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SPECIFICATION: G-8205-14b

TITLE: CORROSION CONTROL OF BURIED STEEL GAS MAINS AND SERVICES, AND METALLIC FITTINGS ON PLASTIC MAINS AND SERVICES

VOLUME: 2 (Section 1.0), 10, & Yellow Book

COURSE ID: [GAS0282](#)

CORE GROUPS: Gas Construction, Corrosion Control, **Leakage Control** and Emergency Response Force Lead Mechanic

TARGET AUDIENCE: Corrosion Control, Gas Construction, Gas Emergency Response Force (ERF), Gas Transmission Engineering- Major Projects, Pressure Control, Construction, Engineering & Planning- Energy Services, Per Diem, Gas Contractors, and Gas Emergency Response Force Lead Mechanic

Administrative Revisions

REV 14b (6/24/24)

Cover page: Added Leakage Control to the Core Groups.

REV 14a (4/12/23)

Cover page: Titled the revision table below “Substantive” revisions.

Updated some of the referenced specification titles though out this specification.

Attachment B: Page 1 of 4 removed the red crossed out image on the top of the page.
This image should have been removed with the last revision.

SUBSTANTIVE REVISIONS: (See ★)

Specification has been revised to incorporate comments made by GTI’s technical experts and Con Edison’s subject matter experts.

- 1) Section 6.6 - Added “As Constructed Sketches” and renumbered subsequent sections.



Gas Operations Standards

TITLE: CORROSION CONTROL OF BURIED STEEL GAS MAINS AND SERVICES

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	AUTHOR:	APPROVED BY:	DATE APPROVED:	VOLUME:	PAGE 1 OF
	D. Politano	Tomas Hernandez General Manager Technical Operations	08/31/2021	2 (Section 1.0), 10, & YB Construction Standards and O&M Manual	11 PAGES
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TITLE: CORROSION CONTROL OF BURIED STEEL GAS MAINS AND SERVICES

1.0. SCOPE

This specification provides guidelines to be used during the installation, repair, or replacement of buried steel gas mains, services, metallic fittings and steel gas piping after the meter.

2.0. LEGAL REQUIREMENTS

This specification complies with the Department of Transportation, 49 CFR Part 192, Sections 451 through 491; and the New York State Public Service Commission, 16 NYCRR Part 255, Sections 451 through 491.

3.0. ORGANIZATIONS APPLICABLE

All organizations involved with the construction, inspection or maintenance of underground gas piping.

4.0. OPERATOR QUALIFICATION

All Corrosion Control covered tasks shall be performed by Operator Qualified individuals, or if an individual is not Operator Qualified, the individual may perform the task under the direct observation of one who is Operator Qualified.

5.0. EXISTING STEEL MAINS AND SERVICES

- 5.1 When an unprotected steel gas pipe (pipelines installed before 1972) is exposed for any reason, a 32 lb. "hot spot" magnesium anode shall be installed (if the gas pipe is scheduled for replacement, no anode shall be installed). The anode wire shall be attached directly to the pipe with no test station. All anodes shall be shown on the "As Constructed."
- 5.2 Repair damaged coating as per Section 6.3 within the limits of the excavation on all coated mains and services. If there is reason to believe that damaged coating extends beyond the limits of the excavation, the pipe shall be exposed to make the repairs.
- 5.3 Backfill the excavation with sand, acceptable reprocessed backfill, or the soil from the excavation as per Section 6.8. If using the excavated soil, any rocks greater than 2 inches in diameter, as well as any clay, organic matter, or other debris shall be removed.

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TITLE: CORROSION CONTROL OF BURIED STEEL GAS MAINS AND SERVICES

5.0 **EXISTING STEEL MAINS AND SERVICES** (Continued)

5.4 Cathodic Protection and Testing

Testing on all existing mains and services shall comply with Specification [G-11830](#), "Corrosion Testing on **Buried** Steel Gas Mains and Services."

6.0. **INSTALLATION OF NEW STEEL MAINS AND SERVICES**

6.1 Cathodic Protection of Services

All new steel services shall be separately protected.

6.2 Anodes

Only magnesium anodes shall be installed on all new and existing steel mains and separately protected services including underground piping after the meter. (See [Appendix A](#))

Anode wires, and wires used for bonding and testing shall be installed on the body of the pipe by use of thermit welding as per [EO-14134-C](#) "**Thermit Weld Process for Attaching Wire to Pipe or Fitting**".

6.3 Coating

A) Repair all damaged coating and coat all bare fittings and pipe as follows:

- 1) Use Cold Applied Primerless Tapes on straight pipes and welded elbows (smooth surfaces) as per Specification [G-8209](#), "Field Coating of Steel Pipe and Fittings Installed Underground and in Subsurface Structures."
- 2) Use Cold Applied Mastic on all irregular surface fittings as per Specification [G-8209](#).

NOTE: Any removal and handling of coal tar coated pipe requires an asbestos handling license or at a minimum 8-hour coal tar removal class training.

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TITLE:

**CORROSION CONTROL OF BURIED STEEL
GAS MAINS AND SERVICES**

6.0 **INSTALLATION OF NEW STEEL MAINS AND SERVICES** (Continued)

6.3 Coating (Continued)

- B) For any length transmission main operating at ≥ 125 psig and any distribution main **100 feet or more** in length, the coating shall be electrically inspected using a Holiday Detector prior to backfilling the pipe in the excavation.

On mains **less than 100 feet** in length and services, the piping shall be electrically inspected using a Holiday Detector prior to backfilling where practical.

6.4 Insulating Joints

- A) Insulating joints (IJs) shall be installed at the following locations:

- 1) Between a new steel pipe and all other existing metallic pipes.
- 2) On a new steel pipe between the service head valve and the meter.
- 3) Between a new steel main and a new steel service.
- 4) At the aboveground ends of any underground steel pipe after the meter.

The following are two examples:

- a) If a steel pipe goes underground immediately after an outdoor meter, an insulating joint (IJ) should be installed after the meter before the pipe goes underground. Another IJ should be installed at the other above ground end where the pipe enters a building or comes above ground.
- b) If a steel pipe exits a building and goes to another building underground, IJs should be installed just inside both buildings on the above ground pipe.

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**CORROSION CONTROL OF BURIED STEEL
GAS MAINS AND SERVICES**

6.0 INSTALLATION OF NEW STEEL MAINS AND SERVICES (Continued)

6.4 Insulating Joints (Continued)

- 5) Where a gas main or gas service is located in close proximity to electrical transmission tower footings, ground cables or counterpoise, or in areas where fault currents or unusual risk of lightning may be anticipated, contact Corrosion Control to design and review the cathodic protection so that protective measures may also be taken at the IJs to protect the gas main or gas service against damage due to fault currents or lightning.
- 6) Gas mains and gas services constructed after November 1993 that are located parallel and in close proximity to or crosses underneath an overhead high-voltage (69-kV or higher) electric transmission facility must be buried or located where access is limited by use of fences or barriers to personnel that are trained in safe practices regarding step and touch voltages. Contact Corrosion Control to design and review the cathodic protection on such gas mains and gas services so that protective measures in the presence of step and touch voltages are ensured.

B) Restrictions

An IJ may not be installed in an area where a combustible atmosphere is anticipated unless precautions are taken to prevent arcing. If a combustible atmosphere is anticipated, contact Corrosion Control to design and review the necessary precautions to prevent arcing.

6.5 Test Stations

- A) Install one test station on all new steel mains less than 100 feet in length and on separately protected services. (See [Appendix B](#))
- B) A minimum of two test stations is required on mains 100 feet or longer at their extremities.

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6.0 INSTALLATION OF NEW STEEL MAINS AND SERVICES (Continued)

6.5 Test Stations (Continued)

C) Call Corrosion Control for test station locations for mains greater than 1,000 feet in length

★ **6.6 As-Constructed Sketches**

A) All anode test stations shall be documented on the As-con sketch and submitted to Maps and Records.

B) Maps and Records shall record test station location on the electronic mapping system.

6.7 Compression End Fittings

Bond all metallic compression end fittings including valves.
(See [Appendix C](#))

6.8 Pipe In Casings and Through Wall Sleeves

A) The steel carrier pipe shall be electrically isolated from the casing or wall sleeve. Should a casing exist, establish electrical isolation by using approved insulating skids between the casing pipe and the carrier pipe. See [G-100,280](#) "Pipeline Casing Insulating Skids."

B) The ends of the casing/wall sleeve shall be sealed in accordance with Company Specification [G-8096](#), "Sealing the Annular Space Between a Gas Pipe and a Wall, Casing Pipe, or Sleeve" and Specification [G-100,237](#), "Link-Type Seals for Sealing the Annular Space Between pipe and Casing."

C) The steel carrier pipe in a sleeve or casing shall be coated in accordance with Section 6.3. The sleeve/casing does not require coating.

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6.0 INSTALLATION OF NEW STEEL MAINS AND SERVICES (Continued)

D) For mains, at each end of the casing, install test leads on the steel carrier pipe and metallic casing pipe as per [EO-14134-C](#). Route the test leads into a test station at each end of the casing. The steel carrier pipe shall have a white #10 test lead, and the metallic casing pipe shall have a red #10 test lead. The test stations shall be shown on the "as constructed" sketch after the test stations have been installed. Contact Corrosion Control to perform tests using the new test leads. (See [Appendix B](#))

6.9 Backfilling

- A) A smooth surface shall be established along the bottom of the trench by placing a bed of sand under the pipe. Sandbags may be placed under the pipe at regular intervals in place of a sand bed. These bags must be able to be temporarily moved to electrically inspect the pipe's coating for damage.
- B) A minimum of 4 inches of wetted and compacted sand shall be used in a rock area to form a firm base.
- C) The pipe in the trench shall be backfilled with 12 inches of sand and it shall be hand compacted. The remaining trench shall be backfilled with sand that shall be mechanically compacted in 12-inch lifts. Care shall be taken when backfilling to prevent damage to the coating.
- D) Wooden blocks may be installed under the pipe in the trench on a temporary basis in order to facilitate pipe line-up or route. The blocks must be removed before backfilling and replaced with the proper supports as per Section 6.8A. The coating shall be checked for holidays (voids or discontinuities) in these areas and repaired in accordance with Section 6.3.
- E) For excavations using trenchless technologies (e.g., boring, horizontal directional drilling, driving), the applicable Company job specification that details precautions with coatings and specific installation guidelines to minimize holidays and coating damage will supersede this specification.

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6.0 INSTALLATION OF NEW STEEL MAINS AND SERVICES (Continued)

6.10 Cathodic Protection Testing

A) Mains Less Than 100 Feet, in Length; or Separately Protected Services

Operating Areas or Energy Services shall perform the following and document on form [Appendix D](#):

6.10 Cathodic Protection Testing (Continued)

- 1) Verify the effectiveness of all insulating joint(s).
- 2) Verify that the pipe is electrically continuous.
- 3) Measure the Pipe to Soil Potential to ensure that it is -0.85 volts or more negative.
- 4) Enter the new structure into GIS including the pipe-to-soil-reading, in accordance with Specification [G-11830](#).
- 5) The Operating Areas shall retain the original copy of the completed [Appendix D](#) for 5 years.

B) Mains 100 Feet or More in Length and Transmission Mains

Operating Areas or Construction shall notify Corrosion Control regarding the installation of these new steel structures. Notification shall comply with Specification [G-11830](#). Additionally, notify Corrosion Control prior to installation and after tie-in to enable Corrosion Control to test these structures pre- and post-installation.

C) Underground Piping After the Meter

Corrosion Control shall perform the initial testing to meet all Company requirements. The piping shall be shown on mains & services (M & S) plates for future leakage surveys. (If the initial testing results are unsatisfactory, the installer shall make repairs and Corrosion Control shall retest. Repairs and retesting shall be performed until satisfactory results are obtained.)

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7.0. METALLIC FITTINGS ON PLASTIC MAINS AND SERVICES

- 7.1 Metallic fittings/couplings shall not be used to permanently join plastic to plastic pipelines. Metallic end caps shall not be used to terminate the plastic pipeline end.
- 7.2 The temporary use of a metallic fitting/coupling/end cap to join plastic pipelines is allowed provided that the excavation around the metallic fitting/coupling/end cap is not backfilled, construction is not final. The metallic fittings/couplings/end caps joining the plastic pipeline shall be replaced with an electro fused fitting/coupling/end cap before backfill and final construction.

In extreme cases where a metallic fittings/couplings/end caps are used to join plastic to plastic pipelines and/or to terminate the plastic pipeline end the operating area or energy services shall:

1. Bond a white test lead to the metallic fittings/couplings/end caps,
 2. Install an appropriately sized anode(s), see [Appendix A](#) Section 2.0
 3. Apply an appropriate cathodic protection coating over the metallic fitting/coupling/end cap per specification [G-8209](#),
 4. Perform an electrical spark test per specification [G-8201](#), "Electrical Spark Inspection of Coating on Steel Pipe"
 5. Install a new test station. Route and connect both white test lead and anode wire within the test station.
 6. Measure the Pipe to Soil Potential to ensure that it is -0.85 volts or more negative
 7. Document the location of the test station, number & size of anodes installed using [Appendix D](#),
 8. Create a new asset in GIS/Asset Manager as a Mains Less than 100' under the test point type Metallic Fitting.
- 7.3 For metallic fittings/couplings used to join plastic to protected steel pipelines (pipelines installed 1972 and after), the metallic fittings/couplings shall be bonded to the protected steel pipeline and install a test station with appropriately sized anode(s), see [Appendix A](#) Section 1.0. For plastic brass-based tees, see [Appendix A](#) Section 2.1 (A).

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7.0 METALLIC FITTINGS ON PLASTIC MAINS AND SERVICES (Continued)

7.4 For metallic fittings/couplings used to join plastic to unprotected steel pipelines (pipelines installed before 1972), the metallic fittings/couplings shall be bonded to the unprotected steel pipeline and install a 32 lb. "hot spot" magnesium anode. For plastic brass-based tees, see [Appendix A](#) Section 2.1 (B).

7.5 For metallic fittings/couplings used to join plastic to cast iron or wrought iron pipelines, the metallic fittings/couplings shall be isolated from the cast iron or wrought iron pipeline, the operating area or energy services shall follow the same test station, coating, testing, anode installation and documentation as described in Section 7.2 and a green test shall be bonded to the cast iron or wrought iron pipeline and routed to the test station.

NOTE: This specification is referenced by other Gas Specifications concerning requirements for cathodic protection of metallic fittings installed on plastic mains and services (see e.g., [G-8005](#) and [G-8100](#)). The provisions of this specification supersede any inconsistent provisions concerning such cathodic protection contained in any specifications referencing this specification.

8.0. RECORDS RETENTION

Any records generated in the course of performing work in accordance with this specification shall be maintained as required by Corporate Instruction [CI-870-1](#) "Records Management". Guidance on the retention of Company Gas Operations records can also be found on the [Records Management](#) intranet site.

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9.0. REFERENCES

CI-870-1		Records Management
EO-4890-A	-	Service Pipe/Tubing and Service Sleeve Through Vault, Open Areaway, Open Area Under Stair, Under Enclosed Area and Into Vaulted Basement
EO-14134-C		Thermit Weld Process for Attaching Wire to Pipe or Fitting
G-8096	-	Sealing the Annular Space Between a Gas Pipe and a Wall, Casing Pipe, or Sleeve
G-8209	-	Field Coating of Steel Pipe and Fittings Installed Underground and in Subsurface Structures
G-11830	-	Corrosion Testing on Buried Steel Gas Mains and Services
G-100,237	-	Link- Type Seals for Sealing the Annular Space Between Pipe and Casing
G-100,280	-	Pipeline Casing Insulating Skids

10.0. ATTACHMENTS

Appendix A	-	Magnesium Anodes for New Steel Gas Mains and Separately Protected Services and Metallic Fittings
Appendix B	-	Test Stations for New Gas Mains and Services
Appendix C	-	Bonding of Compression Couplings and Valves on New Steel Mains and Services
Appendix D	-	New Steel Gas Pipe Corrosion Record

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APPENDIX A

MAGNESIUM ANODES FOR NEW STEEL GAS MAINS AND SEPARATELY PROTECTED SERVICES AND METALLIC FITTINGS

1.0 SEPARATELY PROTECTED SERVICES AND MAINS

1.1 3/4" to 1 1/2" diameter

- Install one 17 lb. magnesium anode for every 100 feet or less in length.

1.2 2" to 4" diameter

- Install one 32 lb. magnesium anode for every 100 feet or less in length.

1.3 6" to 12" diameter

- Install two 32 lb. magnesium anodes for every 100 feet or less in length

For example, an 8-inch main that is 150 feet long requires four 32-lb magnesium anodes (two 32-lb magnesium anodes for the first 100 feet and two 32-lb magnesium anodes for the remaining 50 feet). The total number of magnesium anodes (four) should be evenly distributed at each test station (two magnesium anodes at each of the two test stations). Similarly, an 8-inch main that is 280 feet long requires six 32-lb magnesium anodes that are evenly distributed among the test stations.

1.4 Diameters greater than 12"

- Call Corrosion Control.

1.5 Anode Design

- A maximum of four 32 lb. magnesium anodes shall be installed at any anode test station and eight 32-lb. magnesium anodes at any IJ test station. If there is protected steel on both sides of the IJ, then install four 32-lb magnesium anodes on each side of the IJ.
- Magnesium anodes should be installed horizontally; however, angular or vertical installation is also acceptable.

MAGNESIUM ANODES FOR NEW STEEL GAS MAINS AND SEPARATELY PROTECTED SERVICES AND METALLIC FITTINGS (Continued)

2.0 **METALLIC FITTINGS**

Metallic fittings include transition fittings, posi-lock tees, restraining couplings, or insulated Dresser end caps. These metallic fittings have been designed for adequate corrosion control, including coatings and anodes where applicable, to prevent leakage caused by localized corrosion pitting. One 3 lb. magnesium anode shall be installed on all metallic fittings that are 6-inches in diameter or smaller. For diameters greater than 6-inches, use one 17 lb. magnesium anode. Exceptions to this practice are:

- 2.1 Metallic fittings that are installed on strap saddles shall only have a 3 lb. magnesium anode attached to the saddle. For diameters greater than 6 inches, use one 17 lb. magnesium anode.
 - A) Plastic brass-based tees that are installed on insulated strap saddles around protected steel, cast iron (6" and smaller), or wrought iron mains shall have a 3-lb. magnesium anode attached to the 6" and smaller saddle. For 8" and larger insulated strap saddles, attach a 17-lb. magnesium anode. See Specification G-8100, Appendix H-2.
 - B) Plastic brass-based tees that are installed on insulated strap saddles around unprotected steel mains shall have a 3-lb. magnesium anode attached to the 6" and smaller saddle. For 8" and larger insulated strap saddles, attach a 17-lb. magnesium anode. Attach a 32-lb. "Hot Spot" magnesium anode to the steel main. See Specification G-8100, Appendix H-2.
- 2.2 Metallic fittings that are directly attached (threaded, welded) to a protected steel main require no separate anode.
- 2.3 Metallic fittings that are directly attached (threaded, welded) to an unprotected steel main shall have one 32 lb. "Hot Spot" magnesium anode attached to the steel main.
- 2.4 Metallic fittings that are directly attached (threaded) to a cast iron or wrought iron main shall have one 3 lb. magnesium anode attached to the fitting for diameters 6 inches and smaller. For diameters greater than 6 inches, use one 17 lb. magnesium anode. **NOTE:** Plastic brass-based tees that are directly attached (threaded) to a cast iron main do not require an anode. See Specification G-8100, Appendix H-2.

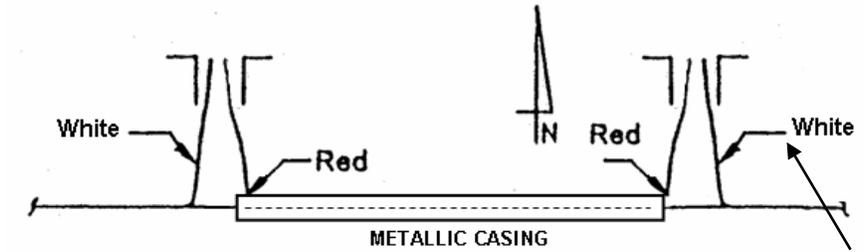
3.0 **CORROSION WORK ORDER (CWO) REPAIRS**

Spike anodes are acceptable for use as a CWO repair on separately protected services that have a small diameter and are short in length.

APPENDIX B

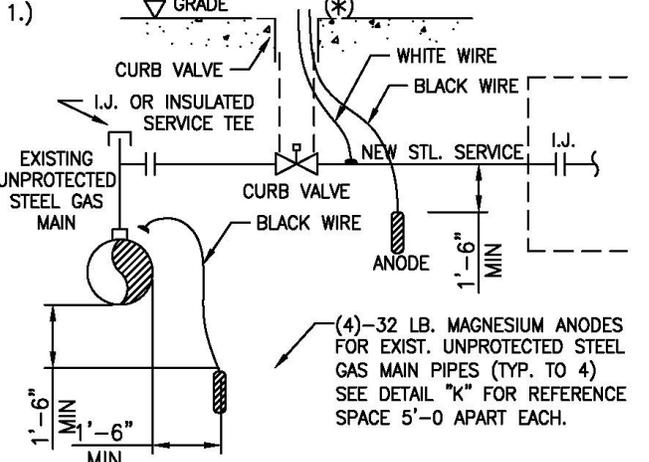
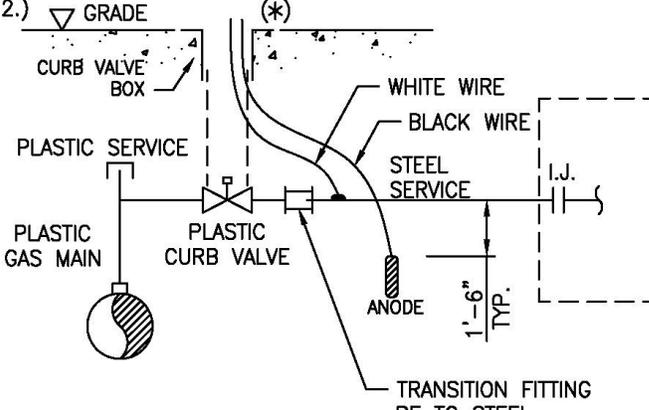
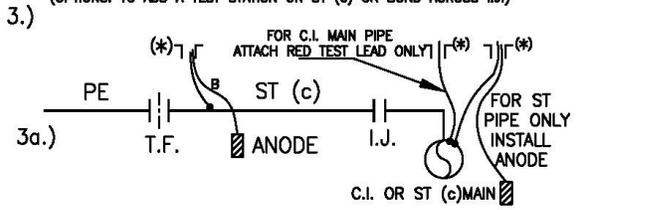
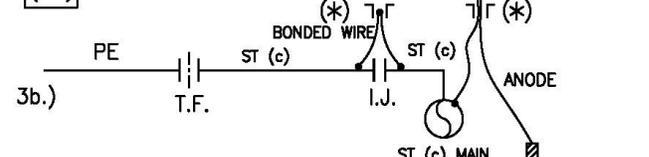
TEST STATIONS FOR NEW GAS MAINS AND SERVICES

NEW STEEL GAS MAIN IN METALLIC CASING PIPE



New Steel Gas Main

TEST STATIONS FOR NEW GAS MAINS AND SERVICES (Continued)

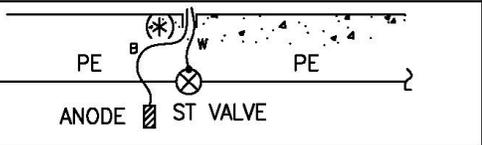
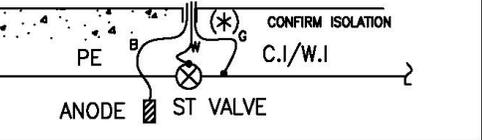
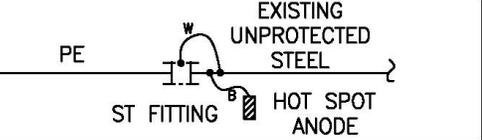
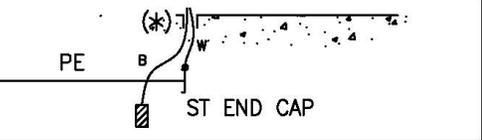
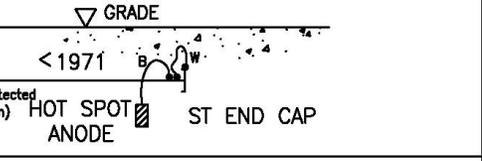
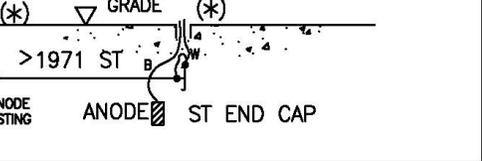
LEGEND: (PAGE 1)	* - TEST STATION ST - STEEL PIPE ≥ 1972 OR STEEL FITTING	(c) - COATED PIPE C.I. - CAST IRON PIPE <1972 - STEEL PIPE PRE 1972 CODE	PE - POLYETHYLENE PIPE (PLASTIC) BLACK: - ANODE WHITE: PIPE AT ANODE TEST STATION	REF. G-8205 RED: NORTH OR EAST SIDE IJ GREEN: SOUTH OR WEST SIDE IJ
TEST STATIONS FOR SERVICES DIAGRAM			DESCRIPTION	(*) REQUIREMENT
<p>1.)</p>  <p>(4)-32 LB. MAGNESIUM ANODES FOR EXIST. UNPROTECTED STEEL GAS MAIN PIPES (TYP. TO 4) SEE DETAIL "K" FOR REFERENCE SPACE 5'-0" APART EACH.</p>			<p>SEPARATELY PROTECTED</p> <p>SERVICE - STEEL AND STEEL</p>	<p>REFER TO SPEC G-8205SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES BASED ON PIPE SIZES</p>
<p>2.)</p>  <p>TRANSITION FITTING PE TO STEEL</p>			<p>SEPARATELY PROTECTED</p> <p>SERVICE - PLASTIC MAIN AND STEEL SERVICE</p>	<p>REFER TO SPEC G-8205SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES BASED ON PIPE SIZES</p>
<p>3.) (OPTIONS: TO ADD A TEST STATION ON ST (c) OR BOND ACROSS I.J.)</p> <p>3a.)</p>  <p>FOR C.I. MAIN PIPE ATTACH RED TEST LEAD ONLY</p> <p>FOR ST PIPE ONLY INSTALL ANODE</p>			<p>SERVICE TRANSITION FITTING TO C.I. OR ST (c) MAIN - I.J. REQUIRED AT TAP OFF.</p>	<p>TEST STATION W/ ANODES ON ST (c) TRANSITION FITTING IF CAST IRON MAIN ATTACH TEST LEAD ONLY AND RUN TO TEST STATION</p>
<p>(OR)</p> <p>3b.)</p>  <p>BONDED WIRE</p>			<p>IF C.I. OR ST (c) MAIN IS PROTECTED - OPTION TO BOND I.J.</p>	<p>(OR)</p>
<p>DETAIL 'R'</p> <p>SCALE: N.T.S.</p>		<p>TYPICAL GALVANIC PROTECTION DETAILS REQUIRED FOR SERVICES STEEL CONNECTIONS (EFFECTIVE 4/22/19) AT STEEL TO STEEL PRE 1972, AT STEEL TO PE, AT PE TO PE, AT SERVICE TRANSITIONS (PAGE 1 OF 3)</p>		

TEST STATIONS FOR NEW GAS MAINS AND SERVICES (Continued)

LEGEND: (PAGE 2)	(*) - TEST STATION ST - STEEL PIPE ≥ 1972 OR STEEL FITTING	(c) - COATED PIPE C.I./W.I. - CAST OR WROUGHT IRON PIPE <1972 - STEEL PIPE PRE 1972 CODE	PE - POLYETHYLENE PIPE (PLASTIC) BLACK - ANODE WHITE: PIPE AT ANODE TEST STATION	REF. G-8205 RED: NORTH OR EAST SIDE U GREEN: SOUTH OR WEST SIDE U
TEST STATIONS FOR PIPE TO PIPE DIAGRAM / FITTINGS		DESCRIPTION		(*) REQUIREMENT
1.)		ST (c) TO ST (c) - I.J. REQUIRED **DIFFERENT VINTAGE	TEST STATION W/ ANODES ON BOTH SIDES. (REFER TO G-8205 APPENDIX FOR APPROPRIATE COLORED WIRES)	
2.)		PRE 1972 ST TO ST (c) I.J. REQUIRED INSTALL 32LB HOT SPOT ANODE	TEST STATION W/ ANODES ON ST (c), HOT SPOT ANODES ON ST 1972	
3.)		ST (c) TO CAST IRON /WROUGHT IRON - I.J. REQUIRED	TEST STATION W/ ANODES ON ST (c) NO ANODES & TEST STATIONS ON CAST IRON. (REF G-8205, APPENDIX A FOR APPR. COLORED WIRES)	
4.)		ST (c) TO PE	TEST STATION W/ ANODES ON ST TRANSITION FITTING (TRANSITION FITTING BONDED TO STEEL) REFERENCE SECTION 7.3	
5.)	<u>GAS MAINS LESS THAN 100 FT IN LENGTH</u> 	TEST STATIONS FOR NEW GAS MAINS BASED ON LENGTH < 100 FT	TEST STATION REQUIRED FOR EACH ANODE ADDED FOR GAS MAINS LESS THAN 100 FT. REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES BASED ON PIPE SIZES	
6.)	<u>MAIN 100 FEET OR MORE IN LENGTH</u> 	TEST STATIONS FOR NEW GAS MAINS BASED ON LENGTH > 100 FT A MINIMUM TWO TEST STATIONS ARE REQUIRED ON MAINS 100 FEET OR LONGER AT THEIR EXTREMITIES.	* INSTALL THIS ANODE IF A CORROSION REPAIR IS MADE AND THE PIPE IS NOT SCHEDULED FOR REPLACEMENT REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES BASED ON PIPE SIZES	
7A.)		TEST STATIONS FOR NEW METALLIC FITTINGS INSTALLED ON PE PIPE	LOCATE TEST STATION OVER FITTING REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES - MIN ONE 17 LB ANODE FOR EACH FITTING REFERENCE SECTION 7.2	
7B.)		TEST STATIONS FOR NEW METALLIC FITTINGS INSTALLED ON PE PIPE	LOCATE TEST STATION OVER FITTING CONFIRM ISOLATION REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES - MIN ONE 17 LB ANODE FOR EACH FITTING REFERENCE SECTION 7.5	
DETAIL 'R' SCALE: N.T.S.		TYPICAL GALVANIC PROTECTION DETAILS REQUIRED STEEL SERVICES, PIPE TO PIPE MAINS AND FITTINGS CONNECTIONS (EFFECTIVE 4/22/19) AT STEEL TO STEEL PRE 1972, AT STEEL TO PE, AT PE TO PE, AT SERVICE TRANSITIONS (PAGE 2 OF 3)		

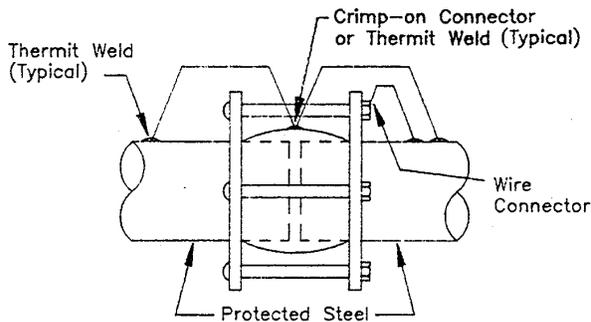
★ **APPENDIX B** (Continued)

TEST STATIONS FOR NEW GAS MAINS AND SERVICES (Continued)

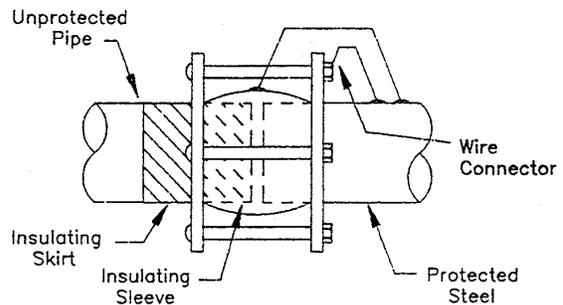
LEGEND: (PAGE 3)	(*) - TEST STATION ST - STEEL PIPE ≥ 1971 OR STEEL FITTING	(*) - COATED PIPE C.I. - CAST IRON PIPE <1971 - STEEL PIPE PRE 1971 CODE	PE - POLYETHYLENE PIPE (PLASTIC) BLACK - ANODE WHITE: PIPE AT ANODE TEST STATION	REF. G-8205 RED: NORTH OR EAST SIDE U GREEN: SOUTH OR WEST SIDE U
TEST STATIONS FOR PIPE TO PIPE DIAGRAM /FITTINGS		DESCRIPTION		(*) REQUIREMENT
7C.)			TEST STATIONS FOR NEW METALLIC VALVE FITTING INSTALLED ON PE PIPE	LOCATE TEST STATION OVER FITTING REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES - MIN ONE 17 LB ANODE FOR EACH FITTING
7D.)			TEST STATIONS FOR NEW METALLIC VALVE FITTING INSTALLED ON PE PIPE	LOCATE TEST STATION OVER FITTING CONFIRM ISOLATION REFER TO SPEC G-8205 SEE APPENDIX A SECTION 1.0 FOR NUMBER OF ANODES - MIN ONE 17 LB ANODE FOR EACH FITTING
8.)			METALLIC FITTING /COUPLINGS SHALL BE BONDED TO UNPROTECTED STEEL AND INSTALL 32LB HOT SPOT ANODE	REFERENCE SECTION 7.4
9.)			ST (c) END CAP TO PE PIPE	TEST STATION W/ ANODES
10.)			PRE 1971 ST TO ST (c) END CAP INSTALL 17LB HOT SPOT ANODE	HOT SPOT ANODES ON ST PIPE PRE 1971 AND BONDED STEEL END CAP
11.)			STEEL END CAP ON POST1971 PROTECTED STEEL MAIN. BOND AND TEST STATION WITH 1-32LB ANODE	TEST STATION W/ ANODES ON ST (c) NO ANODES
DETAIL 'R' SCALE: N.T.S.		TYPICAL GALVANIC PROTECTION DETAILS REQUIRED STEEL SERVICES, PIPE TO PIPE MAINS AND FITTINGS CONNECTIONS (EFFECTIVE 4/22/19) AT STEEL TO STEEL PRE 1972, AT STEEL TO PE, AT PE TO PE, AT SERVICE TRANSITIONS (PAGE 3 OF 3)		

APPENDIX C

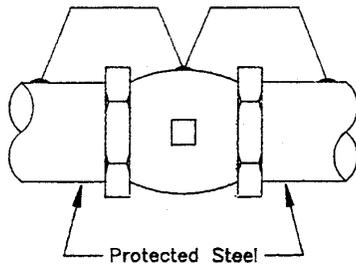
BONDING OF COMPRESSION COUPLINGS AND VALVES ON NEW STEEL MAINS AND SERVICES



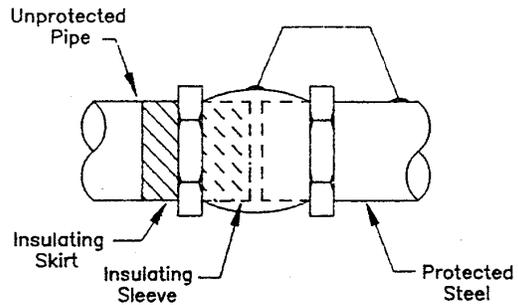
Bolted Non-Insulating Compression
Coupling or Valve



Bolted Insulating Compression
Coupling or Valve



Non-Insulating Compression
Coupling or Valve



Insulating Compression
Coupling or Valve

- NOTES:**
- 1) On Company installed steel services 2" diameter and smaller, bonding is not required as long as the continuity of the service is checked and verified.
 - 2) Crimp-on connectors are welded to the barrel of the coupling so that the coupling may be bonded to the pipe.

APPENDIX D

 **New Steel Gas Pipe Corrosion Record** 
G-8205 Appendix D

ECS Ticket # _____
(created by Installer)

Layout # _____

GIS Ticket # _____
(created by Operating Area)

Operating Area
Indicate One:

- M – Manhattan
 X – Bronx
 Q – Queens
 W – Westchester

Municipality
(Westchester)

Structure Identification
District M&S Plate

Pipe Type
Indicate One:

- N – Main Less than 100ft
 S – Steel Services
 I – Isolated Metallic Fittings

Location of Lowest Pipe-to-Soil (P/S) Reading (Type N or I Pipe), House Address (Type S Pipe)

Length of Pipe
(Feet)

Size of Pipe
(Inches)

Date Installed
(Month) (Year)

Pressure
Indicate One:

- H – High Pressure
 M – Medium Pressure
 L – Low Pressure

Test Information (required)

P/S Potential
(-0.85Vdc or more Negative)

Test Date
Month / Day / Year

Employee Name: _____

Employee Number: _____

- If installed at proper location, tested & effective isolation? Yes No N/A
Is the service electrically isolated from the main? Yes No N/A
Is the pipe electrically continuous? Yes No N/A
Cathodic protection coating applied per G8209? Yes No N/A
Holiday detection test passed? Yes No N/A

Split Sleeve test station installed? N/A Yes Location: _____

Anodes Installed? No Yes How many: _____ Size (lbs): _____ C/V MATS IJTS
(Indicate One)

(Energy Services Representative or Operating Area)

(Date)

Remarks: _____

Form Revised July 2019