BID DOCUMENTS

COUNTY OF GLENN

Replacement of 14 High-efficiency Heating, Ventilation and Air Conditiong (HVAC) Systems to be installed at 5 Glenn County Facilities

Owner's Representative: John F. Linhart,
Glenn County Planning & Public Works Agency Director

Project Sponsor: Annette Chavez
Glenn County Planning & Public Works Agency Deputy Director

GLENN COUNTY
Planning & Public Works Agency

P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988
530.934.6530 Fax 530.934.6533
www.gcppwa.net

"It is our mission to model excellence in local government through accountability and fiscal responsibility"

John F. Linhart, Director

April 21, 2012

PROJECT TITLE: Replacement of 14 High-efficiency Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities

LOCATIONS: Sheriff's Administration Building, Willows Memorial Hall, Orland Memorial Hall, Health Services Agency (Willows), Ag Department

OWNER'S REPRESENTATIVE: JOHN F. LINHART

Listed below is supplement information to the Bid Documents for the project identified above.

1. TENTATIVE SCHEDULE

Release of Request for Proposal	April 21, 2012
Mandatory Bid Conference	May 2, 2012 @ 10:00 a.m.
Deadline for Submission of questions	May 7, 2012
County responds to questions	May 10, 2012
Bid Submission Deadline	May 16, 2012 @ 3:00 p.m.
Bid Openings	May 16, 2012 @ 3:05 p.m.
Bid Results	May 18, 2012
Award of Contract	May 23, 2012
Notice To Proceed	Upon Acceptance of Award
Contract commencement date	Within 5 days of Notice to Proceed
Completion Date	June 14, 2012

PROJECT MANUAL

PROJECT OWNER

Board of Supervisors
Steve Soeth, Chairman
County of Glenn
525 West Sycamore Street
Willows, California 95988
Phone: 530-934-6402
Fax: 530-934-6419

PROJECT SPONSOR

John Linhart, Director
Planning & Public Works Agency
County of Glenn
777 N. Colusa Street
Willows, California 95988
Phone: 530-934-6530
Fax: 530-934-6533

PROJECT LOCATION

Sheriff's Administration Building, Willows Memorial Hall, Orland Memorial Hall, Health Services Agency (Willows), Ag Department.

PROJECT TITLE

Replacement of 14 High-efficiency Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Locations

OWNER'S REPRESENTATIVE

John Linhart, Director
Glenn County Planning & Public Works Agency
777 N. Colusa Street,
Willows, CA 95988
(530) 934-6530 FAX (530) 934-6533

PROJECT MANAGER

Annette Chavez, Deputy Director
Glenn County Planning & Public Works Agency
Facilities Division
777 N. Colusa Street
Willows, CA 95988
(530) 934-6545 or (530) 934-6530

BID LOCATION & CONTACT PERSON FOR OBTAINING DOCUMENTS & INFORMATION

Annette Chavez, Deputy Director
Glenn County Planning & Public Works Agency,
Facilities Division
777 N. Colusa Street
Willows, California 95988
Phone: 530-934-6545
Fax: 530-934-6533

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NOTICE TO CONTRACTORS

NOTICE IS HEREBY GIVEN that the County of Glenn (hereinafter "County") will receive sealed bids for all costs related to providing labor, materials, equipment, services, and expertise for the following project:

"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	**2**
2. Orland Memorial Hall Building	**2**
3. Sheriff's Administration Building	**3**
4. Health Services Building (HSA) Willows	**6**
5. **Ag Department Building**	**1**

See attached Exhibit B for project locations and unit details.

In accordance with the Bid Documents on file in the office of John F. Linhart, Director, Glenn County Planning & Public Works Agency, 777 N. Colusa Street, Willows, California 95988, (530) 934-6545.

BID DOCUMENTS AVAILABLE:

Bid Documents for the Work may be obtained from Glenn County Planning & Public Works Agency, 777 N. Colusa Street, Willows, California 95988, (530) 934-6545, FAX 934-6533, also available online at www.countyofglenn.net , or they can be mailed upon request for a fee of $50.00.

SEALED BIDS:

Sealed bids for the Work shall be filed with:

John F. Linhart, Director
c/o Annette Chavez
Glenn County Planning & Public Works Agency
777 N. Colusa Street
Willows, California 95988

on or before **3:00 pm, Wednesday, May 16, 2012.** The outside of the envelope in which the bid is submitted shall be plainly marked: **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Said bids will be opened in public at or about **3:05 pm, Wednesday, May 16, 2012,** at the Planning & Public Works Agency Conference Room, 777 N. Colusa Street, Willows, California. Bids shall be submitted only on forms provided in the Bid Documents.

BIDDER'S BOND:

Bids must be accompanied by a bidder's bond form provided in the Bid Documents or a certified or cashier's check for at least ten percent (10%) of the bid amount and made payable to the County of Glenn.

CONTRACTOR'S QUALIFICATIONS AND LICENSE REQUIRED:

The County will not consider or accept any bids from contractors who are not licensed to do business in the State of California, in accordance with the Business and Professions Code of the State of California, providing for the licensing of contractors. In accordance with Section 3300 of the Public Contract Code, the contractor shall have a **Class C-20** license. Contractors, if requested by the County, shall submit a contractor's qualifications statement, similar to AIA Document A305 which addresses these qualifications and the contractor's technical ability and expertise required to complete the work.

SUBCONTRACTORS LIST:

Each bid filed shall set forth:

a. The work to be performed, the name, and the location of the place of business of each subcontractor who will perform work or labor or render service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half of one percent of the total bid;

b. The portion of the work which will be done by each subcontractor, as required by Section 4104 of the Public Contract Code. All bids shall be submitted subject to the terms, conditions and penalties of Chapter 4 (commencing with Section 4100) of Part 1 of Division 2 of the Public Contract Code.

BOND AND INSURANCE REQUIRED:

The successful bidder will be required to furnish a **Performance Bond** equal to one hundred percent (100%) of the contract price, said bond to be obtained from a surety company satisfactory to the County.

The successful bidder will be required to furnish certificates of insurance indicating that the bidder carries adequate coverage for the insurance listed below:

a. **General liability**: At least $1,000,000 combined single limit per occurrence coverage for bodily injury, personal injury and property damage. If a general aggregate limit is used, then either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required per occurrence limit. The bidder's insurance carrier shall notify County if incurred losses covered by the policy exceed 50% of the annual aggregate limit. ***Such insurance shall include Glenn County, its elected officials, officers, and employees as an additional insured***, and shall not be reduced or canceled without 30 days written prior notice delivered to County. Insurance certificates provided by any insurance company or underwriter shall not contain the language “endeavor to” and “but failure to mail such notice shall impose no obligation or liability of any kind upon the company,” or similar language.

b. **Automobile Liability**: At least $1,000,000 combined single limit per accident for bodily injury and property damage for autos used by the CONTRACTOR to fulfill the requirements of this agreement, and coverage shall be provided for “any auto”, code 1 as listed on the Accord form “Certificate of Insurance.”

c. **Workers’ Compensation and Employer’s Liability**: Workers’ Compensation insurance up to statutory limits and Employer Liability insurance with policy limits of at least $1,000,000 for bodily injury or disease. If the bidder has no employees, proof/certification will be required by signing a "Certificate of Knowledge Regarding Labor Code Section 3700" form.

SUBSTITUTION OF SECURITIES:

Bidders are hereby notified that this contract does not provide for substitution of securities for any monies withheld by the owner to ensure performance under the contract.

PREVAILING WAGE PROVISIONS:

a. Pursuant to Labor Code Section 1770 et seq., each laborer or mechanic of contractor or any subcontractor engaged in work on the project under the contract shall be paid not less than the hourly wage rate of per diem wages set forth in the prevailing wage rate schedule published by the Director of Industrial Relations, regardless of any contractual relationship which may be alleged to exist between contractor or any subcontractor and such laborers and mechanics.

b. Any laborer or mechanic employed to perform work on the project under the contract, which work or craft is not covered by any of the foregoing rate schedules shall be paid not less than the prevailing rate of per diem wages specified therein for the classification which most nearly corresponds to the work to be performed as determined by the County or its representative.

c. The foregoing specified prevailing wage rates are minimum rates only, and the contractor may pay any wage rate in excess of the applicable rate required by the Contract.

d. Pursuant to Labor Code Section 1775, the contractor as a penalty to the County shall forfeit $50.00 for each calendar day, or portion thereof for each worker paid less than the prevailing wage rate established by the Department of Industrial Relations for such work or craft in which such worker is employed. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which the worker was paid less than the prevailing wage rate shall be paid to each worker by the contractor. NOTE: An error on the part of an awarding body does not relieve the contractor from responsibility for payment of the prevailing rate of per diem wages and penalties pursuant to Labor Code Sections 1770-1775.

e. Copies of the applicable prevailing wage rates are attached to this notice and are on file at the Glenn County Planning & Public Works Agency, Facilities Division, 777 N. Colusa Street, Willows, California, (530) 934-6545, which are available to any interested party upon request.

MISCELLANEOUS:

a. The County reserves the right to reject any or all bids or to waive any informality in any bid received.

b. If the Work is awarded, a letter of award will be issued by the County to the apparent lowest responsible bidder within five (5) calendar days following the opening of bids.

c. A **mandatory pre-bid conference** will be held beginning at **10:00 a.m., Wednesday, May 2, 2012 at 777 North Colusa Street, Willows, CA 95988**. Attendance is a one-time, mandatory requirement for all prospective bidders. Failure to attend this meeting will be cause for rejection of a bid.

d. The successful bidder shall complete the installation by **June 14, 2012**.

e. The date of the notice to proceed shall be used for the purpose of determining "begin time and completion time".

BY ORDER OF THE GLENN COUNTY PLANNING & PUBLIC WORKS AGENCY DIRECTOR

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John F. Linhart, Owner's Representative
Glenn County, California

Generals/Glenn Report GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1
FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS
LOCALITY: GLENN COUNTY
DETERMINATION: GLE-2010-2

CRAFT (JOURNEY LEVEL)	ISSUE DATE	EXPIRATION DATE	BASIC HOURLY RATE	EMPLOYER PAYMENTS HEALTH AND WELFARE	PENSION	VACATION / HOLIDAY	TRAINING	STRAIGHT-TIME OTHER	HOURS	OVERTIME HOURLY RATE TOTAL HOURLY RATE	DAILY	SATURDAY	SUNDAY AND HOLIDAY
# BRICKLAYER, BLOCKLAYER:													
BRICKLAYER, BLOCKLAYER, STONEMASON	08/22/2010	04/30/2011**	A 31.360	9.440	8.000	B 2.500	0.800	C 0.650	D 8.0	52.750	E 69.680	E 69.680	86.610
POINTER, CLEANER, CAULKER, WATERPROOFER	08/22/2010	06/30/2011**	A 33.180	9.440	6.430	F -	0.850	0.400	D 8.0	50.300	66.890	G 66.890	83.480
# BRICK TENDER	08/22/2010	06/30/2011*	H 30.420	6.040	7.160	F -	0.340	-	D 8.0	43.960	E 59.170	E 59.170	74.380
# CARPET, LINOLEUM, RESILIENT TILE LAYER	08/22/2010	06/30/2011**	A 30.490	7.040	5.900	I -	0.500	0.110	8.0	44.040	J 59.280	J 59.280	74.530
# ELECTRICIAN:													
COMM & SYSTEM INSTALLER	02/22/2010	11/30/2010**	24.130	7.350	K 1.700	L 2.010	1.100	M 0.120	8.0	37.240	49.730	49.730	62.220
COMM & SYSTEM TECH.	02/22/2010	11/30/2010**	27.750	7.350	K 1.700	N 2.310	1.100	M 0.140	8.0	41.290	55.650	55.650	70.010
INSIDE WIREMAN	08/22/2010	11/30/2010**	38.930	8.880	K 3.000	F -	1.370	O 0.720	8.0	54.690	75.050	75.050	95.410
CABLE SPLICER	08/22/2010	11/30/2010**	42.820	8.880	K 3.000	F -	1.370	O 0.720	8.0	58.760	81.150	81.150	103.550
# FIELD SURVEYOR:													
CHIEF OF PARTY (018.167-010) P	02/22/1996	08/31/1996*	& 17.000	2.200	-	Q 0.915	0.250	-	8.0	20.360	28.860	28.860	28.860
INSTRUMENTMAN (018.167-034) P	02/22/1996	08/31/1996*	& 12.000	2.200	-	R 0.650	0.250	-	8.0	15.100	21.100	21.100	21.100
CHAINMAN/RODMAN (869.567-010) P	02/22/1996	08/31/1996*	& 10.000	2.200	-	S 0.540	0.250	-	8.0	12.990	17.990	17.990	17.990
# GLAZIER	02/22/2010	12/31/2010**	A 33.530	6.910	T 8.800	-	0.540	U 0.380	8.0	50.160	V 66.930	83.690	83.690
# MARBLE FINISHER W	08/22/2008	07/31/2009*	X 28.020	8.720	2.950	I -	0.450	0.200	8.0	40.340	Y 54.350	68.360	68.360
# MARBLE MASON W	08/22/2008	07/31/2009*	X 39.220	8.720	9.310	I -	0.550	0.210	8.0	58.010	Y 77.620	97.230	97.230
# PAINTER:													
BRUSH, SPRAY, PAPERHANGER	08/22/2010	12/31/2010**	Z 29.770	7.290	5.420	I -	0.310	0.360	D 8.0	43.150	58.030	AA 58.030	72.920
SANDBLASTER, STEAM CLEANER, WATERBLASTER	08/22/2010	12/31/2010**	Z 30.270	7.290	5.420	I -	0.310	0.360	D 8.0	43.650	58.780	AA 58.780	73.920
EXOTIC MATERIALS	08/22/2010	12/31/2010**	Z 30.770	7.290	5.420	I -	0.310	0.360	D 8.0	44.150	59.530	AA 59.530	74.920
TAPER	08/22/2010	06/30/2011**	A 34.230	7.290	8.180	4.250	0.360	0.210	8.0	54.520	71.640	D 71.640	AA 88.750
TAPER CLEAN-UP AB	08/22/2010	06/30/2011*	A 15.100	7.290	-	-	-	-	8.0	22.390	29.940	D 29.940	AA 37.490
# PLASTERER	08/22/2010	06/30/2011**	AC 28.570	8.230	6.600	4.250	0.950	0.550	8.0	49.150	62.700	AD 62.700	76.250
# PLASTER TENDER	08/22/2009	06/30/2010*	28.370	5.540	6.320	2.280	0.340	AE 1.020	8.0	43.870	J 58.060	J 58.060	72.240
# PLUMBER:													
PLUMBER, STEAMFITTER, REFRIGERATION FITTER (HVAC)	08/22/2010	12/31/2010**	35.700	7.920	11.810	F -	0.950	1.520	8.0	57.900	E 75.750	E 75.750	93.600
UNDERGROUND UTILITY PIPEFITTER	08/22/2010	06/30/2011*	26.100	4.200	2.600	2.000	0.400	0.600	D 8.0	35.900	48.950	48.950	62.000
LANDSCAPE PIPEFITTER	08/22/2010	06/30/2011*	26.100	4.200	2.600	2.000	0.400	0.550	D 8.0	35.850	48.900	48.900	61.950

UNDERGROUND UTILITY																	
ASSISTANT JOURNEYMAN AF	08/22/2010	06/30/2011*	14.650	4.200	2.600	2.000	0.400	0.600	D	8.0	24.450	31.770	31.770	39.100
LANDSCAPE ASSISTANT														
JOURNEYMAN AF	08/22/2010	06/30/2011*	14.650	4.200	2.600	2.000	0.400	0.550	D	8.0	24.400	31.720	31.720	39.050
UNDERGROUND UTILITY														
TRADESMAN AF	08/22/2010	06/30/2011*	10.200	4.200	2.600	2.000	0.400	0.600	D	8.0	20.000	25.100	25.100	30.200
LANDSCAPE TRADESMAN I AG	08/22/2010	06/30/2011*	10.200	4.200	-	2.000	0.400	0.550	D	8.0	17.350	22.450	22.450	27.550
LANDSCAPE TRADESMAN II AG	08/22/2010	06/30/2011*	10.200	4.200	2.600	2.000	0.400	0.550	D	8.0	19.950	25.050	25.050	30.150
FIRE SPRINKLER FITTER														
(PROTECTION AND CONTROL														
SYSTEMS, OVERHEAD AND														
UNDERGROUND)	02/22/2010	03/31/2010*	33.350	7.600	AH 9.700	-	0.300	0.250		8.0	51.200	67.880	67.880	84.550
# ROOFER	08/22/2010	07/31/2011**	27.020	6.790	3.600	4.240	0.300	-		8.0	41.950	55.460	AI 55.460	68.970
BITUMASTIC, ENAMELER,														
COAL TAR, PITCH AND														
MASTIC WORKER	08/22/2010	07/31/2011**	31.770	6.790	3.600	4.240	0.300	-		8.0	46.700	62.580	AI 62.580	78.470
# SHEET METAL WORKER	08/22/2010	12/31/2010**	A 37.760	8.800	13.740	F -	0.790	0.630		8.0	61.720	E 79.740	E 79.740	97.770
MECHANICAL JOB WHERE														
COST OF PROJECT IS														
$500,000 OR UNDER	08/22/2010	12/31/2010**	A 28.860	8.800	12.880	F -	0.670	0.350		8.0	51.560	E 65.260	E 65.260	78.970
METAL DECK & SIDING	08/22/2010	06/30/2011*	H 34.210	8.780	15.740	F -	0.790	0.050		8.0	59.570	AJ 76.680	AJ 76.680	93.780
# TERRAZZO WORKER	08/22/2010	06/30/2011**	AK 39.300	9.440	11.110	F -	0.550	0.400		7.0	60.800	AL 77.850	AL 77.850	94.890
TERRAZZO FINISHER	08/22/2010	06/30/2011**	AK 30.300	9.260	3.860	F -	0.550	0.400		7.0	44.370	AL 58.100	AL 58.100	71.840
# TILE FINISHER	08/22/2010	07/31/2011*	19.650	6.300	0.650	A 1.350	0.350	0.200		8.0	28.500	38.320	38.320	48.150
# TILE SETTER	08/22/2010	07/31/2011*	32.850	8.300	4.000	A 3.100	0.350	0.350		8.0	48.950	65.380	65.380	81.800
WATER WELL DRILLER	11/22/1987	02/29/1988*	12.350	2.150	1.000	0.480	-	-		8.0	15.980	AM 22.160	AM 22.160	AM 22.160
PUMP INSTALLER	11/22/1987	02/29/1988*	12.350	2.150	1.000	0.480	-	-		8.0	15.980	AM 22.160	AM 22.160	AM 22.160
HELPER	11/22/1987	02/29/1988*	10.030	2.150	1.000	0.430	-	-		8.0	13.610	AM 18.630	AM 18.630	AM 18.630
HELPER: 3-6 MONTHS	11/22/1987	02/29/1988*	9.740	2.150	1.000	0.440	-	-		8.0	13.330	AM 18.200	AM 18.200	AM 18.200
HELPER: 0-3 MONTHS	11/22/1987	02/29/1988*	8.930	2.150	1.000	0.420	-	-		8.0	12.500	AM 16.970	AM 16.970	AM 16.970

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1

* EFFECTIVE UNTIL SUPERSEDED BY NEW DETERMINATION ISSUED BY THE DIRECTOR OF INDUSTRIAL RELATIONS. CONTACT DIVISION OF LABOR STATISTICS AND RESEARCH (415) 703-4774 FOR NEW RATES AFTER 10 DAYS FROM THE EXPIRATION DATE IF NO SUBSEQUENT DETERMINATION IS ISSUED.

** THE RATE TO BE PAID FOR WORK PERFORMED AFTER THIS DATE HAS BEEN DETERMINED. IF WORK WILL EXTEND PAST THIS DATE, THE NEW RATE MUST BE PAID AND SHOULD BE INCORPORATED IN CONTRACTS ENTERED INTO NOW. CONTACT THE DIVISION OF LABOR STATISTICS AND RESEARCH FOR SPECIFIC RATES (415) 703-4774.

\# INDICATES AN APPRENTICEABLE CRAFT. EFFECTIVE AS OF JULY 1, 2008, THE ISSUANCE AND PUBLICATION OF THE PREVAILING WAGE APPRENTICE SCHEDULES/APPRENTICE WAGE RATES HAVE BEEN REASSIGNED BY THE DEPARTMENT OF INDUSTRIAL RELATIONS FROM THE DIVISION OF LABOR STATISTICS AND RESEARCH TO THE DIVISION OF APPRENTICESHIP STANDARDS. TO OBTAIN ANY APPRENTICE SCHEDULES/APPRENTICE WAGE RATES, PLEASE CONTACT THE DIVISION OF APPRENTICESHIP STANDARDS OR REFER TO THE DIVISION OF APPRENTICESHIP STANDARDS' WEBSITE AT http://www.dir.ca.gov/das.das.html.

& THE BASIC HOURLY RATE AND EMPLOYER PAYMENTS ARE NOT TAKEN FROM A COLLECTIVE BARGAINING AGREEMENT FOR THIS CRAFT OR CLASSIFICATION.

A INCLUDES AMOUNT WITHHELD FOR DUES CHECK OFF.
B AMOUNT INCLUDED IN FACTORING OVERTIME RATES.
C INCLUDES AMOUNT FOR INDUSTRY PROMOTION FUND AND AN AMOUNT FOR INTERNATIONAL MASONRY INSTITUTE (IMI).
D SATURDAYS IN THE SAME WORK WEEK MAY BE WORKED AT STRAIGHT-TIME IF JOB IS SHUT DOWN DURING THE NORMAL WORKWEEK DUE TO INCLEMENT WEATHER.
E RATE APPLIES TO THE FIRST 2 DAILY OVERTIME HOURS AND THE FIRST 10 HOURS ON SATURDAY; ALL OTHER TIME IS PAID AT THE SUNDAY AND HOLIDAY OVERTIME HOURLY

RATE.
F INCLUDED IN STRAIGHT-TIME HOURLY RATE.
G RATE APPLIES TO THE FIRST 10 HOURS WORKED ON SATURDAY. ALL OTHER HOURS ARE PAID AT THE SUNDAY/HOLIDAY RATE.
H INCLUDES AMOUNT FOR VAC/HOL AND DUES CHECK OFF.
I INCLUDED IN BASIC HOURLY RATE.
J RATE APPLIES TO THE FIRST 4 DAILY OVERTIME HOURS AND THE FIRST 12 HOURS WORKED ON SATURDAY; ALL OTHER TIME IS PAID AT THE SUNDAY AND HOLIDAY OVERTIME HOURLY RATE.
K IN ADDITION, AN AMOUNT EQUAL TO 3% OF THE BASIC HOURLY RATE IS ADDED TO THE TOTAL HOURLY RATE AND OVERTIME HOURLY RATES FOR THE NATIONAL EMPLOYEES BENEFIT BOARD.
L VACATION/HOLIDAY AMOUNT; AFTER FIVE YEARS OF SERVICE EQUALS $2.59 PER HOUR.
M IN ADDITION TO THE AMOUNT SHOWN, WHICH IS FACTORED AT THE APPLICABLE OVERTIME MULTIPLIER FOR EACH OVERTIME HOUR, $0.11 IS ADDED TO THE TOTAL HOURLY RATE AND OVERTIME HOURLY RATES FOR THE LABOR MANAGEMENT COOPERATION COMMITTEE FUND.
N VACATION/HOLIDAY AMOUNT; AFTER FIVE YEARS OF SERVICE EQUALS $2.97 PER HOUR.
O IN ADDITION, AN AMOUNT EQUAL TO 1.6% OF THE BASIC HOURLY RATE, WHICH IS FACTORED AT THE APPLICABLE OVERTIME MULTIPLIER, IS ADDED TO THE TOTAL HOURLY RATE AND OVERTIME HOURLY RATES FOR THE CONTRACT ADMINISTRATION FUND.
P DICTIONARY OF OCCUPATIONAL TITLES, FOURTH EDITION, 1977, U.S. DEPARTMENT OF LABOR.
Q $1.11 AFTER 5 YEARS SERVICE; $1.44 AFTER 6 YEARS SERVICE.
R 78¢ AFTER 5 YEARS SERVICE; $1.02 AFTER 6 YEARS SERVICE.
S 65¢ AFTER 5 YEARS SERVICE; 85¢ AFTER 6 YEARS SERVICE.
T INCLUDES $2.25 FOR THE INDIVIDUAL ACCOUNT RETIREMENT PLAN. EFFECTIVE 1/1/2010 INCLUDES $2.50 FOR THE INDIVIDUAL ACCOUNT RETIREMENT PLAN.
U INCLUDES AMOUNTS FOR INDUSTRY FUND, WORK PRESERVATION FUND, AND LABOR MANAGEMENT COOPERATION INITIATIVE
V RATE APPLIES TO THE FIRST 2 DAILY OVERTIME HOURS AND FIRST 8 HOURS WORKED ON DESIGNATED DAYS OFF; ALL OTHER TIME IS PAID AT THE SATURDAY, SUNDAY AND HOLIDAY OVERTIME RATE.
W EMPLOYEES WORKING ON ANY SUSPENDED PLATFORM/SCAFFOLD SHALL BE PAID AN ADDITIONAL $15.00 PER DAY ABOVE THE WAGE RATE.
X INCLUDES AN AMOUNT FOR DUES CHECK-OFF AND VACATION/HOLIDAY WHICH ARE FACTORED INTO OVERTIME RATES.
Y RATE APPLIES TO FIRST OVERTIME HOUR ONLY; ALL OTHER OVERTIME IS PAID AT THE DOUBLE TIME RATE.
Z INCLUDES AN AMOUNT FOR DUES CHECK-OFF, WAGE EQUALITY DUES, ORGANIZING DUES, BENEFICIAL AND HOLIDAY.
AA DESIGNATED DAYS OFF SHALL BE PAID AT THE SATURDAY OVERTIME RATE; PLEASE REFER TO THE HOLIDAY PROVISIONS FOR A LIST OF DESIGNATED DAYS OFF.
AB PLEASE NOTE THAT THE TAPER CLEAN-UP APPLIES ONLY TO THE TAPER CLASSIFICATION.
AC INCLUDES AMOUNT WITHHELD FOR DUES CHECK OFF. PLASTERS OPERATING AND WORKING BEHIND PLASTER GUNS SHALL RECEIVE AN ADDITIONAL $2.00 PER DAY ABOVE THE WAGE RATE.
AD RATE APPLIES TO THE FIRST 8 HOURS WORKED; ALL OTHER TIME IS PAID AT THE SUNDAY AND HOLIDAY OVERTIME HOURLY RATE.
AE AMOUNT IS FOR VALLEY MORTAR TRADES FUND ($1.00) AND INDUSTRY STABILIZATION ($0.02)
AF THERE MUST BE AT LEAST ONE JOURNEYMAN PIPEFITTER PER CONTRACTOR ON EACH JOBSITE.
AG THERE MUST BE AT LEAST ONE JOURNEYMAN PIPEFITTER PER CONTRACTOR ON EACH JOBSITE. MAINTENANCE WORK, BOTH DURING AND AFTER THE PLANT ESTABLISHMENT PERIOD, MAY BE PERFORMED BY LANDSCAPE IRRIGATION TRADESMEN WITHOUT THE SUPERVISION OF A JOURNEYMAN.
AH INCLUDES AN AMOUNT FOR SUPPLEMENTAL PENSION FUND.
AI SATURDAYS IN THE SAME WORK WEEK MAY BE WORKED AT STRAIGHT-TIME IF JOB IS SHUT DOWN FOR 2 OR MORE DAYS DURING THE NORMAL WORKWEEK DUE TO WIND, RAIN, SNOW OR ICE, FOG, FROST, DEW OR EXTREME HEAT.
AJ RATE APPLIES TO THE FIRST 2 DAILY OVERTIME HOURS AND THE FIRST 8 HOURS ON SATURDAY ONLY; ALL OTHER TIME IS PAID AT THE SUNDAY AND HOLIDAY OVERTIME HOURLY RATE.
AK INCLUDES AN AMOUNT FOR VACATION/DUES CHECK OFF WHICH IS NOT FACTORED IN THE OVERTIME RATES.
AL RATE APPLIES TO THE FIRST 3 OVERTIME HOURS MONDAY THROUGH FRIDAY AND THE FIRST 8 HOURS WORKED ON SATURDAY. ALL OTHER TIME IS PAID AT THE SUNDAY/HOLIDAY OVERTIME RATE.
AM RATE APPLIES TO ALL TIME WORKED IN EXCESS OF 8 HOURS PER DAY OR 40 HOURS PER WEEK. DOUBLE-TIME IS PAID FOR WORK ON RECOGNIZED HOLIDAYS.

RECOGNIZED HOLIDAYS: HOLIDAYS UPON WHICH THE GENERAL PREVAILING HOURLY WAGE RATE FOR HOLIDAY WORK SHALL BE PAID, SHALL BE ALL HOLIDAYS IN THE COLLECTIVE BARGAINING AGREEMENT, APPLICABLE TO THE PARTICULAR CRAFT, CLASSIFICATION, OR TYPE OF WORKER EMPLOYED ON THE PROJECT, WHICH IS ON FILE WITH THE DIRECTOR OF INDUSTRIAL RELATIONS. IF THE PREVAILING RATE IS NOT BASED ON A COLLECTIVELY BARGAINED RATE, THE HOLIDAYS UPON WHICH THE PREVAILING RATE SHALL BE PAID SHALL BE AS PROVIDED IN SECTION 6700 OF THE GOVERNMENT CODE. YOU MAY OBTAIN THE HOLIDAY PROVISIONS FOR THE CURRENT DETERMINATIONS

ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/DLSR/PWD. HOLIDAY PROVISIONS FOR THE CURRENT OR SUPERSEDED DETERMINAT

TRAVEL AND/OR SUBSISTENCE PAYMENT: IN ACCORDANCE WITH LABOR CODE SECTIONS 1773.1 AND 1773.9, CONTRACTORS SHALL MAKE TRAVEL AND/OR SUBSISTENCE PAYMENTS TO EACH WORKER TO EXECUTE THE WORK. TRAVEL AND/OR SUBSISTENCE REQUIREMENTS FOR EACH CRAFT, CLASSIFICATION, OR TYPE OF WORKER MAY BE OBTAINED FROM THE PREVAILING WAGE UNIT AT (415) 703-4774.

INSTRUCTIONS TO BIDDERS

The outside of the sealed envelope in which the bid is submitted shall be plainly marked **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	**2**
2. Orland Memorial Hall Building	**2**
3. Sheriff's Administration Building	**3**
4. Health Services Building (HSA) Willows	**6**
5. **Ag Department Building**	**1**

See attached Exhibit B for project locations and unit details.

PREPARATION OF BID FORM:

Bids shall be made upon the Bid Forms, included within the Project Documents furnished by and available at the office of Glenn County Planning & Public Works Agency, 777 N. Colusa Street, Willows, California, (530) 934-6546 FAX 934-6533. All items on the bid shall be filled in and the signatures of all person(s) signing shall be in longhand. Unless bids are submitted on these forms, they will not be considered. Each bidder shall write out the total amount of the bid in addition to inserting the same in figures. An extra copy of the completed Bid Forms and 10% Bidder's Bond, shall be submitted with the originals.

If alternate bids are called for, bidders must bid separately upon each alternate. The County may accept from any firm, a bid on one or more items and reject the bid or bids on other items.

Mistakes must be corrected and the correction inserted on the Bid Forms. Each correction must be initialed in ink by the person(s) signing the Bid Forms.

EXAMINATION OF PROJECT DOCUMENTS:

The bidders shall carefully examine the Project Documents and satisfy themselves as to their sufficiency, and shall not at any time after submission of the bid, dispute or complain that such Documents and the directions explaining or interpreting them are incomplete or ambiguous, nor assert that there is any misunderstanding in regard to the location, extent, nature or amount of work to be performed.

Should a bidder find discrepancies in, or omissions from the Project Documents, or should there be any doubt as to their meaning, the bidder shall notify at once the Project Manager; and should it be found that the point in question is not clearly and fully set forth, a written Addendum will be sent to all plan holders and will become a part of the Contract. The County of Glenn, its officers, agents, representatives, employees, architects, engineers and inspectors will not be responsible for any oral instructions. No bid will be considered which makes exceptions, changes, or reservations to the Project Documents.

EXAMINATION OF PROJECT SITE:

Bidders shall examine the site located at various locations, see attached list; and have full knowledge of all conditions, facilities and difficulties affecting the work which may not be set forth herein. No allowance shall subsequently be made because of a lack of such examination or knowledge.

A mandatory pre-bid conference will be held AT 777 N. Colusa Street, Willows, CA 95988. The submitting of a bid shall be considered an acknowledgment on the part of the bidder of familiarity with conditions at the project site. Attendance is a one time, mandatory requirement for all.

SUBCONTRACTORS LIST:

Pursuant to Public Contract Code Section 4100 et seq., every bidder shall set forth in their bid the following:

a. Subcontractor Information: The work to be performed by and the name and location of the place of business of each subcontractor who will perform work or labor or render service to the bidder in or about the construction of the work or improvement in an amount in excess of one-half of one percent of the bidder's total bid. The list is included with the bid form.
b. Work conducted by Subcontractor: the portion of the work that will be done by each subcontractor. If the bidder fails to specify a subcontractor for any portion of the work to be performed under the contract in excess of one=half of one percent of the bidder's total bid, he/she agrees to perform that portion herself/himself. The successful bidder shall not, without the consent of the County, wither:
    1. Substitute any person as subcontractor in place of the subcontractor designated in the original bid.
    2. Permit any subcontract to be assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed on the Bid Form.
    3. Sublet or subcontract any portion of the work in excess of one-half of one percent of the total bid as to which his original bid did not designate a subcontractor.

All bids shall be submitted subject to the terms, conditions and penalties of Chapter 4 (commencing with Section 4100) of Part 1 of Division 2 of the Public Contract Code.

NON-COLLUSION AFFIDAVIT:

Bidders shall include with their bids a signed affidavit stating that their bid is not a sham or a collusive bid. The affidavit is to be signed exactly as worded, and no alternate wording will be accepted. The affidavit is included with the Bid Forms.

BIDDER'S BOND:

Bids must be accompanied by a bidder's bond form approved by the County, or by a certified or cashier's check, for at least ten percent (10%) of the amount bid and made payable to the County of Glenn. Said bidder's bond or certified or cashier's check shall be declared forfeited if the successful bidder refuses or neglects to enter into a Contract after being requested to do so by the County.

The Attorney-in-Fact who executes this bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond. Where state statute requires, certification by a resident agent shall also be provided.

If the bidder elects to furnish a Bid Bonds, he shall use the Bidder's Bond form contained in the Project Documents, or one conforming substantially thereto in form and content, as determined by the County.

RETURN OF BID SECURITY:

Retained bid security will be returned within a reasonable time after the Contracts has been finally executed, or immediately in case all bids are rejected.

AWARD OF CONTRACT:

Within five (5) calendar days after opening of bids the County will accept one of the bids or will act in accordance with BASIS OF AWARD, below. The acceptance of the bid will be by a Letter of Award, mailed to the office designated on the Bid Forms, or delivered to the bidder's representative. In the event of failure of the bidder to sign the Contract and provide an acceptable Performance Bond, Labor

and Materials Bond and insurance certificates, the County may award the Contract to the next lowest responsible bidder, and the 10% bidders bond or certified cashier's check furnished with the bid will be declared forfeited, if the successful bidder refuses or neglects to enter into a contract after being requested to do by County with ten (10) calendar days.

TYPE OF BID:

The bid for the work is to be submitted on a lump sum basis. Lump sum price amounts shall be submitted on all items of work set forth in the project documents. All items required to complete the work specified or shown on the Plans, but not included on the Bid Forms shall be considered incidental to those set forth on the Bid Forms.

BASIS OF AWARD:

The Contract will be awarded to the single best responsible bidder; provided, however, the County may reject any and all bids and re-advertise for bids, or provide for the work to be done by alternate means, or not construct the project at all. The County also reserves the right to waive any informality or irregularity in any bid.

The County reserves the right to exercise any or all alternatives, if any, detailed in the project documents.

EXECUTION OF CONTRACT:

The successful bidder shall execute the Contract in accordance with the bid as accepted, as noted on the Letter of Award which will be mailed at the address given on the Bid Form with the original contracts attached and two (2) secure workers' compensation and other required insurance and bonds,

CONTRACT BONDS:

a. Performance Bond - The successful bidder shall file with the County, immediately after execution of the Contract, a Performance Bond acceptable to the County in an amount equal to one hundred percent (100%) of the Contract Sum, as security for the faithful performance of the Contract for the construction of the Work, and to cover all guarantees against defective workmanship or materials, or both, during the warranty period following the date of the final acceptance of the Work by the County.
b. Labor and Materials Bond - The successful bidder shall file with the County, immediately after execution of the Contract, a Labor and Materials Bond acceptable to the County in an amount equal to one hundred percent (100%) of the Contract Sum, as security for the payment to all persons supplying labor and materials for the construction of the Work.
c. Form of Bonds - The Performance Bond and the Labor and Materials Bond shall be submitted on the bond forms contained in these Project Documents or shall be substantially in compliance with same. Compliance shall be judged solely by the County.
d. Power-of-Attorney - The Attorney-in-Fact who executes these bonds in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his/her authority to bind the Surety on the date of execution of the bond.
e. Surety - The Surety furnishing these bonds shall have a sound financial standing, have a record of service satisfactory to the County, and shall be authorized to do business in the State of California.

NOTICE TO PROCEED:

The successful bidder shall commence work within five (5) calendar days after the receipt of a written Notice to Proceed.

TIME FOR COMPLETION:

The successful bidder shall complete said work by June 14, 2012

PERFORMANCE OF WORK:

The work shall be performed in a workmanlike, diligent and expeditious manner with such force and materials as may be required, time being of the essence of the contract.

B I D F O R M

"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

TO: Annette Chavez, Deputy Director
Glenn County Planning & Public Works Agency
Facilities Division
777 North Colusa Street
Willows, California 95988

FROM: _____
_____
_____
_____
_____

The undersigned proposes to execute a Contract and complete the work for the sum quoted below.

BIDDER'S DECLARATION AND UNDERSTANDING:

In submitting this bid, the undersigned understands and agrees that the County of Glenn, California (hereinafter "County"), shall and does reserve the right to reject any and all bids, to accept other than the lowest bid and to waive any informality in any bid.

The undersigned also understands and agrees that the County reserves the right and is hereby granted the right to accept or reject this bid at any time within forty-five (45) calendar days following the date the County opens the bids, and the undersigned further understands and agrees that this bid shall be valid and effective until the expiration of said period.

The undersigned has carefully examined the site where the work is to be done and is familiar with local conditions affecting the cost of the construction herein bid upon, and further understands that the County will not be responsible for any errors or omissions on the part of the undersigned in making this bid.

EXECUTION OF CONTRACT:

The successful bidder shall execute a Contract in accordance with the bid as accepted and agrees to furnish Certificates of Insurance and contract bonds as required in the "Notice to Contractors and Instructions to Bidders."

START OF CONSTRUCTION:

Upon notification to start work, the undersigned understands and agrees that time of performance is of the essence of the Contract.

CONTRACT COMPLETION TIME:

The successful bidder shall complete said work by June 14, 2012.

Liquidated Damages:

The undersigned bidder further agrees that there may be a deduction from the contract price in the sum, of two hundred fifty dollars ($250) per day for each calendar day beyond the original contract time from completion as set forth above; accepting any extensions obtained for cause.
Addenda:

The undersigned bidder hereby acknowledges receipt of the following addenda to the Bid documents all the provisions and requirements of which have been taken into consideration in the preparation of the foregoing bid.

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

SIGNATURE:

The names of all persons interested in the foregoing bid as principals are as follows:

_____

_____

The Contractor's State license number of the undersigned is: _____
License Expires: _____

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signature of Bidder: _____

Print Signers Name & Business Title: _____

Business Address: _____

Business Telephone/Fax/E-Mail: _____

City and State Where Form Signed: _____

Date: _____.

No bid is valid unless signed by the person submitting the bid. If the bidder is an individual the same shall be signed by the individual; if the bidder is a partnership the name of the partnership shall be given and signed by one of the partners; if the bidder is a corporation the Bid Form must be signed for the corporation by its properly authorized officer or officers.

NON-COLLUSION AFFIDAVIT
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

I, _____ being first duly sworn, deposes and says that I am is the _____ (officer) of _____ (bidder) the party making the foregoing bids that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid; or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder; or to fix any overhead, profit, or cost element of the bid price or of that of any other bidder; or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contracts thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

_____

By:

B I D F O R M

The above signed bidder agrees to perform all work within the time provided, assuming the obligation for the liquidated damages, herein before specified, for **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

all as indicated in the project documents for a lump sum of:

BASE BID (replace all 14 HVAC at 5 Locations):_____

_____ Dollars ($_____).

Alternate Bid No. 1 (Priority Location #1 only):

_____

_____ Dollars ($_____).

Alternate Bid Item No. 2 (Priority Location #2 only):

_____

_____ Dollars ($_____).

Alternate Bid Item No. 3 (Priority Location #3 only):

_____

_____ Dollars ($_____).

Alternate Bid Item No. 4 (Priority Location #4 only):

_____

_____ Dollars ($_____).

Alternate Bid Item No. 5 (Priority Location #5 only):

_____

_____ Dollars ($_____).

S U B C O N T R A C T O R S L I S T

The following listed subcontractors are proposed to perform the categories of work hereinafter referred to. All work not covered in the following list will be performed directly by the General Contractor. (Note: This list shall contain the name, address, and telephone number of each subcontractor and an enumeration of work to be performed by each in excess of one-half (1/2) of one percent (1%) of General Contractor's total bid.)

	Work to be Performed	Business Name of Sub-Contractor	Mailing Address/Phone No.
1.	_____	_____	_____ _____ _____
2.	_____	_____	_____ _____ _____
3.	_____	_____	_____ _____ _____
4.	_____	_____	_____

BIDDER'S BOND:

The certified or cashier's check, or bidder's bond form accompanying this bid is equal to ten percent (10%) or more of the base bid herein.

Enclosed find (check one):
( ) Bidder's Bond
( ) Certified Check
( ) Cashier's Check No. _____ of the _____
10% of the bid amount.

ADDENDA:

The above signed bidder hereby acknowledges receipt of the following addenda to the Project Documents, all the provisions and requirements of which have been taken into consideration in the preparation of the foregoing bid.

Addendum No. _, _____ dated _____

Addendum No. _, _____ dated _____

Addendum No. _, _____ dated _____

Addendum No. _, _____ dated _____

Addendum No. _, _____ dated _____

END OF BID FORM

BIDDER'S BOND

We, _____
(Business Name)

as Principal, and _____
(Business Name)
as Surety, are bound unto the COUNTY OF GLENN as Owner (Obligee), in the penal sum of ten percent (10%) of the total amount of the bid of the Principal submitted to the Obligee for the work described below, for the payment of which sum we bind ourselves, jointly and severally, in the sum of: _____ _____ Dollars ($_____).

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:

WHEREAS, the Principal is submitting a bid to the Obligee, for the **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities." ,** for which bids are to be opened in public at the Office of Glenn County Planning & Public Works Agency, 777 N. Colusa Street, Willows, California on or about **3:05 p.m., Wednesday, May 16, 2012.**

NOW, THEREFORE, if Principal is awarded the Contract and, within the time and manner required under the Project Documents, after the prescribed forms are presented for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files the required certificates of insurance and two (2) contract bonds with the Obligee, one to guarantee faithful performance of the contract and the other to guarantee payment for labor and materials as provided by law, then this obligation shall be null and void; otherwise it shall remain in full force. Said bidder's bond, certified check, or cashier's check shall be declared forfeited if the bidder refuses or neglects to enter into a contract after being requested to do so by the county within 10 days.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

Dated,

_____

_____
Principal

_____
Surety

By: _____
Attorney-in-Fact

CERTIFICATE OF ACKNOWLEDGMENT

State of California \
County of Glenn \ SS

On this ___ day of _____ in the year 2012 before me _____ _____, personally appeared _____ personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument as the attorney-in-fact of _____, and acknowledged to me that (he) (she) subscribed the name of the said company thereto as surety, and (his) (her) own name as attorney-in-fact.
(SEAL)

_____
Notary Public

"SAMPLE" LETTER OF AWARD

DATE: _____

PROJECT: **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

OWNER: Board of Supervisors
COUNTY OF GLENN
525 West Sycamore Street
Willows, California 95988

CONTRACTOR: _____
_____
_____
_____

PHONE/FAX _____

CONTRACT SUM: _____ Dollars **($_____)**

You are hereby notified that your bid dated _____, has been accepted for the above-listed project. You are being awarded a Contract to furnish, at your own cost and expense, all labor and materials necessary to complete the work.

You must execute the attached Contracts, secure certificates of insurance for (1) Workers' Compensation; (2) General Liability; and (3) Property Damage; including an "Additional Insured" endorsement, and forward 100% Contract Bonds for (1) Faithful Performance and (2) Payment of Labor and Materials in accordance with the bid as accepted, within five (5) calendar days of the date above. Also, your I.R.S. taxpayer identification number is required for payment processing.

Failure to comply with these conditions within the time specified will entitle OWNER to consider other options for having the work completed. Also, the Bidder's Bond accompanying the bid and the money payable thereon, shall become the property and shall be retained by the County of Glenn as liquidated damages for such failure.

Upon timely receipt by the undersigned of all information required, a Notice to Proceed for the project will be issued.

_____
John Linhart, Owner's Representative
Glenn County Planning & Public Works Agency
777 N. Colusa Street
Willows, California 95988
(530) 934-6546 FAX 934-6533

cc: Glenn County Board of Supervisors

"SAMPLE" AGREEMENT BETWEEN THE COUNTY OF GLENN AND CONTRACTOR

COUNTY of Glenn
Planning & Public Works Agency
P.O. Box 1070
Willows, CA 95988
(COUNTY)

CONTRACTOR

This agreement is entered into between the COUNTY of Glenn ("COUNTY") and ("CONTRACTOR") for the purpose of **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."** .

1. BID DOCUMENTS

The complete Contract (Agreement) between the COUNTY and the CONTRACTOR shall consist of this agreement and included the following Bid Documents: the Notice to CONTRACTORs, the Bidders and Performance Bonds, the Instructions to Bidders, the Bid Form, and all Addenda, the General Conditions, the Technical Specifications, Notice to Proceed, Change Orders, Notice of Completion, and all modifications incorporated in the documents. The agreement and technical specifications are intended to supplement one another.

2. RESPONSIBILITIES OF CONTRACTOR

During the term of this agreement, CONTRACTOR shall furnish all labor, materials equipment and tools necessary to perform satisfactorily, all of the services required by the COUNTY under this agreement.

Defective work or work that is indicative of lack of skill or care in its execution shall be redone at the CONTRACTOR'S expense.

CONTRACTOR shall be responsible to immediately notify COUNTY if any deficiency or unforeseen condition is encountered while working. CONTRACTOR shall endeavor to complete all work in a timely manner. Furthermore, CONTRACTOR is licensed and regulated by the California State Licensing Board, CONTRACTOR's license number is XXXXXX, expires XXXXXXX.

CONTRACTOR shall comply with the requirements for all lower-tier subcontracts (subcontracts) entered into under ARRA funding agreements, as stated in the terms and Conditions of GLENN COUNTY agreement with the California Energy Commission, agreement number CDBG Grant Number CBG-09-163.

CONTRACTOR also shall follow federal laws, regulations and guidelines that apply to:

Department of Energy procurement specification
Energy Efficiency Conservation Block Grant (EECBG) Program
ARRA Buy American provision
DOE Assistance Regulations

3. RESPONSIBILITIES OF THE COUNTY

COUNTY shall coordinate all work activities; perform inspections of the work; provide prompt advice and direction in all matters requiring COUNTY's attention so as to not unreasonably delay the work; assure that costs do not exceed the funds allocated; and prepare amendments or change orders to correct any deficiencies or any unforeseen or unknown existing conditions. COUNTY shall be responsible to process CONTRACTOR's payments as described in paragraphs 4 and 5 below.

4. COMPENSATION

CONTRACTOR shall be paid the sum of _____ after satisfactorily completing the duties described in this agreement.

4.1 In consideration of the covenants, agreements, and promises on the part of the CONTRACTOR contained in the Bid Documents, and the strict and literal fulfillment of each and every such covenant, agreement, and promise, and as compensation agreed upon for completion of the said work described in this agreement hereof in strict accordance with the Bid Documents, therefore, the Owner agrees to pay and cause to be paid to the CONTRACTOR the Contract Sum set forth above, lawful money of the United States, subject to additions and deductions as provided in the Bid Documents.

4.2 The Contract Sum may be based upon the alternates, if any, which are described in the Bid Form and are hereby detailed and accepted by the Owner as follows:

5. BILLING AND PAYMENT

5.1 Applications for Payments shall be submitted monthly if work exceed thirty (30) calendar days and shall be in a timely manner by the CONTRACTOR on or before the 1st day of the calendar month. The permit application form shall be reviewed and approved by the Owner's Representative.

5.2 Progress Payments shall be made no more than once each month and shall be paid within thirty (30) days of COUNTY's receipt of CONTRACTORs application for payment for all authorized and satisfactory actual work performed. The amount shall be based on the percent of each portion of work completed as of the end of the month covered by the Application for Payment. Payment of undisputed contract amounts less five percent (5%) retainage (considered progress payments) is contingent upon the CONTRACTOR furnishing the Owner with a release of all claims against the Owner arising by virtue of the work relating to the amount so paid. The release may be on the form used for computing monthly progress payment. Progress payments are subjected to the limitations of Section 20103 of the Public Contract Code. Interest payments on delayed progress payments are subject to Article 1.7 (commencing with Section 20104.50) of Chapter 1 of Part 3 of Division 2 of the Public Contract Code, a copy of which is attached as Exhibit A to this agreement.

6. TERM OF AGREEMENT

This agreement shall commence on the date of signing and shall terminate on June 14, 2012.

7. TERMINATION OF AGREEMENT

If CONTRACTOR fails to perform its duties to the satisfaction of COUNTY, or if CONTRACTOR fails to fulfill in a timely and professional manner its obligations under this agreement, or if CONTRACTOR violates any of the terms or provisions of this agreement, then COUNTY shall have the right to terminate this agreement effective immediately upon COUNTY giving written notice thereof to CONTRACTOR. Either party may terminate this agreement on 30 days written notice.

COUNTY shall pay CONTRACTOR for all work satisfactorily completed as of the date of notice. COUNTY may terminate this contract immediately upon oral notice should funding cease or be materially decreased.

Should this contract be terminated, CONTRACTOR shall provide COUNTY all finished and unfinished reports, data, studies, photographs, charts, and other documents prepared by CONTRACTOR pursuant to this contract.

8. ENTIRE AGREEMENT; MODIFICATION

This agreement supersedes all previous agreements and constitutes the entire understanding of the parties hereto. CONTRACTOR shall be entitled to no other benefits other than those specified herein. No changes, amendments, or alterations shall be effective unless in writing and signed by both parties. CONTRACTOR specifically acknowledges that in entering into and executing this agreement, CONTRACTOR relies solely upon the provisions contained in this agreement and no others.

9. NONASSIGNMENT OF AGREEMENT

Inasmuch as this agreement is intended to secure the specialized services of CONTRACTOR, CONTRACTOR may not assign, transfer, delegate or sublet any interest herein without the prior written consent of COUNTY.

10. EMPLOYMENT STATUS

CONTRACTOR shall, during the entire term of this agreement, be construed to be an independent CONTRACTOR and nothing in this agreement is intended nor shall be construed to create an employer-employee relationship, a joint venture relationship, or to allow COUNTY to exercise discretion or control over the professional manner in which CONTRACTOR performs the services which are the subject matter of this agreement, provided always, however, that the services to be provided by CONTRACTOR shall be provided in a manner consistent with the professional standards applicable to such services. In performing the services described in this Agreement, CONTRACTOR will exercise the degree of care and skill ordinarily exercised by reputable companies performing the same or similar services in the same geographic area.

The sole interest of COUNTY is to ensure that the services shall be rendered and performed in a competent, efficient, and satisfactory manner. CONTRACTOR shall be fully responsible for payment of all taxes due to the State of California or the Federal Government that would be withheld from compensation if CONTRACTOR were a COUNTY employee. COUNTY shall not be liable for CONTRACTOR's failure to make payments to any SubCONTRACTOR, material supplier, or vendor. CONTRACTOR agrees to indemnify the COUNTY with regard to any claim or lien filed against the COUNTY based upon nonpayment by the CONTRACTOR. CONTRACTOR shall not be eligible for coverage under COUNTY's Workers' Compensation Insurance Plan nor shall CONTRACTOR be eligible for any other COUNTY benefit.

11. INDEMNIFICATION

CONTRACTOR shall indemnify, defend and hold harmless the COUNTY, its elected officials, directors, officers, employees and volunteers against all claims, suits, actions, costs, counsel fees, expenses, damages, judgments or decrees by reason of any person's bodily injury, including death or property being damaged by the negligence of CONTRACTOR or any person employed by CONTRACTOR or in any capacity during the progress of the work. CONTRACTOR shall also indemnify COUNTY of any adverse determination made by the Internal Revenue Service or the State Franchise Tax Board against COUNTY with respect to CONTRACTOR's "independent CONTRACTOR" status that would establish a liability for failure to make social security or income tax withholding.

12. LIMITATION OF LIABILITY

CONTRACTOR's aggregate liability for any and all claims arising out of this Agreement, or out of any goods or services furnished hereunder, whether based on contract, negligence, strict liability, agency, warranty, trespass, indemnity or any other theory of liability shall be limited to the value of the insurance coverage required in Article 13 of this Agreement. The stated coverage amounts shall be a maximum liability amount.

13. INSURANCE REQUIREMENTS.

CONTRACTOR shall procure and maintain for the duration of this contract, insurance against claims for injuries to persons or damage to property that may arise from, or be in connection with, the performance of the work hereunder by CONTRACTOR, CONTRACTOR's agents, representatives, employees, and SUBCONTRACTORs. At the very least, CONTRACTOR shall maintain the insurance coverage, limits of coverage and other insurance requirements as described below.

The agency responsible for administering a contract is also responsible for enforcing insurance requirements described below. This includes securing certificates of insurance before work under the contract is begun. CONTRACTOR shall furnish to the COUNTY certificates of insurance. All certificates of insurance to be received and approved by the COUNTY before work under the contract has begun. The

COUNTY reserves the right to require complete, certified copies of all insurance policies required by this contract. CONTRACTOR agrees to notify COUNTY within two working days of any notice from an insuring agency that cancels, suspends, and reduces in coverage or policy limits the insurance coverages described herein.

Any deductibles or self-insured retention must be declared on certificates of insurance and approved by the COUNTY. At the option of the COUNTY, either the CONTRACTOR shall reduce or eliminate such deductibles or self-insured retentions, as respects the COUNTY, its officers, officials, employees and volunteers, or the CONTRACTOR shall procure a bond guaranteeing payment of losses and related investigations, claims administration and defense expenses.
Insurance is to be placed with insurers who are licensed to sell insurance and who possess a Best rating of A or higher.

Exception: Workers' Compensation coverage issued by the State Compensation Insurance Fund (SCIF) shall be acceptable.

14. INSURANCE

A. General liability: At least $1,000,000 combined single limit per occurrence coverage for bodily injury, personal injury and property damage. If a general aggregate limit is used, then either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required per occurrence limit. The CONTRACTOR or CONTRACTOR's insurance carrier shall notify COUNTY if incurred losses covered by the policy exceed 50% of the annual aggregate limit.

B. Automobile Liability: At least $100,000 to cover bodily injury for one person and $300,000 for two or more persons, and $50,000 to cover property damages. However, policy limits for construction projects shall be at least $1,000,000 combined single limit per accident for bodily injury and property damage for autos used by the CONTRACTOR to fulfill the requirements of this contract, and coverage shall be provided for "any auto", code 1 as listed on the Accord form "Certificate of Insurance."

C. Workers' Compensation and Employer's Liability: Workers' Compensation insurance up to statutory limits and Employer Liability insurance with policy limits of at least $1,000,000 for bodily injury or disease.

D. Professional Liability insurance: Professional liability insurance covering professional services shall be provided in an amount of at least $1,000,000 per occurrence or $1,000,000 on a claims-made basis. However, if coverage is written on a claims-made basis, the policy shall be endorsed to provide at least a two-year extended reporting provision.

Such insurance shall include Glenn COUNTY, its elected officials, officers, and employees as an additional insured, and shall not be reduced or canceled without 30 days written prior notice delivered to COUNTY. CONTRACTOR shall provide COUNTY with a certificate of insurance as evidence of insurance protection provided. Insurance certificates provided by any insurance company or underwriter shall not contain the language "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company," or similar language. CONTRACTOR's insurance must act as primary coverage, not excess or contributing coverage. If CONTRACTOR has employees, he/she shall obtain and maintain continuously Workers' Compensation Insurance to cover CONTRACTOR and CONTRACTOR's employees and partners.

15. FORCE MAJEURE.

CONTRACTOR will not be responsible for any delay or failure of performance caused by fire or other casualty, labor dispute, government or military action, transportation delay, inclement weather, act of god, act or omission of COUNTY or their other CONTRACTORs, failure of any government authority to timely review or to approve the services or to grant permits or approvals, or any other cause beyond CONTRACTOR's reasonable control.

16. NON-DISCRIMINATION

CONTRACTOR will not discriminate in employment practices or in the delivery of services on the basis of race, color, religion, national origin, sex, sexual orientation, age, marital status, political affiliation or disability.

17. NOTICES.

Any notice required to be given pursuant to the terms and provisions of this agreement shall be in writing and shall be sent first-class mail to the following addresses:

If to COUNTY: John Linhart, Director
Glenn COUNTY Planning & Public Works Agency
P.O. Box 1070
Willows, CA 95988

If to CONTRACTOR: CONTRACTOR

Notice shall be deemed to be effective two days after mailing.

18. APPLICATION OF LAW

This Contract shall be governed in accordance with all the laws of the State of California.

19. DOCUMENT RETENTION.

CONTRACTOR and COUNTY agree to retain all documents relevant to this Contract for five (5) years from the termination of the contract or until all Federal/State audits are complete, whichever is later. Upon request, consultant shall make available these records to COUNTY or Federal/State government representatives.

IN WITNESS WHEREOF, COUNTY and CONTRACTOR have executed this agreement on the day and year set forth below.

DATED: _____

CONTRACTOR

_____
CONTRACTOR

_____
Tax Identification Number

COUNTY OF GLENN

_____
John Linhart, Director
Approved as to Content and Fund Availability

APPROVED AS TO FORM:

_____
HUSTON T. CARLYLE, JR., COUNTY Counsel
Glenn COUNTY, California

Exhibit A

Public Contract Code Section 20104.50 reads:

20104.50

(a) (1) It is the intent of the Legislature in enacting this section to require all local governments to pay their CONTRACTORs on time so that these CONTRACTORs can meet their own obligations. In requiring prompt payment by all local governments, the Legislature hereby finds and declares that the prompt payment of outstanding receipts is not merely a municipal affair, but is, instead, a matter of statewide concern.

(2) It is the intent of the Legislature in enacting this article to fully occupy the field of public policy relating to the prompt payment of local governments' outstanding receipts. The Legislature finds and declares that all government officials, including those in local government, must set a standard of prompt payment that any business in the private sector which may contract for services should look towards for guidance.

(b) Any local agency which fails to make any progress payment within 30 days after receipt of an undisputed and properly submitted payment request from a CONTRACTOR on a construction contract shall pay interest to the CONTRACTOR equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

(c) Upon receipt of a payment request, each local agency shall act in accordance with both of the following:

(1) Each payment request shall be reviewed by the local agency as soon as practicable after receipt for the purpose of determining that the payment request is a proper payment request.

(2) Any payment request determined not to be a proper payment request suitable for payment shall be returned to the CONTRACTOR as soon as practicable, but not later than seven days, after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the payment request is not proper.

(d) The number of days available to a local agency to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which a local agency exceeds the seven-day return requirement set forth in paragraph (2) of subdivision (c).

(e) For purposes of this article:

(1) A "local agency" includes, but is not limited to, a city, including a charter city, a COUNTY, and a city and COUNTY, and is any public entity subject to this part.

(2) A "progress payment" includes all payments due CONTRACTORs, except that portion of the final payment designated by the contract as retention earnings.

(3) A payment request shall be considered properly executed if funds are available for payment of the payment request, and payment is not delayed due to an audit inquiry by the financial officer of the local agency.

(f) Each local agency shall require that this article, or a summary thereof, be set forth in the terms of any contract subject to this article.

Public Contract Code Section 20104.50 reads:

20104.50 (a) (1) It is the intent of the Legislature in enacting this section to require all local governments to pay their contractors on time so that these contractors can meet their own obligations. In requiring prompt payment by all local governments, the Legislature hereby finds and declares that the prompt payment of outstanding receipts is not merely a municipal affair, but is, instead, a matter of statewide concern.

(2) It is the intent of the Legislature in enacting this article to fully occupy the field of public policy relating to the prompt payment of local governments' outstanding receipts. The Legislature finds and declares that all government officials, including those in local government, must set a standard of prompt payment that any business in the private sector which may contract for services should look towards for guidance.

(b) Any local agency which fails to make any progress payment within 30 days after receipt of an undisputed and properly submitted payment request from a contractor on a construction contract shall pay interest to the contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

(c) Upon receipt of a payment request, each local agency shall act in accordance with both of the following:

(1) Each payment request shall be reviewed by the local agency as soon as practicable after receipt for the purpose of determining that the payment request is a proper payment request.

(2) Any payment request determined not to be a proper payment request suitable for payment shall be returned to the contractor as soon as practicable, but not later than seven days, after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the payment request is not proper.

(d) The number of days available to a local agency to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which a local agency exceeds the seven-day return requirement set forth in paragraph (2) of subdivision (c).

(e) For purposes of this article:

(1) A "local agency" includes, but is not limited to, a city, including a charter city, a county, and a city and county, and is any public entity subject to this part.

(2) A "progress payment" includes all payments due contractors, except that portion of the final payment designated by the contract as retention earnings.

(3) A payment request shall be considered properly executed if funds are available for payment of the payment request, and payment is not delayed due to an audit inquiry by the financial officer of the local agency.

(f) Each local agency shall require that this article, or a summary thereof, be set forth in the terms of any contract subject to this article.

PERFORMANCE BOND

BOND NO. _____
AMOUNT: $_____

KNOW ALL MEN BY THESE PRESENTS, that _____
(name)

of _____
(Business name)

hereinafter called the CONTRACTOR (Principal), and _____
(name)

of_____
a corporation duly organized and existing under and by virtue of the laws of the State of_____, hereinafter called the SURETY, and authorized to transact business within the State of California, as SURETY, are held and firmly bound unto COUNTY OF GLENN as COUNTY (Obligee), in the sum of:

_____ DOLLARS ($_____), lawful money of the United States of America, for the payment of which, well and truly be made to the COUNTY, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the COUNTY, dated _____, 2012, for:

"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	**2**
2. Orland Memorial Hall Building	**2**
3. Sheriff's Administration Building	**3**
4. Health Services Building (HSA) Willows	**6**
5. Ag Department Building	**1**

See attached Exhibit B for project locations and unit details.

NOW, THEREFORE, if the CONTRACTOR shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract and any and all duly authorized modifications of said Contract or extensions thereof that are granted by the COUNTY, with or without notice to the SURETY, and during the life of any guarantee required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may thereafter be made, then this obligation shall be void, otherwise the same shall remain in full force and effect.

Whenever the CONTRACTOR shall be, and is declared in default under the Contract, the COUNTY having performed COUNTY's obligation there under, the SURETY may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms or conditions, or

(2) Obtain a bid or bids for submission to COUNTY for completing the Contract in accordance with its terms and conditions, and upon determination by COUNTY and SURETY of the lowest responsible bidder, arrange for a contract between such bidder and COUNTY, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which the final payment under the Contract falls due.

No right or action shall accrue on this bond to or for the use of any person or corporation other than the COUNTY named herein or the heirs, executors, administrators or successors of COUNTY.

IN WITNESS WHEREOF, the above parties bounded together have executed this instrument this _____ day of _____, 2012, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

_____

By _____ (Seal)

_____
Attest

SURETY

_____

By_____ (Seal)

_____
Attest

The rate of premium on this bond is _____ per thousand.

Total amount of premium charged is $_____.

* * * * * *

LABOR AND MATERIALS BOND

BOND NO._____
AMOUNT: $_____

KNOW ALL MEN BY THESE PRESENTS, that _____
(name)

of _____
(Business name)

hereinafter called the CONTRACTOR (Principal), and _____
name)
of_____ a corporation duly organized
(Business name)
and existing under and by virtue of the laws of the State of _____, hereinafter called the SURETY, and authorized to transact business within the State of California, as SURETY, are held and firmly bound unto COUNTY OF GLENN as COUNTY (obligee), in the sum of:

_____ DOLLARS ($_____), lawful money of the United States of America, for the payment of which, well and truly be made to the COUNTY, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the COUNTY, dated _____, 2012, for:

"Replacement of 9 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

That, if said CONTRACTOR, his or its heirs, executors, administrators, successors or assigns, or subcontractors, shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the CONTRACTOR and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor that the SURETY or Sureties will pay for the same, in an amount not exceeding the sum specified in the bond, and also, in case suit is brought upon the bond, a reasonable attorney's fee, to be fixed by the court.

That, this bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give right of action to such persons or their assigns in any suit brought upon this bond.

NOW, THEREFORE, if the CONTRACTOR shall promptly make payment to all persons who supply labor and materials in the prosecution of the work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereinafter be made, without notice to the SURETY, then this obligation shall be void; otherwise the same shall remain in full force and effect.

IN WITNESS WHEREOF, the above parties bounded together have executed this instrument this _____ day of _____, 2012, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

_____

By_____ (Seal)

_____
Attest

SURETY

_____

By_____ (Seal)

_____
Attest

The rate of premium on this bond is $_____ per thousand.

Total amount of premium charged is $_____.

* * * * *

NOTICE TO PROCEED

DATED: _____

PROJECT: **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

OWNER: Board of Supervisors
COUNTY OF GLENN
525 West Sycamore Street
Willows, California 95988

CONTRACTOR: _____
_____
_____
_____

PHONE/FAX: _____

CONTRACT SUM: _____Dollars
($_____)

You are hereby notified to commence work on the above-referenced Project on or before _____, and are to fully complete the work by **June 14, 2012.**.

Your Contract completion date is therefore.

The Contract provides for the assessment in the sum of $250.00 per day for each calendar day beyond the Contract completion date as set forth above for liquidated damages.

Signed: _____
John Linhart, Director
Planning & Public Works Agency
County of Glenn, California

cc: Glenn County Board of Supervisors
Glenn County Planning & Public Works Agency

GUARANTEE

OWNER: Board of Supervisors
COUNTY OF GLENN
526 West Sycamore Street
Willows, California 95988

CONTRACTOR: _____
_____
_____
_____

PROJECT: **"Replacement of 14 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."**

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

OFFICIAL DATE OF ACCEPTANCE: _____

GUARANTEE FOR: _____
(worked performed)

We hereby guarantee that all workmanship and materials which we provided and installed on the subject project has been in accordance with the Project Documents and that the work as installed will fulfill the requirements of the guarantee included in the Project Documents. We further agree to repair or replace any or all work, together with any other adjacent work, which we may displace in so doing, that may prove to be defective in its workmanship or material within a period of **TWO (2) years** from the date of official acceptance by the County of the above named project, without any expense whatsoever to said County, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within fifteen (15) calendar days after being notified, in writing, by the County, we, collectively or separately, do hereby authorize said County to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefor upon demand.

_____ DATE: _____
CONTRACTOR (Signature)

_____ PHONE: _____

ADDRESS

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ARTICLE I.
GENERAL PROVISIONS

A. BASIC DEFINITIONS

1. Owner. The County of Glenn is the Owner and is identified as the Owner herein as well as in all Project Documents. The term Owner, and pronouns in place of the same shall mean the County of Glenn acting by and through its designated representative.

2. Owner's Representative. This term shall refer to such person as may be designated herein and in the Supplementary Conditions.

3. Contractor. The person or entity identified as such in the Project Documents and referred to throughout the Project Documents as if singular in number. The term Contractor means the Contractor or the Contractor's authorized representative.

4. Inspector. The Inspector shall be the person designated in the Supplementary Conditions.

5. Subcontractor. Those contractors, of whatever tier, furnishing labor or material, or both, for the work identified in the Contractor's bid form.

6. Substantial Completion. The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Project Documents so the Owner can occupy or utilize the Work for its intended use.

7. Final Payment. The Final Payment shall be the last Progress Payment made to Contractor and shall not be considered to be the payment of any or all of the 5% retention.

8. Field Order. A written order of the Owner's Representative directing the Contractor to conduct minor changes in work involving neither extra cost nor extra time and being consistent with the scope and functioning of the project.

9. Construction Change Directive. A written order prepared by the Owner's Representative and signed by the Owner directing a change in the Work and stating a proposed basis for adjustment, if any, of Contract Time or Sum. The Owner may by Change Directive, without invalidating the Contract and without Contractor's agreement, order changes in the Work. This procedure will be used in the absence of a contract between Owner and Contractor.

10. Change Order. A Change Directive prepared by the Owner's Representative and signed by the Owner and Contractor stating their agreement upon all of the following. 1) a change in the Work, 2) the amount of the adjustment in the Contract Sum, if any, and 3) the extent of the adjustment in the Contract Time, if any.

11. Project Documents. The Project Documents consist of the following documents: The Notice of Bidders Bond to Contractors contract, the Bonds, the Instructions to Bidders, the Accepted Bid Form, the Guarantees, all Addenda, the Standard Contract Form for Construction Work, the General Conditions, Supplementary Conditions, the Plans and Specifications, Notice to Proceed, Change Orders, Notice of Completion, and modifications incorporated in those documents.

12. Work. The construction and services required by the Project Documents, including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations.

13. Project. The total construction, including construction site, of which the Work performed under the Project Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

14. Plans. The graphic and pictorial portions of the Project Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

15. Specifications. That portion of the Project Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

16. Claim. A demand or assertion by the Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. Claims must be made by written notice and shall include a demand for the Owner's decision. The responsibility to substantiate Claims and to resolve the claims of subcontractors of whatever tier shall rest with the Contractor.

B. PROJECT DOCUMENTS

1. One Document. The Project Documents are one document and any work shown or mentioned shall be performed or furnished. The Contractor admits and agrees that the specifications exhibit the intent and purpose of the Owner in regard to the work, and that they are not complete in every detail and are to be considered as showing the purpose and intent only; and she/he further agrees to furnish all labor or material for any detail that is necessary to carry out the intent and purpose of the specifications without extra charge.

2. Misuse of Words or Punctuation. The misplacement, addition or omission of any word, letter or punctuation mark will not in any way change the intent or meaning of the specifications. Any part of

the work, or any article pertaining thereto which is not specifically set forth in these specifications, but which is necessary for the proper completion of the work, is to be supplied and set in place at the Contractor's expense, the same as if it had been mentioned in these specifications. The Contractor shall furnish all things necessary to make a good and workmanlike job in accordance with the intent and purpose of the specifications.

3. Discrepancies and Omissions. In resolving inconsistencies that may exist between any of the Project Documents, precedence shall be given in the following order: 1) Standard Contract Form For Construction Work, 2) Bid Form, 3) Notice to Contractors, 4) Instructions to Bidders, 5) Supplementary Conditions, 6) General Conditions, 7) Specifications, and 8) Plans. Addenda and Change Orders shall take precedence over all sections referenced therein. Figure dimensions on drawings shall take precedence over scale dimensions and detail drawings shall take precedence over general drawings.

C. ASSIGNMENT OF CONTRACT

1. Mutual Consent. Neither party to the contract shall assign the contract without the written consent of the other party, nor shall the Contractor assign any monies due or to become due to him hereunder without the written consent of the Owner.

2. Assignment Under Anti-Trust Claims. In accordance with Section 4552 of the Government Code and Section 7103.5 of the Public Contracts Code, Contractor and subcontractors shall conform to the following requirements:

a. In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, contractor or subcontractors offers and agrees to assign to the Owner all rights, title, and interests in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the Owner tenders Final Payment to the Contractor, without further acknowledgment by the parties.

b. In submitting a bid to Owner the bidder offers and agrees that if bid is accepted, it will assign to Owner all rights, title, and interests in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials by the bidder for sale to the Owner pursuant to the bid. Such assignment shall be made and become effective at the time the Owner tenders Final Payment to the bidder.

D. WAIVER OF "COMMON PRACTICE"

1. The Contractor shall waive "common practice" and "common usage" as construction criteria wherever the Project Documents details, plans, specifications, governing codes or ordinances require greater quantity or better quality than common practice or common usage would require.

E. EXCESSIVE COSTS

1. Failure to comply with Contract. If the Contractor fails to comply with any Contract requirements, including any required coordination with other contractors, and that failure results in additional costs to the Owner, then the Contractor shall be liable for such additional costs.

2. Construction Methods. If the Contractor's construction methods and techniques result in additional costs to the Owner, and if, after notice, additional costs continue to occur; the Contractor shall be responsible for costs attributable to his methods and techniques.

ARTICLE II.
OWNER

A. OWNER'S REPRESENTATIVE

1. Planning & Public Works Director is Owner's Representative. The Owner will be represented by PPWA Director who shall see that the performance of the work is in strict accordance with the Project Documents.

2. Owner May Appoint Another Representative. Notwithstanding the designation made in the Supplementary Conditions, the Owner shall be entitled to appoint such other agent, as in the Owner's opinion is duly qualified to carry out the duties of the Owner's Representative.

3. Communication Through Deputy Director. In order that the Owner may act upon expert advice and upon good procedure, all communications from the Contractor will be through the Deputy Director. The Owner reserves the right to alter this procedure without the consent of the Contractor. All communications not in compliance herewith, shall be considered non-binding on the Owner.

B. RIGHTS OF OWNER

1. Right to Clean Up. Subject to the strict prohibition against maintaining a nuisance, if a dispute arises between the Contractor and Subcontractors as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish the Owner may, but need not, clean up and allocate the cost among those responsible as the Inspector determines to be just.

2. Right to Accept Imperfect Work. If any part or portion of the work completed under this Contract is defective and not in accordance with the Plans or Specifications, and if the imperfection is judged by the Owner to be not of sufficient magnitude or importance so as to make the work unacceptable, then the Owner shall have the right and authority to retain such work but will make such deductions in the Contract Price as may be equitable and reasonable. However, the Owner does not by this section; waive any rights under Article IX or Section III.I, below.

3. Right to do Adjacent Work. The Owner reserves the right to perform construction or operations on the site of the Work. In doing this the Owner may use its own forces or award separate contracts in connection with other construction or operations on the site but not covered by the Project Documents.

4. Right to Finish Contractor's Work. If the Contractor defaults or neglects to carry out all or any part of the Work in accordance with the Project Documents, the Owner has the right, exercisable solely at Owner's discretion, to commence and continue completion of the Work with diligence and promptness as set forth in the Article X.

5. Right of Partial Use of Project. The Owner may occupy or use any completed or partially completed portion of the Work at any stage upon agreement of the Owner and Contractor, provided such occupancy or use is consented to by the insurer and surety.

a. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Project Documents.

b. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Inspector.

c. Immediately prior to such partial occupancy or use, the Owner, Contractor and Inspector shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

d. Unless otherwise agreed upon in writing, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Project Documents.

e. No claim for acceleration, delay, or hindrance, may be made by the Contractor on his own behalf or that of any of his subcontractors, for any delays, accelerations, or hindrances that may arise out of the Owner's partial occupancy of the Project.

6. Right to Audit. The Contractor shall maintain and make available to the Owner all books, papers, job cost records, detailed cost estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractors, and financial records related to or which arise out of the Work or under terms of the Contract. The form of record keeping shall be subject to approval by the Owner. These books, papers, records, claims, and accounts shall be made available for examination during normal business hours by the Owner's Representative or others and shall be retained at the Contractor's principal place of business, in California, for audit during normal business hours at such place of business for four (4) years after recording of the notice of completion of the project. The Contractor shall provide an office to enable the Owner, Owner's Representative and others to conduct such audit.

C. RESPONSIBILITIES OF OWNER

1. Removal, Relocation, or Protection of Existing Utilities. In accordance with the provisions of Section 4215 of the California Government Code, the Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the Owner or owner of the utility to provide for the removal or relocation of such utility facilities.

2. Furnish Plans and Specifications. Owner shall be responsible for furnishing Contractor with not more than three (3) sets of Plans, Specifications, and any Addenda that may have been issued.

ARTICLE III.
CONTRACTOR'S RESPONSIBILITIES

A. REVIEW OF PROJECT DOCUMENTS AND FIELD CONDITIONS

1. Reporting Errors in Project Documents. The Contractor shall carefully study and compare the Project Documents with each other and shall at once report to the Deputy Director errors, inconsistencies or omissions discovered. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Project Documents without such notice to the Deputy Director, the Contractor shall assume responsibility for such performance and shall bear all costs for correction.

2. Reporting Errors in Field Conditions. The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Project Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Owner at once.

3. No Implied Warranty. No warranty is to be implied nor shall any warranty arise by implication under this Contract that the Plans and Specifications are adequate and sufficient to construct the Project.

B. SUPERVISION AND CONSTRUCTION PROCEDURES

1. Supervision of Work. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Project Documents give other specific instructions concerning these matters.

2. Acts of Employees and Agents. The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

3. Inspector's Acts Do Not Waive Contractor's Obligation. The Contractor shall not be relieved of obligations to perform the Work in strict accordance with the Project Documents either by activities or duties of the Inspector in the Inspector's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

C. PROSECUTION OF WORK

1. Time of the Essence. It is expressly understood and agreed that the time of beginning, rate of progress, and time of completion of the Work are of the essence. The Work shall be prosecuted at such time, and in or on such part or parts of the Work as may be required to complete the Work as set forth in the Project Documents.

2. Construction Schedule. Unless required in the "Supplementary Conditions," the Contractor is not required to submit a construction schedule. In any case, whether required or not, the schedule will be for the Owner's information only. Silence or inaction with regard to construction schedule shall not be construed as acquiescence or acceptance of the Schedule as being binding on Owner. Unless specifically adopted by the Glenn County Board of Supervisors, such schedule shall not be binding on the County of Glenn. The construction schedule shall provide for the completion date not to exceed nor shall he provide for the completion date earlier than the time limits for completion set forth in the Project Documents.

D. SUBMITTALS

1. Review of "Or Equals". In accordance with the provisions of Public Contracts Code Section 3400, but subject to Subsection (b) thereof, the Contractor shall within twenty (20) calendar days after Award of the Contract submit all substitution requests and shall submit data substantiating a request for a substitution of an "or equal" item. Failure to submit such substitution requests and substantiating data within twenty (20) calendar days shall subject such request for substitution to automatic denial.

2. Excessive Submittal Reviews. The cost of reviewing submittals shall be the Owner's responsibility, except that the Contractor shall be responsible for the cost of the third and subsequent review of any one submittal.

E. STATE LABOR REQUIREMENTS

1. Hours of Work.

a. Eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and it is expressly stipulated that no workman employed at any time by the Contractor, or by any subcontractor under this Contract, upon the Work, shall be required or permitted to work thereon more than eight (8) hours in any one calendar day and/or more than 40 hours in any one (1) calendar week except as provided in Labor Code Section 1815, and it is further expressly stipulated that for each and every violation of said last named stipulation, the

Contractor shall forfeit, as a penalty to the Owner, $50.00 for each workman employed in the execution of this Contract, or by any subcontractor under this Contract, for each calendar day during which said workman is required or permitted to labor more than eight (8) hours in any one (1) calendar day or more than forty (40) hours in any one (1) calendar week in violation of the provisions of the Labor Code.

b. Pursuant to the Labor Code, the Contractor, and each subcontractor, shall also keep an accurate record showing the names and actual hours worked for all workers employed by him in connection with the work contemplated by the Project Documents, which record shall be open at all reasonable hours to the inspection of the Owner or its officers or agents, and to the Chief of the Division of Labor Statistics and Law Enforcement or the Department of Industrial Relations, and the chief's deputies or agents.

2. Travel and Subsistence Pay. Pursuant to the provisions of Labor Code Section 1773.8, the Contractor shall pay travel and subsistence payments to each workman needed to execute the work, as such Travel and Subsistence payments are defined in the applicable collective bargaining agreements filed with the Department of Industrial Relations in accordance with Section 1773.8.

3. Apprentice Employment.

a. Pursuant to the provisions of Labor Code Section 1777.5, as amended, the Contractor or subcontractor employing tradesmen in any apprenticeable occupation shall apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a Certificate of Approval. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. All requirements and exceptions to those requirements set forth herein for Apprenticeship Employment are contained in Labor Code Section 1777.5 and are available from the applicable Joint Apprenticeship Committee.

b. The Contractor shall make contributions to funds established for the administration of the apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

c. The Contractor and any subcontractor under him shall comply with the requirements of Labor Code Sections 1777.5 and 1777.6 in the employment of apprentices. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

4. Wage Rates.

a. Pursuant to Labor Code Sections 1770 et seq., each laborer or mechanic of Contractor or any subcontractor engaged in work on the Project under this contract shall be paid not less than the hourly wage rate of per diem wages set forth in the prevailing wage rate schedule published by the Director of Industrial Relations, regardless of any contractual relationship which may be alleged to exist between Contractor or any subcontractor and such laborers and mechanics.

b. Any laborer or mechanic employed to perform work on the Project under this contract, which work is not covered by any of the foregoing classifications, shall be paid not less than the prevailing rate of per diem wages specified herein for the classification which most nearly corresponds to the work to be performed by him.

c. The foregoing specified prevailing wage rates are minimum rates only, and the Contractor may pay any wage rate in excess of the applicable rate contained in this contract.

d. Pursuant to Labor Code Section 1775, the Contractor as a penalty to the Owner shall forfeit $50.00 for each calendar day, or portion thereof for each worker paid less than the prevailing rate established by the Department of Industrial Relations for such work or craft in which such worker is employed. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which the worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor.

e. An error on the part of an awarding body does not relieve the Contractor from responsibility for payment of the prevailing rate of per diem wages and penalties pursuant to Labor Code Sections 1770 1775.

f. Copies of the applicable prevailing wage rates are on file with the Glenn County Planning & Public Works Agency at 777 N. Colusa Street, Willows, California, and are available to any interested party upon request.

g. The Contractor shall comply with the provisions of the Davis-Bacon Act, as outlined in paragraph F.2 below.

5. Certified Payroll. As required under the provisions of Labor Code Section 1776, the Contractor and subcontractors shall keep and make available accurate payroll records as follows:

a. The payroll records shall show 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 by him or her in connection with the Project, and such other information as may be shown on the certified payroll record form issued by the Division of Labor Standards Enforcement.

b. A certified copy of all of these payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor as follows:

(1) Make available or furnish to the employee or his or her authorized representative on request.

(2) Make available for inspection or furnished upon request to a representative of the Owner, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

(3) Make available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the Owner, the Division of Labor Standards Enforcement, or the Division of Apprenticeship Standards. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Contractor, subcontractor, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

The penalties specified in subdivision (g) of Labor Code Section 1776 for noncompliance with the provisions of that section may be deducted from any moneys due or which may become due to the Contractor.

A copy of all payrolls shall be submitted weekly to the Deputy Director. Payrolls shall contain the full name, address and social security number of each employee, his correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions made and actual wages paid. They shall also indicate apprentices and ratio of apprentices to journeymen. The employee's address and social security number need only appear on the first payroll on which his name appears. The payroll shall be accompanied by a "Statement of Compliance" signed by the employer or his agent indicating that the payrolls are correct and not less than those required by the contract. The "Statement of Compliance" shall be on forms furnished by the Owner or on any form with identical wording. The Contractor shall be responsible for the submission of copies of payrolls of all subcontractors.

If by the 15th of the month, the Contractor has not submitted satisfactory payrolls for all work performed during the monthly period ending on or before the 1st of that month, the Department will retain an amount equal to 10 percent of the estimated value of the work performed (exclusive of Mobilization) during the month from the next monthly estimate, except that such retention shall not exceed $10,000 nor be less than $1,000. Retentions for failure to submit satisfactory payrolls shall be additional to all other retentions provided for in the contract. The retention for failure to submit payrolls for any monthly period will be released for payment on the monthly estimate for partial payments next following the date that all the satisfactory payrolls for which the retention was made are submitted.

The Contractor and each subcontractor shall preserve their payroll records for a period of 3 years from the date of completion of the Contract.

6. Discrimination In Employment. In the performance of the work authorized under this contract, Contractor shall not discriminate against any worker or applicant for work because of race, creed, color, ancestry, religion, marital status, medical condition, age (over 40), physical or mental handicaps, veteran or non-veteran status, sex, or national origin.

7. Convict-Made Materials. The Contractor agrees that no materials manufactured or produced in a penal or correctional institution shall be incorporated in the construction of the Project.

F. FEDERAL PROVISIONS

1. Contractor shall comply with the provisions of the Copeland Anti-Kickback Act (18 U.S.C. 874 and 40 U.S.C. 276c) as supplemented by Department of Labor regulations (Title 29, CFR, Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States"). All subcontracts issued by the Contractor in excess of $2,000 shall include this provision.

2. Contractor shall comply with the provisions of Davis-Bacon Act, as amended (40 U.S.C. 276a to a-7) as supplemented by Department of labor regulations (Title 29, CFR, Part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction"). All

subcontracts issued by the Contractor in excess of $2,000 shall include this provision.

3. Contractor shall comply with the provisions of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), as supplemented by Department of Labor regulations (Title 29, CFR, Part 5). All subcontracts issued by the Contractor in excess of $2,000 for construction and in excess of $2,500 for other subcontracts that involve the employment of mechanics or laborers shall include this provision.

4. Contractor shall comply with the provision of Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), as amended. Violations shall be reported to the federal Department of Health and Human Services and the appropriate Regional Office of the Environmental Protection Agency. All subcontracts issued by the Contractor in excess of $100,000 shall include this provision.

G. TAXES

1. Contractor Pays Taxes. The Contractor and subcontractors shall pay all local, state and federal taxes upon labor or materials involved in their branch of the work, cost of same to be included in the contract price.

H. COMPLIANCE WITH LAW AND LOCAL REQUIREMENTS

1. Regulations. The Contractor and all subcontractors shall conform to and abide by all city, county and state laws, ordinances, rules, and regulations, as the same pertain to the work contemplated by the Plans and Specifications.

2. Permits, Licenses, and Fees. The Owner shall give all notices and shall procure and pay for all permits, licenses, and inspection fees that may be required to commence, carry on and complete the contract.

3. Patent Rights, Copyrights, Trade Names and Royalties. The Contractor shall indemnify and save harmless the Owner and all persons acting under him for all liability on account of any patent rights, copyrights, or trade names which may affect the articles or materials or their application under the specifications. The Contractor shall pay all royalties, or other charges that may arise, due to methods, types of construction, processes, materials or use of equipment, and shall hold the Owner harmless from any charges whatsoever which may arise, and shall furnish written assurance, satisfactory to the owner, that such charges have been paid.

I. GUARANTEE

1. Final Guarantee. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of two years. Contractor warrants and guarantees for a period of two (2) years from the date of Notice of Substantial Completion that the Work is free from all defects due to faulty materials or workmanship and Contractor shall promptly make such corrections as may be necessary, including repairs of any damage to other parts of the Work resulting from such defects. Owner will give notice of observed defects with reasonable promptness. If the Contractor should fail to make such repairs, adjustments, or other Work that may be make necessary by such defects, Owner may do so and charge Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

2. Extended Guarantees. If a guaranty exceeding two years is provided by the supplier or manufacturer of any equipment used in this Project, then the guarantee for such materials shall be extended for such term. Contractor expressly agrees to act as co-guarantor of such equipment and materials, and contractor shall supply owner with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by their suppliers or manufacturers.

3. Environmental and Toxics Warranty. The covenants, warranties, and representations contained in this Section will be effective on the date of recording of the Notice of Completion and will, survive completion of the project. Contractor covenants, warrants and represents to Owner that:

a. No litigation is pending or, to Contractor's knowledge, proposed, threatened or anticipated with respect to the Contractor, or with respect to any other matter affecting the Project or the operation thereof.

b. To Contractor's knowledge after due inquiry, no asbestos-containing materials were installed or was discovered immediate disclosure to Owner in the Project at any time during Contractor's construction thereof.

c. To Contractor's knowledge after due inquiry, no electrical transformers, light fixtures with ballasts or other equipment containing PCB's are or were located on the Project at any time during Contractor's construction thereof.

d. To Contractor's knowledge after due inquiry, no storage tanks for gasoline or any other toxic substance are or were located on the Project at any time during Contractor's construction thereof.

e. Contractor's operations concerning the Project are and were not in violation of any applicable environmental federal, state, or local statute, law or regulation dealing with hazardous materials substances or toxic substances, and no notice

from any governmental body has been served upon Contractor claiming any violation of any such law, ordinance, code or regulation, or requiring or calling attention to the need for, any work, repairs, construction, alteration, or installation on or in connection with the Project in order to comply with any such laws, ordinances, codes or regulations, with which Contractor has not complied. If there are any such notices with which Contractor has complied, Contractor shall provide Owner with copies thereof.

f. Contractor shall indemnify Owner as set forth in the Section III.J, entitled INDEMNIFICATION.

J. WARRANTY

1. Contract Warranty. The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new, unless otherwise required or permitted by the Contract, that the Work will be free from defects or flaws and is of the highest quality of workmanship and that the Work will conform with the requirements of the Contract. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

K. INDEMNIFICATION

1. Owner Not Liable for Damages. Neither the Owner nor its authorized representatives shall in any way or manner be answerable or suffer loss, damage, expense or liability for any loss or damage that may happen to the work, or part thereof, or in or about the same during its construction and before acceptance, and the Contractor hereby assumes all liabilities of every kind or nature arising from the work, either by accident, negligence, theft, vandalism, or any causes whatever; and shall hold the Owner and its authorized representatives harmless from all liability of every kind and nature arising from accident, negligence or any cause whatever.

2. Owner Not Liable for Debts. Indebtedness incurred for any cause in connection with this work must be paid by the Contractor, and the Owner is hereby relieved at all times from any indebtedness or claim other than the contract price.

3. Contractor Responsible for Work. To the fullest extent permitted by law, the Contractor shall be responsible for any and all loss, accident, neglect, injury or damage to person, or property, or loss of life, which may be the result of, may be caused by, or arise out of his performance of work as contemplated by said specifications or the execution of the contract for performance of said work, and for which the Owner might be held liable.

4. Contractor Indemnifies Owner. Contractor shall indemnify the Owner, Owner's Representative, Inspector, and their agents and employees and hold them free, safe and harmless of, from and against any and all liability for the death of, or injury to, any person and for loss of, or damage to, or loss of use of any property, which may arise by reason of the acts done or omitted to be done as a result of the work to be done by the Contractor in completion of performance of the Work contemplated by the plans and specifications and the Contract for the performance of said work.

a. The Contractor shall defend, or at Owner's sole option, reimburse, the Owner upon demand for all reasonable cost and expenses which the Owner may incur in resisting any claim which may be made against the Owner for any injury or damage to any person or property.

b. In any and all claims against the Owner or the Inspector or any of their agents or employees, by any employee of any subcontractor, anyone directly or indirectly employed by any of them, or anyone for those acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under worker's compensation acts, disability benefit acts or other employee benefit acts. Upon demand, the Contractor shall defend any suits or actions arising from such claims.

5. Environmental Indemnification. From and after recording of Notice of Completion, the Contractor shall indemnify, defend and save harmless Owner from all losses or damages resulting from injury to or death of any person and damage to property, and any fine, which is occasioned by or arises out of any breach of Environmental and Toxics Warranty, representations or covenants of Contractor under this Contract. Contractor further agrees to indemnify and hold harmless Owner, its officers, employees, and agents, from and against any and all liability as follows:

a. Including all foreseeable and all unforeseeable consequential damages, directly or indirectly arising out of the use, generation, storage, or disposal of hazardous materials by Contractor, and

b. Including, without limitation, the cost of any required or necessary repair, cleanup, or detoxification and the preparation of any closure or other required plans, whether such action is required or necessary prior to or following filing of the Notice of Completion to the full extent that such action is attributable, directly or indirectly, to the presence or use, generation, storage, release, threatened release, or disposal of hazardous materials by any person on the Project prior to filing of the Notice of Completion. Contractor's

obligations pursuant to the foregoing indemnity shall survive the filing of Notice of Completion of the Project.

c. This Contract as to indemnity and reimbursement undertaken by the Contractor, as set forth above, shall survive the performance of the remainder of this Contract and shall remain in full force and effect notwithstanding such performance.

d. The foregoing duties of indemnity shall not apply to loss, damage, expense, or liability caused solely by the negligence, or willful misconduct of the Owner or the Owner's agents, servants, or independent contractors.

L. WORK REQUIREMENTS

1. Conduct of Work. The Contractor shall confine the storage of his equipment and materials to limits as designated by the Owner. The Contractor shall at all times exercise due caution and provide all necessary barricades and other safety equipment around the work to protect the general public from injury to person and property during the entire time of performance of the work. The Contractor shall not create excessive dust or noise.

2. Maintenance of Site. The Contractor is strictly prohibited from creating, committing or maintaining any nuisance on or about the Project site. The Contractor shall not in any way obstruct or interfere with movements of traffic on any public highway or public right of way without first obtaining the necessary approval of the proper public agency.

3. Clean Up of Site. The Contractor shall keep the Project premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. If the Contractor fails to clean up as provided in the Project Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

4. Cutting And Patching.

a. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

b. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation.

c. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor. Such consent shall not be unreasonably withheld.

d. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

M. SUBCONTRACTORS

1. Contractor Responsible for Subcontractor's Acts. The Contractor shall be fully responsible to Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

2. Contractor's Subcontract. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the Project Documents insofar as applicable to the Work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provisions of the Project Documents.

N. SUPERINTENDENT

1. Work Superintendent. The Contractor will employ and maintain on the work site a qualified supervisor or Superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Superintendent shall have full authority to act on behalf of the Contractor and all communications given to the Superintendent shall be as binding as if given to the Contractor. The Superintendent shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.

O. LABOR AND MATERIALS

1. Skilled Labor. All labor must be especially skilled for each kind of work, and must be thorough and first class in all respects. Any person whom the Owner may deem incompetent or disorderly shall be promptly discharged and not re employed.

2. Quality of Materials. All materials used on this contract shall be new and the best market quality, unless specified or shown otherwise. All work executed under this contract shall be done in the best, most thorough, substantial and workmanlike manner and without flaws. All materials and labor shall be subject to the approval of the Inspector as to its quality and fitness, and shall be immediately removed if it does not meet with his approval. The Inspector may refuse to issue the certificate or payment until all

defective materials or work have been removed and other material of proper quality substituted therefor. All removal and replacement with same shall be done at the contractor's expense. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

ARTICLE IV.
ADMINISTRATION OF CONTRACT

A. ADMINISTRATION BY REPRESENTATIVE

1. Contract Communications. Unless otherwise provided in the Contract or when direct communications have specifically been authorized, all parties shall communicate through the Deputy Director. Communications by and with the Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors, architect, or engineer shall be through the Deputy Director.

2. Inspector Does Not Control Work. The Inspector will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility, The Inspector will not be responsible for the Contractor's failure to carry out the Work in accordance with the Project Documents. The Inspector will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

3. Deputy Director Recommends Payments. Based on the Inspector observations and evaluations of the Contractor's Applications for Payment, the Deputy Director will review amounts due the Contractor and will recommend to Owner, payments to Contractor as set forth in the section entitled "REPRESENTATIVE'S CERTIFICATION FOR PAYMENT". (See Section VI.D , below.)

4. Inspector's Authority. The Inspector will have the authority to stop work whenever necessary to insure a proper execution of the work. The Inspector will also have authority to reject Work which does not conform to the Project Documents. Whenever the Inspector considers it necessary or advisable for implementation of the intent of the Project Documents, the Inspector will have authority to require additional inspection or testing of the Work in accordance with the following section whether or not such Work is fabricated, installed or completed. However, neither this authority of the Inspector nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Inspector to the Contractor, subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

B. INSPECTION AND TESTING

1. Advance Notice. The Contractor shall notify Inspector 24 hours prior to any day in which contractor will 1) require an inspection of any portion of the work, and 2) work in excess of 8 hours or anytime contractor intends to work weekends. Any work not performed subject to inspection will not be accepted and will be rejected and/or ordered removed by Inspector.

2. Access to Work. The Inspector will at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records on personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

3. Costs of Tests. The Owner shall bear all costs related to testing for conformance of the Work to the Contract requirements. However, if the Contractor has called for any testing, and that test fails, subsequent tests, and all related costs, shall be borne by the Contractor.

4. Deputy Director Prepares Change Directives/Orders. The Deputy Director will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in the Article V, entitled "CHANGES IN WORK".

C. CLAIMS

1. Concealed or Unforeseen Conditions. It is understood by both parties that Contractor has made a pre-bid investigation of the site in accordance with the Instructions to Bidders. All concealed, unforeseen, or materially differing conditions are the responsibility of the Contractor in the absence of an actual material, intentional misrepresentation by the Owner as to the conditions on the site. The Owner may have made available to the Contractor information on conditions that may be encountered on the site. However, such information is for the exclusive use of the Owner, and Owner does not make any representations as to the completeness or the accuracy of the information made available. The Contractor shall give written notice of any conditions encountered at the site which are unforeseen, concealed, or materially different from those set forth in the plans or specifications, or ordinarily encountered and generally recognized as inherent in the Work. Such written notice shall be given within

five (5) calendar days of the Contractor's discovery of any such facts.

2. Time Limits on Claims. Claims by the Contractor must be made within 21 calendar days after occurrence of the event giving rise to such Claim, except that claims made due to delay or hindrances which Contractor claims was caused by the Owner shall be made within ten (10) calendar days after occurrence of the event giving rise to such Claim. Claims must be made by written notice. Failure to make such claim in writing in the time set forth herein shall bar the Contractor from recourse for such Claim.

3. Claims for Additional Costs.

a. If the Contractor wishes to make a Claim for an increase in the Contract Prices, he shall give the Owner written notice thereof within the time set forth in Paragraph IV.C.2. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property in which case the Contractor shall, as soon as possible, advise the Owner of his intent to do the Work.

b. Increases in the Contract Price due to Claims shall be calculated based on the Methods of Adjustment detailed in Paragraph V.D, below.

c. Under no circumstances shall Contractor recover any administrative overhead costs or recover on the basis of any "Home Office" damages formula, "Total Cost" recovery formula, or any other such formula.

4. Claims for Additional Time.

a. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

b. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

c. The Owner shall not be liable for any damages on account of any reasonable delay or hindrance of the Owner. However, Contractor shall be entitled to an extension of time for any delay or hindrance caused by the Owner. Any delay or hindrance by Owner which is unreasonable and not within the contemplation of the parties may subject Owner to a claim for damages. Contractor shall make any claims in writing within the time set forth in Paragraph IV.C.2 , for any unreasonable delay or hindrance caused by Owner, and specifying the cause thereof as required in Paragraph IV.C.5 "Submittal of Claims".

5. Submittal of Claims. Any disputes relating to this Contract, or its breach, which is not disposed of by agreement shall be promptly submitted as a claim to and decided by the Owner's Representative who shall issue a written decision on the dispute. Claims shall be submitted by the Contractor to the Owner's Representative with adequate supporting data and include a demand for the Owner's Representative's decision. Adequate supporting data shall include but is not limited to: a statement of the reasons for the asserted entitlement, the certified payroll, invoice for material and equipment rental, and an itemized breakdown of any adjustment sought.

6. Submission Under Penalty of Perjury. The Contractor shall certify, at the time of submission of a claim, as follows:

"I certify under penalty of perjury under the laws of the State of California, that the claim is made in good faith, that the supporting data are accurate and complete and that the amount requested accurately reflects the contract adjustment for which the Owner is liable.

By_____
(Contractor's signature)"

D. DISPUTES RESOLUTION

1. Continue Work During Dispute. In the event of any dispute between the Owner and the Contractor, the Contractor will not stop work but will prosecute the work diligently to completion in the manner directed by the Owner, and the dispute shall be resolved by a court of law after completion of the work. However, all disputes must be submitted by the Contractor in accordance with the subsequent provisions of this Section IV.D.

2. Owner's Review of Claim. The Owner's Representative shall review the facts pertinent to the claim, secure assistance from legal and other advisors, coordinate with the contract administrators and, within the time stipulated in Paragraph IV.D.3, render a written decision on the claim. A copy of the decision shall be furnished to the Contractor by certified mail, return receipt requested, or any other method that provides evidence of receipt. The decision of the Owner's Representative shall be final and conclusive except as is otherwise provided herein.

3. Written Notice of Decision. The Owner's Representative shall issue a written decision on a claim not exceeding $25,000, or for an adjustment in contract terms, within 60 calendar days after receipt

of the completed claim. The decision on a claim exceeding $25,000 shall be issued within 120 calendar days after receipt of the completed claim provided, however, if a decision is not issued within ninety calendar days the Owner's Representative shall notify the Contractor of the time within which the decision will be made. The reasonableness of this time period will depend on the size and complexity of the claim and the adequacy of the Contractor's supporting data and other relevant factors. The Owner's Representative may require re submission of the claim where such representative deems the claim to be incomplete.

4. Denial of Claim by Owner. If a decision is not issued on a claim for $25,000 or less, or for an adjustment of subcontract terms, within the 60 calendar day period stipulated, or on a claim exceeding $25,000 within 120 calendar days after the Owner's Representative's receipt of the completed claim, or as such time is extended pursuant to Paragraph IV.D.3, the claim shall be deemed to have been "automatically" denied. The Contractor shall have an immediate right thereafter, after filing a notice of intent to sue Owner exercisable for a period of ninety (90) calendar days, as provided herein, to bring legal action. The failure to serve the notice of intent to sue and to bring legal action within the ninety (90) calendar days period will result in the denial of the claim and the claim becoming final and conclusive. No legal action may thereafter be brought on the claim.

5. Claims Exempt from Review. The procedures and remedies provided in this Section IV.D do not apply to:

a. Any claims by the Owner;

b. Any claim for or respecting personal injury or death or reimbursement or other compensation arising out of or resulting from liability for personal injury or death;

c. Any claim or dispute relating to stop payment requests or stop notices; or

d. Any claim related to the approval, refusal to approve, or substitution of subcontractors, regardless of tier, and suppliers.

6. Thirty (30) Calendar Day Prior Notice of Law Suit. The Contractor shall, within 30 calendar days from receipt of the Owner's Representative's final written decision or within 30 calendar days of the "automatic" denial as provided in Paragraph IV.D.4 , give the Owner notice in writing of the Contractor's intent to file a law suit over the claim or dispute. The failure to serve a notice within 30 calendar days shall be deemed as complete satisfaction with the results of the written decision or automatic denial, and an express waiver of any right to file a law suit.

7. Filing Law Suit. The Contractor shall comply strictly with all time limits and all procedures specified in this Section IV.D, Dispute Resolution, as a prerequisite to filing a law suit on any dispute or claim. Contractor must file an action within 90 calendar days of the date of receipt of the Notice of the Decision as provided in Paragraph IV.D.3, or within 90 calendar days of the "automatic" denial as provided in Paragraph IV.D.4. Failure to comply with any such time limit or procedure shall be deemed a voluntary waiver of any right to file suit for redress in a court of law or equity.

8. Suit in Glenn County Only. Any litigation arising out of this Contract shall be brought in Glenn County and Contractor hereby waives the removal provisions of California Code of Civil Procedure Section 394.

ARTICLE V.
CHANGES IN WORK

A. WAIVER OF CONTRACT PROVISIONS

It is expressly understood and agreed that any waiver granted by the COUNTY of any term, provision or covenant of this Contract shall not constitute a precedent or breach of the same or any other terms, provisions, or covenants of this Contract.

B. CHANGES

1. Owner May Order Changes in Work. The Contractor agrees that the Owner, without invalidating the Contract, may order changes in the Work by altering, adding to or deducting from the Work, in consideration for the Contract Amount being adjusted according to the provisions of Section V.D . Contractor's agrees to enter into a modification of his original Contract for such changes.

2. Cost Proposals. Upon request of the Owner for a quotation on any change to the Work, the Contractor shall promptly submit to the Inspector in writing a detailed breakdown of the work and of the amount of deduction or addition claimed. In no case shall Cost Proposals be provided later than 30 calendar days from the date requested. The Owner's request for quotations on alterations to the Work shall not be considered authorization to proceed with the work prior to issuance of a Change Order, nor shall such request justify any delay in existing work. If Contractor fails to provide Cost Proposals within 30 calendar days, Owner may prepare the Cost Proposal based on estimated of labor, materials, and equipment. This proposal shall be binding on the Contractor, will become the basis for Contract Price adjustment, and shall not be subject to dispute.

3. Contract Change Instrument. Changes in Work involving a change in Contract Price or Contract Time

shall be done only in pursuance of a Field Order, Change Order, or Construction Change Directive as set forth below in this Article.

4. Changes Shall Conform to Contract. Changes in Work shall be performed in conformance with applicable provisions of the Project Documents, and the Contractor shall proceed promptly unless otherwise provided in the Field Order, Change Order, or Change Directive.

C. CONTRACT CHANGE INSTRUMENTS

1. Field Order. The Inspector may order minor changes in work by use of a Field Order. These minor changes will involve neither changes in the Contract Price or Contract Time. If the Contractor disagrees that the change does not involve a change in cost or time, then a Change Order or Change Directive shall be used.

2. Change Order. The Change Order shall be used in cases where Owner and Contractor agree on the change in Work, the amount of or method of computing the Contract Amount, and the amount of adjustment in Contract Time.

3. Construction Change Directive. If the Owner and Contractor do not agree on the proposed change in Work and/or the proposed adjustment to Contract Price and Time, or if it is essential that the Contractor proceed expeditiously and without delay, then the Owner may, by issuance of a Construction Change Directive, order changes in Work, and the Contractor shall promptly proceed with the change in Work involved.

a. Acceptance of Change Directive. If the Contractor agrees with the Change Directive, the Contractor shall by his signature thereon, indicate his acceptance of the terms of the Directive, including adjustments to price and time, and the Change Directive shall then be followed by a Change Order.

b. Non-Acceptance of Change Directive. If the Contractor disagrees with the method of computing an increase in Contract Price, then the amount of adjustment shall be computed by the Cost Reimbursement method detailed in Basis for Adjustment. Disagreements, except as described in Paragraph V.B.2, with amounts or credits, under the Cost Reimbursement method, or time shall be considered a dispute, and processed under the section on Disputes Resolution.

D. BASIS OF ADJUSTMENT

1. Methods of Adjustment. The amount of adjustments to Contract Price, whether a credit or payment, shall be computed by one of the methods detailed below. The method used shall be at the sole determination of the Owner.

2. Unit Prices. Those prices stipulated in the Bid Form shall be utilized where they are applicable. In the event the change in original quantity is in excess of 25% of the original bid quantity, and the total dollar value of that bid is significant, the Owner shall review the unit price to determine if a new unit price shall be renegotiated. Unit prices for new items shall be negotiated and mutually agreed upon.

3. Lump Sum. A total lump sum for the work negotiated and mutually acceptable to the contractor and Owner. Lump sum quotations for modifications to the work shall include substantiating documentation with an itemized breakdown of Contractor's and Subcontractor's costs, including labor, materials, rentals, approved services, overhead, and profit all calculated as specified in the Cost Reimbursement method which follows.

4. Cost Reimbursement (Extra Work). In this method, the payment for Extra Work shall be made on a time and expense basis that is on an accounting of the Contractor's forces, materials, equipment, and other items of cost as required and used to do the work. Payment will be made for the documented actual cost of the following:

a. costs of labor, excluding supervisory personnel, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, labor insurance and labor taxes established by law,

b. costs of materials, supplies and equipment, including cost of transportation and sales tax, whether incorporated if paid for by the Contractor or his Subcontractor,

c. rental costs, prevailing in the area, of machinery and equipment for the actual time used, and including transportation costs for items having a value in excess of $100, and

d. costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work,

To the above costs the Contractor shall be allowed a markup of 12%. These markups shall be considered to be full compensation, covering the cost of general supervision, administration, overhead, profit, and any other general expenses.

E. EXTENSION OF TIME FOR COMPLETION

1. Contractor Delayed or Hindered. Should the Contractor be delayed or hindered in the completion of the work by the neglect of the Owner, or by fire, by strikes, lockouts, embargoes or earthquakes, and any

other causes the Inspector approves as not having been reasonably foreseeable at the time of execution of the Project Documents, then the time allowance herein fixed for the completion of the work shall be extended for a period equivalent to the time lost by reason of any or all of the causes aforesaid. Time extensions must be requested in accordance with Section IV.C.4 .

2. Agreement on Time Extension. In addition, the Contractor and the Owner reserve the right to mutually agree in writing upon an extension of time for completion for causes other than those enumerated above; the Inspector must recommend, and the additional time so allowed must be approved by Change Order.

3. Time Extension not Waiver. The granting of an extension of time by the Owner for performance by the Contractor shall not operate as a waiver or estop the Owner from claiming damages due to any other delays, prior or subsequent, which were not approved by the Inspector and the Owner as provided herein.

ARTICLE VI.
PAYMENTS AND COMPLETION

A. GENERAL

1. Contract Price. The Contract Price is stated in the Construction Contract and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Project Documents.

2. Waiver. Neither the acceptance of the work by the Owner nor the payment any part or all of the sum due the Contractor hereunder shall constitute a wavier by the Owner of any claim which the Owner may have against the Contractor or surety under this Contract or otherwise.

3. Manner of Paying Warrants. Payments to the Contractor become due under the terms of this Contract in the manner prescribed by law. The Auditor of the Owner shall cause a warrant for the Certified amount to be drawn upon the proper fund of the Treasurer of the Owner, which warrant shall be approved and issued to Contractor within that period of time customarily required to process said warrants in the ordinary course of the Owner's business.

B. APPLICATIONS FOR PAYMENT

1. Submittal of Applications. At least ten (10) calendar days before the date established for each progress payment, the Contractor shall submit to the Deputy Director an itemized Application for Payment for work completed to date. Such application shall be supported by such data substantiation the Contractor's right to payment as the Owner may require, such as copies of requisitions from Subcontractors and material suppliers, and reflection retainage if provided for elsewhere in the Project Documents.

2. Basis for Payment. Each Application for Payment shall be based upon the Contract Unit Prices bid or, where a Lump Sum Bid is involved, upon the Schedule of Values submitted by the Contractor in accordance with the Project Documents. The Schedule of Values shall conform to the requirements set forth in the Supplementary Conditions. Applications shall indicate the percentage of completion of each portion of the Work as of the end of the month covered by the Application.

C. PROGRESS PAYMENTS

1. Monthly Progress Payments. Based on the Applications for Payments, Progress Payments shall be made once each month, on or about a date to be determined by the Owner.

2. Computation of Progress Payments. Subject to the provisions of the Project Documents, the amount of each progress payment shall be computed as follows:

a. That portion of the Contract Price computed by multiplying the percentage completed of each work task by the portion of the Contract Price allocated to the work task in the Schedule of Values, less a retainage of five percent (5%);

b. Add the values of Change Orders for which the final cost or credit has not yet been determined, and which is not in dispute, even though the Contract Price has not been adjusted;

c. Add the portion of the Contract Price allocated to equipment and materials delivered and suitably stored at the site (or, if approved in advance by the Owner, suitably stored off the site) for incorporation in the Work, less a retainage of twenty-five percent (25%).

(1) If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing.

(2) Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

c. Subtract the aggregate of previous payments made by the Owner to the Contractor for the Work; and

e. Subtract amounts, if any, for which the Inspector has withheld or disallowed as provided in Article IX, and Section VI.E of these General Conditions.

f. Add, upon Substantial Completion of the Work, an amount sufficient to increase the total amount paid to the Contractor for the Work to ninety percent (90%) of the Contract Price, less amounts as the Inspector determines for incomplete Work and unsettled claims.

g. Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with the Section VI.F, entitled "SUBSTANTIAL COMPLETION".

3. Release of Claims. Payment of undisputed Contract amounts (progress payments) is contingent upon the Contractor furnishing the Owner with a release of all claims against the Owner arising by virtue of the work relating to the amount so paid. The release may be on the form used for computing monthly progress payment.

4. Work Free of Liens. The Contractor warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances against Contractor by Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials or equipment in relation to the Work.

D. REPRESENTATIVE'S CERTIFICATION FOR PAYMENT

Deputy Director Determination. The Deputy Director will, within seven (7) calendar days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certification for Payment, with a copy to the Contractor, for such amount as the Deputy Director determines is properly due, or notify the Contractor and Owner of the Deputy Director reasons for withholding certification in whole or in part as provided for in the following paragraph.

E. WITHHOLDING FROM PAYMENTS

1. Reasons for Withholding. The Owner, upon recommendation of the Deputy Director, may withhold payments, or on account of subsequently discovered evidence, nullify the whole or a part of any progress or retention payments to such extent as may be necessary to protect the Owner from loss on account of:

a. Defective work or material not remedied or replaced.

b. The filing of claims or Stop Notices to withhold, or reasonable evidence indicating probable filing of such claims or notices.

c. Failure of the Contractor to make payments properly to subcontractors, or for materials or labor.

d. Failure to make payments to any person or entity for financial obligations of the Contractor under terms of this Contract,

e. A reasonable doubt that the Contract can be completed for the balance then unpaid.

f. Damage to another contractor.

g. Performance of work in violation of the terms of the project documents.

h. Excessive costs to Owner, as described in Section I.E.

i. Failure of Contractor to comply with requirements for timely submittal of specified documentation, including but not limited to construction schedules, cost proposals, and submittals.

2. Release of Payment. When the above grounds for withholding are removed, payment shall be made for amounts withheld because of them.

F. SUBSTANTIAL COMPLETION

1. Request for Inspection. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall request an inspection of the Work. The Inspector will then make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Inspector's inspection discloses significant work which is not in accordance with the requirements of the Project Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such work. The Inspector shall prepare a list of any items of work which is judged to be minor repair work or to be covered by warranties.

2. Certificate of Substantial Completion. When the Work or designated portion thereof is substantially complete, the Inspector will recommend to Owner that Owner issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion, and shall fix the time within which the

Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Project Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall indicate responsibilities assigned to Contractor and shall be accepted in writing by him.

3. Final Payment (Ninety-five Percent Payment). Except as otherwise provided, upon issuance of a Certificate of Substantial Completion a sum sufficient to increase the total payments to 95% of the Contract Price shall be paid.

G. SUBSTITUTE SECURITIES FOR 10% RETENTION

1. Escrow Account Requirements. Except when the Glenn County Treasurer acts as escrow Agent pursuant to the Owner's standard Escrow Agreement, the Contractor may at his request and expense, in lieu of the monies withheld by the Owner as provided herein, deposit securities equivalent to the amount withheld with a State or Federally chartered bank as an escrow agent. Securities eligible are those listed in California Government Code section 16430, or bank or savings and loan certificates of deposit. The terms and conditions of the escrow shall be as set forth in Government Code Section 22300.

a. Escrow Agent. The escrow agent shall periodically, but not less than at least every two (2) weeks, determine by appropriate means the current value of any such securities. If the escrow agent determines that the current value of the securities has fallen by five percent (5%) or more under the original value, the escrow agent shall demand that the Contractor deposit further securities or monies to make up the difference. If the Contractor fails to so deposit further securities or monies within seven (7) calendar days of such demand, the escrow agent shall immediately sell or otherwise liquidate the securities into cash so that the value may be maintained. The Contractor shall give the escrow agent legal authority to sell or otherwise liquidate the securities. Any such monies or liquidated securities shall otherwise be held by the escrow agent in accordance with these provisions.

b. Contractor as beneficial Owner. The Contractor shall be the beneficial owner of any securities substituted for monies and shall receive any interest thereon, except as otherwise provided in the following paragraph.

c. Sale of Securities. The Owner may at any time demand that all or any portion of any securities be sold or otherwise be liquidated into cash and be turned over to the Owner, the State of California, the Federal Government, subcontractors, or any other person or entity; provided, however, that the escrow agent shall not comply with the demand for fifteen (15) calendar days after receipt of the demand during which time the Contractor may seek a legal remedy nullifying the demand. The escrow agent shall comply with any order of a court of competent jurisdiction in this regard. The Owner shall give the Contractor notice of such demand at the same time it is given to the escrow agent.

H. FINAL COMPLETION AND PAYMENT OF RETAINAGE

1. Affidavit of Payment. After the date of Substantial Completion of the Work, and before final acceptance of the Work, the Contractor shall file with the Deputy Director his affidavit, sworn to before a Notary Public, stating that all workmen and persons employed, all firms supplying materials, and all subcontractors upon the project for either labor or materials have been paid in full, except certain items, if any, to be set forth in such affidavit covering disputed claims, or items in connection with which Stop Notices have been filed under the provisions of the Statutes of the State of California. The filing of such affidavit by the Contractor shall be one of the prerequisites to the making, by the Owner, of the five percent (5%) retainage payment on the contract.

2. Final Inspection. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Inspector will promptly make such inspection and, when they find the Work acceptable under the Project Documents and the Contract fully performed, the Inspector will promptly recommend to Owner that Owner may consider the Project complete and that Payment of Retainage may be made.

3. Final Certification. Before issuance of Final Payment, Contractor shall file, with Owner, a certificate in which he certifies that to the best of the Contractor's knowledge, information and belief, and on the basis of observations and inspections, the Work has been completed in accordance with terms and conditions of the Project Documents.

4. Payment of Retention. Thirty five (35) calendar days after the Notice of Completion has been executed, provided the work be fully completed and the Contract fully performed, the balance due under the Contract shall be paid, less any monies held for Stop Notices. These payments shall not be construed as an absolute acceptance of any of the work done up to the time of such payments. The Contractor, if requested by the Owner, shall furnish receipts or other vouchers showing his payments for materials and labor.

5. Notice of Completion. The Work shall be accepted in writing in the form of a Notice of Completion when the whole shall have been completed satisfactorily to the Owner. In judging the work, no allowance for deviations from the original specifications will be made unless already approved in writing at the proper times and in the manner as called for herein. The Notice of Completion shall be recorded.

ARTICLE VII.
PROTECTION OF PERSONS AND PROPERTY

A. PROTECTION OF WORK, PROPERTY, AND PERSONS

1. Damage to Owner's Property. The Contractor shall be entirely responsible for any damage to the property of the Owner due to careless handling of tools or materials or other causes attributed to the Contractor's work in performing this Contract.

2. Safety of Employees and Others. The Contractor will take all necessary precautions for the safety of, will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

3. Safety and Convenience. The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. The Contractor will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. The Contractor will notify owners of adjacent utilities when prosecution of the Work may affect them.

4. Remedy of Damages. The Contractor will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or part, by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone of whose acts any of them be liable, except damage or loss attributable to the fault or to the acts or omissions of the Owner, the Inspector or anyone employed by them and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

5. Protection of Workers in Trenches. As required by Labor Code Section 6705, and in addition thereto, whenever work under the Contract involves the excavation of any trench or trenches 5 feet or more in depth, Contractor shall submit for acceptance by the Owner, or by a registered civil or structural engineer, employed by the Owner, to whom authority to accept has been delegated, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation, or such trench or trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial safety, the plan shall be prepared by a registered civil or structural engineer employed by the Contractor, and all costs therefor shall be included in the price named in the Contract for completion of the Work as set forth in the Project Documents. Nothing in this Section shall be deemed to allow the use of a shoring, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this Section shall be construed to impose tort liability on the Owner, the Owner's Engineer, the Owner's Representative or the Inspector, nor any of their officers, agents, representatives, or employees.

ARTICLE VIII.
INSURANCE AND BONDS

A. INSURANCE

1. Copies of Insurance Policies. Before commencing any work under the Contract, the Contractor shall obtain insurance policies, as specified below. Each of the insurance policies shall be issued by a company or companies duly and legally licensed to transact business in the State of California. They shall be issued at the expense of the Contractor and shall be maintained by him and at his expense during the entire life of the Contract.

2. Co-Insured. The Contractor and all subcontractors shall be named or designated in such capacity as insured jointly, or additionally, with the Owner in all policies, all of which shall be open to the Owner's inspection. Certificates of such insurance shall be filed with the Owner prior to commencement of the Work. If the Contractor fails to effect or maintain insurance as above and so notifies the Owner, the Owner may insure its own interest and that of the subcontractors and charge the cost thereof to the Contractor. If the Owner is damaged by failure of the Contractor to maintain such insurance or to so notify the Owner, the Owner may recover such damages.

3. Types of Coverage. The type and coverage of insurance required shall be as describes below:

a. Workers' Compensation Insurance. This insurance policy shall be in the form of Workers' Compensation Insurance and shall cover the full liability of the Contractor in accordance with the provisions of the Labor Code, as amended. In case any work is sublet, the Contractor shall

require the subcontractor similarly to provide Workers' Compensation Insurance for the latter's employees. The Contractor shall provide, and shall cause each subcontractor to provide, adequate insurance for the protection of his employees not otherwise protected. In accordance with provisions of Labor Code Section 1861, the Contractor shall sign and file with the Owner the following certification prior to performing the Work:

CERTIFICATE OF KNOWLEDGE
LABOR CODE SECTION 3700

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of work of this contract.

b. Public Liability and Property Damage Insurance. Occurrence-type Public Liability and Property Damage Insurance shall be secured by the Contractor and shall protect the Owner, its officials, agents and employees, the Contractor and any subcontractor performing work covered by this Contract from claims for damages for personal injury, including wrongful death, and from claims for property damage, which may arise from operations, work or conditions under this Contract, whether such operations, work or conditions be done or caused by the Contractor or any subcontractor or anyone directly or indirectly employed by either of them.

The minimum limits for coverage shall be:

(1) $1,000,000.00 Combined Single Limit

* Automobile Liability Insurance
* Contractual Liability
* Contingent Liability
* Products and Completed Operations (for 5 years after acceptance)
* Independent Contractors
* Premises, Operations

(2) $100,000.00 Property Damage, with Broad Form Endorsement

(2) $100,000.00/$300,000.00 Automobile Liability Coverage (including owned, non-owned or hired motor vehicles)

4. Certificates of Insurance. A certificate of insurance for each policy, including a copy of the endorsement naming the Owner as an additional insured, shall be sent to the Owner's Risk Manager before start of construction. The Owner's Risk Manager shall be notified in writing by the carrier at least ten (10) calendar days prior to cancellation of the above policies.

B. BONDS

1. General Requirements for Bonds. Before commencing any work under the Contract, the Contractor shall file with the Owner an original and three certified copies of each bond described below. These bonds shall be in the amounts and for the purposes specified below. They shall be surety bonds and shall be issued by corporations duly and legally licensed to transact business in the State of California. They shall be maintained by him and at his expense during the entire life of the Contract or later as provided.

2. Performance Bond. One bond shall be in the amount of one hundred percent (100%) of the Contract Price, and shall guarantee the faithful performance of the Contract, including the guarantee required by Paragraph III.H.1, and shall insure the Owner during the life of the Contract. The bond shall insure against faulty or improper materials and/or workmanship.

3. Labor and Materials Bond. One bond shall be in the amount of one hundred percent (100%) of the Contract price, and shall guarantee the payment in full of all claims for labor and materials in accordance with the provisions of the laws of the State of California.

4. Change of Surety. If at any time a surety on such bonds becomes irresponsible or loses its right to do business in the State of California, the Owner may require another surety which the Contractor shall furnish within ten (10) calendar days after receipt of written notice to do so. Evidence of authority of an attorney-in-fact acting for the corporate surety shall be provided in the form of a certificate as to his power of attorney and to the effect that it is not terminated and remains in full force and effect on the date of the bonds. The form of the bonds shall be subject to approval by the Owner.

ARTICLE IX.
UNCOVERING AND CORRECTION OF WORK

A. DEVIATION FROM SPECIFICATIONS

If the Contractor shall vary from the Plans or Specifications in the form or quality of the work, or the amount or value of the materials herein provided for, the Owner shall have the right to order such improper work or materials removed, remade, or replaced. If the work is ordered changed, any other work disturbed or damaged by such alteration shall be made good at the Contractor's expense.

B. CORRECTION OF WORK

1. Covered or Completed Work. If any Work is covered contrary to the written instructions of the Inspector it must, if requested by the Inspector, be uncovered for the Inspector's observation and replaced at the Contractor's expense.

2. Inspection of Covered Work. If the Inspector considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, will uncover, expose or otherwise make available for observation, inspection, or testing as the Inspector may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, if, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and construction and an appropriate Change Order shall be issued.

3. Rejected Work. The Contractor shall promptly remove from the premises all Work rejected by the Inspector or Owner for failure to comply with the Project Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re execute the Work either during the term of the Contract or during the warranty period, in accordance with the Project Documents and without expense to the Owner and shall bear the expense of making good all Work of other Contractors destroyed or damaged by such removal or replacement.

4. Cost of Correction. All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected Work within ten (10) calendar days after receipt of Written Notice, the Owner may remove such Work and store the materials at the expense of the Contractor. Owner also may perform such work or repairs itself and charge the expense to the Contractor.

5. Correction During Guarantee Period. If, within two (2) years after the date of Substantial Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Project Documents, any of the Work is found to be not in accordance with the requirements of the Project Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so. This period of two (2) years shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Subparagraph shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

ARTICLE X.
TERMINATION OR SUSPENSION OF CONTRACT

A. TERMINATION BY OWNER FOR CONVENIENCE

1. Right to Terminate. The Owner reserves the right to terminate the Contract at any time upon determination by the Board of Supervisors that termination of the Contract is in the best interest of the Owner. Owner shall issue the Contractor a written notice specifying that the Contract is to be terminated.

2. Contractor's Duties. Upon receipt of said written notice, Contractor shall stop all work under the Contract except that specifically directed to be completed prior to acceptance, perform work the Inspector deems necessary to secure the Project for termination, remove equipment and plant from the site of Work, take such action as is necessary to protect materials from damage, dispose of materials not yet used in the Work as directed by the Inspector, and clean up the site in accordance with Paragraph III.K.3.

3. Payment for Work. If the Contract is terminated for the Owner's convenience as provided herein, all finished or unfinished Work and materials previously paid for shall, at the option of Owner, become its property. The Contractor shall be paid an amount which reflects costs incurred for Work provided to the date of notification of termination. In addition, the Contractor shall be paid the reasonable cost, as solely judged by the Inspector, and without profit, for all work performed to secure the project for termination.

B. TERMINATION BY OWNER FOR CAUSE

1. Written Termination Notice. If the Contractor is adjudged a bankrupt or insolvent, or makes a general assignment for the benefit of its creditors or if a trustee or receiver is appointed for the Contractor or for any of its property, or if the Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or on more than one occasion fails to supply sufficient skilled workmen or suitable material or equipment, or on more than one occasion fails to make prompt payments to subcontractors or for labor, materials or equipment or disregards the authority of the Inspector, or otherwise violates any provision of the Project Documents, then the Owner may, without prejudice to any other right or remedy and after giving the Contractor and its surety a minimum of ten (10) calendar days from delivery of a Written Termination

Notice, terminate the services of the Contractor and take equipment and machinery thereon owned by the Contractor and finish the Work by whatever method the Owner may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

2. Inspector's Notice to Work or Quit.

a. Without prejudice to other rights or remedies the Owner may have, if the Contractor fails to begin delivery of materials and equipment, to commence the Work within the time specified, to maintain the rate of delivery of materials, to execute the Work in the manner and at such locations as specified in the Project Documents, or to maintain a work program which will ensure the Owner's interest, or, if the Contractor is not carrying out the intent of the Contract, an Inspector's Written Notice may be served upon the Contractor and the Surety on its faithful performance bond demanding satisfactory compliance with the Contract.

b. If the Contractor or its Surety does not comply with such notice within five (5) calendar days after receiving it, or after starting to comply, fails to continue, the Owner may exclude it from the premises and take possession of all material and equipment, and complete the work by Owner's forces, by letting the unfinished work to another contractor, or by a combination of such methods.

3. Owners Rights After Termination. If the Contractor's services have been so terminated by the Owner, that termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment by the Owner of monies due the Contractor will not release the Contractor from compliance with the Project Documents.

a. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to the Contractor. If the sums under the Contract are insufficient for completion, the Contractor or Surety shall pay to the Owner within five (5) calendar days after the completion, all costs in excess of the Contract Price. In any event, the cost of completing the Work shall be charged against the Contractor and its Surety and may be deducted from any money due or becoming due from the Owner.

b. If the Surety assumes any part of the Work, it shall take the Contractor's place in all respect for that part and shall be paid by the Owner for all work performed by it in accordance with the Contract. If the Surety assumes the entire Contract, all money due the Contractor at the time of its default shall be payable to the surety as the work progressed, subject to the terms of the Contract.

c. The provisions of the section shall be in addition to all other rights and remedies available to the Owner under law.

4. Contractor Not in Default. If after notice of termination under Paragraph X.B.1, it is determined for any reason that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the Notice of Termination had been issued pursuant to the provisions of Section X.A, "Termination for Convenience". The Contract shall be equitably adjusted to compensate for such termination in accordance with Section X.A.

C. SUSPENSION OF WORK

1. Owner May Suspend. The Owner may suspend the Work or any portion thereof for a period of not more than ninety (90) calendar days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Inspector which shall fix the date on which Work shall be resumed.

2. Resumption of Work. The Contractor will resume that Work on the dates so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributed to any suspension.

STAFFING, COORDINATION, AND MEETINGS

Supervision and Administration:

OWNER'S STAFF:

1. Owner's Representative: John F. Linhart, Director, Planning & Public Works Agency, whose office is located at 777 N. Colusa Street, Willows, California 95988; (530) 934-6545.

2. Glenn County Deputy Director: Annette Chavez, Planning & Public Works Agency, Facilities Division, whose office is located at 777 N. Colusa Street, Willows, California 95988; (530) 934-6546.

3. Inspections: Dean Miller, Inspector Planning & Public Works Agency, whose office is located at 777 North Colusa Street, Willows, California 95988; (530) 934-6546.

Owner Misc. Responsibilities:

1. The Contractor will obtain a building permit from the County and from the City of Orland that is required for this project and/or work.

2. The Owner will provide staff to continuously inspect all construction work as it progresses.

3. The County Deputy Director will be the contractor's liaison throughout the project and will respond to all inquiries, will process documents, schedule meetings and will be responsible to process contractor's progress payment requests or final payment request if the work is completed in less than 30 calendar days. A 5% retention amount is to be withheld from the computations by contractor when preparing the request. Progress payments will be prepared by using a schedule of values for each category of work, and then the actual percentage of work that has been completed during the payment period, less 5% retention, will be authorized for payment.

CONTRACTOR'S STAFF:

1. The Contractor shall be responsible to supervise the project or provide a competent Superintendent with documented experience supervising this type of project. The Contractor or Superintendent shall be skilled in the use and interpretation of the bid documents and other written or verbal communications prepared for the work. The qualifications of the Superintendent are subject to approval by the Owner.

2. The Contractor or contractor shall provide a duly-authorized representative for the proper administration, coordination, supervision and construction work for this project.

Contractor Misc. Responsibilities:

1. Contractor will be required to comply with all federal and state statutory and regulatory requirements, and existing laws and regulations pertaining to work in California.

2. Coordinate scheduling of all work activities to assure efficient and orderly sequence of the modular installation work. Provide immediate notification to the Owner's Rep. or County
Deputy Director of any apparent conflicts or other issues which could potentially delay or change the project.

3. Contractor shall verify that the existing site conditions (i.e., utilities) are acceptable prior to beginning work. Beginning work means acceptance of existing conditions.

4. Contractor is responsible for all site safety during the project. Provide barricades and/or temporary corrective measures if needed to prevent accidental trespassing and/or unauthorized entry into work site. Secure the site after work hours.

5. Contractor shall maintain the site in a clean and orderly condition. Remove regularly from the site, all waste materials, debris, surplus materials, and rubbish which result from work of this project.

6. Contractor is responsible for all Pollution Controls during construction activities including Noise Pollution, storm water run off. In addition, the contractor is responsible for removal and the legal disposal of all materials encountered.

7. Contractor is responsible to provide 24 hours notice prior to requesting an inspection as required by the Glenn County Building Inspection Division. The Inspection Request Line is reached by calling 934-8447.

8. Contractor is prohibited from the following activities:

a. Storing or selling items at the project site.

b. Use of any explosives for demolition purposes.

c. Cannot close or obstruct any streets, sidewalks, drives, alleys, etc. without the written approval from the Owner or from an official of the City of Willows.

d. Posting of signs and/or advertisements at the work site without the Owner's written permission.

10. Provide progress payment invoices to the County Deputy Director monthly or upon completion if the work is completed in less than 30 calendar days.

MEETINGS:

Preconstruction Meeting:

The Owner will schedule a preconstruction meeting shortly after Contracts are fully executed for the following topics:

1. Designate and introduce personnel representing each of the parties involved in the work of this project.

2. Distribute the Notice to Proceed and the fully executed Contracts. Review and discuss all work requirements and the time in which all work is to be completed.

3. Discuss procedures on how field decisions will be handled, submittal of payment requests, changes if found during the work, and contract close-out procedures.

4. What uses of the premises will and will not be allowed by the Owner and Contractor.

5. Security and housekeeping requirements and procedures.

6. Maintaining record documents.

7. What is required to be inspected and the procedures for requesting inspections.

8. Review and discuss any other business or questions that relate to the work.

Other Types of Meetings:

No other project meetings are required. In the event that the Owner or Contractor find it necessary to schedule a special meeting, all requests shall be forwarded to the County Deputy Director who will be responsible for notifying all parties involved, of the time, date and place for the meeting.

End of Section.

SUMMARY OF WORK

Project Location: The work will be conducted at various locations through out Glenn County as indicated in the attached list.

Description of the Work: Install High-efficiency Heating, Ventilation, and Air Condition (HVAC) System replacement at 5 County locations as listed in the Statement of Works. The Contractor will furnish, install and air balance test all new equipment. Each unit shall be electrically controlled heating and cooling utilizing a reciprocating compressor for cooling duty and natural gas combustion for heating. ***Questions prior to bidding will be discussed at the mandatory pre-bid conference which is a one-time requirement for all prospective bidders. Failure to attend may be cause for rejection of a bid.***

Installation shall be in accordance with the manufacturer's instructions. Installer is to provide a layout drawing of units, locations and power requirements to the County upon completion of the project. Mount rooftop unit(s) level on factory roof mounting frames/curbs. Run condensate drain piping and traps in accordance with manufacturer's instructions. Filters that are a minimum 30% efficiency shall be installed in all units. Coordinate installation of the thermostats with the County Electrician. Install a new set of filters prior to final air balance and substantial completion. See also, the Mechanical Provisions, Section 15000.

Contract Documents: The Facilities Project Manager will furnish three (3) copies of the Project Manual to the Contractor. It is understood that all liaison for the purpose of interpretation of these documents will be provided through the Facilities Project Manager and the County. There are no mechanical designs for this work.

Contract: All work will be contracted using a single fixed price contract which may or may not include any alternate bid items.

Work Schedule: Submit a written request to the Facilities Project Manager at least 48 hours before conducting any work outside of regular business hours, or on Saturdays, Sundays or a holiday.

Contractor's Use of Site and Premises: The Contractor will have use of an area on site as directed by the Facilities Project Manager. Contractor shall take extra care to coordinate all work to avoid disturbance to occupants of the building and adjacent areas, which must remain occupied throughout the construction period.

Extra Work: No extra work may be completed unless authorized in writing by both the County and Contractor. Claims for added compensation on account of extra work done, will not be recognized unless the extra work had been authorized in advance.

Final As-Built Plans: The Contractor will be responsible to provide a schematic design, that indicates the location and size of each unit installed. All thermostats installed and the areas they control are to be indicated. As-built plans must be received by the County before the final 5% retention payment is released.

End of Section.

TECHNICAL SPECIFICATIONS SECTIONS

STATEMENT OF WORK

"Replacement of 149 High-Efficiency, Heating, Ventilation and Air Conditioning (HVAC) Systems to be installed at 5 Glenn County Facilities."

Locations Listed by Replacement Priority	Number of Units
1. Willows Memorial Hall Building	2
2. Orland Memorial Hall Building	2
3. Sheriff's Administration Building	3
4. Health Services Building (HSA) Willows	6
5. Ag Department Building	1

See attached Exhibit B for project locations and unit details.

GENERAL MECHANICAL PROVISIONS

1. WORK INCLUDED

Provide materials, labor, and equipment as indicated in the Notice to Contractors and on the Project Plan, together with all incidental items not shown or specified, which are required by code and good practice to provide complete and operable systems.

2. COORDINATION

Coordinate all mechanical work with all other trade work required for "turn-key" installations. All electrical, plumbing, roofing and crane work, shall be coordinated to provide a complete installation. Expense of changes required because of lack of supervision or coordination shall be borne by the Contractor. Contractor shall take care to coordinate all work to avoid disturbance to building occupants which must remain occupied throughout the construction period.

3. SITE VISIT

Examine the project site(s) and become familiar with job conditions affecting work. No additional allowance will be granted due to lack of information about existing conditions.

4. SUBMITTALS

Submittals are to have been furnished with Bid Form and shall include all information necessary for County to award the work to the lowest responsible bidder.

5. CODES & INSPECTIONS

A. Codes, standards: Applicable codes and standards contained herein shall determine minimum requirements for materials, methods, and labor practices not otherwise stated herein.
B. Inspections: The Building Inspection Divisions will perform all inspections. Allow 24-hour notice when calling for inspections.

6. OPERATING & MAINTENANCE DATA

Include the following information where applicable.

A. Nameplate directory listing of equipment with location, area served, control sequence, complete operating instructions and start-up instructions.
B. Valve directory listing with valve number, type, size, location, foundation, and normal position.
C. Manufacturer's printed operations and maintenance information.
D. Manufacturer's parts list.
E. Service and Dealer directory listing.
F. Service and lubrication schedule

7. INSTRUCTIONS

Instruct County's Buildings & Grounds Manager in the operation and maintenance of all systems. Operating and maintenance manuals shall be approved prior to installation.

8. COMPLETION

Operate system in County's presence to demonstrate that the system is complete and operating in conformance with these specifications. Assure that a final inspection is conducted of all work.

9. MATERIALS

All material shall be new, full weight, in first class condition and suitable for space provided. All similar materials shall be of one manufacturer.

10. ELECTRONIC EQUIPMENT

All equipment which requires electrical services of 50 amperes or more shall have lugs suitable for either copper or aluminum supply conductors. Provide time switches and interlocking devises as required for automatic control. All wiring and electrical work pertaining to mechanical system, shall be by the County's Electrician, unless specified otherwise.

11. CLEANING SYSTEMS

After all equipment, fixtures, pipes, and duct systems are installed, the system shall be thoroughly cleaned. Remove all stickers, tags and instruction from equipment or fixtures. Clean bowls or fixtures. Clean all piping systems prior to installation of insulation or painting.

12. AIR DISTRIBUTION SYSTEM

Remove all debris and dust from system before operation. Under no circumstances shall system be operated without filters. Replace filters used during construction with new filters. Repair or replace any discoloration or damage to system, building finish, or furnishings resulting from Contractor's failure to properly clean system.

13. ACCESS TO EQUIPMENT & ACCESSORIES

Install equipment with adequate access for service. Provide access doors where shown or required for access to valves, P-traps primers, cleanouts, dampers, motors, etc. Type, size, and location of access doors shall be coordinated with County, if applicable.

14. UTILITIES

Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

15. EXISITNG SITE CONDITIONS

Secure units in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

16. SECURE UNITS

Secure units in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

17. DUCT TESTING

Duct testing as required for each location, and the appropriate forms.

END OF MECHANICAL TEHCNICAL SPECIFICATIONS

SECTION 15050 – BASIC MECHANICAL MATERIALS AND METHODS

GENERAL

SECTION INCLUDES

Electric motors.

Motor starters.

Valves and fittings.

Strainers.

Gauges.

Thermometers.

Access Doors.

Expansion loops.

Flexible connections.

Insulation.

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this Section.

This Section is a part of each Division 15 Section.

ADDITIONAL REQUIREMENTS

Furnish and install any incidental work not shown or specified which is necessary to provide a complete and workable system.

Make all temporary connections required to maintain services, including adequate heat and cooling, during the course of this Contract without additional cost to the Owner. The normal function of the building must not be interrupted; notify the Owner seven days in advance before disturbing any service.

REFERENCES

CSA – Canadian Standards Association International

ANSI - American National Standards Institute

ASTM - American Society for Testing and Materials

CCR - California Code of Regulations

Title 8 - Division of Industrial Safety, Subchapter 7; General Industry Safety Orders, Articles 31 through 36

NCPWB - National Certified Pipe Welding Bureau

CEC - California Electrical Code

NEMA - National Electrical Manufacturers' Association

NFPA - National Fire Protection Association

OSHA - Occupational Safety and Health Act

UL - Underwriters' Laboratories, Inc.

DRAWINGS

Examine all Drawings prior to bidding of work and report any discrepancies in writing to the Architect.

Visit the site of work and examine existing conditions in order to become familiar with the scope. Verify any dimensions shown on the plans at the site. Discrepancies shall be brought to the attention of the Architect. Failure to examine the site shall not constitute basis for claims for additional work because of lack of knowledge or location of hidden conditions that could affect the scope.

Drawings showing location of equipment, piping, ductwork, etc., are diagrammatic and job conditions will not always permit their installation in the location shown. The Mechanical Drawings show the general arrangement of all piping, ductwork, equipment, etc., and shall be followed as closely as existing conditions, actual building construction, and the work of other trades will permit.

The Architectural and Structural Drawings shall be considered a part of the work insofar as these Drawings furnish the Contractor with information relating to design and construction of the building. Architectural Drawings take precedence over Mechanical Drawings.

Because of the small scale of the Mechanical Drawing, it is not possible to indicate all offsets, fittings, and accessories that may be required. Investigate the structural and finish conditions affecting the work and arrange work accordingly, providing such fittings, valves, and accessories as may be required to meet conditions. When job conditions do not permit installation of equipment, piping, ductwork, etc., in the locations shown, it shall be brought to the Architect's attention immediately and the relocation determined in a joint conference.

Contractor shall be responsible for the relocation of any items installed without first obtaining the Architect's approval. Remove and relocate such items at his own expense if so directed by the Architect.

Execute work mentioned in the Specifications and not shown on the Drawings, or vice versa, the same as if specifically mentioned in both.

REQUIREMENTS OF REGULATORY AGENCIES

The publications listed below form a part of this specification; comply with provisions of these publications except as otherwise shown or specified.

California Electrical Code, 2007

National Fire Protection Association

CAL-OSHA

California Code of Regulations, Title 24

Occupational Safety and Health Administration

California State Fire Marshal, Title 19 CCR

California Building Code, 2007

California Building Energy Efficiency Standards, 2005

California Fire Code, 2007

California Mechanical Code, 2007

California Plumbing Code, 2007

Other applicable state laws

Nothing in Drawings or specifications shall be construed to permit work not conforming to these codes. It is not the intent of Drawings or specifications to repeat the requirements of codes except where necessary for completeness or clarity.

Conform to State of California 2005 Building Energy Efficiency Standards for all systems, equipment, and construction.

When contract documents differ from governing codes, furnish and install larger size or higher standards called for without extra charge.

No material installed as part of this Work shall contain asbestos in any form.

Where material or equipment is specified to conform to standards such as American Society for Testing and Materials (ASTM), Underwriters' Laboratories, Inc. (UL), American National Standards Institute (ANSI) and the like, it shall be assumed that the most recent edition of the standard in effect at the time of bid shall be used.

FEES AND PERMITS

Obtain and pay for all permits and service required in installation of this work; arrange for required inspections and secure approvals from authorities having jurisdiction. In addition, comply with the requirements of Division 1.

Arrange for utility connections and pay charges incurred, including excess service charges, if any.

Prior to the start of construction, contact local gas company representative and coordinate location of gas meter and piping. In addition, coordinate time required for installation, in order to avoid delay to the project.

Obtain the first permits to operate any compressed air tanks that are required to be furnished under this work, pay all costs, and perform all tests required to obtain permits. Post permits under glass in a conspicuous place on or near the tanks, as required by these authorities.

UTILITY CONNECTIONS

Bear the cost of all construction related to utility services, from the point of connection shown on the Contract Documents. This includes any piping, excavation, backfill, meters, boxes, check valves, backflow prevention devices, general service valves, concrete work and the like, whether or not the work is performed by this contractor, the water/sanitation district or any other governmental agencies or assigns.

FRAMING, CUTTING AND PATCHING

Special framing, recesses, chases and backing for work of this Section, unless otherwise specified, is covered under other Sections. This contractor is responsible for proper placement of all pipe sleeves, hangers, and supports and location of openings for work of this Section.

This Contractor is responsible for proper placement of pipe sleeves, hangers, inserts, and supports for work.

Cutting, patching, and repairing of existing construction to permit installation of piping, etc. is responsibility of this Contractor. Repair or replace damage to existing work with skilled mechanics for each trade involved in first-class manner.

Cut existing construction in a neat and workmanlike manner by the use of a concrete saw. Use of pneumatic devices will not be allowed.

Core openings through existing construction as required for the passage of new piping and conduits. Cut holes of the minimum diameter to suit size of pipe installed and associated insulation. Coordinate with building structure, and obtain structural engineer's approval prior to coring through any existing construction.

MATERIAL LIST AND SUBSTITUTIONS

Provide submittal of all materials proposed for use as part of this project. Product names in the Specification and on Drawings are used as standards of quality. Furnish standard items on specified equipment at no extra cost to the contract regardless of disposition of submittal data; other materials or methods shall not be used unless approved in writing by the Architect. The Architect's review will be required even though "or equal" or synonymous terms are used. It is the responsibility of the Contractor to assume all costs incurred because of additional work and or changes required to incorporate the proposed substitute into the project, including possible extra compensation due to the Architect. Refer to Division 1 for complete instructions.

Substitutions will be interpreted to be all manufacturers other than those specifically listed by model or catalog number.

Partial or incomplete submittals will not be considered.

Only one request for substitution will be considered on each item of material or equipment. No substitutions will be considered thereafter.

Quantities are the Contractor's responsibility and will not be reviewed.

Provide materials of the same brand or manufacture throughout for each class of material or equipment wherever possible.

Identify each item by manufacturer, brand, trade name, number, size, rating or whatever other data is necessary to properly identify and review materials and equipment. Words "as specified" are not sufficient identification.

Identify each submittal item by reference to specification section number and paragraph in which item is specified, or Drawing and Detail number.

Organize submittals in same sequence as they appear in Specification Sections, articles or paragraphs.

Show physical arrangement, construction details, finishes, materials used in fabrications, provisions for piping entrance, access requirements for installation and maintenance, physical size, mechanical characteristics, foundation and support details, weight.

Submit shop drawings, performance curves, and other pertinent data, showing the size and capacity of the proposed materials.

Specifically indicate, by drawn detail or note, that equipment complies with each specifically stated requirement of the Contract Documents.

Drawings shall be drawn to scale and dimensioned (except piping diagrams not to scale). Drawings may be prepared by vendor but must be submitted as instruments of Contractor, thoroughly checked and stamped by Contractor before submission to Architect for review.

Catalog cuts and published material may be included in supplement scale drawings.

Review of submittals will be only for general conformance with the design concept and general compliance with the information given in the contract documents. It will not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with the work of other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor. Review of a specific item does not indicate acceptance of an assembly of which the item is a component. The Architect will not be required to review and shall not be responsible for any deviations from the contract documents not clearly noted by the Contractor.

Installation of reviewed substitution is Contractor's responsibility. Any mechanical, electrical, structural, or other changes required for installation of reviewed substituted equipment must be made without additional cost. Review by the Architect of the substituted equipment and/or dimensional Drawings does not waive these requirements.

Submit to Architect for review, within reasonable time after award of contract and in ample time to avoid delay of construction, Shop Drawings or submittals on all items of equipment and materials to be provided. Provide submittal in at least seven copies and in a complete package.

Shop Drawings and submittals shall include Specification Section, Paragraph number, and Drawing unit symbol or detail number for reference. Organize submittals into booklets for each specification section and submit in loose-leaf binders with index and whether it is a deviation from the specifications.

Provide coordinated layouts for HVAC Ductwork systems, in accordance with Specification Section 15800. Provide specific information of seismic bracing of ductwork and in-line equipment.

Provide specific details for design and installation of seismic bracing of ductwork systems, piping systems, plumbing and hydronic systems, including in-line equipment and all mechanical equipment. Indicate location of each seismic brace for review.

Furnish to the Inspector, upon request, complete installation instructions on all material and equipment before starting installation.

Have fire damper and fire smoke damper installation instructions available at the site during construction for use by the inspector.

Provide submittal information proving compliance with the requirements of NSF-61 for lead free faucets and bubblers. Faucets and bubblers installed after January 1, 2010 shall comply with the lead free requirements of the California Health and Safety Code Section 116875.

Pipe, pipe or plumbing fittings, fixtures, solder and flux installed after January 1, 2010 shall comply with the lead free requirements of the California Health and Safety Code Section 116875. Provide submittal information for products listed and labeled as complying with NSF 61, Annex G, or provide other evidence of compliance with the California Health and Safety Code Section 116875.

MAINTENANCE AND OPERATING INSTRUCTIONS

Instruct the Owner's authorized representatives in operation, adjustment, and maintenance of all mechanical equipment and systems. Provide three copies of certificate signed by Owner's representatives attesting to their having been instructed.

Furnish three complete sets of operating and maintenance instructions bound in a hardboard binder, and one compact disc containing complete operation and maintenance instructions in PDF format. Provide Table of Contents. Provide index tabs for each piece of equipment in the binder and disc. Start compiling the data upon approval of list of materials.

These sets shall incorporate the following:

Complete operating instructions for each item of heating, ventilating and air conditioning equipment.

Complete operating instructions for each item of plumbing equipment.

Complete operating instructions for each item of fire sprinkler system. Include an original manual of NFPA-25 in maintenance instructions for fire sprinkler system.

Test data and system balancing reports as specified.

Typewritten maintenance instructions for each item of equipment listing in detail the lubricants to be used, frequency of lubrication, inspections required, adjustment, etc.

Manufacturers' bulletins with parts numbers, instructions, etc., for each item of equipment properly stripped and assembled.

Temperature control diagrams and literature.

A complete list or schedule of all major valves giving the number of the valve, location and the rooms or area controlled by the valve. Identify each valve with a permanently attached

metal tag stamped with number to match schedule. Post list in frame under plastic on wall in mechanical room or where directed.

Provide copies of check test and start reports for each piece of mechanical equipment provided as part of the Work.

Provide copies of Commissioning and Preliminary Operation Tests required as part of the Work.

Post service telephone numbers and/or addresses in an appropriate place as designated by the Architect.

SITE CONDITIONS

Information on the Drawings relative to existing conditions is approximate only. Deviations found necessary during progress of construction to conform to actual conditions as approved by the Architect shall be made without additional cost to the Owner. The Contractor shall be held responsible for any damage caused to existing services. Promptly notify the Architect if services are found which are not shown on the Drawings.

EXISTING MATERIALS

Remove existing equipment, piping, wiring, construction, etc., which interferes with work of this contract promptly return to service upon completion of work in the area. Replace items damaged by the contractor with new material to match existing.

Removed materials which will not be re-used and which are not claimed by the Owner shall become the property of the Contractor and shall be removed from the premises. Consult Owner before removing any material from the premises. Carefully remove materials claimed by the Owner to prevent damage and delivered on the site where required.

Existing piping and wiring which will not be reused and which are concealed in the building construction may be abandoned in place and all ends shall be capped or plugged. Remove all such piping and wiring that is exposed in Equipment Rooms or occupied spaces. Material shall be removed by the contractor, and removed from the premises. Disconnect power, water, gas, pump or any other active energy source from any piping or electrical service prior to its being abandoned in place.

Existing piping, ductwork, and equipment which is modified or altered as part of this work shall be brought up to the latest code requirements which apply.

WARRANTY

Refer to Division 1 for Warranty requirements, including when warranty is to become effective. Refer to specific items of equipment specified herein for warranty duration if different from that specified in Division 1.

Repair or replace any defective work, material, or part that may appear within the warranty period. This shall include damage by leaks.

On failure to comply with the above warranty within a reasonable length of time after notification is given, the Architect shall have the repairs made at the Contractor's expense.

RECORD DRAWINGS

Refer to Division 1 requirement, Record Documents, for requirements governing Work specified herein.

Upon completion of the work and as a precedent to final payment, deliver to the Architect originals of all Drawings showing the work exactly as installed. Also deliver to the Architect one complete set of reproducible Drawings showing the work exactly as installed. Provide Contractor's signature, verifying the accuracy of Record Drawings.

Obtain the signature of the Inspector of Record for all Record Drawings.

DELIVERY AND STORAGE

All equipment, ducting and piping delivered to site shall be protected from the weather, humidity and temperature variations, dirt and dust and other contaminants.

COORDINATION

General:

Coordinate all of work in this Section with all of the Trades covered in other Sections of the Specifications to provide a complete, operable and sanitary installation of the highest quality workmanship.

Electrical Coordination:

Refer to the Electrical Drawings and Specifications, Division 16, for the service voltage and power feed wiring for equipment specified under this section. The Contractor has full responsibility for the following items of work:

Review the Electrical Drawings and Division 16 to verify that the electrical services provided are adequate and compatible with the equipment requirements.

If additional electrical services are required over and above what is indicated on the Electrical Drawings and in Division 16, such as more control interlock conductors, larger feeder, or separate 120 volt control power source, include the cost to furnish and install the additional electrical services as part of the bid.

Prior to proceeding with the installation of any additional electrical work, submit detailed drawings indicating the exact scope of additional electrical work for review.

Mechanical Coordination:

Arrange for pipe spaces, chases, slots and openings in building structure during progress of construction, to allow for mechanical installations.

Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

Coordinate requirements for access panels and doors for mechanical items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section "Access Doors and Frames".

PRODUCTS

GENERAL

Materials or equipment of the same type shall be of the same brand wherever possible. All materials shall be new and in first class condition.

All sizes, capacities, and efficiency ratings shown are minimum, except that gas capacity is maximum available.

Refer to Division 15400 and 15800 for specific system piping materials.

ELECTRIC MOTORS

U.S. Motors, Century Electric, General Electric, Lincoln, Gould or equal. The minimum efficiencies shall be as defined by IEEE 112 Test Method B and NEMA MG1. Provide NEMA 3R enclosure where exposed to outdoors.

MOTOR STARTERS

Square D, Allen Bradley, or equal, in NEMA Type 1 enclosure, unless otherwise specified or required. Minimum starter size shall be Size 1. Provide NEMA 3R enclosure where exposed to outdoors.

Where three phase motors are provided for two-speed operation, provide two speed motor starters.

All three-phase starters shall have the following:

Provide magnetic motor starters for all equipment provided under the Mechanical Work. Starters shall be non-combination type. Provide part winding or reduced voltage start motors where shown or as hereinafter specified. Minimum size starter shall be Size 1.

Cover mounted hand-off-automatic switch. Starters installed exposed in occupied spaces shall have key operated HOA switch.

Three ambient compensated thermal overload.

Fused control transformer (for 120 or 24 volt service).

Pilot lights, integral with the starters. Starters located outdoors shall be in NEMA IIIR enclosures.

VALVES AND FITTINGS

Valves: Provide Nibco, Hammond, Milwaukee, Powell, Stockham, or equal, full line size.

Butterfly valves may be used in lieu of gate or globe valves for locations above grade. Valves shall conform the paragraph "Butterfly Valves".

Ball valves conforming to the paragraph “Ball Valves” may be used in lieu of gate valves for locations above grade.

Valves 2-1/2 inches and smaller in nonferrous water piping systems may be solder joint type with bronze body and trim. Provide gate or globe valves on inlet and outlet of each water heater or pump whether shown or not.

Gate Valves:

2-1/2 inches and less: Union bonnet, bronze body, rising stem, solid wedge, Class150, Hammond - IB648, Nibco - T-134, Milwaukee - 1151, Stockham - B-124, or equal.

Furnish valves in copper lines with adapters to suit the valve / line requirements.

3 inches and larger: Class 125, iron body, bronze mounted, bolted bonnet, non-rising stem, solid wedge, Hammond - IR-1138, Nibco - F619, Milwaukee F2882, Stockham - G-612, or equal.

Ball Valves:

Ball valves: Provide Class 150, full port, two piece, threaded type for pipe sizes 2 inch and smaller, flanged for larger valves, and Reinforced PTFE seal, 15 percent glass filled seal, Nibco T585-70, Milwaukee BA-400, Stockham S214BR, or equal.

Provide 3 piece bronze, threaded ball valve for compressed air services. Nibco Model T-595-Y, Milwaukee BA-300, or equal.

Ball Valves may be used in lieu of Gate Valves and Globe Valves for service 2-1/2 inches and less.

Underground Valves: Non-rising stem, bolted bonnet, solid wedge disk or resilient seat valves, certified AWWA C509, equipped with operating nuts, Mueller Series 2360, Nibco, or equal.

Underground valves 3 inches and smaller may be furnished with operating nuts or hand-wheels, and with Ring-Tite joint ends.

Furnish and deliver to Owner one wrench of each size required for operating underground valves.

Swing Check Valves: Bronze Valves: 125 or 150 psi, suitable for regrinding, Stockham B-345, Milwaukee 509, 510, Nibco T-433-B, or equal.

Butterfly Valves:

General: Tight closing, full lug type, with resilient seat suitable for minimum working pressure of 200 psig, bi-direction dead end service with down stream flange removed..

Seats suitable for 40 degree F for cold water service and 250 degrees F for hot water service. Seats shall cover inside surface of body and extend over body ends

Bodies: malleable iron or cast iron.

Discs: Bronze or stainless steel.

Stems or Shafts: Stainless steel. Install valves with stems horizontal.

Control Handles: Suitable for locking in any position or with 10 degree or 15 degree notched throttling plates to hold valve in selected position. Provide extended necks to compensate for insulation thickness. Provide gear operator for valves 5 inches and larger.

Manufacturer: Subject to compliance with requirements, provide butterfly valves of one of the following, or equal:

Demco Series "E" -3

Milwaukee CL Series

Nibco LD 2000

Stockham LG-512

Silent Check Valves (for use on pump discharge):

General, Provide Grinnell, Muessco, Bell and Gossett, Nibco/Scott, or equal, spring loaded check valves at pump discharge of all pumps.

2-1/2 inches and smaller: Nibco Model T-480, Grinnell 3615, Muessco #203BP, Milwaukee 548-T, or equal.

3 inches and larger: Nibco Model F910, Grinnell 503-580, Muessco #105AP Milwaukee Series 1400, or equal.

Calibrated Balance Valves (Symbol CBV): Provide globe style valves foil precision regulation and control rated 175 psi for sizes 2 ½ through 12" and rated 240psi for bronze sizes 2" and below. Each valve shall have two metering/test ports with internal check valves and protective caps. All valves must be equipped with visual position readout and concealed memory stops for repeatable regulation and control.

Bell & Gossett Circuit Setter Plus

Armstrong CBV

Flow Design Inc. Accusetter

Tour & Andersson

Circuit Sensor with butterfly valve above 3 inches.

Illinois Series 5000 through 2 inches.

Flow Control Valve: Automatic pressure compensating flow control valves shall be Griswold, Flow Design, Inc., or equal.

Gas Valve or Shut-off Valve above grade:

Provide Milwaukee BB2-100, Nibco Model GB-1, or equal, CSA listed, with tee handle for 2 inches and smaller.

Provide ReSun Model D-126, Key Port, or equal, CSA listed, rectangular port, full pipe area, 125 psi SWP, flanged ends. Provide T-Handle socket wrench and adapter fittings as required for operation of valves. Provide one package of spare lubricant sticks, sizes as required for valve sizes.

Provide valves same size as upstream piping. Make any reduction in size of gas piping down stream of shutoff valves.

For gas service below grade:

Lubricated plug cocks: ReSun Model D-126, Key Port, or equal, CSA listed, rectangular port, full pipe area, 125 psi SWP, flanged ends. Provide extended lubrication stem, arranged to allow for lubrication of the valve from grade. The extension must be constructed to allow for lubrication of the valve and for operation of the valve from grade. Provide T-Handle socket wrench and adapter fittings as required for operation of valves. Provide one package of spare lubricant sticks, sizes as required for valve sizes.

Provide flanged ends on valves installed below grade. Connect to polyethylene piping with flanges and stainless steel bolts.

Anchor each valve flange to valve box with welded angle iron, or provide vertical stiff leg, minimum 18 inches into earth.

Provide Central Double O Seal Transition Fittings, or equal, flanged style for connection between valve and piping system.

Wrap valve, flanges and exposed pipe with Pabco, or equal tape wrap, installed in accordance with requirements listed under “Pipe Protection”.

Molded polyethylene body ball valve: Nordstrom Valves - Polyvalve II for sizes up to 2 inches, and Polyvalve for sizes 2 inches and larger, or equal.

Provide stub ends to match SDR of the piping, arranged for butt fusion welding. Provide valve body material to suit the adjacent piping system.

Provide wrench to suit the valve operator.

Seismic Gas Shut-Off Valve: Pacific Seismic Products, Inc., California model, or equal, high pressure style.

Air Vent Valves:

Provide Armstrong #1AV, Hoffman Model 78, Metraflex Model MV-15A, or equal, where automatic type air vent is shown. Install with shutoff valves or cocks and drain to a floor sink or drain.

At each high point of piping provide manual air vent connection at top of pipe. Provide ball valve within 18 inches of ceiling in accessible location, and extend drain line to allow convenient access.

JOINING MATERIALS

Refer to Division 15400 & 15800 piping sections for special joining materials not listed below.

Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated

Full-Face Type: For flat-face, Class 125, cast iron and cast bronze flanges.

Narrow-Face Type: For raised-face, Class 250, cast iron and steel flanges.

AWWA C111, rubber, flat face, 1/8-inch (3.2mm) thick, unless otherwise indicated; and full-face or ring type, unless other indicated.

Flange Bolts and Nuts: AWWA C111, carbon steel, unless otherwise indicated.

Plastic, Pipe-Flange Gasket, Bolts and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

Solder Filler Metals: ASTM B 32, lead free alloys. Include water-flushable flux according to ASTM B813.

Brazing Filler Metals: AWS A5.8, BCup-3 Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg-1, silver alloy for refrigerant piping, unless otherwise indicated.

Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

Solvent Cements for Joining Plastic Piping:

ABS Piping: ASTM D2235.

CPVC Piping: ASTM F493.

PVC Piping: ASTM D2564. Include primer according to ASTM F 656.

PVC to ABS Piping Transition: ASTM D3138.

STRAINERS

Charles M. Bailey #100A, Armstrong, Muessco, or equal, Fig. 11 "Y" pattern, 125 psi WP minimum, with monel screens with 20 square mesh for 2 inches and smaller and 3/64 inch perforations for 2-1/2 inches and larger. Install all strainers with a blow-off hose valve with hose adapter. Strainer shall have gasketed cover with straight thread.

GAUGES

Marsh "Series J U.S. Gage, Danton 800, or equal, with bronze bushed movement and front recalibration. Dials shall be white with black numerals, 3-1/2 inch dial face. Normal reading shall be at mid-scale. Provide a needle valve on each gauge connection. Supply a gauge piped with branch isolation valves across the inlet and outlet of each pump and where shown on the Drawings.

Provide Pete's Plug II, Sisco P/T, or equal, test plug with Nordel core {and gasketed cap}, on inlet and outlet of each coil, boiler, condenser, chiller and heat exchanger and where shown on Drawings.

THERMOMETERS

Marsh, Taylor, Palmer, or equal, 5 inch diameter bimetal dial, adjustable from face, with adjustable positioner, located to be easily read from normal personnel approach. Normal reading shall be at mid-scale.

Provide extension for insulation.

Provide thermometers with steel bulb chambers and brass separable sockets.

Thermometers for air temperature shall have 8 inch minimum stem.

Provide Ventlock, Durodyne, or equal thermometer test holes at each air conditioning unit, furnace, and make-up air unit, in mixed air and supply air, and at all locations shown or scheduled on the Drawings. Provide two portable thermometers, with sensing connection arranged to suit test connections.

Provide Pete's Plug II, Sisco P/T, or equal, test plug with Nordel core, on inlet and outlet of each coil, boiler, condenser, chiller and heat exchanger and provide two digital electronic test thermometers for each range of fluid temperature and where shown on Drawings.

ACCESS DOORS

Where floors, walls, or ceilings must be penetrated for access to mechanical equipment, provide access doors, 14 inch by 14 inch minimum size in usable opening. Where entrance of a serviceman may be required, provide 20 inch by 30 inch minimum usable opening. Locate access doors/panels for non-obstructed and easy reach.

All access doors less than 7'-0" above floors and exposed to public access shall have keyed locks.

Access doors shall match those supplied in Division 8 in all respects, except as noted herein.

Where panels are located on ducts or plenums, provide neoprene gaskets to prevent air leakage, and use frames to set door out to flush with insulation.

Provide insulated doors where located in internally insulated ducts or casings.

Do not locate access doors in highly visible public areas such as lobbies, waiting areas, and primary entrance areas. Coordinate with the Architect when access is required in these areas.

Where specific information or details relating to access panels different from the above is shown or given on the Drawings or other Divisions of work, then that information shall supersede this specification.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering access doors which may be incorporated in the work include Milcor, Karp, Nystrom, or Cesco, equal to the following:

Milcor

Style K (plaster)

Style DW (gypsum board)

Style M (Masonry)

Style "Fire Rated" where required

EXPANSION LOOPS

Piping in building expansion joints: Provide Metraflex “Metraloop”, Unisource Mfg. Co. “V” connector, or equal, CSA listed for 4 inches of movement, in lines where piping crosses building expansion joints or seismic joints, between buildings, between buildings and canopies, and as indicated.

FLEXIBLE CONNECTIONS

Where indicated on Drawings, provide Metraflex Metrasphere, Style R, Mason Industries, or equal, Spherical Expansion Joints. Provide control units at each expansion joint, arranged to limit both expansion and compression.

Flexible joints at entry points to building shall be Barco Ductile iron, Advanced Thermal Systems, or equal, threaded style with stainless ball and mineral filled seal.

PIPE GUIDES

Where flexible connections are indicated on Drawings, provide Metraflex style IV, B-Line, or equal, pipe guides in locations recommended by manufacturer. Maximum spacing from flexible connection to first pipe guide is 4 pipe diameters, and maximum spacing from second pipe guide is 14 pipe diameters.

EQUIPMENT IDENTIFICATION

Identify each piece of equipment with a permanently attached engraved bakelite plate, 1/2 inch high white letters on black background.

Text of Signs: Provide identification of equipment unit number, and room or area served. Coordinate name of area served with final room names and numbers for the facility. In addition, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

PIPE IDENTIFICATION

Identify each piping system and indicate the direction of flow by means of Idento Bands (Idento Metal Products Co.), Seton, Inc., Marking Services Inc., Reef Industries, Inc., or equal, pipe markers. Apply the markings after all painting and cleaning of the piping and insulation is completed.

The legends and flow arrows shall conform to ASME A13.1.

The sizes of the lettering and flow arrows shall be as follows:

Outside Diameter of Pipe or Covering (inclusive)	Minimum Length	
	Size of Letter	of Flow Arrow
5/8″ to 2″	1/2″	2-1/2″
2-1/2″ and Larger	1″	4″

INSULATION WORK

General:

The term "piping" used herein includes pipe, air separators, valves, strainers and fittings.

Apply insulating cement to fittings, valves and strainers and trowel smooth to the thickness of adjacent covering. Cover with jacket to match piping. Extend covering on valves up to the bonnet. Leave strainer cleanout plugs accessible.

Provide pre-formed PVC valve and fitting covers.

Provide Calcium Silicate rigid insulation and sheet metal sleeve, 18 inch minimum length at each pipe hanger. Seal ends of insulation to make vapor tight with jacket.

Test insulation, jackets, lap-seal adhesives and pre-insulated flexible ductwork as a composite product and confirm flame spread of not more than 25 and a smoke developed rating of not more than 50 when tested in accordance with UL723, ASTM E84, or NFPA 255.

Clean thoroughly, test and have approved, all piping and equipment before installing insulation and/or covering.

Repair all damage to existing pipe and duct insulation whether or not caused during the work of this contract, to match existing adjacent insulation for thickness and finish, but conforming to flame spread and smoke ratings specified above.

Insulation of Piping:

Insulate domestic hot and tempered water with 1 inch thick 3-1/2# minimum density fiberglass with ASJ-SSL jacket for sizes up to and including 2 inches. For larger sizes, provide 1-1/2 inch thick 3-1/2# minimum density fiberglass insulation and ASJ-SSL jacket.

Insulate domestic hot water piping under slab on grade and cold water piping exposed to the weather with 3/4" thick Therma-Cel, Armaflex, or equal; seal water tight per manufacturer's directions.

Insulate horizontal, overhead rainwater leaders and condensate drains within the building envelope with 1 inch thick, 3-1/2# density fiberglass, with ASJ-SSL jacket.

Insulate domestic cold water piping outside of insulation envelope in outside walls, vented attic spaces, and unheated spaces, including equipment rooms and below raised floor with 1 inch thick molded fiberglass, minimum density 3-1/2# per cubic foot, with ASJ-SSL jacket.

Exposed insulated piping within the building shall have a Zeston 2000 25/50, Proto Lo-Smoke, or equal, jacket and fitting cover installed over the insulation, applied per manufacturer's instructions. Verify suitability with manufacturer of insulation. Insulation with pre-applied polymer jacket may be substituted at Contractor’s option.

Insulate condensate drain piping in freezer with 3/4 inch thick Therma-Cel, Armaflex, or equal. Seal water tight per manufacturer's directions. Install heat tape prior to insulation of piping, in accordance with manufacturer's directions.

Insulate all refrigerant suction piping and chilled water supply and return piping, including fittings, with 1 inch thick, 3-1/2 pound per cubic foot minimum density fiberglass with factory-applied ASJ-SSL jacket, or equal, 1-1/2 inches thick for chilled water pipes 6

inches and over and refrigerant piping 1-1/4 inches and larger. Insulate valves and irregular surfaces to match adjacent insulation and cover with two layers of Glasfab saturated in Foster's 30-36, 3M, or equal, carried 3 inches over the adjoining pipe insulation. Finish with a coat of Foster's 30-36, 3M, or equal. The 3 inch wide SSL end laps furnished with the insulation shall be adhered over the end joints. Seal entire surface of insulation vapor tight, including joints and ends of plastic fitting covers.

In lieu of the above, refrigerant suction piping, including fittings, may be insulated with nominal 3/4 inch thick Armacell LLC; AP Armaflex, or equal. Seal all joints with Armaflex 520 adhesive, or equal. Insulation exposed to the weather shall be finished with two coats of Armaflex white WB finish, or equal. Apply insulation in strict accordance with manufacturer's recommendations.

When equipment manufacturers' instructions indicate that refrigerant liquid piping be insulated, insulation thickness shall be as recommended by the manufacturer, and applied as described herein for refrigerant suction piping.

Urethane insulation will not be allowed above ground or on hot water piping.

On all insulated piping exposed to the weather apply .016 aluminum jacket (.014 for 12" and larger pipes) secured with 1/2 inch aluminum bands on 12 inch centers. Insulation shall be vapor tight before installing metal jacket. Cover fittings with glass cloth and two coats of Foster's 30-36, Zeston, or equal, plastic fitting covers. Insulation shall be vapor tight before applying metal jacket or plastic covers.

Insulate all heating hot water piping with 1-1/2 inch thick, 3-1/2# per cubic foot minimum density fiberglass with factory applied ASJ-SSL jacket.

Duct Insulation:

All duct insulation shall meet minimum R-value of R-8 at 3 inch thickness, 3/4 pound per cubic foot density for ductwork installed outside the building insulation envelope. For ductwork installed within the building insulation envelope, duct insulation shall have a minimum R-value of R-4.2 at 2 inch thickness, 3/4 pound per cubic foot density.

General: Insulation applied to the exterior surface of ducts located in buildings shall have a flame spread of not more than 25 and a smoke-developed rating of not more than 50 when tested as a composite installation including insulation, facing materials, tapes and adhesives as normally applied. Material exposed within ducts or plenum shall have a flame-spread rating of not more than 25 and a smoke-developed rating of not more than 50.

Wrap all unlined concealed supply and return ducts with fiberglass duct wrap, manufactured as a blanket of glass fibers factory laminated to a reinforced foil/kraft vapor retarding facing. Provide 2 inch stapling and taping flange. Wrap insulation entirely around duct and secure with outward clinching staples on 6 inch centers. Provide mechanical fasteners at maximum 18 inch centers for all bottoms of duct which are greater than 24 inches. Lap all insulation joints 3 inches minimum. Insulate ducts installed tight against other work before hanging in place. Seal all seams, both longitudinal and transverse, and all staple and mechanical fastener penetrations of facing with scrim backed foil tape or recommended sealant, to provide a vapor tight installation.

On all ductwork exposed to weather field apply minimum 2 inches thick mineral-fiber board thermal insulation, glass fibers bonded with thermosetting resin. Comply with ASTM

C612, type IB without facing and with all service jacket with factory applied FRK-25 foil reinforced kraft paper. Aluminum jacket, 0.024 inch thickness sheets manufactured from aluminum alloy complying with ASTM B209, stucco embossed finish and having an integrally bonded moisture barrier over entire surface in contract with insulation.

Provide internal duct lining in accordance with specification section 15800.

EXECUTION

MECHANICAL DEMOLITION

Refer to Division 1 Sections “Cutting and Patching” and “Selective Demolition” for general demolition requirements and procedures.

Disconnect, dismantle and remove mechanical systems, equipment, and components indicated to be removed. Coordinate with all other trades.

Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

Piping to Be Abandoned in Place: Drain piping and cap or plug piping to remain with same or compatible piping material. Refrigerant system must be evacuated per EPA requirements.

Ducts to Be Removed: Remove portion of ducts indicated to be removed and cap remaining ducts with same or compatible ductwork material.

Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

Equipment to Be Removed: Drain down and cap remaining services and remove equipment.

Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

ELECTRICAL REQUIREMENTS

Provide adequate working space around electrical equipment in compliance with the California Electrical Code. Coordinate the Mechanical Work with the Electrical Work to comply.

Furnish necessary control diagrams and instructions for the controls. Before permitting operation of any equipment which is furnished, installed, or modified under this Section, review all associated electrical work, including overload protection devices, and assume complete responsibility for the correctness of the electrical connections and protective devices. Motors and control equipment shall conform to the Standards of the National Electrical Manufacturers' Association. All equipment and connections exposed to the weather shall be NEMA IIIR with

factory-wired strip heaters in each starter enclosure and temperature control panel where required to inhibit condensation.

All line voltage and low voltage wiring and conduit associated with the Temperature Control System are included in this Section. Wiring and conduit shall comply with Division 16.

Electric Motors:

All motors shall be rated for continuous operation at 115% of nameplate amperage but shall be selected to operate at less than nameplate amperage throughout the entire operating cycle. Motors found exceeding the nameplate amperage shall be promptly replaced at no cost to the Owner. Horsepower shown is minimum and shall be increased as necessary to comply with above requirements. Furnish motors with splash-proof or weatherproof housings, where required or recommended by the manufacturer. Match the nameplate voltage rating with the electrical service supplied. Check Electrical Drawings. Provide a transformer for each motor not wound specifically for system voltage.

Motor Starters:

Provide magnetic motor starters for all equipment provided under the Mechanical Work. Starters shall be non-combination type. Provide part-winding or reduced voltage start motors on all motors 50 – HP and larger, or where shown or as hereinafter specified. Minimum size starter shall be Size 1. All three-phase starters shall have the following:

Cover-mounted hand-off-automatic switch. Starters installed exposed in occupied spaces shall have key operated HOA switch.

Three ambient compensated thermal overload.

Fused control transformer (for 120 or 24 volt service).

Pilot lights, integral with the starters. Starters located outdoors shall be in NEMA IIIR enclosures.

Starters for single-phase motors shall have thermal overloads, Westinghouse Type MSTOLSLIP, Square D, or equal, toggle-operated with pilot light, NEMA I enclosure for starters located indoors, NEMA IIIR enclosure for starters located outdoors.

Provide OSHA label indicating the device starts automatically.

PIPING SYSTEM REQUIREMENTS

Drawing plans, schematic and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

PRIMING AND PAINTING

Perform all priming and painting on the equipment and materials as specified herein.

Priming:

Exposed ferrous metals, including piping, which are not galvanized or factory-finished shall be primed. Black steel pipe exposed to the weather shall be painted one coat of Rust-Oleum #1069 primer for black steel piping or Rust-Oleum #5260, Kelly Moore, or equal, primer for galvanized piping.

Metal surfaces of items to be jacketed or insulated except ductwork and piping shall be given two coats of primer unless furnished with equivalent factory finish. Items to be primed shall be properly cleaned by effective means free of rust, dirt, scale, grease and other deleterious matter and then primed with the best available grade of zinc rich primer. After erection or installation, all primed surfaces shall be properly cleaned of any foreign or deleterious matter that might impair proper bonding of subsequent paint coatings. Any abrasion or other damage to the shop or field prime coat shall be properly repaired and touched up with the same material used for the original priming.

Where equipment is provided with nameplate data, the nameplate should be masked off prior to painting. When painting is completed, remove masking material.

See Painting Section for detailed requirements.

EXCAVATING

Perform all excavating required for work of this Section. Provide the services of a pipe/cable locating service prior to excavating activities to determine location of existing utilities.

Unless shown otherwise, provide a minimum of 2'-6" cover above top of pipe to finished grade for all service piping, unless otherwise noted. Provide 3 foot minimum cover for fire mains. Trim trench bottom by hand or provide a 4 inch deep minimum bed of sand to provide a uniform grade and firm support throughout entire length of pipe. For all PVC pipe and for PE gas pipe, bed the pipe in 4 inch sand bed. Pipe bedding materials should be clean crushed rock, gravel or sand of which 100 percent will pass a 1 inch sieve. For pipes that are larger than 10 inches in diameter, at least 95 percent should pass a 3/4 inch sieve, and for pipes 10 inches in diameter or smaller, 100 percent should pass a 1/2 inch sieve. All other materials should have a minimum sand equivalent of 50. Only a small proportion of the native soils will meet these requirements without extensive processing; therefore, importation of pipe bedding materials should be anticipated. Pipe bedding materials shall be compacted in lifts not exceeding 6 inches in compacted thickness. Each lift shall be compacted to not less than 90 percent relative compaction at or above the optimum moisture content, in accordance with ASTM Specification D2940, except that bedding materials graded such that less than 100 percent will pass a No. 200 sieve shall be compacted in 6 inch lifts using a single pass of a flat-plate, vibratory compactor or vibratory drum. Pipe bedding materials should extend at least to the spring line.

Maintain all warning signs, barricades, flares, and red lanterns as required.

For all trenches 5 feet or more in depth, submit copy of permit detailed drawings showing shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trenches. Obtain a permit from the Division of Industrial Safety prior to beginning excavations. A copy of the permit shall be available at the site at all times.

BACKFILLING

Backfill shall comply with applicable provisions of DIVISION 2 of these Specifications.

Except under existing or proposed paved areas, walks, roads, or similar surfaces, backfill for other types of pipe shall be made using suitable excavated material or other approved material. Place backfill in 8 inch layers, measured before compaction, and compact with impact hammer to at least 90 percent relative compaction per ASTM D2940.

Backfill plastic pipe and insulated pipe with sand for a minimum distance of 12 inches above the top of the pipe. Compact using mechanical tamping equipment.

Entire backfill for excavations under existing or proposed pavements, walks, roads, or similar surfaces, under new slabs on grade, shall be made with clean sand compacted with mechanical tamping equipment vibrator to at least 90 percent relative compaction per ASTM D2940. Remove excess earth. Increase the minimum compaction within the uppermost two feet of backfill to 95 percent.

Replace or repair to its original condition all sod, concrete, asphalt paving, or other materials disturbed by the trenching operation. Repair within the guarantee period as required.

Thrust Blocks:

Provide concrete anchors or thrust blocks on all PVC and cast iron water lines in the ground. Install thrust blocks at all changes in direction and at all connections to the mains 1-1/2 inches and larger. Form thrust blocks by pouring concrete between the pipes and trench wall. They shall be adequate in size and placed to take all thrusts created by the maximum internal water pressure; sizing and placement shall be per manufacturer's recommendations and 2007 CPC (California Plumbing Code) and IAPMO installation standards.

Anchor piping to building construction.

Provide fire protection piping thrust blocks in accordance with the requirements of NFPA 24.

INSTALLATION OF PIPING AND DUCT SYSTEMS

At time of final connection, and prior to opening valve to allow pressurization of water and gas piping from existing systems, on site or off site, perform a pressure test to indicate static pressure of existing systems. If pressure on water piping is greater than 80 psi, or gas pressure is not as indicated on Contract Documents, inform Architect immediately. Do not allow piping systems to be pressurized without written consent of the Architect.

General:

All piping shall be concealed unless shown or otherwise directed. Allow sufficient space for ceiling panel removal.

Installation of piping shall be made with appropriate fittings. Bending of piping will not be accepted.

Install piping to permit application of insulation and to allow valve servicing.

Where piping or conduit is left exposed within a room, the same shall be run true to plumb, horizontal, or intended planes. Where possible, uniform margins are to be maintained between parallel lines and/or adjacent wall, floor, or ceiling surfaces.

Horizontal runs of pipes and/or electrical conduit suspended from ceilings shall provide for a maximum headroom clearance. The clearance shall not be less than 6'-6" without written approval from the Architect.

Minor changes in locations of equipment, piping, ducts, etc., from locations shown shall be made when directed by the Architect at no additional cost to the Owner providing such change is ordered before such items of work, or work directly connected to same are installed and providing no additional material is required.

Close ends of pipe immediately after installation. Leave closure in place until removal is necessary for completion of installation.

Each piping system shall be thoroughly flushed and proved clean before connection to equipment.

Pipe the discharge of each relief valve, air vent, backflow preventer, and similar device to floor sink or drain.

Install exposed polished or enameled connections with special care showing no tool marks or threads at fittings.

Install horizontal valves with valve stem above horizontal.

Use reducing fittings; bushings shall not be allowed. Use eccentric reducing fittings wherever necessary to provide free drainage of lines and passage of air.

Verify final equipment locations for roughing-in.

Service Markers: Mark the location of each plugged or capped pipe with a 4 inch round by 30 inch long concrete marker, set flush with finish grade. Provide 2-1/2 inch diameter engraved brass plate as part of monument marker.

Furnish and install anchors or thrust blocks on PVC water lines in the ground at all changes in direction of piping, and at all connections or branches from mains 1-1/2 inch and larger. Form anchors or thrust blocks by pouring concrete between pipe and trench wall. Thrust blocks shall be adequate size and so placed as to take thrusts created by maximum internal water pressure, all in accord with manufacturer's recommendations.

Sanitary Sewer and Storm Drain: Grade piping inside building uniformly 1/4 inch per foot if possible but not less than 1/8 inch per foot. Run piping as straight as possible. Make piping connections between building piping and outside service pipe with cast iron reducers or increasers. Slope sewers uniformly between given elevations where invert elevations are shown.

Provide Metraflex "Metraloop", Unisource Mfg. Co. “V” connector, or equal, CSA listed for 4 inches of movement, expansion loops in all piping passing through building expansion joints, anchor as recommended by manufacturer.

Where piping is installed in walls within one inch of the face of stud, provide a 16 gauge sheet metal shield plate on the face of the stud. The shield plate shall extend a minimum of 1-1/2 inches beyond the outside diameter of the pipe.

Sleeves:

Install AMI Products, Adjus-to-Crete, Pipeline Seal and Insulator, or equal, pipe sleeves of sufficient size to allow for free motion of pipe, 24 gauge galvanized steel. The space between pipe and sleeves through floor slabs on ground, through outside walls above or below grade, through roof, and other locations as directed shall be caulked with oakum and mastic and made watertight. The space between pipe and sleeve and between sleeve and slab or wall shall be sealed watertight.

At Contractor's option, Link-Seal, Metraflex Metraseal, or equal, casing seals may be used in lieu of caulking. Wrap pipes through slabs on grade with 1 inch thick fiberglass insulation to completely isolate the pipe from the concrete.

Floor, Wall, and Ceiling Plates:

Fit all pipes with or without insulation passing through walls, floors, or ceilings, and all hanger rods penetrating finished ceilings with chrome-plated or stainless escutcheon plates.

Firestopping:

Pack the annular space between the pipe sleeves and the pipe and between duct openings and ducts through all floors and walls with UL listed fire stop, and sealed at the ends. All pipe penetrations shall be UL listed, Hilti, 3M Pro-Set, or equal.

Install fire caulking behind mechanical services installed within fire rated walls, to maintain continuous rating of wall construction.

Provide SpecSeal Systems UL fire rated sleeve/coupling penetrators for each pipe penetration or fixture opening passing through floors, walls, partitions or floor/ceiling assemblies. All Penetrators shall comply with UL Fire Resistance Directory (Latest Edition), and in accordance with Chapter 7,CBC requirements.

Sleeve penetrators shall have a built in anchor ring for waterproofing and anchoring into concrete pours or use the special fit cored hole penetrator for cored holes.

Copper and steel piping shall have SpecSeal plugs on both sides of the penetrator to reduce noise and to provide waterproofing.

All above Systems to be installed in strict accordance with manufacturer's instructions.

Alternate firestopping systems are acceptable if approved equal. However, any deviation from the above specification requires the Contractor to be responsible for determining the suitability of the proposed products and their intended use, and the Contractor shall assume all risks and liabilities whatsoever in connection therewith.

Flashing:

Flashing for penetrations of metal or membrane roof for mechanical items such as flues, ducts, and pipes shall be coordinated with the roofing manufacturer and roofing installer for the specific roofing type. The work of this section shall include furnishing, layout, sizing, and coordination of penetrations required for the mechanical work.

Furnish and install flashing and counterflashing in strict conformance with the requirements of the roofing manufacturer. Submit shop drawing details for review prior to installation.

Furnish and install counterflashing above each flashing required. Provide Stoneman, or equal, vandalproof top and flashing combination. Provide vandalproof top for each plumbing vent through roof. Elmdor/Stoneman Model 1540, 1550 or 1570.

Flues and ducts shall have 24 gauge galvanized sheet metal storm collar securely clamped to the flue above the flashing.

For all other types of roofing system, furnish and install around each pipe, where it passes through roof, a flashing and counterflashing. All flashing shall be made of four pound seamless sheet lead with 6 inch minimum skirt and steel reinforced boot. Counterflashing shall be cast iron. For vents, provide vandalproof top and flashing combination. Elmdor/Stoneman Model 1100-4, 1100-5 or 1100-7.

Where indicated on Drawings, provide Stoneman, or equal Stormtite Multi-Flash assemblies, sized for gas, condensate, electrical and control conduit. Elmdor/Stoneman Model 915.

Hangers and Supports:

General: Support all ductwork, equipment and piping so that it is firmly held in place by approved iron hangers and supports and special hangers as required. All components shall support weight of ductwork, equipment and pipe, fluid, and pipe insulation based on spacing between supports with minimum factor of safety of five based on ultimate strength of material used. Do not exceed manufacturer's load rating. Pipe attachments or hangers, of same size as pipe or tubing on which used, or nearest available. Rigidly fasten hose faucets, fixture stops, compressed air outlets, and similar items to the building construction. The Architect shall approve all hanger material before installation. Do not support piping or ductwork with plumbers' tape, wire rope, wood, or other makeshift devices. Where building structural members do not match piping and ductwork support spacing, provide all “bridging” support members as required firmly attached to building structural members in a fashion approved by the Structural Engineer.

Materials, design, and type numbers per Manufacturers' Standardization Society (MSS), Standard Practice (SP)-58.

All hanger components shall be provided by one manufacturer B-Line, Grinnell, Uni-Strut, Badger, or equal.

Vertical Piping: B-line #B3373 clamps attached to the pipe above each floor to rest on the floor. Provide with lead or Teflon liners on copper tubing. Provide additional support at base of cast iron risers and support at unsupported riser joints and horizontal offsets per 2007 Mason Industries Seismic Restraint Guidelines. Provide intermediate support for vertical piping, spaced at or within the following maximum limits:

Pipe Diameter	Steel Fluid	Steel Vapor	Copper Fluid	Copper Vapor	CPVC & PVC
1/2 - 1”	12	6	12	6	Base and Each Floor (Note 1)
1-1/4 - 2”	12	Base and Each	12	6	Base and Each Floor

		Floor			(Note 1)
2-1/2 - 3”	12	Base and Each Floor	12	10	Base and Each Floor (Note 1)
Over 4”	12	Base and Each Floor	12	10	Base and Each Floor (Note 1)

Note 1: Provide mid-story guides per IAPMO installation standard.

Individually Suspended Piping: B-Line B3690 J-Hanger or B3100 Clevis, complete with threaded rod, or equal. All hangers on supply and return piping handling heating hot water or steam shall have a swing connector at point of support.

Pipe Size	Rod Size
2" and Smaller	3/8"
2-1/2" to 3-1/2"	1/2"
4" to 5"	5/8"
6"	3/4"

Provide 3/8 inch rod for support of PVC and CPVC and provide continuous support.

Trapeze Suspension: B-Line 1-5/8 inch width channel in accordance with manufacturer's published load ratings. No deflection to exceed 1/180 of a span.

Trapeze Supporting Rods: Shall have a safety factor of five; securely anchor to building structure.

Pipe Clamps and Straps: B-Line B2000, B2400; isolate copper pipe with two thicknesses of 2 inches wide 10-mil polyvinyl tape. Where used for seismic support systems, provide B-Line B2400 series pipe straps.

Concrete Inserts: B-line B221 continuous insert or B2500 spot insert. Do not use actuated fasteners for support of overhead piping unless approved by Architect.

Above Roof: H frame made from Uni-Strut hot-dipped galvanized 1-5/8 inch single or double channel with P-2072A or P-2073A foot secured to roof and surrounded with waterproof roofed in sleeper. Secure to sleeper with lag screws, and secure sleeper to blocking under roof.

Steel Connectors: Beam clamps with retainers.

Support to Structure:

Wood Structure: Provide and install wood blocking as required to suit structure. Provide lag screws or through bolts with length to suit requirements, and with size (diameter) to match the size of hanger rods required.

Do not install Lag screws in tension without written review and acceptance by Structural Engineer.

Side Beam Angle Clip	B-Line B3062	MSS Type 34
Side Beam Angle Clip	B-Line B3060	
Ceiling Flange	B-Line B3199	

Blocking for support of piping shall be not less than 2 inch thick for piping up to 2 inch size (water filled) or 3 inch size (vapor filled). Provide 3 inch blocking for piping up through 5 inch size, and 4 inch blocking for larger piping. Provide support for blocking in accordance with Structural Engineers requirements.

Where lag screws are used, length of screw shall be 1/2 inch less than the wood blocking. Pre-drill starter holes for each lag screw.

Steel Structure: Provide and install additional steel bracing as required to suit structure. Provide through bolts with length to suit requirements of the structural components. Burning or welding on any structural member may only be done if approved by the Architect.

Rubber Neoprene Pipe Isolators:

Pipe isolators shall comprise an internal rubber or neoprene material that isolates pipe from hanger and structure. Install at all piping located in acoustical walls. Refer to Architectural Drawings for location of acoustical walls.

Isolation material shall be either a rubber or neoprene material that prevents contact between the pipe and the structure. The rubber shall have between a 45 to 55 durometer rating and a minimum thickness of 1/2 inch.

Acceptable Suppliers:

Vertical runs: Acousto-Plumb or equal.

Horizontal runs: B-Line, Vibraclamp; Acousto-Plumb or equal.

Pipe hanger and support spacing: Locate hangers and supports at each change of direction, within one foot of elbow, and spaced at or within the following maximum limits. Note that spacing listed are recommended maximums; increased spacing requirements due to California Building Code requirements, CCR Title 24, or other regulations in force and applicable for this contract shall be adhered to.

Pipe Diameter	Steel Fluid	Steel Vapor	Copper Fluid	Copper Vapor	CPVC & PVC
1/2 - 1”	6	6	5	6	3
1-1/4 - 2”	7	10	6	6	4
2-1/2 - 3”	10	10	10	10	4

Over 4”	10	10	10	10	4

For cast iron soil piping:

Support piping at every other joint for piping length of less than 4 feet.

For piping longer than 4 feet, provide support on each side of the coupling, within 18 inches of each joint.

Hanger shall not be installed on the coupling.

Provide support at each horizontal branch connection.

Provide swaybrace at 40 foot maximum spacing for all suspended pipe with no-hub joints, except where a lesser spacing is indicated in the 2007 Mason Industries Seismic Restraint Guidelines. Provide a brace on each side of a change in direction of 90 degrees or more. Brace riser joints at each floor and at 15 foot maximum intervals.

Provide continuous V channel support for all horizontal plastic piping.

Provide support for piping through roof, arranged to anchor piping solidly in place at the roof penetration.

Provide rigid insulation and a 12 inch long, 18 gauge galvanized sheet iron shield between the covering and the hanger whenever hangers are installed on the outside of the pipe covering.

Insulate copper tubing from ferrous materials and hangers with two thicknesses of 3 inch wide, 10 mil polyvinyl tape wrapped around pipe.

Provide a support or hanger close to each change of direction of pipe either horizontal or vertical and as near as possible to concentrated loads.

Suspend rods from concrete inserts with removable nuts where suspended from concrete decks. Power actuated inserts will not be allowed.

On chilled or combination hot and chilled water or refrigerant pipes, install the hangers on the outside of the pipe covering and not in contact with the pipe. Provide rigid insulation and a 12 inch long, 18 gauge galvanized sheet iron shield between the covering and the hanger whenever hangers are installed on the outside of the pipe covering.

PIPE JOINTS AND CONNECTIONS

Cutting: Cut pipe and tubing square, remove rough edges or burrs. Bevel plain ends of steel pipe.

Threaded Pipe: Make joints with Rectorseal #5, Permatex #1, or equal, thread lubricant; use no caulking of any kind; remake leaky joints with new materials.

Copper and Brass Pipe and Tubing (Except Control Piping): Make all joints with silver brazing alloy, Sil-Fos, or equal, 1100° F melting point or greater, minimum 5 percent silver content, ASTM B-260, except that domestic water piping 1-1/4 inches and smaller not buried in the ground or concrete and Type DWV plumbing piping may be made up with 95-5 tin-antimony, ASTM B-32,

Grade 5A, solder. Use lead free solder for all applications. Boss or saddle type fittings or mechanically extracted tube joints will not be allowed.

Cast Iron Soil Pipe:

No-Hub fittings shall be made with a torque wrench.

Hub joints shall be with Ty-Seal couplings.

Wrought iron, steel, or copper pipe shall have a ring or part of a coupling screwed on to form a spigot end if caulked into a joint.

Connect cast iron sewer piping to outside service pipe with cast iron or vitrified clay reducers or increasers as required. Caulking of smaller pipe into the larger without a reducer or increaser will not be permitted.

Clay Sewer Pipe: Joints in bell and spigot clay sewer pipe shall comply with ASTM C-425, made with an approved type of interlocking, resilient mechanical compression joint, formed on the pipe at the factory. Lubricate inside of bells and outside of spigots with a solution as recommended by the pipe manufacturer.

Welded Pipe:

Make up with oxyacetylene or electric arc process.

All welding shall conform to the American Standard Code for Power Piping ASME B-31.1. When requested by the Architect, furnish certification from an approved testing agency or National Certified Pipe Welding Bureau that the welders performing the work are qualified.

All line welds shall be of the single "V" butt type. Welds for flanges shall be of the fillet type.

Where the branch is two pipe sizes smaller than the main or smaller, Bonney Weldolets, Threadolets, Nibco, or equal, may be used in lieu of welding tees.

Polyethylene Pipe: Assemble with fusion joints in strict accordance with manufacturer's instructions.

Make joints in PVC water pipe with PVC couplings and rubber rings, Manville Ring-Tite, PW Pipe, or equal. Check final location of rubber rings with the couplings with gauge or as recommended by the manufacturer. Make joints between PVC pipe and cast iron pipe or fittings using cast iron or PVC adapter fittings, installed as recommended by the manufacturer. Ring-Tite PVC or cast iron pipe fittings may be used in lieu of standard fittings. Make connection to valves with cast iron adapters connected to the water pipe with PVC couplings.

Flexible Connections:

Furnish and install Thermo Tech., Inc. F/J/R, Metraflex, or equal, flexible couplings with limiter bolts on piping connections to all equipment mounted on anti-vibration bases, except fan coil units under 2000 cfm, on each connection to each base mounted pump and where shown. Couplings shall be suitable for pressure and type of service.

Flexible connections in refrigerant lines; Flexonic, Anaconda or equal, metal hose, full size.

Anchor piping securely on the system side of each flexible connection.

Remove scale, slag, dirt and debris from inside and outside of pipe before assembly.

GAS SHUT-OFF VALVES

Provide line size ball valve in gas line to each appliance.

Provide line size ball valve in gas line, to be used as emergency shut-off for science classrooms. Install valve in locking box where indicated on the drawings.

Provide line size electric solenoid gas valve in gas line to kitchen equipment (if not supplied with appliance) under Type 1 hood. Interlock with hood fire alarm system.

UNIONS AND FLANGES

Install Epco, Nibco, or equal, dielectric unions or flanges at points of connection between copper or brass piping or material and steel or cast iron pipe or material except in drain, waste, vent, or rainwater piping. Bushings or couplings shall not be used.

Install unions in piping NPS 2” and smaller, and flanges in piping NPS 2-1/2” and larger whether shown or not at each connection to all equipment and tanks, and at all connections to all automatic valves, such as temperature control valves.

Locate the unions for easy removal of the equipment, tank, or valve.

Do not install unions or flanges in refrigerant piping systems.

ACCESS DOOR

Furnish and install access doors wherever required whether shown or not for easy maintenance of mechanical systems; for example, at concealed valves, strainers, traps, cleanouts, dampers, motors, controls, operating equipment, etc. Access doors shall provide for complete removal and replacement of equipment.

CONCRETE WORK

Concrete work required for work of this Section shall be included under another section of the Specification, unless otherwise noted, including poured-in-place concrete work for installing precast manholes, catch basins, etc., and shall include reinforced concrete bases for pumps, tanks, compressors, fan units, boilers, unless the work is specifically indicated on the Drawings to be furnished under this Section.

Thrust blocks, underground anchors, and pads for cleanouts, valve access boxes and washer boxes are included under this Section of the Specification. Concrete shall be 3000 psi test minimum. Refer to Division 3 for concrete types.

PIPE PROTECTION

Wrap bare galvanized and black steel pipe buried in the ground and to 6" above grade, including piping in conduit, with one of the following, or equal:

Polyethylene Coating: Pressure sensitive polyethylene coating, "X-Tru-Coat" as manufactured by Pipe Line Service Corporation or "Green Line" wrap as manufactured by Roystron Products, or equal.

Field Joints and Fittings: Protecto Wrap #1170 tape as manufactured by Pipe Line Service Corporation, or Primer #200 tape by Roystron Products, or equal. Installation shall be as per manufacturer's recommendation and instructions.

Tape Wrap: Pressure-sensitive polyvinyl chloride tape, "Transtex #V-l0 or V-20", "Scotchwrap 50", Slipknot l00, Pabco, or equal, with continuous identification. Tape shall be a minimum of 20 mils thick for fittings and irregular surfaces, two wraps, 50 percent overlap, 40 mils total thickness. Tape shall be laminated with a suitable adhesive; widths as recommended by the manufacturer for the pipe size. Wrap straight lengths of piping with an approved wrapping machine.

Sleeve copper piping/tubing installed below slab with “Polywrap-C” polyethylene sleeve, as manufactured by Northtown Pipe Protection Products, or equal. Sleeve shall be a minimum of 6 mils thick, colored blue for domestic water piping and orange for other piping. Install sleeve per manufacturer’s recommendations and instructions.

Sleeve copper piping/tubing installed outside building below grade with “Polywrap-C” polyethylene sleeve, as manufactured by Northtown Pipe Protection Products, or equal. Sleeve shall be a minimum of 6 mils thick, colored blue for domestic water piping. Install sleeve per manufacturer’s recommendations and instructions.

Field Joints: Valves and Fittings: double wrap polyvinyl chloride tape as above. Provide at least two thicknesses of tape over the joint and extend a minimum of 4 inches over adjacent pipe covering. Build up with primer to match adjacent covering thickness. Width of tape of fittings shall not exceed 3 inches. Tape shall adhere tightly to all surfaces of the fittings without air pockets.

Cleaning: Clean all piping thoroughly before wrapping.

Inspection: Damaged or defective wraps shall be repaired as directed. No wrapped pipe shall be covered until approved by Architect.

Covering: No rocks or sharp edges shall be backfilled against the wrap. When backfilling with other than sand, protect wrap with an outer wrapping of Kraft paper; leave in place during backfill.

Testing: Test completed wrap of piping, including all epoxy painted piping with Tinker and Rasor Co. test machine (San Gabriel, CA - 818-287-5259), Pipeline Inspection Company (Houston, TX - 713-681-5837), or equal.

PIPE IDENTIFICATION

Provide temporary identification of each copper pipe installed, at the time of installation. Temporary identification shall be removed and replaced with permanent identification as part of the work.

Apply the legend and flow arrow at all valve locations; at all points where the piping enters or leaves a wall, partition, cluster of piping or similar obstruction; and at approximately 50'-0" intervals on pipe runs. Variations or changes in locations and spacing may be made with the approval of the Architect. There shall be at least one marking in each room. Markings shall be located for maximum visibility from expected personnel approach.

Wherever two or more pipes run parallel, the markings shall be supplied in the same relative location on each.

Each valve on non-potable water piping shall be labeled with a metal tag stamped "DANGER -- NON-POTABLE WATER" in 1/4 inch high letters.

Identify each piping system in science classroom areas, and indicate the direction of flow by means of pipe markers, Idento Metal Products Co., SETMARK, or equal, pipe markers at 10 foot maximum centers. Apply the markings after all painting and cleaning of the piping and insulation is completed.

SPECIAL SEISMIC REQUIREMENTS

Supports, anchorage and restraints for all piping, ductwork and equipment shall be an OSHPD pre-approved system such as ISAT, Badger, Mason, or equal. All pipes, ducts and equipment shall be seismically restrained in accordance with the requirements of the current edition of the California Building Code. System shall have a current OPA number and shall meet any additional requirements of the authority having jurisdiction. Provide all supporting documentation required by the reviewing authority and the Architect and Engineer. Provide layout drawings showing piping, ductwork and restraint locations.

In lieu of the above or for non-standard installations not covered in the above pre-approved systems, Contractor shall provide layout drawings showing piping, ductwork and restraint locations, and detail supports, attachments and restraints, and furnish supporting calculations and legible details with a stamp by a California registered structural engineer, in accordance with 2007 California Building Code for occupancies requiring DSA/DGS or OSHPD review and approval Contractor shall use Seismic Zone 4 unless noted or approved otherwise.

Bracing of Ducts: Specifically state how the bracing attachment to structure is to be accomplished. All in-line equipment must be braced independently of the ducts and in conformance with all applicable building codes. Identify all in-line equipment in ducts, regardless of duct size and note how the seismic bracing has been independently provided. Provide shop drawings indicating the location of all transverse and longitudinal seismic braces.

Bracing of piping: Specifically state how the bracing attachment to structure is accomplished. Provide shop drawings indicating all seismic restraints, including details of anchorage to the building. All in-line equipment must be braced independently of the piping and in conformance with all applicable building codes. Provide calculations to show that the pre-approval numbers have been correctly applied in accordance with general information notes of the pre-approval documentation.

Typical exclusions for Compliance with this requirement for ductwork and piping are:

Fuel piping less than 1 inch inside diameter.

All other piping less than 2-1/2 inches inside diameter (exclusion does not apply to fire sprinkler piping or medical gas piping including vacuum piping), or

All piping suspended by individual hangers 12 inches or less in length from the top of the pipe to the bottom of the support of the hanger. Does not apply to trapeze assemblies.

All electrical conduit (that is included as part of Division 15) less than 2-1/2 inches diameter.

Brace cast iron and plastic piping at 1/2 of the spacing allowed for ductile material.

All rectangular air handling ducts less than six square feet in cross sectional area, or

All round air handling ducts less than 28 inches in diameter.

All ducts suspended by individual hangers 12 inches or less in length from the top of the duct to the bottom of the support of the hanger.

Additional Requirements: In addition to the above, conform to all state and local requirements.

Expansion Anchors in Hardened Concrete:

Qualification Tests: The allowable shear and withdrawal load shall be based on qualification tests of at least three (3) test specimens, using a factor of safety of five (5) on the average of the test values, or a factor of safety of four (4) on the lowest test value, whichever is lower. Until the test data for the various anchors can be evaluated, use not more than 80% of the allowable load listed in the ICBO Research Committee Recommendation for the specific anchor.

Installation: The anchors must be installed in accordance with the requirements given in ICBO Research Committee Recommendations for the specific anchor.

Limitations on Anchors in Withdrawal: Anchors acting in withdrawal shall not be used for major connections such as anchoring tilt-up walls, tie-downs, heavy continuously applied loads, frequent vibratory loads, etc.

Job Testing: Fifty percent of the anchors shall be load-tested on each job to twice the allowable capacity in tension, except that if the design load is less than 75 pounds; only one anchor in ten need be tested. If any anchor fails, all anchors must be tested. The load test shall be performed in the presence of the project inspector.

The load may be applied by any method that will effectively measure the tension in the anchor, such as direct pull with a hydraulic jack, a torque wrench calibrated using the specific anchor, calibrated spring-loading devices, etc. Anchors in which the torque is used to expand the anchor without applying tension to the bolt may not be verified with a torque wrench.

TESTS AND ADJUSTMENTS

Test the installations in accordance with the following requirements and all applicable codes:

Inspector of Record should witness all tests of piping systems.

Notify the Architect at least seven days in advance of any test.

Notify local fire department of time and date of all fire systems testing.

All piping shall be tested at completion of roughing-in, or at other times as directed by the Architect.

Furnish all necessary materials, test pumps, gases, instruments and labor required for testing.

Isolate from the system all equipment that may be damaged by test pressure.

Make connections to existing systems with flanged connection. During testing of the new work, provide a slip-in plate to restrict test pressure to new systems only. Remove plate and complete connection to existing system at completion of testing.

Inspector of record shall witness final connection to system.

Test Schedule: No loss in pressure or visible leaks shall show after four hours at the pressures indicated.

Testing of Sanitary Sewer, Drain, Vent, Storm Drain may be done in segments in order to limit pressure to within manufacturer's recommendations. Test to 10 feet above the highest point in the system.

System Tested	Test Pressure PSI	Test With
Sanitary Sewer, Drain, Vent	10 Ft. Hd.	Water
Storm Drain, Condensate Drains	10 Ft. Hd.	Water
Domestic Water	125	Water
Natural Gas (PE)	60	Air & Non-corrosive Leak Test Fluid
Natural Gas (Steel)	100	Air & Non-corrosive Leak Test Fluid
Fire Sprinkler Piping	200 lb.	Water
All Hot, Chilled, Combination,	125	Water
Condenser Water Piping		

All piping, including underground, connected to the fire sprinkler system shall be tested and certified in accordance with NFPA requirements, except where the requirements listed in this section exceed the requirements of NFPA.

Non-corrosive leak test fluid shall be suitable for use with the piping material specified, and with the type of gas conveyed by the piping system.

Perform operational tests under simulated or actual service conditions, including one test of complete plumbing installation with all fixtures and other appliances connected, and one test of complete installation of 48 hours each for heating and cooling with all equipment connected and operating.

Should any material or work fail in any of these tests, it shall be immediately removed and replaced for new material, and portion of the work replaced shall again be tested by Contractor at his own expense.

Lubricate each item of equipment, including motors, before operation.

Testing, Evacuating, Charging and Lubrication of Refrigeration Systems:

Pressurize with dry nitrogen and/or refrigerant to 300 psig and test all joints with an electronic detector or halide torch. Release the pressure and attach a high vacuum pump.

Evacuate to 4 mm (4000 microns) and hold for 30 minutes. Break to 5 psig with dry nitrogen or R-22 and allow to remain in the system for ten minutes. Evacuate to 2 mm (2000 microns) and hold for 30 minutes. Use a mercury manometer or electronic vacuum gauge. Do not start timing until recommended vacuum range is reached.

At the end of the evacuation, if the system has been proved leak-free, charge with refrigerant and fill the crankcase to the oil level specified by the manufacturer. All refrigerant oil shall be delivered to the location in sealed containers.

Replenish for a period of one year without cost to the Owner all refrigerant and oil required to maintain the proper levels.

TRACER WIRES

Provide tracer wire for non-metallic gas and water pipe in ground outside of buildings. Use AWG #12 tracer wire with low density high molecular weight polyethylene insulation, and lay continuously on pipe so that it is not broken or stressed by backfilling operations. Secure wire to the piping with tape at 18 inch intervals. Solder all joints. Tracer wire insulation shall be colored yellow for gas piping, blue for water piping.

Terminals: Precast concrete box and cast iron locking traffic cover, Brooks 3TL, or equal; cover marked with name of service; 6 inches of loose gravel below box. Plastic terminal board with brass bolts; identify line direction with plastic tags. Test for continuity between terminals, after backfilling, in presence of Inspector.

Alternate: Use electronically detectable plastic tape with metallic core, Terra Tape D, manufactured by Reef Industries, Inc., Seton, Inc., Marking Services, Inc., or equal; tape 2 inches wide, continuously imprinted "CAUTION WATER (GAS, etc.) LINE BELOW". Install, with printed side up, directly over pipe, 18 inches below finish grade. Backfill material shall be as previously specified for the particular condition where pipe is installed, but avoid use of crushed rock or of earth with particles larger than l/2 inch within the top 12 inches of backfill. Take precautions to insure that tape is not damaged or misplaced during backfill operations. Terminal boxes not required.

OPERATION OF SYSTEMS

Do not operate any mechanical equipment for any purpose, temporary or permanent, until all of the following has been completed:

Complete all requirements listed under “Check, Test and Start Requirements.”

Ductwork and piping has been properly cleaned. Piping systems should be flushed and treated prior to operation.

Filters, strainers etc. are in place.

Bearings have been lubricated, and alignment of rotating equipment has been checked.

Equipment has been run under observation, and is operating in a satisfactory manner.

Provide test and balance agency with one set of Contract Drawings, Specifications, Addenda, Change orders issued, applicable shop drawings and submittals and temperature control drawings.

Operate every fire damper, smoke damper, combination smoke and fire damper under normal operating conditions. Activate smoke detectors as required to operate the damper, stage fan, etc. Provide written confirmation that all systems operate in a satisfactory manner.

TEMPORARY HEAT

The General Contractor will provide for all temporary heat at such times as may be required or directed by the Architect and pay all fuel and energy costs incurred.

Temporary heating facilities proposed for use by the Contractor will be subject to review of the Architect. Prior to use of any equipment for temporary heat, install temporary filters on all return air inlets, to preclude dust and construction debris from entering the duct system. In addition, install filters in air handling units, and replace at the completion of temporary operation.

Filters used for temporary operation of systems shall be as specified for permanent filters specified herein.

Comply with Check, Test and Start Requirements for start-up of equipment prior to operation for temporary heat.

Heating Contractor shall complete the permanent heating system as soon as possible, thereby making it available for temporary heat. When available, the system may be used as required at the direction of the Architect after systems are properly prepared for use as specified elsewhere. Heating Contractor shall then be responsible for operating the system during periods required and the General Contractor shall pay the fuel and energy costs incurred. Operation of the heating system prior to the filing of "notice of completion" shall not change the Guarantee provisions in any way.

CHECK, TEST AND START REQUIREMENTS

An authorized representative of the equipment manufacturer shall perform check, test and start of each piece of mechanical equipment. Provide written certification from the manufacturer stating that the contractor is qualified to perform the check test and start of the equipment.

As part of the submittal process, provide records of certification of contractor's qualifications for start-up of each item of equipment. Provide a copy of each manufacturer's printed startup form to be used.

Check, test and start of equipment may be done by the manufacturer, using manufacturer's employees, for start-up of specific equipment.

Provide all personnel, test instruments, and equipment to properly perform the check, test and start work.

When work has been completed, provide copies of reports for review, prior to final observation of work.

Provide copies of the completed check, test and start report of each item of equipment, bound with the operating and maintenance instructions.

Upon completion of the work, provide a schedule of planned maintenance for each piece of equipment. Indicate frequency of service, recommended spare parts (including filters and lubricants), and methods for adjustment and alignment of all equipment components. Provide a copy of the schedule with each operating and maintenance manual. Provide a copy of certification from the

Owner's representative indicating that they have been properly instructed in maintenance requirements for the equipment installed.

COMMISSIONING AND PRELIMINARY OPERATIONAL TESTS

Prior to observation to determine final acceptance, put all mechanical systems into service and check that work required for that purpose has been done, including but not limited to the following condensed check list. Provide indexed report to tabulating the results of all work.

All equipment has been started, checked, lubricated and adjusted in accordance with the manufacturer's recommendations, including modulating power exhausts if present.

Correct rotation of motors and ratings of overload heaters are verified.

Specified filters are installed and spare filters have been turned over to Owner.

All manufacturers' certificates of start-up specified have been delivered to the Owner.

All equipment has been cleaned, and damaged painted finishes touched up.

Damaged fins on heat exchangers have been combed out.

Missing or damaged parts have been replaced.

Flushing and chemical treatment of piping systems has been completed and water treatment equipment, where specified, is in operation.

Equipment labels, pipe marker labels, ceiling markers and valve tags are installed.

Valve tag schedules, corrected control diagrams, sequence of operation lists and start-stop instructions have been posted.

Preliminary test and balance work is complete, and reports have been forwarded for review.

Automatic control set points are as designated and performance of controls checks out to agree with the sequence of operation.

Maintenance manuals have been delivered and instructions to the operating personnel have been made.

Prior to the observation to determine final acceptance, operate all mechanical systems as required to demonstrate that the installation and performance of these systems conform to the requirements of these specifications.

Operate and test all mechanical equipment and systems for a period of at least five consecutive 8 hour days to demonstrate the satisfactory overall operation of the project as a complete unit.

Include operation of heating and air conditioning equipment and systems for a period of not less than two 8 hour days at not less than 90 percent of full specified heating and cooling capacities in tests.

Commence tests after preliminary balancing and adjustments to equipment have been checked. Immediately before starting tests, install air filters and lubricate all running equipment. Notify the Architect at least seven calendar days in advance of starting the above tests.

Provide training and orientation of Owners operating staff in proper care and operation of all equipment, systems and control systems. Submit three copies of certificate, signed by the Owner's representative, attesting to their having been instructed.

During the test period, make final adjustments and balancing of equipment, systems controls, and circuits so that all are placed in first class operating condition.

Where Utility District rebates are applicable, demonstrate that the systems meet the rebate program requirements.

In addition to the requirements of paragraphs A and B above, the contractor shall also be responsible to complete all the Acceptance Requirements of the 2005 California Building Energy Efficiency Standards, including but not limited to Air Distribution Systems, Outside Air systems, Packaged HVAC Systems, VFD Systems, Hydronic system Controls, Space Conditioning Controls, Demand Control Ventilation and Air Economizers. Contractor shall perform all required acceptance tests and shall complete the appropriate "Certificates of Acceptance" and submit such certificates to the projects enforcement agency for approval by the agency and agency issuance for final occupancy permit.

Before handing over the system to Owner replace all filters with complete new set of filters.

Review of Contractor's Tests:

All tests made by the Contractor or manufacturers' representatives are subject to observation and review by the Owner. Provide timely notice prior to start of each test, in order to allow for observation of testing. Upon the completion of all tests, provide a letter to confirm that all testing has been successful.

Test Logs:

Maintain test logs listing the tests on all mechanical systems showing dates, items tested, inspectors' names, remarks on success or failure of the tests.

Preliminary Operation:

The Owner reserves the right to operate portions of the mechanical system on a preliminary basis without voiding the guarantee.

Operational Tests:

Before operational tests are performed, demonstrate that all systems and components are complete and fully charged with operating fluid and lubricants.

Systems shall be operable and capable of maintaining continuous uninterrupted operation during the operating and demonstration period. After all systems have been completely installed, connections made, and tests completed, operate the systems continuously for a period of five working days during the hours of a normal working day.

This period of continuous systems operation may be coordinated with the removal of Volatile Organic Compounds (VOCs) from the building prior to occupancy should the Owner decide to implement such a program.

Control systems shall be completely operable with settings properly calibrated and adjusted.

Rotating equipment shall be in dynamic balance and alignment.

If the system fails to operate continuously during the test period, the deficiencies shall be corrected and the entire test repeated.

Pre-Occupancy Building Purge:

Prior to occupancy, ventilate the building on 100% outside air, 100% exhaust for a continuous period determined by a qualified industrial hygienist (engaged by the Contractor) to reduce V.O.C's prior to occupancy.

Submit report by the industrial hygienist verifying satisfactory completion of the pre-occupancy purge.

END OF SECTION 15050.

SECTION 15800 – HEATING, VENTILATING AND AIR CONDITIONING

GENERAL

SECTION INCLUDES

Packaged and split heating ventilating and air conditioning sstems.

Fans.

Relief and intake vents.

Filters.

Dampers.

Ductwork.

Ductwork sealing and leak testing.

Air inlets and outlets.

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

ADDITIONAL REQUIREMENTS

Furnish and install any incidental work not shown or specified which is necessary to provide a complete and workable system.

Coordinate all of work in this Section with all of the Trades covered in other Sections of the Specifications to provide a complete, operable and sanitary installation of the highest quality workmanship.

DESCRIPTION OF WORK

Work of this section includes, but is not necessarily limited to Heating, Ventilating and Air Conditioning work indicated on the drawings and described herein.

QUALITY ASSURANCE

Design Criteria:

All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture. All gas-fired equipment shall be UL, ETL or CSA listed.

Supply all equipment and accessories in accordance with requirements of all applicable national, state and local codes.

All items of a given type shall be the products of the same manufacturer.

Scheduled equipment performance is minimum capacity required.

Scheduled electrical capacity shall be considered as maximum available.

Scheduled gas BTU input shall be considered as the maximum available.

SUBMITTALS

Product Data: Submit manufacturer's technical product data, including rated capacities of selected model clearly indicated, dimensions, weights, furnished specialties and accessories; and installation and start-up instructions.

Roof Curb Data: Submit calculations for roof curbs supporting equipment weighing 400 pounds or more, proving compliance with the seismic requirements of the 2007 CBC. Calculations shall be stamped and signed by a State of California registered structural engineer.

Engineering Data: Submit fan curves and sound power level data for each fan unit. Data shall be at the scheduled capacity. Data shall include the name of the rating agency or independent laboratory.

Maintenance Data: Submit maintenance data and parts list for each piece of equipment, control, and accessory; including "trouble-shooting" maintenance guide.

Include this data in maintenance manuals.

Record Drawings: At project close-out, submit Record Drawings of installed ductwork, duct accessories, and outlets and inlets in accordance with requirements of Division 1.

COORDINATED LAYOUT

Coordinated layouts are required to amplify, expand and coordinate the information contained in the Contract Documents.

Provide minimum 1/4 inch equals one foot scaled coordination drawings showing plan and pertinent section or elevation views of all piping, ductwork and electrical systems. Drawings shall be on vellum or sepia mylar, reproducible and the work represented shall be fully coordinated with the structure, other disciplines, and with all finishes. Drawings shall all be presented on a single size sheet. Contractor may use either size D (24 inch x 36 inch) or E (36 inch x 42 inch). Drawings graphics shall fully comply with A.I.A. Architectural Graphic Standards and ANSI Y14. Drawings may be hand drawn or computer generated using AutoCad or "Quick Pen". All drawings shall have title block, key plan, north arrow and sufficient grid lines to provide cross-reference to the design drawings.

Provide a stamp or title block on each drawing with locations for signatures from all contractors involved, including but not limited to the General, HVAC, Plumbing, Fire Protection, and Electrical Contractors. Include statement for signature that the contractor has reviewed the coordination drawings in detail and has coordinated the work of his trade.

Show on drawings the intended elevation of all ductwork in accordance with the following example.

B.O.D. = 9'-0"

OFFSET UP 6"

B.O.D. = 9'-6"

Highlight, encircle or otherwise indicate deviations from the Contract Documents on the coordinated layouts. Architect will not be responsible for "finding" changes or deviations to the original Contract Documents.

Since scale of contract drawings is small and all offsets and fittings are not shown, contractor shall make allowances in bid for additional coordination time, detailing, fittings, offsets, hangers and the like to achieve a fully coordinated installation. If changes in duct size are required, equivalent area shall be maintained and the aspect ratio shall not be in excess of 2 to 1 unless approved by the engineer. Drawings shall be submitted for review prior to fabrication and installation. Drawings may be submitted in packages representing at least one quarter of the building ductwork.

Check routing on all ductwork before fabricating. Report any discrepancies to Architect. No extra cost will be allowed for failure to conform to above.

It shall be responsibility of the General Contractor to insure that the Heating, Ventilating and Air Conditioning Contractor coordinates all of his work with all other trades, including mechanical and electrical trades, so that complete job is neat and in conformity with plans and specifications.

Where computer aided drafting has been used for the Contract Documents, the Drawing files may be made available. Upon request by the contractor, the files will be made available at a price of **$50** per drawing, with a minimum of $200.00 per request.

REFERENCES

AABC - Associated Air Balance Council

AFBMA - Anti Friction Bearing Manufacturer's Association

CSA – Canadian Standards Association International

AMCA - Air Moving and Control Association Inc.

Standard 210 - Laboratory Methods of Testing Fans

ANSI - American National Standards Institute

ARI - Air-Conditioning and Refrigeration Institute

ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers

ASME - American Society of Mechanical Engineers

ASTM - American Society of Testing and Materials

CCR - California Code of Regulations

CSFM - California State Fire Marshal

NIST - National Institute of Standards and Technology

NEMA - National Electrical Manufacturer's Association

NFPA - National Fire Protection Association

OSHA - Occupational Safety and Health Act

SMACNA - Duct Manuals

CBC - California Building Code

UL - Underwriters' Laboratories, Inc.

CMC - California Mechanical Code

CPC - California Plumbing Code

CEC - California Electrical Code

PRODUCTS

GAS FIRED EQUIPMENT

All gas-fired equipment shall be listed for use as a gas appliance.

All units shall comply with the Nox requirements of the Air Quality Management District (AQMD) in which they are to be installed.

PIPE AND FITTINGS

Refrigeration Piping: Refrigeration gas and liquid piping shall be Type "L" hard drawn copper tubing with wrought copper fittings. All joints shall be brazed with Sil-fos. Relief valve discharge piping shall be full size of relief discharge. Furnish and install Superior, Sporlan, Alco, Henry, or equal, stop valves, solenoid valves, adjustable thermal expansion valves, sight glass, flexible connection, charging valve, and drier with valve bypass in the liquid lines and Superior DFN shell and cartridge suction line filter sized 2-1/2 times tonnage.

AIR CONDITIONING UNIT,

Provide factory assembled single packaged outdoor rooftop mounted, electrically controlled electric cooling and heating unit, rated in accordance with ARI Standards 210/240 or 340/360, and UL listed and labeled, classified in accordance with UL 1995. Provide refrigerant charge R-410A, all internal wiring, piping, controls, and special features required prior to field startup. Design unit to conform to the following:

ASHRAE 15.

ASHRAE 90.1.

Insulation, adhesive, and all materials exposed to air stream shall meet NFPA 90A requirements for flame spread and smoke generation.

Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).

UL tested and certified

Unit shall be rated in accordance with ARI sound standards 270.

Unit shall be UL tested and certified in accordance with ANSI Z21.47 Standards as a total package.

Roof curb shall be designed to conform to NRCA Standards.

Unit shall be manufactured in a facility registered to ISO 9001:2000.

Unit shall be Energy Star qualified.

Cabinet:

Provide galvanized steel unit cabinet, bonderized and coated with a baked enamel finish.

All airstream interior surfaces shall be insulated with a minimum 1/2 inch thick, 1 lb density cleanable insulation. Heat compartment for optional electric heater shall be insulated with minimum 1/2 inch thick, 1 lb. density foil-faced insulation.

Cabinet panels shall be removable. Provide access panels for the filter, compressors, evaporator fan, and control box. Each external hinged access panel shall be insulated, with insulation encapsulated with panel or with sealed edges.

Return air filters shall be accessible through a dedicated tooless removable access panel.

Fork lift slots shall be provided in unit base rail. Base rail shall be minimum 16 gauge.

Unit shall have a factory-installed internally sloped condensate drain pan, providing minimum 3/4 in.-14 NPT connections for both horizontal and alternate vertical drain configuration. See Drawings for drain configuration. Pan shall be removable for cleaning and maintenance. All drain pans shall conform to ASHRAE 62 self-draining provisions.

Unit shall have standard side and alternate field or factory installed thru-the-bottom power and control wiring connection capability.

Unit shall be field or factory convertible to horizontal air discharge.

Fans:

Centrifugal supply air blower (evaporator fan) shall have permanently lubricated bearings. Provide belt-driven double inlet fan wheel, centrifugal type with forward curved blades and adjustable sheaves. Fan wheel shall be steel, with corrosion resistant finish, dynamically balanced.

Evaporator-fan motors shall be continuous operation, open drip-proof, and thermally protected. Bearings shall be sealed, permanently lubricated ball-bearing type.

Condenser fans shall be of the direct-driven propeller type, with corrosion-resistant aluminum blades. Fans shall be dynamically balanced and discharge air upwards. Condenser-fan motors shall be totally enclosed and thermally protected.

Compressor:

Fully hermetic, scroll type with internal high-pressure and temperature protection. Furnish with crankcase heater when normally supplied as standard equipment for model size scheduled on Drawings.

Factory installed rubber shock mounted and internally spring mounted for vibration isolation.

Compressor Anti-Recycle Timer: Compressor shall be prevented from restarting for a minimum of five minutes after shutdown, with manufacturers installed compressor cycle delay.

Compressor shall have a five year warranty.

Coils:

Standard evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless internally finned copper tubes with all joints brazed.

Condenser coils shall be single slab, single pass design. Single slab, 2 pass design may be utilized when supplied as standard equipment for unit size as scheduled on the Drawings.

Coils shall be leak tested at minimum 150 psig and pressure tested at minimum 450 psig.

Refrigerant Components:

Each refrigerant circuit shall include:

Fixed orifice metering device.

Solid core refrigerant filter driers with pressure ports.

Refrigerant pressure gage ports and connections on suction, and discharge lines.

Suction line accumulator.

Reversing valve.

Filter Section:

Standard filter section shall consist of factory-installed 2-in. thick, 30% efficiency disposable fiberglass.

Filter section shall use standard size filters.

Optional MERV-8 pleated filters of commercially available sizes shall be available.

Controls:

Unit shall be complete with self-contained low voltage fuse protected control circuit. See Section 15900, if included, and equipment schedule, sequence of operation and control diagram on Drawings for additional requirements.

Provide electro-mechanical controls with 24V thermostat interface or provide microprocessor controls when third party direct digital controls with an Energy Management System will be provided.

Provide electro-mechanical controls with 24V thermostat interface or provide microprocessor controls for stand-alone thermostat operation.

Provide microprocessor controls for single zone VAV or displacement type units for stand-alone operation. Units shall have factory mounted supply fan variable frequency drives.

Provide microprocessor controls with BACnet or LON interface for single zone VAV or displacement type units when third party direct digital controls with an Energy Management System will be provided. Units shall have factory mounted supply fan variable frequency drives.

Electro-mechanical controls shall include the following, as a minimum:

Provide compressor minimum off time (5 minutes).

Economizer control.

Time delay relay.

Integrated adjustable defrost cycle.

Microprocessor controls shall be ASHRAE 62 compliant and include the following, as a minimum:

User diagnostic interface.

Unit control with standard suction pressure transducers and condensing temperature thermistors.

Shall provide a 5° F temperature difference between cooling and heating set points to meet ASHRAE 90.1 Energy Standard.

Service run test capability.

Shall accept input from a CO2 sensor (indoor) and provide demand ventilation control.

Provide compressor minimum off time (5 minutes).

Service diagnostic mode.

Economizer control.

Time delay relay.

Integrated adjustable defrost cycle.

Safeties:

Unit shall incorporate a solid-state compressor lockout that provides optional reset capability at the space thermostat, should any of the following safety devices trip and shut off compressor:

Compressor lockout protection provided for either internal or external overload.

Low-pressure protection.

Freeze protection (evaporator coil).

High-pressure protection (high pressure switch or internal).

Compressor reverse rotation protection.

Loss of charge protection.

Start assist on singe-phase units.

Supply-air sensor shall be located in the unit and detect both heating and cooling operation.

Phase Protection: Provide unit-mounted “SymCom” Motor Saver three phase voltage monitor, model 201A or equal, adjustable voltage range for each unit, install per manufacturer's recommendations, mount in NEMA 3R enclosure if exposed to the weather.

Units shall provide the following features:

Low voltage fault trip and reset.

Voltage unbalance/phasing fault trip and reset.

High voltage fault trip and reset.

Transient Protection (Internal).

Automatic restart.

Provide each unit with 600V socket, “SymCom” model OT08

Operating Characteristics:

Unit shall be capable of starting and running at 115° F ambient outdoor temperature per maximum load criteria of ARI Standards 210/240 or 340/360.

Unit with microprocessor or electro-mechanical controls shall operate in cooling down to an outdoor ambient temperature of 25° F.

Unit shall be provided with fan time delay to prevent cold air delivery in heating mode.

Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single location — standard side or alternate bottom. See Drawing Schedule for thru-the-bottom power wiring requirement.

Motors:

Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.

Evaporator fan motor shall have permanently lubricated, sealed bearings and inherent automatic-reset thermal overload protection or manual reset calibrated circuit breakers.

Totally enclosed condenser-fan motor shall have permanently lubricated, sealed bearings, and inherent automatic-reset thermal overload protection.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

Carrier Corporation.

Trane Inc.

Provide the following additional features and equipment:

Roof Curb: formed 14 gauge galvanized steel with wood nailer strip and capable of supporting entire unit weight. Provide 3 inch wide bottom flange.

Provide heavy-duty 18 gauge expanded metal coil guard grille to protect all surfaces of the condensing coil. Coil guard to by Micrometl, Canfab, or equal.

Modulating Power Exhaust Economizer: Micrometl, Canfab, or equal. Integrated type capable of simultaneous economizer and compressor operation.

Provide self-contained outdoor rooftop system, mounted directly to the return air compartment of the HVAC packaged equipment. Provide differential dry bulb economizer control system and a factory programmed, fully programmable variable frequency drive package controlled by a differential pressure transmitter, mounted directly to the return air compartment of the HVAC packaged equipment. Design the system to continuously maintain space pressure, and provide capability of introducing up to 100 percent outdoor air.

Provide hinged cabinet access doors and include latches to provide a tool-less entry for servicing.

Provide door lock on the power exhaust cabinet to meet ETL safety requirements.

Outdoor air intake dampers shall be low leak not to exceed 3 percent at 1 inch wg pressure differential and include stainless steel side seal and neoprene edge seal. Arrange dampers to close upon loss of power.

Provide belt driven exhaust blowers, double inlet, forward-curved centrifugal type. Provide gravity backdraft damper at fan outlet.

Provide fully programmable factory programmed variable frequency drive (VFD) package for each fan, driven by 4 to 20 mA signal from a differential pressure transmitter. Pressure transmitters shall measure 0 - 0.1 in wg. Install room sensor tubing with sensor tube termination installed within the room.

Where direct digital controls are utilized, provide Belimo, or equal, damper actuator, complete with spring return and all controls required to make the system fully operational.

Where stand-alone controls are utilized, provide Belimo, or equal, damper actuator, complete with spring return and all controls, including logic module, required to make the system fully operational.

RELIEF AND INTAKE VENTS

Galvanized steel housing with 1/2 inch mesh screen, counterbalanced backdraft damper and matching prefabricated curb. Omit backdraft damper on intake vents. Provide pitched roof curb for relief vents, and install with backdraft damper level.

Provide prime coat of paint for all roof-mounted air intakes and relief vents.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

Greenheck Fan Corporation.

Lauren Cook Company.

PennBarry.

American Coolair Corporation.

FILTERS

Provide Farr 30/30, Echo Air E-35, or equal, disposable pleated media type, for all units. Provide 25-30 percent efficiency per ASHRAE test standard. Provide 1 inch thick for furnace units and 2 inch thick for all other units.

Filer bank as per drawing schedule

Air filters shall be a State Fire Marshal approved and listed type. Preformed filters having combustible framing shall be tested as a complete assembly.

Air filters in all occupancies shall be Class 2 or better, as defined in the test method above.

Air filters shall be accessible for cleaning or replacement.

Air filters shall be SFM listed.

Temporary Filters:

Install new temporary filters in all units that have filter systems installed. Temporary filters shall match the permanent filters that are specified for the units. Replace filters as needed, in accordance with manufacturer's directions, in order to provide protection for the unit prior to occupancy by the Owner.

If air handling units are operated during construction of the project, install temporary filters directly over each return air inlet. Filters shall match the permanent filters that are specified for the units. Select size of filter to completely cover the frame of the return air inlet, and tape filters firmly in place to eliminate any construction debris from entering the duct system or unit. Remove the temporary filters upon completion of the work, and repair all damaged paintwork.

Spare Filters:

Furnish two new, complete sets of filter cartridges for each filter bank on completion and acceptance of the work. Install one set of filters in units (prior to final air balance) and leave the remaining filters in location designated by the Owner.

FILTER GAUGE

Furnish and install for each bank of air filters including air conditioning units, heating and ventilating units and fan units, except individual room units, a magnehelic air filter gauge.

Provide 0 to 1 inch range for pre-filter systems, with a permanent red line to indicate change out pressure.

Provide 0 to 2 inch range for final filter systems, with a permanent red line to indicate change out pressure.

DAMPERS

Backdraft Dampers: Ruskin CBD2, counterbalanced, Nailer Industries, or equal.

Manual Air and Balance Dampers: Provide dampers of single blade type or multi-blade type constructed in accordance with SMACNA, "HVAC Duct Construction Standards," except as noted herein.

Rectangular Ductwork:

Single damper blades may be used in ducts up to 10 inches in height. Dampers shall be 16 gauge minimum. Provide self-locking regulators, equal to Ventlok 641. Provide end bearings equal to Ventlok 607 at each damper. Provide continuous solid 3/8 inch square shafts.

Multiple blade dampers shall be equal to Ruskin CD35 Standard Control Damper. Maximum width for multiple damper blades for use in rectangular duct shall not exceed 6 inches.

Where duct velocity may be expected to exceed 1500 fpm, provide Ruskin CD-50, or equal, low leakage dampers with airfoil blades.

Round Ductwork:

Single damper blades may be used in ducts up to 12 inches in diameter. Provide multiple blade opposed blade dampers, with connected linkage, for ductwork larger than 12 inches in diameter.

Damper blades for round ductwork shall be 20 gauge steel for ducts up to 12 inches diameter and 16 gauge steel for dampers larger than 12 inches damper. Provide self-locking regulators, equal to Ventlok 641, Durodyne, or equal for operation of dampers. Provide end bearings equal to Ventlok 607 and provide continuous solid 3/8 inch square shafts.

Where ductwork is externally insulated, provide self-locking regulators equal to Ventlok 644, Durodyne, or equal for rectangular ductwork, and Ventlok 637, Durodyne, or equal for round ducts.

Fire Dampers and Combination Smoke-Fire Dampers:

Fire dampers and combination fir smoke dampers shall be listed and approved by the California State Fire Marshal. Installation shall conform to the manufacturer's UL approved installation instructions.

Fire dampers shall be UL 555 classified and labeled as dynamic fire dampers approved for wall and floor installation. They shall ship from the manufacturer as an assembly with a minimum 20-gauge factory installed sleeve. Sleeve length shall suit the requirements of the wall construction. Each dynamic fire damper/sleeve assembly shall ship complete with factory "roll formed" one-piece angles with pre-punched holes for easy installation. Dynamic fire dampers for vertical installation must consist of a single section on sizes up to 33" x 36" and a single

section on sizes up to 24” x 24” for horizontal installation. 1-1/2 hour dynamic fire dampers shall be Ruskin DIBD20, Pottorff. 3 hour dynamic fire dampers shall b Ruskin DIBD230, Pottorff.

Fire dampers for high pressure/velocity systems where velocities exceed 2000 fpm and/or 4” w.g. pressure fire damper shall be Ruskin FD60 or equal by Pottorff.

Combination fire/smoke dampers. Dampers shall be UL classified and labeled as Leakage Class I Smoke Dampers in accordance with the latest version of UL 555S. Dampers shall be warranted to be free from defects in material and workmanship for a period of 5 years after date of shipment. Damper/actuator assembly shall be tested to full open and full close at minimum 2000 fpm 250° F heated air and 4” w.g. with airflow in both directions. (Specified select: 250° / 350°, 2000 fpm/3000 fpm). Each damper shall be equipped with EZ reset “controlled closure” quick detect heat actuated release device to prevent duct and HVAC component damage resulting from instantaneous damper closure. Release device shall be EFL type and shall allow easy reset from outside the sleeve after moderate temperature exposure. (Replacement type fusible links not acceptable.)

Two position combination fire smoke dampers shall be equipped with one or more factory installed, direct coupled, 120 volt, single phase, electric actuator for energize open – fail close operation. Dampers with multiple actuators shall be factory wired with single point connection at the EFL heat release devise for connection to poser. Damper actuator shall include minimum one-year energized hold open (no cycles) and spring return (fail) close reliability. Damper/actuator shall include minimum 20,000 full open-full close cycle performances.

Modulating combination fire smoke dampers shall be equipped with one or more factory installed contact for modulating signal connection. Damper/actuator shall include minimum 100,000 full open-full close cycle performances with spring return (fail) close on loss of power.

Round combination fire smoke dampers up to 24” diameter shall be true round type with minimum 2- gauge minimum galvanized designed for lowest pressure drop and noise performance. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame. Blade seals shall be silicone edge designed to withstand 450° F and galvanized steel mechanically locked in to the blade edge (adhesive type seals are not acceptable). Each damper shall be equipped with a factory-installed sleeve of 17” minimum length and factory “roll formed” one-piece angles with pre-punched holes for easy installation. Dampers shall be Ruskin FSD60 or equal by Pottorff.

Round (larger than 24” diameter) or rectangular combination fire smoke dampers shall include roll-formed structural hat channel frame, reinforced at the corners, formed from a single piece of minimum 16 gauge equivalent thickness formed from single piece galvanized steel. Bearings shall be stainless steel turning in an extruded hole in the frame. Blade edge seals shall be silicone rubber designed to withstand 450° F and galvanized steel mechanically locked in to the blade edge (adhesive type seals are not acceptable). Each damper shall be equipped with a factory-installed sleeve of 17” minimum length and factory “roll formed” one-piece angles with pre-punched holes for easy installation. Dampers shall be Ruskin FSD60 or equal by Pottorff.

3-hour rated combination fire smoke dampers shall be Ruskin model FSD60-3 or equal by Pottorff.

All FSD60 type dampers shall be AMCA licensed and shall bear the AMCA Seal for Air Performance. AMCA certified testing shall verify pressure drop does not exceed .03” w.g. at a face velocity of 1,000 fpm on a 24” x 24” damper.

Wall type fire/smoke damper:

Combination fire/smoke dampers for use in the wall of exit corridors shall be classified and labeled as Leakage Class II Smoke Dampers in accordance with the latest version of UL 555S. Dampers shall meet the requirements for combination fire/smoke dampers in paragraph 3 above except AMCA certified testing shall verify pressure drop does not exceed .07” w.g. at a face velocity of 1,000 fpm on a 24” x 24” damper and blades shall be single skin galvanized steel 10 gauge minimum with 3 longitudinal grooves for reinforcement. Dampers shall be Ruskin FSD36 or equal by Pottorff.

Front access combination fire/smoke dampers shall meet all the requirements for combination fire/smoke dampers in paragraph 3 above except pressure drop requirement. In addition the dampers shall be constructed so that actuators and all accessories are accessible from the grille side. Actuators and accessories shall be housed within an integral cabinet on the side of the damper frame and shall not be installed in the air stream in front of the damper. The damper sleeve shall be minimum 14” and flanged to accept a steel framed grille. The sleeve shall be covered with fire resistant material. Dampers shall be Ruskin FSD60FA or equal by Pottorff.

Fusible links shall have temperature rating approximately 50° F above normal maximum operating temperature of the heat producing appliance.

If project requires re-openable fire/smoke dampers, provide Ruskin 165 ° F / 350° F TS150, NCA or equal. The TS150 firestat replaces the EFL and allows the damper to be re-opened from remote location up to 350 ° F. TS150 shall include full open and full closed damper position contacts for interface with remote position indication panel.

Each fire/smoke damper shall be quipped with “controlled closure” quick detect heat actuated release device to prevent duct and HVAC component damage. Release device shall allow easy reset after moderate temperature rise outside the sleeve. Heat release device shall be the Ruskin EFL, NCA or equal.

Unless the system is using a validation control system (see section 15820), each fire/smoke damper shall be equipped with a control panel including blade position indicator lights and a key operated switch. The panel cover shall be oversized for flush mount into the wall or ceiling and shall have a brushed look. Control panel shall be Ruskin MCP2, or equal by Pottorff.

Fusible links shall have temperature rating approximately 50 degrees F. above normal maximum operating temperature of the heat producing appliance.

Where required to suit the size of damper required, provide manufacturers standard UL Classified mullions, arranged to support multiple dampers. Assembly shall be minimum of 16 gauge galvanized steel, complete with all accessory caps and framing members required for installation. Provide independent motor and operator as required for each individual damper, arranged to suit UL Classification requirements.

Manufacturer's instructions shall be made available to the inspection authorities.

All actuators used for smoke dampers or combination fire/smoke dampers shall have a cycle time requirement of no more frequently than every twelve months and shall be rated for continuous "0n" duty and shall be provided with internal spring return. Actuators shall be equipped with pilot light, remote key test switch, end switch and circuitry to activate pilot light on remote key (test) switch located in corridor ceiling adjacent to damper. Electric motors shall be Invensys MA-250, MA-253, Honeywell H2000, or equal.

TEMPERATURE CONTROL SYSTEM

Refer to Section 15900.

DUCTWORK

Construct and install all sheet metal ductwork in accordance with the 2007 California Mechanical Code for 2 inches static pressure for supply air, and 2 inches minimum for return and exhaust air unless otherwise noted on Drawings.

Construct and install all sheet metal ductwork in accordance with the 2007 California Mechanical Code for 4 inches static pressure upstream of AIR SUPPLY boxes and 2 inches minimum downstream of AIR boxes for supply air, and 2 inches minimum for return and exhaust air unless otherwise noted on Drawings.

Where not in conflict with the California Mechanical Code, construct and install all sheet metal ductwork in accordance with SMACNA HVAC Duct Construction Standards (Metal and Flexible). Where applicable for HVAC work, construct and install sheet metal work in accordance with SMACNA Architectural Sheet Metal Manual.

Provide variations in duct size, and additional duct fittings as required to clear obstructions and maintain clearances as approved by the Architect at no extra cost to the Owner.

Gauges, joints and bracing shall be in accordance with the 2007 California Mechanical Code.

Provide beading or cross breaking for all ductwork inside building. Provide cross breaking for ductwork exposed to weather.

At the contractor's option, ductwork may be fabricated using the Ductmate, Nexus, Quickduct, Transverse Duct Connection (TDC), Pyramid-Loc duct connection systems, or equal. Fabricate in strict conformance with manufacturer's written installation instructions and in accordance with California Mechanical Code.

Seal flanged ends with pressure sensitive high density, closed cell neoprene or polyethylene tape gasket, Thermo 440, or equal.

Provide metal clips for duct connections, except at breakaway connections for fire dampers and fire smoke dampers. Provide corner clips at each corner of duct, through bolted, at all locations except at breakaway connections for fire dampers

and fire smoke dampers. Where used on locations exposed to weather, provide continuous metal clip at top and sides of duct, with 1 inch overhang for top side.

Design and installation standards:

SMACNA Compliance: Comply with applicable portions of Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) for all work in this section.

ASHRAE Standards: Comply with American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE) recommendations, 1985 edition, for all work in this section.

NFPA Compliance: Comply with ANSI/NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems," and ANSI/NFPA 90B, "Standard for the Installation of Warm Air Heating and Air Conditioning Systems."

California Mechanical Code 2007 edition.

ADC Test Code FD 72-Rl, Flexible Air Duct Test Code.

NFPA 90-A, Standard for the Installation of Air Conditioning and Ventilating Systems, latest edition.

Fabricate all ductwork with sheet metal. Fiberglass ductwork will not be accepted for use on this project.

Duct sizes indicated are external sizes.

Galvanized Sheet Steel: Lock-forming quality, ASTM A924 and ASTM A653, Coating Designation G 90. Provide mill phosphatized finish for exposed surfaces of ducts exposed to view.

Provide mill certification for galvanized material at request of the IOR.

Seal airtight all joints and seams, including standing seams and manufactured joints and seams, of all supply, return and exhaust ducts except those exposed in the conditioned space. Provide one part, non-sag, solvent release and curing polymerized butyl sealant, formulated with a minimum of 75 percent solids.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering duct sealant which may be incorporated in the work include the following, or equal:

Design Polymetrics Model DB1010

Polymer Adhesive Sealant Systems Inc – Airseal #11

United Sheet Metal

Seal airtight and watertight all joints and seams of all ductwork exposed to the weather with 6 ounce canvas bonded with MEI Eco-Tack adhesive; cover the canvas with a heavy coat of Foster's 56-10, United McGill, or equal, no dilution.

Pressure-sensitive tapes or single part sealant not acceptable.

Where seams are exposed to weather, paint seams with aluminum paint. Provide cross broken ductwork, and insure that the ductwork will shed water. Beading of duct work will not be considered.

Provide sheet metal angle frame at all duct penetrations to wall, floor, roof, or ceiling.

Rectangular Duct Fabrication:

Shop fabricate ductwork of gauges and reinforcement complying with the more stringent of the following standards, except as noted herein.

SMACNA HVAC Duct Construction Standards

California Mechanical Code

Fabricate ducts with minimum duct gauges as follows:

Duct Dimension	Minimum Gauge	Joint Reinforcement Per CMC
up through 12"	26	Not Required
13" through 18"	24	Not Required
19" through 30"	24	C/4
31" through 42"	22	E/4
43" through 54"	22	F/2
55" through 60"	20	G/4
61" through 84"	20	I/2
85" through 96"	20	J/2
Over 96"	18	K/2

Fabricate duct fittings to match adjoining ducts and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1.5 times associated duct width. Fabricate to include single thickness turning vane in elbows where space does not permit the above radius or where square elbows are shown. Limit angular tapers to 30 degrees for contracting tapers and 20 degrees for expanding tapers. Turning vanes shall be E-Z Rail II, Durodyne, or equal

Fabricate round supply connections at rectangular, plenum type fittings using spin-in type fittings, complete with extractor and volume control damper. Refer to Paragraph “DAMPERS” for damper requirements.

Provide drive slip or equivalent flat seams for ducts exposed in the conditioned space or where necessary due to space limitations. On ducts with flat seams, provide standard reinforcing on inside of duct. Duct connection to outlet on exposed duct shall be full size of outer perimeter of outlet flange.

Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.

Provide 20 gauge minimum for ductwork exposed within occupied spaces.

Rectangular Internally insulated Duct:

Provide internal duct lining where indicated on the Drawings, with a minimum of 10'-0" length in each direction from the fan, fan casing, or unit casing. Line all transfer ducts.

Where ductwork is exposed to weather or outside the building insulation envelope, provide 2 inch thick, 1-1/2 pound density internal lining with matte facing, with an R-Value of 8.0 minimum.

Where ductwork is within the building insulation envelope, lining shall be 1” thick, 1-1/2 pound density, with R-value of 4.2 minimum.

Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.

Provide 20 gauge minimum for ductwork exposed within occupied spaces.

Cement duct liner in place with nonflammable, non-hardening duct adhesive. Seal all raw edges of insulation inside ductwork with adhesive, including longitudinal liner edges.

Provide metal nosing at all locations where liner is preceded by unlined metal.

Where installed exposed in the conditioned space, duct shall be minimum 20 gauge with 1 inch insulation layer (minimum R-value – R-4.2).

Provide sheet metal weld pins and washers or clinch pins and washers on all ductwork on 12 inch intervals with the first row within 3 inches of the leading edge of each piece of insulation and within 4 inches of corners. No use of adhesive mounted pins will be considered.

Install clinched pin fasteners with properly adjusted automatic fastening equipment. Manual installation will not be considered.

Install weld pins with properly adjusted automatic fastening equipment. Installation shall not damage the galvanized coating on the outside of the duct.

All ductwork, adhesives, lining, sealant, flex duct and the like shall have a flame spread of 25 or less and developed smoke rating of 50 or less when tested in accordance with one of the following test methods: NFPA 255, ASTM E84, or UL 723.

Manufacturer: Subject to compliance with requirements, manufacturers offering duct liners and adhesives include the following, or equal.

Manufacturer:	Product:

Owens-Corning Fiberglas Corp.	Aeroflex Plus
Johns Manville	Linacoustic
CertainTeed Corporation	ToughGard
Fosters Adhesive	85-462
Swifts Adhesive	7336

Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim, and angles for support of ductwork.

Round Ductwork Fabrication:

Spiral lock seam prefabricated factory-build round and oval duct and fittings shall be used wherever possible. Shop fabricated ducts shall be used only where rectangular shaped ducts are shown on plans or where transitions and special fittings cannot be prefabricated by factory. Provide couplings to join each length of duct.

Fabricate duct fittings to match adjoining ducts and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1.5 times associated duct width. Provide two-piece, die-stamped, 45-degree to 90-degree elbows for sizes up to 12 inches; five-piece, 90-degree elbows for sizes 12 inches and above; conical tees; and conical laterals. All reducers shall be placed after a tap has been made on the duct main. Reducers shall be long-taper style.

Round Ductwork: Construct of galvanized sheet steel complying with ANSI/ASTM A 653 by the following methods and in minimum gauges listed.

Diameter	Minimum Gauge	Method of Manufacturer
Up to 14"	26	Spiral Lockseam
15" to 23"	24	Spiral Lockseam
24" to 36"	22	Spiral Lockseam
37" to 50"	20	Spiral Lockseam
51" to 60"	18	Spiral Lockseam
Over 60"	14	Longitudinal Seam

Provide locked seams for spiral duct; fusion welded butt seam for longitudinal seam duct.

Fittings and Couplings: Construct of minimum gauges listed. Provide continuous welds along seams at exposed ducts. Provide spot weld bonded seams at concealed ducts.

Diameter	Minimum Gauge
3" to 36"	20
38" to 50"	18

Over 50"	16

Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.

Provide 20 gauge minimum for ductwork exposed within occupied spaces.

Round Internally Insulated Duct and Fittings: Where ductwork is exposed to weather or outside the building insulation envelope, construct with outer pressure shell, 2 inch thick (Minimum R-value = R-8) insulation layer, and perforated inner liner. Where ductwork is within the building insulation envelope, construct with outer pressure shell, 1 inch thick (minimum R-value = R4.2) insulation layer, and perforated inner liner. Construct shell and liner of galvanized sheet steel complying with ANSI/ASTM A 653, of spiral lockseam construction (use longitudinal seam for over 59 inches), in minimum gauges listed in table below. Where installed exposed in the conditioned space: duct and fitting outer pressure shell shall be minimum 20 gauge with 1 inch insulation layer (minimum R-value = R-4.2).

Nominal Duct Diameter	Outer Shell	Inner Liner
3" TO 12"	26 gauge	24 gauge
13" TO 24"	24 gauge	24 gauge
25" to 34"	22 gauge	24 gauge
35" to 48"	20 gauge	24 gauge
49" to 58"	18 gauge	24 gauge
Over 59"	16 gauge	20 gauge

Fittings and Couplings: Construct of minimum gauges listed. Provide continuous weld along seams of outer shell at exposed ducts. Provide spot weld bonded seams at concealed ducts.

Nominal Duct Diameter	Outer Shell	Inner Liner
3" to 34"	20 gauge	24 gauge
36" to 48"	18 gauge	24 gauge
Over 48"	16 gauge	24 gauge

Inner Liner: Perforate with 3/32 inch holes for 22 percent open area. Provide metal spacers welded in position to maintain spacing and concentricity.

Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.

Provide 20 gauge minimum for ductwork exposed within occupied spaces.

All ductwork, adhesives, lining, sealant, flex duct and the like shall have a flame spread of 25 or less and developed smoke rating of 50 or less when tested in accordance with one of the following test methods: NFPA 255, ASTM E84, or UL 723.

Optional Ducts and Fittings: At Installer's option, provided that certified tests by manufacturer show that rigidity and performance is equivalent to SMACNA and/or ASHRAE standard gauge ductwork, provide ducts and fittings as follows:

Ducts: Construct of manufacturer's standard gauge, with spiral lock seam and intermediate standing rib.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering factory fabricated ductwork which may be incorporated in the work include the following, or equal:

Sheet Metal Div., McGill AirFlow, LLC., Acousti-k27

Semco Duct and Acoustical Products, Inc.

Air Systems Manufacturing, Inc. - Las Vegas

Miscellaneous Ductwork Materials:

Duct Joints: Install duct sealers, pop rivets or sheet metal screws at each fitting and joint. Duct sealer shall be fire retardant. Sheet metal screw for joints shall be minimum #10 size galvanized.

Duct Access: Provide hinged access door in rectangular ducts for access to fire dampers, control equipment, etc. Access door size shall be duct diameter wide by duct diameter high for all ducts under 24 inches. Ducts over 24 inches in diameter shall have 24-inch by 18-inch access doors. Minimum size access doors shall be 6 inches by 6 inches.

Provide hinged style access doors for round ductwork, NCA Manufacturing, Inc., Model AD-RD-87, Pottorff Series 60, or equal. Access doors shall be 16 gauge galvanized steel with continuous piano hinge. Locks shall be plated steel strike and catch. Provide 1" x 3/8" Polyethylene "Perma Stik" gasket all around door.

Flexible Ducts:

Provide exterior reinforced laminated vapor barrier, fiberglass insulation, (minimum R-value = R-8.0 for ductwork installed outside the building insulation envelope; minimum R-value = R-6.0 for ductwork installed within the building insulation envelope), encapsulated spring steel wire Helix and impervious, smooth, non-perforated interior vinyl liner. Individual lengths of flexible ducts shall contain factory fabricated steel connection collars.

Factory made air ducts shall be approved for the use intended and shall conform to the requirements of UMC Standard 6-1, 6-5 and UL 181. Each portion of a factory-made air duct system shall be identified by the manufacturer with a label or other suitable identification indicating compliance with UMC Standard No. 6-5 and its class designation. These ducts shall be UL listed Class 1, 25/50 smoke and flame spread and shall be installed in accordance with the terms of their listing. Factory-made air ducts shall have the following minimum R-values: R-8.0 for ductwork installed outside the building insulation envelope, R-6.0 for ductwork installed within the building insulation envelope.

Flexible ductwork shall be maximum of 8 feet long, and shall be extended to the fullest possible length, in order to minimize pressure drop in the duct.

Ducts shall be U.L. approved and tested and meet Class requirements of NFPA 90A, and comply with UMC Standards 6-2 & 6-5. Make bends to maintain R/W-1.5.

Flexible ducts shall be selected for minimum of 6 inch positive static pressure and minimum of 1 inch negative static pressure.

Make connections to rigid duct and units with Panduit style draw band at inner liner material, and a second draw band over the outer vapor barrier material.

Subject to compliance with requirements, manufacturers offering Flexible Ducts which may be incorporated in the work include the following, or equal:

Cal Flex	Model 2PMJ (Minimum R-6)
ThermaFlex	Model M KC (Minimum R-6)

Provide Ventlon flexible connections on inlet and outlet of AC Unit, air handler and exhaust fans. Provide galvanized weather hood over flexible connections exposed to the weather.

AIR INLETS AND OUTLETS

Except as otherwise indicated, provide manufacturer's standard outlets and inlets where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.

Ceiling, wall or floor Compatibility: Provide outlets with border styles that are compatible with adjacent ceiling, wall or floor systems, and that are specifically manufactured to fit into ceiling, wall or floor module with accurate fit and adequate support. Refer to general construction drawings and specifications for types of ceiling systems that will contain each type of air outlet and inlet.

Refer to Schedule on Mechanical Drawings for details of inlets and outlets to be used.

EXECUTION

ROOF MOUNTED EQUIPMENT

Mount and anchor equipment in strict compliance with drawings details. Alternate anchorage methods will not be considered for roof mounted equipment.

Examine rough-in for roof mounted equipment to verify actual locations of piping and duct connections prior to final equipment installation.

Verify that piping to be installed adjacent to roof mounted equipment allows service and maintenance.

Verify that gas piping will be installed with sufficient clearance for burner removal and service.

Install ducts to termination at top of roof curb and install heavy duty rubber gaskets on supply and return openings and on full perimeter of curb, or as required for an airtight installation, prior to setting unit on curb

Cover roof inside roof mounted air conditioning unit with 2” thick, 3 pound density fiberglass insulating board.

Connect supply and return air ducts to horizontal discharge roof mounted equipment with flexible duct connectors specified elsewhere in these Specifications.

Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.

EQUIPMENT START-UP

Initial start-up of the systems and pumps shall be under the direct supervision of the Contractor.

Equipment start-up shall not be performed until the piping systems have been flushed and treated and the initial water flow balance has been completed.

It shall be the responsibility of the Contractor to assemble and supervise a start-up team consisting of Controls, Chiller Start-Up Technician and Test and Balance Contractor; all to work in concert to assure that the systems are started, balanced and operate in accordance with the design.

After start-up is complete, instruct the Owner's personnel in the operation and maintenance of the systems. Obtain from the Owner's representative a signed memo certifying that instruction has been received.

ANTI-VIBRATION BASES AND HANGERS

Isolate all ventilating and air conditioning equipment connections including conduit, piping, drains, etc., so that equipment will operate under continuous demand without objectionable vibration.

Support all air conditioning units, all fans, and all pumps of 5 HP and over on anti-vibration bases or hangers. Other equipment shall be supported on anti-vibration bases, pads, or hangers, as shown on the drawings or specified with the equipment. Individual fans shall have integral fan and motor bases, spring-type unless noted. High velocity fans - unguided stable springs with 2" deflection.

Selection of the bases or supporting units shall be in accordance with the vibration eliminator manufacturer's recommendations. Minimum static deflection shall be 1-1/2 inches or as marked on the drawings.

The equipment manufacturer shall furnish the weight of equipment at each point of support.

FILTERS

Mount filters in airtight frames furnished by the filter manufacturer, and install in accordance with manufacturer's recommendations.

Identify each filter access door with 1/2 inch high minimum stenciled letters.

Provide temporary filters for all fans that are operated during construction; after all construction dirt has been removed from the building install new filters at no additional cost to the Owner. In addition to temporary filters at filter location, provide temporary filters on all duct openings which will operate under a negative pressure.

Filters used for temporary operation shall be the same as permanent filters for the application. Filters used for duct openings may be 1 inch thick pleated media disposable type.

INSTALLATION OF DUCTWORK

Assemble and install ductwork in accordance with recognized industry practices which will achieve air tight and noiseless (no objectionable noise) systems capable of performing each indicated service. Install each run with minimum of joints. Align ductwork accurately at connections within 1/8 inch misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers, and anchors of type which will hold ducts true to shape and to prevent buckling. Where possible, install ductwork to clear construction by 1/4 inch minimum, except at air inlets and outlets. Where ductwork will not clear construction, secure duct firmly to eliminate noise in the system.

Applicable Leakage Classes:

Pressure Class	Leakage Class	
	Round Duct	Rectangular Duct
2" W.G. or less	12	12
4" W.G. or greater	3	6

Install concrete inserts for support of ductwork in coordination with formwork as required to avoid delays in work.

Upper connection of support to wood structure shall be with wood screws or lag screws in shear fastened in the upper one half of the wood structural member. Fasteners shall conform to the following schedule:

For ducts with P/2=30"	#10 x 1-1/2" wood screw
For ducts with P/2=72"	1/4" x 1-1/2" lag screw
For ducts with P/2 over 73"	3/8" x 1-1/2" lag screw

Upper connection in tension to wood shall not be used unless absolutely necessary. Where deemed necessary the contractor shall submit calculations to show the size fastener and penetration required to support loads in tension from wood in accordance with the following schedule:

For ducts with P/2=30"	260 pounds per hanger
For ducts with P/2=72"	320 pounds per hanger
For ducts with P/2=96"	460 pounds per hanger
For duct with P/2 larger than 120"	NOT ALLOWED

Where ducts pass through interior partitions and exterior walls, conceal space between construction opening and duct or duct plus insulation with sheet metal flanges of same gauge as duct. Overlap opening on four sides by at least 1-1/2 inches.

Upper connection to manufactured truss construction must comply with truss manufacturers published requirements and Structural Engineers requirements.

Support ductwork in manner complying with SMACNA "HVAC Duct Construction Standards," hangers and supports sections. Where special hanging of ductwork is detailed or shown on Drawings, Drawings shall be followed. Angles shall be attached to overhead construction in a manner so

as to allow a minimum of 2 inches of movement in all directions with no bending or sagging of the angle.

Except where modified in individual paragraphs of this Section, provide hanger support with minimum 18 gauge straps, 1 inch wide. Fold duct strap over at bottom of duct.

Install duct supports to rectangular ducts with sheet metal screws. Provide one screw at top of duct and one screw into strap at bottom of duct.

Installation of Flexible Ductwork:

Provide flexible ducts with supports at 30 inch centers with 2 inch wide, 26 gauge steel hanger collar attached to the structure with an approved duct hanger. Installation shall minimize sharp radius turns or offsets.

Supports shall be in accordance with UMC Standard 6-5.

Make connection to duct with spin-in fittings, with air scoop and balance damper.

Paint inside of ducts, visible through grille, dull black.

Where ductwork is installed in finished areas of buildings that do not have ceilings, paint ductwork, support hangers, and air inlets and outlets to match adjacent architectural surfaces, or as directed by Architect.

DUCTWORK SEALING AND LEAK TESTING

New Construction: All duct systems (supply return, outside air intake, and exhaust), except those exposed in the conditioned space, shall be sealed and leak tested to a leakage rate not to exceed 6 % of the fan flow of the system. The leakage rate shall be confirmed through field verification and diagnostic testing in accordance with the procedures set forth in the 2005 California Building Energy Efficiency Standards Non-Residential ACM Manual. Contractor shall also complete the Acceptance Requirements in the standards for duct sealing/leak testing. Refer to section 15050 for further information on Acceptance Requirements.

Retrofit Construction, including alterations to existing duct system or space conditioning equipment: All duct systems (supply, return, outside air intake and exhaust), except those exposed in the conditioned space, shall be sealed and leak tested in strict conformance with the requirements of section 149 of the 2005 California Building Energy Efficiency Standards. See drawings for extent of this work and leakage rate requirements. The leakage rate shall be confirmed through field verification and diagnostic testing in accordance with the procedures set forth in the 2005 California Building Energy Efficiency Standards Non-Residential ACM Manual. Contractor shall also complete the Acceptance Requirements in the standards for duct sealing/leak testing. Refer to Section 15050 for further information on Acceptance Requirements.

CLEANING AND PROTECTION

Refer to section 15880 for cleaning of new and existing ductwork

Clean ductwork internally of dust and debris. Clean external surfaces of foreign substances that might cause corrosive deterioration of metal or where ductwork is to be painted.

Strip protective paper from stainless ductwork surfaces, and repair finish wherever it has been damaged.

Temporary Closure: At ends of ducts that are not connected to equipment or air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering that will prevent entrance of dust and debris until connections are to be completed.

At completion of work, check internal lining for small cuts, tears, or abrasions. Repair all damage with fire retardant adhesive.

DAMPERS

All dampers automatically controlled by damper motors are specified under "Temperature Control System" except those specified with items of equipment.

Provide opposed blade manual air dampers at each branch duct connection and at locations indicated on the drawings and where necessary to control air flow for balancing system. Provide an opposed blade balancing damper in each zone supply duct. Provide an access panel or Ventlok flush type damper regulator on ceiling or wall for each concealed damper.

Install fusible link fire dampers full size of duct at points where shown or required.

Provide 18 inch x 12 inch minimum hinged access doors in ductwork and furring for easy access to each fire damper; insulated access doors in insulated ducts. Label access doors with 1/2 inch high red letters.

Provide Ventlok Series 100, Durodyne, or equal access doors with hardware for convenient access to all automatic dampers and other components of the system, insulated type in insulated ducts. Provide Ventlok #202 for light duty up to 2 inch thick doors, #260 heavy-duty up to 2 inch thick doors and #310 heavy-duty for greater than 2 inch thick doors. Provide #260 hinges on all hinged and personnel access doors; include gasketing.

AIR INLETS AND OUTLETS

Provide all air inlets and outlets with gaskets and install so that there will be no streaking of the walls or ceilings due to leakage. Duct connection to outlet on exposed duct shall be full size of outer perimeter of outlet flange.

Unless otherwise indicated on Drawings, provide rectangular plenum on top of each diffuser and ceiling return for connection to ductwork. Line plenum with internal insulation as indicated for lined ductwork. Size plenum to allow full opening into air terminal.

Ceiling-mounted air terminals or services installed in T-Bar type ceiling systems shall be positively attached to the ceiling suspension main runners or to cross runners with the same carrying capacity as the main runners.

Terminals or services weighing not more than 56 pounds shall have two No. 12 gauge hangers connected from the terminal or service to the structure above. These wires may be slack.

Support terminals or services weighing more than 56 pounds directly from the structure above by approved hangers. Provide 4 taut 12 gauge wires each, attached to the fixture and to the structure above. The 4 taut 12 gauge wires, including their attachment to the structure above must be capable of supporting 4 times the weight of the unit.

Secure air inlets and outlets to main runners of ceiling suspension system with two #8 sheet metal screws at opposing corners.

Furnish all air inlets and outlets with a baked prime coat unless otherwise noted. Provide off-white baked enamel finish on ceiling-mounted air inlets and outlets. Paint exposed mounting screws to match the material being secured.

Air inlets and outlets shall match all qualities of these specified including appearance, throw, noise level, adjustability, etc.

FANS

Each ceiling-mounted fan shall have variable speed switch and integral backdraft damper. Mount variable speed switch within fan housing. Mark final balance point on variable speed switch.

Provide access doors for fans or motors mounted in ductwork.

Mount all fans as detailed on Drawings and in compliance with CBC standards.

Fan motors mounted in air-stream to be totally enclosed.

Completely line supply, return or exhaust fan cabinets with 1 inch thick, 3/4 pound density acoustic insulation securely cemented in place.

Roof fans shall be mounted level.

Provide heavy-duty rubber gasket between exhaust fan mounting flange and roof curb, or as required for an airtight installation.

Label fume hood fans with sign "CAUTION - HAZARDOUS EXHAUST".

RELIEF VENTS

Install relief vents to provide a level mounting for backdraft damper.

TEMPERATURE CONTROL SYSTEM

General: Must comply with the requirements of Title 24 control and set back requirements.

Provide thermostats where indicated on drawings. All wiring shall be in conduit. Provide all relays, transformers and the like to render the control system complete and fully operable. All control conduit to be rigid steel type.

TESTING AND BALANCING

Obtain the service of an independent test and balance agency that specializes in, and whose business is limited to, testing and balancing of air conditioning systems. Balance agency shall be a member of Associated Air Balance Council (AABC). Coordinate testing and balancing agency work with work of other trades.

Testing and balancing agency, as a part of its contract, shall act as authorized inspection agency and shall report any discrepancies or items not installed in accordance with Contract Drawings and/or Specifications pertaining to air and water distribution, and exhaust systems.

Balance report shall be signed by the Contractor, attesting that all reported deficiencies have been corrected. Balance reports containing uncorrected deficiencies will be rejected.

Test economizer cycle for each air system.

Adjust control systems to provide correct operation.

Adjust relief air dampers as required to provide 100 percent relief in economizer mode, and confirm satisfactory operation of all backdraft dampers.

Provide, as part of air balance report, final settings of each economizer control, and total air flow through relief air hood.

ACCEPTANCE REQUIREMENTS

In addition to the testing and balancing requirements specified in the previous section, the contractor shall also be responsible to complete all the Acceptance Requirements of the 2005 California Building Energy Efficiency Standards. Refer to Section 15050 for further information on Acceptance Requirements.

EQUIPMENT MOUNTING

Mount and anchor equipment in strict compliance with drawings details. Alternate anchorage methods will not be considered for roof mounted equipment.

END OF SECTION 15800.

END OF MECHANICAL TEHCNICAL SPECIFICATIONS

Exhibit B

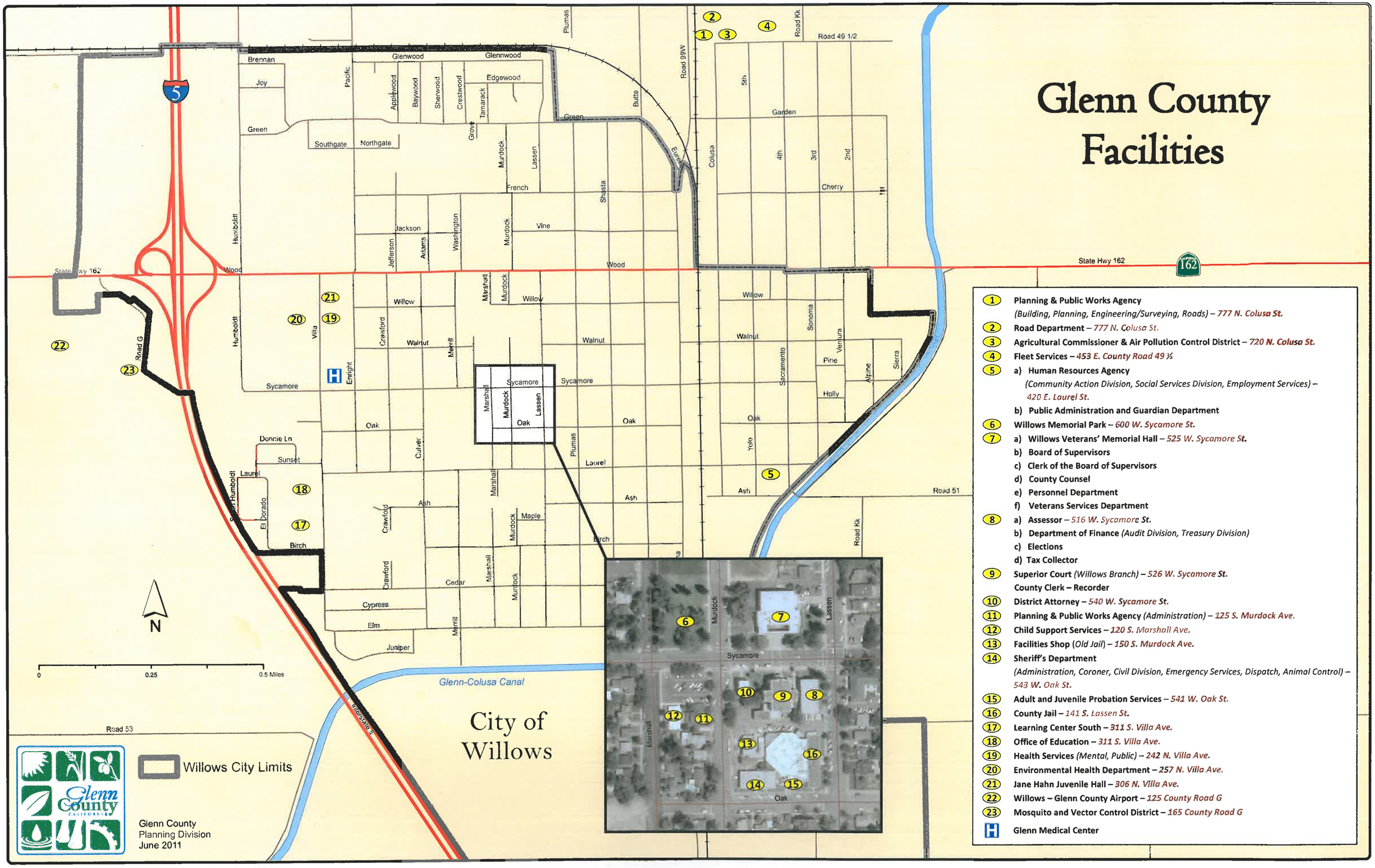
County of Glenn Energy Efficinecy Project for EECBG Grant

Energy Project Summary Sheet for EECBG

Project	Existing Equipment	Proposed Equipment	Facility Where Equipment Installed	Existing Capacity* (kW)	Proposed Capacity (kW)	Estimated Load Reduction (%) (if applicable)	Number of Hours of Operation	Number of Units
1	1-10 ton HVAC installed in 1984 EER 7	10 ton HVAC SEER 13	Willows Memorial Hall Building - 525 W. Sycamore St Willows - 1929	18.86	9.23	NA	3,120	2
2	1-5 ton HVAC installed in 1975 SEER 7	5 ton HVAC SEER 13	Sheriff's Administration Building - 543 West Oak St. Willows - 1975	9.43	4.62	NA	3,120	3
3	1-10 ton HVAC installed in 1984 EER 7	10 ton HVAC SEER 13	Orland Memorial Hall Building - 320 3rd St. Orland - 1930	18.86	9.23	NA	3,120	2
4	5-4 ton HVAC installed in 1980 EER 7	5 ton HVAC SEER 13	Health Services Agency (HSA) Building - 240 N. Villa St. Willows -	9.43	4.62	NA	3,120	6
		5 ton HVAC SEER 13	Building - 240 N. Villa St. Willows - 1982					
		4 ton HVAC SEER 13	Building - 240 N. Villa St. Willows - 1982					
		3.5 ton HVAC SEER 13	Health Services Agency (HSA) Building - 240 N. Villa St. Willows -					
		3 ton HVAC SEER 13	Health Services Agency (HSA) Building - 240 N. Villa St. Willows -					
5	1-3 ton HVAC installed in 1997 SEER 10	3 ton HVAC SEER 13	Ag Department Building - 720 N. Colusa St Willows - 1978	3.96	2.77	NA	3,120	1
Total				60.53	30.46			14.00

* Assuming a 10 percent deterioration factor for existing HVAC

Glenn County Facilities



1. **Planning & Public Works Agency** *(Building, Planning, Engineering/Surveying, Roads) – 777 N. Colusa St.*
2. **Road Department** – *777 N. Colusa St.*
3. **Agricultural Commissioner & Air Pollution Control District** – *720 N. Colusa St.*
4. **Fleet Services** – *453 E. County Road 49 ½*
5. a) **Human Resources Agency** *(Community Action Division, Social Services Division, Employment Services) – 420 E. Laurel St.*
   b) **Public Administration and Guardian Department**
6. **Willows Memorial Park** – *600 W. Sycamore St.*
7. a) **Willows Veterans' Memorial Hall** – *525 W. Sycamore St.*
   b) **Board of Supervisors**
   c) **Clerk of the Board of Supervisors**
   d) **County Counsel**
   e) **Personnel Department**
   f) **Veterans Services Department**
8. a) **Assessor** – *516 W. Sycamore St.*
   b) **Department of Finance** *(Audit Division, Treasury Division)*
   c) **Elections**
   d) **Tax Collector**
9. **Superior Court** *(Willows Branch) – 526 W. Sycamore St.*
   County Clerk – Recorder
10. **District Attorney** – *540 W. Sycamore St.*
11. **Planning & Public Works Agency** *(Administration) – 125 S. Murdock Ave.*
12. **Child Support Services** – *120 S. Marshall Ave.*
13. **Facilities Shop** *(Old Jail) – 150 S. Murdock Ave.*
14. **Sheriff's Department** *(Administration, Coroner, Civil Division, Emergency Services, Dispatch, Animal Control) – 543 W. Oak St.*
15. **Adult and Juvenile Probation Services** – *541 W. Oak St.*
16. **County Jail** – *141 S. Lassen St.*
17. **Learning Center South** – *311 S. Villa Ave.*
18. **Office of Education** – *311 S. Villa Ave.*
19. **Health Services** *(Mental, Public) – 242 N. Villa Ave.*
20. **Environmental Health Department** – *257 N. Villa Ave.*
21. **Jane Hahn Juvenile Hall** – *306 N. Villa Ave.*
22. **Willows – Glenn County Airport** – *125 County Road G*
23. **Mosquito and Vector Control District** – *165 County Road G*

H **Glenn Medical Center**