



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

April 16, 2015

SUBJECT: FAU Route 1698 (Kensington Avenue)  
Section 14-00091-00-RS (LaGrange)  
Cook County  
Contract No. 61B30  
Item 133  
April 24, 2015 Letting  
Addendum B

## NOTICE TO PROSPECTIVE BIDDERS:

Due to clarify information necessary to revise the following:

1. Deleted the Special Provision HMA-Quantity Correction (BMPPR) from pages 31-32
2. Revised the Index of Special Provisions and pages 40-56 of the Special Provisions clarifying an issue with lining the 42" combined sewer
3. Revised Plan Sheet 6 clarifying an issue with lining the 42" combined sewer

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

John Baranzelli, P.E.  
Acting Engineer of Design and Environment

A handwritten signature in black ink, appearing to read "Ted B. Walschleger, P.E." with a stylized flourish at the end.

By: Ted B. Walschleger, P.E.  
Engineer of Project Management

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PAVEMENT CORES

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The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

**1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders.** The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except "Non-Quality" and "FRAP". The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications"
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders."

~~**HOT MIX ASPHALT - QUANTITY CORRECTION (BMPR):**~~

~~Effective: October 1, 2014  
Revised: ~~October 2, 2014~~~~

~~Revise the fifth paragraph of Article 406.13(b) of the Standard Specifications to read as follows:~~

~~"HMA and Stone Matrix Asphalt (SMA) mixture in excess of 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer will not be measured for payment. The "adjusted quantity to be placed" and the "adjusted pay quantity" for HMA and SMA mixtures will be calculated as follows.~~

~~Adjusted Quantity To Be Placed = C x quantity shown on the plans or the plan quantity as specified by the Engineer~~

~~where: C = English:  $C = \frac{G_{mb} \times 46.8}{U}$       Metric:  $C = \frac{G_{mb} \times 24.99}{U}$~~

~~and where:  $G_{mb}$  = average bulk specific gravity from approved mix design  
 $U$  = unit weight of HMA shown on the plans in lb/sq yd/in.  
(kg/sq m/25 mm), used to estimate plan quantity  
46.8 = English constant  
24.99 = metric constant~~

~~Adjusted Pay Quantity (not to exceed 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer) = B x HMA tons actually placed~~

where:  $R = \frac{1}{C}$

If project circumstances warrant a new mix design, the above equations shall be used to calculate the adjusted plan quantity and adjusted pay quantity for each mix design using its respective average bulk specific gravity."

**DOMESTIC WATER SERVICE BOXES TO BE ADJUSTED:**

This work shall be done in accordance with Section 565 of the Standard Specifications and shall include the vertical adjustment of a cast iron extension for the domestic water service box to the finished elevation or as determined by the Engineer. Sufficient space and length along the extension must be provided in order to freely raise or lower the extension. Extreme care shall be taken to keep the inside of the extension and box completely free of any material which would prevent the opening and closing of the water valve.

Basis of Payment. This work will be paid for at the contract unit price each for DOMESTIC WATER SERVICE BOXES TO BE ADJUSTED.

**STRUCTURES TO BE ADJUSTED:**  
**SANITARY MANHOLES TO BE ADJUSTED:**

This work shall be done in accordance with Section 602 of the Standard Specifications, the Frames and Lids to be Adjusted (Special) Special Provision and shall consist of the adjustment of structures including sanitary manholes. Non-hardening butyl rubber mastic sealant; minimum thickness ¼-inch, shall be used between adjusting rings in place of mortar, or as required by the Engineer as coordinated with the Owner of the Sanitary Sewer. In locations where existing external frame seals exist, it shall be removed and reinstalled. In locations where internal frame seals exist, it shall be removed and disposed of and an external frame seal shall be installed. In locations where there are no existing frame seals, an external frame seal shall be installed. The installation of the external frame seal will not be paid for separately and will be considered included in this pay item.

The External Frame seal shall consist of the following:

- A. Provide frame seals consisting of a flexible external rubber sleeve and extension and stainless steel compression bands.
- B. Rubber sleeve and extension:
  - 1. Provide rubber sleeve and extension complying with ASTM C923.
  - 2. Comply with a minimum 1500 psi tensile strength, maximum 18 percent compression set and a hardness (durameter) of 48±5.
  - 3. Provide sleeve with a minimum thickness of 3/16-inch and unexpanded vertical heights of 6 or 9 inches.
- C. Provide extension having a minimum thickness of 3/16-inch.

Signs which are placed on overhead bridge structures shall be fastened to the handrail with stainless steel bands. These signs shall rest on the concrete parapet where possible. The Contractor shall furnish mounting details for approval by the Engineer.

Method of Measurement. This work shall be measured for payment in square feet (square meters) edge to edge (horizontally and vertically).

All hardware, posts or skids, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for TEMPORARY INFORMATION SIGNING.

**CURED IN PLACE PIPE:**

SUMMARY: Provide combined sewer pipeline cured-in-place pipe where shown on the Drawings, specified herein, and as needed for a complete and proper rehabilitation of the sewer, and in accordance with the latest revision of the "Standard Specifications for Water and Sewer Construction in Illinois", MWRDGV requirements, and Village of La Grange standards; except as revised herein. Provide labor, materials, tools, and equipment necessary to perform all work specified in this Special Provision.

SUBMITTALS: Submit shop drawings.

1. Technical data sheet for each product to be used including manufacturer's recommended installation procedures and written certification of compliance with ASTM standards for all materials.
2. Material Safety Data Sheets (MSDS) for resin to be used.
3. Project specific guidelines and recommendations.
4. Cured-in-place pipe design calculations, including manufacturer's validation of contractor's design calculations or manufacturer's design worksheet for each separate liner to be installed.
5. Manufacturer's recommendation for the following:
  - a. Minimum and maximum temperature to be maintained in the cured-in-place pipe during the cure period and post-cure period.
  - b. Minimum and maximum pressures to be maintained in the cured-in-place pipe during the inversion and during the cure period.
6. Submit at the preconstruction meeting for review and approval by Owner and Engineer:
  - a. Plan for bypassing of sewage.
  - b. Traffic control plans.
7. Submit prior to installation of the cured-in-place pipe:
  - a. Pre-rehabilitation television inspection videos and written logs.
    - (1) The cleaning and televising must be completed and submitted no more than seven days and no less than three (3) days prior to installing the liner.

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- (2) Comply with the Internal Sewer Inspection Equipment section of this Special Provision for television inspection format.
8. Submit after installation of the cured-in-place pipe, but before submitting application for final payment:
    - a. Wet-out report for each separate liner including quantity of resin impregnated.
    - b. Written log of pressure readings during the inversion and cure periods.
    - c. Written log of temperatures for each thermocouple used during the cure period and post-cure periods.
    - d. Written log of water loss during the curing process, if applicable.
    - e. Post-rehabilitation television inspection videos and written logs.
    - f. Comply with the Internal Sewer Inspection Equipment section of this Special Provision for television inspection format.
      - (1) Provide one set of DVDs of the pre and post-rehabilitation videos in addition to USB media.
      - (2) Provide one set of a professionally prepared index listing the contents of each disc and a bound document containing the written logs grouped by disc content.

QUALITY ASSURANCE:

Certifications:

1. Furnish manufacturer's certificate of compliance stating the contractor is certified to perform the work.
2. Provide manufacturer's certification that the proposed resin system and cure schedule are appropriate for the proposed application and have been tested in laboratory and field conditions.
3. Verify the product has a minimum of 250,000 feet installed and has been in successful service in the United States for a minimum of 5 years.
4. Installer must have successfully installed a minimum of 50,000 feet of the proposed CIPP product.

EXISTING DATA:

1. Those seeking the previous sewer television inspection videos should contact the owner of record. To make arrangements for access to this information please contact Kaitlin Wright, Project Engineer, with Baxter & Woodman Consulting Engineers (815) 459-1260.

PREPARATORY CLEANING EQUIPMENT: Provide high-velocity water jetting machines, mechanically powered equipment, cable attached devices, pipe pigs and all other equipment necessary to clean pipe in preparation for televising and installation of CIPP.

INTERNAL SEWER INSPECTION EQUIPMENT: Provide a closed circuit television (CCTV) meeting the following requirements:

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Television Camera:

1. Provide a digital color television camera designed and constructed for sewer inspection with the following capabilities:
  - a. High-resolution color-chip camera and monitor capable of producing a minimum of 650 lines of resolution.
  - b. Adequate and adjustable directional lighting to allow a clear picture of the entire periphery of the pipe.
  - c. Provide auxiliary lighting for sewers larger than 12-inch diameter.
  - d. Operable in 100 percent humidity conditions.
  - e. Use a camera that has a 360 degree radial by 270 degree pan-and-tilt viewing field.
  - f. Remote or manually propelled.
  - g. Electronic footage counters accurate to less than 1 percent error over the length of the particular sewer being inspected.
  - h. Skids or floatation device where it is necessary to raise the camera in large sewers specifically sized for each pipe diameter to position the camera in the center of the pipe.

Audio-Video Recording System: Provide the total audio-video recording system and procedures as required to produce a high quality digital video and audio production of bright, sharp, clear pictures with accurate colors, free from distortion. The audio portion will have proper volume and clarity and will be free from distortion.

Video Record Equipment:

1. Record inspections electronically and create DVDs directly from digital content without an intermediate analog conversion.
2. Provide the documentation of the inspection on DVD format discs.

BYPASS PUMPING EQUIPMENT:

1. Provide all pumps, hoses, temporary piping, and plugs required to bypass flow around sewer sections to be rehabilitated.
  - a. Size equipment to transport peak flow rates and to prevent excessive surcharging in the upstream sewer.
  - b. Provide ramps for street and driveway crossings, barricades, and traffic control.
2. Provide portable generators to power temporary bypass pumping.

COMBINED SEWER LINING PRODUCT: Provide flexible/resin-impregnated polyester felt tube sized to provide a tight fitting liner within the existing combined sewer when cured. Provide product that complies with all requirements of ASTM F1216-09.

Material:

1. Provide a tube consisting of one or more layers of flexible needle felt or an equivalent nonwoven or woven material capable of carrying resin, withstanding installation pressures and curing temperatures.

2. Coat the outside layer of the tube with an impermeable, flexible membrane that will contain the resin and allow the resin impregnation (wet-out) procedure to be monitored.
  - a. Comply with ASTM F1216-09, Section 5.1.
  - b. Verify the wall color of the pipe liner after installation is not of a dark color or a non-reflective nature that could inhibit proper closed circuit television inspection.
  - c. Material will allow resin migration between new lining and host pipe.
3. Provide a tube with relatively uniform thickness that when compressed at installation pressures will equal or exceed the calculated minimum design CIPP wall thickness.
4. Mark the tube for distance at regular intervals along its entire length, not to exceed 5 feet.
5. Provide a styrene-based, thermoset resin and catalyst system or an epoxy resin and hardener that is compatible with the inversion process.
  - a. Comply with ASTM F1216-09, Section 5.2.

Design Parameters:

|                       |                    |
|-----------------------|--------------------|
| Pipe Condition        | Fully deteriorated |
| Depth to pipe invert  | 8-feet             |
| Design life (years)   | 50                 |
| Safety factor         | 2                  |
| Groundwater level     | At surface         |
| Ovality circumference | 5%                 |
| Soil Modulus          | 1,000 psi          |
| Soil density          | 120 lbs/cu. ft.    |
| Poisson's Ratio       | 0.3                |

Minimum Structural Properties:

1. Flexural strength: 4,500 psi per ASTM D-790.
2. Flexural modulus: 250,000 psi per ASTM D-790.
3. Final structural properties: Determined by basis of design.
4. Thickness: Comply with ASTM F-1216, Appendix X1.
  - a. Provide a minimum pre-cured thickness of 6mm for all CIPP installed regardless of calculations showing thinner wall thickness is adequate.
  - b. Provide a minimum post-cured thickness of at least 85-percent of the pre-cured thickness, or the minimum required thickness based on the design parameters, whichever is greater.

Acceptable manufacturers:

1. Insituform.
2. Inliner.
3. National Liner.
4. Premier.
5. CIPP.



MANHOLES:

1. Precast:
  - a. Provide concentric or eccentric cone section to match existing.
2. Concrete:
  - a. Provide 4000 psi concrete using Type I Portland Cement complying with ASTM C150.
3. Mortar:
  - a. Mix one part Portland Cement to three parts fine aggregate.
4. Joints for precast sections:
  - a. Provide tongue and groove joints with either flexible watertight rubber gaskets or preformed bituminous plastic gaskets consisting of a homogeneous blend of refined hydrocarbon resins and plasticizing compound reinforced with inert mineral filler.
    - (1) Acceptable preformed gasket products:
      - i. K. T. Snyder Co., RAM-NEK.
      - ii. Concrete Sealants, Type CS-102.
      - iii. Or equal.
5. Frames and covers:
  - a. Provide cast iron frames and covers with heavy duty indented top with solid self-sealing lids and machined bearing surfaces, stamped with the word "SANITARY".
    - (1) Acceptable products:
      - i. Neenah R-1713.
      - ii. East Jordan 1050 EXHD.
      - iii. Or equal.

SURFACE CONDITIONS:

1. Examine the areas and conditions under which work of this Special Provision will be performed.
  - a. Correct conditions detrimental to timely and proper completion of the Work.
  - b. Do not proceed until unsatisfactory conditions are corrected.
2. Provide protective sheeting under wheel tracks of all vehicles entering grassed areas unless otherwise directed by the Engineer.
3. Protect utilities in area of construction.
  - a. Contact JULIE at any locations where excavation is required.
4. Restore all areas of construction to preconstruction condition, including streets, sidewalks, curbs, trees and shrubbery of same type and size, and lawns and parkways.

EXISTING PIPING: Protect existing piping throughout the area of proposed work. All existing piping is to remain in use unless a change is approved by the Engineer.

PUBLIC NOTIFICATION: Implement a public notification program for all users affected by the rehabilitation work.

1. Deliver a written notice to each home or business the day prior to the beginning of work being conducted on the section of sewer.
2. As a minimum, include a description of the work, special instructions for the users, and a local telephone number of the Contractor.

PREPARATORY CLEANING:

1. Provide preparatory cleaning of the sewer section to be lined prior to installing CIPP.
  - a. Completely remove all grease, debris and roots with high velocity jet.
  - b. Remove all mineral deposits to within ¼-inch of the pipe wall.
  - c. Trim protruding service laterals to within ½-inch of the pipe wall.
  - d. Report all unforeseen conditions to the Engineer immediately.
  - e. Remove existing debris and debris resulting from the cleaning operation from the downstream manhole of the sewer section to a location approved by the Owner.
    - (1) Passing of debris through subsequent sections is not permitted.
  - f. Flush each sewer again to remove accumulated debris immediately before installing CIPP.
2. The Owner will provide water at no cost to the Contractor for preparatory cleaning.
  - a. The Contractor may fill his tank truck at approved fire hydrants near the work sites.
  - b. Provide a backflow prevention device approved by the Owner when connecting to the water supply system.
  - c. Meter the amount of water taken from the Owner's system and provide a written water use log to the Owner at the end of the project.
  - d. **Only Village of La Grange Public Works Department employees shall operate any existing water distribution appurtenances (i.e. water valves, fire hydrants, etc.).**

CORRECTION OF EXISTING CONDITIONS:

1. Bring to the attention of the Engineer sections of pipe where voids exist above the pipe and you believe grouting of voids above sewer is warranted.
  - a. Obtain Engineer's approval to add sections of grouting to the Contract.
2. Bring to the attention of the Engineer sections of collapsed pipe, displaced joints, or pipe ovality that is severe to a point that the CIPP cannot be properly installed.
  - a. Obtain Engineer's approval to add locations for excavation and replacement repair to the Contract.

INTERNAL SEWER INSPECTION:

1. Begin each inspection with written and **verbal explanation** of the current date, project name, and Owner; followed by the general locations, manhole segment and direction of viewing and beginning footage count superimposed on the video signal.

2. Provide continuous footage counter and manhole segment throughout the entire video recording.
3. Conduct the inspections from the upstream to the downstream manhole. Utilize "reverse" direction inspections only if television equipment encounters an impassible obstruction that requires the camera to be inserted in downstream manhole in order to complete the inspection.
  - a. The cost to reset the televising equipment for a reverse setup is considered incidental to the cost of that section.
  - b. **Begin all inspections at the center of the beginning manhole** and conclude at the center of the ending manhole.
    - (1) Sewer inspections begun within sewer segments will not be accepted.
  - c. Maintain **continuous verbal commentary** of the sewer inspection for entire length of inspection.
    - (1) This is utilized as a cross-check against written logs and is useful as a reminder of which sewer section is being televised.
4. Move the camera, at a speed no greater than 30 feet per minute.
5. Inspect the entire length of the sewer section.
6. Use air blowers, fans, or other means to evacuate steam from the sewers if such conditions exist.
7. Stop at all service connections, pan and look up service, and note items such as type of connection, plugs, leaks, type of material, etc.
  - a. Adjust focus and lighting as needed to obtain a bright clear view of the connection and service pipe.
  - b. Position the camera to view as far up the service as possible.
8. Stop camera and pan and look up in all manholes.
9. Stop televising if camera becomes submerged.
  - a. Use high-pressure jetting or other means to lower water level to a point below camera.
  - b. Provide temporary plugs if necessary, or directed by the Owner's representative.
  - c. Perform by-pass pumping if necessary, or directed by the Owner's representative.
10. Documentation:
  - a. Inspection Logs:
    - (1) Provide inspection logs with the following information:
    - (2) Owner's Name.
    - (3) Inspector's Name.
    - (4) Crew Chief's Name.
    - (5) Date.
    - (6) From MH No. \_\_\_\_ .
    - (7) To MH No. \_\_\_\_ .
    - (8) Direction of Flow.
    - (9) Type of Pipe.
    - (10) Section Length.
    - (11) Pipe Size.

- (12) Depth of Upstream and Downstream Manholes.
  - (13) Direction of Inspection (camera movement).
  - (14) Document the footage and clock orientation of all building service connections.
  - (15) Use terminology generally accepted by the industry.
  - (16) Provide computer generated entries on inspection logs.
  - (17) Complete inspection log in the field.
  - (18) Provide an audio track describing all information documented in the Inspection Log.
11. Submit pre-rehabilitation and post-rehabilitation inspection video to the Engineer as specified in paragraph 2.2 A.

**COMBINED SEWER LINING:**

- 1. Conduct operations in strict accordance with applicable OSHA standard involving scaffolding and working in confined spaces.
- 2. Do not install CIPP in any sewer where the Engineer has not reviewed and approved the liner thickness calculations and the pre-rehabilitation inspection.
- 3. Provide by-pass pumping of sewage around section of sewer being repaired if pumping is necessary to properly perform the work.
- 4. Provide the necessary quantity of resin to meet the design structural and thickness requirements.
  - a. Allow for polymerization shrinkage and the potential loss of resin during installation through cracks and irregularities in the pipe wall.
- 5. Install wet-out tube by the inversion process and the application of hydrostatic head, or air pressure, sufficient to extend CIPP to next installation point, hold pipe tight to existing sewer wall and prevent damage to the tube.
  - a. Store resin and impregnated felt per manufacturer's requirements.
  - b. Maintain pressure in accordance with manufacturer's requirements.
  - c. Monitor gauge pressure during the inversion and curing process.
  - d. Shape to match existing pipe prior to insertion.
    - (1) Maximum 15% out-of-round.
    - (2) Maximum 5% deficiency in design thickness of liner.
- 6. Cure the CIPP by raising the water or steam temperature in the CIPP to a point necessary to properly cure the pipe.
  - a. The temperature required will be determined by the resin/catalyst system employed.
    - (1) Maintain temperature during cure period and post-cure period in accordance with manufacturer's requirements.
  - b. Provide monitors to gauge temperature of incoming and outgoing water supply, or steam.
  - c. Provide thermocouples to measure the temperature underneath the impregnated tube in the installation manhole, termination manhole, and all intermediate manholes.
  - d. Cool CIPP to a temperature below 100 degrees F for water cure and 113 degrees F for steam cure prior to reducing static head. Slowly drain so as not to create a vacuum in the newly hardened CIPP.

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- e. No visual defects, including delamination, pinholes, un-impregnated or cured spots, or foreign bodies are acceptable.
- 7. Obtain a representative restrained sample from each liner installed.
  - a. For pipe sizes 18 inches and smaller, use a minimum one (1) foot long piece of PVC pipe of the same size as the host pipe in the downstream manhole.
  - b. For pipe sizes greater than 18 inches, use a plate sample apparatus a minimum of 12 inches square.
  - c. Cure the samples along with the liner.
  - d. Provide all materials and equipment for the sampling work.
  - e. Mark each sample with the date taken and the MH to MH section using a permanent marker.
    - i. Cut and store each sample as directed by the Engineer.
  - f. Send samples selected by the Engineer to a State certified laboratory approved by the Engineer.
    - (1) Test for Modulus of Elasticity, Flexural Strength, and thickness.
    - (2) Direct laboratory to send results directly to the Engineer.
    - (3) All samples that fail to meet the structural requirements will require an additional sample to be submitted and tested at no additional cost to the Owner.

#### SERVICE CONNECTIONS:

- 1. Determine service connection locations from pre-rehabilitation CCTV inspections.
- 2. Reinstate services unless investigation proves service is inactive or abandoned.
  - a. Reinstate services by television camera and interior cutting device.
    - (1) Provide a minimum of 95% of design flow capacity.
    - (2) Brush finish all openings to achieve a smooth finish with no ragged cuts or edges.
    - (3) Allow no annular space between connection and liner.
    - (4) Remove excess resin from invert of service.
  - b. Do not reinstate inactive or abandoned services.
    - (1) Repair inactive services that are inadvertently reinstated by installing a short liner, as approved by the Engineer.
    - (2) Short liner will comply with the materials and installation procedures of this Special Provision.
    - (3) Install short liner at no cost to the Owner.
- 3. Allow a maximum of 12 hours for services to be out of service during installation of CIPP.

#### MANHOLES:

##### Jointing:

- 1. Use flexible watertight gaskets for each joint, including grade ring joints.
- 2. Trim surplus gaskets.

Frames and covers: Unless otherwise shown on the Drawings or as directed by the Engineer, set frames and covers:

1. In paved areas: So that the top of the cover will be flush with the finished pavement; or
2. In unpaved areas: To drain away from the manhole.
3. With flexible watertight gaskets.
4. With grade rings not to exceed 8 inches.

RESTORATION: Restore all areas of work to pre-construction conditions.

**CURED-IN-PLACE PIPE LINER, 42”:**

Description: This work shall be done in accordance with the Special Provision for “CURED IN PLACE PIPE” and shall consist of the installation of cured in place pipe (CIPP) within an existing combined sewer complete in place, including protection of staging areas; dewatering; preparatory cleaning and television inspection of combined sewer prior to installation of CIPP; installation of CIPP; curing of CIPP; final television inspection; delivery of all television inspection DVDs to Owner and Engineer; removal and disposal of waste excavated materials; and backfilling with granular backfill materials.

The work of this Pay Item includes reestablishing connection of 33 existing active services lines that will be covered over by the insertion of the CIPP inside the existing sewer, including: determining service location from CCTV inspection; using a camera and internal cutting device to provide opening to the service; brush finishing of the openings; and removal of excess resin in the invert.

The work of this Pay Item includes the excavation and removal of the existing cover, frame, adjusting rings, and brick corbel as necessary to install the liner; providing protection and preventative measures to keep debris from entering the existing combined sewer; providing and installing a minimum 8-inch thick by 8-inch wide pre-cast or cast-in-place concrete collar on top of existing brick barrel complete in place including mastic sealer above and below collar; providing and installing a new pre-cast corbel, new adjusting rings, and new matching frame and cover as approved by the Owner to match the existing surface elevation complete in place; and all other labor, materials, and equipment required to provide a water-tight repair.

The work of this Pay Item includes providing the necessary apparatus to obtain one representative, restrained CIPP sample; curing the sample with the liner; removing the sample after completion of curing; labeling the sample as specified; delivery of sample to a state certified, third-party testing laboratory, acceptable by the Engineer, to be tested for the parameters specified; and laboratory costs for testing.

Measurement: The work of this Pay Item will be measured for payment in lineal feet along the centerline of the pipe.

Basis of Payment: The work of this Pay Item will be paid for at the Contract Unit Price per lineal foot for CURED-IN-PLACE PIPE LINER, 42”.

**UTILITY STRUCTURE REMOVAL:**

Description: The work of this Pay Item shall consist of the removal of existing utilities crossing through the combined sewer, including identification of the type and location of utilities; bypass pumping of sewage, if required; sawcutting or grinding; and removal and disposal of existing materials.

The work of this Pay Item does not include the relocation or reinstallation of the conflicting utility pipe or cable. The Contractor shall coordinate the removal of the utility within the combined sewer with the relocation of the utility to be completed by the owner of the utility. The Village of La Grange has notified the owner(s) of the utility(ies) to relocate their underground facility(ies).

Basis of Payment: The work of this Pay Item will be paid for at the Contract Unit Price for each UTILITY STRUCTURE REMOVAL.

**AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS:**

This work shall consist of furnishing and placing aggregate for use as temporary access in accordance with section 402 of the Standard Specifications, except as modified herein.

Revise Article 402.10 of the Standard Specifications to read:

**"402.10 For Temporary Access.** The contractor shall construct and maintain aggregate surface course for temporary access to private entrances, commercial entrances and roads according to Article 402.07 and as determined by the Engineer.

The aggregate surface course shall be constructed to the dimensions and grades specified below, except as modified by the plans or as determined by the Engineer.

- (a) Private Entrance. The minimum width shall be 12 ft. The minimum compacted thickness shall be 6 in. The maximum grade shall be eight percent, except as required to match the existing grade.
- (b) Commercial Entrance. The minimum width shall be 24 ft. The minimum compacted thickness shall be 9 in. The maximum grade shall be six percent, except as required to match the existing grade.
- (c) Road. The minimum width shall be 24 ft. The minimum compacted thickness shall be 9 in. The grade and elevation shall be the same as the removed pavement, except as required to meet the grade of any new pavement constructed.

Maintaining the temporary access shall include relocating and/or regrading the aggregate surface course for any operation that may disturb or remove the temporary access. The same type and gradation of material used to construct the temporary access shall be used to maintain it.

When use of the temporary access is discontinued, the aggregate shall be removed and utilized in the permanent construction or disposed of according to Article 202.03”.

402.12 Method of Measurement. Add the following to this article:

“Aggregate surface Course for temporary access will be measured for payment as each for every private entrance, commercial entrance or road constructed for the purpose of temporary access. If a residential drive, commercial entrance, or road is to be constructed under multiple stages, the aggregate needed to construct the second or subsequent stages will not be measured for payment but shall be included in the cost per each of the type specified”.

402.13 Basis of Payment. Revise the second paragraph of this Article to read:

“Aggregate surface course for temporary access will be paid for at the contract unit price per each for TEMPORARY ACCESS (PRIVATE ENTRANCE), TEMPORARY ACCESS (COMMERCIAL ENTRANCE) or TEMPORARY ACCESS (ROAD).

Partial payment of the each amount bid for temporary access, of the type specified, will be paid according to the following schedule:

- (a) Upon construction of the temporary access, sixty percent of the contract unit price per each, of the type constructed, will be paid.
- (b) Subject to the approval of the Engineer for the adequate maintenance and removal of the temporary access, the remaining forty percent of the pay item will be paid upon the permanent removal of the temporary access”.

**VALVE VAULTS TO BE REMOVED:**

This work shall be done in accordance with Section 602 of the Standard Specifications except as modified herein.

602.01 Description. Add the following to the end of this Article:

“This work shall consist of the removal and satisfactory disposal of existing valve vaults at the locations shown on the plans.”

602.03 Excavation and Backfilling. Add the following paragraph to the end of this Article:

“Prior to removing the existing structure or ordering materials, the Contractor shall verify the existing conditions so the new structure matches the existing to be removed.”

602.16 Basis of Payment. Add the following to the end of this Article:

“This work will be paid for at the contract unit price per each for VALVE VAULTS TO BE REMOVED.”



**MANHOLE REHABILITATION – INTERIOR SEALING:**

**SUMMARY:** Provide combined sewer manhole rehabilitation as shown on the Drawings, as specified herein, and as needed for a complete and proper installation, and in accordance with the latest revision of the “Standard Specifications for Water and Sewer Construction in Illinois”, except as revised herein. **DO NOT PERFORM THE MANHOLE REHABILITATION WORK UNTIL AFTER THE SEWERS HAVE BEEN LINED.**

**SUBMITTALS:** Submit shop drawings.

1. Technical data sheet on each product used, including ASTM test results indicating the product is suitable for its intended use per these Special Provisions.
2. Material Safety Data Sheets (MSDS) for each product used.
3. Manufacturer’s recommended installation procedures and surface preparation requirements.
4. Project specific guidelines and recommendations.
5. Qualification of Applicator:
  - a. Manufacturer certification that applicator has been trained and approved in the handling, mixing, and application of the products to be used.
  - b. Certification that the equipment to be used for applying the product has been manufactured or approved by the protective coating manufacturer and the applicator personnel have been trained and certified for the proper use of the equipment.
  - c. Five (5) recent references of applicator indicating successful application of intended product(s), during the last two (2) years
  - d. Proof of any necessary federal, state, or local permits or licenses necessary to complete the project.
6. Design details for any additional ancillary systems and equipment to be used in site and surface preparation, application and testing.
7. Submit compressive strength test results of resin system, including the short term flexural modulus and long term flexural modulus strength, prior to submitting final application for payment.
8. Wall thickness design calculations for each structure to be rehabilitated utilizing the specified resin technology systems must be submitted with all qualified bids, along with supporting formulas that document the version of formula used.

**QUALITY ASSURANCE:** Use only approved equipment designed and manufactured by the material supplier specifically for the application of resin system in sanitary systems. Applicator shall initiate and enforce quality control procedures consistent with applicable ASTM, NACE and SSPC standards and the protective coating manufacturer’s recommendations.

**DELIVERY, STORAGE AND HANDLING:**

1. Materials are to be kept dry, protected from weather and stored under cover.
2. Protective coating materials are to be stored between 50° F and 90° F. Do not store near flame, heat or strong oxidants.

3. Protective coating materials are to be handled according to their material safety data sheets.

GENERAL: Provide prepackaged materials that are designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used. Each material shall be designed for application over damp surfaces without degradation of the final product or the bond between the product and the manhole surface.

1. Properly clean and prepare all surfaces as specified and required for the application of the intended products.
2. Fill all voids and irregularities with structurally sound materials as specified before applying the resin based material.
3. Stop all active points of infiltration using chemical or cement grout as specified prior to applying the resin based material.
4. Apply a high strength, resin based material either by manually spraying or centrifugally casting in a uniform, prescribed thickness.
5. Finish all surfaces with a trowel finish followed by a brushed finish.

INTERIOR MANHOLE SEALING:

Minor Infiltration Control Material:

1. Use a rapid setting cementitious product to stop minor water infiltration with the following minimum requirements:
  - a. Compressive strength (ASTM C 109): 1,000 psi, 1 hr.; 2,500 psi, 24 hrs.
  - b. Set time: <1.0 minute.
2. Acceptable manufacturers/products:
  - a. Strong-Seal Corp., Strong-Plug.
  - b. Sauereisen, Instaplug No. F-180.
  - c. Or equal.

Patching Material:

1. Use a quick setting fiber reinforced calcium aluminate corrosion resistant material for filling voids with the following minimum requirements:
  - a. Compressive strength (ASTM C 109): 1,800 psi, 24 hrs.
  - b. Bond (ASTM C882): 1,600 psi, 28 days.
  - c. Applied density: 105 lbs/ft<sup>3</sup>.
  - d. Shrinkage (ASTM C 490): 0% at 90% R.H.
  - e. Set Time: <30 minutes.
2. Acceptable manufacturers/products:
  - a. Strong-Seal Corp., QSR.
  - b. Sauereisen, Underlayment F-120.
  - c. Or equal.

Protective Coating Material:

1. Use a resin based material with the following design conditions assumed for all structures being rehabilitated:

| <u>Parameter</u>    | <u>Design Requirement</u>  |
|---------------------|--|
| Structure Condition | Partially/Fully Deteriorated   |
| Soil Type           | Saturated/Unsaturated  |
| Design Thickness    | ASTM 1216-Appdx. XI  |
| Ovality             | Not greater than 2%  |
| Soil Load           | 120 pounds per cubic foot  |
| Traffic Load        | AASHTO-HS-20-44 Highway  |
| Soil Modulus        | >500 psi <1000 psi.  |
| Safety Factor       | 2.0  |
| Soil Cover          | Distance from grade to invert of conduit   |
| Water Table         | 4 feet below ground surface  |
| 2.                  | The finished liner shall conform to the following minimum physical requirements: |
| a.                  | Compressive strength (ASTM D 695): > 18,000 psi.                                 |
| b.                  | Tensile strength (ASTM D 638): > 7,450 psi.                                      |
| c.                  | Concrete Bond (ASTM D7234 or Substrate Failure): > 200 psi                       |
| d.                  | Steel Bond (ASTM D4541): > 1,600 psi   |
| e.                  | Initial flexural modulus (ASTM D 790): > 735,000 psi                             |
| f.                  | Density: 87± lbs/ft <sup>3</sup> .   |
| g.                  | Chemical Resistance (ASTM D 543)   |
| 3.                  | Acceptable manufacturers/products:   |
| a.                  | Sprayroq, Inc. - SprayWall®  |
| b.                  | Or equal.  |

SURFACE CONDITIONS:

1. Examine the areas and conditions under which work of this Special Provision will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
2. Protect utilities in area of construction.
  - a. Contact JULIE at any locations where excavation is required.
3. Restore all areas of construction to preconstruction condition, including streets, sidewalks, curbs, trees and shrubbery of same type and size, and lawns and parkways.

FIELD MEASUREMENTS AND INSPECTIONS:

1. Make necessary inspections and measurements in the field to assure application methods and materials are in accordance with these Special Provisions and manufacturers recommendations.
2. Comply with all local, state, and federal regulatory agency requirements regarding environment, health, and safety.

SURFACE PREPARATION:

1. Applicator shall inspect all surfaces specified to receive a protective coating prior to surface preparation and notify the Engineer of any noticeable surface disparities that may interfere with proper preparation or material application.
2. Place covers over invert to prevent extraneous material from entering the sewer lines before cleaning.
3. Remove all loose material from manhole wall using a high pressure water spray.
  - a. Minimum water pressure: 3,000 psi.
  - b. Remove loose and protruding brick mortar and concrete using mason's hammer and chisel.
  - c. Remove oil, grease, roots or other contaminants that may inhibit bonding of the rehabilitation materials.
  - d. Fill voids and active leaks on the manhole wall as necessary with patching mix as recommended by the manufacturer.
  - e. If required, drill and pressure grout large leaks as recommended by the manufacturer.
4. All surfaces to receive protective coating shall be dry to the touch with no visible dampness.
5. Prepare surfaces to receive protective coating with a series of groves cut into the substrate at a spacing and depth determined by the manufacturer to lock the protective coating to the substrate.

INTERIOR MANHOLE SEALING:

1. Apply protective coating to all interior manhole surfaces from the bottom of the manhole frame to the spring line of the sewer in strict accordance with manufacturer's recommendations.
  - a. Comply with manufacturer's recommendations for mixing, application and cure.
  - b. Maintain temperature of the surface to be coated between 70° F and 110° F during application.
    - (1) Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat sources to the structure being coated.
  - c. Apply each coat of protective coating with airless spray application equipment approved by the coating manufacturer.
    - (1) The air source is to be filtered to completely remove all oil and water.
  - d. Spray apply protective material per manufacturer's recommendations.
  - e. Final thickness of protective coating for all surfaces of the manholes is a minimum of ¼ inch.
  - f. Follow manufacturer's requirements for setting before applying subsequent coats.
  - g. Remove all protective material from steps as a result of the rehabilitation.
  - h. Re-apply coating to area determined to be unacceptable by the Engineer.

**TESTING:**

1. Perform a final visual inspection by the Inspector and Manufacturer's representative.
2. Perform the following tests on the manholes rehabilitated as selected by the Engineer.
  - a. High Voltage Spark Test:
    - (1) Conduct tests once protective coating is set hard to the touch.
    - (2) Comply with manufacturer's recommendations.
  - b. Adhesion Testing:
    - (1) Perform on a minimum of one or 10% of all rehabilitated structures, whichever is greater.
    - (2) Conduct test after coating system has cured per manufacturer instruction and in accordance with ASTM D4541 (Steel) or ASTM 7234 (Concrete).
    - (3) Each testing section shall be identified by the Engineer.

**MANHOLES TO BE RECONSTRUCTED (SPECIAL):**

Description: The work of this Pay Item shall be done in accordance with the Special Provision for "MANHOLE REHABILITATION – INTERIOR SEALING" and shall consist of rehabilitating the interior of combined sewer manholes complete in place, including manhole cleaning and surface preparation; sealing material; application of sealing material; and all other labor, materials, and equipment required to seal the interior of each of the identified manholes including walls, cones or corbels, and adjusting rings as specified.

Basis of Payment: The work of this Pay Item will be paid for at the Contract Unit Price for each MANHOLES TO BE RECONSTRUCTED (SPECIAL) (for the manhole noted).