CONTROL NO. _____

PLEASE MAIL INVOICE, IN DUPLICATE, AND BILL OF LADING TO LEVER BROS. AT THIS ADDRESS ⇧

DATE OF ORDER	DELIVERY REQUIRED	TERMS
10/31/91	02-01-92	NET 30
SHIP VIA		**F.O.B.**
T/T		INSTALLED

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				IF THE ANOUNTS RETAINED BY THE OWNER ARE SUFFICIENT FOR THE AFORESAID PURPOSES, OR IF ANY SUCH LIEN OR CLAIM REMAINS UNDISCHARGED OR UNSATISFIED AFTER ALL PAYMENTS HAVE BEEN MADE TO THE CONTRACTOR, THEN THE CONTRACTOR SHALL PROMPTLY REFUND TO THE OWNER ALL MONIES THAT MAY HAVE BEEN PAID TO DISCHARGE SUCH LIEN OR SATISFY SUCH CLAIM, INCLUDING ALL COSTS AND EXPENSES AND REASONABLE ATTORNEY'S FEES IN CONNECTION THEREWITH.		
				THE TERMS AND CONDITIONS OF THIS CONTRACT ARE LISTED ON DOCUMENTS NO. 82849, 82850, 82851, & 82852.		
	******			NON-TAXABEE ******		
	******			TELEPHONE CONFIRMATION KEVIN HILL ******		

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL TERMS AND CONDITIONS CONTAINED ON THE FACE HEREOF AND ON THE REVERSE SIDE OF ORIGINAL —

PLEASE EXECUTE AND RETURN PROMPTLY

82852

Ellen P. Hall
BY (AUTHORIZED SIGNATURE)

JW THOMPSON CO. | 10/31/91
FOR (FIRM NAME) DATE

ACKNOWLEDGMENT

PURCHASED BY

AUTHORIZED SIGNATURE

F. S. WALTERS
(PURCHASING VICE PRESIDENT)

Lever

282 (5/88)

GENERAL CONDITIONS (GC #3)— CONTRACT WORK

APPROVED
By Date
KFH 10/5/21

1.0 INTENT OF SPECIFICATIONS

It is the intent of the specifications to provide a complete and acceptable installation of the work described. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be considered as required and shall be furnished as shown or called for in either the drawings or specifications. In case of discrepancies the matter shall be submitted to the Owner immediately for clarification.

Lever Brothers Company's Safety Std. No. 9 "Instructions for Outside Contractors" is a part of these General Conditions.

2.0 WORKMANSHIP AND MATERIALS

2.1 The work described in these specifications or shown on the drawings, and all work dependent upon or necessary to the completion of the work as described, shown or reasonably implied in the drawings or specifications, shall be executed in the best, most thorough and workmanlike manner known to the trade.

2.2 Materials shall be new and of the highest quality. Where not specifically shown or mentioned, materials shall be as the Owner directs. Any materials or workmanship condemned by the Owner as being inferior and unsuitable, or not conforming with the requirements as stated, shall be immediately removed from the site and replaced with proper materials without additional cost to the Owner.

2.3 The work when finished shall be delivered in perfect and undamaged state, without exception, leaving the premises clean and ready for use.

2.4 Each Contractor shall be responsible for all cutting and patching of the building required for the installation of his work. All cutting shall be done so as to result in a minimum of damage to the premises. All patching shall return the premises to their original condition as nearly as is practical.

3.0 EXAMINATION OF SITE

3.1 Before submitting any proposal it shall be the responsibility of the Contractor to familiarize himself with all conditions at the site relative to existing work, materials to be matched, working space available, safety precautions required and all other conditions necessary to the making of an intelligent bid. No increase in cost or extention in performance time will be considered for failure to know the site conditions.

4.0 DRAWINGS AND PRINTS

4.1 Figured dimensions shall be followed, and detail drawings in preference to small scale drawings. The Contractor shall verify all dimensions in the field before any work is fabricated.

4.2 Immediately upon receipt of purchase order, where design is involved requiring Owner's comment and approval, Contractor shall prepare and transmit three (3) copies of all drawings to the Owner for approval. Drawings with corrections noted by Owner shall be revised by the Contractor and three (3) revised prints shall be submitted. When drawings are approved by Owner, Contractor shall immediately forward to Owner four (4) copies of such drawings marked "Approved for Construction". No shop work shall be done until such drawings have been received by Owner.

5.0 INSTRUCTIONS

5.1 In the event of conflict, verbal instructions or information purported to have come from the Owner's office will not be recognized unless confirmed in writing before such work is started. This applies to information given both while estimating and after the contract is awarded.

6.0 SUBSTITUTIONS

6.1 It will be understood that the proposals are based on the materials specified, and any request to substitute any other material shall be so mentioned in the proposal. Any request for substitution after the contract is awarded shall likewise be accompanied by the difference in price.

6.2 Whenever the words "or equal", "similar to", "approved", or words of similar meaning are mentioned herein, they shall mean that the materials, appliances, process or workmanship shall be equal in the opinion of the Owner.

6.3 The Owner's approval shall be obtained in writing before any substitutions are made.

7.0 GUARANTEES

7.1 Equipment shall be fully guaranteed to meet all performance requirements as outlined in accompanying Equipment Specifications.

7.2 Supplier/Contractor hereby guarantees that the workmanship and materials supplied by the Supplier/Contractor under this specification are free from all defects in design, workmanship and materials and will give proper and continuous service under all of the specified operating and service conditions (and under conditions which may be reasonably inferred) for one year from the date of contract completion and acceptance of the work. Supplier shall repair or replace, at his own expense, any part which under normal and proper use proves defective within one year from date of acceptance of the work by the Owner.

8.0 PERMITS AND FEES

8.1 The Building Permit shall be obtained by the building contractor after approval of Owner, and this permit shall be paid for by Owner. The Contractors shall obtain and pay for all other permits, inspection certificates, licenses or other privileges necessary to complete the work, and legal evidence of same shall be delivered to the Owner.

9.0 SUITABLE CONSTRUCTION EQUIPMENT

9.1 The Contractor shall use such methods, tools and equipment for the performance of the work as will produce a satisfactory quality of workmanship and rate of progress which, in the opinion of the Owner, will secure the completion of the contract within the time agreed upon.

9.2 Space at the job site will be provided by the Owner for the Contractor's construction shanty. The location of the space shall be as directed by the Owner. The Contractor shall maintain such space and structures in a safe and sanitary condition.

9.3 Each Contractor shall, for the duration of his work, provide and maintain sanitary facilities for all crafts in his employ unless other agreements are provided.

9.4 All materials, tools, plans, etc., at the site and necessary to the prosecution of the work shall be provided and maintained entirely at the risk of the Contractor.

10.0 CORRECTION OF WORK BEFORE FINAL PAYMENT

10.1 The Contractor shall promptly remove from the location of the work all materials condemned by the Owner as being unfit, unsafe, unsound or at variance with the true intent and purpose of the contract, whether incorporated in the work or not, and shall promptly replace and re-execute his own work in accordance with the contract and without expense to the Owner, and shall bear the expense of making good all work of any other contractors destroyed or damaged by such removal or replacement.

10.2 If the Contractor does not remove such condemned work and materials within five days after such rejection, the Owner may, at the Contractor's expense, have such work removed and replaced.

If the Contractor does not pay all costs and expenses incident to such removal within ten days thereafter, the Owner may thereupon sell the removed material at private sale without further notice to the Contractor, and shall account only for the net proceeds thereof after deducting all costs and expenses incident to such removal and sale.

11.0 CORRECTION OF WORK AFTER FINAL PAYMENT

11.1 The Contractor shall not be relieved of responsibility for faulty materials, apparatus or workmanship by any provisions in the contract documents, by final payment or by failure of the Owner to detect the same, and unless otherwise specified, he shall remedy any defects due thereto which shall appear within a period of one year after the date of completion.

12.0 OTHER CONTRACTS

12.1 The Owner reserves the right to let other contracts in connection with the work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. All work shall be scheduled and coordinated to avoid interference with plant operations.

12.2 If any part of the Contractor's work depends for proper execution or results upon the work of any other Contractor, the Contractor shall inspect and promptly report in writing to the Owner any defects in such work that render it unsuitable for proper execution and results. The failure of the Contractor to so inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other Contractor's work after the execution of his work.

12.3 To insure the proper execution of his work the Contractor shall measure any work already in place affecting the proper execution of his portion of the job, and shall at once report to the Owner any discrepancy between the executed work and the drawings.

13.0 LAWS AND REGULATIONS

13.1 The Contractor, its employees and representatives, shall at all times comply with any applicable laws, ordinances, statutes, rules and regulations, Federal, State, County and municipal; particularly those relating to wages, hours and working conditions. The Contractor shall furnish bonds, security or deposits required to permit performance of the work. This includes compliance with latest O.S.H.A. requirements.

The supplier/contractor will be required at the issuance of a purchase order or contract to execute one copy of the attached "Equal Employment Opportunity" Certificate of Compliance and return same to the Lever Brothers Company Purchasing Division.

Settlement of jurisdictional disputes shall be the responsibility of Contractor.

13.2 All sales, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by Contractor.

14.0 PERFORMANCE SCHEDULES

14.1 The Contractor shall stipulate normal availability of materials and equipment and approximate construction time in response to bid inquiry. A firm schedule will be developed at the time of contract commitment. It is essential that the established schedules be met to avoid jeopardizing the overall construction schedules.

14.2 Immediately upon award of the contract, the Contractor shall prepare and submit a manning schedule plus a definite progress schedule and furnish same to the Owner for approval. The Contractor shall execute all portions of the work in accordance with the approved schedule.

14.3 If necessary, in order to complete the work within the time stated in the contract, or if, in the opinion of the Owner, it becomes necessary in order to maintain the progress schedules, for the Contractor or his Sub-contractors to work after regular hours, the Contractor or his Sub-contractors shall, immediately upon request, work such overtime, additional shifts, Sundays, or holidays as may be required, without additional cost to the Owner.

14.4 The Contractor will be reimbursed for any overtime requested by the Owner to advance the original scheduled completion date in accordance with Article 15.

15.0 BID PROPOSALS

15.1 Bid proposals shall be submitted in original and quadruplicate copy with all copies signed. Bidders shall thoroughly examine the plans and specifications. If there is any obscurity as to meaning or intent of any part of the plans or specifications the bidder should ask for clarification or an explanation before submitting his bid. Lever reserves the right to reject any and all proposals.

15.2 Proposals covering the supplying of mechanical equipment shall include outline dimension drawings, wiring diagrams, catalog data, etc., whenever available.

15.3 Bid proposals shall include the following information. Omission of any part of this information in the bid proposal may be considered cause for rejection of the bid.

(a) Contract price on fixed basis unless the Owner agrees to the submission of a guaranteed maximum price (cost-plus-not to exceed a fixed maximum).

(b) An enumeration of the drawings and specifications used in preparation of the proposal.

(c) A statement of the number of calendar days required to complete the job after award of contract.

(d) The statement: "Contractor agrees to comply with, and shall be bound by Lever's GC-3 entitled "General Conditions — Contract Work" and Lever's Safety Standard No. 9 — Instructions for Outside Contractors."

(e) A listing of any substitutions proposed for materials or equipment called for in the plans or specifications as called for in Article 6.0.

15.4 The following clause shall be included in the bid proposal before a contract is awarded.

"This proposal is based on _____ hours of field work. The wage rates (including overhead and profit) used in figuring this work are as follows: _____

"If overtime work in the field is required by the Purchaser to advance the original schedule of completion, it will be billed at the following rates: _____

"Any overtime required other than that required to maintain the schedule, will be billed on the basis of actual man-hours worked but in no case shall the hours billed exceed the total hours of the base proposal less the hours worked on straight time.

"If Lever desires to advance the scheduled completion date and requests overtime work to do so and the total estimated hours of work are insufficient to complete the unfinished work on the contract, Lever shall pay only for the premium time at the rates stated above."

16.0 INSURANCE

16.1 The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such companies as may be satisfactory to the Owner:

Coverage	Amounts
Worker's Compensation	Statutory
Employer's Liability	$1,000,000
Public Liability	$1,000,000/$4,000,000
Property Damage	$1,000,000
Automobile Public Liability	$1,000,000/$4,000,000
Automobile Property Damage	$1,000,000

On contracts in excess of $100,000, or those involving unusual perils, Lever Brothers Company may require that the limits of coverage be increased.

16.2 Whenever applicable, the Contractor shall carry appropriate insurance covering the Contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the Contractor, or as to which the Contractor is for any purpose exercising physical control. Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative (rigging operations are of primary concern in this area).

16.3 All Sub-Contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 16.1.

16.4 The Contractor and Sub-Contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the Contractor's responsibility to see that all Sub-Contractors working for him have filed such certificates with Lever Brothers Company.

16.5 Lever Brothers Company shall be named as an additional insured in all policies required under this Section 16, or in the alternative, Contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.

16.6 The Contractor shall assume, and shall require its sub-contractors to assume, such risk of loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery, tools, and/or equipment, shanties and/or field offices (and contents thereof) supplied by Contractor or Sub-contractor, and employees' tools and effects.

16.7 The Contractor hereby assumes entire responsibility and liability for and hereby agrees to indemnify and hold harmless the Owner from and against any and all damage, losses, costs and expenses (including without limitation attorneys' fees) caused by, resulting from or arising out of any negligent act or omission, willful misconduct or defective product of Contractor, its agents, employees or subcontractors. Contractor agrees to assume on behalf of the Owner the defense of any action at law or equity which may be brought against the Owner, its agents, servants or employees upon such claim and to pay all costs and expenses of whatever nature resulting therefrom and in connection therewith upon their demand and the amount of any judgment that may be entered against the Owner, its agents, servants or employees in any such action.

17.0 CLEANING UP

17.1 Contractors shall, at all times, keep the premises free from accumulation of waste material or rubbish caused by their employees or work. At the completion of its work, the Contractor shall remove all its rubbish, temporary structures, tools, scaffolding and surplus materials from the site and leave its work "broom clean" or its equivalent unless more exactly specified. In case of dispute regarding responsibility for rubbish, the Owner may remove the rubbish and charge the cost of such removal to the several Contractors involved as the Owner may determine to be just.

17.2 Rubbish shall not be burned without proper authorization. Contractor, his employees and representatives shall comply with all statutory requirements in regard to air pollution and waste disposal.

18.0 TEMPORARY UTILITIES

18.1 A limited amount of power and water will be supplied by Owner and will be available to Contractors if required. Temporary wiring will be provided by Owner to the site only.

18.2 All temporary facilities in the way of pipes, wires, fixtures, etc. as well as connections to Owner's facilities shall be removed to the Owner's satisfaction and at the Contractor's expense on the completion of the Contractor's work.

18.3 Where possible the Owner will provide an area for the Contractor to set up facilities for job supervision. If such space is not available within a building, the Contractor shall provide temporary office and storage facilities to suit his convenience for the performance of the work, and shall remove the same from the premises on completion of the work. All such buildings or facilities shall be located as directed by the Owner and shall be kept neat in appearance. The Contractor shall provide locks for any enclosures he erects for protection of his equipment, tools and materials.

19.0 DEFINITIONS

19.1 **Owner:** Wherever the word Owner occurs in the specification, it refers to Lever Brothers Company 390 Park Avenue, New York, N.Y.

19.2 **Contractor** means the individual, partnership, firm, or corporation performing the specified work at the job site.

19.3 **Engineer** means the Engineer in Charge of Construction for Lever Brothers Company or its designated representative.

19.4 **Work:** The term "work" includes labor or material or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

19.5 **Abbreviation:** The initials used below will designate the following organizations and codes:

A.C.I.	The American Concrete Institute
A.G.A.	The American Gas Association
A.I.E.E.	The American Institute of Electrical Engineers
A.I.S.C.	The American Institute of Steel Construction
A.S.A.	The American Standards Association
A.S.H.A.E.	The American Society of Heating and Air Conditioning Engineers
A.S.M.E.	The American Society of Mechanical Engineers
A.S.T.M.	The American Society for Testing Materials
A.W.W.A.	The American Water Works Association
F.I.A.	Factory Insurance Association
I.P.C.E.A.	The Insulated Power Cable Engineers Association
N.B.F.U.	The National Board of Fire Underwriters
N.E.C.	The National Electric Code
N.E.M.A.	The National Electrical Manufacturers Assn.
O.S.H.A.	The Occupational Safety and Health Act
A.N.S.I.	American National Standard Institute

20.1 TIME AND MANNER OF PAYMENTS

20.1 On jobs of extended duration partial payments may be requisitioned by the Contractor on a monthly basis. Such requisitions for payment shall be based on the value of the material delivered and work erected and completed as estimated by the Owner. Within thirty (30) days eighty five percent (85%) of the value thus determined, less previous payments and less such sums as the Owner may be entitled to retain under provisions of the contract, shall be paid to the Contractor. The fifteen percent (15%) retention on the requisition for final payment shall be held by the Owner until the expiration of (30) days after the work has been completed according to the contract and delivered to and accepted by the Owner, or until such time as Waivers of Lien are given the Owner as called for in Article 21. The acceptance of the final payment by the Contractor shall be held to be a waiver of any and all claims against the Owner arising out of or in connection with this agreement.

20.2 No payment will be made to the Contractor for material not delivered upon the premises.

21.0 LIENS:

21.1 Contractor on his own behalf and (insofar as he is able to contract in that particular) on behalf of all of his Subcontractors and suppliers of material and labor hereby expressly waives the benefits of the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected or repaired, is located. The Contractor hereby agrees to procure from each and every one of his Subcontractors and suppliers of material or labor a release of any claim to mechanics lien which they or any of them may have under the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected or repaired, is located and in addition agrees to furnish the Owner with each and every other document, affidavit or assurance which, in the opinion of the Owner, is necessary or appropriate to insure the Owner immunity from mechanics liens on account of anything done by Contractor, or those acting under him or as his Subcontractors in carrying out the terms of the contract and any and all work orders for additions thereto, all as a condition of payments by the Owner on account of this contract, or on account of any of said work orders for additions thereto. Payments made by the Owner without requiring strict compliance with the terms of this paragraph shall not be construed as a waiver by the Owner of the right to insist upon such compliance as a condition of later payments.

21.2 If at any time there shall be evidence of the existence, whether or not same has been asserted, of any lien or claim arising out of or in connection with the performance or default in performance of the contract for which the Owner or representatives of the Owner or any property of either or any property installed on the premises might be or become liable, then the Owner shall have the right to retain out of any payment then due or thereafter to become due, in addition to the amounts set forth in the contract, an amount sufficient to discharge such lien or satisfy such claim and to reimburse the Owner and/or the representatives of the Owner for all costs and expenses in connection therewith, including reasonable attorney fees; and the Owner at its sole discretion, shall have the right to so apply any amounts so retained if the Contractor does not have said lien or claim discharged or satisfied within ten (10) days after notice.

21.3 Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of all liens arising out of the contract, or receipts in full in lieu thereof and an affidavit that, so far as he has knowledge or information, the releases and receipts cover all the labor and materials for which a lien could be filed. Contractor shall, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify it against any and all liens or claims which may at any time be filed or asserted by such Subcontractor. Partial releases of liens from subcontractors, suppliers and Contractor must be attached to each invoice for partial payment to cover work completed. The Contractor's Affidavit must be included with each invoice for final payment.

21.4 If the amounts retained by the Owner are sufficient for the aforesaid purposes, or if any such lien or claim remains undischarged or unsatisfied after all payments have been made to the Contractor, then the Contractor shall promptly refund to the Owner all moneys that may have been paid to

discharge such lien or satisfy such claim, including all costs and expenses and reasonable attorney's fees in connection therewith.

22.0 CANCELLATION OF CONTRACT

If the Contractor shall become insolvent, or if a petition in bankruptcy shall be filed against the Contractor, or if any execution or attachment shall be levied on any property of the Contractor, then the Owner may give the Contractor thirty (30) days' written notice of intention to terminate this agreement specifying the cause thereof, and, thereupon, at the expiration of the said thirty days, if said cause shall continue to exist, this agreement shall terminate. If a petition in bankruptcy shall be filed by the Contractor or if the Contractor shall take advantage of any insolvency act, or if it shall make a general assignment for the benefit of creditors, or if a receiver or trustee shall be appointed of this property, then, in any of said events, Owner shall have the right to terminate this agreement forthwith upon written notice to Contractor. If the Owner finds that the Contractor is neglecting or is unable to provide equipment or materials or to perform the work required, is careless or incompetent, is not prosecuting the work with promptness and diligence, or is failing in any way to comply with the contract, specifications or drawings, the Owner shall have the right, after having first given the Contractor at least two (2) days' notice in writing of such intention, to enter upon the work immediately upon the day mentioned in such notice, exclude the Contractor and his employees, retain or remove the equipment, tools, implements and materials thereon, obtain other equipment, tools, implements, materials, and labor, if necessary, enter into other contracts for work or materials, remove such parts of the work as the Owner considers necessary, and complete the work according to the specifications and drawings, charging to the Contractor the cost of completing the work, including the cost of obtaining new proposals and letting new contracts, if any, together with the damages caused by the delays thus occasioned in completing the work. In such event, the Contractor shall be entitled to no further payments under this contract until the work is completed. If the cost to the Owner of thus completing the work, together with any damages caused by delay as aforesaid shall exceed the balance due to the Contractor on account of the contract price, the Contractor shall forthwith pay such excess amount to the Owner, but if the balance due on the contract price shall exceed the expense incurred by the Owner in so completing the work, together with any damages for delay, such excess shall be paid by the Owner to the Contractor. Time of completion is of the essence and failure to comply (except if caused by Owner) is cause for cancellation of the agreement by Owner without penalty.

23.0 NOTICE

Any notice that may be given hereunder shall be deemed to have been sufficiently given by one party when, and only when, sent by registered mail in a postpaid envelope to the other party at the address as set forth in the Owner's purchase order submitted in acceptance of Contractor's proposal.

24.0 SUPERVISION OF WORK AND QUALIFIED PERSONNEL

24.1 At all times during the construction, the Contractor shall have in charge of the work a thoroughly competent superintendent with extensive experience in the type of work to be performed under this contract. A satisfactory superintendent shall not be withdrawn without the consent of Lever Brothers Company.

24.2 Should any employee assigned to work on this contract be deemed incapable by Lever Brothers Company, he shall, upon written request, be replaced by one who is satisfactory.

25.0 SUB-CONTRACTOR

25.1 A list of Sub-Contractors who shall perform work on the Lever Brothers Company premises shall be provided with Contractor's proposal. Only subcontractors approved by Owner may be used on any of Owner's projects.

25.2 Lever Brothers Company reserves the right to approve all Sub-Contractors.

26.0 AUTHORIZATION FOR EXTRA WORK

26.1 The drawings and accompanying specifications furnished to the Contractor clearly define the scope of contract work. The Contractor shall not be entitled to additional compensation for labor, materials, or other services above and beyond the scope of the contract without prior written agreement and authorization by the Owner for the performance of this work.

27.0

Paragraph 27. If this proposal involves sale or delivery of any materials, equipment or apparatus then the terms and conditions of the Lever Brothers General Condition-Sale and Delivery are hereby incorporated in this General Condition.

Contract and Purchase Order Supplement

As a contractor, Lever Brothers Company must comply with certain Federal rules, regulations, and orders. Each non-exempt subcontractor and supplier of goods and services to Lever is required to include in its contract or purchase order that it also complies with the applicable Federal rules, regulations and orders. By this letter we are including the above in your contract or purchase order. To indicate your acceptance of the terms and conditions in this letter and your agreement that such terms and conditions shall be part of all agreements or purchase orders Lever Brothers Company places with your company to the extent required by Federal rules, regulations and orders, we ask that you please execute the return to us one copy of this letter.

This is applicable to government contracts and subcontracts exceeding $10,000 that are not exempt from the provisions of the Equal Opportunity Clause as provided by Executive Order 11246 and regulations promulgated thereunder.

Section 202, Executive Order 11246 — Equal Opportunity Clause

During the performance of the contract or purchase order, the supplier agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.
2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.
5. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7. The contractor will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: *Provided, however,* That in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Executive Order 11246 — Certification of Non-Segregated Facilities

By the submission of this bid, the undersigned, bidder, seller, offeror, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, seller, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES

A Certificate of Non-Segregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The Certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually, or annually).

Whoever knowingly and willfully makes any false, fictitious or fraudulent representation may be liable to criminal prosecution under 18 U.S.C. §1001.

Employer Information Report (EEO—1) and Affirmation Action Program

The contractor acknowledges and accepts the obligation of contractors, subcontractors and suppliers having 50 or more employees and an agreement, purchase order or contract in excess of $50,000 to report annually of Standard Form 100 (EEO—1) and to develop and maintain for each of its establishments a written Affirmative Action Program meeting the requirements prescribed by 41 CFR 60-1.40.

Vietnam Era Veterans Readjustment Act of 1974

For contracts of $10,000 or more the contractor certifies that he is and will remain in compliance with the Affirmative Action Clause and Regulations given in 41 CRF 60—250 relating to the employment of Vietnam Veterans, which clause and regulations are included herein by reference.

E.O. 11758 and Rehabilitation Act of 1973

For contracts of $2,500 or more the contractor certifies that he is and will remain in compliance with the Affirmative Action Clause and Regulations given in 41 CFR 60—741 relating to the employment of handicapped persons, which clause and regulations are included herein by reference.

E.O. 11625 Minority Business Enterprise

1. It is the policy of the Government that Minority Business Enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

2. The contractor agrees to use his best efforts to carry out this policy in the award of his subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, the term "minority business enterprise" means a business, at least 50 percent of which is owned by minority group members or, in case of publicly-owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Blacks, Spanish-speaking American persons, American-Orientals, American-Indians, American Eskimos, and American Aleuts. Contractors may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation.

Utilization of Labor Surplus Area Concerns

1. It is the policy of the Government to award contracts to labor surplus area concerns, that (a) have been certified by the Secretary of Labor (hereinafter referred to respectively as certified concerns with a first or second preference) regarding the employment of a proportionate number of disadvantaged individuals and have agreed to perform substantially (i) in or near sections of concentrated unemployment or underemployment or in persistent or substantial labor surplus areas or (ii) in other areas of the United States; or (b) are noncertified concerns which have agreed to perform substantially in persistent or substantial labor surplus areas, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy.
2. In complying with Paragraph 1 of this clause and with Paragraph 2 of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing his subcontracts shall observe the following order of preference: (a) certified concerns with a first preference which are also small business concerns, (b) other certified concerns with a first preference, (c) certified concerns with a second preference which are also small business concerns, (d) other certified concerns with a second preference, (e) persistent or substantial labor surplus area concerns which are also small business concerns, (f) other persistent or substantial labor surplus area concerns, and (g) small business concerns which are not labor surplus area concerns.

Utilization of Small Business Concerns

1. It is the policy of the Government as declared by the Congress that a fair proportion of the purchase and contracts for supplies and services for the Government be placed with small business concerns.
2. The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

FPR Amendment 151 Environmental Protection

§ 1-1.2302-1 Solicitation Provision

The following is applicable if the bid or offer exceeds $100,000 or the contracting officer has determined that the orders under an indefinite quantity contract in any year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857C-8 (c) (1) or the Federal Water Pollution Control Act (33 U.S.C. 1319 (c) and is listed by EPA, or is not otherwise exempt).

The bidder or offeror certifies as follows:

(a) Any facility to be utilized in the performance of this proposed contract has ☐, has not ☐, been listed on the Environmental Protection Agency List of Violating Facilities.

(b) He will promptly notify the contracting officer, prior to award, of the receipt of any communication from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that any facility which he proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities.

(c) He will include substantially this certification, including the paragraph (c), in every nonexempt subcontract.

§ 1-1.2302.2 Contract clause

The following is applicable only if the contract exceeds $100,000, or the contracting officer has determined that orders under an indefinite quantity contract in any one year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1957c-8 (c) (1) or the Federal Water Pollution Control Act (33 U.S.C. 1319 (c) and is listed by EPA, or the contract is not otherwise exempt.)

(a) The Contractor agrees as follows:

(1) To comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 91—604) and Section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq., as amended by Pub. L. 92—500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in Section 114 and Section 308 of the Air Act and Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use his best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed.

(4) To insert the substance of the provisions of this clause into any non-exempt subcontract, including this paragraph (a) (4).

* * * * *

☐ we are ☐ are not a Small Business Concern

☐ we have no plants located in Labor Surplus Areas, or

☐ the following plants are located in Labor Surplus Areas:

_____

_____

_____

This certification shall be valid from the date of the contract or purchase order through the fiscal year ending June 30.

Date _____

_____
(Company name)

Please return one signed copy to:

By _____
(Signature)

LEVER BROTHERS COMPANY
390 Park Avenue
New York, New York 10022

_____
(Title)

Lever

GENERAL CONDITIONS (GC #1)— SALE AND DELIVERY

1. DELIVERY

Supplier shall stipulate normal delivery in his bid proposal. Firm delivery dates may be required to be stipulated before issuing a purchase order.

2. PERFORMANCE GUARANTEE

Equipment shall be fully guaranteed to meet all performance requirements as set forth in equipment specifications forming the bid inquiry. Equipment shall also be guaranteed to meet requirements of Equipment Noise Specification GS-18.

3. FABRICATION GUARANTEE

Supplier shall guarantee that the materials, equipment or apparatus supplied under this specification are free from all defects in design, workmanship, and materials and will give satisfactory performance under the specified operating and service conditions. Supplier shall replace at no cost to Lever Brothers Company any part which proves defective under normal operating and service conditions within one year of installation, unless otherwise stipulated.

Supplier shall furnish standard manufacturer's guarantees covering such items as pumps, motors, reducers, and other manufactured items.

4. TESTING AND SHIPPING

All items of mechanical equipment, except as specified, shall be fully assembled and shop tested prior to shipment. All such tests are subject to witnessing by Lever Brothers Company's representatives. Where complete shop assembly is impractical, the foregoing may be omitted. The supplier assumes full responsibility for proper fit of component parts in field assembly and shall furnish upon request a qualified field representative to supervise assembly and to take any corrective measures required.

All equipment shall be shipped in assembled units whenever consistent with good shipping practice. All disassembled units shall be clearly piece-marked to facilitate field assembly. All machined surfaces shall be greased or otherwise protected from rusting and shall be protected from mechanical injury during shipment and unloading.

5. FIELD ENGINEERING SERVICE

Supplier shall stipulate in his bid proposal all field engineering services normally furnished other than as specified in paragraph 4 above. Where there is a charge for such services, the bid proposal shall clearly state daily rates and expense allowances.

6. PATENT INDEMNITY

Supplier agrees to defend, at its own expense, any suit or legal proceeding instituted against Purchaser and to pay any damages and costs awarded therein against Purchaser, insofar as the same are based on a claim that the apparatus furnished, or any part thereof, in itself constitutes an infringement of any United States patent, provided Purchaser gives Supplier prompt written notice of such infringement claim and of the institution of such suit or proceeding and also gives Supplier all necessary authority, information and reasonable assistance to enable Supplier to settle or defend the same.

In case said apparatus or any part thereof is held in such suit to constitute an infringement and its use is enjoined, Supplier also agrees to procure for Purchaser, at Supplier's own expense, the right to continue using said apparatus or part, or modify same so that it becomes non-infringing, or replace it with non-infringing apparatus or part, or remove the apparatus and refund the purchase price paid therefor by Purchaser.

7. BID PROPOSALS

Bid proposals shall include outline dimension drawings, wiring diagrams, catalog data, photographs, and the like, to facilitate preliminary layout work. The submittal of Vendor's drawings is covered by paragraph 11. Bid proposals and supporting data shall be submitted in triplicate. Bid proposal shall state that, "Supplier agrees to comply with and be bound by General Conditions GC-1."

8. INSURANCE

The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such companies as may be satisfactory to the Owner:

Coverage	Amounts
Worker's Compensation	Statutory
Employer's Liability	$1,000,000
Public Liability	$1,000,000/$4,000,000
Property Damage	$1,000,000
Automobile Public Liability	$1,000,000/$4,000,000
Automobile Property Damage	$1,000,000

On contracts in excess of $100,000, or those involving unusual perils, Lever Brothers Company may require that the limits of coverage be increased.

9. MARKING

Each piece of equipment, or sub-assembly thereof, and its container shall be clearly marked with the proper piece-mark or item number as specified on the purchase order or equipment specification.

10. MANUALS AND INSTRUCTIONS

At the time of delivery, Supplier shall furnish 4 copies each of the following:

a. Installation Instructions
b. Operating Instructions
c. Lubrication and Maintenance Recommendations
d. List of Recommended Spare Parts
e. Wiring Diagrams
f. Complete Parts Lists and/or Prints for Ordering Purposes.

11. SUBMITTAL OF DRAWINGS

PROPOSAL DRAWINGS

Each proposal shall be accompanied by three (3) copies each of an outline dimension drawing and other relevant data such as wiring diagrams, etc. Where such drawings are subject to dimensional changes they should be clearly labelled "Preliminary." Where dimensions are firm and may be used for final layout work, they should be labelled "Certified for Construction".

DRAWING APPROVALS

Following receipt of Purchase Order, the Vendor shall submit to Lever Brothers Company for approval two (2) prints or one (1) Ozalid transparency each of all construction drawings to be supplied. One print will be returned to the Vendor stamped "Approved", "Approved as Noted", or "Not Approved". If either of the latter, Vendor must make the appropriate changes on his drawing and resubmit for approval. This procedure shall be repeated until final approval is obtained. Any shop or field work done prior to receipt of approved drawings which requires alterations or replacement will be at the Vendor's expense.

A print stamped "Approved" in no way implies a waiver of any of the other conditions of this specification.

CERTIFIED PRINTS

After final approval Vendor shall submit four (4) certified prints or one certified Ozalid transparency of each drawing.

MAILING OF TRANSPARENCIES

Transparencies shall not be folded; they must be submitted rolled or flat, protected in mailing from being crushed or creased.

12. EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATE OF COMPLIANCE

The supplier contractor will be required at the issuance of a purchase order or contract to execute one copy of the attached "Equal Employment Opportunity" Certificate of Compliance and return same to the Lever Brothers Company Purchasing Division.

13. The terms and conditions of the Lever Brothers Purchase Order are incorporated in this General Condition.

14. Supplier on its own behalf and (to the full extent it is able under the law to contract) on behalf of its third party suppliers thereby expressly waives the benefits of the Mechanic's Lien Laws of the state in which the materials, equipment and machinery being constructed, erected or repaired is located. Supplier hereby agrees to procure from each and every one of its third party suppliers which supply materials, equipment, machinery and labor aggregating in excess of $20,000 a release of any claim to mechanic's lien which they or any of them may have under the Mechanic's Lien Laws of the state in which the materials, equipment and machinery being constructed, erected or repaired is located and in addition agrees to furnish Lever Brothers Company with each and every other document, affidavit or assurance which in the opinion of Lever Brothers Company is necessary or appropriate to ensure Lever Brothers Company immunity from mechanic's liens on account of any materials supplied by Supplier or those acting under Supplier or by third party suppliers in carrying out the terms of this contract.

15. Supplier indemnifies and holds Lever Brothers Company harmless from and against any and all liability, losses, costs and expenses (including attorney's fees) for any and all damage or injury of any kind or nature whatsoever to all persons and to all property caused by or resulting from, arising out of or occurring in connection with negligence of Supplier, its agents or employees or defective product supplied by Supplier or its third party suppliers.

Contract and Purchase Order Supplement

As a contractor, Lever Brothers Company must comply with certain Federal rules, regulations, and orders. Each non-exempt subcontractor and supplier of goods and services to Lever is required to include in its contract or purchase order that it also complies with the applicable Federal rules, regulations and orders. By this letter we are including the above in your contract or purchase order. To indicate your acceptance of the terms and conditions in this letter and your agreement that such terms and conditions shall be part of all agreements or purchase orders Lever Brothers Company places with your company to the extent required by Federal rules, regulations and orders, we ask that you please execute and return to us one copy of this letter.

This is applicable to government contracts and subcontracts exceeding $10,000 that are not exempt from the provisions of the Equal Opportunity Clause as provided by Executive Order 11246 and regulations promulgated thereunder.

Section 202, Executive Order 11246 — Equal Opportunity Clause

During the performance of the contract or purchase order, the supplier agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.

5. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor or as otherwise provided by law.

7. The contractor will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section

204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: *Provided, however,* That in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Executive Order 11246 — Certification of Non-Segregated Facilities

By the submission of this bid, the undersigned, bidder, seller, offeror, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, seller, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications for proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT
FOR CERTIFICATION OF NON-SEGREGATED FACILITIES

A Certificate of Non-Segregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The Certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually, or annually).

Whoever knowingly and willfully makes any false, fictitious or fraudulent representation may be liable to criminal prosecution under 18 U.S.C. §1001.

Employer Information Report (EEO-1) and Affirmative Action Program

The contractor acknowledges and accepts the obligation of contractors, subcontractors and suppliers having 50 or more employees and an agreement, purchase order or contract in excess of $50,000 to report annually on Standard Form 100 (EEO-1) and to develop and maintain for each of its establishments a written Affirmative Action Program meeting the requirements prescribed by 41 CFR 60—1.40.

Vietnam Era Veterans Readjustment Act of 1974

For contracts of $10,000 or more the contractor certifies that he is and will remain in compliance with the Affirmative Action Clause and Regulations given in 41 CFR 60—250 relating to the employment of Vietnam Veterans, which clause and regulations are included herein by reference.

E.O. 11758 and Rehabilitation Act of 1973

For contracts of $2,500 or more the contractor certifies that he is and will remain in compliance with the Affirmative Action Clause and Regulations given in 41 CFR 60—741 relating to the employment of handicapped persons, which clause and regulations are included herein by reference.

E.O. 11625 Minority Business Enterprise

1. It is the policy of the Government that Minority Business Enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

2. The Contractor agrees to use his best efforts to carry out this policy in the award of his subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, the term "minority business enterprise" means a business, at least 50 percent of which is owned by minority group members or, in case of publicly-owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Blacks, Spanish-speaking American persons, American-Orientals, American-Indians, American Eskimos, and American Aleuts. Contractors may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation.

Utilization of Labor Surplus Area Concerns

1. It is the policy of the Government to award contracts to labor surplus area concerns, that (a) have been certified by the Secretary of Labor (hereinafter referred to respectively as certified concerns with a first or second preference) regarding the employment of a proportionate number of disadvantaged individuals and have agreed to perform substantially (i) in or near sections of concentrated unemployment or underemployment or in persistent or substantial labor surplus areas or (ii) in other areas of the United States; of (b) are nonceritified concerns which have agreed to perform substantially in persistent or substantial labor surplus areas, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy.

2. In complying with Paragraph 1 of this clause and with Paragraph 2 of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing his subcontracts shall observe the following order of preference: (a) certified concerns with a first preference which are also small business concerns, (b) other certified concerns with a first preference, (c) certified concerns with a second preference which are also small business concerns, (d) other certified concerns with a second preference, (e) persistent or substantial labor surplus area concerns which are also small business concerns, (f) other persistent or substantial labor surplus area concerns, and (g) small business concerns which are not labor surplus area concerns.

Utilization of Small Business Concerns

1. It is the policy of the Government as declared by the Congress that a fair proportion of the purchase and contracts for supplies and services for the Government be placed with small business concerns.

2. The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

FPR Amendment 151 Environmental Protection

§ 1-1.2302-1 Solicitation Provision

The following is applicable if the bid or offer exceeds $100,000 or the contracting officer has determined that the orders under an indefinite quantity contract in any year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857C-8 (c) (1) or the Federal Water Pollution Control Act (33 U.S.C. 1319 (c) and is listed by EPA, or is not otherwise exempt).

The bidder or offeror certifies as follows:

(a) Any facility to be utilized in the performance of this proposed contract has ☐, has not ☒, been listed on the Environmental Protection Agency List of Violating Facilities.

(b) He will promptly notify the contracting officer, prior to award, of the receipt of any communication from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that any facility which he proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities.

(c) He will include substantially this certification, including the paragraph (c), in every nonexempt subcontract.

§ 1-1.2302.2 Contract clause

The following is applicable only if the contract exceeds $100,000, or the contracting officer has determined that orders under an indefinite quantity contract in any one year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clear Air Act (42 U.S.C. 1957c-8 (c) (1) or the Federal Water Pollution Control Act (33 U.S.C. 1319 (c) and is listed by EPA, or the contract is not otherwise exempt.)

(a) The Contractor agrees as follows:

(1) To comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 91—604) and Section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq., as amended by Pub. L. 92—500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in Section 114 and Section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use his best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed.

(4) To insert the substance of the provisions of this clause into any non-exempt subcontract, including this paragraph (a) (4).

* * * * *

☐ we are ☐ are not a Small Business Concern

☐ we have no plants located in Labor Surplus Areas, or

☐ the following plants are located in Labor Surplus Areas:

_____

_____

_____

This certification shall be valid from the date of the contract or purchase order through the fiscal year ending June 30.

Date _____

_____
(Company name)

Please return one signed copy to:

By _____
(Signature)

_____
(Title)

Mr. Frank Walters
LEVER BROTHERS COMPANY
390 Park Avenue
New York, New York 10022

Lever

GENERAL CONDITIONS (GC #4)
INSTALLATION & SERVICE PERSONNEL

1.0 Intent of this Specification

1.1 The purpose of this specification is to provide instructions for service personnel working in a Lever Brothers facility. Lever works for maximum safety of all personnel and protection of its facilities and products.

1.2 The service personnel's company (contractor) shall all times comply with any applicable laws, ordinances, statutes, rules and regulations of federal, state, county and municipal governing bodies, particularly those relating to wages, hours and safe working conditions in accordance with applicable OSHA standards. His company shall furnish bonds, security or deposits required to perform their work.

1.3 All sales, use, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by the contractor.

2.0 Instructions

2.1 Upon receiving a contract or purchase order covering service work on Lever's premises, the contractor must designate one individual to act as liaison with Lever Brothers. Lever will designate an employee to act as liaison with the contractor. All questions concerning the service work or installation should be directed to the Lever representative.

2.2 In the event of conflict, verbal instructions purported to have come from Lever will not be recognized unless confirmed in writing.

2.3 Lever's approval must be obtained in writing before any modifications or substitutions are made.

2.4 The contractor will be required to execute and return to Lever one copy of the "Equal Employment Opportunity" Certificate of Compliance.

3.0 Insurance

3.1 The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such Companies as may be satisfactory to the Owner:

Coverage	Amounts
Worker's Compensation	Statutory
Employer's Liability	$1,000,000
Public Liability	$1,000,000/$4,000,000
Property Damage	$1,000,000
Automobile Public Liability	$1,000,000/$4,000,000
Automobile Property Damage	$1,000,000

3.2 On contracts in excess of $100,000 or those involving unusual perils, the limits of coverage shall be reviewed and increased, if such is deemed necessary by Lever Brothers Company.

3.3 Whenever applicable, the contractor shall carry appropriate insurance covering the contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the contractor, or over which the contractor is for any purpose exercising physical control.

Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative.

3.4 All sub-contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 3.1 above.

3.5 The contractor and sub-contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the contractor's responsibility to see that all sub-contractors working for him have filed such certificates with Lever Brothers Company.

3.6 Lever Brothers Company shall be named as an additional insured in all policies required under this section, or in the alternative, contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.

3.7 The contractor shall assume, and shall require its sub-contractors to assume, such risks of loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery tools, and/or equipment supplied by contractor or sub-contractor; and employees' tools and effects.

4.0 Work Procedure

4.1 During the job the contractor will use only thoroughly competent personnel with extensive experience in the type of work covered by the purchase order.

4.2 If any person is deemed incapable he shall be replaced upon written request from Lever Brothers.

4.3 The serviceman shall use such methods, tools, and equipment to produce a satisfactory quality of workmanship and to secure the completion of the contracted work within the agreed upon schedule.

4.4 All material, tools, plans, etc., necessary for the serviceman's work shall be provided and maintained entirely at the serviceman's own risk.

4.5 The serviceman must keep the premises free from accumulation of his rubbish at all times. At the completion of the work the serviceman must remove all his rubbish, temporary equipment and tools.

4.6 Disposal of rubbish and surplus items must comply with all statutory requirements in regard to air pollution, noise control and waste disposal.

4.7 Any required notice or communication shall be deemed sufficiently given when sent by one party to the other by prepaid registered or certified mail to the purchase order address of the other party.

4.8 All non-Lever employees must sign in and obtain an identification tag from the Lever security guard. The tag must be returned to the guard at the completion of the job.

5.0 Safety

5.1 Smoking, except in specifically designated locations, is prohibited in all buildings and yards at all times.

5.2 Lunches and other foods must be eaten only in approved locations.

5.3 Whenever an open flame, welding or other possible ignition source must be used, Lever must be notified in advance.

5.4 The removal of any electric light fixture or tampering with any electrical equipment by the seviceman must be approved by Lever in advance.

Any machinery guards or other safety devices that are removed in the performance of the contractor's work, must be reinstalled by the contractor at the conclusion of his work so that the machine is returned to a safe operating condition.

5.5 Scaffolds, ladders and staging shall be constructed in accordance with good safety practices that conform to OSHA requirements. No tools or equipment will be left on any locations where they can fall.

5.6 Work areas shall be kept clean and free of debris.

5.7 The contractor shall supply his own serviceman with proper protective equipment such as eye shields, gloves, clothing, etc., as may be required. In certain areas, safety eye glasses must be worn at all times.

5.8 For Lever's product protection, no glass containers of any type shall be brought into a work location without prior approval.

5.9 Lever assumes no responsibility for first aid or medical treatment in connection with injuries to a contractor's employee. The contractor should make independent arrangements for such services.

6.0 Miscellaneous Regulations

6.1 Tools, ladders and other equipment will not be furnished by Lever Brothers except by special arrangement.

6.2 Contractor's personnel are restricted to the location where work is assigned, plus the adjoining smoking, eating and lavatory areas.

6.3 Upon request a specific area will be assigned to the contractor for the storage of equipment, tools and supplies. The contractor must supply his own security boxes and assumes full responsibility for safeguarding his own items. Lever Brothers will assume no responsibility for the replacement of the contractor's equipment that may be damaged or stolen.

7.0 Definitions

7.1 **Owner:** Wherever the word Owner occurs in this specification, it refers to Lever Brothers Company, 390 Park Avenue, New York, N.Y.

7.2 **Contractor** means the individual, partnership, firm or corporation performing the specified work at the job site.

7.3 **Engineer** means the engineer in charge for Lever Brothers Company or his designated representative.

7.4 **Work:** The term "work" includes labor or material, or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

STEEL & ALLOY VESSELS, TANKS, BINS & HOPPERS

References:

GC-1: General Conditions

GS-2: Pipe Coils
MCS-1: Welding Details for Tanks
MCS-2: Alloy Nozzles & Manholes
MCS-3: Hinged Manholes

1.0 **SCOPE OF WORK:**

1.1 This specification defines the conditions of design, fabrication, inspection, testing, painting and finishing of steel and alloy (or alloy-clad) vessels (pressure, vacuum or atmospheric), tanks, bins or hoppers.

1.2 Unless otherwise stated a design outline drawing will be provided by Lever Brothers Company for each vessel showing dimensions, construction details, materials of construction, code requirements, and other pertinent information. This design drawing will govern when it conflicts with any other specification or standard.

2.0 **GENERAL:**

2.1 Pressure and vacuum vessels shall be designed, fabricated, inspected, and stamped according to the ASME code requirements specified on the design drawing.

2.2 Atmospheric vessels, tanks, bins and hoppers shall be fabricated in accordance with our Construction Standard MCS-1, or as specified in the design drawing.

2.3 Vendor shall be responsible for construction in conformance with ASME, API, or other codes or regulations as called for on the design drawing.

3.0 **DESIGN:**

3.1 **Materials:**

3.11 All materials shall be new and free from laminations, scabs, pipes, and/or other defects.

5	2/7/75	Added sheets 7 of 8 & 8 of 8		
		& Rev. Pg. 6.21 and 6.24	F.L.	WJK
4	4/17/74	Sht 2 of 7; Line 3.63 & 4.2	E.F.	EF
3	1/13/65	Revise Sheets 2 & 4	AJN	
2	5/13/52	Retyped and Reissued	WJC	

LEVER BROTHERS CO.
ENGINEERING DEPT.
GENERAL SPECIFICATIONS
STEEL AND ALLOY VESSELS, TANKS, BINS AND HOPPERS

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3.1 Materials: (cont'd)

3.12 No acid-Bessemer steel is acceptable.

3.13 All steel plate used in the fabrication of this equipment shall conform to the latest revision of the ASTM Specification called for on the equipment drawing.

3.14 All forgings shall be in accordance with ASTM Specification A181, Class I, latest revision. Maximum carbon content shall not exceed .30% by check analysis.

3.15 All pipe used for nozzle necks or sleeves shall be in accordance with ASTM Specification A106, Grade A.

3.16 Bolting shall be in accordance with ASTM Specification A107, machined with hex heads. Nuts shall be cold pressed, American Standard Heavy.

3.17 Gaskets shall be furnished by the Vendor for any bolted flange connection where bolting material is furnished and shall conform to the type of material called for on the drawing.

3.2 Welding Process and Type of Welds:

3.21 All welding shall be done by the shielded metallic electric-arc fusion process, using ASME approved coated electrodes, and shall comply with the ASME Code for Unfired Pressure Vessels, latest edition; or the API Code, latest revision, as required.

3.22 The double-welded full penetration butt joint, using single or double V-type groove, shall be used for all welded seams unless otherwise specified.

3.23 Drawing MCS-1, attached, showing types of welds, shall be a part of this Specification.

3.3 Location of Openings and Internal Parts:

3.31 No opening shall be located in any longitudinal seam.

3.32 Insofar as it is practical and economical, the layout of plate and openings shall be made in such a manner as to avoid the placing of any opening in the girth seams.

3.33 The layout of all seams shall be planned to avoid being covered by any internal equipment.

3.34 Bottom seams, where tank is supported on concrete, steel or wood beams, must be between the beams for inspection. Plates shall be laid out so nozzles or manways will not pass through seams.

3.4 Reinforcement of Openings:

3.41 All vessel openings larger than 2" in the shell and lower head or cone shall be fully reinforced for the actual full plate thickness of the vessel at the location of the opening.

3.42 The openings in the top cover of all non-pressure vessels, either flat or cone, need not be reinforced.

3.43 Reinforcing pads shall be attached with full fillet welds.

3.5 Steel Nozzles, Manholes and Couplings:

3.51 All nozzle necks of 8" diameter and smaller shall be not less than Schedule 80 seamless steel pipe. All nozzle necks of 10" diameter and larger shall be seamless steel pipe or rolled steel plate, double-butt welded, of not less than 1/2" wall thickness, fitted with 150# A.S.A. slip-on welding flanges.

3.52 Manholes shall be of the size and type shown or called for on the design drawing.

3.53 Couplings shall be 3000#, forged steel.

3.6 Alloy Nozzles, Manholes and Couplings:

3.61 All nozzle necks shall be Schedule 40, of the same alloy as the vessel.

3.62 Manholes shall be as shown on MCS-2, MCS-3, or of other design as called for on the design drawing.

3.63 Couplings shall be 3000# Standard Screwed.

4.0 DRAWINGS

4.1 A design outline drawing will be provided by Lever Brothers Company as outlined in 1.2 above for the guidance of the Vendor.

4.2 The Vendor shall supply detailed construction drawings as specified in Lever Brothers Company General Conditions GC-1.

4.3 When the specific gravity of tank contents is less than 1.0 of the tank shall be designed for a liquid with sp. gr. = 1.0, and a note to this effect shall appear on the Vendor's construction drawing.

4.4 The Vendor's construction drawing shall list: a) weight of empty tank; b) operating weight of tank; c) weight full of water.

5.0 FABRICATION:

5.1 Preparation of Butt-Type Joints:

5.11 All longitudinal, girth and bottom seams shall have full penetration and shall be either single or double butt-V-Type welds.

5.12 All welding shall conform to drawing MCS-1 attached and shall be uniform in size and free from porosity, slag, under-cuts and/or other defects.

5.13 The weld metal deposited for all butt-type joints shall be built up in the form of a reinforcement on each side of the plate not less than 1/16 inch and not more than 1/8 inch.

5.14 Welding of clad plate shall be done in strict accordance with the procedures and recommendations of the Lukens Steel Company in their manual on the fabrication of clad steels.

5.2 Assembly:

5.21 Plate edge preparation for welding shall be done by machining or machine-burning. Hand burning and/or chipping may be used only where results are comparable.

5.22 When shell plates of two or more thicknesses are used, the outside diameter of the assembled vessel shall remain uniform and the inside diameter varied to suit conditions.

5.23 Each shell section shall be completely welded longitudinally prior to assembly with the heads or other shell sections.

5.24 All shell sections whose longitudinal seams are visibly peaked shall be rerolled or formed to the correct curvature.

5.25 No parallel misalignment of any abutting shell sections shall exceed 10% of the plate thickness. In no case shall misalignment exceed 1/8 inch.

5.26 All couplings shall be plugged during their installation and during the vessel fabrication to prevent damage to the threads.

5.27 All flat top vessels shall be reasonably flat and level. Excess material in the covers shall be controlled through proper welding sequence and/or spot shrinking.

5.28 When necessary to splice plates for flattops, the welded seams, upper side only, shall be ground smooth to obtain an appearance of a one piece top.

5.3 Finishing of Alloy Vessels:

5.31 Welds shall be ground with a rubber or Bakelite bonded aluminum oxide rounded edge wheel, sufficiently to remove oxides and sharp edges. Care must be enforced to avoid cutting cladding and heat tinting.

5.32 For vessels that are solid Type 316 stainless steel, both exterior and interior shall have a #2D, 'Dull Cold Rolled' finish, unless otherwise specified.

5.33 Nickel-clad vessels shall have a matte finish on the inside and the outside shall be that supplied on ordinary hot rolled steel plates, unless otherwise specified.

5.34 Solid nickel vessels shall have a plain standard cold rolled finish, unless otherwise specified.

5.35 All alloy steel surfaces shall be free of scale and embedded iron.

5.36 All [illegible] shall be removed from galvanized and alloy steel surfaces by scrubbing with soap, alkali, cleaners, or suitable solvents.

5.4 Qualification of Welders:

5.41 All welding shall be performed by welders qualified as to welding procedure and qualification tests as specified in the applicable ASME Code, or API Code.

5.5 Repairs:

5.51 Should any repairs be required during or after fabrication of a vessel or storage tank, they shall not be made unless, in the opinion of the Purchaser's authorized inspector, such repairs can be made satisfactorily so as to restore the full strength and usefulness of the equipment.

6.0 INSPECTION AND TESTS:

6.1 Inspection:

6.11 The responsibility for inspection rests with the Vendor. However, the Purchaser reserves the right to inspect equipment at any time during the fabrication to assure themselves that such equipment, materials and workmanship are in accordance with this Specification. The approval of any work by any inspector and/or his release of the shipment for shipment shall in no way release the Vendor from or relieve the Vendor of any responsibility for carrying out all provisions of this Specification.

6.2 **Tests:**

6.21 Upon completion, all non-pressure vessels and storage tanks shall be tested by the manufacturer and proved tight against leakage by applying internal air pressure that shall not exceed the weight of the roof plates and then checked for leakage using soap suds, linseed oil or other suitable material. The test equipment shall be of sufficient capacity to maintain the required pressure for a period of 24 hours, with all connections blanked off. If leaks are noticed during the test, the tank shall be made tight by the method used in fabricating the joint. All repaired welds and joints shall be checked by repeating the original test procedure. These tests shall be made in the presence of the purchaser's authorized inspector and with his approval. If purchaser waives testing in his presence, a certification of tank tightness shall be provided by the fabricator showing that tests were made in compliance with this paragraph.

6.22 For vacuum type tanks, tests shall be made as herein prescribed:

After the hydrostatic test has been completed according to Code requirements, the vessel shall be pulled down to 26 inches Hg. vacuum and held for 24 hours with a maximum allowable drop of one-half (1/2) inch in vacuum, based on equivalent temperature at start of test.

6.23 Before testing, all vessels and storage tanks shall be thoroughly cleaned and shall be free from all dirt, weld rod stubs, loose foreign material, weld spatter, etc.

6.24 The flat bottoms of storage tanks shall be tested in accordance with A.P.I. Std. 650, Section 5.3.2.

6.3 Test for Type "316" Stainless Steel:

6.31 For the purpose of confirming the presence of Molybdenum in type "316" stainless steel, specified herein, the Vendor shall submit to the Purchaser six (6) certified copies of a test report from an accredited testing laboratory. The test covered by the report shall be made by the laboratory in accordance with the attached procedure entitled "Standard Test for Type 316 Stainless Steel" which is Addendum No. 1 of this Specification.

6.32 The cost of the necessary testing shall be included in the price of the equipment involved.

6.33 The test report shall cover the following points:

a. Name of Vendor

b. Name of Purchaser

c. Purchase order number and brief description of equipment

d. Part of equipment specified as "316" Stainless Steel

e. Nature of test (Note: This will refer to standard test noted above)

f. Result of test: Positive or negative as to Molybdenum content

7.0 REPORTS AND DATA SHEETS:

7.1 When a code vessel or storage tank is released for shipment or accepted by the Purchaser's authorized inspector, the following reports and/or data sheets shall be supplied by the Vendor to the inspector:

a. Manufacturer's Data Report, Form U-1, ASME Code

b. Vendor's report on tests of welding operators

8.0 PAINTING AND DELIVERY:

8.1 Painting:

8.11 After inspection and acceptance of equipment, vendor shall apply to all external surfaces other than solid alloy one coat of rust preventive primer, light grey color, unless otherwise specified.

8.12 Where steam heat or other high-temperature mediums are used in conjunction with the tanks, the primer shall be high-heat type.

8.13 Before painting, all loose paint, mill scale and rust must be removed by means of a wire brush or scraper, and all grease and oil must be removed with soap, alkali cleaners or suitable solvents.

8.14 Before the bottom plates of field-erected tanks are lowered in place, the Vendor shall thoroughly clean the underside of all bottom plates and apply such preparations and paints as are specified on the design drawing.

8.15 If no primer coat or painting is to be done, it shall be so stated on the requisition or purchase order.

8.2 Finishing:

8.21 All flange faces and other machined surfaces shall be covered with a removable weather-proof coating and shall be protected during shipment and erection against mechanical injury with wooden covers or other suitable guards.

8.22 All couplings or female-threaded connections shall be plugged and all exposed male pipe connections shall be capped.

8.3 Delivery:

8.31 No tank shall be released for shipment without the approval of the Purchaser's authorized Inspector, if so specified.

8.32 All tanks shall be delivered in accordance with instructions issued by the Purchasing Department of the Purchaser.

9.0 GUARANTEES:

9.1 The Vendor shall guarantee to the Purchaser that all equipment furnished fulfills all conditions as stated in this Specification and that it will operate satisfactorily and continuously under the given design, pressures, and temperatures.

9.2 The Vendor shall further guarantee that all materials and workmanship entering into the equipment are first class in every respect.

CENTRIFUGAL PUMPS

References:

GC-1: . General Conditions

1.0. **SUPPLEMENTARY SPECIFICATIONS:**

1.1 Operating conditions which apply will be listed in Equipment Data Sheet.

2.0 **SCOPE:**

2.1 The Equipment Data Sheet furnished for each pump which states the service requirements to be fulfilled shall be considered a part of this Specification.

3.0 **MATERIALS:**

3.1 Materials will normally be specified on Equipment Data Sheets. Where not so designated, manufacturer shall recommend materials suitable for the service indicated.

4.0 **CONSTRUCTION:**

4.1 Unless otherwise specified, flange dimensions and facing shall be in accordance with A.S.A. Standards. All bolt holes shall straddle horizontal and vertical center lines.

4.2 Renewable shaft sleeves shall be provided when specified and they shall extend beyond the face of the packing gland. A positive seal shall be provided to prevent leakage between shaft and sleeve. Alternate construction may be submitted with proposal for approval.

4.3 Stuffing box arrangement shall be designed for minimum gland leakage using mechanical shaft seals, single type, non-lubricated, unless otherwise specified.

4.4 Types and makes of all bearings and method of lubrication shall be specified in proposal.

4.5 All connections for vents, gauges, and drains shall be 1/2" min. I.P.S. tapped holes.

NO.	DATE	REVISION	APP'D
1	3/13/98	Retyped and reissued	WJC
0	4/11/96	Original Issue	WJC

LEVER BROTHERS CO.
ENGINEERING DEPT.
GENERAL SPECIFICATIONS
CENTRIFUGAL PUMPS

4.6 All nozzles shall be provided with tapped pressure gauge openings.

4.7 Drains shall be provided to empty all parts of pump casings.

5.0 **DRIVERS**:

5.1 Unless otherwise indicated, drivers and drives for each pump as required or as called for on Equipment Data Sheets shall be provided by the Vendor.

5.2 Unless otherwise specified, pumps shall be electric motor driven and the motors must conform to General Specifications GS-11. Controls will be furnished by the Purchaser.

5.3 Gear reducers, if required, shall be constructed in accordance with the latest recommended practices and standards of the American Gear Manufacturers Association.

5.4 Shaft couplings shall be a flexible type acceptable to Lever Brothers Company.

5.5 V-belt drives, where required, shall as a minimum requirement conform to the recommendations of the manufacturer of the belts and sheaves to be used. All motors used with V-belt drives shall be provided with standard motor rails, except that for motors of 1 H.P. or smaller slotted motor bases will be accepted.

5.6 Supporting bearings or brackets must be provided for all drives.

5.7 Suitable guards to meet our standards must be provided for all drives.

5.8 Steam turbines, when required, shall conform to General Specification, GS-12.

6.0 **BASE**:

6.1 Unless otherwise specified, a sturdy cast-iron or fabricated steel base shall be provided for pump and drive.

6.2 The pump and driver shall be mounted and doweled on this base, assembled prior to shipment, and fitted with couplings, belts, bearings, reducers, etc., as required to form a complete pump-unit ready for operation.

7.0 CLEANING AND PAINTING: PREPARATION FOR SHIPMENT:

7.1 Each pumping unit shall be thoroughly cleaned of all rust and scale, by wire brushing or other suitable means. After cleaning, the exposed surfaces shall be given one (1) coat of specified rust preventive paint, grey in color.

7.2 Finished surfaces shall not be painted, but shall have a removable weatherproof coating to prevent rusting. Type to be specified later.

7.3 Flange faces shall be protected by wooden covers.

7.4 Tapped openings shall be fitted with suitable plugs or caps.

8.0 GUARANTEE:

8.1 Pumping units shall be guaranteed without qualification, for head, capacity, and power consumption at a specified hydraulic conditions and for satisfactory continuous operation in every other respect at the conditions specified in the pump specification sheets.

8.2 Vendor shall agree to correct or replace at his own expense any pump which does not perform in accordance with this guarantee.

9.0 DRAWINGS AND DATA REQUIRED:

9.1 Quotation shall include a clear statement pointing out all deviations from Specifications.

9.2 Bidder shall supply with his quotation copies of each of the following, as outlined in General Conditions GC-2:

a. Preliminary characteristic curves, showing pump performance both at proposed and maximum impeller diameters.
b. Outline dimension drawings.
c. Sectional drawings or catalog information showing details of pump construction and materials.

9.3 Upon receipt of purchase order, prints shall be supplied in accordance with General Conditions GC-2.

9.4 When pump is shipped, Vendor shall supply the following:

Two (2) copies each to be shipped with unit and two (2) copies to be sent direct to purchaser.

a. Repair and Replacement Parts List
b. "Operating" and "Service and Maintenance" instructions.
c. Other data normally furnished as described in GC-1.

9.5 The contractor shall submit a quotation and delivery time for recommended replacement parts for each size and type of pump supplied. This recommendation shall be based on the minimum number of parts to be carried in stock to secure continuous services while new parts are being procured.

9.6 Vendor shall submit operating weight of the equipment.

10.0 ACCESSORY EQUIPMENT:

10.1 The Vendor shall ship with the pump one full and new set of special tools or wrenches required to service the pump.

GENERAL PIPING SPECIFICATION

TABLE OF CONTENTS

REFERENCES:

GC-3: Contract Work

[redacted]

Welding Specifications
Piping Specifications

NO.	DATE	REVISION	APP
1	10-13-69	Revise Section 19.6	Q.A.H.
0	2-12-57	Original Issue	

APPROVED BY	DATE
Q.A.C.	2/14/57
Q.A.H.	10/13/69

LEVER BROTHERS
ENGINEERING DEPT.
GENERAL SPECIFICATIO
PROCESS AND UTILITY PI

1.0 INTRODUCTION

1.1 This Specification states the conditions and requirements for furnishing, erecting and testing of the piping systems complete with accessories, certain related equipment and supports.

2.0 SCOPE OF WORK

2.1 The work shall include all labor, materials and services necessary for the complete installation of all piping equipment, accessories and supports necessary for complete and finished installation. General Conditions GC-3 are a part of this Specification.

2.2 The work shall be as specified on the piping drawings and in conjunction with this Specification, the Valve Specifications, Piping Specifications, and welding specifications.

3.0 EQUIPMENT AND PIPING FURNISHED AND ERECTED BY OTHERS

3.1 It is the intent of this Specification that necessary connections will be made to each piece of equipment. All materials not specifically listed as furnished with equipment, which are necessary to complete all piping systems, shall be furnished as part of this work.

4.0 DRAWINGS

4.1 The drawings in general are made to scale and shall be followed as closely as the actual construction of buildings and equipment will permit. Dimensions shown on drawings shall be used in all cases in preference to scaling the drawings. When a line or a piece of equipment is located out of scale, a wavy line (27'-3") is placed beneath the dimension.

4.2 Small piping (2" and under) may be shown out of scale for clarity, but the actual location when erected shall follow the general location as shown on drawing and be satisfactory to the engineer in charge.

5.0 ACCESSIBILITY

5.1 Valves shall be accessible from floors or regular operating platforms. Where necessary for operation, extension stems, chain operated hand wheels, or other means of remote control shall be provided. Piping shall be so located as not to obstruct passageways or accessibility to equipment, nor impair clearance. Cock cores should not be more than 7'0" above operating platforms and arranged to be operated with wrench in vertical plane.

6.0 CLEARANCE

6.1 Head room clearance shall be a minimum of 6'-6" for walkways under all piping or equipment when covered or insulated. Clearance over driveways, roads or other passageways requiring clearance for trucks or large pieces of equipment shall be 16'-0".

7.0 VALVE EXTENSION STEMS, ETC.

7.1 Extension stems for valves shall be carefully guided and braced and have some means of indicating open or shut position. Chain wheels shall be of a type attaching to the valve handwheel and be fitted with chain guides. Chain shall extend to 6'-0" above ground or operating floor, and shall be provided with an attachment for securing chain out of walkway. Plug valves requiring extensions shall have either Tee Handle socket wrenches or double end chain wrenches. Chains should be avoided on valves under 2" in size.

8.0 PIPE SUPPORTS AND HANGERS

8.1 All piping and its auxiliary equipment shall be supported in a substantial and safe manner, rigid enough to prevent vibration from any cause and anchored sufficiently to prevent undue strain on branch lines or connecting equipment.

8.2 Hangers and supports shall be so installed as not to interfere with free expansion or contraction of pipe.

8.3 Saddles shall be placed under all insulated lines to provide protection for the insulation against expansion. Saddles shall be so placed over support that center line of saddle will be at center line of support for normal operating condition and shall be of sufficient length as to remain over support under any temperature condition.

8.4 Spacing of hangers and supports shall not exceed the following table:

Pipe Size	Maximum Spacing of Hangers and Supports
1" and smaller	10'-0" for Steel Pipe)
1½ to 2½" inc.	15'-0" for Steel Pipe) Spacing to depend on
3" and 4"	18'-0" for Steel Pipe) service, whether liq
6" and 8"	20'-0" for Steel Pipe) or vapor, insulated
10" and larger	22'-0" for Steel Pipe) uninsulated.

8.4 Continued

Cast Iron Pipe (bell and spigot or screwed) shall be supported or h at least one hanger per length. Lead pipe, copper pipe, and plasti pipe shall be supported at proper intervals and in an approved mann to prevent sag or undue stresses. Glass, porcelain, graphite and o special pipe shall be supported as recommended by the manufacturer.

9.0 EXPANSION AND ANCHORS

9.1 Spring or counterweighted hangers may be used wherever necessary to remove undue stresses on piping flanges or equipment.

9.2 Piping subject to expansion shall be flexible and designed safely t absorb all deflection stresses. Expansion shall preferably be take: by use of bends. Loops are to be avoided and used only where neces Mechanical expansion joints shall only be used at approved points, when so used on process lines the drainage or cleaning of the joint must be considered. Expansion joints with liners, or sleeves, shal be avoided on process lines.

9.3 Lines subject to expansion may be cold sprung, but the amount of co spring and the allowable stresses shall be in acc with the "American Standard Code for Pressure Piping A.S.A. B-31", latest revision.

9.4 Anchor points shall be designed to withstand full thrust of expansi Anchors shall be so located to relieve the strain on branch lines a connecting equipment.

10.0 INSTRUMENT PIPING AND CONNECTIONS

10.1 Instrument lines shall preferably be grouped together and carried i a trough. At other locations small lines shall be supported at a maximum of 6'-0" centers.

10.2 Adequate connections, tapped and plugged, shall be provided for test

10.3 Thermometer, pressure gage, test or instrument connections to pipin equipment shall be 3/4", unless otherwise shown.

10.4 Thermometer wells shall not be installed in any line less than 1-1/2 Lines less than 1-1/2" shall be increased to 1-1/2" by means of a reducer and thermowell installed in a 1-1/2" Tee, after which line is again reduced to line size. Thermowells in horizontal piping sha be placed vertical. Thermowells in vertical piping shall be placed horizontal for fixed instruments and 45° above horizontal for test wells.

11.0 PIPING - GENERAL SERVICE CONDITIONS

11.1 In general, piping 1½" and less is screwed, and lines 2" and larger are flanged or welded. Steel pipe 1½" and less is also generally Schedule 80. In effect, all threaded pipe is Schedule 80. Exception to this are clearly shown on piping specifications. Piping 2" to 10" inclusive shall be Schedule 40, unless otherwise noted and sizes abov 10" shall be investigated for wall thickness and service conditions.

11.2 Galvanized piping shall be screwed, regardless of size. No welding shall be permitted. Flanges shall be galvanized, screwed.

11.3 Copper piping shall be Type "K" & "L"Copper tubing. Joints shall be soldered with streamline type fittings. Soft copper tubing for steam tracing.

11.4 Process piping may be blown with steam at 175 psig pressure and 360°F temperature. Provision shall be made for expansion and anchorage at all operating conditions.

12.0 MATERIALS

12.1 The various piping and valve specifications, attached to and forming a part of this specification, describe in detail the specific material required for the various piping systems.

12.2 The Specifications of the American Society for Testing Materials, generally referred to as A.S.T.M., and the Code for Pressure Piping, American Standard "B-31", latest revision, shall govern all procedure in fabrication and erection of valves, pipe, fittings and attendant equipment.

12.3 The Specifications for the various services as listed in the piping specifications conform to these requirements in every respect.

12.4 No brass or copper shall be used on lines handling soap, detergents or edible oils in any form.

12.5 Corrosion resisting piping shall be used where called for in the piping specifications. Lines carrying acids or other materials that might cause bodily damage shall be protected as called for on the drawings.

12.6 Contact between certain metals such as steel and aluminum are to be avoided to prevent electrolysis. Where contact occurs an acceptable method of completely isolating each metal shall be developed.

12.7 Valves shall be as specified in the various Valve Specifications. As a guide for selection of the proper valve, the various manufacturer catalogs are used and a valve has been selected from these catalogs for each type. This selection is in no way binding. It is only an indication as to the construction of the valve. Valves selected are all of a competitive type and are in most cases manufactured by all of the leading valve manufacturing companies. A list of proposed valve suppliers shall be submitted to engineer for approval.

12.8 Plug type valves listed are as manufactured by the Nordstrom Company and indicate the proper lubricant to be used. Again, this is not binding but only an indication as to the construction of the valve and type of lubricant. Approval must be obtained from engineer, however, for use of other than Nordstrom valves.

12.9 All valves are listed in the Valve Specifications. Valves suitable for use under the pressure, temperature and service conditions of the several systems are selected, described and given a valve code number. Each valve shown on the drawings shall be tagged with a number indicating the size and the valve-code number -.viz: (4"-105).

12.10 All valves shall be ordered tagged with the valve code number and size clearly marked.

12.11 Valve stem packing for each service shall be such as to give best results under conditions imposed.

12.12 Pipe wall thicknesses are as indicated in the various Piping Specifications and refer to pipe wall dimensions as shown in "American Standards Association, Specification No. B36.10, Dimensions of Welded and Seamless Steel Pipe."

13.0 CONSTRUCTION - SCREWED

13.1 Screwed joints shall have clean machine cut threads and shall be made up using a paste as described in the piping specification. When it becomes necessary to dismantle or back off a joint, threads shall be thoroughly cleaned and new compound applied before remaking joint.

13.2 Where screwed joints are specified as seal welded, the pipe shall be made up hand tight, free of makeup compound, and not more than one normal full thread exposed. The pipe and fitting shall be cleaned to bare metal and welded with not less than two light beads with the weld cleaned between each welding. See also "CONSTRUCTION - WELDED", Art. 14.0.

13.3 Galvanized pipe shall be coated inside and out and may be cut and threaded without regalvanizing. No welding of galvanized piping is permitted.

14.0 CONSTRUCTION - WELDED

14.1 All welding and fabrication shall be in accordance with the requirements of the "American Standard Code for Pressure Piping, A.S.A. B-31" latest revision. Selection of welders shall be governed by the testing requirements of the "A.S.M.E. Boiler Code."

14.2 In electric arc welding, the welding electrode shall be of a type and composition suitable for the particular metals and type of welding used. In electric shielded arc welding, the electrode or wire shall be of the heavily coated, or shielded type. For "Heli-Arc" or inert gas, electric welding, the electrode or wire shall be of the uncoated or bare type.

14.2 Continued

Welding rods are to be carefully selected and approved by the Engineer in charge before proceeding to weld.

14.3 Butt welded joints made in field shall be provided with backing rings. This does not include fabricated spools.

14.4 Branch outlets shall be made in a manner shown on the piping drawings.

14.5 All welding fittings shall have a wall thickness equal to the thickness of pipe attached.

14.6 Welds shall be stress relieved only as called for in the Piping Specifications.

14.7 Pipe and fittings shall be beveled 37-1/2° for butt welding. Where slip-on flanges, or socket weld fittings, are used, a plain end is necessary.

14.8 All welded piping 2 inches and larger shall be spooled (pre-fabricated before erection). Long straight runs without side connections may be welded in place. Spools shall be of such a shape as to permit easy handling and erection.

14.9 Extra flanged joints shall be inserted in long lines to facilitate dismantling and cleaning.

15.0 FLANGED CONSTRUCTION

15.1 Flanges attaching to equipment, valves or fittings shall have similar facing. A flat face flange shall not be used against a raised face flange.

15.2 Cast iron flanges shall be relieved of any stress due to piping or bolting.

15.3 Bolt holes shall straddle center line unless otherwise noted.

15.4 Bolts or studs shall be tightened slowly, each bolt a small amount at a time. A uniform pressure is desired on the gasket. Overstressing of the bolts or bending of the flange is to be avoided.

15.5 For line temperatures of over 500°F. the bolted joint must not be warmed up until insulation is in place.

16.0 BENDS AND ELBOWS

16.1 Bends shall be used where space and conditions permit. Soap lines shall have a 36" minimum radius bend wherever practicable. Other lines shall be bent to a minimum radius of 5 times nominal pipe size unless otherwise noted. Usually multiple runs of stock lines will bend in sweeps with radius of bend for each pipe increasing with pipe spacing. Elbows shall be used at all other bending points and to be as called for in piping schedule.

17.0 FLEXIBLE CONNECTIONS

17.1 Flexible hoses shall be as shown on the drawings and as described in Piping Accessories.

18.0 SAFETY

18.1 Emergency showers as shown on Lever Brothers Standard Drawings MCS-8 and MCS-9 shall be installed at points shown on drawings.

18.2 Facilities for handling acids shall be in accordance with our Safety Regulations and in accord with local and insurance regulations, if any.

18.3 Certain fittings and valves shall be shielded in a manner specified on drawings, and where so indicated acid lines shall have a trough placed beneath the line for further protection against leaks.

18.4 Lever Brothers Safety Standard No. 9 is a part of this specification.

19.0 UNDERGROUND PIPING

19.1 All underground piping to be as described in the various Piping Specifications.

19.2 Water piping shall conform to the standards of the American Water Works Association for cast iron pipe, coated inside and out with coal tar pitch varnish.

19.3 Bell and spigot piping shall be laid to bear on entire length, and each joint will require tarred rope (oakum) or jute packing and soft pig lead properly poured and hand caulked.

19.4 A hammer test shall be made of each length of cast iron pipe before laying as a check against cracked or defective pipe.

19.5 Drain piping shall be as called for in Piping Specifications and shall be laid with the same precautions as cast iron pipe above.

19.6 Steel piping shall be as called for in Piping Specifications and outer surfaces shall be factory "SOMASTIC" coated. After pipe has been laid in place and welded together, exposed portions of pipe shall be waterproofed with SOMASTIC or equivalent applied to the remainder of the pipe. Two magnesium sacrificial electrodes shall be affixed to each end of the pipe where the pipe enters the ground.

19.7 Approved underground socket clamps of standard design for bell and spigot cast iron piping will be required for all 1/8 and 1/4 bends, valves, flange spigot pieces, etc.

19.8 Minimum size of underground lines shall be 1".

20.0 TESTING

20.1 All completed piping shall be tested as described in the "Code for Pressure Piping - American Standard B31"; latest revision. All necessary testing equipment, piping, drains and valves shall be furnished as required. In addition each completed section of the piping shall be tested after completion by being subjected for a period of twenty-four hours to the normal operating conditions for that particular system. At the completion of each test, all leaks, weaknesses, vibration or other faults shall be corrected. All screens or filters, shall be cleaned and inspected, and all faulty material replaced by new material.

20.2 Valve packing for steam and other services may, if directed by Engineer in charge, be replaced by special test packing, and after completion of tests be replaced with permanent packing. All bolting on flanges and valve bonnets to be taken up after test.

20.3 During construction all exposed threaded ends of pipe and pipe connections of equipment to be protected by couplings or other female type fitting.

21.0 EQUIPMENT PROTECTION

21.1 Openings to all pumps, vessels and other equipment requiring pipe connections shall be protected against foreign material entering. All piping shall be thoroughly cleaned before removing these opening protectors and joints made tight for test. If it becomes necessary to disconnect piping, these openings shall again be protected.

21.2 All pump suctions, motor valves, etc., where not otherwise protected, shall have a temporary screen installed on inlet flange; these screens to remain in place during test and initial operation. They are to be removed upon first shutdown after plant or unit is in operation.

22.0 RECORD PRINTS

22.1 A special set of prints to be marked "As Constructed" shall be kept to record accurately and completely all differences between the work as actually constructed and the drawings. After completion of the work this set shall be delivered to and become the property of the Lever Brothers Company.

23.0 SUBSTITUTION

23.1 All propositions for substitutions shall be made in writing and shall contain full detail and reasons for consideration. No changes or substitutions shall be made without written approval from the Lever Brothers Company.

24.0 DIVISION OF COSTS

24.1 Where deemed necessary all costs shall be subdivided to conform to the accounting system set up for division of costs.

24.2 All invoices for material and labor in addition to that covered by this Specification shall also have the charges subdivided if so directed by Lever Brothers Company.

25.0 COOPERATION

25.1 This work will be carried on under the usual conditions affecting building construction and in conjunction with other operations at the site.

25.2 In general all work will be carried on in cooperation with other contractors without special restrictions. During the progress of the work certain parts of the job or certain equipment may be put in operation and if, for any reason, access may not be allowed during operation of this part of the plant, the new work shall be carried on so as not to interfere with the normal operations of the plant and must be done at times designated by the Engineers.

25.3 Work shall be scheduled and materials delivered to obtain the earliest possible commercial operation of the plant. If possible, piping requiring insulation shall be scheduled ahead of bare piping.

26.0 TEST FOR TYPE 316 STAINLESS STEEL

26.1 When specifically requested, contractor at his expense shall have laboratory test made of type 316 stainless steel to confirm the presence of Molybdenum. The test shall be made in accordance with "Standard Test for 316 Stainless Steel", Addendum #1 to Lever Brothers Specification GS-1.

27.0 Pipe Line Identification

27.1 Piping contractor shall mark with chalk all lines at suitable interval to show the materials carried in each line so that the painting contractor can apply the correct color classification bands.

28.0 ABBREVIATIONS

1	A.S.A.	Latest revision of specification standard or code of designated number issued by the American Standard Association including tentative standards.
2	A.S.M.E.	American Society of Mechanical Engineers
3	A.S.T.M.	Latest revision of standard specification, stated number, including tentative specifications and tentative revisions issued by the American Society for Testing Materials.
4	Amer. Std.	American Standard
5	A.W.W.A.	American Water Works Association
6	B. & S.	Bell and Spigot
7	C. I.	Cast iron
8	Code	American Tentative Standard Code for Pressure Piping A.S.A. B31. Latest Revision.
9	C.S.	Cast steel
10	E.H. or Ex.Hy.	Extra heavy, or American Standard for 250 lb
11	F. & C.	Female and Coupling
12	F.S.	Forged Steel
13	F.F.	Flat Face
14	G.J.	Ground Joint
15	H.P.	High Pressure
16	I.A.M.D.	Institute of American Milk Dealers
17	I.P.S.	Iron Pipe Size
18	lb.	Pounds per square inch
19	L.P.	Low Pressure
20	L.R.	Long Radius
21	L.W.	Lapweld
22	M.I.	Malleable iron
23	O.S.&Y.	Outside screw and yoke
24	P.S.I.A.	Pounds Per Square Inch Absolute
25	P.S.I.G.	Pounds Per Square Inch Gage
26	R.F.	Raised Face
27	S.A.E.	Latest revision of standard specification, of stated number, issued by the Society of Automotive Engineers including tentative standards
28	S.F.	Semi-Finished
29	Smls.	Seamless
30	Spec.	Specification
31	S.R.	Short Radius
32	S.S.	Stainless Steel
33	Std.	Standard (where applied to piping materials indicates American Standard for 125 lb.)
34	T & C	Threaded and Coupled
35	U.S. Std.	United States Standard
36	W.P.	Working Pressure
37	W.S.P.	Working Steam Pressure
38	W.I.	Wrought Iron
39	W.T.	Working Temperature

VALVE LIST

INDEX

TYPE	ENDS	SIZE	SHEET	VALVE CODE NUMBERS
GATE	Screwed & solder ends	2" and smaller	2	1-20, 341-36
	Flanged	2" and smaller	3	21-34, 366-39
	Flanged	2" and larger	4	35-64, 391-41
GLOBE	Screwed & solder ends	2" and smaller	5	65-84, 416-44
	Flanged	2" and smaller	6	85-100, 441-46
	Flanged	2" and larger	7	101-130, 466-49
ANGLE	Screwed & solder ends	2" and smaller	8	131-141, 491-51
	Flanged	2" and smaller	8	142-145, 516-54
	Flanged	2" and larger	9	146-165, 541-56
CHECK	Screwed, Flanged & soldered ends	2" and smaller	10&10A	166-189, 566-59
	Flanged	2" and larger	11	190-210, 591-61
PLUG & BALL	Screwed	2" and smaller	12&12A	211-231, 616-64
5	Flanged 150#	2" and larger	12&12A	232-235, 641-66
	Flanged 150# 7	3" and larger	13	236-253, 666-69
	Flanged 150 & 300#	4" and smaller	14	254-260, 691-71
				261-284, 716-74
8	Flanged 150 & 300#	4" and larger	20	851-853
FREON	Flanged & solder ends	All Sizes	16	286-300, 741-76
DIAPHRAGM	Flanged & Screwed	All Sizes	17	301-310, 766-79
SPECIAL		All Sizes	18	311-325, 791-81
SANITARY	Union & Screwed	All Sizes	19	326-340, 816-84
BUTTERFLY	Flanged	2" and larger	20	841-

NO	DATE	REVISION	APPR	
8	3/14/79	Added #'s 851-853	GP	
7	11/11/74	Rev. as noted		
6	7/15/74	Gen'l Revision, additions & deleted sheet #15		
5	5/22/68	Gen'l Revision & Add'ns		
4	10/31/58	Added code numbers		
3	2/4/58	Added code numbers		

LEVER BROTHERS CO.
ENGINEERING DEPT.

GENERAL SPECIFICATION - PIPING
SPECIFICATION VALVE LIST

11/68

VALVE LIST

Gate Valves - 2" and Smaller - Screwed Ends

Code-#	Work Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc. Type	Disc. Material	Manuf.	Number
1	200	Bronze	Union	18-8S	Copper-Alloy	Integral	Bronze	Wedge	Nick-Alloy	Lunk	2228
2											
3											
4	125	Brass	Scr'd	Quick Open	Brass	Integral	Brass	Split Wedge	Brass	Walworth	6
5											
6	150	Iron	Union	18-8S	Steel	Integral	Iron	Solid	F.S.	Lunk	1644
7											
8											
9											
10	150	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Split	18-8SS	Aloyco	110
11	600	F.S.	Bolted	OS&Y	Monel	Renew	Monel	Solid	Monel	Lunk	1111
12	600	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	S.S.	Vogt	13111
13											
14	150	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Split	18-8S MO	Aloyco	110
15	150	T-2088	Bolted	OS&Y	T-2088	Integral	T-2088	Split	T-2088	Aloyco	110
16	300	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Split	18-8SS	Aloyco	2210-A
17											
18											
19											
20											

GATE VALVES - 2" AND SMALLER - SOLDER ENDS

341	125	Bronze	Screwed	OS&Y	Brass	Integral	Brass	Wedge	Brass	Chase	429

VALVE LIST
Gate Valves - 2" and Smaller - Flanged Ends

Code #	Work Press	Body	Bonnet	Stem Type	Stem Mat'l	Seat Type	Seat Mat'l	Disc Type	Disc Mat'l	Mfr.	Number
21											
22	300 (b)	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	Excelloy	Crane	3615X
23	600 (a)	F.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	Excelloy	Crane	3611XU
24	150	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Double	18-8SS	Aloyco	117FF
25	150	Aloyco 20	Bolted	OS&Y	Aloyco 20	Integral	Aloyco 20	Double	Aloyco 20	Aloyco	111
26											
27											
28	150	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Double	18-8S MO	Aloyco	117FF
29	300	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8SS	Double	18-8SS	Aloyco	211FF
30	300	18-8SS	Bolted	OS&Y	18-8S MO	Integral	18-8SS	Double	18-8SS	Aloyco	211FF
31											
32											
33											
34											

(a) 600 lb. valve with 150 lb. flanges
(b) 600 lb. valve with 300 lb. flanges

VALVE LIST
Gate Valves - 2" and Larger - Flanged Ends

Code #	Work Press	Body	Bonnet	Stem Type	Stem Mat'l	Seat Type	Seat Mat'l	Disc Type	Disc Mat'l	Mfr.	Number
35	125	C.I.	Bolted	OS&Y	Nickel Pl.	Renew	Bronze	Solid	Br.	Lunk	1430
36	125	C.I.	Bolted	IS-NRS	Nickel Pl.	Renew	Bronze	Solid	Br.	Lunk	1428
37	125	C.I.	Bolted	OS&Y	Steel	Integral	C.I.	Solid	C.I.	Crane	475 1/2
38											
39											
40											
41	300	Steel	Bolted	OS&Y	Bronze	Renew	S.S.	Solid	S.S.	Lunk	3012
42	250	C.I.	Bolted	IS-NRS	Bronze	Renew	S.S.	Solid	S.S.	Powell	1433
43											
44											
45											
46	150	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	Excelloy	Crane	47X
47	150	C.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Solid	S.S.	Lunk	1512
48	300	C.S.	Bolted	OS&Y	Excelloy	Renew	Nick-Alloy	Solid	Excelloy	Crane	33XR
49	300	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	Excelloy	Crane	33X
50											
51											
52	600	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Solid	Excelloy	Crane	76X
53											
54	300	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Double	18-8S MO	Aloyco	211FF
55	150	Type 304	Bolted	OS&Y	18-8SS	Integral	18-8SS	Double	18-8SS	Aloyco	117FF
56	150	Type 316	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Double	18-8S MO	Aloyco	117FF
57											
58											
59	150	Aloyco 20	Bolted	OS&Y	Aloyco 20	Integral	Aloyco 20	Double	Aloyco 20	Aloyco	111
60											
61	300	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Double	18-8SS	Aloyco	2117
62 (c)	150 C.I.	Glass-lined	Bolted	OS&Y	Glass-lined	Renew	Porcelain	Solid	Porcelain	Pfaudler	(d)

(a) Valves 35 thru 61 have provision for lowout, drain, and seal taps; see MCS-7.
(c) Valve No. 62X same as 62 except glass-lining to be alkali resistant
(d) Pfaudler Valve Nos. are as listed for "Standard Line Valves" on page 11 of Pfaudler Bulletin No. 886.

VALVE LIST

Globe Valves - 2" and Smaller - Screwed Ends

Code #	Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
65	150	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Plug	18-8SS	Aloyco	310
66	150	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Plug	18-8S MO	Aloyco	310
67	150	T-2088	Bolted	OS&Y	T-2088	Integral	T-2088	Plug	T-2088	Aloyco	310
68	300	18-8 SS	Bolted	OS&Y	18-8 SS	Integral	18-8 SS	Plug	18-8 SS	Aloyco	2310-A
69											
70	600	F.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Plug	S.S.	Vogt	13141
71	600	F.S.	Bolted	OS&Y	Monel	Integral	Hastelloy "C"	Wedge	Monel	Lunk	1511
72											
73											
74											
75											
76	200	Bronze	Union	IS-RS	Copper Alloy	Renew	S.S.	Plug	S.S.	Lunk	73PS
77	150	Iron	Union	IS-RS	Steel	Renew	Iron	Renew	Iron	Lunk	1113
78											
79											
80											
81											
82											
83											
84											

GLOBE VALVES - 2" AND SMALLER - SOLDER ENDS

416	150	Bronze	Screwed	OS&Y	Brass	Integral	Brass	Jenkins Disc	Brass	Chase	434

VALVE LIST
Globe Valves - 2" & Smaller - Flanged Ends

Code #	Work Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
85	600	F.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Plug	S.S.	Vogt(c)	5-5091-5097
86											
87											
88											
89											
90	300	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Plug	18-8SS	Aloyco	2317FF
91	300	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Plug	18-8S MO	Aloyco	2317FF
92	150	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Plug	18-8SS	Aloyco	317B-FF
93	150	Aloyco 20	Bolted	OS&Y	Aloyco 20	Integral	Aloyco 20	Plug	Aloyco 20	Aloyco	311
94											
95											
96	150	18-8S MO	Bolted	OS&Y	18-8S MO	Integral	18-8S MO	Plug	18-8S MO	Aloyco	317B-FF
97	150(a)	F.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	3656X
98	300(b)	F.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	3656X
99											
100											

(a) 600 lb. Valve with 150 lb. flanges
(b) 600 lb. Valve with 300 lb. flanges
(c) Vogt Valves are numbered according to size

VALVE LIST

Globe Valves - 2" and Larger - Flanged Ends

Code-#	Work Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
101	125	C.I.	Bolted	OS&Y	Nickel Pl.	Renew	Bronze	Plug	Bronze	Lunk	1123
102	125	C.I.	Bolted	OS&Y	Steel	Renew	C.I.	Plug	C.I.	Crane	351 1/4
103											
104											
105	150	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	143X
106	150	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Plug	18-8SS	Aloyxo	317B-FF
107	150	18-8SMO	Bolted	OS&Y	18-8SMO	Integral	18-8SMO	Plug	18-8SMO	Aloyco	317B-FF
108	150	Aloyco 20	Bolted	OS&Y	Aloyco 20	Integral	Aloyco 20	Plug	Aloyco 20	Aloyco	311
109											
110											
111											
112											
113											
114											
115											
116	300	18-8SMO	Bolted	OS&Y	18-8SMO	Integral	18-8SMO	Plug	18-8SMO	Aloyco	2317FF
117	150	C.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Full Opn'g	S.S.	Lunk	1532
118	300	C.S.	Bolted	OS&Y	Excelloy	Renew	Stellite	Plug	Nick-Alloy	Lunk	3042
119	300	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	151X
120	300	18-8SS	Bolted	OS&Y	18-8SS	Integral	18-8SS	Plug	18-8SS	Aloyco	2317FF
121											
122	150 C.I.	Glass-lined	Bolted	OS&Y	Glass-lined	Renew	Porcelain	Plug	Porcelain	Pfaudler	(a)
123											
124	600	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	171X

(a) Pfaudler Valve No's are as listed for "Globe Line Valves" on pg. 11 of Pfaudler Bulletin No. 886 Flush Bottom Tank Valves

125
126
127
128
129
130

All Fig. 2310 valves shall have 1" tapped boss per MCS-6

VALVE LIST

Angle Valves - 2" and Smaller - Screwed Ends

Code #	Work Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
131											
132	600	F.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Loose Disc	S.S.	Vogt	1971
133											
134	600	F.S.	Union	OS&Y	S.S.	Renew	S.S.	Plug	S.S.	Vogt	5-5291 thru 5-5297
135											
136											
137	200	Bronze	Union	IS-RS	Brass	Renew	S.S.	Plug	S.S.	Lunk	72PS
138											
139											
140											
141											

Angle Valves - 2" and Smaller - Flanged Ends

142											
143	150(a)	F.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	3657X
144	300(b)	F.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	3657X

(a) 600 lb. valve with 150 lb. flanges
(b) 600 lb. valve with 300 lb. flanges

Angle Valves - 2" and Smaller - Solder Ends

491	125	Bronze	Screwed	OS&Y	Brass	Integral Brass		Plug	Teflon	Chase	427

VALVE LIST

Angle Valves - 2" and Larger - Flanged Ends

Code #	Work Press	Body	Bonnet	Stem Type	Stem Material	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
146	125	C.I.	Bolted	OS&Y	Nickel Al.	Renew	Bronze	Plug	Bronze	Lunk	1124
147	125	C.I.	Bolted	OS&Y	Steel	Renew	C.I.	Plug	C.I.	Crane	353 1/4
148											
149											
150	150	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	145X
151	150	C.S.	Bolted	OS&Y	S.S.	Renew	S.S.	Full Opening	S.S.	Lunk	1552
152											
153											
154											
155											
156											
157											
158	300	C.S.	Bolted	OS&Y	Stellite	Renew	Stellite	Plug	Nick-Alloy	Lunk	3062
159	300	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	153X
160											
161	600	C.S.	Bolted	OS&Y	Excelloy	Renew	Excelloy	Plug	Excelloy	Crane	173XB
162											
163											
164											
165											

VALVE LIST

Check Valves - 2" & Smaller - Screwed Ends

Code#	Work Press	Body	Bonnet	Stem Type	Stem Mat'l	Seat Type	Seat Mat'l	Disc Type	Disc Mat'l	Mfr.	Number
166	200	Bronze	Screwed			Regrind	Bronze	Swing	Bronze	Lunk	554Y
167	200	18-8SS	Screwed			Regrind	18-8SS	Swing	18-8SS	Powell	1847Y
168	200	18-8S MO	Screwed			Regrind	18-8S MO	Swing	18-8S MO	Powell	1847
169											
170	200	T-20SS	Screwed			Regrind	T-20SS	Swing	T-20SS	Powell	1847Y
171	300	18-8SS	Bolted			Integral	18-8SS	Swing	18-8SS	Powell	2345A
172	400	A.I.	Screwed			Regrind	A.I.	Swing	A.I.	Crane	346½
173											
174											
175	600	F.S.	Bolted			Renew	S.S.	Lift	S.S.	Vogt	701
176	600	F.S.	Bolted			Renew	S.S.	Swing	S.S.	Lunk	2311W
177											
178	300	18-8S MO	Bolted			Integral	18-8S MO	Swing	18-8S MO	Powell	2346A

Check Valves - 2" & Smaller - Flanged Ends

179	150	18-8S MO	Bolted			Integral	18-8S MO	Swing	18-8S MO	Aloyco	371
180	150	18-8SS	Bolted			Integral	18-8SS	Swing	18-8SS	Aloyco	371
181											
182											
183											
184	300	18-8SS	Bolted			Integral	18-8SS	Swing	18-8SS	Powell	2346A
185											
186											
187											
188	300(b)	C.S.	Bolted			Renew	Excelloy	Swing	Excelloy	Crane	3686X
189	150(a)	C.S.	Bolted			Renew	Excelloy	Lift	Excelloy	Crane	3686X

(a) 600 lb. valve with 150 lb. flanges
(b) 600 lb. valve with 300 lb. flanges

VALVE LIST

Check Valves - 2" & Smaller - Solder Ends

Code #	Work Press	Body	Bonnet	Seat Type	Seat Mat'l	Disc Type	Disc Mat'l	Mfgr.	Number
566	150	Bronze	Screwed	Integral	Brass	Swing	Brass	Chase Mueller	486 V-1007A

VALVE LIST
Check Valves - 2" & Larger - Flanged Ends

Code #	Work Press	Body	Bonnet	Seat Type	Seat Material	Disc Type	Disc Material	Mfr.	Number
190	125	C.I.	Bolted	Renew	C.I.	Swing	C.I. & Br.	Lunk	1790
191	125	C.I.	Bolted	Renew	C.I.	Swing	C.I.	Crane	373 1/2
192									
193									
194									
195	150	C.S.	Bolted	Renew	C.S.	Swing	C.S.	Lunk	1572
196	150	C.S.	Bolted	Renew	Excelloy	Swing	Excelloy	Crane	147X
197	150	18-8SS	Bolted	Integral	18-8SS	Swing	18-8SS	Aloyco	371
198	150	18-8SMO	Bolted	Integral	18-8SMO	Swing	18-8SMO	Aloyco	371
199									
200									
201	300	S.S.	Bolted	Renew	S.S.	Swing	S.S.	Lunk	3072
202	300	C.S.	Bolted	Renew	Excelloy	Swing	Excelloy	Crane	159X
203	300	18-8SS	Bolted	Integral	18-8SS	Swing	18-8SS	Powell	2346A & 306188
204									
205									
206	600	C.S.	Bolted	Renew	Excelloy	Swing	Excelloy	Crane	175X
207									
208	300	18-8SMO	Bolted	Integral	18-8SMO	Swing	18-8SMO	Powell	2346A & 306188
209									
210	150	Aloyco 20	Bolted	Integral	Aloyco 20	Swing	Aloyco 20	Aloyco	371
591	125	Alum.	Bolted	Renew	Aluminum	Swing	Aluminum	Varec	211A

VALVE LIST

Plug Valves - 2" and Smaller - Screwed Ends

Code #	Work Press	Body	Plug	Operator	No. Ports	Arrangement	Mfr.	Figure No.
211								
212								
213								
214	150	C.S.	C.S.	*	2		Tufline	066
215								
216								
217								
218								
219								
220								
221								
222								
223								
224	150	C.S.	C.S.	*	3	A	Tufline	036
225	150	C.S.	C.S.	*	3	D	Tufline	036
226								
227								
228	150	C.S.	C.S.	*	3-Way	3-Port A	Tufline	30
229								
230								
231								

Plug Valves - 2" and Larger

232								
233								

*All valves through 3" size to be equipped with wrenches, and larger sizes to be equipped with "Tufgear" operators and operating handles.

VALVE LIST

Ball Valves - 1 1/2" and Smaller - Screwed ends

Code #	Work Press	Body	Ball	Seat	Body Seal	Stem Seal	Mfr.	Number
616	400	Bronze	(Bronze (Hard Chromed	Teflon	Teflon	Teflon	Jamesbury	A-11
617	2000	Carbon Steel	(Carbon Steel (Hard Chromed	Mod.Teflon w/Metal	Teflon	Teflon	Jamesbury	AZ-22
618	2500	Carbon Steel	18-8SMO	Mod.Teflon w/secondary [illegible] seat	Teflon	Teflon	Jamesbury	BZ2236-DT
636	2000	18-8SMO	(18-8SMO (Hard Chromed	Mod.Teflon w/Metal	Teflon	Teflon	Jamesbury	AZ-36
637	600 to 800	Alloy 20 SS	Alloy 20 SS	Teflon	Teflon	Teflon	Jamesbury	A-35
BALL VALVES - 2" & LARGER - FLANGED 150#								
641	150	Carbon Steel	(Carbon Steel (Hard Chromed	Teflon	Teflon	Teflon	Jamesbury	D-150F-22
642	150	Carbon Steel	(Carbon Steel (Hard Chromed	Teflon	Teflon	Teflon	Jamesbury	DM-150FD-22
643	150	Carbon Steel	Carbon Steel	Mod.Teflon w/Metal	Teflon	Teflon	Jamesbury	DZ-150F-22
661	150	18-8SMO	18-8SMO	Mod.Teflon w/Metal	Teflon	Teflon	Jamesbury	DZ-150F-36
662	150	18-8SMO	18-8SMO	Teflon	Teflon	Teflon	Jamesbury	AM150FD-36 or DM150FD-36
663	300	18-8SMO	(18-8SMO (Hard Chromed	Mod.Teflon w/Metal	Teflon	Teflon	Jamesbury	DZF308-36
664	150	18-8SMO	(18-8SMO (Hard Chromed	Teflon	Teflon	Teflon	Jamesbury	A-150F-36TT or D-150F036TT
665	150	Alloy 20 SS	Alloy 20 SS	Teflon	Teflon	Teflon	Jamesbury	D-150F-36

VALVE LIST

Wrench Operated Plug Valves - 1/2" to 12" - 150# Flanged Ends

Code #	Work Press	Body	Plug	Operator	No. Ports	Arrangement	Mfr.	Fig. No.	Remarks
236									
237									
238									
239	150	C.S.	C.S.	*	2		Tufline	067	1/2"-4"
240	150	C.S.	C.S.	*	2		Tufline	067EO	4"-12"
241									
242									
243									
244									
245									
246									
247									
248	150	C.S.	C.S.	*	3	A	Tufline	037EO	4"-12"
249	150	C.S.	C.S.	*	3	D	Tufline	037EO	4"-12"
250	150	C.S.	C.S.	*	3	A	Tufline	037	1/2"-4"
251	150	C.S.	C.S.	*	3	D	Tufline	037	1/2"-4"
252									
253									

*All valves thru 3" size to be equipped with wrenches and larger sizes equipped with enclosed "Tufgear" operators and operating handles.

VALVE LIST

Wrench Operated Plug Valves - 1/2" to 12" - 150# Flanged Ends

Code#	Work Press	Body	Plug	Operator	No. Ports	Arrangement	Mfr.	Fig. No.	Remarks
254	150	Alloy 20	Alloy 20	*	2		Tufline	067	1/2"-4"
							Tufline	067EO	4"-12"
255	150	Alloy 20	Alloy 20	*	3	A	Tufline	037	1/2"-4"
							Tufline	037EO	4"-12"
256	150	316 s.s.	316 s.s.	*	2		Tufline	067	1/2"-4"
							Tufline	067EO	4"-12"
257	150	316 s.s.	316 s.s.	*	3	A	Tufline	037	1/2"-4"
							Tufline	037EO	4"-8"
258	150	316 s.s.	316 s.s.	*	3	D	Tufline	037	1/2"-4"
							Tufline	037EO	4"-8"
259	150	Alloy 20	Alloy 20	*	3	D	Tufline	037	1/2"-4"
							Tufline	037EO	4"-8"
691									

Wrench Operated Plug Valves - 4" and Less - 300# Flanged Ends

260									
285									

*All valves thru 3" size to be equipped with wrenches, and larger sizes equipped with enclosed "Tufgear" operators and operating handles.

VALVE LIST

Flanged Refrigeration Valves - 300 and 400 lb. Flanges

Code #	Type	Body	Bonnet	Bonnet Gasket	Stem Type	Stem Mat'l	Seat Type	Seat Mat'l	Disc. Type	Disc. Mat'l	Henry Number
286	Globe	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Flat	Lead Alloy	148-WM-etc.
287	Globe	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Flat	Nylon	C148-WM-etc.
288											
289	Angle	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Flat	Lead Alloy	248-WM-etc.
290											
291	Angle	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Flat	Nylon	C248-WM-etc.
292	Check	Duct.Iron	*	Fiber			Integ.	Duct.Iron	Lift	Lead Alloy	32A etc.
293											
294											
295	Expan.	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Needle	Steel	300M-etc. or 151M-WM-etc.
296	Expan.	SemiStl.	Bolted	Lead	18-R8	Steel	Integ.	Semi-Stl	Needle	Steel	991
297	Angle Exp.	Semi-Stl	Bolted	Lead	18-R8	Steel	Integ.	Semi-Stl	Needle	Steel	691
298	Angle Exp.	Duct.Iron	*	Fiber	18-R8	Steel	Integ.	Duct.Iron	Needle	Steel	350M-etc. or 251M-WM-etc.

Soldered Joint Refrigeration Valves - 300 lb. pressure

741	Globe	Forged-Brass	Screwed	Durable	Rising	Brass	Integ.	Brass	Flat Plug	Teflon	516
742	Angle	Forged-Brass	Screwed	Durable	Rising	Brass	Integ.	Brass	Flat Plug	Teflon	647
743	Expan.	Forged-Brass	Screwed	Durable	Rising	Monel	Renew.	S.S.	Tapered	Monel	629
744											
745	Globe	Bronze	Bolted	Durable	Rising	Cad.Pl.	Integ.	Bronze	Flat Plug	Nylon	203
746	Angle	Bronze	Bolted	Durable	Rising	Cad.Pl.	Integ.	Bronze	Flat Plug	Nylon	216
747	Check	Bronze	Bolted	Durable	- -		Integ.	Bronze	Beveled	Nylon	205

* Valve sizes 1" and smaller have screwed bonnets; all other sizes are bolted

VALVE LIST
Diaphragm Valves

Code #	Work Press	Ends	Body	Bonnet	Lining	Diaphragm	Hills-McCanna Type
301	125	Screwed	C.I.	Bolted	None	As specified (c)	500
302	125	Flanged	C.I.	Bolted	None	As specified (c)	500
303	125	Screwed	Alloy (a)	Bolted	None	As specified (c)	500
304	125	Flanged	Alloy (a)	Bolted	None	As specified (c)	500
305	125	Flanged	C.I.	Bolted	(b)	As specified (c)	500
306	125	Screwed	Special (a)	Bolted	None	As specified (c)	500
307	125	Flanged	Special (a)	Bolted	None	As specified (c)	500
308							
309							
310							

(a) When body is of alloy or other special material such as plastic, porcelain, etc. our code number shall be followed by the code number shown in Hills-McCanna catalog #V-54, pp. 14 & 15. Valve #303-09 would indicate screwed Carpenter 20; 307-27 would indicate flanged Chemical Stoneware.

(b) Linings for cast iron valves would be indicated similarly: 305-89 would be a flanged valve lined with alkali-resistant glass; 305-42 would be Ebonite lined.

(c) Diaphragm materials would be indicated similarly using the code numbers on p. 16 of catalog #V-54. Valve #303-09-J-1 would be a screwed Carpenter 20 valve with a Teflon diaphragm.

VALVE LIST

Double Hub - 4" and Larger - Underwriters Approved

Code #	Type	Work Press	Body	Bonnet	Stem Type	Stem Mat'l.	Seat Type	Seat Mat'l.	Disc. Type	Disc. Mat'l.	Crane Number
311	Gate	175	C.I.	Bolted	13-NRS	Brass	Renew	Brass	Solid	C.I. Brass Trim	462½
312											
313											
314	Check	175	C.I.	Bolted			Renew	Brass	Swing	C.I. Br. Trim	375½
315											
316											

Fire Hydrant - 6" Hub Ends with Luge

317 Underwriters Approved - 2½" Double Outlet - Local Fire Dept. Thds. - Grinnell - A-20030
318
319

Fire Department Siamese Connection - 4" Sor'd. Ends.

320 175 Lb. Brass - Clapper and Trap in Each Outlet - Grinnell Fig. 1684
321
322
323 Post Indicator - To fit Crane No. 462½ - Give distance center line valve to grade - Crane No. 510
324
325

VALVE LIST

Polished Stainless Steel (Type 316) Sanitary Plug Valves - Operator Attached. To Conform to 3A Sanitary Standards. Demountable for Cleaning.

Code #		Alloy Prod. Co. Fig. No.	Tri-Clover Fig. No.
326	2 Port - Straight Thru - Sor'd. Ends	10-C	10-C
327	2 Port - Straight Thru - Th'd. One End, Union Other End	10-F	10BFPL
328	2 Port - Angle Type - Sor'd. Ends	30-C	
329	2 Port - Angle Type - Th'd. One End, Union Other End	30-F	
330	3 Port - Side Outlet - Sor'd. Ends	11-C	11-C

Polished 304 Stainless Steel Sanitary Plug Valves - Operator Attached. To Conform to 3A Sanitary Standards. Demountable for Cleaning.

Code #		Alloy Prod. Co. Fig. No.	Tri-Clover Fig. No.
331	2 Port - Straight Thru - Sor'd. Ends	10-C	10-C
332	2 Port - Straight Thru - Th'd. One End, Union Other End	10-F	10BFPL
333	2 Port - Angle Type - Sor'd. Ends	30-C	
334	2 Port - Angle Type - Th'd. One End, Union Other End	30-F	
335	3 Port - Side Outlet - Sor'd. Ends	11-C	11-C

		Cherry Burrell Fig. No.
336	2 Port - Straight Thru - Female Ends	10-CI
337	3 Port - Side Outlet - Female Ends	11-CI
338	2 Port - Straight Thru - Male Ends	45-MI

VALVE LIST

Butterfly Valves - 2" and Larger - Flanged Ends

Code #	Work Press.	Body	Stem Material	Seat Type	Seat Material	Disc Material	Manufacturer	Number
841	150	Cast Iron, Nodular Iron or Alum.	316 s/s	Replaceable	EPDM, Buna N or Teflon lined	316 s/s	Keystone	122

Plug Valves - 4" and Larger - Flanged Ends

Code #	Work Press.	Body	Plug	Operator	#Ports	Arrangement	Mfg	Fig. #
851	150	316 S.S.	316 S.S.	*	3	D	Tufline	0376
852	150	316 S.S.	316 S.S.	*	3	AX	Tufline	037EG
853	150	316 S.S.	316 S.S.	*	3	A	Tufline	0376

* Valves 4" and larger to be equipped with Tufgear or Spurgear Operator, per figure No. designation.

GENERAL ELECTRICAL SPECIFICATIONS

1.0 GENERAL CONDITIONS

Lever Brothers Company "Instructions for Outside Contractors" and General Conditions for Contract Work GC-3 shall be considered part of these specifications.

2.0 CONTRACTOR'S RESPONSIBILITY

2.1 Certain items of material and equipment as indicated on drawings, may be furnished to the electrical contractor for installation by him.

Upon receipt of this material the contractor becomes entirely responsible for any losses or delays occasioned by its loss, damage or misuse.

On or before the completion of the job the electrical contractor shall return in good condition all material and equipment, originall furnished by Lever Brothers Company, that is not required or used on the job.

2.2 Procurement of Material and Equipment

All equipment necessary to complete the electrical installations shall be furnished by the Contractor. Utilities will be furnished to the Contractor by Lever Brothers Company; however, before any utility connections are made, approval must be received from the Lever field engineer. All material required, other than that being furnished by Lever as listed on drawings, shall be furnished by the electrical contractor.

2.3 Prosecution of Work

The electrical Contractor shall execute all work in a workman-like manner and in such a manner as not to interfere with the progress of the other trades. No excuse is acceptable for hindering and/or delaying work progress of other trades.

Added 15.

REFERENCES
Instructions for Outside Contractors
GC-3: Contract Work
ECS-1 Electrical Gen'l Notes
ECS-2 Electrical Legend- One Line Diag. & Power Layout
ECS-3 Electrical Legend- Elementary Diagrams
ECS-4 Electrical Legend - Lighting Layout

NO.	DATE	REVISION	
5	9/1/71	Rev. Par: 12.1,12.6.18.1	S.G
4	11/18	Revised Para: 14.1, Add Ref.	AR
3	6/6/69	Revised Para: 6.0; 12.1 &	
2	9/2/61	Revised Par. 1.0	
1	4/4/57	Retyped cover sheet	
0	1/1/57	Original Issue	

APPROVED	
BY	DATE

LEVER BROTHERS
ENGINEERING DEPT.
GENERAL SPECIFICATI
ELECTRICAL WORK
SPECIFICATION GS-

2.4 Differences Between Drawings and Code

The intent of all Lever Brothers Company electrical drawings and specifications is to be in accordance with the National Electrical Code and local governing codes and regulations.

In cases where there are differences between what is called for on the drawings and interpretations of governing codes, it shall be t Contractor's responsibility to insure that the installation is mad according to code. At the time the job is bid, it will be the Contractor's responsibility to take exception to any such differences that appear on the drawings and take account of them in his origin bid.

After the job is awarded it shall be the Contractor's sole responsi to correct discrepancies, if any, between what is shown on the dra and requirements of governing codes.

In general, electrical equipment is only approximately located on t design drawings; therefore, the Electrical Contractor shall determi its exact location in the field.

2.5 Interferences

In the event that a dispute arises regarding responsibility for int ferences, the work shall be performed by the particular Contractor other trades as directed by the Lever Engineer.

3.0 STANDARDS FOR MATERIAL AND WORKMANSHIP

3.1 All material shall be new with type of enclosure as specified on the drawings and shall conform with the standards of the Underwriters Laboratories, Inc. in every case where such a standard has been established for the particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat mechanical appearance when completed.

3.2 The electrical contractor shall have present on the job at all times a person who is authorized to make decisions.

If in the opinion of Lever Brothers Company the work is being delaye by reason of the electrical contractor not having enough men on the job, the contractor shall immediately place more men on the job when requested by Lever's representative.

4.0 CODES, PERMITS AND INSPECTIONS

4.1 The installation shall comply with all local, county, or state law applying to electrical installations and with the regulations of t. National Electrical Code. The contractor shall obtain and pay for all permits required by the city, county or state, and after completion of the work, shall furnish the owner with a certificate of final inspection, before receiving final payment.

5.0 GUARANTEE

5.1 The contractor shall leave the entire electrical system installed under this contract in proper working order tested and ready for operation.

6.0 STANDARDS

6.1 The following standards shall be considered as minimum standards:- The standard rules of the Inst. of Electrical & Electronic Engineer The Rules and Regulations of the National Board of Fire Underwriter (National Electrical Code); The National Electrical Manufacturers Association; National Bureau of Standards and The National Electric Safety Code.

7.0 GROUNDING

7.1 All metallic conduits, supports, cabinets and equipment shall be grounded in accordance with the governing code, even though not sho on the drawings. Lighting transformer neutrals shall be grounded. Additional grounding of outside tanks and outside structures shall be made as shown or noted on the drawings.

8.0 TRANSFORMERS

8.1 Transformers for power or lighting shall be dry type, class B insul Voltage and KVA rating shall be as indicated on the drawings.

9.0 SWITCHES AND PANELS

9.1 Where specified all power and feeder switches shall be enclosed saf switches, Type "A". Fused switches shall be provided with new fuse: of the rating shown on the drawings.

Where specified, power and feeder air circuit breakers shall be Westinghouse Electric Company, Type Deion or equal, with ratings and special features as indicated on the drawings.

9.2 Power Panelboards shall be of standard dead front, safety type, cc sisting of panels and fused switches or circuit breakers of the nu and sizes shown on the drawings. The construction shall consist c structural or formed steel frame carefully built into a rigid stru that will withstand handling and short circuit stresses without da or misalignment. Panelboards shall, except as noted, be designed floor mounting, with adequate pull space and ventilation. Circuit breakers shall be Westinghouse Electric Company, Type AB Delon or with ratings and special features as indicated on the drawings. P board bases and disconnect means shall be equipped with solderless connectors or proper size for the wires indicated on the drawings.

9.3 Lighting Panelboards shall be furnished in accordance with drawing

9.4 All cabinets shall be made of sheet steel and shall be provided wi a hinged door with catch and lock. Cabinets shall bear the Under- writers Laboratories inspection label.

9.5 Maximum mounting height of all power and lighting panels shall be from the finished floor to the top of the panels, unless otherwise dicated on the drawings.

10.0 UNDERGROUND DUCT SYSTEM

10.1 Any underground system shall include all duct lines and appurtenanc necessary to install all underground electrical, telephone and in- cidental services, as indicated on the drawings. All underground c runs outside of buildings shall be buried to a minimum of 24 inches low finished grade, except where otherwise noted on the drawings. duct runs shall be graded as indicated on the drawings.

Conduits for underground ducts shall be standard rigid steel condui galvanized encased in concrete unless otherwise specified. Conduit shall have joints made up watertight. Conduits shall be laid true and even in the duct bank with nonmetallic spacers; and shall be se curely tied and anchored to prevent displacement when concrete enve is poured. Minimum concrete between conduits shall be 1" and minim concrete covering conduits shall be 3". Concrete shall be 1-3-4 mi with red coloring admix. Small aggregate shall be used to insure complete fillage between the conduits.

Where conduits are run underground and not enclosed in concrete, th shall be of corrosion-resistant material and shall be completely su rounded by at least 4" of gravel, if in cinderfill, with 2" x 12" planking on top, for protection against excavation.

Conduits shall be protected from entrance of foreign material durin construction and shall be rodded before pulling in cables.

11.0 CONDUITS AND RACEWAYS

11.1 Where conduits are embedded in concrete floor slabs they shall be standard rigid steel conduit, galvanized. Joints shall be set up tight and all unions shall be watertight. Conduits shall be run in as straight a line as possible, and shall have a minimum of 1" concrete covering, except when entering or leaving the slab.

11.2 Conduit for exposed runs shall be standard rigid steel, galvanized as indicated on the drawings. Exposed conduit runs shall be paral or at right angles to structural members. Runs shall be straight true; elbows, offsets and bends shall be uniform and symmetrical. Rigid conduit shall have threaded couplings and fittings. Conduit shall be securely supported to structural members, supports to be eight feet maximum on centers. No running threads shall be permit

12.0 WIRE AND CABLES

12.1 All wire and cable shall be 98% conductivity copper. All wiring for power and for lighting circuits shall be type THW, 600V. unless otherwise specified. Joints shall be taped with "Scotch #33" tape approved equal.

12.2 Cable for high voltage circuits shall be rubber insulated neoprene jacketed rated 5000 volts with joints taped as recommended by the manufacturer, unless otherwise specified.

12.3 Wires shall be suitably protected from weather and damage during storage and handling and shall be in first-class condition when installed. Joints, taps and splices in wires larger than No. 6 shall be made with solderless connectors.

12.4 Cable supports and boxes shall be installed for all vertical feeder in accordance with the schedule in the National Electrical Code. T cable supports shall be of the split wedge type which clamps each c ductor firmly, and tightens due to weight of cable.

12.5 Conductors shall not be drawn into conduit until the plaster or con crete is dry and conduits is free from moisture. When wires are pul into conduits, sufficient slack shall be provided to permit the con nection of fixtures, switches, etc., without additional splices.

12.6 No wire smaller than #12 shall be used except as specified on the drawings. Control wire shall be #14.

13.0 BOXES AND WIRING DEVICES

13.1 Pull boxes and junction boxes shall be constructed of sheet steel, gauge to correspond to NEMA standards for panelboards of comparable size unless otherwise indicated on drawings. Pull boxes shall have screw fastened covers and be painted inside and out for rust preven Junction boxes not over 150 cubic inches volume shall be standard o let boxes.

Cast iron junction boxes of corrosion-resistant material with gask and screw cover shall be used in dust or moist installations.

13.2 Ceiling outlet boxes and junction boxes shall be standard outlet boxes not less than 4" in diameter by 1-1/2" deep unless otherwise indicated on drawings. Flush mounted boxes shall have raised plas ring cover. Boxes embedded in concrete shall be standard type dee concrete boxes.

13.3 Wall outlet boxes shall be standard square or rectangular outlet boxes unless otherwise indicated on drawings. Flush mounted boxes shall have raised cover for number of wiring devices indicated on drawings. Surface mounted boxes shall be 4" square with Appleton turned edge surface box covers, or equal.

13.4 Wall switches shall be tumbler type "T" rated, with bakelite handl unless otherwise indicated on drawings. Standard mounting height for switches shall be 4'-0" above the floor.

13.5 Receptacle outlets shall be standard duplex two wire three pole rated [illegible] unless otherwise indicated on drawings. Mounting height shall be as indicated on drawings.

14.0 MOTORS AND CONTROL

14.1 All motors 1/3 h.p. and above shall be three-phase, 440 volt unless otherwise indicated on the drawings. All motors shall have short circuit protection and shall be equipped with a starter or control that will furnish overload protection unless that overload protect: is built in by the manufacturer. Starters shall be of type indica on the drawings. Motor Control Panels, where specified, shall be factory built units conforming to NEMA industrial control standard: Reset buttons shall be installed in all starter covers.

15.0 LIGHTING FIXTURES

15.1 Install lighting fixtures, lighting equipment and lamps for all li ing outlets as shown on the drawings and listed in the "Lighting Fixture Schedule", if any, including the connection of fixtures and equipment to the electric wiring of the building. All joints in fixture wiring shall be made up with approved solderless connector: All outside fixtures shall be vapor proof unless otherwise specifie All lamps will be furnished by Lever Brothers Company.

15.2 All lighting fixtures mounted under platforms are to be mounted so to give a six foot, six inch clearance between the fixtures and the floor. Mounting heights of fixtures are indicated on drawings.

15.3 All fixtures shall be U.L. approved.

16.0 TELEPHONE SYSTEM

16.1 Where telephone systems are specified, conduit, raceways and outlet and terminal boxes shall be installed as shown on the drawings. Al wire, instruments and wiring devices will be installed by others.

16.2 All terminal boxes for telephones shall be the size indicated on t drawings and shall have hinged covers. Boxes will be painted with coat of rust resisting primer inside and out.

17.0 FIRE PROTECTION SYSTEM

17.1 Where called for, the FP conduit, raceway system, and wiring, shal installed as shown on the drawings. Electrical devices will be installed and connected by others.

18.0 MISCELLANEOUS SUPPORTS

18.1 The contractor shall furnish and install all angle iron, channel i: rods, supports or hangers required to install and adequately suppo: and mount electrical equipment called for by the plans or specific: Unprotected ferrous metals will not be permitted.

19.0 CUTTING AND REPAIRING

19.1 All cutting required for electrical work into walls, floors, or oth portions of the building and related equipment, shall be carefully done and repaired in approved workmanlike manner. This work is responsibility of the electrical contractor. No cutting into the structural parts of the building will be permitted unless approved by the Engineer.

20.0 PAINTING

20.1 All tool marks, abrasions, or other damage to the finish of exposed electrical raceways and to the interior or exterior of switchboards or other electrical equipment enclosures shall be painted to match the original finish.

21.0 DRAWINGS

21.1 The drawings as prepared by Lever Brothers Company shall be followe as closely as actual construction of the building and work of other trades permit.

21.2 The Electrical Contractor is required to make or mark the following drawings:

A. Any design prints which require any minor redesign, deviations and/or changes from the original design.

B. Detail and field sketches or drawings showing and explaining any major redesign, deviations and/or changes from the design prints These prints or sketches must be approved by Lever Brothers Comp resident engineer before this contractor makes the deviations and/or changes on the jobsite.

Before or upon completion of this contract, the electrical contractor shall turn over a complete set of prints of all such above mentioned drawings in their entirety to Lever Brothers Company resident engineer.

The Contractor shall consult the drawings of other trades for verification of building and equipment details. Co-ordinatior of drawings and cooperation with other trades shall be mandat

22.0 TESTING

22.1 The electrical Contractor shall conduct tests, upon completion, or all electrical installations. All tests are to be conducted in t presence of a Lever Brothers Company field engineer or a qualifiec Testing Laboratory Representative. Tests on the telephone system are to be made by others.

22.2 The Contractor is not responsible for any Unit Substation testing. All Unit Substation testing is to be conducted by the manufacturer of the equipment.

22.3 Tests, for which the Contractor is responsible, are the following:

22.31 Motors

Insulation resistance, continuity, and phasing tests are to be made on all motors.

22.32 Wiring

Instrumentation, alarm, control, lighting, and power circui wiring tests are to be made with circuit breakers, panel boards, switches, control stations, and over-current device in place.

Each circuit is to be tested for continuity and insulation resistance. In addition, 3 phase power and lighting circui are to be tested phase to phase and phase to ground for ins tion resistance.

22.33 Motor Control Centers

Upon completion of the motor control center installations, ready for service, the Contractor shall test the equipment for proper operation of the starters, contactors, and/or re and coils.

An insulation and grounding test shall also be made for the wiring of the control centers.

22.34 Transformers

Continuity and insulation resistance tests are to be made o all transformer windings.

22.35 Grounding

Test the resistance between the grounding system and the sea This resistance is not to exceed six ohms.

PLUMBING

1.0 SCOPE OF WORK

1.10 This specification states the conditions and requirements for furnishing, erecting, and testing of domestic hot and cold water systems and sanitary, storm, process and acid drain piping not otherwise identified on the drawings as being part of process or utility piping.

1.20 Lever Brothers Company "Instructions for Outside Contractors" and "General Conditions for Contract Work, GC-3" are a part of this specification and all provision thereof must be complied with.

2.0 CODES AND ORDINANCES

2.10 All work and all materials used for such work shall conform to the requirements of the code of the country in which the work is being done and the requirements of any other code, ordinance or ruling by any authority having jurisdiction. Where the requirements of any such code, ordinance or ruling exceed the requirements of this specification, the requirements of such code, ordinance or ruling shall be followed and no special allowance shall subsequently be made for any extra expense incurred in meeting such requirements.

3.0 EXCAVATION AND BACKFILL

3.10 All excavation and backfill as required for the work under the scope of this specification shall be part of this Contract.

3.11 Trench Excavation

Excavate trenches true to line and grade maintaining trench banks approximately vertical. Make cuts approximately 12" wider than diameter of pipe. Sheet and brace excavation if required. Excavate bell holes to insure that pipe rests in the trench its full length. For drains and sewers shape bottom of trench round so that

REFERENCES
GC-3 General Conditions for Contract Work
Lever Brothers Company Instructions to Outside Contractors

NO.	DATE	REVISION	APP
3	9/26/61	Revised Par. 1.20	WEC
2	4/11/61	Minor Corrections	CR
1	7/4/58	Rev. Par. 2.1, 3.14, 5.10, 8.12 & 8.24	WN
0	10/31/58	Original Issue	WN

APPROVED	
BY	DATE
A.H.L.	11/5/58

LEVER BROTHERS
ENGINEERING DEPT.
GENERAL SPECIFICATION
PLUMBING

3.11 Trench Excavation (Continued)

The lower third of pipe rests on this undisturbed soil or select sand fill. All underground piping shall be embedded in an earth foundation of uniform density, tamped hard, and carefully sloped by means of templates to the desired grade Rocks or foreign material shall be excavated to 6" below pipe and backfilled with select sand.

3.12 Trench Backfill

Do not backfill until utility lines have been inspected and approved. Backfill with approved excavated material carefully depositing in eight inch maximum layers on both sides of the pipe, and thoroughly compacting each layer until ground fill has been placed to provide a cover of not less than one foot above the pipe. The remainder of the backfill material may then be placed, moistened to insure maximum density and tamped. Trench backfill shall be compacted to 90 percent of maximum density.

3.13 Unsatisfactory Material

When the material soil below the base of the pipe is found to be unsatisfactory, this material shall be excavated and backfilled with select material or concrete as directed by the Engineer.

3.14 Water in Excavation

If necessary, contractor shall devater the excavation.

4.0 CASINGS

4.10 Underground pipe passing under railroad track shall be encased in corrugated galvanized steel 16 gauge pipe and the pipe shall extend four (4) feet beyond the railroad bed on each side.

4.20 After the underground pipe and casing are in place, the casing shall be plugged at both ends with redwood or concrete plugs.

5.0 OPENINGS

5.10 The Contractor shall cooperate with the other Contractors in providing openings required for the work within the scope of this Section, through walls, floors and foundations. The Contractor shall locate, furnish and set all forms, sleeves or any fixtures cast into concrete (like floor drains, clean outs, etc.), shall provide all necessary supports or lintels required. In case the general contract work is completed without provisions for openings, this Contractor shall cut the openings and provide any lintels or supports required. If openings are provided in

5.10 Continued

floor slabs for the installation of floor drains, clean outs, W. C. flanges or similar fixtures, this Contractor shall provide proper support for such fixtures and fill in the remainder of such openings, after fixture has been installed. See Par. 2.4 of General Conditions GC-3.

6.0 TESTS

6.10 All piping and equipment under jurisdiction of the local Plumbing Code shall be examined and tested as required in this Code to the satisfaction of the Plumbing Inspector and the authorized representative of Lever Brothers Company. In addition all hot and cold water piping shall be completely filled with water and submitted to a water pressure test of not less than 100 psig for not less than thirty (30) minutes. During this time all joints shall be inspected for leaks and a pressure gage connected to the piping system shall not indicate any loss of pressure. An air pressure test may be substituted for this test, applying an air pressure of not less than 40 psig for not less than thirty (30) minutes. During this time joints shall be inspected for leaks by applying a soapy solution to all joints and pressure gage connected to the piping system shall not indicate any loss of pressure. If systems are tested in sections, the connection of the previously tested section shall be included in the test. Pressures used in sectional tests shall be not less than equal to the pressures to which pipes would be submitted if tested in one.

All tests shall be repeated until satisfactory to the authorized representative of Lever Brothers Company. All material, labor and equipment required for these tests shall be furnished by this Contractor as part of this contract.

6.20 A hammer test shall be made on each length of cast iron pipe before laying as a check against cracked or defective pipe.

7.0 CLOSING IN OF UNINSPECTED WORK

7.10 This Contractor shall not allow or cause any of the work installed under this specification to be covered up or enclosed before it has been inspected, tested and approved in accordance with the preceding article. Any expense caused by premature enclosing or covering shall be carried by this Contractor.

8.0 MATERIALS

8.10 Hot and Cold Domestic Water - Above Ground

8.11 Allowable limits for this schedule are 125 lbs. @ 350°F to 175 lbs. @ 100°F.

8.12 Pipe and Fittings

8.121 Pipe:	3" and smaller - hard drawn copper tubing ASTM, B88-51 Type L - ends plain. 4" and above - 125# Std. C.I. Class with screwed-on flanges.
8.122 Fittings:	3" and smaller - copper solder join streamline type. 4" and above - 125# C.I. flanged.
8.123 Couplings:	3" and smaller - copper solder join type. 4" and above - none - use flanges.
8.124 Unions:	3" and smaller - cast brass solder joint type. 4" and over - none - use flanges.
8.125 Flanges:	3" and smaller - 150 lb. brass solde joint type flat face. To be used at flanged equipment and valves only. 4" and larger - 125 lb. C.I. screwed
8.126 Bolts:	A.S.T.M. A-107 Sq. Hd. Mach. Bolts with S.A.E. Heavy Hex. Nuts.
8.127 Gaskets:	Full Face Cloth impregnated rubber - 1/16" Th. Garlock No. 159.
8.128 Thread Make-up:	Pipe joint compound suitable for wat
8.129 Solder-joint Make-up:	Use 95-5 Tin-Antimony or 95-5 Tin-Le

Note: When adapting copper tubing to threaded piping and valves use "Chase" c equal cast brass solder-joint fittings.

8.13 Valves

8.131 2" dia. and smaller - screwed ends -

ITEM	GATE	GATE Quick-Opening	GLOBE	CHECK	AN
a) Valve Code No.	1	4	76	166	13
b) Working Press. lbs.	200	125	150	200	15
c) Body	Brass	Bronze	Brass	Brass	Br
d) Bonnet	Union	Screwed	Union	Screwed	Un
e) Stem-Screw	Inside	Sliding	Inside	-	In
f) Stem-Type	Rising	Rising	Rising	-	Ri
g) Stem-Mat'l	Brass	Bronze	Brass	-	Br
h) Seat-Type	Renew	Integral	Renew	Regrind	Re
i) Seat-Mat'l	Nick-Alloy	Bronze	S.S.	Brass	S..
j) Disc-Type	Solid	Split Wedge	Plug	Swing	Pl
k) Disc-Mat'l	Nick-Alloy	Bronze	S.S.	Brass	S..
l) Manufacturer	Crane	Walworth	Crane	Crane	Cr
m) Figure No.	428	6	1½ P	35	16

8.132 2½" dia. and larger - 125 lb. Flgd. -

ITEM TYPE OF STEM	GATE RISING	NON RISING	GLOBE	CHECK	AN
a) Valve Code No.	35	36	101	190	1h
b) Working Press. Lbs.	125 Std.	125 Std.	125 Std	125 Std.	12
c) Body	C.I.	C.I.	C.I.	C.I.	C..
d) Bonnet	Bolted	Bolted	Bolted	Bolted	Bo
e) Stem-Screw	O.S.&Y.	Inside	O.S.&Y.	-	O.S
f) Stem-Type	Rising	Non-Rising	Rising	-	Ri
g) Stem-Mat'l	Brass	Brass	Brass	-	Br
h) Seat-Type	Renew	Renew	Renew	Renew	Re
i) Seat-Mat'l	Brass	Brass	Brass	Brass	Br
j) Disc-Type	Solid	Solid Wedge	Solid	Swing	So
k) Disc-Mat'l	C.I. Brass Trim	C.I. Brass Trim	Brass Trim	C.I. Brass Trim	Br T
l) Manufacturer	Crane	Crane	Crane	Crane	Cr
m) Figure No.	465½ see note (1)	461 see note (2)	351 see note (1)	373 see note (1)	35 se no (1

Note 1. For underground service use gate valves only for valve sizes 6" and above.
2. Non-rising stem valve to be used only where necessary.

Equivalent valves of other manufacture may be substituted.

8.20 Hot and Cold Domestic Water - Below Ground

8.21 The allowable limits of this schedule shall be 130 lbs. @ 15

8.22 Galvanized Piping 3" and smaller shall be factory "SOMASTIC" coated on outer surfaces. After pipe has been laid in place and threaded or bolted together, exposed portions of pipe sh be waterproofed with "SOMASTIC" or equivalent applied to remainder of pipe.

8.23 Pipe and Fittings

8.231	Pipe:	1½" and smaller - Sch. 80 - seamless carbon steel ASTM A-53 Gr. A, Galvan: ends T & C.
		2" thru 3" - Sch. 40 lapweld or seam carbon steel ASTM A-53 Gr. A, Galvanized, ends threaded.
		4" and above - C.I., bell and spigot A.W.W.A. or C.I. 125# flanged F & D, Class D. Each shall be factory coate inside and out with coal tar pitch varnish.
8.232	Fittings:	3" and smaller - 125# C.I. screwed G
		4" and larger - C.I. bell and spigot A.W.W.A. Class "D" or 125# flanged C. standard for water. Each shall be factory coated inside and out with co tar pitch varnish. Lugs must be prov at heel of all bell and spigot ells t provide for socket clamps.
8.233	Flanges:	All sizes: 125# C.I. screwed. 2" and smaller to be galvanized.
8.234	Pipe Plugs:	3" and smaller - Use nipple and cap. 4" and larger - Socket type C.I. wit plug clamp.
8.235	Bolts:	A.S.T.M. A-107 Sq. Hd. Mach. Bolts wi S.P. Hy. Hex. Nuts - Galvanized.
8.236	Gaskets:	Full face cloth impregnated rubber 1/ th. Garlock No. 159.
8.237	Joint Make-up:	Jute and Lead for bell and spigot joi
8.238	Thread Make-up:	Pipe joint compound suitable for wate

8.24 Valves - See Paragraph 8.13

8.30 Drain Piping - Above Ground

8.31 Service

8.311 "A" - Sanitary - - (Plumbing, Drains, and Vents)
8.312 "B" - Storm - (Roof Drains)
8.313 "C" - Process - (Floor and Equipment)
8.314 "D" - Acid Waste - (Floor and Equipment)

8.32 Pipe and Fittings

8.321 Pipe: "A" Ex. Hy. Cast Iron Soil Pipe - B. Std. Galvanized Steel or W.I. pipe fo vents and small waste lines.
"B" Ex. Hy. Cast Iron Soil Pipe - B. for covered lines with Std. Galvanize Steel pipe as alternate for exposed l
"C" Ex. Hy. Cast Iron Soil Pipe - B. & S. Std. Galvanized Steel as alternate
"D" Ex. Hy. acid resistant Silicon C. Soil pipe B. & S. "Duriron" or equal (See 8.33).

8.322 Fittings: "A", "B" & "C" Ex. Hy. Cast Iron - So B. & S. for soil pipe, Std. C.I. screw drainage for steel or W.I. pipe.
"D" Ex. Hy. B. & S. acid resistant Silicon C.I. fittings (See Par. 8.33).

8.323 Flanges: "A", "B" & "C" 125# C.I. screwed.
"D" none.

8.324 Bolts: A.S.T.M. A-107 Sq. Hd. Galvanized Mach Bolts with S.F. Hy. Hex. Nuts.

8.325 Gaskets: Full face cloth impregnated rubber 1/16" thick Garlock No. 159.

8.326 Joint Make-up: "A", "B" & "C" soft pig lead and jute or oakum.
"D" soft pig lead and asbestos rope.

8.327 Valves: None.

8.33 Acid drain pipe and fittings shall be corrosion resistant Silicon C.I. as made by Duriron or equal and comply with the following analysis:

Silicon	- 14.25-15%
Manganese	- below 0.5%
Total Carbon	- 0.5-1.12%
Sulphur	- below 0.05%

8.40 Drain Piping - Below Ground

8.41 Service

8.411 "A" - Sanitary Drains
8.412 "B" - Storm Drains
8.413 "C" - Process Drains (two separators)
8.414 "D" - Acid Waste

8.42 Pipe and Fittings

8.421 Pipe: "A" 2" dia. to 15" dia. Ex. heavy C.I Soil Pipe B & S from bldg. to 5' from Bldg; 4" dia. to 36" dia. Vitreous cl pipe B & S. All lines outside 5' boundary of bldg. "B" inside bldg. s as "A". Outside 5' from bldg. 4" to dia. Concrete Sewer Pipe Bell ends A.S.T.M. - C14-41, 24" to 42" dia. Reinforced Concrete Sewer Pipe T & G ends A.S.T.M. C-75-41
"C" Same as "A"
"D" Ex. Hy. acid resistant Silicon C. soil pipe B & S.
"Duriron" or equal (see par. 8.303)

8.422 Fitting: "A" 2" to 15" dia. Ex. hvy. C.I. Soil Pipe Fittings B & S; 4" to 36" dia. Vetrified Clay Pipe Fittings B & S "B" Inside bldg. Same as "A". Outsid 5' from bldg. 4" dia. to 21" dia. - Std. Bell ends. Concrete Pipe Fittin 24" dia. to 42" dia. - none
"C" Same as "A"
"D" Ex. Hvy. acid resistant silicon. Soil Pipe Fittings (see par. 8.33)

8.423 Joint Materials: "A", "B", "C" - For soil pipe - soft lead and jute. For Vitrified Clay an Concrete pipe - Cement mortar and jut or approved Bituminous Compound and j
"D" Soft pig lead and Asbestos Rope

8.50 Plumbing Fixtures

Fixtures shall be "Standard Sanitary", "Zurn", "Bradley", etc. as specified hereinafter. If substitutions are suggested, plumbing contractor shall submit complete information concerning such substitutions including catalog cuts, make, materials, etc., for approval. No substitution shall be made without written approval of Lever Brothers Company.

8.501 Water Closets shall be Crane "Oxford" No. 3-140 reverse trap bowl tank enclosed with supply to wall, and stop, CHURCH #95 white seat. "ZURN" wall closet fittings; ZURN Chair carrier support.

8.502 Urinals shall be "STANDARD" No. P-6240C syphon jet vitreous china with "Sloan" Royal No. 180 AY flush valve with vacuum breaker and stop. "ZURN" Chair carrier support.

8.503 Service Sinks shall be "STANDARD" P-7705A 24 x 20 A.B. [illegible] with integral P-7798 trap standard with 3" wall outlet; B-213 stops for concealed supply; B-914 double [illegible] set.

8.504 Electric water heaters shall be "Thermador" round, single element, insulated rust proofed tank for 125 p.s.i.g. water pressure complete with thermostat of capacity as shown on drawings. Tanks shall be A.S.M.E. approved and stamped. T & P relief valve shall "Cashwell" No. 25 diaphram, Actuated Self-closing Temperature and Pressure Relief Valve set for 100# and 210°F.

8.505 Floor drains in showers, toilet rooms and janitor rooms shall be "Zurn" Z-605-5 floor drains with 5-inch strainer outlet and nickel bronze square strainer, of size shown on drawings.

8.506 Factory type floor drains shall be "Zurn" No. Z-511 cast iron coated of size shown on drawings.

8.507 Acid resistant area floor drains shall be Duriron type 5501 A or B of size shown on drawings.

8.508 Hose bibbs inside building shall be similar to "Standard" B-1680 or B-1682. On outside of building hose bibbs to be of anti-freeze type with loose key, similar to "Zurn" Z-1395.

8.509 Floor and Ceiling Plates

Provide and install "Cashwell" No. 3-A cast brass split ring floor and ceiling plates with set screw locking device on all pipes passing through exposed walls, ceilings or partitions. In finished rooms they shall be C.P.; in unfinished rooms they shall be polished brass.

8.510 Roof drains except side outlet drains shall be "Zurn" Z-100 of size as shown on drawings. Where expansion joints are required in accordance with the following paragraph 8.511, "Zurn" No. Z-120 with integral expansion joint of size shown on drawings shall be installed.

8.511 Expansion joints, "Zurn" #Z-190, shall be installed in all soil or waste stacks and interior downspouts (rain water leaders) which are more than forty (40) feet in length on a straight run without any offset. Roof drains with integral expansion joint in accordance with the preceding article may be installed instead in leader pipes wherever roof drain is on a straight run of pipe in excess of 40 feet.

8.512 All pipes passing through flat roof shall be flashed with ZURN Z-195 Dura-coated Roof Flashing Sleeve, to which roofing felts shall be attached and made permanently water tight by bolting down with heavy cast iron clamping collar with cadmium plated steel bolts. Top joint shall be made permanently water tight by lead caulking.

All pipes passing through pitched roof shall be flashed by the Z-195 joint sheet as above and made permanently water tight by lead caulking ZURN Z-196 Duracoated Counter flashing sleeve to the pipe, Counter flashing to be installed by this Contractor after roof is installed.

8.513 Cleanouts, where indicated on drawings or required by the applicable Plumbing Code shall be accessible or extended to an accessible location. They shall be of types as specified hereinafter.

In finished floors they shall be ZURN Z1326-1 with Nickel Bronze Non-Slip Scoriated Square Top set flush with floor. In unfinished floor and outside areas they shall be ZURN Z-1326-10 with Non-Slip Scoriated Vandal Proof Cover, set flush with surface.

In finished walls they shall be ZURN Z-1315-1 or Z-1305 in cast iron soil pipe lines of ZURN "Code" Red Brass Plugs in IPS pipe lines.

8.514 Provide and install access boxes where indicated on drawings and over all concealed valves, traps, strainers, trap primers, etc.

In finished walls they shall be ZURN Z-1385-1 with smooth chromium plated top and full 8" x 8" opening. Those in floors shall have Nickel Bronze Non-Slip Scoriated Top. They shall be set flush with finished surface and shall be held securely in place by means of integral offset anchoring lugs.

8.515 Side outlet-type roof drains shall be "Zurn" No. Z-115 or Bibb Shown on drawings. [illegible]

9.0 Protection from Freezing

9.10 All underground piping shall be deep enough to prevent freezing.

9.20 All water piping above ground shall have a continuous slope to a low point with provisions for draining the line at the point.

10.0 Pipe Hangers and Supports

10.1 All pipe lines shall be securely supported by steel band or malleable iron pipe hangers. Spacing of hangers shall not exceed five feet (5'-0") for bell and spigot pipe and ten feet (10'-0") for steel and copper piping. [illegible]. Special care shall be taken to isolate all pipes in pipe spaces and furred partitions to avoid vibration of piping. Stacks and risers shall be properly supported and pipe clamps provided at each floor. Hot water lines shall be supported to allow for thermal expansion.

11.0 Cleaning and Protection

11.1 Clean all exposed metal surfaces from grease, dirt or other foreign materials. Chrome plated pipings, fittings, and trimmings shall be polished upon completions, showing no tool, wrench or other bruise marks.

11.2 Fixtures shall be properly protected from damage during construction period, and shall be cleaned in accord with manufacturer's instructions.

11.3 Flush all water supply lines thoroughly to remove all sand, dirt, or any foreign matter from pipes which may interfere with proper operation.

12.0 Tags, Charts and Instructions

12.1 Valves shall be provided with brass tags numbered. Provide a chart indicating location and service of each valve. Provide instructions for operation of all equipment. Charts and instructions shall be framed, set under glass, and hung where later directed by Engineer.

ELECTRICAL DRIVERS AND SPECIALTY ITEMS

1. **PURPOSE:**

This Specification is intended as a guide to the bidder on equipment items including motors or electrical specialty items. A separate Equipment Data Sheet will specify the service requirement to be met. The bidder shall give detailed information as to the type and characteristics of all motors or other electrical items covered by his proposal in accordance with the service requirement and other data shown below.

440 volt, 3 phase, 60 cycle motors shall be supplied except where single phase motors are specified in equipment specifications. Any deviation from this specification shall be made only upon specific approval of Purchaser.

2. **MOTOR RATINGS:**

Specification Service	Frame-Type	Underwriter's Classification
(a) Non-hazardous Clean Areas (dry)	Open	—
(b) Non-hazardous Clean Areas (wet)	Splash-Proof	—
(c) Non-hazardous Dusty Areas	TEFC or TENV	—
(d) Hazardous Vapor Areas	TEFC or TENV	Class 1, Group D
(e) Hazardous Dust Areas	TEFC or TENV	Class II, Group G

REFERENCES:
GC-1: General Conditions.
GC-2: Vendors' Drawings.

NO.	DATE	REVISION	AP
1	5/20/58	Retyped and Reissued	
0	4/11/58	Original Issue	

APPROVED BY	DATE

LEVER BROTHERS
ENGINEERING DEPT.
GENERAL SPECIFICATION
ELECTRICAL DRIVERS AND SPECIALITY ITEMS

G

3. CONSTRUCTION:

All motors shall be equal to those manufactured by General Electric Company in quality and performance and shall conform in all respects to standards of the NEMA.

4. MOTOR BEARINGS:

Unless specified otherwise, motors shall be furnished with self-sealed, prelubricated ball bearings. If this type of bearing is not available, ball bearings sealed in the motor housing may be substituted and an alternate quotation submitted therefor.

5. MOTOR STARTERS:

Motor starters and control stations will be supplied by Purchaser unless otherwise requested. If reduced voltage starting is required by Purchaser, Supplier shall specify.

6. SPECIAL ITEMS:

Voltage and phase characteristics of all auxiliary items such as program timers, pressure relays, etc., shall be as specified. Complete wiring diagrams, location of controls, manufacturer's name and model number, and description of operating service shall be furnished by Supplier. All equipment shall be furnished completely wired internally with wiring brought to the outside and readily accessible for connections by Purchaser. All auxiliary equipment shall be furnished in enclosures corresponding to service requirement checked above.

7. CODE PROVISIONS:

Equipment furnished shall conform with the requirements of the National Electric Code, and all requirements of any applicable local electrical codes or safety regulations.

GENERAL SPECIFICATION

GS-12

FOR

MACHINERY GUARDS

REFERENCES:

GC-1	SALE AND DELIVERY OF MECHANICAL EQUIPMENT
GC-2	SUBMITTAL OF VENDORS' DRAWINGS
GC-3	GENERAL CONDITIONS CONTRACT WORK
MCS-16	CONSTRUCTION STANDARD FOR MACHINERY GUARDS

NO.	DATE	REVISION	APP'D.
1	6/26/71	Rev. Par. 3.14, 3.24, 3.34, 4.12	GS
0	4/30/70	ORIGINAL ISSUE	

LEVER BROTHERS C
ENGINEERING DEPT.

GENERAL SPECIFICATION
MACHINERY GUARDS

SPECIFICATION GS-12

4B 11-69

STANDARD MACHINERY GUARDS

1.0 SCOPE OF THIS SPECIFICATION

1.1 This specification is to become part of all project and packaging machine specifications to the extent that it is applicable. The cost of standard guards, per this specification, shall be included in the base cost of the machine.

1.2 Special guards may be required on this machine. Such guards will be specified separately and specifically and shall be subject to separate pricing when defined. No provision shall be made in the base cost for providing special guards, unless called for elsewhere in the specifications. (See also 5.0).

2.0 DEFINITION OF STANDARD GUARDS

2.1 In general, the design for machinery guards shall be in accordance with the American Standard Safety Code for Mechanical Power Transmission Apparatus and Related Equipment; Applicable State Codes and the United States Department of Labor Bureau of Labor Standards for Mechanical Guards.

2.2 Standard guards shall be enclosures which can be clearly identified and defined or illustrated by the descriptions in these specifications.

2.3 Exceptions to these specifications may be suggested by the manufacturer if he considers that his standard machine enclosure conflicts with or provides the equal of, these standard specifications. This exception will be subject to Lever's approval, and will be accepted only if, in Lever's opinion, seller's design furnishes equal protection. The exception must be presented in written or graphic form and must be accepted in writing by Lever.

3.0 STANDARD GUARD DETAILS - POWER TRANSMISSION

3.1 For Chains & Sprockets - Must:

3.11 Be fully enclosed

3.12 Provide clearance for tension adjustment

3.13 Be easily removable and replaceable

3.14 Be constructed in accordance with typical details. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of MCS-16A for protection, accessibility, and quality of construction.

3.15 Permit lubrication of chain and bearings without removal.

3.2 For Belts & Pulleys - Must:

3.21 Be fully enclosed

3.22 Make provision for tension adjustment

3.23 Be easily removable and replaceable

3.24 Be constructed in accordance with Standard Details MCB-168. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of MCB-168 for protection, accessibility, and quality of construction.

3.25 Permit lubrication of bearings without removal

3.3 For Gears, Fixed Ratio - Must:

3.31 Be fully enclosed

3.32 Permit or provide for continuous lubrication without removal

3.33 Be easily removable and replaceable

3.34 Be constructed in accordance with Dwg. MCB-164. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of MCB-164 for protection, accessibility, and quality of construction.

3.4 For Gears - Timing or Roller Chains - Must:

3.41 Conform to all requirements of 3.3 and

3.42 Be provided with a fixed half and a removable half which can be opened and closed without removing any screws or bolts to permit changing.

3.5 For Couplings, Clutches, etc. - Must:

3.51 Be enclosed with a guard of the type shown in Dwg. MCB-167.

3.6 Shafting, Handwheels, etc. - Must:

3.61 Have no exposed keys, keyways, set screws, spokes or other projections, or, if they do, must

3.62 Be enclosed in a guard of the type shown on Dwg. MCB-166

4.0 STANDARD GUARD DETAILS - OTHER THAN POWER TRANSMISSION

4.1 For Conveying Belts

4.11 Side guards are required at entrance side of pulleys, as shown on Dwg. MCS-16E.

4.12 Takeup pulleys are to be enclosed as shown on Dwg. MCS-16E. Automatic takeup where applicable.

4.2 For Conveying Chains

4.21 Side guards are required as shown on Dwg. MCS-16D

4.22 Idlers are to be enclosed as shown on Dwg. MCS-16E.

4.23 Carrier lugs, if any, are to be guarded so as to eliminate minor points as shown on Dwg. MCS-16D.

5.0 SPECIAL GUARDS

5.1 Special guards which may be required as indicated in Paragraph 1.2, will be the subject of separate negotiations. The seller shall inform Lever at what stage of construction it may be possible to review and agree on the need for special guarding. No provision is to be made in the original proposal for such special guarding, either as regards cost or construction time.

INSULATION SPECIFICATIONS

FOR

PIPING, EQUIPMENT AND DUCTWORK

REFERENCES

GC-3: CONTRACT WORK
INSTRUCTIONS FOR OUTSIDE CONTRACTORS
SAFETY STANDARD NO. 9

NO.	DATE	REVISION	APP'D.
9	8/3/71	P.S.51, Sect 5, Sh. 4 of 4	
8	7/1/70	Deleted all ref. to asbestos	
	"	Mat'ls, ch'gd pipe insul.	
		th'k and miscellaneous rev.	
7		General Revision	
6		Revised Sect. 3.0, Sh. 1 thru 5	
5		Retyped Cover Sheet	

Issue 11/68

LEVER BROTHERS CO.
ENGINEERING DEPT.
GENERAL SPECIFICATION
INSULATION SPECIFICATION FOR PIPE EQUIPMENT AND DUCTWORK
SPECIFICATION GS-13

1.0 GENERAL SPECIFICATIONS FOR CALCIUM SILICATE, FIBERGLAS, FOAMGLAS AND FOAMED PLASTIC

1.1 SPECIAL NOTE

Lever Brothers "Safety Standard No. 9" and "General Conditions GC-3" are a component part of these specifications and the sub-contractor shall consult them in detail for instructions pertaining to this work.

1.2 SCOPE OF WORK

The work required under this specification includes all labor, equipment, and services necessary to install the type of insulation required for piping, tanks, ducts and equipment as shown on the design drawings and insulation schedule, a list of which is attached.

All material to be installed under this specification shall be furnished and shipped to the plant site by the contractor in sufficient time to meet the construction schedules.

1.3 INSPECTION AND TESTS

It is intended that all insulation work be done after satisfactory water pressure or compressed air tests on piping, tanks, and equipment are completed, and the work must be scheduled to best serve Lever Brothers Company.

Insulation shall be inspected by Lever Brothers Company before canvas or outside cover is applied. Final inspection shall be made after the piping is in service; the contractor shall properly protect the material against damage between inspections and shall keep material dry while in storage or in transit.

1.4 PROTECTION

Protective insulation for personnel safety to 7' 6" above floor grade shall be installed as specified on the project drawing and insulation specification, and as per the instruction of the Lever Brothers Company Engineer.

1.5 INSULATION IN INACCESSIBLE LOCATIONS

The contractor shall familiarize himself with the setting of Piping, Ducts, Vessels, and Equipment, in order to provide for the insulation of areas which may be inaccessible after equipment is in place.

1.6 PAINTING (By others)

Color Code Painting to be as per "Safety Standard No. 1, Identification of Piping Systems", Lever Brothers Company.

1.7 INSULATION MATERIALS

1.71 New Installation

1.71a Under no circumstances shall any materials be used which contain asbestos or asbestos fibers.

1.72 Existing Installation

1.72a Any alterations on ductwork, piping, equipment, etc. that is insulated with an asbestos material shall be done in accordance with the latest OSHA Standards as set forth in Chapter XVII of the OSHA, Dept. of Labor, Part 1910 Occupational Safety and Health Standards Section 1910.93a and Lever Brothers Company Safety Standard No. 11.

2.0 SPECIFICATION NUMBER FOR TEMPERATURES AND INSULATION THICKNESS

2.1 PIPING — PIPE INSULATION THICKNESS

Type No.	Temp. Range	Type Insulation	Utility Service	PIPE SIZES 1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12" & above
I	-30° to 0°F	Fiberglas Heavy Density	Refrigerant Lines	1½	1½	1½	2	2	2	2	2	2	2	2	2½
II	1° to 34°F	Fiberglas Heavy Density	Refrigerant Lines	1	1½	1½	1½	1½	1½	1½	1½	2	2	2	2
III	35°F to 50°F	Fiberglas Heavy Density	Refrigerant and Chilled Water	3/4	3/4	3/4	1	1	1	1	1	1	1	1½	1½
IV	51° to 100°.	Foamed Plastic and Fiberglas Heavy Density	Anti-Sweat	Armstrong Armaflex, Fiberglas O-C or Dow Styro Foam #33 or equal 3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1 Fiberglas Heavy Density
V Safety (9)	Above 140°	Fiberglas	All lines above 140°F and not otherwise insulated	1	1	1	1	1	1	1	1	1	1½	1½	1½
			To be insulated in the area extending from floor or ground line to a point 7' 6" above for personnel safety												
VI (4)	101° to 205°	Fiberglas	Steam, Condensate & hot water	1	1	1	1	1½	1½	1½	1½	2	2	2	2
VII (6)	286° to 400°	Fiberglas	Steam 40 to 240 psig	1½	1½	1½	1½	2	2	2	2	2½	2½	2½	2½
VIII (8)	401° to 550°	*	Steam above 240 psig	1½	1½	1½	1½	2	2	2	2½	2½	3	3	3½
IX (8)	551° to 700°	Calcium Silicate		2	2	2	2	2½	2½	3	3	3	3½	4	4½
X (11)	701° to 1000°	Calcium Silicate		2½	2½	2½	2½	3	3	3	3½	3½	4	4½	5
XI	1001°	Calcium													

LEVER BROTHERS COMPANY
ENGINEERING DEPARTMENT
NEW YORK, N.Y.

SPECIFICATION CS-13
SHEET 1 OF 8 SEC.
Revised 5/3/76

2.11 Pipe Insulation Installation and Thickness General Notes

a. The thickness of Fiberglas and Calcium Silicate Insulation is Thermal Insulation Manufacturers Association nominal thickness.

b. The schedule as listed in Section 2.1 designates the minimum thickness of insulation as shown at temperature ranges for all outdoor and indoor insulated lines above ground.

c. For insulated lines below ground, set in "Ric-Wil" or other waterproof casing; the thicknesses as specified in Section 2.1 are minimum and may be increased to suit casing. For two or more lines grouped in a casing, the insulation thickness shall be such that the heat loss will not exceed similar loss for the thicknesses specified.

d. The thicknesses as designated in Section 2.1 shall be determined by individual pipe line as electrically traced.

e. Any pipe, fittings, etc., subject to freezing shall be covered with an additional layer of 1" insulation of the same finish specified when not subject to freezing.

f. For single steam-traced pipe line, use Johns-Manville Therm-12 or equal with 3/4" extended leg. This is also available in Johns-Manville "Metal-Cor" for outdoor use or approved equal.

SECTION 2

PIPE INSULATION BY TYPE NUMBER

2.2 GENERAL REQUIREMENTS FOR ALL PIPING

2.21 Before any insulation is applied, pipe, valves, flanges unions, and fittings must be tested, made tight, cleaned of rust, scale or other foreign matter and made dry.

2.22 Thickness of Pipe Insulation to be as shown in Table of Insulation Thickness - Sheet No. 1, Sect

2.3 INSULATION TYPES I TO III

2.31 TEMPERATURE RANGES

Type I -30° to 0°F
Type II 1° to 34°F
Type III 35° to 99°F

2.32 FIBERGLAS HEAVY DENSITY INSULATION WITH FRJ SELF-SEALING LAP AND 3" WIDE BUTT STRIP

2.33 APPLICATION - PIPE

a. Start to peel the release paper off the vapor barrier, apply to pipe, and peel off the balance, press the lap in place at the center of the insulation section and, pressing hard, work out toward either end. Rub with blunt edge of knife. Seal end joints with a 3" wide butt strip of the same self-sealing vapor barrier material.

b. Contraction joints are to be constructed at 21 foot intervals by packing a 1" space with light density "Aerocor" compressed to one-third its original thickness.

2.34 APPLICATION - VALVES, FLANGES, UNIONS AND FITTINGS

a. Where manufactured factory pre-molded fittings (of the same material and thickness) shall be used for all Valves, Flanges, Unions and Fittings.

b. Where pre-molded insulation fittings are not manufactured, all valves, flanges, unions and fittings shall be insulated with mitered segments.

c. Where adjacent to Fiberglas insulation, J-M Unifit (or equal) insulating covers may be used.

d. All insulation is to be wired in place. A vapor barrier, consisting of .004 mil aluminum foil, shall be wrapped tightly over the insulation. All laps are to be sealed with Benjamin Foster 65-07 aluminum vapor barrier finish, covered with 1/8" wet coat of Benjamin Foster 65-07 aluminum vapor barrier finish into which Glass Fabric is imbedded. A final coat of Benjamin Foster 65-07 aluminum vapor barrier finish shall then be applied. The entire vapor barrier at each valve, flange, union, and fitting shall extend a minimum of 2" on to the adjacent pipe.

2.35 FINISH

2.351 INDOOR PIPE LINES, VALVES, FLANGES, UNIONS AND FITTINGS

a. Do not finish concealed pipe, fittings, etc.

b. On exposed pipe, fittings, etc., apply 8 oz. canvas with Benjamin Foster 30-36 insulation lagging adhesive. Canvas and adhesive coat shall overlap adjacent covering by at least 2".

c. Insulation for removable flanges of pipe strainers shall be fabricated with built-up sections of insulation covering so arranged as to facilitate servicing of the strainer.

2.352 OUTDOOR PIPE LINES, VALVES, FLANGES, UNIONS AND FITTINGS

a. Any piping, fittings, etc. subject to freezing shall be covered with an additional layer of 1" insulation of the same finish specified when not subject to freezing.

b. Apply Benjamin Foster 65-07 aluminum outdoor vapor barrier mastic.

c. In addition to the above, all outdoor pipe lines, fittings, etc. shall be further protected with an 0.016 mil embossed aluminum jacket, with a 2" overlap at longitudinal and circumferential joints. Secure in place with 3/4" by 0.15" aluminum bands on 18" centers.

2.36 PIPE SUPPORTS

All pipe supports and hangers are to be installed before any insulation is applied and the insulation shall cover the hangers. On cold lines, the insulation shall extend up the hanger rod 2" above the pipe covering.

2.37 VERTICAL LINES

Insulation on vertical lines shall be supported by means of lugs welded to the pipe at 12' 0" on centers.

2.4 INSULATION TYPE IV

2.41 TEMPERATURE RANGE 50° to 100°F

2.42 ARMSTRONG ARMACELL #33 OR DOW STYRO-FOAM #33 OR EQUAL for all sizes up to 12" diameter and Fiberglas heavy density sectional pipe insulation with FRJ self-sealing lap and 3" wide butt straps for size 12" diameter and larger.

2.43 APPLICATION - PIPE

2.431 Wherever possible, slip the formed plastic insulation onto the piping before it is in place. Seal butt joints with manufacturer's recommended adhesive. Where insulation cannot be slipped on, slit the insulation lengthwise and apply to piping, seal longitudinal seams and butt joints with manufacturer's recommended adhesive.

2.432 For piping 5" to 10" IPS, apply manufacturer's formed plastic sheet material insulation (which accurately fits the pipe's outside dimensions). Wrap sheets around the piping with longitudinal seams and butt joints sealed with manufacturer's recommended adhesive.

2.433 At pipe hangers, install insulation with 16 gage galvanized sheet metal shields of at least three times the insulation diameter in length and one-third the insulation circumference in width.

2.434 For piping 12" and larger, apply Fiberglas heavy density Sectional Pipe Insulation or equal with FRJ self-sealing lap as per Specifications for Insulation Types I to III.

2.44 APPLICATION - FITTINGS

a. Insulate sweat fittings with miter-cut pieces of foamed plastic insulation. To make fitting covers, join miter-cut pieces with manufacturer's recommended adhesive; then slit covers, snap over fittings and seal joints with manufacturer's recommended adhesive.

b. Insulate screwed and flanged fittings with sleeve-type covers made from miter-cut pieces of foamed plastic insulation. Inside diameter of the insulation must overlap the pipe insulation on the adjacent piping. To make fitting covers join the miter-cut pieces with manufacturer's recommended adhesive; then slit covers, snap over fitting, and seal joints with manufacturer's recommended adhesive.

c. Insulate fittings 12" and larger with Fiberglas Heavy Density Sectional Pipe Insulation as per insulation Types I to III.

d. Flanges, unions and valves will be insulated.

2.45 FINISH

a. For foamed plastic insulation, apply two coats of good quality commercial latex paint.

b. For finish of Fiberglas Heavy Density Sectional Pipe Insulation, see finish for Types I to III Insulation.

2.5 INSULATION TYPES V TO XI

2.51 TEMPERATURE RANGES

Type V all lines above 140°F and not otherwise insulated to be insulated in the area extending from floor or ground line to a point 7' 6" above for personnel safety.

Type VI 101° to 285°F

Type VII 275° to 499°F

Type VIII 401° to 550°F

Type IX 551° to 700°F

Type X 701° to 1000°F

Type XI 1001° to 1200°F

2.52 CALCIUM SILICATE PIPE INSULATION: JOHNS-MANVILLE "THERMO-12", OWENS-CORNING "KAYLO", or approved equal. (8)

2.53 APPLICATION - PIPE

a. Apply all single layer insulation with joints butted tightly together, and held in place with copper clad wire loops on 36" centers maximum. All voids shall be sealed with Johns-Manville General Purpose Insulation Cement #375. (8)

b. Stop off all insulation a sufficient distance from all flanges to permit the easy removal of the bolts when the ends of the insulation are beveled back from the pipe to the outside of the insulation at an angle of 45° with the axis of the pipe.

c. Flanges and unions shall be insulated.

2.54 VALVES AND FITTINGS

a. Insulate all valves, flanges, and fittings for size 4" and larger with calcium silicate sectional pipe insulation and/or block insulation equal to 1/2" or less in thickness than adjacent pipe insulation, and apply a hard finish coat of non-asbestos cement to bring the total thickness to that of the adjacent pipe insulation. (8)

b. Insulate all valves, flanges and fittings for sizes 3" and smaller with hard finish insulating cement molded to shape, having the same thickness as the adjacent pipe insulation.

2.55 FINISH

2.551 INDOOR LINES

Sectional insulation for indoor lines shall have a factory applied 8 ounce canvas jacket. After wire loops are secure, the jacket shall be treated with Benjamin Foster 30-36 lagging adhesive.

2.552 OUTDOOR LINES

a. Any piping, fittings, etc. subject to freezing shall be covered with an additional layer of 1" insulation of the same finish specified when not subject to freezing.

b. Apply Benjamin Foster 65-07 aluminum outdoor vapor barrier mastic.

c. In addition to the above, all outdoor pipe lines, fittings, etc. shall be further protected with an 0.016 mil embossed aluminum jacket, with a 2" overlap at longitudinal and circumferential joints. Secure in place with 3/4" by 0.15" aluminum bands on 18" centers.

d. Johns-Manville "Metal-On" or equal may be used on all outdoor lines.

2.56 VERTICAL LINES

Insulation on vertical lines shall be supported by means of lugs welded to pipe at 12' 0" centers.

2.6 UNDERGROUND INSULATED LINES

2.61 For insulated lines below grade, set in "Tic-Wil" or other waterproof casing. The thicknesses as specified in Section 2 are minimum and may be increased to suit casing. For two or more lines grouped in a casing, the insulation thickness shall be such that the heat loss will not exceed similar loss for the thicknesses specified.

SECTION 3

3.0 INSULATION FOR HEATING, VENTILATING AND AIR CONDITIONING DUCT BY TEMPERATURE RANGES

3.1 The first 10' 0" of office air conditioning supply duct and the duct inlet to the return air fan shall be lined with 1" thick J-M black plastic coating Microlite Liner adhered to the duct with Benjamin Foster 85-75 insulation bonding adhesive.

3.2 MATERIAL

All concealed ducts other than those mentioned in above section 3.1 shall be insulated on the outside with a rigid 1 1/2" thick 3.0 lb. density mineral fibre board, Johns-Manville 814 Spin-Glass, or approved equal. Insulation shall be furnished with a factory applied Foil-Scrim-Kraft facing consisting of aluminum foil (min. .7 mil thick, reinforced with fiberglas yarn mesh and laminated to 40 lb. chemically treated, fire resistant Kraft.

3.3 All exposed ducts to be insulated with J-M Therm 12, or approved equal.

3.4 APPLICATION METHOD

a. Impaling over pins

All insulation shall be applied with edges tightly butted and secured by impaling on pins welded to the duct. Pins shall be on spacing as required to hold insulation firmly against the duct surface. However, in no case shall there be less than 1-pin/sq. ft. If necessary, insulation on the underside of all horizontal or sloping ducts shall be additionally secured by applying adhesive (Minnesota Mining EC-1128, Miracle Type 3, Benjamin Foster 85-75 or approved equal.)

b. Other Method of Securement

If, through space or size restriction, or other causes, the welded method is impossible, the insulation shall be secured to the ducts with fire resistive adhesive, Benjamin Foster 85-20, or approved equal. The adhesive shall cover the surface of the metal when applied to the underside of horizontal ducts but may be spotted for application to top and sides. Insulation shall be additionally secured with No. 16 galvanized wire on not more than 12" centers. Corner metal angles shall be used to protect edges of insulation. Joints shall be sealed as above.

3.5 FINISH

a. Concealed Ductwork

Insulation shall have no finish in unexposed areas.

8

b. Exposed Ductwork

Apply Johns-Manville "Thermo 12" Calcium Silicate to all ductwork with working temperature of 350°F. to 1200°F. All ductwork below 350°F to be insulated with Johns-Manville spin glass 800 series or microlite insulation which does not require a finish (aluminum cover supplied as part of insulation).

SECTION 4

4.0 HOT VESSEL, EQUIPMENT AND PROCESS DUCT INSULATION BY TEMPERATURE RANGES

4.1 VESSELS, EQUIPMENT AND PROCESS DUCT

Temperature Range	Type Insulation	Insulation Thickness	Hard Finish Thickness
901°F to 1200°F	Calcium Silicate	8" (8)	1/2"
701°F to 900°F	Calcium Silicate	6" (8)	1/2"
551°F to 700°F	Calcium Silicate	4" (8)	1/2"
401°F to 550°F	* (8)	3"	1/2"
261°F to 400°F	Fiberglas (8)	2" (8)	1/2
100°F to 260°F	Fiberglas (8)	2" (8)	1/2"

4.2 Above schedule designates minimum thickness of insulation as shown at temperature ranges shown for all outdoor or indoor insulated vessel, equipment and process duct.

Any vessel, equipment or process duct subjected to freezing shall be covered with an additional layer of 1" insulation of the same finish specified when not subject to freezing.

(8) * Use Fiberglas up to 500°F; above 500°F, use Calcium Silicate.

4.3 CALCIUM SILICATE BLOCK INSULATION FOR HOT VESSELS & PROCESS DUCTS

4.31 Preparation:

Before insulation is applied, vessels and fittings must be tested, made tight, cleaned of rust, scale or other foreign matter, freed of frost and made dry.

4.32 Application - Shell:

4.321 Lay block insulation up on vessel with end joints staggered and leave no voids.

4.322 Fasten insulation to shell with 1/2" x .015 stainless steel straps spaced 12" mx. centers, pulled tight, and buckled on with 2 buckles per connection.

4.33 Heads:

4.331 Notch and cut block insulation, as necessary, to fit curvature of head and lay with end joints staggered leaving no voids.

4.332 Impale insulation on "Nelson" split welding studs with thin metal washer between bent prongs and insulation.

4.34 Manholes:

4.341 Notch block insulation to clear reinforcing pad and cut to fit around manhole.

4.342 Install 3/8" rings at manhole for fastening steel straps to hold insulation.

4.35 Nozzles:

4.351 Notch block insulation to clear reinforcing pad and cut to fit around nozzle.

4.352 Cut back insulation to clear weld and allow for bot removal.

4.36 Expansion Ribs:

4.361 Where additional expansion type insulation rings are required, a 1/4" thick x a width 1/4" less than insulation will be supplied by insulation contractor and welded to vertical vessels 6" below head seam and at 12' 0" maximum centers where necessary.

5.44 Manholes (Cont'd)

e. Pack blanket mineral wool insulation around bolts to line with O.D. of flanges tied in place with Jute twine.

f. Cover manhole cover with lagging of thickness equal to that of vessel Shell insulation. Notch lagging to fit bolts.

g. Cut lagging to fit over manhole cover insulation and against vessel Shell insulation and fasten with wooden skewers or steel pins and bind with two stainless steel bands.

h. Build around hinge and handle with blanket mineral wool insulation.

i. Seal entire surface of manhole with Pittcote 300 sealer.

5.45 Application - Equipment Supports

a. Where equipment is supported on metal cradles, "Foamglas" insulation shall be carried down over all cradles.

b. Where equipment is supported by structural steel members, "Foamglas" insulation shall be extended not less than four times the specified insulation thickness in each direction. Thickness of insulation over steel supports shall be one-half that specified for body of equipment. Thickness of insulation over support lugs to be same as vessel insulation.

c. Equipment legs shall be insulated with "Foamglas" as part of the equipment area. Insulation is to extend over structural legs and down legs a distance four times insulation thickness. Thickness shall be as specified for body of equipment. Body insulation shall be brought up to and butted firmly against tank leg flange. Spaces between flanges and web of structural members shall be filled with insulation.

5.5 FINISH

5.5.1 a. Glass fabric reinforced mastic. After specified thickness of equipment insulation has been installed, a tack coat of Pittcote 300 or 400 (depending on service) shall be sprayed, brushed or trowelled onto the insulation at a rate of 29 gallons per 100 square feet. While coat is still tacky, an open weave glass membrane (10" x 10" mesh, impregnated for Pittcote 300 or 400) shall be laid smooth and thoroughly embedded in the coating. Care must be exercised that the glass weave does not rupture and that the cloth is overlapped approximately three inches to provide strength at joint equal to that maintained elsewhere.

b. Before surface becomes dry to touch, a second coating shall be sprayed, brushed or trowelled over the reinforcing cloth. Coverage shall be 6 gallons per 100 square feet for Pittcote 300 and 4 gallons per 100 square feet for Pittcote 400. The glass fabric shall be completely covered with mastic with no [illegible]

GENERAL SPECIFICATIONS

1	8/4/71	Rev. Sect. 7.0 & added Sect. 8.0	
0	7/24/71	Original Issue	

LEVER BROTHERS CO.
ENGINEERING DEPT.
General Specification
EQUIPMENT BOILER

EQUIPMENT NOISE

1.0 GENERAL

1.1 This specification is intended to establish the limiting value of noise generated by the equipment to be purchased. It provides a uniform method of conducting and recording noise tests to be made on such machinery.

1.2 Tests are to be made by the vendor and may be witnessed by the purchaser. Confirming or additional measurements by the purchaser shall be permissible.

2.0 INSTRUMENTS

2.1 The sound level shall be determined by a sound level meter meeting the standards of the U.S.A., Standards Institute and operating on the A-weighting network with slow meter response.

2.2 Instruments shall be calibrated as recommended by the instrument manufacturer. Calibration of the meter and microphone shall be made before the test.

3.0 NOISE TESTS

3.1 The tests will be made at the factory or in a test room provided by the vendor at his expense. The test room should preferably provide conditions free of extraneous sounds.

3.2 Ambient sound levels within the test room should be 8 dB or more below the sound level that prevails when the tested equipment is in operation.

3.3 Unless otherwise specified, equipment tested should be at full load.

3.4 The placement of the microphone during the test shall be such as to protect it from air currents, electric or magnetic fields and other disturbing influences that might affect the readings obtained. The microphone shall be positioned at ear level and a horizontal distance of three (3) feet from the nearest major surface. The entire area surrounding the equipment shall be explored to insure that the maximum noise levels are measured.

3.5 Measurements shall be made at a minimum of six (6) points approximately sixty (60) degrees apart in the plane specified in paragraph 3.4 starting with the line of maximum noise level.

4.0 SOUND LEVEL SPECIFICATION

4.1 The location and orientation of the microphone for measurement of total (ambient plus machinery) and ambient noise levels shall be identical. If either the machine or ambient noise levels fluctuate appreciably, maximum levels shall be recorded.

If the difference between total and ambient levels is less than 3 dB, the ambient level is unsatisfactory for measuring the noise produced by the machine. If the difference is 10 dB or more, the higher readings shall be assumed as the noise level generated by the equipment. For differences of 3 to 10 dB, the machinery noise level shall be determined by the following corrections values:

Difference between total and ambient levels, dB	Correction to be subtracted from total sound level, dB
3	3
4-5	2
6-9	1
10	0

5.0 SOUND LEVELS

5.1 All equipment shall be guaranteed not to exceed a noise level of 85 dBA at a distance of three (3) feet in any direction. This requirement applies to basic machine and the drive unit, including motor, speed reduction unit, couplings, chains, belts, etc., when a complete package is furnished.

6.0 RECORDING OF DATA

6.1 Before shipment of equipment, the vendor shall transmit to Lever Brothers Company a completed copy of Equipment Noise Specification Data Sheet 7.0, which forms a part of this specification.

7.0 EQUIPMENT NOISE SPECIFICATION

Type of Equipment _____

Manufacturer _____ Vendor _____

Vendor's Mos-Order _____ Serial _____ Shop _____

Purchaser's Project _____ Machine No. _____ Order _____

Equipment Specifications: Model No. _____ Serial No. _____

Size _____ Capacity _____

Speed _____ H.P. _____

Machine at ___% Capacity _____

Test Room - Inches Length _____ Width _____ Height _____

Material Floor _____ Wall _____ Ceiling _____

Noise Description Continuous___ Intermittent___ Impact___

Does Narrow Band Noise Exist Yes___ No___

Narrow Band Analyser Used Yes___ No___

Octave Band Analyser Used Make _____ Serial No._____

Sound Level Meter Make _____ Serial No._____

Microphone Type Make _____ Serial No._____

Microphone Cable Used Yes___ No___

Reading Corrected Yes___ No___

Meter Speed Used Fast___ Slow___

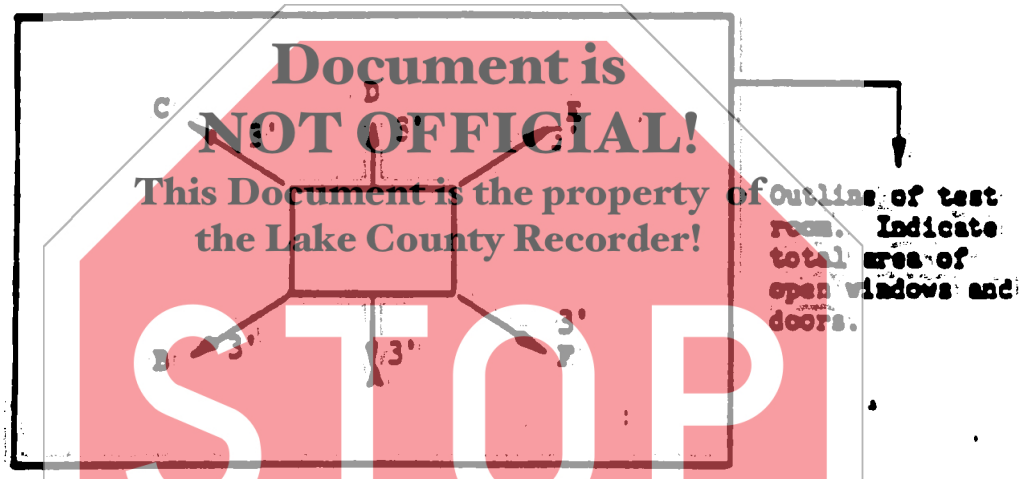
For equipment which due to its size must be tested outdoors, the following additional information shall be furnished:

1. A description of the test environment where the equipment is located, including the position of the equipment.
2. Operating conditions for which measurements were made.
3. Pertinent meteorological data, if important.
4. Location of the microphone, including angle of orientation of the microphone, with respect to the equipment.
5. Description of background noises and their sources.

7.0 EQUIPMENT NOISE SPECIFICATION (Cont'd)

Location of Microphone

Indicate on the sketch below the position of the equipment as placed in the room and orient the machine by some identifying feature. Note the sound level readings at appropriate locations such as A-F.



8.0 EQUIPMENT SELECTION

8.1 Preferential consideration will be given to vendors whose equipment complies with Par. 5.1, providing all other conditions of OC-1 "Sale and Delivery of Mechanical Equipment" are fully satisfied.

8.2 Failure to meet requirements of Par. 5.1 does not automatically disqualify the vendor's bid proposal. Vendor shall submit his test results and an evaluation will be made by Lever Brothers Company to determine final equipment selection.

DUST COLLECTORS
AIR PULSE TYPE CLEANING

1.0 GENERAL

Lever Brothers Company Sale and Delivery of Equipment, GC-1, Electric Drivers, GS-11, and Equipment Noise Specification, GS-18 are a part of this specification and all provisions thereof must be complied with.

2.0 CODES AND ORDINANCES

All equipment shall comply with and operate in accordance with the requirements of any code, ordinance or ruling by any authority having jurisdiction.

3.0 APPLICATION

3.1 Air to be handled:

_____ CFM at _____ °F.

_____ PSIG Pressure _____ in. Wg. Vac.

3.2 Material to be handled

_____ at _____ #/Hr.

_____ % on 10 mesh

_____ % on 100 mesh

_____ % through 100 mesh

3.3 Materials of Construction

_____ ; clean air side

_____ ; dirty air side

3.4 Unless otherwise specified, motors shall be TEFC or encapsulated. Electric equipment shall be NEMA-4.

REFERENCES:

GC-1	Sale and Delivery of Equipment
GS-11	Electric Drivers
GS-18	Equipment Noise Specification

0	4/19/73	Original Issue	ce	a2/6

LEVER BROTHERS CO.
ENGINEERING DEPT.
General Specification
DUST COLLECTORS

11/68

4.0 The specifications of the equipment shall comply with the following:

4.1 Air to cloth ratio shall not be over 4:1.

4.2 The vertical air velocity in the dust collector shall not be greater than 100 F.P.M.

4.3 Two sturdy quick opening gasketed hinged access doors approximately 18" x 36" shall be provided, 180° apart.

4.4 Unit shall be dust-tight and water-tight under operating conditions.

4.5 Bags shall be fastened with Breeze M64 (Breeze Corp., Union, N.J.) clamps over solid nozzles so that bags will not come loose in operation.

4.6 Bag material shall be flame treated polypropylene felt or a substitute approved by Lever Brothers.

4.7 Dirty air inlet shall be baffled. Cylindrical units shall have a tangential inlet.

4.8 When possible, unit shall be factory-assembled and shipped as a unit.

5.0 Bidder shall supply the following information:

5.1 Dimensions of unit

5.2 Weight of unit

5.3 Bag Data

Number: _____ Diameter: _____ Length _____

5.4 Air requirement: _____ CFM at _____ PSIG

5.5 Electric requirement:

5.6 Tube sheet thickness and support.

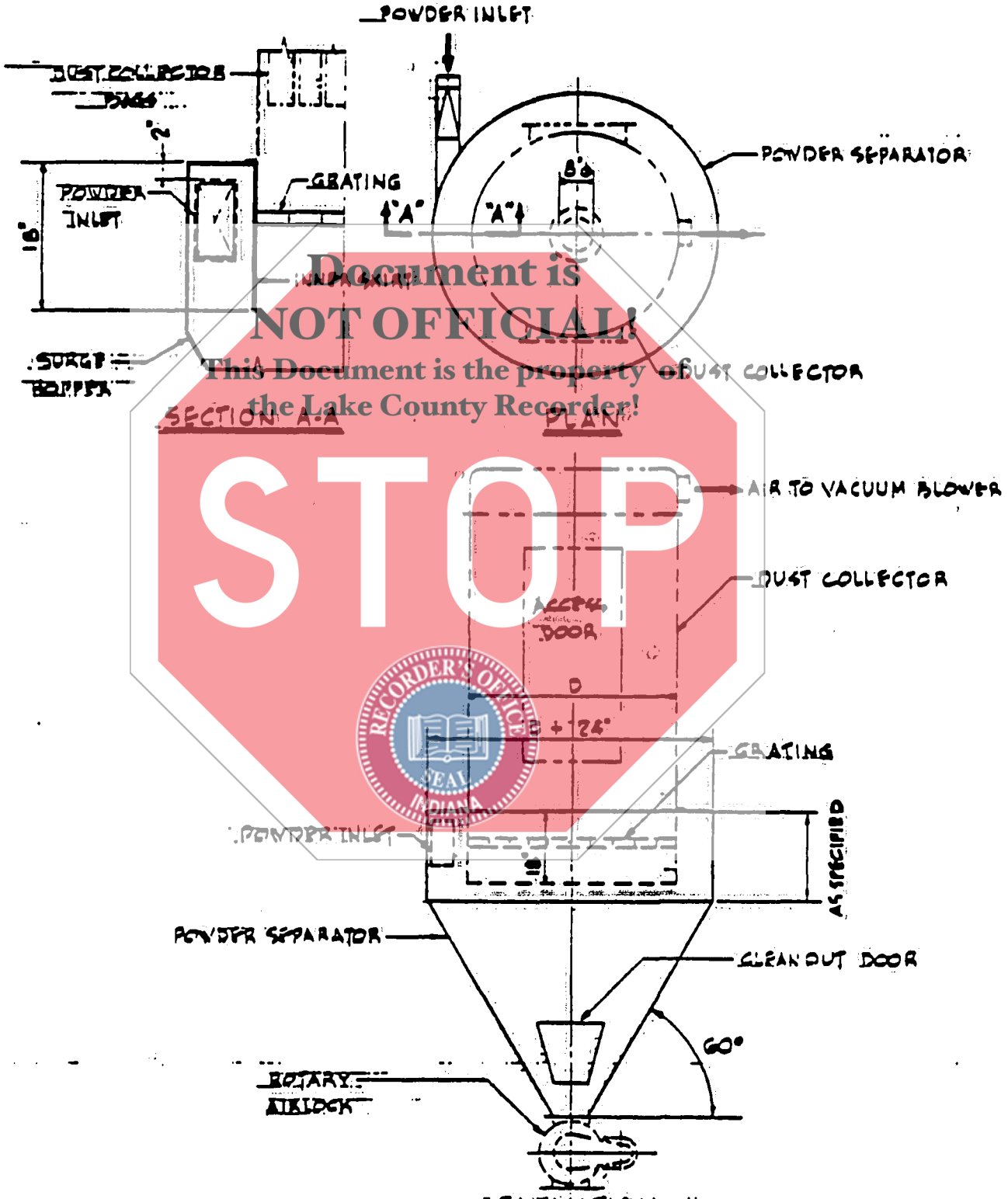
5.7 Hopper bottom and dirty air inlet drawing.

5.8 Design pressure of shell and tube sheet

5.9 ____" W.C. ΔP clean _____" W.C. ΔP dirty

5.10 Separate price for hopper bottom

6.0 When unit is for heavy dust concentration or powder conveying system, a powder separator hopper, as shown below, shall be provided.



POWDER SEPARATOR HOPPER

Issued: 02/16/48
Revised: 07/29/54
Revised: 12/01/75

Approved by:

T. J. Clevenger
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R. R. Siegel
A. J. Wells

LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 1
FOR
IDENTIFICATION OF PIPING SYSTEMS
AND TESTING

SECTION 1 - OBJECT, SCOPE AND DEFINITIONS

1.1 - OBJECT

The purpose of this standard is to establish a common code to assist in the ready identification of materials conveyed in piping systems in the interest of preventing personal injuries, fires, and damage to buildings, equipment, materials and product. The use of this standard will promote greater safety and will lessen the chances of error, confusion or inaction.

1.2 - SCOPE

The classes of piping systems are as follows:

A. Piping carrying dangerous materials
B. Fire-protection piping
C. Miscellaneous piping system

1.3 - DEFINITIONS

Dangerous Materials - Are considered to be those which are in themselves hazardous by virtue of being poisonous; materials easily ignited or explosive such as fuel gas, fuel oil, gasoline, naptha, etc. Corrosive or toxic chemicals such as acids, alkalis, chlorine, ammonia, sulphur, dioxide, hydrogen sulphide, etc. Materials at temperature above 160F° and pressure above 100 psi such as steam high pressure water and air, and those materials which do not have the above properties but under abnormal circumstances of use may present the hazard of asphyxiation.

Fire-Protection - These systems include all sprinkler piping mains and risers, foam and carbon dioxide lines and other devices used in connection with buildings, equipment, and process fire-protection. The identification color for this group of materials may also be used to identify and or locate such equipment as alarm boxes, extinguishers, fire blankets, fire doors, hose connections, hydrants, and any other fire fighting equipment.

Miscellaneous - These piping systems are those not falling into the above categories but are desirable to identify.

Safe-Materials - This group of materials includes those involving little or no hazard to life or property in their handling. This classification includes materials at low pressure and temperatures, which are not corrosive, toxic or poisonous and will not produce fires or explosives.

SECTION 2 - METHOD OF IDENTIFICATION

2.1 Major identification shall be obtained through the use of classification colors painted on the piping system in accordance with the American National Standard Scheme for the identification of piping systems, ANSI A13.1-1956. The full prevalent plant nomenclature or abbreviated name for specific material shall be in lettered legend readily visible along piping and at such locations as pumps and valves. Arrows may be used to indicate direction of flow.

2.2 Except as specifically provided otherwise, classification colors shall be painted on the piping as follows:

Bands of the classification color shall be placed on the piping at not more than 20-feet intervals, adjacent to all valves, cocks and equipment, and at such other places as may be required to maintain continuity of identification. On 8" (inches) or larger pipe oblongs of the classification color may be substituted for a complete band.

2.3 Piping systems conveying hydrogen, propane, city gas, blue gas, or any other materials which form explosive mixtures in combination with air shall be identified by painting the entire system the classification color. This provision shall apply in all locations except in hydrogen gas producing areas where banding with the classification color may be substituted.

2.4 Specific identification of materials in piping systems shall be made by the use of a lettered legend applied over the classification color. This shall be done adjacent to valves, cocks, pumps and equipment, and at such other locations as may be needed for adequate identification.

SECTION 3 - CLASSIFICATION COLORS

Classification	Color
F - Fire-Protection Equipment	RED
D - Dangerous Materials	YELLOW (OR ORANGE)
S - Safe Materials	GREEN (OR THE ACHROMATIC COLC WHITE, BLACK, GRAY OR ALUMINUM)
P - Protective Materials (Low Pressure Air)	BRIGHT BLUE

SECTION 4 - CLASSIFICATION COLORS AND LEGENDS

4.1 Dangerous Materials

The following materials, in addition to any others falling within the definition as set forth in Section 1, are classified as dangerous. Yellow shall be the classification color for this group of materials except those which form explosive mixtures in combination with air. The latter shall be identified with the color orange. Legends, as listed, shall be applied to the piping over the classification color.

Material	Classification Color	Stenciled Legend	Legend Color
Alcohol	Orange	Alcohol (plus formula no.)	Black
Alkane	Orange	Alkane	Black
Aluminum Chloride	Yellow	Aluminum Chloride	Black
Ammonia	Orange	Ammonia	Black
Blue Gas	Orange	Blue Gas	Black
Caustic (Potassium Hydroxide)	Yellow	Caustic P	Black
Caustic (Sodium Hydroxide)	Yellow	Caustic S	Black
Chlorine	Yellow	Chlorine	Black
City Gas	Orange	City Gas	Black
Cresylic Acid	Yellow	Cresylic A	Black
Dow Therm Liquid	Yellow	Dow Therm L	Black
Dow Therm Vapor	Yellow	Dow Therm V	Black
Fuel Oil	Orange	Fuel Oil	Black
Hydrochloric Acid	Yellow	Hydrochloride A	Black
Hydrogen	Orange	Hydrogen	Black
Lye	Yellow	Lye	Black
Monoethanolamine	Orange	M.E.A.	Black
Nitric Acid	Yellow	Nitric Acid	Black
Nitrogen	Yellow	Nitrogen	Black
Oleum	Orange	Oleum	Black
Phosphoric Acid	Yellow	Phosphoric A	Black
Propane Liquid	Orange	P.L.	Black
Propane Vapor	Orange	P.V.	Black
Propane Liquid plus Stock	Orange	PL + S	Black
Sodium Hypochloride	Yellow	Hypochloride	Black
Sulphuric Acid	Yellow	Sulphuric Acid	Black

4.2 - Fire-Protection

Red shall be the classification color for fire-protection piping systems, and such systems should preferably be painted this color throughout their entire length. When the color red is undesirable as for instance in general offices and special departments where decorative painting is used, fire-protection piping may be painted the color required by the color scheme. The following stenciled legend may be used when detailed identification is required.

Material	Stenciled Legend	Legend Color
Carbon Dioxide	CO_2	White
Dry Pipe System	Dry System	White
Foam System	Foam	White
Hose Stand Pipes	Stand Pipes	White
Open Sprinklers	Open Sprinklers	White
Wet System	Wet System	White

4.3 Miscellaneous Piping Systems

In the event that it is found desirable to identify piping systems other than fire-protection and those conveying dangerous materials, the following color classifications and stenciled legends shall be used:

Material	Classification Color	Stenciled Legend	Legend Color
Air (If Low Pressure)	Blue	Air	White
Steam (If Low Pressure)	Black	Steam (plus numerals indicating pressure)	White
Stock	Green	*	White
		* Note: Enter name or abbreviation of stock oil, Finished Soap, Acidulated Oil, Foots, etc. (Check Safety Data Sheet)	
Vacuum	White	Vacuum	Black
Water (If Low Pressure)	Light Green	Water	White

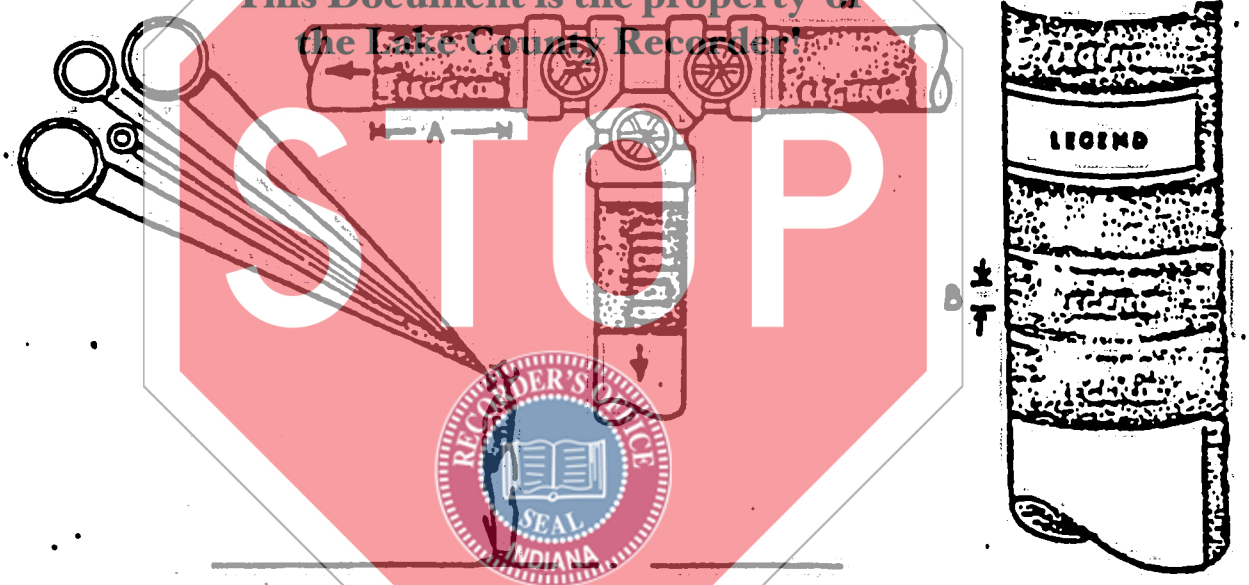
SECTION 5 - TESTING OF PIPING SYSTEMS WHICH WILL CONTAIN ANY HAZARDOUS, FLAMMABLE OR COMBUSTIBLE MATERIALS

5.1 All piping before being covered, enclosed, or placed in use shall be hydrostatically tested to, at least, 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to, at least, 110 percent of the maximum anticipated pressure of the system, but no less than five pounds per square inch guage at the highest point of the system. This test shall be maintained for a sufficient time to complete inspection of all joints and connections using appropiate means but for, at least, 10 minutes.

5.2 This section shall in no way supersede any more stringent testing requirements imposed by Lever engineering or outside agencies.

Key to Classification Color of Bands-
Color of Legend Letters-
Legend Placement-Width of Color Bands and Size of Letters for Various Diameter Pipes

KEY TO CLASSIFICATION OF PREDOMINANT COLORS FOR BANDS		COLOR OF LETTERS FOR LEGENDS
F – Fire protection	Red	White
D – Dangerous	Yellow	Black
S – Safe	Green	Black
P – Protective	Blue	White



Outside Diameter of Pipe or Covering	Width of Color Band A	Size of Legend Letters B
¼ to 1 ¼	8	½
1 ½ to 2	8	½
2 ½ to 6	12	1 ¼
8 to 10	24	2 ½
Over 10	32	3 ½

All dimensions are given in inches.

Fig. 1

Issued: 12/1/75

Approved by:
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A. J. Wells

LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 2
FOR
CONSTRUCTION AND USE OF SCAFFOLDS

SECTION 1 - SCOPE, PURPOSE AND DEFINITIONS

1.1 - SCOPE

This standard establishes safety requirements for the construction, maintenance and use of scaffolds used in construction, alteration, demolition and maintenance of buildings and structures.

1.2 - PURPOSE

The purpose of this standard is to provide adequately for the safety of all employees who have occasion to work on or in the vicinity of scaffolds.

1.3 - DEFINITIONS

Below is a listing of scaffolds most commonly used by Lever employees. For additional types of scaffolding, OSHA standards and applicable State Codes shall be consulted.

Scaffolds - Shall mean a temporary elevated working platform used for the purpose of supporting workers and/or materials. The design load of all scaffolds shall be calculated on the basis of:

Light - Designed and constructed to carry a working load of 25 pounds per square foot.

Medium - Designed and constructed to carry a working load of 50 pounds per square foot.

Heavy - Designed and constructed to carry a working load of 75 pounds per square foot.

Independent Pole Scaffold - Shall mean a scaffold supported from the base by a double row of uprights or posts, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.

Tube and Coupler Scaffolds - Shall mean a scaffold erected from four basic parts, (posts, bearers, runners and traces) galvanized steel tubes of various lengths, joined by fittings which lock to make a continuous tube, a standard, right angle coupler for joining members at right angles, adjustable couplers for joining members at other than right angles, and bases, on which the scaffold is erected.

Suspended Scaffold - Shall mean a scaffold, the platform of which is supported by stirrups or hangers at least at two points, suspended from overhead supports in a manner to permit raising or lowering to suit required position.

Horse Scaffold - Shall mean a scaffold supported by two (2) or more frames, each having four (4) legs.

Lean-to or Jack Scaffold - Shall mean a scaffold consisting of two (2) or more supports, each with two (2) legs and a cross member which bears against a substantial object.

Shore Scaffold - Shall mean a bracket-type scaffold, consisting of a platform and lower section at right angles to the platform, supported by a leg or legs extending from the ground or floor at an angle to the bottom edge of the platform where it bears against a wall or other substantial object.

Boatswain's Chair - Shall mean a seat to support a workman in a sitting position, supported by manila or wire rope slings attached to a suspension rope.

SECTION 2 - GENERAL REQUIREMENTS

2.1 The footing or anchorage for scaffolding shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

2.2 Guardrails and toeguards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor except:

2.2.1 When the scaffolding is totally within the interior of the building and covering the entire floor area of any room therein and not having any sides exposed to a hoistway, elevator shaft, stairwell, or any other floor opening.

2.3 Guardrails shall be 2" X 4" lumber or the equivalent, not less than 36 inches or more than 42 inches high, with a midrail (when required) of 1" X 4" lumber or the equivalent. Supports should not exceed intervals of ten feet and shall be 4" X 4" lumber or the equivalent.

2.4 Toeboards shall be a minimum of four (4) inches high.

2.5 All scaffolds and their supports shall be capable of supporting the load they are designed to carry with a safety factor of at least four (4).

2.6 Scaffolds shall not be altered or moved horizontally while they are in use or occupied.

2.7 Employees shall not work on exterior scaffolds during storms or high winds.

2.8 Scaffolds shall be cleared of ice, snow, grease, oils or other substances which may be conducive to slippery and unsafe working conditions.

2.9 Scaffolds shall not be overloaded nor, in any case, shall the strength of the scaffold be impaired to less than that required for the work intended.

2.10 An access ladder or equivalent safe access shall be provided.

2.11 All lumber used in construction of scaffolds shall be spruce, fir, long leaf yellow pine, oregon pine or wood equal to strength. Hemlock, short leaf yellow pine, or short fibre lumber shall <u>not</u> be used.

2.12 Side screens shall be provided on scaffolds in all cases where persons are required to walk or pass under the scaffold.

2.13 Materials hoisted onto a scaffold shall have a guide line.

<u>2.14</u> Platform planking shall not be less than two inches (2") in thickness and ten inches (10") in width.

2.14.1 All planking or platforms shall be overlapped end to end (Minimum 12 inches) or secured from movement.

2.14.2 Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.

2.14.3 Platform planks shall be laid with their edges close together so that the platform will be tight with no spaces through which tools or fragments of material can fall.

2.14.4 Where the ends of planks abut each other to form a flush floor, the butt joint shall be at the center line of a pole. The abutted ends shall rest on separate bearers.

2.14.5 Intermediate beams shall be provided where necessary to prevent dislodgment of planks due to deflection, and the ends shall be nailed or cleated to prevent their dislodgment.

2.15 None but skilled workers, as determined by Mechanical Supervision, shall be employed in the erection of scaffolds, and the work shall be done under the direct supervision of a person familiar with scaffold erection and who will take such precautions to insure safety and compliance to this standard.

SECTION 3 - SPECIFIC REQUIREMENTS

3.1 Independent Pole Scaffolds

3.1.1 The inner row of poles shall be set as near the wall of the building or structure to be worked on, as practicable, and allow workers sufficient working space.

3.1.2 All pole uprights shall be set plumb.

3.1.3 Diagonal bracing shall be provided to prevent the poles from moving in a direction parallel with the wall of the building or from buckling.

3.1.4 Cross bracing shall be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds shall be cross braced.

3.1.5 Full diagonal face bracing shall be erected across the entire face of pole scaffolds in both directions. The braces shall be spliced at the poles.

3.1.6 All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with tables D-7 through D-12, (Attachment.)

a) If they are over 60 feet in height, they shall be designed by a registered professional engineer and constructed and erected in accordance with such design.

3.1.7 Scaffolds shall be secured to permanent structures, through the use of anchor bolts, reveal bolts or other equivalent means. Window cleaners anchor bolts shall not be used.

3.1.8 Where the height or length exceeds 25 feet, the scaffold shall be secured at intervals not greater than 25 feet horizontally or vertically.

3.1.9 Adequate protection shall be provided where necessary to prevent trucks or other moving equipment from running into scaffolding.

3.2 Tube and Coupler Scaffolds

3.21. A light-duty tube and coupler scaffold shall have all post, bearers, runners, and bracing of nominal 2-inch O.D. steel tubing or equivalent.

a) The posts shall be spaced no more than 6 feet apart

3.2.2 A medium-duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing or equivalent.

a) Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2½ inch O.D. steel tubing or equivalent.

b) Posts spaced not more than 5 feet apart and 8 feet along the length of the scaffold shall have bearers of nominal 2-inch O.D. steel tubing or equivalent.

3.2.3 A heavy-duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing or equivalent.

a) Posts spaced not more than 6 feet apart by 6 feet 6 inches along the length of the scaffold.

3.2.4 Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in Table 0-13, 14 and 15. (Attachment)

3.2.5 Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

3.2.6 Bearers shall be at least 4-inches but not more than 12-inches longer than the post spacing or runner spacing.

3.2.7 Cross bracing shall be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically.

3.2.8 The entire scaffold shall be affixed to and securely braced against the building at intervals not to exceed 30-feet horizontally and 26-feet vertically.

3.3 - Suspended Scaffold

3.3.1 Wire or fibre rope used for scaffold suspension shall be capable of supporting at least six (6) times the intended load.

3.3.2 All parts of the scaffold such as bolts, nuts, fittings, clamps, wire rope, and outrigger beams and their fastenings, shall be maintained in sound and good working condition and shall be inspected before each installation and periodically thereafter.

3.3.3 The free end of the suspension wire ropes shall be equipped with proper size thimbles and be secured by splicing or other equivalent means.

3.3.4 The running end shall be securely attached to the hoisting drum and at least four (4) turns of the rope shall remain on the drum.

3.3.5 Overhead protection shall be provided on the scaffold, not more than 9-feet above the platform, consisting of 2-inch planking or material of equivalent strength laid tight, when workers are working on the scaffold and an overhead hazzard exists.

3.3.6 The hangers of suspension scaffolds shall be made of wrought iron, mild steel or other equivalent material having a cross-sectional area capable of sustaining six (6) times the maximum intended load.

3.3.7 The roof irons or hooks shall be of wrought iron, mild steel or other equivalent material of proper size and design securely installed and anchored.

a) Tiebacks of three-fourths inch manila rope or the equivalent shall serve as a secondary means of anchorage.

3.3.8 The blocks for fibre ropes shall be of standard six (6) inch size consisting of at least one (1) double and one (1) single block. The sheaves of all blocks shall fit the size of the rope used.

3.3.9 All wire ropes, fibre ropes, slings, hangers, platforms and their supporting parts shall be inspected before every installation. Daily inspections shall be made while the scaffold is in use.

3.3.10 On suspension scaffolds designed for a working load of 500 pounds no more than two people shall be permitted to work at one time. On suspension scaffolds with a working load of 750 pounds, no more than three people shall be permitted to work at one time.

3.3.11 Each worker shall be protected by wearing a safety lifebelt attached to a lifeline.

a) The lifeline shall be securely attached to substantial members of the structure (not scaffold) or to securely rigged lines, which will safely suspend the worker in case of a fall.

3.3.12 Where acid solutions are used, fibre ropes are not permitted unless acid-proof.

3.3.13 Scaffolds shall be secured to the building or structure to prevent them from swaying.

3.4 - Horse Scaffolds

3.4.1 All horses used for scaffold purposes shall be rigid and of solid, strong construction. They shall be maintained in a state of good repair.

3.4.2 Horse scaffolds shall not be constructed or arranged more than two (2) tiers or 10 feet high.

3.4.3 The members of the horses shall not be less than specified below:

Members	Dimensions (inch
Horizontal members or bearers	3 by 4
Legs	1¼ by 4½
Longitudinal brace between legs	1 by 6
Gusset brace at tope of legs	1 by 6
Half diagonal braces	1¼ by 4½

3.4.4 Horses shall not be spaced more than 5 feet for medium duty and not more than 8 feet for light duty.

3.4.5 When arranged in tiers, each horse shall be placed directly below the horse in the tier below. On all scaffolds arranged in tiers, the legs shall be nailed down to the planks to prevent displacement or thrust and each tier shall be substantially cross braced.

3.4.6 Horses or parts that have become defective shall not be used.

SECTION 4 - PROHIBITED TYPES OF SCAFFOLDS

4.1 Lean to or jack scaffolds, shore scaffolds, barrels, boxes, loose bricks or similar unstable objects shall not be used to support scaffolds or used as scaffolds.

4.2 Bracket scaffolds shall not be used unless through-bolted, welded to a substantial object or hooked over a supporting member. The platform shall be at least two (2) planks wide.

TABLE D-7—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS LIGHT DUTY

	Maximum height of scaffold	
	20 feet	60 feet
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in.	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Maximum width of scaffold	3 ft. 0 in.	3 ft. 0 in.
Bearers or putlogs to 3 ft. 0 in. width	2 by 4 in.	2 by 4 in.
Bearers or putlogs to 5 ft. 0 in. width	2 by 6 in. or 3 by 4 in.	2 by 6 in. or 3 by 4 in. (rough).
Ledgers	1 by 4 in.	1½ by 3 in.
Planking	1½ by 9 in. (nominal)	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in.	1 by 4 in.
Ties	1 by 3 in.	1 by 4 in.
Toeboards	4 in. high (minimum).	4 in. high (minimum).
Guardrail	2 by 4 in.	2 by 4 in.

All members except planking are used on edge.

(17) Wood-pole scaffolds shall not be erected beyond the reach of effective firefighting apparatus.

TABLE D-8—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS

MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 4 in.
Spacing of bearers or putlogs	8 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	9 ft. 0 in.
Bracing, horizontal	1 by 6 in. or 1¼ by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-9—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS

HEAVY DUTY

Uniformly distributed load	Not to exceed 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 6 in. (rough).
Spacing of bearers or putlogs	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	6 ft. 6 in.
Bracing, horizontal and diagonal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-10—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS LIGHT DUTY

	Maximum height of scaffold	
	20 feet	60 feet
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in.	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Pole spacing (transverse)	6 ft. 0 in.	10 ft. 0 in.
Ledgers	1½ by 4 in.	1½ by 3 in.
Bearers to 3 ft. 0 in. span	2 by 4 in.	2 by 4 in.
Bearers to 10 ft. 0 in. span	2 by 6 in. or 3 by 4 in.	2 by 9 (rough) or 3 by 6 in.
Planking	1½ by 9 in.	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in.	1 by 4 in.
Ties	1 by 4 in.	1 by 4 in.
Toeboards	4 in. high	4 in. high (minimum).
Guardrail	2 by 4 in.	2 by 4 in.

All members except planking are used on edge.

TABLE D-11—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS

MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Pole spacing (transverse)	8 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	6 ft. 0 in.
Spacing of bearers	8 ft. 0 in.
Bearers	2 by 9 in. (rough) or 2 by 10 in.
Bracing, horizontal	1 by 6 in. or 1¼ by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.

TABLE D-11—Continued

MEDIUM DUTY—continued

Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-12—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS

HEAVY DUTY

Uniformly distributed load	Not to exceed 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Pole spacing (transverse)	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	4 ft. 6 in.
Bearers	2 by 9 in. (rough).
Bracing, horizontal and diagonal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-13—TUBE AND COUPLER SCAFFOLDS LIGHT DUTY

Uniformly distributed load	Not to exceed 25 p.s.f.
Post spacing (longitudinal)	10 ft. 0 in.
Post spacing (transverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	8	125 ft.
2	4	125 ft.
3	0	91 ft. 0 in.

TABLE D-14—TUBE AND COUPLER SCAFFOLDS MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 p.s.f.
Post spacing (longitudinal)	8 ft. 0 in.
Post spacing (transverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	8	125 ft.
2	0	75 ft. 0 in.

TABLE D-15—TUBE AND COUPLER SCAFFOLDS HEAVY DUTY

Uniformly distributed load	Not to exceed 75 p.s.f.
Post spacing (longitudinal)	6 ft. 0 in.
Post spacing (transverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	6	125 ft.

(c) *Tube and coupler scaffolds.* (1) A light-duty tube and coupler scaffold shall have all posts, bearers, runners, and bracing of nominal 2-inch O.D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load.

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LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 3
FOR
PROTECTION OF EMPLOYEES
AGAINST THE MECHANICAL HAZARDS OF
ELECTRICALLY POWER-DRIVEN MECHANICAL EQUIPMENT

SECTION 1 - SCOPE, PURPOSE AND DEFINITIONS

1.1 - SCOPE

This standard applies to the performance of any work on mechanical equipment driven by electric power.

1.2 - PURPOSE

The purpose of this standard is to provide adequately for the safety of all employees who have occasion to work on or operate electric powered mechanical equipment.

1.3 - RESPONSIBILITY

It is the responsibility of departmental supervision to insure that each employee is instructed in the use of the local safety disconnect switch. It is also supervision's responsibility to insure that all sections of this standard are followed. It is the responsibility of every employee to follow these safe practices and to report any unsafe condition immediately and such cases shall be given immediate attention.

1.4 - DEFINITIONS

Work - This word applies to cleaning, adjusting or repairing equipment or doing any job which might cause injury by contact with moving machine parts, such as using hands to remove material from a machine.

Local Safety Disconnect Switch - A switch installed specifically for the purpose of protecting operating personnel that opens both the control circuit and the power circuit. See sketch on page 4. This switch may

Local Safety Disconnect Switch (Continued) - commonly be referred to as drumswitch, furnace switch or barrel switch.

Power Disconnect Switch - A device installed specifically to comply with the National Electrical Code, located either locally or in a motor center to interrupt the power circuit and the control circuit either manually or automatically.

SECTION 2 - SWITCHES LOCATION, TYPE AND IDENTIFICATION

2.1 - Principles

For the protection of employees, there must be a device that prevents the accidental operation of a motor while the employee is working on/or in the machine. When, for engineering reasons, it is not practical to install the power disconnect switch next to the operator's station; a separate local safety disconnect switch shall be provided. All local safety and power disconnect switches, regardless of location, shall be of a type which can be padlocked in the OFF position. Power disconnect switches may be used as local safety disconnect switches when they are suitably located; that is "in line of sight" of the operator.

2.1.1 All switches shall be conspicuously identified to indicate the machine or machines which they control and the power source location as well.

SECTION 3 - PROCEDURE

3.1 - General

3.1.1 Before work is performed on any machine which has an automatic starting device in any vessel that is equipped with an internal mechanical mixer, on any screw conveyor or superflow, an electrician shall remove the power fuses or disconnect the motor leads at the starter and the person performing the work shall lock and tag the power disconnect switch in the "OFF" position.

3.1.2 In all other instances of work on electric power driven mechanical equipment, the power or local safety disconnect switch shall be locked and tagged in the "OFF" position except as specifically provided otherwise in this standard.

3.1.3 Whenever two or more people are working on equipment in such a manner as to be exposed to injury, a multiple-locking device shall be used and each worker shall secure his lock to this device, locking the power or local safety disconnect switch in the "OFF" position.

3.1.4 In every case after taking the required precautions against inadvertent starting of the machine, a check shall be made by operating the starting device to make sure that the machine does not start.

3.2 - Mechanical Crafts (Except Oilers)

3.2.1 Before performing any work on a piece of mechanical equipment, the mechanic shall lock the power or local safety disconnect switch in the "OFF" position and a Mechanical Work Authorization Card or the Mechanical Requisition shall be signed as outlined in Safety Standard No. 5, "Safety Authorization for Mechanical Work".

3.2.2 Whenever there is a change of mechanic on the job, the safety authorization procedure shall be reinitiated including the relocking of disconnect switches.

3.3 - Oilers

3.3.1 In instances where grease and oil fittings can be reached without danger of contact with moving parts, the machine may be lubricated while in operation.

3.3.2 In all other instances, the oiler shall lock the local safety disconnect switch in the "OFF" position before performing work.

3.3.3 Oiling lists shall contain specific instructions as to whether a given machine shall be locked out or lubricated while in operation.

3.4 - Machine Operators

3.4.1 Where possible, approved implements such as sticks, hooks, brushes, etc., shall be provided and used to avoid reaching into machinery.

3.4.2 Before performing work which is expected to continue for five minutes or more, the local safety disconnect switch shall be locked in the "OFF" position.

3.4.3 Before performing work which is expected to last less than five minutes, the local safety disconnect switch shall be placed in the "OFF" position and secured by a device approved by the Safety Superintendent, which prevents inadvertent operation of the switch.

3.5 - Machine Maintenance Mechanics

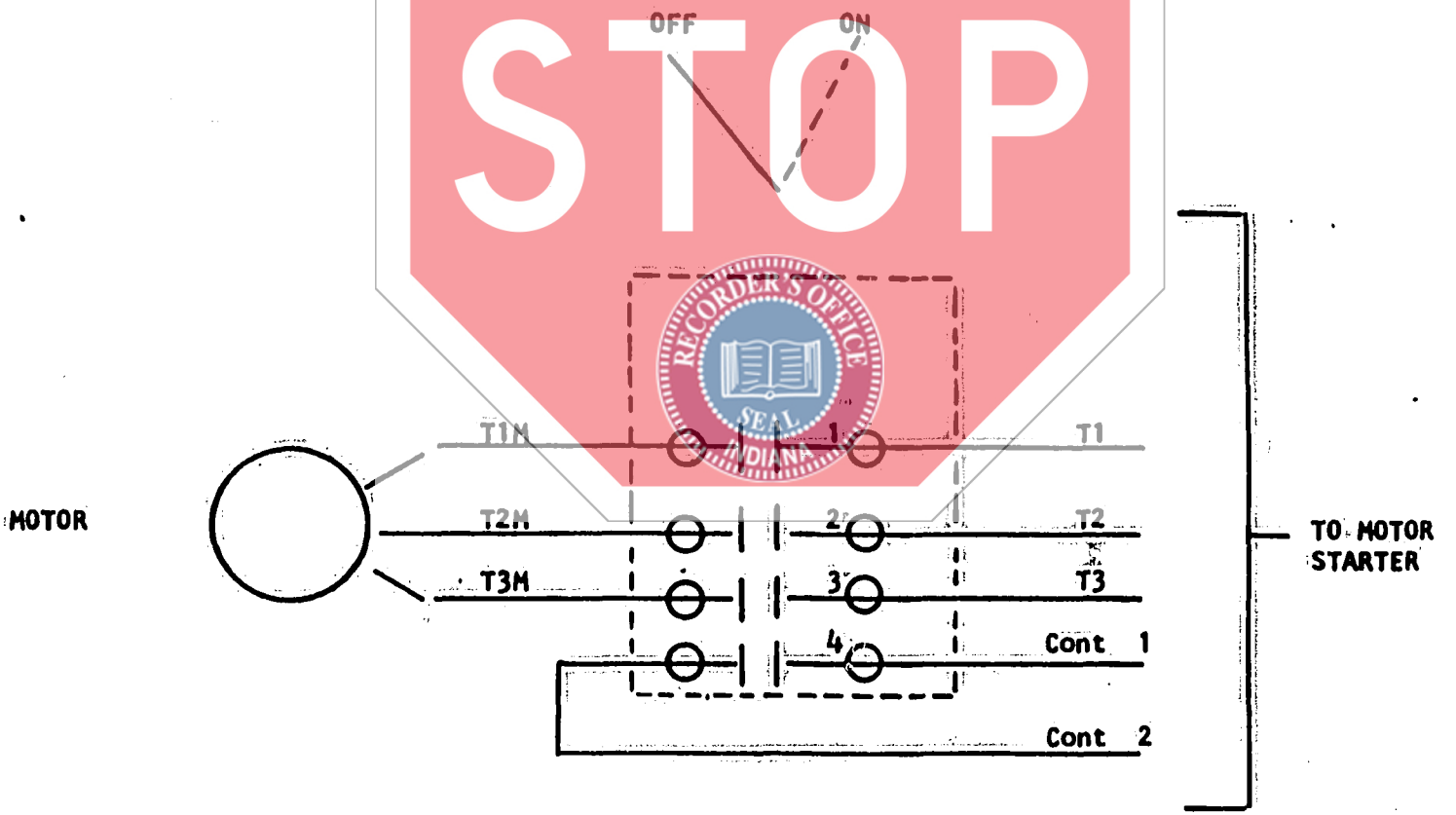
All of the provisions of "Article 3.4" apply to machine maintenance mechanics.

DISCONNECT SWITCH SCHEMATIC

SEQUENCE:

CLOSING (ON) - Power Contacts 1, 2 & 3 Make Before Control Contact 4.

OPENING (OFF) - Control Contact 4 Breaks Before Power Contacts 1, 2 & 3.



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LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 6
FOR
CONSTRUCTION, CARE AND USE OF LADDERS

SECTION 1 - SCOPE AND OBJECT

1.1 - SCOPE

This standard applies to all company-operated establishments.

1.2 - OBJECT

The purpose of this standard is to provide for proper design, construction, selection and care of ladders in the interest of preventing personal injuries.

SECTION 2 - DESIGN AND CONSTRUCTION

2.1 The design and construction of all portable and fixed ladders shall, where applicable, comply with the following codes except where specific provisions in this standard conflict.

American National Standard Institute (ANSI) - Safety Code for Portable Wood Ladders - (A14.1 - 1968 and A14.1A - 1972)

American National Standard Institute (ANSI) - Safety Code for Portable Metal Ladders - (A14.2 - 1972)

American National Standard Institute (ANSI) - Safety Code for Fixed Ladders - (A14.3 - 1974)

American National Standard Institute (ANSI) - Safety Code for Job Made Ladders - (A14.4 - 1973)

SECTION 3 - SPECIFIC PROVISIONS

3.1 - Stepladders

Platform ladders shall be substituted for the conventional stepladder where space limitations make it reasonable to do so.

3.2 - Mobile Ladder Stands

All mobile ladder stands with casters or wheels shall have positive locking devices to prevent movement while in use.

3.3 - Portable Straight Ladders

All portable straight ladders shall be equipped with hooks or ladder shoes suitable for the service for which the ladder is intended.

3.4 - Portable Metal Ladders

All portable metal ladders shall be legibly marked with signs affixed reading, "Caution - Do Not Use Around Electrical Equipment." Legend color shall be black on yellow background.

3.5 - Fixed Ladders

Fixed ladders, more than twenty feet in length or those so located that a person could fall more than twenty feet, shall be equipped with cage or basket guards.

In new installations, stairways shall be substituted for fixed ladders in all instances except where it is impractical to do so or frequency of use does not warrant the installation of stairs, as determined jointly by Engineering and Safety. All new fixed ladders shall be equipped with Morton-Kass metal treads or approved equal.

3.6 - Ship's Ladders

No new ship's ladders shall be installed.

SECTION 4 - IDENTIFICATION

4.1 All portable ladders shall be marked with the name of the department which is responsible for them. In addition, ladders shall be numbered for individual identification in departments which maintain a supply of two or more.

The marking shall be permanent (e.g. brand, stencil, brass tag, etc.) and located on the inner side of the right side rail between the second and third steps from the bottom.

SECTION 5 - INSPECTION AND MAINTENANCE

5.1 Each department shall be responsible for the maintenance and monthly inspection of its ladders. Each department shall maintain the ladder log of all its ladders and enter, upon that log, the monthly inspection results for each of its ladders.

5.2 Ladders which are unfit for use shall be tagged out of service and under no circumstances shall a tagged ladder be used until it is properly repaired and the tag is removed by Departmental Supervision.

5.3 Wooden ladders shall be kept coated with a suitable transparent preservative material. Preservative materials which can cause slippery footing on treads shall not be used.

SECTION 6 - STORAGE OF PORTABLE LADDERS

6.1 All portable ladders assigned to a department shall be properly stored in designated areas. Wood ladders should not be stored near sources of heat or where subject to excessive dampness.

SECTION 7 - PURCHASES - PORTABLE LADDERS

7.1 All requisitions for new portable ladders shall be checked by the Plant Engineering Manager or his designee before orders are placed to insure adherence to this standard.

Lever

SAFETY STANDARD NO. 9
FOR
INSTRUCTIONS FOR OUTSIDE CONTRACTORS

SECTION 1 — GENERAL

1.1 Upon receiving a contract or purchase order covering performance of work on Company premises, the Contractor shall designate one individual (hereafter described as "field superintendent") to act as liaison between the Contractor and Lever Brothers Company. Lever Brothers Company will designate an employee to act as liaison with the Contractor. All questions pertaining to this standard shall be directed to the designated liaison.

1.2 The following instructions include minimum requirements only, and the omission of any specific provisions shall in no way relieve the Contractor of his normal responsibility for the safe conduct of the work of his employees.

1.3 To improve communications and to create awareness, Lever's liaison shall be responsible for completing the "Outside Contracting Report" prior to starting any project. (See attachment #1)

This report is designed to cover specific procedures and to insure compliance in all respects. A copy of the report must be submitted to the Safety Superintendent, Department involved and Watch Office.

1.4 Each plant shall develop and issue to all Contractors and their employees an "Outside Contractor's Safe Practice Card." (See attachment #2). Lever's liaison shall issue these cards accordingly.

1.5 All Contractors must report to and sign in daily at the plant Watch Office and comply with all local security procedures.

1.6 All Contractors must be in compliance with (Bureau of Labor Statistics) OSHA record keeping requirements and state laws as required. Lever Brothers Company must be furnished with the OSHA (log) form 200."

SECTION 2 — FIRE SAFETY

2.1 In many of our processes, there is the possibility of release of explosive gases, vapors or dusts. In order to prevent fires, the following precautions shall be taken.

2.1.1 Smoking is prohibited in all buildings and yards, except in specifically designated locations.

2.1.2 Whenever it is necessary to use open flames or other possible ignition sources, advance notice must be given to the Lever liaison by the Contractor and specific approval must be obtained daily before proceeding.

2.1.3 Whenever open flames are used, fire safety must be given special attention. The Engineering Department must determine if a fire watch is necessary on each job. If the Engineering Department determines that a fire watch is necessary, a worker must be assigned to the work area who will be responsible for fire safety. The worker assigned may be either an outside Contractor or a Lever employee as local plant agreements dictate. This worker must be approved by Lever Engineering and shall be stationed at each job site with adequate fire extinguishers and proper fire safety instructions.

2.1.4 The removal of light bulbs or any tampering with electrical equipment is prohibited.

2.1.5 Broken crates, excelsior, wrapping paper and other combustible waste shall be removed and properly disposed of daily.

2.1.6 Arrangements shall be made for the safe storage and handling of flammables prior to delivery. Daily supplies of flammable liquids shall be kept in labelled Underwriter's approved safety cans.

2.1.7 All drop cloths, tarpaulins and other textiles which are brought into the Plant must be flame-retardant.

SECTION 3 — PERSONNEL SAFETY

3.1 In order to prevent accidents to both Lever and Contractor's employees the following minimum precautions shall be taken.

3.1.1 Scaffolds and stagings shall be constructed in accordance with accepted safety standards such as Lever's "Safety Standard No. 2"

3.1.2 Protruding nails shall be removed or bent over.

3.1.3 Floor or excavation holes shall be adequately guarded, and warning lights shall be provided. Lever's "Safety Standard No. 10, Excavation/Trench Work" shall apply.

3.1.4 Welding cables, extension cords, etc., shall be arranged to eliminate hazards and shall be in good condition to eliminate the danger of electric shock.

3.1.5 Work areas shall be kept clean and free of debris.

3.1.6 Shields shall be provided when needed around welding operations to prevent injury to the eyes of persons in the vicinity.

3.1.7 Explosive powered tools shall not be used unless specific advance approval is obtained from the Lever Plant Engineering Manager. Such approval will be limited to licensed operators.

3.1.8 The Contractor shall be responsible for his employees wearing required personal protective equipment. In certain areas of the Plant, Lever requires all persons entering the area to wear safety glasses at ALL times. Personal protective equipment shall be worn by all contractors and their employees as required by Lever Brothers Company.

3.1.9 All equipment used on the job site by the Contractor must be in compliance with the law. Defective or sub-standard equipment will not be used. Hoists, ladders, electrical equipment, scaffolding, hand and powered tools must meet Lever Safety Standard requirements.

3.1.10 Work areas that may require testing of the atmosphere for flammable vapors and oxygen deficiency shall comply with accepted safety standards such as Lever Safety Standard No. 13, "Confined Space Entry Procedures". Contractors are required to supply their own testing equipment.

3.1.11 It is the Contractor's responsibility to instruct his employees to comply with all Lever rules and regulations. Safe work practices and good working habits shall be adhered to.

SECTION 4 — PRODUCT PROTECTION

To prevent contamination of our products, the following precautions shall be taken.

4.1 Contractors shall provide protection around their work as needed for the location.

4.2 Glass containers or glassware of any kind shall not be brought into the plant, unless specifically needed and advance arrangements are made.

SECTION 5 — INSURANCE COVERAGE

The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such companies as may be satisfactory to the Owner:

Coverage	Amounts
Worker's Compensation	Statutory
Employer's Liability	$1,000,000
Public Liability	$1,000,000/$4,000,000
Property Damage	$1,000,000
Automobile Public Liability	$1,000,000/$4,000,000
Automobile Property Damage	$1,000,000

On contracts in excess of $100,000, or those involving unusual perils, Lever Brothers Company may require that the limits of coverage be increased.

SECTION 6 — FIRST AID

Lever Brothers Company assumes no responsibility for first aid or subsequent treatment in connection with injuries sustained by employees of the Contractor. The Contractor shall make independent arrangements for such services.

SECTION 7 — OTHER REGULATIONS

7.1 Lunches shall not be eaten in the Plant except in approved locations.

7.2 Tools, ladders and other equipment will not be furnished by Lever Brothers Company.

7.3 Specific approval shall be obtained for locations where working clothes, tools, materials and other equipment may be stored.

7.4 Contractor's workers are definitely restricted to the location where work is assigned.

7.5 Lever's materials or equipment shall not be removed from the Plant by the Contractor without first obtaining a pass or delivery order.

7.6 Contractors shall assume full responsibility for the safeguarding of tools and other equipment used in connection with the work, as Lever Brothers Company assumes no responsibility for the replacement of such equipment which is lost, damaged or stolen.

7.7 Elevators shall not be used by Contractors unless approval is obtained in advance from Lever's liaison.

Section 8 —

The terms and conditions of Attachments 1 and 2 are hereby incorporated and made a part of Safety Standard No. 9.

5113

OUTSIDE CONTRACTING REPORT

PROJECT _____ Copies: Dept. Supt. _____
Safety Supt. _____
Watch Office _____

Location _____ Date of this report _____

Contracting Company _____ Prepared by _____

Address & phone # _____ Lever Engineer _____

Expected starting date _____ Estimated duration of work _____

	YES	NO	REMARKS
1. Has "the contractor" received a copy of Lever Standard #9?			
2. Has Safety Standard #9 been discussed with "the contractor's" site supervisor?			
3. Will any vehicles, cranes, office trailers or other oversized equipment be used or stored on premises?			
4. Has an approved site been selected for equipment and construction materials? (Location approved by the effective department?)			
5. Will any combustible or hazardous materials be used or stored on the premises?			
6. Have arrangements been made for the proper use and storage of combustibles? (Minimum amounts and approved containers at a suitable location?)			
7. Have necessary permits been obtained by Lever Brothers and "the contractor"? (Welding, cutting, trailer-office etc.)			
8. Will "the contractor" use any plant utilities? (Water, electricity, air, sewers, etc.)			
9. Have arrangements been made with the department for use of plant utilities?			
10. Will pedestrian or vehicular traffic be detoured at any time during the construction period?			
11. Have posters been prepared to detour unauthorized personnel (All plant personnel not responsible for project development) safely around the construction site?			
12. Will any barriers, warning lights, shoring, etc. be required? (This is "the contractor's" responsibility.)			
13. Is all the necessary equipment now available or on order?			
14. Does Gate House have list of all sub-contractors?			
15. Will Fire Watch be required?			

REMARKS — INDICATE APPROPRIATE NUMBER

OUTSIDE CONTRACTOR'S SAFE PRACTICE REMINDERS

NOTE — The following items are not to be meant as a complete list of reminders. — They are only the bare basics to help insure a safe operation for all concerned. For additional information refer to the complete standard, Safety Standard No. 9. Instructions for Outside Contractors, which was issued with your work contract. Please comply with this Safety Standard in all respects.

1. Are you using safe tools and equipment?
2. Is your equipment properly guarded? Does it present a hazard to passers by?
3. Is the construction/work area identified and roped off?
4. If using open flame equipment, is your fire extinguisher in place? Do you have one? If you do, is it adequate in size and of the proper type? Do you need a fire watch?
5. Never leave open flame equipment unattended.
6. If gasoline is used as a fuel, it must be stored in a labeled Underwriter's Approved safety can. This means a properly designed container with self closing dispensing faucet, and the screen flame arrestor in place. **Do not** store excessive amounts of gasoline in our Plant.
7. When using propane or other fuels be sure the handling and storing is done in a safe manner.
8. Keep construction/work area clean and orderly.
9. Do not block fire hydrants, doorways, aisles, etc.
10. Smoking is not permitted in all buildings and yards, only in specifically designated areas.
11. Keep Lever's project engineer or assigned contact informed.

STOP

TAKE TIME TO BE SAFE

Specifications for Asbestos Insulation Removal

The following Specifications are designed to provide proper asbestos emission control and presumed protective guidelines as required by EPA, OSHA, and other Bureaus, State or Legal Agencies, to prevent exposure of contractors' workers, plant personnel, and the community.

Asbestos exposure in excess of the allowable limits may be expected while removing dry asbestos insulation from existing vessels, piping, fittings, pumps, ducts, etc. Therefore, in order to safely remove asbestos, and to insure safe working conditions, the following specifications are to be met:

1. Documentation of Performance in Asbestos Removal;
2. Scope of Work;
3. Worker's Protective Equipment;
4. Decontamination;
5. Pre-Asbestos Removal Preparations;
6. Methods of Asbestos Removal; and
7. Air Monitoring.

Specification #1 — Documentation of Performance in Asbestos Removal

The contractor shall furnish documentation of successful performance in asbestos removal. This should include the name and address of the company, location of work performed, and a record of air monitoring for asbestos as required by OSHA 1910.1001.

Specification #2 — Scope of Work

A. Contractor shall furnish all labor, materials, services, insurance and equipment necessary for the complete removal of all asbestos located at the site in accordance with the guidelines and regulations of the responsible EPA, OSHA, State or Local Agency.

B. Contractor shall ensure that his employees have had instructions on the dangers of asbestos exposure, on respirator use, personal hygiene, and OSHA regulations.

Specifications #3 — Worker's Protective Equipment

Work clothes will consist of full body disposable protective clothing and head cover. Respirators and other protective equipment as required by OSHA and plant regulations shall be used.

Specification #4 — Decontamination

All workers without exception:

A. Will change work clothes at a designated area prior to start of day's work. Locker facilities must be provided to ensure that regular street or work clothes are not contaminated.

B. All work clothes must be removed in the work area and the disposable clothing shall be sealed in an impermeable container and properly identified.

Any contaminated clothing to be laundered shall be handled in the same manner as above, to warn the laundry company of the clothes' contamination.

C. Workers must adhere to strict personal hygiene practices by vacuuming and washing before lunch and at the end of each day's work. Hygiene facilities, supplier, etc., are the contractor's responsibility.

D. No smoking, eating, or drinking is allowed at the work site. At no time is a worker to leave the work site in their contaminated clothes.

Specification #5 — Pre-Asbestos Removal Preparation

A. Caution signs — Work area must be posted with signs 20" x 14" to warn all employees. Sign specifications shall conform as specified in OSHA 1910.145(D)(4).

B. Contractor must seal up all openings as needed with polyethylene taped securely in place (6 mil minimum thickness).

C. Toilet facilities should exist in the work area to avoid contamination problems. If none exist, contractor will provide portable service.

Specification #6 — Methods of Asbestos Removal

A. Wet Method — The asbestos material must be sprayed with water. A fine spray must be applied to prevent fiber disturbance. The asbestos should be sufficiently saturated to prevent emission of airborne fibers in excess of the exposure limits prescribed in the OSHA standard.

B. Wet insulation is to be slit with a hand cutting tool and carefully removed. The insulation **is not to be dropped to the floor.** It must be lowered carefully and immediately placed in sealable containers, bags, and drums, and identified.

C. Housekeeping — Area must be maintained free of asbestos accumulations. **Using brooms, brushes, or air to clean is prohibited.** Hosing area down or vacuuming are the only approved methods. This cleaning must be done daily. After complete removal of asbestos, the area will be wet cleaned. After a 24 hour period to allow for dust settling, the area will be wet cleaned again. Twenty-four hours after the second cleaning, all floor surfaces will be thoroughly wet mopped.

D. All polyethylene material, tape, cleaning material, clothing, etc., that is properly sealed and labelled as asbestos contaminated must be removed from the premises.

Specification #7 — Air Monitoring

A. Throughout the removal and cleaning operations, air sampling monitoring must be conducted. The methods and the equipment used are described in OSHA standards 1910.93A.

B. Air monitoring shall be performed to provide samples during asbestos removal in the following areas:

1. Immediate work area;
2. Outside work area barriers.

C. Lever Brothers Company reserves the right to require contractors' personnel to wear personal asbestos monitoring devices. This monitoring is solely for Lever Brothers Company and does not relieve the contractor of his responsibilities.

SAFETY CHECKLIST FOR ASBESTOS REMOVAL BY OUTSIDE CONTRACTOR

	YES	NO
1. Have all the entrances to the asbestos removal site been properly roped off to prevent inadvertent entry?	____	____
2. Have OSHA specified 'Caution' signs been placed at all entrances to the removal site?	____	____
3. Has the contractor provided appropriate clothing and necessary personal protective equipment for his laborers removing asbestos?	____	____
4. Has the contractor made arrangements for daily changes of work clothes for his laborers?	____	____
5. Has the contractor contacted the Plant Safety Manager for an approval on the respirator he wishes to furnish his laborers?	____	____
6. Has the contractor provided bags, drums, and labels for the proper removal of the stripped asbestos from the site?	____	____
7. Has the proper means of wetting the asbestos been explained?	____	____
8. Has the contractor provided air monitoring equipment for sampling the concentration of airborne asbestos in the work area?	____	____
9. Has the contractor sealed any openings to other operating areas to prevent airborne asbestos from escaping the site?	____	____
10. Has the contractor provided a change area and a shower facility for his laborers?	____	____
11. Has the contractor agreed to do all work in accordance with Lever specification GC-3 and Lever Safety Standard #14 in writing?	____	____

IF ALL ANSWERS ARE "YES" THEN THE CONTRACTOR MAY BEGIN WORK! IF ANY ANSWERS WERE "NO", THE CONTRACTOR MUST TAKE THE NECESSARY STEPS TO CORRECT THE DEFICIENCY BEFORE WORK IS STARTED!

Issued: 12/01/75

Approved by:
T. J. Clevenger
G. P. Davidson
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R. R. Siegel
A. J. Wells

LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 12
FOR
HOISTS

SECTION 1 - SCOPE, PURPOSE AND RESPONSIBILITY

1.1 - SCOPE

This standard applies to the inspection, maintenance, and safe operating procedures for all mechanical and electrical hoisting equipment rated under three (3) tons capacity.

1.2 - PURPOSE

The purpose of this standard is to provide adequately for the safety of employees whose duties require them to operate mechanical or electrical hoisting equipment.

1.3 - RESPONSIBILITY

It is the responsibility of Departmental Supervision to insure that all sections of this standard are followed. It is the responsibility of all employees authorized to operate hoisting equipment to follow the safety practices outlined in this standard and to report any unsafe conditions immediately. Such conditions shall be given immediate attention.

SECTION 2 - DEFINITIONS

Hoist - An electrically powered or manually operated machine used for raising or lowering a load.

Limit Switch - A device designed to cut off the power automatically at or near the limit of travel of a hoist.

Load Rating - The lifting capacity established by the manufacturer or certified agent for various angles and positions.

Authorized Employee - A person designated by a member of Management who by reason of experience or instruction is familiar with the operation to be performed and the potential hazards involved.

Safety Hook - A hook with a latch across the throat to prevent slings or loads from accidentally slipping off the hook.

SECTION 2 - DEFINITIONS (continued)

Rope - Refers to wire or fibre rope.

SECTION 3 - GENERAL PROCEDURES

3.1 Only authorized employees who are familiar with the following procedures shall operate hoisting equipment.

3.1.1 Hoists attached to or under load shall never be left unattended. Warning signs shall be placed and areas roped off as needed.

3.1.2 Before starting the hoist in motion, the operator must be certain that the load will clear all obstacles and that only those persons whose duties require them to be present shall be in the immediate vicinity of the hoist.

3.1.3 Loads must be positioned directly under the hoist body before it is raised.

3.1.4 If there is any question of load weight vs. hoist capacity or if the hoist does not appear to respond properly, the operator is not to proceed without authorization from supervision.

3.1.5 At its lower limit, there must be two full wraps of rope left on the drum of electrical hoists.

3.1.6 Hoist chains shall not be spliced with bolts.

3.1.7 Hoists must have load ratings prominently displayed on the hoist body.

3.1.8 No one shall be permitted to oil the hoist while it is in operation.

3.1.9 The hoist operator shall be kept fully informed of any changes in work conditions or requirements that affect the hoisting operation.

3.1.10 The hook on each hoist shall be equipped with an approved safety latch.

SECTION 4 - INSPECTIONS

4.1 - FREQUENT INSPECTIONS

A visual inspection of hoisting equipment by an authorized employee shall be conducted prior to its initial use on each working day. The inspection should include checking the following items:

4.1.1 Physical damage of control mechanism.

4.1.2 All safety devices such as limit switches and the hook safety latch.

4.1.3 The hook for deformation, cracks or twisting.

4.1.4 The electrical apparatus for dirt and moisture accumulation.

4.1.5 The rope for fraying, excessive wear, broken wires, kinking, twisting, crushing, cutting, unstranding and corrosion.

4.1.6 A link-by-link inspection of the chain and chain attachments. Look for bent links, cracks in weld areas, nicks and gouges, corrosion pits, and elongation.

4.1.7 Free-end connections for excessive wear, twist, distortion or stretch. Where rope clip attachments are used check for tightness.

4.1.8 Metal mesh slings for broken wires or abraded joint along the sling edge, broken wires in any part of the mesh, a reduction in wire diameter due to abrasion or lack of flexibility.

4.1.9 Nylon slings for caustic or acid burns, for melting or charring, snags, punctures, tears and broken or worn stitches.

4.2 - Periodic Inspections

A periodic inspection shall be conducted quarterly. This inspection shall be conducted by an authorized individual as designated by the Engineering Department. A written record on a special report form must be kept and will include the following: (See attachment A)

4.2.1 All items in 4.1

4.2.2 The hoist structure for deformed, cracked or corroded members.

4.2.3 Loose bolts or rivets.

4.2.4 Sheaves or drums for cracking and/or wear.

4.2.5 Chain drive sprockets for excessive wear.

4.2.6 Load test - test limit switch first with no load, then, take load up in segments of one foot each. Test to 25% overload on electric hoists 10% on chain hoists.

4.2.7 Brake and clutch systems for excessive wear. The brake must arrest and hold the maximum load noted in 4.2.6, promptly when controls are released.

4.3 - Other Inspection Regulations

4.3.1 Hoists that are either new, altered or out of service for six months must have a written inspection prior to initial use as outlined in Section 4.2.

4.3.2 All hoists exceeding three (3) tons rated capacity must be inspected annually. Where regulatory agencies require certificates issued by D.(accredited inspectors, inspections must be performed by those State accredited inspectors.

4.3.3 Records of periodic inspections must be retained for five (5) years.

Safety Standard No. 12
Attachment A

LOCATION_____

RATED CAPACITY_____

TYPE_____

MANUFACTURER_____

DATE_____

INSPECTOR_____

QUARTERLY HOIST INSPECTION

CHECK FOR THE FOLLOWING:

		SATISFAC YES	!
1.	Physical damage of control mechanism.		
2.	All safety devices such as limit switches and the hook's safety latch.		
3.	The hook for deformation, cracks or twisting.		
4.	The electrical apparatus for dirt and moisture accumulation.		
5.	The rope for fraying, excessive wear, broken wires, kinking, twisting, crushing, cutting, unstranding and corrosion.		
6.	A link-by-link inspection of the chain and chain attachments. Look for bent links, cracks in weld areas, nicks and gouges, corrosion pits, and elongation.		
7.	Free end connections for excessive wear, twist, distortion or stretch. Where rope clip attachments are used check for tightness.		
8.	Metal mesh slings for broken wires or abraded joint along the sling edge, broken wires in any part of the mesh, a reduction in wire diameter due to abrasion or lack of flexibility.		
9.	Nylon slings for caustic or acid burns, for melting or charring, snags, punctures, tears and broken or worn stitches.		
10.	The hoist structure for deformed, cracked or corroded members.		
11.	Loose bolts or rivets.		
12.	Sheeves or drums for cracking and/or wear.		
13.	Chain drive sprockets for excessive wear.		
14.	Load test - test limit switch first with no load; then, take load up in segments of one foot each. Test to 25% overload on electric hoists, 10% on chain hoists.		
15.	Brake and clutch systems for excessive wear. The brake must arrest and hold the maximum load, noted in 14 above, promptly when controls are released.		

COMMENTS:_____

* Full explanation required if unsatisfactory.