

## TABLE OF CONTENTS

### PROPOSAL DOCUMENTS

BLR 12200 & 12200a	Local Public Agency Formal Contract Proposal Notice to Bidders Proposal Schedule of Prices Contractor Certifications Signatures
BLR 12230	Local Agency Proposal Bid Bond
BLR 12325	Apprenticeship or Training Program Certification
BLR 12326	Affidavit of Illinois Business Office
BC 75	Affidavit of Availability
	DuPage County – Required Vendor Ethics Disclosure Statement

### SPECIAL PROVISIONS 5

BIDDING REQUIREMENTS AND CONDITIONS FOR CONTRACT PROPOSALS	
SECTION 107 LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC	
SECTION 108 PROSECUTION AND PROGRESS	
SECTION 109 MEASUREMENT AND PAYMENT	
SECTION 671 MOBILIZATION	
TRAFFIC CONTROL AND PROTECTION	
REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES	

### ARTICLE I – DESCRIPTION OF WORK 5

#### ARTICLE II – INSTRUCTION TO BIDDERS

II-1. Competency of Bidders	8
II-2. Examination of Plans, Specifications, Special Provisions, and Site of Work	8
II-3. Award and Execution of Contract	8
II-4. Cooperation with utilities	8
II-5. Legal Regulations and Responsibility to Public	9
II-6. Protection and Restoration of Property	9
II-7. Protection of Streams, Lakes, Reservoirs, Natural Areas	10
II-8. Protection and Restoration of Traffic Signs	10

#### ARTICLE III – GENERAL PROVISIONS AND SPECIFICATIONS

III-1. Applicable Specifications and Standards	11
III-2. Definition of Terms	12
III-3. Control of Work	13
III-4. Prosecution of Work by the Contractor	14
a. Work Force	15
b. Emergency Travel Time	15
c. Work Priority	15
d. Communication Equipment	15
e. Contractor's Representatives	16
f. Pavement Closures	16
g. Traffic Control	16

h. Contractor's Shops	16
i. Extra Work	16
j. Equipment and Materials	16
k. Testing Instruments	17
l. Contractor's Equipment	17
m. Work by Others	17
n. Emergency Temporary Repairs	17
o. Equipment Location and Access Responsibility	17
p. Repair Records	18
q. Utility Service Coordination	18
r. Cable Maintenance	18
s. Equipment Labels	18
t. Malfunction Investigation	18
u. Adequate Parts Inventory (Spare Components)	18
v. Locks	19
w. Restoration of Work Area	19
x. Construction Safety and Health Standards	19
III-5. New Installations, Increased or Decreased Quantities	19
III-6. Maintenance Schedules	19
III-7. Disruption of Service – Liquidated Damages	20
III-8. Extra Work	21
III-9. Special Maintenance (Locations not under Routine Maintenance)	22
III-10. Reimbursement from Third Party for Repairs or Damages	22
a. Damages by Traffic, Vandalism and Other Miscellaneous Causes	22
b. Damages by Construction Forces Working Under County and Motor Fuel Tax (MFT) Contracts	22
c. Cable Damages by County Personnel Working Within the County Right-of-Way	23
d. Record Keeping Requirements for Third Party Damages	23
III-11. Method of Billing	23
III-12. Damaged Parts, Materials, and Equipment	23
III-13. Reports and Forms	24
a. Unsatisfactory Service Report	24
b. Condition Report	24
c. Inspection Report	24
d. Radio Room Report	24
e. Work Order	24
f. Weekly Traffic Signal Maintenance Report	24
g. High Speed Internet Connection with E-mail Capability	25
III-14. Duration of Contract	25
III-15. Special Billing Procedures (Tollway Work)	25
<b>ARTICLE IV – SPECIAL PROVISIONS</b>	<b>26</b>
Traffic Signal System	26
Item T: Traffic Signal Routine Maintenance	26
Description of Routine Maintenance (T) Pay Items	35
Item L: Street Lighting Routine Maintenance	38
Description of Routine Maintenance (L) Pay Items	39
Item PS: Street Lighting Routine Maintenance	39
Description of Routine Maintenance (PS) Pay Items	63
Item EW: Budgetary Allowance for Extra Work	63

Item KD: Knockdowns	63
Item EQ: Equipment	63
Description of Equipment (EQ) Pay Items	64
Item CH: Century Hill Street Lighting	74
Description of Equipment (CH) Pay Items	75
Equipment List	76
Schedule of Routine Maintenance Pay Items	78

## ***STATE OF ILLINOIS INSERTED SPECIAL PROVISIONS***

### **INDEX FOR SUPPLEMENTAL SPECIFICATIONS**

### **CHECK SHEET FOR RECURRING SPECIAL PROVISIONS**

### **CHECK SHEET FOR LOCAL ROADS AND STREETS SPECIAL PROVISIONS**

## **BDE AND VARIOUS INSERTED SPECIAL PROVISIONS**

BDE 80099 Accessible Pedestrian Signals(APS)  
BDE 80165 Moisture Cured Urethane Paint System  
BDE 80261 Construction Air Quality-Diesel retrofit  
BDE 80328 Progress Payments  
BDE 80345 Underpass Luminaire  
BDE 80354 Sidewalk, Corner or Crosswalk Closure  
BDE 80358 Equal Employment Opportunity

DuPage, Kane, Will, Kendall County Prevailing Wage for May 2015

Check Sheet #25 Night Time Inspection of Roadway Lighting

## ***TRAFFIC SIGNAL SPECIAL PROVISIONS***

DuPage County Traffic Signal Special Provisions

DuPage County Coordination of IDOT District 1 Traffic Signal Specifications

## ***HIGHWAY STANDARD DRAWINGS***

DuPage County DOT Street Lighting Standards

701006 Traffic Control – Off Road Operations, 2L, 2W, 15' to 24" from Pavement Edge

701101 Traffic Control – Off Road Operations, Multilane 15' to 24" from Pavement Edge

701201 Traffic Control – Lane Closure, 2L, 2W Day Only, for Speeds  $\geq$  45 MPH

701301 Traffic Control – Lane Closure, 2L, 2W, Short Time Operations

701406 Traffic Control – Lane Closure, Freeway/Expressway, Day Operations Only

701501 Traffic Control – Urban Lane Closure, 2L, 2W, Undivided

701502 Traffic Control – Urban Lane Closure, 2L, 2W with Bidirectional Left Turn Lane

701601 Traffic Control – Urban Lane Closure, Multilane, 1W or 2W with Nontraversable Median

701602 Traffic Control – Urban Lane Closure, Multilane, 2W with Bidirectional Left Turn Lane  
701606 Traffic Control – Urban Lane Closure, Multilane, 2W with Mountable Median  
701701 Traffic Control – Urban Lane Closure, Multilane Intersection  
701901 Traffic Control Devices  
805001 Electrical Service Installation Details  
814001 Handholes  
814006 Double Handholes  
857001 Standard Phase Designation Diagrams and Phase Sequences  
857006 Supervised Railroad Interconnect Circuit  
862001 Uninterruptable Power Supply (UPS)  
873001 Traffic Signal Grounding and Bonding  
876001 Pedestrian Push Button Post  
877001 Steel Mast Arm Assembly and Pole 16' Through 55'  
877006 Steel Mast Arm Assembly and Pole with Dual Mast Arms  
877011 Steel Combination Mast Arm Assembly and Pole 16' Through 55'  
878001 Concrete Foundation Details  
880001 Span Wire Mounted Signals and Flashing Beacon Installation  
880006 Traffic Signal Mounting Details  
886001 Detector Loop Installations  
886006 Typical Layouts for Detection Loops

## STATE OF ILLINOIS SPECIAL PROVISIONS

The following Special Provisions supplement the Illinois Department of Transportation (IDOT) "Standard Specifications for Road and Bridge Construction", adopted January 1, 2012, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", the "Manual of Test Procedures for Materials" in effect on the date of invitation for bids, and the "Supplemental Specifications and Recurring Special Provisions" indicated on the Index Sheet included herein which apply to and govern the proposed improvement designated as Section **15-TSMTC-00-GM**. In case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

### BIDDING REQUIREMENTS & CONDITIONS FOR CONTRACT PROPOSALS

(Illinois Department of Transportation Bureau of Local Roads and Streets Special Provision for BIDDING REQUIREMENTS AND CONDITIONS FOR CONTRACT PROPOSALS LR 102-02)

Revise the first sentence of the section **Preparation of the Proposal** to read: "Bidders shall submit their proposals on the form furnished by the Awarding Authority or on a form approved by the Awarding Authority prior to submittal of the Proposal."

Add the following to the section **Preparation of the Proposal**: "Unit prices shall only be accepted rounded to the nearest one-hundredth (.01) of a dollar."

### SECTION 107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

Article 107.26 Indemnification. In addition to the requirements of this Article, for any activity occurring on an easement or any other property not owned by the Department, the indemnification shall also be extended to the property owners and any tenants thereon.

Article 107.27 Insurance. In addition to the requirements of this Article, the policies of insurance for Commercial (Comprehensive) General Liability and Commercial (comprehensive) Automobile Liability shall include an additional insured endorsement naming the County of DuPage, its officers as additional insureds. The endorsements shall be on forms acceptable to the County of DuPage. This additional insured is to be on a primary and non-contributory basis.

Employer's Liability insurance shall be in an amount not less than one million (\$1,000,000.00) dollars each accident/injury and one million (\$1,000,000.00) dollars each employee/disease.

Limits of Umbrella Excess Liability (over primary) shall not be less than an amount that in combination with Commercial General Liability totals \$6,000,000.00 of liability insurance per occurrence. The Umbrella Excess Liability Policy shall include in the "Who is Insured" pages of the policy wording such as "Any other person or organization you have agreed in a written contract to provide additional insurance" or wording to that effect. The contractor shall provide a copy of said section of the excess/umbrella liability policy upon request by the County of DuPage.

The Contractor shall require all subcontractors to maintain the same insurance coverage required of the contractor. The County of DuPage retains the right to obtain evidence of subcontractor insurance coverage at any time.

Replace the second sentence of the second paragraph (third to last paragraph) of this article with the

following: “It is the duty of the Contractor to immediately notify the County of DuPage if any insurance required under this contract has been cancelled, materially changed, or renewal has been refused, and the Contractor shall immediately suspend all work in progress and take the necessary steps to purchase, maintain and provide the required insurance coverage. If a suspension of work should occur due to insurance requirements, upon verification by the County of DuPage of the required insurance coverage, the County of DuPage shall notify the Contractor that the Contractor can proceed with the work that is a part of this contract. Failure to provide and maintain the required insurance coverage could result in the immediate cancellation of this contract, and the Contractor shall accept and bear all costs that may result from cancellation of this contract due to Contractor’s failure to provide and maintain the required insurance.”

Separate policies and endorsements meeting the above requirements will be required for the City of Aurora as part of their contract award process.

### SECTION 108 PROSECUTION AND PROGRESS

Article 108.03 Prosecution of the Work. Revise the first sentence of this Article to read, "The Contractor shall begin the work to be performed under the contract on December 1, 2015 at 12:00 a.m. Work shall continue for a two year period through November 30, 2017.

### SECTION 109 MEASUREMENT AND PAYMENT

Article 109.08 Acceptance and Final Payment. Prior to final payment, an affidavit from the Contractor will be required (BC 141).

### SECTION 671 MOBILIZATION

Article 671.02 Basis of Payment. Revise this Article to read: “Basis of Payment. This work will not be paid for separately, but shall be included in the various items of work.”

### TRAFFIC CONTROL AND PROTECTION

Description. The traffic control and protection for this project shall be performed in accordance with the project Traffic Control Plan and Section 701 of the Standard Specifications as amended by the Special Provision for Work Zone Traffic Control Surveillance (Illinois Department of Transportation Check Sheet #LRS 3).

Traffic Control Plan. No work shall commence until traffic control requirements are met. Arrow Boards will be required when implementing lane closures on multi-lane roads. The following traffic control standards are the minimum requirements for traffic control for this project:

- 701006 Off Road Operations, 2L, 2W, 15’ to 24” from Pavement Edge
- 701101 Off Road Operations, Multilane, 15’ to 24” from Pavement Edge
- 701201 Lane Closure, 2L, 2W Day Only, for Speeds  $\geq$  45 MPH
- 701301 Lane Closure, 2L, 2W, Short Time Operations
- 701406 Lane Closure, Freeway/Expressway, Day Operations Only
- 701501 Urban Lane Closure, 2L, 2W, Undivided
- 701502 Urban Lane Closure, 2L, 2W with Bidirectional Left Turn Lane
- 701601 Urban Lane Closure, Multilane, 1W or 2W with Non-traversable Median
- 701602 Urban Lane Closure, Multilane, 2W with Bidirectional Left Turn Lane

701606 Urban Lane Closure, Multilane, 2W with Mountable Median  
701701 Urban Lane Closure, Multilane Intersection  
701901 Traffic Control Devices

Basis of Payment. The cost of Traffic Control and Protection provided under the Traffic Control Plan and Section 701 - WORK ZONE TRAFFIC CONTROL will not be paid for separately, but shall be included in the cost of the items in the Contract.

#### REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES

This work shall be according to Article 669 of the Standard Specifications and the following:

Qualifications: The term environmental firm shall mean an environmental firm with at least five (5) documented leaking underground storage tank (LUST) cleanups or that is pre-qualified in hazardous waste by the Department. Documentation includes but is not limited to verifying remediation and special waste operations for sites contaminated with gasoline, diesel, or waste oil in accordance with all Federal, State, or local regulatory requirements and shall be provided to the Engineer for approval. The environmental firm selected shall not be a former or current consultant or have any ties with any of the properties contained within and/or adjacent to this construction project.

General: This Special Provision will likely require the Contractor to subcontract for the execution of certain activities. The Environmental firm shall continuously monitor for worker protection and the Contractor shall manage any excavated soils within the construction limits of this project as fill. All excavated soils can be placed back into the excavated trench or used within the construction limits as fill. If the contaminated materials cannot be utilized within the construction limits as fill then they must be managed off-site as non-special waste. The contractor shall submit a plan for testing excavation removed from the job site. The Engineer's approval of the plan must be provided prior to removal of excavated materials from the job site.

All contaminated materials shall be managed as non-special waste. This work shall include monitoring and potential sampling, analytical testing, and management of a material contaminated by regulated substances.

### ARTICLE I - DESCRIPTION OF WORK

It is the intent of the DuPage County Division of Transportation and the City of Aurora to jointly bid for electrical maintenance services and award these services to a single contractor ("Contractor").

Through this joint bid process, DuPage County Division of Transportation and the City of Aurora are presenting an economy of scale, providing potential bidders with opportunities for increased revenues as well as reduced costs, which the bidders will in turn extend to the agencies via lower pricing. The DuPage County Division of Transportation is conducting the bidding process on behalf of both agencies. Each agency's Board and Council will have the right to review and independently approve or reject the bid award and execute the contract for that agency.

This Contract is for the maintenance of all traffic signals, flashing beacons, streetlights, pump stations and their appurtenances under the jurisdiction or maintenance responsibility of the DuPage County Division of Transportation.

The same unit prices and contract terms shall apply to the City of Aurora for the items under its jurisdiction and maintenance as indicated in the summary of quantities.

All contract administration, invoicing, and coordination will be the responsibility of the individual agencies. The only combined activity associated with this proposal is the bidding process being conducted by the DuPage County Division of Transportation.

The Contractor for specified unit prices listed under the Schedule of Prices shall (1) furnish labor and provide materials to maintain the respective installations and systems; (2) make permanent repairs to damaged equipment; (3) clean, repair, test, perform preventive maintenance, and overhaul specified equipment at stated intervals of time; (4) provide the necessary transportation for workers; (5) provide continuous maintenance and repair service on a 24-hour basis, 7 days a week, including holidays, to correct any malfunction of equipment or perform any temporary/emergency repairs to missing, defective, damaged, or displaced equipment resulting from any cause whatsoever in the shortest possible time; (6) locate and mark underground facilities when requested; and (7) perform all activities required and described herein.

## **ARTICLE II - INSTRUCTION TO BIDDERS**

### **II-1. COMPETENCY OF BIDDERS**

Each bidder shall be pre-qualified to comply with all of the requirements of Article 102.01 of the Illinois Department of Transportation Standard Specifications for Road & Bridge Construction.

### **II-2. EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK**

The prospective bidder shall before submitting his bid, carefully examine the Contract proposal, plans, specifications, special provisions, Contract and Contract bond. He shall inspect in detail all of the locations to be maintained under this Contract and familiarize himself with all the local conditions affecting the Contract and the detailed requirements of maintenance. The Contractor shall be responsible for any pre-existing maintenance deficiencies that may exist at the time this Contract is awarded and his bid shall reflect these deficiencies. If this bid is accepted, he will be responsible for all errors in his proposal resulting from his failure or neglect to comply with these instructions. The contracting agency will, in no case, be responsible for any change in anticipated profits resulting from such failure or neglect.

### **II-3. AWARD AND EXECUTION OF CONTRACT**

Award and execution of Contract shall be in accordance with Section 102 of the Standard Specifications and the following special provision:

Insurance certificates shall be received by the contracting agency within five (5) calendar days after the Contract has been received by the bidder. Contract performance and payment bond shall be received by the contracting agency within ten (10) calendar days after the Contract has been received by the bidder. The Contract shall be executed by the successful bidder and returned to contracting agency within fifteen (15) calendar days after the Contract has been received by the bidder.

### **II-4. COOPERATION WITH UTILITIES**

The Contractor shall coordinate with applicable utilities according to Article 105.07 of the "Standard Specifications" and the following:



The Contractor shall be aware of the location of all utilities and structures in the project area. The Contractor shall conduct construction operations to avoid damage to the above-mentioned utilities or structures.

Should any damage to utilities occur, due to the Contractor's negligence, the Contractor shall be responsible for making all repairs, in a manner acceptable to the Engineer. All costs associated with making the repairs shall be the responsibility of the Contractor.

The Contractor shall be aware of the locations of vehicle detector loops cut into the pavement. Any vehicle detector loop damaged by the Contractor's negligence shall be repaired by the Contractor in a manner acceptable to the Engineer. All costs associated with making the repairs shall be the responsibility of the Contractor.

The Contractor shall notify all utility owners of the proposed construction schedule, and shall coordinate construction operations with the utility owners so that relocation of utility lines and structures may proceed in an orderly manner. Notification shall be in writing with copies transmitted to the Engineer.

**II-5. LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**

The Contractor shall observe and comply with the Legal Regulations and Public Responsibilities according to Section 107 of the "Standard Specifications", as modified above, and the following:

**Construction Safety and Health Standards:** It is a condition of this contract and shall be made a condition of each subcontract entered into pursuant to this contract that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to their health or safety, as determined under Federal Construction Safety and Health Standards.

**Keeping Roads Open to Traffic:** All roads shall remain open to traffic. The Contractor may close one (through traffic) lane because of construction only between the hours of 9:00 AM and 3:00 PM. The Contractor shall maintain one-way traffic during these restricted hours on two lane highways with the use of signs and flaggers as shown on the Traffic Control Standard. On multi-lane highways the Contractor shall maintain at least one (through traffic) lane in each direction with the use of signs, barricades, and arrow boards as shown on the Traffic Control Standards. All lanes of traffic will be maintained between 3:00 PM and 9:00 AM and when no construction activities are being carried out.

The restricted lane closure time may be adjusted by the Resident Engineer. The Contractor shall provide a start and end time and a procedure plan 48 hours prior to the lane(s) to be closed. The Resident Engineer will notify the Contractor 24 hours in advance with the decision.

If the Contractor fails to provide notification or disregards the decision by the Resident Engineer the Traffic Control Deficiency Charge will be applied as stated in the Special Provisions for Traffic Control and Protection.

**II-6. PROTECTION AND RESTORATION OF PROPERTY**

The Contractor shall protect and restore property according to Article 107.20 of the "Standard Specifications" and the following:

**Trees and Shrubs:** Extra care shall be exercised when operating equipment around trees or

shrubs. Injured branches or roots shall be pruned in a manner satisfactory to the Engineer and shall be painted where the cut was made. Roots exposed during excavating operations shall be neatly pruned and covered with topsoil. This work shall be done as soon as possible and shall be considered as included in the contract, and no additional compensation will be allowed.

**II-7. PROTECTION OF STREAMS, LAKES, RESERVOIRS, NATURAL AREAS, WETLANDS, PRAIRIE AREAS, SAVANNAHS, AND ENDANGERED AND THREATENED SPECIES**

**CONCRETE WASHOUT FACILITY**

The Contractor shall take sufficient precautions to prevent pollution of streams, lakes, reservoirs, and wetlands with fuels, oils, bitumens, calcium chloride, or other harmful materials according to Article 107.23 of the “Standard Specifications”.

To prevent pollution by residual concrete and/or the byproduct of washing out the concrete trucks, concrete washout facilities shall be constructed and maintained on any project which includes cast-in-place concrete items. The concrete washout shall be constructed, maintained, and removed according to this special provision. Concrete washout facilities shall be required on all projects regardless of the need for NPDES permitting. On projects requiring NPDES permitting, concrete washout facilities shall also be addressed in the Storm Water Pollution Prevention Plan.

The concrete washout facility shall be constructed on the job site according to the standards and special provisions. The Contractor may elect to use a pre-fabricated portable concrete washout structure. The Contractor shall submit a plan for the concrete washout facility, to the Engineer for approval, a minimum of 10 calendar days before the first concrete pour. The working concrete washout facility shall be in place before any delivery of concrete to the site. The Contractor shall ensure that all concrete washout activities are limited to the designated area.

The concrete washout facility shall be located no closer than 50 feet from any environmentally sensitive areas, such as water bodies, wetlands, and/or other areas indicated on the plans. Adequate signage shall be placed at the washout facility and elsewhere as necessary to clearly indicate the location of the concrete washout facility to the operators of concrete trucks.

The concrete washout facility shall be adequately sized to fully contain the concrete washout needs of the project. The contents of the concrete washout facility shall not exceed 75% of the facility capacity. Once the 75% capacity is reached, concrete placement shall be discontinued until the facility is cleaned out. Hardened concrete shall be removed and properly disposed of outside the right-of-way. Slurry shall be allowed to evaporate, or shall be removed and properly disposed of outside the right-of-way. The Contractor shall immediately replace damaged basin liners or other washout facility components to prevent leakage of concrete waste from the washout facility. Concrete washout facilities shall be inspected by the Contractor after each use. Any and all spills shall be reported to the Engineer and cleaned up immediately. The Contractor shall remove the concrete washout facility when it is no longer needed.

This work will not be paid for separately, but shall be included in the cost of the concrete work items included in the contract.

**II-8. PROTECTION AND RESTORATION OF TRAFFIC SIGNS**

The Contractor shall protect and restore traffic signs within the limits of the project according to Article 107.25 of the “Standard Specifications” and the following:

1. All signs removed shall be reinstalled 16 feet to 18 feet off the edge of pavement where possible. In curb sections this will vary and will be determined by the DuPage County Division of Transportation.
2. All single sign installations shall be installed with the bottom of the sign 5 feet above edge of pavement in rural districts, and 7 feet above the edge of pavement in business, commercial or residential districts. On installations having two or more signs, the bottom of the lowest sign shall be 4 feet above edge of pavement.
3. All signs replaced will be erected using new "Telespar" system metal bases cut 42" long from 2¼" square material. They are to be driven into solid ground using a pneumatic driver. This work will not be paid for separately but shall be considered included in the cost of the contract.

### **ARTICLE III - GENERAL PROVISIONS AND SPECIFICATIONS**

#### **III-1. APPLICABLE SPECIFICATIONS AND STANDARDS**

The latest issue of the following standards at the bid date including subsequent additions or revisions shall apply to the work covered by this Contract. In case of conflict with any or parts of the standards listed below the Special Provisions contained herein shall take precedence and shall govern:

- a. Illinois Department of Transportation Standards & Specifications
  - Standard Specifications for Road and Bridge Construction, Latest edition
  - Supplemental Specifications and Recurring Specifications
  - Design Manual Section 3-600 on Highway Lighting
  - Highway Standards
  - Road, Bridge and Other Related Laws of Illinois
  - Safety Code
  - Work Site Protection Manual
  - Traffic Control Plans for Daylight Traffic Operation
  - Illinois Supplement to the Manual on Uniform Traffic Control Devices
  - District 1 Standard Specifications for Integrated Closed-Loop Traffic Signal Monitoring System
- b. National Standards and Specifications
  - An Informal Guide for Roadway Lighting, published by American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., N.W., Washington, D.C. 20001
  - Insulated Cable Engineers Assn. and Underwriters Laboratories publications when applicable for cable and other materials
  - National Electrical Manufacturers Associations (NEMA) Standards
  - American National Standards Institute, where applicable, for lamps, ballasts, and other accessories
  - American Society for Testing and Materials (ASTM) Standards for materials
  - All applicable manuals and policies of the Federal Highway Administration (FHWA)
  - American National Standard Practice for Roadway Lighting, Published by Illuminating Society of North America, 120 Wall St., 17<sup>th</sup> Floor, New York, NY, Phone: (212) 248-5000

- National Electrical Code, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, approved by the American National Standards Institute, Publication #ANSI/C2, published by IEEE, 345 E. 47th Street, New York, NY 10017
  - National Electrical Code, NFPA - SF70-96, as published by National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
  - Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals AASHTO Publication
  - Institute of Traffic Engineers Technical Report No. 1 (A Standard for Adjustable Face Vehicular Traffic Control Heads)
  - Emergency Response Guidebook by U.S. Dept. of Transportation, latest version, for further assistance call National Response Center (NRC) 1-800-424-8802
  - Hazardous Materials Regulations, Hazardous Materials Transportation Uniform Safety Act of 1990, Hazardous Materials Regulations and Motor Carrier Safety Regulating by U.S. Department of Transportation
  - OSHA, all applicable regulations
  - RUS, all applicable regulations
  - IMSA Standards & Manuals
  - Manual on Uniform Traffic Control Devices
- c. DuPage County Division of Transportation Standards and Specifications
- Traffic Signal Special Provisions

### **III-2. DEFINITION OF TERMS**

- a. Contract Period  
The period from December 1, 2015 to November 30, 2017 as stated in Article III, Section 14 of this Contract.
- b. Emergency  
A condition which is a hazard to the public, or is designated by the Engineer to be a hazard or potential hazard of such severity that life and property are endangered. ALL emergency conditions require IMMEDIATE CORRECTIVE ACTION.
- c. Equipment Damage  
Any piece of equipment owned or maintained by the contracting agency that is no longer capable of functioning as originally designed, or as since modified, or any piece of equipment that has deteriorated sufficiently in the opinion of the Engineer so that failure is imminent.
- d. Extra Work  
Any work upon an existing system or existing installation not specified in this Contract as Routine Maintenance or as a Specialty Item. Provisions for Extra Work are covered in Article III, Section 8, of this Contract.
- e. Immediate Corrective Action  
When Immediate Corrective Action is required, the Contractor shall proceed to the site of the emergency by the fastest means available and, with no delay, perform all such work as may be necessary and appropriate to: 1) Ensure the safety of the public at the site of the emergency, and 2) restore to operation all of the equipment as specified under Article IV - Special Provisions.
- f. Maintenance Schedule  
A schedule prepared by the Engineer, or prepared by the Contractor at the direction and approval of the Engineer, showing starting and completion dates of work items to be

performed on the various installations or systems.

- g. Manual on Traffic Control  
The State of Illinois "Manual on Uniform Traffic Control Devices for Streets and Highways."
- h. Routine Maintenance  
Servicing the various installations, systems and equipment and performing all work necessary to keep them in proper working order, appropriate appearance, and in serviceable condition at all times. Any required equipment repair of an unforeseen nature coming to the attention of the Contractor shall also be included under the Routine Maintenance definition. The Routine Maintenance work is more fully described under Article IV - Special Provisions.
- i. Standard Specifications  
The Illinois Department of Transportation's "Standard Specifications for Road and Bridge Construction."
- j. Week  
A period of seven (7) calendar days. Any multiple of this term shall mean a corresponding multiple of seven (7) calendar days.
- k. Working Day  
Any day the offices of the contracting agency are open for normal business.
- l. Yard  
The portion of the contracting agency or contractor property designated for the storage of materials and equipment.
- m. Equipment Repair  
Servicing and/or restoring of any equipment to normal operating condition and appearance as necessitated by equipment wearout, failure, damage, or loss.
- n. End of Life  
The point at which equipment is no longer serviceable, repairs are not possible and the equipment must be replaced. The Engineer shall have sole discretion to make this determination.

### **III-3. CONTROL OF WORK**

The Engineer will be responsible for the control of work in conformance with Section 105 of the Standard Specifications and Contract Special Provisions.

- a. The Engineer may furnish the Contractor with the names of representatives of the contracting agency who may be available to confer with or to advise the Contractor in administrative and technical matters.
- b. The Engineer, or his representative, may make periodic and/or frequent inspections of the respective systems and installations to determine if all maintenance operations are being performed by the Contractor promptly and satisfactorily, and in the manner specified in this Contract. The Contractor shall respond promptly in restoring, replacing, repairing, and realigning equipment covered in this Contract when notified by any source.
- c. The Engineer may prepare MAINTENANCE SCHEDULES for the prosecution of work on the various items of Routine Maintenance, Specialty Items, and/or Extra Work which are to

be completed at regularly stated intervals. Refer to Article III, Section 6 of this Contract for specific requirements.

- d. The Engineer may require that the Contractor prepare and submit written progress reports for Routine Maintenance and/or Extra Work. When required, these reports shall include (but not be limited to) one or more of the following: 1) completed or uncompleted status of work items, 2) specific troubleshooting procedures and when they were performed, 3) any temporary repair actions taken, 4) explanation of any delays experienced by the Contractor, and/or 5) expected completion dates for each work item, based on the Engineer's approval. Written reports may be required on a regular and/or periodic basis throughout the duration of the Contract.

#### **III-4. PROSECUTION OF WORK BY THE CONTRACTOR**

The purpose of this Contract is (1) to assure that all components of the traffic signal systems and installations operate essentially as originally installed, or as subsequently modified and (2) for preventive maintenance, to guard against and prevent equipment failures due to mechanical or electrical defects. The proper functioning of the traffic signal systems and installations is essential to maintain the smooth, expeditious, and safe movement of people and goods. It is imperative that all of the traffic signal equipment be serviceable and in good operating condition so as to insure maximum working efficiency and prevent unnecessary failures. When equipment failures do occur, due to unforeseen events, knockdowns, inclement weather, or from any cause whatsoever, TIME IS OF THE ESSENCE in arriving at the scene and taking corrective measures. To insure this continuous and uninterrupted operation of equipment, service calls and emergency calls shall be answered promptly, and extraordinary effort shall be exerted by the Contractor to render this service. Following is an Index to the issues covered under this section.

**The items listed below shall be considered included in the cost of the Routine Maintenance portion of the Contract, and will not be paid for separately unless explicitly stated otherwise in the Contract.**

- a. Work Force
- b. Emergency Travel Time
- c. Work Priority
- d. Communication Equipment
- e. Contractor's Representatives
- f. Pavement Closures
- g. Traffic Control
- h. Contractor's Shops
- i. Extra Work
- j. Equipment and Materials
- k. Testing Instruments
- l. Contractor's Equipment
- m. Work by Others
- n. Emergency Temporary Repairs
- o. Equipment Location and Access Responsibility
- p. Repair Records
- q. Utility Service Coordination
- r. Cable Maintenance
- s. Equipment Labels
- t. Malfunction Investigation
- u. Adequate Parts Inventory

- v. Locks
- w. Restoration of Work Area
- x. Construction Safety and Health Standards

a. **Work Force**

The Contractor shall at all times provide a force of qualified personnel sufficient, in the opinion of the Engineer, to perform the Routine work and specialized operations required and described herein. The force of qualified personnel shall be sufficient to simultaneously perform both Routine Maintenance and Emergency repairs, including Specialty Items and Extra Work.

It is the intent of this Contract that contracting agency service shall take precedence over other work for third parties. The Engineer may grant the Contractor authorization to postpone their work to address emergency situations, but the shortage of work force shall otherwise be insufficient grounds for the Contractor's failure to perform routine or other non-routine work within the prescribed time constraints.

The Contractor's workforce shall possess the skills and knowledge necessary to perform all work in the proper manner. The workforce shall include personnel having certain special expertise, including, but not limited to the following:

- Materials Management
- General Electrical Power
- Building Wiring (Indoor Electrician)
- Various Types of Mechanical Work
- Roadway Electrical (Outdoor Lineman)
- Telemetry/Telecommunications
- Traffic Signal Closed Loop Monitoring System
- Fiber Optic Cable Installation and Repairs
- Hardware/Software Trouble-Shooting
- Office Administration

All patrolman and field personnel working on County traffic signal equipment shall be certified IMSA Traffic Signal Level II technicians.

b. **Emergency Travel Time**

The Contractor's Representative designated to respond to emergency calls shall be stationed so that their travel time to arrive at any designated point of trouble shall not exceed one hour during normal weather and under normal traffic conditions.

c. **Work Priority**

Priority in the performance of Routine Maintenance and Extra Work shall be at the discretion of the Contractor unless specifically directed otherwise by the Engineer.

d. **Communication Equipment**

The Contractor shall furnish the transportation for his employees and equipment used in the performance of this Contract. All vehicles used by the Contractor shall comply with all applicable laws and shall carry such lights and safety appurtenances as may be prescribed by the contracting agency. All personnel shall be equipped with cellular phones for expediting and maintaining 24-hour communications with the Contractor's headquarters. A listing of cellular telephone numbers shall be prepared and furnished to the Engineer one (1) week prior to the beginning of the Contract.

The Contractor shall maintain a high-speed Internet connection on a personal computer in the dispatch center. Refer to Article III-13, Reports and Forms, Paragraph g, for more information on this requirement.

e. **Contractor's Representatives**

The Contractor and subcontractors, if any, shall each designate in writing at least one responsible representative of their organizations to whom instructions may be given by the Engineer. Replacements on a temporary basis that might be needed shall be provided to the Engineer as necessary. The representatives designated are to be available at all times under all circumstances.

f. **Pavement Closures**

The Contractor shall keep at least one lane of two-lane roadways, and one through lane in each direction on multi-lane highways, open to traffic unless otherwise directed by the Engineer. These restrictions shall not apply when and for the time necessary to clear from the roadway damaged equipment, debris, or other objects that constitute a hazard.

g. **Traffic Control**

Traffic Control shall be in accordance with the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the Contract, and the Special Provisions contained herein.

h. **Contractor's Shops**

The Contractor shall have and maintain adequate facilities for the timely completion of the work under this Contract. These facilities shall be available at all times, and shall include a central base of operations (Headquarters) and 24-hour dispatch center.

The Contractor shall maintain storage facilities and/or shops within DuPage County in order to minimize time involved in repairing items covered under this Contract.

The Contractor shall maintain, equip and staff a facility for the testing, repairing and overhauling of all traffic signal control equipment to be maintained under this Contract.

The repair facility staff shall include at a minimum one full time employee dedicated to the repair and testing of traffic signal equipment. This employee shall be capable of conducting the required conflict monitor/MMU testing and performing cabinet and controller troubleshooting onsite at the repair facility.

The Engineer shall have the authority to visit and inspect the Contractor's facilities at any time.

All storage and repair facilities shall be operational and available for inspection by November 20, 2015.

i. **Extra Work**

The Contractor shall perform Extra Work, as authorized under Article III, Section 8 of this Contract, when directed by the Engineer.

j. **Equipment and Materials**



All equipment, materials, miscellaneous items and component parts are to be furnished by the Contractor at his expense, unless otherwise specified by the Engineer, and shall be the best grade of their respective kinds for the purpose. When required by these Specifications, or when called for by the Engineer, full information concerning the materials or articles which the Contractor intends to incorporate into the work shall be provided for approval (this may include such submittals as the manufacturer's catalog information). The Contractor shall prepare the equipment and materials in his shop so that the Engineer can easily inspect them for approval for use in the system.

Extra Work directed by the Engineer shall be completed with all new materials and parts, unless otherwise specified by the Engineer.

k. **Testing Instruments**

The Contractor shall provide all necessary testing instruments and related troubleshooting equipment. That portion of instrumentation for use in the performance of this Contract shall be calibrated by an approved testing laboratory once each year. The Contractor shall maintain all current certificates of calibration, and shall provide this information when requested by the Engineer. This equipment shall include but not be limited to the following: Inductive Loop Analyzer, amp probe, ohm meter, volt meter, watt meter, preemption system emitter/tester, conflict monitor testers, malfunction monitoring unit tester, fiber optic testers, including OTDR, etc.

l. **Contractor's Equipment**

The Contractor shall provide at all times sufficient equipment in the opinion of the Engineer to perform the routine work and specialized operations required and described herein. This equipment shall be dedicated to the work under this Contract and is in addition to the equipment required for any other work being performed by the Contractor.

m. **Work by Others**

The Contractor shall report to the Engineer, by the fastest means of communication, (1) any unauthorized work being performed by others affecting the system, (2) any other work in progress which may come to his attention and which may endanger any installation of the system, and (3) any emergency and/or temporary repairs.

n. **Emergency Temporary Repairs**

The Contractor shall make emergency temporary repairs and permanent repairs to the installations. Unless specifically authorized by the Engineer, permanent repairs shall be started not later than the second working day following emergency temporary repairs, and shall be continued insofar as possible without interruption, until completion. The contractor shall assemble all equipment and parts necessary for making permanent repairs within one (1) working day following notification of damage.

o. **Equipment Location and Access Responsibility**

The Contractor shall be responsible for responding to all calls requesting location of agency maintained electrical facilities included under this Contract. The Contractor shall locate and mark underground cables or any other components of the system to prevent damage and facilitate work by others. For routine equipment locate requests, the Contractor shall locate and mark the appropriate equipment within forty-eight (48) hours of the request. Emergency equipment locates, when directed by the Engineer, shall be performed immediately upon the Contractor's notification. If the Contractor suspects or determines that the requester does not have permission to work within the contracting agency's Right-of-Way, the Contractor shall

notify the Engineer. The cost for all equipment location services required of the Contractor shall be included in the cost of the pay items for Routine Maintenance.

The Contractor is also required to provide access to equipment for other contractors and consultants who have approved contracts to work on the systems. The Contractor shall provide personnel to open cabinets and facilities for inspection and review of equipment. All of the work items and services included herein shall be considered included in the cost of the pay items for Routine Maintenance.

p. **Repair Records**

The Contractor shall maintain Records for each respective system's equipment as described and/or directed by the Engineer, under the terms and conditions of the Contract. This work shall include keeping records of repairs and services to all serial-numbered pieces of equipment, and making them available for review by the Engineer at all times.

q. **Utility Service Coordination**

The Contractor shall keep incoming power service in proper condition at all times, and shall cooperate with the appropriate utility company in this matter. The Contractor shall maintain interconnection lines owned by the County, and shall cooperate with any utility company leasing interconnection lines to the County. In addition, the Contractor shall perform such work at line terminals as may be required.

r. **Cable Maintenance**

All interconnecting cable, conduit and handholes between various parts of the traffic signal system shall be maintained by the Contractor. All parts of an existing cable system and appurtenances which become inoperative and/or designated for abandonment by the Engineer, shall be removed by the Contractor, as directed, to the satisfaction of the Engineer.

s. **Equipment Labels**

The Contractor shall maintain cabinet stickers for traffic signals, service disconnects, and street lighting controllers in readable condition at all times and replaced as required. Replacement stickers will be provided by the contracting agency.

t. **Malfunction Investigation**

When directed by the Engineer, the Contractor shall provide additional special patrols, inspections, and tests to confirm proper system equipment operation and/or collect information to isolate the cause of repetitious or intermittent system malfunctions. The times and locations shall be specified by the Engineer.

u. **Adequate Parts Inventory (Spare Components)**

The Contractor shall be responsible for providing an adequate number of spare components and equipment, and shall have them available for emergency, routine service and for overhauling replacement. At any time during the duration of this Contract, the current spare components inventory shall be provided to the Engineer upon request.

In the event the Contractor fails to have or obtain the appropriate spare equipment, the Engineer may deduct from the monthly billing, as liquidated damages, the amount of \$500.00 per day or part of a day past the associated repair time limit.

v. **Locks**

The Contractor shall be responsible for keeping all equipment locks in proper working order at all times. Whenever the Engineer deems it necessary to change, replace, remove or add locks, the Contractor shall assume the full cost for such changes. Whenever any locks are changed or added, 2 keys shall be furnished to the Engineer.

w. **Restoration of Work Area**

Restoration of the traffic signal work area shall be included in the cost of the related pay item such as foundation, conduit, handhole, trench and backfill, etc. and no extra compensation shall be allowed. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be restored to match the previously existing conditions. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded, in accordance with Standard Specifications Sections 252 and 250, respectively.

x. **Construction Safety and Health Standards**

It is a condition of this Contract and shall be made a condition of each subcontract entered into pursuant to this contract that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to their health or safety, as determined under Federal Construction Safety and Health Standards.

**III-5. NEW INSTALLATIONS, INCREASED OR DECREASED QUANTITIES**

Whenever the quantity of any item of work, as listed in the Schedule of Prices, is increased or decreased due to additions or deletions of items in the installations or systems, payment will be made on the basis of the actual work performed.

The Engineer shall notify the Contractor in writing when changes are made in any installations or systems that will increase or decrease the quantities in the Schedule of Prices. This notification shall give the following information:

- (1) a description of the equipment, unit or item to be added or removed, (2) the location of the equipment, unit, or item, (3) the revised totals of the respective item as shown in the Schedule of Prices, (4) effective date of the change.

In case of installation of new equipment to be added to this Contract, the Engineer shall inform the Contractor of the scheduled date and time of equipment actuation. The Contractor shall make such inspection as necessary at the time of actuation to ascertain that the equipment is in proper working order. In addition, at no extra cost to the contracting agency, the Contractor shall notify the Engineer in writing any information regarding failure of parts, guarantee periods, failure due to faulty construction, and knockdowns.

**III-6. MAINTENANCE SCHEDULES**

This section supplements Section 108 of the Standard Specifications.

- a. The Engineer may present MAINTENANCE SCHEDULES to the Contractor or may require the Contractor to present proposed schedules to him. Where schedules are required, the Contractor shall submit schedules a minimum of two weeks before work is to begin.
- b. The Contractor shall complete all work items contained in MAINTENANCE SCHEDULES within the time period specified. Failure to complete the work items as specified, and within the designated time period, is sufficient cause for the County to collect liquidated damages as defined herein.

- c. The Contractor may request changes in a MAINTENANCE SCHEDULE by submitting proposed changes in writing to the Engineer at least five (5) working days prior to the scheduled starting date of any item(s). Any such changes will become effective only upon the written approval of the Engineer.
- d. The Contractor shall forward a MAINTENANCE SCHEDULE Completion Report to the Engineer at the completion of a Work Item, or prior to the end of the Contract, whichever occurs first.

**III-7. DISRUPTION OF SERVICE - LIQUIDATED DAMAGES**

The Contractor is obligated to assure that the various items of equipment in the installations and systems perform properly; whereas, maintenance operations for the respective installations and systems prescribed by this Contract must not be interrupted; whereas, MAINTENANCE SCHEDULES and completion dates are specified for various items of work and are deemed of paramount importance in the maintenance functions; whereas, failure to perform all functions in the manner specified and within any time limit specified may seriously jeopardize the welfare of the general public, the Contractor agrees that should the Contractor refuse or fail to prosecute the work, or any separable part thereof, promptly and in the manner specified in this Contract with such diligence as will insure its satisfactory completion, the Engineer in his discretion may take one or more of the following actions:

(1) Withhold payment of any monthly or final remittance for any installation or system until all work has been performed to the satisfaction of the Engineer; (2) Deduct a proportionate amount of money for work not performed on any installation or system, from any monthly or final remittance due the Contractor, with the amount of money deducted to be determined by the Engineer; (3) By written notice to the Contractor, terminate his right to proceed with the work or such part of the work that has been delayed, in which event the County may take over the work, prosecute the same to completion, by Contract or otherwise, and the Contractor and his sureties shall be liable to the County for any excess expenditures occasioned by the County; (4) Assess liquidated damages if any work covered by MAINTENANCE SCHEDULES, or any ROUTINE MAINTENANCE or other work which has a time limit specified, shall remain uncompleted after the expiration of such time limit, or after any authorized extension of such stipulated time. The Contractor expressly agrees to pay the contracting agency the sum of Five Hundred Dollars (\$500.00) for each and every Calendar Day, or part of a day, for each and every item of such work remaining uncompleted. Such monies shall be paid by the Contractor as liquidated damages to partially cover losses and expenses to the contracting agency, and not as a penalty. The contracting agency shall recover said liquidated damages by deducting the amount thereof from any monies due or that may become due the Contractor. If said monies are insufficient to cover said damages, then the Contractor or the Surety shall pay such amount due, provided, in any of the above instances, the right of the Contractor to proceed with the work was not deterred by the contracting agency, other Contractors employed by the County, or unforeseen causes beyond the control and without the fault or negligence of the Contractor. The Contractor shall as soon as practicable notify the Engineer in writing of the cause of such delay, if any, and request of the Engineer in writing such additional time or relief as he may deem necessary.

The Engineer reserves all rights of contribution and indemnity.

**III-8. EXTRA WORK**

The Engineer may authorize the Contractor to perform Extra Work and furnish the necessary materials and parts, provided that changes are not of such magnitude as to constitute a substantial or material variation in the original Contract. However, the contracting agency reserves the right to advertise for competitive bids to effect changes on any system or installation. Authorization for Extra Work shall be given by the Engineer in writing.

The completion time for Extra Work shall be 30 calendar days, unless specifically agreed to otherwise by the Engineer. If the Contractor is certain that he cannot fulfill the above requirement when he is resubmitting his quotation for Extra Work, the quotation should contain a proposed schedule for start and finish of the work at issue. Failure to complete the work within the proposed schedule may constitute disruption of service and appropriate liquidated damages will be assessed in accordance with Article III, Section 7 of this Contract.

- a. Extra work shall not include replacing or making temporary and/or permanent repairs to equipment which is damaged by traffic. Repairs of motorist caused damage or knockdowns of traffic signal heads and posts, mast arm assemblies, cabinets or any other piece of equipment shall be paid to the Contractor on a Force Account Basis in accordance with Article 109.04 (b) of the Standard Specifications.
- b. The repair of equipment damaged from any cause whatsoever, other than that due to traffic, construction forces working under other agency contracts, permits, or agency personnel, shall not be paid for as Extra Work. Such work will be considered Routine Maintenance.
- c. Extra work does not include the repair or replacement of equipment damaged by the fault or negligence of the Contractor.
- d. Extra Work includes the replacement of failed inductive detector loops, providing the failure was not caused by negligence on the part of the Contractor. Failed inductive detector loops shall be replaced as directed by the Engineer.

Under routine conditions, the Contractor shall have thirty (30) calendar days, after notification by the contracting agency, to complete the installation of a specified inductive detector loop. This time frame shall apply to both new and replacement detector loop installations.

Certain inductive detector loop installations may be designated by the Engineer as priority items if, in the opinion of the Engineer, they diminish public safety or level of service. For all such specially designated detector loop installations, the Contractor shall have ten (10) calendar days, after notification by the contracting agency, to complete the installation of the specified inductive detector loop. Failure to complete routine or priority detector loop installations within the required time will constitute disruption of service and appropriate liquidated damages will be assessed in accordance with Article III, Section 7 of this Contract.

- e. The contracting agency reserves the right to furnish any or all of the materials or parts for Extra Work, in which case no charges for items so furnished shall be made to the contracting agency.
- f. The contracting agency reserves the right to reject any claims for extra work which were not

approved by the Engineer before the work was started, for other than knockdowns or emergency repairs.

- g. Extra work for items not listed on the Schedule of Prices will be paid for: (1) either at a lump sum price or at a unit price agreed upon by the Contractor and the Engineer, or (2) upon a force account basis as calculated in accordance with Article 109.04 of the Standard Specifications, with the exception that no additional payments will be made for fabrication, engineering, transportation, materials ordering, or any other labor or equipment costs.

**III-9. SPECIAL MAINTENANCE (LOCATIONS NOT UNDER ROUTINE MAINTENANCE)**

The County is establishing agreements with various municipalities to add their signals to the County's central signal system communication network. When the municipality elects to retain maintenance responsibilities, the signal will not be transferred to County Routine Maintenance. Although these signals are not maintained by the County, the County may require the Contractor to perform maintenance and/or make repairs, according to the following:

Special maintenance requests shall be sent to the Contractor in writing (E-mail, fax, etc) directly from the Engineer, or other representative of the DCDOT Traffic Engineering Department.

After performing the necessary maintenance and/or repairs, the Contractor shall bill the DCDOT in accordance with applicable Contract pay items.

It is not the intent of the DCDOT Traffic Engineering Department that this item be used for the maintenance and repair of minor signal items such as lamp outages, twisted heads, pedestrian buttons, etc. The purpose of this item is to provide a mechanism to expedite repairs related to the County's signal communication network. These types of equipment and repairs may be outside the scope of work normally performed by the municipality.

**III-10. REIMBURSEMENT FROM THIRD PARTY FOR REPAIRS OR DAMAGES**

- a. Damages by Traffic, Vandalism and Other Miscellaneous Causes

The contracting agency reserves the right to make recovery from third party or parties for damage to any part of the installations or systems caused by vehicular traffic, vandalism, or construction forces working within the Right-of-Way requiring a highway permit, including all incidents of equipment damage for which the contracting agency pays the Contractor to replace the damaged equipment. No part of such recovery or recoveries shall inure to the benefit of the Contractor. For each incident resulting in damage to electrical facilities, the Contractor shall furnish to the Engineer an individual statement itemizing the location and nature of damages, costs of labor, equipment and materials, the date of damage, and the date repairs were completed.

- b. Damages by Construction Forces Working under Agency and Motor Fuel Tax (MFT) Contracts

The Specifications for each project describe in detail the responsibility for equipment damaged by construction forces working under contract with the contracting agency. For cases when the Electrical Maintenance Contractor is directed to perform repairs on damaged equipment, the Contractor will be paid either directly by the party who caused the damage (upon approval by the Engineer) or by the use of Specialty Work Pay Items and/or Extra Work provided for under Article III, Section 8 of this Contract.

- c. Equipment Damages by County Personnel Working Within the County Right-of-Way  
Damage to equipment caused by agency personnel in the performance of their assigned duties shall be paid for by the contracting agency as Specialty Items and/or Extra Work, as provided for under Article III, Section 8 of this Contract. The Contractor shall request an inspection by the Engineer of the damaged equipment at the site of the damage prior to making permanent repairs.
- d. Record Keeping Requirements for Third Party Damages  
The Contractor shall prepare Dispatch Room Reports for all equipment damages, whether the Contractor discovered the damage himself or was notified by others. The Contractor shall prepare Work Order Reports for each incident of damage to be repaired or replaced, for all Emergency, Temporary or Permanent Repairs made to the installations or systems. Dispatch Room Reports, Work Order Reports, and pictures of the damage shall be completed and forwarded to the Engineer within 48 hours of occurrence or discovery.

### **III-11. METHOD OF BILLING**

Billing for the cost of Routine Maintenance operations shown on invoices shall be for full monthly periods only, and shall not be prorated for shorter periods. Work performed on installations completed and activated on or before the fifteenth of the month shall be billed to cover the entire month; however, work performed on installations completed and activated after the fifteenth of the month shall not be billed on the current invoice, and payment shall begin the following month. Equipment that has been inactivated, eliminated or which the contracting agency has relinquished maintenance responsibility after the fifteenth of the month, shall be billed for the full month. Equipment that has been inactivated, eliminated or which the contracting agency has relinquished maintenance responsibility on or before the fifteenth of the month, shall not be billed for that month. The Engineer shall notify the Contractor, in writing, whenever changes are made to the Schedule of Routine Maintenance Pay Items.

Between the fifteenth (15<sup>th</sup>) day and the thirtieth (30<sup>th</sup>) day of each month, the Engineer shall provide the Contractor, in writing, a list of the Routine Maintenance pay items and quantities for the current month. This list shall reflect the total dollar amount for each pay item, as well as the overall total dollar amount for the current month's Routine Maintenance. The Contractor shall review this list to insure that recent signal activations, maintenance transfers, equipment additions, etc. are properly indicated. If necessary, the Engineer shall resubmit a corrected list to the Contractor. The Contractor shall then submit to the Engineer an invoice for the dollar value shown on the list.

At the end of the Contract, the Engineer may withhold the final month routine maintenance billing until all work, determined by the Engineer to be the responsibility of the Contractor, is completed to the Engineer's satisfaction.

Separate invoices shall be submitted no later than thirty (30) calendar days after the completion of the work for Extra Work and for Specialty Work. Each invoice shall show the date of authorization and location of the work. Partial project billing will not be accepted unless previously authorized by the Engineer.

### **III-12. DAMAGED PARTS, MATERIALS, AND EQUIPMENT**

Surplus or damaged parts, materials, or other equipment deemed salvageable by the Engineer shall be stored in the Contractor's warehouse or yard and designated as property of the County until disposed of or repaired under the direction of the Engineer. The Engineer may require inside, protected storage of specified equipment.

Used parts may not be installed to repair the various systems and installations unless specifically permitted by the Routine Maintenance Special Provisions or when otherwise directed by the Engineer.

**III-13. REPORTS AND FORMS**

The following reports, in addition to the other reports or forms listed under ARTICLE IV - SPECIAL PROVISIONS, or elsewhere in the Contract, shall be submitted when required:

a. Unsatisfactory Service Report

When, in the opinion of the Engineer, any maintenance operation is not being properly performed to the satisfaction of the Engineer, the Engineer may submit an Unsatisfactory Service Report. The Contractor shall take necessary action in the most practical manner possible to correct the items listed in the report. A copy of the report showing the action taken and the date of such action shall be submitted to the Engineer.

b. Condition Report

The Contractor shall submit to the Engineer, when requested, a Condition Report showing the history of any item in the system. This report shall contain the following information or such other information as required by the Engineer: (1) The general condition of the item, including the results of tests, (2) The record of any breakdown of the item, and of remedial action taken, and (3) The Contractor's recommendations for corrective measures necessary to insure the proper performance of the item.

c. Inspection Report

When the Contractor finds any item of equipment not functioning properly, he shall submit to the Engineer an Inspection Report. This report shall contain a detailed description of the particular malfunction and the Contractor's detailed recommendations for corrective measures necessary to eliminate the condition.

d. Dispatch Room Report

Whenever defective, non-operative, or damaged equipment is reported to the Contractor by telephone or other means, a sequentially numbered Dispatch Room Report shall be initiated. Copies of said reports shall be provided to the Engineer weekly. The Copy of the Dispatch Room Report shall show, in addition to the description of the defect, the Work Order Number which is initiated to correct the reported defect. This provision does not require a Work Order to be generated for every Dispatch Room Report. However, the Engineer reserves the right to require Work Orders for specific maintenance activities.

e. Work Order

Copies of all Work Order(s) issued to correct the defect(s) indicated on a Dispatch Room Report shall be maintained with the associated Dispatch Room Report. The copy of the Work Order(s) shall indicate the exact location of the component at fault and whether it is being bypassed, removed, replaced, or repaired temporarily or permanently. The Engineer reserves the right to require copies of all Work Orders related to a specific Dispatch Room Report. When requested by the Engineer, copies of Work Orders shall be provided within seven (7) days from the date of the request.

f. Weekly Traffic Signal Maintenance Report

Every Monday morning, the Contractor shall send a Weekly Traffic Signal Maintenance Report to the Engineer. This report shall include location, item description, date and time



notified, caller, reference number (dispatch room ticket number), date completed, and status/remarks. The report shall cover the previous 7 days, ending on Sunday. All maintenance items at agency maintained traffic signals shall appear on the report. For tracking purposes, maintenance items shall remain on the report, and subsequent reports, until the item is completed and a completion date is entered.

g. High-Speed Internet Connection with E-Mail Capability

Maintenance communication and documentation between the contracting agency and the Contractor will be moving towards an electronic / E-Mail format. For this reason, the Contractor shall maintain a high-speed Internet connection on a personal computer in the dispatch center. The PC shall have E-Mail capability, such as Microsoft Outlook.

**III-14. DURATION OF CONTRACT**

This Contract shall be in full force from December 1, 2015 to November 30, 2017 following the date of execution and acceptance of the Contract, subject, however, to the right of the contracting agency to cancel and terminate the same at any time with or without cause, or for reasons which it believes to be in the public interest by giving thirty (30) days notice in writing to the Contractor.

In the event of such cancellation, the Contractor shall be entitled to receive payment for services and work performed and materials or equipment furnished under the terms of the Contract prior to the effective date of such cancellation, but shall not be entitled to receive any damages on account of such cancellation or any further payment whatsoever. The Department may take possession of the work and all materials, tools, and appliances thereon and thereat, for any reason that the Engineer deems to be in the public interest, and his decision shall be final.

**III-15. SPECIAL BILLING PROCEDURES (TOLLWAY WORK)**

Some of the equipment and facilities for the DuPage County Central Signal System Network are on property belonging to the Illinois State Toll Highway Authority. Due to special access requirements, etc., the Tollway prefers to have its own contractors perform work in or around its facilities. As part of maintaining the DuPage County Central Signal System Network, the Engineer may require the Tollway and/or their contractor to install equipment perform maintenance and/or make repairs. The purpose of this item is to provide a mechanism to expedite such work and provide payment to the Tollway and/or its contractors.

When such work has been authorized by the Engineer, the billing procedure shall be according to the following:

The Tollway's contractor shall submit a detailed invoice to the Contractor. The Contractor shall coordinate with the Engineer (or DCDOT Traffic Engineering Dept.) to confirm that the work has been completed and accepted, and that the invoice is in accordance with the work that was authorized. The Contractor shall then approve the invoice and pay the Tollway's contractor for the work. The Contractor shall then provide a detailed bill to the Engineer for reimbursement of the same amount that was paid to the Tollway contractor.

## **ARTICLE IV - SPECIAL PROVISIONS**

### **TRAFFIC SIGNAL SYSTEM**

The Traffic Signal System consists of electronically operated traffic control devices maintained by the contracting agency including flashing beacon installations, vehicle counting stations, traffic signal installations, and closed-loop traffic signal systems.

The traffic signal installations include, but are not limited to master and local controllers, time base coordinators, coordination units, intersection monitors/modules, modems, transceivers, detectors (induction loop, microwave, video, infrared, pedestrian-activated, or optical), controller cabinets, signal heads (vehicle and pedestrian), internally illuminated and fiber optic signs, pan/tilt/zoom cameras, video monitors, communication cabinets, battery back-up systems, traffic signal posts, mast arm assemblies and poles, electric cable (standard multi conductor, shielded multi conductor, co-axial, and fiber optic), conduit, communication lines, concrete foundations, handholes, junction boxes, utility service installations, ground rods, and other appurtances owned and/or maintained by the contracting agency.

In all cases where the signal head is bracket mounted to a combination mast arm assembly and pole with a lighting unit, the foundation and mast arm assembly and pole shall be maintained under Routine Maintenance Pay Item T-1, TRAFFIC SIGNAL LOCATION, and the luminaire shall be maintained under Routine Maintenance Pay Item L-1, STREET LIGHTING LOCATION, where both the traffic signal installation and street lighting are maintained by the contracting agency. At locations the contracting agency maintains the traffic signal installation and a municipality (others) maintains the street lighting system, the foundation, mast arm assembly and pole shall be maintained under Routine Maintenance Pay Item T-1, TRAFFIC SIGNAL LOCATION, and the lighting arm, luminaire and related wiring shall be maintained by the municipality (others). In this case, Contractor shall coordinate all repair work with the municipality (others).

**The quantity of any item of work as listed in the Schedule of Prices may not reflect the actual amount that will be used. Payment will be made on the basis of actual work performed.**

### **ITEM T - TRAFFIC SIGNAL ROUTINE MAINTENANCE**

The following shall be part of Pay Items T-1 through T-9.

1. The Contractor shall maintain and repair the various installations and perform all work necessary to keep them in proper working order, to the satisfaction of the Engineer, at all times. No compensation will be allowed over and above the bid prices for meeting the requirements of Routine Maintenance.
2. The Contractor shall, after proper notification, accept maintenance of any new or existing installations which may be taken over for maintenance by the contracting agency.
3. The Contractor shall report the following to the Engineer as quickly as possible:
  - a) any work authorized by the Contractor being performed on the installations by anyone other than the Contractor.
  - b) any work that comes to the attention of the Contractor which may endanger any installation.

- c) any emergency temporary repairs.
  - d) any work of an unusual nature and/or for which the Engineer has requested notification.
4. The Contractor shall respond as required (typically 48 hours for routine locates and 2 hours for emergency locates) to all calls by the Engineer or other parties to locate and mark any or all underground components of an installation. The Contractor shall locate and mark said components after he has verified with the Engineer that the excavator has the permission of the contracting agency to work within the Right-of-Way.
  5. The Contractor shall keep incoming power service and/or telephone service in proper working condition at all times. The Contractor shall coordinate and cooperate with the appropriate utility companies in this matter.
  6. The Contractor shall patrol and inspect each installation, as directed by the Engineer, and after repairs have been made, to insure said repairs were satisfactorily completed.
  7. Replacement of burned out traffic signal lamps and damaged sockets shall be scheduled and accomplished in the following manner, or as directed by the Engineer:
    - a. If two or more traffic signal indications remain in operation for any given vehicle phase (movement) on any approach to an intersection, the replacement of the burned-out lamp or damaged socket shall be accomplished within twenty-four (24) hours for red indications and forty-eight (48) hours for all other indications. The twenty-four (24) hour and forty-eight (48) hour time periods begin immediately following discovery and/or notification of the outage.
    - b. If only one traffic signal indication for any given vehicle phase (movement) remains in operation for any approach to an intersection, IMMEDIATE CORRECTIVE ACTION must be taken. This requirement includes but is not limited to arrow indications where only one such indication is operational as well as any red flashing beacons. This requirement shall not have any exceptions.

When replacing burned out traffic signal lamps, the Contractor shall clean the reflector and lens. All replacement lamps shall meet the requirements and approval of the Engineer. (See Group Relamping, Paragraph 19). These provisions shall not apply to knockdowns.

8. The Contractor shall replace burned out indicator lamps, LED and LCD displays as discovered, or when directed by the Engineer.
9. The Contractor shall repair or replace all defective or damaged equipment from any cause other than traffic, construction forces working under other agency contracts, permits, or agency personnel. (These items would be paid for as Extra Work). Routine Maintenance includes all repairs and replacement of equipment damaged by adverse weather conditions.
10. The Contractor shall maintain in stock at all times sufficient materials and equipment to perform temporary and permanent repairs within specified time limits.

11. The following shall be considered the minimum acceptable signal operation pending permanent repairs: Two (2) far side signal heads directed towards the through traffic movements of each approach, two (2) signal faces directed towards any separate turning movements (where they are provided) on each approach, and two (2) pedestrian signal faces for each pedestrian crossing. In addition, where the distance from any stop bar to the far side signal exceeds 150 feet, then a near right signal must also be maintained. The Contractor's response time for all traffic signal knockdowns shall be in accordance with the Repair Timetable as listed in the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract. When clearing a traffic signal knockdown, the Contractor shall determine if the minimum acceptable signal operations described above are present. If the minimum conditions are not present, the Contractor shall take IMMEDIATE CORRECTIVE ACTION to restore the minimum acceptable signal operations. All temporary signal faces shall contain the same type, number and size of lenses as the signal faces being replaced. The Contractor shall notify the Engineer of knockdowns reported or serviced on the first business day following the knockdown. This repair work shall be considered Routine Maintenance except for damage caused by traffic, construction forces working under agency contracts, permits, or agency personnel, which will be paid for as Extra Work. When maintenance at a signalized intersection requires that the controller be disconnected, when power is available, the Contractor shall place the intersection on flashing operation, which may require the Contractor to install a flasher unit in the controller cabinet if none is provided. The signals shall flash RED for all directions unless a different indication has been directed by the Engineer. The Contractor shall first place at least one STOP sign, (Illinois Standard Sign R1-1-36 x 36 or larger), on EACH approach to the intersection as a temporary means of regulating traffic, except for those approaches to which a flashing YELLOW indication has been directed by the Engineer. All Contractor vehicles involved with the maintenance of traffic signals shall be equipped with a sufficient number of serviceable, reflective STOP signs, furnished by the Contractor, to be erected as specified herein. At all times, the Contractor must maintain a sufficient number of spare STOP signs for the replacement of existing STOP signs which are damaged or stolen. Municipally owned folding stop signs, authorized by the agency, when properly placed in the open position, shall fulfill the temporary traffic control responsibilities of the Contractor in this paragraph, unless directed otherwise by the Engineer. When a signalized intersection is returned to normal operation, the Contractor shall immediately re-fold and properly secure all folding STOP signs that were in use. The Contractor's use of, or dependence upon, municipal folding STOP signs shall in no way diminish the Contractor's obligations for properly equipped vehicles and adequate spare signs, as specified herein.
12. The Contractor shall replace defective or damaged equipment that is part of a specific traffic control installation. If proper signal sequencing with full vehicle detection cannot be achieved immediately, a controller which will provide the proper signal sequencing and full vehicle detection shall be installed within twenty-four (24) hours of removal of the original controller. The Contractor shall notify the Engineer no later than the first business day following removal and/or replacement of any controller.
13. Controllers shall be cleaned and overhauled when the controller malfunctions, at which time it will be thoroughly bench checked at the Contractor's repair facility.
14. STOP signs (Illinois Standard R1-1 36x36 or larger) shall be erected on all signalized

approaches when power is not available, or if the red flashing operation is expected to be in effect for more than thirty (30) minutes after the arrival of the Contractor's personnel.

15. All permanent repairs or replacements shall be made with new equipment only, unless otherwise specifically approved by the Engineer.
16. The Contractor shall check and maintain the following items as directed by the Engineer:
  - a. Controllers, conflict monitors, flashers, relays, detectors, time clocks, coordination equipment, telemetry equipment, cameras, and preemption equipment to insure its proper function.
  - b. Align all signal posts, controller pedestals, foundations, mast arm poles, astro brackets and signal heads.
  - c. Tighten all bolts
  - d. Remove the dust and debris from the interiors of controller cabinets with a brush and vacuum cleaner, and replace cabinet air filters.
  - e. Replace damaged, discolored, cracked or peeling signal lenses.
  - f. Replace damaged or missing nut covers, mast arm shrouds, handhole covers and handles, handhole hooks, pole handhole covers, cabinet locks, and related hardware.
  - g. Clean the exterior housings of all image sensing and PTZ (pan/tilt/zoom) cameras in strict accordance with the manufacturer's recommendations, and as directed by the Engineer.
17. **System Monitoring** – The Contractor shall maintain communication with all intersection monitor locations, closed loop signal systems, and the centralized traffic signal system software in order to monitor and receive alarm notifications regarding the operations of the count stations and traffic signal locations.

The Contractor shall maintain a separate phone line and shall program all intersection monitor and master controller equipment to report all alarms to this number. The Contractor shall maintain a high speed internet connection for remote access to the centralized traffic signal software and shall provide a dedicated email account which shall receive all alarm notifications from the centralized traffic signal software.

The Contractor shall have a valid software license for all closed loop monitoring software in use by the contracting agency.

The Contractor shall respond to all alarms from an intersection monitor, a closed loop signal system, or the centralized traffic signal software in accordance with the Repair Timetable as listed in the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

System monitoring shall be conducted by an IMSA Level III Traffic Signal certified staff member.

DuPage County currently utilizes Aries closed loop monitoring software.  
City of Aurora currently utilizes Aries and Eagle closed loop monitoring software.

18. **Patrol Inspection** – The Contractor shall inspect all Traffic Signal Routine Maintenance Pay Items (T-1 through T-9) currently under Routine Maintenance at least once every two (2) months.

This patrol inspection shall include checking for the proper operation of the following items: Signal heads (twisted/misaligned), Lamps/LEDs (for outages), vehicle detection, pedestrian push-buttons, signal controller (including correct date/time), MMU (including correct date/time), battery back-up system, Emergency Vehicle Preemption System (EVPS), proper telemetry/communications, door switches, cabinet vents and fans, heat exchangers and all other specialty equipment that exists and is associated with the corresponding pay item.

When the Contractor inspects a signalized intersection or remote controlled video system as part of a maintenance transfer inspection, it shall fulfill the requirement for that month's patrol inspection.

The Contractor shall prepare and maintain a list for each month's patrol inspections. For each calendar month, the list shall include all items inspected, the date inspected, the name of the patrolman, and any significant deficiencies identified and corrected. The Contractor shall provide the patrol inspection list to the Engineer by the 15<sup>th</sup> day of the following month.

19. **Group Relamping** - The Contractor shall group relamp all incandescent traffic signal faces (all sections) including flashing beacons, and preemption confirmation beacons at each year of this Contract, with the following exceptions: If the Contractor uses approved traffic signal lamps rated for minimum 16,000 hours for the first year group relamping, then the Contractor shall not be required to perform the group relamping of the traffic signals during the second year of the Contract.

Choosing the extended-life lamp option, however, does not relieve the Contractor from performing the yearly cabinet cleaning during the second year of the Contract. (Refer to Paragraph 23) The group relamping operations shall include washing all lenses and polishing all reflectors. All replacement lamps shall be manufactured in the United States of America and shall meet or exceed the following specifications:

- a. 12-inch traffic signal sections: 135 watt; 1750 lumens, 6,000 hour, 3-inch light center (incandescent lamps).
- b. 12-inch pedestrian signal sections: 90 watt; 1040 lumens; 8,000 hour, 3-inch light center (incandescent lamps).
- c. 12-inch optically programmable sections: 150 watt; 6,000 hour. (sealed beam)
- d. All other lamps shall be replaced or relamped with a lamp of similar characteristics and wattage.

All replacement lamps shall meet the approval of the Engineer. Upon completion of the relamping operations, including washing the lenses and polishing the reflectors, the

Contractor shall furnish to the Engineer a completion report. The completion report shall indicate the location, the date relamped, and by whom. The replacement lamps shall be manually marked with the year installed. The entire intersection shall be relamped on the same working day. Old lamps shall be disposed of in accordance with the manufacturer's recommendations. The Contractor shall relamp any traffic signal installation added to this Contract out of sequence with the annual relamping program at no additional cost to the County.

20. **Mast Arm Inspections** - The Contractor shall inspect all mast arm assemblies, mast arm poles and astro brackets (or other types of hardware) supporting traffic signal heads or pedestrian signal heads. This inspection shall be completed between April 1 and October 1 of the first year of the contract and may be performed concurrent with the group relamping, or separately. The Contractor must furnish in writing, to the Engineer, a progress schedule indicating the dates on which these inspections will be completed, prior to March 15th of the each year. The inspection shall focus on the structural elements of the mast arm assembly, and must include a close-up, arms-length investigation of the following elements:

Mast Arm Pole	Mast-to-Pole Connection Base Plate	Anchor Bolts Nuts
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- a. The arm of the assembly should be visually inspected at all signal head connections for any defects, such as cracks or buckles. The mast arm-to-pole connection should be inspected for significant loss of section, cracks in welds or base metal, and deterioration of the connection plates. The bolts of the mast arm-to-pole connection should be inspected for tightness and condition.
- b. The pole should be checked for external corrosion, impact damage, perforation by rust-through, and any discernible deflection, distortion or cracking. The pole should be closely checked for corrosion near the base plate, especially if mounted on a grout bed. The welds of the pole-to-base plate connection should be checked for cracks. The base plate should be checked for any severe section loss or deformation.
- c. The anchor bolts of the mast arm should be inspected to verify that the existing nuts are not loose or missing. The anchor bolts should also be checked for any corrosion or bending.
- d. Upon discovery of any buckles and/or significant structural defects (loose nuts, dents, severe corrosion, cracks in welds or structure, etc.), the Contractor shall immediately notify the contracting agency and take corrective action as directed by the Traffic Engineer to insure the assemblies do not pose an immediate hazard.
- e. Upon discovery of any broken or significant defects of the supporting hardware for the traffic signal heads, the Contractor shall immediately notify the contracting agency and take corrective action to insure that the assemblies do not pose an immediate hazard.

The Contractor's personnel must inspect the entire intersection on the same working day. The Contractor shall provide the Engineer a completed form MA-1 or MA-2

(single or double mast arm assembly), "Annual Arm Inspection Report Form" for each County maintained mast arm assembly and pole inspected.

21. **Conflict Monitor Testing** - The Contractor shall conduct conflict monitor and/or malfunction monitor unit (MMU) testing at locations designated by the Engineer at one half of all traffic signal maintained locations per year. Records of the test results indicating the date, time, name of the person conducting the test, and the serial number of the unit shall be furnished to the Engineer. If any part of the test fails, the unit shall be taken in for repair and a spare unit installed and tested. The testing shall be completed between April 1 and October 1 of the year.
22. **Camera Inspection and Cleaning** - The Contractor shall inspect and clean all cameras at agency-maintained traffic signals. All video detection and PTZ cameras shall be inspected for proper operation, security of connections and mounting hardware, and general condition. The Contractor shall clean all camera lenses and domes in accordance with the manufacturer's recommendations. Upon completion of this work, the Contractor shall furnish to the Engineer a completion report. The completion report shall indicate the location, the date inspected and cleaned, by whom, and remarks regarding items noted during inspection. The camera inspection and cleaning shall be completed between April 1 and October 1 of each year.
23. **Annual Cabinet Cleaning** - The Contractor shall clean the interior of all traffic signal controller or remote control video cabinets at least once during each year of this Contract. Dust and debris inside the cabinets shall be removed with a brush and vacuum cleaner, and all cabinet air filters shall be replaced. Cabinet filters shall be clearly labeled with the date replaced. Upon completion of this work, the Contractor shall furnish to the Engineer a completion report. The completion report shall indicate the location, the date cleaned, and by whom. The annual cabinet cleaning shall be completed by October 1 of each year.
24. **Annual UPS Inspection / Battery Testing** - The Contractor shall inspect all uninterruptible power supply cabinets and test the batteries at least once during each year of this Contract. For each location, the Contractor shall complete an inspection report form (provided by the Engineer). Batteries shall be tested and voltages documented. Weak batteries and unserviceable equipment shall be replaced by the Contractor.
25. The Contractor shall keep records of repairs and services to all serial numbered pieces of equipment and furnish them to the Engineer upon request. These records must indicate the location, the malfunction, and removal and reinstallation dates of each item. The records should also indicate the serial number of the spare piece of equipment if such item is installed.
26. The Contractor shall maintain all components of the emergency vehicle preemption system (EVPS) at applicable intersections to the satisfaction of the Engineer. This work includes repairing or replacing defective components so as to restore the preemption system to complete working order within 72 hours of problem notification. The Contractor shall notify the local fire district and the Engineer whenever the EVPS is inoperative or any component of the EVPS is removed for service. As part of maintaining the emergency vehicle preemption system the Contractor will be required to



clean the optical detector lenses and/or adjust the sensitivity of the phase selector as directed by the Engineer.

27. The Contractor is responsible for removing posters and graffiti from all components of the traffic signal installations and to repaint as directed by the Engineer.
28. The Contractor shall not make any timing or programming changes on any closed-loop system or its components except through qualified electrical technicians and with the approval of the Engineer.
29. The Contractor is responsible for the removal and installation of the existing traffic signal controller and to cover and uncover the traffic signal heads at locations where the traffic signal installation is seasonal, as directed by the Engineer.
30. The Contractor shall furnish a qualified representative to perform inspections during all agency traffic signal maintenance transfers. The following two types of maintenance transfers may occur: (1) A new or existing traffic signal installation will be added to the Contract, or (2) an existing traffic signal installation will have its maintenance transferred from the Contract to another agency or contractor. All costs associated with these inspections shall be included in the cost of routine traffic signal maintenance. This item may include high mount and/or low mount flashing beacon installations.
  - a. The Contractor shall analyze all detector loops at the controller cabinet insuring that each detector loop, or set of detector loops, complies with Section 886 of the Standard Specifications.
  - b. The Contractor shall analyze the controller program provided by the controller manufacturer to insure that the phase and overlap designations are provided correctly in the controller program, as indicated on the traffic signal sequence drawing and cabinet wiring drawings.
  - c. The Contractor shall insure that the phase timings in the traffic signal controller are those provided by the contracting agency.
  - d. The Contractor shall assist in placing the traffic signal in operation by observing the signal display and the conflict monitor or MMU operations. The Contractor shall report any operational discrepancies or signal outages to the Engineer immediately.
  - e. The Contractor shall assist the Engineer in walking all approaches of the signal installation, and inspecting all traffic signal items for conformance with the DuPage County Division of Transportation specifications for the project. The Contractor shall also assist the Engineer in inspecting all of the traffic signal heads for proper aiming.
  - f. The Contractor shall assist in the testing and/or adjusting of emergency vehicle pre-emption equipment. The Contractor shall insure that whenever railroad pre-emption and emergency vehicle pre-emption are in operation simultaneously, that the railroad pre-emption has priority over emergency vehicle pre-emption.
  - g. The Contractor shall insure that locations containing railroad preemption are

programmed in accordance with the approved railroad preemption program, and that all special lock-out devices are operating properly.

31. Special Tasks Required by the Engineer - The Contractor shall be responsible for completing special tasks as directed by the Engineer. These special tasks will be associated with the maintenance and operation of the traffic signal system. The following is a representative list of special tasks the Contractor may be required to complete. This list contains examples of special tasks that may be required, however, it should not be considered all-inclusive or comprehensive in any way.
- a. Inspect the timing operation of a signalized intersection at a specific time period and provide a recommendation for improving traffic flow.
  - b. Program timing parameter changes that have been approved by the Engineer.
  - c. Determine the phasing or operation of a signalized intersection.
  - d. Check the condition or verify the presence of equipment at a signalized location.
  - e. Provide a copy of timing parameters in use at a signalized location.
  - f. Provide recommendations to improve the safety or operation of a signalized location.
  - g. Provide a compiled list of all locations meeting a specified criteria.

All costs relating to completing special tasks such as these shall be considered included in cost of routine traffic signal maintenance and no additional compensation shall be allowed.

32. Unless specifically stated to the contrary, all items shall be repaired within a time frame more specifically described in the Repair Timetable listed in the DCDOT Traffic Signal Special Provisions contained in this Contract. This table is not to be used in place of routine maintenance schedules. The times listed are noncumulative. Any repairs not specifically covered in the Repair Timetable, or described elsewhere, shall be completed within a time frame matching the most similar line item in the Repair Timetable. The Repair Timetable shall be subject to revision at any time, at the discretion of the Engineer.

The Contractor shall respond to all notifications of Traffic Signal System malfunctions in a reasonable time. In addition to the daily routine and non-routine requirements of the Traffic Signal System, the Contractor shall provide sufficient qualified personnel to respond to all notifications of malfunctions on a round-the-clock basis (24 hours a day, 7 days a week). The Contractor is required to keep a time and date log of each response, from the time of the initial report to the time of final permanent repair.

In the event the Contractor fails to meet the required times for response, service restoration, and/or permanent repairs as listed in the Repair Timetable, the Engineer may deduct liquidated damages from the monthly billing in the following amounts:

- a. Response Time – Fifty dollars (\$50.00)/hour for each hour or part of an hour past the response time limit.
- b. Service Restoration – One hundred dollars (\$100.00)/hour for each hour or part of an hour past the service restoration time limit.
- c. Permanent Repairs – Five hundred dollars (\$500.00)/day for each day or part of a

day past the permanent repair time limit.

The above liquidated damages shall not limit the contracting agency from withholding additional monies from the monthly billing if, in the opinion of the Engineer, proper service to the traffic signal system is seriously deficient.

32. The Contractor shall be responsible for clearing snow and ice from LED signal indications in compliance with the Repair Timetable for a signal outage. Two clearly visible signal indications of all colors and arrows are required to be maintained at all times.
33. The Contractor shall clean all lenses and reflectors at incandescent locations and all LED signal indications at least once each year between April and October. If the indication is cleaned as part of the Group Relamping (Paragraph 19) or under Extra Work pay item for relamping LED indications, this shall satisfy the annual cleaning requirement of the signal indication.

#### **ITEMS T-1 through T-9 - TRAFFIC SIGNAL ROUTINE MAINTENANCE PAY ITEMS**

##### **T-1 TRAFFIC SIGNAL LOCATION**

This item shall consist of maintaining a traffic signal location, either as part of a coordinated signal system or an isolated signalized intersection. This item may include, but shall not be limited to, any number or type of the following:

- Traffic signal heads, (incandescent and LED), programmable signal heads, traffic signal posts, mast arms, combination mast arms, brackets, and foundations. The traffic signal heads shall consist of signal sections, back plates, louvers, and/or visors.
- Pedestrian signal heads, (incandescent and LED), audible and countdown pedestrian signals, pedestrian-actuated detectors (e.g. push buttons), and associated signs.
- A full-actuated controller, solid-state type, with volume-density features, railroad and/or emergency vehicle preemption, and time-base coordination. A controller cabinet with its associated equipment, system communications equipment, modems, switching units, intersection coordinators, time switches and, where applicable, control pedestal and foundation. Intersection monitoring devices, where applicable, shall be maintained.
- Inductive detector loops, magnetic detectors, image sensing (video) detectors, micro loops, preformed detector loops, and microwave detectors. Communication for video detection systems, including transmitters, receivers, modems, and other miscellaneous communication equipment, regardless of its location in the system, shall be included under this pay item
- A remote-controlled video system for monitoring traffic flow and road/pavement conditions. The video system shall include remote pan/tilt/zoom (PTZ) cameras mounted on poles and/or mast arms, camera housings, all necessary mounting hardware, conduits, cables, connectors and related equipment. In addition, communication for the remote video system, including image digitizer (processor), video/data transmitters and receivers, modems, and other miscellaneous communication equipment, regardless of its location in the system.

- Emergency Vehicle Preemption System (EVPS) including optical heads, discriminator card / amplifier, confirmation beacons, and associated wiring.
- Terminal Servers, which are used to connect multiple traffic signal controllers to the Central Signal System Network. The terminal servers currently in use by the County are the Digi PortServer TS with up to 4 ports.
- Battery Back-Up systems. The system is comprised of the UPS or Inverter unit, bypass switch, batteries, cabinet, and related wiring harnesses.
- Illuminated signs. The signs may be street name signs and/or regulatory signs. The illumination shall be accomplished by incandescent lamps, fluorescent lamps, neon tubes, LEDs or fiber optics.
- Traffic signal conduit and interconnect conduit. The conduit may be in the ground or attached to structure.
- Traffic signal communications equipment including copper, fiber optic, or radio links.
- Traffic signal handholes and interconnect handholes, including broken and/or missing handhole lids.
- Traffic signal cable and interconnect cable including copper wire and fiber optic.
- Electrical and telephone service installations.
- Railroad interconnected security systems.
- Master controllers with solid-state features with associated equipment and where applicable, cabinet and foundation. The associated equipment shall consist of modems, telephone jacks, switching units, interface boards for copper and fiber optic type interconnect cables, and all associated components for a coordinated traffic control system.

#### T-2 TEMPORARY TRAFFIC SIGNAL LOCATION

This item shall consist of maintaining a temporary traffic signal location, either as part of a coordinated signal system or an isolated signalized intersection. This item may include, but shall not be limited to, any number or type of the following: traffic signal posts, mast arms, handholes, cabinet, system master controller, local controller, image sensors, a remote traffic PTZ camera and its associated image digitizer (processor), intersection monitor, conflict monitor, malfunction monitor unit, detector amplifiers, modems, relays, load switches, terminal boards, power supplies, vehicle and/or pedestrian signal heads, emergency vehicle preemption system, sections, backplates, brackets, louvers, visors, vehicle detectors, pedestrian-actuated detectors, illuminated signs, crosswalk signs, and/or electrical conduits, cables, and interconnects. In addition, this item may include any number or type of the following: wood poles with down guys, span wire cable, span wire accessories, tether wires, electric service installation and cables, microwave detectors, and/or auxiliary components.

When directed by the Engineer, this item shall also include operational items such as: controller database changes, timing changes, activation/deactivation of phases, relocation of signal heads, relocation / reconfiguration of detectors (microwave and/or video), and bagging / unbagging signal heads.

T-3 FLASHING BEACON, OVERHEAD MOUNT, ONE OR MORE FACES

This item shall consist of maintaining a flashing beacon, either LED or incandescent, mounted overhead. This item may include, but shall not be limited to, a flasher controller in a housing, span-wire installation, and signal head with one or more faces and one or more sections. The span wire installation shall consist of two (2) or more wood poles with down guys, span wire cable, span wire accessories, electric cable, electric service installation, solar panels and batteries.

T-4 FLASHING BEACON, LOW MOUNT, ONE OR MORE FACES

This item shall consist of maintaining a low mount flashing beacon, either LED or incandescent. This item may include, but shall not be limited to, a flasher controller in a housing, electric service installation, solar panels, batteries, traffic signal post and foundation, pedestrian push button, and signal head with one or more faces and one or more sections.

T-5 VEHICLE COUNTING STATION

This item shall consist of maintaining a vehicle counting station. This item may include, but shall not be limited to, any number or type of the following: traffic signal cabinet, pedestal, handhole, detector amplifiers, modem, intersection monitor, vehicle detectors (inductive loop, video, microwave, or magnetometer), power supply, and/or electrical conduits and cables.

T-6 VIDEO COMMUNICATIONS CABINET, GIGABIT ETHERNET

This item shall consist of maintaining a video communications cabinet, and related equipment such as connectors, hardware, media converters, digital video processors, video multiplexers, video and data transmitters, fiber optic termination equipment, cabinet wiring, terminals, circuit breakers, surge arresters, UPS and peripheral equipment, as part of the DCDOT Gigabit Ethernet communications network. **This item shall NOT include maintenance of the Cisco Intelligent Ethernet switches (Layer II (data link) switches and/or Layer III (Network) Switches). Initially, these Cisco switches will be maintained and configured by the County's Transportation Management Center Consultant. When maintenance of these switches is transferred to this Contract, it will be paid for separately as LAYER II (DATA LINK) SWITCH and/or LAYER III (NETWORK) SWITCH.**

T-7 LAYER II (DATA LINK) SWITCH

This item shall consist of maintaining a layer II (data link) switch, and all associated video encoders, as part of the DCDOT Gigabit Ethernet network. The layer II (data link) switch shall be a Cisco Catalyst 2950 or 2955 Series Intelligent Ethernet Switch, or approved equal. **Initially, these Cisco switches will be maintained and configured by the County's Transportation Management Center Consultant. When maintenance of the layer II (data link) switch is transferred to this Contract, they shall be maintained under this pay item (as an addition to VIDEO COMMUNICATIONS CABINET, GIGABIT ETHERNET)**

T-8 LAYER III (NETWORK) SWITCH

This item shall consist of maintaining a layer III (network) switch, and all associated video encoders, as part of the DCDOT Gigabit Ethernet network. The layer III (network) switch shall be a Cisco Catalyst 3550 or 3560 Series Intelligent Ethernet Switch, or approved equal. **Initially, these Cisco switches will be maintained and configured by the County's Transportation Management Center Consultant. When maintenance of the layer III (network) switch is transferred to this Contract, they shall be maintained under this pay item (as an addition to VIDEO COMMUNICATIONS CABINET, GIGABIT ETHERNET)**

T-9 REMOTE-CONTROLLED VIDEO SYSTEM

This item shall consist of maintaining a remote-controlled video system. This item may include, but shall not be limited to, any number or type of the following: CCTV/Dome camera, equipment cabinet, pole, mounting assembly, and related cabinet wiring, terminals, circuit breakers, surge arresters and peripheral equipment. Occasionally the associated video encoder is located inside a nearby traffic signal cabinet. At these locations, this item shall include maintenance of the conduit and wiring from the traffic signal cabinet to the remote-controlled video system equipment cabinet. **This item shall only be used at isolated locations that are not part of a traffic signal (e.g. along Tollway). This item shall NOT be used to maintain remote-controlled video systems that are already included in ITEM T-1, TRAFFIC SIGNAL LOCATION.**

ITEMS L - STREET LIGHTING ROUTINE MAINTENANCE

The following shall be part of Pay Item L-1 through L-3.

This item may include, but is not limited to, maintaining any of the following street light installations: a street light mounted on a combination mast arm, a street light mounted under a bridge/overpass, and/or a street light mounted on its own pole or sign lighting. This item shall also include the power distribution cabinet, if applicable. All repairs of malfunctions/damage to a street light installation shall be considered Routine Maintenance, except for damage caused by traffic, construction forces working under agency contracts, permits, or agency personnel, which will be paid for as Extra Work. In addition the Contractor shall provide the following as part of Routine Maintenance of street lighting installations:

- Report to the Engineer any unusual operating conditions within two working days of discovery.
- The Contractor shall inspect all street lighting locations currently under Routine Maintenance at least once every four (4) months. This patrol inspection shall include checking for the proper operation of the following items: Lamps/LEDs (for outages), controller (including correct date/time), and cabinet.
- When the Contractor inspects a street lighting location as part of a maintenance transfer inspection, it shall fulfill the requirement for that month's patrol inspection.
- The Contractor shall prepare and maintain a list for each month's patrol inspections. For each calendar month, the list shall include all street lighting locations inspected, the date inspected, the name of the patrolman, and any significant deficiencies identified and corrected. The Contractor shall provide the patrol inspection list to the Engineer by the 15<sup>th</sup> day of the following month.
- Replace all burned out lamps, faulty ballasts, faulty fuses and broken glassware not later than two (2) calendar days following discovery or notification.
- Replace broken or missing light deflectors/shields, as necessary
- Provide Immediate Corrective Action to restore proper working condition to any outage(s) meeting any of the following conditions:
  - Two (2) or more outages on a single circuit.

- Two (2) or more adjacent or consecutive fixtures.
- The Contractor shall group relamp all streetlights at least once each year of the Contract. If the Contractor uses approved non-cycling, high pressure sodium lamps rated for minimum 40,000 hours for the first year group relamping of the streetlight luminaires, then the Contractor shall not be required to perform the group relamping of the streetlight luminaires during the second year of the Contract.
- The group relamping shall be completed between April 1 and October 1.
- If ground conditions restrict the construction of permanent repairs, repairs shall be performed in accordance with a maintenance schedule submitted by the Contractor and approved by the Engineer.

### **ITEMS L-1 through L-3 - STREET LIGHTING ROUTINE MAINTENANCE PAY ITEMS**

#### **L-1: LUMINAIRE**

This work shall consist of all labor, equipment and material necessary to maintain operation of mast arm mounted high pressure sodium or mercury vapor luminaires. The cost to repair wiring, photo cells, lenses or time clocks, or other street light components damaged for any reason other than traffic or construction activities by others shall be included in the cost of this item.

#### **L-2: UNDERPASS LIGHTING**

This work shall consist of furnishing all labor, materials and equipment necessary to maintain operation of low pressure sodium underpass lighting. The cost to repair wiring, photo cells, lenses, conduit or other underpass lighting equipment components damaged due to any reason other than traffic accidents or construction activities by others shall be included in the cost of this item.

#### **L-3: SIGN LIGHTING**

This work shall consist of furnishing all labor, materials and equipment necessary to maintain operation of fluorescent sign lighting. The cost to repair wiring, photo cells, lenses, conduit or other sign lighting equipment components damaged due to any reason other than traffic accidents or construction activities by others shall be included in the cost of this item.

### **ITEM PS – PUMP STATION ROUTINE MAINTENANCE**

The pump stations at County Farm Road and Belmont Road are owned by the DuPage County Division of Transportation (DPCDOT). The pump stations are used for pumping storm water collected from a viaduct into nearby detention ponds. It is essential that these pump stations shall be available and ready to operate at their designed capacity at all times to keep the traffic moving and to ensure motorist safety. The equipment at these pump stations include: electric motor driven submersible pumps; two sources of power; automatic transfer switch; disconnect switches; transformer; control cabinet that includes motor starters, circuit breakers, standby battery, standby gas generator, control transformer, control system with PLC, SCADA system, gas detection system, and power wiring; transducer water level indicating system with secondary float system; bar screens, hatches, locks, and all associated equipment and appurtenances owned by DuPage County and under the jurisdiction of the Division of Transportation. Refer to Section II (Non-Routine Work) of these specifications for reimbursement of pump and motor damage repairs.

### **General Maintenance Responsibilities**

All items as listed in the System Description herein shall be maintained under routine maintenance, unless otherwise stated herein.

At the beginning of the Contract, the Contractor shall:

- Organize logbooks in the pump station as described herein.

### **Contractor PS Call-Out Response**

The Pump Station (PS) shall remain in continuous operation during normal and emergency maintenance activities. The Contractor shall provide and maintain software to monitor pump house SCADA systems for alarms in their 24 HR/7 Day radio room. It is imperative that the Contractor immediately addresses alarms, reports of water on pavement, reports of clogged inlets, hazmat spills, or other serious malfunctions or damage by dispatching trained personnel to check the pump station.

Although the availability/location of trained personnel dictates the call-out, during normal workday hours, the order of call-out response shall be:

1. PS Specialist
2. PS Crew
3. Other Contractor Personnel Trained in PS Operations

The Contractor shall develop an appropriate emergency PS Call-Out plan to provide trained personnel (hereafter referred to as patrolman) on-call after normal workday hours for pump station emergencies.

The Pump Station Manager shall be notified of any reports of possible hazardous materials in the pump station wet pit, and he/she shall be responsible to immediately notify an approved hazardous materials waste contractor. OSHA safety regulations must be followed at the pump station. Any Contractor personnel entering the pump station shall be properly trained and equipped for confined space operations, and shall be equipped with essential equipment such as digital multi-meters with clamp-on probes for current measurement, tape and block, and marking paint or marker to note water levels.

### **Station Procedures and Response Documentation**

Contractor personnel shall not manually operate the pumps with insufficient wet pit water elevation, for general maintenance operations, including pump inspection, wet pit cleaning, and all other wet pit work requiring abnormally low water levels.

Two logbooks shall be maintained in the pump station control cabinet to document entry/inspection. The Contractor shall maintain the logbooks so that one book contains the current year information and the second logbook contains information recorded in the previous years. In January of each year, the Contractor shall transfer the sheets from the current year logbook to the previous year logbook and place blank sheets in the current year log book. The logbooks shall not be altered or removed from the station.



There are specific procedures, which are required of all personnel when entering or leaving any pump station. It is necessary to:

1. Notify the Contractor's Dispatch Center of arrival.
2. Complete log book chart I, with the date, time, person's name and reason for entry
3. Upon completion of inspection, record the observations in the required charts in the logbook.
4. Notify the Contractor's Dispatch Center to issue a Ticket for any deficiencies, observed during the inspection. Record the ticket number and the deficiency in the logbook.
5. Acknowledge any alarms before departure.
6. Check all pumps that are not tagged "Out of Service" and set in the auto position (H-O-A switch) immediately before departing the pump station.
7. Secure all control cabinet doors and station hatches.
8. Notify the Contractor's Dispatch Center of departure.

### **PS Alarm Response**

Upon receipt of a Pump Station alarm, the Contractor's Dispatch Center shall:

1. Create a ticket.
2. Dispatch a patrolman to the station to check the alarm conditions. Arrival shall be within one hour of the receipt of the alarm.

Upon arrival at the station, the patrolman shall:

1. Notify the Contractor's Dispatch Center of the arrival information, including a notation of all alarms flashing on the annunciator and PLC panel.
2. Record all information on the incident in the logbook
3. Perform all necessary repairs required to restore the pump station to its normal operating condition, if possible. (If follow-up repairs are needed in an emergency situation, notify the PS Manager immediately.)
4. Notify the Contractor's Dispatch Center, as to status of problem, whether it was cleared or if follow-up work by the PS Specialist or PS Crew is necessary, before departing the pump station. (All response information shall be recorded on the ticket)
5. In the event of a power failure alarm, monitor the power outage status at regular intervals and notify the Pump Station System Manager and the DPCDOT ComCenter (located in the DPCDOT office in Room 2-300 in the main county complex) if a high water level is imminent.

### **Station Pre-Storm Condition Check**

Upon receiving a storm warning, code Red or Black, from the DPCDOT ComCenter or Engineer, the Contractor shall dispatch sufficient trained personnel to initiate these actions within one hour:

1. Check the operating status of the pump station.
2. Check the condition of the trash on bar screen, clean if necessary.
3. Check the status of the low point inlet and catch basins for the pump station, if found clogged notify DPCDOT ComCenter immediately.
4. Submit a checklist (spreadsheet), indicating the time each pump station was checked, to the PS Engineer when completed.

### **Water on Pavement Situations**

The dispatched patrolman shall be equipped with the necessary measuring devices to trouble shoot and mark the water level with a reference point.

Upon observing Water on the Pavement (WOP) or extremely high water levels at the station, the Patrolman shall immediately notify the MC's Dispatch Center, who shall in turn notify the DPCDOT ComCenter.

Immediately after entering the station, the dispatched patrolman shall report the following information:

1. Pumps Running -- Yes or No.
2. Water Depth in Wet Well
3. Depth of Water on Pavement
4. Street Inlet Clogged -- Yes or No

The patrolman shall obtain a ticket number from the MC's Dispatch Center and complete the station logbook. All ticket information and WOP report information shall be relayed to the MC's Dispatch Center within one (1) hour of receipt of information from the field. All WOP report tickets shall be marked for follow-up until the pump station system is back to normal operation and there is no water on the pavement. All incidents shall be reported to the Engineer via a W.O.P. report and ticket summary report by 8 a.m. the next day (within 24 hours on Holidays).

During high water level or WOP conditions, the patrolman shall not leave the station until approved to do so by the PS Manager.

### **Station Post Storm Condition Check**

After each major rainstorm event (i.e. having a rainfall intensity of 3 inches in 24 hours or greater), the pump station crew shall:

- Clean bar screen.
- Check the Pump Pit float switches and level transducer sensor for proper operation, and remove debris, and
- Check the inlet/catch basins. If clogged, notify DPCDOT ComCenter

### **Submittals of Service Company Names**

The Contractor shall submit the following, for Engineer approval, at the Pre-Construction meeting:

- Names, addresses qualifications of at least six potential submersible pump services repair companies within the tri-state area of Illinois/Indiana/Wisconsin.
- Name(s) of lab facilities that are certified and equipped to test oil and other lubricant fluids.

### **Service Company Work**

When the Contractor is unable to complete repairs to pump station equipment, the Contractor shall hire a subcontractor approved by DPCCDOT to do the work.

The Contractor shall provide all labor, equipment, and general services necessary to schedule and assist a specialty service company in conducting various comprehensive testing and inspections, including routine and non-routine work.

The Contractor shall coordinate the work with the service companies and provide qualified personnel to:

- Allow free and clear access to and from the pump station and all equipment
- Open and close all enclosures to provide access to the electrical equipment being inspected, replaced and/or repaired.
- Notify the power utility company to schedule all power outages required for the project.
- Perform all switching, de-energizing and re-energizing of electrical equipment
- Perform lock out tag out procedures
- Provide for safe working conditions in accordance with OSHA requirements
- Assist in data collection when requested by the Engineer

#### **Monthly PS Quick Check**

The Contractor shall perform a monthly PS quick check at the pump station. The patrolman shall notify the Contractor's Dispatch Center to create a Ticket for all deficiencies or malfunctions found.

During the inspection, check the following:

1. Are inlets clear of debris?
2. Is grass cutting required?
3. Are equipment doors and hatches secure and free of graffiti?
4. Alarm panel OK? (No alarms holding)
5. Lighting fixtures outages?
6. Are Indicator lamps in operational?
7. Is trash bin free of debris?
8. Does bar screen need cleaning?
9. Is wet pit free of hazardous materials?
10. Pump On/Off operation OK? (Simulate a call)
11. Abnormal noise from pumps?
12. Is piping free of leaks?
13. Is pump free of abnormal noise or vibration?
14. Verify gas detector calibration.

#### **Monthly Preventive Maintenance Program**

The Contractor shall perform the following inspections and allow thirty (30) days between the inspections.

#### **Monthly Pump Operation Inspection**

The Contractor shall perform the following and record on the appropriate chart (see pump data and sample forms):

- Operate each pump and check alternator or selector switch for proper sequence in accordance with recommended manufacturer procedures. Caution: Do not draw down the wet well level past the designated stop elevation under any circumstances.
- Set the selector switch on the pump with the least number of hours as the lead pump.
- Operate each unit noting the current draw and compare with the motor plate and note any deviation, and/or any abnormal operating sounds.
- Record hours run of each pump.
- Verify that flap valves have been greased.
- Verify condition of bar screens.

The Contractor shall submit an electronic copy of the chart, as approved by the Engineer, once every two months, in the monthly routine maintenance work documentation book.

#### **Monthly Bar Screen Maintenance**

The Contractor shall inspect the bar screen at the pump station, rake and manually clean the bar screen, when debris are excessive and clogging the bar screen.

#### **Monthly Transfer Switch Operation and Gas Generator Inspection**

The Contractor shall exercise the transfer switch, on a monthly basis, to inspect for proper transfer and time delay to secondary power source and time delay from secondary to primary and shall be recorded in the appropriate chart.

The Contractor shall submit an electronic copy of the chart, as approved by the Engineer, once every two months, in the monthly routine maintenance work documentation book.

The Contractor shall start and run the gas generator for 15 minutes each month, observe the operation, and make all maintenance checks required by the manufacturer.

#### **Monthly Programming Logic Control (PLC) Maintenance**

The Contractor shall be responsible for proper operation and maintenance of the PLC System equipment described herein. The Contractor shall record and submit an electronic copy of the appropriate chart, as approved by the Engineer, once every two months, in the monthly routine maintenance work documentation book.

The PLC System shall have its periodic maintenance activities/programs completed by the Pump Station (PS) Specialist. On a monthly basis, the PS Specialist shall review the operations and do a simulated test of the PLC System. This work would include system back-ups, programming, selector switches, standby battery, control transformer, elapsed time meters, alarm points, alarm lights, level transducer, backup floats, and wiring.

The PS Specialist shall inspect all the wires and test control transformer, selector switches, standby battery, elapsed time meter, and alarm lights to make sure they are in operational.

The PS Specialist shall test all of the alarm points under simulated service conditions to assure the

accuracy of the wiring and the functioning of all the equipment without disrupting the pumps operation. The alarm points are as follow:

A. Remote Alarm Contacts to Monitoring Equipment at Power Plant:

- Standby power not available
- Loss of normal power
- Pump malfunction
- High Level Alarm

In addition, the PS Specialist shall verify that these alarm points are properly displayed at the Monitoring System at the DuPage County Power Plant Building.

B. Transfer Switch Contacts:

- Normal
- Backup

C. Combustible Gas Monitor Contacts:

- Trouble
- Warning
- Alarm

D. Thermal and Seal Failure Pump Sensors:

- PS Specialist shall simulate the signals to make sure the PLC is in operational.

E. Level Transducer:

- PS Specialist shall simulate water level signals to make sure the PLC is in operational.

F. Backup Floats:

- PS Specialist shall simulate water level signals to make sure the PLC is in operational.
- PS Specialist shall test each float switch manually in the wet pit to make sure it is in operational. PS Specialist should be careful when perform this test due to water in the wet pit.

G. Pilot Light Indicators

- PS Specialist shall verify all local indicating lights are operational when the alarm condition is simulated.

**Semi-Annual Wet Pit Submersible Pump Station Maintenance**

The pump station shall be inspected once between the months of January and June and once between the months of July and November and the inspections for the station shall be spaced six months apart throughout the term of the contract.

The Contractor shall visually inspect pump impeller for clogging, shall inspect oil reservoir for contaminants. The wet pit submersible pumps shall be washed down with a pressure hose.

The Contractor shall operate the flap valves. All flap valves shall be lubricated with environmentally safe grease.

The Contractor shall submit an electronic copy of the appropriate chart, as approved by the Engineer, once every 6 month, in the semi-annual routine maintenance work documentation. Create tickets for any deficiencies found and enter the ticket numbers on chart D. When repairs are complete, chart D shall be submitted in the semi-annual routine maintenance workbook.

### **Yearly Preventive Maintenance Programs**

The contractor shall perform inspections once a year as described below.

#### **Yearly Wet Pit Inspection**

The pump station shall be inspected once between the months of April and October of each year. The station shall be inspected in the same month in the second year of the Contract.

The Contractor shall complete the wet pit inspection of the pump station. The Contractor shall use his own portable pump to draw down the wet pit to a low level and maintain the existing inflow water in the wet pit. The Contractor shall:

- Inspect the integrity of all equipment attached to the structure such as level transducers and the floats.
- Inspect the level transducers and floats for operational efficiency, and clear them of any debris.
- Take a photograph of any bowl assemblies which show any wear on the impeller and/or if the suction is clogged with debris. The photos shall be appropriately labeled and placed in a sheet album with the station report, log P-6
- Inspect the silt accumulation.
- Visually inspect the inlet sewer from inside of the pump station.

Each report, including photo album, shall be included with the monthly routine maintenance work documentation book. Create tickets for any deviations found and enter the numbers on the report log P-6.

#### **Yearly Pump Control System Inspection**

The pump station shall be inspected once between the months of January and March of each year. The station shall be inspected in the same month in the second year of the Contract.

The Contractor shall inspect all pump control systems within the pump station. The Engineer shall be present for each inspection. This work shall include inspection of the transducer and float systems. The inspection shall consist of all starts, stops and alarm control elevations. Any control elevations which are different than the required elevations shall be noted and corrected.

Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-4. Each report shall be included with the monthly routine maintenance work documentation book.

#### **Yearly Pump Station Inspection and Maintenance**

The pump station shall be inspected once between the months of January and November of each year.

The Contractor shall conduct an annual comprehensive inspection of the electrical and mechanical equipment at each pump station using log P-2 and shall:

- Dispose of any debris found on the grounds
- Remove or paint over graffiti with comparable paint
- Patch or repair cracks found in concrete
- Clean all cabinets and exposed equipment by wiping with a damp cloth

Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-2. A re-inspection will be scheduled by the Engineer following completion of any necessary repair work. When repairs are complete the P-2 reports shall be included in the monthly routine maintenance work documentation book. The stations shall be inspected in the same month in the second year of the Contract.

### **Yearly Electrical Inspection and Testing**

The Contractor shall conduct the following inspections and tests:

- A. The Contractor shall conduct pump capacity, motor running current, voltage measurement, megger, and Flygt submersible pump moisture tests. The Contractor shall also utilize the services of the specialty services subcontractor for this test. The Contractor shall be responsible for providing or storing water for testing, not to exceed high level elevations.

The Contractor shall provide as needed all necessary equipment, tools, material and labor to set up the pumping station for capacity testing using either the wet pit draw down method or the direct measurement strap on flow meters, as approved by the Engineer.

Prior to testing, record all necessary nameplate information for pump and motor. Pump testing will require the presence of at least two personnel equipped with radio communications and measuring tape and block.

A draw down test shall be done in the pump station. The pumps shall be tested for at least for 1-minute duration. Record all readings, including full load current, flow reading and water level change.

The following data shall be recorded and submitted to the Engineer on log P-3:

- Water depth
- TDH
- Capacity
- Vibration
- Current
- Voltage
- Insulation resistance to ground
- Pressure

In addition, the Contractor shall megger all motor windings and feeder cables. Any reading below 1 Mega ohm (Mohm) will require the Contractor to determine the source or cause of the low reading and make prompt repairs as required. A copy of the log P-3 shall be kept in the logbook. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-3. An electronic copy of the results of the capacity and megger test on log P-3 shall be submitted to the Engineer with the monthly routine maintenance book. The station shall be re-inspected in the same month in the second year.

- B. The Contractor shall inspect and test the main circuit breakers, branch circuit breakers, automatic transfer switch and motor starters in the pump station each year. The DPCDOT

Engineer shall be notified at least twenty-four hours in advance to witness the tests. The Contractor shall coordinate with the electrical utility to turn power off and on where required. The Contractor shall furnish all necessary test equipment along with fittings, cables and connectors as required to complete the tests.

The Contractor shall submit an electronic copy of the appropriate chart, as approved by the Engineer, once a year, in the yearly routine inspection and testing work documentation.

Inspection and testing shall consist of the following:

1. Clean enclosure and control equipment by blowing out with low air pressure or vacuuming
2. Check and clean contacts, relays and timers and visually inspect for damage or out of adjustment parts
3. Check control panel indicating lamps and all switches and push buttons
4. Circuit breaker maintenance:
  - Check connections
  - Exercise breaker
  - Check trip setting
5. Motor Starter Contact Maintenance:
  - Check contacts and burnish, if necessary
  - Check coil and clean
  - Inspect arc chute for cracks or burns
  - Check contact pressure and measure contact resistance on all 3 phases
6. Inspect wiring/conductors for overheating and discoloration
7. Check sizing of motor overload heaters
8. Check tightness of wire terminations and connections
9. Check for proper labeling, provide and install missing labels
10. Check wire tags/labels, provide and install missing tags or labels
11. Check fuse disconnects for proper operations, keep fuse clips clean and tight
12. Check fuses for proper size, and overheating
13. Test equipment ground system of the station.

#### **Yearly Submersible Pump Inspection**

The Contractor shall remove, inspect and service all submersible pumps, each contract year. Service work shall include the changing of oil, check and adjust clearance between impeller and wear ring. This work shall be done in accordance to manufacturer specifications and instructions. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-5.

#### **Yearly Oil Analysis**

The Contractor shall obtain suitable test containers from an approved lab facility. Collect oil samples from the motor upper and lower bearing compartments, and wet pit submersible pumps. The oil shall be drawn from the equipment reservoir. The oil should drain for a few seconds before collecting the sample. A minimum of two (2) ounces of oil shall be used for analysis. Do not use the same container for different equipment or for different compartments of the same equipment.

Samples shall be taken after running the pump within fifteen minutes after the equipment is turned off. This work shall be done along with the capacity and vibration test.



The Contractor shall provide the laboratory with the brand and type of oil, type of equipment from which the sample was taken, number of days since the last oil change, and any suspected abnormalities in the equipment. Each sample of oil shall be identified with the equipment and compartment from which the sample was taken. The Contractor shall ship the oil samples to the lab facility within one month of collection.

The lab facility shall conduct a wear particle analysis to determine:

- Wear metals
- Contaminants
- Additives elements
- Viscosity
- Solid percent volume
- Water percent volume
- Fuel where required
- Particle counting and direct reading ferrography

Create tickets for any deficiencies found from the lab testing and submit an electronic copy of the lab reports to the Engineer with operating software that can utilize existing data for trending. Based upon the lab report, the Engineer may request additional analytical ferrography testing. The oil shall be changed if the lab results indicate that the oil is contaminated. All charges for lab work, shipping, and changing of oil etc., shall be covered under routine maintenance.

**Pump Data and Sample Forms:**

**County Farm Road Pump Station  
Summary Data Sheet**

**Location/Description**

County Farm Road Pump Station construction was completed in 2002. The pump station was constructed to service the storm water flow associated with the grade separation of CH 43 County Farm Road under the Union Pacific Railroad in Wheaton, IL. The pump station is fitted with three submersible pumps (2 duty and 1 standby). The pump controls are based on level measurements taken in the wet well using a level transducer with backup float level measurement. All alarms are hard wired back to the DuPage County Com Center. The pump station has two sources of power with an automatic transfer switch. The primary feed is from Commonwealth Edison and the secondary feed is from the emergency panel located in the Power Plant Building that is owned and operated by DuPage County.

<b><u>Pumps</u></b>	
Number	3
Type	Submersible
Capacity in gpm	2695
Design Head (TDH) in feet	35
Shutoff Head in feet	82
Manufacturer	Flygt
Model No.	CP3201
Impeller No.	636
Discharge Diameter in Inches	8
Motor HP	35
Explosion Proof?	Yes
Voltage	460
Phase	3
<b><u>Pump Control System</u></b>	
Primary	Transducer
Secondary	Float
<b><u>Remote Alarm Conditions</u></b>	
Standby Power Not Available	
Loss of Normal Power	
Pump Malfunction	
High Water Level	

Table P-1 (10/02)

**Belmont Road Pump Station  
Summary Data Sheet**

**Location/Description**

Belmont Road Pump Station construction was completed in 2012. The pump station was constructed to service the storm water flow associated with the grade separation of CH 2 Belmont Road under the Burlington Northern and Santa Fe Railroad in Downers Grove, IL. The pump station is fitted with four submersible pumps (3 duty and 1 standby). The pump controls are based on level measurements taken in the wet well using a level transducer with backup float level measurement. All alarms are hard wired back to the Meade Electric Radio Room. The pump station has two sources of power with an automatic transfer switch. The primary feed is from Commonwealth Edison and the secondary feed is from Nicor Gas Company.

<b><u>Pumps</u></b>	
Number	4
Type	Submersible
Capacity in gpm	2468
Design Head (TDH) in feet	30
Shutoff Head in feet	82
Manufacturer	Xylem
Model No.	NP3202.090-5217
Impeller No.	643
Discharge Diameter in Inches (High Flow)	12
Discharge Diameter in Inches (Low Flow)	6
Motor HP	35
Explosion Proof?	Yes
Voltage	460
Phase	3
<b><u>Pump Control System</u></b>	
Primary	Transducer
Secondary	Float
<b><u>Remote Alarm Conditions</u></b>	
Standby Power Not Available	
Loss of Normal Power	
Pump Malfunction	
High Water Level	

Table P-2 (10/12)

**DPCDOT PS ALARM STATUS - PREVENTATIVE MAINTENANCE LOG P-1**

Pump Station No.

Inspection Date:

Call #

Alarm Code	Function	Wired? Yes/No	Alarm Received		Test Comments:
			By DPCDOT? Yes/No	By Contractor? Yes/No	
1	Standby Power Not Available				
2	Loss of Normal Power				
3	Pump Malfunction				
4	High Water Level				

Problem Yes/No	Physical Condition Checklist	
	Item	Comment
	Wiring	
	Alarm Lights	
	Battery Condition	Volts

List General Alarms for this Pump Station:  
 List General Alarm (Code 2) Comments:


Log P-1 (10/02)

**PUMP STATION INSPECTION CHECKLIST (ANNUAL)**

Date: \_\_\_\_\_

Patrol #/Name: \_\_\_\_\_

P.S. #: \_\_\_\_\_

Location: \_\_\_\_\_

Last MC Patrolman in the Station: \_\_\_\_\_

Patrol #: \_\_\_\_\_

<u>NA</u>	<u>Items</u>	<u>O.K.</u>	<u>Abnormalities/Remarks</u>
	1. Log Book Charts		
	A. Patrol Frequency	<input type="checkbox"/>	_____
<input type="checkbox"/>	B. Sluice Gate Operation	<input type="checkbox"/>	_____
	C. _____		_____
	2. Alarms Holding	<input type="checkbox"/>	_____
	3. Breakers or Fuse Disconnect		
	A. Mains	<input type="checkbox"/>	_____
	B. Branch	<input type="checkbox"/>	_____
	C. Others	<input type="checkbox"/>	_____
<input type="checkbox"/>	4. Main Motor Oil Levels	<input type="checkbox"/>	_____
	A. Top Reservoir	<input type="checkbox"/>	_____
	B. Bottom Reservoir	<input type="checkbox"/>	_____
<input type="checkbox"/>	5. Motor Operation (visual & feel test)	<input type="checkbox"/>	_____
	A. Vibration	<input type="checkbox"/>	_____
	B. Hum	<input type="checkbox"/>	_____

**PUMP STATION INSPECTION CHECKLIST (ANNUAL)**

- Alternator – Manual  
 Check Chart A for indication Patrolman changing lead pump  \_\_\_\_\_
  
- 6. Meters/Counters
  - A. Hours Pump 1  \_\_\_\_\_
  - B. Hours Pump 2  \_\_\_\_\_
  - C. Hours Pump 3  \_\_\_\_\_
  
- 7. Pumps
  - A. Noise  \_\_\_\_\_
  - B. Vibration  \_\_\_\_\_
  - C. Capacity  \_\_\_\_\_
  
- 8. Bar Screen Condition  \_\_\_\_\_
  
- 9. Terminal, Wire & Insulation Integrity  \_\_\_\_\_
  
- 10. Ground System  \_\_\_\_\_
  
- 11. Power
  - A. Line #1 (ComEd Voltage)  \_\_\_\_\_
  - B. Line #2 (Power Plant Voltage)  \_\_\_\_\_
  - C. Transfer Switch  \_\_\_\_\_
  
- 12. Debris
  - A. Wet Pit “pump down to low level to determine silt level for cleaning ( use draw down pump)”  \_\_\_\_\_
  - B. Screens  \_\_\_\_\_
  - C. Outflow  \_\_\_\_\_
  - D. Grounds  \_\_\_\_\_

**PUMP STATION INSPECTION CHECKLIST (ANNUAL)**

- 13. Leaks
  - A. Discharge Piping  \_\_\_\_\_
  - B. Structure  \_\_\_\_\_
  - C. Service Conduits  \_\_\_\_\_
  
- 14. Ladders/Safety Cages  \_\_\_\_\_
  
- 15. Grate/Hatch Covers  
 (clips missing, etc.)  \_\_\_\_\_
  
- 16. Lights
  - A. Inside  \_\_\_\_\_
  
- 17. Fencing
  - A. Gates  \_\_\_\_\_
  - B. Posts  \_\_\_\_\_
  - C. Fabric  \_\_\_\_\_
  
- 18. Painting
  - A. Discharge Pipe  \_\_\_\_\_
  - B. Grates/Hatches/Ladders  \_\_\_\_\_
  - C. Motors/Bases  \_\_\_\_\_
  - D. Pumps  \_\_\_\_\_
  - E. Cabinets  \_\_\_\_\_
  
- 19. Control Processor
  - A. Water Level Indicator  \_\_\_\_\_
  - B. Current  \_\_\_\_\_
  - C. 3 Ø Voltage  \_\_\_\_\_

---

**ACTIONS**

- Put "☐" in Chart Book
- Called Dispatcher for \_\_\_\_\_  
 List Ticket #'s \_\_\_\_\_

<b>Pump Station :</b>	<b>PUMP OPERATION TEST RESULTS</b>	<b>Test Date :</b>
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Make adjustments to impeller setting when pump capacity has dropped significantly.

Instructions: Check each pump per contract specifications and record results below.

Any readings below or above normal operating parameters must be recorded on a Ticket and DPCDOT shall be notified immediately.

Pump #	Impeller Setting		Wet Pit	Capacity	PUMP	PUMP	Current (Amps)				Voltage (Volts)			Megger (Meg-OHMS)			Pressure Gauge	Peak Vibration
	As Found	Adjustment (As Left)	Water Level	(GPM)	Starts	Hours Run	A	B	C		A	B	C	A	B	C	Reading	IPS



## PUMP CONTROL SYSTEM INSPECTION

PUMP STATION NUMBER:

DATE:

Examples of Applicable Control Points	SCADA CONTROL POINTS		TRANSDUCER VALUES		FLOAT VALUES			
	SP #	VALUE	IDEAL	ACTUAL	IDEAL	ACTUAL		
LOW LEVEL								
ALL / LOW FLOW PUMP OFF PUMP								
LOW FLOW PUMP ON								
MAIN PUMPS STOP								
LAG 1 OFF								
LAG 2 OFF								
LAG 3 OFF								
MAIN PUMP START								
LAG 1 ON								
LAG 2 ON								
LAG 3 ON								
ALL ON								
HIGH LEVEL								

Log P-4 (Rev. 10/02)

<b>PUMP STATION:</b>		<b>SUBMERSIBLE PUMP INSPECTION</b>				<b>DATE:</b>
<b>PUMP POS.</b>	<b>TYPE</b>	<b>MODEL #</b>	<b>CLEAN PER 8.6.1</b>	<b>PUMP IMPELLER SIZE</b>	<b>PUMP IMPELLER INSPECTION</b>	<b>OIL CHANGE NO. OF PINTS AND GRADE</b>
<b>COMMENTS:</b>						

## WET PIT INSPECTION

1: Inspect grease lines on all pumps and note their condition

	<b>Pump 1</b>	<b>Pump 2</b>	<b>Pump 3</b>
Good			
Satisfactory			
Need Repair			

2: Inspect integrity of all equipment attached to the perimeter of wet pit

Check Condition Of	Floats	Probes		
Good				
Satisfactory				
Need Repair				

3. Inspect condition bar screens. Also, check the integrity of the inlet sewer noting any excess debris accumulation in the sewer.

Comments:

4. Inspect and take pictures of any bowl assemblies, which show any wear on the impeller and / or if the suction, is clogged with debris. The photos shall be appropriately labeled and placed in a sheet album.

5: Note the amount of silt accumulation in inches or feet.

**PLC SYSTEM MAINTENANCE  
 PLC EQUIPMENT CHECK LIST**

PUMP STATION #:	DATE:	COMPLETED BY:
-----------------	-------	---------------

**DIGITAL INPUTS**

	OK			COMMENTS
PUMP 1 AUTO				
PUMP 2 AUTO				
PUMP 3 AUTO				
ENTRY KEY IN NON-ALARM POS.				
TRANSFER SW IN NORMAL				
TRANSFER SW IN EMERGENCY				

<b>DIGITAL INPUTS (Cont.)</b>				
	OK		OK	COMMENTS
PUMP 1 BREAKER				
PUMP 2 BREAKER				
PUMP 3 BREAKER				
PUMP 1 St. CONTACTOR				
PUMP 2 St. CONTACTOR				
PUMP 3 St. CONTACTOR				
SERVICE #1 DISCONNECT OPEN				
SERVICE #2 DISCONNECT OPEN				
PUMP 1 OVERLOAD TRIP				
PUMP 2 OVERLOAD TRIP				
PUMP 3 OVERLOAD TRIP				
MANUAL SEQUENCE SWITCH (ALL SELECTIONS)				
PUMP 1 OVERTEMP TRIP				
PUMP 2 OVERTEMP TRIP				
PUMP 3 OVERTEMP TRIP				
MISC. DIGITAL INPUTS				

<b>PLC SYSTEM MAINTENANCE            PLC EQUIPMENT CHECK LIST</b>			
PUMP STATION #:	DATE:	COMPLETED BY:	
<b>ANALOG INPUTS</b>			
	PLC	ACTUAL	COMMENTS
PRI. XDUCER LEVEL			

LOG P-7 3 OF 3 (Rev. 10/02)

**ITEM PS-1 – PUMP STATION ROUTINE MAINTENANCE PAY ITEM**

**PS-1: PUMP STATION**

This work shall consist of all labor, equipment and material necessary to maintain operation of the pump station as described above.

The Contractor shall provide the maintenance on an as needed basis for the following items such as, but not limited to, the gas detector inspection, automatic transfer system service, adjustment of existing controls, removal and replacement of gas sensors, motor inspection, cylinder for padlocks, padlock replacement, pump repair and pump replacement, vibration testing and analysis, water for testing and power wash, cleaning of wet pit, and wet pit power wash. All costs of repairs of pump and motor assemblies damaged under normal use shall be paid for at an agreed price on a case by case basis as approved by the engineer.

**ITEM EW-1 – BUDGETARY ALLOWANCE FOR EXTRA WORK**

This item is to establish a budget account to allocate funds for various traffic signal and/or street lighting extra work items. This account may be used to pay for projects such as signal equipment installations, modifications, relocations, upgrades, etc. It may also be used for procurement, installation, testing, and evaluation of special equipment, including support and/or training from hardware and software vendors. This item is not for materials and services included under Routine Maintenance.

Basis of Payment: The Engineer will evaluate the quotations and authorize work accordingly. The total estimated amount of annual expenses to be incurred for goods and services performed under this item is shown on the schedule of prices and shall be used for bidding purposes for pay item EW-1.

**ITEM KD-1 – BUDGETARY ALLOWANCE FOR EQUIPMENT KNOCKDOWNS**

This item is to establish a budget account to allocate funds for temporary and/or permanent repairs to equipment which is damaged by traffic. This account may be used to pay for repair or replacement of any equipment hit/knocked down/damaged due to traffic, including mast arm assemblies, signal heads and posts, cabinets, cameras, radios, streetlighting, or any other equipment owned or maintained by the County. Equipment damage may occur from typical roadway traffic, utility vehicles, construction vehicles, mowers, etc. This item is not for materials and services included under Routine Maintenance.

Basis of Payment: Repairs shall be paid to the Contractor on a Force Account Basis in accordance with Article 109.04 (b) of the Standard Specifications. The total estimated amount of annual expenses to be incurred for goods and services performed under this item is shown on the schedule of prices and shall be used for bidding purposes for pay item KD-1.

**ITEM EQ - EQUIPMENT**

Under this item, for unit prices as shown in the Schedule of Prices, and when directed by the Engineer in writing, the Contractor shall furnish all materials, equipment, and labor necessary to perform the work as specified herein. All materials or work not expressly specified but necessary for the proper completion in a neat, professional manner shall be considered included in the cost of the associated pay item and shall be included under the unit bid prices.

The following standards, latest revisions, shall be used, as applicable, for each authorization issued to the Contractor or as directed by the Engineer:

Illinois Department of Transportation Standards:

720016, 805001, 814001, 814006, 857001, 857006, 862001, 873001, 876001, 877001, 877006, 877011, 878001, 880001, 880006, 886001, 886006

EQ-1 SIGNAL HEAD, LED, 1-FACE, 1-SECTION, MOUNTING AS SPECIFIED

EQ-2 SIGNAL HEAD, LED, 1-FACE, 3-SECTION, MOUNTING AS SPECIFIED

EQ-3 SIGNAL HEAD, LED, 1-FACE, 4-SECTION, MOUNTING AS SPECIFIED

EQ-4 SIGNAL HEAD, LED, 1-FACE, 5-SECTION, MOUNTING AS SPECIFIED

The items listed above shall comply with the SIGNAL HEAD, LIGHT EMITTING DIODE section of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

These items shall be paid for at the Contract unit price each for SIGNAL HEAD, LED, of the type specified, which price shall be payment in full for furnishing the equipment described above including signal head, LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of signal sections, and the method of mounting.

EQ-5 PEDESTRIAN SIGNAL HEAD, LED, MOUNTING AS SPECIFIED

This item shall comply with Section 881 and Article 1078.02 and with the SIGNAL HEAD, LIGHT EMITTING DIODE section of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

This item shall be paid for at the Contract unit price each for PEDESTRIAN SIGNAL HEAD, LED, MOUNTING AS SPECIFIED, which price shall be payment in full for furnishing the necessary equipment including signal head, LED module(s), and hardware, and installing it, by the required method of mounting, in satisfactory operating condition.

EQ-6 PEDESTRIAN SIGNAL HEAD, LED, COUNTDOWN, MOUNTING AS SPECIFIED

This item shall consist of two (2) 12-inch by 12-inch modules aligned vertically. The top module of the unit shall be an LED message-bearing surface supplied with overlapping outline "HAND" and "MAN" symbols that comply with the PTCSI standard for these symbols. The bottom module of the unit shall house a LED countdown traffic signal consisting of a two digit numerical display ("00" to "99") a minimum of seven (7) inches in height. The counter shall begin countdown at the beginning of the pedestrian clearance interval as the pictogram of the hand starts flashing. The counter shall execute a countdown of the time, in seconds, of the pedestrian clearance interval synchronized with the controller and ending at (0) at the expiration of the clearance interval. The counter shall be blank at all other times.

The use of a 16'X18" overlapping pedestrian signal indication may be allowed by approval of the Engineer.

The unit price shall be payment in full for furnishing and installing the pedestrian signal head, LED, Countdown, with the required method of mounting. The unit price shall also include furnishing and installing any cabinet modules and/or interface cards necessary for proper operation.

EQ-7 TRAFFIC SIGNAL BACKPLATE

This item shall comply with Section 882 and Article 1078.03 of the Standard Specifications for



Road and Bridge Construction. The backplate shall be louvered and aluminum. The louver openings shall cover a minimum of twenty percent (20%) of the surface of the backplate.

**EQ-8 EMERGENCY VEHICLE PREEMPTION SYSTEM**

This item shall consist of furnishing and installing an Emergency Vehicle Preemption System in accordance with Section 887 and Article 1072 of the Standard Specifications for Road and Bridge Construction, and shall include light detector(s), light detector amplifier(s), and LED confirmation beacon(s). The Emergency Vehicle Pre-emption shall be the latest type manufactured and must be completely compatible with all components of the equipment currently in use by the fire district at the location specified by the Engineer. All necessary cable from cabinet to detectors, mounting hardware, and labor to complete the installation shall be included in cost of this item.

**EQ-9 FULL ACTUATED CONTROLLER, IN TYPE IV CABINET, NEMA-TS2**

This item shall comply with Sections 857 and 863 of the Standard Specifications for Road and Bridge Construction, and shall also comply with the following requirements:

The controller shall be the latest model available that is compatible with the central signal system software (NTCIP) or “Aries” software, currently in use by DCDOT. Controller software compatibility requirements are based upon the controller’s location in the communication system, and shall be as shown on the plans.

The unit price shall include payment in full for furnishing and installing the cabinet and controller, complete with necessary connections and equipment for proper operation, at a location designated by the Engineer. If required, the transceiver shall be included in cost of this item. Removal of an existing controller, and its return to the County, shall also be included in cost of this item.

**EQ-10 INSTALL EXISTING TRAFFIC SIGNAL CABINET**

This item shall consist of installing a traffic signal cabinet at an existing signal cabinet location, and shall be used when the pre-wired signal cabinet is being provided by the Engineer. This item shall include the installation, connection, and or modification of all necessary equipment including panels, program card, wiring, connectors, harnesses, mounting hardware, and related equipment necessary for proper operation. The existing cabinet which is being replaced shall be returned to DCDOT.

**EQ-11 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER**

This item shall consist of installing a traffic signal controller and associated components at an existing signal controller location, and shall be used when the signal controller is being provided by the Engineer. This item shall include providing and installing all necessary panels, wiring, connectors, harnesses, mounting hardware, and related equipment necessary to complete the installation in accordance with the manufacturer’s specifications. The existing controller which is being replaced shall be returned to the DuPage County Division of Transportation.

**EQ-12 FULL ACTUATED CONTROLLER**

This item shall consist of furnishing and installing a traffic signal controller and associated components in a traffic signal cabinet, as directed by the Engineer.

The controller shall be the latest model available that is compatible with the central signal system software (NTCIP) or “Aries” software, currently in use by DCDOT. Controller software

compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans.

EQ-13 INSTALL UPDATED PROM SET AT EXISTING LOCAL OR MASTER CONTROLLER

This item shall consist of installing a new PROM or set of PROMS of the latest version of software in an existing traffic signal local or master controller. At locations that contain coordination modules, all PROMS in the controller, telemetry module, and coordination module must be of the same version and revision. New system interface board shall be included in cost of this item.

EQ-14 UPGRADE EXISTING LOCAL CONTROLLER SOFTWARE TO NTCIP

This item shall consist of furnishing and installing the latest version of National Transportation Communications for ITS Protocol (NTCIP) software in an existing traffic signal controller. The unit price shall include payment in full for furnishing and installing the software, and placing the controller back in operation.

EQ-15 DETECTOR LOOP

This item shall comply with Section 886 and Article 1079.02 of the Standard Specifications. Loop detectors shall be installed according to the "District 1 Standard Traffic Signal Design Details."

Each loop detector lead-in wire shall be labeled in the handhole using a Panduit 250W175C waterproof tag or approved equal secured to each wire with nylon ties. The location of each dive hole shall be marked on the face of the curb or handhole with a saw cut.

Detector loops to be installed in the proposed asphalt pavement must be placed in the binder course, as directed by the Engineer. Detector loops to be installed in existing asphalt pavement shall be located to miss existing pavement cracks, if possible. Detector loops to be installed in concrete pavement shall be located to miss pavement joints and cracks, if possible.

All detector loop saw cuts are to be filled with approved sealant to no higher than 1/8 inch below the surface of the pavement, and all excess sealant deposited on the pavement shall be removed immediately. Loop sealant shall be a two-component thixotropic chemically curing polyurethane such as Chemqu Q-Seal 295, Perol Elastic Cement A/C Grade, or an approved equal.

Where approved by the Engineer, 6-foot diameter round loops may be substituted for 6-foot by 6-foot square loops.

EQ-16 PEDESTRIAN PUSH BUTTON

Replace Article 1074.02 of the Standard Specifications with the following:

This item shall comply with the PEDESTRIAN PUSH BUTTON section of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the contract unit price each for PEDESTRIAN PUSH BUTTON. The unit price shall include furnishing and installing the pedestrian station, push button, sign, and all necessary equipment and connections for proper operations. Electric cable in conduit from the traffic signal cabinet to the pedestrian push-button shall be paid for separately.

EQ-17 GALVANIZED STEEL CONDUIT IN GROUND, 2 INCH

The above items shall comply with the CONDUIT IN GROUND section of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract. All conduit installed underground shall be fully buried a minimum depth of thirty (30) inches.

This work will be paid for at the contract unit price per foot for CONDUIT IN GROUND of the type and size specified, which price shall be payment in full for furnishing and installing the conduit either pushed, trenched, plowed, or directionally bored with fittings, complete. Trenching, backfilling and area restoration are included in cost of this item.

EQ-18 ELECTRIC CABLE IN CONDUIT, NO. 14 1/C

EQ-19 ELECTRIC CABLE IN CONDUIT, NO. 14 2/C

EQ-20 ELECTRIC CABLE IN CONDUIT, NO. 14 3/C

EQ-21 ELECTRIC CABLE IN CONDUIT, NO. 14 5/C

EQ-22 ELECTRIC CABLE IN CONDUIT, NO. 14 7/C

EQ-23 ELECTRIC CABLE IN CONDUIT, NO. 14 2/C, TWISTED, SHIELDED

EQ-24 ELECTRIC CABLE IN CONDUIT, NO. 6 2/C

EQ-25 ELECTRIC CABLE IN CONDUIT, NO. 10 2/C

EQ-26 ELECTRIC CABLE IN CONDUIT, NO. 20 3/C, TWISTED, SHIELDED

The items listed above shall comply with Section 873, Article 1088.01, and Article 1076.04 of the Standard Specifications for Road and Bridge Construction as revised in the DuPage County Traffic Signal Special Provisions included in this contract.

EQ-27 ELECTRIC CABLE IN CONDUIT, COAXIAL

This work shall consist of furnishing and installing a Belden 1694A RG-6/U Type Digital Coaxial Cable or approved equal. The cable shall be a 75 ohm coaxial cable with 18 gauge solid bare copper conductor, gas-injected foam high density polyethylene (FHDPE) insulation, 95%(min) tinned copper braided shield, and black polyvinyl chloride outer covering. The nominal outside diameter shall be 0.274 inches. Amphenol 31-71032 (or equivalent) BNC plug connectors shall be used at both the video junction box and traffic control cabinet ends of the cable.

EQ-28 ELECTRIC CABLE IN CONDUIT, NO. 18, 3/C for VIDEO

This work shall consist of furnishing and installing a Belden YR52311 cable, or approved equal, in existing and/or new conduit, between an Autoscope Solo Terra camera and the traffic signal cabinet.

A Harting HAN 3 A connector, or approved equivalent, is required to connect this cable to an Autoscope Solo Terra camera. The cost of furnishing and installing this connector is included in this pay item.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, NO. 18, 3/C, which price shall be payment in full for furnishing, installing and making all electrical connections necessary for proper operation.

EQ-29 ELECTRIC CABLE IN CONDUIT, COMMUNICATION, NO. 16, 5½ PAIR

This work shall consist of furnishing and installing a Belden YC46223 communications cable, or approved equal, in existing and/or new conduit. The cable shall consist of 16 AWG stranded bare copper twisted-pair conductors, with PVC insulation, and PVC jacket with nylon ripcord. The nominal outside diameter shall be 0.502-inch.

The communications cable, No. 16, 5½ pair shall be spliced to the MVP Cable in the base of the signal mast arm pole on which the MVP is mounted. The MVP cable shall be provided by the MVP manufacturer. The communications cable shall be provided by the Contractor. The conductors from the two cables shall be spliced using the 3M Scotchlok gel-filled splice tabs (part number 314). The individual splices shall be bundled together and protected with 3M vinyl mastic pads. The cost of all work associated with splicing the cables shall be considered included

in the cost of the communications cable, No. 16, 5½ pair.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, COMMUNICATION NO. 16, 5½ PAIR, which price shall be payment in full for furnishing, installing and making all electrical connections necessary for proper operation.

EQ-30 FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, 24 FIBER (12 MULTIMODE AND 12 SINGLEMODE)

EQ31 FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, 36 FIBER (12 MULTIMODE AND 24 SINGLEMODE)

EQ-32 FIBER OPTIC CABLE IN CONDUIT, 24 SINGLEMODE

These items shall consist of furnishing and installing Fiber Optic Cable in conduit, No. 62.5/125, of the number of fibers specified (24 fibers or 36 fibers) at a location indicated by the Engineer. This work shall be in accordance with the FIBER OPTIC CABLE section of the DCDOT Traffic Signal Special Provisions contained in this Contract. This item shall include all necessary cable slack, cable termination and testing, distribution enclosures, break-out kits, connectors, splices, pigtail assemblies and all other materials, hardware, and labor necessary to complete the installation as directed by the Engineer.

EQ-33 TRANSCEIVER - FIBER OPTIC

This item shall consist of furnishing and installing a fiber optic transceiver for an existing controller. This item shall comply with Section 864 of the Standard Specifications for Road and Bridge Construction, and shall include 2 each fiber optic modems and all necessary associated components to provide database upload/download capabilities, as well as the other features of the ECONOLITE "ARIES" software or central signal system software as directed by the Engineer.

EQ-34 SERVICE INSTALLATION, POLE MOUNT

EQ-35 SERVICE INSTALLATION, GROUND MOUNT

This item shall comply with the ELECTRICAL SERVICE INSTALLATION section of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the contract unit price each for SERVICE INSTALLATION, of the type specified which shall be payment in full for furnishing and installing the service installation complete. The Type A foundation for a ground mount service installation and all service and ground cables shall be paid for separately.

EQ-36 CONCRETE FOUNDATION, TYPE A

The items listed above shall comply with Section 734, Article 1020, Article 1094.02, and Article 1087.01 of the Standard Specifications for Road and Bridge Construction. These items shall include anchor bolts, nuts, washers, and ground rods as specified for the type of post, pole, or cabinet being installed at the location.

EQ-37 CONCRETE HANDHOLE

EQ-38 CONCRETE HEAVY DUTY HANDHOLE

The items listed above shall comply with Section 814 and Article 1088.06 of the Standard Specifications for Road and Bridge Construction.

EQ-39 REBUILD EXISTING HANDHOLE

This item shall comply with Section 814 and Article 1088.06 of the Standard Specifications for Road and Bridge Construction. This pay item shall include any of the following: rebuilding, raising, and/or re-aligning any type of handhole at a location designated by the Engineer. This item shall include steel hooks, frame, cover, concrete, and all labor and equipment necessary to complete construction to the satisfaction of the Engineer.

EQ-40 DRILL EXISTING HANDHOLE

This item shall comply with Section 879 of The Standard Specifications for Road and Bridge Construction.

EQ-41 ROTATE SIGNAL PHASING AT AN EXISTING TRAFFIC SIGNAL INTERSECTION

This item shall consist of revising the traffic signal phasing at an existing traffic signal intersection. The proposed sequence of operation shall conform with the current "Standard Phase Designation Diagrams and Phase Sequences" Highway Standard, the District's phase diagrams and notes, the District's chart sequence of operations or as directed by the Engineer. The phase rotation shall consist of the following items:

1. Modify all incoming field wiring to provide the new sequence of operations which includes all signal heads, pedestrian heads, internally illuminated signs, emergency vehicle preemption, confirmation beacons, vehicle detectors, pedestrian detectors and system detectors.
2. Modify the controller programming and phase overlaps to provide the proposed sequence of operations.
3. All back panel modifications as required to provide the proposed sequence of operations and system detection.
4. The Contractor shall provide five (5) copies (11" x 17") of revised cabinet wiring diagrams.
5. The Contractor shall provide revised cable logs indicating the number of each cable, the field location the cable is terminated at, and all cables must be tagged with an I.D. number that corresponds with the revised cable log.

EQ-42 VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION)

This item shall comply with the VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION) section of the DCDOT Traffic Signal Special Provisions contained in this Contract, with the exception noted below.

This specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device. This work shall consist of furnishing and installing an Autoscope Solo Terra or approved equal video vehicle detection system at one signalized intersection, including all necessary hardware, cable and accessories necessary to complete the installation in accordance with the manufacturer's specifications.

This item shall consist of up to four (4) integrated machine vision processor sensors (MVPs), an electrical interface panel, and a detector interface card. The system shall also include a ten-inch color VGA monitor with BNC connector for video input. A simple multi-camera video switching unit shall be provided to select video input to the monitor.

This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) which price shall be payment in full for furnishing all associated equipment required, installing the system at one signalized intersection, and placing the system in operation to the satisfaction of the Engineer. This item shall include a cabinet-mounted video interface panel with a serial port and/or Gigabit Ethernet port.

EQ-43 SPLICE FIBER OPTIC CABLE IN CABINET

This item shall comply with the SPLICE FIBER OPTIC CABLE IN CABINET section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

Basis of Payment: This work shall be paid for at the contract unit price each for SPLICE FIBER OPTIC CABLE IN CABINET, which will be payment in full for all fusion splicing, fiber optic splice trays, testing and documentation, at a cabinet or building location shown on the plans and as directed by the Engineer.

EQ-44 TERMINATE FIBER IN CABINET

This item shall comply with the TERMINATE FIBER IN CABINET section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

Basis of Payment: This work shall be paid for at the contract unit price each for each fiber terminated in a field cabinet or inside a building as TERMINATE FIBER IN CABINET, which will be payment in full for terminating each required multimode or singlemode fiber, including all connectors, pigtails, splice trays, bulkheads, testing and documentation.

EQ-45 REMOTE-CONTROLLED VIDEO SYSTEM

This pay item shall include providing and installing a remote-controlled video system at a location designated by the Engineer. The item shall comply with the REMOTE CONTROLLED VIDEO SYSTEM section of the DCDOT Traffic Signal Special Provisions included in this contract.

This item will be paid for at the Contract unit price each for REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for furnishing all equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer.

EQ-46 LED INTERNALLY ILLUMINATED STREET NAME SIGN

This item shall comply with the LED INTERNALLY ILLUMINATED STREET NAME SIGN section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the Contract unit price each for furnishing and installing LED INTERNALLY ILLUMINATED STREET NAME SIGN, complete in place, to the satisfaction of the Engineer.

EQ-47 UNINTERRUPTIBLE POWER SUPPLY (UPS), Special

This item shall comply with the UNINTERRUPTIBLE POWER SUPPLY (UPS), Special section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the Contract unit price each for furnishing and installing UNINTERRUPTIBLE POWER SUPPLY (UPS), Special. The price shall include the UPS/Inverter unit, Bypass Switch, Batteries, Cabinet, wiring harnesses, and all associated equipment and materials necessary for proper operation.

EQ-48 RELAMP EXISTING TRAFFIC SIGNAL WITH LED MODULES

This item shall consist of furnishing and installing LED signal modules at an existing traffic signal. All vehicle signals (circular and arrow indications) and all pedestrian signals (Walk and

Don't Walk indications) at the intersection shall be relamped as part of this pay item. Pedestrian signal heads shall be relamped with countdown modules. At signals interconnected with the railroad, the countdown signal module shall not be used. All LED modules shall comply with the SIGNAL HEAD LIGHT EMITTING DIODE (LED) and PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE (LED) sections of the DCDOT Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the Contract unit price each for RELAMP EXISTING TRAFFIC SIGNAL WITH LED MODULES, which shall include furnishing and installing LED signal modules as replacements for all existing LED vehicle and pedestrian signals at one signalized intersection. The price shall include the proper aiming of the signals, and all necessary connections and hardware, complete in place, to the satisfaction of the Engineer.

**EQ-49 OUTDOOR RATED NETWORK CABLE**

This item shall comply with the OUTDOOR RATED NETWORK CABLE section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

This work will be paid for at the contract unit price per foot for OUTDOOR RATED NETWORK CABLE. The unit price shall include furnishing and installing the cable and RJ-45 connectors, and making all connections necessary for proper operation to the satisfaction of the Engineer.

**EQ-50 TRAFFIC SIGNAL GROUNDING AND ELECTRICAL SERVICE UPGRADE**

This item shall comply with the ELECTRICAL SERVICE INSTALLATION, GROUNDING OF TRAFFIC SIGNAL SYSTEMS, and GROUNDING EXISTING HANDHOLE FRAME AND COVER sections of the DuPage County Division of Transportation Traffic Signal Special Provisions contained in this Contract.

This work will generally include:

- Replacement of the electrical service entrance equipment and cable
- New grounding of the service
- New feeder conductors from the service disconnect to the controller cabinet
- Cabinet grounding modifications
- Supplementary ground electrodes at handholes
- Extension of the equipment ground wires to all poles, posts, handholes, etc.
- Bonding of equipment ground to all exposed metal parts
- Testing and documentation

The Contractor shall be responsible for all coordination with the electrical utility and shall keep the disruption of the operation of the traffic signal to a momentary outage while the final connections are made.

This work shall be paid for at the contract unit price each for TRAFFIC SIGNAL GROUNDING AND ELECTRICAL SERVICE UPGRADE, which shall be payment in full for furnishing and installing all necessary cable and equipment to complete the system grounding of an intersection and provide a new electrical service installation.

**EQ-51 MODIFY EXISTING CONTROLLER CABINET**

This item shall consist of modifying an existing controller cabinet to accommodate new and/or relocated traffic signal equipment.

General: The work shall be performed according to Section 895 of the "Standard Specifications", the details shown on the plans, and DCDOT Traffic Signal Specifications.:

The work shall include all modifications and peripheral work necessary to accommodate the new or relocated traffic signal equipment, which may include but is not limited to the addition of signal phases, relocation of the EVP phasing unit, installation and configuration of an existing UPS unit, installation of an existing Layer II Switch, or remote controlled video system items to be installed in the existing cabinets.

Additionally all necessary materials, parts, equipment and labor required to modify the controller cabinet to accommodate the new or relocated equipment or phasing, shall be included in the unit cost of this pay item.

This work will be paid for at the contract unit price per each for MODIFY EXISTING CONTROLLER CABINET. The unit price shall include furnishing and installing all necessary parts and materials required to modify the existing controller cabinet to accommodate the new and/or relocated traffic signal equipment.

**EQ-52 INSTALL TEMPORARY TRAFFIC SIGNAL, FOUR APPROACHES OR LESS:**

Under this item, for a unit price per installation, as shown in the Schedule of Prices and directed by the Engineer in writing, the Contractor shall install a temporary traffic signal. The intent of this item is to restore an existing signalized location to operation and not for the construction of at a new or proposed location. This item shall comply with the TEMPORARY TRAFFIC SIGNAL INSTALLATION section of the DCDOT Traffic Signal Special Provisions contained in this Contract, with the following exceptions: All equipment for the temporary traffic signal shall be new, including signal heads, LED modules, signal cabinet, controller, and related equipment. If required, the vehicular detection system and uninterruptible power supply (UPS) will be paid for separately.

- a. Plans for the temporary traffic signal shall be supplied by the Engineer.
- b. The temporary traffic signal shall be installed in compliance with Department of Transportation Standard No. 880001 "Details of Span Wire Mounted Signals and Flashing Beacon Installation."
- c. All parts of the temporary traffic signal shall become property of the DuPage County Division of Transportation upon acceptance of the installation.

This work shall be paid for at the contract unit price each for INSTALL TEMPORARY TRAFFIC SIGNAL, FOUR APPROACHES OR LESS which shall include all costs for providing and installing the necessary equipment, in accordance with the plans, as directed by the Engineer. If required, the vehicular detection system and uninterruptible power supply (UPS) will be paid for separately.

**EQ-53 REMOVE EXISTING TEMPORARY TRAFFIC SIGNAL, FOUR APPROACHES OR LESS:**

This work will consist of removing all equipment, poles, down guys, mounting hardware, signal heads, controller cabinets and any other equipment associated with the specified temporary signal installation, and delivering the equipment to the DuPage County Division of Transportation yard in Wheaton. All holes caused by the removal of wood poles shall be backfilled with sand as directed by the Engineer. This work will be paid for at the Contract unit price each for REMOVE EXISTING TEMPORARY TRAFFIC SIGNAL, FOUR APPROACHES OR LESS which will be payment in full for all work.



EQ-54 PAINT TRAFFIC SIGNAL POST AND BASE:

- a. Description - This work shall consist of cleaning and painting an existing traffic signal post and base.
- b. Materials - Paint shall be a two-coat system consisting of Rust Destroyer paint primer, and Benjamin Moore Super Spec HP Urethane Alkyd Gloss Enamel P22 finish, or an approved equivalent.
- c. Cleaning - Prior to painting, the signal post shall be cleaned by removing all rust, foreign material, dirt, oil, and all loose or peeling paint. Cleaning shall be accomplished by the use of metal brushes and scrapers or other effective means meeting the approval of the Engineer. A sand blast may be used provided results are equal to the best results obtainable by hand methods. Oil or grease shall be removed by the use of a suitable solvent or equally effective method. Bristle or wood fiber brushes shall be used for removing loose dust.
- d. Painting - After cleaning, one coat of an approved primer shall be placed to all areas where the old paint has been removed or damaged. On surfaces where small areas of metal or closely spaced intervals are exposed, the primer shall consist of a complete coating. The signal post shall be painted with two coats of yellow enamel. Rollers or brushes must be used to apply the primer and paint. Spray painting will not be allowed.
- e. Basis of Payment - This work will be paid for at the contract price each for PAINT TRAFFIC SIGNAL POST & BASE, which price shall be payment in full for all labor, equipment and materials necessary to paint the existing traffic

EQ-55 PAINT MAST ARM & POST

EQ -56 COMBINATION MAST ARM&POLE:

- a. Description - This work shall consist of cleaning and painting a mast arm post or combination mast arm and post.
- b. Materials – Paint shall be TNEMEC with a compatible primer, or an approved equivalent.
- c. Cleaning - The mast arms or combination mast arms shall be cleaned by removing all rust, foreign material, dirt, oil, and all loose or peeling paint. Cleaning shall be accomplished by the use of metal brushes and scrapers or other effective means meeting the approval of the Engineer. The sand blast may be used provided results are equal to the best results obtainable by hand methods. Oil or grease shall be removed by the use of a suitable solvent or equally effective method. Bristle or wood fiber brushes shall be used for removing loose dirt.
- d. Painting - After cleaning, one coat of an approved primer shall be applied to all areas where the old paint has been removed or damaged. On surfaces where small areas of metal at closely spaced intervals are

exposed, the primer shall consist of a complete coating. Mast arms and poles shall be painted with two coats of paint. The mast arms and poles shall be painted with hi-build vinyl paint to conform to 99R Illinois DOT State Brown Ameron or equivalent. Rollers or brushes must be used to apply the primer and paint. Spray painting will not be allowed.

- e. Basis of Payment - This work will be paid for at the contract unit price each for PAINT MAST ARM & POLE or COMBINATION MAST ARM & POLE, which price shall be payment in full for all labor, equipment and materials necessary to paint the mast arm and post or combination mast arm and post.

EQ-57 TRAFFIC SIGNAL POST, 10 FT

EQ-58 TRAFFIC SIGNAL POST, 14 FT

EQ-59 TRAFFIC SIGNAL POST, 16 FT

EQ-60 TRAFFIC SIGNAL POST, 18 FT

This item shall comply with the TRAFFIC SIGNAL POST section of the DCDOT Traffic Signal Special Provisions contained in this Contract.

This work shall be paid for at the Contract unit price each for furnishing and installing TRAFFIC SIGNAL POST of the size indicated, complete in place, to the satisfaction of the Engineer.

#### **ITEM CH – CENTURY HILL STREET LIGHTING DISTRICT**

The Century Hill Street Lighting District provides street light service within the Century Hill subdivision in Naperville, Illinois. The service area is located in the area between Chicago Avenue, Burlington Railroad, Naper Boulevard and the Naperville Country Club.

Currently the street lights are maintained on an on-call basis funded through a tax levy assessed by this unit of government. There are approximately 75 residential street lights within the district. Twenty-seven aluminum poles with luminaires mounted on arms and forty-eight concrete poles with post top mounted luminaires.

Through the DuPage County ACT Initiative and consolidation efforts, the maintenance responsibilities for these residential street lights will be incorporated into this Contract.

The maintenance responsibility will continue to be accomplished on an on-call basis. No routine patrol of the subdivision is required. When an outage is reported, the Contractor shall have seven (7) days to respond to perform an investigation and perform repairs to the above ground equipment in accordance with the following pay items.

Should the initial investigation, result in a determination that the cause of the failure is a lack of power or other underground situation or a pole needs to be replaced, that work shall be paid to the Contractor on a Force Account Basis in accordance with Article 109.04 (b) of the Standard Specifications.

CH-1 RESIDENTIAL STREET LIGHT REPAIR, POST TOP MOUNTED

CH-2 RESIDENTIAL STREET LIGHT REPAIR, LUMINARIE ARM MOUNTED

This item shall consist of responding to a reported street light outage within seven (7) days to investigate to determine the nature of the problem and repair any above ground faults including but not limited to issues related to bulb outages, ballasts, fuses, or wiring in the pole. This item shall include all labor, parts, and equipment necessary to restore the street light to operation.

Should the initial investigation, result in a determination that the cause of the failure is a lack of power or other underground situation or a pole needs to be replaced, all work shall be paid to the Contractor on a Force Account Basis in accordance with Article 109.04 (b) of the Standard Specifications.

These items shall be paid for at the Contract unit price each for RESIDENTIAL STREET LIGHT REPAIR, of the type specified, which price shall be payment in full for investigating, repairing, and restoring the residential street light, of the type specified, to operation including all labor, equipment and materials necessary.

## **TRAFFIC SIGNAL MAINTENANCE CONTRACT**

### **EQUIPMENT LIST**

The following is a listing of the equipment that the Contractor shall be responsible to maintain under the Contract with the DuPage County Division of Transportation. The approximate number and type of equipment is listed to provide the Contractor with a breakdown of the inventory for bidding purposes. This list is comprised of existing equipment owned and/or maintained by the DuPage County Division of Transportation, and new equipment planned for construction and/or installation during the term of this Contract. The list includes traffic signal locations, street lighting locations, vehicle counting stations, as well as a listing of the type and number of signal appurtenances. The number of traffic signal locations varies due to construction, maintenance transfers, new installations, maintenance agreement revisions, and removals. The equipment list shall not be considered all-inclusive or comprehensive in any way, and the DuPage County Division of Transportation shall not be held accountable for any errors on the list.

It should be noted that the DuPage County Division of Transportation does have maintenance of traffic signal and street lighting facilities on roads that are not under the jurisdiction of the County. These locations are maintained for the municipalities and state through intergovernmental agreements. All work orders, payments and invoicing for these locations, which the County has maintenance responsibility, will be administered through this Contract by the County and not the agency with jurisdiction of the road.

## **TRAFFIC SIGNAL MAINTENANCE CONTRACT**

### **EQUIPMENT LIST**

The following is a listing of the equipment that the Contractor shall be responsible to maintain under this Contract with the City of Aurora. The approximate number and type of equipment is listed to provide the Contractor with a breakdown of the inventory for bidding purposes. This list is comprised of existing equipment owned and/or maintained by the City of Aurora, and new equipment planned for construction and/or installation during the term of this Contract. The list includes traffic signal locations and number of signal appurtenances. The number of traffic signal locations varies due to construction, maintenance transfers, new installations, maintenance agreement revisions, and removals. The equipment list shall not be considered all-inclusive or comprehensive in any way, and the City of Aurora shall not be held accountable for any errors on the list.

## **TRAFFIC SIGNAL MAINTENANCE CONTRACT**

### **SCHEDULE OF ROUTINE MAINTENANCE PAY ITEMS**

The following is a listing of the Routine Maintenance Pay Items that the Contractor shall be responsible to maintain under this Contract with the DuPage County Division of Transportation. The quantity of each pay item is provided to enable the Contractor to readily determine the Routine Maintenance Pay Items at a given location. This list is comprised of existing equipment owned and/or maintained by the DuPage County Division of Transportation, and new equipment planned for construction and/or installation during the term of this Contract. The list includes locations of traffic signals, emergency vehicle preemption systems, flashing beacons, street lighting, pump stations, and vehicle counting stations. The Routine Maintenance Pay Items at a given location vary due to construction, maintenance transfers, new installations, maintenance agreement revisions, and removals. The Schedule of Routine Maintenance Pay Items shall not be considered all-inclusive or comprehensive in any way, and the DuPage County Division of Transportation shall not be held accountable for any errors on the list.

**THE ROUTINE MAINTENANCE PORTION OF THE SCHEDULE OF PRICES FOR THIS CONTRACT (PAY ITEMS T-1 TO T-9, L-1to L-3, and PS-1) CONTAINS BID QUANTITIES THAT REFLECT AN ESTIMATED TYPICAL MONTH'S MAINTENANCE.**

## **TRAFFIC SIGNAL MAINTENANCE CONTRACT**

### **SCHEDULE OF ROUTINE MAINTENANCE PAY ITEMS**

The following is a listing of the Routine Maintenance Pay Items that the Contractor shall be responsible to maintain under this Contract with the City of Aurora. The quantity of each pay item is provided to enable the Contractor to readily determine the Routine Maintenance Pay Items at a given location. This list is comprised of existing equipment owned and/or maintained by the City of Aurora, and new equipment planned for construction and/or installation during the term of this Contract. The list includes locations of traffic signals, emergency vehicle preemption systems, flashing beacons, street lighting, pump stations, and vehicle counting stations. The Routine Maintenance Pay Items at a given location vary due to construction, maintenance transfers, new installations, maintenance agreement revisions, and removals. The Schedule of Routine Maintenance Pay Items shall not be considered all-inclusive or comprehensive in any way, and the City of Aurora shall not be held accountable for any errors on the list.

**THE ROUTINE MAINTENANCE PORTION OF THE SCHEDULE OF PRICES FOR THIS CONTRACT (PAY ITEMS T-1 TO T-9, L-1to L-3, and PS-1) CONTAINS BID QUANTITIES THAT REFLECT AN ESTIMATED TYPICAL MONTH'S MAINTENANCE.**