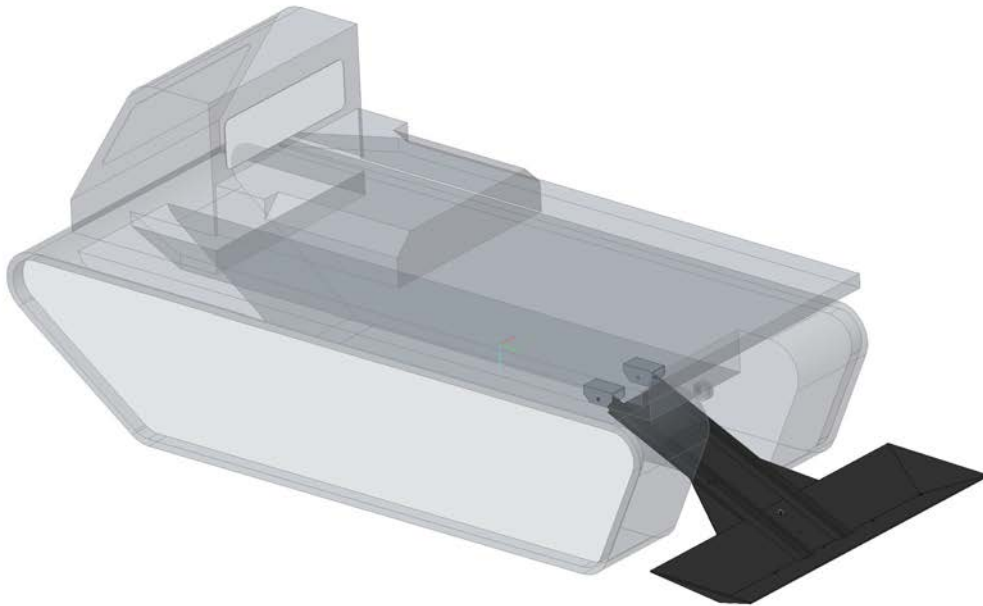


ROSCOMMON EQUIPMENT CENTER



**NewsNote #20
October, 2015**



Marsh Vehicle Wiper

National Association of State Foresters
in Cooperation with
Michigan's Forest Fire Experiment Station

REC NewsNote No. 20

Marsh Vehicle

Wiper

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Disclaimer

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Introduction

The Roscommon Equipment Center (REC) and MIDNR staff have once again worked together to develop a system to help make prescribed burn operations on stands of chemically treated vegetation safer for fire personnel. REC has developed a simple and low cost pull behind compaction device that effectively compacts this type of vegetation without the need for mowing or chopping.

Michigan is a state with a great variety of animal and plant species, both native and non-native. Some non-native species of vegetation are considered to be invasive. Topping the list of invasive plant species is phragmites. Phragmites tend to flourish around wet and marsh type areas. Stands of phragmite are usually very thick and typically can grow to a height of more than 15 feet. The Michigan Department of Natural Resources (MIDNR) Divisions have significant interest in developing reliable & safe equipment and strategies to control these plants due to their invasive nature. Prescribed burning is often the tool used to help control phragmites.

Marsh/wet lands where phragmite typically grow can be difficult terrain to operate heavy equipment in. The MIDNR recognized this and have begun using an amphibious machine called a MarshMaster to be able to traverse this type of terrain. MIDNR's use of this type of vehicle has shown great maneuverability in marsh areas. The MarshMaster vehicle is equipped with a 3-point hitch system on the rear of the vehicle that can be used to attach and control pull behind type implements.

Prescribed burns on vegetation growing in this type of arrangement can produce intense heat and large flame lengths. To make prescribed burns safer, MIDNR's usual burning method is to mow or chop treated phragmite stands down before the stand is ignited so that during the burn the heat intensity & flame lengths are more manageable. Rear mounted mowers used in this manner have shown operational difficulty in wet locations having more than few inches depth of standing water.

REC studied the operational issues associated with mowing stands of vegetation with particular vision in regards to wet and lowland areas. The study indicated a need for a pull behind type device that is controlled by the MarshMaster operator and powered through the hydraulic system already present on the MarshMaster. The amphibious abilities of the MarshMaster while coupled to a pull behind device also needed to be maintained.

The marsh vehicle wiper was created to satisfy this need.

Design

REC staff worked directly with MIDNR staff to fully understand tactical & logistical needs for this device. REC staff members participated and followed up on both phragmite treatment compaction and prescribed burns to validate the device and collect end user information regarding the usage of the wiper implement.

By design, the wiper device will directly attach to the MarshMaster (MM-2LX) platform utilizing the MarshMaster's 3 point hitch and hydraulic lift system. The hydraulic functions of the 3 point hitch include provision for power lift, load holding and a "float" function capability. The float function allows the wiper device to maintain contact with the ground while the MarshMaster is traversing rough terrain.

The wiper is constructed of mild steel and was painted after fabrication. Basic dimensions of the wiper unit are 96" wide and extends approximately 48" behind the vehicle when mounted. The perimeter of the wiper device is angled/tapered to help it "float" on the ground while in use. This ability to float over the ground is especially important when the vehicle is reversing direction or turning.

When mounted on the MarshMaster vehicle and while the hydraulic controls are set in the float position, the entire 714 Lb. weight of the wiper is concentrated to the contact edge at the bottom of the pan. This proved effective in compaction of phragmite growing both on dry land and in standing water. See photo in Appendix B.

The complete assembly part # is: 40-0001. Purchased parts are identified within the title block of the assembly. Manufactured parts contained in the assembly include:

00-2141	Plate, Upper
00-2139	Plate, Bottom Front Half
00-2146	Plate, Bottom Rear Half
00-2142	Plate, Stiffener
00-2143	Rib, Outer
00-2144	Rib, Inner
00-2145	Tie-Bar
00-2140	Plate, End

Appendix A Photograph of the wiper mounted to the MarshMaster vehicle.

Appendix B shows the MarshMaster and wiper being used in the field.

Appendix C Construction Drawings

Appendix B

Field Test: Nayanquing Point State Wildlife Area Kawkawlin, Michigan May 27th, 2015

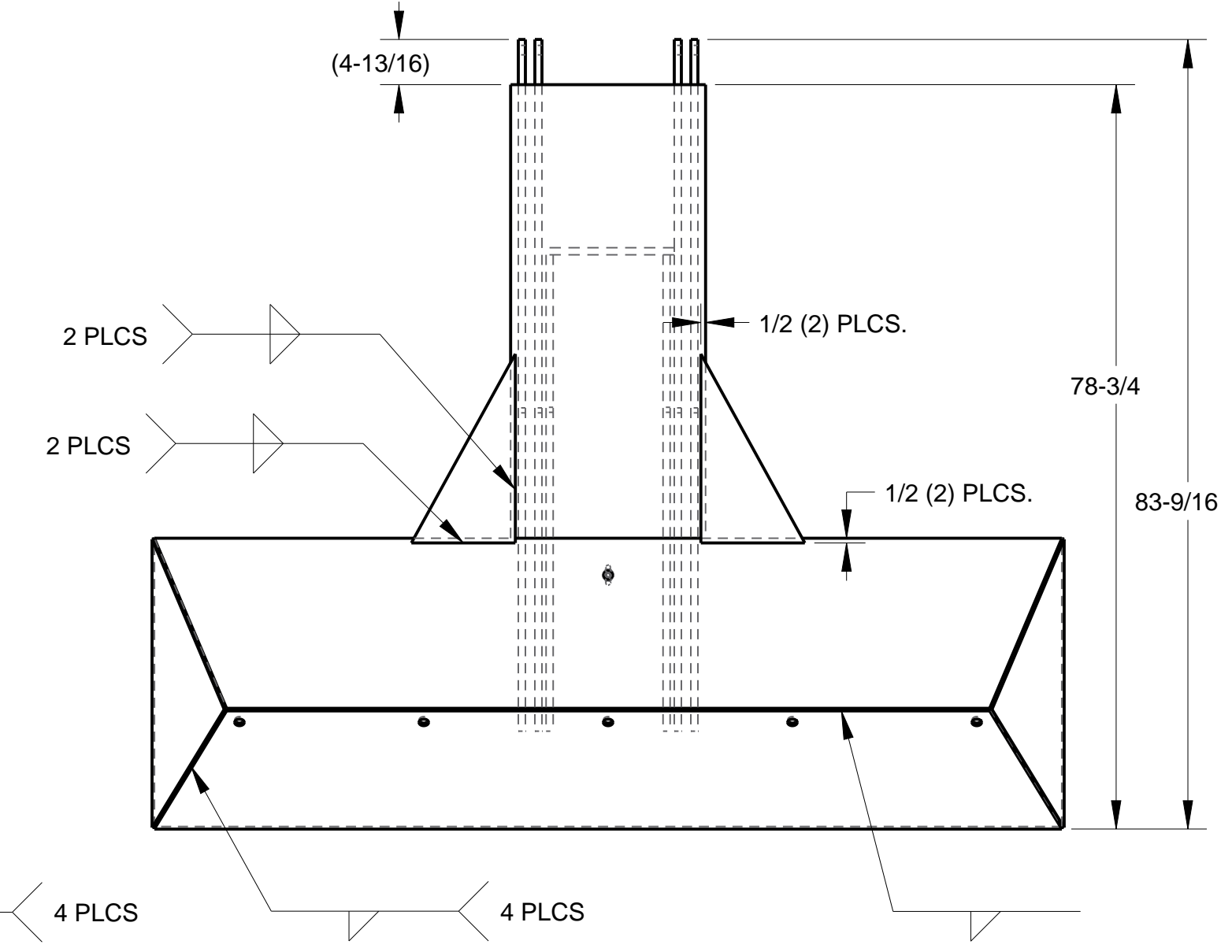
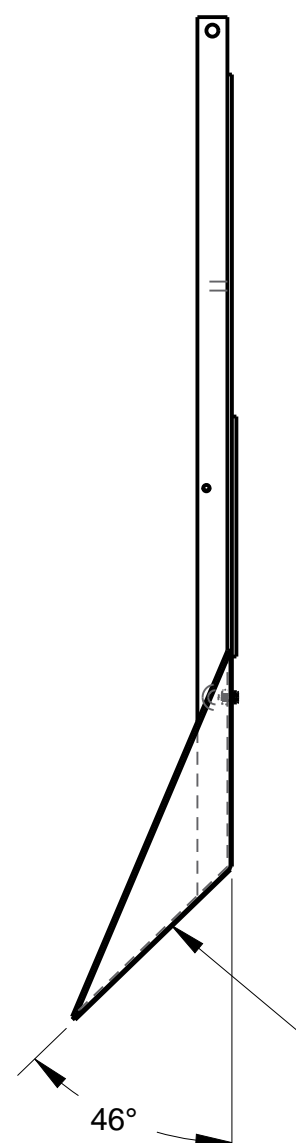
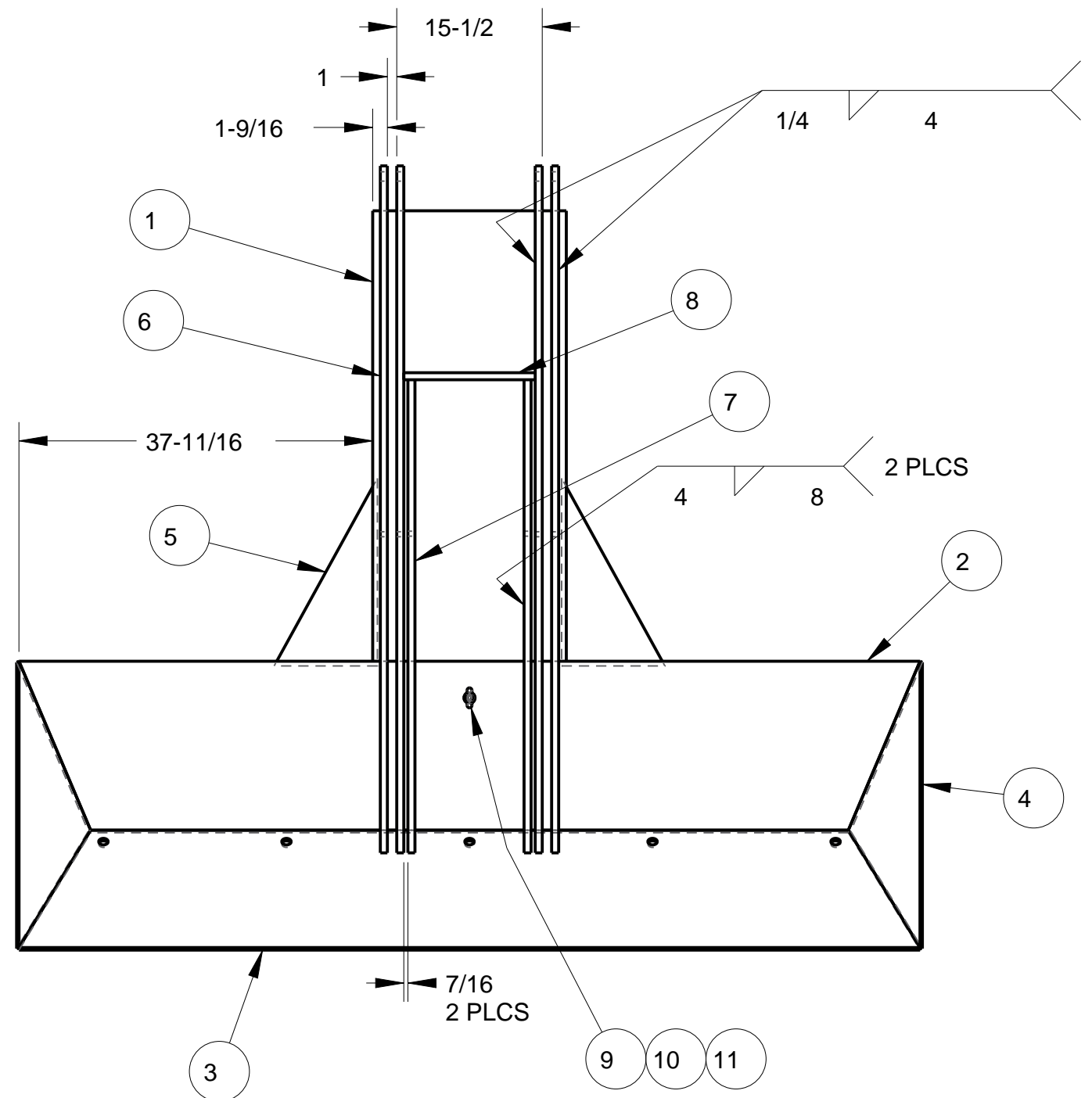
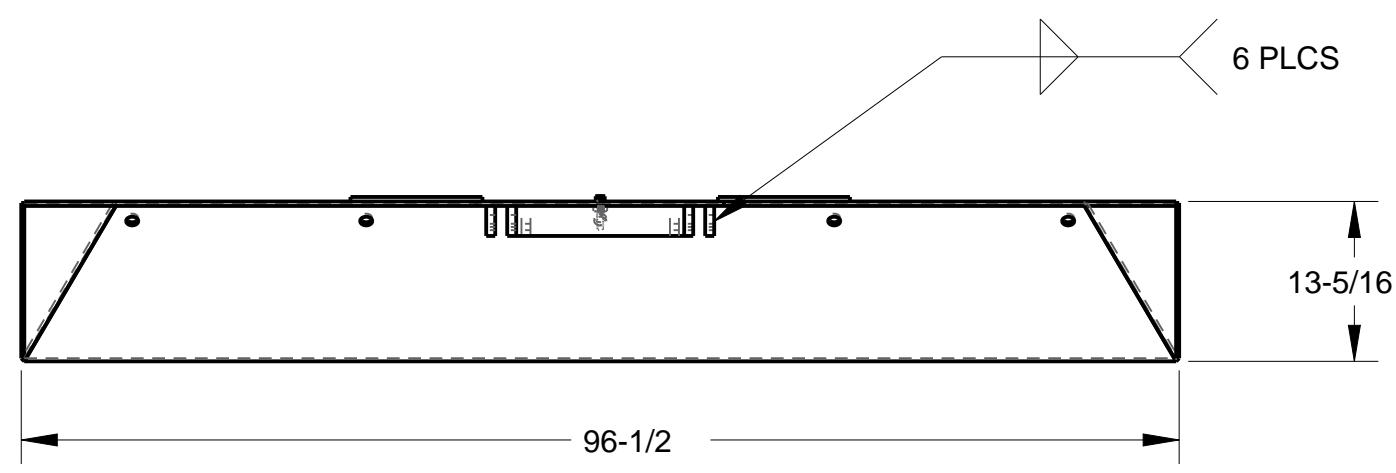


Further Information

For more info on Phragmites visit the Michigan DNR, Wildlife & Habitat, Invasive Species website at "http://www.michigan.gov/dnr/0,4570,7-153-10370_59996---,00.html"

Appendix &

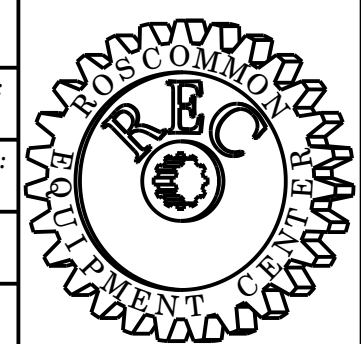
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2	00-2139	B	BOTTOM-HALF FRONT	1
3	00-2146	B	BOTTOM HALF REAR	1
4	00-2140	B	END PLATE	2
5	00-2142	B	STIFFENER PLATE	2
6	00-2143	B	OUTER RIB	4
7	00-2144	B	INNER RIB	2
8	00-2145	B	TIE BAR	1
9	33-0181		CAST STEEL EYE BOLT, MCMASTER #3112T34	1
10	TS-08GG10		SCREW, HEX HEAD CAP 1/2-13UN X 1 1/4 GR 5 PLTD	1
11	WS08-BC		WASHER, LOCK 1/2, SPRING TYPE, REG PLTD	1

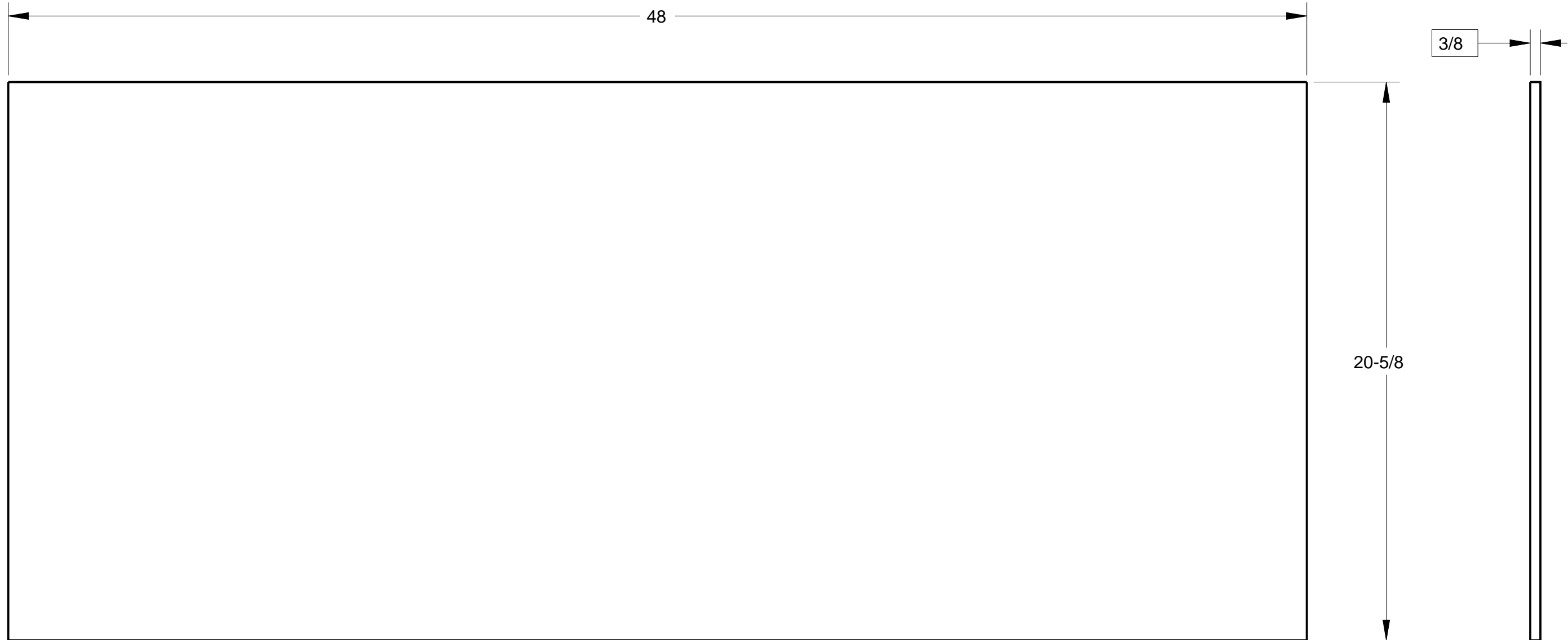


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ITEM NUMBER: 3112T34

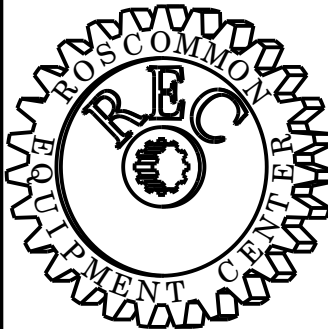
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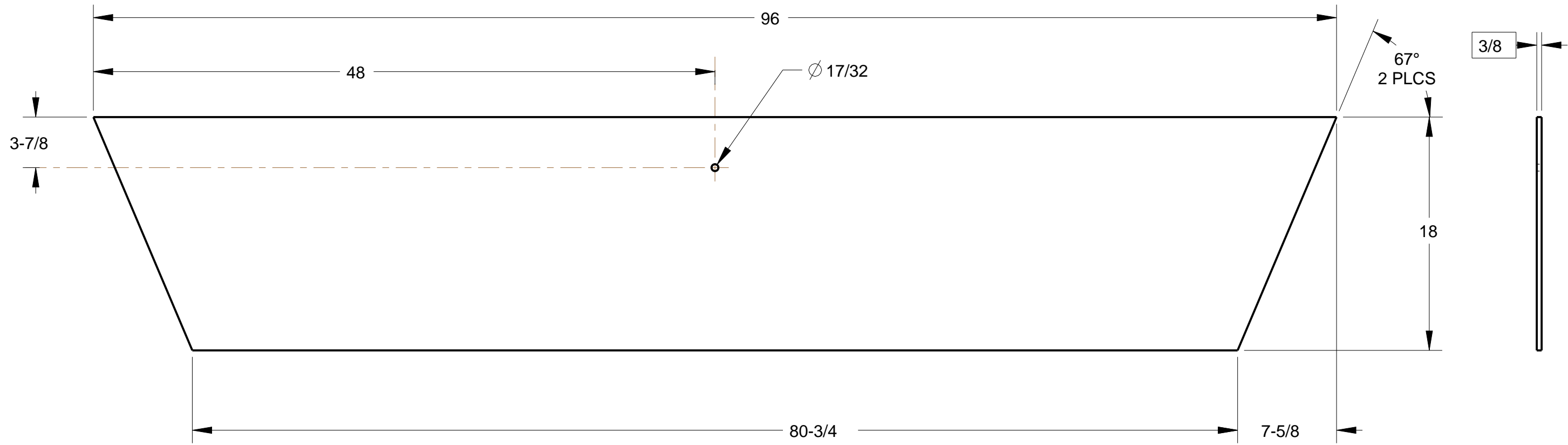




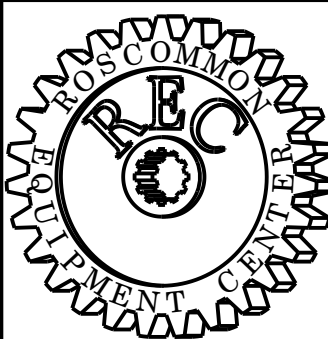
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 EST WT: 105.06 LBS

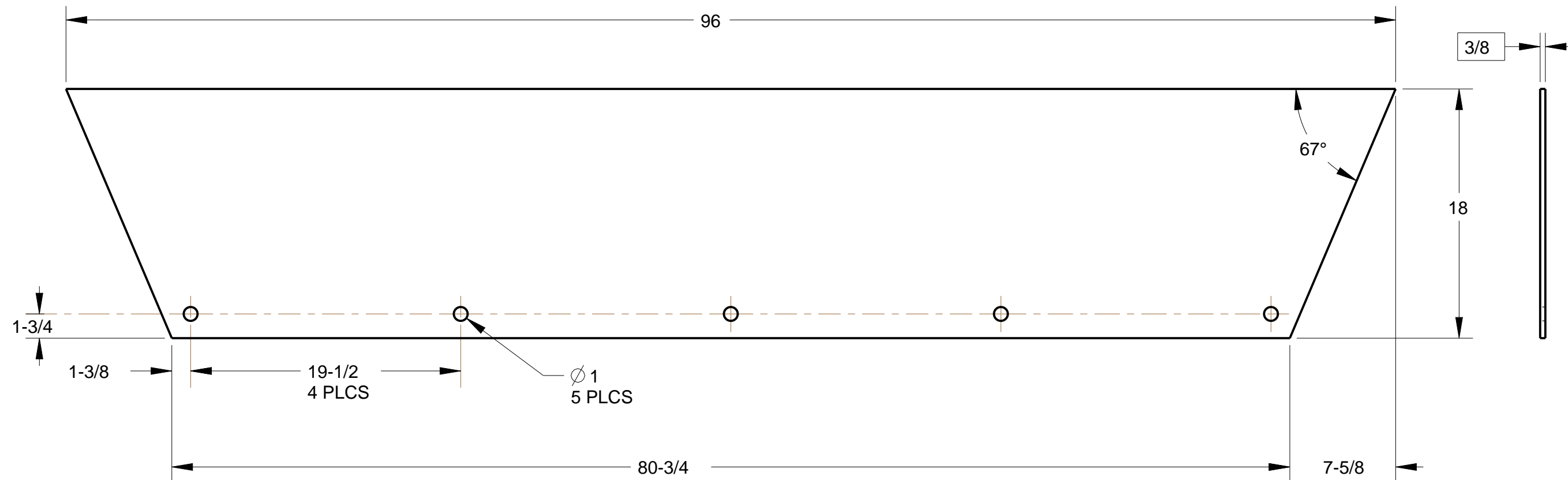
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PROJECT NO.: 15-5	TITLE: UPPER PLATE					SCALE: 1/4	
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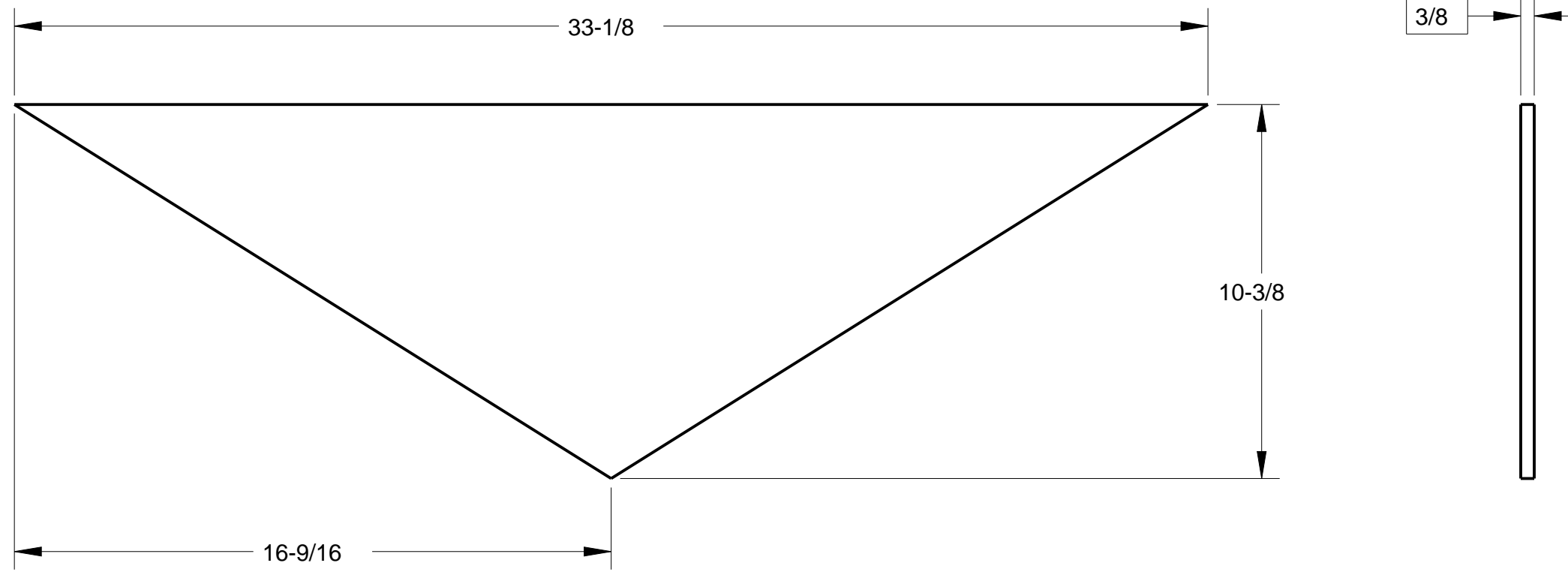
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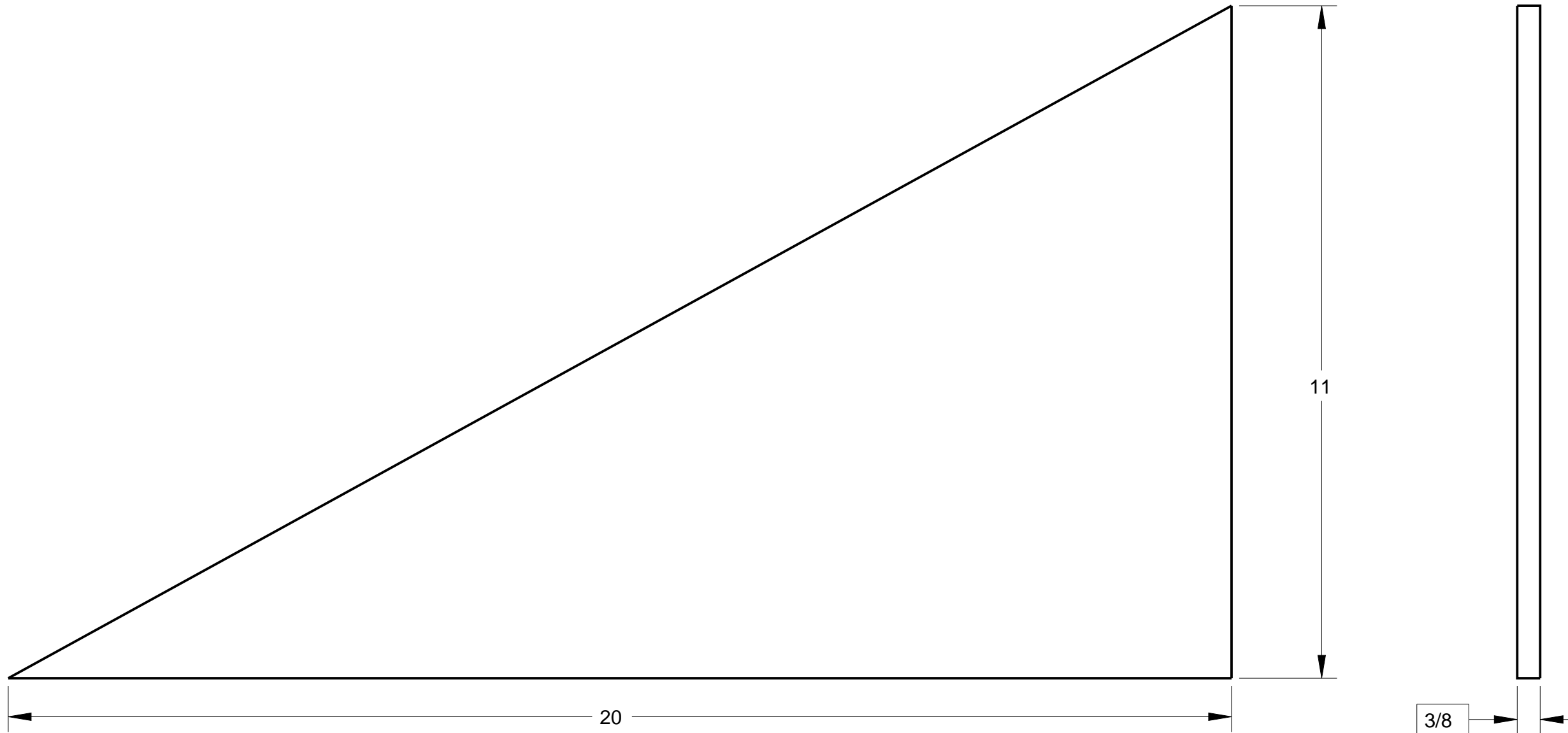
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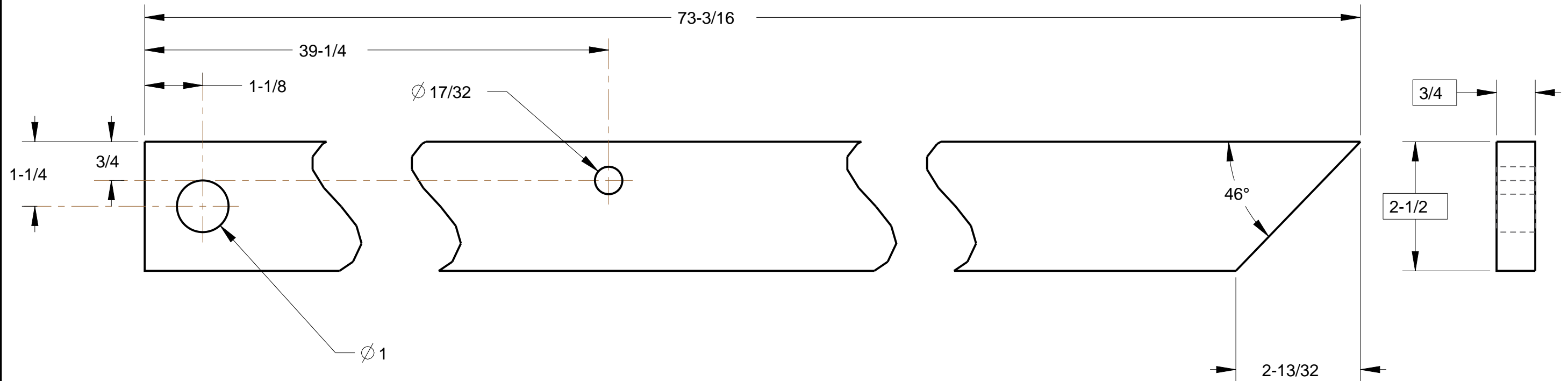
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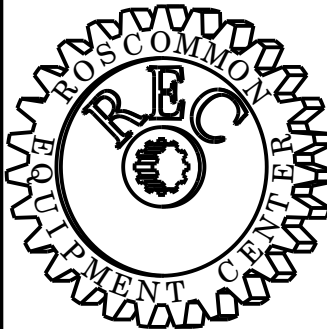


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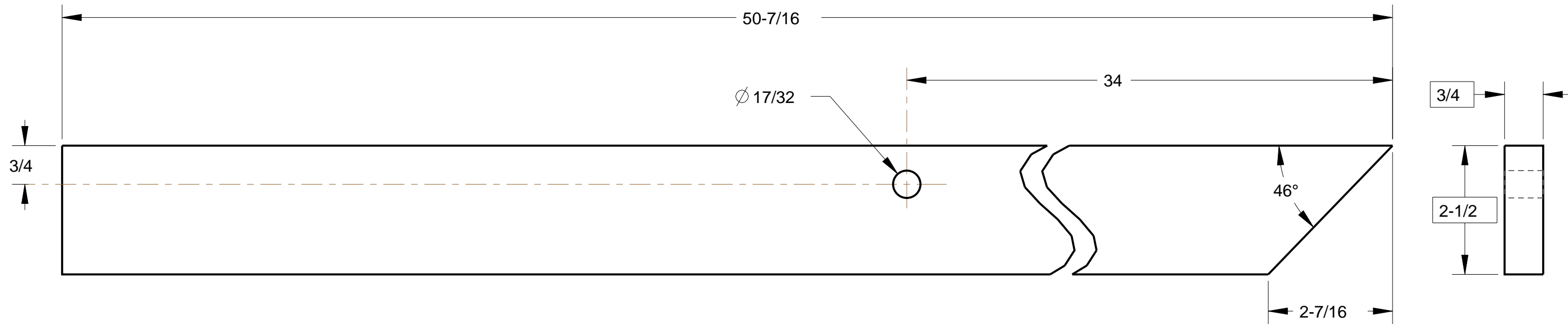
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 MAT'L: BAR, FLAT 3/4 X 2-1/2 HR
 G10200
 FFES SPEC NO: AB-01210AA
 EST WT: 37.99 LBS

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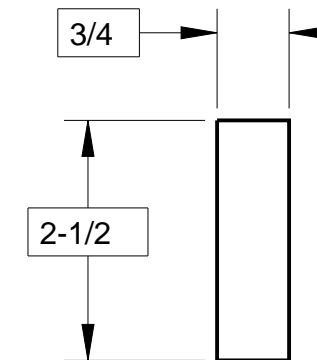
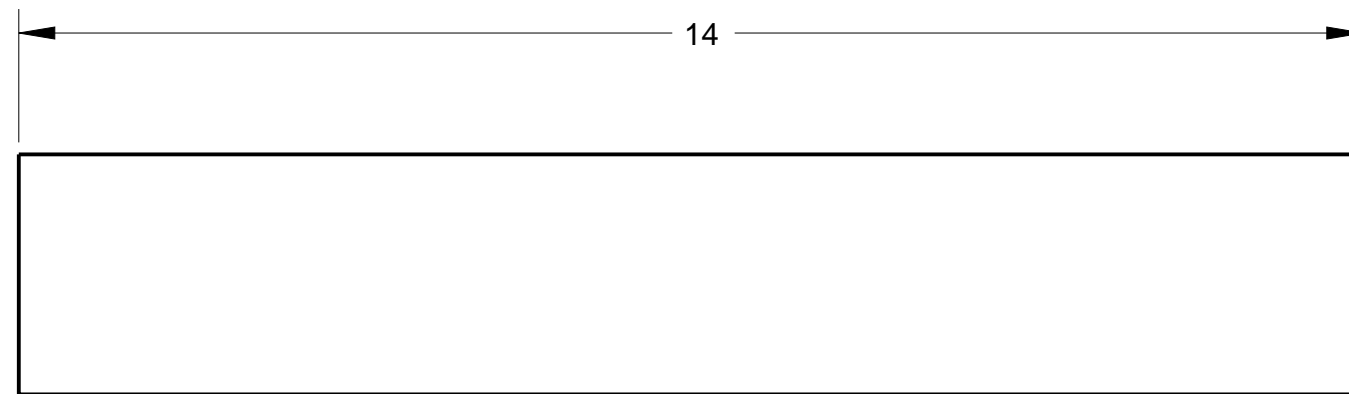


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 EST WT: 26.06 LBS

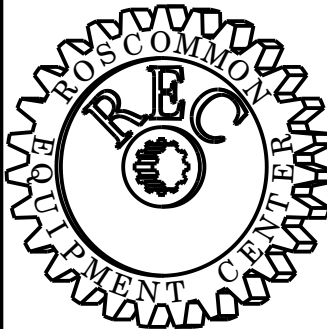
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PART NO: 00-2145
 MAT'L: BAR, FLAT 3/4 X 2-1/2 HR
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 FFES SPEC NO: AB-01210AA
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