S

ENGINEERING CHANGE NOTICE

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1. ECN 654046

Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. TA Nuxall, SNF CVD, R3-86, 372-3739	4. USQ Required? ☐ Yes ☒ No	5. Date 8/31/99.
	6. Project Title/No./Work Order No. W-441 Spent Nuclear Fuel Cold Vacuum Drying	7. Bldg./Sys./Fac. No. CVDF	8. Approval Designator SQ
12a. Modification Work ☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date
13a. Description of Change Addition of locknuts and couplings.		13b. Design Baseline Document? ☐ Yes ☒ No	
14a. Justification (mark one) Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐ 14b. Justification Details Technical correction.			
15. Distribution (include name, MSIN, and no. of copies) See Distribution		RELEASE STAMP DATE: STA: A SEP 01 1999 HANFORD RELEASE ID: 2	

A-7900-013-2 (05/96) GEF095

A-7900-013-3 (05/96) GEF096

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CONDUIT FOR SAFETY CLASS WIRING

Carl Van Katwijk
Numatec Hanford, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 654046	UC: 620
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Key Words: W-441, Cold Vacuum Drying Facility (CVDF), CGI-SNF-D-93-2-C1-052, Conduit for Safety Class Wiring

Abstract: W-441, Cold Vacuum Drying Facility (CVDF), CGI-SNF-D-93-2-C1-052, Conduit for Safety Class Wiring

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Release Approval 9/1/99

Approved for Public Release

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A-7320-005 (10/97)

Commercial Grade Item Upgrade Dedication Form		SNF-4914, Rev. 1
ECN No. NA	CGI No. CGI-SNF-D-93-2-C1-052	Page 1 of 46
Title: CONDUIT FOR SAFETY CLASS WIRING		

Section 1 Part Information									
Item No.: NA	Manufacturer:		Supplier:						
Mfg. Part/Model No.:		Supplier's P/N:							
Part Description:									
End Use Description:									
Section 2a Component Information									
Equipment No.: See attached Section 9	Specification No.: W-441-C1, Section 16110	Manufacturer: Various	Past P.O. No.: NA						
Procurement and/or Model No.: See attached Section 9	Equipment Supplier (if different from manufacturer): American Electric		Equip. Supplier's Part No.: NA						
Component Description: Rigid conduit, nipples, sealtight flex connectors/reducers, struts and straps, condulets, locknuts/grounding locknuts, gasketed sealing locknuts, couplings, flexible metal conduit/connectors, outlet bodies, angle connectors, aluminum lugs, grounding/insulating bushings.									
Section 2b Commercial Availability of the Item									
<p>1. Is the Item available from a catalogue of a qualified NQA1 supplier? (coordinate with project CGI interface Engineer or BTR)</p> <p>☐ YES (go to #2 below)</p> <p>☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)</p> <p>If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate with project CGI interface Engineer or BTR)</p> <p>☐ YES (go to #2 below, then go to procedure step 6.3.2, proceed to dedicate Item)</p> <p>☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)</p>									
<p>2. List of Candidate qualified suppliers or ISO 9000 suppliers</p> <table border="1"> <thead> <tr> <th>company name & type</th> <th>contact name</th> <th>phone</th> </tr> </thead> <tbody> <tr> <td colspan="3">NA</td> </tr> </tbody> </table>				company name & type	contact name	phone	NA		
company name & type	contact name	phone							
NA									
<p>3. Recommended Procurement Strategy (coordinate with project CGI interface Engineer or BTR):</p> <p>NA</p>									

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Section 2c CGI Determination	
1. Question #1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities?	☐ YES (the Item is not commercial grade) ☒ NO (continue)
2. Question #2: Is the Item used in applications other than nuclear facilities or activities?	☐ NO (the item is not commercial grade) ☒ YES (continue)
3. Question #3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the published product information (e.g. manufacturer's catalog)?	☐ NO (the Item is not commercial grade) ☒ YES (continue)
☒ All three criteria have been satisfied. The Item meets the definition of commercial grade.	
Section 2d Reason for Dedication	
The above described Item is being Dedicated for use in the application cited for the following reason(s):	
☒	Item is being purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Class application.
☐	Item is being purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Significant application.
☐	Item was purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Class application.
☐	Item was purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Significant application.
☐	Other ('like-for-like', similar, substitution, replacement evaluation)
Section 3 Failure Effects Evaluation	
A. Part/Component Safety Function:	
1. Provide conduit protection, structural support for safety class wiring.	
2. Maintain critical function before, during, and after Seismic Event.	
B. Part/Component Functional Mode:	
Safety Function #1:	
☐	Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function
☒	Passive – Change of state is not required for the component to perform its safety function
Safety Function #2:	
☐	Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function.
☒	Passive – Change of state is not required for the component to perform its safety function
Safety Function #3:	
☐	Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function.
☐	Passive – Change of state is not required for the component to perform its safety function

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C. Host Component Safety Function (if applicable): NA		
1.		
D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):		
1. Fracture or material fatigue leads to loss of structural support and possible damage to wiring.		
2. Loss of sealtight integrity of fittings could result in moisture corrosion and possible damage to wiring.		
Section 4 Environmental & Natural Phenomena Hazard Design		
Environmental Qualification Required: Yes [] No [X]	If yes: Environmental Qualification Requirements Limiting Environmental Conditions: Required Safety Functions: Qualification Period:	
Environmental Condition B		
Natural Phenomena Hazard (NPH) Design Required: Yes [X] No []	If yes: NPH Design Requirements Performance Category: PC-3 NPH Design Req'ts.: Seismic Condition C Required Safety Functions: Provide protection and support for safety class wiring. Maintain critical function before, during, and after Seismic Event.	
HNF-PRO-97, Rev. 0		
Section 5 Component Functional Classification		
[X] Safety Class (SC)	[] General Service (GS)	[] Safety Significant (SS)
If part/component classification is different from host component/system, document basis. NA		
Section 6 (Reserved)		
Section 7 (Reserved)		
Section 8 References (for Functional Classification)		
National Codes/Standards: IEEE 628	Safety Analysis Report (SAR): HNF-SD-SNF-SAR-002, Rev. 4A	Drawings: HNF-SD-SNF-SEL-002, Rev. 6A; Dwg. H-1-82303
Vendor Manual/Manufacturer/Supplier Information: Thomas & Betts, Conduit Fittings, Pages G-G/666, 23		
Rigid Conduit - LTV Steel Tubular Products/Galvite		
Rigid Conduit Nipples/Connectors /Locknuts/Beam Clamps/Reducers/Grounding Bushings- Appleton Catalog CF-2 Pages 4, 5, 6, 7, 10, 14;		
Covers and gaskets for Form 35 Conduit Outlet Boxes - Appleton Catalog A-8, Pages 6 and 7, A-7, Page 7, A-9, Page 9		
Conduit Nipples - Conduit Pipe Products Catalog Page KG		
Flexible Steel Conduit - Thomas & Betts Liquidtight Flexible Metal Conduit and Fittings/Connectors, Pages 8 and 23.		
Metal Framing Channels/Pipe Straps - Superstrut Series 1000 Section 1, Pages 6, 7, 39;		
BWF/M Stephens Manufacturing, Inc. - Insulated Bushings, Page 6;		
Penn-Union Corp, Aluminum Solderless Lugs - Type LA		
Galvanized Conduit Couplings, Shamrock Conduit Products, Inc. Page 3		

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Other:

Section 9 Critical Characteristics				
Critical Characteristics Verification Document: American Electric Purchase Orders C188R12TM3157 6/16/99; C188R12TM3158, 6/16/99 and C188R12TM3168, 6/17/99 HNF-SD-SNF-SEL-002, Rev. 6A Dwg. H-1-82303	Acceptance Criteria/Tolerances	Acceptance Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Manufacturer, All Rigid Conduit	LTV Steel Tubular Products/Galvite	1, IN	X	
Component Number- Procurement and/or Model Number	Verify UL marking on the conduit sample lot. Verify Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows: 1/2" Rigid Conduit 3/4" Rigid Conduit 1" Rigid Conduit 1 1/4" Rigid Conduit 1 1/2" Rigid Conduit	1, IN	X	
Threaded Rigid Conduit Nipples, Page KG Manufacturer, All Rigid Conduit Nipples	Conduit Pipe Products Verify UL marking on the sample lot. Verify Size marking on the sample lot or verify identifying dimensions on the sample lot as follows: 1/2" 3/4" 1" 1 1/2"	1, IN	X	

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Threaded Rigid Conduit, Reducers, Page 7 Manufacturer, All Threaded Rigid Conduit Reducers RB75-50 RB100-50 RB150-50 RB100-75 RB150-75 RB125-100 RB150-100	Appleton Electric Company Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the parts in the sample lot or verify identifying dimensions on the sample lot as follows: 3/4" - 1/2" 1" - 1/2" 1 1/2" - 1/2" 1" - 3/4" 1 1/2" - 3/4" 1 1/4" - 1" 1 1/2" - 1"	1, IN	X	
Rigid Conduit Condulet, Form 35, Page 6 Manufacturer, All Rigid Conduit Condulet Form 35	Appleton Electric Company	1, IN	X	

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All Rigid Conduit Condulet Form 35 Component Number-Procurement and/or Model Number Conduit Outlet Bodies LB Style LL Style LR Style T Style X Style C Style	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. LB50-M LB75-M LB100-M LB150-M LL50-M LL75-M LL100-M LL150-M LR50-M LR75-M LR100-M LR150-M T50-M T75-M T100-M T150-M X50-M X75-M X100-M X150-M C50-M C75-M C100-M C150-M	1, IN	X	
Rigid Conduit Condulet Form 35 - Hub Size LB/T/LR/LL/X/C-50-M LB/T/LR/LL/X/C-75-M LB/T/LR/LL/X/C-100-M LB/T/LR/LL/X/C-150-M	Verify Size marking on the condulet sample lot or verify identifying dimension on the condulet sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	1, IN	X	
Rigid Conduit Locknuts, Page 10 Manufacturer, All Rigid Conduit Locknuts / Grounding Locknuts	Appleton Electric Company	1, IN	X	

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All Rigid Conduit Locknuts / Grounding Locknuts Component Number-Procurement and/or Model Number Locknuts Grounding Locknuts	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. BL-50 BL-75 BL-100 BL-125 BL-150 GL-50 GL-75 GL-100 GL-150 GL-200	1, IN	X	
All Rigid Conduit Locknuts / Grounding Locknuts Size Locknuts / Grounding Locknuts BL-50 / GL-50 BL-75 / GL-75 BL-100 / GL-100 BL-125 BL-150 / GL-150 GL-200	Verify Size marking on the locknut sample lot or verify identifying dimension on the locknut sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/4" Nominal 1 1/2" Nominal 2"	1, IN	X	
Gasketed Sealing Locknuts, Page 10 Manufacturer, Gasketed Sealing Locknuts	Appleton Electric Company	1, IN	X	
Gasketed Sealing Locknuts Component Number-Procurement and/or Model Number	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. BLSG-50 BLSG-75 BLSG-100 BLSG-150	1, IN	X	

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Gasketed Sealing Locknuts Size BLSG-50 BLSG-75 BLSG-100 BLSG-150	Verify Size marking on the gasketed sealing locknut sample lot or verify identifying dimension on the gasketed sealing locknut sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	1, IN	X	
Galvanized Conduit Couplings, Page 3 Manufacturer, Galvanized Conduit Couplings	Shamrock Conduit Products, Inc.	1, IN	X	
Galvanized Conduit Couplings Component Number-Procurement and/or Model Number	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. 0314 0315 0316 0318	1, IN	X	
Galvanized Conduit Couplings Size 0314 0315 0316 0318	Verify Size marking on the conduit coupling sample lot or verify identifying dimension on the conduit coupling sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	1, IN	X	
Rigid Conduit Grounding Bushings, Page 14 Manufacturer, All Rigid Conduit Grounding Bushings	Appleton Electric Company	1, IN	X	
All Rigid Conduit Grounding Bushings Component Number-Procurement and/or Model Number	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. GIB-50L-4 GIB-75L-4 GIB-100L-4 GIB-150L-4	1, IN	X	

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All Rigid Conduit Grounding Bushings Size GIB-50L-4 GIB-75L-4 GIB-100L-4 GIB-150L-4	Verify Size marking on the grounding bushing sample lot or verify identifying dimension on the grounding bushing sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	1, IN	X	
Rigid Conduit Insulated Bushings, Page 6 Manufacturer, All Rigid Conduit Insulated Bushings	BWF/M.Stephens Manufacturing, Inc	1, IN	X	
All Rigid Conduit Insulated Bushings Component Number- Procurement and/or Model Number	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. 171 / 09003-4 172 / 70710-9 173 / 70715-4 175 / 70725-3	1, IN	X	
All Rigid Conduit Insulated Bushings Size 171 / 09003-4 172 / 70710-9 173 / 70715-4 175 / 70725-3	Verify Size marking on the insulated bushing sample lot or verify identifying dimension on the insulated bushing sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	1, IN	X	
Rigid Metal Conduit Beam Clamps, Page 4 Manufacturer, All Rigid Metal Conduit Beam Clamps BH-502 BH-503	Appleton Electric Company Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the sample lot or verify identifying dimensions on the sample lot as follows: 2" Size, Jaw Opening Nominal 15/16" 2 1/2" Size, Jaw Opening Nominal 1 1/16"	1, IN	X	

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Liquidtight Flexible Steel Conduit, Page 8 Manufacturer, All Flexible Steel Conduit Type LA-11 Type LA-12 Type LA-13 Type LA-14 Type LA-15	Thomas & Betts Verify UL marking on the conduit sample lot. Verify Type and Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows: Nominal 1/2" Diameter Nominal 3/4" Diameter Nominal 1" Diameter Nominal 1 1/4" Diameter Nominal 1 1/2" Diameter	1, IN	X	
Liquidtight Flexible Metal Conduit Fittings, Page 23 Manufacturer, Flexible Steel Conduit Connectors Straight / 45° Angle / 90° Angle Connectors 5332 / 5342 / 5352 5333 / 5343 / 5353 5334 / 5344 / 5354 5335 / 5345 / 5355 5336 / 5346 / 5356	Thomas and Betts Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the sample lot or verify identifying dimensions on the sample lot as follows: Nominal 1/2" -"A" Dimension, Nominal 1 3/8" Nominal 3/4" -"A" Dimension, Nominal 1 21/32" Nominal 1" -"A" Dimension, Nominal 1 7/8" Nominal 1 1/4" -"A" Dimension, Nominal 2 9/32" Nominal 1 1/2" -"A" Dimension, Nominal 2 23/32"	1, IN	X	

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Metal Framing Channels/Pipe Straps, Pages 7 and 39 Manufacturer, All Framing Channels/Pipe Straps Half Slot Channel A-1200-HS 702 Pipe Straps 702-1/2 702-3/4 702-1 702-1 1/4 702-1 1/2	Superstrut Verify identifying catalog/part number of the sample lot. Nominal 1 5/8" x 1 5/8", 12 gage. Verify identifying size marking on the sample lot or verify identifying dimensions on the sample lot as follows: Pipe OD Nominal 0.840", 14 gage Pipe OD Nominal 1.050", 14 gage Pipe OD Nominal 1.315", 14 gage Pipe OD Nominal 1.660", 14 gage Pipe OD Nominal 1.900", 14 gage	1, IN	X	
Aluminum Solderless Lugs Manufacturer, Aluminum Solderless Lugs	Penn-Union Corp	1, IN	X	
Catalog Number Dimension, Length x Width, inch LA-6 LA-2	Verify UL marking on the lug sample lot. Verify identifying catalog/part number of the sample lot. LA-6 LA-2 Verify Size marking on the lug sample lot or verify identifying dimensions on the lug sample lot as follows: Nominal 1 1/16 x 1/2 Nominal 1 5/32 x 1/2	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
All Size Rigid Conduit, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Rigid Conduit Nipples, Material	Steel (Note 3)	1, IN 1, T	X	
Threaded Rigid Conduit Bushed Nipples, Material CN-50, -75, -100 CN-125, 150	Pressure Cast (Note 3) Malleable Iron (Note 3)	1, IN 1, T	X	

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Threaded Rigid Conduit, Three Piece Connectors, Material EC-50, -75 EC-100, -125, -150	Steel (Note 3) Malleable Iron (Note 3)	1, IN 1, T	X	
All Size Threaded Rigid Conduit, Reducers, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Rigid Conduit Condulet Form 35, Material	Malleable Iron (Note 3)	1, IN 1, T	X	
Rigid Metal Conduit, Locknuts /Grounding Locknuts, Material Locknuts Grounding Locknuts	Steel (Note 3) Malleable Iron (Note 3)	1, IN 1, T	X	
All Size Gasketed Sealing Locknuts, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Galvanized Conduit Couplings, Material	Galvanized Steel (Note 3)	1, IN 1, T	X	
All Rigid Conduit Grounding Bushings, Material	Malleable Iron (Note 3)	1, IN 1, T	X	
All Rigid Conduit Insulated Bushings, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Rigid Metal Conduit, Beam Clamps, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Liquidtight Flexible Steel Conduit, Jacketing Material	Flexible PVC Compound (Note 3)	1, IN 1, T	X	
All size Flexible Steel Conduit, Connectors, Material	Malleable Iron (Note 3)	1, IN 1, T	X	
All Size Framing Channel / 702 Pipe Straps, Material	Steel (Note 3)	1, IN 1, T	X	
All Size Aluminum Solderless Lugs, Material	Aluminum (Note 3)	1, IN 1, T	X	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Environmental	Note 1			
Seismic Condition C	Note 2	1, T 1, A		X

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4. Notes and Legend:

1. The components are not subject to degradation from the 40°F or 60% RH or 115°F and 22% RH conditions and are suitable for Environmental Condition B application.
2. Maintain critical function before, during, and after Seismic event. Equipment that has been shaker-table tested should not be installed in a plant (Ref. IEEE Standard 344-1984, Section 7). Consequently, the seismic test constitutes a destructive test. Seismic Design may be verified by analysis of the installed conduit system.
3. Material verification acceptance method may be by either inspection or test.

Acceptance Method:

1. Special Test and Inspection
 - 1, IN for Inspection
 - 1, T for Test
 - 1, A for Acceptance by Analysis
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History

Section 10 Initial Review and Approval

Approvals:

Designated Engineer:

Design Authority:

QA Engineer:

[Signature] 8/31/99
[Signature] 8/31/99
[Signature] 8/31/99

08/31/99

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WORKSHEET 1 DETERMINATION OF FAILURE MECHANISMS/MODES		
Section 1		
Typical Failure Mechanisms	Definition	Applicable to Component under Evaluation
Fracture	Separation of a solid accompanied by little or no macroscopic plastic deformation.	Yes ☒ No ☐ ; If Yes, indicate failure Mode: <u>Fracture or material fatigue-loss of structural protection to wiring</u>
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Short Circuit	An abnormal connection by which an electrical current is connected to ground, or to some conducting body, resulting in excessive current flow.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.	Yes ☒ No ☐ ; If Yes, indicate failure Mode: <u>Material fatigue leads to loss of structural support and enclosure of wiring</u>
Mechanical Creep	From prolonged exposure to high temperature and stress, the object will show a slow change in its physical (shape and dimension) and mechanical characteristics.	Yes ☐ No ☒ ; If Yes, indicate failure Mode _____
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.	Yes ☒ No ☐ ; If Yes, indicate failure Mode: <u>Fracture or material fatigue – loss of structural support and protection of wiring</u>
Section 2 Additional Failure Modes Applicable to the Component Under Evaluation		
1.		
2.		

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Title: CONDUIT FOR SAFETY CLASS WIRING		

CHECKLIST 1
ACCEPTANCE METHOD 1
SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1			
Item Description: Rigid conduit, nipples, sealtight flex connectors/reducers, struts and straps, condulets, locknuts/grounding locknuts, gasketed sealing locknuts, couplings, flexible metal conduit/connectors, outlet bodies, angle connectors, aluminum lugs, grounding/insulating bushings. System #: 93-2		Equip #: NA Procurement and/or Model #: See Catalog Numbers in Section 8 and Characteristics in Section 9.	
Manufacturer (Address/Phone): Various - See Sections 8 and 9. P.O. #		Supplier (Address/Phone):	
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
[X]	[]	[]	1. Description and characteristics for identification. (See 16 items listed below under inspection.)
[X]	[X]	[]	2. Material verification for Identification. (See 16 items below under inspection) (Verification may be by either inspection or by test.)
[]	[X]	[]	3. Seismic Condition C (Seismic verification may be by test or by analysis)
SECTION 3 VERIFIED BY INSPECTION			
* See Attachment H of Desk Instruction for Sampling Size: Reduced Sampling Plan Was Selected Due to The Product History and Simplicity of Product			
Characteristic: Manufacturer, All Rigid Conduit Sample Size*: REDUCED SAMPLING PLAN Acceptance Criteria: LTV STEEL TUBULAR PRODUCTS/GALVITE As Found: _____ Passed: Y / N (Circle) Receipt Inspection Plan / Report #: _____ References (see Section 8): _____			

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **All Rigid Conduit**

Sample Size*: **REDUCED SAMPLING PLAN**

Size / Acceptance Criteria: **Verify UL marking on the conduit sample lot.**

Verify Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows:

1/2 " / Nominal 0.622 ID

3/4" / Nominal 0.824 ID

1" / Nominal 1.049 ID

1 1/4" / Nominal 1.380 ID

1 1/2" / Nominal 1.610 ID

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **LTV Steel Tubular Products/Galvite**

Characteristic: **Threaded Rigid Conduit Nipples, Manufacturer**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Conduit Pipe Products**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Threaded Rigid Conduit Nipples**

Sample Size*: **REDUCED SAMPLING PLAN**

Size / Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify Size marking on the sample lot or verify identifying dimensions on the sample lot as follows:

1/2" / Nominal 1/2"

3/4" / Nominal 3/4"

1" / Nominal 1"

1 1/2" / Nominal 1 1/2"

As Found: _____ Passed: Y / N (Circle)

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References (see Section 8): **Conduit Pipe Products Catalog Page KG**

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<p>Characteristic: Threaded Rigid Conduit Bushed Nipples, Manufacturer</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Appleton Electric Company</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: Threaded Rigid Conduit Bushed Nipples</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>ID Number / Acceptance Criteria: Verify UL marking on the sample lot.</p> <p>Verify identifying catalog/part number of the sample lot.</p> <p>Verify part identifying size marking on the sample lot or verify identifying Dimensions on the sample lot as follows:</p> <p style="padding-left: 40px;">CN-50 / Nominal 1/2"; "A" Dimension, Nominal 7/16"</p> <p style="padding-left: 40px;">CN-75 / Nominal 3/4"; "A" Dimension, Nominal 1/2"</p> <p style="padding-left: 40px;">CN-100 / Nominal 1"; "A" Dimension, Nominal 5/8"</p> <p style="padding-left: 40px;">CN-125 / Nominal 1 1/4"; "A" Dimension, Nominal 11/16"</p> <p style="padding-left: 40px;">CN-150 / Nominal 1 1/2"; "A" Dimension, Nominal 7/8"</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): Appleton Catalog CF-2 Page 6</p>
<p>Characteristic: Manufacturer, Threaded Rigid Conduit 3 Piece Connectors</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Appleton Electric Company</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>

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Title: <u>CONDUIT FOR SAFETY CLASS WIRING</u>		

Characteristic: **All Threaded Rigid Conduit 3 Piece Connectors**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify identifying size marking on the sample lot or identifying dimensions on the sample lot as follows:

EC-50 / Nominal 1/2"; "A" Dimension, Nominal 1 7/16"

EC-75 / Nominal 3/4"; "A" Dimension, Nominal 1 9/16"

EC-100 / Nominal 1"; "A" Dimension, Nominal 1 11/16"

EC-125 / Nominal 1 1/4"; "A" Dimension, Nominal 2 1/8"

EC-150 / Nominal 1 1/2"; "A" Dimension, Nominal 2 3/16"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): Appleton Catalog CF-2 Page 5

Characteristic: **Manufacturer, Threaded Rigid Conduit Reducers**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Appleton Electric Company**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **All Threaded Rigid Conduit Reducers**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number /Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify identifying size marking on the parts in the sample lot or verify identifying dimensions on the sample lot as follows:

RB75-50 / 3/4" - 1/2"

RB100-50 / 1" - 1/2"

RB150-50 / 1 1/2" - 1/2"

RB 100-75 / 1" - 3/4"

RB150-75 / 1 1/2" - 3/4"

RB125-100 / 1 1/4" - 1"

RB150-100 / 1 1/2" - 1"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Appleton Catalog CF-2 Page 7** _

Characteristic: **Manufacturer, All Rigid Conduit Condulet Form 35**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Appleton Electric Company**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Rigid Conduit Condulet Form 35**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify Size marking on the condulet sample lot or verify identifying dimensions on the condulet sample lot as follows:

LB/T/LR/LL/X/C-50-M / Nominal 1/2"

LB/T/LR/LL/X/C-75-M / Nominal 3/4"

LB/T/LR/LL/X/C-100-M / Nominal 1"

LB/T/LR/LL/X/C-150-M / Nominal 1 1/2"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Appleton Catalog A-7, Page 7** _

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Title: <u>CONDUIT FOR SAFETY CLASS WIRING</u>		

<p>Characteristic: Manufacturer, All Rigid Conduit Locknuts And Grounding Locknuts</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Appleton Electric Company</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: All Rigid Conduit Locknuts And Grounding Locknuts</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>ID Number/Acceptance Criteria: Verify UL marking on the sample lot.</p> <p>Verify identifying catalog/part number of the sample lot.</p> <p>Verify Size marking on the locknut sample lot or verify identifying dimensions on the locknut sample lot as follows:</p> <p>Locknuts / Grounding Locknuts</p> <p>BL-50 / GL-50 / Nominal 1/2"</p> <p>BL-75 / GL-75 / Nominal 3/4"</p> <p>BL-100 / GL-100 / Nominal 1"</p> <p>BL-125 / Nominal 1 1/4"</p> <p>BL-150 / GL-150 / Nominal 1 1/2"</p> <p>GL-200 / Nominal 2"</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): <u>Appleton Catalog CF-2 Page 10</u></p>
<p>Characteristic: Manufacturer, Gasketed Sealing Locknuts</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Appleton Electric Company</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **Gasketed Sealing Locknuts**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify Size marking on the locknut sample lot or verify identifying dimensions on the locknut sample lot as follows:

BLSG-50	Nominal 1/2"
BLSG-75	Nominal 3/4"
BLSG-100	Nominal 1"
BLSG-150	Nominal 1 1/2"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Appleton Catalog CF-2 Page 10** _

Characteristic: **Manufacturer, Galvanized Conduit Couplings**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Shamrock Conduit Products, Inc.**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Galvanized Conduit Couplings**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify Size marking on the coupling sample lot or verify identifying dimensions on the coupling sample lot as follows:

0314	Nominal 1/2"
0315	Nominal 3/4"
0316	Nominal 1"
0318	Nominal 1 1/2"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Galvanized Conduit Couplings, Shamrock Conduit Products, Inc. Page 3**

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<p>Characteristic: Manufacturer, All Rigid Conduit Grounding Bushings</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Appleton Electric Company</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: All Rigid Conduit Grounding Bushings</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>ID Number/Acceptance Criteria: Verify UL marking on the sample lot.</p> <p>Verify identifying catalog/part number of the sample lot.</p> <p>Verify Size marking on the grounding bushing sample lot or verify identifying dimensions on the grounding bushing sample lot as follows:</p> <p style="padding-left: 40px;">GIB-50L-4 / Nominal 1/2"</p> <p style="padding-left: 40px;">GIB-75L-4 / Nominal 3/4"</p> <p style="padding-left: 40px;">GIB-100L-4 / Nominal 1"</p> <p style="padding-left: 40px;">GIB-150L-4 / Nominal 1 1/2"</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): Appleton Catalog CF-2 Page 14 _</p>
<p>Characteristic: Manufacturer, All Rigid Conduit Insulated Bushings</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: BWF/M.Stephens Manufacturing, Inc</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **All Rigid Conduit Insulated Bushings**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify Size marking on the insulated bushing sample lot or verify identifying dimensions on the insulated bushing sample lot as follows:

171 / 09003-4 / Nominal 1/2"

172 / 70710-9 / Nominal 3/4"

173 / 70715-4 / Nominal 1"

175 / 70725-3 / Nominal 1 1/2"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **BWF/M.Stephens Manufacturing, Inc Insulated Bushings, Page 6**

Characteristic: **Manufacturer, Rigid Conduit Beam Clamps**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Appleton Electric Company**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Rigid Conduit Beam Clamps**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify catalog/part number and identifying size marking on the sample lot or verify identifying dimensions on the sample lot as follows:**

BH-502 / 2" Size; Jaw Opening Nominal 15/16"

BH-503 / 2 1/2" Size; Jaw Opening Nominal 1 1/16"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Appleton Discount Schedule CH Page 4**

Characteristic: **Manufacturer, Liquidtight Flexible Steel Conduit.**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Thomas & Betts**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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Title: <u>CONDUIT FOR SAFETY CLASS WIRING</u>	

Characteristic: **All Flexible Steel Conduit**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the conduit sample lot.**

Verify Type and Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows:

Type LA-11 / Nominal 1/2" Diameter

Type LA-12 / Nominal 3/4" Diameter

Type LA-13 / Nominal 1" Diameter

Type LA-14 / Nominal 1 1/4" Diameter

Type LA-15 / Nominal 1 1/2" Diameter

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Thomas & Betts Liquidtight Flexible Metal Conduit and Fittings/Connectors, Page 8**

Characteristic: **Manufacturer, Flexible Metal Conduit Connectors**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Thomas and Betts**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Flexible Metal Conduit Connectors**

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria: **Verify UL marking on the sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify identifying size marking on the sample lot or verify identifying dimensions (inches) on the sample lot as follows:

Straight / 45° Angle / 90° Angle Connectors

5332 / 5342 / 5352 - Nominal 1/2" ID -"A" Dimension, Nominal 1 3/8"

5333 / 5343 / 5353 - Nominal 3/4" ID -"A" Dimension, Nominal 1 21/32"

5334 / 5344 / 5354 - Nominal 1" ID -"A" Dimension, Nominal 1 7/8"

5335 / 5345 / 5355 - Nominal 1 1/4" ID-"A" Dimension, Nominal 2 9/32"

5336 / 5346 / 5356 - Nominal 1 1/2" ID-"A" Dimension, Nominal 2 23/32"

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Thomas & Betts Liquidtight Flexible Metal Conduit and Fittings/Connectors, Page 23.**

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **Manufacturer, Framing Channels/Pipe Straps**
Sample Size*: **REDUCED SAMPLING PLAN**
Acceptance Criteria: **Superstrut**
As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 8): _____

Characteristic: **All Framing Channels/ Pipe Straps**
Sample Size*: **REDUCED SAMPLING PLAN**
ID Number/Acceptance Criteria: **Verify identifying catalog/part number of the sample lot.**
Verify identifying marking on the sample lot or verify identifying dimensions on the sample lot as follows:

Half Slot Channel,	A-1200-HS / Nominal 1 5/8" x 1 5/8"; 12 gage.
702 Series Pipe Straps:	702-1/2 / Pipe OD Nominal 0.840", 14 gage
	702-3/4 / Pipe OD Nominal 1.050", 14 gage
	702-1 / Pipe OD Nominal 1.315", 14 gage
	702-1 1/4 / Pipe OD Nominal 1.660", 14 gage
	702-1 1/2 / Pipe OD Nominal 1.900", 14 gage

As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 8): **Superstrut Series 1000 Section 1, Pages 6, 7, 39;**

Characteristic: **Manufacturer, Aluminum Solderless Lugs**
Sample Size*: **REDUCED SAMPLING PLAN**
Acceptance Criteria: **Penn-Union Corp**
As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 8): _____

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Characteristic: **Verify UL marking on the lug sample lot.**

Verify identifying catalog/part number of the sample lot.

Verify Size marking on the lug sample lot or verify identifying dimensions on the lug sample lot as follows:

Sample Size*: **REDUCED SAMPLING PLAN**

ID Number/Acceptance Criteria:

Catalog Number **LA-6;** **Length x Width, inch** **Nominal** **1 1/16 x 1/2**

Catalog Number **LA-2;** **Length x Width, inch** **Nominal** **1 5/32 x 1/2**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Penn-Union Corp, Aluminum Solderless Lugs - Type LA**

Characteristic: **All Size Rigid Conduit, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Steel**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Size Rigid Conduit Nipples, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Steel**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Rigid Conduit Bushed Nipples, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **CN-50, -75, -100** **Pressure Cast**
 CN-125, 150 **Malleable Iron**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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<p>Characteristic: Threaded Rigid Conduit, Three Piece Connectors, Material</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: EC-50, -75 Steel EC-100, -125, -150 Malleable Iron</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: Rigid Conduit Reducers, Material</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Steel</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: All Size Rigid Conduit Condulet Form 35, Material</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Malleable Iron</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: All Size Rigid Conduit Locknuts/Grounding Locknuts, Material</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Locknuts Steel Grounding Locknuts Malleable Iron</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>
<p>Characteristic: All Size Gasketed Sealing Locknuts, Material</p> <p>Sample Size*: REDUCED SAMPLING PLAN</p> <p>Acceptance Criteria: Steel</p> <p>As Found: _____ Passed: Y / N (Circle)</p> <p>Receipt Inspection Plan / Report #: _____</p> <p>References (see Section 8): _____</p>

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Title: CONDUIT FOR SAFETY CLASS WIRING		

Characteristic: **All Size Galvanized Conduit Couplings, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Galvanized Steel**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Size Rigid Metal Conduit Grounding Bushings, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Malleable Iron**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Size Rigid Metal Conduit Insulated Bushings, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Steel**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **All Size Rigid Metal Conduit Beam Clamps, Material**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Steel**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Material Identification, Flexible Steel Conduit Jacket**

Sample Size*: **REDUCED SAMPLING PLAN**

Acceptance Criteria: **Flexible PVC Compound**

As Found: _____ Passed: Y / N (Circle)

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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Title: <u>CONDUIT FOR SAFETY CLASS WIRING</u>		

Characteristic: **All Size Flexible Steel Conduit Connectors, Material**
Sample Size*: **REDUCED SAMPLING PLAN**
Acceptance Criteria: **Malleable Iron**
As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 8): _____

Characteristic: **Framing Channel/702 Pipe Straps, Material**
Sample Size*: **REDUCED SAMPLING PLAN**
Acceptance Criteria: **Steel**
As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 7): _____

Characteristic: **Aluminum Solderless Lugs, Material**
Sample Size*: **REDUCED SAMPLING PLAN**
Acceptance Criteria: **Aluminum**
As Found: _____ Passed: Y / N (Circle)
Receipt Inspection Plan / Report #: _____
References (see Section 8): _____

SECTION 4 VERIFIED BY SPECIAL TEST

* See Attachment H of Desk Instruction for Sampling Size

Test To Be Performed by: ☐ Purchaser ☐ Supplier/Manufacturer** ☐ Other	Number of Items to be Tested: Reduced Sampling Plan Was Selected Due To The Product History and Simplicity Of Product Test/Inspection Location:
--	---

Characteristic for Test: **Seismic Condition C - All Items (16 items from Section 9-2)**
Acceptance Criteria: **Maintain Critical Function Before, During, and After Seismic Event.**
Sample Size*: **Sample Size is NA because seismic verification of the installed conduit system with fittings, supports, etc, will be done by analysis. Physical testing is not anticipated.**
Actual Test Value:
Test Plan and Report #: _____ References (see Section 8): _____

** If Supplier/Manufacturer or Other, Refer to CGI Checklist-2 for Support Information

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Section 5 Test / Inspection Summary (Acceptance Method 1)

1. SUMMARY OF VERIFIED CRITICAL CHARACTERISTICS , THEIR VERIFICATION METHODS, AND RESULTS

ITEM DESCRIPTION:

Critical Characteristics			Verification Results								
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RR#	Check- list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer, All Rigid Conduit <											

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Manufacturer, All Threaded Rigid Conduit 3 Piece Connectors	Appleton Electric Company	X	IN							
EC-50	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the sample lot or identifying dimensions on the sample lot as follows: Nominal 1/2" -"A" Dimension, Nominal 1 7/16"									
EC-75	Nominal 3/4" -"A" Dimension, Nominal 1 9/16"									
EC-100	Nominal 1" -"A" Dimension, Nominal 1 11/16"									
EC-125	Nominal 1 1/4" -"A" Dimension, Nominal 2 1/8"									
EC-150	Nominal 1 1/2" -"A" Dimension, Nominal 2 3/16"									

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Manufacturer, All Threaded Rigid Conduit Reducers	Appleton Electric Company Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the parts in the sample lot or verify identifying dimensions on the sample lot as follows: 3/4" - 1/2" 1" - 1/2" 1 1/2" - 1/2" 1" - 3/4" 1 1/2" - 3/4" 1 1/4" - 1" 1 1/2" - 1"	X																		
RB75-50 RB100-50 RB150-50 RB100-75 RB150-75 RB125-100 RB150-100																				

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Manufacturer, Rigid Metal Conduit Condulet Form 35	Appleton Electric Company	X	IN							
Verify UL marking on the sample lot.	Verify identifying catalog/part number of the sample lot.	Verify Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows:								
LB/T/LR/LL/X/C-50-M	Nominal 1/2"									
LB/T/LR/LL/X/C-75-M	Nominal 3/4"									
LB/T/LR/LL/X/C-100-M	Nominal 1"									
LB/T/LR/LL/X/C-150-M	Nominal 1 1/2"									

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ECN No. **NA**

Manufacturer, All Rigid Conduit Locknuts / Grounding Locknuts	Appleton Electric Company Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot.	X	IN							
Locknuts / Grounding Locknuts	Verify Size marking on the locknut sample lot or verify identifying dimensions on the locknut sample lot as follows:									
BL-50 / GL-50	Nominal 1/2"									
BL-75 / GL-75	Nominal 3/4"									
BL-100 / GL-100	Nominal 1"									
BL-125	Nominal 1 1/4"									
BL-150 / GL-150	Nominal 1 1/2"									
GL- 200	Nominal 2"									

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Manufacturer, All Gasketed Sealing Locknuts	Appleton Electric Company Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify Size marking on the locknut sample lot or verify identifying dimensions on the locknut sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	X	IN							
BLSG-50 BLSG-75 BLSG-100 BLSG-150										
Manufacturer, All Galvanized Conduit Couplings	Shamrock Conduit Products, Inc. Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify Size marking on the locknut sample lot or verify identifying dimensions on the locknut sample lot as follows: Nominal 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	X	IN							
0314 0315 0316 0318										

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Manufacturer, All Rigid Conduit Insulated Bushings	BWF/M.Stephens Manufacturing, Inc Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify Size marking on the insulated bushing sample lot or verify identifying dimensions on the insulated bushing sample lot as follows: Nominal 1 1/2" Nominal 3/4" Nominal 1" Nominal 1 1/2"	X	IN							
171 / 09003-4 172 / 70710-9 173 / 70715-4 175 / 70725-3										
Manufacturer, Rigid Metal Conduit Beam Clamps	Appleton Electric Company Verify identifying catalog/part number of the sample lot. Verify identifying size arking on the sample lot or verify identifying dimensions on the sample lot as follows: 2" Size, Jaw Opening Nominal 15/16" 2 1/2" Size, Jaw Opening Nominal 1 1/16"	X	IN							
BH-502 BH-503										

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Manufacturer, All Flexible Steel Conduit	Thomas & Betts	X	IN							
	Verify UL marking on the conduit sample lot. Verify Type and Size marking on the conduit sample lot or verify identifying dimensions on the conduit sample lot as follows: Nominal 1/2" Diameter Nominal 3/4" Diameter Nominal 1" Diameter Nominal 1 1/4" Diameter Nominal 1 1/2" Diameter									
Type LA-11										
Type LA-12										
Type LA-13										
Type LA-14										
Type LA-15										

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Manufacturer, Flexible Metal Conduit Connectors	Thomas and Betts	X	IN							
	Verify UL marking on the sample lot. Verify identifying catalog/part number of the sample lot. Verify identifying size marking on the sample lot or verify identifying dimensions (inches) on the sample lot as follows:									
Straight / 45° Angle / 90° Angle Connectors										
5332 / 5342 / 5352	Nominal 1/2" -"A" Dimension, Nominal 1 3/8"									
5333 / 5343 / 5353	Nominal 3/4" -"A" Dimension, Nominal 1 21/32"									
5334 / 5344 / 5354	Nominal 1" -"A" Dimension, Nominal 1 7/8"									
5335 / 5345 / 5355	Nominal 1 1/4" -"A" Dimension, Nominal 2 9/32"									
5336 / 5346 / 5356	Nominal 1 1/2" -"A" Dimension, Nominal 2 23/32"									

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Manufacturer, Framing Channels/Pipe Straps	Superstrut	X	IN						
Half Slot Channel A-1200-HS	Verify identifying catalog/part number of the sample lot. Nominal 1 5/8" x 1 5/8", 12 gage.								
702 Pipe Straps	Verify identifying size marking on the sample lot or verify identifying dimensions on the sample lot as follows: Pipe OD Nominal 0.840", 14 gage Pipe OD Nominal 1.050", 14 gage Pipe OD Nominal 1.315", 14 gage Pipe OD Nominal 1.660", 14 gage Pipe OD Nominal 1.900", 14 gage								
702-1/2									
702-3/4									
702-1									
702-1 1/4									
702-1 1/2									

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Threaded Rigid Conduit Three Piece Connectors I EC-50, -75 EC-100, -125, -150	Steel Malleable Iron	X	IN, T							
All Size Threaded Rigid Metal Conduit Reducers	Steel	X	IN, T							
All Size Threaded Rigid Metal Conduit, Condulet Form 35	Malleable Iron	X	IN, T							
Rigid Metal Conduit, Locknuts/Grounding Locknuts		X	IN, T							
Locknuts Grounding Locknuts	Steel Malleable Iron									
All Size Gasketed Sealing Locknuts	Steel	X	IN, T							
All Size Galvanized Conduit Couplings	Galvanized Steel	X	IN, T							
All Size Rigid Metal Conduit Grounding Bushings	Malleable Iron	X	IN, T							
All Size Rigid Metal Conduit Insulated Bushings	Steel	X	IN, T							
All Size Rigid Metal Conduit Beam Clamps	Steel	X	IN, T							
All Size Liquidtight Flexible Steel Conduit, Jacketing	Flexible PVC Compound	X	IN, T							
All Size Flexible Steel Conduit Connectors	Malleable Iron	X	IN, T							

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SECTION 6 CONTACTS / PHONE NUMBERS	
Name	Phone
Design Authority	()
QA	()
QC	()
Cog - Engineer	()
CGI Engineer	()
Procurement Engineer	()
Other	()
SECTION 7 SUPPORTING DOCUMENTATION FOR THIS CHECKLIST	
Initial Procurement Documents	For Critical Characteristics
☐ Drawings:	
☐ Manuals (specify type & number):	
☐ Design Calculations	
☐ Installation Instructions	
☐ Operation Instructions	
☐ Calibration Instructions	
☐ Manufacturer's Recommended Spare Parts List	
☐ Other:	
Procurement Documents	
☐ Certificate of Conformance/Compliance	
☐ Seismic Qualification Certificate	
☐ Environmental Qualification Certificate	
☐ Test Report (s):	
☐ Inspection Report (s):	
☐ CMTRs for ASME Pressure Retaining Materials	
☐ Valve Seat Leakage Report	
☐ Weld Records	
☐ Material Traceability Record	
☐ Other:	

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All Size Framing Channel 702 Pipe Straps	Steel Steel	X																		
All Size Aluminum Solderless Lugs	Aluminum	X								IN, T										
Seismic Condition C	Maintain Critical Function Before, During, and After Seismic Event. Seismic verification of the installed conduit system will be provided by analysis.		X							Analysis										

2. DISPOSITION OF UNVERIFIED OR FAILED CRITICAL CHARACTERISTICS	
Critical Characteristic	Disposition

3. SIGNATURE INDICATES ALL CRITICAL CHARACTERISTICS VERIFIED SATISFACTORY OR ACCEPTABLY DISPOSITIONED AND COMMERCIAL GRADE DEDICATION IS SATISFACTORY AND COMPLETE.		BUYER VERIFICATION	
Testing Agency Approval: _____	Date _____	Design Authority: _____	Date _____
Testing Agency QA Engineer: _____	Date _____	QA Engineer: _____	Date _____