



CITY of NOVI CITY COUNCIL

**Agenda Item J
September 26, 2011**

SUBJECT: Approval to award a contract for Underground Irrigation System Upgrade at ITC Community Sports Park to American Sprinkler & Landscape, Inc., the low bidder, in the amount of \$51,821.

RJA

SUBMITTING DEPARTMENT: Department of Public Services – Field Operations Division
Parks, Recreation and Cultural Services Department

CITY MANAGER APPROVAL:

[Handwritten signature]

EXPENDITURE REQUIRED	\$51,821
AMOUNT BUDGETED	\$50,500
APPROPRIATION REQUIRED	\$1,321 (included in first quarter budget amendment)
LINE ITEM NUMBER	208-691.00-974.084 (Park Development – ITC Park Pump House)

BACKGROUND INFORMATION: The Novi City Council appropriated \$50,500 in FY2010-2011 for an Underground Irrigation Upgrade at ITC Community Sports Park. These funds were rolled-over and included in the current FY 2011-2012 Park Development Fund.

This upgrade will replace irrigation infrastructure and equipment that is 12 years old and has no advanced technology options to assist with park maintenance operations. The specifications for this equipment included replacement of the mainline water distribution pipe on the west side of the park complex (soccer fields) that connects to the newer mainline on the east side of the park (baseball fields), a multi-functional two wire control clock that coordinates both sides of the complex to maximize watering efficiency, two wire signal decoders that reduce maintenance costs and abate lightning strike damage, and a new pumping system that is controlled by an energy efficient variable frequency drive (VFD). In addition, the upgrade of this system will provide the City with a future option for funding a cell modular kit that monitors water use, indicates component failure, and controls programming through a web based computer application or smart phone (this was bid as Alternate 1, but is not being recommended for award at this time).

Following a public bid solicitation period, on August 9, 2011 two bids were received, with two alternates, see table below. Upon a thorough evaluation, the Department determined that American Sprinkler & Landscape, Inc. met all specifications by providing a responsive bid. Based on available funding the Department is recommending awarding only the base bid at this time. Upon approval to award, all bonds and vendor signed contracts will be presented to legal counsel for review, before final City signature.

Vendor	Base Bid (Recommended)	Alternate #1 (Cell Modular Kit)	Alternate #2 (New 200 gpm Pumping Station)	Total
American Sprinkler & Landscape Associates	\$51,821	\$2,950	\$2,890	\$57,661
Troy Clogg Landscape Associates	\$74,450	\$3,800	\$3,000	\$81,250

Installation of the system is tentatively scheduled to begin the second week of October, and will be completed by December 31.

RECOMMENDED ACTION: Approval to award a contract for Underground Irrigation System Upgrade at ITC Community Sports Park to American Sprinkler & Landscape, Inc., the low bidder, in the amount of \$51,821.

	1	2	Y	N
Mayor Landry				
Mayor Pro Tem Gatt				
Council Member Fischer				
Council Member Margolis				

	1	2	Y	N
Council Member Mutch				
Council Member Staudt				
Council Member Wrobel				

CONTRACT

This Agreement shall be considered as made and entered into as of the date of the last signature (“Effective Date”), and is between the City of Novi, 45175 W. Ten Mile, Novi, Michigan 48375 “City”, _____, whose address is _____, _____, _____, “Contractor.”

Work. For and in consideration of payment by the City as provided under the Payment Section of this Contract, Contractor shall perform the work described on and in the Work Specifications listed in “Exhibit A”, which is a part of this Contract, in a competent, efficient, timely, good and workmanlike manner and in compliance with the following terms and conditions.

Permits. The work to be performed includes applying and paying for, and obtaining issuance of all required permits and satisfying all requirements or conditions for such permits.

Bonds and Insurance. This Contract is conditioned on Contractor securing and maintaining the liability insurance specified in the Bid Specifications, which are a part of this Contract, which shall be confirmed by Certificate(s) of Insurance, with said coverages to be maintained for the life of this Contract and the City entitled to thirty (30) days written notice of any cancellations or changes. Contractor shall also supply payment, performance, and maintenance bonds as required, in a form acceptable to the City.

Time of Work. All Insurance requirements shall be satisfied within 14 days, and work shall be completed within ___ days of the Effective Date of this Contract. These time limits are of the essence of this Contract and failure to meet them shall permit City to terminate this Contract whether or not work has been commenced.

Payment. The City agrees to pay the Contractor the sum of \$ _____, payment to be made after satisfactory completion of the work and within thirty (___) days of receiving a final bill or invoice for the work from the Contractor, accompanied by a sworn statement and full unconditional waivers of lien, confirming that all subcontractors and any material suppliers have been paid in full.

Changes. Any changes in the provisions of this Contract must be in writing and signed by the City and Contractor.

Liability. Contractor shall be liable for any injury or damage occurring on account of the performance of its work under this Contract. Consistent with this liability, the Contractor agrees to defend, pay on behalf of, and hold harmless the City, its agents, and others working on its behalf against any and all claims, demands, suits, losses and settlements, including actual attorney fees incurred and all costs connected therewith, for any damages which may be asserted, claimed or recovered against the City by reason of personal injury and/or property damages which arises out of or is in any way connected or associated with this Contract.

Inspections, Notices and Remedies Regarding Work. During the performance of the work by Contractor, City shall have the right to inspect the work and its progress to assure that it complies

with this Contract. If such inspections reveal a defect in the work performed or other default in this Contract, City shall provide Contractor with written notice to correct the defect or default within a specified number of days of the notice. Upon receiving such a notice, Contractor shall correct the specified defects or defaults within the time specified. Upon a failure to do so, the City may terminate this Contract by written notice and finish the work through whatever method it deems appropriate, with the cost in doing so a valid claim and charge against Contractor, or, preserve the claims of defects or defaults without termination by written notice to Contractor.

Demolition Disposal Requirements. The Contractor shall perform all work and dispose of all materials in compliance with all provisions of applicable federal, state, county and City environmental laws. This obligation includes lawful disposal of all material, with a condition of the City's payment obligation being Contractor delivering to City copies of written documents from the licensed landfill or disposal site, confirming the dates, quantities and types of demolition debris disposed of, the disposal costs and that those costs have been paid in full by Contractor.

Compliance with Laws. This Contract and all of Contractor's work and practices shall be subject to all applicable state, federal and local laws, rules or regulations, including without limitation, those which apply because City is a public governmental agency or body. Contractor represents that it is in compliance with all such laws and eligible and qualified to enter into this Contract.

Governing Law. This Contract shall be governed by the laws of the State of Michigan.

Assignment. Contractor shall not assign this Contract or any part thereof without the written consent of the City.

Successors and Assigns. This Contract shall be binding on the parties, their successors, assigns and legal representatives.

Notices. Written notices under this Contract shall be given to the parties at their addresses on page one by personal or registered mail delivery to the attention of the following persons:

City: Matt Wiktorowski, Field Operations Senior Manager, and
Maryanne Cornelius, City Clerk

Contractor: Name, Company Name, 9276 Address. City, State, Zip code.

Contract Term. The Contract Term shall be as set forth in the attached Exhibit A.

Contract Termination. The City may terminate and/or cancel this contract (or any part thereof) at any time during the term, any renewal, or any extension of this contract, upon thirty (30) days written notice to the Contractor, for any reason, including convenience without incurring obligation or penalty of any kind. The effective date for termination or cancelation shall be clearly stated in the written notice. In the event of termination Contractor shall be paid as compensation in full for services performed to that date an amount calculated for that particular project. Such amount shall be paid by the City upon Contractor delivering or otherwise making

available to the City all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been prepared and/or accumulated by Contractor in performing the services up to the date of termination.

Waivers. No waiver of any term or condition of this Contract shall be binding and effective unless in writing and signed by all parties, with any such waiver being limited to that circumstance only and not applicable to subsequent actions or events.

WITNESS AND DATES
OF SIGNATURES:

CITY OF NOVI

Date: _____

By: David B. Landry
Its: Mayor

Date: _____

By: Maryanne Cornelius
Its: Clerk

CONTRACTOR

Date: _____

By: R.S. Contracting, Inc.,
Jim Valente
Its: Treasurer

EXHIBIT A WORK SPECIFICATIONS

SAMPLE



cityofnovi.org

CITY OF NOVI
BID FORM

We the undersigned as bidder, propose to furnish to the City of Novi, according to the terms, conditions and instructions attached hereto and made a part thereof:

**UNDERGROUND IRRIGATION SYSTEM UPGRADE -
ITC COMMUNITY SPORTS PARK**

A. Irrigation system per specs	\$ <u>51,821.00</u>
Alternate #1	\$ <u>2,950.00</u>
Alternate #2	\$ <u>2,890.00</u>

We acknowledge receipt of the following Addenda: #1
(please indicate numbers)

We have included a letter from our bonding company indicating that we are able to obtain bonds with the language & format as specified in the bid documents.

Yes X No _____

Exceptions to specifications (all exceptions must be indicated here):

Comments: _____

References: Please provide at least three (3) client references for similar projects done within the last three years:

SEE ATTACHED

Company _____

Address _____

Phone _____ Contact name _____

Project: _____

Company _____

Address _____

Phone _____ Contact name _____

Project: _____

Company _____

Address _____

Phone _____ Contact name _____

Project: _____

Bid submitted by:

Company (Legal Registration) AMERICAN SPRINKLER

Address 34567 GLENDALE

City LIVONIA, State MI Zip 48150

Telephone 734-458-7005 Fax 734-458-7011

Representative's Name (please print) THOMAS J. HENIG

Representative's Title V. President / owner

Representative's Signature [Signature]

E-mail TJHENIG@AOL.COM or J.BORNEMAN@AMERICANSPRINKLER.COM

Date 8/8/2011



American Sprinkler

34567 Glendale
Livonia, MI 48150
(734) 458-7005
(734) 458-7011 Fax

REFERENCES FOR RECENTLY COMPLETED WORK

Job Name	Contract With	Contact	# of zones	Job Cost	Year	Notes
Hickory Chase Retirement Hilliard, Oh	WH Canon Company	Ed Ashcraft (734) 931-3900 Jim Jones, Steve Ude	130	\$ 480,000.00	2008	includes 3 fountains, wells and pump skids
Blue Cross Detroit, MI	WH Canon Company		39	\$ 126,761.00	2007	
Bedford East Campus Troy, MI	WH Canon Company		23	\$ 48,000.00	2008	Two wire decoder system
Oak Point Church Novi, MI	WH Canon Company		68	\$ 101,635.00	2006	Two-wire decoder system/ pump skid
Meridian Rd Median Islands Romulus, MI	WH Canon Company		43	\$ 82,150.00	2005	Extensive directional boring
12 Mile Rd Median Islands Novi, MI	City Of Novi	Tim Sikma (248) 735-5647 Ryan Trainer (248) 343-1319	45	\$ 138,221.00	2008	Included grading/seedng
MDOT Job Woodward Ave Detroit, MI	Dan's Excavating	Todd Heizer (481) 588-2542	7		2008	extensive directional boring
Fenton Public Schools Fenton, MI	Lavant Landscaping	Ethan Lavinge (810) 266-4730	47	\$ 68,890.00	2008	
Fuller Park Soccer Fields Ann Arbor, MI	City of Ann Arbor	Mark Warner (734) 835-8647	33	\$ 60,350.00	2007	Two wire decoder system
CMI Riverfront Redevelopment Lansing, MI	NorthLavant Landscaping	Ethan Lavinge (810) 266-4730	20	\$ 36,891.00	2009	
Moving Rd Median Islands Warren, MI	City of Warren	Hubbel, Roth & Clark (248) 434-6585	70	\$ 328,365.00	2006	Two wire decoder system
U of M soccer fields Ann Arbor, MI	University of Michigan	TJ Lentner (734) 717-4206 Tom Keast (734) 647-1332	37	\$ 89,000.00	2009	
Farrington Schools North Farrington High Dunke & Warner Middle Schools Powers Middle School	McCarthy & Smith	Steve Cipparone (248) 914-5169 Frederic Bopp (248) 302-8950	85 76	\$ 15,764.00 \$ 507,500.00	2005 2006	includes well/pump skid
Toyota Tech Center York Twp, MI	Deangelis Contractors	Larry Berry (734) 676-8688	210	\$ 438,000.00	2008	two-wire decoder system/pump skid

TRADE REFERENCES
John Deere Landscapes
(734) 414-0100 Dawn Hicks

Spartan Distributors
(800) 822-2216 Mike
Gabert

BANK REFERENCES
National City Bank
(734) 459-9000
Kara McInerney



American Sprinkler

34567 Glendale

Livonia, MI 48150

(734) 458-7005

(734) 458-7011 Fax

WORK COMPLETED IN 2010

Job Name	Contract With	Owner	Architect	Contract Amt
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Towsley Center for Children Ann Arbor, MI	Phoenix Contractors	University of Michigan	Integrated Design Sol Troy, MI	\$ 16,463.00
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St Clair Shores Harper Int improvements	City of St Clair Shores	City of St Clair Sh. 586-447-3340	Spartan Distributors	\$ 19,500.00
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Karmanos Cancer Center Roch Hills	WH Canon Company	Cridenon Hospital	Albert Kahn Associates	\$ 27,584.00
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Detroit Port Authority Terminal	WH Canon Company	Detroit/Wayne Co Port Authority	Hamilton Anderson	\$ 19,862.00
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313-864-0270

Valley View Elementary Battle Creek, MI	Morricks Nursery	Battle Creek Public schools	Beta Design	\$ 9,670.00
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616-235-6220

Villages of Spring Meadow	Morricks Nursery	Presbyterian Villages	Progressive Basic Arh	\$ 11,740.00
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248-840-3490

Deoindre Trail Park Detroit	WGI Contracting	DEGC 313-933-2940	Mannik & Smith	\$ 27,900
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Forest St improvements - Dexter	Nagle Paving	Village of Dexter	Beckett & Raeder	\$ 19,500.00
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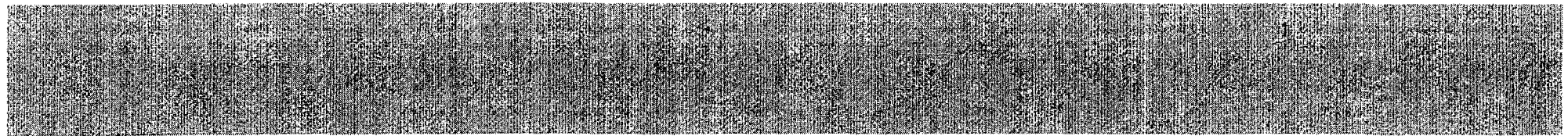
734-663-2622

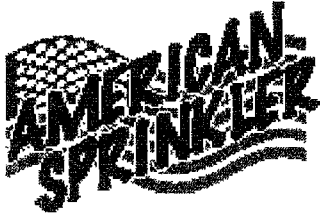
Rouge Woods Apartments	Lavant Landscaping	Rouge Woods Arts	TDC Architects	\$ 7,950.00
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313-585-9164

Rochester Rd/ Big Beaver Intersection And Park Improvements	Iafrate Construction	City of Troy	Grissem Metz	\$ 51,067.00
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248-347-7010





American Sprinkler & Landscape Inc

34567 Glendale
Livonia, MI 48150
(734) 458-7005
(734) 458-7011 Fax

March 2011

COMPANY BACKGROUND

- Year established: 1986
- Yearly Sales: 2.2 million
- Insurance: Workers Comp and Commercial General Liability and Auto with a \$3,000,000 limit
- Officers:
 - Tom Henig - Vice President
 - Jeff Borneman - President

COMPANY MISSION STATEMENT

Irrigation is our only business. We are experts at what we do. We do not have the distractions of other interests, as do many of our competitors. Our mission is to be the most efficient, best quality, most reliable contractor available anywhere.

INSTALLATION DEPARTMENT

- Total field employees 25-35
- Four installation crews. Average experience of foremen is 12 years.
- Equipment available
 - * 4 Case pipe pullers
 - * 4 Case trenchers
 - * 1 Vermeer trencher
 - * 6 fully stocked truck/trailer combos
 - * 2 Directional Boring rigs

SERVICE DEPARTMENT

- Total service employees 8-12
- Six service crews. Average experience of service techs is 10 years
- Equipment available:
 - 6 fully stocked service vehicles
 - Access to any installation equipment above when needed.

OFFICE STAFF

- 3 full time office staff to handle service calls, billing issues, etc. in a timely manner.

MERCHANTS 
BONDING COMPANY

August 27, 2010

City of Novi
45175 W Ten Mile
Novi, MI 48375

RE: American Sprinkler & Landscape, Inc.
Canton, MI
Underground Irrigation System Upgrade - ITC Community Sports Park Project
Bid Date 08/09/11

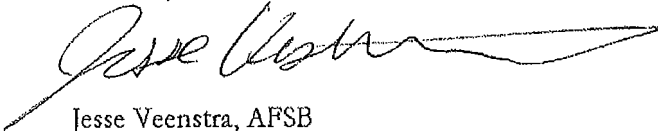
Please let this letter act as notification that should American Sprinkler & Landscape, Inc. be awarded the above project we will be in a position to provide a performance and payment bond based on our current underwriting file.

This is offered under the assumption the contract terms and conditions, including any requested bond forms, are acceptable and no significant changes occur in the contractor's financial condition.

Please understand that any arrangement for the issuance of the final bond is a matter between the contractor and Merchants Bonding Company. This letter shall not be construed to be a promise or guarantee to issue performance and payment bonds for this project. We assume no liability to you, any successor in interest, or assignee, if for any reason we elect not to issue the requested bond.

Thank you.

Sincerely,



Jesse Veenstra, AFSB
Contract Underwriter

JLV/kc

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we American Sprinkler & Landscape, Inc.

34567 Glendale, Livonia, MI 48150

as Principal, hereinafter called the Principal, and Merchants Bonding Company

2100 Fleur Drive Des Moines, IA 50321-1158

a corporation duly organized under the laws of the State of Iowa as Surety, hereinafter

called the Surety, are held and firmly bound unto City of Novi

45175 W. Ten Mile, Novi, MI 48375 as Obligee, hereinafter called the Obligee, in the sum of

5% of Amount Bid Dollars (\$ 5% of Amount Bid),

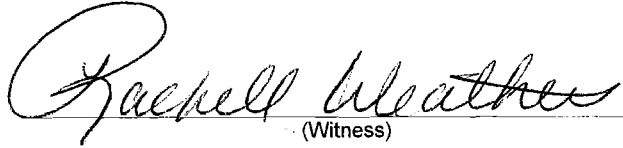
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____

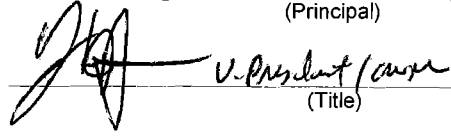
Underground Irrigation System Upgrade - ITC Community Sports Park

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

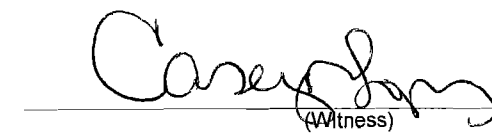
Signed and sealed this 9th day of August, 2011.



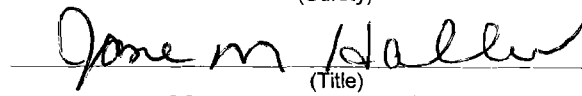
(Witness)

American Sprinkler & Landscape, Inc.
(Principal) (Seal)


V. President (Title)



(Witness)

Merchants Bonding Company
(Surety) (Seal)


Jane M. Haller, Attorney-in-fact (Title)

MERCHANTS BONDING COMPANY POWER OF ATTORNEY

Know All Persons By These Presents, that the MERCHANTS BONDING COMPANY (MUTUAL), a corporation duly organized under the laws of the State of Iowa, and having its principal office in the City of Des Moines, County of Polk, State of Iowa, hath made, constituted and appointed, and does by these presents make, constitute and appoint

Thomas C. Moglia, Robert F. Moglia, Jr., Donn T. Johnson,
Ila Konja, Edmund M. George, Jane M. Haller, Lori A. Powell
of Bloomfield Hills and State of Michigan its true and lawful Attorney-in-Fact, with full power and authority hereby conferred in its name, place and stead, to sign, execute, acknowledge and deliver in its behalf as surety any and all bonds, undertakings, recognizances or other written obligations in the nature thereof, subject to the limitation that any such instrument shall not exceed the amount of:

ONE MILLION (\$1,000,000.00) DOLLARS

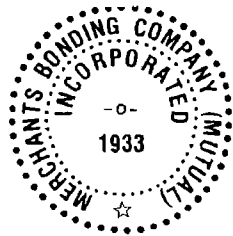
and to bind the MERCHANTS BONDING COMPANY (MUTUAL) thereby as fully and to the same extent as if such bond or undertaking was signed by the duly authorized officers of the MERCHANTS BONDING COMPANY (MUTUAL), and all the acts of said Attorney-in-Fact, pursuant to the authority herein given, are hereby ratified and confirmed.

This Power-of-Attorney is made and executed pursuant to and by authority of the following Amended Substituted and Restated By-Laws adopted by the Board of Directors of the MERCHANTS BONDING COMPANY (MUTUAL) on November 16, 2002.

ARTICLE II, SECTION 8 - The Chairman of the Board or President or any Vice President or Secretary shall have power and authority to appoint Attorneys-in-Fact, and to authorize them to execute on behalf of the Company, and attach the Seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof.

ARTICLE II, SECTION 9 - The signature of any authorized officer and the Seal of the Company may be affixed by facsimile to any Power of Attorney or Certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the Company, and such signature and seal when so used shall have the same force and effect as though manually fixed.

In Witness Whereof, MERCHANTS BONDING COMPANY (MUTUAL) has caused these presents to be signed by its President and its corporate seal to be hereto affixed, this 3rd day of November, 2010.



MERCHANTS BONDING COMPANY (MUTUAL)

By *Larry Taylor*
President

STATE OF IOWA
COUNTY OF POLK ss.

On this 3rd day of November, 2010, before me appeared Larry Taylor, to me personally known, who being by me duly sworn did say that he is President of the MERCHANTS BONDING COMPANY (MUTUAL), the corporation described in the foregoing instrument, and that the Seal affixed to the said instrument is the Corporate Seal of the said Corporation and that the said instrument was signed and sealed in behalf of said Corporation by authority of its Board of Directors.

In Testimony Whereof, I have hereunto set my hand and affixed my Official Seal at the City of Des Moines, Iowa, the day and year first above written.

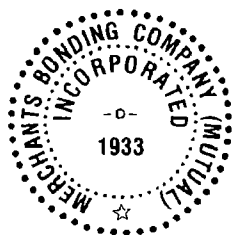


Cindy Smyth
Notary Public, Polk County, Iowa

STATE OF IOWA
COUNTY OF POLK ss.

I, William Warner, Jr., Secretary of the MERCHANTS BONDING COMPANY (MUTUAL), do hereby certify that the above and foregoing is a true and correct copy of the POWER-OF-ATTORNEY executed by said MERCHANTS BONDING COMPANY (MUTUAL), which is still in full force and effect and has not been amended or revoked.

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Company on this 9th day of August, 2011



William Warner Jr.
Secretary

Underground Irrigation System Upgrade - ITC Community Sports Park

Pump station, Mainline and Controls replacement.

DESCRIPTION OF WORK

- A. Install a complete and working underground irrigation system according to plans and specifications provided. Work shall include but not limited to, mainline, Baseline two-wire controller, two-wire, decoders, connection to existing valves, pump system replacement and Variable Frequency Drive.

ALT. #1	NOT SHOWN	BL-3200CM-X	CELL MODULE KIT FOR X CABINET
	NOT SHOWN	BL-3200CM-SVC5	5 YEAR PRE-PAID CELLULAR DATA SERVICE PLAN FOR BL-3200CM
	NOT SHOWN	BL-BMWEB-5	5 YEAR PRE-PAID BASE MANAGER WEB-BASED CENTRAL CONTROL SERVICE FOR I CONTROLLER
	NOT SHOWN	BL-BMWEB-SETUP	ONE TIME ACCOUNT SETUP FEE FOR BASE MANAGER WEB
ALT. #2	NOT SHOWN	F-VBLR-20-1	20 H.P. PUMP STATION CAPABLE OF 200 GPM @ 90 PSI

UNDERGROUND IRRIGATION SYSTEM

PART 1 – GENERAL SPECIFICATIONS

1.1 RELATED DOCUMENTS

Drawings and general provisions of contract, including specifications sections, apply to project work.

1.2 DESCRIPTION OF WORK

Install a complete and working underground irrigation system according to plans and specifications provided. Work shall include but not limited to, mainline, Baseline two-wire controller, two-wire, decoders, connection to existing valves, pump system replacement and variable frequency drive for pump motor.

1.3 QUALITY ASSURANCE

- A. Manufacture's Qualifications: Irrigation products (i.e. controllers, decoders) shall be by a single manufacturer. All irrigation system components shall be supplied by the regionally authorized distributors to provide single source responsibility for warranty, service, and operations to conform to specifications in all respects.
- B. Contractor's Qualifications: Irrigation Contractor must meet the following criteria:
 - 1. Irrigation Contractor to have established business for a minimum of 5 years.
 - 2. Contractor's primary business is to be commercial irrigation installation. Primary defined as 60% of the contractor business is to be derived from irrigation installation.
 - 3. Irrigation Contractor to be insured and capable of bonding.
 - 4. Irrigation Contractor must have previous experience installing similar size jobs.
 - 5. **Irrigation Contractor shall submit "Contractors Qualifications Statement" with their bid form.**

1.4 RELATED SECTIONS/WORK

- A. Section – Electrical
Irrigation contractor to coordinate the following:
 - 1. 115V Power for the controllers at locations indicated on drawing.

2. 230 V 1-phase power for the pump controls at locations indicated on drawing (existing 200 amp service).

B. Section – Pump Specifications

Irrigation contractor shall include in his bid the pump system, pump controls and piping as required.

C. Section – General

Irrigation contractor to supply the following:

1. Sleeving for the irrigation system (see general notes on drawing for size and type specified.)
2. Cores through wall for irrigation entry and exit and conduit sleeves (size and type as specified on drawing.)
3. Point of connection: All plumbing up to the Irrigation Contractor's point of connection as specified on drawings.

1.5 SITE CONDITIONS

A. The Contractor shall coordinate his work with that of other trades wherever possible.

1. 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.
2. In the event of damage, the Contractor shall repair or replace these lines to the satisfaction of the Owner's Representative.

B. It is the irrigation contractor's responsibility to install or field verify all sleeving under paving in locations as shown on drawings.

1.6 SUBMITTALS

- A. Submit manufacture's data sheets for all materials (valve boxes, controllers, wire, pipe and pump station) and all other related items to Owner's Representative, (Post- award).
- B. Submit shop drawing as required.

1.7 CHANGE ORDERS

Any changes require written authorization by the Owner's Representative prior to implementation.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

All decoders and controllers for this project shall be manufactured by Baseline.

2.2 MATERIALS

- A. All pipe shall be PVC pressure pipe and made from High-impact virgin polyvinyl-chloride (PVC-1120 conforming to NSF Standard 14 and ASTM D-2241 for thermoplastic pipe with minimum 200 PSI test strength. Pipe shall have standard thermoplastic pipe dimension ratio of SDR-21 and shall be marked or stamped every 5 feet to indicate brand, strength rating, size and standards. See drawing for sizes specified.

B. PIPE SLEEVES:

<u>Pipe Size</u>	<u>Sleeve size</u>	<u>Sleeve Type</u>
¾" to 1"	2 inch	PVC 160 or Sch 40 DWV pipe
1-1/4" to 1 1-1/2"	3 inch	PVC 160 or Sch 40 DWV pipe
2" to 2-1/2"	4 inch	PVC 160 or Sch 40 DWV pipe
3 inch	6 inch	PVC 160 or Sch 40 DWV pipe
4 inch	8 inch	PVC 160 or Sch 40 DWV pipe
6 inch	10 inch	PVC 160 or Sch 40 DWV pipe

(Sleeve sizes and locations are based on a single pipe being installed in a sleeve. Contractor shall verify sleeve sizes with drawings.)

C. FITTINGS

PVC Pipe Fittings: All fittings 1-1/2" through 4" shall be Schedule 40 PVC solvent weld, type 1, meeting the requirements of ASTM D-2466. No saddles allowed.

D. VALVES AND VALVE BOXES

1. Valves: Type and size as specified on drawings.
2. Valve Boxes: All valves shall be protected by a two-piece valve box assembly consisting of a removable cover and box. Enclosure shall be rigid plastic material composed of fiberglass components chemically inert and unaffected by moisture, corrosion and temperature changes. Approved replacement boxes shall be sized as follows:
 - Minimum of 10" valve box and cover shall be used for all automatic valves 1-1/2" and smaller and for all manual gate valves and quick coupling valves.

- Minimum of 12" valve box and cover shall be used for all automatic valves 2" & larger.
- Side walls to extend at least 2 inches below the bottom of the valve body; for deep mainline appropriate extensions shall be used to reach depth of valves. Valve box shall not bear directly on pipe. Manufacturer shall be Carson.

E. QUICK COUPLING VALVES: Type and size as specified on drawings.

F. CONTROLLER: REQUIRED FEATURES

Controller specifications based on a BaseStation 3200 with 200 zones plus two MV/Pump Controls

- The Cell modem (BL-3200CM-X) and 5-year pre-pay data service.
- The BaseManagerWeb software is required for modem and Ethernet management. With (BL-BMWEB-5) 5-year pre-paid service plan.

Type and size as specified on drawings.

G. BOOSTER PUMP: Type and size specified on drawings.

The controller shall be sized to operate one 15 HP / 230 volts AC / 1 phase suction lift pump. This pump station is designed for water delivery of up to 140 GPM at 85 PSI. Performance of the station is based on a lift of 6 feet or less to the pump volute and 6 feet (5.2 in hg).

1. REQUIREMENTS

- A. Provide stable pump discharge pressure without the use of mechanical restriction.
- B. Allow the pump to operate according to the irrigation demand, thereby reducing electrical costs.
- C. Resolve electrical service problems such as power factor and high inrush current that are common with pump controls using across-the-line starters.
- D. Minimize pump cycles, high head pressure and problems associated with water hammer.
- E. Provide flow totals of your pump motor.

2. DESCRIPTION OF OPERATION

When the water pressure falls below the set point, the VFD turns on. Then the VFD monitors the pressure and adjusts the speed of the pump to efficiently provide stable water pressure during the changing flow of the irrigation system. (As with any pump control, if the demand exceeds the maximum output of the pump,

pressure cannot be maintained.) When the water pressure is above the set point for a length of time the VFD will shut down.

3. ALARMS AND PROTECTION

- A. In the event of abnormal power conditions the VFD will shutdown to protect itself.
- B. The maximum pump speed will be controlled so that the system is operated below the maximum system water pressure as well as the maximum allowable speed of the pump and motor manufacturer.
- C. In the unlikely event of high water flow for a period of time, the controller will shut down to protect your system.
- D. In the unlikely event of high pump temperature during pump operation, the controller will shut down to protect your pump.
- E. The pump motor will be provided with over-current and short circuit protection according to the pump manufacture's requirements as well as the requirements of the NEC.

H. ELECTRICAL REQUIREMENTS

Supply power – 88 amps /230 volts AC / single phase continuous motor load. Contact Auto Control for further information: 616-532-6100

I. INCLUDED IN THIS PUMP STATION

- [1] 200 amp NEMA 3R lockable, fusible disconnect
- [1] Lightning and surge arrestor to protect electrical components
- [1] 230 volts AC Variable Frequency Drive (VFD)
- [1] Solid state, stainless pressure transmitter to monitor and control system operating pressure
- [1] Data Industrial Flow Sensor
- [1] Data Industrial Flow Monitor
- [2] ¼ " drain valves
- [1] Isolation valve
- [1] Check valve
- [1] Liquid filled pressure gauge
- [1] Liquid filled vacuum gauge
- [1] 2 ½" galvanized piping with fittings for the above provide devices
- [1] Eccentric reducer for pump suction line
- [1] 15 HP pump and motor
- [1] Set of operating and installation instructions
- [1] 12 month limited warranty on parts and labor

ADDITIONAL MATERIALS – This pump station is wired and programmed to be incorporated with the Toro Sentinel or equivalent.

- [1] Signal isolator
- [1] Input isolation relay

J. SOLVENT AND PRIMER

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 to be used in accordance with manufacturer's specification. Primer to 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.

K. SWING JOINTS:

1. All sprinkler heads with a 1" or larger inlet shall be attached to the PVC pipe using Spears 5807 series one-piece swing joint assembly. Match model to inlet size of sprinkler head.
2. All quick coupling valves shall be installed using a galvanized swing joint assembly consisting of three galvanized elbows and four galvanized nipples ((2) 2"; (1) 4" and (1) 12". Size shall match inlet size of quick coupling valve.

L. WIRE AND WIRE SPLICES

1. Wire: All communication wire shall run, where possible, with the mainline. All wire shall be tin coated soft annealed cooper, PVC insulated, Polyethylene encased single outer jacket, UL approved, type UF. Wire sizes shall be 14/2 gauge as called for on drawing.
2. Wire splices: 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.

M. SPARE PARTS

Provide one (1) spare decoder of each type.

PART 3 – EXECUTION

3.1 LAYOUT AND STAKING

- A. Piping Layout: Piping layout is shown on drawings. Irrigation contractor shall verify site conditions. Any deviations from the plan shall be approved by the Owner's Representative prior to installation.
- B. Staking: All valves and mainline line routing shall be staked prior to installation for approval upon request of Owner's Representative.

3.2 SYSTEM DESIGN

Design is based on information and criteria provided by the Owner, Owner's Representative and/or Architect. Any deviation from the drawing requires a written authorization by the Owner's Representative prior to installation. Water and pressure requirements shall be as noted on drawings and verified by the Irrigation Contractor.

3.3 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 – 12".
 - 2. All PVC pipe: Depths as specified below:

2-1/2" – 4" pipe size	16" cover
6" – 8" pipe size	20" cover
10" pipe size	24" 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 tempered prior to any pipe placement.
- D. Where trenching of PVC 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 as directed by Owner's Representative. It shall be a part of this contract and shall be performed in the following matter: Return to grade with 6" of topsoil and hydro-seed.

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

- E. Depth of sleeves shall be as noted on installation details on drawing.
- F. Pavement: Where existing pavement must be cut to install irrigation system, cut smoothly in straight lines 6 inches wider than trench.
 - 1. Excavate to required depth and width.
 - 2. Remove cut-out pavement and excavated material from the site.
 - 3. Backfill with dry sand fill material, placing in 6-inch lifts.
 - 4. Repair or replace pavement cuts with equivalent materials and/or finishes.
 - 5. At walkways, jack piping under paving material, if possible.

3.4 INSTALLATION

- A. GENERAL: Unless otherwise indicated, comply with requirements of Uniform Plumbing Code.
- B. PIPING:
 - 1. All mainlines and headers shall be kept to a minimum to 2 feet from all existing or proposed trees as shown on drawings.
 - 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. At wall penetrations, pack the opening around pipe with non-shrink grout. At exterior face, leave perimeter slot approximately ½ inch wide by 4/5 inch deep. Fill this slot with backer rod and an acceptable elastomeric sealant.
 - 6. 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. Connection to Water Source: Point of connection shall be as indicated on drawings. Contractor shall verify point of connection with Landscape Architect or Owner's Representative. All above grade piping shall be galvanized steel .
- D. Dielectric Protection: Use dielectric fittings at connections where pipes of dissimilar metals are joined.

3.5 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 pipe manufacturer's recommendations for type and method of thrust blocks.

3.6 TESTING AND INSPECTION

- A. The 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 contract requirements and shall 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.)

3.7 BALANCE AND ADJUSTMENT

- A. Contractor shall balance and adjust various components of sprinkler system to maximize performance and efficiency. This includes synchronization of controllers, adjustments to pressure regulators, pressure relief valves, individual station adjustments, and any other adjustments necessary to obtain optimum performance of system.
- B. The Contractor shall flush all lines and evacuate all air and debris from the system.

3.8 DRAWINGS OF RECORD/OWNER'S MANUAL

- A. Drawings of record: After completion of system and before final payment, Contractor shall furnish to Owner a reproducible digital copy of a drawing of record of the entire system showing as built locations, with GPS coordinates, of all valves, drains, controllers and pipelines to scale with dimensions where required.
- B. Owner's Manual: After completion of system and before final payment, Contractor shall provide to the Owner, instruction sheets including a operations and maintenance manual and parts lists covering all operating equipment that shall be bound into a folder and furnished to the Owner. Contractor shall also provide all necessary special tools for maintaining the system.

3.9 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 the following winter, and in the following spring, put the system into operation at no additional expense to the Owner.
- B. For a period of 1 year from the date of final acceptance of work on the contract, Contractor shall provide a labor warranty to promptly furnish and install, without cost to the Owner, any and all parts which prove defective in material or workmanship. Final acceptance occurs when City Council approves payment for the project.
- C. A full 5 year manufacturer's warranty on all controllers and decoders shall be provided by the Irrigation Contractor. Any part proven to be defective within the 5 year warranty period shall be replaced with no cost to the Owner for parts. After the 1 year labor warranty has expired, the Owner shall be responsible for the labor to replace defective controllers and decoders.