

1-10-2013
C7510
PAGE 1 OF 11

REVISES STANDARD DATED 10-08-2011

1-10-2013
C7510
PAGE 1 OF 11

WILDLIFE PROTECTION OF ELECTRICAL EQUIPMENT 34.5kV AND BELOW SYSTEMS

TYPE OF PROTECTOR & (15)
APPLICATION

C7510.A SMALL WILDLIFE PROTECTOR (3)(5)(27)

1#, 2.4-13.8kV TR

1#, 2.4 & 7.2kV CABLE TERMINATIONS,
3/0 AND SMALLER CABLE, MOUNTED ON GROUNDED BRACKET, 15kV AND BELOW.

1#, 2.4 & 7.2kV OIL CIRCUIT RECLOSERS AND OIL SWITCHES.

DISTRIBUTION AND RISER POLE CLASS ARRESTER

(2)

C7510.B LARGE WILDLIFE PROTECTOR (3)(5)(27)

3# TR 34.5-13.8kV

1#, 2.4 & 7.2kV CABLE TERMINATIONS,
4/0 AND LARGER CABLE, MOUNTED ON GROUNDED BRACKET. (2)

3#, 4.16 & 13.8kV CIRCUIT RECLOSERS AND REGULATORS

EQUIPMENT BUSHING, 13.8kV - 34.5kV

C7510.C SILICONE RUBBER TAPE (ONE INCH WIDE) (4)

SIDE WALL BUSHING OR BUSHINGS WITH CONNECTIONS TOO LARGE FOR
ITEM "D" OR THE LARGE BUSHING COVER SPECIFIED IN NOTE (5) (SHOWN IN DETAIL "F")

C7510.E SQUIRREL GUARD ON 12kV DISCONNECT SWITCH (25)

C7510.F SQUIRREL GUARD AND BUS SUPPORT COVER ON 12kV BUS (21)(25)

C7510.G CONDUCTOR COVER (ONE INCH ID) (6)

C7510.H LINE GUARD (CONDUCTORS) (20)

C7510.J MESH FOR BIRD NEST PREVENTION (28)

C7510.K BIRD SPIKE PERCH DETERRENT (30)

ITEM	CAT ID DESCRIPTION TABLE-1	CAT ID	UNIT	QUANTITY											
				.A	.B	.C	.E	.F	.G	.H	.J	.K			
A	TAPE, SILICONE RUBBER, SELF-BONDING, 1 IN. X 30 MILS X 36 FT., GRAY (1)(4)(11)	0001600131	RL	1/8	1/8	1									
B	COMPOUND, ELECTRICAL, MOISTURE SEALING, 1/8 IN. X 3-3/4 IN. X	0000350074	RL			1/8									
C	PROTECTOR, WILDLIFE, 3-3/4 IN. TO 4-3/4 IN. DIA. BUSHING SKIRT (5) EM23702	0000348422	EA	1											
D	PROTECTOR, WILDLIFE, BUSHING COVER, FULL SIZE, 4 IN. TO 6 IN. (5)	0001600129	EA		1										
E	TAPE, PLASTIC, 3/4 IN. X .0085 IN. X 66 FEET, PLYMOUTH-BISHOP EM27412	0000348171	RL	1/8	1/8										
G	PROTECTOR, SQUIRREL GUARD, 2.4 IN. TO 4.5 IN. BUSHING AND POST INS (17) (29)	0001600126	EA				6	2							
H	PROTECTOR, WILDLIFE, BUS SUPPORT COVER, 4 IN. TO 8 IN. DIAMETE	0001600127	EA						1						
J	INSULATOR, CONDUCTOR, BARE ROUND COVER, 1 IN. ID X 50 FT., SPL (6)	0001600136	RL							1					
K	PROTECTOR, WILDLIFE OVERHEAD LINE GUARD, 5 FT. LONG, 12 IN. DIAMETER LARGE	0001601301	EA								1				
L	TIE, CABLE, 18.1 IN. LENGTH, 0.275 IN. WIDTH, 6.6 NYLON, BARB	0000392206	EA	1	4										
M	CLAMP, BEAM, SIZE 1, 15/16 IN. JAW OPENING, 1/4-20 IN. TAPPING,	0000346765	EA												AS REQD
N	MESH, STAINLESS STEEL EXPANDED METAL FLAT, 1/4, # 18-20, 48"X96"	0001611149	EA												AS REQD
O	PROTECTOR, WILDLIFE, POLYCARBONATE BIRD SPIKES; BIRDPERCH DETERRENT; 5" 10'	0001612399	FT												AS REQD
P	PROTECTOR, WILDLIFE, POLYCARBONATE BIRD SPIKES; BIRDPERCH DETERRENT; 2" SP	0001612398	FT												AS REQD
Q	ADHESIVE, POLYURETHANE CONSTRUCTION, TUBE, INTERIOR AND EXTERIOR; INSTALL T	0001612416	TB												AS REQD

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NOTES:APPLICATION

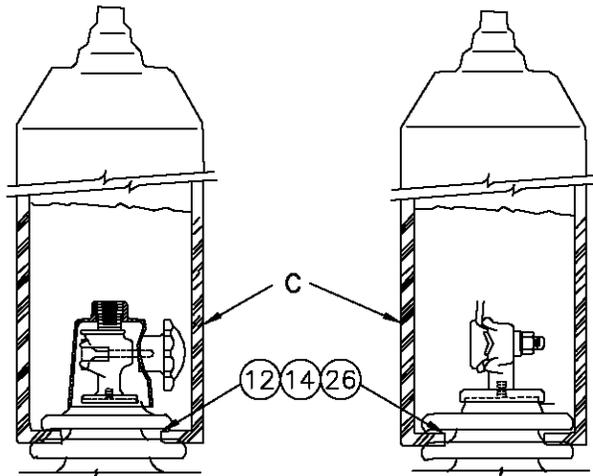
- THIS STANDARD SHALL BE USED TO TAPE AND COVER ELECTRICAL CONNECTIONS.

SUPPLEMENTARY MATERIAL

- ① USE WEATHER RESISTANT WIRE FOR TAPS TO LINE OR DISCONNECT.
- ② WHERE WILDLIFE DAMAGE COULD OCCUR TO RISER LEAD SHEATH COVERED CABLES, APPLY 2 HALF-LAPPED LAYERS OF PRESSURE SENSITIVE GLASS TAPE (CAT ID 0000348183) OVER THE EXPOSED LEAD SHEATH BETWEEN THE TOP OF THE RISER AND THE BOTTOM OF THE TERMINATION.
- ③ SPECIFY REQUIRED QUANTITY OF C7510.A OR C7510.B FOR REGULATORS, RECLOSERS, THREE PHASE EQUIPMENT, OR PHASE TO PHASE CONNECTED TRANSFORMERS. ONE FOR EACH PRIMARY BUSHING.
- ④ ADDITIONAL SIZES FOR SILICONE TAPE ARE AVAILABLE:
FOR 2 1/2 INCH WIDE TAPE SPECIFY CAT ID 0001600132.
FOR 4 INCH WIDE TAPE SPECIFY CAT ID 0001600133.
- ⑤ SMALL BUSHING COVERS ITEM C:
ITEM C, CAT ID 348422, IS THE PREFERRED BUSHING COVER. WHEN NOT AVAILABLE SPECIFY CAT ID 0001600128. SEE C7510.A (ALTERNATE).
LARGE BUSHING COVERS ITEM D:
ITEM D, CAT ID 0001600129, IS FOR LARGE BUSHINGS. SEE DETAIL 'F' USING CAT ID 0001600130 FOR OVERSIZED BUSHING COVERS WHERE ITEM D IS TOO SMALL.
- ⑥ CUT 50 FOOT ROLL TO DESIRED LENGTH. ADDITIONAL CONDUCTOR COVER SIZES ARE AVAILABLE:
1/4" ID CONDUCTOR COVER - CAT ID 0001600134
3/4" ID CONDUCTOR COVER - CAT ID 0001600135
1" ID CONDUCTOR COVER - CAT ID 0001600136
1 1/4" ID CONDUCTOR COVER - CAT ID 0001600137
1 3/4" ID CONDUCTOR COVER - CAT ID 0001600138
2 1/2" ID CONDUCTOR COVER - CAT ID 0001600139
3 1/2" ID CONDUCTOR COVER - CAT ID 0001600140
4" X 4" X 3/8" X 6' LONG ALUMINUM ANGLE BUS COVER - CAT ID 0001600141

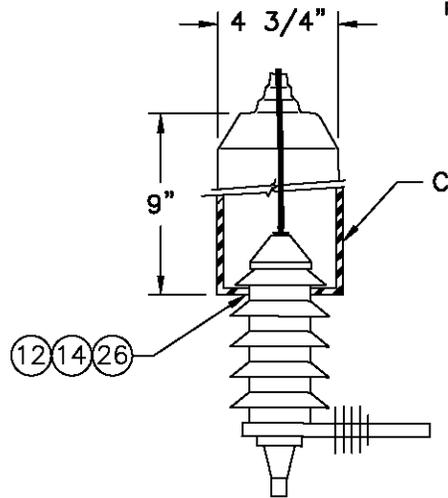
INFORMATION

- ① SILICONE RUBBER TAPE WILL BOND TO ITSELF BUT NOT TO ANYTHING ELSE. IT IS TRIANGULAR IN SHAPE (THICK IN THE MIDDLE AND THIN AT THE EDGES) SO THAT THE THICKNESS IS UNIFORM WHEN IT IS HALF-LAPPED. THE WHITE STRIPE IS A GUIDE FOR HALF-LAPPING.
- ② TAPE LIVE PARTS NOT COVERED BY THE WILDLIFE PROTECTOR. DO NOT SEAL BOTTOM OF PROTECTOR BECAUSE IT RETAINS MOISTURE.
13.8kV: 3 HALF-LAPPED LAYERS
34.5kV: 9 HALF-LAPPED LAYERS
ALSO TAPE LIVE PARTS UNDER THE COVER IF THERE IS ANY POSSIBILITY THAT THE BUSHING COVER COULD BE PUSHED UP BY WILDLIFE SUCH THAT CONTACT WITH THE LIVE PART COULD BE MADE.
- ③ SECURE AGAINST UNRAVELLING WITH 3 TURNS OF UNSTRETCHED TAPE. SQUEEZE ENTIRE TAPE JOB TO ASSURE GOOD BONDING OF TAPE LAYERS.
- ④ THE OPENING AT THE BASE OF THE WILDLIFE GUARD MAY BE ENLARGED WITH A KNIFE TO OBTAIN BETTER COVERAGE OF LIVE PARTS.
- ⑤ FOR INSTALLATION OF WILDLIFE PROTECTORS ON ENERGIZED EQUIPMENT SEE DISTRIBUTION SPECIFICATION C7511.E AND C7511.N.
- ⑥ COVER LUG PAD AND LUG OR CONNECTOR WITH COMPOUND. USE SUFFICIENT MATERIAL TO COVER ALL LIVE PARTS AND TAPE WITH 2 HALF-LAPPED LAYERS OF SILICONE RUBBER TAPE.
- ⑦ WHEN INSTALLING SQUIRREL GUARDS ON CLOSELY SPACED HORIZONTAL INSULATORS, LIKE THOSE FOUND ON HOOK SWITCH DISCONNECTS, ONE COMPLETE GUARD SHOULD BE INSTALLED BETWEEN THE SKIRTS CLOSEST TO THE GROUND PLANE OR BASE OF SWITCH. THE SECOND GUARD SHOULD BE PLACED BETWEEN THE FIRST AND SECOND SKIRTS TO PROVIDE A MINIMUM 4 INCH CLEARANCE BETWEEN GUARDS. THE SQUIRREL GUARD CAT ID 0001600126 IS A 24" OUTSIDE DIAMETER SQUIRREL GUARD, BUT CAN BE TRIMMED DOWN TO AN OUTSIDE DIAMETER OF 17" IF NEED BE. TRIM TO FIT IN THE SPACE AVAILABLE.
- ⑧ CHECK TO MAKE SURE THE INSTALLATION OF SQUIRREL GUARDS DOES NOT INTERFERE WITH THE BLADE OR MECHANISM OPERATION.
- ⑨ THE SQUIRREL GUARD SHOULD BE PLACED BETWEEN THE UPPER MOST 2 SKIRTS ON ALL VERTICAL OR UNDER-HUNG INSULATORS.
- ⑩ LINE GUARD, ITEM "K", TO BE INSTALLED ON ALL OVERHEAD DISTRIBUTION LINES, STATIC OR LIVE, THAT ENTER THE STATION VIA OVERHEAD IN ORDER TO PREVENT ACCESS TO THE STATION BY WILDLIFE. THE PHYSICAL PLACEMENT OF LINE GUARDS IS STRATEGIC IN PROTECTING AGAINST WILDLIFE INTRUSION. LINE GUARDS ARE TO BE PLACED 4 FEET OUTSIDE THE STATION FENCE WHEN POSSIBLE TO PREVENT ACCESS TO THE SUBSTATION AREA INSIDE THE FENCE.
- ⑪ THE PREFERRED METHOD IS TO INSTALL BUS SUPPORT COVERS ON THE MIDDLE PHASE BUS SUPPORT INSULATORS AND SQUIRREL GUARDS ON THE OUTER PHASE BUS SUPPORT INSULATORS. WHEN THERE IS NOT SUFFICIENT PHASE SPACING FOR SQUIRREL GUARDS, THEN INSTALL BUS SUPPORT COVERS ON THE OUTER PHASE BUS SUPPORT INSULATORS.
- ⑫ MINIMUM REQUIREMENT IS TO ONLY COVER THE CENTER PHASE BUS 3 FEET FROM EACH SIDE OF BUS SUPPORT COVER. HOWEVER, WHEN THE BUS PHASE SPACING IS 20' OR LESS, IT IS RECOMMENDED THAT THE ENTIRE LENGTH OF THE CENTER PHASE BUS BE COVERED.
- ⑬ BOTTOM OF BUS SUPPORT COVER SHALL LEAVE AT LEAST ONE SKIRT AT THE BOTTOM OF THE INSULATOR EXPOSED AND NOT TOUCH ANY METAL SURFACE OF THE STEEL BUS STRUCTURE. IT IS RECOMMENDED THAT THE BOTTOM OF THE BUS SUPPORT COVER BE INSTALLED AS HIGH AS POSSIBLE TO AVOID CONTACTING THE STEEL BUS STRUCTURE.
- ⑭ BUS SUPPORT COVERS INSTALLED ON UNDERHUNG BUS SHALL REQUIRED 1/4" WEEP HOLES AT THE TOP FOR DRAINING WATER.
- ⑮ THE SQUIRREL GUARDS OR BUS SUPPORT COVERS MAY BE INSTALLED ON 4kV, 12kV, OR 34kV BUSES OR DISCONNECT SWITCHES AS REQUIRED.
- ⑯ POSITION GUARD BETWEEN TOP TWO SKIRTS.
- ⑰ CABLE TIES SHALL BE INSTALLED TO PREVENT WILDLIFE PROTECTOR FROM SNAPPING OPEN. SMALL WILDLIFE PROTECTOR REQUIRES ONLY 1 WRAP WITH 1-18" CABLE TIE (ITEM L). 2-18" CABLE TIES CONNECTED TOGETHER ARE REQUIRED TO WRAP COMPLETELY AROUND THE CIRCUMFERENCE OF THE LARGE WILDLIFE PROTECTOR. 2 WRAPS ARE RECOMMENDED. AFTER WRAPPING REMOVE ANY EXCESS LENGTH OF CABLE TIES.
- ⑱ EXPANDED METAL MESH SHALL BE INSTALLED AS REQUIRED TO BLOCK OFF ACCESS TO CREVICES FORMED BY INTERSECTING STEEL MEMBERS. SEE DETAIL ON PAGE 11.
- ⑲ CAT ID 1600126 IS A 24 INCH RED SQUIRREL GUARD. THE 24 INCH SQUIRREL GUARD MAY ALSO BE OBTAINED IN GRAY COLOR, CAT ID 1606728.
- ⑳ INSTALLATION OF BIRD SPIKES AS A PERCH DETERRENT CAN BE MADE AT LOCATIONS WHERE INSULATORS ARE UNDERHUNG ON STEEL BEAMS. PLACEMENT OF THE BIRD SPIKES ON THE STEEL BEAMS ABOVE THE UNDERHUNG INSULATORS IS TO PREVENT FLASHOVER OF THE INSULATORS DUE TO THE COLLECTION OF BIRD DROPPINGS DOWN ONTO THE INSULATORS. EXTEND COVERAGE BEYOND THE AREA OF THE INSULATORS TO INSURE ADEQUATE COVERAGE.



INSTALLED ON TERMINALS
EQUIPPED WITH RIGID
CAP BIRDCUARD.

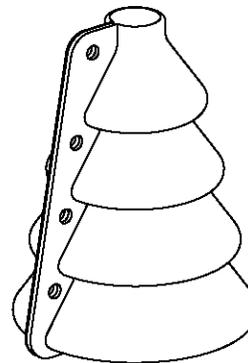
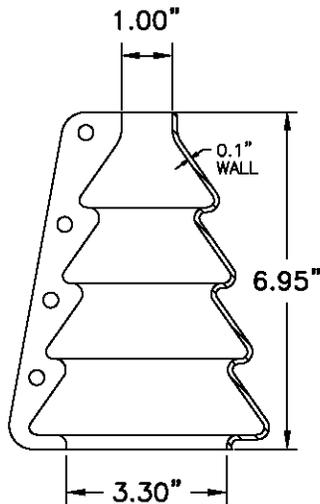
INSTALLED ON TERMINALS
NOT EQUIPPED WITH RIGID
CAP BIRDCUARD.



INSTALLED ON ARRESTER
WITHOUT TOP CAP

C7510.A

CAT ID 0000348422



ISOMETRIC VIEW

C7510.A (ALTERNATE)

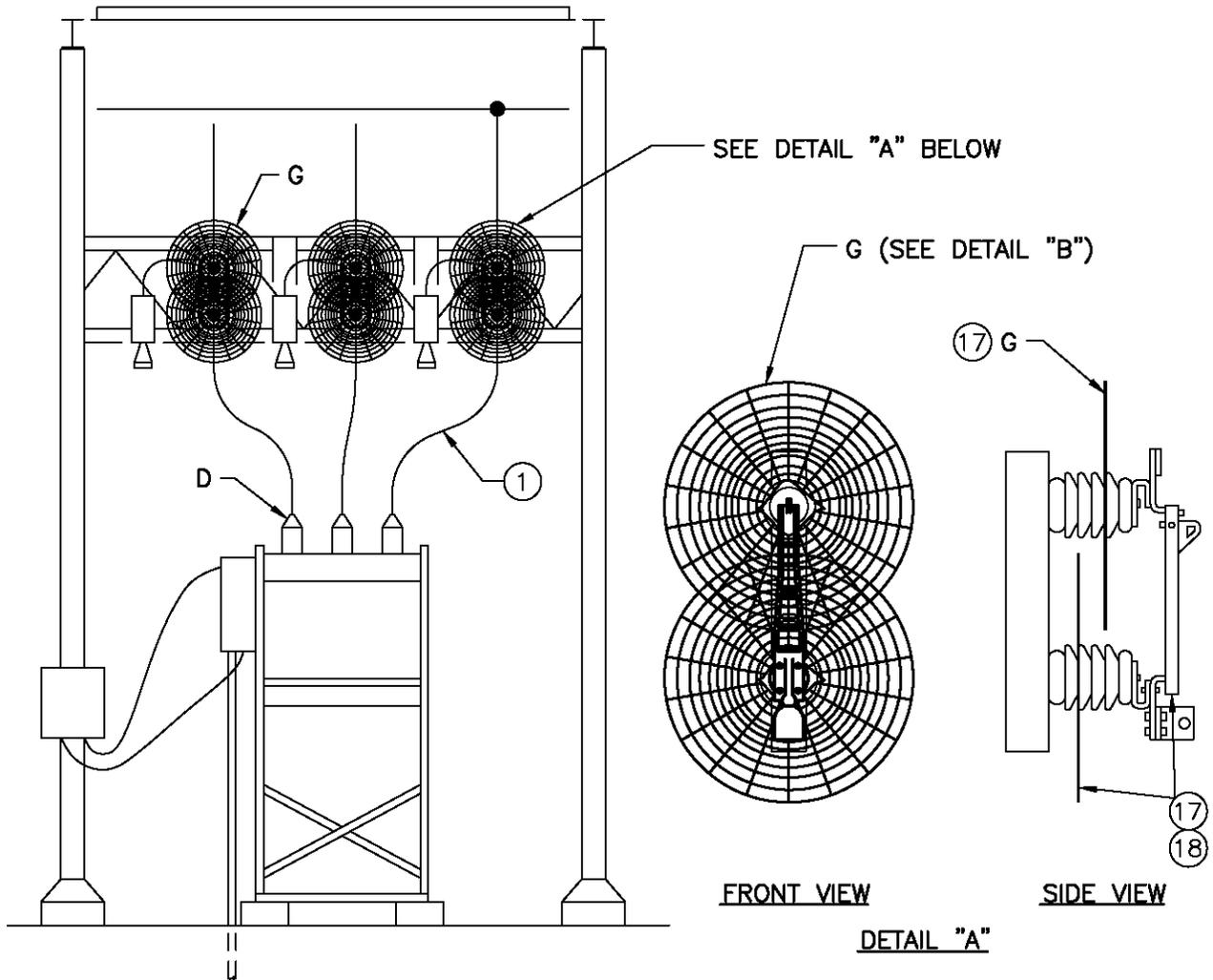
CAT ID 0001600128 (SEE NOTE ⑤)

NOTICE

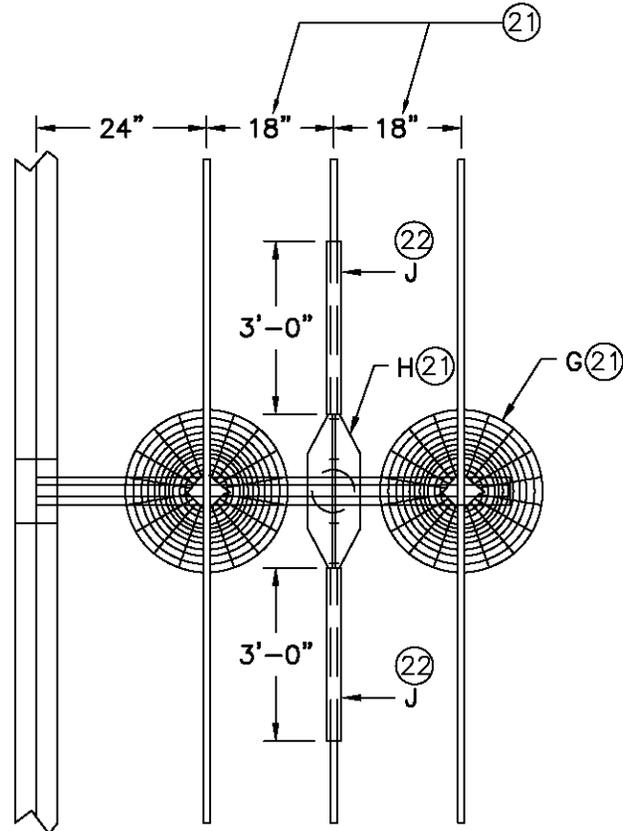
THE 3 UNSTRETCHED TURNS OF TAPE ARE ABSOLUTELY NECESSARY. WITHOUT THEM THE TAPE WILL UNRAVEL BEFORE THE LAYERS BOND TO EACH OTHER. ⑬

CAUTION

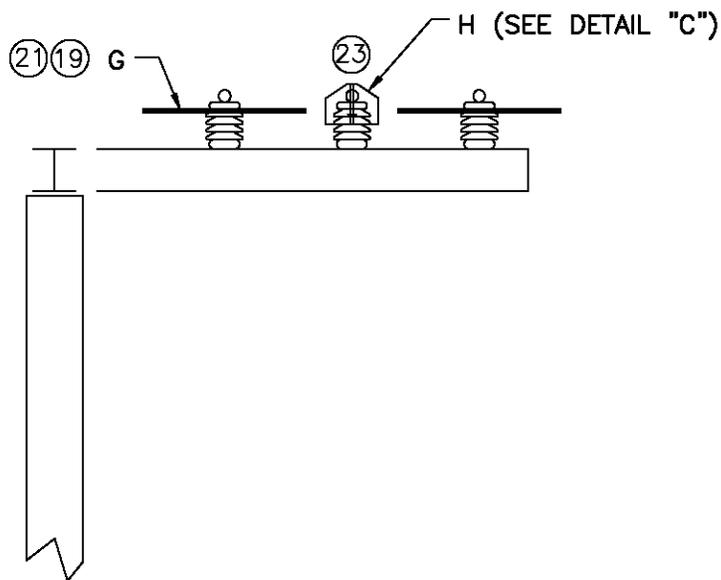
TAPING CAN PROVIDE PROTECTION FOR PERSONNEL AT 300 VOLTS TO GROUND AND BELOW. ON HIGHER VOLTAGES IT IS FOR THE PROTECTION OF EQUIPMENT, NOT PERSONNEL. WILDLIFE GUARDS ARE FOR PROTECTION OF EQUIPMENT ONLY.



C7510.E
SQUIRREL GUARD ON 12kV DISCONNECT SWITCH (25)



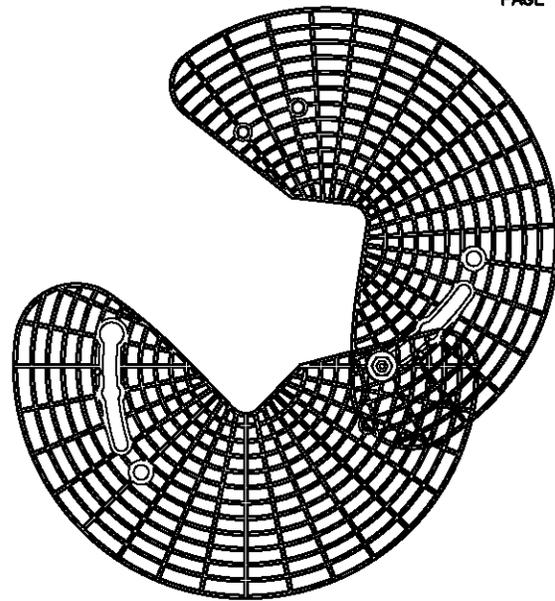
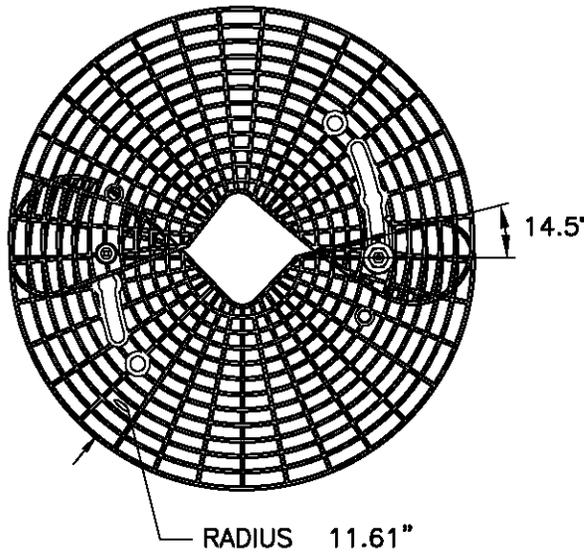
PLAN



C7510.F

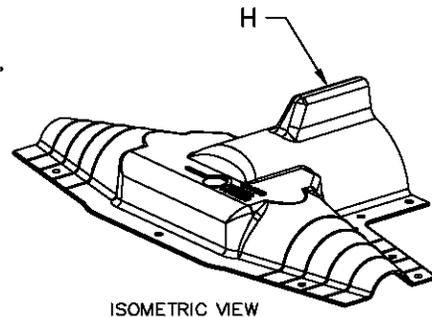
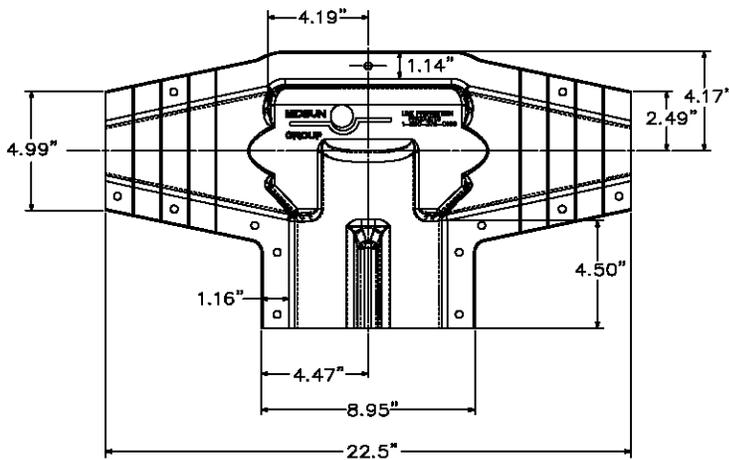
SQUIRREL GUARD AND BUS SUPPORT COVER ON 12KV BUS (25)

ACAD

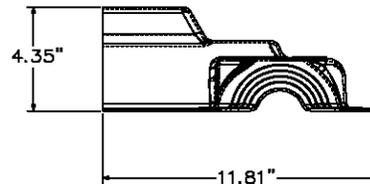
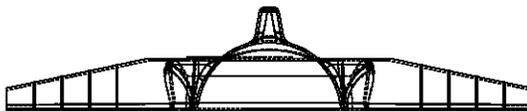


DETAIL "B"

RAYCHEM SQUIRREL GUARD ASSEMBLY
FOR REFERENCE ONLY

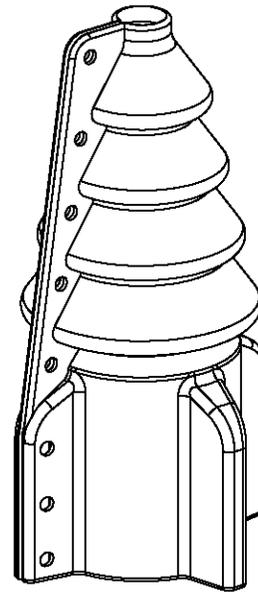
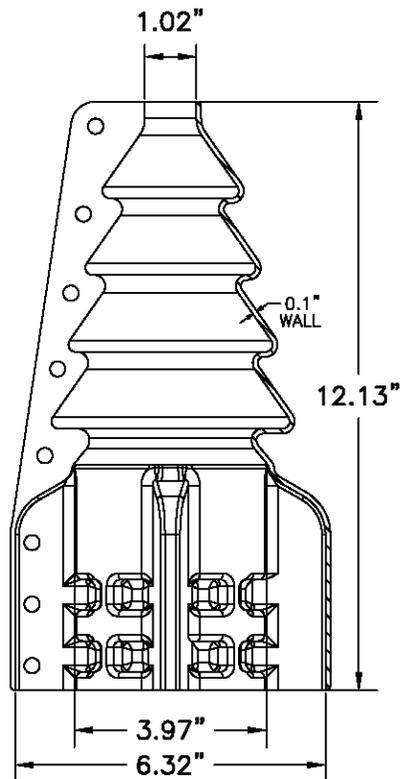


ISOMETRIC VIEW



DETAIL "C"

BUS SUPPORT COVER

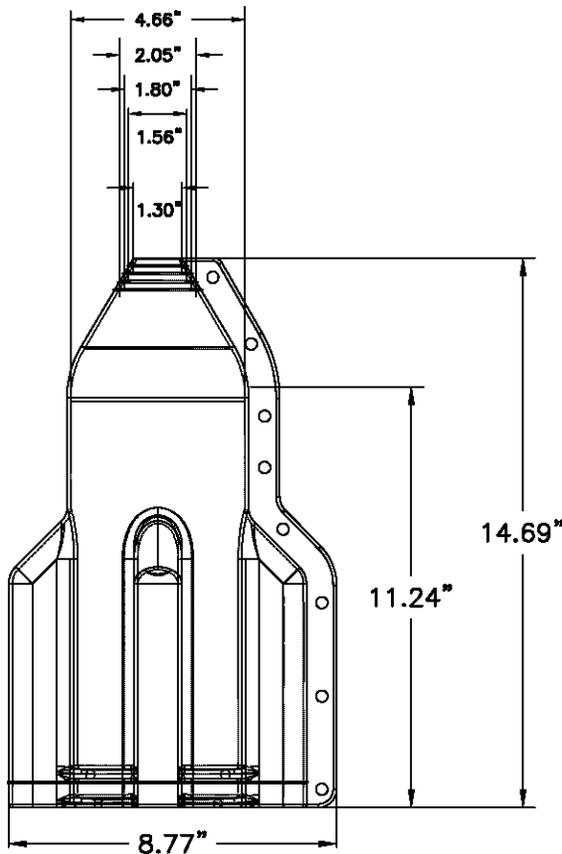


ISOMETRIC VIEW

C7510.B

LARGE BUSHING COVER

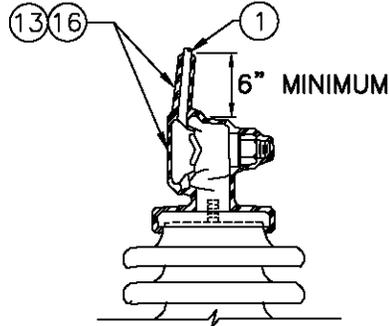
CAT ID 0001600129



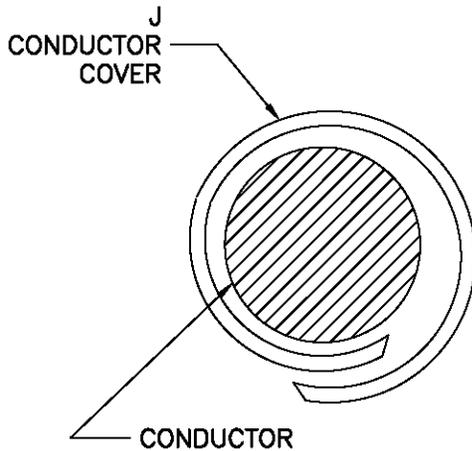
DETAIL "F"

OVERSIZED BUSHING COVER (SEE NOTE ⑤)

CAT ID 0001600130



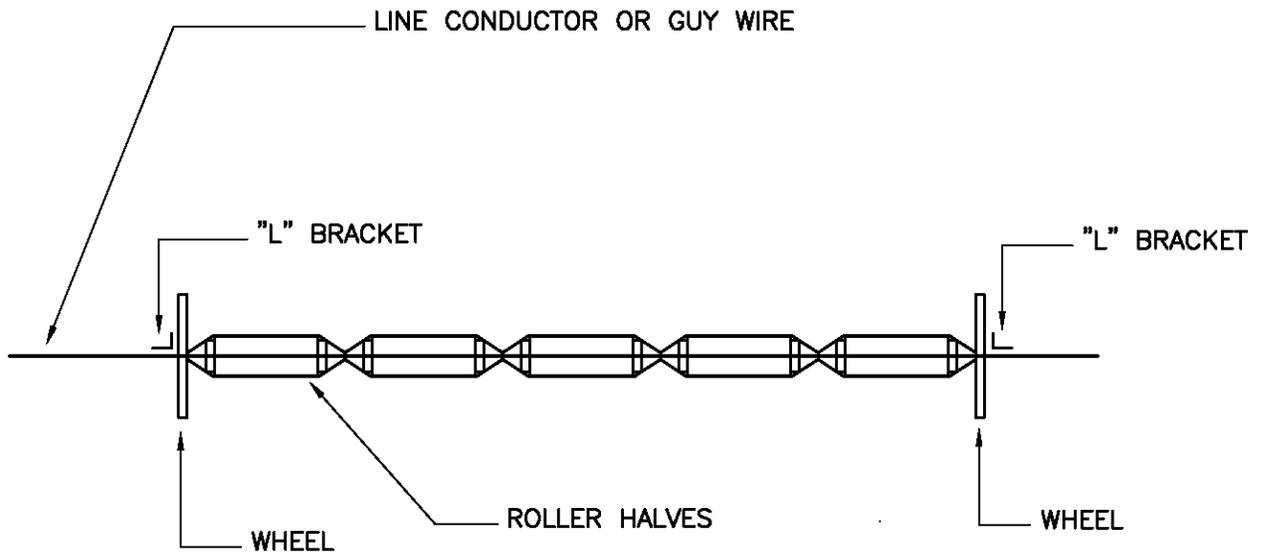
C7510.C
EYE BOLT
SILICONE RUBBER TAPE
4 & 13.8kV APPLICATIONS
SPADE CONN. (NOT SHOWN)
(CAT ID 0000348332)



SEVERAL CONDUCTOR COVER SIZES ARE AVAILABLE:

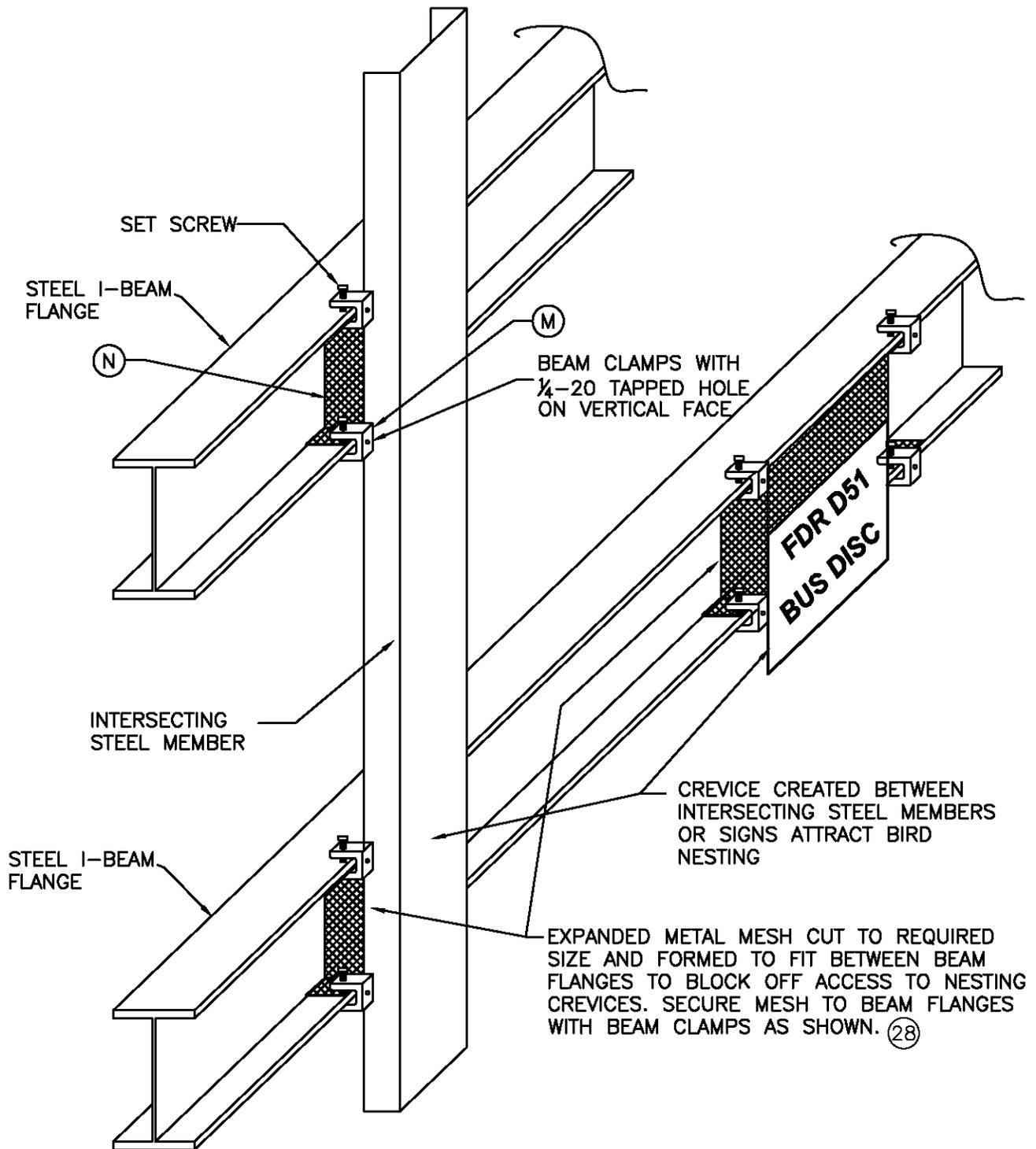
- 1/4" ID CONDUCTOR COVER – CAT ID 0001600134
- 3/4" ID CONDUCTOR COVER – CAT ID 0001600135
- 1" ID CONDUCTOR COVER – CAT ID 0001600136
- 1 1/4" ID CONDUCTOR COVER – CAT ID 0001600137
- 1 3/4" ID CONDUCTOR COVER – CAT ID 0001600138
- 2 1/2" ID CONDUCTOR COVER – CAT ID 0001600139
- 3 1/2" ID CONDUCTOR COVER – CAT ID 0001600140

C7510.G
CONDUCTOR COVER

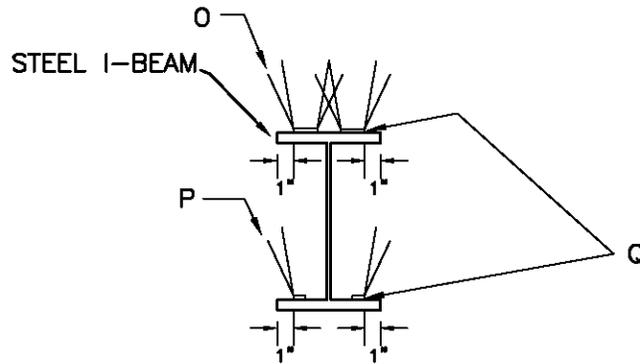


C7510.H LINE GUARD (20)

C7510.J
PREVENTION OF BIRD NESTING BETWEEN STEEL CREVICES (28)



NOTE: EXPANDED METAL MESH CAN BE FORMED AND CLAMPED TO BEAM FLANGES AS SHOWN OR CAN BE SECURED TO TAPPED HOLES IN BEAM CLAMPS OR DRILLED HOLES IN STEEL MEMBERS AS REQUIRED DEPENDING ON THE APPLICATION.



C7510.K
BIRD SPIKE PERCH DETERRENT (30)

INSTALLATION INSTRUCTIONS

1. APPLICATION OF ADHESIVE MUST BE MADE AT A TEMPERATURE BETWEEN 40 DEGREES AND 100 DEGREES.
2. THE TOP OF THE BEAM WILL HAVE THE BIRD SPIKES OVERLAPPING EACH OTHER.