

CITY OF ANN ARBOR

INVITATION TO BID



OLSON PARK IRRIGATION SYSTEM IMPROVEMENTS

ITB #4359

Due Date: Monday, February 9, 2015 at 10:00 AM

Public Services Area
Field Operations Unit

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48107

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CIVIL

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ADVERTISEMENT
FOR THE
OLSON PARK IRRIGATION SYSTEM IMPROVEMENTS
CITY OF ANN ARBOR

ITB NO. 4359

Sealed Bids will be received by the City of Ann Arbor Procurement Unit, Fifth (5th) Floor, 301 East Huron Street, Guy Larcom City Hall, on or before Monday, February 9, 2015 at 10:00 AM (Local Time) for the construction of the Olson Park Irrigation System Improvements. Bids will be publically opened and read aloud at this time.

A pre-bid conference will be held Monday, January 26, 2015 at 10:00 AM at the City of Ann Arbor Wheeler Service Center, Conference Room B, located at 4251 Stone School Road, Ann Arbor, MI 48108. Attendance is highly recommended.

Work to be done includes: demolition and removal of existing pump station and intake line, in-place abandonment of a section of existing supply line, installation of a non-potable, submersible well pump and motor in an existing well casing, and underground supply line, connecting it to the existing irrigation system network, with associated appurtenances, connect well pump, with a new starter, to existing electrical supply and irrigation control panel, with site restoration, system testing, and all related work.

Bid documents, plans, specifications, and addenda shall be downloaded by Bidders at either of the following websites: Michigan Inter-governmental Trade Network (MITN) www.mitn.info or City of Ann Arbor Purchasing website: www.A2gov.org. It is the Bidder's responsibility to verify they have obtained all information before submitting a bid.

Each Bid shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total of the bid price. A Bid, once submitted, becomes the property of the City. In the sole discretion of the City, the City reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

The successful Bidder will be required to furnish satisfactory performance and labor and material bonds in the amount of 100% of the bid price and satisfactory insurance coverage.

Precondition for entering into a Contract with the City of Ann Arbor is compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor. The successful Bidder may also be required to comply with Chapter 23 of Title I of the Code of the City of Ann Arbor. Further information is outlined in the Contract Documents. All bidders are required to complete and submit the City of Ann Arbor Conflict of Interest Disclosure Form with the bid.

After the time of opening, no Bid may be withdrawn for a period of 90 days. The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Technical questions regarding this project may be submitted in writing to the Consulting Engineer, Stantec Consulting, Attn: Gary Sacharski, PE via email at gary.sacharski@stantec.com. Questions by telephone call are prohibited. Technical questions directed to the Owner are prohibited. The deadline for questions shall be seven (7) calendar days before bids; questions are due on or before Monday, February 2, 2015 at 5:00 PM. Questions will not be received after this date.

Any further information on bid documents may be obtained from the Procurement Office, (734) 794-6500.

CITY OF ANN ARBOR PROCUREMENT UNIT

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on Monday, January 26, 2015 at 10:00 AM at the City of Ann Arbor Wheeler Service Center, Conference Room B, located at 4251 Stone School Road, Ann Arbor, MI 48108. Olson Park is open to the public year round and bidders are welcome and encouraged to visit the project site prior to the pre-bid conference. A site visit is not scheduled as part of the pre-bid conference.

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The City shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Service Area/Unit in cases where access to the site must be arranged by the City.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on Page Numbers ITB 1-3 and on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarification on ITB Specifications

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be submitted by Monday, February 2, 2015 at 5:00 PM and should be addressed as follows:

Specification/Scope of Work questions emailed to gary.sacharski@stantec.com

Bid Process and HR Compliance questions emailed to mberryman@a2gov.org.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before Monday, February 9, 2015 at 10:00 AM Local Time. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and two (2) additional Bid copies in a sealed envelope clearly marked: **ITB No. 4359 – Olson Park Irrigation System Improvements**.

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit, 5th Floor
301 East Huron Street
Ann Arbor, MI 48104

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

Hand delivered Bids will be date/time stamped/signed by the Procurement Unit at the address above in order to be considered. Normal business hours are 9:00 a.m. to 3:00 p.m. Monday through Friday, excluding Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items

listed in the bid forms.

Qualifications

The City will evaluate Proposals based on cost as well as experience. Contractors that have not included the required list of similar work experience and associated references in Section 5 of the Bid Form may have their bid rejected.

As part of the proposal, Bidders shall provide documentation that the Bidder's company has at least 10 years of experience performing construction on similar projects. Bidders shall also submit the attached form, "Section 5 – References," which identifies a minimum of three projects completed in the past five years on similar projects, including construction cost, contractor and subcontractor information, that demonstrate similar work experience and complexity to that included within these contract documents.

All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor shall accept no alternates to the bid documents made by the Bidder unless those alternatives are set forth in the "Alternate" section of Bid form.

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of 90 days specified in the Advertisement.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

Section 5, beginning at page GC-3, outlines the requirements for fair employment practices under City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder should complete and return with its bid completed copies of the Human Rights Division Contract Compliance Forms or an acceptable equivalent. In the event Human Rights forms are not submitted with bid, the Bidder will have 24 hours to provide once requested by the City.

Wage Requirements

Section 4, beginning at page GC-2, outlines the requirements for payment of prevailing wages or of a “living wage” to employees providing service to the City under this contract. The successful bidder must comply with all applicable requirements and provide documentary proof of compliance when requested.

Conflict of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form (a copy of which is attached to this ITB). A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City.

Major Subcontractors

The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act". The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The Bidder must clearly state the reasons for the protest. If a Bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the Bidder to the Purchasing Agent. The Purchasing Agent will provide the Bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Bidders shall submit with their Bid, responses to the following. Responses shall be prepared to numerically match the itemized list as follows:

1. Bidder shall submit a formal/written safety program.
2. Bidder shall describe the job site safety program for this project and specific safety policies in which employees must be in compliance.
3. Bidder shall provide the organizations most current OSHA 300 logs or reasons why this organization is exempt from OSHA 300 reporting.
4. Bidder shall provide the organization's most recent OSHA recordable incident rate, DART rate, and lost workday rate.
5. If applicable, bidder shall provide the organization's excavation and trench safety program. Within this program, please identify the organization's Qualified Person for excavation and trench safety that will be on-site daily.
6. Bidder shall identify the project safety team, their qualifications, duties and city(s) of residence.
7. Bidder shall identify any major accidents or incidents that resulted in major injury or deaths that have occurred on a project site controlled by the firm, or any subcontractor(s) (at any contractual level), that had any major injury or death on a project site? If so, describe how the organization has revised the program.

CONTRACT COMPLIANCE FORMS

City of Ann Arbor Procurement Office INSTRUCTIONS FOR CONTRACTORS

For Completing CONTRACT COMPLIANCE FORM

City Policy

The “non discrimination in contracts” provision of the City Code, (Chapter 112, Section 9:161) requires contractors/Bidders/grantees doing business with the City not to discriminate on the basis of actual or perceived race, color, religion, national origin, sex, age, condition of pregnancy, marital status, physical or mental limitations, source of income, family responsibilities, educational association, sexual orientation, gender identity or HIV status against any of their employees, any City employee working with them, or any applicant for employment. It also requires that the contractors/Bidders/grantees include a similar provision in all subcontracts that they execute for City work or programs.

This Ordinance further requires that each prospective contractor/Bidder submit employment data to the City showing current total employee breakdown by occupation, race and gender. This allows the Human Rights Office to determine whether or not the contractor/Bidder has a workforce that is reflective of the availability of women and under-represented minorities within the contractor’s labor recruitment area (the area where they can reasonably be expected to recruit employees). ***This data is provided to the City on the Human Rights Contract Compliance Forms (attached).***

To complete the form:

1) **If a company has more than one location, then that company must complete 2 versions of the form.**

- **Form #1** should contain the employment data for the **entire corporation.**
- **Form #2** should contain the employment data for those employees:
 - who will be working on-site;
 - in the office responsible for completing the contract; or,
 - in the case of non-profit grantees, those employees working on the project funded by the City grant(s).

2) If the company has only one location, fill out Form #1 only.

3) Complete all data in the upper section of the form including the name of the person who completes the form and the name of the company/organization’s president.

4) Complete the Employment Data in the remainder of the form. Please be sure to complete all columns including the Total Columns on the far right side of the form, and the Total row and Previous Year Total row at the bottom of the form.

5) Return the completed form(s) to your contact in the City Department for whom you will be conducting the work.

For assistance in completing the form, contact:

Procurement Office of the City of Ann Arbor
(734) 794-6500

If a contractor is determined to be out of compliance, the Procurement Office will work with them to assist them in coming into compliance.

CITY OF ANN ARBOR HUMAN RIGHTS OFFICE
CONTRACT COMPLIANCE FORM
Entire Organization (Totals for All Locations where applicable)

Form #1

Name of Company/Organization _____ Date Form Completed _____

Name and Title of Person Completing this Form _____ Name of President _____

Address _____ County _____ Phone # _____
 (Street address) (City) (State) (Zip) (Area Code)

Fax# _____ Email Address _____
 (Area Code)

EMPLOYMENT DATA

Job Categories	Number of Employees (Report employees in only one category)												TOTAL COLUMNS A-L
	Male						Female						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic Latino	or Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native	
A	B	C	D	E	F	G	H	I	J	K	L		
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

**CITY OF ANN ARBOR HUMAN RIGHTS OFFICE
CONTRACT COMPLIANCE FORM**

Form #2

Local Office (Only those employees that will do local or on-site work, if applicable)

Name of Company/Organization _____ Date Form Completed _____

Name and Title of Person Completing this Form _____ Name of President _____

Address _____ County _____ Phone # _____
 (Street address) (City) (State) (Zip) (Area Code)

Fax# _____ Email Address _____
 (Area Code)

EMPLOYMENT DATA

Job Categories	Number of Employees (Report employees in only one category)												TOTAL COLUMNS A-L	
	Male						Female							
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native		
	A	B	C	D	E	F	G	H	I	J	K	L		
Exec/Sr. Level Officials														
Supervisors														
Professionals														
Technicians														
Sales														
Admin. Support														
Craftspeople														
Operatives														
Service Workers														
Laborers/Helper														
Apprentices														
Other														
TOTAL														
PREVIOUS YEAR TOTAL														

**ATTACHMENT C
CITY OF ANN ARBOR
LIVING WAGE ORDINANCE
DECLARATION OF COMPLIANCE**

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that employers providing services to the City or recipients of grants for financial assistance (in amounts greater than \$10,000 in a twelve-month period of time) pay their employees who are working on the City project or grant, a minimum level of compensation known as the **Living Wage**. This wage must be paid to the employees for the length of the contract/project.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from the Ordinance. If this exemption applies to your firm, please check below:

- _____ This **company** is exempt due to the fact that we employ or contract with fewer than 5 individuals.
- _____ This **non-profit agency** is exempt due to the fact that we employ or contract with fewer than 10 employees.

The Ordinance requires that all contractors/vendors and/or grantees agree to the following terms:

- a) To pay each of its employees performing work on any covered contract or grant with the City, no less than the living wage, which is defined as \$12.70/hour when health care is provided, or no less than \$14.18/hour for those employers that do *not* provide health care. It is understood that the Living Wage will be adjusted each year on April 30, and covered employers will be required to pay the adjusted amount thereafter. The rates stated above include any adjustment for 2014.
- b) Please check the boxes below which apply to your workforce:
- Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage without health benefits Yes _____ No _____
- OR**
- Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage with health benefits Yes _____ No _____
- c) To post a notice approved by the City regarding the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- d) To provide the City payroll records or other documentation as requested; and,
- e) To permit access to work sites to City representatives for the purposes of monitoring compliance, investigating complaints or non-compliance.

The undersigned authorized representative hereby obligates the contractor/vendor or grantee to the above stated conditions under penalty of perjury and violation of the Ordinance.

Company Name

Address, City, State, Zip

Signature of Authorized Representative

Phone (area code)

Type or Print Name and Title

Email address

Date signed

Questions about this form? Please contact:

Procurement Office City of Ann Arbor

Phone: 734/794-6500

**CITY OF ANN ARBOR
LIVING WAGE ORDINANCE**

RATE EFFECTIVE APRIL 30, 2014 - ENDING APRIL 29, 2015

\$12.70 per hour

If the employer provides health
care benefits*

\$14.18 per hour

If the employer does **NOT**
provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint Contact
Mark Berryman at 734/794-6500 or mberryman@a2gov.org**



Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

Certification: I hereby certify that to my knowledge, there is no conflict of interest involving the vendor named below:

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Vendor Name	Vendor Phone Number
Conflict of Interest Disclosure *	
Name of City of Ann Arbor employees, elected officials, or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to Employee _____ <input type="checkbox"/> Interest in vendor's company _____ <input type="checkbox"/> Other _____

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that the information provided is true and correct by my signature below:

Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative
---	------	--

PROCUREMENT USE ONLY

- Yes, named employee was involved in Bid / Proposal process.
- No, named employee was not involved in procurement process or decision.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including Advertisement, Human Rights Division Contract Compliance Forms, Conflict of Interest Disclosure Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:319 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting

requirements stated in the City Code provisions cited. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 20__.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other two.)

By signing below the authorized representative of the Bidder hereby certifies that:

The Bidder is:

- A corporation organized and doing business under the laws of the state of _____, for whom _____ bearing the office title of _____, whose signature is affixed to this proposal, is authorized to execute contracts on behalf of respondent.*

*If not incorporated in Michigan, please attach the corporation's Certificate of Authority

- A limited liability company doing business under the laws of the state of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

- A partnership organized under the laws of the state of _____ and filed with the county of _____, whose members are (attach list including street and mailing address for each.)

- An individual, whose signature with address, is affixed to this Bid.

Signature Date: _____,

(Print) Name _____ Title _____

Firm: _____

Address: _____

Contact Phone _____ Fax _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Project: Olson Park Irrigation System Improvements
ITB No.: 4359

Bidder's Name: _____

Notes:

1. All bidders shall provide a Unit Price and Total Price for all bid items specified.
2. Quantities included in the bid table represent estimated quantities for different work. The CONTRACTOR shall be compensated for the actual number of items completed using the unit prices provided.
3. The City, at its sole discretion, may elect to delete any portion of the work delineated below, with no change to the unit prices provided. Work shall be determined based upon the availability of funds.
4. Any item not provided in the following list shall be considered incidental.

Bid Items

The Bidder agrees to complete the Project and all related work, as specified and shown on the drawings, for the following unit prices.

OLSON PARK IRRIGATION SYSTEM IMPROVEMENTS					
Item No.	Item Description	Qty	Unit	Unit Price	Total Price
1.	General Conditions, Insurance, Bonds, Mobilization (max. 5% of bid).	1	LS	\$	\$
2.	Audio-Visual Site Survey	1	LS	\$	\$
3.	Demolition & Removal of Existing Pump Station, Intake Pipe.	1	LS	\$	\$
4.	Disconnect and Abandon in-place Segment of Existing Irrigation Supply Pipe	1	LS	\$	\$
5.	Soil Erosion Control	1	LS	\$	\$
6.	Install New Well Pump, Motor, Supply line, Starter, Power Supply, and Make All Required Connections	1	LS	\$	\$

7.	Demobilization and Final Restoration	1	LS	\$	\$
8.	Allowance – Misc. Repairs	1	LS	\$5,000.00	\$ 5,000.00
TOTAL BID (ITEMS 1 THROUGH 8)					\$

_____ Dollars (\$_____)
 (Amount shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.)

BID FORM

Section 2 - Material and Equipment Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
--------------------	--------------------	--------------------------

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
	Well Pump Installation	
	Electrical Work	
	Site Restoration	
	Other	

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____

BID FORM

Section 5 – References

SUBCONTRACTOR (Name: _____)

Include a minimum of three references from similar projects completed within the past five (5) years.

Refer also to Instructions to Bidders for additional requirements.

1) _____
 Project Name Cost Date Constructed

 Contact Name Phone Number

 Description

2) _____
 Project Name Cost Date Constructed

 Contact Name Phone Number

 Description

3) _____
 Project Name Cost Date Constructed

 Contact Name Phone Number

 Description

BID FORM

Section 6 – Certification for Self-Performed Work

In submitting this Bid and by signing below, the Bidder certifies that, as General Contractor, they shall self-perform 50% or greater of the work (based upon the Lump Sum Base Bid fee). For the purposes of this Contract, self-performed work shall not include administrative costs, overhead, profit, management, on-site supervision and all other construction management.

At the City's request, the bidder shall provide supporting documentation during the Bid phase and construction phase demonstrating compliance.

Signature of Authorized Representative of Bidder _____

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 20__, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 (“City”) and _____ (“Contractor”)

(An individual/partnership/corporation, include state of incorporation)

(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled “Olson Park Irrigation System Improvements” in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Human Rights Division Contract	General Conditions
Living Wage Declaration of	Standard Specifications
Compliance Forms	Detailed Specifications
(if applicable)	Plans
Bid Forms	Addenda
Contract and Exhibits	
Bonds	

ARTICLE II - Definitions

Administering Service Area/Unit means Public Services Area.

Supervising Professional or Owner means Utilities Engineer or other persons acting under the authorization of the Administrator/Manager of the Administering Service Area/Unit.

Engineer or Owner’s Representative means Consulting Professional acting under the authorization of the Supervising Professional/Owner.

Project means Olson Park Irrigation System Improvements, Bid No. ITB-4359

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.

- (B) The entire work for this Contract shall be completed within sixty (60) consecutive days. Shorter completion times for certain portions of the work may be specified in the Detailed Specifications. Liquidated damages shall also apply to these intermediate milestones based on the amounts listed in the Detailed Specifications.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$500.00 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

As an independent requirement, where the Detailed Specifications or Plans identify certain portions of the work to be completed within a shorter period of time and the Contractor fails to complete each portion within the shorter period specified for each portion, including any extension granted in writing by the Project Supervisor, the City is entitled to deduct from the monies due the Contractor, as liquidated damages and not as a penalty, the amount equal to that identified in Specifications or Plans for each portion or Phase of the work not timely completed for each calendar day of delay in completion of each portion of the work.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Liquidated damages under this section are in addition to any liquidated damages due under Section 5 of the General Conditions.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Forms for the estimated bid total of:

_____ Dollars (\$ _____)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted without the written consent of the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____
Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
Steven D. Powers, City Administrator

By _____
Craig Hupy, Public Services
Area Administrator

Approved as to form and content

Stephen K. Postema, City Attorney

PERFORMANCE BOND

- (1) _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for \$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City dated _____, 20__, for: ITB-4359; Olson Park Irrigation System Improvements _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.
- (3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:
- (a) complete the Contract in accordance with its terms and conditions; or
 - (b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.
- (4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.
- (5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 20__.

(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Name and address of agent:

Stephen K. Postema, City Attorney

LABOR AND MATERIAL BOND

- (1) _____
of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of \$ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated _____, 20__, for ITB-4359; Olson Park Irrigation System Improvements _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 20__.

(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Name and address of agent:

Stephen K. Postema, City Attorney

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section."

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23 of Title I of the Code of the City of Ann Arbor, as amended, which in part states:

1:814. Applicability.

- (1) This Chapter shall apply to any person that is a contractor/Bidder or grantee as defined in Section 1:813 that employs or contracts with five (5) or more individuals; provided, however, that this Chapter shall not apply to a non-profit contractor/Bidder or non-profit grantee unless it employs or contracts with ten (10) or more individuals.
- (2) This Chapter shall apply to any grant, contract, or subcontract or other form of financial assistance awarded to or entered into with a contractor/Bidder or grantee after the effective date of this Chapter and to the extension or renewal after the effective date of this Chapter of any grant, contract, or subcontract or other form of financial assistance with a contractor/Bidder or grantee.

1:815. Living Wages Required.

- (1) Every contractor/Bidder or grantee, as defined in Section 1:813, shall pay its covered employees a living wage as established in this Section.
 - (a) For a covered employer that provides employee health care to its employees, the living wage shall be \$12.52 an hour, or the adjusted amount hereafter established under Section 1:815(3).
 - (b) For a covered employer that does not provide health care to its employees, the living wage shall be \$13.96 a hour, or the adjusted amount hereafter established under Section 1:815(3).

- (2) In order to qualify to pay the living wage rate for covered employers providing employee health care under subsection 1:815(1)(a), a covered employer shall furnish proof of said health care coverage and payment therefor to the City Administrator or his/her designee.
- (3) The amount of the living wage established in this Section shall be adjusted upward no later than April 30, 2002, and every year thereafter by a percentage equal to the percentage increase, if any, in the federal poverty guidelines as published by the United States Department of Health and Human Services for the years 2001 and 2002. Subsequent annual adjustments shall be based upon the percentage increase, if any, in the United States Department of Health and Human Services poverty guidelines when comparing the prior calendar year's poverty guidelines to the present calendar year's guidelines. The applicable percentage amount will be converted to an amount in cents by multiplying the existing wage under Section 1.815(1)(b) by said percentage, rounding upward to the next cent, and adding this amount of cents to the existing living wage levels established under Sections 1:815(1)(a) and 1:815(1)(b). Prior to April 1 of each calendar year, the City will notify any covered employer of this adjustment by posting a written notice in a prominent place in City Hall, and, in the case of a covered employer that has provided an address of record to the City, by a written letter to each such covered employer.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of Section 209 of the Elliot-Larsen Civil Rights Act (MCL 37.2209). The Contractor further agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity. The Contractor further agrees to comply with the provisions of Section 9:161 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

9:161 NONDISCRIMINATION BY CITY CONTRACTORS

- (1) All Contractors proposing to do business with the City of Ann Arbor shall satisfy the nondiscrimination administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All Contractors shall receive approval from the Director prior to entering into a contract with the City, unless specifically exempted by administrative policy. All City Contractors shall take affirmative action to insure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon race, national origin or sex.
- (2) Each prospective contractor shall submit to the City data showing current total employment by occupational category, sex and minority group. If, after verifying this data, the Director concludes that it indicates total minority and female employment commensurate with their availability within the contractor's labor recruitment area, i.e., the area from which the contractor can reasonably be expected to recruit, said contractor shall be accepted by the Director as having fulfilled affirmative action requirements for a period of one year at which

time the Director shall conduct another review. Other Contractors shall develop an affirmative action program in conjunction with the Director. Said program shall include specific goals and timetables for the hiring and promotion of minorities and females. Said goals shall reflect the availability of minorities and females within the Contractor's labor recruitment area. In the case of construction Contractors, the Director shall use for employment verification the labor recruitment area of the Ann Arbor-Ypsilanti standard metropolitan statistical area. Construction Contractors determined to be in compliance shall be accepted by the Director as having fulfilled affirmative action requirements for a period of six (6) months at which time the Director shall conduct another review.

- (3) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.
- (4) All Contracts shall include provisions through which the Contractor agrees, in addition to any other applicable Federal or State labor laws:
 - (a) To set goals, in conference with the Human Resources Director, for each job category or division of the work force used in the completion of the City work;
 - (b) To provide periodic reports concerning the progress the Contractor has made in meeting the affirmative action goals it has agreed to;
 - (c) To permit the Director access to all books, records and accounts pertaining to its employment practices for the purpose of determining compliance with the affirmative action requirements.
- (5) The Director shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The Director shall develop procedures and regulations consistent with the administrative policy adopted by the City Administrator for notice and enforcement of non-compliance. Such procedures and regulations shall include a provision for the posting of Contractors not in compliance.
- (6) All City Contracts shall provide further that breach of the obligation not to discriminate shall be a material breach of the Contract for which the City shall be entitled, at its option, to do any or all of the following:
 - (a) To cancel, terminate, or suspend the Contract in whole or part and/or refuse to make any required periodic payments under the Contract;
 - (b) Declare the Contractor ineligible for the award of any future contracts with the City for a specified length of time;
 - (c) To recover liquidated damages of a specified sum, said sum to be that percentage of the labor expenditure for the time period involved which would have accrued to minority group members had the affirmative action not been breached;

(d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

<u>Contract Amount</u>	<u>Assessed Damages Per Day of Non-Compliance</u>
\$ 10,000 - 24,999	\$ 25.00
25,000 - 99,999	50.00
100,000 - 199,999	100.00
200,000 - 499,999	150.00
500,000 - 1,499,999	200.00
1,500,000 - 2,999,999	250.00
3,000,000 - 4,999,999	300.00
5,000,000 - and above	500.00

(e) In addition the Contractor shall be liable for any costs or expenses incurred by the City of Ann Arbor in obtaining from other sources the work and services to be rendered or performed or the goods or properties to be furnished or delivered to the City under this contract.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by

the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;

- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all

power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:
 1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit
 2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor shall be named as an additional

insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

\$1,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

\$2,000,000 Per Job General Aggregate

\$1,000,000 Personal and Advertising Injury

\$2,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.
 4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.
- B. Insurance required under Section A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.
- C. In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Service Area/Unit at least ten days prior to the expiration date.

- D. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land

and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20__, to _____, 20__, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled Olson Park Irrigation System Improvements, ITB #4359, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

SUPPLEMENTAL GENERAL CONDITIONS

General Safety Requirements

The Contractor shall be responsible for ensuring compliance with the most stringent provisions of the applicable statutes and regulations of the Michigan Occupational Safety and Health Act 154 of 1974, the Occupational Safety and Health Act of 1970, and all City of Ann Arbor safety policies. The Contractor shall supply all these requirements to any subcontractor performing work under the contract. Should charges of violation of any of the above be issued to the Contractor in the course of the work, a copy of each charge shall be immediately forwarded to the City along with a plan to correct the violation.

Upon the failure of the Contractor to comply with any of these requirements, the City's Representative shall have the authority to stop any and all operations of the Contractor affected by such failure until such failure is remedied. No part of the time lost due to any such stop orders shall be made subject to a claim or extension of time or increase in compensation.

All materials, equipment, and supplies provided to the City of Ann Arbor must comply fully with all safety requirements as set forth by the Michigan Occupational Safety and Health Act 154 of 1974 and all applicable OSHA Standards.

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Advertisement. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

A copy of the Public Services Department Standard Specifications may be purchased from the Engineering Division, (Fourth Floor, City Hall, Ann Arbor, Michigan), for \$35.00 per copy. In addition, a copy of these Standard Specifications is available for public viewing at the Engineering Division office, for review Monday through Friday between the hours of 8:30 a.m. and 4:00 p.m. Copies of the Standard Specifications can also be downloaded from the web link:

http://www.a2gov.org/government/publicservices/project_management/privatedev/pages/standardspecificationsbook.aspx.

DETAILED SPECIFICATIONS

SECTION 01000

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work under this Contract consists of abandonment and removal of the existing Olson Park irrigation pump station and part of the existing supply line, the installation of a new submersible well pump, supply line, power supply conductors, conduits, motor starter and panel, making all required connections, and all related work.
- B. It is the intent of these Contract Documents that the CONTRACTOR provide a complete and finished product. Items shown on the Drawings and Specifications not specifically connected to a heading in the Bid Form are to be considered as incidental to the work.

1.2 EXISTING FACILITIES ACCESS

- A. The CONTRACTOR shall be responsible for maintaining safe access for the public to the existing park areas beyond the work zones.
- B. Access to the parks shall not be temporarily disrupted without coordination with and prior approval of the OWNER.
- C. Prior to commencing work, the CONTRACTOR shall submit to the OWNER a plan for bringing construction traffic to and from the site.

1.3 CONSTRUCTION WATER

- A. Water for construction is not available from the OWNER and may not be obtained from the existing facilities. The CONTRACTOR shall be responsible for providing all construction water required for the project.

1.4 CONSTRUCTION POWER

- A. 110V single phase power is available for use via temporary connection at the existing panel. The CONTRACTOR will be responsible for providing all connections. If additional power is needed, a temporary metered connection or portable generators shall be provided by the CONTRACTOR at his own expense.

1.5 NOTIFICATION OF UTILITIES

- A. The CONTRACTOR shall notify all utilities prior to any excavation.
- B. MISS DIG – Utility providers are members of a utility communication system called "MISS DIG" that provides service to participating utilities. The CONTRACTORS shall contact "MISS DIG" not less than 72 hours before starting construction for assistance in locating utilities or for any work to be done on utilities. The toll free phone number is (800) 482-7171.

1.6 WORK SCHEDULE

- A. The CONTRACTOR shall provide a work schedule. The schedule shall be complete and shall show in detail the manner in which he proposes to complete the work under this

Contract and approximate monthly billing of the Contract. The purpose of the schedule is to assist the OWNER in notifying the public of inconveniences and to anticipate cash-flow on the job, and to determine if the CONTRACTOR is reasonably proceeding with the work to assure completion within the specified time.

- B. Work hours shall be restricted to Monday through Friday, 7AM to 8PM. Work shall not be conducted on City holidays. Exceptions to work hour limits shall be only by written permission of the OWNER.

1.7 CONSTRUCTION SEQUENCE

- A. The CONTRACTOR shall coordinate and schedule his work with the OWNER when his operation may affect access to existing facilities or interfere with park access and operations. The CONTRACTOR shall coordinate his operations with the OWNER.
- B. Prior to commencing the work, the CONTRACTOR shall provide the ENGINEER a detailed schedule of the proposed work. The schedule shall include a list of tasks required to complete the work; their relevancy to each other; expected duration; and completion dates.
- C. The CONTRACTOR is responsible for presenting a sequence with schedule to the OWNER/ENGINEER for review. All proposed improvements shall be constructed only in accordance with an approved schedule.

1.8 CONSTRUCTION PERMITS

- A. The CONTRACTOR will be required to follow the requirements established by all permits necessary for the construction of this project. The following is a list of permits that may be required prior to the beginning of construction.
 - 1. City of Ann Arbor Grading / Soil Erosion and Sedimentation Control Permit, as part of Public Act 451 (1994), Part 91.
 - 2. Washtenaw County Health Department – Non-Potable Well Permit
 - 3. City of Ann Arbor – Electrical Permit
 - 4. City of Ann Arbor – Plumbing Permit
- B. The Soil Erosion and Sedimentation Control permit shall be issued by the City of Ann Arbor. The CONTRACTOR will be required to apply for the permit, pay all required fees and adhere to all requirements of the permit.
- C. The Non-potable Well Permit shall be issued by the Washtenaw County Environmental Health Division. The CONTRACTOR shall be required to apply for the permit, pay all required fees, and adhere to all requirements of the permit.
- D. The Electrical permit shall be issued by the City of Ann Arbor. The CONTRACTOR will be required to apply for the permit, pay all required fees and adhere to all requirements of the permit.
- E. If required, the Plumbing Permit shall be issued by the City of Ann Arbor. The CONTRACTOR will be required to apply for the permit, pay all required fees and adhere to all requirements of the permit.

1.9 DUST AND MUD CONTROL

- A. All haul roads, detour roads, and other public and private roads, driveways and parking lots used by the CONTRACTOR must be maintained in a dust free condition during the life of this Contract. The control of the dust shall be accomplished by the application of dust control materials and methods of application as approved and as directed by the ENGINEER. Such dust control materials shall be applied as often as is necessary to control the dust.
- B. Should the CONTRACTOR be negligent in providing dust control, the OWNER may, with or without notice, cause the same to be done and deduct the cost of such work from any monies due or to become due the CONTRACTOR under this Contract, but the performance of such work by the OWNER, or by the OWNER's direction, shall service in no way to release the CONTRACTOR from liability for dust control.

1.10 AUDIO-VISUAL SITE SURVEY

- A. The CONTRACTOR shall furnish to the OWNER, an audio-video DVD recording for all areas proposed for improvement.
- B. The audio-video recording shall be DVD and of such quality to accurately describe the existing conditions. The DVD shall be produced one (1) week prior to the placement of materials or equipment in the construction area. The DVD shall be of commercial quality and of size commonly used.
- C. Both sides of the entire area must be recorded with the rate of speed less than 48 ft per minute. Camera functions such as panning rate; zoom-in/zoom-out shall be controlled to provide optimum object clarity. The location shall be easily referenced to the Contract Drawings.
- D. The DVD must be recorded while the visibility is clear and at no time will it be allowed during periods of ground cover.

1.11 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. GENERAL

The method of measurement and the basis of payment for each item in the Proposal will be as specified in the schedule attached. The items are generally grouped by the section of the Specifications under which the particular unit of work is detailed. There will be no payment allowed for any unit of work not specifically mentioned in the Proposal as a bid item, and any such unit of work not mentioned in the Proposal, but necessary for the completion of the Project, will be considered as incidental to the construction of the Project.

B. MEASUREMENT

Items for this project are all Lump Sum.

C. PAYMENT

In each and every instance in the following Measurement and Payment Schedule, where a Basis of Payment is specified, it shall be understood to be prefaced by the following statement, "**The contract unit price bid in the Proposal will be payment in full for all labor, materials, and equipment necessary to do the following according to the Plans and Specifications.**" Payment shall be made on the basis of the actual quantity of the item completed and accepted at the unit price for such item named in the Proposal.

**BID ITEMS – BASE BID
(ITEMS APPLY SEPARATELY TO EACH LOCATION SPECIFIED IN THE BID FORM)**

<u>ITEM IN PROPOSAL</u>	<u>METHOD OF MEASUREMENT</u>	<u>BASIS OF PAYMENT</u>
General Conditions, Insurance, Bonds Mobilization	By the unit lump sum (LS)	The complete cost of insurance, bonds, permits and mobilization for the project and other requirements of General Conditions. Includes offices, stores, conveniences, and other temporary facilities, soil erosion and site preparation, and whatever means the CONTRACTOR deems necessary for accessing the work, organizing the project, coordination with OWNER, ENGINEER, third parties and sub-contractors, obtaining all permits, permit inspection fees, permit requirements, Shop Drawings, paperwork, bringing equipment to the site as required, management of job, and all related work. Any costs assumed to be above and beyond the value of this pay item shall be incidental to other pay items in the Contract. The maximum amount of this item shall be 5% of Contract Total.
Audio-Visual Site Survey	By the unit lump sum (LS)	Film and provide a finished electronic video to the ENGINEER showing all existing site conditions prior to construction. The unit price includes filming the entire project limits.
Demolition and Removal of Existing Pump Station, Intake Pipe	By the unit lump sum (LS)	Disconnect, remove and dispose of existing surface-mounted pump station, demolish and remove concrete base slab, excavate, remove and dispose of existing pump intake pipe, backfill trench, install topsoil, seed and mulch.
Disconnect and Abandon in-place segment of Existing Irrigation Supply Pipe	By the unit lump sum (LS)	Remove protruding end of supply pipe at the pump station end to below the ground surface, Excavate and cut supply pipe at bend by zone control panel for connection to new well pump. Plug both ends of old supply line and bury.
Soil Erosion Control	By the unit lump sum (LS)	Install and remove required silt fencing and other specified erosion control measures. Includes restoration of areas affected by performance of this work.

<u>ITEM IN PROPOSAL</u>	<u>METHOD OF MEASUREMENT</u>	<u>BASIS OF PAYMENT</u>
Install New Well Pump, Motor, Starter, Supply Pipe, Power Supply, and Make all Required Connections.	By the unit lump sum (LS)	Procure and install new irrigation water supply including: submersible pump, motor, piping, wiring, valve vaults, valves, shock suppressor tank, starter, panel, make all required piping and electrical connections, system start-up and testing, and all related work.
Demobilization and Final Restoration	By the unit lump sum (LS)	Restore disturbed areas, remove equipment from the site, remove and dispose of any trash, debris, or surplus soil material resulting from the work, and perform final clean-up.
Allowance – Misc. Repairs	By the unit lump sum allowance (LS)	Allowance is to be used for repairs as determined necessary by the OWNER. This excludes work called out under other Bid Items.

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY OF WORK

- A. Work under this contract consists of demolition and removal of existing pump station and intake line, in-place abandonment of a section of existing supply line, installation of a non-potable, submersible well pump and motor in an existing well casing, and underground supply line, connecting it to the existing irrigation system network, with associated appurtenances, connect well pump, with a new starter, to existing electrical supply and irrigation control panel, with site restoration, system testing, and all related work.

1.2 CONTRACT DOCUMENTS

- A. The Work to be done is shown on the set of Drawings entitled Olson Park Irrigation System Improvements. The numbers and titles of all Drawings appear on the cover sheet of the Drawings. All drawings so enumerated shall be considered an integral part of the Contract Documents as defined herein.
- B. Certain Document Sections refer to Divisions of the Contract Specifications. Sections are each individually numbered portions of the Specifications (numerically) such as 08110, 13182, 15206, etc. The term Division is used as a convenience term meaning all Sections within a numerical grouping. Division 16 would thus include Sections 16000 through 16955.
- C. The prime CONTRACTOR shall be responsible for all work in the Contract Documents regardless of the division of disciplines.

1.3 GENERAL ARRANGEMENT

- A. Drawings indicate the extent and general arrangement of the work. If any departures from the Drawings are deemed necessary by the CONTRACTOR to accommodate the materials and equipment CONTRACTOR proposes to furnish, details of such departures and reasons therefore shall be submitted as soon as practicable to the ENGINEER for approval by OWNER and ENGINEER. No such departures shall be made without the prior written approval of the OWNER or ENGINEER. Approved changes shall be made without additional cost to the OWNER for this work or related work under other Contracts of the Project.
- B. The specific equipment proposed for use by the CONTRACTOR on the project may require changes in structures, or other work to provide a complete satisfactory operating installation. The CONTRACTOR shall submit to the ENGINEER, for approval by OWNER and ENGINEER, all necessary Drawings and details showing such changes to verify conformance with the overall project structural requirements and overall project operating performance. The Bid Price shall include all costs in connection with the preparation of new drawings and details and all changes to construction work to accommodate the proposed equipment, including increases in the costs of other Contracts.

1.4 CONSTRUCTION PERMITS, EASEMENTS AND ENCROACHMENTS

- A. The OWNER shall obtain or cause to be obtained all permanent and temporary construction easements required. No easements are anticipated for this project.
- B. The CONTRACTOR shall obtain, keep current and pay all fees for any other necessary construction permits from those authorities, agencies, or municipalities having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the CONTRACTOR's operations unless otherwise stated. CONTRACTOR shall pay plan review fees and any other fees for required permits. Record copies of all permits shall be furnished to the ENGINEER and OWNER.
- C. When construction permits are accompanied by regulations or requirements issued by a particular authority, agency or municipality, it shall be the CONTRACTOR's responsibility to become familiar with and comply with such regulations or requirements as they apply to CONTRACTOR's operations on this Project.
- D. The CONTRACTOR will be required to follow the requirements established by all permits necessary for the construction of this project. The following is a list of all permits that must be obtained prior to the beginning of construction.
 - 1. Non-Potable Well Permit from the Washtenaw County Environmental Health Division
 - 2. Applicable City Permits (Electrical, Grading / Soil Erosion and Sedimentation Control).

1.5 ADDITIONAL ENGINEERING SERVICES

- A. In the event that the ENGINEER is required to provide additional engineering services as a result of substitution of materials or equipment which are not "or equal" by the CONTRACTOR, or changes by the CONTRACTOR in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or if the ENGINEER is required to examine and evaluate any changes proposed by the CONTRACTOR for the convenience of the CONTRACTOR, then the ENGINEER's charges in connection with such additional services shall be charged to the CONTRACTOR by the OWNER.
- B. In the event that the ENGINEER is required to provide additional engineering services as a result of CONTRACTOR's errors, omissions, or failure to conform to the requirements of the Contract Documents, or if the ENGINEER is required to examine and evaluate any changes proposed by the CONTRACTOR solely for the convenience of the CONTRACTOR, then the ENGINEER's charges in connection with such additional services shall be charged to the CONTRACTOR by the OWNER.

1.6 ADDITIONAL OWNER'S EXPENSES

- A. In the event the Work of this Contract is not completed within the time set forth in the Contract or within the time to which such completion may have been extended in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the OWNER may be charged to the CONTRACTOR and deducted from the monies due the CONTRACTOR. Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the CONTRACTOR, will be given due consideration by the OWNER before assessing engineering and inspection charges against the CONTRACTOR.

- B. Charges assessed to the CONTRACTOR for additional engineering and inspection costs will be determined based on actual hours charged to the job by the ENGINEER. Daily rates will depend on the number and classifications of employees involved, but in no case shall such charges exceed \$900 per day for field personnel and \$1,100 per day for engineering personnel, based on an eight hour workday.
- C. Charges for additional OWNER's expenses shall be in addition to any liquidated damages assessed in accordance with the Contract.

1.7 PROTECTION OF WORK

- A. Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, stormy or freezing weather. Only such work as will not suffer injury to workmanship or materials will be permitted. CONTRACTOR shall carefully protect the work against damage or injury from the weather, and when work is permitted during freezing weather, CONTRACTOR shall provide and maintain approved facilities for heating the materials and for protecting the finished work.

1.8 SUBSURFACE DATA

NOT USED

1.9 SURVEYS AND LAYOUT

- A. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as directed by the ENGINEER or OWNER. Elevation of existing ground and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake out survey shall be referred immediately to the ENGINEER for interpretation or correction.
- B. All survey work for construction control purposes, staking, and all related work shall be performed by the CONTRACTOR.
- C. CONTRACTOR shall have the responsibility to carefully preserve the bench marks, reference points and stakes, and in the case of destruction thereof by the CONTRACTOR or resulting from CONTRACTOR's negligence, the CONTRACTOR shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.
- D. Existing or new control points, property markers and monuments that will be or are destroyed during the normal causes of construction shall be reestablished by the CONTRACTOR and all reference ties recorded therefore shall be furnished to the OWNER and ENGINEER. All computations necessary to establish the exact position of the work shall be made and preserved by the CONTRACTOR.
- E. The OWNER or ENGINEER may check all or any portion of the work and the CONTRACTOR shall afford all necessary assistance to the OWNER and ENGINEER in carrying out such checks. Any necessary corrections to the work shall be immediately made by the CONTRACTOR. Such checking by the OWNER or ENGINEER shall not relieve the CONTRACTOR of any responsibilities for the accuracy or completeness of CONTRACTOR's work.

1.10 RESIDENT PROJECT REPRESENTATIVES

- A. If the OWNER authorizes the ENGINEER, the ENGINEER shall provide a resident project representative to assist the ENGINEER in carrying out his responsibilities at the site. The resident may not be full-time on-site and the CONTRACTOR shall be responsible for coordination with the ENGINEER. The furnishing of such resident project representatives shall not make the ENGINEER responsible for the CONTRACTOR's construction means, methods, techniques, sequences, or procedures or for any safety precautions or programs in connection with the work. The CONTRACTOR shall remain solely responsible for meeting the requirements of the Contract Documents.

1.11 FIRE PROTECTION

- A. CONTRACTOR shall take all necessary precautions to prevent fires at or adjacent to the work, buildings, etc., and shall provide adequate facilities for extinguishing fires which do occur. Burning of debris is not permitted on the project site.
- B. When fire or explosion hazards are created in the vicinity of the work as a result of the locations of fuel tanks, or similar hazardous utilities or devices, the CONTRACTOR shall immediately alert the local Fire Marshal, the ENGINEER, and the OWNER of such tank or device. The CONTRACTOR shall exercise all safety precautions and shall comply with all instructions issued by the Fire Marshal and shall cooperate with the OWNER of the tank or device to prevent the occurrence of fire or explosion.
- C. Hydrants must be maintained in service and approved during all phases of work.
- D. Storage area for construction materials must not interfere with fire/emergency site access.
- E. All material demolished from site should not be stored on location.

1.12 CHEMICALS

- A. All chemicals used during project construction or furnished for project must show approval of either the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with all applicable rules and regulations.
- B. Provide MSDS sheets for all chemicals to OWNER.

1.13 FIRST AID FACILITIES AND ACCIDENTS

- A. First Aid Facilities
 - 1. The CONTRACTOR shall provide at the site such equipment and facilities as are necessary to supply first aid to any of CONTRACTOR's personnel who may be injured in connection with the work.
- B. Accidents
 - 1. The CONTRACTOR shall promptly report, in writing, to the ENGINEER and OWNER all accidents whatsoever out of, or in connection with, the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses.

2. If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the OWNER and the ENGINEER.
3. If any claim is made by anyone against the CONTRACTOR or a Subcontractor on account of any accidents, the CONTRACTOR shall promptly report the facts, in writing, to the ENGINEER and OWNER, giving full details of the claim.

1.14 ULTIMATE DISPOSITION OF CLAIMS BY ONE CONTRACTOR ARISING FROM ALLEGED DAMAGE BY ANOTHER CONTRACTOR

- A. During the progress of the work, other CONTRACTORS may be engaged in performing other work or may be awarded other Contracts for additional work on this project and/or on this site. In that event, the CONTRACTOR shall coordinate the work to be done hereunder with the work of such other CONTRACTORS and the CONTRACTOR shall fully cooperate with such other CONTRACTORS and carefully fit its own work to that provided under other Contracts as may be directed by the OWNER. The CONTRACTOR shall not commit or permit any act which will interfere with the performance of work by any other CONTRACTOR.
- B. If the OWNER shall determine that the CONTRACTOR is failing to coordinate this work with the work of the other CONTRACTORS as the OWNER directed, then the OWNER shall have the right to withhold any payments otherwise due hereunder until the CONTRACTOR completely complies with the OWNER's directions.
- C. If the CONTRACTOR notifies the OWNER in writing that another CONTRACTOR is failing to coordinate his work with the work of this Contract as directed, the OWNER will promptly investigate the charge. If the OWNER finds it to be true, he will promptly issue such directions to the other CONTRACTOR with respect thereto as the situation may require. The OWNER, the ENGINEER, nor any of their agents shall not, however, be liable for any damages suffered by the CONTRACTOR by reason of the other CONTRACTOR's failure to promptly comply with the directions so issued by the OWNER, or by reason of another CONTRACTOR's default in performance, it being understood that the OWNER does not guarantee the responsibility or continued efficiency of any CONTRACTOR.
- D. The CONTRACTOR shall indemnify and hold the OWNER and the ENGINEER harmless from any and all claims of judgments for damages and from costs and expenses to which the OWNER may be subjected or which it may suffer or incur by reason of the CONTRACTOR's failure to comply with the OWNER's directions promptly.
- E. Should the CONTRACTOR sustain any damage through any act or omission of any other CONTRACTOR having a Contract with the OWNER for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the work to be performed hereunder, or through any act or omission of a Subcontractor of such Contract, the CONTRACTOR shall have no claim against the OWNER or the ENGINEER for such damage, but shall have a right to recover such damage from the other CONTRACTOR.
- F. Should any other CONTRACTOR having or who shall hereafter have a Contract with the OWNER for the performance of work upon the site sustain any damage through any act or omission of the CONTRACTOR hereunder or through any act or omission of any Subcontractor of the CONTRACTOR, the CONTRACTOR agrees to reimburse such other CONTRACTOR for all such damages and to defend at his own expense any suit based upon such claim and if any judgment or claims against the OWNER shall be allowed, the CONTRACTOR shall pay or satisfy such judgment or claim and pay all costs

and expenses in connection therewith and shall indemnify and hold the OWNER harmless from all such claims.

- G. The OWNER's right to indemnification hereunder shall in no way be diminished, waived or discharged, by its recourse to assessment of liquidated damages as provided in the Contract, or by the exercise of any other remedy provided for by Contract Documents or by law.

1.15 BLASTING AND EXPLOSIVES

- A. The use of blasting or explosives shall not be allowed under this project.

1.16 LIMITS OF WORK AREA

- A. The CONTRACTOR shall confine the construction operations within the Contract limits shown on the Drawings and/or property lines and/or fence lines. Storage of equipment and materials, or erection and use of sheds outside of the Contract limits, if such areas are the property of the OWNER, shall be used only with the OWNER's approval. Such storage or temporary structures, even within the Contract's limits, shall be confined to the OWNER's property and shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents.

1.17 WEATHER CONDITIONS

- A. No work shall be done when the weather is unsuitable. The CONTRACTOR shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to floods, driving rain, or wind, and snow storms. The OWNER reserves the right to order that additional protection measures over and beyond those proposed by the CONTRACTOR, be taken to safeguard all components of the Project. The CONTRACTOR shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the OWNER for damage to the work from weather elements.
- B. The ENGINEER shall have permissive authority over the work which is proposed to be done during the winter months. The CONTRACTOR shall provide adequate weather protection, temporary heating, ground thawing equipment and take any other measures which are necessary to insure that the work performed during the winter months is properly installed and protected against damage from freezing.
- C. Any and all work performed during adverse conditions shall adhere to the applicable Codes and Standards (i.e. ACI, ASTM, etc.).

1.18 USE OF FACILITIES BEFORE COMPLETION

NOT USED

1.19 DELIVERY, STORAGE, AND HANDLING

- A. All materials, supplies and equipment, whether furnished by the CONTRACTOR or by the OWNER, shall be delivered, stored and handled as to prevent the inclusion of foreign materials and/or damage by water, freezing, breakage or other causes. The ENGINEER may require the CONTRACTOR to provide an enclosed storage shed for the storage of the above mentioned materials, supplies and equipment. Packaged materials shall be delivered in the original unopened containers and shall be stored until ready for use. All materials which have been stored shall meet the requirements of the Specifications at the time they are used in the project.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01210

ALLOWANCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cash Allowances

1.2 DEFINITIONS

- A. Cash Allowance: A monetary sum that includes, as part of the Contract Price, the associated costs and requirements to complete the specified allowance.

1.3 SUBMITTALS

- A. Submit detailed invoices to indicate the work performed or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.4 OWNER'S INSTRUCTIONS

- A. At the earliest feasible date after Contract award the CONTRACTOR shall notify all utility companies and begin coordination efforts in order to avoid delay in performance of the work.
- B. Use allowances only as directed for OWNER's purposes, and only by Change Orders which designate amounts to be charged to the allowance. CONTRACTOR shall furnish a request for change order to the OWNER itemizing expected costs to complete the directed work. Approval must be obtained from the OWNER prior to executing the work.
- C. If the actual price for the specified allowance is more or less than the stated allowance, the Contract Price shall be adjusted accordingly by Change Order. The adjustment in Contract Price shall be made in accordance with the General Conditions.
- D. At project closeout, any amounts remaining in allowances will be credited to OWNER by Change Order.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related construction activities.

3.2 CASH ALLOWANCE FOR MISCELLANEOUS REPAIRS AND PERMITS

- A. A total cash allowance of \$5,000 shall be included in the Contract Price for miscellaneous repairs and permits as directed by the OWNER. All administrative work and coordination between the CONTRACTOR and OWNER shall be considered incidental to the Contract.

END OF SECTION

SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Project Superintendence
- B. Coordination and Project Conditions
- C. Field Engineering
- D. Pre-Construction Conference
- E. Site Mobilization Meeting
- F. Progress Meetings

1.2 PROJECT SUPERINTENDENCE

- A. CONTRACTOR's superintendent shall be on site full time for the duration of the project and shall meet the experience requirements identified in the instructions to bidders.

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate with utility companies for construction of utilities to the construction site.
- B. Coordinate with OWNER/ENGINEER to request OWNER-supplied surveying if required.
- C. Coordinate with subcontractors to complete connections to other work.
- D. Coordinate construction operations included under different Section of the Specifications that are dependent upon each other for proper installation, connection, and operation. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair. Make adequate provisions to accommodate items scheduled for later installation.
- E. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Schedules
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.

4. Request for information.
 5. Project closeout activities.
- F. Coordinate scheduling, submittals, and Work of the various sections of the Contract Documents to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- G. Verify utility requirements and characteristics of operating equipment are compatible with existing utilities.
- H. After OWNER occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of OWNER's activities.

1.4 PRE-CONSTRUCTION CONFERENCE

- A. OWNER will schedule a pre-construction conference and organizational meeting at the site or other convenient location prior to commencement of construction activities to review responsibilities and personnel assignments.
- B. Attendees: OWNER, ENGINEER and ENGINEER's consultants, CONTRACTOR and its superintendent, subcontractors, utility companies, and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matter relating to the work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
1. Site Access.
 2. Tentative Construction Schedule.
 3. Designation of responsible personnel.
 4. Procedures for processing field decisions and Change Orders.
 5. Submittal of Shop drawings, Product Data, Samples and Schedule.
 6. Use of the premises.
 7. Work and storage areas.
 8. Equipment deliveries and priorities.
 9. CONTRACTOR's Quality Assurance Plan.
 10. Safety procedures and First Aid.
 11. Security and Housekeeping.
 12. Working hours.
 13. Utility Contacts.

1.5 SITE MOBILIZATION MEETING

NOT USED

1.6 SITE SAFETY MEETING

- A. OWNER will schedule a conference at the project site prior to the CONTRACTOR's occupancy.
- B. Attendance required by the OWNER, ENGINEER, CONTRACTOR's Superintendent, CONTRACTOR's Safety Officers, and all subcontractors.
- C. Agenda
 - 1. Safety Procedures
 - 2. First Aid
 - 3. Security

1.7 PROGRESS MEETINGS

NOT USED

1.8 PREINSTALLATION OR SHUTDOWN COORDINATION MEETING

NOT USED

1.9 FINAL INSPECTION MEETING

- A. When the CONTRACTOR has provided written notice that the project is complete, a final inspection meeting shall be scheduled with the CONTRACTOR, ENGINEER, and OWNER.
- B. ENGINEER will notify the CONTRACTOR in writing of all items which this inspection reveals are incomplete or defective.
- C. CONTRACTOR shall immediately take all necessary measures to remedy such deficiencies. A written description of how each item has been addressed shall be submitted to the ENGINEER and OWNER.

1.10 CLOSEOUT/WARRANTY MEETING

- A. Prior to final application for payment, a closeout/warranty meeting shall be scheduled with the CONTRACTOR, ENGINEER and OWNER.
- B. Agenda
 - 1. Review submitted warranties and bonds.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittal Procedures
- B. Certifications
- C. Shop Drawings
- D. Product Data
- E. Samples
- F. Manufacturers' Instructions
- G. Manufacturers' Field Reports
- H. Construction Schedule
- I. Submittal Schedule

1.2 SUBMITTAL PROCEDURES

- A. Package each submittal appropriately for shipping and handling. This shall include an index either on the transmittal or within the submittal itself. Transmit each submittal from CONTRACTOR to ENGINEER using a transmittal form. Submittals received from sources other than CONTRACTOR will be returned without action. Use separate transmittals for items from different specification sections. Number each submittal consecutively. Resubmittals should have the same number as the original, plus a letter designation for each Resubmittal (i.e. 7-A, 7-B, etc.)
- B. Indicate on the transmittal relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include CONTRACTOR's certification that information complies with Contract Document requirements. On Resubmittal, all changes shall be clearly identified for ease of review. Resubmittals shall be reviewed for the clearly identified changes only. Any changes not clearly identified will not be reviewed and original submittal shall govern.
- C. Include the following information on the label for processing and recording action taken.
 - 1. Project name.
 - 2. Date.
 - 3. Name and address of ENGINEER.
 - 4. Name and address of CONTRACTOR.

5. Name and address of subcontractor.
 6. Name and address of supplier.
 7. Name of manufacturer.
 8. Number and title of appropriate specification sections.
 9. Drawing number and detail references, as appropriate.
- D. Schedule submittals to expedite the Project, and deliver to ENGINEER at business address. Coordinate submission of related items. Coordinate related activities that require sequential activity.
 - E. Submit a schedule of shop drawing submittals.
 - F. Review and approve shop drawings, project data, and samples before submitting them.
 - G. Verify field measurements, field construction criteria, catalog numbers, and similar data. Indicate on the submission exactly what was verified.
 - H. Any markings done by CONTRACTOR shall be done in a color other than red. Red is reserved for ENGINEER's marking.
 - I. The number of copies to be submitted will be determined at the pre-construction conference.
 - J. Coordinate each submittal with the requirements of the Contract Documents.
 - K. Provide space for CONTRACTOR and ENGINEER review stamps.
 - L. Apply CONTRACTOR's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
 - M. Submit the number of copies that the CONTRACTOR requires, plus four (4) copies that will be retained by the OWNER and ENGINEER.
 - N. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
 - O. No claim will be allowed for damages or extension of time because of delays in the work resulting from rejection of material or from revision and resubmittal of Shop Drawings, project data, or samples.
 - P. No extension of contract time will be authorized because of failure to transmit submittals to ENGINEER sufficiently in advance of the work to permit processing.
 - Q. ENGINEER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- R. Do not install materials or equipment which requires submittals until the submittals are returned with ENGINEER's/OWNER's stamp and initials or signature indicating approval. The OWNER shall have final approval authority.
- S. CONTRACTOR's responsibility of errors, omissions, and deviations from requirements of Contract Documents in submittals is not relieved by the ENGINEER's review.
- T. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with requirements.
- U. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- V. Submittals not requested in conformance with this Specification will not be recognized or processed.
- W. Revise and resubmit as required, identify all changes made since the previous submittal.
- X. In the event that more than two re-submittals of any submittal is necessary to achieve conformance to the contract requirements, CONTRACTOR shall be charged for excess engineering. The OWNER shall deduct these charges from the CONTRACTOR's final payment. Charges will be \$115.00/hr. minimum 4 hours, for each additional submittal of an item. A tabulated record of such charges will be provided for the CONTRACTOR's review prior to the processing of the final payment.
- Y. Submit new project data and samples when the initial submittal is returned disapproved.

1.3 CERTIFICATIONS

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.
- B. Indicate that the material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certifications may be recent or previous test results of the material or product, but must be acceptable to ENGINEER.

1.4 SHOP DRAWINGS

- A. Shop Drawings: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with Paragraph 1.2 - Submittal Procedures.
- B. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the project is not considered Shop Drawings.

- C. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
 - 1. Dimension.
 - 2. Identification of products and materials included.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurements.
- D. Standard manufactured items in the form of catalog work sheets showing illustrated cuts of the items to be furnished, scale details, sizes, dimensions, quantity, and all other pertinent information should be submitted and approved in a similar manner.
- E. Measurements given on Shop Drawings or standard catalog sheets, as established from contract drawings and as approved by ENGINEER, shall be followed. When it is necessary to verify field measurements, they shall be checked and established by CONTRACTOR. The field measurements so established shall be followed by CONTRACTOR and by all affected trades.

1.5 PRODUCT DATA

- A. Product Data: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with Paragraph 1.2 - Submittal Procedures.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1.6 SAMPLES

NOT USED

1.7 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.
- B. Indicate special procedures required for application or installation.

1.8 MANUFACTURER'S FIELD REPORTS

NOT USED

1.9 CONSTRUCTION SCHEDULE

- A. CONTRACTOR to present proposed project schedule at the pre-construction meeting for approval by the OWNER.

1.10 SUBMITTAL SCHEDULE

- A. After development and acceptance of the construction schedule, prepare a complete schedule of submittals. Submit schedule within 10 days of the date required for establishment of construction schedule.
- B. Coordinate submittal schedule with the list of subcontracts, schedule of values, and the list of products as well as construction schedule.
- C. Prepare schedule in chronological order; include all submittals required during the duration of the project. Provide the following information:
 - 1. Scheduled date for the first submittal.
 - 2. Related section number.
 - 3. Submittal category.
 - 4. Name of subcontractor.
 - 5. Description of the part of the work covered.
 - 6. Scheduled date for Resubmittal.
 - 7. Scheduled date ENGINEER's final release or approval.
- D. The submittal schedule shall reflect critical path shop drawings that must be expedited.
- E. Following response to initial submittal, print and distribute copies to ENGINEER, OWNER, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
- F. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.
- G. Schedule Updating: Provide an updated submittal schedule at each progress meeting.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 ENGINEER'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, ENGINEER will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is CONTRACTOR's responsibility.

- B. Action Stamp: ENGINEER will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. Final Unrestricted Release: Where submittals are marked “No Exceptions Taken” that part of the work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents; final acceptance will depend upon the compliance.
 2. Final-But-Restricted Release: When submittals are marked “Make Corrections Noted” that part of the work covered by the submittal may proceed, provided it complies with notation or correction on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 3. Returned for Resubmittal: When submittal is marked “Rejected” or “Revise and Resubmit” do not proceed with the part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked “Rejected” or “Revise and Resubmit” to be used at site, or elsewhere where work is in progress.
 4. Additional Information Needed: When submittal is marked “Submit Specified Item” CONTRACTOR shall submit requested information.
 5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked “Acknowledge Receipt”.
 6. The approval of ENGINEER shall not relieve CONTRACTOR of responsibility for errors on drawings or submittals as ENGINEER’s checking is intended to cover compliance with Drawings and Specifications and not enter into every detail of the shop work.

END OF SECTION

SECTION 01450

QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. References.
- C. Testing and inspection services.
- D. Manufacturers' field services.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from ENGINEER before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on Shop Drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. All materials and equipment shall be new, unless otherwise noted.

1.3 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.
- B. Should specified reference standards conflict with Contract Documents, request clarification from the ENGINEER before proceeding.
- C. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the ENGINEER shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 TESTING AND INSPECTION SERVICES

NOT USED

1.5 MANUFACTURERS' FIELD SERVICES

NOT USED

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- A. Temporary Utilities
 - 1. Temporary Electricity
 - 2. Temporary Lighting for Construction Purposes
 - 3. Internet Service
 - 4. Temporary Water Service
 - 5. Temporary Sanitary Facilities
- B. Construction Facilities
 - 1. Field Offices and Sheds
- C. Temporary Controls
 - 1. Dust Control
 - 2. Barriers
 - 3. Protection of the Work
 - 4. Security Measures
 - 5. Water Control
- D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. The CONTRACTOR will be responsible for providing all temporary electricity. Portable generators shall be provided by the CONTRACTOR at no additional cost to the OWNER.
- B. Provide and pay for power service required from utility source as needed for construction operation.
- C. Provide temporary electric feeder from electrical service at location as directed. Provide all necessary meters, disconnections and transformers.
- D. Complement existing power service capacity and characteristics as required.
- E. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

NOT USED

1.4 INTERNET SERVICE

NOT USED

1.5 TEMPORARY WATER SERVICE

- A. Water is not available at the construction site. CONTRACTOR shall make arrangements to provide water for the duration of the Contract at no additional cost to the OWNER.

1.6 TEMPORARY SANITARY FACILITIES

- A. The CONTRACTOR shall be responsible for providing temporary sanitary facilities.

1.7 FIELD OFFICES AND SHEDS

NOT USED

1.8 DUST CONTROL

- A. All public and private roads, driveways and parking lots used by the CONTRACTOR must be maintained in a dust free condition during the life of this Contract. The control of the dust shall be accomplished by the application of dust control materials and methods of application as approved and as directed by the ENGINEER. Such dust control materials shall be applied as often as is necessary to control the dust.
- B. Should the CONTRACTOR be negligent of his duties in providing dust control, the OWNER may, with or without notice, cause the same to be done and deduct the cost of such work from any monies due or to become due the CONTRACTOR under this Contract, but the performance of such work by the OWNER, or at his insistence, shall service in no way to release the CONTRACTOR from his liability for dust control.
- C. Street Cleaning
 - 1. CONTRACTOR shall provide street cleaning with water for City and private roads and parking areas affected by spillage of excavated material or other material associated with the work.
 - 2. CONTRACTOR shall provide street cleaning by the end of each workday when spillage has occurred, and upon request by OWNER.

1.9 BARRIERS

- A. Provide barriers to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide protection for plant life designated to remain. Replace damaged plants.
- C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.10 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Prohibit traffic from landscaped areas, unless approved by the OWNER/OWNER'S REPRESENTATIVE.

1.11 WATER CONTROL

NOT USED

1.12 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

NOT USED

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- A. Basic Product Requirements
- B. Product Options
- C. Product Substitution Procedures
- D. Product Delivery Requirements
- E. Product Storage and Handling Requirements

1.2 BASIC PRODUCT REQUIREMENTS

- A. Provide products of qualified manufacturers suitable for intended use. Provide products of each type by a single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer for similar components.

1.3 PRODUCT OPTIONS

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

1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify requirements for submitting requests for Substitutions during the bidding period. This section specifies procedures and requirements affecting substitutions proposed by the CONTRACTOR after the Contract Date.
- B. Where the term "substitutions" is used in this section, it means materials, equipment, or methods of construction which differ from the requirements in the Contract Documents. The term "substitutions" does not include:
 - 1. Requirements provided by Addenda issued prior to the Contract date.
 - 2. Changes made at the direction of ENGINEER.

3. Changes ordered by governing authorities.
 4. Options described in the Contract Documents.
- C. Substitutions will be considered in the event that:
1. They are related to "or equal" or "or approved equal" provisions in the Contract Documents.
 2. The specified requirements cannot be provided within the Contract Time due to causes beyond the CONTRACTOR's control.
 3. The OWNER will gain a substantial advantage if substitutions are approved.
 4. Substitutions will be considered when a product becomes unavailable through no fault of the CONTRACTOR.
- D. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- E. A request constitutes a representation that the CONTRACTOR:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the Substitution as for the specified product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to OWNER.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse OWNER and/or ENGINEER for review or redesign services associated with re-approval by authorities.
 6. Will reimburse the OWNER and/or ENGINEER for any costs incurred in the evaluation of any "or equal" or substitution proposal. Such costs shall include, but are not limited to, related charges of the ENGINEER made necessary by the evaluation and acceptance or rejection, as the case may be, of the proposed "or equal" or substitute material or equipment.
- F. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- G. Substitution Submittal Procedure:
1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 2. Submit Shop Drawings, Product Data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.

3. Submit itemized comparison between the specified product and the substitution product demonstration equivalent.
 4. The ENGINEER will notify CONTRACTOR, in writing, of decision to accept or reject request.
 5. Such submittals do not relieve the CONTRACTOR of obligation to later furnish Shop Drawings, product data, samples, and other submittals required by the Contract Documents.
- H. If any "or equal" or substitute material or equipment differs materially from the material or equipment named or specified, and that difference was not expressly identified in the CONTRACTOR's request, or results in changes in the work, the ENGINEER has authority to require removal and replacement of that "or equal" or substitute material or equipment. The CONTRACTOR shall bear the delay and costs resulting from (a) any such removal and replacement of "or equal" or substitute materials or equipment; (b) making "or equal" or substitute materials or equipment conform to the requirements of the Contract Documents; and (c) any changes in the work and/or in other work required to accommodate the "or equal" or substitute material or equipment, or both.

1.5 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- 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 and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with 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 under acceptable condition.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01730

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes, but is not limited to, all demolition and removal of existing materials, equipment necessary to complete the work specified and as shown on the Contract Drawings. Items for removal a surface mounted irrigation pump system in a metal enclosure, several sections of 3" diameter underground PVC irrigation pipe.
- B. CONTRACTOR shall be responsible for all necessary procedures for removal, handling, transportation, and disposal of materials.

1.2 SECTION INCLUDES

- A. Selective removal and off-site disposal of following:
 - 1. Surface mounted irrigation pump system in a metal enclosure.
 - 2. Several sections of 3" diameter underground PVC irrigation pipe marked "remove" or "demolish" on Drawings.

1.3 RELATED SECTIONS

- A. Section 02220 – Site Demolition

1.4 DEFINITIONS

- A. Remove: Remove and dispose of items shown or scheduled. Discard demolished or removed items except for those shown to remain, those shown as reinstalled, those shown as salvaged, and historical items that are to remain OWNER's property.
- B. Remove and Reinstall: Remove items shown; clean, service and otherwise prepare them for reuse; store and protect against damage. Reinstall items in same location or in location shown.
- C. Existing to Remain: Protect construction or items shown to remain against damage during selective demolition operations. When permitted by ENGINEER, CONTRACTOR may elect to remove items to suitable, protected storage location during selective demolition and properly clean and reinstall items in their original locations.

1.5 SUBMITTALS

NOT USED

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Demolition operations shall comply with OSHA and EPA requirements and EPA notification regulations insofar as they apply to demolition Work under this Contract.

2. Comply with hauling and disposal regulations of authorities having jurisdiction.
 3. If hazardous materials are found during demolition operations, comply with all applicable local, state and national requirements for removal and disposal.
- B. Facility Access:
1. Do not close, block or obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction.
 2. Coordinate with OWNER's continuing use of portions of existing park facilities.
 3. Plan and present the CONTRACTOR's plan for achieving the continued use of park facilities by OWNER in a submittal and in a meeting with the OWNER and ENGINEER.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Disassemble into smaller pieces to promote safe removal and transportation
1. Transport and unload items requested by OWNER to a designated location at the project site.
 2. Haul away and dispose of debris and materials neither retained by OWNER, nor reused or reinstalled.
 3. Arrange for disposal areas.
- B. Handling: CONTRACTOR shall take every precaution to prevent spillage of materials being hauled in public streets.
1. It shall be CONTRACTOR's responsibility to immediately clean spillage that may accidentally occur.
 2. Do not burn removed material on or within Project Site.

1.8 PROJECT CONDITIONS

- A. Materials Ownership
1. Salvage Materials: Demolished materials shall become CONTRACTOR's property, except for items or materials shown as reused, reinstalled, or otherwise shown to remain OWNER's property. Remove demolished material promptly from Site with further disposition at CONTRACTOR's option. Transport items of salvageable value by CONTRACTOR to CONTRACTOR's area as they are removed.
- B. Existing Conditions: OWNER/PUBLIC will be continuously occupying areas adjacent to selective demolition areas.
- C. OWNER assumes no responsibility for actual condition of items or structures scheduled for demolition.
- D. OWNER will maintain conditions existing at Contract commencement insofar as practical. However, variations within structure may occur by OWNER's removal operation before selective demolition work begins.

1.8 SEQUENCING

- A. Conduct selective demolition work in manner that minimizes need for disruption or interference of OWNER's normal on-Site operations.
- B. Coordinate with OWNER's continuing occupation of portions of existing park facilities.
- C. Include coordination with details for dust and noise control protection to ensure uninterrupted on-Site operations by OWNER and use by the public.

1.9 SCHEDULING

- A. Schedule: Discuss schedule of proposed methods and sequence of operations for selective demolition work with OWNER's representative at Pre-construction meeting, before commencement of Work.
- B. Arrange selective demolition schedule so as not to interfere with OWNER's on-site operations.
- C. Give minimum of 15 days advance notice to OWNER of demolition activities, which affect OWNER's normal operations.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Before beginning selective demolition work inspect areas of Work. Survey existing conditions and correlate with requirements shown to determine extent of selective demolition required. Audio-visual survey shall include coverage of existing structure surfaces, equipment, or surrounding properties, which could be misconstrued as damage resulting from selective demolition work. File with OWNER's representative before starting Work.
- B. If unanticipated structural elements conflict with intended function or design, investigate, and measure nature and extent of conflicts. Promptly submit detailed written reports to OWNER's Representative. Pending receipt of directive from OWNER's Representative, rearrange selective demolition schedule to continue general job progress without delay.

3.2 UTILITY SERVICES

- A. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction.

3.3 PREPARATION

- A. Protect existing finish work that remains in place and becomes exposed during demolition operations.
- B. Remove protection at completion of Work.

3.4 DEMOLITION

- A. Completely fill below-grade areas and voids resulting from demolition Work. Either:
 - 1. Provide fill consisting of approved earth, gravel, or sand.
 - 2. Fill shall be free of trash, debris, stones over 6-inch diameter, roots, or other organic matter.OR
 - 3. Fill below-grade areas and voids with Flowable Fill.
- B. Explosives: Use of explosives is not allowed.
- C. Promptly remove debris.

3.5 REPAIR\RESTORATION

- A. Repair damages caused by demolition more extensive than required.
- B. Return structures and surfaces to condition existing before commencing selective demolition Work.
- C. Repair adjacent construction or surfaces soiled or damaged by selective demolition Work.
- D. Promptly repair damages caused to adjacent facilities by demolition Work at no cost to OWNER.

3.6 CLEANING

- A. CONTRACTOR shall maintain an order of neatness and good housekeeping comparable to that observed by OWNER.
- B. Remove dirt and debris resulting from CONTRACTOR's demolition operations from Site daily. Dirt and debris shall not collect or interfere with OWNER's facility operations.
- C. Upon completion of demolition Work, remove tools, equipment, and demolished materials from Site. Remove protection and clean the surrounding area.

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Substantial Completion
- B. Final Inspection
- C. Request for Final Payment

1.2 SUBSTANTIAL COMPLETION

- A. Substantial completion shall be the date as certified by the ENGINEER when the construction of the Project, or a specified part thereof, is sufficiently completed, in accordance with the Contract Documents, so that the Project, or specified part, can be fully utilized for the purposes for which it was intended.
- B. Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documents for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the contract price.
 - 2. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete.
 - 3. Advise OWNER of pending insurance changeover requirements.
 - 4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 5. Obtain and submit releases enabling OWNER unrestricted use of the work and access to services and required certificates releasing bridge for use.
 - 6. Complete final cleanup requirements, including touch-up and otherwise repair and restore marred exposed finishes.
- C. Inspection Procedures: On receipt of a request for inspection, ENGINEER will either proceed with inspection or advise CONTRACTOR of unfilled requirements.
 - 1. ENGINEER will prepare the Certificate of Substantial Completion following inspection, or advise CONTRACTOR of construction that must be completed or corrected before the certificate will be issued.
 - 2. ENGINEER will repeat inspection when requested and assured that the work has been substantially completed.

3. Results of completed inspection for the basis of requirements for final acceptance.
4. Date of Substantial Completion will begin the warranty period unless noted otherwise.

1.3 FINAL ACCEPTANCE

- A. Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Price.
 3. Submit a copy of ENGINEER's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance. The list shall be endorsed and dated by the ENGINEER.
 4. Submit consent of surety to final payment.
 5. Submit a final liquidated damages settlement statement.
 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 7. Submit record drawings, damage or settlement survey, property survey, and similar final record information.
- B. Re-inspection Procedure: ENGINEER will inspect the work upon receipt of notice that work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the ENGINEER.
 1. Upon completion of re-inspection, ENGINEER will prepare a certificate of final acceptance, or advise CONTRACTOR of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, re-inspection will be repeated.

1.4 REQUEST FOR FINAL PAYMENT

- A. Submit request for final payment in accordance with the Agreement and General Conditions.
- B. Request for final payment shall include:
 1. Documents required in the General Conditions, as may be modified by the Supplementary Conditions.

2. Releases or Waivers of Lien Rights:
 - a. When submitting releases or waivers of Lien rights, provide release or waiver by CONTRACTOR and each Subcontractor and Supplier that provided CONTRACTOR with labor, material, or equipment.
 - b. Provide list of Subcontractors and Suppliers for which release or waiver of Lien is required.
 - c. Each release or waiver of Lien shall be signed by an authorized representative of entity submitting release or waiver to CONTRACTOR, and shall include Subcontractor's or Supplier's corporate seal if applicable.
 - d. Release or waiver of Lien may be conditional upon receipt of final payment.
3. Consent of Surety.
4. Documentation that all punch list items are complete.
5. Warranties.
6. Record Drawings being maintained by the CONTRACTOR.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 02010

SITE GENERAL PROVISIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The CONTRACTOR shall provide all labor, materials, tools and equipment necessary for the preparation and completion of the site of the project.

1.2 PROTECTION OF TREES

- A. Trees shall be protected with tree protection fencing placed at the drip line of the tree.
- B. Machine excavation shall not be made within a circular area of any tree, the diameter of the area in feet being equal to the diameter of the tree in inches. If hand excavation within this area cuts across a large root of a tree, the cutting of which, in the opinion of the ENGINEER, would be injurious to the tree, the CONTRACTOR shall tunnel under such root and protect it from injury throughout the work.
- C. No trees are to be removed without the expressed approval of the governmental body having jurisdiction thereof and of the ENGINEER.
- D. Construction materials and equipment shall not be stored within tree protection fence areas in order to protect tree roots from unnecessary damage during construction operations.

1.3 TEMPORARY ROADWAYS

- A. The location of any temporary roadways and/or access drives shall be subject to the approval of the OWNER.

1.4 WORK AREA AND STORAGE OF MATERIALS

- A. CONTRACTOR shall submit a proposed site access plan to the OWNER and ENGINEER for review at the park. The access plan shall include locations of equipment access points and materials storage locations.
- B. The working area shall be organized in an orderly manner the CONTRACTOR shall keep the site and the drives and parking area used during construction reasonably clean and dust free.
- C. All materials, supplies and equipment, whether furnished by the CONTRACTOR or by the OWNER, shall be delivered, stored and handled as to prevent the inclusion of foreign materials and/or damage by water, freezing, breakage or other causes. Packaged materials shall be delivered in the original unopened containers and shall be stored until ready for use. All materials which have been stored shall meet the requirements of the Specifications at the time they are used in the project.

1.5 EXISTING PUBLIC UTILITIES

- A. The CONTRACTOR shall conduct his operations so as not to damage any existing utility whether shown in the Plans or not. The CONTRACTOR shall correct, at his own expense, any injury caused during the operations of his subcontractors or suppliers.

1.6 NOTIFICATION TO UTILITIES

- A. Prior to the start of any operations in the vicinity of any utilities, the CONTRACTOR shall notify the utility companies and request that they stake out the locations of the utilities in question.

1.7 SANITARY REQUIREMENTS

- A. The CONTRACTOR shall provide adequate sanitary facilities for all persons employed on the project. The sanitary facilities shall conform in every way to the requirements of the "General Safety Rules and Regulations for the Construction Industry".

1.8 UTILITIES

- A. The CONTRACTOR shall make all necessary arrangements for the provisions of all utility services, temporary or permanent, required under this Contract. The CONTRACTOR shall pay all costs for such connections and services.
- B. All utility services shall be inspected by and shall meet the requirements of the applicable codes and governmental bodies.

PART 2 - PRODUCTS

2.1 TREE PROTECTION FENCING

- A. Tree protection fencing shall be constructed of high-density extruded and stretched polyethylene fabric with 2-inch (20 mm) maximum opening in pattern and weighing a minimum of 0.4 lb/ft (0.6 kg/m); remaining flexible from -60°F to +200°F (-16°C to +93°C); inert to most chemicals and acids; minimum tensile yield strength of 2680 psi (18.5 mPa); secured with plastic bands or galvanized-steel wire this; and supported by tubular t-shape galvanized-steel posts spaced not more than 8 feet (2.4m) apart.
 - 1. Height shall be 4 feet (1.2m).
 - 2. Color shall be high-visibility orange, non-fading.

PART 3 - EXECUTION

3.1 CONTROL OF WATER POLLUTION AND SILTATION

- A. General Requirements
 - 1. The CONTRACTOR shall conduct his work in a manner to comply with the Soil Erosion and Sedimentation Control Act of 1972, (MICH P.A. 347) that will not cause damaging siltation or pollution of the water in streams, rivers, lakes and reservoirs. All work of water pollution and siltation control is subject to inspection by the Department of Natural Resources.
 - 2. All applicable regulations of fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied with in the performance of the Contract.

3. Construction operations shall be conducted in such manner as to reduce erosion to the practicable minimum and prevent damaging siltation to streams or lakes. The area of erodible land exposed to the elements by grading operations, including gravel pits, waste or disposal areas and haul roads, at any one time shall be subject to approval of the ENGINEER and the duration of such exposure prior to final trimming and finishing of the areas shall be as short as practical. The ENGINEER shall have full authority to order the suspension of grading and other operations pending adequate and proper performance of trimming, finishing and maintenance work or to restrict the area of erodible land exposed to the elements.
4. The disturbance of lands and waters that are outside the limits of construction as staked is prohibited, except as found necessary and approved by the ENGINEER.
5. The CONTRACTOR shall conduct his work in such manner as to prevent the entry of fuels, oils, bituminous materials, chemicals, sewage or other harmful materials into streams, rivers, lakes or reservoirs.
6. Water from aggregate washing or other operations containing sediment shall be treated by filtration, by use of a settling basin or other means to reduce the sediment content to a level acceptable to the Department of Natural Resources.

B. Temporary Control Requirements

1. The CONTRACTOR shall provide temporary soil erosion and sedimental controls according to current local soil conservation district soil erosion and sedimentation control standards and specifications or revisions thereof.
2. The CONTRACTOR shall not pump water directly from the excavation into a storm sewer but shall construct and maintain stilling basins to receive the pumpage with an overflow from the basins to the storm sewer. The basins shall be of sufficient size to allow proper settling of sediment before the water flows into the storm sewer. The CONTRACTOR shall remove and/or restore the basin area to original condition after backfilling is complete.
3. Permanent soil erosion control measures for all slopes, channels, ditches or any disturbed land area shall be completed within 15 calendar days after final grading or the final earth change has been completed or where significant earth change activity ceases, temporary soil erosion control measures shall be implemented within 30 calendar days. All temporary soil erosion control measures shall be maintained until permanent soil erosion control measures are implemented.

3.2 FINISH GRADING, TOP SOIL

- A. After all backfilling and rough grading has been completed and thoroughly compacted, the entire disturbed area at the site shall be graded to smooth, even surfaces as shown by the proposed new contours shown on the Plans. The portion of the disturbed area where no new contours are shown shall be graded to smooth, even surfaces approximating the original surfaces.
- B. All debris and larger stones and sticks and the like shall be removed and disposed of and the entire disturbed area made ready for the addition of top soil and seeding.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall perform all excavation and backfilling necessary to complete the work. This shall include the excavation of earth and rock, the removal and disposal of unsuitable material, dewatering, placement of suitable fill and backfill material, and the restoration and final grading for all earth surfaces.

1.2 RELATED SECTIONS

- A. Section 02370 – Erosion and Sedimentation Controls

1.3 REFERENCES

- A. MDOT, 2012 Standard Specifications for Construction

1.4 PROJECT REQUIREMENTS

- A. Work within rights-of-way.
 - 1. Where the governmental bodies having jurisdiction of the streets or rights-of-way have specific specifications relating to the requirements for work within their jurisdiction, such requirements must be met as a minimum requirement, and if these Specifications impose further limitation on the work, they shall also be met as the required work standard.

1.5 EXISTING CONDITIONS

- A. Soil boring results, if taken on a site, are appended to these Specifications with locations noted. Boring logs are shown to be generally representative of the site and to assist in the design and construction of the work.

1.6 QUALITY ASSURANCE

- A. The CONTRACTOR's independent testing firm shall provide the following:
 - 1. Certify that the required soil bearing capacity of prepared excavation meets proposed design criteria.
 - 2. Certify that materials proposed by the CONTRACTOR meet specifications. Certification test reports shall be submitted to the ENGINEER.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIAL

- A. For areas not requiring "granular backfill" material, backfill shall be of the excavated material, with the exception that materials such as soft clay, topsoil, muck, cinders, vegetable matter, refuse, boulders and other objectionable and non-packing earth shall

be excluded from the backfill and removed from the site. Stone larger than 3 inches in any dimension shall be excluded from the backfill and removed from the site by the CONTRACTOR.

- B. Where "granular material" backfill is required as specified herein, backfill material shall be defined as a material meeting granular material Class II as defined in MDOT Section 902.

PART 3 - EXECUTION

3.1 GENERAL EXCAVATION

- A. Excavation shall be performed by any practicable method consistent with the integrity and protection of the work and neighboring structures, workmen, and the public.
- B. All excavation may be open cut from the surface.
- C. Foreign material or unsuitable foundation material encountered such as wood, boulders, etc., which obstruct the excavation, shall be removed. Such materials found at the bottom of the excavation shall be removed and the foundation restored with approved materials. Discovery of such unsuitable materials shall not constitute a change in site conditions, and payment for removal shall be paid for under the bid items "Demolition and Removal of Existing Pump Station, Intake Pipe" or "Disconnect and Abandon in Place Segment of Irrigation Supply Pipe" as applicable.
- D. If excess excavation is made or the material becomes disturbed so as to require removal beyond the prescribed limits, the resulting space shall be filled with selected material solidly tamped into place, in not more than 6-inch layers to the satisfaction of the ENGINEER, before the construction work proceeds. At the direction of the ENGINEER, the excess excavation may be filled with 2000 psi concrete at the CONTRACTOR's expense.
- E. The excavation shall be kept dry during the work. Where water is encountered in the excavation, it shall be removed by pumping. All necessary precautions shall be taken to prevent damage to completed or partially completed structures. The CONTRACTOR shall be responsible for all damages caused by him due to inadequate or improper protection. Discovery of groundwater in any excavation shall not constitute a change in site conditions. Payment for pumping, should site conditions warrant the need, shall be paid for under the bid items "Demolition and Removal of Existing Pump Station, Intake Pipe" or "Disconnect and Abandon in Place Segment of Irrigation Supply Pipe" as applicable.

3.2 EXCAVATION FOR SEWERS AND WATER MAINS

NOT USED

3.3 EXCAVATION FOR STRUCTURES

- A. Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction and for practicable construction methods to be followed.
- B. The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction area, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other

agencies connected with the work, including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective fencing before construction begins, when in the judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

3.4 EXCAVATION FOR PAVED SURFACES

NOT USED

3.5 SHORING, SHEETING AND BRACING

NOT USED

3.6 BACKFILLING FOR SEWERS AND WATER MAINS

NOT USED

3.7 FILLING AND BACKFILLING FOR STRUCTURES

NOT USED

3.8 FILLING AND BACKFILLING FOR PAVED SURFACES

NOT USED

3.9 PREPARATION OF SUBGRADE FOR PAVED SURFACES

NOT USED

3.10 GRADING

- A. The CONTRACTOR shall grade the site to achieve the elevations as shown on the Plans. All disturbed areas beyond the grading limits shall be restored to prior condition.
- B. Surplus excavated material not needed shall be disposed of by the CONTRACTOR. All damage caused by the CONTRACTOR during the course of his operations shall be cleaned, repaired, or replaced by means approved by the OWNER/OWNER'S REPRESENTATIVE at the CONTRACTOR'S expense.
- C. All temporary earth changes shall be in conformance with the Soil and Erosion Control Act.

3.11 RESTORATION

- A. All damage caused by the CONTRACTOR during the course of his operations shall be cleaned, re-laid or rebuilt with new materials to a condition equal to the original state, and of thickness equal to the original structure and to the original line and grade at the CONTRACTOR'S expense.

- B. Where the excavation is located beside a ditch and/or where an existing ditch is filled or disturbed in the CONTRACTOR's operations, the CONTRACTOR shall clean, repair, or replace the ditch with properly pitched bottom and side slopes and of section and capacity not less than the original section.
- C. Where excavation has been through areas containing foliage, the CONTRACTOR shall restore the disturbed area by planting new foliage approved by the OWNER/OWNER'S REPRESENTATIVE over the final backfill material.
- D. The CONTRACTOR shall remove excess dirt and other construction material from the site of the work and leave the site in a condition equal to its original state.
- E. The final condition of the streets and roadways shall be subject to the approval of the governmental body having jurisdiction thereof, as well as review by the ENGINEER.

END OF SECTION

SECTION 02520

WELLS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Under this Section, the CONTRACTOR shall provide all materials, labor and services necessary for furnishing and installing one (1) submersible well pump as specified herein. The pump shall be installed in the existing well as shown on the Plans.
- B. Operating Conditions: Each submersible well pump shall be multi-stage, and shall meet the following conditions:

No. of Pumps	1
Design Flow	52 gpm
Design Head	206 ft TDH
Max. Motor HP	5
Speed	3450 RPM
Discharge Size	3-inch

1.2 SUBMITTALS

- A. The CONTRACTOR, prior to purchasing the pumping units, shall submit to the ENGINEER, three (3) copies of characteristic curves and dimension sheets for the pumps which he proposes to furnish to meet the required conditions.

1.3 TESTING

- A. Pumps shall be tested at the manufacturer's plant and prior to shipment, certified copies of such tests shall be submitted to the ENGINEER in triplicate for final review and acceptance. Test data shall include head capacity curves from zero head to shutoff, brake horsepower, and efficiency. Certified tests shall conform to the operating requirements specified herein.

PART 2 - PRODUCTS

2.1 SURFACE PLATE ASSEMBLY

- A. A surface plate shall be fabricated from steel with a flat face base flange to match the well casing flange, short radius 90 degrees steel elbow terminating in a 150 lbs. raised faced steel discharge flange. The surface plate shall be fitted with properly sized electrical junction box to allow for splicing surface cables and well cables. It shall also be tapped for a well vent and air line and shall be provided with lifting lugs of sufficient strength to lift the entire pump and motor assembly including the riser pipe.

2.2 DISCHARGE COLUMN ASSEMBLY

- A. Each discharge column shall be constructed to ASTM-53 steel pipe furnished with threaded and coupled connections in lengths not to exceed 10 ft. All column sections must be interchangeable.

2.3 PUMP ASSEMBLY

- A. The pump assembly shall be Goulds Pumps Model 50L Stainless Steel submersible pump, or ENGINEER approved equal.

2.4 MOTOR ADAPTER

- A. A motor adapter of cast stainless steel shall be supplied to connect the submersible motor to the bowl assembly. The maximum strainer opening shall not be more than 75 percent of the minimum opening or water passage through the bowl or impeller.

2.5 SUBMERSIBLE MOTOR

- A. The motor shall be Single Phase, (60) Hz., 230 Volts, 3450 RPM with an outside diameter not to exceed 6-inches. It shall be a submersible type designed for continuous underwater operation and with a combination of a maximum water temperature and minimum velocity past the motor, such that the service factor shall be 1.15 minimum. The motor shall be of the water-filled type and fitted with a segmented plate type thrust bearing sized to match the pump. Motor leads shall be of sufficient length so that they may be spliced above the bowl assembly and the leads shall be protected by a stainless steel cable guard for the entire bowl length. The motor rating shall be selected so that the load at any point on the design curve is not greater than the name plate rating at 1.0 service factor.

2.6 POWER CABLE

- A. The power cable shall be sized such that the voltage drop will not exceed five percent at the motor rated full load current and voltage. Cables shall be designed specifically for submersible pump service and shall consist of either three single conductors individually insulated or three individual conductors individually insulated and the whole covered with an outer jacket.

2.7 WATER LEVEL INDICATOR

- A. There shall be furnished for the unit a suitable device for making conveniently possible at all times the determination of the water level in the well. Such device may consist of a small foot operated force pump with provision for quick connection to 3/16-inch plastic tubing extending down into the well to a point near the bottom of the well and with indicating device to read directly in feet the depth to the water in the well, when the air line has been pumped up to maximum pressure corresponding to the depth of submergence of the air pipe outlet. Some other device may be used subject to the approval of the ENGINEER..

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The CONTRACTOR shall be responsible for installing a complete well pump installation in accordance with these specifications and all applicable codes. The installation shall be coordinated such that it operates seamlessly with the proposed and existing irrigation system.

3.2 FIELD SERVICE

- A. The equipment manufacturer shall provide the services of a qualified field engineer to inspect and check out the installation of the equipment, make any necessary mechanical

adjustments, initiate start-up, and instruct the OWNER's personnel in the proper operation and maintenance of the equipment.

END OF SECTION

SECTION 02810

UNDERGROUND IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including general and supplementary conditions and specifications sections, apply to work of this section.

1.2 DESCRIPTION

- A. Install new submersible well pump, supply line and valves to and existing underground irrigation network and appurtenances to provide complete and working system according to plans and specifications provided.

1.3 QUALITY ASSURANCE

- A. Irrigation CONTRACTOR's Qualifications (or General CONTRACTOR, if they are to complete irrigation work) must meet the following criteria:
 - 1. CONTRACTOR to have established business for a minimum of 5 years.
 - 2. CONTRACTOR's primary business is to be irrigation installation. Primary defined as 60% of the CONTRACTOR business is to be derived from irrigation installation. Verification may be required.
 - 3. CONTRACTOR to be insured and capable of bonding.
 - 4. CONTRACTOR must have previous experience installing similar size jobs (submit with bid form).
 - 5. CONTRACTOR shall submit "CONTRACTORS Qualifications Statement", included in this package (submit with bid form).

1.4 RELATED WORK

- A. Electrical
 - 1. CONTRACTOR to supply and install the following:
 - a. Underground conductors for 230V power for the submersible well pump motor.
 - b. Pump motor starter and NEMA 4 panel
 - c. 24V connection between control panel and pump motor starter.
 - d. Required conduits.

B. General

1. CONTRACTOR to supply and install the following:

- a. Submersible well pump, motor, pitless adapter, supply pipe, fittings, valves, shock suppressor and all other required equipment and materials to provide a working water supply connected to the existing control panel and irrigation system.
- b. Point of Connection: All plumbing up to the Irrigation CONTRACTOR's point of connection as specified on drawings.

1.5 SITE CONDITIONS

- A. Before excavation, the CONTRACTOR shall obtain location of all cables, conduits, sewers, septic tanks, and other underground utilities, and shall be cautious as not to damage them. If such obstacles conflict with the proposed work, the CONTRACTOR shall immediately notify the OWNER's Representative for arrangements for relocation.
- B. In the event of damage, the CONTRACTOR shall repair or replace these lines at their expense to the satisfaction of the OWNER's Representative.

1.6 SUBMITTALS

- A. Submit manufacturer's data sheets for all materials (valves, pipe) and all other related items to OWNER's Representative.
- B. Submit CONTRACTOR's qualification form with bid form.
- C. Submit all other shop drawings as required.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

NOT USED

2.2 PIPE

- A. All PVC pipe shall be pressure pipe as manufactured by J-M Manufacturing or Cresline Plastic Pipe Company. High-impact virgin polyvinyl-chloride (PVC-1120) conforming to NSF Standard 14 and ASTM D-2241 for thermoplastic pipe with minimum 160 PSI test strength. Pipe shall have standard thermoplastic pipe dimension ratio of SDR-26 and shall be marked or stamped every 5 feet to indicate brand, strength rating, size and standards. See drawing for sizes specified.
- B. Solvent and primer used on PVC pipe shall meet the requirements of ASTM D-2564 and shall be approved by the National Sanitation Foundation. All solvent and primer shall be used in accordance with manufacturer's specification. Primer shall be purple in color. Solvent shall be used as is from original container. No thinner shall be added to the solvent to change its viscosity. If viscosity or consistency is unsuitable, the solvent shall not be used.

2.3 PIPE SLEEVES

NOT USED

2.4 FITTINGS

- A. All fittings 1-1/2" through 3" shall be Schedule 40 PVC solvent weld, type 1, meeting the requirements of ASTM D-2466. No saddles allowed.

2.5 VALVES

- A. Valves shall be of the type and size as specified on drawings.

2.6 QUICK COUPLING VALVES

NOT USED

2.7 SPRINKLER HEADS

NOT USED

2.8 CONTROLLERS

- A. Existing controller shall be connected to new submersible well pump motor starter, in a NEMA 4 panel as specified on the drawings.

2.9 SWING JOINTS

NOT USED

2.10 WIRE AND WIRE SPLICES

- A. All wire shall be 600 volt soft annealed copper, PVC insulated, UL approved, type UF. Wire sizes shall be as called for on drawing.
- B. All 24 volt wire connections shall be made using water-tight 3M DBY connectors. All field splices shall be contained in a 10" valve box.

2.11 SPARE PARTS

NOT USED

PART 3 - EXECUTION

3.1 LAYOUT AND STAKING

- A. Piping layout is diagrammatic. Irrigation CONTRACTOR shall verify site conditions. Any deviations from the plan shall be approved by the OWNER's Representative prior to installation.

3.2 TRENCHING

- A. Trenches shall be excavated so that irrigation lines are installed with the following minimum depths for pipe cover:
 - 1. All PVC lateral pipe 1-1/4" and 2-1/2": Minimum depth - 14".
 - 2. All PVC mainline pipe: Depth as specified below:
2-1/2" - 4" pipe size - 16" cover
 - 3. All wire:
115V power wire - 24" or as required by code.
24V control wire - 14" or as required by code.
- B. All PVC mainline piping shall be trenched.
- C. Trench excavation in excess of required depth shall have bottom graded and tamped prior to any pipe placement.
- D. Where trenching of PVC or polyethylene pipe lines is not possible because of adverse soil conditions or obstructions, and backhoe operation is required, provide labor, materials and equipment for this operation, including full trench backfilling with soil if required in opinion of OWNER's Representative. Site restoration of these areas shall be directed by OWNER's Representative. It shall be a part of this contract and shall be performed in the following manner:
 - 1. Return to grade with 4" of top soil and restore per the requirements of the contract documents. Backfill material shall be free from debris, including rocks, large stones, clay clumps or other unsuitable substances and care shall be taken to prevent settling and damage to pipe during and after backfilling operations. When backfilling, soil shall be tamped in 6-inch layers with a minimum of 6 inches of acceptable soil in turf areas.

3.3 INSTALLATION

- A. Unless otherwise indicated, comply with requirements of Uniform Plumbing Code.
- B. Piping
 - 1. All mainlines and headers shall be kept to a minimum of 2 feet from all existing or proposed trees.
 - 2. PVC pipe shall be laid on solid undisturbed soil or on thoroughly compacted full bed of clean fill so as to assure full bedding, proper alignment and minimum slope for drainage.
 - 3. PVC pipe ends and PVC fittings shall be thoroughly cleaned for full depth of fitting with liquid cleaner cement. Method of application shall be in accordance with manufacturer's recommendations for solvent weld connections.
 - 4. Lay pipe on solid sub-base, uniformly sloped without humps or depressions.

5. Install PVC pipe in dry weather when temperature is above 40 degrees F (4 degrees C) in strict accordance with manufacturer's instructions. Allow joints to cure at least 24 hours at temperature above 40 degrees F (4 degrees C) before testing, unless otherwise recommended by manufacturer.
- C. Point of connection shall be as indicated on drawings. CONTRACTOR shall verify point of connection with the OWNER's Representative.
- D. Use dielectric fittings at connections where pipes of dissimilar metals are joined.

3.4 THRUST BLOCKS

- A. Provide concrete thrust blocks on thrust side of mainline pipe wherever pipe changes direction at tees, bends, or dead ends, and at any other location where thrust is to be expected.
- B. Refer to City of Ann Arbor Standard Detail SD-W-2 for type and method of thrust blocks.

3.5 TESTING AND INSPECTION

- A. OWNER's authorized representative shall be responsible for inspection of the CONTRACTOR's work while such work is in progress. The CONTRACTOR will be notified of any work which does not meet the installation instructions and will be required to correct such work.
- B. Upon completion of construction, the CONTRACTOR will test the entire system under the normal working conditions. Upon visual inspection of the ground, should any leak be found, it shall be promptly repaired. All components will be checked for proper operation. Any malfunctioning equipment or leak shall be repaired and retested until it is in satisfactory working condition. CONTRACTOR is not responsible for existing irrigation mainline, valves or related components. If leaks are observed in existing irrigation system, CONTRACTOR shall immediately inform OWNER's Representative of approximate location of leak.

3.6 DRAWINGS OF RECORD / O&M MANUAL

NOT USED

3.7 MAINTENANCE, GUARANTEE AND WARRANTY

- A. After completion, testing and acceptance of the system, instruct OWNER in the operation and maintenance of the system. Following acceptance, thoroughly flush and drain the system for winter, and in the following spring, put the system into operation at no additional expense to the OWNER.

END OF SECTION

SECTION 16010

ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 REFERENCE TO GENERAL CONDITIONS

- A. The requirements of the General Conditions shall be reviewed for their application to the work within the Electrical Division.

1.2 WORK INCLUDED

- A. The work included in this Division consists of providing all labor and material required for the installation of the complete electrical system, ready for operation.
- B. The work shall include the following:
 - 1. Panelboards;
 - 2. All branch circuits with overcurrent protection, local disconnect switches, raceways and conductors to the facility's motors including control wiring;
 - 3. All wiring and equipment for instrumentation and controls;
 - 4. All items incidental to and/or required to complete the installation;
 - 5. Local disconnect switches for all equipment where the local disconnect switch is not furnished with the equipment;
 - 6. 120 volt or other low voltage power to control equipment if required;
 - 7. Pumps and equipment grounding;
 - 8. Electrical system and control start-up and testing.
 - 9. Associated incidental wiring with raceways and conductors which is not shown on the Plans will be required with, but not limited to, the following equipment specified under separate sections:
 - a. Submersible pumps
 - b. Valves and valve control panels

1.3 CHARACTER OF WORK

- A. The work shall be done in a first-class and workmanlike manner by skilled tradesmen and shall be complete in all details. It shall be executed so that the installation conforms and accommodates itself to the building structure, facilities, equipment and usage.

1.4 MATERIALS

- A. All materials and equipment shall be new and, to the extent possible, standard products of the same manufacturer for similar equipment. Equipment or material not specifically identified shall conform to the general standard of quality established herein.

- B. All materials and equipment shall be listed and labeled by a nationally recognized testing laboratory.
- C. All mounting hardware installed outdoors, in wet locations, or in contact with concrete shall be stainless steel.

1.5 PERMITS

- A. The CONTRACTOR shall obtain and pay for all permits and certificates of inspection for work herein specified. The cost of such permits and certificates shall be included in the CONTRACTOR's bid price.

1.6 LAWS, ORDINANCES, REGULATIONS

- A. The CONTRACTOR shall comply with, and all work and materials shall conform to, the requirements of all applicable federal, state and local laws, ordinances, regulations, as well as the rules and standards of the National Board of Fire Underwriters.

1.7 TEMPORARY CONSTRUCTION POWER

- A. The CONTRACTOR shall provide facilities for temporary light, power, and heat as hereinafter specified and as indicated under the General Conditions.
- B. At a minimum, the CONTRACTOR shall provide a 120/240 volt, single phase, 3-wire temporary service of sufficient capacity to suit construction needs. It shall consist of 2-pole solid neutral disconnect breaker in weatherproof enclosures, feeding breaker panels conveniently located on the construction site.
- C. As required, provide 240 volt single-phase receptacle outlets.
- D. Provide all temporary 120 volt power receptacles with ground fault protection.
- E. The CONTRACTOR shall connect the temporary power feed to the existing system and coordinate the connection point with the OWNER. All cost involved with connecting to the existing system shall be the responsibility of the CONTRACTOR.
- F. Temporary wiring shall be removed as soon as permanent wiring is completed and the service connected.
- G. If additional power or current characteristics are required, the CONTRACTORS requiring same shall pay for providing this service under the bid item "Install New Well Pump, Motor, Supply Line, Starter, Power Supply, and Make All Required Connections".

1.8 RECEIPT OF PORTABLE AND DETACHABLE PARTS

- A. All portable and detachable portions of the installation, such as keys, etc., shall be retained. At the completion of the work, they shall be turned over to the OWNER and itemized receipts obtained.

1.9 SHOP DRAWINGS

- A. Shop drawings shall be prepared as defined in the General Conditions for all equipment supplied under Division 16.00, Electrical.

1.10 INSTRUCTION MANUALS

- A. The CONTRACTOR shall supply five (5) copies of Installation, Operation and Maintenance Manuals for all equipment supplied under Division 16.00, Electrical.

PART 2 - INSTALLATION

2.1 PLANS

- A. The Electrical Plans show the arrangements, and general design and intent of the wiring system only. The circuit runs are diagrammatic; however, the drawings may include details giving specific data. Pull boxes or junction boxes, though not shown on the Plans, shall be provided and installed by the CONTRACTOR. Electrical work indicated on the Plans but not covered by these Specifications or vice versa shall be provided and installed by the CONTRACTOR.

2.2 FIELD MEASUREMENTS

- A. The CONTRACTOR shall make all necessary field measurements where electrical installations are involved to insure the ability to execute the work in accordance with the working drawings.
- B. Should interferences occur which will necessitate deviation from the layout or dimensions shown on the Plans, the ENGINEER shall be notified for his review of the changes before proceeding with the work.

2.3 COORDINATION OF WORK

- A. The CONTRACTOR shall coordinate his work with that of subcontractors on the job.
- B. The CONTRACTOR shall check with the ENGINEER before placing any panels, flush devices or other equipment installed in masonry walls and partitions.
- C. The CONTRACTOR shall install all starters, disconnect switches and other items or material used in connection with equipment in accordance with supplier's requirements and diagrams.

2.4 DEMOLITION

- A. The CONTRACTOR shall remove and/or relocate all electrical equipment, devices, conduit and wiring work as called for on the Drawings and as necessary whether such items are actually indicated on the Drawings or not in order to accomplish the installation of the specified new work.
- B. Equipment, materials and devices removed shall remain the property of the OWNER and shall be stored at locations as directed by the ENGINEER. Such items shall only be reused if specifically designated on the drawings.

2.5 POWER INTERRUPTIONS

- A. The CONTRACTOR shall coordinate with the OWNER any interruptions to power at the facility. Every effort shall be made to give enough advance notice to allow proper scheduling of the affected work activities.

- B. The CONTRACTOR shall provide temporary wiring or power generation to minimize the duration of electrical interruptions and to keep critical load energized.

2.6 CONCRETE WORK

- A. Concrete work for foundations, manholes, concrete encased conduit, etc., shall be provided by the CONTRACTOR and performed as shown on the Plans and shall conform to the Concrete Work Section of these Specifications.

2.7 LEGEND PLATES

- A. Electrical equipment shall be equipped with laminated plastic legend plates with black lettering engraved on white background. The legend plates shall be 1-1/4 inches high and 3-1/2 inches wide and shall be attached to the equipment by means of stainless steel machine screws. The plates shall be approximately 3/32-inch thick and shall have letter sizes and legends as reviewed by the ENGINEER.
- B. Legend plates shall be installed on the doors or covers of all enclosed electrical equipment.

2.8 MOUNTING HEIGHTS

- A. Devices shall be installed at heights as listed below unless otherwise shown on the drawings or directed in the field. Dimensions given are from the finished floor to the centerline of the device unless otherwise noted:

Push button stations	4'-0"
Hand-off-auto selector switches	4'-0"
Receptacles	1'-6"
Lighting switches	4'-0"
Outdoor receptacles	3 0" above ground
Lighting panelboards	6'-6" to top of panel
Power panelboards, starters, disconnect switches, actuating handle	6'-6" to highest

2.9 ENCLOSURES

- A. Unless noted otherwise, enclosures shall be NEMA 4 for outdoor locations.

2.10 CUTTING AND PATCHING

- A. The CONTRACTOR shall be responsible for the proper location of all chases, recesses and openings required for the electrical work and shall advise other trades of the sizes and locations of those required for his work.
- B. The CONTRACTOR shall provide all sleeves, etc., required for the introduction and placement of his work and shall be responsible for their correct location.
- C. Cutting, coring, and patching required as a result of the omission or opening of sleeve shall be done by the CONTRACTOR at his own expense.
- D. All cutting, coring, and patching shall be done by workers skilled in that trade.

2.11 ACCESS DOORS

- A. The CONTRACTOR shall provide access doors for concealed pull boxes and other work items that require accessibility for operation and maintenance.

2.12 EQUIPMENT SUPPORTS, FOUNDATIONS AND STANDS

- A. The CONTRACTOR shall provide supports, foundations, stands, and platforms for electrical equipment when specified or required for proper installation.
- B. Supporting structures shall be designed and constructed of a strength to withstand stresses and to distribute the load over building areas.

2.13 EXCAVATION, TRENCHING AND BACKFILLING

- A. The CONTRACTOR shall perform all excavation and backfilling required for the complete installation of the electrical systems.
- B. Excavations and backfilling shall be made at such time as will permit the uninterrupted progress of the work.
- C. Trenches for conduit may be excavated manually or with mechanical trenching equipment. Where underground utilities are encountered, the trenching shall be done by hand. Trenches shall be opened the complete length and depth before conduit is placed so that if any obstructions are encountered proper provisions can be made to avoid them. The CONTRACTOR shall sheet and brace the trenches, where necessary, and shall furnish and keep in place such bridges and crossing as may be required.
- D. All conduits shall be securely fastened in place during construction and shall be plugged or capped to prevent entrance of grout, water or dirt. Any conduit having a defective joint shall not be installed.
- E. No conduit shall come into contact with tunnels, or gas, water or sewer pipes. The conduit where crossing gas, water or sewage pipes shall be separated therefrom by at least 6 inches of soil. Conduits laid parallel to tunnels or gas or water mains or sewers must be separated therefrom by at least 12 inches of soil.
- F. Where it is necessary to cut existing paving, the CONTRACTOR shall restore the paving to its original condition.
- G. Restore any disturbed grading or seeded areas to their original conditions.
- H. The appropriate sections of Division 2.00, Sitework, shall be referred to for additional requirements of the listed work.

PART 3 - TESTS

3.1 GENERAL

- A. Following installation, but not more than 120 hrs before energization, the CONTRACTOR shall test the electrical system and components in the manner described below. All test results shall be recorded in writing. If requested, the CONTRACTOR shall use test documents supplied by the ENGINEER to record data. A certified copy of all test results shall be submitted to the ENGINEER immediately after completion.

- B. All necessary test instruments and equipment shall be furnished by the CONTRACTOR.
- C. Tests shall be performed and the system reviewed by the ENGINEER for acceptability before any work is covered up or concealed. If such work is concealed, it shall be re-opened so that the test may be performed.
- D. The ENGINEER shall be given ample notification of tests to permit him or the OWNER to be present. If tests are conducted without notification, they shall be required to be redone.
- E. A representative of the CONTRACTOR shall accompany the ENGINEER during the final inspection and checking out of the electrical system.

3.2 TESTS REQUIRED

- A. All work shall be given a visual inspection for good workmanship and conformance with standard practice.
- B. The CONTRACTOR shall make any tests or adjustments required or recommended in the manufacturer's installation instructions.
- C. The direction of rotation of all motors shall be checked. The motor shall be mechanically uncoupled from the driven load where reverse rotation could damage equipment.
- D. All motor control circuits shall be checked for correct operation, as well as all control functions, all actuating mechanisms and sensors. All adjustable circuit breakers and overload protection devices for motor circuits shall be adjusted to allow the motors to start and run. Furnish and install the proper size heaters if required.

END OF SECTION

SECTION 16020

RACEWAYS

PART 1 - GENERAL

1.1 CONDUIT MATERIALS

- A. All conduit, unless otherwise indicated, shall be rigid galvanized steel.

1.2 INSTALLATION

- A. All conduit shall be surface-mounted unless otherwise noted or shown on the plans.

1.3 CONDUIT SIZES

- A. Minimum size of conduit shall be 3/4-inch unless otherwise indicated.

PART 2 - PRODUCTS

2.1 RIGID GALVANIZED STEEL CONDUIT

- A. Rigid galvanized steel conduit shall be mild steel pipe with threaded connections, hot-dipped galvanized on both interior and exterior surfaces, conforming to ANSI Standard C80.1, "Specifications for Rigid Steel Conduit (zinc-coated)." Manufacturers shall be Allied, Triangle, Youngstown, Steelduct, or equal.

2.2 METAL CONDUIT FITTINGS

- A. Metal conduit fittings shall conform to ANSI C80.4, "Fittings for Rigid Metal Conduit and Electrical Metal Tubing." Manufacturers shall be Appleton, Crouse-Hinds, O.Z. Gedney, Pyle-National, Russel & Stoll, Thomas & Betts, or equal. Conduit fittings for EMT shall be compression type.

2.3 ELECTRICAL METALLIC TUBING

- A. Electrical metallic tubing shall be mild steel tube, zinc-coated, threadless type conforming to ANSI C80.3, "Specifications for Electrical Metallic Tubing (zinc-coated)." Manufacturers shall be Jones & Laughlin, Allied, Triangle, Steelduct, or equal.

2.4 LIQUIDTIGHT FLEXIBLE STEEL CONDUIT

- A. Liquidtight flexible steel conduit shall be constructed of a flexible galvanized steel core made from a continuous metal strip and an extruded PVC cover. Manufacturers shall be Anaconda, ElectriFlex, or equal.

2.5 PLASTIC CONDUIT AND FITTINGS

- A. Plastic conduit and fittings shall be rigid polyvinyl chloride (PVC), UL 651 labeled for 90°C and NEMA-40-PVC and meeting ASTM D 1784-81 standards for PVC compounds. Material shall permit chemical solvent sealing of joints in the field, providing continuity of mechanical strength and water tightness. Manufacturers shall be Amoco, Carlon, Olin, or equal.

2.6 PVC-COATED RIGID METAL CONDUIT AND FITTINGS

- A. Rigid metal conduit and fittings shall be identical to Paragraph 2.01 and 2.02 but with a minimum of 40 mil bonded coating of PVC on the exterior and a minimum of 2 mil interior coating.

2.7 INTERMEDIATE METAL CONDUIT

- A. Intermediate metal conduit shall be steel pipe with threaded connections, hot-dip or electro galvanized and conform to ANSI Standards. Manufacture shall be in accordance with the requirements of UL 1242IMC.

PART 3 - EXECUTION

3.1 GENERAL

- A. All electrical wiring shall be installed in conduit.

3.2 RACEWAYS

- A. All exposed conduit shall be run in neat symmetrical lines parallel and perpendicular to building walls, beams, columns, and other building elements.
- B. All conduit shall be dry, clean, and free of obstructions before conductors are pulled. If there is evidence of moisture, obstructions, or foreign matter in the conduit when the conductors are installed, the wiring shall be removed and the conduit cleaned to the satisfaction of the ENGINEER. All wiring showing evidence of damaged insulation shall be replaced.
- C. Assemble metallic conduit in such a manner that it will be electrically continuous.
- D. Conduits shall be separated by at least one conduit diameter.
- E. Maximum distance between pullboxes and/or outlets in any conduit run shall not exceed 80 ft.
- F. Concealed conduit shall be placed in the floors before concrete is poured and in concrete or masonry walls as the walls are laid up. The conduit shall be blocked and fastened in place to prevent any displacement during construction.
- G. One nylon fish cord shall be furnished and left remaining inside each run of conduit in which no conductors are installed. Splicing of fish cord will not be permitted.
- H. Use flexible steel conduit for short connections to motors on adjustable rails, to vibrating equipment, between outlet boxes and in metal partitions.
- I. Where plastic conduit is used, a ground conductor shall be installed.
- J. Expansion joints for conduit shall be furnished to compensate for thermal expansion and contraction.

3.3 CONDUIT SUPPORTS

- A. Groups of conduits shall be supported on trapeze hangers, "Unistrut," "Powerstrut," or equal. Hanger supports shall be rod or pipe with threaded connections.

- B. Conduit pipe straps shall be one-hole malleable iron. Individual conduits not supported on pipe straps shall be provided with clevis hangers.
- C. Conduit shall be supported at intervals not exceeding the maximum distances as specified by the N.E.C. for a given type/size conduit. Multiple runs of conduit shall be mounted with steel supports so arranged that each individual conduit is clamped in place.
- D. Conduit installed on walls shall be mounted on spacers to provide not less than 1/4-inch space between the conduit and the wall.
- E. Conduit and other equipment may be attached to structural steel only after review by the ENGINEER.
- F. All conduit shall be secured to the supports by means of approved galvanized clamps which are designed for use with the support system.

3.4 PENETRATIONS/TERMINATIONS

- A. Wherever a conduit enters an electrical equipment enclosure from an underground location, the opening shall be sealed with duct seal after the wires and/or cables are pulled.
- B. The threads of all steel conduit connections concealed in concrete shall be coated at the time of installation with zinc-clad primary coating as manufactured by the Sherwin Williams Corp., General Electric Co., or equal.
- C. All conduits, fittings, and enclosures shall be terminated with bonding and bushing fittings as required by NEC.

END OF SECTION

SECTION 16040

CONDUCTORS

PART 1 - GENERAL

1.1 CONDUCTOR TYPES AND SIZES

- A. Unless otherwise noted, all general use cable shall be 600 volt, NEC Type THWN, or XHHW, annealed copper.
- B. All shielded instrumentation cable shall be 300 volt, UL type PLTC, twisted pair/triad, with overall aluminum polyester cable shield, suitable for conduit and cable tray applications.
- C. All conductors shall be stranded.
- D. Unless otherwise noted all conductors shall be minimum No. 12 AWG, except No. 14 AWG may be used for control circuits. No. 18 AWG shall be used for all shielded instrumentation circuits.
- E. Multi-conductor cable shall consist of two (2) or more insulated color coded conductors with an overall PVC jacket. All multi-conductor cable shall be specifically approved for cable tray use, NEC Type TC, including conduit and other approved raceways in accordance with NEC Article 340.

PART 2 - PRODUCTS

2.1 600 VOLT CABLE

- A. Conductors shall be annealed, uncoated, softdrawn copper wire, or aluminum wire UL listed, AWG gauge, insulated for 600 volts with code grade insulation conforming to I.P.C.E.A. specifications. Manufacturers shall be Okonite, Rome Cable, American (AIW), Essex, Triangle, or equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. The inside of conduit and raceways shall be dry and clean before cables are pulled. Care shall be exercised in pulling to avoid damage to the cable. A UL approved wire lubricant shall be used where required to facilitate wire pulling.
- B. All wire and cable shall be equipped with lugs and connectors, except where cable terminations are included with the equipment being connected.
- C. Splices and taps shall be made only in junction boxes or cabinets.
- D. Cable connections for No. 8 AWG and smaller shall be with a copper indent type pressure connector.
- E. Cable connections for No. 6 AWG and larger shall be made with a compression or bolted type pressure connector.

- F. Conductors terminating at outlets shall be left with not less than 8 inches free length within the outlet.
- G. 20 amp, 120 volt circuits over 100 ft in length shall be of No. 10 AWG conductors unless otherwise noted and comply with minimum NEC voltage drop.
- H. Conductors for control circuitry may be No. 14 AWG unless otherwise noted.
- I. 480 volt circuits shall be run in individual conduits, one circuit per conduit.
- J. Control and power circuits shall not be run in the same conduit or raceway unless otherwise noted.
- K. Low voltage and 120 volt control conductors shall not be run in the same conduit or raceway unless otherwise noted.
- L. DC and AC control conductors shall not be run in the same conduit or raceway unless otherwise noted.
- M. All shielded instrumentation cables shall be run in individual conduits or raceways separate from power and control and shall not be spliced.
- N. Each wire and cable shall be tagged at least once as it passes through each junction box, manhole, or handhole, and at each termination. Tags shall be vinyl cloth, plastic coated, self-adhesive tape markers.
- O. Orientation of three phase circuits at terminations shall take the order: Phase X - Phase Y - Phase Z, left to right, top to bottom, or front to back.
- P. Exposed Interlocked Armor Cable must be protected against mechanical damage. Sleeves shall be installed for each cable penetration through all concrete walls and foundations. Each penetration through an exterior building wall shall be sealed with a link seal.

END OF SECTION

SECTION 16060

GROUNDING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Electrical system neutrals and non-current carrying parts of electrical equipment shall be grounded in accordance with the national electrical code, except where additional requirements are shown on the plans or called for herein.

PART 2 - PRODUCTS

2.01 GROUND RODS

- A. Ground rods shall be 5/8-inch diameter x 10 ft long copper-clad steel rods.

2.02 GROUND BUS

- A. Ground bus shall be minimum No. 4/0 stranded, soft drawn bare copper, continuous length from ground rods to ground terminal of service entrance equipment.

2.03 GROUND CONDUCTORS

- A. Ground conductors shall be stranded, soft drawn, bare or insulated copper, sized per NEC, but not smaller than No. 12 AWG.

2.04 MANUFACTURERS

- A. Clamp or bolt connectors shall be Thomas & Betts, Everdur, or equal.
- B. Exothermic weld connectors shall be Cadweld, Erico Products, or equal.

PART 3 - EXECUTION

3.01 STRUCTURAL FRAME AND EQUIPMENT CONNECTIONS

- A. Ground connections to structural steel shall be made with exothermic welds.

3.02 UNDERGROUND AND CONCEALED CONNECTIONS

- A. All underground and concealed ground connections shall be made with exothermic welds.

3.03 GROUND RODS AND BUS

- A. Ground rods and underground ground bus shall be at least 18 inches below grade.

3.04 DISTRIBUTION AND LIGHTING PANELS

- A. The neutral of all distribution and lighting panels shall be bonded to comply with NEC.

3.05 MOTOR CONTROL CENTERS

- A. The ground bus of all motor control centers shall be connected to the common ground bus system.

3.06 480 VOLT POWER SYSTEM

- A. The grounded conductor of 480 volt power circuits shall be bonded in accordance with NEC.

3.07 GROUND CONDUCTORS IN CONDUIT

- A. Ground conductors run in conduit with circuit conductors shall be securely connected inside junction boxes or enclosures.

3.08 SYSTEM AND EQUIPMENT GROUNDING

- A. The system and equipment grounding systems shall be bonded at the service entrance equipment in accordance with NEC. Connect to ground bus.

3.09 GROUNDING CONDUCTORS IN CONDUIT

- A. Any ground conductor smaller than No. 6 AWG subject to mechanical injury shall be installed in steel conduit, grounded to the conduit at both ends.

3.10 FLEXIBLE AND PLASTIC CONDUIT

- A. All plastic conduit shall contain a separate ground conductor.
- B. All flexible steel conduit exceeding 6 ft in length shall contain a separate ground conductor.

3.11 SUPPORT OF BARE GROUND CONDUCTORS

- A. Bare ground conductors shall be supported at intervals not exceeding two (2) ft.

3.12 BONDING SURFACE PREPARATION

- A. All bonding surfaces shall be thoroughly cleaned prior to making ground connection.

3.13 INSULATED GROUND CONDUCTORS

- A. Where insulated ground conductors are used, all splices and connections shall be taped.

3.14 GROUNDING PENETRATION THROUGH BUILDING STRUCTURE

- A. Where a grounding conductor passes through floors or walls, it shall be installed in rigid metal conduit, bonded to the conduit at both ends.

3.15 GROUNDING CONNECTIONS

- A. Connections to grounding electrodes shall be made with ground conductors as shown on the Plans.

END OF SECTION

SECTION 16070

DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide, install and connect a complete system of feeders, panels, safety switches, starters, contactors, push buttons, conduits, wire fittings, boxes, supports and all necessary materials for equipment requiring electrical power as indicated on the Plans or hereinafter specified, ready for satisfactory operation. Items listed below may not pertain to this particular project.

PART 2 - PRODUCTS

2.1 MOTOR STARTERS

- A. All starter units shall be combination starters with molded case circuit breaker disconnects. The circuit breaker disconnect shall be mechanically linked to a handle mounted on the outside of the enclosure so that the circuit breaker can be operated without opening the cover of the enclosure. This handle shall have provisions for padlocking in either position.
- B. All 3-phase starters shall be full voltage, reversing or non-reversing as noted on the Plans or in these Specifications. Overload relays shall be of the thermal, manual reset type with ambient temperature compensation. Motors shall be protected by three (3) overloads. All overloads shall have reset capability from the front of the unit without opening the door.
- C. All starters shall include an individually fused control transformer, 480/120 volts, 1-phase, 60 Hz. This transformer shall be on the load side of the motor circuit protector specified above and shall provide power to operate the contactor coil, indicating lights, and other control equipment associated with the individual motor. This transformer shall be fused on one side of its secondary or 120 volt coil. The opposite side shall be grounded. Both sides of the primary of this transformer shall be fused. Provide 50% spare fuses of each type and rating.
- D. Unless noted otherwise, all starters shall have green light - motor stopped; red light - motor contactor energized. These lights shall be visible from the front of the enclosure. Provide two spare normally-open contacts and one spare normally-closed contact. These contacts shall be rated for at least 10 amperes and 1/3 horsepower at 120 volts a.c.
- E. The enclosure, when not mounted in panels, switchboard or motor control centers, shall be NEMA 4.
- F. Each starter shall have a Local-Off-Remote selector switch, a start button that will operate only in the Local mode, and a stop button with a mushroom head that will operate in all modes. These buttons shall be visible and not behind any covers.

2.2 BRANCH CIRCUIT BREAKERS

- A. The breakers shall have each pole provide inverse time delay and instantaneous circuit protection.
- B. The breakers shall be operated by a toggle type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits and abnormal currents.

- C. Tripping due to overload or short circuit shall be clearly indicated by the handle automatically assuming a position midway between the manual ON and OFF positions.
- D. All poles shall be so constructed that they open, close and trip simultaneously. Breakers must be complete, enclosed in a molded case. Ampere ratings shall be clearly visible.
- E. The minimum interrupting ratings of the circuit breakers shall be 22,000 RMS symmetrical amps at 480 volts.
- F. Circuit breakers shall be listed with Underwriter's Laboratories, Inc. Manufacturer shall be Eaton Electric, Square D, or equal.

2.3 DRY TYPE TRANSFORMERS

- A. Transformers shall be indoor, dry-type, self air-cooled, metal enclosed with provisions for conduit connections and shall have windings with Class H, 150°C rise insulation.
- B. Transformers with KVA ratings less than 30 KVA shall be provided with two 5% full capacity below normal voltage taps on the primary winding.
- C. Transformers rated 30 KVA and greater shall be provided with two 2-1/2% full capacity above and below normal voltage taps on the primary windings.
- D. Transformers shall be quiet type and shall be designed, manufactured, and tested in accordance with applicable IEEE, ANSI and NEMA standards.
- E. Manufacturers shall be Eaton Electric, Square D, or equal.

2.4 CIRCUIT BREAKER PANELBOARDS

- A. Panelboards shall be dead front and have ratings and features as shown on the Plans.
- B. Enclosures for panelboards shall be minimum 20 inches wide by 5-3/4 inches deep with an overall door. Boxes shall be made of code gauge galvanized steel and shall be designed for surface or flush mounting as shown on the Plans.
- C. Glazed directory frames and cards designating the branch circuits shall be mounted on the inside of the cabinet door. All directories shall be typed or printed.
- D. Circuit breakers shall have molded plastic cases, AC rated, quick-make, quick-break, with trip-free operating handle, position indicator, and thermal magnetic trip device.
- E. Two- and three-pole breakers shall have a common operating handle and a common trip mechanism.
- F. Ground fault circuit interrupters shall be installed in panels where noted on the Plans.
- G. Panelboards shall be Square D, Type NQO or I-Line or equal.

2.5 SAFETY SWITCHES

- A. Safety switches shall be industrial grade heavy-duty type, dead front construction, quick-make, quick-break switch mechanism, with cover interlocked with handle with provision for padlocking handle, horsepower rated, fused or non-fused as shown on the Plans.

- B. The enclosures, when not mounted in panel, switchboards or motor control centers, shall be NEMA 4.
- C. Manufacturer shall be Eaton Electric, Square D, or equal.

2.6 PACKAGE POWER SUPPLY

- A. The package power supply shall have four parts; a primary side circuit breaker, a dry transformer, a secondary side main circuit breaker, and a branch circuit panelboard. This power supply shall be purchased as a single unit.
- B. The primary side circuit breaker shall be sized no larger than 250% of the rated current of the transformer. The breaker shall be three-pole and rated at 480 volts or greater.
- C. The transformer shall be three-phase, 480:120/208 volts with a temperature rise no greater than 115 degrees C. The transformer shall be sand-epoxy encapsulated and have two 5% FCBN taps.
- D. The secondary main breaker shall be sized no greater than 200% of the rated secondary current of the transformer. The breaker shall be three-pole and rated at 250 volts or greater.
- E. The panelboard shall have space for a minimum of 12 single-pole spaces. The breakers shall be sized as required.
- F. The enclosure shall be weather-resistant and be suitable for outdoor use.
- G. Glazed directory frames and cards designating the branch circuits shall be mounted on the inside of the cabinet door. All directories shall be typed or printed.
- H. The package power supply shall be as manufactured by Square D, Mini Power-Zone or ENGINEER approved equal.

2.7 MOTOR STARTERS - SINGLE-PHASE

- A. Single-phase manual starters shall have a quick-make, quick-break toggle mechanism with overload. Hand-off-auto selector switch and indicating lights where indicated on the Plans.
- B. Single phase magnetic shall be similar to that of three-phase except that it is modified for single-phase operation.
- C. The enclosures, when not mounted in panel, switchboards or motor control centers, shall NEMA 4.

2.8 FUSES

- A. Where fuses are installed, they shall be dual-element type unless otherwise indicated, and manufactured by Bussmann.

PART 3 - EXECUTION

3.1 PANELBOARD MOUNTING

- A. Panel boards shall be mounted at uniform heights throughout the building, as indicated in Section 16.01.

- B. Flush-mounted panel boards shall be provided with two spare 1-inch conduits extending to the ceiling cavity or nearest area of exposed conduit.

3.2 EQUIPMENT IDENTIFICATION

- A. Identification shall be provided on all electrical equipment, as called for in Section 16.01.

3.3 PANELBOARD DIRECTORIES

- A. Panelboard directories shall be filled out identifying the equipment served and the location.

3.4 SECURING AND ANCHORING

- A. All electrical equipment not self-supporting, including panelboards, circuit breakers, starters, safety switches, and similar equipment shall be mounted securely to walls, columns and machine frames with 1/4-inch minimum separation from same, and provided with all necessary spacers, brackets, structural pieces, inserts, anchors, and bolts for this purpose. All self-supporting equipment shall be anchored securely to floors and to supporting steel where such supports are indicated or required. All equipment mounting shall conform to the manufacturer's recommendations.

3.5 TRANSFORMERS

- A. Transformers shall be mounted so as to minimize transmission of vibrations to the building. Isolation pads and flexible 18-inch long conduit connections for transformers over 15 KVA shall be provided.
- B. All transformers shall be checked in the field for proper tap position. A tabulation shall be made showing the tap position for each transformer and six (6) copies submitted for the ENGINEER's review.
- C. The CONTRACTOR shall adjust taps to give a line to neutral voltage under load of 115V to 119V for nominal 120/240V systems and 265V and 275V for 277/480V systems.

3.6 ADJUSTABLE CIRCUIT BREAKERS, FUSES, AND MOTOR OVERLOAD DEVICES

- A. The CONTRACTOR shall set all adjustments on circuit breakers and solid state motor overloads. A copy of the settings shall be given to the ENGINEER for approval.
- B. The CONTRACTOR shall furnish and install all required fuses and shall replace fuses that blow during start-up.
- C. The CONTRACTOR shall furnish and install proper size heaters for motor overload protection. The heaters shall be sized to the full load current as stated on the nameplate of the actual motor that is being protected.
- D. The CONTRACTOR shall be responsible to make adjustments and take corrective action to all overcurrent devices in order to start and run all motors and other loads. All adjustments and other action must meet the requirements of the National Electrical Code.

END OF SECTION

SECTION 16100

CONTROL DEVICES

PART 1 - GENERAL

1.1 FURNISHING OF CONTROL DEVICES

- A. When not supplied with other apparatus, control devices shall be furnished and installed as required to achieve the control functions indicated on the Plans.

1.2 IDENTIFICATION OF CONTROL

- A. All control devices shall be provided with legend plates identifying the equipment being controlled, as specified in Section 16.01 of this Division.

PART 2 - PRODUCTS

2.1 TIME SWITCHES

- A. Time switches shall be heavy duty, voltage rated for application, momentary or maintained contacts as called for on Plans, 24-hour, astronomical dial, omitting device, spring wound carryover. Manufacturer shall be Tork, Paragon, Intermatic, or ENGINEER approved equal.

2.2 DIMMERS

- A. Dimmers shall be heavy-duty, solid-state type, 1500 watt, 120 volt AC, toggle or pushbutton on-off switch and linear slide dimmer control, manufacturer shall be Lutron, Leviton, Lightolier, Lithonia, Prescolite or ENGINEER approved equal.

2.3 PUSHBUTTONS, SELECTOR SWITCHES, AND PILOT LIGHTS

- A. Pushbuttons, selector switches, and pilot lights shall be heavy duty, oiltight, with die-cast bushings, and interchangeable lenses, buttons, and knobs. Contact blocks shall be tandem mounted and terminals shall be screw type, easily accessible, and well identified. Enclosures shall be NEMA 4 (for outdoor use), flush or surface mounted as shown on the Plans. Manufacturer shall be MicroSwitch, Square D, or ENGINEER approved equal.

2.4 RELAYS

- A. Relays shall be electromechanical, heavy duty, industrial grade, enclosed, with ratings and contacts as shown on the Plans. Manufacturer shall be General Electric, Allen Bradley, Square D, or ENGINEER approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All control wiring shall be run in separate raceways from feeder and branch circuit wiring unless otherwise noted.

3.2 IDENTIFICATION

- A. All control wiring shall be tagged and identified in accordance with the requirements under Section 1.00 of this Division.

3.3 MINIMUM CONTROL WIRE SIZES

- A. Minimum size of control wiring shall be No. 14 AWG.

END OF SECTION