CITY OF TRACY
SAN JOAQUIN COUNTY, CALIFORNIA

TRACY

Think Inside the Triangle™

Development Services Department,
Engineering Division
333 Civic Center Plaza,
Tracy, California 95376
Phone: (209) 831-6400
Fax: (209) 831-4430

CONTRACT DOCUMENTS

For the Construction of

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

BID OPENING: WEDNESDAY, SEPTEMBER 23, 2015 @ 2:00 PM

Approved for Construction:

Kuldeep Sharma, P.E.
Project Director

BID SET
COPY NO. _____
The Plans and Technical Specifications contained herein have been prepared by, or under the responsible charge of, the following registered person(s):

**LANDSCAPE ARCHITECT**
Verde Design, Inc.
2455 The Alameda
Santa Clara, CA 95050

Derek McKeever
License # 4148
Exp. Date: 12/15

Date: 7/14/15

---

**CIVIL ENGINEER**
NV5
2525 Natomas Park Drive
Sacramento, CA 95833

Jay Radke
License # 44915
Exp. Date: 3/31/16

Date: 7/14/15

---

**ELECTRICAL**
Salas O'Brien
305 South 11th Street
San Jose, CA 95112-2218

Jeffry Gosal
License # E18084
Exp. Date: 6/17

Date: 11/4/15
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CITY OF TRACY
SAN JOAQUIN COUNTY, CALIFORNIA

INVITATION FOR BIDS

SUBJECT: INVITATION FOR BIDS

This is to advise you that sealed bid proposals for the

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

will be accepted by the City of Tracy, at the City Clerk’s Office, City Hall Second Floor, 333 Civic Center Plaza, Tracy, California 95376, until:

WEDNESDAY, SEPTEMBER 23, 2015 @ 2:00 PM

The project is more specifically defined in the plans and specifications, but generally includes the following work to be done:

Base Bid: Improvements for six (6) Soccer Fields and seven (7) Baseball Fields as described below:
Includes clear and grub of existing surface, earthwork and grading operations, including the installation of new concrete paving, drainage, fencing, edgebands, athletic furnishings, irrigation, natural turf, infield fines and landscape.

Additive Bid Alternates: Subsurface improvements to one (1) baseball field and two (2) soccer fields as described below:
A. Field K - Improvements within Field K to include clear and grub of existing surface, fine grading, drainage, wood header, and irrigation.
B. Fields O and P - Improvements within Field O and P to include clear and grub of existing surface, fine grading, drainage, netting and irrigation. Fencing and gates along west side of field will be part of the base bid.
C. Provide overhead netting system at the Little League Backstops.

The Engineer’s estimate will not be released until the bids are publicly opened.

In accordance with the provisions of California Public Contract Code Section 3300, the City has determined that the Contractor shall possess a valid Class A General Engineering Contractor’s license or B General Building Contractor’s License.
Bids are required for the entire work as described herein, and shall be made upon the Bid Forms included in the attached Bid Documents in accordance with the Notice to Bidders. Bid Documents and Addendums shall be placed on the City Website at www.ci.tracy.ca.us. Hard copies of the construction documents are not available at the Office of Director for sale. For technical questions, please call Paul Verma at (209) 831-6460.

Website should be checked periodically for addendums and other instructions.

Dated: 8/20/15

By:  
Nora Pimentel, City Clerk
City of Tracy, California

Notice Published: August 21, 2015
August 28, 2015
CITY OF TRACY
SAN JOAQUIN COUNTY, CALIFORNIA

NOTICE TO BIDDERS

PUBLIC NOTICE IS HEREBY GIVEN THAT the City of Tracy invites sealed bid proposals for the construction of the

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

RECEIPT OF BIDS AND BID OPENING: Bids must be received at the office of the City Clerk, 333 Civic Center Plaza, Tracy, California 95376, not later than the Bid Deadline of

WEDNESDAY, SEPTEMBER 23, 2015 @ 2:00 PM

at which place and time the bids will be publicly opened and read aloud. Bids are invited on a unit price basis, are required for the entire work described herein, and shall be made upon the Bid Forms provided by the City and in accordance with the Contract Documents. Contractor is advised that the City of Tracy does not allow a bid to be withdrawn once submitted. The City Council also reserves the right to reject any or all bids.

CONTRACT DOCUMENTS: The plans and specifications are available on the City's Website, www.ci.tracy.ca.com. Bid documents shall be downloaded and printed for submission of bids. The website should be checked periodically for addendums and other changes that are made for this project. Plans and specifications are on file in the Office of the Director of Development Services and may be examined only at 333 Civic Center Plaza, Tracy, California. Hard copies of the construction documents are not available for sale.

PROJECT ESTIMATE: The Engineer's Estimate will not be released until the bids are publicly opened.

PROJECT DESCRIPTION: The project is more specifically defined in the plans and specifications, but generally includes the following work to be done:

Base Bid: Improvements for six (6) Soccer Fields and seven (7) Baseball Fields as described below:
Includes clear and grub of existing surface, earthwork and grading operations, including the installation of new concrete paving, drainage, fencing, edgebands, athletic furnishings, irrigation, natural turf, infield fines and landscape.

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C. Provide overhead netting system at the Little League Backstops.

PROJECT LOCATION: City of Tracy, San Joaquin County, California.
ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the State Standard Specifications and these special provisions. Sequence of work shall be:

a) Little League and Babe Ruth fields are first priority and will be required to have the natural turf sod installed by January 28, 2015.

b) Soccer field construction can start after the baseball fields have been constructed. Natural turf shall be seeded by May 18, 2016.

TIME OF COMPLETION AND LIQUIDATED DAMAGES: All work shall be diligently prosecuted to substantial completion on or before February 12, 2016 for the baseball fields and July 14, 2016 for the soccer fields from the date of receipt of the “Notice to Proceed”. If the Contractor fails to complete the work within the above-specified time limit, the Contractor shall pay liquidated damages to the City, computed at the rate of Two Thousand Dollars ($1,000) for each calendar day beyond the specified time limit until the project is completed.

BID SECURITY: Pursuant to California Public Contract Code Section 20170, each proposal shall be accompanied by a bid security in the form of cash, cashier’s or certified check, or bidder’s bond made payable to the “City of Tracy” for an amount equal to at least ten percent (10%) of the Bid Amount and no bid shall be considered unless such security is enclosed therewith.

BID GUARANTEE: No bid shall be withdrawn except as provided for pursuant to Public Contract Code Section 5103, and the bidder shall guarantee the Total Bid Price for a period of Ninety (90) calendar days from the date of the bid opening.

CONTRACTOR’S LICENSE: Bidders are to be licensed in accordance with the provisions of the “Contractor’s License Law,” Chapter 9 of Division 3 of the State Business and Professions Code. In addition, at the time of submitting the bid, bidder must have must have the following classification(s) of contractor’s license: Class A General Engineering Contractor’s license or B General Building Contractor’s License.

PREVAILING WAGE: The work contemplated by this contract is a public work subject to prevailing wages under California Labor Code Section 1770 et. seq. The successful bidder will be required to pay not less than the prevailing rate of per diem wages as determined by the California Department of Industrial Relations in effect on the date the work is performed.

BONDS AND INSURANCE: All contractors are required to furnish to the City faithful performance, labor and materials, and warranty bonds and insurance, as required in the specifications.

SECURITIES SUBSTITUTION: Pursuant to California Public Contract Code Section 22300, and at the request and expense of the Contractor to whom the Contract is awarded, securities of a value equivalent to the retention amount, in a form approved by the City, shall be permitted in substitution for money withheld by the City to ensure performance under the Contract.

PRE-BID CONFERENCE: A non-mandatory pre-bid conference will be held at 2:00 PM on SEPTEMBER 16, 2015 at City of Tracy, located at 333 Civic Center Plaza, Conference Room 109. All prospective bidders are highly encouraged to attend this meeting.

REQUESTS FOR CLARIFICATION AND PROJECT COMMUNICATION: In the event the bidder has any questions as to the meaning of any part of the plans and specifications, or if the bidder finds any error, inconsistency, or ambiguity in the Contract Documents, the bidder shall
make a written request for clarification prior to submitting its bid. All questions and comments regarding the plans and specifications should be directed in to the Project Manager indicated below and will only be responded to if received in writing at least five (5) working days before the bid opening. Questions received after this time and date may not be addressed.

City of Tracy - Development Services Department  
333 Civic Center Plaza, Tracy, CA 95376  
Attention: Paul Verma, Senior Civil Engineer  
paul.verma@ci.tracy.ca.us  
Telephone: (209) 831-6460  
Fax: (209) 831-4430

**PROJECT REQUIREMENTS:** For general and legal requirements concerning the work, see the General Provision. For project specific requirements see the Special Provisions and Technical Provisions.
SCHEDULE OF REQUIRED
BID DOCUMENTS AND AGREEMENT FORMS

The following documents must be completed, signed and submitted as part of the Bid Proposal, prior to the bid opening.

- Bid Proposal with all Blanks Filled in
- Bid Schedule
- Designation of Subcontractors
- Certifications and Affidavits:
  - Non-Collusion Affidavit
  - Bidder’s Qualifications
  - Bidder’s References
- Signature of Bidder
- Bid Guarantee (Bid Bond attached)
- Addendum, if any (not attached) – signature page to be signed and submitted by bidder.

The following documents must be completed, signed and submitted after approval and award of the Contract, prior to the Notice to Proceed.

- Agreement
- Faithful Performance Bond
- Labor and Material Bond
- Warranty Bond
- General Liability Endorsement
- Automobile Liability Endorsement
- Worker’s Compensation / Employers Liability Endorsement
- Certifications
  - Workers Compensation Certification
  - Certification of Safety Requirements for Contractors and Vendors
- Escrow Agreement for Security Deposits in Lieu of Retention (Optional)

The following documents must be completed, signed and submitted prior to final acceptance:

- Guarantee
- Stop Notice Releases, if any (form not included)
- Record Drawings (not included)
BID PROPOSAL
CITY OF TRACY
DEVELOPMENT SERVICES DEPARTMENT

BID PROPOSAL

FOR:

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

IN

CITY OF TRACY, COUNTY OF SAN JOAQUIN
STATE OF CALIFORNIA

For use in Connection with the Standard Specifications for Public Works Construction (Greenbook), Standard Plans for Public Works Construction, Standard Specifications and Standard Plans of the California Department of Transportation, the latest issue of the General Prevailing Wage Rates and the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished.

Project:  LEGACY FIELDS SPORTS COMPLEX

Project Number:  78153

Bid Opening Date:  WEDNESDAY, SEPTEMBER 23, 2015 @ 2:00 PM

NOTE: All portions of all pages included within this section, and acknowledgement of receipt of any issued addenda must be properly completed, signed, and submitted with the bid. Failure to do so may result in the bid being deemed non-responsive by the City.
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BID PROPOSAL

BID TO: The Honorable Mayor and City Council Members
Attn: City Clerk
City of Tracy
333 Civic Center Plaza
Tracy, California 95376

FOR: LEGACY FIELDS SPORTS COMPLEX
CIP 78153

BID FROM:
Bidder’s Company Name: ________________________________
Contact Person: ________________________________
Business Street Address: ________________________________
City, State, Zip Code: ________________________________
Phone No.: (____) ________________________________
Fax No.: (____) ________________________________
Email: ________________________________
Contractor License No.: ________________________________
Date Bid Submitted: ________________________________

Dear Mayor and City Council Members:

I, as bidder, declare that I have satisfied myself as to the actual conditions and requirements of
the work by careful examination of the location of the proposed work, by examination of the
plans and specifications including the Notice to Bidders, and by other measures, and that after
submission of the bid, I will not dispute, complain or assert that there was any misunderstanding
in regards to the nature or amount of work to be done.

I hereby certify that only those parties interested in this proposal as principals are named in this
proposal and that this bid is genuine, and not sham, collusion, or made in the interest or in
behalf of any person not named. I have not directly or indirectly induced or solicited any other
bidder, person, firm or corporation to put in a sham bid, or refrain from bidding, and have not in
any manner sought by collusion to secure for myself an advantage over any other bidder.

I agree that if this proposal is accepted, I will contract with the City of Tracy in the form of
agreement proposed, will provide all bonds and insurance certificates as required by the
agreement and will furnish all equipment and materials and perform all the labor required to
complete the work in accordance with the plans, specifications and other contract documents,
for the unit or lump sum prices set forth in the Bid Schedule.
I have carefully checked all of the figures in the Bid Schedule and understand that the City shall not be responsible for any errors or omissions on my part in making up this bid. I agree that this bid may not be withdrawn for a period of 90 calendar days from the date of the bid opening and that the City reserves the right to reject any or all bids.

**BIDDING REQUIREMENTS**

The work to be done and referred to here is in the City of Tracy, County of San Joaquin, State of California, and shall be constructed in accordance with all provisions of the project specifications and project plans including: any addenda; the Agreement; the Standard Specifications for Public Works Construction; “Greenbook”, current edition; the Standard Plans for Public Works Construction, current edition; the Standard Specifications and Standard Plans of the California Department of Transportation, current edition; the Labor Surcharge and Equipment Rental Rates; and payment of not less than the latest issue of the State General Prevailing Wage Rates in effect on the date the work is performed.

For each of the various contract items of work designated on the Bid Schedule, the bidder shall set forth a unit or lump sum price which the bidder shall then use to calculate and designate a total cost for each item of work based upon the designated estimate of the quantities of work to be done, all in clearly legible figures in the respective spaces of the Bid Schedule provided for this purpose.

The bidder shall include in the unit or lump sum prices paid for the various contract items of work full compensation for conforming to the requirements of the Contract Documents and for completing all of the work required. No additional compensation shall be granted for any additional items unless categorized and approved as extra work under the terms of the agreement.

The estimate of construction quantities set forth in the Bid Schedule is approximate only, being given only as a basis for the comparison of bids, and the City does not expressly or by implication agree that the actual amount of work will correspond with those estimated quantities. The City reserves the right to increase the amount of any class or portion of the work or to omit portions of the work as may be deemed necessary or expedient by the Engineer.

If the City accepts this proposal and the bidder fails to enter into the contract and/or fails to furnish bonds as required by the specifications with sureties satisfactory to the City within ten (10) calendar days after the bidder has received notice from the City that the contract has been awarded, the City may, at its option, determine that the bidder has breached and abandoned the contract, and thereupon, the bid security accompanying this proposal shall be forfeited and become the property of the City.

The Notice to Proceed will not be issued until after the contract has been fully executed. The contractor shall commence the work under the contract within fifteen (15) days following the date of the Notice to Proceed, or as otherwise specified in the project specifications, and shall diligently prosecute the project to completion within the time specified. The contract completion period is inclusive of the time needed for material delivery.

Bidder shall comply with the requirements of the California Labor Code, including sections 1770 et seq., and pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages are on file at the office of the city, which copies shall be made available to any interested party upon request. The Contractor shall post a copy of such determination at the job site.
As required by Section 6705 of the California Labor Code and in addition thereto, for any excavation of any trench or trenches five feet (5') or more in depth, the Contractor shall submit to the Engineer for acceptance, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. Structural calculations prepared, stamped and signed by a Registered Engineer licensed to practice in the State of California shall accompany the plan to verify the structural safety and adequacy of the sheeting, shoring and bracing to be used on the project. No such plan shall allow any shoring, sloping or a protection system less effective than that required by the Construction Safety Orders of the State Division of Occupational Safety and Health.

In accordance with the provisions of Section 1860 of the Labor Code, prior to performing work on the Contract, each Contractor to whom a public works contract is awarded shall sign and file with the City the Worker’s Compensation Certification included in the “Agreement and Agreement Forms” section of these specifications.

Bidder’s attention is directed to General Provisions, Section 2, “Proposal Requirements and Conditions”, which contains additional information and requirements pertaining to the submission of a bid, and which is incorporated here by reference.

Any protest of the proposed contract award must be submitted in writing to the City no later than 5:00 p.m. on the fifth business day following the date of the bid opening. See the General Provisions, Section 2.14 for bid protest procedures.
All applicable sales taxes, state and/or federal, and any other special taxes, patent rights or royalties are included in the price quoted in the bid.

In the case of a discrepancy between the product of the “Estimated Quantity” and the “Unit Price” with the “Item Total”, the product of the “Estimated Quantity” and the “Unit Price” shall prevail and the figure shown as the “Item Total” shall be adjusted accordingly. In the case of a discrepancy between the sum of the figures in the “Item Total” column (adjusted per the previous sentence, if necessary) and the amount set forth as the “Total Base Bid Amount”, the sum of the figures in the “Item Total” column shall prevail and the amount shown as the “Total Base Bid Amount” shall be adjusted accordingly.

**BASE BID ITEMS ARE AS FOLLOWS:**

**LITTLE LEAGUE FIELDS:**

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<th>Unit</th>
<th>Unit Price</th>
<th>Item Total</th>
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<td>3.</td>
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<td>$__________</td>
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<td>Estimated Quantity</td>
<td>Unit</td>
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LITTLE LEAGUE SUBTOTAL AMOUNT: $_______________

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**BABE RUTH SUBTOTAL AMOUNT: $______________**

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TRACY YOUTH SOCCER FIELDS SUBTOTAL AMOUNT: $________

GRAND TOTAL BASE BID AMOUNT: $________
## ADDITIVE BID ALTERNATES

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<td>$__________</td>
</tr>
<tr>
<td>5.</td>
<td>CLEAR AND GRUB</td>
<td>1</td>
<td>LS</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>6.</td>
<td>FINE GRADING</td>
<td>1</td>
<td>LS</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>7.</td>
<td>8&quot; PERFORATED FRENCH DRAIN</td>
<td>1,467</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>8.</td>
<td>6&quot; STORM DRAIN PIPE</td>
<td>16</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>9.</td>
<td>12&quot; STORM DRAIN PIPE</td>
<td>7</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>10.</td>
<td>15&quot; STORM DRAIN PIPE</td>
<td>9</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>11.</td>
<td>6&quot; VERTICAL DRAIN PIPE</td>
<td>3,771</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>12.</td>
<td>STORM DRAIN CLEANOUT</td>
<td>4</td>
<td>EA</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>13.</td>
<td>18&quot; CATCH BASIN</td>
<td>2</td>
<td>EA</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>14.</td>
<td>24&quot; JUNCTION BOX</td>
<td>4</td>
<td>EA</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>15.</td>
<td>36&quot; JUNCTION BOX</td>
<td>1</td>
<td>EA</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>16.</td>
<td>CONCRETE SWALE</td>
<td>362</td>
<td>LF</td>
<td>$__________</td>
<td>$__________</td>
</tr>
<tr>
<td>17.</td>
<td>IRRIGATION SYSTEM</td>
<td>1</td>
<td>LS</td>
<td>$__________</td>
<td>$__________</td>
</tr>
</tbody>
</table>

**BID ALTERNATE B TOTAL AMOUNT: $_______________**
### BID ALTERNATE C:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>LITTLE LEAGUE BACKSTOP NETTING</td>
<td>1</td>
<td>LS</td>
<td>$__________</td>
<td>$__________</td>
</tr>
</tbody>
</table>

**BID ALTERNATE C TOTAL AMOUNT: $_______________**

**Notes:**
1. The Contract will be compared and awarded on the basis of the Total Base Bid Amount
2. The City reserves the right to reject all bids for any reason whatsoever.
3. Issuance of the “Notice to Proceed” will constitute the beginning of the Contract.
**DESIGNATION OF SUBCONTRACTORS**

In accordance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code sections 4100 *et seq.* (the “Subcontracting Act”), the Bidder hereby certifies and submits, as required by law, the following concerning subcontractors:

1. The portion of the work, which will be done by each such subcontractor.

2. The name and location of the place of business of each subcontractor who will perform work or labor, fabricate a portion of the work or improvement according to detailed drawings in the project plans, or render service to the Contractor in or about the construction of the work in an amount in excess of one-half of one percent (0.5%) of the Contractor’s total bid; and

<table>
<thead>
<tr>
<th>Portion of Work to be Performed:</th>
<th>Subcontractor Name</th>
<th>DIR# and Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ___________________________</td>
<td>______________________________</td>
<td>-----------------</td>
</tr>
<tr>
<td>2. ___________________________</td>
<td>______________________________</td>
<td>-----------------</td>
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<tr>
<td>3. ___________________________</td>
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<tr>
<td>4. ___________________________</td>
<td>______________________________</td>
<td>-----------------</td>
</tr>
<tr>
<td>5. ___________________________</td>
<td>______________________________</td>
<td>-----------------</td>
</tr>
</tbody>
</table>

(For additional Subcontractors, attach copies of this sheet as necessary)

**CITY BUSINESS LICENSE REQUIREMENT**

NOTES:
It is understood and agreed that the bidder and all subcontractors will obtain a City of Tracy Business License before beginning any work.

The bidder shall provide his DIR Registration number including for each subcontractor within twenty four (24) hours of the opening of the bid proposal.
NON-COLLUSION AFFIDAVIT
Title 23 United States Code Section 112 and
Public Contract Code Section 7106

State of California )
              ) ss.
County of _______________ )

______________________________ (name of person signing affidavit), being first duly
sworn, deposes and says under penalty of perjury under the laws of the State of California, that
he or she has the right, power, legal capacity, and authority to execute this Affidavit as__________
______________________________ (sole owner, partner, president, secretary, etc) of ________________
(legal name of Bidder), the Bidder, that the
Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership,
company, association, organization, or corporation; that the Bid is genuine and not collusive or
sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in
any false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed
with any Bidder or anyone else to put in a sham Bid, or that anyone shall refrain from Bidding;
that the Bidder has not in any manner, directly or indirectly, sought by agreement,
communication, or conference with anyone to fix the Bid price of the Bidder or any other Bidder,
or to fix any overhead, profit, or cost element of the Bid price, or of that of any other Bidder, or to
secure any advantage against the public body awarding the Contract or 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 Bid price or any breakdown thereof, or the contents
thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any
corporation, partnership, company association, organization, Bid depository, or to any member
or agent thereof to effectuate a collusive or sham Bid.

IN WITNESS WHEREOF, the undersigned, as bidder, represent and warrant that they have the
right, power, legal capacity, and authority to enter into and execute this document on behalf of
the Bidder, and have executed this document by setting hereto their names, titles and signature.

______________________________
(Signature of Representative of Bidder)

Subscribed and sworn to before me, a Notary Public in and for the State of California,

County of ________________, this _____ day of ________________, 20____.

Signature of Notary Public:______________________________

My Commission expires ________________, 20____ (Seal)

NOTE: THIS AFFIDAVIT MUST BE COMPLETED AND RETURNED AS PART OF THE
CONTRACTOR’S BID PROPOSAL.
BIDDER’S QUALIFICATIONS

The following statements as to the financial qualifications and experience of the Bidder are submitted as a part of this Bid and the Bidder guarantees the truthfulness and accuracy of the information. Pursuant to Public Contract Code 10165, financial statements and experience questionnaires are not public records and are not open to public inspection.

Financial Data
Reference is hereby made to the following bank or banks as to the financial responsibility of the bidder.

<table>
<thead>
<tr>
<th>NAME OF BANK</th>
<th>ADDRESS</th>
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<tbody>
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</table>

Experience Data
The Bidder has been engaged in the contracting business, under the present business name for ________ years. Experience in work of a nature similar to that covered in this Bid extends over a period of ________ years.

The Bidder as a Contractor has never failed to satisfactorily complete a contract awarded to him, except as follows: (Name all exceptions and reasons therefore):

<p>| |</p>
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</tbody>
</table>
**BIDDER’S REFERENCES**

List three (3) major projects which the Bidder has performed comparable work for a Governmental Agency or Developer within the last three (3) years. Providing a contact person and description of the project, or other such information that will demonstrate the ability to vigorously prosecute the work.

1.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>LOCATION</th>
<th>YEAR COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENCY CONTACT PERSON</td>
<td>TELEPHONE NO.</td>
<td></td>
</tr>
<tr>
<td>BRIEF DESCRIPTION OF THE WORK AND/OR MANNER OF EXECUTION</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>LOCATION</th>
<th>YEAR COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENCY CONTACT PERSON</td>
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<td></td>
</tr>
</tbody>
</table>

3.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>LOCATION</th>
<th>YEAR COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENCY CONTACT PERSON</td>
<td>TELEPHONE NO.</td>
<td></td>
</tr>
<tr>
<td>BRIEF DESCRIPTION OF THE WORK AND/OR MANNER OF EXECUTION</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SIGNATURE OF BIDDER

The terms and conditions of the final contract when executed shall control and supersede anything herein to the contrary or inconsistent with such contract.

The bidder hereby offers to furnish all labor, materials, equipment, transportation, and services necessary to complete the work on this project in accordance with the Contract Documents and to complete all requirements of the Contract Documents for the sums quoted in this Bid.

Addenda:
Bidder has received and examined all addenda issued during the bid period (if any) and agrees that all addenda shall be made a part of the Contract Documents. The bidder acknowledges receipt and incorporation of all impacts resulting from all addenda issued by inserting the number of each addendum below OR by signing and submitting with the bid proposal the signature page from each addendum.

Addendum Nos. _____, _____, _____, _____, _____

Bidder’s Guarantee:
In accordance with Public Contract Code Section 20170, accompanying this Bid is ______________________ (insert the word “Cash”, “Cashier’s Check”, “Certified Check” or “Bidder’s Bond” as the case may be) made payable to the City in the amount of ______________________($_______________) equal to at least ten percent (10%) of the total amount of this bid, which is given as a guarantee that the undersigned will enter into a contract if awarded the work.

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

Note: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer and manager thereof; if partnership, state true name of firm, also names of all individual partners composing firm; if bidder or other interested person is an individual, state first and last name in full.

Firm Name: ________________________________________________________________

Business Address: __________________________________________________________

______________________________________________________________

Names and Titles of Company Officers:

1. ______________________________________________________________________
2. ______________________________________________________________________
3. ______________________________________________________________________
4. ______________________________________________________________________
Licensed in accordance with the Contractors License Law, Business and Professions Code, Section 7000 et seq., providing for the registration of contractors:

License No.: ___________, Date of license expiration: ________________.

Proposal Execution:
IN WITNESS WHEREOF, the undersigned, as bidder, represent and warrant that they have the right, power, legal capacity and authority to enter into and execute this document on behalf of the Bidder, and have executed this document by setting hereto their names, titles, and signatures. The representations made herein, including but not limited to the above contractor’s license, expiration date and name of bidder, are true and correct, shall be complied with and are made under penalty of perjury.

1. __________________________
   Authorized Signature

   __________________________
   Printed Name

   __________________________
   Title

2. __________________________
   Authorized Signature

   __________________________
   Printed Name

   __________________________
   Title

_________________________ , 20____
Dated

Note: If Bidder is a corporation, the signature of two officers authorized to sign contracts on behalf of the corporation shall be set forth above; if Bidder is a partnership, the signature of the partner or partners authorized to sign contracts on behalf of the partnership shall be set forth above; and if Bidder is an individual, his signature shall be placed above. If signature is by an agent other than an officer of a corporation, or a member of a partnership, a Power of Attorney must be on file with the City of Tracy prior to opening bids or be submitted with the bid.

Subscribed and sworn to before me, a Notary Public in and for the State of California,

County of ______________________, this _____ day of ________________, 20____.

Signature of Notary Public: __________________________

My Commission expires ________________, 20_____ (Seal)
BIDDER'S BOND

To Accompany Contract Proposal
KNOW ALL PERSONS BY THESE PRESENTS:

That we, the undersigned _________________________________, as principal and _________________________________, as surety, are held and firmly bound unto the City of Tracy as OWNER in the penal sum of TEN PERCENT (10%) of the total amount of the bid of the principal, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to OWNER a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the LEGACY FIELDS SPORTS COMPLEX, CIP 78153

NOW, THEREFORE
   (a) If said BID shall be rejected, or
   (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BIDS including all required bonds for faithful performance and labor and material, as well as all required evidence of insurance) then this obligation shall be void, otherwise the same shall remain in force and effect.

In the event the City brings suit upon this Bond, surety shall pay reasonable attorney’s fees and costs incurred by the City in such suit.

The Surety, for value received, stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the City of Tracy may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, this day and year first set forth.

By: _______________ (L.S.)      By: _______________ (Surety)
    (Principal)               (Seal)                   (Seal)

Subscribed and sworn to before me, a Notary Public in and for the State of California, County of _________________________, this _____ day of _________________________, 20____.

Signature of Notary Public: _________________________ (Seal)

My Commission expires _________________________, 20____

IMPORTANT: Surety companies executing BONDS must be authorized to transact Surety insurance in the State of California. If Contractor is Partnership, all partners should execute BOND.
AGREEMENT & AGREEMENT FORMS
AGREEMENT AND AGREEMENT FORMS

Agreement for Public Improvements ................................................................................. A1

Agreement Forms

   Faithful Performance Bond.......................................................................................... A9
   Labor and Material Bond ............................................................................................ A10
   Warranty Bond ........................................................................................................... A11
   General Liability Endorsement.................................................................................... A12
   Automobile Liability Endorsement............................................................................... A14
   Worker’s Compensation / Employers Liability Endorsement ........................................ A16
   Workers Compensation Certification .......................................................................... A18
   Certification of Safety Requirements for Contractors and Vendors ........................ A19
   Escrow Agreement for Security Deposits in Lieu of Retention (Optional) .................. A20
   Guarantee (to be submitted prior to final acceptance) ............................................... A22
AGREEMENT FOR PUBLIC IMPROVEMENTS

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

This AGREEMENT (“Agreement”) is entered into between the CITY OF TRACY, a municipal corporation (“City”), and _____________________________ (“Contractor”).

RECITALS

A. In accordance with State law, including the Public Contract Code, and local law, including the Tracy Municipal Code, the City issued an invitation for competitive bids for this Project.

B. In response to the invitation for bids, the Contractor submitted the Bid Forms, which are incorporated here by reference, and these were found by the City to be responsive to the invitation for bids.

C. After reviewing all bids submitted in response to the invitation for bids, the City found the Contractor to be the Lowest Responsible Bidder, and the City Council awarded this Agreement to the Contractor pursuant to Resolution No. ________.

D. The project is more specifically described in the Contract Documents, but generally includes the construction of site improvements: clear and grub of existing surface, grading operations, including the installation of new concrete paving, drainage, fencing, edgebands, athletic furnishings, irrigation, natural turf, infield fines and landscape. Along with other items of work that are required by the Plans, Standard Specifications, and Special Provisions.

NOW THEREFORE, THE PARTIES MUTUALLY AGREE AS FOLLOWS:

1. SCOPE OF WORK. The Contractor shall perform, or cause to be performed, the Work described in the Contract Documents (“Work”), to the satisfaction of the City Engineer. Contractor shall perform additional work arising from changes ordered by the City in accordance with Section 2.3, “Modifications” of this Agreement.

2. CONTRACT DOCUMENTS.

   2.1. List of Contract Documents and Precedence. The Contract Documents consist of the documents listed below, beginning with the highest and ending with the lowest order of precedence. If there is a conflict between component parts of the Contract Documents, the document highest in precedence controls. See also General Provisions, Section 4.05, “Precedence of Contract Documents”.

      a. Change orders.
      b. Project directives.
      c. Permits in the following order those issued by other agencies, those issued by the City.

f. Project Plans and Drawings.

g. City Standard Specifications.


2.2. **Addenda.** The following addenda are incorporated into the Contract Documents:

<table>
<thead>
<tr>
<th>No.</th>
<th>Date of Issue:</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

2.3. **Modifications.** The Contract Documents may not be modified orally or in any manner other than in writing in accordance with procedures prescribed in the Contract Documents. See General Provisions Sections 2.07, “Examination of Plans, Specifications, and Work Site”, Section 2.08, “Requests for Clarification”, Section 5, “Changes in Work”, Section 8.15, “Time of Completion and Days Charged”, and Section 10.06, “Claims”. All such written modifications shall become part of the Contract Documents.

2.4. **Entire Agreement.** The Contract Documents comprise the entire integrated understanding between the City and Contractor concerning the Work to be performed for this Project. All prior negotiations or stipulations regarding this matter, which preceded or accompanied the executing of these Contract Documents are conclusively deemed to be superseded by these Contract Documents. The Contract Documents are complementary; what is called for in one is binding as if called for by all. To the extent that portions of the Contract Documents are not attached to this Agreement, they shall be deemed incorporated here by reference.

3. **CONTRACT AMOUNT.** The Contract Amount, is ______________________ Dollars ($______________). City shall pay to Contractor, for the performance of the Work, the Contract Amount pursuant to the General Provisions, Section 10, “Measurement and Payment”, subject to adjustment for unit price items, and as modified by the terms of the Contract Documents. The Contractor’s compensation shall include all costs incurred by the Contractor in the performance of the Work, including: furnishing all labor (including supervision), materials, equipment, tools, transportation, and services necessary (including the costs of any and all applicable taxes, patent rights, royalties, licenses, permits, and traffic control; including flagmen) to complete the Work (including costs to protect the Work, and all damages to the Work prior to acceptance of the Work by the City, unless otherwise specifically provided in the Contract Documents).
4. **CONTRACT TIME.** After the Contractor has provided all documents required by the Notice of Award, as identified in the Notice to Bidders, and following execution of the Agreement by the City, the City shall issue a Notice to Proceed to the Contractor. Contract time shall commence upon receipt date of the Notice to Proceed. Contractor shall commence work within fifteen calendar days of the receipt date specified in the Notice to Proceed. See General Provisions Sections 8.01, “Notice to Proceed”, 8.02, “Commencement of Work”, 8.15, “Time of Completion and Days Charged”, and 8.17, “Delays and Extension of Time”.

5. **LIQUIDATED DAMAGES.** If Contractor fails to complete the Work within the Contract Time, Contractor shall pay to the City, as liquidated damages and not as a penalty, the sum specified in the Notice to Bidders for each calendar day after the expiration of the Contract Time that the Work remains incomplete. See Notice to Bidders and General Provisions Section 8.16, “Liquidated Damages”.

6. **CONTRACTOR REPRESENTATIVE.** At all times during the progress of the Work, Contractor shall have a competent foreman or superintendent (“Contractor Representative”) on site with authority to act on behalf of the Contractor. The Contractor shall, at all times, keep the City Engineer informed in writing of (a) the name and telephone number of the Contractor Representative, and (b) the names and telephone numbers of all subcontractors performing the Work.

7. **IMPROVEMENT SECURITY.** Concurrently with the execution of this Agreement by the Contractor, and before the commencement of any Work, the Contractor shall furnish a Faithful Performance Bond, Labor and Material Bond, Warranty Bond, or other guarantees, in the required amounts as improvement securities, in a form substantially the same as that set forth in the Contract Forms or in an alternate form authorized by state law and approved by the City. See Division C, “Agreement and Agreement Forms” of the Project Specifications and General Provisions Section 3.07, “Contract Bonds”.

8. **INSURANCE.** Concurrently with the execution of this Agreement by the Contractor, and prior to the commencement of any Work, the Contractor shall furnish evidence to the City that all of the insurance requirements required by General Provisions Section 3.08, “Insurance Requirements” have been satisfied.

9. **PERMITS, LICENSES, AND COMPLIANCE WITH LAW.** The Contractor shall obtain and maintain all necessary permits and licenses for the performance of the Work, as provided in General Provisions Section 9.06, “Permits and Fees”.


11. **FINAL ACCEPTANCE OF WORK.** Prior to final acceptance of the Work by the City Council, the Contractor shall be solely responsible for maintaining the quality of the Work, and maintaining safety at the Project site. The Contractor’s obligation to perform the Work shall not be satisfied until after the City Engineer has made a written determination that all obligations under the Agreement have been satisfied, all outstanding fees and charges have been paid, and the City Council has accepted the Work as complete. See General Provisions Sections 8.20, “Final Acceptance” and 8.21, “Risk of Loss”.
12. **WARRANTY.** The Contractor shall warrant the quality of the Work for a period of one year after acceptance of the Work by the City Council, and shall provide a Guarantee and Warranty Bond in the required amount, in accordance with the terms of the Contract Documents. In the event that during the one-year warranty period any portion of the Work is determined by the City Engineer to be defective as a result of an obligation of the Contractor under this Agreement, the Contractor shall be in default. See General Provisions Section 11, “Guarantee”.

13. **LABOR REQUIREMENTS.**

13.1. **Prevailing Wage.** The California general prevailing wage rates determined by the Director of Industrial Relations are made a part of this Agreement. Nothing in the Contract Documents shall be interpreted in a manner conflicting with these rates. See General Provisions Section 9.05 (d), “Prevailing Wage”.

13.2. **Apprentices.** Labor Code Sections 1777.5, 1777.6 and 1777.7 govern the employment of apprentices by Contractor or any Subcontractor. Contractor and any of his Subcontractors shall comply with these Labor Code requirements. Contractor shall have full responsibility for compliance regardless of any other contractual or employment relations alleged to exist. See General Provisions Section 9.05 (f), “Apprentice Program”.

13.3. **Wage Information.** A copy of the general prevailing rates of per diem wager for each craft, classification or type of worker needed to perform the Agreement, as determined by the Director of the State Department of Industrial Relations, are available at the office of the City’s Director of Development and Engineering Services, located at Tracy City Hall, 333 Civic Center Plaza. These will be made available to any interested party upon request.

13.4 **Hours of Labor.** The Contractor shall forfeit, as a penalty, to the City $50 for each worker employed in the execution of the Agreement by him or by any Subcontractor for each calendar day during which any worker is required or permitted to labor more than 8 hours, in violation of Labor Code sections 1810-1815. See General Provisions Section 9.05 (c), “Hours of Labor”.

13.5 **Nondiscrimination.** Contractor shall afford equal employment opportunities for all persons without discrimination because of race, color, religion, sex, sexual orientation, political affiliation, national origin, ancestry, age, marital status, or physical or mental disability. See General Provisions Section 9.05 (a), “Non-Discrimination”.

14. **INDEPENDENT CONTRACTOR STATUS.** Contractor is an independent contractor. All persons working for or under the direction of the Contractor are the Contractor’s employees, agents or Subcontractors, and they shall not be deemed agents, servants or employees of the City. See General Provisions Sections 9.01, “Contractor’s Responsibility for the Work” and 9.02, “Contractor’s Responsibility for Subcontracted Work”.

15. **CONFLICTS OF INTEREST.** Contractor (including its employees, agents, and subcontractors) shall not maintain or acquire any direct or indirect interest that conflicts with the performance of this Agreement. In the event that Contractor maintains or acquires such a conflicting interest, any contract (including this Agreement) involving Contractor’s conflicting interest may be terminated by the CITY.
16. **ATTORNEY’S FEES.** If any legal action is commenced to enforce this Agreement, the prevailing party is entitled to reasonable attorney’s fees, costs, and expenses incurred.

17. **INDEMNIFICATION.** Contractor shall indemnify, defend, and hold harmless the City (including its elected officials, officers, agents, and employees) from and against any and all claims (including all litigation, demands, damages, liabilities, costs, and expenses) resulting from or arising out of the performance of the Work by Contractor (including Contractor’s agents, representatives, contractors, subcontractors, and employees), except only for those claims arising from the established willful misconduct or active negligence of the City. Contractor’s indemnification shall specifically include, but not be limited to, all claims arising out of: contract claims, property damage, personal injury, and any infringement of patent rights or copyrights incidental to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents. Contractor’s indemnification shall include any and all costs, expenses, court costs, attorneys’ fees and liability incurred by the City in enforcing the provisions of this section, and in defending against such claims, whether the same proceed to judgment or not. Contractor shall reimburse City for any expenditures City incurs by reason of such matters.

18. **ASSIGNMENT AND DELEGATION.**

18.1. **Assignment of This Agreement.** This Agreement and any portion thereof shall not be assigned or transferred, nor shall any of the Contractor's duties be delegated, without the written consent of the City. See General Provisions Section 3.04, “Assignment”.

18.2. **Assignment pursuant to Government Code.** Pursuant to Government Code Section 4552, the Contractor shall assign to the City, all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Action (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgment by the parties. The Contractor further warrants that all goods, services, and materials provided to the City in accordance with this Contract are free and clear of all liens and encumbrances.

19. **MISCELLANEOUS PROVISIONS.**

19.1. **Notices.** All notices, demands, or other communications which this Agreement contemplates or authorizes shall be in writing and shall be personally delivered or mailed to the respective party as follows:

**To CITY:**
- City of Tracy
- Development Service Dept.
- Attn: Paul Verma
- 333 Civic Center Plaza
- Tracy, CA 95376

**To CONTRACTOR:**
- _____________________________
- _____________________________
- _____________________________
- _____________________________
Communications shall be deemed to have been given and received on the first to occur of: (1) actual receipt at the address designated above, or (2) three working days following the deposit in the United States Mail of registered or certified mail, sent to the address designated above.

19.2. **Waivers.** Waiver of a breach or default under this Agreement shall not constitute a continuing waiver or a waiver of a subsequent breach of the same or any other provision of this Agreement.

19.3. **Severability.** In the event any term of this Agreement is held invalid by a court of competent jurisdiction, the Agreement shall be construed as not containing that term, and the remainder of this Agreement shall remain in full force and effect.

19.4. **Public Records.** Public records are subject to disclosure under the California Public Records Act, Government Code Section 6250 et. seq.

19.5. **Jurisdiction and venue.** The interpretation, validity, and enforcement of the Agreement shall be governed by and construed under the laws of the State of California. Any suit, claim, or legal proceeding of any kind related to this Agreement shall be filed and heard in a court of competent jurisdiction in the County of San Joaquin.

19.6. **Signatures.** The individuals executing this Agreement represent and warrant that they have the right, power, legal capacity, and authority to enter into and to execute this Agreement on behalf of the respective legal entities of the Contractor and the City. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

(Signatures on next page)
IN WITNESS WHEREOF the parties do hereby agree to the full performance of the terms set forth herein.

CONTRACTOR:

Name of Contractor

Contractor’s Address

Federal Employer ID No.  Contractor’s License No.  Class of License & Exp. Date

If Contractor is a Corporation, the agreement must be signed by one corporate officer from each of the following two groups:

Group A - Chairman, President or Vice President
Group B – Secretary, Assistant Secretary, CFO or Assistant Treasurer

If Contractor is a partnership, the agreement must be signed by the partner or partners authorized to sign contracts on behalf of the partnership. If Contractor is an individual, the agreement must be signed by the individual. If the signature is by an agent other than an officer of a corporation, or a member of a partnership, a power of attorney must be submitted with the Agreement.

Authorized Signature of Contractor

Name of Signatory (written out)

Title of Signatory

Date

CITY OF TRACY:

By: Michael Maciel
Title: MAYOR

Date: ___________________  (Approval Effective)

ATTEST:

By: Nora Pimentel
Title: CITY CLERK

Date: ___________________

APPROVED AS TO FORM:

By: Daniel G. Sodergren
Title: CITY ATTORNEY

Date: ___________________
Faithful Performance Bond

CITY OF TRACY
Tracy, California

WHEREAS, ______________________ (“Principal”) has entered into an “Agreement” with the City of Tracy (“City”) for the project identified as: LEGACY FIELDS SPORTS COMPLEX, CIP 78153, the terms and conditions of which are incorporated herein by reference; and

WHEREAS, the terms of the Agreement require the Principal to submit performance security.

NOW, THEREFORE, Principal and ______________________ (“Surety”), are hereby held and firmly bound unto the City in the amount of ______________________ dollars ($____________), for payment of which Principal and Surety hereby bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if Principal (or its heirs, executors, administrators, successors, or assigns approved by the City) performs the covenants, conditions, and obligations of the Agreement, including the obligation to indemnify, defend, and hold harmless the City, then this obligation shall be null and void; otherwise it shall be and remain in full force and effect.

The Surety’s obligation under this bond shall arise after the City has provided written notice to the Surety, at the address set forth below, of the Principal’s default under the Agreement, and the Principal’s failure to cure the default in accordance with the terms of the Agreement.

The Surety hereby agrees, for value received, that its obligations under this bond shall in no way be impaired or modified by any modification to the Agreement by the City and the Principal, and the Surety hereby waives notice of any such modification.

In the event suit is brought upon this bond, the surety shall pay reasonable attorneys’ fees and costs incurred by the prevailing parties in such suit, which fees and costs shall be in addition to the face amount of the bond.

IN WITNESS WHEREOF, the undersigned represent and warrant that they have the right, power, legal capacity, and authority to enter into and execute this document on behalf of the Principal and the Surety, and have caused this document to be executed by setting hereto their names, titles, and signatures.

Principal: ______________________ Surety: ______________________
(Name of Firm) (Name of Firm)

By: ______________________ By: ______________________
Title: ______________________ Title: ______________________
Date: ______________________ Date: ______________________

Address for Notices to Surety:

____________________________________________________________________

____________________________________________________________________

NOTE: NOTARY ACKNOWLEDGMENT FOR SURETY AND SURETY’S POWER OF ATTORNEY MUST BE ATTACHED.
Labor and Material Bond

CITY OF TRACY
Tracy, California

Bond Number________________

WHEREAS, ___________________________ ("Principal") has entered into an “Agreement” with the City of Tracy ("City") for the project identified as: LEGACY FIELDS SPORTS COMPLEX, CIP 78153, the terms and conditions of which are incorporated herein by reference; and the terms of the Agreement require the Principal to submit payment (labor & material) security for the benefit of all “Claimants”; and

WHEREAS, the term “Claimants” is defined as any of the persons named in California Civil Code Section 3181, or their assigns.

NOW, THEREFORE, Principal and ___________________________ ("Surety"), are hereby held and firmly bound unto the City, and all Claimants, in the amount of ___________________________ dollars ($________________), for payment of which Principal and Surety hereby bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the Principal (or its heirs, executors, administrators, successors, or assigns approved by the City) and all of its subcontractors pay: (a) all Claimants, and (b) all amounts due under the California Unemployment Insurance Code with respect to work or labor performed under the Agreement, and (c) all amounts required to be deducted, withheld, and paid over to the California Employment Development Department from the wages of employees of the Principal and its subcontractors pursuant to California Unemployment Insurance Code Section 13020 with respect to such work and labor; then this obligation shall become and be null and void; otherwise it shall remain in full force and effect.

The Surety's obligation under this bond shall arise, and the Surety shall make appropriate payments, after the Surety has received written notice, at the address set forth below, of the Principal's failure to make payment in accordance with the obligations of the Agreement or this bond.

This bond shall inure to the benefit of the City and Claimants, as to give a right of action to any Claimant or their assigns in any suit brought upon this bond.

In the event suit is brought upon this bond, the surety shall pay reasonable attorneys’ fees and costs incurred by the prevailing parties in such suit, which fees and costs shall be in addition to the face amount of the bond.

The Surety hereby agrees, for value received, that its obligations under this bond shall in no way be impaired or modified by any modification to the Agreement by the City and the Principal, and the Surety hereby waives notice of any such modification.

IN WITNESS WHEREOF, the undersigned represent and warrant that they have the right, power, legal capacity, and authority to enter into and execute this document on behalf of the Principal and the Surety, and have caused this document to be executed by setting hereto their names, titles, and signatures.

Principal: ___________________________
(Name of Firm)
By: _______________________________
Title: _____________________________
Date: _____________________________

Surety: ___________________________
(Name of Firm)
By: _______________________________
Title: _____________________________
Date: _____________________________

Address for Notices to Surety:
_________________________________
_________________________________

NOTE: NOTARY ACKNOWLEDGMENT
FOR SURETY AND SURETY’S POWER
OF ATTORNEYS MUST BE ATTACHED.
WARRANTY BOND
(To Be Submitted Prior to Contract Execution
Pursuant to General Provisions Section 3.07, “Contract Bonds”)

CITY OF TRACY
Tracy, California 95376

WHEREAS, __________________________ (“Principal”) has entered into an “Agreement” dated _________________, 20___, with the City of Tracy (“City”) for the project identified as: LEGACY FIELDS SPORTS COMPLEX, CIP 78153, the terms and conditions of which are incorporated herein by reference; and

WHEREAS, the terms of the Agreement require the Principal to install and complete certain designated public improvements; and

WHEREAS, the Principal is required under the terms of said agreement to furnish a good and sufficient warranty bond for the faithful performance of said agreement pursuant to Government Code Sections 66499.1., 66499.4. and 66499.9. and Tracy Municipal Code Section 12.36.080, and

WHEREAS, Principal has completed the construction of various public improvements, consisting generally of the following scope of work:

___________________________________________________________________________________
___________________________________________________________________________________

in accordance with the General Provisions, the Drawings and Specifications, which Contract Documents are by reference incorporated herein, and made a part hereof, and is referred to as the Plans.

NOW, THEREFORE, the condition of this obligation is such that, if Principal shall remedy any defects due to faulty materials or workmanship, and pay for any damage to other work resulting therefrom, which shall appear within a period of one (1) year from the date of substantial completion of the work, or acceptance of the project, provided for in the Plans, then this obligation to be void; otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the Principal has duly executed this instrument and Surety above named, on ________________________________, 20___.

Principal      Bonding Company

NOTE:  THE WARRANTY BOND SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO THE EXECUTION OF THE AGREEMENT, CONCURRENTLY WITH THE FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIAL BOND, PRIOR TO THE COMMENCEMENT OF ANY WORK.  ALL APPLICABLE PROVISIONS OF THE CONTRACT DOCUMENTS SHALL BE MODIFIED TO REFLECT THIS REQUIREMENT.
General Liability Endorsement

1. POLICY INFORMATION

   Endorsement No. _______________
   Policy No. ______________________

1.1 Insurance Company ____________________________ ("Company")
   (Must have a current A.M. Best's rating of no less than A:VII)
   Address & Telephone of Insurance Company
   __________________________________________
   __________________________________________
   ATTN:____________________________________
   Phone:____________________________________

1.2 Named Insured ________________________________ ("Named Insured")
   Address & Telephone of Named Insured
   __________________________________________
   __________________________________________
   ATTN:____________________________________
   Phone:____________________________________

1.3 City of Tracy ("City"). (The term "City" shall include the City, its elected and appointed officials, officers, employees, agents and volunteers.)
   Address & Telephone of City
   City of Tracy, ____________ Department
   333 Civic Center Plaza, Tracy CA  95376
   ATTN:____________________________________
   Phone:____________________________________

1.4 Policy Term (From) ________ (To) _______

1.5 Endorsement Effective Date _____________

1.6 Limit of Liability
   Any One Occurrence $_______________ (minimum $1 million)
   General Aggregate $_______________ (minimum $2 million)

1.7 Excess Liability
   Each Occurrence $_______________
   Aggregate $_______________

1.8 Deductible or Self-Insured Retention: $_______________
   (Nil Unless Otherwise Specified)

2. POLICY AMENDMENTS

2.1 COVERAGE. Contractor shall furnish the City with original certificates and endorsements, including amendatory endorsements, in consideration of the policy premium. Notwithstanding any inconsistent statement in the Policy to which this Endorsement or any other endorsement is attached thereto, it is agreed as set forth in the requirements herein.

2.2 INSURED. The City is included as an insured regarding damages and defense of claims arising from: (a) Activities performed by or on behalf of the Named Insured; (b) Products and completed operations of the Named Insured; or (c) Premises owned, leased, or used by the Named Insured.
2.3 CONTRIBUTION NOT REQUIRED. The insurance provided by the Policy shall be primary insurance, with respect to the City, for: (a) Work performed by the Named Insured for or on behalf of the City, (b) Products sold by the Named Insured for or on behalf of the City, (c) Products sold by the name Insured to the City, or (d) Premises leased by the Named Insured from the City. Any insurance maintained by the City shall be in excess of the insurance provided by the Policy, and the City’s insurance shall not contribute with it.

2.4 SCOPE OF COVERAGE. The Policy provides coverage at least as broad as Insurance Services Office (ISO) Commercial General Liability Coverage, “occurrence” form CG 00 01.

2.5 SEVERABILITY OF INTEREST. The insurance provided by the Policy applies separately to each insured who is seeking coverage or against whom a claim is made or a suit is brought.

2.6 PROVISIONS REGARDING THE NAMED INSURED’S DUTIES AFTER ACCIDENT OR LOSS. Any failure by the Named Insured to comply with reporting provisions of the Policy shall not affect coverage provided to the City.

2.7 CANCELLATION NOTICE. The insurance provided by the Policy shall not be suspended, voided, canceled, or materially changed in coverage or in limits except after thirty (30) days prior written notice has been given to the City.

2.8 METHOD OF PROVIDING NOTICE. All notices, demands, or other communications contemplated by this Endorsement, including: (a) notices of claims provided to the Insurance Company, (b) cancellation notices provided to the City, and (c) notices of change of address, shall be in writing and personally delivered or mailed to the respective party at the address designated in this Endorsement. Communications shall be deemed to have been given and received on the first to occur of: (i) actual receipt at the address designated above, or (ii) three working days following the deposit in the United States Mail of registered or certified mail, sent to the address designated in this Endorsement.

3. SIGNATURE OF AUTHORIZED REPRESENTATIVE OF THE INSURER
The individuals executing this Endorsement represent and warrant that they have the right, power, legal capacity, and authority to bind the Insurance Company identified on this endorsement, and by their signature hereby bind the Insurance Company.

SIGNATURE OF AUTHORIZED REPRESENTATIVE  DATE

______________________________
TYPED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

______________________________  ________________________________
Address & Telephone of Authorized Representative  Phone:

ATTN: ____________________________
Automobile Liability Endorsement

1. POLICY INFORMATION

1.1 Insurance Company ____________________________ ("Company")
(Must have a current A.M. Best's rating of no less than A:VII)
Address & Telephone of Insurance Company

_____________________________________
_____________________________________
ATTN:_______________________________
Phone:__________________________

1.2 Named Insured ________________________________ ("Named Insured")
Address & Telephone of Named Insured

_____________________________________
_____________________________________
ATTN:_______________________________
Phone:__________________________

1.3 City of Tracy ("City"). (The term "City" shall include the City, its elected and appointed officials,
officers, employees, agents and volunteers.)
Address & Telephone of City
City of Tracy, _________________ Department
333 Civic Center Plaza, Tracy CA  95376
ATTN:_______________________________
Phone:__________________________

1.4 Policy Term (From) ________ (To) _______

1.5 Endorsement Effective Date

1.6 Limit of Liability
   Any One Occurrence  $________________
   General Aggregate  $________________

1.7 Excess Liability
   Each Occurrence  $_______________ (minimum $1 million)
   Aggregate  $________________

1.8 Deductible or Self-Insured Retention: $_______________
   (Nil Unless Otherwise Specified)

2. POLICY AMENDMENTS

2.1 COVERAGE. Contractor shall furnish the City with original certificates and endorsements,
including amendatory endorsements, in consideration of the policy premium. Not withstanding
any inconsistent statement in the Policy to which this Endorsement or any other endorsement
is attached thereto, it is agreed as set forth in the requirements herein.

2.2 INSURED. The City is included as an insured regarding damages and defense of claims
arising from: the ownership, operation, maintenance, use, loading, or unloading of any vehicle
owned, leased, hired, or borrowed by the Named Insured.
2.3 CONTRIBUTION NOT REQUIRED. The insurance provided by the Policy shall be primary insurance, with respect to the City, for Work performed by the Named Insured for or on behalf of the City. Any insurance maintained by the City shall be in excess of the insurance provided by the Policy, and the City's insurance shall not contribute with it.

2.4 SCOPE OF COVERAGE. The Policy provides coverage at least as broad as Insurance Services Office form CA 00 01, Code 1 for “any auto.”

2.5 SEVERABILITY OF INTEREST. The insurance provided by the Policy applies separately to each insured who is seeking coverage or against whom a claim is made or a suit is brought.

2.6 PROVISIONS REGARDING THE NAMED INSURED'S DUTIES AFTER ACCIDENT OR LOSS. Any failure by the Named Insured to comply with reporting provisions of the Policy shall not affect coverage provided to the City.

2.7 CANCELLATION NOTICE. The insurance provided by the Policy shall not be suspended, voided, canceled, or materially changed in coverage or in limits except after thirty (30) days prior written notice has been given to the City.

2.8 METHOD OF PROVIDING NOTICE. All notices, demands, or other communications contemplated by this Endorsement, including: (a) notices of claims provided to the Insurance Company, (b) cancellation notices provided to the City, and (c) notices of change of address, shall be in writing and personally delivered or mailed to the respective party at the address designated in this Endorsement. Communications shall be deemed to have been given and received on the first to occur of: (i) actual receipt at the address designated above, or (ii) three working days following the deposit in the United States Mail of registered or certified mail, sent to the address designated in this Endorsement.

3. SIGNATURE OF AUTHORIZED REPRESENTATIVE OF THE INSURER
The individuals executing this Endorsement represent and warrant that they have the right, power, legal capacity, and authority to bind the Insurance Company identified on this endorsement, and by their signature hereby bind the Insurance Company.

_____________________________ ______________________
SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

_____________________________
TYPED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Address & Telephone of Authorized Representative

_____________________________
ATTN: _________________________
Phone: _________________________
Worker’s Compensation / Employers Liability Endorsement

1. **POLICY INFORMATION**

   Endorsement No. _______________
   Policy No. ______________________

   1.1 Insurance Company ____________________________ (the “Company)
   Address & Telephone of Insurance Company
   ____________________________________________
   ____________________________________________
   ATTN:________________________________
   Phone:__________________________

   1.2 Named Insured _________________________________ (“Named Insured”)
   Address & Telephone of Named Insured
   ____________________________________________
   ____________________________________________
   ATTN:________________________________
   Phone:__________________________

   1.3 City of Tracy (“City”). (The term “City” shall include the City, its elected and appointed officials, officers, employees, agents and volunteers.)
   Address & Telephone of City
   City of Tracy, _________________ Department
   333 Civic Center Plaza, Tracy CA 95376
   ATTN:_______________________________
   Phone:__________________________

   1.4 Policy Term (From) ________ (To) _______

   1.5 Endorsement Effective Date _____________

   1.6 Employer’s Liability Limit: $_____________ (minimum $1 million)

2. **POLICY AMENDMENTS**

   2.1 COVERAGE. Contractor shall furnish the City with original certificates and endorsements, including amendatory endorsements, in consideration of the policy premium. Notwithstanding any inconsistent statement in the Policy to which this Endorsement or any other endorsement is attached thereto, it is agreed as set forth in the requirements herein.

   2.2 WAIVER OF SUBROGATION. The Insurance Company hereby waives all rights of subrogation against the City for losses paid under the terms of the Policy which arise from Work performed by the Named Insured for the City.

   2.3 SCOPE OF COVERAGE. The Policy provides coverage of at least as broad as required by the State of California and Employer’s Liability Insurance.

   2.4 CANCELLATION NOTICE. The insurance provided by the Policy shall not be suspended, voided, canceled, or materially changed in coverage or in limits except after thirty (30) days prior written notice has been given to the City.

   2.5 METHOD OF PROVIDING NOTICE. All notices, demands, or other communications contemplated by this Endorsement, including: (a) notices of claims provided to the Insurance Company, (b) cancellation notices provided to the City, and (c) notices of change of address, shall be in writing and personally delivered or mailed to the respective party at the address
designated in this Endorsement. Communications shall be deemed to have been given and received on the first to occur of: (i) actual receipt at the address designated above, or (ii) three working days following the deposit in the United States Mail of registered or certified mail, sent to the address designated in this Endorsement.

3. **SIGNATURE OF AUTHORIZED REPRESENTATIVE OF THE INSURER**
The individuals executing this Endorsement represent and warrant that they have the right, power, legal capacity, and authority to bind the Insurance Company identified on this endorsement, and by their signature hereby bind the Insurance Company.

____________________________________________________________________
**SIGNATURE OF AUTHORIZED REPRESENTATIVE** __________________________  **DATE** __________________

**TYPED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE**

Address & Telephone of Authorized Representative

__________________________________

ATTN:_______________________________

Phone:_______________________________
WORKERS' COMPENSATION CERTIFICATION  
Labor Code Section 1861

The Bidder hereby certifies as follows:

"I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions and furnish proof of said insurance before commencing the performance of the work of this contract."

__________________________________________________________________________________________________

Name of Contractor

__________________________________________________________________________________________________

Signature of Contractor Representative

Dated: __________________________

NOTE:  THIS CERTIFICATION MUST BE COMPLETED AND RETURNED BY THE SUCCESSFUL BIDDER PRIOR TO THE START OF CONSTRUCTION.
CERTIFICATION OF SAFETY REQUIREMENTS FOR CONTRACTORS AND VENDORS
California Code of Regulations, Title 8, Section 1509

To work as a contractor or vendor with the City of Tracy, your organization is required to certify that it has an active on-the-job written Injury and Illness Prevention Program. This program is essential to make the job as accident-free as possible and to comply with Federal and State Safety Standards.

The undersigned hereby certifies that his/her organization has an active written Injury and Illness Prevention Program, as required by Cal-OSHA under California Code of Regulations, Title 8, General Industry Safety Orders, Section 3203 and/or Construction Safety Orders, Section 1509, that ensures compliance with, and enforcement of, current minimum Cal-OSHA Safety Standards, and that his/her organization has knowledge of these standards that are applicable to the job operations. This includes a program for ensuring employees have been trained to recognize hazards of their job.

The undersigned also hereby certifies that his/her organization has an active written Hazard Communication Program with evidence that all employees have been trained in safe use and handling of chemicals on the job site, and a file will be made available for review by the City of Tracy of each Material Safety Data Sheet (MSDS) on those chemicals kept on the site.

______________________________
Name of Contractor

______________________________
Signature of Contractor Representative

Dated: _______________________

NOTE: THIS CERTIFICATION MUST BE COMPLETED AND RETURNED BY THE SUCCESSFUL BIDDER PRIOR TO THE START OF CONSTRUCTION.
This Escrow Agreement is made and entered into by and between ________________________________ whose address is __________________________________________________ hereinafter called “Owner,” __________________________________ whose address is _______________________________ hereinafter called “Contractor” and __________________________________ whose address is __________________________________________ hereinafter called “Escrow Agent.”

For the consideration hereinafter set forth, the Owner, Contractor, and Escrow Agent agree as follows:

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for ______________ in the amount of ______________ dated __________ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the Escrow Agent. When the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of ______________________, and shall designate the Contractor as the beneficial owner.

(2) The Owner shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that the escrow created under this contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

(7) The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days’ written notice to the Escrow Agent from the owner of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.
(8) Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

<table>
<thead>
<tr>
<th>On behalf of Owner:</th>
<th>On behalf of Contractor:</th>
<th>On behalf of Escrow Agent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Title</td>
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<td>Name</td>
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<td>Address</td>
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<td>Address</td>
</tr>
</tbody>
</table>

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

Owner:                                                   Contractor:

Title

Name

Signature
GUARANTEE
(To Be Submitted Prior to Project Acceptance
Pursuant to Agreement, Section 12, “Warranty”)

FOR THE
CITY OF TRACY
Tracy, California 95376

LEGACY FIELDS SPORTS COMPLEX
CIP 78153

We hereby guarantee that the work we have installed for the LEGACY FIELDS SPORTS COMPLEX, CIP 78153 has been done in accordance with the Plans and Specifications and that the work installed will fulfill the requirements of the guarantee.

We agree to repair or replace any or all of our work, together with any other adjacent work which may be displayed in so doing that may prove to be defective in its workmanship or material within a period of one (1) year from the date of acceptance of the above-named work by the City of Tracy, without any expense whatsoever to the City of Tracy, ordinary wear and tear and unusual abuse or neglect excepted.

Within fifteen (15) days after being notified in writing by the City of Tracy of any defects in the work, we agree to commence and prosecute with due diligence all work necessary to fulfill the terms of this guarantee, and to complete the work within a reasonable period of time, and in the event of our failure to so comply, we collectively and separately, do hereby authorize said City of Tracy to proceed to have such work done at our expense and we will honor and pay the cost and changes therefore upon demand.

Dated: __________________________

By: __________________________

NOTE: THIS CERTIFICATION MUST BE COMPLETED AND RETURNED BY THE SUCCESSFUL BIDDER PRIOR TO PROJECT ACCEPTANCE.
GENERAL PROVISIONS
GENERAL PROVISIONS

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* * *
SECTION 1 - TERMS AND DEFINITIONS

1.01 Terms – Unless otherwise stated, the words directed, required, permitted, ordered, instructed, designated, considered necessary, prescribed, approved, acceptable, satisfactory, or words of like meaning, refer to actions, expressions, and prerogatives of the Engineer.

1.02 Definitions – Except as amended or supplemented, whenever in the Contract Documents the following terms are used, the intent and meaning shall be interpreted as follows:

**Agreement** - The written contract between the City and the Contractor covering the performance of the work.


**Addenda** - Written or graphic instruments issued prior to the opening of bids which clarify, correct or change the bidding documents or the Contract Documents.

**Bid** - The offer or proposal of the bidder submitted on the prescribed forms setting forth the prices for the work to be performed.

**Bid Forms** - Includes the Bid Schedule, Designation of Subcontractors, Bidders Statement of Responsibility, Bidder’s Non-Collusion Affidavit, Bid Security, and all other information requested by the Bid Proposal Documents.

**Bidder** – Any individual, firm, partnership, corporation, or combination thereof submitting a bid for the work, acting directly or through a duly authorized representative. After the City awards the Contract, the term “Bidder” shall be equivalent to the term “Contractor” for the purpose of identifying the Contractor’s rights and obligations under the Contract Documents.

**Bidding Documents** - The Notice Inviting Bids, Instruction to Bidders, Bid Proposal forms and Bidders Bond.

**Bonds** - Bid, performance, labor and material, and warrantee bonds and other instruments of security.

**City** - City of Tracy, California, as Owner, acting through the City Council or other duly authorized agents.

**Change Order** - A document recommended by the Engineer which is signed by the Contractor and City authorizing an addition, deletion or revision in the work, with possible adjustment in the contract price or the contract time, issued on or after the effective date of the Agreement.

**City Regulations** - All written laws, rules, and policies established by the City, including those set forth in the General Plan, Tracy Municipal Code, ordinances, resolutions, policies, procedures, and City Design Documents (including the Standard Plan, Standard Specifications, Design Standards, and relevant Public Facility Master Plans).

**Code** – The terms Government Code, Labor Code, etc, refer to codes of the State of California.
Contract – See definition for “Agreement”.


Construction Plans – Improvement Plans.

Contract Price - The total amount of money for which contract is awarded.

Contract Time - The number of days or the date stated in the contract as the duration for completing work.

Contract Unit Price - The Contractor’s original bid for a single unit of an item of work in the proposal.

Contractor - An individual, partnership, corporation, developer, joint venture, subdivider or other legal entity entering into a contract or agreement with the City to perform the work. After the City awards the Contract, the term “Contractor” shall be equivalent to the term “Bidder” for the purpose of identifying the Contractor’s rights and obligations under the Contract Documents.

Council - The City Council of the City of Tracy.

Days - Days shall mean calendar days unless otherwise specified.

Defective Work - Work that is unsatisfactory, faulty, omitted, incomplete, deficient, or does not conform to the requirements of the Contract Documents, directives of the Engineer, or requirements of any inspection, reference standard, test, or approval specified in the Contract Documents, or has been damaged prior to the Engineer’s recommendation of final acceptance. See General Provisions Section 6.01, “Materials and Workmanship”.

DES Department – Development and Engineering Services Department.

Directive - Any document, signed by the City, with instruction to the Contractor pertaining to the completion of a project objective; including, but not limited to Field Orders, responses to Requests for Information, Clarifications, Letters of Instruction, the Notice of Award and the Notice to Proceed.

Engineer - The City Engineer or his/her designee.

Final Completion - The point at which work has been completed in accordance with the contract plans and specifications to the satisfaction of the Engineer and there are no items of work remaining to be completed. See General Provisions, Section 8.19, “Final Completion”.


Hold Harmless - Agreement by one party to bring no claim for negligence, breach of contract, indemnity or otherwise against another party. See Agreement Section 17, “Indemnification”.
Laboratory - The laboratory designated by the Engineer to test materials and work involved in the contract.

Liquidated Damages - The amount of dollars assessed for each and every calendar day required to complete the contract in excess of the contract time. See General Provisions, Section 8.16, “Liquidated Damages”.

Losses - Any and all losses, costs, liabilities, claims, damages, and expenses, including, without limitation, reasonable attorneys’ fees and expenses.

Major Bid Item - A single bid item constituting 10% or more of the contract price.

Materially Unbalanced Bid - A bid that generates a reasonable doubt that awarding a contract to the bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the City. See General Provisions, Section 2.13, “Disqualification of Bidders”.

Mathematically Unbalanced Bid - A bid containing lump sum or unit prices, which do not reflect reasonable actual costs of labor, equipment, materials, plus a reasonable proportionate share of the bidder's anticipated profit, overhead costs, and other indirect costs.

Modification – Modifications to the Agreement are executed by change orders, and may only be issued after the effective date of the contract.

Notice - Any notice allowed or required to be given by the City may be given by the Engineer.

Notice of Award – The written notice by the City to the successful Bidder stating that upon completion of required conditions the City will execute the contract.

Notice to Proceed – A written notice by the City to the Contractor fixing the date on which the contract time will start.

Owner - The City of Tracy, California, acting through the City Council or other duly authorized agents.

Plans - The contract plans and/or supplemental drawings approved by the Engineer which show the location, character, dimensions and details of the work.

Project - The total construction of which the work performed under the Contract Documents may be the whole or a part and which may include construction by the City or by separate Contractors.

Proposal - The offer of a bidder when submitted on the proposal form, properly signed and guaranteed.

Reference Specifications - Those standards, rules, method of tests or analysis, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents. These refer to the current edition or amendments in effect at the time of advertising the project unless specifically referred to by edition, volume or date. Unless otherwise stated in the plans or specifications, the reference specification in effect shall be that edition which was in effect on the date of the Notice Inviting Bids.
Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the Contractor to illustrate some portion of the work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by the Contractor to illustrate material or equipment for some portion of the work. See General Provisions, Section 4.13, “Shop Drawing Submittals”.

Special Provisions - Any provisions which supplement or modify these standard specifications.


Standard Plans - The Standard Plans (Standard Details) of the City of Tracy, current edition, including the Parks and Streetscape Standard Plans, current edition, identifying construction standards for the various items of work indicated and/or referred to on the plans, specifications or special provisions.


State - State of California.


Subcontractor - Any individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the work at the site. Unless otherwise specifically provided, the term Subcontractor includes Subcontractor of any tier, suppliers, manufacturers and distributors.

Substantial Completion – When the work (or a specified part thereof) has progressed to the point where it is sufficiently complete and in accordance with the Contract Documents. See General Provisions, Section 8.18, “Substantial Completion” and References Section 01090.

Surety - Any individual, firm or corporation, bound with and for the Contractor for the acceptable performance and completion of the work, and the satisfaction of all obligations incurred.

Surveyor - A land surveyor licensed in the State of California.

Unbalanced Bid - See Materially Unbalanced Bid and Mathematically Unbalanced Bid.

Work - The construction and services required by the Contract Documents as amended by contract modifications, whether completed or partially completed, including all labor, materials, equipment, tools, and services provided or to be provided, by the Contractor to fulfill the Contractor’s obligations. The work may constitute the whole or a part of the project.
Working Day – Any day except Saturday, Sunday, Holidays observed by the City, or days in which the Contractor is entitled to an excusable delay. See General Provisions, Section 8.17, “Delays and Extension of Time”.
SECTION 2 - PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 General - Bidders may obtain complete sets of the Contract Documents, including the proposal forms to be used for bidding, at the location designated in the Notice to Bidders. Bidders shall use complete sets of Contract Documents in preparing bids. The City makes copies of the Contract Documents available, on the above terms, for the sole purpose of obtaining Bids for the work and does not confer a license or grant permission for any other use of the Contract Documents.

2.02 Proposal Forms – The portion of the Contract Documents entitled “Bid Proposal” focuses the Bidders attention on the requirements for submitting a bid, including the Notice to Bidders, and the Bid Forms.

Bids are required for the entire work described herein, and shall be submitted on the Bid Forms included within the Bid Proposal documents consisting of the completed Bid Schedule, Designation of Subcontractors, Bidders Statement of Responsibility, Bidder’s Non-Collusion Affidavit, Bidder’s Qualifications, Bidders References, Signature of Bidder, Bid Guarantee, and all other information requested by the Bid Proposal documents.

All blanks on the Bid Forms shall be filled in by typewriter or printed legibly in ink. Corrections must all be individually initialed by the Bidder. Bidder shall not modify or qualify the Bid Forms in any manner.

Before submitting bids, Contractors shall be licensed as specified in the Notice to Bidders and in accordance with the provisions of Chapter 9 of Division III of the Business and Professions Code. The Bid Forms shall be signed by a person or persons legally authorized to bind the Bidder to the Contract. The individuals signing each document shall warrant that they are authorized to bind the legal entity of the Bidder.

2.03 Rejection of Proposals Containing Alterations, Erasures, or Irregularities - Proposals may be rejected if they show any alterations of form, additions not called for, conditional or alternative bids, incomplete bids, irregularities of any kind, or corrections and erasures without initials by the Bidder.

2.04 Submission of Bids - All Bid Forms, including all documents required to be submitted with the Bid, shall be enclosed in a sealed opaque envelope. The envelope shall be clearly marked on its face with the Bidder’s name and address, and the notation “SEALED BID ENCLOSED, CITY OF TRACY”, with an identification of the project name and number as identified in the Notice to Bidders. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope. Oral, telephonic, facsimile, telegraphic, or electronically transmitted Bids are invalid and will not be accepted.

Bids may be mailed or delivered by messenger. It is the Bidder’s responsibility alone to ensure that the Bid is received prior to the bid deadline at the place specified in the Notice to Bidders. Whether or not bids are opened exactly at the time fixed in the public notice inviting bids, any bid received after that time shall be returned unopened.

2.05 Approximate Estimate - The quantities listed in the bid schedule are approximate only, supplied as a general indication of the scope of work and to be used as a basis for comparing bids. The City does not expressly or by implication agree that the actual amount of work will correspond therewith, and reserves the right to increase or decrease the amount of any class or portion of the work, or to delete any portions of the work in their entirety, from the quantities listed on the bid schedule, as may be deemed necessary or advisable by the Engineer.
2.06 **Bid Prices to Cover Entire Work** - The quantities listed in the Bid Schedule do not govern final payment, as payments to the Contractor will only be made for the actual quantities constructed in accordance with the plans and specifications as measured by the appropriate unit of measurement indicated in the Bid Schedule, complete in place to the satisfaction of the Engineer. Such payment shall constitute the full compensation for furnishing all materials, labor, tools and equipment for performing the work, and for all other incidentals necessary to complete the work as shown on the plans and described in these specifications.

No separate payment will be made for incidentals or any items delineated on the plans or called for in the specifications to be supplied or installed which are not specifically listed as bid items but are required to complete the project. Full compensation for such items shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed.

2.07 **Examination of Plans, Specifications and Work Site** - The bidder shall examine carefully the site of the work contemplated, the plans and specifications, and the proposal and contract forms therefor. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the general and local conditions to be encountered, as to the character, quality and scope of work to be performed, the quantities of materials to be furnished and as to the requirements of the proposal, plans, specifications and the contract. It is mutually agreed that submission of a proposal shall be considered prima facie evidence that the bidder has made such examination.

2.08 **Requests for Clarification** - In the event the Bidder has any question as to the meaning of any part of the Contract Documents, or if the Bidder finds any error, inconsistency or ambiguity in the Contract Documents, the Bidder shall make a written request for clarification prior to submitting its Bid. Requests for clarification or interpretation of the Contract Documents shall be addressed only to the Engineer designated in the Notice to Bidders. It shall be the Bidder’s responsibility to ensure that any such request be submitted to the City at least five (5) working days prior to the bid opening, in order to allow time for the City to consider a response.

If necessary, the City shall make clarifications, interpretations, corrections, and changes to the Contract Documents by Addenda, issued as provided in the Notice to Bidders. Purported clarifications, interpretations, corrections, and changes to the Contract Documents made in any other manner shall not be binding on the City, and Bidders shall not rely upon them.

2.09 **Addenda** - If issued, addenda will be in writing, by fax, e-mail or overnight mail. The City will make reasonable efforts to deliver Addenda to all Bidders who are known by the City to have received a complete set of Contract Documents and who have provided a street address for receipt of Addenda. The City makes no guarantee that all Bidders will receive all the Addenda. Each Bidder shall be responsible for ascertaining, prior to submitting its Bid, that it has received all issued Addenda. Each Bidder shall acknowledge receipt of all Addenda on the Bid Form. Failure to acknowledge receipt of Addenda may render the bid non-responsive. Copies of Addenda will be made available for inspection at the office where Contract Documents are on file for inspection, as indicated on the Notice to Bidders.

Addenda withdrawing the Notice to Bidders or postponing the bid deadline may be issued anytime prior to the bid deadline. If any Addenda results in a material change to the Contract Documents, and there is less than 72 hours before the bid deadline, pursuant to Public Contract Code, Section 4104.5, the bid deadline will be extended.
2.10 **Subcontractors** - The Bidder shall comply with the Subletting and Subcontracting Fair Practices Act as set forth in Public Contract Code, Section 4100 et seq. (hereinafter referred to as the “Subcontracting Act”). The following excerpts of some of the requirements of the Subcontracting Act are included below for reference.

The Bidder shall set forth in the bid:

(a) The name and location of the place of business of each Subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work for this project, or a Subcontractor licensed by the State of California who, under subcontract to the Bidder, specially fabricates and installs a portion of the work or improvements according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent (0.5%) of the Bidder’s bid amount.

(b) The portion of the work which will be done by each Subcontractor under the Subcontracting Act. The Bidder shall list only one Subcontractor for each portion of the work as defined by the Bidder in the Bid.

The Bidder shall not list any Subcontractor who is ineligible pursuant to Labor Code, Sections 1777.1 and 1777.2, and Public Contract Code, Section 6109.

If, after the execution of the Agreement, the successful Bidder subcontracts except as provided for in the Subcontracting Act, or if the Bidder lists in his bid another Contractor who will in turn sublet portions constituting the majority of work covered by the prime contract, the Contractor shall be subject to the penalties set forth in the Subcontracting Act. If the Contractor violates any provisions of the Subcontracting Act, the Contractor violates the Agreement and the City may either terminate the Agreement or assess a penalty to the Contractor in accordance with the terms of the Subcontracting Act.

If the Bidder fails to specify a Subcontractor, or if the Bidder specifies more than one Subcontractor for the same portion of the work in excess of one-half of one percent (0.5%) of the Bidder’s total Bid Amount, the Bidder agrees that it is fully qualified to perform that portion itself, and that the Bidder shall perform that portion itself.

2.11 **Proposal Guarantee** - In accordance with the Public Contract Code, Section 20170, each Bid shall be accompanied by a Bid Security, in the amount of ten percent (10%) of the Bid Amount, as a guarantee for the Bidder’s obligation to enter into an Agreement with the City on the terms stated in the Contract Documents and no bid shall be considered unless such Bid Security is enclosed therewith. Bid Security shall be in the form of cash, cashier’s check, certified check or a Bid Bond made payable to the City of Tracy.

If a Bid Bond is submitted, the surety issuing the Bid Bond shall meet the requirements set by California law and be authorized to issue surety bonds in the State of California. The Bid Bond shall conform or be executed upon the bond form included in the Bidding Documents. If an attorney-in-fact executes the Bid Bond on behalf of the surety, a notarized and current copy of the power of attorney shall be affixed to the Bid Bond.

The City reserves the right to retain the Bid Security of all bidders until ten (10) working days following the execution of the Agreement by the successful Bidder, until the time period for the City’s review of Bids as specified in the Instruction to Bidders has expired, or until the Bids have been rejected by the City.
2.12 Withdrawal of Bids – The City’s policy pertaining to the withdrawal of bids is such that after a bid has been received by the City, no request for withdrawal or modification to a bid will be considered until at least ninety (90) calendar days following the bid opening unless the Bidder establishes, after the opening of bids, to the satisfaction of the Engineer, all of the elements identified in California Public Contract Code, Section 5103, including the following:

   (a) A clerical error was made by the Bidder in filling out the Bid; and the error was not due to error in judgment or to carelessness in inspecting the site of the work, or in reading the plans or specifications.

   (b) The clerical error caused the Bid to be materially different than the Bidder intended the Bid to be.

   (c) The Bidder gave the City written notice within five (5) working days after the opening of the Bids of the mistake, specifying in detail the nature of the mistake and how the mistake occurred.

2.13 Disqualification of Bidders – More than one proposal from an individual, firm, partnership, corporation, or combination thereof under the same or different names will not be considered. Reasonable grounds for believing that any individual, firm, partnership, corporation or combination thereof is interested in more than one proposal for the work contemplated may cause the rejection of all proposals in which that individual, firm, partnership, corporation or combination thereof is interested. If there is reason for believing that collusion exists among the bidders, any or all proposals may be rejected. Proposals in which the prices are obviously materially or mathematically unbalanced may be rejected.

2.14 Bid Protest Procedure – Any protest of the proposed contract award shall be submitted in writing to the City Clerk no later than 5:00 p.m. on the fifth business day following the date of the bid opening. The protest must include the name, address, and telephone number of the person representing the protesting party. In addition,

   (a) The party filing the protest must have submitted a bid for the Project. A Subcontractor of a party filing a bid for the project may not submit a bid protest.

   (b) The protest must contain a complete statement of the basis for the protest, and refer to the specific portion of the Contract Documents or the specific statute that forms the basis for the protest.

   (c) The party filing the protest must concurrently transmit a copy of the protest to the proposed awardee.

Any bidder’s failure to fully comply with these procedures shall constitute a waiver of any right to further pursue a bid protest, including filing of a challenge of the award pursuant to the California Public Contract Code, filing of a claim pursuant to the California Government Code, or filing of any other legal proceedings.

The City shall review all timely protests prior to the award of contract. The City shall not be required to hold an administrative hearing to consider any protests, but may do so at its option. At the time of the City Council’s consideration of the project award, the City Council shall also consider the merits of any timely protests. The City Council may either reject the protest and award the project to the lowest responsible bidder or accept the protest and award the project to the next lowest responsible bidder. Nothing in this section shall be construed as a waiver of the City Council’s right to reject all bids.
SECTION 3 - AWARD AND EXECUTION OF CONTRACT

3.01 Opening and Initial Review of Bids - Bids which have been submitted in accordance with the requirements of the Bidding Documents, and which are received on or before the bid deadline will be opened publicly, and the dollar amounts of each bid shall be read aloud.

The City shall have the right to reject all bids. The City shall have the right to reject any bid not accompanied by the required bid security or any other item required by the Bidding Documents, or a bid which is in any other way incomplete or irregular. The City shall have the right to waive irregularities in a bid, and to award the Contract to the Lowest Responsible Bidder (as determined by the City), only if the irregularities are non-material and inconsequential.

3.02 Determination of Lowest Responsible Bidder - City shall determine the “Lowest Monetary Bidder” on the basis of the Engineer’s approximate estimate of the quantities of work to be done as set forth in the Bid Schedule, in accordance with the calculation criteria set forth on the bid.

After the Lowest Monetary Bidder has been determined, the Engineer shall review that Bidder’s bid in order to determine whether or not that Bidder is the “Lowest Responsible Bidder.” The term Lowest Responsible Bidder shall mean the Lowest Monetary Bidder whose bid is responsive, and who is responsible to perform the work, as required by the Contract Documents.

The term “responsive” is defined by California law, but generally means that the bid has been prepared and submitted in accordance with the requirements of the Bidding Requirements.

The term “responsible” is defined by California law, but generally means that the Bidder is able to demonstrate that it possesses: (1) the capacity to perform the work required by the Contract Documents with respect to financial strength, resources available, and experience; and (2) the integrity and trustworthiness to complete performance of the work in accordance with the Contract Documents.

The City will make its determination of responsibility based upon information submitted by Bidders contained in the Bidders Qualifications and Bidders References included in the Bid Forms and, if necessary, through interviews with previous cities, clients, design professionals, or subcontractors with whom the Bidder has worked. In determining whether or not a Bidder is responsible, the City may consider the following factors in relation to the work to be performed for this Project:

(a) Demonstrated financial strength including, but not limited to, resources available, bonding capacity, and available insurance.

(b) Demonstrated safety record including, but not limited to, Experience Modification Rate.

(c) Successful completion of projects of similar scope and size. In reviewing this factor, the City may consider elements including, but not limited to, contract amount of completed projects, experience on public works projects, experience implementing prevailing wage certified payroll requirements, timeliness of performance and, if necessary, evaluation of the Bidder’s work by previous cities, clients, design professionals, or subcontractors.

(d) Sufficiency of contract administration and construction management systems including, but not limited to, proposed scheduling tools, proposed subcontract forms, proposed progress payment applications, and proposed certification of payroll documents.
(e) History of claims, litigation, termination or disqualification from projects.

If the Engineer finds that the Lowest Monetary Bidder submitted a responsive Bid and that the Bidder is responsible, then that Bidder shall be deemed the apparent “Lowest Responsible Bidder,” and the Engineer shall report the findings to the City Council.

If the Engineer finds that the Lowest Monetary Bidder’s bid is not responsive, or that the Lowest Monetary Bidder is not responsible, then the Engineer may review the responsiveness and responsibility of the next Lowest Monetary Bidder. If the Engineer finds that the next Lowest Monetary Bidder is responsive and responsible, then that next lowest Bidder shall be deemed the apparent “Lowest Responsible Bidder,” and Engineer shall report its findings as recommendations to the City Council. This process may continue until the Engineer finds the Lowest Monetary Bidder which is also responsive and responsible.

In the event that one or more Low Monetary Bidders are found by the Engineer to be non-responsive or non-responsible, those Bidders will be given notice and a reasonable opportunity to present additional relevant evidence to the Engineer for consideration, within five (5) working days after the Bidder receives the notice.

All findings by the Engineer shall be reported as recommendations to the City Council. The City Council reserves the right to reject any or all Bids, and to waive any irregularity. No Bid shall be binding upon the City until after the Agreement is signed by both the Contractor and the City. If the City Council determines that it is in the City’s best interest to award the Agreement, a Notice of Award shall be sent to the Lowest Responsible Bidder as determined by the City Council. The City Council’s decision shall be final.

The City may investigate the responsibility and qualifications of all Bidders to whom the award is contemplated for a period not to exceed ninety (90) calendar days after the Bid opening, during which time no bid shall be withdrawn by the Bidders. The ninety (90) day review period may be extended upon the written request by the Engineer and written approval by the affected Bidder.

3.03 Award of Contract - After the City Council makes a determination as to which Bidder is the Lowest Responsible Bidder, the City shall issue a Notice of Award to the Lowest Responsible Bidder. Within ten (10) calendar days after receipt of the Notice of Award, Bidder shall submit to the City two (2) originals of the signed agreement, the required improvement securities, proof of insurance, a City of Tracy business license and a copy of the required State Contractor’s license. After the Bidder has properly submitted these documents, the City will execute the Agreement and issue a Notice to Proceed.

3.04 Assignment - No agreement or portion thereof maybe assigned without consent of the Council, except that the Contractor may assign money due which will accrue to him under the Agreement. If given written notice, such assignment will be recognized by the City to the extent permitted by law, but any assignment of money shall be subject to all proper setoffs and withholdings in favor of the City and to all deductions provided for in the Agreement. All money withheld, whether assigned or not, shall be subject to being used by the City for completion of the work, should the Contractor be in default.

Any attempt to assign or delegate the Agreement without the written consent of the City shall be void and of no force and effect. Consent by the City to one assignment shall not be deemed to be consent to any subsequent assignment.
3.05 **Return of Bid Security** - Within 10 working days after the execution of the Agreement, the City will return the proposal guaranties accompanying the proposals that are not to be considered in making the award. All other proposal guaranties will be held until the Agreement has been fully executed, after which, they will be returned to the respective bidders whose proposals they accompanied.

3.06 **Forfeiture of Proposal Guarantee** - If Bidder does not properly execute the contract and submit the acceptable bonds, insurance and certifications within the specified time, this shall be just cause for the annulment of the award and the forfeiture of the proposal guarantee to the City. The City may then award the contract to next Lowest Responsible Bidder. The forfeited proposal guarantee may be utilized by the City in accordance with Public Contract Code, Sections 20170 through 20174.

3.07 **Contract Bonds** - Before execution of the contract by the City, the Contractor shall file with the City surety bonds satisfactory to the City in the amounts, and for the purposes, noted below.

(a) **Performance Bond** - The “Faithful Performance Bond” shall be for one hundred percent (100%) of the contract price to guarantee faithful performance of all work, within the time prescribed, in a manner satisfactory to the City, and that all materials and workmanship will be free from original or developed defects.

(b) **Labor and Material Bond** - The “Labor and Material” Bond shall be for not less than one hundred percent (100%) of the contract price, to satisfy claims of material suppliers and of mechanics and laborers employed by it on the work. The bond shall be maintained by the Contractor in full force and effect until the work is accepted by the City and until all claims for materials and labor are paid.

(c) **Warranty Bond** - The Contractor shall furnish a warranty bond in the amount of ten percent (10%) of the final contract price (total cost including change orders) to guarantee his work for one (1) year after acceptance of the work by the City Council.

Bonds shall be duly executed by a responsible corporate Surety, licensed and authorized to issue such bonds in the State of California, and secured through an authorized agent with an office in California. Each bond shall be signed by both the Contractor and Surety and the signature of the authorized agent of the Surety shall be notarized.

The Contractor shall pay all bond premiums, costs and incidentals. Should any bond become insufficient due to an increase in the contract amount, the Contractor shall obtain supplemental bonding within 10 days.

Should any Surety at any time be unsatisfactory to the City, notice will be given the Contractor to that effect. No further payments shall be deemed due or will be made under the Agreement until a new Surety shall qualify and be accepted by the City.

Changes in the work, or extensions of time, made pursuant to the Agreement, shall in no way release the Contractor or Surety from their obligations. The requirement for notifying the Surety of such changes or extensions shall be waived by the Surety.

3.08 **Insurance Requirements** - Contractor shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor’s bid.
(a) **Minimum Scope of Insurance** - Coverage shall be at least as broad as:

Insurance Services Office (ISO) Commercial General Liability coverage (occurrence Form number CG 00 01) or ISO form (Form CG 00 09 11 88 Owners and Contractors Protective Liability Coverage Form – Coverage for Operations of Designated Contractor.

Insurance Services Office form number CA 00 01 covering Automobile Liability, Code 1 “any auto”.

Workers’ Compensation insurance as required by the Labor Code of the State of California and Employers Liability insurance.

(b) **Minimum Limits of Insurance** - Contractor shall maintain limits no less than:

General Liability: $1,000,000 combined single limit 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 be twice the required occurrence limit.

Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage.

Workers’ Compensation and Employers Liability: Workers’ compensation limits as required by the Labor Code of the State of California and Employers Liability limits of $1,000,000 per accident.

(c) **Deductibles and Self-Insured Retentions** - Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either (a) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or (b) the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

(d) **Other Insurance Provisions** - The policies are to contain, or be endorsed to contain, the following provisions:

1. **General Liability and Automobile Liability Coverages:**

   The City, its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities 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, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the City, its officers, officials, employees or volunteers.

   The Contractor’s insurance coverage shall be primary insurance as respects the City, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees or volunteers shall be excess of the Contractor’s insurance and shall not contribute with it.
Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its officers, officials, employees or volunteers. The Contractor’s insurance shall apply separately to each insured against whom claim is made or suite is brought, except with respect to the limits of the insurer’s liability.

2. Workers’ Compensation and Employers Liability Coverage

The insurer shall agree to waive all rights of subrogation against the City, its officers, officials, employees and volunteers for losses arising from work performed by the Contractor for the City.

3. All Coverages

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days’ prior written notice by certified mail, return receipt requested, has been given to the City.

(e) Acceptability of Insurers - Insurance is to be placed with California admitted insurers with a Best’s rating of no less than A:VII.

(f) Verification of Coverage - Contractor shall furnish the City with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements may either be on forms provided by the City or forms provided by the insurer so long as all the necessary information is represented. Where by statute, the City’s workers’ compensation-related forms cannot be used, equivalent forms approved by the Insurance Commissioner are to be substituted. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, at any time.

(g) Subcontractor Insurance - Contractor shall include all subcontractors as insureds under its policies or shall secure separate certificates and endorsements from each Subcontractor. All Subcontractor coverages shall be subject to all of the requirements stated in this Section, General Provisions, Section 3.08, “Insurance Requirements”.

(h) Indemnification - Approval of any insurance contracts by City does not relieve the Contractor or Subcontractor from liability under the Indemnification Section of the Agreement. City will not be liable for any accident, loss, or damage to the work prior to its completion and acceptance.
SECTION 4 - SCOPE AND CONTROL OF THE WORK

4.01 Work to be Done – The work to be done consists of furnishing all labor, materials, equipment and services necessary to complete the project, as further described in the Notice to Bidders of these Specifications, and as necessary to leave the site in a neat condition.

4.02 Project Scope - It is the intent of the Plans and Specifications to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. In general, the Special Provisions, General Provisions, and other sections of the specifications indicate the responsibilities of the Contractor and the quality of material and methods of workmanship. The plans indicate dimensions, quantities, positions, and various other details of construction. Clarifications and interpretations of the Contract Documents shall be issued by Engineer.

Any work, materials or equipment that may be reasonably inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words, which have a well-known technical or trade meaning, are used to describe the work, materials or equipment, such words shall be interpreted in accordance with that meaning. See General Provisions, Section 6.07, “Trade Names or Equals”.

Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of the opening of bids (or, on the Effective Date of the Agreement if there were no bids), except as may be otherwise specifically stated. However, no provisions of any referenced standard specifications, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of City, Contractor or Engineer, or any of their consultants, agents or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to the Engineer, or any of the Engineer’s Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the work or any duty or authority to undertake responsibility for the Contractor.

4.03 Authority of the Engineer – The City has the final authority in all matters affecting the work. Within the scope of the Agreement, the Engineer has the authority to enforce compliance with the Plans and Specifications and the Contractor shall promptly comply with instructions from the Engineer. The decision of the Engineer is final and binding on all questions relating to: quantities; acceptability of materials furnished and work performed; equipment; work execution, rate of progress or sequence of work; and interpretation of the Plans, Specifications, or other drawings. This shall be precedent to any payment under the Agreement, unless otherwise ordered by the City.

4.04 Contract Documents – For a list of items that make up the Contract Documents, see the Agreement, Section 2, “Contract Documents”.

4.05 Precedence of Contract Documents - All of the individual components of the Contract Documents are intended to be complementary and what is required by one shall be binding as if required by all. Interpretation of a disputed meaning or intent of the plans and specifications shall be made initially by the Engineer in accordance with the application of the order of precedence, as described in the Agreement, Section 2.1, “List of Contract Documents and Precedence”. Any final decisions required regarding precedence and discrepancies in the Contract Documents shall be made by the Engineer.
4.06 Plans and Specifications - The Contractor shall keep at the worksite a copy of the plans and specifications, to which the Engineer shall have access to at all times.

For convenience, the Specifications are arranged in several sections, but such separation shall not be considered as the limits of the work required by any separate trade. The terms and conditions of such limitations are wholly between the Contractor and his subcontractors.

While the City has endeavored to accurately represent in the plans and specifications the physical conditions which may affect the cost of the proposed work, the City does not warrant the completeness or accuracy of such information. It is the Contractor’s responsibility to ascertain the existence of any such conditions affecting the cost of the work, which would have been disclosed by reasonable examination of the site.

Conclusions pertaining to any test, investigation, statement or estimate of fact incorporated in the plans and specifications shall be considered by the Contractor to be a recommendation only. The Contractor may request equal access to the underlying or background information to arrive at his own opinion thereon, including his determination of how reliable might be any conclusion appearing in (or inferred from) the information. The Contractor may not rely upon “record drawings” or similar final or accepted drawings or maps constructed on public or private property. Such information may be used for reference only. Actual locations and depths shall be determined by field investigations by the Contractor.

No oral or telephonic agreement or conversation with any officer, agent, or employee of the City or the Engineer, or with the Engineer, either before or after execution of the contract, shall affect or modify any of the terms or obligations contained in any of the contract documents.

4.07 Interpretation of Plans and Specifications - The Contractor and each of his Subcontractors shall carefully study and compare each component of the plans and specifications with each other, with information furnished by the City, with the Contract Documents and with applicable legal requirements. During the progress of construction if any errors, inconsistencies, ambiguities, omissions, conflicts or discrepancies are detected, it shall be the Contractor’s duty to immediately report them to the Engineer and obtain written instructions on how to resolve deficiencies prior to proceeding with affected work.

4.08 Record Documents - Contractor shall maintain in good order, at the work site a record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directives, Field Orders and written interpretations and clarifications. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to the Engineer as a reference at all times. Upon completion of the work, these record documents, samples and Shop Drawings will be delivered to Engineer.

The Contractor shall prepare, and update, a master “as-built” set of red-ink annotated (red-lined) plans, to be reviewed and approved by the Engineer at the end of every month. Upon the project’s completion, and prior to acceptance, the Contractor shall submit to the City the completed as-built plans.

4.09 Reuse of Documents - Neither the Contractor nor any Subcontractor or supplier or other person or organization performing or furnishing any of the work under a direct or indirect agreement with the City shall have any title or ownership rights to any of the Drawings, Specifications or other documents (or copies thereof) which bear the seal of the design engineer. Such documents shall not be reused on extensions of the project or for any other project without written consent of the City and the design engineer.
4.10 Subsurface Data - All soil and soil test data, water table elevations, and soil analyses included or referred to in the Contract Documents apply only at the location of the test holes and to the depths indicated. Soil test reports for test holes which have been drilled are available for inspection at the office of the Engineer. Any additional subsurface exploration shall be done by Bidders or the Contractor at their own expense.

The elevation of the water table indicated by soil test reports is that which existed on the date the test hole was drilled. It is the Contractor’s responsibility to determine and allow for the possibility of differing ground water elevations on the date of the project’s construction. A difference in elevation between ground water shown in soil boring logs and ground water actually encountered during construction will not be considered as a basis for extra work.

4.11 Right-of-Way – Acquisition of right-of-way or permanent easements necessary for the improvements as shown on the plans will be provided by the City. Unless otherwise provided, the Contractor shall make his own arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of additional work areas, easements, and temporary facilities required. Contractor shall identify and hold the City harmless from all claims for damages resulting from such actions.

4.12 Removal of Defective and Unauthorized Work - Should the Contractor deliberately proceed with any portion or phase of construction which is obviously incorrectly indicated in the contract plans or documents, he shall be responsible for any corrective measures required to make adequate repairs or adjustment. This shall include any work done beyond the lines and grades shown on the plans or established by the Engineer, or any extra work done without written authority.

All work that has been rejected shall be remedied or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed for such removal or replacement.

4.13 Shop Drawing Submittals - When shop drawings, submittals or samples are required by the specifications or requested by the Engineer, they shall be prepared in accordance with Construction Management best practices at the Contractor’s expense. Unless otherwise specified, six (6) copies of all submittals shall be provided to the Engineer for review at least 30 days before approved drawings will be required for the work. One (1) set will be returned to the Contractor marked “No Exceptions Taken”, “Furnish as Corrected”, “Revise and Resubmit”, or “Rejected”. If changes are required, six (6) copies of corrected shop drawings shall be resubmitted to the Engineer.

Shop drawings shall be of a size and scale to clearly show all necessary details.

For items requiring shop drawings, no materials shall be furnished, and no work shall be performed, until the drawings have been favorably reviewed.

Favorable review of the shop drawings by the Engineer is interpreted to mean that there is substantial and acceptable conformance with the contract plans, but details of design may not necessarily be checked for adequacy or accuracy. Such acceptance shall not relieve the Contractor from the responsibility for errors or omissions in the shop drawings or from deviations from the contract documents unless such errors, omissions, or deviations were specifically called to the attention of the Engineer in writing. The Contractor shall be responsible for the correctness of the shop drawings, for shop fits and field corrections, and for the results obtained by the use of such plans.

4.14 Construction Staking - Unless otherwise stated in the Special Provisions, the Contractor shall provide, preserve, and replace if necessary, all of the necessary construction stakes required for the
conclusion of the project. Grades for underground conduits will be set on the ground surface and shall then be transferred to the bottom of the trench by the Contractor.

Stakes or marks will be set by a California Licensed Surveyor or a California Registered Civil Engineer to establish the lines and grades required for the completion of the work as specified in the Contract Documents. It shall be the Contractor's responsibility to notify the Engineer of any discrepancies found between field grades and notes shown within the Contract Documents.

Contractor shall furnish horizontal control and cut sheets to the Engineer immediately upon the setting of construction or boundary markers. Upon completion, all work shall conform to the lines, elevations, and grades shown on the plans.

4.15 Inspection of the Work - Unless otherwise stated in the specifications, the City shall perform all required inspections.

All work is subject to inspection and approval of the Engineer. The Contractor shall notify the Engineer before noon of the working day before inspection is required. Unless otherwise authorized, work shall be done only in the presence of the Engineer. Any work done without proper inspection will be subject to rejection. The Engineer shall at all times have access to the work during its construction at shops and yards as well as the project site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with the Contract Documents. Inspection of the work shall not relieve the Contractor of the obligation to fulfill all conditions of the contract.

If a portion of the work is covered contrary to the Engineer’s request or direction, or contrary to the requirements of the Contract Documents, it must, if required in writing by the Engineer, be uncovered for the Engineer’s observation and be replaced at Contractor’s expense without adjustment of the contract time or the contract sum.

If a portion of the work has been covered, which is not required by the Contract Documents to be observed or inspected prior to its being covered and which the Engineer has not specifically requested to observe prior to its being covered, the Engineer may request to see such work and it shall be uncovered and replaced by Contractor. If such work is in accordance with the Contract Documents, the costs of uncovering and replacing the work shall be added to the contract sum by change order; and if the uncovering and replacing of the work extends the contract time, an appropriate adjustment of the contract time shall be made by change order. If such work is not in accordance with the Contract Documents, the Contractor shall pay such costs and shall not be entitled to an adjustment of the contract time or the contract sum.

In the event the Contractor elects to work beyond the specified hours of work, or on a Saturday, Sunday or recognized City holiday, the Contractor shall notify the Engineer at least forty-eight (48) hours in advance to seek approval and if approved, shall reimburse the City for the cost of overtime inspection.

4.16 Testing - Unless otherwise stated in the Contract Documents, all required testing will either be performed directly by the City or by an independent laboratory, coordinated and paid for by the City. Contractor shall cooperate with the City in coordinating the necessary testing. The coordination of testing, including the number and location of tests, shall be under the direction of the Engineer. All compaction test sites deeper than five (5’) feet below grade shall be properly shored by the Contractor to protect testing personnel.
The cost for performing re-tests due to failures, or additional call-outs if work is not ready to test, will be charged to the Contractor. The City shall require retesting until all required tests are successfully passed.

4.17 **Building Permit** - The Contractor will be required to attain a building permit for the project. Structural design for the fencing, netting and backstops will be provided by the Contractor.
SECTION 5 – CHANGES IN WORK

5.01 Limited City Authority - The Contractor recognizes that the City is a public agency and that it can only act through its duly authorized agents. In this regard, the Contractor agrees that only written change orders, executed by the governing body of the City, shall be valid. The Engineer shall have no authority to issue a change order unless so specifically authorized, and no person shall have authority to issue any oral change order.

5.02 Contractor Liability for Unapproved Change Orders - Unless a valid change order is issued, all changes in the work performed by the Contractor shall be at the Contractor’s own risk, and shall not be entitled to any additional compensation. Furthermore, the Contractor may be required to make the work conform to the plans and specifications. No act or series of acts by the City during the course of the contract shall be deemed to constitute a waiver of the City’s right to rely upon the provisions of this Section 5, “Changes in Work”.

5.03 Non-Material Change Requests by the Contractor - Changes in the plans and specifications requested in writing by the Contractor, which do not materially affect the work and which are not detrimental to the work or to the interests of the City, may be granted to facilitate the work, when approved in writing by the Engineer. If such changes are granted, they shall be made at a reduction in cost or at no additional cost to the City. Nothing herein shall be construed as granting a right to the Contractor to demand acceptance of such changes or to increase the contract sum or contract time as a result of the proposed change.

5.04 Letters of Instruction - The Engineer may issue letters of instruction in the form of Field Orders, Clarifications, responses to Requests for Information, or any other document which makes interpretations or clarifications to the Contract Documents that do not modify the scope of work or involve an adjustment in the contract sum or contract time. Letters of Instruction shall be binding upon the Contractor, and the Contractor shall promptly carry out the requirements of such Letters of Instruction.

5.05 Inconsistencies, Changed Conditions and Requests for Information - Before undertaking each part of the work, the Contractor shall carefully study all pertinent figures shown in the Contract Documents and verify that all applicable field measurements are free of conflicts, errors, discrepancies, inconsistencies and omissions. If such conditions are discovered, the Contractor shall notify the Engineer by writing a Request for Information, and await direction from the Engineer before proceeding.

If the Contractor encounters a changed condition, as defined by one or more of the conditions below, the Contractor shall notify the Engineer by writing a Request for Information before disturbing the condition further.

(a) Material differing from that represented in the Contract which the Contractor believes may be hazardous waste, as defined by Health and Safety Code, Section 25117 that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provision of existing law; and

(b) Subsurface or latent physical conditions at the site differing materially from those represented in the Contract Documents; and
(c) Unknown physical conditions at the site of any unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in the work and of the character provided for in the Contract Documents.

No extension of Contract time shall be made by the City due to the Contractor’s failure to provide a timely written notice of any inconsistency or changed condition requiring direction. The Engineer will respond to the Contractor’s Request for Information within 48 hours, providing an interpretation, clarification or change order for an appropriate adjustment in contract time and cost pursuant to General Provisions, Section 5.07, “Change Orders”. Contractor shall wait for the Engineer’s written response to a Request for Information before proceeding with any work.

The Contractor shall not be liable to the City for failure to report any conflict, error, or discrepancy in the Contract Documents, unless the Contractor had actual knowledge or could foresee such conditions as may be discovered by a reasonable examination of the work site or materials. If the Contractor performs any construction activity in which he knows or should know involves an error, inconsistency, ambiguity, or omission referred to in this Section, without notifying and obtaining the written consent of the Engineer, Contractor shall be responsible for the resultant costs, including, without limitation, the costs of correcting defective work. However, in an emergency affecting the safety of persons or property, the Contractor shall take all reasonably necessary precautions to prevent or minimize damage, injury, or loss.

5.06 Extra Work - New or unforeseen work may be classified as “Extra Work” when the Engineer determines that the work is either not covered by contract unit prices, not stipulated in the scope of work, represents work that is substantially different from what the Contractor bid upon, or falls under the category of a changed condition. The General and Special Provisions shall apply with equal force to all of the work, including extra work authorized. Payment for extra work will be made on the basis of General Provisions, Section 5.07, “Change Orders”.

The Contractor shall maintain records sufficient to distinguish the direct cost of extra work from the cost of other operations. The Engineer will compare his records with the Contractor’s reports, to make the necessary adjustments and compile the costs associated with the extra work.

When extra work reports are agreed upon and signed by both parties, they shall become the basis of payment. When extra work is still under negotiation or has not been agreed upon, the Contractor shall keep daily detailed and accurate records itemizing each element of cost and shall provide certified payroll, invoices, and other substantiating records and documentation.

5.07 Change Orders – At any time during the progress of the work, and without in any way rendering void the Agreement, the City may order alterations, additions or deductions from the work by change order, without notice to sureties. When so ordered in writing, the Contractor shall proceed with work as directed by the change order.

The change order shall describe the change in the work, the adjustment of the contract sum (if any), and the adjustment of the contract time (if any). The Contractor shall not be entitled to any extension of time for the completion of the work by virtue of any change order unless the change order specifically provides for this. If, after receiving a change order, the Contractor feels that he is entitled to an extension of time, he may, within five (5) working days file a written claim to that effect for consideration by the Engineer.

The process of submitting a proposed change, a cost proposal, or negotiating an agreed upon change order, or any failure to reach an agreement as to an adjustment in the contract sum or the contract
time, shall not relieve the Contractor of his obligation to perform in accordance with the Contract Documents.

A change order may be in the form of a City directed change order or an agreed upon change order. Upon the receipt of either form of change order, the Contractor shall proceed promptly and diligently with the extra work.

(a) City Directed Change Orders - A City directed change order may be issued by the City without the Contractor’s signature where the City determines that it is in the City’s best interest to proceed with the work, and the change does not materially alter the character of the work. The Contractor shall be deemed to have accepted the terms of any City directed change order unless the Contractor asserts a claim with respect to the change order, no later than ten (10) working days following the Contractor’s receipt of the change order. See General Provisions, Section 5.08, “Disputed Work”.

(b) Agreed Upon Change Orders - Within five (5) working days after receiving a request from the City for a written proposal for an agreed upon Change Order, the Contractor shall provide the Engineer with a cost proposal in a form satisfactory to the Engineer, setting forth the Contractor’s proposed adjustments to the contract sum and contract time for performing the extra work.

Compensation for agreed upon change orders shall be calculated based upon the unit prices stated in the Bid Schedule and no additional markup for overhead or profit will be provided. If there are no unit prices for the extra work, the Contractor and the City may agree upon unit prices or lump sum costs, which shall be used to increase or decrease the contract sum. In the absence of any such agreement, the contract sum shall be adjusted by Force Account.

1. Unit Price Adjustments - Unit prices shall govern not only for alterations to work covered by written specifications and drawings, but also for other work incidental or necessary to completing the work for which written specifications and drawings may be later prepared. Whenever an item of work or materials is specified in the contract by unit price and is changed by less than twenty-five percent (25%) of the Engineer’s estimated quantity for that item of work as specified in the Bid Schedule, then the contract sum shall be increased or decreased by the application of the unit price so specified. Whenever an item of work exceeds twenty-five percent (25%) of the Engineer’s estimated quantity, the City reserves the right to renegotiate with the Contractor for the unit price associated with that bid item. This renegotiated price shall apply to only the amount in excess of twenty-five percent (25%). If the City decides not to renegotiate, or a renegotiated price cannot be reached by the Contractor and the City, then the payment for this item shall be adjusted by Force Account.

2. Agreed Upon Price Adjustments – If there are no unit prices for proposed extra work, the Contractor and the City may agree upon unit prices or lump sum costs, by written change order, prior to commencing work. In the absence of any such agreement, the contract sum shall be adjusted by Force Account.

3. Force Account Price Adjustments - When extra work is to be paid on a force account basis, the labor, materials and equipment used in the performance of that work shall be paid in accordance with the State Standard Specification, Section 9-1.03 (Force Account Payment). To the total of the direct costs computed, there will be an added markup of 33% to the cost of labor, 15% to the cost of materials and 15% to the cost of
equipment. These markups shall constitute full compensation for any and all overhead costs, profit, or other costs not specifically designated as a cost of labor, material or equipment. When subcontractors perform force account work, an additional 5% markup shall be added to the total cost of the extra work to reimburse the Contractor for additional administrative costs. No markup for any Subcontractor beyond the first tier shall be paid.

During the performance of extra work by Force Account, and as a condition to the Contractor’s right to an adjustment of the contract sum, the Contractor shall prepare daily reports itemizing all costs for labor, materials, and equipment rental. For labor costs, the reports shall include names, job classifications, hours worked and rates of pay. For equipment costs, the reports shall include size, type, identification number and hours of operation. All records and reports shall be submitted to the Engineer for approval on a daily basis. Reports shall be made on the State of California, Daily Extra Work Report Form or on a similar form approved by the Engineer.

a. Labor - Labor costs shall be based on the prevailing wage scale for each craft or type of workman, and no compensation shall be allowed for payment in excess of the prevailing wage. Employer payments for payroll taxes and insurance, health and welfare, pension, vacation, and other direct labor costs shall be included and will be calculated as the Labor Surcharge stipulated in the State of California, Labor Surcharge and Equipment Rental Rates book.

b. Materials - Materials cost shall be the cost of all materials purchased by the Contractor and used in the extra work and shall be the actual cost of such materials, including sales taxes, freight and delivery charges. The City reserves the right to approve materials to be furnished by the Contractor, sources of supply or, if necessary, to furnish the materials to the Contractor. No compensation will be paid to the Contractor for any material furnished by the City or for materials not used.

c. Equipment Rental - The Contractor will be allowed the actual rental rate of equipment, prorated over the time the machinery or equipment is required. For Contractor owned equipment, this rate shall be as stipulated in the State of California, Labor Surcharge and Equipment Rental Rates book. In addition, the Contractor will be allowed reasonable move-in and move-out charges, if applicable. All equipment shall, in the opinion of the Engineer, be in good working order, good condition, and suitable for its purpose. Equipment or tools having a replacement value of $200.00 or less, whether or not consumed by use, shall be considered small tools and no payment will be made therefore.

d. Other Services or Expenditures - The City may authorize and approve payment for work performed by special forces or necessary services and expenditures other than labor, materials, and equipment rental.

5.08 Disputed Work - When the Engineer and Contractor fail to agree as to whether an alteration ordered by the Engineer constitutes a material change or difference in the character of the work, or fail to agree upon the compensation to be allowed for such altered work, the Contractor shall proceed with the altered work and file with the Engineer, within ten (10) working days after receiving direction from the Engineer, a written protest detailing the particulars of the dispute and the amount of additional compensation or time required for the alteration. Failure of the Engineer to recognize a change in the
character of work when ordering alterations shall in no way be construed as relieving the Contractor of the Contractor’s duty and responsibility for filing a protest as prescribed above. The City will not consider additional compensation for altered work unless the Contractor files a written protest within ten (10) working days after receiving direction from the Engineer.

If the Contractor has complied with the notification requirements of this sub-section, consideration of payment due shall be made as later determined through claim resolution procedures as set forth in General Provisions, Section 10, “Measurement and Payment”.

Although not to be considered as approval for proceeding under extra work provisions, the Contractor shall keep and furnish records of disputed work in accordance with General Provisions, Section 5.06, “Extra Work”.
SECTION 6 - CONTROL OF MATERIALS

6.01 Materials and Workmanship - All materials, parts and equipment furnished by the Contractor in the work shall be new, high grade, and free from defects. Workmanship shall be in accordance with generally accepted standards. Materials and workmanship shall be subject to the Engineer’s approval.

Materials and workmanship not conforming to the requirements of these specifications shall be considered defective and will be subject to rejection. Defective work or material, whether in place or not, shall be removed immediately from the site by the Contractor, at his expense, when so directed by the Engineer.

If the Contractor fails to replace any defective or damaged work or material after notice from the Engineer, the Engineer may cause such work or materials to be replaced. The replacement expense shall be deducted from the amount to be paid to the Contractor.

Used or secondhand materials, parts and equipment is permissible only if permitted by the Special Provisions.

Specialized material or equipment to be used in the work that is not readily available from material suppliers (such as electroliers, luminaries, signal poles, heads, cable, controllers, pumps, etc.) shall be ordered within five (5) days after award of the contract. Time extensions will not be granted for project delays due to the unavailability of such specialized material and equipment unless the Contractor furnishes the Engineer with documentation of purchase order dates, acceptable reason for delay of delivery, or proof of diligent efforts to obtain said items from alternate sources.

The Contractor shall provide the Engineer with periodic reports to inform the Engineer of any changes in the projected material or equipment delivery dates.

6.02 Protection of Work and Materials - The Contractor shall provide and maintain storage facilities and employ such measures as will preserve the specified quality and fitness of materials to be used in the work. Stored materials shall be reasonably accessible for inspection. The Contractor shall also adequately protect new and existing work and equipment for the duration of his contract.

The Contractor shall not, without the City’s consent, assign, sell, mortgage, hypothecate, or remove equipment or materials which have been installed or delivered and which may be necessary for the completion of the contract.

6.03 Inspection of Materials by City - Unless otherwise specified, inspection may be required at the source for such typical materials and fabricated items as bituminous paving mixtures, structural concrete, metal fabrication, metal casting, welding, concrete pipe manufacture, protective coating application, and similar shop or plant operations.

Standard items of equipment such as electric motors, conveyers, elevators, plumbing fixtures, etc., are subject to inspection at the job site. Special items of equipment such as designed electrical panel boards, large pumps, sewage plant equipment, etc., are subject to inspection at the source, normally only for performance testing. The Special Provisions may specify additional inspection requirements.

6.04 Inspection of Materials by Others - When the City does not elect to make its own inspection at the source, the City may, at its expense, engage an inspector or accredited testing laboratory
to inspect the materials, equipment or process. The inspector or representative of the testing laboratory shall judge the materials by the requirements of the plans and specifications. No materials or equipment shall be shipped nor any processing, fabrication or treatment of such materials shall be done without a favorable inspection by the engaged agent. These materials shall be subject to re-inspection at the job-site.

6.05 Tests of Materials - Before incorporation into the work, the Contractor shall submit samples of materials, as the Engineer may require, at no cost to the City. The Contractor, at his own expense, shall deliver the materials for testing to the place, and at the time designated, by the Engineer. Unless otherwise provided by the Special Provisions, all testing shall be performed under the direction of the Engineer, and at no expense to the Contractor.

The Contractor shall notify the City in writing at least 15 days in advance of his intention to use materials for which tests are specified, to allow sufficient time for the City to perform the tests. The notice shall name the proposed supplier and source of material.

6.06 Certification – The Engineer may waive material testing requirements of the Specifications and accept the manufacturer’s written Certificate of Compliance or test data demonstrating that the materials to be supplied meet the requirements of the specifications. A Certificate of Compliance is acceptable for authorizing the use of steel pipe in sizes less than 18 inches and vitrified clay, cast iron or ductile iron pipe in all sizes. All materials used on the basis of a Certificate of Compliance may be sampled or tested by the City at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of the responsibility for incorporating materials in the work which conforms to the requirements of the Contract Documents.

6.07 Or Equal Manufacturers - Bidders shall base their bids for furnishing products (Prefabricated Buildings, Equipment, Pipes, Valves, Fixtures, Etc.) as specified in the technical specification. It is recognized that few manufactured products are identical in all respects; therefore, the City of Tracy will be the sole judge as to whether a proposed equal product is considered by the City of Tracy as being equal because it either meets or exceeds the requirements set forth in these specifications. The responsibility to qualify a product as being an equal lies with the bidder to provide the City with all the necessary data, and line by line comparison of compliance with the technical specifications, certifications, testing and compliance requirements from various state, federal testing laboratories and agencies as required by the City of Tracy. Any bidder that proposes “or equal product” must submit the complete comparison documentation with that bidder’s bid package or the City of Tracy will reject that bidder’s entire bid.

NOTE: Failure to submit, concurrent with the bid package, complete “or equal product” detailed comparison documentation as described above will result in the entire bid being considered non-responsive. Also, please note, if after reviewing the lowest responsive and responsible bidder’s “or equal product” detailed comparison documentation, the City of Tracy denies the selected bidder’s “or equal product” proposal, the selected bidder shall be required to furnish a product manufactured as specified in the technical specifications.

6.08 Weighing and Metering Equipment – All scales and metering equipment used for proportioning materials shall be inspected for accuracy and certified within the past 12 months by the State of California Bureau of Weights and Measures, by the County Director or Sealer of Weights and Measures, or by a scale mechanic registered with or licensed by the County,

The accuracy of the work by a scale service agency, except as stated herein, shall meet the standards of the California Business and Professions Code and the California Code of Regulations
pertaining to weighing devices. A certificate of compliance shall be presented to the Engineer for approval prior to operation, and shall be renewed whenever required by the Engineer at no cost to the City.

All scales shall be arranged so they may be read easily from the operator’s platform or area. They shall indicate the true net weight without the application of any factor. The figures of the scales shall be clearly legible. Scales shall be accurate to within 1 percent when tested with the plant shut down. Weighing equipment shall be so insulated against vibration or moving of other operating equipment in the plant area such that the error in weighing with the entire plant running will not exceed 2 percent for any setting nor 1.5 percent for any batch.

6.09 Calibration of Testing Equipment – Testing equipment, such as but not limited to, pressure gages, metering devices, hydraulic systems, force (load) measuring instruments, and strain-measuring devices shall be calibrated by a testing agency acceptable to the Engineer at intervals not to exceed 12 months, and following repairs, modification, or relocation of the equipment. Calibration certificates shall be provided when requested by the Engineer.
SECTION 7 - UTILITIES

7.01 City’s Statutory Obligation - Pursuant to Government Code, Section 4215, the City shall assume responsibility for the cost of timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Project site if such utilities are not identified by the City in the Contract Documents. The Contractor shall be compensated for the costs of locating, repairing, removing or relocating such utility facilities, and for the cost of idled equipment on the project during such work, providing that the Contractor exercised reasonable care and that damage was not caused due to the Contractor’s negligence. The Contractor shall not be assessed liquidated damages for delay in the completion of the Project, when such delay was caused by the failure of the City or the owner of the utility to provide for removal or relocation of such utility facilities.

7.02 Contractor’s Obligation to Identify and Protect Subsurface Infrastructure - The Contractor shall locate and protect service laterals, conduits, and appurtenances of any underground facility, the presence of which could be reasonably inferred from the Contract Documents or from the presence of visible facilities such as buildings, meters, and junction boxes, prior to doing any work that may damage any such facilities, or interfere with their service. Where underground main distribution conduits, such as water, gas, sewer, electric power, telephone, or cable television are shown on the plans, the Contractor shall assume that every parcel will be served by a service connection for each type of utility. The Contractor shall comply with all requirements for the protection of underground infrastructure as set forth in Government Code, Sections 4215 through 4216.9.

It shall be the Contractor’s responsibility to complete all work in a manner that satisfies utility company standards, providing if requested, detailed plans prepared by a California Registered Civil Engineer showing necessary temporary support of utilities during coordinated construction work. The Contractor is directed to contact these agencies before submitting bids and to be familiar with their requirements.

The Contractor agrees to assume liability and to hold the City of Tracy, its officers, and employees harmless from any damages resulting from the existence of underground utilities and structures not reported to the Engineer, not indicated on the public records examined, or located at variance with that reported or shown on records examined.

7.03 Location - The City will search known records and indicate on the plans those utilities, except service connections, which may affect the work. All available information regarding removal, relocation, or disconnection of utilities, or installation of new utilities, will be furnished to prospective bidders before the receipt of bids. The Contractor shall immediately report to the Engineer those utilities omitted from the plans or found substantially at variance with the location shown.

Existing and proposed utilities and improvements are shown in their approximate locations. Locations may not have been field verified and no guarantee is made as to the accuracy and completeness of the information shown. The fact that any facility is not shown on the plans shall not relieve the Contractor of his responsibility under this Section. As necessary or as directed by the Engineer, the Contractor shall field adjust proposed improvements to avoid conflicts with existing improvements. It shall be the Contractor’s responsibility to determine the existence and location of utilities shown on the plans, indicated by field locating services, or evidenced by facilities visible in the field. No additional compensation will be allowed for delays incurred as a result of the Contractor’s failure to field verify and/or pothole existing utilities prior to beginning construction. Potholing shall be considered as part of the various contract bid items and no additional compensation will be allowed.
At least two (2) working days prior to commencing work, the Contractor shall request utility owners to mark or otherwise indicate the location of their substructures. Contractor shall contact Underground Service Alert (USA) at (800) 642-2444 and the Engineer at least 48 hours prior to excavation. The location of utilities as shown on the plans are approximate and are not to be construed as certainty. It shall be the Contractor’s responsibility to determine the true location and depth of all utilities and service connections affecting or conflicting with the work, prior to the performance of the work. As necessary, the Contractor shall pothole these utilities prior to working in the area to avoid damage to them. Potholing shall be considered as part of the contract bid items, and no separate payment will be made. Contractor shall familiarize himself with the type, material, age and condition of any utility which may be affected by the work.

7.04 Protection - The Contractor shall not interrupt the service function or disturb the supporting base of any utility, without authority from the utility owner or order from the City.

Where protection is required to insure support of existing underground, overhead and at-grade utilities (including their associated structures and service connections) as shown on the plans, the Contractor shall furnish and place the necessary protection at his expense. In case of damage, the Contractor, without additional compensation, shall restore utilities to as good of a condition as they were found.

Upon learning of the existence and location of any utility omitted from or shown incorrectly on the plans, the Contractor shall notify the owner and be fully responsible for protecting such utility. When authorized by the Engineer, additional protection may be paid by change order, for utilities other than a service connection.

The Contractor shall immediately notify the Engineer and the utility owner if he disturbs, disconnects or damages any utility. If the utility is located substantially as indicated on the plans, the Contractor shall bear the costs of repair or replacement.

When placing concrete around or contiguous to any utility, the Contractor shall at his expense, furnish and install a cushion of expansion joint material, clear opening, sleeve, or other suitable material approved by the Engineer so as to prevent embedment or bonding of the utility with the concrete.

7.05 Shut Down Notification - Contractor shall coordinate all shut downs with the City’s Public Works Maintenance Department, and follow all of their requirements for exercising and shutting off water valves on main lines. The Contractor shall have all materials required for the work at the job site prior to requesting a shut off.

Shut down of water or sewer services shall be done only after the Contractor has coordinated the shut down with the Engineer and the property owners. When a water main, sewer main, or service lateral is to be shut down, the Contractor shall coordinate with and notify the Engineer in writing, at least seventy-two (72) hours in advance of the shut down. Except for scheduled shutdowns and in cases of emergency, the Contractor shall notify all customers and effected parties of a shut down at least forty-eight (48) hours in advance by writing and four (4) hours in advance by person to allow adequate draw time. Once shut down, the Contractor shall proceed with the work in an expedient manner until the water lines or sewer lines are back in service.

7.06 Removal - Unless otherwise specified, the Contractor shall remove all portions of interfering utilities shown on the plans as ‘abandoned’ or “to be abandoned in place”. Before starting removal operations, the Contractor shall ascertain from the utility owner whether abandonment is
complete. The costs involved in the removal and disposal of utilities to be abandoned shall be considered as part of the contract bid items, and no separate payment will be made.

7.07 **Relocation** - When feasible, the owners of utilities within the area affected by the work will complete their necessary installations, relocations, repairs, or replacements before commencement of work by the Contractor. When the Contract Documents or plans indicate that a utility is to be relocated, altered or constructed by others, the City will conduct all negotiations with the owners and the work will be done at no cost to the Contractor.

Utilities interfering with the permanent project work, discovered after the award of the contract, shall either be relocated, altered, or reconstructed by the utility owners, or the Engineer may order changes in the work to avoid interference. Such changes will be paid for in accordance with General Provisions, Section 5, “Changes in Work”.

When the plans or specifications provide for the Contractor to alter, relocate, or reconstruct a utility, all costs for such work shall be absorbed in the contract bid items. Temporary or permanent relocation or alteration of utilities by the Contractor for his own convenience shall be his responsibility, and he shall make all arrangements, obtain all approvals, and bear all costs. The Contractor may, for his own convenience or to expedite the work, agree with the owner of any utility to disconnect and reconnect interfering service connections. The City shall not be involved in any such agreement.

7.08 **Delays** - The Contractor is responsible for notifying utility owners in time to prevent delays attributable to utility relocations or alterations as called for in the Contract Documents. The Contractor shall not be entitled to damages or additional payment if such delay does occur. The Engineer will determine the extent of the delay on the project as a whole, and any commensurate extension of time.

7.09 **Cooperation** - When necessary, the Contractor shall conduct his operations so as to permit access to the worksite and provide time for utility work to be accomplished during the progress of the contract work.
SECTION 8 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

8.01 Notice to Proceed - Within twenty-one (21) calendar days following receipt of the signed agreement, bonds and insurance, the City shall issue the Contractor a Notice to Proceed provided that the documents are acceptable to the City. Unless stated otherwise, the contract time shall commence upon the receipt date on the Notice to Proceed.

8.02 Commencement of Work - Work shall commence within fifteen (15) calendar days following the receipt date on the Notice to Proceed, and shall be diligently prosecuted to completion within the time provided in the Notice to Bidders.

8.03 Subcontracting - Unless otherwise indicated by the Special Provisions, there is no minimum requirement as to the amount of work that must be performed by the prime Contractor’s own forces.

8.04 Construction Schedule – Within ten (10) calendar days of the Notice to Proceed, the Contractor shall submit to the Engineer an acceptable Critical Path Method (CPM) progress schedule showing the critical path for completing the various items of work within the number of contract days specified. The schedule shall show the order in which the Contractor proposes to carry out the major items of work and the dates on which he will start and finish the various items (including procurement of materials and equipment). If requested, the schedule shall reflect person/crew hours and equipment loading for various construction activities in order for the City to better evaluate the proposed schedule.

(a) City Review of Schedule – The City may review and note exceptions to the Contractor’s schedule, if it is not sufficiently detailed to clearly show the work to be completed during each month to assure the completion of the work within the project duration. The Contractor will be solely and exclusively responsible for resolving any exceptions, and the City’s review will not create any scheduling obligations of the City. Any noted corrections to the schedule shall be addressed within five (5) working days.

(b) Update of Schedule – After submission of a schedule to which the City has taken no exceptions, the Contractor shall submit an updated schedule on a monthly basis or as otherwise specified by the City until completion of the work. The updated schedule must show the “As Constructed” progress up to the date for which the schedule has been prepared and reflect any proposed changes in the method of operations, to achieve the project milestones within the required project duration.

(c) Float – The schedule must show early and late completion dates for each task. The number of days between these dates will be designated as “float”. The float will be assigned to the project and will be available to both the City and the Contractor as needed to complete the work in accordance with the agreement.

(d) Failure to Submit Schedule – If the Contractor fails to submit a schedule within the time periods specified in this sub-section, or submits a schedule to which the City has taken uncorrected exceptions, the City may withhold payments to the Contractor until such schedule is submitted and/or corrected in accordance with the Contract Documents.

8.05 Construction Sequence - The Contractor shall prepare and submit at the pre-construction meeting a staging or phasing plan identifying the sequence of construction work and traffic control needed to complete the project. The staging plan shall be subject to review and approval by the Engineer,
prior to the start of construction. The goal of the phasing plan will be to minimize impacts to surrounding businesses and residents in the project areas. When required by the Special Provisions or plans, the Contractor shall follow the sequence of operations as set forth therein.

8.06 Recording Existing Conditions - Existing conditions throughout the project site shall be photographed and videotaped by the Contractor before starting construction. Recording shall include and show every detail of existing improvements, including the current condition of the curb, gutter, sidewalk, signs, landscaping, streetlights, structures near the project including face of buildings, canopies, shades, fences and any other features within the limits of work. Photos and videotape shall be delivered to the Engineer at the pre-construction meeting.

8.07 Preconstruction Conference - The City shall designate a date and time for the pre-construction conference once the contract has been fully executed. At the pre-construction conference, the City shall discuss various administrative procedures and project coordination issues. At a minimum, the Contractor should be prepared to furnish and discuss the following:

(a) Letter designating the Superintendent.

(b) A list of key personnel and emergency contact information including telephone numbers to be used in case of emergency

(c) Sequence or phasing plans identifying the phasing of construction work and any alternative sequences for consideration.

(d) Traffic control plans associated with the staging plans (to be signed and stamped by a Licensed Traffic Engineer).

(e) A draft of the master construction schedule, in Critical Path Method (CPM) format (to be finalized no later than 10 days after the Notice to Proceed).

(f) A breakdown of lump sum bid items to be used as a basis for determining the value of work completed on future progress payments.

(g) A submittal schedule listing submittals that will need to be reviewed and a listing of proposed material suppliers.

(h) Utility company coordination and/or permit issues.

(i) Videotape and photography of the project’s existing condition (to be completed prior to starting construction).

(j) Anticipated cash flow projections, if requested by the engineer.

8.08 Progress Meeting - The Contractor, and Subcontractors if requested by the City, shall attend weekly progress meetings to be scheduled by the Engineer at a time agreeable to both the Engineer and the Contractor.

8.09 Hours of Construction - Construction activities shall be limited to the hours of 7:30 a.m. to 4:30 p.m., unless otherwise noted or further restricted in the Contract Documents, or as directed by the Engineer. No work shall be done on weekends, holidays or outside these specified hours, unless otherwise approved by the Engineer. The Contractor shall take into consideration and coordinate time
constraints for special events or activities organized by the City or other agencies. No mechanical equipment, including hauling or deliveries by trucks, shall start before 7:30 a.m. and all equipment must shut down before 4:30 p.m. unless approved by the Engineer.

8.10 Prosecution of Work - To minimize public inconvenience and possible hazards and to restore the streets and other work areas to their original condition and former state of usefulness as soon as practicable, the Contractor shall diligently prosecute the work to completion. If, in the Engineer’s opinion the Contractor fails to prosecute the work to the extent that the above purposes are not being accomplished, the Contractor shall, upon orders from the Engineer, immediately take the steps necessary to fully accomplish said purposes. All costs for prosecuting the work as described herein shall be absorbed in the Contractor’s bid. Should the Contractor fail to take the necessary steps to fully accomplish said purposes, after orders of the Engineer to do so, the Engineer may suspend the work in whole or in part, until the Contractor takes said steps. With or without such suspension, the Engineer may cause such steps to be taken by force account or by other means at the Contractors expense.

8.11 Suspension of Work - Work may be stopped or suspended in whole or in part for up to ninety (90) days when, in the Engineer’s opinion, the suspension is necessary and in the interest of the City. The Contractor shall immediately comply with any written order of the Engineer suspending work. Such City directed suspension shall be without liability to the Contractor on the part of the City. Suspended work shall be resumed upon written order of the Engineer. An extension of contract time equal to the period of suspension shall be issued to the Contractor by change order. Any claim by the Contractor for an adjustment of the contract sum or the contract time shall be made within ten (10) working days after the end of the work suspension.

If work is suspended through no fault of the City, all expenses and losses incurred by the Contractor during such suspensions shall be borne by the Contractor. If the Contractor fails to properly provide for public safety, traffic, and protection of the work during periods of suspension, the City may elect to do so, and shall deduct the cost thereof from monies due the Contractor. Such action will not relieve the Contractor from any liability.

8.12 Default by the Contractor and Termination of Control - As a result of any of the following events, the Contractor shall be deemed to be in default:

(a) If the Contractor is in bankruptcy or makes a general assignment for the benefit of creditors, or
(b) If the Contractor fails to make prompt payment to subcontractors for labor or materials, or
(c) If a receiver is appointed on account of the Contractor’s insolvency, or
(d) If the Contractor fails to provide enough properly skilled workmen or enough materials to insure compliance with the construction time schedule, or
(e) If the Contractor fails to perform any portion of the work within the timing requirements of the Contract Documents, or abandons the project site, or
(f) If the Contractor disregards instructions from the Engineer or violates any provision of the contract, or
(g) If the Contractor fails to replace or repair any damage caused by the Contractor or its agents, representatives, contractors, subcontractors, or employees in connection with the performance of the work, or
(h) If the Contractor violates any legal requirement related to the work.

In case of default, the City may give written notice to the Contractor and the Contractor’s bonding agent that if the default is not remedied within ten (10) calendar days or the Contractor does not
provide adequate written assurance to the satisfaction of the Engineer that the cure will be forthcoming, the Contractor’s control over the work may be terminated as of the date specified in the written notice.

Upon such termination of control the City may enter upon and take possession of the entire work and may also take possession, for the purpose of completing the work, of all of the Contractor’s tools, equipment and appliances upon the work, and all materials on the site or stored off-site for incorporation into the work. The City may, at its sole option and without further notice to anyone, complete the work by day labor, by contract entered into by negotiations, by competitive bidding, by calling upon the performance of the performance bond surety, or by other means as the City, in its discretion, shall elect.

After termination of the Contractor’s control over the work as herein provided, the Contractor shall not be entitled to any further payments under the contract until the entire work thereunder has been fully completed and finally accepted by the City. After such completion and acceptance, if the “unpaid balance of the contract price” (as defined in the next paragraph) exceeds the sum of the amounts expended by the City in taking over and completing the work, including all managerial and administrative expense incurred by the City on account thereof and the amount of all damages incurred by the City by reason of the Contractor’s default, such excess shall be paid to the Contractor. If the said amount expended exceeds the unpaid balance, the Contractor and his surety shall be liable to the City for the difference. At the Contractor’s request, the expense incurred by the City in taking over and completing the work, and the amount of any damage incurred by the City by reason of the Contractor’s default shall be audited and certified by an independent third party, whose certificate thereof shall be binding and conclusive upon the parties.

For the purposes of the computations required by the paragraph above, the “unpaid balance of the contract price” shall be the original contract price as adjusted by any change orders issued prior to termination of the Contractor’s control, less all payments made on account thereof prior to such termination, and less any and all amounts withheld or paid pursuant to stop notices filed with the City upon claims of subcontractors or others from equipment, labor or materials furnished to the work on behalf of the Contractor.

Upon completion and acceptance of the work, the Contractor shall be entitled to the return of all materials not used in the work, but without claim against the City for loss or damage with respect thereto, and shall be entitled to the return of all his equipment, tools and appliances taken possession of by the City, but without claim against the City for any charge for the use thereof or for usual and ordinary depreciation and wear and tear.

The exercise of remedies provided for in this sub-section, for default by the Contractor, shall be in addition to, and shall not be deemed a waiver by the City of any other rights or remedies due the City under the contract provisions, for default by the Contractor.

8.13 Contractor’s Right to Stop Work or Terminate Contract – As a result of any of the following defaults, the Contractor may give written notice to the Engineer of intention to stop work or terminate the Agreement, or both.

(a) If the work should be stopped by order of any court or other public authority, through no act, omission or fault of the Contractor or any Subcontractor, agent or employee of the Contractor, and such work stoppage under such order shall continue for thirty (30) consecutive days from the effective date of such order, or
(b) If the Engineer should fail or refuse, except on account of any act or omission of the Contractor, to issue any certificate for payment, less deductions or withholdings, within thirty days after it is due.

If, after the Contractor provides notice to the City of any of the above defaults, the City does not remedy the default within ten (10) calendar days, the Contractor may stop work and may give the City written notice of contract termination. The Contractor may then recover from the City payment for all work executed to date and any loss sustained upon any equipment or materials procured for the work prior to the work stoppage. No compensation for loss of anticipated profits will be provided, however, on work not completed. The Contractor’s right to recovery shall be subject, however, to the duty of the Contractor to mitigate all loss or damage so far as reasonably possible.

8.14 City’s Right to Terminate Contract – The City may, at its option, terminate the Agreement, in whole or from time to time in part, at any time by giving notice to the Contractor. Upon such termination, the Contractor agrees to waive any claims for damages, including loss of anticipated profits, on account thereof; and, as the sole right and remedy of the Contractor, the City shall pay the Contractor in accordance with this sub-section. Upon termination, the obligations of the Contractor for portions of the work already performed shall continue.

(a) Upon receipt of a Notice of Termination, the Contractor shall, unless the notice directs otherwise, do the following:

1. Immediately discontinue the work to the extent specified in the notice.

2. Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary to complete such portion of the work that are not to be discontinued.

3. Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent that they relate to the performance of the discontinued portion of the work.

4. Thereafter do only such work as may be necessary to preserve and protect the work already in progress and to protect materials, plants, and equipment on the project site or in transit thereto.

(b) Upon such termination, the City shall pay to the Contractor as a sole and exclusive remedy for the termination, the sum of the following, and the Contractor will be entitled to no other compensation or damages, and expressly waives same:

1. The amount of the contract amount allocated to the portion of the work properly performed by the Contractor as of the date of termination, less sums previously paid to the Contractor, plus

2. Previously unpaid costs of any items delivered to the project site which were fabricated for subsequent incorporation in the work, plus

3. Any proven losses with respect to materials and equipment directly resulting from such termination, plus
4. Reasonable demobilization costs in excess of what would have been incurred if work were not terminated, plus

5. Reasonable costs for preparing a statement of the aforesaid costs, expenses, and losses in connection with such termination.

The City may terminate the Agreement at its own discretion or when conditions encountered during the work make it impossible or impracticable to proceed, or when the City is prevented from proceeding with the Agreement by act of God, by law, or by official action of a public authority.

8.15 Time of Completion and Days Charged - The Contractor shall diligently prosecute and fully complete the work within the number of calendar or working days set forth in the Notice to Bidders or shall be subject to liquidated damages. Time is of the essence in the performance of all obligations under the Contract Documents, and all timing requirements shall be strictly adhered to unless otherwise modified by the City. See General Provisions, Sections 8.10, “Prosecution of Work”, and 8.16, “Liquidated Damages”.

Under a calendar day contract, City observed holidays and inclement weather delays are to be anticipated and unless there is a deviation from what is customary for the time of year the project is under construction, no additional days will be granted. Every day, including holidays, Saturdays and Sundays shall be counted as a day charged under a calendar day contract.

Under a working day contract, the Contractor will be given credit for City observed holidays and inclement weather delays, in accordance with the State Standard Specifications. Should the Contractor prepare to begin work at the regular starting time in the morning of any day on which inclement weather, or the conditions resulting from the weather prevents the work from beginning at the usual starting time and the crew is dismissed as a result thereof and the Contractor does not proceed with at least 75 percent of the normal labor and equipment force engaged in the current controlling operations for at least 60 percent of the total daily time being currently spent on the controlling operations, the Contractor will not be charged for a working day whether or not conditions should change thereafter.

8.16 Liquidated Damages - The City and the Contractor, by execution of the agreement, each agree that time is of the essence in the performance of the work, and that actual damages for inconvenience and loss from any delay in completion of the contract beyond the date provided in the Notice to Bidders is extremely difficult or impossible to determine.

The City and the Contractor further agree, as specified in the Notice to Bidders, that liquidated damages shall be assessed for each and every calendar day required to complete the contract in excess of the contract time established for the project, and that the amount stated therein is a reasonable estimate of the amount of such damages. The Engineer may deduct any liquidated damaged owed to the City, as determined by the Engineer from any payments otherwise payable to the Contractor under this agreement.

Separate from the above-mentioned liquidated damages, the Contractor shall be responsible for paying all damages incurred by private businesses (residential, commercial or industrial), schools and hospitals due to non-completion of the project by the date specified.

Nothing contained herein shall limit the City’s rights or remedies against Contractor for any default other than failure to complete the work within the contract time. This provision for liquidated damages shall not be applicable nor act as a limitation upon the City if the Contractor abandons the work. In such event, the Contractor shall be liable to the City for all losses incurred.
The date of the Engineer’s Certificate of Substantial Completion shall be the termination date, if applicable, of liquidated damages.

8.17 Delays and Extensions of Time

(a) **Excusable Delays** - shall mean delays in the prosecution or completion of the work which result from causes beyond the control of the Contractor and City and which could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor, suppliers, or any tier of the Contractor’s subcontractors. Excusable Delays fall into the following categories:

1. **Abnormal Delays** – Excusable Delays caused by acts of god, fire, unusual storms, floods, tidal waves, earthquakes, strikes, labor disputes, freight embargoes, and shortages of materials insofar as they prevent the Contractor from proceeding with at least seventy-five (75) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical path activity.

2. **Weather Delays** – Excusable Delays due to inclement weather conditions or the conditions resulting from weather prevent the Contractor from proceeding with seventy-five (75) percent of the normal labor and equipment force engaged in the current critical activity item for a period of at least five (5) hours per day toward completion of the current critical path activity.

3. **Material Shortage Delays** – Excusable Delays due to shortages of material, provided that the Contractor submits satisfactory proof to the Engineer. For the proof to be satisfactory, the Contractor must demonstrate that he has made every effort to obtain the materials from all known sources within reasonable reach of the proposed work. Only the physical shortage of material, caused by unusual circumstances, will be considered under these provisions as an excusable delay, and no consideration will be given to any claim that material could not be obtained at a reasonable, practical, or economical price, unless it is shown to the satisfaction of the Engineer that such material was only available at exorbitant prices. A material shortage delay will not be considered for material ordered or delivered late or for material whose availability is affected by virtue of mishandled procurement. The above provisions shall apply equally to equipment to be installed in the work.

(b) **Compensable Delays** - shall include delays that occur in the prosecution or completion of the work, through no fault of the Contractor which prevent the Contractor from proceeding with at least seventy-five (75) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule due to the following causes:

1. Delays due solely to the actions and/or inactions of the City.

2. Delays due to changed conditions as defined in General Provisions, Section 5.05, “Inconsistencies, Changed Conditions and Requests for Information”.

3. Delays due to other Contractors employed by the City who interfere with the Contractor's prosecution of the work as defined above.
(c) **Inexcusable Delay** - means any delay in the completion of the work beyond the expiration of the contract time resulting from causes other than Excusable Delays or Compensable Delays. An Inexcusable Delay shall not entitle the Contractor to an extension of the contract time or an adjustment of the contract sum. In addition to liquidated damages for inexcusable delays, the Contractor agrees to pay the City’s actual costs, including charges for engineering, inspection and administration incurred during the delay.

(d) **Concurrent Delays** - those periods of delay when the prosecution of the work is delayed during the same period of time due to causes from a combination of the delays defined as Excusable, Compensable or Inexcusable.

If the Contractor desires an extension of time, he shall file a written request based upon the delays reported. The Engineer will ascertain the facts, the extent of the delays, and the effect upon the entire project, and the City will grant an extension of time equivalent to verified time lost. The request for an extension of time must be made no later than ten (10) working days after the start of the condition that purportedly caused the delay, and no later than fifteen (15) working days after the date on which performance on the condition purportedly causing the delay has ended.

Contractor may make a delay claim for an extension of the contract time for an Excusable Delay or a Compensable Delay. If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the contract time shall be the number of calendar days from the commencement of the first delay to the cessation of the delay which ends last. If an Inexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the contract time shall be the number of calendar days, if any, by which the Excusable Delay or the Compensable Delay exceeds the Inexcusable Delay.

For a Compensable Delay, the Contractor may make a delay claim for an adjustment in the contract sum in an amount equal to the sum of the actual and unavoidable additional costs of labor, material, and equipment furnished at the site by the Contractor or subcontractors, including wages, salaries, fringe benefits and payroll taxes.

Extensions of time, when granted, will be based upon the effect of delays to the project as a whole and will not be granted for non-controlling delays to minor portions of the work unless it can be shown that such delays did, in fact, delay the progress of the project as a whole. For purposes of determining delays, all float associated with the project schedule shall belong to the project. See General Provisions, Section 8.04, “Construction Schedule”.

If delays are caused by unforeseen events beyond the control of either the Contractor or the City, such delays will entitle the Contractor to an extension of time as provided herein, but the Contractor shall not be entitled to damages or additional payment due to these delays. War, governmental regulations, labor disputes, strikes, fires, floods, adverse weather necessitating cessation of work, other similar action of the elements, inability to obtain materials, equipment, or labor because of Federal Government restrictions arising out of National Defense, required extra work, action or inaction by the City, or other specific reasons as may be further described in the specifications may constitute such a delay. If delays beyond the Contractor’s control are caused by reasons other than those mentioned above, but are substantially equal in gravity to those enumerated, an extension of time may be granted, if deemed by the Engineer to be in the best interests of the City.

The Contractor shall be entitled to an extension of time if delayed due to a failure of the City to furnish necessary right-of-way or materials which the City agreed to furnish, or by the City’s failure to supply necessary plans or instructions concerning the work, after written request by the Contractor.
For Compensable Delay periods resulting in indirect overhead expenses, the Contractor shall be reimbursed as provided for in General Provisions, Section 5, “Changes in Work”.

8.18 Substantial Completion – When work in accordance with the Contract Documents has progressed to a stage of one-hundred percent (100%) complete, as determined by the Engineer, except for the completion of minor punch list items of deficiencies or omissions in the work which require correction in order to satisfy the agreement, yet do not impair the City’s ability to occupy and fully utilize the work for its intended purpose, the project shall be deemed “Substantially Complete”. Portions of the work may also be designated by the City as substantially complete if the Contract Documents require separate delivery.

When the Contractor gives notice to the Engineer that the work is substantially complete, unless the Engineer determines that the work or designated portion thereof is not sufficiently complete to warrant an inspection, the Engineer will inspect the work to determine if it is substantially complete and will prepare a comprehensive punch list of items to be completed or corrected before final acceptance. The Contractor shall proceed promptly to correct items on the punch list. Failure to include an item on the punch list does not alter the responsibility of Contractor to complete all the work in accordance with the Contract Documents. If subsequent inspections by the Engineer disclose additional items needing correction, whether or not included on the initial punch list or not, those items must also be completed. See General Provisions, Section 8.20, “Final Acceptance”.

When the Engineer determines that the work or such designated portions of the work are substantially complete, the Engineer will prepare and sign a Certificate of Substantial Completion. The date of substantial completion shall establish the date of occupancy by the City and the transfer of responsibility from the Contractor to the City for such items as security, maintenance, heat, utilities, insurance, and damage to the work from causes other than that of the Contractor. Unless otherwise indicated in the Certificate of Substantial Completion, the Contractor’s guarantee for the work shall commence upon the date of substantial completion. See General Provisions, Section 11.01, “Contractor’s Guarantee”.

8.19 Final Completion - After the Contractor has received the Certificate of Substantial Completion along with the punch list, and the Contractor has completed the work on the punch list, the Contractor may make a written request for final inspection, upon submitting the following documentation:

(a) Copy of the previous list of items to be completed or corrected, indicating that each has been completed or otherwise resolved for acceptance.

(b) Concurrence with the Engineer on the totals of all quantities, costs, contract change orders and the final contract sum.

(c) Written guarantee and warranty bond for 10% of the final contract sum, effective as of the date of substantial completion.

(d) Description and cost of any unsettled claims.

(e) Any other data required by the Contract Documents.
Final Completion shall occur when the Engineer determines that the work is fully completed and in accordance with the Contract Documents. After final completion has occurred, the City will recommend final acceptance to the City Council.

8.20 **Final Acceptance** – Final acceptance by the City Council will be made promptly after the work has been fully completed, final inspection made, and the final Certificate of Substantial Completion issued by the Engineer. In judging the work, no allowances for deviations from the Specifications will be made, unless already approved in writing at the times and in the manner provided for in the Contract Documents.

Should it become necessary, due to developed conditions, for the City to occupy any portion of the work, or any part of any structure or equipment, before the contract is completed or accepted, such occupancy shall not constitute an acceptance of any part of the work, unless so stated in writing by the City.

8.21 **Risk of Loss** - The Contractor shall be responsible for the charge and care of the project and shall bear all risks of injury or damage to the work, materials or equipment delivered to the site, by any means including fire, earthquake, wind, storm or other action of the elements, vandalism, or loss by theft, from the date of commencement of construction to the date of formal acceptance by the City Council. The Contractor shall rebuild, repair, restore and make good all injuries or damage to any portion of the work, and shall bear the entire expense thereof, except such injuries or damages that are caused by riot, insurrection, acts of the Federal or State Government, or a public enemy in time of war.

8.22 **Use of Improvements During Construction** - The City reserves the right to take over and utilize all or part of any completed facility or appurtenance. Such action by the City will not relieve the Contractor of responsibility for injury or damage to said completed portions of the improvement resulting from use by public traffic, from the action of the elements or from any other cause attributable to the Contractor’s operations or negligence. The Contractor will be required to restore such portions of the improvement before final acceptance. Nothing in this Section shall be construed as relieving the Contractor from full responsibility for correcting defective work or materials.
SECTION 9 — RESPONSIBILITIES OF THE CONTRACTOR

9.01 Contractor’s Responsibility for the Work - The Contractor shall supervise, coordinate, and direct the work using Contractor’s best skill and attention. Contractor shall have control over and be solely responsible for construction means, methods, techniques, sequences, procedures, and the coordination of all portions of the work in accordance with the terms of the Contract Documents.

The Contractor shall be responsible for assuring that all portions of the work, including those portions already performed under the Contract, conform to the requirements of the Contract Document and are ready to receive subsequent work.

The Contractor shall furnish and maintain in good condition all equipment and facilities as required for the proper execution and inspection of the work. Such equipment and facilities shall meet all requirements of applicable ordinances and laws.

9.02 Contractor’s Responsibility for Subcontracted Work - The City will deal directly with, and make all payments to the Contractor only. The Contractor shall be responsible for the coordination of all trades, subcontractors, and suppliers engaged upon the work. Neither the City nor the Engineer will undertake to settle any differences between the Contractor and his subcontractors.

All persons engaged in the work, including subcontractors, will be considered as employees of the Contractor. The Contractor will be held responsible for their work and shall be responsible to the City for acts and omissions including those by their respective agents and employees.

When subcontracted work is not prosecuted in a manner satisfactory to the Engineer, the Contractor shall be notified to take corrective action within a specified time. If timely correction is not made, then upon receipt by the Contractor of written instructions from the Engineer, the Subcontractor shall be removed immediately from the work and shall not be reemployed.

9.03 Superintendent - The Contractor shall employ, and provide a written letter designating a superintendent or representative who shall be present on the job site whenever work is in progress to coordinate all work with the City and neighboring property owners. A backup representative may also be provided. A joint venture shall designate only one Superintendent.

Directions and information given to the Superintendent shall be considered as having the same effect as if delivered to the Contractor and the Superintendent shall have complete authority to act on behalf of the Contractor.

City approval of the Superintendent is required prior to starting work. The City reserves the right to request an appropriately qualified replacement of the Superintendent any time during construction of the project. Contractor shall provide the Engineer with the Superintendent’s telephone number, along with an after-hours emergency contact number of a responsible person who shall correct hazardous situations, should they occur, during times other than the normal working hours.

9.04 Character of Workers - Contractor shall provide competent, fully qualified personnel to perform the work and shall at all times maintain good discipline and order among its employees and Subcontractors. Any employed person or Subcontractor who is found to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable or who fails or refuses to perform his work properly and acceptably, shall be immediately removed from the work by the Contractor and shall not be reemployed.
9.05 **Laws to be Observed** - The Contractor shall keep himself fully informed of, and at all times observe and comply with, all Federal, State and County laws, all municipal ordinances and regulations of the City of Tracy, and all orders and decrees of bodies having jurisdiction over the work.

(a) **Non-Discrimination** – Attention is directed to Labor Code, Section 1735 which reads as follows: “No discrimination shall be made in the employment of persons upon public work because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status or sex of such persons, except as provided in Government Code, Section 12940 and every Contractor for public works violating this Section is subject to all the penalties imposed for a violation of this chapter.”

(b) **Alien Labor** - The Contractor shall forfeit as penalty to the City of Tracy fifty dollars ($50.00) for each alien with no permit to work in the USA knowingly employed in the contract, by him or by any Subcontractor under him upon any of the work herein mentioned, for each calendar day, or portion thereof, during which such alien is permitted or required to labor in violation of the provisions of the Labor Code and in particular Sections 1850 to 1854 thereof, inclusive.

(c) **Hours of Labor** – Pursuant to Labor Code, Sections 1810, eight (8) hours labor shall constitute a legal day’s work and as such, the Contractor shall not permit any worker to labor more than eight (8) hours during any one (1) calendar day or more than forty (40) hours during any one (1) calendar week, except as permitted by law and in such cases only upon such conditions as are provided by law. Pursuant to Labor Code, Sections 1813, Contractor shall forfeit to the City, as a penalty, twenty-five dollars ($25.00) for each worker employed in the execution of this Agreement by Contractor, or any Subcontractor, for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one (1) calendar day or more than forty (40) hours in any one (1) calendar week in violation of the terms of this Section or in violation of the provision of any law of the State of California. Such forfeiture amounts may be deducted from the contract sum. Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the actual hours worked each calendar day and each calendar week by each worker employed on the project, which record shall be kept open at all reasonable hours to the inspection of the City, its officers and agents, and to the inspection of the appropriate enforcement agency of the State of California.

(d) **Prevailing Wage** – As identified in the Notice to Bidders, the work contemplated by this agreement is a public work subject to prevailing wages under California Labor Code, Sections 1720 et. seq. The State of California Department of Industrial Relations has ascertained the general prevailing per diem wage rates in the locality in which the work is to be performed for each craft, classification, or type of worker required to perform the work. A schedule of the most recent general prevailing per diem wage rates made available to the City will be on file at the City’s principal facility office and will be made available to any interested party upon request. This prevailing wage rate schedule is provided by the City for Bidder’s information only and is not guaranteed by the City to be current. Contractor is obligated to verify all appropriate prevailing wage rates and pay those rates as required. By this reference the verified current schedule of prevailing wage rates is made part of the Contract Documents. Contractor shall pay not less than the prevailing per diem wage rates, as specified in the schedule and any amendments thereto, to all workers employed by Contractor in the execution of the work. Contractor shall cause all subcontracts to include the provision that all Subcontractors shall pay not less than the specified prevailing per diem wage rates to all workers employed by such Subcontractors in the execution of the work.

Contractor shall forfeit to the City, as a penalty, no more that fifty dollars ($50.00) for each calendar day or portion thereof for each worker that is paid less than the specified prevailing per diem wage rates for the work or craft in which the worker is employed for any portion of the work done by Contractor or any Subcontractor in violation of the provisions of the Labor Code, and in particular Sections 1770 to 1781 thereof, inclusive. Such forfeiture amounts may be deducted from the contract.
sum. Contractor shall also pay to any worker who was paid less than the specified prevailing per diem wage rate for the work or craft for which the worker was employed for any portion of the work, for each calendar day, or portion thereof, for which the worker was paid less than the specified prevailing per diem wage rate, an amount equal to the difference between the specified prevailing per diem wage rate and the amount which was paid to the worker.

The City will not recognize any claim for additional compensation because of the payment by the Contractor for any wage rate in excess of prevailing wage rates set forth in the Agreement, including payment in excess of the prevailing wage for extra work paid by force account. The possibility of wage increases is one of the elements to be considered by the Contractor in determining the Contractor’s bid and will not, under any circumstances be considered as the basis of a claim against the City under the Agreement.

(e) Payroll Records - Pursuant to Labor Code, Sections 1776, Contractor and all Subcontractors shall keep an accurate payroll record, showing the name, address, social security number, job classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in connection with the work. All payroll records shall be certified as being true and correct by Contractor or Subcontractors keeping such records; and the payroll records shall be made available weekly and provided for inspection upon request by the City, the State of California Division of Labor Standards Enforcement, or the Division of Apprenticeship Standards of the State of California Division of Industrial Relations.

(f) Apprentice Program - Attention is directed to State of California Labor Code, Sections 1777.5, 1777.6, and 1777.7 and Title 8, California Code of Regulations, Section 200, and the applicable Sections that follow. Responsibility for compliance with these requirements lies with the Contractor. To ensure compliance and complete understanding of the law requiring apprentices, and specifically the required ratio thereunder, Contractor or Subcontractors should, where some question exists, contact the Division of Apprenticeship Standards, 525 Golden Gate Avenue, San Francisco, California, or one of its branch offices prior to commencement of the work. In the event Contractor willfully fails to comply with this Section, it will be considered in violation of the requirements of the Contract.

Nothing contained herein shall be considered or interpreted as prohibiting or preventing the hiring by Contractor or Subcontractors of journeyworker trainees who may receive on-the-job training to enable them to achieve journeyworker status in any craft or trade under standards other than those set forth for apprentices.

9.06 Permits and Fees – Unless otherwise stated in the Special Provisions, the Contractor shall procure all permits and licenses, including a City business license, pay all charges and fees, and give all notices necessary for lawful prosecution of the work. All permits, licenses, and other authorizations shall be secured in sufficient time to prevent delays to the work. The Contractor shall comply with the provisions of said permits, licenses and other authorizations.

For City Capital Improvement Construction Projects, the Contractor shall obtain a “No Fee” encroachment and/or building permit from the Development and Engineering Services (DES) Department. Contractor shall coordinate through the Engineer to insure that all appropriate construction inspections occur.

9.07 Coordination and Cooperation - Construction work by utility companies or other Contractors may be needed or may be occurring simultaneously within or adjacent to the limits of work for this project. The Contractor shall coordinate and cooperate with all other Contractors and utility companies throughout the duration of this project to avoid delays and minimize interference and conflicts. Cooperation will be required in the arrangement for the storage of materials, and in the detailed execution of the work. It is the Contractor’s responsibility to ascertain the nature of work by others, coordinate his work, and install, modify, and maintain traffic control as necessary to avoid interferences and delays on the construction activities. Failure of the Contractor to
keep informed of the work progressing on the site and failure to give written notice of lack of progress or
defective workmanship by others shall be construed as acceptance by the Contractor of the status of the work as
being satisfactory for proper coordination with his own work.

Where work of one trade joins or is on the other’s work, there shall be no lack of continuity or
discrepancy when work is completed. In conforming one kind of work with another, marring or damaging other
work will not be permitted. Should improper work of any trade be covered by another which results in damage or
defects, the whole work affected shall be made good by the Contractor without expense to the City.

The City reserves the right to perform work or allow others to perform work, as necessary, within or
adjacent to the limits of this project, at any time. If the Contractor or any of his Subcontractors or employees cause
loss or damage to any separate Contractor on the work, the Contractor, by agreement or arbitration, if he deems it
necessary, will settle any claim for such loss or damage. If such separate Contractor shall sue the City, on account
of any loss so sustained, the City shall notify the Contractor, who shall indemnify and save harmless the City
against any loss or damage arising therefrom, including the cost and expense of defending any such suit.

The Contractor shall absorb in his bid all costs involved in coordinating his work with others. The
Contractor will not be entitled to additional compensation from the City for damages resulting from such
simultaneous, collateral and essential work.

9.08 Use of Premises - The Contractor shall confine construction activities to the project limits;
which shall consist of right-of-way, easements and/or property owned by the City of Tracy. With prior
approval of the Engineer, adjacent street right-of-way may also be utilized for day-to-day operations.
Unless approved by the Engineer, no storage of materials and equipment will be allowed to remain
within the right-of-way during non-working hours, on the weekends, or during holidays.

Each day, after the completion of construction operations, unless otherwise approved by the Engineer, the
project limits shall be secured and made accessible to the public. All excess materials and equipment not protected
by approved traffic control devices (such as k-rails) shall be relocated to a staging area or demobilized. Trench
spoils shall be off-hauled daily and open excavations shall be protected with steel plates.

Personnel of Contractor and Subcontractors shall not occupy, live upon, or otherwise make use of the
project site during any time that work is not being performed at the project site, except as otherwise provided for
in the Contract Documents for issues such as site security.

9.09 Construction Staging and Field Office - If additional space beyond the construction limits is
necessary for staging, the Contractor shall, at his own cost and initiative, make special arrangements with
neighboring property owner(s) to secure a staging area for a field office and/or material and equipment storage. The
staging area must be fenced, with screening, and shall be operated in a manner that minimizes the inconvenience
to neighbors.

The Contractor is encouraged to negotiate side agreements with the property owner of such sites prior to
submitting bids. Prior to occupying the staging area, the Contractor will be required to provide to the Engineer a
copy of the agreement or temporary construction easement granted by the property owner. A written release from
the property owner, holding the City harmless from liability, will also need to be provided. In addition to approval
from the property owner, the Contractor may also need to secure a Use Permit from the City’s Planning Division.

9.10 Site Security - Contractor shall be responsible for the care and custody of work and the site,
including all necessary security provisions, on a 24-hour per day basis throughout the entire term of the
Agreement. The Contractor shall provide and maintain storage facilities and employ such measures as will
preserve the specified quality and fitness of materials to be used in the work.
Contractor shall install a temporary construction fence at the Tracy Little League fields that have already been constructed. These fields will be accessed by Tracy Little League during construction and contractor shall setup fencing to allow for access.

9.11 **Construction Water** - Construction water is available at no cost to the Contractor. The Contractor is responsible for obtaining the required permit from the City and providing an approved water truck, installed with backflow prevention devices, prior to obtaining any construction water from City hydrants.

9.12 **Project Site Maintenance**

(a) **Disposal of Material** - Unless otherwise shown on the plans or specified herein, all excess materials and materials removed from existing improvements shall become the property of, and be disposed by the Contractor. The Contractor shall be responsible for all costs associated with disposing all excess materials in a safe and legal manner. No material shall be placed on private or public property without prior approval from the City and the property owner. The Contractor shall not allow any refuse, excavated material, surplus concrete or mortar, or any associated washings, to be disposed upon paved streets, into manholes or into the City’s storm drain system.

   Contractor shall establish a system for daily collection and disposal of waste materials from construction areas and elsewhere on the site. Contractor shall handle waste materials that are hazardous, dangerous, or unsanitary separately from inert waste by containerizing appropriately. Burning or burying of waste materials on site will not be permitted.

   All materials removed from the existing improvements, which in the opinion of the Engineer have salvage value, shall be delivered to the City Corporation Yard at 520 Tracy Boulevard or at any other site designated by the Engineer within the City, at no additional cost.

(b) **Cleanup and Dust Control** – at all times during construction, including weekends and holidays, and throughout all phases of construction, including work suspensions and until final acceptance of the project, the Contractor shall keep the work site clean and free from rubbish, debris, and prevent the formation of an airborne dust nuisance.

   Materials and equipment shall be removed from the site as soon as they are no longer necessary. Upon completion of the work and before final inspection, the entire site shall be cleared of equipment, unused materials, and rubbish so as to present a satisfactory clean and neat appearance. All cleanup costs shall be absorbed in the Contractor’s bid.

   The Contractor shall abate dust nuisance by cleaning, sweeping, and sprinkling with water, those excavated areas of dirt or other materials which are prone to causing dust, within both the project site and the storage or staging area. If required or directed by the Engineer, the Contractor shall provide an approved water truck of large capacity with spraying capability.

   The Contractor shall be required to apply water for dust control immediately during construction efforts and within one (1) hour after notification by the Engineer that an airborne nuisance exists. If dust control is not adequate in the opinion of the Engineer, the Engineer will have this work done by others and will deduct such cost from the total contract price.

   All hauling trucks or other construction vehicles leaving the site shall be cleaned of mud or dirt clinging to exterior body surfaces or wheel rims before traveling on City streets outside the work limits. All trucks coming to or leaving the site with materials or loose debris shall be loaded in a manner, which will prevent the dropping of materials or debris on City streets. Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately at the Contractor’s expense.
When construction operations cause dirt to be deposited on public streets, the Contractor shall immediately remove such material. Streets shall be cleaned by street sweeping, rather than flushing, so as to prevent mud from entering the storm drain system.

Excess excavated material shall be removed from the site immediately. Sufficient material may remain for use as backfill if permitted by the specifications. Forms and form lumber shall be removed from the site as soon as practicable after stripping.

Failure of the Contractor to comply with the Engineer’s cleanup orders may result in an order to suspend work until the condition is corrected. No additional compensation will be allowed as a result of such suspension.

(c) **Air Pollution Control** - The Contractor shall not discharge smoke, dust, or any other air contaminants into the atmosphere in such quantity as will violate the regulations of any legally constituted authority.

(d) **Noise Control** - The Contractor shall make every reasonable effort to control noise generated as a result of construction to the satisfaction of the Engineer. Use of an air compressor, jackhammer or other loud, vibrating sound generating device shall be limited to operations between the hours of 8:00 a.m. and 4:30 p.m. unless otherwise authorized by the Engineer.

(e) **Vermin Control** - At the time of acceptance, structures entirely constructed under the contract shall be free of rodents, insects, vermin and pests. Necessary extermination work shall be arranged and paid for by the Contractor as part of the contract work within the contract time and shall be performed by a licensed exterminator in accordance with requirements of governing authorities. The Contractor shall be liable for injury to persons or property and responsible for the elimination of offensive odors resulting from extermination operations.

(f) **Sanitation** - The Contractor shall provide and maintain enclosed toilets for the use of employees engaged in the work. These accommodations shall be maintained in a neat and sanitary condition. They shall also comply with all applicable laws, ordinances and regulations pertaining to the public health and sanitation of dwellings and camps.

(g) **Wastewater** - Wastewater systems shall not be interrupted. Should the Contractor disrupt existing sewer facilities, the Contractor shall immediately notify the Engineer, and the Contractor shall establish a plan, subject to the approval of the City, to convey the sewage in closed conduits and disposed of it back into the sanitary sewer system. Sewage shall not be permitted to flow in trenches or be covered by backfill.

(h) **Temporary Light, Power and Water** - The Contractor shall at his own expense furnish, install, maintain, and remove all temporary light, power, and water, including piping, wiring, lamps, and other equipment, necessary for the work. The Contractor shall not draw water from any City water source, except to extinguish a fire, without first obtaining a permit from the City.

(i) **Storm Water Pollution Control** – Storm Water Pollution Control work shall consist of following Best Management Practices (BMP) for storm water pollution prevention, submitting a Storm Water Pollution Prevention Plan (SWPPP) in compliance with all NPDES requirements, and constructing those facilities which may be required to provide prevention, control, and abatement of water pollution.

In compliance with State and Federal regulations on construction storm water management and non-point source pollution control, no pollutants will be allowed to enter the storm drainage system. The
Contractor shall be responsible for containing and removing any waste from the Contractor’s construction operations using the appropriate BMP. The Contractor shall be responsible for cleaning catch basins of solid or liquid waste materials originating from the Contractor’s operation before this material migrates further into the storm drain system. Violation of this provision shall cause the City to issue a stop-work notice and take necessary action to require the Contractor to correct and comply with regulations. All costs related to the stop-work action and corrective work to come into compliance shall be fully borne by the Contractor.

All construction efforts shall be conducted in a manner which prevents the release of hazardous material or hazardous waste into the soil or groundwater, and minimizes the discharge of pollutants into the storm drain system.

9.13 Protection and Preservation of Property - The Contractor shall be responsible for the protection of public and private property adjacent to the work.

Due care shall be exercised to avoid damage to existing roadway improvements and facilities, adjacent property, roadside trees, lawn and shrubbery not designated for removal, pole lines, fences, signs, survey markers and monuments, buildings and structures, conduits, pipe lines under or above ground, sewer and water laterals, and any other improvements or facilities within or outside the limits of construction. As ordered and approved by the Engineer, the Contractor shall provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor’s operations, they shall be replaced or restored, at the Contractor’s expense, to a condition as good as when the Contractor entered upon the work, or as good as required by the Contract Documents.

Existing striping damaged during construction within and adjacent to the project site shall be replaced with thermoplastic. Partially damaged striping (such as what might occur trenching through a pavement legend), shall be replaced in their entirety.

Any survey monuments that are damaged or removed as part of the construction shall be replaced by the Contractor and a Record of Survey, as required by State law, shall be filed by a licensed Land Surveyor at the Contractor's expense.

The fact that any such improvement or facility is not shown upon the plans shall not relieve the Contractor of his responsibility under this Section. It shall be the Contractor’s responsibility to ascertain the existence of any underground improvements or facilities indicated on the plans, indicated by locating services, or as evidenced by facilities visible in the field.

9.14 Restoration of Adjacent and Existing Improvements - Contractor shall do all cutting, fitting, or patching of the work required to make all parts of the work come together properly with existing and adjacent conditions.

Unless otherwise provided, the Contractor shall repair or replace all existing improvements (e.g., curbs, sidewalks, driveways, fences, signs, utilities, street surfaces, structures, etc.) damaged or removed as a result of his operations. Repairs and replacements shall be at least equal to existing improvements, and shall match in terms of condition, finish and dimension.

All traffic signs and street signs within the limit of work necessarily removed during the various phases of operations shall be temporarily reset by the Contractor at or near the original location upon completion of each phase of construction operations. Prior to removal of all traffic control signs, the Contractor shall take photographs of the site which show the existing location of these signs so that upon completion the photographs will aid in resetting the signs at or near their original location. Traffic control signs and street signs will be replaced upon completion of the work and the cost of removal and replacement will be included in various bid
items and no separate payment will be made. Rural type mail boxes shall be maintained by the Contractor in a manner satisfactory to the property owner and postal service, and the Contractor shall relocate the same as soon as possible to a permanent location in accordance with postal regulations and in a location acceptable to the property owner.

Any object to be removed and reused at other locations shall be removed with due care and delivered or stored at the project’s construction storage area, or if approved by the Engineer, at the Boyd Service Center or any other site designated by the Engineer within the City. Such objects may consist of street light poles, signal mast arms and other objects directed by the Engineer. Items not approved by the Engineer for reuse purposes, and without salvage value, shall become the property of the Contractor, to be disposed of at Contractor expense, in an acceptable manner.

9.15 Archeological Remains - If archeological remains are uncovered during excavation, earthwork within 100 feet of these materials will be stopped until a professional archeologist (SCA) and/or the Society of Professional Archeology (SOPA) has had an opportunity to evaluate the significance of the find and suggest appropriate mitigation measures.

9.16 Access to Private Property - The Contractor shall schedule and perform operations so as to minimize disruption of access to private property. Prior to blocking access to any private driveway or parking lot entrance, the Contractor shall notify the resident, business owner or tenant of pending closure and allow residents to remove vehicles. During non-working hours no driveway, house or parking lot shall be denied access to a public roadway.

The Contractor shall coordinate with the adjacent property owners and businesses and maintain vehicle and pedestrian access to their properties at all times. Temporary access ramps, fencing, or other measures shall be provided as needed.

9.17 Public Convenience and Traffic Control – The Contractor shall provide for safe movement of all vehicular, bicycle and pedestrian traffic through and around the construction operations with as little inconvenience and delay as possible. The Contractor shall have no amount of work under construction other than what he can properly prosecute with due regard to the rights and convenience of the public.

Proper conveyance of vehicular traffic and pedestrians through the work area depends upon navigating under unexpected situations. The means of clarifying such conditions to the public include the Contractor’s use of signs, flagmen, pavement markings, barricades, lights, cones and delineators. No one standard sequence of signs or control devices will suit all conditions which may result from construction operations. Even for the same work, the conditions may vary from hour to hour, requiring adjustment and revisions of the traffic control in effect. The traffic control requirements specified herein are therefore intended to establish general principles to be observed in the control and regulation of traffic through and around the construction operations anticipated for this project. The requirements set forth in this Section represent the minimum traffic control requirements imposed and the Contractor shall be solely responsible for providing the full extent of traffic control measures that are necessary. Only individuals trained in the principles of implementing traffic control and/or traffic control flagging shall be assigned that responsibility at the work site.

(a) Traffic Control Plan – The Contractor shall submit a Traffic Control Plan to clearly describe proposed traffic control measures. The plan shall be generally in accordance with the illustrations included in the “Manual of Uniform Traffic Control Devices” and the “Work Area Traffic Control Handbook”, (Building News Incorporated P.O. Box 3031, Terminal Annex, Los Angeles, CA 90051). The submittal shall consist of scaled drawings for each situation anticipated to be encountered, i.e., intersections, mid-block (each during working and non-working hours), etc. The drawings shall show signs, traffic control devices and flagmen as required.
The Traffic Control Plan shall be directed equally to the regulation and protection of non-vehicular traffic including pedestrians, bicyclists, joggers, skaters, skateboarders, etc. The Contractor shall provide for the protection and separation of non-vehicular traffic from construction operations at all times. No work involving the implementation of traffic control shall begin until the Engineer has favorably reviewed the traffic control plans. The Contractor may implement a revised Traffic Control Plan only with subsequent review and acceptance by the Engineer.

(b) Traffic Control Devices - Traffic control devices shall be provided in sufficient quantities and types as required to provide safe and adequate traffic control. During hours of darkness, approved lights and/or flares shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic. Barricades shall be furnished and maintained along all open trenches in contact with traffic. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised. All traffic control devices shall be placed in accordance with the Manual of Uniform Traffic Control Devices and the Contractor’s favorably reviewed traffic control plans. Locations of devices shall be adjusted to suit the conditions and circumstances of each detour situation. In all cases, signs shall be placed to most effectively convey their messages to approaching traffic.

The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor’s operations exists. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations. Traffic control devices shall remain in place at all times, as required to alert approaching traffic of upcoming hazards. After hazards have been removed, all traffic control devices shall be removed. Temporary signs shall be removed or their messages covered.

Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor’s equipment has been removed from the traveled way.

(c) Traffic Control Detours - The Contractor shall direct, divert and detour traffic through, around and adjacent to construction operations in accordance with the traffic control plans specified in the Contract Documents or in accordance with the Contractor’s favorably reviewed traffic control plans.

1. Field Review of Detours - Immediately after traffic control devices have been placed, the detour shall be test driven by the Engineer and the Contractor’s Superintendent. The test drive shall include approaches to the detour from each possible direction, and traverse the full length of each detour route. The Contractor shall adjust and revise all traffic control devices as determined to be required by the test drive and the test drive shall be repeated, if determined necessary by the Engineer. The Contractor shall provide additional traffic control devices as required to maintain the flow of traffic throughout construction operation.

2. Diverting Bicycle and Pedestrian Traffic – Whenever construction operations obstruct the flow of bicycle and pedestrian traffic or present a hazard to bicycles and pedestrians, the Contractor shall take appropriate action to protect and separate bicycles and pedestrians from the work area. Such action may include placement of barricades between bicycles and pedestrians and the work areas, placement of warning signs, and provisions utilizing personnel as required to protect and maintain access for bicycles and pedestrians as conditions warrant.

3. Diverting Vehicular Traffic - Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.
4. Flagmen - The Contractor shall employ flagmen as required for each specific detour and at all locations where barricades and warning signs cannot control the movement of traffic. A warning sign shall be placed ahead of the flagman reading: “Flagman Ahead.” The distance between the sign and the flagman should be based on the average traffic speed, allowing approximately 50 feet for each 10 miles per hour. During hours of darkness, flagman stations shall be illuminated such that the flagman will be clearly visible to approaching traffic. Lights for illuminating the flagman station shall receive favorable review by the Engineer. The flagman shall wear a red or orange warning garment when flagging. Flagmen shall be provided with approved red flags or STOP/SLOW hand paddles, and two-way radios for communication. When flagging during hours of darkness, the flagman shall signal with a red light or flare and shall have a belt and suspender harness outside his garment fitted with reflectors or made from reflectorized cloth, unless the garment is well reflectorized in one of these ways.

5. Notice to Agencies - The Contractor shall notify the Engineer and all agencies having jurisdiction over the work, in writing, at least ninety-six (96) hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each workday, the Contractor shall inform the Engineer, Police Department and Fire Departments of the status of all detours, lane restrictions, or road closures. The Contractor shall cooperate and coordinate with the various parties involved in the collection and removal of trash and garbage, the transit providers, the U.S. Postal Service, and others, as necessary, in order to maintain existing schedules and services.

6. Emergency Vehicle Access Through Detours - During all detours and/or street closures the Contractor shall provide for the movement of emergency vehicles through the work area. It is essential that the Contractor’s work and equipment does not impede emergency access.

7. Night Detours - The Contractor shall not be permitted to maintain any lane closure or road closure during non-working hours without first obtaining written approval from the Engineer. During non-working hours the Contractor shall restore travel lanes to their original alignment and configuration by means of placing temporary asphalt pavement or bridging with steel plates. The Contractor shall place “ROUGH ROAD” signs conforming to the Manual of Uniform Traffic Control Devices at uneven temporary pavement or bridging locations. See General Provisions, Section 9.18 (b), “Trench Safety Requirements”.

8. Temporary Traffic Lanes – Temporary traffic lanes shall be at least 10 feet wide, or 11 feet wide around curves. Provide an additional two (2) feet of clearance from curbs. The length of temporary lanes should be limited to the area under construction and the distance necessary to divert traffic.

(d) Parking Restrictions - The Contractor shall post approved “No Parking” signs at all locations necessary to establish work areas and detour traffic. Signs shall read: “NO PARKING - CONSTRUCTION TOW-AWAY ZONE,” show the actual day and hours of parking restriction and indicate the telephone number of the City’s Police Department or agency having jurisdiction. Signs shall be placed at least seventy-two (72) hours in advance of the restriction. The Engineer shall approve the location and duration of no parking limits and verify their placement. “No Parking” signs shall be removed when no work is under construction and must be reposted seventy-two (72) hours before the resumption of construction activities.

For any violation of “No Parking” signs by motorists, the Contractor shall contact and coordinate directly with the City’s Police Department for removal of vehicles in accordance with the California Vehicle Code. The Contractor shall also coordinate with the Police Department directly for enforcement and towing of parked vehicles.
9.18 **Safety** - The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the work. The Contractor’s responsibilities shall specifically provide for the safety of persons involved in the project, other persons who are affected by the performance of the work, the work in place, materials and equipment to be incorporated in the work, the project site, and adjoining property.

Payment for performing all work necessary to provide safety measures shall be included in the bid items for which safety measures are required and no additional compensation will be made.

(a) **Safety Orders** – The Contractor shall have at the work site, copies or suitable extracts of: Construction Safety Orders, Tunnel Safety Orders, and General Industry Safety Orders issued by the State Division of Industrial Safety. The Contractor shall comply with provisions of these and all other applicable laws, ordinances, and regulations.

(b) **Trench Safety Requirement** - As required by California Labor Code, Section 6705 and in addition thereto, for any excavation of any trench or trenches five feet (5’) or more in depth, the Contractor shall submit to the Engineer for acceptance, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. Structural calculations prepared, stamped and signed by a Registered Engineer licensed to practice in the State of California shall accompany the plan to verify the structural safety and adequacy of the sheeting, shoring and bracing to be used on the project. No such plan shall allow any shoring, sloping or a protection system less effective than that required by the Construction Safety Orders of the State Division of Occupational Safety and Health.

The maximum length of open trench shall be 200 feet or the distance that pipe can be installed in a single day. Trenches shall be backfilled and covered with 2 inches of cutback (in paved areas) or bridged with tack-welded steel plates at the end of each workday. Cutback shall be placed around plate edges to provide a smooth transition and to secure against displacement.

As soon as possible under the provisions of these specifications, the Contractor shall backfill all excavations and restore to usefulness all improvements that existed prior to the start of construction.

(c) **Confined Space Entry Program (CSEP)** - Entry into permit-required confined spaces as defined in Section 5157, Title 8, CCR may be required as a part of the work. All manholes, tanks, vaults, pipelines, excavations, or other enclosed or partially enclosed spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. The Contractor shall be responsible for implementing, administering, and maintaining a confined space entry program (CSEP) in accordance with Sections 5156, 5157, 5158, Title 8, CCR and shall implement such a program prior to performing any work in a permit-required confined space. A copy of the permit shall be available at all times for review by the Contractor and City personnel at the work site.

Prior to starting work, the Contractor shall prepare and submit its comprehensive CSEP to the Engineer. The CSEP shall address all potential physical and environmental hazards and contain procedures for safe entry into confined spaces, including, but not limited to the following:

1. Training of personnel
2. Purging and cleaning the space of materials and residue
3. Potential isolation and control of energy and material inflow
4. Controlled access to the space
5. Atmospheric testing of the space
6. Ventilation of the space
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7. Special hazards consideration
8. Personal protective equipment
9. Rescue plan provisions

The Contractor’s CSEP submittal shall also include the names of the Contractor’s and Subcontractor’s personnel assigned to the project who will have CSEP responsibilities, their CSEP training, their specific assignment and their responsibilities in carrying out the CSEP.

Payment for implementing, administering, and providing all equipment and personnel associated with the CSEP shall be included in the bid items for which the CSEP is required and no additional compensation will be made.

(d) Hazardous Conditions: Contractor’s Responsibility for Precautions - Contractor agrees that if, during the progress of the work, a hazardous condition is identified which involves a risk of bodily harm to any person or a risk of damage to any property, the Contractor will take such special precautions as shall be necessary to make the progress of the work safe under such condition. Conditions may result from, but are not limited to, the use of specified materials or equipment, the location of the work, the condition of the site, the kind or method of construction, or the manner in which any of the work is required to be done. The Contractor agrees to assume the sole responsibility for determining whether any such hazardous condition exists or will be created during the course of the work.

(e) Use of Explosives – Explosives may be used only when authorized in writing by the Engineer, or as otherwise stated in the Specifications. Explosives shall be handled, used, and stored in accordance with all applicable regulations. The Engineer’s approval of the use of explosives shall not relieve the Contractor from liability for claims caused by blasting operations.

(f) Special Hazardous Substances and Process – Materials that contain hazardous substances or mixtures may be required on the work. A Material Safety Data Sheet as described in California Code of Regulations, Section 5194 shall be requested by the Contractor from the manufacturer of any hazardous products used.

Hazardous material usage shall be accomplished with strict adherence to California Division of Industrial Safety requirements and all manufacturer warnings and application instructions listed on the Material Safety Data Sheet and on the product container label. The Contractor shall notify the Engineer if a specified product cannot be used under safe conditions.

9.19 Patent Fees or Royalties - The Contractor shall absorb in his bid, the patent fees or royalties on any patented article or process which may be furnished or used in the work. The Contractor shall indemnify and hold the City harmless from any legal action that may be brought for infringement of patents.

9.20 Advertising - The names of the Contractor or Subcontractors, with their addresses and the designation of their particular specialties, may be displayed at the job site on removable signs only if written approval is received from the Engineer. Commercial advertising material shall not be attached to, or painted on the surfaces of, any buildings, fences, canopies, or barricades.

9.21 Antitrust Claims – Attention is directed to Public Contract Code, Section 7103.5 which provides: “In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec 15) or the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or
subcontract. The assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgement by the parties.”

9.22 Audit and Examination of Records – The City and entities and agencies designated by the City, shall have access to, and the right to audit and examine at no additional cost, all of the Contractor’s project related data including but not limited to, books, estimates, records, contracts, bid cost data, Subcontractor and supplier job cost data, change orders, correspondence, instructions, drawings, receipts, vouchers, purchase orders, notes, computations, daily logs, and memoranda relating to the work. Pursuant to Government Code, Section 8546.7, the Contractor shall preserve all such records and will be subject to examination and audit by the State Auditor, at the request of the City, for a period of three (3) years after final payment under the Agreement.

SECTION 10 - MEASUREMENT AND PAYMENT

10.01 Measurement of Quantities for Unit Price Work - Materials and items of work which are to be paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular sections of the Contract Documents involved.

Unless otherwise specified, quantities of work shall be determined from measurements or dimensions in the horizontal planes. Stationing shall be along the street centerline, lengths of sanitary sewers, storm drains and water lines shall be measured as the horizontal distances from center to center of structures, rounded to the nearest foot, and lengths of all return radii and curb data shall be measured along the face of curb.

Unless otherwise provided in the Contract Documents, volumetric quantities shall be the product of the mean area of vertical or horizontal sections and the intervening horizontal or vertical dimensions. Measurements shall be in accordance with U.S. Standard Measures. A pound is an avoirdupois pound. A ton is 2,000 pounds avoirdupois. The unit of liquid measure is the U.S. gallon.

When payment is to be made on the basis of weight, the weighing shall be done on certified platform scales or, when approved by the Engineer, on a completely automated weighing and recording system. The Contractor shall furnish the Engineer with duplicate licensed weighmaster’s certificates showing the actual net weights. The City will accept the certificates as evidence of the weights delivered.

10.02 Bid Items - Should any bid item be eliminated in its entirety, payment will be made to the Contractor for actual costs incurred, in connection with such eliminated contract work, and for costs incurred prior to the date of the Engineer’s written notification eliminating such work. The actual costs to be paid to the Contractor shall be computed in the same manner as if the work were to be paid on a force account basis. No compensation will be made to the Contractor, in any case, for loss of anticipated profits. Increased or decreased scope involving a change order will be paid as stipulated in the change order.

Payment for lump sum items of work shall be made at the price indicated on the Bid Schedule. Such payment shall be full compensation for the items of work and all work appurtenant thereto. Contractor shall submit to the Engineer, at the pre-construction conference, a detailed schedule of values or breakdown of the lump sum pay items, to be used as a basis for determining progress payments on lump sum work.

10.03 Bid Quantities - The quantities listed in the Bid Schedule for each bid item do not govern final payment. Payments to the Contractor will be made only for the actual quantities of contract items constructed in accordance with the plans and specifications. If upon completion of the construction, the actual quantities show either an increase or decrease from the quantities given in the bid schedule, the contract unit prices will still prevail.
Payment will not be made for materials wasted or disposed of in a manner not called for under the contract. This includes rejected material not unloaded from vehicles, material rejected after it has been placed and material placed outside of the plan lines. Unless otherwise provided, no payment will be made for materials delivered to the site but not incorporated in the work. Such quantities will not be included in the final pay quantities. No compensation will be allowed for the disposal of rejected or excess material.

When the estimated quantity for a specific portion of work is designated on the Bid Schedule as a “Final Pay Quantity”, the estimated quantity specified shall be the final quantity for which payment for such specified portion of the work will be made, regardless of the actual quantity constructed, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If such dimensions are revised and such revisions result in an increase or decrease in the quantity of such work, the final quantity for payment will be revised by the amount represented by the change. The estimated quantity for any portion of the work designated as a Final Pay Quantity shall be considered as approximate only and no guarantee is made that the quantity, which can be determined by computations, based upon the details and dimensions shown on the plans, will equal the estimated quantity. No allowance will be made in the event that the quantities based upon computations do not equal the estimated quantities. Final pay quantities will be designated on the Bid Schedule with the letter (F) and shall only apply to the corresponding portions of work specifically designated on the plans. Any portion of work not designated as a final pay quantity will be measured and paid for as specified under other provisions of the Contract Documents.

10.04 Progress Payments - The last working day of each month may be designated as the monthly payment date which will terminate each working month. This date or an alternate date agreed upon by the Engineer and the Contractor shall terminate each working month for the duration of the work.

The Contractor shall, on the date established, prepare and submit a progress estimate to the City for work accomplished during the previous working month, based on the various contract bid items and the unit bid prices. Invoices shall include amounts previously paid, itemized retention and any deductions or additions authorized by change order. Consultation with the Engineer may be necessary to determine the amount of work accomplished.

Contractor may request partial payment for materials delivered to the site but not yet incorporated into the work (materials on hand). To receive consideration for payment of materials on hand, the Contractor shall provide the Engineer with a list of such materials at least five (5) working days prior to submitting the monthly estimate of amount earned for work completed. At the Engineer’s sole discretion, up to seventy-five percent (75%) of the estimated value of materials on hand may be considered for payment, subject to the following:

(a) Only materials which have received favorable review of shop drawings will qualify.

(b) Eligible materials must be delivered and properly stored, protected, and maintained in a manner favorably reviewed by the Engineer, at the job site or at a bonded warehouse.

(c) The Contractor's actual net cost for the materials must be supported by paid invoices to suppliers or other documentation requested by the Engineer.

(d) Materials delivered to the site less than thirty (30) days prior to their scheduled incorporation in the work shall not qualify.

(e) Partial payments for materials on hand shall not be deemed to be final payment for the material nor relieve the Contractor of his obligations under the Contract.

(f) Partial payments for materials on hand shall be subject to retention.
From each progress estimate, ten percent (10%) will be deducted and retained by the City, and the remainder of the amount due, less the amount of all previous payment will be paid to the Contractor provided all work invoiced has been completed and approved by the Engineer.

The Contractor may elect to receive one hundred percent (100%) of payments due under the contract from time to time, without retention of any portion of the payment by the City, by depositing securities of a value equivalent to the retention amount with the City in accordance with the provisions of Public Contract Code, Section 22300. Such securities, if deposited by the Contractor, shall be valued by the City’s Finance Director, whose decision on valuation of the securities shall be final.

No application for payment will be reviewed or paid by the City unless proof of insurance, improvement security, identification of the Superintendent, list of subcontractors and suppliers, Contractor’s construction schedule, submittal schedule, and all required submittals (if any) have all been received by the City, and are up to date.

Upon receipt of a progress payment request, the City shall, within seven (7) days, determine if the request is proper, and if disputed the City will return the progress payment to the Contractor along with a written document setting forth the progress payment request’s shortcomings. Following receipt of an undisputed and properly submitted progress payment request, the City shall make payment within thirty (30) days.

The Engineer may withhold or nullify, the whole or any part of any payment to such extent as may be necessary to protect the City from loss on account of any of the following:

(a) Defective or vandalized work not remedied,
(b) Damage to the City or another Contractor,
(c) Claims filed, or reasonable evidence indicating probable filing of claims,
(d) Stop notices, or failure of the Contractor to make payments properly to subcontractors or laborers or suppliers,
(e) A reasonable doubt that the contract can be completed for the balance unpaid,
(f) Reasonable evidence that the work will not be completed within the contract time and that the unpaid balance of the contract sum would not be adequate to cover the City’s liquidated damages assessed in accordance with the Agreement for the anticipated delay,
(g) Failure of Contractor to maintain, update and submit record documents, schedules or other submittals as required by the Contract Documents,
(h) Performance of work by Contractor without properly processed shop drawings;
(i) Any other failure of Contractor to perform its obligations under the Contract Documents.

Contractor warrants that, upon submittal of an application for payment, all work for which payment has been previously issued by the City and received by the Contractor, shall be free and clear of all claims, stop notices, security interests, and encumbrances in favor of Contractor, Subcontractors, or other persons or firms entitled to make claims by reason of having provided labor, materials, or equipment relating to work.

The payment of pay estimates by the City shall not be construed as an absolute acceptance of the work done up to the time of such payments and shall not constitute acceptance of defective work.

10.05 Final Payment - The City shall, prior to final acceptance, provide the Contractor with a copy of the final pay quantities of the various contract bid items and contract change orders for his review. All prior payments shall be subject to correction in determining the final pay quantities. The Contractor shall reply promptly in writing, to indicate either his concurrence or an explanation of possible discrepancies in the final quantities.

The project will not be submitted to the City Council for acceptance until the Engineer and the Contractor concur with the totals of all quantities, costs, contract change orders and the total contract sum. Following
concurrence of the contract sum, a semi-final payment will be made to the Contractor after deducting all previous payments and all amounts to be retained under the provisions of the contract. The retention payment shall be due and payable as a final payment after the expiration of thirty-five (35) days following the date of final acceptance of the work by the City Council.

If within the time fixed by law, a properly executed notice to stop payment is filed with the City, due to Contractor’s failure to pay for labor or materials used in the work, all money due for such labor or materials will be withheld from payment to the Contractor in accordance with applicable laws.

If releases are required, Contractor shall pay or cause to be paid to Subcontractors the amount stated in the conditional releases within five (5) days after receipt of the semi-final payment, and shall promptly thereafter furnish evidence of such payment to the City.

The securities deposited by the Contractor will be released, providing that the following requirements of the contract have been fulfilled:

(a) Satisfactory completion of all construction work and written acceptance of said work by the City;

(b) The submission by the Contractor to the Engineer of all required stop notice releases, submittals, written guarantees, warranties, operating manuals, and other project related documentation;

(c) The return to the Engineer of all drawings and written specifications loaned to the Contractor during the construction period.

(d) The submission by the Contractor to the Engineer a set of red-lined drawings showing the revisions to the original set of drawings which reflect the actual construction of the project for preparation of “Record Drawings”.

The Contractor agrees that the payment of the final amount due under the contract shall release the City of Tracy from any and all claims or liability on account of all work performed under the contract, except those items previously made in writing and identified by the Contractor as unsettled. Release of the final payment by the City shall not be construed as an acceptance of any defective work or acceptance of improper materials.

10.06 **Claims** - The term “Claim” shall mean a written demand or assertion by the Contractor seeking, as a matter of asserted right, adjustment in the terms of the Contract Documents, payment of money, extension of time, or other relief with respect to the Contract Documents, or determination of other disputes or matters in question between the City and Contractor arising out of or related to the Contract Documents or the performance of the work, including claims alleging an error or omission.

A claim must be stated with specificity, including identification of the event giving rise to claim, the date of the event, and the asserted effect on contract sum and contract time. The claim shall include adequate supporting data. Adequate supporting data for a claim for an adjustment of the contract time shall include scheduling data demonstrating the impact of the event on the completion of the work. Adequate supporting data for a claim for an adjustment of the contract sum shall include a detailed cost breakdown of the items allowed, isolating labor, material, and equipment costs, and providing detailed quantities and unit prices for changed work. If the exact amount of a claim is not ascertainable at the time such claim is made, the supporting data currently available shall be submitted. Supplemental data supporting the exact amount of the claim shall be submitted as soon as available.

Notwithstanding the making of any claim or the existence of any dispute regarding any claim, unless otherwise directed by the Engineer, the Contractor shall not cause any delay, cessation, or termination in the performance of the work, including portions of the work pertaining to a claim.
10.07 **Time Limit on Claims** - Contractor shall submit any and all claims, together with adequate supporting data to the Engineer as soon as possible but not later than ten (10) working days after occurrence of the event giving rise to the claim, or the date the Contractor first recognized, or reasonably should have recognized, the condition giving rise to the claim, whichever is earlier. Contractor hereby expressly waives all claims not made within this time limit.

Contractor is expressly barred from asserting any claims of which the Contractor was aware, whether or not the exact amount of such claims was ascertainable, that is not submitted to the Engineer prior to the Contractor proceeding with the work.

10.08 **City Response to Claims** - The Engineer shall promptly review claims. If additional supporting data is deemed necessary, the Engineer shall request such additional data within ten (10) working days after receipt of the claim. The Contractor shall furnish such additional data no later than ten (10) working days after receipt of the City’s request. The Engineer shall render a decision promptly, but in any event, within thirty (30) working days after the receipt of the claim or the receipt of additional supporting data. If the amount of the claim is in excess of $50,000, the aforesaid thirty (30) working day period shall be sixty (60) working days. Failure of the Engineer to render a decision within the aforesaid thirty (30) or sixty (60) working day period shall be deemed a decision denying the claim and the last day of such period shall be the date of such decision. The decision of the Engineer shall be final and binding unless appealed in accordance with the General Provisions, Section 10.09, “Appeal of the Engineer’s Decision”.

10.09 **Appeal of Engineer’s Decision** - If Contractor disputes the Engineer’s decision of a claim, the Contractor shall, within thirty (30) calendar days of the decision, make a written appeal of the decision to the Engineer. The written appeal shall include all supporting data upon which the Contractor requests the City to modify its decision, including all documentation transmitted between the Contractor and the Engineer on the underlying claim. The Engineer shall make a good faith effort to resolve the claim prior to final completion of the Project. In the event the claim is not resolved prior to final completion, the Contractor’s claim shall be heard by the DES Director prior to recommending final acceptance to the City Council. The Contractor’s administrative remedies under the Contract Documents shall be exhausted after the decision of the DES Director is rendered.
SECTION 11 - GUARANTEE

11.01 Contractor’s Guarantee - Prior to final acceptance, the Contractor shall warrant and guarantee to the City that all work is in accordance with the Contract Documents and is not defective.

The guarantee shall be accompanied by a warranty bond for ten percent (10%) of the final contract sum, which shall warrant the quality of the work for a period of one (1) year after acceptance. The guarantee and warranty bond shall be in accordance with the Agreement Forms furnished in the Contract Documents.

11.02 Correction of Defective Work During the Guarantee Period - If within one (1) year after the date of City Council acceptance, or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents, any work is found to be defective, the Contractor shall promptly without cost to the City and in accordance with the City’s written instructions, either correct such defective work or if it has been rejected by the City, remove it from the site and replace it with non-defective work.

If the Contractor does not promptly comply with the terms of such instructions within ten (10) working days after written demand by the City, the City may have the defective work corrected. The City may also correct defective work immediately in cases of emergency where delay would cause serious risk of loss or damage. All direct, indirect and consequential costs of correcting defective work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) shall be absorbed by the Contractor.

The Contractor shall remove from the Project site portions of the work and materials which are not in accordance with the Contract Documents and which are neither corrected by the Contractor nor accepted by the City. If Contractor fails to pay the costs of such removal within ten (10) working days after written demand, the City may, without prejudice to other remedies, sell such materials at auction or at private sale, or otherwise dispose of such material. The Contractor shall be entitled to the proceeds of such sale, if any, in excess of the costs and damages for which the Contractor is liable to the City, including reasonable attorneys’ fees and expenses and compensation for the City’s services and expenses.

11.03 Acceptance of Defective Work - The City shall have the option, at its sole discretion and by notice to the Contractor, to accept defective work instead of requiring its removal or correction, in which case the contract sum shall be reduced by an amount equal to the difference between the value to the City such work would have were it complete, correct, and in conformity with the Contract Documents and the value to the City of such defective work. Such option shall be exercised solely by notice to the Contractor and shall not be implied from any act or omission by the City or the Engineer. If the remaining payments and retention are insufficient to cover the amount of the reduction of the contract sum, the Contractor shall promptly pay to the City the amount of any such deficiency.
TECHNICAL PROVISIONS
CITY OF TRACY
LEGACY FIELDS SPORTS COMPLEX

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Appendix A
TECHNICAL PROVISIONS

Contract Documents – Order of Precedence. The following sections of the Contract Documents are incorporated by reference into this Construction Agreement:

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SECTION 2 - ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the State Standard Specifications and these special provisions. Sequence of work shall be:

a) Little League and Babe Ruth fields are first priority and will be required to have the natural turf sod installed by January 28, 2015.

b) Soccer field construction can start after the baseball fields have been constructed. Natural turf shall be seeded by May 18, 2016.

SECTION 3 - PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS

The Department maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the State Standard Specifications for each type of traffic product supplied.

For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the State Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be
submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

SECTION 4 - MONITOR AND INSPECT STORM WATER POLLUTION PREVENTION PLAN

Contractor shall use a responsible party who is certified by the State to implement and monitor the SWPPP with a QSP certification. Contractor will be responsible to provide all reporting, testing, sampling and coordination with the SWPP. Contractor will provide the closeout and certification of the SWPP at the completion of the project. City will provide the NOI and QSD services.
Division 1

General Requirements
SECTION 01010
SUMMARY OF WORK

PART 1  GENERAL

1.01  SUMMARY

A. Abbreviated Written Summary / Scope of work: Briefly and without force and effect upon the Contract Documents, the work of the Contract can be summarized to include as follows:
   1. Perimeter paving, fencing, site furnishing improvements, and utility upgrades
   2. Natural turf field construction

B. Related sections:
   1. All pertinent sections of the specifications

1.02  REFERENCES AND REGULATORY REQUIREMENTS

A. Refer to Section 01090 - References.

1.03  PROJECT LOCATION

A. Legacy Fields Sports Complex – Tracy Boulevard

1.04  CONTRACT DOCUMENTS

A. The general nature and extent of the work and the appurtenant facilities are shown on the Drawings under the title: Legacy Fields Sports Complex

B. Perform work within the Limit of Work line indicated on the Drawings and per the discretion of the Owner.

1.05  DRAWINGS

A. Drawings such as irrigation plans, utility plans, etc., are essentially diagrammatic. Actual runs indicated on the Drawings shall be followed as closely as coordination with the work of other trades will permit. The exact routing of such improvements and locations of equipment shall be governed by site conditions, obstructions, and locations of other utilities as acceptable to the Owner.

B. In the event that discrepancies arise over dimensions, product references, omissions, or written statements, these conflicts shall be immediately brought to the Owner’s attention by the contractor. If available, this may be accomplished with the use of a "Request for Information" (RFI) form. While awaiting direction or clarification from the Owner, the contractor shall re-direct work as necessary so as not to cause delay to the project.

C. Products, materials, labor, etc., installed or performed without proper clarification, or prior to Owner acceptance shall be the Contractor’s sole responsibility and shall be removed, repaired, replaced, and/or reinstalled per the Owner’s direction at no additional cost to the Owner or its agents.

1.06  CONTRACTOR’S DUTIES

A. Provide and pay for:
   1. Labor, materials, equipment, tools, construction equipment machinery, and other facilities
and services necessary for proper execution and completion of the Contract.

2. Water and temporary utilities required for construction excluding any metering and connection fees or charges. Subject to the discretion of the Owners Representative (contractor to verify), utilities which are in place and/or are in use by the Owner at the site (excluding telephone) may be utilized by the Contractor, to the extent available, at no cost.

3. Other facilities and services necessary for proper execution and completion of work to provide a facility capable of operation.

4. Legally required sales, consumer, and use taxes.

5. Attain a building permit for the plans.

B. Permits:

1. The Owner shall obtain and pay for the building permits, utility cut-offs and hook-ups including, but not limited to: water, gas, and electrical meters, sanitary and storm sewer connection fees.

2. The contractor shall obtain and pay for other permits required by Owner, County and other agencies, including but not limited to business licenses and hauling & dumping permits as applicable.

3. Provisions of required permits and licenses, whether obtained by the Owner’s Representative or the contractor, shall become a part of the Contract Documents and shall be adhered to by the contractor.

C. Comply with latest adopted edition of the governing building code and other codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of the work. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these applicable laws, ordinances, rules, and regulations. In case of conflicts between code requirements, the most restrictive shall apply; except that where the requirements of these Specifications exceed code requirements, the Specifications shall govern.

D. Attend pre-scheduled on-site job conference meetings and/or any special meetings as may be required by the Owner’s Representative.

E. Promptly submit written notice to the Owner’s Representative of any observed variance in Contract Documents from legal requirements. Appropriate modifications to Contract Documents will be performed by the Owner’s Representative to incorporate such necessary modifications.

1. Contractor shall assume responsibility for work performed and known to be contrary to such requirements.

F. Enforce strict discipline and good order among the contractor’s or sub-contractor’s employees per the discretion of the Owner’s Representative.

G. Prior to bidding, the contractor shall visit the site to become familiar with existing conditions and the requirements of the work.

H. The contractor shall be held to have examined the site and to have compared it with the Drawings and Specifications, to have carefully examined all of the Contract Documents and to have satisfied himself as to the conditions under which the work is to be performed before entering in this Contract. No allowance shall subsequently be made on behalf of the contractor on account of an error on his part or his negligence or failure to acquaint him with the conditions of the site. All discrepancies found shall be brought to the attention of the Owner’s Representative by the contractor prior to bid date.

I. Examine site and verify that site conditions are acceptable to begin any work. Verify that work specified elsewhere has been completed to an appropriate stage to begin any applicable work. This includes, but is not limited to: lines, grades and surfaces prepared by others. Notify the
Throughout the job the contractor shall be responsible for the general safety of the public and shall take appropriate means at no extra cost to Owner to provide a safe and secure job site to the satisfaction of the Owner’s Representative.

K. Verify all measurements, materials and systems taken from the Drawings and Specifications. Contractor shall be responsible for all investigations, field measurements layouts, and coordination necessary to properly fit, install and complete the work required, including integration of new work into, and with existing.

L. Contractor shall deliver, receive, store, protect, install and apply all materials in accordance with manufacturer’s and/or industry specifications and instructions unless specifically modified and shown otherwise in the Contract Documents. All installations shall be tight, smooth, level, straight to line, and secure.

1.07 PROTECTION OF PROPERTY, MATERIALS AND WORK

A. Contractor shall be held responsible insofar as his operations are concerned for the care, protection, and preservation of the adjoining premises, buildings, trees, landscaping, utilities, walks, streets, and adjacent properties from damage resulting from or incidental to this Contract.

B. Protect all existing structures, planted areas and improvements not designated for removal. Any damage to existing structures including asphalt paving, utilities, and fixtures shall be replaced to an “as was” or better condition, at contractor’s expense, per the direction and satisfaction of the Owner’s Representative.

C. All materials and equipment, both before and after installation, shall be properly protected by the contractor from the weather and other hazards and kept in a clean and orderly manner.

D. All utility piping and conduit stub-outs, and parts or equipment left unconnected shall be capped, plugged, or otherwise properly protected by the contractor to prevent damage or the intrusion of dirt or other foreign matter.

E. Materials and equipment damaged or containing defects developed before acceptance of the work shall be replaced with new at the contractor’s expense.

F. Contractor shall install a temporary construction fence at the Tracy Little League fields that have already been constructed. These fields will be accessed by Tracy Little League during construction and contractor shall setup fencing to allow for access.

1.08 WORK SEQUENCE / SCHEDULE

A. The sequence and scheduling of the work to be performed by the contractor shall be subject to review and acceptance by the Owner’s Representative. The contractor shall submit a Submittal Progress Log and Schedule in accordance with Section 01300 – Submittals prior to starting work. Project schedules shall conform to Specification Section 01300.

1.09 CONTRACTOR’S USE OF PREMISES

A. Confine operations to areas immediately within the proposed project sites.
   1. Develop and utilize construction access and haul routes as per the rules and regulations pertaining to the locale in which the work is to be performed and per the discretion of the Owner’s Representative.
2. Do not encumber site with materials or equipment.

B. Limit use of premises for work and construction operations to allow for work by other contractors.
   1. Conduct operations so as not to cause unnecessary delay or hindrance to other contractors.
   2. Conduct, adjust, correct, and coordinate work with others to prevent project discrepancies and/or delays.

C. Assume full responsibility for protection and safekeeping of products stored on premises and work performed until Final Acceptance of the work.

D. Move stored products under contractor's control which interfere with operations of the Owner.

E. Obtain and pay for use of additional storage or work areas needed for construction operations.

1.10 WORK HOURS AND WORK DURING ONGOING ACTIVITIES

A. Carry on the work as quietly as possible to prevent possible annoyance to adjacent properties. Avoid unnecessary noise at all times. Comply with all local noise regulations or requirements. Absolutely no work, delivery of equipment or materials shall take place between the hours of 5:00 PM and 7:30AM, or during non-working hours/days without written authorization by the Owner's Representative.

B. When connecting new utilities to existing, and similar operations, the contractor shall time and coordinate with Owner's Representative, facility operators, and utility companies such operations to minimize interference with existing activities and operations.

1.11 MATERIALS

A. All materials and equipment used in the work herein specified shall be new, first class, condition (unless otherwise noted or scheduled), suited to the intended use.

B. Materials shall be delivered to the site and stored in original containers sheltered from the elements, but readily accessible for inspection by the Owner's Representative until installed.

C. Materials of the same general type shall be of the same make and quality throughout the work to provide uniform appearance, operation, and maintenance ease.

D. Equipment specified by manufacturer's number shall include all accessories, controls, etc., listed in catalog as standard equipment. Furnish optional or additional accessories as specified.

E. Where no specified make of material or equipment is specified, any product by a reputable manufacturer which conform to the requirements of the Construction Documents may be used with the Owner's Representative's acceptance.

F. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products.
   1. All equipment items shall be supported by service organizations, which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the Specified Warranty Period.

1.12 NUISANCE WATER

A. The contractor shall protect the work at all times from damage, and shall take measures to prevent delays in the progress of the work caused by nuisance water, such as rainfall, irrigation water and groundwater.
B. The contractor shall dispose of nuisance water using appropriate mechanical means at their sole expense and without adverse effects upon the Owner’s, or any other property.

C. The contractor shall comply with any and all applicable non-point source pollution regulations required by the Owner.

1.13 REFERENCE POINTS

A. The contractor shall leave all existing stakes and reference points in their existing locations unless directed or authorized otherwise by the Owner’s Representative. The contractor shall set additional stakes and reference points as necessary to properly establish horizontal and vertical controls required for the work.

1.14 COORDINATION:

A. The contractor shall coordinate all items of work to assure efficient and orderly sequence of installation of construction elements.
   1. The contractor shall make provisions for accommodating items installed by the Owner or under separate contracts.
   2. The contractor shall coordinate and cooperate fully with all other agencies, subcontractors, or utility company personnel furnishing labor, materials, or services, so that the work, as a whole, shall be executed in the most efficient manner and without conflict or delay.

B. The contractor shall verify that characteristics of interrelated operating equipment are compatible and coordinate work having interdependent responsibilities for installing of mechanical, irrigation, or electrical work, which may be indicated diagrammatically on Drawings.

C. The contractor shall coordinate space requirements and installation of work, which is indicated diagrammatically on Drawings.
   1. Follow routing shown for pipes, and conduits as closely as possible, run lines parallel with lines of construction edges whenever possible.
   2. Utilize spaces efficiently for other installations, for maintenance, and for repairs.
   3. Work out all conditions involving work of all trades in advance of installation. If necessary, and before work proceeds in areas with constricted clearances, prepare supplementary drawings for Owner’s Representative review, showing all work in “tight” areas. Provide supplementary drawings and additional work necessary to overcome spatially constricted conditions.

D. Differences or disputes concerning coordination, interference or extent of work between divisions shall be decided by the Owner’s Representative.

E. Access Doors and Panels:
   1. Coordinate access door and panel requirements with each trade installing work to which access must be available to the Owner’s Representative from time to time.

F. Contractor shall install a temporary construction fence at the Tracy Little League fields that have already been constructed. These fields will be accessed by Tracy Little League during construction and contractor shall setup fencing to allow for access.

G. During the landscape maintenance period, youth sports leagues will utilize the fields when they are adequately established for use. Contractor will still maintain the fields per the landscape maintenance requirements during this period.
1.15 CUTTING AND PATCHING

A. Contractor shall be responsible for all cutting, fitting, or patching of work which may be required to make its several parts come together properly and fix it to receive or be received by work of other trades.

B. Any cost caused by defective or poorly timed work shall be borne by the responsible party, as determined by the Owner’s Representative. Contractor shall not endanger any work, persons or construction by cutting, digging, or otherwise, and shall not alter the work of any other contractor except as acceptable to the Owner’s Representative.

C. Patching of all openings for new installations and all openings resulting from the removal or relocation of any installations shall be done with material of the same type adjoining openings and as acceptable to the Owner’s Representative.

1.16 CLEANING DURING CONSTRUCTION

A. Execute weekly cleaning operations to keep the work, site, streets, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris resulting from construction operations.
   1. The Owner’s Representative may, at any time during construction, order general clean up of the site at no additional cost to the Owner.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove hazardous waste materials, debris, and rubbish from the site periodically and properly dispose of such materials at legal disposal areas.
   1. Location of legal disposal sites and all costs incurred from waste disposal and transportation shall be the responsibility of the contractor.
   2. Waste material or debris shall not be buried or burned on the site.

1.17 PROJECT COMPLETION

A. Conform to Section 01700 - Contract Closeout.

B. The contractor shall, at completion of the project, leave all work installed properly operating and in a thoroughly clean condition.

C. Thoroughly instruct the Owner’s Representative and any applicable operation and maintenance personnel in the contents of the “operations and maintenance manual.” Refer to Section 01300 - Submittals.

PART 2 PRODUCTS - Not Applicable

PART 3 EXECUTION - Not Applicable

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY

A. Scope of work:
1. Alternate Bids shall state the NET AMOUNT to be ADDED TO or DEDUCTED FROM the BASE BID PRICE or the CONTRACT SUM, as applicable.
2. The changes described in each Alternate shall only become incorporated into the work if the Owner elects to proceed with one or more or any combination of the Alternative and amends the Owner-Contractor Agreement accordingly. Alternate selections may occur prior to the Contract Date, or may, by the Agreement, be deferred for possible selection at a subsequent date.
3. Acceptance or Rejection: Acceptance or rejection of each Alternate Bid is at the discretion of the Owner. None, any, or all Alternate Bid item(s) may be accepted or rejected in any sequence by the Owner.
4. Costs: Include under each Alternate Bid the net amount of all changes in costs, whether additive or deductive, resulting to the work affected by the Alternate Bid item(s).
5. Modifications to the work shall require furnishing and installing the selected Alternate materials and labor to the satisfaction of the Owner’s Representative at no additional cost to the Owner other than described in the applicable Alternate Bid.
6. Extent of Alternate Bid Items: Bidders shall determine the full extent of work affected by each Alternate and shall make full and proper allowance for such extent in the preparation of the Alternate Bid.
7. Furnish all labor, materials, equipment, facilities, transportation, and services to complete all work relating to each Alternate listed below.
8. No increase in Contract days or extension of Contract completion schedule shall be made for work required by Alternate Bid improvements.

B. Related sections can include, but are not necessarily limited to:
1. All applicable sections of the Specifications

PART 2 PRODUCTS

2.01 ALTERNATE “A”: Furnish all labor, materials, equipment, facilities, transportation, and services to complete all work relating to the installation of the clear and grub, fine grading, drainage, header and irrigation for Field K as shown on the drawing sheets and further described by other applicable portions of the Contract Documents.

2.02 ALTERNATE “B”: Furnish all labor, materials, equipment, facilities, transportation, and services to complete all work relating to the installation of the clear and grub, fine grading, drainage and irrigation for Field O and P as shown on the drawing sheets and further described by other applicable portions of the Contract Documents.

2.03 ALTERNATE “B”: Furnish all labor, materials, equipment, facilities, transportation, and services to complete all work relating to the installation of the overhang netting system at the Little League backstops as shown on the drawing sheets and further described by other applicable portions of the Contract Documents.

PART 3 EXECUTION

3.01 ADVANCE COORDINATION BY CONTRACTOR
A. Upon Owner acceptance of any Alternate, all personnel and material suppliers affected shall be immediately notified by the contractor as to the nature and extent of additional or lesser work implied by such acceptance.

END OF SECTION
SECTION 01050

FIELD ENGINEERING

PART 1  GENERAL

1.01 SUMMARY

A. Layout work as shown on the Drawings with the use of a Licensed Surveyor and establish additional
bench marks, monuments, lines, and levels necessary for the work covered by this Contract.

B. Scope of work:
Provide such field engineering services required for proper completion of the work which may
include, but is not limited to:
1. Establishing and maintaining hubs, coordinate grid base lines and levels
2. All excavations and elevations, footings and piers required for installation of work items
3. Establishing horizontal and vertical control for site construction items

C. Related sections can include, but may not be limited to the following:
1. Section 01300 - Submittals
2. Section 01720 - Record Drawings

1.02 PROCEDURES

A. In addition to procedures directed by the Owner for proper performance of the work, the
contractor shall:
1. Locate and protect control points before starting work on the site
2. Preserve permanent reference points during progress of the work
3. Not change or relocate reference points or items of the work without specific review and
acceptance by the Owner’s Representative
4. Promptly advise the Owner’s Representative when a reference point is lost or destroyed,
or requires relocation because of other changes in the work.
a. Upon direction of the Owner’s Representative, replace reference stakes or
   markers according to the original or appropriate survey control.

PART 2  PRODUCTS - Not Applicable

PART 3  EXECUTION

3.01 LAYING OUT THE WORK

A. Contractor shall employ a Registered Civil Engineer or Licensed Land Surveyor (hereafter referred
to as Surveyor) to lay out the entire work and set grades, lines, levels, and positions throughout the
site.

B. Prior to beginning work, locate or set all general reference points, bench marks, establish
monuments and take action as necessary to prevent their destruction, then layout all lines, elevations
and measurements for entire work.

C. Verify figures and dimensions shown on the Drawings, notify the Owner’s Representative
immediately of any discrepancies and re-direct work to avoid delay. Contractor shall accept
responsibility for all errors resulting from failure to notify Owner’s Representative of known
discrepancies.

D. Establish monuments on curbs, manholes or pavements with concrete embedded steel pipe with lead
plug and/or brass nail with washer, as acceptable to the Owner’s Representative.

E. Show exact locations of the monuments if any are disrupted or destroyed on the Record Drawings in conformance with Section 01720 – Project Record Drawings.

END OF SECTION
SECTION 01070
CONFORMANCE SURVEYING

PART 1 GENERAL

1.01 SUMMARY

A. Conformance Surveying work shall be completed by a Licensed Surveyor and be based on established site bench marks, monuments, lines, and levels necessary for the work covered by this Contract.

B. Scope of work:
Providing conformance surveying required for proper completion of the work may include, but may not be limited to:
1. Natural turf field construction
2. Other applicable project components.

C. Related sections can include, but may not be limited to the following:
1. Section 01300 – Submittals
2. Section 01720 – Record Drawings
3. Section 01050 – Field Engineering
4. Section 02200 – Earthwork
5. Section 02230 – Base Courses
6. Section 02510 – Asphaltic Concrete Paving
7. Section 02900 – Landscaping

1.02 SUBMITTALS

A. Contractor will be required to submit three (3) hard copies and one (1) electronic copy (in AutoCAD or scaled PDF image) of all conformance surveys for the project. The Contractor shall ensure that all survey data is completed with the supervision of a licensed surveyor. The Owner Representative shall provide a written response within two (2) working days of receipt of said drawings and identify any areas out of tolerance.

1.03 QUALITY CONTROL AND REWORK

A. Any portion of the survey that does not conform to the grading tolerance requirements identified in this specification section will be corrected by the Contractor. Areas out of conformance will be resurveyed at the Contractor’s sole expense (following the identical procedure stated above) by the Surveyor, and these revised points shall be added to the original digital file for resubmittal, review and acceptance by the Owner Representative.

B. All delays and costs incurred due to grades out of conformance are the sole responsibility of the Contractor. At any point during construction following acceptance of any portion of the survey by the Owner, the Owner reserves the right to recheck the surface grades (at no cost to the Contractor) to verify it is still in conformance. It is the Contractor’s responsibility to protect the grading and compaction tolerances of the surveyed surface after conformance surveying operations are complete and accepted, and prior to installation of any subsequent materials. Any work identified by the survey that is outside of the acceptable tolerances shall be corrected by the Contractor at its sole expense.

PART 2 PRODUCTS - Not Applicable

PART 3 EXECUTION
3.01 LAYING OUT THE WORK

A. Contractor shall employ a Registered Civil Engineer or Licensed Land Surveyor (hereafter referred to as Surveyor) to perform any conformance surveying work required by the Contractor.

B. Prior to beginning work, Contractor shall secure the electronic grading plan from the Owner for use by the Surveyor. The surveyor shall provide all conformance survey drawings. The drawings shall provide both the design elevations and the as-constructed spot elevations. These elevations shall be for comparison to those on the contract documents for the same location. Contractor shall also show the difference in these two numbers. In addition, unique reference numbers shall be assigned to each point for reference purposes. For spacing requirements, refer to specific type of improvement identified in this specification section.

C. Accuracy of all surveys provided in this section shall be to 0.01 feet.

D. The surveyor shall provide all conformance survey drawings and all 25' grid or other grid conformance grades based on the grading plans designed grades.

3.02 NATURAL TURF (native soil) ATHLETIC FIELD CONFORMANCE SURVEYING REQUIREMENTS

A. PRE-TURF INSTALLATION: Upon successful installation of the edges of the natural turf transition edges and the installation of irrigation, drainage, and other various utility systems, as well as the final soil amendment incorporation and fine grading, the Contractor shall be responsible for verifying the proper horizontal and vertical controls of the prepared rootzone. This quality control process shall be completed by a licensed surveyor. The field natural turf area shall be shot using laser surveying equipment capable of accuracy to 0.01 feet, and shall be shot on a maximum 25 foot spacing. The survey results shall be deemed acceptable when the results show that the field has no field surveyed grade points greater than ¾ inch (0.06 feet) outside its design grade elevation. Any repairs and/or corrections made after the survey has been completed will require those affected areas to be resurveyed at the Contractor's sole expense.

B. POST-TURF INSTALLATION: Upon acceptance of the pre-turf installation conformance survey, Contractor shall install the specified turf material. If directed by the Owner, the Contractor shall survey the turf prior to final acceptance as outlined above to ensure the turf areas are in contract compliance.

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY

A. This section covers abbreviations, definitions, and the general requirements for regulatory requirements pertaining to the work. This section shall be supplementary to all other abbreviations, definitions, and regulatory requirements mentioned or references elsewhere in the Contract Documents.

B. Scope of work:
   1. Reference Standards
   2. Abbreviations
   3. Definitions

C. Related sections can include, but may not be limited to the following:
   1. All applicable sections of the Specifications.

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. Refer to latest editions of the references stated herein.

B. Work shall comply with the requirements of all applicable codes, laws, rules, regulations, and standards of applicable code enforcing authorities. Nothing in the drawings or specifications shall be constructed to permit work not conforming to the applicable laws, ordinances, rules, and regulations. In case of conflicts between code requirements, the most restrictive shall apply; except that where the requirements of these Specifications exceed code requirements, the Specifications shall govern. The following codes and specifications are hereby referenced and considered part of these Contract Documents.


D. Building Codes – Per the plan set cover sheet:
   1. Building Standards Administrative Code
   2. California Building Code
   3. California Mechanical Code
   4. California Plumbing Code
   5. California Electrical Code
   6. California Fire Code
   7. California Energy Code


F. American Association of State Highway and Traffic Officials.


H. Occupational Safety and Health (ACT) Standards.
I. Other statutes, ordinances, laws, regulations, rules, orders and codes specified in other sections of the Specifications or bearing on the work.

J. State and Local Public Health Codes.


L. Safety Orders of Division of Industrial Safety.


N. State of California Low Voltage Electrical Safety Orders (CAL/OSHA).

O. Americans with Disabilities Act (ADA).


1.03 ABBREVIATIONS

Abbreviations for numerous common references, terms and materials used throughout the specifications include:

AA Aluminum Association
AAMA Architectural Aluminum Manufacturers Association
AAN American Association of Nurserymen
AASHTO American Association of State Highway and Traffic Officials.
ACI American Concrete Institute
AEIC Association of Edison Illuminating Companies
AFI Air Filter Institute
AIA American Institute of Architects
AIEE American Institute of Electrical and Electronic Engineers
AISC American Institute of Steel Construction
AJCHN American Joint Committee on Horticultural Nomenclature
AMCA Air Moving and Conditioning Association
ANSI American National Standard Institute
APA American Plywood Association
APWA American Public Works Association
ARI American Refrigeration Institute
AHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers
ASLA American Society of Landscape Architects
ASME American Society of Mechanical Engineers
ASSE American Society of Sanitary Engineering
ASTM American Society for Testing and Materials
AWI Architectural Woodwork Institute
AWPI American Wood Preservers Institute
AWS American Welding Society
AWWA American Water Works Association
BC Bottom of Curb
BFP Backflow Preventer
BOC Back of Curb
CB Catch Basin
CL Center Line
CONC Concrete
1.04 DEFINITIONS

Reference to Drawings: Where the words "shown", "indicated", "detailed", "noted", "scheduled" or words of similar import are used, it shall be understood that reference is made to the Drawings accompanying these Specifications, unless otherwise noted.
Addendum: The word "Addendum" shall mean written and/or graphic modifications to the contract documents provided to holders of the Contract Documents prior to the opening of bids. Addenda shall be issued by the Owners Representative.

Alternates: The word "Alternates" shall be understood to mean alternate products, materials, equipment, systems, methods, units of work or elements of the construction, which may, at the Owners option and under the terms established by the Contract Documents, be added to, or deleted from the work.

Approvals: The words "approved", "approval", "acceptable", "acceptance", shall mean acceptance by the Owners Representative is required.

Contract Change Order: The words "Contract Change Order" shall mean a change order authorization to the contractor, covering changes to the Contract found by the Owner Representative to be necessary for the proper completion or construction for the whole work required by the Contract, and establishing the basis of payment and/or time adjustments for the work affected by the changes, also sometimes referred to as a "Change Order".

Contract Documents: The words "Contract Documents" shall mean the documents contained within the General Conditions, Special Provisions of the Contract, the Drawings, Specifications, all Addenda, Change Orders, clarifications and other modifications issued by the Owners Representative prior to and after execution of the Contract.

Directions: The words "directed", "designated", and "selected", shall mean the directions, designations, selection, of the Owners Representative, unless otherwise noted.

Drawings: The word "Drawings" shall mean the official project bid or construction plans, plan details, profiles, typical cross sections, working drawings, shop drawings, supplemental drawings, and/or reproductions thereof, accepted or issued by the Owners Representative, which show the locations, character, dimensions, and details of work to be performed. All such documents are to be considered as a part of the Drawings.

Equals: The words "or equal", "equal to", "approved equal", "or approved equal" and "equivalent", shall mean "equal to or acceptable in the opinion of the Owners Representative," unless stated otherwise.

Language: Words and phrases requiring an action or performance, such as "perform", "provide", "install", "furnish", "connect", "test", "coordinate", and words and phrases of similar import, shall be understood to be preceded by the phrase "The contractor shall" unless otherwise stated.

Modifications: The word "modifications" shall mean a written amendment to the Contract signed by both parties, a Change Order, a written interpretation issued by the Owners Representative or a written order for a minor change in the work issued by the Owners Representative.

Notice To Proceed: The words "Notice to Proceed" shall mean the written notice issued by the Owners Representative to the contractor fixing the date on which or within which dates the contractor shall start to perform the contractor's obligations under the Contract Documents.

Perform: The word "perform" shall mean that the contractor, at his expense, shall perform all operations including necessary labor, tools, and equipment and further including the furnishing and installation of materials that are indicated, specified, and required to complete such the conditions of the Contract and Contract Documents.

Project: The word "project" shall mean the total construction of the work performed under the Contract Documents.
Provide: The word “provide” shall mean that the contractor, at his expense, shall furnish and install the work, complete in place and ready for use, including furnishing of necessary labor, materials, tools, equipment and transportation.

Required: The word "required" shall mean "as required to properly complete the work and as required and acceptable to the Owner's Representative" unless otherwise noted.

Shop Drawings: The words "shop drawings" shall mean drawings, diagrams, schedules, and other data specifically prepared for the work by the contractor or his sub-contractor, manufacturer, supplier, or distributor to illustrate some portion of the work.

Site: The words "Site" or "Sites" shall be understood to mean the property or properties described within the Contract Documents and indicated on the Drawings where the work shall commence.

Substantial Completion: The words "substantial completion" shall mean the time and date when the work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the work, or designated portion thereof, for the use for which it was intended, as evidenced by the Owner's Certificate of Substantial Completion. The Certificate of Substantial Completion shall set forth the date on which Substantial Completion is deemed by the Owners Representative in its sole discretion to have occurred. This shall occur only when the site improvements are 100% complete and shall include correction of final punch list items(s) and the execution of the Landscape Turf Establishment Period. The issuance of a Certificate of Substantial Completion shall signify the date on which the accounting of Contract "Working Days" or "Calendar Days" is terminated insofar as they may relate to Liquidated Damages.

Work: The word “work” whether capitalized or in lower case, shall be understood to mean labor, materials, or both, and the entire construction encompassed by the Contract Documents.

PART 2  PRODUCTS - Not Applicable
PART 3  EXECUTION - Not Applicable

END OF SECTION
SECTION 01300

SUBMITTALS

PART 1  GENERAL

1.01    SUMMARY

   A. Scope of work:
      1. Submit all items specified herein and as noted elsewhere in the Contract Documents.

   B. Related sections:
      1. All pertinent sections of the specifications

1.02    SCHEDULE OF SUBMITTALS

   A. Within ten (10) working days from date of Notice To Proceed, the contractor shall submit to the Owner a comprehensive list of all submittals and the Submittal Progress Log and Schedule (refer to Section 01010-Summary Of Work) for review and acceptance. The submitted list shall be broken down by specification section, material / product and other applicable information. The log shall be reviewed and accepted prior to submission of actual submittals.

   B. Upon acceptance by the Owner Representative, the list and Progress Schedule shall become part of the Contract Documents. All project submittals shall be submitted to the Owner’s Representative within ten (10) working days from the date of the Notice To Proceed unless noted otherwise.

   C. Coordinate the Progress Schedule with all sub-contractors, material suppliers, etc. to ensure adherence to the schedule.

   D. Revise and update the Progress Schedule on a monthly basis to reflect on-going construction conditions and sequences.

   E. Submit one copy of the Progress Schedule monthly to the Owner Representative showing all revisions for review and comment. Coordinate this submittal with Progress Payment requests or as acceptable to the Owner’s Representative.

1.03    IDENTIFICATION OF SUBMITTALS

   A. Identify each submittal with the following information:
      1. Date and revision dates
      2. Project title and number
      3. The names of:
         a. Sub-contractor
         b. Supplier
         c. Manufacturer
         d. Separate detailer when pertinent
      4. Identifications of product or material (the submitted product must be clearly identified).
      5. Applicable standards
      6. Identification of deviations from Contract Documents
      7. Contractor’s stamp, initialed or signed, certifying review of submittal, verification of field measurements, and compliance with Contract Documents.

PART 2  PRODUCTS

2.01 PRODUCT LITERATURE
A. Contractor will have the option to provide electronic or hardcopy submittals. Our preference would be electronic.

1. Electronic Submittal: Include transmittal sheets and highlighted product data sheets.

2. Hardcopy Submittal: Submit six (6) copies of the manufacturer’s printed data and instructions to the Owner’s Representative for review. Two (2) copies shall be to be returned to the contractor and two (2) copies shall be retained by the Owner’s Representative.

B. Clearly indicate, by colored highlight or colored stamp (USING A COLOR THAT WILL COPY), which portion of the literature is submitted to be reviewed for compliance with the Contract Documents.

2.02 SHOP DRAWINGS

A. Shop drawings shall be drawn accurately to a scale sufficiently large to depict all aspect of the items and its methods of connection to the work. Submit shop drawings to the Owner’s Representative in the quantity specified in "PRODUCT LITERATURE" above.

B. Review of the shop drawings by the Owner’s Representative shall not relieve the contractor of the responsibility for errors and/or omissions in the design of adequate connections or satisfactory construction of the work or conformance to applicable codes, etc.

C. Clearly indicate, by colored highlight or colored stamp (USING A COLOR THAT WILL COPY), the desired deviations from the Drawings (as applicable).

2.03 SAMPLES

A. Samples shall be of the actual article(s) to be furnished.

B. Submit four (4) samples to the Owner’s Representative for review. Two (2) samples shall be returned to the contractor and two (2) shall be retained by the Owner’s Representative.

C. When specifically acceptable to the Owner’s Representative the returned sample(s) may be used in the work as an installed item.

D. Construct the work, or re-submit in accordance with the Owner’s Representative’s review.

2.04 COLORS AND PATTERNS

A. As required in related sections of these Specifications, submit actual color chips of specified colors and patterns as applicable to the actual material proposed for use in the work. Submit quantity as noted in "SAMPLES" above.

2.05 MANUALS

A. Submit four (4) copies of all required manuals.

B. Unless specified elsewhere, all manuals shall be bound in identical plastic binders approximately 8.5" x 11" in size and shall contain at least the following:

1. Label on the front cover and binding edge stating general nature of the manual

2. Neatly typed table of contents.

3. Complete instructions regarding operation and maintenance of all equipment to be furnished as part of the work.

4. Complete list of replaceable parts with part numbers and name and address of nearest
5. Copies of all guarantees and warranties issued.
6. Copies of reviewed shop drawings.
7. Photographs of exposed work before final covering, if required by the Owner’s Representative.

C. When the manual includes manufacturer’s catalog "cut-sheets", clearly indicate the actual items installed in the project.

PART 3-execution

3.01 SUBMITTAL ORGANIZATION

A. Unless otherwise directed by the Owner’s Representative, organize all submittals in categories by specification section number from which the submittal was requested and submit all at one time in format as described in "MANUALS" above.

B. Owner’s Representative reserves the right to reject incomplete or partial submittals.

3.02 SUBMITTAL REVIEW

A. Contractor shall sign or stamp all submittals as verification that the submittal complies with the Contract Documents.

B. The Owner’s Representative shall review all submittals and respond with one of the following markings:
   1. No Exceptions Taken
   2. Furnish as Corrected
   3. Revise and Resubmit

C. The Owner’s Representative’s review of submittals shall not relieve the contractor from responsibility for deviations from the Construction Documents unless the contractor has called the Owner Representative’s attention to such deviations and secured written acceptance, nor shall it relieve the contractor from the responsibility for errors and/or omissions in shop drawings or other data.

3.03 RESUBMITTAL REQUIREMENTS

A. General:
   1. The contractor shall make all submittals in advance of scheduled dates of installation to provide ample time for Owner’s Representative’s review, for possible revision and resubmittal, placing orders, necessary delivery lead times and for delivery to project site.
   2. In scheduling, the contractor shall allow at least ten full working days for the Owner Representative’s review following receipt of the submittal. If a submittal is time sensitive, the contractor shall clearly indicate this on the submittal and the Owner’s Representative shall make all reasonable effort to review the submittal and respond by the time it is needed.

B. Financial impact of delays due to contractor’s tardiness of submittals will be backcharged as necessary to the contractor and shall not be at the temporal or financial expense of the Owner.

END OF SECTION
PART 1  GENERAL

1.01 SUMMARY

A. Materials furnished and work performed under the Contract shall be subject to review by the Owner’s Representative. The contractor shall be held strictly to the requirements of the Contract Documents with regard to quality of materials, workmanship, and diligent execution of the Contract. Such review may include mill, plant, shop, or field review as deemed necessary.

B. Scope of work:
1. Work performed in the absence of any prescribed inspection or observation may be subject to removal and replacement. In such a case, the entire cost of removal and replacement shall be borne by the contractor, regardless of whether the work removed is found to be defective or not.
2. Testing, inspection, or other related services shall be performed by an independent consultant, testing laboratory or services selected by the Owner’s Representative.
3. Furnish labor necessary to obtain and handle testing samples at the project site or at other locations.

C. Related sections can include, but may not be limited to the following:
1. All applicable sections of these Specifications.

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. Control of Work: Conform to Section 5 of the State Standard Specifications.
B. Control of Materials: Conform to Section 6 of the State Standard Specifications.

PART 2  PRODUCTS

2.01 INSPECTION AND TESTS:

A. Inspections, observations and/or testing that may be required by the Contract Documents during progress of the work shall be made by a pre-qualified, independent testing agency selected and paid for by the Owner’s Representative. When tests indicate non-compliance, the contractor shall pay all direct and indirect costs of subsequent re-testing until compliance is established.

B. Costs associated with testing, inspections and observations due to the following shall be the responsibility of the contractor:
1. Re-testing due to failure of initial samples
2. Unacceptable changes in sources, lots, or suppliers of materials after original testing established compliance
3. Changes in methods or materials of construction by contractor that require testing, inspection or other related services in excess of that require by original design
4. Failure to properly notify the Owner’s Representative at critical stages of construction
5. Requesting testing, inspection, and/or observation of work not ready.

2.02 TOLERANCES

A. Tolerances not specifically identified shall meet the written standards and/or recognized commercial tolerances established for the specific materials or product. Refer to Section 01090 -
References.

PART 3  EXECUTION

3.01  EXAMINATION OF CONDITIONS

A. Prior to installing any portion of the work, the contractor shall examine the site and verify that site conditions are acceptable to begin work of each section.

B. Verify that work specified elsewhere has been completed to an appropriate stage to begin work of each section.

C. Materials or products requiring installation under the supervision or inspection of a specific materials manufacturer or manufacturer’s representative shall be examined and/or tested, and accepted in writing, by such representative(s) prior to installation of work.

D. Notify the Owner’s Representative immediately in writing of any irregularities or unacceptable conditions and re-direct work to avoid delay.

E. Start of work by contractor shall indicate contractor’s acceptance of site conditions.

END OF SECTION
PART 1  GENERAL

1.01 SUMMARY

A. Scope of work: Provide construction facilities and temporary controls required for the performance of the work, which may include, but are not necessarily limited to, the following:

1. Temporary utilities
2. Enclosures, barricades, and fences
3. Fire protection
4. Protection of work
5. Bottled water

B. Related sections can include, but may not be limited to the following:

1. All pertinent sections of the specifications

1.02 SELECTED REFERENCE AND REGULATORY REQUIREMENTS

A. National Fire Protection Association (NFPA):

1. 10 - Portable Fire Extinguishers.
2. 241 - Safeguarding Construction, Alteration and Demolition Operations.


1.03 UTILITY SERVICES

A. Power and Lighting: Furnish, install, and maintain temporary wiring, poles, meter board, service entrance switch, lamps, and equipment as necessary to provide temporary lighting and power for the construction site.

1. Pay all costs for temporary electrical systems required for construction.
2. Source of power shall be at location on site acceptable to the Owner’s representative. Required temporary transmission lines shall be arranged by contractor in conjunction with the appropriate utility company.

B. Water:

1. Install temporary piping and valves downstream from permanent (new) meter locations as acceptable to the Owner’s representative. No temporary water services shall be installed prior to meter installation without prior Owner review and acceptance.
2. Temporary water facilities shall be installed with an acceptable reduced pressure backflow prevention unit furnished and installed by the contractor.
3. Locate temporary sources of water route, and construct pipelines so that they do not create a hazard or interfere with public access, traffic, or construction operations.
4. Design and construct such pipelines.

C. Utility Costs for Contractors:

Distribution of temporary utility services to sub-contractors shall be contractor’s responsibility and cost.

1.04 SANITARY FACILITIES

A. Provide, install and maintain, through duration of the work, temporary sanitary facilities for use of construction personnel.

1. Sanitary facilities shall be provided, maintained with supplies as required for the number
of construction personnel in compliance to local regulations.
2. Locate such facilities a reasonable distance from all working areas.

B. Provide weather tight and floored structures, maintained in clean and sanitary condition acceptable to the Owner’s representative.

1.05 STORAGE ENCLOSURES
A. Provide sheds and enclosures necessary for storing applicable materials and equipment.
B. Enclosures shall be conveniently located, substantially and neatly constructed, and weather tight.
C. Store and protect products in accordance with manufacturer’s instructions, with seals and labels intact and legible.
D. For exterior storage of fabricated products, place on sloped supports, above ground.
E. Provide off-site storage and protection when site does not permit on-site storage or protection.
F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent contamination by foreign matter.
H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.06 MAINTENANCE OF CONSTRUCTION FACILITIES
A. All facilities shall be provided and maintained by the contractor in accordance with Cal-OSHA and applicable laws and ordinances.

1.07 SECURITY
A. Employment of a watchman for non-construction hours shall be left to the discretion of the contractor, who shall be fully responsible for any theft or damage to any material, equipment or to portion of the work until Project Final Acceptance. Such security service shall be paid for by the contractor.
B. All site security shall be the responsibility of the contractor.

1.08 FIRE PROTECTION
A. Take precautions to prevent and eliminate fire hazards. The contractor shall be responsible for providing, maintaining, and enforcing any necessary or required fire prevention safeguards until Project Final Acceptance.
B. Provide fire extinguishers on the premises during the course of construction of the type and sizes recommended by the NFPA 10 and NFPA 241 to control fires resulting from the particular work being performed. Instruct employees in their use. Place extinguishers in the immediate vicinity of the work being performed, ready for use.
C. Fire Inspection: The contractor’s superintendent shall inspect the entire project as necessary to make certain the required precautions are being adhered to.
D. Combustible and/or flammable Building Materials: Only an appropriate working supply of flammable fuel or building materials shall be located inside of any storage facility.

E. During the use of hazardous equipment, such as acetylene torches, welding equipment, bitumen kettles, and similar devices, no work shall start or equipment used unless fire extinguishers of specified type and capacity are placed in the working area and available for use by workmen using such hazardous equipment.
   1. Extinguishers shall meet standards established by Underwriter’s Laboratory, and shall be inspected at regular intervals and recharged by the contractor as necessary.

F. Combustible and/or flammable Waste Materials. Oil-soaked rags, papers, and other highly combustible materials must be stored in closed metal containers with tightly-hinged lids at all times, and shall be removed from the site at the close of each day’s work and more often when necessary.

1.09 BARRICADES

A. Furnish or construct fences, barricades, railing, warning lights, lights and other barricades required by law, Contract Documents, common sense or to ensure public safety.

B. Give adequate warning to the public at all times whenever a dangerous condition exists as the result of construction work. Furnish Owner’s representative with name, address, pager number and local telephone number of the superintendent responsible and at least one other person for the maintenance of barriers, signs, lights and other accident prevention devices for evenings and weekends.

1.10 PROTECTION OF WORK AND FACILITIES

A. Protect adjacent property, roads, streets, curbs, planting areas, erosion control materials and other improvements during construction operations. All damaged materials shall be replaced and/or repaired at the expense of the contractor and to the satisfaction of the Owner’s representative.

B. Protect installed work and provide special protection where applicable.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

1.11 VEHICULAR SAFETY

A. All motorized and/or self-propelled construction equipment shall be equipped with a reverse signal alarm (hub-cap type).

1.12 FIRST AID

A. Provide and maintain first aid supplies as required Cal-OSHA and applicable local ordinances. Make arrangements with local emergency center and nearest hospital to receive personnel requiring medical attention, including emergencies. Such information shall be conspicuously displayed at the construction office when an office is required on the project.

1.13 ACCESS ROADS & PARKING AREAS

A. Construct, designate and maintain specific vehicular access as required for the orderly progress of the work. Engineer construction access roads and parking areas as necessary to provide suitable support during all weather conditions for anticipated loads, including municipal fire apparatus. Provide adequate surface drainage without interrupting natural flow of existing drainage.

B. Provide designated parking areas for use by construction personnel and Owner’s representative(s) such parking areas are subject to the discretion of the Owner’s representative.
C. Restore temporary vehicular access and parking areas to original or specified conditions prior to Project Final Acceptance.

1.14 HAUL ROUTES

A. Comply with any and all local governing ordinances and guidelines.

1.15 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work. Coordinate removal of temporary facilities with the Owner's representative.

B. After removal of temporary facilities, restore grounds or buildings which have been damaged or disturbed back to an "as was" or better condition subject to the discretion of the Owner's representative.

1.16 Storm Water Pollution Prevention Plan (SWPPP)

A. Contractor shall be required to adhere to the project's SWPPP that is provided within these contract documents. Contractor will be required to provide the QSP services and complete all reporting, SWPP updates and termination of the SWPP permit. City will provide the QSD services, initial SWPP plan and NOI.

PART 2 PRODUCTS - Not Applicable

PART 3 EXECUTION - Not Applicable

END OF SECTION
PART 1 GENERAL

1.1 SECTION INCLUDES

A. The goal of these requirements is to prevent the pollution of storm water runoff on construction projects by keeping pollution out of storm drains, reducing the exposure and discharge of materials and wastes to storm water, and by reducing erosion and sedimentation. Storm drains discharge runoff directly to creeks without treatment.

1.2 RELATED SECTIONS

A. Section 01500: Construction Facilities and Temporary Controls
B. Section 01700: Contract Close-Out
C. Requirements of the Contract Documents

1.3 GENERAL REQUIREMENTS

A. The following general requirements shall be met on all projects within the Owner.

1. Non-hazardous Material/Waste Management
   a. Designated Area: The Contractor shall propose designated areas of the project site, for approval by the Owner Representative, suitable for material delivery, storage, and waste collection that, to the maximum extent practicable, are near construction entrances and away from catch basins, gutters, drainage courses, and creeks.
   b. Granular Material
      i) The Contractor shall store granular material at least ten feet away from catch basin and curb returns.
      ii) The Contractor shall not allow granular material to enter the storm drains or creeks.
      iii) When rain is forecast within 24 hours or during wet weather, the Owner Representative may require the Contractor to cover granular material with a tarpaulin and to surround the material with sand bags.
   c. Dust Control: The Contractor shall use reclaimed water to control dust on a daily basis or as directed by the Owner Representative.
   d. Cleaning Paved Storage Areas: The Contractor shall thoroughly clean all on-site paved areas used for storage of materials or otherwise utilized or involved during the work immediately after the materials are removed from storage. Cleaning shall be accomplished by sweeping and not with use of water.
   e. Recycling
      i) The Contractor, to the extent practicable, shall recycle aggregate base material, asphalt concrete, and Portland cement concrete as described in these Specifications.
      ii) In addition, to the maximum extent practicable, the Contractor shall reuse or recycle any useful construction materials generated during the project.
   f. Disposal
      i) The Contractor shall maintain the project site in a clean and orderly manner at all times. To the extent practicable, the Contractor shall collect all scrap, debris, and waste material, and dispose of such materials properly. The Owner Representative may require the
Contractor to clean and dispose of such materials at any time should the situation, in his opinion, constitute a danger.

ii) The Contractor shall inspect dumpsters for leaks and contact trash hauling contractors to replace or repair dumpsters that leak.

iii) The Contractor shall not discharge water on-site from cleaning dumpsters.

iv) The Contractor shall arrange for regular waste collection before dumpsters overflow.

2. Hazardous Material / Waste Management

   a. The Contractor shall label and store all hazardous materials, such as pesticides, paints, thinners, solvents, and fuels; and all hazardous wastes, such as waste oil and antifreeze; in accordance with all applicable State and Federal regulations.

   b. Usage

      i) When rain is forecast within 24 hours or during wet weather, the Owner Representative may prevent the Contractor from applying chemicals in outside areas.

      ii) The Contractor shall not over-apply pesticides or fertilizers and shall follow material manufacturers instructions regarding uses, protective equipment ventilation, flammability, and mixing of chemicals.

   c. Disposal

      i) The Contractor shall arrange for regular hazardous waste collection to comply with time limits on storage of hazardous wastes.

      ii) The Contractor shall dispose of hazardous waste only at authorized and permitted Treatment, Storage, and Disposal Facilities, and use only licensed hazardous waste haulers to remove the waste off-site, unless quantities to be transported are below applicable threshold limits for transportation specified in State and Federal regulations.

3. Spill Prevention and Control

   a. The Contractor shall keep a stockpile of spill cleanup materials, such as rags, or absorbents, readily accessible on-site.

   b. The Contractor shall immediately contain and prevent leaks and spills from entering storm drains, and properly clean up and dispose of the waste and cleanup materials. If the waste is hazardous, the Contractor shall handle the waste as described in section A.2.c above.

   c. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials.

4. Vehicle/Equipment Cleaning

   a. The Contractor shall not perform vehicle or equipment cleaning on-site or in the street using soaps, solvents, degreasers, steam cleaning equipment, or equivalent methods.

   b. The Contractor shall perform vehicle or equipment cleaning, with water only, in a designated, beamed area that will not allow rinse water to run off-site or into streets, gutters, storm drains, or creeks.

5. Vehicle/Equipment Maintenance and Fueling

   a. The Contractor shall perform maintenance and fueling of vehicles or equipment in a designated, bermed area or over a drip pan that will not allow run-on of storm water or runoff of spills.

   b. The Contractor shall use secondary containment such as a drip pan, to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed, or poured.

   c. The Contractor shall keep a stockpile of spill cleanup materials, such as rags or absorbents, readily accessible on-site.

   d. The Contractor shall clean up leaks and spills of vehicle or equipment fluids immediately and dispose of the waste and cleanup materials as hazardous waste, as described in above.

   e. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials.
f. The Contractor shall inspect vehicles and equipment arriving on-site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs are made.

g. The Contractor shall recycle waste oil and antifreeze, to the maximum extent practicable.

h. The Contractor shall comply with Federal, State, and City requirements for above ground storage tanks.

6. Contractors Training and Awareness

a. The Contractor shall train all employees/subcontractors on the storm water pollution prevention requirements contained in these Specifications.

b. The Contractor shall inform subcontractors of the storm water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

c. The Contractor shall post warning signs in areas treated with chemicals.

d. The Contractor shall paint new catch basins, constricted as part of the project with a “No Dumping” stencil.

1.4 ACTIVITY-SPECIFIC REQUIREMENTS

A. The following activity-specific requirements shall be met on all projects within the Owner that include the listed activities.

1. Paving Operations

   a. Project Site Management
      i.) When rain is forecast within 24 hours during wet weather, the Owner Representative may prevent the Contractor from paving.
      ii.) The Owner Representative may direct the Contractor to protect drainage courses by using control measures, such as earth dike*, straw bale*, and sand bags* to divert runoff or trap and filter sediment.
      iii.) The Contractor shall cover drip pans or absorbent material under paving equipment when not in use.
      iv.) The Contractor shall cover catch basins and manholes when paving or applying seal coat, tack coat, slurry seal, or fog seal.

   b. Paving Waste Management: The Contractor shall not sweep or wash down excess sand (placed as part of a sand seal or to absorb excess oil) into gutters, storm drains, or creeks. Instead, the Contractor shall either collect the sand or return it to the stockpile, or dispose of it in a trash container. The Contractor shall not use water to wash down fresh asphalt concrete pavement.

2. Saw Cutting

   a. During saw cutting, the Contractor shall cover or barricade catch basins using control measures, such as filter fabric*, straw bales*, sand bag*, and fine gravel dams, to keep slurry out of both the sanitary and storm drain systems. When protecting a catch basin, the Contractor shall ensure that the entire opening is covered.

   b. The Contractor shall shovel, absorb, or vacuum saw cut slurry and pick up the waste before moving to the next location or at the end of each working day, whichever is sooner.

   c. If saw cut slurry enters catch basins, the Contractor shall remove the slurry from the storm drain system immediately.

3. Contaminated Soil Management

   a. On all projects involving grading or excavation, the Contractor shall look for contaminated soil as evidenced by site history, discoloration, odor, differences in soil properties, abandoned underground tanks or pipes, or buried debris. If the project is not within an area of known soil contamination and no evidence of soil contamination is found, then testing of the soil shall only be required if directed by the Owner Representative.

4. Concrete, Grout, and Mortar Waste Management
a. **Material Management:** The Contractor shall store and keep covered concrete, grout, and mortar away from drainage areas and ensure that these materials do not enter the storm drain system.

b. **Concrete Truck/Equipment Wash Out:**
   i) The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains, or creeks.
   ii) The Contractor shall perform washout of concrete trucks or equipment off-site or in a designated area on-site where the water will flow onto dirt or into a temporary pit in a dirt area. The Contractor shall let the water percolate into the soil and dispose of the hardened concrete in a trash container. If a suitable dirt area is not available, then the Contractor shall collect the wash water and remove it off-site.

c. **Exposed Aggregate Concrete Wash Water**
   i) The Contractor shall avoid creating runoff by draining water from washing of exposed aggregate concrete to a dirt area. If a suitable dirt area is not available, then the Contractor shall filter the wash water through straw bales or equivalent material before discharging to the storm drain.
   ii) The Contractor shall collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in a trash container.

5. **Painting**
   a. **Painting Cleanup**
      i) **Designated Area**
         a) The Contractor shall conduct cleaning of painting equipment and tools in a designated area that will not allow run-on of storm water or runoff of spills.
         b) The Contractor shall not allow wash water from cleaning of painting equipment and tools into streets, gutters, storm drains, or creeks.
      ii) **Water-based Paint**
         a) The Contractor shall remove as much excess paint as possible from brushes, rollers, and equipment before starting cleanup.
         b) To the maximum extent practicable, the Contractor shall dispose of wash water from aqueous cleaning of equipment and tools to the sanitary sewer.
         c) Otherwise, the Contractor shall direct wash water onto dirt area and spade in.
      iii) **Oil-based Paint**
         a) The Contractor shall remove as much excess paint as possible from brushes, rollers, and equipment before starting cleanup.
         b) To the maximum extent practicable, the Contractor shall filter paint thinner and solvents for reuse.
         c) The Contractor shall dispose of waste thinner and solvent, and sludge from cleaning of equipment and tools as hazardous waste, as described above.

   b. **Material/Waste Management**
      i) The Contractor shall store paint, solvents, chemicals, and waste materials in compliance with the local Hazardous Materials Storage Ordinances and all applicable State and Federal regulations. The Contractor shall store these materials in a designated area that will not allow run-on of storm water runoff of spills.
      ii) The Contractor shall dispose of excess thinners, solvents, oil, and water-based paint as hazardous waste.
      iii) The Contractor shall dispose of dry, empty paint cans, buckets, old brushes, rollers, rags, and drop cloths in the trash.

PART 2 PRODUCTS – N/A

PART 3 EXECUTION – N/A

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY

A. Scope of work:
1. Wherever in the Contract Documents a material, article, or process is indicated or specified by trade, patent, proprietary name, or name of manufacturer, such specification shall be deemed to be followed by the words, "or equal, as accepted in writing by the Owner’s representative.”

2. The naming of more than one manufacturer in a section does not imply that all products produced by such manufacturers are acceptable for use on the project. Where more than one proprietary name, process, product, etc. is specified, the contractor may provide materials or equipment of any one of the manufacturers specified, only if full compliance with other portions of the Contract Documents can be provided and the product is acceptable to the Owner’s representative.

B. Related sections can include, but may not be limited to the following:
1. Section 01300 - Submittals
2. All other applicable sections of the Specifications

1.02 MATERIALS

A. Unless otherwise specifically provided in the Contract Documents, all equipment, material, and articles incorporated into the work shall be new and suitable for the purposes intended.

B. Reference to any equipment, material, article or patented process, by trade name or catalog number shall not be construed as limiting competition. Specifications designating a material, product, or service by specific brand or trade name, with only one name listed is:
1. Required to be used since it is a unique product application
2. Used as a standard of quality which must be satisfied without compromise
3. The only brand or trade name known to the Owner’s representative

1.03 SUBSTITUTIONS

A. Materials and equipment for the work shall be the standard product of a manufacturer regularly engaged in the production of such materials and equipment. Product options or substitutions shall not be the basis for any price increase above the original bid price for the Contract.

B. Substitutions which are equal in quality, efficiency, durability and utility to those specified will be permitted, subject to the following provisions:
1. All substitutions must be favorably reviewed and accepted by the Owner’s representative in writing prior to implementation.

C. Submit to the Owner’s representative, not later than ten (10) working days from date of Notice To Proceed, a typewritten list containing a thorough side-by-side description of each proposed substitute item or material compared with the specified item as specified in Section 01300.
1. Provide sufficient data, drawings, samples, literature and other detailed information which demonstrates to the Owner’s representative that the proposed substitute is equal in quality, operating efficiency, and durability of the material specified.
D. The Owner’s representative shall review such proposed substitutions and determine if a substitution is acceptable.

E. Favorable review shall not relieve the contractor from complying with the requirements of the Contract Documents, and the contractor shall be responsible for all expenses for any changes resulting from acceptable substitutions which affect other parts of the work.

F. Failure of the contractor to submit proposed substitutions for review in the manner specified shall be sufficient cause for rejection by the Owner’s representative of any substitutions otherwise proposed.

G. Failure to place orders for specified equipment or material sufficiently in advance of the scheduled date of installation shall not be considered a valid reason upon which the Contractor may base a request for any substitutions or for any deviations from the Contract Documents.

H. The first or only named manufacturer is the basis for the project design and the use of alternative-names, second-names, or unnamed manufacturer’s products may require modifications in the project design and construction.
   1. Costs incurred due to requests, changes or revisions resulting from substitutions requiring drawings or services of the Owner’s representative or project consultants to facilitate purchase, installation or erection of any portion of the work, shall be borne by the contractor. A flat hourly rate, as agreed upon, shall be paid by the contractor whether the change is accepted or not. This fee shall be deducted, and paid, from Contract moneys due to the contractor as determined by the Owner’s representative.

I. Contractor shall furnish full information concerning the material or articles being proposed for substitution.
   1. Testing of a proposed substitute material to assure compliance with the Specifications may be required by the Owner’s representative at the contractor’s expense.
   2. Samples shall be submitted for review as specified in Section 01300.
   3. Equipment, material, and articles installed or used by the contractor without required review, shall be at the contractor’s risk.

J. Substitutions shall comply with or exceed all requirements of size, function, structure, durability, and appearance without exception.
   1. Use of accepted substitutions shall in no way relieve the contractor from responsibility for compliance with the Contract Documents after installation.
   2. The contractor shall assume all extra costs caused by the use of such substitutions where they affect other work or trades.

1.04 SUBSTITUTION REQUEST FORM

A. All requests for alternate materials or substitutions shall be submitted on the attached Substitution Request Form with descriptive information outlining the equivalent characteristics of the alternate product or material.

PART 2 PRODUCTS - Not applicable.

PART 3 EXECUTION

3.01 SUBSTITUTION REQUEST FORM

A. For all proposed substitutions, the contractor shall complete the attached Substitution Request Form,
attach all substantiating back-up literature and submit to the Owner’s representative within time
limit specified above.

END OF SECTION

ATTACHMENT: Substitution Request Form
SUBSTITUTION REQUEST FORM

DATE:

TO: OWNER’S REPRESENTATIVE

PROJECT NAME:

SPECIFIED ITEM: Section _____ Page _____ Item Number _____ Paragraph

DESCRIPTION:

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: (put N/A where not appropriate)

Manufacturer:_________________________ Color:

Model Number:_________________________ Material:

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the requests; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which the proposed substitution requires for proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings. If, in fact, it does affect dimensions, the contractor shall provide shop drawings, accurately showing changes to documents.
2. The undersigned shall pay for changes to the design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution shall not adversely affect other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts are locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.
SECTION 01700

CONTRACT CLOSE-OUT

PART 1 GENERAL

1.01 SUMMARY

A. Scope of work:
This section specifies administrative and procedural requirements for project close-out, that may include but are not necessarily limited to:
1. Inspection and/or observation procedures
2. Project record document submittal
3. Operating and maintenance manual submittal
4. Warranty submittal
5. Final cleaning

B. Related sections can include, but may not be limited to the following:
1. All pertinent Sections of the Specifications

1.02 SUBSTANTIAL COMPLETION

A. Refer to the General Provisions as applicable, and Section 01090 for procedures required to establish Substantial Completion.

1. Final, regular Certificate for Payment (progress payment) shall be issued when all pertinent requirements of the achieving Substantial Completion are met. Final retention payment shall be made after project Final Acceptance and conclusion of any specified Landscape Maintenance Periods subject to the discretion of the Owner’s representative.

B. Inspection Procedures: Upon receipt of a request for inspection or observation, the Owner’s representative shall either proceed or advise the Contractor of unfilled requirements. The Owner’s representative shall prepare the Certificate of Substantial Completion following review, or advise the contractor of what must be completed or corrected by "punch-list" before the Certificate is issued. Upon receipt of "punch-list", contractor shall complete all work described in a timely manner subject to the discretion of the Owner’s Representative.

1. The Owner’s representative shall repeat inspection and/or observation when requested provided the contractor has made the request within the specified lead time and given written assurance that the "punch-list" work has been completed.
2. Results of the completed inspection and/or observation shall help form the basis of requirements for Final Acceptance and if acceptable, may signal the beginning of the specified Landscape Maintenance Period.

1.03 UNCORRECTABLE WORK

A. Should the Owner’s representative determine it is not practical or possible for the contractor to correct work that is damaged or improperly executed, an equitable deduction from the Contract sum may be made at the sole discretion of the Owner’s representative.

1.04 CLOSE-OUT SUBMITTALS

A. Submit two (2) copies of the following, where applicable, in accordance with applicable Contract Documents:
1. Project record documents (as-constructed)
2. Operation and maintenance manuals
3. Warranties, guaranties, and bonds
4. Keys and keying schedule
5. Spare parts and extra materials
6. Other items required by the Specifications
7. Binder of all manufactured items final submittal information that were installed or provided for the project.

B. Specified number of copies of above close-out submittals shall be received and accepted by the Owner's representative before Final Acceptance shall be given.

C. In addition to those items previously mentioned in this section, the contractor shall submit to the Owner's representative the following items before a Notice Of Completion will be filed:
1. Up-to-date sub-contractor list with names, addresses and telephone numbers.

D. Final Adjustment of Account:
1. Submit a final statement of accounting to the Owner's representative showing all adjustments to the Contract sum.

1.05 MAINTENANCE MANUALS
A. Submit two (2) copies of proposed manual(s) to the Owner's representative for review and acceptance. All maintenance manuals shall be received and accepted by the Owner's representative before Final Acceptance shall be given.

B. Organize operating and maintenance data into properly indexed heavy duty 2-inch, 3-ring vinyl covered binders. Mark appropriate identification on front and spine of each binder. Manuals can include but are not limited to the following types of information:
1. Emergency instructions
2. Spare parts list
3. Copies of warranties or actual warranty cards
4. Wiring diagrams
5. Recommended "turn around" cycles
6. Inspection procedures
7. Shop drawings and product data
8. Fixture lamping schedule

C. Product submittal items (1.04-A-7) can be provided with warranty information binders.

1.06 DEMONSTRATION
A. Prior to Final Acceptance, the contractor shall fully instruct Owner's representative's designated operating and maintenance personnel in the operation, adjustment and maintenance of all products, equipment, and systems installed.
1. Provide services of factory trained instructors from the manufacturers of each major item of equipment or system, if necessary or requested by the Owner's representative.

B. Operation and maintenance manual(s) shall be fully described at this instruction meeting.
1. Review contents of manual(s) with personnel in full detail to explain all aspects of operations and maintenance such as:
a. Maintenance manuals
b. Record documents
c. Spare parts and materials
d. Tools
e. Fuels
f. Identification systems
2. As part of instruction for operating equipment, demonstrate the following procedures:
   a. Start-up
   b. Shutdown
   c. Emergency operations
   d. Noise and vibration adjustment
   e. Safety procedures
   f. Economy and efficiency adjustments
   g. Effective energy utilization

1.07 WARRANTY/GUARANTY FORMAT

A. Provide written warranties, guaranties (except manufacturers’ standard printed warranties and/or guaranties), addressed to the Owner’s representative, in the format shown at the end of this section. Manufacturers’ standard printed warranties and/or guaranties shall be submitted as-is.

B. Warranties and guaranties shall be submitted in duplicate, in the attached format, signed by all pertinent parties and by the contractor in every case, with modifications as accepted by the Owner’s representative to suit the conditions pertaining to the warranty or guaranty. Collect and assemble written warranties and guaranties into bound booklet form, and deliver bound books to the Owner’s representative for review.

1.08 REMOVAL OF TEMPORARY FACILITIES

A. Prior to final inspection, the contractor shall remove tools, materials, sheds, temporary power poles, temporary tree protection, and other articles from the project site. Should the contractor fail to take prompt action, the Owner’s representative may, given 30 days written notice, treat them as abandoned property.

1.09 FINAL SITE CLEANING

A. Broom clean and power wash exterior paved surfaces and adjacent public streets. Utilize appropriate cleaning methods to remove spills, stains, tire tracks, etc. from all paved surfaces. Rake clean other surfaces of the site.

B. Hose down and scrub walls and paving surfaces dirtied or stained as a result of the construction work, as directed by the Owner’s representative.

C. Remove from the site construction waste, unused materials, excess earth, and debris resulting from the work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

ATTACHMENT: Warranty/Guaranty Form
WARRANTY/GUARANTY FORM

TO: XXXXX

We, the undersigned, do hereby warranty and guaranty that the parts of the Work described above which we have furnished and/or installed for:

XXX
XXX
XXX

Are in accordance with the Contract Documents and that all said work as installed will fulfill or exceed the Warranty and Guaranty requirements. We agree to repair or replace work installed by us, together with any adjacent work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or operation within a period of one (1) year from the date of Final Acceptance by Owner’s representative or from the date of Certificate of Substantial Completion, whichever is the earlier, at no cost to the Owner, ordinary wear and tear and unusual neglect or abuse excepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the Owner’s representative, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the Owner’s representative to have said defective work repaired and/or replaced and made good, and agree to pay to the Owner upon demand all moneys that the Owner’s representative may expend in making good said defective work, including all collection costs and reasonable attorney fees.

Date: _______________________

____________________________________________________________
(Sub-Contractor, Sub-subContractor, Manufacturer or Supplier)

By: __________________ __________________________________________

Title: _________________________________________________________

State License No.: _____________________________________________

Local Representative: For maintenance, repair, or replacement service, contact:

Name: __________________________________________________________

Address: _________________________________________________________

Phone Number: ___________________________________________________
SECTION 01720

PROJECT RECORD DRAWINGS

PART 1 GENERAL

1.01 SUMMARY

A. Scope of work:
   1. Prepare Project Record Drawings of as-constructed conditions as required by various sections of these Specifications and whenever work is installed differently than as shown in the Construction Documents as bid.
   2. Maintain a continually updated Job Set of as-constructed Contract Documents at the job site for review by the Owner’s representative at all times.

B. Related sections can include, but may not be limited to the following:
   1. Section 02611 – Gravity Sewer System
   2. Section 02623 - Water Systems
   3. Section 02700 - Storm Drainage
   4. Section 02810 - Irrigation

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. State of California Department of Transportation Standard Specifications, Current Edition

1.03 SUBMITTALS

A. Submit full Job Set to Owner's representative for review and acceptance prior to preparation of final Project Record Drawings.

B. After acceptance, prepare and submit final Project Record Drawings to Owner's representative at Contract Close-Out. Final Record Drawings shall be received prior to Final Acceptance.

1.04 QUALITY ASSURANCE

A. Job Set maintenance shall be delegated to one person on contractor's staff who will be present at all meetings.

B. Final Record Drawings shall be clearly drafted by a competent draftsperson on bond paper.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store Job Set separate from Construction Document sets in a safe fire-resistant location.

B. Protect Job Set and completed final Record Drawings from damage at all times.

C. Maintain all documents in neat, legible condition.

PART 2 PRODUCTS

- Not Used

PART 3 EXECUTION

3.01 MAINTENANCE OF JOB SET
A. Clearly mark the designated Contract Documents as "Job Set."

B. Record all deviations from the “as-bid” Contract Documents onto Job Set daily prior to covering of all work that has deviated.

C. Convert schematic lay-outs to portray precise physical lay-out (including depths) of all exposed and concealed work.

D. Clearly identify deviations by drawing a "cloud" around affected area and make sufficient notations to describe the change.

E. Contractor shall solely bear any cost of uncovering, recording and re-covering work not recorded on Job Set.

3.02 FINAL RECORD DOCUMENTS

A. Submit Job Set for review and acceptance by the Owner’s representative prior to preparing final Record Drawings.

B. After acceptance by Owner’s representative, the contractor shall cleanly and clearly draft, all information contained in the accepted Job Set. The final Record Drawing sheet material shall be as specified above in 1.04 - Quality Assurance. One set of reproducible Drawings and a CD of digital files shall be provided by the contractor to the Owner’s representative at no cost.

C. Deliver the Job Set bond prints and a CD of the digital files of final Record Drawings to the Owner’s representative prior to Final Acceptance.

END OF SECTION
Division 2

Site Work
SECTION 02100

SITE CLEARING AND DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all site clearing and demolition work plus all related activities as shown on the Drawings and/or specified herein.

B. Scope of work: The general extent of the site clearing and demolition work is shown on the Drawings and can include, but is not necessarily limited to the following:
   1. Demolition, removal and disposal of designated items
   2. Incidental demolition of abandoned utility and irrigation lines
   3. Spraying until dead, clearing, grubbing vegetated areas and/or roto-tilling in existing vegetated areas.
   4. Protection of existing plant material

C. Related sections can include, but may not be limited to:
   1. Section 02050 - Tree Protection
   2. Section 02200 – Earthwork

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. State of California Department of Transportation Standard Specifications, Current Edition

1.03 SUBMITTALS

A. Conform to requirements of Section 01300 Submittals and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.

B. Indicate the proposed time line for site clearing and demolition work including all required shut off times and capping of utility services on the project schedule.

C. Provide product information on herbicides to be used for approval prior to use.

1.04 QUALITY ASSURANCE

A. The Owner shall obtain and pay for all permits required in connection with this work. Fees for the dumping of debris shall be paid for by the Contractor.

1.05 PROJECT CONDITIONS

A. Dust Control:
   1. The contractor shall, at all times, prevent the formation of airborne dust on and around the project site with the use of sprinkled water or other means acceptable to the Owner’s representative. Non-compliance with proper dust control measures shall be grounds for issuance of “stop work” orders by the Owner’s representative until such time as satisfactory measures are implemented.

B. Utility Services:
1. Issue written notices of planned demolition operations to utility companies and coordinate site clearing and demolition improvements as requested by said utility companies.

2. Existing power poles and lines serving existing occupied buildings shall remain. Arrange all necessary work in order to maintain utilities not designated for removal.

3. Coordinate work in order to maintain utilities to any applicable temporary on-site facilities.

**PART 2  PRODUCTS**

2.01 Herbicides

A. All herbicides shall conform to Owner’s approved chemicals list.

B. Herbicide shall be non-selective broad spectrum systemic herbicide for perennial vegetation and straight contact herbicide for annual vegetation in accordance with a licensed pest control advisor or herbicide manufacturers recommendations.

**PART 3  EXECUTION**

3.01 EXAMINATION

A. Conform to Section 01400 - Quality Control (as applicable).

B. Carefully identify limits of demolition.

C. Mark project areas as directed by the Owner’s representative and as necessary to clearly identify the interface of items to be removed and items to be left in place intact.

3.02 PREPARATION

A. Protection:

1. Make provisions and take necessary precautions to protect all existing items not designated for removal. Any existing item or area damaged during construction operations shall be replaced or repaired to an “as-was” or better condition at no additional cost to the project and subject to the acceptance of the Owner’s representative.

2. Erect barriers, fences, guard rails, enclosures, chutes, and shoring as necessary to protect personnel, structures, and utilities remaining intact.

3. Provide warning signs and lighting as necessary for vehicular and personnel protection. Maintain warning signs during construction as required by applicable safety ordinances and as reasonably prudent.

4. Coordinate arrangements for items to be salvaged and turned over to the Owner.

5. Notify Underground Service Alert (USA), (800) 642-2444, and local utility companies to verify locations of existing utilities a minimum of 48 hours prior to beginning work.

6. Provide tree protection fencing prior to any demolition work.

B. Traffic Access:

1. Ensure minimum interference with roads, streets, driveways, sidewalk and adjacent facilities.

2. Do not close or obstruct streets, sidewalk, alleys or passageways without acceptance from the Owner’s representative.

3. Provide approved alternate routes around closed or obstructed traffic ways as required by the Owner’s representative.

4. Maintain access to adjacent existing buildings to ensure uninterrupted operations during demolition work.
3.03 DEMOLITION

A. General:
   1. Refer to drawings for extent of demolition work.

B. Paving:
   1. Demolish paving in accordance with local noise ordinance regulations and as acceptable to the Owner’s representative.

C. Filling:
   1. Completely fill below-grade areas and voids resulting from demolition work. Install appropriate, acceptable fill material consisting of soil, gravel or sand, free of trash and debris, stones over 6” diameter, roots or other organic matter. Meet compaction requirements as specified.

D. Other:
   1. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both the nature and extent of the conflict. Submit report to Owner’s representative in written, accurate detail. Pending receipt of directive from Owner’s representative, rearrange selective demolition schedule as necessary to continue overall job progress without delay.

E. Clearing and Grubbing:
   1. Mow all existing vegetation to a height of 1” and remove cuttings.
   2. Prior to site clearing, all existing vegetation (below twelve inches (12”) in height) areas to be removed shall be sprayed with a non-selective broad spectrum systemic herbicide for perennial vegetation and straight contact herbicide for annual vegetation in accordance with a licensed pest control advisor or herbicide manufacturers recommendations.
   3. Allow a sufficient period of time to ensure that all sprayed vegetation is dead (refer to manufacturer’s recommendations).
   4. Clear/strip vegetative material from soil surface and remove unless noted otherwise. Existing turf areas to be removed need not be stripped, but may be cross-ripped in two opposite directions and roto-tilled into the ground to a minimum six inch (6”) depth. Remaining clods of turf shall be no larger than two inches (2”) in diameter.
   5. Contractor is responsible for stockpiling and protecting all topsoil needed for landscaping improvements. Refer to Earthwork and Landscape Specifications.

G. Utilities and Related Equipment:
   1. The locations of existing utilities, as may be shown on the Drawings, are approximate. Should existing utilities not shown on the Drawings be encountered during construction operations, notify the Owner’s representative immediately, and re-direct work to avoid delay. The Owner’s representative shall then determine what action, if any, is required.

H. Underground Piping: Materials used for pipe terminations and temporary connections shall be the same as the existing lines. Fittings and flanges shall be of weight and class suitable for the service in which used.

3.04 SALVAGE

A. Demolition:
   1. Materials or equipment to be demolished shall become the property of the Contractor except for items specified to be salvaged for the Owner.
B. Replacement:
   1. In the event items not scheduled to be demolished are damaged, promptly replace or
      repair such items to an as-was or better condition per the discretion of the Owner’s
      representative at no additional cost.

C. Materials scheduled for removal shall not be placed on view to prospective purchasers or sold on
   site.

3.05 CLEANING

A. Debris and Rubbish:
   1. Remove and transport debris and rubbish as it accumulates and dispose in a legal manner
      via recognized haul routes, in a manner that will prevent spillage on streets or adjacent
      areas.
   2. Remove all tools, equipment and appliances used for demolition from the site upon
      completion of the work.
   3. Clean entire project area, adjacent streets, and pavements to a broom-clean, “stain-free”
      condition per the discretion of the Owner’s representative.

END OF SECTION
SECTION 02200

EARTHWORK

PART 1   GENERAL

1.01 SUMMARY
   A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all earthwork and related work shown on the Drawings and/or specified herein.
   
   B. Scope of work:
      The general extent of the earthwork is shown on the Drawings and can include, but is not necessarily limited to the following:
      1. Topsoil stripping, stockpiling, and replacement into planting areas
      2. Rough grading
      3. Filling and backfilling to attain required grades
      4. Excavating for paving, footings and foundations
      5. Adherence to requirements, recommendations and/or Best Management Practices (BMPs) for storm water management as may be outlined in the Project Storm Water Pollution Prevention Plan (SWPPP), or as required by governing agencies
      
   C. Related sections can include, but may not be limited to:
      1. Section 02100 - Site Clearing and Demolition
      2. Section 02230 - Base Courses
      3. Section 02900 – Landscaping

1.02 REFERENCES AND REGULATORY REQUIREMENTS
   A. California Building Code (CBC):
   
   B. American Society for Testing and Materials (ASTM):
      1. D 1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
   
   C. California Occupational Safety and Health Standards (OSHA):
      1. Article 6 - Excavations and Shoring.
   
   D. State of California Department of Transportation Standard Specifications, Current Edition

1.03 SUBMITTALS
   A. Conform to requirements of Submittals and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.
   
   B. Project Record Drawings:
      1. Conform to and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.
      2. Accurately record locations of utilities remaining, re-routed utilities, new utilities, and newly discovered utilities by horizontal dimensions, elevations, inverts, and slope gradients.

1.04 QUALITY ASSURANCE
   A. Geotechnical Investigation:
1. A geotechnical investigation report has been prepared for use on this project. The recommendations contained therein have been incorporated into the Contract Documents.

2. The Owner may designate and pay for the services of a Geotechnical Engineer to make recommendations based on the soil conditions encountered the results of field and laboratory tests, and observations of the activities performed under this Section.

3. Compaction densities specified for structural fills under footings, slabs, or pavements shall be determined in accordance the geotechnical engineer’s written recommendations.

B. Certification:
   1. The contractor shall certify source and type of backfill and topsoil proposed to be incorporated into the work, at the request of the Owner’s Representative.
   2. The contractor shall certify elevations of excavations, footings, subgrades and finish grades with the use of a Licensed Surveyor, at contractor’s expense, at the request of the Owner’s Representative.

C. Control of Work: Conform to Section 5 of the Standard Specifications.

D. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.05 PROTECTION

A. Protect all existing structures, fences, roads, sidewalks, paving, curbs, and other items as necessary from earthwork activity.

B. Protect above or below grade utilities which are to remain.

C. Repair damage to any existing site features which are to remain. Repair and restoration shall be equal to quality and appearance of prior condition and to the satisfaction of the Owner’s representative.

1.06 PROJECT / SITE CONDITIONS

A. Underground Utilities: Unknown buried utility lines may exist. If encountered, notify Owner’s representative immediately for direction and re-direct work to avoid delay.
   1. Cooperate and coordinate with Owner’s representative and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
   2. Do not interrupt existing utilities serving occupied facilities without proper notification to, and written direction from, Owner’s representative.

B. Wet Conditions: No grading operations shall be conducted when excessively wet conditions exist as determined by the Owner’s representative.

C. Contractor shall provide de-watering equipment as required to continue scheduled operations and provide optimum working conditions at no additional cost to Owner.

D. Dry Conditions: Contractor shall apply sufficient water to materials during construction to properly compact materials and control dust. Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to subgrades as necessary to achieve compaction goals.

1.07 GRADE STAKES AND LINES

A. All grading and subgrading shall be controlled by contractor-installed intermediate grade stakes and lines necessary to obtain the finished grade elevations shown or implied in the Drawings. Subgrade and finish grade surfaces shall conform to the control planes established by these grade
stakes and lines.

B. Protect and maintain all existing bench marks, monuments and other reference points. If disturbed or destroyed, they shall be replaced at the Contractor’s expense.

C. Contractor shall set temporary bench marks as necessary to properly complete construction operations.

1.08 SURVEYING

A. Contractor shall be responsible for hiring a licensed professional surveyor to perform all surveying, layout and staking. Contractor shall be responsible for informing Owner’s representative (minimum two (2) working days notice) when staking and layout is scheduled so that a review of completed chalk lines and staking can take place.

1.09 TOLERANCES

A. Refer to related specification sections for grading tolerances of specified improvements.

PART 2 PRODUCTS

2.01 MATERIALS

A. Select material for structural backfill shall be in accordance with applicable portions of Section 19 - Earthwork, of the Standard Specifications, unless modified by this section or by recommendations and requirements of the Project Geotechnical Report.

B. Topsoil: Excavated material from top 6 inches (maximum) of existing grade (unpaved areas) and/or acceptable import material graded free of roots and rocks larger than two inches, subsoil, debris, weeds, large mats of grass, and other deleterious material.

C. Subsoil: Excavated material below top 6 inches of existing grade, graded free of clay clods larger than 6 inches, rocks larger than 3 inches, and debris.

PART 3 EXECUTION

3.01 PREPARATION

A. Identify all required lines, levels, contours, datum, control points and property lines required to properly establish limits of work.

B. Verify elevations of critical existing grades as noted on Drawings and as directed by Owner’s representative. Notify Owner’s representative of discrepancies prior to start of work and re-direct work to avoid delay.

C. Identify all known below grade utilities. Stake and flag locations.

D. Identify and flag surface grades and utilities.

E. Contact Underground Service Alert (USA) (800-642-2444) and local utility companies to verify locations of existing utilities a minimum of two (2) working days prior to excavation.

3.02 PROTECTION

A. Maintain and protect existing utilities remaining which pass through work area.
B. Perform excavation work near utilities by hand. Provide necessary protection as the work progresses.

C. Provide and maintain protection for walks, curbs, drains, trees, corners of structures, etc., as necessary to prevent damage.

D. Barricade and/or cover open excavations occurring as part of this work and post with warning lights to the satisfaction of the Owner’s representative. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

E. Keep adjacent properties, streets and drives clean of any dirt, dust, or stains caused by earthwork operations.

F. Upon discovery of unknown utility or concealed conditions, notify the Owner’s representative immediately and re-direct work to avoid delay.

G. Control dust on and near the work, and on and near off-site borrow areas.
   1. Thoroughly moisten surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of any other activities that may occur on the site.
   2. Non-compliance with proper dust control measures shall be grounds for issuance of "stop work" orders by the Owner’s representative until such time as satisfactory measures can be implemented.

3.03 TOPSOIL EXCAVATION

A. Excavate topsoil from all areas scheduled for paving or rough grading and stockpile material in neat wind-row(s) in location(s) that have been previously established which will cause least interference to construction operations, and which is/are acceptable to the Owner’s representative.

B. Do not excavate topsoil that has become wetted to, or beyond, the saturation point that would be required for optimum compaction.

C. Stockpile topsoil in wind-row(s) of a height not to exceed 8 feet, protect from erosion, and cover as necessary to prevent formation of dust.

D. Topsoil excavation shall occur for the entire area or per field. No topsoil excavation shall occur for partial field areas without approval.

E. Topsoil staging areas shall be clearly defined and protected from other grading and utility operations.

3.04 ROUGH GRADING

A. Grade site subsoil to establish proper subgrade elevations and site contouring as described or implied in the Drawings:

B. Contouring:
   1. Construct landforms depicted in the Drawings to the satisfaction of the Owner’s representative.
   2. "Round-off" all tops of slopes.
   3. "Feather" all toes of slopes.

C. Compaction: Compact subgrade for the specific areas as follows unless otherwise noted:
   1. Areas to be planted: Maximum eight inch (8") loose lifts to be between 85% and 90% relative compaction.
2. **Areas to be paved:** Shall be as follows:
   a. Scarify or rip to a depth of 12" below the finished subgrade elevation and uniformly moisture condition to a moisture content ranging from 2 to 4 percent above the optimum moisture content.
   b. Maximum eight inch (6") loose lifts with the underlying 6" of moisture conditioned subgrade soil compacted to at least 90% relative compaction.
   c. The upper or top 6" shall be compacted to at least 95% relative compaction.
   d. Additional lifts should not be placed if the previous lift did not meet the required density, relative compaction, moisture content or if the soil conditions are not stable.
   e. Compacted subgrade should be non-yielding under construction traffic, and non-pumping condition, including a loaded ten-wheel truck such as a water or dump truck, in all pavement areas. Removal and subsequent replacement of some material (i.e. areas of excessively wet materials, unstable subgrade, or pumping soils) may be required to obtain the minimum 95 percent compaction to the recommended depth of 6 inches.
   f. Moisture content of the soils should be maintained until placement of the aggregate base by liberal sprinkling with water or other suitable method.
   g. If there is a delay in placement of the concrete paving, the aggregate based should also be periodically sprinkled or wetted to prevent drying of the underlying subgrade.
   h. Subgrade preparation for pavement areas shall extend laterally for at least two feet beyond the edge of pavement.

D. Remove all excess subsoil material from site and dispose of in a legal manner. Refer to "Material Storage" below.

E. Entire project or individual field area shall be rough graded at one time. No earthwork operation shall occur for partial field areas without receiving direction from the Owner or prior written approval from the Owner.

3.05 EXCAVATION

A. Remove and dispose of all miscellaneous materials encountered when establishing required grade elevations:
   1. Miscellaneous materials can include but are not limited to: pavements and other obstructions, underground structures, utilities, abandoned irrigation materials, and other materials encountered per the discretion of the Owner's representative.

B. Stability of Excavations:
   1. Comply with any applicable recommendations contained within the Project Geotechnical Report and requirements of agencies having jurisdiction.
   2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

C. De-watering: Provide and maintain, at all times during construction, ample means and devices with which to promptly remove and properly dispose of water from any source entering structural excavation, pipe trenches, or other excavations. All costs incurred from de-watering activities shall be paid for by the contractor.

D. Excavation for Structures:
   1. Conform to elevations and dimensions shown in the drawings within a tolerance of plus-or-minus one tenth (0.10') of a foot, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete form-work, installation of services, and quality review.

E. Excavation for Pavements:
1. Cut surface under pavements to comply with cross-sections, elevations, and grades as shown in the Drawings.

F. Material Storage: Stockpile satisfactory excavated materials where appropriate, until required for use.

G. Stockpile topsoil and subgrade soil in separate piles.

H. Place, grade and shape stockpiles for proper drainage.
   1. Locate and retain stockpiles away from edge of excavations.
   2. Dispose of excess soil material in a legal fashion after it has become evident that the material is no longer needed on the project and is of no value to the Owner.

3.06 TOPSOIL PLACEMENT

A. Thoroughly cross-rip all subgrade soil to a depth of twelve (12) inches prior to placing the specified thickness of topsoil back into all applicable planting areas. Secure review and acceptance of ripping depth prior to placement of topsoil. Refer to Section 02900 – Landscaping for this process.

B. Topsoil placement requirements for planting areas shall be as follows:
   1. All planting areas: Shall contain or receive a minimum of six (6) inches of clean, acceptable topsoil.
   2. Topsoil shall not be placed until all earthwork and utility operations are complete.
   3. Topsoil shall be installed at one time for entire project or entire field area. No partial placements shall occur.

C. Compact topsoil to 84% to 88% relative density.

D. Maintain all slopes and gradients established during subgrade operations and shape landforms to satisfaction of the Owner’s representative.

E. Refer to Section 02900 - Landscaping for finish grading information and finish grades at edge of planting areas and hardscape.

3.07 TOLERANCES

A. Shall conform to Conform to Section 26 of the Standard Specifications, unless more stringent requirements in these Contract Documents are provided, in which place the more stringent tolerances shall govern. Refer to specification section 01070 for additional project requirements.

3.08 FIELD QUALITY CONTROL

A. The Owner Representative shall review and accept work at the following stages:
   1. Topsoil removal and stockpile.
   2. Grading plan for project. Plan shall provide strategy for grading sequence for entire site at one time or by field. Limits and sequence shall be reviewed and coordinated.
   3. Cross ripping of subgrade shall be reviewed and observed.

END OF SECTION
SECTION 02221

EXCAVATION, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation, and services to complete all excavation, trenching, backfilling, compaction, and related work as shown on the Drawings and/or specified herein.

B. Scope of work:
The general extent of all trenching, backfilling, and compaction is shown on the Drawings and may include, but is not necessarily limited to, the following:
1. Sanitary Sewer Line Installation
2. Storm Drainage System Installation
3. Potable Water Line Installation
4. Irrigation System Installation
5. Electrical Conduit Installation
6. Paving Installation

C. Related sections can include, but may not be limited to:
1. Section 02200 - Earthwork
2. Section 02510 - Asphalt Concrete Paving
3. Section 02520 - Portland Cement Concrete
4. Section 02700 - Storm Drainage
5. Section 02713 - Domestic Water Systems
6. Section 02810 - Irrigation
7. Section 02900 - Landscaping

1.02 REFERENCES AND REGULATORY REQUIREMENTS


1.03 SUBMITTALS

A. Project Record Drawings:
1. Conform to requirements of and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.
2. Accurately record locations of utilities remaining, re-routed utilities, new utilities, and newly discovered utilities by horizontal dimensions, elevations, inverts and slope gradients as practical.

1.04 QUALITY ASSURANCE

A. Control of Work: Comply with Section 5 of the Standard Specifications.

B. Control of Materials: Comply with Section 6 of the Standard Specifications.

C. Trench Safety: Comply with applicable portions of Sections 5 and 7 of the Standard Specifications and requirements of other agencies having jurisdiction (OSHA etc.).

1.05 PROJECT/SITE CONDITIONS
A. Wet Conditions: No trenching shall occur when excessively wet conditions exist in the opinion of the Owner’s Representative.

B. Dry Conditions: Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to work as necessary to achieve compaction goals.

1.06 SEQUENCING AND SCHEDULING

A. Refer to all other Contract Documents, determine the extent and character of related work, and properly coordinate work specified herein with that described elsewhere to produce a complete, operational installation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Provide materials as described below free of debris, roots, wood, scrap material, vegetative matter, refuse, soft unsound particles, or other deleterious and objectionable materials.

B. Select Backfill: Select backfill material shall be sand conforming to Section 19-3.025B of the Standard Specifications.

C. Native Backfill: Native backfill shall be acceptable soil material excavated from the project site. This material will be considered unclassified and no testing other than for compaction will be required. Additional material required for backfill shall be acceptable to the Owner’s Representative.

D. Permeable Material: Permeable material shall be Caltrans Class II permeable rock material.

E. Aggregate Base: Refer to Section 02230 – Base Courses.

PART 3 EXECUTION

3.01 PREPARATION

A. General:
   1. Prior to trenching, the contractor shall pothole existing utilities at locations indicated or implied on the plans, where new piping or utilities will cross existing utilities of uncertain depth to determine the elevation of the utility in question and ensure that the new line will clear the potential obstruction.
   2. The Contractor shall mark out all construction areas in white, non-permanent paint and contact Underground Service Alert (U.S.A.) (800-642-2444) to locate all known utilities a minimum 48 working hours prior to any excavation.
   3. Should an existing crossing utility present an obstruction, the proposed line shall be adjusted as acceptable to the Owner’s Representative to clear the existing utility.

3.02 TRENCH EXCAVATION

A. General:
   1. Excavation shall include removal of all water and materials that interfere with construction. Remove any water which may be encountered in the trench by pumping or other methods prior to pipe laying, bedding and backfill operations. Trenches shall be sufficiently dry to permit proper jointing and compaction.
   2. It shall be the contractor’s responsibility to direct vehicular and pedestrian traffic safely through or around the work area at all times.
   3. The contractor shall relocate, replace, reconstruct or repair, to an “as-was” or better condition,
all surface or subsurface improvements which are in the line of construction or which may be
damaged, removed, disrupted or otherwise disturbed by the construction activities. Except as
specified in other Sections or shown in the Drawings, this provision applies to all surface
improvements of whatever nature such as walls, fences, above-grade utilities, landscaping,
paving, structures, or other physical features whether shown in the Drawings or not and to all
subsurface improvements such as utilities which may be indicated in the Drawings or marked in
the field. The contractor shall connect such utilities to existing systems and leave all in a
workable and operating condition. The cost of this work shall be considered as included in other
items of work and no additional compensation will be allowed.

4. The maximum allowable trench width at the top of pipe shall be 18 inches greater than the pipe
diameter.

5. New utility trenches extending deeper than 2 feet below finish grade should be located a
minimum of five feet away from foundations.

B. Existing Paving Areas:
1. Existing asphalt concrete paving over new trenches shall be sawcut, removed, and legally
disposed. Existing asphalt concrete paving shall be neatly sawcut one foot (1') greater on each
side than the trench width. If a longitudinal pavement joint or edge of pavement is located
within three feet of the limit of excavation, all intervening pavement shall be removed and
replaced after completion of backfilling. If concrete curb and/or gutter are to be replaced, the
adjacent existing asphalt concrete paving shall be sawcut two feet (2') from the edge of
concrete curb and/or gutter.

2. Existing Portland cement concrete paving over new trenches shall be sawcut to a minimum depth
of 1-1/2 inches in straight lines either parallel to the curb or at 90 degree angles to the
alignment of the sidewalk prior to being broken out. No section to be replaced shall be smaller
than 30 inches in either length or width. If the sawcut would fall within 30 inches of a
construction joint, expansion joint, or edge, or within 12 inches of a score mark, the concrete shall
be removed to the joint, edge, or mark.

C. Walkway Areas:
Backfill for trenches or other excavations within walkway areas should be compacted in six inch (6")
maximum layers, unless otherwise noted, with hand-held tampers to assure adequate subgrade
support.

D. Compacted Fill Areas:
Where trenches must be excavated in compacted fill, these trenches shall be backfilled with the fill
materials excavated and re-compacted in the layers and to the density specified for the particular
area.

E. Open Trench:
1. No trench shall be left in an open un-protected condition at the end of the day. At the end of
the day any open trench shall be protected in a manner acceptable to the Owner’s
Representative.

2. Provisions for trench crossings and access shall be made at all street crossings, driveways, water
gate valves, and fire hydrants unless otherwise acceptable to the Owner’s Representative.

F. Excavated Material:
1. All excavated material not required for backfill or of value to the Owner shall be removed and
legally disposed of by the contractor at no additional cost.

2. Material excavated in streets and roadways shall be laid alongside the trench no closer than
two feet from the trench edge and kept trimmed to minimize inconvenience to public traffic.

3. Provisions shall be made whereby all storm and waste water can flow uninterrupted in gutters or
drainage channels to drainage structures.

4. Excavated material shall not be stored on existing landscaping or paving without provisions
being made to protect the surface below from being stained or otherwise adversely affected.
G. Shoring
1. Should excavations extend more than 4 feet below existing ground surface, shoring will be 
required.
2. Excavations can be sloped back to an inclination of 1.5 horizontal to 1 vertical as an option for
shoring in these conditions.
3. Utility trenches shall be excavated according to accepted engineering practices following
OSHA.

3.03 PIPE BEDDING

A. Stabilization of Trench Bottom:
When the trench bottom is unstable due to wet or spongy foundation, trench bottom shall be de-
watered as necessary. The Owner’s Representative shall determine the suitability of the trench bottom
and the amount of sand, gravel, or crushed rock needed to stabilize the soft foundation.

3.04 TRENCH BACKFILL AND COMPACTION

A. General:
1. Construct backfill in two operations (initial and final).
2. Do not backfill where the foundation material in trench is already saturated, except as
acceptable to the Owner’s Representative. Provide a minimum cover as may be specified.
3. Where settling greater than the tolerance allowed for grading occurs in trenches and pits due to
un-stable subgrade material, excavate to the depth necessary to rectify the problem, then
backfill and compact the excavation as specified herein and restore the surface to the required
elevation.
4. For utilities under roads, streets, concrete slabs or other areas to be paved, place final backfill in
6-inch maximum loose lifts. Compact all backfill surrounding ducts, conduits, pipes and other
structures, including the top 12-inches of subgrade to 95 percent of ASTM D1557 maximum
density. Backfill to permit the rolling and compacting of the completed excavation with the
adjoining material providing the specified density necessary to enable rock placement of paving
of the area immediately after backfilling has been completed.

B. Initial Backfill:
1. Prior to trench backfill, the condition of the trench and laying of pipe shall be acceptable to the
Owner’s Representative.
2. Select backfill material shall be used as initial backfill for all utilities except irrigation piping,
unless otherwise noted. After the pipe has been properly laid and accepted by the Owner’s
Representative, select backfill material shall be placed on both sides of the pipe and compacted
to the depth shown in the Drawings.
3. Compaction: The initial backfill material shall be hand tamped in layers not exceeding four
inches (4") in uncompacted depth and shall be brought up uniformly on both sides of the pipe to
avoid bending or distortional stress. After handtamping, the relative compaction of the initial
backfill material shall be at least 95% relative compaction.

C. Final Backfill:
1. Native backfill material shall be used for final backfill, unless otherwise noted.
2. Compaction: Final backfill compaction shall be by mechanical means with backfill material
placed in layers not exceeding six inches (6") in loose depth. Each layer shall be thoroughly
compacted before succeeding layers are placed. The use of machine tampers, except manually
held types, shall not be permitted. Final backfill shall be compacted to a relative compaction of
95% for paving areas. In planting areas, provide acceptable topsoil to required depth
compacted to 85% to 88% maximum relative compaction.

D. Jetting: No jetting shall be allowed.
3.05 TRENCH SURFACING

A. General:
   1. In unimproved areas, the trench surface shall be restored to its original condition. No mounds of earth shall be left along the trench.
   2. All backfill shall be flush with adjoining grade in a firm, unyielding position with no visible settling for a period of one year after Final Acceptance.

B. Paved Areas:
   1. Temporary surfacing acceptable to the Owner’s Representative shall be laid within one day after backfilling (except where the contractor elects to place permanent surfacing within this time period) until permanent paving is installed.

END OF SECTION
SECTION 02230

BASE COURSES

PART 1   GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all base course preparation, installation and related work as shown on the Drawings and/or specified herein.

B. Scope of work:
The general extent of the base course work is shown on the Drawings and may include, but is not necessarily limited to, the following:
1. Grading and compaction of subgrade soil for areas to receive pavement, structures, base material, etc.
2. Furnishing and placing of aggregate base material.

C. Related sections can include, but may not be limited to:
1. Section 02200 - Earthwork
2. Section 02510 - Asphalt Concrete Paving
3. Section 02520 - Portland Cement Concrete

1.02 REFERENCES AND REGULATORY REQUIREMENTS


1.03 SUBMITTALS

A. Conform to the requirements of and/or applicable Division One and Division Two Specifications, General Conditions and Special Provisions.

B. Submit material certificates of compliance and/or sieve analyses for all products and materials proposed to be used in work covered by this Section.

1.04 QUALITY ASSURANCE

A. Control of Work: Conform to Section 5 of the Standard Specifications.

B. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.05 PROJECT/SITE CONDITIONS

A. Wet Conditions: No subgrade preparation or base material placement shall occur when excessively wet conditions exist in the opinion of the Owner’s Representative.

B. Dry Conditions: Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to subgrades and base courses as necessary to achieve compaction goals.
1.06 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be stockpiled on site in locations that, in the opinion of the contractor, cause least interference with construction operations and as acceptable to the Owner’s Representative.

B. Materials shall not be stockpiled in proposed planting areas.

C. Protect materials from segregation, contamination and wind and water erosion.

1.07 SEQUENCING AND SCHEDULING

A. Work of this section shall not proceed until all underground utilities and irrigation sleeving has been installed and accepted.

B. Contractor shall schedule work so that installation of paving/surfacing occurs no later than five (5) working days after placement and proper compaction of base materials. Base materials left unpaved longer than this time period shall be subject to testing and re-compaction at the contractor’s expense.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate Base:
   Aggregate base shall be Class 2, 3/4” maximum material conforming to Section 26-1.02A of the Standard Specifications. All paving and surfacing using aggregate base can use recycled materials.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

A. Preparation of subgrade shall conform to Section 6 of the Standard Specifications and as described in section 02200.

B. Remove unsuitable subgrade material as necessary and replace with suitable material or aggregate base per the discretion of the Owner’s Representative.

3.02 BASE MATERIAL PLACEMENT

A. Conform to Section 26 of the Standard Specifications.

B. Obtain acceptance of subgrade preparation work prior to placing base material thereon.

C. Place and compact base material in six inch (6”) maximum lifts unless otherwise noted. Compaction shall be at least 95 percent relative compaction.

D. Base material shall be moisture conditioned to between optimum and 3 percent above optimum prior to placement and compaction.

3.03 TOLERANCES
A. Conform to Section 26 of the Standard Specifications, unless more stringent requirements in these Contract Documents are provided, in which place the more stringent tolerances shall govern.

3.04 CLEAN-UP OF WORK AREA

A. The contractor shall remove and legally dispose of excess materials/spoils and debris from the job site on a daily basis.

3.05 PROTECTION OF FINISHED PRODUCT

A. The contractor shall provide lighted barricades, signs and other devices as necessary to prevent damage to finished base courses.

END OF SECTION
PART 1  GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation, and services to complete all concrete and related work as shown on the Drawings and/or specified herein.

B. Scope of work:
The general extent of the concrete work is shown on the Drawings and may include, but is not necessarily limited to the following:
1. Vertical Curbs
2. Curbs and Gutters
3. Valley Gutters and Concrete Swales
4. Mowbands and Edge bands
5. Flatwork, Slabs and Walkways
6. Expansion, Deep Score and Score Joints
7. Misc. Footings
8. Reinforcement and/or Doweling

C. Related sections can include, but may not be limited to:
1. Section 02200 - Earthwork
2. Section 02230 - Base Courses
3. Section 02700 - Storm Drainage
4. Section 02810 - Irrigation
5. Section 02870 - Site Furnishings
6. Section 02900 - Landscaping

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. State of California Department of Transportation Standard Specifications, Current Edition

B. California Building Code 2007

1.03 SUBMITTALS

A. Conform to applicable Division One and/or Division Two specifications, General Conditions and Special Provisions.

B. Submit cut-sheets, mill certificates, certificates of compliance etc. for all products proposed for use on the project.

1.04 QUALITY ASSURANCE

A. Concrete
1. Conform to Section 01400 Quality Control (as applicable).
2. All formwork, joint patterns, base material, reinforcement and other miscellaneous items such as “dobies” and ties shall be reviewed and accepted by the Owner’s Representative prior to pouring concrete. Contractor shall have any and all such items in place and shall give a minimum of two (2) working day lead-time notice to Owner’s Representative when scheduling the review request. Contractor shall also schedule and allow a minimum of two
(2) working days after review for possible modifications to concrete preparation work, at no cost or delay to the project.

3. The Owner’s Representative shall at all times have access to any off-site batch plant or quarry supplying materials for subject project and trucks en route to the project site. The Owner’s Representative may at any time request slump tests and secure samples of concrete, cement, aggregates or other materials. All applicable materials shall be provided by the contractor at no additional cost to the Owner.

4. Any specified review or observation by the Owner’s Representative of the concrete work shall be requested by the contractor at least two (2) working days prior to the need for the review or observation.

5. Finishes and colorants other than the concrete darkening agent (see Part 2 Products) are called out in the Drawings. A four foot by four foot (4’ x 4’) sample of all concrete colorants (including concrete darkening agent) and finishes shall be poured by the contractor in the field for review and acceptance by the Owner’s Representative. Sample shall include all joints, finishes and tooled conditions for approval. Contractor shall schedule review well in advance of concrete operations to allow for color and/or finish modifications if necessary.

6. Codes and Standards: Comply with the provisions of the following codes, specifications and standards, except where more stringent requirements are shown or specified:
   b. Part 2, Chapter 26, Title 24, C.C.R.
   c. ACI 301 Specifications for Structural Concrete for Buildings
   d. ACI 318 Building Code Requirements for Reinforced Concrete
   e. ACI 614 Recommended Practice for Measuring, Mixing, and Placing Concrete
   f. Concrete Reinforcing Steel Institute, Manual of Standard Practice

7. Concrete Testing Service: The Owner may retain and engage a testing laboratory to perform material evaluation tests.

1.05 DELIVERY AND STORAGE

A. Deliver concrete reinforcement to job site properly tagged and ready to set. Store above ground surface on platforms, skids, or other supports. Coordinate delivery and storage of all other materials as appropriate.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Concrete shall be Portland Cement Concrete conforming to Section 90 of the Standard Specifications. Unless otherwise specified, all concrete shall be Class B at a minimum.

B. Cement shall be Type II cement conforming to ASTM Designation C150 as modified by Section 90 of the Standard Specifications.

C. Mortar shall conform to Section 51 of the Standard Specifications. Mortar, when used for patching, shall match the color of the work to be patched.

D. Water used for mixing shall be potable.

E. Minimum mix requirements: It shall be the contractor’s responsibility to design the concrete mixes to provide the minimum requirements listed below. Increase cements content over that listed if necessary to obtain the specified compressive strength. Minimum ultimate compression strength of concrete at 28 days is as follows:
<table>
<thead>
<tr>
<th>Item</th>
<th>Strength</th>
<th>Max. slump</th>
<th>Size of aggregate</th>
<th>Cement (# of 94 lb. sacks per yard)</th>
<th>W/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab-On-Grade</td>
<td>3,000</td>
<td>4&quot;</td>
<td>3/4&quot;-1&quot;</td>
<td>5</td>
<td>.60</td>
</tr>
<tr>
<td>Walls/Footings</td>
<td>3,000</td>
<td>4&quot;</td>
<td>3/4&quot;-1&quot;</td>
<td>5</td>
<td>.60</td>
</tr>
<tr>
<td>Thrust Blocks</td>
<td>2,500</td>
<td>4&quot;</td>
<td>3/4&quot;-1&quot;</td>
<td>4.5</td>
<td>.45</td>
</tr>
</tbody>
</table>

### 2.02 OTHER MATERIALS

#### A.
Formwork materials shall be surfaced lumber, plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide from material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection, and as follows:

1. All form panels shall be placed in a neat, symmetrical pattern, subject to the acceptance of the Owner's Representative.
2. Form clamps or bolts shall be used to fasten forms. The use of ties consisting of twisted wire loops to hold forms in position during the placing of concrete shall not be permitted unless noted otherwise.
3. All exposed sharp edges shall be bullnosed to prevent mortar runs and to preserve smooth, straight lines, unless otherwise acceptable to the Owner's Representative or noted in the Drawings.
4. Before concrete is placed in forms, all inside surfaces of forms which will later be removed shall be thoroughly coated with commercial quality form oil, which will permit the ready release of the forms and will not discolor the concrete.
5. Where form panels are attached directly to the studding or joists, the panels shall be not less than five-eighths of an inch (5/8") thick, and the studding, or joists, shall be spaced not more than twelve inches (12") center to center.
   a. Form panels less than five-eighths of an inch (5/8") thick, otherwise conforming to the requirements specified, may be used with a continuous backing of surfaced material three-fourths of an inch (3/4") thick.
   b. Form panels more than five-eighths of an inch (5/8") thick attached to studding or joists spaced at more than twelve inches (12") center to center may be used, provided that the deflection of the panel between studding or joists does not exceed that of a five-eighths inch (5/8") thick panel attached to studding or joists spaced at eighteen inches (18") center to center.
6. Curved surfaces shall be formed with timber, plywood, masonite, or sheet metal as appropriate. Sheet metal shall have masonite or plywood backing. Plywood for forming shall be ACX or better grade.

#### B.
Expansion Joints:
1. Joint primer: Sonneborn horizontal paving joint primer No. 733, or No. 766, one component solvent based primer or acceptable equal.
2. Key Kold joint: not used.
3. Expansion joint: One-half inch (1/2") asphalt impregnated fiber strips in compliance with ASTM D1751 or acceptable equal. Expansion joint material shall be variety with “zip-strip” H-channel joint sealant receptacles. If proposed joint material is not installed with sealant receptacles then, the expansion joint material shall be completely covered with a Sonneborn “Sonofoam” closed cell backer rod or acceptable or equal prior to application of joint sealant. Provide three eighth inch (3/8") tooled edges each side of joint material.
Refer to Drawings for additional information.


Sonneborn products are available through the Cade Co. San Jose, CA (408) 292-3435.

C. Score Joints:
   1. Score joints: Shall be three eighth inch (3/8") radius tooled joints to a one inch (1") depth.

D. Reinforcing bars: Comply with Section 2603 (f) and 2528 (b), Title 24, C.C.R. and ASTM A-615. Grade 60, deformed, except #3 and smaller may be Grade 40. Test in accordance with Sec. 2628, Title 24, C.C.R. Bars shall be in a new, “first-class” condition.

E. Smooth Dowel Steel Bars for Expansion Joints: ASTM A-29, #3 smooth Grade 40. Provide as indicated on drawings. Where shown, provide metal dowel sleeve at one end of dowel (or other approved break-bond method), to permit lateral movement at dowel within concrete section. Provide for movement with equals joint width plus one-half inch (1/2"). Bars shall be in a new, “first-class” condition.

F. Tie Wires: Black annealed, ASTM A-82, minimum 16 gauge.

G. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, support and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying owner CRSI specifications, unless otherwise acceptable.

H. Concrete Darkening Agent: Add one quarter pound (1/4 lb.) of Davis Colors Inc. colorant #8084 Black (or acceptable equal) per 94 lb. sack of cement to all exterior concrete which will be exposed to view when cured (Drain rims and concrete receiving other colorants excluded). Contact Davis Colors Inc. for local distribution information Ph.: (800)-800-6856 Fx.: (213)-269-1053. Other colorants shall be as noted in the Drawings.

I. No admixtures will be allowed without prior acceptance by the Owner’s Representative.

PART 3 EXECUTION

3.01 EXCAVATION

A. In addition to the general grading excavation required, the contractor shall excavate to the required depths in the locations shown for flatwork, retaining walls, curbs, footings, etc. Excess excavation shall be replaced with concrete poured monolithically with the wall or pavement, at no additional cost to the Owner.

3.02 FORMING

A. All forming shall conform to Section 51 of the Standard Specifications and as follows:
   1. The Contractor shall build forms with a high degree of care and shall select from materials of adequate strength and smoothness to produce smooth, even surfaces of uniform texture and appearance, free of bulges, depressions, or other imperfections per the discretion of the Owner’s Representative. Remove any residue remaining on concrete after forms are removed.
   2. Concrete walls are to be vibrated as necessary to provide uniform density. No concrete surfaces with “rock pockets” or “honeycombing” shall be accepted.
3. Transition of curves to straight lines and of curves to curves shall be formed as smooth, continuous, and uninterrupted with typical 90 degree radius alignment at the points of tangency.

3.03 CONCRETE CONSTRUCTION

A. All concrete shall be mixed in accordance with Section 90 of the Standard Specifications.

B. Construction of concrete substructures shall conform to applicable provisions of Section 51 of the Standard Specifications.

C. Construction of concrete curbs, gutters, sidewalks, wheelchair ramps, and driveway aprons shall conform to Section 73 of the Standard Specifications.

D. At the termination of all curbs, the final eighteen inch (18") length of curb shall be tapered from the full curb height to the gutter flow line or adjacent pavement elevation unless noted otherwise on the plans.

3.04 CONCRETE JOINTS

A. Joints shall be constructed at locations indicated and as detailed in the Drawings.

B. Construct concrete joints as follows:
   1. Expansion Joints:
      a. General. Refer to drawings for location and type expansion joints.
      b. Install to full depth of slab per drawings and manufacturer’s instructions.
      c. Key kold joints – not used.
      d. Fiber expansion joints - After allowing concrete to fully cure, remove zip strips and install expansion joint sealant. Expansion joint sealant. Install per drawings and manufacturer’s instructions.
   2. Score Joints: Refer to drawings for locations.

C. Curb and edge band joint locations – unless otherwise noted on plans
   1. Every five feet for score joints
   2. Install fiber expansion joints fifteen feet maximum.
   3. Align score and fiber expansion joints with proposed fence posts.
   4. Install fiber expansion joints at all corners, beginnings and endings of radii.

3.05 EDGING

A. All edges of slabs, curbs, and other structures shall be tooled with a one-half inch (1/2") radius edging tool, unless otherwise specified in the Drawings.

B. All trowel marks resulting from tooling of edges shall be carefully trowelled out.

3.06 REINFORCEMENT

A. Reinforcement installation shall conform to the provisions of the Standard Specifications as follows:
   1. Cleaning - Section 51-1.05
   2. Bending - Section 52-1.06
   3. Placing - Section 52-1.07
   4. Splicing - Section 52-1.08
   5. Lapped Splices - Section 52-1.08A

3.07 CONCRETE PLACEMENT
A. Concrete placement shall conform to Section 40 of the Standard Specifications.

B. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall it be dropped freely more than six feet. Spouts, elephant trunks, or other acceptable means shall be used to prevent segregation.

3.08 SURFACE DRAINAGE - Finish surfaces shall drain properly with no areas of standing water. Tops of curbs, walls and foundations shall be level unless otherwise specified.

3.09 CURING - All newly placed concrete shall be cured in accordance with the provisions in Section 90 of the Standard Specifications.

3.10 PROTECTION

A. All newly placed concrete shall be protected in accordance with the provision in Section 90-8 of the Standard Specifications.

B. Provide all necessary security to protect the concrete from vandalism. Any concrete which is defaced or damaged during the course of this contract shall be replaced by the Contractor at no additional cost to the Owner.

3.11 CONCRETE FINISHES

A. Patching of concrete to repair or disguise flaws, imperfections or other damage, shall commence only with the acceptance of the Owner’s Representative. Patching color and finish shall conform to the original adjacent concrete color and finish and the Owner’s Representative shall be the sole judge in this respect. Any patching of concrete walls must occur prior to final wall finishing.

B. Provide concrete finishes where shown in the Drawings and as follows:
   1. Trowel Finish: Trowel finish shall be smooth and clean with no obvious trowel marks.
   2. Broom Finish: Broom with medium bristled broom to a uniformly roughened surface. Finished surface shall be clean with uniform and straight lines.
   3. Provide samples, as previously specified, of all concrete finishes for review and acceptance prior to pouring concrete. All accepted samples shall be left on Job site as quality control examples until removal and disposal of samples is acceptable to the Owner’s Representative.
   4. Paving with a slope greater than 6% shall be heavy broom finish and paving less than 6% shall be a medium broom finish.

3.12 BUILT-INS

A. Refer to drawings for additional information relating to built-ins that shall be coordinated with concrete work (e.g., light fixtures, benches, handrails, guardrails, site furnishings, signs, etc).

3.13 CLEANING

A. Remove excess base material, concrete spills, cement stains and all other excess materials from all project areas prior to Final Acceptance.

3.14 TOLERANCES

A. Concrete
   1. Vertical deviation from specified grades shall not exceed 0.04 foot.
   2. Surface smoothness deviations shall not exceed 1/8 inch in 8 feet, in any direction.
3. Thickness shall not be more than 0.01 foot less than planned thickness at any point.

END OF SECTION
PART 1  GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation, and services to install and complete all miscellaneous paving and surfacing and related work as shown on the Drawings and/ or specified herein.

B. Scope of work:
The general extent of the miscellaneous paving surfacing is shown on the Drawings and may include, but is not limited to:
1. Infield fines mix
2. Infield clay mix

C. Related sections can include, but may not be limited to:
1. Section 02200 - Earthwork
2. Section 02230 - Base Courses
3. Section 02870 - Site Furnishings

1.02 REFERENCES AND REGULATORY REQUIREMENTS

A. State of California Department of Transportation Standard Specifications, Current Edition

1.03 SUBMITTALS

A. Conform to applicable Division One and/ or Division Two specifications, General Conditions and Special Provisions.

B. Submit two (2) (unless noted otherwise) one quart samples of the following:
1. Infield fines mixture
2. Infield clay mixture
3. Decomposed granite

1.04 QUALITY ASSURANCE

A. Materials Source: Sources of materials specified herein shall not be changed during course of work without review and written acceptance by the Owner’s Representative.

1.05 SEQUENCING AND SCHEDULING

A. Coordinate all applicable subgrade preparations, installations of base course materials and all other work with work of this section to insure a proper, timely installation.

PART 2  PRODUCTS

2.01 MATERIALS

A. Warning track, Infield Fines and Clay Mix: Infield mixes shall be free of rocks, debris, vegetation, clay balls, foreign materials, etc. Infield mixes shall be sterilized to eliminate the possibility of any growth of vegetation. The composition of the mixes shall be achieved using mechanical blending
equipment prior to delivery to the site and shall be as follows:

1. **Warning track and Infield fines mix:** Candlestick Park Infield Mix
   
<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 mm</td>
<td>100</td>
</tr>
<tr>
<td>5 mm</td>
<td>97-100</td>
</tr>
<tr>
<td>2 mm</td>
<td>85-100</td>
</tr>
<tr>
<td>1 mm</td>
<td>70-90</td>
</tr>
<tr>
<td>0.5 mm</td>
<td>60-80</td>
</tr>
<tr>
<td>&lt;0.05 mm (silt &amp; clay)</td>
<td>25-40%</td>
</tr>
</tbody>
</table>

2. **Pitchers Mound Mix:** shall be Turface Pro Clay in 50 lb bag.
3. **Home plate and bases clay:** Turface Moundmaster clay bricks
4. **Bases clay:** TMT Pro-Grade Screened Clay.
5. All of the above shall be as available from: TMT Enterprises Inc. San Jose, CA. Ph: (408) 432-9040, Fx: (408) 432-9429 attn: Matt Moore or Ewing Irrigation, Stockton, CA Ph: (916)502-3287.

C. Aggregate Base: shall be per Section 02230 - Base Courses.

**PART 3 EXECUTION**

3.01 **INFIELD CLAY MIX AT HOMEPLATE AND BASES**

A. **Home Plate:** Excavate evenly designated infield areas and lay a ½” course of loose clay and compact. Lay clay bricks across entire area and alternate brick joints in courses. Bricks to be worked together to bond and hand tamp. Apply ½” layer of loose clay to cover and finish with fines layer.

B. **Bases:** Excavate evenly designated infield areas and lay loose clay in 2” lifts and compact. Lay additional clay lifts to get 4” of clay and compact.

C. Water lightly and compact with 1,000 to 3,000 pound roller.

D. Spread additional material, roll and compact to establish even finished grade at specified elevation.

3.02 **INFIELD FINES / WARNING TRACK MIX**

A. Spread infield fines mix evenly where shown in drawings and screed in two inch lifts. Thoroughly water each lift until the entire depth is moist.

B. Compact with a 1,000 to 3,000 pound roller after grading and wetting final lift.

C. Allow material to dry, then spike and mat drag to establish finish grade at specified elevations.

D. Water to settle.

E. Finish grade of infield and warning track fines shall be flush with concrete edgebands. If edge condition is a tall curb set finish grade to finish grade established on grading plans.

3.03 **AGGREGATE BASE**

A. Install as per Drawings.
3.04 PITCHER'S MOUND MIX

A. Apply the pitchers mound clay mix at 2-inch lifts, tamp, compact and repeat.

B. Compact with a 1,000 to 3,000 pound roller after grading and wetting final lift.

C. Fill in back and sides of sloping to the edge of the circle.

3.05 TOLERANCES

A. Vertical deviation from specified lines, grades, and detail cross sections shall not exceed 0.04 foot for all surfacing specified in this section.

END OF SECTION
SECTION 02582
UNDERGROUND ELECTRICAL STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. PVC Non-metallic Conduit and Ducts
B. Underground pull boxes
C. Accessories

1.02 REFERENCES
G. UL 651A - Type EB and A Rigid PVC Conduit and HDPE Conduit; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.03 SUBMITTALS
A. See Division 1 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide for nonmetallic conduit and pullboxes and accessories.
C. Shop Drawings: Indicate dimensions, reinforcement, size and locations of openings, and accessory locations for pullboxes. Shop drawings shall include reinforcements for conduit openings and stamped by a registered structural engineer.
D. Field Samples: Provide sample of actual plastic duct delivered to site, two each 2 feet long.
E. Project Record Documents: Record actual routing and elevations of underground conduit and duct, and locations and sizes of pullboxes.
F. Shop drawings of pullbox covers complete with nameplate schedule.

1.04 QUALITY ASSURANCE
A. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 CONDUIT AND DUCT
A. Plastic Utilities Duct: NEMA TC 6; PVC Type DB.
   2. Product: Carlon P&C Duct or approved equal.
   3. Plug fittings with pull tab.
   4. Nominal size: Two (2) inches for electrical conduits, or as shown in drawings.
B. Plastic Communications Duct and Fittings:  NEMA TC 10, Type DB.
   1. Product: Carlon P&C Duct or approved equal.
   2. Plug fittings with pull tab.
   3. Nominal size: Four (4) inches for telecommunication conduits, or as shown in drawings.

2.02 UNDERGROUND PULLBOXES

A. Manufacturers:  Jensen Pre-cast, Christy Concrete Products, BES Concrete Products
B. Sizes:  17” (width) x 30”(length) x 24”(depth), (Minimum Dimensions)
C. Pullboxes shall be precast concrete as indicated on plans.
   1. Traffic Box - High density reinforced concrete box with non-setting shoulders positioned to maintain grade and facilitate back filling. Utility boxes shall be used where shown on the drawings. Use reinforced concrete lids on unfinished grades (i.e. grass, dirt, etc.), and steel checker plate, H/20 loading, bolt down on finished grades (i.e. concrete, asphalt, etc.) Provide 12” extension piece.

2.03 ACCESSORIES

A. Underground Warning Tape:  4 inch wide plastic tape, detectable type colored red with suitable warning legend describing buried electrical lines. Orange colored tape with suitable warning legend will describe buried telecommunications lines.
B. Duct spacers shall be Wunpeece, Carlon Snap-Loc or equal. Spacers shall be provided with rebar holder.
C. End Bells - Molded style.
D. Ground Rod - 3/4” x 10’ minimum, copper clad. Blackburn, Erico, or equal.
E. Grounding Electrode Conductor - # 1 bare copper conductor
F. Traceable mule tape. 5/8” diameter min. 1,800 lbs. with sequential footage markings. Install mule tape in all spare ducts/conduits.
G. Duct Plugs - removable, reusable, plastic plugs. Watertight, airtight, and gastight with provisions for pullrope attachments.
H. Duct Seal - Non hardening. Rated for outdoor locations.

PART 3  EXECUTION

3.01 EXAMINATION

A. Conduit routing is shown in approximate locations unless dimensions are indicated. Route as required to complete conduit system. Verify routing and termination locations of conduit prior to excavation for rough-in.
B. Pullbox locations are shown in approximate locations unless dimensions are indicated. Locate as required to complete conduit system. Verify locations of pullboxes prior to excavating for installation.

3.02 UNDERGROUND PULLBOX INSTALLATION

A. Install and seal precast sections in accordance with ASTM C 891.
B. Install pullboxes plumb.
C. Use precast neck and shaft sections to bring pullbox cover to finished elevation. Refer to grading plans for finished elevations.
D. Attach cable racks to inserts after pullbox installation is complete.
E. Provide crushed rocks min 6” in bottom of pullboxes for proper drainage or install drains and connect to closest site drainage system.
F. Install one ground rod. Ground rods shall project 6” above pullbox floor.
G. Knock-out a 2” diameter hole in sump area of pullbox.
H. Clean pullbox of any debris prior to substantial completion. Drain pullbox of water.
END OF SECTION
SECTION 02611
GRAVITY SEWER SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY
A. Furnish all labor, materials, equipment, and incidentals required, and install polyvinyl chloride (PVC) gravity sewer pipe, manholes and appurtenances as shown on the Drawings and as specified herein.

B. Related Work Specified in other sections include:
1. Section 02221, “Excavation, Backfilling, and Compaction.”
2. Section 02240, “Dewatering.”

1.2 SUBMITTALS
A. Shop Drawings: Submit shop drawings and manufacturer’s printed information for sewer pipes, manholes, grade rings, covers, couplings, and liner and coating materials.

1.3 DELIVERY, STORAGE AND HANDLING
A. General: Take every precaution to prevent injury to the PVC sewer pipe and manhole sections during transportation and unloading. Unload manhole and PVC sections using skids, pipe hooks, rope slings, or suitable power equipment, if necessary, and keep the sections under control at all times. Do not allow the manhole or PVC sections to be dropped, dumped or dragged under any conditions.

B. Damaged Section: If any manhole or PVC section is damaged in the process of transportation or handling, reject and immediately remove such sections from the site, and replace the damaged manhole sections or pipe at no cost to the City.

1.4 INSPECTION AND TESTS
A. All pipe and accessories to be installed under this Contract shall be inspected and tested at the place of manufacture by the manufacturer as required by the Standard Specifications to which the material is manufactured.

B. In the event that any of the test specimens fail to meet the applicable standards, all pipe and accessories presented by such tests shall be subject to rejections. The Contractor may furnish two additional test specimens from the same shipment or delivery for each specimen that failed and the pipe and accessories will be considered acceptable if all of these additional specimens meet the requirements of the applicable standards.

C. Both pipe and accessories which have been rejected by the Engineer shall be removed from the site of the work by the Contractor and replaced with pipe and accessories which meets these specifications.

PART 2 - MATERIALS

2.1 PVC PIPE
A. PVC gravity sewer pipe and fittings 4-inch through 12-inch diameter shall conform to ASTM D-3034, “Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings,” DR 26.
Each length of pipe and fitting shall be marked with the nominal size, the SDR designation, the name of the manufacturer or trademark, and the date of manufacture.

B. The pipe shall be joined with an integral bell and spigot type rubber gasketed joints. Each integral bell joint shall consist of a formed bell with a rubber gasket. Flexible gasketed joints shall be elastomeric compression types conforming to ASTM F1336, ASTM D3201 and ASTM F477. Joints shall permit contraction, expansion and settlement, and yet maintain a watertight connection. Joints shall be tested in accordance with ASTM D3212. Rubber gaskets shall be marked with the manufacturer’s identification sizes and proper insertion direction.

C. Pipe shall be furnished in standard laying lengths not exceeding 20 feet and shall be colored green in accordance with the Utility Location and Coordination Council Uniform Color Guide.

D. All fittings and accessories shall be furnished by the pipe supplier and shall have bell and/or spigot configurations compatible with the pipe.

2.2 MANHOLES

A. Concrete, Steel Reinforcement and Aggregates

1. Provide reinforced concrete, cementitious materials, aggregates and steel reinforcement conforming to the requirements of ASTM C 478, with Grade 40 reinforcement bars, Type II cement.

B. Manhole Frames and Covers

1. Provide manhole frames and covers as shown in the City of Tracy Standard Details. Castings for manhole frames, covers and other items shall conform to the ASTM Designation A48, Class 35B. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects in positions which would impair their strength, or otherwise make them unfit for the service intended. The seating surfaces between frames and covers shall be machined to fit true so the frames and covers do not shift under traffic conditions or permit entry of storm water from flooding. Lifting or “pick” holes shall be provided. The words SANITARY SEWER shall be cast in all manhole covers. All manhole frames and covers shall be traffic bearing unless otherwise specified, and be fully bedded in mortar in the correct finish grade elevation with concrete grade rings. Frame and cover shall be Phoenix Iron Works, Model P-1090.

C. Preformed Joint Sealing Compound

1. Provide preformed joint sealing compound for joining manhole sections; Ram-Nek, as manufactured by K.T. Snyder Company, Inc., or approved equal.

D. Pipeline Connections

1. Provide neoprene boots with type 316 stainless steel clamps for joining sewers to manhole riser sections. The unfilled portion of the connection shall be filled with Ram-Nek.

2.3 CLEANOUTS

A. Gray-Iron Cleanouts: ASME A112.36.2m, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.

1. Manufactures:
b. MIFAB Manufacturing Inc.
d. Wade Div.; Tyler Pipe.
e. Watts Industries, Inc.
g. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

2. Top-Loading Classification: Light, Medium, Heavy or Extra –Heavy duty as described in Section 3.5 below.

PART 3 - EXECUTION

3.1 DELIVERY AND TEMPORARY STORAGE
A. Storage of pipe on the job site shall be done in accordance with the pipe manufacturer's recommendation and with approval of the Engineer, and shall be limited to one week.
B. At times when pipe laying is not in progress, the pipe shall be closed with a tight fitting cap or plug to prevent the entrance of foreign matter into the pipe.

3.2 LAYING PVC PIPE AND FITTINGS
A. PVC gravity sewer pipe shall be laid in accordance with the instructions of the manufacturer and ASTM D-2321, "Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe." Pipe shall be laid upgrade without a break from structure to structure, with bell ends of the pipe upgrade. Bell holes shall be excavated so that after installation only the pipe barrel shall bear upon the trench bottom. No blocking under the pipe will be permitted.
B. For pipelines less than 12 inches in diameter, a single laser level beam shall be utilized and centered inside the pipe.
C. Use care in handling and installing pipe and fittings. Pipes shall be lifted with handling beams or wide belt slings as recommended by the pipe manufacturer. Under no circumstances shall pipe or fittings be dropped either into the trench or during unloading. The interior of the pipe shall be kept clean of oil, dirt, and foreign matter, and the machined ends and couplings shall be wiped clean immediately prior to jointing.
D. Use a PVC pipe cutter where necessary to cut and machine all PVC pipe in the field. A "full insertion mark" shall be provided on each field cut pipe end. Field-cut pipe shall be beveled with a beveling tool made especially for plastic pipe. Bevels shall be in accordance with the manufacturer's requirements.
E. Pipe stubs for all manhole connections shall not exceed 3 feet in length unless otherwise shown on the drawings. Install caps where required.

3.3 LATERALS
A. New laterals shall be constructed from the new sewer main to the property line, where a two-way cleanout shall be installed.
B. PVC tee wyes, and other types of branches, shall be furnished and installed along with the sewer pipe. Wyes shall be installed for each lateral. Unless shown otherwise in the plans, the branch of the wye shall be rotated to an angle of 45 degrees from horizontal.
No wye for a sewer shall be closer than 5 feet to any structure, as measured from the centerline of the wye to outside of the structure.

C. Where possible, all laterals shall be run perpendicular to the sewer main from the main to the building connection. All laterals shall be bedded the same as the sewer to which they connect.

D. Any disturbed landscaping or hardscape features shall be restored to their previous condition or better, as depicted by the pre-construction photographs which shall be taken by the Contractor.

E. All laterals to be lined shall be cleared and cleaned by the Contractor to remove all obstructions that will interfere with the insertion of the liner. Methods used shall not require excavation or pavement cutting. Major defects identified during cleaning or video inspection may require point repair. The Contractor shall notify the Engineer of any work requiring point repairs, and no work shall be started on point repairs until written approval has been received from the Engineer.

3.4 MANHOLES INSTALLATION

A. Lifting Holes: Lifting holes through the structure shall be grouted with non-shrink grout.

B. Cast-in-Place Base: The manhole base shall be cast-in-place as shown in these plans and specifications.

C. Joining Manhole Sections: Pre-cast sections shall be joined using Ram-Nek plastic joint sealing compound. Non-shrink grout shall be used inside and outside for filling voids between manhole pre-cast sections and shall be of a type designed for use in wastewater. All openings and joints shall be sealed watertight.

D. Top Termination: Manhole tops shall terminate at such elevations as will permit laying up grade rings under the manhole frame to make allowances for future street grade adjustments.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use light-duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.

2. Use medium-duty, top-loading classification cleanouts in paved foot-traffic areas.

3. Use heavy-duty, top-loading classification cleanouts in vehicle-traffic service areas.

4. Use extra-heavy-duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement with tops flush with pavements surface.

3.6 TESTS FOR GRAVITY SEWERS

A. Mandrel Testing
1. Following placement and compaction of backfill for all utilities, and prior to placement of permanent pavement, all sewer mains shall be cleaned and mandrelled to verify the pipeline is free from obstructions, deflections, and lateral pipe intrusions. A rigid madrel, with a circular cross section having a diameter of at least 95 percent of the specified pipe inside diameter, shall be hand pulled through the pipe. The minimum length of the circular section shall be equal to the nominal diameter of the pipe. Any pipe section failing to pass the mandrel shall be repaired, replaced, and retested at the Contractor's expense. Pipe rounders shall not be allowed.

B. Leakage Testing

1. Gravity sewers shall be required to pass a leakage test before acceptance. Leakage tests shall be as described in Section 02676, Leakage and Pressure Testing.

C. Final Inspection

1. After paving has been completed and all manholes have been raised to grade (where required), a final visual inspection shall be made. The necessary labor shall be furnished to assist the District Representative in making the final inspection. The Contractor shall furnish a responsible person or supervisor for the final inspection to remove manhole covers and to note any corrections required by the District Representative in order to obtain final approval. Final District inspection shall be requested through the District Representative by giving at least forty-eight (48) hour's notice.

END OF SECTION
SECTION 02623
WATER SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION
A. This section includes materials and installation for pressure pipelines and appurtenances to be used for potable water, irrigation main water and fire service water. Like items of equipment specified herein shall be the end products of one manufacturer in order to achieve standardization for operation, maintenance, spare parts, and manufacturer's service. Refer to the City's Standards for other requirements applicable to this section.

1.2 RELATED WORK DESCRIBED ELSEWHERE
A. Section 02221, “Excavation, Backfilling and Compaction.”
B. Section 02240, “Dewatering.”
C. Section 02676, “Leakage and Pressure Testing.”

1.3 REFERENCES TITLE
AWWA C605 Underground Installation of Poly Vinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
ANSI B16.5 Pipe Flanges and Flanged Fittings
ASTM D 1785 Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.
ASTM D 2855 Standard Practice for Making Solvent- Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings

1.4 SUBMITTALS
1. Shop drawing submittals for piping under this Section shall include all data and information required for the complete piping systems. All dimensions shall be based on the actual equipment to be furnished.

2. The Contractor shall submit shop drawings and catalog cuts for the pipe, fittings, valves, primer, solvent cement, and any other equipment supplied under this section, in accordance with the Standard Specifications.

3. Submit pipe manufacturer's recommendations for handling, storing, and installing pipe and fittings.

PART 2 – MATERIALS

2.1 PVC PRESSURE PIPE 3-INCH AND SMALLER DIAMETER
A. PVC pipe fittings for 3-inch and smaller diameter pipe shall be solvent welded Schedule 80 and conform to the requirements of ASTM D 2464. Threaded joints can be used where needed. At threaded joints between PVC and metal pipes, the metal shall contain a threaded socket end and the PVC threaded spigot end. A metal spigot shall not under any circumstances, be screwed into a PVC socket.
B. Material used to produce the pipe and couplings shall be made from Class 12454-A or B virgin compounds as defined in ASTM D 1784, with an established hydrostatic design basis rating of 4,000 psi for water at 73.4 degrees F (23 degrees C).

C. Fittings shall be of the same material and have the same pressure rating as the pipe.

### 2.2 COUPLING AND SLEEVES

A. Connections of 3 inches and smaller PVC pipe to pipe or fittings of other material shall be made with PVC pipe adaptors or flexible couplings. Adaptors shall have ends specifically manufactured to receive the adjoining pipes.

C. Where flexible connections in the piping are specified or indicated on the plans, they shall be obtained by the use of sleeve-type couplings. All sleeve-type couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Sleeve-type couplings shall be made by Rockwell International, Pittsburgh, PA; Dresser Mfg. Div., Bradford, PA; or be approved equal products.

D. Couplings for buried PVC pipe shall be Rockwell 411, Dresser Style 38, or approved equal products.

### 2.3 VALVES

A. General

1. Valves shall be furnished full line size unless specifically called out to be of reduced size. Unless otherwise specified, valves shall be rated for 150 psi working pressure minimum.

2. All valves shall be complete with all necessary operating handwheels, chainwheels, extension stems, valve boxes, floor stands, worm and gear operators, operating nuts, chains, and wrenches which are required for the proper completion of the work included under this section. Operating torque to operate any valve shall not exceed 40 ft-lb. Unless otherwise indicated, the direction of rotation of the wheel, wrench nut or lever to open the valve shall be counterclockwise. Each valve body or operator shall have cast thereon the word "OPEN" and an arrow indicating the direction to open. Actual length of valves shall be within 1/16 inch (plus or minus) of the specified or catalog length except where installed adjacent to flexible or mechanical pipe couplings, where different lengths of a replacement can be accommodated. Flanges shall meet requirements of ANSI B16.

3. Valve boxes and extended stems to within 24 inches of finished grade shall be provided for all buried valves.

B. Manually-Operated Valves

1. Gate Valves

   a. Gate Valves - 3 Inches and Smaller: For threaded joints gate valves shall be Crane Company No. 438, Mueller H10914, or equal, with bronze construction, solid wedge disc, non rising stem and screwed ends. For soldered joints, gate valves shall be Crane No. 1324, or equal.

2. Hose Valves:
a. Hose valves shall be of bronze construction with composition disk and threaded connection. Valve shall be rated for 200 psi and shall be Crane Figure 117, or equal.

3. Check Valves
   a. Swing Check Valve: The check valve shall be iron body, bronze mounted, swing check valve meeting requirements of AWWA C508. Valves shall be quipped with outside adjustable lever and weight. The lever and weight shall be so constructed and positioned that it can operate without interference. All internal ferrous metal surfaces shall be factory coated with 10 mils epoxy coating per AWWA C550. Check valves shall be manufactured by Mueller, Kennedy, or equal approved by the Engineer.

C. Self-Actuated Valves
   1. Backflow Preventers
      a. Backflow preventers shall be installed on water lines at the locations shown on the drawings and shall conform to the City of Tracy’s Standard Plan No. 420, or as shown in the plans.

D. Valve Appurtenances
   1. Extension Stems for Buried Valve Operators
      a. Where the depth of the valve is such that its centerline is more than 4 feet below grade, operating extension stems shall be provided to bring the operating nut to a point 24 inches below the surface of the grounds and/or box cover. Extension stems shall be constructed of steel and shall be complete with 2 inches square operating nut.

2. Valve Boxes and Risers
   a. Valve boxes and risers shall be provided for all buried valves. Valve box shall be a pre-cast 8-inch valve box set flush with the street surface or adjacent ground surface. Valve box opening shall have a cast iron ring and cover shall be marked “WATER.” The valve boxes shall be Christy G-5 and shall conform to the City of Tracy’s Standard Plan No. 402.

2.4 FLANGES AND FLANGE ADAPTERS
   A. Unless otherwise noted, flanges on all DIP pipe shall conform to AWWA C115.
   B. Flange connections for PVC pipe 3-inch and smaller shall be made using a tapped and threaded ductile iron blind flange. The PVC pipe to be threaded into the blind flange shall have a minimum wall thickness equal to SCH 80 PVC.

2.5 GASKETS
   A. Gasket for flanged joints shall be 1/8-inch thick, cloth-inserted rubber. Gaskets shall be suitable for a water pressure of 350-psi at a temperature of 108ºF.
   B. Full face type gaskets with pre-punched holes shall be used where both flanges are flat faced. Ring gaskets extending to inner edge of bolts may be used where raised face flange is present.
   C. Gaskets for push-on, mechanical, and restrained joints shall be synthetic or natural rubber in accordance with AWWA C111.
2.6 BOLTS AND NUTS

A. Bolts and nuts for flanges and couplings that are submerged within underground vaults and structures, and located above ground, shall be Type 316 stainless steel conforming to ASTM A 193 (Grade B8M) for bolts, and ASTM A 194 (Grade 8M) for nuts.

B. Bolts and nuts for flanges and couplings that are buried shall be Heavy Hex Head ASTM A 193 (Grade B7) for bolts, and Heavy Hex Head ASTM A 194 (Grade 2H) for nuts. Nuts and bolts (including threads) shall be coated using a three layer system consisting of a metallic base coat, an adhesion coat, and a heat cured fluoropolymer compound containing PTFE or TEFLOW® as topcoat. Coating shall be FluoroKote#1 by Metal Coatings Corp., Tripac 2000 Blue Coating System by Tripac Fasteners, or approved equal.

C. Washers shall be provided for each nut, and shall be the same material and coating as the nut. Bolts shall extend through the nuts a minimum of 1/4-inch.

D. Apply a liberal coat of a white food grade anti-seizing compound containing PTFE or TEFLOW® to the threads of all stainless steel nuts and bolts, and to the face of all washers. The compound shall have operating range covering -20 degrees F to 440 degrees F, be NSF approved (or meet USDA-H1 and FDA requirements for incidental food contact), suitable for use on stainless steel, with a coefficient of friction no greater than K=0.13. Compound shall be White-Knight as manufactured by Jet-Lube, or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION OF GASKETED PIPE

A. Pipe shall be installed in accordance with the City of Tracy’s Standard Plan No. 502.

B. The new main shall not be connected to any existing main or service until after the new main has successfully passed testing requirements.

C. Pipe and fittings shall be carried and placed into trench using wide fabric straps. Chains and cables shall not be used, and items shall not be dropped into trenches. All items shall be inspected by the City prior to placing into trench and backfilling.

D. The bell shall be inspected and any foreign material shall be removed.

E. The spigot end of the pipe shall be cleaned off and a lubricant (approved by the manufacturer) shall be applied to the spigot end covering the beveled nose and sealing surface. The beveled end shall be placed in the companion bell and straight alignment shall be provided. The pipe shall be pushed straight home with a block and bar until the stop mark on the spigot is even with the end of the bell. The joint shall not be assembled by swinging or stabbing, or by using a backhoe bucket.

F. After assembly to the stop mark, the pipe may be bent up to 70 percent of the limit defined by the manufacturer. Construction of curved reaches of PVC pipe shall be accomplished by bending the pipe, not by deflecting joints or beveling ends. At fittings, the joint may be deflected up to 70 percent of the limit defined by the manufacturer. If the pipe joint is to be deflected more than 2 degrees at ductile iron fittings, the spigot bevel shall be removed and edges shall be de-burred.

3.2 THRUST BLOCKS AND ALTERNATE THRUST RESTRAINTS

A. Thrust blocks shall be constructed of concrete having a cement content of not less than six (6) sacks of cement per cubic yard of concrete, and shall be mixed and delivered to the jobsite by an approved ready-mix concrete supplier.
B. Thrust restraint locations may not be shown on the drawings, but shall be provided for all pressure pipe fittings, valves, changes in pipe size or direction, and at all other points where there is a possibility of joint separation under pressure. Provide anchors and supports where necessary for fastening work into place. Make proper provisions for expansion or contraction of pipelines. Thrust blocks shall be placed between solid ground and the pipe or fittings to be anchored as detailed. Thrust blocks shall be as shown in the City of Tracy’s Standard Plan No. 423, and in accordance with AWWA C600 and pipe manufacturer’s recommendations.

C. Where concrete thrust blocking is not possible due to space limitations or unstable soil conditions, mechanical joint restraints may be used.
   1. Push-on fittings to be restrained with mechanical restraints shall be provided with restraining ears, and shall be restrained using a split serrated style restraint; Series 15PF00 by EBAA Iron, Series 1300 by Uni-Flange, or approved equal.
   2. Pipe shall be restrained on both sides of the fitting to a length recommended by EBAA Iron’s “PVC Pipe Thrust Restraint Design Handbook”, using split serrated style restraints, Series 1600 by EBAA Iron, Series 1390 by Uni-Flange, or approved equal.

D. Backfilling operations at thrust blocks shall not begin until concrete has set for a minimum of twelve (12) hours. After thrust blocks have been backfilled, water may be carefully introduced into the new pipe and appurtenances for disinfection. Care shall be used not to subject the new pipe to any pressure loading at this time. Concrete shall not be disturbed or pressure loaded for at least five (5) days after placing thrust blocks unless otherwise permitted by the Engineer.

3.3 TRACING WIRE
   A. A continuous insulated AWG 10 tracing wire shall be installed on top of the pipe, attached at 10-foot intervals. The wire shall run along the entire pipe, and be stubbed out at valves, blowoffs, and air release valves.

3.4 WARNING TAPE
   A. 3-inch wide, 5-mils thick detectable warning tape shall be installed over the entire pipe length of all mains. The tape shall be installed at the top of the pipe zone, and shall be color coded.
   B. Tape for potable water pipelines shall be blue with white lettering, with the wording: “CAUTION: POTABLE WATERLINE BURIED BELOW”.
   C. Tape for potable water pipelines shall be blue with white lettering, with the wording: “CAUTION: FIRE SERVICE LINE BURIED BELOW”.
   D. Tape for reclaimed water pipelines shall be purple with black lettering, with the wording: “CAUTION: IRRIGATION WATERLINE BURIED BELOW”.

3.5 VALVES
   A. General
      1. Generally, unless otherwise indicated on the drawings or herein, all valves installed in horizontal runs of pipe having centerline elevations 4 feet, 6 inches or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs of pipe having centerline elevations 4 feet, 6 inches to 6 feet, 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and
operating handwheel shall be installed as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as approved by the Engineer.

B. Gate Valves

1. Gate valves shall be installed with stems vertical where possible but in no case with stems pointed downward from the horizontal.

3.6 TESTING

A. General

1. Valves shall be tested at the same time that the adjacent pipeline is tested. Joints shall show no visible leakage under test. Joints that show signs of leakage shall be repaired prior to final acceptance. If there are any special parts of control systems or operators that might be damaged by the pipeline test, they shall be properly protected. The Contractor shall be held responsible for any damage caused by the testing.

2. If requested by the City, the valve manufacturer shall furnish an affidavit stating the materials options furnished, and/or that these and other referenced specifications have been complied with.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Flushing and testing for any signs of leakage in all pipelines and structures required to be watertight.

B. Testing Gravity Sewers and Drain Lines:
   1. Low pressure air test.
   2. Infiltration test.
   3. Testing Pressure Pipelines.
   5. Testing Manholes.
   7. Testing Structures
   8. Exfiltration Test.

C. Operation of Existing Facilities: Conduct all tests in a manner to minimize as much as possible any interference with the day-to-day operations of existing facilities or other Contractors working on the site.

1.2 PERFORMANCE REQUIREMENTS

A. Written Notification of Testing: Provide written notice when the work is ready for testing, and make the tests as soon thereafter as possible.

B. Personnel for reading meters, gauges, or other measuring devices, will be furnished.

C. Furnish all other labor, equipment, air, water and materials, including: meters, gauges, smoke producers, blowers, pumps, compressors, fuel, water, bulkheads and accessory equipment.

1.3 SUBMITTALS

A. Testing Report: Prior to placing the sewer system in service submit for review and approval a detailed bound report summarizing the leakage test data, describing the test procedure and showing the calculations on which the leakage test data is based.

B. Reference Sewer Line Data For Low Pressure Air Testing
   1. The length and diameter of the section of line tested (MH to MH) including any laterals.

C. A complete description of test procedures and methods, including:
   1. Trench backfilling and sewer cleaning status.
   2. Type of plugs used and where.
   3. Depth of sewer, and ground water pressure over sewer pipe.
   4. Stabilization time period and air pressure.
5. Actual air test pressures used if ground water is present.
6. The allowed time by specifications.
7. The actual test time.
8. The air pressure at beginning and end of test.

D. The name of the inspector/tester and the date(s) and time(s) of all testing, including any re-testing.
E. A description of any repairs made.

PART 2 - PRODUCTS

2.1 WATER
A. All water used in testing of potable water pipes shall be potable water.

PART 3 - EXECUTION

3.1 GENERAL
A. All new sewer and water pipelines installed shall be flushed and tested for leakage. All testing to be performed shall be witnessed by the City.

3.2 PIPE TESTING PREPARATION
A. All mains shall be flushed to remove all sand and other foreign matter prior to performing leakage tests.
B. The velocity of the flushing water shall be at least 4 fps. Flushing shall be terminated at the direction of the Engineer. Dispose of flushing water without causing a nuisance or property damage, in accordance with applicable regulations and permits.
C. Temporary flush out connections shall be installed on all dead end water mains and at other locations needed for proper cleaning and testing.

3.3 HYDROSTATIC TEST
A. Perform hydrostatic testing of the system as set forth in the following, and conduct said tests in the presence of representatives from the City and other authorized agencies, with forty-eight (48) hours advance notice provided.
B. Piping and appurtenances to be tested shall be within sections between valves unless alternate methods have received prior approval from the City.
C. The pipe to be tested must be sufficiently backfilled to prevent movement while under the test pressure. Testing shall not proceed until concrete thrust blocks are in place and cured, or other permanent restraining devices are installed.
D. While the piping is being filled with water, care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required. The flow velocity during filling shall not exceed 2 fps.
E. Hydrostatic testing shall be performed with a sustained pressure for a minimum of two (2) hours at a pressure equal to 1.25 times the maximum pipe working pressure rating (or 200 psi minimum for fire pipes), measured at the lowest elevation of the pipe section being tested, unless otherwise approved by the City.
F. The testing procedure shall include the continued application of the specified pressure to the test system, for the two hour period, by way of a pump taking supply from a
container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced from said container.

G. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formula:

\[ L = \frac{CND(P)^{1/2}}{7,400} \]

H. Equation developed from AWWA C600, Uni-Bell Handbook of PVC Pipe, and “GREENBOOK” (Standard Specifications for Public Works Construction.

1. \( L \) = Allowable leakage (gallons/hour).
2. \( N \) = Number of joints tested in line (pipe joints and fittings).
3. \( D \) = Nominal diameter of the pipe (inches).
4. \( P \) = Average test pressure maintained during the leakage test (psi).
5. \( C = 1 \) for PVC, DIP, or ACP pipe with rubber gasket joints.
6. \( C = 2 \) for reinforced concrete pressure pipe with rubber joints, cylinder type.
7. \( C = 6 \) for reinforced concrete pressure pipe with rubber joints, non-cylinder type.
8. \( C = 0 \) (no leakage allowed) for welded steel pipe with welded joints, or PVC with solvent welded joints and fittings.

I. Should the test fail, source of leakage shall be found, necessary repairs shall be made, and tests shall be repeated by the Contractor, at the Contractor’s expense, until results are within the established limits. The Contractor shall furnish the necessary labor, water, pumps, gauges, and all other items required to conduct the testing and perform necessary repairs.

3.4 LOW PRESSURE AIR TEST

A. After completing backfill of a section of gravity sewer line, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the below stated equipment, under the supervision of the City, with forty-eight (48) hours advanced notice provided.

3.5 EQUIPMENT

A. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

B. Pneumatic plugs shall resist internal bracing or blocking.

C. All air used shall pass through a single control panel.

D. Three individual hoses shall be used for the following connections:

E. From control panel to pneumatic plugs for inflation.

F. From control panel to sealed line for introducing the low pressure air.

G. From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

3.6 PROCEDURES

A. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the
pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psi. The sealed pipe shall be pressurized to 5 psi. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

B. After a manhole to manhole reach of pipe has been backfilled and cleaned and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psi. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psi greater than the average back pressure of any ground water that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psi minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable", if the time required for the pressure to decrease from 3.5 psi to 2.5 psi (plus the average back pressure of any ground water that may be over the pipe) is greater than the times shown for the given diameters in the following table:

<table>
<thead>
<tr>
<th>PIPE DIAMETER (IN.)</th>
<th>MINIMUM TIME (MIN)</th>
<th>TIME FOR TESTED LENGTH (SEC)</th>
</tr>
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<tbody>
<tr>
<td>4</td>
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<td>0.38 L</td>
</tr>
<tr>
<td>6</td>
<td>5.7</td>
<td>0.85 L</td>
</tr>
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<td>1.5 L</td>
</tr>
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</tr>
<tr>
<td>30</td>
<td>28.5</td>
<td>21.4 L</td>
</tr>
<tr>
<td>33</td>
<td>31.1</td>
<td>25.9 L</td>
</tr>
<tr>
<td>36</td>
<td>33.9</td>
<td>30.8 L</td>
</tr>
<tr>
<td>42</td>
<td>39.8</td>
<td>41.9 L</td>
</tr>
<tr>
<td>48</td>
<td>45.6</td>
<td>54.7 L</td>
</tr>
</tbody>
</table>

Time for the 1 psi pressure drop to occur must be greater than both columns 2 and 3.

L = Length of test section.

Table developed from Uni-Bell Handbook of PVC Pipe; also saw a specification using the original table referring to ASTM F1417-92.

C. In areas where ground water is known to exist, the Contractor shall install capped pipe adjacent to the top of one of the sewer lines. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, and a measurement of the height in feet of water over the invert of the pipe shall be taken. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11 ½ feet, then the added pressure will be 5 psi. This increases the 3.5 psi to 8.5 psi, and the 2.5 psi to 7.5 psi. The allowable drop of one pound and the timing remain the same).
3.7 INFILTRATION TEST
A. Infiltration test shall be performed only where the pipeline is submerged in ground water.
B. Maximum allowable infiltration rate is 200 gallons per inch of pipe diameter per mile per day for, including allowances for manhole leakage.

3.8 EXFILTRATION TEST
A. Perform leakage tests of wet wells, tanks, vaults and similar purpose structures before backfilling by filling the structure with water to within 6-inches of the top of the overflow level and observing the water surface level for the following twenty-four (24) hours.
B. Make an inspection for leakage of the exterior surface of the structure, especially in areas around construction joints.
C. Leakage will be accepted as within the allowable limits for structures from which there are no visible leaks.
D. If visible leaks appear, repair the structure by removing and replacing the leaking portions of the structure, waterproofing the inside, or by other methods approved.
E. Water for testing will be provided by the City at the Contractor's expense.

3.9 VACUUM TEST
A. Perform vacuum testing on all manholes in accordance with testing equipment manufacturer's written instructions, and in accordance with ASTM C 1244. The completed manhole shall be backfilled prior to official testing.
B. Vacuum testing shall be performed at the top of manhole casting after installation of all adjustment rings.
C. Prior to testing, all lifting holes and exterior joints shall be filled with an approved non-shrinking mortar well in advance of testing so it will have time to cure to its maximum strength. No grout shall be placed in the horizontal joints.
D. All pipes and other openings into the manhole shall be plugged. Plugs and seals must be securely braced to prevent them from being dislodged and drawn into the manhole during the vacuum test. Pipe plugs shall be installed beyond boot seals.
E. A plate with an inflatable rubber ring the size of the top of the manhole shall be installed by inflating the ring with air to pressure adequate to prevent leakage of air between the rubber ring and manhole wall.
F. Air shall then be pumped out of the manhole through an opening in the plate until a vacuum is created inside of the manhole equal to ten (10) inches of mercury on an approved vacuum gauge. The removal of air shall then be stopped and the test time begun.
G. Manhole is considered acceptable when vacuum does not drop below nine (9) inches of mercury for the following time, based upon manhole size and depth:

<table>
<thead>
<tr>
<th>DEPTH (FEET)</th>
<th>MANHOLE DIAMETER (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>36</td>
</tr>
<tr>
<td>TIME (SECONDS)</td>
<td>14</td>
</tr>
<tr>
<td>≤10</td>
<td>18</td>
</tr>
<tr>
<td>14</td>
<td>25</td>
</tr>
</tbody>
</table>
3.10 REPAIR AND RETEST
   A. Should any test fail, source of leakage shall be found and necessary repairs or material replacement shall be accomplished in a manner approved by the Engineer. Testing and repairs shall be repeated by the Contractor, until results are within the established limits. The Contractor shall furnish the necessary labor, equipment, and all other items required to conduct the testing, perform necessary repairs, and perform retesting.

3.11 DISPOSAL OF WATER
   A. Water used in testing shall be disposed of in accordance with Section 02240, Dewatering.

END OF SECTION
SECTION 02700

STORM DRAINAGE

PART 1  GENERAL

1.01  SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all storm drainage system improvements and related work as shown on the Drawings and/or specified herein.

B. Scope of work: The general extent of the drainage work is shown on the Drawings and includes, but is necessarily limited to, the following:
   1. Storm drainage system installation

C. Related sections can include, but may not be limited to:
   1. Section 02200 - Earthwork
   2. Section 02221 - Excavation, Backfilling and Compaction
   3. Section 02230 - Base Courses
   4. Section 02520 - Portland Cement Concrete
   5. Section 02870 - Site Furnishings

1.02  REGULATORY REQUIREMENTS AND REFERENCES


1.03  SUBMITTALS

A. Submit cut-sheets or samples of all products to be used in conformance with applicable Division One and Division Two specifications, General Conditions and Special Provisions.

B. Record Drawings:
   1. Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts and slope gradients as applicable.

1.04  QUALITY ASSURANCE

A. Control of Work: Conform to Section 5 of the Standard Specifications.

B. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.05  PROTECTION OF PROJECT SITE

A. Make provisions for, and take the necessary precautions to protect existing and new work from damage during entire life of project.

1.06  DELIVERY, STORAGE, AND HANDLING

A. Store pipe neatly and orderly, stacked and blocked to prevent damage. Cracked, checked, spalled or otherwise damaged pipe shall be removed from site.

B. Use of chain slings shall not be permitted.
C. All piping, fittings and related materials shall be carefully handled at all times.

D. All pipelines, fittings and drainage structures shall be kept clean and closed during construction.

1.07 PROJECT/SITE CONDITIONS

A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the Owner's Representative.

1.08 SEQUENCING AND SCHEDULING

A. Coordinate work of this section with all other work contained in the Contract Documents.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

A. All pipe and fittings shall be clearly and permanently marked to identify manufacturer, type, class, or schedule and NSF approval as applicable.

B. Corrugated High Density Polyethylene (CHDPE) Pipe (Perforated and Solid - Dual Wall)

1. High-density polyethylene perforated corrugated pipe with an integrally formed smooth waterway. Nominal sizes shall have a full circular cross-section, with an outer corrugated pipe wall and an essentially smooth inner wall (waterway). Corrugations may be either annular or spiral. All sizes shall conform to the AASHTO classification "Type S". Pipe manufacturer for this specification shall comply with the requirements for test methods, dimensions, and markings found in AASHTO Designations M252 and M294. Pipe and fittings shall be made from virgin PE compounds which conform with the requirements of cell class 324420C as defined and described in ASTM D 3350.

   a. The minimum parallel plate stiffness values when tested in accordance with ASTM D 2412 shall be as follows:
      
      | Diameter     | Pipe Stiffness |
      |--------------|----------------|
      | 4 inch (100 mm) | 50 psi (340 kPa) |
      | 6 inch (150 mm)  | 50 psi (340 kPa)  |
      | 8 inch (200 mm)   | 50 psi (340 kPa)   |
      | 10 inch (250 mm)  | 50 psi (340 kPa)  |
      | 12 inch (300 mm)  | 50 psi (340 kPa)  |
      | 15 inch (375 mm)  | 42 psi (290 kPa)  |

   2. The fittings shall not reduce or impair the overall integrity or function of the pipeline. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as “tees”, “wyes”, and end caps. These fittings may be installed by various methods, such as snap-on, screw-on, bell and spigot, and wrap around. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Only fittings supplied or recommended by the pipe manufacturer shall be used. Where designated on the plans and as required by the manufacturer, a neoprene or rubber gasket shall be supplied. Installation of the pipe specified above shall be in accordance with ASTM Recommended Practice D 2321 as covered elsewhere in these specifications.

   3. Corrugated Polyethylene Pipe shall be N-12 drainage pipe as manufactured by Advanced Drainage Systems, Inc. or approved equal.

C. Smooth Polyvinyl Chloride Pipe (P.V.C.) and fittings: Shall be polyvinyl chloride pipe, SDR 26 Spigot, Type I P.V.C. 1120, NSF approved. Comply with ASTM D 3034.
2.02 DRAINAGE STRUCTURES (as applicable)

A. Manholes: not used.

B. Catch Basins:
   1. 12-inch shall be CB12 supplied by Central Precast – US Concrete (with ADA lockable round grate), or acceptable equivalent product. Ph: (925) 462-6804.
   2. 18-inch basins shall be CB18 as supplied by Central Precast – US Concrete (with lockable round grate), or acceptable equivalent product. Ph: (925) 462-6804. Note that this grate is not ADA compliant and shall not be used in pedestrian hardscape areas.
   3. 24-inch basins shall be CB24 as supplied by Central Precast – US Concrete (with ADA lockable round grate), or acceptable equivalent product. Ph: (925) 462-6804.
   4. Grates in paved areas shall have grates that conform to ADA Regulations.
   5. All catch basins to have locking mechanism or screw down grate to frame.
   6. Provide two grade rings at each catch basin.

C. Extensions: Provide box extensions, junction boxes and grade rings compatible with structures as necessary to finish at the proper elevation and to facilitate future elevation adjustments as noted below.

D. Clean Outs: Shall be as shown or noted in the Drawings.

E. French Drain: Shall be as shown or noted in the Drawings.

F. Trench Drains: Shall be KS 100 pre-sloped slot channel drain as supplied by ACO Polymer Products, Inc (or acceptable equivalent product). Contact name is Tom Blyndo (209) 572-1511. Contractor to provide appropriate end connections and 600 series catch basin with in-line trash bucket and outlet connections. Use 494Q ADA grate with quick lock locking device. Traffic areas shall use the 411Q (galvanized). All grates shall comply with ADA requirements.

G. Perforated Vertidrain: Shall be the Multi-Flow Drainage System, as available from Reed & Graham, ph: (916) 933-9140. Contact name is Ray Myers. All fittings, adaptors, fittings, and couplers shall also be Multi-Flow components.

2.03 MISCELLANEOUS MATERIALS (as applicable)

A. Drainage Rock: Shall be ¾” inch crushed drain rock or acceptable equal as shown in the drawings, materials available through Stevens Creek Quarry, Cupertino, TMT Enterprises, San Jose, or AA and Bob Allen, Stockton.

B. Sand for all perforated drain pipe applications: Shall be a washed sand that meets USGA Greens Specifications (see below for sieve range) with the following characteristics:
   1. 100% passing a #4 screen and no more than 4% passing a #200 screen.
   2. A total silt and clay % of no more than 5%.
   3. Shall be crushed or naturally angled sand – no rounded silica sand.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Sieve Number</th>
<th>Particle Size (mm)</th>
<th>Allowable Range (% Retained on Sieves by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Gravel</td>
<td>10</td>
<td>&gt;2.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>---</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>V. Coarse Sand</td>
<td>18</td>
<td>1.00 – 2.00</td>
<td>0% to 10%</td>
</tr>
<tr>
<td>Coarse Sand</td>
<td>35</td>
<td>0.5 – 1.0</td>
<td></td>
</tr>
<tr>
<td>Medium Sand</td>
<td>60</td>
<td>0.25 – 0.5</td>
<td>82% to 100%</td>
</tr>
<tr>
<td>Fine Sand</td>
<td>140</td>
<td>0.1 – 0.25</td>
<td></td>
</tr>
<tr>
<td>V. Fine Sand</td>
<td>270</td>
<td>0.05 – 0.1</td>
<td></td>
</tr>
<tr>
<td>Silt &amp; Clay</td>
<td>--</td>
<td>&lt;0.05</td>
<td>0% to 8%</td>
</tr>
</tbody>
</table>

Note: 50% to 75% of particles to be within diameter of 0.25 to 0.75 mm.

C. French drains and Vertidrains shall have a backfill with one of the following:
   1. USGA Greens Mix (Approved Supplier- TMT Enterprises – Matt Moore408-432-9040) or AA and Bob Allen, Stockton
      a. 65% USGA sand (see above for material requirements)
      b. 15% Coir
      c. 15% Lassenite
      d. 5% Worm Castings
   2. 90% USGA Sand / 10% Peat Blend (see above for material requirements). Sand/Peat mixture shall be pre-blended at the source and shall be a 90% sand/10% peat as defined by volume.

D. Filter Fabric for French Drain: Shall be Mirafi 140N or acceptable equal.

E. Filter Fabric Fasteners: Metal clip type staple.

F. Mortar: Shall conform to all applicable sections of the Standard Specifications. Mixture shall be a 1:2 Portland Cement to sand mixture with a minimum of water.

G. Reinforcing bars: Refer to Section 02520.

H. Minor concrete: Refer to Section 02520.

I. Structural Adhesives for Catch Basins, and Junction Boxes: Shall be Ramnek or equivalent product. Available thru multiple suppliers.

**PART 3 EXECUTION**

3.01 PIPE LAYING

A. General: Pipe shall be installed per manufacturers’ instructions and in conformance with the Contracts Documents.

B. CHDPE Pipe:
   1. Pipe shall be installed with a minimum cover under the H-20 live load = 12 inches to the top of subgrade elevation.
   2. Minimum compaction for pipe subject to H-20 live load is 90% per Section 19, Standard Specifications.
   3. CHDPE pipe shall be laid and jointed in accordance with generally accepted practice and the following provisions to provide the required work.

C. P.V.C. (non-perforated) Pipe:
   1. Pipe shall be laid in trench to specified lines and grades fully and evenly supported by bedding material. Excavate bedding as required so bell fittings are clear from soil 12" on each side of joint and to a depth sufficient to avoid contamination of joint.
2. Pipe shall be laid beginning at the outlet and proceeding with each bell end facing upgrade.
3. Cut pipe square and ream to remove burrs.
4. Connections shall be solid, true to grade and watertight. Grease gaskets as necessary to facilitate joining pipe.

3.02 DRAINAGE STRUCTURES

A. General: Set rim or cover elevations to specified grades utilizing a minimum of two grade rings (or extensions) at top of drainage structure to facilitate potential elevation adjustments in the future.

B. Catch Basins: Install as shown in the Drawings and as follows:
   1. Excavate as required.
   2. Set on firm, unyielding base. Set on compacted select backfill material if directed by Owner’s Representative.
   3. Prefabricated units not having a bottom shall be set on a poured-in-place concrete slab with smooth trowel finish. Mortar and properly seal unit to slab, making a watertight connection.
   4. Install pipe inlets and outlets to specified elevations. Grout and/or seal all joints to a watertight condition with material per manufacturer’s recommendation.

C. French Drains and Cleanouts: Install as shown in the Drawings.

D. Trench Drains: Install as shown in the Drawings and in accordance with the manufacturer’s written recommendations.

E. Vertidrain Installation:
   1. The trench excavations for the Vertidrain shall be to the lines and grades shown in the plans. Over excavation in the bottom of the excavations shall be backfilled to the proper grade with excavated material prior to the placement of the drainage system.
   2. All fittings for the drainage system shall be installed in accordance with the manufacturer’s recommendations. Two inch Multi-Flow polyethylene tape shall be used to seal the filter fabric to the fittings and preclude intrusion of backfill between the core and filter fabric.
   3. No excavated material shall be used as backfill around geocomposite unless approved by the Engineer. In no case shall any backfill contain any rocks, pieces of pavement or debris with any dimension greater than one inch.

3.03 FIELD QUALITY CONTROL

A. The Owner’s Representative shall review and accept work at the following stages:
   1. Excavated trench with bedding in place prior to any pipe being laid.
   2. Pipe laid prior to backfilling. Any pipe covered prior to review and acceptance shall be uncovered and re-backfilled at contractor’s expense.
   3. Drainage device location and pipe connection.
   4. New drainage system shall be flood tested and clean of debris.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: All labor, materials, supplies, tools and transportation to perform all operations in connection with and reasonably incidental to the complete installation of the automatic sprinkler irrigation systems as shown on the Drawings.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS: Related section can include, but may not be limited to:

A. Final Acceptance for Work of this Section is contingent on completion of Work of Section 02900.

B. Division 16 - Electrical power to controller

1.3 REFERENCES

A. ASTM – American Society for Testing and Materials
   1. A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

B. ICC – International Code Council

C. NEC – National Electric Code

D. State of California, Division of Industrial Safety
   1. Electrical Safety Orders

E. UPC – Uniform Plumbing Code

1.4 QUALITY ASSURANCE

A. OSHA Compliance:
   1. All articles and services covered by this Specification shall meet or exceed the safety standards established under the Federal Occupational Safety and Health Act of 1970, together with all amendments in effect as of the date of this Specification.
   2. The subcontractor shall erect and maintain barricades, guards, warning signs, and lights as necessary or required by OSHA regulations for the protection of the public or workmen.

B. Regulatory requirements: In addition to complying with all pertinent codes and regulations, comply with the latest rules of NEC and the Electrical Safety Orders of the State of California, Division of Industrial Safety, for all electrical work and materials.
The materials and methods to be used in constructing the irrigation system shall conform to the applicable provisions of the UPC.

C. When the Specifications call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, the provision of the Specifications shall take precedence over the requirements of the said rules and regulations.

D. The subcontractor shall furnish without any extra charge any additional material and labor when required by the compliance with these rules and regulations, though the work be not mentioned in these particular Specifications or shown on the Drawings.

E. Any existing buildings, equipment, piping, pipe covering sewers, sidewalks, landscaping, etc., damaged by the subcontractor during the course of his work shall be replaced or repaired by the subcontractor in a manner satisfactory to the Owner’s Agent and at subcontractor’s own expense, and before the final payment is made. The subcontractor shall be responsible for damage caused by leaks in the piping systems being installed by him. He shall repair, at his own expense, all damage so caused, in a manner satisfactory to the Owner’s Agent.

F. The subcontractor, personally or through an authorized and competent representative, shall supervise the work constantly, and shall as far as possible keep the same foreman and workmen on the job from commencement to completion. The workmanship of the entire job must in every way be first class, and only experienced and competent workmen will be allowed on the job.

G. The subcontractor shall pay for all permits, licenses, and fees required.

H. Pre-construction conference: Contractor shall schedule and conduct a conference to review in detail quality control and construction requirements for equipment, materials, and systems used to perform the work. The conference shall be scheduled not less than 10 days prior to commencement of work. All parties required to be in attendance shall be notified no later than 7 days prior to date of conference.

1.5 SUBMITTALS

Procedures: In accordance with Section 01300.

A. Materials List: Within 15 days after award of contract and prior to installation, submit six copies of materials list. Include manufacturer, model number, and description of all materials and equipment. Include sealants, cements, lubricants and other proprietary items.

B. Substitutions: Submit six copies of catalog information on materials which are to be submitted for substitution. No substitution will be permitted without prior written approval by the Architect. A complete material list shall be submitted prior to performing any work.

C. Record Drawings:

Comply with Section 01720

1. The subcontractor shall maintain in good order, in the field office, one complete set of blue line prints of all irrigation drawings which form a part of the Contract,
showing all water lines, sprinklers, valves, controllers and stub-outs. Any work not installed as indicated on the Drawings, shall be recorded and dimensioned accurately from the building walls on these prints. All as-built markups shall be indicated in red.

2. All underground stub-outs for future connections and valves shall be located and dimensioned accurately from building walls on these record drawings.

3. Upon completion of the work, obtain reproducible prints from Architect and neatly correct the prints to show the as-built conditions.

D. Controller Charts:
   1. Record Drawings shall be accepted by Architect before controller charts are prepared.
   2. Provide one controller chart for each controller supplied.
   3. Charts shall be the maximum size that the controller door will allow, showing areas covered by each controller. Chart shall be an electrostatic copy and a different color shall be used to indicate area of coverage for each station. Enlarge valve sequence to be readable when drawing is reduced.
   4. After being completed and accepted, seal by plastic laminating. Laminating sheets shall be a minimum of 10 mil thick.

E. Operations and maintenance manuals:
   Per Section 01700. Include
   
   1. Deliver to owner at least 10 days prior to completion of construction, 2 complete sets of the following data. Data shall be on 8 1/2 inch by 11 inch sheets, in a 3-ring binder.
      a. Index sheet stating Contractor’s address and telephone number and list of equipment with name and addresses of local manufacturer’s representatives.
      b. Catalog and parts sheets on all material and equipment installed under this Section.
      c. Complete operating and maintenance instructions for all equipment.
      d. Complete and dated manufacturer’s warranties for all materials used.
   2. Irrigation Maintenance Schedule to include, but not be limited to, routine inspection, adjustment, and repair of the irrigation system and its components.

1.6 LAYOUT OF WORK
   
   A. The irrigation contractor shall stake out the irrigation system as shown on the Drawings. Stakes shall be approved by Landscape Architect before construction is started. Any changes, deletions or additions shall be determined at this check.

1.7 INSTRUCTION
   
   A. After the system has been installed and approved, subcontractor shall instruct the Owner’s representative in complete operation and maintenance of the irrigation system.

1.8 WARRANTY
   
   A. Provide 1 year guarantee for Work of this Section in accordance with Section 1700.
   
   B. Provide supplemental guarantee, on Contractor’s letterhead:
1. Warrant that irrigation system has been installed according to Drawings and Specifications, and that system will be free of defects in products and installation for 1 year from Substantial Completion. Manufacturer's warranties shall only supplement special warranty.

2. Agree to repair or replace defective Work, or adjacent work which is damaged by such defects, with the exception of ordinary wear and tear, abuse or neglect. This includes damage to site improvements caused by settlement of improperly compacted trench backfill.

3. Owner reserves the right to make temporary repairs as required.

PART 2 MATERIALS

2.1 PIPE AND FITTINGS

A. Main lines (constant pressure) 2 1/2 inch and larger shall be polyvinyl chloride (PVC) 1120-200 PSI purple gasketed pipe, Use PVC ring-tite fittings; 1 to 2 inch shall be PVC 1120 Schedule purple 40 solvent weld pipe, Type 1, and shall conform to ASTM D1785. Use Schedule 40 PVC solvent weld fittings.

B. Lateral lines (non pressure) shall be Schedule 40 PVC purple plastic pipe Type 1, and shall conform to ASTM D1785. Use Schedule 40 PVC solvent weld fittings.

C. Fittings:
   1. Solvent Weld socket fittings: Schedule 40, Type 1, Grade 1, PVC and shall conform to ASTM D2466. Schedule 80, Type 1, Grade 1 PVC and shall conform to ASTM D2467. Solvent cement and primer for PVC solvent-weld pipe and fittings shall be of type recommended by pipe manufacturer.
   2. PVC gasketed fittings: ASTM D3139.

D. Connections between main lines and remote control valves shall be of Schedule 80 PVC (threaded both ends) nipples and fittings.

E. Risers shall be as follows: Schedule 80 PVC threaded nipples and Schedule 80 PVC ells as shown on the construction details.

F. Detectable marking tape shall be 3 inch wide and consist of a minimum 5.0 mil overall thickness. The tape shall have a 20 gauge solid aluminum foil core, encapsulated within 2.55 mil polyethylene backing. Tape color shall be purple for recycled water or blue for potable water.

2.2 QUICK COUPLING VALVES

A. Quick Coupling valves shall be bronze construction, 1-inch connection, two-piece body, locking purple vinyl top, single slot and lug. Provide 1-inch single lug key and 1-inch hose swivel.

2.3 GATE VALVES

A. 3 inch and larger shall be resilient wedge cast iron conforming to ASTM A126 Class B and shall have bolted bonnet, non-rising stem, operating nut (2 inch square) and “O” ring connections for PVC plastic pipe.

2.4 BALL VALVES
A. 2 ½ inch and smaller ball valves shall be full port two-piece, bronze construction conforming to ASTM B-584 with stainless steel ball and blow-out proof stainless steel stem.

2.5 REMOTE CONTROL VALVES

A. Automatic valves for two wire decoder system: the automatic control valves shall be as listed on the drawings and operated by DC-latching solenoids, normally closed, with manual flow adjustment. Remote control valves shall be constructed of heavy duty glass-filled nylon and stainless steel with internal and external bleed. Operating pressure shall be 10 to 220 psi and flow range shall be 5-300 gpm. All internal parts shall be removable from the top.

B. All remote control valves shall be equipped with the purple warning tag for recycled water.

C. Install pressure regulating module on each remote control valve. Pressure regulating module shall be by same manufacturer as remote control valve.

D. Each valve shall have a plastic tag denoting its controller and station number.

2.6 MASTER REMOTE CONTROL VALVE

A. Master remote control valve shall be constructed of heavy duty cast iron, bronze, stainless steel, and copper with metering pin and manual flow stem to adjust closing speed and operated by DC latching solenoid. Operating pressure shall be 3 to 300 psi and flow range shall be .01 to 3000 gpm.

B. Master Valve shall be normally open.

2.7 FLOW SENSOR

A. Flow sensors shall be capable of sensing programmed water flows during the operation of the irrigation system and shall be capable of detecting excess or inadequate water flows as per the operator entered parameters.

B. The flow sensors shall be compatible with the irrigation controller and central computer system and shall be capable of transmitting water flow information to the irrigation controller.

C. The flow sensor shall meet the following requirements:
   1. Threadolet for all pipe material and 3” and larger
   2. Insertion type with a non-magnetic, spinning impeller as the only moving part.
   3. Rated for a maximum line pressure of 400 psi and a maximum liquid temperature of 200 F.
   4. Accuracy of plus or minus 1 percent of full scale, linearity of plus or minus 1 percent, repeatability of plus or minus 1 percent, and a flow range of 1 to 30 feet per second.

2.8 TORO SENTINEL IRRIGATION CENTRAL COMPUTER WATER MANAGEMENT SYSTEM

A. Shall be as listed on the drawings and shall include the following general components.
1. Toro Sentinel WMS Software
2. Sentinel controller with two-wire decoder mother board and daughter board controller capable of 204 stations
3. Sentinel communications hardware for cellular communication
4. Central laptop computer utilizing a Windows XP operating system (provided by each league's administrator).
5. The laptop shall always be on and hooked in high speed internet connection.

2.9 AUTOMATIC CONTROLLER

A. Controllers compatible with the Toro Sentinel Irrigation Central Computer Water Management System, shall be as listed on the Drawings and shall have the following features, but not limited to:
   1. Utilize either evapotranspiration or soil moisture data for irrigation scheduling
   2. UL listed, solid state, capable of automatic or manual operation.
   3. Non-volatile memory.
   4. Scheduling with 365 day calendar, odd/even watering, and rain delay of 1-14 days.
   5. Cycle and soak feature.
   6. Compatible with master valve and flow sensor.

B. Controller enclosure shall be stainless steel and as listed on the Drawings.

C. Hand held remote, as listed on the drawings, shall be compatible with controller.

2.10 CONTROL WIRE (COMMUNICATION CIRCUITRY)

A. Communication between the controller and the decoders and valves shall be accomplished by a twisted pair of #14 AWG decoder cables for direct burial within a red HDPE outer jacket. The communication cable shall be manufactured by Paige Electric model # P7350D or equal. Decoders (preferably just 1 station configuration with ability to operate one or two solenoids) shall have “Integrated Surge Protection (CDEC-ISP-1). Each decoder is pre-addressed with a five digit address, and is not programmable. The decoders send DC signals to DC-latching solenoid through #14 wire DTS cables (model #P7351D). All splices shall be made in accordance with National Electrical Code Articles 300.5 (Underground Installations) and 110.14 (Electrical Connections using 3M DBY-6 or DBR-6 connectors, which are UL listed under “UL 486D-Direct Burial”, for wet or damp locations, 600 volts. The decoders shall have “Integrated Surge Protection: rated to 20 KV (20,000 volts) secondary surges.

2.11 VALVE BOXES

A. High density polyethylene construction with UV inhibitors. Lid shall be purple in color and have stainless steel bolt-down mechanism. Boxes, lids, and bolts shall be from the same manufacturer. Plastic valve boxes shall be purple by Carson, NDS Pro Series, or equal.

B. The lid shall be marked as follows:
   1. Remote Control Valves – “Irrigation Control Valve” or “ICV” with the station number in one inch (1”) high white enamel or heat branded numbers and letters.
   2. All other valves - “Irrigation Control Valve” or “ICV”.

Legacy Fields Sports Complex
Brookwater

Section 02810-6
C. Valve box sizes are noted on drawing details.

2.12 SPRINKLER HEADS AND BUBBLERS

A. All sprinkler heads and nozzles shall be as listed on the Drawings.

B. All pop-up sprinkler heads shall have shut-off devices, check valves, and pressure regulation built into the sprinkler head.

C. Bubblers shall be as listed on the Drawings and shall be pressure compensating.

2.13 SUBSURFACE IRRIGATION

A. Dripline tubing and pressure compensating emitters shall be extruded from linear low-density polyethylene. Tubing shall have a minimum nominal diameter of ½ inch with a minimum wall thickness of 0.045. Protection from root intrusion shall be provided by means of impregnation of pre-emergent in pipe during the manufacturing process.

B. All accessories listed below shall be furnished by the same manufacturer as the dripline.

1. Line Flushing Valves – the subsurface irrigation system shall utilize automatic line flush valves at the end of each independent zone area. This valve shall be capable of flushing one gallon at the beginning of each irrigation cycle. The valves shall connect directly to the dripline.

2. Air/Vacuum Relief Valve – each independent irrigation zone shall utilize an air/vacuum relief valve at its high point. The air and vacuum relief valve shall seal effectively from 2 to 10 psi.

2.14 RAIN SENSOR

A. UV resistant, polymer housing with weatherproof switch mechanism and mounting bracket.

B. Fully adjustable shutoff from 1/8 inch to 1 inch of accumulated rainfall with automatic return to normal watering cycle.

C. Shall be wireless with 300 foot transmission range.

D. The sensor’s receiver shall have a “Water Conservation” setting, which allows for multi-day delays before resuming the normal watering schedule.

2.15 MISCELLANEOUS INSTALLATION MATERIALS

A. Solvent cement and primer for solvent weld joints shall be of make and type approved by manufacturer(s) of pipe and fittings. Cement shall be maintained at proper consistency throughout use.

B. Lubricant for assembling rubber ring seal joints shall be of make and type approved by manufacturer of pipe.

C. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as Rector Seal 100 W.
D. Drain rock: 3/4 inch washed pea gravel.

2.16 MISCELLANEOUS EQUIPMENT

A. Provide all equipment called for by the Drawings.

B. Provide to the Owner, at completion of the Maintenance Period, three (3) each of all operating and servicing keys and wrenches required for complete maintenance and operation of all heads and valves. Include all wrenches necessary for complete disassembly of all heads and valves.

C. Provide two (2) each of quick coupler keys and hose swivels and three (3) sets of keys to both controller cabinets and enclosures.

PART 3 INSTALLATION

3.1 PREPARATION

A. Schedule and coordinate placement of materials and equipment in a manner to effect the earliest completion of work in conformance with construction and progress schedule.

B. Contractor shall field verify the static water pressure at the project site prior to commencing work or ordering irrigation materials. If contractor fails to verify static water pressure prior to commencing work, contractor shall assume responsibility for all costs required to make system operational.

C. Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until necessary conditions have been corrected.

3.2 HANDLING AND STORAGE

A. Protect work and materials from damage during construction and storage as directed by Architect.

B. Handle plastic pipe carefully; especially protecting it from prolonged exposure to sunlight.

C. Store sub-surface dripline in cool dry place out of sunlight during installation.

3.3 LAYOUT

A. Layout work as accurately as possible in accordance with diagrammatic drawings.

B. Where site conditions do not permit location of piping, valves and heads where shown, notify Architect immediately and determine relocation in a joint conference.

C. Run pipelines and automatic control wiring in common trenches whenever practical.

3.4 EXCAVATING AND TRENCHING

A. Excavation shall be in all cases ample in size to permit the pipes to be laid at the elevations intended and to permit ample space for joining.
B. Depth of trenches shall be enough to provide minimum cover from finish grade to top of pipe in trenches, as follows:

1. 24 inch minimum cover over main lines to the control valves and quick coupling valves.
2. 24 inch minimum cover over direct burial control wires from controller to valves.
3. 18 inch minimum cover over the valve controlled lines to sprinkler heads.
4. 24 inch minimum cover over sleeves.

C. Restore surfaces, existing underground installations, etc., damaged or cut as a result of excavations, to original conditions in a manner approved by the Architect.

D. Where other utilities interfere with irrigation trenching and pipe work, adjust the trench depth as instructed by Architect.

3.5 ASSEMBLING PIPELINES

A. All pipes shall be assembled free from dirt and pipe scale. Field cut ends shall be reamed only to full pipe diameter with rough edges and burrs removed.

Rubber Ring Seal Joint:

1. Use a factory-made male end or prepare a field-cut male end to exact specifications of a factory-made end.
2. Carefully clean bell or coupling and insert a rubber ring without lubricant. Position the ring carefully according to the manufacturer’s instructions.
3. Lubricate male end according to the manufacturer’s instructions and insert male end to specified depth. Use hands only when inserting PVC pipe.
4. Thrust blocks shall be provided where necessary to resist system pressure on ring-tite pipe and fittings. Blocks shall be concrete and the size shall be based on an average soil safe bearing load of 1,000 pounds per square foot.

B. Form thrust blocks in such a manner that concrete comes in contact only with the fittings. Thrust blocks shall be between solid soil and the fitting

C. Thrust Blocking:

1. Provide thrust blocks at all changes in size or direction. Bends, reducers, plugs, and the opposite side of tee branches all require thrust blocks.
2. The size of the thrust block is determined by the working pressure, the size and type of fitting and the soil conditions at the job site. To calculate the area of contact with the soil, follow these steps:

Calculate the total thrust by selecting thrust/100 by size and type of fitting from Table 1 and multiplying thrust/100 by system pressure divided by 100. Divide the total thrust by the bearing capacity of the soil in excavation (from Table 2) to determine the area (in square feet) of thrust block required to be in contact with the undisturbed soil.

| TABLE 1 THRUST/100 TABLE (POUNDS PER 100 PSI) |
|-----------------|------------|-----------------|-----------------|-----------------|
| SIZE            | TEES PLUGS | 90° BENDS       | 45° BENDS       | 22° BENDS       |
| 2               | 363        | 513             | 259             | 141             |
TABLE 2 SOIL BEARING CAPACITY

<table>
<thead>
<tr>
<th>SOIL TYPE</th>
<th>SAFE BEARING LOAD</th>
<th>LBS PER SQ FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft Clay</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Sand and Gravel</td>
<td>3,000</td>
<td></td>
</tr>
<tr>
<td>Sand and Gravel cemented w/ Clay</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>Hard Pan</td>
<td>10,000</td>
<td></td>
</tr>
</tbody>
</table>

The engineer is responsible for determining safe bearing loads. When doubt exists, soil bearing tests should be specified.

D. Solvent Weld Joint:

1. Prepare joint by first making sure the pipe end is square, then deburring the pipe end and cleaning the pipe and fitting of dirt.
2. Dry-insert pipe into fitting to check for missizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.
3. Coat the inside socket surface of the fitting and the external surface of the male end of the pipe with P-70 primer (manufactured by Weld-On), immediately followed by Weld-On 711 cement liberally applied to the male end of the pipe and lightly applied to the inside of the socket. Then, apply a second coat of cement to the pipe end.
4. Insert pipe immediately into fitting and turn it 90° to distribute cement and remove air bubbles. The pipe must seat to the bottom of the socket and fitting. Check alignment of the fitting. Pipe and fitting shall be aligned properly without strain to either.
5. Hold joint still for approximately thirty (30) seconds and then wipe the excess cement from the pipe and fitting.
6. Cure joint a minimum of thirty (30) seconds before handling and at least six (6) hours before allowing water in the pipe.

E. Threaded Joint:

1. Field threading of plastic pipe or fittings is not permitted. Factory-formed threads only will be permitted.
2. Factory-made nipples shall be used wherever possible. Field-cut threads in metallic pipe will be permitted only where absolutely necessary. When field threading, cut threads accurately on the axis with sharp dies.
3. All threaded joints shall be made up with pipe joint compound. Apply compound to male threads only.
4. Where assembling metallic pipe to metallic fitting or valve, no more than three (3) full threads shall show when joint is made up.
5. Where assembling to threaded plastic fitting, take up joint no more than one full turn beyond hand tightening.
6. Where assembling soft metal (brass or copper) or plastic pipe, use a strap type
friction wrench only; do not use a metal-jawed wrench.

F. Cap or unplug openings as pipeline is assembled to prevent entrance of dirt or obstruction. Remove caps or plugs only when necessary to continue assembly.

G. Where pipes or control wires pass through sleeves, provide a removable non-decaying plug at ends of sleeve to prevent entrance of earth.

3.6 REMOTE CONTROL VALVES

A. Install where shown on Drawings and group together where practical. Limit one remote control valve per box with no exceptions.

B. Locate valve boxes 12 inches from and perpendicular to walk edges, buildings and walls. Provide 12 inches between valve boxes where valves are grouped together.

C. Thoroughly flush main line before installing the valve.

D. Install in shrub or ground cover areas where possible.

E. Label control line wire at each valve with a 2½” x 2½” polyurethane I.D. tag, indicating identification number of the valve (controller and station number). Attach a label to control wire.

3.7 AUTOMATIC CONTROLLER

A. Provide and install automatic irrigation controller in approximate locations shown on Drawings. The exact location will be determined on the site by Architect. Provide conduit and wire and connect to 120 volt switch accessible to controller for ease of maintenance.

B. Connect control lines to controller in sequential arrangement according to assigned identification number of the valve. Each control line wire shall be labeled at controller with a permanent non-fading label indicating station number of the valve controlled. Attach label to control wire.

C. Contractor is responsible for programming the controller. Provide optimum amounts of water for each plant type to maintain plants in vigorous healthy condition. Reprogram as required at end of maintenance period.

D. Contact Horizon, Stockton, 209-931-8555 for supply and installation instruction for solar components for the Sentinel controllers

E. Contact Toro- and Horizon controller manufacturer for certification of the installation.

F. Contractor shall be responsible for the verification of valve operation at controller and testing of the system.

G. Contractor is responsible for hardware installation (controller, wiring, grounding, antenna mounting, etc.) and basic programming. Contractor shall use “Installation Worksheet” provided by Toro to note station numbers, zone-specific characteristics and locations of field controller. Contractor is responsible for completing worksheet which records decoder addresses and entering pertinent program information (plant type, sprinkler type, precipitation rates, expected flows) into the software/computer.
H. For a period of two consecutive days, Toro service reps and/or Sentinel distributor personnel shall assist the contractor and each league administrator with set-up of the central controller (laptop computer and software), central-software programming, base antenna and inter-related communication issues. The contractor shall provide a five (5) day notice to the Engineer to arrange for the league administrator to be in attendance at controller set-up.

3.8 CONTROL WIRE (COMMUNICATION CIRCUITRY)

A. A minimum of 24 inches of wire shall be left at each decoder (or valve) to provide slack

B. Grounding: Install grounding per controller specifications. In the two-wire, connect a line surge-protector (Toro #DEC-SG-LINE) to ground rod communication line every 500 feet along the two wire path. An earth ground should be attained for proper ground protection at each controller (grounding of 20 ohms or less, will be required), using 6 AWG (8mm) solid bare copper wire connected to copper clad 5/8” x 8’ ground rod by 5/8” clamp or cad-weld.

C. Run lines along mains where practical. Tie wires in bundles with pipe wrapping tape at 10’ intervals and allow slack for contraction between strappings.

D. Loop a minimum of two (2) feet of extra two-wire cable in each valve box.

E. Connections shall be made as shown on plans.

F. Splicing will be permitted only on runs exceeding 2500’. Locate all splices at valve locations within valve boxes.

G. Where control lines pass under paving, they shall pass through Schedule 40 electrical PVC conduit.

3.9 QUICK COUPLING VALVES

A. Install quick coupling valves on double swing-joint assemblies of Schedule 80 PVC risers and fittings.

B. Thoroughly flush main line before installing the valve.

C. Install 12 inch from hardscape areas.

3.10 VALVE BOXES

A. Valve boxes and lids to be purple.

B. Install one valve box for each type of valve unless otherwise noted.

C. Install boxes 12 inches from walk or header and 12 inches apart. Short side of rectangular boxes shall be parallel to walk or header. Install 1 inch above finish grade in groundcover areas and flush with grade in lawn areas.

D. Install common bricks as shown and as required to keep box stable. Install a foundation of 3/4 inch gravel backfill, 3 cubic feet minimum, after compaction of all trenches.
3.11 FLOW SENSOR

A. Install flow sensor a minimum of 10 times pipe diameter upstream and 5 times pipe diameter downstream of any valves, fittings, pipe bends, etc.

B. Use only sensor cable REA PE-89 or PE-39) approved by the controller manufacturer. Install cable in a separate 1 inch conduit routed to controller. Leave enough flexibility in the cable to allow for future service of sensor.

C. All wire connections shall be watertight with no leakage to ground or shorting from one conductor to another.

D. All splices shall be made in accordance with National Electrical Code Articles 300.5 (Underground Installations and 110.14 (Electrical Connections) using 3m DBY-6 or DBR-6 connectors, which are UL listed under “UL 486D-Direct Burial” for wet or damp locations, 600 volts.

3.12 WIRELESS RAIN SENSOR

A. Mount 10’ above ground on a south/southwest facing surface of pole.

B. Mount in an open area, not below tree canopies of building eaves.

C. Mount with 300 feet of the controller, connected to the controller per manufacturer’s instruction.

D. Receiver shall be installed adjacent to and connected to the controller.

3.13 SPRINKLER HEADS AND BUBBLERS

A. Thoroughly flush lines before installing heads or bubblers.

B. Locate heads and bubblers as shown in the Drawings and Detail.

C. Set sprinkler heads perpendicular to grade unless otherwise shown.

D. Adjust sprinkler heads for proper distribution and trim, providing complete coverage with minimal overspray.

E. Install one tree bubbler in perforated polystyrene drainpipe filled with drain rock, flush with grade, as shown on Drawings. Provide removable cap.

F. Install lawn heads 1 inch above grade in seeded lawn area at time of installation. Lower to finish grade after turf is well established and as directed by Architect.

3.14 SUB-SURFACE IRRIGATION

A. Install per manufacturer’s instructions.

B. Install dripline in a grid pattern 4 inch below finish grade.

C. Install air/vacuum relief valve at the highest point of each circuit on a line that is perpendicular to the dripline rows (exhaust header or lateral connecting dripline.) Install in 6 inch round valve box.
D. Install automatic flush valve at a point farthest away from source or along exhaust header. Install in 6 inch round valve box.

3.15 BACKFILLING

A. Backfill only after piping has been tested, inspected and approved.

B. Backfill material shall be the earth excavated from the trenches, free from rocks, concrete chunks, and other foreign or coarse materials. Carefully select backfill that is to be placed next to plastic pipe to avoid any sharp objects which may damage the pipe.

C. All pipe under asphalt paving shall be backfilled with 4 inches of clean sand on all sides of pipe.

D. Place backfill materials in 6 inch layers and compact by jetting or tamping to a minimum compaction of 90 percent of original soil density.

E. Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.

F. If settlement occurs along trenches, and adjustments in pipes, valves and sprinkler heads, soil, sod or paving are necessary to bring the system, soil, sod, or paving to the proper level or the permanent grade, subcontractor, as part of the work under this Contract, shall make all adjustments without extra cost to the Owner.

3.16 PIPE TESTS

A. Notify Architect at least three (3) days in advance of testing.

B. Perform testing at his own expense

C. Center load piping with a small amount of backfill to prevent arching or slipping under pressure. No fitting shall be covered.

D. Apply the following tests after weld plastic pipe joints have cured at least 24 hours.
   1. Test live (constant pressure) and quick coupling valve lines hydrostatically at 125 PSI minimum. Lines shall be filled with water and pressure gauge connected to the pipe line. After lines have reached the 125 PSI, (use hydraulic pump or other safe method – do not use an air compressor) cut off the source of pressure. Lines will be approved if test pressure (with an allowable drop of 2 PSI) is maintained for two (2) hours. Should leaks develop during the test period, they shall be located and repaired and retested in the same method. The subcontractor shall make tests and repairs as necessary until test conditions are met.
   2. Test remote control valve controlled lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

E. Pressure and Leakage Test for Gasketed Pipe.
   1. Tests shall not be conducted until 7 days have elapsed since casting of concrete thrust blocks. Ensure the release of air from the line during filling so that the pipeline is completely filled with water before testing. Pressure shall be applied by means of a hydraulic pump and measured with a test gauge. Pressurize pipeline to 150% of the working pressure at the point of the test, but not less than
125% of highest elevation.

2. The test pressure shall be maintained (by additional pumping if necessary) for two hours. Carefully examine for leakage. All defective elements shall be replaced and the test repeated until all visible leakage has been stopped and the allowable leakage requirements have been met by not exceeding as amount determined by the following formula:

\[ L = \frac{(N) (D) (\text{Square root of } P)}{7400} \]

Where
- \( L \) = allowable leakage rate in gallons/hour
- \( N \) = number of joints in test section
- \( D \) = nominal diameter of pipe in inches
- \( P \) = average test pressure

3. Test remote control valve controlled lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

F. Remake faulty joints with new materials. Do not use cement or caulking to seal leaks.

3.17 SYSTEM ADJUSTMENT

A. Adjust pressure regulating modules to proper and similar pressure to provide optimum and efficient coverage.

B. Flush and adjust sprinkler heads for optimum performance. Prevent overspray onto walks, roadways, paving and buildings. Adjust nozzle sizes and degree of arc and install pressure compensating screens as required to cover planting areas without overspray. Adjust valve flow controls.

C. Sub-Surface Drip System Check
   1. Immediately after installation, flush line piping by removing automatic flush valve, figure 8 fitting, or by opening the shut-off flush valve.
   2. Clean filter screens. Open filter flush valve for at least 10 seconds. Clean or replace clogged elements
   3. Adjust pressure regulator to system design pressure.
   4. Verify that in-line emitters are producing specified water output. If not, check filter element, check pressure at emitters, and review system for clogs and leaks. Correct deficiencies.

D. Spray and Bubbler Check
   1. Perform coverage test in the presence of Architect to establish that coverage of all planting areas is complete and adequate.
   2. Correct deficiencies and repeat test until approved.

3.18 GUARANTEE

A. It shall be the responsibility of subcontractor to fill and repair all depressions and replace all necessary lawn and planting due to the settlement of irrigation trenches for one year following completion and acceptance of the job.

B. The subcontractor shall also guarantee all materials, equipment and workmanship furnished by him to be free of all defects of workmanship and materials, and shall agree to replace at his expense, at any time within one year after installation is accepted, any and all defective parts that may be found.
3.19 CLEANUP

A. When work of this section has been completed, and at such other times as may be directed, remove all trash, debris, surplus materials and equipment from the site.

END OF SECTION
PART 1  GENERAL

1.01  SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all chain link fencing installations and related work as shown on the Drawings and/or specified herein.

B. Scope of work:
The general extent of the chain link fencing improvements is shown on the Drawings, and can include but is not necessarily limited to the following:
1. Galvanized chain link fabric, posts, gates, hardware, and related appurtenances
3. Chain link fence with integrally woven privacy plastic "slats"
4. Baseball backstops with baseboards
6. Concrete footings and/or mowbands

C. Related sections can include, but may not be limited to:
1. Section 02520 - Portland Cement Concrete
2. Section 02870 - Site Furnishings
3. Section 02900 - Landscaping

1.02  REFERENCES AND REGULATORY REQUIREMENTS

A. ASTM:
1. A53/A53M-04a Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
5. ASTM F1043 Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework
6. ASTM F1083 Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
7. ASTM A500 (HSS) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

B. Chain Link Fence Manufacturers Institute (CLFMI)

C. Industrial Steel Guide for Fence, Rails, Posts, Gates and Accessories

D. State of California Department of Transportation Standard Specifications, current ed.

1.03  SUBMITTALS

A. Product Data: Submit manufacturer’s descriptive literature and/or standard catalog "cut-sheets" of all materials, coatings, fittings and equipment proposed to be furnished and installed under this portion of the work. Include the manufacturer’s name and catalog number for each item where applicable. Clearly annotate (star or asterisk-in black ink) which portions of "cut-sheets" are applicable if more than one product is shown.

B. Shop Drawings: Submit complete Shop Drawings for all different types and sizes of backstop
unit(s), gates and fencing systems. Shop Drawings shall include, but may not be limited to:

1. Structural calculations and stamped plans for all backstops, fencing, related concrete footings and reinforcement.
2. All information regarding clearances, connections, components and any miscellaneous related appurtenances (such as wood baseboards at backstops, locking mechanisms etc.)
3. Concrete footing and reinforcement information

C. Installation Instructions and/or Drawings: Submit as applicable.

D. Samples:
   1. Color selections for netting and backstop post painting.
   2. Sample of privacy slat system

1.04 SEQUENCE AND SCHEDULING

A. Contractor shall coordinate construction timing of all chain link fencing and related work with installation of concrete work (Section 02520 - Portland Cement Concrete) and all other work.

PART 2 PRODUCTS

2.01 MATERIALS - General Note: It is intended that all fencing, by area, receive the same finish coating wherever possible.

A. Fabric:
   1. Selvage: Knuckled finish top and bottom.
   3. Size: Two (2) inch mesh, 9-gauge (0.148 inch diameter) unless noted otherwise.
   4. Galvanized Wire: Zinc coated wire-ASTM A 392, Class 1, with not less than 1.2 oz. zinc per sq. ft.

B. Framing:
   1. Strength requirements for posts and rails shall conform to ASTM F 1043.
   2. Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

<table>
<thead>
<tr>
<th>NPS in inches</th>
<th>Outside Diameter (OD) in inches</th>
<th>Type I Steel</th>
<th>Type II Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.315</td>
<td>1.68</td>
<td>1.35</td>
</tr>
<tr>
<td>1.25</td>
<td>1.660 (1-5/8&quot;)</td>
<td>2.27</td>
<td>1.84</td>
</tr>
<tr>
<td>1.5</td>
<td>1.900 (2&quot;)</td>
<td>2.72</td>
<td>2.28</td>
</tr>
<tr>
<td>2</td>
<td>2.375 (2-1/2&quot;)</td>
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<td>3.12</td>
</tr>
<tr>
<td>2.5</td>
<td>2.875 (3&quot;)</td>
<td>5.79</td>
<td>4.64</td>
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<td>3</td>
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<td>6.625</td>
<td>18.97</td>
<td>---</td>
</tr>
<tr>
<td>8</td>
<td>8.625</td>
<td>28.55</td>
<td>---</td>
</tr>
</tbody>
</table>

C. Steel Framework:
   1. Posts, Rails, Braces, and Gate Frames:
a. Type I Steel Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F 1083, plain ends, standard weight (Schedule 40) with not less than 1.8 oz. zinc per sq. ft. of surface area coated.

b. Type II pipe: not applicable

2. End, corner, and pull posts for following fabric heights: Per plans.
3. Line or intermediate posts for following fabric heights: Per plans
4. Top, Bottom and Horizontal Intermediate Rails:
   a. Top, bottom and horizontal intermediate rails (as applicable) shall be 1.66" OD (1-5/8"OD)
5. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows: Per plans
6. Gate Frames: Furnish frames (single or double gate), for nominal gate widths as follows:

D. Fittings and Accessories:
1. Material: Comply with ASTM F 626. Mill-finished aluminum or galvanized iron or steel, to suit manufacturer’s standards.
   a. Zinc Coating: Unless specified otherwise, steel fence fittings and accessories shall be galvanized in accordance with ASTM A 153, with zinc weights per Table 1 of ASTM A153.
2. Tension Wire: 7-gauge (0.177 inch diameter) coil spring steel with finish to match fabric (where applicable).
3. Tie Wires: 9 gauge (0.148 inch diameter) steel with finish to match fabric.
4. Post and Line Caps: Provide weather tight closure cap for each post. Provide line post caps with loop to receive wire or top rail with finish to match fabric.
5. Tension Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum of 1.2 oz. zinc coating per sq. ft. of surface area.
7. Truss Rods: Hot dipped galvanized steel rods with a minimum diameter of 5/16" (7.9 mm).
8. Hinges: Master Halco heavy duty, or acceptable equal.
9. Concrete: Concrete for footings shall be Class B minimum. Refer to Section 02520 Portland Cement Concrete for additional information.
10. Privacy Plastic Slats: Shall be the pre-woven variety in 3.5" x 5.5" galvanized chain-link mesh. Color shall be determined by Owner’s Representative; submit color choices for review.

E. Backstop Baseboards: Backstop Baseboards shall be of surfaced Kiln Dried Douglas Fir painted with a primer coat and two coats of durable exterior enamel paint of a green color. Color to be selected by Owner’s Representative. Install as per Drawings.

F. Edgebands: All fencing shall be provided with concrete edgebands unless otherwise noted. Edgebands shall have a minimum 4" clearance from edge of post to edge of concrete. Gates will have the same edgeband width as adjacent fencing.

PART 3 EXECUTION

3.01 PREPARATION

A. Prior to excavation, layout all fencing locations for review and acceptance by Owner’s Representative.

3.02 INSTALLATION
A. Conform to layout shown on Drawings, except as modified by the Owner’s Representative.

B. Erect fencing in strict conformance with reviewed and accepted Drawings, Shop Drawings, and manufacturer’s recommendations.

C. Install new footings as shown on Drawings.

D. Posts shall be installed vertical and plumb.

E. General: Install fence in compliance with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

F. Excavation: Drill or hand-excavate holes for posts to diameter and spacing indicated in firm, undisturbed or compacted soil.
   1. Unless noted otherwise, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross section of post.
   2. Unless noted otherwise, excavate hole depths approximately 3 inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface.

G. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space chain link posts maximum 8 feet o.c. unless noted otherwise. Surface mount posts with mounting plates where indicated. Fasten with lag bolts and shields.

H. Top Rails: Run rail continuously through line posts caps, bending to radius for curved runs and at other posts termination into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

I. Bottom Rails: Install bottom rails between posts with fittings and accessories as shown in Drawings (as applicable).

J. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

K. Tension Wire: As applicable, install at bottom of fabric (and at top if top rail is not specified) as shown in Drawings. Install tension wire before stretching fabric and attach to each post with ties. Secure wire to fabric with 12.5 gauge hog rings at 24” on center maximum.

L. Fabric: Leave approximately 2 inches between finish grade and bottom selvages (1 inch at backstops) unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on infield or primary use side of fence (unless noted otherwise), and anchor to framework so that fabric remains in tension after pulling force is released.

M. Tension Bars: Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric integrally woven into post. Thread through fabric, and secure to end, corner, pull, and gate posts with tension clips spaced not over fifteen (15) inches on center.

N. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing. Tie fabric to line posts 12 inches maximum on center and to rails and braces 24 inches maximum on center.

O. Fasteners: Install nuts for tension clips and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts. Cut all bolts within three threads of nut or less.
P. Welding: All welds shall be shop fabricated prior to galvanizing unless otherwise acceptable to Owner’s Representative. Any and all field welds shall be completed by a Certified Structural Welder and shall be "spray-galvanized" or otherwise treated subject to the discretion of the Owner’s Representative.

Q. All bolts shall be cut back to within three threads of the nut.

END OF SECTION
SECTION 02870

SITE FURNISHINGS

PART 1  GENERAL

1.01 SUMMARY

Furnish all labor, materials, miscellaneous hardware, foundations, miscellaneous appurtenances, facilities, transportation and services required for installation of all site furnishings and related work as shown on the Drawings and/or specified herein.

A. Scope of work: The general extent of work contained in this section is shown on the drawings and can include, but may not be limited to, installation of the following:
   1. Bases/plates/pitching rubbers
   2. Fence cap
   3. Permanent foul poles
   4. Player Benches
   5. Protective Netting

B. Related sections can include, but may not be limited to:
   2. Section 02520 - Portland Cement Concrete
   3. Section 02545 - Miscellaneous Paving and Surfacing

1.02 REFERENCES AND REGULATORY REQUIREMENTS


1.03 SUBMITTALS

A. Conform to applicable Division One and Division Two specifications, General Conditions and/or Special Provisions.

B. Product Data: Submit catalog cut sheets of all materials and equipment proposed to be furnished and/or installed under this portion of the work. Include the manufacturer and distributor name, subcontractor as applicable. Insure that the cut sheets clearly describe the specific product by catalog number and that additional non-specified products that may appear on the same cut sheet are crossed out where applicable.

C. Samples: Submit samples of colors and finishes for all applicable products and furnishings for selection by Owner’s Representative.

D. Shop Drawings: Submit complete shop drawings for all materials or furnishings requiring field or shop fabrication.

1.04 QUALITY ASSURANCE

A. Review: All equipment shall be reviewed for conformance with the intent of the Contract Documents and accepted by the contractor prior to installation. All site furnishings shall be in a new, “first-class” condition, per the discretion of the Owner’s Representative, prior to Final Acceptance.

1.05 DELIVERY, STORAGE AND HANDLING

A. The contractor is responsible for coordination of the delivery, acceptance, handling and storage of all site furnishings.
B. Store and handle site furnishings as acceptable to the Owner’s Representative and so that work or access of others is not impeded.

C. The contractor shall protect all site furnishings from theft or damage at all times until such items have been accepted by the Owner.

PART 2 PRODUCTS

2.01 SITE FURNISHINGS

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>MANUFACTURER</th>
<th>MODEL NO.</th>
<th>FINISH/COLOR</th>
<th>DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASEBALL/SOFTBALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASES, ANCHORS, PLUGS</td>
<td>Tomark</td>
<td>10315/10145/72469</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>PITCHING RUBBER</td>
<td>Tomark</td>
<td>10153</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>HOME PLATE</td>
<td>Tomark</td>
<td>10350</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>FOUL LINE POLE</td>
<td>Tomark</td>
<td>14285</td>
<td>Yellow</td>
<td>12' Tall with 6' wing panel</td>
</tr>
<tr>
<td>BAT RACK</td>
<td>Tomark</td>
<td>14535</td>
<td></td>
<td>Two per dugout</td>
</tr>
<tr>
<td>HELMET RACK</td>
<td>Tomark</td>
<td>10978</td>
<td></td>
<td>One per dugout</td>
</tr>
<tr>
<td>PLAYERS BENCHES</td>
<td>Wabash Valley</td>
<td>SG342P</td>
<td></td>
<td>Two per dugout</td>
</tr>
<tr>
<td>BASEBALL PROTECTIVE NETTING</td>
<td>West Coast</td>
<td>K42T-1 ¾ UV treated</td>
<td>Black</td>
<td>Refer to Material Plan for locations and heights</td>
</tr>
<tr>
<td>SOCCER PROTECTIVE NETTING</td>
<td>West Coast</td>
<td>K96T-4 UV treated</td>
<td>Black</td>
<td>Refer to Material Plan for locations and heights</td>
</tr>
<tr>
<td>CABLE AND HOG RINGS FOR NETTING</td>
<td>West Coast</td>
<td>Aircraft cable and hog rings as needed</td>
<td></td>
<td>As needed for netting</td>
</tr>
</tbody>
</table>
2.02 VENDORS

TOMARK SPORTS
P.O. Box 1088 800.959.1844 www.tomark.com
Corona, CA 92878 909.278.9976 (fax)

WABASH VALLEY
P.O. Box 457 925.837.4440 www.wabashvalley.com
Alamo, CA 94507 925.837.6234 (fax)

WEST COAST NETTING
5075 Flightline Dr. 928.692.1144 www.westcoastnetting.com
Kingman, AZ 86401 928.692.1501 (fax)

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING
A. Coordinate construction timing of installation of site furnishings in conformance with all other pertinent work.
B. Concrete footings shall conform to requirements of Section 02520 Portland Cement Concrete unless noted otherwise.

3.02 INSTALLATION
A. Concrete Footings: Install as shown in Drawings unless noted otherwise.
B. Equipment: Conform to layout shown on Drawings. Erect in strict conformance with Details, accepted Shop Drawings, and manufacturer’s instructions.

3.03 FIELD QUALITY CONTROL
A. All site furnishings shall be inspected and accepted upon delivery by the Contractor. Final acceptance of site furnishings and locations of site furnishings shall be per the discretion of the Owner’s Representative.

END OF SECTION
SECTION 02900

LANDSCAPING

PART 1  GENERAL

1.01  SUMMARY

A. Furnish all labor, materials, facilities, transportation and services to complete all landscaping and related work as shown on the Drawings and specified herein.

B. Scope of work:
The general extent of the landscaping is shown on the Drawings and can include, but may not be limited to the following:
1. Soil preparation
2. Fine grading
3. Turf planting
4. Tree, shrub, and ground cover planting – Bid Alternate
5. Turf Establishment Period
6. Landscape Maintenance Period

C. Related sections can include, but may not be limited to:
1. Section 02100 - Site Clearing and Demolition
2. Section 02810 - Irrigation
3. Section 02970 - Landscape Maintenance

1.02  REFERENCES AND REGULATORY REQUIREMENTS

A. American Joint Committee on Horticulture Nomenclature (AJCHN):
Standardized Plant Names

B. American Association of Nurserymen, Inc. (AAN):
American Standard for Nursery stock

C. Sunset Western Garden Book, Lane Publishing CO.

D. Agricultural Code of California.


1.03  SUBMITTALS

A. Conform to requirements of Section 01300 and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.

B. Plant Materials and Products:
1. Thirty (30) days prior to planting, submit four (4) copies of documentation that all plants specified have been ordered. Include names and addresses of all suppliers.
2. Substitutions: If substitutions are required, they shall be brought to the attention of the Owner’s Representative, at time of submittal, for any requested substitutions.
3. Submit four (4) copies of product data or “cut-sheets” for all products proposed for use.

C. Samples: Submit four (4) samples of the following (1 quart size “zip-lock” plastic bag min. each):
1. Soil amendment (with current evaluation and sieve analysis)
2. Bark mulch top dress
3. Topsoil (as applicable, with current fertility and structure analyses)
D. Certificates: Submit “cut-sheets” or other product literature showing certified chemical analysis of the following:
   1. All fertilizers
   2. All herbicides

1.04 SOURCE/QUALITY ASSURANCE

A. Control of work: Comply with Section 5 of the Standard Specifications.

B. Control of materials: Comply with Section 6 of the Standard Specifications.

C. Contractor shall employ on-site at all times during execution of this Section at least one person who is thoroughly familiar and experienced with the materials and products being installed and proper methods of their installation. Notify the Owner’s Representative immediately of all changes in supervision.

D. General: Ship plant material and seed with certificates of inspection required by governing authorities. Comply with regulations applicable to plant materials (as applicable).

E. Tree, Shrubs and Plants: Provide trees, shrubs and plants of quantity, size, genus, species and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 “American Standard for Nursery Stock.” Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free of disease, insects, etc., larvae, and defects such as girdling or bound roots, knots, sun-scald, injuries, abrasions or disfigurement.

F. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

G. Quality Review: The Owner’s Representative shall review all trees and shrubs before planting for compliance with specified requirements for genus, species, variety, size and quantity. Owner’s Representative retains right to further review trees and shrubs for size and condition of root systems, trunks, stems branches or structure, buds, etc., and to disqualify unsatisfactory or defective material at any time during the progress of work. Remove disqualified trees or shrubs immediately from project site with materials acceptable to Owner’s Representative.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General:
   1. Handle and store all products of this Section in such a manner as to protect them from damage at all times.
   2. Storage of products on-site shall be coordinated by the contractor in an orderly manner so as not to unnecessarily impede the work or reasonable use of project site.

B. Plants:
   1. Delivery: Coordinate with Owner’s Representative. Provide proper identification for landscape labor force and vehicles at all times while on site.
   2. Storage: Coordinate with Owner’s Representative. Provide exposure as required by plant variety and provide wind protection for all plants. Water regularly to maintain thorough moisture in root zone. Temporary, automatic irrigation system will be required at discretion of Owner’s Representative if extended storage period becomes necessary. Protect dark colored plant containers from direct exposure to the sun.
   3. Labeling: At least one plant of each variety or type shall be legibly labeled at all times clearly indicating correct plant name as indicated on Drawings. Labels shall be durable with waterproof ink.
C. Fertilizers:
1. Deliver in original, unopened containers with original labels intact and legible which state the guaranteed chemical analysis.

D. Bulk Material:
1. Coordinate delivery and storage of bulk material with Owner’s Representative.
2. Confine materials to neat piles in areas acceptable to the Owner’s Representative.

1.06 PROJECT/SITE CONDITIONS

A. Planting operations shall not be conducted under the following conditions, subject to the discretion of the Owner’s Representative:
1. Freezing weather
2. Excessive heat
3. High winds
4. Excessively wet conditions

1.07 GUARANTEE

A. All work executed and all materials provided or used under this Section shall be guaranteed to be free of defects and poor workmanship for a period of one year after Final Acceptance.

B. All plant materials shall be guaranteed to be in a healthy and thriving condition one (1) year after Final Acceptance, unless it can be proven that the unhealthy or non-thriving material is due to causes other than the contractor’s materials or workmanship.

C. Replace all dead plants and plants not in vigorous condition immediately upon notification by Owner’s Representative during Guaranty Period. Replaced plants shall be subsequently guaranteed by the contractor for an additional year following date of replacement.

D. Repair all defective materials and work as acceptable to the Owner’s Representative during guaranty period.

1.08 TURF ESTABLISHMENT PERIOD

A. Turf Establishment period shall include complete germination or rooting of ALL turf and at least two mowings as specified herein, prior to the commencement of the specified Landscape Maintenance Period.

1.09 MAINTENANCE PERIOD

A. Refer to Section 02970 - Landscape Maintenance for information.

PART 2 PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be clean on-site material that has been previously stripped from the top 6 inches of grade. Acceptable topsoil shall be free from “rocks” (rock, stones, rubble, clay clods, etc. over 2” in diameter), roots, toxins, and any other deleterious materials per the discretion of the Owner’s Representative. Refer to Section 02200 – Earthwork.

B. All import topsoil proposed for use shall be submitted to the Owner’s Representative for review and acceptance prior to use. Submit samples and current soil fertility and structure analyses in the quantity previously specified.
2.02 FERTILIZERS

A. General:
1. All fertilizers shall be of an acceptable brand with a guaranteed chemical analysis as required by USDA regulations.
2. All fertilizers shall be dry and (except plant tabs) free flowing.
3. Soil test prior to planting to check soil Ph. Preferred Ph for Bermudagrass is 6.0 to 7.0. Sulfur is used to lower Ph. Agricultural limestone is used to raise Ph. Do not fertilize until Ph is corrected to preferred Ph level for Bermudagrass.

B. Pre-Plant Fertilizer: Shall be of the following chemical analysis:
1. 6% Nitrogen
2. 20% Phosphoric Acid
3. 20% Soluble Potash

C. Post-Plant Fertilizer: Shall be of the following chemical analysis:
1. 16% Nitrogen
2. 6% Phosphoric Acid
3. 8% Soluble Potash

D. Plant Tabs: Shall be “Gro-Power” 7 gram tabs designed for 12 month slow release with the following chemical analysis by weight (no known equal):
1. 12% Nitrogen
2. 8% Phosphoric Acid
3. 8% Soluble Potash
4. 20% Humus
5. 4% Humic Acid
6. 3.5% Sulfur
7. 2% Iron
8. Micronutrients

2.03 SOIL ADDITIVES

A. Soil Amendment
1. Shall be “Super Humus” Compost: As available from BFI Organics Inc. 1995 Oakland Road, San Jose, California, 95131 Ph.: (408) 262-1401 Fx.: (408) 262-0603. Or “Organic Compost” as available from Z-Best Products Inc. 705 Los Esteros Road, San Jose Ca. 95134 Ph.: (408) 934-6152 Fx.: (408) 263-2393. Or acceptable equal.
Acceptable material shall meet or exceed the following criteria:
   a) Gradation: A minimum of 90% of the material shall pass a 2” screen. Material passing shall meet the following criteria:
      % Passing Sieve Designation
      85-100 9.51 mm (3/8”)
      50-80 2.38 mm (No. 8)
      0-40 500 Micron (No. 35)
   b) Organic Content: Minimum 25% based on dry weight and determined by ash method. Minimum 240 lbs. organic matter per cubic yard of compost.
   c) Carbon to Nitrogen Ratio: Maximum 35:1 if material is claimed to be nitrogen stabilized.
   d) PH: 5.5-8.0 as determined in saturated paste.
   e) Soluble Salts: Refer to manufacturers specification guidelines.
   f) Moisture Content: 25-60%
   g) Contaminants: Shall be free of glass, metal and visible plastics.
   h) Color / Odor: Color shall be dark brown to black. Odor shall be soil-like, (musty or moldy) not sour, ammonia-like or putrid.

B. Soil Conditioner: Shall be “Gro-Power Plus (5-3-1) with 4% Sulfur” available through Gro-Power
C. Soil Sulphur: Shall be agricultural grade, 99% pure, pelletized/granular form, not powdered.

D. Iron Sulphate: Shall be “Gro-Power Premium Green” non-staining iron with micro-nutrients, soil penetrant, trace minerals, and humic acids as available through Gro-Power Inc. Ph.: (800) 473-1307. No known equal.

2.04 MULCH TOP DRESS – Not Used

2.05 PLANTS

A. General
1. All plants shall conform to the species and minimum sizes shown on the Drawings.
2. Quantities shown on the Drawings are for the contractors bidding convenience only. Contractor shall provide plant material to fulfill the intent of the Planting Plan per the discretion of the Owner’s Representative.

B. Condition: All plants shall conform to the following minimum requirements:
1. Nursery grown unless otherwise specified
2. Supplied in appropriate container, balled and burlapped, or bare root as specified on Drawings

2.6 SEED MIXES

A. All seed mixes and seed from which sod was grown shall be, or shall have been:
1. From current or latest seasons crop
2. Free of all weed seed and have producers “Statement of Analysis Guarantee”
3. 95% pure by weight with a 90% germination rate or increased to equal 85.50 pure line seed.
4. Labeled in conformance to State and U.S.D.A. laws and regulations

B. Mix: Turf seed mix subject to acceptance by the City’s Representative, shall be as follows:
1. Sports Field Turf: Blackjack Bermuda seeding rate of 140 lbs per acre:
2. Retention Basin Mix: Shall be Valley Wetland Mix at the following in lbs per acre:
   A. 12 lbs. Hordeum brachyantherum / Meadow Barley
   B. 6 lbs. Leymus triticoides “Rio”/ Rio Creeping Wildrye
   C. 4 lbs. Agrostis exerata / Spike California Bentgrass
   D. 2 lbs. Artemisia douglasiana / Mugwart
   E. 1.5 lbs. Juncus occidentalis / Rush
   F. 2 lbs. Cyperus acuminatus / Umbrella Plant
   G. 1.5 lbs. Juncus effuses / C. Eragrostis Pacific Rush
   H. 1.0 lbs. Eleocharis macrostachys / Spike Rush
   I. 0.75 lbs. Lasthenia californica / Dwarf Goldfields
   J. 1.5 lbs. Ranunculus californica / Buttercups

3. Native and Wildflower Mix: Shall be Valley Habitat – Tracy Mix at the following in lbs. per acre for areas outside of a drainage basin.

<table>
<thead>
<tr>
<th>Lbs./acre</th>
<th>Species/Common Name –</th>
<th>Min. Germ</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>Bromus carinatus/Native California Brome</td>
<td>45</td>
</tr>
<tr>
<td>6.0</td>
<td>Elymus glaucus/Blue Wildrye</td>
<td>45</td>
</tr>
<tr>
<td>6.0</td>
<td>Hordeum californicum/California Barley</td>
<td>45</td>
</tr>
<tr>
<td>5.0</td>
<td>Festuca idahoensis/Idaho Fescue</td>
<td>40</td>
</tr>
<tr>
<td>5.0</td>
<td>Nassella pulchra/Purple Needlegrass</td>
<td>40</td>
</tr>
</tbody>
</table>
### 2.07 TURF SOD

A. Sod shall be as follows:

1. Sod for fields shall be Tifway II hybrid Bermuda or Bandera hybrid Bermuda as supplied by West Coast Turf, P.O. Box 188 Stevenson, CA 95374 Ph: 888.893.8873 Contact Greg Dunn

2. Sod shall have:
   a. \( \frac{3}{4} \)" cut or thickness
   b. Sod shall be large roll cut for sports fields
   c. Sod shall have a peat or sand / peat base.
   d. No netting shall be included within the sod.

### 2.08 HYDROSEED SLURRY

A. Hydroseed slurry shall contain the following (or acceptable equal), thoroughly mixed and applied per acre. Method for hydroseeding shall be a two-step hydraulic straw treatment as follows:

<table>
<thead>
<tr>
<th>Step One</th>
<th>Lbs/acre</th>
<th>hydroseed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1800</td>
<td>1200 lbs 100% Conwed Woodfiber or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600lbs Hydro straw™ straw and tack mulch 600</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>7-2-3 Biosol</td>
</tr>
<tr>
<td></td>
<td>As specified</td>
<td>Native grass and wildflower seed mix</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>AM 120 mycorrhizal inoculant</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>M — Binder trackifier or equal</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Step Two</th>
<th>Lbs/acre</th>
<th>hydroseed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1800</td>
<td>1200 lbs 100% Conwed Woodfiber or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600lbs Hydro straw™ straw and tack mulch 600</td>
</tr>
</tbody>
</table>
B. Hydroseed slurry shall contain green dye at a rate common to the industry so that hydroseed coverage can be confirmed visually from a distance.

C. Equipment used for application of hydroseed slurry shall be a commercial type hydro-seeder and have built-in agitation system with an operational capacity sufficient to agitate, suspend and homogeneously mix slurry. Tank capacity shall be a minimum of 1,500 gallons and shall be mounted on a truck to allow access to site. Distribution lines shall be large enough to prevent stoppage and allow for even distribution of slurry over the site. Pump shall be able to generate 150 psi at the nozzle.

D. Areas of hydroseed for Native and Wildflower mixes do not require soil amendments beyond what is found in the Hydroseed slurry.

2.09 HERBICIDES

A. Pre-emergent: “Ronstar-G” pelletized, “Surflan” liquid, or acceptable equal.

B. Other: All other herbicides shall be accepted by Owner’s Representative prior to use.

2.10 TREE STAKES AND TIES – BID ALTERNATE

A. Tree stakes and ties shall be as specified on Drawings.

2.11 OTHER MATERIALS

A. Header Board: As may be specified on the Drawings.

B. Jute Netting – only on areas of 4:1 slope or greater.
   1. Poly Jute Netting (model 814312) and Anchor Stakes (model 00042579500581 – DeWitt Co. – 905 S. Kings Highway, Sikeston MO 63801, 800-888-9669.
   2. Geo Jute Netting with ½” x ¾” holes made from hemp use with 8” jute staples.

C. Provide all other materials necessary to complete landscaping work as shown on Drawings and specified herein.

D. All products and materials, including those specified above, shall be new, first quality as acceptable to the Owner’s Representative.

PART 3 EXECUTION

3.01 TOPSOIL INSTALLATION

A. Subgrade soil shall be cut or filled to the depth required such that after placement of required amount of topsoil and specified preparation procedures have been accomplished, specified finish grades will be attained.

B. All planting areas shall contain a minimum of six (6) inches of acceptable topsoil. As applicable and where needed. Only previously accepted topsoil shall be installed.

C. Refer to Section 02200 - Earthwork for rough grading for information.

3.02 PREPARATION

A. Make provisions and take necessary precautions to protect all existing and new improvements from damage during execution of this work.
B. Initial Preparations:
1. Prior to any work in this section, thoroughly cross-ripped (second rip shall be performed at 90 degrees to first rip) all planting area soil to be cross-ripped to a depth of twelve (12) inches.
2. Remove all rocks, sticks, clods, debris, and other deleterious materials over one-half (1/2) inch in diameter from top 6 inches of soil.
3. Contractor shall leach field areas with irrigation. System shall run to apply four inches of water dispersed over several days.
4. Float, rake, and roll all planting areas as necessary to establish smooth, clean, non-yielding planting beds.
5. Prevent erosion of the soil between completion of soil preparation and planting.

C. Concrete Mowbands and Wood Header Boards: Install per Drawings and repeat initial preparations described above as necessary.

3.03 SOIL PREPARATION / FINISH GRADES

A. Thoroughly roto-till the following additives into the top six (6) inches of all planting area soil at the following rates per 1,000 square feet.
1. 3 Cubic Yards Soil Amendment
2. 200 Pounds Soil Conditioner
4. 25 Pounds Soil Sulfur

The above additive recipe shall be used for bid purposes only. A site specific fertility test shall be performed by the Contractor after rough grading (and applicable topsoil placement or replacement) operations are complete. The results of the test(s) shall be reviewed by the Owner Representative and direction for amendment additives ratio will be provided. Any variance from "the as-bid" additives or quantities shall be handled by specified procedures relating to changes in the work.

After additives are fully incorporated into the soil, the Contractor shall perform another test to check conformance with the newly recommended materials and quantities. If deficiencies are found, the contractor shall be solely responsible for the cost of adding deficient material as necessary and all re-testing required to reach, and prove conformance.

Contractor shall also schedule seven (7) working days after soil samples have been taken to allow for receipt and evaluation of soil tests at no cost or delay to the project.

Soil testing shall be sent to Gro-Power for tests.

B. Planting Area Finish Grades

1. After tilling in additives and re-compaction to 85% relative compaction, rake all planting areas smooth and set finish grades as follows.
2. After soil preparation, finish grades of all planting areas shall be one (1) inch below all adjacent paving, headers, utility boxes, irrigation boxes etc. Finish grade slopes shall be consistent.
3. All drainage structures (i.e. catch basins, area drains, concrete swales, etc) shall be flush with finish grade to allow for proper drainage. Soil shall be sloped consistently from spot elevations provided to drain.
4. In planting areas to receive mulch, depth of mulch shall taper within three (3) feet of paving edge to a depth from 3” to 1” at edge of pavement.
5. Irrigation head elevation relative to finish grade shall be installed per details.
6. Contractor shall irrigate fields with four inches of water dispersed over several days prior to planting.
3.04 NATIVE GRASS AND WILDFLOWER HYDROSEEDING

A. Verify that soil is prepared and finish graded in accordance with this section prior to hydroseeding.

B. All slurry preparation shall be performed at job site. Water, mulch, fertilizer and other ingredients shall be added to the tank simultaneously so that the finished load is a homogenous mix of specified ingredients. Seed shall be added last and shall be discharged in 2 hours. Loads held over 2 hours will be recharged with ½ the seed rate before application. Once fully loaded, the complete slurry shall be agitated for 3-5 minutes to allow for uniform mixing.

C. Apply hydroseed evenly and uniformly over areas to be seeded at rates described in the “Products” portion of this specification section. Apply in a sweeping motion to form a uniform application and form a mat at the specified rates.

D. Seeding shall occur before first germinating rains in the fall.

E. If mixture remains in the tank for more than 8 hours it shall be removed from the job site.

F. Remove or clean areas not intended to receive hydroseed treatment.

3.05 TURF SEED INSTALLATION

A. Soil preparation and fine grading shall be as previously specified. Prior to seed installation, irrigation shall be tested, coverage test approved and be fully operational. The turf bed shall be reviewed and accepted by the Owner’s Representative prior to seed installation.

B. Seed to be installed using a mechanical drill seeder. Use Brillion type or approved equal.

C. Provide and install temporary fencing around all completed seeded areas. Use 6’ tall construction fencing specification for project.

D. Refer to Section 02970 for mowing and maintenance procedures. As applicable, the contractor shall remove turf, re-grade any areas that have been rutted from mowers (or otherwise damaged) and replace turf to the satisfaction of the Owner’s Representative.

E. Until project Final Acceptance, should it become evident that certain sod areas have not grown, re-seed the areas immediately with seed of the same type as originally used and maintain as specified.

3.06 SOD INSTALLATION

A. Soil preparation and fine grading shall be as previously specified. Prior to sod installation, roll turf bed until a smooth, firm surface with uniform grade has been produced. The turf bed shall be reviewed and accepted by the Owner’s Representative prior to sod installation.

B. Sod shall be unrolled into place with careful attention to tight joints with no overlapping or stretching. Stagger the joints in each new row like rows of bricks (18” minimum stagger). Use a sharp knife for shaping around trees, flower beds or borders. Immediately after placement, soak sod areas with water. Roll sod after watering to smooth out bumps and air pockets, and roll again if sod is not even. Water frequently for the first 10 - 14 days with enough water to saturate soil to a depth of 4”. DO NOT LET SOD DRY OUT.

C. Provide and install temporary fencing around all completed sod areas if not protected by other fencing. Use 6’ temporary fence for protection.

D. Refer to Section 02970 for mowing and maintenance procedures. As applicable, the contractor
shall remove sod, re-grade any areas that have been rutted from mowers (or otherwise damaged) and replace sod to the satisfaction of the Owner’s Representative.

E. Until project Final Acceptance, should it become evident that certain sod areas have not grown, re-sod the areas immediately with sod of the same type as originally used and maintain as specified.

3.07 TURF ESTABLISHMENT PERIOD

A. Prior to commencement of specified maintenance period, all turf shall be completely germinated and established, and a minimum of two (2) mowings shall have taken place as follows:

1. First mowing shall take place when turf has reached a height of two inches (2") and turf shall be mown to one and one half inches (1-1/2"). Submit written request to the Owner’s Representative for acceptability of initiating first mowing.

2. Thereafter, turf shall be mown weekly until all turf is sod-like in appearance and quality, and all other contract requirements shall be fulfilled prior to allowing the maintenance period to commence.

3. Contractor shall receive written notice of acceptance of turf establishment to commence with landscape maintenance period.

4. Owner’s Representative shall approve any phasing of turf areas to commence into the maintenance period. Areas may be approved in stages but will require contiguous areas of turf that are completely established.

3.08 TREE, SHRUB AND GROUND COVER PLANTING – Not Used

3.09 TREE STAKING – Not Used

3.10 HERBICIDE APPLICATION

A. Apply in accordance with manufacturers’ recommendations.

B. Apply pre-emergent herbicide to soil prior to placement of bark mulch top-dress.

3.11 MULCH TOP DRESS – Not Used

3.12 OTHER MATERIALS

A. Header Board: Install as shown in the drawings.

B. Root Barriers: Install as shown in the drawings.

C. Jute Netting: Install in planting areas as shown on the drawings. Install prior to planting. Stake 36” on center. Install plants and mulch after netting.

3.13 FIELD QUALITY CONTROL

A. The Owner’s Representative shall review and accept the following prior to the contractor proceeding with subsequent work:

1. Preparation - At completion of finish grading and prior to planting, grading tolerances and soil preparation shall be checked for conformance to Construction Documents.

2. Layout - Layout of plants, header board, and other major items shall be as directed and/or accepted by the Owner’s Representative.

3. Pre-maintenance review - At completion of this Section, work shall be reviewed to check conformance with Construction Documents. Acceptance shall mark beginning of the specified maintenance period. If acceptance is not given, a punch-list of items requiring attention will be issued to the contractor. One more review will be allowed after contractor certifies in writing that the punch-list has been completed. Punch-list shall be
completed to the satisfaction of the Owner’s Representative prior to commencement of the Specified Maintenance Period.

B. All costs incurred from repeat reviews required due to contractor not being prepared or non-conformance with Construction Documents shall be back charged to the contractor.

END OF SECTION
SECTION 02970

LANDSCAPE MAINTENANCE

PART 1  GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, facilities, transportation and services to complete all landscape maintenance and related work as shown on the Drawings and specified herein.

B. Scope of work:
The general extent of landscape maintenance can include, but may not be limited to the following:
1. Tree, shrub, ground cover and turf areas
2. Irrigation systems
3. General site clean-up

C. Related sections can include, but may not be limited to:
1. Section 02810 - Irrigation
2. Section 02900 - Landscaping

1.02 REFERENCES AND REGULATORY REQUIREMENTS


1.03 QUALITY ASSURANCE

A. Control of work: Comply with Section 5 of the Standard Specifications.

B. Control of materials: Comply with Section 6 of the Standard Specifications.

C. The Maintenance Contractor shall be experienced in horticulture and landscape maintenance, practices and techniques, and shall provide sufficient number of workers with adequate equipment to perform the work during the Landscape Maintenance Period.

1.04 LANDSCAPE MAINTENANCE PERIOD

A. Landscape Maintenance Period shall be 90 calendar days.

B. Continuously maintain the entire project area during the progress of the work, during the specified Landscape Maintenance Period or until Final Acceptance of the project by the Owner's Representative.

C. Landscape Maintenance Period shall not start until all elements of construction, planting and irrigation for the entire project are in accordance with Contract Documents. A prime requirement is that all turf and landscape areas shall be planted and that all turf areas shall show an even, healthy stand of "sod-like" turf which shall have been mown twice. If such criteria are met to the satisfaction of the Owner's Representative, a written notification shall be issued to establish the effective beginning date of Landscape Maintenance Period. Additionally, all elements contained on the Pre-maintenance Punch-list shall have been completed to the satisfaction of the Owner's Representative. The Landscape Maintenance period shall, per the discretion of the Owner's Representative, be allowed to start and finish at different times in different areas as applicable.

D. Any day of improper maintenance, as determined by the Owner's Representative, shall not be
credited as an acceptable Landscape Maintenance Period day. The Landscape Maintenance Period shall be extended on a day-for-day basis should this occur until proper maintenance, as determined by the Owner’s Representative, is being performed.

E. Contractor shall secure the project site against trespass, vandalism or theft during the Landscape Maintenance Period subject to the discretion of the Owner’s Representative.

F. Each project user group may be granted access to the fields prior final acceptance of turf. Soccer and baseball fields are expected be used by user group for games or practice. Contractor shall coordinate with user group representatives and site staff on mowing schedule and other maintenance schedules. User group use will have priority over maintenance.

1.05 GUARANTEE

A. All work executed under this section shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship, as determined by the Owner’s Representative, for the entire Landscape Maintenance Period and for a period of one year after Final Acceptance of project.

B. The contractor shall install all replacement material in conformance with the Contract Documents.

1.06 FINAL ACCEPTANCE

A. Upon completion of all project work, including Landscape Maintenance Period, the Owner’s Representative will, upon written request from the contractor (2 working day minimum notice), make an observation to determine conformance with the Contract Documents.

B. If, at the final project observation, work is found at variance with the Contract Documents, or is otherwise unacceptable, the Owner’s Representative shall issue a punch-list of items requiring attention to the contractor. The contractor shall repair, replace or otherwise correct all non-compliant work, continue Landscape Maintenance Period, and make another written request to the Owner’s Representative to verify punch-list completion. If punch-list is found to be incomplete, or if site is still found to be unacceptable, the contractor shall be back-charged as necessary for all additional observations required to issue Final Acceptance. All replacement materials and installations shall be in accordance with the Contract Documents. Remove rejected work and materials immediately from project. Prior to Final Acceptance, contractor shall provide the Owner’s Representative with all Record Drawings and written Guaranty Statements in accordance with the Contract Documents.

PART 2 PRODUCTS

2.01 MATERIALS

A. All materials used shall either conform to Specifications in other sections or shall otherwise be acceptable to the Owner’s Representative. The Owner’s Representative shall be given a monthly record of all herbicides, insecticides and disease control chemicals used.

B. Maintenance fertilizer: shall be “Gro-Power High Nitrogen” as available through Gro-Power, Inc. (800) 473-1307, and shall contain the following chemical analysis (or approved equal) (Would be better for a soil chemical test result to determine the fertilizer or amendment ratios, amounts and mixture):

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>14%</td>
<td>nitrogen</td>
</tr>
<tr>
<td>4%</td>
<td>phosphoric acid</td>
</tr>
<tr>
<td>9%</td>
<td>potash</td>
</tr>
</tbody>
</table>
PART 3      EXECUTION

3.01 MAINTENANCE

A. General: Proper maintenance, including watering, weeding, mowing, edging, fertilization, repairing and protection shall be required until entire project is finally accepted, but in any event for a period of not less than the specified Landscape Maintenance Period.

B. Watering: Water appropriately (based on plant type) to insure vigorous and healthy growth until work is accepted. Once seed has substantially germinated or sod had adequately knitted, irrigation run times should be adjusted to make sure adequate depth of watering occurs to promote root growth to a minimum of six (6) inches for turf. Water or irrigate in a manner to prevent runoff or erosion. When hand watering, use a “water wand” to break the water force.

C. Weeding: Entire project site shall be kept free of weeds at all times. Control new weed growth with pre-emergent herbicides. If weeds develop, use legally approved herbicides.
   1. No herbicide shall be used without the Owner’s Representative prior consent. Use only herbicides in accordance with manufacturer’s recommendations. If selective herbicides are used, extreme caution shall be observed so as not to damage any other plants. Spraying shall be done only under windless conditions.

   2. Disease and Pest Control: Disease and insect damage shall be controlled by the use of fungicides and insecticides, subject to the prior consent of the Owner’s Representative. Mole and gopher mitigation shall be accomplished using legal means other than poison baits.

D. Tree “rings” in turf areas: Remove turf from around each tree to create a four (4) foot diameter turf free area.

E. Pruning:
   1. Trees: Prune trees to select and develop permanent scaffold branches; to eliminate narrow v-shaped branch forks that lack strength; to reduce potential toppling and wind damage by thinning out crowns; to maintain a natural appearance and to balance crown with roots. Prune only as directed by the Owner’s Representative.

   2. Shrubs: The objectives of shrub pruning are the same as for trees. Shrubs shall not be clipped into balled or boxed forms unless such is required by the design.

   3. All pruning cuts shall be made to lateral branches, buds or near flush with the trunk. “Stubbing” or heading cuts shall not be permitted.

   4. Only skilled workers shall perform pruning work in accordance with standard horticultural pruning practices. Remove from the project all pruned branches and material. Remove and replace any plant material excessively pruned or malformed resulting from improper pruning practices at no additional cost to the Owner.

F. Staking: Stakes shall remain in place through the maintenance and guaranty periods and shall be periodically inspected and adjusted by the contractor to prevent rubbing that causes bark wounds, loosen for proper growth or other appropriate reasons.

G. Protection: The contractor shall maintain protection of all planting areas until Final Acceptance. Damaged areas shall be repaired or replaced at the contractors expense. Install a temporary maintenance fence (4’ blaze orange with steel driven stakes or acceptable equal) around all turf areas for the entire length of Landscape Maintenance Period.

H. Trash: Remove trash in all project areas plus adjacent pedestrian walkways and parking areas.

I. Replacement: Refer to the Guaranty portion of this Section.
J. Fertilizing: Turf shall be fertilized on day 45 and 85 after initial seeding or installation. Turf shall be fertilized with 20 lbs of fertilizer per 1,000 square feet. Fertilizer use should be determined by a chemical soil test to determine frequency, amount and ratios of ingredients. Contractor to supply test results to owners representative before applications are initiated.

3.02 ATHLETIC FIELD TURF MAINTENANCE AND ACCEPTANCE

A. Current cultural management practices may be modified in accordance with tissue test results or environmental conditions. Fertilizer composition, rate, and/or source may be adjusted based on current soil and tissue test results and existing environmental conditions.

B. The following list represents the minimum required data that must be recorded in a field operations log:
   1. Chemical application logs – All labels, application rates, equipment used to apply chemicals shall be kept in the maintenance log. Chemicals shall include all fertilizers, bio-stimulants, growth regulators, and pesticides.
   2. All cultural maintenance activities such as mowing, sample collection and seeding shall be recorded.
   3. Irrigation applications – Any use of the irrigation system should be documented as to zones used, duration of application, and any problems with coverage or system components.
   4. System repair logs for each system must be maintained. Record replaced or repaired items such as irrigation heads and valves, or any drainage components in the appropriate system repair log.

C. The Contractor shall be responsible for the performance and operation of the playing field system during the construction, maintenance periods and until final acceptance. The Contractor shall keep a technically qualified man on site and maintain adequate labor, equipment and supplies in reserve to immediately repair the system or components in the event of any deficiency or failure, during the interim maintenance period.

D. Contractor shall provide all operations necessary to maintain the field throughout the Maintenance Period. The following list of items represents the minimum operations necessary to maintain the fields. Maintenance items should, at the minimum, include:
   1. Mowing: Turf will be cut with a dedicated reel (for warm season grasses) mower. Cutting height will be determined by environmental conditions, condition of sod, and time of year or activities. Turf height will be maintained using only sharp, clean equipment capable of cutting heights of 1.5 to 0.5 inches. The initial cutting or subsequent cuttings will remove not more than 1/3 of the grass leaf. Turf will be maintained to a neat appearance. Remove cuttings from site. Turf shall not be allowed to exceed one and one half (1.5) inches and shall not be mown shorter than one half (0.5) inches.
   2. Turf shall be established to be turned over with a three quarter (0.75) inches in height for mowing.
   3. Weed and Pest Control: The Contractor is to maintain the turf free from disease and infestation. Required treatments will be made according to the needs of the field as determined by the City Representative. Comply with applicable requirements of Federal, State, and Local laws, regulations and codes having jurisdiction over chemical treatments. The contractor is to apply suitable preventative or post infection fungicides to protect the quality of the turf. Special attention shall be required during the seedling establishment period for damping off diseases.
   4. Let turf areas dry out enough so that mower wheels do not skid, tear or mark the surface.
   5. Edges shall be trimmed at least twice monthly or as needed for neat appearance. Clippings shall be removed and disposed of.
E. **Turf Acceptance:** Final acceptance will follow District Representative’s final approval of the punch list and the following criteria:

1. Turf has rooted into the rootzone mix to a depth of six inches (6”) and has formed a mature sod mat. This will be determined by random samples being pulled from the rootzone with the owner’s representative in attendance. If less than 80% of the random tests pass (a minimum of 15 samples will be pulled from the field areas), then the fields will not be considered acceptable. If any tests are below five inches (5”), then the field in question shall not be accepted.

2. The playing field surface is in a safe and playable condition.

3. Turf is free of dead or bare spots in excess of 3 square inches.

4. Maintenance log is complete and all equipment manuals and documentation delivered to the owner.

3.03 **IRRIGATION SYSTEM**

A. **System Observation:** The contractor shall visually check all systems for proper operation on a weekly basis and make all necessary repairs. All equipment shall be adjusted as necessary for proper coverage and function.

B. **Controllers:** Program automatic controllers for appropriate seasonal water requirements. Perform a full instruction session in the presence of the Owner’s designated maintenance personnel demonstrating programming, system testing, trouble shooting, etc. Include instructions on how to turn off system in case of emergency.

C. **Repairs:** All repairs made to the irrigation system shall be at the contractor’s expense. All repairs shall be made within twenty-four (24) hours.

3.04 **FIELD QUALITY CONTROL**

A. **Final Review:** At, or near the end of specified Landscape Maintenance Period, the contractor shall make written request for a final review and the work shall be reviewed for conformance with the Construction Documents. If work is not accepted at time of review, a punch-list of items requiring attention will be issued to the contractor for correction. The Landscape Maintenance Period shall be extended at contractors sole cost as necessary. Upon completion of the punch-list the contractor shall again make written request for review. If, upon re-visiting the site, it is found that the punch-list has not been completed, the review shall end and the contractor shall be back-charged for all additional visits.

B. All re-inspections required due to contractor not being prepared or non-conformance with the Construction Documents shall be back charged to the contractor.

C. **Final Acceptance:** When work is found to be in conformance with the Contract Documents, subject to the discretion of the Owner’s Representative, a statement of Final Acceptance shall be issued to the contractor.

END OF SECTION
Division 16

Electrical
SECTION 16010
ELECTRICAL GENERAL PROVISIONS

PART 1  GENERAL

1.01 SECTION INCLUDES

A. Furnish all labor, materials, apparatus, tools, equipment, transportation, temporary construction and special or occasional services as required to make a complete working electrical installation, as shown on the drawings or described in these specifications.

1.02 RELATED SECTIONS

A. Perform following work, in accordance with appropriate sections of the specifications cited, where and as necessary to furnish a complete, working electrical installation.
   1. Miscellaneous Metal Work: Include fittings, brackets, supports, welding and pipe as required for raceway and disconnect switch support.

1.03 REFERENCES

A. Reference to codes, standards, specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean the latest edition of such publications adopted and published prior to submittal of the bid proposed. Such codes or standards shall be considered a part of this specification as though fully repeated herein.

B. When codes, standards, regulations, etc., allow work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred as reducing the quality, requirements or extent of the drawings and specifications.

C. California Code of Regulations (CCR) Title 24, Part 3, Basic Electrical Requirements, State Building Standards Electrical Code

D. National Fire Protection Association (NFPA).

E. Equipment and materials specified under this Division shall conform to the following standards where applicable:
   1. UL  Underwriters' Laboratories
   2. ASTM  American Society for Testing Materials
   3. CMB  Certified Ballast Manufacturers
   4. IPCEA  Insulated Power Cable Engineer Assoc.
   5. NEMA  National Electrical Manufacturer’s Assn.
   6. ANSI  American National Standards Institute
   7. ETL  Electrical Testing Laboratories

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to National Electrical Manufacturers Association (NEMA) standards and the NEC and bear the Underwriters' Laboratories (UL) label where such label is applicable.

1.04 SUBMITTALS

A. See Division 1 - Administrative Requirements, for submittal procedures.

B. Where items are noted as "or equal" a product of equal design, construction and performance will be considered. Contractor must submit all pertinent test data, catalog cuts and product information required to substantiate that the product is in fact equal. Refer to Division 1, General Requirement for additional requirements. Only one substitution will be considered for each product specified.

C. Submittals shall consist of detailed shop drawings, specifications, "catalog cuts" and data sheets containing physical and dimensioned information, performance data, electrical characteristics, material used in fabrication, material finish and shall clearly indicate those optional accessories which are included and those which are excluded. Furnish one reproducible and 4 prints of each shop drawing.
1.05 CUTTING, PAINTING AND PATCHING

A. Structural members shall in no case be drilled, bored or notched in such a manner that will impair their structural value. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect.

B. Cutting and digging shall be under the direct supervision of the General Contractor. Include as necessary for the work in this section.

C. The contractor shall be responsible for returning any surface from which he has removed equipment or devices to the condition and finish of the adjacent surfaces.

1.06 SUPERVISION

A. Contractor shall personally or through an authorized and competent representative constantly supervise the work from beginning to completion and, within reason, keep the same workmen and foreman on the project throughout the project duration.

1.07 PROTECTION

A. Keep conduits, junction boxes, and outlet boxes, and other openings closed to prevent entry of foreign matter: cover fixtures, equipment, and apparatus and protect against dirt, paint, water, chemical, or mechanical damage, before and during construction period. Restore to original condition any fixture, apparatus, or equipment damaged prior to final acceptance, including restoration of damaged shop coats of paint, before final acceptance. Protect bright finished surfaces and similar items until in service. No rust or damage will be permitted.

1.08 EXAMINATION OF SITE

A. The Contractor shall visit the site and determine the locale, working conditions, conflicting utilities, and the conditions in which the electrical work will take place. No allowances will be made subsequently for any costs which may be incurred because of any error or omission due to failure to examine the site and to notify the Engineer of any discrepancies between drawings and specifications and actual site conditions. Schedule visits at least 1 week in advance with Owner’s Maintenance staff.

1.09 ENVIRONMENTAL REQUIREMENTS

A. After other work such as sanding, painting etc. has been completed, clean lighting fixtures, panelboards, switchboards, and other electrical equipment to remove dust, dirt, and grease, or other marks, and leave work in clean condition.

1.10 VOLTAGE CHECK

A. At completion of job, check voltage at several points of utilization on the system which has been installed under this contract. During test, energize all loads installed. Measure 3-Phase voltages and note percentage differences. Submit report to Engineer. Include copy in O&M Manual.

1.11 TESTS

A. Perform tests as specified to prove installation is in accordance with contract requirements. Perform tests in the presence of the Engineer and furnish test equipment, facilities, and technical personnel required to perform tests. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications. Tests, in addition to specific system test described elsewhere, shall include:

1. Insulation Resistance: All 600 volt insulation shall be tested at 1000 volts D.C for one minute on all feeder and branch circuit conductors including the neutral, and make a typed record of all readings to be included in the maintenance instructions. The direct current amperes shall be recorded at start and at one minute. The value shall be declining and not more than one microamperes.

2. Circuit Continuity: Test all feeder and branch circuits for continuity. Test all neutrals for improper ground.

B. Equipment Operations: Test motors for correct operation and rotation.

C. Product Failure: Any products which fail during the tests or are ruled unsatisfactory by the Engineer shall be replaced, repaired, or corrected as prescribed by the Engineer at the expense of the Contractor. Tests shall
be performed after repairs, replacements, or corrections until satisfactory performance is demonstrated.

D. Miscellaneous: Include all test results in the maintenance manual. Cost, if any, for all tests shall be paid by the Contractor.

1.12 DRAWINGS

A. Layout: General layout shown on the drawing shall be followed except where other work may conflict with the drawings.

B. Accuracy:
   1. Drawings for the work under this section are diagrammatic.
   2. Contractor shall verify lines, levels, and dimensions shown on the drawings and shall be responsible for the accuracy of the setting out of work and for its strict conformance with existing conditions at the site.
   3. Contractor shall insure reconnection of existing equipment and circuits affected by contract demolition whether or not reconnection is specifically shown on the contract documents.

1.13 PROJECT RECORD DRAWINGS

A. Refer to General Conditions for contractual requirements. Provide project record drawings as required by the General Provisions of the specifications and as required herein. Such drawings shall fully represent installed conditions including actual locations of outlets, true panelboard connections following phase balancing routines, correct conduit and wire sizing as well as routing, revised fixture schedule listing the manufacturer and products actually installed and revised panel schedule. All changes to drawings shall be made by qualified draftspersons to match existing linework and lettering as close as possible. When all the changes have been made to the trade drawings, contractor shall produce one (1) full size (E-Size) updated set of trade drawing(s) utilizing AutoCad 2006 or newer and supply one (1) set of Compact Discs (CD’s) reflecting same.

1.14 MAINTENANCE AND OPERATING INSTRUCTIONS

A. Furnish to the Engineer four (4) hard back 3-ring binders containing all bulletins, operating and maintenance instructions and part lists and other pertinent information for each and every piece of equipment furnished under this specification. Include service telephone numbers. Each binder shall be indexed into sections and labeled for easy reference. Bulletins containing more information than the equipment concerned shall be properly stripped and assembled.

B. At the time of completion, a period of not less than eight hours shall be allotted by the Contractor for instruction of building operating and maintenance personnel in the use of all systems. All personnel shall be instructed at one time, the Contractor making all necessary arrangements with manufacturer’s representative. The equipment manufacturer shall be requested to provide product literature and application guides for the user’s reference. Costs, if any for the above services shall be paid by the Contractor.

1.15 WARRANTIES

A. Furnish to the Engineer four (4) hard back 3-ring binders containing all warranties of every piece of equipment furnished under this specification. Include terms and limitations of warranties, contact names, addresses, and telephone numbers of manufacturer. Each binder shall be indexed into sections and labeled for easy reference for each equipment warranty.

1.16 EXTRA MATERIALS

A. See Division 1 - Product Requirements, for additional provisions.

B. All special tools for proper operation and maintenance of the equipment provided under this Section shall be delivered to the District’s representative.

PART 2 EXECUTION

2.01 WORKMANSHIP

A. Preparation, handling, and installation shall be in accordance with manufacturer’s written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Coordinate work and cooperate with others in furnishing and placing this work. Work to reviewed shop drawings for work done by others and to field measurements as necessary to properly fit the work.
B. Conform to the National Electrical Contractor’s Association “Standard of Installation” for general installation practice.

2.02 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

END OF SECTION
SECTION 16050
BASIC MATERIAL AND METHODS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Conduit, raceways and fittings.
B. Wires and Cables for 600 Volts and less.
C. Wire connections and devices.
D. Outlet boxes.
E. Pull and junction boxes.
F. Disconnect Switches and Fuses
G. Supporting Devices.
H. Identifying Devices.
I. Grounding and Bonding

1.02 REFERENCES

A. NECA (INST) - Standard of Installation; National Electrical Contractors Association
B. NFPA 70 - National Electrical Code - latest edition

1.03 SUBMITTALS

A. See Division 1 - Administrative Requirements, for submittal procedures.
B. In Addition, submit in accordance with the requirements of Division 1 the following items:
   1. A list of conduit types indicating where each type of conduit will be used. Indicate conduit manufacturers and fittings to be used.
   2. Wires and Cables.
   3. Wiring Devices and Plates
   4. Nameplates, including engraving schedules where engraved plates are specified.
   5. Fused disconnect switches.

1.04 QUALITY ASSURANCE

A. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

1.05 REFERENCES

A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated; latest edition.
B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated; latest edition.
C. ANSI C80.5 - Rigid Aluminum Conduit; latest edition.
D. NECA (INST) - Standard of Installation; National Electrical Contractors Association; latest edition.
E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies; latest edition.

PART 2 PRODUCTS

2.01 CONDUIT, RACEWAYS AND FITTINGS
A. Rigid Steel Conduit
   1. Rigid steel conduit shall be full weight, pipe size, finished inside and out by hot-dip galvanizing after fabrication, and shall conform with ANSI C80.1 and UL.
   2. Couplings shall be electroplated steel.
   3. Insulating Bushings: Threaded polypropylene or thermo-setting phenolic rated 150°C minimum.
   4. Insulated grounding Bushings: Threaded cast malleable iron body with insulated throat and steel “lay-in” ground lug with compression screw.
   5. Insulated Metallic Bushings: Threaded cast malleable iron body with plastic insulated throat rated 150°C.
   6. Running threads are not acceptable.

B. Non-Metallic Conduit
   1. Schedule 40 PVC underground is an acceptable conduit material.

C. Electrical Metallic Tubing (EMT):
   1. Conduit: Conduit shall be formed of cold rolled strip steel, and shall comply with ANSI C80.3 and UL requirements.
   2. Couplings: Electroplated steel, UL listed rain and concrete tight through 1-1/4" trade size. All EMT fittings shall be compression type.
   3. Connectors: Steel, gland compression type with insulated plastic throat, 150°C temperature rated. All EMT fittings shall be compression type.

D. Liquid Tight Flexible Metal Conduit:
   1. Conduit: Conduit shall be fabricated in continuous lengths from galvanized steel strip, spirally wound. Flexible conduit, except where installed in concealed dry locations, shall be liquid tight with plastic jacket extruded over the outer zinc coating. No aluminum substitute will be accepted.
   2. Fittings: Connectors shall be the screw clamp on screw-in (Jake) variety with cast malleable iron bodies and threaded male hubs with insulated throat or insulated bushings. Set screw type connectors are not acceptable. Liquid tight fittings shall be of cadmium plated cast malleable iron, with insulated throat.

2.02 WIRING AND CABLES

A. Acceptable manufacturers: CABLEC, Triangle, or equal.

B. Conductor material: All wire and cable shall be insulated, stranded copper conductors. Soft drawn annealed copper wire 98% conductivity, bearing the UL label.

C. Minimum conductor size: AWG No. 12 for all power and lighting branch circuits. AWG No. 12 for all signal and control circuits.

D. Color Coding: System conductors shall be identified as to voltage and phase connections by means of color impregnated insulation or approved colored marking tape as follows:
   1. For 120/240 volt, single phase, 3 wire system.
      a. Phase A - Black
      b. Phase B - Red
      c. Phase C - Orange for High Leg (208v to neutral)
      d. Neutral - White
      e. Ground - Green
   2. For 120/208 volt, 3 phase, 4 wire systems.
      a. Phase A - Black
      b. Phase B - Red
      c. Phase C - Blue
      d. Neutral - White
      e. Ground - Green
   3. For 277/480 Volt, 3 phase, 4 wire system
      a. Phase A - Brown
      b. Phase B - Orange
      c. Phase C - Yellow
      d. Neutral - White
      e. Ground - Green

E. Secondary Wire and Cable, 0 to 600 Volts;
1. NEC Type THWN, or Type XHHW for feeders and branch circuits in wet or dry locations. NEC type THHN for branch circuits in dry locations.

2.03 WIRE CONNECTION

A. Wire Joints: Wires in sizes from #18 to #8 AWG, stranded conductor, with insulation rated 105 degrees C. or less shall be joined with electrical spring connectors of three part construction incorporating a non-restricted, zinc coated steel spring enclosed in a steel shell with an outer jacket of vinyl plastic with a flexible insulating skirt.

B. Mechanical Compression Connectors and Taps: Stranded conductors from #6 AWG to 750 Kcmil shall be joined or tapped using bolted pressure connectors having cast bronze compression bolts. Fittings shall be wide range-taking and designed to facilitate the making of parallel taps, tees, crosses or end-to-end connections. Split-bolt connectors will not be acceptable.

C. Fixture Connections: Splice fixture wire to circuit wiring with solderless connectors as specified above in paragraph A.

D. Terminating Lugs: Conductors from size No. 6 AWG to 750 MCM, copper, shall be terminated using tin plated hydraulically operated crimping tools and dies as stipulated by the lug manufacturer. Lugs shall be 3M "Scotchlok" series 30014, Burndy Type Ya-L series, or equal.

E. Splicing and Insulating Tape (600 volts and below): General purpose electrical tape shall be suitable for temperatures from minus 18 degrees C to 105 degrees C, shall be black, ultraviolet proof, self-extinguishing, 7 mil thick vinyl with a dielectric strength of 10,000 volts. Apply 4 layers half-lap with 2" over-lay on each conductor.

F. Insulating Putty (600 volts and below): Pads or rolls of non-corrosive, self-fusing, one eight inch thick rubber putty with PVC backing sheet. Putty shall be suitable for temperatures from minus 17.8 degrees C to 37.8 degrees C and shall have a dielectric strength of 570 volts/mil minimum.

G. Insulating Resin: Two Part liquid epoxy resin with resin and catalyst in pre measured, sealed mixing pouch. Resin shall have a set up time of approximately 30 minutes at 21.1 degrees C, and shall have thermal and dielectric properties equal to the insulation properties of the cables immersed in the resin.

H. Terminal Strip Connectors: Terminate wire in locking tongue style, pressure type, solderless lug where applicable.

2.04 WIRING DEVICES

A. Switches: Specification grade, flush mounting, quite operating AC type, with toggle operator, heat resistant plastic housing and self grounding metal strap. Silver or silver alloy contact. Rated 20A at 120-277V and capable of full capacity on tungsten or fluorescent lamp load. Design for up to #10 wire. Use single pole, double pole, three-way, four-way, lighted, pilot, or keyed type, as indicated on drawings or required. Provide ivory color unless otherwise noted. Manufacturer: Leviton, Arrow Hart, or Hubbell.

B. Receptacles: Specification grade, flush mounting receptacles with nylon face. High grade brass allow triple wipe contacts. Provide 2 pole, 3 wire grounding type with a green colored brass hexagonal equipment grounding screw. Grounding shall be rivetless, single piece brass with no mechanical connections in the primary path between point of ground wire termination and ground blades. Use 20A rated receptacles, ivory in color, unless otherwise noted. Manufacturer: Leviton, Arrow Hart, or Hubbell.

   1. Isolated Ground - Provide separate path to ground, with orange faceplate or triangle to indicated isolated ground
   2. GFCI - Equipped with diagnostic indicator for miswiring.
   3. Weatherproof - GFCI type, outdoor rated, with while in use cover

C. Faceplates: Provide nylon cover faceplates for wall receptacles, outlets, and switches. Include thermal mounting screws that match plate and device color. Manufacturer: Leviton, Arrow Hart, or Hubbell.

2.05 OUTLET BOXES

A. Standard outlet boxes: Galvanized, die formed or drawn steel, knock-out type of size and configuration best suited to the application indicated on the plans. Minimum box size, 4 inch square by 1-1/2 inch deep, indoor use. FS cast boxes are required for outdoor use.
B. Cast Metal Outlet Boxes: FS cast boxes are required for outdoor use. Four-inch round, galvanized cast iron alloy with threaded hubs and mounting lugs as required. Boxes shall be furnished with cast cover plates of the same material as the box and neoprene cover gaskets. Thomas and Betts, Crouse-Hinds VXF series, Appleton JBX series or equal.

C. Conduit Outlet Bodies: Cadmium plated, cast iron alloy. Obround conduit outlet bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Outlet bodies shall be used to facilitate pulling of conductors or to make changes in conduit direction only. Splices are not permitted in conduit outlet bodies. Thomas and Betts, Crouse Hinds Form 8 Condulets, Appleton form 3S Unilets, or equal.

2.06 PULL AND JUNCTION

A. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use minimum 15 gauge get metal, NEMA 1 boxes, sized to code requirements with covers secured by cadmium plated machine screws located 6 inches on centers. Circle AW Products, Hoffman Engineering Co., or equal.

B. Cast Metal Boxes: Use standard cast malleable iron outlet or device boxes wherever possible; otherwise use cadmium plated, cast malleable iron junction boxes with bolt-on, interchangeable conduit hub plates with neoprene gaskets. Appleton RS series; Crouse Hinds RS series, or equal.

2.07 DISCONNECT SWITCHES

A. All disconnect switches shall be heavy-duty type and have the number of poles, voltage rating, and horsepower rating as required by the motor or equipment. Disconnect switches shall be in enclosures to suit conditions, NEMA 3R for outdoor and NEMA 1 for indoor. Disconnect switches shall be fused unless otherwise noted on the drawings. As manufactured by: Square D - Class 3110, ITE Siemens, or equal.

2.08 FUSES

A. Dual Element, Time Delay, UL Class RK5. Rejection type. Size and Voltage as indicated on equipment. Bussman, Little Fuse, or approved equal.

2.09 ELECTRICAL SUPPORTING DEVICES

A. Concrete Fasteners: Phillips “Red-Head” or equal, self drilling expansion type concrete anchor.

B. Conduit Straps: Hot-dip galvanized, cast malleable iron, two hole type strap with cast clamp-backs and spacers as required. OZ/Gedney No. 14-50G strap and #141G spacer; Efcor No. 231 strap, and No.131 spacer; or equal.

C. Construction Channel: 1-1/2 inch by 1-1/2 inch 12 gauge galvanized steel channel with 17/32 inch diameter bolt holes, 1-1/2 inch on center, in the base of the channel. Kindorf 905 series, Unistrut P-1000-HS or equal.

D. Cable Ties and Clamps: Thomas and Betts Co. "Ty-Raps" Panduit "Pan-Ty" or equal one piece, nylon, reusable type lashing ties.

E. Fasteners (General) : Wood screws for fastening to wood. Machine screws for fastening to steel. Toggle bolts for fastening to hollow concrete block, gypsum board, or plaster walls. Expansion anchors for attachments to pre-poured concrete.

2.10 IDENTIFYING DEVICES

A. Nameplates: Type NP: Engraved black bakelite, 1 inch by 3-1/2 inch, 1/8 inch high white letters, machine screw retained. For permanent identification of all switchboards, panelboards, circuit breakers in separate enclosures, motor starters, relays, time switches, disconnect switches and other cabinet-enclosed apparatus including terminal cabinets or match existing as closely as possible.

B. Legend Plates: Type LP: Die-stamped metal legend plate with mounting hole and positioning key for attachment to panel mounted operators’ devices. Engraved paint-filled characters as specified.

C. Wire & Terminal Markers: Self-adhering, pre-printed vinyl with self-laminating wrap around strip. Markers shall be legible after termination. Brady B191 series, Thomas & Betts WSL series or equal.

D. Conductor Phase Markers: Thomas & Betts WCPHAS series or similar in addition to colored marking as specified under this section of the specifications.
2.11 GROUNDING AND BONDING

A. Ground Rods
   1. Manufacturer: Blackburn, Erico, or approved Equal
   2. Size: 3/4” x 10’ Ground Rods

B. Grounding Electrode Conductor, 2/0 for foundation foots, and per NEC.

C. Grounding Well - Christy Box, Valve Box

PART 3 EXECUTION

3.01 CONDUIT AND RACEWAY APPLICATIONS

A. Rigid Steel Conduit: For all exterior applications, all conduits larger than 2” trade diameter, indoor, below eight (8) feet.

B. Electrical Metallic Tubing (EMT): Interior only and above eight (8) feet or when entering a panel from above.

C. Liquidtight Flexible Metallic Conduit: In damp and wet locations for connections to motors, transformers, vibrating equipment and machinery. Connections to all pump motors, flow switches, and similar devices.

3.02 CONDUIT INSTALLATION

A. General
   1. All conduit runs shown on the plans are sized based on the use of rigid steel conduit and THWN copper conductors. If conductor type is changed the contractor shall be responsible for resizing conduits to meet code. In no case is conduit to be sized smaller than 3/4” trade diameter.
   2. Low voltage wiring shall be installed in conduit, minimum 3/4” trade diameter.
   3. Conduits shall be tightly covered and well protected during construction using metallic bushings and bushing "pennies" to seal open ends.
   4. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading.
   5. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors.
   6. In all empty conduits or ducts, install an 1100 pound tensile strength polyethylene pulling rope.
   7. Conduit systems shall be electrically continuous throughout. Install code size, uninsulated, copper grounding conductors in all conduit runs, grounding conductor shall be bonded to conduit, equipment frames and properly grounded.

B. Layout:
   1. All new conduits shall be concealed. Any field conditions that does not allow concealment of conduits shall be reviewed with the Architect prior to rough-in.
   2. Locations of conduit runs shall be planned in advance of the installation and coordinated with concrete work, plumbing and framing.
   3. Where practical install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary offsets.
   4. Low voltage conduit shall be grouped separately and labelled every 10 ft interval as to system (i.e. fire, control, etc)
   5. Exposed conduit shall be run parallel or at right angles to the centerlines of the columns and beams.
   6. Conduits shall not be placed closer than 12 inches from a parallel hot water or steam line or three inches from such lines crossing perpendicular to the runs.
   7. In long runs of conduit, provide sufficient pull boxes per NEC inside buildings to facilitate pulling wires and cables. Support pull boxes from structure independent of conduit supports. These pull boxes are not shown on the plans.

C. Supports:
   1. All raceway systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to Code.
   2. Support single runs of conduit using two hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp blocks" to space conduit off the surface.
   3. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from 3/8 inch diameter,
threaded steel rods secured to building structures. Fasten conduit to construction channel with standard two hole pipe clamps. Provide lateral seismic bracing for hangers.

4. Installation
   a. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
      1) Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
      2) Do not drill or cut structural members.
      3) Obtain permission from Architect before drilling or cutting structural members.
   b. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
   c. Install surface-mounted cabinets and panelboards with minimum of four anchors.
   d. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch off wall.
   e. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

D. Terminations and Joints:
   1. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.
   2. Rigid conduit connection to enclosures shall be made by Myers type grounding hubs only. EMT connections to enclosures shall be made with compression connector with grounding lock-nuts or bushings.
   3. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using appropriate connectors and hubs.
   4. Install expansion couplings where any conduit crosses a building separation or expansion joint.
   5. Install cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets or gutters inside the building. Install cable sealing bushings or caulk conduit terminations in all grade level or below grade exterior pull, junction or outlet boxes.

E. Penetrations:
   1. Furnish and install metal sleeves for all exposed interior conduit runs passing through concrete floors or walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack, grouting compound.
   2. Install specified watertight conduit entrance seals and membrane clamps at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be insulated rigid steel.
   3. Conduits penetrating rated walls, floors, etc. shall be fireproofed.

3.03 CABLE AND WIRE INSTALLATION

A. Examination
   1. Verify that interior of building has been protected from weather.
   2. Verify that mechanical work likely to damage wire and cable has been completed.
   3. Verify that raceway installation is complete and supported.
   4. Verify that field measurements are as indicated.

B. Preparation
   1. In existing conduits that will be reused, pull out existing conductors.
   2. Completely and thoroughly swab raceway before installing wire.
   3. Use 50/50 solution of Simple Green. Use CO2 to blow water and soap into conduit - let soak to break up dried out pulling compounds, then pull conductors. Pull one conductor at a time if will not pull all out together.

C. General:
   1. Conductors shall not be in conduit until all work of any nature that may cause injury is completed. Care should be taken in pulling conductors that insulation is not damaged. U.L. approved non-petroleum base and insulating type pulling compound shall be used as needed.
   2. All cables shall be installed and tested in accordance with manufacturer’s requirements and warranty.
   3. Block and tackle, power driven winch or other mechanical means shall not be used in pulling conductors of size smaller than AWG # 1.

D. Splicing and Terminating:
1. All aspects of splicing and terminating shall be in accordance with cable manufacturer’s published procedures.
2. Make up all splices in outlet boxes with connectors as specified herein with separate tails of correct color to be made up to splice. Provide at least six (6) inches of tails packed in box after splice is made up.
3. All wire and cable in panels, control centers and equipment enclosures shall be bundled and clamped.
4. Encapsulate splices in exterior outlet, junction and pull boxes using insulating resin kits. All splices for exterior equipment in pump rooms shall be made up watertight.
5. Insulate mechanical compression taps AWG # 1/0 and larger using pre-molded, snap-on insulating boots or specified conformable insulating putty overwrapped with two half-lapped layers of insulating tape.

E. Identification:
1. Securely tag all branch circuits, noting the purpose of each. Mark conductors with vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each circuit with the corresponding circuit number at the panelboard.
2. Color code conductors size #6 and larger using specified phase color markers and identification tags.
3. All terminal strips are to have each individual terminal identified with specified vinyl markers.
4. All identification shall be legible and readable after completion of installation.

F. Installation:
1. Route wire and cable as required to meet project conditions.
2. Install wire and cable in accordance with the NECA "Standard of Installation."
3. Use wiring methods indicated.
4. Pull all conductors into raceway at same time.
5. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
6. Neatly train and lace wiring inside boxes, equipment, and panelboards.
7. Clean conductor surfaces before installing lugs and connectors.
8. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
9. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

3.04 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer’s instructions.
B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations. Max distance 6 ft.
C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
D. Provide receptacle outlet to accommodate connection with attachment plug.
E. Provide cord and cap where field-supplied attachment plug is required.
F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
H. Install terminal block jumpers to complete equipment wiring requirements.
I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

3.05 INSTALLATION OF BOXES

A. General:
1. Leave no un-used openings in any box. Install close-up plugs as required to seal openings.
2. Exposed outlet boxes and boxes in damp or wet locations shall be cast metal with gasketed cast metal cover plates.
B. Box Layout:
3.06 INSTALLATION OF WIRING DEVICES

A. General
1. Install all devices flushmounted unless otherwise noted on the drawings. Comply with layout drawings for general locations. Consult Architect or Owner for locations that have conflict with other devices or manner not suitable for installation. Avoid place devices behind open doors.
2. Align devices horizontally and vertically. Device plates shall be aligned vertically with tolerance of 1/16". All four edges of device plates shall be in contact with the wall surface.
3. Mounting height as indicated on the drawings and according to ADA requirements.
4. Install device plates on all outlet boxes. Provide blank plates for all empty, spare, and boxes for future use.
5. Securely fasten devices into boxes and attach appropriate cover plates.
6. Caulk around edges or outdoor device plates and boxes when rough wall surfaces prevent raintight seal.
7. Fireproof around opening of devices located or penetrating firerated construction assemblies.

B. Switches
1. Where switches are indicated to be installed near doors, corner walls, etc. mount not less than 2 inches and not more than 18" from trim. Verify exact location with Architect or Engineer prior to rough-in.
2. Coordinate the location of switches to insure locations at the strike side of doors.
3. Furnish and install engraved legend of each switch that controls exhaust fans, motors, equipment systems, etc. not located within sight of the controlling switch.
4. Ganging of Switches - provide barriers for switches of difference phases and voltages. Otherwise switches shall be gauged in one faceplate.

C. Receptacles
1. Mount receptacles vertically with U-shaped ground position on bottom.
2. Do not combine GFCI protected circuits with other circuits in the same raceway. Limit number of GFI protect circuits in any one raceway to a maximum of one (1) circuit.

D. Identification
1. Label all outlets and switches. Mark each wiring device where circuits and panel supply is derived from.
2. All identification shall be legible and readable after completion of installation

3.07 INSTALLATION OF FUSES AND DISCONNECT SWITCHES

A. Fuses shall be installed where noted on plans. Listed or labeled equipment must be in accordance with instructions included in the listing or labeling. Be sure to observe maximum branch circuit fuse size labels.

B. Disconnect switches shall be mounted on the units or on the closest wall. Coordinate with mechanical contractor to ensure switches are not mounted on a removable access panel.

C. Label each disconnect fuse with equipment tag as indicated in the single line diagram, or as directed.

3.08 ELECTRICAL EQUIPMENT GROUNDING

A. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways or cable trays to provide a low impedance path for line-to-ground fault current and to bond all non-current carrying metal parts together. Install a ground conductor in each raceway system in addition to conductors shown. Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC 250 unless larger conductors are shown on the drawings.

B. Grounding conductors shall be identified with green insulation, except where a bare ground conductor is specified. Where green insulation is not available, on larger sizes, black insulation shall be used and suitably identified with green tape at each junction box or device enclosure.
C. Install metal raceway couplings, fittings and terminations secure and tight to insure good ground continuity. Provide insulated grounding bushing and bonding jumper where metal raceway is not directly attached to equipment metal enclosure and at concentric knock-outs.

D. Motors shall be connected to equipment ground conductors with a conduit grounding bushing and with a bolted solderless lug connection on the metal frame.

E. Conduit terminating in concentric knockouts at panelboards, cabinets and gutters shall have insulated grounding bushings and bonding jumpers installed interconnecting all such conduits and the panelboard cabinet, gutter, etc.

F. Performance: Measure ground resistance, 25 Ohms or less.

3.09 BONDING

A. Bonding shall be provided to assure electrical continuity and the capacity to conduct safely any fault current likely to be imposed.

B. Bonding shall be in accordance with NEC Article 250, Part V.

3.10 WORKMANSHIP

A. Preparation, handling, and installation shall be in accordance with manufacturer’s written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Coordinate work and cooperate with others in furnishing and placing this work. Work to reviewed shop drawings for work done by others and to field measurements as necessary to properly fit the work.

B. Conform to the National Electrical Contractor’s Association “Standard of Installation” for general installation practice.

3.11 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

END OF SECTION
SECTION 16272

HIGH EFFICIENCY K-7 TRANSFORMERS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Copper-wound transformers exceeding US Department of Energy 2016 mandated minimum efficiency. These transformers shall be UL listed to feed a K-7 electronic equipment load profile and be optimized to minimize operating cost under light loading.

B. Compliance with full specification is required

C. Basic compliance with NEMA TP1/EPACT2005, NEMA Premium, CEE Tier 1, or CSL3 is not sufficient to meet this specification due to the following:
   a. Efficiencies must exceed the US DOE 2016 minimum requirement
   b. No load losses must comply with those defined in this specification
   c. Efficiency at low load and under nonlinear K-7 load must meet the minimum requirements of this specification
   d. K-7 listing per UL 1561 is required
   e. Comprehensive testing under linear and nonlinear loading is required to verify specified performance
   f. Performance submittals are required

1.2 REFERENCES


E. ANSI/NEMA ST 20 - Dry Type Transformers for General Applications.

F. NEMA Premium Efficiency Transformers Program

G. Consortium for Energy Efficiency (CEE): Specification for Low-Voltage, Dry-Type Distribution Transformers


J. Metering Standards:
   a. Computational algorithms per IEEE Std 1459-2000
   b. UL 916, UL 61010C-1 CAT III

K. IEEE C57.110-1998 – IEEE Recommended Practice for establishing transformer capability when feeding nonsinusoidal load currents

L. IEEE Std C57.12.91-1995 Standard Test Code for Dry-Type Transformers
M. IEEE-1100 – Recommended Practice for Powering and Grounding Sensitive Electronic Equipment


R. ISO 17025 – International Standards Organization - General requirements for the competence of testing and calibration laboratories

1.3 SUBMITTALS

Submit product data including the following:

A. Test Reports per US DOE 10 CFR Part 431, NEMA TP2, of previously manufactured units – representative of the kVA range on the project, tested in ISO 17025 Certified Efficiency Test Lab, signed by test engineer, documenting history of production capability to comply with performance requirements of this specification.

B. Test Reports per factory ISO Nonlinear Load Test Program, signed by factory test engineer of previously manufactured units – representative of the kVA range on the project, tested in ISO 17025 Certified Efficiency Test Lab, documenting history of production capability to comply with performance requirement of this specification.

C. ISO 17025 Efficiency Test Lab Certificate where testing is performed.

D. Where one or more of the integrated transformer meter options is selected for this project, provide associated documentation.

E. Insulation system impregnant data sheet as published by supplier.

F. Construction details including enclosure dimensions, kVA rating, primary & secondary nominal voltages, voltage taps, BIL, unit weight

G. Basic Performance characteristics including insulation class, temperature rise, core and coil materials, impedances & audible noise level, unit weight

H. Documentation of UL listing of 2” clearance from ventilated surfaces

I. Inrush Current (typical 3 cycle recovery)

J. Short Circuit Current data: Primary & Secondary

K. Efficiency, Loss & Heat output Data

L. No load and full load losses per NEMA ST20

M. Linear load data @ 1/6 load

N. Linear load data @ 1/4, 1/2, 3/4 & full load

O. Linear Load efficiency @ 35% loading tested per NEMA TP-2.

P. Efficiency under K7 load profile at 16.7%, 25%, 50%, 75%, 100% of nameplate rating.

Q. Factory ISO 9001 procedure describing nonlinear load test program
a. Meter and CT details including model, accuracy, serial numbers and calibration information.

R. 25 year Product Warranty Certificate
S. Copy of ISO 14001:2004 Certification
T. Copy of ISO 9001:2008 Certification
U. Documentation that materials used for shipment packaging meet the environmental requirements of this specification.
V. For LEED projects, provide the following additional submittal information:
   a. Optimize Energy Performance: Provide baseline and proposed energy performance as defined in LEED-Submittal Template for this credit
   b. Enhanced Commissioning: Provide installation and operations manual required by this credit for the Commissioning Agent

1.4 NONLINEAR LOAD TEST PROGRAM

A. Nonlinear Load Testing shall be carried out by an ISO 17025 Certified Efficiency Test Lab, and follow a defined protocol, independently audited within the ISO system.
B. Efficiency shall be determined purely by measurements following IEEE Std C57.12.91-1995 Standard Test Code for Dry-Type Transformers. Other methods are not acceptable.
C. The nonlinear load bank shall consist of phase-neutral equipment with a K-7 profile, representative of a mix of typical office receptacle loads.
D. Meters and CTs shall both be revenue class accurate and carry current calibration certificates. CTs shall be operated within their approved accuracy loading range. Dual meters shall gather simultaneous primary and secondary energy and harmonic data. Meter and CT details including model, accuracy, serial numbers and calibration information.
E. Efficiency: Measurements shall be taken at multiple load levels and plotted to show compliance with specification and correlation to the designed efficiency curve.
F. Harmonic data including current and Voltage THD at the different load levels shall be included with the test report.

1.5 PACKAGING FOR SHIPMENT

A. Transformers shall be packaged for shipment using materials that will have the least environmental impact:
   1. Transformer Wrapping
      a. Transformers shall be wrapped for shipment in a film coating that is 100% compostable and biodegradable.
   2. Transformer Shipping Base
      a. Transformers shall be shipped on a base that uses at least 50% less wood than traditional pallets.
      b. Wood used in the shipping base shall be Forestry Stewardship Council (FSC) certified as having been sustainably harvested.
   3. Shall minimize or eliminate use of materials that are not commonly recycled at the destination.
4. Shall minimize labor, risk of injury and equipment damage, while handling from initial transportation through to final placement of the transformer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store and protect products
B. Store in a warm, dry location with uniform temperature. Cover ventilation openings to keep out dust, water and other foreign material.
C. Handle transformers using lifting eyes and/or brackets provided for that purpose. Protect against unfavorable external environment such as rain and snow, during handling.

1.7 WARRANTY

A. Transformer shall carry a 25-year pro-rated warranty, which shall be standard for the product line.
B. Manufacturer warranty shall remain in effect through a qualified seismic event.

1.8 COMMERCIAL PRODUCT

A. Transformer shall be a standard item in the manufacturer’s catalog.

1.9 FACTORY PRODUCT PERFORMANCE VALIDATION

A. At time of order, the customer may request that the project engineer or other designated customer representative witness the performance testing of one or more of the transformers on the project at the manufacturer’s facility, along with a demonstration of integrated metering option if specified.

1.10 ON-SITE PERFORMANCE VALIDATION

A. To insure that the products shipped to the job site meet this specification, provide on-site revenue class accurate efficiency and harmonic measurements of transformers once installed and operating at customer’s site. Data shall be collected from primary and secondary sides of the transformer simultaneously on a synchronized cycle by cycle basis. The use of two discrete meters that are not synchronized is not acceptable. Sampling shall be of 10% of transformers on the project once installed and operating, as selected by customer. Transformers that are supplied on the project will be tested for conformance with these performance values. Transformers not meeting the specified performance values shall be removed and replaced.

1.11 INTERNATIONAL STANDARDS ORGANIZATION REGISTRATION

A. Registration of the manufacturer to current versions of the following ISO standards is required.
   b. ISO 14001:2004 – Environmental Management System

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS/PRODUCT
A. Basis of Design: E-Saver 2016 by Powersmiths International Corp., Or Approved Equal
   Contact: Peter Ouellette petero@powersmiths.com (415)710-9562

B. Manufacturers wishing to have products evaluated for acceptability and conformance with
   the performance requirements of this specification, shall provide detailed compliance and/or
   exception statements, along with the documentation required in the submittal section, including
   test documentation, signed by an engineer, that confirms that the transformer(s) meets the
   specified performance.

C. Failure to provide the required documentation no less than 7 days prior to the bid date will
   disqualify products from consideration for this project.

2.2 TRANSFORMER SPECIFICATION

A. Compatibility: This product must facilitate the ability of the electrical system to supply a
   sinusoidal voltage in order to improve the long-term compatibility of the electrical system
   with all types of linear and nonlinear connected loads today and in the future. All national
   and international standards on harmonics and power quality set limits on levels of voltage
   distortion to maintain compatibility.

B. Copper-wound, 3-phase, common core, ventilated, dry-type, isolation transformer built to
   UL1561, NEMA ST20 and other relevant NEMA, UL and IEEE standards; 200% rated
   neutral; 60Hz rated; Transformers 750 kVA and less, 600 volt primary and less, shall be UL
   Listed and CSA Approved. All terminals, including those for changing taps, must be readily
   accessible by removing a front cover plate. Windings shall be continuous with terminations
   brazed or welded. 10kV BIL.

C. Seismic Qualification: been seismically qualified in accordance with: International Building
   2005 Edition to OSHPD CAN 2-1708A.5, Rev. , ICC-ES AC 156, Effective 01/01/2007,
   OSHPD approved: OSP-0110-10
   a. Manufacturer warranty shall remain in effect through a qualified seismic event
   b. Unit shall remain operational and shall not suffer electric or mechanical damage within the
      limits of a qualified seismic event
   c. Certification Level: Short period spectral acceleration: SDS= 1.5 g, Seismic importance
      factor: Ip= 1.5, Installation height: z/h= 1.0, Installation restrictions: None - Valid for
      below grade, at grade and roof installations in floor mounted configuration
   d. [OPTIONAL SEISMIC SEVERE LEVEL] Same as above but Short period spectral
      acceleration: SDS= 2.28 g, includes seismic bracing option.

D. Insulation System:
   a. Shall be NOMEX-based with an Epoxy Co-polymer impregnant for lowest environmental
      impact, long term reliability and long life expectancy
   b. Class: 220 degrees C
   c. Impregnant Properties for low emissions during manufacturing, highest reliability and life
      expectancy
   d. Epoxy co-polymer
   e. VOC: less than 1.65 lbs/gal (low emissions during manufacturing)
f. Water absorption (24hrs @25C): less than 0.05% (superior insulation, longer life)
g. Chemical Resistance: Must have documented excellent performance rating by supplier
h. Dielectric Strength: minimum of 3200 volts/mil dry (for superior stress, overvoltage tolerance)
i. Dissipation Factor: max. 0.02 @25C to reduce aging of insulation, extending useful life

E. Operating Temperature Rise: 115 degree C in a 40 degree C maximum ambient

F. Noise levels:
a. 3 dB quieter than NEMA ST-20
b. Every unit to meet this noise level. Production Test every unit. Data to be available upon request.

G. UL Listed & Labeled K-Rating: K-7 or higher

H. Enclosure type: Indoor Ventilated NEMA 1, drip-proof [or select other: sprinklerproof, outdoor padmount, secure, outdoor public, totally enclosed, stainless steel]

I. Rear Clearance: UL Listed for 2” clearance from the wall rather than standard 6”. This capability shall be explicitly described on the nameplate of each unit.

J. Exceed minimum efficiency requirements of US Department of Energy, 10 CFR Part 431, April 18, 2013, Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule which takes effect January 1, 2016, and comply with the table of Maximum No Load Losses, efficiency requirements at 1/6 load, efficiency at 35% load per 10 CFR Part 431, and efficiency at 25% load under a K-7 load profile.

<table>
<thead>
<tr>
<th>kVA</th>
<th>No load losses (Watts)</th>
<th>Efficiency @ 1/6 load (%)</th>
<th>Efficiency @ 35% load (%)</th>
<th>Efficiency at 25% load under K-7 nonlinear load</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>47</td>
<td>97.85%</td>
<td>98.28</td>
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</tr>
<tr>
<td>20</td>
<td>60</td>
<td>98.05%</td>
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<td>45</td>
<td>97</td>
<td>98.40%</td>
<td>98.66</td>
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<tr>
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<td>112</td>
<td>98.45%</td>
<td>98.67</td>
<td>98.42%</td>
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<tr>
<td>63</td>
<td>120</td>
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<td>98.75</td>
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<td>135</td>
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<td>98.82</td>
<td>98.60%</td>
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<td>98.94</td>
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<td>235</td>
<td>98.80%</td>
<td>98.99</td>
<td>98.80%</td>
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<tr>
<td>175</td>
<td>270</td>
<td>98.82%</td>
<td>99.02</td>
<td>98.82%</td>
</tr>
</tbody>
</table>
K. Voltage Taps: For transformers 15kVA-750kVA, provide two 2-1/2% full capacity taps above and four 2-1/2% taps below nominal primary voltage.

L. Impedance: Between 3.0% and 6.0% unless otherwise noted.

M. Maximum Footprint for 115 degree C rise model in a NEMA 1 enclosure:
   a. 18" Wide x 17" Deep x 27" High for 15kVA.
   b. 26" Wide x 18" Deep x 30" High for 20, 30, 45kVA
   c. 33" Wide x 22" Deep x 40" High for 50, 63, 75, 100, 112.5kVA
   d. 38" Wide x 27" Deep x 48" High for 125, 150, 175, 200kVA
   e. 38" Wide x 32" Deep x 52" High for 225, 250, 300kVA
   f. 52" Wide x 38" Deep x 61" High for 400, 450, 500kVA
   g. 64" Wide x 47" Deep x 67" High for 600, 750kVA
   h. 64" Wide x 53" Deep x 67" High for 850, 1000kVA

N. TRANSFORMER OPTIONS TO BE SUPPLIED
   a. Lockable Hinged Doors
      i. Provide lockable hinged doors on the transformer to facilitate access and reduce arc flash risk.

PART 3 EXECUTION
3.1 INSTALLATION
   B. Follow all national, state and local codes with respect to transformer installation.
   C. Where sound level may be of concern, utilize the services of a recognized and established Acoustical Consultant to provide the proper installation environment to minimize noise and
vibration.
D. Check for damage and loose connections.
E. Set the transformer plumb and level.
F. Mount transformer on vibration isolation pads suitable for isolating the transformer.
G. Provide Seismic restraints where required.
H. Coordinate all work in this Section with that in other sections.
I. Verify all dimensions in the field.
J. Upon completion of the installation, an infrared scan shall be provided for all bolted connections. Correct any deficiencies. Repeat thermal scan 3 months after installation and prepare a report for the customer.
K. Adjust transformer secondary voltages to provide the required voltage at the loads.
L. PERFORMANCE VALIDATION: To insure that the products shipped to the job site meet this specification, provide on-site revenue class accurate efficiency and harmonic measurements of transformers once installed and operating at customer’s site. Data shall be collected from primary and secondary sides of the transformer simultaneously on a synchronized cycle by cycle basis. The use of two discrete meters that are not synchronized is not acceptable. Sampling shall be of 10% of transformers on the project once installed and operating, as selected by customer. Submit a detailed report to the project engineer.
M. Where integrated meter option has been specified to be connected to an external network, contractor to provide the required connection and commissioning to customer’s specified system.
N. Identify non-compliant products to thineer and replace at no cost to the customer.

END OF SECTION
SECTION 16443
PANELBOARDS

PART 1  GENERAL

1.01 SECTION INCLUDES

A. Power distribution panelboards.
B. Lighting and appliance panelboards.
C. Overcurrent protective devices for panelboards.

1.02 REFERENCE STANDARDS

A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Federal Specification; Revision E, 2013.
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
C. NECA 407 - Standard for Installing and Maintaining Panelboards; National Electrical Contractors Association; 2009.
D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
E. NEMA PB 1 - Panelboards; National Electrical Manufacturers Association; 2011.
F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; National Electrical Manufacturers Association; 2013.
H. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
K. UL 67 - Panelboards; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Division 1 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
C. Manufacturer’s Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
D. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

1.04 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.
1.05 MAINTENANCE MATERIALS
   A. See Division 1 - Product Requirements, for additional provisions.
   B. Furnish two of each panelboard key.

PART 2 PRODUCTS

2.01 ALL PANELBOARDS
   A. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose indicated.
   B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
      1. Altitude: Less than 6,600 feet.
      2. Ambient Temperature:
         a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.
   C. Short Circuit Current Rating:
   D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
   E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
   F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
      1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
   G. Conductor Terminations: Suitable for use with the conductors to be installed.
   H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
      1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
         2. Boxes: Galvanized steel unless otherwise indicated.
         3. Fronts:
            a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
            b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
      4. Lockable Doors: All locks keyed alike unless otherwise indicated.
   I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.02 POWER DISTRIBUTION PANELBOARDS
   A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
   B. Conductor Terminations:
      1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
      2. Main and Neutral Lug Type: Mechanical.
   C. Bussing:
      1. Phase and Neutral Bus Material: Copper.
      2. Ground Bus Material: Copper.
   D. Circuit Breakers:
      1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
   E. Enclosures:
      1. Provide surface-mounted enclosures unless otherwise indicated.
   F. Manufacturers: IEM or equal.
1. Substitutions: See Division 1 - Product Requirements.

G. Description: NEMA PB 1, circuit breaker type.

H. Panelboard Bus: Copper, ratings as indicated. Provide full size copper ground and neutral bus in each panelboard.

I. Copper bus bars shall be of sufficient size to provide a current density of not more than 1000 amperes per square inch of cross section, and not more than 200 amperes per square inch at bolted connections.

J. Minimum integrated short circuit rating: As indicated.
   1. 240 Volt Panelboards: Refer to single line diagram.
   2. 480 Volt Panelboards: Refer to single line diagram.

K. Molded Case Circuit Breakers: NEMA AB 1, bolt on type circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.

L. Circuit Breaker Accessories: Trip units and auxiliary switches as indicated.

M. Provide and install all mounting hardware in spaces for future circuit breaker.

N. Each circuit shall be permanently numbered to agree with the panel schedule, using plastic or metal buttons mounted adjacent to the breaker and secured by rivets or grommets with an engraved or depressed number. Adhesive numbering tape, painted numbers, or use of more than one number per breaker is not acceptable.

O. Ratings: (Refer to drawings)
   1. Fully rated.

P. Enclosure: Type 1 for indoor location; Type 3R for outdoor location.

Q. A sturdy metal frame, with a clear plastic cover shall be welded to the inside of the panel door.

R. Door-in-Door construction: The front trim shall have full-length hinged outer door designed to expose the wiring raceways and breakers when open. Another, inner hinged door shall expose breakers only, when open, making this a door-in-door construction. Both doors shall open to the right. When the outer door is open, all gutter space shall be exposed.

S. Cabinet Front: Surface type, fastened with concealed trim clamps, hinged door with flush lock, door-in-door construction, metal directory frame, finished in manufacturer’s standard gray enamel.

2.03 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
   1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
   2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
   2. Phase and Neutral Bus Material: Copper.

D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

E. Enclosures:
   1. Provide surface-mounted or flush-mounted enclosures as indicated.
   2. Provide clear plastic circuit directory holder mounted on inside of door.

F. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

G. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard; provide insulated ground bus where scheduled.
H. Minimum Integrated Short Circuit Rating: As indicated.

I. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles.
   1. Type SWD for lighting circuits.
   2. Type HACR for air conditioning equipment circuits.
   3. Class A ground fault interrupter circuit breakers where scheduled.
   4. Do not use tandem circuit breakers.

J. Enclosure: Type 1 for indoor location; Type 3R for outdoor location.

K. Door-in-Door construction: The front trim shall have full-length hinged outer door designed to expose the wiring raceways and breakers when open. Another, inner hinged door shall expose breakers only, when open, making this a door-in-door construction. Both doors shall open to the right. When the outer door is open, all gutter space shall be exposed.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
   1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.

   2. Interrupting Capacity:
      a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
      b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.

   3. Conductor Terminations:
      a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

   4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

   5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer’s instructions.

B. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1 (general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer’s instructions and NFPA 70.

D. Provide required supports in accordance with Section 16070.

E. Install panelboards plumb.

F. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.

G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.

H. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.

I. Provide grounding and bonding in accordance with Section 16060.

J. Install all field-installed branch devices, components, and accessories.

K. Install panelboards in accordance with NEMA PB 1.1 and the NECA Standard of Installation.

L. Install panelboards plumb. Install recessed panelboards flush with wall finishes.
M. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.

N. Provide filler plates to cover unused spaces in panelboards.

O. Provide computer-generated circuit directory for each lighting and appliance panelboard, and each power distribution panelboard provided with a door, clearly and specifically indicating the loads served. Identify spares and spaces.

P. Provide typed or neatly handwritten circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

Q. Provide engraved plastic nameplate.

R. Provide arc flash warning labels in accordance with NFPA 70.

S. Provide spare conduits out of each recessed panelboard to an accessible location above ceiling. Identify each as SPARE.

   1. Minimum spare conduits: 5 empty 1 inch.

T. Ground and bond panelboard enclosure according to NEC.

3.02 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01400.

B. Perform field inspection and testing in accordance with Division 1.

C. Inspect and test in accordance with NETA STD ATS, except Section 4.

D. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA STD ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 175 amperes. Tests listed as optional are not required.

E. Correct deficiencies and replace damaged or defective panelboards or associated components.

F. Perform inspections and tests listed in NETA STD ATS, Section 7.5 for switches, Section 7.6 for circuit breakers.

3.03 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer’s recommended torque settings.

B. Adjust alignment of panelboard fronts.

END OF SECTION
SECTION 16950
ELECTRICAL ACCEPTANCE TESTING

PART 1 - GENERAL

1.01 OVERVIEW
A. The purpose of these specifications is to assure that all tested electrical equipment and systems are operational and within applicable standards and manufacturer’s tolerances and that the equipment and systems are installed in accordance with design specifications.

B. The work specified in these specifications may involve hazardous voltages, materials, operations, and equipment. These specifications do not purport to address all of the safety problems associated with their use. It is the responsibility of the independent testing agency to review all applicable regulatory limitations prior to the use of these specifications.

C. Perform the visual inspections, manual operations and tests on systems and equipment as described in Part 3, “Execution”.

D. Tests shall be performed and documented by an independent testing agency.

E. Perform these tests in addition to other electrical tests delineated in other Sections.

1.02 REFERENCES
A. All inspections and field tests shall be in accordance with the latest edition of the following codes, standards, and specifications except as provided otherwise herein.
   1. American National Standards Institute - ANSI
   3. Institute of Electrical and Electronic Engineers - IEEE
   4. Insulated Cable Engineers Association - ICEA
   5. InterNational Electrical Testing Association - NETA
   6. National Electrical Manufacturer’s Association - NEMA
   7. National Fire Protection Association - NFPA
   8. Occupational Safety and Health Administration - OSHA
   9. State and local codes and ordinances
   10. Underwriters Laboratories, Inc. - UL

1.03 SUBMITTAL
A. The testing organization shall submit appropriate documentation to demonstrate that it satisfactorily complies with the following. An organization having a “Full Membership” classification issued by the InterNational Electrical Testing Association meets this criteria.
   1. The testing organization shall be an independent, third party, testing organization which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing organization.
   2. The testing organization shall be regularly engaged in the testing of electrical equipment devices, installations, and systems.

B. The testing organization shall utilize technicians who are regularly employed for testing services.

C. Each on-site crew leader shall hold a current registered certification in electrical testing applicable to each type of apparatus to be inspected or tested. The certification in electrical testing shall be issued by an independent, nationally-recognized, technician certification agency. The following entities shall qualify as independent, nationally-recognized, technician certification agencies:
   1. InterNational Electrical Testing Association (NETA)
   2. Accepted certifications:
   3. Certified Technician/Level III
   4. Certified Senior Technician/Level IV

1.04 TEST REPORTS
A. Provide written test reports, signed and dated, for all tests prior to acceptance of the tested equipment by the Owner. Test reports on megger, dielectric absorption and high potential tests shall include the ambient temperature and relative humidity existing at the time of the tests.

PART 2 - PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 VISUAL INSPECTIONS

A. Prior to any testing, perform visual inspections to verify the following:
   1. The equipment is completely and properly installed
   2. The equipment is free from damage and defects
   3. Shipping blocks and restraints have been removed
   4. Electrical terminations have been properly tightened
   5. The equipment has been properly aligned
   6. The equipment has been properly lubricated
   7. The ventilation louvers are open and unobstructed
   8. The equipment is ready to be tested

3.02 MANUAL OPERATION

A. Prior to any testing, mechanical devices shall be exercised or rotated manually to verify that they operate properly and freely.

3.03 POWER CABLE TESTS

A. Perform a continuity check and a 1,000 volt DC megger test on 600 volt power cables No. 4 AWG and larger.
   1. The megger test shall be performed between each pair of conductors and from each conductor to ground.
   2. The megger test shall be performed for 15 seconds or until the insulation resistance value stabilizes.
   3. The insulation resistance between conductors and from each conductor to ground shall be 100 megohms minimum in one minute or less. In addition, the lowest insulation resistance value shall not differ from the highest value by more than 20 percent.

3.04 CONTROL CABLE TESTS

A. Perform a continuity check on control and instrumentation wiring.

3.05 SECONDARY SWITCHGEAR AND SWITCHBOARD TESTS

A. Perform a continuity check and 1,000 volt DC megger test on buses, and on main and feeder breakers.
B. Perform a primary current injection test and a 'Ducter' (contact resistance) test on main breakers.
C. Perform a 1,000-volt DC megger test and a turns-ratio test on CT's and PT's.
D. Calibrate the metering.

3.06 SERVICE, DISTRIBUTION AND MOTOR CONTROL EQUIPMENT TESTS

A. Perform a 1,000-volt megger test on buses, motor starters and disconnect switches. This test may be combined with the feeder cable megger test by testing the devices and terminated cables together.
B. Perform a continuity check on motor control circuits and control panel internal wiring.
C. Perform an operational test on the controls.
D. Perform a continuity check and a 1,000-volt DC megger test on 3 phase distribution and isolation transformers.

3.07 MOTOR TESTS

A. Perform a 1,000-volt megger test on 460 volt, 3 phase motors, and a 500 volt megger test on 200 volt, 3
phase motors.

B. “Bump” motors to verify proper direction of rotation.

C. Run motors and check for vibration.

3.08 GROUNDING TESTS

A. Measure the resistance to ground of each ground rod before connection to the other ground rods. The resistance shall not exceed 10 ohms.

B. Measure the resistance to ground of the total ground system with all connections completed. The resistance shall not exceed 2 ohms for primary services or 5 ohms for secondary services.

C. Tests of the resistance to ground shall be made using either the three point method or the fall-of-potential method.

D. Perform a continuity check from equipment ground bus bars and ground lugs to the ground system.

END OF SECTION