GUAM WATERWORKS AUTHORITY
Gloria B. Nelson Public Service Building | 688 Route 15, Mangilao, Guam 96913
P.O. Box 3010, Hagåtña, Guam 96932
Tel. No. (671) 300-6846/48 Fax No. (671) 648-3290

Invitation For Bid:	IFB-03-ENG-2026
Project:	Gravity Main Acute Defects Repair Project GWA Project No. 22606
Addendum No.:	**01**
Date:	August 25, 2026

All Potential Bidders:

This addendum is issued to modify the previously issued bid documents and/or given for informational purposes and is hereby made a part of the bid documents. Failure to acknowledge receipt of this addendum shall be grounds for the bidder's disqualification and rejection of the bidder's proposal.

1. The following sheets of the Conceptual Drawings supersede all previously issued drawings. The drawings were revised to correct inconsistencies.

   Drawings (1 Sheet)
   - C-20 Details - Replaced "REPAIR AT LATERAL" detail

2. The following sheets of the Specifications supersede all previously issued Specifications. The Specifications were updated as such:

   Specifications
   - Delete Specification Section 01 22 00 Measurement and Payment in its entirety and replace with the attached Specification Section 01 22 00 Measurement and Payment.
   - Delete Specification Section 33 01 30.71 Gravity Sewer Pipe Point Repairs in its entirety and replace with the attached Specification 33 01 30.71 Gravity Sewer Pipe Point Repairs

All other terms and conditions of the IFB remain the same.

Bidders are also notified to visit GWA website: http://guamwaterworks.org/bids/ to ensure that all addenda to the bid, answers to questions, and reminders communicated are received by all bidders throughout the solicitation process.

Miguel C. Bordallo, P.E.
General Manager

MCB; eq
Attachments: Revised Conceptual Drawings—Gravity Main Acute Defects Repair, Addendum No. 1
Revised Specifications— Gravity Main Acute Defects Repair, Addendum No. 1

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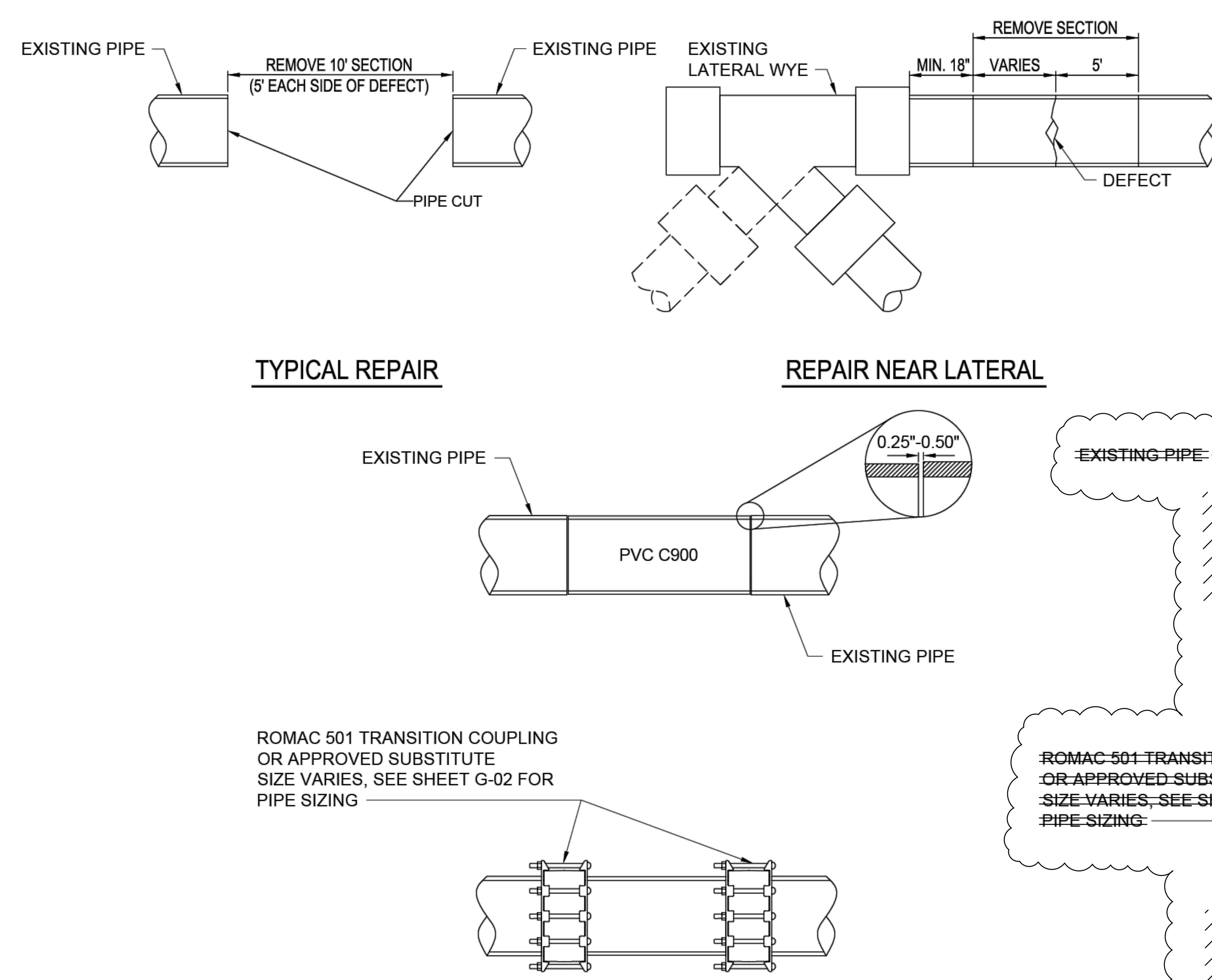

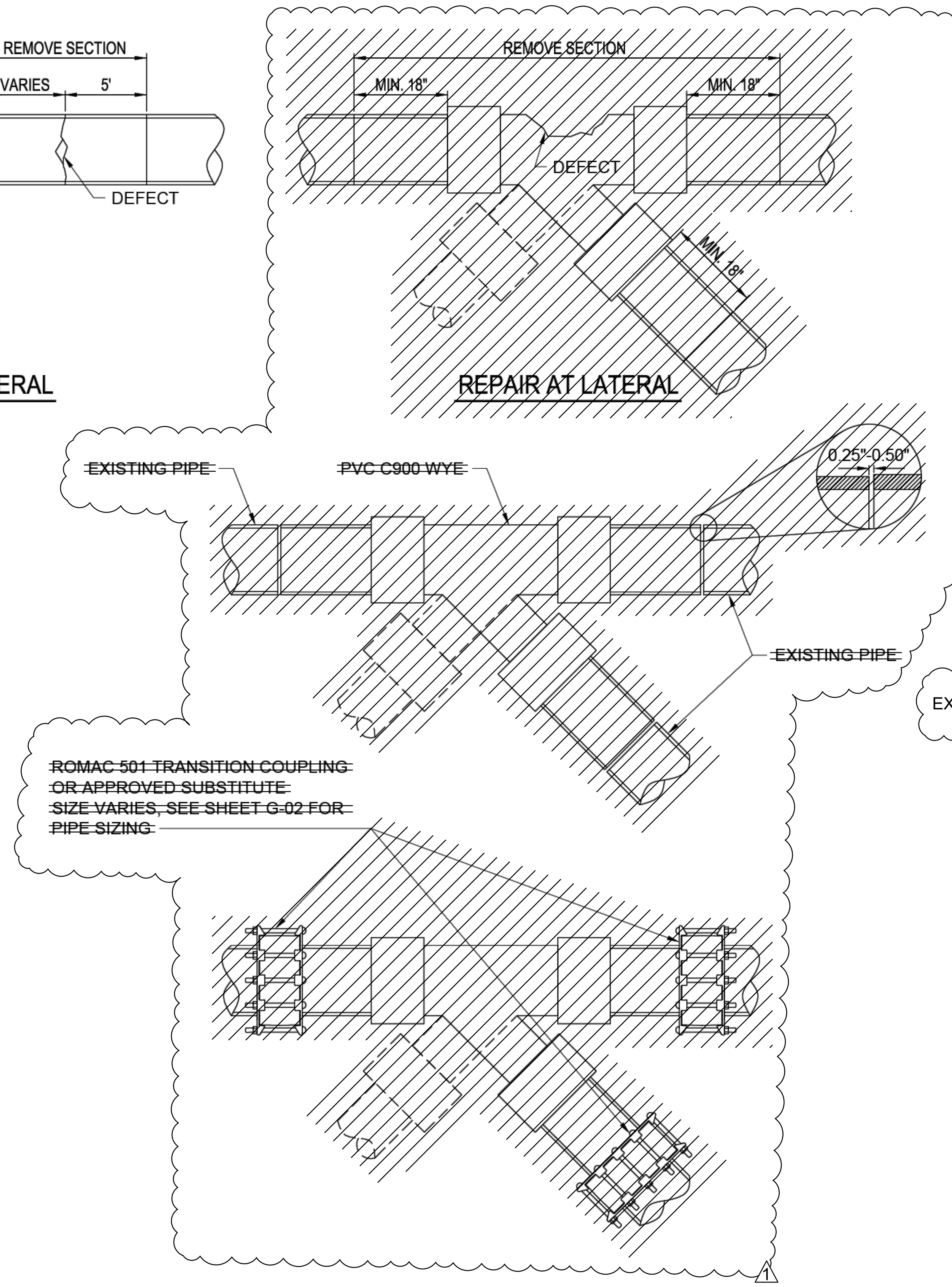

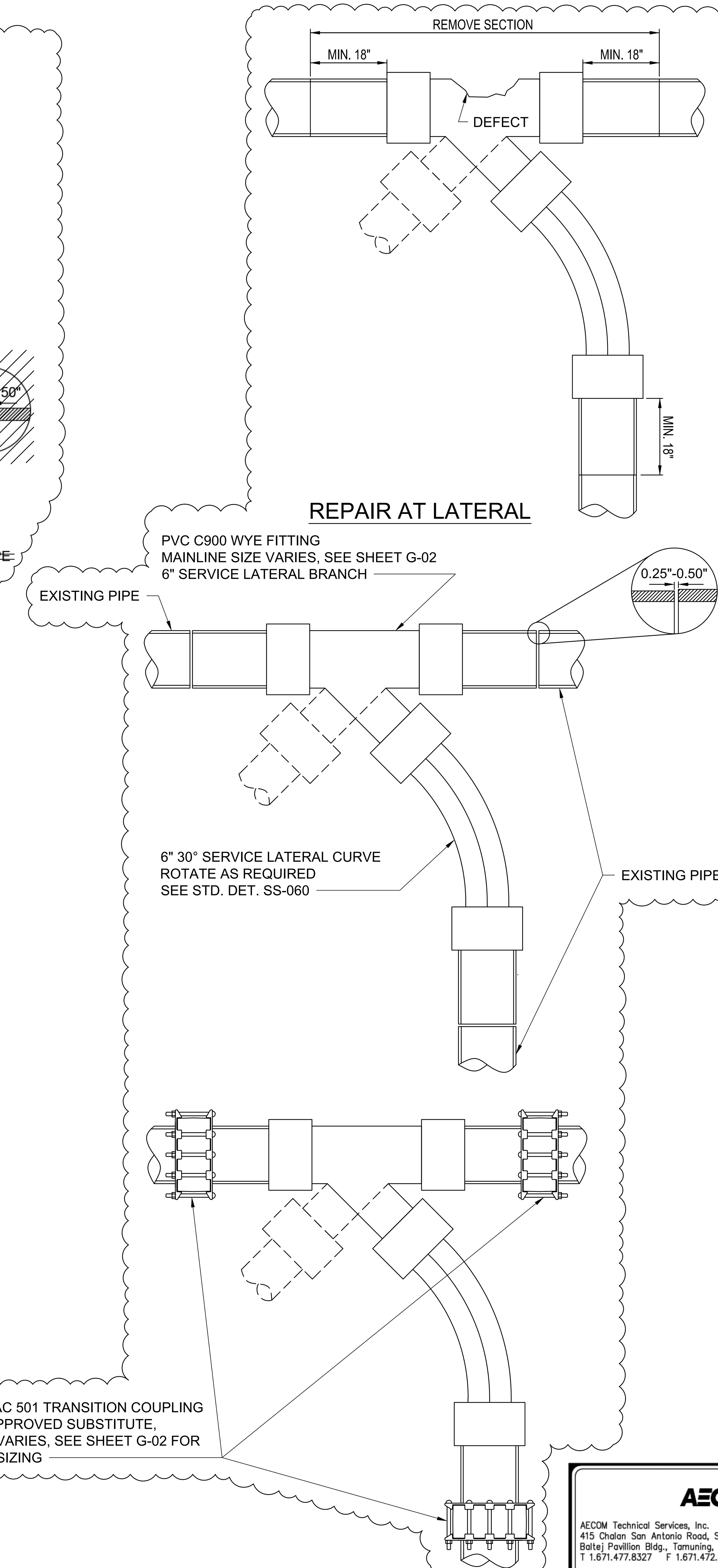

NOTES:

1. COUPLINGS TO BE PROTECTED WITH DENSO: PRIMER, PROFILING MASTIC, PETROLATUM TAPE AND PVC OUTERWRAP OR APPROVED SUBSTITUTE.
2. IF DEFECT IS LESS THAN 24" FROM A LATERAL WYE, REMOVE AND REPLACE EXISTING WYE.
3. CONTRACTOR SHALL MINIMIZE INTERRUPTION TO SEWER SERVICES. SEE SPECIFICATION SECTION NO. 33 01 30.51.

PIPE REPAIR DETAIL 1 / C-20
SCALE: NTS

DWG: C:\Users\hernan.co\DC\ACCDocs\AECOM\CI-AMER(US)-60745967-GWA T02 CCTV Pump Station\Project Files\400 Technical\Acute Defects Project\22 23 C-19 C-20 – Details.dwg USER: hernan.co
DATE: Jul 17, 2026 4:02pm XREFS: G-BORDER IMAGES:

GUAM WATERWORKS AUTHORITY

NO.	REVISIONS:	DATE:	BY:
1	ADDENDUM NO. 1 - REPLACED "REPAIR AT LATERAL" DETAIL	8/19/26	HC

STRUCTURE NO.

INDEX NO.

JARRETT BROWN CERTIFICATE № 1478 CIVIL EXP. 4/30/2027 GUAM PROFESSIONAL ENGINEER

This work was prepared by me or under my responsible control.
DATE: 07/17/2026

CITY ENGINEER
DESIGN GROUP

		DATE:
ENGINEER:	HC	04/2026
DESIGNED BY:	HC	04/2026
DRAWN BY:	CH	04/2026
CHECKED BY:	JB	04/2026
APPROVED BY:	JB	04/2026

VERTICAL CONTROL: -
HORIZONTAL CONTROL: -

SHEET TITLE: DETAILS
PROJECT: YIGO-DEDEDO SEWER ACUTE DEFECT REPAIRS
ADDRESS: YIGO-DEDEDO

AECOM
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WORK ORDER NO.
-
DRAWING NO.
C-20
SHEET 23 OF 23 SHEETS

Sheet Version 3.0

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section specifies requirements for measurement and payment for the Work.

B. The Bid Form identifies bid items, estimated quantities, units of measurement, unit prices, and lump sum prices.

C. Payment for the Work will be made only for accepted Work performed in accordance with the Contract Documents.

D. Bid item descriptions in the Bid Form are abbreviated and do not limit the Work required by the Contract Documents. Work required to provide a complete and functional installation shall be included in the applicable bid item unless specifically identified for separate payment.

E. Quantities shown in the Bid Form are estimated quantities for comparison of Bids. Final payment for unit price bid items will be based on actual quantities of accepted Work, measured as specified in this Section.

F. Additional repair length bid items are included in the Total Bid based on estimated quantities shown in the Bid Form. Estimated quantities are for bid comparison only. Payment will be based on actual authorized additional repair length completed and accepted in accordance with the Contract Documents.

1.02 RELATED SECTIONS:

A. Section 00410 – Bid Form

B. Section 01 29 00 – Payment Procedures

C. Section 01 55 26 – Traffic Control

D. Section 02 82 13.33 – Asbestos Cement Pipe Removal and Disposal

E. Section 03 34 00 – Controlled Low Strength Material (CLSM)

F. Section 31 23 33 – Trenching and Backfilling

G. Section 31 25 13 – Erosion and Sediment Controls

H. Section 32 16 13 – Concrete Curbs, Gutters, Sidewalks, and Driveways

I. Section 33 01 30.16 – CCTV Inspection of Gravity Sewer Pipelines

J. Section 33 01 30.51 – Sanitary Sewer Flow Control

K. Section 33 01 30.71 – Gravity Sewer Pipe Point Repairs

L. DPW Special Contract Requirement – Section 204 – Excavation and Embankment

M. DPW Special Contract Requirement – Section 301 – Untreated Aggregate Courses

N. DPW Special Contract Requirement – Section 402 – Hot Mix Asphalt Concrete Pavement

O. DPW Special Contract Requirement – Section 404 – Minor Hot Asphalt Concrete

P. DPW Special Contract Requirement – Section 412 – Asphalt Tack Coat

Q. DPW Special Contract Requirement – Section 634 – Permanent Pavement Markings

1.03 DEFINITIONS:

A. *Additional Repair Length:* Authorized repair length measured along the pipe centerline beyond the first 10 linear feet included in each gravity sewer point repair bid item.

B. *Base Repair Length:* The first 10 linear feet of pipe repair included in each gravity sewer point repair bid item.

C. *Complete in Place:* Work furnished, installed, tested, accepted, and complete in accordance with the Contract Documents, including labor, materials, equipment, tools, transportation, supervision, overhead, profit, taxes, incidentals, and work necessary to complete the bid item.

D. *Existing Asbestos Cement Pipe:* Existing asbestos cement gravity sewer pipe identified on the Drawings, Repair Schedule, CCTV records, or encountered in the field.

E. *Existing PVC Pipe:* Existing polyvinyl chloride gravity sewer pipe identified on the Drawings, Repair Schedule, CCTV records, or encountered in the field.

F. *RPR:* Resident Project Representative.

G. *Additional Repair Length Bid Item:* A unit price bid item included in the Base Bid for authorized repair length measured along the pipe centerline beyond the first 10 linear feet included in each gravity sewer point repair bid item.

H. *Wye Connection Point:* The point where the centerline of the sewer lateral intersects the centerline of the gravity sewer main at the wye fitting, as determined by field verification.

I. *Lateral Reconnection:* Replacement of the wye fitting and reconnection of the existing sewer lateral to the replacement gravity sewer main, including the minimum lateral pipe replacement length specified in the Contract Documents.

1.04 GENERAL MEASUREMENT REQUIREMENTS:

A. Measure quantities only for Work completed and accepted in accordance with the Contract Documents.

B. Measure Work by the unit of measure indicated in the Bid Form.

C. Do not measure materials wasted, rejected, replaced, or installed outside the limits shown on the Drawings or authorized by the Owner or RPR.

D. Do not measure additional quantities resulting from the Contractor's means, methods, sequencing, over-excavation, inaccurate layout, rework, damage, or failure to protect existing improvements.

E. Where Work is measured by linear foot, measure horizontally or along the centerline of the item being installed or restored, as applicable.

F. Where Work is measured by square foot or square yard, measure the actual authorized surface area restored and accepted.

G. Where Work is measured by each, measure each completed and accepted unit of Work.

H. Where Work is measured by lump sum, no separate quantity measurement will be made. Payment will be based on the accepted percentage of the lump sum Work completed.

I. Notify the RPR before performing Work that may result in payment under a unit price item, including additional repair length bid items. Work performed without required authorization may be considered incidental and may not be measured for payment.

1.05 GENERAL PAYMENT REQUIREMENTS:

A. Unit prices and lump sum prices shall include full compensation for labor, materials, equipment, tools, transportation, supervision, overhead, profit, taxes, incidentals, and other costs necessary to complete the Work in accordance with the Contract Documents.

B. Payment will be made at the Contract unit price or lump sum price for each bid item, subject to additions and deductions provided in the Contract Documents.

C. Payment for an item will not be made until the Work associated with that item is complete, accepted, and supported by required documentation.

D. Progress payments for lump sum items may be made based on the accepted percentage of Work completed, as approved by the Owner.

E. Payment for unit price items will be based on actual accepted quantities measured in accordance with this Section.

F. Payment for additional repair length bid items will be made only for actual authorized additional repair length completed and accepted. Additional repair length must be authorized by the Owner or RPR before the additional work proceeds.

G. No separate payment will be made for Work required by the Contract Documents unless a specific bid item or unit price item is provided in the Bid Form.

1.06 INCIDENTAL WORK:

A. The following Work is incidental to the applicable bid items and will not be measured or paid separately unless specifically identified as a separate bid item:

1. Project administration, coordination, scheduling, meetings, reporting, and supervision.
2. Field verification of existing conditions.
3. Layout, staking, measurements, and documentation necessary to perform the Work.
4. Coordination with the Owner, RPR, Guam Department of Public Works, utility owners, property owners, residents, businesses, and other affected parties.
5. Protection of existing utilities, structures, pavements, curbs, gutters, sidewalks, driveways, landscaping, survey monuments, and other existing improvements.

6. Temporary controls, temporary facilities, temporary access, temporary trench protection, temporary plates, barricades, signs, and safety measures required to perform the Work.
7. Sawcutting, removal, handling, loading, hauling, and disposal of materials unless specifically identified for separate payment.
8. Excavation, trench support, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, testing, and restoration required to complete the Work unless specifically identified for separate payment.
9. Dewatering and control of incidental trench water.
10. Cleaning, testing, inspection support, photographs, records, and closeout documentation.
11. Correction of defective Work.
12. Other work necessary to complete and accept the Work in accordance with the Contract Documents.

1.07 BID ITEMS:

A. Item 1.1 – Mobilization and Demobilization.

1. *Measurement:* Mobilization and demobilization will be measured as a lump sum.
2. *Payment:* Payment for mobilization and demobilization will be made at the Contract lump sum price and shall include preparatory work, mobilization of personnel and equipment, temporary facilities, initial coordination, bonds and insurance not paid under separate bid items, demobilization, final removal of temporary facilities, cleanup, and other work required to begin, maintain, and complete the Work.

B. Item 1.2 – Bonds.

1. *Measurement:* Bonds will be measured as a lump sum.
2. *Payment:* Payment for bonds will be made at the Contract lump sum price and shall include required performance bonds, payment bonds, and other bonds required by the Contract Documents.

C. Item 1.3 – Insurance.

1. *Measurement:* Insurance will be measured as a lump sum.
2. *Payment:* Payment for insurance will be made at the Contract lump sum price and shall include insurance required by the Contract Documents.

D. Item 1.4 – Permits.

1. *Measurement:* Permits will be measured as a lump sum.
2. *Payment:* Payment for permits will be made at the Contract lump sum price and shall include obtaining, maintaining, complying with, and closing permits required for the Work, except permits obtained directly by the Owner.

E. Item 1.5 – Erosion and Sediment Controls.

1. *Measurement:* Erosion and sediment controls will be measured as a lump sum.
2. *Payment:* Payment for erosion and sediment controls will be made at the Contract lump sum price and shall include furnishing, installing, maintaining, relocating, replacing, inspecting, and removing erosion and sediment control measures required by the Contract Documents.

F. Item 1.6 – Traffic Control.

1. *Measurement:* Traffic control will be measured as a lump sum.
2. *Payment:* Payment for traffic control will be made at the Contract lump sum price and shall include traffic control plans, coordination, signs, cones, barricades, flaggers, temporary pavement markings, plates, pedestrian controls, driveway and property access controls, maintenance of traffic, and other traffic control measures required to perform the Work.

G. Item 1.7 – Sanitary Sewer Flow Control.

1. *Measurement:* Sanitary sewer flow control will be measured as a lump sum.
2. *Payment:* Payment for sanitary sewer flow control will be made at the Contract lump sum price and shall include planning, equipment, labor, temporary plugging, diversion, bypass pumping, hoses, piping, fittings, fuel, standby equipment, monitoring, maintenance of sewer service, spill prevention, removal of temporary flow control measures, and other work required to complete the Work without sanitary sewer overflows, backups, or unauthorized discharges.

H. Item 1.8 – Post-Repair CCTV Inspection.

1. *Measurement:* Post-repair CCTV inspection will be measured as a lump sum.
2. *Payment:* Payment for post-repair CCTV inspection will be made at the Contract lump sum price and shall include CCTV inspection after repair work, additional cleaning necessary to perform the post-repair CCTV inspection, video files, inspection logs, reports, defect documentation, repair verification, resubmittals, and other deliverables required by the Contract Documents. Cleaning required as part of completing each point repair is included in the applicable point repair bid item and will not be measured separately under this item.

I. Item 1.9 – Archaeological Monitoring.

1. *Measurement:* Archaeological monitoring will be measured as a lump sum.
2. *Payment:* Payment for archaeological monitoring will be made at the Contract lump sum price and shall include archaeological monitoring, coordination, reporting, documentation, and related work required by the Contract Documents and applicable permits or regulatory requirements.

J. Item 2.1 – 8-Inch Point Repair in Existing PVC Pipe.

1. *Measurement:* 8-inch point repair in existing PVC pipe will be measured by each completed and accepted repair location.

2. *Payment:* Payment for 8-inch point repair in existing PVC pipe will be made at the Contract unit price for each repair and shall include field verification, excavation, trench protection, removal of existing pipe, furnishing and installing up to 10 linear feet of 8-inch PVC C900 replacement pipe, repair or transition couplings, corrosion protection for metallic coupling components, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, testing, cleanup and cleaning required to complete the repair, documentation, and other work required to complete the repair, except Work paid under separate bid items.

K. Item 2.2 – 6-Inch Point Repair in Existing Asbestos Cement Pipe.

1. *Measurement:* 6-inch point repair in existing asbestos cement pipe will be measured by each completed and accepted repair location.

2. *Payment:* Payment for 6-inch point repair in existing asbestos cement pipe will be made at the Contract unit price for each repair and shall include field verification, excavation, trench protection, asbestos cement pipe removal and disposal for the base repair length, furnishing and installing up to 10 linear feet of 6-inch PVC C900 replacement pipe, repair or transition couplings, corrosion protection for metallic coupling components, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, testing, cleanup and cleaning required to complete the repair, documentation, asbestos-related records, and other work required to complete the repair, except Work paid under separate bid items.

L. Item 2.3 – 8-Inch Point Repair in Existing Asbestos Cement Pipe.

1. *Measurement:* 8-inch point repair in existing asbestos cement pipe will be measured by each completed and accepted repair location.

2. *Payment:* Payment for 8-inch point repair in existing asbestos cement pipe will be made at the Contract unit price for each repair and shall include field verification, excavation, trench protection, asbestos cement pipe removal and disposal for the base repair length, furnishing and installing up to 10 linear feet of 8-inch PVC C900 replacement pipe, repair or transition couplings, corrosion protection for metallic coupling components, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, testing, cleanup and cleaning required to complete the repair, documentation, asbestos-related records, and other work required to complete the repair, except Work paid under separate bid items.

M. Item 2.4 – Replace Wye and Reconnect Existing Sewer Lateral

1. *Measurement:* Replace wye and reconnect existing sewer lateral will be measured by each completed and accepted wye replacement and lateral reconnection.

2. *Payment:* Payment for replace wye and reconnect existing sewer lateral will be made at the Contract unit price for each and shall include field verification; excavation required to expose the wye and lateral connection; removal of the existing wye fitting and affected lateral piping; furnishing and installing replacement wye fitting; furnishing and installing 6-inch 30-degree service lateral bend; furnishing and installing a minimum of 18 inches of

lateral pipe measured along the lateral pipe centerline from the outlet end of the 6-inch 30-degree bend to the cut end of the existing lateral pipe; repair or transition coupling for the lateral reconnection; corrosion protection for metallic coupling components; bedding, haunching, backfill, controlled low-strength material, compaction, cleanup and cleaning required to complete the reconnection, testing, repair records, documentation, and other work required to complete the wye replacement and lateral reconnection, except Work paid under separate bid items.

N. Item 3.1 – Asphalt Concrete Pavement Restoration.

1. *Measurement:* Asphalt concrete pavement restoration will be measured by the square yard of pavement restored and accepted.

2. *Payment:* Payment for asphalt concrete pavement restoration will be made at the Contract unit price per square yard and shall include final trimming, surface preparation, aggregate base course, tack coat, asphalt concrete pavement, joints, compaction, testing, protection of the restored surface, and other work required to restore asphalt concrete pavement in accordance with the Contract Documents and applicable DPW requirements.

O. Item 3.2 – Permanent Pavement Marking Restoration.

1. *Measurement:* Permanent pavement marking restoration will be measured as a lump sum.

2. *Payment:* Payment for permanent pavement marking restoration will be made at the Contract lump sum price and shall include layout, surface preparation, materials, application, protection, testing, and restoration of pavement markings disturbed by the Work.

P. Item 3.3 – Sidewalk Restoration.

1. *Measurement:* Sidewalk restoration will be measured by the square foot of sidewalk restored and accepted.

2. *Payment:* Payment for sidewalk restoration will be made at the Contract unit price per square foot and shall include removal of damaged or disturbed sidewalk, subgrade preparation, base material, forms, concrete, joints, finishing, curing, protection, cleanup, and other work required to restore sidewalk disturbed by the Work.

Q. Item 3.4 – Curb and Gutter Restoration.

1. *Measurement:* Curb and gutter restoration will be measured by the linear foot of curb and gutter restored and accepted.

2. *Payment:* Payment for curb and gutter restoration will be made at the Contract unit price per linear foot and shall include removal of damaged or disturbed curb and gutter, subgrade preparation, base material, forms, concrete, reinforcement where required, joints, finishing, curing, protection, cleanup, and other work required to restore curb and gutter disturbed by the Work.

R. Item 3.5 – Driveway Restoration.

1. *Measurement:* Driveway restoration will be measured by the square foot of driveway restored and accepted.
2. *Payment:* Payment for driveway restoration will be made at the Contract unit price per square foot and shall include removal of damaged or disturbed driveway, subgrade preparation, base material, forms, concrete, joints, finishing, curing, protection, cleanup, and other work required to restore driveway surfaces disturbed by the Work.

1.08 ADDITIONAL REPAIR LENGTH BID ITEMS:

A. Additional repair length bid items are included in the Total Bid based on estimated quantities shown in the Bid Form.

B. Estimated quantities for additional repair length are for bid comparison only. Actual quantities may be more, less, or zero.

C. Payment will be based on actual authorized additional repair length completed and accepted in accordance with the Contract Documents.

D. Additional repair length applies only to repair length beyond the first 10 linear feet included in each gravity sewer point repair bid item.

E. Additional repair length bid items apply only to additional gravity sewer main replacement length and do not include replacement of wye fittings or sewer lateral reconnections.

F. Additional repair length must be authorized by the Owner or RPR before the additional work proceeds.

G. Additional repair length will be measured along the pipe centerline between the authorized limits of additional pipe removal and replacement beyond the base repair length.

H. No payment will be made under additional repair length bid items for additional repair length caused by the Contractor's means, methods, over-excavation, damage, inaccurate locating, rework, or failure to comply with the Contract Documents.

I. Item 4.1– Additional Length of 8-Inch Point Repair in Existing PVC Pipe.

1. *Measurement:* Additional length of 8-inch point repair in existing PVC pipe will be measured by the linear foot beyond the base repair length.
2. *Payment:* Payment will be made at the Contract unit price per linear foot and shall include additional removal of existing PVC pipe, additional 8-inch PVC C900 replacement pipe, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, cleanup and cleaning required to complete the repair, testing, repair records, documentation, and other work required to complete the authorized additional repair length, except Work paid under separate bid items.

J. Item 4.2 – Additional Length of 6-Inch Point Repair in Existing Asbestos Cement Pipe.

1. *Measurement:* Additional length of 6-inch point repair in existing asbestos cement pipe will be measured by the linear foot beyond the base repair length.

2. *Payment:* Payment will be made at the Contract unit price per linear foot and shall include additional asbestos cement pipe removal and disposal, additional 6-inch PVC C900 replacement pipe, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, cleanup and cleaning required to complete the repair, testing, repair records, documentation, asbestos-related records, and other work required to complete the authorized additional repair length, except Work paid under separate bid items.

K. Item 4.3 – Additional Length of 8-Inch Point Repair in Existing Asbestos Cement Pipe.

1. *Measurement:* Additional length of 8-inch point repair in existing asbestos cement pipe will be measured by the linear foot beyond the base repair length.

2. *Payment:* Payment will be made at the Contract unit price per linear foot and shall include additional asbestos cement pipe removal and disposal, additional 8-inch PVC C900 replacement pipe, bedding, haunching, backfill, controlled low-strength material where indicated or approved, compaction, cleanup and cleaning required to complete the repair, testing, repair records, documentation, asbestos-related records, and other work required to complete the authorized additional repair length, except Work paid under separate bid items.

PART 2 - PRODUCTS

2.01 NOT USED:

A. Products are specified in the applicable technical sections and Special Provisions.

B. No separate products are specified in this Section.

PART 3 - EXECUTION

3.01 NOT USED:

A. Execution requirements are specified in the applicable technical sections and Special Provisions.

B. No separate execution requirements are specified in this Section.

END OF SECTION 01 22 00

SECTION 33 01 30.71

GRAVITY SEWER PIPE POINT REPAIRS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Section includes requirements for excavated point repairs of existing gravity sewer pipelines at the locations shown on the Drawings.

B. The Work includes, but is not limited to:

1. Field locating existing sewer pipe defects using the Drawings, Repair Schedule, existing CCTV information, GIS information, and field verification.
2. Providing traffic control, temporary controls, and protection of existing utilities.
3. Excavating to expose the existing gravity sewer pipe.
4. Maintaining sanitary sewer flow during the Work.
5. Removing the damaged section of existing pipe and installing a new PVC C900 replacement pipe section.
6. Connecting the new replacement pipe to the existing pipe using approved repair couplings or transition couplings.
7. Providing corrosion protection for repair couplings.
8. Bedding, backfilling, compacting, restoring the trench, pavement restoration, and pavement marking restoration.
9. Cleaning the repaired sewer segment and performing post-repair CCTV inspection.
10. Correcting unacceptable repairs.

C. Point repairs shall consist of excavated removal and replacement of the damaged pipe section using new PVC C900 pipe and approved repair or transition couplings.

D. Exterior pipe patches, exterior grout collars, exterior clamps, concrete encasement used as a substitute for pipe replacement, internal sleeves, CIPP point repairs, chemical grout sealing, and other repair methods that do not remove and replace the damaged pipe section are not permitted unless specifically authorized in writing by GWA and the Resident Project Representative (RPR).

E. Existing pipe materials anticipated for the repair include PVC pipe in 8-inch diameter and asbestos cement pipe (ACP) in 6- and 8-inch diameters, as shown on the Drawings and Repair Schedule.

1.02 RELATED SECTIONS:

A. Section 01 33 00 – Submittal Procedures

B. Section 01 45 16 – Quality Requirements

C. Section 02 82 13.33 – Asbestos Cement Pipe Removal and Disposal

D. Section 31 23 33 – Trenching and Backfill

E. Section 32 16 13 – Concrete Curbs, Gutters, Sidewalks, and Driveways

F. Section 33 01 30.16 – CCTV Inspection of Gravity Sewer Pipelines

G. Section 33 01 30.51 – Sanitary Sewer Flow Control

H. DPW Special Contract Requirement – Section 402 – Hot Mix Asphalt Concrete Pavement

I. DPW Special Contract Requirement – Section 404 – Minor Hot Asphalt Concrete

J. DPW Special Contract Requirement – Section 412 – Asphalt Tack Coat

K. DPW Special Contract Requirement – Section 634 – Permanent Pavement Markings

1.03 REFERENCES:

A. ASTM International (ASTM):

1. *ASTM C1173:* Standard Specification for Flexible Transition Couplings for Underground Piping Systems

B. American Water Works Association (AWWA):

1. *AWWA C900:* Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In.

C. Guam Waterworks Authority (GWA) standards, details, and requirements, where applicable.

D. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP), latest edition, where CCTV coding is required.

1.04 DEFINITIONS:

A. *Point Repair:* Excavated localized repair of an existing gravity sewer pipe by removing the damaged pipe section and installing new PVC C900 pipe with approved repair or transition couplings.

B. *Repair Schedule:* Table on the Drawings identifying repair locations, pipe segment information, defect information, and repair detail references.

C. *Pipe Segment Length:* Manhole-to-manhole length of the existing pipe segment containing the defect. Pipe segment length is not the required repair length.

D. *Repair Coupling:* Mechanical coupling, transition coupling, or approved flexible coupling used to connect new replacement pipe to existing pipe.

E. *Wye Connection Point:* The point where the centerline of the sewer lateral intersects the centerline of the gravity sewer main at the wye fitting, as determined from field verification.

F. *Post-Repair CCTV:* CCTV inspection performed after completion of pipe repair and cleaning to document and verify acceptability of the repair.

1.05 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Proposed repair work plan, including sequence of repairs.
2. Proposed method for field locating defects.
3. Sewer flow control plan.
4. Traffic control plan, where not fully shown on the Drawings.
5. PVC C900 replacement pipe product data.
6. Repair coupling and transition coupling product data.
7. Coupling corrosion protection system product data, including primer, profiling mastic or filler, petrolatum tape, outer wrap, accessories, material compatibility data, and manufacturer's installation instructions.

8. Replacement wye fittings, lateral pipe, and repair or transition couplings for sewer lateral reconnections.
9. Bedding and backfill material data.
10. Compaction testing plan.
11. Post-repair CCTV inspection plan.
12. CCTV deliverable format.
13. Record information for each completed repair.

B. Repair coupling submittals shall include:
1. Manufacturer.
2. Model number.
3. Pipe materials to be joined.
4. Pipe outside diameter range.
5. Gasket material.
6. Hardware material.
7. Installation instructions.
8. Recommended torque requirements.
9. Corrosion protection requirements.

C. Submit product data for the proposed PVC C900, DR 18, Pressure Class 235 psi replacement pipe for each pipe size. Submittal shall include manufacturer, nominal diameter, actual outside diameter, dimension ratio, pressure class, laying length, end configuration, and compatibility with the proposed repair or transition couplings.

D. Submit post-repair CCTV video, inspection logs, still images, and repair records for each repair prior to final acceptance of that repair.

1.06 QUALITY ASSURANCE:

A. Perform Work using personnel experienced in gravity sewer pipe repair, active sewer excavation, repair coupling installation, trench backfill, pavement restoration, and CCTV inspection.

B. Repair locations shown on the Drawings are based on existing CCTV, GIS mapping, and available record information. Contractor shall verify field conditions before cutting existing pipe.

C. Do not begin cutting pipe until:
1. Existing utilities have been located.
2. Excavation has exposed the pipe sufficiently to confirm pipe material, outside diameter, alignment, and condition.
3. Sewer flow control measures are in place.
4. Repair coupling compatibility has been verified.
5. RPR has been notified and given the opportunity to observe exposed conditions.

D. Pipe repairs shall maintain existing pipe alignment, grade, invert continuity, and hydraulic capacity.

E. Completed repairs shall be subject to review and acceptance based on post-repair CCTV inspection and field inspection.

1.07 EXISTING CONDITIONS:

A. Existing pipe locations, depths, materials, diameters, and defect locations are shown for bidding and construction based on available information. Actual field conditions may vary.

B. Contractor shall verify the location and depth of existing utilities before excavation.

C. Contractor shall protect existing utilities, drainage facilities, pavements, curbs, driveways, structures, and other improvements.

D. If existing pipe material differs from that shown on the Drawings, notify RPR before proceeding with the pipe cutting or repair.

E. Where asbestos cement pipe is shown on the Drawings or identified during field verification, perform cutting, removal, handling, packaging, transportation, and disposal in accordance with Section 02 82 13.33. If suspected asbestos-containing material not identified in the Contract Documents is encountered, stop work in the affected area and notify the RPR. Do not disturb unanticipated suspected asbestos-containing material until specifically authorized and applicable requirements have been addressed.

1.08 REPAIR LOCATION CONTROL:

A. Repair locations are shown on the Drawings and Repair Schedule. Existing CCTV defect distances and GIS mapping are provided to assist the Contractor.

B. Where CCTV distances are provided, distances are measured from the referenced manhole unless otherwise indicated.

C. Pipe segment length shown in the Repair Schedule represents the manhole-to-manhole length of the existing pipe segment and does not represent the required repair length.

D. Contractor shall field locate each repair before excavation and shall notify the RPR of discrepancies between field conditions, Drawings, Repair Schedule, CCTV information, and GIS information.

E. Contractor shall not relocate a repair, change repair limits, or change repair method without written acceptance from the RPR.

1.09 DELIVERY, STORAGE, AND HANDLING:

A. Deliver pipe, couplings, gaskets, corrosion protection materials, and accessories in manufacturer’s original packaging where practical.

B. Store materials to prevent damage, contamination, deformation, excessive exposure to sunlight, and loss of identification.

C. Protect gaskets and flexible coupling components from petroleum products, sunlight, ozone, heat, and other conditions that may degrade materials.

1.10 SEQUENCING AND COORDINATION:

A. Coordinate repair sequencing with GWA, RPR, traffic control requirements, utility owners, affected residents, and local agencies.

B. Maintain access to residences, businesses, driveways, emergency vehicles, and local traffic unless otherwise approved.

C. Coordinate pavement restoration and pavement marking restoration with completion of each repair or as otherwise approved.

D. Complete post-repair CCTV after the repair has been installed, the line has been cleaned, and sewer flow has been restored.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Materials shall be new and suitable for buried sanitary sewer service.

B. Materials shall be compatible with existing pipe materials, pipe outside diameters, burial conditions, sewer environment, and repair coupling requirements.

C. Materials shall be as shown on the Drawings and specified herein. Proposed substitutions shall comply with Section 01 25 00.

2.02 REPLACEMENT PIPE:

A. Replacement pipe shall be PVC C900, DR 18, Pressure Class 235 psi, conforming to AWWA C900.

B. Pipe shall be of the same nominal diameter as the existing pipe unless otherwise shown or directed.

C. Replacement pipe shall be compatible with the existing pipe and repair or transition couplings. Confirm actual pipe outside diameters before ordering or installing couplings.

D. Pipe shall have a smooth interior, uniform wall thickness, and plain ends suitable for installation with the specified repair or transition couplings.

E. Replacement pipe shall be free of cracks, splits, chips, gouges, deformation, or other defects that may affect installation, jointing, structural integrity, or serviceability.

2.03 REPAIR COUPLINGS AND TRANSITION COUPLINGS:

A. Couplings shall be suitable for underground sanitary sewer service and for joining the specific pipe materials and outside diameters encountered.

B. Repair couplings and transition couplings shall be flexible mechanical couplings suitable for direct-buried underground sanitary sewer service and for the specific pipe materials, pipe sizes, outside diameters, and field conditions encountered.

C. Couplings shall include an elastomeric sealing sleeve or gasket, corrosion-resistant bands, shear or transition restraint components where required by the coupling type, and stainless steel hardware suitable for buried wastewater service. Products such as ROMAC 501 or approved equal products meeting the requirements of this Section may be submitted for review.

D. Couplings shall comply with ASTM C1173 where applicable.

E. Couplings shall provide a watertight connection and shall not create an internal obstruction or unacceptable offset.

F. Coupling dimensions shall be selected based on actual measured outside diameters of the existing pipe and replacement pipe.

G. Use transition couplings where joining dissimilar pipe materials or different outside diameters.

H. Do not use unshielded couplings, improvised bands, concrete collars, grout collars, exterior patches, or other non-specified repair methods unless specifically shown or approved in writing.

2.04 WYE FITTINGS:

A. Wye fittings shall be compatible with the replacement gravity sewer main, existing sewer lateral, repair or transition couplings, and service conditions.

B. Wye fittings shall be PVC fittings suitable for gravity sewer service unless otherwise shown or approved.

C. Wye fitting size and configuration shall match the existing sewer main and lateral connection unless otherwise shown on the Drawings or approved by the RPR.

2.05 COUPLING CORROSION PROTECTION:

A. Protect metallic coupling components with a cold-applied petrolatum-based corrosion protection system suitable for direct-buried wastewater utility service. Acceptable systems include Denso petrolatum tape systems or approved equal systems meeting the requirements of this Section.

B. Corrosion protection system shall include compatible primer, profiling mastic or filler, petrolatum tape, PVC or polymer outer wrap, and accessories recommended by the corrosion protection system manufacturer.

C. Corrosion protection shall fully cover exposed metallic coupling components, bolts, nuts, bands, and irregular surfaces.

2.06 BEDDING AND PIPE ZONE MATERIAL:

A. Bedding and pipe zone material shall conform to Section 31 23 33.

B. Bedding material shall provide firm, uniform support under the replacement pipe and existing pipe ends.

C. Do not use large rock, debris, organic material, unsuitable material, or frozen material in the pipe zone.

2.07 BACKFILL MATERIAL:

A. Backfill material shall conform to Section 31 23 33.

B. Backfill beneath pavement shall be suitable for roadway trench restoration and shall meet compaction requirements.

2.08 FLOW CONTROL MATERIALS:

A. Plugs, pumps, hoses, fittings, temporary piping, and appurtenances for sewer flow control shall conform to Section 33 01 30.51.

B. Flow control materials shall be suitable for sanitary sewer service and sized for anticipated flow conditions.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Review Drawings, Repair Schedule, CCTV information, and GIS information before beginning Work.

B. Verify repair location, pipe depth, pipe material, pipe diameter, outside diameter, alignment, and adjacent utilities before cutting pipe.

C. Expose sufficient length of existing pipe to confirm the damaged section and allow proper installation of replacement pipe and couplings.

D. Notify RPR if:

1. Pipe material differs from that shown.
2. Pipe size or outside diameter differs from that shown.
3. Defect location differs materially from the Drawings or Repair Schedule.
4. Existing pipe condition requires a longer repair than shown or anticipated.
5. Pipe is collapsed or unstable beyond the indicated repair limits.
6. Existing utilities conflict with the repair.
7. Groundwater, unsuitable material, or other conditions may affect the repair.

3.02 FIELD LOCATION OF DEFECTS:

A. Locate each defect using the Drawings, Repair Schedule, existing CCTV distance, GIS mapping, manhole references, surface measurements, and field verification.

B. Where practical, confirm repair location by measuring from the referenced manhole or other control point shown on the Drawings.

C. Contractor is responsible for accurately locating the repair prior to excavation.

D. If the exposed pipe does not contain the indicated defect at the anticipated location, notify RPR before extending excavation or cutting pipe.

3.03 TRAFFIC CONTROL AND TEMPORARY CONTROLS:

A. Provide traffic control in accordance with the Drawings, approved traffic control plans, and applicable agency requirements.

B. Maintain safe passage for vehicles, pedestrians, residents, emergency vehicles, and local access.

C. Protect excavations, equipment, materials, and open trenches with barricades, signs, cones, plates, fencing, and other controls as required.

D. Provide erosion, sediment, dust, and debris controls in accordance with the Contract Documents.

3.04 SEWER FLOW CONTROL:

A. Maintain sanitary sewer service during the Work.

B. Provide plugs, temporary bypass pumping, diversion, or other flow control measures as required to perform the repair in dry and safe conditions.

C. Prevent sewage spills, backups, overflows, and discharge to streets, drainage systems, waterways, or ground surfaces.

D. Do not cut or remove existing pipe until flow control is in place and functioning.

E. Restore normal sewer flow after the repair is complete and before post-repair CCTV, unless otherwise approved.

3.05 EXCAVATION AND EXPOSURE OF PIPE:

A. Excavate in accordance with Section 31 23 33.

B. Sawcut and remove pavement in accordance with the Drawings and applicable DPW requirements.

C. Excavate carefully around existing sewer pipe and adjacent utilities.

D. Provide trench protection, shoring, sheeting, shielding, sloping, or other excavation safety measures as required. Contractor is solely responsible for excavation safety.

E. Support existing pipe to remain. Do not undermine existing pipe beyond the repair limits.

F. Remove water from excavation as required to maintain stable trench conditions and proper bedding and coupling installation.

3.06 REMOVAL OF DAMAGED PIPE SECTION:

A. Remove damaged pipe section at the locations shown on the Drawings or as directed by the RPR.

B. Unless otherwise shown or directed, remove and replace a minimum 10-foot length of existing pipe centered on the defect. Where field conditions allow, remove approximately 5 feet of pipe on each side of the defect.

C. Extend repair limits as required to:

1. Remove cracked, broken, deformed, offset, or otherwise defective pipe.
2. Provide sound pipe ends for coupling installation.
3. Avoid placing couplings over damaged, cracked, or unsuitable existing pipe.
4. Maintain existing alignment, grade, and invert continuity.
5. Accommodate replacement pipe laying length and coupling requirements.

D. Cut existing pipe square and clean using methods suitable for the pipe material.

E. Do not shatter, crack, split, deform, or otherwise damage pipe to remain.

F. Trim pipe ends as required to provide smooth, sound, and uniform surfaces for coupling installation.

G. Remove loose fragments, debris, sediment, and foreign material from the pipe and trench.

H. Dispose of removed pipe and debris in accordance with applicable requirements.

3.07 INSTALLATION OF REPLACEMENT PIPE:

A. Install PVC C900 replacement pipe of the same nominal diameter as the existing pipe and match the existing alignment, grade, and invert unless otherwise shown or directed.

B. Provide firm, uniform bedding under replacement pipe and existing pipe ends.

C. Set replacement pipe so the invert is smooth and continuous through the repair.

D. Do not create reverse grade, belly, sag, hump, offset, or other hydraulic restriction.

E. Do not allow bedding, backfill, rocks, debris, grout, mastic, tape, gaskets, or other materials to enter or protrude into the pipe.

F. Provide sufficient clearance around pipe and couplings to install and inspect the couplings in accordance with manufacturer’s instructions.

G. Replacement pipe length shall be coordinated with coupling dimensions and existing pipe cut locations.

3.08 INSTALLATION OF REPAIR COUPLINGS:

A. Measure existing pipe and replacement pipe outside diameters before selecting and installing couplings.

B. Install approved repair couplings or transition couplings suitable for the pipe materials, pipe outside diameters, and repair conditions encountered.

C. Install couplings in accordance with manufacturer's written instructions.

D. Center coupling over the joint between existing pipe and replacement pipe unless manufacturer's instructions require otherwise.

E. Maintain pipe gap recommended by the coupling manufacturer.

F. Tighten bolts uniformly and to manufacturer's recommended torque.

G. Do not over-tighten couplings or damage pipe.

H. After installation, verify that couplings are seated properly and that the pipe joint is aligned.

I. Protect metallic coupling components with the approved coupling corrosion protection system, including primer, profiling mastic or filler, petrolatum tape, PVC or polymer outer wrap, and accessories recommended by the corrosion protection system manufacturer.

J. Corrosion protection shall be complete before backfilling.

3.09 WYE REPLACEMENT AND LATERAL RECONNECTION:

A. Where a Wye Connection Point is located within the authorized mainline pipe replacement limits, or within 2 feet outside either end of the authorized mainline pipe replacement limits, measured along the mainline pipe centerline, replace the wye fitting and reconnect the existing sewer lateral.

B. Replace the existing wye fitting with a PVC C900 wye fitting compatible with the replacement gravity sewer main. The mainline barrel of the wye fitting shall match the size of the replacement gravity sewer main. The wye branch for the sewer service lateral shall be 6 inches.

C. Install a 6-inch 30-degree service lateral bend and rotate as required to reconnect the existing sewer lateral.

D. Replace a minimum of 18 inches of 6-inch lateral pipe measured along the lateral pipe centerline from the outlet end of the 6-inch 30-degree service lateral bend to the cut end of the existing lateral pipe. Reconnect the existing lateral using an approved repair or transition coupling.

E. Before removing an existing wye fitting or service lateral connection, verify the lateral location, size, material, alignment, depth, and active service status. Notify the RPR of conflicts or conditions that differ from the Drawings, Repair Schedule, CCTV records, or exposed conditions.

F. Do not abandon, cap, remove, or interrupt an existing active sewer lateral unless shown on the Drawings or authorized by the RPR.

G. Where the existing lateral pipe is damaged, unsuitable, misaligned, or cannot be reconnected with the minimum 18-inch replacement length, notify the RPR before

proceeding. Additional lateral replacement length shall be performed only when authorized by the RPR.

H. Document each wye replacement and lateral reconnection with photographs before backfill and include the reconnection in the post-repair CCTV inspection and repair records.

3.10 PROHIBITED REPAIR METHODS:

A. The following repair methods are not permitted unless specifically authorized in writing by GWA and the RPR:

1. Exterior pipe patches.
2. Exterior grout collars.
3. Concrete encasement used as a substitute for removal and replacement.
4. Exterior clamps used as permanent repair without pipe replacement.
5. Internal CIPP point repair patches.
6. Internal sleeves.
7. Chemical grout sealing as a substitute for pipe replacement.
8. Repairs that leave known damaged pipe in place.
9. Repairs that rely on bedding, grout, concrete, or backfill to bridge a damaged pipe section.

3.11 BEDDING, BACKFILL, AND COMPACTION:

A. Place bedding and pipe zone material in accordance with Section 31 23 33.

B. Place bedding to provide continuous support under the replacement pipe and existing pipe ends.

C. Place and compact pipe zone backfill carefully to avoid displacement of pipe or couplings.

D. Do not damage couplings, corrosion protection, pipe, or existing utilities during backfill.

E. Backfill beneath pavement shall meet compaction requirements for roadway restoration.

F. Perform compaction testing as required by Section 31 23 33 and Section 01 45 16.

3.12 PAVEMENT AND SURFACE RESTORATION:

A. Restore asphalt concrete pavement in accordance with the Drawings, DPW Special Contract Requirement – Section 402 – Hot Mix Asphalt Concrete Pavement, and DPW Special Contract Requirement – Section 412 – Asphalt Tack Coat.

B. Restore pavement markings in accordance with the Drawings and DPW Special Contract Requirement – Section 634 – Permanent Pavement Markings.

C. Restore disturbed surfaces to equal or better condition than existed before construction unless otherwise shown.

D. Maintain temporary pavement, plates, trench protection, and traffic controls until final pavement restoration is complete.

3.13 CLEANING:

A. Clean repaired pipe segment before post-repair CCTV.

B. Remove sediment, debris, pipe fragments, gravel, rocks, gasket material, tape, mastic, construction debris, and other foreign materials from the sewer.

C. Do not flush construction debris downstream.

D. Remove debris from the sewer system and dispose of properly.

3.14 POST-REPAIR CCTV INSPECTION:

A. Perform post-repair CCTV inspection in accordance with Section 33 01 30.16.

B. Post-repair CCTV is required for each completed point repair.

C. CCTV shall document the completed repair, including:

1. Upstream transition from existing pipe to replacement pipe.
2. Downstream transition from replacement pipe to existing pipe.
3. Each repair coupling.
4. Replacement pipe section.
5. Pipe invert through the repair.
6. Pipe alignment and grade through the repair.
7. Cleanliness of the pipe.
8. Absence of protruding gaskets, displaced couplings, debris, or obstructions.
9. Completed wye fitting, service lateral bend, and lateral reconnection, where applicable.

D. Where wye fittings or sewer lateral reconnections are included in the Work, post-repair CCTV shall show that the lateral connection is open, properly aligned, free of visible defects, and does not protrude into the gravity sewer pipe.

E. Unless otherwise approved, CCTV shall extend far enough upstream and downstream to fully document the repair and both transitions to existing pipe.

F. Where the repair lies within a manhole-to-manhole pipe segment suitable for CCTV access, post-repair CCTV shall be performed from manhole to manhole unless otherwise approved by the RPR.

G. Submit CCTV video, logs, and still images for review.

H. Repair is not complete until post-repair CCTV has been reviewed and accepted.

3.15 ACCEPTANCE CRITERIA:

A. Completed repairs shall meet the following requirements:

1. Damaged pipe section has been removed.
2. PVC C900 replacement pipe is installed at the required size, alignment, and grade.
3. Invert through repair is smooth and continuous.
4. Repair couplings are properly installed and seated.
5. Couplings are protected with the specified corrosion protection system.
6. No visible pipe damage caused by repair work.
7. No displaced gasket or coupling component.
8. No protrusions into the pipe.
9. No debris, rocks, bedding, mastic, tape, or construction material inside the pipe.

10. No visible infiltration at the repair.
11. No open joints.
12. No significant offset affecting flow or serviceability.
13. No sag, belly, reverse grade, or obstruction caused by the repair.
14. Pipe is clean and suitable for service.
15. Post-repair CCTV has been submitted and accepted.

B. Repairs that do not meet the acceptance criteria shall be corrected at no additional cost to GWA.

C. Corrective work may include additional excavation, removal and replacement, coupling adjustment, pipe replacement, cleaning, reinspection, and additional CCTV.

D. Acceptance of repair location or method before construction does not relieve Contractor of responsibility for completing an acceptable repair.

3.16 RECORD DOCUMENTATION:

A. Provide record information for each repair, including:

1. Repair ID.
2. Street or location.
3. Upstream and downstream manholes.
4. Pipe size.
5. Existing pipe material.
6. PVC C900 replacement pipe manufacturer, dimension ratio, and pressure class.
7. Actual repair length.
8. Actual depth to pipe invert or crown, as directed.
9. Coupling manufacturer and model.
10. Date of repair.
11. Date of post-repair CCTV.
12. Field changes or differing conditions.
13. Photos of exposed pipe before repair, after pipe installation, after coupling installation, and before backfill.
14. Wye replacement and lateral reconnection information, where applicable, including replacement wye fitting, service lateral bend, lateral replacement length, lateral coupling type, photographs before backfill, and post-repair CCTV reference.

B. Include final repair information in Project Record Documents.

3.17 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION 33 01 30.71