

## **3.6 Plant Cabling**

### **Design Description**

#### **1.0 System Description**

Plant cabling and raceways associated with redundant safety-related circuits is arranged so that a single failure cannot cause malfunctions in redundant divisions that prevent completion of safety-related functions. Separation distances described in this section are for Class 1E cables and raceways containing Class 1E cables.

#### **2.0 Arrangement**

2.1 Equipment markings for Class 1E divisions cables and raceways are distinctly identified and distinguishable from other identifying markings placed on the Class 1E divisions cables and raceways.

2.2 Physical separation or electrical isolation exists between Class 1E division cables and raceways and between Class 1E divisions and non-Class 1E cables and raceways.

### **Inspections, Tests, Analyses, and Acceptance Criteria**

Table 3.6-1 lists the plant cabling ITAAC.

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<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
2.1	Equipment markings for Class 1E divisions cables and raceways are distinctly identified and distinguishable from other identifying markings placed on the Class 1E divisions cables and raceways.	An inspection will be performed on the as-built Class 1E divisions cables and raceways to verify that the equipment markings for each Class 1E division cable and raceway are distinctly identified and distinguishable from other markings placed on the Class 1E division cable and raceway.	Equipment markings for each Class 1E division cable and raceway are distinctly identified and distinguishable from other identifying markings placed on the Class 1E division cable and raceway.
2.2	Physical separation or electrical isolation exists between Class 1E divisions cables and raceways and between Class 1E divisions and non-Class 1E cables and raceways.	An inspection and analysis will be performed to verify that physical separation or electrical isolation exists between as-built Class 1E divisions cables and raceways and between as-built Class 1E divisions and as-built non-Class 1E cables and raceways.	Physical separation exists between raceways containing Class 1E cables of different divisions; and between raceways containing Class 1E cables and raceways containing non-Class 1E cables; or a combination of separation and barriers exists; or an analysis exists as follows: <ul style="list-style-type: none"> <li>a. Within the MCR and RSS (non-hazard area), the minimum separation distances meet one of the following criteria:               <ul style="list-style-type: none"> <li>– 1 in horizontally and 3 in vertically. Vertical separation may be reduced to 1 in if the enclosed raceway is below an open raceway.</li> <li>– Circuits routed in an enclosed-to-enclosed configuration the minimum separation is 1 in horizontally and vertically.</li> </ul> </li> </ul>

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Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
		<p>b. Within limited hazard plant areas, the minimum separation distances meet one of the following criteria:</p> <ul style="list-style-type: none"> <li>– 3 ft horizontally and 5 ft vertically.</li> <li>– Circuits routed in an enclosed-to-enclosed configuration the minimum separation is 1 in horizontally and vertically.</li> <li>– For interactions involving low-voltage power circuits with cable sizes less than or equal to 2/0 AWG the minimum separation is 6 in horizontally and 12 in vertically. Minimum separation may be reduced to 1 in horizontally and 3 in vertically if the circuits in the open configuration in an enclosed-to-open configuration are limited to control and instrumentation circuits</li> <li>– For interactions involving only control and instrumentation cables the minimum separation is 1 in horizontally and 3 in vertically. Vertical separation may be reduced to 1 in if the enclosed raceway is below an open raceway.</li> </ul>

**Table 3.6-1—Plant Cabling ITAAC**  
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Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
		<ul style="list-style-type: none"> <li>c. Circuits that do not meet minimum separation distances have barriers provided between circuits requiring separation.</li> <li>d. Circuits that do not meet minimum separation distances or have barriers provided between circuits requiring separation are analyzed.</li> <li>e. Non-Class 1E circuits that are not analyzed and do not meet the minimum separation distances or have barriers providing separation between Class 1E circuits are treated as Class 1E.</li> </ul>