

City of Garden Grove

INTER-DEPARTMENT MEMORANDUM

To:	Matthew J. Fertal	From:	William E. Murray	
Dept:	City Manager	Dept:	Public Works	
Subject:	AWARD OF CONTRACT TO A2Z CONSTRUCT, INC. FOR THE REMODELING OF THE CHAPMAN BRANCH LIBRARY, LOCATED AT 9182 CHAPMAN AVENUE, GARDEN GROVE		Date:	June 24, 2014

OBJECTIVE

To request that the City Council award a contract to A2Z Construct, Inc. in the amount of \$86,000 for the remodeling of the Chapman Branch Library.

BACKGROUND

The building housing the Chapman Branch Library, located at 9182 Chapman Avenue, Garden Grove, has been in use since the mid-1960's and is in need of construction maintenance.

DISCUSSION

In response to the prescribed bidding procedures, fourteen bids were received:

Company	Bid Amount
A2Z Construct, Inc.	\$86,000.00
Damon, Inc.	\$87,454.00
Corral Construction	\$93,339.00
Ali Alavisadeh	\$104,916.00
Frank Shariat Construction	\$109,244.00
St. George Construction	\$130,350.00
Kitano Construction	\$136,500.00
Jag Construction	\$137,368.00
Dependable Construction	\$146,000.00
IBN Construction, Inc.	\$147,000.00
Kazoni, Inc.	\$153,724.00
Courts Construction Company	\$164,879.00
RT Contractor Corp.	\$168,725.00
Visionary Construction and Consulting	\$315,000.00

AWARD OF CONTRACT TO A2Z CONSTRUCT, INC. FOR THE REMODELING
OF THE CHAPMAN BRANCH LIBRARY, LOCATED AT 9182 CHAPMAN AVENUE,
GARDEN GROVE

June 24, 2014

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FINANCIAL IMPACT


The financial impact of this project is \$86,000. Funds are available in the 2013/2014 budget.

RECOMMENDATION

It is recommended that the City Council:

- Award a contract to A2Z Construct, Inc., in the amount of \$86,000, for the remodeling of the Chapman Branch Library; and
- Authorize the City Manager to execute the agreement on behalf of the City and make minor modifications as necessary.


WILLIAM E. MURRAY, P.E.
Public Works Director


By: William R. Pickrell
Public Works Supervisor

Attachment: Agreement

Recommended for Approval


Matthew Fertal
City Manager

SECTION 4 - AGREEMENT**PROJECT AGREEMENT**

THIS AGREEMENT is made this ____ day of _____, 2014 by the CITY OF GARDEN GROVE, a municipal corporation, ("CITY"), and **A2Z Construct, Inc.**, hereinafter referred to as ("CONTRACTOR").

RECITALS:

The following recitals are a substantive part of this Agreement:

This Agreement is entered into pursuant to Garden Grove COUNCIL AUTHORIZATION, DATED _____.

CITY desires to utilize the services of Furnish all Labor, Material, Tools and Equipment for the Renovations for ADA Upgrade of the Chapman Branch Library Restrooms located at 9182 Chapman Avenue, Garden Grove, CA 92841.

CONTRACTOR is qualified by virtue of experience, training, education, and expertise to accomplish services.

AGREEMENT

THE PARTIES MUTUALLY AGREE AS FOLLOWS:

- 4.0 **Compensation.** CONTRACTOR shall be compensated as follows:
Compensation under this agreement shall be a Not to exceed (NTE) amount of Eighty Six Thousand Dollars (\$86,000.00) payable in arrears and in accordance with Bid Proposal (Attachment B), which is attached and is hereby incorporated by reference. Payment for work under this Agreement shall be made per invoice for work completed. All work shall be in accordance with Bid No. S-1141 and the Plans and Specifications (Attachment A), which are attached and are hereby incorporated by reference.
- 4.1 **General Conditions.** CONTRACTOR certifies and agrees that all the terms, conditions and obligations of the Contract Documents as hereinafter defined, the location of the job site, and the conditions under which the work is to be performed have been thoroughly reviewed, and enters into this Contract based upon CONTRACTOR'S investigation of all such matters and is in no way relying upon any opinions or representations of CITY. It is agreed that this Contract represents the entire agreement. It is further agreed that the Contract Documents including the Notice Inviting Bids, Special Instructions to Bidders, if any, and Contractor's Proposal, are incorporated in this Contract by reference, with the same force and effect as if the same were set forth at length herein, and that CONTRACTOR and its subcontractors, if any, will be and are bound by

any and all of said Contract Documents insofar as they relate in any part or in any way, directly or indirectly, to the work covered by this Contract.

"Project" as used herein defines the entire scope of the work covered by all the Contract Documents. Anything mentioned in the Specifications and not indicated in the Plans, or indicated in the Plans and not mentioned in the Specifications, shall be of like effect as if indicated and mentioned in both. In case of discrepancy in the Plans or Specifications, the matter shall be immediately submitted to City's Engineer, without whose decision CONTRACTOR shall not adjust said discrepancy save only at CONTRACTOR'S own risk and expense. The decision of the Engineer shall be final.

4.2 Materials and Labor. CONTRACTOR shall furnish, under the conditions expressed in the Plans and Specifications, at CONTRACTOR'S own expense, all labor and materials necessary, except such as are mentioned in the Specifications to be furnished by the CITY, to complete the project, in good workmanlike and substantial order. If CONTRACTOR fails to pay for labor or materials when due, CITY may settle such claims by making demand upon the surety to this Agreement. In the event of the failure or refusal of the surety to satisfy said claims, CITY may settle them directly and deduct the amount of payments from the Contract price and any amounts due to CONTRACTOR. In the event CITY receives a stop notice from any laborer or material supplier alleging non-payment by CONTRACTOR, CITY shall be entitled to deduct all of its costs and expenses incurred relating thereto, including but not limited to administrative and legal fees.

4.3 Project. The PROJECT is described as Furnish all Labor, Material, Tools and Equipment for the Renovations for ADA Upgrade of the Chapman Branch Library Restrooms located at 9182 Chapman Avenue, Garden Grove, CA 92841.

4.4 Plans and Specifications. The work to be done is described in a set of detailed Plans and Specifications entitled Furnish all Labor, Material, Tools and Equipment for the Renovations for ADA Upgrade of the Chapman Branch Library Restrooms located at 9182 Chapman Avenue, Garden Grove, CA 92841.

Said Plans and Specifications and any revisions, amendments or addenda thereto are attached hereto and incorporated herein as part of this Contract and referred to by reference. The work to be done must also be in accordance with the General Provisions, Standard Specifications and Standard Plans of City which are also incorporated herein and referred to by reference.

4.5 Time of Commencement and Completion. CONTRACTOR agrees to commence the Project with TEN (10) calendar days from the date set forth in the "Notice to Proceed" sent by City and shall diligently prosecute the work to completion within **NINETY (90) calendar days**, excluding delays caused or

authorized by the CITY as set forth in Sections 4.7, 4.8 and 4.9 hereof. The completion dates shall include any material delivery.

4.6 Time is of the Essence. Time is of the essence of this Contract. As required by the Contract Documents, CONTRACTOR shall prepare and obtain approval of all shop drawings, details and samples, and do all other things necessary and incidental to the prosecution of CONTRACTOR'S work in conformance with an approved construction progress schedule. CONTRACTOR shall coordinate the work covered by this Contract with that of all other contractors, subcontractors and of the CITY, in a manner that will facilitate the efficient completion of the entire work in accordance with Section 4.5 herein. CITY shall have complete control of the premises on which the work is to be performed and shall have the right to decide the time or order in which the various portions of the work shall be installed or the priority of the work of other subcontractors, and, in general, all matters representing the timely and orderly conduct of the work of CONTRACTOR on the premises..

4.7 Excusable Delays. CONTRACTOR shall be excused for any delay in the prosecution or completion of the Project caused by acts of God; inclement weather; damages caused by fire or other casualty for which CONTRACTOR is not responsible; and act, neglect or default of CITY; failure of CITY to make timely payments to CONTRACTOR; late delivery of materials required by this CONTRACT to be furnished by CITY; combined action of the workers in no way caused by or resulting from default or collusion on the part of CONTRACTOR; a lockout by CITY; or any other delays unforeseen by CONTRACTOR and beyond CONTRACTOR'S reasonable control.

City shall extend the time fixed in Section 4.5 herein for completion of the Project by the number of days CONTRACTOR has thus been delayed, provided that CONTRACTOR presents a written request to CITY for such time extension within fifteen (15) days of the commencement of such delay and CITY finds that the delay is justified. CITY'S decision will be conclusive on the parties to this Contract. Failure to file such request within the time allowed shall be deemed a waiver of the claim by CONTRACTOR.

No claims by CONTRACTOR for additional compensation or damages for delays will be allowed unless CONTRACTOR satisfies CITY that such delays were unavoidable and not the result of any action or inaction of CONTRACTOR and that CONTRACTOR took all available measures to mitigate such damages. Extensions of time and extra compensation as a result of incurring undisclosed utilities will be determined in accordance with Section 9-103A of the State of California Department of Transportation Standard Specifications. The CITY'S decision will be conclusive on all parties to this Contract.

4.8 Extra Work. The Contract price includes compensation for all work performed by CONTRACTOR, unless CONTRACTOR obtains a written change order signed by a designated representative of CITY specifying the exact nature of the extra work and the amount of extra compensation to be paid all as more particularly

set forth in Section 4.9 hereof. CITY shall extend the time fixed in Section 4.5 for completion of the Project by the number of days reasonably required for CONTRACTOR to perform the extra work, as determined by CITY'S Engineer. The decision of the Engineer shall be final.

4.9 Changes in Project.

4.9.1 CITY may at any time, without notice to any surety, by written order designated or indicated to be a change order, make any change in the work within the general scope of the Contract, including but not limited to changes:

- a. in the Specifications (including drawings and designs);
- b. in the time, method or manner of performance of the work;
- c. in the City-furnished facilities, equipment, materials, services or site; or
- d. directing acceleration in the performance of the work.

4.9.2 A change order shall also be any other written order (including direction, instruction, interpretation or determination) from the CITY which causes any change, provided CONTRACTOR gives the CITY written notice stating the date, circumstances and source of the order and that CONTRACTOR regards the order as a change order.

4.9.3 Except as provided in this Section 4.9, no order, statement or conduct of the CITY or its representatives shall be treated as a change under this Section 9 or entitle CONTRACTOR to an equitable adjustment.

4.9.4 If any change under this Section 4.9 causes an increase or decrease in CONTRACTOR'S actual, direct cost or the time required to perform any part of the work under this Contract, whether or not changed by any order, the CITY shall make an equitable adjustment and modify the Contract in writing. Except for claims based on defective specifications, no claim for any change under paragraph (4.9.2) above shall be allowed for any costs incurred more than 20 days before the CONTRACTOR gives written notice as required in paragraph (4.9.2). In the case of defective specifications for which the CITY is responsible, the equitable adjustment shall include any increased direct cost CONTRACTOR reasonably incurred in attempting to comply with those defective specifications.

4.9.5 If CONTRACTOR intends to assert a claim for an equitable adjustment under this Section 4.9, it must, within thirty (30) days after receipt of a written change order under paragraph (4.9.1) or the furnishing of a written notice under paragraph (4.9.2), submit a written statement to the CITY setting forth the general nature and monetary extent of such claim. The CITY may extend the 30-day period. CONTRACTOR may

include the statement of claim in the notice under paragraph (4.9.2) of this Section 4.9.

4.9.6 No claim by CONTRACTOR for an equitable adjustment shall be allowed if made after final payment under this Agreement.

4.9.7 CONTRACTOR hereby agrees to make any and all changes, furnish the materials and perform the work that CITY may require without nullifying this Contract. CONTRACTOR shall adhere strictly to the Plans and Specifications unless a change therefrom is authorized in writing by the CITY. Under no condition shall CONTRACTOR make any changes to the Project, either in additions or deduction, without the written order of the CITY and the CITY shall not pay for any extra charges made by CONTRACTOR that have not been agreed upon in advance in writing by the CITY. CONTRACTOR shall submit immediately to the CITY written copies of its firm's cost or credit proposal for change in the work. Disputed work shall be performed as ordered in writing by the CITY and the proper cost or credit breakdowns therefore shall be submitted without delay by CONTRACTOR to CITY.

4.10 Liquidated Damages for Delay. The parties agree that if the total work called for under this Contract, in all parts and requirements, is not completed within the time specified in Section 4.5 herein, plus the allowance made for delays or extensions authorized under Section 4.7, 4.8 and 4.9 herein, the CITY will sustain damage which would be extremely difficult and impractical to ascertain. The parties therefore agree that CONTRACTOR will pay to CITY the sum of two hundred and fifty dollars (\$250.00) per day for each and every calendar day during which completion of the Project is so delayed. CONTRACTOR agrees to pay such liquidated damages and further agrees that CITY may offset the amount of liquidated damages from any moneys due or that may become due CONTRACTOR under the Contract.

4.11 Contract Price and Method of Payment. CITY agrees to pay and the CONTRACTOR agrees to accept as full consideration for the faithful performance of this Contract, subject to any subsequent additions or deductions as provided in approved change orders, the sum as itemized in the bid proposal. Progress payments shall be made to the CONTRACTOR per month for each successive month as the work progresses. The CONTRACTOR shall be paid such sum as will bring the total payments received since the commencement of the work up to ninety five percent (95%) of the value of the work completed, less all previous payments, provided that the CONTRACTOR submits the request for payment prior to the end of the day required to meet the payment schedule. The CITY will retain five percent (5%) of the amount of each such progress estimate and material cost until 30 days after the recordation of the Notice of Completion.

Payments shall be made on demands drawn in the manner required by law, accompanied by a certificate signed by the CITY'S Engineer, stating that the work for which payment is demanded has been performed in accordance with the terms of the Contract. Partial payments of the Contract price shall not be considered as an acceptance of any part of the work.

4.12 Substitution of Securities in Lieu of Retention of Funds. Pursuant to California Public Works Contract Code Section 22300, the CONTRACTOR will be entitled to post approved securities with the CITY or an approved financial institution in order to have the CITY release funds retained by the CITY to ensure performance of the Contract. CONTRACTOR shall be required to execute an addendum to this Contract together with escrow instructions and any other documents in order to effect this substitution.

4.13 Completion. CITY may require affidavits or certificates of payment and/or releases from any subcontractor, laborer or material supplier in connection with Stop Notices, which have been filed under the provisions of the statutes of the State of California.

4.14 Contractor's Employee Compensation.

4.14.1 General Prevailing Rate. CONTRACTOR shall comply with all applicable requirements of Division 2, Part 7, Chapter 1 of the California Labor Code and all applicable federal requirements respecting the payment of prevailing wages. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the prevailing wage rates determined by the Director of the Department of Industrial Relations (DIR) for similar classifications of labor, the CONTRACTOR and its Sucontractors shall pay not less than the higher wage rate. The DIR will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal Wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the CONTRACTOR and Subcontractors, the CONTRACTOR and its Subcontractors shall pay not less than the Federal Minimum wage rate which most closely approximates the duties of the employees in question." CONTRACTOR shall be responsible for compliance with the most recent Federal Wage Requirements and may reference <http://www.wdol.gov/dba.aspx#0>.

4.14.2 Forfeiture for Violation. CONTRACTOR shall, as a penalty to the CITY, forfeit fifty dollars (\$50.00) for each calendar day or portion thereof for each worker paid (either by the CONTRACTOR or any subcontractor under it) less than the prevailing rate of per diem wages as set by the Director of Industrial Relations, in accordance with Sections 1770-1780 of the California Labor Code for the work provided

for in this Contract, all in accordance with Section 1775 of the Labor Code of the State of California.

4.14.3 Travel and Subsistence Pay. Section 1773.8 of the Labor Code of the State of California, regarding the payment of travel and subsistence payments, is applicable to this Contract and CONTRACTOR shall comply therewith.

4.14.4 Apprentices. Section 1777.5, 1777.6 and 1777.7 of the Labor Code of the State of California, regarding the employment of apprentices is applicable to this Contract and the CONTRACTOR shall comply therewith if the prime contract involves thirty thousand dollars (\$30,000.00) or more or twenty (20) working days, or more; or if contracts of specialty contractors not bidding for work through the general or prime contractor are two thousand dollars (\$2,000.00) or more for five (5) working days or more.

4.14.5 Workday. In the performance of this Contract, not more than eight (8) hours shall constitute a day's work, and CONTRACTOR shall not require more than eight (8) hours of labor in a day from any person employed by him thereunder except as provided in paragraph (4.14.2) above. CONTRACTOR shall conform to Article 3, Chapter 1, Part 7 (Sections 1810 et sep.) of the Labor Code of the State of California and shall forfeit to the CITY as a penalty, the sum of twenty-five dollars (\$25.00) for each worker employed in the execution of this Contract by CONTRACTOR or nay subcontractor for each calendar day during which any worker is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in any one week in violation of said Article. CONTRACTOR shall keep an accurate record showing the name and actual hours worked each calendar day and each calendar week by each worker employed by CONTRACTOR in connection with the Project.

4.14.6 Records of wages: Inspection. CONTRACTOR agrees to maintain accurate payroll records showing the name, address, social security number, work classification, straight-time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by it in connection with the Project and agrees to require that each of its subcontractors does the same. All payroll records shall be certified as accurate by the applicable contractor or subcontractor or its agent have authority over such matters. CONTRACTOR further agrees that its payroll records and those of its subcontractors shall be available to the employee or employee's representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards and shall comply with all the provisions of Labor Code Section 1776, in general.

4.15 Surety Bonds. CONTRACTOR shall, upon entering into performance of this Agreement, furnish bonds in the amount of one hundred percent (100%) of the Contract price bid, to guarantee the faithful performance of the work, and the other in the amount of one hundred percent (100%) of the Contract price bid to guarantee payment of all claims for labor and materials furnished. This Contract shall not become effective until such bonds are supplied to and approved by the CITY. The Surety Company must have an AM Best rating of A- VII or better.

4.16 Insurance.

4.16.1 CONTRACTOR is also aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Workers' Compensation or undertake self-insurance with provisions of that Code and will comply with such provisions before commencing the performance of the work of this Contract.

4.16.2 CONTRACTOR and all subcontractors will carry and provide Workers' Compensation insurance for the protection of its employees during the progress of the work and *provide Employers Liability in an amount not less than \$1,000,000*. The insurer shall waive its rights of subrogation against the CITY, its officers, agents and employees and shall issue a certificate to the policy evidencing same.

4.16.3 For any claims related to this Agreement, CONTRACTOR'S insurance coverage shall be primary insurance as respects CITY, its officers, officials, employees, agents, and volunteers. Any insurance or self-insurance maintained by the CITY, its officers, officials, employees, agents, or volunteers shall be in excess of the CONTRACTOR'S insurance and shall not contribute with it.

4.16.4 Before CONTRACTOR performs any work at, or prepares or delivers materials to, the site of construction, CONTRACTOR shall furnish certificates of insurance and endorsements evidencing the foregoing insurance coverage and such certificates of insurance and endorsements shall provide the name and policy number of each carrier and that the insurance is in force and will not be cancelled without 30 days written notice to the CITY. CONTRACTOR shall maintain all of the foregoing insurance in force until the work under this contract is satisfactorily and fully completed to the satisfaction of the CITY. The requirement for carrying the foregoing insurance shall not derogate from the provisions for indemnification of CITY by Contractor under Section 4.17 of this Contract. Notwithstanding nor diminishing the obligations of CONTRACTOR with respect to the foregoing, CONTRACTOR shall subscribe for and maintain in full force and effect during the life of this Contract, the following insurance in amounts not less than the amounts specified and issued by a company having a Best's Guide Rate of A-, Class VII or better (claims made and modified occurrence policies are not acceptable).

4.16.5 COMMENCEMENT OF WORK. CONTRACTOR shall not commence work under this Agreement until all certificates and endorsements have been received and approved by the CITY. All insurance required by this Agreement shall contain a Statement of Obligation on the part of the carrier to notify the CITY of any material change, cancellation, or termination at least thirty (30) days in advance. Contractor shall also provide a **wavier of subrogation** for **each policy**.

4.16.6 INSURANCE AMOUNTS. CONTRACTOR shall maintain the following insurance for the duration of this Agreement:

- (a) Commercial general liability in an amount not less than \$5,000,000 per occurrence, and not excluding XCU; (**claims made and modified occurrence policies are not acceptable**); Insurance companies must be acceptable to CITY and have an AM Best's Guide Rating of A-, Class VII or better, as approved by the CITY.
- (b) Automobile liability in an amount not less than \$1,000,000 combined single limit; (**claims made and modified occurrence policies are not acceptable**); Insurance companies must be acceptable to CITY and have an AM Best's Guide Rating of A-, Class VII or better, as approved by the CITY.
- (c) Course of Construction in an amount not less than the completed value of the project with no coinsurance penalty provisions. (**claims made and modified occurrence policies are not acceptable**); Insurance companies must be acceptable to CITY and have an AM Best's Guide Rating of A-, Class VII or better, as approved by the CITY.
- (d) Excess liability, follows form coverage, shall be provided for any underlying policy that does not meet the insurance requirements set forth herein. (**claims made and modified occurrence policies are not acceptable**) Insurance companies must be acceptable to CITY and have a Best's Guide Rating of A-Class VII or better, as approved by the CITY.

An Additional Insured Endorsement, **ongoing and products-completed operations**, for the policy under section 4.16.6 (a) shall designate CITY, its officers, officials, employees, agents, and volunteers for this contract and all public agencies from whom permits will be obtained and their directors, officers, agents, and employees, as determined by the CITY, as additional insureds for liability arising out of work or operations performed by or on behalf of the CONTRACTOR. CONTRACTOR shall provide to CITY proof of insurance

and endorsement forms that conform to city's requirements, as approved by the CITY.

An Additional Insured Endorsement for the policy under section 4.16.6 (b) shall designate CITY, its officers, officials, employees, agents, and volunteers for this contract and all public agencies from whom permits will be obtained and their directors, officers, agents, and employees, as determined by the CITY, as additional insureds for automobiles owned, leased, hired, or borrowed by the CONTRACTOR. CONTRACTOR shall provide to CITY proof of insurance and endorsement forms that conform to CITY's requirements, as approved by the CITY.

A Loss Payee Endorsement for the policy under section 4.16.6 (c) shall designate CITY OF GARDEN GROVE as loss payee. CONTRACTOR shall provide to CITY proof of insurance and endorsement forms that conform to CITY's requirements, as approved by the CITY.

In the event any of CONTRACTOR'S underlying policies do not meet policy limits within the insurance requirements, CONTRACTOR shall provide coverage under the excess liability policy in 4.16.6 (d). Policy must be a follows form excess/umbrella policy. CONTRACTOR shall provide the schedule of underlying policies for an excess liability policy, state that the excess policy follows form on the insurance certificate, and provide an additional insured endorsement for the excess liability policy designating CITY, its officers, officials, employees, agents, and volunteers for this contract and all public agencies from whom permits will be obtained and their directors, officers, agents, and employees, as determined by the CITY, as additional insureds.

For any claims related to this Agreement, CONTRACTOR's insurance coverage shall be primary insurance as respects CITY, its officers, officials, employees, agents, and volunteers for this contract and all public agencies from whom permits will be obtained and their directors, officers, agents, and employees. Any insurance or self-insurance maintained by the CITY, its officers, officials, employees, agents, or volunteers, for this contract and all public agencies from whom permits will be obtained and their directors, officers, agents, and employees, as determined by the CITY shall be excess of the CONTRACTOR's insurance and shall not contribute with it.

If CONTRACTOR maintains higher insurance limits than the minimums shown above, CONTRACTOR shall provide coverage for the higher insurance limits otherwise maintained by the CONTRACTOR.

4.17 Risk and Indemnification. All work covered by this Contract done at the site of the Project or in preparing or delivering materials to the site shall be at the risk of CONTRACTOR alone. CONTRACTOR agrees to save, indemnify and keep CITY, its Officers, Agents, Employees, Engineers, and Consultants for this Contract, and all public agencies from whom permits will be obtained and their directors, Officers, Agents and Employees harmless against any and all liability, claims, judgments, costs and demands, including demands arising from injuries or death of persons (CONTRACTOR'S employees included) and damage to property, arising directly or indirectly out of the obligations herein undertaken or out of the operations conducted by CONTRACTOR, save and except claims or litigation arising through the *active negligence* or sole willful misconduct of CITY and will make good to reimburse CITY for any expenditures, including reasonable attorneys' fees CITY may incur by reason of such matters, and if requested by CITY, will defend any such suits at the sole cost and expense of CONTRACTOR.

4.18 Termination.

4.18.1 This Contract may be terminated in whole or in part in writing by the CITY for its convenience, provided that the CONTRACTOR is given (1) not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination. Termination of contract shall conform to Section 8-1.11 of the State of California, Department of Transportation Standard Specifications.

4.18.2 If termination for default or convenience is effected by the CITY, an equitable adjustment in the price provided for in this Contract shall be made, but (1) no amount shall be allowed for anticipated profit on unperformed services or other work, and (2) any payment due to the CONTRACTOR at the time of termination may be adjusted to cover any additional costs to the CITY because of the CONTRACTOR'S default. The equitable adjustment for any termination shall provide for payment to the CONTRACTOR for services rendered and expenses incurred in accordance with section 8-1.11 of the State of California, Department of Transportation Standard Specifications.

4.18.3 Upon receipt of a termination action under paragraph (4.18.1) or (4.18.2) above, the CONTRACTOR shall (1) promptly discontinue all affected work (unless the notice directs otherwise), and (2) deliver or otherwise make available to the CITY all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the CONTRACTOR in performing this Contract whether completed or in process.

4.18.4 Upon termination under paragraphs (4.18.1) and (4.18.2) above, the CITY may take over the work and may award another party an agreement to complete the work under this Contract.

4.19 Warranty. The CONTRACTOR agrees to perform all work under this Contract in accordance with the CITY'S designs, drawings and specifications.

The CONTRACTOR guarantees for a period of one (1) year from the date of the notice of completion of the work that the completed work is free from all defects due to faulty materials, equipment or workmanship and that he shall promptly make whatever adjustments or corrections which may be necessary to cure any defects, including repairs or any damage to other parts of the system resulting from such defects. The CITY shall promptly give notice to the CONTRACTOR of observed defects. In the event that the CONTRACTOR fails to make adjustments, repairs, corrections or other work made necessary by such defects, the CITY may do so and charge the CONTRACTOR the cost incurred. The performance bond shall remain in full force and effect through the guarantee period.

The CONTRACTOR'S obligations under this clause are in addition to the CONTRACTOR'S other express or implied assurances provided under this Contract and in no way diminish any other rights that the CITY may have against the CONTRACTOR for faulty materials, equipment or work.

4.20 Attorneys' Fees. If any action at law or in equity is necessary to enforce or interpret the terms of this Contract, *each party shall be responsible for their own attorneys' fees, costs and necessary expenses.* If any action is brought against the CONTRACTOR or any subcontractor to enforce a Stop Notice or Notice to Withhold, which named the CITY as a party to said action, the CITY shall be entitled to all attorneys' fees, costs and necessary disbursements arising out of the defense or such action by the CITY. The CITY shall be entitled to deduct its costs for any Stop Notice filed, whether court action is involved or not.

4.21 Notices. Any notice required or permitted under this Contract may be given by ordinary mail at the address set forth below. Any party whose address changes shall notify the other party in writing.

To CITY: City of Garden Grove
 City Attorney
 11222 Acacia Parkway
 Garden Grove, California 92840

To CONTRACTOR: A2Z Construct, Inc.
 Attention: Matthew Jafan, President
 63 Via Gatillo
 Rancho Santa Margarita, CA 92688

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(Agreement Signature Block On Next Page)

IN WITNESS THEREOF, these parties have executed this Project Agreement on the day and year shown below.

Date: _____

"CITY"
CITY OF GARDEN GROVE

By: [Signature]
For City Manager

ATTEST:

City Clerk

Date: _____

"CONTRACTOR"
A2Z Construct, Inc.

Contractor's State Lic. No. 739539

Expiration Date: 3/31/15

By: [Signature]

Title: President

Date: 6/2/14

Tax ID No. 33-0943514

If CONTRACTOR is a corporation, a Corporate Resolution and/or Corporate Seal is required. If a partnership, Statement of Partnership must be submitted to the CITY.

APPROVED AS TO FORM:

[Signature]
Garden Grove City Attorney

ATTACHMENT "B"

SECTION 2 - PROPOSAL
 THE HONORABLE MAYOR AND CITY COUNCIL
 CITY OF GARDEN GROVE
 11222 ACACIA PARKWAY
 GARDEN GROVE, CALIFORNIA 92840

To: THE HONORABLE MAYOR AND CITY COUNCIL

The undersigned having carefully examined the Plans and Specifications for Furnish all Labor, Material, Tools and Equipment for the Renovations for ADA Upgrade of the Chapman Branch Library Restrooms located at 9182 Chapman Avenue, Garden Grove, CA 92841. HEREBY PROPOSE to furnish all labor, materials, and equipment and do all the work required to complete work in accordance with the Plans and Specifications for the sum of:

BID PROPOSAL	
LOCATION	TOTAL COST
Chapman Branch Library 9182 Chapman Avenue Garden Grove, CA 92841	\$ <i>86,000.00</i>
TOTAL COST In Written Words: <i>Eighty Six thousand dollars.</i>	
PARTIAL BIDS WILL NOT BE ACCEPTED!	
The above bid price includes all applicable taxes for the pricing proposed in this submittal. Note: In case of discrepancy between the words and figures, the words prevail.	

It is understood and agreed that:

- (a) No verbal agreement or conversation with any officer, agent or employee of CITY, either before or after the execution of the Agreement shall affect or modify any of the terms or obligations of this Proposal.
- (b) CITY will not be responsible for any errors or omissions on the part of the undersigned in making up his bid, nor will bidders be released on account of errors.
- (c) The undersigned hereby certifies that this Proposal is genuine and is not sham or collusive, or made in the interest or in behalf of any person not

herein named, and that the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding, and that the undersigned has not in any manner sought, by collusion, to secure for himself an advantage over any other bidder.

(d) The Bidder acknowledges receipt of amendments to the Solicitation and related documents numbered and dated:

<u>Amendment No.</u>	<u>Date</u>
<u>#1</u>	<u>4.16.14</u>
<u>#2</u>	<u>4.21.14</u>

(e) undersigned has not in any manner sought, by collusion, to secure for himself an advantage over any other bidder.

Check below where appropriate:

Partnership: That _____ are partners, doing
(Names of all Partners)

business under the firm name of _____ and that
the co-partnership makes the accompanying proposal.

Corporation: That Matthew Jabin of A2Z Construct Inc makes
(President or Secretary) (Name of Corporation)

the accompanying proposal.

Individual: That _____ is the bidder and makes the
(Name of Individual)
accompanying proposal.

Date: 4.28.14 A2Z Construct Inc.
Company Name
P.O. BOX 80425
Address
Rancho Santa Margarita Ca 92688
City - State - Zip
949.283.5179
Telephone

739539

CA Contractors Lic. No.

Matthew Jafari

Bidder's Name (Please Print)



Authorized Signature

SECTION 3 - DOCUMENTS (Cont.).

DESIGNATION OF SUB-CONTRACTORS

1. Pursuant to Public Contract Code Sections 4100 et seq, the undersigned certifies that it has used the sub-bids of the following listed subcontractors in making up its bid, and that the subcontractors listed will be used for the work for which they bid subject to the approval of the Engineer and in accordance with the applicable provisions of the Specifications.

<u>ITEM OF WORK</u>	<u>SUBCONTRACTOR & LIC. #</u>	<u>ADDRESS & TELEPHONE NO.</u>
1. <u>Hand Rail</u>	<u>M & R Fencing / 983692</u>	<u>12109 S. Vermont Ave. L.A. CA 90044</u>
2. _____	_____	_____
3. _____	_____	_____

Following are the names, addresses and telephone numbers of firms or agencies with whom you may confirm the past performances of the company in performing work of a similar nature and scope:

<u>REFERENCE</u>	<u>ADDRESS</u>	<u>TELEPHONE</u>
1. <u>David Albright</u>	<u>LACOE</u>	<u>562.755.9396</u>
2. <u>Ben Smith</u>	<u>OCWD</u>	<u>714.378.3211</u>
3. <u>Jim Khan</u>	<u>OCTA</u>	<u>714.920.9697</u>
4. <u>Kyoko Adachi</u>	<u>UCI</u>	<u>949.910.9462</u>

A2Z Construct Inc.

BIDDER'S NAME


AUTHORIZED SIGNATURE

**BIDDER/CONTRACTOR STATEMENT
REGARDING INSURANCE COVERAGE
(Submit with IFB/RFP Package)**

This signed document must be included with your bid package in order for your bid/proposal to be considered complete!

BIDDER/CONTRACTOR HEREBY CERTIFIES that he/she has reviewed and understands the insurance coverage requirements specified as in the attached Insurance Requirements Checklist.

Should we/I be awarded the contract, we/I certify that we/I can meet the specified requirements for insurance, including insurance coverage of the subcontractors, and agree to name the **City/Successor Agency/Sanitary District** and other additional insureds as per the agreement for the work specified. And we/I will comply with the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, before commencing the performance of the work specified.

A2Z Construct Inc.

Please Print (Person, Firm, or Corporation)

M. Jafari

Signature of Authorized Representative

Matthew Jafari, President

Please Print (Name & Title of Authorized Representative)

4-28-14

Date

949.283.5179

Phone Number

a2zconstructinc2@aol.com

Email

Insurance Certificates and Endorsements will also be accepted via email and must be emailed to the following email address only: sandras@garden-grove.org. This is the preferred and quickest method of submitting insurance certificates and endorsements.

Insurance Certificates and Endorsements can also be mailed to: City of Garden Grove
Attention: Sandra Segawa:
Purchasing Division
11222 Acacia Parkway
Garden Grove, CA 92840

NOTE: All insurance certificates and endorsements must be received by the City of Garden Grove Purchasing Division within ten (10) City working days of the original request or the City reserves the right to proceed with the next lowest responsible bidder or the next highest scoring proposer in the process.

INDEX TO SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Chapman Ave
Library

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003	PROJECT DATA	1	3 -	3
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PROJECT DATA

NAME OF PROJECT: Chapman Avenue Branch Library Restroom Remodel
9182 Chapman Ave.
Garden Grove, CA 92841

OWNER: City of Garden Grove, CA
c/o City of Garden Grove Public Works Dept.
13802 Newhope St.
Garden Grove, CA 92843

OPERATED BY: **Orange County Public Library**
Randy Quillman, Project Manager
Facilities Construction and Maintenance
1501 E. St. Andrew Place, Santa Ana, CA,

FLOOR AREA: Existing Building: 5,100 s.f. Each

Remodel Area: Interior of existing building and site work.

OCCUPANCY: A-3

Type of Construction V-B

ZONE: (CPA 24) verify

PARKING: 24 spaces + 1 Handicapped

BASIC REQUIREMENTS

PART 1 GENERAL

- 1 ATTACHMENT 1 - INCLUDED AS A PART OF THESE SPECIFICATIONS BUT NOT BOUND HEREIN, ARE SUPPLEMENTAL REQUIREMENTS BY THE CITY OF GARDEN GROVE. IN CASE OF CONFLICT WITH THIS SECTION THE MORE RESTRICTIVE CONDITION SHALL GOVERN.**

SECTION INCLUDES

- A. Summary of Work:
 - 1.1 Work by Contractor
 - 1.2 Work By Owner

- B. Contract Considerations:
 - 1.3 Minimum Requirements.
 - 1.4 Use of Premises.
 - 1.5 Plans Permits and Licenses
 - 1.6 Inspection and Testing Allowances.
 - 1.7 Schedule of Values.
 - 1.8 Applications for Payment.
 - 1.9 Alternates.

- C. Coordination and Meetings:
 - 1.10 Coordination.
 - 1.11 Field Engineering.
 - 1.12 Cutting and Patching.
 - 1.13 Conferences.
 - 1.14 Progress Meetings.

- D. Submittal:
 - 1.15 Submittal Procedures.
 - 1.16 Construction Progress Schedules.
 - 1.17 Proposed Products List.
 - 1.18 Shop Drawings.
 - 1.19 Product Data.
 - 1.20 Samples.
 - 1.21 Manufacturers' Instructions.
 - 1.22 Manufacturers' Certificates.

- E. Quality Control:
 - 1.23 Quality Assurance/Control of Installation.
 - 1.24 References.
 - 1.25 Field Samples.
 - 1.26 Inspection and Laboratory Services.

- F. Construction Facilities and Temporary Controls:
 - 1.27 Temporary Electricity.
 - 1.28 Temporary Lighting.
 - 1.29 Telephone Service.
 - 1.30 Temporary Water Service.
 - 1.31 Temporary Sanitary Facilities.
 - 1.32 Barriers and Fencing.
 - 1.33 Water Control.

- 1.34 Exterior Enclosures.
- 1.35 Protection of Installed Work.
- 1.36 Security.
- 1.37 Parking.
- 1.38 Progress Cleaning.
- 1.39 Field Offices and Sheds.
- 1.40 Removal of Utilities, Facilities and Controls.

G. Material and Equipment:

- 1.41 Products.
- 1.42 Transportation, Handling, Storage and Protection.
- 1.43 Products Options.
- 1.44 Substitutions.

H. Starting of Systems:

- 1.45 Starting Systems.
- 1.46 Demonstration and Instructions.
- 1.47 Testing, Adjusting, and Balancing.

I. Contract Closeout:

- 1.48 Contract Closeout Procedures.
- 1.49 Final Cleaning.
- 1.50 Adjusting.
- 1.51 Project Record Documents.
- 1.52 Operation and Maintenance Data.
- 1.53 Warranties.
- 1.54 Spare Parts and Maintenance Materials.

A SUMMARY OF WORK:

1

1.1 WORK BY CONTRACTOR:

The new work shall be constructed in and around the existing building as noted on drawings and Specifications.

Owner (City) will inspect the building for Asbestos, lead paint and mold. If any is uncovered, the city will pay for it's removal

B. CONTRACT CONSIDERATIONS:

1.3 MINIMUM REQUIREMENTS:

Details and specific requirements in these plans are minimum requirements only. All work shall conform to the Uniform Building Code (current prevailing edition), unless the governing building department has different standards. All local applicable ordinances, laws, standards and regulations shall be adhered to.

It shall be assumed that the mechanics, craftsmen and subcontractors are sufficiently competent and knowledgeable in their own specific areas of work to be familiar with these applicable codes and requirements at the time of bidding and claimed ignorance of these standards during constructions shall not constitute a basis for obtaining extra charges. The act of offering a bid proposal shall be interpreted as evidence that the contractor or subcontractor has fully examined the site, the plans and all contract documents affecting the work and unless he has notified the owner in writing of any conflict or condition which would prevent him from producing a completed and operational project, he shall be held to performance of the contract in every way and as reasonably implied therein.

1.4 USE OF PREMISES

A. Limit use of premises to allow:

- 1. Owner occupancy.
- 2. Work by Others and Work by Owner.

As an essential condition of the contract, the owner may have access to and use of the premises without prejudicing any other condition

of this contract. Before acceptance of the building by the owner, the building shall be fully operative, connected to all utilities and functioning perfectly with all on and off site work included in the contract completed to the satisfaction of the owner, local building officials and all parties having jurisdiction.

1.5 PLANS, PERMITS AND LICENSES:

- A. Plans for the building permit for the construction of this project shall be prepared by the Architect and paid for by the Owner but picked up and signed for by the General Contractor. Plans for permits required for individual Landscape, Plumbing, Electrical and HVAC subcontracts shall be prepared by the Architects respective consultants and paid for by the Owner but picked up and signed for by the individual subcontractor involved. Drawings required for any other permits such as fire sprinklers shall be prepared by and the permit paid for by that subcontractor
- B. The General Contractor and all subcontractors shall have a current business license from the City of Garden Grove before beginning work on this project. The cost of these licenses shall be born by the Contractor or Subcontractor involved.

1.6 INSPECTION AND TESTING ALLOWANCE

- A. There is no Inspection and testing allowance in this contract. Cost of engaging an inspection or testing firm, execution of inspection or tests, and reporting of results, if required, shall be paid for by the General Contractor. Special testing required by the Owner, shall be as noted under section 1.26.

1.7 SCHEDULE OF VALUES

- A. Submit schedule on AIA Form G703. Contractor's standard form or electronic media printout will be considered.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

1.8 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly.

1.9 ALTERNATES

- A. Alternates (If any) quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option.
- B. Coordinate related Work and modify surrounding Work as required.
- C. Schedule of Alternates:
 - 1. Additional Fencing and Gates.

C. COORDINATION AND MEETINGS:

1.10 COORDINATION

- A. Coordinate scheduling, submittal, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.
- D. In finished areas, conceal pipes, ducts, and wiring within the construction.

1.11 FIELD ENGINEERING:

- A. Employ a Land Surveyor to locate a reference datum and protect survey control and reference points.
- B. Establish elevations, lines, and levels and certify that elevations and locations of the Work conform with Contract

Documents.

1.12 CUTTING AND PATCHING

- A. Employ a skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.
- B. Submit written request in advance of cutting or altering structural or building enclosure elements.
- C. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- D. Refinish surfaces to match adjacent finishes.

1.13 CONFERENCES

- A. City of Garden Grove will schedule a pre-construction conference after Notice of Award for all affected parties.
- B. When required in individual specification Section, convene a pre-installation conference at project site prior to commencing Work of the Section.

1.14 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum every two week intervals.
- B. Preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

D. SUBMITTALS:

1.15 SUBMITTAL PROCEDURES

- A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Contract Document references.
- B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- D. Revise and resubmit submittal as required; identify all changes made since previous submittal.

1.16 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 20 days after date of Owner-Contractor Agreement for City of Garden Grove review.
- B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.
- C. Submit a horizontal bar chart with separate line for each major section of Work or operation, identifying first work day of each week.

1.17 PROPOSED PRODUCTS LIST

- A. Within 20 days after date of Owner-Contractor Agreement, submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

1.18 SHOP DRAWINGS

- A. Submit in the form of one reproducible transparency and five 5 opaque reproduction.

1.19 PRODUCT DATA

- A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the City of Garden Grove.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this project.

1.20 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product.
- B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for City of Garden Grove's selection.

1.21 MANUFACTURERS' INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.22 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to City of Garden Grove for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

E. QUALITY CONTROL:

1.23 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.24 REFERENCES

- A. Conform to reference standard by date of issue current as of date of Contract Documents.
- B. Should specified reference standard conflict with Contract Documents, request clarification from City of Garden Grove before proceeding.

1.25 FIELD SAMPLES

- A. Construct field samples at the site for review as required by individual specifications Sections. Acceptable samples represent a quality level for the Work.

1.26 INSPECTION AND TESTING LABORATORY SERVICES

- A. If Owner requires additional testing, other than that normally required or called for in the plans and specifications, Owner

will appoint and employ services of an independent firm to perform inspection and testing at Owners option. If after testing the item does not meet the required specification, Contractor shall pay for services of retesting. All other testing shall be paid for by the General Contractor.

- B. The independent firm will perform inspections, tests, and other services as required.
- C. Cooperate with independent firm; furnish samples as requested.
- D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor.
- E. Report observations and site decisions or instructions that are supplemental or contrary to manufacturers' written instructions.

F. CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS:

1.27 TEMPORARY ELECTRICITY

- A. Connect to existing power service. Power consumption shall not disrupt Owner's need for continuous service. Owner to pay for power consumed.
- B. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

1.28 TEMPORARY LIGHTING

- A. Provide and maintain temporary lighting for construction operations.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Permanent building lighting may be utilized during construction.

1.29 TELEPHONE SERVICE

- A. Provide, maintain and pay for telephone service to field office at time of project mobilization.

1.30 TEMPORARY WATER SERVICE

- A. Connect to existing water source for construction operations.

1.31 TEMPORARY SANITARY FACILITIES

- A. Maintain required facilities and enclosures.
- B. Maintain in clean and sanitary condition.

1.32 BARRIERS AND FENCING

- A. Provide security to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage. Security may be in form of locking and maintaining existing doors in secure condition. Any demolition exposing area to unauthorized entry shall be secured by the General Contractor before leaving the premises each day. It is the General Contractors responsibility to maintain security of all areas of his work at all times.

1.33 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Prohibit traffic or storage upon waterproofed or roofed surfaces.

1.34 SECURITY

- A. Provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft. It shall be the General Contractors responsibility to pay for or replace any materials lost or stolen

from the project.

1.35 PARKING

- A. Arrange for temporary parking areas to accommodate construction personnel.

1.36 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

1.37 PROJECT IDENTIFICATION

- A. Provide an 8 ft wide x 6 ft high project sign of exterior grade plywood and wood frame construction, painted, to City of Garden Grove's design and colors.
- B. Erect on site at location established by City of Garden Grove.

1.38 FIELD OFFICES AND SHEDS

- A. Office: Weather-tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display table. Use of interior room in area of work will be acceptable.

1.39 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion Final Application for Payment inspection.
- B. Remove underground installations to a minimum depth of 2 ft Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

G. MATERIAL AND EQUIPMENT:

1.40 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.
- C. Use interchangeable components of the same manufacture for similar components.

1.41 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

- A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

1.42 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.43 SUBSTITUTIONS

- A. City of Garden Grove will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- C. Submit three copies of requests for Substitution for consideration. Limit each request to one proposed Substitution.

H. STARTING SYSTEMS:

1.44 STARTING SYSTEMS

- A. Provide seven days notification prior to start-up of each item.
- B. Ensure that each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.
- D. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.45 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of final inspection.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.

1.46 TESTING, ADJUSTING, AND BALANCING

- A. Contractor shall appoint and employ services of an independent firm to perform testing, adjusting, and balancing. Contractor shall pay for these services as part of the General Contract.
- B. Reports will be submitted by the independent firm to the City indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.
- C. Cooperate with independent firm; furnish assistance as requested.
- D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor.

I. CONTRACT CLOSEOUT:

1.47 CONTRACT CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for City of Garden Grove's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.48 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces.
- C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.

- D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.49 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.50 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of Contract Documents to be utilized for record documents.
- B. Record actual revisions to the Work. Record information concurrent with construction progress.
- C. Specifications: Legibly mark and record at each Product Section a description of actual Products installed.
- D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.
- E. Submit documents to City of Garden Grove with claim for final Application for Payment.

1.51 OPERATION AND MAINTENANCE DATA

- A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", and title of project.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents:
 - 1. Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Operation and maintenance instructions, arranged by system.
 - 3. Project documents and certificates.

WARRANTIES

- E. Contractors shall provide a one year guarantee against defective workmanship and materials. The Contractor shall upon notification, immediately correct any and all defects that may occur within one year after signing the notice of completion. Contractor shall at the completion of the job, furnish the owner with all required "as built" drawings, all operating manuals for installed equipment and all manufacturers warranties and guarantees.
- F. Provide duplicate notarized copies.
- G. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.
- H. Submit prior to final Application for Payment.

1.52 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

END OF SECTION

SECTION 02055
DEMOLITION

1 PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all DEMOLITION WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES:

- A. Removal of existing partitions, finish material, ceilings, flooring etc. not required to remain to complete the project as drawn.
- B. Remove existing toilet partitions to be replaced with new, similar type, different color in configuration shown on remodeled plans.
- C. Removal of existing concrete for new plumbing lines in area of remodeled restroom.
- D. Removal of existing concrete ramp, entrance landing and part of walk in area of new ramp at main entrance of building as required to complete project as noted on drawings.
- E. Remove existing ceramic floor tile on all restroom floors in area of new work.
- F. Remove existing ceramic wall tile on all restroom walls in area of new work.
- G. Remove existing toilet partitions to be replaced with new, similar type, different color in configuration shown on plans.
- H. Removal of portion of irrigation system where disturbed by new walk at North side of building. This demolition may be done by the irrigation subcontractor at direction of General Contractor. Verify.

1.3 REGULATORY REQUIREMENTS

- A. Conform to the requirements of the City of Garden Grove and OSHA standards for demolition of structure, safety of adjacent structures, dust control, service utilities, discovered hazards, and asbestos removal if required.

2 PART 2: PREPARATION

- A. Notify adjacent occupants and owners of work which may affect their property, potential noise, utility outage, or disruption. Coordinate with owner.
- B. Protect existing carpet, floor tile and similar finishes not required to be removed in adjacent areas of work. General Contractor must replace all carpet soiled or damaged during construction at his own expense.
- C. Protect existing materials and structures which are not to be demolished.
- D. Erect and maintain weatherproof airtight closures for exterior openings.
- E. Protect existing items which are not indicated to be removed.

3 PART 3: EXECUTION

G3.1 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and building areas not scheduled to be removed.
- B. Maintain protected egress and access at all times. Do not close or obstruct roadways sidewalks without permits.
- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Owner and Architect.

3.2 SELECTIVE DEMOLITION

- A. Demolish and remove components in an orderly and careful manner, in sequence as indicated on Drawings or as required by General Contractor to obtain an efficiently run operation..
- B. Protect existing supporting structural members and finishes scheduled to remain.

3.3 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Erect and maintain weatherproof airtight closures for exterior openings.
- C. Protect existing items which are not indicated to be removed.

3.4 CLEAN UP

- A. Remove demolished materials from site as work progresses. Leave areas of work in clean condition.

END OF DEMOLITION SECTION

SECTION 02510

ASPHALTIC CONCRETE PAVING and STRIPING

PART 1) GENERAL

1) SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all ASPHALT PAVING WORK as shown on the drawings or specified herein. This Section contains no actual asphalt paving as such but specifies the restriping of the handicapped parking spaces and accessories related to all ADA requirements.. Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

2) SECTION INCLUDES

- i) Handicapped striping, painted signage on pavement and Parking bumpers. See also other sections of spec and handicapped requirements on plans.
- ii) Seal Coat and Striping for existing parking area as described on site plan.

3) SYSTEM DESCRIPTION

This section describes materials and methods of construction of the on-site parking area. Paving of the street, if required must be accomplished per the City of Garden Grove standards and is not necessarily noted herein. It shall be the General Contractors responsibility to ascertain those requirements and do that portion of the work accordingly.

4) QUALITY ASSURANCE

- i) Perform Work in accordance with The Asphalt Institute Manual MS-8 and the State of California Dept. of Highway standards.
- ii) Mixing Plant: Conform to The Asphalt Institute Manual MS-3 and the State of California Dept. of Highway standards.

PART 2) PRODUCTS

a) PAVEMENT MATERIALS

- i) Seal Coat: The Asphalt Institute MS-19, fog type for new paving and slurry type for existing paving.

b) ACCESSORIES

- i) Striping Paint: White, Rapid Dry, acrylic emulsion base, #3080 acrylic traffic paint as manufactured by Pervo Paint Co. of Los Angeles, CA. Material shall meet TT-P-1952B, type 1 @ 2. Do not apply over water soluble top sealers. Other colors as required by title 24 and ADA shall be similar material as recommended and manufactured by Pervo Paint Co.
- ii) Bumpers: Precast concrete; of standard profile.

PART 3) EXECUTION

a) APPLICATION OF STRIPING:

- i) Install per manufacturers recommendations.
- ii) Wait a minimum of 7 days after surfacing before striping.
- iii) Remove all sand, dirt etc. Oil and grease shall be removed with a strong solution of T.S.P.
- iv) Stripe with 4" white wide vinyl stripes. Letter all handicapped spaces, compact stalls, etc. noted on plans or required by building

official. Install handicapped sign per code at handicapped stall. Do not apply when temperature is below 50% F.

v) Do not install specified product over water soluble top sealers.

b) **INSTALLATION OF BUMPERS:** Install concrete bumpers as noted on plans by fastening with steel rods.

c) **SCHEDULE**

i) Existing Pavement Area: Patch as needed, apply new emulsion seal coat and restripe.

END OF PAVING SECTION

CONCRETE

1 PART 1 GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all CONCRETE WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. New concrete handicapped ramp and walkways outside of existing buildings.
- B. Replacing of concrete slabs where removed for plumbing and revised restrooms.
- C. Installing of reinforcing in all new ramps, landings and walkways.

1.3 WORK INCLUDED:

- A. Furnishing and installation of all dowels, bolts, sleeves and anchors embedded in concrete.
- B. All formwork required for concrete work.
- C. Furnishing and installation of all reinforcing steel embedded in concrete.
- D. Finishing and curing of all concrete work.

1.4 GENERAL:

All work shall comply with the Uniform Building Code, (current prevailing edition), California Building code, Current ADA requirements and the requirements of the City of Garden Grove Building Department.

1.5 PERMITS, LICENSES AND INSPECTIONS:

This Contractor shall call for all inspections required for his portion of construction by the City of Garden Grove. He shall show proof of workman's compensation insurance and pay for a CITY BUSINESS LICENSE per section 01001 of this specification.

1.6 QUALITY ASSURANCE

- A. Construct and erect concrete formwork and cast-in-place concrete work in accordance with ACI 301, unless specified otherwise in this Section.
- B. Perform concrete reinforcing work in accordance with ACI 301 and Manual of Standard Practice ASTM A184, unless specified otherwise in this Section.

2 PART 2 PRODUCTS

2.1 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615, intermediate grade 40 ksi (276 MPa) yield grade; deformed new billet steel bars.
- B. Welded Steel Wire Fabric: ASTM A185, plain type, in flat sheets.
- C. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for support of reinforcing.
- D. Fabricate concrete reinforcing in accordance with ACI 315.

2.2 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type II, low alkali, Portland type,
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean, potable and not detrimental to concrete.

2.3 CONCRETE MIX

- A. Ready-mixed concrete shall conform to U.B.C. Standard no. 26-13. Mix and deliver concrete in accordance with ASTM C94.
- B. Provide concrete of the following strength:
 - 1. Compressive Strength: 1,650 psi (7 day).
 - 2. Compressive Strength: 2,500 psi (28 day).
 - 3. Slump: 4 to 5 inches.

PART 3 EXECUTION

All concrete work shall be level, straight and even, or sloped when required as noted on plans. Then finished in the appropriate manner. Steel trowel finish on interior and light broom finish on exterior walks, slabs and steps. Exterior walks, slabs and steps shall be sloped for drainage at a rate of 1/4" per foot for drainage unless specified otherwise on drawings.

3.1 REINFORCEMENT PLACEMENT

- A. Place reinforcement, supported and secured against displacement prior to placing concrete.
- B. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.
- C. Install #3 dowels (or larger if noted on plans) @ 18" o.c., embedded min. 4" into existing slab and projecting at least half way across opening at all sawcuts for plumbing or similar trenching. Embed into existing concrete using epoxy cement bond approved for this use.

3.2 PLACING CONCRETE

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's instructions.
- B. Place concrete continuously between predetermined expansion, control and construction joints. Do not break or interrupt successive pours such that cold joints occur.
- C. Where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack with non-shrink grout.

3.3 CONCRETE WALK FINISHING

- A. Finish concrete walk surfaces in accordance with ACI 301. and ACI 302.
- B. Uniformly spread, screed, and float concrete.
- C. Steel trowel surfaces and finish with salt finish to match existing.

3.4 CURING

- A. CURING METHOD: Apply sodium silicate base curing compound "CURE-TREAT R.T.U." as manufactured by D.F.C.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.5 DEFECTIVE CONCRETE

- A. Modify or replace concrete not conforming to required lines, details and elevations, as directed by City of Garden Grove/Engineer.

END OF CONCRETE SECTION

STRUCTURAL STEEL & MISC. METALS HANDRAILS

I. GENERAL

a. SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all STRUCTURAL STEEL AND MISC. METAL WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

b. SECTION INCLUDES

- i. Steel handrails at handicapped ramps.
- ii. Structural steel framing members, baseplates, plates, anchor bolts, Pipe column & tubes, grouting under baseplates.
- iii. Anchors for casting into concrete.
- iv. Simpson anchors, straps, clips, post bases, post caps, etc.

c. RELATED WORK NOTED ELSEWHERE:

- i. Section 03001 - CONCRETE: Placement of anchors for casting into concrete.

d. SUBMITTALS

- i. Shop Drawings: Indicate sizes, spacing, and locations of structural members, connections, cambers, loads, and welded connections.

e. QUALITY ASSURANCE

- i. Fabricate structural steel members per AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- ii. Perform design under direct supervision of a Professional Structural Engineer licensed at the place where the project is located.

2. PRODUCTS

a. MATERIALS

- i. Structural Steel Members: ASTM A36. A572, Grade 50.
- ii. Framing anchors, post caps, post bases, straps, ties, saddles etc. shall be Simpson or approved equal.
- iii. Structural Tubing: ASTM A500, Grade B. ASTM A501.
- iv. Pipe: ASTM A53, Grade B.
- v. Bolts, Nuts, and Washers: ASTM A325, galvanized to ASTM A153 for

galvanized members.

- vi. Anchor Bolts: ASTM A307.
- vii. Welding Materials: AWS D1.1; type required for materials being welded.
- viii. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days;
- ix. Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide.

b. **FABRICATION**

- i. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

c. **FINISH**

- i. Prepare structural component surfaces per SSPC SP 2.
- ii. Shop prime structural steel members. Do not prime surfaces that will be field welded.

EXECUTION

d. **EXAMINATION AND PREPARATION**

- i. Verify that field conditions are acceptable and are ready to receive work.

e. **ERECTION**

- i. Allow for erection loads. Provide temporary bracing to maintain framing in alignment until completion of erection and installation of permanent bridging and bracing.
- ii. Do not field cut or alter structural members without approval of Architect/Engineer.
- iii. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

FIELD QUALITY CONTROL

Field inspection, if required, will be performed under provisions of Section 01001.

*****END OF STEEL & MISC. METALS SECTION*****

SECTION 05400

METAL STUD FRAMING

(Optional)

1 PART 1 GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all METAL STUD FRAMING WORK as shown on the drawings or specified herein. This section is an alternate to wood stud framing of interior partitions. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

METAL STUD FRAMING: As an option, metal stud framing may be used in place of wood stud framing provided all elements meet minimum building code standards and requirements listed below. If this option is selected by the Contractor, he shall be required to meet all of the structural requirements, sizes and details currently detailed or specified in wood at no additional cost.

1.2 SECTION INCLUDES

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. All backing necessary for plaster expansion joints.
- D. All backing for other trades and equipment.

1.3 RELATED WORK NOTED ELSEWHERE:

- A. Cement Plaster.
- B. Gypsum board with taped and sanded joint treatment.
- C. Building insulation.
- D. Optional wood stud framing.

1.4 SYSTEM DESCRIPTION

- A. This Section added as an alternate method of framing interior, non-bearing partitions. Either wood studs or metal studs may be used at the option of the General Contractor. If this option is to be used, it shall be so stated at the time of submitting bids.
- B. Conform to applicable codes for fire rated assemblies where required and to all structural and architectural requirements.
- C. If this system of partition construction should be used in lieu of wood stud construction, it shall be the responsibility of the Contractor to complete the construction as detailed in wood as required by the building department. Any additional costs for larger or stronger material shall be borne by this Contractor.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C840. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board, and GA-600 - Fire Resistance Design Manual.
- B. Work shall meet the requirements of:
 - 1. American Iron and Steel Institute (A.I.S.I.), Design of Cold Formed Steel Structural Members, 1980.
 - 2. American Welding Society (A.W.S.) D.1.3, 1981 Structural Welding code - Sheet Steel.
 - 3. American Institute of Steel Construction (A.I.S.C.), Manual of Steel Construction, latest edition.

2 PART 2 PRODUCTS

2.1 METAL STUD SYSTEM

- A. Manufacturers:
 - 1. Milcor Division of Inryco. Type 20 ga, galvanized.
 - 2. CIMCO Type 20 ga, galvanized.
- B. Studs and Tracks: Shall meet ICBO report #4560 and ASTM A-568; galvanized sheet steel, 20 gage thick, C shape, with serrated faces with a minimum yield point of 33,000 psi. Steel must comply with the ductility requirements listed in Section 27.902 of UBC Standard No. 27-9.
- C. SHOT PINS: Install track to concrete slab with power driven shot pins meeting ICBO report #2388. Approved manufacturer: "Hilti" SDS22 P8, 7/8" long shaft, drywall track pins or "Ramset" #1506. Space pins @ minimum 32" O.C. or as required by code.

2.2 ACCESSORIES

- A. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

3 PART 3 EXECUTION

3.1 INSTALLATION - METAL STUDS

- A. Install studding in accordance with ASTM C754.
- B. Metal Stud Spacing: As noted on drawings, but in no case to exceed 24 inches o.c.
- C. Partition Heights: To height to bottom of 2nd floor sheathing or roof sheathing as appropriate.

3.2 INSTALLATION - CEILING FRAMING

- A. Install in accordance with ASTM C754.
- B. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.
- C. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. (If suspended ceiling is required per plans)
- D. Laterally brace entire suspension system. (If suspended ceiling is required per plans)

3.3 INSTALLATION - ACOUSTICAL ACCESSORIES

- A. Install acoustical sealant under floor plate, where stud abuts masonry walls and within partitions in accordance with manufacturer's instructions.

3.4 TOLERANCES

- Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

1 PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all ROUGH CARPENTRY WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. New structural and non bearing walls and ceiling framing.
- B. Installation of rough hardware incidental to work of this Section.
- C. Backing for items requiring backing including those items indicated in Restroom Accessories (Section 10800).
- D. Miscellaneous cutting, blocking and wood framing required for other trades.

1.3 RELATED WORK NOTED ELSEWHERE:

- A. Section 06200 "Finish Carpentry".
- B. Section 09111 "Metal Stud Framing" (ALTERNATE).

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with the following agencies:
 - 1. Lumber Grading Agency: Certified by ALSC.
 - 2. Plywood Grading Agency: Certified by APA.

2 PART 2 PRODUCTS

2.1 LUMBER MATERIALS

- A. Lumber Grading Rules: WWPA.
- B. Beam Framing: Stress Group 1500 p.s.i., Douglas Fir species, No. 1 grade, 19 percent maximum moisture content.
- C. Joist Framing: Stress Group 1500, Douglas Fir species, No. 1 grade, 19 percent maximum moisture content.
- D. Non-structural Light Framing: Stress Group 1050, Douglas Fir species, Construction grade, 2" to 4" thick and 2" to 4" wide classification, 19 percent maximum moisture content.
- E. Studding: Stress Group 600 psi, Douglas Fir species, Stud grade, 2" to 4" thick and 2" to 4" wide classification, 19 percent maximum moisture content.
- F. Sill Plate: Pressure treated douglas fir.

2.2 ACCESSORIES

- A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.
- B. Joist Hangers: Galvanized steel, sized to suit framing conditions.

3 PART 3 EXECUTION

3.1 FRAMING

- A. Erect wood framing members in accordance with Uniform Building code. Place members level and plumb. Place horizontal members crown side up.
- B. Frame double joist headers at floor and ceiling openings. Frame rigidly into joists. Frame double joists under wall studding.
- C. Bridge floor joists framing in excess of 8 feet span at mid-span of members. Fit solid blocking at ends of members.
- D. Curb all roof openings except where curbs are provided. Construct curb members of single pieces per side.

3.2 SHEATHING

- A. Install roof sheathing perpendicular to framing with end joints staggered. Secure sheet edges over firm bearing.
- B. Install sheathing to two span continuous 48 inches minimum length.
- C. Secure wall sheathing with ends staggered, over firm bearing.

END OF SECTION

FINISH CARPENTRY

1 PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all FINISH CARPENTRY WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. Finish carpentry items, including new doors, hardware and attachment of accessories.
- B. Installation of doors, jambs and door hardware.

1.3 RELATED WORK NOTED ELSEWHERE:

- A. Hardware for all doors. (SECTION 08705)
- B. Wood Doors, section 08210.

1.4 QUALITY ASSURANCE

- A. Perform cabinet work in accordance with Woodwork Institute of California (W.I.C.) Custom quality.

2 PART 2: PRODUCTS

2.1 CABINETS:

- A. Shall be "Woodwork Institute of California" (WIC) Custom grade. All exposed finishes to be laminated plastic covered, Euro-style, WIC style A-Type I.
- B. Plastic Laminate shall be as specified in Section 2.3 below.

2.2 FINISH MATERIALS

- A. Plastic Laminate: Shall be as manufactured by Wilson Art or approved equal, NEMA LD 3.1. Color, pattern and surface texture as selected by City of Garden Grove. See finish schedule under cabinets for location of counter top material.

2.3 LUMBER MATERIALS

- A. Softwood Lumber: PS 20; Graded in accordance with WIC Custom standards; maximum moisture content of 6 percent.
- B. Hardwood Lumber: Graded in accordance with Custom; oak species, maximum moisture content of 8 percent.

2.4 SHEET MATERIALS

- A. Softwood Plywood: PS 1 Grade C-D; Graded in accordance with APA, veneer core.
- B. Wood Particle board: ANSI A208.1 Type 1 2; standard, composed of wood chips made with waterproof resin binders, sanded faces.
- C. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder; tempered grade.

2.5 ACCESSORIES

- A. Fasteners: Size and type to suit application; Electro galvanized steel for exterior, high humidity and treated wood locations, plain finish elsewhere.

- B. Contact Adhesives: "Lockwood" contact cement.
- C. Wall Adhesive: Cartridge type, compatible with wall substrate, capable of achieving durable bond.

2.6 HARDWARE

- A. Cabinet Hardware: (There are no cabinets on this project)
 - 1. HINGES: Blum or equal, self closing, concealed, wit a minimum 125 degree open angle.
 - 2. PULLS: "Bainbridge" BA1710- recessed. finish as selected by Owner.
 - 3. SHELF STANDARDS: KV255, KV256 supports, stainless finish.
 - 4. SHELF BRACKETS: type to match brackets.
 - 5. DRAWER SLIDES:
 - a. "Blum" epoxy coated bottom mount, 100 lb. load capacity for standard drawers.
 - b. "Accuride" full extension, 100 lb load capacity for file drawers.
- B. Door Hardware: See Door Hardware schedule in Section 08705.

2.7 FABRICATION

- A. Fabricate to WIC Custom standards.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install work in accordance with WIC Custom Quality Standard.
- B. Set and secure materials and components in place, plumb and level.
- C. Cover exposed edges of shelving with laminated plastic edging.
- D. Apply plastic laminate finishes with adhesive over entire surface. Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.
- E. Install hardware supplied by Section 08705 in accordance with manufacturer's instructions.

3.2 PREPARATION FOR FINISH

- A. Sand work smooth and set exposed fasteners. Apply wood filler in exposed fastener indentations.
- B. Site Finishing: Refer to Section 09900.

END OF FINISH CARPENTRY SECTION

BUILDING INSULATION

1 PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all BUILDING INSULATION WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. Install R-11 sound insulation in all new interior partitions and walls.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation in accordance with manufacturer's instructions and State of California Environmental and OSHA standards.

2 PART 2 PRODUCTS

2.1 INSULATION MATERIALS

- A. Batt Insulation : ASTM C665; preformed glass fiber batts manufactured by Owens Corning Fiberglas Corp., conforming to the following:
 - 1. R-11 at interior partitions shall be unfaced, friction fit, type I Sound Insulation.

3 PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that electrical work in walls is installed and that all new or open walls scheduled to receive drywall are ready to receive insulation.

3.2 INSTALLATION - BATT INSULATION

- A. Install in interior partitions full height to underside of ceilings in all new partitions or existing walls that are exposed during construction and do not already contain specified insulation. Intent is to block sound from one room to another.
- B. Fit insulation tight in spaces. Leave no gaps or voids.
- C. Install friction fit insulation tight to framing members, completely filling prepared spaces.

END OF INSULATION SECTION

WOOD DOORS

1 PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all WOOD DOOR WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. Prefinished "laminated plastic finished" wood type doors.
- B. Steel frames for these doors.
- C. All glass and glazing work related to these doors and frames.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Finish Carpentry, (Section 06200).
- B. Door hardware under section 08708

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with the following:
 - 1. ANSI/NWWDA I.S.1.
 - 2. Fire Door and Panel Construction: Conform to ASTM E152 NFPA 252 UL 10B.
 - 3. Installed Door and Panel Assembly: Conform to NFPA 80 for fire rated class as scheduled. as indicated.

2 PART 2 PRODUCTS

2.1 DOOR TYPES

- A. **Wood Doors** shall be prefinished "Laminated Plastic finish" doors. They shall have a prefinished surface of laminated plastic and prefitted for metal frames listed below. When required to be fire rated, they shall be a minimum of 20 minute fire resistive or better as noted on door schedule. Rated doors shall have fire rated frames of equal or higher rating.

2.2 DOOR JAMBS (frames)

- A. Frames for wood type doors designated as "Timely" on doors schedule shall be 18 ga. series "C" Pre-finished steel frames as manufactured by "Timely Industries" of Sun Valley, CA. Color shall be browntone or as selected by City of Garden Grove. Acceptable substitute - "Rediframe" of equal metal thickness and finish as manufactured by "Slimfold Manufacturing Co." and distributed by Frank Gerici & Assoc., West Covina, CA.

2.3 FABRICATION

- A. Fabricate non-rated doors in accordance with ANSI/NWWDA I.S.1 requirements.
- B. Fabricate fire rated doors in accordance with ANSI/NWWDA I.S.1 and to UL Warnock-Hersey requirements. Attach fire-rating label to door edge.
- C. Fabricate doors with hardware reinforcement blocking in place.
- D. Factory machine doors for finish hardware.
- E. Factory pre-fit doors for frame opening dimensions identified on shop drawings.

3 PART 3 EXECUTION

3.1 INSTALLATION

- A. All items under this heading shall be set in their correct locations as shown on the plans and shall be level, square, plumb and at proper elevation and alignment with other work in accordance with manufacturer's instructions and ANSI/NWWDA I.S.1 requirements.
- B. All door clearances and sizes must meet current California building code handicapped standards and hardware requirements.
- C. Hardware shall be installed on the doors as specified in the hardware schedule, well secured, straight, neat, complete and in perfect working condition.
- D. Adjust doors for smooth and balanced door movement.

3.2 INSTALLATION TOLERANCES

- A. Conform to ANSI/NWWDA requirements for fit and clearance tolerances and maximum diagonal distortion.

3.3 SCHEDULE

- A. See Door Schedule sheets A-1 of the drawings and floor plan sheets A-4 for additional information on these doors.

END OF DOORS SECTION

SECTION 08705

DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

- A. Hardware for Wood, Hollow Steel, Aluminum Plastic Laminate Faced doors.
- B. Thresholds.
- C. Gasketing.

1.02 REFERENCES

- A. ANSI A117.1 - Specifications for making buildings and facilities accessible to and usable by Physically Handicapped People.
- B. NFPA 80 - Fire Doors and Windows.
- C. NFPA 101 - Fire Life Safety
- D. WIC - Woodwork Institute of California.
- E. BHMA - Builders' Hardware Manufacturers Association.
- F. DHI - Door and Hardware Institute.
- G. NAAMM - National Association of Architectural Metal Manufacturer.
- H. CBC - California Building Code
- I. SDI - Steel Door Institute.
- J. ADA - Americans With Disabilities Act.

1.03 COORDINATION

- A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.04 QUALITY ASSURANCE

- A. Manufacturers: Companies specializing in manufacturing door hardware with minimum five years experience.
- B. Hardware Supplier: Company specializing in supplying institutional door hardware with three years documented experience. Company shall employ Architectural Hardware Consultant (AHC) who shall be available for jobsite meetings and required by Architect, owner or contractor.
- C. Source Limitation: Obtain each type and variety of door hardware from only one manufacturer, although several may be indicated as offering products complying with requirements.

- D. Scheduled Designations: Except as otherwise indicated, the use of one manufacturer's numeric designation system in schedules does not imply that another manufacturer's products will not be acceptable, unless they are not equal in design, size, weight, finish, function, or other quality of significance. However, do not make substitutions after Architect's acceptance of hardware supplier's completed hardware schedule.

1.05 REGULATORY REQUIREMENTS

- A. Conform to California Building Code and NFPA Standard No. 80, for requirements applicable to fire rated doors and frame.
- B. The hardware schedule shall detail all door locations, sizes, materials, labels and proper handing.
- C. Conform to the applicable sections of the California Building Code, CBC Sections 1133B.2.1, 1133B.2.5, 1133B.2.5.1, 1003.1.8, 1003.3.1.9, and 1133B.2.4.1.
- D. Provide UL labels on all panic devices in fire-rated openings.
- E. Provide California State Fire Marshall Listing for all fire exit hardware.
- F. Comply with ADA - Americans with Disabilities Act.

1.06 SUBMITTALS

- A. Submit schedule, shop drawings, and product data under provisions of Section 01300, Submittals. The Door Schedule on the Contract Drawings indicates which Hardware Group is to be used with each door.
- B. The hardware schedule shall detail all door locations, sizes, materials, labels and proper handing.
- C. Indicate locations and mountings heights of each type of hardware.
- D. Provide product data on specified hardware.
- E. Indicate quantity, complete part numbers and installation location for each piece of hardware.
- F. Provide final keying charts for Owner approval.
- G. Submit manufacturer's part list, templates and installation instructions under provision of Section 01300, Submittals.
- H. Submit manufacturer's certificate that fire-rated hardware meets or exceeds specified requirements.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually, group small items together, label and identify package with door opening code to match hardware schedule. Identify location of each door opening. Deliver in strong sturdy containers.
- B. Deliver keys to Owner by security shipment direct from Lock Manufacturer. Failure to comply will

result in rekeying of facility at supplier's expense.

- C. Protect hardware from theft by cataloging and storing in dry, secure area.

1.09 GUARANTEE

- A. Provide a 2-year written guarantee. Said guarantee shall read as follows: "For a period of not less than two (2) years, we (Firm Name) will service and or replace, at no charge to the Owner, any part proving defective due to faulty manufacture of materials. Exit Devices to be guaranteed for five years & Door Closers shall be guaranteed for twenty-five years. This guarantee does not cover abnormal operation conditions or abusive jobsite treatment after acceptance of work by Owner".

1.10 MAINTENANCE MATERIALS

- A. Provide special wrenches and tools applicable to each different or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

<u>Hardware Item</u>	<u>Listed Manufacturer</u>	<u>Approved Equals</u>
HINGES	(BOM) Bommer	As Listed
LOCKS & CYLINDERS	(MAR) Marks USA	As Listed
DOOR CLOSERS	(DOR) Dorma	As Listed
PUSH/PULLS/KICKS	(TRI) Trimco	As Listed
WALL & FLOOR STOPS	(TRI) Trimco	As Listed
WEATHERSTRIP & THRESHOLDS	(NGP) National Guard Products	As Listed

2.02 KEYING

- A. Locks, Deadbolts, Cylinders, Padlocks
 - 1. All Locks and Cylinders shall be keyed to an existing 6-pin Grandmasterkey system. Furnish 6 of each Masterkey. Furnish 3 change keys per lock.
 - 2. All Keying requirements shall be established by Hardware Distributor with input from Owner and Architect.
 - 3. Deliver all Permanent keys directly to Owner's Representative via registered delivery.

2.03 KEY CONTROL SYSTEM & CABINET – Not Required

2.04 FINISHES

- A. Finishes are identified in Schedule at end of this Section.
- B. Finishes to conform to the following standards of symbols.

Finish/Description US Symbol BHMA No.

1. Prime Coat	PC	600
2. Polished Brass	3	605
3. Satin Brass	4	606
4. Polished Bronze	9	611
5. Satin Bronze	10	612
6. Oil Rubbed Bronze	10B	613
7. Satin Chromium	26D	626/652
8. Polished Chromium	26	625/651
9. Stainless Steel	32D	630
10. Polished Stainless Steel	32	629

2.05 SUBSTITUTION REQUESTS

- A. No substitutions for manufacturer's products specified or those listed as an approved equal will be allowed unless written request is submitted. Requests for approval shall comply with Section 01630, Product Options and Substitutions. All requests for substitution must be submitted with a CSI substitution form.
- B. Requests for substitution must list specified item (s) and the proposed substitution. Catalog cuts for specified item (s) and the proposed substitution must be included with transmittal. Include cost savings where applicable.
- C. Requests for substitution must also state the effects that the substitution will have on other trades.
- D. Products listed in the specification have been selected for the performance required for this project. Any proposed substitution must meet the material content, design, accessory features and installation requirements or approval will be denied.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- B. Verify that power supply is available to power operated devices.
- C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install hardware in accordance with Manufacturer's instructions and with CBC Section 1133B.2.5.1.
- B. Use the templates provided by hardware item manufacturer.
- C. Mounting heights for Hardware:
 - 1. Locksets: 40-5/16 inches from floor to centerline of lever or handle.
 - 2. Hinges: 5 inches from head of opening to top of top hinge; 10 inches from finish floor to bottom of bottom hinge; intermediate hinge(s) spaced equidistant between top and bottom butts.
- D. Conform to ANSI A117.1 for positioning requirements for accessibility.
- E. After fitting hardware to doors remove all finish hardware except butt hinges, carefully replace in

properly marked boxes and place in storage until painting and finishing is completed. After painting and finishing is completed, permanently install finish hardware.

- F. Secure finish hardware with suitable fasteners of the same material and finish as the item being attached. Contractor shall provide blocking in walls to receive wall stops or holders.
- G. Provide expansion anchors for attaching hardware items to concrete or masonry.
- H. Mount exit devices and closers on mineral or particle core fire doors with closed head sex bolts.

3.03

FASTENERS

- A. Screws for strikes, face plates and similar items shall be flat phillips head, countersunk type; provide machine screws for metal and standard wood screws for wood.
- B. Screws for butt hinges shall be flat phillips head, countersunk, full-thread type.
- C. Fastening of closer bases of closer shoe to doors shall be by means of sex bolts and spray painted to match closer finish.
- D. Use manufacturer's supplied attachments.

3.04

BUTT HINGES

- A. Furnish 3 ea. 4-1/2" ball or 'oilite' bearing hinges at doors up to 89" tall. Furnish one additional hinge for each additional 30" of door height.
- B. Furnish 5" extra heavy duty hinges at doors 42" and wider.
- C. Furnish 5" extra heavy duty hinges where listed in hardware groups.
- D. Provide extra heavy duty hinges where listed in hardware groups.
- E. Stainless steel hinges shall have stainless steel pins and shall be manufactured with 304L stainless steel.
- F. Provide sufficient hinge width to clear trim and allow 180 degree swing.
- G. All hinges shall be manufactured in the United States of America.

3.05

LOCKS

- A. Provide locks as scheduled with 2-3/4" backset. Locks for labeled doors shall be ANSI Grade I -- Certified and UL Listed for 3 hours.
- B. Furnish strikes with curved lip of sufficient length to clear trim and protect clothing.

3.06

DOOR CLOSERS

- A. Provide adjustable sized closers with the following maximum pressure for opening of doors. Adjust closers after installation and test doors in the event of fire.
 - 1. Maximum effort to operate doors shall not exceed 5 pounds for exterior doors and 5 pounds for interior doors, such pull or push effort being applied at right angles to hinged doors and at the center plane of sliding or folding doors.

2. Compensating devices or automatic door operators may be utilized to meet the above standards.
 3. When fire doors are required, the maximum effort to operate the door may be increased to the minimum allowable by the appropriate administrative authority, not to exceed 15 pounds.
- B. Comply with CBC Section 1133B.2.5.
 - C. If the door has a closer, then the sweep period of the closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing edge of the door.
 - D. The Factory representative for the door closer manufacturer shall visit the project prior to acceptance of the project by the owner to insure installation and adjustment of the closers has been performed properly.
 - E. The supplier and installer shall furnish mounting plates and brackets necessary to allow for a complete and secure installation, whether specified or not.
 - F. Where parallel arm closers are mounted in conjunction with surface mounted door seal, and the closer will be mounted on top of the seal, provide parallel arm brackets with spacer blocks to secure the bracket with the "5th" screw attachment. Spacer blocks shall be furnished ¾" in height when seal extrusion is ¼" and the frame stop is ½" in depth. If frame stop is 5/8", the spacer block shall be 7/8" in height.

3.07 SIGNS

- A. Exit doors with dead locks (for "B" occupancies) shall have indicating type lock hardware or appropriate signing in accordance with CBC Sections 1117B.5 & 1103.2.4, "THIS DOOR TO REMAIN UNLOCKED WHENEVER THE BUILDING IS OCCUPIED".. Doors with panic devices are excepted from this provision.

3.08 PANIC DEVICES

All panic devices must meet ANSI Standard 156.3, Grade 1. Panic Devices must be UL listed and California State Fire Marshall Listed. Comply with CBC Section 1003.3.1.9. All Rail Assemblies shall be made of brass, bronze or stainless steel. Springs shall be manufactured of stainless steel. Push Rail height shall be 40" from floor to centerline. All trim shall be thru bolted. Provide fire rated devices at labeled openings as noted in Door Schedule.

3.09 AUTOMATIC FLUSH BOLTS AND CO-ORDINATORS

Shall be tested by independent lab for cycle test of 100,000 cycles minimum. Units must be certified to UL specifications for use on fire rated openings up to three (3) hours for metal doors and one and one half (1-1/2) hour for wood doors. Units shall work with five (5) pounds of closing force for top and bottom bolts. Coordinators shall have a built-in override feature engineered to prevent damage to door, frame, or bolt assembly should circumstances prevent normal operation. Coordinators shall be furnished with closer backsets as required for a proper and complete installation.

3.10 THRESHOLDS, DOOR SEALS, DOOR BOTTOMS, DOOR SWEEPS AND ASTRAGLS

- A. Standard: BHMA A156.21 and A156.22. Listed under Category J in BHMA's "Certified Product Directory".
- B. General: Provide continuous weatherstrip gasketing on exterior and provide smoke, intumescent, light or sound gasketing on interior doors as indicated and specified in the individual finish hardware sets. Provide manufacturers supplied non-corrosive fasteners for exterior applications and elsewhere as indicated.
 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. Where NGP 700ASseal is specified, install seal before exit device strikes and closers.
 2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

3. Door Bottoms: Shall require low force operation and shall be applied to the bottom of the door, forming a seal with the threshold when door is closed.
- C. Air Leakage: Not to exceed 0.50 CFM per foot (0.000774 cu. m/s per m) of crack length for gasketing, other than for smoke control, as tested in accordance to ASTM E 283.
 - D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.
 - E. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252, UBC Standard 7-2 and UL 10B & C.
 - F. Sound Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM 1408.
 - G. Color of Seal & Brush Material: Provide all seals, sweeps and door bottoms with matching color of extrusions and seal & brush material..
 - H. Surface applied sweeps and door bottoms shall be mounted with an attachment screw located within ¾” of each end of aluminum extrusion holding the seal.
 - I. When screw on gasketing is applied to the frame, an attachment screw shall be applied within ¾” each end of the extrusion holding the seal.
 - J. Thresholds: Shall meet accessibility requirements to comply with “Americans with Disabilities Act” (ADA), Title 24 of the California Building Code (CBC) Section 1133B.2.4.1 and to “Accessibility Guidelines for Building and Facilities (ADAAG)”.
 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than ½ inch (13mm) high.
 2. Thresholds shall be extruded from S6063-T5 alloy aluminum, and /or #385 alloy bronze/brass.
 3. Thresholds/carpet separators shall be provided as necessary to comply with NFPA 80 fire codes.
 4. Thresholds installed at exterior locations shall be set in a full bed of butyl mastic.
 5. Thresholds at doors requiring sound control shall be set in a full bed of butyl mastic. This would include conference rooms, elevator equipment rooms, etc.
 - K. Warranty: Thresholds and weatherstripping shall have a 5-Year warranty. Thresholds with “SIA” finish shall be warranted for Ten Years.

3.11

PUSH-PULLS, STOPS, KICKPLATES, ARMOR PLATES, MOP PLATES, STRETCHER PLATES, FLOOR AND WALL STOPS & HOLDERS

Shall be provided by one manufacturer. All products shall be provided in brass, bronze, stainless steel metals as specified. Stainless steel plates shall be of 304L grade stainless steel. All plates shall have four beveled edges and any units furnished with sharp edges shall be rejected. Immediate replacement with acceptable units will be required. All products specified and furnished shall be installed with manufacturer’s supplied screw attachments. Kickplates and armor plates over 16 inches in height and installed on rated wood doors, shall be UL approved and furnished with UL labels. Wall stops shall have an embedded steel washer in the rubber

portion so that vandals cannot pry out the rubber. All floor stops and holders shall be mounted within 4 inches of adjacent walls and partitions. Do not place stops in the path of travel and, where stop and holders cannot be mounted within 4 inches of adjacent walls and partitions, furnish overhead stops and holders, as required for proper door control, per Policy 99-08.

3.12 SCHEDULE OF PRODUCTS

DOOR INDEX

DOOR # HW. SET

1	1
2	2
3	3
4	3

HW. SET 1

1 DOOR 1 -- STAFF ROOM TO RESTROOM

1 DOOR 3 -- ANTE ROOM FROM WOMEN

1 DOOR 4 -- ANTE ROOM FROM MEN

3 EA	HINGES	BB5002-450	630	BOM
1 EA	PRIVACY SET	195L	626	MAR
1 EA	CLOSER	8916	689	DOR
1 EA	KICKPLATE	K0050 10" x 2" LDW B4E	630	TRI
1 EA	MOP PLATE	KM050 4" x 2" LDW B4E	630	TRI
1 EA	STOP	1211ES	626	TRI
1 SET	SEAL	2525W @ HEAD & JAMBS	WHT	NGP

HW. SET 2

1 DOOR 2 -- RECEPTION AREA FROM UTILITY

3 EA	HINGES	BB5000-450	652	BOM
1 EA	LOCKSET	195F x SCH. "C" KWY	626	MAR
1 EA	CLOSER	8916PA	689	DOR
1 EA	KICKPLATE	K0050 10" x 2" LDW B4E	630	TRI
1 EA	STOP	1270CXCP	626	TRI
1 SET	SEAL	2525W @ HEAD & JAMBS	WHT	NGP

HW. SET 3

1 DOOR 5 -- RECEPTION TO OFFICE

3 EA	HINGES	BB5002-450	630	BOM
1 EA	LOCKSET	195F x SCH. "C" KWY	626	MAR
1 EA	CLOSER	8916PA	689	DOR
1 EA	KICKPLATE	K0050 10" x 2" LDW B4E	630	TRI 2
1 EA	STOP	1270CXCP	626	TRI
1 EA	PULL PLATES	1014-3B 4" x 16" B4E	630	TRI

END OF HARDWARE SECTION

GYPSUM BOARD

PART 1: GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all GYPSUM DRYWALL WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. Gypsum board with taped and sanded joint treatment.
- B. Nailing, Metal corner bead.
- C. Textured or smooth finish.

1.3 RELATED WORK NOTED ELSEWHERE:

- A. Wood stud wall & ceiling framing. (Rough Carpentry - Section 06100)
- B. (Alternate) Metal stud wall or ceiling framing. (Section 09111)
- C. Building Insulation (Section 07210).

1.4 SYSTEM DESCRIPTION

- A. Plan shall be carefully examined and drywall covering partitions extended to underside of ceiling. where noted on Plans or Specifications. Partitions to be covered with gypsum drywall shall not be enclosed until backing, electrical, plumbing and insulation have been installed. All new interior walls or walls where drywall is removed shall be covered with gypsum board per finish schedule.
- B. See reflected ceiling plan for areas of ceiling to receive drywall.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C840. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board, and GA-600 - Fire Resistance Design Manual.

2 PART 2 PRODUCTS

2.1 GYPSUM BOARD SYSTEM

- A. Manufacturer specified: (Products refer to this manufacturer, approved equal manufacturers products will be acceptable)
 - Goldbond Building Products
 - 1850 West 8th St.
 - Long Beach, CA 90813
- B. Acceptable alternate manufacturers:
 - 1. United States Gypsum
 - 2. Pabco
 - 3. Flintkote
 - 4. Kaiser Gypsum
- C. Gypsum Board Types: All material shall be 5/8 inch thick, type "X", maximum permissible length; ends square cut, tapered edges; unless noted otherwise as follows:
 - 1. Standard Type: ASTM C36.

2. Fire Rated Type: ASTM C36 fire resistive, UL rated.
 3. Moisture Resistant Type: ASTM C630.
- D. Moisture resistant wallboard (MRGB) Shall be provided on Restroom walls, Janitors closet and walls of all wet areas, unless cement plaster is specified on plans.

2.2 ACCESSORIES

- A. **Acoustical Insulation:** ASTM C665, preformed mineral wool, friction fit type, unfaced, 3-1/2 inch thick, for installation in all interior wall for sound proofing. This product is described as to be furnished and installed by the Building Insulation Contractor and is specified in section 07210 of these Specifications. Material must be installed before closing wall.
- B. **Acoustical Sealant:** Goldbond "Sound Seal" Non-hardening, non-skinning, for use in conjunction with gypsum board;
- C. **Corner Beads:** shall be of "square" type and shall be formed from galvanized steel, no lighter than 0.0217 thickness (26 ga.)
- D. **Joint Materials:** ASTM C475 GA 201 and GA 216, reinforcing tape, joint compound, adhesive, and water.
- E. **Fasteners:** ASTM C1002 Type W nails or ASTM C1002 Type S12 hardened screws.
1. Nails shall conform to Federal Specification FF-N-105B. Wallboard nails shall be type II, style 19, with mechanically deformed shank, blued finish, 1-1/4" length for 1/2" wallboard and 1-3/8" length for 5/8" wallboard.
 2. Screws for wallboard attachment shall be shouldered flat-headed design for use with special power-driven tools. Wood screws shall be as recommended by drywall manufacturer but not less than 1-1/4" long.
- F. **Adhesive:** ASTM C557, shall be of the type recommended in writing by the wallboard manufacturer for the following uses:
1. Joint and fastener concealment.
 2. Embedding compound for first and second coat.
 3. Finishing compound for final coat.
- G. **Textured Finish Materials:** Latex based texturing material, containing fine aggregate, Wall Spray Texture manufactured by Goldbond.
- H. **Reinforcing tape** shall be Goldbond Joint Tape or approved equal.

3 PART 3 EXECUTION

3.1 INSTALLATION - ACOUSTICAL ACCESSORIES

- A. Place acoustical insulation in **all partitions**, tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions. See Building Insulation Specification Section.
- B. Install acoustical sealant within partitions in accordance with manufacturer's instructions.

3.2 INSTALLATION - GYPSUM BOARD

- A. **GENERAL;** Wallboard shall be applied first to ceilings and then to walls, with the separate boards in moderate contact but not forced into place. The boards shall be so staggered that the corners of any 4 boards will not meet at a common point except at vertical corners.
- B. Nailing shall be spaced at 6" o.c. along nailing members at ceilings and at 8" o.c. at walls. (Unless closer spacing is

required for shear panel spacing noted on plans.)

- C. Screws at edges shall be spaced at 6 o.c. Screws in field shall be spaced at 12" o.c. at ceilings and walls except where framing members attachments may be used in lieu of nailing. (Unless closer spacing is required for shear panel spacing noted on plans.)
- D. Joints shall be treated with a uniform layer of compound not less than 6" wide with joint tape imbedded in layer. After drying, a 2nd coat shall be applied over tape and fastening heads. After drying and sanding a final layer of finishing compound shall be applied and feathered not less than 12" wide. Treated area then must be sanded to obtain a smooth uniform surface.
- E. Install gypsum board in accordance with GA-201, GA-216 and GA-600. Fasten gypsum board to furring or framing with nails or screws. Staples may only be used when securing the first layer of double layer applications.
- G. Place control joints consistent with lines of building spaces.
- H. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials. Use bullnose corner bead at all 90 degree outside corners.
- I. Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.3 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/16 inch.

3.4 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

3.5 CLEANUP:

- A. As work progresses and upon completion of the work under this section, Contractor shall remove from the premises all surplus material, tools, equipment, rubbish and debris resulting from his work at his own expense and leave the installation in a neat, clean and workmanlike condition satisfactory to the Owner.

END OF GYP BOARD SECTION

CERAMIC TILE

PART 1 GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all CERAMIC TILE WORK as shown on the drawings or specified herein. This Section relies extensively on The General Conditions of the Contract of these specifications and all requirements therein must be adhered to by this Contractor.

1.2 SECTION INCLUDES

- A. Ceramic tile floor and base over concrete slab using the thinset application method
- B. Ceramic wall tile installed over mortar base using the mortar base application method.
- C. Threshold at door openings where ceramic floor tile finish changes.

1.3 RELATED WORK NOTED ELSEWHERE:

- A. Resilient flooring, section 09650.

1.4 SUBMITTALS

- A. Product Data: Provide material specifications, characteristics, and instructions for using adhesives and grouts. Submit per The General Conditions of the Contract.
- B. Samples: Submit two samples illustrating color range for selection.
- C. Maintenance Instructions: Include recommended cleaning methods, cleaning materials, stain removal methods [and polishes and waxes].

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with TCA Handbook for Ceramic Tile Installation, ANSI A108.1-1985, ANSI A108.4-1985, ANSI A108.5 AND A108.10-1985.

PART 2: PRODUCTS

Manufacturer shall be "Dal-Tile Corporation", 2051 E. Howell, Anaheim, CA 92806.

- 2.1 **Ceramic Wall Tile:** (for Restroom Areas) shall be installed up 5'-0" Per ANSI A137.1; 4-1/4"x4-1/4" size, square shape, semi-glass surface finish, as selected from Dal Tile price group 1. Requires all normal bullnose edges, ends and corners.
- 2.2 **Floor Tile:** (For bidding purposes only, submit samples and verify before ordering tile.) Dal-Tile, "Porcelain" (CD31); 12"x12"x5/16" thick, square shape, with slip resistant finish, in all areas requiring this floor material on finish schedule and /or noted on floor plans. Color to be selected by Architect. Grout shall be summitville 962 natural.

Base: Standard 6" x 8" high sanitary cove base at walls and 4" base at cabinets. Cut base to fit under cabinet toe space if necessary. Match floor tile for, color, and coved internal corner.

SETTING MATERIALS

- 2.3 **Organic Adhesive:** ANSI A136.1, Type I, thinset bond type for ceramic wall tile.
- 2.4 **Thinset Mortar Materials:** ANSI A118.4 Latex Modified, Portland cement, sand, latex additive, and water.

GROUT MATERIALS

2.5 Grout: ANSI A118.6, Ceramic Tile Grout. "Hydrament" grout.

ACCESSORIES

Threshold: Marble type, matching color finish, full depth and width of frame opening, beveled on thinner side. Required only where floor finishes change from tile to thicker or thinner material.

MORTAR AND GROUT MIX

2.7 Mix and proportion pre-mix mortar and grout materials in accordance with manufacturer's instructions and TCA Handbook.

GROUT SEALER

"AQUA MIX" – "Sealers Choice Gold" as manufactured by Aqua Mix Inc., Corona, CA

PART 3: EXECUTION

EXAMINATION AND PREP

Seal substrate surface cracks with filler. Level and taper surfaces to a smooth, even finish. Acceptance of surface is indication that final product will be even, smooth level or plumb as required for good quality project with top quality workmanship as is reasonably implied therein.

3.1 Shot blast surface to receive floor material and fill all void, cracks etc. with epoxy sand mixture to obtain smooth level surface before installing membrane.

4 MEMBRANE APPLICATION

4.1 Install 1st coat of 1202 "Epmar" as recommended by manufacturer. After applying 1st coat, evenly broadcast a light abrasive material similar to that approved in submittal sample. Install 2nd coat of 1600 "Epmar" epoxy exactly as recommended by manufacturer.

5 INSTALLATION

5.1 Install adhesive, tile, and grout in accordance with TCA Handbook. Use manufacturer recommended corner pieces, interior pieces and bullnose where ever required.

2 Set tile to pattern indicated. Do not interrupt tile pattern through openings. Use full tile pieces wherever possible. If cut pieces are required, locate in rear or inauspicious locations.

3 Cut and fit tile tight to penetrations. Form corners and bases neatly. Align floor, base and wall joints.

4 Grout tile joints. Make joints watertight, without voids, cracks, excess mortar or excess grout.

5 Apply sealant to grout joints using manufacturers recommended methods. Clean any residue from tile within 5 minutes of applying per manufacturer. Do not apply before 48 hours after grouting. 2 hours after applying conduct a water test to determine if surface is completely sealed. If water is absorbed apply an addition coat. Wait 2 hours after final test. If epoxy grout is used, grout sealant is not required.

END OF ceramic tile SECTION

SECTION 09900
PAINTING

PART 1: GENERAL

1.2 SCOPE OF WORK:

Furnish all labor, material, scaffolding, tools and equipment necessary for and incidental to the completion of all PAINTING WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.3 SECTION INCLUDES

- A. Surface preparation for and field application of paints and coatings of all new and existing work on the interior and exterior of the new building and canopy.
- B. Painting work shall include but is not limited to: All surfaces in area of new work obviously needing paint. If in question, verify with Architect. Also specifically included are:
 - 1. INTERIOR:
 - a. Drywall and plaster.
 - b. Wood trim
 - 2. EXTERIOR:
 - c. Steel handrails noted on site plan shall be painted unless prefinished required on plans

1.4 AREAS NOT REQUIRING PAINT:

- A. Prefinished acoustical ceilings.
- B. Prefinished doors and Timely metal door frames.
- C. Prefinished laminated cabinets. (if any)

1.5 SYSTEM DESCRIPTION

- A. Intent is to Paint all interior and exterior surfaces requiring paint in area of new work..

1.6 STORAGE:

- A. The contractors operations for the preparation of paints and storage of materials shall be limited to a designated area, and such space shall be kept clean and orderly at all times. the contractor shall employ all safety measures during operations for the prevention of fire.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Store and apply materials in environmental conditions required by manufacturer's instructions.

2 PART 2 PRODUCTS

2.2 MATERIALS

- A. Manufacturers:
 - Frazer Paint Co.
 - 1133 N. Kraemer
 - Anaheim, CA 92806
 - (714) 630-8040
- B. Manufacturers considered equal:
 - 1. Sinclair Paint Co. Los Angeles, CA.
 - 2. Dunn Edwards Paint Co.
- C. Finish Materials: Conform to State of California codes for environmentally allowed materials, including flame/smoke

rating requirements.

- D. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.
- E. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified. (Except if disallowed by State of California.)

2.3 FINISHES

- A. Refer to schedule at end of section for surface finish schedule.

3 .2 EXAMINATION AND PREPARATION

- A. Verify that substrate conditions are ready to receive work, correct minor defects and clean surfaces which affect work of this Section.
- B. Remove [or mask] electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- C. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.
- D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with a solution of TRI-sodium phosphate, rinse and allow to dry.
- F. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.
- G. Shop Primed or previously painted steel surfaces: Sand and scrape to remove loose primer and rust, clean surfaces with solvent. Prime bare steel surfaces.
- H. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- I. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Sand transparent finishes lightly between coats to achieve required finish.
- C. Where clear finishes are required, tint fillers to match wood.
- D. Back prime interior and exterior wood work scheduled to receive paint finish with primer paint.
- E. Back prime interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.4 CLEANING

- A. As the work proceeds, Contractor shall protect the public and all property from damage due to his operations and shall be responsible for any and all kinds of damage to the work or property caused by his employees. Contractor shall promptly remove any finishes where spilled, splashed, or spattered.

The following paint schedule refers to "Frazee" paint numbers. Paints of equal quality may be used. Acceptable equals are "Sinclair" and "Dunn Edwards". All products must comply with the current air quality regulations governing architectural coatings. The following numbers correspond to those on the finish schedule:

3.5 SCHEDULE – NEW INTERIOR SURFACES

A. Gypsum Board: (Semigloss enamel)

1st ct. Frazee's No. 065 Acry-Prime

2nd ct. Frazee's No. 128 Satin Glide II

B. Wood Trim:

1st ct. Frazee's No. 065 Acry-Prime

2nd ct. Frazee's No. 128 Satin Glide II

C. Steel Doors: (if any)

1st ct. Jasco's Prep-N-Prime

2nd ct. Frazee's No. 661 Metal Prime

3rd ct. Frazee's No. 628 Aro-Plate S/G

3.6 SCHEDULE - EXTERIOR SURFACES

D. Steel Tube Handrail, Fencing and sheet metal:

1st ct. Frazee's No. 661 Metal Prime

3rd ct. Frazee's No. 628 Aro-Plate S/G

COLORS TO BE SELECTED BY OWNER DURING CONSTRUCTION.

3.7 Protection and Clean-up

A. Protection: Carefully protect areas where work is in progress from damage.

1. Provide and spread clean drop cloths when and where required to provide the necessary protection.
2. Immediately clean-up all accident splatter, spillage, misplaced paint and restore the affected surface to its original condition.

B. Clean-up: At completion of work, remove all materials supplies, debris and rubbish and leave each area in a clean acceptable condition.

END OF PAINTING SECTION

SECTION 10150

TOILET COMPARTMENT PARTITIONS

PART 1 GENERAL

10A.01 SCOPE OF WORK

- A. Furnish all labor, materials, tools and equipment to complete the purchase, fabrication and installation of all NEW TOILET COMPARTMENT PARTITIONS as indicated on plans or denoted herein. Remove and reinstall with new, all existing toilet compartment partitions.

10A.02 REFERENCES:

- A. International conference of Building Officials UBC chapter 52.
- B. California Building Code (Current Edition)
- C. Americans with Disabilities Act.

10A.03 WORK SPECIFIED ELSEWHERE

Restroom Equipment. (Section 10800)

10A.04 SUBMITTALS

Submit under provisions of Section 01001, part D of "Basic Requirements".

Shop Drawings: Indicate partition plan, elevation views, dimensions, panel and door sized, details of wall, floor supports and door swings.

1. Provide data on panel construction, hardware and accessories.
2. SAMPLES: Submit sample of partition material, illustrating finish, color, and sheen.
3. Provide a sample of each type of hardware, if requested by Architect.

10A.05 FIELD MEASUREMENTS:

1. Verify that field measurements are as indicated on shop drawings.

10A.05 COORDINATION:

1. Coordinate placement of backing in walls. Backing by others.

10A.05 EXTENDED WARRANTY:

Provide manufacturer's standard 15 year warranty to include breakage, corrosion of delamination of installed plastic components and door latch/ strike system. Defective components shall be replaced. Labor for reinstallation not included.

PART 2 PRODUCTS

10B.01 MATERIALS

Toilet Compartment equipment and screens shall as manufactured by "AMPCO PRODUCT, INC.", Opa Locka, Florida .

GENERAL : Provide material that been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller mark, stains, discoloration, telegraphing of cork or other imperfection on finished units are not acceptable.

Shall be Solid Plastic, high density Polyethylene, Floor Mounted Overhead Braced Type, one inch thick, Solid Polymer partitions. All fittings shall be stainless steel or chrome plated.

Hardware: Provide the following hardware:

Coat hook and bumper, locking device and door stop. See also Restroom Equipment for hardware items this subcontractor may want to submit bids on.

10B.02 BACKING

Backing and necessary structural support must be placed in the area of connection with wall or ceiling prior to installation of drywall. If partitions are to be connected to an existing wall or ceiling, then the existing material must be removed, backing installed and wall material replaced in an acceptable manner at no additional expense to the Owner.

10B.03 LOCATION

All partitions must be installed at locations noted on drawings and as required by law and as recommended by the manufacturer. All misc. restroom equipment must be installed at heights and locations as required by law (handicapped requirements) and recommended by the manufacturer.

Verify correct spacing of and between plumbing fixtures.

Verify correct location of build-in framing, anchorage and backing.

10B.04 FABRICATION:

Fabricate partitions from HDPE material with finished faces, free of saw marks, and all edges machined to .250 inch radius. Strike and hinge pilasters machined to accept overlapping edge of door. Both vertical edges of door routed to receive overlapping edge of pilasters. Bevel corners and edges of cutouts.

Typical Doors, Panels and Pilasters", Thickness 1 inch, Door width. 24" minimum, Door width of handicapped stall 36", Door height 55", Pilaster Height as required per drawings and actual conditions.

Typical Urinal screens: Thickness 1 inch, Screen Width 24" ,Screen Height 42" mounted 14" above Finish Floor.

Alum. Edging strips to be fastened to the bottom edge of all screens. Using anti-theft fasteners.

PART 3 EXECUTION

10C.01 LOCATION

1. All partitions must be installed at locations noted on drawings and as required by law and as recommended by the manufacturer. All misc. restroom equipment must be installed at heights and locations as required by law (handicapped requirements) and recommended by the manufacturer.
2. Verify correct spacing of and between plumbing fixtures
3. Verify correct location of build-in framing, anchorage and backing.

10C.02 SUBMITTAL

1. Provide shop drawing SUBMITTALS of all equipment to be used including manufacturers brochures with exact fixture clearly marked. (5 copies). Information shall include sizes, specification and colors available. See also submittal section of "Basic Requirements".

10C.03 COLORS: TO BE SELECTED BY ARCHITECT

10C.04 WORKMANSHIP

1. All material and equipment shall be installed in a secure and workmanlike manner by competent workmen. Any item not so installed shall be removed, replaced or corrected to meet the approval of the Architect. If at anytime the Contractor believes that proper results cannot be secured with the use of materials or methods herein specified or shown on the plans, it shall be his responsibility to notify the Architect in writing, stating his reason.

10C.05 CLEANUP

2. Upon completion of the work under this section, The Contractor shall remove from the premises all surplus material, tools, equipment, rubbish and debris resulting from his work at his own expense and leave the installation in clean, neat and workmanlike condition satisfactory to the Owner.

10C.06 GUARANTEE

3. All work shall be guaranteed for a period of 1 year against all defects in material and workmanship from the date of final acceptance.

*****END Toilet Compartment Partitions*****

SECTION 10800

RESTROOM ACCESSORIES

PART 1 GENERAL

1.2 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all RESTROOM ACCESSORIES as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements therein must be adhered to by this Contractor.

1.3 SECTION INCLUDES

- A. Restroom accessories.
- B. Grab bars.
- C. Handicapped parking signs

1.4 RELATED WORK NOTED ELSEWHERE:

- A. Mirrors under glass and glazing
- B. Plumbing Fixtures, under Plumbing.
- C. Section 06100 Rough Carpentry: Placement of backing plate reinforcement.
- D. Handicapped Parking- Section 02510.

1.5 SYSTEM DESCRIPTION

- A. All work shall comply with the Uniform Building Code, (current prevailing edition), the City of Garden Grove, and the requirements of State of California Administrative code, title 24 regulations governing handicapped requirements.
- B. Provide one item of each type listed in schedule below in each appropriate restroom.

1.6 SUBMITTALS

- A. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

2 PART 2 PRODUCTS

2.2 MATERIALS

- A. Manufacturers:
 - 1. BOBRICK WASHROOM EQUIPMENT, INC.
11611 Hart St., North Hollywood, CA 91605
(714) 662-1278

2.3 FINISHES

- A. Anchors: Galvanize to 1.25 oz/Sq yd.
- B. Enamel: Pretreat, one coat primer and two coats electrostatic baked enamel.
- C. Chrome/Nickel Plating: ASTM B456, Type SC 2; satin polished finish.
- D. Stainless Steel: No. 4 satin luster finish.

PART 3 EXECUTION

3.2 EXAMINATION AND PREPARATION

- A. Verify exact location of accessories for installation. Confirm with General Contractor that backing has been installed where needed.
- B. Deliver inserts and rough-in frames to site. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

- A. Install all accessories listed in this Specification or noted on plans or normally required under this section in accordance with the California Administrative Code, Title 24 regulations regarding handicapped requirements and manufacturers' instructions.

3.4 LOCATION:

- A. All equipment must be installed at heights and locations as required by law and recommended by the manufacturer. Areas requiring such equipment shall be as noted on plans and specification. If required herein but not shown on plans, Contractor shall request clarification from City of Garden Grove. See finish schedule sheet, Interior elevations and specifications.
- B. Install plumb and level, securely and rigidly anchored to substrate.

3.5 BACKING:

- A. Backing must be placed in the area of the grab bars and other equipment requiring backing prior to installation of drywall. If this is not done then the wall finishes, drywall, etc. must be removed, blocking installed and material replaced in an acceptable manner at no expense to the Owner.

3.6 SCHEDULE

	BOBRICK	
ITEM	MODEL #	FINISH
A. PAPER TOWEL DISPENSER Semi-recessed with Waste Receptacle	Bobrick #B3904	Stainless Steel
B. Toilet Tissue Dispenser Bobrick, double roll	B-697	Stainless Steel
C. Toilet Seat Cover Dispenser	B-221	Stainless Steel
D. Napkin Dispenser	B-3500 Series	Stainless steel
E. Napkin Disposal	B-270	Stainless steel
F. Soap Dispenser Surface mounted, Liquid type	B-2112	Stainless steel
G. Grab Bars-Tubular Spec. or Bobrick	1111 1-1/4"dia. B-3267	14ga. SS Stainless Steel
H. DIAPER CHANGING STAION Recessed mounting	Bobrick	KB110-SSRE.
I. MIRRORS	1/4" PL glass per interior elevations.	
J. Handicapped wall sign	8"x8" #2385222	Blue
K. Handicapped door sign	12" dia. #RFH12RR	
L. Handicapped parking sign	12"x18" #RFH1218PB	
M. Handicapped Parking lot sign	18 "x24" #RF1824P	

END of Restroom Accessories SECTION

SECTION 15400

PLUMBING

PART 1.00 - GENERAL

1.01 SCOPE OF WORK

Furnish all labor, materials, equipment, appliances and necessary incidentals for the complete installation of all plumbing as shown on the drawings and as specified herein.

A. Work Specified in this Section

1. Sanitary soil, waste, and vent system.
2. Domestic hot and cold water systems.
7. Pipe covering, insulation, and wrapping.
8. Excavation and backfill.
10. Rough-in and final connections to fixtures and equipment
11. All plumbing fixtures, valves, and other miscellaneous items of equipment required for a complete installation.
13. Water for construction and temporary connections.

B. Related Work in Other Sections

1. Temporary facilities as specified in Section 01500.
2. Cutting and patching as specified in Section 01010.
3. Concrete work as specified in Division 3; however, furnish templates for spacing and size of concrete pads and anchor bolts for equipment under plumbing.
4. Electrical work as follows will be provided under Division 16:
 - a. Conduit and wiring as indicated on the drawings and as required.
 - b. Installing electrical devices such as starters, disconnects, control panels, and when indicated, furnishing such devices.

1.02 QUALITY ASSURANCE

A. Codes and Standards

1. All items indicated on site, Architectural or Mechanical drawings are to be provided complete from point of connection to finished fixture in conformance with all governing authority requirements. Nothing in these drawings or specifications shall be construed to permit work in violation of governing codes.
2. In addition to the requirements of all governing codes, ordinances, and agencies, conform to the requirements of the following codes and standards:
 - a. California Building Code, 2007 Edition.
 - b. Uniform Plumbing Code, current prevailing Edition.
 - c. City of Garden Grove.
 - d. State Fire Marshal.

- e. State Health Department requirements.
- f. All requirements of CAL/OSHA.
- g. Title 24 of California Administrative Code.
- h. All other regulatory agencies having jurisdiction over this work.

B. Guarantees

Furnish a written guarantee form required under Division 1, against defects in materials and workmanship for one year. Guarantee shall include repair of damage to, or replacement (if so required) of any part of premises caused by water, oil, or gas leaks or breaks in pipe, fixtures, or equipment provided under this Section.

1.03 SUBMITTALS

A. Manufacturer's Literature

Within 35 days after award of contract and before any of the materials of this section are delivered to the job site, submit seven complete brochures of all materials and equipment, per Division 1 of these specifications.

B. Other Submittals

- 1. Shop Drawings.
- 2. Test data.

C. Operating and Maintenance Instructions

Deliver to Architect two complete sets in bound booklet form of written operating and maintenance instructions and brochures for equipment specified in this section. Fully instruct Owner's operating personnel and demonstrate performance, operating, and maintenance of equipment. Amount of time allocated for said instruction and demonstrations of equipment and systems shall be part of these obligations. One additional set of approved instructions shall be suitably framed behind glass and mounted as directed.

D. Record Drawings

Comply with requirements of Division 1. Keep an accurate dimensioned record of as-built locations and elevations, as referred to approved base datum, of buried concealed lines, manholes, cleanouts, valves, plugged tees, capped ends, and of work which is installed different from that indicated.

1.04 PRODUCT HANDLING

A. Protection

Take all precautions necessary to protect the materials of this section before, during, and after installation.

B. Replacements

In the event of damage, immediately repair all damaged and defective work to the approval of the Architect at no additional cost to the Owner.

1.05 MISCELLANEOUS

A. Examination of the Site

Exercise care in examining the site and coordinate all work indicated on the drawings with existing conditions. Report to Architect in writing conditions that will prevent proper provisions of this work. Verify depth and location of service lines with servicing companies having jurisdiction before excavating. By submission of the bid, the Contractor warrants that he has familiarized himself with the existing conditions and will perform all work as required for hookup and as required by the contract documents at no additional cost to the Owner.

B. Permits and Fees

Arrange and pay for all permits, inspections and fees required by all governing agencies. Deliver all certificates to Owner through the Architect.

C. Service Connections

Make all necessary arrangements with applicable utility company for connection to existing service lines. Pay all fees associated with work including meters and hookup charges. Utility assessment fees, if any, will be paid by the Owner and are not part of this contract.

D. Drawings

Coordinate all space requirements with other trades. Drawings indicate desired location and arrangement of piping, equipment, and other items and are to be followed as closely as possible.

PART 2.00 - PRODUCTS

2.01 GENERAL

A. Pipe Sleeves and Wrapping

Provide polished chromium plate and brass set screw flanges where plumbing pipes pass through walls, floors, ceilings, and partitions in finished portions of building, including flanges on pipes at fixtures. All sleeves in concealed and exterior walls shall be 20 ga. galvanized iron one inch o.d. larger than the pipe, caulked if below grade in a moisture proof manner.

B. Pipe Identification

1. Piping identification per ANSI and OSHA standards in Mechanical equipment areas only: Each individual pipeline shall be marked for quick and easy identification as to content and character of material carried in the pipes by Seton SNA or STR markers.

2. Markers shall be installed and spaced at not more than 8 ft. intervals and so located that markers shall be visible where piping system is exposed.

a. One marker shall be installed at each side of valves, special fittings, and at branch take-off. In furred spaces install one marker 2 ft. above floor and one marker 18 in. below ceiling line.

b. Furnish two identification charts complete with glass and frame showing list of materials carried in the piping system, classified by nature of its contents and respective identifying colors.

3. Color scheme shall be approved. Base color for markers shall be as follows:

Domestic hot water - Orange

Domestic cold water - Green

Fuel gas - Yellow

Sanitary sewer - Green

Sanitary vent - Green

C. Materials

Materials when not otherwise definitely specified shall conform to the applicable ASTM, ASME, AGA, and ANSI standards.

D. Equal Materials and Substitutions

In addition to manufacturers specified, the following shall also be considered equal, provided corresponding models meet specified requirements. Equivalent substituted equipment named herein shall be submitted to Architect for approval. Submit alternate selections at time of bid, listing major equipment.

ITEM MANUFACTURER

Strainers:	Walworth, Bailey, Mueller
Valves:	Walworth, Milwaukee
Pipe Hangers & Supports:	Fee & Mason, Elsen
Access Panels:	Milco
Gas Vents:	Metalbestos, Amerivent
Insulation:	Johns Manville, Gustin Bacon, Fiberglas

Plumbing Fixtures:	Kohler, Crane
Toilet Seats:	Church, Beneke
Flush Valves:	Delaney
Pressure Gauges:	Marsh, Marshalltown, Terrice
Water Heaters:	American, State, National
Soil Pipe:	Tyler, Universal

PLUMBING FIXTURES SHALL BE AS SPECIFIED ON DRAWINGS.

2.02 PIPE AND FITTING SCHEDULE

- A. Soils and storm drain lines 5 ft. from building: Vitrified clay pipe and fittings for soil pipe; service weight no-hub cast-iron pipe and fittings CISPI-301. Install in accordance with authorities having jurisdiction.
- B. Soil, waste, vent, and storm drain piping and to 5 ft. outside building: Service weight no-hub cast-iron pipe and fittings CISPI-301.
- C. Hot and cold water piping above ground: Type L hard-drawn copper tube, ASTM B88, and wrought copper fittings, ANSI B16.22.
- D. Cold water piping below ground and outside the building:
 - 1. 3 in. and smaller: Type K hard-drawn copper tube, ASTM B88, and wrought copper fittings ANSI B16.22, brazed joint type (refer to paragraph "Pipe Wrapping" herein).
 - 2. 4 in. and larger: Bell and Spigot Class 50 ductile iron pipe centrifugally cast, cement lined inside.
- E. Indirect Drains
Schedule 40 hot dipped galvanized steel pipe, ASTM A120, or Type M copper tube, ASTM B88 and wrought copper fittings, ANSI B16.22, solder joint type.
- F. Gas Piping
 - 1. 2 in. and smaller: Schedule 40 black steel pipe, ASTM A53, A120, with 300 lb. WOG black banded malleable iron screwed fittings.
 - 2. 2-1/2 in. and larger: Schedule 40 black steel pipe, ASTM A53, A120, with tube-turn econo-weight welded fittings.

2.03 MATERIALS FOR JOINTS, FITTINGS, AND VALVES

- A. Soil, Waste, Vent, and Storm Drain Cast-Iron Pipe Above Ground:
 - 1. Vertical: "No-Hub" couplings as approved by the cast-iron soil pipe foundation, CISPI-301.
 - 2. Horizontal: 4 in. and smaller, "No-Hub" couplings, 5 in. and larger, "M.G." cast-iron or Clamp-All couplings.
- B. Braze for Water Piping
Equivalent to Harris Stay-Silv O lead-free copper braze alloy. 95-5 solders are not approved.
- C. Welded Joints
Welding shall be performed only by qualified welders, and shall comply with ASME Boiler Construction Code, ANSI Code for pressure piping, and state requirements.
- D. Unions and Gaskets
 - 1. 2 in. and under for steel pipe: Screwed malleable-iron ground joint, 300 lb. WOG. Class with brass-to-iron seat, galvanized or black to suit service.
 - 2. 2-1/2 in. and larger for steel pipe: Cast-iron flanged gasket type, conforming to ANSI B16.1, galvanized or black to suit service, or 160 lb. forged steel slip-on flanges.
 - 3. Unions for copper tubing: Cast bronze, ground joint pattern, soldered joint connection, ASTM B62 and ANSI B16.18.

4. Dielectric Unions: Epco, complete with isolators and gaskets of same size as pipe, galvanized or black to suit service.
5. Dielectric Flanges: F. H. Maloney Co., Type E flanges for cathodic insulation.
6. Gaskets: 1/16 in. Garlock #17022.

E. Strainers

Y-type with stainless steel screen with perforations suitable for service requirements, same size as pipeline in which installed. Provide gate valve with hose connection at each strainer blow-off.

1. 2 in. and smaller: Bailey 3131 bronze body, 500 lb. WOG, screwed ends with screwed gasketed cap.
2. 2-1/2 in. and larger: Bailey 3132 cast-iron body, 125 lb. or 3102 cast-iron body 250 lb., flange ends and bolted gasketed cap.

F. Valves

Valves shall be of same manufacturer, or of specifically approved manufacturer. Provide adaptors for valves in copper tubing where necessary.

Flanged iron body valves used in copper piping systems shall be installed with Maloney Flange and Bolts insulating kits.

1. Eccentric valves 4 in. and smaller, gas: DeZurik #425 valve with RS49, plug seals, iron body, screwed or flanged, U. L. listed.

2. Gates valves, 2 in. and smaller, water: 200 psi WOG, solid wedge disc, screwed bonnet, rising stem.

	<u>Threaded</u>	<u>Solder</u>
Nibco	T-111	S-111
Crane	428UB	1334
Stockham	B-100	B-108

3. Gate Valves, 2-1/2 in. and larger, water: 200 psi WOG, solid wedge disc, union bonnet, rising stem, flanged.

Nibco	F-617-0
Crane	465 1/2
Stockham	G-623

4. Partition Stop Valves: T&S B416, loose-key type with wall flange.

5. Ball Valves - Water: Bronze, Class 125, threaded.

Jamesbury 300 Series	
Nibco	T-580
Watts	6000
Stockham	S-216-BR-RT

G. Check Valves

1. Horizontal swing:

- a. 2 in. and smaller (200 psi WOG), bronze screwed cap, swing.

	<u>Threaded</u>	<u>Solder</u>
Nibco	T-413(BWY)	S-413(BWY)
Crane	37	1342
Stockham	B314	B-309

- b. 2-1/2 in. and larger (200 psi WOG), iron body, bronze trim, screwed cap, swing, Y-pattern, regrinding, flanged.

Nibco	F-918-B
Crane	373
Stockham	G-931.

2.04 HOSE BIBBS

- A. HB-1: Equivalent to Woodford 24P-3/4, with vacuum breaker. (Keyless)

2.05 PIPE HANGERS

- A. Hangers shall be supplied with factory installed isolation and di-chromate finish.
 - 1. 2 in. and smaller: Super Strut C-727-F.
 - 2. 2-1/2 in. and larger: Super Strut C-710-F.
 - 3. Concrete inserts: Super Strut 452.
 - 4. Riser clamps for copper piping: Super Strut C-720-P, plastic coated.
 - 5. Riser clamps for other piping: Super Strut C-720.
- B. Hanger rods shall conform to the following table:
 - Pipe size 2 inches and smaller: 3/8 inch rods
 - Pipe size 2-1/2 inches and 3 inches: 1/2 inch rods
 - Pipe size 3 inches and larger: 5/8 inch rods

2.06 ROOF FLASHING

- A. Sanitary Vent Flashings
 - Stoneman 1100-3 or 1100-5, with one piece lead flashing and counterflashing sleeve.
- B. Other Pipe Through Roof Flashing
 - Stoneman 1100-2 or 1100-4, one piece 4 lb. lead flashing and counterflashing sleeve.

2.07 PIPE SLEEVES

At concrete walls or floors, Adjust-to-Crete, Paramount, or Shamrock Cretesleeve. Floor sleeves shall extend to top of concrete curbs for piping rising through floors. Wall sleeves shall be flush with finished surface. Sleeves shall be sized to allow 1/2 in. clearance around pipe insulation. Insulation and covering shall be continuous through wall and floor sleeves.

2.08 ACCESS PANELS

- A. Access Panels in Plaster Walls and Ceilings
 - Elmdor PW 24x24 in. with metal access door and frame, prime coated steel and painted to match adjacent surfaces. For fire rated areas use FR 1-1/2 hour "B" Label access panels, U. L. listed.
- B. Access Panels in Acoustic Tile Ceilings
 - Elmdor AT 24x24 in. with metal access door and frame, 24x24 in. minimum size, prime coated steel, recessed to accept standard tile in full opening door.
- C. Access Panels in Ceramic Tile Walls
 - Smith 4730 chrome plated cover and frame of suitable size for purpose intended, but not less than 8x8 in. size. For fire rated areas use FR 1-1/2 hour "B" Label access panels, U. L. listed.

2.09 CLEANOUTS

For cast-iron soil pipe, iron body with extra heavy bronze plugs screwed into caulking ferrules; for steel pipe, extra heavy bronze plugs; and for vitrified clay pipe, vitrified clay plugs.

Where cleanouts occur in finished interior walls, provide access panels, plates, and frames for flush mounting. Exposed parts of floor cleanouts shall have adjustable top. All cleanouts and cleanout plugs shall be accessible. Cleanout shall be the following:

- A. In finished floors: Cast-iron with polished nickel bronze round top, non-skid diamond tread set flush with the floor. Provide flashing flange when used with waterproofing membrane.
 - Smith - 4023
 - Wade - W-6000
 - Zurn - ZN-1420-2
- B. In Mechanical equipment areas: Cast-iron with heavy cast-iron round top, non-skid diamond tread set flush with the floor. Provide flashing flange when used with waterproofing membrane.
 - Smith - 4223
 - Wade - W-6000
 - Zurn - ZN-1420-25
- C. In walls: Cleanout tee with squared polished nickel bronze access plate with vandalproof screws and frames. Opening 8x8

in. minimum.

Smith - 4558-U

Wade - W-8460-S

Zurn - ZN-1445-3

D. In exterior grades: Cast-iron body, vandalproof cover, non-skid diamond tread, set flush with grade or finished surface. In non-surfaced area, they shall be cast in a concrete block 14x14x6 in. deep.

Smith - 4020-U

Wade - W-8300MF

Zurn - ZN-1460-15-W/Z-1450-8

2.10 SHOCK ABSORBERS

Zurn "Shocktrol" with stainless steel continuous bellows which shall expand and dissipate the shock pressure into a Hydro-Pneumatic cushion, installed as indicated or as recommended by PDI pamphlet WWH-201. Provide access panel for a single multiple fixture installation (not of flush valve type). In no case shall a fixture be installed without shock protection.

2.11 PRESSURE TEMPERATURE RELIEF VALVE

Provide domestic water heater with ASME rated pressure/temperature relief valve set to relieve at 125 psi pressure and at 188 degrees to 208 degrees F temperature range.

2.12 PRESSURE GAUGES

Potter-Roemer 6240-U. L. - F. M. 0-300 psi range, complete with 3-1/2 in. diameter dial and gauge cock. Install pressure gauges where indicated and as required.

2.13 INSULATION

- A. All pipe insulation shall comply with the State of California Energy Conservation Standards. Insulation thicknesses indicated are based on insulation having thermal resistances in the range of R-4.0 to R-4.6 per inch of thickness on a flat surface at a mean temperature of 75°F. Thicknesses indicated are minimum and shall be increased proportionately for materials having R values less than 4.0 per inch of thickness or may be reduced for materials having R values greater than 4.6 per inch thickness. Install pipe insulation after piping is installed, tested, and approved and is in clean, dry condition. Firmly butt insulation joints.
- B. Insulate all hot water and interior condensate drain piping with glass fiber pipe insulation with factory applied white jacket, J-M Micro-Lok 650 AP, 1 in. thick for pipe sizes to 1-1/4 in. and larger. Insulate fittings and valves with preformed insulation with PVC premolded one piece fitting cover, J. M. Zeston cover. Adhere longitudinal laps and butts of strips of jacket with factory applied pressure sensitive tape system, J-M AP-T. Flanges and unions shall not be covered.
- C. Insulate all piping under lavatories accessible to the physically handicapped with Armaflex P-trap insulation as fabricated by Thorpe Insulation Company.

2.14 PLUMBING FIXTURES AND EQUIPMENT

A. General

Plumbing fixtures trim and exposed supplies and wastes shall be brass with polished chrome plated finish. Provide individual loose key stops or, if so specified, screw driver stops for supplies and, unless integral with valves or faucets, mount under fixture. Separately trap all wastes. Provide exposed supplies and wastes to wall with polished chrome plated cast brass wall escutcheons. All lavatories shall have 1-1/2 in. 17 gauge chrome plated cast brass P-traps.

B. Wall-Hung Fixtures

Fixtures specified with hangers or supporting arms shall have hangers or arms securely mounted on a 1/4 in. thick by 6 in. wide steel wall plate which extends at least one stud beyond first and last fixture mounting points, or a total of three studs minimum. Attach wall plate to each structural stud it crosses by tack welding each side of stud flange at top and bottom of plate. Fixture or supporting arms shall be securely and firmly attached to steel wall plate in accordance with manufacturer's instructions. If structural studs are not being installed behind wall-hung fixtures, Plumbing Contractor shall notify Architect and Mechanical Engineer immediately.

C. Floor-Mounted Water Closets

Install on slotted cast-iron floor flanges. Make joints permanently gas and water tight with a preformed wax gasket and held in place with 5/16-in. solid brass bolts concealed with vitreous china bolt caps. Color to match fixture.

- D. See drawings for fixtures, trim, equipment, and accessories specifications.

PART 3.00 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection

- 1. All plumbing shall be installed in accordance with the requirements of all governing authorities, the original design, and the referenced standards.

B. Discrepancies

- 1. In the event of discrepancy, immediately notify the Architect.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
- 3. Interferences between installed work of various trades due to lack of coordination shall be resolved by Architect whose decision is final. Relocate or offset any work as required to accommodate work of other trades at no extra cost to the Owner when so directed by the Architect.

3.02 LOCATIONS AND SPACE REQUIREMENTS

- A. Contractor shall fully inform himself regarding peculiarities and limitations of spaces available for installation of work under this division. Drawings indicate desired location and arrangement of piping, equipment, and other items, and are to be followed as closely as possible. Work specified and not clearly defined by drawings shall be installed and arranged in a manner satisfactory to Architect. In event changes in indicated locations and arrangements are deemed necessary by Architect, they shall be made by Contractor without additional charge provided the change is ordered before work is installed and no extra materials are required.
- B. Verify all spaces, dimensions for all fixtures, equipment, tenant or Owner furnished equipment and equipment furnished under other sections.
- C. Obtain all necessary rough-in data and dimensions for all fixtures, equipment, tenant or Owner furnished equipment and equipment furnished under other sections.
- D. Maintain ample headroom clearances and accessibility. Maintain ceiling heights.
- E. Constantly check work of other trades to prevent interference with this installation.
- F. No shop assembled plumbing pipe trees allowed.

3.03 PIPE INSTALLATION

- A. Make pipe runs straight and true. Springing or forcing piping into place is not permitted. Install in manner to prevent any undue strain on equipment. Make joints smooth and unobstructed inside and out, and ream pipe ends thoroughly to remove burrs. Conceal piping in finished portions of the buildings except as otherwise directed or indicated. Cap or plug ends and openings in pipe and fittings immediately to exclude dirt until equipment is installed or final connections are made. Make pipe size reductions with reducing fittings. Use no bushings unless specifically authorized. Use no close nipples. Proceed to rough-in as rapidly as general construction of building will permit and complete and test before any lathing, plastering, or drywall, or other finish work is started. Fit work to available space and accurately rough-in. Grade and valve water piping so as to provide for complete drainage and control of the system. Provide clamps and/or concrete thrust blocks at dead ends, angles, or other points where separation of joints may occur. Grade vent piping to allow piping to free itself of condensation or water.
- B. Install piping to clear beams unless sleeving is indicated. Constantly check work of other trades to prevent interference with this installation. Obtain approval from Architect if coring or cutting of concrete work is necessary due to failure to install required sleeves prior to time of concrete pour. Cost of coring and cutting work shall be borne by the Subcontractor.
- C. Exposed Plated or Enameled Pipe
Make connections to equipment with special care. Show no tool marks or threads.

D. Dielectric Unions

Make connections between two dissimilar metal pipes with dielectric unions.

E. Unions

Provide a union on one side of each shutoff valve, at both sides of automatic valves, at equipment connections and elsewhere indicated or required, unless flanges are indicated.

F. Floor, Wall, and Ceiling Plates

Provide where pipes pierce finished surfaces.

G. Noise

Install soil, waste, and water piping in manner that prevents any unusual noise from flow of water under normal conditions.

H. Shutoff Valves

Provide where indicated and required for adequate control of systems and for isolation of fixture groups of equipment.

I. Buried Piping

Install with minimum 36 in. coverage unless otherwise indicated. Lay piping accurately to grade where invert elevations are indicated. When required, provide thrust blocks per manufacturer's recommendations.

J. Equipment and Materials

Install per manufacturer's recommendations.

K. Accessibility

Install work readily accessible for normal operation, reading of instruments, adjustment, service, inspection, and repair. Provide access panels where indicated and required.

L. Pipe Joints

Make screwed joints with a minimum amount of compound applied to the male thread only. All joints shall be made per code requirements.

3.04 HANGERS AND SUPPORTS

A. Hold horizontal pipe runs firmly in place using approved steel and iron hangers, supports, and/or pipe rests unless otherwise indicated. Suspend hanger rods from concrete inserts or from approved brackets, clamps, or clips. Hang pipes individually or in groups if supporting structure is adequate to support weight of piping and fluid. Except for buried piping, hang or support pipe runs so that they may expand or contract freely without strain to pipe or equipment.

1. Horizontal steel piping: Provide hangers or supports every 10 ft. except every 8 ft. for piping 1-1/4 in. and smaller.
2. Horizontal copper tubing: For 2 in. diameter and over, provide hangers every 10 ft.; for 1-1/2 in. diameter and smaller, every 6 ft.
3. Horizontal cast-iron hub and spigot piping: Provide hangers or supports at each hub.
4. Horizontal cast-iron no-hub piping: Provide hangers or supports at each side of a no-hub fitting. Provide anti-separation bracing at each 90° change of direction.
5. Vertical piping: Support at floor with iron pipe clamps.
6. Sway brace in accordance with NFPA 13.

B. Branches

Provide separate hangers or support for branch lines 6 ft. or more in length.

C. Sound and Electrolysis Isolators

Provide at all hangers and supports for hot and cold domestic water lines. Securely attach pipe to walls, studs, etc. All such

piping isolated from structure by "Trisolators".

3.05 EXPANSION AND CONTRACTION

Install piping subject to expansion and contraction with expansion loops made up of bends, fittings, or Victaulic couplings, expansion joints, swing joints, or other approved methods or devices.

Branch lines from mains subject to expansion and contraction shall have a swing joint at a point of connection with the main. Risers which pass through one or more floors shall have swing joints at their base. Anchor lines subject to expansion and contraction by approved methods to restrict movement.

3.06 CORROSION PREVENTION

Make joint between cuprous and ferrous materials with approved nylon insulating couplings. Separate contact surfaces of dissimilar metals with non-conducting coating or sheet.

3.07 CLEANOUTS

A. Provide cleanouts where indicated and required. Unless otherwise indicated, cleanouts shall be accessible with extension to grade, to outside of buildings, or to floors above as indicated or required. Do not locate cleanouts in public lobbies and public corridors unless approved by Architect.

B. Membranes

Where waterproofing membrane occurs under floor, bring membrane to cleanout without puncturing, and permanently anchor to integral anchoring flange with a heavy cast-iron clamping collar and rustproofed bolts.

C. Covers

Set cleanout covers with all finished wall, floor, or grade. In all cases securely anchor by means of integral lugs and bolts. Where surfacing material such as resilient covering is specified, ascertain thickness being used and set cleanout top so finished floor is smooth.

D. Use Acorn 3500 thread compound.

3.08 ACCESS BOXES AND PANELS

A. Provide valve boxes for valves located below grade. Provide metal access panels of size and type specified for valves or shock absorbers located in concealed areas.

B. Access Boxes and Panels

Set flush with finished wall, floor, or ceiling. Those in finished walls shall have door or plate removed during construction or be otherwise suitably covered to protect finish.

C. Outside General Service Access Boxes

Provide with metal, asbestos cement, or clay pipe sleeve extensions where added depth is necessary. Do not locate boxes in public walks, driveways, or covered passages unless indicated.

3.09 WRAPPING FOR BURIED STEEL PIPING

A. All buried steel pipe shall be factory coated with Plexco 25 mil high density polyethylene coating (yellow). Finished coating shall have continuous imprinting of coating type and applicator and pipe type and manufacturer. All fittings and field joints of buried steel piping shall be cleaned, primed then fully protected by wrapping with two separate wrappings (each half lapped) of 0.010x2 in. wide pressure sensitive polyvinyl tape equivalent to Johns-Manville "Trantex". All fitting and joint wrapping shall overlap pipe wrapping a minimum of 2 in.

3.10 PROTECTION FOR UNDERGROUND DUCTILE AND CAST IRON PIPE AND FITTINGS

Wrap all pipe and fittings with 20 mil PVC pipe tape and primer per manufacturer's directions, or install in 20 mil polyethylene encasement in accordance with ANSI/AWWA Standard C105/A21.5-82. Bed and backfill with clean sand a minimum of 4 in. all around pipe and fittings

3.11 EXCAVATION AND BACKFILLING

Perform excavation and backfilling required work under this section unless otherwise specified. Conform to requirements of

Division 2 and of public authorities having jurisdiction.

3.12 SPECIALTY ITEMS

Install as indicated on the drawings, as herein specified, and as recommended by manufacturer.

3.13 STERILIZATION

Sterilize each unit of water supply and distribution system with liquid chloride or hypochloride before acceptance for operation in accordance with AWWA C601, "Standard for Disinfecting Water Mains". Work shall be done by Contractor and, unless otherwise required by public authorities having jurisdiction, shall conform to the following:

A. Materials

1. Liquid chorine: U. S. Army Specification 4-1.
2. Hypochloride: Liquid shall conform to Fed. Spec. O-C-11RA (Int. 4).

B. Method

Amount of chlorine shall provide a dosage of 50 ppm minimum. Introduce chlorinating materials into lines and distribution system in approved manner. After a contact period of 24 hours minimum during which period chlorine residual shall be maintained at 5 ppm minimum, flush out systems with clean water until residual content is not greater than 0.2 ppm. Open and close valves in lines being sterilized several times during contact period.

C. Test Reports

Furnish one copy of test report of complete and adequate sterilization to Architect before final acceptance of work. Certificates shall bear signature of an official of laboratory responsible for test. Cost of testing laboratory services shall be included in this subcontract.

3.14 TESTS

A. Perform tests to Architect's satisfaction. Make tests in presence of Architect and at a time suitable to him if requested. Furnish necessary labor and equipment and bear costs for testing. Cost of replacing and/or repairing damage resulting therefrom shall be borne by this Contractor. Should the Contractor refuse or neglect to make tests necessary to satisfy the Architect that requirement of specifications and drawings are met, such tests may be made by an independent testing company and the Contractor charged for all expenses.

B. Hydrostatic Tests

Make by completely filling piping system with water and eliminating accumulations of air so that leakage, no matter how small, will be apparent on testing gauge immediately. Maintain pressure until pipe under test has been examined, but in no case less than 24 hours. Test systems at following pressure:

<u>SYSTEM</u>	<u>TEST PRESSURE</u>
Domestic cold water	150 psig
Domestic hot water	150 psig

C. Sanitary Soil, Waste, Vent System Tests

Before installation of fixtures, cap ends of system and fill lines with water to 10 ft. above the section being tested (including vents) and allow to stand until a thorough inspection is made. Make tests in sections if necessary or convenient. However, include interconnections between new sections and previously tested sections in the new test.

E. Gas systems: Test with compressed air at 50 psig for six hours or longer as directed to prove tight without leaks. Use pressure recorder to record pressure of all lines for duration of test.

3.15 ADJUSTING

Upon completion of work and after cleaning of system, fixtures, and equipment, and automatic parts of plumbing system shall be carefully adjusted for normal operation. All flush valves and fixture stops shall be check for proper operation and final adjustments made where required. System shall operate quietly without vibration or noise.

-END OF PLUMBING SECTION-

HEATING, VENTILATING & AIR CONDITONING

PART 1 - GENERAL

1.01 GENERAL CONDITIONS AND DIVISION ONE

The General Conditions, Supplementary Conditions and Division One are hereby made a part of this Section.

1.02 SCOPE OF WORK

THE HVAC ON THIS PROJECT ONLY AFFECTS THE REMODELED RESTROOMS AND THAT IMMEDIATE AREA ADJACENT TO THEM. NO NEW EQUIPMENT IS ANTICIPATED BUT REARRANGEMENT OF EXISTING DUCT WORK AS SHOWN ON THE MECHANICAL PLAN AND EXTENSION OF OR REARRANGEMENT OF SUCH DUCT WORK, GRILLS, REGISTERS ETC. WILL BE REQUIRED.

Furnish all design plans, labor, materials, equipment, appliances, and necessary incidentals for the complete installation of all heating, ventilating, and air conditioning as shown on the Architectural Drawings and specified herein.

A. Work Specified in this Section

2. Ventilation from all toilet rooms and other areas where required.

B. Related Work Included in this Section

1. Responsibility for obtaining clarification of discrepancies between mechanical and electrical work from Architect prior to proceeding with the work.

1.03 QUALITY ASSURANCE

A. Codes and Standards

In addition to the requirements of all governing codes, ordinances, and agencies, conform to the requirements of the latest edition of the following Codes and Standards:

1. State of California Administrative Code.
2. Health and Safety Code, State of California.
3. National Board of Fire Underwriter's Publications:
 - a. Pamphlet #70 - National Electrical Code.
 - b. Pamphlet #90A - Air Conditioning Systems.
4. Uniform Building Code; 2007 Edition.
5. Uniform Mechanical Code, Current applicable Edition.

1.04 SUBMITTALS

A. Shop Drawings

Within 35 days after award of Contract, and before any of the materials of this Section are delivered at the job site, submit

complete Shop Drawings to the Architects in accordance with the Provisions of Division 1 of these Specifications.

Show all details of all duct work, piping, and equipment pads.

B. Product Data

1. Submit six (6) copies of all manufacturer's product data in accordance with Division 1 simultaneously with all Shop Drawing submittal.
2. Manufacturers and suppliers of equipment shall provide all data necessary for compliance with the State of California Energy Conservation Standards. Compliance certification for all equipment shall be included in equipment submittals.

C. Record Drawings

Maintain throughout the progress of the work project record drawings in accordance with Division 1 and submit to the Architect in compliance with the above section. Indicate location of ducts and piping dimensioned off of grid lines.

D. Operating Manuals and Maintenance Manuals

1. Submit four (4) copies of all operating instructions and maintenance manuals in accordance with Division 1.

E. Guarantees

In addition to equipment warranties, furnish a written guarantee against defects in materials and workmanship for one (1) year. Guarantee shall include repair of damage to, or replacement of, any part of equipment or premises caused by leaks or breaks in pipe or equipment provided under this Section.

1.05 PRODUCT HANDLING

A. Protection

Take all precautions necessary to protect the materials of this Section before, during, and after installation.

B. Replacements

In the event of damage, immediately repair all damaged and defective work to the approval of the Architect, at no additional cost to Owner.

1.06 JOB CONDITIONS

A. Examination of the Site

Examine the site and include in Bid Proposal all conditions under which work is to be performed.

1.07 MISCELLANEOUS

A. Permits and Fees

Arrange, apply, and pay for all necessary permits, inspections, examinations, and fees or charges required by Public Authorities having jurisdiction.

B. Locations and Accessibility

Contractor shall fully inform himself regarding peculiarities and limitations of spaces available for installation of work under this Section. Valves, motors, controls, and other devices requiring service, maintenance, and adjustment shall be placed in fully accessible positions and locations. Provide access doors where required in ductwork or construction whether specially detailed or not, and render all such devices accessible.

C. Scaffolding

Furnish all scaffolding, rigging, and hoisting as required for the proper execution of the work.

D. Drawings

Drawings indicate desired location and arrangement of piping, equipment, and other items, and are to be followed as closely as possible. Assume the responsibility for coordinating the work with all other trades. Work specified and not clearly defined by the Drawings shall be installed and arranged in a manner satisfactory to Architect. In the event changes in indicated locations and arrangements are deemed necessary by Architect, they shall be made by Contractor without additional charges provided the change is ordered before work is installed and no extra materials are required.

PART 2 - EXECUTION

2.01 SURFACE CONDITIONS

A. Inspection

1. Prior to commencing work required by this section, inspect the work of other trades and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required by this section.
2. All heating, ventilation and air conditioning shall be installed in accordance with the requirements of all governing authorities, the original design, and the referenced standards.

B. Discrepancies

1. In the event of discrepancy, immediately notify the Architect.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

2.02 EQUIPMENT IDENTIFICATION

All major equipment shall bear firmly attached metal nameplates which state name of manufacturer, model number, and electrical data. An additional permanent label shall be affixed to each equipment which will clearly indicate by number which operating and maintenance manual explains maintenance requirements in detail.

2.03 SAFETY PROVISIONS

Equipment, ductwork, and piping with temperatures above 140°F or temperatures below 25°F, located as to endanger personnel or create a fire hazard, shall be properly guarded or covered with insulation of type specified. Bolts, gears, chains, pulleys, couplings, projecting set screws, keys, and other rotating or reciprocating parts shall be enclosed or properly guarded. Provide guard rails, etc. required for safe operation and maintenance of equipment.

2.04 INITIAL LUBRICATION, ADJUSTING AND CHARGING SYSTEMS

Before operating any mechanical systems, equipment bearings shall be lubricated and bolts, pulleys, and other moving parts checked for alignment and tolerances in accordance with manufacturer's operating instructions. Refrigerant piping shall be fully charged in accordance with manufacturer's recommendations.

2.05 CLEANING OF EQUIPMENT, MATERIALS AND PREMISES

Refer to section "Clean Up and Disposal". Clean equipment and materials thoroughly. Leave surfaces to be painted smooth and clean, ready for painters. Clean entire premise of unused materials, rubbish, debris, grease spots and dirt left by subcontractors. Remove, clean, and replace pipe line strainers after systems have been in operating for a period of 30 calendar days.

2.06 HANGERS AND SUPPORTS

A. Hold horizontal pipe runs firmly in place using approved steel and iron hangers, supports, and/or pipe rests, unless otherwise indicated. Suspend hanger rods from concrete inserts or from approved brackets, clamps, or clips. Hang pipes individually, or in groups if supporting structure is adequate to support weight of piping and fluid. Except for buried piping, hang or support pipe runs so they may expand or contract freely without strain to pipe or equipment.

B. Horizontal Steel Piping

Provide hangers or supports every 10' except every 8' for piping under 1" in diameter, unless otherwise specified.

C. Horizontal Copper Tubing

For 2" diameter and over, provide hangers, every 10', for 1-1/2" diameter and smaller, every 6'.

D. Vertical Piping

Support at floor with wrought iron pipe clamps.

E. Branches

Provide separate hangers or supports for branch lines 6' or more in length.

2.07 EQUIPMENT AND MATERIALS

Install per manufacturer's recommendations.

2.08 ACCESSIBILITY

Install work readily accessible for normal operation, reading of instruments, adjustment, service, inspection, and repair. Provide access panels where indicated and required. Access panels shall be the responsibility of the respected subcontractor. Submit proposed access panel fixture cuts to Architect for approval.

2.09 EXCAVATION AND BACKFILL

Perform excavation and backfilling required for mechanical work under this division unless otherwise specified. Conform to requirements of Division 2 and of public authorities having jurisdiction.

2.10 EXPANSION AND CONTRACTION

Install piping subject to expansion and contraction with expansion loops made up of bends or fittings, expansion joints, swing joints, or other approved methods or devices. Branch lines from main subject to expansion and contraction shall have a swing joint at point of connection with the main. Risers which pass through one or more floors shall have swing joints at their base. Anchor lines subject to expansion and contraction by approved methods to restrict movement.

2.11 SYSTEM BALANCING

- A. Balancing of air quantities shall be made by contractor to the satisfaction of the Architect.
- B. Balancing data shall be submitted for air flow at each outlet, outside air, return air, total supply air, fan RPM, fan pressures, water quantities and temperatures, and any other data deemed necessary to show that proper adjustments have been made. If in the opinion of Architect test results are not acceptable and Contractor does not satisfy system balancing requirements, an independent balancing company will be retained to balance all systems. All costs for this service shall be paid by Contractor.
- C. Tests shall be witnessed by Owner's representative and submittal data signed by Owner's representative before final inspection.
- D. Air balance subcontractor shall verify that dampers have been installed for adequate air balancing and that air loss in duct work will not prevail. Duct joints shall be repaired by Contractor.

2.12 INSTALLATION

Rooftop packaged units, outdoor heat pumps, exhaust fans, and other equipment shall be installed on level bases, curb, and bolted to vibration isolators and then anchored to structures as indicated.

2.13 AIR DISTRIBUTION EQUIPMENT LOCATIONS

Shall be coordinated with Architectural drawings.

2.14 TURNING VANES

Shall be installed in all right angle sharp turns in ducts.

2.15 SOUND INSULATION

Where indicated, specified duct dimensions are net clear dimensions, i.e. clear dimensions after sound insulation have been installed.

2.16 DUCT WORK

Connected to louvered openings shall be adapted to size of these openings.

2.17 DUCTS

No hangers, supports, or pipes shall pierce ducts. Secure duct hangers and supports to building structure. Install ducts to clear beams and other obstructions. Assemble, erect, and adjust duct systems so as to insure absolute minimum of noise and vibration in operation. Provide entire system quiet to a degree satisfactory to Architect. Any adjustment required to produce quietness shall be made by contractor before work will be considered finished and acceptable. Grout air ducts piercing walls and floors where fire dampers are required with gypsum plaster. Install ducts so that system can be readily balanced after completion of work.

2.18 OPERATION

Place systems in operation and regulate and adjust to Architect's satisfaction. Systems shall operate quietly and without vibration or noise. Provide access doors in ductwork as directed to allow air flow in system for proper testing.

2.19 CERTIFICATION

Upon completion, the contractor shall inspect work of this section and deliver to general contractor a written certification that installed materials and workmanship conform to specifications.

2.20 OPERATING AND MAINTENANCE INSTRUCTIONS

Incorporate in the operating and maintenance instructions the following directives:

- A. Oil motor bearings every month.
- B. Clean outside air louvers and screens every month.
- C. Check fan belts every month.
- D. Replace media on all air filters every two months or when pressure drop exceeds maximum indicated on drawings.

PART 3 - EQUIPMENT

A. General Requirements

3.03 EXHAUST FANS

A. Ceiling Mounted

1. Furnish and install Cook Gemini of size indicated on drawings.
2. Ceiling ventilator shall be direct drive, forward curved, and centrifugal blower type.
3. Fans housing shall be acoustically insulated, and constructed of galvanized steel. Fan wheel and scroll shall be constructed of galvanized steel.
4. Entire fan wheel and motor assembly shall be removable.
5. The motor shall be permanently lubricated and shall be factory tested prior to shipment.
6. The ceiling ventilators shall be furnished standard with a powder-painted white steel grille.
7. Backdraft damper shall be included as a unit.
8. Fan shall be UL listed and carry an AMCA certified rating seal.
9. Fan shall interlock with light switch

3.04 DIFFUSERS, REGISTERS, AND GRILLES

Air distribution equipment shall be of sizes and capacities indicated.

A. Colors

Air distribution equipment installed on ceiling shall be furnished in factory finished enamel of color to match ceiling tile as selected. Submit paint samples for approval.

B. Square Ceiling Diffusers

Metal Aire series 7650-6 square neck connection with a perforated, hinged removable face, round to rectangular neck fitting and adjustable louver. Provide butterfly type volume damper in branch ductwork. Return air registers shall match ceiling diffuser.

C. Surface Mounted Ceiling Diffusers

Metal Aire model 7000-1 square connection with perforated, hinged removable face, square to round fitting, and adjustable louvers.

3.05 DUCTS AND SHEET METAL WORK

- A. Provide ducts, plenums, access doors, fresh air intakes, and exhausts as indicated and required. All ductwork shall be constructed, erected, and tested in accordance with the most restrictive of local regulations, procedures detailed in the ASHRAE Handbook of Fundamentals or the applicable standards adopted by the Sheet Metal and Air Conditioning Contractors National Association. Prefabricated spiral lockseam ducts and fittings may be used in lieu of rectangular ducts of galvanized steel.
- B. Final connections to ceiling diffuser shall be made with acoustical flexible ductwork, Casco Silent Flex II or approved equal. Connections of flexible duct to round ducts shall be made with 1/2" wide positive locking steel straps.
- C. Flat duct surfaces shall be crimped diagonally regardless of size. Longitudinal joints in all duct sizes may be flat lock joints. Transverse joints and intermediate bracing shall be constructed of galvanized sheet metal or galvanized structural angles in accordance with requirements of ASHRAE guide and public authorities having jurisdiction.
- D. Transverse joints on all supply ducts shall be sealed with mastic or tape.
- E. Longitudinal joints on low pressure supply ducts with internal static pressure in excess of 0.75" of water pressure shall be sealed with mastic or tape.
- F. Lock joints shall be hammered to make them airtight. Inside of duct shall present a smooth surface to flow of air.
- G. Changes in size of ducts shall increase gradually with a slope of not more than 12" in 5' where possible, but not more than 12" in 3' in any event.
- H. Turns shall be made with a throat radius of not less than the duct width.

- I. Horizontal duct work shall be strongly supported with galvanized hangers, in accordance with the requirements of ASHRAE Guide and public authorities having jurisdiction.
- J. All supply and return air ductwork shall be preinsulated aluminum flexible duct with 1" thick fiberglass insulation with vapor barrier.
- K. Plenums shall be made of 18 ga. galvanized sheet steel reinforced horizontally on a maximum of 48" centers by 1-1/2" x 1-1/4" x 1/8" galvanized angles and reinforced vertically by 1-1/2" standing seams.
- L. Plenum access doors 24" x 54" minimum size, shall be galvanized sheet steel doors and frames properly reinforced to prevent breathing. Door shall be of same gauge as the duct or casing and shall have 1" insulating with galvanized sheet steel on both sides. Each door shall be hung on 5" tee hinges and with one or more catches with are operable from both sides and similar to Ventfabrics, Inc. 260 Ventlock Hatch. Doors shall be hung to open against pressure and shall be fitted with felt to insure air tightness.
- M. Flexible connections for air ducts shall be 16 oz. airtight "Ventglass" non-combustible fabric with fire retardant neoprene coating on outside. Attach to duct work by lock seam. Install not more than 6" long. Provide where required or indicated.

3.06 TURNING VANES

- A. Both dimensions less than 48", Barber Colman "Airturms" without splicing or approved double thickness airfoil vanes.
- B. Either dimension greater than 48", double thickness air foil vanes of approved pattern.

3.07 DAMPERS

- A. Provide balancing volume dampers in each branch duct and in each main duct to provide for complete air balancing. Fit each manual volume damper with bearings and an adjusting device having a locking mechanism. Provide access panels if concealed or inaccessible through ceiling or wall, opposed blade damper may be used.
- B. Balancing dampers where neither dimension of duct exceeds 17" may be job-fabricated "Butterfly" type consisting of a blade constructed of 18 ga. galvanized steel securely riveted or welded at its center axis to a square operating rod.
- C. Balancing Dampers
Balancing dampers where either dimension exceeds 18" shall be Controlair OPP-MD.

3.08 INSULATION

All insulation shall comply with the State of California Energy Conservation Standards. (1995 Edition)

- A. Thermal Duct Insulation
Insulate all concealed main supply and return air ducts and plenums, unless otherwise specified, with J-M Microlite fiber glass duct insulation, foil faced, 3/4" density. 1" thick, insulation wrapped entirely around duct with joints lapped at least 2" and secured with 16 ga. galvanized wire on 12" centers. Insulation shall cover all surfaces including standing seams.
- B. Lined Supply, Return Air Ducts and Plenum
Shall be lined with J-M Linacoustic, 1" thick, 1-1/2 lb. density coated fiberglass duct liner complying with NFPA 90-A requirements. The cut liner shall have an air friction correction factor not greater than 1.1 at a velocity of 3000 FPM. Apply insulation to inside of ducts with an approved fire retardant adhesive to provide 100% coverage and a smooth surface. In ducts with one side more than 12", secure insulation with mechanical fasteners in addition to adhesive, spaced at 14" centers in both directions. Mechanical fasteners shall be flush with the liner surface and shall start within 2" of the leading edge of each section and within 3" of the leading edge of all cross joints within the duct section. All exposed edges and the leading edge of all cross joints of the liner shall be heavily coated with an approved fire resistant adhesive. The duct line shall be cut to assure snug closing corner joints, the black surface of the liner shall face the air stream, transverse joints shall be neatly butted, and all damaged areas shall be heavily coated with an approved fire resistant adhesive. All ducts and plenums exposed to outdoor weather shall be 1-1/2" thick similar to above.
- C. Contractors' Option
Concealed main supply air ducts and plenums may be lined in lieu of external wrapping as hereinbefore specified.
- D. Sound Duct Insulation

Where indicated, sound insulate air ducts as hereinbefore specified for lined ducts and plenums.

E. All duct insulation shall have a minimum thermal resistance of 4.0 exclusive of film resistance.

3.10 EQUAL MATERIALS AND SUBSTITUTIONS

In addition to manufacturers specified, the following shall also be considered equal, provide corresponding models meet specified requirements. Equivalent substituted equipment named herein shall be submitted to Architect for approval. Submit alternate selections at time of bid submittal, listing for major equipment. No evaluations will be made during bidding. Base bid to include specified items. List proposed substitutions with proposed deducts from base bid.

ITEM	MANUFACTURER
INSULATION	JOHNS MANVILLE, FIBERGLAS
AIR FILTERS	CAMBRIDGE, AAF
DIFFUSERS, REGISTERS, AND GRILLES	ANEMOSTAT-CONTROLAIR, TITUS, KRUEGER
EXHAUST FANS	ACME, EXITAIRE, GREENHECK
HEATPUMP UNITS	CARRIER, DAY & NIGHT
VIBRATION ISOLATOR	MASON, CAL-DYN

-END OF SECTION-

SECTION 16000

ELECTRICAL

1. PART 1 GENERAL

1.1 SCOPE OF WORK:

Furnish all labor, material, tools and equipment necessary for and incidental to the completion of all ELECTRICAL WORK as shown on the drawings or specified herein. This Section relies extensively on Section 01001 of these specifications and all requirements there-in must be adhered to by this Contractor.

1.2 SECTION INCLUDES

The work of this section includes the furnishing and installing of all electrical work, including labor, materials, delivery, insurance fees, taxes, equipment and scaffolding, as shown and noted on the drawings and specified herein. The following is a general list of the work included; the list is not necessarily all inclusive.

- A. Removal of existing electrical equipment, conduit, wiring etc. not required for final construction.
- B. Reconnection of existing electrical that is to remain to existing sub panels.
- C. Furnish, install and connect all new light fixtures, outlets and equipment required for completed project of all new work.
- D. Lighting fixtures, lamps and all necessary fixture supports, hangers and accessories.
- H. Testing of contracted work.
- I. Clean up and Record Drawings.

1.3 STANDARDS:

- A. All electrical work shall be installed or performed in compliance with the City Electrical Code, State Fire Marshal Regulations and the National Electrical Codes, except that the conduit fill shall be as indicated on the drawings. In case of conflict, the most restrictive code shall apply.
- B. All material used in the electrical work herein specified shall be new and suited to the intended use, shall be listed by a Nationally recognized testing laboratory, and shall meet their requirements and bear their label whenever standards have been established and label service is regularly furnished by that agency.
- C. All equipment shall conform to National Electrical Manufacturer's Association (NEMA) industry standards.
- D. The installation shall conform to the requirements of NECA "Manual of Good Workmanship" (Standard of Installation)

1.4 SUBMITTALS:

Material Lists: Submit a complete list of all materials in the electrical system covered by these specifications. Each electrical lighting fixture shall be identified by the manufacturer's name and exact catalog number. Other items shall be identified by the name of the manufacturer and the trade name of the item. No material shall be delivered to the job until the list has been approved.

1.5 CONTRACT DRAWINGS:

- A. General: The structural, architectural, electrical and mechanical drawings form a part of the work to be done under this specification and the work shall be executed in accordance with these drawings and any detail drawings which may be furnished during progress of the work. The Contractor shall examine all architectural, structural, and mechanical drawings in order to fully inform himself as to the scope and detail of the work which will be required.
- B. Electrical Drawings: In general, the electrical drawings are diagrammatic in nature and indicate the locations of outlets and equipment and the circuit arrangement of the required wiring. Although not necessarily indicating the actual runs of conduit, the drawings shall be followed as closely as coordination with the work of other trades and spaces available will permit. The drawings are not intended to be scaled, and the Contractor shall refer to the architectural and structural drawing for dimensions and limitations of the building structure and finish, and to the shop drawings for the connection location of equipment requiring electrical service and connections. Any discrepancies, conflicts or questionable points shall be immediately reported to the Architect. In the event a change of location of any outlet is required, it shall be made by the Contractor without extra cost, provided the new location is not more than 5 feet from the location shown on the

drawing, and the change is ordered before the outlet is installed. All items not specifically mentioned in the specifications or noted on the drawings, but which are obviously necessary to make a complete working installation shall be included.

1.6 RECORD DRAWING:

- A. Record of Job Progress: Keep an accurate dimensional record of as-built locations of all work. Keep record up-to-date daily on prints as the job progresses and have available for inspection at all times.
- B. Record of Installation: At the conclusion of the work, purchase from the Architect a set of reproducible drawings and incorporate all as-built data in a clearly legible and reproducible manner utilizing Contract Drawing symbol and notation, and deliver to the Architect.
- C. Include on Record Drawings:
 - 1. Corrected panel schedules indicating installed condition.
 - 2. Revisions, including sketches, change orders, written directives.

1.7 PERMITS, INSPECTIONS AND TESTS:

- A. Permits and Inspections: Shall be as specified in General Requirements Section 01001. The Contractor shall obtain and pay for all permits, licenses and fees required for the execution of his work, Except that the basic electrical permit shall be submitted and paid for by the Owner and signed for and picked up by the electrical subcontractor. Electrical subcontractor shall arrange for and pay for all required tests and inspections, and shall give all notices required by any and all laws, rules, regulations and ordinances which pertain to the work.
- B. Tests: All wiring and connections shall be tested for continuity, short circuits and improper grounds. Each lighting panel shall be tested with mains disconnected from feeder, branches connected, wall switches closed, fixtures connected, but without lamps.

1.8 **GUARANTEE:** Equipment and accessories installed under this section shall carry the manufacturer's guarantee against defects for a period of not less than one year from the date of acceptance of the equipment. The Contractor shall guarantee, in writing, in a form acceptable to the Owner, the entire electrical installation against defective materials and/or improper workmanship for a period of one year from the date of final acceptance, and during the period covered by the guarantee, Contractor shall make necessary replacement and repairs at no cost to the Owner.

1.9 **COOPERATION WITH OTHERS:** The Contractor shall consult and cooperate fully with all trades furnishing labor, material or services, so the work as a whole, shall be executed in the most efficient manner and without conflict or delay.

1.10 **TEMPORARY POWER:** The Contractor shall make all arrangements for, and shall install the necessary provisions for temporary electrical construction power, sized as required

1.11 NOT USED

1.12 **SUBSTITUTIONS:** Reference to specific manufacturers and catalog numbers is intended to establish the required standard. Substitutions may be approved, if they are determined by the Architect to be equal to that specified in quality, performance and appearance. If substitutions are approved, such approval shall not relieve the Contractor from complying with the requirements of the Drawing and Specifications and the Contractor shall be responsible for any changes in cost caused by the substitution which affects other parts of the electrical work or the work of other trades. Requests for substitutions must be accompanied by literature which completely describes the proposed substitution and clearly indicates all variances from that specified, and the net cost to be credited to the Owner if such substitutions are allowed.

1.13 **PRELIMINARY OPERATION:** Should the Owner and/or Architect deem it necessary that the electrical installation or any part thereof be operated prior to completion and/or acceptance of the work, the Contractor shall consent to such preliminary operations. Preliminary operation shall be conducted under the supervision of the Contractor. All costs except cost of electricity occasioned by such operations, shall be paid by the Contractor. Preliminary operation shall not be construed as an acceptance of any work installed under the Contract.

1.14 **OPERATION AND MAINTENANCE INSTRUCTIONS:** Upon completion of the work, the Contractor shall supply

three (3) copies of complete operating and/or maintenance information and instructions including wiring diagrams for all electrical and other equipment which can be reasonably expected to require such material for proper operations and care. This will include such items as switchgear, metering equipment, rotating electrical equipment, signal, and alarm systems, etc.

1.15 INSPECTION: Architects's Electrical Engineer shall check all rough electrical work prior to pouring of concrete slab, and upon completion of work. The Contractor shall notify the Architect at least three days in advance of these dates.

2. PART PRODUCTS

2.04 RACEWAYS:

A. Conduit:

1. Rigid Steel Conduit (RSC): Shall conform to industry standards and shall be full weight pipe with threaded and screwed joints and shall be protected on inside and outside by galvanizing, sherardizing, or equivalent process.
2. Intermediate Metal Conduit (IMC): Shall conform to industry standards and shall be protected on inside and outside by galvanizing, sherardizing, or equivalent process.
3. Electrical Metallic Tubing (EMT): Shall be thin-wall steel conduit conforming to industry standards and shall be galvanized or sherardized.
4. Flexible Metallic Conduits: Shall be interlocking, single strip type and shall be suitably protected against corrosion. Where exposed to the weather or moisture, flexible conduit shall be of the liquid-tight construction complete with associated fittings.
5. Non-metallic Conduit: Shall be PVC Schedule 40 with tapered sleeve couplings, rated and labelled for use with 90 degree C. rated conductors. All conduit, fittings and cement shall be produced by the same manufacturer.

B. Outlet Boxes: Outlet boxes for concealed work or for exposed work more than 6 feet above the floor, shall be galvanized or sherardized, one piece, pressed steel, knockout type. Outlet boxes for exposed work within 6 feet of the floor or for exterior work shall be Appleton, Crouse-Hinds or Pyle-National cast metal type with threaded hubs and neoprene cover gasket.

1. Lighting Outlets: Shall be 4-inch square, or larger, box with fixture studs, and raised plaster ring where required.
2. Local Switch or Receptacle Outlet: For concealed work shall be 4-inch square, or larger, box with raised plaster ring for single or two-gangs as required. For more than two switches, use special gang box, with gang plaster ring as required. For exposed work, use FS or FD cast metal box with cast cover and gasket.
3. Telephone Outlets: Shall be same as for receptacle outlets, except that boxes shall be nominal 5" square.

C. Pull and Junction Boxes:

1. Small Pull and Junction Boxes: Outlet boxes shall be used as pull and junction boxes wherever possible. Boxes in finished walls or ceilings shall have two-gang raised plaster rings and blank wall plates. Other boxes shall have blank covers.
2. Large Pull and Junction Boxes: Where other than outlet boxes are required, pull and junction boxes shall be constructed of galvanized sheet steel conforming to code requirements. Boxes shall be of the sizes indicated on the drawings and/or as required by code. Boxes shall be rigid under torsional and deflecting forces, and shall be provided with angle iron framing where necessary. Covers shall be fastened to boxes with a sufficient number of brass machine screws to insure continuous contact all around. Boxes for exterior locations shall be of weatherproof construction and shall be provided with neoprene cover gaskets. Boxes shall be rigidly attached to the building structure independent of any conduit support, or as detailed on the drawings.

2.05 CONDUCTORS:

Shall be of the sizes and types as shown on the drawings and herein specified. Unless otherwise specified, all wires and cables shall be insulated for 600 volts. Sizes No. 8 AWG and larger shall be stranded and No. 10 AWG and smaller shall be solid. The minimum size wire for lighting or power circuits shall be No. 12 AWG. All wire and cables shall be copper, type THHN/THWN insulation or as noted on the drawings.

2.06 WIRING DEVICES AND PLATES:

A. The Contractor shall furnish and install in a true and plumb fashion, all wiring devices and plates necessary to complete the intended installation. All devices shall be equal to those indicated on the drawings or as listed below:

1. Light Switches - Bryant #4900 Series, brown or ivory, as required.
2. Duplex Receptacles - Bryant #5262 Series, brown or ivory, as required.
3. All other devices shall be as indicated on the drawings.

B. The plates for all flush mounted devices shall be Pass and Seymour, Inc., Sierra wall plates "P" series. The Architect shall be consulted as to which color is to be used where. When indicated on the drawings or where necessary to clearly define the function of a switch or device, the plate shall be engraved with black letters.

C. The Contractor is hereby cautioned to exercise care in the installation of receptacles so that the final installation is such that it is impossible to accidentally connect any piece of equipment to a system on which its use is not intended.

D. Weatherproof Convenience Outlets: Shall be Hubbell No. 53CM62 receptacle with No. 5222 plate, Bryant No. 5362-CR receptacle, or A-H & H No. 5739-CR receptacle with Hubbell plate per above.

E. Wall plates for surface mounted interior locations shall be cast metal and of the proper type to suit the devices with which they are used.

2.08 LIGHTING FIXTURES AND LAMPS:

A. The Contractor shall furnish and install all fixtures complete with lamps as shown on the drawings.

B. Fluorescent fixture ballasts shall be as manufactured by Advance or approved equal, and shall be equipped with internal thermal protection. All ballasts shall be high power factor, Class "P", carry ETL and UL labels and have an "A" sound rating. All ballasts shall be of the energy saving type or electronic type as designated on lighting fixture schedule unless otherwise noted on the drawings.

C. High Intensity Discharge Ballasts: Shall be the auto-stabilized type and high power factor. The ballasts shall be designed to start at temperatures as low as minus 20 degrees F.

D. Incandescent Lamps: Shall be rated for 2500 hours average life.

E. Fluorescent Lamps: Shall be the type as indicated on the drawings and shall be rated for 20,000 hours average life.

2.09 IDENTIFICATION MARKINGS:

A. Switchboard, panel boards, cabinets and miscellaneous electrical equipment shall have laminated black and white engraved plastic nameplates properly identifying each item.

B. Appliance and motor controls and weatherproof switchgear shall have metal nameplates or stenciling to suit the conditions.

C. All feeder cables must be phased out and identified with linen tags, minimum diameter 2", attached with copper wire at each pull box or terminal. Copper attachment wire shall be TW or RR insulated type #12 or larger. No bare parts of the tie wire shall be allowed to connect around the cable being tagged. Information shall be lettered onto tags with waterproof ink. Tags shall identify phases and circuits and give all pertinent cable data. Branch circuits shall be identified with E-Z markers in panel boards and in all outlet boxes.

D. Furnish and install in the space provided on the back of the door of each panel board, a neatly typewritten list of all circuits, indicating the room and the equipment supplied by each circuit. List shall be under 1/32 inch lucite.

3. PART 3 EXECUTION

3.01 SAFETY PRECAUTIONS:

The Contractor shall be responsible for the protection and good condition of all new electrical material and equipment for the entire installation, until final acceptance by the Owner. He shall erect and maintain suitable barriers, protective devices, lights and warning signs where required for the protection of public and employees about the building and he shall be fully responsible for any loss or injury to persons or property resulting from his neglect of these precautions, his own carelessness, or neglect of his employees. Compliance with the requirements of OSHA is the Contractor's responsibility.

3.03 CONDUIT SYSTEMS:

All wiring shall be installed in approved wiring enclosures except where specifically noted otherwise on the drawings or in the specifications. Conduit shall be used as follows:

A. Rigid Galvanized Steel Conduit or Galvanized Intermediate Conduit: Shall be used where exposed to weather or where embedded in concrete construction.

B. Rigid Galvanized Steel Conduit: Shall be used for interior runs where exposed below 6 feet above the floor and in sizes larger than 3".

C. Electrical Metallic Tubing (sizes 3" or smaller): Shall be used for interior runs in stud walls, furred ceilings and where exposed more than 6 feet above the floor.

D. Flexible Metallic Conduit: Shall be used for final connections to motors and other vibration producing equipment, and in locations where structural conditions make the use of rigid conduit or EMT impractical. If exposed to the weather or moisture, flexible conduit shall be of the liquid-tight type.

E. PVC Conduit: Shall be used only underground or in or below concrete slabs on grade with the following limitations:

1. When used for exterior runs, rigid galvanized steel elbows shall be installed for stub-ups, and conduits 2 inch and larger shall be encased, 3" thick all around.
2. When used in or below concrete slabs on grade, rigid galvanized steel elbows shall be installed for all stub-ups.
3. A code sized green grounding conductor, shall be provided, properly terminated, and the conduit size increased if required by code.

F. Fittings: Furnish and install all fittings and special devices necessary for proper installation, connection and operation of the system. Special fittings as required shall be Appleton "Unilets", Crouse-Hinds "Condulets" or Pyle-National "Pylets". Conduit elbows shall be of the same make, quality and finish as the conduit used. Install sealing fittings where conduits enter hazardous or moist room areas. Sealing fittings shall be filled with sealing compound, according to the manufacturer's instructions, after wires are installed.

G. **Hangers and Supports:** Furnish and install all inserts, hangers and supports required for supporting switches, conduits, junction and pull boxes, fixtures and similar materials and equipment. All horizontal and vertical runs of exposed conduits, and conduits larger than one inch located above furred ceilings, shall be supported at intervals of not more than 10 feet. Conduits one inch or smaller, located above suspended ceilings shall be fastened to the ceiling furring in an approved manner.

1. Supports for Individual Conduits: Individual conduits, one inch and smaller, shall be secured with one hole malleable iron pipe straps and screws and inserts on concrete construction, and with suitable clamps on steel construction. Conduits larger than one inch shall be attached to framing members with approved pipe hangers. Perforated steel plumbers tape shall not be used. Conduit shall not be attached to motors or other vibration producing equipment.

2. Supports for Groups of Conduits: Where conduits are grouped together, they shall be supported on "Unistrut", "Kindorf" or equivalent channels.

3. Supports for outlet boxes in stud walls shall consist of bar hanger mounted between studs to prevent box wobble.

4. The Contractor has the responsibility of providing additional pull or junction boxes in conduit runs where he deems them necessary for the work or where required by code. The chosen location shall be accessible and shall be approved by the Architect.

H. Conduit Installation:

1. Conduit in finished areas shall be run concealed except as otherwise shown on the drawings or as herein specified. Conduit may be run exposed in mechanical equipment and electrical rooms. Conduit shall be connected to outlet boxes and

cabinets with double locknuts and bushings. Where conduit cannot be connected with standard couplings, only approved conduit unions shall be used. Running thread connections shall not be used. Threadless fittings shall not be used. Where conduits cross expansion or seismic joints, "O.Z." Type DX, or equal, expansion and deflection fittings shall be used. Each run of conduit shall be entirely of one material. Open ends of conduits, unless in a closed box or cabinet, shall be closed with approved conduit caps or closures, as soon as installed, and kept closed until ready to pull in conductors. Bends in all conduits one inch trade size, or larger, shall be made with factory elbows or with an approved hydraulic bender.

2. The joints of all conduits installed in the ground, in concrete in contact with the ground, or where exposed to the weather, shall be made liquid and gastight, and the outside of each metallic coupling and adjacent conduit and all wrench abrasions shall be painted with "P and B" or equal compound. In addition to the above, the entire length of metallic conduits installed in the ground shall be painted with "P and B" or equal compound.

3. Electrical metallic tubing shall be installed with threaded gland compression type connectors and couplings. Indentor type or set-screw type fittings shall not be used. Flexible metallic conduit shall be installed with clamp type or Thomas and Betts "Tight-Bite" connectors. Angle type connectors shall be used only for exposed work. Liquid-tight flexible metallic conduit shall be installed with special fittings approved for the purpose.

3.04 CONDUCTOR INSTALLATION:

A. Wire shall be new, in unbroken reels or containers of recent manufacture, shall bear the label of a nationally recognized testing laboratory, the manufacturer's trademark, and the type and size of wire. Conductors shall not be installed in any conduit system until the following has been performed:

1. Conduit system is free of moisture.

B. Joints:

1. Connections shall be made without strain on the conductors and all strands of wire shall be included in the splice or termination.

2. All taps or connections to conductors shall be made with compression type connectors except those smaller than #8 may have soldered connections. Solderless connections for #10 or smaller, including fixture connections, shall be made with solderless spring connectors. For #8 or larger, connectors shall be made with solderless pressure type connectors.

3. All joints shall be mechanically and electrically secure and shall be insulated with rubber and friction tapes, or Scotch electrical tape to equal the original insulation of wires. If the type of connector used provides equivalent insulation, taping may be omitted.

4. Insulating bushings shall be used at all conduit terminations for #4 AWG or larger wires.

3.05 LIGHTING FIXTURES:

Incandescent fixture outlet boxes shall be provided with the proper hangers or fixture studs and shall be substantially supported from the structural elements. All fixtures shall be provided with all necessary hanging, supporting and accessory devices required for the installation in their particular locations, including earthquake clips. End-to-end fluorescent units shall be mounted on a straight line and shall be provided with an approved raceway for branch circuit conductors. The Contractor shall refer to the Architectural reflected ceiling plan for exact locations of all ceiling mounted fixtures.

3.06 OPENINGS, CHASES AND SLEEVES:

A. The Contractor shall be responsible for the proper locations and sizes of all openings, chases, cutting, sleeves, etc., required in the building structure to accommodate the work, and shall, sufficiently in advance of the need and in advance of construction, provide for the same so as to avoid cutting. Should these provisions be neglected, delayed or incorrect, the additional work shall be accomplished at no additional cost to the Owner.

B. Where cutting is necessary to install work under this section, it shall be done by methods that will not damage the structure, and shall have the Architect's approval.

3.07 FLASHING:

Wherever conduits extend through the roof, furnish and install galvanized steel flashing consisting of a No. 24 gauge roof jack and a flashing collar strapped to the conduit set in mastic and covering the top of the roof jack. Roof jack shall extend not less than 6 inches out of roof and up conduit. Conduit shall be allowed to slip in the roof jack. Coordinate installation of flashing with roofing installation to permit mopping in flanges by the Roofing Contractor.

3.08 CONNECTION TO EQUIPMENT:

A. All electrical outlets, apparatus, motors, equipment, fixtures, wiring devices and appliances, whether they are installed under the contract for electrical work, or not, which require electrical connections, shall be fully connected in an approved manner to

the corresponding electrical system.

B. Where the work under this section requires connection to be made to equipment that is furnished and set in place under other sections of these Specifications, the Contractor shall obtain roughing-in dimensions from the installer of each such item of equipment and assume full responsibility for the neat and work- manlike installation of the connections thereto.

3.10 EQUIPMENT SUPPORTS:

A. **Fabricate** supports for panelboards, lighting fixtures and other equipment of structural steel, or where applicable, of structural systems such as "Unistrut" or "Kindorf". Do all drilling and tapping of the building structure and all welding required for installing equipment supports.

B. **Welding:** Welding shall be done by the electric arc process by welders who are fully qualified for this work. Where brackets are welded to structural steel, the prime coat of paint on the steel shall be scraped away from the area in which welding is to be done.

C. **Painting:** All equipment and conduit supports, fabricated of structural steel, shall receive a shop coat of "Pabco" No. 7356 zinc dust, zinc-oxide metal primer. After erection and welding is completed, all structural steel supports shall be given a touch-up coat of paint specified for shop painting. All welds, bolts and spots where shop coating is damaged or removed shall be touched up to match shop coat.

3.12 TELEPHONE and COMPUTER SYSTEM:

The Contractor shall furnish and install a telephone "conduit only" system as indicated on the drawings. The system shall include building conduits, outlet boxes, finish plates and all accessories required for a complete raceway system. Galvanized or nylon pull wire of adequate and proper size shall be installed in all conduits.

3.13 CLEANING:

A. Galvanized Surfaces: Brush thoroughly and wipe with solvent to remove dirt, oil and grease.

C. Lighting Fixtures: Clean and polish fixtures, diffusers and trim.

D. Removal of Rubbish: Remove from the site all packing car- tons, scrap materials and other rubbish incidental to the work under this section, and leave the premises in a condition acceptable to the Architect.

3.14 TESTS:

A. Upon request of the Owner, at any time prior to completion, the Contractor shall make all necessary tests which will insure that all equipment, materials or installation methods are as specified. Qualified representatives of the Contractor shall perform the tests under the supervision of the Owner's representative. Any equipment or materials failing to meet the required standards shall be immediately replaced at no cost to the Owner.

B. Upon job completion, all electrical loads and controls shall be tested under full operating conditions and all defective materials, equipment, devices or faulty workmanship shall be immediately replaced at no cost to the Owner. The Contractor will be required to make standard equipment, material and performance tests and also reasonable tests that may be required, such as electrical insulation resistance or equipment temperature rise. The cost of all tests will be the responsibility of the Contractor.

*****END*****