

CONTRACT DOCUMENTS SPECIFICATIONS AND STANDARD DRAWINGS

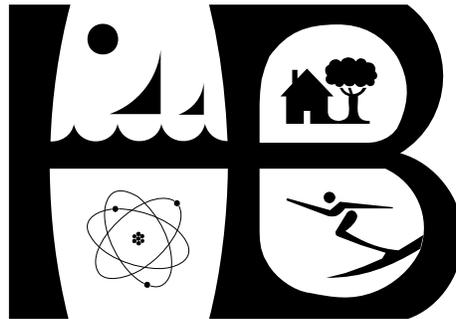
for the construction of

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

MSC No. 477 (CC-1334)

in the

CITY OF HUNTINGTON BEACH



**2000 MAIN STREET
HUNTINGTON BEACH, CALIFORNIA 92648
(714) 536-5431**

**BIDS DUE:
September 21, 2010
4:00 PM, Lower Level of City Hall
Offices of the Purchasing Division**

CITY OF HUNTINGTON BEACH

**PLANS
SPECIFICATIONS AND CONTRACT DOCUMENTS**

for the construction of

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

MSC No. 477 (CC-1334)

Prepared Under the Supervision of:



Jeong S. Park, R.E.E. No. E16392

Date 8/25/2010

Approved by:



Antonio Olmos, City Engineer, R.C.E. No. 56814

Date

9/1/10

NOTE: *If there are any questions relative to this project,
please call Sharon Griffin at: 714-960-8878.*

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**PURCHASING DEPARTMENT
CITY OF HUNTINGTON BEACH
2000 MAIN STREET
HUNTINGTON BEACH, CA 92648-2702**

10-0921
Show this number on outside of
your envelope.

REQUEST FOR QUOTATION

Enter the following:
Name of Company & Address

**Date: September 2, 2010
Bids will be received until 4:00pm
September 21, 2010
at the office of the Purchasing
Division Lower Level City Hall
Sharon Griffin/Buyer
sgriffin@surfcity-hb.org**

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
		The City of Huntington Beach is requesting quotations for the		
		Construction of Edwards Hill Reservoir and Booster Pump Station		
		MSC #477 per the attached specifications and drawings.		
		Pricing will be based upon non-prevailing wage rates.		
		The Agency will deduct a 10% retention from all progress payments		
		The Contractor may substitute an escrow holder surety of equal		
		value to the retention in accordance with the provisions of the		
		California Government code, Section 4590. The Contractor shall		
		be beneficial owner of the surety and shall receive any interest		
		thereon.		

Submission of Responses: Each submittal shall be in a sealed package marked " BID# . Bids must be submitted not later than 4:00pm to:

**Buyer:
City of Huntington Beach/Purchasing Division
2000 Main St
PO Box 190
Huntington Beach CA 92648**

Any questions regarding the specification, exceptions or approved equals must be put in writing to the above buyer. If the bidder is responding from our Website you must notify the appropriate buyer, which is listed on the front page of the RFQ. This is to notify the bidder of any addendums that may occur during the bidding process.

All quotations must be signed

	_____	Total _____
	Signature	SalesTax _____
Delivery to be made on or before:	_____	Total _____
	Print Name	Terms _____% _____days
_____	Title _____	Email: _____
or _____ days from receipt of	Date _____	
order.	Phone Number _____	

**EMAIL AND FAXED
BIDS ARE NOT ACCEPTED**

THIS IS NOT AN ORDER



PURCHASING DEPARTMENT
 CITY OF HUNTINGTON BEACH
 2000 MAIN STREET
 HUNTINGTON BEACH, CA 92648-2702

«RFQ»
 QUOTATION NUMBER

VENDOR NAME
 «Company»

REQUEST FOR QUOTATION

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
		<p>No Bid shall be considered unless it is prepared on the approved proposal forms in conformance with instructions to bidders. The bid must be accompanied by a certified check, cashier's check, or bidder's bond made payable to the AGENCY for an amount no less than 10% of the amount bid. The successful bidder shall be licensed in accordance with provisions of the Business and Professions Code and shall possess a State Contractor's License Class A at the time of the bid opening. The successful contractor and his subcontractors will be required to possess business licenses from the AGENCY.</p>		
		<p>There will be a mandatory job walk on Friday, September 10th at 9:00 a.m. We will meet at City Hall, 1st Floor in lobby, then proceed over to the Edwards Hill Reservoir and Booster Pump Station.</p>		

**CITY OF HUNTINGTON BEACH
INSTRUCTION TO BIDDERS**

ALL PAGES OF THE BID MUST BE RETURNED

Quotations are requested for furnishing the items described in accordance with terms set forth herein. All quotations must be F.O.B. delivered. The detailed specifications or brand names or numbers given herein is descriptive and indicates quality and style of item required. Offer to supply articles substantially the same as those described herein will be considered provided the articles offered are equal in quality, durability, and fitness for the purpose intended. Acceptability of alternates will be determined solely by the City of Huntington Beach

EXAMINATION OF BID Each bidder is responsible for examining the invitation to bid and submitting its bid complete and in conformance with these instructions.

DISCREPANCIES IN BID DOCUMENTS Should bidder find discrepancies in, or omissions from the invitation to bid, or if the intent of the invitation is not clear, and if provisions of the specifications restrict bidder from bidding, they may request in writing that the deficiency(s) be modified. Such request must be received by the City's Central Service Manager five (5) days before bid opening date. All bidders will be notified by addendum of any approved changes in the invitation to bid documents.

ORAL STATEMENTS The City of Huntington is not responsible for oral statements made by any of their employees or agents concerning this invitation to bid. If the bidder required specific information, bidder must request that it be supplied in writing by the City of Huntington Beach.

BRAND NAMES AND SPECIFICATIONS The detailed specifications and/or brand names stated are descriptive only and indicate quality, design, and construction of items required. Offers will be considered to supply articles substantially the same as those described herein provided the articles are equal in quality, durability, and fitness from the variation in the bid. Acceptability of alternate will be determined solely by the City of Huntington Beach. Bidder must submit specifications when bidding alternative equipment.

RIGHT TO REJECT City reserves the right to reject at any time any or all bids, or parts thereof, and to waive any variances, technicalities and informalities which do not impair the quality, utility, durability, or performance of the items.

SAMPLES Samples if items, when requested or required, must be furnished to the city free of expense to the city and, if not destroyed by tests will, upon request, be returned at the bidder's expense.

PRICES Individual item pricing must be shown for each line item. In case of error in extension of prices, unit price will govern. All prices must be firm for the contract term unless the city specifically provides for adjustment. Any proposed pricing adjustment shall be submitted to the City Representative in writing at least thirty (30) days prior to the proposed date of increase. All quotations must be FOB delivered.

FORM OF BID AND SIGNATURE The bid must be made on this form only. Bid should be enclosed in a sealed envelope, showing the Request for Quotation Number in the lower left corner, and addressed to the City of Huntington Beach, 2000 Main street, Huntington Beach CA 92648-2702, Attn: Purchasing. This bid must be signed by an officer or authorized employee. Bids may be rejected if this form is not signed.

SUBMISSION DATE AND WITHDRAWAL OF BIDS Each bid must be delivered to the location and received on or before the due date and time stated. Bids may be withdrawn without prejudice, providing the Central Service Division receives the written request no later than the time set for opening bids. Withdrawals will be returned to bidder unopened. **FAXED BID IS NOT ACCEPTABLE.**

AWARD OF CONTRACT The City reserves the right to award this Contract by item or in its entirety, whichever is in the best interest of the City

Insurance Certificate is not required with submittal of Request for Quotation, Awarding vendor will be required to submit for approval before commencement of work.

CITY OF HUNTINGTON BEACH

Email: Justin.Wessels@surfcity-hb.org
Phone: 714-374-5378 Fax: 714-536-5212

Insurance Requirements vary for different applicants. Please see the below listed applicant types followed by the insurance requirements.

City of Huntington Beach Resolution 2008-63 requires that contractors, permittees, licensees/lessees and vendors have an approved Certificate of Insurance on file with the City of Huntington Beach for the issuance of any permit or city contract.

The insurance certificate must be approved by the City Attorney's Office as to meeting all of the city's insurance requirements. An original certificate is required or a PDF version attached to an email may be forwarded. If the insurance certificate is faxed, it must come directly from the insurance provider to the City of Huntington Beach. All insurance must be from a California admitted carrier with a current A.M. Best's Rating of no less than A:VII

1. CONTRACTORS – Any persons or entities or Contract with the City and/or provide service to the City which are readily available and efficiently procured by competitive bidding.

Requirements: General Liability, Workers' Compensation, Auto Liability, Additional Insured Endorsements

2. DESIGN PROFESSIONALS- Professional Service contractors who contract with the City and/or provide architectural and/or engineering services to the City.

Requirements: Errors and Emissions (Professional Liability) \$1,000,000 coverage

3. LICENSEES/LESSEES – any person or entities who make contract with the city for the use of public property.

Requirements: General Liability, Workers' Compensation, Property Insurance, Additional Insured Endorsement

4. PERMITEES – any persons or entities who make application to the City for any use of encroachment upon any street, waterway, pier, or City property.

Requirements: General Liability, Workers' Compensation, Auto Liability, Additional Insured Endorsements

5. Professional Services – means those services, which involve the exercise of professional discretion and independent judgment on an advanced or specialized knowledge, expertise or training gained by formal studies or experience or services which are not readily or efficiently procured by competitive bidding pursuant to Huntington Beach Municipal Code Section 3.02. Such Services shall include but not be limited to those services provided by appraisers, architects, attorneys, engineers, instructors, insurance advisors, physicians and other specialized consultants.

Requirements: Errors and Emissions (Professional Liability) \$1,000,000 coverage

Private Property Work Permit Requirements – If the planned work does not involve public property or its right-of-way (e.g. sidewalk/street), the Workers' Compensation Certificate is the only insurance requirement. However, if the work site is adjacent or attached to public property, the City Attorney's Office must be informed for consideration of liability and decides whether or not to approve the certificate with a specific "Private Property Only" approval stamp.

- **General Liability (G/L)** – The general liability requirement is for \$1,000,000 with “per occurrence” type claims coverage and a separate “Additional Insured Endorsement” page listing both the policy number and naming the “*City of Huntington Beach, its officers, elected or appointed officials, employees, agents and volunteers*” as additional insured on the endorsement. (see below for Additional Insured requirements)
- **Additional Insured Endorsement Requirements** – The City, its officers, elected or appointed officials, employees, agents and volunteers are to be specifically named and covered as additional insureds by separate attached endorsement(s) as respects liability arising out of action performed by or on behalf of the contractor, products and completed operations of the contractor, premises owned, occupied or used by the contractor, or automobiles owned, leased or borrowed by the contractor. The coverage shall contain no special limitations on the scope of protection afforded to the City, its agents, officers and employees. The endorsement should include the policy number it correlates to.
- **Primary Insurance** – General Liability Insurance coverage shall be primary insurance as respects the City, its agents, officers, and employees. Any insurance or self-insurance maintained by the City, its agents, officers, and employees shall be excess of the submitted insurance and shall not contribute with it.
- **Description of work** – The staff contact and purpose of the evidence of coverage must be identified on the certificate of insurance.
- **Automotive Insurance** – Automobile insurance requirement is for \$1,000,000 and a separate “Additional Insured Endorsement” page listing both the policy number and naming the “*City of Huntington Beach, its officers, elected or appointed officials, employees, agents and volunteers*” as additional insured on the endorsement. The City of Huntington Beach has a zero deductible/SIR requirement.
- **Worker’s Compensation Insurance (W/C)** – The Worker’s Compensation insurance requirement is the State statutory limits of \$250,000 bodily injury by disease, policy limit, and \$100,000 bodily infury each employee for accident or disease per occurrence. Certificate holder listed on the certificate is:
 City of Huntington Beach, 2000 Main St., Huntington Beach, CA 92648.
 If your organization/company has no compensated employees working on the project, you may complete and return a “Non-Employer Status” form to be used in lieu of a W/C insurance certificate.
- **Cancellation Clause Notice** – The cancellation clause must contain a thirty (30) day notice. A ten (10) day notice for non-payment of premium is acceptable in combination with 30 day notice.
- **Professional Liability** – Coverage must be provided at a minimum of \$1,000,000 per occurrence and in the aggregate.
- **Deductibles**– The following deductibles are acceptable and all others must be removed from the insurance policy or a waiver can be requested (see below) :
 - **General Liability** - \$5,000
 - **Auto Liability** - \$1,000
 - **Professional Liability/Errors & Emissions** - \$10,000
- **Waiver Procedure** – If unable to comply with a requirement, the “INSURED” may request a waiver of a specific requirement. The Insurance Waiver form is an internal form that the City of Huntington Beach will complete. (see following page for waiver form) ***The exception to the waiver is the G/L & Auto “Additional Insured Endorsement” page.***
 -

Waiver Procedure

To request a waiver, indicate here and provide a brief description (1 – 2 sentences) of the proposed work/project, its dollar value (if not a specific dollar amount, use an average, annual estimate or non-profit) and projected timeframe (per job or as-needed basis).

For substantial dollar deductible/SIR amounts, a financial statement is required (Balance Sheet, Budget Reports, Dun & Bradstreet Report, etc.).

Waiver Requested: _____

Encroachment Permit Private Property Work Permit Consultant Services

Other: _____

Proposed Work: _____

Dollar Value: _____

Projected Timeframe: _____

SECTION B

INSTRUCTIONS TO BIDDERS

1. Proposal Forms

Bids shall be submitted in writing on the Proposal forms provided by the AGENCY. All information requested therein must be clearly and legibly set forth in the manner and form indicated. The AGENCY may reject any proposal not meeting these requirements. The bid shall be filed with the Purchasing Division, Lower Level of City Hall, 2000 Main Street, Huntington Beach, California, which shall be endorsed with the Project Title, Bid #10-0921 and MSC Number as it appears on the Notice Inviting Sealed Bids. The sealed envelopes will be publicly opened and read at the time and place stated in the Notice Inviting Bids. Bidders or their authorized agents are invited to be present at the opening. Unauthorized conditions, limitations, or provisions attached to a proposal will render it informal and may cause its rejection. The complete proposal forms shall be without interlineations, alterations or erasures. Alternative proposals will not be considered unless requested. No oral, telegraphic, or telephonic proposals or modifications will be considered. The proposal may be withdrawn upon request by the bidder without prejudice to himself prior to, but not after the time fixed for opening of bids, provided that the request is in writing, that it has been executed by the bidder or his duly authorized representative, and that it is filed with the AGENCY.

2. Proposal Guarantee

Proposals must be accompanied by a proposal guarantee consisting of a certified or cashier's check or bid bond payable to the AGENCY in the amount not less than 10% of the total amount named in the proposal. Any proposal not accompanied by such a guarantee will not be considered. Said check or bond shall be made payable to the AGENCY, and shall be given as a guarantee that the bidder, if awarded the Work, will enter into a contract within 10 working days after the award and will furnish the necessary bonds as hereinafter provided. In the case of refusal or failure to enter into said contract, the check or bond, as the case may be, shall be forfeited to the AGENCY.

3. Proposal Signature

If the proposal is made by an individual, it shall be signed and his full name with his address shall be given; if it is made by a firm, it shall be signed with the copartnership name by a member of the firm who shall sign his own name and the name and address of each member shall be given; and if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer or officers attested by the corporate seal, and the names and titles of all officers of the corporation shall be given.

4. Delivery Of Proposal

Proposals shall be enclosed in a sealed envelope plainly marked on the outside:

"SEALED BID"
#10-0921
Attn: Purchasing Division

for

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

in the

CITY OF HUNTINGTON BEACH - DO NOT OPEN WITH REGULAR MAIL

Proposals may be mailed or delivered by messenger. However, it is the bidder's responsibility alone to ensure delivery of the proposal to the hands of the AGENCY's designated official prior to the bid opening hour stipulated in the Notice Inviting Sealed Bids. Late proposals will not be considered.

5. Return Of Proposal Guarantees

The proposal guarantees of the second and third lowest bidders will be held until the awarded bidder has properly executed all contract documents. Within 10 working days after the award of contract, the remaining proposal guarantees accompanying all other proposals will become null and void and returned to the unsuccessful bidders.

6. Taxes

No mention shall be made in the proposal of Sales Tax, Use Tax or any other tax, as all amounts bid will be deemed and held to include any such taxes which may be applicable.

7. Disqualification Of Bidders

In the event that any bidder acting as a prime contractor has an interest in more than one proposal, all such proposals will be rejected and the bidder will be disqualified. This restriction does not apply to subcontractors or suppliers who may submit quotations to more than one bidder, and while doing so, may also submit a formal proposal as a prime contractor.

8. Contractor's License Requirement

This project requires the Contractor to possess a valid State of California contractor's license of the proper classification in accordance with the provisions of Public Contract Code Section 10164.

9. References

All reference information called for in the bid proposal must be submitted with the bid proposal.

10. Listing Of Subcontractors

Bidders shall list in the bid proposal the name and place of business of each subcontractor who will perform work or labor or render services for the Contractor in an amount in excess of one-half of one percent of the Contractor's total bid or \$10,000, whichever is greater.

11. Discrepancies And Misunderstandings

Bidders must satisfy themselves by personal examination of the work site, plans, specifications and other contract documents, and by any other means as they may believe necessary, as to the actual physical conditions, requirements and difficulties under which the Work must be performed. No bidder shall at any time after submission of a proposal make any claim or assertion that there was any misunderstanding or lack of information regarding the nature or amount of work necessary for the satisfactory completion of the job. Should a bidder find any errors, omissions, or discrepancies in the plans, specifications, and other contract documents or should he be in doubt as to their meaning, he shall notify the AGENCY. Should it be found necessary, a written addendum will be sent to all bidders. Any addenda issued during the bidding period shall form a part of the contract and shall be included with the proposal.

12. Equivalent Materials

Requests for the use of equivalents to those specified, must be submitted to the AGENCY 10 working days prior to the need of such materials. Within that time, the AGENCY will issue a written response indicating approval or disapproval of such request. It is the sole responsibility of the successful bidder to prove to the AGENCY that such a material is truly an equivalent.

13. Legal Responsibilities

All proposals must be submitted, filed, made and executed in accordance with State and Federal laws relating to bids for contracts of this nature whether the same or expressly referred to herein or not. Any bidder submitting a proposal shall by such action thereby agree to each and all of the terms, conditions, provisions and requirements set forth, contemplated and referred to in the Plans, Specifications and other contract documents, and to full compliance therewith. Additionally, any bidder submitting a proposal shall, by such action thereby, agree to pay at least the minimum prevailing per diem wages as provided in Section 1773, et. seq. of the labor code for each craft, classification or type of workman required as set forth by the Director of Industrial Relations of the State of California.

14. Award Of Contract

The award of contract, if made, will be to the lowest responsible bidder as determined solely by the AGENCY. The AGENCY reserves the right to reject any or all proposals, to waive any irregularity, and to take the bids under advisement for a maximum period of 60 days. In no event will an award be made until all necessary investigations are made to the responsibility and qualifications of the bidder to whom the award is contemplated.

15. Material Guarantee

The successful bidder may be required to furnish a written guarantee covering certain items of work for varying periods of time from the date of acceptance of the work by the AGENCY. The work to be guaranteed, the form, and the time limit of the guarantee will be specified in the special provisions. Said guarantee shall be signed and delivered to the AGENCY before acceptance of the contract by the AGENCY. Upon completion of the contract, the amounts of the two contract bonds required in Section 2-4, "CONTRACT BONDS," of the Standard Specifications for Public Works Construction, may be reduced to conform to the total amount of the contract bid prices for the items of work to be guaranteed, and this amount shall continue in full force and effect for the duration of the guarantee period. However, the Labor and Material Bond can not be reduced until the expiration of 35 days after the date of recordation of the Notice of Completion.

16. Execution Of Contract

The successful bidder shall execute a written contract with the AGENCY on the form of agreement provided, and shall secure all insurance and bonds required by the Specifications within 10 working days from the date of the award. Failure to enter into a contract shall be just cause for the annulment of the award and the forfeiture of the proposal guarantee. If the successful bidder fails to execute the contract, the AGENCY may award the contract to the second lowest responsible bidder. If the second lowest responsible bidder fails to execute the contract, the AGENCY may award the contract to the third lowest bidder. On the failure of such second or third lowest responsible bidder to execute the contract, such bidder's guarantees shall be likewise forfeited to the AGENCY. The work may then be re-advertised.

17. Submission Of Bonds And Insurance

The successful bidder will be required to furnish the necessary bonds and insurance to the AGENCY within 10 working days from the award of contract. See Appendix F for the City approved Payment and Performance Bond Forms. The Contractor may use any standard form for the Bid Bond. The successful bidder shall provide a certificate stating that the bonding company is admitted to do business in the State of California. This certification may be obtained from the Executive Officer and Clerk of the Superior Court at the following address & phone:

Orange County Superior Court
Probate Court Operations
341 The City Drive
P.O. Box 14171
Orange, CA 92613-1571
(714) 935-6061, Contact Linda C. Wallace

Prior to the issuance of the Notice to Proceed, the AGENCY must be furnished with a *Policy Endorsement*, from the successful bidder's insurance company, naming the AGENCY as an additional insured.

18. Addenda

The effect of all addenda to the contract documents shall be considered in the bid package and said addenda shall be made part of the contract documents and shall be returned with the bid package. Failure to submit any such addenda with the bid package may render the bid irregular and may result in its rejection by the AGENCY.

19. Bid Protest

To be considered timely, a bid protest must be filed within the following time limits:

- (a) Protests based upon alleged defects or improprieties in the bid documents shall be filed prior to the date of bid opening.
- (b) All other protests must be filed within five calendar days after the protester knew or should have known the basis of the protest, but no later than five calendar days after the date of when the Bids were due to the AGENCY.

20. Questions

Questions regarding the bid documents (i.e. plans, specifications, contract documents, bid forms, etc.) will be received by the Buyer listed on the RFQ form up to five working days prior to the bid opening. Questions asked of the Buyer after this time will not be addressed.

SECTION C

PROPOSAL

for the

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

MSC No. 477 (CC-1334)

in the

CITY OF HUNTINGTON BEACH

TO THE HONORABLE MAYOR AND MEMBERS OF THE COUNCIL OF HUNTINGTON BEACH:

In compliance with the Notice Inviting Sealed Bids, the undersigned hereby proposes and agrees to perform all the work therein described, and to furnish all labor, material, equipment and incident insurance necessary therefore, in accordance with the plans and specifications on file in the office of the City Engineer of the City of Huntington Beach. The undersigned agrees to perform the work therein to the satisfaction of and under the supervision of the City Engineer of the City of Huntington Beach, and to enter into a contract at the following prices. The undersigned agrees to complete the work within 60 working days, starting from the date of the Notice to Proceed.

BIDDER declares that this proposal is based upon careful examination of the work site, plans, specifications, Instructions to Bidders and all other contract documents. If this proposal is accepted for award, BIDDER agrees to enter into a contract with AGENCY at the unit and/or lump sum prices set forth in the following Bid Schedule. BIDDER understands that failure to enter into a contract in the manner and time prescribed will result in forfeiture to AGENCY of the guaranty accompanying this proposal.

BIDDER understands that a bid is required for the entire work, that the estimated quantities set forth in the Bid Schedule are solely for the purpose of comparing bids and that final compensation under the contract will be based upon the actual quantities of work satisfactorily completed. THE AGENCY RESERVES THE RIGHT TO DELETE ANY ITEM FROM THE CONTRACT. It is agreed that the unit and/or lump sum prices bid include all appurtenant expenses, taxes, royalties, fees, etc., and will be guaranteed for a period of sixty days from the bid opening date. If at such time the contract is not awarded, the AGENCY will reject all bids and will readvertise the project. In the case of discrepancies in the amounts bid, unit prices shall govern over extended amounts, and words shall govern over figures.

If awarded the Contract, the undersigned agrees that in the event of the BIDDER'S default in executing the required contract and filing the necessary bonds and insurance certificates within 10 working days after the date of the AGENCY'S notice of award of contract to the BIDDER, the proceeds of the security accompanying this bid shall become the property of the AGENCY and this bid and the acceptance hereof may, at the AGENCY'S option, be considered null and void.

Accompanying this proposal of bid, find _____ in the amount of \$_____ which said amount is not less than 10% of the aggregate of the total bid price, as required by the Notice Inviting Sealed Bids, payable to the AGENCY. (Please insert the words "Cash", "Certified Check", or "Bidder's Bond", as the case may be).

Bidder shall signify receipt of all Addenda here, if any:

<i>Addenda No.</i>	<i>Date Received</i>	<i>Bidder's Signature</i>

**SECTION C
PROJECT BID SCHEDULE**

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

**MSC No. 477
BID ITEMS**

Item No.	Description	Qty	Unit	Unit Cost	Total Cost
1	Mobilization	1	LS	\$ _____	\$ _____
2	Remove existing SCE service and concrete pad.	1	LS	\$ _____	\$ _____
3	Install concrete pad & step(s) for the SWBD-1 as indicated on the plan.	1	LS	\$ _____	\$ _____
4	Install Agency furnished new switchboard SWBD-1, coordinate SCE work, provide and install conduit stub out as indicated on the plan.	1	LS	\$ _____	\$ _____
5	Provide and install conduit and cable between SWBD-1 and MCC as indicated on the plan.	1	LS	\$ _____	\$ _____
6	Provide and install (4) 4-inch underground service conduits paralleled with existing (2) 4-inch service conduits per SCE requirements. Provide and install extension of existing (2) 4-inch underground conduits to new switchboard SWBD-1.	1	LS	\$ _____	\$ _____
7	Remove existing MCC and existing cable(s) as indicated on the plan.	1	LS	\$ _____	\$ _____
8	Install Agency furnished new MCC, coordinate delivery, and reconnect existing overhead conduit and pull new cables. Provide and install conduit extension on existing conduit if necessary.	1	LS	\$ _____	\$ _____
9	Provide and install pull box (NEMA 12, 24"x24"x12" minimum) at ceiling.	2	EA	\$ _____	\$ _____
10	Remove existing Zone 1 pump motors, coordinate delivery, and install Agency furnished new motors.	4	EA	\$ _____	\$ _____
11	Provide and install overhead conduit and cable connection for the Zone 1 pump motors including flex connection as indicated on the plan.	4	LS	\$ _____	\$ _____
12	Remove existing pullbox and provide and install new pull box (20"x16"x6") on the existing stanchion for Zone 1 pumps.	4	EA	\$ _____	\$ _____

**SECTION C
PROJECT BID SCHEDULE**

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

**MSC No. 477
BID ITEMS**

Item No.	Description	Qty	Unit	Unit Cost	Total Cost
13	Provide and install control wiring and motor space heater circuit through existing underground conduit for the Zone 1 pump motors.	4	LS	\$ _____	\$ _____
14	Provide and install overhead conduit and cable connection for the Zone 2 pump motors including flex connection as indicated on the plan.	3	LS	\$ _____	\$ _____
15	Provide and install new conduit and control wiring between MCC and Zone 1 control panel as indicated on plan.	1	LS	\$ _____	\$ _____
16	Provide and install new conduit and control wiring between MCC and Zone 2 control panel as indicated on plan.	1	LS	\$ _____	\$ _____
17	Provide and install cable for signal (analog) wiring between MCC and Zone 1 control panel through existing conduit.	1	LS	\$ _____	\$ _____
18	Provide and install cable for signal (analog) wiring between MCC and Zone 2 control panel through existing conduit.	1	LS	\$ _____	\$ _____
19	Startup, Commissioning, and Testing.	1	LS	\$ _____	\$ _____

**SECTION C
PROJECT BID SCHEDULE**

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

**MSC No. 477
BID ITEMS**

PROJECT BID:

TOTAL BASE BID AMOUNT IN FIGURES, BASIS OF AWARD: <p style="text-align: right;">\$ _____</p>

TOTAL BASE BID AMOUNT IN WORDS:

The base bid will be used for comparison of bids and to determine the lowest bidder. Additive bid items may be awarded at the discretion of the AGENCY. Bids shall be submitted for the entire work, including additive items.

Notes: All extensions of unit prices will be subject to verification by Owner. In case of a discrepancy between the unit price and the extension, the unit price will govern.

The Owner reserves the right to reject any or all proposals and bid items.

**SECTION C
PROJECT BID SCHEDULE**

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

**MSC No. 477
BID ITEMS**

ADDITIVE ALTERNATE #1

Item No.	Description	Qty	Unit	Unit Cost	Total Cost
ALT. 1	In lieu of base bid item No. 6 above, remove existing (2) 4-inch underground service conduits and provide and install new (6) 4-inch conduits between SCE transformer pad and new SWBD-1 per SCE requirements.	1	LS	\$ _____	\$ _____

The additive bid items above will not be used for comparison of bids and to determine the lowest bidder. Additive bid items may be awarded at the discretion of the AGENCY. Bids shall be submitted for the entire work, including additive items.

Notes: All extensions of unit prices will be subject to verification by Owner. In case of a discrepancy between the unit price and the extension, the unit price will govern.

The Owner reserves the right to reject any or all proposals and bid items.

**SECTION C
PROJECT BID SCHEDULE**

EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION

**MSC No. 477
BID ITEMS**

ADDITIVE ALTERNATE #1

Item No.	Description	Qty	Unit	Unit Cost	Total Cost
ALT. 1	In lieu of base bid item No. 6 above, remove existing (2) 4-inch underground service conduits and provide and install new (6) 4-inch conduits between SCE transformer pad and new SWBD-1 per SCE requirements.	1	LS	\$ _____	\$ _____

The ~~additive~~base bid items above will not be used for comparison of bids and to determine the lowest bidder. Additive bid items may be awarded at the discretion of the AGENCY. Bids shall be submitted for the entire work, including additive items.

Notes: All extensions of unit prices will be subject to verification by Owner. In case of a discrepancy between the unit price and the extension, the unit price will govern.

The Owner reserves the right to reject any or all proposals and bid items.

**NONCOLLUSION AFFIDAVIT
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID**

State of California

ss.

County of Orange

_____, being first duly sworn, deposes and says that he or she is _____ of _____ the party making the foregoing bid that the bid is not made in the interest of, or on the 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, or 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 contents thereof, or divulged information or data relative thereto, or paid, and will not pay fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Name of Bidder

Signature of Bidder

Address of Bidder

Subscribed and sworn to before me this _____ day of _____, 201__ .

NOTARY PUBLIC _____

NOTARY SEAL

UTILITY AGREEMENT

HONORABLE MAYOR AND CITY COUNCIL CITY OF HUNTINGTON BEACH, CALIFORNIA

Gentlemen:

The undersigned hereby promises and agrees that in the performance of the work specified in the contract, known as the **EDWARDS HILL RESERVOIR AND BOOSTER PUMP STATION**, (I)(we)(it) will employ and utilize only qualified persons, as hereinafter defined, to work in proximity to any electrical secondary or transmission facilities. The term "Qualified Person" is defined in Title 8, California Administrative Code, Section 2700, as follows:

"Qualified Person: *A person who, by reason of experience or instruction, is familiar with the operation to be performed and the hazards involved."*

The undersigned also promised and agrees that all such work shall be performed in accordance with all applicable electrical utility company's requirements, Public Utility Commission orders, and State of California Cal-OSHA requirements.

The undersigned further promises and agrees that the provisions herein shall be and are binding upon any subcontractor or subcontractors that may be retained or employed by the undersigned, and that the undersigned shall take steps as are necessary to assure compliance by any said subcontractor or subcontractors with the requirements contained herein.

Contractor

By

Title

Date: _____

COMPENSATION INSURANCE CERTIFICATE

Pursuant to Section 1861 of the State Labor Code, each contractor to whom a public works contract has been awarded shall sign the following certificate.

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

Contractor

By

Title

Date: _____

**UNDERGROUND SERVICE ALERT
IDENTIFICATION NUMBER**

(To be completed only by the awarded Contractor prior to excavation)

No excavation will be permitted until this form is completed and returned to the AGENCY.

Section 4216/4217 of the Government Code requires a Dig Alert Identification Number be issued before a Permit to Excavate will be valid.

To obtain a Dig Alert Identification Number, call Underground Service Alert at **811** or **1-800-422-4133** a minimum of two working days before scheduled excavation.

Dig Alert Identification Number: _____

Contractor

By

Title

Date: _____

Note: *This form is required for every **Dig Alert Identification Number** issued by U.S.A. during the course of the Work. Additional forms may be obtained from the AGENCY upon request.*

BIDDER'S INFORMATION

BIDDER certifies that the following information is true and correct:

Bidder Name

Business Address

City,

State

Zip

()

Telephone Number

State Contractor's License No. and Class

Original Date Issued

Expiration Date

The work site was inspected by _____ of our office on _____, 201__.

The following are persons, firms, and corporations having a principal interest in this proposal:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

The undersigned is prepared to satisfy the Council of the City of Huntington Beach of its ability, financially or otherwise, to perform the contract for the proposed work and improvements in accordance with the plans and specifications set forth.

Company Name

Signature of Bidder

Printed or Typed Signature

Subscribed and sworn to before me this ___ day of _____, 201__ .

NOTARY PUBLIC _____

NOTARY SEAL

Listed below are the names, address and telephone numbers for three public agencies for which the bidder has performed similar work within the past two years:

1. _____
Name and Address of Public Agency

Name and Telephone No. of Project Manager: _____

Contract Amount Type of Work Date Completed

2. _____
Name and Address of Public Agency

Name and Telephone No. of Project Manager: _____

Contract Amount Type of Work Date Completed

3. _____
Name and Address of Public Agency

Name and Telephone No. of Project Manager: _____

Contract Amount Type of Work Date Completed

SECTION E

SPECIAL PROVISIONS

All the Work to be done under this contract shall be in accordance with these Special Provisions and the **“GREENBOOK” Standard Specifications for Public Works Construction**, latest edition, as written and promulgated by the Joint Cooperative Committee of the Southern California Chapter of the American Public Works Association and the Southern California District of Associated General Contractors of California. Copies of the Standard Specifications are available from the publisher:

BNI Publications, Inc.
990 Park Center Drive, Suite E
Vista, CA 92081
760-734-1113

or

1612 S. Clementine St.
Anaheim, CA 92802
714-517-0971

The Standard Specifications set forth above, referred hereinafter as Standard Specifications, will control the general provisions, construction materials, and construction methods for this contract except as amended by the Plans, Special Provisions, or other contract documents.

In addition to the Greenbook standard specifications, CSI standard specifications attached herein shall be complied.

The section numbers of these Special Provisions coincide with those of the said Standard Specifications. Only those sections requiring amendment, elaboration, or specifying options, are called out.

WORK DESCRIPTION

The work to be done consists of furnishing all materials, equipment, tools, labor, and incidentals as required by the Plans, Specifications and Contract Documents for the above stated project. The primary scope of work includes replacement of existing electrical switchboard, motor control center (MCC), Zone 1 pump motors, and power and control circuits, upgrading Zone 2 pump circuits, installation of new concrete pad and steps for the switchboard, underground electrical duct banks, and coordination with Southern California Edison company (SCE) for replacement of SCE transformer, removal of tree(s) and all appurtenant related work.

The materials furnished and used shall be new except as specifically provided on the plans.

Should any items or details to make a complete installation be found missing from the specifications, same shall be supplied as if distinctly specified.

Before starting any construction, the Contractor shall notify the City Engineer in writing, giving the name, address, and telephone number where he can be reached when work is not in progress as well as giving twenty-four (24) hours notice prior to commencing any construction. Should the progress of the work cease for more than a normal working day, the Contractor shall again notify the City Engineer as to when the work will again begin. Any work done without proper notification shall be subject to disapproval by the City Engineer.

Other items of work or details not mentioned above that are required by the plans, Standard Specifications or these Special Provisions, shall be performed, placed, constructed or installed.

The Contractor shall be responsible to call Underground Service Alert at 1-800-422-4133 a minimum of 5 (five) working days prior to any construction.

Southern California Edison (SCE) Service Transformer Replacement

The City has obtained a permit from SCE to remove and replace the existing service transformer to the booster pump station as depicted on the project plans. The Contractor will need to coordinate with SCE who will conduct this work. Construction of conduits from the transformer to the main switchboard is the responsibility of the contractor. The compensation for Southern California Edison (SCE) Service Transformer Replacement shall be included in the bid for Install New SCE Service (SWBD-1) and no additional compensation will be allowed therefore.

Agency Furnished Equipment

The following is a list of pre-purchase items that is referred in the section E, Agency Furnished Equipment:

- Main switchboard SWBD-1
- Motor Control Center MCC including VFDs
- Zone 1 pump motors, total of four

The Contractor is responsible to coordinate the schedule for shipping and delivery of the Agency Furnished Equipment from the respective vendors. The contractor is responsible to protect the Agency Furnished Equipment once delivered from damage, weather, or theft, and is responsible to replace the equipment if damage or theft occurs. The compensation for the Agency Furnished Equipment shall be included in the bid for each of the respective bid item installation and no additional compensation will be allowed therefore.

City of Huntington Beach Electrical Permit

The Agency has obtained an Electrical Permit for the project work as depicted on the project plans. The Contractor will need to coordinate with the City of Huntington Beach Building and Safety Department to transfer of the ownership of the Electrical Permit from the Agency to the Contractor. Proof of this transfer shall be provided to the City Engineer before the Notice to Proceed will be issued. A copy of the Electrical Permit is presented as Appendix XX of these specifications. The compensation for the Electrical Permit shall be included in the bid for Mobilization and no additional compensation will be allowed therefore.

PART 1 GENERAL PROVISIONS

SECTION 1 TERMS, DEFINITIONS, ABBREVIATIONS AND SYMBOLS

1-2 DEFINITIONS

[Add or redefine the following:].

AGENCY - The City of Huntington Beach.

Board - The City Council of the City of Huntington Beach.

Caltrans - The State of California Department of Transportation.

County - The County of Orange.

Engineer - The City Engineer of the City of Huntington Beach or his authorized representative.

Plans – Construction drawings approved by the Engineer.

Specifications – Includes the Standard Specifications, Special Provisions, Addenda, and other contract documents, collectively.

SECTION 2 SCOPE AND CONTROL OF WORK

2-1 AWARD AND EXECUTION OF CONTRACT

[Replace with the following:].

Within 10 working days after the date the AGENCY'S award of contract, the Contractor shall execute and return all contract documents required by the AGENCY. The AGENCY reserves the right to terminate the award if the above requirement is not met. Such termination will result in the forfeiture of the Proposal Guarantee.

The Contract Agreement shall not be considered binding upon the AGENCY until executed by the authorized AGENCY officials.

A corporation to which an award is made may be required, before the Contract Agreement is executed by the AGENCY, to furnish evidence of its corporate existence, of its right to enter into contracts in the State of California, and that the officers signing the contract and bonds for the corporation have the authority to do so.

2-4 CONTRACT BONDS

[Add the following:].

The Faithful Performance Bond shall remain in force until the date of recordation of the Notice of Completion. The Material and Labor Bond shall remain in force until 35 days after the date of recordation of the Notice of Completion.

In conformance with the State of California Government Code, Chapter 13, Section 4590, the Contractor may substitute securities for any monies withheld by the City to endurance under the contract.

At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the AGENCY, or with a state or federally chartered bank as the escrow agent, who shall pay such monies to the Contractor upon notification by AGENCY of Contractor's satisfactory completion of the contract.

The type of securities deposited and the method of release shall be approved by the AGENCY.

2-5 PLANS AND SPECIFICATIONS

2-5.1 General

[Add the following:].

Only written authorization from the AGENCY shall be binding over any deviation or change in the Plans and Specifications. Please refer to SECTION 3 - CHANGES IN WORK for further explanation. The Contractor shall maintain a control set of Plans and Specifications on the project site at all times. All final locations determined in the field, and any deviations from the Plans and Specifications, shall be marked in red on this control set to show the as-built conditions. Upon completion of all Work, the Contractor shall return the control set to the Engineer. Final payment will not be made until this requirement is met. Reference in the Special Provisions to "State Standard Specifications" shall mean the Standard Specifications, latest edition, of the State of California, Department of Transportation. Copies of these specifications may be obtained from:

*State of California - Department of General Services
Publications Distribution Unit
P.O. Box 1015
North Highlands, California 95660*

Reference in the Special Provisions to Standard Plans shall mean the Standard Plans of the City of Huntington Beach, and where applicable, the following:

Standard Plans for Public Works Construction, published by the American Public Works Association, latest edition.

Standard Plans, published by the Orange County Environmental Management Agency.

Standard Plans, published by the State Department of Transportation, latest edition.

2-5.1.1 Agency Supplied Plans and Specifications

The City shall supply no more than 5 sets of plans and specifications for the Contractor's use. Additional copies are the responsibility of the Contractor. The Contractor may elect to reproduce existing sets, or purchase additional sets directly through the City's reprographics company.

2-5.3 Submittals

[Add the following:].

The contractor shall submit the names and addresses of all suppliers of mineral construction materials, and the mine from which the materials were obtained, along with a copy of the Office of Mine Reclamation AB3098 List showing that the mining operation is listed, prior to delivering any mineral construction materials to the project site. This documentation regarding the AB3098 List shall be made a part of every submittal required on the project that includes mineral construction materials. Failure to identify the supplier and the mine may result in rejection of the submittal.

The contractor shall submit a detail construction schedule to the engineer for approval. The schedule will include coordination for the delivery of Agency Furnished Equipment, and all coordination with SCE. After Agency approval of the detail construction schedule, Agency will issue the Notice to Proceed to begin work.

2-9 SURVEYING

2-9.1 Permanent Survey Markers

[Add the following:].

When the contract does not include a pay item for the adjustment of monuments to finished grade and unless otherwise provided for in the specifications, full compensation for said adjusting shall be included in the price bid for other items of work and no additional compensation will be allowed therefore.

2-9.2 Survey Service

[Add the following:].

All construction surveying and monument preservation work will be performed by the AGENCY.

2-10 AUTHORITY OF BOARD AND THE ENGINEER

[Add the following].

The Contractor shall give at least 24 hours advance notice when he or his subcontractor will start or resume the work.

The above notice is to be given during working hours, exclusive of Saturday, Sunday or AGENCY holidays for the purpose of permitting the Engineer to make necessary assignments of his representatives.

2-11 INSPECTION

[Delete the second sentence and add the following.]

If the Contractor elects to work under this contract more than 8 hrs./day or more than 40 hrs./week, Saturday, Sunday, or AGENCY holidays, the Contractor shall arrange with the Engineer for the required inspection service and pay **Special Inspection Fees** which will be charged at the following rates:

4 hrs. or less/day - \$465.00
4 hrs. to 8 hrs./day - \$880.00

Holidays

4 hrs. or less/day - \$ 565.00
4 hrs. to 8 hrs./day - \$1,125.00

When Special Inspection is required, the Contractor shall notify the AGENCY and pay inspection fees 24 hours in advance. If the Contractor is directed by the AGENCY to work under this contract more than 8 hrs./day or more than 40 hrs./week, the Special Inspection fee requirements will be waived.

SECTION 3 CHANGES IN WORK

3-3 EXTRA WORK

3-3.2 Payment

3-3.2.3 Markup.

[Delete Subsection in total and replace with the following:].

(a) **Work by Contractor.** The following percentages shall be added to the Contractor's costs and shall constitute the markup for all overhead and profits:

- 1) Labor 20
- 2) Materials15
- 3) Equipment Rental15
- 4) Other Items and Expenditures15

To the sum of the costs and markups provided for in the subsection, 1 percent shall be added as compensation for bonding.

(b) **Work by Subcontractor.** When all or any part of the extra work is performed by a Subcontractor, the markup established in 3-3.2.3(a) shall be applied to the Subcontractor's actual cost of such work. A markup of 10 percent on the first \$5,000 of the subcontracted portion of the extra work and a markup of 5 percent on work added in excess of \$5,000 of the subcontracted portion of the extra work may be added by the Contractor.

SECTION 4 CONTROL OF MATERIALS

4-1 MATERIALS AND WORKMANSHIP

4-1.1 General

[Add the following:].

The Contractor and all subcontractors, suppliers, and vendors, shall guarantee that the entire Work will meet all requirements of this contract as to the quality of materials, equipment, and workmanship. The Contractor, at no cost to the AGENCY, shall make any repairs or replacements made necessary by defects in materials, equipment, or workmanship that become evident within one year after the date of recordation of the Notice of Completion. Within this one year period, the Contractor shall also restore to full compliance with requirements of this contract any portion of the Work which is found to not meet those requirements. The Contractor shall hold the AGENCY harmless from claims of any kind arising from damages due to said defects or noncompliance.

Security of this guarantee shall be in the form of a Maintenance Bond furnished to the AGENCY by the Contractor. There shall be specific wording in the Maintenance Bond, that includes the guarantee or warranty of the labor and materials for a one year period, commencing from the recording date of the Notice of Completion by the County Recorder. The guaranteed amount shall be for 100 percent of the total amount earned to date as indicated on the final progress payment. The AGENCY reserves the right to withhold the retention until the Maintenance Bond has been accepted by the AGENCY.

The Contractor shall make all repairs, replacements, and restorations covered by the Maintenance Bond within 10 working days after the date of the Engineer's written notice. Failure to comply with such notice, will cause the AGENCY to file claim against the bond.

Excepted from the Maintenance Bond will be defects caused by acts of God, acts of the AGENCY, acts of vandals, or by acts of others outside or beyond the control of the Contractor.

4-1.4 Test of Materials

[Replace the third sentence of the first paragraph with the following:].

Unless otherwise provided, all testing shall be performed under the direction of the Engineer and the AGENCY will bear the cost of initial testing of material and workmanship which are required by the Standard Specifications and the Special Provisions. The cost of all other tests, including the retesting of material or workmanship that fails to pass the first test, shall be borne by the Contractor.

4-1.6 Trade Names or Equals

[Replace the last two sentences of the first paragraph with the following:].

Approval of equipment and materials offered as equivalents to those specified must be obtained as set forth in the Instructions to Bidders.

SECTION 5 UTILITIES

5-1 LOCATION

[Replace the first sentence of the last paragraph with the following:].

The location and existence of any underground utility or substructure was obtained from a search of available records. No guarantee is made or implied that the information is complete or accurate.

It shall be the Contractor's responsibility alone to determine the location of underground utilities or substructures of every nature and to protect them from damage.

The Contractor shall pothole all utilities, including service connections, which have been marked by the respective owners and which may affect or be affected by the Work.

5-4 RELOCATION

[Replace the second sentence of the last paragraph with the following:].

When not otherwise required by the plans and specifications and when directed by the Engineer, the Contractor shall arrange for the relocation of service connections, as necessary, between the meter and property line, or between the meter and limits of construction.

5-5 DELAYS

[Add the following paragraph:].

All notification to utility companies insofar as the relocation or removal of a utility shall be made by the Engineer based on Contractor's request as submitted to the Engineer at least 48 hours in advance of the needed work. Any costs for delay of the Contractor of utility companies in this regard shall be assigned to the Contractor, if these costs are a result of the Contractor's request being untimely in any respect excepting thereof any delay cost incurred as a result of the utility company not responding at their agreed time.

SECTION 6 PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK

[Replace the first sentence of the first paragraph with the following:].

The Contractor's proposed construction schedule shall be submitted to the Engineer within 10 working days after the date of the AGENCY'S execution of the Contract Agreement. The schedule shall be supported by written statements from each supplier of materials or equipment indicating that all orders have been placed and acknowledged, and setting forth the dates that each item will be delivered. Prior to issuing the Notice to Proceed, the Engineer will schedule a preconstruction meeting with the Contractor to review the proposed construction schedule and delivery dates, arrange utility coordination, discuss construction methods, and clarify inspection

procedures. The Contractor shall submit progress reports to the Engineer by the tenth day of each month. The report shall include an updated Construction Schedule. Any deviations from the original schedule shall be explained. Progress payments will be withheld pending receipt of any outstanding reports.

6-7 TIME OF COMPLETION

6-7.1 General

[Add the following:].

The time within which the Work must be completed by the Contractor is fixed at 60 working days, starting from and after the date in the Notice to Proceed with the Work, issued by the AGENCY to the Contractor, exclusive of maintenance periods.

6-7.2 Working Day

[Add the following:].

The Contractor's activities shall be confined to the hours between 7:00 A.M. to 4:00 P.M., Monday through Friday, excluding holidays. Deviation from these hours will not be permitted without the prior consent of the Engineer, except in emergencies involving immediate hazard to persons or property. In the event of either a requested or emergency deviation, inspection service fees will be charged against the Contractor. The service fees will be calculated at overtime rates including benefits, overhead, and travel time. The service fees will be deducted from any amounts due the Contractor.

Parking prohibitions on all roadways, where parking is currently permitted, shall be confined to the hours between 7:00 AM and 5:00 PM.

Lane closures on all arterial roadways will be confined to the hours between 9:00 AM and 4:00 PM, Monday through Friday, except holidays and any exceptions listed in Section 7-10.3.

6-9 LIQUIDATED DAMAGES

[Amend the liquidated damage amount to read:].

\$500.00

SECTION 7 RESPONSIBILITIES OF THE CONTRACTOR

7-1 CONTRACTOR'S EQUIPMENT AND FACILITIES

[Add the following:].

A noise level limit of 95 dbL at a distance of 50' shall apply to all construction equipment on or related to the job whether owned by the Contractor or not. This requirement in no way relieves the Contractor from responsibility for complying with local ordinances regulating noise level.

Contractor shall comply with the California Air Resource Board's regulations for off-road diesel vehicles, including but not limited to its idling policies.

7-2 LABOR

7-2.2 Laws

[Add the following:].

The Contractor, and all subcontractors, suppliers and vendors, shall comply with all AGENCY, State and Federal orders regarding affirmative action to ensure equal employment opportunities and fair employment practices. Failure to file any report due under said orders will result in suspension of periodic progress payments.

The Contractor shall ensure unlimited access to the job site for all equal employment opportunity compliance officers.

7-3 LIABILITY INSURANCE

[Delete the entire subsection and replace with the following:].

Contractor shall, prior to execution of an Agreement with the AGENCY, comply with the provisions of AGENCY's Resolution Number 2008-63 and any amendments thereto, contained in Appendix E of these Special Provisions and incorporated herein as if fully set forth.

Except as provided in 6-10, Contractor hereby agrees to protect, defend indemnify and hold harmless AGENCY, its officers, elected or appointed officials, employees, agents, and volunteers from and against any and all, claims, damages, losses, expenses, judgments, demands defense costs, and consequential damage or liability of any kind or nature, however caused, including those resulting from death or injury to Contractor's employees and damage to Contractor's property, arising directly or indirectly out of the obligations or operations herein undertaken by Contractor, caused in whole or in part by any negligent act or omission of the Contractor, any subcontractors, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, including but not limited to concurrent active or passive negligence, except where caused by the active negligence, sole negligence, or willful misconduct of the AGENCY. Contractor will conduct all defense at its sole cost and expense and AGENCY shall approve selection of Contractor's counsel. City shall be reimbursed for all costs and attorney's fees incurred by the AGENCY in enforcing this obligation. This indemnity shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as a limitation upon the amount of indemnification to be provided by

Contractor. The AGENCY will not be liable for any accident, loss or damage to the Work prior to its completion and acceptance, except as provided in 6-10.

The cost of this insurance shall be included in the Contractor's Bid.

7-5 PERMITS

[Delete the entire subsection and replace with the following:].

Prior to the start of any work, the Contractor shall take out the applicable AGENCY permits and make arrangements for AGENCY inspections. The AGENCY will issue the permits at no charge to the Contractor. The Contractor and all subcontractors shall each obtain an AGENCY business license, and shall be licensed in accordance with State Business and Professions Code. The Contractor, at no additional cost to the AGENCY, shall also obtain any and all other permits, licenses, inspections, certificates, or authorizations required by any governing body or entity.

The contractor is responsible to manage the construction site in accordance with the city's National Pollutant Discharge Elimination System (NPDES) Permit and Municipal Code Chapter 14.25 - Stormwater and Urban Runoff Management ordinance. The purpose of the NPDES permit and ordinance is the improvement of water quality through the control of pollutants. Without exception, discharges of stormwater from a construction site into the storm drain system (gutter) or a receiving waterbody are prohibited if the discharge contains pollutants that have not been reduced to the maximum extent practicable through the implementation of BMPs. It is the contractor's responsibility to implement a combination of BMPs to control erosion and sediment transport, and pollutants from materials and waste management storage and activities.

Full compensation for obtaining and conforming with the requirements of this section shall be included in other items of work and no additional compensation will be made therefore. No separate or additional compensation will be made for AGENCY permit and inspections, nor permits, licenses, inspections, certificates, or authorizations required by any other governing body or entity.

7-8 WORK SITE MAINTENANCE

7-8.1 General

[The first paragraph is amended to read:].

City of Huntington Beach Municipal Code Section 8.21.020 specifies that the collection of refuse and recyclable waste material shall be performed exclusively by the City Refuse Collector. The City of Huntington Beach has granted exclusive franchise for solid waste removal to Rainbow Disposal Co., Inc. Rainbow Disposal (714-847-3581) is the only refuse hauling company authorized to provide trash bins, drop-off boxes, and roll-off containers for construction and demolition disposal in Huntington Beach.

The construction companies that generate construction and demolition waste and have their own manpower and equipment to safely convey it to a permitted and approved landfill or recycling site and all hazardous waste are excluded from this provision. Any such companies providing

their own manpower and equipment for construction and demolition waste removal must clearly mark the equipment used in Huntington Beach with their company name and telephone number.

[The second paragraph is amended to read:].

Unless directed otherwise by the Engineer, the Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day to keep paved areas acceptably clean wherever construction, including restoration, is incomplete.

7-8.5.3 Spill Prevention and Emergency Response Plan

[Add the following:].

Secondary containment shall be provided with portable toilets.

7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

[Delete the second paragraph and substitute with the following:].

The Contractor shall relocate, repair, replace or reestablish all existing improvements within the project limits which are not designated for removal (e.g., curbs, gutters, sidewalks, driveways, fences, walls, sprinkler systems, signs, utility installations, pavements, and structures.) which are damaged or removed as a result of his operations.

Where existing traffic striping, pavement markings and curb markings are damaged or their reflectivity reduced by the Contractor's operations, such striping or markings shall also be considered as existing improvements and the Contractor shall repaint or replace such improvements.

Relocations, repairs, replacements or reestablishments shall be equal to the existing improvements and shall match such improvements in finish and dimensions unless otherwise specified.

[Delete the last paragraph and substitute the following:].

All cost to the Contractor for protecting, removing, restoring, repairing, replacing, or reestablishing existing improvements shall be included in the bid in other items of work unless otherwise specified.

7-10 PUBLIC CONVENIENCE AND SAFETY

7-10.1 Traffic and Access

[Add the following:].

All traffic control shall be in accordance with the latest edition of the following documentation: **Caltrans Manual on Uniform Traffic Control Devices (MUTCD)**; **Sign Specifications, Standard Plans, Standard Specifications**; **American Public Works Association Southern California Chapter – Work Area Traffic Control Handbook**.

Within 30 calendar days after notification of award, the Contractor shall submit, for review and approval by the Engineer, a Traffic Control Plan. The Traffic Control Plan shall be signed and stamped by a civil engineer familiar with the preparation of traffic control plans and licensed by the State of California. The plans shall incorporate, as a minimum, the following requirements of Section 7-10.3.

Upon approval of the Traffic Control Plan by the City, approval of the Contractor's schedule by the City and execution of the Contract documents by both parties, the City will issue a Notice to Proceed specifying the Contract start date (first day of work).

Full compensation for conforming to this requirement shall be included in the lump sum price bid for Mobilization and no additional compensation will be allowed therefor.

The Contractor shall provide, to the Engineer, a telephone number at which the Contractor's representatives can be reached, at any hour, should an emergency occur requiring replacement or relocation of the required traffic control devices.

Prior to the start of construction, the Contractor shall inform the AGENCY's Police and Fire departments of the project location, approximate starting date, completion date, and the name and telephone number of contractor representatives who may be contacted at any hour in the event of an emergency.

POLICE DEPARTMENT: *Watch Commander @ (714) 960-8809*

FIRE DEPARTMENT: *Battalion Chief/Development @ (714) 536-5411*

Information signs shall be required on all arterial streets one week prior to beginning of roadway construction projects.

The Contractor shall adhere to applicable sections of California Administrative Code, Title 8, concerning electrical and construction safety standards and practices.

Contractor shall require that an approved safety vest be worn by all personnel who are working at this project site. Any worker without a vest may be ordered off the job by the Inspector until such apparel is acquired. Questions as to approved vests shall be directed to the Engineer.

Prior to the beginning of work, the Contractor shall execute the provided construction traffic control plan prepared per current AGENCY guidelines to safely prosecute the construction work involved with a minimum of inconvenience to the motoring public.

Any relocation of travel lanes longer than three calendar days shall be delineated by removing the existing striping and legends by wet sandblasting and placing new striping and legends as required. Upon completion of the work and the restoration of the road surface to its final condition, the Contractor shall remove temporary striping by wet sandblasting.

If the traffic cones or portable delineators are damaged, displaced or are not in an upright position, for any reason, the contractor shall immediately replace or restore to their original location, in an upright position, the cones or portable delineators.

The Contractor shall provide and maintain all signs, barricades, flashers, delineators and other necessary facilities for the protection of the motoring public within the limits of the construction

area. He shall also post proper signs to notify the public regarding detours and conditions of the roadway, all in accordance with the provisions of the California Vehicle Code, the current State of California Department of Transportation "Manual of Traffic Controls for Construction and Maintenance Work Zones", and the State of California Department of Transportation Standard Plans and the current Work Area Traffic Control Handbook (a.k.a the WATCH Manual).

The Contractor shall furnish such flagmen and equipment as are necessary to give adequate warning to traffic or to the public of any dangerous conditions in accordance with the current Department of Transportation "Instructions to Flagmen".

All existing traffic signs and street signs shall be maintained in visible locations during construction. Signs designated for removal shall be salvaged and delivered to the AGENCY Yard or disposed of as directed by the AGENCY.

Warning Signs

Adequate warning signs for motorists shall be placed and maintained throughout all applicable phases of the work including speed limit reduction, loose gravel, fresh oil, and open trench. Signs shall be 36" X 36" in size; shall be on site ready for placement prior to start of the applicable phase of work and shall be placed in advance on all streets approaching the work zone.

7-10.3 Street Closures, Detours, Barricades

[Add the following:].

Construction Traffic Control Plans shall be prepared in accordance with the AGENCY's latest Traffic Control Plan Preparation Guidelines and shall be reviewed and approved by the Engineer. The Contractor shall submit the plans to the Engineer for approval or correction at least 10 working days before approved plans will be required for commencing the work.

The Construction Traffic Control Plans (CTCP) shall be prepared under the supervision of a registered professional Civil Engineer licensed to practice in the State of California. Each sheet of the CTCP shall have the name, address, and telephone number of the engineer or engineering firm that prepared the CTCP, and the professional engineer's stamp and expiration date, and the professional engineer's signature and signature date.

Approval of the plans by the Engineer shall not relieve the Contractor from the responsibility for errors or omissions in the plans or from deviations from the Contract Documents. This traffic control plan shall provide pedestrian access throughout the construction area. The appropriate signing, barricades, etc., shall be included on the plan. This pedestrian access shall comply with the accessibility requirements contained within the American with Disabilities Act (ADA).

The contractor shall install a barricade mounted 18" x 36" C42 sign "SIDEWALK CLOSED CROSS HERE" at the nearest crossings leading to the closure when the sidewalk width is reduced to less than 36" or at the discretion of the Engineer.

The Contractor shall be responsible for the correctness of the plans and for the results obtained by the use of such plans.

Full compensation for Construction Traffic Control Plan and furnishing Traffic Control shall be paid for on a lump sum bid price for Mobilization and no additional compensation will be allowed therefor.

Street closures will not be allowed except as permitted by the Engineer. The following minimum lane requirements shall be provided at all times, subject to time of day restrictions as established by Section 6-7.2.

7-10.5 Protection of the Public

[Add Subsection in total and replace with the following:].

It is part of the service required of the Contractor to make whatever provisions are necessary to protect the public. The Contractor shall use foresight and shall take such steps and precautions as his operations warrant to protect the public from danger, loss of life or loss of property, which would result from interruption or contamination of public water supply, interruption of other public service, or from the failure of partly completed work or partially removed facilities. Unusual conditions may arise on the work which will require that immediate and unusual provisions be made to protect the public from danger or loss, or damage to life and property, due directly or indirectly to prosecution of work under this contract.

Whenever, in the opinion of the Engineer, an emergency exists against which the Contractor has not taken sufficient precaution for the public safety, protection of utilities and protection of adjacent structures or property, which may be damaged by the Contractor's operations and when, in the opinion of the Engineer, immediate action shall be considered necessary in order to protect the public or property due to the Contractor's operations under this contract, the Engineer will order the Contractor to provide a remedy for the unsafe condition. If the Contractor fails to act on the situation, the Engineer may provide suitable protection to said interests by causing such work to be done and material to be furnished as may be necessary.

The cost and expense of said labor and material, together with the cost and expense of such repairs as are deemed necessary, shall be borne by the Contractor. All expenses incurred by the AGENCY for emergency repairs will be deducted from the progress payments and the final payment due to the Contractor. However, if the AGENCY does not take such remedial measures, the Contractor is not relieved of the full responsibility for public safety.

7-12 Advertising

[Delete first paragraph and replace with the following:].

Solar changeable message boards shall be furnished by the contractor on either side of arterial highway projects. The placement of these signs will be determined by City Staff at the pre-construction meeting, and shall be placed at this location prior to the start of work.

Doorknob notification of residents and business owners directly affected by construction and the posting of "No Parking" notification signs shall occur a minimum of 48 hours prior to construction. On projects involving tree removals and replacements, doorknob notification explaining the work location, scope of work regarding tree removal and replacement, and AGENCY contact information will be posted at all residential and business addresses adjacent to the project area no later than two weeks prior to commencement of the project or any tree related work.

Full compensation for these items and placement thereof shall be included in the contract price for mobilization, and no other compensation will be allowed there for.

SECTION 8 FACILITIES FOR AGENCY PERSONNEL

8-1 GENERAL

[Add the following:].

No field offices for AGENCY personnel will be required, however, the AGENCY personnel shall have the right to enter upon the project at all times and shall be admitted to the offices of the Contractor, at any time during the operation of the Work.

SECTION 9 MEASUREMENT AND PAYMENT

9-3 PAYMENT

9-3.1 General

[Delete the last paragraph and substitute with the following:].

Compensation for items of work not specifically identified in these Special Provisions shall include all labor, materials, tools, equipment, safety measures, and supervision required to complete the work to grades and dimensions shown on the Plans or staked in the field. There shall be no compensation except for the bid items specified in the Proposal. The cost of all work shown in the Plans and Specifications but not specifically identified as a bid item or described within a bid item shall be included in related bid items, and no additional compensation shall become due the Contractor by nature of compliance with the Plans and Specifications except as provided in Sections 3, "Changes in Work" of the Greenbook, as modified in these Special Provisions.

At the expiration of 35 days from the filing and recording of the Notice of Completion of the Work, the amount deducted from the final estimate and retained by the AGENCY will be paid to the Contractor except such amounts as required to be withheld by properly executed and filed to stop payment, or as may be authorized by the contract.

9-3.2 Partial & Final Payment

[Amend the first sentence of the first paragraph to read:].

The closure date for the purpose of making partial progress payments will be the last day of each month. The Contractor may request, in writing, that such monthly closure date be changed. The Engineer may approve such request when it is compatible with the AGENCY'S payment procedure.

Each month, the Contractor shall meet with the Engineer, a minimum of three working days prior to the submittal of the progress payment to the AGENCY, to finalize and receive approval regarding the measurement of the Work performed through the closure date and the estimated

value of the progress payment based on the contract Unit Prices or as provided for in Section 9-2. Any progress payment submitted without such approval will be considered incomplete and returned to the Contractor and no payment shall be considered until such approval is obtained.

[Add the following to the end of the section:].

Payments will be withheld pending receipt of any outstanding reports required by the contract documents. In addition, the final progress payment will not be released until the Contractor returns the control set of specifications and plans indicating the as-built conditions.

At the request and expense of the Contractor, who shall retain beneficial ownership and receive interest, if any thereon, the AGENCY shall permit the substitution and deposit therewith of securities equivalent to the amount of any monies withheld by the AGENCY.

9-3.4 Mobilization

[Add the following to the end of the section:].

Work under this item shall include the cost to secure bonds and insurance's, permits and licenses, maintenance of record plans, movement of personnel, equipment, materials and incidentals to and from the project sites, securing a temporary construction yard, maintaining the project in a safe, clean and orderly manner during construction and final cleanup of the work and staging sites, and demobilization.

Included in this item are any costs associated with construction activities required to conform to the general notes on the construction plans.

Payment for this item shall be made at the lump sum price indicated in the Bid Schedule and progress payments shall be made upon the judgment of the Engineer as percent complete.

PAYMENT ITEMS

ITEM NO. 1: Mobilization/Demobilization:

Refer to Subsection 9-3.4 of these Specifications. The lump Sum price bid for this item of work shall constitute full and complete payment for mobilization and demobilization, and including furnishing all labor, materials, equipment, and incidentals and no additional compensation will be allowed.

ITEM NO. 2: Remove Existing SCE Service and Concrete Pad:

Refer to plans, and Standard Plan 109 in Appendix P of these Specifications. The lump Sum price bid for this item of work shall constitute full and complete payment for the coordination with SCE for the service disconnect, demolition of existing SCE service and concrete pad and any associated cleanup, furnishing all labor, materials, equipment, and incidentals and no additional compensation will be allowed.

ITEM NO. 3: Install concrete pad & step(s) for the SWBD-1:

The lump sum price bid for this item shall include full compensation for the installation of concrete pad and steps including new grading around pad, remove existing trees that obstructs with new concrete pad, relocation of irrigation sprinkler heads if required, and any associated field adjustment.

- ITEM NO. 4: Install Agency furnished new switchboard SWBD-1:
Refer to plans and appendix Q pre-purchase items of these Specifications. The lump sum price bid for installing the Agency Furnished switchboard shall include full compensation for coordinating the delivery of the Agency Furnished Switchboard, coordination with SCE to install the new transformer, provide service connection, conduit stub-outs for future load, miscellaneous circuit connection as indicated on plans and pre-purchase item package, furnishing all labor, materials, equipment, and incidentals.
- ITEM NO. 5: Provide and install conduit and cable between SWBD-1 and MCC:
Refer to plans and Section F of these Specifications. Lump Sum price bid for this item of work shall constitute full and complete payment for installation of conduits, wall penetration and seal, pull cables and termination, and including furnishing all labor, materials, equipment, and incidentals and no additional compensation will be allowed therefor.
- ITEM NO. 6: Provide and install (4) 4-inch underground service conduits paralleled with existing (2) 4-inch service conduits per SCE requirements:
Refer to plans, Subsection 300 through 306, and section F of the specifications. Unit price bid for electrical trench and duct bank shall include full compensation for furnishing all labor, materials, equipment, saw-cut of existing pavement, trench, installation of new conduits per SCE requirements, backfill, resurfacing match to surroundings, remove existing trees if it is necessary, and incidentals and no additional compensation will be allowed therefor.
- ITEM NO. 7: Remove existing MCC and existing cable(s):
Refer to plans. The lump sum price bid for this item of work shall include full compensation for furnishing all labor, materials, equipment, removing and disposing of existing MCC and interfering materials, remove existing cables and wires including all incidentals and no additional compensation will be allowed therefor.
- ITEM NO. 8: Install Agency furnished new MCC:
Refer to plans, Section F, and appendix Q pre-purchase items of these Specifications. Lump Sum price bid for this item of work shall constitute full and complete payment for furnishing all labor, materials, equipment, coordinating the delivery of the Agency Furnished MCC, installation of new MCC including VFDs, installation of new cables and wires through the existing conduit for the power, control, signal and communication circuits, provide conduit extension as required, installation of internal heater circuits, and including all incidentals and no additional compensation will be allowed therefor.
- ITEM NO. 9: Provide and install pull box (NEMA 12, 24"x24"x12" minimum) at ceiling:
Refer to plans. Unit price bid for installation of pullbox at ceiling space shall include full compensation for furnishing all labor, materials, equipment, and no additional compensation will be allowed therefor.
- ITEM NO. 10: Remove existing Zone 1 pump motors and install Agency furnished new motors:

Refer to plans. Unit price bid for removal of existing pump motor and install new shall include full compensation for furnishing all labor, materials, equipment, coordinating the delivery of the Agency Furnished motors, removal of existing motor, install new motor, and no additional compensation will be allowed therefor.

ITEM NO. 11: Provide and install overhead conduit, cable and connection for the Zone 1 pump motors:

Refer to plans and Section F. Unit price bid to furnish and install overhead circuit shall include full compensation for furnishing all labor, materials, equipment, conduit support, pump motor connection including flexible conduit connection, re-route interfering materials, incidentals and no additional compensation will be allowed therefor.

ITEM NO. 12: Remove existing pullbox and provide and install new pull box (20"x16"x6") on the existing stanchion for Zone 1 pumps:

Refer to plans and Section F. Unit price bid for replacing existing pullbox with new shall include full compensation for furnishing all labor, materials, equipment, disposal, re-route interfering materials, and no additional compensation will be allowed therefor.

ITEM NO. 13: Provide and install control wiring and motor space heater circuit through existing underground conduit for the Zone 1 pump motors:

Refer to plans, Section F and appendix Q pre-purchase items of these Specifications. Unit price bid for installation of motor space heater circuit and no additional compensation will be allowed therefor.

ITEM NO. 14: Provide and install overhead conduit, cable and connection for the Zone 2 pump motors:

Refer to plans and Section F. Unit price bid to furnish and install overhead circuit shall include full compensation for furnishing all labor, materials, equipment, conduit support, pump motor connection including flexible conduit connection, re-route interfering materials, incidentals and no additional compensation will be allowed therefor.

ITEM NO. 15: Provide and install new conduit and control wiring between MCC and Zone 1 control panel:

Refer to plans, Section F, and appendix Q pre-purchase items of these Specifications. Unit price bid for control circuit wiring shall include full compensation for furnishing all labor, materials, equipment, re-route interfering materials and no additional compensation will be allowed therefor.

ITEM NO. 16: Provide and install new conduit and control wiring between MCC and Zone 2 control panel:

Refer to plans, Section F and appendix Q pre-purchase items of these Specifications. Unit price bid for control circuit wiring shall include full compensation for furnishing all labor, materials, equipment, re-route interfering materials and no additional compensation will be allowed therefor.

ITEM NO. 17: Provide and install cable for signal (analog) wiring between MCC and Zone 1 control panel:

Refer to plans, Section F, and appendix Q pre-purchase items of these Specifications. Unit price bid for signal circuit wiring shall include full compensation for furnishing all labor, materials, equipment, re-route interfering materials and no additional compensation will be allowed therefor.

ITEM NO. 18: Provide and install cable for signal (analog) wiring between MCC and Zone 2 control panel:

Refer to plans, Section F, and appendix Q pre-purchase items of these Specifications. Unit price bid for signal circuit wiring shall include full compensation for furnishing all labor, materials, equipment, re-route interfering materials and no additional compensation will be allowed therefor.

ITEM NO. 19: Startup, Commissioning, and Testing:

Refer to plans, Section F, and appendix Q pre-purchase items of these Specifications and field direction by the City. Unit price bid for the Startup, Commissioning, and Testing of new and modified equipments and its operation shall include full compensation for furnishing all labor, materials, equipment, and no additional compensation will be allowed therefor.

ADDITIVE ALTERNATE

ALT NO. 1: Provide and install new (6) 4-inch conduits between SCE transformer pad and new SWBD-1 in lieu of the bid item No.6 above:

Refer to plans, Subsection 300 through 306, and section F of the specifications. Unit price bid for electrical trench and duct bank shall include full compensation for furnishing all labor, materials, equipment, saw-cut of existing pavement, trench, removal of exiting (2) 4-inch conduits, installation of new conduits per SCE requirements, backfill, resurfacing match to surroundings, remove existing trees if it is necessary, transporting and proper disposal of accumulated water at the site designated by the Agency if required by the agency and no additional compensation will be allowed therefor.

PART 2 CONSTRUCTION MATERIALS

SECTION 200 ROCK MATERIALS

200-1 ROCK PRODUCTS

200-1.1 General

[Add the following:].

Aggregates shall conform to the provisions in Section 200-1 and shall be approved by the Engineer prior to use.

In accordance with the provisions of Section 20676 of the State of California Public Contract Code, it shall be mandatory upon the Contractor to whom the Contract is awarded, and upon all subcontractors and suppliers under him, to obtain all construction aggregate, sand, gravel, crushed stone, road base, fill materials, and any other mineral materials, including those used in other construction materials such as asphalt concrete and Portland cement concrete, from a supplier that is included on the most current Office of Mine Reclamation AB3098 List. Failure to identify the supplier and the mine may result in rejection of the submittal, and any work completed using materials from an unlisted mine will be SUBJECT TO REJECTION.

200-2 UNTREATED BASE MATERIALS

200-2.1 General

[Add the Following:].

Untreated base to be used for the base course under asphalt concrete pavement shall be crushed miscellaneous base.

Payment for Untreated Base will be made at the contract unit price per ton which shall include full compensation for furnishing all material required under untreated base in accordance with the plans and these special provisions and no additional compensation will be allowed therefor.

SECTION 201 CONCRETE, MORTAR AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE

201-1.2 Materials.

201-1.2.4 Chemical Admixtures

[Delete Subsection in total and replace with the following:].

Admixtures will not be permitted.

SECTION 203 BITUMINOUS MATERIALS

203-6 ASPHALT CONCRETE.

203-6.1 General

[Delete the second paragraph and replace with the following:].

Asphalt Base Course shall be Type III-B2-PG 64-10. Asphalt Surface Course shall be Type III-C3-PG 64-10. Asphalt-Rubber Hot Mix shall be ARHM-GG-C 1/2" PG 64-16 and shall comply with the requirements of Section 302-9. The grading of the combined aggregates for rubberized and conventional asphalt concrete shall conform to the requirements of Section 203-11.3 and Section 400-4, respectively. Asphalt binder shall comply with the Performance Grade specifications of Section 203-1.

PART 3 CONSTRUCTION METHODS

SECTION 300 EARTHWORK

300-1 CLEARING AND GRUBBING

300-1.3 Removal and Disposal of Materials.

300-1.3.1 General

[Delete Subsection in total and substitute with the following:].

No burning will be permitted.

No accumulation of flammable material shall remain on or adjacent to the right-of-way. The roadway and adjacent areas shall be left with a neat and finished appearance.

In order to protect the public streets from deterioration due to hauling of materials, the Contractor shall submit, prior to the pre-job meeting, for approval a proposed route for hauling of materials for disposal. Upon approval, the Contractor shall strictly adhere to that route, unless written permission from the Engineer is obtained to change the route.

300-2 UNCLASSIFIED EXCAVATION

300-2.1 General

[Add the following:].

Unclassified excavation shall include excavating, removing, hauling and disposal of all material including asphalt concrete pavement to the subgrade elevations indicated on the plans as required to construct the new improvements.

Removal of asphalt concrete, aggregate base and native soil shall be made at the locations shown on the plans, or as specified in the field by the Engineer. Asphalt pavement shall be removed to clean straight lines by saw cutting.

The areas and quantities shown on the plans are given only for the Contractor's aid in planning the Work and preparing bids. The Engineer shall designate the limits to be removed and these designated areas shall be considered to take precedent over the areas shown on the plans. No guarantee is made that areas or quantities shown will equal the areas or quantities designated by the Engineer.

300-2.9 Payment

[Add the following:].

Unless directed otherwise by the Engineer, stockpiling of removal material will not be allowed in or around the project site.

Said payment shall also include full compensation for all required saw cutting of removal areas.

**SECTION 302
ROADWAY SURFACING**

302-1 COLD MILLING OF EXISTING PAVEMENT

302-1.1 General

[Add the following:].

The Contractor shall protect all existing facilities during the planing operation and repair or replace any damage facilities. These existing facilities shall include but not be limited to:

- A. Concrete curbs, gutters, driveways and sidewalks.
- B. Roadside signs.
- C. Trees and shrubs adjacent to the Work area.
- D. Utility lines, vaults, manholes, valves and signal detector loops.

302-1.2 Milling Machine

[Add the following:].

The planing machine shall plane without tearing or gouging the underlying surface, shall be adjustable as to crown and depth by tilting the drum axis, and shall be capable of cutting sharp straight longitudinal edge joints in the pavement.

The surface tolerance permitted as measured along a 10 foot straight edge shall be 3/8 inch laterally (except in crown areas) and 3/16 inch longitudinally. If in the judgment of the Engineer, the joint cut varies from a straight line or ravel excessively, he may require the longitudinal joint to be saw cut.

302-5 ASPHALT CONCRETE PAVEMENT

302-5.1 General

[Add the following:].

Tarpaulins shall be used to cover all loads from plant to project.

Each layer of asphalt concrete shall not exceed 0.25 foot in compacted thickness. Each layer shall be completely placed and compacted prior to commencement of successive layers. Tracks or wheels of spreading equipment shall not be operated on the top layer of asphalt concrete in any area until final compaction has been completed.

Three-wheeled rollers shall not be permitted, and pneumatic rollers shall be used only on lower layers.

Initial breakdown compaction shall consist of a minimum of three coverages of layer of asphalt mixture. A pass shall be movement of a roller in both directions over the same path. A coverage shall consist of as many passes as are necessary to cover the entire width being paved. Overlap between passes during any coverage, made to insure compaction without displacement of material in accordance with good rolling practices, shall be considered to be part of the coverage being made and not part of a subsequent coverage. Each coverage shall be completed before subsequent coverage is started.

Prior to placement of asphalt concrete, a tack coat of SS1H emulsified asphalt shall be applied to all contract surfaces.

An asphalt leveling course shall be applied in depressed areas in accordance with the plans and/or as directed by the Engineer. An automatic leveling device shall be used on the paver unless omitted by the Engineer.

302-5.5 Distribution and Spreading

[Add the following:].

Prior to placing asphalt pavement overlay, all vegetation shall be removed from the cracks in the pavement and all joints between the pavement and concrete gutters by the Contractor. The surface to be overlaid shall be cleaned by the Contractor to remove moisture, dirt, grease, or other foreign matter which would reduce the bond between the overlay and the pavement.

302-5.8 Manholes (and other structures)

[Delete Subsection in total and substitute with the following:].

The manhole and valve box locations and distance from curb to center shall be marked on the curb face by the Contractor.

The method of adjusting manholes in areas for resurfacing shall be as follows:

The asphalt pavement immediately adjacent to the manhole shall be removed, the manhole shaft extended with adjustment ring(s) to proper grade, the manhole frames and covers replaced, the manhole frames set in concrete, and the pavement replaced with a

minimum of 2 inches of asphalt concrete. The finished grade of the water valve frame and cover shall be ¼ inches below the finish grade of the asphalt pavement.

The Contractor shall notify affected utility owners at least 5 working days in advance of the need to commence work required prior to paving operations and again for work required after paving operations. The Contractor shall mark locations of utility vaults where utility companies specifically state adjustments shall be made after paving. If it is found to impractical for the utility owner to complete remodeling or adjustment to structures, as evaluated by the Engineer, then the Contractor shall be absolved of further responsibility in connection therewith, and the structure shall be adjusted to grade by the utility owner under permit or ordinance procedure established by the AGENCY for utility cuts in pavement.

Any new concrete surface on the inside of an AGENCY sewer manhole shall be applied with a Zebron or Sancon coating or an approved equal.

Payment for sewer manhole coating and manhole adjusting will be made at the contract unit bid price per each which shall constitute full compensation.

Payment for valve box adjusting will be made at the contract unit bid price per each which shall constitute full compensation.

302-5.9 Measurement and Payment

[Amend the first paragraph to read:].

Asphalt concrete pavement will be paid for in the lump sum price of other items of work where underground conduit is installed. Such price shall include removing existing raised pavement markers, preparation of subgrade, applying tack coat, and placement of asphalt concrete leveling course.

**SECTION 303
CONCRETE AND MASONRY CONSTRUCTION**

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS

303-5.5 Finishing.

303-5.5.4 Gutter

[Add the following:].

When gutter is constructed at a rate of grade less than 0.30% it shall be water tested. If any portion of the newly constructed gutter is shown to pond water, that portion, including curb if applicable, shall be removed, reconstructed, and retested by the Contractor at no additional cost to the AGENCY. The exact limits of removal will be determined based on a survey conducted by AGENCY forces, unless otherwise directed by the Engineer.

303-5.9 Measurement and Payment

[Add the following:].

Payment for the construction or removal, respectively, of concrete curbs, gutters, curb ramps, cross gutters, v-gutters, driveway approaches, alley approaches, and sidewalk shall be made as shown on the plans. Such price shall constitute full compensation for all equipment, materials, labor, and incidentals necessary for the construction or removal of said item, and shall include, but not be limited to: slot paving, any required saw cutting, removal and disposal of said items, the reconstruction of curb drains, the replacement of water meter boxes damaged during the removal of existing improvements and/or the construction of proposed improvements, and the adjustment of existing utilities and other improvements located within the area of work in order to match the proposed finished surfaces and grades as indicated in the Project Plans and/or Specifications. Additionally, all depressed curb and gutter, and concrete sidewalk located within the limits of the new curb ramp, cross gutter, or driveway/alley approach shall be considered as part of said ramp, cross gutter, or approach and shall be paid for in the lump sum cost for other items of work where underground conduit is installed.

SECTION 306 UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

306-1.1 Trench Excavation.

306-1.1.1 General

[Replace the last sentence in the third paragraph and add the following:]

If groundwater is encountered, the Contractor shall dispose of it by any method acceptable to the Engineer. The trench shall be dewatered to a minimum depth of 12 inches below trench bottom. The cost of any dewatering shall be included in the cost of pipe construction and no additional compensation will be allowed therefore.

[Add the following:]

Upon approval by the Engineer, when backfilling operation of an excavation in the travel way, whether transverse or longitudinal cannot be properly completed within a work day, steel plate bridging with a nonskid surface and shoring may be required to preserve unobstructed traffic flow. In such cases, the following shall apply:

1. Steel plate used for bridging must extend a minimum of twelve (12") inches (300 mm) beyond the edge of the trench.
2. Steel plate bridging shall be installed to operate with minimum noise.
3. The trench shall be adequate to support the bridging and the traffic load. Contractor shall be responsible for determining whether shoring is necessary.

4. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plate.
5. Bridging shall be secured against displacement by adjustable cleats, shims, or other devices.

Approaches plate and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of two (2) dowels pre-drilled into the corners of the plate and drilled two (2") inches (53 mm) into the pavement. Subsequent plates are butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope of 8.5% with a minimum of twelve (12") inches (300 mm) taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either fines of asphalt concrete mix, concrete slurry or an equivalent slurry satisfactory to the Engineer.

The Contractor shall be responsible for maintenance of the steel plates, shoring, and asphalt concrete ramps.

Unless specified, use of steel plate bridging at any given location should not exceed four (4) consecutive working days in any given week. Trench plates need to be set flush with pavement and secured in place as noted above for any durations over (4) days upon approval of the engineer. Backfilling of excavation shall be covered with a minimum of three (3") inches (78 mm) of temporary layer of cold asphalt concrete.

The following table shows the required minimal thickness of steel plate bridging for a given trench width:

<u>Trench Width</u>	<u>Minimum Plate Thickness</u>
1.0 foot (300 mm)	½ inch (13 mm)
1.5 foot (450 mm)	¾ inch (19 mm)
2.0 feet (600 mm)	7/8 inch (22 mm)
3.0 feet (900 mm)	1 inch (27 mm)
4.0 feet (1200 mm)	1 ¼ inch (35 mm)

For spans greater than four (4') feet (1200 mm), a structural design for the steel plate bridging shall be prepared by a registered civil engineer and approved by the Engineer. Steel plate bridging shall be designed for HS20-44 truck loading per Caltrans Bridge Design Specifications Manual. The Contractor shall maintain steel plates with a non-skid surface having a minimum coefficient of friction equivalent to 0.35 as determined by California Test Method 342. The Contractor may use standard steel plate with known coefficient of friction equal or exceeding 0.35.

Payment for steel plate bridging shall be included in the other items of work involved and no additional payment will be allowed therefore.

306-1.1.6 Bracing Excavations

[Add the following:].

Payment for trench shoring shall be considered to be included in the other items of work, which shall include full payment for furnishing shop drawings, all labor and materials, and performing

all work as specified to brace excavations or provide an equivalent method for protection of workers per Section 6707 of the California Labor Code, and in accordance with these Plans and Special Provisions and no other measurement or additional compensation will be allowed therefor.

306-1.2 Installation of Pipe

306-1.2.1 Bedding

[Replace the second sentence of the second paragraph with the following:].

Bedding for sewer main and/or storm drain pipe shall conform to AGENCY Standard Plans.

Additional bedding ordered by the Engineer, over the amount indicated on the plans due to unsuitable material, shall be paid for per Subsection 3-3.

Bedding for pipe shall conform to AGENCY Standard Plans.

306-1.2.2 Pipe Laying

[Add the following:].

One or two foot standard lengths of pipe shall be used for inlet and outlet connection to the manhole assemblies.

306-1.3 BACKFILL AND DENSIFICATION

306-1.3.3 Jetted Backfill

[Delete Subsection in total and substitute with the following:].

Water densified backfill will not be permitted.

306-1.3.5 Jetted Bedding and Backfill Compaction Requirements

[Delete Subsection in total and substitute with the following:].

Trench backfill shall be compacted to a relative compaction of 90% from the top of the bedding section to 12 inches below pavement subgrade, or finished grade where there is no pavement, and 95% from 12 inches below pavement subgrade to pavement subgrade.

306-1.6 Basis of Payment for Open Trench Installations

[Delete the second paragraph and substitute with the following:].

The lump sum price in other items of work that includes conduit shall be considered full compensation for all wyes, tees and bends and specials shown on the Plans; the removals of interfering improvements; the excavation of the trench; the control of ground and surface water; the preparation of subgrade; the placement and joining of pipe; backfilling the trench; temporary and permanent resurfacing; and all other work necessary to install the pipe, complete in place. No additional compensation will be allowed therefore.

SECTION F

SPECIAL ELECTRICAL PROVISIONS

The specifications herein have been modified from MasterFormat specifications as written by The Construction Specifications Institute (CSI). Copies of the MasterFormat specifications are available from the publisher:

The Construction Specifications Institute
110 South Union Street, Suite 100
Alexandria, VA 22314
1-800-689-2900

The Standard Specifications set forth above, referred hereinafter as Standard Specifications, will control the general provisions, construction materials, and construction methods for this contract except as amended by the Plans, Special Provisions, or other contract documents.

Section 16010

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section includes materials, installation, and testing of the electrical system.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. One-year Guarantee: General Provisions
- B. Permits and Licenses: General Provisions

1.3 SUBMITTALS

- A. Submit shop drawings in accordance with the General Provisions and the following.
- B. Complete fabrication, assembly, and installation drawings, wiring and schematic diagrams; and details, specifications, and data covering the materials used and the parts, devices, and accessories forming a part of the equipment furnished shall be submitted in accordance with the submittals section.
- C. Instrument tag numbers indicated on the contract drawings shall be referenced where applicable.
- D. Submittal data for multifunctional instruments shall include complete descriptions of the intended functions and configurations of the instruments.
- E. Submittal data shall be grouped and submitted in three separate stages. The submittal for each stage shall be substantially complete. Individual drawings and data sheets submitted at random intervals will not be accepted for review.

1. First Stage Submittal

- a. Product catalog cut sheets clearly marked to show the model number, optional features, and intended service of the device.
- b. A detailed list of any exceptions, functional differences, or discrepancies between the supplier's proposed system and the contract requirements.

2. Second Stage Submittal

- a. Complete panel fabrication drawings and details of panel wiring, piping, and painting. Panel and subpanels drawings shall include

overall dimensions, metal thickness, door swing, mounting details, and front of panel arrangement to show general appearance, with spacing and mounting height of instruments and control devices.

- b. System wiring and installation drawings for all interconnection wiring between components of the systems furnished and for all interconnecting wiring between the related equipment and the equipment furnished under this section. Wiring diagrams shall show complete circuits and indicate all connections.
- c. If panel terminal designations, device interconnections, device features and options, or other features are modified as a result of the fabrication process or factor testing, revised drawings shall be resubmitted.
- d. ELECTRONIC FILES OF SHOP DRAWINGS: Submit electronic files for all shop drawings in AutoCAD 2004 or later version format.
- e. At the supplier's option, and for projects with very few fabrication drawings, the first stage and second stage submittal may be combined.

3. Third Stage Submittal

- a. Complete system documentation, in the form of operation and maintenance manuals, shall be provided. Manuals shall include complete product instruction books for each item of equipment furnished.
- b. Where instruction booklets cover more than one specific model or range of instrument, product data sheets shall be included which indicate the instrument model number, calibrated range, and all other special features. A complete set of "as-built wiring, fabrication, and inter connection drawings shall be included with the manuals.
- c. ELECTRONIC FILES FOR SHOP DRAWINGS: Submit AS-BUILT electronic files for all shop drawings in AutoCAD 2004 or later version format.

1.4 REGULATORY AGENCIES AND STANDARDS

- A. Regulatory Agencies: Installations, materials, equipment, and workmanship shall conform to the applicable provisions of the following agencies:
 - 1. National Electrical Code (NEC), 1999 Edition.
 - 2. State Department of Industrial Safety (CAL/OSHA).
 - 3. Local authorities having lawful jurisdiction pertaining to the work required.
- B. Underwriters' Laboratories, Inc. (UL): Materials, appliances, equipment, and devices shall conform to the applicable UL standards. The label of, or listing by, UL is required wherever applicable.

C. Standards: Where referenced in these specifications or on the drawings, the publications and standards of the following organizations apply:

1. American Society of Testing and Materials (ASTM)
2. National Electrical Manufacturers Association (NEMA)
3. National Fire Protection Association (NFPA)
4. American National Standards Institute (ANSI)
5. Institute of Electrical and Electronic Engineers (IEEE)
6. Insulated power Cable Engineers Association (IPCEA).

1.5 INDUSTRY REGULATIONS AND LAWS

A. In case of difference between the building codes, Specifications, State law, local ordinances, industry standards, utility company regulations, fire insurance carrier's requirements, and the contract documents, the most stringent shall govern. The Contractor shall promptly notify the City in writing of such differences.

1.6 UTILITY COMPANY REQUIREMENTS AND FEES

A. The City will make application for electric service. The City will pay utility company fees, cable charges, and added facilities charges.

B. The Contractor shall make any service and installation agreements that the utility companies may require.

C. Install electric and telephone service entrance equipment in accordance with the serving utility's requirements. Coordinate with the servicing utility to ensure timely connection by the utility. Obtain utility company approval of service entrance and metering equipment shop drawings prior to starting fabrication.

D. Verify utility companies' service point of connection prior to beginning installation.

1.7 MEASUREMENT AND PAYMENT

A. Payment for the work in this section shall be in accordance with the General Provisions and in the amount stated in the Proposal.

PART 2 - MATERIALS

2.1 GENERAL

A. Similar materials and equipment shall be the product of a single manufacturer.

- B. Provide only products which are new, undamaged, and in the original cartons or containers.
- C. Materials and equipment shall be the standard products of manufacturers regularly engaged in the production of such material and shall be the manufacturer's current design.
- D. Materials and equipment shall be suitable for storage, installation, and operation in an ambient of 0 C to 50 C except where more stringent conditions are stated in individual equipment specifications.
- E. Electrical equipment and panels shall be factory finished with manufacturer's standard primer and enamel topcoats, unless stated otherwise in the individual equipment specifications. Provide 1 pint of the equipment manufacturer's touchup paint per 500 square feet of painted surface for repair of damaged enamel topcoats.

2.2 OPERATION, MAINTENANCE, AND REPAIR MANUALS

- A. The organization of the initial submittals as required by these contract documents shall be compatible to eventual inclusion as one volume of the operation, maintenance, and repair manuals.
- B. Operation manuals shall be prepared and submitted to the City's Representative for preliminary review in six copies. When the City's Representative is satisfied that these are complete and properly prepared, six final sets shall be delivered to the City's Representative. Digital copy of all manuals and data either on CD or flash drive shall be submitted to City.
- C. The complete operation manual shall contain all the information included in the preliminary equipment submittal, the detailed installation submittal, programming instructions, and the additional information required herein, all bound in hard-cover binders and arranged for convenient use including tab sheets, all indexed and cross referenced, and all final as-built drawings.
- D. The operation manuals shall contain:
 - 1. calibration and maintenance instructions,
 - 2. trouble-shooting instructions
 - 3. instructions for ordering replacement parts.

2.3 AS-BUILT DRAWINGS

- A. As-built drawings shall be submitted at the completion of work, which depict the final configuration of all installed equipment.
- B. All shop drawings shall be updated by the originator to "As-Built" status.

- C. As-Built drawings shall be provided to the City in both hardcopy and digital formats. Digital format shall be AutoCAD 2004 or later version.
- D. All drawings shall become property of the City.
- E. The Contractor shall clearly indicate on As-Built plans the following information:
 - 1. All conduit runs exactly as installed.
 - 2. Location of all underground conduits.
 - 3. Forming, cabling, and identification of all power and control circuits within pull boxes, and terminal boxes.
 - 4. All underground conduit runs shall be photographed and made part of "As-Built".
 - 5. All changes and/or deviations in locations, routing, or dimensions or additions to any part of the Electrical work.
 - 6. Interior views of each underground pull box identifying each conduit entrance by conduit number.
 - 7. Complete and accurate wiring, schematic, and interconnecting wiring diagrams for all equipment supplied and all work performed.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The drawings indicate connections for typical equipment only. If the equipment furnished is different from what is shown, provide the modifications necessary for a safe and properly operating installation in accordance with the equipment manufacturer's recommendations.
- B. The drawings indicate diagrammatically the desired location and arrangement of outlets, conduit runs, equipment, and other items. Field determine exact location based on physical size and arrangement of equipment, finished elevations, and obstructions.
- C. Work or equipment not indicated or specified which is necessary for the complete and proper operation of the electrical systems shall be accomplished without additional cost to the City.

3.2 FOREIGN POWER ISOLATION IN EQUIPMENT ENCLOSURES

- A. Provide foreign power circuit isolation devices in equipment enclosures. PLC input/output circuits for example, are a source of foreign power when they exist in an equipment enclosure such as a local control panel which has a separate source of control power. Circuits which are a source of foreign

power shall pass through an isolation device where the wiring enters the equipment enclosure. Isolation devices are required in control cabinets, MCC buckets, etc., to provide an easily accessible isolation point, whenever the power source for the circuit would be considered foreign power in the enclosure. Isolation devices shall be clearly labeled.

- B. Equipment manufacturers shall supply isolation devices integral with their equipment whenever possible (isolation switches integral with disconnect handles on MCC buckets for example).
- C. Devices shall allow for the operation of equipment with doors open to allow for testing and/or maintenance.
- D. The Contractor shall be responsible for supplying isolation devices as needed such that the complete system of power distribution installed at the facility complies with this specification.

3.3 IDENTIFICATIONS AND SIGNS

- A. Mark each individual panelboard, motor controller, power panel, transformer, circuit breaker, disconnect switch, timer, relay, and contactor to identify each item with its respective service or function and unique identification number as shown on the drawings. Provide nameplates with engraved lettering not less than 1/4 inch high. Use black-on-white laminated plastic, attached with sheet metal screws or self-adhesive backs. Refer to Exhibit D8 – Identification Tag Specification.

3.4 PERFORMANCE TESTS

- A. After the electrical installation is complete, test it to demonstrate that the entire system is in proper working order and in accordance with the drawings and specifications. Test data including, but not limited, voltage, voltage drop, amp load, phase balance, motor starting current and running current shall be recorded and submitted to City as a part of “As-Built” included on CD version as well.

* * * * *

SECTION 16110

RACEWAYS, PULL BOXES, AND FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes materials and installation of raceway systems, whether concealed or exposed, above or below grade.

1.2 SUBMITTALS

- A. Submit shop drawings in accordance with the General Provisions and the following.
- B. Submit material list for all conduits, fittings, boxes, conduit boxes, mounting hardware, and related accessories
- C. Submit installation drawing including individual conduit numbers, routing, conduit sizes, circuit numbers contained in each conduit, and number and size of wires in each conduit.

PART 2 - MATERIALS

2.1 CONDUIT RELATED MATERIALS

A. Conduit Mounting Strut:

1. Type 316 stainless steel for mounting of PVC coated rigid steel conduit and PVC non-metallic conduit.
2. Hot dipped galvanized for other conduit types except conduit runs on floor (see below).
3. Type 316 stainless steel for mounting of any type of conduit that runs on pump room floor or up to 18" above floor level.
4. Conduit mounting strut shall be manufactured by Unitstrut, B-Line or approved equal.

B. Conduit Thruwall Seals:

1. Hot-dip galvanized.
2. PVC oversize sleeve.
3. Manufacturers: O-Z/Gedney, Type "WSK".

C. Couplings Connectors and Fittings:

1. Threaded.
 2. Manufactured with same materials and process as corresponding conduit.
- D. Condulet Fittings:
1. With wedge nut covers (Form 7), weathertight when located outdoors or in wet or corrosive locations, matching type for corresponding conduit systems.
 2. Manufacturers: Crouse-Hinds, Appleton.
- E. Galvanized Rigid Steel conduit Expansion Fittings for Exposed Locations: Manufacturers: O-Z/Gedney, Type AX with jumper.
- F. Galvanized Rigid Steel Conduit Expansion Fittings at Structural Expansion Joints: Manufacturers: Spring City, Type D.
- G. Conduit Seals: Manufacturers: Appleton, Crouse-Hinds EYS and EYD.
- H. Electrical Metallic Tubing (EMT) and fittings are prohibited.
- I. Fasteners for PVC Coated Rigid Steel conduit: PVC coated steel fasteners with Type 316 stainless steel bolts, nuts and hardware.
- J. Fasteners for Galvanized Steel Conduit: Galvanized Steel fasteners with Type 316 stainless steel bolts, nuts and hardware.

2.2 RIGID NONMETALLIC (PVC) CONDUIT AND FITTINGS

- A. PVC conduit shall be heavy wall, Schedule 40 conduit, and UL labeled for above ground and underground uses. The PVC conduit shall conform to NEMA TC-2 and UL-651.
- B. Manufacturers shall be Carlon, or Triangle Conduit and Cable.

2.3 PVC-COATED STEEL CONDUIT AND FITTINGS

- A. PVC-coated steel conduit and fittings shall be UL listed and shall conform to ANSI C80.1 and to UL-6. The thickness of the PVC-coating shall be .040 inch minimum. Conduit and fittings shall be Occidental, or Robroy.
- B. Supports, hangers, unistrut, and clamps shall be Type 316 stainless steel. Bolts and nuts shall be Type 316 stainless steel.
- C. A two-part urethane chemically cured coating shall be applied at a nominal 2-mil thickness to the interior of all conduit and fittings. The coating shall be sufficiently flexible to permit field bending of the conduit without cracking or flaking of the coating.

- D. Every Female opening shall have a PVC sleeve extending one conduit diameter or 2 inches beyond the opening, whichever is less. The inside diameter of the sleeve shall be the same as the outside diameter of the conduit before coating. The wall thickness of the sleeve shall be at least 40 mils.
- E. All fittings, FS and FD boxes, condulets, mounting hardware, and accessories shall be PVC coated. All conduit fittings shall be coated with the same interior urethane coating as described above. The screw heads on condulets shall be encapsulated with corrosion – resistant material by the manufacturer.
- F. Manufacturers shall be Ocal, Inc. or Robroy Industries, only, no equal.

2.4 GALVANIZED RIGID STEEL CONDUIT

- A. Galvanized Rigid Steel conduit shall be domestic raw steel, made smooth, clean, and free of burrs and rough spots to enhance wire pulling.
- B. Interior and exterior surfaces shall be coated with solid, unbroken layer of zinc.
- C. Entire surface finish shall be coated with secondary bichromate treatment applied over galvanizing able to extend surface protection and prevent oxidation.
- D. Threads shall be protected by color coded end caps to provide quick trade size identification.
- E. Manufacturers shall be LTV Steel Tubular Products Company, Galvite, Triangle PWC, Inc., Allied Tube and Conduit Corp., or OCAL, Inc.

2.5 LIQUID-TIGHT FLEXIBLE CONDUIT AND CONNECTORS

- A. Single strip steel, hot-dipped galvanized on all four sides prior to conduit fabrication. Overall PVC plastic jacket. Conduit sizes 1 - 1/4 inches and smaller shall include an integral copper bonding conductor wound spirally in the space between each convolution on the inside of the conduit. Conform to UL-360.
- B. Compression-type bushing, manufactured with same material and process as corresponding conduit, and insulated throat and sealing O-ring.
- C. Manufacturers shall be American Brass Co., or General Electric.

2.6 OUTLET AND PULL BOXES

- A. Provide boxes for installation of electrical work, in compliance with codes and regulations. Use only deep boxes Type FD.
- B. Provide one-piece FD type boxes, minimum size 4 inches square by 1 1/2 inches, in flush-mounted or concealed locations unless otherwise indicated.

Boxes for use in concrete shall have square corner tile type covers with ribs or extensions for casting in concrete.

- C. Use PVC-coated steel boxes for surface-mounted or exposed locations.
- D. Provide pull boxes constructed of code-gage sheet steel finished with one coat of metal primer and one coat of primer sealer for pull boxes in dry locations. Box material shall match the conduit material.
- E. Boxes in finished area such as offices and control rooms may be galvanized press steel with knock outs and plaster rings for flush surface installation.
- F. Concrete pull boxes: provide precast concrete pull boxes as indicated on the drawings. Set on $\frac{3}{4}$ inch crushed rock flush with finished surface. Cover shall be cast iron or concrete, as indicated, with H20 traffic loading.

2.7 JUNCTION BOXES

- A. Junction boxes shall be aluminum, stainless steel, or fiberglass, rated per the area in which they are installed.

2.8 CONDUIT IDENTIFICATION TAGS

- A. Identification tags shall be 19-gauge stainless steel, with $\frac{1}{2}$ inch stamped letters and numbers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Conduit runs are shown schematically. Supports, pull boxes, junction boxes, and other ancillary equipment are not usually shown. Provide pull boxes and junction boxes where shown. In addition, provide pull boxes and junction boxes to permit pulling of wires without damage to the conductors or insulation.
- B. Install conduit runs for lighting and receptacle circuits, whether or not indicated on the Drawings, for circuit numbers indicated on the Drawings.
- C. Install conduit system to provide firm mechanical assemblies with electrical conductivity throughout.
- D. Install ground bushings on all conduit not installed in to threaded hubs.
- E. Install exposed conduits parallel to or at right angles to the lines of the building. Make right-angle bends in exposed conduit runs with standard elbows, threaded conduit fittings, or conduit bent to radii not less than those of standard elbows.
- F. Route exposed conduit to preserve headroom, access space, and work space. Install conduit runs so they do not interfere with proper and safe

- operation of equipment and not block or interfere with ingress or egress, including equipment removal hatches.
- G. Treat threaded joints of rigid steel conduit before installation of fittings. Coating material shall be T&B “Kor-Shield” or Crouse Hinds “STL.”
 - H. Treat exposed threads of threaded joints of rigid steel conduit, after installation of fittings, with Enterprise Galvanizing “Galvabra.”
 - I. Terminate rigid steel conduits with Meyers type hubs with bushings. Install conduit squarely.
 - J. When terminating in threaded hubs, screw the conduit or fitting tight into the hub so that the end bears against the fire protection shoulder. When chase nipples are used, install the raceway and coupling square to the box and tighten the chase nipple with no exposed threads.
 - K. Label conduits with a label designating the destination of the conduit.
 - L. Conduits shall be capped during construction to prevent entrance of dirt, trash, and water.
 - M. Concealed conduit for future use shall be terminated in equipment or by galvanized couplings plugged flush with structural surfaces.
 - N. All conduits that enter enclosures shall be terminated by fittings that ensure that the NEMA rating of the enclosure is not affected for changed.
 - O. Unless otherwise indicated on the drawings, no conduit shall be less than $\frac{3}{4}$ inch.
 - P. After completing installation of 2 inch and larger conduit runs, snake conduits with conduit cleaner equipped with a cylindrical mandrel of diameter not less than 85% of nominal diameter of conduit. Remove and replace conduits through which the mandrel will not pass.
 - Q. Clean and ensure that conduit runs are not crushed or creased. Verify that no foreign objects or obstructions are present in conduit prior to installing conductors.
 - R. Install runs between pull boxes or junction boxes with total bends equaling not more than 270 degrees. Install NEC required pull boxes at locations acceptable to the Engineer. Plug conduits brought into pull boxes, manholes, handholes, and other openings until used to prevent entrance of dirt, moisture and rodents.
 - S. Install ductbank raceway to external conduit size transitions at pullboxes and manholes.

3.2 CONDUIT USAGE

- A. Install the following types of raceway in the locations listed, unless otherwise indicated on the drawings.
1. Exposed Outdoor, Underground Vaults, Corrosive Indoor Locations: PVC-coated steel conduit.
 2. Exposed Dry Indoor Locations: Rigid Steel Conduit.
 3. Underground: PVC-coated rigid steel conduit, or Schedule 40 PVC pipe with concrete encasement. Use PVC coated steel conduit for stub-ups (see below).
 4. Underground Below Concrete: PVC-coated steel conduit, or Schedule 40 PVC pipe.
 5. Final Connections to Motors or Vibrating Equipment: Liquid tight flexible conduit, limited to less than 3 feet in length for conduit less than 3 inches in diameter, and limited to less than 5 feet for conduit 3 inches and larger.
 6. Connections to Lighting Fixtures: Liquid tight flexible conduit limited to less than 4 feet in length.
 7. Conduit Stub-ups: PVC-coated rigid steel conduit stub-ups for entering or exiting concrete, masonry, or earth, extending a minimum of 12 inches above and below grade or finished floor. Underground nonmetallic conduit, which turns out of concrete, masonry, or earth, shall be connected to PVC-coated rigid steel metallic conduit with 90-degree elbows of PVC-coated rigid steel metallic conduit before emergence.
 8. A corrosion-resistant coating shall be applied to all conduits that turn-out of concrete, masonry, or earth indoors. The coating shall consist of a heavy coat of coal tar paint, or 3 wraps of 10 mil pipe wrap tape, extending one inch on each side of the point of turn-out.
 9. Underground Ductbanks: PVC-coated rigid steel or Schedule 40 PVC conduit with concrete encasement.

3.3 UNDERGROUND CONDUIT

- A. No underground conduit shall be smaller than 1 inch.
- B. Provide 30-inch-minimum cover for direct burial underground conduit. Provide 3-inch-minimum sand above and below conduit or concrete encasement for PVC conduit.
- C. Provide burial depth, bedding, and backfill per utility company requirements for high voltage and service entrance conduits.

- D. Where other utility piping systems are encountered or being installed along a raceway route, maintain a 12-inch minimum vertical separation between raceways and other systems at crossings. Maintain a 12-inch-minimum separation between raceways and systems in parallel runs. Do not place raceways over valves or couplings in other piping systems. Refer conflicts with these requirements to the City's Representative for instructions before further work is done.
- E. Underground conduits shall be sloped to drain from buildings to the manholes.
- F. Telephone cable raceways shall be isolated from raceways, conduits, boxes, manholes, and handholes for other circuits.
- G. Intercommunication and instrumentation cables shall be separated from all power wiring in raceways, boxes, manholes, and handholes.

3.4 CONDUIT SUPPORTS

- A. Support conduit at intervals and at locations as required by the NEC. Do not use perforated strap or plumbers tape for conduit supports.
- B. Conduit on Concrete or Masonry: Use on-hole malleable iron straps with metallic expansion anchors and screws or from preset inserts. Use preset inserts in concrete when possible. Use pipe spacers (clamp backs) in wet locations. On plaster or stucco, use one-hole malleable iron straps with toggle bolts. Supports will match the conduit being used.
- C. Suspended Conduit: Use factory-made, split-hinged pipe rings with threaded suspension rods sized for the weight to be carried (minimum 3/8 inch diameter). For grouped conduits, construct racks with threaded rods and preformed unistrut channel cross members. Clamp each conduit individually to a cross member. Where rods are more than 2 feet long provide rigid sway bracing. Coat all ends of unistrut channel with sealer where cuts are made.
- D. Supports at Structural Steel Members: Use beam clamps. Drilling or welding may be used only where indicated on the drawings.
- E. Wherever conduit may be affected by dissimilar movements of the supporting structures or medium, provide flexible or expansion devices.

3.5 DAMAGED CONDUIT

- A. Replace conduit damaged during or after installation. Replace crushed or clogged conduit or any conduit whose inner surface is damaged or not smooth.
- B. Repair cuts, nicks, or abrasions in the zinc coating of galvanized conduit with galvanizing repair stick, Enterprise Galvanizing "Galvabra."

- C. Repair PVC coated steel conduits with Robroy "Plastibond" touch-up compound.

3.6 EMPTY CONDUIT

- A. Cap spare conduits and provide #10 THHN Green wire below threaded cap.
- B. Provide bonding bushing and bond wire.

3.7 SEALING OF CONDUITS

- A. After cable has been installed and connected, conduit ends shall be sealed by non-hardening duct sealing compound forced into conduits to a minimum depth equal to the conduit diameter. This shall apply for all conduits at handholes, manholes, and building entrance junction boxes, and for one inch and larger conduit connections to equipment.
- B. Conduits entering hazardous (classified) areas and submersible or explosionproof enclosures shall have "EYS" sealing fittings with sealing compound.

3.8 CONDUIT IDENTIFICATION

- A. Conduits shall be provided with identification tags in manholes, handholes, building entrances, junction boxes, and equipment. Identification tags shall be attached to conduits with nylon tie wraps and shall be positioned to be readily visible for inspection.
- B. Identification tags shall be 19-gauge stainless steel, with ½ inch stamped letters and numbers as indicated on the drawings.
- C. Identification tags shall be attached to conduits with nylon tie wraps and shall be positioned to be readily visible for inspection.

3.9 SCHEDULES

- A. Conduit Sizes: In accordance with NEC, unless otherwise indicated on the Drawings or specified as follows:
- B. Exposed Conduit: Minimum ¾ inches.
- C. Rigid Non-metallic PVC encased in concrete: Minimum 1 inch.
- D. Direct Buried Conduit Size: Minimum 1 inch.
- E. Direct Buried Conduit for Telemetry Cable: Minimum 2 inches.
- F. Duct Banks: Minimum 2 inches.

* * * * *

Section 16120

WIRES AND CABLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes materials and installation of wires and cables.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. General Electrical Requirements: 16010

1.3 SUBMITTALS

A. Submit shop drawings in accordance with the General Provisions and Section 16010.

B. Submit material list for each conductor type. Indicate insulation material, conductor material, voltage rating, manufacturer and other data pertinent to the specific cable, such as type shielding, number of pairs, and applicable standards.

PART 2 - MATERIALS

2.1 CONDUCTORS

A. Conductor material for wire and cable shall be copper.

2.2 LOW-VOLTAGE WIRE

A. Low-voltage building wire for use at 600 volts or less shall be 600-volt insulated, Type THHN/THWN, and rated for continuous operation at 90/75°C. Conductors shall be copper.

B. Ground wires shall have 600-volt insulation, Type THWN.

C. No. 12 AWG minimum conductor size for power and lighting circuits.

D. No. 14 AWG minimum conductor size for control circuits.

E. Power conductors No. 10 AWG and smaller shall be solid. Control wiring shall be stranded. Conductors No. 8 AWG and larger shall be stranded.

2.3 WIRE IN LIGHT FIXTURES

A. 600 volts, Type AVA No. 14 minimum.

2.4 INSTRUMENT CABLE

- A. Two or three No. 18AWG < 1000', 16AWG >1000' stranded tinned-copper conductors individually insulated with fully color-coded PVC rated at 300 volts; insulated conductors twisted together and shielded with a spiral-wound metal foil tape overlapped for 100% shielding. Outer jacket shall be PVC.

2.5 WIRE COLOR REQUIREMENTS

- A. Conductors No. 8 AWG and smaller shall have factory color coding with solid color insulation. Do not use onsite coloring of ends of conductors or apply colored plastic adhesives in lieu of factory color-coding.
- B. Conductors No. 6 AWG and larger shall have factory color coding with solid color insulation or shall have black insulation with onsite application of colored plastic adhesives at ends of conductors and at each junction and splice box.
- C. Purple colored wiring shall be used to identify wires that connect to the PLC input/output circuits. White or purple w/white stripe shall be used for PLC neutral throughout the facility. This requirement is a worker safety precaution to identify foreign power sources in equipment. This requirement applies to internal wiring in the PLC enclosure cabinet, interconnecting wiring to individual devices and equipment, and internal wiring at the equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wiring and cable in conduit unless otherwise noted.
- B. To reduce pulling tension in long runs, coat cables with pulling compound recommended by the cable manufacturer before being pulled into conduits.
- C. Remove debris and moisture from the conduits, boxes, and cabinets prior to cable installation.

3.2 IDENTIFICATION

- A. Conductor color coding throughout the entire network of feeders and circuits (600 volts and below) shall be as follows:

480 / 277 Volt Circuits	
Circuit Designation	Color
Phase A	Brown
Phase B	Orange
Phase C	Yellow

Neutral	Gray
Ground	Green

120/240 Volt Circuits	
Circuit Designation	Color
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green
Control	Red
PLC Input/Output (Field)	Purple
PLC Output (neutral)	White or Purple w/White stripe

24 Volt DC Circuits	
Circuit Designation	Color
+24 VDC	Yellow
-24VDC	Blue
PLC Input/Output (Field)	Purple
PLC Input/Output (neutral)	Purple
Ground	Green

B. Tagging of Conductors: Tag control wires and instrument cables in panels, pull boxes, wireways, and at control device with heat shrink type of marker:

Brady, or Thomas and Betts. Tag control wires and instrument cables with same wire numbers as on the shop drawing submittals. Terminal block number at each opposite end shall be used for the tag if tag number is not identified in the shop drawing. Self-laminating write on type or wrap around self-adhesive type Will Not Be Accepted.

- C. Tagging of conductors which interface to the PLC input/output circuits shall include the PLC input/output register number. For example, PLC input 30001 shall have "30001" in the tag number scheme.

3.3 LOW-VOLTAGE WIRE SPLICES

- A. Solid Conductors: Use 3M "Scotchlok," Ideal "Super Nut," or Buchanan B-Cap.
- B. Stranded Conductors NO. 8 and Larger: Use T & B "Lock-Tie" connectors, Burndy Versitaps and heavy-duty connectors, or O.Z. solderless connectors.
- C. Control Wiring: Use crimp connectors with tools by same manufacturer and/or UL listed for connectors of all stranded conductors.
- D. Retighten bolt-type connectors 24 to 48 hours after initial installation and before taping. Tape connections made with noninsulated-type connectors with rubber-type tape, one and one-half times the thickness of the conductor insulation, then cover with Scotch 33 tape.
- E. No splices shall occur in grade located pull box without the written approval of the City.

* * * * *

APPENDIX A

DOWNLOAD PUBLIC WORKS STANDARDS

http://www.huntingtonbeachca.gov/Government/Departments/Public_Works/Bids/

APPENDIX B

DOWNLOAD PLANS & SPECS

http://www.huntingtonbeachca.gov/Government/Departments/Public_Works/Bids/

APPENDIX C

DOWNLOAD DE MINIMUS PERMIT FROM REGIONAL WATER QUALITY CONTROL BOARD FOR DEWATERING OF GROUNDWATER

http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2006/06_004_gen_wdr_amend05_041_insig_threat_01182006.pdf

APPENDIX D

SAMPLE CITY BUSINESS LICENSE APPLICATION

ABOUT BUSINESS LICENSES...

Welcome to the City of Huntington Beach business community. This information guide is intended as a summary of information you will need to know in order to operate a business in Huntington Beach. This guide is provided as a public service. It is not all-inclusive and any specific questions should be directed to Business License at (714) 536-5267. Clarification and definition can also be found in the Huntington Beach Municipal Code, Section V. A City of Huntington Beach business license is not a regulatory license, but is a tax to help pay for the public safety needs of the people of Huntington Beach.

Who Needs a Business License?

The City of Huntington Beach Municipal Code requires most businesses operating in Huntington Beach to pay an annual business license tax. Business Licenses are not transferable between owners; however, they may be transferred to a new location upon notification to Business License and approval by the City Planning Department. All businesses, trades, professions, callings, or occupations operating in the City need a Business License. These include but are not limited to:

- ✓ Any business in a commercial or industrial location.
- ✓ Persons who have a home office or use their home as the headquarters of their business.
- ✓ Businesses, which are located outside the city, but transact business in the city such as contractors, cleaners, repair people, gardening services, fumigators, telemarketers etc.
- ✓ Independent contractors such as doctors, real estate sales agents, hairdressers, janitorial contractors, and home party demonstrators.
- ✓ Apartment owners renting 3 or more units.
- ✓ Mobile Vendors who sell merchandise from their vehicles, such as ice cream trucks.
- ✓ Temporary businesses such as a one-day or weekend event in the city, or a short-term seasonal business.

How Do I Obtain a Business License?

You can obtain an application from City Hall, or download one from our website at www.surfcity-hb.org. Look under Business / Licenses, Permits, Codes / Business License. Complete the application and bring it to City Hall on the 1st floor, 2000 Main Street or mail it to Business License, P.O. Box 190, Huntington Beach, CA 92648. If you are in a commercial location in the city, you may need to fill out an application for a Certificate of Occupancy for the Planning Department, who can be reached at (714) 536-5271. Apply for this in person on the 3rd floor.

How Much Does It Cost?

The business license cost is based on a flat tax plus additional amounts if there are more than 3 employees, more than 1 business vehicle or coin operated machines. A typical business license starts at \$75 plus a non-refundable processing fee. Additional amounts added are as follows:

Additional Employees:	4 – 9	\$4.00 each
	10 – 52	\$3.00 each
	> 52	\$2.00 each
Additional vehicles:	Under 1 ton:	\$12.00 each
	1 to 3 tons:	\$35.00 each
	Over 3 tons:	\$46.00 each

Home-based businesses are required to pay a one-time fee for a Home Occupation Permit, in addition to their license.

Some business licenses are calculated differently, such as apartment rental, hotels, carnivals, special events, vending machines, out of town contractors, pool halls. Call (714) 536-5267 for information on these types of licenses or to find out the cost of your license.

How Long Does It Take to Apply?

A business license may be issued at City Hall while you wait. Your application must be complete and include all necessary documents. You may need to bring the following: Certificate of Occupancy or receipt showing payment; Seller's Permit showing a Huntington Beach location; Health Permit. The application may also be mailed to City Hall. Be sure to complete all relevant items on the application.

What Other Things May I Need?

- **Certificate of Occupancy** – required by the Planning Dept. for businesses in a commercial or industrial location. Call (714) 536-5271 or pick up an application from City Hall.
- **Conditional Use Permit** – required by the Planning Dept. for some businesses such as live entertainment, dance schools, internet cafes and alcohol sales. Call (714) 536-5271.
- **Certified Unified Program Agency (CUPA)** – required by the Fire Dept. if you handle or store hazardous material or waste. Call (714) 536-5676.
- **Fictitious Name (dba)** – must be filed if you choose a business name that does not include your own last name. Contact the County Clerk's office at (714) 834-2889, go online at www.oc.ca.gov/recorder or contact your local newspaper office.
- **Seller's Permit (Resale #)** – required by the State Board of Equalization if you sell merchandise. Call (714) 558-4059 or visit www.boe.ca.gov.
- **Health Permit** – required by the County Health Dept. for food handling, permanent make-up, tattooing or body piercing. Call (714) 433-6000.
- **Federal Tax ID #** – required if you have employees, are incorporated, or have a registered partnership. Call (800) 829-1040 or visit www.irs.gov.
- **Worker's Compensation Insurance** – required if you have employees. Contact your local insurance agent, state fund or visit www.dir.ca.gov/dwc.
- **Liquor License** – required by the State Dept. of Alcoholic Beverage Control if you sell or serve alcohol. Contact (714) 558-4101 or visit www.abc.ca.gov.
- **Special Permits** – required by the Police Dept. for certain types of business activities, such as firearm dealers, pawnbrokers, psychic reading, massage, soliciting for donations, live entertainment, and bingo. Call (714) 536-5267 or the Police Dept. at (714) 536-5991 for more information.

Frequently Asked Questions:

What if I Don't Obtain a License?

Conducting business in the city without a license can result in penalties, Notices of Violation and Administrative Citations. It is a misdemeanor to violate the City Business License ordinances.

Do I Need to Display My Business License?

Yes, all business licenses must be posted in public view at the fixed location of the business. If no fixed location in the city, the responsible party must carry the business license with them while conducting business in Huntington Beach.

How Often Do I Need to Renew It?

Business licenses are renewed annually. A courtesy notice is mailed approx. 4 weeks before the due date. However, you are responsible for renewing your license whether or not the renewal notice is received. If the payment is received more than 30 days past the due date, a 10% per month penalty is charged. Notices of Violation and Administrative Citations may also be issued.

I am Moving to a New Location in the City.

Please notify us of your new address, phone number, and any other changes to your business. After compliance with any applicable city requirements, your business license may be transferred to the new location for a small processing fee. If you are moving to a new commercial location, you will need to apply for a new Certificate of Occupancy. Call (714) 536-5271.

What if I Stop Doing Business or Move Away?

Let us know in writing if you want your license cancelled, otherwise you will continue to receive renewal notices and late penalties. No refunds are given when the business ceases.

Can I Transfer My License to Someone Else?

Business Licenses are not transferable from one owner to another. The new owner must apply for a business license in their name.

Where Do I Find You?

We are located at 2000 Main St on the corner of Yorktown and Main, in the Civic Center on the 1st floor. Enter the Administration Building and follow the signs to Business License.

Who Else Can Help Me Get Started?

- How To Do Business in the City of Huntington Beach - a guide to permits: www.hbbiz.com.
- U.S. Small Business Administration – provides financial assistance programs, guide to resources and workshops. (714) 550-7420 or www.sba.gov.
- S.C.O.R.E Service Corps of Retired Executives. Workshops and counselors for small businesses. Call (714) 550-7369 or visit www.score.org.
- California Permit Assistance Center - information on local, state & federal permits. (714) 834-2840 or www.calgold.ca.gov.
- Small Business Corner - helpful information about taxes from the IRS. Visit their website at www.irs.gov.
- Small Business Development Center - provides help to small businesses through 1-on-1 counseling, workshops and education seminars. Call (800) 303-6600 or visit www.commerce.ca.gov.

Additional Telephone Numbers:

Better Business Bureau.....	(714) 985-8915
Building Permits.....	(714) 536-5241
Chamber of Commerce.....	(714) 536-8888
Community Services Dept.....	(714) 536-5486
Consumer Affairs Dept.....	(800) 344-9940
Contractors State License Board...	(800) 321-2752
Employment Development Dept.....	(888) 745-3886
Franchise Tax Board.....	(800) 852-5711
Library (Central).....	(714) 842-4481
Office of Secretary of State.....	(213) 897-3062
Sign Permits.....	(714) 536-5271
State Compensation Ins. Fund.....	(714) 565-5000
Zoning Department.....	(714) 536-5271

How to Obtain a Business License in Huntington Beach



City of Huntington Beach
Shari L. Freidenrich, City Treasurer
Business License

2000 Main Street
1st Floor
Huntington Beach
CA 92648

Phone: (714) 536-5267
Fax: (714) 374-1603

Hours: 8:00 am – 5:00 pm
Monday to Friday

www.surfcity-hb.org



CITY OF HUNTINGTON BEACH

FINANCE DEPARTMENT – BUSINESS LICENSE

P. O. Box 190 - 2000 Main Street, Huntington Beach, CA 92648-2702

Phone (714) 536-5267 – Fax (714) 536-5934 – www.surfcity-hb.org

APPLICATION FOR BUSINESS LICENSE

BUSINESS DETAILS: Applications must be typed, or legibly hand printed in blue or black ink

Name of Business (DBA)			
Name of Corporation (attach list of officers)			
Owner(s) or Principal(s)		Title	
		Title	
Contact Person		Title	
Business Address			
Mailing Address			
Web Site	E-mail Address	Business Phone	Fax

Type of Ownership: <input type="checkbox"/> Sole Proprietor	Social Security #	Type of Ownership: <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation	Federal Tax ID #	State Tax ID #
Date Business Started in Huntington Beach	# Employees (include self per latest tax filing):	Full-time	Part-time (FTE)	SIC #

Detailed Description of Business Activity

Located in a BID? <input type="checkbox"/> Yes <input type="checkbox"/> No	BID Zone <input type="checkbox"/> 1 <input type="checkbox"/> 2	Area (sq ft)	BID Type	Discharge into Stormdrain? <input type="checkbox"/> Yes <input type="checkbox"/> No	NPDES Permit #
Description of Products Sold		Do you collect sales tax? <input type="checkbox"/> Yes <input type="checkbox"/> No		Seller's Permit (Resale #)	
Business Vehicles Used in the City? <input type="checkbox"/> Yes <input type="checkbox"/> No How Many?	Under 1 ton	1-3 tons	Over 3 tons	License Plate #	License Plate #
<input type="checkbox"/> General Contractor <input type="checkbox"/> Sub Contractor	Contractor's Lic #	Classes	Type of Job	Project Address (# street)	

Burglar Alarm System? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit is required. Call (714) 960-8805	Alarm Permit #	Health Permit #	ABC License #	CUPA#	
State License (# / Type / Exp. Date)	Live Entertainment? <input type="checkbox"/> Yes <input type="checkbox"/> No		Sale of Adult Only Items? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Coin Operated Machines? <input type="checkbox"/> Yes <input type="checkbox"/> No	# Vending	# Amusement	# Service	# Music	# Bulk
Vending Company's Name/Address/Phone					
# Apt/Motel/Rooming House/Office Units	#Trailer Spaces	Date of Purchase	Mobile Vendor? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, complete section on back of form		

I am aware of the provisions of Section 3700 of the California Labor Code, which requires every employer to be insured against liability for Workers Compensation. (Please check appropriate box)

Certificate of Workers Compensation Insurance Certificate of Self-Insurance of Workers Compensation

I certify that in the performance of work for which this license is issued I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California. Note: If after signing the certificate, you hire any employee, you become subject to the workers' compensation provisions of the California Labor Code and you must immediately comply with the provisions of Section 3700 or your license immediately becomes revoked.

I hereby declare under penalty of perjury that the information and statements on this application are true and correct.

Signature: _____ Title: _____

Printed Name: _____ Date: _____

Total Due:

SUPPLEMENTARY INFORMATION REQUIRED: (NON-PUBLIC INFORMATION)				
Owner or Principal			Title	
Residence Address				
City		State	Zip	Home Phone
Date of Birth	Social Security #		Drivers License	
Signature			Date	
Partner's Name or Secondary Principal (If applicable)			Title	
Residence Address				
City		State	Zip	Home Phone
Date of Birth	Social Security #		Drivers License	
Signature			Date	
ALTERNATIVE CONTACT IN CASE OF EMERGENCY:				
Name		Title		Phone

MOBILE VENDORS ONLY – SUPPLEMENTARY INFORMATION:				
Products Sold		Overnight Location of Vehicle		
Registered Owner of Vehicle		Description of Logo (may attach photo)		
Make of Vehicle	Year	Color	Serial #	Engine #
Previous License? <input type="checkbox"/> Yes <input type="checkbox"/> No	City where previous license obtained			Date
Has license/franchise previously been revoked/suspended? <input type="checkbox"/> Yes <input type="checkbox"/> No	Reason for Suspension if Yes			Year
Please attach list of drivers/vendors; copy of liability insurance; photo of vehicle.				

IMPORTANT INFORMATION:

Please notify the Business License Office of any changes to the business, including business name, location, owners, partners, business type or activity. If the business license is not updated accordingly, it may no longer be valid and the business owner may then be liable for penalties and administrative citations.

If the business moves to another commercial location, a Certificate of Occupancy for the new location must be applied for with the Planning Department. Call (714) 536-5271 for application.

As an applicant for a business license as a sole proprietor, you are required to provide your Social Security number as part of the application. Pursuant to Section 405(c)(2)(C)(i) of Title 42 of the United States Code, the City is permitted to require disclosure of the Social Security number for tax purposes. Disclosure of this information is mandatory. However, while disclosure is required in order for the City to properly administer the business license tax program, the Social Security number is not public record, and will not be disclosed to any members of the public.

OFFICE USE ONLY:					
Certificate of Occupancy CD T	Date Filed	Bus License #	Drivers Lic	Receipt	TOTAL DUE: _____ (Includes non-refundable processing fee)

NOTES:

APPENDIX E

INSURANCE AND INDEMNITY REQUIREMENTS

**CONTRACTOR'S SWORN STATEMENT AND WARRANTY
REGARDING CONTINUING INSURANCE OBLIGATIONS**

FROM: _____ **PROJECT:** _____
(Contractor Name) _____

(Street Address) _____

(City, State and Zip)

TO: CITY OF HUNTINGTON BEACH

DECLARATION

Attached hereto is a true and correct copy of the current Certificate of Insurance and Additional Insured Endorsement CG 2010 1185, which Certificate complies with the insurance requirements of the Contract by and between the City of Huntington Beach ("City") and the above-named Contractor ("Contractor") for the above-described project ("Project").

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

Signed on _____, 20__, at _____
(Date) (City, State)

(Signature of Individual Who is Making Declaration)

WARRANTY

Contractor hereby warrants and agrees to maintain Products and Completed Operations Insurance in compliance with the insurance requirements of the Contract for the Project. Said insurance shall be maintained through and until the expiration of all Warranties provided by Contractor. Said insurance shall contain Additional Insured Endorsement CG 2010 1185, naming City as an additional insured. Contractor shall supply to City, on at least an annual basis, a Certificate of Insurance and the aforementioned Endorsement evidencing continued coverage which meets the Contract requirements.

Signed on _____, 20__, at _____
(Date) (City, State)

CONTRACTOR:

Name: _____

By _____

Name: _____

Title: _____

277621.2

This form to be turned in with Payment Bond

RESOLUTION NO. 2008-63

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF
HUNTINGTON BEACH REVISING AND RESTATING THE
CITY'S INSURANCE AND INDEMNITY REQUIREMENTS

WHEREAS, there are persons and organizations who are engaged in various activities in the City, thereby subjecting the City to substantial risk of liability for damage to property and injury to persons; and,

The City desires to establish insurance and indemnification requirements; and, in appropriate cases, a procedure for the waiver thereof; and,

The City desires to establish internal staff responsibility for the administration of the insurance required by this Resolution and delineate the authority to make adjustments to requirements based upon unique and unusual circumstances.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Huntington Beach that effective on the date of adoption of this Resolution, the insurance coverage and indemnity requirements shall be as follows:

SECTION I. DEFINITIONS AND FORMS REQUIRED

A. Definitions:

1. "Contractors" are any persons or entities who contract with the City and/or provide services to the City which are readily available and efficiently procured by competitive bidding.
2. "Design Professionals" are professional services contractors who contract with the City and/or provide architectural and/or engineering services to the City.
3. "Licensees/Lessees" are any persons or entities who contract with the City for the use of public property.
4. "Permittees" are any persons or entities who make application to the City for any use of or encroachment upon any public street, waterway, pier, or City property.
5. "Professional Services" are as defined by Huntington Beach Municipal Code section 3.03.
6. "Vendors" are any persons or entities who transfers property or goods to the City which may or may not involve delivery and/or installation.

B. Indemnity and Insurance Coverage Requirements Defined

1. General Liability: Combined single limit bodily injury, personal injury and property damage: Minimum limits of \$1,000,000 per occurrence.

- a. Coverage must include completed operations liability and unlimited blanket contractual liability and, where products are furnished, products liability.
 - b. If coverage is provided under a form which includes a designated general aggregate limit, the aggregate limit must be no less than \$1,000,000 or an increased coverage as memorialized in the terms and conditions agreed to by the parties and the policy holder shall submit written notice of any known depletion of limits to City attached to the proof of insurance.
 - c. Claims made policies are not acceptable, except that claims made insurance for pollution liability shall be acceptable.
 - d. All deductibles in excess of \$5,000, or alternative forms of providing coverage must be approved through the Waiver Procedure set forth in Section III to this Resolution. The requirement for self-insured retention remains at zero.
 - e. The City, its, officers, elected or appointed officials, employees, agents and volunteers are to be covered as additional insureds by separate attached endorsement(s) approved by the City Attorney as respects liability arising out of action performed by or on behalf of the contractor, products and completed operations of the contractor, premises owned, occupied or used by the contractor; or automobiles owned, leased or borrowed by the contractor. The coverage shall contain no special limitations on the scope of protection afforded to the City, its agents, officers and employees.
 - f. For any claims related to the project, the contractor's insurance coverage shall be primary insurance as respects the City, its agents, officers, and employees. Any insurance or self-insurance maintained by the City, its agents, officers, and employees shall be excess of the contractor's insurance and shall not contribute with it.
 - g. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the City, its agents, officers and employees.
 - h. The contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
2. Workers Compensation and Employers' Liability: In accordance with the applicable state statutes with limits in the case of workers' compensation and employers' liability in amounts not less than the State statutory limits.

Alternatively, a signed declaration of non-employee status shall be filed. A certificate or consent to self-insure issued by the California Director of Industrial Relations is also acceptable.

3. Professional Liability Insurance: Coverage must be provided at a minimum of \$1,000,000 per occurrence and in the aggregate. All deductibles in excess of \$10,000, or alternative forms of providing coverage must be approved through the Waiver Procedure set forth in Section III to this Resolution. The requirement for self-insured retention remains at zero.
 - a. Claims made policies are acceptable if the policy further provides that:
 1. The policy retroactive date coincides with or precedes the professional services contractor's start of work (including subsequent policies purchased as renewals or replacements).
 2. The professional services contractor will make every effort to maintain similar insurance during the required extended period of coverage following project completion, including the requirement of adding all additional insureds.
 3. If insurance is terminated for any reason, professional services contractor agrees to purchase an extended reporting provision of at least two (2) years to report claims arising from work performed in connection with this agreement or permit.
 4. The reporting of circumstances or incidents that might give rise to future claims.
4. Automobile Liability Coverage must be provided at a minimum of \$1,000,000 per occurrence.
 - a. If coverage is provided under a form which includes a designated general aggregate limit, the aggregate limit must be no less than \$1,000,000 and the policy holder shall submit written notice of any known depletion of limits to City attached to the proof of insurance.
 - b. All deductibles in excess of \$1,000, or alternative forms of providing coverage must be approved through the Waiver Procedure set forth in Section III to this Resolution. The requirement for self-insured retention remains at zero.
 - c. The City, its officers, elected or appointed officials, employees, agents and volunteers are to be covered as additional insureds by separate attached endorsement(s). The coverage shall contain no special limitations on the scope of protection afforded to the City, its agents, officers and employees.
 - d. For any claims related to the project, the contractor's insurance coverage shall be primary insurance as respects the City, its agents, officers, and employees. Any insurance or self-insurance maintained by the City, its agents, officers, and employees shall be excess of the contractor's insurance and shall not contribute with it.

C. Certificate of Insurance Requirements Defined

1. Form. Evidence of insurance coverage and limits as required by the City shall be furnished to the City as a certificate holder on the "Acord" or similar form approved by the City Attorney. (See samples attached herein as Exhibit "A").
 - a. The description of work to be performed, the City department involved in the performance, and the City staff contact person must be clearly identified on the "Acord" or similar form evidencing insurance coverage.
 - b. All forms of insurance shall identify the City of Huntington Beach, its officers, elected or appointed officials, employees, agents and volunteers as an additional insured by separate attached endorsement with respect to general liability and automobile liability coverages.
 - c. Contractors shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.
2. Approval of Certificate Insurance certificates must be approved by the City Attorney prior to commencement of any performance under a contract or issuance of any permit, as authorized by the City Charter.
3. Acceptability of Insurers Insurance must be placed with insurer with a Best's rating of no less than A: VII and insurer must be a California admitted carrier.

SECTION II INSURANCE AND INDEMNIFICATION REQUIREMENTS

A. INSURANCE

1. Contractors and Permittees must meet the requirements as set forth in Exhibit "B" incorporated by reference and attached herein. Permittees who do not use vehicles or equipment in connection with the permit, shall not be required to provide auto insurance. To be exempt from this requirement, permittees must execute a declaration such as Exhibit I attached hereto and incorporated by this reference.
2. Professional Services providers must meet the requirements as set forth in Exhibit "C" incorporated by reference and attached hereto.
3. Licensees/Lessees must meet the requirements as set forth in Exhibit "D" incorporated by reference and attached hereto.
4. Vendors
 - a. Vendors supplying goods including delivery, service and/or installation must meet the requirements of Exhibit "B".

- b. Vendors supplying goods only without delivery, service and/or installation are required to provide products liability coverage only.
5. The insurance requirements of persons or organizations not identified herein shall be as designated by the agreement. All certificates of insurance designated must conform to the requirements of this Resolution.
6. Exceptions.
 - a. Public entities are exempt from the requirements of this resolution. Any insurance and indemnity requirements of a public entity shall be pursuant to Section II(A)(5).
 - b. Persons providing judicial or quasi-judicial services as independent contractors, such as judges, arbitrators, hearing officers, expert witnesses, and court reporters shall be exempt from all insurance coverage requirements. Any insurance and indemnity requirements shall be pursuant to Section II(A)(5).
 - c. Each person making application for a permit for private property construction, alteration, improvement, demolition, or repair of any building or structure shall sign a declaration under penalty of perjury verifying workers' compensation coverage or exemption from coverage, as required by Section 19825 of the Health and Safety Code and, at the time of permit issuance, contractors shall show their valid workers' compensation insurance certificate.
 - d. Persons contracting with the City under subdivision agreements are exempt from providing evidence of workers' compensation.
 - e. Oil operators as regulated by Huntington Beach Municipal Code Section 15.16 and pipeline franchises as regulated by Huntington Beach Municipal Code Section 3.44 are exempt from the requirements of this resolution.
 - f. Taxicabs/Vehicles-for-hire as regulated by Huntington Beach Municipal Code Section 5.50 are exempt from the requirements of this resolution.
 - g. Trucking companies, including those regulated under Huntington Beach Municipal Code Section 10.32, are exempt from the minimum insurance requirements of this resolution but must submit proof of workers' compensation insurance and general liability insurance in accordance with the requirements of the Public Utilities Commission (PUC) regulations which include: 1) the general liability insurance requirements are \$600,000 combined single limit or \$250,000 bodily injury or death of one person and \$500,000 protection against total liability for bodily injury or death of more than one person from any one accident. 2) this is subject to the same \$250,000 limitation for each person and \$100,000 protection for accidental damage or destruction of property other than property being transported. 3) the City of Huntington Beach must be

named as certificate holder but does not need to be named as additional insured.

7. Indemnity

- a. Contractors and Permittees shall be required to indemnify City, pursuant to the indemnity provision attached hereto and incorporated herein by this reference as Exhibit "E".
- b. All design professionals shall be required to indemnify City pursuant to the indemnity provision attached hereto and incorporated herein by this reference as Exhibit "F".
- c. All other persons or organizations, including but not limited to professional service providers other than Design Professionals as defined by this Resolution, shall be required to indemnify City, pursuant to the indemnity provision attached hereto and incorporated by reference as Exhibit "G".

SECTION III. WAIVER OR MODIFICATION PROCEDURE

A. Waivers or Modification Request Form.

A department Request for Waiver or Modification, Exhibit "H" attached, shall be completed and forwarded to the Risk Manager for all requests for waiver or modifications of the minimum indemnification and insurance requirements. Claim history, financial statements and scope of work must be submitted as attachments with any request for waiver.

B. Waiver or Modification Authority.

The Risk Manager and the City Attorney may approve any waiver or modification of the insurance and indemnification requirements, including requests for indemnification of third parties. A denial may be appealed to the City Administrator.

C. Waiver Criteria.

The criteria to evaluate any requests for waiver shall include the following:

- a. The type of waiver or modification requested;
- b. The reason for the waiver or modification;
- c. The nature of the scope of work;
- d. The cost of the contract;
- e. The liability exposure of the City;
- f. The cost and availability of the coverage requested;
- g. The claim history of the requesting party;
- h. The past experience of the City with the requesting party; and
- i. The past experience of the City with other contracting parties of a similar nature.

SECTION IV. Resolution 2007-03 and all other resolutions in conflict herewith are hereby repealed.

PASSED AND ADOPTED by the City Council of the City of Huntington Beach at a regular meeting held 6th day of October 2008.



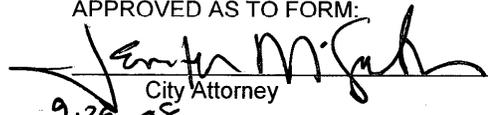
Mayor

INITIATED AND APPROVED:


Director of Human Resources

REVIEWED AND APPROVED:


City Administrator

APPROVED AS TO FORM:


City Attorney
9.29.08

Attachments

- Exhibit A
- Exhibit B
- Exhibit C
- Exhibit D
- Exhibit E
- Exhibit F
- Exhibit G
- Exhibit H
- Exhibit I

ACORD™ CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY)
PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
INSURED	INSURERS AFFORDING COVERAGE	NAIC #
	INSURER A:	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR	ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
			GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$
			AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
			GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
			EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
			WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER				<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS							

SPECIMEN COPY

CERTIFICATE HOLDER

CANCELLATION

	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <u>30</u> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
--	---

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED-OWNERS, LESSEES OR
CONTRACTORS (Form B)**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY

SCHEDULE

Name of Person or Organization: **THE CITY OF HUNTINGTON BEACH**
2000 Main Street
Huntington Beach, CA 92648

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" for that insured by or for you

RE: ALL OPERATIONS OF THE NAMED INSURED FOR THE CERTIFICATE HOLDER.

City of Huntington Beach, its elected or appointed officials, agents, officers, employees and volunteers

CG 20 10 11 85

Copyright, Insurance Services Office, Inc., 1984

EXHIBIT A-3 of 4

**STATE
COMPENSATION
INSURANCE
FUND**

P.O. BOX 420807, SAN FRANCISCO, CA 94142-0807

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

POLICY NUMBER:
CERTIFICATE EXPIRES:

CITY OF HUNTINGTON BEACH
RISK MANAGEMENT
2000 MAIN STREET
HUNTINGTON BEACH, CA 92648

This is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California Insurance Commissioner to the employer named below for the policy period indicated.

This policy is not subject to cancellation by the Fund except upon ³⁰30 days' advance written notice to the employer.

We will also give you ³⁰30 days' advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

Tom Hansen
AUTHORIZED REPRESENTATIVE

K. Bollier
PRESIDENT

EMPLOYER'S LIABILITY LIMIT INCLUDING DEFENSE COSTS: \$1,000,000 PER OCCURRENCE.

ENDORSEMENT #2065 ENTITLED CERTIFICATE HOLDERS' NOTICE EFFECTIVE 07/01/00 IS ATTACHED TO AND FORMS A PART OF THIS POLICY.

EMPLOYER

EXHIBIT A-4 of 4

THIS DOCUMENT HAS A BLUE PATTERNED BACKGROUND

SCIF 10262 (REV)

EXHIBIT B

INSURANCE REQUIREMENTS FOR CONTRACTORS, AND PERMITTEES

PLEASE GIVE THESE INSURANCE REQUIREMENTS TO YOUR INSURANCE AGENT

Minimum Limits of Insurance

City Council Resolution _____ requires submittal of certificates of insurance evidencing the following minimum limits with a California admitted carrier with a current A.M. Best's Rating of no less than A:VII:

1. General Liability: \$1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. "Claims made" designation is only acceptable for professional or pollution liability insurance.

The City of Huntington Beach, its officers, elected or appointed officials, employees, agents and volunteers must be named as certificate holder and as additional insured by separate attached endorsement. (This wording must be exact.)

2. Workers' Compensation and Employer's Liability: State statutory limits of \$250,000 bodily injury by disease, policy limit, and \$100,000 bodily injury each employee for accident or disease per occurrence. If you have no employees, you must sign a Declaration of Non-employee Status form available from the City. In lieu of a certificate of insurance, a certificate of consent to self-insure issued by the California Director of Industrial Relations is also acceptable.
3. Automobile liability of \$1,000,000 per occurrence for bodily injury, personal injury and property damages. The City of Huntington Beach, its officers, elected or appointed officials, employees, agents and volunteers must be named as certificate holder and as additional insured by separate attached endorsement. (This wording must be exact).

Deductibles, Self-Insured Retentions, or Similar Forms of Coverage Limitations or Modifications

Any deductibles, self-insured retentions or similar forms of coverage limitations or modifications, must be declared to and approved by the City of Huntington Beach.

Subcontractors

Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

Description of Work to be Performed

The staff contact and purpose of the evidence of coverage must be identified.

*PLEASE FORWARD THIS NOTICE TO YOUR INSURANCE AGENT.
FOR ASSISTANCE, PLEASE CONTACT RISK MANAGEMENT.*

EXHIBIT C

**INSURANCE REQUIREMENTS PROFESSIONAL
SERVICE CONTRACTORS**

PLEASE GIVE THESE INSURANCE REQUIREMENTS TO YOUR INSURANCE AGENT

Minimum Limits of Insurance

City Council Resolution No. _____ requires submittal of certificates of insurance evidencing the following minimum limits with a California admitted carrier with a current A.M. Best's Rating of no less than A:VII :

Errors and Omissions liability: \$1,000,000 per occurrence.

Deductibles, Self-Insured Retentions, or Similar Forms of Coverage Limitations or Modifications

Any deductibles, self-insured retentions or similar forms of coverage limitations or modifications, must be declared to and approved by the City of Huntington Beach.

Description of Work to be Performed

The staff contact and purpose of the evidence of coverage must be identified.

EXHIBIT D

INSURANCE REQUIREMENTS FOR LESSEES/LICENSEES

PLEASE GIVE THESE INSURANCE REQUIREMENTS TO YOUR INSURANCE AGENT

Minimum Limits of Insurance

City requires submittal of certificates of insurance pursuant to the form set forth in Resolution No. _____ evidencing the following minimum limits with a California admitted carrier with a current A.M. Best's Rating of no less than A:VII:

1. General Liability: \$1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. "Claims made" designation is only acceptable for professional or pollution liability insurance.

For general liability certificate holder, the City of Huntington Beach, its elected or appointed officials, agents, officers, employees, and volunteers must be named as certificate holder and as additional insured by separate attached endorsement. (This wording must be exact).

2. Workers Compensation and Employer's Liability: State statutory limits of \$250,000 bodily injury by disease, policy limit, and \$100,000 bodily injury each employee for accident or disease per occurrence. If you have no employees, you must sign a Declaration of Non-employee Status form available from the City. In lieu of a certificate of insurance, a certificate of consent to self-insure issued by the California Director of Industrial Relations is also acceptable.
3. Property Insurance: Full replacement cost with no coinsurance penalty provision.

Deductibles, Self-Insured Retentions, or Similar Forms of Coverage Limitations or Modifications

Any deductibles, self-insured retentions or similar forms of coverage limitations or modifications, must be declared to and approved by the City of Huntington Beach.

Description of Work to be Performed

The staff contact and purpose of the evidence of coverage must be identified.

***PLEASE FORWARD THIS NOTICE TO YOUR INSURANCE AGENT,
FOR ASSISTANCE, PLEASE CONTACT RISK MANAGEMENT***

EXHIBIT E

TO RESOLUTION NO. _____

CONTRACTOR'S INDEMNIFICATION, DEFENSE, HOLD HARMLESS

Contractor hereby agrees to protect, defend, indemnify and hold harmless City, its officers, elected or appointed officials, employees, agents, and volunteers from and against any and all, claims, damages, losses, expenses, judgments, demands defense costs, and consequential damage or liability of any kind or nature, however caused, including those resulting from death or injury to Contractor's employees and damage to Contractor's property, arising directly or indirectly out of the obligations or operations herein undertaken by Contractor, caused in whole or in part by any negligent act or omission of the Contractor, any subcontractors, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, including but not limited to concurrent active or passive negligence, except where caused by the active negligence, sole negligence, or willful misconduct of the City. Contractor will conduct all defense at its sole cost and expense and City shall approve selection of contractor's counsel. City shall be reimbursed for all costs and attorney's fees incurred by City in enforcing this obligation. This indemnity shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as a limitation upon the amount of indemnification to be provided by Contractor.

EXHIBIT F

TO RESOLUTION NO. _____

INDEMNIFICATION, DEFENSE, AND HOLD HARMLESS

To the fullest extent permitted by law (including, without limitation, California Civil Code Sections 2782 and 2782.6), CONSULTANT hereby agrees to protect, defend, indemnify and hold harmless CITY, its officers, elected or appointed officials, employees, agents and volunteers from and against any and all claims, damages, losses, expenses, demands, and defense costs (including without limitation, costs and fees of litigation of every nature or liability of any kind or nature) arising out of or in connection with CONSULTANT's (or CONSULTANT's subcontractors, if any) negligence, recklessness or willful misconduct related to performance of this Agreement or its failure to comply with any of its obligations contained in this Agreement by CONSULTANT, its officers, agents or employees. CITY shall be reimbursed by CONSULTANT for all costs and attorney's fees incurred by CITY in enforcing this obligation. CONSULTANT will conduct all defense at its sole cost and expense, and the CITY shall approve selection of CONSULTANT's counsel. This indemnity shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as a limitation upon the amount of indemnification to be provided by the CONSULTANT.

EXHIBIT G

TO RESOLUTION NO. _____

INDEMNIFICATION, DEFENSE, AND HOLD HARMLESS

CONSULTANT hereby agrees to protect, defend, indemnify and hold harmless CITY, its officers, elected or appointed officials, employees, agents and volunteers from and against any and all claims, damages, losses, expenses, judgments, demands and defense costs (including, without limitation, costs and fees of litigation of every nature or liability of any kind or nature) arising out of or in connection with CONSULTANT's (or CONSULTANT's subcontractors, if any) negligent (or alleged negligent) performance of this Agreement or its failure to comply with any of its obligations contained in this Agreement by CONSULTANT, its officers, agents or employees except such loss or damage which was caused by the sole negligence or willful misconduct of CITY. CITY shall be reimbursed by CONSULTANT for all costs and attorney's fees incurred by CITY in enforcing this obligation. CONSULTANT will conduct all defense at its sole cost and expense and the CITY shall approve selection of CONSULTANT's counsel. This indemnity shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as limitation upon the amount of indemnification to be provided by the CONSULTANT.



CITY OF HUNTINGTON BEACH
2000 Main Street
Huntington Beach, CA 92648

DECLARATION OF PERMITTEE

I certify that no vehicle(s) will be used or operated in the performance of the task(s) or event(s) for which this permit is granted.

I authorize the City of Huntington Beach to immediately and retroactively revoke the license or permit issued in connection with or in the performance of said task(s) or event(s) if any vehicle(s) is used.

Signature of Permittee _____

Print name _____

Company name (if applicable) _____

Date signed _____

STATE OF CALIFORNIA
COUNTY OF ORANGE) ss:
CITY OF HUNTINGTON BEACH)

I, JOAN L. FLYNN the duly elected, qualified City Clerk of the City of Huntington Beach, and ex-officio Clerk of the City Council of said City, do hereby certify that the whole number of members of the City Council of the City of Huntington Beach is seven; that the foregoing resolution was passed and adopted by the affirmative vote of at least a majority of all the members of said City Council at a **regular** meeting thereof held on **October 6, 2008** by the following vote:

- AYES:** Hansen, Hardy, Bohr, Cook, Coerper, Carchio
- NOES:** None
- ABSENT:** Green
- ABSTAIN:** None



 City Clerk and ex-officio Clerk of the
 City Council of the City of
 Huntington Beach, California

APPENDIX F

BOND FORM

PAYMENT BOND
(LABOR AND MATERIALS)

KNOW ALL PERSONS BY THESE PRESENTS that:

WHEREAS, the City of Huntington Beach (hereinafter referred to as "City") has awarded to _____

(name and address of Contractor)

(hereinafter referred to as "Principal"), a contract ("Contract") for the work described as follows:

(project title)

WHEREAS, Principal is required under the terms of the Contract and the California Civil Code to secure the payment of claims of laborers, mechanics, materialmen, and other persons as provided by law.

NOW THEREFORE, we, the undersigned Principal, and _____

(name and address of Surety)

(a duly admitted surety insurer under the laws of the State of California and hereinafter referred to as "Surety"), as Surety, are held and firmly bound unto City in the penal sum of _____

_____ dollars, (\$ _____), this amount being not less than one hundred percent (100%) of the total price set forth in the Contract, in lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, and each of our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the Principal, his, her, or its heirs, executors, administrators, successors or assigns, or subcontractors shall fail to pay any of the persons named in Section 3181 of the California Civil Code ("Claimants") for all labor, materials or services used or reasonably required for use in performance of the work described in the Contract, or any amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such Claimant, or prevailing wages due and penalties incurred pursuant to Sections 1774, 1775, 1813 or 1815 of the Labor Code, or any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the Principal and Subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to the work or labor performed under the Contract, Surety will pay for the same, in an amount not exceeding the penal sum specified in this bond; otherwise, this obligation shall be null and void.

This bond shall inure to the benefit of any of the persons named in Section 3181 of the California Civil Code so as to give a right of action to such persons or their assigns. In case any action is brought upon this bond, Surety further agrees to pay all court costs and a reasonable attorney's fee in an amount fixed by the court.

Surety stipulates and agrees, for value received, that no change, extension of time, alteration, addition or modification to the terms of the Contract, or any contract document or any work to be performed thereunder, whether made after notice or not, shall in any way affect, impair or release the obligations of Surety under this bond. Surety hereby waives notice of any such change,

extension of time, alteration, addition, or modification to the terms of the Contract, the contract documents or the work thereunder. Surety also waives the provisions of California Civil Code §§ 2845 and 2849.

IN WITNESS WHEREOF, each party represents and warrants that this instrument has been duly executed by Principal and Surety, on the date set forth below, that the name of each corporate party being affixed hereto is such party's proper legal name and that the individuals signing this instrument have been duly authorized pursuant to the authority of its governing body. Surety, by execution of this bond, waives any defense which Surety has or may have by reason of any failure of the Principal to execute or properly execute this bond.

Dated: _____

ATTEST

(Corporate Seal)

(Principal Name)

By: _____
Name: _____
Its: _____

ATTEST

(Corporate Seal)

(Surety Name)

By: _____
Name: _____
(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate)

(_____) _____
(Area Code & Telephone Number of Surety)

APPROVED AS TO FORM:
CITY OF HUNTINGTON BEACH

By: Jennifer McGrath
Jennifer McGrath
City Attorney
5/15/06

Note: This bond must be executed in duplicate and dated, all signatures must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, City of Huntington Beach (hereinafter referred to as "City") has, by written agreement dated _____, 20____, entered into a contract with _____

(name and address of Contractor)

(hereinafter referred to as "Principal"), for performance of the work described as follows:

(Project Title)

WHEREAS, said contract, and all documents referenced therein (hereinafter collectively "Contract"), are incorporated herein by this reference made a part hereof as though set forth herein in full.

WHEREAS, said Principal is required under the terms of the Contract to furnish a bond guaranteeing the prompt, full and faithful performance of said Contract.

NOW THEREFORE, we, the undersigned, as Principal, and

(name and address of Surety)

(a duly admitted surety insurer under the laws of the State of California and hereinafter referred to as "Surety"), as Surety, are held and firmly bound unto City in the penal sum of

Dollars (\$_____), this amount being not less than one hundred percent of the price set forth in the Contract, in lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT if the Principal shall promptly, fully and faithfully perform each and all of the covenants, obligations and things to be done and performed by the Principal in strict accordance with the terms of the Contract as said contract may be altered, amended or modified from time to time; and if the Principal shall indemnify and save harmless City and all of City's officers, agents and employees (hereinafter collectively referred to as "Obligees") from any and all losses, liability and damages, claims, judgments, stop notices, fees and costs of every description, whether imposed by law or in equity, which may be incurred by the Obligees by reason of the failure or default on the part of the Principal in the performance of any or all of the terms or the obligations of the Contract, including all alterations, amendments and modifications thereto, and any warranties or guarantees required thereunder; then this obligation shall be void; otherwise, it shall be and shall remain in full force and effect.

Surety stipulates and agrees, for value received, that no adjustment of the time or price in the Contract or any alteration, change, deletion, addition or other modification to the Contract, or the work to be performed thereunder, shall in any way affect, limit, restrict, impair or release the obligations of the Surety under this Bond. Surety waives notice of any adjustment of contract time or contract price, and

any other alteration, change, deletion, addition or other modification to the Contract, or the work to be performed thereunder, and agrees to automatically adjust the penal sum of this Bond to reflect such adjustments, alterations, changes, deletions, additions or other modifications. Surety agrees to provide written confirmation of such adjustments in the penal sum to City on not less than a quarterly basis. Surety also waives the provisions of Civil Code §§ 2845 and 2849.

The obligations of this Bond shall survive the completion of the work described in the Contract as to all obligations and liabilities of the Principal which survive completion of the work.

IN WITNESS WHEREOF, each party represents and warrants that this instrument has been duly executed by Principal and Surety, on the date set forth below, that the name of each corporate party being affixed hereto is such party's proper legal name and that the individuals signing this instrument have been duly authorized pursuant to the authority of its governing body. Surety, by execution of this bond, waives any defense which Surety has or may have by reason of any failure of the Principal to execute or properly execute this bond.

Dated: _____

ATTEST

(Corporate Seal)

(Principal Name)

By: _____
Name: _____
Title: _____

ATTEST

(Corporate Seal)

(Surety Name)

By: _____
Name: _____
(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate)

() _____
(Area Code & Telephone Number of Surety)

APPROVED AS TO FORM:

CITY OF HUNTINGTON BEACH

By: 
Jennifer McGrath
City Attorney
5/15/06

Note: This bond must be executed in duplicate and dated, all signatures must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.

APPENDIX G

SENATE BILL 1563



COUNTY OF ORANGE
PUBLIC FACILITIES & RESOURCES DEPARTMENT

300 N. Flower Street
Santa Ana, CA
P.O. Box 4048
Santa Ana, CA 92702-4048
Telephone: (714) 834-2500
Fax: (714) 834-5188

November 20, 2000

To: City Engineers ⁵⁰¹
Surveying, Engineering and Title Companies

Subject: Subdivision Mapping Procedures and New Legislation, Effective January 1, 2001

This past year has brought about important changes to existing legislation and the procedures that surveyors and engineers use to provide surveying services.

Enclosed is a letter from Gary Cowan, Assistant Tax Collector, clarifying the County's Subdivision Map Tax Bonding Procedure. Please note that: "Parcel/Tract maps need to be recorded by December 31 deadline. Title Companies must submit their maps two weeks prior to this date."

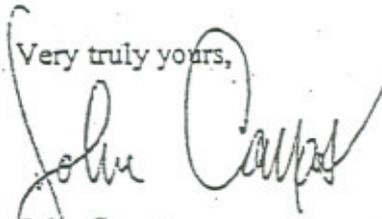
Also enclosed is a memorandum from Christopher Dargan, Deputy County Counsel, on the execution of corporate documents. It is based on a recently issued California Supreme Court ruling clarifying the rules applicable to the execution of documents by corporations. This includes corporate signatures on subdivision maps and is already in force in Orange County.

Senate Bill 1563 is the most significant surveying and mapping legislation that becomes effective January 1, 2001. Major changes/additions include the following:

- Requirements to take the LSIT Exam.
- Deletion of a portion of Section 8761 of the Professional Land Surveyors Act that mandates specific requirements on every map and plat issued by a Licensed Land Surveyor or Civil Engineer.
- Section 8771 of the Professional Land Surveyors Act (Monument Preservation) has been revised and expanded to include easements and resurfacing of street monumentation requirements. This section also requires pre and post construction corner records, effective in this office, January 1, 2001.
- This bill also includes, a 10 day, requirement to the preparer of the subdivision map by the County Recorder on subdivision maps and a 10 day notification to the preparer of records of surveys or corner records by the County Surveyor.

I have enclosed Senate Bill 1563 for your review. Please feel free to discuss procedural changes with my staff or me.

Very truly yours,


John Canas
County Surveyor

Attachments: Tax Bond Letter, Gary Cowan, 7/6/2000
"Execution of Corporate Documents", memorandum, Christopher Dargan, 7/19/2000
Senate Bill 1563

Cc: Vicki Wilson
Ken R. Smith

Senate Bill No. 1563

CHAPTER 678

An act to amend Sections 8741, 8761, 8762, 8771, and 8773.2 of the Business and Professions Code, and to amend Section 66466 of the Government Code, relating to land surveyors.

[Approved by Governor September 24, 2000. Filed
with Secretary of State September 26, 2000.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1563, Leslie. Real property.

(1) Existing law, with respect to licensure under the Professional Land Surveyors' Act, authorizes the Board of Professional Engineers and Land Surveyors to prescribe by regulation reasonable educational or experience requirements but not to exceed 2 years of postsecondary education in land surveying for admission to the first division of the licensure examination.

This bill would require the board to prescribe by regulation reasonable educational or experience requirements to include 2 years of postsecondary education in land surveying, 2 years experience in land surveying, or a combination of one year of postsecondary education and one year of experience in land surveying for admission to the first division of the examination.

(2) Existing law requires every map or plat issued by a licensed land surveyor or registered civil engineer to show the bearing and length of lines, scale of map and north arrow, the name and legal designation of the property depicted, and the date or time period of the preparation of the map or plat.

This bill would delete the requirement that these items be included on each map or plat issued by a licensed land surveyor or registered civil engineer.

(3) Existing law requires the perpetuation by specified means of the location of monuments that control the location of boundaries and improvements or that provide survey control when a highway, right-of-way, or easement is improved, constructed, reconstructed, or relocated.

This bill would additionally impose this requirement when a highway, right-of-way, or easement is maintained or resurfaced and would specify that it applies only if the monument could be destroyed, damaged, covered, or otherwise obliterated as a result of these activities.

(4) Existing law provides for the filing of a record of survey, after the making of a field survey with the county surveyor, and the record of survey to thereafter be filed with the county recorder.

This bill would require the county recorder to provide the preparer of the map with the filing data, as defined, within 10 days of the filing if a postage-paid, self-addressed envelope or postcard was submitted by the preparer. The bill would also require the county surveyor to provide the preparer of a corner record with applicable filing data, as defined, within 20 days of a final filing if a postage-paid, self-addressed envelope or postcard was submitted by the preparer and the county surveyor's office does not maintain an electronic data base of filed corner records that is accessible to the public. The bill would also make certain clarifying changes in the act, and conforming changes in provisions of the Subdivision Map Act, as specified. The bill would impose a state-mandated local program because it requires local officials to provide a higher level of service.

(5) This bill would incorporate additional changes in Sections 8761 and 8771 of the Business and Professions Code proposed by SB 1863, to become operative only if both bills are enacted and become operative on or before January 1, 2001, and this bill is enacted last.

(6) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 8741 of the Business and Professions Code is amended to read:

8741. (a) The first division of the examination shall test the applicant's fundamental knowledge of surveying, mathematics, and basic science. The board shall prescribe by regulation reasonable educational or experience requirements including two years of postsecondary education in land surveying, two years of experience in land surveying, or a combination of one year of postsecondary education and one year of experience in land surveying for admission to the first division of the examination. Applicants who have passed the engineer-in-training examination, or who hold professional engineer registration, are exempt from this division of the examination.

The second division of the examination shall test the applicant's ability to apply his or her knowledge and experience and to assume responsible charge in the professional practice of land surveying.

(b) The applicant for the second division examination shall have successfully passed the first division examination, or shall be exempt therefrom. The applicant shall be thoroughly familiar with (1) the procedure and rules governing the survey of public lands as set forth in "Manual of Surveying Instructions," published by the Bureau of

Land Management, Department of the Interior, Washington, D.C. and (2) the principles of real property relating to boundaries and conveyancing.

(c) The board may by rule provide for a waiver of the first division of the examination for applicants whose education and experience qualifications substantially exceed the requirements of Section 8742.

(d) The board may by rule provide for a waiver of the second division of the examination and the assignment to a special examination for those applicants whose educational qualifications are equal to, and whose experience qualifications substantially exceed, those qualifications established under subdivision (c). The special examination may be either written or oral, or a combination of both.

SEC. 2. Section 8761 of the Business and Professions Code is amended to read:

8761. Any licensed land surveyor or registered civil engineer may practice land surveying and prepare maps, plats, reports, descriptions, or other documentary evidence in connection with that practice. All maps, plats, reports, descriptions, or other documents issued by the licensed land surveyor or registered civil engineer shall be signed by the surveyor or engineer to indicate the surveyor's or engineer's responsibility for them. In addition to the signature, the map, plat, report, description, or other document shall bear the seal or stamp of the licensee or registrant and the expiration date of the license or registration. If the map, plat, report, description, or other document has multiple pages or sheets, the signature, seal or stamp, and expiration date of the license or registration need only appear on the originals of the map or plat and on the title sheet of the report, description, or other document.

It is unlawful for any person to sign, stamp, seal, or approve any map, plat, report, description, or other document unless the person is authorized to practice land surveying.

SEC. 2.5. Section 8761 of the Business and Professions Code is amended to read:

8761. Any licensed land surveyor or registered civil engineer may practice land surveying and prepare maps, plats, reports, descriptions, or other documentary evidence in connection with that practice. All maps, plats, reports, descriptions, or other documents issued by the licensed land surveyor or registered civil engineer shall be signed by the surveyor or engineer to indicate the surveyor's or engineer's responsibility for them. In addition to the signature, the map, plat, report, description, or other document shall bear the seal or stamp of the licensee or registrant and the expiration date of the license or registration. If the map, plat, report, description, or other document has multiple pages or sheets, the signature, seal or stamp, and expiration date of the license or registration need only appear on the originals of the map or plat and on the title sheet of the report, description, or other document.

It is unlawful for any person to sign, stamp, seal, or approve any map, plat, report, description, or other document unless the person is authorized to practice land surveying.

It is unlawful for any person to stamp or seal any map, plat, report, description, or other document with the seal after the certificate of the licensee that is named on the seal has expired or has been suspended or revoked, unless the certificate has been renewed or reissued.

SEC. 3. Section 8762 of the Business and Professions Code is amended to read:

8762. After making a field survey in conformity with the practice of land surveying, the surveyor or civil engineer may file with the county surveyor in the county in which the survey was made, a record of the survey.

After making a field survey in conformity with the practice of land surveying, the licensed land surveyor or registered civil engineer shall file with the county surveyor in the county in which the field survey was made a record of the survey relating to land boundaries or property lines, if the field survey discloses any of the following:

(a) Material evidence or physical change, which in whole or in part does not appear on any subdivision map, official map, or record of survey previously recorded or properly filed in the office of the county recorder or county surveying department, or map or survey record maintained by the Bureau of Land Management of the United States.

(b) A material discrepancy with the information contained in any subdivision map, official map, or record of survey previously recorded or filed in the office of the county recorder or the county surveying department, or any map or survey record maintained by the Bureau of Land Management of the United States. For purposes of this subdivision, a "material discrepancy" is limited to a material discrepancy in the position of points or lines, or in dimensions.

(c) Evidence that, by reasonable analysis, might result in materially alternate positions of lines or points, shown on any subdivision map, official map, or record of survey previously recorded or filed in the office of the county recorder or the county surveying department, or any map or survey record maintained by the Bureau of Land Management of the United States.

(d) The establishment of one or more points or lines not shown on any subdivision map, official map, or record of survey, the positions of which are not ascertainable from an inspection of the subdivision map, official map, or record of survey.

(e) The points or lines set during the performance of a field survey of any parcel described in any deed or other instrument of title recorded in the county recorder's office are not shown on any subdivision map, official map, or record of survey.

The record of survey required to be filed pursuant to this section shall be filed within 90 days after the setting of boundary monuments during the performance of a field survey or within 90 days after completion of a field survey, whichever occurs first.

If the 90-day time limit contained in this section cannot be complied with for reasons beyond the control of the licensed land surveyor or registered civil engineer, the 90-day time period shall be extended until the time at which the reasons for delay are eliminated. If the licensed land surveyor or registered civil engineer cannot comply with the 90-day time limit, he or she shall, prior to the expiration of the 90-day time limit, provide the county surveyor with a letter stating that he or she is unable to comply. The letter shall provide an estimate of the date for completion of the record of survey, the reasons for the delay, and a general statement as to the location of the survey, including the assessor's parcel number or numbers.

The licensed land surveyor or registered civil engineer shall not initially be required to provide specific details of the survey. However, if other surveys at the same location are performed by others which may affect or be affected by the survey, the licensed land surveyor or registered civil engineer shall then provide information requested by the county surveyor without unreasonable delay.

Any record of survey filed with the county surveyor shall, after being examined by him or her, be filed with the county recorder. The county recorder shall provide the preparer of the map with the filing data within 10 days of the filing of the map.

SEC. 4. Section 8771 of the Business and Professions Code is amended to read:

8771. (a) Monuments set shall be sufficient in number and durability and efficiently placed so as not to be readily disturbed, to assure, together with monuments already existing, the perpetuation or facile reestablishment of any point or line of the survey.

(b) When monuments exist that control the location of subdivisions, tracts, boundaries, roads, streets, or highways, or provide survey control, the monuments shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer prior to the time when any streets, highways, other rights-of-way, or easements are improved, constructed, reconstructed, maintained, resurfaced, or relocated, and a corner record or record of survey of the references shall be filed with the county surveyor. They shall be reset in the surface of the new construction, a suitable monument box placed thereon, or permanent witness monuments set to perpetuate their location if any monument could be destroyed, damaged, covered, or otherwise obliterated, and a corner record or record of survey filed with the county surveyor prior to the recording of a certificate of completion

for the project. Sufficient controlling monuments shall be retained or replaced in their original positions to enable property, right-of-way and easement lines, property corners, and subdivision and tract boundaries to be reestablished without devious surveys necessarily originating on monuments differing from those that currently control the area. It shall be the responsibility of the governmental agency or others performing construction work to provide for the monumentation required by this section. It shall be the duty of every land surveyor or civil engineer to cooperate with the governmental agency in matters of maps, field notes, and other pertinent records. Monuments set to mark the limiting lines of highways, roads, streets or right-of-way or easement lines shall not be deemed adequate for this purpose unless specifically noted on the corner record or record of survey of the improvement works with direct ties in bearing or azimuth and distance between these and other monuments of record.

(c) The decision to file the required corner record or a record of survey shall be at the election of the licensed land surveyor or registered civil engineer submitting the document.

SEC. 4.5. Section 8771 of the Business and Professions Code is amended to read:

8771. (a) Monuments set shall be sufficient in number and durability and efficiently placed so as not to be readily disturbed, to assure, together with monuments already existing, the perpetuation or facile reestablishment of any point or line of the survey.

(b) When monuments exist that control the location of subdivisions, tracts, boundaries, roads, streets, or highways, or provide survey control, the monuments shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer prior to the time when any streets, highways, other rights-of-way, or easements are improved, constructed, reconstructed, maintained, resurfaced, or relocated, and a corner record or record of survey of the references shall be filed with the county surveyor. They shall be reset in the surface of the new construction, a suitable monument box placed thereon, or permanent witness monuments set to perpetuate their location if any monument could be destroyed, damaged, covered, or otherwise obliterated, and a corner record or record of survey filed with the county surveyor prior to the recording of a certificate of completion for the project. Sufficient controlling monuments shall be retained or replaced in their original positions to enable property, right-of-way and easement lines, property corners, and subdivision and tract boundaries to be reestablished without devious surveys necessarily originating on monuments differing from those that currently control the area. It shall be the responsibility of the governmental agency or others performing construction work to provide for the monumentation required by this section. It shall be the duty of every

land surveyor or civil engineer to cooperate with the governmental agency in matters of maps, field notes, and other pertinent records. Monuments set to mark the limiting lines of highways, roads, streets or right-of-way or easement lines shall not be deemed adequate for this purpose unless specifically noted on the corner record or record of survey of the improvement works with direct ties in bearing or azimuth and distance between these and other monuments of record.

(c) The decision to file either the required corner record or a record of survey pursuant to subdivision (b) shall be at the election of the licensed land surveyor or registered civil engineer submitting the document.

SEC. 5. Section 8773.2 of the Business and Professions Code is amended to read:

8773.2. (a) A "corner record" submitted to the county surveyor or engineer shall be examined by him or her for compliance with subdivision (d) of Section 8765 and Sections 8773, 8773.1, and 8773.4, endorsed with a statement of his or her examination, and filed with the county surveyor or returned to the submitting party within 20 working days after receipt.

(b) In the event the submitted "corner record" fails to comply with the examination criteria of subdivision (a), the county surveyor or engineer shall return it to the person who submitted it together with a written statement of the changes necessary to make it conform to the requirements of subdivision (a). The licensed land surveyor or registered civil engineer submitting the corner record may then make the changes in compliance with subdivision (a) and resubmit the corner record for filing. The county surveyor or engineer shall file the corner record within 10 working days after receipt of the resubmission.

(c) If the matters appearing on the corner record cannot be agreed upon by the licensed land surveyor or the registered civil engineer and the county surveyor within 10 working days after the licensed land surveyor or registered civil engineer resubmits and requests the corner record be filed without further change, an explanation of the differences shall be noted on the corner record and it shall be submitted to and filed by the county surveyor. When the county surveyor places an explanatory note on a corner record, the county surveyor shall transmit a copy of the filed corner record within 10 working days of the filing to the licensed land surveyor or registered civil engineer who submitted the corner record.

(d) The corner record filed with the county surveyor of any county shall be securely fastened by him or her into a suitable book provided for that purpose.

(e) A charge for examining, indexing, and filing the corner record may be collected by the county surveyor, not to exceed the amount required for the recording of a deed.

(f) If the preparer of the corner record provides a postage-paid, self-addressed envelope or postcard with the filing of the corner record, the county surveyor shall provide the preparer of the corner record with the filing data within 20 days of final filing. For the purposes of this subdivision, "filing data" includes the date, book or volume, and the page at which the corner record is filed by the county surveyor. This subdivision shall not apply to a county surveyor's office that maintains an electronic data base of filed corner records that is accessible to the public by reference to the preparer's license number.

SEC. 6. Section 66466 of the Government Code is amended to read:

66466. (a) The county recorder shall have not more than 10 days within which to examine a final or parcel map and either accept or reject it for filing.

(b) If the county recorder rejects a final or parcel map for filing, the county recorder shall, within 10 days thereafter, mail notice to the subdivider and the city engineer if the map is within a city, or the county surveyor if the map is within the unincorporated area, that the map has been rejected for filing, giving the reasons therefor, and that the map is being returned to the city clerk if the map is within a city, or to the clerk of the board if the map is within the unincorporated area, for action by the legislative body. Upon receipt of the map, the clerk shall place the map on the agenda of the next regular meeting of the legislative body and the legislative body shall, within 15 days thereafter, rescind its approval of the map and return the map to the subdivider unless the subdivider presents evidence that the basis for the rejection by the county recorder has been removed. The subdivider may consent to a continuance of the matter; however, the prior approval of the legislative body shall be deemed rescinded during any period of continuance. If a map is returned to the county recorder, the county recorder shall have a new 10-day period to examine the map and either accept or reject it for filing.

(c) If the county recorder accepts the map for filing, the acceptance shall be certified on the face thereof. The map shall be securely fastened in a book of subdivision maps, in a book of parcel maps, or in a book of cities and towns which shall be kept for that purpose, or in any other manner as will assure that the maps will be kept together. The map shall become a part of the official records of the county recorder upon its acceptance by the county recorder for filing. If the preparer of the map provides a postage-paid, self-addressed envelope or postcard with the filing of the map, the county recorder shall provide the preparer of the map with the filing data within 10 days of the filing of the map. For the purposes of this subdivision, "filing data" includes the date, book or volume, and the page at which the map is filed by the county recorder.

(d) The fee for filing and indexing the map is as prescribed in Section 27372 of the Government Code.

(e) The original map shall be stored for safekeeping in a reproducible condition. The county recorder may maintain for public reference a set of counter maps that are prints of the original maps and produce the original maps for comparison upon demand.

(f) Upon the filing of any map, including amended maps and certificates of correction for recordation pursuant to this section or any record of survey pursuant to the Professional Land Surveyors' Act (Chapter 15 (commencing with Section 8700) of Division 3 of the Business and Professions Code), the surveyor or engineer who prepared the document shall transmit a copy of the document, including all recording information, to the county surveyor, who shall maintain an index, by geographic location, of the documents. The county surveyor may charge a fee not to exceed the fee charged for recording the document, for purposes of financing the costs of maintaining the index of the documents.

The requirements of this subdivision shall not apply to any county that requires a document filed pursuant to this section to be transmitted to the county surveyor and requires that official to maintain an index of those documents.

SEC. 7. Section 2.5 of this bill incorporates amendments to Section 8761 of the Business and Professions Code proposed by both this bill and SB 1863. It shall only become operative if (1) both bills are enacted and become effective on or before January 1, 2001, (2) each bill amends Section 8761 of the Business and Professions Code, and (3) this bill is enacted after SB 1863, in which case Section 2 of this bill shall not become operative.

SEC. 8. Section 4.5 of this bill incorporates amendments to Section 8771 of the Business and Professions Code proposed by both this bill and SB 1863. It shall only become operative if (1) both bills are enacted and become effective on or before January 1, 2001, (2) each bill amends Section 8771 of the Business and Professions Code, and (3) this bill is enacted after SB 1863, in which case Section 4 of this bill shall not become operative.

SEC. 9. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

APPENDIX J

PERMITS



CITY OF HUNTINGTON BEACH

DEPARTMENT OF BUILDING & SAFETY

2000 Main St., Huntington Beach, CA 92648

For Inspections Call: (714) 536-5241

Inspector:

Benbow, Jeff (714) 536-5680

ELECTRICAL PERMIT

Permit Number: E2010-004149	Sprinklered? No	Valuation: \$0.00
Date Issued: 08/20/2010	Zone: SP9	Coastal Permit? No
Building Address: 6401 Overlook Dr	Block:	No. Families:
Date Entered: 07/29/2010	Tract:	No. Stories:
Building Use: C-MISC	Lot:	Public Building? No

Owner	Contractor	Engineer
CITY OF HUNTINGTON BEACH		CA

Project Description: REPLACE EXISTING SWITCHGEAR AND MCC SYSTEM ***CITY JOB***

Occ. Group	Construction Type	Occupancy Load

Permit Fees:	Inspection: \$1,996.80	Park & Rec: \$0.00	Microfilm: \$1.56
	Building Plan Review: \$0.00	Library: \$0.00	Penalty: \$0.00
	Planning Plan Review: \$0.00	Traffic Impact: \$0.00	Extension: \$0.00
	Processing: \$31.20	Sanitation: \$0.00	C/O: \$0.00
	SMIP: \$0.00	Demolition: \$0.00	
		Permit Total:	\$0.00
		Outstanding Amount:	\$0.00

Permit Details			Permit Fees:	Inspection	Plan Review
Electrical	Related Items	Unit Type	Quantity	\$1,996.80	
	Meter Size (amps)	QTY	2000		
	Motor Control Center	QTY	1		
	Control Wiring	QTY	1		
	Generator / Motor / Transformer Over 50 HP	QTY	4		

WORKERS' COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation policy information is: Carrier: _____ Policy Number: _____ Expires: _____

Agent: _____ Phone () - _____

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provision of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3700 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect. License No.: _____ License Class: _____

Contractor's Signature: _____ Date: _____

IF WORK IS NOT COMMENCED 180 DAYS FROM DATE OF ISSUE OF THIS PERMIT, OR IF THE WORK IS ABANDONED FOR MORE THAN 180 DAYS, THIS PERMIT SHALL BE SUBJECT TO EXPIRATION.

OWNER-BUILDER DECLARATION (Declaration Form Attached)

CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender: _____ Address: _____

DECLARATION BY CONSTRUCTION PERMIT APPLICANT

By my signature below, I certify to each of the following: I am

A California licensed contractor; or

The property owner*; or

Authorized to act on the property owner's behalf

I certify that I have read this construction application and that the information I have provided is correct. I agree to comply with all City and County ordinances and State Laws relating to building construction. I authorize representatives of this City or County to enter upon the above-identified property for inspection purposes.

California Licensed Contractor, Property Owner* or Authorized Agent**

Signature: [Signature] for Duncan Lee

Date: 8/20/10

*Requires separate verification form

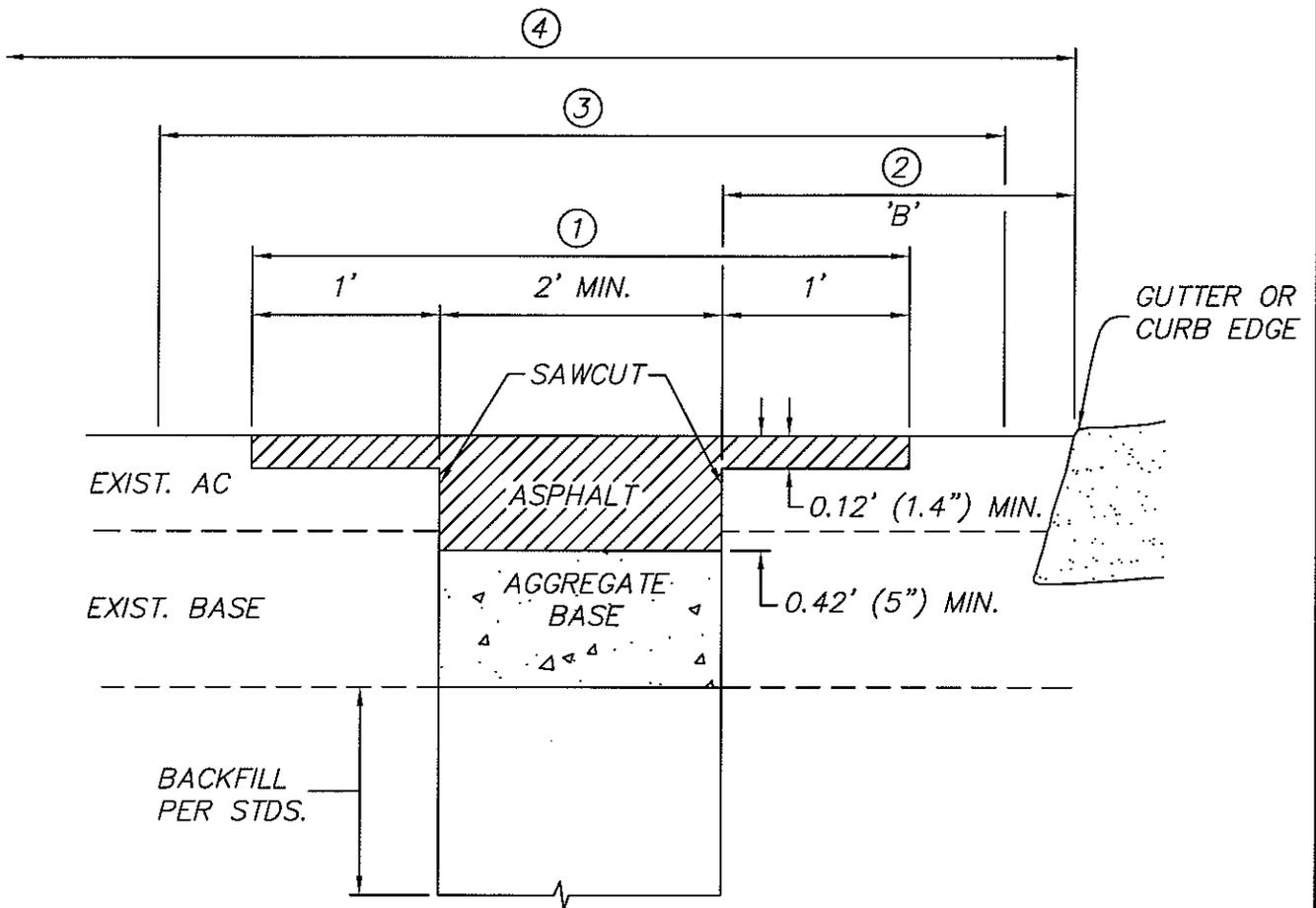
**Requires separate authorization form

APPENDIX P

AGENCY STANDARD PLANS

Standard Plans provided within this appendix are purely for the Contractors convenience. It is the Contractors responsibility to construct this Project in accordance with the Standard Plans referenced within the Project Plans or Specifications, even if a Standard Plan is inadvertently absent from this appendix. Complete Public Works Standards can be download at City website, refer to Appendix A and B.

City of HB Standard Plan 109 Trench Pavement Repair Detail



NOTES:

- ① BASE A.C. TRENCH IN FLUSH WITH ADJACENT SURFACE PRIOR TO COLD PLANING AND FINISH PAVING. COLD PLANE A MINIMUM OF 4' WIDE (CENTERED ON TRENCH) AND REPLACE A.C.
- ② REMOVE AND REPLACE A.C. TO EDGE OF GUTTER (TO CURB FACE IF NO GUTTER EXISTS) OR TO ADJACENT TRENCH EDGE LINE WHERE 'B' IS LESS THAN 36".
- ③ TYPE 1 SLURRY SEAL SHALL BE APPLIED TO ALL FINISH TRENCH SURFACES (MIN. 6" BEYOND A.C. JOIN LINE).
- ④ IF TRENCHING BY CITY APPROVAL IS WITHIN A STREET COVERED BY A PAVEMENT CUT MORATORIUM PER HBMC CHAPTER 12.13, A TYPE 1 SLURRY SEAL SHALL BE APPLIED TO THE LIMITS REQUIRED BY THE CITY ENGINEER.

APPROVED:

CITY ENGINEER

REVISION DATE: May 2008

CITY OF HUNTINGTON BEACH

DEPARTMENT OF PUBLIC WORKS



TRENCH / PAVEMENT
REPAIR DETAIL

STANDARD PLAN

109

1 of 1

APPENDIX Q

PRE-PURCHASE ITEMS



DESIGNED: R. TANIGUCHI	CHECKED: J. PARK
DATE: 2-26-2010	



LINE IS 2 INCHES AT FULL SCALE (IF NOT 2-SHADE ACCORDINGLY)

TWO DAYS BEFORE YOU DIG
 CALL U.S.A. TOLL FREE 1-800-422-4133

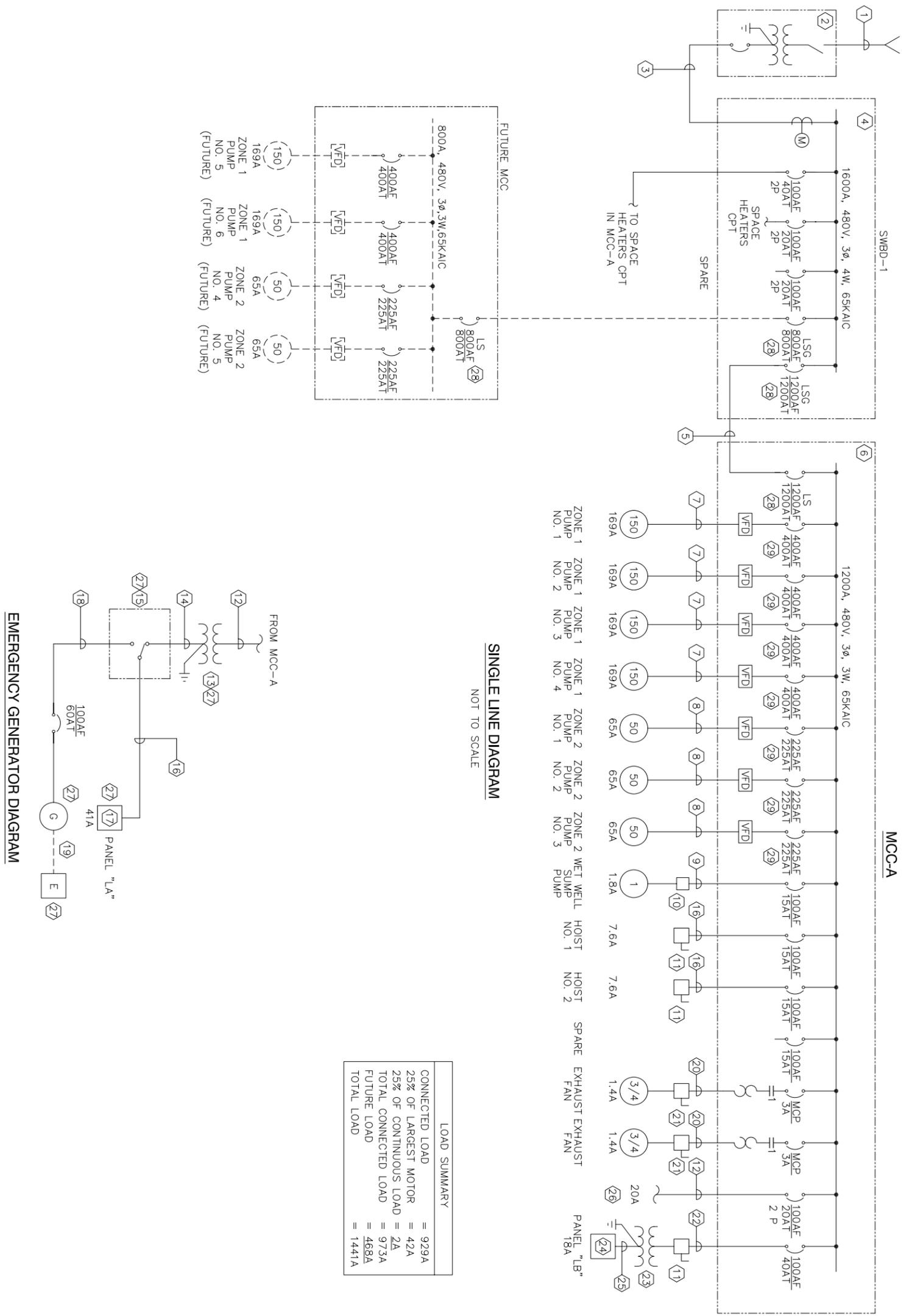
No.	DATE	REVISIONS	APPROVED:
7/31/09	ISSUED FOR EQUIPMENT PREPURCHASE	BY _____	DATE _____
2/26/10	REVISION OF PREPURCHASE	RECOMMENDED: BY _____	DATE _____
		REVIEWED: BY _____	DATE _____

LEE & RO, INC.
 1199 SOUTH FULLERTON ROAD
 CITY OF INDUSTRY, CALIFORNIA 91748

CITY OF HUNTINGTON BEACH
 DEPARTMENT OF PUBLIC WORKS

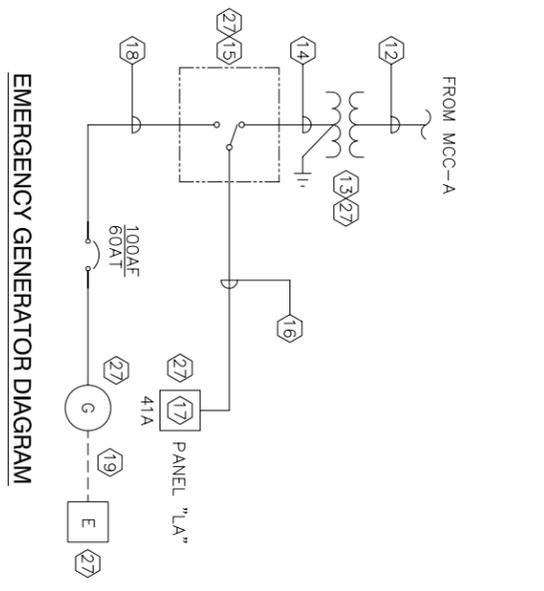
EDWARDS HILL RESERVOIR & BOOSTER PUMP STATION
SINGLE LINE DIAGRAM

JOB NO. _____
 DRAWING NO. **SK-1**
 SHEET NO. 1 OF 4



SINGLE LINE DIAGRAM
 NOT TO SCALE

LOAD SUMMARY	
CONNECTED LOAD	= 929A
25% OF LARGEST MOTOR	= 42A
25% OF CONTINUOUS LOAD	= 2A
TOTAL CONNECTED LOAD	= 973A
FUTURE LOAD	= 468A
TOTAL LOAD	= 1441A



EMERGENCY GENERATOR DIAGRAM

- NOTES:**
- ① (2) 4" CONDUIT ONLY - CABLE BY UTILITY COMPANY.
 - ② 12 KV - 480 V, 3 PHASE TRANSFORMER PROVIDED BY UTILITY CO. (PAD PROVIDED BY CONTRACTOR.)
 - ③ (5) 4" CONDUITS ONLY - CABLE BY UTILITY CO.
 - ④ METER AND MAIN DISCONNECT SWITCH (SEE SPECIFICATION 16429).
 - ⑤ (3) 4"C, 3 #750 Kcmil & 1 #3/0 GND EACH.
 - ⑥ MCC-"A" (SEE SPECIFICATION 16480).
 - ⑦ 3"C, 3 #250 Kcmil & 1 #4 GND.
 - ⑧ 1"C, 3 #2 & 1 #6 GND.
 - ⑨ 3/4"C, 3 #12 & 1 #12 GND.
 - ⑩ CONTROLLER FURNISHED WITH SUMP PUMP AND FURNISHED BY MECHANICAL.
 - ⑪ 30A, 600 VAC, NON-FUSIBLE DISCONNECT SWITCH.
 - ⑫ 3/4"C, 2 #10 & 1 #10 GND.
 - ⑬ 10KVA, 480-120/240 VAC TRANSFORMER, 1 PHASE.
 - ⑭ 3/4"C, 3 #6 & 1 #10 GND.
 - ⑮ 100A, 120/240 VAC, 2 POLE AUTO TRANSFER SWITCH.
 - ⑯ 3/4"C, 3 #6 & 1 #10 GND.
 - ⑰ 100A, 120/240 VAC, S/N PANELBOARD WITH MAIN CIRCUIT BREAKER, PANEL "LA".
 - ⑱ 1"C, 3 #6 & 1 #10 GND AND 3 #12 CONTROL.
 - ⑲ GENERATOR, 10 KW, 1.0 PF, 10 KVA, 120/240 VAC, 1 PHASE.
 - ⑳ 3/4"C, 3 #12 & 1 #12 GND.
 - ㉑ 30A, 600 VAC, NON-FUSIBLE DISCONNECT SWITCH MOUNTED ON THE ROOF FOR EXHAUST FAN.
 - ㉒ 1"C, 3 #6 & 1 #10 GND AND 3 #12 CONTROL.
 - ㉓ 30 KVA, 480-120/208 VAC, TRANSFORMER 3 PHASE.
 - ㉔ 100A, 120/208 VAC, S/N PANELBOARD, WITH MAIN CIRCUIT BREAKER, PANEL "LB".
 - ㉕ 1"C, 3 #4 & 1 #8 GND.
 - ㉖ FOR CONTINUATION OF THIS CONNECTION SEE "EMERGENCY GENERATOR DIAGRAM" TO LEFT SIDE OF THIS SHEET.
 - ㉗ EXISTING TO REMAIN.
 - ㉘ CIRCUIT BREAKER IS 100% RATED.
 - ㉙ CIRCUIT BREAKER RATINGS FOR VFDs ARE APPROXIMATE. THE CIRCUIT BREAKERS FURNISHED SHALL BE RATED IN ACCORDANCE WITH THE VFD MANUFACTURER'S RECOMMENDED SIZE FOR THE VFD FURNISHED.



LINE IS 2 INCHES
 AT FULL SCALE
 (# NOT 2'-SCALE ACCORDING)

DESIGNED: R. TANIGUCHI
 DRAWN: G.M.
 CHECKED: J. PARK
 DATE: 2-26-2010



TWO DAYS BEFORE YOU DIG
 CALL U.S.A. TOLL FREE
 1-800-422-4133

No.	DATE	REVISIONS
1	7/31/09	ISSUED FOR EQUIPMENT PREPURCHASE
2	2/26/10	REVISION OF PREPURCHASE

APPROVED: _____ DATE _____
 BY _____
 RECOMMENDED: _____ DATE _____
 BY _____
 REVIEWED: _____ DATE _____

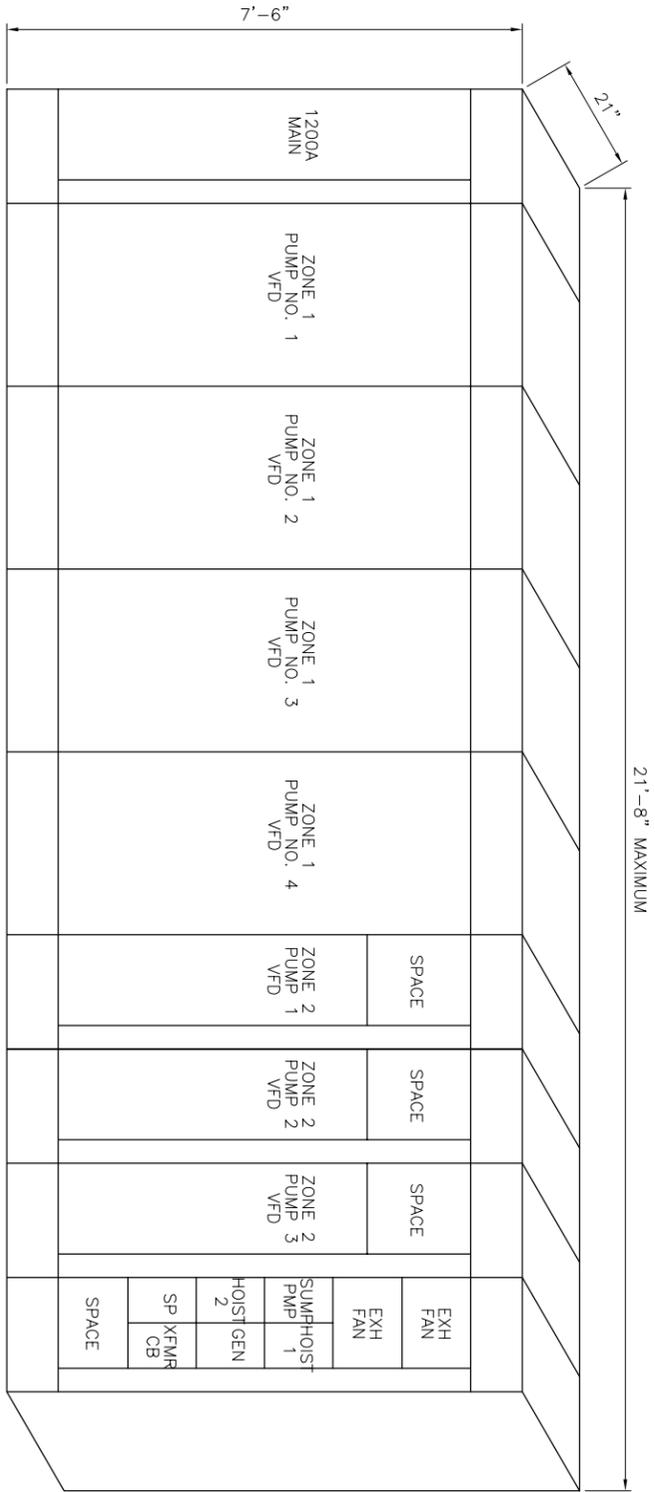
LEE & RO, INC.
 1199 SOUTH FULLERTON ROAD
 CITY OF INDUSTRY, CALIFORNIA 91748

CITY OF HUNTINGTON BEACH
 DEPARTMENT OF PUBLIC WORKS

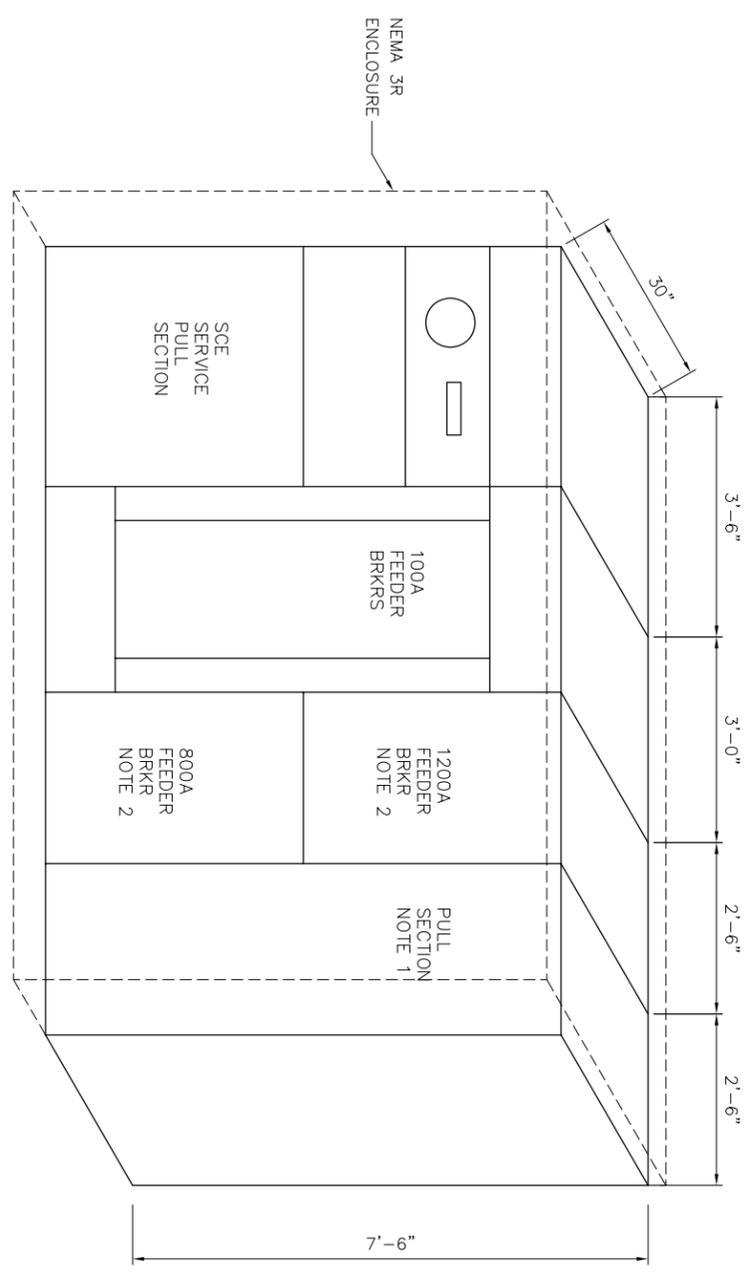
EDWARDS HILL RESERVOIR &
 BOOSTER PUMP STATION
ELEVATIONS

JOB NO. _____
 DRAWING NO. **SK-2**
 SHEET NO. **2** OF **4**

MCC-A ELEVATION
 NO SCALE



SWBD-1 ELEVATION
 NO SCALE



- NOTES:
- ① LOAD SIDE PULL SECTION FOR THE CONNECTION OF MCC-1.
 - ② INDIVIDUALLY MOUNTED BREAKER.



LEE & RO, Inc.
 City of Industry, California

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 (IF NOT 2'-SCALE ACCORDINGLY)

DESIGNED:	R. TANIGUCHI
DRAWN:	G.M.
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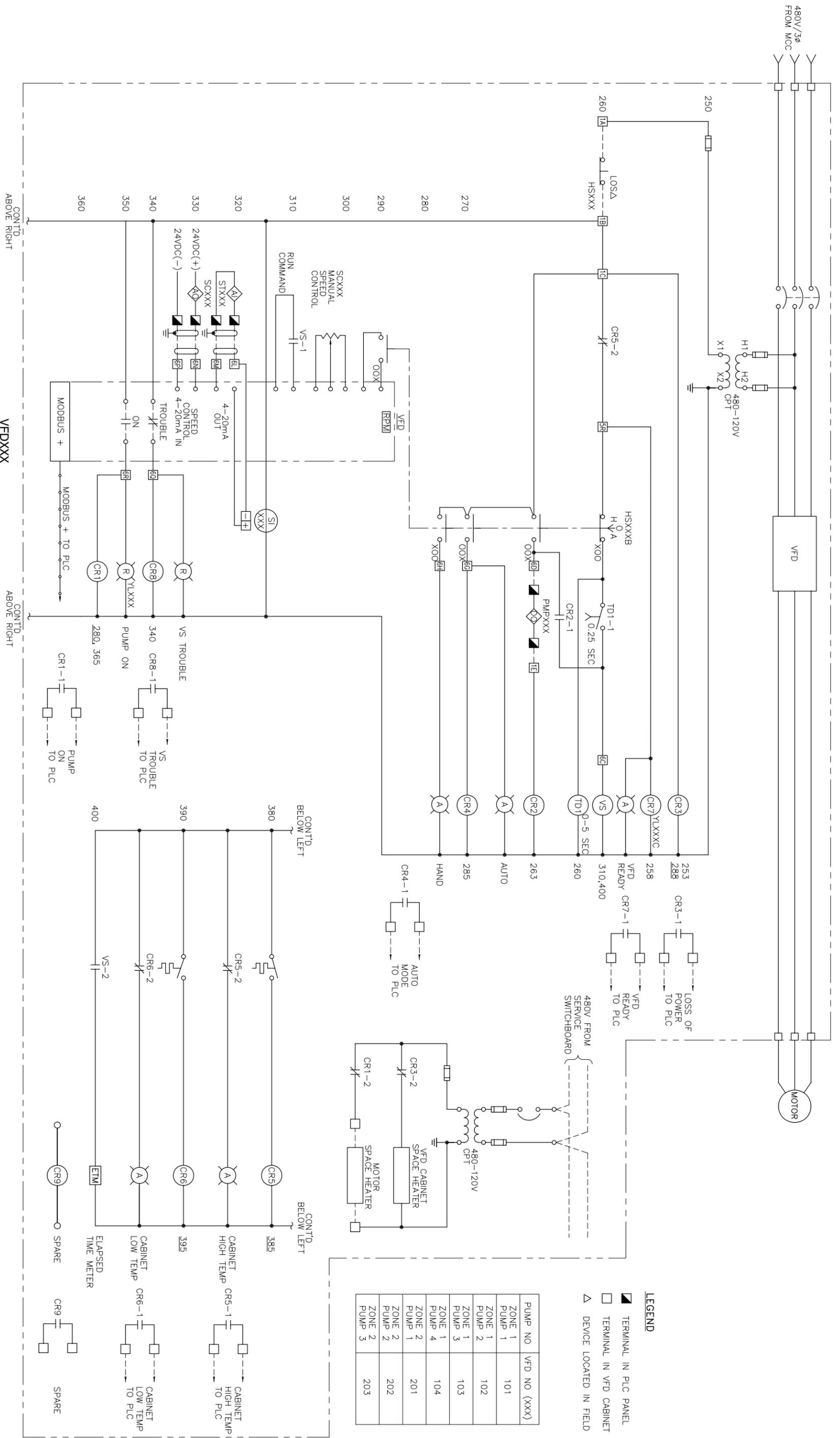
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BY _____	DATE _____
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BY _____	DATE _____

LEE & RO, INC.
 1199 SOUTH FULLERTON ROAD
 CITY OF INDUSTRY, CALIFORNIA 91748
 CITY OF HUNTINGTON BEACH
 DEPARTMENT OF PUBLIC WORKS

EDWARDS HILL RESERVOIR &
 BOOSTER PUMP STATION
BOOSTER PUMP
TYPICAL CONTROL SCHEMATIC



PUMP NO	VFD NO (XXX)
ZONE 1 PUMP 1	101
ZONE 1 PUMP 2	102
ZONE 1 PUMP 3	103
ZONE 1 PUMP 4	104
ZONE 2 PUMP 1	201
ZONE 2 PUMP 2	202
ZONE 2 PUMP 3	203

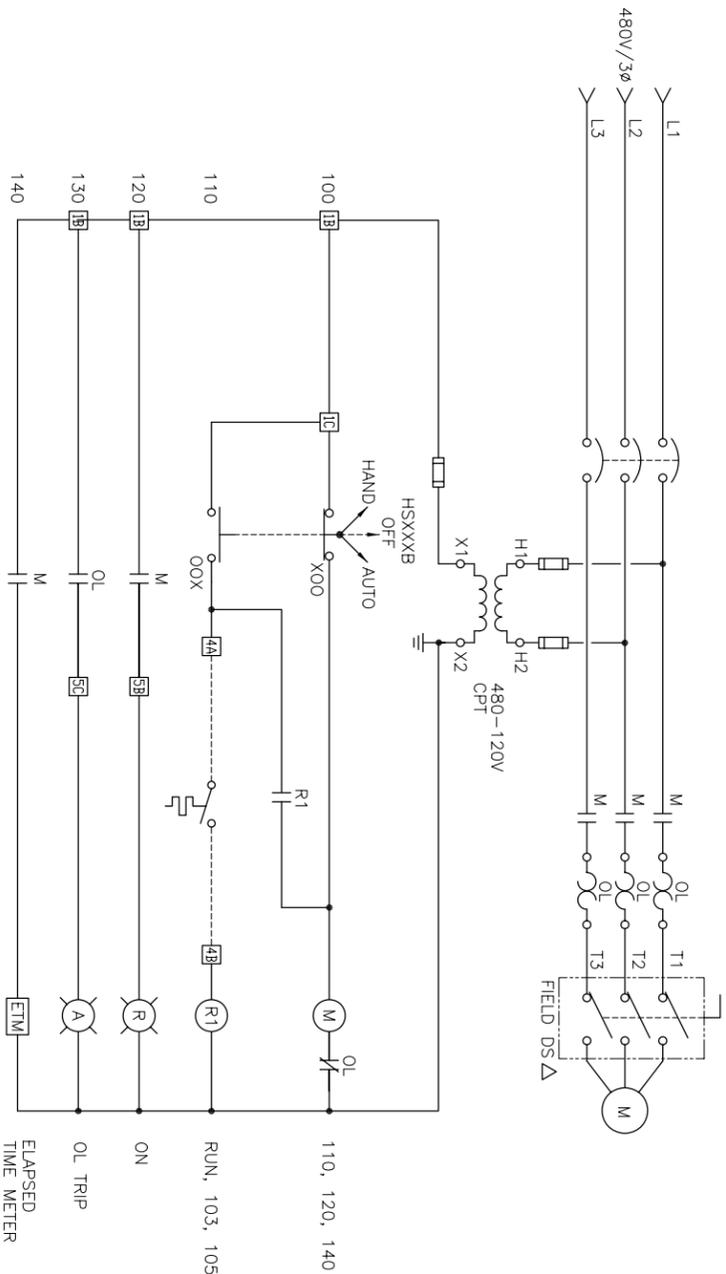
- LEGEND**
- TERMINAL IN PLC PANEL
 - TERMINAL IN VFD CABINET
 - △ DEVICE LOCATED IN FIELD

CONT'D ABOVE RIGHT

CONT'D ABOVE RIGHT

CONT'D BELOW LEFT

CONT'D BELOW LEFT



TYPICAL EXHAUST FAN CONTROL SCHEMATIC DIAGRAM

ALL DEVICES ARE LOCATED IN MCC
 EXCEPT AS INDICATED BY THE FOLLOWING SYMBOLOGY:
 Δ - AT EQUIPMENT LOCATION
 □ - AT MCC

EXHAUST FAN	TAG NO. (XXX)
EAST EXHAUST FAN	001
WEST EXHAUST FAN	002

LEE & RO, Inc.
 City of Industry, California

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 1-800-422-4133

No.	DATE	REVISIONS	APPROVED:
1	7/31/09	ISSUED FOR EQUIPMENT PREPURCHASE	BY: _____ DATE: _____
2	2/26/10	REVISION OF PREPURCHASE	RECOMMENDED: BY: _____ DATE: _____
			REVIEWED: BY: _____ DATE: _____

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 1199 SOUTH FULLERTON ROAD
 CITY OF INDUSTRY, CALIFORNIA 91748

CITY OF HUNTINGTON BEACH
 DEPARTMENT OF PUBLIC WORKS

EDWARDS HILL RESERVOIR &
 BOOSTER PUMP STATION
EXHAUST FAN SCHEMATIC

Section 16429

LOW VOLTAGE SWITCHBOARDS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor as required for furnishing and installing a Southern California Edison (SCE) entrance-metering switchboard, all in accordance with the intent and requirements of the Contract Documents.

1.2 REFERENCE CODES AND STANDARDS

- A. All work specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following publications to the extent that the provisions thereof are not in conflict with other provisions of these Specifications.

- B. Comply with the latest editions of the following codes and standards:

1. Codes and Regulations

NEC	National Electrical Code
CCR	California Code of Regulations, Title 8, Industrial Relations, Subchapter 5, Electrical Safety Orders
NESC	National Electrical Safety Code (ANSI C2)
UBC	Uniform Building Code
UL	Underwriters Laboratories
SCE	Southern California Edison Electrical Service Requirements (ESR-6)

2. Industrial Standards

ANSI/IEEE C37.13	Low Voltage AC Power Circuit Breakers Used in Enclosures
Federal Specifications W-C-375	Circuit Breakers, Molded Case, Branch Circuit and Service
ANSI/NEMA 250	Enclosures for Electrical Equipment (1000 Volts Maximum)
ANSI/NEMA PB2	Deadfront Distribution Switchboards
NEMA AB1	Molded-Case Circuit Breakers and Molded Case Switches, and Circuit Breaker Enclosures

NEMA AB3	Molded Case Circuit Breakers and their Application
NEMA FU 1	Low-Voltage Cartridge Fuses
NEMA ICS 1	Industrial Control & Systems General Requirements
NEMA PB 2.1	General Instructions for Proper Handling, Installation, Operation and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less
UL 891	Switchboards
UL 1012	Power Units Other than Class 2

1.4 SERVICE CONDITIONS

- A. Switchboards will be located outdoors in a high moisture marine environment with temperature ranges from 10 degrees to 40 degrees C.

1.5 CONTRACTOR SUBMITTALS

- A. Provide six (6) copies of each document listed below. In addition provide three (3) additional copies of each submittal shall be submitted to Southern California Edison (SCE) planner responsible for Edwards Hill Pump Station area located within the City of Huntington Beach, CA.
- B. The following submittals and specific information shall be provided.
 1. Complete switchboard drawings with all components and dimensions, to scale
 2. One-line diagrams
 3. Elementary diagrams
 4. Connection diagrams
 5. Interconnection diagrams
 6. Protective device time-current characteristics on conventional-sized transparencies
 7. Installation instructions
 8. Test reports (factory and field)
 9. Area showing bottom conduit entry
 10. All diagrams, schematics, interconnections, layouts and details submitted shall be on 24" x 36" or 11" x 17" with details clearly legible. If computer generated, manufacturer shall submit both prints and compact disks.

1.6 QUALITY ASSURANCE

- A. In addition to the manufacturers standards for testing and other requirements for Quality Assurance, inspection and tests shall be conducted in accordance with the applicable standards.
- B. All manufacturing, processing, testing, and inspection operations affecting the equipment will be subject to quality assurance surveillance by the Inspector and ENGINEER.

PART 2 - PRODUCTS

2.1 LOW-VOLTAGE SWITCHBOARDS

A. General

- 1. The CONTRACTOR shall furnish and install low-voltage, front-accessible switchboards as described herein and as indicated on the Contract Documents.
- 2. Subject to compliance with requirements, manufacturers shall be Cutler-Hammer.
- 3. Low-voltage, front-accessible switchboards shall be factory assembled and factory tested.
- 4. Low-voltage switchboards shall be suitable for application on a 480/277V, 3-phase, 4 wire, 60 Hz, solidly grounded neutral system.
- 5. The final switchboard line-ups shall be UL certified and labeled by the assembler.
- 6. The switchboards and metering sockets shall conform to SCE standards.
- 7. The switchboard shall be rated a minimum 65kAIC.

- B. Incoming Line Sections: Incoming line sections shall be rated as indicated in the Drawings. Sections shall include compression lug equipped busway connection and bus riser to SCE utility metering compartment.

C. Main Circuit Breakers

- 1. Multiple main circuit breakers shall be provided per the contract documents. The main breakers shall be fixed mount, UL 100% rated molded case circuit breakers with terminations at full NEC 75 degrees C ampacity. Main breakers feeding MCC-A or future MCC shall have electronic trip units with L, S and G tripping functions as indicated on the contract documents.

D. Structure and Components

- 1. Switchboards shall be fully self-supporting structures with 90 inch tall vertical sections (excluding lifting eyes and pull boxes) bolted together to form required arrangement.

2. Switchboard enclosures shall be NEMA 3R, non-walk-in, deadfront construction.
3. All switchboard sections shall have open bottoms for conduit entry.
4. Switchboards shall be rated as indicated on Contract Drawings.
5. Switchboard current ratings, including all devices, shall be based on 40 degrees C ambient temperature.
6. Each feeder device shall be individually mounted with an external operating handle located through front door.
7. Each feeder device shall be isolated from adjacent devices by steel barriers at sides and insulating barriers at top and bottom of each breaker compartment.
8. Door shall be formed steel hinged and lockable with a padlock and shall be retained in closed position by two captive, hex head hand screws.
9. Switchboards shall include:
 - a. UL service entrance label
 - b. Neutral bonding jumper
 - c. Ground bus
 - d. Lug for grounding electrode
10. Painting shall be manufacturer's standard. Color shall be ANSI 61, light gray.

E. Buses

1. Bus bars shall be mounted on high-impact non-tracking insulated supports.
2. All busses shall be tin-plated copper. Bus joints shall be bolted with high tensile steel (Grade 5) bolts with split type lock washers. All bus joints shall be accessible from front of switchboards for maintenance. Welded connections are unacceptable.
3. Bussing shall have sufficient cross-sectional area to meet UL 891 temperature rise requirements. Phase bus shall have an ampacity shown on Contract Drawings.
4. Bus bars shall be braced to withstand mechanical forces exerted during short circuit conditions as indicated on the Contract Drawings.
5. Ground bus shall be secured to each vertical section structure. Ground bus shall extend full width of switchboard. Ground bus shall be 0.25 by 2 inch copper bar minimum.
6. All feeder device line and load connection straps shall be rated to carry continuous rating of device frame (not trip rating). Load connection straps shall be insulated and extend beyond main bus.

7. A-B-C bus arrangement (left-to-right, top-to-bottom, front-to-rear) shall be used throughout to assure convenient and safe testing and maintenance. Where special circuitry precludes this arrangement, bus bars shall be labeled.

F. Utility Metering: Furnish metering compartment meeting SCE requirements.

G. Space Heaters: Space heaters shall be provided to prevent condensation. Space heaters shall be rated 240 V operating at 120 VAC and shall be supplied from the manufacturer-furnished internal 480-120 V control power transformers. Power for the control power transformers shall be from 480 V branch circuit breakers in the switchboards. Heaters shall be thermostatically controlled. The 120 V space heater circuit shall be protected by a circuit breaker located in each switchboard.

H. Control Wiring and Terminal Blocks

1. All internal control wiring shall be flexible, stranded copper conductors, #14 AWG minimum size, with Type TBS or SIS cross-linked thermosetting polyethylene insulation. All wiring shall be bundled and supported by plastic strip lock straps in a workmanlike manner. Adhesive "stick-on" bundle-type supports are not acceptable.

2. Terminal blocks shall be supplied and clearly identified to show wiring that will be installed by the CONTRACTOR, including wiring between shipping sections.

3. Each end of the internal interconnecting wire shall be identified by a permanent label showing the wire number. Wire numbers shall match the manufacturer's detailed connection diagrams. All wires originating from the same electrical node or point shall carry the same wire number. This wire number shall be unique for any given cubicle.

4. All wiring shall terminate in screw-type wire terminations which shall make use of compression type connectors that firmly grip the conductor and employ insulated compression sleeves to grip the wire insulation. Connectors terminating on terminal blocks shall be of the locking spade or ring type.

5. Nylon cable ties may be used to bundle wiring but under no circumstance shall adhesive-type cable tie anchors be acceptable. All anchoring of cable ties shall be done with steel screws to the enclosure structure and/or direct looping of the tie through existing holes in the structure.

2.2 NAMEPLATES

A. Laminated nameplates attached with stainless steel screws shall be furnished for each cubicle as identified on single line diagram and/or elevation detail. An equipment nameplate showing the panel identification shall be furnished.

2.3 WARRANTY

A. Provide manufacturer's warranty period of 24 months for equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The switchboards shall be installed completely in accordance with the requirements of the National Electrical Code, applicable UL, NEMA, ANSI and IEEE standards, the manufacturer's recommendations and practice, and in accordance with the requirements of the Contract Documents.
- B. The CONTRACTOR shall take all necessary precautions to exclude moisture and foreign material from the equipment at all times during storage and installation.
- C. Switchboards shall be set level and plumb on a cast in place or pre-cast concrete pad as shown on drawings, furnished and installed by the CONTRACTOR. The CONTRACTOR shall furnish all shims necessary to comply with these requirements. Before switchboards are anchored in place, the location, elevation, and degree of plumbness shall be checked by the CONTRACTOR' and shall be accurate to within 1/8 inch in all directions. The switchboards shall be secured as recommended by the manufacturer to meet seismic Zone 4 requirements. CONTRACTOR shall properly protect the panel surfaces to prevent damages.
- D. Upon completion of all installation work by the CONTRACTOR, as specified, each switchboard unit shall be cleaned with a vacuum cleaner to remove all dust and debris from the inside of the enclosures. The switchboards shall remain tightly closed to keep out any additional dust or debris until turned over for installation of conduit, installation and termination of power and control cable, testing and energization.
- E. During temporary storage and after installation of the switchboards, the CONTRACTOR shall install and provide temporary 120-V power to energize the space heaters furnished with the switchboards.

* * * * *

Section 16419

VARIABLE FREQUENCY DRIVES 100 HORSEPOWER AND ABOVE

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The requirements of the following sections and divisions apply to the Work of this section. Other sections and divisions, not referenced below, shall also apply to the extent required for proper performance of this Work.

1. Section 16480 Low Voltage MCC

B. Materials and equipment furnished and installed under this Specification with raceway and electrical conductors furnished, installed, and connected under Division 16, Electrical.

1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. All work specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following publications to the extent that the provisions thereof are not in conflict with other provisions of these Specifications.

B. Comply with the latest editions of the following codes and standards.

1. Codes and Standards:

NEC	National Fire Protection Association (NFPA) –70 National Electrical Code (NEC)
-----	---

CCR	Title 8, Industrial Relations, Subchapter 5, Electrical Safety Orders, California Code of Regulations National Electrical Code
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2. Commercial Standards:

ANSI/UL 467	Grounding and Bonding Equipment
-------------	---------------------------------

IEEE 519	Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
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NEMA 250	Enclosures for Electrical Equipment (1,000 volts maximum)
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NEMA Standard ICS7.1	Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drives Systems
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UL 508A	Industrial Control Panels
---------	---------------------------

UBC	Uniform Building Code
-----	-----------------------

1.3 SYSTEM DESCRIPTION

- A. Furnish and install complete, solid-state VFD systems as specified herein and indicated on the Contract Drawings. This Specification describes variable speed motor control which includes the design, fabrication, testing, installation and support requirements for VFD systems for 3-phase squirrel cage rotor, induction motors listed in the table below. In addition to the VFD, provide each system with a starter for bypass starting during VFD downtime.
- B. The estimated ratings of the motors for each VFD is listed in the table below. Refer to motor nameplate ratings of the manufactured equipment for the exact ratings.

VFD Driven Equipment Tag Number	Motor Rating (hp)	Motor Rating (Volts)	Motor Rating (Amperes)
Zone 1 Pump 1	150	480, 3 phase	169
Zone 1 Pump 2	150	480, 3 phase	169
Zone 1 Pump 3	150	480, 3 phase	169
Zone 1 Pump 4	150	480, 3 phase	169

1.4 CONTRACTORS SUBMITTALS

- A. Provide (6) copies of each document listed below:
 - 1. Layout Drawings: Layout drawings shall include enclosure dimensions, plan, front and side elevations, clearances and access details, weights, conduit entry location and dimensions, internal component arrangement, panel front device arrangement, nameplate legend, panel color, anchoring details, and heat dissipation values
 - 2. Single-Line Diagrams: Complete single-line diagrams indicating all devices comprising the VFD system including circuit breakers, motor circuit protectors, contactors, instrument transformers, meters, relays, timers, control devices, and other equipment comprising the complete system. Electrical ratings of all equipment and devices shall be clearly indicated on these single-line diagrams.
 - 3. Schematic and Connection Diagrams

- a. Schematic diagrams, per ISA S5.4 Standard, shall show system control, terminal block numbers, wire numbers, and wire colors. One schematic diagram shall be prepared for each motor-load combination.
 - b. Internal connection diagrams shall show wiring of all devices inside the VFD, specific device location symbols and their respective legend terminal block arrangement, and wire numbers. External connection shall show interconnection of VFD with all external devices, identified by loop-tag numbers.
4. Characteristic curves of fuses, circuit breakers, and other protective devices.
 5. Bill of Material: Complete Bills of Material with catalog data sheets and manuals for all equipment and devices comprising the VFD system. Where catalog cuts and other brochures depicting product characteristics are supplied, annotate to show product to be used on this Project.
 6. List of Spare Parts: A complete list of recommended spare parts: Include item descriptions, recommended quantities, and unit costs. The recommended list should be based on a maintenance plan where City of Huntington Beach (CHB) will remove and replace failed items to the lowest replaceable module/component level.
 7. VFD Design Data: Submit VFD system design data necessary for electrical distribution system analysis (performed by the ENGINEER) using ETAP software. VFD design data shall include efficiencies, harmonic wave form, harmonic spectrum (up to 50 orders), transformer phase shift angle, rectifier firing angle, advance angle, and commutation reactance in percent of the rated reactance.
 8. Factory Inspection Plan, Factory Demonstration Test (FDT) Plan, and FDT Procedures (including efficiency tests/calculations)
 9. Seismic Calculations: Seismic design calculations for VFD structure and anchorage shall be prepared and stamped by a professional structural engineer registered in the State of California.
 10. Test Reports: Submit certified copies of manufacturer's test reports specific to the unit.
 11. Operation, Maintenance and Installation Instructions: Furnish with the equipment at delivery manufacturer's operating and maintenance manuals, installation instructions, and other documentation necessary for the installation, start-up, operation and maintenance of the system.
 12. Programming Guides and Manuals: If the VFD systems require computer software or configuration, provide 4 copies of all programming guides/manuals. Submit copies of all related software and licenses for the VFD to CHB for inclusion in the software library. The CONTRACTOR shall be responsible for acquiring any software required to complete the Project. In addition, the CONTRACTOR shall install and maintain the software until the VFD is accepted and transferred to CHB. Flow charts, listings of software and FINAL programmable parameters developed shall be submitted to the ENGINEER.

Submit final flow charts and program listings no later than 6 weeks prior to factory testing of the system.

13. Record Drawings

- a. Drawings of each of the above types representing the as-built condition of the equipment and software shall be delivered with the equipment at the jobsite. Final or corrected as-built drawings shall be delivered 4 weeks after field system acceptance.
- b. Programmable parameters shall be provided in hard copy and electronically (Microsoft Excel format) and shall include the following data fields: parameter, service, default setting, suggested setting, actual setting.

14. Test documentation shall be provided in a three-ring binder(s) within three weeks after the completion of the Project. The binder(s) shall be clearly marked on the outside front cover and spine with the words "Test Results", the project name, and the date of completion (month and year). Scanner tests shall be printed on 8-1/2" x 11" paper. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be collected in the binder.

15. Personnel training curriculum for training as specified in Section 3.4 Standard Field Quality Control.

1.5 QUALITY ASSURANCE

A. System Warranty

1. The CONTRACTOR shall provide a system warranty covering the installed VFDs against defects in workmanship, components, and performance, and follow-on support after project completion.
2. The CONTRACTOR shall warrant the VFDs against defects in workmanship for a period of one year from the date of system final acceptance. The warranty shall cover all labor and materials necessary to correct a failed portion of the system and to demonstrate performance within the original installation specifications after repairs are accomplished. This warranty shall be provided at no additional cost to CHB.
3. The CONTRACTOR shall facilitate a 2-year component warranty between the manufacturer and CHB. An extended component warranty shall be provided which warrants functionality of all components used in the system for 2 years from the date of acceptance.
 - a. The CONTRACTOR shall maintain current status with the warranting manufacturer, including all training requirements, for the duration of the Project.

- b. The CONTRACTOR shall staff each installation crew with the appropriate number of trained personnel, in accordance with their manufacturer/warranty contract agreement, to support the 2-Year Performance Warranty requirements.
- c. After installation, the CONTRACTOR shall submit all documentation to support the warranty in accordance with the manufacturer's warranty requirements, and to apply for said warranty on behalf of CHB.
- d. The warranty shall cover the components and labor associated with the repair/replacement of any failed link, within the warranty period, that is a valid warranty claim.

B. Manufacturer Qualifications

- 1. The VFD manufacturer shall be ISO 9001 certified.
- 2. Not Used
- 3. VFD manufacturer shall maintain, as part of a national network, engineering service facilities within 250 miles of the equipment installation to provide start-up service, 24 hour/day emergency service calls, repair work, service contracts, maintenance, and troubleshooting training of customer personnel.
- 4. Provide the following supporting information:
 - a. The location of repair facilities where drive system components would be repaired.
 - b. The location(s) nearest to Huntington Beach, California, where spare parts are stocked.
 - c. VFD manufacturer information guaranteeing 72 hours turnaround time after receipt at the repair facility for the repair and return of a failed part.

1.6 OPERATING CONDITIONS

- A. The following environmental conditions are applicable for all equipment of this Specification:
 - 1. Humidity: 50 to 95 percent.
 - 2. Ambient Temperature: 75 to 95 Degrees Fahrenheit
 - 3. Altitude: Sea level
 - 4. Power Supply: 480 volts, 3-phase, 60 Hertz.
 - 5. Short circuit fault withstand: 65 kAIC.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. All VFD systems shall be supplied by the same manufacturer. The manufacturer shall be Cutler-Hammer.

2.2 VARIABLE FREQUENCY DRIVE SYSTEM

- A. The VFD shall be UL listed and show a UL label.
- B. Each VFD shall be a complete alternating current electric drive system including hardware, software, and technical data necessary to accomplish variable speed operation of an induction motor and load combination in accordance with the requirements as indicated on the Contract Drawings and as described in these Specifications. CONTRACTOR shall refer to the appropriate sections of these Specifications for the driven equipment control description for each VFD system.
- C. VFD system manufacturer shall either manufacture all items of component equipment or supply them using coordinated specifications furnished to the original equipment manufacturers to insure compatibility and performance in accordance with this Specification.
- D. CONTRACTOR shall be responsible for the successful application and operation of the drive combined with the motor and driven equipment. This includes the responsibility for determining all load, torque, speed, and performance requirements from the respective sources and integrating these into a VFD system that fulfills the requirements of this Specification.
- E. The complete VFD system shall be designed to withstand the mechanical forces exerted during short circuit conditions.
- F. The VFD system shall be suitable to operate, at times, on a limited power source engine-generator set. The system when operating on this source shall also conform to waveform distortion limits for normal operation as specified in below.
- G. All necessary motor and drive parameters together with specific control and protection functions shall be programmable via a keypad. Control and sequence logic shall be designed such that the motor-load combination can be operated in the manual mode upon control and sequence logic failure, and that all necessary personnel and equipment safety interlocks will remain effective.

2.3 DESIGN REQUIREMENTS

- A. Each VFD system shall meet the requirements of this Specification without derating the induction motor operating parameters including service factor and nameplate horsepower. The VFD system manufacturer shall specifically identify special requirements or restrictions of the motor-load combination that may result from operation on the VFD system.
- B. The VFD shall consist of an 18-pulse full-wave diode semiconductor rectifier, a direct current link, a pulse-width-modulated inverter, line and load reactors and an input single phase loss relay to trip the drive. The drive shall also include a phase-shifting transformer or autotransformer. However, for the drives utilizing full isolation phase-

shifting transformers, a line reactor is not required. The VFD shall be of non-active-front-end (voltage source) design using Pulse Width Modulation (PWM) and Insulated Gated Bipolar Transistor (IGBT) technology. Active front end (current source) design is not acceptable. The inverter shall invert the direct current voltage into an alternating current voltage and frequency proportional to the desired speed. This alternating current voltage and frequency shall both vary simultaneously at a constant "Volts-Per-Hertz" ratio to operate the induction motor at the desired speed.

- C. VFD shall operate from fixed frequency power supply and convert this input power into variable speed induction motor shaft power as required by this Specification. Provide each VFD with a thermal-magnetic main protective device as indicated on the Contract Drawings which shall be padlockable in the OFF position. Provide line and load reactors having a minimum 3 percent reactance. Reactors shall be mounted in the VFD enclosure.
- D. The drive shall operate the motor and produce full rated nameplate horsepower at the motor output shaft without exceeding rated total temperature including the additional temperature increment that constitutes the motor service factor. Motor shall retain its service factor of 1.15 when operated by the VFD.
- E. Power _(Load) is the total 3-phase power delivered to the motor, measured at the output terminals of the drive system. Power _(Supply) is the total electrical power delivered to the drive system, measured at the input terminals of the VFD including input and output filters, line and load reactors, transformers, harmonic distortion attenuation equipment and the other drive assembly devices. Power _(Supply) shall include power input required for auxiliary equipment (e.g., controls, fans, air conditioning, pumps) for complete system operation.
- F. The overall drive system efficiency shall be a minimum of 97 percent when operating the specified motor-load combination at rated voltage, frequency, and current. The efficiency shall exceed 90 percent when operating at 50 percent speed and load. This efficiency shall be calculated as follows:

$$Efficiency(\%) = \frac{Power(Load)}{Power(Supply)} \times 100$$

- G. The VFD system shall provide smooth, stepless changes in motor speed and acceleration over the entire operating speed range from minimum to maximum speed (revolutions per minute).
- H. The VFD system shall maintain a desired output frequency (set-point) with a steady state accuracy of 0.5 percent of rated frequency of 60 Hertz for a 24 hour period.
- I. VFD shall have an automatic current limit feature to control motor currents during startup and provide a "soft start" torque profile for the motor-load combination. The VFD shall also limit current due to motor winding or motor lead phase-to-phase short circuit or phase-to-ground short circuit. The current limit protection setting shall be field adjustable.
- J. A door-mounted membrane keypad with integral two-line, 24 character LCD display shall be provided, capable of controlling the VFD and setting drive and motor parameters. The keypad module shall contain a self-test software program which

may be activated to verify proper keypad operation. A hinged clear plastic cover with lock shall be installed over the keypad to prevent unauthorized use of the keypad. Key all cover locks the same.

- K. The system shall be capable of operating the specified load continuously at any speed within the operating speed range of 0 percent to 100 percent of rated speed. The minimum and maximum continuous operating speeds shall each be adjustable within this speed range. The VFD shall provide for field adjustment of these set points.
- L. Drive system controls shall be microprocessor-based and have controlled linear acceleration capability to ramp up and down the speed (revolutions per minute) of the motor-load combination from the minimum selected operating speed to the maximum selected operating speed at individual adjustable rates. Provide 3 field-adjustable speed set points for the VFD to skip equipment resonant frequencies. Provide controlled linear deceleration capability. The acceleration and deceleration time limits shall be field adjustable to values up to 120 seconds. Use of PLC for the purpose of implementing CHB's elementary diagrams and interlocks is not allowed. All interlocks shall be hardwired using relays.
- M. Voltage unbalance between phases of the VFD output shall not exceed 3 percent of the instantaneous values with balanced input voltage. The VFD system shall continuously monitor the output voltages and generate an alarm condition when the unbalance exceeds 3 percent. The system shall detect and generate a separate alarm for loss of any output phase voltage (single phasing). Phase unbalance shall be as defined by NEMA Standard MG-1.
- N. The VFD system shall operate continuously without interruption of service or damage to equipment during transient input voltage variations of plus or minus 10 percent for duration of 15 cycles. Unacceptable voltage fluctuations on the supply bus shall cause under or over-voltage protection to trip and remove supply voltage from the drive system. VFD output voltage regulation shall be plus or minus 2 percent.
- O. The VFD shall be capable of supplying continuously an output motor load RMS current equal to 100 percent of the motor full load RMS current when operated from an undistorted sine wave source. This 100 percent RMS value shall include all harmonic content in the inverter output current while producing full nameplate horsepower from the motor. Motor overcurrent protection shall be provided.
- P. The audible noise (sound pressure) level of a motor when operated from no load to full load with the VFD described herein shall not increase more than 5 decibels (dB) above its noise level when operated at constant rated speed from a utility power source without the VFD. Audible noise shall be measured in a free field at 3 feet in all directions from the motor.
- Q. When a motor lockout stop pushbutton is indicated on the Contract Drawings, activation of this device shall disable operation of the VFD including operation by the keypad in the manual mode and all current flowing to the motor terminals.
- R. The drive shall fit within the space allocated on the Contract Drawings while meeting all code clearance requirements.

- S. The VFD will operate in a solidly grounded electrical power distribution system as a normal power source.

2.4 SYSTEM FEATURES AND CONDITIONS

- A. Include Human Machine Interface (HMI) to provide the following:

1. VFD design shall include on-line diagnostics, with an automatic self-check feature that will detect a VFD failure that affects motor operation and generate an alarm with a form "C" output contact rated for 2 A, 250 V ac suitable for interfacing into an alarm annunciation system. All displays and diagnostics shall be in narrative English.
2. Diagnostics shall operate a visual alarm indicator that is visible on the VFD equipment cabinets without opening cabinet doors.
3. Provide an RS 232 and RS 485 communication for connection to a laptop computer. An indication of the "First Out" failure is a minimum for fault sequence detection.
4. Provide Modbus+ connection which shall be able to upload and download all the operation/ performance / programming parameters. The CONTRACTOR shall provide CHB with a register I/O list which defines the Modbus+ register locations of each parameter, its range of values and value as delivered to CHB after setup. The CONTRACTOR shall have the sole responsibility for installing and configuring all VFD communications software for proper operation. The CONTRACTOR shall also be responsible to ensure that the various VFD Set communication link is fully capable with and will communicate with the CHB's PLC system over MODBUS+ Communications. Programming by the CHB is limited to CHB's PLC.
5. A door-mounted programming keypad to input set points and mode and sequence programming data and display shall provide for the following, as a minimum:
 - Input Voltage
 - Output Voltage
 - Output Current
 - Output Frequency
 - Alarm Read-out.

- B. In addition to HMI, controls and indicators to accomplish operation and maintenance functions shall be located on the VFD equipment assembly as specified herein and indicated on the Contract Drawings. As a minimum, the required controls and indication shall consist of the following displayed in English units or narrative English. No codes shall be accepted. All the shutdown and/or alarms which will prevent VFD from running shall be displayed on the cabinet with indicating light. Motor protection

relay and motor instrumentation shall be compatible. If not, provide all necessary interface with ENGINEER's written acceptance.

1. Devices to be mounted on the front door of the VFD section shall include the following:
 - a. Digital Output Speed Indicator: 0 to 100% percent speed
 - b. Manual Speed Control (separate three-quarter turn potentiometer with Scale 0-100% speed in addition to the keypad)STOP Pushbutton
 - c. HAND-OFF-REMOTE Selector Switch
 - e. VS LOCAL READY Indicator: Amber
 - f. VFD ON Indicator: Red
 - g. VS OFF Indicator: Green
 - h. Elapse time meter
 - i. VFD Cabinet High Temperature Indicator: Amber
 - j. VFD Cabinet Low Temperature Indicator: Amber
 2. All indicating lights shall be push-to-test LED type.
- C. Provide a separate control power transformer (CPT) to power the 120 V control and indication devices in the bypass section. A third CPT shall be supplied to power the 120 V protection, control and indication devices common to both the VFD and the bypass system such as the motor protection relay and the external mounted intrinsically safe moisture detector. Refer to the VFD elementary diagram for details.
- D. All alarm contacts to outside equipment and/or SCADA shall be form "C" rated 2 A, 250 VAC.
- E. Interface with CHB's SCADA shall meet the following requirements:
1. All SCADA I/O shall be hardwired and dry contact type. Status, alarm and control signals to and from SCADA shall include the following:
 - a. DI (signals output from VFD to SCADA for monitoring and control):
 - VFD Ready
 - Pump ON
 - VFD Reset
 - HAND Mode
 - Remote Mode

- VFD Trouble
 - Protection On
 - VFD Cabinet High Temperature
 - VFD Cabinet Low Temperature
- b. DO (command from PLC to VFD for start /stop of the VFD):
- Pump RUN
 - PLC Reset
2. VFD system shall provide an isolated 4-20 milliamperes direct current output signal to a 1000 Ohm load that is proportional to the drive output frequency (speed in rpm) for use as speed feedback or control and remote speed indication. The 4-20 milliamperes signal shall correspond to 0-100% speed or 0-60 Hz frequency.
 3. VFD system controls shall accept an isolated 4-20 milliamperes direct current input command signal to input impedance of 250 Ohm (0.5 percent accuracy) in order to control the output frequency in the automatic and/or manual control modes as specified herein or indicated on the Drawings. The 4-20 milliamperes signal shall correspond to 0-100% speed or 0-60 Hz frequency. The controls shall accept the input increase/decrease command with a resolution that permits incremental changes in speed, revolutions per minute, equal to or less than 0.1 percent of rated speed.
- F. When operating in the automatic mode, the VFD system shall shut down during a power outage. Upon restoration of normal or standby power and after an adjustable time delay (0-30 seconds); the VFD system shall have the capability to automatically restart and then ramp up to speed as required by the control system.. The default operating mode will be with the automatic restart feature disabled. The pumps will be restarted manually when power is restored.
- G. The VFD shall have a programmable parameter which allows the independent setting of the minimum speed as well as other speed-related settings such as frequency skipping, etc.
- H. Provide each VFD with its respective drive controller and, if required, output contactors for each motor.
- I. Provide VFD system with transmitted and received radio interference protection.
- J. All the VFD system programming including that of the micro-processor protective relays shall be stored on EEPROM.
- K. The VFD shall have a Hold Zero Speed function to keep the motor winding warm. This shall be accomplished without the need of single phasing devices in the VFD to heat-up the motor winding. The Lock-Out-Stop (LOS) shall de-energize the VFD and disable the Hold Zero Speed function so that no power is available at the motor terminals.

2.5 ENCLOSURES

- A. The VFD shall be bus connected and mounted within a motor control center (MCC) vertical section. The VFD MCC sections shall be furnished with individual positive force ventilation and be dead-front with front accessibility. Design enclosures for (top and bottom) entry of cables. Design enclosures for top and bottom entry of cables.
 - 1. Painting shall be manufacturer's standard. Finish exterior of enclosures ANSI-61 gray.
 - 2. The doors shall have full length piano type hinges.
- B. Equipment bus including ground bus, if used, shall be tin-plated copper. Power and control wiring shall be copper, color coded and identified.
- C. Furnish main circuit breakers with an external operating handle interlocked with the door so that the door cannot be opened unless the disconnect is in the OFF position. Power supply to the motor from both the VFD and the bypass starter, if provided, shall be capable of being positively locked in the OFF position. The disconnect shall be interlocked so that equipment cannot be energized when the door is open.
- D. Equipment shall be of modular construction allowing normal maintenance and repair to be done with ordinary hand tools. Design and install semiconductor assemblies so that a single failed power switch or power module containing multiple power switches can be individually removed and replaced.
- E. Comply with the seismic Zone 4 requirements of the Uniform Building Code. Design mechanical and electrical equipment, and their supports and connections, to prevent sliding or overturning. Brackets and anchors shall be of ductile material so that they can absorb energy and continue to carry load.
- F. Supply fans shall be located approximately 18" above bottom with removable filter. A minimum of two individually fused fans shall be provided. Exhaust louvers shall be located near the top of the enclosure. Insect screens shall be provided on exhaust louvers. Supply fans and exhaust openings shall be on the front of the VFD enclosure.
- G. Space Heaters: VFD cabinet space heater(s) shall be provided in each VFD MCC section to prevent condensation. Space heater(s) shall be rated 240 V operating at 120 VAC and shall be supplied from the manufacturer-furnished internal 480-120 V control power transformers (CPT) located in each VFD section of the MCC. A CPT dedicated to the space heater(s) each section shall be provided. The space heaters shall not be powered from the motor control circuit CPT. The space heater(s) shall run when the power to the VFD is off. The space heater CPT shall be powered from an external power source. The space heater CPT shall not be powered from the MCC 480V power. The quantity and rating of space heaters shall be as required for the volume of space to be heated to prevent condensation within the VFD MCC section.

2.6 NAMEPLATES AND WARNING SIGNS

- A. Nameplates shall be black lamicaid with engraved white letters. Nameplates shall be fastened to equipment with round head stainless steel screws. Engrave nameplates with equipment identification and description shown on single line diagram SK-1 for the VFD driven equipment. Engraved letter height shall be 0.25 inches.
- B. Provide red lamicaid warning nameplate with engraved white letters on each VFD section door: "WARNING: FOREIGN VOLTAGES ARE PRESENT IN THIS MCC SECTION, OPENING THE MCC MAIN CIRCUIT BREAKER WILL NOT DISCONNECT POWER TO FOREIGN VOLTAGE CIRCUITS". Nameplate shall be fastened to door with round head stainless steel screws.

2.7 HARMONIC DISTORTION

- A. The harmonic distortion values contributed by operation of all VFD motor-loads operating at full load shall be:
 - 1. Maximum Allowable Harmonic Voltage Distortion (HVD) Contribution: 5 percent of the fundamental for total distortion and 3 percent for the individual harmonics per the latest edition of IEEE-519.
 - 2. Maximum Allowable Total Harmonic Current Demand Distortion (THID) Contribution: 8 percent of the combined load current of the main feeder supplying all 480 volt loads.
- B. The harmonic study that accounts for actual equipment values shall be submitted to the ENGINEER for review and written acceptance before equipment manufacturing is begun.

2.8 WARRANTY

- A. Provide manufacturers warranty for a period of 24 months for equipment

PART 3 - EXECUTION

3.1 SHOP INSPECTION AND FACTORY DEMONSTRATION TEST

- A. Before the test, a meeting shall be held to review the test procedures and determine that all the Drawings and documents for the equipment are up-to-date.
- B. After the test, a meeting shall be held to review the punchlist items, corrective actions and shipping schedule.
- C. If the equipment does not meet specification or not ready for inspection when the ENGINEER arrives at the factory as scheduled, re-inspection and/or re-witness test may be required. Re-inspection or re-witness test, if needed, shall be in accordance with Section 16010, Electrical General Provisions.

3.2 SOURCE QUALITY CONTROL

- A. Factory Testing

1. Factory test the complete VFD system in accordance with IEEE and NEMA standards, the requirements of this Specification and Contract Drawings. Successful factory tests of output short circuit of phase to phase and phase to ground on a prototype drive system similar to the model and rating being supplied shall have been performed. Short circuit test results shall be submitted to CHB for information. The CONTRACTOR shall describe how efficiency tests will be performed and submit it as part of the test plan/procedure.
 2. After the specified inspections and tests have been successfully completed, the VFD system shall undergo a 10 hour burn-in test. Burn-in system at 100 percent motor load for 10 hours without an unscheduled shutdown. After the burn-in cycle is complete, the VFD system shall also be put through a 30 minute varying motor load test from 25 to 50 to 100 percent of full load before final factory inspection and shipping.
 3. Auxiliaries, including fans, that are required for rated load operation at maximum ambient temperature, shall be designed for 100 percent redundancy. A new and unused spare replacement fan(s) or air conditioning unit(s), shipped in original carton, may be an acceptable alternate.
 4. Acceptance of a shop test does not relieve CONTRACTOR from requirements to meet field installation tests under specified operating conditions, nor does the inspection relieve the CONTRACTOR of responsibilities.
 5. Drive system shall not be shipped from the manufacturing and assembly facility until the acceptance tests are completed and the results accepted by the ENGINEER in writing.
 - a. The Supplier shall also be responsible to ensure that the various VFD communication link is fully capable with and will communicate with the CHB's PLC system over MODBUS+ Communications. The supplier shall demonstrate the communications operate.
- B. Verification of Performance: Submit to the ENGINEER the signed and dated certification that all of the factory inspection and tests described herein have been successfully performed by the CONTRACTOR prior to shipment.

3.3 PROGRAMMING OF THE VFD

- A. The CONTRACTOR shall have the sole responsibility for installing and configuring the VFD software for proper operation. The CONTRACTOR shall also be responsible to ensure that the various VFD communication links are fully capable with and will communicate with CHB's PLC system.

3.4 FIELD QUALITY CONTROL AND TRAINING

- A. Provide the services of an experienced, factory trained technician or service engineer of the VFD manufacturer at the jobsite for minimum of 2 days for startup of each VFD beginning at a date mutually agreeable to the CONTRACTOR and CHB. Allow four 2 hour sessions for operator training, four 4 hour sessions for mechanical maintenance training, and eight 4 hour sessions for electrical and instrument maintenance training. The technician shall be on duty at the site for at least 8 hours per day and shall be

available 24 hours per day when required to advise concerning special problems with equipment and systems.

- B. Include the service of a factory-trained service personnel to inspect installation, commission, and prepare a final report for record purposes.

3.5 MAINTENANCE

- A. Tools and Equipment: VFD manufacturer shall identify and supply necessary special tools and test equipment that is unique to performing maintenance or repair tasks of the drive system supplied.
- B. Field Services: Manufacturer shall describe the field service system available to support the proposed VFD system. As a minimum describe:
 - 1. Type of technical support available (e.g. system engineering and technician)
 - 2. Location of field service personnel (Maximum 100 miles)
 - 3. Field service daily rates in dollars per hour and dollars per day
 - 4. Guaranteed response times to service requests

3.6 ACCEPTANCE TESTING

- A. Final Inspection: The CONTRACTOR shall perform and submit the results of a final comprehensive field performance survey after equipment installation.
- B. Performance Verification
 - 1. The CONTRACTOR shall field measure actual harmonic distortion to verify compliance with harmonic content requirements per this Specification during satisfactory full-load operation of all the drives. These post-installation tests shall be performed by an independent electrical testing firm acceptable to CHB. Test methods shall be acceptable to the ENGINEER in writing. The testing firm shall be ElectroTest Inc., or equal.
 - 2. As part of the specified harmonic studies and measurements for this Project, use frequency scan analysis to identify and correct resonance conditions in the electrical distribution system at no additional cost to CHB.
 - 3. Measurements shall include harmonic voltage and current spectra and individual and total harmonic distortions.
 - a. VFD to CHB PLC communications.

Section 16418

VARIABLE FREQUENCY DRIVES BELOW 100 HORSEPOWER

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- A. The requirements of the following sections and divisions apply to the work of this section. Other sections and divisions, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 16480 480V Motor Control Center
- B. Materials and equipment furnished and installed under this specification with raceway and electrical conductors furnished, installed, and connected under Division 16, Electrical.

1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. All work specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following publications to the extent that the provisions thereof are not in conflict with other provisions of these specifications.
- B. Comply with the latest editions of the following codes and standards.
 - 1. Codes and Standards:

NEC	National Fire Protection Association (NFPA) –70 National Electrical Code (NEC)CCR Title 8, Industrial Relations, Subchapter 5, Electrical Safety Orders, California Code of Regulations. National Electrical Code
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 - 2. Commercial Standards:

ANSI/UL 467	Grounding and Bonding Equipment, Safety Standard For
IEEE 519	Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
NEMA MG-1998	Motors and Generators, Standard for
NEMA 250-1997	Enclosures for Electrical Equipment (1,000 volts maximum), Standard for
NEMA Standard ICS7.1 1995	Construction and Guide to Selection, Installation, and Operation of Adjustable Frequency Drives Systems. Safety, Standards for
UL 508A	Industrial Control Equipment, Standard for

ISA 5.4

Instrument Loop Diagrams, Standard for

UBC

Uniform Building Code

1.3 SYSTEM DESCRIPTION

- A. Furnish and install complete, solid-state VFD systems as specified herein and indicated on the Drawings. This Specification describes variable speed motor control which includes the design, fabrication, testing, installation and support requirements for VFD systems for 3-phase squirrel cage rotor, induction motors listed in the table below.

VFD Driven Equipment Tag Number	Motor Rating (hp)	Motor Rating (Volts)	Motor Rating (Estimated Amperes)
Zone 2 Pump 1	50	480, 3 phase	65
Zone 2 Pump 2	50	480, 3 phase	65
Zone 2 Pump 3	50	480, 3 phase	65

1.4 CONTRACTORS SUBMITTALS

- A. Provide (6) copies of each document listed below:

1. Shop Drawings

a. Layout Drawings

- (1) Layout drawings of the VFD system that include all cabinet or enclosure dimensions, access details, and weights.
- (2) Layout drawings of panels or enclosures showing size, arrangement, color, and nameplates. Drawings shall include the physical arrangement of door mounted devices located on the VFD enclosure. Sufficient detail shall be provided for locating conduit stub-ups. General "catalog data sheet" layout drawings which are not specific to the systems specified herein are not acceptable.

b. Single-Line Diagrams

- (1) Complete single-line diagrams indicating all devices comprising the VFD drive system including, but not limited to, circuit breakers, motor circuit protectors, contactors, instrument transformers, meters, relays, timers, control devices, and other equipment comprising the complete system.

Electrical ratings of all equipment and devices shall be clearly indicated on these single-line diagrams.

c. Control Diagrams

- (1) Schematic and interconnection wiring diagrams of all electrical work per ISA S5.4 Standard, including terminal blocks and identification numbers, wire numbers and wire colors. These drawings shall be circuit specific for each motor-load combination and each shall include a reference (drawing name/number) to the associated control diagram in the construction contract documents set. Logic diagrams identifying system control logic
- (2) Indicate all devices, regardless of their physical location, on these diagrams. The specific device location symbols and their respective legend shall also appear on these diagrams.
- (3) Specific equipment service names and loop tag numbers consistent with the Drawings shall appear on each respective diagram.
- (4) Functional diagrams that identify major system functional blocks and interfaces. The diagrams shall note any special requirements or restrictions of the motor-load combination and shall show all interface wiring and points of connection to the VFD enclosure (and bypass if included).

d. Manufacturers Drawings

- (1) Drawings submitted by the manufacturer shall be complete and documented to provide the City of Huntington Beach (CHB) with operations and maintenance capabilities.
- (2) Relay and timer coil and respective contact identification numbers shall match those indicated on the Drawings.

e. Bill of Material

- (1) Complete Bills of Material with catalog data sheets and manuals for all equipment and devices comprising the VFD system. Where catalog cuts and other brochures depicting product characteristics are supplied, annotate to show product to be used on this project.

f. List of Spare Parts

- (1) Complete list of recommended spare parts. Include item descriptions, recommended quantities, and unit costs. The recommended list shall be based on a maintenance plan where CHB will remove and replace failed items to the lowest replaceable module/component level.

2. Electrical System Data

- a. Submit additional data as specified in Article 3.4 below.

3. Test Reports
 - a. Submit certified copies of manufacturer's test reports specific to the unit serial number being supplied as well as model number type acceptance tests performed such as short circuit testing.
 - b. Submit factory bench-test data to indicate that the manufacturer's proposed equipment has been tested in the specified arrangement and found to achieve specified accuracy.
4. Operation, Maintenance and Installation Instructions:
 - a. Furnish with the equipment at delivery manufacturer's operating and maintenance manuals, installation instructions, and other documentation necessary for the installation, start-up, operation and maintenance of the system as specified in Division 01 General Requirements.
5. Programming Guides and Manuals:
 - a. If the VFD systems require computer software or configuration, provide 4 copies of all programming software and guides /manuals. Submit copies of all related software and licenses for the VFD to CHB for inclusion in the software library. The CONTRACTOR shall be responsible for acquiring any software required to complete the project. In addition, the CONTRACTOR shall install and maintain the software until the VFD is accepted and transferred to CHB. Flow charts, listings of software and FINAL programmable parameters developed shall be submitted to the ENGINEER. Submit final flow charts and program listings no later than 6 weeks prior to factory testing of the system.
6. Record Drawings:
 - a. Drawings of each of the above types representing the as-built condition of the equipment and software shall be delivered with the equipment at the jobsite. Final or corrected as-built drawings shall be delivered 4 weeks after field system acceptance.
 - b. Programmable parameters shall be provided in hard copy and electronically (Microsoft Excel format) and shall include, but not be limited to, the following data fields: parameter, service, default setting, suggested setting, actual setting.
7. Test documentation shall be provided in a three-ring binder(s) within three weeks after the completion of the project. The binder(s) shall be clearly marked on the outside front cover and spine with the words "Test Results", the project name, and the date of completion (month and year). Scanner tests shall be printed on 8-1/2" x 11" paper. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be collected in the binder.
8. Personnel training curriculum for training as specified in Section 3.5 Field Quality Control.

1.5 QUALITY ASSURANCE

A. System Warranty

1. The CONTRACTOR shall provide a system warranty covering the installed VFDs against defects in workmanship, components, and performance, and follow-on support after project completion.
2. The CONTRACTOR shall warrant the VFDs against defects in workmanship for a period of two years from the date of system final acceptance. The warranty shall cover all labor and materials necessary to correct a failed portion of the system and to demonstrate performance within the original installation specifications after repairs are accomplished. This warranty shall be provided at no additional cost to CHB.
3. The CONTRACTOR shall facilitate a 2-year component warranty between the manufacturer and CHB. An extended component warranty shall be provided which warrants functionality of all components used in the system for 2 years from the date of acceptance.
 - a. The CONTRACTOR shall maintain current status with the warranting manufacturer, including all training requirements, for the duration of the Project.
 - b. The CONTRACTOR shall staff each installation crew with the appropriate number of trained personnel, in accordance with their manufacturer/warranty contract agreement, to support the 2-Year Performance Warranty requirements.
 - c. After installation, the CONTRACTOR shall submit all documentation to support the warranty in accordance with the manufacturer's warranty requirements, and to apply for said warranty on behalf of CHB.
 - d. The warranty shall cover the components and labor associated with the repair/replacement of any failed link, within the warranty period, that is a valid warranty claim.

B. Manufacturer Qualifications

1. For the equipment specified herein, the manufacturer shall be ISO 9001 certified and provide detailed evidence of such certification, including the certifying agency, date of certification and dates of periodic recertification. Submittal of a blanket ISO 9000 statement is not acceptable.
2. Manufacturer shall provide a Quality Assurance Program to verify that all items and services comply with the requirements of this Specification and shall submit proof of such QA program along with other submittal items. Proof shall include, but not be limited to copies of factory inspection checklists, detailed test procedures, and policies for correction of errors found.
3. VFD manufacturer shall maintain, as part of a national network, engineering service facilities within 250 miles of the equipment installation to provide start-up service, 24 hour/day emergency service calls, repair work, service contracts, maintenance, and troubleshooting training of customer personnel.

4. Provide the following supporting information:
 - a. The location of repair facilities where drive system components would be repaired.
 - b. The location(s) nearest to Huntington Beach, California where spare parts are stocked.
 - c. Variable frequency drive manufacturer information guaranteeing 72 hours turn-around time after receipt at the repair facility for the repair and return of a failed part.

C. Underwriter's Laboratory

1. VFD shall have a visible UL mark.

1.6 OPERATING CONDITIONS

- A. The following operating conditions are applicable for all equipment of this Specification.
 1. Humidity: 0 to 95 percent.
 2. Ambient Temperature: 40 to 95 Degrees Fahrenheit.
 3. Altitude: Sea level to 3,300 feet.
 4. Power Supply: 480 volts, 3-phase, 60 Hertz.
 5. Short circuit fault withstand: 65,000A.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. The same manufacturer shall supply all VFD systems. The manufacturer shall be Cutler-Hammer.

2.2 VARIABLE FREQUENCY DRIVE SYSTEM

- A. Each VFD shall be a complete alternating current electric drive system including hardware, software, and technical data necessary to accomplish variable speed operation of an induction motor and load combination in accordance with the requirements as indicated on the Drawings and as described in these Specifications. CONTRACTOR shall refer to the appropriate sections of these Specifications for the driven equipment control description for each VFD system.
- B. VFD system manufacturer shall either manufacture all items of component equipment or supply them using coordinated specifications furnished to the original equipment manufacturers to insure compatibility and performance in accordance with this Specification.
- C. VFD manufacturer shall be responsible for the successful application and operation of the drive combined with the motor and driven equipment. This includes the

responsibility for determining all load, torque, speed, and performance requirements from the respective sources and integrating these into a VFD system that fulfills the requirements of this Specification.

- D. VFD system shall be suitable for operation as part of a 480 volt alternating current, 3-phase, 60 Hertz power distribution system. The complete VFD system shall be designed to withstand the mechanical forces exerted during short circuit conditions. In the event that the results of the short circuit fault analysis submitted during the shop drawings period, as accepted by the ENGINEER, indicate that a higher short circuit duty rating of the VFD system is required, the CONTRACTOR shall furnish the VFD system with that higher rating.
- E. The VFD system shall be suitable to operate, at times, on a limited power source engine-generator set. The system when operating on this source shall also conform to waveform distortion limits for normal operation as specified in Article 2.7 of this Specification.
- F. All necessary motor and drive parameters together with specific control and protection functions shall be programmable via a keypad. Control and sequence logic shall be designed such that the motor-load combination can be operated in the manual mode upon control and sequence logic failure, and that all necessary personnel and equipment safety interlocks will remain effective.
- G. The CONTRACTOR and VFD system manufacturer are cautioned regarding the review and compliance with the total Contract Documents regarding the package components. Typical examples are circuit breakers, motor circuit protectors, line and load reactors, magnetic starters, relays, timers, programmable logic controllers, pilot devices including pushbuttons, selector switches and pilot lights, enclosures, conduit, disconnect switches, terminal boxes, and other equipment.

2.3 DESIGN REQUIREMENTS

- A. The VFD shall consist of a 6-pulse full wave diode bridge rectifier, a DC bus, a power transfer inverter and line and load reactors and an input single phase loss relay to trip the drive. The inverter shall invert the direct current voltage into an alternating current voltage and frequency proportional to the desired speed using isolated gate bipolar transistors (IGBTs) with pulse width modulation (PWM) technology. This alternating current voltage and frequency shall both vary simultaneously at a constant "Volts-Per-Hertz" ratio to operate the induction motor at the desired speed.
- B. Provide each VFD with a main disconnect and thermal-magnetic protective device as indicated on the Drawings which shall be padlockable. Provide line reactors having a minimum 3 percent reactance. Reactors shall be mounted in the VFD enclosure.
- C. The drive shall operate the motor and produce full rated nameplate horsepower at the motor output shaft without exceeding rated total temperature including the additional temperature increment that constitutes the motor service factor. Motor service factor shall be 1.0 when operated from the VFD. The drive shall operate with a minimum 95 percent input power factor at speeds between 30 percent and 100 percent of rated speed.
- D. For lead lengths exceeding 500 feet, the VFD assembly shall include the capability to provide transient voltage protection at the motor by means of a motor terminator or output sine wave filter. Stand alone line reactors are not acceptable.

- E. Power_(Load) is the total 3-phase power delivered to the motor, measured at the output terminals of the drive system. Power_(Supply) is the total electrical power delivered to the drive system, measured at the input terminals of the VFD including input and output filters, line and load reactors, transformers, harmonic distortion attenuation equipment and the other drive assembly devices. Power_(Supply) shall include power input required for auxiliary equipment (e.g., controls, fans, air conditioning, pumps) for complete system operation. The overall drive system efficiency shall be a minimum of 97 percent when operating the specified motor-load combination at rated voltage, frequency, and current. The efficiency shall exceed 90 percent when operating at 50 percent speed and load. This efficiency shall be calculated as follows:

$$\text{Efficiency (\%)} = \frac{\text{Power (Load)}}{\text{Power (Supply)}} \times 100$$

- F. The VFD system shall maintain a desired output frequency (setpoint) with a steady state accuracy of 0.5 percent of rated frequency of 60 Hertz for a 24 hour period. The drive system shall achieve a desired output frequency (setpoint) with a repeatability of 0.1 percent of rated frequency of 60 Hertz.
- G. The VFD shall have an automatic current limit feature to control motor current during startup and provide a "soft start" torque profile for the motor-load combination. The current limit setting shall be field adjustable.
- H. The VFD shall have software current limit allowing frequency to fold back under high current conditions thereby reducing motor current.
- I. A door-mounted membrane keypad with integral two-line, 24 character LCD display shall be provided, capable of controlling the VFD and setting drive and motor parameters. The keypad module shall contain a self-test software program which may be activated to verify proper keypad operation.
- J. The system shall be capable of operating the specified load continuously at any speed within the operating speed range of 0 percent to 100 percent of rated speed. The minimum and maximum continuous operating speeds shall each be adjustable within this speed range. The VFD shall provide for field adjustment of these setpoints.
- K. Drive system controls shall be microprocessor-based and have controlled linear acceleration capability to ramp up and down the speed (revolutions per minute) of the motor-load combination from the minimum selected operating speed to the maximum selected operating speed at individual adjustable rates. Provide 3 field-adjustable speed setpoints for the VFD to skip equipment resonant frequencies. Provide controlled linear deceleration capability. The acceleration and deceleration time limits shall be field-adjustable to values up to 120 seconds. Use of PLC for the purpose of implementing the CHBs's elementary diagrams and interlocks is not allowed. All interlocks shall be hardwired using relays.
- L. Voltage unbalance between phases of the VFD output shall not exceed 3 percent of the instantaneous values with balanced input voltage. The VFD system shall continuously monitor the output voltages and generate an alarm condition when the unbalance exceeds 3 percent. The system shall detect and generate a separate alarm for loss of any output phase voltage (single phasing). Phase unbalance shall be as defined by NEMA Standard MG-1.

- M. The VFD system shall operate continuously without interruption of service or damage to equipment during transient input voltage variations of plus or minus 10 percent for duration of 15 cycles. VFD output voltage regulation shall be plus or minus 2 percent.
- N. The VFD shall be capable of supplying continuously an output motor load RMS current equal to 100 percent of the motor full load RMS current when operated from an undistorted sine wave source. This 100 percent RMS value shall include all harmonic content in the inverter output current while producing full nameplate horsepower from the motor. Motor overcurrent protection shall be provided.
- O. The audible noise (sound pressure) level of a motor when operated from no load to full load with the VFD described herein shall not increase more than 5 decibels (dbA) above its noise level when operated at constant rated speed from a utility power source without the VFD. Audible noise shall be measured in a free field at 3 feet in all directions from the motor.
- P. Carrier Frequency for pulse width modulation shall be 3500 Hertz or less.
- Q. The driven motor shall operate in the forward direction regardless of input source phase sequence. The VFD shall be capable of energizing a spinning load of a motor "on-the-fly" if the motor is spinning in the forward direction
- R. When a motor lockout stop pushbutton is indicated on the Drawings, activation of this device shall disable operation of the VFD including operation by the keypad in the manual mode and the bypass control mode.
- S. The drive must fit within the space allocated on the Drawings while meeting all code clearance requirements.
- T. All operation, maintenance, and repair tasks shall be performed via front access to the enclosure. No side or rear access will be available.
- U. The VFD shall operate in a solidly grounded electrical power distribution system as a normal power source.

2.4 SYSTEM FEATURES AND CONDITIONS

- A. Include Human Machine Interface (HMI) to provide, but not be limited to, the following:
 1. VFD design shall include on-line diagnostics, with an automatic self-check feature that will detect a VFD failure that affects motor operation and generate an alarm with a form "C" output contact rated for 2 A, 250 VAC suitable for interfacing into an alarm annunciation system. All displays and diagnostics shall be in narrative English.
 2. Diagnostics shall operate a visual alarm indicator that is visible on the VFD equipment cabinets without opening cabinet doors.
 3. Provide an audible alarm horn.

4. Provide an RS 232 and RS 485 communication for connection to a laptop computer. An indication of the "First Out" failure is a minimum for fault sequence detection.
5. Provide Modbus+ connection which shall be able to upload and download all the operation/ performance / programming parameters. The CONTRACTOR shall provide CHB with a register I/O list which defines the Modbus+ register locations of each parameter, its range of values and value as delivered to CHB after setup.
6. A door-mounted programming keypad to input set points and mode and sequence programming data and display shall provide for the following, as a minimum:

Input Voltage

Output Voltage

Output Current

Output Frequency

Alarm Read-out

Alarm Reset button

Event and Diagnostic Recorder

- B. In addition to the HMI, controls and indicators to accomplish operation and maintenance functions shall be located on the VFD equipment assembly as specified herein and indicated on the Drawings. As a minimum, the required controls and indication shall consist of the following displayed in English units or narrative English. No codes shall be accepted. All the shutdown and/or alarms which will prevent the VFD from running shall be displayed on the cabinet with indicating lights. Motor protection relay and motor instrumentation shall be compatible. If not, provide all necessary interface with ENGINEER's approval

1. Devices to be mounted on the front door of the VFD section shall include the following:

Digital Output Speed Indicator: 0 to 100%

Manual Speed Control (separate three-quarter turn lockable potentiometer with Scale 0-100% speed in addition to the keypad)

Lockout STOP Pushbutton

HAND-OFF-AUTO Selector Switch

VFD READY Indicator: Amber

PUMP ON Indicator: Red

PUMP OFF Indicator: Green

VFD Trouble Indicator: Amber

VFD Cabinet High Temperature Indicator: Amber

VFD Cabinet Low Temperature Indicator: Amber

C. All alarm contacts to outside equipment and/or SCADA shall be form "C" rated 2 A, 250 VAC.

D. Interface with CHB's SCADA shall meet the following requirements:

1. All SCADA I/O shall be hardwired and dry contact type. Status, alarm and control signals to and from SCADA shall include the following.:

DI (signals output from VFD to SCADA for monitoring and control):

VFD Ready

PUMP ON

Hand Mode

Remote Mode

VFD Trouble

DO (command from PLC to VFD for start /stop of the VFD):

RUN Pump

PLC Reset

VFD Cabinet High Temperature

VFD Cabinet Low Temperature

2. VFD system shall provide an isolated 4-20 milliamperes direct current output signal to a 1000 Ohm load that is proportional to the drive output frequency (speed in rpm) for use as speed feedback or control and remote speed indication. The 4-20 milliamperes signal shall correspond to 0-100% speed or 0-60 Hz frequency.

3. VFD system controls shall accept an isolated 4-20 milliamperes direct current input command signal to input impedance of 250 Ohm (0.5 percent accuracy) in order to control the output frequency in the automatic and/or manual control modes as specified herein or indicated on the Drawings. The 4-20 milliamperes signal shall correspond to 0-100% speed or 0-60 Hz frequency. The controls shall accept the input increase/decrease command with a resolution that permits incremental changes in speed, revolutions per minute, equal to or less than 0.1 percent of rated speed.

F. When operating in the automatic mode, the VFD system shall shut down during a power outage. Upon restoration of normal or standby power and after an adjustable time delay (0-30 seconds); the VFD system shall have the capability to automatically

restart and then ramp up to speed as required by the control system. The default operating mode will be with the automatic restart feature disabled. The pumps will be restarted manually when power is restored.

- G. The VFD shall have a programmable parameter which allows the independent setting of the minimum speed as well as other speed related settings such as frequency skipping.
- H. Provide each VFD with its respective drive controller and, if required, output contactors for each motor.
- I. Provide VFD system with transmitted and received radio interference protection.
- J. All the VFD system programming including that of the micro-processor protective relays, if any, shall be stored on EEPROM.

2.5 ENCLOSURES

- A. Unless otherwise specified, the VFD system enclosures shall be NEMA 1 gasketed, force ventilated dead-front with front accessibility. Design enclosures for top and bottom entry of cables. The VFD shall be installed in a standard motor control center vertical section. See Section 16480.
 - 1. Treat metal surfaces and structural parts by phosphatizing, or equal, prior to painting.
 - 2. Apply a gun-metal gray undercoat to enclosures which is equal to zinc chromate.
 - 3. Finish exterior of the enclosures in ANSI-61 gray.
- B. Equipment bus, including ground bus, shall be tin-plated copper. Power and control wiring shall be copper, color coded and identified in accordance with Section 16120.
- C. Furnish each VFD system with the control switches, alarm lights and indicators as specified herein and as indicated on the Drawings. Furnish main circuit breakers with an external operating handle interlocked with the door so that the door cannot be opened unless the disconnect is in the OFF position. Power supply to the motor from both the VFD shall be capable of being positively locked in the OFF position. The disconnect shall be interlocked so that equipment cannot be energized when the door is open.
- D. Equipment shall be of modular construction allowing normal maintenance and repair to be done with ordinary hand tools. Design and install semiconductor assemblies so that a single failed power switch or power module containing multiple power switches can be individually removed and replaced.
- E. Each VFD enclosure shall have positive forced air ventilation to meet the operating conditions of paragraph 1.7 above. Supply fans shall be located approximately 18" above bottom with removable filter. A minimum of two individually fused fans shall be provided. Exhaust louvers shall be located near the top of the enclosure. Insect screens shall be provided on exhaust louvers. Supply fans and exhaust openings shall be on the front of the VFD enclosure.

- F. Space Heaters: VFD cabinet space heater(s) shall be provided in each VFD MCC section to prevent condensation. Space heater(s) shall be rated 240 V operating at 120 VAC and shall be supplied from the manufacturer-furnished internal 480-120 V control power transformers (CPT) located in each VFD section of the MCC. A CPT dedicated to the space heater(s) each section shall be provided. The space heaters shall not be powered from the motor control circuit CPT. The space heater(s) shall run when the power to the VFD is off. The space heater CPT shall be powered from an external power source. The space heater CPT shall not be powered from the MCC 480V power. The quantity and rating of space heaters shall be as required for the volume of space to be heated to prevent condensation within the VFD MCC section.

2.6 NAMEPLATES AND WARNING SIGNS

- A. Nameplates shall be black lamincoid with engraved white letters. Nameplates shall be fastened to equipment with round head stainless steel screws. Engrave nameplates with equipment identification and description shown on single line diagram SK-1 for the VFD driven equipment. Engraved letter height shall be 0.25 inches.
- B. Provide red lamincoid warning nameplate with engraved white letters on each VFD section door: "WARNING: FOREIGN VOLTAGES ARE PRESENT IN THIS MCC SECTION, OPENING THE MCC MAIN CIRCUIT BREAKER WILL NOT DISCONNECT POWER TO FOREIGN VOLTAGE CIRCUITS". Nameplate shall be fastened to door with round head stainless steel screws.

2.6 HARMONIC DISTORTION

- A. The harmonic distortion values contributed by operation of all VFD motor-loads operating at full load shall be:
 - 1. Maximum Allowable Harmonic Voltage Distortion (HVD) Contribution: 5 percent of the fundamental for total distortion and 3 percent for the individual harmonics per the latest edition of IEEE-519.
 - 2. Maximum Allowable Total Harmonic Current Demand Distortion (THID) Contribution: 8 percent of the combined load current of the main feeder supplying all 480 volt loads.
- B. The harmonic study that accounts for actual equipment values shall be submitted to the ENGINEER for review and acceptance before equipment manufacturing is begun.

PART 3 - EXECUTION

3.1 HARMONIC DISTORTION

- A. Based on the minimum available 3-phase short circuit current specified in Article 1.4, the VFD manufacturer shall perform a comprehensive pre-equipment-selection harmonic study to determine harmonic voltage and current distortion and the ratings and characteristics of individual drive attenuation equipment if these are necessary to achieve the required distortion limits specified in Article 2.7 above. In conducting the study, the manufacturer shall calculate the total harmonic voltage distortion at the point of common coupling using the short circuit values stated in this Specification.

3.2 SOURCE QUALITY CONTROL

A. Factory Testing

1. Successful factory type acceptance short circuit tests shall have been performed on a complete VFD system prototype model of the same type that is being supplied to CHB in accordance with IEEE and NEMA standards and these Specifications. The output short circuit type acceptance tests shall include both line-to-line and line-to-ground fault tests. A short circuit type acceptance test report from the manufacturer shall be submitted to the CONTRACTOR. If short circuit type tests have not been performed previously, the MANUFACTURER shall perform short circuit tests to demonstrate that the equipment will successfully protect against and survive one line-to-line and one line-to-ground short circuit at the drive output terminals. In addition, the VFD system shall be tested for efficiency.
2. VFD system components, including power transistors, GTO's, SCR's, and diodes shall be 100 percent inspected and tested, including temperature cycling to simulate high temperature and exercise thermal shutdown during load testing. All integrated circuits shall be inspected, pass/fail tested, temperature cycled as part of the drive test. Small components, including small signal semiconductors, resistors, capacitors, diodes, etc. shall be lot sampled and tested for functionality. Test printed circuit boards using a bench test to verify component rating and functionality prior to unit installation. Inspect all final assemblies and test at full load.
3. After the specified inspections and tests have been successfully completed, the VFD system shall undergo a 10 hour burn-in test. Burn the system in at 100 percent motor load for 10 hours without an unscheduled shutdown. After the burn-in cycle is complete, the VFD system shall also be put through a 30 minute varying motor load test before final factory inspection and shipping.
4. Auxiliaries, including fans, that are required for rated load operation at maximum ambient temperature, shall be designed for 100 percent redundancy. A new and unused spare replacement fan(s) or air conditioning unit(s), shipped in original carton, may be an acceptable alternate.
5. Circuit boards and electrical components shall have corrosion protection suitable for an industrial environment.
6. Authorized representatives of CHB shall be allowed free access to the shops at all times while work is in progress for the purpose of inspection, test observation, and obtaining information on the progress of the work. CHB will give the CONTRACTOR 72 hours prior notice.
7. Acceptance of a shop test does not relieve CONTRACTOR from requirements to meet field installation tests under specified operating conditions, nor does the inspection relieve the CONTRACTOR of responsibilities.
8. The CONTRACTOR shall successfully complete Acceptance Test Procedures on the assembled drive system that demonstrate compliance with the requirements of this Specification. The test plan shall be submitted for acceptance at least 30 days prior to the planned test date.

9. Drive system shall not be shipped from the manufacturing and assembly facility until the acceptance tests are completed and the results approved by the ENGINEER.

B. Verification of Performance

1. Tests may be witnessed by a representative of the ENGINEER. The VFD manufacturer shall notify the ENGINEER 2 weeks in advance and shall provide testing procedures to the ENGINEER 4 weeks prior to actual testing. Failure of a test shall result in rejection of the equipment until performance is in compliance with these Specifications.
2. Certification on materials and records of shop tests necessary for the inspector to verify that the requirements of the specifications are met, shall be made available to the ENGINEER.
3. Submit to the ENGINEER the signed and dated certification that all of the factory inspection and testing procedures described herein have been successfully performed by the CONTRACTOR prior to shipment.

3.3 PROGRAMMING OF THE VFD

- A. The CONTRACTOR shall have the sole responsibility for installing and configuring the VFD software for proper operation. The CONTRACTOR shall also be responsible to ensure that the various VFD communication links are fully capable with and will communicate with CHB's PLC system. Programming by CHB is limited to CHB's PLC.

3.4 ELECTRICAL SYSTEM DATA

- A. The drive manufacturer and CONTRACTOR shall provide the ENGINEER with all the drive system design information necessary for electrical distribution system analyses by the consultant that uses ETAP software during the shop drawing review period and for the project as-built ETAP database to be finalized by the consultant after equipment installation.

3.5 FIELD QUALITY CONTROL AND TRAINING

- A. Provide the services of an experienced, factory trained technician or service engineer of the VFD manufacturer at the jobsite for minimum of 2 days for startup of each VFD beginning at a date mutually agreeable to the CONTRACTOR and CHB. Allow four 2 hour sessions for operator training, four 4 hour sessions for mechanical maintenance training, and eight 4 hour sessions for electrical and instrument maintenance training. The technician shall be on duty at the site for at least 8 hours per day and shall be available 24 hours per day when required to advise concerning special problems with equipment and systems.
- B. Include in the bid an allowance for factory-trained service personnel to supervise field installation, inspect, make final adjustments and operational checks, and prepare a final report for record purposes. Adjust control and instrument equipment until this equipment has been field-tested by the CONTRACTOR and the results of these tests have been accepted by the ENGINEER.

- C. Include in the bid the training of personnel in the operation and maintenance of each furnished VFD control system. For the purposes of this training section of the Specifications, a system is by definition a group of driven equipment which all serve a common function (e.g., filter influent pumps, chlorine mixers, flocculators).

3.6 MAINTENANCE

- A. Tools and Equipment: VFD manufacturer shall identify and supply necessary special tools and test equipment that is unique to performing maintenance or repair tasks of the drive system supplied.
- B. Field Services: Manufacturer shall describe the field service system available to support the proposed VFD system. As a minimum describe:
 - 1. Type of technical support available (e.g. system engineering and technician).
 - 2. Location of field service personnel. (Maximum 100 miles.)
 - 3. Field service daily rates in dollars per hour and dollars per day.
 - 4. Guaranteed response times to service requests.

3.7 ACCEPTANCE TESTING

A. FINAL INSPECTION

- 1. The CONTRACTOR shall perform and submit the results of a final comprehensive field performance survey after equipment installation.

B. PERFORMANCE VERIFICATION

- 1. The CONTRACTOR shall field measure actual harmonic distortion to verify compliance with harmonic content requirements per this Specification during satisfactory full-load operation of all the drives. These post-installation tests shall be performed by an independent electrical testing firm acceptable to CHB. Test methods shall be acceptable to the ENGINEER. The testing firm shall be ElectroTest Inc., or equal.
- 2. Measurements shall include harmonic voltage and current spectra and individual and total harmonic distortions.
- 3. As part of the specified harmonic studies and measurements for this project, use frequency scan analysis to identify and correct resonance conditions in the electrical distribution system at no additional cost to CHB.

C. SYSTEM PERFORMANCE

- 1. During the three-week period between final inspection and delivery of the test and as-built documentation, the ENGINEER will validate operation of the VFD system by regular inspection during work days.
- 2. Completion of the installation, final inspection, receipt of the test and as-built documentation, and successful performance of the system for a three week period shall constitute acceptance of the system.

* * * * *

Section 16480

LOW-VOLTAGE MOTOR CONTROL CENTER

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish and install all group-mounted and unit low voltage motor control as required for each motor furnished for installation all in accordance with the requirements of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. The requirements of the following divisions or sections apply to the work of this section. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 16418 Variable Frequency Drives Below 100 Horsepower
 - 2. Section 16419 Variable Frequency Drives 100 Horsepower and Above

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. All work specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following publications to the extent that the provisions thereof are not in conflict with other provisions of these Specifications.

- 1. Codes and Standards:

- NEC National Fire Protection Agency (NFPA) – 70 National Electrical Code (NEC), latest adopted edition

- CCR Title 8, Industrial Relations, Subchapter 5, Electrical Safety Orders, California Code of Regulations. National Electrical Code

- 2. Industrial Standards:

- NEMA ICS-1 Industrial Control and Systems General Requirements

- NEMA ICS-2 Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts

- NEMA ICS 18 Motor Control Centers

- UL 508 Industrial Control Equipment

- UL 845 Motor Control Centers

1.4 CONTRACTOR SUBMITTALS

A. Provide six (6) copies of each document listed below:

1. Complete enclosure drawings showing:
 - a. Arrangement
 - b. Dimensional plan and elevation, front view, and other elevation views if pertinent
 - c. Conduit entrance locations and dimensions for both top and bottom entrance
 - d. Bus bar locations and configurations
 - e. User's wiring terminal block locations, and all other terminal block locations
 - f. Anchor bolt locations
 - g. Grounding connections
 - h. Weight of equipment
 - i. Control power transformer (CPT) sizing calculations
2. Elementary Diagrams
 - a. Elementary (schematic) wiring diagrams shall be furnished for each control scheme.
 - b. Each elementary diagram shall show all control devices, CPT sizing, CPT fuse size, and device contacts, each of which shall be labeled.
3. Detailed Connection (Wiring) Diagrams showing:
 - a. All wiring within each unit
 - b. All interconnecting wiring between units and between MCC and external equipment
 - c. Identification of all terminals, terminal blocks, and wires
4. Bill of Material
5. Spare Parts Lists
 - a. Complete spare parts list

- b. List of priced spare parts, which are recommended by the manufacturer, during plant start-up and the first year's operation.
- 6. Installation, Operating, and Maintenance Instructions
 - a. Field storage, installation, operating, and maintenance instructions shall cover all the components furnished.
 - b. One set of Installation, Operating, and Maintenance Instructions shall be shipped with the equipment.
- 7. Protective device time-current characteristics
- 8. Test reports, including procedures, test conditions and results

1.5 QUALITY ASSURANCE

- A. Quality assurance shall be in accordance with the manufacturer's standards in addition to applicable standards.
- B. Electrical and Mechanical Testing: All components shall be factory tested in accordance with the applicable NEMA ICS and UL requirements.

PART 2 - PRODUCTS

2.1 MOTOR CONTROL, GENERAL

- A. Provide each motor with a suitable controller and devices that will function as specified for the respective motors and meeting NEMA ICS 2, the NEC, and UL.
- B. Each motor control center shall be NEMA Class 1, Type B with all remote control and signal circuits wired to a separate terminal board compartment in each motor control center lineup.
- C. MCCs shall be suitable for application on a 3-phase, 60 Hz, solidly grounded system with a nominal system voltage of 480 V ac and a design voltage of 600 V ac.

2.2 MOTOR CONTROL CENTERS

- A. Each assembly shall consist of metal-enclosed, free-standing, dead-front, vertical, steel structures containing power buses, ground bus, combination magnetic motor starters, combination lighting or heating controllers, feeder breakers, metering, control equipment and other devices as specified on the Contract Documents.
- B. MCCs shall be designed to withstand fault currents of not less than 65,000 A RMS symmetrical or as specified on the Contract Documents
- C. Each MCC section shall not exceed 90-inches high, 20-inches wide, 21-inch deep for front-of-board unit arrangement. The total width of the MCC including VFDs shall not exceed 21 feet, 8 inches. The depth of the main circuit breaker section shall not exceed 24 inches. Full depth horizontal wireways at top and bottom shall be

provided. Vertical wireways shall be provided as applicable. MCCs shall be suitable for back-to-wall. Rear access shall not be required for inspection or maintenance. Structure doors shall be constructed with removable pin hinges and secured with quarter-turn indicating-type fasteners.

- E. MCCs shall be designed so that either end of the lineup can be extended without using transition sections, and shall be provided with removable end and top cover plates to close off openings.
- F. The MCC Individual compartments shall be separated by steel barriers for each starter, feeder, or other unit and be capable of being wired from front without unit removal

1. Unit Construction

- a. Unit connections for NEMA Size 5 starters and below shall be provided by plug-on connections for each electrical power phase. Contact fingers shall be free floating and self-aligning with tin plated contacts for a low resistance connection. Stabs shall be backed by spring clips to maintain a high pressure connection to the vertical bus.
- b. Disconnect operators shall have external operator handles for disconnect switches and circuit breakers. Handles shall be designed with up-down motion and with the down position being the OFF position. The operator handle shall be lockable in the OFF position with three 3/8" shank padlocks.
- c. Unit doors shall be securely mounted with rugged, concealed-type hinges which allow the doors to swing open a minimum of 115 degrees for ease of unit maintenance and removal. Doors shall be fastened to the MCC structure so that they remain in place when the unit is removed. The closed unit door must cover the unit space when the unit has been temporarily removed.
- d. An interlock between each unit door and the associated disconnect mechanism shall prevent the door from opening when the unit is energized. Defeater mechanism shall be provided for test or maintenance purposes.
- e. The operator handle shall be interlocked with the unit door so the disconnect can not be switched on unless the unit door is closed. A defeater mechanism shall be provided for test or maintenance purposes.
- f. When additional devices (e.g., relays, extra terminals) are added to a standard manufacturer's MCC bucket, the bucket vertical size shall be larger than the current industry standard for it by 6".

2. Cable Entrance: Top entry except main.

3. Buses

- a. Power buses shall be tin-plated copper.

- b. The horizontal power bus shall have a minimum rating as indicated on the Contract Documents. Horizontal power bus bars shall be fully supported, braced and isolated. Protective barriers shall be provided to prevent people from accidentally contacting the bus with front cover open. Horizontal power bus shall allow for future extension at both ends. Long barrel compression type lugs shall be supplied for each incoming line cable.
- c. Vertical bus bars shall be fully supported, braced and isolated so that the bus will only be exposed where the draw-out unit stab-on assembly makes contact. Suitable automatic shutters shall be provided to cover these bus stab openings when the units are withdrawn. Vertical power bus shall be rated 300 amps minimum.
- d. A ground bus shall be provided running the full length of the MCC at the bottom of the lineup. The ground bus shall be drilled and supplied with lugs suitable for a #4/0 AWG copper conductor at each end of the MCC as indicated on the Contract Documents. Ground Bus shall be tin-plated copper, 400 A minimum capacity.

G. Acceptable Manufacturers: Low Voltage MCCs shall be manufactured by Cutler-Hammer.

H. Control Power Transformer

- 1. A 480-120 V control power transformer shall be supplied for each magnetic motor starter, lighting controller or heating controller, and shall be one standard size larger than is required for the motor space heater, control devices, and/or indicating lights shown on the Contract Documents.
- 2. Each control power transformer shall have both primary legs fused, one secondary leg fused, and the other secondary leg grounded. Connections to both secondary legs shall be provided at the control terminal strip.
- 3. Transformer shall be sized for total connected loads plus one standard size larger than is required. CONTRACTOR shall submit sizing calculations.

I. Motor Starter Units

- 1. Motor starters shall be of the combination circuit breaker, magnetic-contactor-type, 3-pole and minimum NEMA Size 1 contactor size. The magnetic contactor shall operate with a coil voltage of 115 V, 60 Hz, single phase except for size 5 and size 6 starters.
- 2. Each combination motor starter assembly shall have a short circuit withstand rating equal to or greater than the system level indicated on Contract Drawings or specified herein.
- 3. Each motor starter shall have a three phase adjustable electronic overload relay with manual reset from a door-mounted pushbutton. Each overload relay shall have both a normally open alarm contact and normally closed contact used to trip the starter coil. Overload relay setting shall be based on actual motor nameplate full-load current.

4. Each motor starter shall include a minimum of four auxiliary contacts, two normally open and two normally closed, for City of Huntington Beach (CHB) use in addition to those required to fulfill the intent of the control scheme specified on the Contract Documents. All spare auxiliary contacts shall be wired to the terminal blocks in the respective unit compartment.
5. Combination motor starters and controller units shall be of the draw-out type for NEMA Sizes 1 through 4. NEMA Size 5 starters may be of the bolted-on type, although draw-out type is preferred. Draw-out units of the same NEMA size shall be interchangeable with each other.
6. Motor starter units smaller than 12-inch high shall not be acceptable.
7. Units shall be equipped with pilot devices such as START-STOP buttons, selector switches and indicating lights as specified on the Contract Documents. Pilot devices shall be heavy-duty oil-tight type. Pilot lights shall be push-to-test LED type.
8. Spare starters shall be equipped and wired as the regular starter of same rating.

J. Motor Starter Circuit Breakers

1. The circuit breaker used in combination motor starters shall be of the 3 pole molded case, motor circuit protector (MCP) type, consisting of an adjustable instantaneous magnetic trip device.
2. Operating handles for the circuit breaker mechanism shall be provided with indication showing the "ON", "OFF", and "TRIPPED" positions.
3. Molded case motor circuit protectors (MCP) sizing shall be based on the MCC manufacturer's UL listed standard for maximum motor protection.

K. Variable Frequency Drives

1. Provide 18-pulse variable frequency drives with bussed connection per the contract documents. See Section 16419 for specification of 18-pulse VFDs.
2. Provide 6-pulse variable frequency drives with bussed connection per the contract documents. See Section 16418 for specification of 6-pulse VFDs.

L. Main Circuit Breaker

1. Main Circuit breaker shall be individually fixed mount, with trip rating per the contract documents, UL 100% rated molded case circuit breaker with termination at full NEC 75 degrees C ampacity. The main circuit breaker shall be provided with an electronic trip unit with L and S tripping functions.

M. Feeder Circuit Breakers

1. Individual circuit breaker units shall consist of factory-assembled, molded-case circuit breakers with permanent instantaneous magnetic and thermal trips in each

pole, fault-current limiting protection, and current ratings as indicated on the Contract Documents.

2. Circuit breakers shall be capable of being mounted and operated in any position and in an ambient temperature of 40°C. Circuit breakers shall be provided with tin plated Al/Cu rated mechanical screw-type removable connector lugs.
3. Feeder circuit breakers through 250 A frame size shall be of the draw-out type. Frames larger than the 250 A frame size may be of the bolted-on type. Draw-out units of the same frame size shall be interchangeable with each other. Feeder circuit breakers for VFDs shall be 100% rated.
4. Circuit Breakers shall be suitable for use with 75 degrees C wire at full NEC 75 degrees C ampacity. Use molded case circuit breakers with ambient insensitive solid state trips: provide adjustable short time delay pickup, fixed instantaneous trip and adjustable ground fault trip and delay band; locate a trip button on the front cover of the circuit breakers to permit mechanical simulation overcurrent tripping for test purposes and to trip the breaker quickly in an emergency situation.

N. Control Wiring and Terminal Blocks

1. All internal control wiring shall be installed with flexible, stranded copper conductors, #14 AWG minimum size, with type TBS or SIS (cross-linked thermosetting polyethylene) insulation. All wiring shall be bundled and supported by plastic strip lock straps in a neat and workmanlike manner. Adhesive "stick-on" type bundle supports are not allowed.
 2. Terminal blocks shall be clearly labeled to identify connection points for field wiring that will be installed by the CONTRACTOR, including wiring between shipping sections.
 3. Control terminal blocks shall be pull-apart type on all draw-out units for easy removal of the unit from the structure. Provide a minimum of 25% spare terminals.
 4. Terminal blocks shall not be located inside the vertical section.
 5. Each end of the internal interconnecting wire shall be identified by a white shrink-on machine printed sleeve label showing the wire number. The sleeves shall be slightly shrunk so that they can still be rotated on the wire. Wire numbers shall match the manufacturer's detailed connection diagrams. All wires originating from the same electrical node or point shall carry the same wire number.
 6. When practical, all screw-type wire terminations shall use compression-type locking-spade connectors which firmly grip on the conductor and employ insulated compression sleeves to grip the wire insulation. Connectors terminating on terminal blocks shall also be of the locking-spade type.
- O. The following refers to space heaters for the MCC vertical sections that do not contain VFDs. For the specification of space heaters in the vertical sections that contain VFDs see sections 16418 and 16419: Space Heaters: Space heaters shall

be provided to prevent condensation. Space heaters shall be rated 240 V operating at 120 VAC and shall be supplied from the manufacturer-furnished internal 480-120 V control power transformers. Power for the control power transformers shall be from 480 V branch circuit breakers in the service switchboard. Heaters shall be thermostatically controlled. The 120 V space heater circuit shall be protected by a circuit breaker located in the MCC. Provide provision for connection of external 480V circuit to control power transformer.

P. 2.6 NAMEPLATES AND WARNING SIGNS

1. Nameplates shall be black lamicoid with engraved white letters. Nameplates shall be fastened to equipment with round head stainless steel screws. Engrave nameplates with equipment identification and description as shown on single line diagram SK-1 for each MCC cubicle including spares and spaces. Engraved letter height shall be 0.25 inches.
2. Provide red lamicoid warning nameplate with engraved white letters on each VFD section door: "WARNING: FOREIGN VOLTAGES ARE PRESENT IN THIS MCC SECTION, OPENING THE MCC MAIN CIRCUIT BREAKER WILL NOT DISCONNECT POWER TO FOREIGN VOLTAGE CIRCUITS". Nameplate shall be fastened to door with round head stainless steel screws.
3. Provide arc-flash warning label on main circuit breakers section:

WARNING:

ARC FLASH AND SHOCK HAZARD. APPROPRIATE PPE REQUIRED. DO NOT OPERATE CONTROLS OR OPEN COVERS WITHOUT APPROPRIATE PERSONAL PROTECTION EQUIPMENT. FAILURE TO COMPLY MAY RESULT IN INJURY OR DEATH. REFER TO NFPA 70E FOR MINIMUM PPE REQUIREMENT.

- Q. Painting: Painting shall be manufacturer's standard. Color shall be ANSI 61, light gray.

2.3 WARRANTY

- A. Provide warranty on equipment for a period of 24 months.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide work presenting a neat and finished appearance.

3.2 INSTALLATION

- A. Secure MCCs in accordance with manufacturer's recommendations for seismic Zone 4 requirements and NEMA ICS 2.

- B. Retighten all bolted current-carrying bus connections per manufacturer's recommendations.
- C. CONTRACTOR shall adjust the trip settings of all motor starter, circuit breakers, and overload relays per manufacturer's recommendations. Determine motor full load current from motor nameplate following installation. Prepare a typed tabulation of motor name, horsepower, nameplate full load current, measured full load current, overload trip setting and breaker trip setting. Include a copy of the tabulation in the final Technical Manual.
- D. After the equipment is installed, touch up any scratches, marks, etc., incurred during shipment or installation of equipment. If required in writing by the ENGINEER because of undue amount of scratches, repaint the entire assembly at no additional cost to CHB.

3.3 TRAINING

- A. Training shall be provided for CHB's Personnel for the operation and maintenance of the MCC. Provide the services of an experienced, factory trained technician or service engineer of the MCC manufacturer at the jobsite for minimum of 2 days for startup of each MCC beginning at a date mutually agreeable to the CONTRACTOR and CHB. Allow four 2 hour sessions for operator training, four 4 hour sessions for mechanical maintenance training, and eight 4 hour sessions for electrical and instrument maintenance training. The technician shall be on duty at the site for at least 8 hours per day and shall be available 24 hours per day when required to advise concerning special problems with equipment and systems.

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