

CERTIFICATIONS

ENGINEERING #2000

WORK ORDER NO. 930-2009

Return to
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FOR CONSTRUCTION

SPECIFICATION

FOR

ENGINEERING BUILDING NO. #2000

Union Carbide & Carbon Corporation
South Charleston, West Virginia

**UNION
CARBIDE**

RETURN TO:

ENGINEERING RECORDS CENTER

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ALFRED FELLHEIMER, A.S.C.E.

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ARCHITECTS AND ENGINEERS

155 EAST 47TH ST. NEW YORK, N.Y.

PLAINTIFF'S
EXHIBIT

75997.0

UCASB00206908

See Drafts
1958

DETAILED LIST
OF DRAWING REVISIONS TO
DATE OF JUNE 27, 1957
FOR THE
CONSTRUCTION
OF THE
ENGINEERING BUILDING NO. 2000
FOR

DEPARTMENTS 935, 936 AND 937
UNION CARBIDE CHEMICALS COMPANY
A DIVISION OF
UNION CARBIDE CORPORATION
SOUTH CHARLESTON, WEST VIRGINIA



ALFRED FELLHEIMER, F.A.I.A.
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ARCHITECTS AND ENGINEERS

155 EAST 42nd STREET
NEW YORK 17, NEW YORK
JUNE 27, 1957

UCASB00206909

CARBIDE AND CARBON CHEMICALS CORPORATION

ENGINEERING OFFICE BUILDING #2000

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STRUCTURAL STEEL	I
CLEARING, GRADING AND SITE DEVELOPMENT	II
EXCAVATION	III
FOOTINGS AND FOUNDATION WALLS	IV
CONCRETE, CEMENT, POURED GYPSUM AND BACKFILLING WORK	V
MASONRY WORK	VI
MISCELLANEOUS METAL WORK	VII
DAMP-PROOFING, AND CAULKING WORK	VIII
ROUGH AND FINISH CARPENTRY	IX
ROOFING AND SHEET METAL WORK	X
ALUMINUM AND ORNAMENTAL WORK	XI
COMBINATION METAL BUCKS AND HOLLOW METAL DOORS	XII
METAL TOILET PARTITIONS	XIII
MOVEABLE OFFICE PARTITIONS	XIV
GLASS AND GLAZING	XV
VINYL ASBESTOS FLOOR TILE, RUBBER TILE, AND VINYL BASE	XVI
TILE, MARBLE AND TERRAZZO WORK	XVII
METAL FURRING, LATHING AND PLASTERING	XVIII
ACOUSTICAL WORK	XIX
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UCASB00206914

S U B J E C T

D I V I S I O N

PAINTING

XXIII

FURNITURE AND FURNISHINGS

XXIV

PLUMBING AND DRAINAGE WORK

XXV

HEATING, VENTILATING AND AIR CONDITIONING

XXVI

PIPE INSULATION

XXVIII

ELECTRIC WORK

XXIX

UCASB00206915

DIVISION U - GENERAL CONDITIONS

GENERAL NOTE:

THE CONDITIONS LISTED IN THE CONSTRUCTION CONTRACT (FORM NO. U. C. 10573) SHALL REFER TO AND BE CONSIDERED AS APPLYING TO ALL SUBDIVISIONS OF THESE SPECIFICATIONS AND SHALL GOVERN THE CONTRACTOR AND HIS SUBCONTRACTORS ENGAGED IN THE WORK. IN ANY CASE WHERE THERE IS A CONFLICT BETWEEN THE PROVISIONS AND CONDITIONS OF THE CONSTRUCTION CONTRACT AND THE DRAWINGS, OR SPECIFICATIONS, OR BOTH, THE PROVISIONS AND CONDITIONS OF THE CONSTRUCTION CONTRACT SHALL GOVERN. ANY DISCREPANCY BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER AND A RULING OBTAINED IN WRITING BEFORE PROCEEDING WITH THE WORK.

SECTION U-01 - SCOPE OF WORK

- (A) THESE SPECIFICATIONS, TOGETHER WITH THE DRAWINGS AS LISTED IN SECTION U-37 ARE INTENDED TO PROVIDE FOR THE CONSTRUCTION OF A FIVE-STORY ENGINEERING BUILDING, NO. 2000, OF STRUCTURAL STEEL AND CONCRETE CONSTRUCTION, WITH POURED GYPSUM AND CONCRETE ROOF SLABS, LOCATED AT SOUTH CHARLESTON, WEST VIRGINIA, AND UNLESS OTHERWISE SPECIFIED HEREIN, IT SHALL INCLUDE ALL LABOR, TRANSPORTATION, MATERIALS, APPARATUS, FUEL, ELECTRIC AND OTHER ENERGY, LIGHT, SCAFFOLDING, HOISTING, INSURANCE, TAXES AND ALL OTHER ITEMS NECESSARY FOR THE ENTIRE AND PROPER COMPLETION OF THE BUILDING AND ADJOINING WORK.
- (B) ALL WORK SHALL BE CONSTRUCTED IN THE BEST AND MOST WORKMANLIKE MANNER, SO AS TO PRODUCE THE COMPLETED STRUCTURE AND EVERYTHING PROPERLY INCIDENT THERETO, AS SHOWN ON THE DRAWINGS, STATED IN THE SPECIFICATIONS OR REASONABLY IMPLIED THEREFROM, ALL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- (C) THE FOLLOWING ITEMS OF WORK ARE NOT INCLUDED IN THIS CONTRACT:
1. FURNISHING AND ERECTION OF STRUCTURAL STEEL WORK, SPECIFIED UNDER DIVISION I.
 2. CLEARING, GRADING AND SITE DEVELOPMENT WORK, SPECIFIED UNDER DIVISION II.
 3. EXCAVATION WORK, SPECIFIED UNDER DIVISION III.
 4. CONCRETE FOOTINGS AND FOUNDATION WALLS, INCLUDING CONCRETE COLUMNS AND PIERS, SPECIFIED UNDER DIVISION IV.

NOTE: THE CONTRACTOR SHALL CONSULT THESE DIVISIONS OF THE SPECIFICATIONS TO ACQUAINT HIMSELF WITH THE WORK THAT IS INCLUDED THEREIN. FAILURE OF THE CONTRACTOR TO CONSULT THESE DIVISIONS OF THE SPECIFICATIONS TO DETERMINE THE AMOUNT AND EXTENT OF WORK COVERED SHALL BE HIS RESPONSIBILITY AND NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR, FOR ANY ERROR OR NEGLIGENCE ON HIS PART TO SO INFORM HIMSELF.

SECTION 0-02 - DEFINITIONS

- (A) WHEREVER THE WORDS DEFINED IN THIS SECTION OR PRONOUNS USED IN THEIR STEAD OCCUR IN THESE SPECIFICATIONS, THEY SHALL HAVE THE MEANINGS HERE GIVEN; WHEREVER IN THESE SPECIFICATIONS WORDS ARE USED IN THE SINGULAR FORM, THEY SHALL HAVE PLURAL MEANINGS WHERE APPLICABLE.
1. THE WORD "OWNER" REFERS TO THE PARTY OR PARTIES, OR THEIR DULY AUTHORIZED REPRESENTATIVES, FOR WHOM THE WORK IS BEING ACCOMPLISHED AND WHOSE NAME APPEARS ON THE CONTRACT DOCUMENTS.
 2. THE WORD "ENGINEER" REFERS TO THE OWNER'S ASSOCIATE ENGINEER.
 3. THE WORD "CONTRACTOR" SHALL MEAN AND APPLY EQUALLY TO THE CONTRACTOR WHOSE SIGNATURE APPEARS ON THE CONTRACT DOCUMENTS AND/OR HIS SUBCONTRACTORS.
 4. THE WORD "WORK" SHALL BE HELD TO INCLUDE LABOR OR MATERIAL, OR BOTH.
 5. THE WORDS "BUILDING," "STRUCTURE," "PROJECT," OR WORDS OF SIMILAR IMPORT SHALL REFER TO AND MEAN COLLECTIVELY THE BUILDING OR STRUCTURE AND ALL WORK OUTSIDE OF THE BUILDING PROPER AS CALLED FOR BY THE CONTRACT DRAWINGS OR MENTIONED IN THESE SPECIFICATIONS.
 6. THE WORDS "CONCEALED WORK" SHALL MEAN ALL WORK EMBEDDED IN MASONRY, FLOORS OR OTHER CONSTRUCTION, ALL WORK BEHIND WALL OR OTHER FURRING, ABOVE HUNG CEILINGS, UNDER FLOORS ON GROUND, IN TRENCHES, OR UNDERGROUND.
 7. THE WORD "EXPOSED" SHALL MEAN NOT CONCEALED NOR INSTALLED UNDERGROUND AS DEFINED ABOVE.
 8. THE WORD "PIPING" SHALL MEAN PIPE, FITTINGS, VALVES, HANGERS, TRAPS, DRAINS, AND ALL OTHER ITEMS NECESSARY OR REQUIRED IN CONNECTION WITH OR RELATING TO PIPING.
 9. THE WORDS "APPROVED" OR "APPROVAL" AS USED IN THESE SPECIFICATIONS SIGNIFY THAT THE ENGINEER MUST BE CONSULTED AS TO THE SOURCE FROM WHICH THE MATERIAL OR EQUIPMENT IS TO BE PURCHASED, AS WELL AS ITS GENERAL QUALITY, CONSTRUCTION AND DURABILITY, BUT SUCH APPROVAL SHALL NOT BE HELD TO MEAN THE ACCEPTANCE OF THE MATERIAL FURNISHED IF SAME SHOULD PROVE TO BE DEFECTIVE.
 10. THE WORD "PROVIDE" SHALL MEAN THAT THE CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT UP COMPLETE, IN AN OPERATIVE CONDITION AND USE, ALL MATERIALS, EQUIPMENT, APPARATUS AND REQUIRED APPURTENANCES OF THE PARTICULAR ITEM TO WHICH IT HAS REFERENCE.
 11. THE WORD "DIRECTED" SHALL MEAN IN ACCORDANCE WITH INSTRUCTIONS OR DIRECTIONS GIVEN BY THE ENGINEER.

12. THE LETTERS A.I.S.C. SHALL MEAN AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
13. THE LETTERS A.S.T.M. SHALL MEAN AMERICAN SOCIETY FOR TESTING MATERIALS.
14. THE LETTERS A.C.I. SHALL MEAN AMERICAN CONCRETE INSTITUTE.
15. THE WORDS "EQUAL," "NECESSARY," "REQUIRED," "SATISFACTORY" OR "PROPER" SHALL MEAN EQUAL, NECESSARY, REQUIRED, SATISFACTORY OR PROPER IN THE OPINION OF THE ENGINEER WHEN APPLICABLE TO WORK CALLED FOR OR INDICATED ON THE CONTRACT DRAWINGS OR SPECIFICATIONS.
16. THE WORD "SITE" SHALL MEAN THAT AREA UPON, OR IN WHICH, THE CONSTRUCTION OPERATIONS ARE CARRIED ON, TOGETHER WITH SUCH AREAS ADJACENT THERETO, AS MAY BE DESIGNATED FOR THE CONTRACTOR'S USE BY THE ENGINEER.
17. THE WORD "DRAWINGS" SHALL MEAN THOSE DRAWINGS LISTED IN THE SPECIFICATIONS, OR IN ANY ADDENDUM OR ANY DETAILED DRAWINGS PERTAINING OR SUPPLEMENTAL THERETO.
18. THE WORDS "SHOP DRAWINGS" SHALL MEAN COMPLETE ASSEMBLY, SETTING AND DETAIL DRAWINGS AND SHALL INCLUDE CATALOGUES, CUTS, SCHEDULES, PAMPHLETS, ETC., TO BE SUBMITTED TO THE ENGINEER BY THE CONTRACTOR FOR APPROVAL.
19. THE WORDS "COMPLETE," "COMPLETED," OR "COMPLETION" SHALL MEAN FULL AND EXACT COMPLIANCE AND CONFORMITY WITH THE PROVISIONS AND REQUIREMENTS EXPRESSED OR IMPLIED IN THESE SPECIFICATIONS AND THE DRAWINGS ACCOMPANYING AND FORMING A PART OF SAME.

SECTION 0-03 - APPLICATION

- (A) THESE GENERAL CONDITIONS OF THE SPECIFICATIONS SHALL BE HELD TO APPLY TO EVERY TRADE ENGAGED IN THE WORK AND MUST BE CAREFULLY READ AND COMPLIED WITH BY THE CONTRACTOR AND ALL SUBCONTRACTORS.

SECTION 0-04 - COMPLETION DATE

- (A) ALL WORK UNDER THIS CONTRACT MUST BE ENTIRELY COMPLETED AND THE BUILDING TENDERED TO THE OWNER, READY FOR OCCUPANCY, AT THE DATE STIPULATED IN THE CONTRACT. THE CONTRACTOR WILL BE HELD TO HAVE INCLUDED IN HIS CONTRACT PRICE EACH AND EVERY ITEM OF COST OR EXPENSE OF WHATEVER KIND, INCLUDING OVERTIME WORK, THAT MAY BE REQUIRED TO MEET THE COMPLETION DATE AS STATED IN HIS CONTRACT.

SECTION 0-05 - EXAMINATION OF SITE AND CONTROLLING CONDITIONS

- (A) THE CONTRACTOR SHALL INSPECT AND CAREFULLY EXAMINE THE SITE AND ACQUAINT HIMSELF WITH ALL EXISTING CONDITIONS THAT MAY IN ANY WAY AFFECT THE CARRYING OUT OF THE WORK.

- (b) THE CONTRACTOR WILL BE HELD TO HAVE INCLUDED IN HIS CONTRACT PRICE ALL ITEMS OF COST, WHETHER LABOR, MATERIALS, OR OTHER RELATED OR RELEVANT COST ITEMS, AS REQUIRED TO DELIVER TO THE OWNER THE COMPLETED BUILDING, READY FOR USE, IN CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT PLANS, SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
- (c) THE CONTRACTOR SHALL EXPRESSLY BE BOUND THAT HE AND HIS SUBCONTRACTORS, WORKMEN, AND EMPLOYEES OR TRUCKS SHALL NOT TRESPASS OR USE ANY OTHER PORTION OF THE OWNER'S PROPERTY OR WALKWAYS, ROADS, OR BUILDINGS; AND THEY SHALL BE HELD STRICTLY RESPONSIBLE AND ACCOUNTABLE FOR ANY DAMAGE DUE TO THEIR LACK OF OBSERVANCE OF THIS PROVISION.
- (d) THE CONTRACTOR MAY USE ONLY SUCH ROADWAYS AS THE ENGINEER MAY DIRECT.
- (e) UPON THE SATISFACTORY COMPLETION AND ACCEPTANCE OF ALL WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REPAIR AND CLEAN ADJACENT PROPERTY DAMAGED DUE TO THE CONSTRUCTION OPERATIONS, ALL AS DIRECTED BY THE ENGINEER.

SECTION 0-06 - CONTRACT DRAWINGS AND SPECIFICATIONS

- (A) SCOPE OF DRAWINGS AND SPECIFICATIONS: THE DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AS FIXING THE GENERAL CHARACTER AND EXTENT OF THE WORK. PARTS NOT DETAILED SHALL BE CONSTRUCTED IN THE CUSTOMARY MANNER FOR THAT CLASS OF WORK, SO AS TO MAINTAIN THE STRENGTH AND COMPLETE THE PARTS THEY COMPOSE.
 - 1. THE DRAWINGS GOVERNING THE CONTRACT ARE LISTED IN SECTION 0-37 OF THE SPECIFICATIONS.
 - 2. THE VARIOUS DIVISIONS OF THE SPECIFICATIONS AS LISTED IN SECTION 0-36 SHALL BE CONSIDERED AS GIVEN FOR THE CONVENIENCE OF REFERENCE ONLY, AND SHALL BE CONSTRUED IN THEIR ENTIRETY AS COVERING THE GENERAL REQUIREMENTS OF ALL WORK UNDER THE CONTRACT AS TO PROCEDURE, WORKMANSHIP AND MATERIALS.
 - 3. THE ARRANGEMENT OF THE DIVISIONS OF THE SPECIFICATIONS AND THE SECTIONS THEREUNDER SHALL NOT BE HELD TO CONFORM TO THE JURISDICTIONAL RULES WHICH MAY PREVAIL IN ANY PARTICULAR TRADE AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHEN SUBCONTRACTING ANY PORTION OF HIS WORK, TO SO ARRANGE OR GROUP THE ITEMS OF WORK UNDER ANY PARTICULAR TRADE TO CONFORM WITH THE THEN PREVAILING CUSTOMS OF THAT TRADE, INDEPENDENT OF THE PARTICULAR POSITION OF SUCH ITEMS IN THE DIVISIONS OR SECTIONS OF THE SPECIFICATIONS.
- (B) DIMENSIONS: WHERE DIMENSIONS OR OTHER INFORMATION IS LACKING IN THE SPECIFICATIONS OR ON THE DRAWINGS, OR CONFLICTIONS OCCUR, THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS OR PROCEED WITH THE WORK AFFECTED, BUT SHALL FIRST APPLY TO THE ENGINEER WHO WILL FURNISH THE NECESSARY INFORMATION.

- (C) REPETITION: WHERE ONLY PARTS OF THE WORK ARE INDICATED ON DRAWINGS, THE BALANCE SHALL BE CONSIDERED A REPETITION, AND WHERE ANY DETAIL IS STARTED UPON A DRAWING IT SHALL, IN THE CONSTRUCTION, BE CARRIED THE FULL LENGTH OF THE PART AND SIMILAR PARTS THAT IT DETAILS.
- (D) RELATION OF PLANS AND SPECIFICATIONS: THE SPECIFICATIONS ARE INTENDED TO COMPLEMENT THE PLANS AND THEREFORE IT WILL NOT BE THE PROVINCE OF THE SPECIFICATIONS TO DESCRIBE OR NECESSARILY INCLUDE ANY PORTION OF THE CONSTRUCTION WHICH THE DRAWINGS ARE COMPETENT TO SHOW AND EXPLAIN.
- (E) COPIES OF DRAWINGS FURNISHED: THE ENGINEER WILL FURNISH ALL SCALE AND DETAIL DRAWINGS SHOWING THE GENERAL DESIGN AND ARRANGEMENT OF THE VARIOUS PARTS OF THE WORK. EIGHT COPIES OF PRINTS OF SCALE AND DETAIL DRAWINGS (ALSO ONE SET OF DRAWINGS FOR RECORD -- SEE SECTION O-19), TOGETHER WITH EIGHT COMPLETE SETS OF SPECIFICATIONS, WILL BE FURNISHED TO THE CONTRACTOR BY THE ENGINEER. ANY ADDITIONAL SETS WILL BE PROVIDED AT THE COST OF DUPLICATION OF SAME.
- (F) VOIDED DRAWINGS: THE CONTRACTOR SHALL BE REQUIRED TO RECEIPT FOR COPIES OF REVISED DRAWINGS AND SHALL THEREAFTER BE RESPONSIBLE FOR ERRORS MADE IN USING SUPERSEDED DRAWINGS.
- (G) CONTRACTOR'S CLAIM: IF, IN THE EXECUTION OF THE WORK, THE CONTRACTOR BELIEVES THAT THE DETAIL DRAWINGS HE RECEIVED SUBSEQUENT TO THE SIGNING OF THE CONTRACT REQUIRE MORE WORK THAN CONTEMPLATED IN THE DRAWINGS UPON WHICH HE BASED HIS CONTRACT, HE MUST MAKE ALL CLAIMS FOR ADDITIONAL ALLOWANCE THEREON WITHIN TWO WEEKS AFTER RECEIVING THE DRAWINGS, OR BEFORE THE EXECUTION OF THE WORK, WHICHEVER IS FIRST, OR LOSE ALL RIGHT TO MAKE SUCH CLAIMS AT ANY SUBSEQUENT TIME.
- (H) MEASUREMENTS: TO INSURE THE PROPER EXECUTION OF HIS SUBSEQUENT WORK THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND HE SHALL BE HELD RESPONSIBLE FOR THE CORRECTNESS OF FIT OF HIS WORK. HE SHALL PROMPTLY REPORT TO THE ENGINEER ANY DISCREPANCIES WITH THE EXISTING WORK AND THE RELATED WORK SHOWN ON THE DRAWINGS.
 - 1. NO EXTRA CHARGE OR COMPENSATION WILL BE ALLOWED BECAUSE OF MINOR DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THE MEASUREMENTS INDICATED ON THE CONTRACT DRAWINGS.

SECTION O-07 - CONTRACTOR'S EXAMINATION OF CONTRACT DOCUMENTS

- (A) THE CONTRACTOR WILL BE HELD TO HAVE CAREFULLY EXAMINED THE CONTRACT DOCUMENTS BEFORE SUBMITTING HIS BID, AND TO HAVE APPLIED TO THE ENGINEER, IN WRITING, FOR AN INTERPRETATION OR CORRECTION OF EVERY APPARENT AMBIGUITY, INCONSISTENCY OR ERROR FOUND THEREIN, IF ANY, AND ANY SUCH INTERPRETATION OR CORRECTION OF ANY AMBIGUITY, INCONSISTENCY OR ERROR TO HAVE BEEN ISSUED BY THE ENGINEER IN THE FORM OF AN ADDENDUM AND MADE A PART OF THE CONTRACT DOCUMENTS.
- (B) IN EVENT THE CONTRACTOR, PRIOR TO THE SUBMISSION OF HIS BID, HAS FAILED TO APPLY TO THE ENGINEER, IN WRITING, FOR THE CLARIFICATION OF ANY APPARENT AMBIGUITY, INCONSISTENCY OR ERROR IN THE CONTRACT

DOCUMENTS, IF LATER FOUND, HE WILL BE HELD TO ACCEPT THE ENGINEER'S SUBSEQUENT INTERPRETATION OF SUCH AMBIGUITY, INCONSISTENCY OR ERROR, AND SUCH INTERPRETATION OR DIRECTION BY THE ENGINEER WILL BE HELD AS CONCLUSIVE AND BINDING.

SECTION 0-08 - CHANGES IN CONTRACT PRICE

- (A) ORAL INSTRUCTIONS - THE OWNER WILL NOT BE RESPONSIBLE IN ANY WAY FOR ORAL ANSWERS OR INSTRUCTIONS TO ANY INQUIRIES REGARDING THE INTENT AND MEANING OF THE CONTRACT DRAWINGS OR SPECIFICATIONS THAT MAY EFFECT CHANGES IN THE CONTRACT PRICE, UNLESS CONFIRMED IN WRITING BY THE ENGINEER.
- (B) NO CHARGE FOR EXTRA WORK WILL BE VALID, EXCEPT IT BE ORDERED IN WRITING BY THE ENGINEER IN CONFORMANCE WITH THE TERMS OF THE CONTRACT AGREEMENT.
- (C) IF THE ENGINEER DEEMS IT INEXPEDIENT TO CORRECT WORK INJURED OR NOT DONE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AN EQUITABLE DEDUCTION FROM THE CONTRACT PRICE, ACCEPTABLE TO THE ENGINEER, SHALL BE THEREFORE MADE BY THE CONTRACTOR.

SECTION 0-09 - CLAIMS FOR EXTRA COST

(A) CONDITIONS PRECEDENT TO RECOVERY:

1. THE OWNER MAY AUTHORIZE WORK ENTAILING EXTRA COST IN ACCORDANCE WITH THE TERMS OF THE CONSTRUCTION CONTRACT.
2. IN EVENT THE CONTRACTOR CLAIMS OR WILL CLAIM THAT ANY INSTRUCTIONS, ORDERS OR DIRECTIONS (NOT, HOWEVER, INTERPRETATIONS WHICH ARE GOVERNED BY SECTION 0-07) OF THE ENGINEER OR THE OWNER, INVOLVES EXTRA WORK ENTAILING EXTRA COST, HE SHALL WITHIN FIVE (5) DAYS AFTER THE RECEIPT OF SUCH INSTRUCTIONS, ORDERS OR DIRECTIONS, AND IN ANY EVENT BEFORE PROCEEDING TO EXECUTE THE WORK, GIVE THE ENGINEER OR OWNER WRITTEN NOTICE OF HIS INTENTION TO MAKE A CLAIM FOR EXTRA COMPENSATION. SUCH NOTICE IS NOT REQUIRED WHERE PREVIOUS WRITTEN AUTHORIZATION FOR AGREED UPON EXTRA COST WORK HAS BEEN ISSUED.
3. THE CONTRACTOR SHALL STATE IN THE NOTICE THE AMOUNT AND CHARACTER OF THE WORK WHICH HE DEEMS SHOULD BE TREATED AS EXTRA WORK AND HIS REASONS THEREFOR.
4. CLAIMS SUBMITTED BY THE CONTRACTOR FOR EXTRA WORK DONE BY HIS OWN FORCES MUST BE ACCOMPANIED BY A DETAILED COST BREAKDOWN TO FACILITATE CHECKING BY THE ENGINEER, AND CLAIMS FOR EXTRA WORK DONE BY HIS SUBCONTRACTORS SHALL BE ACCOMPANIED BY A SIMILAR COST BREAKDOWN, BEARING THE CERTIFICATION OF THE CONTRACTOR THAT HE HAS CHECKED AND FOUND SAME CORRECT AND REASONABLE.

- (B) COMPLIANCE WITH SUCH DEMAND SHALL BE A CONDITION PRECEDENT TO THE SETTLEMENT OF ANY CLAIM OR THE RIGHT TO REQUEST ARBITRATION.

SECTION 0-17 - PROGRESS AND ORDER OF WORK

- (A) ALL WORK SHALL BE PERFORMED IN SUCH ORDER AND BY SUCH METHODS AS WILL PRODUCE THE BEST WORKMANSHIP, ECONOMY AND SPEED.
- (B) THE OWNER SHALL HAVE THE OPTION WITHOUT GIVING THE CONTRACTOR THE RIGHT TO ANY EXTRA COMPENSATION, AT ANY TIME WHEN, IN THE JUDGMENT OF THE OWNER, THE WORK IS NOT PROCEEDING IN ACCORDANCE WITH THE PROPER RATE OF PROGRESS, TO REQUIRE THE CONTRACTOR TO TAKE SUCH MEASURES OR ADOPT SUCH METHODS AS MAY BE NECESSARY IN THE OWNER'S OPINION TO OBTAIN AND MAINTAIN SATISFACTORY PROGRESS.
- (C) THE FAILURE OF THE OWNER TO DEMAND THAT THE CONTRACTOR ADOPT SUCH MEASURES SHALL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO SECURE THE RATE OF PROGRESS NECESSARY TO COMPLETE THE WORK WITHIN THE TIME REQUIRED IN THE CONTRACT.

SECTION 0-18 - DRAWINGS TO BE FURNISHED BY THE CONTRACTOR

(A) SHOP DRAWINGS

1. BEFORE PROCEEDING WITH THE FABRICATION OF MATERIALS OR EQUIPMENT REQUIRING SHOP DRAWINGS, THE CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE ASSEMBLY, SETTING AND DETAIL DRAWINGS, GIVING ALL INFORMATION NECESSARY FOR INSTALLATION OF SUCH EQUIPMENT AND MATERIAL AND FOR DEMONSTRATING THAT IT COMPLIES WITH THE SPECIFICATIONS.
2. SHOP DRAWINGS SHALL BE MADE IN A MANNER TO GIVE CLEAR, PERMANENT REPRODUCTIONS, IN EITHER BLUE OR BLACK LINE PRINTS ON WHITE PAPER OR INK TRACINGS IF NECESSARY. DRAWINGS SHALL BE IDENTIFIED BY SERIAL NUMBERS AND DESCRIPTIVE TITLES INDICATING THEIR APPLICATION TO THE CONTRACT, AND SHALL BE SIGNED BY A RESPONSIBLE REPRESENTATIVE OF THE CONTRACTOR.
3. DRAWINGS SHALL BE DRAWN TO THE FOLLOWING OR A LARGER SCALE.
 - (A-A) PLANS AND SECTIONS: 1/4 INCH SCALE.
 - (B-B) DETAILS: 3/4 INCH SCALE.
4. PRINTS OF EACH DRAWING SHALL BE SUBMITTED IN QUADRUPLICATE TO THE ENGINEER FOR APPROVAL AND IN SUCH SEQUENCE THAT THE ENGINEER WILL HAVE ALL INFORMATION NECESSARY FOR CHECKING.
5. PRIOR TO THE DELIVERY OF PREFABRICATED MATERIALS OR EQUIPMENT, DRAWINGS, SPECIFICATIONS, CATALOGUES, ETC., SHALL ALSO BE SUBMITTED FOR APPROVAL AS OUTLINED ABOVE.
6. THE ENGINEER WILL, WITHIN A REASONABLE TIME AFTER RECEIPT OF PRINTS OF DRAWINGS FOR APPROVAL, FORWARD ONE COPY TO THE CONTRACTOR MARKED "APPROVED," "APPROVED WITH CORRECTIONS AS NOTED," OR "RETURNED FOR CORRECTION."

- (A-A) THE CONTRACTOR SHALL MAKE NECESSARY CORRECTIONS AND REVISIONS ON DRAWINGS MARKED "APPROVED WITH CORRECTIONS AS NOTED" OR "RETURNED FOR CORRECTION" AND SHALL RESUBMIT PRINTS FOR APPROVAL IN THE SAME ROUTINE AS BEFORE. TIME REQUIRED FOR SUCH REVISION AND RESUBMISSION WILL NOT ENTITLE THE CONTRACTOR TO ANY EXTENSION OF TIME, BUT THE ENGINEER WILL EXAMINE AND RETURN SUCH PRINTS AS PROMPTLY AS POSSIBLE.
7. ANY WORK DONE, MATERIAL ORDERED OR DELIVERED BY THE CONTRACTOR PRIOR TO THE RECEIPT OF DRAWINGS, MARKED "APPROVED WITH CORRECTIONS AS NOTED," OR "APPROVED," SHALL BE AT THE CONTRACTOR'S RISK. WHEN THE CORRECTIONS HAVE BEEN MADE ON SHOP DRAWINGS MARKED "APPROVED WITH CORRECTIONS AS NOTED," SUCH DRAWINGS MAY BE USED FOR FABRICATION UNLESS SPECIFICALLY STATED OTHERWISE BY THE ENGINEER.
- (A-A) APPROVAL OF SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR THE CORRECTNESS OF THE DRAWINGS FURNISHED BY HIM. IN EVENT THAT DEVIATIONS, CHANGES OR SUBSTITUTIONS ARE MADE IN THE SHOP DRAWINGS FROM THE REQUIREMENTS OF THE CONTRACT DRAWINGS OR SPECIFICATIONS, THESE CHANGES MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING AND ALSO IDENTIFIED ON THE SHOP DRAWINGS AND CLEARLY NOTED. FAILURE TO COMPLY WITH THIS PROVISION WILL SUBJECT THE CONTRACTOR OR SUBCONTRACTORS TO THE POSSIBILITY OF REMOVING AND REPLACING ANY WORK FOUND NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, EVEN THOUGH SHOWN ON APPROVED SHOP DRAWINGS.
8. IF ADDITIONAL COPIES OF SHOP DRAWINGS ARE REQUIRED BY THE ENGINEER, THEY SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST.
9. IF, AT ANY TIME BEFORE THE COMPLETION OF THE WORK, CHANGES ARE MADE NECESSITATING THE REVISION OF APPROVED DRAWINGS, THE CONTRACTOR SHALL MAKE SUCH REVISIONS AND PROCEED IN THE SAME ROUTINE AS FOR THE ORIGINAL APPROVAL.
10. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL FURNISH TO THE OWNER SERIAL NUMBERS OF ALL PIECES OF EQUIPMENT INSTALLED, PERFORMANCE CURVES AND OPERATING DATA FOR ALL EQUIPMENT AND MOTOR NUMBERS AND CHARACTERISTICS FOR ALL MOTORS.

SECTION 0-19 - RECORD DRAWINGS

- (A) AS VARIATIONS FROM THE CONTRACT PLANS MAY BE REQUIRED TO MEET UNANTICIPATED FIELD AND JOB CONDITIONS, AS APPROVED BY THE ENGINEER, IT IS ESSENTIAL THAT CAREFUL DAY BY DAY RECORD BE KEPT BY THE CONTRACTOR OF SUCH CHANGES, IN ORDER THAT THEY MAY FINALLY BE INCORPORATED IN A SET OF REVISED DRAWINGS FOR THE OWNER'S REFERENCE, SHOWING THE STRUCTURE AS ACTUALLY BUILT. THESE DRAWINGS ARE FOR THE PURPOSE OF MAINTENANCE AND OPERATION OF THE BUILDING AFTER ITS COMPLETION AND OCCUPANCY AND FOR PLANNING FUTURE CHANGES OR INSTALLATIONS.

1. THE OWNER WILL FURNISH THE CONTRACTOR WITH A COMPLETE SET OF CONTRACT PLANS, WHICH HE SHALL KEEP IN GOOD CONDITION AT THE SITE, FOR THE SOLE PURPOSE OF RECORDING ON SAME ALL AUTHORIZED CHANGES IN THE CONSTRUCTION AND MECHANICAL WORK.
2. ALL INFORMATION ON THESE DRAWINGS, INCLUDING THAT FOR MECHANICAL WORK, SHALL BE DRAWN TO SCALE AND IS TO BE REFERENCED BY MEASUREMENTS AND ELEVATIONS TO SOME FIXED VISIBLE POINT AND THE CONTRACTOR SHALL BE HELD RESPONSIBLE THAT THIS SET OF RECORD PLANS IS KEPT UP TO DATE AT THE SITE BY HIM AND THAT THEY SHALL BE CONSTANTLY AVAILABLE FOR THE INSPECTION OF THE ENGINEER.
3. IN EVENT THAT ANY SUCH CHANGES ARE FOUND DIFFICULT TO RECORD ON THE CONTRACT DRAWINGS, THEY MAY BE SHOWN ON SEPARATE SHEETS WITH CROSS REFERENCE TO THE PARTICULAR CONTRACT DRAWINGS TO WHICH THEY MAY APPLY.
4. AT THE COMPLETION OF THE WORK AND AT THE EXPENSE OF THE CONTRACTOR, A COMPLETE SET OF RECORD DRAWINGS SHALL BE PREPARED SHOWING ALL WORK AS ACTUALLY INSTALLED. THESE DRAWINGS SHALL BE NEATLY DRAWN IN PENCIL ON TRACING CLOTH CONFORMING IN SIZE, SCALE AND LETTERING WITH THE CONTRACT DRAWINGS.
5. THE ORIGINAL CLOTH TRACINGS TOGETHER WITH TWO BLUE ON WHITE PRINTS SHALL BE DELIVERED TO THE OWNER BEFORE FINAL ACCEPTANCE AND PAYMENT FOR THE WORK WILL BE MADE TO THE CONTRACTOR UNDER HIS CONTRACT. CORRECTED PHOTO-LITHOS OF THE CONTRACT DRAWINGS WILL NOT BE ACCEPTED IN LIEU OF THE ABOVE.

SECTION 0-20 - ITEMS OF SPECIAL MAKE

- (A) WHEREVER AN ITEM IS SPECIFIED BY NAME, TRADE-MARK, CATALOGUE NUMBER OR THE MAKER MENTIONED, SUCH REFERENCE SHALL BE CONSIDERED AS ESTABLISHING A STANDARD FOR THE ARTICLE REQUIRED. EQUAL PRODUCT OF OTHER MAKE MAY BE SUBSTITUTED UPON THE WRITTEN PERMISSION OF THE ENGINEER SECURED IN ADVANCE. ARTICLES OTHER THAN THOSE SPECIFIED, BROUGHT TO THE WORK WITHOUT SUCH WRITTEN APPROVAL, WILL NOT BE ACCEPTED.
- (B) NO CHANGE SHALL BE MADE IN THE MATERIALS AND PRODUCTS SPECIFIED PRIOR TO THE RECEIPT OF BIDS, EXCEPT AS MAY BE STATED IN ADDENDA OF PRIOR ISSUE.
- (C) AFTER THE CONTRACT HAS BEEN AWARDED, SHOULD THE CONTRACTOR THEN DESIRE TO USE SOME MATERIAL OR PRODUCT OTHER THAN THAT SPECIFIED, HE SHALL FIRST MAKE APPLICATION IN WRITING TO THE ENGINEER NAMING THE PRICE DIFFERENTIAL (IF ANY) AND, IF REQUIRED, GIVE FULL ASSURANCE AND PROOF THAT SUCH MATERIAL OR PRODUCT IS EQUAL TO THAT SPECIFIED.
- (D) IN EVENT THE ENGINEER APPROVES THE USE OF SUCH MATERIAL OR PRODUCT AND IT SHOULD COST LESS THAN THAT SPECIFIED, THE CONTRACTOR SHALL GIVE AN ADEQUATE CREDIT, AS APPROVED BY THE ENGINEER, FOR THE CALCULATED COST DIFFERENTIAL.

DIVISION V - CONCRETE, CEMENT, GYPSUM, AND BACKFILLING WORK

GENERAL NOTE - THE "GENERAL CONDITIONS" - DIVISION 0 - SHALL REFER TO AND BE CONSIDERED AS APPLYING TO ALL SUBDIVISIONS OF THE SPECIFICATIONS AND GOVERN THE CONTRACTOR IN THE WORK.

SECTION V-01 - SCOPE OF WORK

GENERAL SCOPE -

THE WORK UNDER THIS DIVISION COVERS ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY OR REQUIRED TO PROVIDE AND FULLY COMPLETE ALL THE CONCRETE, CEMENT, GYPSUM, AND BACKFILLING WORK AND RELATED ITEMS AS SHOWN ON THE CONTRACT DRAWINGS AND AS HEREIN SPECIFIED, EXCEPT FOR ITEMS LISTED IN PARAGRAPH -02 HEREIN.

ITEMS OF WORK -

FOR THE CONVENIENCE OF THE CONTRACTOR, THE MAJOR ITEMS OF WORK ARE LISTED AS FOLLOWS: ITEMS NOT LISTED, BUT CALLED FOR BY THE PLANS AND/OR SPECIFICATIONS, ARE NOT HEREBY ELIMINATED BY REASON OF SUCH OMISSION AND SHALL BE PROVIDED BY THIS CONTRACTOR.

- A. ALL REINFORCED AND PLAIN CONCRETE (EXCEPT FOR WORK LISTED IN DIVISION IV), INCLUDING BUT NOT LIMITED TO WALLS, COLUMNS, BEAMS, FLOORS, AND FLOOR SLABS, SIDEWALKS, CURBS, AND STEPS, REAR ENTRANCE STAIRS, PLATFORMS, COPPINGS, CONCRETE FIREPROOFING OF STEEL, CURBS, CEMENT WORK, AREAWAY WALLS AND FLOORS FOR AREAWAYS A, B, C, AND D, AND ROOF SLAB OVER EXTENDED GROUND FLOOR.
- B. ALL STEEL AND WIRE REINFORCEMENT, INCLUDING DOWELS, CHAIRS AND SPACERS.
- C. ALL FORMS, STOPS AND SKEEDES FOR CONCRETE OR CEMENT WORK.
- D. ALL POROUS FILL FOR SLABS ON GROUND, INCLUDING THERMAL INSULATION.
- E. ALL GROUND SEAL UNDER FLOORS ON GROUND.
- F. ALL CONCRETE FLOOR SLABS ON GROUND.
- G. ALL POURED-IN PLACE GYPSUM ROOF SLABS WHERE SHOWN, INCLUDING BULB TEE PURLINS.
- H. ALL CEMENT BASE, CEMENT STOOBS, AND CEMENT FILL FOR MAT SINKAGES.
- I. ALL COLORED CEMENT FINISH FOR STAIR TREADS AND PLATFORMS OF PAN TYPE STAIRS.
- J. FURNISHING AND INSTALLING ALL ZINC METAL CORRUGATED WALL TIES EMBEDDED IN CONCRETE OR FIREPROOFING FOR ANCHORING MASONRY WORK.

- K. ANCHOR BOLTS FOR LOADING PLATFORM BUMPER.
- L. CEMENT MORTAR PROTECTION OVER MEMBRANE WATERPROOFING.
- M. CINDER CONCRETE FILL AND FINISH FOR STEPS IN MEETING ROOM.
- N. ALL FIREPROOFING OF STEEL BEAMS.
- O. FURNISH AND INSTALL NONSLIP NOSINGS FOR TREADS AND PLATFORMS OF CONCRETE STAIRS AND STEPS, ALSO FOR TREADS AND LANDINGS OF PAN TYPE STAIRS.
- P. METAL FORM FOR FLOOR SLAB OF PROJECTION BOOTH.
- Q. ALL TESTING OF CONCRETE.
- R. ALL BACKFILLING OF FOOTINGS, FOUNDATION WALLS, STEPS, ELEVATOR PITS, ETC., INCLUDING REMOVAL OF ANY SHEET PILING AND BRACING.
- S. BUILDING-IN WORK OF OTHER TRADES.
- T. ALL CUTTING AND PATCHING OF CONCRETE AND CEMENT WORK, INCLUDING PATCHING OF HOLES IN WALLS FOR SHEET PILING BRACING.
- U. ALL RUBBING AND FINISHING OF ALL EXPOSED CONCRETE.
- V. ALL PROTECTION OF CONCRETE AND CEMENT WORK, INCLUDING HOT WEATHER OR COLD WEATHER PROTECTION.
- W. ALL OTHER LABOR AND MATERIALS CUSTOMARILY NEEDED TO MAKE THE WORK UNDER THIS SPECIFICATION COMPLETE.

SECTION V-02 - WORK OF OTHER TRADES

- (A) THE FOLLOWING ITEMS OF WORK ARE CALLED FOR UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO BE FURNISHED AND/OR INSTALLED AS A PART OF THE WORK OF OTHER TRADES.
 - 1. STRUCTURAL STEEL, DIVISION I.
 - 2. CLEARING, GRADING AND SITE DEVELOPMENT WORK, DIVISION II.
 - 3. EXCAVATION FOR FOOTINGS AND FOUNDATION WALLS, DIVISION III.
 - 4. EXCAVATION AND BACKFILLING FOR SPRINKLER, PLUMBING AND DRAINAGE WORK, DIVISION XXV.
 - 5. EXCAVATION AND BACKFILLING FOR HEATING, VENTILATION AND AIR CONDITIONING WORK, DIVISION XXVI.

6. EXCAVATION AND BACKFILLING FOR ELECTRICAL WORK, DIVISION XXVII.
7. STACKING ADJACENT TO THE BUILDING SITE, EXCAVATED MATERIAL FOR BACKFILLING, DIVISION III.
8. CONCRETE FOOTINGS, FOUNDATION WALLS, CONCRETE STAIRS No.'s 8, 9, WALLS AND FLOORS FOR AREAWAYS F, G, AND H, DIVISION IV.
9. CONCRETE COLUMNS AND MAIN FLOOR SLAB OF EAST WING, DIVISION IV.
10. DAMPPROOFING OF FOUNDATION WALLS BELOW GRADE, DIVISION VIII.
11. MEMBRANE WATERPROOFING OF ROOF OVER EXTENDED GROUND FLOOR SECTION OF CORE, DIVISION X.
12. FURNISHING AND INSTALLING SLEEVES AND FOUNDATIONS FOR SPRINKLER, PLUMBING AND DRAINAGE WORK, DIVISION XXV.
13. FURNISHING AND INSTALLING SLEEVES AND FOUNDATIONS FOR HEATING, VENTILATION AND AIR CONDITIONING WORK, DIVISION XXVI.
14. FURNISHING AND INSTALLING SLEEVES AND FOUNDATIONS FOR ELECTRICAL WORK, DIVISION XXVII.
15. FURNISHING AND INSTALLING HANGERS FOR HUNG CEILINGS, DIVISION XVIII.
16. EXTERIOR WALL LINTELS, DIVISION VII.
17. CONCRETE WALLS FOR PLANTING BOXES "F" AND "G" AND CONCRETE RETAINING WALL OF MAIN ENTRANCE, NOT IN CONTRAST.
18. BRACING OF PROTECTION FOR DAMPPROOFING, DIVISION VIII.
19. WOOD BUMPER BLOCKS FOR LOADING PLATFORM, DIVISION IX.

SECTION V-03-MATERIALS

- (A) ALL MATERIALS FOR THE WORK TO BE PERFORMED UNDER THIS SPECIFICATION SHALL BE OF BEST QUALITY OBTAINABLE AND SHALL BE DELIVERED TO THE BUILDING IN ORIGINAL AND UNBROKEN PACKAGES OR CONTAINERS BEARING THE MANUFACTURER'S LABEL.
- (B) WOOD FORMS FOR CONCRETE WORK SHALL BE OF EITHER PLYWOOD OR NO. 2 COMMON GRADE OR BETTER LUMBER. FOR EXPOSED CONCRETE WORK, FORMS SHALL BE OF NEW UNUSED PLYWOOD OF AT LEAST FIVE PLY AND NOT LESS THAN 5/8" THICK.

- (C) PORTLAND CEMENT SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR PORTLAND CEMENT" (A.S.T.M. SERIAL DESIGNATION: C150-49) AND SHALL BE TYPE I UNLESS OTHERWISE SPECIFIED. ALL CEMENT FOR EXPOSED CONCRETE SHALL BE FROM THE SAME MANUFACTURER AND PLANT IN ORDER TO MAINTAIN A UNIFORM COLOR.
- (D) METAL REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF THE "STANDARD SPECIFICATIONS FOR BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT" (A.S.T.M. SERIAL DESIGNATION: A15-50T). BARS SHALL BE OF DEFORMED PER ASTM DESIGNATION A-305, AND OF INTERMEDIATE GRADE NEW BILLET-STEEL.
- (E) WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF THE "STANDARD SPECIFICATIONS FOR WELDED STEEL WIRE FABRIC" (A.S.T.M. SERIAL DESIGNATION A185).
- (F) DISPERSING AGENT SHALL BE "PLASTIMENT" AS MANUFACTURED BY SIKKA CHEMICAL CO., PASSAIC, N. J. OR EQUAL AS APPROVED.
- (G) TIE WIRE SHALL BE SOFT ANNEALED, GALVANIZED 18 GAUGE WIRE.
- (H) WALL TIES SHALL BE CORRUGATED ZINC 7/8 OF AN INCH WIDE AND 7 INCHES LONG, OF NO. 20 GAUGE ZINC.
- (I) CHAIRS AND BOLSTERS FOR REINFORCING SHALL BE OF THE SIZE AND TYPE REQUIRED OR SHOWN ON THE DRAWINGS. WHERE UNDERSIDES OF CONCRETE SLABS ARE TO BE LEFT EXPOSED, CHAIRS AND BOLSTERS SHALL BE GALVANIZED.
- (J) ABRASIVE AGGREGATE SHALL BE ALUMINUM OXIDE (Al_2O_3) OF SIZES RANGING FROM 1/32 INCH TO 1/4 INCH. ONE THIRD (1/3) OF A POUND SHALL BE USED FOR EACH ONE (1) SQUARE FOOT OF SURFACE. THE AGGREGATE, AFTER HAVING ~~BEEN~~ SOAKED FOR TEN MINUTES IN CLEAN WATER, SHALL BE SPRINKLED UNIFORMLY ON THE SURFACE OF THE TREADS AND PLATFORMS AND IMMEDIATELY TROWELED TO A HARD, SMOOTH SURFACE.
- (K) NONSLIP NOSINGS FOR CONCRETE AND PAN TYPE STAIRS SHALL BE WOOSTER PRODUCTS, INC., TYPE NO. 49, OR APPROVED EQUAL.
- (L) POROUS FILL UNDER SLABS ON GROUND SHALL BE OF CLEAN, ONE INCH BROKEN STONE OR GRAVEL. BANK RUN MATERIAL WILL NOT BE ACCEPTABLE.
- (M) EXPANSION JOINT FILLER FOR WALLS AND FLOORS SHALL BE ASPHALT MASTIC STRIPS, PREFORMED, COMPOSED OF APPROXIMATELY 75% ASPHALT, 15% FIBER, AND 10% MINERAL MATTER, SUBJECT TO THE APPROVAL OF THE ENGINEER.
- (N) WATERSTOPS FOR WALL AND FLOOR EXPANSION JOINTS SHALL BE "PLASTI-GRIP" AS SUPPLIED BY PROGRESS UNLIMITED, INC., NEW YORK, NEW YORK.
- (O) BEAM CLIPS FOR CONCRETE FIREPROOFING OF STEEL SHALL BE OF NO. 12 GAUGE GALVANIZED LONGITUDINAL WIRES, WITH WIRE CLIPS 12 INCHES ON CENTERS.

1. CLIPS SHALL BE "REED RIGID SOFFIT" CLIP OR EQUAL AS APPROVED.
2. COLUMNS SHALL BE WRAPPED WITH WELDED WIRE MESH.
- (P) GROUND SEAL SHALL BE POLYETHYLENE SHEETING AS MANUFACTURED BY THE VISKING CORPORATION, TERRE HAUTE, INDIANA.
- (Q) FORMS FOR FLOOR SLAB OF PROJECTION ROOM SHALL BE TYPE RK-16-16 METAL DECK AS MANUFACTURED BY H. H. ROBERTSON COMPANY, PITTSBURGH, PA., OR EQUAL AS APPROVED.
- (R) GYPSUM FIBER CONCRETE FOR ROOF SLABS SHALL BE PREMIXED AT THE MILL, REQUIRING ONLY THE ADDITION OF WATER AT THE JOB.
 1. THE MIX SHALL CONTAIN NOT MORE THAN 12-1/2% OF WOOD CHIPS BY WEIGHT OF THE DRY MIX.
- (S) BULB TEES FOR SUPPORT OF SLAB SHALL BE SPECIAL SECTION BULB TEES OF REQUIRED SECTION TO SAFELY SUPPORT THE REQUIRED DEAD AND LIVE LOADS.
 1. BULB TEES SHALL BE SHOP COATED WITH AMERGOAT No. 86 PRIMER AS MANUFACTURED BY AMERGOAT CORPORATION.
- (T) FORM BOARD FOR GYPSUM CONCRETE SHALL BE SQUARE EDGED GYPSUM BOARD 1/2 INCH THICK AND WEIGHING APPROXIMATELY 2.10 LBS. PER SQUARE FOOT. BOARD SHALL CONFORM WITH LATEST EDITION OF A.S.T.M. SPECIFICATIONS, DESIGNATION C-318.
- (U) STEEL REINFORCING MESH FOR GYPSUM CONCRETE SLABS SHALL BE A GALVANIZED WELDED WIRE MESH CONSISTING OF No. 12 GAUGE LONGITUDINAL WIRES SPACED 4 INCHES ON CENTERS AND No. 14 GAUGE TRANSVERSE WIRES SPACED 8 INCHES ON CENTERS.
- (V) VERMICULITE-SAND CONCRETE SHALL BE "ZONOLITE" OR APPROVED EQUAL.
- (W) INSERTS FOR LINTELS SHALL BE HOHMANN AND BARNARD WEDGE INSERTS No. HW340 FOR 3/4" BOLTS.

SECTION V-04 - SAMPLES

- (A) SAMPLES OF THE MATERIALS TO BE USED UNDER THIS SPECIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL IN CONFORMANCE WITH THE "GENERAL CONDITIONS."

SECTION V-05 - CONSTRUCTION AND PLACING FORMS FOR CEMENT CONCRETE

- (A) ALL FORMS AND CENTERING FOR CEMENT CONCRETE WORK SHALL BE BUILT TO CONFORM TO SHAPE, LINES AND DIMENSIONS OF THE CONCRETE AS SHOWN ON DRAWINGS.



DIVISION XVI - VINYL FLOOR TILE & BASE

GENERAL NOTE - THE "GENERAL CONDITIONS" - DIVISION 0 - SHALL REFER TO AND BE CONSIDERED AS APPLYING TO ALL SUBDIVISIONS OF THE SPECIFICATIONS AND GOVERNING THE CONTRACTOR IN THE WORK.

SECTION XVI-01 - SCOPE OF WORK

GENERAL SCOPE -

THE WORK UNDER THIS DIVISION COVERS ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY OR REQUIRED TO PROVIDE AND FULLY COMPLETE ALL THE VINYL FLOOR TILE AND BASE WORK AND RELATED ITEMS AS SHOWN ON THE CONTRACT DRAWINGS AND AS HEREIN SPECIFIED.

ITEMS OF WORK -

FOR THE CONVENIENCE OF THE CONTRACTOR, THE MAJOR ITEMS OF WORK ARE LISTED AS FOLLOWS: ITEMS NOT LISTED, BUT CALLED FOR BY THE PLANS AND/OR SPECIFICATIONS, ARE NOT HEREBY ELIMINATED BY REASON OF SUCH OMISSION AND SHALL BE PROVIDED BY THIS CONTRACTOR.

- A. ALL VINYL ASBESTOS FLOOR TILE.
- B. ALL HOMOGENEOUS (ALL VINYL) VINYL BASE.
- C. ALL FLUSH HOMOGENEOUS VINYL STRIP SADDLES AT ALL DOORS BETWEEN SPACES WHERE VINYL ASBESTOS OR HOMOGENEOUS VINYL TILE OCCURS, OF COLOR AS SELECTED.
- D. RUBBER TILE FOR RAMPS IN MEETING ROOM.
- E. ALL ALUMINUM METAL EDGE STRIPS WHERE FLOOR FINISH CHANGES FROM VINYL TILE TO OTHER FINISHES, IN ALL PLACES, EXCEPT WHERE OTHER TYPE SADDLES ARE INDICATED.
- F. ALL RUBBER MATS.
- G. ALL CLEANING, FINISHING, POLISHING AND PROTECTION OF TILE FLOORS AND BASE.
- H. ALL OTHER LABOR AND MATERIALS CUSTOMARILY NEEDED TO MAKE THE WORK UNDER THIS SPECIFICATION COMPLETE.

SECTION XVI-02 - MATERIALS

- (A) ALL MATERIALS FOR THE WORK TO BE PERFORMED UNDER THIS SPECIFICATION SHALL BE OF THE BEST QUALITY OBTAINABLE AND SHALL BE DELIVERED TO THE BUILDING IN ORIGINAL AND UNBROKEN PACKAGES OR CONTAINERS BEARING THE MANUFACTURER'S LABEL.

1. MATERIALS SHALL BE OF ONE OF THE FOLLOWING MAKES. MATERIALS OF ANY ONE CLASSIFICATION SHALL BE OF A SINGLE MANUFACTURER.

(B) VINYL ASBESTOS TILE

"EXCELON" AS MANUFACTURED BY ARMSTRONG CORK COMPANY
"KENFLEX" AS MANUFACTURED BY KENTILE, INC.
"FLEXACHROME" AS MANUFACTURED BY TILE-TEX DIVISION, FLINTKOTE CO.
"ARISTOFLEX" AS MANUFACTURED BY MASTIC TILE COMPANY
"TERRAFLEX" AS MANUFACTURED BY JOHNS-MANVILLE COMPANY
"VINYLBEST" AS MANUFACTURED BY CONGOLEUM-NAIRN, INC.

HOMOGENEOUS VINYL

"LIFE-TIME" AS MANUFACTURED BY ROBBINS FLOOR PRODUCTS
"VINYLAST" AS MANUFACTURED BY VINYL PLASTICS, INC.
"ROYAL KENFLOR" AS MANUFACTURED BY KENTILE, INC.

- (C) VINYL ASBESTOS TILE SHALL COMPLY WITH FEDERAL SPECIFICATIONS L-T-751 (GSA-FSS) TYPE 1, 9" x 9" IN SIZE AND 1/8" THICK.

1. VINYL ASBESTOS TILE PATTERNS AND COLORS WILL BE SELECTED BY THE ENGINEER.

- (D) HOMOGENEOUS VINYL FOR STRIP SADDLES AND BASE SHALL BE IN ACCORDANCE WITH INTERIM FEDERAL SPECIFICATION L-T-751 (G-3A-FSS) FOR VINYL PLASTIC FLOOR TILE TYPE II.

1. TILES SHALL BE 9" x 9" IN SIZE AND 1/8" THICK.
2. BASE SHALL BE TOP SET TYPE WITH COVE AT FLOOR AND SLIGHTLY ROUNDED AT TOP, EXCEPT WHERE STRAIGHT BASE IS INDICATED.
3. STRIP SADDLES AND BASE SHALL BE OF COLOR AS SELECTED BY THE ENGINEER.

- (E) ADHESIVE COMPOUNDS FOR APPLYING THE TILE FLOORING SHALL BE AS FOLLOWS:

FOR VINYL ASBESTOS TILE - KENTILE No. 2, OR EQUAL AS APPROVED.

FOR HOMOGENEOUS VINYL STRIP SADDLES AND BASE - ADHESIVE No. 60A AS SUPPLIED BY MINNESOTA MINING AND MANUFACTURING COMPANY OR EQUAL AS APPROVED. ADHESIVE FOR RUBBER SAFETY TILE SHALL BE RAPID DRYING, LONG TACK RANGE CEMENT, AS RECOMMENDED BY THE MANUFACTURER OF THE RUBBER TILE.

1. ADHESIVES SHALL BE DELIVERED IN THE MANUFACTURER'S SEALED CONTAINERS WITH LABELS INTACT AND SEALS UNBROKEN.

- (F) COVE BASE SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUAL MANUFACTURE:

"KENCOVE" AS MANUFACTURED BY KENTILE, INC.
"LIFE-TIME" COVE BASE AS MANUFACTURED BY ROBBINS FLOOR PRODUCTS
"VINYL COVE BASE" AS MANUFACTURED BY VINYL PLASTICS, INC.

1. COVE BASE SHALL BE 4" X 48" AND SHALL BE SET IN THE LONGEST POSSIBLE LENGTHS WITH NO PIECES LESS THAN TWELVE INCHES LONG. INTERNAL CORNERS AND EXTERNAL CORNERS SHALL BE FORMED WITH PRE-MOULDED CORNER PIECES. ALL JOINTS SHALL BE ACCURATELY TRIMMED AND TIGHTLY BUTTED.
- (g) VINYL BASE SHALL BE OF THE HEIGHT INDICATED ON THE DRAWINGS, FITTED SNUGLY TO THE INTERNAL AND EXTERNAL CORNERS.
- (h) RUBBER MATS SHALL BE PERFORATED TYPE, 3/8" THICK, OF COLOR AS SELECTED BY THE ENGINEER.
 1. MATS SHALL HAVE 1/2 INCH PERFORATIONS, 1-1/4 INCHES ON CENTERS, WITH SOLID BORDER AROUND THE PERIMETER OF THE MATS.
 2. TOP SURFACE OF MATS SHALL BE RIBBED.
- (i) RUBBER TILE FOR RAMP IN MEETING ROOM SHALL BE NO. 500-P SQUARE BLOCK SAFETY DESIGN, 9" X 9" BLOCKS WITH 1/2" OUTSIDE BORDERS AS MANUFACTURED BY THE R.C. MUSSON RUBBER COMPANY, AKRON, OHIO, OR EQUAL AS APPROVED.
 1. TILE SHALL BE OF COLOR AS SELECTED BY THE ENGINEER.
- (j) THE CLEANING COMPOUND SHALL BE THAT MANUFACTURED BY THE HILLYARD SALES COMPANY, ST. JOSEPH, MO. (NEW YORK OFFICE: 1947 BROADWAY, N.Y.C.), KNOWN AS "SHINE-ALL" NEUTRAL CLEANER, OR AN EQUAL COMPOUND APPROVED BY THE ENGINEER.
- (k) THE WAXING COMPOUND FOR VINYL ASBESTOS TILE SHALL BE THAT MANUFACTURED BY THE HILLYARD SALES CO., KNOWN AS "HIL-BRITE" LIQUID WAX, OR EQUAL, AS APPROVED BY THE ENGINEER.
 1. HOMOGENEOUS VINYL TILE SHALL BE CLEANED BUT NOT WAXED.
- (l) METAL EDGE STRIPS SHALL BE OF ALUMINUM, SIMILAR TO #4144 "WAYNE OF WOOSTER," AS MANUFACTURED BY WOOSTER PRODUCTS, INC., WOOSTER, OHIO.

SECTION XVI-03 - SAMPLES

- (A) SAMPLES OF ALL FLOOR TILE, VINYL BASE, RUBBER MAT, AND METAL EDGE STRIPS SHALL BE SUBMITTED TO THE ENGINEER IN TRIPLICATE FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT A FULL LINE OF VINYL ASBESTOS TILE COLORS FOR THE ENGINEER'S SELECTION.

SECTION XVI-04 - SURFACES TO BE COVERED

- (A) IT SHALL BE THE RESPONSIBILITY OF THE FLOOR TILE CONTRACTOR TO ASCERTAIN THAT THE SURFACES TO RECEIVE THE TILE AND BASE ARE IN PROPER CONDITION TO RECEIVE HIS WORK. STARTING WORK BY THE TILE CONTRACTOR WILL BE CONSTRUED AS AN INDICATION THAT THE SURFACES ARE IN PROPER CONDITION TO RECEIVE HIS WORK AND TO PERMIT HIM TO GUARANTEE HIS WORK.

DIVISION XVIII - METAL FURRING, LATHING, AND PLASTERING

GENERAL NOTE - THE "GENERAL CONDITIONS" - DIVISION 0 - SHALL REFER TO AND BE CONSIDERED AS APPLYING TO ALL SUBDIVISIONS OF THE SPECIFICATIONS AND GOVERNING THE CONTRACTOR IN THE WORK.

SECTION XVIII-01 - SCOPE OF WORK

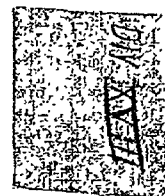
GENERAL SCOPE -

THE WORK UNDER THIS DIVISION COVERS ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY OR REQUIRED TO PROVIDE AND FULLY COMPLETE ALL THE METAL FURRING, LATHING, AND PLASTERING WORK AND RELATED ITEMS AS SHOWN ON THE CONTRACT DRAWINGS AND AS HEREIN SPECIFIED.

ITEMS OF WORK -

FOR THE CONVENIENCE OF THE CONTRACTOR, THE MAJOR ITEMS OF WORK ARE LISTED AS FOLLOWS: ITEMS NOT LISTED, BUT CALLED FOR BY THE PLANS AND/OR SPECIFICATIONS, ARE NOT HEREBY ELIMINATED BY REASON OF SUCH OMISSION AND SHALL BE PROVIDED BY THIS CONTRACTOR.

- A. ALL METAL HANGERS, PURLINS, RUNNERS, FURRING, AND LATHING FOR HUNG CEILINGS WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE TO BE PLASTERED.
- B. ALL METAL HANGERS, PURLINS, RUNNERS AND 3/8 INCH GYPSUM CEILING BOARD, TO RECEIVE MINERAL FIBER ACOUSTICAL TILE, WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE AS ACOUSTIC TILE CEILING.
- C. ALL WHITE FINISH PLASTER WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE AS PLASTER.
- D. ALL CEMENT PLASTER WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE AS CEMENT PLASTER.
- E. ALL VERMICULITE PLASTER WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE.
- F. ALL ACOUSTICAL PLASTER WHERE SHOWN ON DRAWINGS OR INDICATED IN FINISH SCHEDULE.
- G. ALL FURRING AND LATHING FOR VERMICULITE PLASTER FIREPROOFING AS SHOWN.
- H. ALL MISCELLANEOUS FURRING AND/OR LATHING FOR LIGHT COVE, FURRED OUT SPACES OR AS REQUIRED FOR PLASTERING.
- I. ALL PLASTER GROUNDS, STOPS AND CORNER BEADS.
- J. ALL OTHER LABOR AND MATERIALS CUSTOMARILY NEEDED TO MAKE THE WORK UNDER THIS SPECIFICATION COMPLETE.



SECTION XVIII-02 - WORK OF OTHER TRADES

- (A) THE FOLLOWING ITEMS OF WORK WILL BE FURNISHED UNDER OTHER SPECIFICATIONS AS A PART OF THE WORK OF OTHER TRADES.
1. MINERAL FIBER ACOUSTICAL TILE, DIVISION XIX.
 2. CONCRETE AND CEMENT WORK, DIVISION V.
 3. MOSAIC WORK, DIVISION XVII.
 4. HANGERS AND CARRIERS FOR LUMINOUS CEILING, DIVISION XXVII.
 5. SUSPENSION SYSTEM FOR REMOVABLE SECTIONS OF ACOUSTIC CEILING, DIV. XIX.

SECTION XVIII-03 - MATERIALS

- (A) ALL MANUFACTURED MATERIALS SHALL BE THE PRODUCTS OF WELL-KNOWN MANUFACTURERS, AND SHALL BE DELIVERED TO THE SITE OF THE WORK IN ORIGINAL UNBROKEN CONTAINERS OR PACKAGES, BEARING THE NAME OF THE MANUFACTURER AND BRAND.
- (B) HANGERS FOR CONCRETE ARCH CONSTRUCTION SHALL BE "T" SHAPED, 3/16" X 1" METAL, ASPHALT-COATED WITH TWO HOLES PUNCHED TO TAKE BOLTED CONNECTION FOR EXTENSION HANGERS, PLACED IN FORMS FOR CONCRETING IN SLAB, AND SPACED FOUR FEET ON CENTERS BOTH WAYS, FOR HUNG PLASTER AND ACOUSTIC CEILINGS.
- (C) EXTENSION HANGERS SHALL BE 1/8" X 1" METAL ASPHALT COATED OF LENGTH TO SUIT CONDITIONS.
- (D) HUNG CEILING PURLIN MEMBERS FOR ACOUSTIC AND/OR PLASTERED CEILINGS SHALL CONSIST OF 1-1/2" HOT ROLLED STEEL CHANNEL PURLINS WEIGHING AT LEAST 0.85 POUNDS PER LINEAR FOOT.
- (E) CROSS FURRING FOR CEILINGS SHALL BE 3/4 INCH CHANNELS WEIGHING AT LEAST 0.30 POUNDS PER LINEAR FOOT.
1. ALL HUNG CEILING AND FURRING MEMBERS SHALL BE PAINTED WITH A RUST INHIBITIVE PAINT OF WELL KNOWN MANUFACTURE.
- (F) TIE WIRE SHALL BE SOFT-ANNEALED GALVANIZED WIRE NO. 18 GAUGE.
- (G) HAIR PIN CLIPS SHALL BE NO. 8 GAUGE GALVANIZED WIRE.
- (H) LATH SHALL BE EXPANDED TYPE METAL LATH WEIGHING NOT LESS THAN 3.4 POUNDS PER SQUARE YARD. LATH SHALL BE GALVANIZED.
- (I) GYPSUM BOARD FOR ACOUSTIC CEILINGS SHALL BE UNITED STATES GYPSUM COMPANY OR APPROVED EQUAL 16" X 48" X 3/8" THICK.
- (J) CLIPS FOR FASTENING GYPSUM BOARD SHALL BE BRIDJOINT CLIPS AS DISTRIBUTED BY U. S. GYPSUM COMPANY OR APPROVED EQUAL.

- (K) SAND SHALL CONSIST OF FINE GRANULAR MATERIAL, COMPOSED OF HARD, STRONG, DURABLE, UNCOATED PARTICLES, WHICH ARE FREE FROM INJURIOUS AMOUNTS OF ACID, ALKALINE, ORGANIC OR OTHER DELETERIOUS SUBSTANCES, CONFORMING WITH THE LATEST EDITION OF A.S.T.M. SPECIFICATIONS, DESIGNATION C-35.
- (L) WATER SHALL BE CLEAN, FRESH, SUITABLE FOR DOMESTIC USE AND FREE FROM INJURIOUS AMOUNTS OF OILS, ALKALI, ACID AND OTHER DELETERIOUS SUBSTANCES.
- (M) HYDRATED LIME SHALL BE AN APPROVED STANDARD BRAND MEETING THE REQUIREMENTS OF THE LATEST EDITION OF A.S.T.M. SPECIFICATIONS, DESIGNATION C-206.
- (N) PORTLAND CEMENT SHALL BE AN APPROVED STANDARD BRAND MEETING THE REQUIREMENTS OF THE LATEST EDITION OF A.S.T.M. SPECIFICATIONS, DESIGNATION C-150.
- (O) CORNER BEADS FOR EXTERNAL CORNERS SHALL BE ZINC COATED 24 GAUGE MILCOR No. 1 WITH 2-1/2 INCH EXPANDED LATH WINGS WITH NARROW ROUNDED NOSE, OR EQUAL AS APPROVED.
- (P) EXPANDED METAL ANGLES FOR ALL INTERNAL ANGLES OF PLASTER WORK SHALL BE "CORNERITES" OF 26 GAUGE WITH NOT LESS THAN THREE INCHES ON EACH LEG, OR EQUAL AS APPROVED.
- (Q) ACOUSTICAL PLASTER SHALL BE "SABINITE" AS MANUFACTURED BY U.S. GYPSUM COMPANY, OR EQUAL AS APPROVED OF COLOR AS APPROVED BY ENGINEER.
- (R) GYPSUM PLASTER SHALL BE AN APPROVED BRAND CONFORMING WITH THE LATEST EDITION OF A.S.T.M. DESIGNATION C-28.
- (S) KEENE'S CEMENT SHALL BE OF AN APPROVED BRAND CONFORMING WITH LATEST EDITION OF A.S.T.M. SPECIFICATIONS, DESIGNATION C-61.
- (T) VERMICULITE PLASTER SHALL BE A VERMICULITE GYPSUM PLASTER WITH ZONOLITE AGGREGATE CONFORMING TO THE SPECIFICATION REQUIREMENTS OF THE VERMICULITE RESEARCH INSTITUTE. IT SHALL BE EQUAL TO "MASON FIREPROOF SPECIFICATION PLASTER" AS MANUFACTURED BY MUNN AND STEELE, INC., NEWARK, N. J., OR OF SAME FIREPROOFING QUALITIES AS APPROVED BY THE ENGINEER. VERMICULITE PLASTER SHALL BE DELIVERED PREMIXED IN SEALED PACKAGES, IDENTIFIED WITH THE MANUFACTURER'S LABEL REQUIRING ONLY THE ADDITION OF WATER.

SECTION XVIII-04 - GENERAL REQUIREMENTS AND WORKMANSHIP

- (A) PURLINS FOR HUNG CEILINGS SHALL BE SPACED FOUR FEET ON CENTERS.
 - 1. FURRING CHANNELS SHALL BE SPACED TWELVE (12) INCHES ON CENTERS FOR PLASTER WORK AND SIXTEEN (16) INCHES ON CENTERS FOR GYPSUM BOARD BASE FOR MINERAL FIBER ACOUSTIC CEILING TILE, AND SHALL BE SECURED TO PURLINS WITH NO. 8 GAUGE WIRE HAIR PIN CLIPS AT EACH INTERSECTION.

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welding. On odd lengths of pipe, beveling may be accomplished by means of the oxy-acetylene cutting torch, provided all paint, rust, scale and oxide is carefully removed with hammer, chisel or file and bevel left smooth and clean. Joints shall be prepared and welded to assure thorough fusion with bare metal, complete penetration, maintenance of alignment and the production of a joint that shall develop the full strength of the pipe, and that shall be leakproof in service.

4. Welding Tees - Welding tees shall be used where branch connections are the same or one or more pipe sizes smaller than the main. Where necessary, such branch connections shall be reinforced in an approved manner. For the smaller branches, where welding tees are unavailable, nozzles shall be welded to the pipe. Where such nozzles are welded to the pipe, all cutting oxide, which may drop inside the pipe, shall be removed before welding the branch or section in place.

5. Welding Rods - The welding rod used for welding steel shall be approved, high-test welding rod or its equivalent.

(c) Piping, Fittings and valves for Low-pressure Steam and Condensate System and Hot/Chilled Water Supply and Return System.

1. PIPING

Item		Size, incl.	Specification
<u>Construction</u>		To 2-1/2" 3" to 14"	Screwed. Welded and flanged.
<u>Pipe</u> -	Material	To 1-1/2"	Steel: ASTM A-53, Grade A or B, butt- welded.
		2" to 14"	Steel: ASTM A-106, Grade A or B, seamless.
	Thickness	To 6" 8" to 12" 14"	Schedule 40. Schedule 20. Schedule 10.
<u>Fittings</u> -	Elbows, tees, etc.	To 2-1/2"	Cast iron: ASA 125 lb., screwed.
	Unions	To 2-1/2"	Petro or equal.
	Stub ends	3" to 14"	Steel: butt-welding, seamless, ASTM A-234-WPA or WPE, to match pipe.-(2)

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1. PIPING (Continued from Page 18)

Item		Size, incl.	Specification
<u>Fittings</u> -	Elbows, tees, etc.	To 3/4"	Forged Steel: 2000 lb. (min.) socket-welding.
	Unions	To 1"	Petro or equal; seal-welded.
	Stub ends	1" to 8"	Steel: butt-welding, seamless, ASTM A-234-WPA or WPB, to match pipe.
	Tees, laterals, reducers, caps	1" to 8"	Shop-fabricated from pipe; reinforced if necessary. Or steel: butt-welding, seamless, ASTM A-234-WPA or WPB, to match pipe.
	Elbows	1" to 8"	Steel: butt-welding, ASTM A-234-WPA, WPB, WPAW or WPBW, to match pipe.
<u>Flanges</u> -	Type	To 3/4" 1" to 8"	Forged Steel: ASA 300 lb., socket-welding. Forged Steel: ASA 300 lb., welding-neck or lap-joint type to match pipe.
	Facing	to 8"	Manufacturer's standard.
<u>Gaskets</u>			U. S. No. 4899 or equal; 1/16" thick.
<u>Dope</u> -	Threads	-	Red lead.
	Gaskets	-	Graphite and oil.
<u>Bolt Studs and Nuts</u>		-	Alloy steel, Carbide Spec. PVM-100, Class I.

2. VALVES

Service	Size, incl.	Carbide Number	Make and Fig. No.	<u>Materials</u>		Type of Ends
				Body	Trim	
<u>Shut-off</u>	1/4" to 3/8"	GL-112	Lunk. 16P-S	Br	NA	Screwed
	1/2" to 1"	GA-55	Vogt 5-9853-55	FS	Crs	Screwed
	1-1/4" to 8"	GA-23	Powell 3003P-140	CS	Crs	Flanged
<u>Control</u>	1/4" to 1"	GL-112	Lunk. 16P-S	Br	Crs	Screwed
	1-1/4" to 8"	GL-134	Powell 3031P-140	CS	Crs	Flanged
<u>Valve Stem Packing</u>	To 3" 4" Up		Garlock 117 or equal. Garlock 150 or equal.			

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(e) Piping, Fittings and Valves for Cycle Water Make-up above ground and for air conditioning drain piping.

1. PIPING

Item		Size, incl.	Specification
<u>Construction</u>		To 2-1/2" 3" to 6"	Screwed. Screwed and flanged. (1)
<u>Pipe</u> -	Material	To 1-1/2" 2" to 6" To 6"	Galvanized steel: ASTM A-120, butt-welded. Galvanized steel: ASTM A-120, lap-welded. Schedule 40.
<u>Fittings</u> -	Elbows, tees, etc.	To 2-1/2" 3" to 6"	Cast iron: ASA 125 lb., screwed. Cast iron: ASA 125 lb., flanged. (1)
	Unions	To 2-1/2"	Petro or equal.
<u>Flanges</u> -	Type	To 6"	Cast iron: ASA 125 lb., screwed.
	Facing	To 6"	Manufacturer's standard.
<u>Gaskets</u>		To 6"	U. S. No. 4009 "Rainbow" or equal; 1/16" ring type.
<u>Dope</u> -	Threads Gaskets	- -	Red lead. None
<u>Bolts and Nuts</u>		-	Square head machine bolts, hex nuts.

2. VALVES

Service	Size, incl.	Carbide Number	Make and Fig. No.	Materials Body Trim	Type of Ends
<u>Shut-off</u>	1/4" to 2 1/2" 3" to 6"	GA-1 GA-5	Lunk. 2125 Powell 1444	Br Br CI Br	Screwed Flanged

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2. VALVES (Continued from Page 22)

Service	Size, incl.	Carbide Number	Make and Fig. No.	Remarks
Shut-off	4" to 6"	GA-1103	Mueller A-2072-20	Mechanical Joint ends gate valve with indicator post according to Fig. A-20800, center line of valve _____ below grade.
<u>Valve Stem Packing</u>	4" up	Garlock 150 or equal.		

- Notes: (1) If a depth of bury greater than five feet or a laying condition worse than "B" is used, a correspondingly thicker wall pipe should be specified.
- (2) Whitewashing of the outside of pipe and fittings may be required to protect the pipe from the heat of the sun if shipped in summer months, or if it is to be stored for a long period of time.

SECTION XXVI-18 UNDERGROUND PIPING AND CONDUIT:

(a) All steam and return, to be installed underground to buildings, as shown on Plans, shall be installed in Prefabricated Insulated Pipe Conduit, with necessary fittings, as hereinafter specified.

1. CONDUIT - The conduit shall be 16 gauge steel for all sizes, spirally-corrugated with full welded lock seam designed for proper strength to prevent deformation in service. Conduit shall be hot dip galvanized after seam is welded. Conduit shall be tested for tightness with 15 lbs. air pressure before coating is applied. All outside corrugated surfaces of the steel conduit shall be machine-coated with high melting point asphalt with one layer of asphalt impregnated pipe line felt, applied under tension. A 10 gauge steel collar shall be welded to conduit ends to provide a full, round, smooth surface for conduit closures. Conduit closures shall be furnished by manufacturer of the pipe conduit for field connection, constructed of 12 gauge steel in cylindrical form, with a single horizontal

split and necessary wedge clamps. Conduit closures shall be welded to smooth conduit ends and after test (Paragraph 7) covered in the field with a plastic tape or "Tapecoat", applied as per manufacturer's recommendations, as approved. All pipe insulation and tape for field closures shall be furnished with the conduit.

2. PIPE AND SUPPORTS - All pipe in conduit shall be as hereinbefore specified for the service required (See SECTION XXVI-15, Paragraph (c) and (d)), and shall be free to expand and contract without stress or wear on the insulation. Pipe supports, spaced according to requirements, shall be furnished with the pipe conduit. All field pipe joints shall be welded by certified welders and hammer tested under hydrostatic pressure of 250 lbs. per square inch, or twice the working pressure, whichever is greater. Concealed pipe welds in prefabricated units shall be factory-tested the same as specified for field joints.

3. ELLS AND TEES - Prefabricated ells and tees shall be furnished and installed, where shown on Plans or required, consisting of pipe, insulation and conduit, conforming to the same specifications as hereinbefore specified for straight runs.

4. GLAND AND END SEALS - Prefabricated, packed gland seals shall be furnished and installed adjacent to building walls, consisting of a packed stuffing box and gland follower mounted on a steel plate, welded to conduit ends. If these ends are within 5' of an anchor, provide end seals consisting of a steel plate, welded to the pipe and conduit.

5. BUILDING WALL ENTRANCE - Conduit shall terminate at inside face of building wall. The terminal ends of conduit in wall shall be equipped with leak plates.

6. ANCHORS - Prefabricated plate anchors shall be furnished and installed, where shown on Plans or required, consisting of a steel plate, welded to pipe and conduit and extending at least 2-1/2" beyond the O.D. of the conduit. The steel plate shall be 3/8" thick for 6" to 10" conduit, 1/2" thick for 12" to 16" conduit. A concrete block, where required, shall be cast over the plate and conduit, large enough for firm anchorage. The concrete block to be at least 30" long and extend 9" beyond the periphery of the plate.

7. CONDUIT AIR TEST - All field welds in conduit closures shall be tested for leaks before applying tape. During test, all field welds shall be checked with soap suds and repaired, if necessary, until airtight, at 15 lbs. pressure. Test caps shall be provided by the manufacturer. The Contractor shall furnish all necessary equipment and labor to perform the air test, including air compressor, gauges, conduit caps, temporary pipe and connections, etc., and complete the test to the satisfaction of the Engineer.

8. PIPE INSULATION - Steam and return piping in conduit shall be Owens-Corning "Kaylo", 2" thick on steam and 1" thick on returns. Insulation shall have a wrapping of 30 lb. asphalt-saturated felt, wired on with copper wire.

9. INSTALLATION - The Contractor shall conform to the manufacturer's instructions during the installation. Wherever possible, the conduit sections shall be made up above ground, in runs not exceeding six (6) sections and piping welds and conduit closures tested. The conduit shall then be lowered into the trench and the completed runs retested and the conduit joints taped. Any conduit coating scarred or damaged during the installation shall be repaired with materials furnished by the manufacturer. The manufacturer shall provide an accredited field engineer who will periodically inspect the installation and certify all pipe and conduit tests, such certifications to be submitted, in writing, to the Owner or his representative. The manufacturer's field engineer shall also provide written reports periodically during the progress of the installation.

SECTION XXVI-19 PRESSURE-REDUCING VALVES:

(a) The primary reducing valve station shall consist of two (2) pneumatically operated diaphragm valves, installed in parallel. Valve sizes shall be selected by the manufacturer, in accordance with the capacities and pressure drops indicated on the Plans and in the tabulation sheets. An interlock shall be installed, as shown. Its function is to close the smaller diaphragm valve when the system demand is greater than its rated capacity, the larger valve will then pick up the entire load. When the system load decreases to within the rated capacity of the smaller valve, the interlock will allow the smaller valve to pick up the load, thus closing the larger valve.

(b) The diaphragm-operated valves shall be cast steel bodies with 300# standard flanged end connections. The valve trim shall be stainless steel with stellite main valve seats. Valve shall be single-seated, normally closed, suitable for dead-end service, Leslie Class DS-2, DDL3-1 or approved.

(c) Each diaphragm valve shall be controlled by a pneumatically-operated, forced balance relay type pilot, capable of operating without the need of a continuous bleed. A 1/4" strainer and a 1/4" air-reducing valve shall be provided with each pneumatically-operated pilot, Leslie Class PRA or approved.

(d) The two-position, pneumatically-operated relay shall be as manufactured by Leslie Company or approved.

(b) Ventilation -

1. All ventilation and air conditioning systems shall be thoroughly tested in accordance with the Contract Drawings, including adjustments of dampers, registers, and controls to secure the specified CFM and air distribution called for on Drawings. All systems shall be balanced prior to closing-in the masonry or suitable removable panels shall be installed in such masonry work as to allow subsequent adjustment of dampers for proper air distribution.

2. The Contractor shall submit a report of the final test showing fan speeds, suction and discharge static pressures, fan delivery in CFM, CFM at each outlet and all other data as required or directed. The test shall be conducted under the direction of and certified by a licensed, professional Engineer.

3. The report shall locate and identify the air reading in chart form, giving grille, register or diffuser size, location by Wing, Floor and Room number, specified CFM and actual CFM.

SECTION XXVI-60 ACOUSTICAL DUCT LINING:

Furnish 1" thickness Fibreglas duct lining where specified and/or indicated on the plans. Lining shall be six (6) lbs. density and having both surfaces coated with a sprayed Neoprene coating. Lining shall be installed in strict conformance with the manufacturer's recommendations and shall include the application of a brushing or troweling adhesive over the complete interior metal surface to be lined. All interior insulation joints must be pointed up to a smooth surface, with a plastic emulsion or a good grade of acoustical cement.

SECTION XXVI-61 PAINTING:

(a) All finish painting of piping, ductwork, etc., except as otherwise noted, shall be done under another Section. This Contractor shall paint, as hereinafter specified.

(b) All equipment, such as pumps, motors, fans, etc., shall have a factory coat of paint and shall be touched-up, as required, at the completion of the installation, with machine enamel to match existing color.

(c) The interior of all fresh air intake ductwork, including dampers, shall be painted with an approved primer and two (2) coats of bitumastic paint.

(d) The interior of all ducts, back of all registers and grilles shall be painted with two (2) coats of non-reflective, flat black paint.

DIVISION XXVIII - INSULATION

General Note

The "General Conditions" Division 0, shall be considered as applying to these specifications and governing the Contractor in the work.

SECTION XXVIII-01 SCOPE OF WORK:

(a) General Scope.

The work covered by this Division of the Specifications consists of providing all equipment, materials and labor, and performing all the work as shown on the Drawings, herein specified, or both and which, without restricting the generality of the foregoing, shall include all items hereinafter set forth.

(b) Item of Work - (for Plumbing and Drainage)

For the convenience of the Contractor, the major items of work are listed as follows: Items not listed, but called for by the Plans and/or Specifications, are not hereby eliminated by reason of such omission and shall be provided by this Contractor.

1. Provide and install insulation on all cold and hot water return piping and hot water piping, hot water storage tank and drainage piping subject to sweating.

2. All other labor and materials customarily needed to make the work under this Specification complete.

SECTION XXVIII-02 GENERAL:

(a) Insulation shall be as made by Owens-Corning Fiberglas Company, Philip Carey Company or Khrot Magnesia Manufacturing Company.

(b) Exposed pipe insulation shall be recovered with a modified polyvinyl acetate covering, similar, and approved equal to Miracle Adhesives Corporation's "Protectinsul", with all joints sealed with tape and sealer to form a perfect vapor barrier. All meters, valves and fittings shall be re-covered with tape and sealer "Protectinsul" or equal. Concealed pipe insulation, not re-covered, shall be secured with brass bands, two (2) bands at elbows, three (3) bands on tees and three (3) bands per section of insulation.

(c) All magnesia insulation shall contain not less than 85% Hydrate Carbonate of Lime and 10% asbestos fiber.

(d) All insulation shall be applied after the respective piping systems have been tested and approved. Where the Contractor fails to do so, it shall be his responsibility to remove and replace the insulation, at his own expense.

SECTION XXVIII-03 PLUMBING PIPE COVERING:

(a) Domestic Water Piping.

1. Valves, fittings and flanges on insulated, cold, hot and hot-water circulating piping and meter assembly, shall be built up full thickness with plastic asbestos cement, trowelled smooth.

(b) Cold, hot and hot water circulating piping (except chromium-plated piping at fixtures and equipment) shall be insulated with 1/2" thickness glass fibre sectional pipe covering with pasted canvas jacket similar and approved equal to Owens-Corning Fiberglas Company's "Low Pressure Pipe Insulation". Jacket shall be sealed with wheat paste or other approved adhesive.

(c) Drainage Piping.

1. Horizontal drainage piping between roof drains and leaders, exposed horizontal stormwater drainage piping and drainage piping carrying chilled water between fixture and stack, shall be sweat-proofed, as herein-after specified for insulation of cold water piping.

(d) Domestic Hot Water Heater Tank.

1. Hot water heater shall be covered with 1-1/2" thickness 85% magnesia block insulation, held in place with wire, over which shall be spread a 1/2" thick coat of asbestos finishing cement, applied in two (2) layers and properly reinforced with chicken wire, and trowelled to a hard, smooth finished surface.

SECTION XXVIII-04 ITEMS OF WORK (HEATING AND AIR CONDITIONING):

(a) For the convenience of the Contractor, the major items of work are listed as follows: Items not listed, but called for by the Plans and/or Specifications, are not hereby eliminated by reason of such omission and shall be provided by this Contractor.

1. Provide and install insulation on all hot/chilled water piping and hot/chilled water return piping, steam supply, condensate

return piping and cycle water supply and return lines, hot/chilled water pumps, ductwork, converters, on specified portions of drainage piping subject to sweating, and as hereinafter specified.

2. All other labor and materials customarily needed to make the work under this Specification complete.

SECTION XVIII-05 GENERAL:

(a) Insulation shall be as made by Owens-Corning Fiberglas Company, Gustin-Bacon, Philip Carey Company or Ehref Magnesia Manufacturing Company.

(b) All pipe insulation, except steam supply and condensate return and condensate pumped discharge shall be re-covered with a modified polyvinyl acetate covering, similar and approved equal to Miracle Adhesives Corporation's "Protectinsul", with all joints sealed with tape and sealer to form a perfect vapor barrier. All meters, valves, and fittings shall be re-covered with tape and sealer, "Protectinsul" or equal. Steam supply and condensate return and condensate pumped discharge shall be covered as specified hereinafter.

(c) All magnesia insulation shall contain not less than 85% Hydrate Carbonate of Lime and 10% asbestos fiber.

(d) All insulation shall be applied after the respective piping systems have been tested and approved. Where the Contractor fails to do so, it shall be his responsibility to remove and replace the insulation, at his own expense.

(e) All insulation shall be applied over dry, clean surfaces and applied in accordance with manufacturer's recommendations.

SECTION XVIII-06 PIPING AND EQUIPMENT INSULATION FOR HEATING:

(a) Insulation shall be applied to all steam supply lines, condensate return lines, pumped discharge lines, expansion tanks, pumps, condensate coolers, flash tanks, heat exchangers and all hot/chilled water supply and return piping. All insulation shall be continuous at pipe hangers.

(b) All pipe insulation shall be of calcium silicate of the sectional type, applied to piping in staggered position with all joints tightly butted and be of the following thickness:

1. Steam supply (up to 30 PSI), all condensate return lines and condensate pumped discharge lines shall be 1" thick, up through 5" diameter pipe, and 1-1/2" thick for 6" diameter pipe and above.

2. Steam supply (over 30 PSI) shall be 1-1/2" thick, up through 2-1/2" pipe and 2" thick for 3" pipe and above.
3. All small cracks and depressions, where present, shall be pointed up with insulating cement.
4. Fittings, Flanges and Valves - Insulation thickness shall be equal to thickness as specified for adjacent pipe insulation and fitted with prefabricated fitting covers. Welded ells shall be insulated with miter-sawed pipe insulation or covers fabricated therefrom. All joints shall be tight-fitting with special fabricating cement. In all cases, the joints shall be as thin as possible with just sufficient cement to obtain good adhesion and complete closure. In no case, will wide cement joints or voids, and holes filled with cement, be permitted. Plastic asbestos insulating cement may be used on fittings up to and including 2-1/2" pipe and finished with 1/4" thick coat of hard-finish asbestos cement.
5. Insulation shall be covered with 6-ounce overlapping, pasted canvas jacket. Pasting shall be performed with Benjamin Foster's "Seal Pac" and then the entire surface covered with a thick coating of "Seal Pac".
6. All heat exchangers, expansion tank, condensate coolers and flash tanks shall be covered with 1-1/2" thick 85% magnesia block, wired on and covered with 1/2" thick coat of asbestos finishing cement, applied in two (2) layers and properly reinforced with chicken wire and trowelled to a hard, smooth finished surface.

SECTION XXVIII-07 PIPING AND EQUIPMENT INSULATION FOR AIR CONDITIONING:

- (a) Insulation shall be applied to all hot/chilled water lines, indirect waste service water lines and chilled water pumps. All insulation shall be continuous at pipe hangers.
- (b) All pipe insulation shall be of the sectional type, applied to piping in staggered position with all joints tightly butted and covered with a pasted canvas jacket secured with a wheat paste adhesive and 18 gauge stainless steel wire. A vapor sealer shall be applied at all joints. Insulation shall be re-covered with Protectinsul, as specified hereinbefore.

1. Hot/chilled water supply and return lines and indirect waste lines shall be insulated with 1-1/2" thick cellular glass, up through 4" pipe and 2" thick cellular glass for all pipe larger than 4".
2. Cycle water supply and return lines shall be insulated with 1" thick glass fibre.

3. Fittings, Flanges and Valves - Insulation thickness shall be equal in thickness as specified for adjacent pipe covering and fitted with prefabricated fitting covers, tightly butted and a vapor sealer applied at all joints.

(a) Hot/chilled Water Pumps - shall be insulated with two (2) 1" thick layers of cellular glass blanket with joints staggered and held in place with 18 gauge stainless steel wire, complete with a 001" aluminum vapor barrier. Apply at all joints a vaporproof sealer. Provide a 1/2" thick coat of asbestos finishing cement properly reinforced with chicken wire and trowelled to a smooth, hard finished surface and applied in two (2) layers.

SECTION XXVIII-08 DUSTWORK INSULATION:

(a) All fresh air intake sections, plenums and filter sections for the ventilating and air conditioning apparatus and all air conditioning apparatus spray coil dehumidifiers, heating coil sections, plenums up to and including fan discharge plenum, shall be insulated with 1-1/2" thick rigid Fibreglasboard with vaporseal. All joints shall be pointed up with a vaporseal. Insulation shall be laid up in hot mastic waterproof compound with copper wire and covered with a galvanized wire mesh and 1/2" thick asbestos cement, trowelled smooth and hard and applied in two (2) layers. Covering shall be trowelled back and protected with metal frames at all openings. Access doors shall be framed, with door flush with finished surface and having insulation applied to the inside surface. Install plasterers corner beads in all corners.

SECTION XXVIII-09 FROST-PROOFING:

Furnish frostproof pipe covering for piping on the roof, consisting of three (3) layers of 1" hairfelt lined and interlined with tarpaper. Each layer shall be wrapped with jute twine. Outer covering shall be two-ply hairfelt, lap and seal joint, bind with copper wire on 6" centers.

ADDENDUM 1 TO DIVISION XXVIII: DELETE IN ITS ENTIRETY "DIVISION XXVIII - INSULATION"
AND SUBSTITUTE THE FOLLOWING

DIVISION XXVIII - INSULATION

SECTION XXVIII - SCOPE OF WORK

General Scope -

The work covered by this Division of the specifications consists of providing all equipment, materials, and labor, and performing all the work as required for the complete execution of the Insulation work as herein specified, and which without restricting the generality of the foregoing, shall include all items hereinafter set forth for the Engineering Building Number 2000.

Items of Work

The material and installation shall be in accordance with the Thermal Insulation Specifications, applied on items herein specified and on marked drawings attached to or accompanying these specifications.

SECTION XXVIII-01 - GENERAL

- (a) Insulations used shall be as specified in the insulation design schedule, They are:

Specification No.

Materials

10-L	Cellular Glass Insulation Finish: Modified Polyvinyl Acetate Reinforced with glass cloth.
16-H	Glass Fiber Insulation (3 lb. Density min.) Finish: (a) Exposed, modified Polyvinyl Acetate reinforced with glass cloth. (b) Hidden, pasted canvas jacket.
16-L	Glass fiber insulation (3 lb. density min.) with attached vapor barrier Finish: (a) Exposed, modified Polyvinyl Acetate reinforced with glass cloth. (b) Hidden, attached vapor barrier, sealed.
17-L	Glass fiber duct insulation 6# density min. with vapor barrier of Kraft paper and asphalt. Finish: Exposed, modified Polyvinyl Acetate reinforced with glass cloth. Hidden, vapor barrier jacket sealed at all joints, corners, etc
20-H	Calcium Silicate Insulation Finish: Exposed, modified Polyvinyl Acetate, reinforced with glass fiber cloth. Hidden, pasted canvas jacket.

- (b). Insulation shall be applied after respective piping systems have been tested and approved. Where Contractor fails to do so, it shall be his responsibility to remove and replace the insulation at his own expense.
- (c) Insulation shall be applied in accordance with the General Insulation Specifications and Individual Insulation Specifications.

SECTION XXVIII -02 - PIPING INSULATION FOR PLUMBING WORK

- (a) The following piping shall be insulated with 1.0 inch thick glass fiber insulation, applied in accordance with Carbide and Carbon Chemicals Company's Spec. 16-L:
 - 1. Domestic Water Piping (Cold, Hot and Hot Water).
 - 2. Circulating Piping (Cold, Hot and Hot Water).
 - 3. Drainage piping between roof drains and leaders and exposed horizontal storm water drainage piping carrying chilled water between Fixture and Stack.
- (b) The domestic Hot Water Heater shall be insulated with 1-1/2 inch thick Calcium Silicate in accordance with Carbide and Carbon Chemicals Company's Spec. 20-H.

SECTION XXVIII-03 - PIPING AND EQUIPMENT INSULATION FOR HEATING

- (a) Steam, Hot Water and Condensate Lines and all converters shall be insulated as follows:

Steam Supply Lines: Up to 350° F, 4" IPS and below, 1" thick, Spec. 16-H
Above 4" IPS, 1-1/2" " Spec. 16-H
350° F to 463° F, 2-1/2" IPS and below, 1.5" Spec. 20-H
3" IPS thru 26" IPS, 2" Spec. 20-H
Above 26" 2.5" Spec. 20-H

Condensate return lines 1" thick, Spec. 16-H
Hot Water Supply and return lines 1" thick, Spec. 16-H
Condensate pump discharge lines 1" thick, Spec. 16-H
- (b) All converters (including Heat Exchangers for Spray Water Heating) shall be insulated with 1-1/2" thick, Spec. 20-H.

SECTION XXVIII-04 - PIPING AND EQUIPMENT INSULATION FOR AIR CONDITIONING

- (a) Chilled water lines and chilled water pumps shall be insulated with 1-1/2 inch thick cellular glass insulation applied in accordance with Carbide and Carbon Chemicals Company's Spec. 10-L.

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