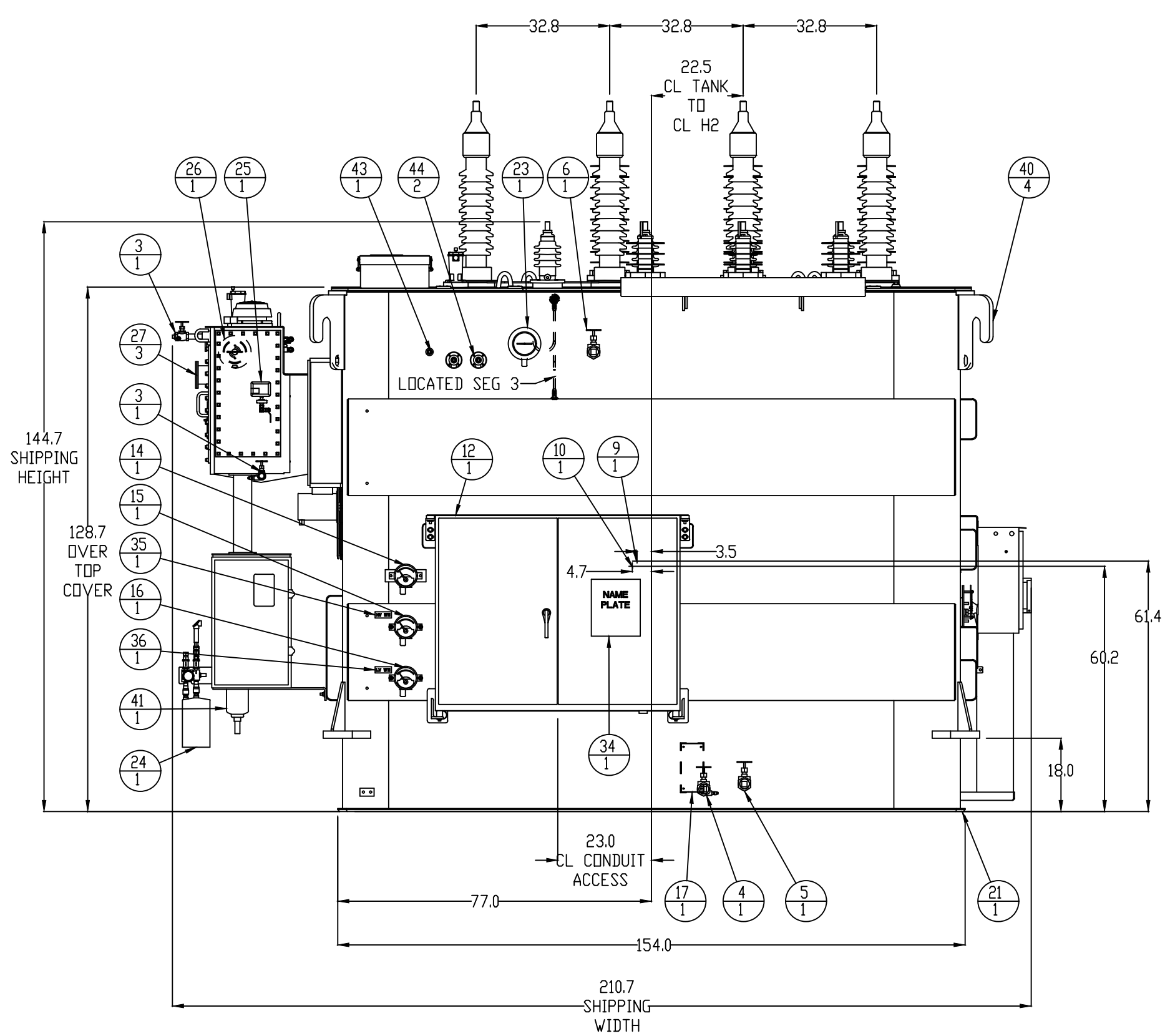
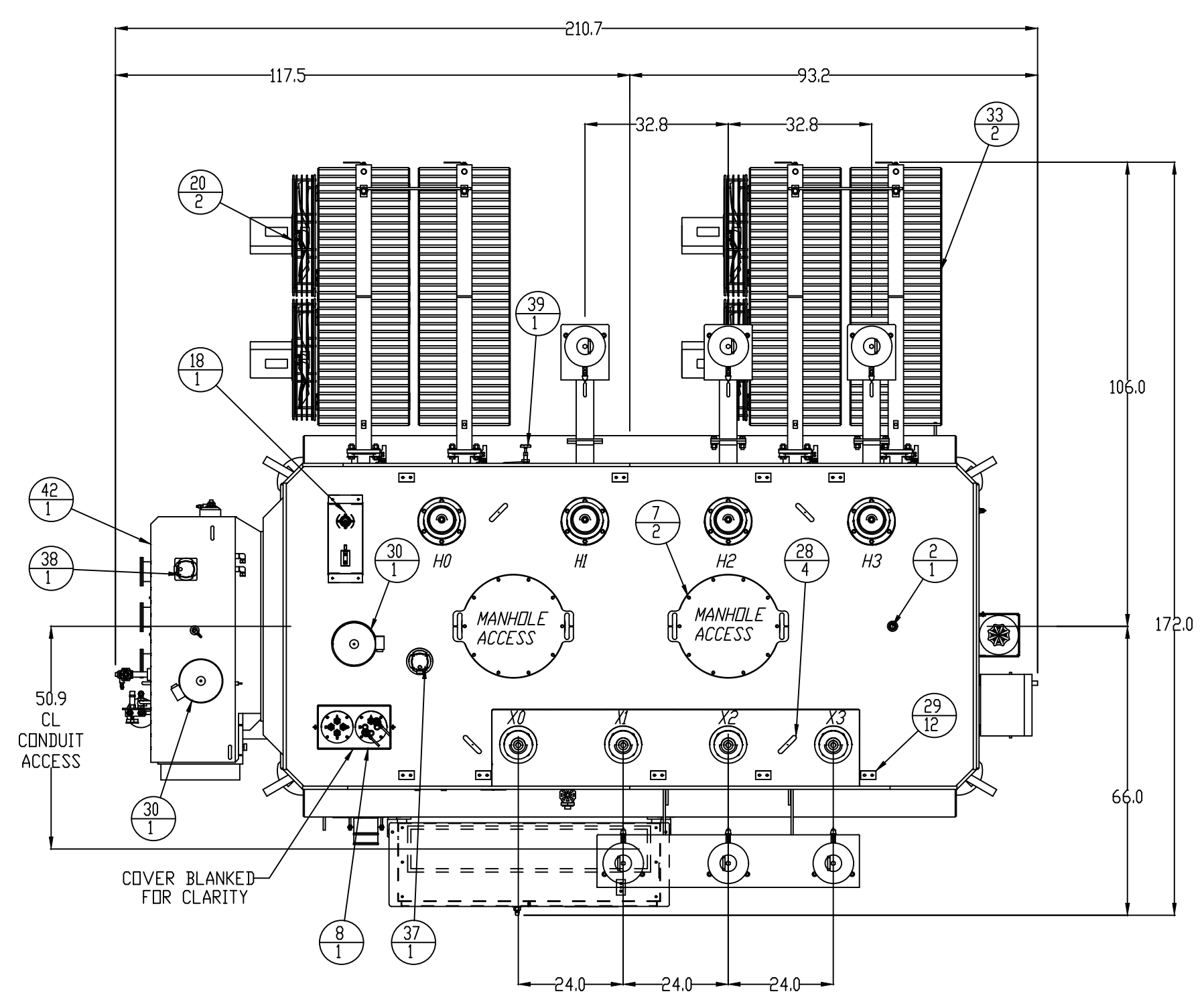


It#	Qty	Description
1	4	.75" ball valve 600 WDG
2	1	1 in. filling flange with pipe plug.
3	2	1 in. valve w/.375" sampler and plug.
4	1	2 in. filter press/drain valve w/.375" sampler and plug.
5	1	2 in. lower filter press valve with brass pipe plug.
6	1	2 in. upper filter press valve with brass pipe plug.
7	2	Bolted manhole (20 inch opening) w/ gasket in groove and machined surface.
8	1	Bushing current transformer junction box on top cover (Shown with cover removed)
9	2	Center of gravity - Assembled
10	2	Center of gravity - Shipping
11	1	Channel bracing members.
12	1	Control box w/padlocking provisions and removable gasketed bottom plate
13	1	De-energized tap changer w/position indicator and padlock provisions.
14	1	Dial-type liquid temperature indicator.
15	1	Dial-type winding temperature indicator for HV.
16	1	Dial-type winding temperature indicator for LV.
17	1	Electronic impact recorder
18	1	Enclosed core ground bushing
19	1	Enclosure for open-type inert gas system for constant oil preservation.
20	9	Fan - 208-240 V 1PH 1/6HP 1140 RPM 5000 CFM w/automatic overload protection
21	1	Flat base w/beveled edges for sliding both directions.
22	4	Jacking plate with pulling provisions.
23	1	Liquid level gauge.
24	1	LTC oil filtration system
25	1	LTC pressure control switch assembly
26	1	LTC tank liquid level gauge
27	3	LTC viewing port with removable cover
28	4	Main cover lifting lug
29	12	NEMA 2 hole s/stl ground pads.
30	2	Pressure relief device.
31	3	Removable lightning arrester mounting assembly
32	1	Removable lightning arrester mounting channel for secondary arresters
33	4	Removable, galvanized, panel type radiators w/shutoff valves
34	1	Stainless steel BCT and power nameplate.
35	1	Stainless steel HV WTI nameplate
36	1	Stainless steel LV WTI nameplate
37	1	Sudden pressure relay - Qualitrol 910 series
38	1	Sudden pressure relay - Qualitrol 910 series on LTC
39	1	Tank vented to channel braces for additional gas space (See Notes)
40	4	Unit lifting lug (with chamfered edges) for lifting entire unit
41	1	Waukesha maintenance-free dehydrating breather.
42	1	Waukesha type UZD 200/600 (200 kv BIL/600 amp) load tap changer.
43	1	Well for liquid temperature indicator probe
44	2	Well for winding temperature indicator probe

- NOTES:
- (1)- EXTERIOR TANK FINISH ANSI #70 LIGHT GRAY.
 - (2)- SEALED TANK CONSTRUCTION WITH WELDED MAIN TOP COVER.
 - (3)- ALL EXTERNAL CONTROL WIRING ROUTED THROUGH CONDUIT EXCEPT FOR SHORT RUNS OF FLEXIBLE LIQUID-TIGHT CONDUIT AND/OR TYPE "SD" CABLE TO GAUGES AND FANS.
 - (4)- TANK AND FITTINGS DESIGNED FOR VACUUM FILLING IN THE FIELD.
 - (5)- ALL EXTERNAL REMOVABLE AND/OR UN-PAINTED HARDWARE STAINLESS STEEL.
 - (6)- TRANSFORMER DESIGNED FOR TRUCK SHIPMENT.
 - (7)- SEE CONTROL WIRING FOR ALL ALARM CONTACT INFORMATION.
 - (8)- FORCED AIR COOLING BY (9) 24" FANS, 1/6 HP, 208-240 VAC, 60 HZ, 1 PH, 5000 CFM WITH OSHA APPROVED FAN GUARDS AND AUTOMATIC OVERLOAD PROTECTION. (5) "A" STAGE (4) "B" STAGE.
 - (9)- VALVE FOR VENTING GAS SPACE MUST REMAIN OPEN WHILE TRANSFORMER IS IN OPERATION. CLOSED FOR SHIPMENT.

- TRANSFORMER EQUIPPED WITH INERT GAS SYSTEM FOR CONSTANT OIL PRESERVATION INCLUDING:
- (1)- PRESSURE VACUUM SWITCH
 - (2)- GAS SAMPLING VALVE WITH HOSE Barb FITTING FOR .25" I.D. HOSE
 - (3)- PRESSURE VACUUM GAUGE
 - (4)- CYLINDER PRESSURE GAUGE WITH LOW PRESSURE ALARM
 - (5)- PADLOCKABLE HINGED DOOR
 - (6)- 220 CU FT. NITROGEN CYLINDER

- ADDITIONAL DRAWING INFORMATION:
- (1)- SEE HAEFELY DRAWING 350-H014-21-AG3-01A FOR COMPLETE HV BUSHING INFORMATION
 - (2)- SEE HAEFELY DRAWING 350-H014-21-AG3-01A FOR COMPLETE HV NEUTRAL BUSHING INFORMATION
 - (3)- SEE LAPP DRAWING B89113-70 FOR COMPLETE LV BUSHING INFORMATION
 - (4)- SEE LAPP DRAWING B89113-70 FOR COMPLETE LV NEUTRAL BUSHING INFORMATION
 - (5)- SEE OHIO BRASS DRAWING S007438-00 FOR COMPLETE HV ARRESTER INFORMATION
 - (6)- SEE OHIO BRASS DRAWING S007433-00 FOR COMPLETE LV ARRESTER INFORMATION
 - (7)- SEE WES DRAWING A517237390 FOR COMPLETE NAMEPLATE AND BCT INFORMATION

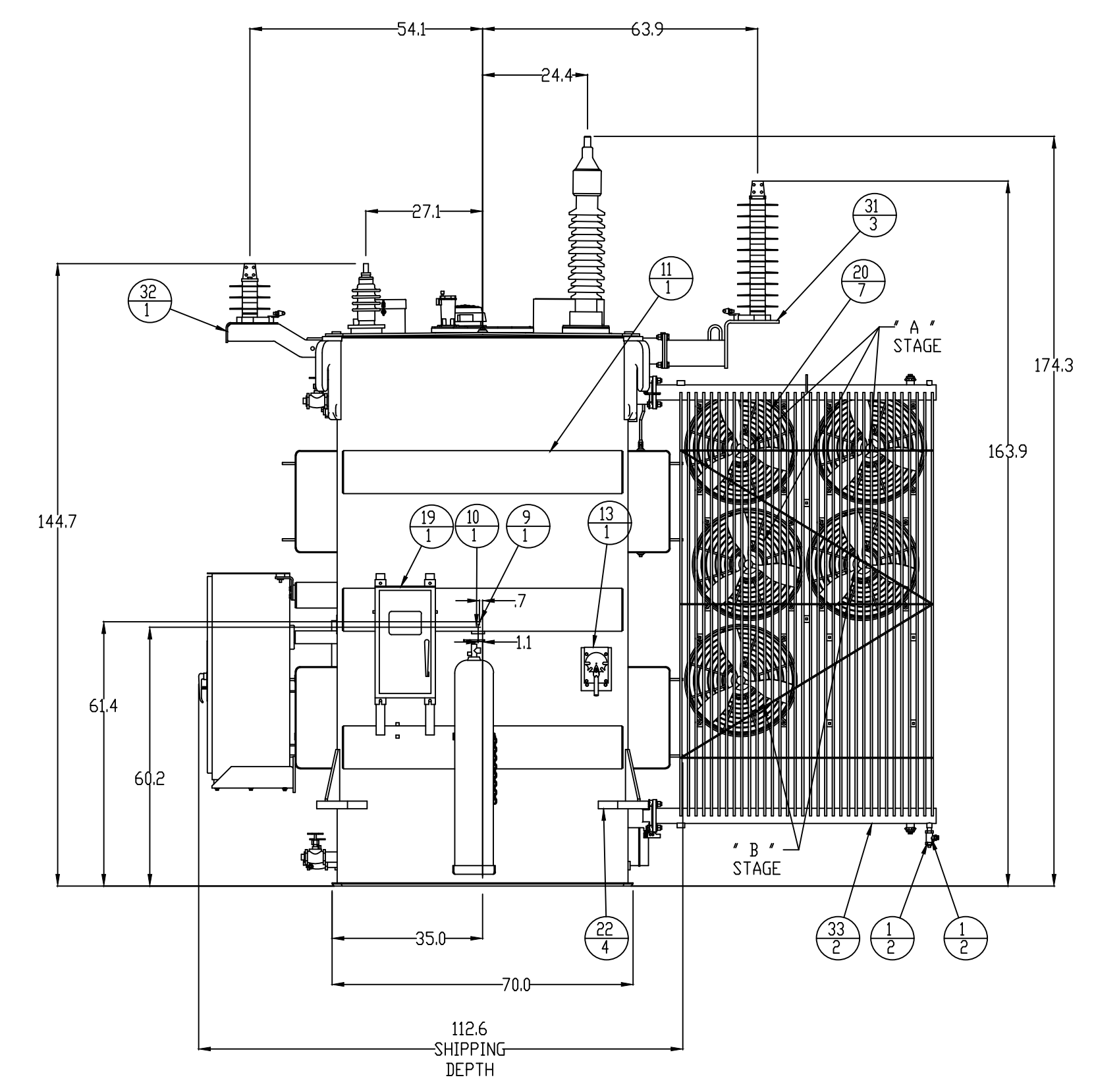


CLASS ONAN/DNAF/DNAF 3 PHASE 60 HERTZ
M.V.A. 12.00/16.00/20.00 CONTINUOUS TEMPERATURE RISE 55 DEG. C
M.V.A. 13.44/17.92/22.40 CONTINUOUS TEMPERATURE RISE 65 DEG. C
HV - 67000 Y 350 KV BIL
HV NEUTRAL 350 KV BIL
LV - 13800 Y GRDY 110 KV BIL
LV NEUTRAL - 110 KV BIL
TV - BURIED 110 KV BIL

HV TAPS - 70350 CORE AND COIL WT. = 46140
68675 TANK AND FITTING WT. = 40010
67000 OIL WT. = 33150
△ 65325 TOTAL WT. = 119300
63650 SHIPPING WT. = 108400
TOTAL GALLONS OIL = 4420

SHIPPING DIMENSIONS: HEIGHT= 145" WIDTH= 211" DEPTH= 113"
PHYSICAL DIMENSIONS: TANK HEIGHT= 129" BASE WIDTH= 154" BASE DEPTH= 70"
UNTANKING HEIGHT = 248"

- THE FOLLOWING ITEMS ARE REMOVED FOR SHIPMENT:
- (1)- PRIMARY BUSHINGS
 - (2)- PRIMARY NEUTRAL BUSHING
 - (3)- PRIMARY SURGE ARRESTERS AND MOUNTING BRACKETS
 - (4)- SECONDARY SURGE ARRESTERS AND MOUNTING BRACKET
 - (5)- RADIATORS INCLUDING FANS
 - (6)- NITROGEN BOTTLE

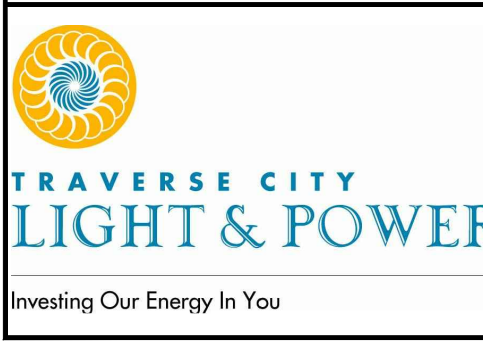


REVISIONS				
ZONE	REV	Description	DATE	APPROVED
N/A	1	Changed taps, moved rads, and added 1 fan per AA drawings.	7/22/05	Brian B.
N/A		Changed lv and hv arresters	7/22/05	Brian B.

FOR REFERENCE ONLY

TRAVERSE CITY LGT & PWR DEPT.
PO.NO. CONTRACT
PARSON ROAD SUBSTATION
SERIAL/MFG.NO. GM053114
"APPROVAL DRAWINGS"

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ENG.	NMA	01-26-2020	RECORD DRAWINGS
DR	NMA		
CK	NMA		
APP	MPM	09-18-2018	QA/QC REVISIONS
		06-15-2018	BDS & CONSTRUCTION
		06-10-2018	OWNER REVIEW
		DATE	ISSUED FOR

GRP
Engineering, Inc.
PETOSKEY, MICHIGAN, 231-439-9683
GRAND RAPIDS, MICHIGAN, 616-942-7183

TRAVERSE CITY LIGHT & POWER
PARSONS ROAD SUBSTATION - 69KV SWITCH STATION
TRAVERSE CITY, MICHIGAN
OUTLINE DIAGRAM - TRANSFORMER NO.2

PROJECT NUMBER	DRAWING NUMBER
18-0929.01	861

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