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1.0 INTRODUCTION

1.1 Purpose

The purpose of this safety procedure is to prevent the possibility of arcing across piping during separation or connection due to electrical current flow in the pipe caused by the cathodic protection system. Typical work involving pipe separation or connection includes:

- Cutting a pipeline
- Parting a flange
- Removing a valve
- Removing a pipe spool
- Any procedure requiring structural separation or connection of piping.

The scope of this safety procedure shall identify work areas within the Marathon Anacortes Refinery that are subject to significant levels of cathodic protection current. Bonding cables shall be required during piping separation or connection in these areas. This safety regulation shall also establish a procedure for the use of these bonding cables.

2.0 REFERENCES

2.1 Marathon Standards, Policies & Procedures

- RSP-1161, Electrical Hazardous Area Classification and Design
- RSP-1162, Electrical Safe Work Practices
- RSP-1163, Assessment of Electrical Infrastructure
- SP-60-39, Maintenance Testing of Electrical Equipment

3.0 DEFINITIONS

The following definitions are applicable to this procedure.

Table 1 Acronyms

Term	Description
AWG	American Wire Gauge

Table 2 Definitions

Term	Description
Bonding Conductor/Cable	A reliable conductor to ensure the required electrical conductivity between metal parts required to be connected.

Table 2 Definitions

Term	Description
All Underground Piping	A pipe is considered to be underground for its entire length below ground and for the extension of the pipe above ground to a point where it is in contact with at least two other parallel electrical grounding paths to the rectifier.

4.0 IDENTIFICATION OR WORK AREAS REQUIRING BOND CABLES

The following areas shall require bond cables to be used when piping separation or connection is to be performed. This work shall be accomplished in accordance with the "Procedure" section described below.

4.1 All Underground Piping

All underground piping in the Marathon Anacortes Refinery is under the influence of the cathodic protection system and consequently will have current flow through them. Any separation or connection of the pipes will require the use of bond cables.

A pipe is considered to be underground for its entire length below ground and for the extension of the pipe above ground to a point where it is in contact with at least two other parallel electrical grounding paths to the rectifier. Typically, this would be two pipe rack support structures. The attached Attachment 1 illustrates the definition point.

4.2 All Piping Inside Tank Farm Firewalls

Any piping that is inside a tank farm firewall shall require a bond cable before piping separation or connection to a tank.

4.3 Loading Rack Area

All piping in the loading rack area, including the tank car, tank truck, and propane loading rack area, shall require bond cables before piping separation or connection operations.

4.4 Effluent Plant Area

All piping in the Effluent Plant Area shall require bond cables before piping separation or connection.

4.5 Wharf Area

All piping in the Wharf area shall require bond cables before piping separation or connection.

5.0 AREAS THAT DO NOT REQUIRE BOND CABLES

5.1 Operating Units

Above ground piping located in the operating units do not require bond cables for separation or connection of piping.

5.2 Piperacks Between Operating Units

Above ground piping located on piperacks that connect operating units do not require bond cables for separation or connection.

It has been determined that a sufficient number of parallel paths exist in these areas that bond cables are not required.

5.3 Outside Refinery Fence

All non-hydrocarbon lines inside buildings and outside the Marathon Anacortes Refinery fenced area.

5.4 Vessel Side of Insulating Flanges at the Wharf

Vessel side of insulating flanges at the Wharf do not require bond cables.

6.0 PROCEDURE

6.1 Safety Permits

A determination shall be made by the person(s) issuing the safety work permit as to whether or not a bond cable is required for the pipe separation or connection. Proper safety work permit requirements shall be followed prior to starting the work.

6.2 Installation of Bond Cables

The bond cables shall be available from the Tool Room. The bond cables shall be attached (i.e. finger tight) to each side of the pipe to be separated or connected. The bond cable attachment points shall be positioned far enough from the work area that they are not disturbed during the work procedure. Each bond cable contact point shall be cleaned to bare metal to assure an adequate connection. The contact point shall be approximately 1" square and cleaned using a hand file or small grinder. The attached Attachment 4 illustrates the procedures for the bond cable installation.

6.3 Removal of Bond Cables

The bond cable shall remain in place until the work has been completed and the pipe is structurally continuous. Upon removal of the bond cable from underground piping, a mastic patch, which is available from the Tool Room with the bond cables, shall be placed over the bare metal contact point. Please refer to Attachment 3. The bare contact area on above ground piping shall be coated with gray Rustoleum paint. The bond cable shall then be returned to the Tool Room.

7.0 BOND CABLE DESCRIPTION

The bond cable shall be a No. 2 AWG, 136 strand, and copper cable with crimped lug connections at each end attached to a "Quick-Bond" clamp. An illustration and description of a typical bond cable is found on the attached Attachment 5.

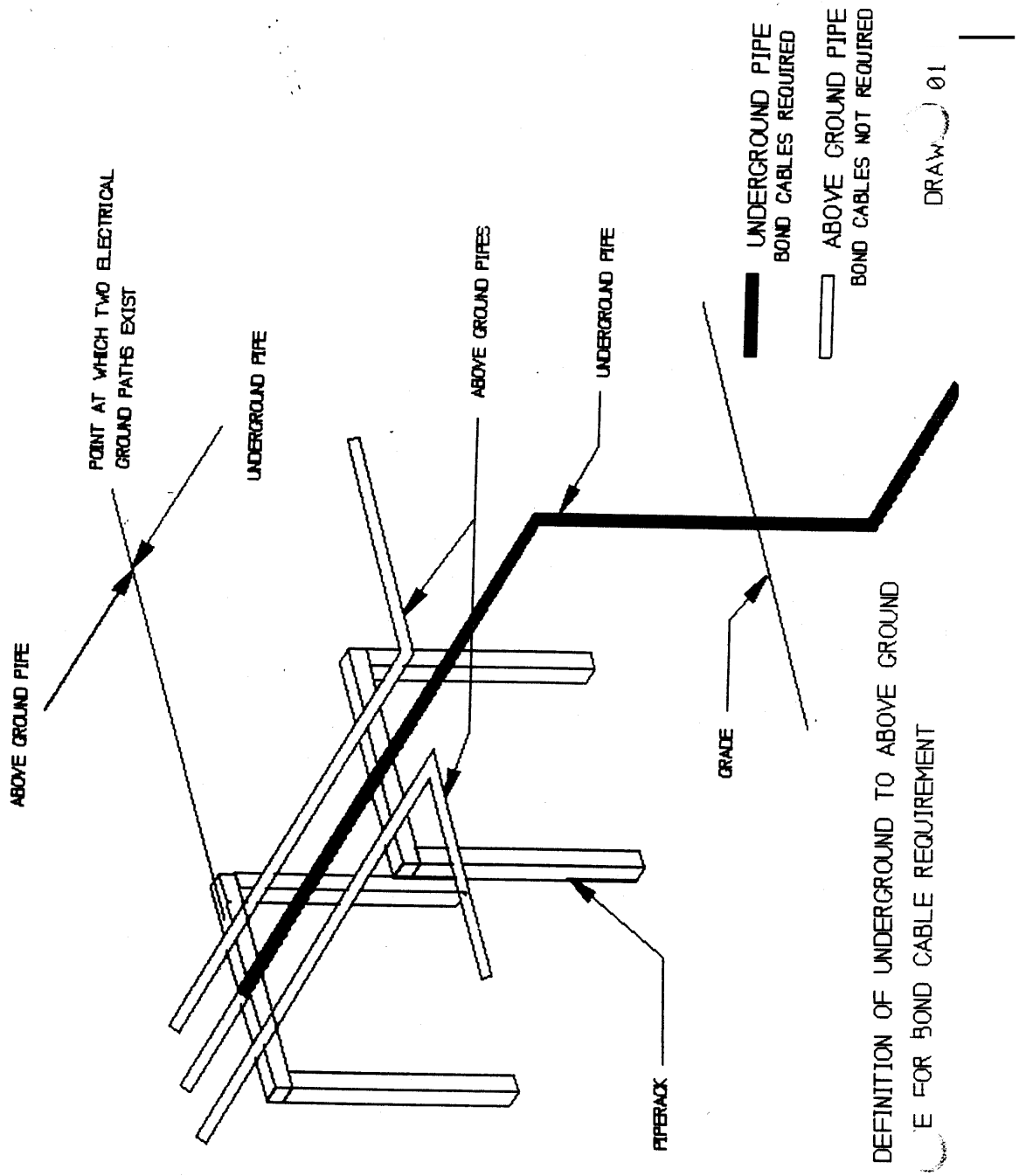
8.0 TRAINING

All Operations personnel shall be trained on initial hiring. Operations shall review R-11-034 upon a revision to the regulation.

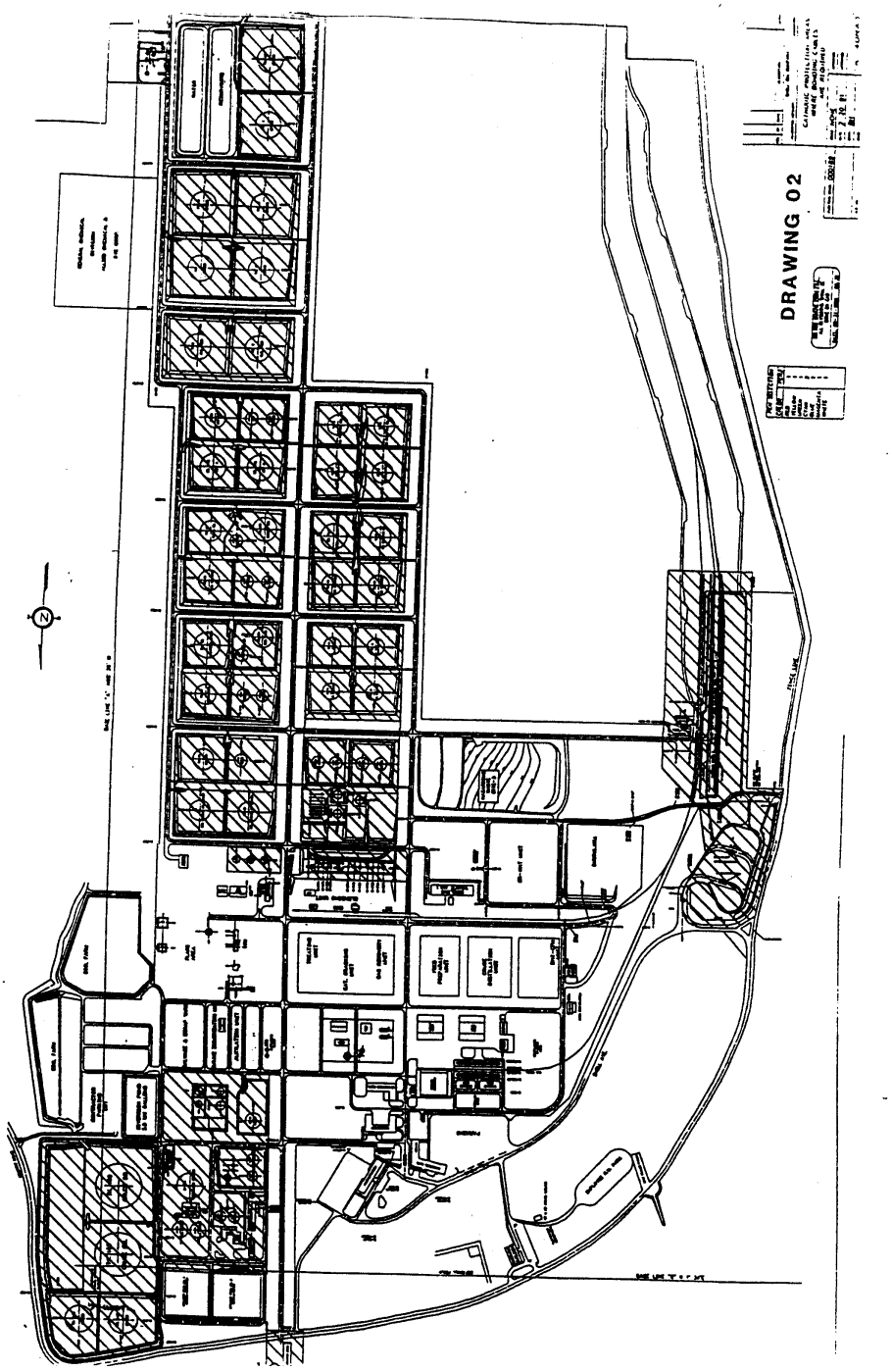
9.0 REVIEW AND REVISION HISTORY

Revision #	Preparer	Date	Description
0	Chris Walker, Marc Ranieri, Soren Wellman	10/06/2021	Reformatted and Numbered per Document Control Policy, R-63-001 Line-by-line review.

10.0 APPENDIX 1 – UNDERGROUND PIPING TO ABOVE GROUND PIPING



11.0 APPENDIX 2 – WORK AREAS REQUIRING BOND CABLES



12.0 APPENDIX 3 – MASTIC PATCH

Data Sheet No 172-C

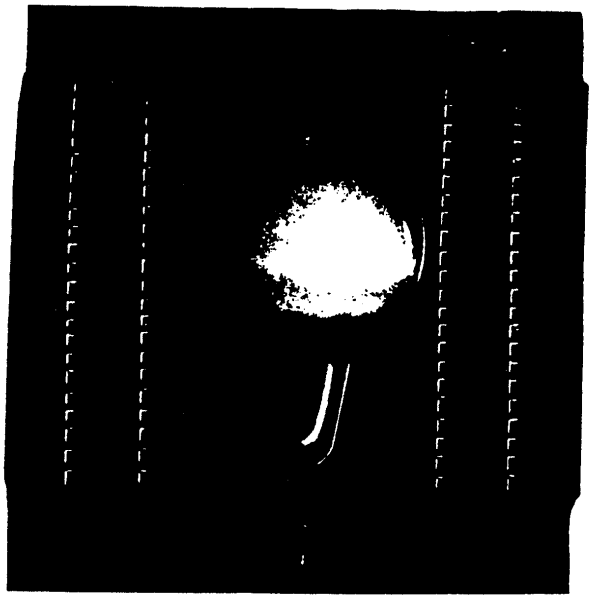
~~SAFETY REGULATION NO. 63~~

Royston

Handy Cap 2

Corrosion Protection
For Exothermic Grounding
Connections

The ROYSTON HANDY CAP 2 is a prefabricated assembly specifically designed for Cathodic Protection leads to pipes and tanks. When pressed by hand into position over the anode lead wire weld, it forms a thick, highly resistant electrical insulation seal over the weld, the end of the lead wire and the surrounding area of the pipe or tank.



Actual Size of Royston Handy Cap 2

FEATURES:

1. A top plastic sheet formed with an igloo shaped dome and entry tunnel for the lead wire.

2. A special elastomeric compound in the plastic dome, which is firm enough to resist flow at all normally encountered application and operation temperatures, but soft enough to mold itself around and completely cover the irregular welded profile.

3. On either side of the dome are a double row of parallel, flexibilizing serrations to assist with conforming around small diameter pipe.

4. A base of Royston Tac-Tape, a black unbacked elastomeric tape with exceptional adhesive properties, for bonding firmly to the metal surface, when used with Royston Roybond 747 primer.

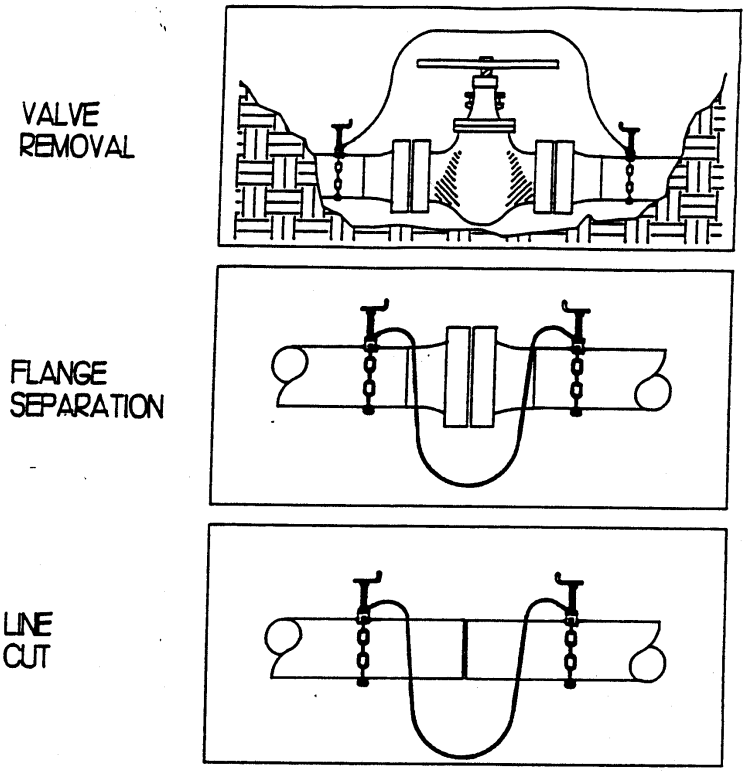
USAGE

The ROYSTON HANDY CAP 2 is easily applied and economical. They may be used on all anode lead wire and test wire weld areas. Royston Handy Cap 2 is especially useful for welds on mill coated pipe where only a small part of the coating has been removed to permit installation of the thermite grounding connections.

They are ideal for use in limited access situations, because they can be manipulated easily and applied at arm's length.

13.0 APPENDIX 4 – INSTALLATION OF BOND CABLES

SAFETY REGULATION NO. 63



PROCEDURE

FOR SEPARATION OF A PIPE, VALVE REPLACEMENT, GASKET REPLACEMENT, LINE CUTTING, ETC - PROCEED AS FOLLOWS:

1. ATTACH A BONDING CABLE ACROSS THE WORK AREA. PROVIDE A CLEAN CONTACT POINT FOR THE BONDING CLAMP.

2. REMOVE THE VALVE, GASKET, OR OPEN THE LINE. AT ALL TIMES THE BONDING CABLE SHALL REMAIN IN PLACE DURING THE WORK.

3. FOLLOWING THE REPAIRS OR MODIFICATION TO THE LINE, REMOVE THE BONDING CABLES. THIS SHALL BE DONE ONLY IF THERE IS A CONTINUOUS METALLIC PATH WHEN THE WORK IS COMPLETED.

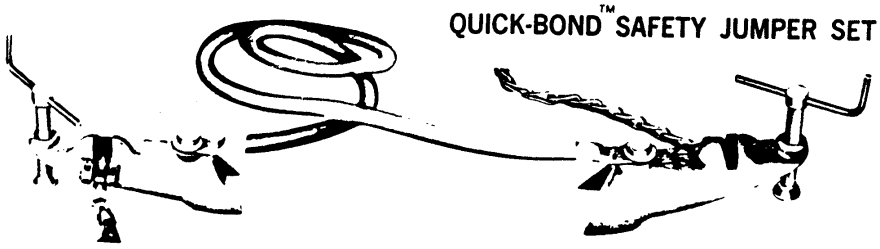
BOND CABLE INSTALLATION

DRAWING 04

14.0 APPENDIX 5 –BOND CABLES

PIPETRON™ QUICK-BOND™ ELECTRICAL SAFETY DEVICES

QUICK-BOND™ SAFETY JUMPER SET



Convenient connecting of two Quick-Bond Type QBPC Clamps with a No. 2 AWG SAFE-FLEX® heavy duty cable. The universal bonding clamps assure electrical connections to a pipe or circular surface from 2" diameter and up; depending on length of installation chain. Speed screw allows installation in less than 15 seconds. The heavy duty clamp body and cable give assurance of a low resistance path for handling up to 300 amps. Flat chain prevents damage to pipe coating. Designed for compliance to USAS Codes B31.8-1968 Section 863.2 and B31.4-1966 Section 438.5 (d). Available with convenient carrying case.

APPLICATIONS:

- Safety jumpering across sections of pipe being removed
- Cathodic protection measurements
- Shorting out insulated fittings for testing
- Jumpering telephone cable sheath for testing

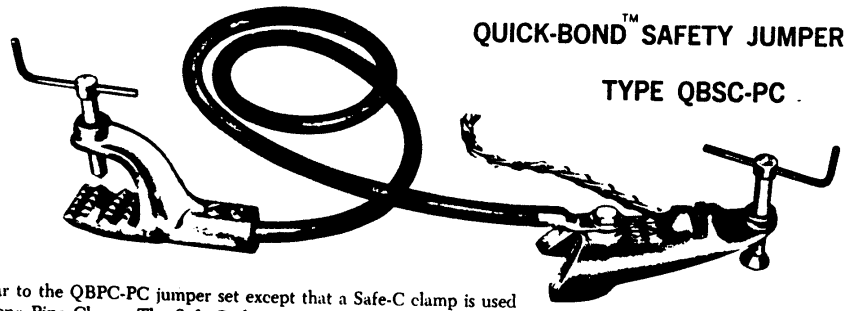
TYPE QBPC-PC

CATALOG NUMBER (Add Cable Length as dash number)*	PIPE O.D. (Max. Chain Capacity)
QBPC - PC14 - XX	14 in.
QBPC- PC18 - XX	18 in.
QBPC - PC22 - XX	22 in.
QBPC - PC26 - XX	26 in.
QBPC - PC30 - XX	30 in.
QBPC - PC34 - XX	34 in.
QBPC - PC38 - XX	38 in.

*Standard Cable Lengths are: 6, 8, 10, 15, 20, 50, 75 and 100 feet.

QUICK-BOND™ SAFETY JUMPER SET

TYPE QBSC-PC



Similar to the QBPC-PC jumper set except that a Safe-C clamp is used in lieu of one Pipe Clamp. The Safe-C clamp attaches to structural shapes, plate, pipe wall or pipe (up to 2 in. O.D.) Stainless steel speed screw breaks through tough oxides, paint, corrosion, etc., to make an excellent connection. Diamond studded jaw for excellent gripping and high psi contact.

APPLICATIONS:

- Safety grounding of tanks, tank cars and electrical distribution equipment.
- Eliminate static electricity when loading or discharging flammable fluid. Avoid fires and explosions.
- Temporary grounding and shorting to prevent personnel shock hazard.
- Arc welding grounds

CATALOG NUMBER (Add Cable Length as dash number)*	PIPE O.D. (Max. Chain Capacity)
QBSC - PC14 - XX	14 in.
QBSC - PC18 - XX	18 in.
QBSC - PC22 - XX	22 in.
QBSC - PC26 - XX	26 in.
QBSC - PC30 - XX	30 in.
QBSC - PC34 - XX	34 in.
QBSC - PC38 - XX	38 in.

*Standard Cable Lengths are: 6, 8, 10, 15, 20, 50, 75 and 100 feet.

DRAWING 05