

LIME SYSTEM EQUIPMENT DESCRIPTION		
ITEM	QUANTITY	DESCRIPTION
101	1	<p>Welded carbon steel skirt supported hydrated lime storage silo</p> <ul style="list-style-type: none"> • 13' diameter • Approximately 20' storage cylinder height • Approximately 37' eave height • 2,700 cubic feet storage capacity • One 10° sloped roof • One 20" diameter manway with pressure/vacuum relief valve • One dust collector flange • One roof mounted level switch opening • Two roof mounted lifting lugs • One target box mounting flange • Lot of truck fill line mounting brackets • Two side mounted level switch openings with protective baffles • 60° discharge cone with a 6' diameter flanged outlet • One lime feed room located at grade <ul style="list-style-type: none"> • One 6' x 6'-8" double door assembly • One exhaust fan mounting flange • Lot of couplings welded in the skirt wall for water, slurry, electrical and compressed air connections • Equipment support beams • Sixteen silo hold-down channels, shipped loose • One galvanized ladder assembly to access the silo roof from grade with maintenance platform, shipped loose and knocked-down • One 3M Lad-Saf™ flexible cable safety climb system, shipped loose and knocked down <ul style="list-style-type: none"> • One galvanized top bracket with energy absorber • One 3/8" galvanized cable lifeline • Two cable guides • One galvanized bottom bracket with tensioner • One detachable cable sleeve with carabiner • One 1-1/2" Schedule 40 galvanized handrail assembly with angle posts provided around the perimeter of the silo roof, shipped loose and knocked-down

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		<ul style="list-style-type: none"> • One painted steel toe plate assembly provided around the perimeter of the silo roof • The silo shall be painted as follows: <ul style="list-style-type: none"> • The silo storage interior will be bare • The silo exterior and skirt interior will be sandblasted to SSPC SP-6 surface profile • The silo exterior, cone exterior and skirt interior will be prime painted with a 4-6 mil DFT coat of Carboline Carboguard #60 epoxy • The silo exterior and cone exterior shall be finish painted with a 2-3 mil DFT coat of Carboline Carbothane #8845 polyurethane • The silo shall be designed in accordance to the following: <ul style="list-style-type: none"> • The silo shall be designed to store hydrated lime weighing 40 pounds per cubic foot for structural design and 25 pounds per cubic foot for volumetric design with a 30° angle of repose • The silo shall be constructed of 8 gauge minimum mild carbon steel plate • Roof load of 30 pounds per square foot • Seismic and wind load design per IBC • 8 ounce pressure • 0.4 ounce vacuum • Field installation and erection by the Purchaser
102	1	Truck fill line assembly <ul style="list-style-type: none"> • 34' of 4" Schedule 40 carbon steel pipe • One target box with clean-out port • One 4" Schedule 40, 90° long radius elbow • Five compression type couplings • One malleable iron truck fill adapter with dust cap • One NEMA 4X limit switch • Field installation and wire terminations by the Purchaser

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103	3	Silo point level switches <ul style="list-style-type: none">• Rotating paddle type• Stainless steel paddle• NEMA 4 polyester-coated aluminum housing and cover• One single-pole, double-throw switch• 120 volt, 1 phase, 60 hertz, low torque slow speed synchronous motor• Field installation and wire terminations by the Purchaser
104	1	CHEMCO dust collector <ul style="list-style-type: none">• Pulse jet type• Carbon steel housing• Approximately 300 square feet of polyester filter media• Three solenoid valves, 120 volt, 1 phase, 60 hertz• Three diaphragm valves• Compressed air header• Pressure differential gauge• 2 HP, 460 volt, 3 phase, 60 hertz blower motor• Field installation, air line connection, and wire terminations by the Purchaser
105	1	Dust collector air line assembly <ul style="list-style-type: none">• One manually operated isolation, bronze ball valve• One combination filter/regulator• One pressure gauge• 3/4" Schedule 40 stainless steel pipe, routed from the air supply connection in the silo skirt to the silo roof• Factory installed

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106	1	Truck unloading operator station <ul style="list-style-type: none">• NEMA 4X Type 304 stainless steel enclosure• Indicating lights• Selector switches• Alarm siren• Push button• Terminal blocks• Field installation and wire terminations by the Purchaser
107	1	Bin activator <ul style="list-style-type: none">• 6' diameter• Carbon steel mounting ring• Carbon steel hanger arms with bushings• Continuous flexible rubber sleeve• Two stainless steel retaining bands• 45° lower cone assembly• 10" diameter flanged outlet• Inverted head assembly• 1-1/2 HP, 230/460 volt, 3 phase, 60 hertz, variable force vibrator• Factory installed and wired
108	1	Silo discharge isolation knife gate valve <ul style="list-style-type: none">• 10" diameter manually operated• Carbon iron body• 304 stainless steel gate• 304 stainless steel metal seat• Manual chain wheel operator• Factory installed

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109	1	<p>Knife gate to feeder transition assembly</p> <ul style="list-style-type: none">• One painted carbon steel silo outlet knife gate discharge adapter flange• One flexible connection<ul style="list-style-type: none">• Pure gum rubber construction• Single ply nylon reinforcement• Two stainless steel band clamps• One painted carbon steel screw feeder inlet adapter flange• Field installation by the Purchaser
110	1	<p>Volumetric screw type feeder</p> <ul style="list-style-type: none">• Capable of feeding hydrated lime weighing 30 pounds per cubic foot• 304 stainless steel construction• Solid flight dual pitch feed screw• Vibrator• 1 HP, 230/460 volt, 3 phase, 60 hertz, TEFC motor• Variable frequency drive located in control panel• Factory installed and wired
111	1	<p>Inlet water line assembly</p> <ul style="list-style-type: none">• One manually operated, bronze ball valve• One bronze pressure reducing valve• One bronze wye strainer• One pressure switch• One pressure gauge• One wash down connection with bronze ball valve• 1-1/2" Schedule 80 PVC pipe, routed from the inlet water line connection to the make-up water line assembly• Factory installed, piped, and wired

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112	1	Slurry make-up water line assembly <ul style="list-style-type: none">• One manually operated bronze ball valve• One variable area flow meter• One normally closed brass solenoid valve• One manually operated bronze globe valve• 1-1/2" Schedule 80 PVC pipe, routed from the inlet water line assembly to the slurry mix tank• Factory installed and piped
113	1	Slurry tank level monitor <ul style="list-style-type: none">• Ultrasonic type• NEMA 4 housing and cover• Digital readout• Factory installed and wired
114	1	Slurry tank mixer <ul style="list-style-type: none">• Slow speed gear drive mechanical mixer• Plate mount with 10° angle riser• 1 HP, 460 volt, 3 phase, 60 hertz, TEFC, motor• Stainless steel shaft• Stainless steel dual impellers• Factory installed and wired, but the shaft and impeller will be removed for shipment

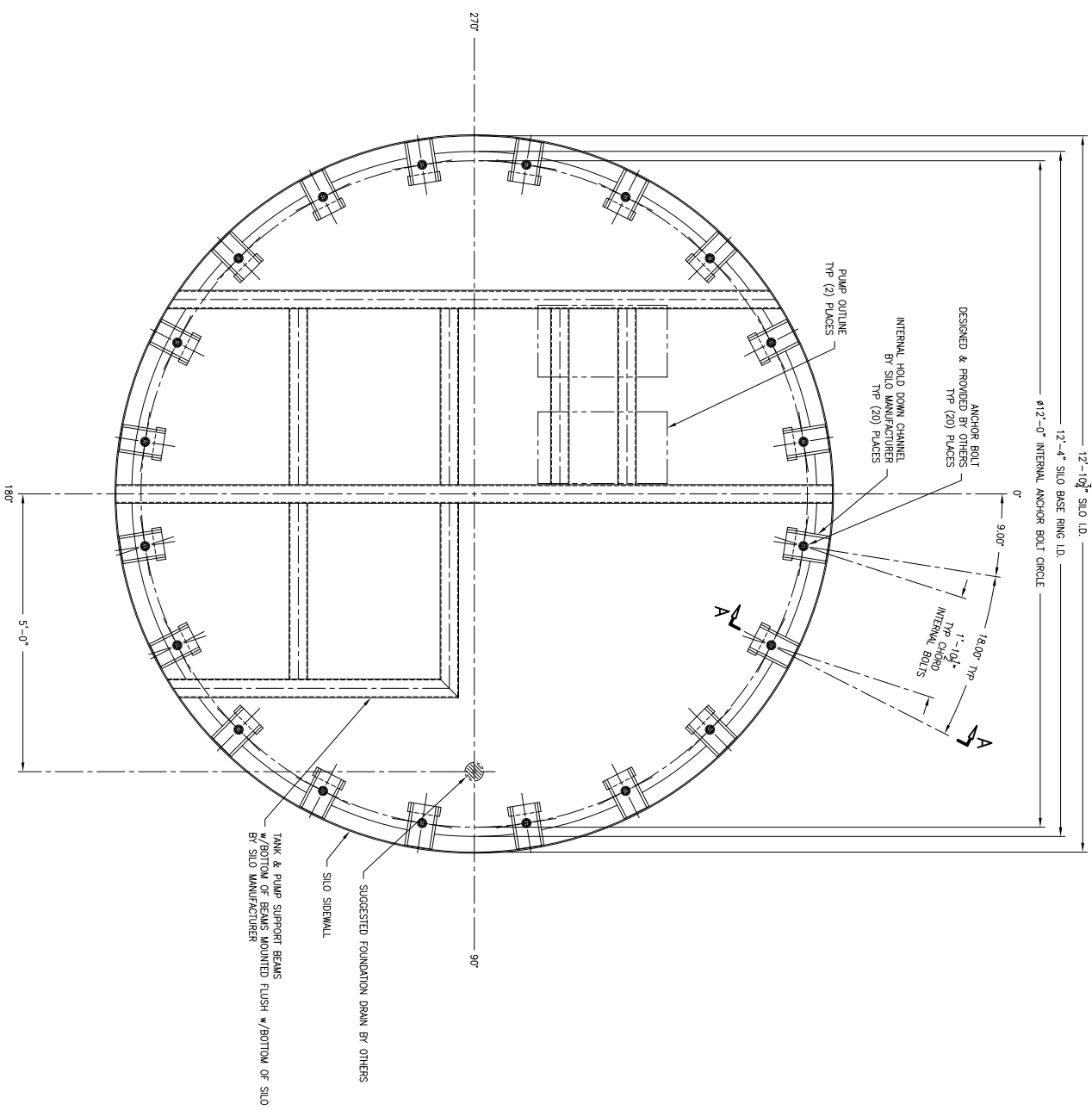
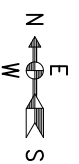
LIME SYSTEM EQUIPMENT DESCRIPTION		
ITEM	QUANTITY	DESCRIPTION
115	1	Lime slurry tank <ul style="list-style-type: none"> • 750 gallon working volume • 6' diameter • 6'-9" high • Painted carbon steel construction • One feeder support • One feeder inlet • One mixer mount • One water inlet connection • Two pump suction connections • One overflow connection • One drain connection • One level control coupling • One inspection opening • One galvanized access ladder • One galvanized handrail assembly with safety gate at ladder opening • Factory installed
116	1	Drain and overflow line assembly <ul style="list-style-type: none"> • One manually operated valve • 3" Schedule 40 carbon steel pipe • Factory installed and piped
117	2	Lime slurry pump suction line assemblies <ul style="list-style-type: none"> • One manually operated isolation valve • One pure gum rubber expansion joint • Schedule 40 carbon steel pipe, routed from the slurry mix tank to the pump suction • Factory installed and piped
118	2	Lime slurry pump suction flush/drain line assemblies <ul style="list-style-type: none"> • One manually operated drain valve • One manually operated flush valve • 1" Schedule 40 carbon steel pipe, routed from the water supply to the pump suction • Factory installed and piped

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ITEM	QUANTITY	DESCRIPTION
119	2	Lime slurry pumps <ul style="list-style-type: none">• Centrifugal type• 160 GPM at 50' TDH• Ductile iron construction• 7-1/2 HP 230/460 volt, 3 phase, 60 hertz, TEFC motor• Factory installed, piped and wired
120	2	Lime slurry pump discharge line assemblies <ul style="list-style-type: none">• One manually operated isolation valve• Schedule 40 carbon steel pipe, routed from the pump discharge to the silo skirt wall• Factory installed and piped
121	1	Lime slurry pump discharge header line assembly <ul style="list-style-type: none">• One pressure gauge with diaphragm seal• Schedule 40 carbon steel pipe, installed on the pump discharge• Factory installed and piped
122	2	Lime slurry pump drain assemblies <ul style="list-style-type: none">• One manually operated, carbon steel, ball valve• 1" Schedule 40 carbon steel pipe, installed on the pump discharge• Factory installed and piped
123	1	Lime slurry return line assembly <ul style="list-style-type: none">• One manually operated pinch valve• Schedule 40 carbon steel pipe, routed from the silo skirt wall to the slurry tank• Factory installed and piped

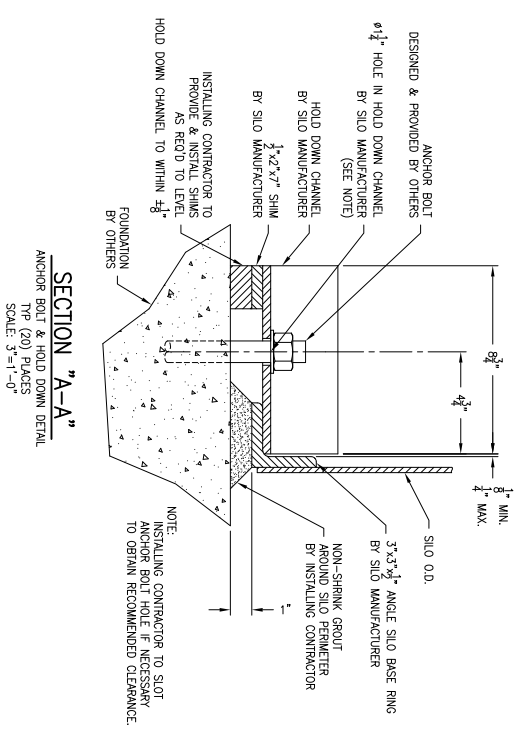
LIME SYSTEM EQUIPMENT DESCRIPTION		
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124	1	Hydrated lime system control panel <ul style="list-style-type: none">• NEMA 4 painted carbon steel enclosure• IEC motor starter/protector• Transformer• Main disconnect switch• Fuses• Variable frequency drive• Allen-Bradley CompactLogix programmable logic controller• Operator interface terminal• Alarm siren• Push button• Terminal blocks• Factory installed and wired
125	1	Silo exhaust fan <ul style="list-style-type: none">• 16" diameter• Automatic shutter• Wire guard• 1/20 HP, 120 volt, 1 phase, 60 hertz, motor• Adjustable thermostat with a temperature range of 40 to 100 degrees Fahrenheit• Factory installed and wired
126	1	Silo heavy duty electric heater <ul style="list-style-type: none">• 10 kW• Adjustable outlet louver• Built-in thermostat with an adjustable temperature range from 45 to 90 degrees Fahrenheit• Mounting bracket for horizontal installation• 460 volt, 3 phase, 60 hertz• Field installation and wire terminations by the installing contractor

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127	2	Silo interior light fixtures <ul style="list-style-type: none">• Fluorescent type• 4' long• Fiberglass housing with acrylic diffuser• Completely sealed and fully gasketed to resist dust and moisture• Factory installed and wired
128	1	Electrical outlet <ul style="list-style-type: none">• Ground fault duplex receptacle• 120 volt• 20 amp• Factory installed and wired
129	Lot	Silo skirt insulation <ul style="list-style-type: none">• 1-1/2" thick• Extruded polystyrene closed cell foam• Painted with white latex• Factory installed on the silo skirt interior wall
130	Lot	Factory assembly, piping, wiring and testing of components <ul style="list-style-type: none">• As noted above with some items removed for shipment• All exterior ladders, railings, fill lines, level indicators, dust collector, fill panel, and related items will be shipped loose for field installation by installing contractor• Conduit will be run on the silo exterior and wires will be pulled for the exterior fill panel, level indicators, and dust collector prior to shipment from our shop• Re-connection and wiring terminations for items shipped loose will be the responsibility of the installing contractor

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SERVICES AND ITEMS NOT INCLUDED IN CHEMO'S PROPOSAL		
<ul style="list-style-type: none">• Unloading• Erection• Installation• Design or supply of anchor bolts• Design or supply of concrete foundations• Hook-up of utilities• Supply of chemicals• Supply of any piping past the couplings in the silo skirt• Supply of any conduit or wire past the couplings in the silo skirt• Supply of clean, dry compressed air• Light bulbs• Supply of any other materials or services unless specifically mentioned above		



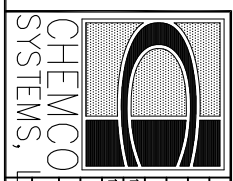
SILO FOUNDATION PLAN



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CHEMCO SYSTEMS, L.P.
 1500 INDUSTRIAL DRIVE, MONONGAHELA, PA

SILO FOUNDATION PLAN

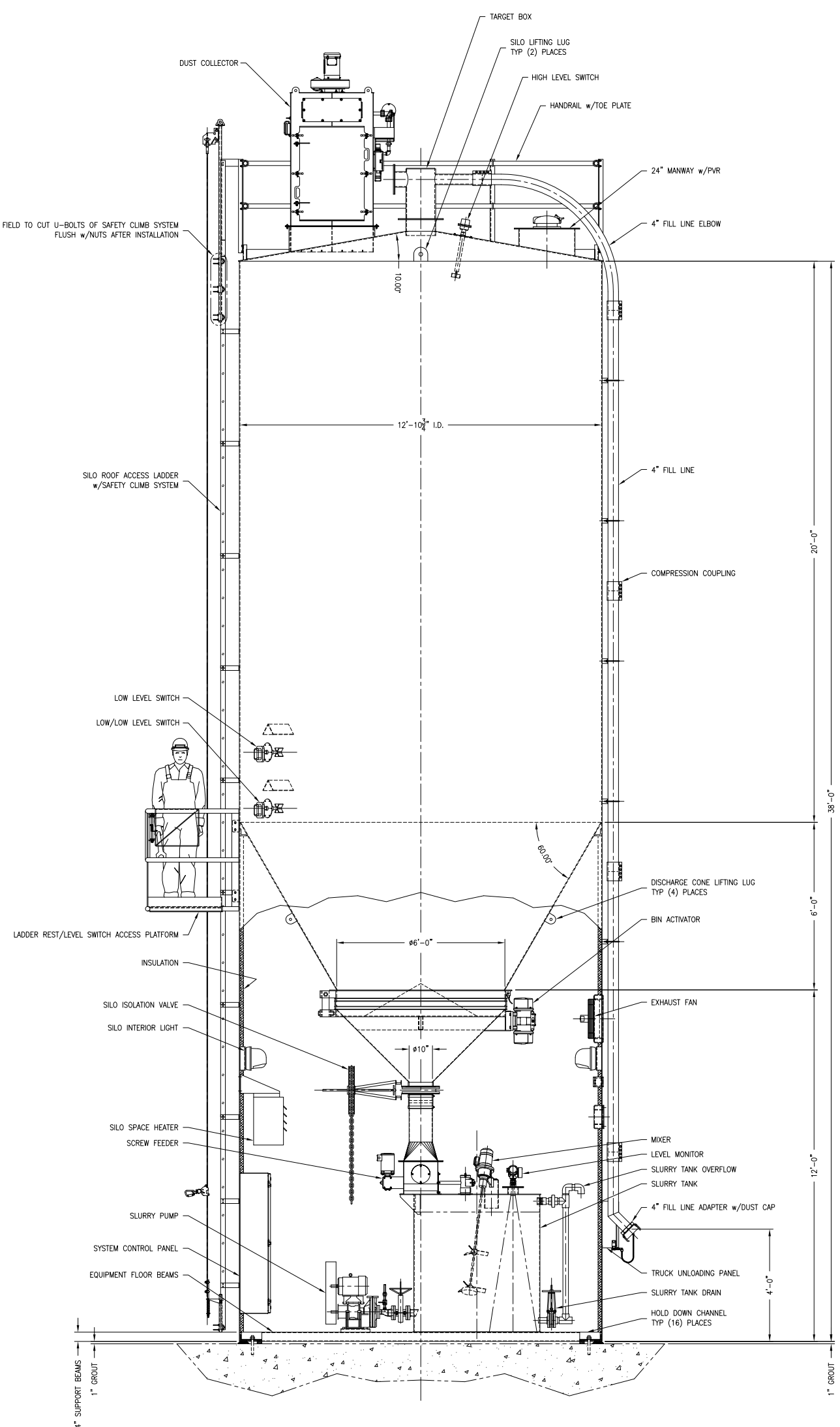


DATE:	11/01/19	1	SALES ISSUE
DATE:	10/31/19	0	SALES ISSUE
DATE:			REMARKS
SCALE:	3/4" = 1'-0"		
DATE:	SEPTEMBER 12, 2019		
DRAWN BY:	G. KUNDRAT		

TYPICAL HYDRATED LIME SYSTEM

CHECKED BY: **DI** DWG NO.: **P91010**

APPROVED BY: SHEET NO. 1



NOTE:
1. ELEVATION VIEWS ARE FOR ELEVATION ONLY.
SEE PLAN VIEWS FOR CORRECT ORIENTATIONS.

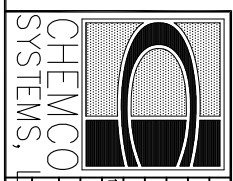
SILO ELEVATION

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SHT. DESCRIPTION: **SILO ELEVATION**

DATE: 10/31/19
SCALE: 1/2" = 1'-0"
CHECKED BY: DJ
APPROVED BY: G. KUNDRAT



DATE	REV	ZONE	REMARKS
10/31/19	0		SALES ISSUE

8	7	6	5	4	3	2	1
A	B	C	D				