2

VILLAGE OF LOMBARD

CONTRACT DOCUMENT NUMBER WA 13 02

FOR

CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS

Bid Opening Date: ..... September 23, 2014
Bid Opening Time: ..... 11:00 AM
Bid Opening Location: ..... Public Works
Bid Opening Room: . Public Works Conference Room
Bid Deposit: 5%
Performance Bond: ..... YES

Mandatory Pre-Bid Meeting
Pre-Bid Meeting Date: ..... September 11, 2014
Pre-Bid Meeting Time: ..... 11:00 AM
Pre-Bid Meeting Location: ..... Village Hall
Pre-Bid Meeting Room: ..... Board Room

Obtain information from and submit bids to:

Carl Goldsmith
Director of Public Works
Village of Lombard
1051 S. Hammerschmidt Avenue
Lombard, Illinois 60148
(630) 620-5740

Note: Every page of this document is an integral part of the contract documents, and is part of any contract executed between the Village of Lombard and any successful Bidder.

FOR BID

SEPTEMBER 4, 2014

TABLE OF CONTENTS

VILLAGE OF LOMBARD
NOTICE TO BIDDERS
FOR
CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS

The Village of Lombard is now accepting sealed bid proposals for CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS (Contract Document Number WA 13 02).

TIME AND PLACE OF OPENING BIDS

Notice is hereby given that the Village of Lombard, Illinois, acting through the Department of Public Works, will receive sealed bids at the Public Works Facility, 1051 S. Hammerschmidt Avenue, Lombard, Illinois until September 23, 2014 at 11:00 A.M. local time for the CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS, at which time the bids will be publicly opened, reviewed for completeness and read. Bid proposals for this project will be considered to determine the lowest responsible bidder. Judgment on award of the contract shall be based not only on cost, but also on past performance, experience and ability to perform the work. The Village of Lombard reserves the right to accept the proposal deemed to be in its own best interest based on all of the above considerations and other considerations the law allows in determining the definition of 'responsible bidder'. Bids will be acted upon by the President and Board of Trustees.

DESCRIPTION OF WORK

The proposed work is officially known as "CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS". The Scope of Work includes removal of an existing diesel generator at the Civic Center Reservoir Facility and installation of new Owner furnished diesel fuel generator with base fuel tank, weatherproof and sound attenuated enclosure, automatic transfer switch, concrete pad and sidewalk, building modifications to remove existing louvers and install glass block.

The Scope of Work at Garfield Lift Station includes the installation of Owner furnished pump control panel and natural gas fuel generator, automatic transfer switch and concrete pads.

The Scope of Work at Westmore Lift Station includes the installation of an Owner furnished natural gas fuel generator, automatic transfer switch, demolition of existing sidewalk, removal of landscaping, installation of new landscaping, concrete pad and sidewalk.

All of the above as well as other project details are further described in the contract documents for the said work prepared for the Village of Lombard by Christopher B. Burke Engineering, Ltd.

PRE-QUALIFICATION OF BIDDERS

Pre-qualification of Bidders in accordance with Section 102 of the Standard Specifications for Road and Bridge Construction in Illinois will be required of all Bidders on this proposal.

AVAILABILITY OF CONTRACT DOCUMENTS

Prospective Bidders **must** purchase contract documents at the office of the Director of Public Works. The nonrefundable cost for contract documents is $20 for a CD containing the contract documents in a pdf format. Payment shall be in cash or check payable to the Village of Lombard. **Bids will not be accepted from any prospective bidder who has not purchased contract documents directly from the Village.** Prospective bidders must have a representative present at the pre-bid meeting. Bids will not be accepted from any prospective bidder who has not had a representative present at the pre-bid meeting. All questions shall be submitted in writing at the meeting. **Contract documents sold for bidding purposes must be purchased prior to the start of the pre-bid meeting. Once the pre-bid meeting starts, no contract documents will be sold for bidding purposes.** After the start of the pre-bid meeting, contract documents, excepting addenda will be issued for informational purposes only.

Notwithstanding the foregoing, plans and specifications may be **examined** at the following locations:

1) Office of the Director of Public Works, 1051 S. Hammerschmidt Avenue, Lombard, Illinois 60148;

2) Christopher B. Burke Engineering, Ltd., 9575 W. Higgins Road, Suite 600, Rosemont, Illinois 60018;

3) Subscribers to **Bid Tool** may view the documents thru their service agreement. The Village provides Plans, Advertisements, Plan Holders Lists, Addenda and Bid Results to Bid Tool electronically. For any additional services Bid Tool subscribers should contact the Bid Tool Plan Room, One Oakbrook Terrace, Suite 510, Oakbrook Terrace, IL 60181.

4) Subscribers to **McGraw-Hill Construction – Dodge** may view the documents thru their service agreement. The Village provides Plans, Advertisements, Plan Holders Lists, Addenda and Bid Results to Dodge electronically. For any additional services Dodge subscribers should contact the MHC Plan Room at 133 Burr Ridge Parkway, Suite, 100, Burr Ridge, IL 60527

5) Subscribers to **iSqFt** may view the documents thru their service agreement. The Village provides Plans, Advertisements, Plan Holders Lists, Addenda and Bid Results to iSqFt electronically. For any additional services iSqFt subscribers should contact the iSqFt® and HACIA Plan Room Partnership C/O Cushing Co, 420 West Huron Street, Chicago, IL 60654.

HOWEVER, EXAMINATION OF SAID PLANS AND SPECIFICATIONS AT ANY OF THESE LOCATIONS OR ONLINE SHALL NOT RELIEVE THE PROSPECTIVE BIDDERS FROM THE CONTRACT DOCUMENT PURCHASE REQUIREMENT SET FORTH ABOVE.

BID SECURITY

All bid proposals must be accompanied by a bid bond, certified check, bank cashier's check or bank draft payable to the Village of Lombard for five percent (5%) of the amount of the bid as provided in the General Requirements. No proposals or bids will be considered unless accompanied by such bond, check or draft.

REJECTION OF BIDS

The Village reserves the right to defer the award of the contract for a period not to exceed sixty (60) calendar days after the date bids are received, and to accept or reject any or all proposals and to waive technicalities.

PRE-BID MEETING

A mandatory pre-bid meeting will be held in the Board Room of the Village Hall at 11:00 AM on September 11, 2014. Prospective bidders must have a representative present at the pre-bid meeting. Bids will not be accepted from any prospective bidder who has not had a representative present at the pre-bid meeting. Any prospective bidder shall have the Pre-Bid Attendance Form counter signed by a Village Representative at the end of the meeting.

Village of Lombard, Illinois

By: _____
Brigitte O'Brien
Village Clerk

PROJECT SPECIAL PROVISIONS
FOR
CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS

REV (01/12)

The following provisions and Technical Specifications (CSI) supplement the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2012 (referred to hereinafter as the "Standard Specifications"); the "Supplemental Specifications and Recurring Special Provisions", adopted January 1, 2013; the latest edition of the "Illinois Manual on Uniform Traffic Control Devices For Streets and Highways" (IMUTCD); and "The Standard Specifications for Sewer and Water Construction in Illinois", July 2009, Sixth Edition. In case of conflict with any part or parts of said specifications, these provisions shall take precedence and shall govern. Where no conflict exists, the named specifications shall apply to this Contract as if repeated in their entirety herein.

LOCATION AND DESCRIPTION OF PROJECT

The proposed work is officially known as "CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS". The sites are located as follows:

1. Civic Center Reservoir Facility: adjacent and east of the Village of Lombard, Village Hall, 255 E. Wilson Avenue, Lombard, IL 60148
2. Garfield Lift Station: Garfield Avenue, north of North Avenue (IL Route 64)
3. Westmore Lift Station: 1049 S. Westmore Avenue at Westmore Avenue and Norton Street

The Scope of Work includes removal of an existing diesel generator at the Civic Center Reservoir Facility and installation of new Owner furnished diesel fuel generator with base fuel tank, weatherproof and sound attenuated enclosure, automatic transfer switch, concrete pad and sidewalk, building modifications to remove existing louvers and install glass block.

The Scope of Work at Garfield Lift Station includes the installation of Owner furnished pump control panel and natural gas fuel generator, automatic transfer switch and concrete pads.

The Scope of Work at Westmore Lift Station includes the installation of an Owner furnished natural gas fuel generator, automatic transfer switch, demolition of existing sidewalk, removal of landscaping, installation of new landscaping, concrete pad and sidewalk.

All of the above as well as other project details are further described in the contract documents for the said work prepared for the Village of Lombard by Christopher B. Burke Engineering, Ltd.

SECTION 100. GENERAL REQUIREMENTS AND COVENANTS

SECTION 101. DEFINITION OF TERMS REV. 02/13

101.28 Plans. Add the following at the end of the last sentence in the Section: ", all of which are included in this specification manual as exhibits, inserts, or details." (use for projects with no external plan set – in-house maintenance projects).

Add the following articles to this section:

101.56 Business Day. Any day Monday thru Friday that the Village of Lombard, DuPage County, Illinois is open for business.

101.57 Village. The Village of Lombard, DuPage County, Illinois.

101.58 Water and Sewer Specifications. The "Standard Specifications for Water and Sewer Main Construction in Illinois", Sixth Edition, adopted July 2009, available from the Associated General Contractors of Illinois or the Illinois Society of Professional Engineers.

101.59 Notice to Proceed. Notice to proceed is defined as one of the following events, whichever occurs first:

a) 10 days after the Contract has been signed by both parties;
b) 45 days after award of the Contract by the Village Board of Trustees; or
c) The day that construction materials or equipment are delivered to the job site.

101.60 Substantial Completion. Standby generator commission improvements and the completion of all items of work as specified within these documents, less punch list items. **This work is to be substantially completed within 106 calendar days of notice to proceed. Punch list items including Final Inspection per Section 105.13 are to be completed within 14 calendar days of substantial completion.** In the event the Contractor does not complete the work within the **120 calendar days** allotted by Contract, liquidated damages will accrue per Section 108.09.

SECTION 102. ADVERTISEMENT, BIDDING, AWARD & CONTRACT EXECUTION REV. 01/12

Add the following articles to this section:

102.02 Examination of Plans, Specifications, Special Provisions, and Site of Work.

Add the following: A mandatory pre-bid meeting will be held in the Board Room of the Village Hall at 11:00 AM on September 11, 2014. Prospective bidders must have a representative present at the pre-bid meeting. Bids will not be accepted from any prospective bidder who has not had a representative present at the pre-bid meeting. **All questions shall be submitted in writing at the meeting. Contract documents sold for bidding purposes must be purchased prior to the start of the pre-bid meeting. Once the pre-bid meeting starts, no contract documents will be sold for bidding purposes.** After the start of the pre-bid meeting, contract documents, excepting addenda will be issued for informational purposes only.

If a written addendum is issued, all Bidders known to the Village will receive a copy. Bidders shall provide written acknowledgment of receipt of each addendum issued with the bid submission. The information shall also be placed on file and be made available to the public per the Freedom of Information Act. Oral explanations will not be made prior or subsequent to the pre-bid meeting. No addenda shall be issued less than 3 business days prior to bid opening date.

102.03 Preparation of the Proposal. The Bidder shall prepare its proposal on the proposal forms furnished by the Village. All blank spaces on the proposal page or pages, applicable to the subject specification, must be correctly completed. The total bid amount is to be shown in both words and figures where indicated. In case of a discrepancy between words and figures, the words shall prevail, unless it clearly appears in the Village's opinion that the words rather than the figures are in error.

102.04 Rejection of Proposals. The following are causes for rejection of proposals but are not intended to limit rejection of proposals by the Village for any other lawful purpose not listed herein:

(a) Prices excessively high and/or exceed monies available for the intended work;
(b) Failure to offer to meet specified delivery or performance schedules;
(c) Qualification of price to protect the Bidder from unknown future market conditions;
(d) Rights of the Village limited under any contract clause;
(e) Failure of any authorized person to sign any required forms or to sign the bid; and
(f) Bidder is prohibited by local, state or federal law from entering into public contracts.

Identical bids may be reported to the Justice Department, in conformance to the President's Executive Order No. 10936, 26 F.R. 3555 (1961), and to local or state investigative bodies.

102.05 Proposal Guaranty. All bid bonds shall be in IDOT format and in the amount of five percent (5%) of the bid amount. Any checks shall be made payable to the Village.

102.06 Delivery of Proposals. The Village does not issue special envelopes. All envelopes must be at least 9" x 12" and clearly marked with the project name, Bidder's name, address, bid opening location, date and time. All bids must be delivered to the office of the Director of Public Works prior to the specified opening time of the bid.

102.07 Withdrawal of Proposals. After the proposals are opened, no proposal shall be withdrawn or canceled for a period of sixty (60) calendar days. The successful Bidder shall not withdraw or cancel its proposal after having been notified by the Director of Public Works that said proposal has been accepted by the Village Board of Trustees.

102.08 Consideration of Proposals. The Village Director of Public Works shall represent and act for the Village in all matters pertaining to this proposal and Contract in conjunction therewith. The Village shall accept the proposal of the lowest responsible Bidder on the basis of the proposal that is in the best interest of the Village to accept. In awarding the Contract, in addition to price and any other considerations allowed by law, the Village shall consider the following:

(a) The ability, capacity, and skill of the Bidder to perform the contract to provide the service required;
(b) Whether the Bidder can perform the contract or provide the service promptly, or within the time specified, without delay or interference;
(c) The character, integrity, reputation, judgment, experience, and efficiency of the Bidder;

(d) The quality of performance of previous contracts of services;
(e) The previous and existing compliance by the Bidder with laws and ordinances relating to the Contract or service;
(f) The sufficiency of the financial resources and ability of the Bidder to perform the Contract or provide the service;
(g) The quality, availability, and adaptability of the supplies or contractual services to the particular use required;
(h) The ability of the Bidder to provide future maintenance and service for the use of the subject of the Contract;
(i) The number and scope of conditions attached to the proposal;
(j) Whether the Bidder has a place of business in the Village;
(k) Responsiveness to the exact requirements of the invitation to bid;
(l) Ability to work cooperatively with the Village and its administration; and
(m) Past records of the Bidder's transaction with the Village or with other entities as evidence of the Bidder's responsibility, character, integrity, reputation, judgment, experience, efficiency, and cooperativeness.

The Bidder, if requested in writing, must present within three (3) working days, evidence satisfactory to the Director of Public Works of ability and possession of necessary facilities, prior experience, financial resources, and adequate insurance to comply with the terms of these contract documents.

102.09 Award of Contract. Written notification of award of Contract will be mailed to the lowest responsible Bidder within seven (7) working days of the President and Board of Trustees' decision.

102.10 Return of Proposal Guaranty. The Village will hold the proposal guaranty checks of the three (3) lowest Bidders.

102.11 Requirement of Contract Bond. The successful Bidder shall furnish and pay for a satisfactory Performance Bond and satisfactory Labor and Material Payment Bonds, in the amount of one hundred percent (100%) of the Contract sum (collectively the "Bonds"). Said Bonds shall be in a form acceptable to the Village, shall be deposited with the Village at the time of execution of the Contract and shall provide that they shall not terminate on completion of the work, but shall be reduced to ten percent (10%) of the Contract sum upon completion of the work for a period of one (1) year to cover the one (1) year guaranty and maintenance period. Execution of the Contract by the Village is contingent upon receipt of the Bonds and any required certificate(s) of insurance by the successful Bidder. Failure to furnish the required Bonds within the time specified may be cause for withdrawal of the award. The successful Bidder shall furnish the required Bonds and certificate(s) of insurance within ten (10) working days after the Village sends out written notification of the award of the Contract.

SECTION 104. SCOPE OF WORK

REV. 01/12

104.01 Intent of the Contract. Add the following at the end of this Section: Any work not specified on the plans or herein which may be implied as being included in this Contract, of which the Engineer shall be the judge, shall be done by the Contractor without extra charge.

104.02 Alterations, Cancellations, Extensions and Deductions, and Extra Work. Delete paragraph four (4) and subparagraphs b and d of paragraph six (6).

104.07 Value Engineering Proposals. Delete this article in its entirety.

SECTION 105. CONTROL OF WORK REV. 01/12

105.12 Inspection of Work. Add the following as a separate Paragraph, second Paragraph from the end: Any failure by the Village to reject or condemn any work or material at the time of its construction or arrival at the worksite shall not be construed to mean an acceptance of the work.

Add the following articles to this section:

105.14 Periodic Inspections. Periodic inspections of the work will be made. The Contractor shall correct work to the satisfaction of the Engineer, which may be in satisfactory condition at the time of a periodic inspection but is found to be unsatisfactory at the time of final inspection.

105.15 Failure to Properly Notify the Village of Work Cancellations/Rescheduling. The Contractor shall reimburse the Village (pursuant to a setoff against any amounts due to the Contractor) for costs incurred by the Village for administration, engineering, inspection or supervision as a result of the Contractor canceling or rescheduling work without giving sufficient notice to the Resident Engineer. For purposes of this section, "sufficient notice" shall mean a notice given to the Resident Engineer at or before 2:30 P.M. on the weekday (Monday through Friday) immediately prior to the day on which the work in question is being cancelled or rescheduled, was to have taken place.

SECTION 106. CONTROL OF MATERIALS REV. 01/12

106.02 Unacceptable Materials. Add the following as a separate, final Paragraph: The Village hereby reserves the right to approve as an equal, or to reject as not being an equal, any article the Contractor proposes to furnish under the terms of the Contract. All proposed substitutions shall be submitted to the Engineer for review and approval prior to their delivery to the worksite.

SECTION 107. LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC REV 01/13

107.09 Public Convenience and Safety. Add the following to the list of legal holidays; Martin Luther King Day, Christmas Eve.

Add the following before the third Paragraph: The Contractor shall plan their operations to ensure that no resident will be denied access to their driveway for more than a single twenty-one (21) day period. During this period the Contractor shall construct curb and gutter, pavement, sidewalk and driveway approaches. Should the Engineer determine that the Contractor will exceed this time constraint, the Engineer will order that temporary roads and/or approaches be installed at the Contractor's expense.

The Contractor shall notify the Village at least forty-eight (48) hours in advance of any water shutdown. The Village will determine the limits of the shutdown and determine which residences will be affected.

The Village shall supply the Contractor with yellow and/or blue shut-off notice door tags. The yellow door tags are to be used in the event of a water main shut down. Blue door tags are to be used during the transfer of water services. The Contractor shall be responsible for distributing notice by taping the tags to the front door of the affected property a minimum of twenty-four (24) hours in advance of the shutdown. (Example: If the contractor requests a Tuesday 8:30 AM shut down, all notices must be taped to the affected properties front door no later than Monday by 8:30 AM. Monday morning shut downs notice shall be in place by noon on Friday.) Village personnel shall operate all valves other than those installed but not yet accepted by the Village. The maximum time allowed for a water shutdown will be four (4) hours.

The Contractor is prohibited (with or without the permission of the property owner) from drawing water from any private property sources. If the Contractor wishes to utilize the Village water supply system he must secure an RPZ valve per section 107.18 of the standard specifications.

107.15 Dirt on Pavement or Structures. Add the following at the end of this Section: If the pavement on or adjacent to the section under construction shall need cleaning because of the Contractor's operation and the Contractor fails to clean the pavement to the satisfaction of the Engineer at any time during the duration of the Contract, the Engineer will notify the Contractor, at which time the Contractor will have twenty-four (24) hours in which to perform the cleaning. If the Contractor fails to perform the required cleaning within this period of time, the Village shall contract the cleaning to be performed by whatever such method they feel necessary. At the time such work has been completed, the amount incurred by the Village for such work along with a $500.00 per incident fine will be deducted from monies due, or that may become due, the Contractor.

107.16 Equipment on Pavement and Structures. Add the following at the end of this Section: In accordance with Village Code (Title 9, Chapter 97, Section 97.200) the Contractor must obtain a permit for the movement of any overweight or oversize vehicle within the jurisdiction of the Village. If any of the following limits are exceeded, a permit is required.

Maximum Gross Weight:	***80,000 pounds***
Maximum Gross Length: ***Tractor Trailer*** ***Truck Trailer***	 ***55 feet*** ***60 feet***
Maximum Gross Width:	***8 feet 6 inches***
Maximum Gross Height:	***13 feet 6 inches***
Maximum Axle Weight Limit	***20,000 pounds***
Maximum Axle Tandem Weight Limit	***34,000 pounds***

The Contractor must be familiar with the ordinance. Copies of the ordinance are available at Department of Public Works or the Police Department. Specific questions concerning the movement of overweight or over-dimension vehicles through the jurisdictional limits of the Village should be addressed to the Village of Lombard, Police Department, Traffic Unit, 235 E. Wilson Ave., Lombard, IL 60148, (630) 873-4400. **This ordinance is strictly enforced; offenders will be subject to fine, arrest and prosecution.**

107.18 Use of Fire Hydrants. Add the following at the end of this Section: The Contractor may request to use fire hydrants within the project area. Fire hydrant usage will only be allowed after the Contractor receives authorization from the Village. Prior to drawing water from any fire hydrant, the Contractor shall

rent a water meter and RPZ valve from the Village. The meter and RPZ valve must be connected to the fire hydrant while it is in use. **The current billing rate is $9.29 per thousand gallons. Rates are subject to change after December 31, 2014. Meter rentals must be returned after 90 days.** Meter rentals may be renewed after 90 days; however, rental and usage fees at the time of renewal will be charged. Meter renewals will require a new deposit and a renewal fee. The Village will refund any balance from the water usage and daily rental fee incurred during the 90-day rental period.
Billing rates and fees are listed below.

Water Meter Rental and Water Usage Charges Rev. 01/13

5/8" or 3/4" Meter

Initial Administration Fee	$40.00
Deposit	$500.00
Meter Rental Fee (per day)	$3.00
Cost of Water (per 1000 gallons)	$9.29
Maximum Rental Time	90 days
Renewal Fee	$10.00

2" Meter

Initial Administration Fee	$40.00
Deposit	$2,000.00
Meter Rental Fee (per day)	$5.00
Cost of Water (per 1000 gallons)	$9.29
Maximum Rental Time	90 days
Renewal Fee	$10.00

Contractors wishing to rent a water meter should contact the Village Department of Public Works at (630) 620-5740. The Finance Department will deduct the water meter rental fee and water usage from the deposit.

Unauthorized or improper use will subject the offender to arrest and prosecution.

107.24 Forest Protection. Add the following at the end of this Section: In the case of excavation, the Contractor shall attend the showing of a videotape regarding tree protection during construction. The videotape will be shown at the Public Works Building. The approximate time required to view the videotape is one (1) hour. The videotape shall be viewed before any excavation begins. The Engineer will arrange a time suitable to all parties involved to view the videotape. This work will not be paid for separately, but shall be considered incidental to the Contract. The Contractor shall also protect parkway trees from damage by their operations. Failure to do so will result in the following deductions from monies owed to the Contractor:

DAMAGE TO PARKWAY TREES CAUSING REMOVAL (PAYMENT): Any person that damages a parkway tree so severely that the tree dies or requires removal shall compensate the Village for the loss of the parkway tree. The amount paid shall be based on the following schedule:

1. If the damaged parkway tree is less than 6 in. in diameter (measured at 6 in. above ground level), the amount paid shall be determined by using the "Replacement Cost Method" of evaluating trees found in the most current edition of the *Council of Tree and Landscape Appraisers Guide (CTLA) for Plant Appraisal.*
2. For parkway trees larger than an 8 in. trunk diameter, (measured at 54 in. above grade) the amount paid shall be determined by using the "Trunk Formula Method" of evaluating trees found in the most current edition of the above-referenced *CTLA*'s Guide.
3. Added to the costs established under the above provisions shall be the cost of the removal

of the parkway tree.

DAMAGE TO PARKWAY TREES NOT CAUSING REMOVAL (PAYMENT): Any person that causes injury to a parkway tree shall compensate the Village for the injury to the parkway tree. Such injuries include, but are not limited to the following: damage to the tree trunk, broken branches, and the storing of construction materials within the drip-line of the tree. The amount paid shall be the actual cost to repair the damage.

The Forestry Division using the most current edition of the above-referenced CTLA's Guide shall determine the appraised value or the partial loss in the tree value.

The following is a SAMPLE of both methods of evaluating parkway trees:

REPLACEMENT COST METHOD (TREES UNDER 8" DIAMETER):	
2" AUTUMN BLAZE FREEMAN MAPLE -	$ 230.00
2" HORSECHESTNUT -	$ 345.00
2" SWAMP WHITE OAK -	$ 340.00
2" RED OAK -	$ 340.00
2" HEDGE MAPLE -	$ 330.00
2" IVORY SILK JAPANESE TREE-LILAC -	$ 340.00

TRUNK FORMULA METHOD (TREES OVER 8" DIAMETER):	
10" HONEY LOCUST -	$ 1,595.00
15" LITTLE-LEAF LINDEN -	$ 2,662.00
18" SUGAR MAPLE -	$ 4,240.00
19" GREEN ASH -	$ 4,708.00
30" SILVER MAPLE -	$ 7,331.00
32" GREEN ASH -	$12,853.00

107.26 Indemnification. In lieu of the first paragraph of Article 107.26 insert the following:
The Contractor shall indemnify, defend and save harmless the Village, its officers, agents, employees, representatives and assigns, from lawsuits, actions, costs (including attorneys' fees), claims or liabilities of any character, including, as allowed by law, liabilities incurred due to joint negligence of the Village and the Contractor, brought because of any injuries or damages received or sustained by any person, persons, or property on account of any act or omission, neglect or misconduct of said Contractor, its officers, agents and/or employees arising out of, or in performance of any of the provisions of the Contract, including any claims or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act" or any other law, ordinance, order or decree. In connection with any such claims, lawsuits, actions or liabilities, the Village, its officers, agents, employees, representatives and their assigns shall have the right to defense counsel of their choice. The Contractor shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, lawsuits, actions or liabilities.

107.27 Insurance. In lieu of the first sentence of the third paragraph of Article 107.27 insert the following: The Contractor shall furnish to the Village satisfactory proof of coverage of the above insurance requirements, by a reliable company or companies, before commencing any work. Such proof shall consist of certificates executed by the respective insurance companies and filed with the Village. Said certificates shall contain a clause to the effect that, for the duration of the Contract, the insurance

policy shall not be canceled, expired or changed as to the amount of coverage without written notification thirty (30) days in advance to the Village. **In addition, said certificates shall list the Village and its officers, agents and employees as additional insureds on all required insurance policies and shall provide that all insurance policies provided by the contractor shall be primary to any insurance policies maintained by the Village.**

In addition to the language set forth in Article 107.27, add the following at the end of this Section:
The Contractor shall require subcontractors, if any, not protected under the Contractor's policies, to secure and maintain insurance of the same nature in amounts, and under the same terms, as required of the Contractor. Proof of said insurance shall be furnished to the Village.

107.28 Contractor Safety Responsibility. Add the following at the end of this Section: The Contractor shall read and comply with all applicable Occupational Safety and Health Act (OSHA) standards. Special attention is directed to the Congressional Federal Register, Volume 58, Number 9, Thursday, January 14, 1993, Part 1910 (Permit Required Confined Spaces for General Industry) and 29CFR1926.650-652, Appendices A-F, Revised July 1, 1990 (Subpart P - Excavations). Equipment supplied to the Village must comply with all requirements and standards as specified by the OSHA. Items not meeting any OSHA specifications will be refused.

107.30 Contractor's Responsibility for Work. Add the following as a separate Paragraph after the existing first Paragraph: The Contractor is required to maintain all work including but not limited to; roadway, driveway, sidewalk, lighting, traffic signals, landscaping, water and sewer mains and structures until final acceptance by the Engineer. The Engineer will determine what constitutes acceptable maintenance. Any defaced work shall be corrected or replaced by the Contractor at its sole expense prior to final payment. The Village will cooperate with the Contractor to minimize vandalism, but the Contractor is ultimately responsible for any damages. After new water service lines have been installed, the Contractor shall be responsible for locating said service lines for the duration of the project. The Village will not locate service lines placed by the Contractor for the duration of the project. The Contractor, at its own expense, shall repair any damage to any service line installed under the contract which was damaged as a result of the Contractor's failure to properly locate the service lines to the satisfaction of the Engineer.

107.35 Construction Noise Restrictions. Delete sentence one of paragraph two and replace with the following: Confined periods shall be: 7:00 A.M. to 6:00 P.M. weekdays, 7:00 A.M. to 4:00 P.M. Saturdays and no work on Sundays or Legal Holidays (per section 107.09). Work outside these periods must have the prior, written permission of the Village Engineer. Muffling devices shall comply with the Village of Lombard, Code of Ordinances.

107.36 Dust Control. Delete the last sentence and replace with the following: Dust Control will be paid for as specified elsewhere herein.

107.37 Prevailing Wages. The Village requires all Contractors (and any subcontractors) bidding on Village projects to comply with the Illinois Prevailing Wage Act, 820 ILCS 130/1 et seq., as applicable to the particular Contract. Prevailing wage rate updates can be obtained by calling the Illinois Department of Labor at (312) 793-2914, or writing to the Illinois Department of Labor at: 310 S. Michigan Avenue, 10th Floor, Chicago, Illinois 60604, or calling the Lombard Village Hall at (630) 620-5700.

Note: The Prevailing Wage Act requires the Contractor and each Subcontractor participating on public works projects to submit monthly a certified payroll to the public body in charge of the project.

107.38 Taxes. The Village is exempt, by law, from paying the following taxes: Federal Excise Tax, Illinois Retailer's Occupation Tax, Use Tax and Municipal Retailers' Occupation Tax and Service Occupation Tax on materials and services purchased by the Village. A copy of the Village tax-exempt letter will be provided to the successful Bidder upon request.

107.39 Non-Discrimination. The Contractor shall, as a party to a Contract:

1. Refrain from unlawful discrimination in employment and take all necessary actions to assure equality of employment opportunity,
2. By submission of this proposal, the Contractor certifies that it is an "equal opportunity employer" as defined by Section 2000 (e) of Chapter 21, Title 42, U.S. Code Annotated and Executive Orders #11246 and #11375 (42 U.S.C., Section 2000 (e)); Exec. Order No. 11246, 30 F.R. 12319 (1965); Exec. Order No. 11375, 32 F.R. 14303 (1967) which are incorporated herein by reference. The Equal Opportunity Clause, Section 6.1 of the Rules and Regulations of the Department of Human Rights of the State of Illinois, is a material part of any contract awarded on the basis of this proposal.

It is unlawful to discriminate on the basis of race, color, sex, national origin, religion, ancestry, age, marital status, physical or mental handicap, military service sexual orientation or unfavorable discharge for military service. The Bidder shall comply with standards set forth in Title VII of the Civil Rights Act of 1964, 42 U.S.C. S 2000 et seq. and the Human Rights Act of the State of Illinois (775 ILCS 5/1 – 101 et seq.).

107.40 Venue. The parties hereto agree that for purposes of any lawsuit(s) between them concerning the Contract, its enforcement, or the subject matter thereof, venue shall be in DuPage County, Illinois, and the laws of the State of Illinois shall govern the cause of action.

107.41 Warranty. The Contractor warrants to the Village that materials and equipment furnished under the Contract will be of good quality and new and that the work will be free from defects in material and workmanship for one (1) year from the date of issuance of the final payment by the Village and any deficiencies shall be corrected by the Contractor under this warranty immediately upon notification from the Village.

SECTION 108. PROSECUTION AND PROGRESS

REV. 02/13

108.01 Subcontracting. Add the following to the fourth paragraph: Each Subcontractor shall be approved by the Village Director of Public Works in writing prior to commencement of work. A list of proposed Subcontractors and the amount of each subcontract shall be submitted to the Village at the pre-construction conference. If all Subcontractors are not selected at the time of the pre-construction conference, the Contractor shall classify the items of work, which will be subcontracted, and the value thereof. The names of the remaining Subcontractors shall be submitted when available. In the event that a proposed subcontractor(s) is/are not approved by the Director of Public Works, the general contractor shall propose another subcontractor(s). No changes to the awarded contract amount will be allowed.

108.08 Determination and Extension of Contract Time. Add the following subsection:
(d) The Contractor shall not be entitled to any claim for damages for any hindrance or delay from any cause whatsoever in the progress of the work or any part thereof. However, such hindrance may entitle the Contractor to an extension of time for completing the contract, sufficient to compensate for the detention; the same to be determined by the Engineer, given that the Contractor provides notice, in writing, of the nature of the cause of such detention within ten (10) calendar days after the detention has occurred.

108.09 Failure to Complete the Work on Time. Add the following Paragraph at the end of this Section: In addition to the foregoing, the Contractor shall also be liable and shall pay to the Village any costs for administration, engineering, inspection and supervision that the Village incurred as a result of the Contractor canceling or rescheduling work without giving sufficient notice (no later than 2:30 PM the prior business day) to the Resident Engineer.

Time is of the essence. The Contractor agrees that all work included in connection with this project must be completed by the Final Performance Date, or sooner, after receipt of Notice To Proceed. *It is hereby acknowledged and agreed by both parties that the damages to the Village are not readily ascertainable but that the failure to timely complete this Work will materially and significantly damage the safety and well-being of the Village, its staff and the public, and that therefore a sum of $1,000.00 per day is a fair and reasonable damage estimate to compensate the Village for any such delay.* If the Contractor fails to fully complete the Work in that time, then and in this event, the Contractor further expressly agrees that, for each day this Work and this contract shall remain uncompleted after that date, the Village may deduct the sum of *$1,000.00* per day after the Final Performance Date, from the contract price as payment to the Village, by the Contractor of the liquidated damages sustained by reason of failure of the Contractor to complete the Project on or before the time aforesaid.

Provided, however, that if the completion of this contract is delayed by the Village, by general strikes, acts of God, or casualty beyond the control of the Contractor, then and in such event, the time of completion of this contract shall be extended for such additional time as shall be caused by such delay.

Provided, always, however, that the Contractor shall, at the time of such delay, if any, demand of the Village, in writing, such additional time within which to complete the performance of the Contract. The Contractor will be required to notify the Village within three (3) days of such delay, stating the reason for same. If the Contractor does not notify the Village in writing, within three (3) days of the delay, no request for extension of time will be approved.

SECTION 109. MEASUREMENT AND PAYMENT

REV. 01/12

109.07 Partial Payments and Retainage. Delete paragraph 1 under subsection (a) and replace with the following: The Engineer shall submit a partial payment estimate not more than once each month. Payment is predicated on approval of the Contractor's affidavit and partial waiver(s) of lien. Subsequent pay estimates will not be processed until partial waivers have been received and approved for all previous pay estimates. Retainage will not be deposited under any trust agreement. MOBILIZATION (SECTION 671) WILL NOT BE PAID. The Contractor will have the option to receive payment by check through the U.S. mail or payment via Electronic Funds Transfer (EFT). EFT payments will be made on Friday's

(excluding bank holidays). If a bank holiday falls on a Friday, the EFT payment will be dated on the last working day before the holiday. NO OTHER PAYMENT OPTIONS SHALL BE ALLOWED

109.08 Acceptance and Final Payment. Add the following to the end of this Section: Notwithstanding the forgoing, any payment, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract or the performance bond and payment and material bonds.

109.10 Contractor Record Retention. Delete the first sentence and replace with the following. The Contractor and all subcontractors shall maintain books and records relating to the performance of the contract or subcontract and necessary to support amounts charged to the Village under the contract and subcontract. The books and records shall be maintained by the Contractor for a minimum of three year from the later of the date of final payment under the contract or the completion of the contract. The books and records shall be maintained by the subcontractor for a minimum of three year from the later of the date of final payment under the subcontractor or the completion of the subcontract. However, the three year period shall be extended for the duration of any audit in progress at the time of that period's expiration. All book and records required to be maintained by the Contractor and subcontractor shall be available for review and audit by the Village, the State and any participating Federal agency if State or Federal funding is used for the contract.

DIVISION 200. EARTHWORK, LANDSCAPING, EROSION CONTROL

SECTION 201. CLEARING, TREE REMOVAL AND PROTECTION, CARE AND REPAIR OF EXISTING PLANT MATERIAL

REV. 01/12

This work shall be performed in accordance with Section 201 of the Standard Specifications with the following alterations.

201.01 Description. Add the following: "(f) Certified Arborist: At least one individual who has passed and received "Arborist Certification" from the International Society of Arboriculture" must witness the work being performed. His/Her name(s) and certification number(s) must be submitted to the ENGINEER prior to prosecution of the work. The certified arborist must be on site during execution of the work."

201.04 Tree Removal. Add the following, "For all necessary tree removal activities, limbs and branches larger than six (6) inches in diameter shall be lowered to the ground through the use of ropes or other mechanical devices. Damages to private lawns, shall be repaired with sod or if approved by the ENGINEER the damaged area may be filled with black dirt and seeded with a turf grass seed lawn mix.

201.05 Protection of Existing Plant Material. Delete Article 201.05 (b).

Delete the second, third, fourth and fifth sentences and add the following: The CONTRACTOR shall trim all trees designated by using a combination of the following pruning types: Crown Cleaning, Crown Thinning and Crown Raising, which involves removal of dead, dying, diseased, crowded, weakly attached, low vigor branches, one inch in diameter and larger, major interfering limbs, and sucker growth from the base up to a minimum height of 14 feet. The tree is to be elevated to minimum of 14 feet above the street, based on structure of the tree and overhanging limbs as designated on the plans or where

directed by the ENGINEER. The crew will uniformly balance the tree structure on the sidewalk side.

201.06 Care of Existing Plant Material. Delete the second and third sentences from Article 201.06 (b): and replace with: "All limbs to be removed shall be cut in such a manner so as to prevent any ripping or tearing of the wood or bark on the parent or remaining stem. Large limbs shall be cut using the three-cut pruning method. All limbs shall be brought to the ground in such a manner as to prevent any damage to real or personal property, publicly or privately owned.

Proper tools for pruning shall be used for each cut. Blades of each tool, including hand pruners, pole saws, hand saws, and chain saws, shall be placed on each branch to obtain the proper pruning cut. This shall be done in a way that will not to cut, rip, or harm adjacent bark areas.

All final cuts shall be "collar cuts" made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily begin under normal conditions. The face of the "collar cut" or wound area shall be circular in form. "Flush" cuts to the main stem behind the branch collar that leave oval exposed wound, shall not be made. Cuts shall be made such that all wound sides are even edged and do not leave "dog ear" ridges on one side or another. Clean cuts shall be made at all times without leaving any stubs.

No person working in trees shall use shoes with spikes, or any other footwear which will, in the opinion of the Village Forester, injure the tree being pruned. At no time shall any person working in trees for pruning purposes, wear spurs or climbing irons.

For all necessary tree pruning activities, limbs and branches larger than six (6) inches in diameter shall be lowered to the ground through the use of ropes or other mechanical devices. Damages to private lawns shall be repaired with sod or if approved by the ENGINEER, the damaged area may be filled with black dirt and seeded with a turf grass seed lawn mix."

SECTION 202. EARTH AND ROCK EXCAVATION

CBBEL 11/12

This work shall be performed in accordance with Section 202 of the Standard Specifications with the following alterations.

202.03 Removal and Disposal of Surplus, Unstable, and Unsuitable Materials and Organic Waste. Delete sentence two and three from paragraph four. Replace with the following: Organic waste originating from the project area may be chipped or shredded. Disposal of chips and debris will be the responsibility of the CONTRACTOR. Any logs requested by a resident or property owner within the project area shall be given free of charge, and shall not be from elm, ash or diseased trees. Logs left at the resident/property Village request must be placed on private property. All debris from the tree trimming operation shall be removed from the job site the same day it is generated. After the tree trimming operation is complete, the job site shall be free of saw dust, small twigs, chips, grindings, leaves, trunks and limbs.

The VILLAGE will not be responsible for any additional soil disposal costs if the soil disposal site chosen by the CONTRACTOR rejects loads due to photoionization readings greater than zero. **Photoionization detector (PID) readings are not acceptable results for determining classification of the excavated**

material. Should a licensed landfill reject any load, analytical chemical testing shall be performed on the excavated material by an IEPA National Environmental Laboratory Accreditation Program (NELAP) approved laboratory on representative samples obtained in accordance with standard IEPA protocol and frequencies. The analytical chemical testing shall be completed by a qualified, independent testing agency hired and paid for by the CONTRACTOR. SW-846 Analytical Laboratory Procedures (USEPA) methods will be used for analysis. The CONTRACTOR will also be responsible for the required PH testing and all other required testing to fill out, sign, and seal IEPA form LPC-663. If the test results are inconclusive, or when the test results indicate levels that do not exceed the Residential Tier 1 Soil and/or Class One Groundwater Remediation Objectives (SRO & GRO) presented in 35 Illinois Administrative Code 742 (IAC) the removal and disposal of the excavated material shall be classified as EARTH EXCAVATION or REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL as further defined below. The CONTRACTOR shall be responsible for transporting this material to a site that will accept the material. No additional compensation will be allowed for this testing or disposal.

When test results indicate that the materials exceed said SROs and GROs objectives, the material shall be classified as Non-Special Waste. All costs for excavation, testing and transportation and disposal shall be included in the contract unit price for NON-SPECIAL WASTE DISPOSAL.

Disposal operations shall only proceed with the authorization of the ENGINEER. The VILLAGE has the right to require that **all** sampling be performed in the presence of the ENGINEER or the VILLAGE's authorized representative.

202.07 Method of Measurement. Add the following
(c) The following describe the essential elements of the EARTH EXCAVATION pay item:

EARTH EXCAVATION is defined as excavation of suitable material that shall either be transported and placed throughout the limits or disposed off site in accordance with Section 205. EARTH EXCAVATION includes proposed grade changes on private property which is defined as the quantity of excavation on private property necessary to blend differing elevations on private property to match the proposed grade at the right-of-way. EARTH EXCAVATION also includes proposed excavation for sidewalk and is defined as the quantity of excavation necessary to place sub-base and sidewalk as further described in Section 424. Undercutting of unsuitable sub-grade soils, is paid for separately under the contract pay item REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL Any and all testing costs associated with the excavation and disposal of material shall be included in the unit prices for EARTH EXCAVATION, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL, and NON-SPECIAL WASTE DISPOSAL.

No adjustment to the awarded contract unit prices for the earthwork pay items will be allowed because of changes to quantities based on actual field conditions. At locations where existing pavement removal and excavation is indicated in the plans, or as otherwise directed by the ENGINEER, it may be necessary to remove underlying unsuitable soils. It is understood and agreed that the actual need for removal of unsuitable material will be determined in the field at the time of construction by the Engineer. Excavation for the removal of unsuitable soils is to begin at the individual soil boring locations where unsuitable soils are identified (refer to Appendix 6 for soil borings) and will progress outward from the soil boring location until suitable sub-base material is exposed. The Bidder may examine the entire geotechnical report, which is on file with the VILLAGE.

The limits of unsuitable material shown in the plans are estimated, and where unstable soils are encountered the soils removed and replaced will be measured for payment. If unstable soils are not encountered, the quantities will be deducted and no additional compensation will be due the CONTRACTOR. All unsuitable material shall be removed from the site and disposed of according to Article 202.03. The resulting excavation shall be backfilled with porous granular embankment or as specified elsewhere herein.

SECTION 208. TRENCH BACKFILL

CBBEL REV. 01/12

This work shall be performed in accordance with Section 208 of the Standard Specifications with the following alterations.

208.02 Materials. Add the following: The ENGINEER shall approve all sources of supply. The CONTRACTOR shall submit to the ENGINEER a statement giving the sources of aggregate. Only aggregates from these sources shall be used on the job unless approval in writing is obtained from the ENGINEER. Crushed concrete will not be allowed.

Add the following:
Construction Requirements.
Backfilling Method 2 as listed in Article 550.07 will not be allowed.
Backfilling Method 3 will only be allowed with prior approval from the Engineer.

208.03 Method of Measurement. Delete the second paragraph of Article 208.03(b).

208.04 Basis of Payment. Replace the sentence with the following: This work will be paid for at the contract unit price per cubic yard (cubic meter) for TRENCH BACKFILL, SPECIAL.

SECTION 211. TOPSOIL

REV. 01/12

This work shall be performed in accordance with Sections 211 of the Standard Specifications with the following alterations.

211.01 Description. Delete the words "or compost."

211.02 Materials. Add "Only 'pulverized' top soil shall be used." Delete subsection (b).

21.04 Placing Topsoil. Delete paragraph two.

211.05 Finishing delete the words "or compost/topsoil blend" from sentence one.

211.07 Method of Measurement. In subparagraph (b), paragraph two delete the words "and compost furnish and place "

211.08 Basis of Payment. Delete the words "and per square yard (square meter) for COMPOST FURNISH AND PLACE, of the thickness specified."

SECTION 250. SEEDING (SPECIAL) – EMERGENT / SEEDING CLASS 4 (SPECIAL) – WET PRAIRIE / SEEDING, CLASS 4 (SPECIAL) - PRAIRIE CBBEL 03/13

The work shall be performed in accordance with Section 250 of the Standard Specifications with the following additional requirements.

250.02 Materials. The seed mixtures are designated in the plans or in Article 250.07 of the Standard Specifications. Seed mixtures specified to be installed in the same season shall be seeded within 3 days of each other. The ENGINEER must approve variations in seed mixture in writing. Seed quality must meet the applicable standards set forth in Standard Specification 1081.04. All seed shall have a native source within 200 miles of DuPage County.

Planting Time: Live seed shall be planted between May 1 and June 15 or between August 12 and September 15. Dormant seed shall be planted between September 15 and June 15.

Period of Establishment. The period of establishment shall be the first 90 days of the growing season following seeding. Ninety percent aerial cover shall be evident at the end of the 90-day period of establishment. The ENGINEER shall make the cover determination. Re-seeding to achieve the aerial cover shall not be paid for separately, but shall be included in the cost of the initial seeding.

250.06 Seeding Methods. Seeding shall be accomplished by utilizing a "no till" attachment meeting the specifications of the Engineer or a rangeland type grass drill meeting the specifications of the Standard Specifications 1101.08(g). Grasses and sedge mixtures and forb mixtures will be seeded separately. The machine used to seed should be reset to drill the forb mixture at a depth recommended by the seed supplier or ENGINEER

Hydraulic seeding or hand broadcast seeding shall only be allowed as approved by the Engineer and only for inaccessible areas where the use of the equipment as specified is physically impossible. Hydraulic seeding shall utilize tackifier and mulch as approved by Engineer.

250.09 – 250.10 Method of Measurement and Basis of Payment. The work shall be measured and paid for at the contract unit price per square yard for SEEDING (SPECIAL) – EMERGENT, SEEDING (SPECIAL) - WET PRAIRIE, and SEEDING, CLASS 4 (SPECIAL)– PRAIRIE.

DIVISION 400. SURFACE COURSES, PAVEMENTS, REHABILITATION AND SHOULDERS

SECTION 424. PORTLAND CEMENT CONCRETE SIDEWALK CBBEL 02/13

This work shall be performed in accordance with Section 424 and 311 of the Standard Specifications with the following alterations.

424.04 Subgrade Preparation: Sidewalks shall be placed on a minimum of 2 in. of subbase granular material, type B.

424.06 Placing and Finishing. Add the following: At driveway apron locations, the depth of concrete shall be increased to 6 in for residential drives and 8 in for commercial drives. After the installation of the detectable warning surface, finishing will include edging around detectable warning surface. The surface shall be free of any debris, concrete and sealant and shall be cleaned according to the manufacturer's recommendations.

424.07 Expansion Joints. In subsection (b), Change "100 ft (30 m)" to "50 ft (15 m)".

424.13 Basis of Payment. Replace paragraph one with the following.
This work will be paid for at the contract unit price per square foot for PORTLAND CEMENT CONCRETE SIDEWALK, SPECIAL, which price shall include all required expansion joints, finishing, variable height edge treatment at sidewalk ramps, additional thickness at driveway aprons, and compacted sub base granular material.

Replace paragraph two with the following.
Add the following to the beginning of paragraph three: Where existing sidewalk is to be replaced, all removal and excavation will be paid for as SIDEWALK REMOVAL. Where new sidewalk is to be placed, excavation will be paid for as EARTH EXCAVATION.

SECTION 440. REMOVAL OF EXISTING PAVEMENT AND APPURTENANCES REV. 01/12

This work shall be performed in accordance with Section 440 of the Standard Specifications with the following alterations.

Special attention is drawn to the typical existing sections shown on the plans. These sections indicate the limits of payment for this item. No additional compensation for PAVEMENT REMOVAL shall be allowed without written direction from the Engineer prior to the commencement of any additional work. The Bidder may examine the geotechnical report and boring logs for this project which are on file with the Village. Delete previous sentence if there are no borings/corings for the project area).

440.01 Description. Add the following: Sidewalk and pavement removal prior to replacement shall be made to the depth of the new structure. The removal of any gravel driveway will be paid for as EARTH EXCAVATION. All removed material shall be hauled from the work site the same day as its removal.

440.08 Basis of Payment. Add the following: All required saw cutting shall be included in the unit prices for the various items of work. The contract unit prices for SIDEWALK REMOVAL and DRIVEWAY PAVEMENT REMOVAL shall include removing and disposing of the entire sidewalk or driveway structure including excavation to the depth of the new structure.

DIVISION 600. INCIDENTAL CONSTRUCTION

SECTION 604. FRAMES, GRATES AND MEDIAN INLETS REV. 01/12

This work shall be performed in accordance with Section 604 of the Standard Specifications with the following alterations.

604.04 General. Add the following: The words "DUMP NO WASTE!" and "DRAINS TO RIVERS" or "DRAINS TO WATERWAYS", as approved by the Engineer, shall be cast into the top of all curb boxes.

SECTION 700. WORK ZONE TRAFFIC CONTROL, SIGNING, AND PAVEMENT MARKING

SECTION 701. WORK ZONE TRAFFIC CONTROL

REV. 01/12

This work shall be performed in accordance with Sections 701 of the Standard Specifications, and any Highway Standards contained herein with the following clarifications.
Special attention is called to Articles 107.09 and 107.14 and the following Highway Standards:

701006-03 Off-Road Operations, 2L, 2W, 4.5m (15') to 600m (24") from Pavement Edge
701801-05 Lane Closure, Multilane, 1W or 2W Crosswalk or Sidewalk Closure
701901-02 Traffic Control Devices

701.04 General. Add the following:
The Contractor shall maintain at least one lane of traffic for local and emergency use at all times. Entrances to driveways and side roads shall also be maintained as indicated in the special provision for AGGREGATE FOR TEMPORARY ACCESS. All signs except those referring to daily lane closures shall be post mounted in accordance with Standard 720001.

The Contractor shall make frequent inspections of the work zone. Any traffic control items that are worn, damaged or are inoperative to the extent that they no longer meet these specifications or that have been displaced shall be repaired or removed and replaced. Traffic control items shall be properly installed and operational 24 hours a day, 7 days a week. The Contractor shall respond to requests from the Village to correct traffic control deficiencies that constitute an immediate safety hazard within 4 hours of the request and within 24 hours for all other traffic control deficiencies. If this specification is not meet within 4 hours of notice, the Village will take whatever action it may deem necessary to bring the traffic control within specification. If the Village corrects the deficiency, the Village will deduct $500 plus all costs (actual and incurred) from amounts due or which may become due the Contractor. This corrective action will in no way relieve the Contractor of its contractual requirements or responsibilities.

If the Contractor fails to restore the required traffic control and protection within the 4 hour or the 24 hour time limit, the Engineer will also impose a daily monetary deduction for each 24 hour period (or portion thereof) the deficiency exists. This time period will begin with the time of notification to the Contractor and end with the Engineer's acceptance of the corrections. For this project, the daily deduction will be __* per day.

* The cost of the daily deduction will be calculated by dividing three percent (3%) of the awarded contract price by the number of calendar days anticipated for this project. The number of days anticipated for this project is 164 calendar days. This procedure is to be followed regardless of whether the contract is based upon working days, contains a completion date, or has an incentive/disincentive clause.

701.16 Lights. Add the following:
All traffic control devices that require illumination shall be completely operational at all times. Non-

working illuminating fixtures shall be considered deficient and shall be repaired and/or replaced as indicated herein.

701.17 Specific Construction Operations. Under section (e) subparagraph (2) delete "If patches are not opened when required, additional traffic control shall be provided at no additional cost to the Department" and replace with the following: Patches shall be completed and open holes shall be closed overnight, however, patches or holes may remain open overnight with the acknowledgement and **approval** of the Village Engineer, and subject to such traffic control and protective barriers/safety devices as requested by the Village Engineer, which shall be provided by the Contractor at no additional cost. The Contractor shall provide a written request to the Village Engineer detailing the reason for not completing the patch(es) or leaving the holes open overnight.

701.19 Method of Measurement. Delete entire section and replace with: Traffic Control and Protection will be measured on a lump sum basis.

701.20 Basis of Payment. Delete paragraph one of section (a), and sections (b), (c) (d), (e), (f), and (g) and add the following: No compensation for any delays that may be incurred by Contractor in complying with this special provision shall be made. This work will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION, less amounts deducted for non-compliance with this special provision.

TECHNICAL SPECIFICATIONS (CSI)

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes construction facilities and temporary controls required for the Work.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.
2. Comply with pertinent safety requirements and regulations for temporary facilities and controls.
3. Equipment normally furnished by the individual trades in execution of their own portions of the Work is not part of this Section.
4. Permanent installation and hookup of the various utility lines are described in other Sections.
5. Section 107 of the IDOT Standard Specifications for Road and Bridge Construction in Illinois, adopted January 1, 2012.

1.2 REQUIREMENTS

A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:
1. Temporary utilities and services such as water.
2. Sanitary facilities.
3. Enclosures such as fencing, tarpaulins, barricades, and canopies.
4. Temporary fencing of the construction site.
5. Fire extinguishers.
6. Dust and mud control.
7. Security.
8. Right-of-way and property line control.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 - PRODUCTS

2.1 UTILITIES AND SERVICES DURING CONSTRUCTION

A. USE OF FIRE HYDRANTS: See Section 107.18 of the Standard Specifications.

2.2 SANITARY FACILITIES

A. Per Section 107.08 of the Standard Specifications, provide temporary sanitary facilities meeting federal, state, and local health department requirements.
   1. Maintain in a sanitary condition at all times.

2.3 ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

2.4 TEMPORARY FENCING (SITE PROTECTION)

A. Provide and maintain for the duration of construction a temporary fence of design and type needed to prevent entry onto the Work by the public and to delineate limit of Contractor's Work area.

B. Temporary work boundary fence (standard).
   1. Provide fence 36-inch to 48-inch in height.
      a. Material: Polyethylene, PVC, or wood lath.
   2. Provide steel or wood posts.
      a. Height: To support fence for total height after being driven.

2.5 FIRE EXTINGUISHERS

A. Provide and maintain not less than two fire extinguishers, multi-purpose dry chemical type with UL rating of 4A-60 B:C, 10-pound capacity, Amerex Model ABC, or equal, enclosed in suitable protecting cabinets and conveniently located for proper protection.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Engineer.

3.2 DUST AND MUD CONTROL

A. Abide by Village requirements and Section 107.36 of the Standard Specifications.

B. Take necessary precautions to control dust and mud associated with the Work, subject to the approval of the Engineer.
   1. In dry weather, spray dusty areas daily with water in order to control dust.
   2. Apply calcium chloride having a minimum chemical content of 77 percent calcium chloride at an application rate of 3 pounds per square yard of surface covered at locations as directed by the Engineer.

C. Take necessary steps to prevent the tracking of mud onto adjacent streets and highways.
   1. Wash mud resulting from the construction traffic off the adjacent streets and highways.
   2. Clean all permanent roadways used for construction activities by using motorized street sweeper that utilizes vacuum and water to pick up debris, when directed by Engineer.

3.3 SECURITY

A. Take whatever measures are necessary to protect the safety of the public, labor force, and materials.
   1. Provide inspection of work area daily.
   2. Provide the security of the site, both day and night.

3.4 RIGHT-OF-WAY AND PROPERTY LINE CONTROL

In addition to Article 107.20 of the Standard Specifications the Contractor shall;

A. Protect all right-of-way markers, property line iron pins, and easement iron pins during construction.
   1. Flag such control points prior to construction, and protect the points during the course of construction.

B. Establish tie-down control for any right-of-way markers or iron pins that may be lost or damaged during the work.

C. Reestablish any right-of-way markers or iron pins that are lost or damaged during construction, after completion of restoration work.

D. Provide the services of a Registered Land Surveyor for replacement of lost markers and pins.

The cost for this work will be considered incidental to the Contract, and no additional compensation will be allowed.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at unit prices for the below Listed Items, in the Schedule of prices:

015000/01; Temporary Fencing (Site Protection) Lump Sum

B. These prices shall be full compensation for furnishing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to complete the Items. Payment for excavation and backfill required for installation shall be included in the prices bid for these Items as they pertain.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 01 66 11

STORAGE AND PROTECTION OF MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Coordinate storage and protection with both Village and manufacturers.

C. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.
   2. Additional procedures also may be prescribed in other Sections of these Specifications.
   3. Section 106 of the "Standard Specifications".

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Engineer, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.4 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
   1. Maintain packaged materials with seals unbroken and labels intact until time of use.
   2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Village.

B. The Village or Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to manufacturer, grade, quality, and other pertinent information.

1.5 STORAGE AND PROTECTION

A. Comply with the requirements of this Section for off-site storage.
   1. The Village and Engineer reserves the right to inspect the off-site storage areas.

B. Store equipment and materials in accordance with the manufacturer's instructions.

C. Provide temporary weathertight enclosures to protect products from damage by the elements.

D. Protect finished surfaces through which equipment and materials are handled.

E. Do not store equipment on site until they are needed by the Village or for progress of work.

1.6 REPAIRS AND REPLACEMENTS

A. In event of damage after delivery, promptly make replacements and repairs to the approval of the Engineer and at no additional cost to the Village.

B. Additional time required to secure replacements and to make repairs will not be considered by the Engineer to justify an extension in the Contract Time of Completion.

END OF SECTION

SECTION 01 91 58

FACILITY STARTUP

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes the Contractor's general equipment requirements for facility start-up.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01, 26, 33, 40 and 44 of these CSI Specifications.
2. Section 801 of the Standard Specifications.

1.2 SUBMITTALS

A. Submit a detailed plan and schedule for start-up of each facility at least seven (7) days prior to the scheduled start-up of each facility.
1. Coordinate with all manufacturers.

PART 2 - PRODUCTS

No products are required in this Section.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REQUIREMENTS

A. Provide the services of a qualified and experienced factory employed field service engineer from each equipment manufacturer:
1. Ascertain that equipment has been installed in accordance with the manufacturer's recommended procedures.
2. Ascertain that equipment is operational and ready for start-up.
3. Make necessary repairs, corrections, and/or modifications prior to the scheduled start-up.

B. Coordinate efforts of equipment field service engineers with construction activities.

C. Perform the above services at least two weeks prior to the scheduled start-up.

D. Perform the facility start-up procedures in the presence of the Village and Engineer.

E. Complete the attached "Start-Up Report Form" for each location.

END OF SECTION

Start-Up Report Form

This report is designed to insure the customer that customer service and a quality product are the number one priority.

Please answer the following questions completely and as accurately as possible. Please mail this form to:

Manufacturer's Name
Manufacturer's Address

1) Pump Village Name _____
Address _____
Location of Installation _____
Person in Charge _____
Purchased From _____

2) Model _____ Serial No. _____
Voltage _____ Phase _____ Hertz _____ Horsepower _____
Rotation: Direction of Impeller Rotation (Use C/W for clockwise, CC/W for counter-clockwise)
_____
Method Used to Check Rotation (viewed from bottom) _____
Does Impeller Turn Freely by Hand _____ Yes _____ No

3) Condition of Equipment _____ Good _____ Fair _____ Poor
Condition of Cable Jacket _____ Good _____ Fair _____ Poor
Resistance of Cable and Pump Motor (measured at pump control)
Red-Black _____ Ohms Red-White _____ Ohms White-Black _____ Ohms
Resistance of Ground Circuit Between Control Panel and Outside of Pump _____ Ohms
Resistance of Moisture Sensor _____ Ohms
Motor Heat Sensor Connected and Circuit Enclosed _____ Yes _____ No
MEG Ohm Check of Insulation:
Winding Temperature _____ °F or _____ °C
Red to Ground _____ Ohms White to Ground _____ Ohms Black to Ground _____ Ohms

4) Condition of Equipment at Start-Up: Dry _____ Wet _____ Muddy
Was Equipment Stored: ____ Yes ____ No. If YES, length of storage: _____
Describe Station Layout _____

5) Liquid Being Pumped _____
Debris in Bottom of Station? _____ Yes _____ No
Was Debris Removed in Your Presence? _____ Yes _____ No
Are Guide Rails Exactly Vertical (plumb)? _____ Yes _____ No
Is Base Elbow Installed Level? _____ Yes _____ No

6) Liquid Level Controls: Model _____
Is Control Installed Away from Turbulence? _____ Yes _____ No
Operation Check:
Tip lowest float (stop float), all pumps should remain off.
Tip second float (and stop float), one pump comes on.
Tip third float (and stop float), both pumps on (alarm on simplex).
Tip fourth float (and stop float), high level alarm on (omit on simplex).
If not our level controls, describe type of controls _____
Does liquid level ever drop below volute top? _____ Yes _____ No

7) Control Panel Model No. _____
Number of Pumps Operated by Control Panel _____
NOTE: At no time should hole be made in top of control panel, unless proper sealing devices are utilized.
Control Panel Manufactured by Others: _____ Yes _____ No
Company Name _____
Model No. _____
Short Circuit Protection _____ Type _____
Number and Size of Short Circuit Device(s) _____ Amp Rating _____
Overload Type _____ Size _____ Amp Rating _____
Do Protective Devices Comply With Pump Motor Amp Rating? _____ Yes _____ No
Are All Connections Tight? _____ Yes _____ No
Is the Interior of the Panel Dry? _____ Yes _____ No. *If "No", correct the moisture problem.*

8) Electrical Readings:
Single Phase:
Voltage Supply at Panel Line Connection, Pump Off, L1, L2 _____
Voltage Supply at Panel Line Connection, Pump On, L1, L2 _____
Amperage: Load Connection, Pump On, L1 _____ L2 _____
Three Phase:
Voltage Supply at Panel Line Connection, Pump Off, L1-L2 _____ L2-L-3 _____ L3-L1 _____
Voltage Supply at Panel Line Connection, Pump On, L1-L2 _____ L2-L-3 _____ L3-L1 _____
Amperage: Load Connection, Pump On, L1 _____ L2 _____ L3 _____

9) Final Check:
Is Pump Seated on Discharge Property? _____ Yes _____ No
Was Pump Checked for Leaks? _____ Yes _____ No
Do Check Valves Operate Properly? _____ Yes _____ No
Flow: Does Station Appear to Operate at Proper Rate? _____ Yes _____ No
Noise Level: _____ Acceptable _____ Unacceptable
Comments:

10) Describe Any Equipment Difficulties During Start-Up:
_____
_____
_____

11) Manuals:
Has Operator Received Pump Instruction and Operations Manual? _____ Yes _____ No
Has Operator Received Electrical Control Panel Diagram? _____ Yes _____ No
Has Operator Been Briefed on Warranty? _____ Yes _____ No.
Name/Address of Local Representative/Distributor? _____

I Certify This Report To Be Accurate. Signed By (Start-Up Person) _____
Employed By: _____ Date _____
Date and Time of Start-Up: _____
Present at Start-Up:
Engineer's Name _____ Operator's Name _____
Contractor's Name _____ Others _____

SECTION 02 41 53

DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of existing generator and site improvements.
2. Abandoning in-place and removing below-grade construction.
3. Disconnecting, capping or sealing, abandoning in-place and removing site utilities.
4. Salvaging items for reuse by Owner.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 SUBMITTALS

A. Qualification Data: For qualified refrigerant recovery technician.

B. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.

C. Schedule of Building Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by demolition operations.

F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

D. Predemolition Conference: Conduct conference at project site.

1. Inspect and discuss condition of construction to be demolished.

2. Review structural load limitations of existing structures.
3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent buildings.
7. Review items to be salvaged and returned to Owner.

1.7 PROJECT CONDITIONS

A. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.

1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.

a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.

B. Owner assumes no responsibility for buildings and structures to be demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
2. Before building demolition, Owner will remove the following items:

a. As directed by Owner.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

D. On-site storage or sale of removed items or materials is not permitted.

1.8 COORDINATION

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations or operations of adjacent occupied buildings.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Soils: Comply with requirements in Division 31.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting demolition operations.

B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

1. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.

E. Verify that hazardous materials have been remediated before proceeding with demolition operations.

3.2 PREPARATION

A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.

B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.

1. Owner will arrange to shut off indicated utilities when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.
3. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
4. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

C. Existing Utilities: Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

E. Salvaged Items: Comply with the following:
1. Clean salvaged items of dirt and demolition debris.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.

1. Protect adjacent buildings and facilities from damage due to demolition activities.
2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION, GENERAL

A. General: Demolish indicated items and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during and for at least 4 hours after flame cutting operations.
3. Maintain adequate ventilation when using cutting torches.
4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.

C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

D. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.

C. Salvage: Items to be removed and salvaged are indicated on Drawings.

D. Below-Grade Construction: Abandon foundation walls and other below-grade construction. Cut below-grade construction flush with grade.

E. Below-Grade Construction: Demolish foundation walls and other below-grade construction that are within footprint of new construction and extending 5 feet outside footprint indicated for new construction. Abandon below-grade construction outside this area.

1. Remove below-grade construction, including basements, foundation walls, and footings to 5 feet below grade.

F. Below-Grade Construction: Demolish foundation walls and other below-grade construction.

1. Remove below-grade construction, including basements, foundation walls, and footings to at least 5 feet below grade.

G. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.

H. Existing Utilities: Demolish existing utilities and below-grade utility structures that are within 5 feet outside footprint indicated for new construction. Abandon utilities outside this area.

1. Fill abandoned utility structures with controlled low strength concrete material (flowable fill) satisfactory soil materials according to backfill requirements in Division 31 Section "Earth Moving."
2. Piping: Disconnect piping at unions, flanges, valves, or fittings.
3. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

I. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 DEMOLITION BY EXPLOSIVES

A. Explosives: Explosives are not permitted on or near the project site.

3.7 SITE RESTORATION

A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.

B. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with controlled low strength concrete material (flowable fill).

C. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.10 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

1. Clean roadways of debris caused by debris transport.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Separate measurement will not be made for the Work in this Section.

4.2 PAYMENT

A. Payment for the Work in this Section will be made at the contract lump sum price for 02 41 53, Demolition, Removal and Abandonment.

END OF SECTION

SECTION 042300

GLASS UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Glass block set in mortar.
2. Glass block set in silicone sealant.
3. Glass block set in glass-block grid systems.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design glass-block grid systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Glass-block grid systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Wind Load: Uniform pressure of 30 psf, acting inward or outward.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants used inside the weatherproofing system, documentation including printed statement of VOC content.
2. Laboratory Test Reports for Credit IEQ 4: For sealants used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Show fabrication and installation details for glass unit masonry, including vertical and horizontal coursing, anchors, reinforcement, and expansion strips.

D. Samples for Initial Selection: Manufacturer's actual glass-block units and joint materials involving color selection.

E. Samples for Verification: Glass-block units and joint materials involving color selection.

F. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, documentation including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

1.6 QUALITY ASSURANCE

A. Source Limitations for Glass Block: Obtain glass block through single source from single manufacturer.

B. Source Limitations for Accessory Materials: Obtain each cementitious material through single source from single manufacturer and each aggregate from single source or producer.

C. Fire-Rated Glass Unit Masonry Assemblies: Assemblies listed by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 257.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store glass block in unopened cartons on elevated platforms, under cover, and in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

B. Store glass-block grid materials in unopened cartons in an enclosed, dry location.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Store accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

A. Environmental Limitations for Sealants: Do not install sealants when ambient and substrate temperatures are outside limits permitted by sealant manufacturer or below 40 deg F (5 deg C) or when joint substrates are wet.

B. Weather Limitations: Proceed with installation of glass unit masonry assemblies only when ambient and material temperatures are 40 deg F (5 deg C) or higher.

1. Maintain temperature in installation areas at 40 deg F (5 deg C) or above for 48 hours after installing.

1.9 SEQUENCING AND SCHEDULING

A. Sequence and coordinate completion of glass unit masonry assemblies so sealants can be installed immediately after mortar has attained final set.

PART 2 - PRODUCTS

2.1 GLASS BLOCK

A. Solid glass block shall be Pittsburgh Corning Thickset 60 Block Decora Pattern or equal.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II. Provide natural color or white cement as required to produce mortar color indicated.

1. Where joints are indicated to be raked out and pointed, gray cement may be used for setting mortar.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C 91.

E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.

F. Colored Cement Product: Packaged blend made from masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.

G. Aggregate: ASTM C 144, with 100 percent passing No. 8 (2.36-mm) sieve.

H. Water-Repellent Admixture: Manufacturer's standard dry mixture of stearates, water-reducing agents, and fine aggregates intended to reduce capillarity in mortar.

I. Water-Repellent Admixture: Liquid polymeric water-repellent mortar admixture that does not reduce flexural bond strength of mortar.

J. Water: Potable.

2.3 GLASS UNIT MASONRY ACCESSORIES

A. Panel Reinforcement: Ladder-type units, butt welded, not lapped and welded; complying with ASTM A 951 in straight lengths of not less than 10 feet (3 m), and as follows:

1. Interior Walls: Hot-dip galvanized, carbon-steel wire.
2. Exterior Walls: Hot-dip galvanized, steel wire.
3. Wire Size: W1.7 or 0.148-inch (3.8-mm) diameter.
4. Width: 2 inches (50 mm).
5. Spacing of Cross Rods: Not more than 16 inches (407 mm) apart.

B. Panel Anchors: Glass-block manufacturer's standard perforated steel strips, 0.0359 inch (0.9 mm) by 1-3/4 inches (44 mm) wide by 24 inches (600 mm) long, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.

C. Mortarless Installation System: System of aluminum perimeter framing, anchors, and spacers designed for installing glass block with sealant-filled joints.

D. Fasteners, General: Unless otherwise indicated, provide Type 304 or Type 316 stainless-steel fasteners at exterior walls and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at interior walls. Select fasteners for type, grade, and class required.

E. Carbon-Steel Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6) with hex nuts, ASTM A 563 (ASTM A 563M) if applicable.

F. Stainless-Steel Bolts: ASTM F 593 (ASTM F 738M), Alloy Group 1 or 2 (A1 or A4) with hex nuts, ASTM F 594 (ASTM F 836M) if applicable.

G. Postinstalled Anchors: Provide metal expansion sleeve anchors of type and size necessary for installation indicated, according to manufacturer's written instructions unless otherwise indicated.

H. Asphalt Emulsion: Cold-applied asphalt emulsion complying with ASTM D 1187 or ASTM D 1227.

I. Mineral-Fiber Expansion Strips: Comply with requirements of fire-rated assembly listing and glass-block manufacturer.

1. Use for fire-rated assemblies.

J. Plastic-Foam Expansion Strips: Polyethylene foam complying with requirements of glass-block manufacturer; 3/8 inch (9 mm) thick by 2-1/2 inches (63 mm) wide.

1. Use plastic-foam expansion strips for non-fire-rated assemblies.

2.4 MORTAR MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, or antifreeze compounds unless otherwise indicated.

1. Do not use calcium chloride in mortar.
2. For mortar in exterior panels, use water-repellent admixture according to admixture manufacturer's written instructions.
3. For pointing mortar in exterior panels, use water-repellent admixture according to admixture manufacturer's written instructions.
4. Limit cementitious materials in mortar to portland cement and lime.

B. Mortar for Glass Unit Masonry Assemblies: Provide mortar, mixed according to glass-block manufacturer's listing with testing and inspecting agency, for fire-resistance rating indicated.

C. Mortar for Glass Unit Masonry Assemblies: Comply with ASTM C 270, Proportion Specification for Type S mortar.

1. Combine and thoroughly mix cementitious materials, water, and aggregates in a mechanical batch mixer unless otherwise indicated. Mix mortar to produce a stiff but workable consistency that is drier than mortar for brick or concrete masonry. Discard mortar when it has reached initial set.

D. Pigmented Mortar: Use colored cement product[or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products].

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of masonry cement by weight.
3. Mix to match Architect's sample.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

1. Mix to match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine sills, jambs, and heads surrounding glass unit masonry assemblies for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLING GLASS BLOCK WITH MORTAR

A. Apply a heavy coat of asphalt emulsion to sill and adhere expansion strips to jambs and heads with asphalt emulsion. Allow asphalt emulsion to dry before placing mortar. Trim expansion strips to width required to fit glass block and to full lengths of heads and jambs.

B. Set glass block with completely filled bed and head joints, with no furrowing, accurately spaced and coordinated with other construction. Maintain 1/4-inch (6-mm) exposed joint widths unless otherwise indicated.

C. Install panel reinforcement in horizontal joints at spacing indicated and continuously from end to end of panels; comply with the following requirements:

1. Vertical Spacing of Panel Reinforcement for Exterior Panels: Every other course but not more than 16 inches (407 mm) o.c., starting with first course above sill.
2. Vertical Spacing of Panel Reinforcement for Interior Panels: Not more than 16 inches (407 mm) o.c.
3. Do not bridge expansion joints with panel reinforcement.
4. Place panel reinforcement in joints immediately above and below all openings within glass unit masonry assemblies.
5. Lap panel reinforcement not less than 6 inches (150 mm) if more than one length is necessary.
6. Embed panel reinforcement in mortar bed by placing lower half of mortar bed first, pressing panel reinforcement into place and covering with upper half of mortar bed.

D. Install panel anchors at locations indicated and in same horizontal joints where panel reinforcement occurs. Extend panel anchors at least 12 inches (300 mm) into joints, and bend within expansion joints at edges of panels and across the head. Attach panel anchors as follows:

1. For in-place unit masonry assemblies and concrete, attach panel anchors with 1/4-inch- (6-mm-) diameter bolt-size, postinstalled anchors, two per panel anchor.
2. For new unit masonry assemblies, embed other ends of panel anchors, after bending portions crossing expansion joint, in horizontal mortar joints closest in elevation to joints in glass unit masonry assemblies containing panel anchors.
3. For steel members, attach panel anchors with 1/4-inch- (6-mm-) diameter through bolts and nuts or bolts in tapped holes in steel members.

E. Use rubber mallet to tap units into position. Do not use steel tools, and do not allow units to come into contact with metal accessories and frames.

F. Use plastic spacers in mortar joints to produce uniform joint widths and to prevent mortar from being squeezed out of joints.

1. If temporary wedges are used, remove them after mortar has set and fill voids with mortar.

G. Keep expansion joints free of mortar.

H. Rake out joints indicated to be pointed to a uniform depth sufficient to accommodate pointing material, but not less than joint width.

1. If temporary wedges are used, remove them before raking out and pointing joints.
2. Point joints at both faces of exterior panels with mortar.
3. Point joints at both faces of exterior panels with sealant.
4. Point joints at both faces of exterior and interior panels with sealant.

I. Point joints with mortar by filling raked joints and voids. Place and compact pointing mortar in layers not more than 3/8 inch (10 mm) thick. Compact each layer thoroughly and allow to become thumbprint hard before applying next layer.

1. Tool exposed joints slightly concave when pointing mortar is thumbprint hard. Use a smooth plastic jointer larger than joint width.

J. Point joints by filling with sealant to comply with requirements in Division 07 Section "Joint Sealants."

K. Clean glass unit masonry assemblies as work progresses. Remove mortar fins and smears immediately, using a clean, wet sponge or a scrub brush with stiff fiber bristles. Do not use harsh cleaners, acids, abrasives, steel wool, or wire brushes when removing mortar or cleaning glass unit masonry assemblies.

L. Install sealant at jambs, heads, mullions and other locations indicated. Prepare joints, including installation of primer and bond-breaker tape or cylindrical sealant backing, and

apply elastomeric sealants to comply with requirements in Division 07 Section "Joint Sealants."

M. Construction Tolerances: Set glass block to comply with the following tolerances:

1. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet or more.
2. Variation from Level: For bed joints, and other conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (12 mm in 12 m) or more.
3. Variation of Location in Plan: For location of elements in plan do not vary from that indicated by more than plus or minus 1/4 inch (6 mm).
4. Variation in Mortar-Joint Thickness: Do not vary from joint thickness indicated by more than plus or minus 1/16 inch (1.5 mm).
5. For faces of adjacent exposed units, do not vary from flush alignment by more than 1/16 inch (1.5 mm).

3.3 INSTALLING GLASS BLOCK WITH SEALANT

A. General: Install mortarless glass-block systems according to manufacturer's written instructions.

1. Fasten frames and anchors or clips securely to surrounding construction.
2. Shim starting track as needed to make it level.
3. Adhere glass block to starting track and spacers with silicone sealant.

B. After glass blocks are installed, apply sealant to completely fill channel around each glass block, and tool flush with exterior surface. Remove excess sealant and smears.

3.4 GLASS-BLOCK GRID SYSTEM INSTALLATION

A. General: Install glass-block grid systems according to manufacturer's written instructions.

B. Window and Wall System Installation: Assemble grid system, apply continuous sealant bead to back of window Z-bar, place in position, adjust as needed to make grid level and plumb, and fasten to substrate.

1. Insert glass blocks into vinyl glass-block boots and carefully insert into grid from exterior side. Install blocks firmly against T-bars without deforming boots.
2. Apply sealant to completely fill channel around each glass block, and tool flush with exterior surface. Remove excess sealant and smears.

C. Skylight System Installation: Assemble grid system, apply continuous sealant bead to top of supporting curb, place in position, adjust as needed to bring grid true to line, and fasten

to substrate.

1. Insert glass blocks into vinyl glass-block boots and carefully insert into grid from exterior side. Install blocks firmly against T-bars without deforming boots.
2. Apply sealant to completely fill channel around each glass block, and tool flush with exterior surface. Remove excess sealant and smears.

D. Floor System Installation: Assemble grid system in position, adjusting supports as needed to level grid as system is assembled, and fasten to substrate.

1. Insert glass blocks into vinyl glass-block boots and install into grid. Install blocks flush with adjoining floor surfaces and aluminum grid.
2. Apply sealant to completely fill channel around each glass block and joints of aluminum grid. Tool flush with exterior surface and remove excess sealant and smears.

3.5 CLEANING

A. On surfaces adjacent to glass unit masonry assemblies, remove mortar, sealants, and other residue resulting from glass-block installation, in a manner approved by manufacturers of materials involved.

B. Remove excess sealants with commercial solvents according to sealant manufacturer's written instructions. Exercise care not to damage sealant in joints.

C. Perform final cleaning of glass unit masonry assemblies when surface is not exposed to direct sunlight. Start at top of panel using generous amounts of clean water. Remove water with clean, dry, soft cloths; change cloths frequently to eliminate dried mortar particles and aggregate.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

B. Separate measurement will not be made for the Work in this Section.

4.2 PAYMENT

B. Payment for the Work in this Section will be made at the contract lump sum price for 04 23 00/01, Glass Block.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide low-voltage electrical power conductors and cables as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 QUALITY ASSURANCE

A. Comply with the following requirements:
   1. NFPA 70 National Electrical Code (NEC).
   2. Local codes and ordinances.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 GENERAL

A. Comply with the following standards:
   1. UL 83 and ICEA S-61-402 for thermoplastic insulated wire and cable.
   2. UL 44, ICEA S-19-81 and ICEA S-66-524 for rubber or rubber-like and cross-linked thermosetting polyethylene insulated wire and cable.

B. Provide copper wire only.

C. No underground splices allowed unless approved by the Village or Engineer.

2.2 WIRE AND CABLE IN RACEWAY

A. Power, light, and control conductors:
   1. Insulation: Rated for 600 volts.
      a. Use dual rated type THHN/THWN in temperature controlled cabinet or interior locations.

b. Use Type XHHW in underground locations unheated areas and unheated concrete structures.

2. Use stranded wire for control conductors.

2.3 JOINTS, TAPS, SPLICES, AND TERMINATIONS

A. Conductors No. 10 AWG and smaller: Use twist type insulated wire nut solderless connectors.

B. Conductors No. 8 AWG and larger: Use solderless compression type connectors of type that will not loosen under vibration or normal strains.

C. Control and instrumentation conductors: Use crimp type spade connectors where control wires are connected to screw terminals of equipment.

D. Joints, taps, and splices located in enclosures subject to moisture: Use watertight splice kits.

2.4 UNIT DUCT

Description. This work shall consist of furnishing and installing preassembled cable in coilable nonmetallic conduit (unit duct), complete with all splicing, identifications, and terminations. The unit duct shall be UL Listed and in accordance with NEC Article 354.

2.5 PERMANENT WIRE MARKERS

A. Provide type-on, self-laminating vinyl, heat shrink polyolefin or nylon clip-sleeve, alpha-numeric, permanent wire markers.
1. Use fine-line, black, permanent ink pens where field marking is necessary.
2. Tags shall be oil and water proof. Cloth tags are not acceptable.

2.6 COLOR CODING

A. Provide color coded wires per NFPA 79 exterior of the control cabinet (refer to table below) and UL508A for interior control cabinet wiring.

AC Conductor	120/208/240 V AC	277/480 V AC
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	White / Gray stripe
Equipment Grounds	Green	Green

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wiring system in accordance with manufacturer's recommendations.

B. Install wire and cable in conduit unless otherwise shown on the Drawings.

C. Trench and backfill for direct burial cables:
   1. Install cable in PVC coated rigid steel conduit under and 1-foot beyond all driveways and other pavement, and within a radius of 5 feet from all structures, trees, obstacles, etc.
   2. Provide suitable bracing for cable to withstand movement due to settlement where cable crosses a previous or new excavation.
   3. Seal all conduit entrances with watertight cable-conduit seals to prevent entrance of water into underground structures and caulk opposite end of conduit where conductors enter junction box, panel or electrical enclosure.

D. Install warning tape along and above direct buried cable.
   1. Use red plastic, 6-inch wide tape.
   2. Imprinted "CAUTION - ELECTRIC CABLE BELOW".
   3. Bury approximately 1-foot below surface before final backfilling.

E. Maintain barrier or conduit separation between power conductors and instrumentation conductors to avoid magnetic interaction where such conductors enter and pass through same manhole, handhole, casing pipe, box, or enclosure.

F. Provide individual wiring compartments or barrier for separation between intrinsically safe and non-intrinsically safe conductors inside enclosures.

G. The unit duct shall be installed directly from the reels on which the unit duct was shipped, in continuous spans without splicing the duct or cables.

Where unit duct passes through handholes or pull boxes, the polyethylene duct shall be cut open and the continuous, uncut and unspliced conductors exposed and looped within the handhole or pull box. The ends of the polyethylene duct must be sealed with duct sealant and mounted in the handhole to prevent entrance of moisture or contaminants.

When the unit duct is to be pulled, the pulling apparatus shall be attached to the duct and not to the cables. The pulling tension on the duct shall not exceed 550 lb (2.4 kN).

Unit duct extended to future light pole locations shall be of a length sufficient for cable splices to be withdrawn a minimum of 18 in. (450 mm) out of pole handholes. The duct of the unit duct assembly shall extend a minimum of 12 in. (300 mm) into enclosure bases. Coordinate with existing Village light/poles.

Unit duct is only to be used for the future light pole location feeder. See plans for locations. The unit duct shall be an assembly of insulated conductors which are factory pre-installed in a coilable nonmetallic conduit. The polyethylene duct shall be extruded directly over the cable at the factory in long continuous lengths. The unit duct shall be according to NEC Article 354.

3.2 WIRE AND CABLE IDENTIFICATION

A. Install permanent wire markers on wire and cable in junction boxes, pull boxes, wireways, and wiring gutters of panels. Markers to identify wire or cable number.

B. Provide schedule identifying various power and lighting conductors from power source to equipment or device served.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at lump sum price for the below Listed Items, in the Schedule of prices:

260519/01; Wire and Cable

B. These prices shall be full compensation for furnishing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to complete the Items. Payment for excavation and backfill required for installation shall be included in the prices bid for these Items as they pertain.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide grounding and bonding as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 QUALITY ASSURANCE

A. Comply with the following requirements:
1. NFPA 70 National Electrical Code (NEC).
2. Local codes and ordinances.
3. Utility company providing electrical service.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 GENERAL

A. Ground clamp fittings, connections, and joints (inside cabinet only):
1. Provide interlocking listed clamp fabricated from high strength corrosion- resistant metal.
2. Use high strength silicon bronze U-bolt, nuts, and lock washers.
3. Cad weld all ground rod connections.

B. Ground rods:
1. Provide copper or copper-clad steel core.
2. Use 3/4-inch diameter minimum and 10-foot long.
3. Three rods minimum per station.
4. Provide one GCR (Ground Connection Receptacle, or Grounding junction box) receptacle per station. Refer to mounting detail on drawings.

C. Ground wires:
1. Use copper wire only.

2. Size as shown on the Drawings.

2.2 ACCEPTABLE MANUFACTURERS

EXTERIOR GROUNDING JUNCTION BOX: QUICK CONNECT FOR GROUNDING SYSTEM

Harger Lightning Protection Floor Ground Receptacles 350-6T, Ground Rod Size: 3/4", Connection Type: Threaded – Set screw type not allowed.
Ground test to conform to IEEE 81: 5 ohms or lower.

Station generator hookup shall be provided with three 3/4" ground rods cad welded in a triangular orientation with an access can and cover for quick connect. Ground rods shall be 10-ft. long and buried 10 ft. apart

PART 3 - EXECUTION

3.1 INSTALLATION

A. Grounding electrode system:
1. Attach ground wire to enclosures where available.

B. Main and supplemental grounding electrode conductors:
1. Install triad ground rod system per plans.

C. Install properly terminated equipment grounding conductor in all flexible conduits.

D. Drive ground rod to a depth that allows for physical protection and concealment below finished floor or grade. Leave approximately 4 inches of each rod exposed for inspection prior to concealment.

E. Make connections to ground rods with a cad-weld process. For inside the control cabinet: utilize a listed and approved ground clamp.

3.2 FIELD QUALITY CONTROL

A. Perform and record resistance-to-earth measurements witnessed by Engineer with all grounding electrode conductors.
1. Isolate ground under test from other grounds.
2. Measure in normally dry conditions not less than 48 hours after rainfall.
3. Measure at each ground rod and other ground connections when applicable.

B. Maximum D.C. resistance allowable is 5 ohms. Submit test signed report to Village and the engineer for review.

C. Use the three-point method of measurement, unless specified otherwise.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at the lump sum unit price for the below Listed Items, in the Schedule of prices:

260526/01; Grounding System

B. These prices shall be full compensation for furnishing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to complete the Items. Payment for excavation and backfill required for installation shall be included in the prices bid for these Items as they pertain.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide hangers and supports as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 QUALITY ASSURANCE

A. Comply with the following requirements:
   1. NFPA 70 National Electrical Code (NEC).
   2. Local codes and ordinances.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide zinc galvanized, cadmium plated steel, or malleable iron supporting devices.

B. Provide factory PVC-coated metal supports, clamps, and hardware when PVC-coated, galvanized rigid steel conduit is used.
   1. Comply with Section 26 05 33.

C. Provide supports, clamps and hardware for nonmetallic conduit system.

2.2 SUPPORTING STRUCTURES

A. Provide rack supports of steel channels with adequate feet for secure mounting. Provide steel support channels with a zinc coating, hot dipped galvanized per ASTM A123 or A153.Uni-strut or equal.

2.3 MOUNTING PANELS

A. Provide adequately braced and sized equipment mounting panels where required to mount equipment.

2.4 CONDUIT SUPPORTS

A. Provide one-hole or two-hole conduit straps as required.

2.5 TRANSFORMER MOUNTING BRACKETS

A. Provide mounting brackets fabricated of galvanized steel channel section designed to support size of transformer.

2.6 CORD GRIPS (Kellems)

A. Shall be stainless steel, closed mesh, of the diameter to suit the cord diameter being supported, Hubbell, Kellems Division, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install supporting devices in accordance with manufacturer's recommendations.

B. Do not use perforated hanger iron.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Separate measurement or payment will not be made for the Work specified in this Section. All costs of such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain in the Schedule of Prices.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide raceway and boxes as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 QUALITY ASSURANCE

A. Comply with the following requirements:
1. NFPA 70 National Electrical Code (NEC).
2. Local codes and ordinances.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide conduit system of the types of conduit as indicated in the Conduit Usage Schedule in Part 3 of this Section.

B. Provide junction boxes as necessary to facilitate pulling and/or splicing of wires.

C. Provide factory PVC-coated boxes of same coating thickness as conduit system where PVC-coated conduit is used (except hazardous classified areas).

D. Provide PVC boxes where non-metallic conduit system is used.

2.2 METAL CONDUIT AND FITTINGS

A. All underground and/or encased in concrete conduits shall be PVC coated galvanized rigid steel and no smaller than 1" in size. All other conduits are galvanized rigid steel only and no smaller than ¾" in size.

B. Galvanized rigid steel conduit (GRC) and fittings:

1. Conduit: Comply with ANSI C80.1 and UL 6 standards.
2. Fittings: Comply with UL 514B and NEMA FB1 & FB2.10 standards.

C. Polyvinyl-chloride (PVC) coated galvanized rigid steel conduit and fittings – to be used for all in-ground conduits.
1. Conduit: Comply with ANSI C80.1, UL 6, and NEMA RN1 standards.
a. Galvanized rigid steel conduit with full weight 40 mil thick PVC exterior coating.
b. PVC bonding to galvanized metal shall be stronger than plastic tensile strength.
c. Provide nominal 2 mil thick urethane, or equal, coating to inside of conduit.
2. Fittings:
a. Comply with UL 514B and NEMA RM1 standards.
b. Threaded with full weight 40 mil thick PVC exterior coating.
c. Inside coating: Nominal 2 mil thick urethane, or equal.
d. Provide pressure sealing sleeves on all conduit openings.
3. Accessories: Provide straps, clamps, and screws with full weight 40 mil thick PVC exterior coating.
4. Provide factory-installed PVC coating on all components of PVC coated conduit system.
a. Use coating in field only for touch-up of components.

2.3 FLEXIBLE METAL CONDUIT AND FITTINGS– allowed in control cabinets only

A. Liquidtight, flexible metal conduit and fittings:
1. Conduit: Comply with UL 360 standards.
a. Galvanized flexible steel core.
b. Provide outer liquidtight, PVC sunlight resistant jacket.
2. Fittings: Comply with UL 514B and NEMA FB1 standards.

B. Flexible metal conduit and fittings:
1. Conduit: Comply with UL 1 standards.
2. Fittings: Comply with UL 514B and NEMA FB1 standards.

2.4 NON-METALLIC CONDUIT AND FITTINGS

A. Rigid conduit: Comply with ANSI C80.3, ASTM F512, NEMA TC-2 and UL 651 standards.
1. Use heavy wall, sunlight resistant PVC as shown on the Drawings.
2. Rated for use with 90 degree C. conductors.

B. Liquid tight, flexible conduit: Comply with ANSI-79 and UL 1660 standards.
1. Fittings: Liquid-tight.

C. Fittings:
1. Comply with UL 514C and NEMA TC3 standards.
2. Schedule 40 or 80 to match conduit.

2.5 CONDUIT BODIES

A. Metallic conduit bodies:
1. Comply with ANSI C80.4 and C33.84, and UL 514 standards.
a. Use galvanized or cadmium plated malleable iron, or copper-free aluminum material.
b. Provide factory PVC-coated conduit bodies of same coating thickness as conduit where PVC-coated conduit is used.

B. Non-metallic conduit bodies:
1. Comply with ASTM F512 and UL 514 and 651 standards.
a. Compatible with Schedule 40 or 80 conduit.
b. UL listed for use.

C. Provide removable cover with gasket and corrosion-resistant screws.

2.6 DRAINS AND BREATHERS

A. Automatic drain-breather: Use Crouse-Hinds Type ECD, or equal.

B. Condensate drain: Use conduit outlet body, Type T.
1. Provide threaded, galvanized plug with 3/16-inch drilled hole through plug.

C. Provide factory PVC-coated fittings of same coating thickness as conduit where PVC-coated conduit is used.

D. For non-metallic conduit system, use drains and breathers of material to match conduit system installed.

2.7 FLEXIBLE SEALING COMPOUND

A. Use Panduit DS-5 duct sealing compound, or equal, where air and vaportight conduit sealing is required.

2.8 HANDHOLES

A. Provide electrical handholes as shown on the Drawings and as follows:

1. Heavy duty, precast stackable type, constructed of polymer concrete and reinforced with heavy weave fiberglass.
2. Stack sections to accommodate depth of conduits where shown on the Drawings.
3. Heavy duty covers having service load of 15,000 pounds over a 10-inch square area. Tier 15 (ANSI/SCTE77) with min. H20 rating.

4. Embossed cover logo to read "ELECTRIC"
5. Stainless steel, hex-head cover bolts and stainless steel threaded inserts.
6. UL Labeled with ANSI/SCTE77 Application Tier Rating.

B. Acceptable manufacturers:
1. Quazite Corporation, "Composolite" "PG" style (stackable) or equal.

2.9 OUTLET BOXES AND JUNCTION BOXES

A. Surface mounted: Provide corrosion-resistant single or multiple gang malleable iron or aluminum Type FS or FD cast boxes with threaded hubs, or pressed steel boxes as permitted under Part 3 of this Section.

B. Weatherproof boxes: Provide gasketed covers and corrosion-proof fasteners.

2.10 PULL BOXES AND SPECIAL PURPOSE OUTLET BOXES

A. Provide pull boxes with covers held in place by corrosion-resistant machine screws, and of type or NEMA rating as shown on the Drawings.

B. Provide special purpose outlet boxes furnished with fixtures and devices where standard outlets are not applicable.

PART 3 - EXECUTION

3.1 INSTALLATION - RACEWAY

A. Install conduit and fittings in accordance with manufacturer's recommendations.

B. Run exposed conduits parallel to or at right angles with lines of enclosures.

C. Keep conduit plugged, clean and dry during construction.

D. Conduit runs extending through areas of different temperature or atmospheric conditions, or partly indoors and partly outdoors must be sealed, drained, and installed in a manner preventing drainage of condensed or entrapped moisture into cabinets, boxes, fixtures, motors, or equipment enclosures.

E. Conduits run in concrete structures:
1. Comply with applicable provisions of ACI 318 for conduits embedded in structural frame slab.
2. Install conduits parallel to each other spaced on center of at least three times conduit trade diameter with minimum 2-inch concrete covering.
3. Conduits over 1-1/2 inches may not be installed in slab without approval of Engineer.

F. Install bushings with ground lugs and integral plastic linings at equipment with open-bottom conduit entrances.

G. Exterior underground conduit:
1. Provide conduits or ducts terminating below grade with means to prevent entry of dirt or moisture.

3.2 INSTALLATION – BOXES

A. Install boxes in accordance with manufacturer's recommendations.

B. Use weatherproof boxes for interior and exterior locations exposed to weather or moisture.

C. Set outlet boxes parallel to construction.

D. Thoroughly clean boxes prior to installing wiring devices.

E. Maintain minimum 4-inch separation between exposed power wires and control/instrumentation wires inside electrical handholes.

3.3 CUTTING AND PATCHING

A. Make provisions for openings, holes, and clearances through walls, cabinets, driveways, and partitions in advance of construction.

B. Core drill through reinforced concrete with approval of Engineer.

3.4 EXISTING CONDUIT

A. The Drawings show the approximate location of existing conduit as indicated by available existing records. The proposed work may require crossing, relocating, and, in some cases, connecting to the existing conduits.

B. Expose carefully the existing conduits throughout the area of proposed work.
1. All existing conduits to remain undisturbed and in uninterrupted use until such time as a change is approved by the Engineer.

C. Where the conduits are to cross or be connected to existing conduit, make a field check to determine whether any conflict will be encountered in laying the new conduit.
1. Adjust the location of new conduits, if necessary, as authorized by the Engineer, to avoid conflict with existing conduits.

D. Any conduit found during excavation with the PVC coating damaged must by re-sealed with PVC coating.

E. Remove and replace existing conduits, fittings, boxes, and all appurtenances as shown on the Drawings.

1. Do not remove and replace existing items shown to remain unless approved by the Engineer.

3.5 CONDUIT USAGE SCHEDULE

A. Install PVC coated GRC when in contact with earth or fill unless otherwise shown on the Drawings.

B. Install PVC coated GRC in the following locations unless otherwise shown on the Drawings:
   1. Concealed in poured concrete walls and floor or roof slabs.
   2. Concealed in insulation above poured or precast concrete roof slabs.
   3. Exposed.
   4. Below grade to 1" above finished grade.

C. Install liquidtight flexible metal conduit and fittings for connections to motors, instrumentation, and equipment subject to vibration and at locations shown on the Drawings.

D. In concrete or underground: Install PVC coated galvanized rigid steel conduit, rigid aluminum conduit, and rigid non-metallic conduit only when shown on the Drawings.

3.6 EXPOSED OUTLET AND JUNCTION BOXES

A. Install weatherproof outlet, switch, and junction boxes outdoors and in any area where Drawings show weatherproof (WP) wiring devices.

3.7 OUTLET BOX ACCESSORIES

A. Provide outlet box accessories and mounting devices as required for each installation.

3.8 OUTLET BOX LOCATIONS

A. Location of outlets and equipment is approximate. Exact location to be verified and determined by:
   1. Conflict with equipment of other trades.
   2. Equipment manufacturer's drawings.
   3. Engineer in field.

B. Minor modification in location of outlets and equipment is considered incidental up to distance of 10 feet with no additional compensation, providing necessary instructions are given prior to roughing-in of outlet boxes and equipment.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at the lump sum unit price for the below Listed Items, in the Schedule of prices:

260533/01; Electrical Conduit

B. These prices shall be full compensation for furnishing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to complete the Items. Payment for excavation and backfill required for installation shall be included in the prices bid for these Items as they pertain.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide identification for electrical systems as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 NAMEPLATES AND TAGS

A. Provide nameplates or tags for identification of cabinets, panels, panel components, and field mounted devices with the following requirements.
   1. Engraved laminated plastic.
   2. White or black letters on background of opposite color. Match and coordinate color of nameplate or tag background with other panels.

B. Panel nameplates to have 1/2-inch high letter engraving.

C. Device and component nameplates or tags to have 3/16-inch high letter engraving.

D. Engravings include the following:
   1. Alpha-numeric number.
   2. Descriptive title.
   3. Range, where applicable.
   4. Engineering units, where applicable.

E. Arc-Flash hazard warning shall be determined by the contractor and labeled in the field according to NEC Article 110.16

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install nameplates and tags on enclosures, panel mounted components, and field mounted devices.

END OF SECTION

SECTION 26 27 16

ELECTRICAL CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide intermediate junction box as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 SUBMITTALS

A. Submit shop drawings including the following:
   1. Scaled drawings showing dimensions, front view, side view, vertical and horizontal sections, and layout of all equipment inside cabinet and enclosure.
   2. Manufacturer's detailed specifications.
   3. Door hardware details.

1.3 QUALITY ASSURANCE

A. Comply with the following requirements:
   1. NFPA 70 National Electrical Code (NEC).
   2. Local codes and ordinances.
   3. Completed Control Cabinet must be UL listed.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 EXTERIOR ELECTRICAL ENCLOSURES: INTERMEDIATE JUNCTION BOX

A. Provide custom-fabricated, free-standing exterior electrical equipment enclosures as follows:
   1. Combination NEMA Type 4X construction: Designed for outdoor use, with permanently attached door gaskets and drip-shield over door openings.
   2. Constructed from minimum 14 gauge stainless steel with brushed finish.
   3. Seams continuously welded and ground smooth; no holes or knockouts.
   4. Stiffeners welded to back of enclosure to maintain flatness and increase rigidity.

5. Sloped top to prevent water accumulation and ice formation on top surface.
   a. Slope from front edge to rear edge of enclosure.
6. Front access openings with formed edges, one set of formed dual doors (one door overlapping the other without a fixed-in-place mullion in the center of the opening), and/or one formed single door as shown on the Drawings.
   a. Access openings and doors arranged to provide clear, unobstructed access to all equipment inside enclosure.
   b. Width of any door not to exceed 36 inches.
   c. Stiffener welded to each door to prevent twisting and misalignment.
7. Restraint mechanism on each door to prevent movement of open door in windy conditions.
   a. Restraint mechanism to automatically deploy when door is fully opened (100 degrees swing), and must be manually released in order to close door.
8. Three-point latching system on each single and overlapping door with nylon rollers and oil-tight, weather resistant pad-lockable handle.
9. Concealed, heavy gauge continuous door hinges with stainless steel pin.
10. Interior lugs and terminal strips as required.
11. Copper ground bus bonded to interior sub-panel and to enclosure.
12. Flexible copper bonding jumper (braided strap or stranded wire), connected to enclosure and each door and/or hinged inner panel on which current- carrying devices are mounted.

B. Acceptable manufacturers:
   1. Hoffman.
   2. Or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cabinets and enclosures in accordance with manufacturer's recommendations.

B. Caulk all field punched or drilled openings with silicone sealing compound to maintain leak-proof integrity of exterior surfaces.

C. Level and plumb intermediate junction box on metal bracing and attach to reinforced concrete base.

D. Adjust doors and door hardware as required for correct alignment and ease of operation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Separate measurement or payment will not be made for the Work specified in this Section. All costs of such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain in the Schedule of Prices.

END OF SECTION

SECTION 26 28 00

LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide overcurrent protective devices as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 SUBMITTALS

A. Submit shop drawings in compliance with pertinent provisions of Section 01 33 01 including electrical ratings, physical size, interrupt ratings, trip curves, I^2t curves, and manufacturer's detailed specifications.

1.3 QUALITY ASSURANCE

A. Comply with the following requirements:
1. NFPA 70 National Electrical Code (NEC).
2. Local codes and ordinances.
3. Provide overcurrent protective devices by same manufacturer for each type of device.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

1.5 SPARE PARTS

A. Provide the following spare parts to the Owner that match items specified:
1. In three phase circuits: Three (3) fuses of each type and rating.
2. In single phase circuits: Two (2) fuses of each type and rating.

PART 2 – PRODUCTS

2.1 MOLDED CASE CIRCUIT BREAKERS

A. General:
1. Comply with UL 489 requirements.

2. Provide thermal and magnetic protection.

B. Provide permanent trip lighting panel circuit breakers as follows:
1. UL listed SWD (switching duty) on 120 volt circuits where switched circuits are indicated.
2. Short circuit rating (integrated equipment rating):
a. Up to 240 volt: 10,000 RMS symmetrical amps minimum.
b. Up to 480 volt: 14,000 RMS symmetrical amps minimum.

C. Provide permanent trip power panel circuit breakers as follows:
1. Single magnetic trip adjustment.
2. Bolt-on type.
3. Short circuit rating (integrated equipment rating):
a. Main: 35,000 RMS symmetrical amps minimum.
b. Branch: 14,000 RMS symmetrical amps minimum.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install overcurrent protective devices in accordance with manufacturer's recommendations.

B. For the stations with new permanent generators: the main circuit breaker in the meter pedestal is to have an auxiliary contact that is to be wired in series with the automatic transfer switch start signal. Refer to drawings for control diagram.

3.2 ADJUSTMENT

A. Set and record adjustable settings on circuit breakers to provide selective coordination and proper operation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Separate measurement or payment will not be made for the Work specified in this Section. All costs of such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain in the Schedule of Prices.

END OF SECTION

SECTION 26 32 13

ENGINE GENERATOR

PART 1 – GENERAL

1.1 SCOPE

This Section covers the **diesel fueled and natural gas fueled** standby generators to be installed and tested as shown on the Drawings and as specified herein. All piping, valves, enclosures and accessories where required, not otherwise specifically provided for in these Specifications, shall be included under this Section of Work. The Village of Lombard will furnish the generators, delivery to the site and primary pressure regulating valves. Contractor shall provide means of offloading and all labor and materials required for installation.

1.2 QUALITY ASSURANCE

A. Applicable Standards

All Work shall conform to the applicable provisions of codes, standards and specifications, as specified herein, and the following:

Name	Abbreviation
National Fire Protection Assoc.	NFPA
National Electrical Code	NEC
Institute of Electrical & Electronic Engrs.	IEEE
Diesel Engine Manufacturers Association	DEMA
Std. for Stationary Eng./Gen. Assemblies	UL2200

PART 2 – PRODUCT

2.1 GENERAL

A. All materials and equipment shall conform to the Specifications listed below and shall be equal to the products listed below by brand name and catalog number. Identification symbols and nomenclature, where used in this Section, are the same as those shown on the Drawings. Paragraphs of these Specifications describing the requirements for a single item of equipment shall apply equally to all identical items of equipment to be furnished.

B. All rotating parts of the equipment shall operate throughout the required range without objectional noise or vibration.

C. System Operation

The engine generator shall be designed to be installed as shown on the Drawings and shall be equipped to operate as follows:

1. For local manual starting and loading.

2. For automatic starting and stopping and loading of connected loads.

3. For manual unloading and stopping.

The engine generator shall be furnished with the engine and generator protective devices specified herein, which shall provide unattended stand-by power, and upon occurrence of a fault, shall stop and lock the unit out of operation until the fault is cleared.

D. Operating Conditions

1. Connected Loads: The engine generator shall be designed to automatically start and continuously operate the connected loads as shown on the Drawings and as specified herein. The maximum voltage dip shall not exceed 20 percent during the starting of any load. The connected loads may include lighting panelboard loads and motor loads.

2. Load Starting Sequence. The load starting sequence shall be as follows:

   a) Connected loads shall be started after the automatic transfer switch transfers from utility to the generator position. All loads could be connected when the Automatic Transfer Switch (ATS) closes.

   b) After several seconds have elapsed the connected motor loads shall be sequentially started. An interval of several seconds shall be maintained between starting successive loads during sequential starting. Sequential starting shall be as follows:

      - Miscellaneous Loads
      - Well Pump #10
      - Reservoir Pump #1
      - Reservoir Pump #2
      - Reservoir Pump #3
      - Reservoir Pump #4

   c) Sequential starting of the motor loads in 2.02,F.2(b) above shall be accomplished by means of a time delay relay furnished and installed in each of the motor starters.

3. Wiring: Internal wiring shall be completed in accordance with the National Electrical Code, and good practice. The Contractor shall make connections from the appropriate controlling device. Conduits shall be stubbed-out for these external connections, but conductors shall be a continuous length pulled back to the controlling device and terminated therein by Contractor. Conduit under the floor or stubbed for field connections shall be rigid type with threaded connections. Minimum size conduit shall not be less than 3/4-inch. Conductors shall be type XHHW-2, appropriately rated and shall be in accordance with the applicable requirements of Section 26 05 19.

4. Concrete Slab: The Contractor shall provide a structurally reinforced concrete slab in accordance with these Specifications and as shown on the Drawings, to support the packaged engine generator and enclosure. Dimensions of the concrete slab shall be as shown on Drawings. Exact dimensions shall be determined after submittal of shop drawings by the manufacturer. The concrete equipment pad shall be arranged for electrical conduit entry to the generator as required.

5. Bollards: Concrete filled 6" steel pipe bollards shall be provided and located as shown on the Drawings. Yellow plastic bollard covers shall be furnished. Bollard covers shall be as manufactured by Ideal Shield or equal.

PART 3 – EXECUTION

3.1 FACTORY TEST AND INSPECTION

A. General: The complete engine generator and related accessories shall be shop assembled, inspected and tested in accordance with the manufacturer's standard procedures and as specified herein. Monitoring and control devices shall be functionally tested to verify correct operation and that all parts function properly. The Contractor shall provide certified factory test results to the Owner's Representative for review. No shipment shall be made until the factory test results have been reviewed to the satisfaction of the Owner's Representative. The Contractor shall notify the Owner's Representative one week prior to factory testing so that such tests may be witnessed. All consumables required for factory testing shall be provided by the manufacturer.

B. Engine Tests. The operation of the engine shall be observed and checked over a range of loads between zero and 100%. Pertinent fuel, air, lubricant, and coolant pressures and temperatures, exhaust temperatures, fuel consumption, power output, and engine setting data shall be taken and recorded for the various test runs. Compression, firing, and indicator diagrams shall be taken to demonstrate satisfactory pressure range and balance. The results of the tests shall be submitted as a report. All fuel, lubricating oil, and all facilities and supplies required for the engine tests in the factory shall be furnished by the manufacturer. Rated load operation of the generator at rated power factor shall require not more than 100% of the maximum horse power which the engine can develop at synchronous speed when the engine is operating with all auxiliaries connected, including

fan. The engine shall operate satisfactorily without overheating or suffering mechanical damage when operating under the conditions specified herein.

C. Generator and Exciter Tests. The generator and exciter shall be given the standard commercial test in accordance with IEEE and NEMA Standards and shall include the following:

1. Resistance of armature and field windings

2. Polarity of armature and field coils

3. Insulation resistance of field coils

4. Insulation resistance of armature coils before and after high potential test, including polarization index.

5. Dielectric test of windings

6. Measurement of airgap by gauge

D. Auxiliary Equipment. All engine generator auxiliary equipment shall be given adequate routine factory tests.

E. Unit Operational Testing. The completed pre-packaged electric generator enclosure, with generator housed within the enclosure, shall be tested to verify proper operation and connection of the engine-generator set and all other components. These tests shall simulate manual test and an actual power outage with automatic transfer and retransfer of the load. Additionally, test shall include simulation of all operational, alarm and safety functioning, as well as, tests of all shelter support and environment systems.

3.2 INSTALLATION AND TESTING

A. The equipment shall be installed in accordance with the manufacturer's instructions and recommended best practices. The equipment shall be installed as shown on the Drawings. After the equipment has been installed, all items of equipment shall be operated, adjusted, and tested for proper performance in accordance with the manufacturer's recommended test procedure and under the supervision of the equipment manufacturer's field supervisory personnel.

B. The generator manufacturer shall provide all necessary items such as but not limited to supports, anchors, embedded stud bolts, nuts and bolts, vibration isolators, etc. as required for the installation of the Engine Generator and associated accessories.

C. After the equipment has been made ready for operation, the Contractor shall field test the generator. The Contractor shall furnish the services of a factory representative who shall

provide final checkout of the entire installation covered by the Contract Documents and supervise the initial start-up and test. The tests shall include load, phase sequence, and utility power tests. Load Tests of the generator shall include its operation to start and run continuously on motor load as previously specified under Paragraph 2.02F. Field testing shall include a simulated power failure.

The loads shall be operated continuously for a period of not less than 30 minutes or as otherwise mutually agreed upon between Owner, Owner's Representative and Contractor.

Any and all consumables required during testing shall be provided by the Contractor at no additional cost to the Owner.

During the test run, all gauge and instrument readings shall be recorded and observation shall be made to determine that the installation has been made properly and that there is no undue noise, vibration, or overheating. The resistance of the generator insulation between windings and from windings to ground shall be measured with a megger at the beginning and end of the test run. Any corrections or adjustments required to secure satisfactory operation shall be made by the Contractor at no additional expense to the Owner.

D. The Engine Generator equipment manufacturer shall provide the services of factory-trained field supervisory personnel who shall perform all necessary coordination to check-out, start-up and place into operation the herein specified equipment together with equipment specified in 263600, Automatic Transfer Switch, as well as providing a minimum of 12 hours of training to instruct Owner personnel in its control and operation.

3.3 PAINTING

A. All equipment specified in this Section shall be shop-painted and may be shop-painted with the manufacturer's standard finish. All equipment specified in this Section shall be field painted as directed by the Owner.

B. The Contractor shall be responsible for coordination of the compatibility between the manufacturer's standard finish and any field painting required and the field-paint specified.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at the contract unit prices for the below listed Items, in the Schedule of Prices:

26 32 13/01; Install Standby Generators

B. These prices shall be full compensation for furnishing all materials; and for all preparation, excavation, installation, backfilling, compacting and/or concrete for equipment pads and miscellaneous uses; and for all labor, offloading equipment, tools and incidentals necessary to complete the Items of Work.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices for the various items to which they pertain in the Schedule of Prices.

D. After 12 months from the date of Final Acceptance, the Contractor shall provide First Year Maintenance Service for the engine-generator. This maintenance service shall be performed by factory trained personnel regularly engaged in maintaining engine-generators and shall include changing out any and all consumables.

END OF SECTION

SECTION 26 36 00

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.1 SCOPE

A. This Section covers the automatic transfer switch that has been prototype tested, factory built and production tested. A transfer switch with the number of poles, voltage and current ratings shown on the plans and specified herein shall be **furnished by the Village of installed by the Contractor.**

1.2 CODES AND STANDARDS

A. The automatic transfer switch shall conform to the requirements of:

1. UL 1008: Underwriters Laboratories Standard for Automatic Transfer Switches
2. CSA: C22.2 No. 178 Certified
3. IEC: 947-6-1 Certified at 480 VAC
4. NFPA 70: National Electrical Code including Use in Emergency and Standby Systems in accordance with Articles 517, 700, 701, 702
5. NFPA 101: Life Safety Code
6. NFPA 110: Standard for Emergency and Standby Power Systems
7. IEEE 241: I.E.E.E. Recommended Practice for Electrical Power Systems in Commercial Buildings
8. IEEE 446: I.E.E.E. Recommended Practice for Emergency and Standby Power Systems
9. NEMA ICS10: AC Automatic Transfer Switch Equipment
10. UL 50/508: Enclosures
11. ICS 6: Enclosures
12. ANSI C33.76: Enclosures
13. NEMA 250: Enclosures
14. IEEE 472: (ANSI C37.90A): Ringing Wave Immunity

1.3 APPROVED MANUFACTURERS

A. The automatic transfer switch shall be **furnished by the Village and installed by the Contractor.**

PART 3 - EXECUTION

3.1 GENERAL

A. The transfer switch shall be installed as shown on the plans, in accordance with the

manufacture's recommendations and all applicable codes.

3.2 FACTORY TESTS

A. The transfer switch manufacturer shall perform a complete functional test on the switch, controller and accessories prior to shipping from the factory. A certified test report shall be available upon request.

3.3 INSTALLATION AND TESTING

A. The Contractor shall install the equipment as shown on the Drawings in accordance with the manufacturer's recommendations. The Contractor shall adjust and calibrate the equipment after all connections are made.

B. All equipment and components shall be tested by operating them a reasonable number of times to demonstrate their proper and safe installation and operation. To determine what constitutes a safe and proper installation, these Specifications, manufacturer's recommendations, guidelines set by NEC, IEEE, ANSI, OSHA, etc. shall be the norm. Operational testing of the equipment herein specified shall be in accordance with the applicable requirements of the applicable sections of the Specifications.

C. Operational tests shall be performed to verify correctness of operation, connections, and interconnections with other equipment.

D. Electric operators shall be tested by applying rated voltage and operating the remote control switch to insure their proper interconnection and compliance with the requirements for the remote operation of the equipment. Supervisory meters and relays shall be functionally operated to insure their proper operation.

E. An operational test in the presence of the Engineer and Owner shall be conducted to ascertain compliance with the requirements for automatic operation of the system.

3.4 SERVICE

A. The manufacturer shall maintain a national service organization that is factory trained and certified for transfer switch equipment. In addition, the service organization shall be available 24 hours per day, 365 days per year.

3.5 WARRANTY

A. The automatic transfer switch shall be warranted against defective workmanship for a period of one year, including both parts and labor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at the lump sum prices for the below listed Items in the Schedule of Prices:

26 36 00/01; Automatic Transfer Switch

B. These prices shall be full compensation for furnishing all materials; and for all preparation, excavation, installation and backfilling; and for all labor, equipment, tools, and incidentals necessary to complete the items as specified herein.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 26 36 10

MANUAL TRANSFER SWITCH

PART 1 - GENERAL

1.1 SCOPE

A. Description

This Section covers the manual transfer switch and plug-in receptacle to be furnished, installed and tested as shown in the Drawings and as specified herein. All related accessories where required, but not specifically provided for in these Specifications, shall be included under this Section of Work.

B. Related Work

1. Sections 26 05 19, 26 05 26 and 26 05 33.

2. Section 26 60 20.

3. Other Sections as specified herein.

1.2 QUALITY ASSURANCE

A. Acceptable Manufacturers

(The requirements of Section 26 36 00, paragraph 1.02A, for the Automatic Transfer Switch shall equally apply to the herein specified Manual Transfer Switch.)

B. Applicable Standards

All Work shall conform to the applicable provision of the codes, standards and Specifications, as specified herein, and the following:

Name	Abbreviation
National Electrical Code (& NFPA)	NEC/NFPA-70
National Electrical Mfr.'s Assoc.	NEMA
Underwriters Laboratories	UL 1008

1.3 SUBMITTALS

The Contractor shall submit to the Owner's Representative for review drawings, product specifications and descriptions including control schematic diagrams, wiring connection diagrams,

complete ratings, short circuit ratings together with installation instructions, operating and maintenance manuals, and field check-out, start-up and testing procedures specified in Section 15013 for all equipment furnished.

PART 2 - PRODUCT

2.1 GENERAL

A. The manual transfer switch designated MTS shall be of the non-automatic type, direct manual operation with external operating handle and shall be furnished complete with all necessary contacts to transfer the load from the normal power source to the emergency standby power source.

B. The manual transfer switch shall be furnished to be compatible with the engine-generator set specified in Section 26 32 13. The manual transfer switch shall be listed by Underwriter's Laboratory, Standard 1008.

C. The herein specified MTS shall be installed on the exterior of the Civic Center Building. The manual transfer switch shall be equipped with those herein specified options, provided with a NEMA 3R enclosure or equal.

2.2 RATING AND OPERATION

The manual transfer switch shall be rated for normal and emergency sources and shall have full 600 V insulation on all main contacts and current carrying parts. The manual transfer switch shall be 3 poles, with overlapping neutral and shall be rated 800A continuous current for use on a 480/277-V, 4 wire, and shall be capable of withstanding 22,000 A, interrupting/fault close rms, symmetrical three phase short circuit current for 3 cycles without contact damage or contact separation.

2.3 DETAILS OF CONSTRUCTION

A. <u>General</u>

The manual transfer switch shall be 3-pole, with overlapping neutral contacts, double throw, operated manually by a single quick-make/quick-break non-automatic mechanism. Normal and emergency contacts shall be mechanically interlocked by the operating linkage when in the open or closed position. All parts of the mechanical driving system and mechanical interlocks shall be electrically isolated and at ground potential.

B. <u>Mechanically-Held Transfer</u>

The transfer switch unit shall be mechanically held. The switch shall be positively locked and unaffected by voltage variations or momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for

maximum reliability and operating life. The switch shall be mechanically interlocked to ensure only one of two possible positions.

All main contacts shall be silver composition. Transfer switch designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which have not been intended for continuous duty, repetitive switching, or transfer between two active power sources are not acceptable.

Inspection of all contacts (movable and stationary) shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to stop the contacts at any point throughout the entire travel to properly inspect and service the contacts when required.

C. Operation

The manually-operated transfer switch shall be enclosed in a NEMA Type 3R enclosure, and shall be arranged for external operation by a single quick-break/quick-make mechanism on the outside of the switch enclosure.

One set of auxiliary contacts shall be provided rated 10 amps, 480VAC, consisting of one contact closed when the transfer switch is connected to each source. Also, one set of signal lights to indicate when the transfer switch is connected to each source shall be provided.

D. Plug-In Receptacle

A plug-in receptacle shall be provided as required for the installation. The Contractor shall coordinate the type and pin configuration of the plug-in receptacle with the Owner. Receptacle shall be Appleton Model No. AR40034RS or equal.

PART 3 - EXECUTION

3.1 FACTORY TEST AND INSPECTION

Each item of equipment shall be shop-assembled and tested in accordance with the manufacturer's standard procedure. Monitor and control devices shall be functionally tested to verify correct operation and that all parts function properly.

3.2 INSTALLATION AND TESTING

A. The Contractor shall install the equipment as shown on the Drawings in accordance with the manufacturer's recommendations. The Contractor shall adjust and calibrate the equipment after all connections are made.

B. All equipment and components shall be tested by operating them a reasonable number of times to demonstrate their proper and safe installation and operation. To determine what constitutes a safe and proper installation, these Specifications, manufacturer's recommendations, guidelines set by NEC, IEEE, ANSI, OSHA, etc. shall be the norm.

C. Operational tests shall be performed to verify correctness of operation, connections, and interconnections with other equipment.

D. After the equipment has been installed and made ready for operation, the Contractor shall perform field testing of the manual transfer switch. This testing shall include connecting an alternative power source to the system via the plug-in receptacle and running the connected loads for not less than one hour. The Village will provide an existing portable generator set for testing.

E. Factory trained field supervisory personnel shall be provided by the equipment manufacturer to supervise the installation and perform check-out and start-up testing.

3.3 PAINTING

A. All equipment specified in this Section shall be shop-painted with the manufacturer's standard finish. All equipment specified in this Section shall be "touch-up" field-painted as required.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at the lump sum prices for Item 26 36 10/01, Furnish and Install Manual Transfer Switch and Generator Receptacle, in the Schedule of Prices.

B. These prices shall be full compensation for furnishing all materials; and for all preparation; and for all labor, equipment, tools, and incidentals necessary for the Work as required by the Specifications and Drawings.

C. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

SECTION 40 90 25

PROCESS CONTROL SYSTEM FOR PUMP STATION CONTROL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Village to furnish and Contractor to install process control system and pump station control cabinets as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 – General Requirements of these Specifications.

C. Work under this section includes the following:
   1. Installing and programming the following:
      a. Supervisory Control and Data Acquisition (SCADA) Computer(s).
      b. Installing hardware and programming for the pump station control cabinets.
   2. Providing calibration, commissioning and start-up of the entire pump station control and monitoring system.
   3. Providing on-site training to the pump station operator(s).

1.2 SUBMITTALS

A. Submit a test protocol document which is to be used to record test results demonstrating the instrumentation and control system operates as designed, a minimum of two (2) weeks prior to installation testing (commissioning). Documentation includes but is not limited to the following:
   1. Detailed test procedure.
   2. Checklists.
   3. Blank forms and data to be recorded.
   4. Test equipment to be used and calculated tolerance limits.

B. Submit completed test protocol document after installation testing has been completed certifying system functions as specified.

1.3 QUALITY ASSURANCE

A. **Acceptable integrator shall be Energenecs/Kamp. No substitutions.**

B. **Acceptable Pump Control Panel manufacturer shall be The Flolo Corporation. No substitutions.**

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 66 11.

PART 2 - PRODUCTS

2.1 PUMP STATION CONTROL

Pump controls shall be completed by a 24-volt DC programmable logic controller (PLC) and pressure transducer (4-20 milliamp) system. The PLC shall be programmed to automatically control the station based upon wet well level. The pumps shall also be programmed for manual control from the main SCADA system computer. ***Programming/integration is to be performed by Energenecs/Kamp. Flolo is to coordinate with systems integrator to have a fully functional system***. Backup floats to override the PLC in emergency situations shall also be provided. A hand selection switch shall be included to control alternating sequencing of the pumps when operating in float control override. The operator shall have the ability to set the maximum number of pumps available. An operator interface terminal (OIT) shall be provided to display data and change set points. The Village may request additional display screens for a specific site based upon the specific station size and design. The OIT shall be mounted in the face of the PLC panel at a height pre-approved by the Village.

All alarms shall be tied to the SCADA system. These shall be subject to approval by the Village. ***Programming/integration is to be performed by Energenecs/Kamp. Flolo is to coordinate with systems integrator to have a fully functional system***. All alarms shall include LED push to test buttons for alarm lights and resets. The exterior alarm light shall be a bright yellow strobe, with battery back-up, to flash with selected warning/alarms.

A. Automatic Control: The PLC shall be programmed to completely control the station based upon wet well level. A two-pump station will operate in a lead-lag sequence. A typical operating is as follows: if the wet well is higher than the lead on set point, one pump turns on and pumps the wet well down to the specified "OFF" set point. The alternator will operate after pump shut off. When all pumps stop running, the pumps lead/lag operations will rotate. If the pump is turned off, or not able to run for any reason, the pump should be ignored and by-passed in the rotating sequence and an alarm sent to Winn 411/911 software.

B. PLC / Float Control Override: Two floats shall be included that will act as an override to the programmable logic controller. One backup float will determine the low-low wet well condition and is wired to override the PLC and shut pumps off in an emergency situation. The second backup float will determine the power interrupt level (high level) and is wired to override the PLC and turn off the pumps allowed to run at the station. If the HOA switch is in hand, it will run the pump(s) until it is turned off by an operator or set to auto control. The pump(s) will continue to run until the low-low float stops them. A selector switch shall set which pump(s) will run and in what order. If the transducer fails, the pump station will operate on four backup floats: low-low, pump(s) off, and pump(s) on.

C. Data Display: An operator interface terminal (OIT) display shall include but not limited to, the following displays and functions: live data – current value, local data, remote data, an alarm history display, ability to change set points, silence alarms, acknowledge alarms, reset alarms, reset PLC faults, remove wet well transducer's 24vdc, set 4-20 range for transducers and clear alarm history. The OIT shall be programmed to change all set points locally at the station. Data to be displayed for each station as a minimum shall include flow in gallons per minute (real time or calculated) and wet well level, a graph of the wet well level, lead on/off set points, lag on/off set points and reset "Mini CAS" contacts. Alarm data to be displayed for station shall include high and low water alarm set points, station is in override (float control), power failure, and test alarm light. Data to be displayed for each pump shall include, pump run in hand/off/automatic (only if the HOA switch is in auto), pump run/off, run time (running total), manual reset for run time, pump starts since midnight with auto reset at midnight. Minimum alarm data to be displayed for each pump shall include over temperature, seal failure and over load failure. The Village may request additional displays for specific sites based upon the specific station size and design.

D. SCADA Alarms: Alarms shall include as a minimum, low-low wet well level (float activated), power interrupt, low wet well, power fail, phase monitor/s tripped, pump fail to start, PLC fail (via a 5th "card" that is to be installed in each controller), as a minimum. These shall be subject to approval by the Village. Some selected alarms will use Win-411/911 software for sending alarm to a pager. The Win 411/911 alarming software will be programmed for the Village staff to call in and monitor current status on selected database blocks and alarm points.

2.2 ACCEPTABLE MANUFACTURERS

A. See Section 44 62 56.23: Pump Station Control Cabinet of these specifications.

B. The Flolo Corporation. No substitutions.

2.3 ELECTRICAL CONTROL POINTS

A. Station shall have surge protection on incoming electrical feed. Stations shall be equipped with a digital display of amps and volts (in plain text display), indicator pump run, pump fail and PLC in run mode lights (push to test) for each pump, hand-off-auto selector switches for each pump, hand-off selector switch for street light and an indicator light for power monitor. Control transformer shall be sized for all controls, area lighting and spare 20A receptacle. All equipment shall be mounted at a pre-approved mounting height. All run and alarm conditions displayed at the pump station; shall be tied to SCADA system.

B. Electrical Wiring:

1. Two Pump Station - Contractor shall wire controls as follows:
   a. Digital inputs provide prewired terminal blocks for RTU termination of the following I/O:

Description	Address
Pump No. 1 Auto Select	I:1/0
Pump No. 1 Run	I:1/1
Pump No. 1 Check Valve	I:1/2
Pump No. 1 Pump Over Temperature	I:1/3
Pump No. 1 Pump Seal Fail	I:1/4
Pump No. 1 Overloads Failed	I:1/5
Pump No. 2 Auto Select	I:1/6
Pump No. 2 Run	I:1/7
Pump No. 2 Check Valve	I:1/8
Pump No. 2 Pump Over Temperature	I:1/9
Pump No. 2 Pump Seal Fail	I:1/10
Pump No. 2 Overloads Failed	I:1/11
HI-HI Level	I:1/12
LO-LO Level	I:1/13
Generator Run	I:1/14
Utility Fail	I:1/15
Spare	I:2/0
Spare	I:2/1
Spare	I:2/2
Spare	I:2/3
Spare	I:2/4
Spare	I:2/5
Door Open	I:2/6
Power Interrupt	I:2/7
Utility Power – Normal/Failed	I:2/8
Spare	I:2/9
Spare	I:2/10
Spare	I:2/11
Spare	I:2/12
Spare	I:2/13
Generator Power Selected	I:2/14
Flow Total Pulse	I:2/15

Digital Outputs

Description	Address
Pump No. 1 Start/Stop	O:3/0
Pump No. 2 Start/Stop	O:3/1
Spare	O:3/2
High Level Alarm	O:3/3
Pump 1 Fail	O:3/4
Pump 2 Fail	O:3/5
Spare	O:3/6

Mini-CAS Relay Reset	O:3/7
Spare	O:5/0
Spare	O:5/1
Spare	O:5/2
Spare	O:5/3
Spare	O:5/4
Spare	O:5/5
Reset Power to Transducer	O:5/6
PLC Running – Normal/Failed	O:5/7

Analog Inputs

Description	Address
Wet Well Level	I:4/0
Station Flow Rate	I:4/1
Misc Input	I:4/2
24VDC Battery Transmitter	I:4/3

2.4 MISCELLANEOUS FEATURES

Three complete copies of the operations and maintenance manuals for the station shall be provided to the Village. All new stations shall be keyed to match existing stations. Contractor shall provide 4 hours of training on the control cabinet of training for all equipment, controls, etc. The Village shall videotape this for future use. Laminated record drawings shall be provided and installed in the plan holder.

2.5 SITE REQUIREMENTS – N/A

2.6 PERMITTING – N/A

PART 3 - EXECUTION

3.1 INSTALLATION

A. Perform programming, install software, antennas, radios, etc. for a fully functional pump station control system.
B. Provide cabinets as specified in accordance with manufacturer's instructions. Deliver the cabinets to each respective site when requested by the Owner. The Village shall videotape this for future use.
C. Install equipment in accordance with manufacturer's recommendations.
D. The Contractor is responsible for all wiring, connections and devices. The Contractor shall terminate all control cables, devices, sensors, etc. and connect to their corresponding control terminals for indication alarm, etc. to have a fully functional electrical system. Contractor is responsible for all field wiring labels and must correspond with as-built drawings.

3.2 START-UP AND TESTING

A. Start-up and testing is responsibility of the system integrator.

B. Provide calibration of all equipment and signals prior to start-up and testing.

C. Notify Owner and Engineer two (2) days prior to on-site start-up.

D. In the presence of the Owner and Engineer, perform commissioning of the system after the contractor has tested the equipment and its appurtenances for proper operating condition, start-up has been performed, and Contractor feels system is ready to be placed into operation. Commissioning includes the following:
   1. Testing of operational control of entire system, which includes:
      a. System interlocks and controls.
      b. Equipment status.
      c. Alarm functions.
      d. Password and security functions.
   2. Emergency shutdown and restarting of the system.
   3. Provide report after testing has been completed certifying system functions as specified.

E. Operational test after commissioning:
   1. The control and monitoring system is to operate without failure prior to Substantial Completion.
   2. Engineer and Contractor will agree to the start date for the 14-day operational test.
   3. Any failure in the system will require correction by the Contractor. If the failure causes shutdown of the system for more than 12 hours, the failure will be considered as a major and a new starting date for the 14-day operational test will be determined.
      a. Submit a major malfunction report which will include details concerning the nature of the malfunction and the resulting repair action required and taken.

F. Provide two (2) man-days of on-site non-warranty programming modification in two trips after Substantial Completion of the Contract.

3.3 TRAINING

The contractor shall note the following specific training requirements.

All field training will be completed at relevant Village of Lombard facility, and will be videotaped by the Village The equipment contractor and installation contractor and any subcontractors shall work together to provide on-site training regarding the respective piece of equipment including pumps, controls, generators and any other supplied equipment.

Field training shall consist of (as a minimum):

- The Contractor providing a qualified representative(s) at the job site(s) to train the Village personnel regarding the operation and maintenance of the supplied equipment.
- The representative(s) shall be a skilled, factor-trained technician capable of providing services to supervise and inspect the installation and start-up operation of all systems, as well as to instruct Village's operating personnel in the operation and maintenance of the equipment.
- The field training session shall include a technical explanation of the equipment and an actual hands-on demonstration of field instrument operation, maintenance and calibration training at start-up. The Village shall videotape this for future use.

Ongoing discussions during installation or field time during checkout and start-ups shall not be considered as part of formal field or classroom training.

3.4 FIELD QUALITY CONTROL

Conduct field test prior to energization as follows:

- Megger check wire insulation levels (do not megger check solid state equipment).
- Record and provide results of tests to Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Separate measurement or payment will not be made for the Work specified in this Section. All costs of such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain in the Schedule of Prices.

END OF SECTION

SECTION 44 62 56.23

PUMP STATION CONTROL CABINET

PART 1 - GENERAL

1.1 SUMMARY

A. When the control cabinet is delivered to the site, the Contractor shall be responsible for unloading, storage and protection of the control cabinets, and all associated items. All installation of pump station control cabinet will be by the contractor. **The Village will** purchase pump control panel from The Flolo Corporation, no exceptions. Energenecs/Kamp shall be the System Integrator, no exceptions.

B. Provide installation of pumping station control cabinet as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

C. Related work:
1. Documents affecting work under this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Division 01 - General Requirements of these Specifications.

1.2 SUBMITTALS

A. Approved submittals will be provided by the Village.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Sections 01 61 01 and 01 66 11.

1.4 QUALITY ASSURANCE

A. Comply with the following requirements:
1. NFPA 70, National Electrical Code (NEC).
2. UL

1.5 SPARE PARTS

A. Spare parts will be provided by the pre-purchased manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

A. Submersible pumping equipment **located at Westmore Lift Station and Garfield Lift Station** consisting of:

1. Pump control system: control cabinet.

2.2 PUMP CONTROL SYSTEM

A. General Requirements:

Programming/integration is to be performed by Energenecs/Kamp. Flolo is to coordinate with systems integrator to have a fully functional system. All wiring connections are to be completed by the contractor and coordinated with Energenecs/Kamp.

Station shall have surge protection on incoming electrical feed. Stations shall be equipped with a digital display of amps and volts (in plain text display), indicator pump run, pump fail and PLC in run mode lights (push to test) for each pump, hand- off-auto selector switches for each pump, hand-off selector switch for street light and an indicator light for power monitor. Control transformer shall be sized for all controls, area lighting and spare 20A receptacle. All equipment shall be mounted at a pre-approved mounting height. All run and alarm conditions displayed at the pump station, shall be tied to SCADA system.

B. Electrical Control Cabinets: shall be above ground, stainless steel, NEMA 4X rated. Panels shall be at least 4' tall with an additional 1' legs with vented doors between the legs. A 6" drip edge minimum on top the cabinet and include a doorstop for main cabinet doors. The panels shall be compartmentalized. The resets for the station shall be located on the outside of the power source, with hand controls located in the upper one-third of the cabinet. Completed control cabinet must be Underwriter's Laboratory (UL) Listed or field certified by UL and National Electrical Code (NEC) 70E arc flash labels. Flolo is responsible for all labels. Flolo is to provide and install all labels.

Control cabinet shall be provided with two 12V backup batteries placed in plastic battery box under control panel behind the 1' vented doors, which will backup all equipment and equipped with a 24-volt trickle charger. The control cabinet shall include interior lights. A minimum of one (1) spare set of fuses and light bulbs shall be provided in a storage box in the panel. The control panel shall be equipped with motor starter resets on the outside of the panel, but not exposed on the exterior doors of cabinet. Control cabinet shall be equipped with a thermostatically controlled heater. Two fans, louvers with bug screens and NEMA 4X rain hoods for ventilation. At least one 20-amp 110V GFCI rated outlet shall be provided in the control cabinet. Control cabinet shall be equipped with a plan holder to store plans on site.

All conduit entrances shall not have gas-tight seals: an intermediate air-gap junction box will be utilized, refer to plan detail/elevations for information.

Three complete copies of the operations and maintenance manuals for the station shall be provided to the Village. All new stations shall be keyed to match existing stations. Laminated record drawings shall be provided and installed in the plan holder.

No main circuit breaker is to be provided. Only incoming lugs are to be provided. The main circuit breaker will be located in the meter pedestal and provided and installed by the contractor.

C. Electrical control panel:

1. Controls for each pump:
2. A thermal magnetic 3-pole circuit breaker with UL listed short circuit ratings of 10,000 RMS symmetrical amps for up to 240 volts and 14,000 RMS symmetrical amps for up to 600 volts Acceptable manufacturer, Square D - FAL36 series.

   NEMA rated magnetic starter, NEMA 1 minimum size, minimum short circuit withstand rating in combination with motor circuit protective device of 10,000 symmetrical amps, with NEMA Class 10 overload relay with reset button and thermal overload elements in each phase sized per motor nameplate FLA rating.

   a. Hand-off-automatic selector switch: Oil-tight, NEMA 4 rated.
   b. Indicating pilot lights: Oil-tight, NEMA 4 rated, green "run", red "seal failure", Pump Failed (PLC) and/or "overheat", of 120 volt, push-to- test type.
   c. Manual reset button for pump failure (overheat).
   d. Wiring terminal board.
3. Control Functions and Components:
   a. Single phase control transformer with 240 volt or 480 volt primary and 120 volt secondary windings. 5000 watt as a minimum. Contractor to verify connected/demand load of transformer with items added to control panel such as generator block heaters, light/pole circuit, etc.
   b. Automatically switch primary power for control transformer from deactivated pump circuit breaker to active circuit breaker.
   c. Means for independent manual pump selection and automatic alternation of pumping sequence.
   d. Intrinsically safe barriers for float switches and Transducer.
   e. Dry contacts to activate remote alarm circuits.
   f. A 20 amp, single pole thermal magnetic circuit breaker for an exterior light/pole via a hand-off-auto internal switch.
   g. Three phase monitor is connected to the incoming service with fuse protected lead and is connected to the PLC to indicate an alarm when phase loss is present and to also activate the exterior strobe light. The PLC will de-energize the pumps upon this alarm.
4. Prewired controls at the factory and clearly labeled screw terminals and lugs for field connections of pump cables, float switch cables, convenience receptacle, alarm light, remote alarm circuit, and feed from the electrical service switch. All labeling must correspond with as-built drawings.

2.5 ACCEPTABLE MANUFACTURERS

A. Starters:

Acceptable brand is Siemens FVNR (14FUF32AH) starter w/ ESP-200 solid state overload relays.

B. Submersible Pressure Transducers: Acceptable brand Ashcroft: Consolidated Electric Model A1000 head and cable assembly, an Ashcroft transducer G27M0242G2030 mounted inside. Assembly shall be mounted on a stainless steel chain, 4-20mAdc output and installed with an intrinsically safe barrier.

C. Flow Meters – Not used.
No flow meters are to be installed for the pump stations.

D. PLC's: Acceptable brand is Allen Bradley As a minimum - Model SLC 5/03 (1747-L532) with a 64 K, Flash EPROM Memory Module, 24Vdc Power Supply (1746-P3). 24Vdc discrete input (1746-IB16) and output (1746-OX8) modules. I/O analog input modules (NI4, NO4I).

E. Operator Interface Terminals: Acceptable brand is Proface 3.8 Amber Touch Screen. XYCM - ST400 – AG41 – 24V

F. Alarm Light: Tomar Electronics Microstrobe Model 490S1280. Yellow lens. No red lens. Operating voltage 12-80 volts DC.

G. Power Monitor: Power Measurement 7300 ION Volts-Amps Meter with Digital Display with fuse protection. RS-485 Port compatible with MODBUS communication protocol, 20-60Vdc power supply..

H. Power Indicating Light: Roughlyte 2V566 rated for 100 watt, wall mount, with a 12 watt LED bulb (Equivalent to 60-watt incandescent light bulb).

I. Batteries, Monitor and Trickle Charger:

1. *Batteries* - Two sealed lead acid battery, 7.09 x 2.99 x 6.57 (HASE - HZS12- 18). Batteries must be installed in a Group U1 Utility Battery Box, 11 x 7.5 x 8.5 (QuickCable M301).

2. *Battery Monitor* (to display the battery level when power is lost to the battery charging system) - Transmitter for 24vdc input to 4-20 mA Output to PLC and displayed on OIT.

3. *Trickle Charger* - One ChargeTek 500, 5-amp dual bank 3 state waterproof battery charger.

J. Power Supply: 24vDC, Power One International Series Model HE24-7.2A as a minimum.

K. Interior Control Cabinet Light: Two - Fluorescent Lighting Package with Door Switch. Hoffman Model No. LF120V18

L. Control Cabinet Heater: Electric Heater, thermostat adjustable from 0 deg. F to 100 deg. F. Thermostatically controlled fan. Hoffman Model No. D-AH4001A or D-AH8001A depends on cabinet size.

M. Three-Phase Monitor for Generator Run and for ComEd Power: Time Mark Model No. A257B or 257B (depending on voltage) with fuse protection.

N. Cabinet Control Transformer: EGS Electrical Group, SolaHD, T5000 5KVA, as a minimum.

O. Main Circuit Breaker – Square D. HGL36100 in an Enclosure, Square D. J250AWK.

P. Portable Generator Circuit Breaker – Square D HGL 36100.

Q. Pump Circuit Breaker: 3 Pole, 600 Volt Molded Case Circuit Breaker by Square D – Enclosure for line power circuit breaker [inside overall enclosure].

R. Surge Protection: Square D SDSA3650 Line surge arrestor, as a minimum.

S. Portable Generator Plug: Crouse Hinds ARKTITE AR-2042 S22 with locking spring door cover. Generator run and alarm signals shall be sent to PLC and display on IFix in the main office. Contractor to verify proper receptacle/pin configuration prior to ordering and installation. Mount receptacle 40" from center of receptacle to top of concrete equipment pad.

T. Radio/Antennae: Free Wave Radio Model FRG09CSU with Notch Filter EBF-900. Antennae: MYA-9156 6dB Yagi, MFB-9157 &dB Omni, MFB-9153 3 dB Omni.
For stations with new control cabinets:
1. All radios and antennas are to be new.

U. Exterior Grounding Junction Box: Quick Connect for Grounding System: Harger as specified on the plans.

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall provide training of equipment.

3.2 INSTALLATION

A. Install equipment in accordance with manufacturer's recommendations.

B. The Contractor is responsible for all wiring, connections and devices. The contractor shall terminate all control cables, devices, sensors, etc. and connect to their corresponding control terminals for indication, alarm, etc. to have a fully functional electrical system. Contractor is responsible for all field wiring labels and must correspond with as-built

drawings.

C. Village shall purchase and furnish contractor with Pump Control Panel from Flolo. Contractor shall install Pump Control Panel as shown on the plans. Contractor shall furnish and install reinforced concrete pad for mounting control panel as shown on drawings.

D. Complete Village standard pump / pump station startup form.

3.3 FIELD QUALITY CONTROL

A. Conduct field test prior to energization as follows:
1. Megger check wire insulation levels (do not megger check solid state equipment).
2. Record and provide results of tests to Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will not be made for the Work specified in this Section.

4.2 PAYMENT

A. Payment for the Work specified in this Section will be made at unit prices for the below Listed Items, in the Schedule of prices:

446256.23/01; Install Pump Control Panel

2. These prices shall be full compensation for furnishing, and installing all materials including concrete pad and for all labor, equipment, tools, and incidentals necessary to complete the Items. Payment for excavation and backfill required for installation shall be included in the prices bid for these Items as they pertain.

3. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items to which they pertain.

END OF SECTION

INSTRUCTIONS TO BIDDERS ON FILLING OUT FORMS

4. An authorized agent must sign the Bid Proposal. The corporate seal, if applicable, must be affixed. The unit price(s), amount(s), date of signature, and any other relevant information must be stated.

5. An authorized agent must sign the Bidder's Certification Form. The date, notary public seal and any other relevant information must also be properly filled out.

6. The Performance Reference Form must also be properly filled out.

4. The Pre-Bid Meeting Attendance Form must be signed by an authorized agent and countersigned by the Village.

IF THE FORMS REFERENCED IN 1, 2, 3 AND 4 ABOVE ARE NOT COMPLETED PROPERLY AND INCLUDED WITH THE BID, THE BID MAY BE REJECTED BY THE VILLAGE.

The *successful* Bidder will be required to agree to and sign the Village Contract and Contract Bond, and the Contractor's Certification Form (sexual harassment policy, tax payment, and CDL testing). **These documents need not be completed at the time the bid is submitted.** They are provided in Appendices 1 & 2 for the Bidder's information.

VILLAGE OF LOMBARD
CONTRACT DOCUMENT NUMBER WA 13 02
BID PROPOSAL

I/We hereby agree to furnish to the Village of Lombard all necessary materials, equipment, and labor, to complete the CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS project within **120 calendar days** from the date of the Notice to Proceed in accordance with the provisions, instructions, and specifications of the Village of Lombard for the prices as follows:

GARFIELD LIFT STATION

	Item	Quantity	Unit	Unit Price	Total Price
20200100	EARTH EXCAVATION	1	L SUM	5,900.00	5900.00
21101505	TOPSOIL PLACEMENT	1	L SUM	1,770.00	1,770.00
25000100	SEEDING, CLASS 1	1	L SUM	1,770.00	1,770.00
28000510	INLET FILTERS	1	EACH	220.00	220.00
44000600	SIDEWALK REMOVAL	150	SQ FT	17.00	2,550.00
X2080250	TRENCH BACKFILL, SPECIAL	5	CU YD	205.00	1,025.00
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM	590.00	590.00
ZZCBBEL07	PORTLAND CEMENT CONCRETE SIDEWALK, SPECIAL	150	SQ FT	18.00	3,240.00
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM	1,180.00	1,180.00
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	L SUM	4,130.00	4,130.00
260519/01	WIRE AND CABLE	1	L SUM	5,900.00	5,900.00
260526/01	GROUNDING SYSTEM	1	L SUM	1,770.00	1,770.00
260533/01	ELECTRICAL CONDUIT	1	L SUM	17,700.00	17,700.00
266020/01	ELECTRICAL SERVICE AND DISTRIBUTION	1	L SUM	3,540.00	3,540.00
446256.23/02	INSTALL PUMP CONTROL PANEL	1	L SUM	4,000.00	4,000.00
263213/01	INSTALL STANDBY GENERATOR	1	L SUM	10,800.00	10,800.00
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM	1,770.00	1,770.00
				SUBTOTAL GARFIELD LIFT STATION BID	67,855.00

WESTMORE LIFT STATION

	Item	Quantity	Unit	Unit Price	Total Price
20100101	REMOVE & REPLACE EXISTING SHRUBBERY	1	L SUM	2,655.00	2,655.00
20200100	EARTH EXCAVATION	1	L SUM	5,900.00	5,900.00
21101505	TOPSOIL PLACEMENT	1	L SUM	1,770.00	1,770.00
25000100	SEEDING, CLASS 1	1	L SUM	1,770.00	1,770.00
28000510	INLET FILTERS	1	EACH	220.00	220.00
44000600	SIDEWALK REMOVAL	105	SQ FT	17.00	1,785.00
X2080250	TRENCH BACKFILL, SPECIAL	15	CU YD	180.00	2,700.00
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM	750.00	750.00
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM	1,200.00	1,200.00
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	LSUM	2,360.00	2,360.00
260519/01	WIRE AND CABLE	1	L SUM	7,080.00	7,080.00
260526/01	GROUNDING SYSTEM	1	L SUM	1,770.00	1,770.00
260533/01	ELECTRICAL CONDUIT	1	L SUM	27,140.00	27,140.00
263213/01	INSTALL STANDBY GENERATOR	1	L SUM	10,915.00	10,915.00
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM	1,770.00	1,770.00
				SUBTOTAL WESTMORE LIFT STATION BID	69,785.00

CIVIC CENTER RESERVOIR FACILITY

	Item	Quantity	Unit	Unit Price	Total Price
20200100	EARTH EXCAVATION	1	L SUM	5,900.00	5,900.00
21101505	TOPSOIL PLACEMENT	1	L SUM	2,360.00	2,360.00
25000100	SEEDING, CLASS 1	1	L SUM	2,360.00	2,360.00
28000510	INLET FILTERS	1	EACH	220.00	220.00
42000300	PORTLAND CEMENT CONCRETE PAVEMENT 8"	425	SQ FT	19.00	8,075.00
44000600	SIDEWALK REMOVAL	25	SQ FT	25.00	625.00
X2080250	TRENCH BACKFILL, SPECIAL	5	CU YD	205.00	1,025.00
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM	750.00	750.00
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM	1500.00	1,500.00
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	L SUM	10,800.00	10,800.00
042300/01	GLASS BLOCK	1	LSUM	6,850.00	6,850.00
260519/01	WIRE AND CABLE	1	L SUM	17,700.00	17,700.00
260526/01	GROUNDING SYSTEM	1	L SUM	1,770.00	1,770.00
260533/01	ELECTRICAL CONDUIT	1	L SUM	24,780.00	24,780.00
~~66900200~~	~~NON-SPECIAL WASTE DISPOSAL~~	~~60~~	~~CU YD~~	0	0
263610/01	FURNISH AND INSTALL MANUAL TRANSFER SWITCH AND GENERATOR RECEPTABLE	1	L SUM	14,160.00	14,160.00
263213/01	INSTALL STANDBY GENERATOR	1	L SUM	24,130.00	24,130.00
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM	2,950.00	2,950.00
	SUBTOTAL CIVIC CENTER RESERVOIR FACILITY BID				125,955.00

TOTAL BID IN FIGURES: $ 263,595.00

TOTAL BID PRICE IN WORDS: Two Hundred Sixty Three Thousand Five Hundred Ninety Five and 00/100 Dollars

VILLAGE OF LOMBARD
CONTRACT DOCUMENT NUMBER WA 13 02
BID PROPOSAL

I/We hereby agree to furnish to the Village of Lombard all necessary materials, equipment, and labor, to complete the CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS project within **120 calendar days** from the date of the Notice to Proceed in accordance with the provisions, instructions, and specifications of the Village of Lombard for the prices as follows:

GARFIELD LIFT STATION

	Item	Quantity	Unit	Unit Price	Total Price
20200100	EARTH EXCAVATION	40	CU YD		
20201200	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	32	CU YD		
21101505	TOPSOIL EXCAVATION AND PLACEMENT	16	CU YD		
25000100	SEEDING, CLASS 1	.02	ACRE		
28000510	INLET FILTERS	1	EACH		
44000600	SIDEWALK REMOVAL	150	SQ FT		
66900200	NON-SPECIAL WASTE DISPOSAL	40	CU YD		
X2080250	TRENCH BACKFILL, SPECIAL	5	CU YD		
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM		
ZZCBBEL07	PORTLAND CEMENT CONCRETE SIDEWALK, SPECIAL	150	SQ FT		
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM		
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	LSUM		
260519/01	WIRE AND CABLE	1	L SUM		
260526/01	GROUNDING SYSTEM	1	L SUM		
260533/01	ELECTRICAL CONDUIT	1	L SUM		
266020/01	ELECTRICAL SERVICE AND DISTRIBUTION	1	L SUM		
446256.23/02	INSTALL PUMP CONTROL PANEL	1	L SUM		
263213/01	INSTALL STANDBY GENERATOR	1	L SUM		
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM		
			SUBTOTAL GARFIELD LIFT STATION BID		

WESTMORE LIFT STATION

	Item	Quantity	Unit	Unit Price	Total Price
20100101	REMOVE & REPLACE EXISTING SHRUBBERY	1	L SUM		
20200100	EARTH EXCAVATION	15	CU YD		
20201200	REMOVAL AND DISPOSAL OF UNSUITABLE MATERAIL	12	CU YD		
21101505	TOPSOIL EXCAVATION AND PLACEMENT	8	CU YD		
25000100	SEEDING, CLASS 1	.01	ACRE		
28000510	INLET FILTERS	1	EACH		
44000600	SIDEWALK REMOVAL	130	SQ FT		
66900200	NON-SPECIAL WASTE DISPOSAL	15	CU YD		
X2080250	TRENCH BACKFILL, SPECIAL	15	CU YD		
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM		
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM		
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	LSUM		
260519/01	WIRE AND CABLE	1	L SUM		
260526/01	GROUNDING SYSTEM	1	L SUM		
260533/01	ELECTRICAL CONDUIT	1	L SUM		
263213/01	INSTALL STANDBY GENERATOR	1	L SUM		
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM		
			SUBTOTAL WESTMORE LIFT STATION BID		

CIVIC CENTER RESERVOIR FACILITY

	Item	Quantity	Unit	Unit Price	Total Price
20200100	EARTH EXCAVATION	60	CU YD		
20201200	REMOVAL AND DISPOSAL OF UNSUITABLE MATERAIL	60	CU YD		
21101505	TOPSOIL EXCAVATION AND PLACEMENT	25	CU YD		
25000100	SEEDING, CLASS 1	.03	ACRE		
28000510	INLET FILTERS	1	EACH		
42000300	PORTLAND CEMENT CONCRETE PAVEMENT 8"	50	SQ YD		
44000600	SIDEWALK REMOVAL	25	SQ FT		
X2080250	TRENCH BACKFILL, SPECIAL	5	CU YD		
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM		
015000/01	TEMPORARY FENCING (SITE PROTECTION)	1	L SUM		
024153/01	DEMOLITION, REMOVAL AND ABANDONMENT	1	L SUM		
042300/01	GLASS BLOCK	1	LSUM		
260519/01	WIRE AND CABLE	1	L SUM		
260526/01	GROUNDING SYSTEM	1	L SUM		
260533/01	ELECTRICAL CONDUIT	1	L SUM		
66900200	NON-SPECIAL WASTE DISPOSAL	60	CU YD		
263610/01	FURNISH AND INSTALL MANUAL TRANSFER SWITCH AND GENERATOR RECEPTABLE	1	L SUM		
263213/01	INSTALL STANDBY GENERATOR	1	L SUM		
263600/01	INSTALL AUTOMATIC TRANSFER SWITCH	1	L SUM		
	SUBTOTAL CIVIC CENTER RESERVOIR FACILITY BID				

TOTAL BID IN FIGURES: $_____

TOTAL BID PRICE IN WORDS: _____

VILLAGE OF LOMBARD
CONTRACT DOCUMENT NUMBER WA 13 02
BID PROPOSAL (CONTINUED)

Signed on this 13rd day of SEPTEMBER, 2014.

The undersigned is aware that, Federal Labor Standards and Prevailing Wage Rates apply to all work performed on this contract. It is the contractor's responsibility to comply with these requirements and to assure compliance by his/her subcontractors and/or any lower tier subcontracts required by this contract.

If an individual or partnership, the individual or all partners must complete and sign.

By.....: _____

Print Name .....: _____

Position/Title.....: _____

By.....: _____

Print Name .....: _____

Position/Title.....: _____

Company Name....: _____
Address line 1 .....: _____
Address line 2 .....: _____
Telephone.....: _____

If a corporation, an officer duly authorized should sign and affix the corporate seal

PLACE CORPORATE SEAL HERE

By.....: Mark Trokey

Print Name .....: MARTIN TROKEY

Position/Title.....: PRES.

Company Name.....: RENCO INDUSTRIES, INC.

Address line 1 .....: 13610 KENTON AVE., CRESTWOOD, IL

Telephone.....: 708-824-0081

The Village of Lombard is exempt from sales or federal tax; therefore, do not include in bid price.

VILLAGE OF LOMBARD
BIDDER'S CERTIFICATION FORM
(BID PROPOSAL)

The undersigned being an authorized representative of GENCO INDUSTRIES, INC.,
(Name of Company)
(hereinafter the "Bidder") who has submitted a bid on a contract for CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS to the Village of Lombard, certifies that:

1. The Bidder is not barred from bidding on the aforementioned contract as a result of a violation of either 720 ILCS 5/33E-4 or 720 ILCS 5/33E-5 or of any similar statute of another state or of a federal statute containing the same or similar elements;

2. The Bidder will comply with all requirements of 29 CFR Part 1910 Permit Required Confined Spaces for General Industry. Special attention is drawn to Section 1910.146(c)(9), which provides as follows:

> "In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:
> (i) Obtain any available information regarding permit space hazards and entry operations from the host employer;
> (ii) Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph (d)(11) of this section; and
> (iii) Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation." and

3. The Bidder will comply with 29CFR1926.650-652, Appendices A-F, Revised July 1, 1990 (Subpart P - Excavations).

By: _____
Authorized Agent of Bidder

Subscribed and sworn to
before me this 23rd
day of SEPTEMBER 2014.

OFFICIAL SEAL
JUDITH S HANSEN
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:01/12/15

_____
Notary Public

The Village of Lombard reserves the right to reject any or all bids, and to waive technicalities in bidding.

VILLAGE OF LOMBARD
PERFORMANCE REFERENCE FORM

Each Bidder shall supply three (3) names, addresses, telephone numbers and names of persons to contact as performance references. **Note: All recommendations shall be from government agencies.**

Company Name: .....: Brookfield North Riverside WC
Address .....: 8636 Brookfield Ave
City & State.....: Brookfield, IL 60513
Telephone Number.....: 708-485-4244
Person To Contact.....: Bob Novotny
Title/Position.....: Superintendent

Company Name: .....: Village of Romeoville
Address .....: 615 Anderson Drive
City & State.....: Romeoville, IL 60446
Telephone Number.....: 815-886-1870
Person To Contact.....: Bob Stoppenbach
Title/Position.....:

Company Name: .....: Village of Winfield
Address .....:
City & State.....: Winfield, IL
Telephone Number.....: 630-933-7140
Person To Contact.....: Steve Loomis
Title/Position.....:

VILLAGE OF LOMBARD
PRE BID MEETING ATTENDANCE FORM

The undersigned is an authorized representative of GENCO INDUSTRIES, INC.,
(Name of Company)
and was in attendance at the pre-bid meeting for CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS that was held in the Board Room of the Village Hall at 11:00 AM on September 11, 2014.

Signed: _____

Name: MARTIN TROLEY

Title/Position: PRES.

Acknowledgment of attendance:

Signed: _____

_____
Village of Lombard
Department of Public Works

APPENDIX 1

VILLAGE OF LOMBARD

CONTRACT

CONTRACT DOCUMENT NUMBER WA 13 02

This agreement is made this 2nd day of October, 2014, between and shall be binding upon the Village of Lombard, an Illinois municipal corporation (hereinafter referred to as the "Village") and **Genco Industries, Inc.** (hereinafter referred to as the "Contractor") and their respective successors.

Witnessed, that in consideration of the mutual promises of the parties delineated in the Contract Documents, the Contractor agrees to perform the services and the Village agrees to pay for the following services as set forth in the Contract Documents:

Installation of Generators and Pump Controls at Civic Center Reservoir Facility, Garfield Lift Station and Westmore Lift Station

1. This contract shall embrace and include all of the applicable Contract Documents listed below as if attached hereto or repeated herein:

   a. Contract Document Number WA 13 02 for CIVIC CENTER RESERVOIR FACILITY, GARFIELD LIFT STATION AND WESTMORE LIFT STATION STANDBY GENERATOR IMPROVEMENTS, consisting of the following:

      i) Cover Sheet
      ii) Table of Contents
      iii) Notice to Bidders on Contract Document Number WA 13 02 - Legal Notice
      iv) General Provisions
      v) Special Provisions
      vi) Plans and Specifications

   b. The Contractor's Bid Proposal Dated: **September 23, 2014**

   c. Required Performance and Payment Bonds and Certificate(s) of Insurance

   d. Executed Bidder's Certification Form.

2. The Village agrees to pay, and the Contractor agrees to accept as full payment the amount as shown on the Contractor's Bid Proposal, which is made a part hereof, subject to such additions and deletions as agreed to by the parties hereto.

3. The Contractor shall commence work under this Contract upon written Notice to Proceed from the Village and shall complete work under this contract within **120** calendar days from the date of the Notice to Proceed. Time is of the essence in regard to this Contract, and the Contractor agrees to achieve completion within the time permitted by all proper and appropriate means including working overtime without additional compensation.

4. Pursuant to the provisions of Section 5 of the Mechanics' Lien Act of Illinois, prior to making any payment to the Contractor under this Contract, the Village demands that the Contractor furnish a written statement of the names of all parties furnishing labor and/or materials under this Contract and the amounts due or to become due each. This statement must be made under oath or be verified by affidavit. The Village shall not issue final payment nor shall any retained percentage become due until releases and waivers of lien have been supplied as the Village designates.

5. This Contract represents the entire agreement between the parties and may not be modified without the written approval of both parties.

IN WITNESS WHEREOF, the Village of Lombard, Illinois, and the Contractor have each hereunto caused this Contract to be executed by their respective duly authorized representatives this 2nd day of October 2014.

If an individual or partnership, the individual or all partners shall sign or, if a corporation, an officer(s) duly authorized shall sign.

Genco Industries, Inc.
Print Company Name

Individual or Partnership _____ Corporation ✓

Accepted this 2nd day of October, 2014.

Mark Lustig — PRESIDENT
By — Position/Title

By — Position/Title

THE VILLAGE OF LOMBARD, ILLINOIS

Accepted this 2nd day of October, 2014.

Keith Giagnorio, Village President

Attest: Sharon Kuderna
Sharon Kuderna, Village Clerk