

ROSCOMMON EQUIPMENT CENTER

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6x6 Wildland Fire Engines

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

REC Project No. 63

6x6 Wildland Fire Engines

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Disclaimer

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Introduction

Since its inception in 1972, REC has provided technical information about converting U.S. Military 6x6's into fire fighting vehicles. The Project 63 report series will replace our past reports about the 2.5-ton and 5-ton 6x6's. Our past 2.5-ton 6x6 information has been completely updated. A more refined tank design and complete details are available now. The previous 2.5-ton report, Project No. 22, is out-of-print and obsolete. Project No. 39, our documentation of the 5-ton 6x6, is still a viable design. We decided, however, to combine our updated 5-ton designs

into this project. We did this for two reasons. Many of the drawings are the same for either 2.5- or 5-ton models. We reduce redundancy. Second, users want information on both to make acquisition decisions. This booklet provides basic data about 6x6's. Details for converting your vehicle are found in the design packets listed on pages 6 and 7. All packets are available on-line or in print. Select the design booklets you need to accomplish your project. We provide additional and updated information about 6x6 conversion on our web site, www.RoscommonEquipmentCenter.com.

The U.S. Military 6x6 Truck Family

A brief history of the military 6x6's produced since WW II may help you identify the unit you need. We will refer to the general series number to describe these trucks. Within each series there are many variants; body styles that the military set up for a specific purpose. As an example, the M35 is a 2.5-ton cargo truck. The M35 series includes the M47 dump truck and the M48 truck tractor, each on the same basic chassis. Appendix A lists some of the common variants of the various 2.5-and 5-ton series.

The shorter wheel base 6x6's have the most application for wildfire conversion. They will be more nimble off-road yet have adequate space to fit the appropriate water load. For this reason, much of the data presented here is specific to the shorter wheelbase variants. The shortest wheelbase 2.5-ton is 154 inches. For the 5-ton, it is 167 inches. Our tank design packet also refers to the short wheelbase trucks. A description of each series is found below.

M135 GMC 2.5-Ton 6x6 Series

These were Korean War vintage (1951-1954) trucks that had a troublesome automatic transmission. No longer readily available, we advise against using these for fire engine use.

M35 (REO) 2.5-Ton 6x6 Series

These were produced from 1955 to 1971. Many have been converted for fire use. Some are still available through FEPP. Found in gasoline

(M35), multifuel (M35A1, M35A2) and diesel engine (M35A2C) models. Retrofit kits are available to add power steering, an item that you should consider. Approximate water payload capacity is 900 gallons. The actual capacity will be dependant on the weight of the tank, accessories, and stored items. Table 1 lists other characteristics of the series.

M35 2.5-Ton 6x6 Extended Service Program (ESP)

From 1994 to 1999, many M35's were remanufactured into the M35A3. They were disassembled and then reassembled using some used and some newer parts. The ESP vehicles have diesel engines, automatic transmission, air assisted steering, improved brake system, 3-point seat belts and other improvements. These are not likely to be available through FEPP for awhile.

M39 5-Ton 6x6 Series

The 5-ton began replacing the 2.5-tons during the 1970's. Greater power, payload, and width than the 2.5-tons are features found in gasoline (M40), diesel (M40A1), and multifuel (M40A2) versions. These can carry about 1500 gallons, depending on the weight of the tank, accessories, and stored items.

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M809 5-Ton 6x6 Series

The M809 series vehicles are similar to the M39 series but with some upgraded components including diesel power. They were produced during the 1970's and 1980's.

M939 5-Ton 6x6 Series

An "improved" version of the M809 that includes automatic transmission, better power steering,

air brakes, tilt hood, hydraulic winch, and engine diagnostic connection. First introduced in 1983, the M939 has 11xR20 tires with rear tandem duals. This is similar to the M39 and M809 vehicles. The M939A1 features 14xR20 super single radial tires. The M939A2 series has the large tires and adds central tire inflation. Table 2 lists other characteristics of each 5-ton series.

Table 1. M35 Series 2.5-Ton Characteristics

	M35	M35A1	M35A2
Height (inches)	99.0	101.5	101.5
Length (inches) ¹	93.0	93.0	93.0
Wheelbase ²	154.0	154.0	154.0
Turning Radius (feet)	36.0	36.0	36.0
Ground Clearance (inches)	12.8	10.9	10.9
Engine Type	Gasoline	Multi-fuel	Multi-fuel
Engine Cylinders	6	6	6
Engine Aspiration	Natural	Turbo	Natural/Turbo
Engine Horsepower	127	130	140/210
Transmission	Manual-4	Manual-5	Manual-5
Maximum Speed (mph)	60	56	56

This data is compiled from military manuals and other sources. Some model variants or model years may have variations.

¹Length of truck tractor variant.

²Some models have a longer wheelbase. This wheelbase accommodates REC's 900 gallon tank design.

Table 2. 5-Ton 6x6 Characteristics for Truck Tractor Variant

Series Name:	M39			M809	M939		
Truck Tractor Variant Name:	M52	M52A1	M52A2	M818	M931	M931A1	M931A2
Height (inches)	103.1	103.1	103.1	112.0	118.5	121.2	121.2
Width (inches)	97.0	97.0	97.0	98.0	97.5	97.4	97.4
Length (inches) ¹	257.5	257.5	257.5	266.0	264.5	264.5	264.5
Wheelbase ²	167.0	167.0	167.0	167.0	167.0	167.0	167.0
Turning Radius (feet)	39.3	39.3	39.3	39.0			
Front Winch Capacity (lbs.)	20,000	20,000	20,000	10,000	17,000	17,000	17,000
Ground Clearance Under Axle (inches)					11.5	13.9	13.9
Ground Clearance Under Chassis (inches)	10.5	10.5	10.5	10.5	10.5	13.1	13.1
Engine Type	Gasoline	Diesel	Multi-fuel	Diesel	Diesel	Diesel	Diesel
Engine Cylinders	6	6	6	6	6	6	6
Engine Aspiration	Natural	Turbo	Turbo	Natural	Natural	Natural	Turbo
Engine Horsepower	224	205	175-180	240	250	250	240
Estimated Fuel Consumption (mpg)	4	5	5		3-4	3-4	5.5-6
Transmission	Manual-5	Manual-5	Manual-5	Manual-5	Auto	Auto	Auto
Maximum Speed (mph)	59	52	52	54	65	65	65

This data is compiled from military manuals and other sources. Some model variants or model years may have variations.

¹Length of truck tractor variant.

²Some models have a longer wheelbase. This wheelbase accommodates REC's 1400 gallon tank design.

Federal Excess Property Program (FEPP)

FEPP is a program in which federal property that is no longer used by a federal agency can be acquired by another federal agency such as the USDA Forest Service. The Forest Service can then loan the property to qualified state or local units for rural fire defense. Congress has



A FEPP obtained 6x6 chassis prior to modification.

authorized the program and the acquisition is assisted by the state forester of the fire department's state. More information is available through the following web sites:

USDA Forest Service FEPP Program, www.fs.fed.us/fire/planning/fepp. This site quickly answers the basic questions about the FEPP Program. Recent FEPP legislation changes are discussed. There is a list of state foresters and state FEPP Program managers with their telephone numbers and addresses. The site is designed to help you get acquainted to the FEPP Program.

The State Foresters Directory is found at <http://205.185.177.133/Sflist.html>. This site has addresses and telephone numbers for each of the state foresters. Email links are often included. Web links to each state forestry page are included. Many of the state foresters web pages have information on the state's FEPP Program.

Comparing a FEPP 6x6 with Commercial Cab and Chassis

Deciding whether to use FEPP or buy a new cab and chassis is usually determined by finances. Others use them because they are excellent off-road. Below is a list of some other things to consider.

Disadvantages

Used vehicle; condition not known until obtained.
Older technology.
Limited operator comfort.
Service and parts options are limited.
24 volt electric; must add 12 volt system for civilian accessories like radios.
Cannot order the truck the way you want it.

Advantages

Acquisition cost is zero compared to approximately \$60,000 for new cab and chassis.
Built rugged, a plus when operating on poor roads or off-road.
Excellent off-road performance.
Power optimized at slower speeds.
Only large 6 wheel drive vehicles with short wheelbase.
Good payload characteristics.

Safe Modification of FEPP

There are many elements that go into the proper design of highway vehicles. Two important considerations are:

- Determining the maximum payload and not exceeding it.

- Installing proper lighting.

Both of these directly affect the safety of the operator and general public.

Gross Vehicle Weight Rating (GVWR): The manufacturer of each truck determines the GVWR for that vehicle. The GVWR is the maximum design load. The manufacturer also lists the Front Axle Weight Rating (FAWR) and Rear Axle Weight Rating (RAWR). These are the maximum design loads on each axle. For 6x6 military vehicles, these ratings are found on a dash plate. None of these ratings should be exceeded. It is prudent to load the truck at 85 to 90 percent of the weight ratings. This reduces operating costs, lengthens truck life, and provides a margin when operators decided they need to take more items.

REC provides an interactive web page¹ that allows you to enter weight and dimensional data to calculate the expected final weight of the vehicle. It is important to understand that it is possible to do this work before you buy or build a tank.

Before you put the vehicle in service, weigh it with the tank full, all the fire tools loaded, and

the occupants seated. If the weight or axle ratings are exceeded you need to make some changes.

Vehicle Lighting: Military 6x6's do not include all the lighting required for highway operation. Vehicles over 80 inches wide need clearance and identification lights. These are the 5 amber lights on the front of the vehicle and 5 red lights on the rear. Stop, tail, and turn lighting and front side and rear side marker lights will be needed as well.

REC provides more information on GVWR and vehicle lighting in its publication, "Guidelines for Designing Wildland Fire Engines." An online version is found at www.RoscommonEquipmentCenter.com.

¹ Currently the calculators are found by going to the "Wildland Engines" section of www.RoscommonEquipmentCenter.com.

Weight Capacity of a U.S. Military Vehicle

For the most part, each model in a military vehicle series is designed for a specific mission. The military has determined what it takes to accomplish that mission and with the vehicle manufacturer, assigns a weight rating to the vehicle that assures it will perform that task. This process is somewhat different than assigning a weight rating to a commercial vehicle. In that case, the manufacturer must sell the vehicle for a variety of potential users. The components are analyzed along with the projected uses to determine the maximum capacity of that truck. The truck user is then obligated to stay within that rating when operating on the highway.

In the military system two military vehicles with essentially the same components but with different missions will likely have different weight ratings. The military rating accounts for the needs of the mission. The tasks performed by a lighter rated truck may not require a large load capacity and only enough capacity to accomplish the mission is assigned to that model. In another case, a higher capacity may be assigned because the mission for that vehicle may not be as severe of duty.

The military often uses "payload" as the defining characteristic for load limit. The payload is the amount of weight that the user can add to the truck as delivered without exceeding its weight limit. For many years the military assigned dual weight ratings, one for on-highway, another for cross-country use. The 5-ton 6x6 had a nominal payload of 5 tons for cross country use, it's highway payload was twice that or 10 tons. In the later 70's, the military dropped the on-highway rating. Since that time a single rating for payload, GVWR and GAWR have been issued to a truck. For the 6x6 series, this change occurred while the M809 5-ton series was still being made. Early M809's will have both highway and cross-country ratings. Later models have only the much lower cross-country rating.

All the M939 series data plates will have only a single load rating equal to 5-ton payload. This is considerably less than the 10-ton highway payload of its predecessors. To add to the confusion, the M939 operator's manual says, ***"The 5-ton load limit rating of M939/A1/A2 series vehicles does not mean these vehicles***

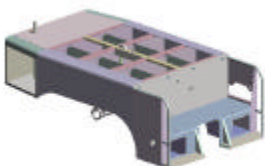
are limited to 5-ton payloads. A vehicle rating only indicates the maximum amount of cargo weight the vehicle axles and frame can withstand when operating under the worst cross-country conditions.” This leaves the post-military user with a dilemma. The GVWR is the accepted definition for the total load capacity of a vehicle. It may have legal stature and this may vary in different states. The military has latitude that the wildland fire organization may not. Our best advice is to operate within the load limits posted on the vehicle’s data plate. Appendix B shows weight information for a variety of 5-ton models.

The REC 1400 gallon water tank was designed prior to the development of the M939. Added to a bare M939 chassis, the tank with water and accessories will push the truck over the weight limits. Sizing the tank smaller for these vehicles is an option. Our on-line truck weight calculators can help you do this.

The last few paragraphs pertained to the 5-ton 6x6 series. Fortunately, the 2.5-ton vehicles were all produced with dual weight ratings. REC’s designs will comfortably fit within maximum load limits of the 2.5-ton.

REC Design Packets for 6x6’s

REC has design packets for both 2.5- and 5-ton 6x6 models. These packets are accessible on the internet or can be obtained from us by local, state, or federal fire agencies, as a printed booklet. A description of each of the packets follows. Current packet availability, updates, and other 6x6 information is available online at RoscommonEquipmentCenter.com.



Packet 63A-2, 900 Gallon Tank Drawings for 2.5-ton 6x6’s, Including Frame Extension. This is the first volume of drawings needed to build REC’s 900 gallon unitized steel water tank for the

2.5-ton. You will also need **Packet 63B, Common 6x6 Tank Parts for 6x6’s, Including Plumbing Examples.** Together, these two packets include all detailed parts, subwelds, subassemblies, completed weldments, and tank assembly drawings. The packet also includes details for extending the truck frame to accommodate the installation and mounting of the tank. This design is for the 154 inch wheelbase models.



Packet 63A-5, 1,400 Gallon Tank Drawings for 5-ton 6x6’s, Including Frame Extension. This is the first volume of drawings needed to build REC’s

1,400 gallon unitized steel water tank for the 5-ton. You will also need **Packet 63B, Common 6x6 Tank Parts for 6x6’s, Including Plumbing Examples.** Together, these two packets include all detailed parts, subwelds, subassemblies, completed weldments, and completed tank drawings. The packet also includes details for extending the truck frame to accommodate the installation and mounting of the tank. This design is for the 167 inch wheelbase models.

Packet 63B, Common 6x6 Tank Parts for 6x6’s, Including Plumbing Examples. This is the second volume of tank part details that are required for either the 900 or 1,400 gallon 6x6 tanks. These parts are the same for either of the tanks and hence if you are interested in both 2-1/2 and 5-ton designs, you need only one copy of this booklet.



Packet 63C, Filler Port and Strainer Drawings for REC Design 6x6 Tanks. This depicts a heavy duty filler port lid designed for either of the REC 6x6 water tanks. It also shows the design for a intake strainer to filter water entering the filler port. If you have another way that you prefer filling a water tank, these parts are optional.



Packet 63D, Pneumatic Controlled Emergency Light Mast. REC designs its water units for off-road and rugged rural use. Rotating emergency beacons are very vulnerable in these situations. REC has designed a telescoping light mast operated pneumatically with

air supplied by the vehicle's brake system. This allows the operator to raise the beacon on the highway so it is a visible warning device for the public. When operating in the woods or on poor rural roads or drives, the operator has the option to lower the light so that it rests on the top of the water tank, hidden by the profile of the cab. This is a relatively inexpensive method of protecting the light and is an optional accessory with the REC system.



Packet 63E, Fabricated Metal Cab Tops for REO Style 6x6's. Most of the 2.5-ton and 5-ton 6x6's available through the military are the so-called REO style. The cab is the same dimensionally and REC has designed a durable metal cab top to fit these cabs. Often the military units come with rag tops and the canvas is not suitable for fire emergency work. This booklet contains complete drawings to fabricate the metal cab.

NOTE: The lower cab of the M939 series is different from the other 5-ton 6x6's. This means that the design of packet 63E will not work as is. The 939 lower cab is similar though, and the 63E concept will work with a few dimensional changes.



Packet 63F-2, Brush Protection Drawings for 2.5-Ton 6x6's. Includes drawings to build heavy duty grill, limb risers, fuel tank guards, and heavy duty bumper. This

concept is designed to protect the vehicle's sheet metal and radiator during off-road use. It reduces the contact of brush on side view mirrors. The bumper design fits both winch or winchless models.



Packet 63F-5, Brush Protection Drawings for 5-Ton 6x6's. Includes drawings to build heavy duty grill, limb risers, fuel tank guards, and heavy duty bumper. This concept is

designed to protect the vehicle's sheet metal and radiator during off-road use. It reduces the contact of brush on side view mirrors. The bumper design fits both winch or winchless models. Not intended for M939 series 6x6's.

Packet 63G, Wiring Diagrams for REC Designed 6x6 Wildfire Engines. Each user will have his own accessories that need electrical power and REC cannot possibly design an electric system that fits all these needs. However, Publication 63G provides some basic information on the most important and required electrical accessories and how they might be tied in to the truck's main electrical source.

Other REC Publications Related to Subject

REC Newsnote #9, Adding a 12 Volt DC Charging Circuit. 1998. Available in pamphlet form or online at www.RoscommonEquipmentCenter.com.

REC Project No. 2, Wiring Conversion on Military Vehicles. Rev. 1981. Available in pamphlet form or online at www.RoscommonEquipmentCenter.com.

REC Newsnote #3, Guidelines for Designing Forest Fire Engines. 1998. Gives additional advise for designing and planning water tank vehicles. Available in pamphlet form or online at www.RoscommonEquipmentCenter.com.

REC Project No. 11, Rustproofing Treatments for Steel Water Tanks. 1983. Available in pamphlet form or online at www.RoscommonEquipmentCenter.com.

Other Sources

NFPA 1906. Standard for Wildland Fire Apparatus. 2001 Edition. NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

Water Handling Equipment Guide, National Wildfire Coordinating Group, March 1994. Has photographs and lists specifications for wildland fire units across the Nation. Order NFES #1275 from the National Interagency Fire Center, ATTN: Great Basin Cache Supply Office, 3833 South Development Avenue, Boise, Idaho 83705.

Wildland Fire Engine Component Guide, National Wildfire Coordinating Group, March 1994. Lists and discusses common components found on wildland fire vehicles. Has chapters which discuss tanks, pumps, and other components. Order NFES #1871 from the National Interagency Fire Center, ATTN: Supply, 3905 Vista Avenue, Boise, Idaho 83705.

Portrayal Press, Military Booksellers to the World, P.O. Box 1190N, Andover, NJ 07821, telephone (973) 579-5781, www.portrayal.com. Source for military truck manuals in printed form.

M939 Series 5-Ton Truck, CHQ Software. 2001. Order No. CDR-0939 from CHQSoftware.com, C52 Blaine Road, Lone Butte, B.C., V0K 1X0, Canada, Telephone 1-888-300-7718. M939 operator and maintenance manuals on compact disk.

M35 Series 2 1/2-Ton Truck Operator & Technical Manuals, CHQ Software. 2001. Order No. CDR-0037 from CHQSoftware.com, C52 Blaine Road, Lone Butte, B.C., V0K 1X0, Canada, Telephone 1-888-300-7718. M35 operator and maintenance manuals on compact disk.

M39 Series 5-Ton Truck Operator & Technical Manuals, CHQ Software. 2001. Order No. CDR-0039 from CHQSoftware.com, C52 Blaine Road, Lone Butte, B.C., V0K 1X0, Canada, Telephone 1-888-300-7718. M39 and M809 operator and maintenance manuals on compact disk.

Appendix A

6x6 Truck Families and their Variants

5-Ton Models

M39 Series

M51 Truck, Dump
M52 Truck, tractor
M54 Truck, Cargo
M55 Truck, Cargo, Long Wheel Base (LWB)
M61 Truck Chassis
M62 Truck, Wrecker, medium
M63 Truck Chassis
M64 Truck, Cargo Van
M139 Truck Chassis
M246 Truck, Tractor-wrecker
M291 Truck, Van, expandable
M328 Truck, Stake, Bridging
M543 Truck, Wrecker, medium
M748 Truck, Bolster

M809 Series

M813 Truck, Cargo
M814 Truck, Cargo, LWB
M815 Truck, Bolster
M816 Truck, Wrecker, medium
M817 Truck, Dump
M818 Truck, Tractor
M819 Truck Tractor, Wrecker
M820 Truck, Van Expandable
M821 Truck, Bridging

M939 Series

M923 Truck, Cargo dropside w/o winch
M924 Truck, Cargo w/o winch
M925 Truck, Cargo dropside w/winch
M927 Truck, Cargo, LWB w/o winch
M928 Truck, Cargo, LWB w/winch
M929 Truck, Dump w/o winch
M930 Truck, Dump w./winch
M931 Truck, Tractor w/o winch
M932 Truck, Tractor w/winch
M933 Truck, Tractor-wrecker w/winch
M934 Truck, Van, expandable w/o winch
M935 Truck, Van, expandable w/o winch
M936 Truck, Wrecker, medium w/winch

2.5-Ton Models

M35 Series

M35A2C Truck, Cargo, 6x6, 2.5-ton
M46A2C Truck, Cargo, 6x6, 21/2 Ton w/drop sides
M34 Truck, Cargo, 6x6, 21/2 Ton w/single rear
wheels on chassis
M44 Truck Chassis
M47 Truck, Dump Truck Chassis
M57 Truck Chassis
M36A2C Truck, Cargo, long bed
M48 Truck, tractor
M49 Truck, fuel tanker
M50 Truck, water tanker
M59 Truck, Dump
M60 Truck, wrecker, light
M108 Truck, wrecker, light
M109 Truck, shop, van
M132 Truck, medical van
M185 Truck, repair van
M275 Truck, Tractor
M292 Truck, shop, van w/extendible sides
M342 Truck, Dump
M756 Truck, maintenance, pipeline
M763 Truck, maintenance, telephone
M764 Truck, maintenance, earth-boring

Appendix B - Weight Information for Various Series and Types of 5-Ton 6x6's

Model Description	Wheel Base (Inches)	General Series										
		M39				M809				M939		
		Model No.	EVW (lbs.)	Payload (lbs.)		Model No.	EVW (lbs.)	Payload (lbs.) (e)		Model No.	EVW (lbs.)	Payload (lbs.)
On Highway	Cross-Country			On Highway(h)	Cross-Country							
Chassis, Truck	N/A					M812A1	20,810	26,000	16,000			
Dump Truck	167	M51	21,523	20,000	10,000	M817	23,755 (f)	20,000	10,000	M929	25,888	10,000
		M51A1, M51A2	21,986 (a)	20,000	10,000					M929/A1	25,065	10,000
										M929/A2	23,820	10,000
										M930	26,624	10,000
										M930/A1	26,165	10,000
M930/A2	24,920	10,000										
Tractor Truck	167	M52	18,313 (a)	25,000 (b)	15,000 (c)	M818	20,165 (f)	25,000 (b)	15,000	M931	22,089	15,000 (b)
		M52A1, M52A2	18,560 (a)	25,000 (b)	15,000					M931/A1	21,140	15,000 (b)
										M931/A2	19,895	15,000 (b)
										M932	22,841	15,000 (b)
										M932/A1	22,242	15,000 (b)
M932/A2	20,995	15,000 (b)										
Cargo Truck	179	M54	19,231 (a)	20,000	10,000	M813	21,020 (f)	20,000	10,000			
		M54A1, M54A2	19,480 (a)	20,000	10,000							
Dropside Cargo Truck	179	M54A1C, M54A1C	19,946 (a)	20,000	10,000	M813A1	21,120 (f)	20,000	10,000	M923	21,600	10,000
										M923/A1	22,175	10,000
										M923/A2	20,930	10,000
										M925	22,360	10,000
										M925/A1	22,275	10,000
M925.A2	22,030	10,000										
Cargo truck	215	M55	23,349 (a)	20,000	10,000	M814	23,540 (f)	20,000	10,000	M927	27,749	10,000
										M927/A1	25,035	10,000
										M927/A2	23,790	10,000
										M928	27,811	10,000
										M928/A1	26,135	10,000
M928/A2	24,890	10,000										
Tractor Wrecker	215	M246	32,830	16,000 (b,d)	12,000 (c,d)	M819	35,065	16,000 (b,g)	12,000 (b,g)			
		M246A1, M246A2	32,087	16,000 (b,d)	12,000 (c,d)							
Medium Wrecker Truck	179	M62	33,325	(d)	(d)	M816	35,050	12,000 (g)	7,000 (g)	M936	39,334	7,000 (g)
		M543	34,440	(d)	(d)					M936/A1	38,155	7,000 (g)
		M543A1, M543A2	34,690	(d)	(d)					M936/A2	36,910	7,000 (g)
Expansible Van Truck	215	M291A1	26,270	15,000	5,000	M820	28,195 (f)	15,000	5,000	M934	29,946	5,000
		M291A1D	27,136	15,000	5,000	M820A1	27,895 (f)	15,000	5,000	M934/A1	29,280	5,000
						M820A2	30,195 (f)	15,000	5,000	M932/A2	28,035	5,000
Bridge Transporting Truck	215	M328A1	26,586	20,000	10,000	M821	28,880 (f)	20,000	10,000			
Bolster Truck	215	M748A1	20,550 (a)	20,000	10,000	M815	21,040	20,000	10,000			

- a) Add 714 pounds for vehicles equipped with front winch.
- b) On fifth wheel.
- c) 12,000 and 15,000 pound loads on fifth wheel are for limited cross-country operation.
- d) See crane safe load chart.
- e) Subtract 400 pounds for two crew members.
- f) 665 pounds less without front winch.
- g) On crane with boom shipper braced and secured.
- h) These loadings are found in older manuals but not in the newer ones. Units may or may not have these ratings.

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6x6 Wildland Fire Engines**

March 2001



***Design Packet 63A-2
2.5 Ton 6x6 900 Gallon
Unitized Water Tank
Includes Truck Frame Extension***

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

2.5 Ton 6x6 900 Gallon Unitized Water Tank

Much of the design of REC's 900 gallon water tank for 2.5 ton 6x6's is contained in this booklet. Combine these drawings with REC Booklet No. 63B, Common Tank Parts. Other REC publications depict options that work with this tank.

- No. 63C, Filler Port and Strainer Drawings
- No. 63D, Pneumatic Controlled Emergency Light Mast

The tank is designed for the shortest wheelbase version of the US Military 2.5 Ton 6x6 (M35/M44 series). That wheelbase is 154 inches as measured from centerline of the front axle to centerline of the tandem. The M48 truck tractor, M59 dump, and some M35 cargo trucks will have this wheelbase. Cargo box, fifth wheel, or other component attached to the truck frame is removed down to the cab and chassis.

In the 1950's, the Army fleet included the M135 series GMC-built 2.5 Ton 6x6. These are largely out-of-service and had a troublesome automatic transmission. A previous but now out-of-print REC publication discussed these vehicles. We no longer include any information on the GMC 2.5 Ton.

This REC design is based on several concepts.

Commonly available material. The design uses carbon steel for three reasons. It is widely available, relatively low price, and can be fabricated easier than other suitable materials.

Strength and durability. The 7 gauge (approximately 3/16 inch) thick skin is self protecting when operating in off-road wooded areas.

Volume and weight. The water capacity and storage areas are sized to the load capacity (GVWR) of the vehicle. The water load is placed in the optimal position on the truck frame.

Auxiliary engine pump. Auxiliary engine powered centrifugal pumps are the simple way to produce the water stream. It also is the easiest manner to provide "pump and roll" capability of these style pumps. The tank structure helps protect the pump.

These tank design concepts have over 30 years of field use. When the inside of the tank is galvanized in the manner depicted in drawing 23-9806D, you can expect a minimum of 20 years tank life without leakage. Normally 25 years can be expected.

The design can be used in either of two ways:

- As a concept in which the user can get ideas for their own design, possibly adjusting the drawings to fit their needs.
- As a fabrication specification to be given to a manufacturer, technical school, or in their own shop. It contains all the details for bidding and constructing the tank.

Figures 1-3 show renderings of the design.

Tank Specifications

Tank Capacity: 900 gallons (nominal)
Tank Weight: 3,350 lbs. (without water or accessories)
Dimensions: Height above truck frame - 33 inches
Width - 90 inches
Length - 160 3/4 inches
Cab to centerline of tandem axle - 84 inches
Material: Primarily 7 gauge pickled & oil carbon steel.
Various structural steel shapes
Aluminum lids

Truck Chassis: Tank is designed for 154 inch wheelbase tandem axle truck.
Fabrication Method: MIG (wire feed) welding system
Internal Corrosion Protection: Cold Applied Zinc (Galvanizing)

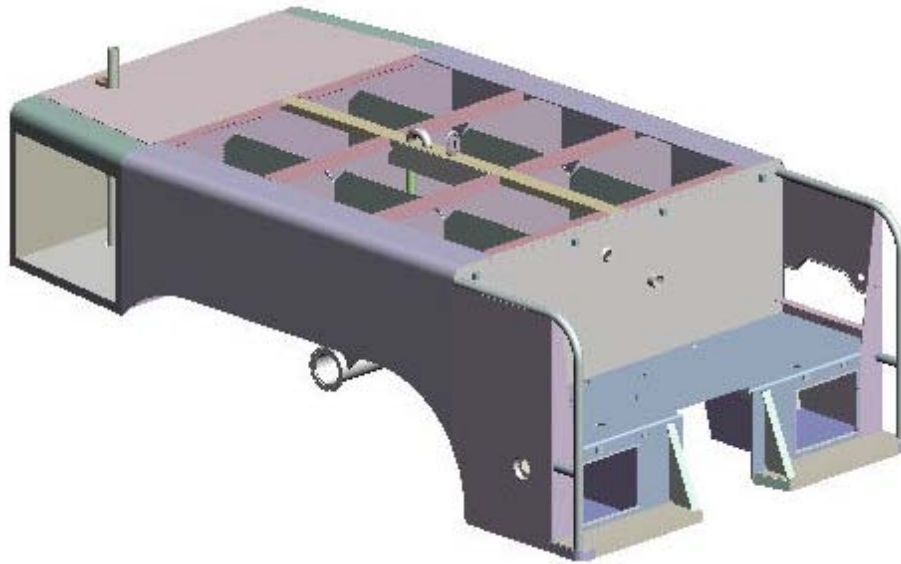


Figure 1 - REC 900 gallon unitized tank with lids and compartment doors removed. Rear quarter view.

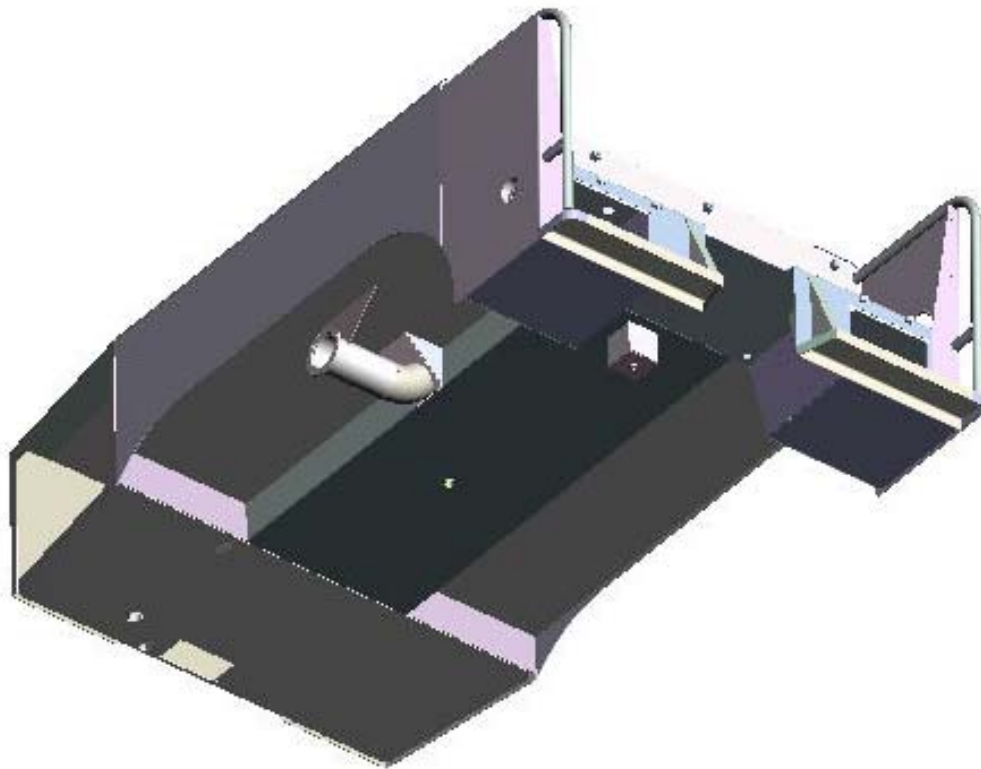


Figure 2 - REC 900 gallon tank underside view.

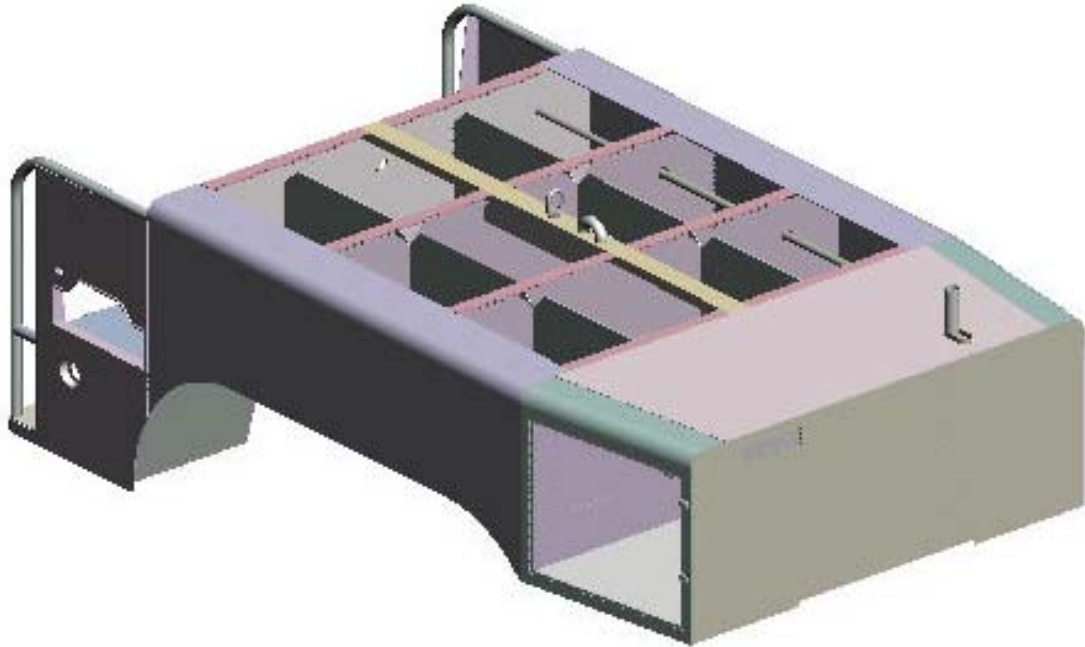


Figure 3 - REC 900 gallon tank front-quarter view without lids or compartment door.

Truck Frame Extension and Tank Mount

The drawings located at the end of this booklet show a method of extending the rear of the truck's frame to accommodate the tank. This helps support the rear apron and the accessories mounted on the tank. Hardwood strips 3/4 to 1 inch thick sit on the frame rail

between the tank and frame (Figure 5). This prevents metal-to-metal wear. Two 3/4 inch Grade 8 (high strength) bolts are used to fasten the tank to the frame. Figure 6 explains this further.

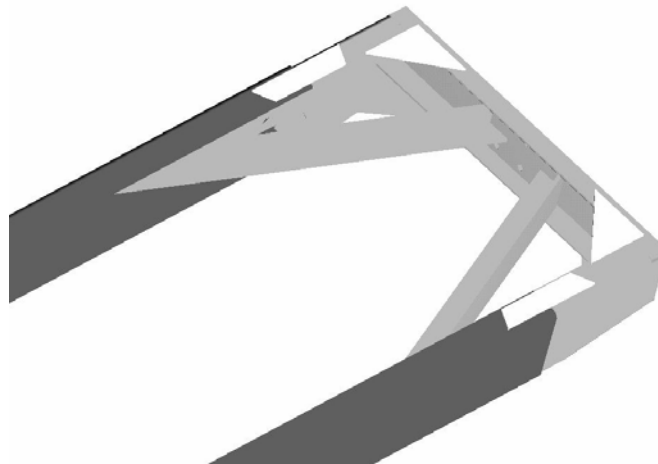


Figure 4 - A rendering of the frame extension. The dark colored channel is the original truck frame. The gray pieces are detailed in the drawing booklet.



Figure 5 - The tank rides on a 3/4 inch hardwood board to prevent metal-to-metal wear.

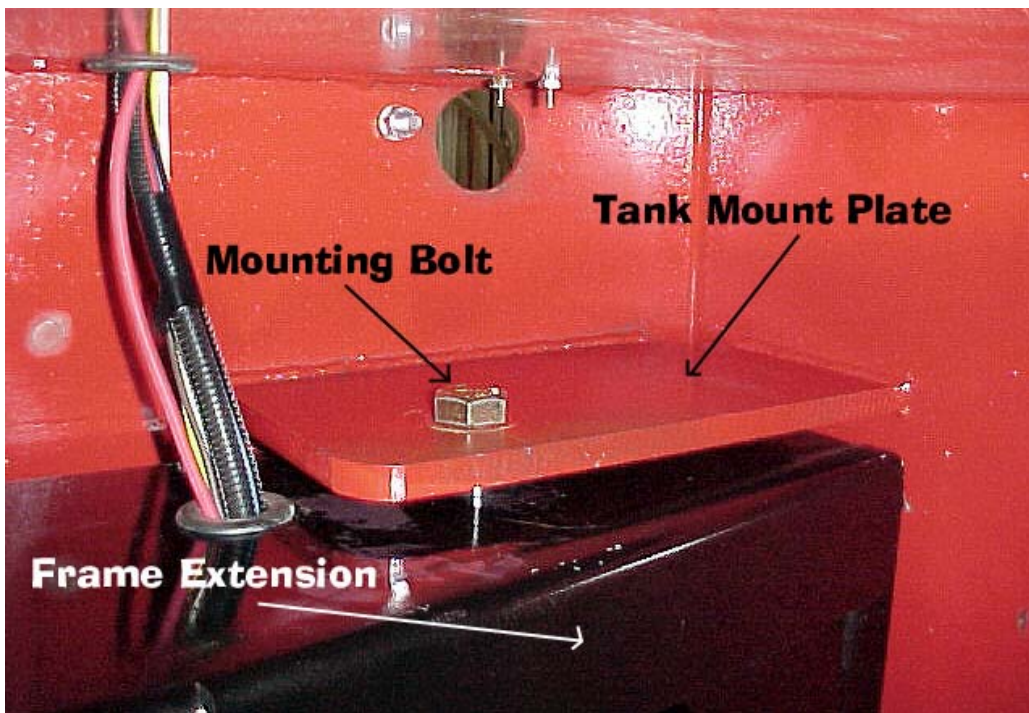


Figure 6 - View from the bottom of the tank mounting plate. A 3/4 inch grade 8 bolt fastens the tank to the frame. Shim between the mount plate and frame extension. Use a lock nut to assure the bolt stays in place.

Drawings and Drawing Notes:

The remaining information pertains directly to the drawings. There are some items on these drawings that may be for a user's preference (in this case ours) or be part of our fixturing system. We have included some notes to help you understand these. Often it is about whether a hole for an accessory is right for you.

The drawings are split into two sections. The first and largest section are tank drawings beginning with the overall assembly and primary weld-complete. The second section shows how to extend the vehicle frame in order to provide a mounting for the tank on the truck.

In general, the drawings are in ascending order by the drawing (part) number.

Some users of this booklet use the drawings as is. Some modify the drawings for their own situation. The following notes are intended to guide those who want to make changes by pointing out optional items. The notes are organized by the assembly or weldment drawing in which they appear.

23-9806D: The filler port and filler port screen (items 14 and 19) designs are part of Design Packet 63C. If a different style filler is used, item #5 must be modified.

23-9803C: Silicone sealant provides an inexpensive, long lasting, lid seal. Be sure to allow the bead to cure, otherwise the lid will be difficult to remove at a later date. Eighth inch (1/8") closed-cell foam strip is an alternative seal material.

23-0068D: Items 11 and 12 are part of the telescoping light mast system shown in REC Design Packet 63D. If you will not use this system, then parts 00-1081 and 00-1059 can be modified by eliminating the hole for the mast.

Wire guides (item 18) are welded into place to hold electric wires for lights and other appliances. We have found these to be a better long-term solution than adhesive back wire clips. The adhesive clips are a simple short-term solution but they do not endure off-road use.

Item 19 is specifically designed to mount push-pull light switch. This switch shuts off the light when the compartment door closes and comes on when the door opens. It also has a setting that allows the operator to shut the light off when the door is open. Cole Hersee part number 91800 is one such product.

00-1076D: The two Items 1, "Rear Tank Mount," are designed to fasten the tank onto the REC truck frame extension design (Drawing #21-0048). The extension provides support to the rear of the tank as well as the tank attachment point.

Items 27 and 34 are part of the tank venting system. If another vent and fill system is used, several parts including Item #17 (00-1062) the lift channel and Item #4 (00-1055) the water compartment bottom also change.

00-0954: This subweld includes items not necessary for this project. Drawings for Items #2 and #3 are not included in this packet. Item #1 (00-0953) should be used in place of 00-0954 on the subweld drawing 00-1076D.

00-1057: The holes of the rear bulkhead are sized for plumbing needed for typical auxiliary mounted pump systems. Check the flow requirements for the pump you will use to see if these port sizes correctly accommodate it. A different placement of the holes might be more efficient for some pumps. The upper left hole is for the forward water pipe. If it is moved, then the holes in the baffles that the pipe goes through must be moved as well.

00-1059: The rectangular cut-out and adjoining tapped holes are not needed for this project. The circular hole is for the telescoping light mast. If you do not want this option it is not needed.

00-1060, 00-0161, 00-1072, and 00-1073: The large radius bend prevents the extreme paint rub off problems of a sharp edge when operating off-road in wooded environments. Unfortunately, few small fabricating facilities will have dies of larger radius. If other radius is used for making these parts, the sheet size and bend location will need to be recalculated.

00-1062: The 2-inch holes are for the vent system. If a different system is used, they are not needed.

00-1069: The holes in the “Apron” were used to mount appliances and feed electrical wires that we use. You will need to decide where you

need holes. This might be easiest done after the tank is completed.

00-1074: The bolt circle is used to mount a compartment light. If you choose a different light, these will change.

00-1341 and 00-1036. The bolt holes are for mounting other items. If you have no use, eliminate them.

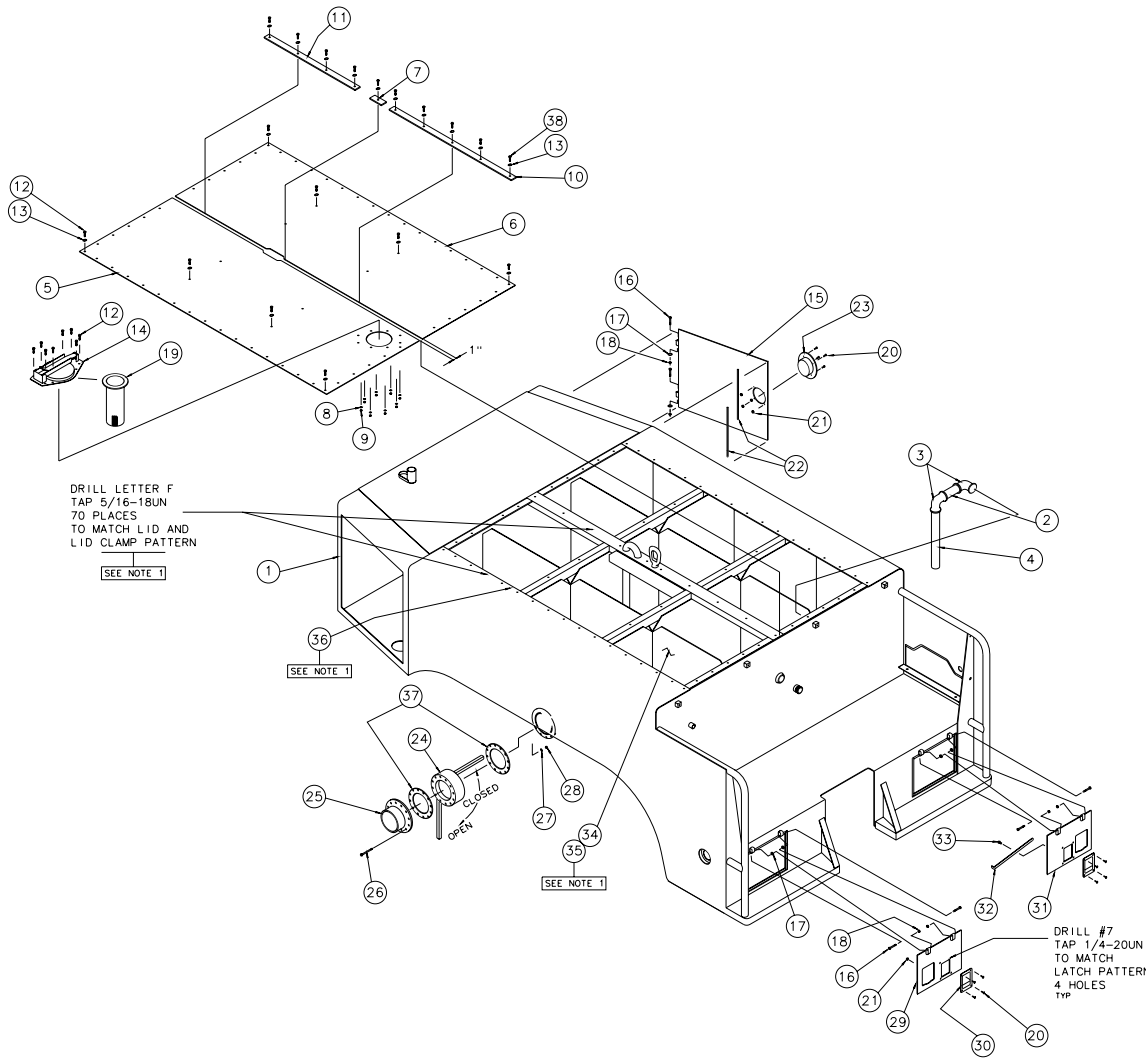
Drawing List

Drawing Number	Drawing Name
23-9806D	Tank A/C 2.5 Ton
23-9803C	Water Compartment Prep & Seal
23-0068D	Tank W/C
23-0069D	Lid, Rear LH FEPP 2.5 Ton
23-0070D	Lid, Rear RH FEPP 2.5 Ton
00-0262A	Bar, Flat, 1/4" x 2" H.R.
00-0303A	Angle 1 x 1 x 1/4
00-0936B	Baffle
00-0953B	Sheet, Divider
00-0954C	Compartment Wall S/W
00-0957B	Strip
00-0958B	Pipe, Black Sch 40 1.1/2"
00-1047B	Strip
00-1048B	Stiffener, Lift Channel
00-1049B	Bottom, Upper (LH)
00-1050B	Bar
00-1051B	Bottom, Upper (RH)
00-1052B	Baffle
00-1053B	Baffle
00-1054C	Baffle, Longitudinal (RH)
00-1055C	Bottom, Water Compartment
00-1056C	Bulkhead, Front
00-1057C	Bulkhead, Rear
00-1058C	Baffle, Longitudinal (LH)
00-1059C	Floor, Compartment
00-1060D	Tank Side (RH)
00-1061D	Tank Side (LH)
00-1062C	Channel, Tank Lifting S/W
00-1063B	Channel 4 x 7.25 #/Ft
00-1069D	Apron
00-1072C	Front Quarter LH
00-1073C	Panel, Front Quarter RH
00-1074C	Front Panel
00-1075C	Panel, Front S/W
00-1076D	Tank S/W
00-1077A	Gusset
00-1078B	Tank Guide S/W
00-1081B	Sheet, Compartment Top

00-1082B	Channel, Bumper LH
00-0183B	Channel, Bumper RH
00-1084B	Bumper S/W RH
00-1085B	Bumper, Rear S/W LH
23-0076B	Lid Clamp, Front
23-0077B	Lid Clamp, Rear

Truck Frame Extension

Drawing Number	Drawing Name
21-0048D	Frame Extension w/o Plow
00-0717B	Gusset
00-1036B	Mounting Plate
00-1064C	Frame Extension LH
00-1065C	Frame Extension RH
00-1338B	Bar, Diagonal
00-1339B	Bar, Stiffener
00-1341B	Rear Channel
00-1342B	Doubler Strip

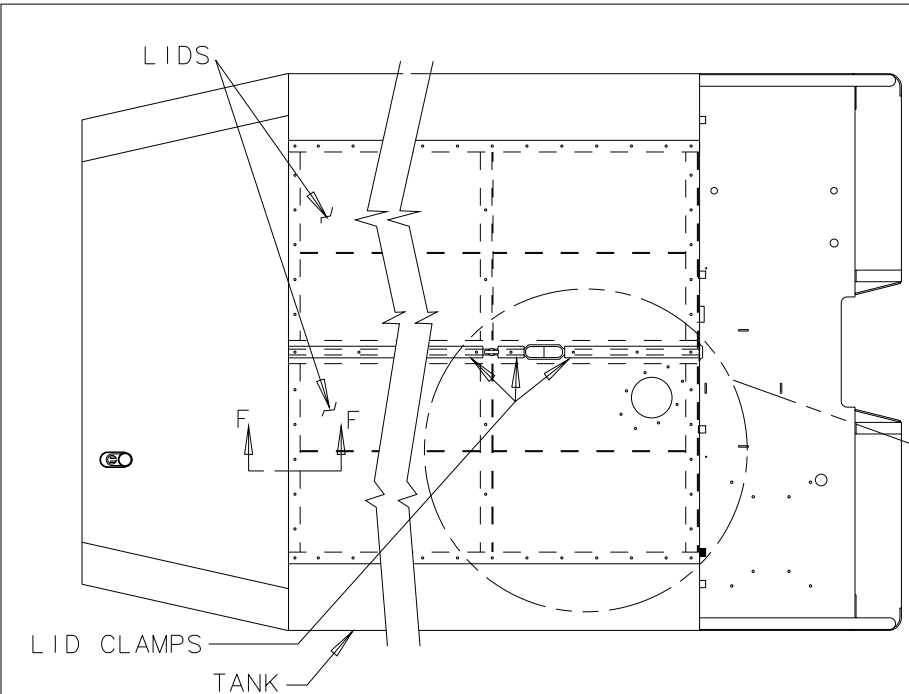


ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	23-0068	D	TANK W/C	1	3100
2	P32-CGN68		NIPPLE 2" X 6.1/2" LONG SCHEDULE 40 GALV	1	2.13
3	P32-AGL		ELBOW 90, 2" SCH 40 GALV	2	2.19
4	P32-CGN74L		PIPE 2" X 18.1/2" LONG SCHEDULE 40 GALV	1	5.78
5	23-0069	D	LID, REAR (LH)	1	40.0
6	23-0070	D	LID, REAR (RH)	1	40.6
7	23-0050	B	LID CLAMP, CENTER	1	0.62
8	WS-05BC		WASHER, LOCK 5/16 PLATED	8	
9	TS-05GP		NUT, HEX 5/16-18 PLATED GRADE 5	8	
10	23-0077	B	LID CLAMP, REAR	1	6.26
11	23-0076	B	LID CLAMP, FRONT	1	4.56
12	TS-05GG06		CAPSCREW HEX HEAD 5/16-18 3/4" LONG PLATED GRADE 5	68	
13	WS-05BB		WASHER, FLAT 5/16 S&S PLATED	70	
14	23-0031		FILLER PORT LID A/C	1	11.1
15	23-0024	C	DOOR W/C (RH)	1	44.4
16	TS-06HG20		CAPSCREW HEX HEAD 3/8-24 2.1/2" LONG PLATED GRADE 5	6	
17	23-0006	B	WASHER, FLAT 3/8" ID X 9/16" OD 0.03" THICK NYLON	6	
18	TS-06HPL		NUT LOCK HEX 3/8-24 PLATED GRADE 5	6	
19	23-0032	C	FILLER PORT SCREEN W/C	1	2.38
20	TS-04CB08		MACH SCREW PAN HEAD 1/4-20 1/2" LONG PLATED GRADE 5	12	
21	TS-04GP		NUT, HEX JAM 1/4-20 PLATED GRADE 5	12	
22	23-0034	A	ROD, LATCH	2	
23	23-0004	B	DOOR, LATCH (LH)	1	4.00
24	23-0041	B	VALVE, DUMP 6"	1	11.6
25	23-0060	B	FLANGE 6" DUMP TO 6" NPT FEMALE	1	8.60
26	TS-06GG28		CAPSCREW HEX HEAD 3/8-16 3.1/2" LONG PLATED GRADE 5	12	
27	WS-06BC		WASHER, LOCK 3/8 PLATED	12	
28	TS-06GP		NUT, HEX 3/8-16 PLATED GRADE 5	12	
29	23-0025	C	DOOR W/C (LH)	1	10.0
30	23-0030	B	DOOR LATCH PADDLE HANDLE	2	1.00
31	23-0026	C	DOOR W/C (RH)	1	10.0
32	23-0035	B	DOOR STOP	2	0.64
33	TS-04HG04		CAPSCREW HEX HEAD 1/4-20 1/4" LONG PLATED GRADE 5	2	
34	18-8002	B	ETCHING AND CLEANING AGENT		
35	18-8003	B	GALVANIZING, COLD		
36	33-0041	B	SEALANT, MULTI-PURPOSE SILICONE		
37	23-0047	B	GASKET	2	0.08
38	TS-05GG08		CAPSCREW HEX HEAD 5/16-18 1" LONG PLATED GRADE 5	10	
39					

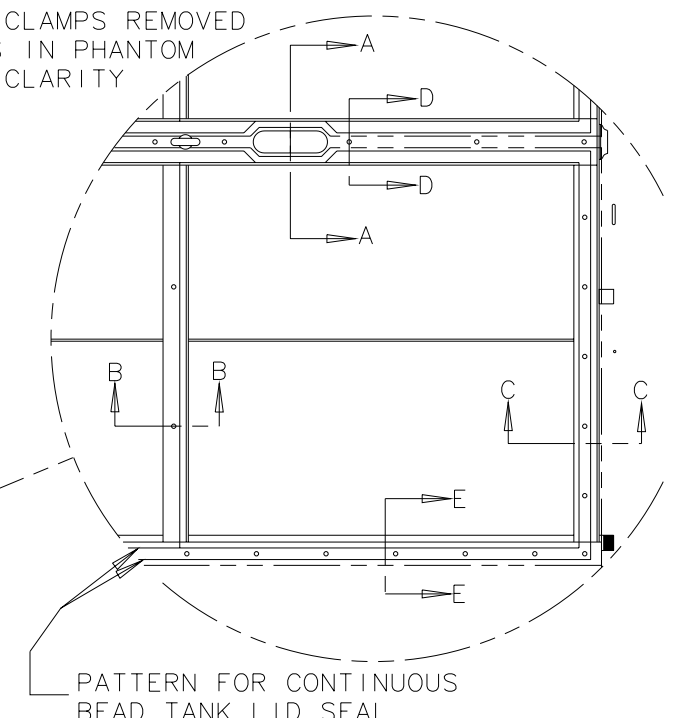
NOTES:
1. SEE DRAWING 23-9803C FOR LID MOUNTING, ETCHING, GALVANIZING AND LID SEALING PROCEDURES.

PART NUMBER: 23-9801
EST WT: 3350 LBS

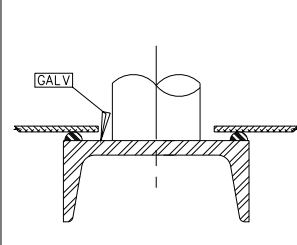
STD. TOLERANCES						DRAWN: LLP
FRACTIONAL:						CHECKED: KJB
DECIMAL:						APPROVED:
DATE:						
SCALE:						
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						MICHIGAN DNR FOREST MANAGEMENT DIVISION
TITLE:	TANK A/C	SCALE:	2.5:10N	DATE:	1/13/97	PROJECT NO.: 96-4 DWG. NO. 23-9806D



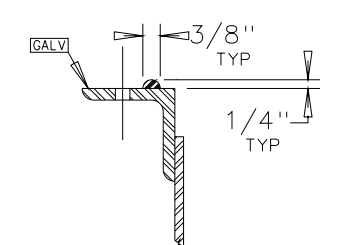
LID CLAMPS REMOVED
LIDS IN PHANTOM
FOR CLARITY



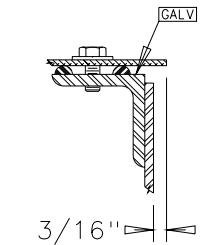
PATTERN FOR CONTINUOUS
BEAD TANK LID SEAL



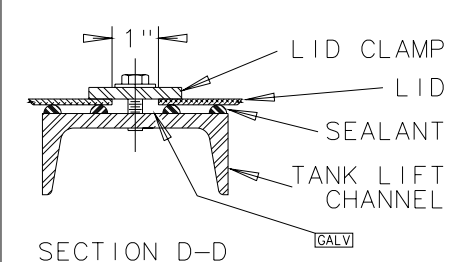
SECTION A-A



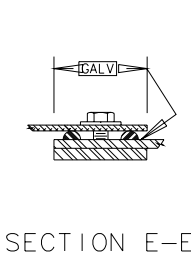
SECTION B-B
SHOWN WITHOUT LID
OR FASTENER



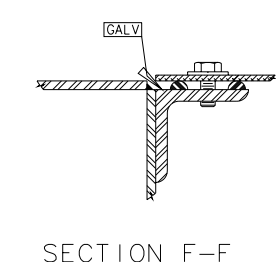
SECTION C-C



SECTION D-D



SECTION E-E

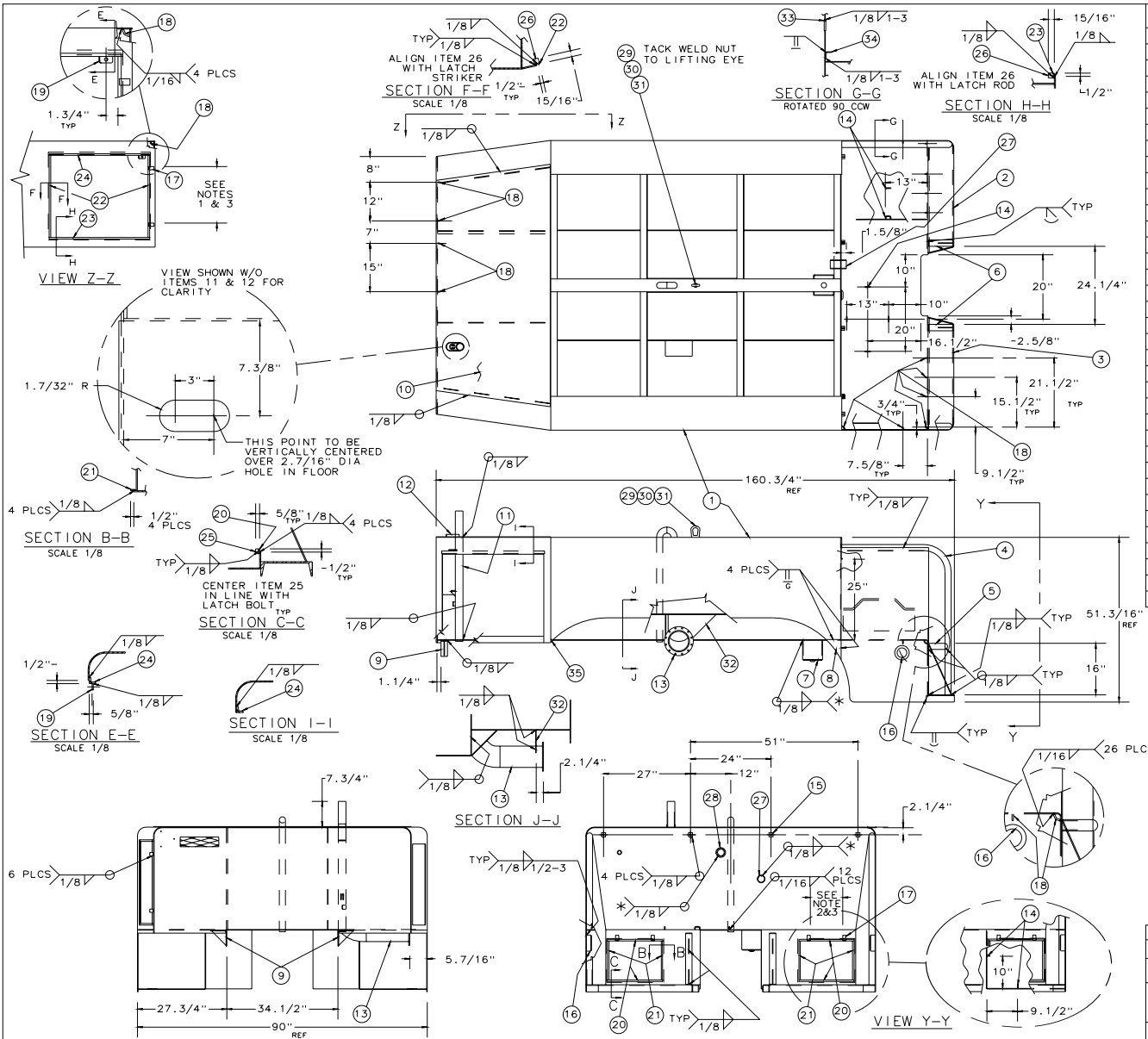


SECTION F-F

LID MOUNTING AND CORROSION PROTECTION PROCEDURES

1. DRILL & TAP HOLES FOR LID MOUNTING
2. ETCH & GALVANIZE ALL INTERNAL WATER COMP. SURFACES. ETCH & GALVANIZE LID MOUNTING SURFACES AS NOTED BY GALV. 3 MILS MIN. REF DRAWINGS 18-8002B & 18-8003B
3. APPLY SEALANT AS SHOWN. REF DRAWING 33-0041B CURE SEALANT 18 HRS MIN BEFORE ATTACHING LIDS

STD. TOLERANCES		DRAWN: BH		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. ± 1/32" 6 IN AND UP ± 1/16"		CHECKED:		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		FOREST MANAGEMENT DIVISION
NO. BY DATE		REVISION		
FOREST FIRE EXPERIMENT STATION				PROJECT NO.: 90-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 23-9803C
TITLE: WATER COMPARTMENT PREP & SEAL		SCALE: NONE	DATE: 12/6/94	

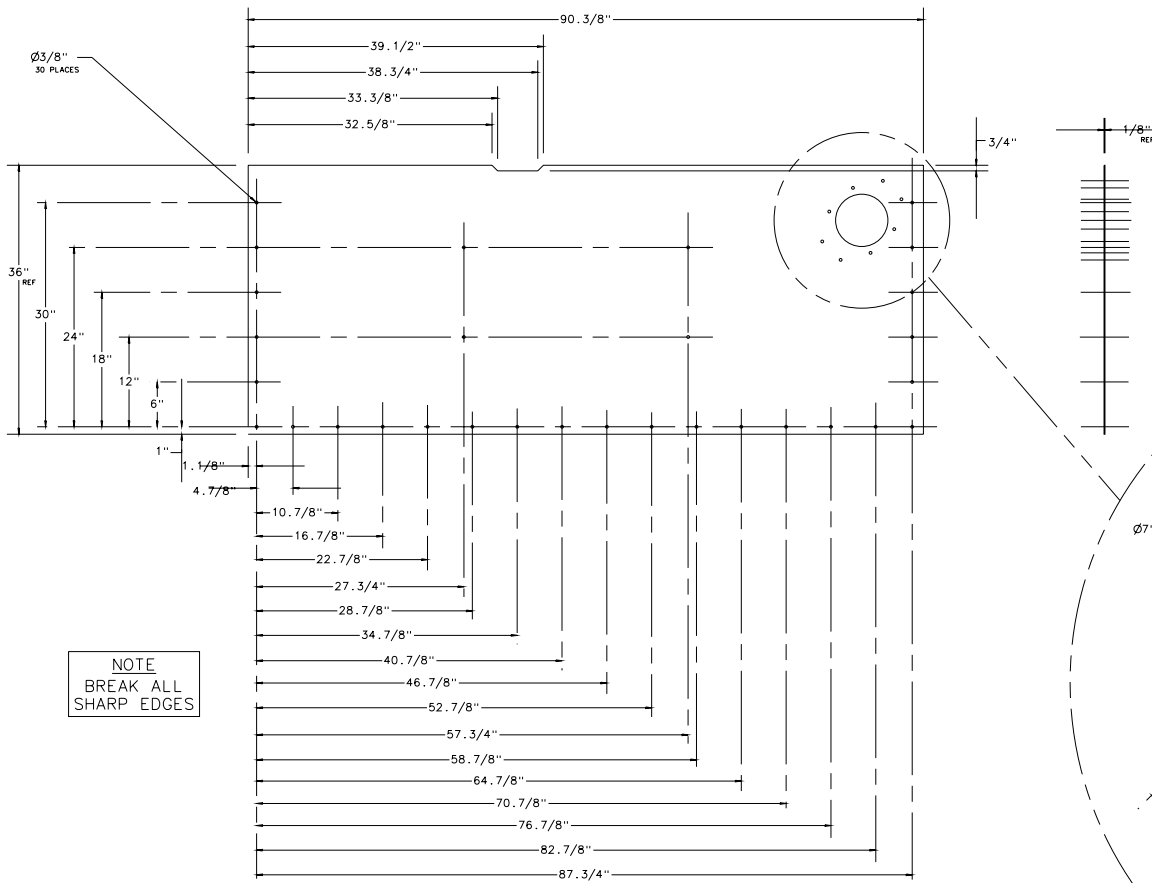


ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1076	D	TANK S/W	1	2620
2	00-1084	B	BUMPER S/W RH	1	34.5
3	00-1085	B	BUMPER S/W LH	1	34.5
4	00-0272	B	PIPE	2	17.7
5	00-0113	B	PIPE	2	1.23
6	00-0116	B	GUSSET S/W	2	5.60
7	00-0117	B	SUMP S/W	1	9.70
8	00-0832	B	FENDER FILL	2	0.50
9	00-1078	B	TANK GUIDE S/W	2	2.20
10	00-1081	B	COMPARTMENT TOP	1	126
11	00-0830	B	MAST TUBE S/W	1	13.2
12	00-0286	B	CYLINDER SHIELD	1	0.33
13	00-0824	C	DUMP S/W	1	43.0
14	00-0123	A	TIE DOWN	6	0.04
15	00-0285	A	TAP BLOCK	4	0.52
16	00-0163	B	MARKER LIGHT BRKT S/W	2	1.85
17	00-0304	A	HINGE BLOCK	6	0.30
18	00-0164	A	WIRE GUIDE	13	0.02
19	00-0333	A	MOUNT, SWITCH	1	0.06
20	00-0174	A	BAR	4	0.70
21	00-0329	A	BAR	4	0.48
22	00-0330	A	BAR	2	1.01
23	00-0331	A	BAR	1	1.29
24	00-0332	A	ANGLE	2	4.04
25	00-0311	A	BAR, SQUARE	2	0.06
26	00-0312	A	BAR, SQUARE	2	0.12
27	P32-CAN40		NIPPLE 2" SCH 40 BLK STL	1	1.52
28	P24-MAF		FLANGE, WELD 1.1/2"	1	0.53
29	23-0043	B	LIFTING EYE 7/8"	1	2.09
30	TS-14EP		NUT, HEX 7/8 UNC NON PLTD	1	0.35
31	WS14-BB		WASHER, FLAT 7/8 SAE PLATED	1	0.04
32	00-0825	B	DUMP GUSSET	1	3.61
33	00-0826	B	HOSE RUB BAR	1	1.36
34	00-0827	B	ANGLE, HOSE ROLLER MTG	1	4.80
35	00-0690	A	GUSSET	2	0.03
36					

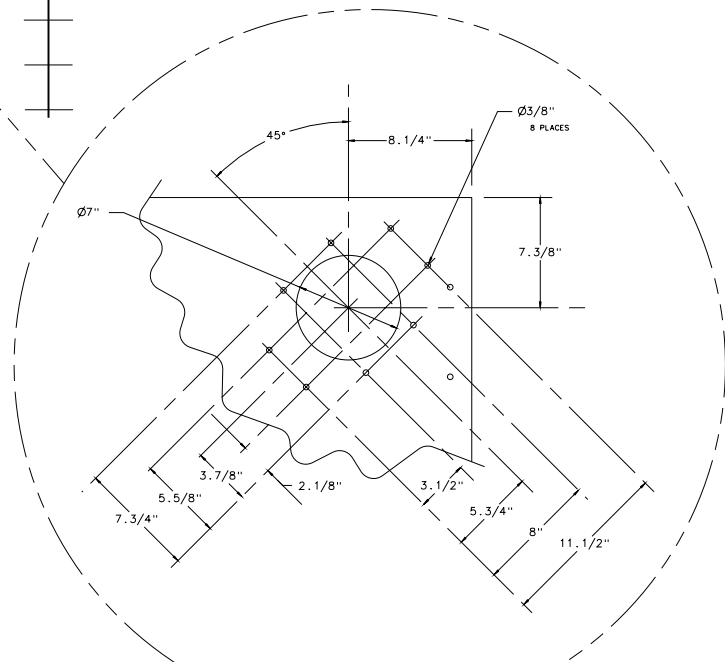
- NOTES:
1. USE DOOR W/C P/N 23-0024 TO POSITION THE HINGE BLOCKS ON TANK. HINGE BLOCK SEQUENCE SHOULD BE DOOR HINGE BLOCKS ON TOP OF TANK HINGE BLOCKS.
 2. USE DOOR W/C P/N 23-0025 OR P/N 23-0026 TO POSITION HINGE BLOCKS ON TANK. HINGE BLOCK SEQUENCE SHOULD BE TANK HINGE BLOCKS OUTSIDE OF DOOR HINGE BLOCKS.
 3. 1/32" SPACE BETWEEN HINGE BLOCKS IS REQ'D FOR INSTALLATION OF NYLON WASHER P/N 23-0006
 4. * DENOTES WATER TIGHT WELD

PART NUMBER: 23-0068
EST WT: 3100 LBS

STD. TOLERANCES		DRAWN: LJP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FUNCTIONAL		CHECKED: KDB	
DECIMAL: ANGULAR:		APPROVED:	
FOREST FIRE EXPERIMENT STATION			PROJECT NO: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			DWG NO: 23-0068D
TITLE: TANK W/C			SCALE: 1/16 DATE: 11/5/96

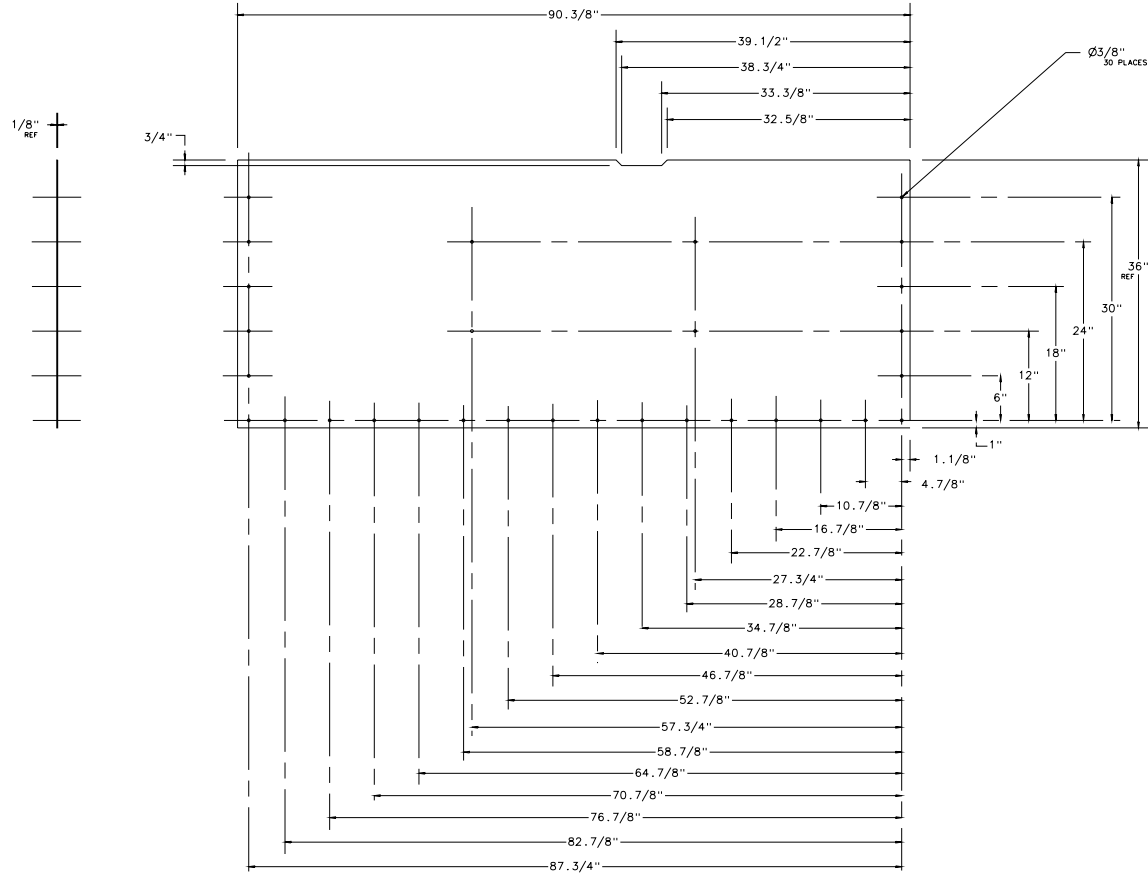


NOTE
BREAK ALL
SHARP EDGES



PART NUMBER: 23-0069
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-1253BAT
 EST WT: 40.0 LBS

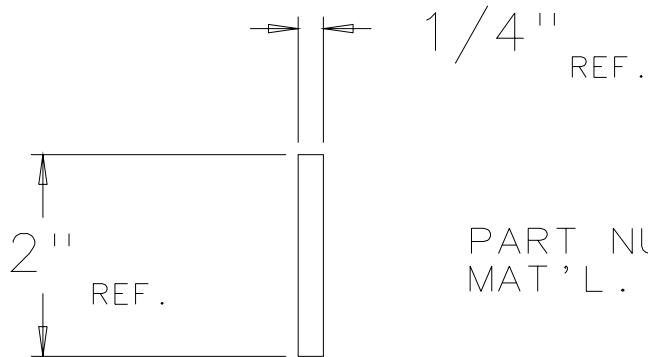
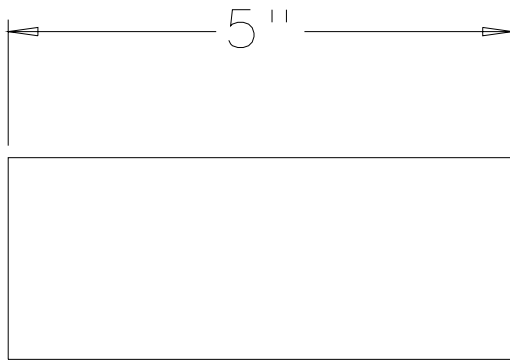
STD. TOLERANCES		DRAWN: LLP	
FUNCTIONAL: ± 0.004" - 0.008"		CHECKED: KDB	MICHIGAN DNR
DECIMAL: ± 0.004" - 0.008"	ANGULAR: ± 0.004" - 0.008"	APPROVED:	
NO. BY DATE REVISION		PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			
TITLE: LID, REAR LH		FEPP SCALE: 1" = 8"	DATE: 11/8/96
		DRAWING NO: 23-0069D	



NOTE
BREAK ALL
SHARP EDGES

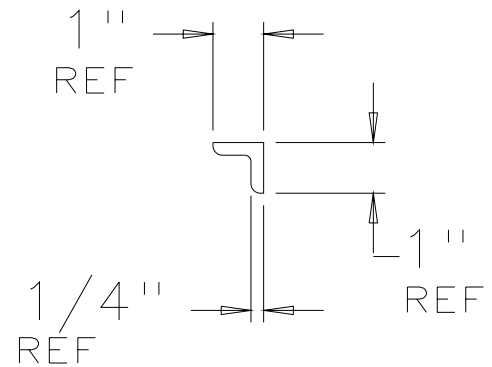
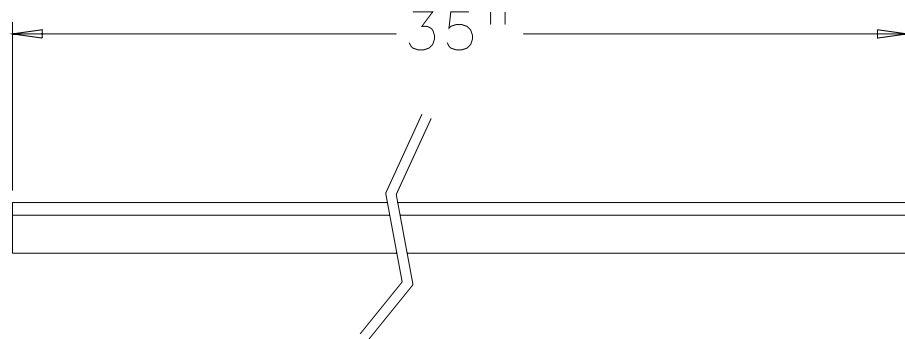
PART NUMBER: 23-0070
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-12538AT
 EST WT: 40.6 LBS

STD. TOLERANCES		DRAWN: LLP		MICHIGAN DNR	
FRACTIONAL: ± .005" - .010"		CHECKED: KDJ			FOREST MANAGEMENT DIVISION
DECIMAL: ± .005" - .010"		APPROVED:			
ANGULAR: ± .1°		NO. BY DATE REVISION			
FACE: ± .005" - .010"		TITLE: FOREST FIRE EXPERIMENT STATION		PROJECT NO.: 96-4	
		P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		DWG. NO.: 23-0070D	
		SCALE: 1" = 8"			
		DATE: 11/8/96			



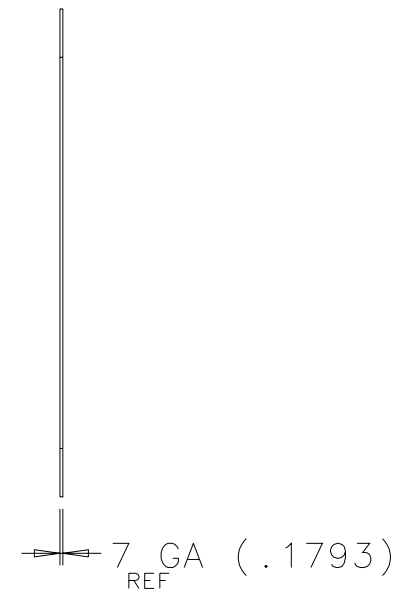
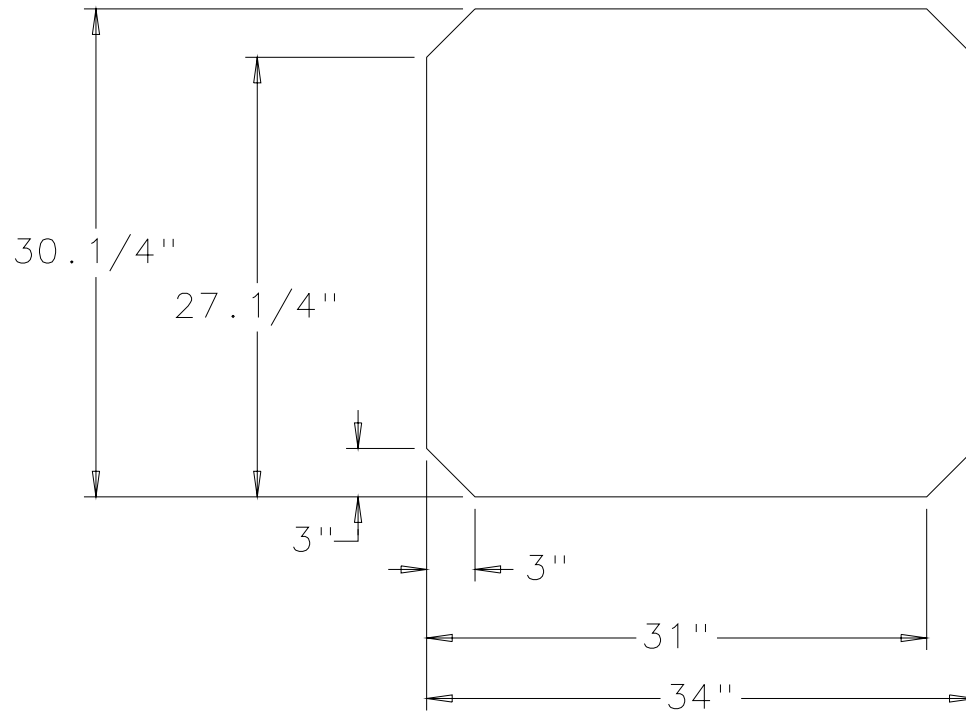
PART NUMBER: 00-0262
 MAT'L.: BAR, FLAT,
 1/4" X 2" H. R.
 UNS G10200
 F.F.E.S. SPEC. NO.:
 AB-00408AA
 EST. WT.: .71 LBS.

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: K. D. BRADLEY	
						APPROVED: B. HUTCHINS	
						PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-0262A
TITLE: BAR, FLAT, 1/4" X 2" H. R.			SCALE: 1 = 2		DATE: DEC. 16, 1988		



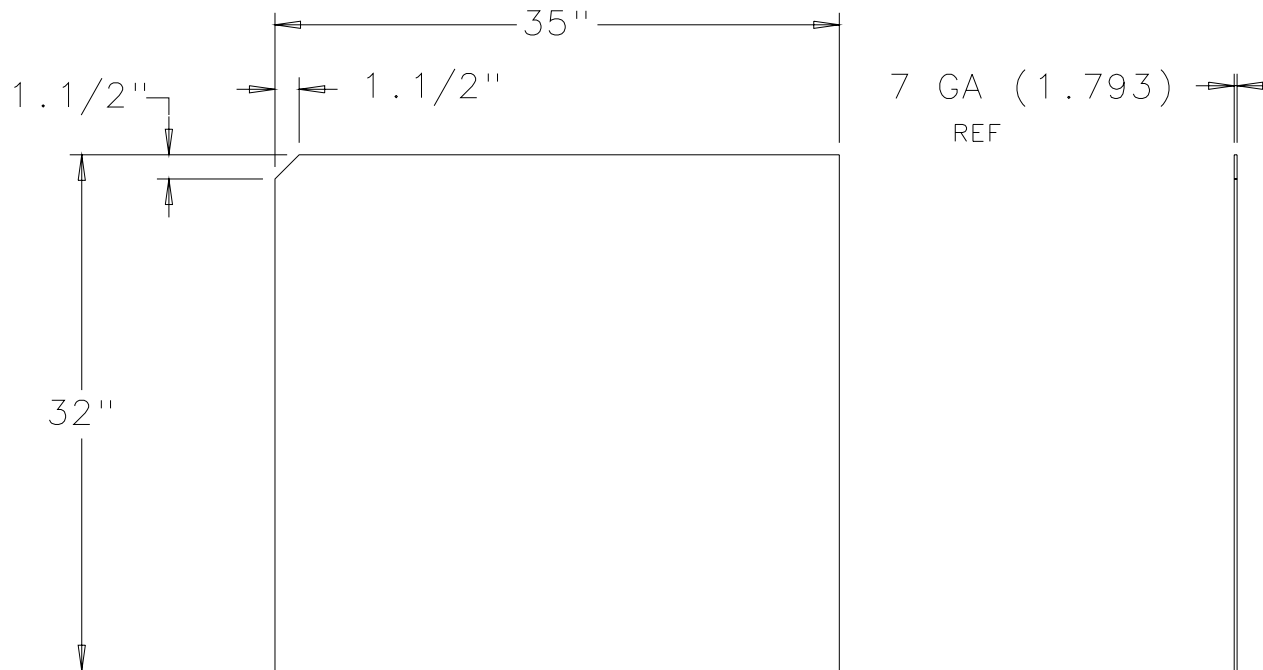
PART NO: 00-0303
 MATERIAL: ANGLE 1 X 1 X 1/4
 UNS K02600
 FFES SPEC NO: AK-40404AG
 EST WT: 4.35 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: ANGLE 1 X 1 X 1/4					SCALE: 1/4	DATE: 1/17/89	DWG. NO. 00-0303A



PART NO: 00-0936
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT : 51.3 LBS

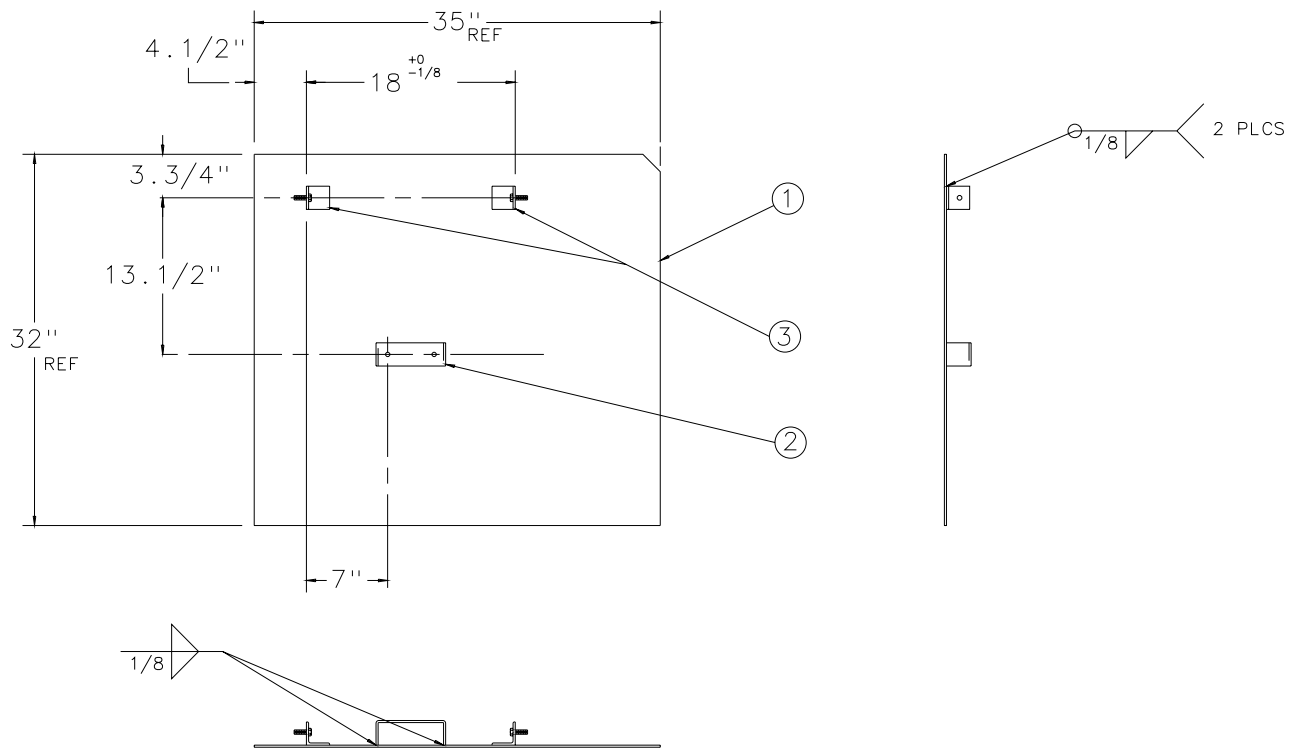
STD. TOLERANCES							DRAWN: BH	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16							CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 90-4
TITLE: BAFFLE						SCALE: 1/8	DATE: 11/4/94	DWG. NO. 00-0936B



PART NO: 00-0953
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 56.8

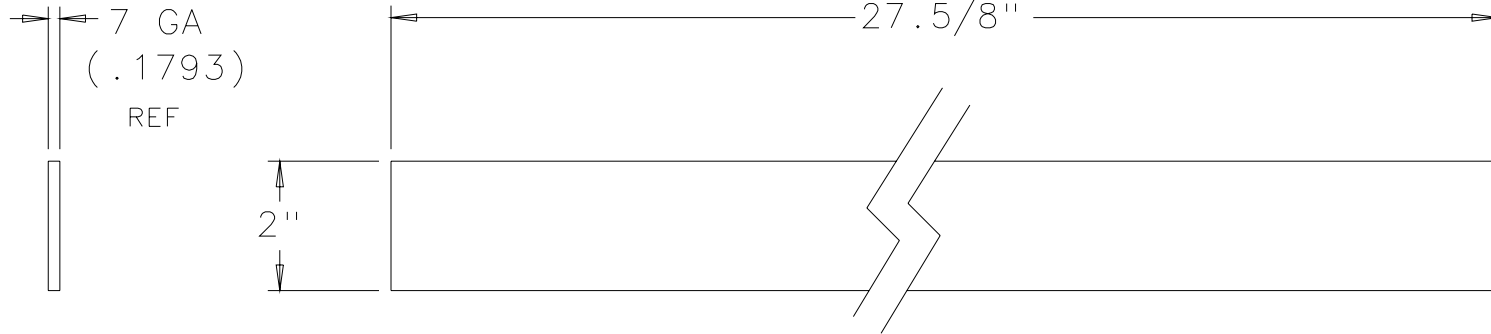
STD. TOLERANCES								DRAWN: BH	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16								CHECKED: KDB	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005								APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 90-4
TITLE: SHEET, DIVIDER							SCALE: 1/8	DATE: 11/8/94	DWG. NO. 00-0953B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0953	B	SHEET, DIVIDER	1	56.8
2	00-0952	B	BRACKET	1	0.96
3	00-0807	B	MOUNTING ANGLE W/STUD	2	0.42



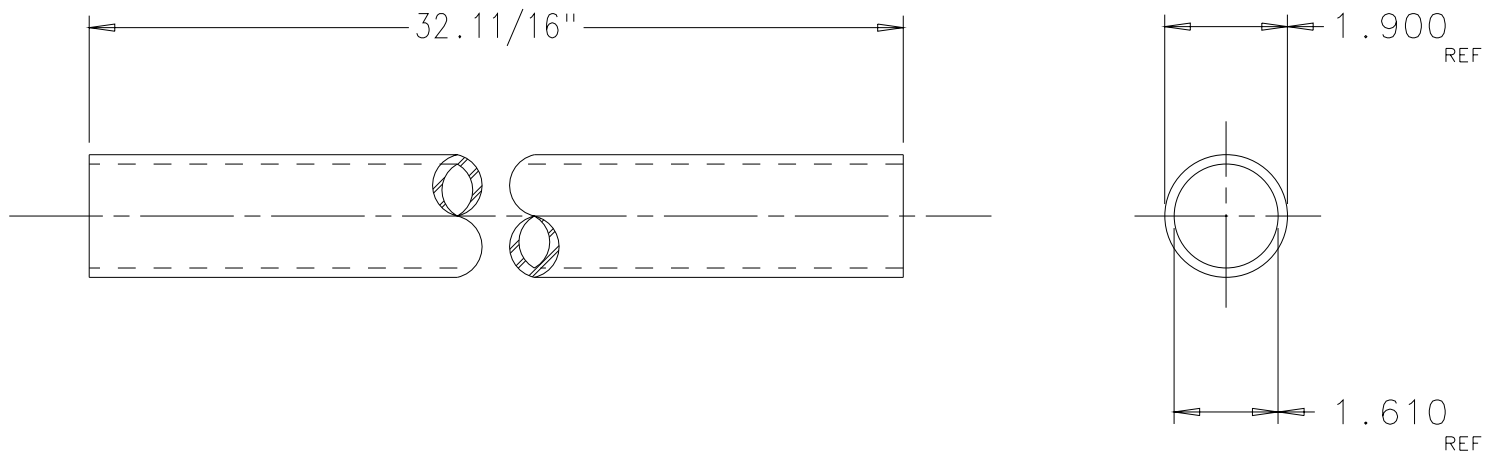
PART NUMBER: 00-0954
EST WT: 59.5 LBS

STD. TOLERANCES: FRACTIONAL: 8 TO 6 IN. -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005		DRAWN: BH CHECKED: KDB APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 90-4		
TITLE: COMPARTMENT WALL S/W		SCALE: 1/8	DATE: 11/8/94	DWG. NO. 00-0954C



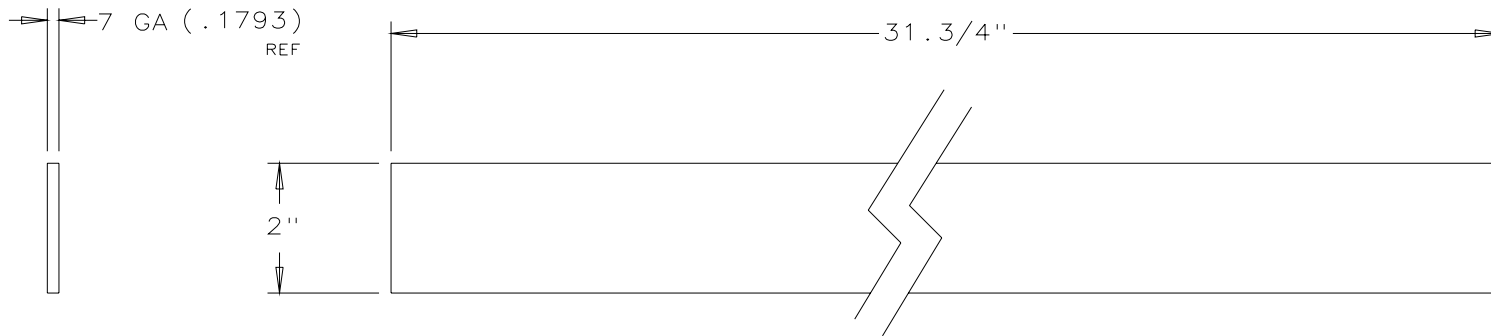
PART NO: 00-0957
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 2.80 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG							DRAWN: BH	MICHIGAN DNR FOREST MANAGEMENT DIVISION
							CHECKED: KDB	
							APPROVED:	
NO. BY DATE REVISION						FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		
TITLE: STRIP						SCALE: 1/2	DATE: 11/10/94	PROJECT NO.: 90-4 DWG. NO.: 00-0957B



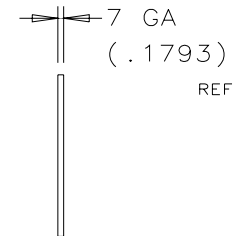
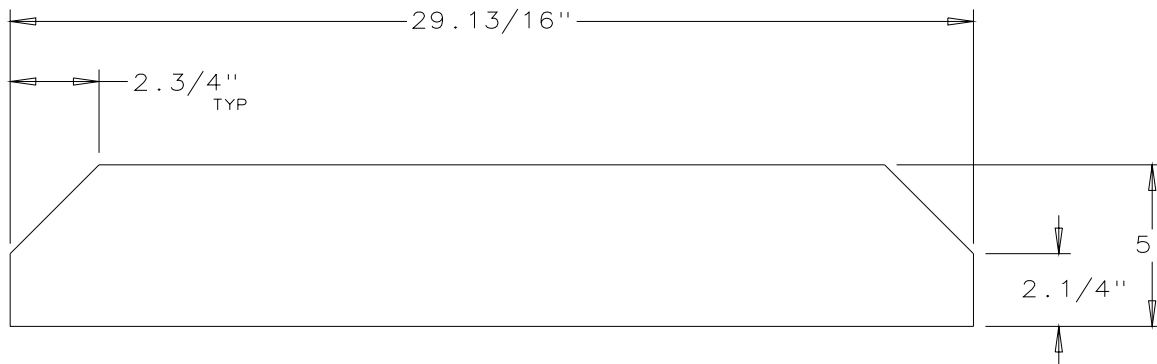
PART NUMBER: 00-0958
 MAT'L: PIPE BLACK SCH 40 1.1/2"
 UNS K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 7.41 LBS

STD. TOLERANCES							DRAWN: HUTCHINS	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 5 IN + - 1/32 6 IN AND UP + - 1/16							CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG					APPROVED:	
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 90-4
TITLE: PIPE, BLACK SCH 40 1.1/2"						SCALE: 1" = 2'	DATE: 11/10/94	DWG. NO. 00-0958B



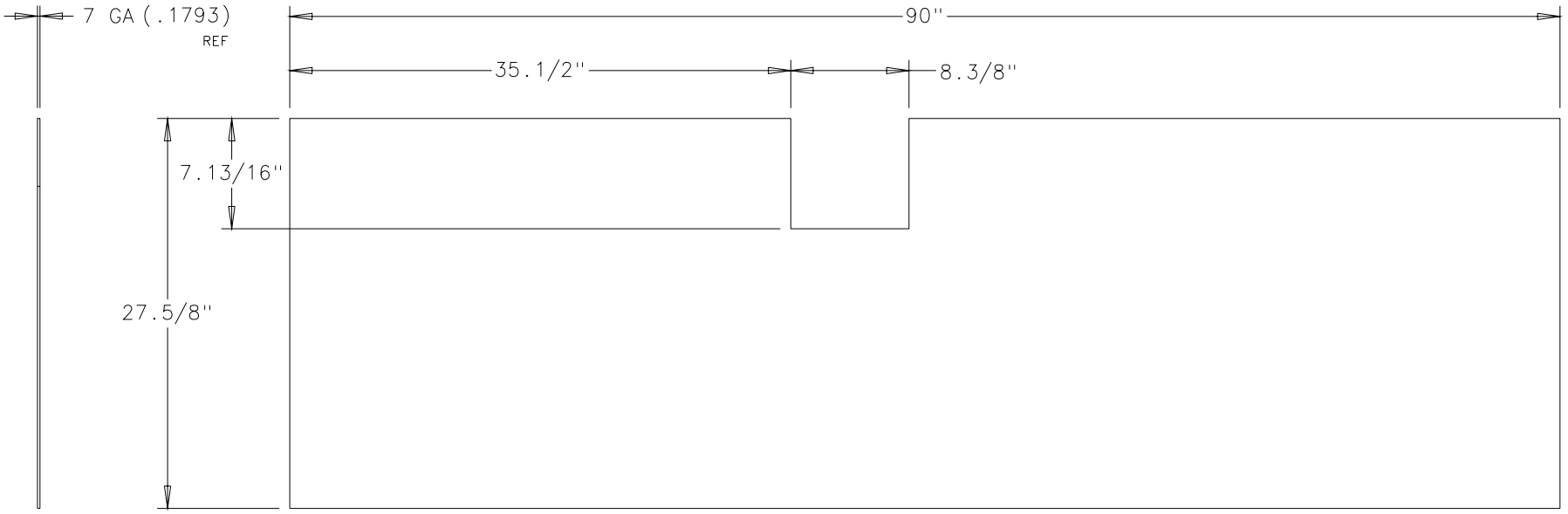
PART NO: 00-1047
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.22 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: -- 1 DEG				APPROVED:		
		NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: STRIP					SCALE: 1/2	DATE: 10/8/96	DWG. NO.: 00-1047B	



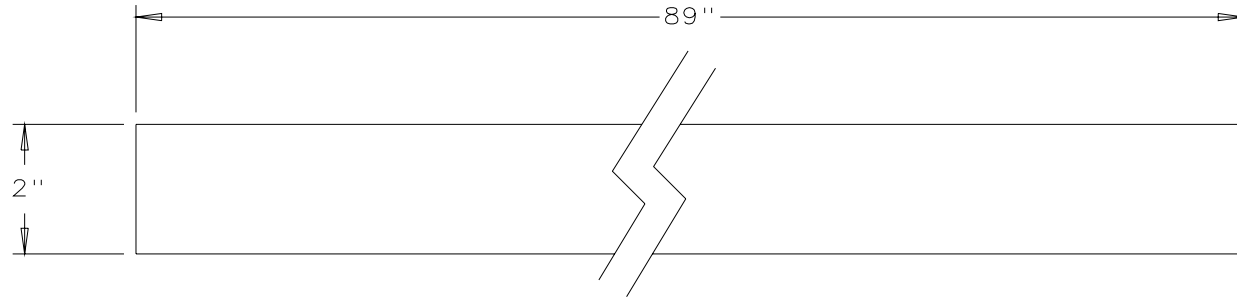
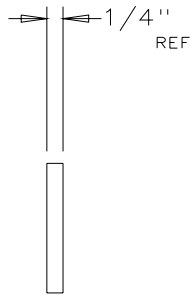
PART NO: 00-1048
 MATERIAL: SHEET 7GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 7.17 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16 DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005 ANGULAR: +-1 DEG									DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
									CHECKED: KDB	
									APPROVED:	
	NO.	BY	DATE	REVISION						
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										PROJECT NO.: 96-4
TITLE: STIFFENER, LIFT CHANNEL							SCALE: 1/4	DATE: 10/8/96	DWG. NO. 00-1048B	



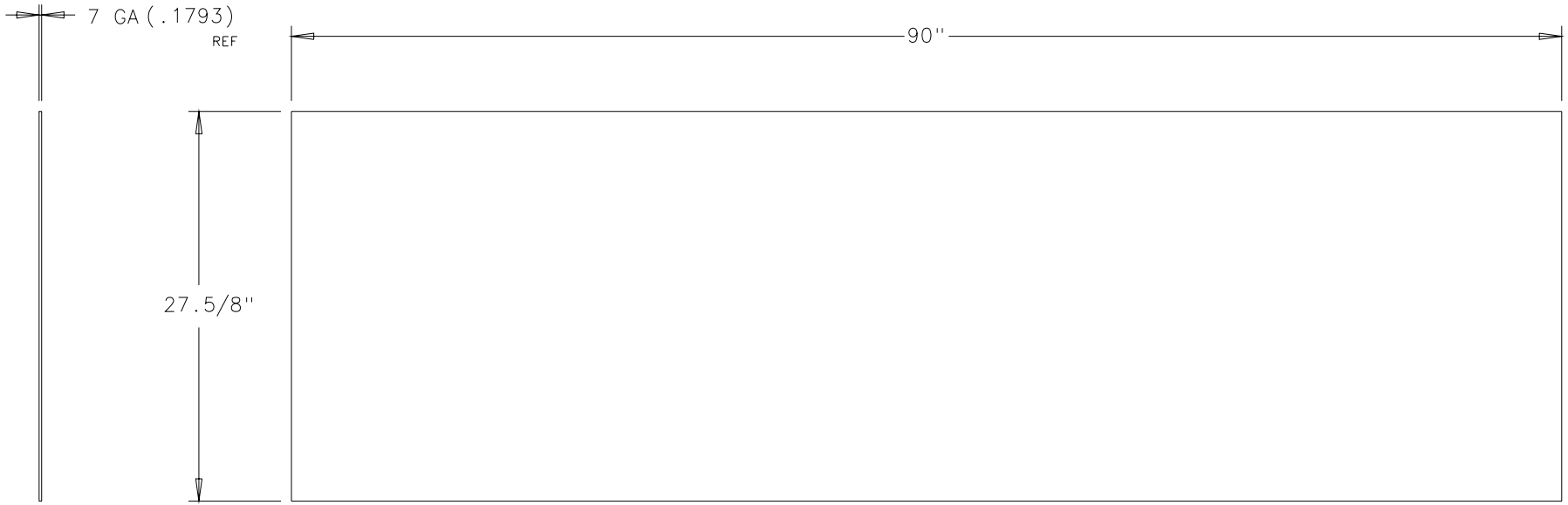
PART NO: 00-1049
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 123 LBS

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: BOTTOM, UPPER (LH)						SCALE: 1/8	DATE: 10/8/96	DWG. NO.: 00-1049B



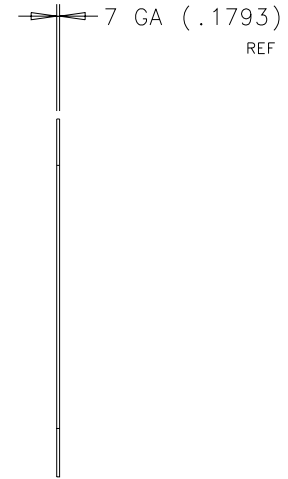
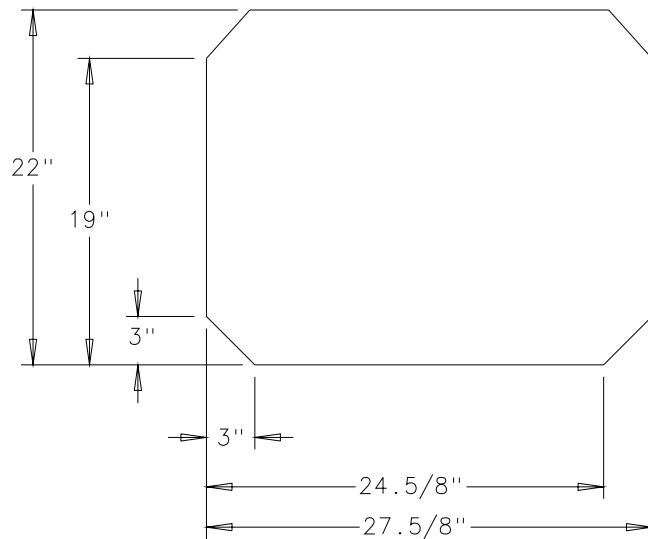
PART NO: 00-1050
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 12.6 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: KDB	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: BAR				SCALE: 1/2	DATE: 10/9/96	DWG. NO.: 00-1050B	



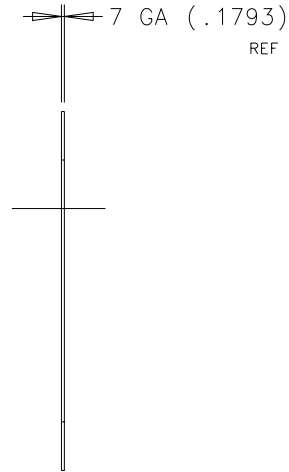
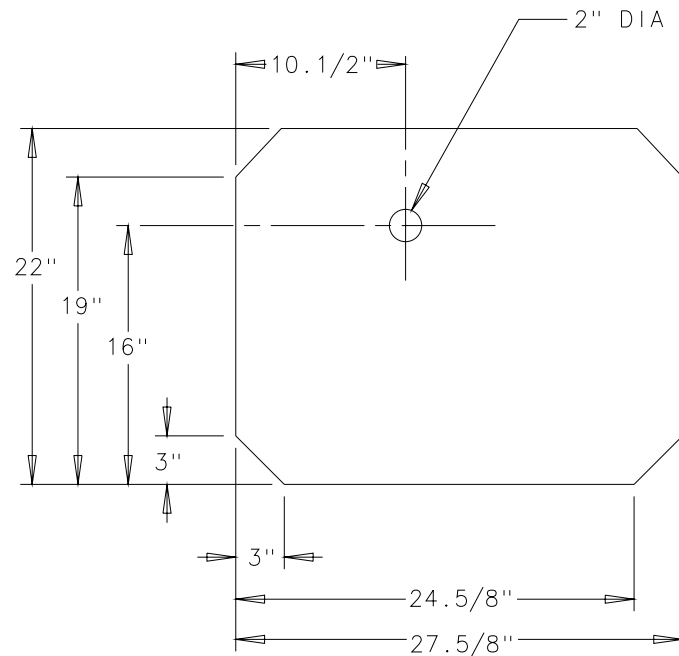
PART NO: 00-1051
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 126 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 96-4
TITLE: BOTTOM, UPPER (RH)				SCALE: 1/8	DATE: 10/8/96	DWG. NO.: 00-1051B



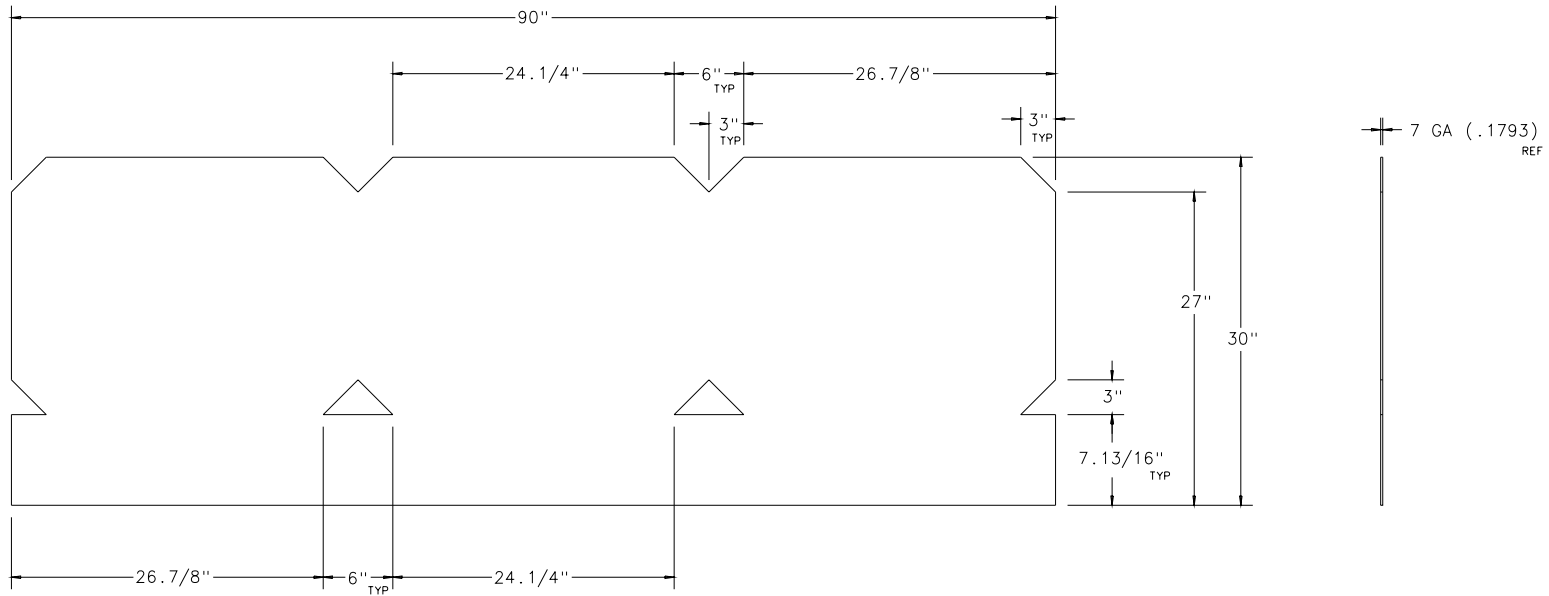
PART NO: 00-1052
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT : 29.9 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
								CHECKED: KDB		
								APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4		
TITLE: BAFFLE						SCALE: 1/8		DATE: 10/8/96		DWG. NO. 00-1052B



PART NO: 00-1053
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 29.8 LBS

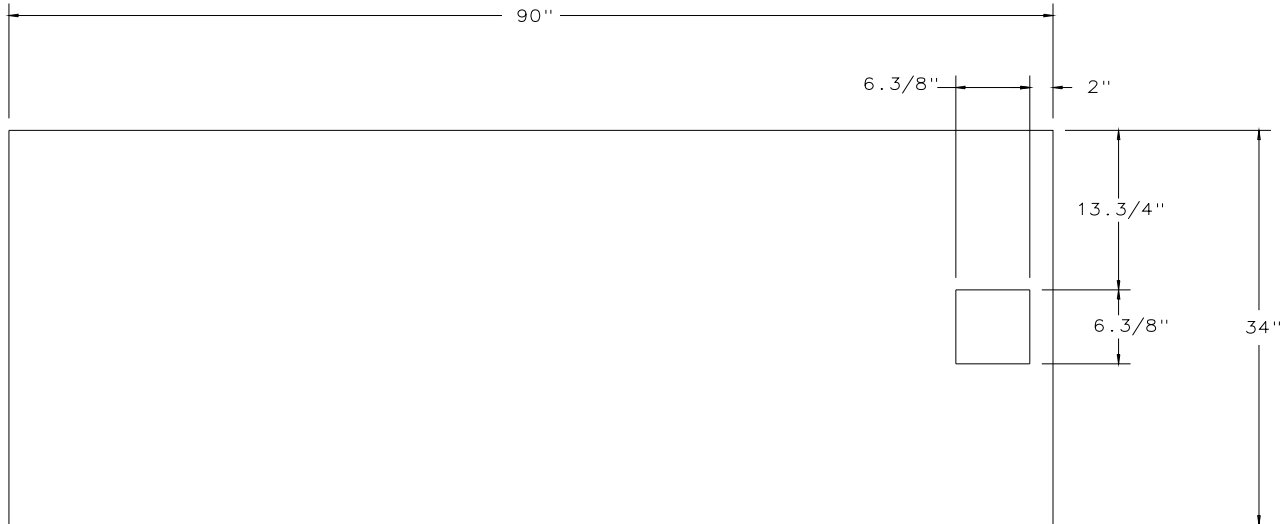
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: KDB	
						APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: BAFFLE					SCALE: 1/8	DATE: 10/8/96	DWG. NO. 00-1053B



PART NO: 00-1054
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT : 134 LBS

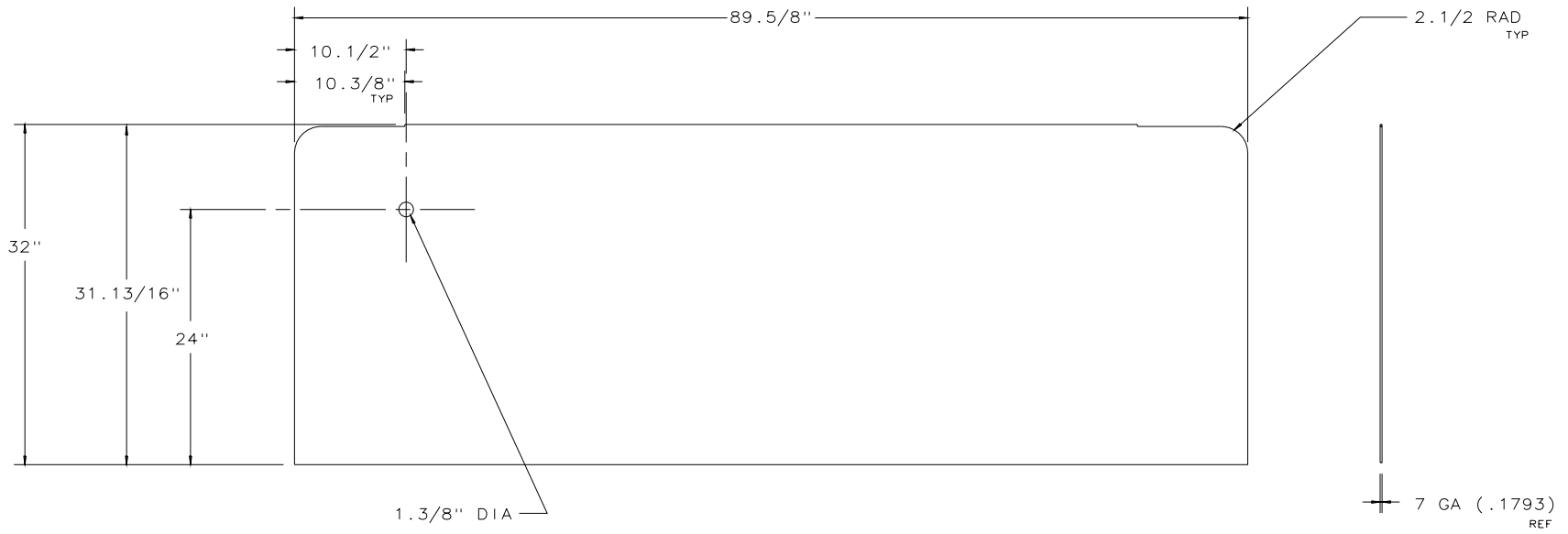
STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 96-4 DWG NO. 00-1054C
								CHECKED: KDB	
								APPROVED:	
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: BAFFLE, LONGITUDINAL (RH)						SCALE: 1/8	DATE: 10/10/96		

7 GA (.1793)
REF



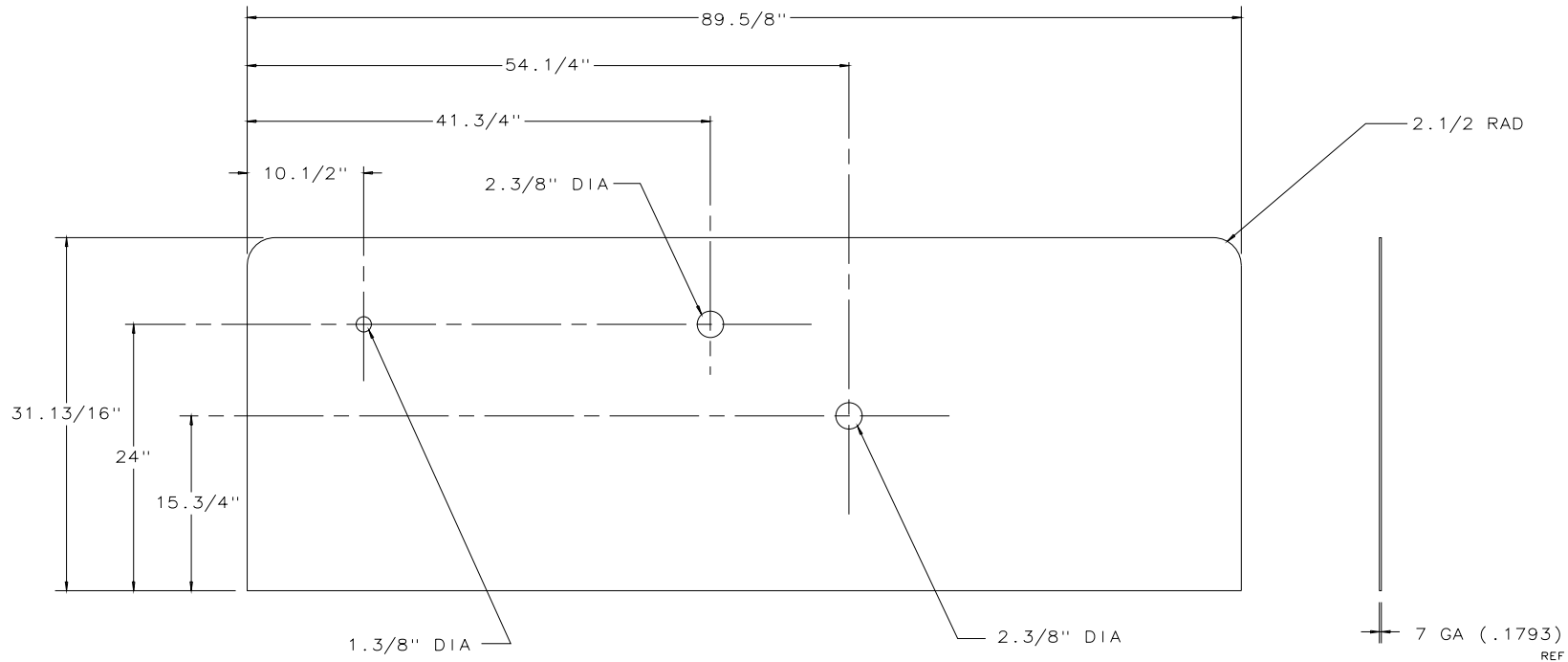
PART NO: 00-1055
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 153 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32" 6 IN AND UP + - 1/16"						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: BOTTOM, WATER COMPARTMENT					SCALE: 1/8	DATE: 10/10/96	DWG. NO.: 00-1055C



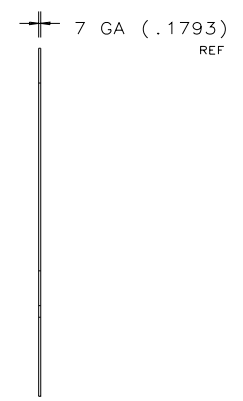
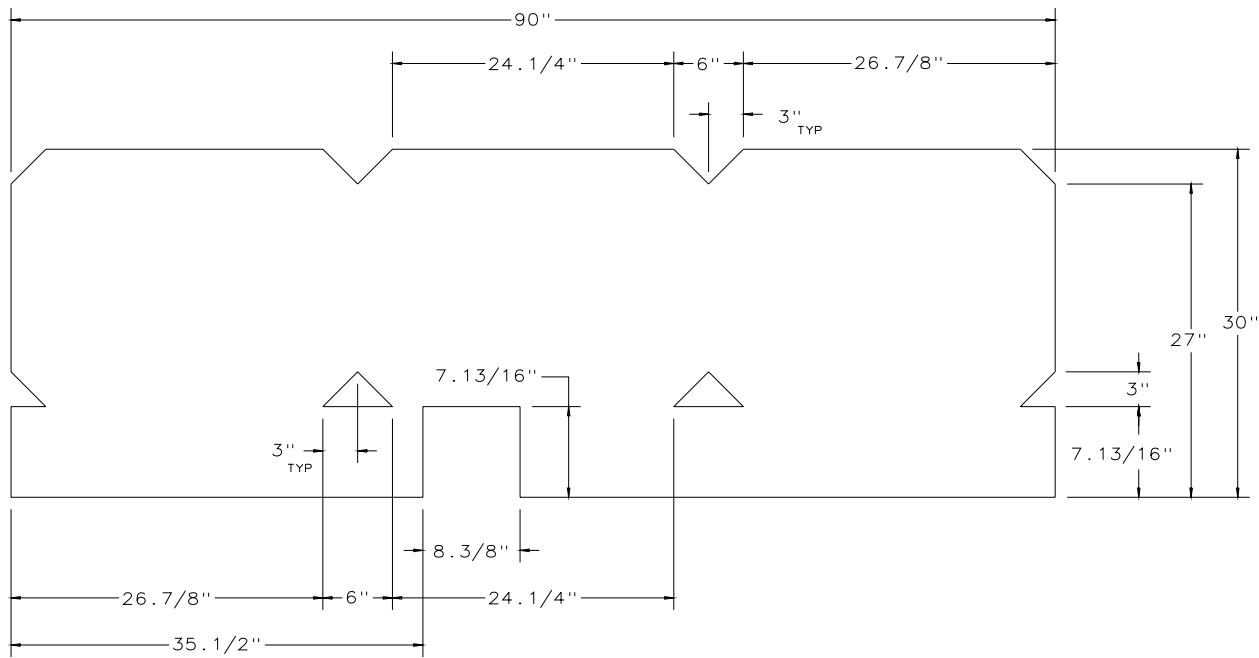
PART NO: 00-0156
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 145 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN. AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		DRAWN: LLP CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 96-4	
TITLE: BULKHEAD, FRONT		SCALE: 1/8	DATE: 10/10/96 DWG. NO.: 00-1056C



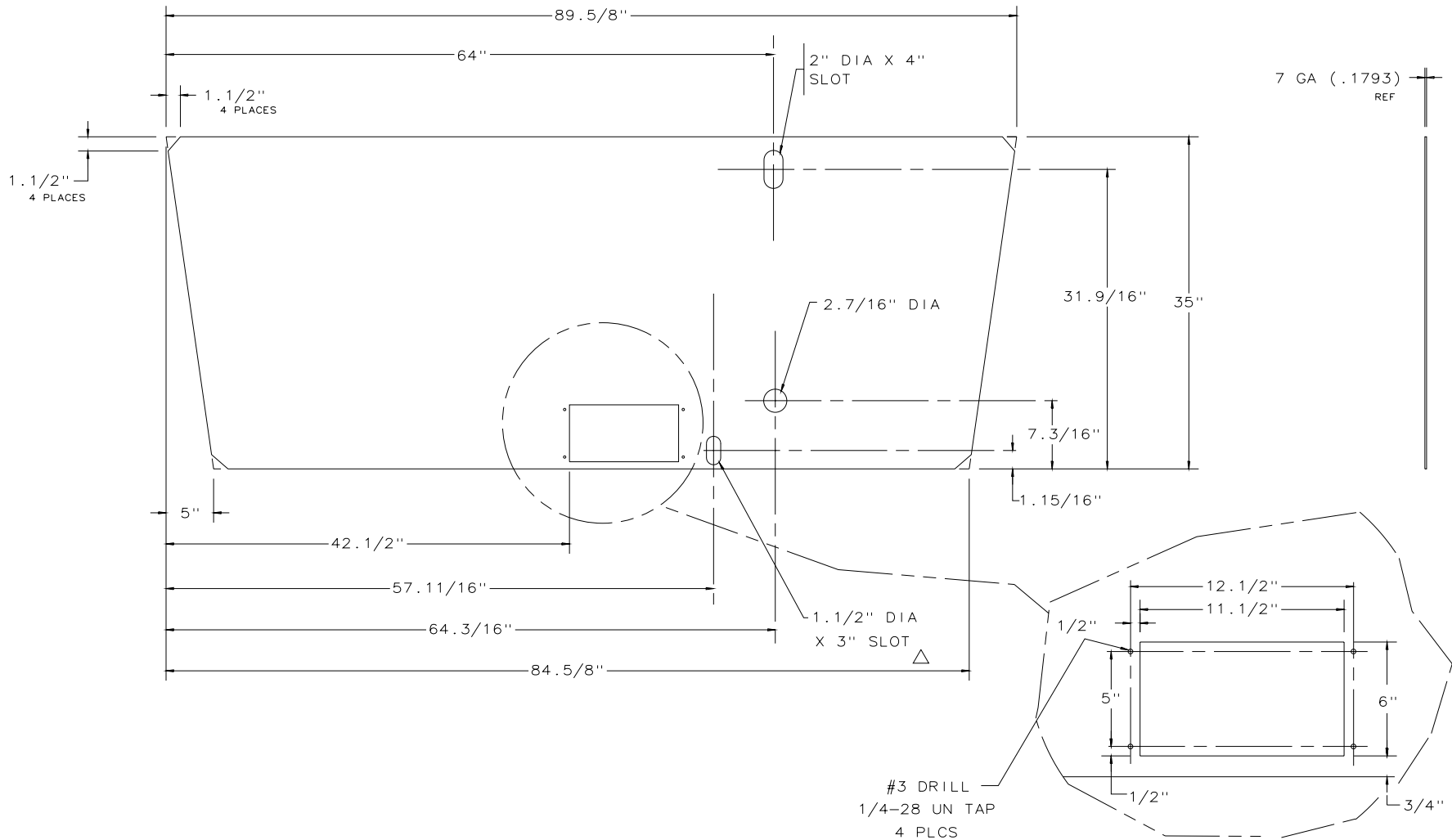
PART NO: 00-1057
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 144 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR
FRACTIONAL:				LLP		
0 TO 6 IN. +-.1/32"				CHECKED:		
6 IN AND UP +-.1/16"				KDB		
DECIMAL:		ANGULAR:		APPROVED:		FOREST MANAGEMENT DIVISION
1 PLACE +-.0.1		+-.1 DEG				
2 PLACE +-.0.01						
3 PLACE +-.0.005		NO.	BY	DATE	REVISION	PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION						DWC: NO:00-1057C
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BULKHEAD, REAR				SCALE:	DATE:	
				1/8	10/10/96	



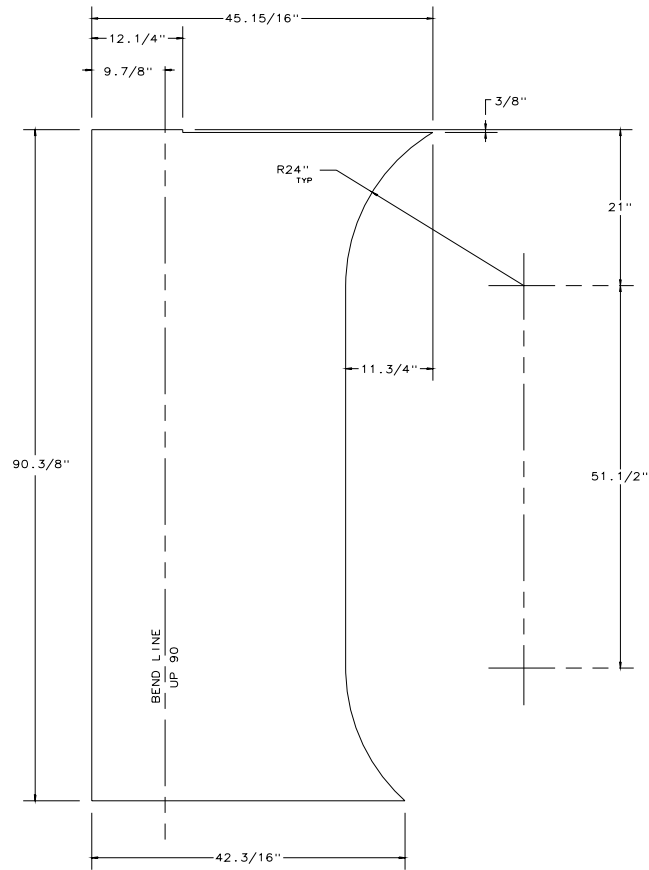
PART NO: 00-1058
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT : 131 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG		DRAWN: LLP CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 96-4		
TITLE: BAFFLE, LONGITUDINAL (LH)		SCALE: 1/8	DATE: 10/10/96	DWG. NO. 00-1058C

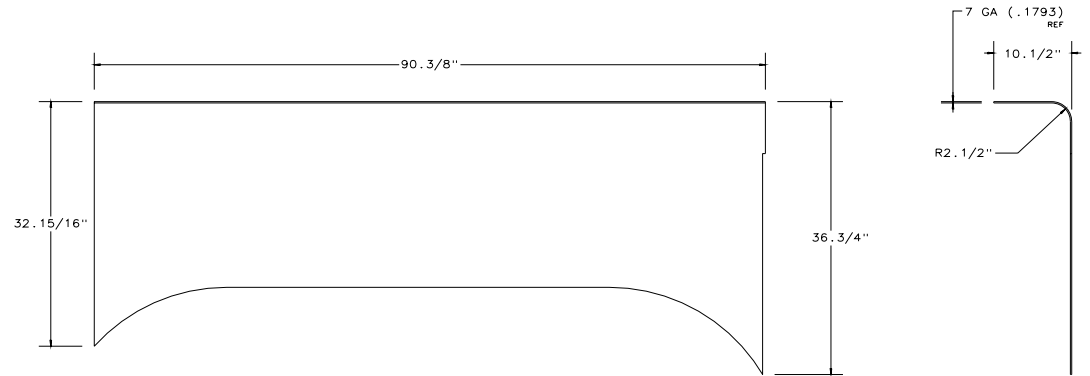


PART NO: 00-1059
 MATERIAL: SHEET, 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 145 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. +-.1/32" 6 IN AND UP +-.1/16"				CHECKED: KDB		
DECIMAL: 1 PLACE +-.0.1 2 PLACE +-.0.01 3 PLACE +-.0.005		ANGULAR: +-.1 DEG		APPROVED:		
NO.	BY	DATE	REVISION	1 DGPS/00 WAS 1" DIA X 2.1\2" SLOT		FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 00-1059C
TITLE: FLOOR, COMPARTMENT				SCALE: 1/8	DATE: 10/10/96	



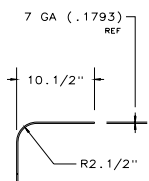
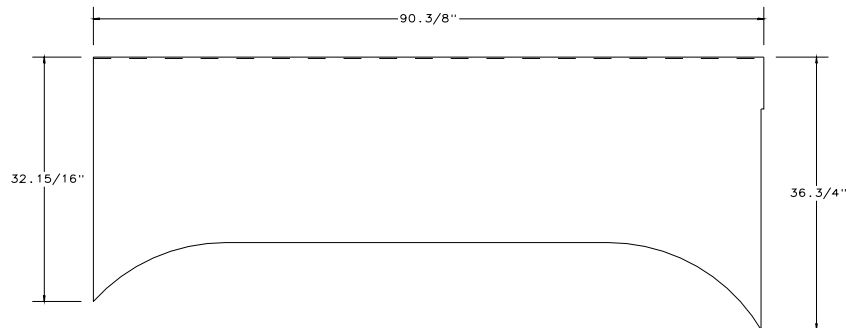
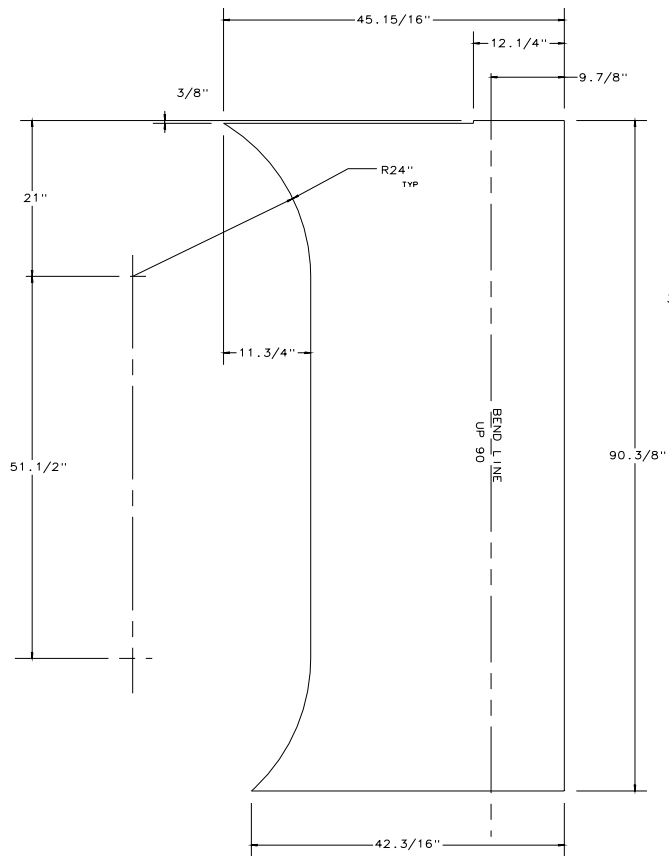
FLAT LAYOUT



AFTER BENDING

PART NO: 00-1060
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 163 LBS

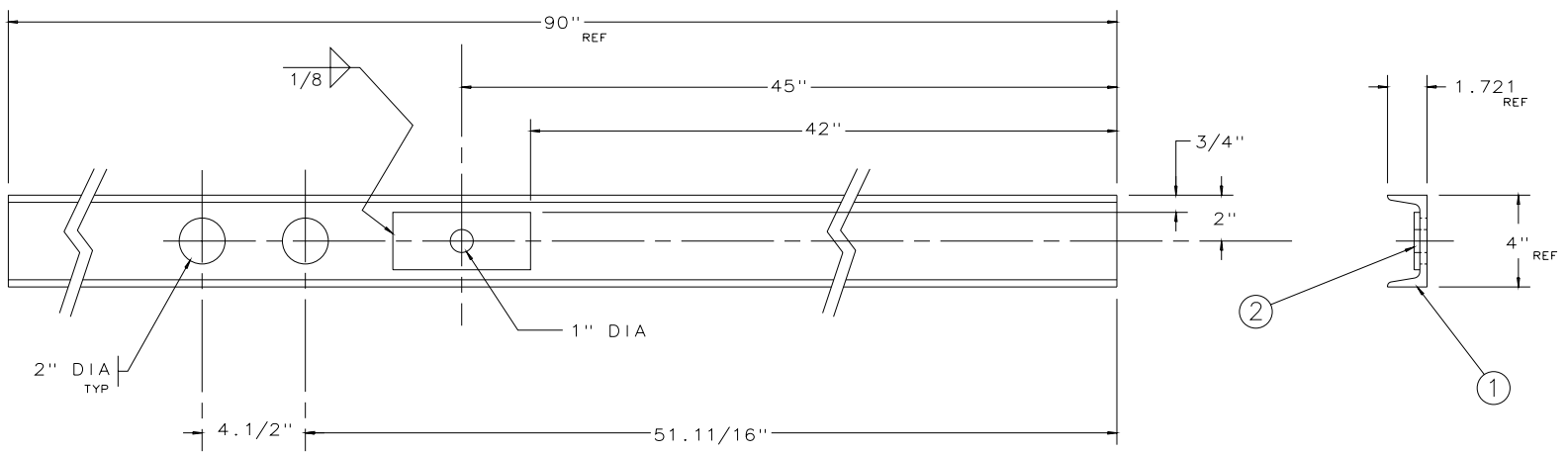
STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FUNCTIONAL: ±.0000" ±.0000"				CHECKED: KDB		
DECIMAL: ±.0000" ±.0000"				APPROVED:		
ANGULAR: ±.0000" ±.0000"				NO. BY DATE		PROJECT NO.: 96-4 NO: 00-1060D
REVISION				DATE		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: TANK SIDE (RH)		SCALE: 1/8"		DATE: 10/11/96		



PART NO: 00-1061
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 163 LBS

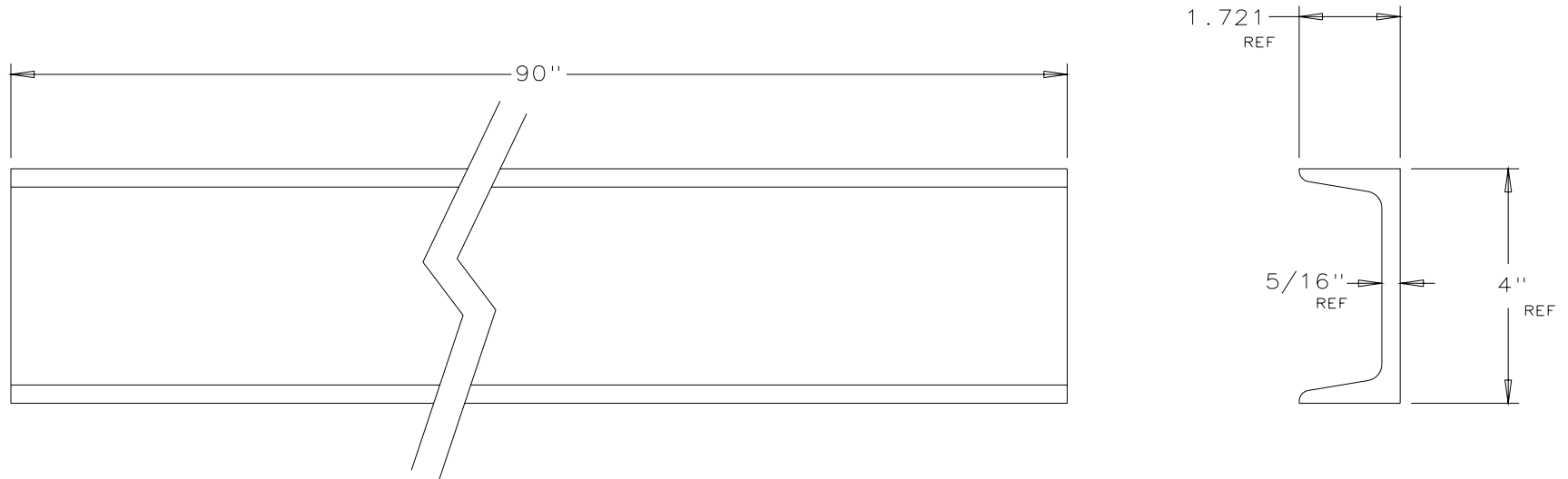
STD. TOLERANCES				DRAWN: LLP
FUNCTIONAL:				CHECKED: KDB
DECIMAL: .015	ANGULAR: .1			APPROVED:
FINISH: .015				
DATE: 10/11/96	BY: []	DATE: []	REVISION: []	MICHIGAN DNR
FOREST FIRE EXPERIMENT STATION				FOREST MANAGEMENT DIVISION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				PROJECT NO.: 96-4
TITLE: TANK SIDE (LH)			SCALE: 1/8	DATE: 10/11/96
				UNC 00-1061D

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1063	B	CHANNEL	1	54.4
2	00-0280	A	BAR, FLAT	1	1.06



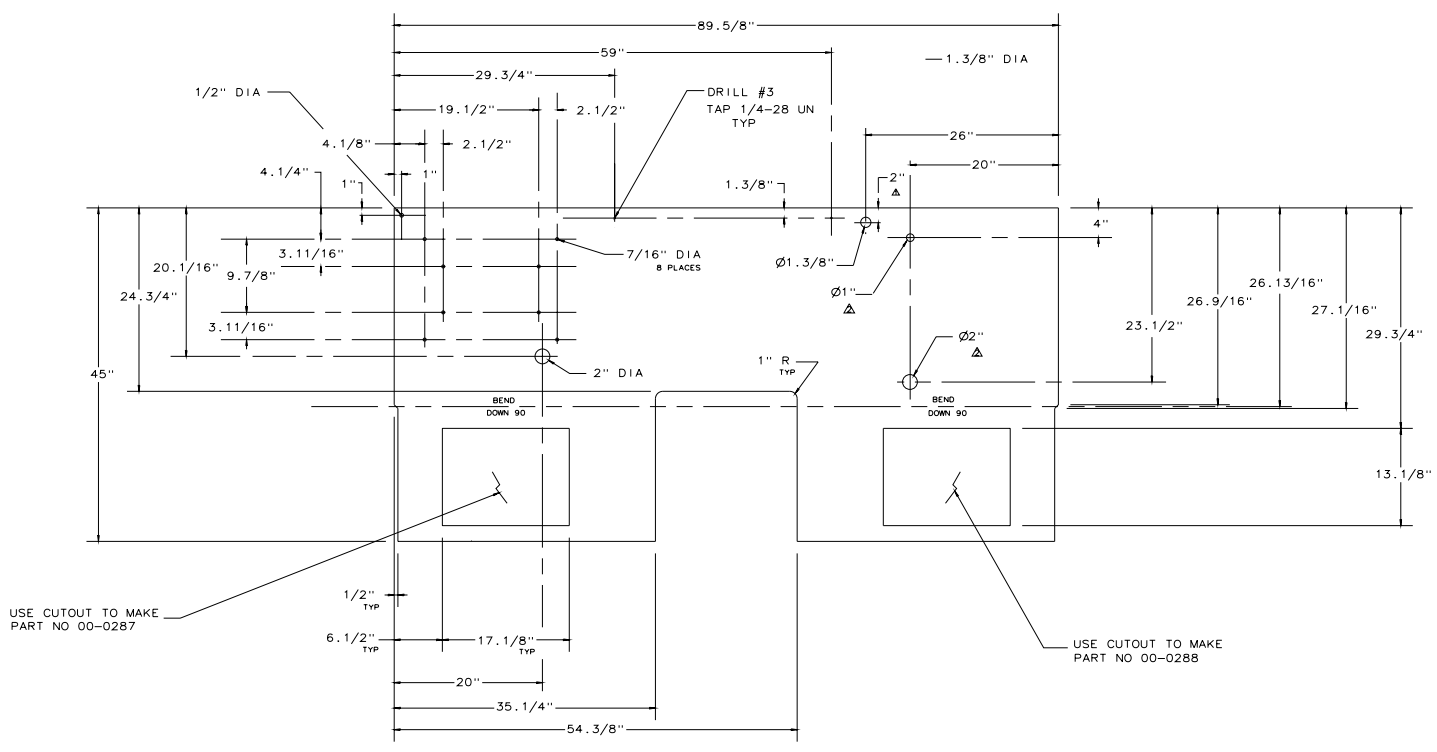
PART NUMBER: 00-1062
EST WT: 55.6 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 0.16 ± 1/32" 6 IN AND UP ± 1/16"		DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION	PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 00-1062C
TITLE: CHANNEL, TANK LIFTING S/W			SCALE: 1 = 4	DATE: 10/14/96

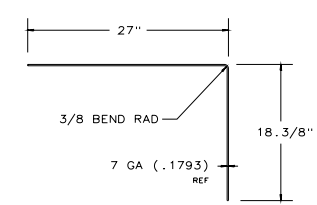


PART NO: 00-1063
 MATERIAL: CHANNEL, STD 4 X 7.25 #/FT
 UNS K02600
 FFES SPEC NO: AH-04072AG
 EST WT: 54.4 LBS

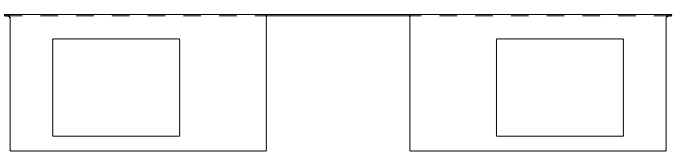
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: KDB	
	NO.	BY	DATE	REVISION			PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-1063B
TITLE: CHANNEL 4 X 7.25 #/FT						SCALE: 1/2	DATE: 10/14/96



FLAT LAYOUT

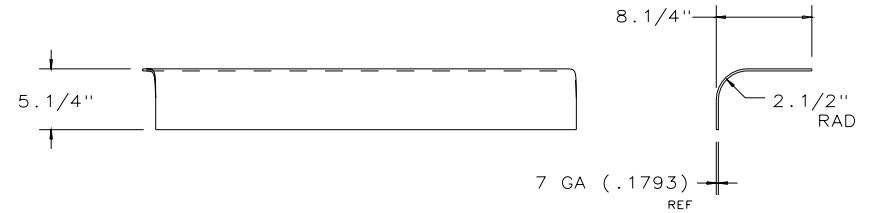
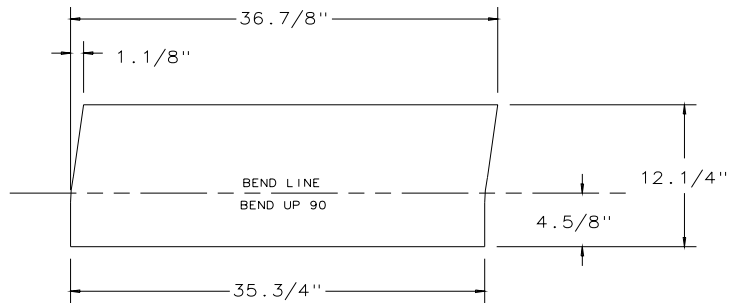


AFTER BENDING



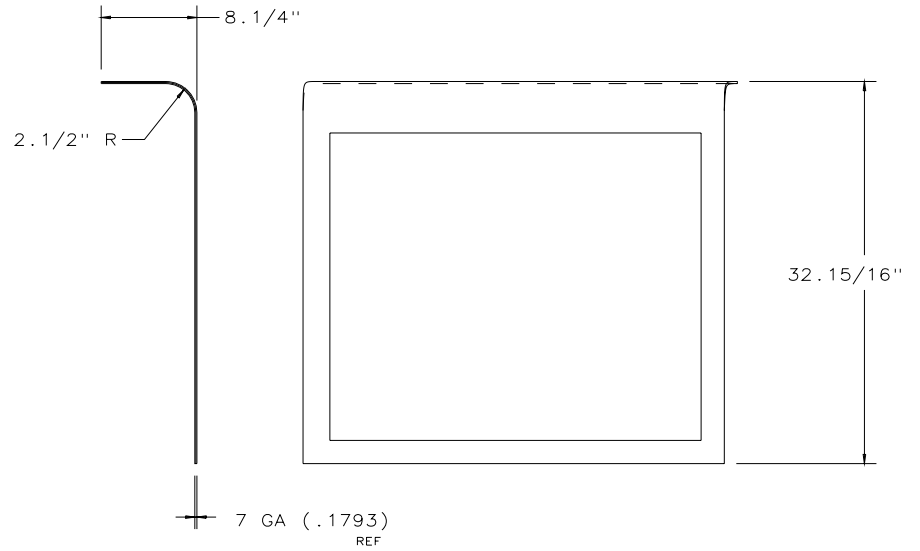
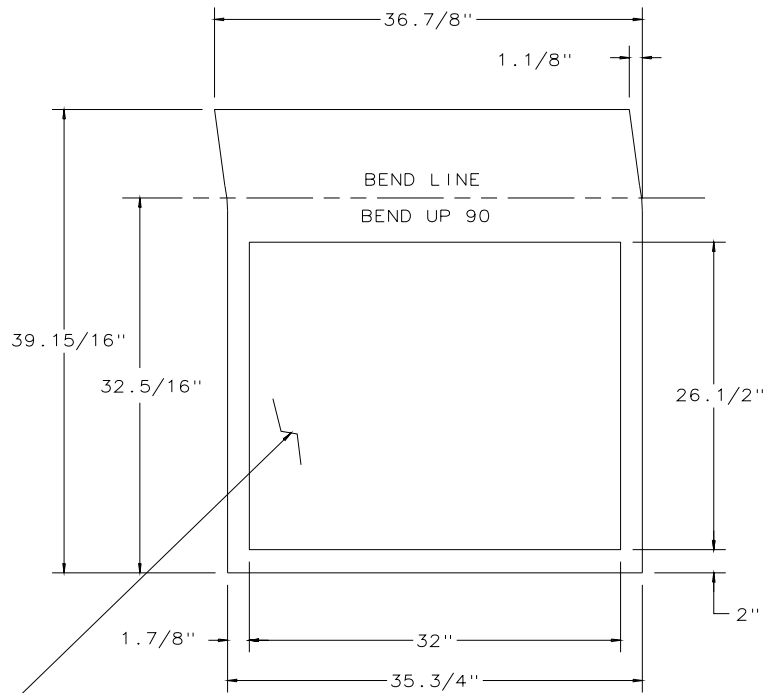
PART NUMBER: 00-1069
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 162 LBS

STD. TOLERANCES						DRAWN: LLP
FRACTIONAL: ± .005" TYP						CHECKED: KDB
DECIMAL: ± .005" TYP						APPROVED:
ANGULAR: ± .5° TYP	2 DGPB/OD	WAS 1.1/8" DIA				FOREST MANAGEMENT DIVISION
WELD: ± .005" TYP	1 DGPB/OD	WAS 1.3/8"				PROJECT NO.: 96-4
	NO. BY DATE	REVISION				DWG NO: 00-1069D
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: APRON	SCALE: 1/8"	DATE: 10-17-96				



PART NO: 00-1072
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 22.2 LBS

STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR
FRACTIONAL:								CHECKED: KDB	
0 TO 6 IN +-.1/32 6 IN AND UP +-.1/16								APPROVED:	
DECIMAL:	ANGULAR:								FOREST MANAGEMENT DIVISION
1 PLACE +-.0.1 2 PLACE +-.0.01 3 PLACE +-.0.005	+-.1 DEG								PROJECT NO.: 96-4
NO. BY DATE		REVISION		TITLE: FRONT QUARTER LH		SCALE: 1/8	DATE: 10/24/96	DWG. NO. 00-1072C	
				FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					



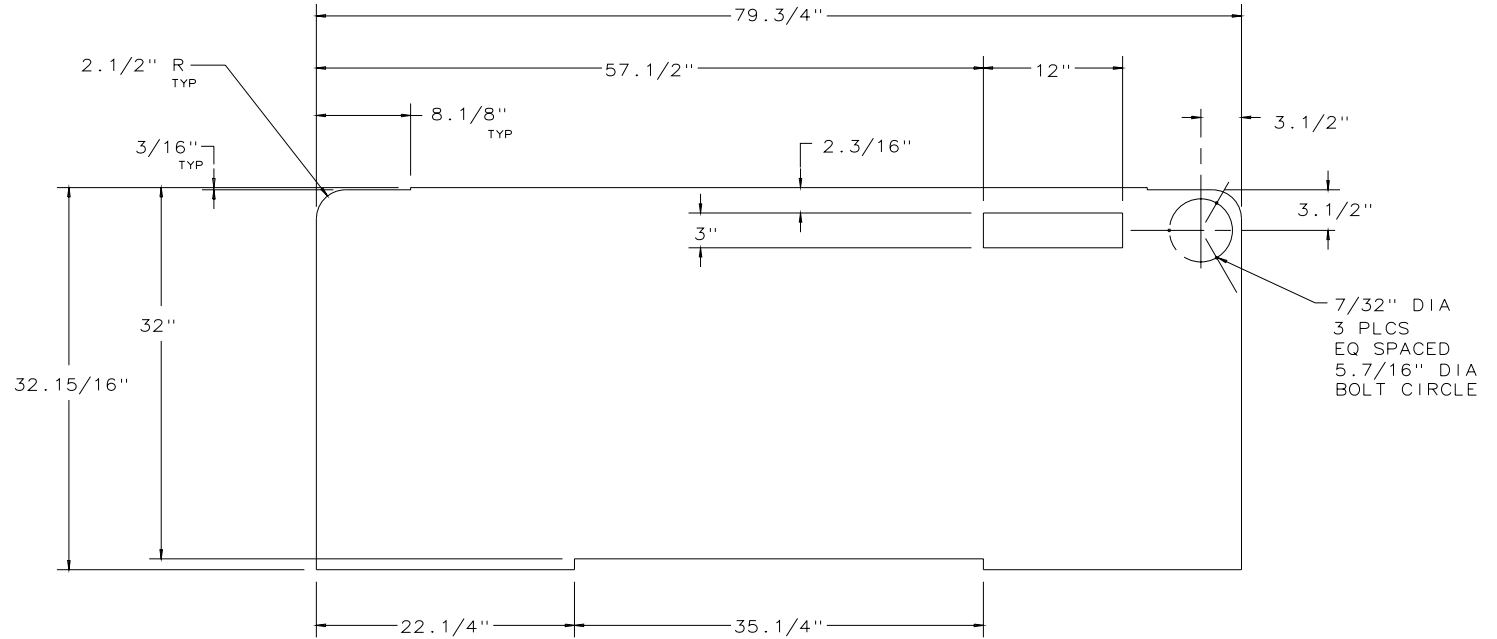
CUT OUT AFTER BENDING
USE CUTOUT TO MAKE P/N 23-0024

PART NO: 00-1073
MATERIAL: SHEET 7 GA (.1793) P&O
ASTM A569
FFES SPEC NO: AA-G0748AP
EST WT: 29.3 LBS

FLAT LAYOUT

STD. TOLERANCES		DRAWN: LLP		MICHIGAN DNR		
FRACTIONAL: 0 TO 6 IN. +-.1/32" 6 IN AND UP +-.1/16"		CHECKED: KDB				
DECIMAL: 1 PLACE +-.0.1 2 PLACE +-.0.01 3 PLACE +-.0.005		APPROVED:				
ANGULAR: +-.1 DEG		NO.	BY	DATE	REVISION	FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 00-1073C
TITLE: PANEL, FRONT QUARTER RH			SCALE: 1/8	DATE: 10/24/96		

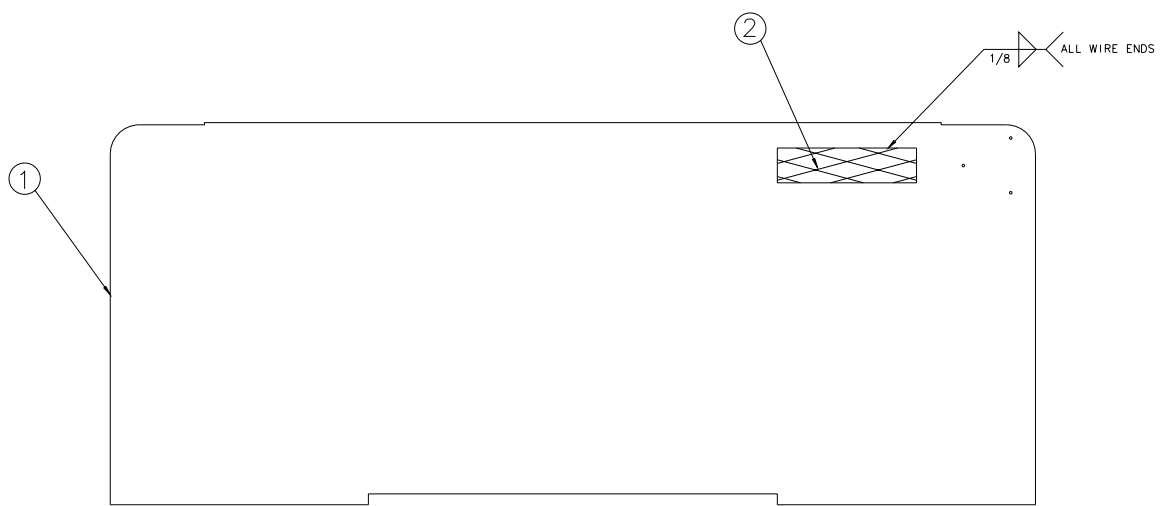
7 GA (.1793)
REF



PART NO: 00-1074
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 129 LBS

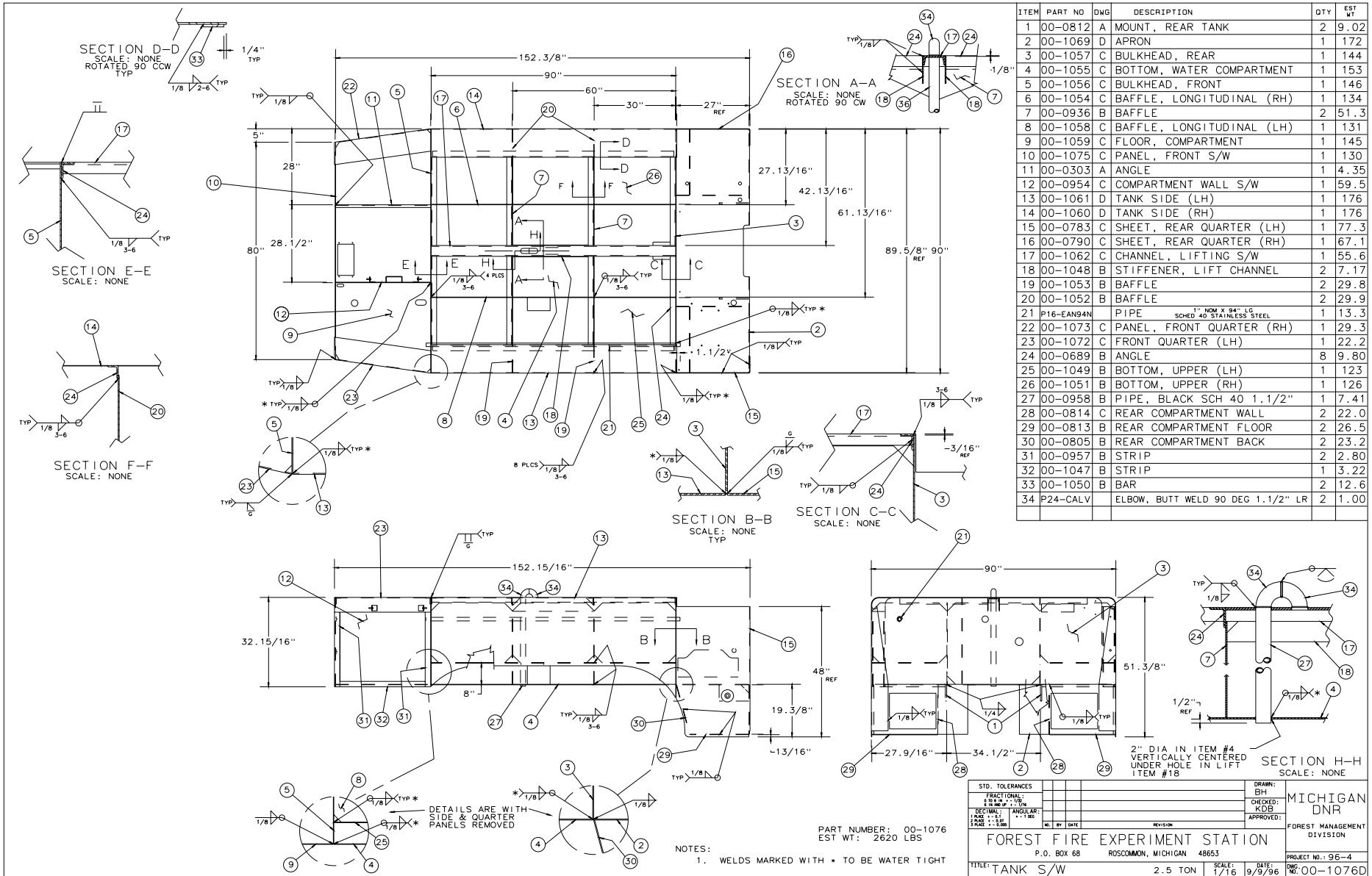
STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005		DRAWN: LLP CHECKED: KDB APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
ANGULAR: -- 1 DEG		REVISION NO. BY DATE		
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653				PROJECT NO.: 96-4
TITLE: FRONT PANEL		SCALE: 1/8	DATE: 10/24/96	DWG NO. 00-1074C

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1074	C	FRONT PANEL	1	129
2	00-0276	A	EXPANDED METAL	1	0.28



PART NO: 00-1075
EST WT: 130 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
						CHECKED: KDB		
						APPROVED:		
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4	
TITLE: PANEL, FRONT S/W						SCALE: 1/8	DATE: 10/24/96	DWG NO. 00-1075C



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0812	A	MOUNT, REAR TANK	2	9.02
2	00-1069	D	APRON	1	172
3	00-1057	C	BULKHEAD, REAR	1	144
4	00-1055	C	BOTTOM, WATER COMPARTMENT	1	153
5	00-1056	C	BULKHEAD, FRONT	1	146
6	00-1054	C	BAFFLE, LONGITUDINAL (RH)	1	134
7	00-0936	B	BAFFLE	2	51.3
8	00-1058	C	BAFFLE, LONGITUDINAL (LH)	1	131
9	00-1059	C	FLOOR, COMPARTMENT	1	145
10	00-1075	C	PANEL, FRONT S/W	1	130
11	00-0303	A	ANGLE	1	4.35
12	00-0954	C	COMPARTMENT WALL S/W	1	59.5
13	00-1061	D	TANK SIDE (LH)	1	176
14	00-1060	D	TANK SIDE (RH)	1	176
15	00-0783	C	SHEET, REAR QUARTER (LH)	1	77.3
16	00-0790	C	SHEET, REAR QUARTER (RH)	1	67.1
17	00-1062	C	CHANNEL, LIFTING S/W	1	55.6
18	00-1048	B	STIFFENER, LIFT CHANNEL	2	7.17
19	00-1053	B	BAFFLE	2	29.8
20	00-1052	B	BAFFLE	2	29.9
21	P16-EAN94N	PIPE	1" NOM X 94" LG SCHED 40 STAINLESS STEEL	1	13.3
22	00-1073	C	PANEL, FRONT QUARTER (RH)	1	29.3
23	00-1072	C	FRONT QUARTER (LH)	1	22.2
24	00-0689	B	ANGLE	8	9.80
25	00-1049	B	BOTTOM, UPPER (LH)	1	123
26	00-1051	B	BOTTOM, UPPER (RH)	1	126
27	00-0958	B	PIPE, BLACK SCH 40 1.1/2"	1	7.41
28	00-0814	C	REAR COMPARTMENT WALL	2	22.0
29	00-0813	B	REAR COMPARTMENT FLOOR	2	26.5
30	00-0805	B	REAR COMPARTMENT BACK	2	23.2
31	00-0957	B	STRIP	2	2.80
32	00-1047	B	STRIP	1	3.22
33	00-1050	B	BAR	2	12.6
34	P24-CALV	ELBOW, BUTT WELD 90 DEG 1.1/2" LR	2	1.00	

MICHIGAN DNR
FOREST MANAGEMENT DIVISION

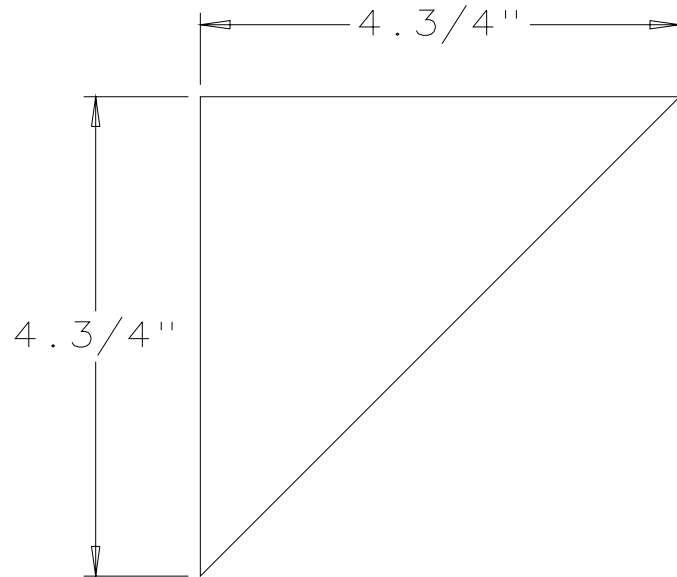
PROJECT NO.: 96-4

DATE: 9/9/96

SCALE: 2.5 TON

DATE: 9/9/96

DATE: 9/9/96



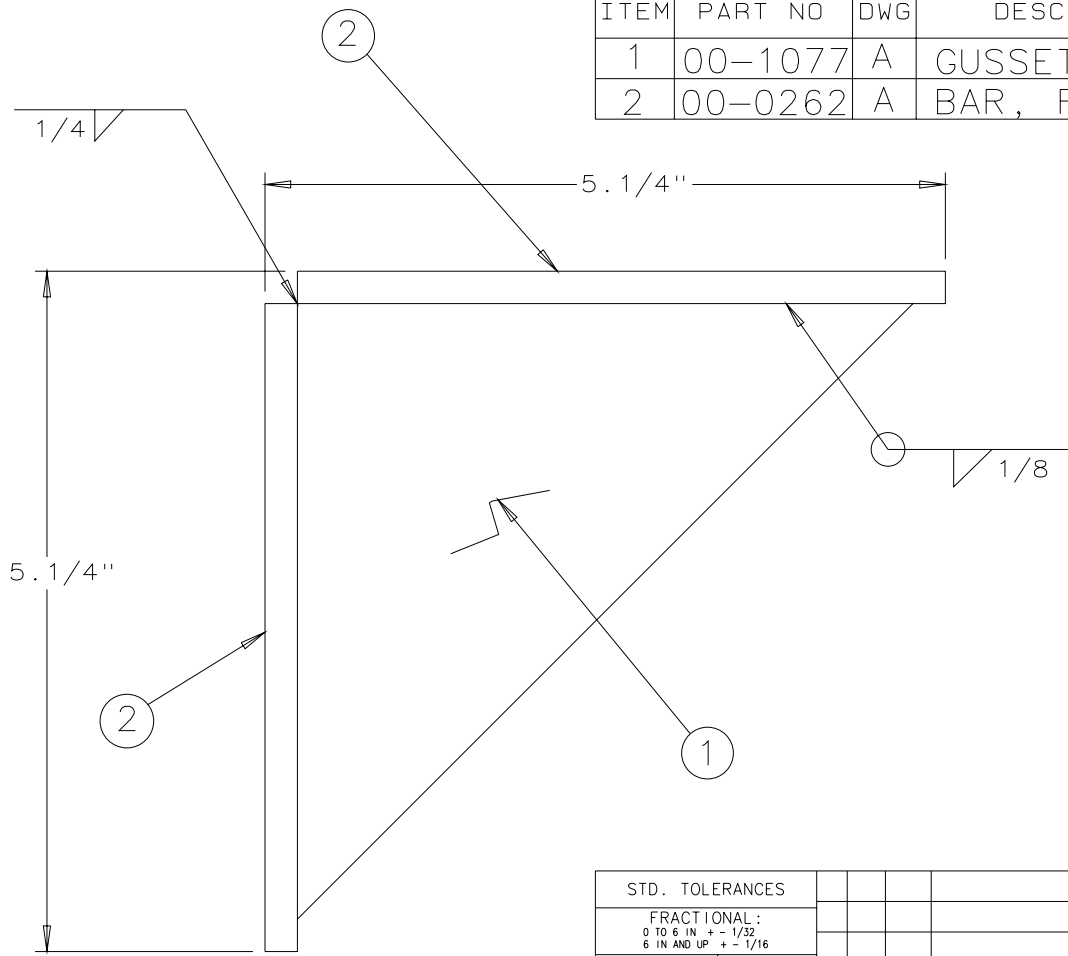
7 GA (.1793)

REF

PART NUMBER: 00-1077
 MAT'L: SHEET, 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC. NO.: AA-G0748AP
 EST. WT.: 0.58 LBS.

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: KDB	
						APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: GUSSET					SCALE: 1 = 2	DATE: 11/5/96	DWG. NO. 00-1077A

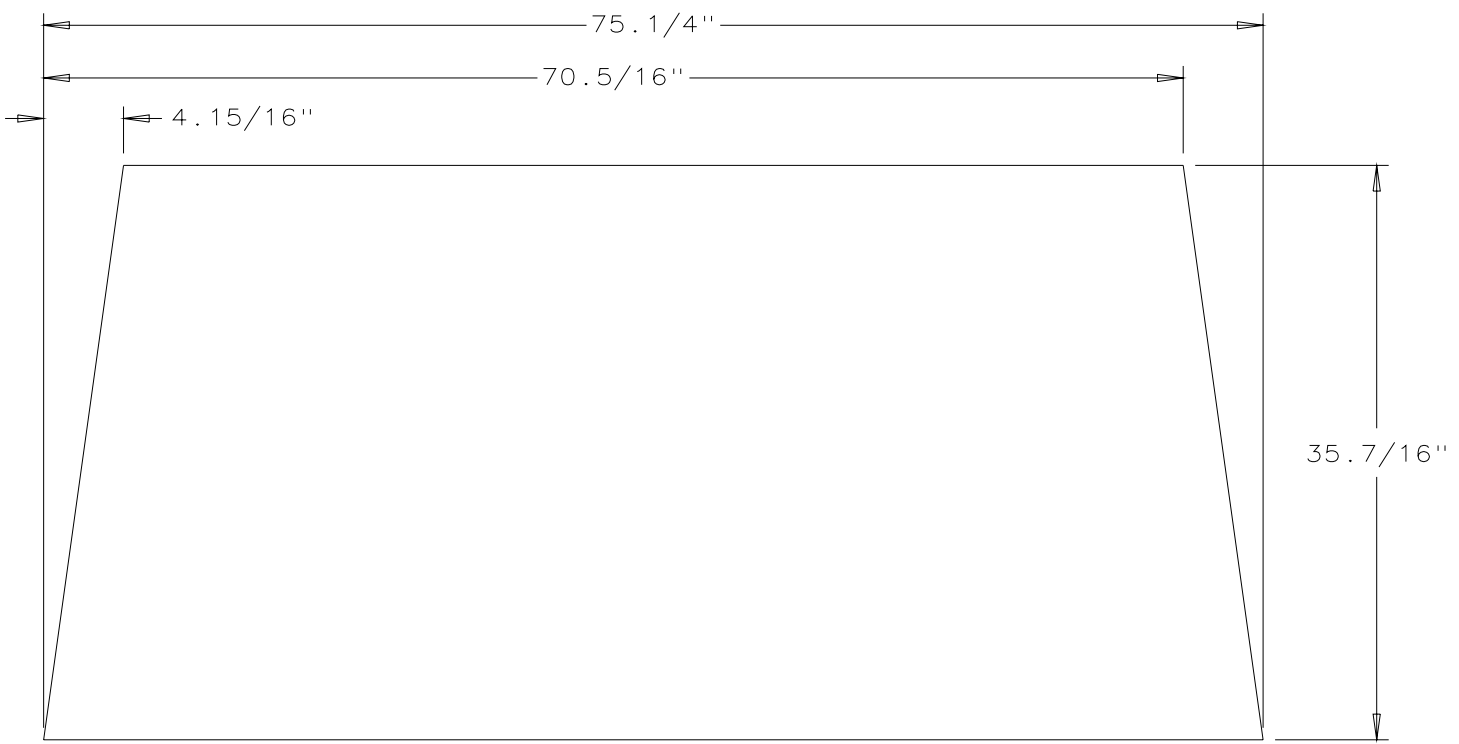
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1077	A	GUSSET	1	0.58
2	00-0262	A	BAR, FLAT, 1/4" X 2" HR	2	0.71



PART NUMBER: 00-1078
EST. WT.: 2.20 LBS.

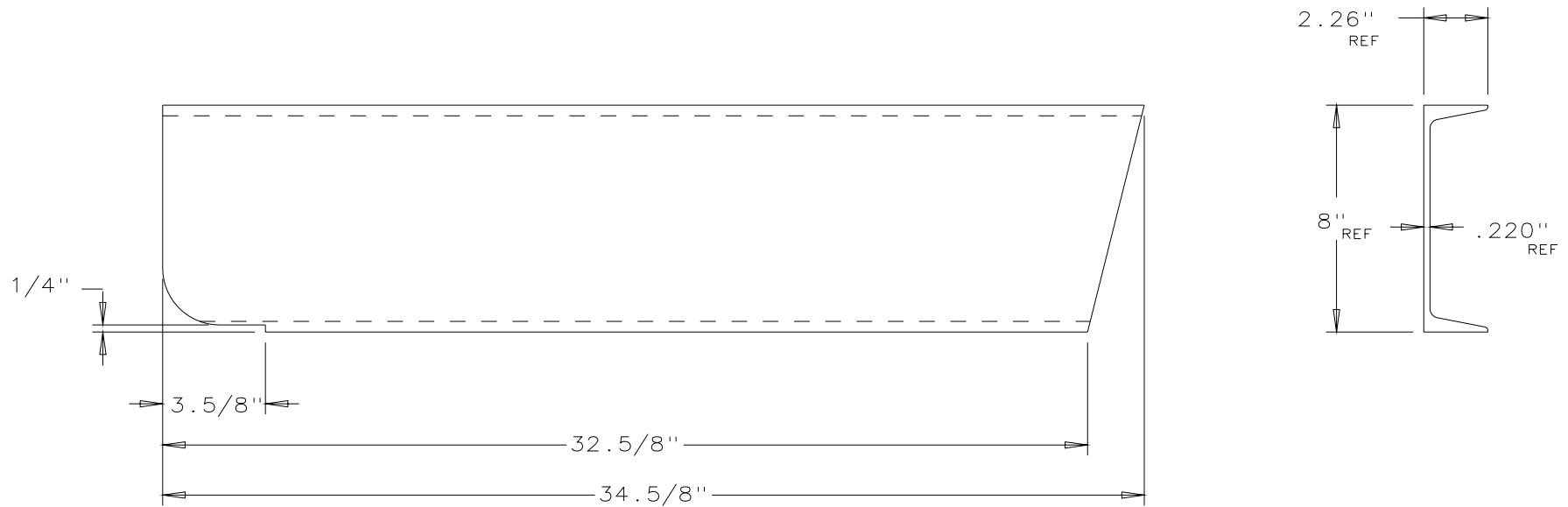
STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: TANK GUIDE S/W				SCALE: FULL	DATE: 11/7/96	PROJECT NO.: 96-4 DWG. NO.: 00-1078B

7 GA
(.1793)
REF



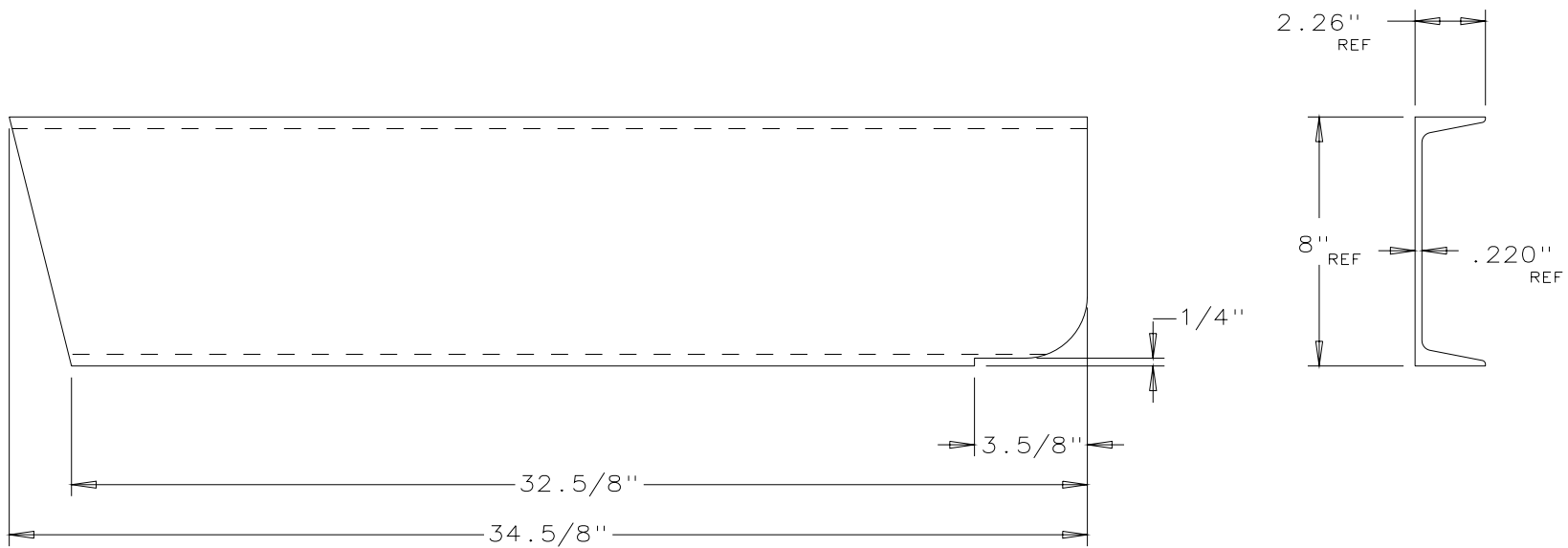
PART NUMBER: 00-1081
 MATERIAL: SHEET 7 (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 126 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 5 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
No.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 96-4
TITLE: SHEET, COMPARTMENT TOP				SCALE: 1/8	DATE: 11/7/96	DWG. NO. 00-1081B



PART NO: 00-1082
 MATERIAL: CHANNEL 8 X 11.5 #/FT
 K02600
 FFES SPEC NO: AH-08115AG
 EST WT: 31.6 LBS

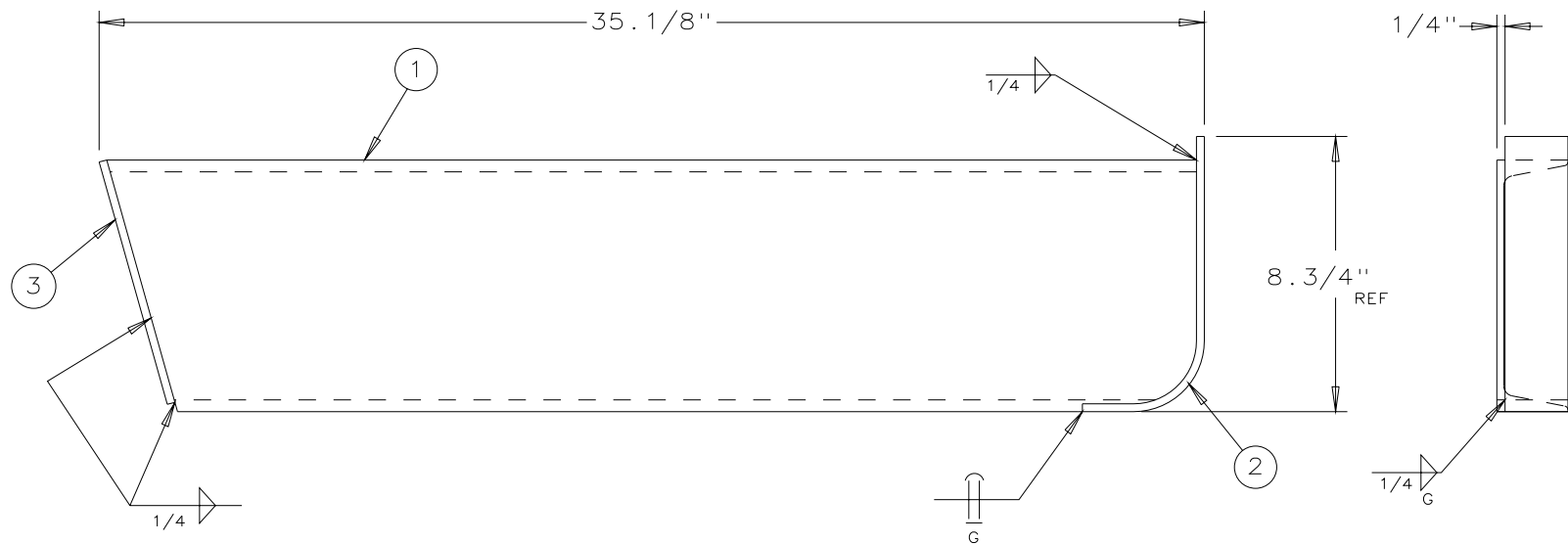
STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. +-1/32 6 IN AND UP +-1/16								CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: +- 1 DEG				APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: CHANNEL, BUMPER LH							SCALE: 1/4	DATE: 11/7/96	DWG. NO. 00-1082B



PART NO: 00-1083
 MATERIAL: CHANNEL 8 X 11.5 #/FT
 K02600
 FFES SPEC NO: AH-08115AG
 EST WT: 31.6 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
								CHECKED: KDB	
								APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: CHANNEL, BUMPER RH							SCALE: 1/4	DATE: 11/7/96	DWG. NO. 00-1083B

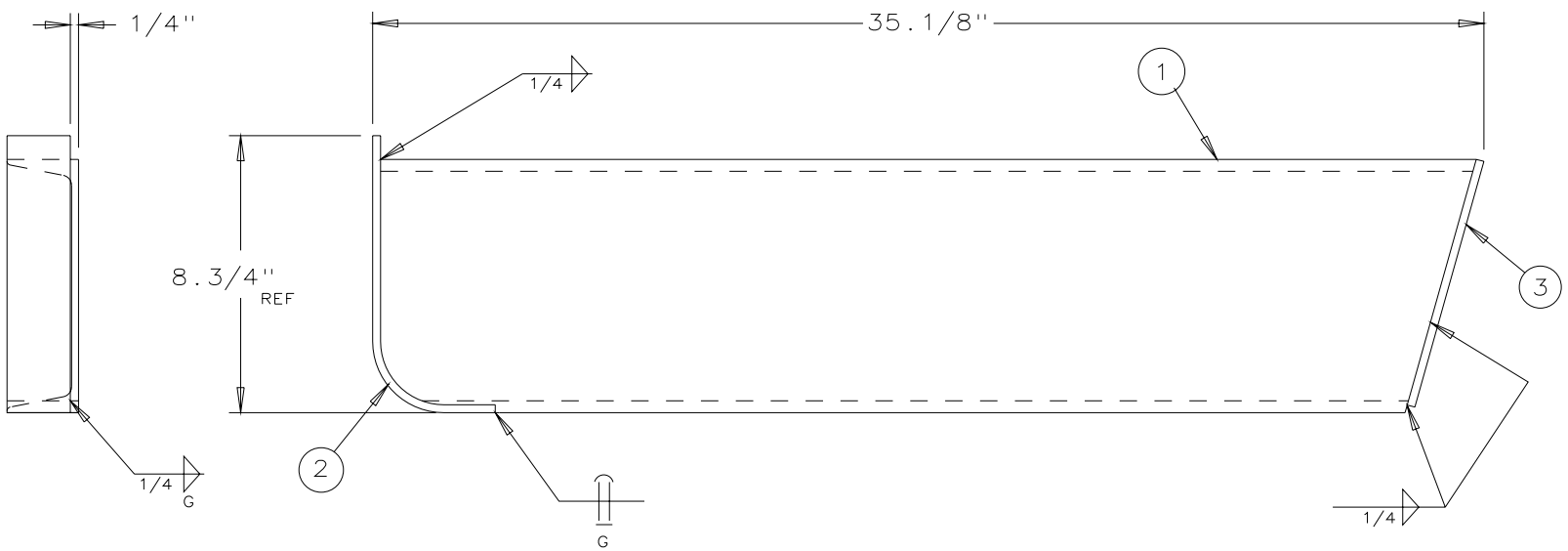
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1083	B	CHANNEL, BUMPER RH	1	31.6
2	00-0291	B	BAR, BUMPER END CAP	1	1.61
3	00-0292	A	BAR	1	1.13



PART NO: 00-1084
EST. WT: 34.5 LBS

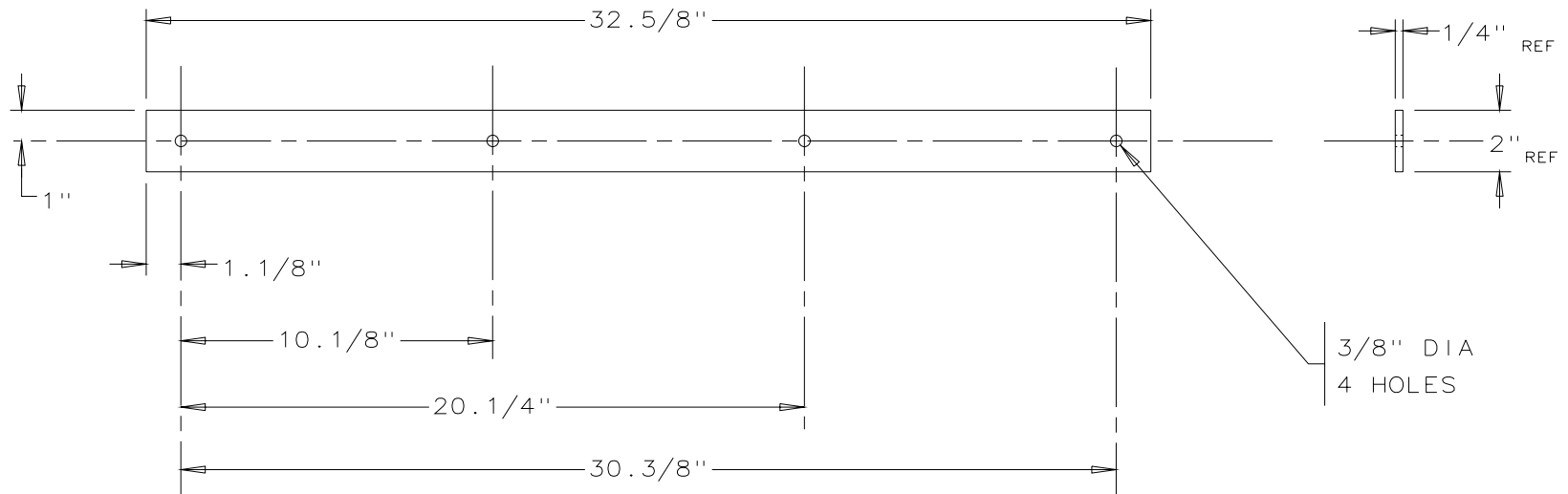
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: KDB	
						APPROVED:	
NO. BY DATE REVISION							PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-1084B
TITLE: BUMPER, REAR S/W RH					SCALE: 1/4	DATE: 11/7/96	

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1082	B	CHANNEL, BUMPER LH	1	31.6
2	00-0291	B	BAR, BUMPER END CAP	1	1.61
3	00-0292	A	BAR	1	1.13



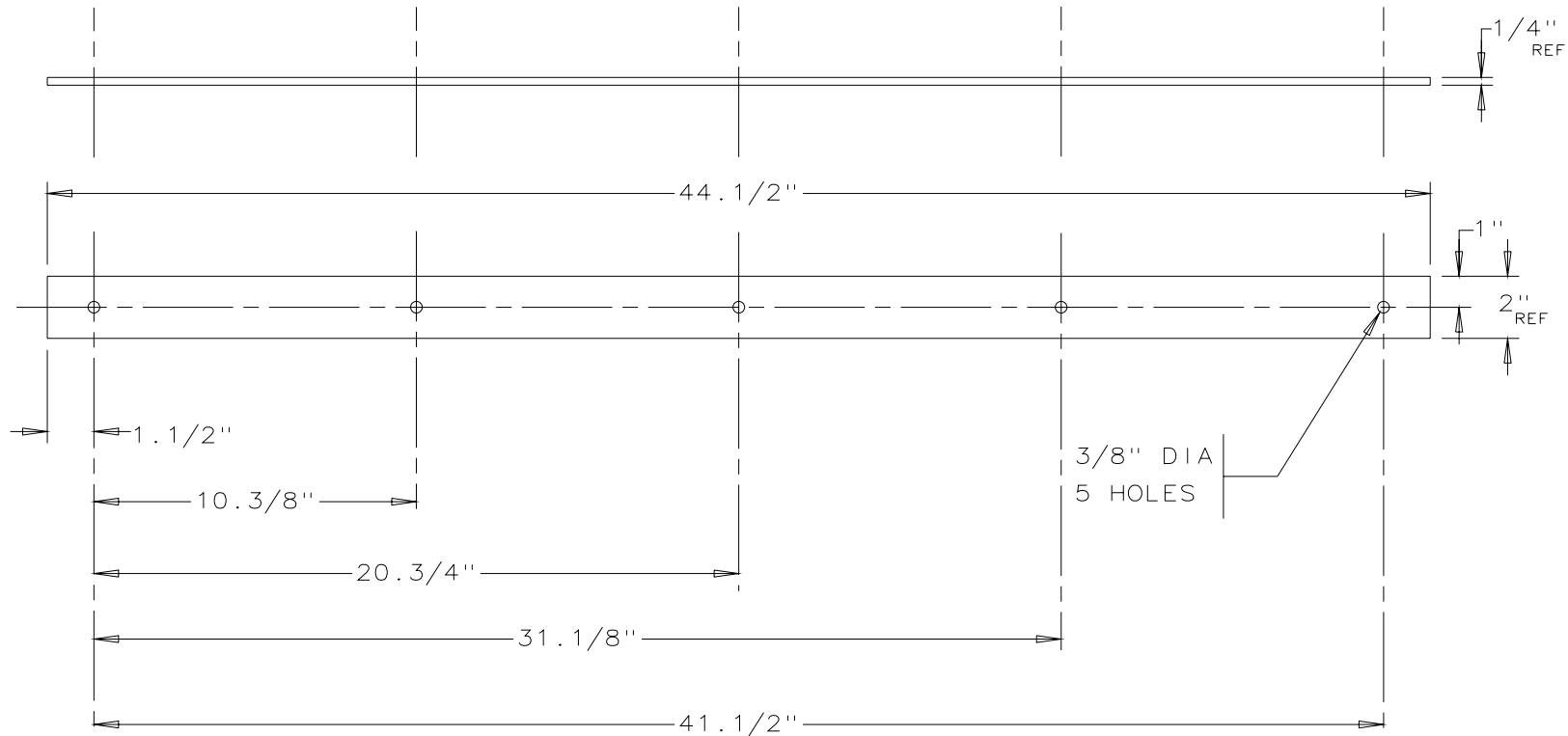
PART NO: 00-1085
EST WT: 34.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG					DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
					CHECKED: KDB	
				APPROVED:	PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-1085B
TITLE: BUMPER, REAR S/W LH				SCALE: 1/4	DATE: 11/7/96	



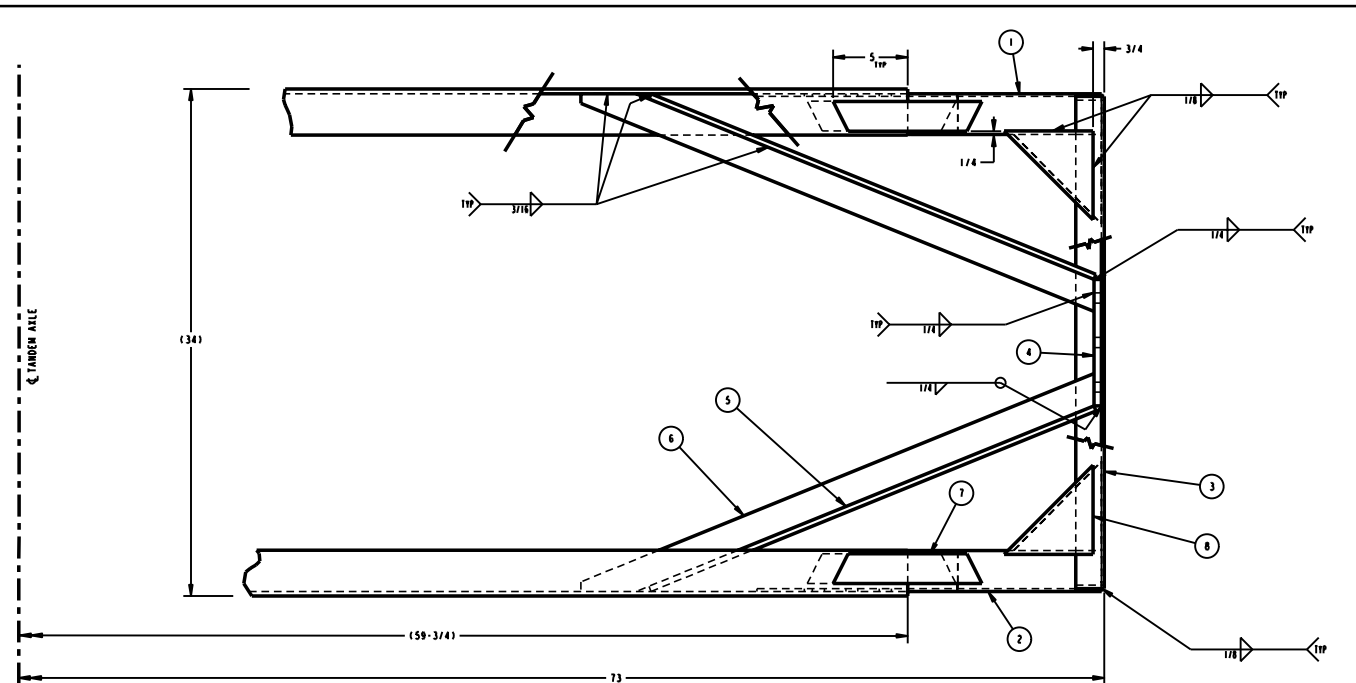
PART NUMBER: 23-0076
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 4.56 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: LID CLAMP, FRONT					SCALE: 1/4	DATE: 1/14/97	DWG. NO. 23-0076B	



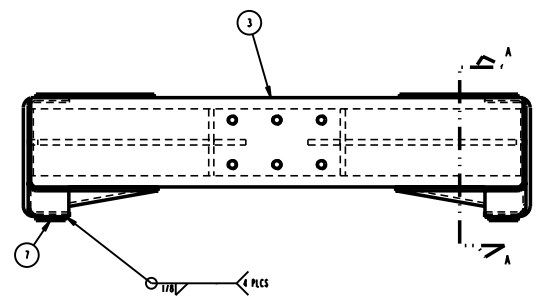
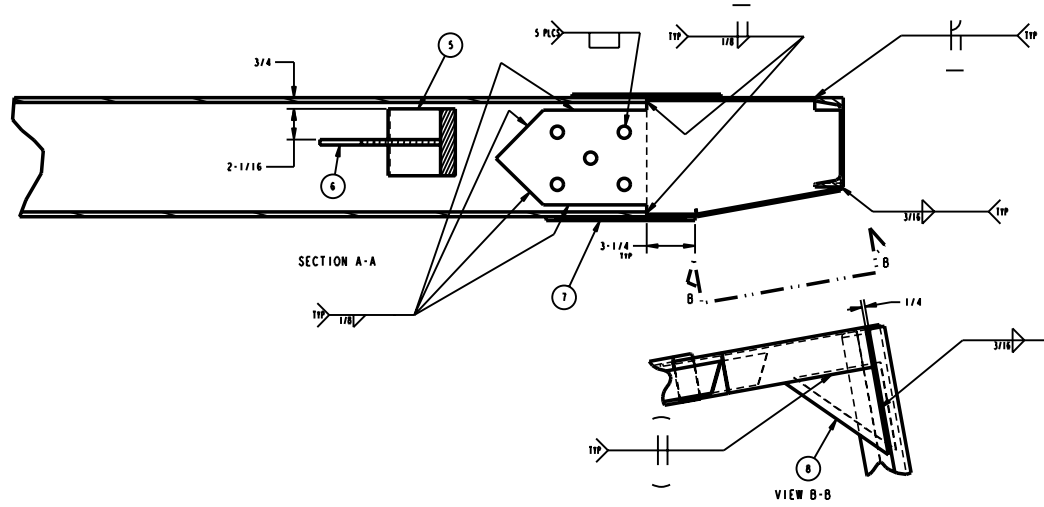
PART NUMBER: 23-0077
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 6.26 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG	NO.	BY	DATE	REVISION	APPROVED:		
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: LID CLAMP, REAR					SCALE: 1/4	DATE: 1/14/97	DWG. No: 23-0077B	



ITEM	PART NO.	DWG	DESCRIPTION	QTY
1	00-1065	C	FRAME EXTENSION RH	1
2	00-1064	C	FRAME EXTENSION LH	1
3	00-1341	B	REAR CHANNEL	1
4	00-1036	B	MOUNTING PLATE	1
5	00-1338	B	BAR, DIAGONAL	2
6	00-1339	B	BAR, STIFFENER	2
7	00-1342	B	DOUBLER STRIP	4
8	00-0717	B	GUSSET	4

84" FROM C OF TANDEM AXLE TO BACK OF CAB



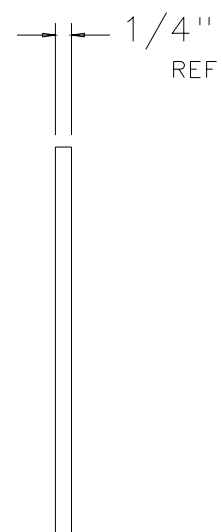
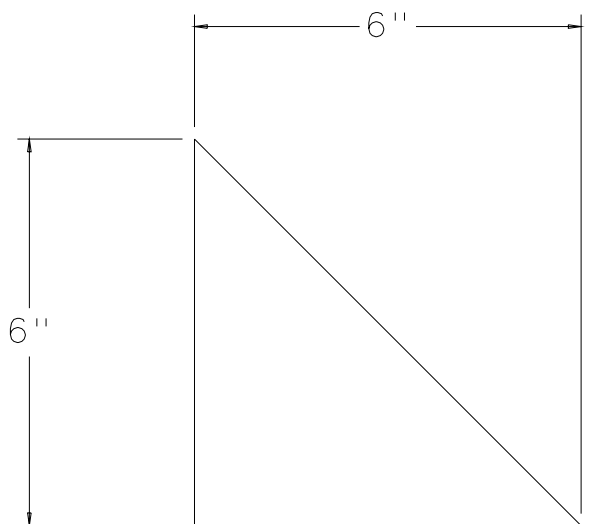
PART NO: 21-0048
EST WT: 107 LBS

STD. TOL.	DRWGR	DATE	REVISED
FRAGMENTAL			
SYMBOLS			
ANGULAR			
DECIMALS			
HEAD & TAIL			
ALPHABETICAL			

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 BIRCHMOUND, MICHIGAN 49620

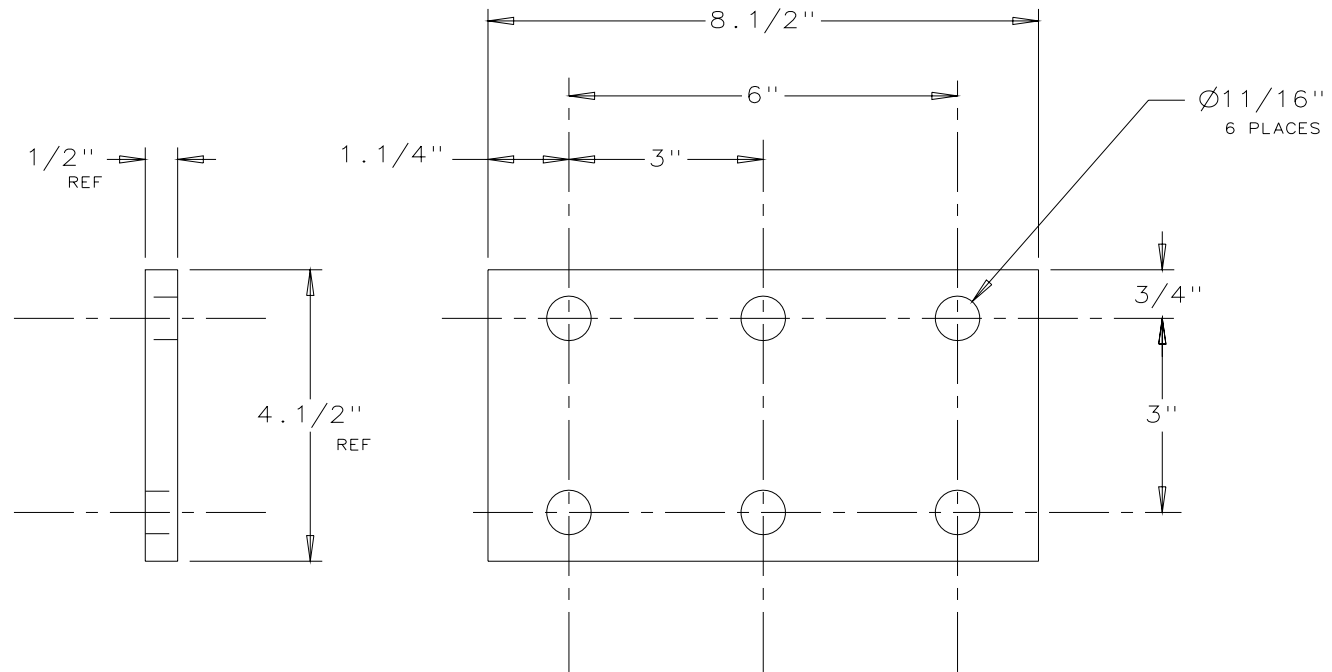
21-0048
 2 1/2 TO 636
 21-0048





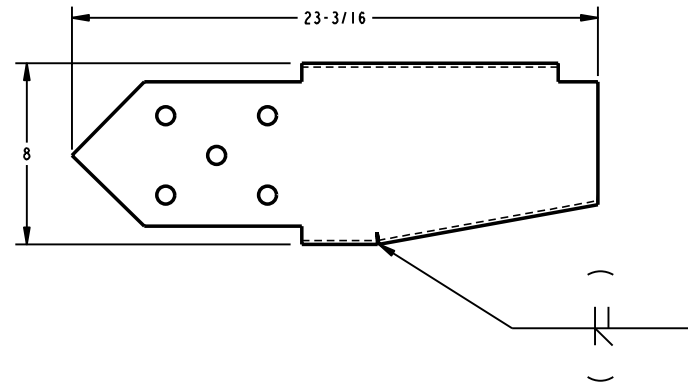
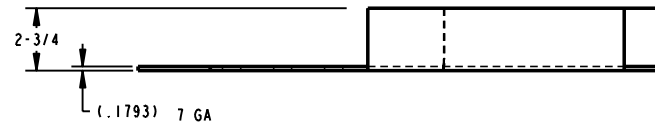
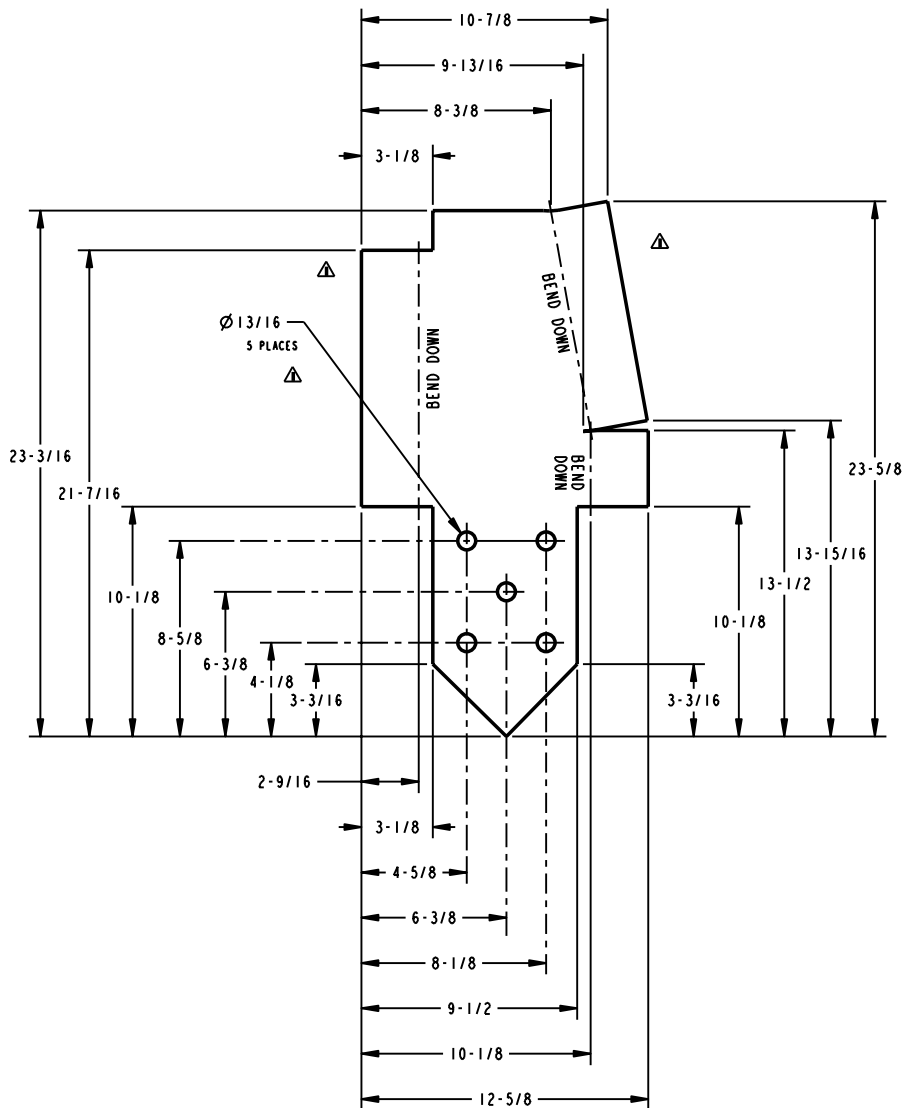
PART NO: 00-0717
 MATERIAL: PLATE 1/4 HR
 G01015
 FFES SPEC NO: AA-00448BC
 EST WT: 1.27 LBS

STD. TOLERANCES									DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16									CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				ANGULAR: + - 1 DEG					APPROVED:	
NO.	BY	DATE	REVISION							
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										PROJECT NO.: 91-2
TITLE: GUSSET							SCALE: 1/2	DATE: 5/24/93	DWG. NO.: 00-0717B	



PART NO: 00-1036
 MATERIAL: BAR, FLAT 1/2 X 4 1/2
 G10200
 FFES SPEDC NO: AB-00818AA
 EST WT: 5.10 LB

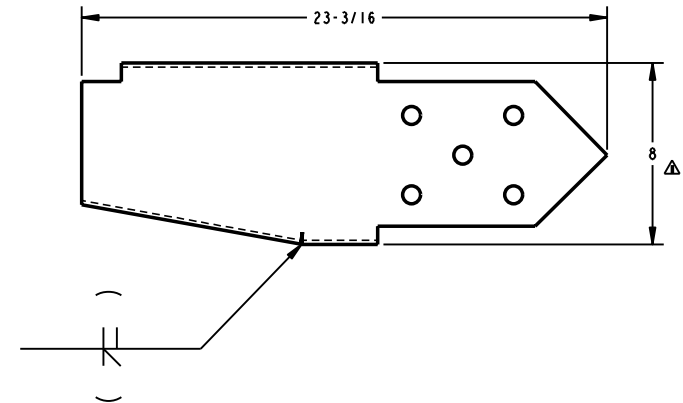
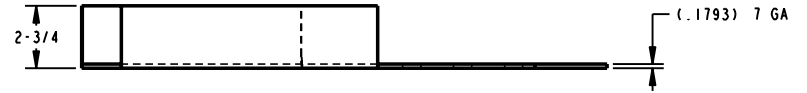
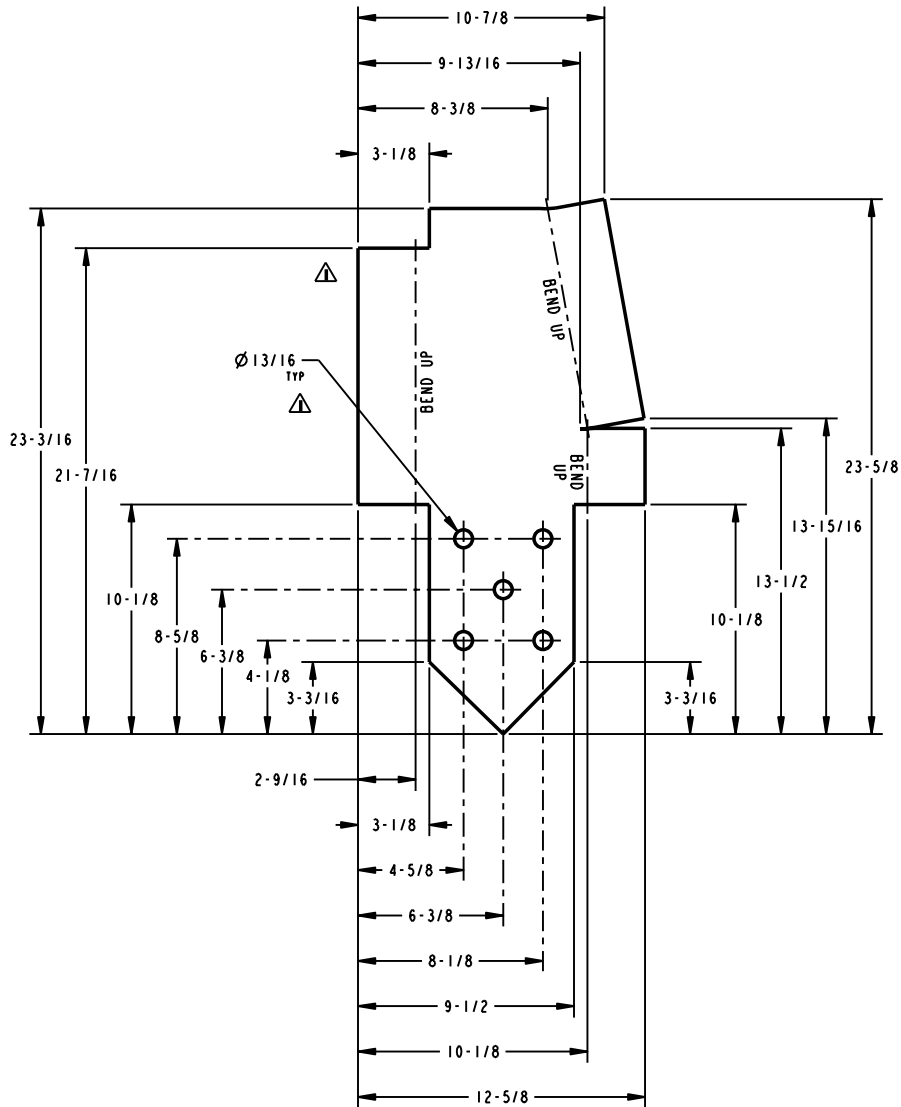
STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL:						CHECKED:			
0 TO 6 IN + - 1/32									
6 IN AND UP + - 1/16						APPROVED:			
DECIMAL:		ANGULAR:		NO.		DATE		REVISION	
1 PLACE + - 0.1		+ - 1 DEG							
2 PLACE + - 0.01									
3 PLACE + - 0.005									
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 96-3	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								SCALE: 1/2	
TITLE: MOUNTING PLATE						DATE: 8/29/96		DWG. NO. 00-1036B	



PART NO: 00-1064
 MAT'L: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 10.39 LBS

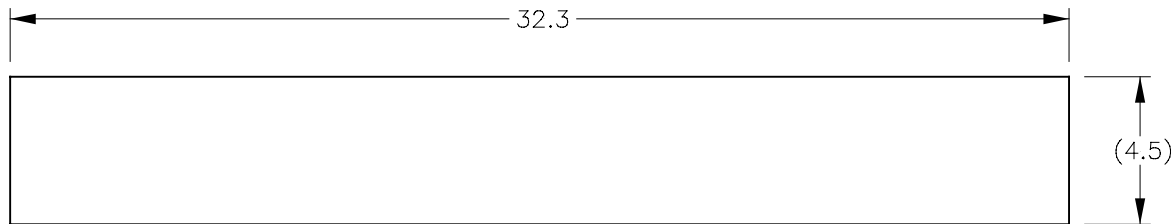
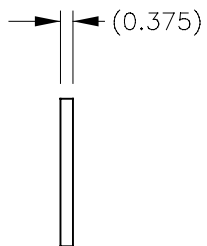
STD. TOL.						DRAWN: BEP
FRACTIONAL:						DESIGNED: BEP
STD & 1/2 3/4 UP & 1/2						APPROVED:
ANGULAR: ± .1500	1	DGP	2/01	REDESIGNED PART		DATE: 12-1-2001
DECIMAL: 1 PLACE ± .001 2 PLACE ± .0005 3 PLACE ± .0002						SCALE: 1:1
PROJECT NO:	TITLE: FRAME EXTENSION LH					FIG. NO: 00-1064






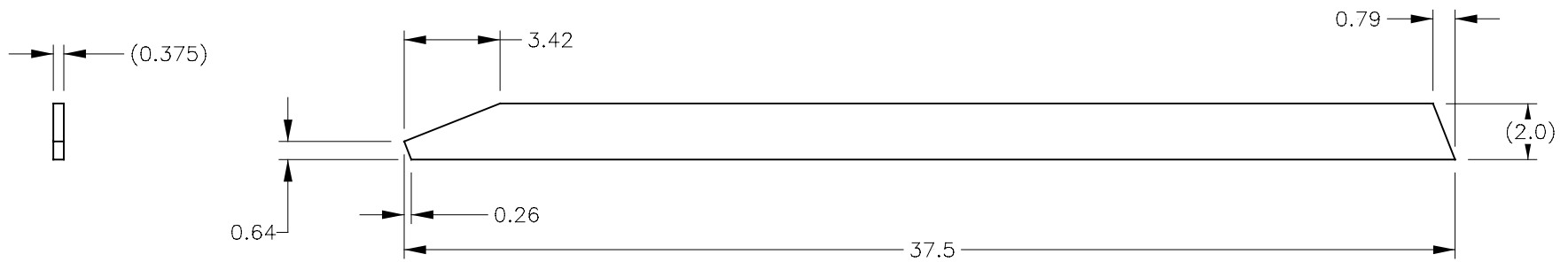
PART NO: 00-1065
 MAT'L: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 10.39 LBS

STD. TOL:						DRAWN: 06P
FRACTIONAL: ± .005 ± .0025 ± .00125						DESIGNED: 06P
ANGULAR: ± .1 DEG	1	DGP 2101	RE-DESIGNED PART			APPROVED:
DECIMAL: 1 PLACE ± .005 2 PLACE ± .0025 3 PLACE ± .00125						DATE: 13-Feb-2001
PROJECT NO:						SCALE: 1:1
	TITLE: FRAME EXTENSION RH					DNR FOREST MANAGEMENT DIVISION
						FORM NO. 00-1065 C




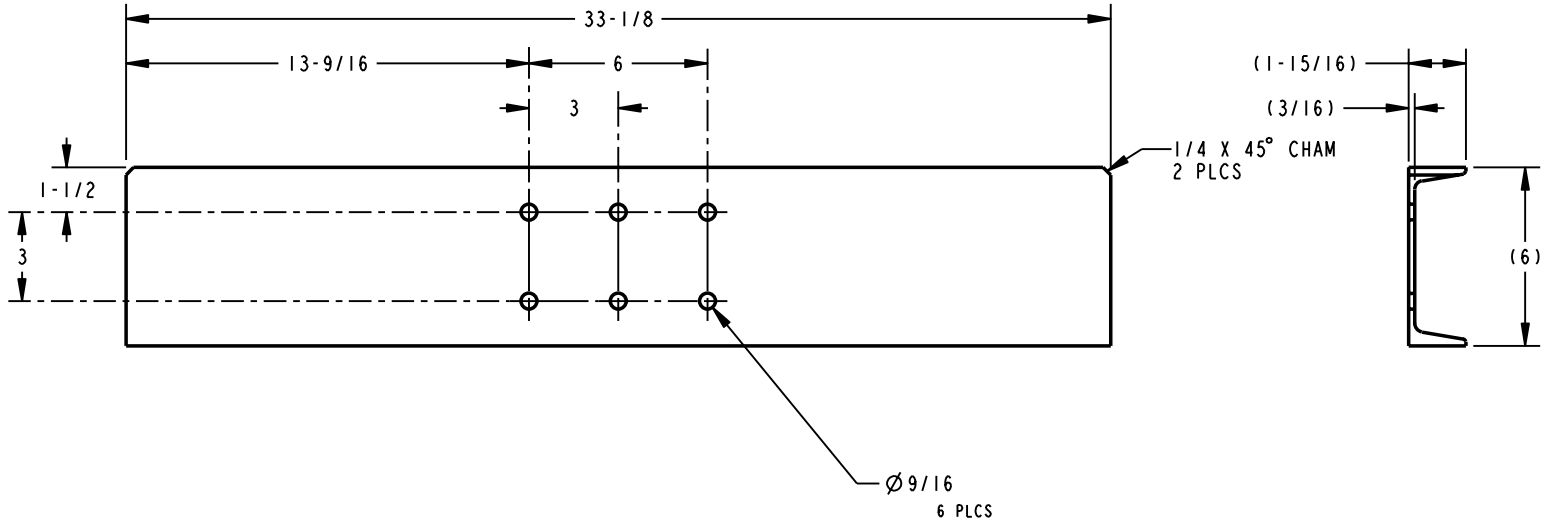
PART NO: 00-1338
 MAT'L: BAR, FLAT 3/8 X 4-1/2 HR
 G10200
 FFES SPEC NO: AB-00618AA
 EST WT: 15.4 LBS

STD. TOL.						DRAWN: DGP	 FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE		REVISION	APPROVED:	
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
SCALE: 1/4							
PROJECT NO.:	TITLE: BAR, DIAGONAL						DWG. NO. 00-1338B




PART NO: 00-1339
 MAT'L: BAR, FLAT 3/8 X 2 HR
 G10200
 FFES SPEC NO: AB-00608AA
 EST WT: 7.62 LBS

STD. TOL.								DRAWN: DGP	 DNR FOREST MANAGEMENT DIVISION	
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005								CHECKED:		
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION				APPROVED:		
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
SCALE: 1/4	PROJECT NO.:							TITLE: BAR, STIFFENER		
									DWG. NO. 00-1339B	



PART NO: 00-1341
 MAT'L: CHANNEL 6 x 8.2 #/FT
 K02607
 FFES SPEC NO: AH-06082AG
 EST WT: 22.77 LBS

STD. TOL.						DRAWN: DGF	 DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + .1/32 6 IN AND UP + .1/16						DESIGNED: DGF	
ANGULAR: + .1 DEG.						APPROVED:	
	NO.	BY	DATE	REVISION		DATE: 02-Mar-2001	
DECIMAL: 1 PLACE +- .005 2 PLACE +- .0025 3 PLACE +- .0005	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					SCALE: 1/4	
PROJECT NO.:	TITLE: REAR CHANNEL					DWG. NO.: 00-1341	SIZE: B

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

May 2001



***Design Packet 63A-5
5 Ton 6x6 1400 Gallon
Unitized Water Tank
Includes Truck Frame Extension***

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

5 Ton 6x6 1400 Gallon Unitized Water Tank

Much of the design of REC's 1400 gallon water tank for 5 ton 6x6's is contained in this booklet. Combine these drawings with REC Booklet No. 63B, Common Tank Parts. Other REC publications depict options that work with this tank.

- No. 63C, Filler Port and Strainer Drawings
- No. 63D, Pneumatic Controlled Emergency Light Mast

The tank is designed for the shortest wheelbase version of the US Military 5 Ton 6x6 (M39 or M809 series). That wheelbase is 167 inches as measured from centerline of the front axle to centerline of the tandem. The M52 and M818 truck tractor and M51 and M817 dump truck, have this wheelbase. Cargo box, fifth wheel, or other components attached to the truck frame should be removed down to the cab and chassis.

This REC design is based on several concepts.

Commonly available material. The design uses carbon steel for three reasons. It is widely available, relatively low price, and can be fabricated easier than other suitable materials.

Strength and durability. The 7 gauge (approximately 3/16 inch) thick skin is self protecting when operating in off-road wooded areas.

Volume and weight. The water capacity and storage areas are sized to the load capacity (GVWR) of the vehicle. The water load is placed in the optimal position on the truck frame.

Auxiliary engine pump. Auxiliary engine powered centrifugal pumps are the simple way to produce the water stream. It also is the easiest manner to provide "pump and roll" capability. The tank structure helps protect the pump.

These tank design concepts have over 30 years of field use. When the inside of the tank is galvanized in the manner depicted in drawing 23-9806D, you can expect a minimum of 20

years tank life without leakage. Normally 25 years can be expected.

The design can be used in either of two ways:

- As a concept in which the user can get ideas for their own design, possibly adjusting the drawings to fit their needs.
- As a fabrication specification to be given to a manufacturer, technical school, or in your own shop. It contains all the details for bidding and constructing the tank.

Figures 1 to 3 show views of a finished tank.



Figure 1 - Left side view showing front hose reel and tank dump (between wheels).



Figure 2 - Right side showing front compartment door and right rear hose reel opening.



Figure 3 - The pump deck at the rear has room for an auxiliary pump, hose reel, and proportioning system, if desired. Two compartments add storage behind the wheels.

Tank Specifications

Tank Capacity: 1400 gallons (nominal)
Tank Weight: 3,750 lbs. (without water or accessories)
Dimensions: Height above truck frame - 36 inches
Width - 96 inches
Length - 166 3/4 inches
Cab to centerline of tandem axle - 84 inches
Material: Primarily 7 gauge pickled & oil carbon steel.
Various structural steel shapes
Aluminum lids
Truck Chassis: Tank is designed for 167 inch wheelbase tandem axle truck.
Fabrication Method: MIG (wire feed) welding system
Internal Corrosion Protection: Cold Applied Zinc (Galvanizing)

Truck Frame Extension and Tank Mount

The drawings located at the end of this booklet show a method of extending the rear of the truck's frame to accommodate the tank. This helps support the rear apron and the accessories mounted on the tank. Hardwood strips 3/4 to 1 inch thick sit on the frame rail between the tank and frame (Figure 5). This

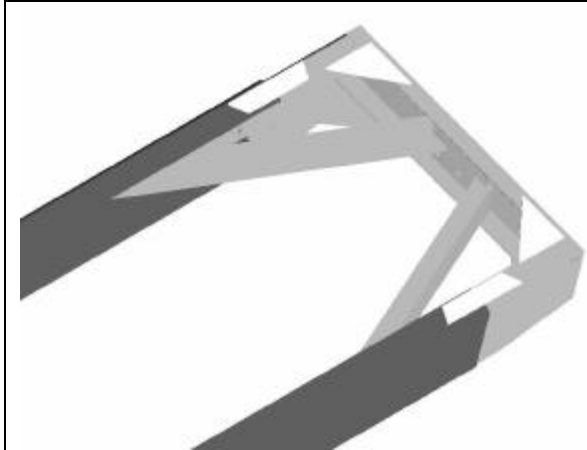


Figure 4 - A rendering of the frame extension. The dark colored channel is the original truck frame. The gray pieces are detailed in the drawing booklet.



Figure 5 - The tank rides on a 3/4 inch hardwood board to prevent metal-to-metal wear.

prevents metal-to-metal wear. Two 3/4 inch Grade 8 (high strength) bolts are used to fasten the tank to the frame. Figure 6 explains this further.

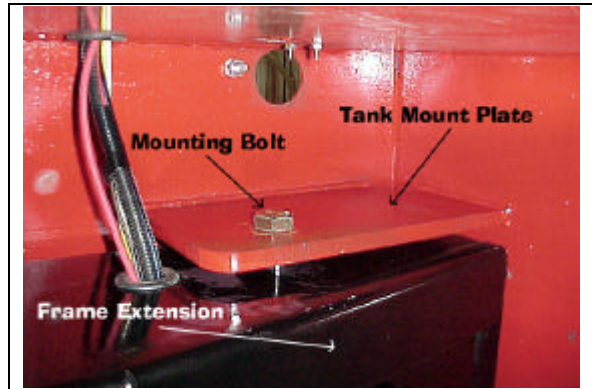


Figure 6 - View from the bottom of the tank mounting plate. A 3/4 inch grade 8 bolt fastens the tank to each frame rail. Shim between the mount plate and frame extension. Use a lock nut to assure the bolt stays in place.

Drawings and Drawing Notes:

The remaining information pertains directly to the drawings. There are some items on these drawings that may be for a user's preference (in this case ours) or be part of our fixturing system. We have included some notes to help you understand these. Often it is about whether a hole for an accessory is right for you.

The drawings are split into two sections. The first and largest section are tank drawings beginning with the overall assembly and primary weld-complete. The second section shows how to extend the vehicle frame in order to provide a mounting for the tank on the truck.

In general, the drawings are in ascending order by the drawing (part) number.

Some users of this booklet use the drawings as is. Some modify the drawings for their own situation. The following notes are intended to guide those who want to make changes by pointing out optional items. The notes are organized by the assembly or weldment drawing in which they appear.

23-9801D: The filler port and filler port screen (items 14 and 19) designs are part of Design Packet 63C. If a different style filler is used, item #5 must be modified.

23-9803C: Silicone sealant provides an inexpensive, long lasting, lid seal. Be sure to allow the bead to cure, otherwise the lid will be difficult to remove at a later date. Eighth inch (1/8") thick closed-cell foam strip is an alternative seal material.

23-0042D: Items 11 and 12 are part of the telescoping light mast system shown in REC Design Packet 63D. If you will not use this system, then parts 00-1081 and 00-1059 can be modified by eliminating the hole for the mast.

Wire guides (item 18) are welded into place to hold electric wires for lights and other appliances. We have found these to be a better long-term solution than adhesive back wire clips. The adhesive clips are a simple short-term solution but they do not endure off-road use.

Item 19 is specifically designed to mount push-pull light switch. This switch shuts off the light when the compartment door closes and comes on when the door opens. It also has a setting that allows the operator to shut the light off when the door is open. Cole Hersee part number 91800 is one such product.

00-0198D: The holes in the "Apron" were used to mount appliances and feed electrical wires that we use. You will need to decide where you need holes. This might be easiest done after the tank is completed.

00-0786D, 00-0787D, 00-0809C, and 00-0810C: The large radius bend prevents the extreme paint rub off problems of a sharp edge when operating off-road in wooded environments. Unfortunately, few small fabricating facilities will have dies of larger radius. If other radius is used for making these parts, the sheet size and bend location will need to be recalculated.

00-0791C: The holes of the rear bulkhead are sized for plumbing needed for typical auxiliary mounted pump systems. Check the flow requirements for the pump you will use to see if these port sizes correctly accommodate it. A different placement of the holes might be more efficient for some pumps. If you move the suction port, you may wish to relocate the tank's sump as well. The upper left hole is for the forward water pipe. If it is moved, then the holes in the baffles that the pipe goes through must be moved so they are aligned.

00-0792C: The smaller circular hole is for the telescoping light mast. If you do not want this option it is not needed. The larger circular hole is an opening for accessing the vehicle's left fuel tank port.

00-0795C: The bolt circle is used to mount a compartment light. If you choose a different light, these will change.

00-0804C: The 2-inch holes are for the vent system. If a different system is used, they are not needed.

00-0808C: This subweld includes items not necessary for this project. Drawings for Items

#2 and #3 are not included in this packet. Item #1 (00-0811) without the lower right cut out and hubs should be used in place of 00-0808 on the subweld drawing 00-0820D.

00-0820D: The two Items 1, "Rear Tank Mount," are designed to fasten the tank onto the REC truck frame extension design found in the last section of this booklet (Drawing #21-0047D). The extension provides support to the rear of the tank as well as the tank attachment point.

Items 35 and 36 are part of the tank venting system. If another vent and fill system is used, several parts including Item #17 (00-0804) the lift channel and Item #4 (00-0784) the water compartment bottom also change.

00-1337C and 00-1036B. The bolt holes are for mounting auxiliary items. If you have no use, eliminate them.

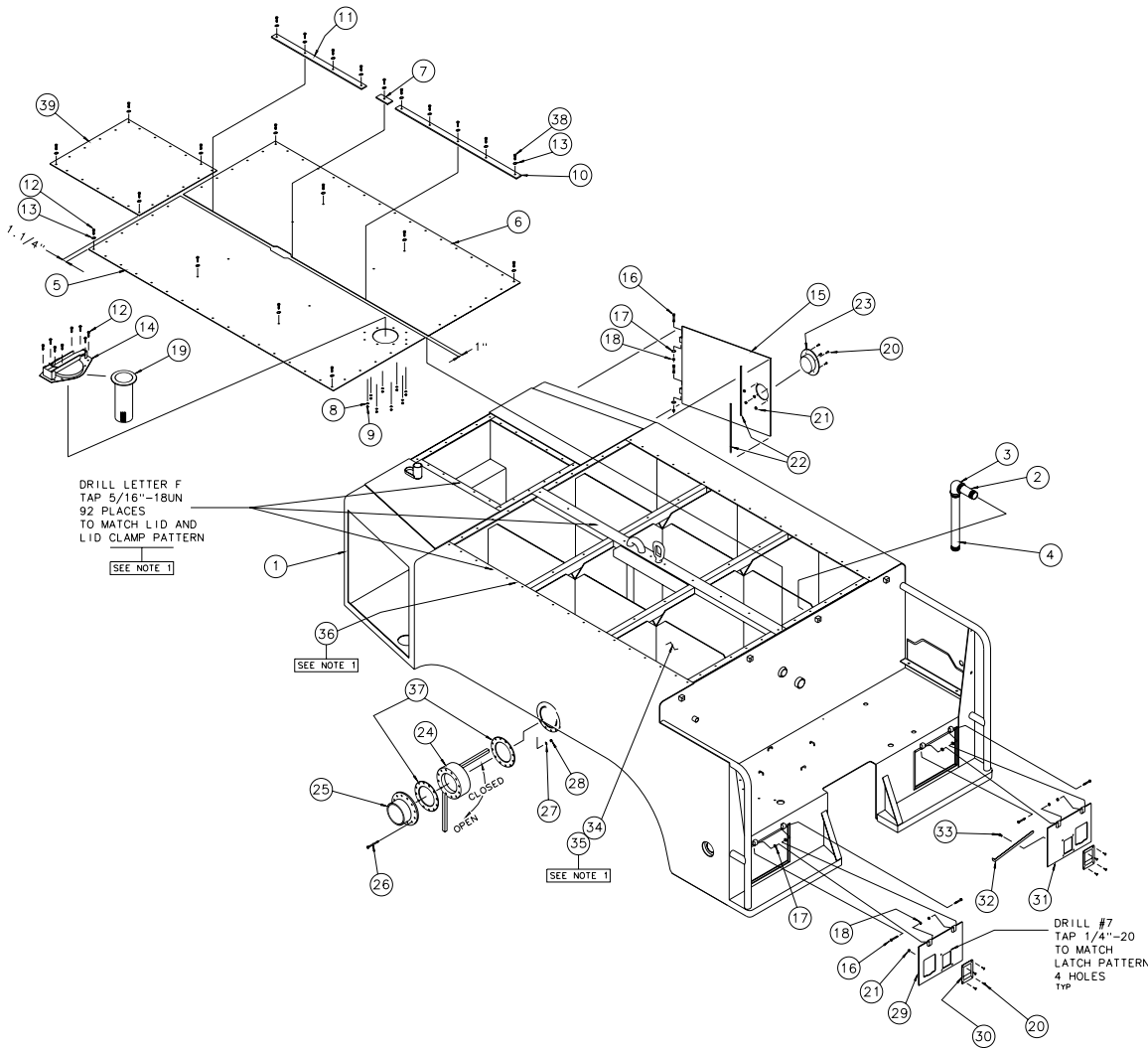
Drawing List

Drawing Number	Drawing Name
23-9801D	Tank A/C
23-9803C	Water Compartment Prep & Seal
23-0042D	Tank W/C
23-0048D	Lid, Front
23-0049B	Lid Clamp, Front
23-0051B	Lid Clamp, Rear
23-0052D	Lid, Rear LH 1500 Gal Tank
23-0053D	Lid, Rear RH
00-0198D	Apron
00-0289B	Channel, Bumper LH
00-0290B	Channel, Bumper RH
00-0294B	Bumper, Rear S/W RH
00-0295B	Bumper, Rear S/W LH
00-0784C	Bottom, Water Compartment
00-0785C	Bulkhead, Front
00-0786D	Tank Side (LH)
00-0787D	Tank Side (RH)
00-0788C	Bottom, Upper (LH)
00-0789C	Bottom, Upper (RH)
00-0791C	Bulkhead, Rear
00-0792C	Floor, Compartment
00-0793C	Baffle, Longitudinal (RH)
00-0794C	Baffle, Longitudinal (LH)
00-0795C	Front Panel
00-0796C	Panel, Front S/W
00-0797A	Angle: 1" x 1" x 1/4"
00-0799B	Baffle
00-0798B	Baffle
00-0800B	Baffle
00-0802B	Angle
00-0803B	Channel 4 x 7.25 #/FT
00-0804C	Channel, Tank Lifting S/W
00-0808C	Compartment Wall S/W
00-0809C	Panel, Front Quarter RH
00-0810C	Front Quarter LH
00-0811B	Sheet

Drawing Number	Drawing Name
00-0815B	Strip
00-0816B	Strip
00-0817B	Bar
00-0818C	Box Out
00-0819B	Stiffener, Lift Channel
00-0820D	Tank S/W
00-0828C	Compartment Top (RH)
00-0829C	Compartment Top (LH)
00-0929B	Pipe, Black Sch 40 1.1/2"

Truck Frame Extension

Drawing Number	Drawing Name
21-0047D	Frame Extension W/O Plow
00-0693C	Frame Extension LH 5 Ton
00-0694C	Frame Extension RH 5 Ton
00-1337B	End Channel
00-1036B	Mounting Plate
00-1340B	Doubler Strip
00-1339B	Bar, Stiffener
00-0717B	Gusset
00-1338B	Bar, Diagonal



DRILL LETTER F
TAP 5/16"-18UN
92 PLACES
TO MATCH LID AND
LID CLAMP PATTERN

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

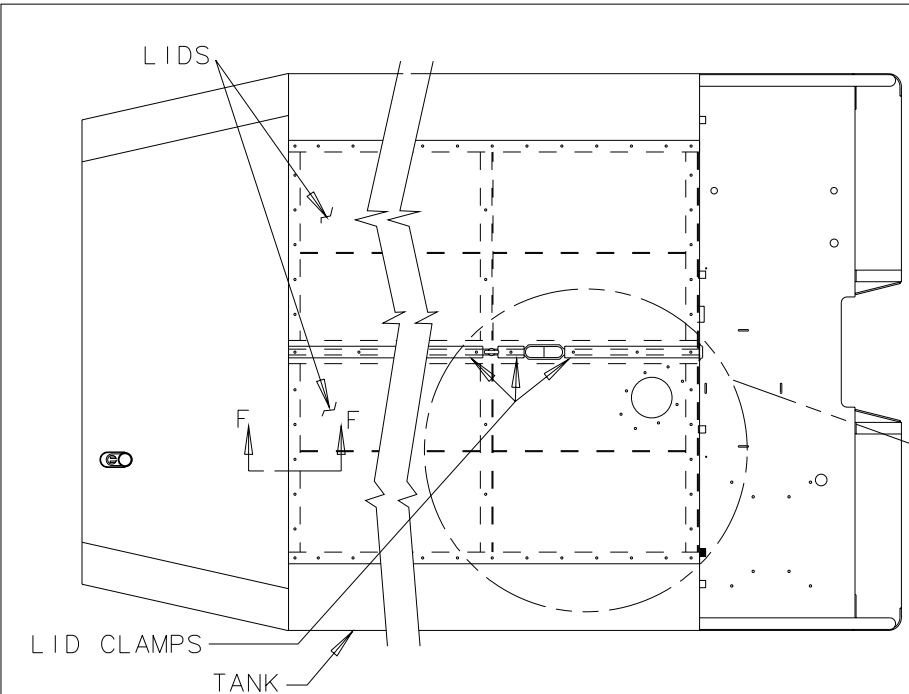
DRILL #7
TAP 1/4"-20
TO MATCH
LATCH PATTERN
4 HOLES
TYP

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	23-0042	D	TANK W/C	1	3500
2	P32-CGN28		NIPPLE 2" X 7" LONG SCHEDULE 40 GALV	1	2.13
3	P32-AGL		ELBOW 90°, 2" SCH 40 GALV	1	2.19
4	P32-CGN76		PIPE 2" X 19" LONG SCHEDULE 40 GALV	1	5.78
5	23-0052	D	LID, REAR (LH)	1	42.1
6	23-0053	D	LID, REAR (RH)	1	42.6
7	23-0050	B	LID CLAMP, CENTER	1	0.62
8	WS-05BC		WASHER, LOCK 5/16" PLATED	8	
9	TS-05GP		NUT, HEX 5/16"-18 PLATED GRADE 5	8	
10	23-0051	B	LID CLAMP, REAR	1	6.63
11	23-0049	B	LID CLAMP, FRONT	1	4.96
12	TS-05GG08		CAPSCREW HEX HEAD 5/16"-18 3/4" LONG PLATED GRADE 5	92	
13	WS-05BB		WASHER, FLAT 5/16" SAE PLATED	102	
14	23-0031	F	FILLER PORT LID A/C	1	11.1
15	23-0024	C	DOOR W/C (RH)	1	44.4
16	TS-06HG20		CAPSCREW HEX HEAD 3/8"-24 2-1/2" LONG PLATED GRADE 5	6	
17	23-0006	B	WASHER, FLAT 3/8" TO 5/8" 9/16" OD 0.03" THICK NYLON	6	
18	TS-06HPL		NUT LOCK HEX PLATED GRADE 5	6	
19	23-0032	C	FILLER PORT SCREEN W/C	1	2.38
20	TS-04CB08		MACH SCREW PAN HEAD 1/4"-20 1/2" LONG PLATED GRADE 2	12	
21	TS-04GP		NUT, HEX JAM 1/4"-20 PLATED GRADE 5	12	
22	23-0034	A	ROD, LATCH	2	----
23	23-0004	B	DOOR, LATCH (LH)	1	4.00
24	23-0041	B	VALVE, DUMP 6"	1	11.6
25	23-0060	B	FLANGE 6" DUMP TO 6" NPT FEMALE	1	8.60
26	TS-06GG28		CAPSCREW HEX HEAD 3/8"-18 3-1/2" LONG PLATED GRADE 5	12	
27	WS-06BC		WASHER, LOCK 3/8" PLATED	12	
28	TS-06GP		NUT, HEX 3/8"-18 PLATED GRADE 5	12	
29	23-0025	C	DOOR W/C (LH)	1	10.0
30	23-0030	B	DOOR LATCH PADDLER HANDLE	2	1.00
31	23-0026	C	DOOR W/C (RH)	1	10.0
32	23-0035	B	DOOR STOP	2	0.64
33	TS-04HG04		CAPSCREW HEX HEAD 1/4"-20 1/4" LONG PLATED GRADE 5	2	
34	18-8002	B	ETCHING AND CLEANING AGENT		
35	18-8003	B	GALVANIZING, COLD		
36	33-0041	B	SEALANT, MULTI-PURPOSE SILICONE		
37	23-0047	B	GASKET	2	0.08
38	TS-05GG08		CAPSCREW HEX HEAD 5/16"-18 1" LONG PLATED GRADE 5	10	
39	23-0048	D	LID, FRONT	1	13.2

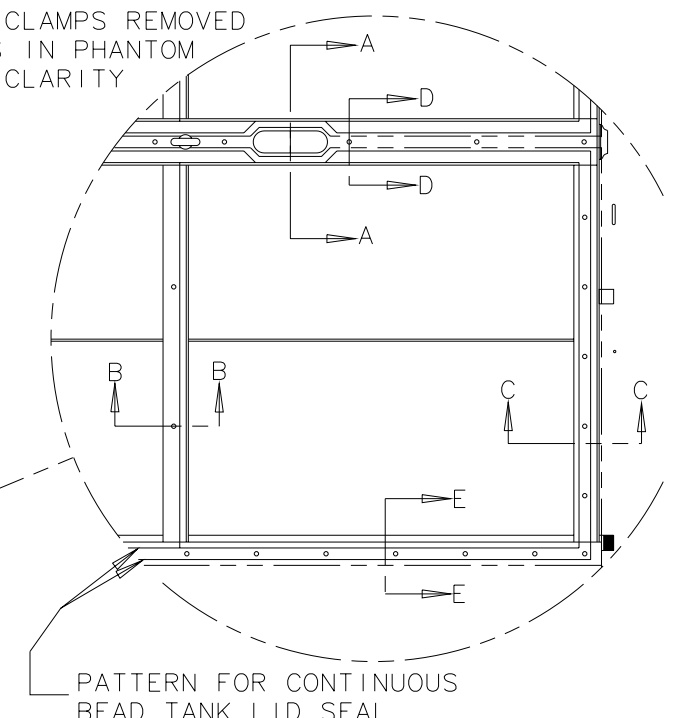
NOTES:
1. SEE DRAWING 23-9803C FOR LID MOUNTING, ETCHING, GALVANIZING AND LID SEALING PROCEDURES.

PART NUMBER: 23-9801
EST WT: 3750 LBS

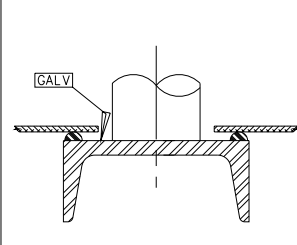
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FRACTIONAL:				CHECKED:	KDB	
DECIMAL:				APPROVED:		
ANGULAR:				DATE:		FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: TANK A/C			SCALE: 1" = 20'	DATE: 27 DEC 94	DWG NO: 23-9801D	



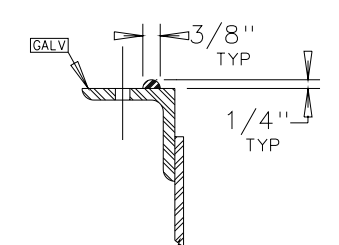
LID CLAMPS REMOVED
LIDS IN PHANTOM
FOR CLARITY



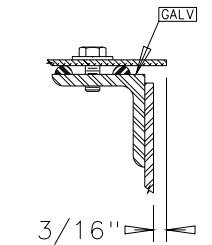
PATTERN FOR CONTINUOUS
BEAD TANK LID SEAL



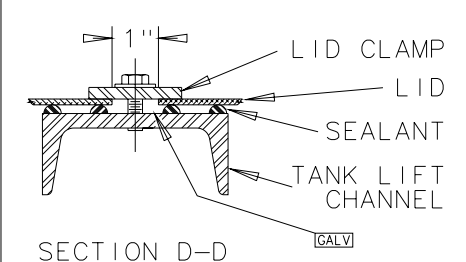
SECTION A-A



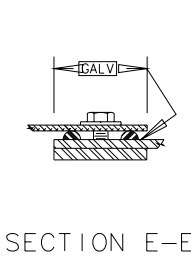
SECTION B-B
SHOWN WITHOUT LID
OR FASTENER



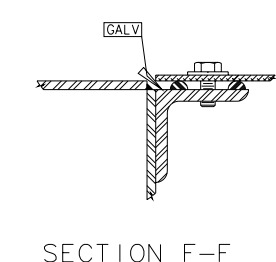
SECTION C-C



SECTION D-D



SECTION E-E

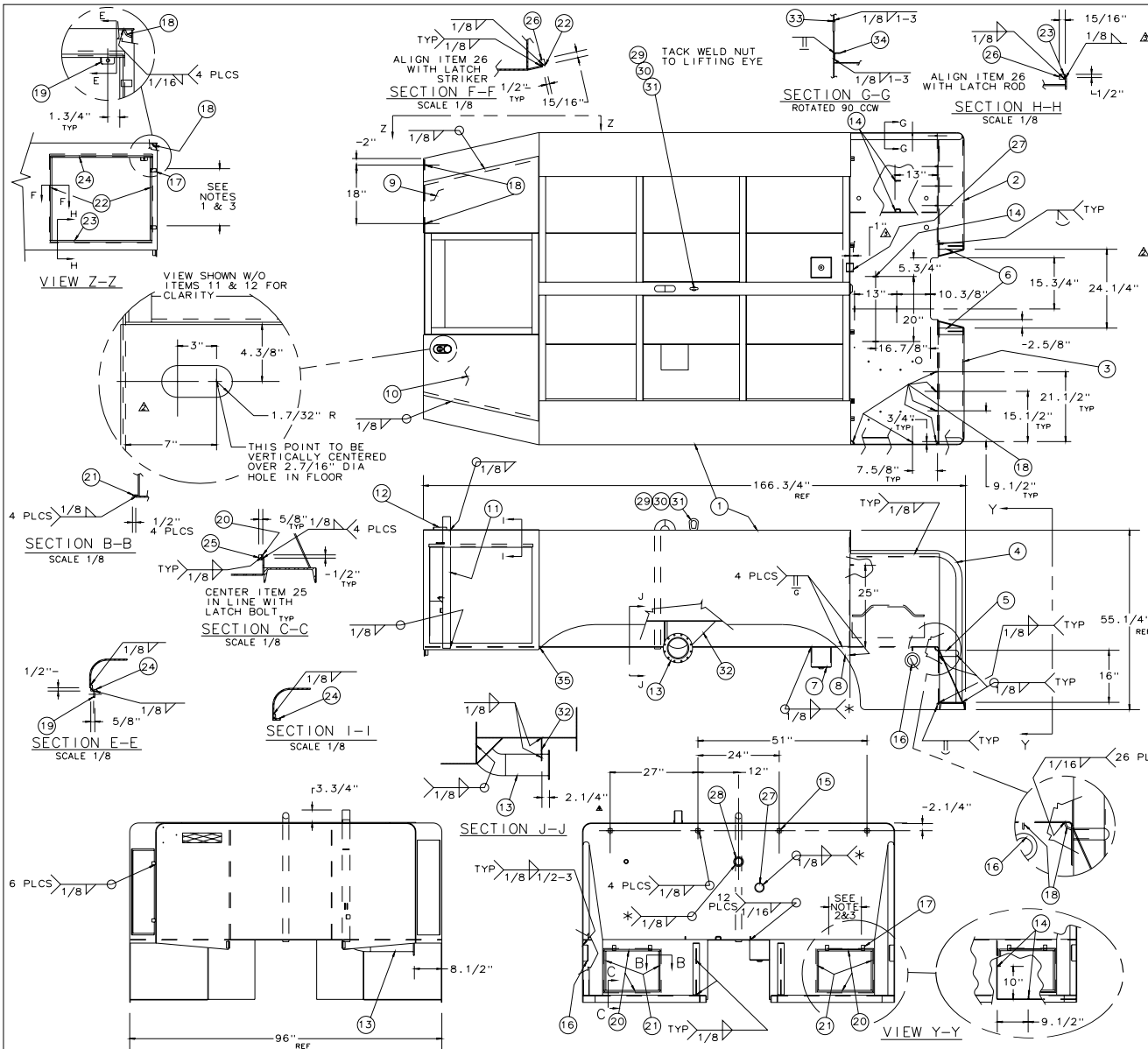


SECTION F-F

LID MOUNTING AND CORROSION PROTECTION PROCEDURES

1. DRILL & TAP HOLES FOR LID MOUNTING
2. ETCH & GALVANIZE ALL INTERNAL WATER COMP. SURFACES. ETCH & GALVANIZE LID MOUNTING SURFACES AS NOTED BY GALV. 3 MILS MIN. REF DRAWINGS 18-8002B & 18-8003B
3. APPLY SEALANT AS SHOWN. REF DRAWING 33-0041B CURE SEALANT 18 HRS MIN BEFORE ATTACHING LIDS

STD. TOLERANCES		DRAWN: BH		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. ± 1/32" 6 IN AND UP ± 1/16"		CHECKED:		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		FOREST MANAGEMENT DIVISION
NO.		DATE		
FOREST FIRE EXPERIMENT STATION				PROJECT NO.: 90-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 23-9803C
TITLE: WATER COMPARTMENT PREP & SEAL		SCALE: NONE	DATE: 12/6/94	



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0820	D	TANK S/W	1	3100
2	00-0294	B	BUMPER S/W RH	1	38.5
3	00-0295	B	BUMPER S/W LH	1	38.5
4	00-0272	B	PIPE	2	17.7
5	00-0113	B	PIPE	2	1.23
6	00-0116	B	GUSSET S/W	2	5.60
7	00-0117	B	SUMP S/W	1	9.70
8	00-0832	B	FENDER FILL	2	0.50
9	00-0828	C	COMPARTMENT TOP (RH)	1	35.1
10	00-0829	C	COMPARTMENT TOP (LH)	1	40.5
11	00-0830	B	MAST TUBE S/W	1	13.2
12	00-0286	B	CYLINDER SHIELD	1	0.33
13	00-0824	C	DUMP S/W	1	43.0
14	00-0123	A	TIE DOWN	6	0.04
15	00-0285	A	TAP BLOCK	4	0.52
16	00-0163	B	MARKER LIGHT BRKT S/W	2	1.85
17	00-0304	A	HINGE BLOCK	6	0.30
18	00-0164	A	WIRE GUIDE	13	0.02
19	00-0333	A	MOUNT, SWITCH	1	0.06
20	00-0174	A	BAR	4	0.70
21	00-0329	A	BAR	4	0.48
22	00-0330	A	BAR	2	1.01
23	00-0331	A	BAR	1	1.29
24	00-0332	A	ANGLE	2	4.04
25	00-0311	A	BAR, SQUARE	2	0.06
26	00-0312	A	BAR, SQUARE	2	0.12
27	P32-CAK		COUPLING 2" SCH 40 BLK STL	1	1.05
28	P24-MAF		FLANGE, WELD 1.1/2"	1	0.53
29	23-0043	B	LIFTING EYE 7/8"	1	2.09
30	TS-14EP		NUT, HEX 7/8 UNC NON PLTD	1	0.35
31	WS14-BB		WASHER, FLAT 7/8 SAE PLATED	1	0.04
32	00-0825	B	DUMP GUSSET	1	3.61
33	00-0826	B	HOSE RUB BAR	1	1.36
34	00-0827	B	ANGLE, HOSE ROLLER MTG	1	4.80
35	00-0690	A	GUSSET	2	0.03

- NOTES:
1. USE DOOR W/C P/N 23-0024 TO POSITION THE HINGE BLOCKS ON TANK. HINGE BLOCK SEQUENCE SHOULD BE DOOR HINGE BLOCKS ON TOP OF TANK HINGE BLOCKS.
 2. USE DOOR W/C P/N 23-0025 OR P/N 23-0026 TO POSITION HINGE BLOCKS ON TANK. HINGE BLOCK SEQUENCE SHOULD BE TANK HINGE BLOCKS OUTSIDE OF DOOR HINGE BLOCKS.
 3. 1/32" SPACE BETWEEN HINGE BLOCKS IS REQ'D FOR INSTALLATION OF NYLON WASHER P/N 23-0006
 4. * DENOTES WATER TIGHT WELD

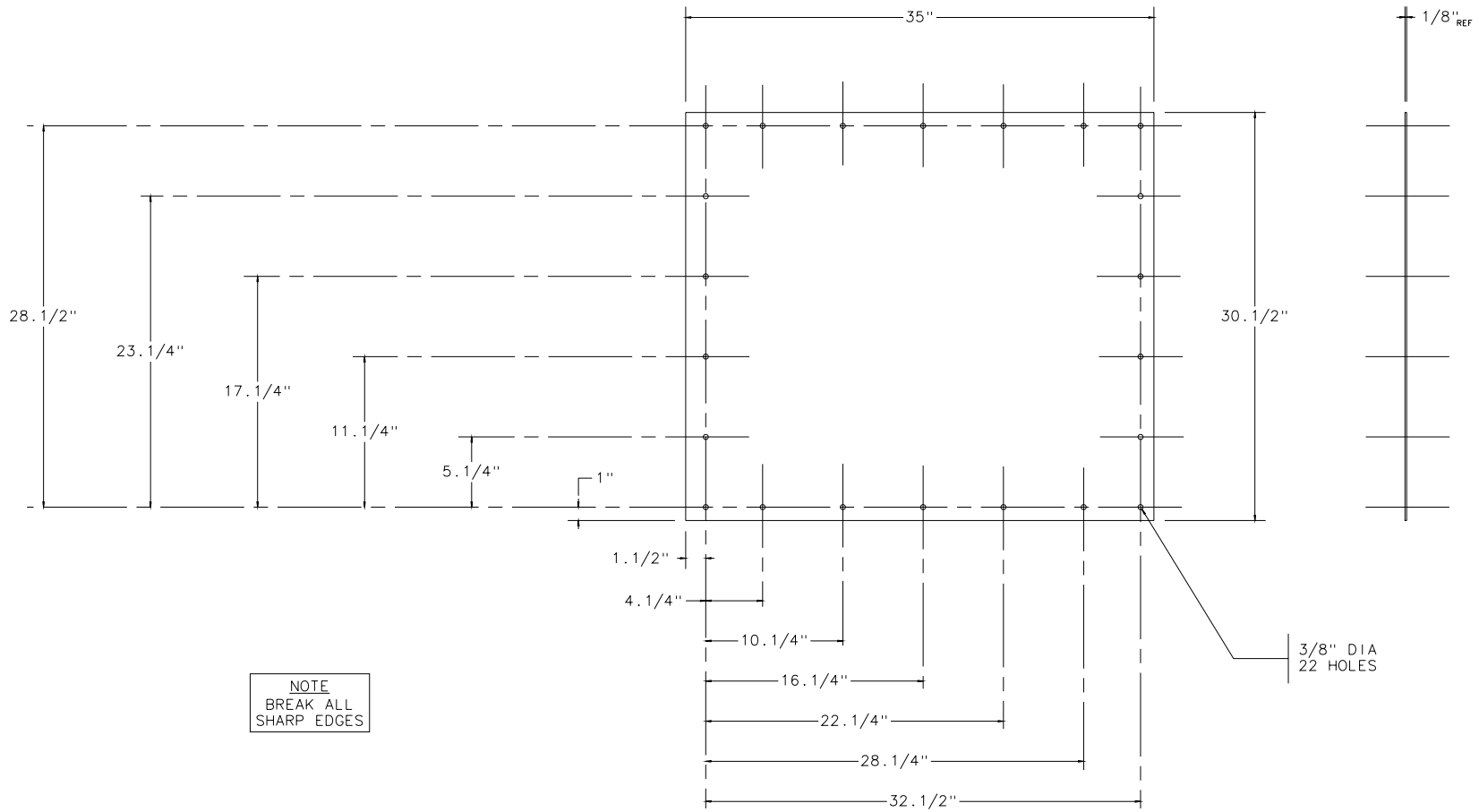
PART NUMBER: 23-0042
EST WT: 3500 LBS

STD. TOLERANCES	4 LLP/07 ADDED DIMENSION	DRAWN:	KDB
FRACTIONAL:	3 DECIMAL	CHECKED:	KDB
DECIMAL:	1 1/100 TO 1/10	APPROVED:	MICHIGAN DNR
SCALE:	1"=1'-0"	DATE:	4/29/92

FOREST FIRE EXPERIMENTATION STATION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

TITLE: TANK W/C 5 TON SCALE: 1/16 DATE: 4/29/92

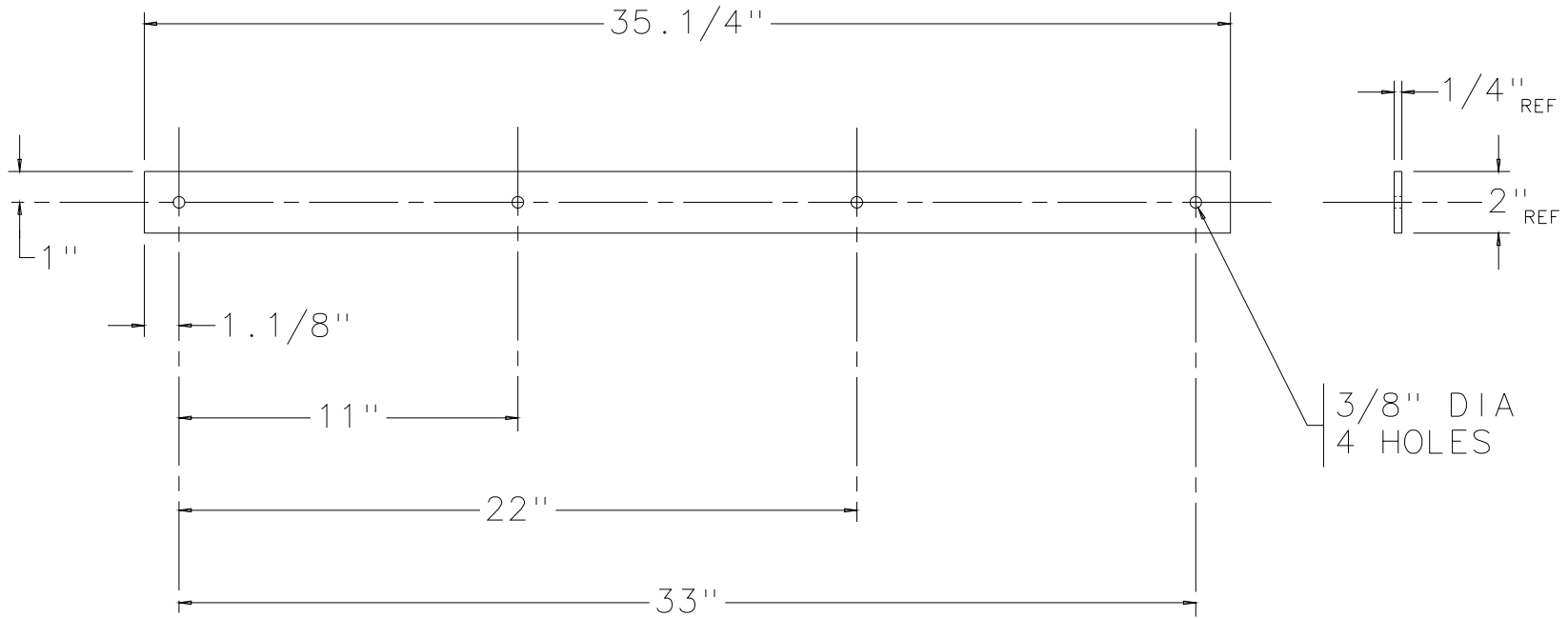
PROJECT NO.: 91-2
DWG. NO.: 23-0042D



NOTE
BREAK ALL
SHARP EDGES

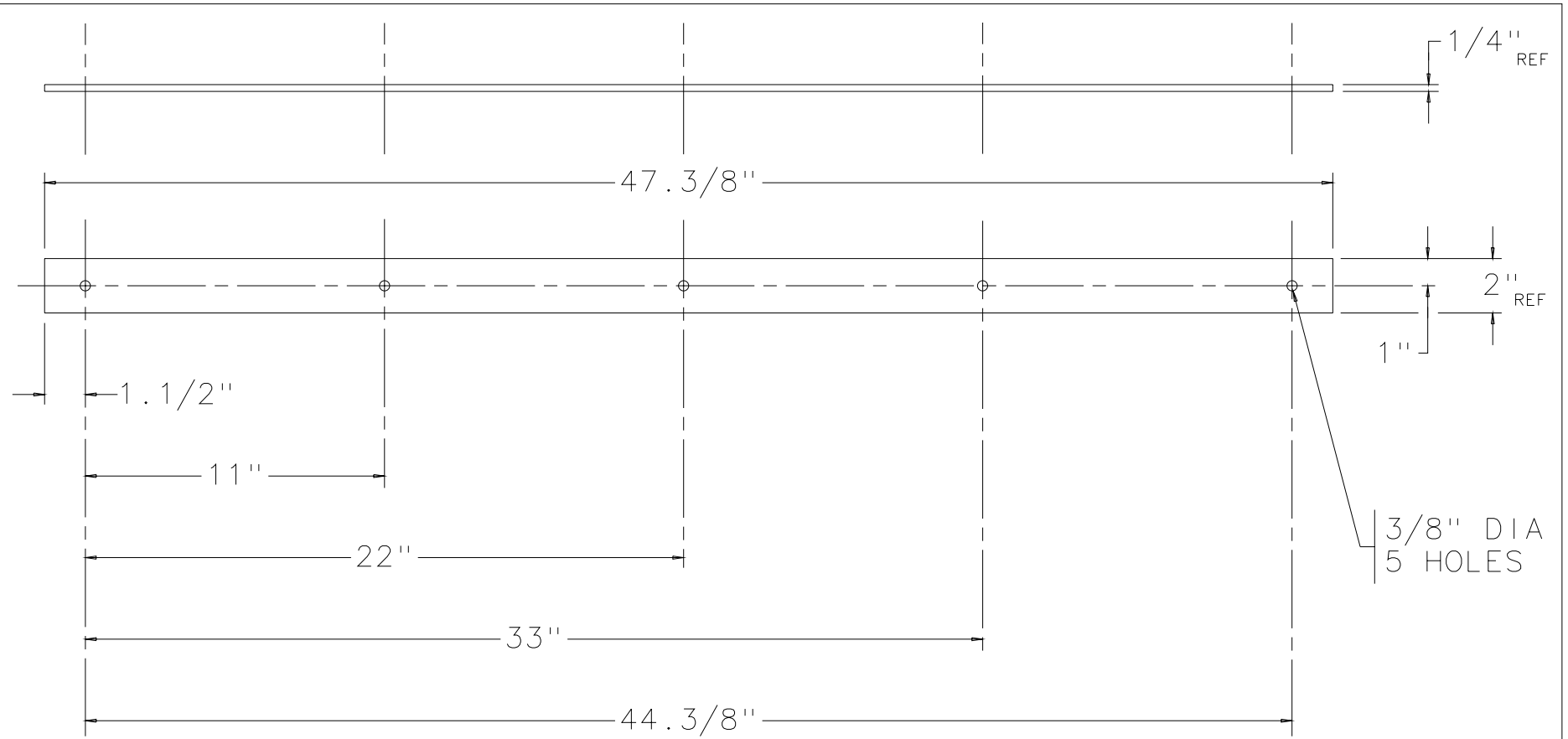
PART NUMBER: 23-0048
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-1253BAT
 EST WT: 13.2 LBS

STD. TOLERANCES				DRAWN:		R. GREENLAW	
FRACTIONAL:	± 1/16"	DECIMAL:	± 0.005"	CHECKED:			
ANGULAR:	± 1/2°	RECTANGULAR:	± 0.005"	APPROVED:			
PLATE:	± 0.005"	NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION						MICHIGAN DNR	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: LID, FRONT 1500 GAL TANK SCALE: 1 = 4 DATE: 06 SEP 94							
						FOREST MANAGEMENT DIVISION	
						PROJECT NO.: 91-2 DWG. NO.: 23-0048D	



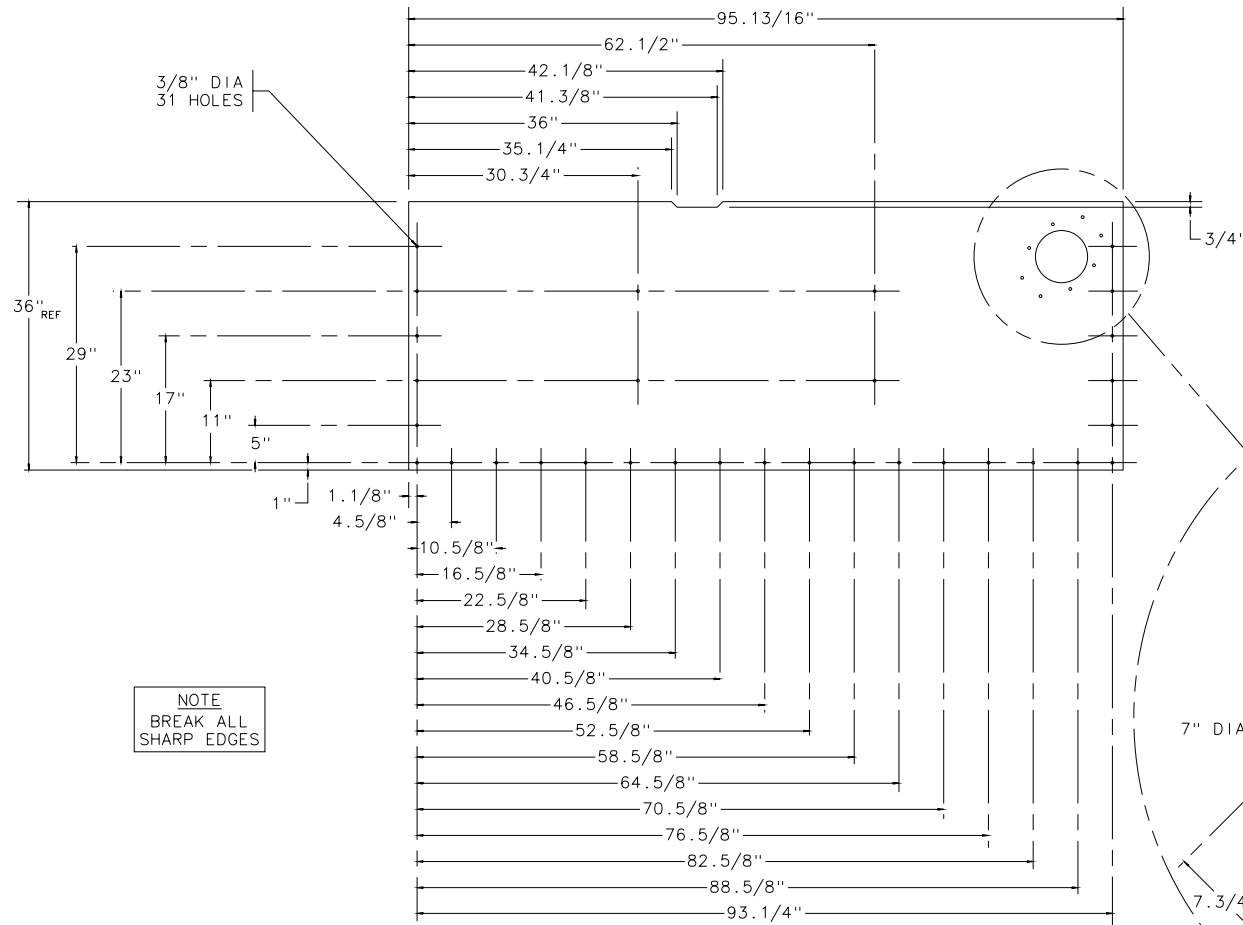
PART NUMBER: 23-0049
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 4.96 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: LID CLAMP, FRONT				SCALE: 1 = 4	DATE: 09 SEP 94	PROJECT NO.: 91-2
						DWG. NO.: 23-0049B

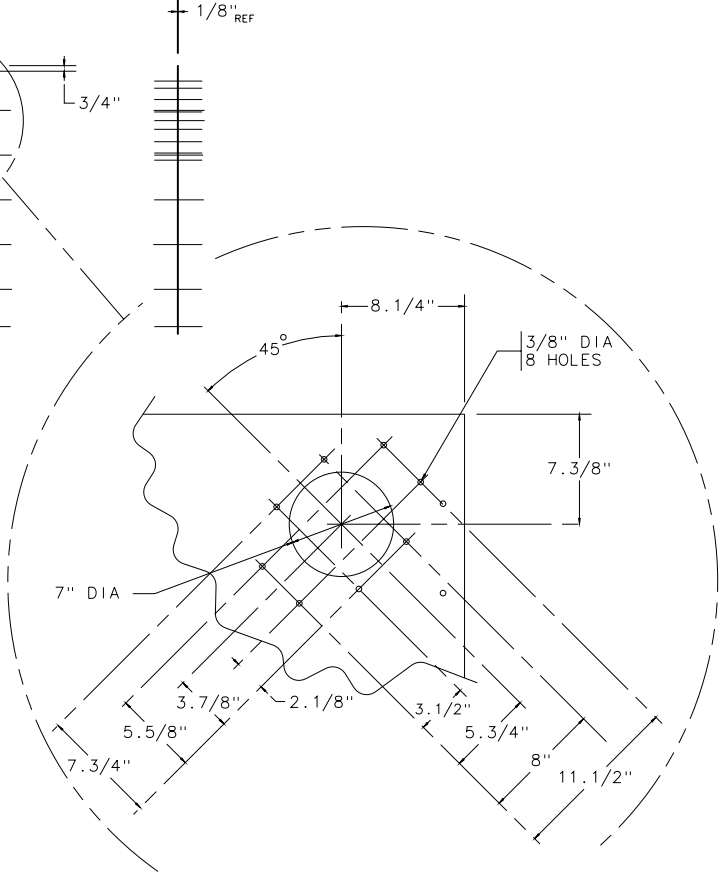


PART NUMBER: 23-0051
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 6.63 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: LID CLAMP, REAR				SCALE: 1 = 4	DATE: 09 SEP 94	DWG. NO.: 23-0051B



NOTE
BREAK ALL
SHARP EDGES



PART NUMBER: 23-0052
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-1253BAT
 EST WT: 42.1 LBS

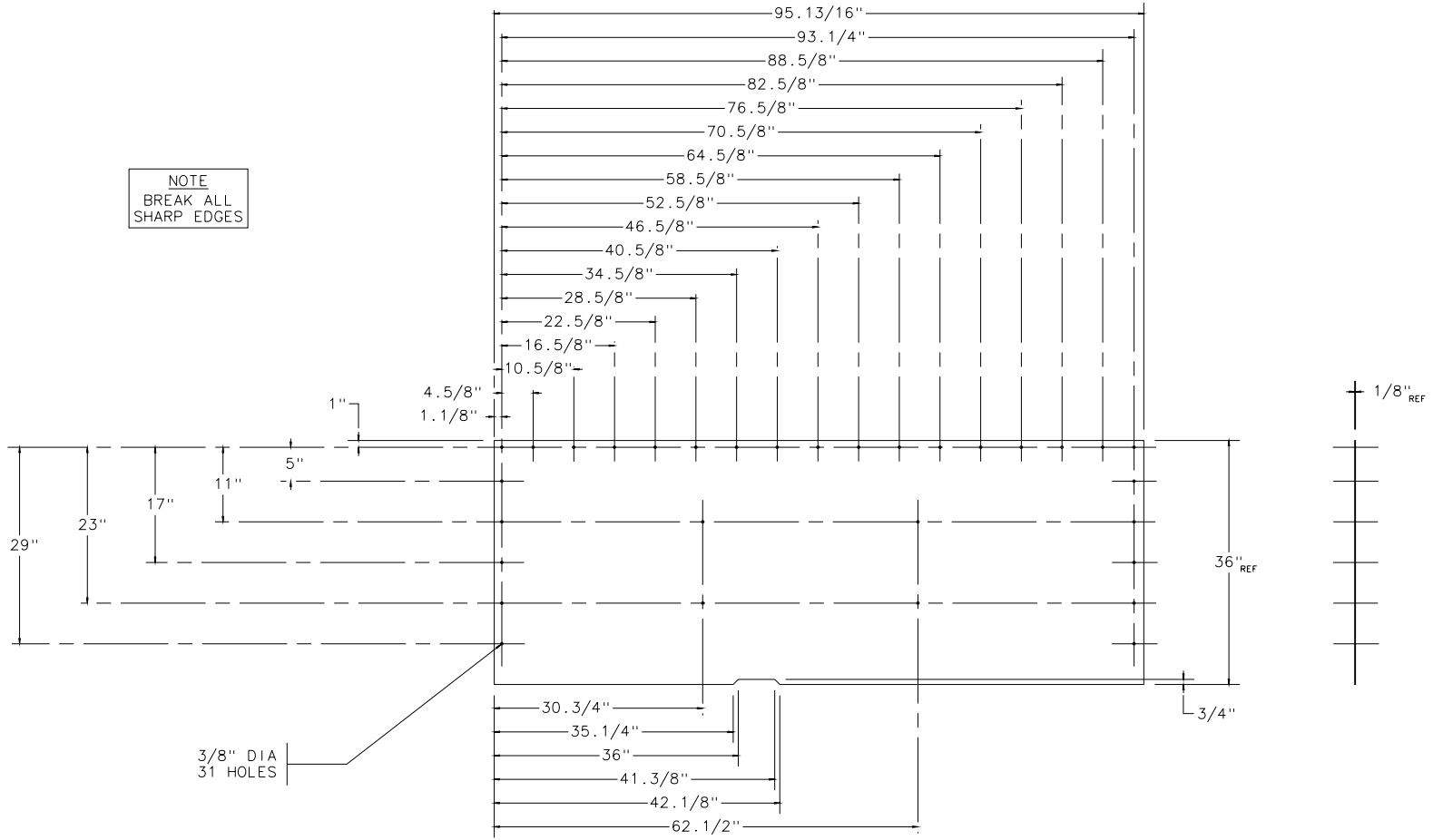
STD. TOLERANCES						DRAWN:	R. GREENLAR
FRACTIONAL:	± 0.005	± 0.010	± 0.015	± 0.020	± 0.030	CHECKED:	KJD
DECIMAL:	± 0.005	± 0.010	± 0.015	± 0.020	± 0.030	APPROVED:	
ANGLE:	± 0.005	± 0.010	± 0.015	± 0.020	± 0.030	NO.	BY
DATE						REVISION	

PROJECT NO.: 91-2
 FOREST MANAGEMENT DIVISION

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48663

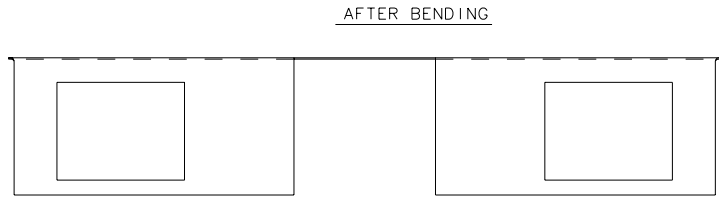
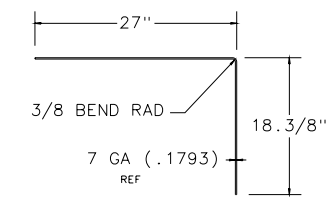
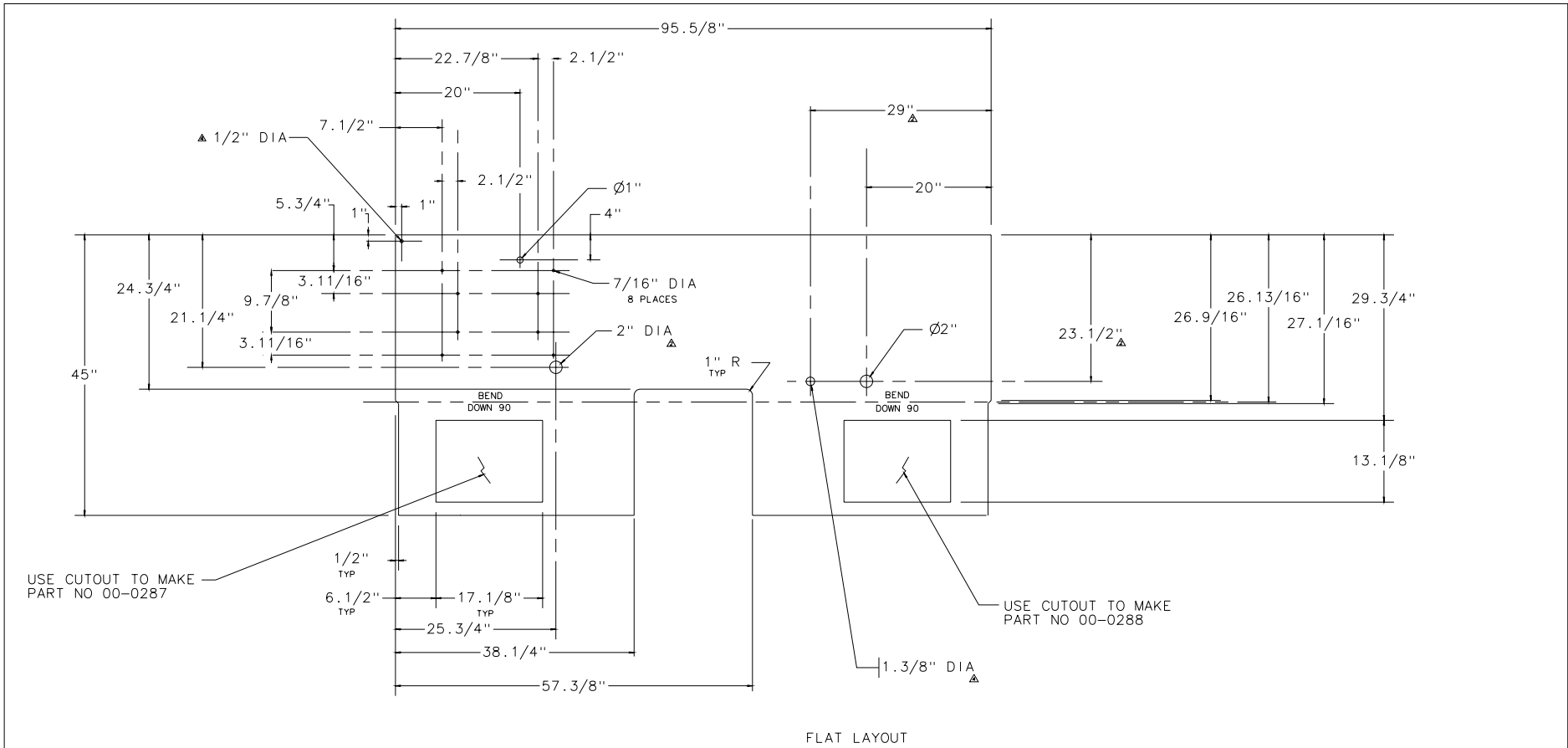
TITLE: LID, REAR LH 1500 GAL TANK
 SCALE: 1" = 8"
 DATE: 13 SEP 94
 DWG NO: 23-0052D

NOTE
BREAK ALL
SHARP EDGES



PART NUMBER: 23-0053
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-1253BAT
 EST WT: 42.6 LBS

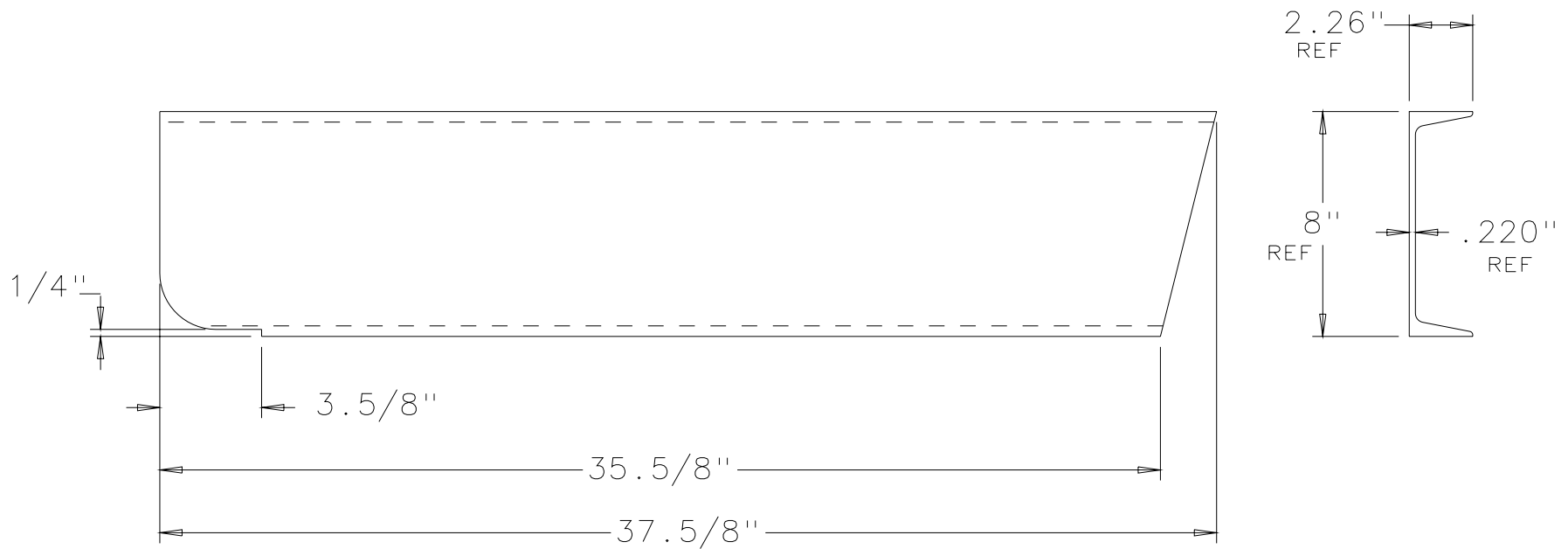
STD. TOLERANCES:		DRAWN:		MICHIGAN DNR
FRACTIONAL: ± .005 ± .004		R. GREENLAW		
DECIMAL: ± .005 ± .004		CHECKED: KID		FOREST MANAGEMENT DIVISION
ANGULAR: ± 1/30°		APPROVED:		
HOLE POSITION: ± .005		NO. BY DATE REVISION		PROJECT NO.: 91-2
FACE: ± .005		NO. BY DATE REVISION		DWG. NO.: 23-0053D
TITLE: LID, REAR RH		SCALE: 1500 GAL TANK 1" = 8"		DATE: 13 SEP 94



PART NUMBER: 00-0198
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 177 LBS

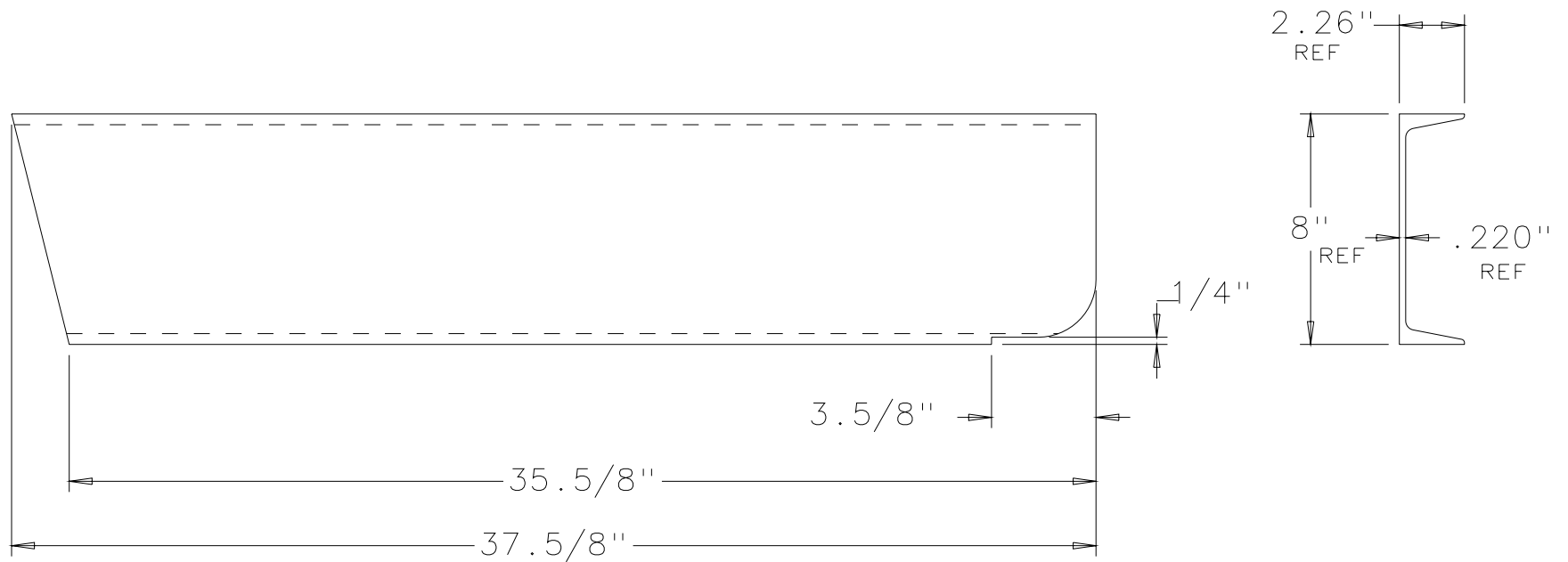
STD. TOLERANCES	4 LLP/97 WAS 11/32" DIA	DRAWN:	KDB
FRACTIONAL:		CHECKED:	
DECIMAL:	2 REG/94 ADDED 2 DIA HOLES AND 1 3/8 DIA HOLE. REMOVED HOSE REEL	APPROVED:	
ANGLES:	1 KDB/21 REVISIONS FOR PUMP REGULATOR PUMP MFG. ADDED MTO HOLES		
DATE:			
TIME:			
SCALE:			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			
TITLE:	APRON	SCALE:	1/8
		DATE:	10-12-88
		PROJECT NO.:	87-3
		DWG. NO.:	00-0198D

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION



PART NO: 00-0289
 MATERIAL: CHANNEL 8 X 11.5 #/FT
 K02600
 FFES SPEC NO: AH-08115AG
 EST WT: 34.5 LBS

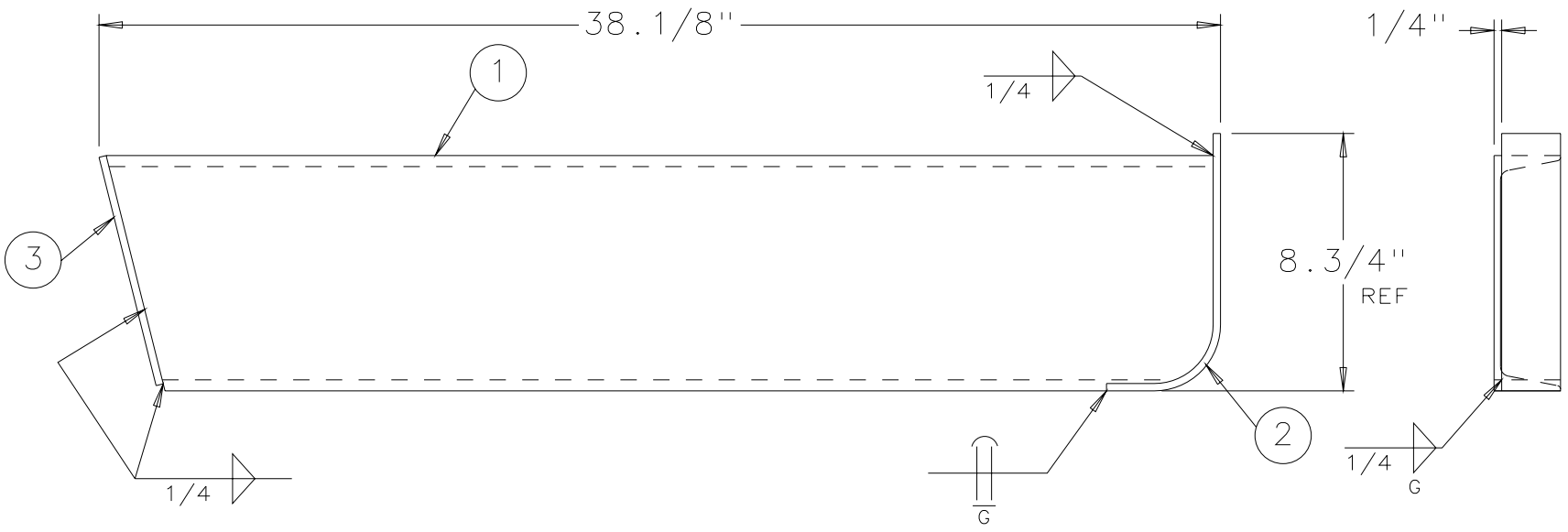
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		NO.	BY	DATE	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 87-3	
TITLE: CHANNEL, BUMPER LH				SCALE: 1/4	DATE: 1/4/89	DWG. NO. 00-0289B	



PART NO: 00-0290
 MATERIAL: CHANNEL 8 X 11.5 #/FT
 K02600
 FFES SPEC NO: AH-08115AG
 EST WT: 34.5 LBS

STD. TOLERANCES FRACTIONAL: Ø TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG							DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
							CHECKED: *		
									APPROVED:
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3	
TITLE: CHANNEL, BUMPER RH						SCALE: 1/4	DATE: 1/4/89	DWG. NO. 00-0290B	

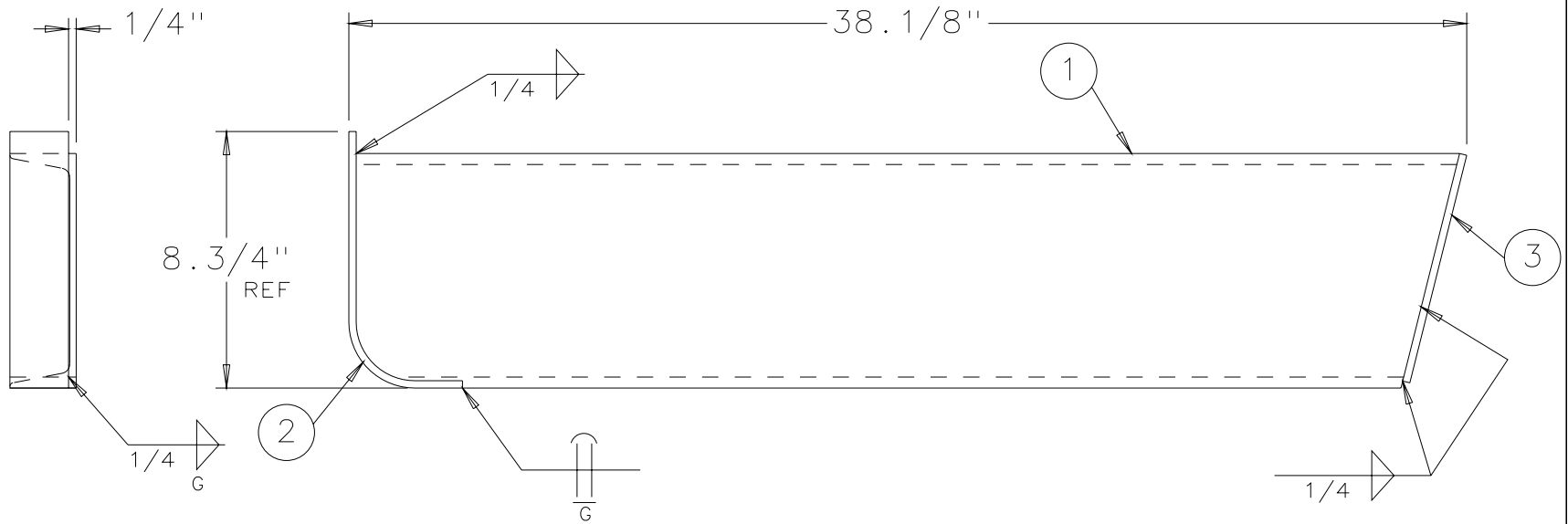
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0290	B	CHANNEL, BUMPER RH	1	34.5
2	00-0291	B	BAR, BUMPER END CAP	1	1.61
3	00-0292	A	BAR	1	1.13



PART NO: 00-0294
EST WT: 38.5 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 87-3
TITLE: BUMPER, REAR S/W RH			SCALE: 1/4	DATE: 1/4/89	DWG. NO. 00-0294B	

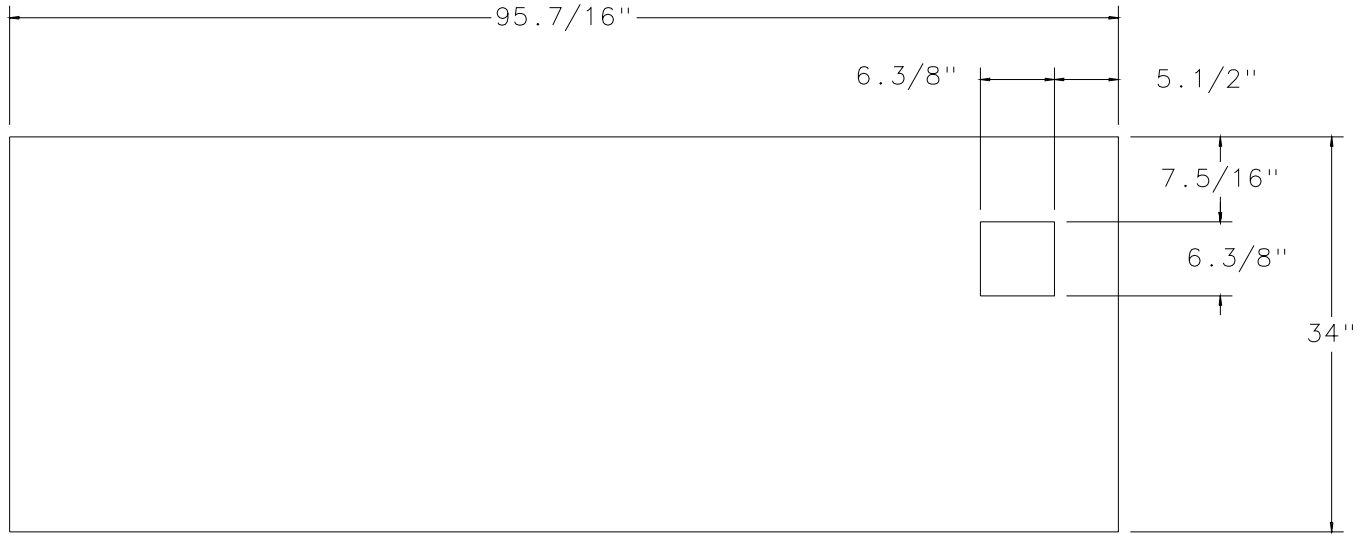
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0289	B	CHANNEL, BUMPER LH	1	34.5
2	00-0291	B	BAR, BUMPER END CAP	1	1.61
3	00-0292	A	BAR	1	1.13



PART NO: 00-0295
EST WT: 38.5 LBS

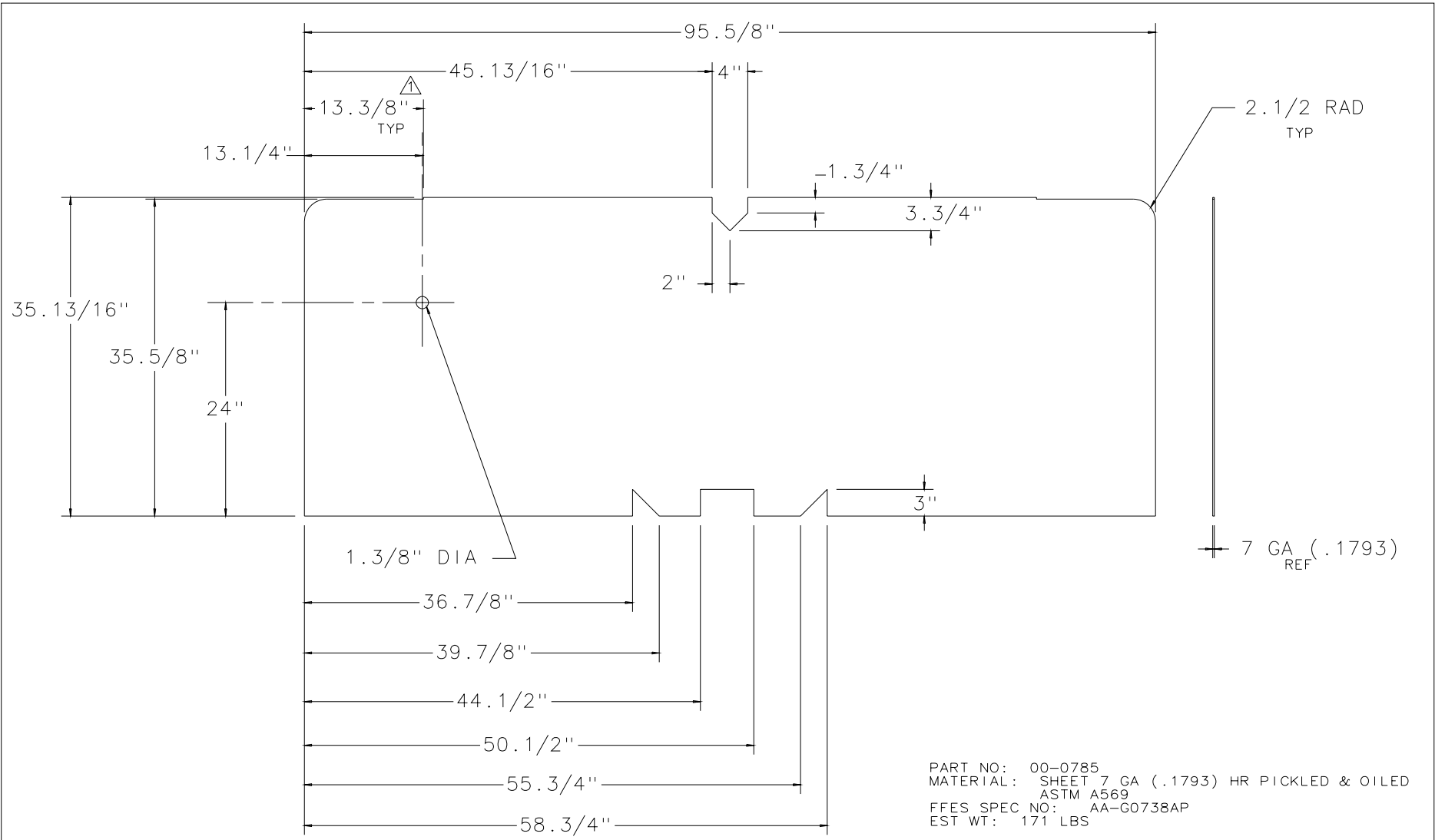
STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *			FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005				ANGULAR: +- 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION					PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								DWG. NO. 00-0295B	
TITLE: BUMPER, REAR S/W LH						SCALE: 1/4		DATE: 1/4/89	

7 GA
 (.1793)
 REF



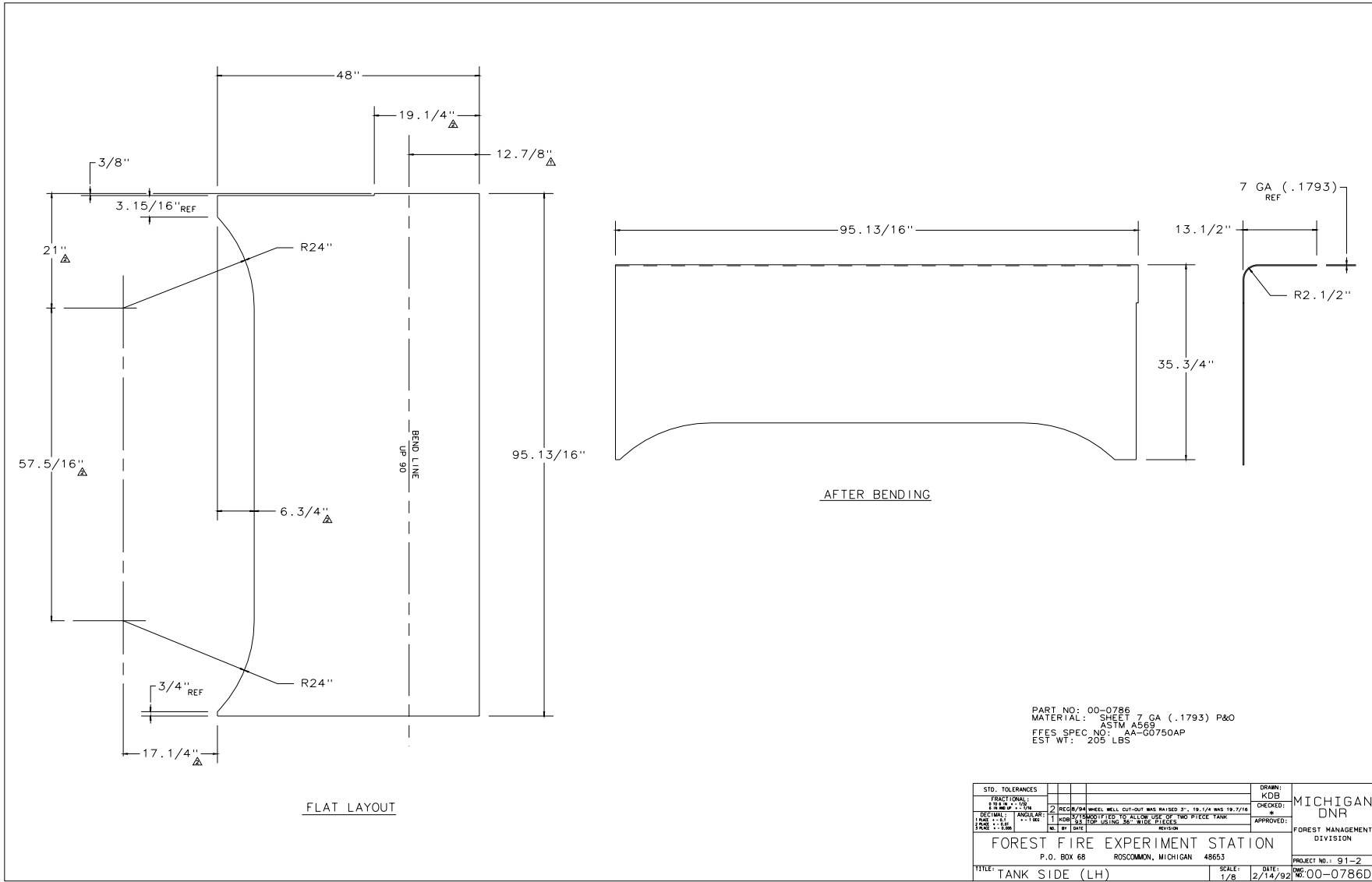
PART NO: 00-0784
 MATERIAL: SHEET 7 GA HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 162 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16							DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG					CHECKED: *	
				NO.	BY	DATE	APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: BOTTOM, WATER COMPARTMENT						SCALE: 1/8	DATE: 2/14/92	DWG. NO.: 00-0784C



PART NO: 00-0785
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 171 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN ± .1/32 6 IN AND UP ± .1/16				CHECKED: *			
DECIMAL: 1 PLACE ± .01 2 PLACE ± .005 3 PLACE ± .0005		ANGULAR: ± .1 DEG		APPROVED:			
		1	KDB	3/15/93	MODIFIED TO ALLOW USE OF TWO PIECE TANK TOP USING 36" WIDE PIECES		
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION							FOREST MANAGEMENT DIVISION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: BULKHEAD, FRONT				SCALE: 1/8	DATE: 2/14/92	PROJECT NO.: 91-2	
						DWG. NO.: 00-0785C	



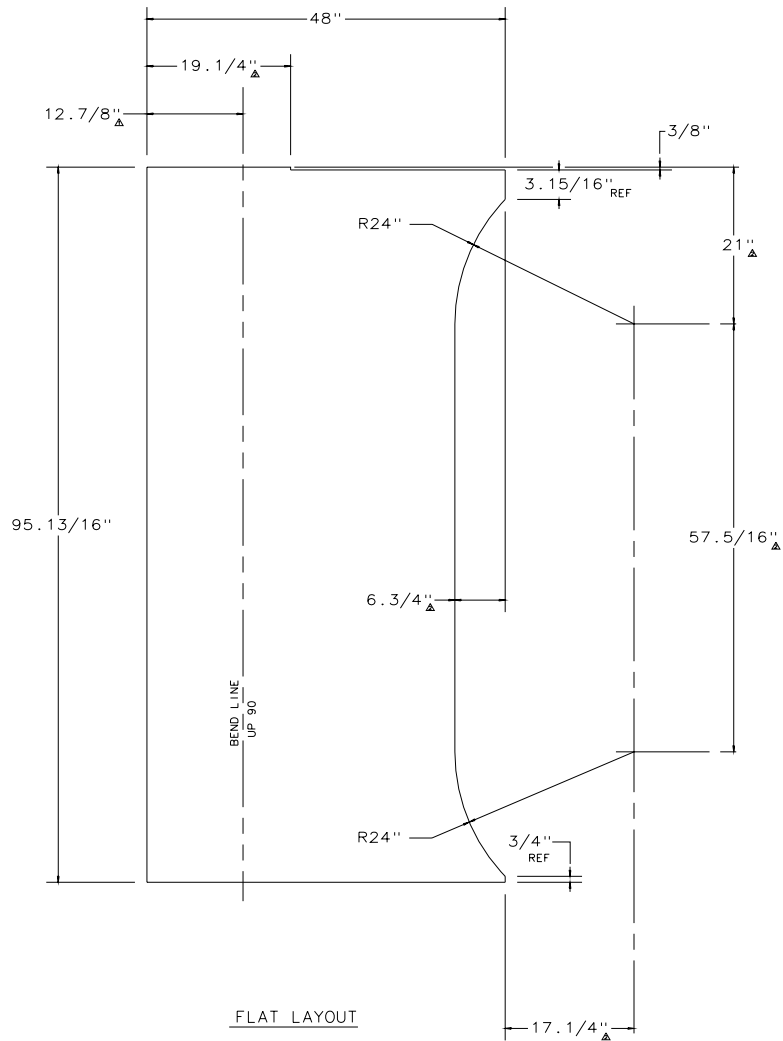
PART NO: 00-0786
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 205 LBS

FLAT LAYOUT

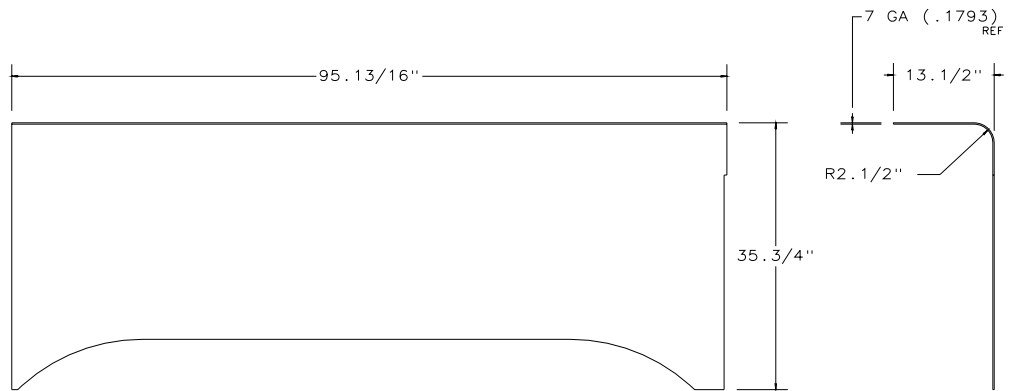
AFTER BENDING

STD. TOLERANCES		DRAWN: KDB	
FRACTIONAL: ± 1/32" ± 1/64"	DECIMAL: ± 0.005" ± 0.001"	APPROVED: *	CHECKED: *
ANGLES: ± 1/32" ± 1/64"	WELDS: ± 1/32" ± 1/64"	REVISIONS:	DATE:
1. REVISIONS TO BE MADE BY THE DESIGNER 2. REVISIONS TO BE MADE BY THE FABRICATOR		1. REVISIONS TO BE MADE BY THE DESIGNER 2. REVISIONS TO BE MADE BY THE FABRICATOR	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			
TITLE: TANK SIDE (LH)		SCALE: 1/8"	DATE: 2/14/92
PROJECT NO.: 91-2		DWG NO.: 00-0786D	

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION



FLAT LAYOUT

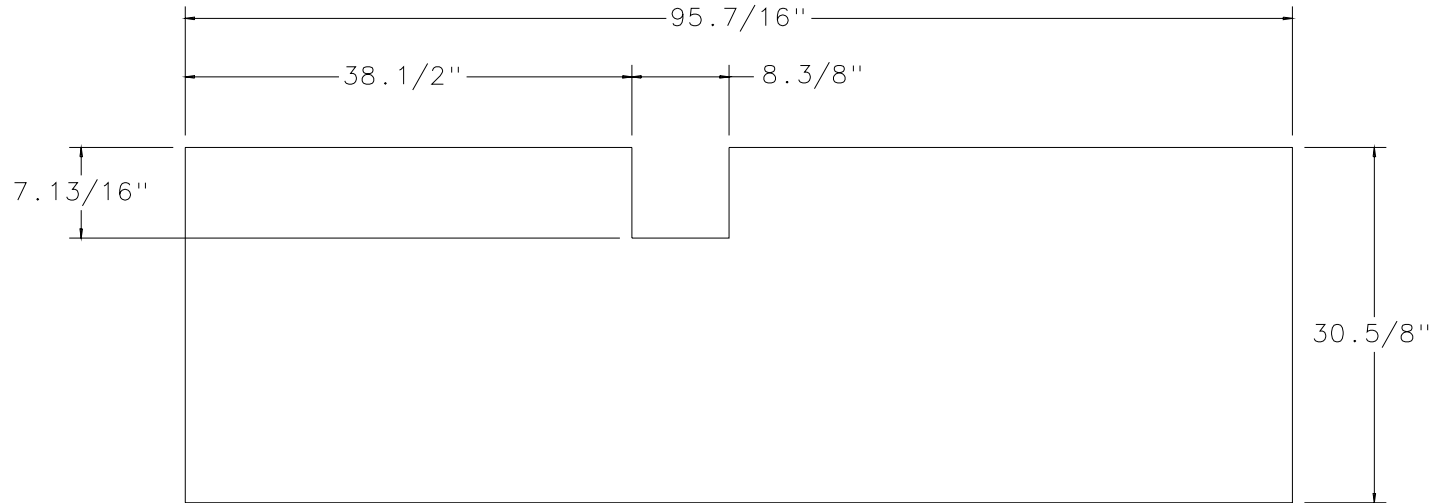


AFTER BENDING

PART NO: 00-0787
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 205 LBS

STD. TOLERANCES					DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: ± 1/32" ± .005"					CHECKED: *		
DECIMAL: ± .005"	2	REC/7/94	WHEEL WELL CUT OUT RAISED 3" - 19.1/4 WAS 19.7/16		APPROVED:		
ANGULAR: ± .100°	1	KDB/9/93	MODIFIED TO ALLOW USE OF TWO PIECE TANK TOP USING 36" WIDE PIECES				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2	
TITLE: TANK SIDE (RH)						SCALE: 1/8"	DATE: 2/14/92 DWG NO: 00-0787D

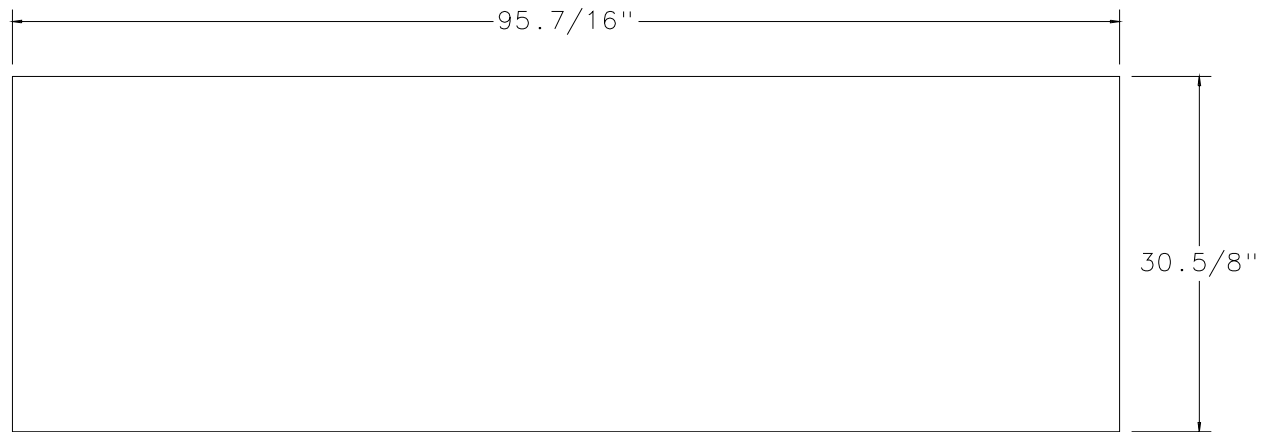
7 GA
 (.1793)
 REF



PART NO: 00-0788
 MATERIAL: SHEET 7 GA HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 145 LBS

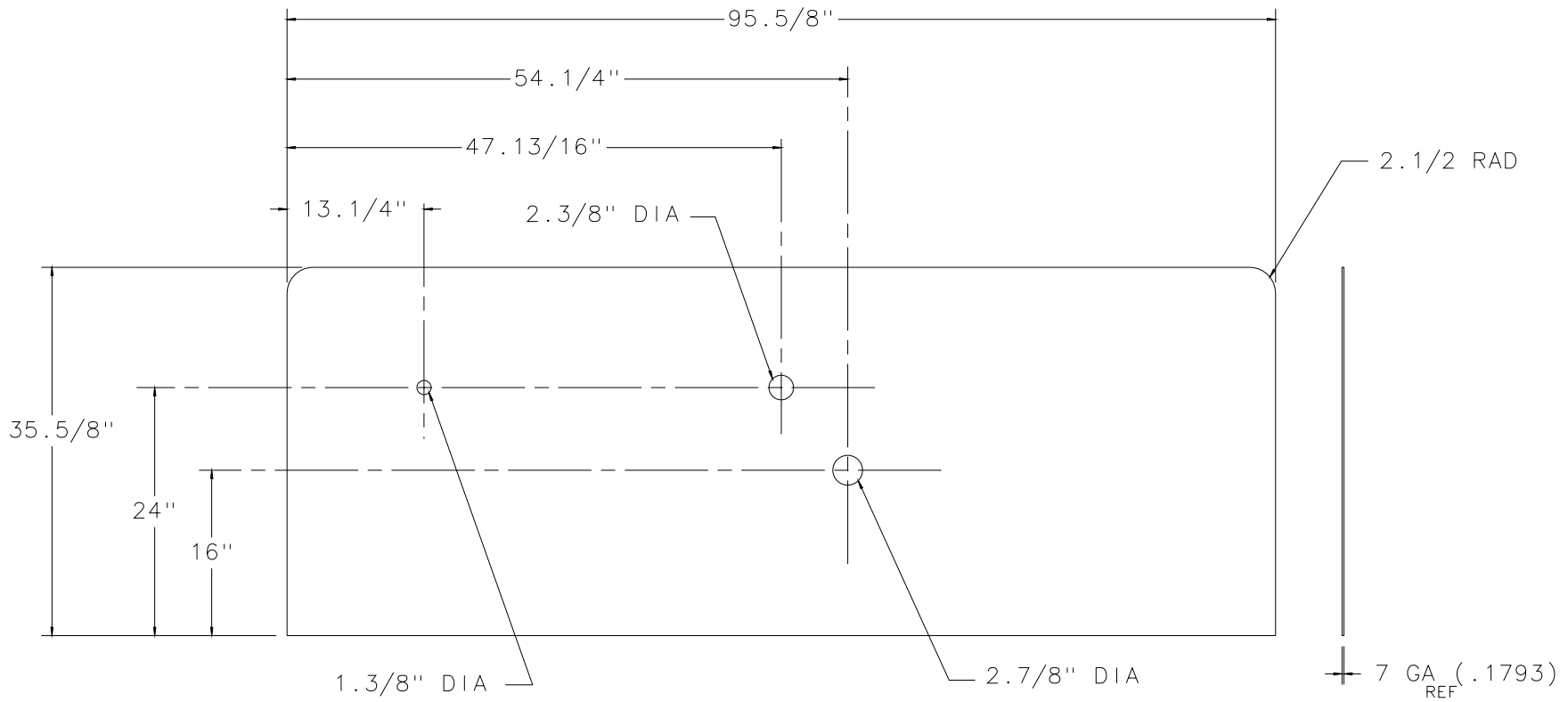
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. + - 1/32" 6 IN AND UP + - 1/16"									DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						CHECKED: *		
				NO.	BY	DATE	REVISION	APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										PROJECT NO.: 91-2
TITLE: BOTTOM, UPPER (LH)								SCALE: 1/8	DATE: 2/14/92	DWG. NO: 00-0788C

7 GA
 (.1793)
 REF



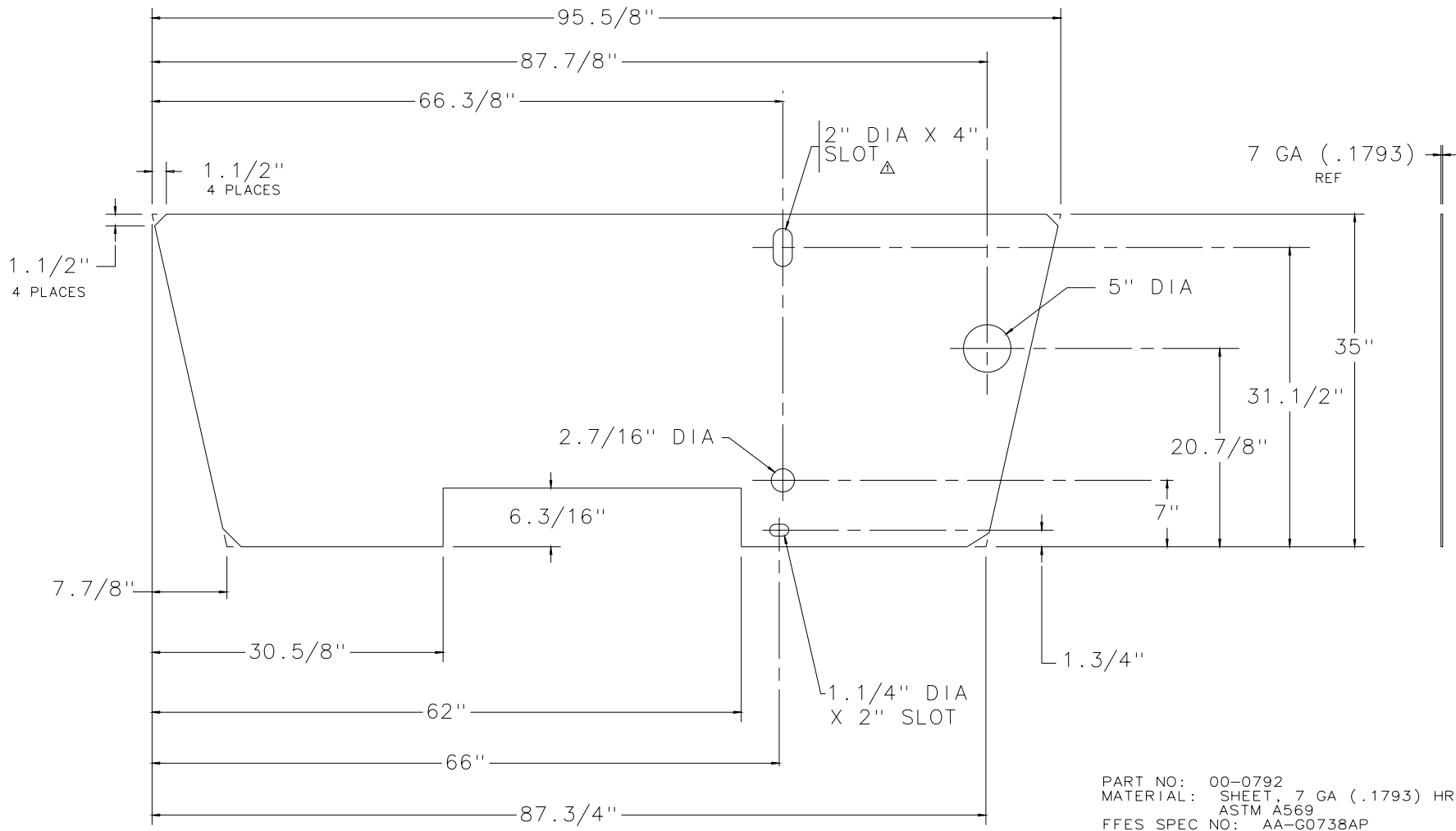
PART NO: 00-0789
 MATERIAL: SHEET 7 GA HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 148 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. + - 1/32" 6 IN AND UP + - 1/16"								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG					CHECKED: *		
NO.	BY	DATE	REVISION		APPROVED:				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2	
TITLE: BOTTOM, UPPER (RH)						SCALE: 1/8	DATE: 2/14/92	DWG. NO.: 00-0789C	



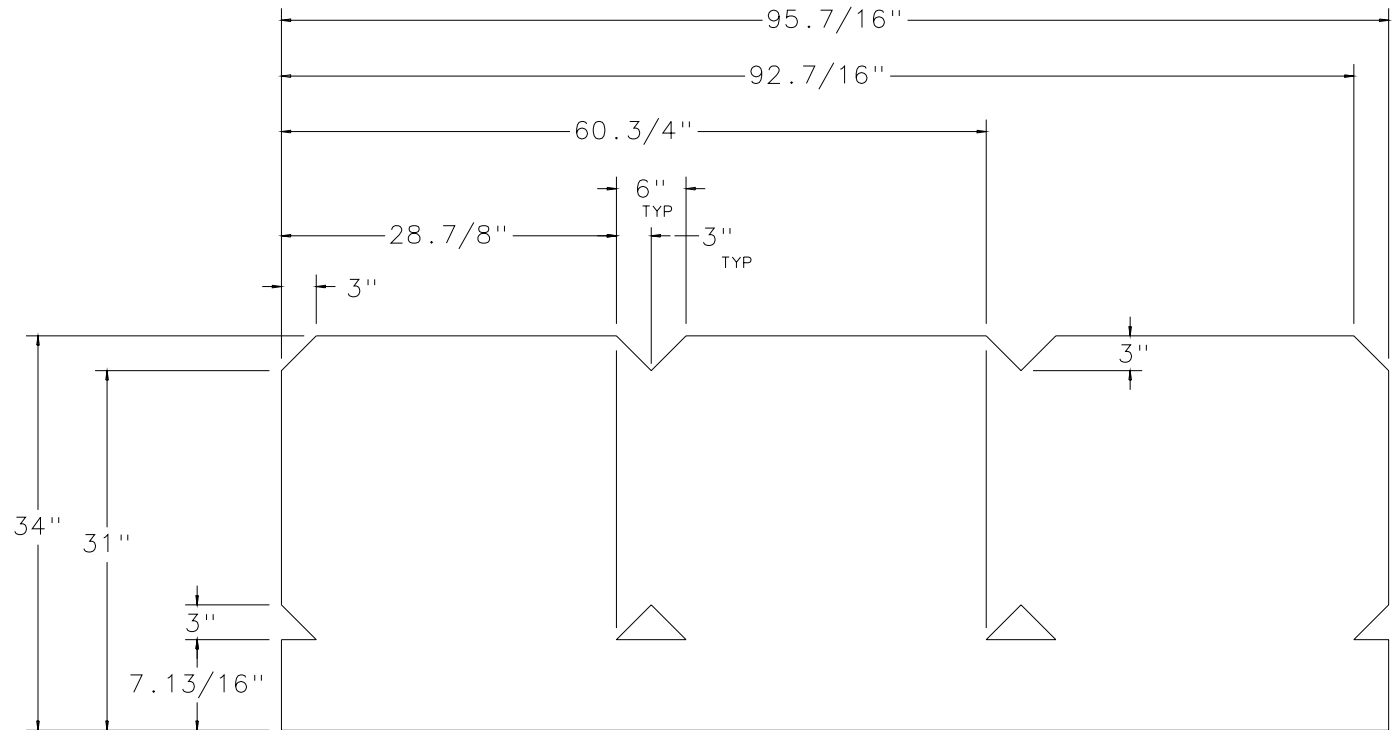
PART NO: 00-0791
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 172 LBS

STD. TOLERANCES		DRAWN: KDB		MICHIGAN DNR		
FRACTIONAL: 0 TO 6 IN. ± 1/32" 6 IN. AND UP ± 1/16"		CHECKED: *				
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		APPROVED:				
ANGULAR: ± 1 DEG		NO.	BY	DATE	REVISION	FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 00-0791C
TITLE: BULKHEAD, REAR				SCALE: 1/8	DATE: 2/14/92	



PART NO: 00-0792
 MATERIAL: SHEET, 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 144 LBS

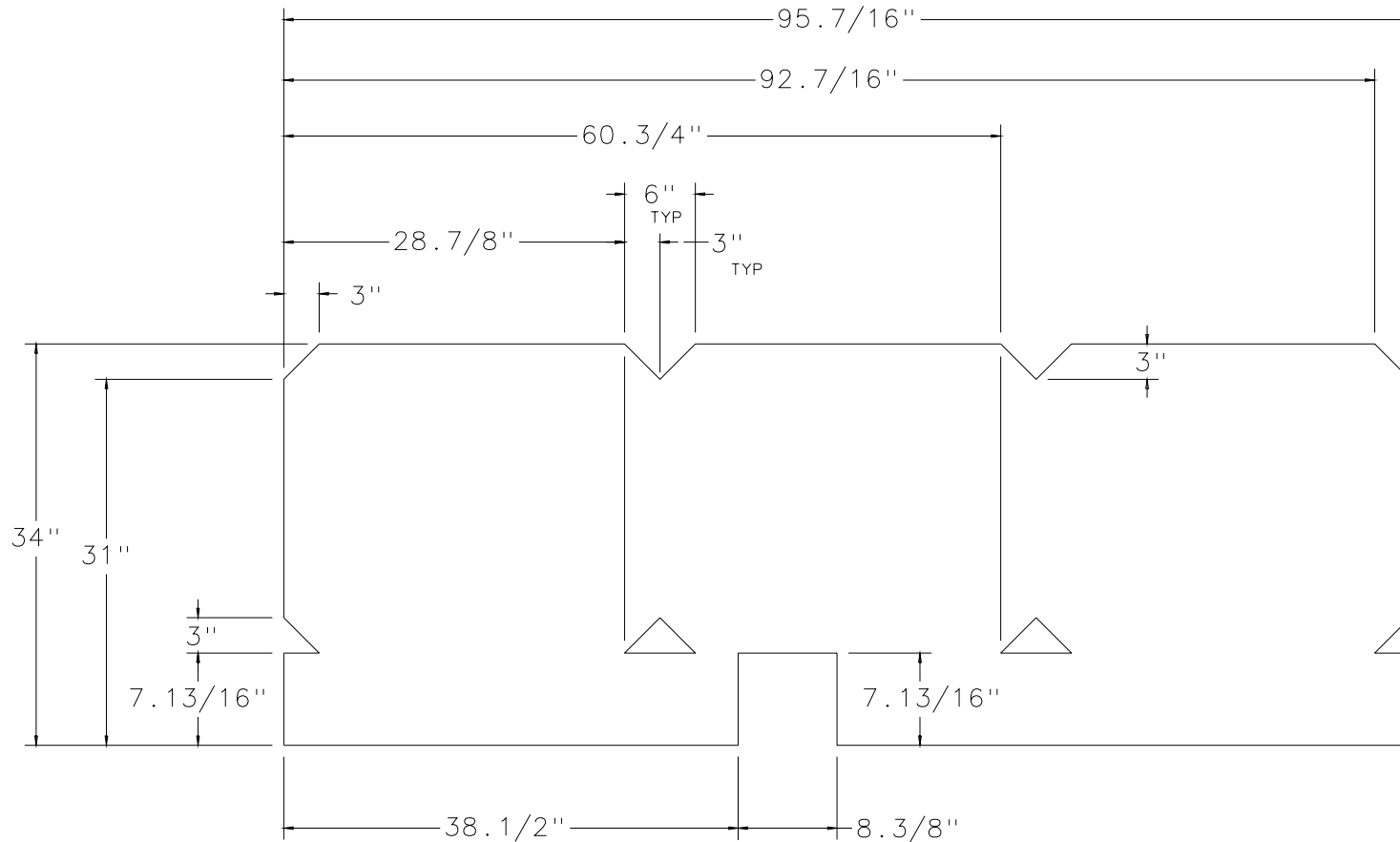
STD. TOLERANCES				DRAWN: KDB	
FRACTIONAL:				CHECKED: *	
0 TO 6 IN +/- 1/32				APPROVED:	
6 IN AND UP +/- 1/16				MICHIGAN DNR	
DECIMAL:	ANGULAR:	1	REG/6/94	2" DIA X 4" LONG SLOT WAS A 1.3/4" DIA HOLE	FOREST MANAGEMENT DIVISION
1 PLACE +/- 0.1	+/- 1 DEG	NO.	BY	REVISION	PROJECT NO.: 92-1
2 PLACE +/- 0.01					DWG. NO. 00-0792C
3 PLACE +/- 0.005					
FOREST FIRE EXPERIMENT STATION				SCALE: 1/8	DATE: 02/18/92
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: FLOOR, COMPARTMENT					



7 GA (.1793)
REF

PART NO: 00-0793
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 162 LBS

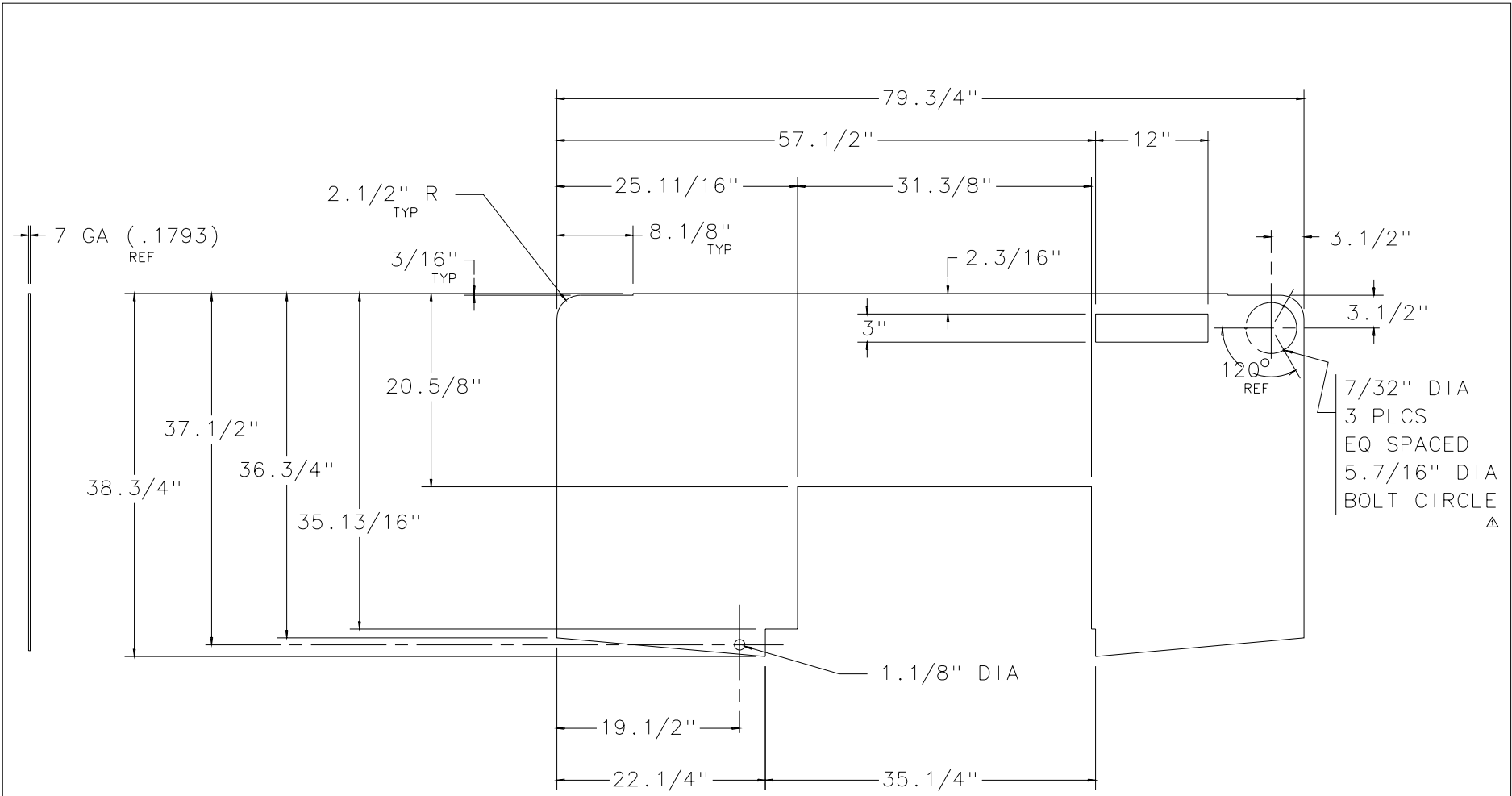
STD. TOLERANCES FRACTIONAL: 8 TO 6 IN. -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
						CHECKED: *		
								APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: BAFFLE, LONGITUDINAL (RH)						SCALE: 1/8	DATE: 2/18/92	DWG. NO. 00-0793C



7 GA (.1793)
REF

PART NO: 00-0794
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 159 LBS

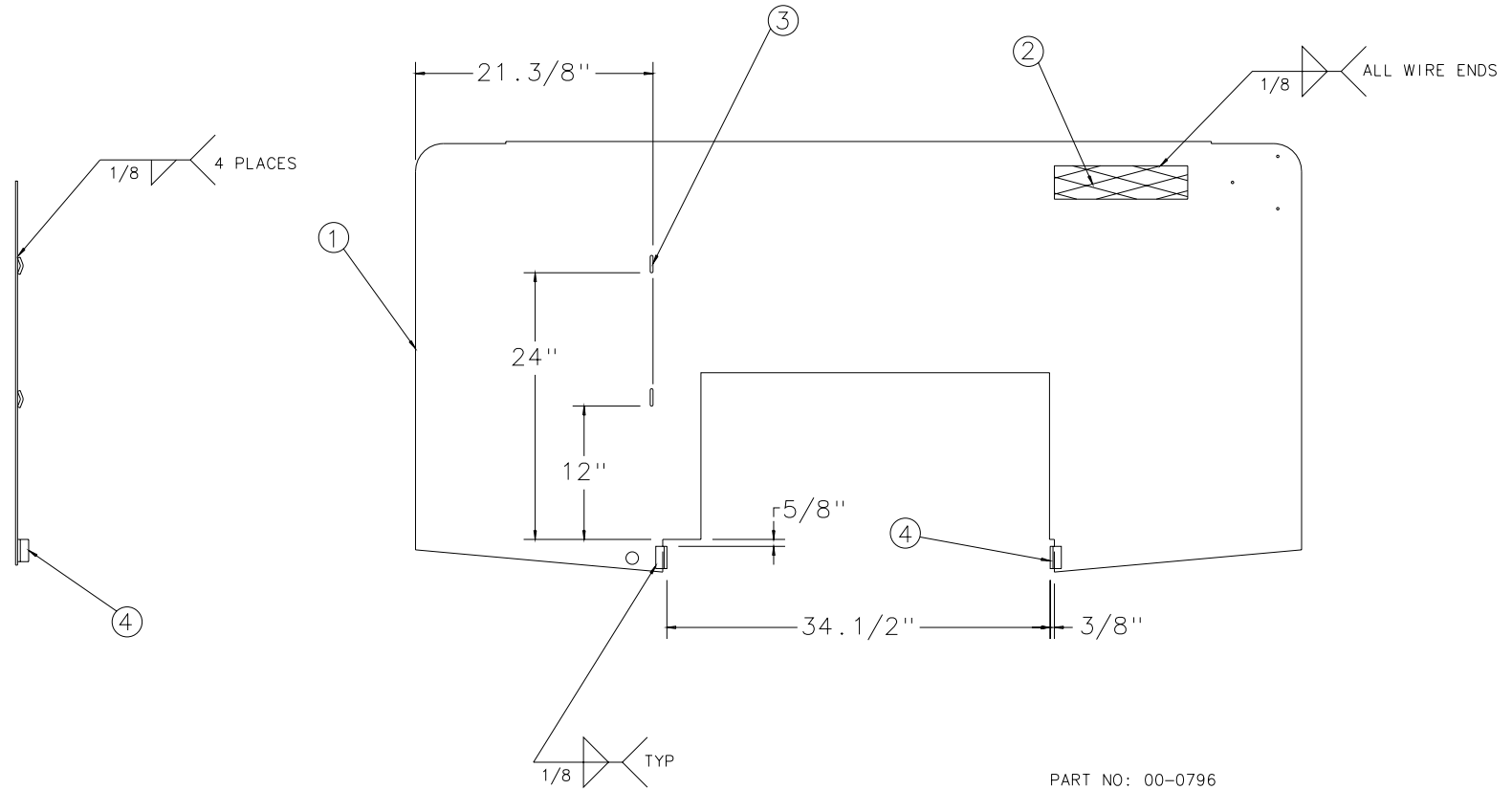
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG	<table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			PROJECT NO.: 91-2																
TITLE: BAFFLE, LONGITUDINAL (LH)		SCALE: 1/8	DATE: 2/18/92	DWG. NO. 00-0794C															



PART NO: 00-0795
 MATERIAL: SHEET 7 GA 3 X 8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0738AP
 EST WT: 123 LBS

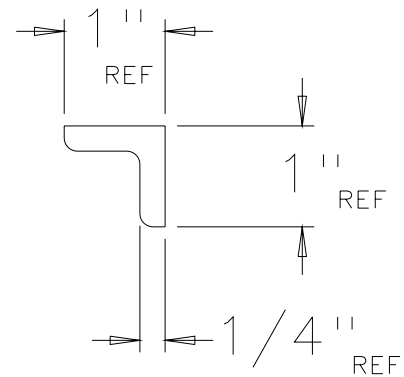
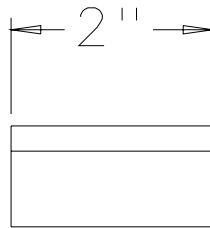
STD. TOLERANCES: FRACTIONAL: 8 TO 6 IN --1/32 6 IN AND UP --1/16 DECIMAL: 1 PLACE --0.1 2 PLACE --0.01 3 PLACE --0.005		ANGLAR: --1 DEG		1 REC 8/94 ADDED 7/32" DIA HOLES FOR DOME LIGHT MTG		DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
				NO. BY DATE REVISION		CHECKED: *	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						APPROVED:	DWG. NO. 00-0795C
TITLE: FRONT PANEL						SCALE: 1/8	DATE: 2/18/92

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0795	C	SHEET, COMPARTMENT PANEL	1	123
2	00-0276	A	EXPANDED METAL	1	0.28
3	00-0164	A	WIRE GUIDE	2	0.02
4	00-0797	A	ANGLE	2	0.25



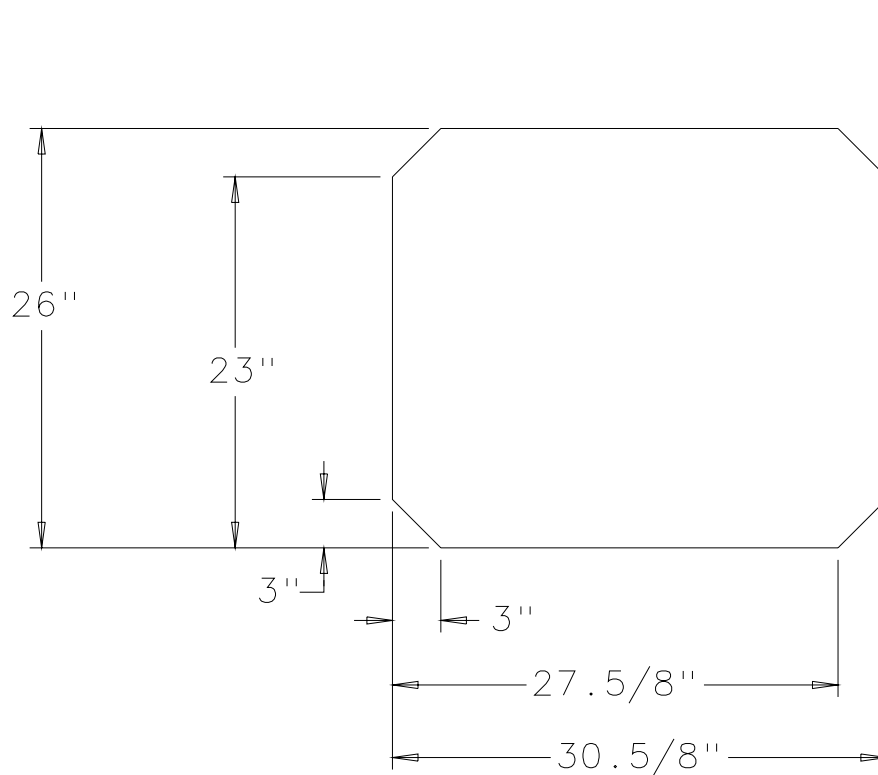
PART NO: 00-0796
EST WT: 124 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005		DRAWN: KDB CHECKED: * APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 91-2			
TITLE: PANEL, FRONT S/W			SCALE: 1/8"	DATE: 2/18/92	DWG. NO. 00-0796C



PART NUMBER: 00-0797
 MAT'L: ANGLE, 1" X 1" X 1/4"
 UNS K02600
 FFES SPEC NO: AK-40404AG
 EST WT: 0.25 LBS

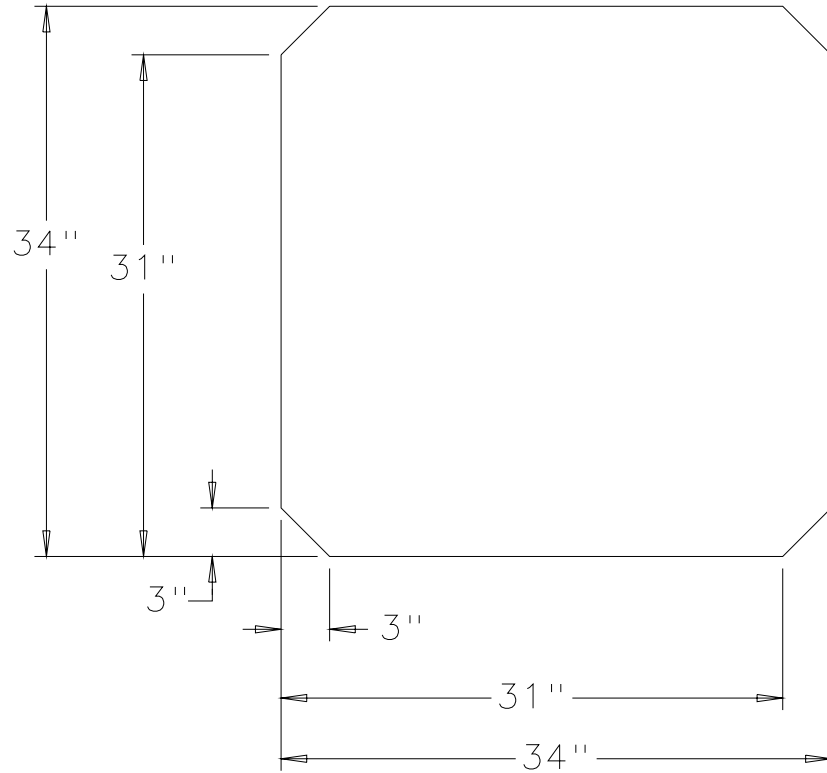
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: *	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: ANGLE: 1" X 1" X 1/4"					SCALE: 1/2	DATE: MAR. 07, 1991	DWG. NO. 00-0797A



7 GA (.1793)
REF

PART NO: 00-0799
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT : 39.5 LBS

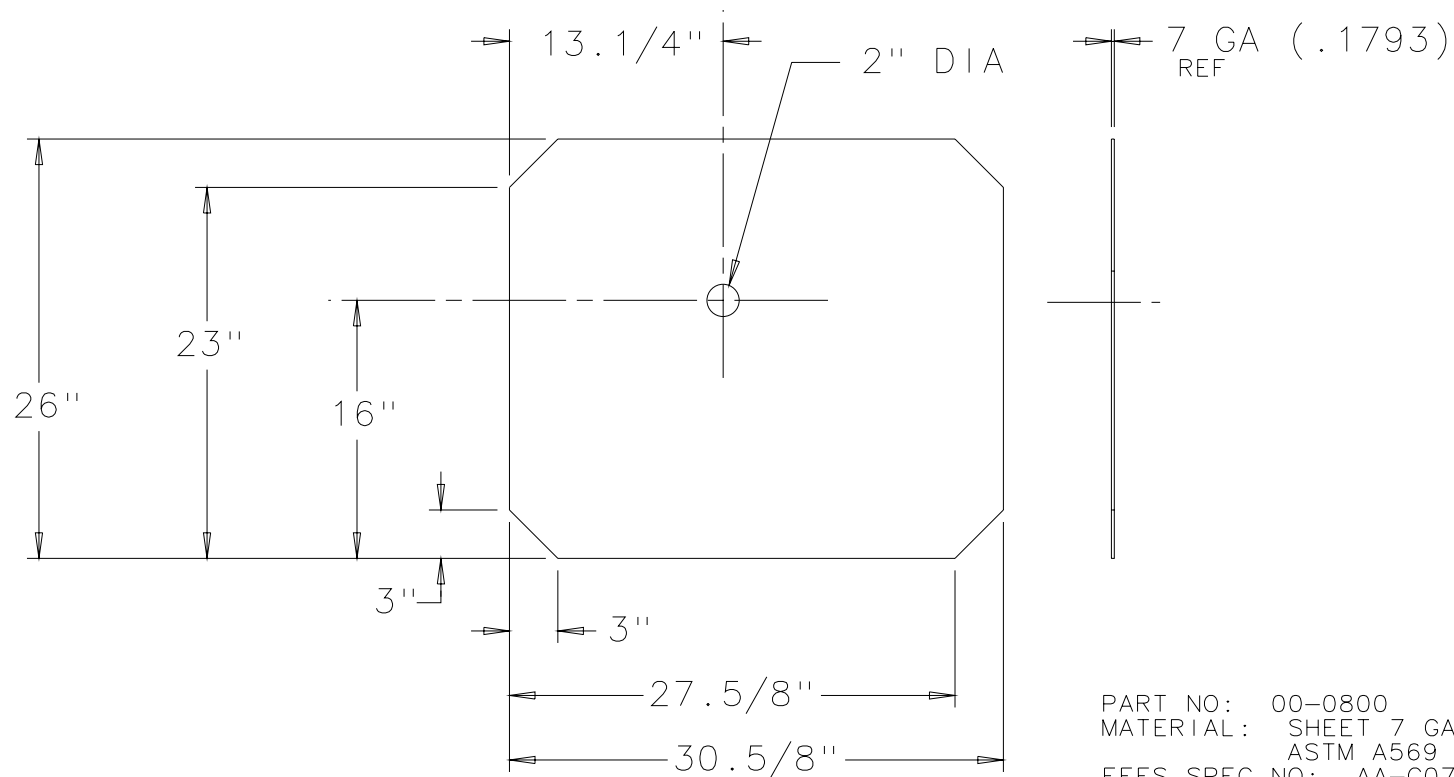
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
								CHECKED: *	
								APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 91-2
TITLE: BAFFLE							SCALE: 1/8	DATE: 2/18/92	DWG. NO. 00-0799B



7 GA (.1793)
REF

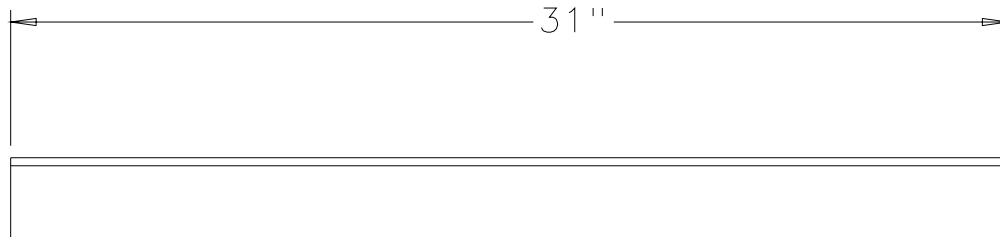
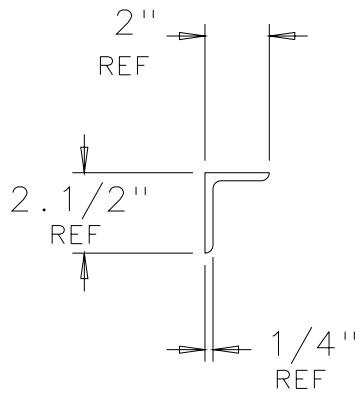
PART NO: 00-0798
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT : 57.7 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					PROJECT NO.: 87-3 DWG. NO.: 00-0798B		
TITLE: BAFFLE					SCALE: 1/8	DATE: 2/18/92	



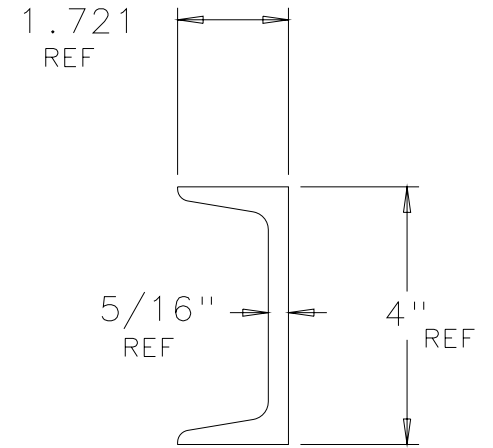
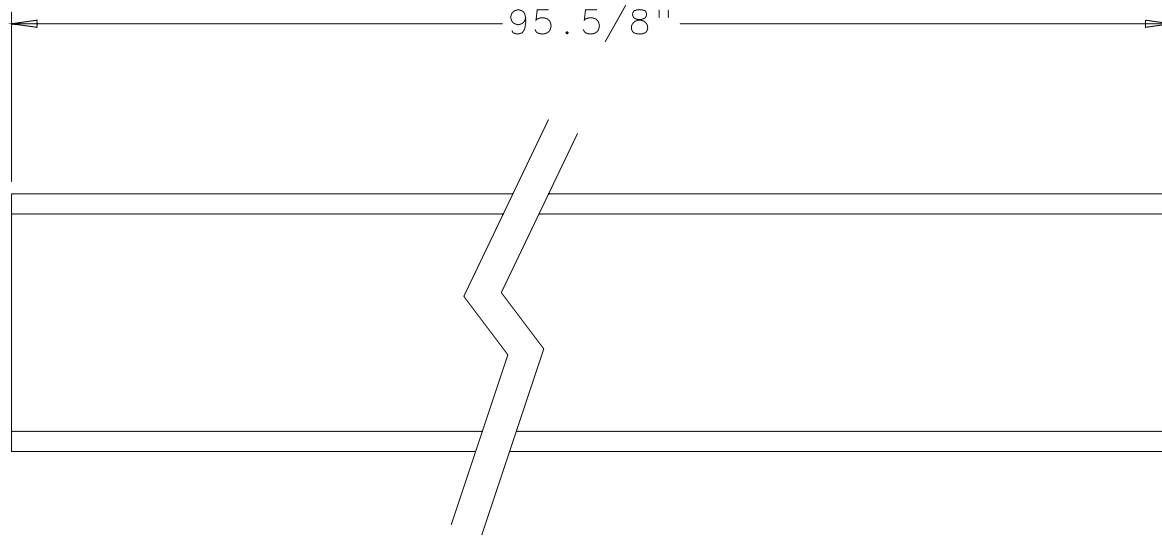
PART NO: 00-0800
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 39.3 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG							DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
							CHECKED: *	
							APPROVED:	
	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: BAFFLE						SCALE: 1/8	DATE: 2/18/92	DWG. NO. 00-0800B



PART NO: 00-0802
 MATERIAL: ANGLE 2.1/2x2x1/4 HR
 UNS K02600
 FFES SPEC NO: AK-41008AG
 EST WT: 9.35 LBS

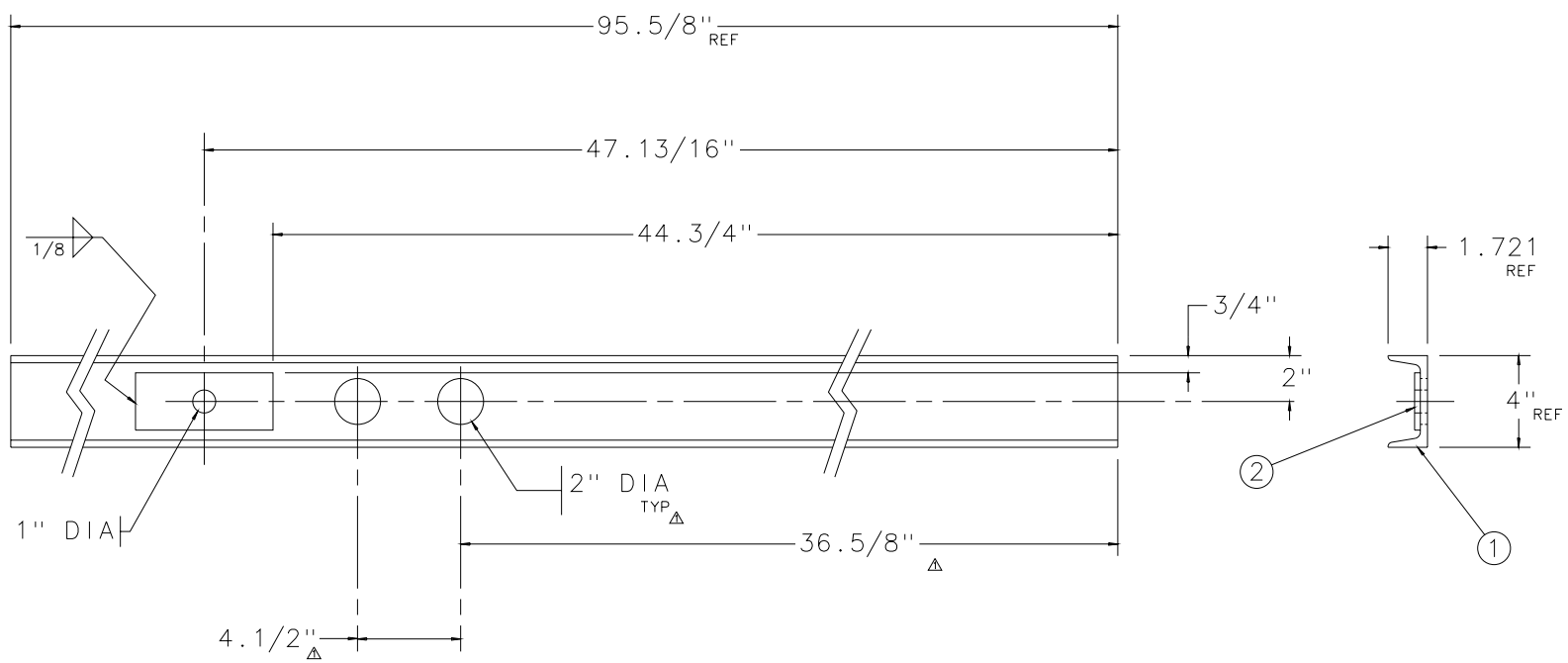
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG							DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2
							CHECKED: *	
							APPROVED:	
	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								DWG. NO. 00-0802B
TITLE: ANGLE						SCALE: 1/4	DATE: 2/19/92	



PART NO: 00-0803
 MATERIAL: CHANNEL, STD 4 X 7.25 #/FT
 UNS K02600
 FFES SPEC NO: AH-04072AG
 EST WT: 58.4 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: *	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: CHANNEL 4 X 7.25 #/FT					SCALE: 1/2	DATE: 2/19/92	DWG. NO. 00-0803B

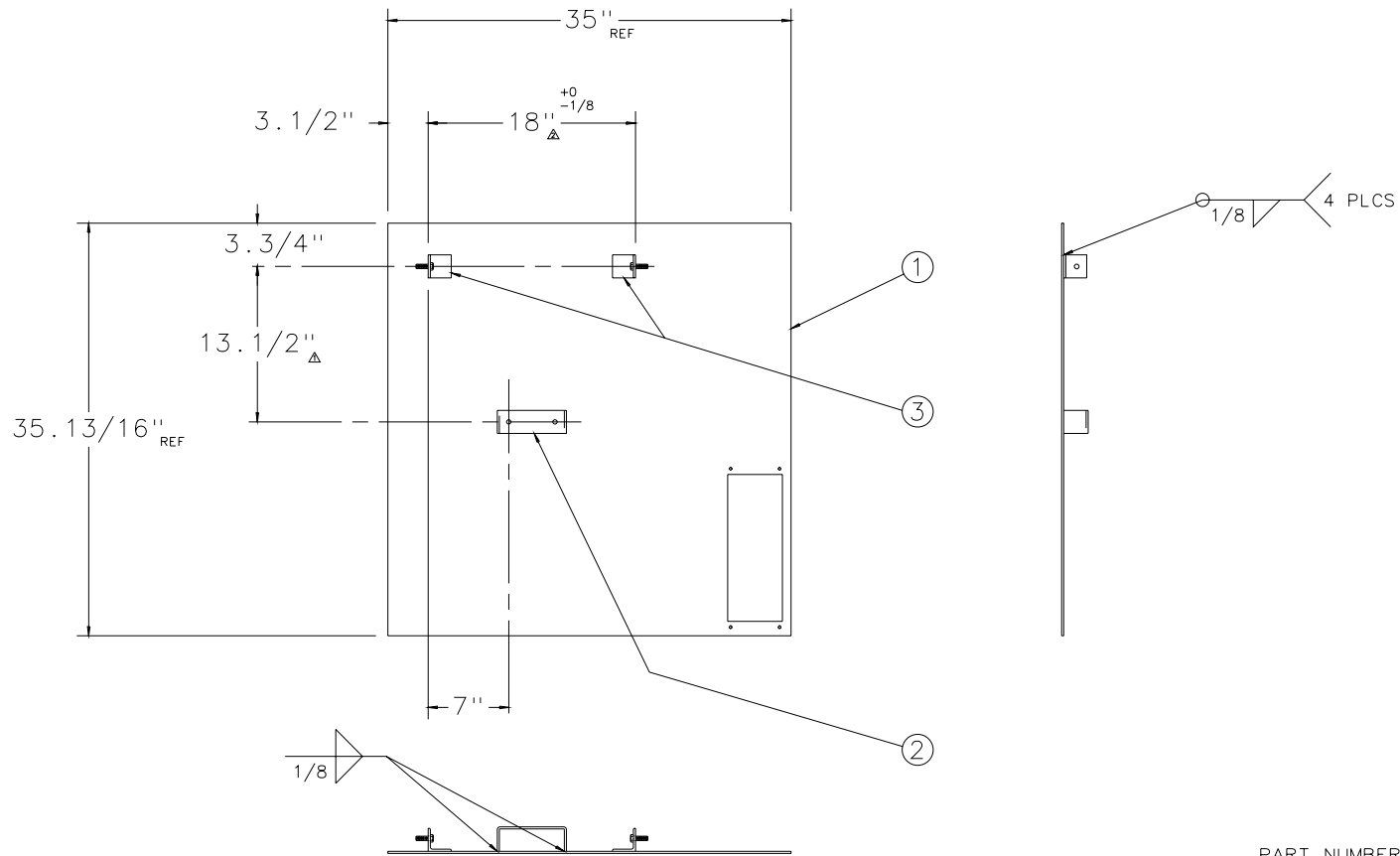
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0803	B	CHANNEL	1	58.4
2	00-0280	A	BAR, FLAT	1	1.06



PART NUMBER: 00-0804
EST WT: 59.5 LBS

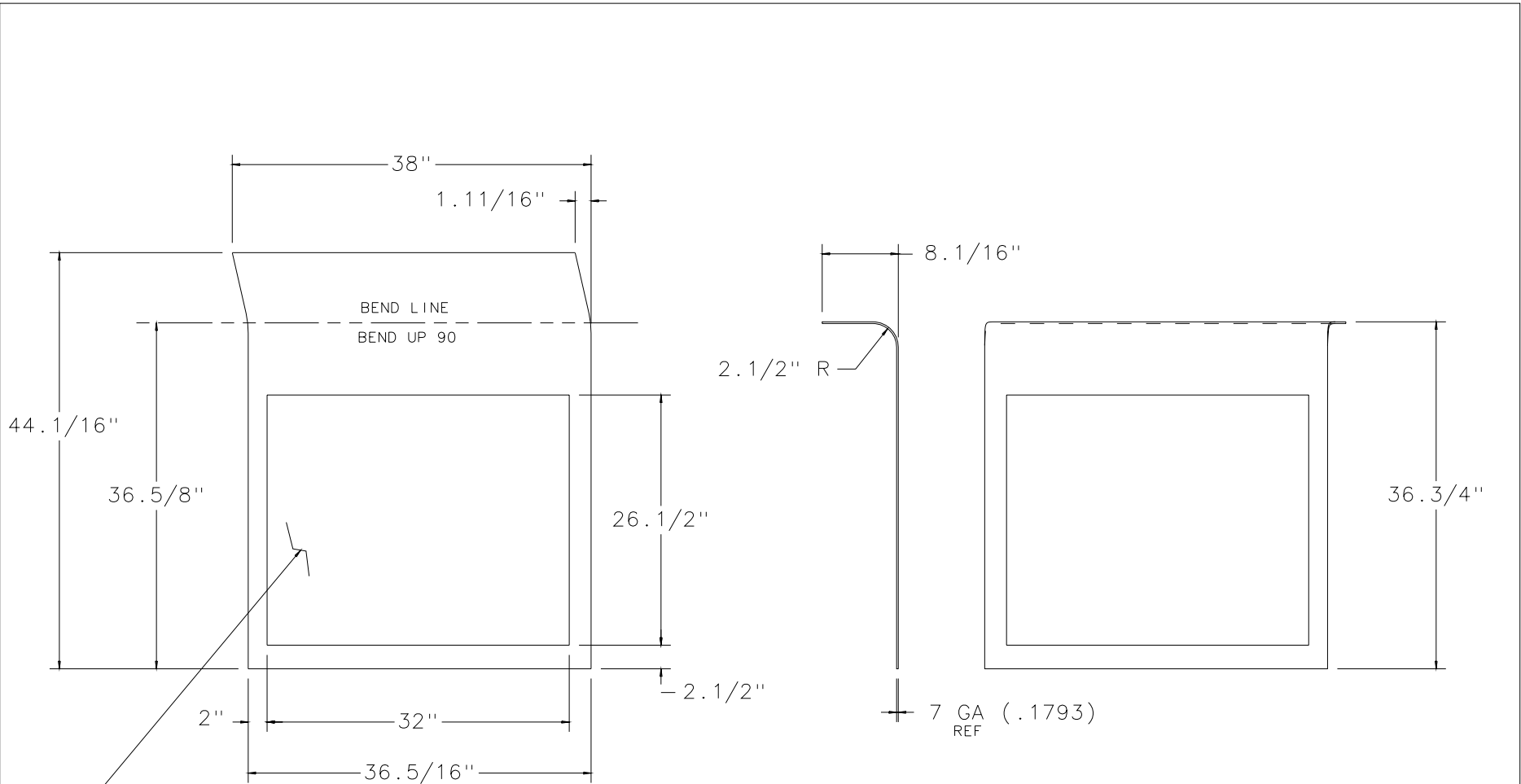
STD. TOLERANCES				DRAWN: KDB	
FRACTIONAL: 3 TO 6 IN ± 1/32 6 IN AND UP ± 1/16				CHECKED:	
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:	
1	REG	8/94	ADDED 2" DIA HOLES FOR TANK VENT SYSTEM		
NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION				MICHIGAN DNR	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				FOREST MANAGEMENT DIVISION	
TITLE: CHANNEL, TANK LIFTING S/W				PROJECT NO.: 91-2	
SCALE: 1 = 4		DATE: 19 FEB 92		DWG. NO.: 00-0804C	

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0811	B	SHEET	1	60.7
2	00-0952	B	BRACKET	1	0.96
3	00-0807	B	MOUNTING ANGLE W/STUD	2	0.42



PART NUMBER: 00-0808
EST WT: 63.0 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN. -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG	3 REG 1/95 REVISED PER NEW HYDRAULIC VALVE MOUNT 2 REG 1/95 18" DIMENSION WAS 18.1/4" 1 REG 8/94 14" DIMENSION WAS 12"	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 91-2 DWG. NO. 00-0808C	
TITLE: COMPARTMENT WALL S/W		SCALE: 1/8	DATE: 2/19/92

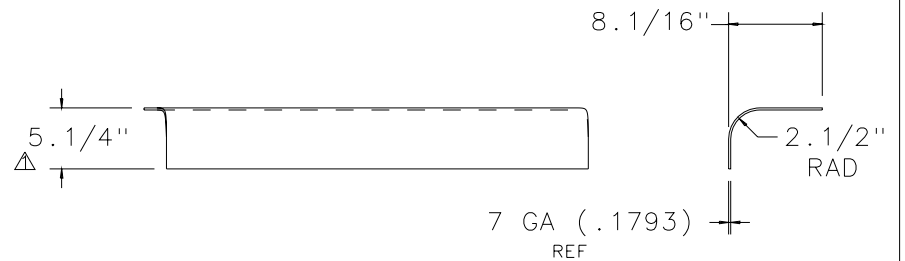
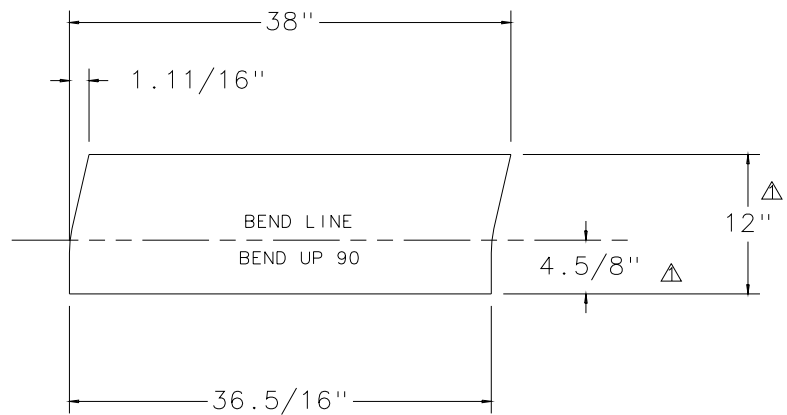


CUT OUT AFTER BENDING
USE CUTOUT TO MAKE P/N 23-0024

FLAT LAYOUT

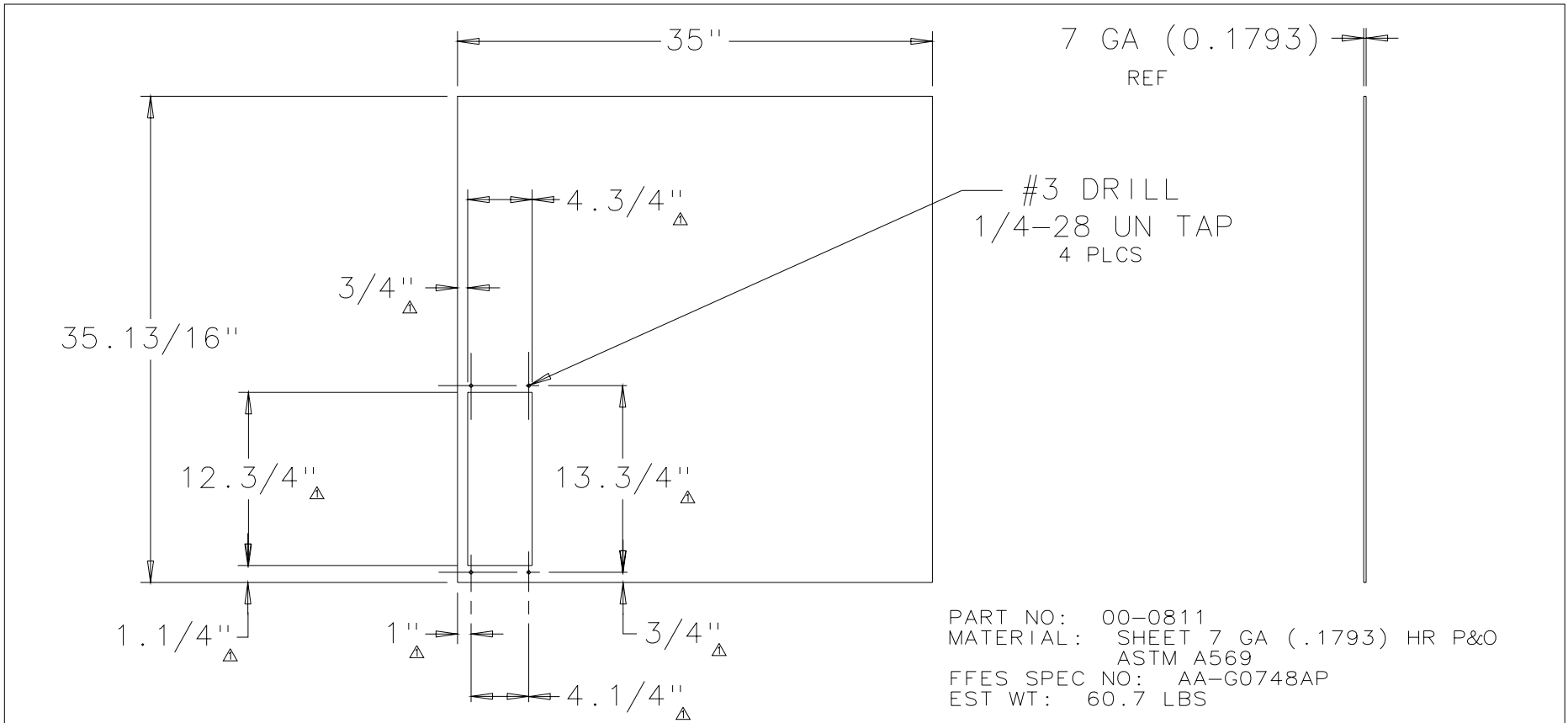
PART NO: 00-0809
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 37.9 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR
FRACTIONAL: 0 TO 5/16 ± 1/32 6 IN AND UP ± 1/16				CHECKED: *		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:		FOREST MANAGEMENT DIVISION
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 87-3
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: PANEL, FRONT QUARTER RH			SCALE: 1/8	DATE: 2/19/92	DWG. NO.: 00-0809C	

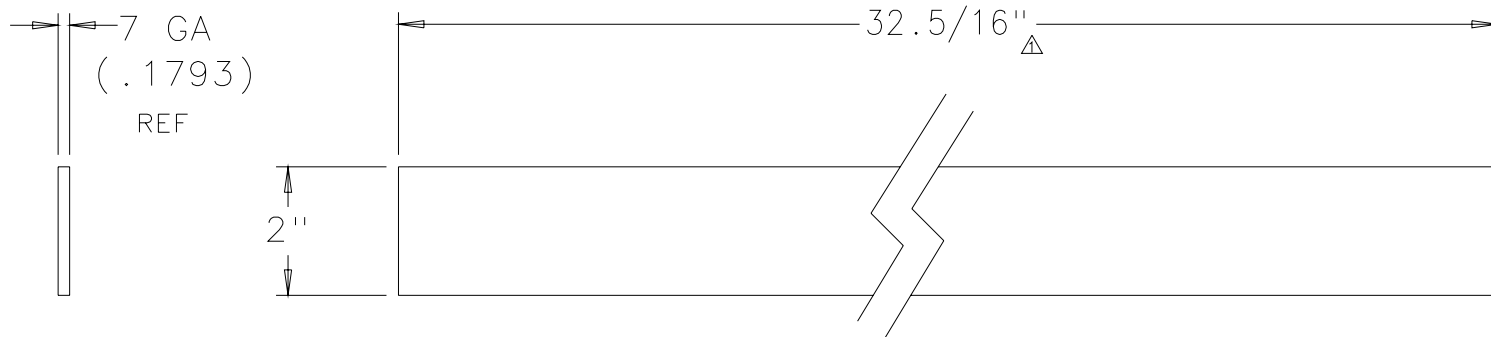


PART NO: 00-0810
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 22.1 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. +- 1/32 6 IN AND UP +- 1/16				CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION	1 BH 11/94 5 1/4 WAS 7 1/4		FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO: 00-0810C
TITLE: FRONT QUARTER LH				SCALE: 1/8	DATE: 2/19/92	

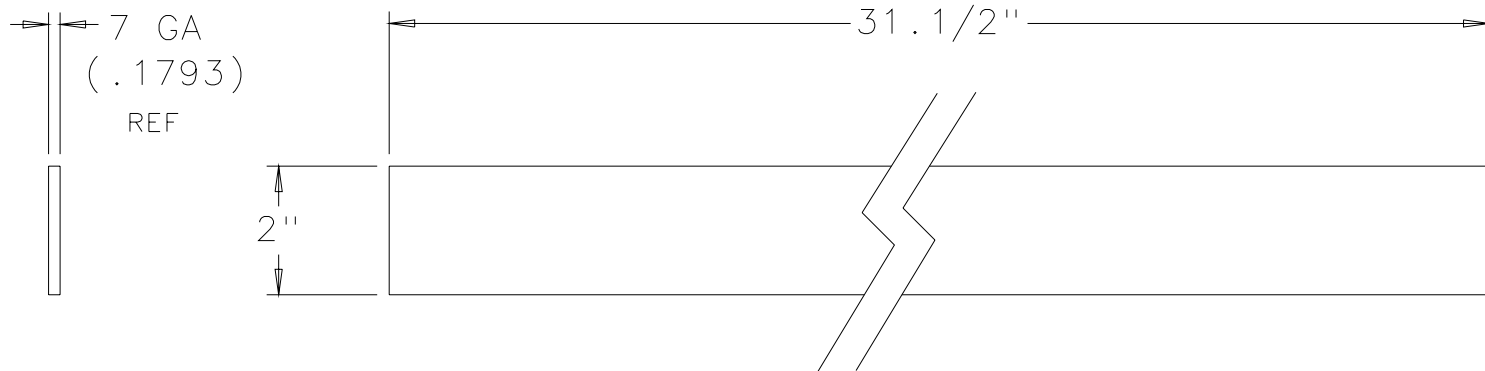


STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: +- 1 DEG		APPROVED:		
1	REG	8/94	3/4 WAS 1/2, 4.3/4 WAS 5, 12.3/4 WAS 13, 13.3/4 WAS 14, 1.1/4 WAS 1, 1 WAS 3/4, 4.1/4 WAS 4.1/2					
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: SHEET						SCALE: 1/8	DATE: 2/19/92	DWG. NO. 00-0811B



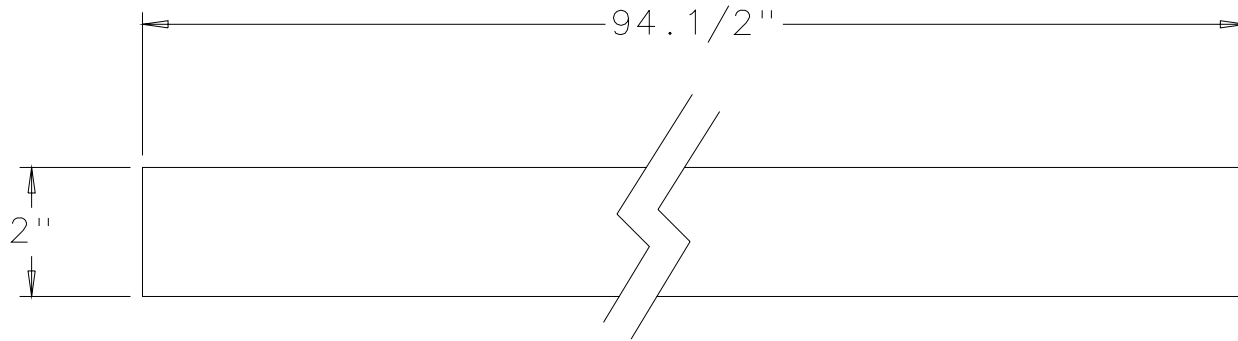
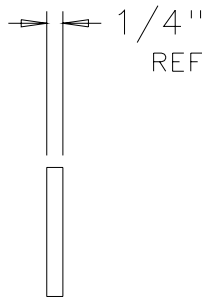
PART NO: 00-0815
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.28 LBS

STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN. +1/32 6 IN AND UP +1/16						CHECKED:			
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				1	BAH	11/94	WAS 29.5"		APPROVED:
NO.	BY	DATE	REVISION						
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2	
TITLE: STRIP						SCALE: 1/2	DATE: 3/10/92	DWG. NO. 00-0815B	



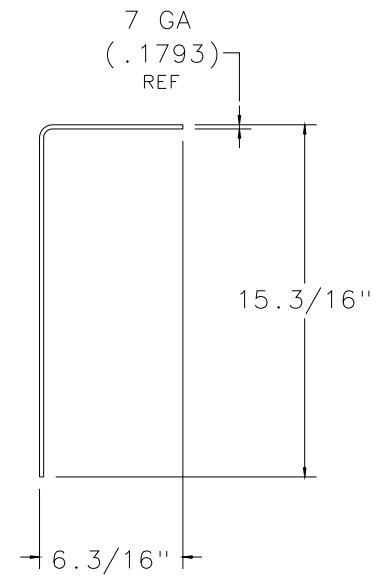
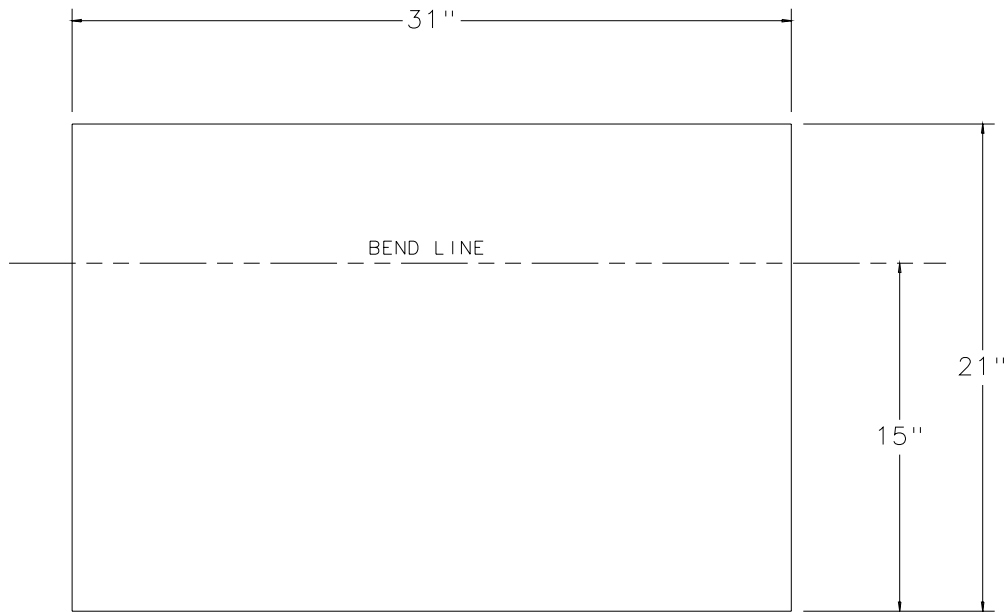
PART NO: 00-0816
 MATERIAL: SHEET 7 GA 4 X 8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.20 LBS

STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: STRIP						SCALE: 1/2	DATE: 3/10/92	DWG. NO. 00-0816B



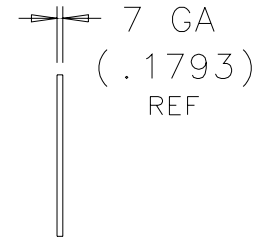
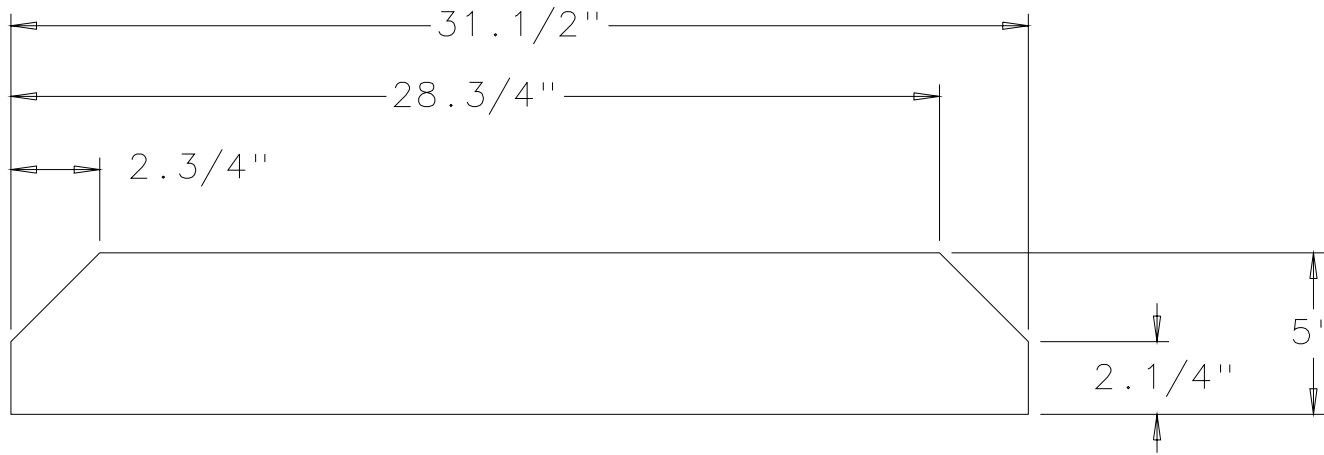
PART NO: 00-0817
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 13.4 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG							DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
							CHECKED: *	
							APPROVED:	
	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: BAR						SCALE: 1/2	DATE: 3/10/92	DWG. NO. 00-0817B



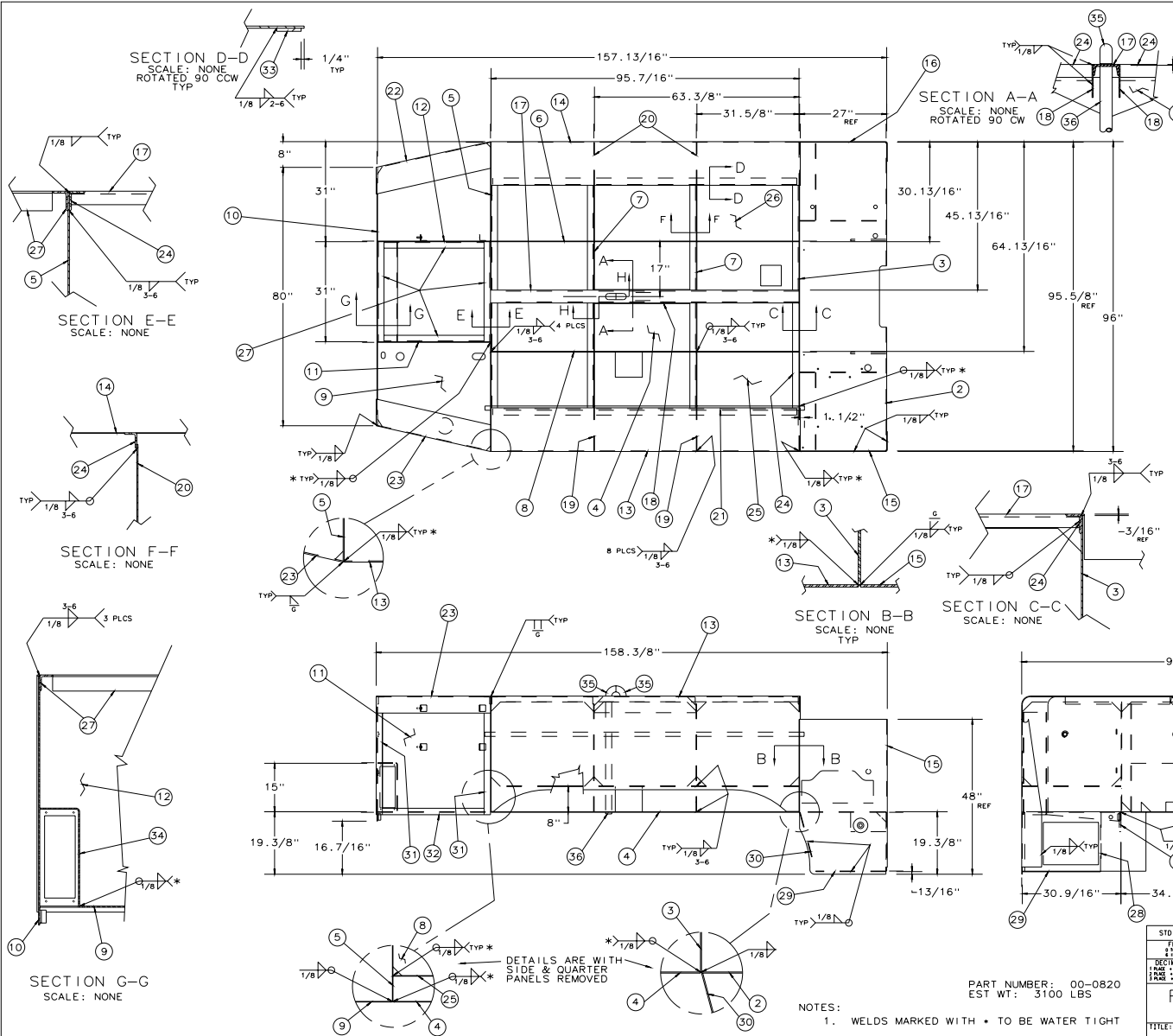
PART NO: 00-0818
 MATERIAL: SHEET 7GA (.1793) 4X8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 33.0 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN. -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG		DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 91-2		
TITLE: BOX OUT		SCALE: 1/4	DATE: 3/10/92	DWG. NO. 00-0818C



PART NO: 00-0819
 MATERIAL: SHEET 7GA (.1793) 4X8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 7.61 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION												
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *													
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:													
<table border="1"> <thead> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> <th colspan="3">REVISION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						NO.	BY	DATE	REVISION									<p>PROJECT NO.: 91-2</p>	
NO.	BY	DATE	REVISION																
<p>FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>						SCALE: 1/4	DATE: 3/10/92	DWG. NO. 00-0819B											
TITLE: STIFFENER, LIFT CHANNEL																			



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0812	A	MOUNT, REAR TANK	2	9.02
2	00-0198	D	APRON	1	1.77
3	00-0791	C	BULKHEAD, REAR	1	1.72
4	00-0784	C	BOTTOM, WATER COMPARTMENT	1	1.62
5	00-0785	C	BULKHEAD, FRONT	1	1.71
6	00-0793	C	BAFFLE, LONGITUDINAL (RH)	1	1.62
7	00-0798	B	BAFFLE	2	57.7
8	00-0794	C	BAFFLE, LONGITUDINAL (LH)	1	1.59
9	00-0792	C	FLOOR, COMPARTMENT	1	1.44
10	00-0796	C	PANEL, FRONT S/W	1	1.24
11	00-0811	B	SHEET	1	60.7
12	00-0808	C	COMPARTMENT WALL S/W	1	62.2
13	00-0786	D	TANK SIDE (LH)	1	205
14	00-0787	D	TANK SIDE (RH)	1	205
15	00-0783	C	SHEET, REAR QUARTER (LH)	1	77.3
16	00-0790	C	SHEET, REAR QUARTER (RH)	1	67.1
17	00-0804	C	CHANNEL, LIFTING S/W	1	58.4
18	00-0819	B	STIFFENER, LIFT CHANNEL	2	7.61
19	00-0800	B	BAFFLE	2	39.3
20	00-0799	B	BAFFLE	2	39.5
21	P16-EAN99N	PIPE	1" NOM X 99' LG SCHED 40 STAINLESS STEEL	1	13.9
22	00-0809	C	PANEL, FRONT QUARTER (RH)	1	37.9
23	00-0810	C	FRONT QUARTER (LH)	1	22.1
24	00-0689	B	ANGLE	8	9.79
25	00-0788	C	BOTTOM, UPPER (LH)	1	145
26	00-0789	C	BOTTOM, UPPER (RH)	1	148
27	00-0802	B	ANGLE	4	9.35
28	00-0814	C	REAR COMPARTMENT WALL	2	22.0
29	00-0813	B	REAR COMPARTMENT FLOOR	2	26.5
30	00-0805	B	REAR COMPARTMENT BACK	2	23.2
31	00-0816	B	STRIP	2	3.20
32	00-0815	B	STRIP	1	3.00
33	00-0817	B	BAR	2	13.4
34	00-0818	C	BOX OUT FRONT	1	33.0
35	P24-CALV	ELBOW	BUTT WELD 90 DEG 1.1/2" LR	2	1.00
36	00-0929	B	PIPE, BLACK SCH 40 1.1/2"	1	8.27

PART NUMBER: 00-0820
 EST WT: 3100 LBS

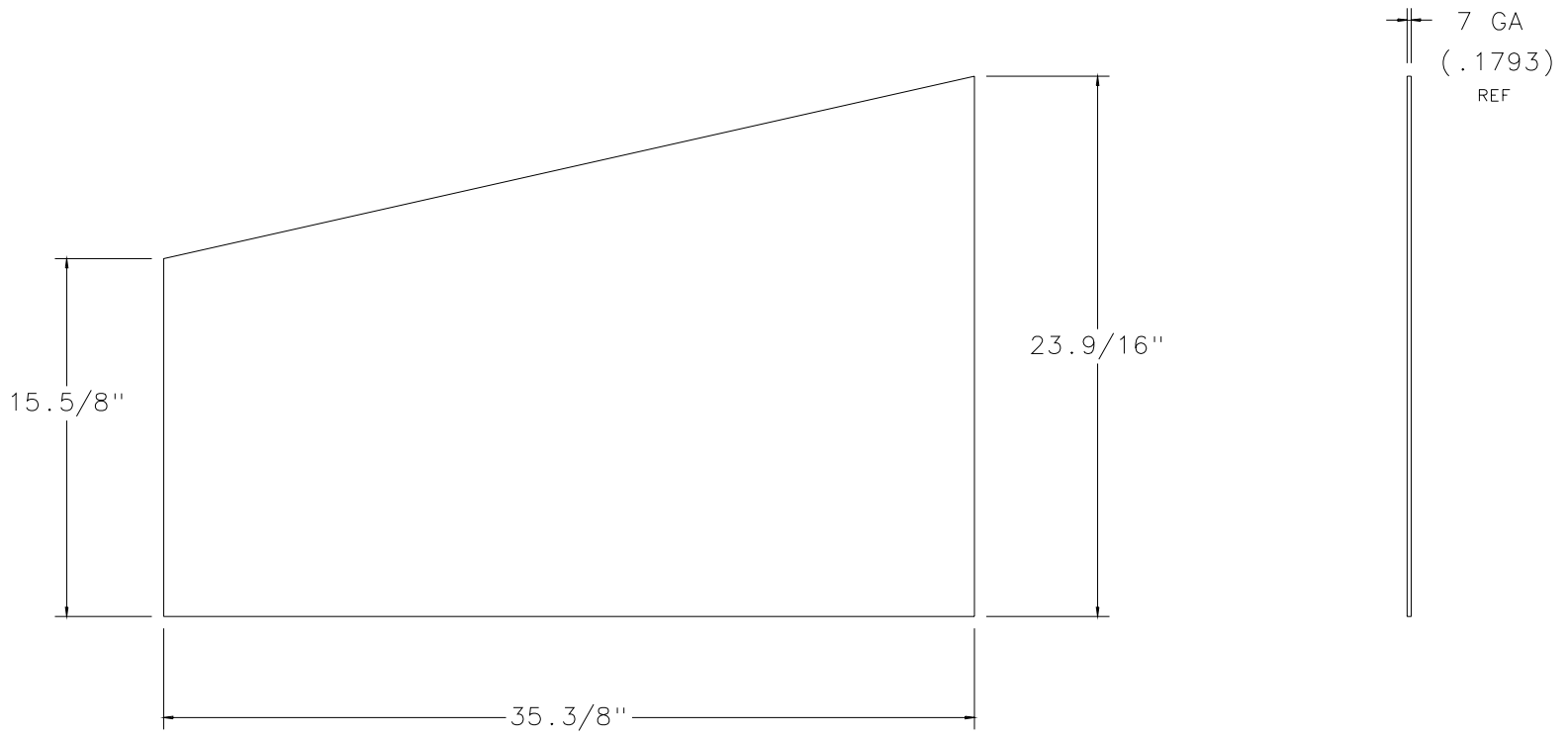
NOTES:
 1. WELDS MARKED WITH * TO BE WATER TIGHT

STD. TOLERANCES	3	REVISED TO COMPLY WITH CHANGES ON	DRN:	KDB
FRACTIONAL:	1/16, 1/8, 3/16, 1/2, 3/4, 1	REVISED TO COMPLY WITH CHANGES ON	CHECKED:	*
DECIMAL:	0.0005, 0.001, 0.002, 0.005, 0.010, 0.020, 0.050, 0.100, 0.200, 0.500, 1.000	REVISED TO COMPLY WITH CHANGES ON	APPROVED:	*
ANGLES:	15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180	REVISED TO COMPLY WITH CHANGES ON		
SPACES:	1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 3/4, 2, 2 1/4, 2 3/4, 3, 3 1/4, 3 3/4, 4, 4 1/4, 4 3/4, 5, 5 1/4, 5 3/4, 6, 6 1/4, 6 3/4, 7, 7 1/4, 7 3/4, 8, 8 1/4, 8 3/4, 9, 9 1/4, 9 3/4, 10	REVISED TO COMPLY WITH CHANGES ON		

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

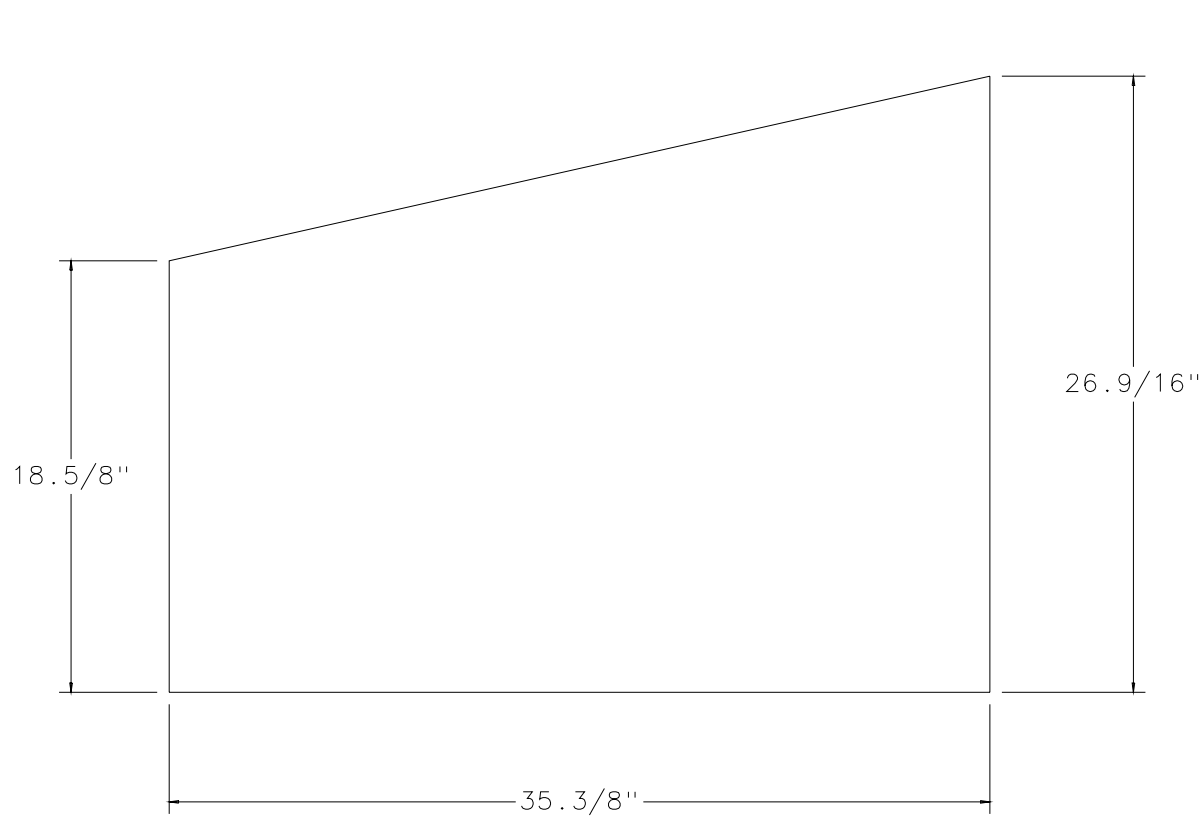
MICHIGAN DNR
 FOREST MANAGEMENT DIVISION

PROJECT NO.: 91-2
 DATE: 3/10/92
 DWG NO.: 00-0820D



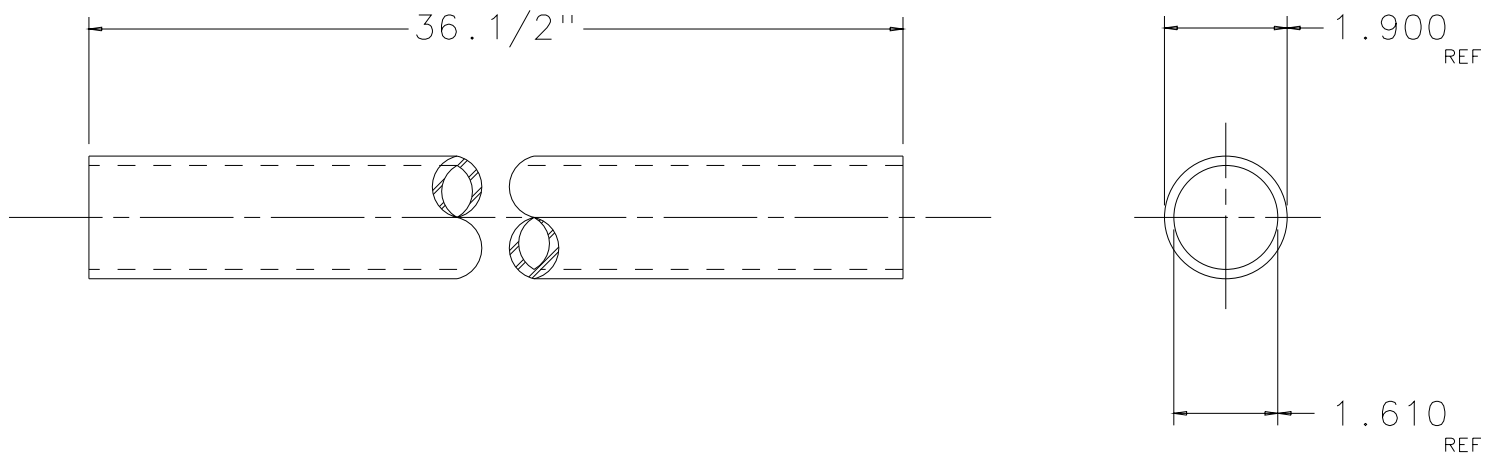
PART NO: 00-0828
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 35.1 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: COMPARTMENT TOP (RH)					SCALE: 1/4	DATE: 5/6/92	DWG. NO. 00-0828C



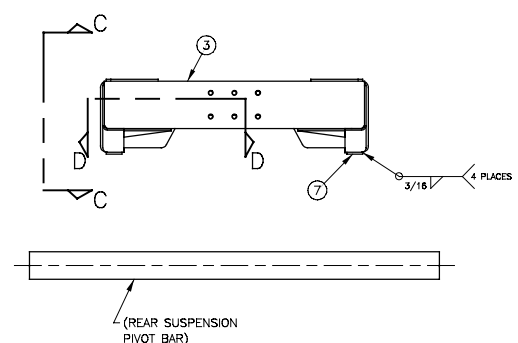
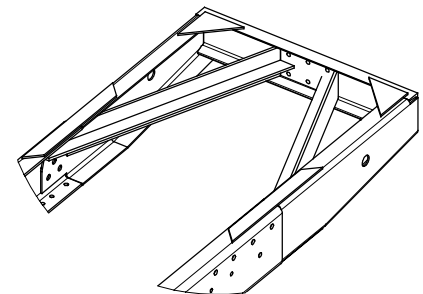
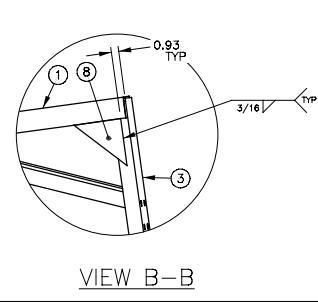
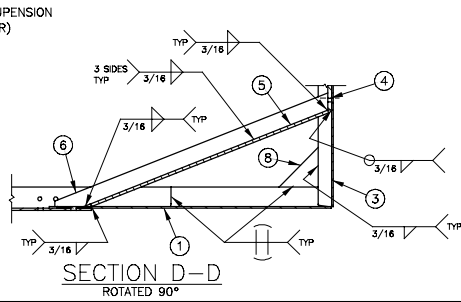
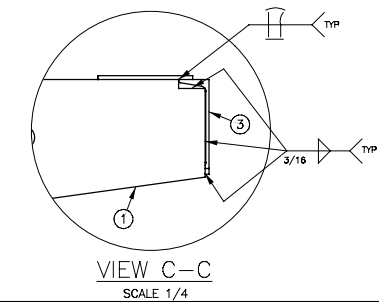
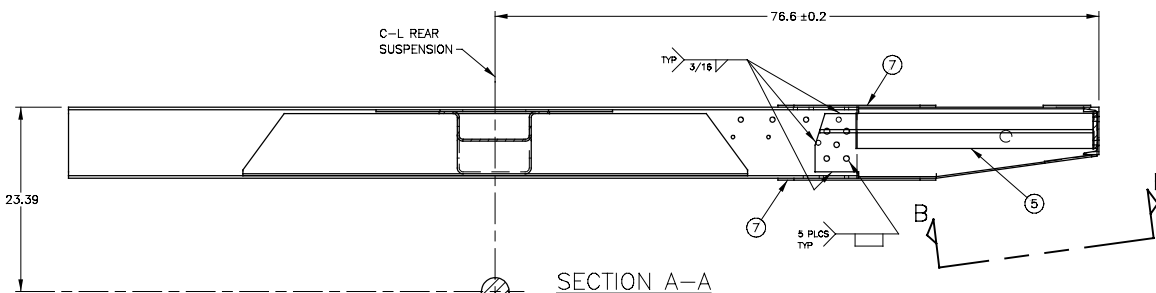
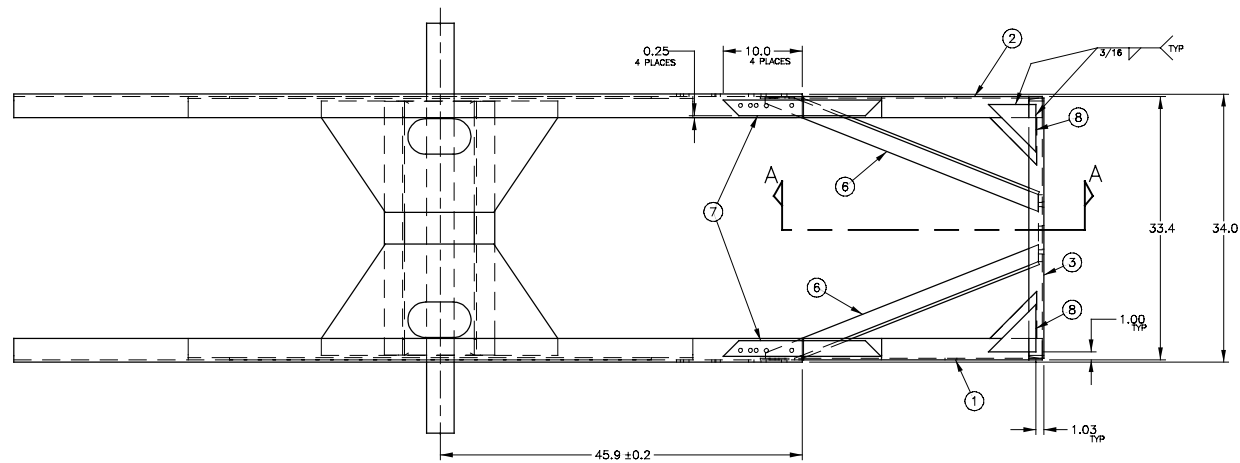
PART NO: 00-0829
 MATERIAL: SHEET 7 GA (.1793) P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 40.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32" 6 IN AND UP + - 1/16"								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						CHECKED: APPROVED:	
NO.	BY	DATE	REVISION					PROJECT NO.: 91-2 DWG. NO.: 00-0829C	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								SCALE: 1/4	DATE: 5/6/92
TITLE: COMPARTMENT TOP (LH)									



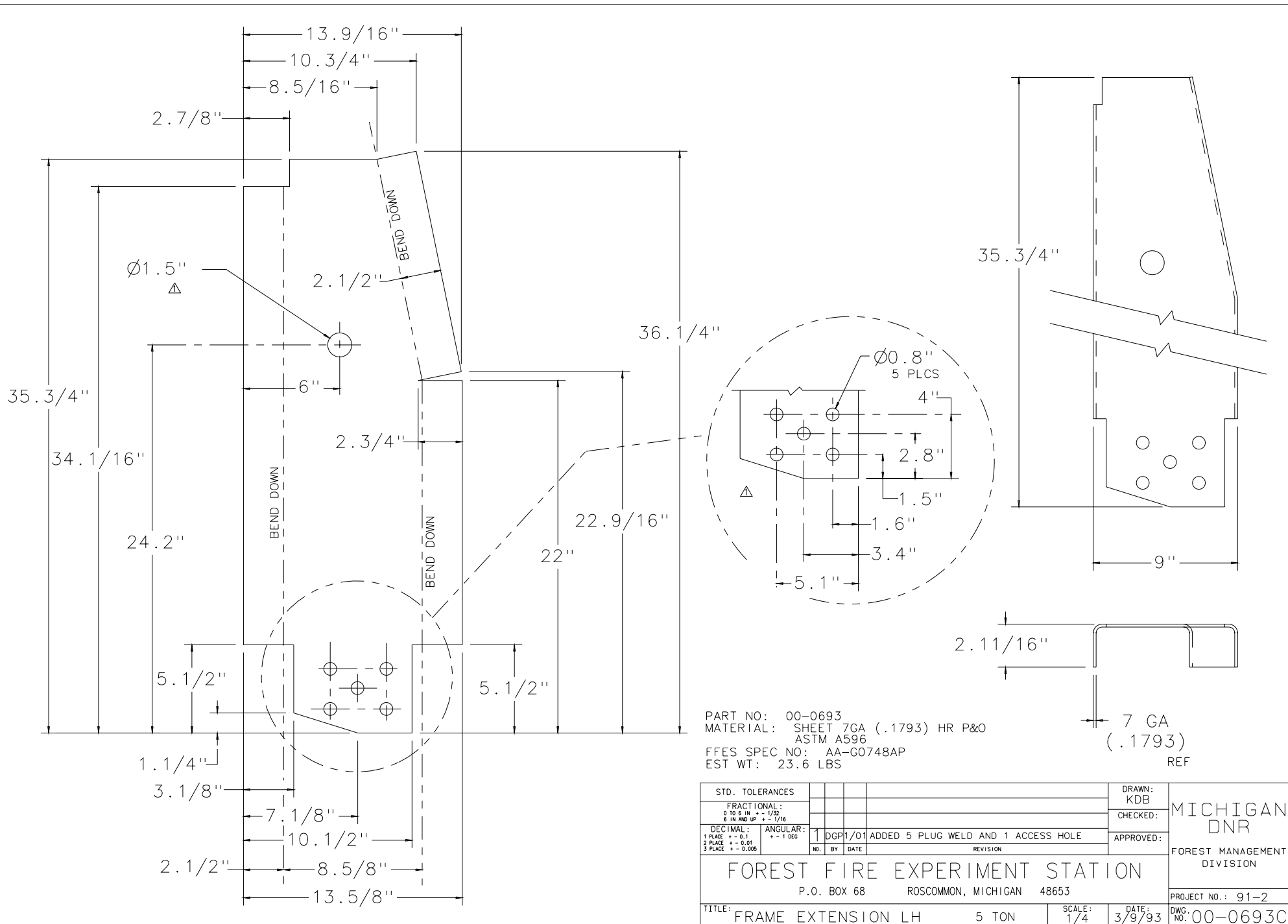
PART NUMBER: 00-0929
 MAT'L: PIPE BLACK SCH 40 1.1/2"
 UNS K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 8.27 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: PIPE, BLACK SCH 40 1.1/2"					SCALE: 1 = 2	DATE: 19 AUG 94	DWG NO: 00-0929B



COMPONENT LIST					
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0693	C	FRAME EXTENSION LH	1	20.9
2	00-0694	C	FRAME EXTENSION RH	1	20.9
3	00-1337	B	END CHANNEL	1	21.2
4	00-1036	B	MOUNTING PLATE	1	5.22
5	00-1338	B	BAR, DIAGONAL	2	15.4
6	00-1339	B	BAR, STIFENER	2	7.62
7	00-1340	B	DOUBLER STRIP	4	2.55
8	00-0717	B	GUSSET	4	1.27

EST ADDED WT: 130 LBS				DRAWN: DGP	
STD. TOL:				CHECKED:	
DECIMAL:				APPROVED:	
1 PLACE = ± 0.08				DATE: 02-01-01	
2 PLACE = ± 0.005				PROJECT NO.:	
3 PLACE = ± 0.0005				TITLE: FRAME EXTENSION W/O PLOW	
ANGULAR:				FEPP 5 TON	
1 DEG.				DWG. NO. 21-0047D	
DATE:		NO. BY DATE		REVISION	
02-01-01		FOREST FIRE EXPERIMENT STATION		DNR	
SCALE: 1/8		P.O. BOX 68 ROSCOMMON, MICHIGAN 48853		FOREST MANAGEMENT DIVISION	

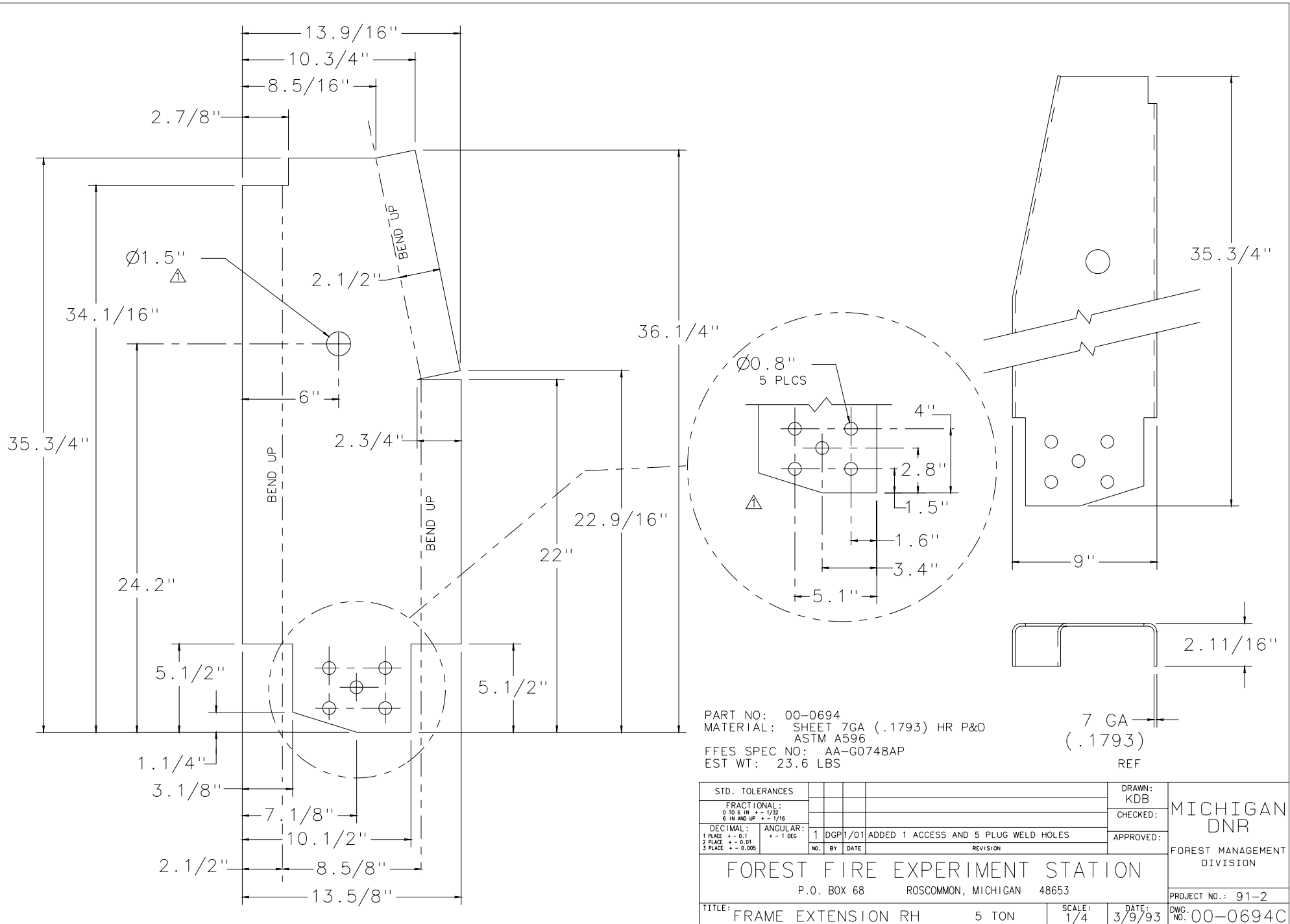


PART NO: 00-0693
 MATERIAL: SHEET 7GA (.1793) HR P&O
 ASTM A596
 FFES SPEC NO: AA-G0748AP
 EST WT: 23.6 LBS

7 GA
 (.1793)

REF

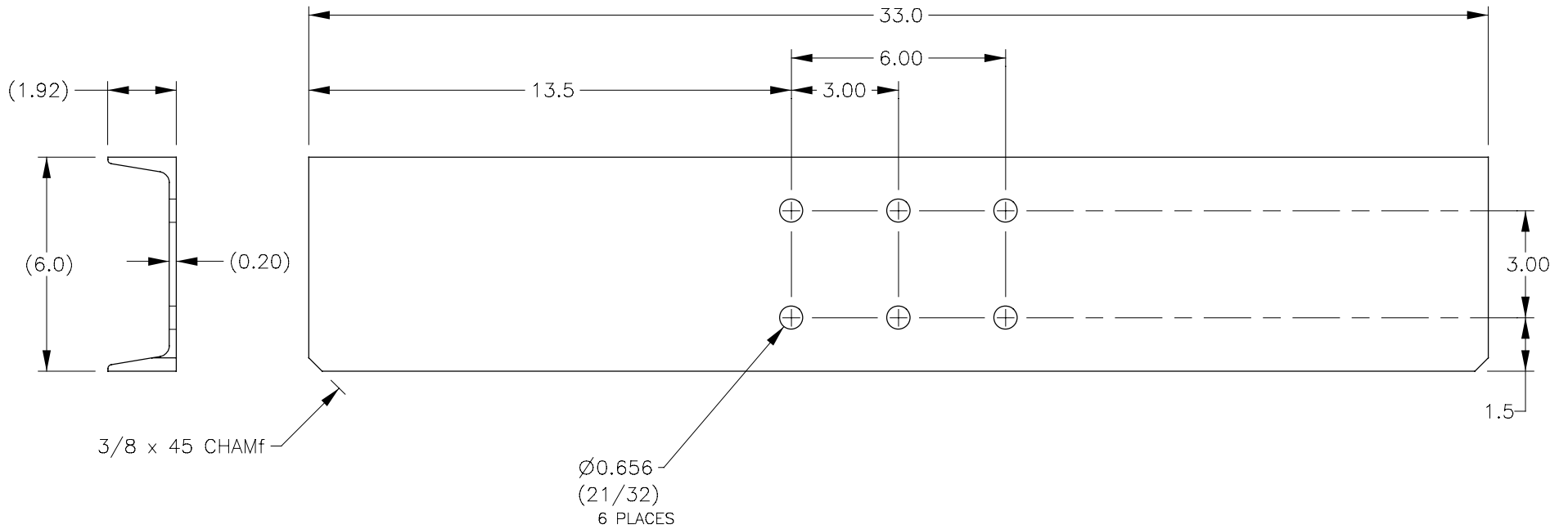
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				DRAWN: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		CHECKED:	
1 DGP1/01		ADDED 5 PLUG WELD AND 1 ACCESS HOLE		APPROVED:	
NO. BY DATE		REVISION		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: FRAME EXTENSION LH 5 TON				SCALE: 1/4 DATE: 3/9/93	
				PROJECT NO.: 91-2 DWG. NO.: 00-0693C	



PART NO: 00-0694
 MATERIAL: SHEET 7GA (.1793) HR P&O
 ASTM A596
 FFES SPEC NO: AA-G0748AP
 EST WT: 23.6 LBS

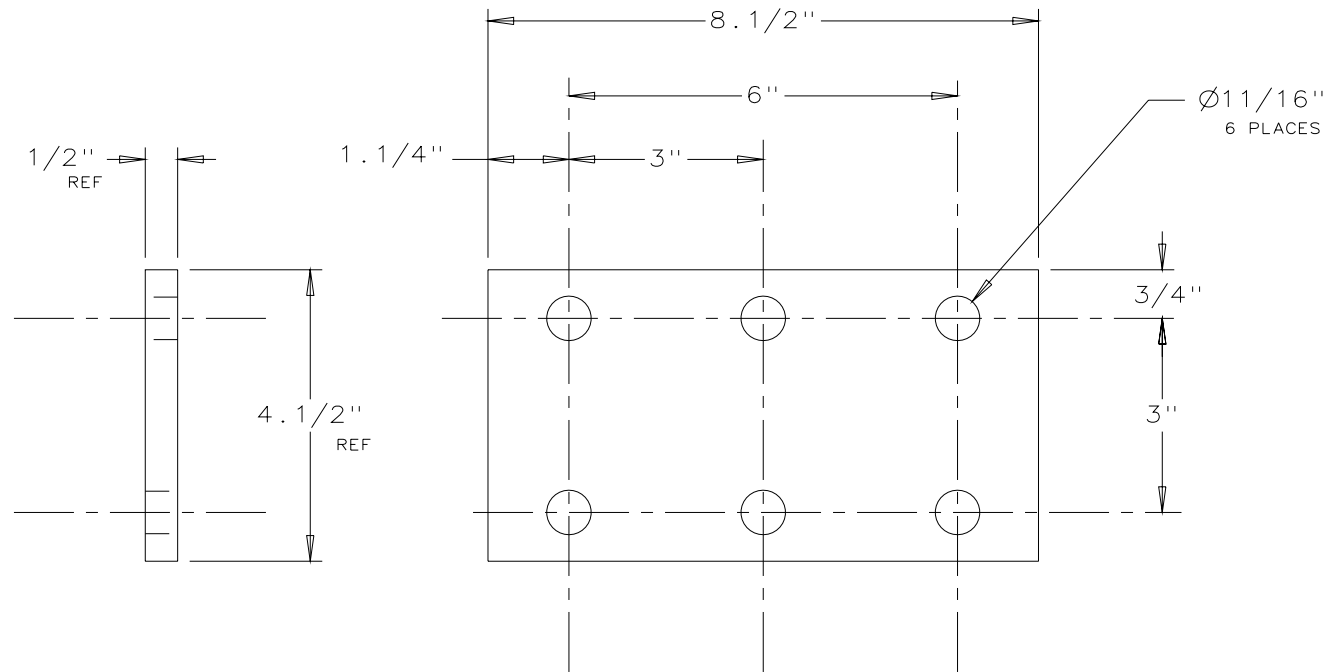
7 GA
 (.1793)
 REF

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16 DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG		1 DGP NO. BY DATE	1/01 DATE	ADDED 1 ACCESS AND 5 PLUG WELD HOLES REVISION	DRAWN: KDB CHECKED: APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				PROJECT NO.: 91-2 DWG. NO.: 00-0694C		
TITLE: FRAME EXTENSION RH 5 TON					SCALE: 1/4	DATE: 3/9/93



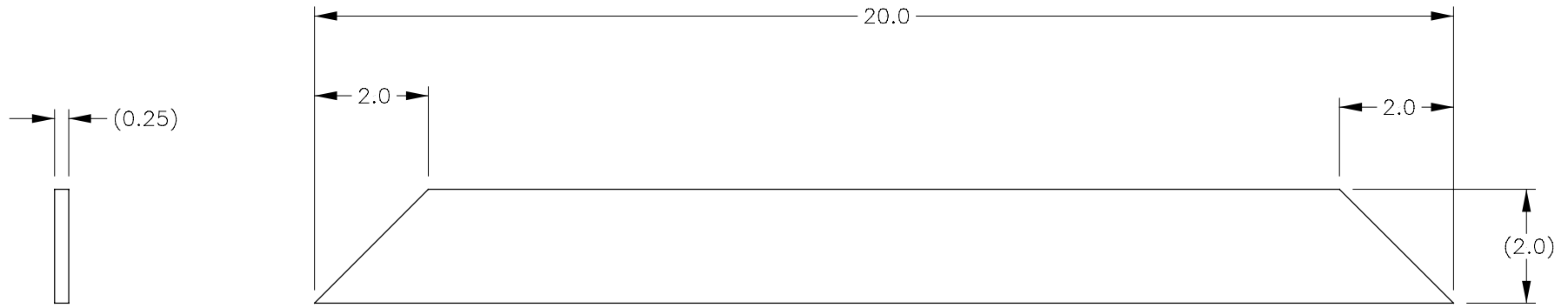
PART NO: 00-1337
 MAT'L: CHANNEL 6 X 8.2#/FT
 K02600
 FFES SPEC NO: AH-06082AG
 EST WT: 21.2 LBS

STD. TOL.								DRAWN: DGP
DECIMAL:								CHECKED:
1 PLACE + - 0.06								APPROVED:
2 PLACE + - 0.03								
3 PLACE + - 0.005								
ANGULAR:	NO.	BY	DATE	REVISION				
+ - 1 DEG.								
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION							 FOREST MANAGEMENT DIVISION
SCALE: 1/3	P.O. BOX 68			ROSCOMMON, MICHIGAN		48653		
PROJECT NO.:	TITLE: END CHANNEL							DWG. NO. 00-1337B



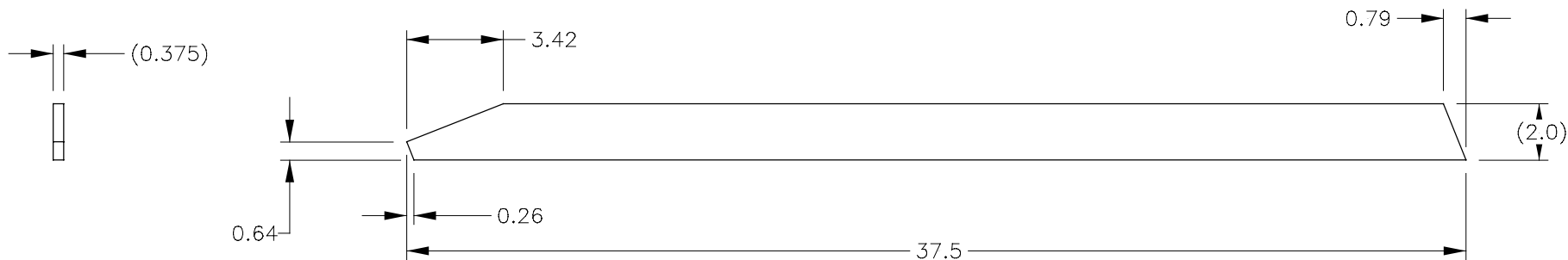
PART NO: 00-1036
 MATERIAL: BAR, FLAT 1/2 X 4 1/2
 G10200
 FFES SPEDC NO: AB-00818AA
 EST WT: 5.10 LB

STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:						CHECKED:		
0 TO 6 IN + - 1/32								
6 IN AND UP + - 1/16								
DECIMAL:		ANGULAR:				APPROVED:		PROJECT NO.: 96-3
1 PLACE + - 0.1		+ - 1 DEG						
2 PLACE + - 0.01				NO.		BY		TITLE: MOUNTING PLATE
3 PLACE + - 0.005				DATE		REVISION		
FOREST FIRE EXPERIMENT STATION						SCALE:		DATE: 8/29/96
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						1/2		
DWG. NO. 00-1036B								




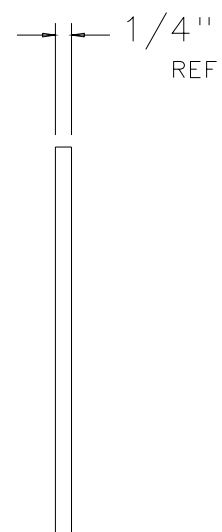
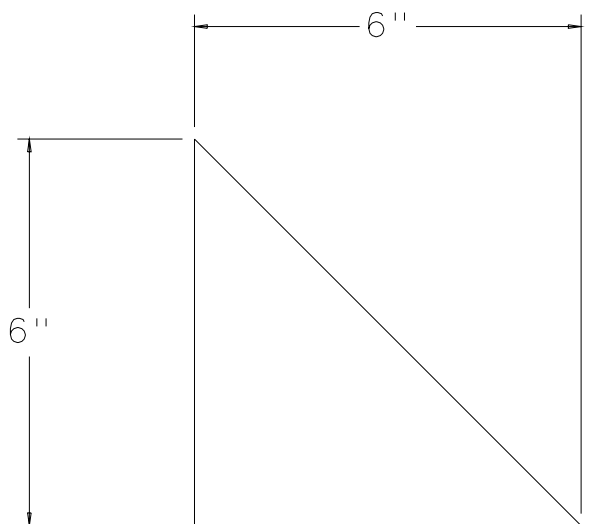
PART NO: 00-1340
 MAT'L: BAR, FLAT 1/4 X 2 HR
 G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 2.55 LBS

STD. TOL.								DRAWN: DGP	 DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005								CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION				APPROVED:	
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION								
SCALE: 1/2	P.O. BOX 68			ROSCOMMON, MICHIGAN		48653			
PROJECT NO.:	TITLE: DOUBLER STRIP								DWG. NO. 00-1340B



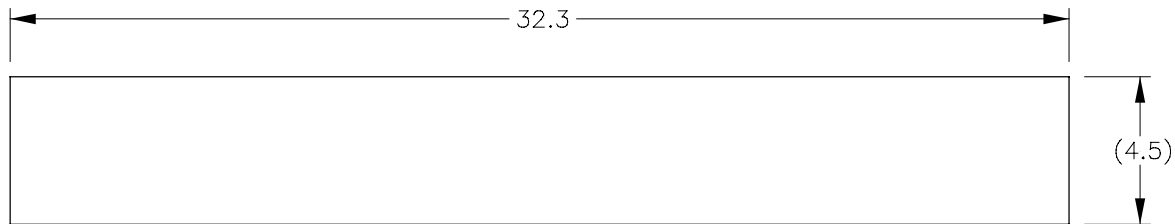
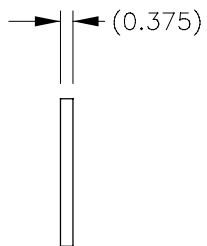
PART NO: 00-1339
 MAT'L: BAR, FLAT 3/8 X 2 HR
 G10200
 FFES SPEC NO: AB-00608AA
 EST WT: 7.62 LBS

STD. TOL.								DRAWN: DGP	 FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005								CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION				APPROVED:	
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION								
SCALE: 1/4	P.O. BOX 68			ROSCOMMON, MICHIGAN		48653			
PROJECT NO.:	TITLE: BAR, STIFFENER								DWG. NO. 00-1339B




PART NO: 00-0717
 MATERIAL: PLATE 1/4 HR
 G01015
 FFES SPEC NO: AA-00448BC
 EST WT: 1.27 LBS

STD. TOLERANCES									DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16									CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				ANGULAR: + - 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										PROJECT NO.: 91-2
TITLE: GUSSET							SCALE: 1/2	DATE: 5/24/93	DWG. NO.: 00-0717B	



PART NO: 00-1338
 MAT'L: BAR, FLAT 3/8 X 4-1/2 HR
 G10200
 FFES SPEC NO: AB-00618AA
 EST WT: 15.4 LBS

STD. TOL.						DRAWN: DGP	 FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION		APPROVED:	
DATE: 01-24-01	FOREST FIRE EXPERIMENT STATION						
SCALE: 1/4	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
PROJECT NO.:	TITLE: BAR, DIAGONAL						DWG. NO. 00-1338B

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

March 2001



Design Packet 63B Common Tank Parts Includes Tank Plumbing Examples

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

Common Tank Parts

This booklet contains part details that are used in two REC water tanks. In order for these to be useful, you must have one of the following:

For the 2.5 Ton Series 6x6

REC Project No. 63A-2, 2.5 Ton 6x6 900 Gallon Unitized Water Tank.

For the 5 Ton Series 6x6

REC Project No. 63A-5, 5 Ton 6x6 1400 Gallon Unitized Water Tank.

Notes:

00-0285: The tap blocks are used to fasten the rear clearance and identification lights mounting bracket to the back of the tank. If a different light mounting system is used, these are not necessary.

00-0286: This is part of the telescoping light mast system.

00-0287: The 5-3/4 x 4-5/8 inch cut out is for the stop, turn, tail light listed in the electric requirements. Other lights may require a different opening.

00-0304: These are tough durable hinges that allow easy removal of the door when necessary. They are reliable when working off-road in severe conditions. Piano hinge style substitutes are an alternative.

00-0333: For use with compartment door switch listed in electrical requirements.

00-0783 and 00-0790: The hole is for the side marker light. The size may vary depending on light used.

00-0790: The right quarter panel has a cut out for hose reel access and a hole for the rewind switch. Different reel mountings will not need this.

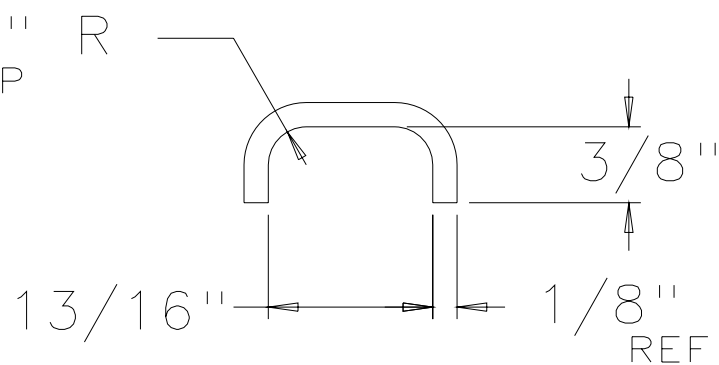
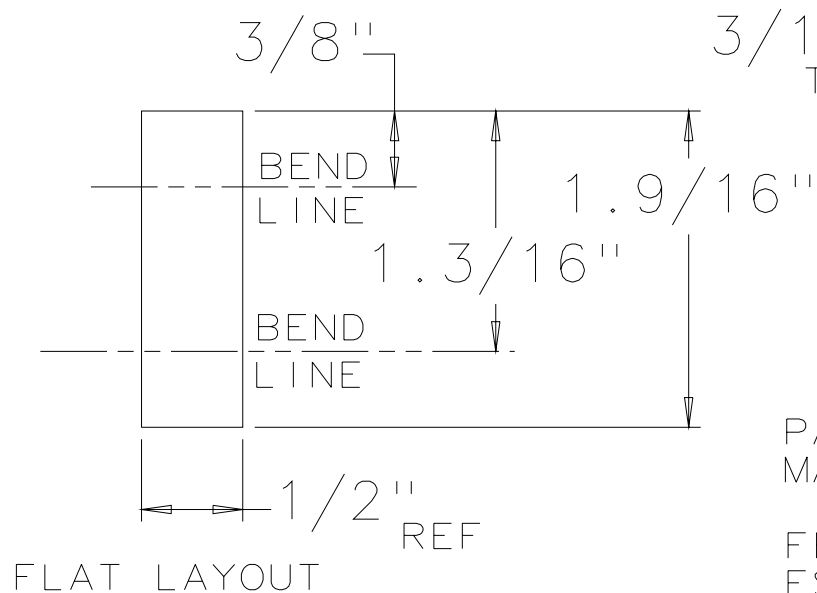
00-0826 and 00-0827: These parts are used if the rear quarter panel (00-0790) hose reel opening is used.

26-9801 and 26-9807: The drawings are provided to show a sample method of mounting accessories and plumbing to the apron. Since each agency has its own pump and accessories, use this as a generalization.

Drawing List

Drawing Number	Drawing Name
00-0083A	Bar, Guide
00-0113B	Pipe
00-0114A	Gusset
00-0115A	Bar
00-0116B	Gusset S/W
00-0117B	Sump S/W
00-0123A	Tie Down
00-0128A	Tube
00-0129B	Ring
00-0163B	Marker Light Brkt S/W
00-0164A	Wire Guide
00-0174A	Bar, Flat 3/16 x 3/4
00-0231B	Sump Wall
00-0272B	Pipe, Hand Rail
00-0275A	Sheet, Sump Bottom
00-0276A	Expanded Metal
00-0280A	Bar, Flat
00-0285A	Tap Block 3/8 UNC
00-0286B	Cylinder Shield
00-0287B	Sheet, Comp. Door LH
00-0291B	Bar, Bumper End Cap
00-0292A	Bar, Flat 1/4 x 2 x 8
00-0301A	Bar 3/8 x 1 x 3-1/2
00-0304A	Hinge Block
00-0311A	Bar
00-0312A	Bar
00-0329A	Bar, Flat 3/16 x 3/4
00-0330A	Bar, Flat 3/16 x 3/4
00-0331A	Bar, Flat 3/16 x 3/4
00-0332A	Angle 1 x 1 x 1/4
00-0333A	Mount, Switch
00-0689B	Angle
00-0690A	Gusset
00-0783C	Sheet, Rear Quarter (LH)
00-0790C	Sheet, Rear Quarter (RH)
00-0805B	Rear Compartment Back
00-0812A	Mount, Rear Tank
00-0813B	Rear Compartment Floor
00-0814C	Rear Compartment Wall
00-0821B	Sheet
00-0822B	Gusset
00-0823B	Pipe 6" Sch 40 Black
00-0824C	Dump S/W
00-0825B	Dump Gusset
00-0826B	Hose Rub Bar
00-0827B	Angle, Hose Roller Mtg
00-0832B	Fender Fill
18-8002B	Etching and Cleaning Agent
18-8003B	Galvanizing Compound, Cold

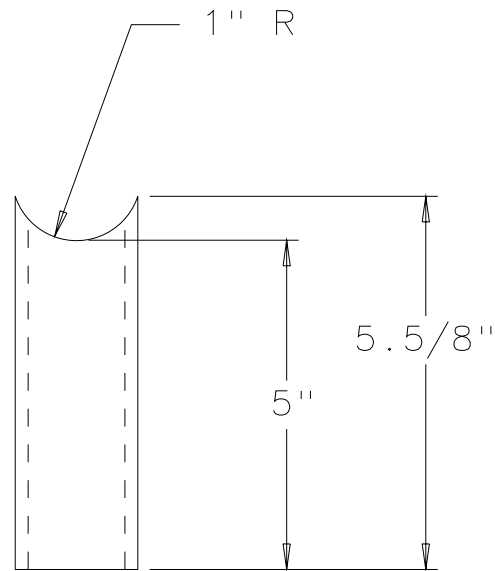
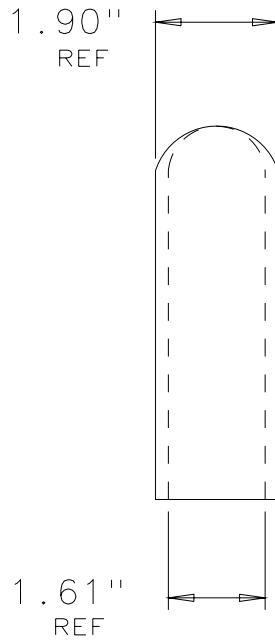
Drawing Number	Drawing Name
23-0004B	Latch, Door 3 Point Left Hand
23-0006B	Washer, Flat Nylon
23-0024C	Door W/C (RH)
23-0025C	Rear Comp. Door LH
23-0026C	Rear Comp. Door RH W/C
23-0030B	Latch, Door
23-0034A	Latch Rod
23-0035B	Door Stop
23-0041B	Valve, Water 6"
23-0043B	Lifting Eye 7200 lb
23-0046B	Weld Flange
23-0047B	Gasket
23-0050B	Lid Clamp, Center
23-0060B	6" Flange to 6" NPT FEM
33-0041B	Sealant, Multi-Purpose Silicone
26-9801D	Water Plumbing, Tank, Large Engines w/Unitized Tanks
26-9807D	Water Plumbing, Suction, 2.5 Ton



PART NO: 00-0083
 MATERIAL: BAR, FLAT 1/8 X 1/2 HR
 UNS G10100
 FFES SPEC NO: AB-00202BD
 EST WT: 0.03 LBS

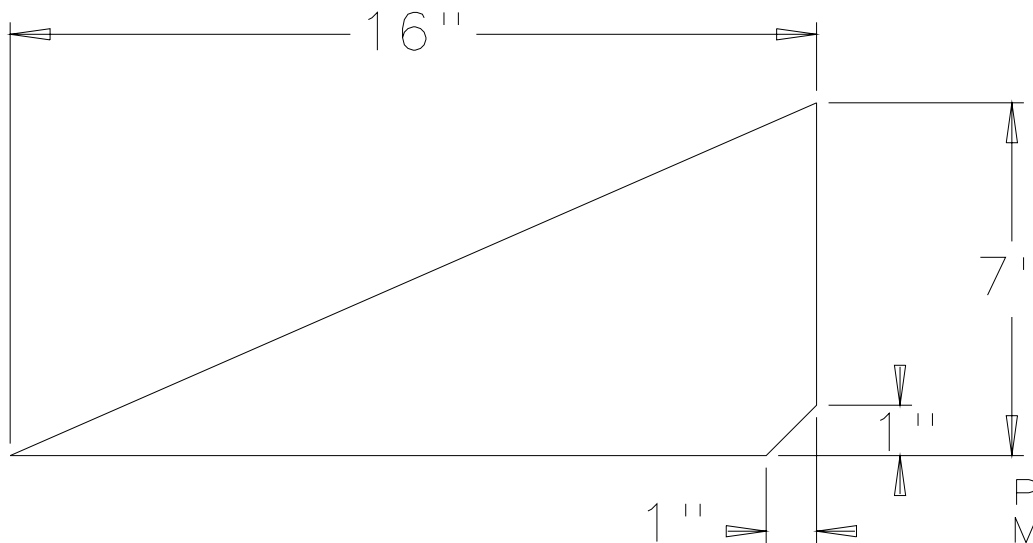
FLAT LAYOUT

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	1	KDB	10/9 89	P/N WAS 00-0087, DUPLICATE P/N		APPROVED:		
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								DWG. NO. 00-0083A
TITLE: BAR, GUIDE					SCALE: 1/1	DATE: 2/23/89		



PART NO: 00-0113B
 MATERIAL: PIPE 1.1/2 NOM. SCHED 40 BLACK
 UNS K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 1.23 LBS

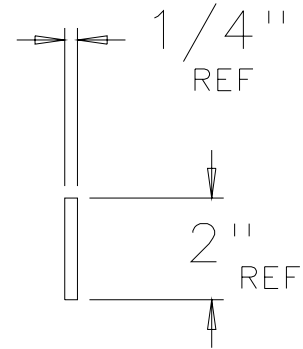
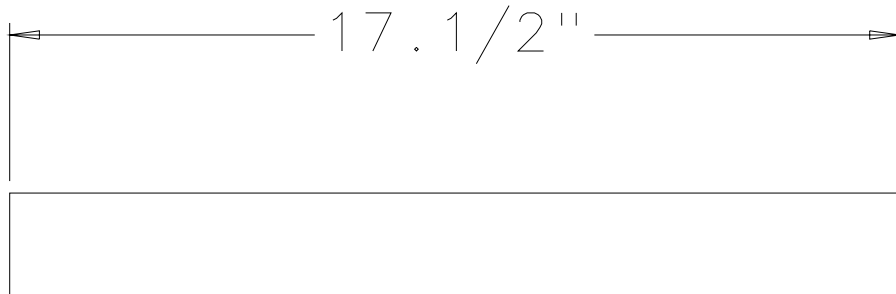
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16						CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: -- 1 DEG					APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: PIPE					SCALE: 1/2	DATE: 2/24/89	DWG. NO. 00-0113B



7 GA
(.1793)
REF

PART NO: 00-0114
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 2.82 LBS

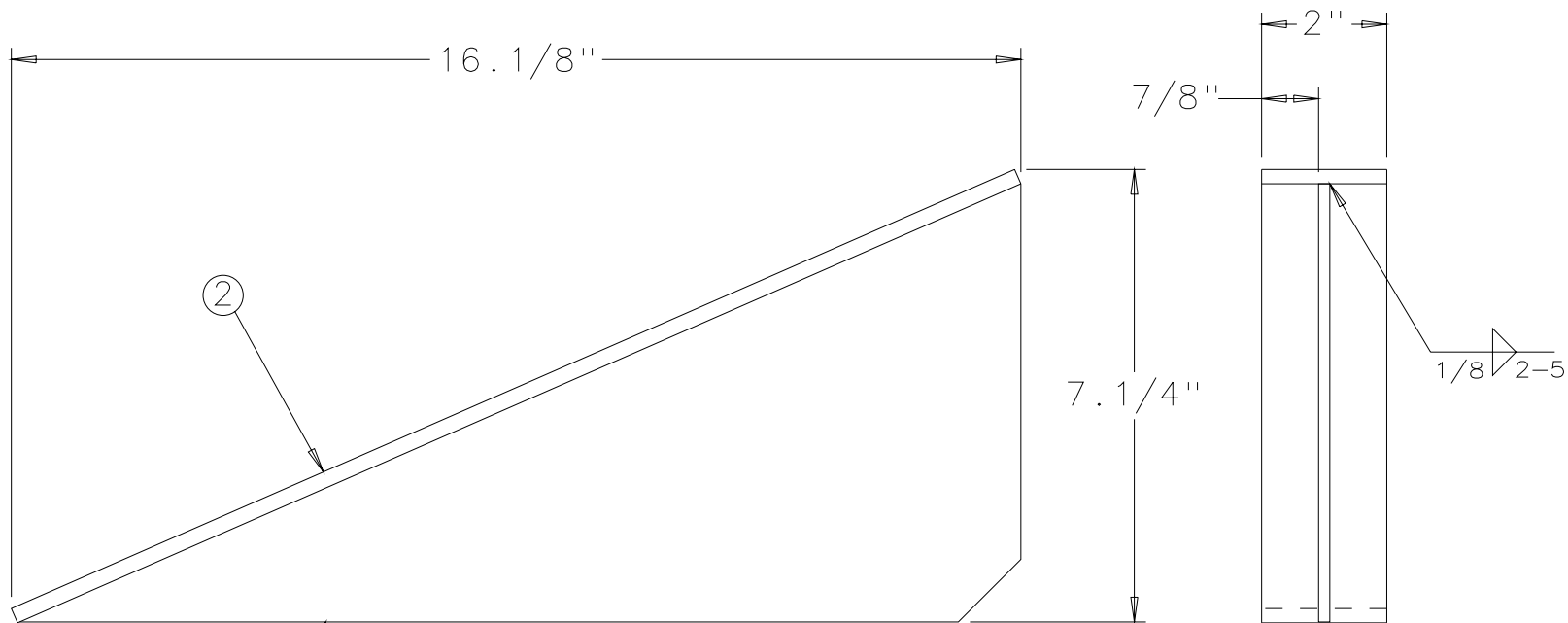
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: ANGULAR: 1 PLACE ± 0.1 ± 1 DEG 2 PLACE ± 0.01 3 PLACE ± 0.005						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 87-3
						CHECKED: *	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: GUSSET					SCALE: 1/4	DATE: 2/24/89	DWG. NO. 00-0114A



PART NO: 00-0115
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 2.48 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 87-3
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BAR				SCALE: 1/4	DATE: 2/24/89	DWG. NO. 00-0115A

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0114	A	GUSSET	1	2.82
2	00-0115	A	BAR	1	2.48



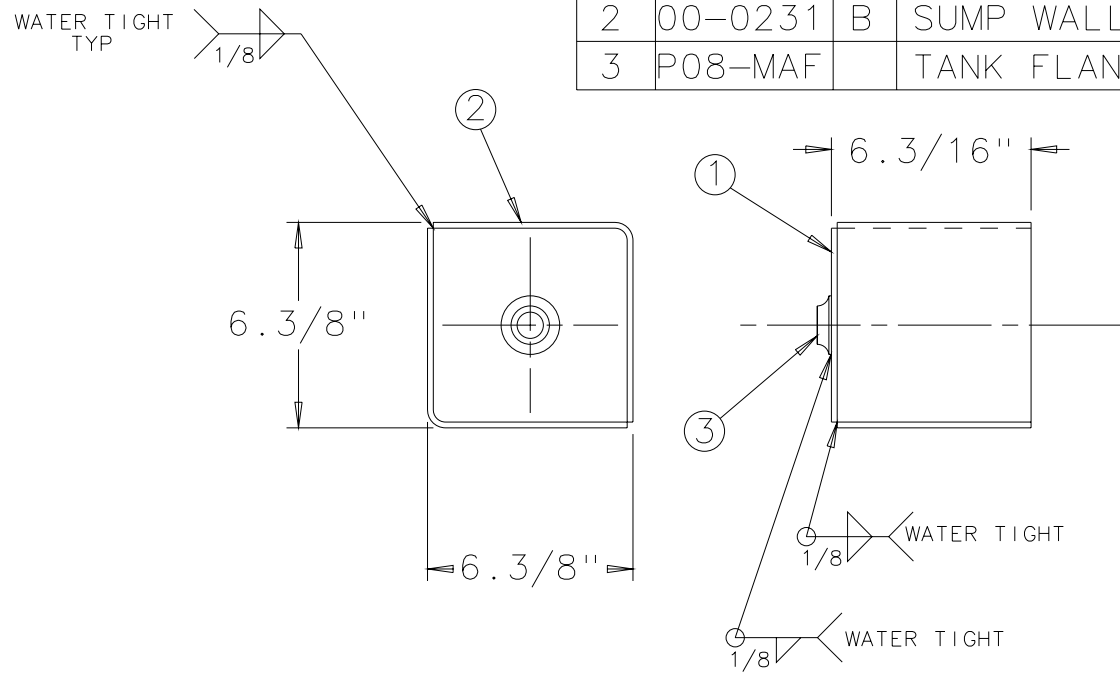
PART NO: 00-0116
EST WT: 5.60 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 87-3
	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				SCALE: 1/2	

②

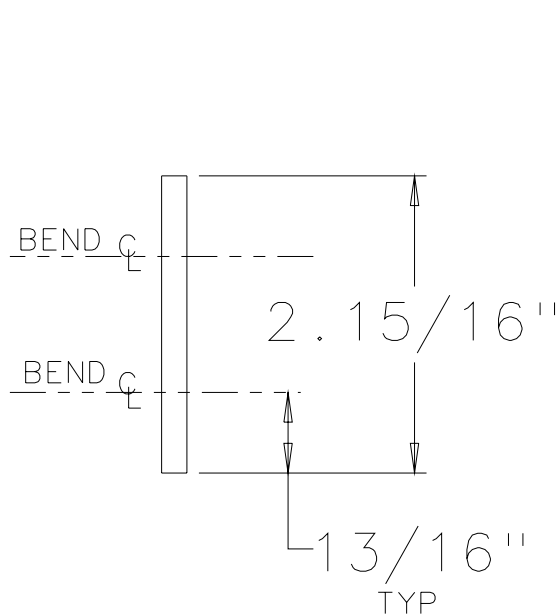
①

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0275	A	SHEET, SUMP BOTTOM	1	1.76
2	00-0231	B	SUMP WALL	2	3.65
3	P08-MAF		TANK FLANGE W/ PILOT 1/2 NPT	1	0.16

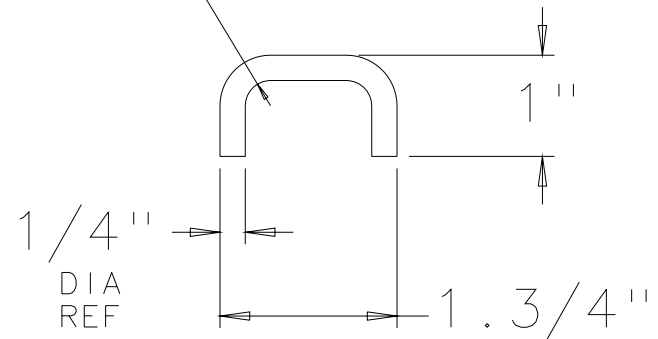


PART NO: 00-0117
EST WT: 9.70 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG		NO. BY DATE REVISION	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			SCALE: 1/4 DATE: 2/24/89	DWG. NO. 00-0117B
TITLE: SUMP S/W				

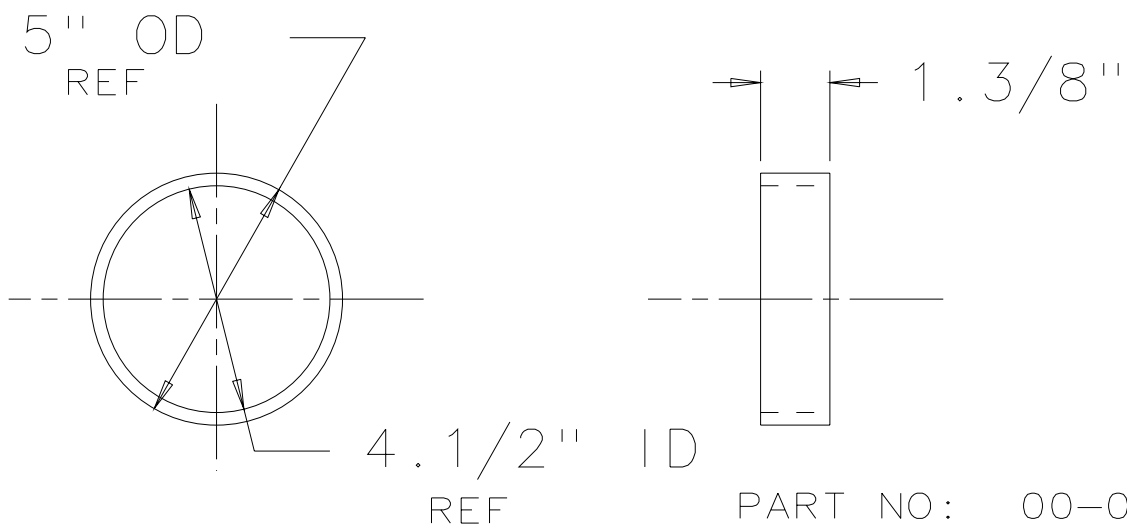


1/4" R
TYP



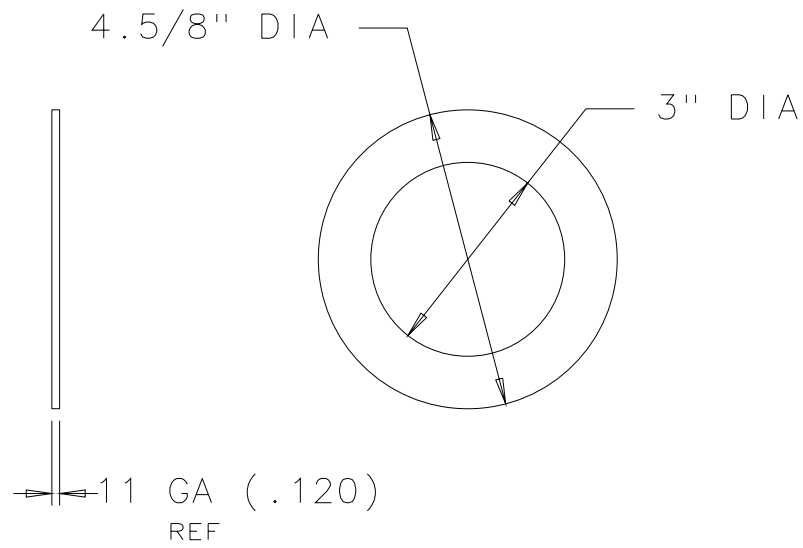
PART NO: 00-0123
 MATERIAL: BAR ROUND 1/4 DIA HR
 UNS K02600
 FFES SPEC NO: AC-00025AG
 EST WT: 0.04 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-0123A
TITLE: TIE DOWN					SCALE: 1/2	DATE: 2/28/89	



PART NO: 00-0128
 MATERIAL: TUBE 5 OD X 1/4 WALL
 UNS G10260
 FFES SPEC NO: AD-50008AM
 EST WT: 1.45 LBS

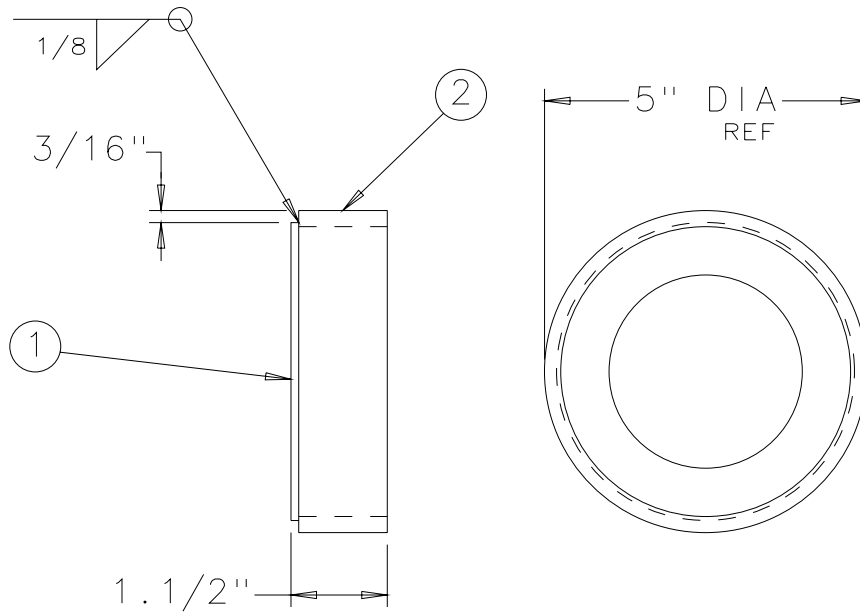
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3
TITLE: TUBE					SCALE: 1/4	DATE: 3/16/89	DWG. NO. 00-0128A	



PART NO: 00-0129
 MATERIAL: PLATE 11 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 0.33 LBS

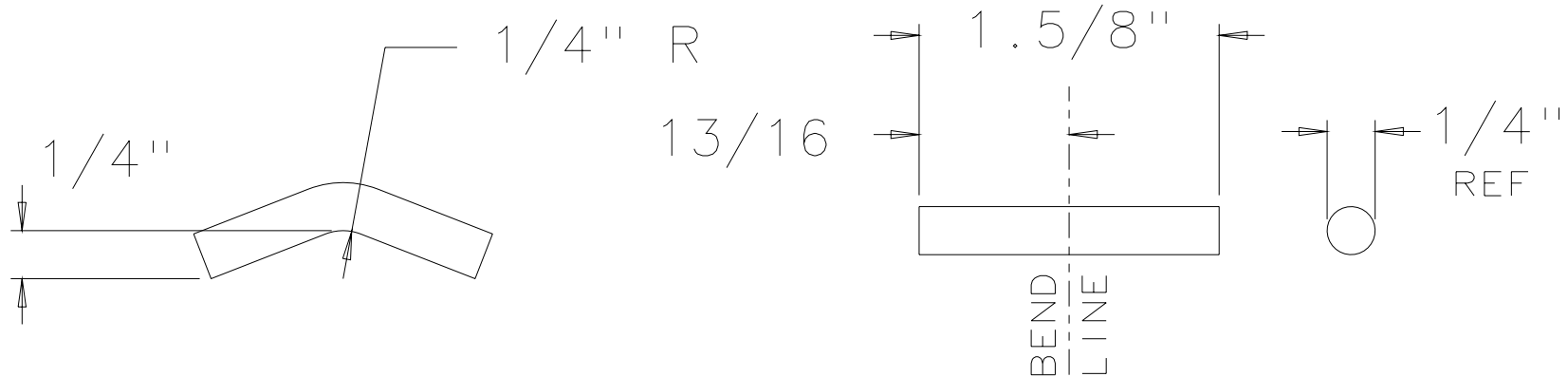
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		1	KDB 3/16/93	THICKNESS WAS 7 GA AND REMOVED BOLT PATTERN TO ALLOW USE OF SNAP IN STYLE LIGHT		APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				NO.	BY	DATE	REVISION	PROJECT NO.: 87-3
TITLE: RING				SCALE: 1/2		DATE: 3/16/89		DWG. NO. 00-0129B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0129	B	RING	1	0.33
2	00-0128	A	TUBE	1	1.45



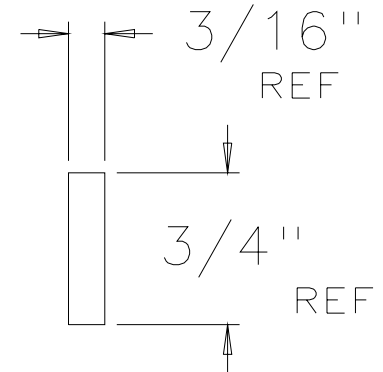
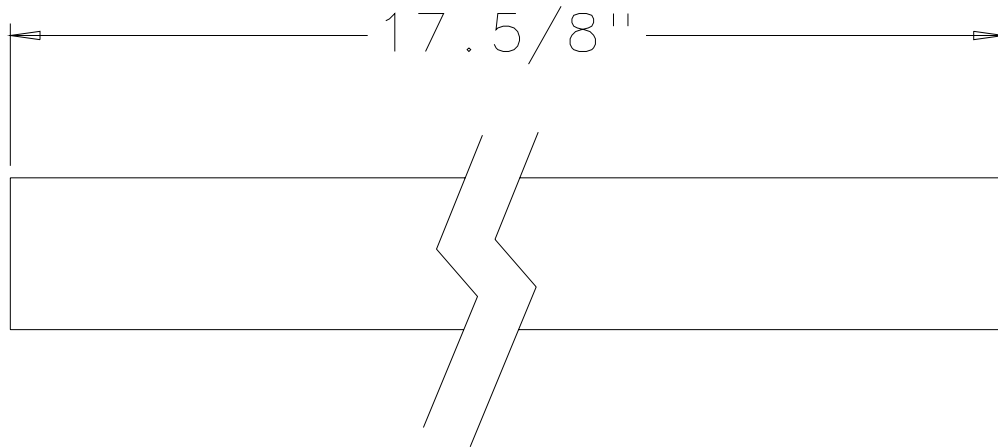
PART NO: 00-0163
EST WT: 1.85 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB CHECKED: * APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
1 KDB 3/16 93 MODIFIED PER CHANGES IN ITEM #1 TO ALLOW USE OF SNAP IN STYLE LIGHT		NO. BY DATE REVISION				PROJECT NO.: 87-3		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: MARKER LIGHT BRKT S/W				SCALE: 1/2		DATE: 3/16/89		DWG. No. 00-0163B



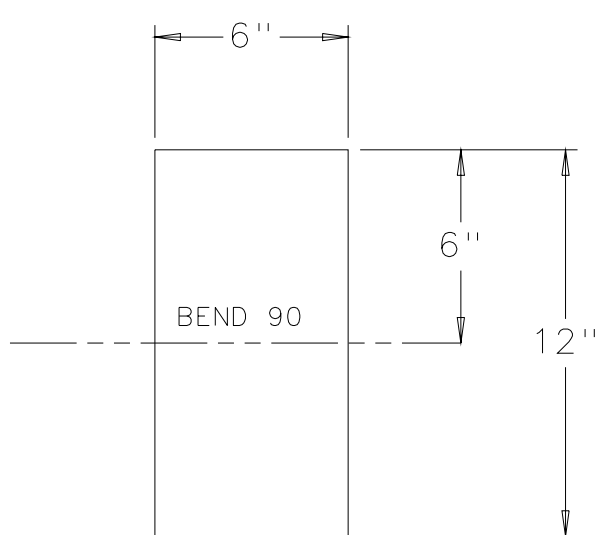
PART NO: 00-0164
 MATERIAL: BAR, RD 1/4 DIA HR
 UNS K02600
 FFES SPEC NO: AC-00025AG
 EST WT: 0.02 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: WIRE GUIDE					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0164A

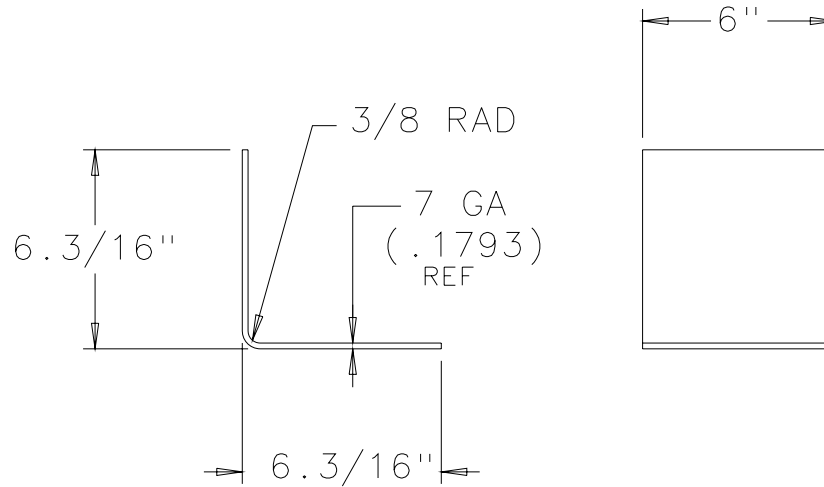


PART NO: 00-0174
 MATERIAL: BAR, FLAT 3/16 X 3/4 HR
 UNS G10200
 FFES SPEC NO: AB-00303AA
 EST WT: 0.70 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: *	
						APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BAR, FLAT 3/16 X 3/4					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0174A

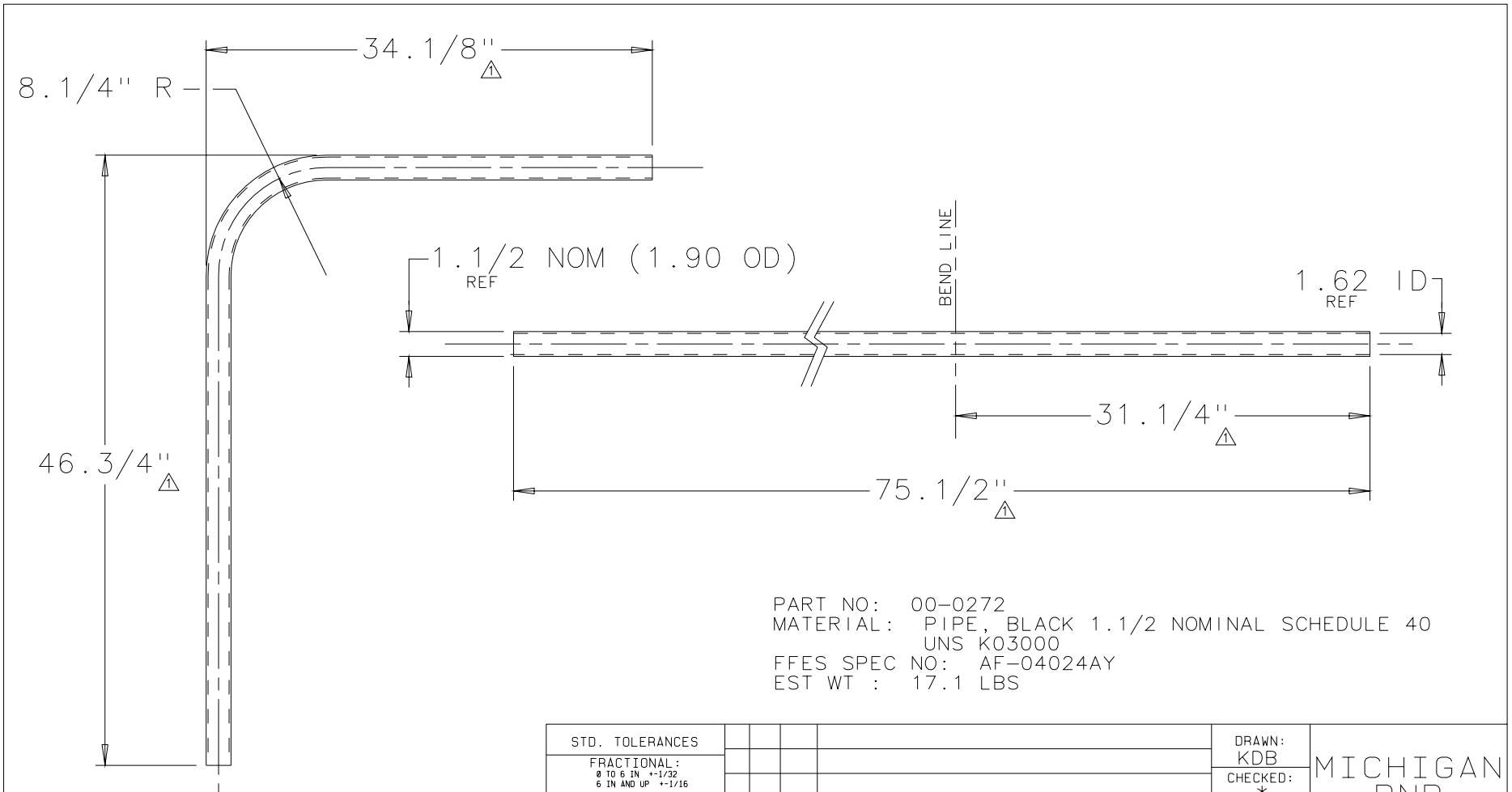


FLAT LAYOUT



PART NO: 00-0231
 MATERIAL: SHEET 7 GA HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.65 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: *- 1 DEG	NO.	BY	DATE	REVISION			PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							SCALE: 1/4	DATE: 11/3/88
TITLE: SUMP WALL						DWG. NO. 00-0231B		

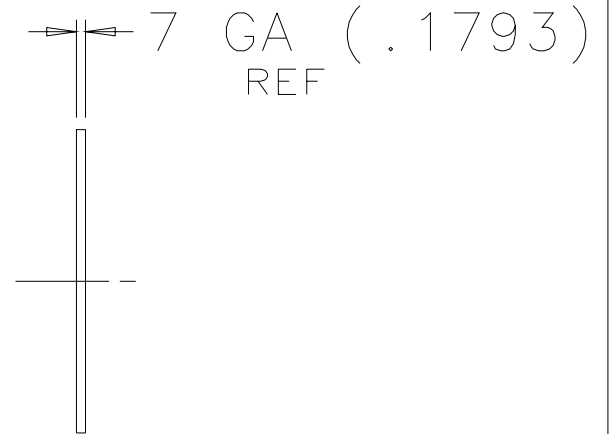
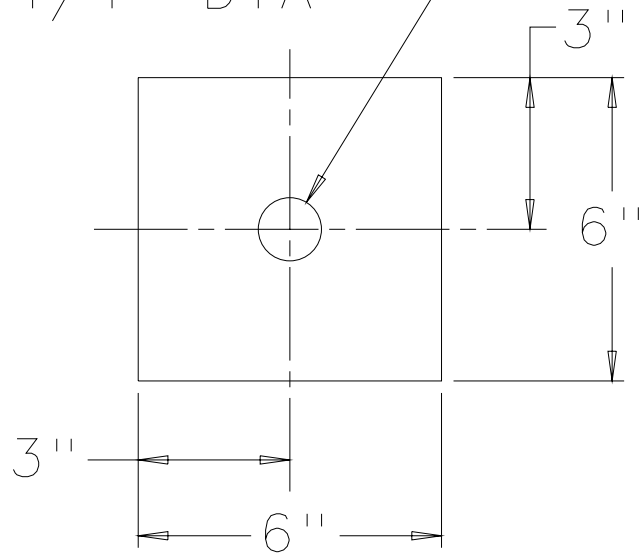


PART NO: 00-0272
 MATERIAL: PIPE, BLACK 1.1/2 NOMINAL SCHEDULE 40
 UNS K03000
 FFES SPEC NO: AF-04024AY
 EST WT : 17.1 LBS

PIPE BENDER READING = 8

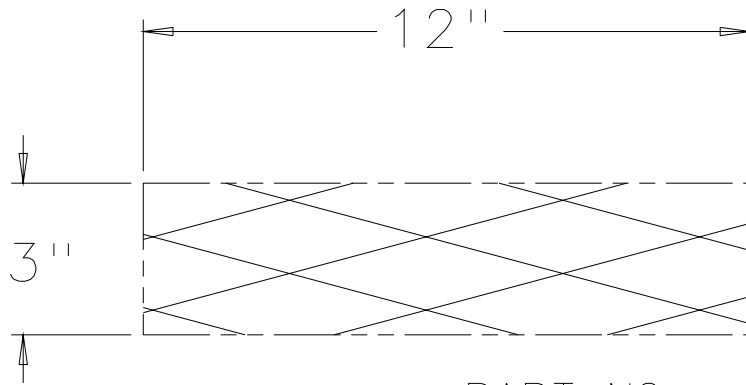
STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: -- 1 DEG		APPROVED:		
1	REG	8/94	46.3/4 WAS 47.3/16, 34.1/8 WAS 34.1/4, 75.1/2 WAS 78.7/8, 31.1/4 WAS 31.1/2					
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								
P. O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: PIPE, HAND RAIL						SCALE: 1/8	DATE: 12/27/88	PROJECT NO.: 87-3
								DWG. NO.: 00-0272B

1.1/4" DIA



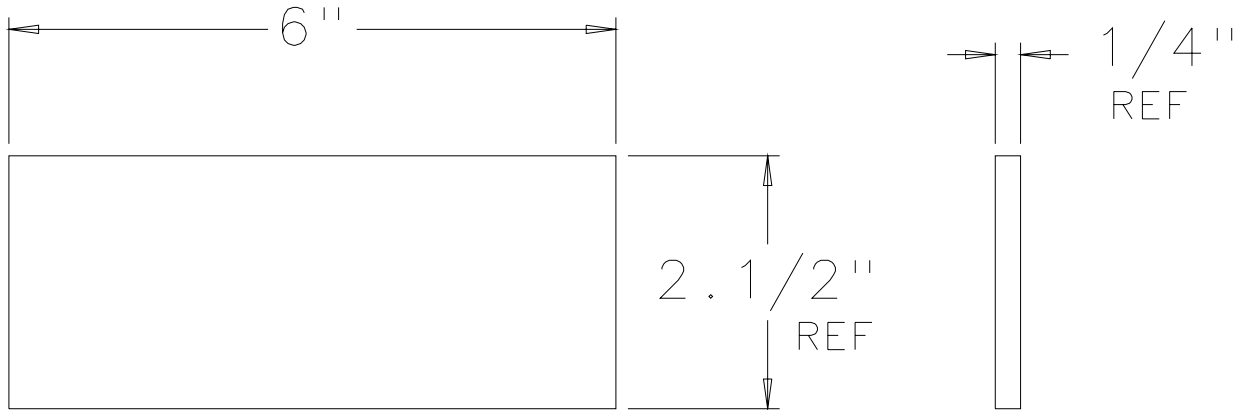
PART NO: 00-0275
 MATERIAL: SHEET 7 GA HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 1.76 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: SHEET, SUMP BOTTOM					SCALE: 1/4	DATE: 12/27/88	DWG. NO. 00-0275A



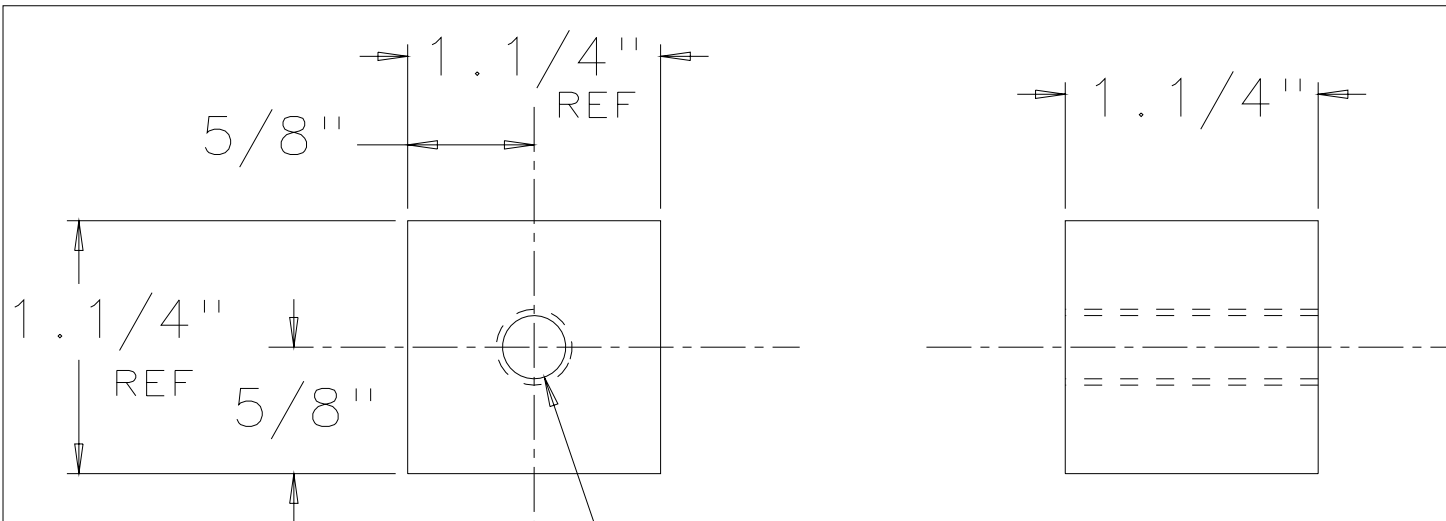
PART NO: 00-0276
 MATERIAL: EXPANDED METAL
 3/4" No. 10S
 FFES SPEC NO: AP-31048AR
 EST WT: 0.28 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB CHECKED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: EXPANDED METAL					SCALE: 1/4	DATE: 12/28/88	DWG. NO. 00-0276A



PART NO: 00-0280
 MATERIAL: BAR, FLAT 1/4 X 2.1/2 HR
 UNS G10200
 FFES SPEC NO: AB-00410AA
 EST WT: 1.06 LBS

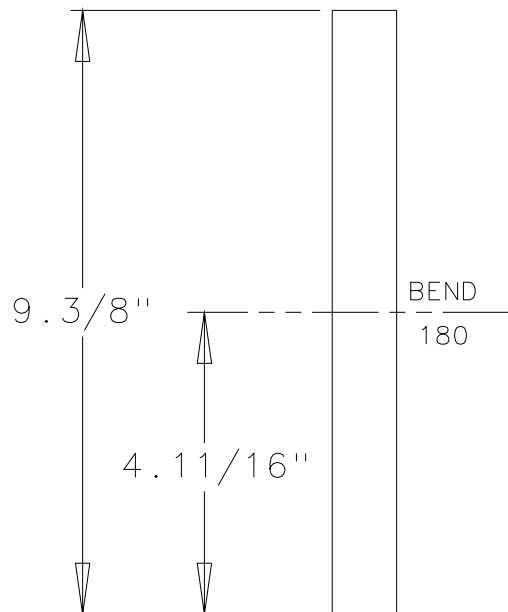
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BAR, FLAT					SCALE: 1/2	DATE: 12/28/88	DWG. NO. 00-0280A



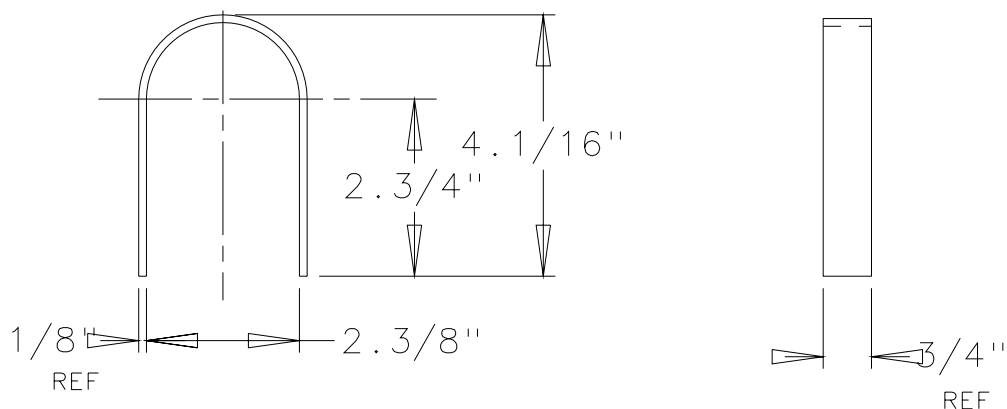
5/16" DRILL
3/8-16 UNC TAP

PART NO: 00-0285
 MATERIAL: BAR, SQUARE 1.1/4 HR
 UNS G10200
 FFES SPEC NO: AB-02000AA Δ
 EST WT: 0.52 LBS

STD. TOLERANCES					DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16					CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	1	LLP	7/7 1997	FFES SPEC NO WAS AB-02005AA	APPROVED:	
	NO.	BY	DATE	REVISION		PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0285A
TITLE: TAP BLOCK 3/8 UNC				SCALE: FULL	DATE: 1/3/88	

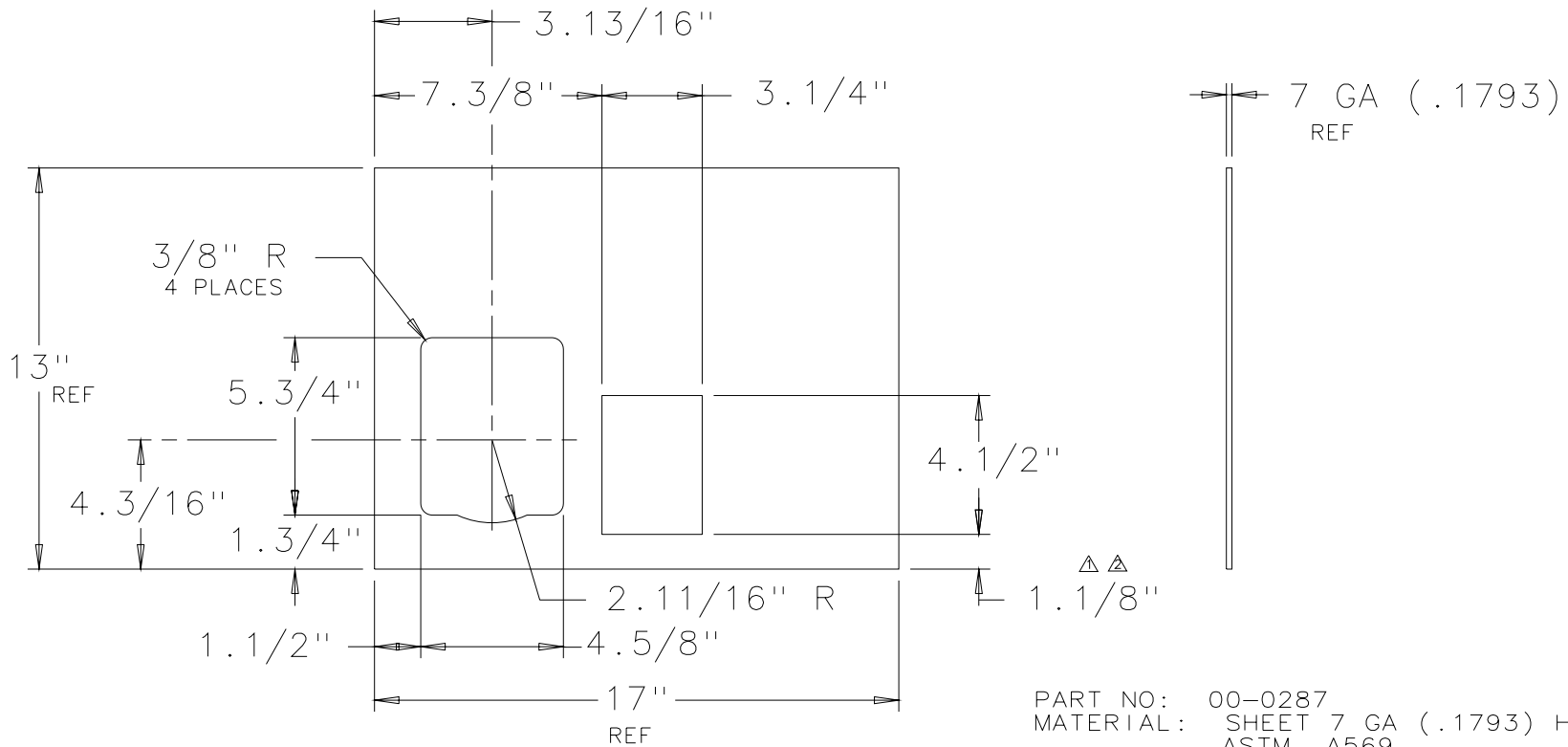


FLAT LAYOUT



PART NO: 00-0286
 MATERIAL: BAR FLAT 1/8 X 3/4 HR
 G10080
 FFES SPEC NO: AB-00203AH
 EST WT: 0.33 LBS

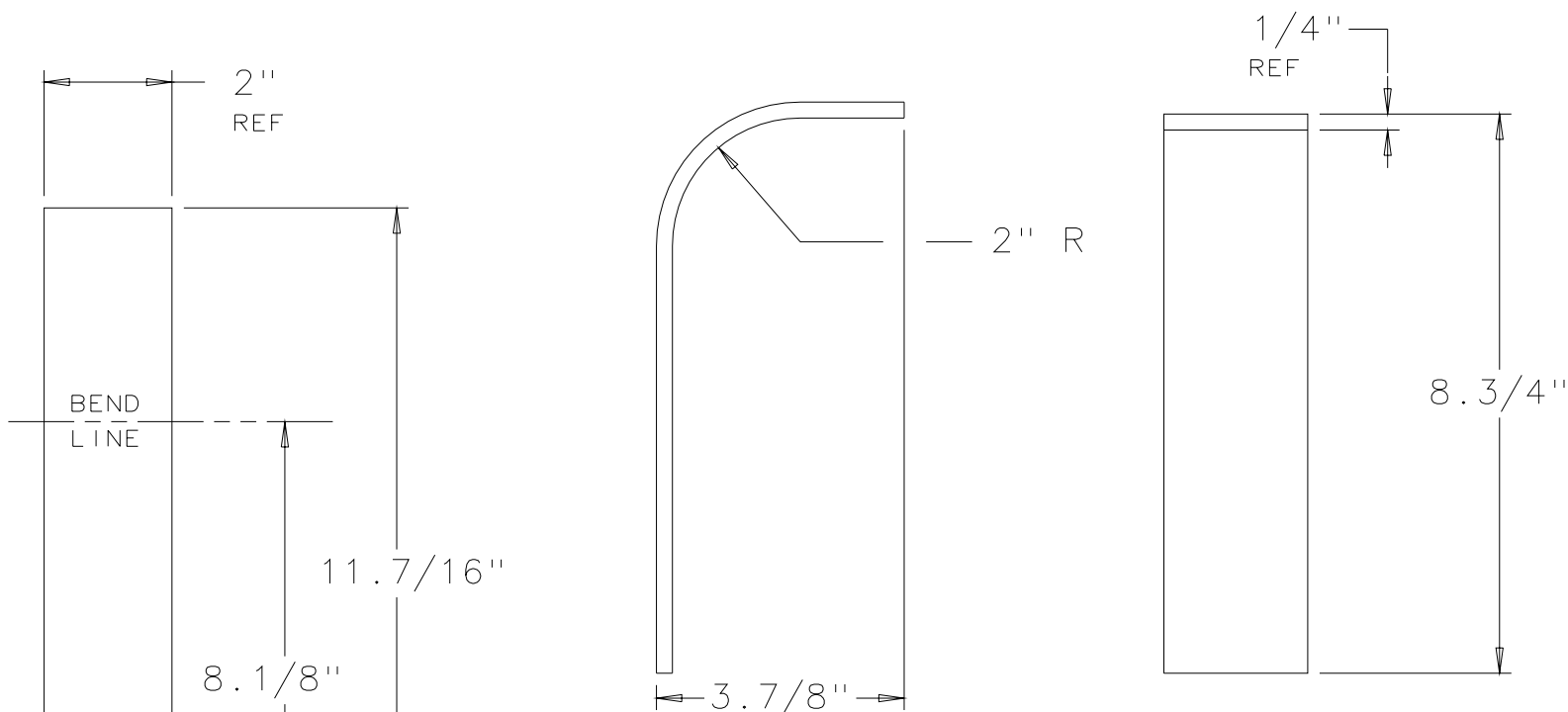
STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
1	KDB	11/93	PER CHANGES IN AIR CYL OPENING IN TANK			
NO.	BY	DATE	REVISION			PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 00-0286B
TITLE: CYLINDER SHIELD				SCALE: 1/2	DATE: 1/4/89	



PART NO: 00-0287
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 9.08 LBS

NOTE: MAKE FROM DESIGNATED CUTOUT FROM P/N 00-0198

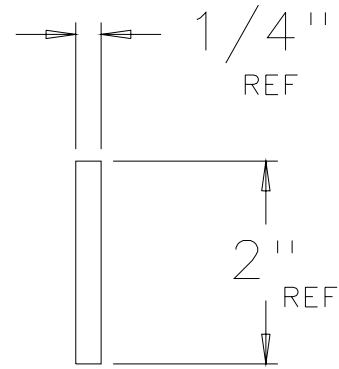
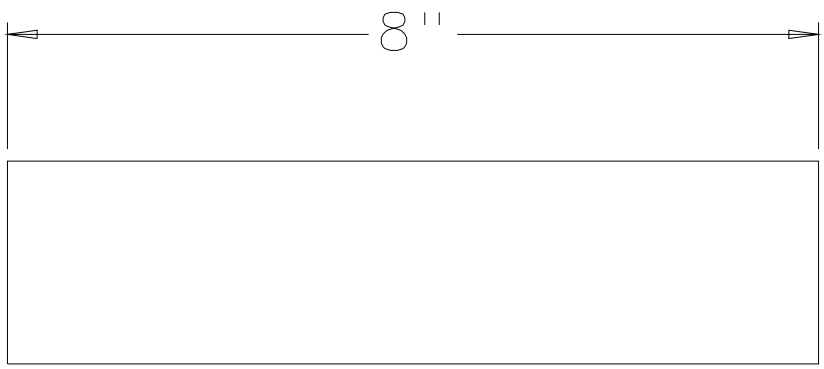
STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$				2	KDB 5/9/89		CHECKED:
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005				1	KDB 2/23/89		APPROVED:
ANGULAR: ± 1 DEG				NO.	BY		DATE
				REVISION			
FOREST FIRE EXPERIMENT STATION							
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 87-3	
TITLE: SHEET, COMP. DOOR LH				SCALE: 1/4	DATE: 1/4/89	DWG. NO. 00-0287B	



PART NO: 00-0291
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 1.61 LBS

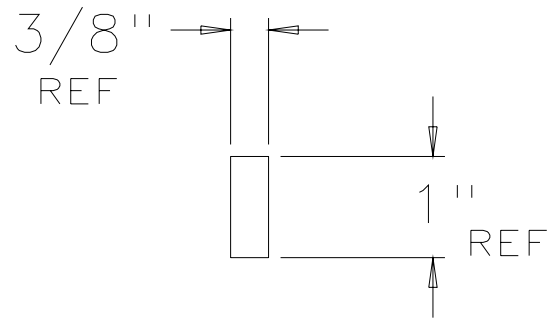
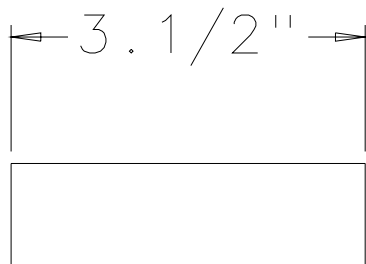
FLAT LAYOUT

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION	PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BAR, BUMPER END CAP				SCALE: 1/2	DATE: 1/4/89	DWG. NO. 00-0291B



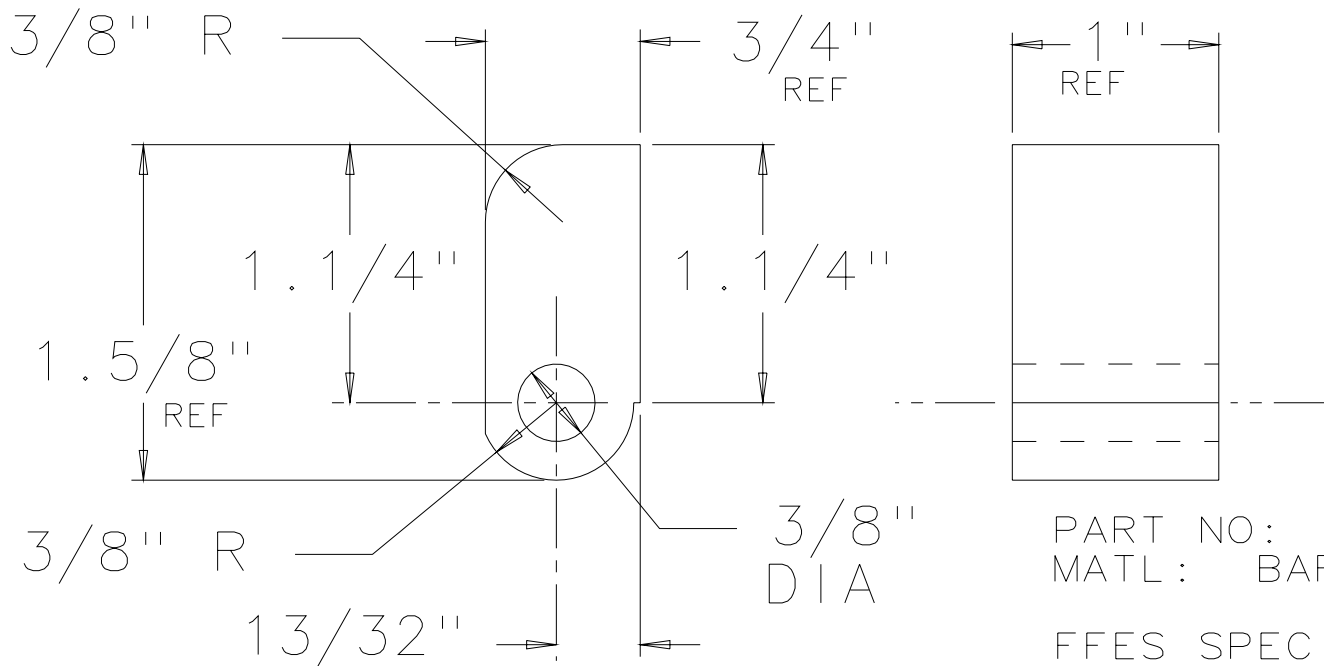
PART NO: 00-0292
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 1.13 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: *	
						APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BAR, FLAT 1/4 X 2 X 8					SCALE: 1/2	DATE: 1/4/89	DWG. NO. 00-0292A



PART NO: 00-0301
 MATERIAL: BAR, FLAT 3/8 X 1 HR
 UNS K02600
 FFES SPEC NO: AB-00604AG
 EST WT: 0.37 LBS

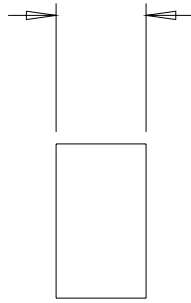
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. +-1/32 6 IN AND UP +-1/16						CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BAR 3/8 X 1 X 3.1/2					SCALE: 1/2	DATE: 1/18/89	DWG. NO. 00-0301A



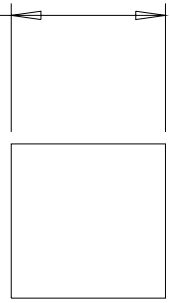
PART NO: 00-0304
 MATL: BAR, FLAT 3/4 X 1 CD
 UNS G10180
 FFES SPEC NO: AB-01204AW
 EST WT: 0.30 LBS

STD. TOLERANCES					DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16					CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005	NO.	BY	DATE	REVISION	APPROVED:		
FOREST FIRE EXPERIMENT STATION							
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: HINGE BLOCK						SCALE: FULL	DATE: 1/20/89
						DWG. NO. 00-0304A	PROJECT NO.: 87-3

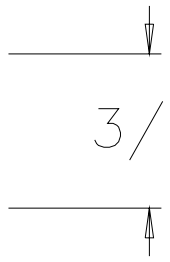
7/16"



3/4"
REF

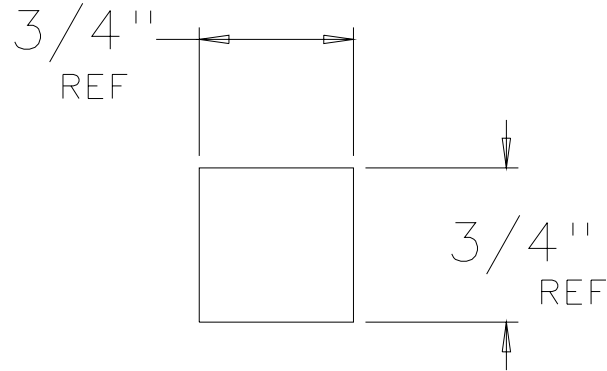
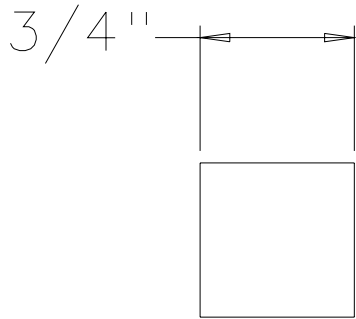


3/4"
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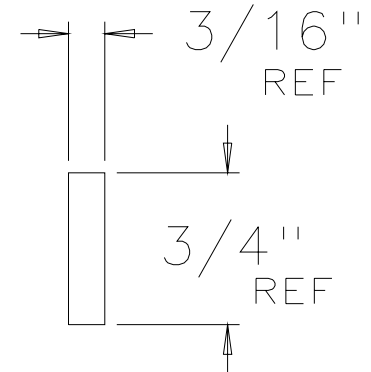
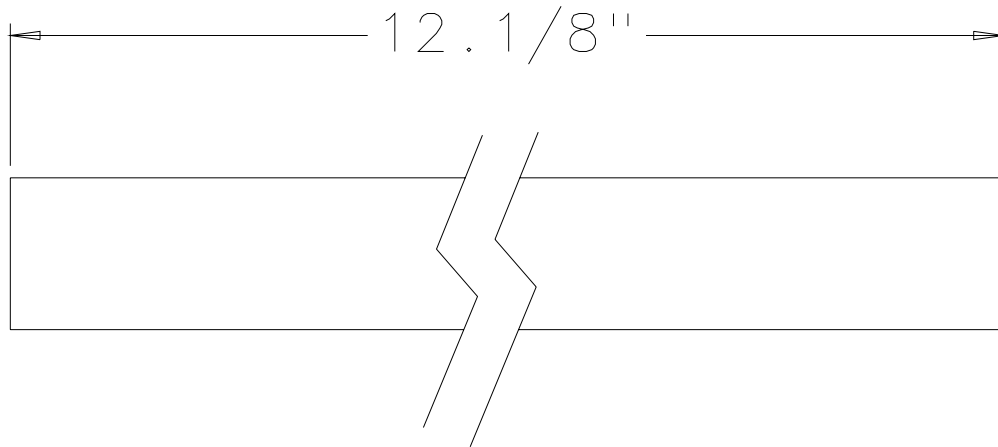
PART NO: 00-0311
 MATERIAL: BAR, SQUARE 3/4 HR
 UNS G10260
 FFES SPEC NO: AB-01203AG Δ
 EST WT: 0.06 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO. BY DATE REVISION						
1 LLP 7/7/1997 MAT'L WAS G10200, FFES SPEC NO WAS AB-01203AA						
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 87-3
TITLE: BAR				SCALE: FULL	DATE: 4/18/89	DWG. NO. 00-0311A



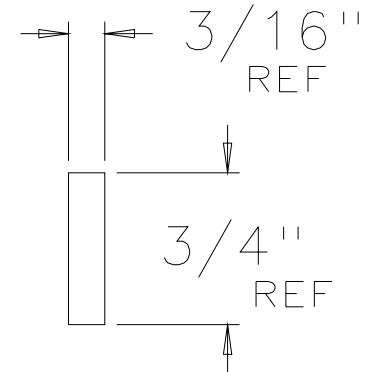
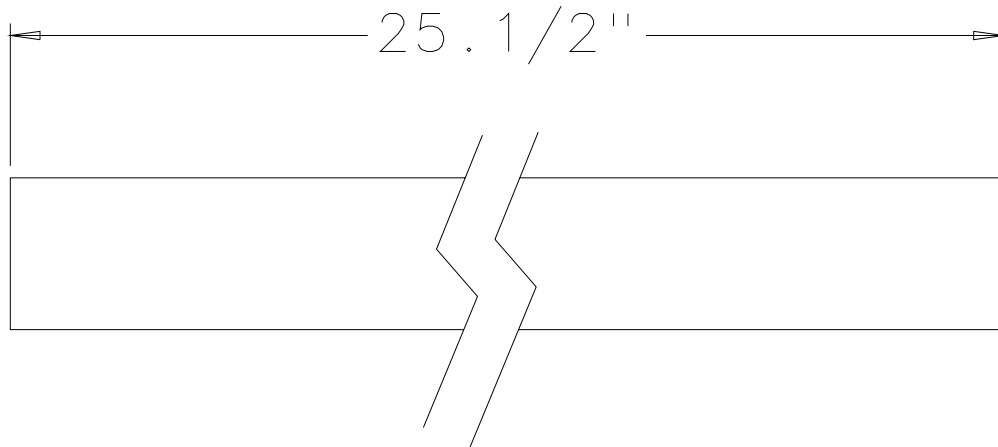
PART NO: 00-0312
 MATERIAL: BAR, SQUARE 3/4 HR
 UNS G10260
 FFES SPEC NO: AB-01203AG Δ
 EST WT: 0.12 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			
1	LLP	7/7 1997	MAT'L WAS G10200, FFES SPEC NO WAS AB-01203AA			PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BAR				SCALE: FULL	DATE: 4/18/89	DWG. NO. 00-0312A



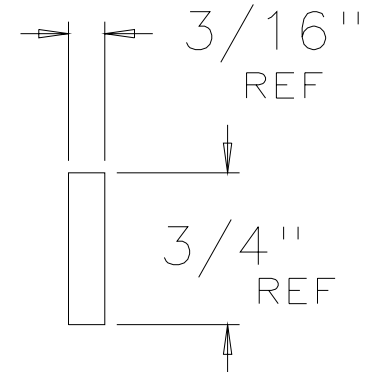
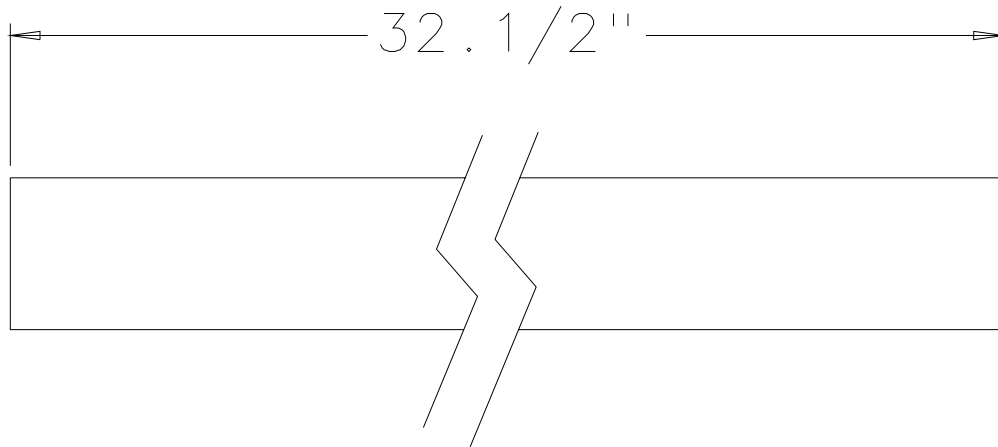
PART NO: 00-0329
 MATERIAL: BAR, FLAT 3/16 X 3/4 HR
 UNS G10200
 FFES SPEC NO: AB-00303AA
 EST WT: 0.48 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3
TITLE: BAR, FLAT 3/16 X 3/4					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0329A	



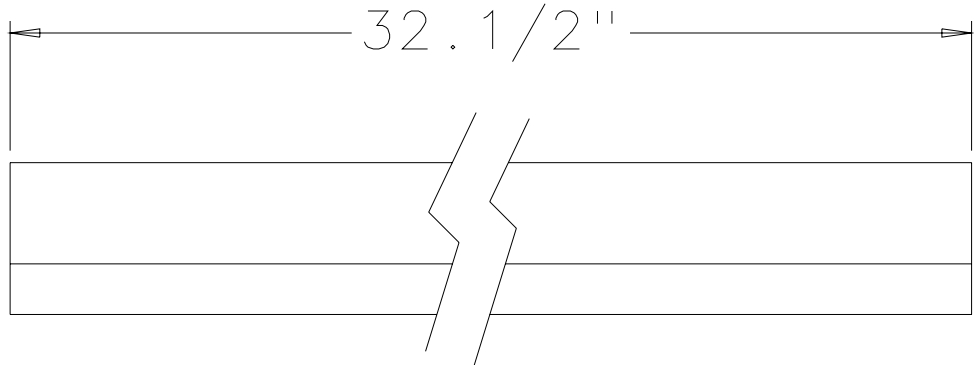
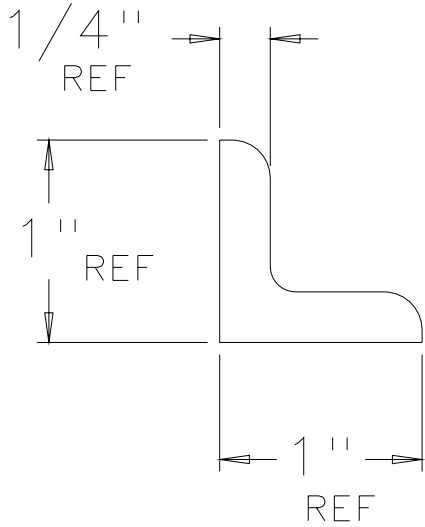
PART NO: 00-0330
 MATERIAL: BAR, FLAT 3/16 X 3/4 HR
 UNS G10200
 FFES SPEC NO: AB-00303AA
 EST WT: 1.01 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3	
TITLE: BAR, FLAT 3/16 X 3/4					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0330A	



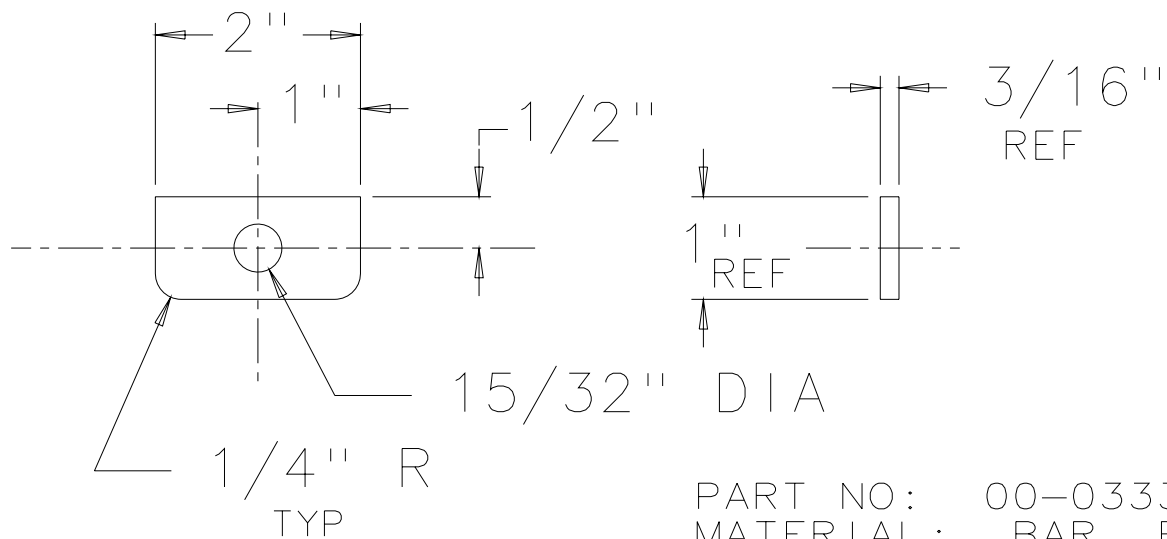
PART NO: 00-0331
 MATERIAL: BAR, FLAT 3/16 X 3/4 HR
 UNS G10200
 FFES SPEC NO: AB-00303AA
 EST WT: 1.29 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BAR, FLAT 3/16 X 3/4					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0331A



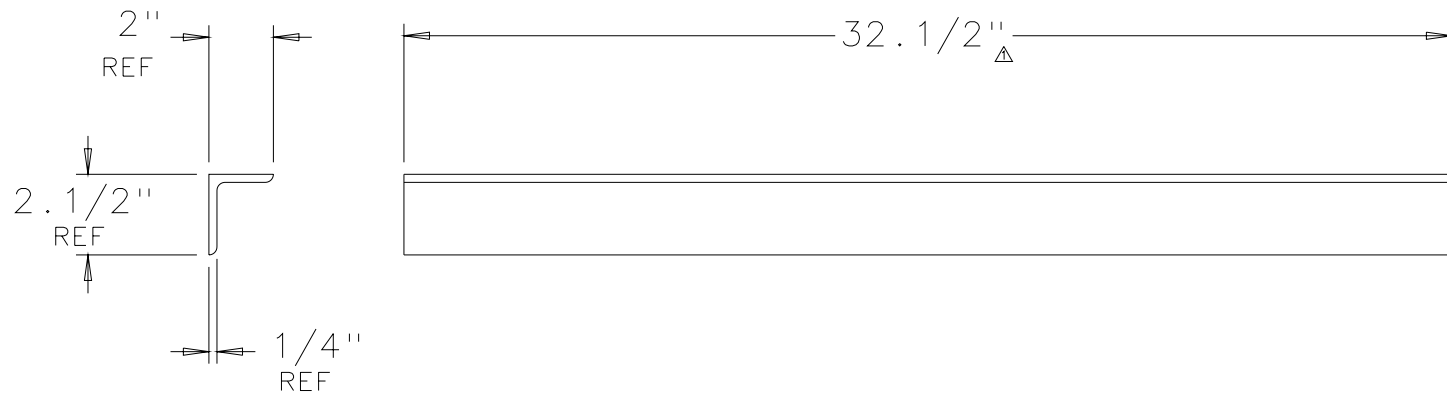
PART NO: 00-0332
 MATERIAL: ANGLE 1 X 1 X 1/4
 UNS K02600
 FFES SPEC NO: AK-40404AG
 EST WT: 4.04 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: *	
						APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: ANGLE 1 X 1 X 1/4					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0332A



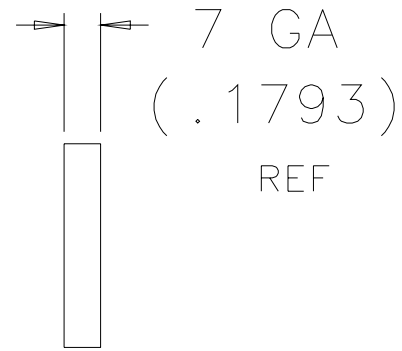
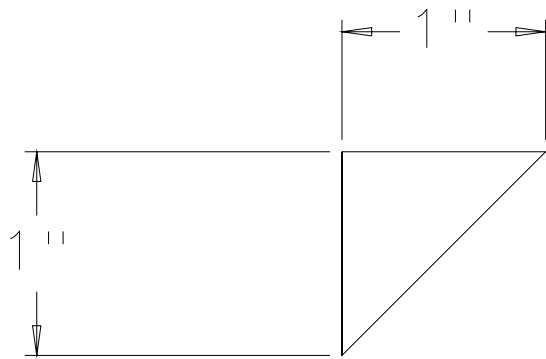
PART NO: 00-0333
 MATERIAL: BAR, FLAT 3/16 X 1 HR
 UNS G10200
 FFES SPEC NO: AB-00304AA
 EST WT: 0.09 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +1/32 6 IN AND UP +1/16						CHECKED: *		
DECIMAL: ANGULAR:						APPROVED:		
1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005		NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3
TITLE: MOUNT, SWITCH					SCALE: 1/2	DATE: 3/30/89	DWG. NO. 00-0333A	



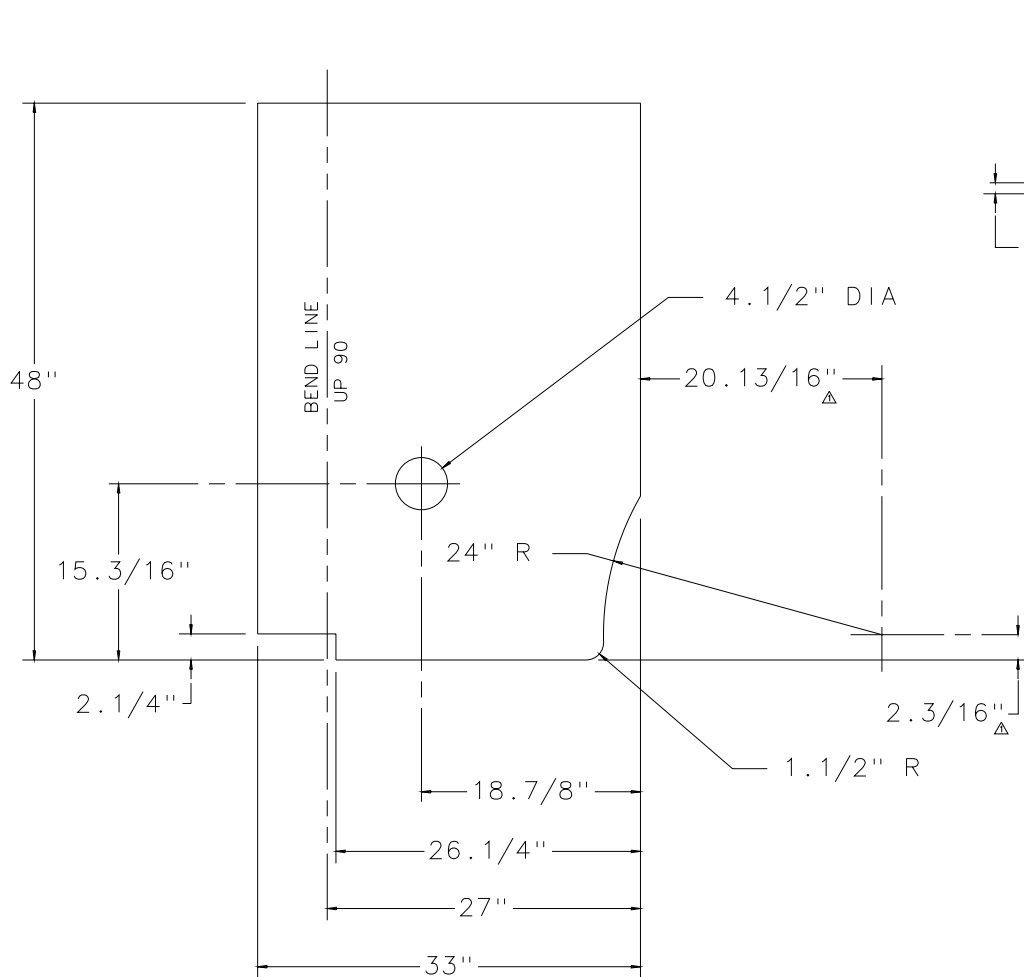
PART NO: 00-0689
 MATERIAL: ANGLE 2.1/2x2x1/4 HR
 UNS K02600
 FFES SPEC NO: AK-41008AG
 EST WT: 9.80 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +1/32 6 IN AND UP +1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED: *	
1 REG 8/94 32.1/2 WAS 37.15/16						APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: ANGLE					SCALE: 1/4	DATE: 03/15/93	DWG. NO: 00-0689B

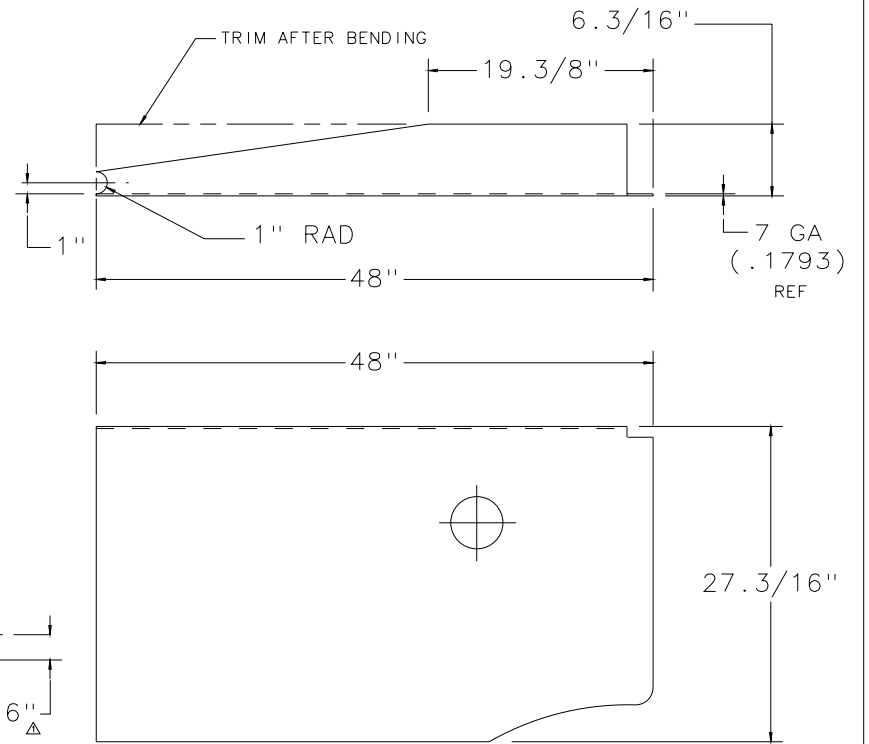


PART NUMBER: 00-0690
 MAT'L: SHEET 7GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.03 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
1 REG 9/2 9/4		REVISED TO COMPLY WITH NEW WHEEL WELL CUT-OUT, REFER P/N 23-0042				
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: GUSSET			SCALE: FULL	DATE: 02 SEP 94	DWG. NO. 00-0690A	



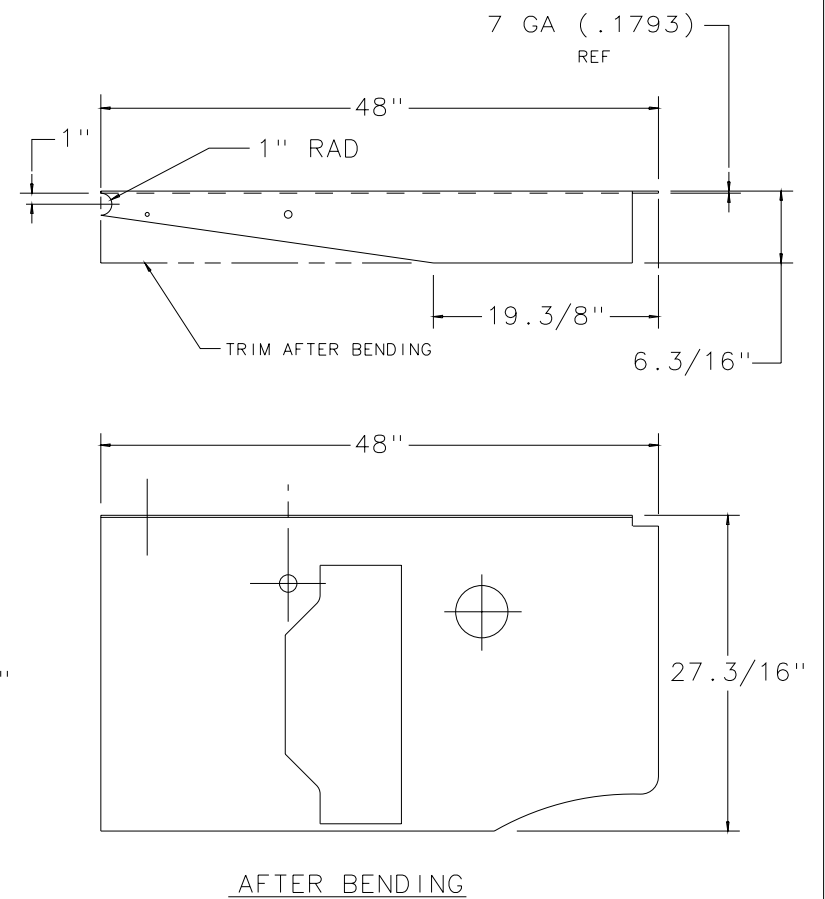
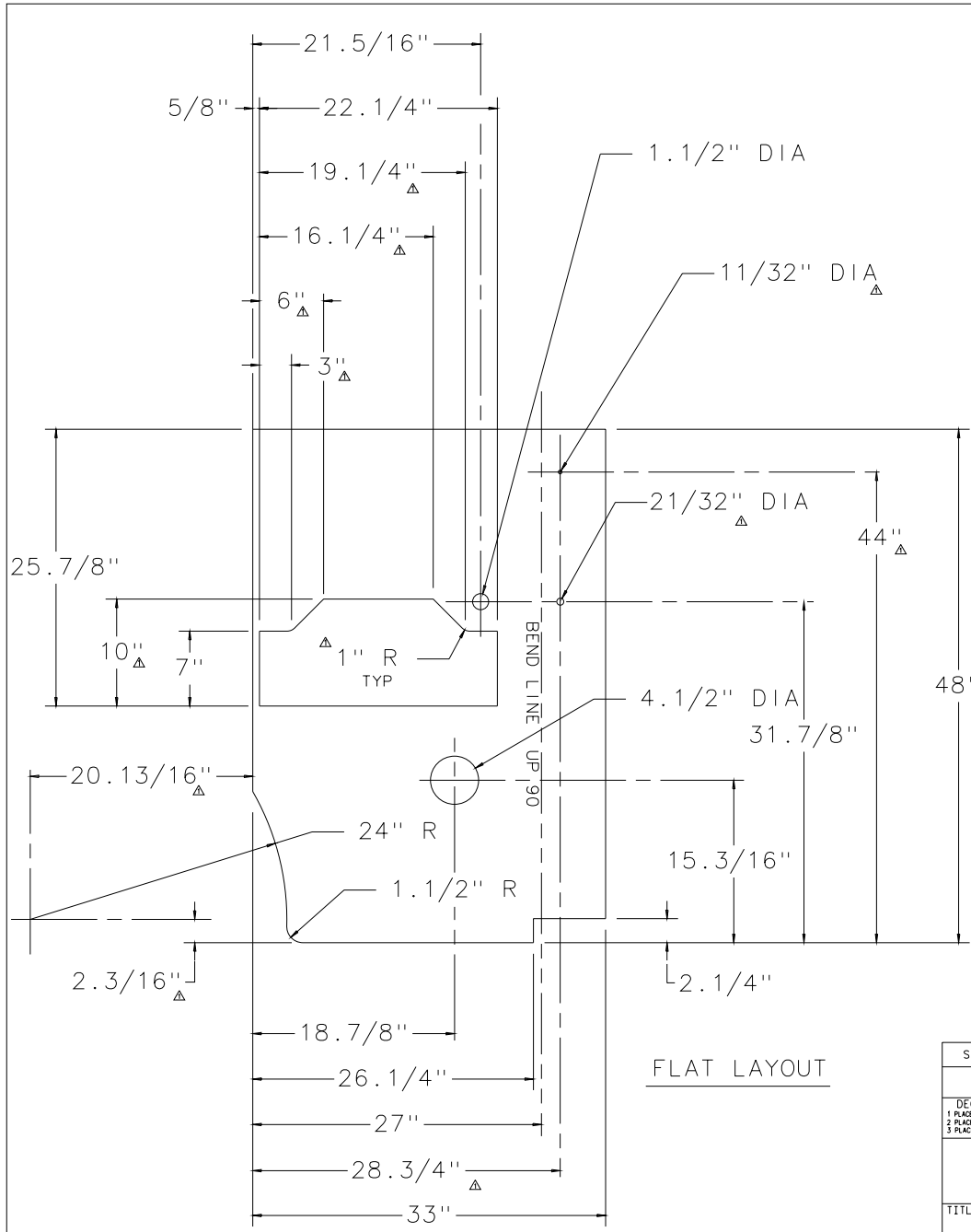
FLAT LAYOUT



AFTER BENDING

PART NO: 00-0783
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 77.3 LBS

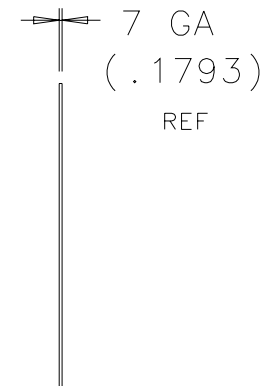
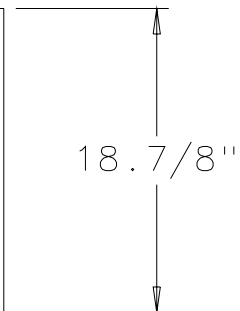
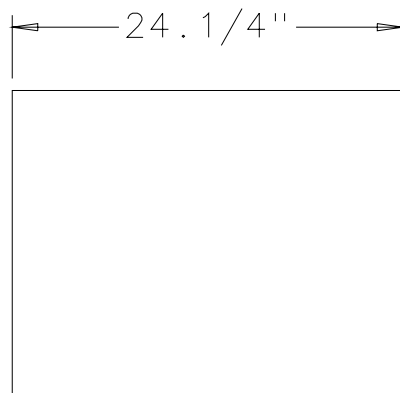
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN. + .1/32 6 IN AND UP + .1/16						CHECKED: *		
DECIMAL: 1 PLACE + .01 2 PLACE + .001 3 PLACE + .0005		ANGULAR: + .1 DEG - .1 DEG	1	REC	8/94	MODIFIED RADIUS CUT TO MATCH CHANGES IN SIDE PANEL		APPROVED:
			NO.	BY	DATE	REVISION	FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: SHEET, REAR QUARTER (LH)		SCALE: 1/8	DATE: 2/14/92	DWG. NO.: 00-0783C				



PART NO: 00-0790
 MATERIAL: SHEET 7 GA (.1793) HR PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0750AP
 EST WT: 67.1 LBS

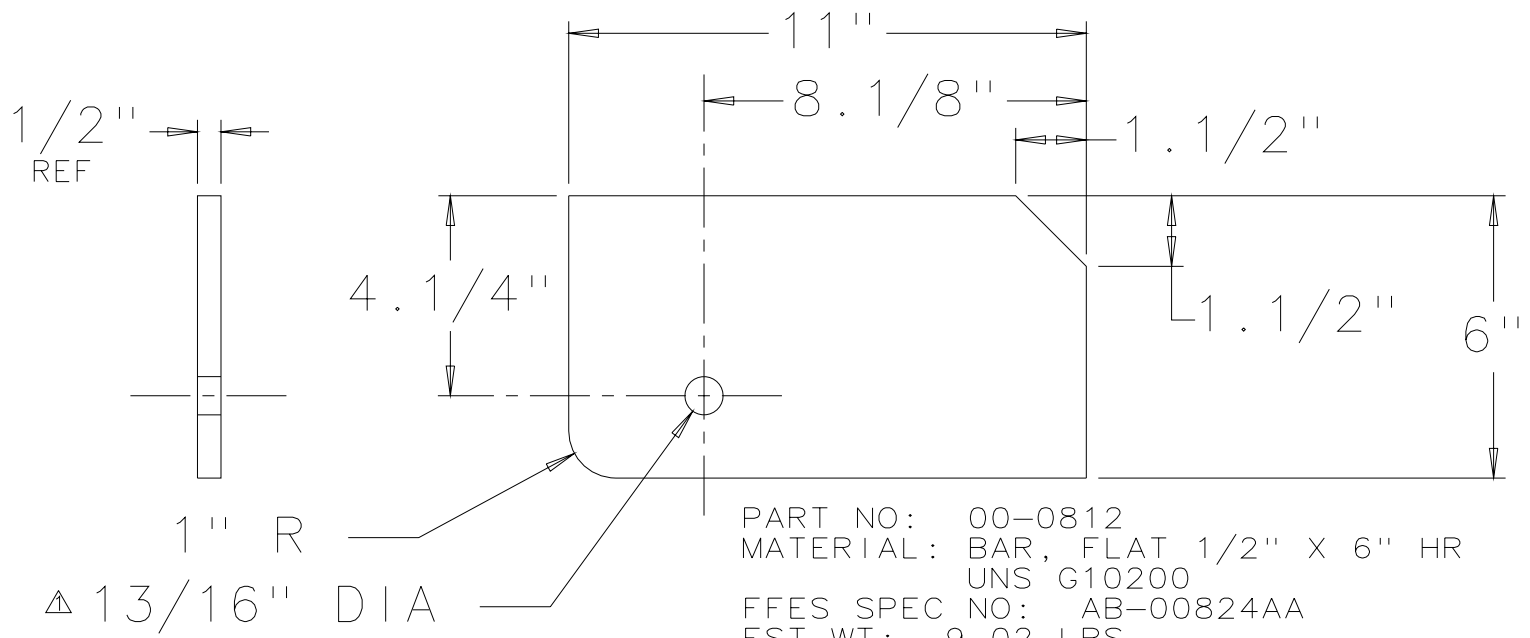
FLAT LAYOUT

STD. TOLERANCES		DRAWN: KDB		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16		CHECKED: *		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		APPROVED:		
ANGULAR: ± 1 DEG		1	REC 8/94	FOREST MANAGEMENT DIVISION
		HOSE REEL OPENING MODIFIED, MODIFIED RADIUS CUT TO MATCH SIDE PANEL, ADDED 11/32 AND 21/32 DIA HOLES		PROJECT NO.: 91-2
		REVISION		DWG. NO. 00-0790C
FOREST FIRE EXPERIMENT STATION				
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: SHEET, REAR QUARTER (RH)		SCALE: 1/8	DATE: 2/14/92	



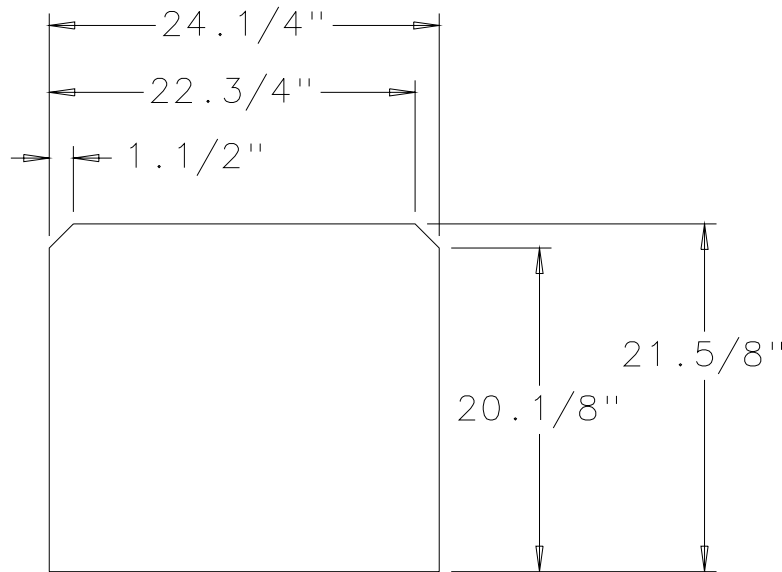
PART NUMBER: 00-0805
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 23.2 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		NO. BY DATE REVISION	DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			SCALE: 1/8 DATE: 2/27/92	
TITLE: REAR COMPARTMENT BACK			DWG. NO.: 00-0805B	



PART NO: 00-0812
 MATERIAL: BAR, FLAT 1/2" X 6" HR
 UNS G10200
 FFES SPEC NO: AB-00824AA
 EST WT: 9.02 LBS

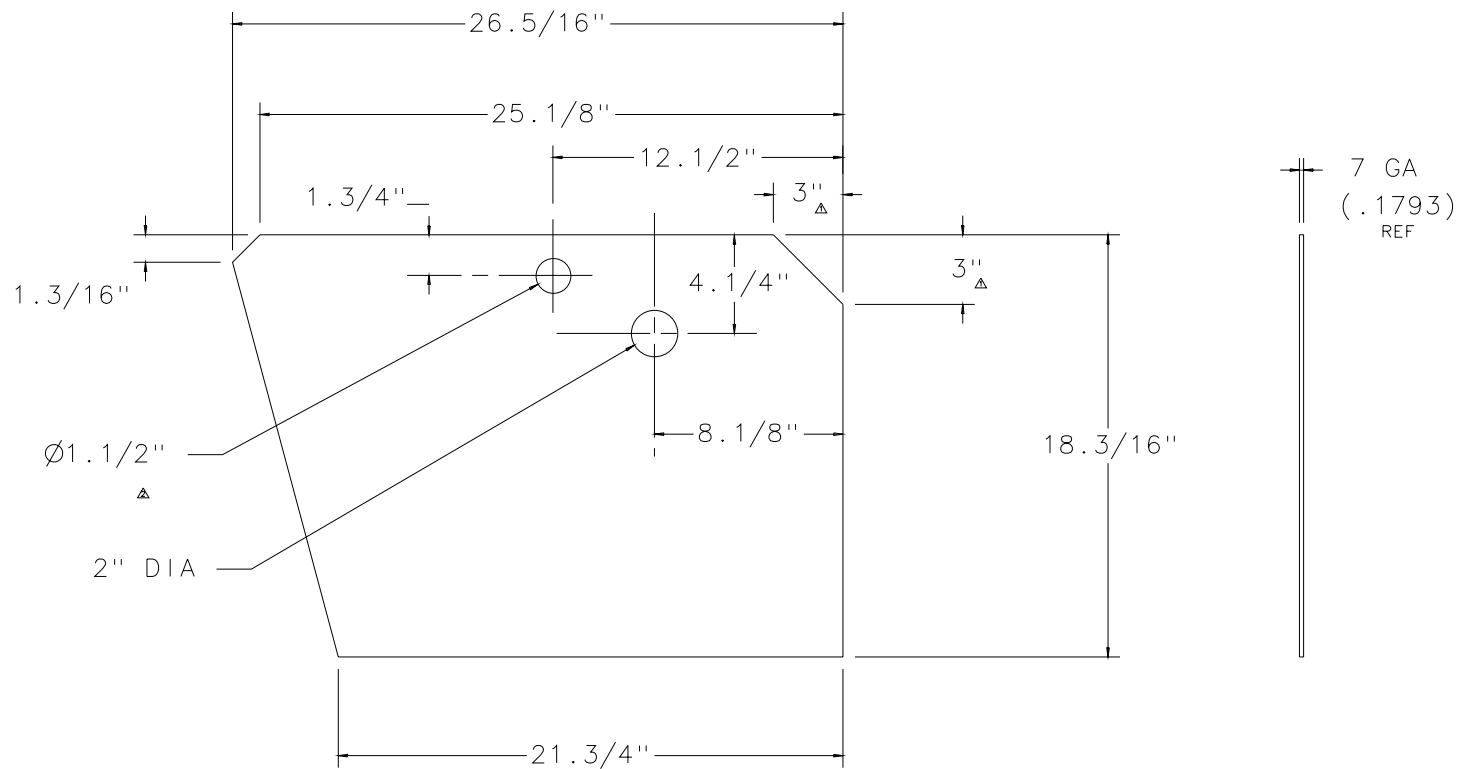
STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: *		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG	1	REG	3/95	WAS 1.1/16" DIA	APPROVED:		
		NO.	BY	DATE	REVISION	PROJECT NO.: 91-2		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-0812A	
TITLE: MOUNT, REAR TANK					SCALE: 1/4	DATE: 2/21/92		



7 GA
 (.1793)
 REF

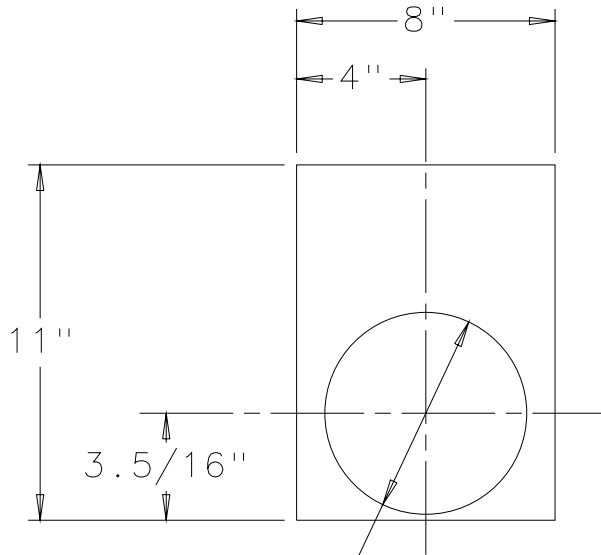
PART NUMBER: 00-0813
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 26.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2
NO.	BY	DATE	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			DWG. NO.: 00-0813B
TITLE: REAR COMPARTMENT FLOOR		SCALE: 1/8	DATE: 2/27/92

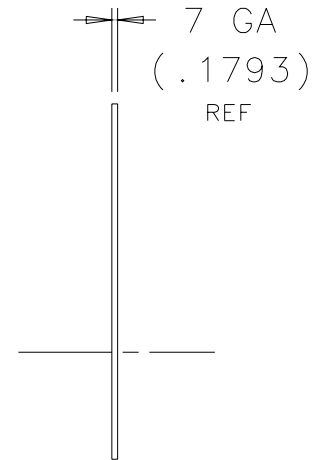


PART NUMBER: 00-0814
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 22.0 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. +-.1/32" 6 IN AND UP +-.1/16"		DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE +-.0.1 2 PLACE +-.0.01 3 PLACE +-.0.005		CHECKED: *		
ANGULAR: +-.1 DEG		APPROVED:		
2 DCP 5/00 1.1/2" HOLE ADDED		1 REG 8/94 3 WAS 1.1/2		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO: 00-0814C
TITLE: REAR COMPARTMENT WALL		SCALE: 1/4	DATE: 2/27/92	

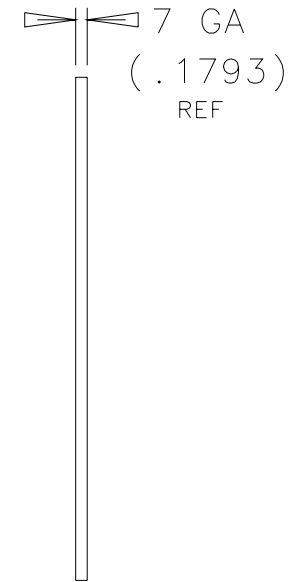
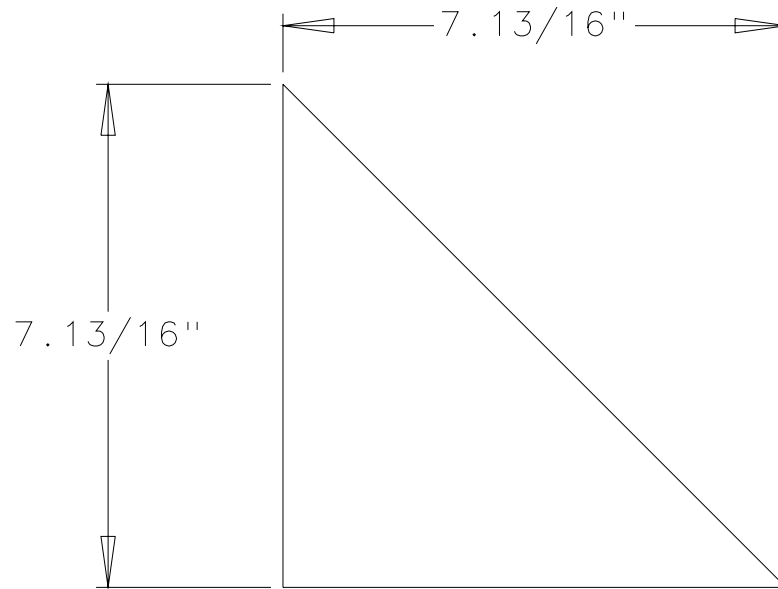


6.1/4" DIA



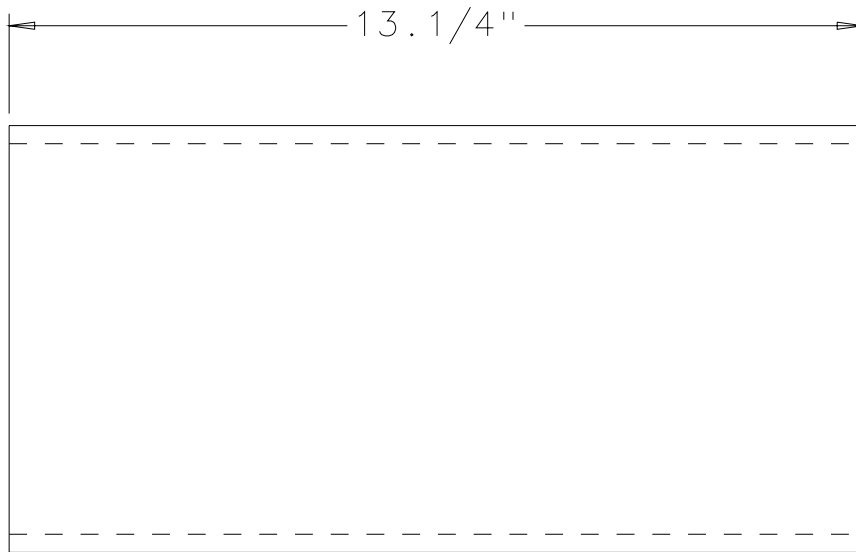
PART NO: 00-0821
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AAA-G0748AP
 EST WT: 2.91 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL:						CHECKED:		
0 TO 6 IN + - 1/32								
6 IN AND UP + - 1/16						APPROVED:		
DECIMAL:	ANGULAR:	NO.	BY	DATE	REVISION			
1 PLACE + - 0.1	+ - 1 DEG							
2 PLACE + - 0.01								
3 PLACE + - 0.005								
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: SHEET					SCALE: 1/4	DATE: 5/5/92	DWG NO.: 00-0821B	

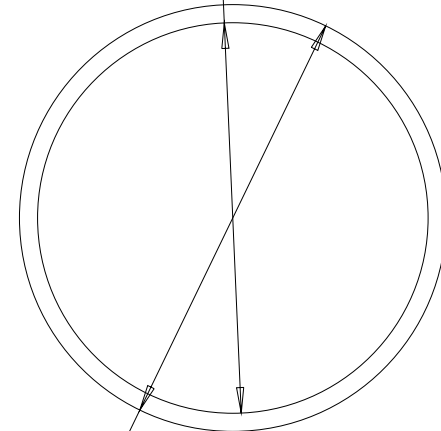


PART NO: 00-0822
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 1.55 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: GUSSET					SCALE: 1/4	DATE: 5/5/92	DWG. NO.: 00-0822B



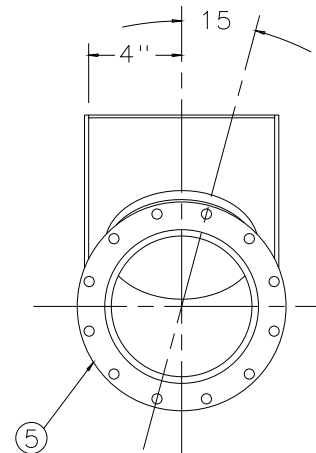
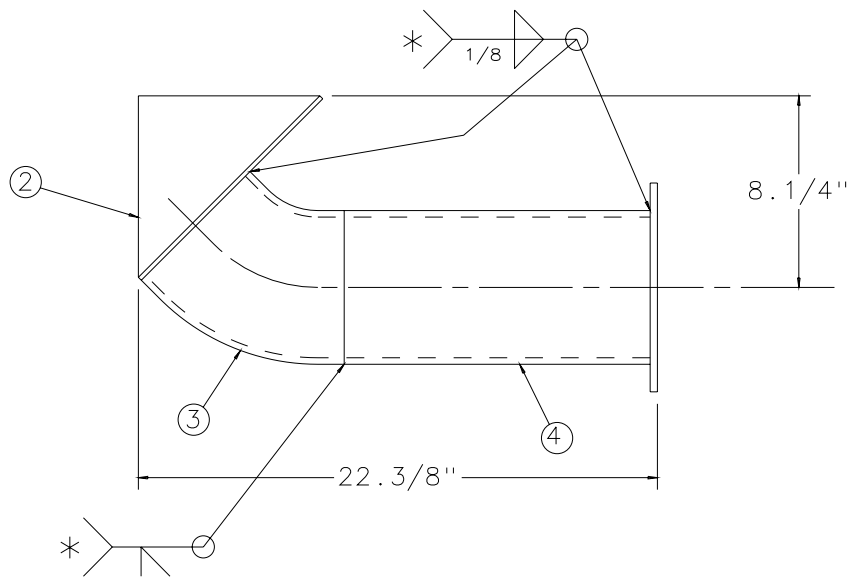
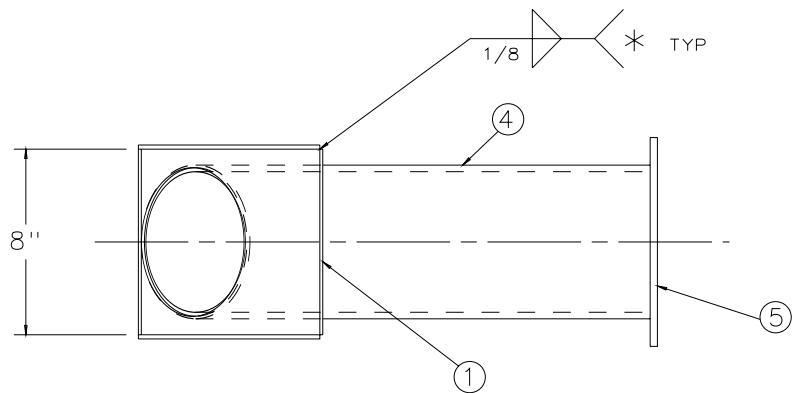
6.065 DIA
REF



PART NO: 00-0823
 MATERIAL: PIPE 6" NOM SCH 40 BLACK
 K02504
 FFES SPEC NO: AF-04096
 EST WT: 20.0 LBS

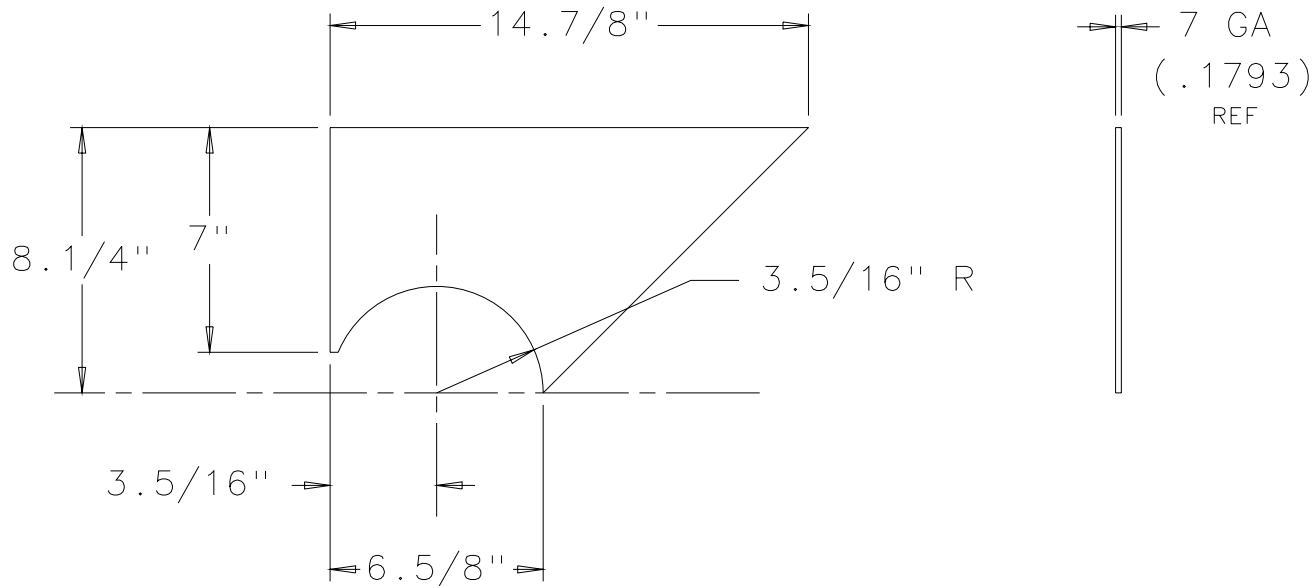
STD. TOLERANCES								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. +- 1/32 6 IN AND UP +- 1/16								CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG						APPROVED:	
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 91-2
TITLE: PIPE 6" SCH 40 BLACK							SCALE: 1/2	DATE: 5/5/92	DWG. NO. 00-0823B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0821	B	SHEET	1	2.91
2	00-0822	B	GUSSET	2	1.55
3	P96-CALVA		ELBOW, BUTT WELD 45° LONG 6" RADIUS	1	12.0
4	00-0823	B	PIPE	1	20.9
5	23-0046	B	FLANGE PART OF 6" DUMP VALVE P/N 23-0041	1	2.50



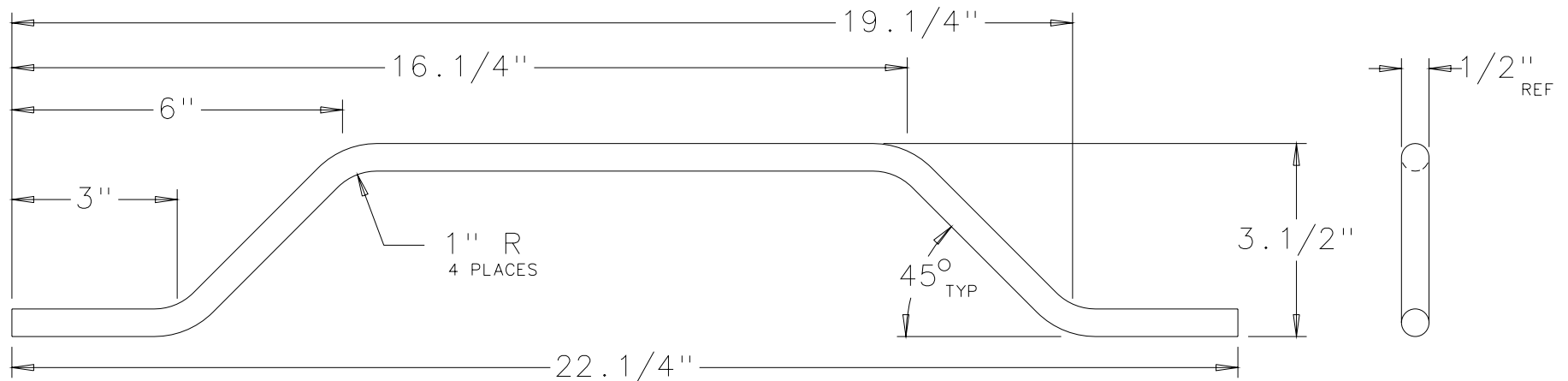
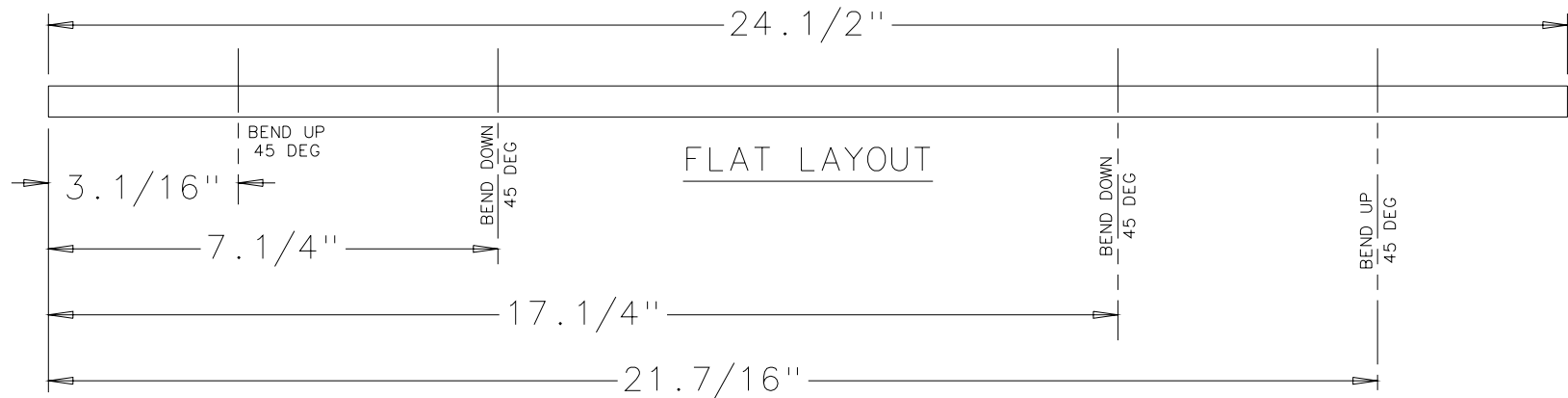
PART NO: 00-0824
EST WT: 43 LBS

STD. TOLERANCES: FRACTIONAL: 0 TO 6 IN. + - 1/32" 6 IN. AND UP + - 1/16"				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		CHECKED: APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: DUMP S/W				SCALE: 1/4"	DATE: 5/5/92	DWG. NO.: 00-0824C



PART NO: 00-0825
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.61 LBS

STD. TOLERANCES								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED:		
DECIMAL:		ANGULAR:						APPROVED:		
1 PLACE + - 0.1		+ - 1 DEG		NO.	BY	DATE	REVISION			
2 PLACE + - 0.01										
3 PLACE + - 0.005										
FOREST FIRE EXPERIMENT STATION										
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										
TITLE: DUMP GUSSET								SCALE: 1/4	DATE: 5/5/92	PROJECT NO.: 91-2
								DWG. NO. 00-0825B		



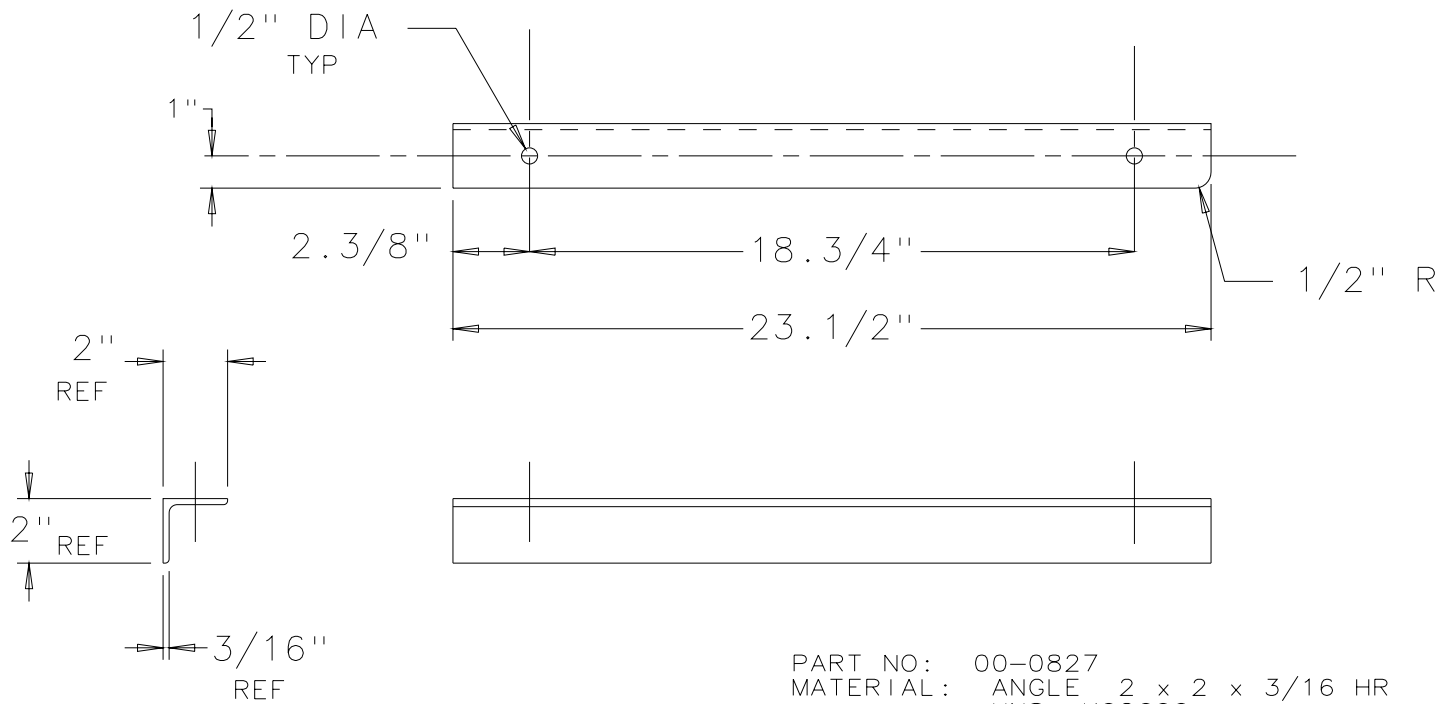
PART NUMBER: 00-0826
 MAT'L: BAR, ROUND 1/2" DIA HR
 UNS G10200
 FFES SPEC NO: AC-00050AA
 EST WT: 1.36 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW	
FRACTIONAL:						CHECKED: KDB	
0 TO 6 IN + - 1/32						APPROVED:	
6 IN AND UP + - 1/16							
DECIMAL:	ANGULAR:	NO.	BY	DATE	REVISION		
1 PLACE + - 0.1	+ - 1 DEG						
2 PLACE + - 0.01							
3 PLACE + - 0.005							

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

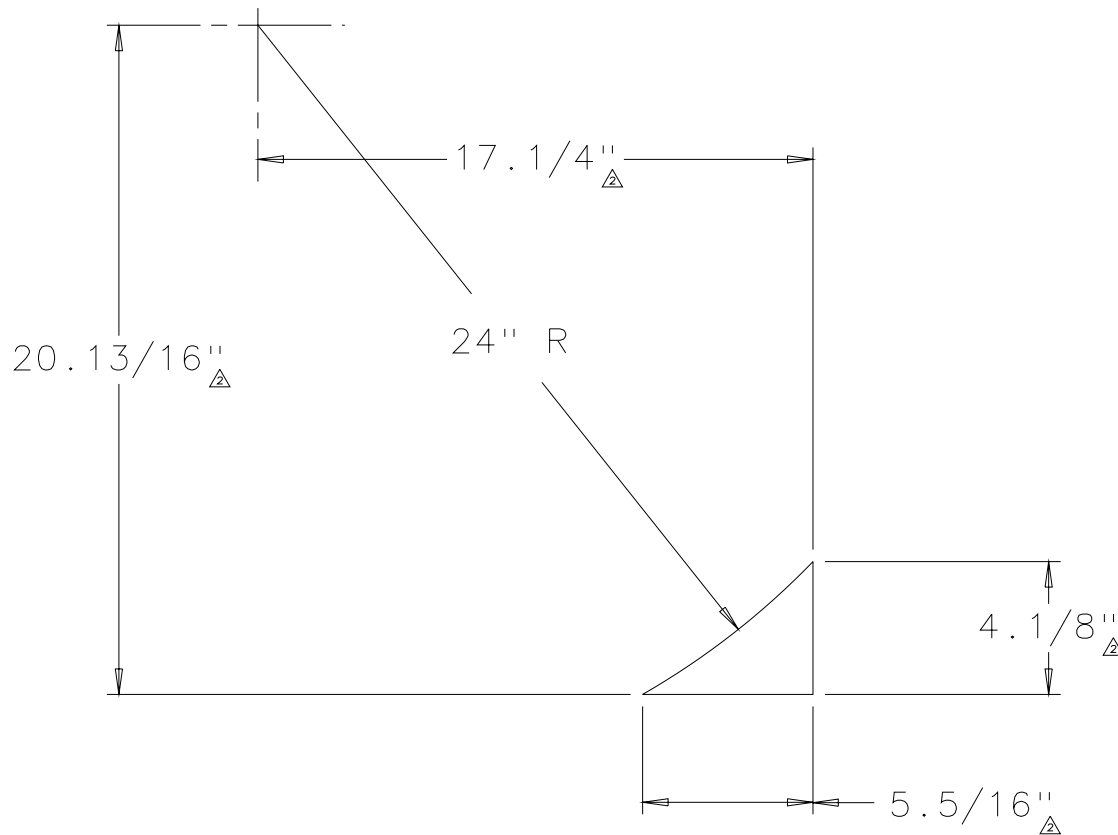
TITLE:	HOSE RUB BAR	SCALE: 1 = 2	DATE: 12 AUG 94	PROJECT NO.: 91-2
			DWG. NO. 00-0826B	

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION



PART NO: 00-0827
 MATERIAL: ANGLE 2 x 2 x 3/16 HR
 UNS K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 4.80 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
								CHECKED:		
								APPROVED:		
NO. BY DATE REVISION								PROJECT NO.: 91-2		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								SCALE: 1/4	DATE: 5/5/92	DWG. NO. 00-0827B



PART NO: 00-0832
 MATERIAL: SHEET 7 GA (.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.50 LBS

STD. TOLERANCES									DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				2	REG	9/01 94	MODIFIED TO COMPLY WITH RAISED WHEEL WELL CUT-OUT REFER TO P/N 00-0786 & 00-0787		CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		1	KDB	3/15 93	MODIFIED TO ALLOW USE OF TWO PIECE TANK TOP USING 36" WIDE PIECES		APPROVED:	
				NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION										PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										
TITLE: FENDER FILL							SCALE: 1/4	DATE: 5/6/92	DWG. NO. 00-0832B	

ETCHING AND CLEANING AGENT

USE: CLEANS OILS AND SURFACE RUST FROM METAL. ETCHES SURFACE
FOR GOOD ADHESION OF COATING.

PROPERTIES: CONTAINS PHOSPHORIC ACID TO ETCH SURFACE OF METALS
AND SOLVENTS TO REMOVE OILS AND WATER.
DRIES FAST AND PREVENTS FLASH RUST.

APPLICATION METHODS: RAG WIPE, SPRAY WASH OR DIP

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

B-B PAINT CORPORATION
2201 N. DORT HWY
FLINT, MICHIGAN 48506

X.E.A IRON WASH

STD. TOLERANCES					DRAWN: BAH	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16					CHECKED: KBD	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005					APPROVED:	
	NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 90-1
TITLE: ETCHING AND CLEANING AGENT						DWG. NO. 18-8002B
SCALE: NONE						DATE: 12/7/93

FFES PART NO: 18-8002

GALVANIZING COMPOUND, COLD

ESTERIFIED EPOXY BASED ZINC-RICH METAL PRIMER
USE: COAT METAL FOR CORROSION PROTECTION
PROPERTIES: ADHERES TO BARE METAL TO REDUCE EXPOSURE FROM SOME
SOURCES OF OXIDATION
APPLICATION METHODS: BRUSH OR SPRAY @ ROOM TEMPERATURE. PREPARE
SURFACE WITH ETCHING AND CLEANING AGENT (18-0002B)

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

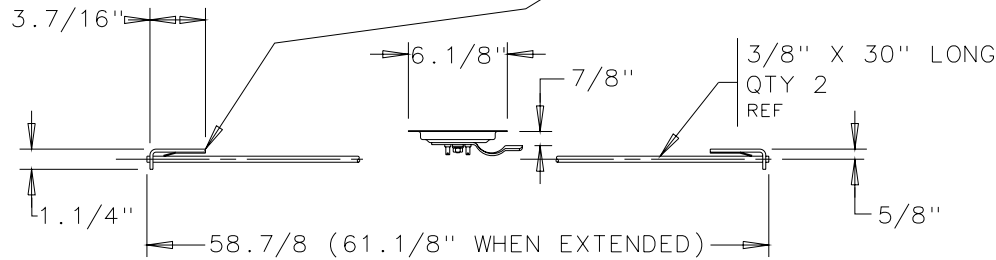
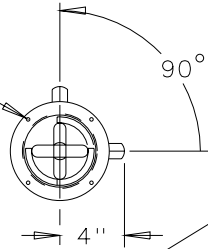
ZRC PRODUCTS COMPANY
QUINCY, MASS 02171

ZRC COLD GALVANIZING
COMPOUND
10001-10004

STD. TOLERANCES <small>0 TO 6 IN --1/32 6 IN AND UP --1/16</small>						DRAWN: BAH	MICHIGAN DNR					
FRACTIONAL:						CHECKED:		FOREST MANAGEMENT DIVISION				
DECIMAL: ANGULAR: <small>1 PLACE -- 0.1 -- 1 DEG 2 PLACE -- 0.01 3 PLACE -- 0.005</small>						APPROVED:						
<table style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 5%;">NO.</th><th style="width: 5%;">BY</th><th style="width: 5%;">DATE</th><th style="width: 85%;">REVISION</th></tr></thead></table>						NO.	BY	DATE	REVISION	PROJECT NO. : 90-1		
NO.	BY	DATE	REVISION									
<h3 style="margin: 0;">FOREST FIRE EXPERIMENT STATION</h3> <p style="margin: 0;">P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>						SCALE: NONE	DATE: 12/7/93	DWG. NO. 18-8003B				
TITLE: GALVANIZING COMPOUND, COLD												

FFES PART NO: 18-8003

7/32" DIA
4 HOLES
EQ SPACED
5.9/16" DIA
BOLT CIRCLE



ROD GUIDES
QTY 2
REF

3/8" X 30" LONG
QTY 2
REF

DOOR LATCH, 3 POINT

TYPE: FLUSH, NON-LOCKING, 3-POINT LATCH
LEFT-HAND OPERATION

HANDLE: FLUSH "D" RING

MATERIAL: CUP & HANDLE - STAINLESS STEEL
ALL OTHER COMPONENTS - PLATED STEEL

EST WT: 4.00 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

A.L. HANSEN MFG CO
701 PERSHING ROAD
WAUKEGAN, ILLINOIS 60085

103-LSS LH

PAUL MOORE COMPANY
77 CIRCLE FREEWAY
CINCINNATI, OHIO 45246

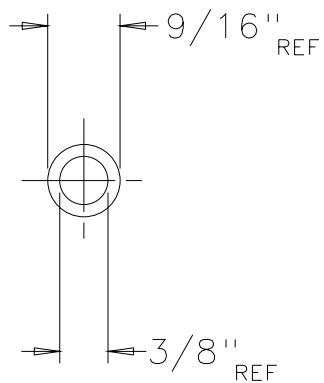
103-LSS LH

AUSTIN HARDWARE
1790 RADDISON RD NE
PO BOX 34007
MINNEAPOLIS, MINN 55434

103-LSS LH

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		NO.	BY	DATE		APPROVED:
REVISION								
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: LATCH, DOOR						SCALE: 1 = 8	DATE: 08 DEC 94	PROJECT NO.: 90-4 DWG. NO. 23-0004B

FFES SPEC NUMBER: 23-0004



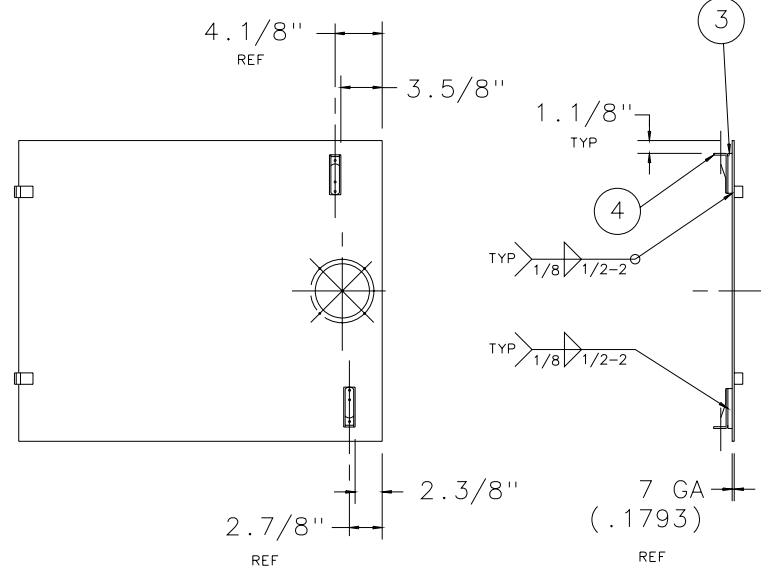
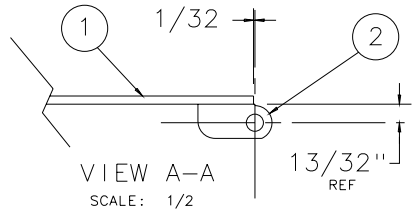
WASHER

TYPE: FLAT
 MATERIAL: NYLON
 COLOR: NATURAL
 PROPERTIES: NON-MAGNETIC

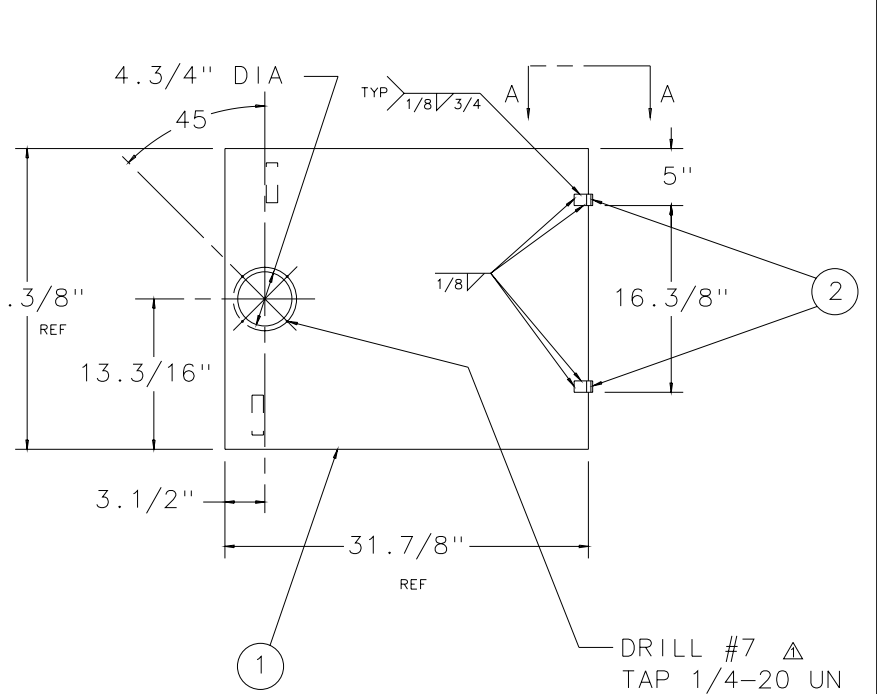
APPROVED MANUFACTURERS	PART NO	APPROVED MANUFACTURERS	PART NO
McMASTER-CARR SUPPLY CO PO BOX 4355 CHICAGO, ILLINOIS 60680-4355	95606A140		

STD. TOLERANCES					DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 5 IN ++1/32 6 IN AND UP ++1/16					CHECKED: KDB		
DECIMAL: 1 PLACE ++ 0.1 2 PLACE ++ 0.01 3 PLACE ++ 0.005	ANGULAR: ++ 1 DEG			NO. BY DATE	APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					PROJECT NO.: 90-4		
TITLE: WASHER, FLAT NYLON					SCALE: FULL	DATE: 06 DEC 94	DWG. NO. 23-0006B

FFES PART NO: 23-0006



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	REF	-	SHEET (SAVED CUTOUT FROM P/N 00-0230)	1	41.8
2	00-0304	A	HINGE BLOCK	2	0.30
3	00-0301	A	BAR	2	0.37
4	REF	-	GUIDE, ROD (PART OF P/N 23-0004)	2	0.40

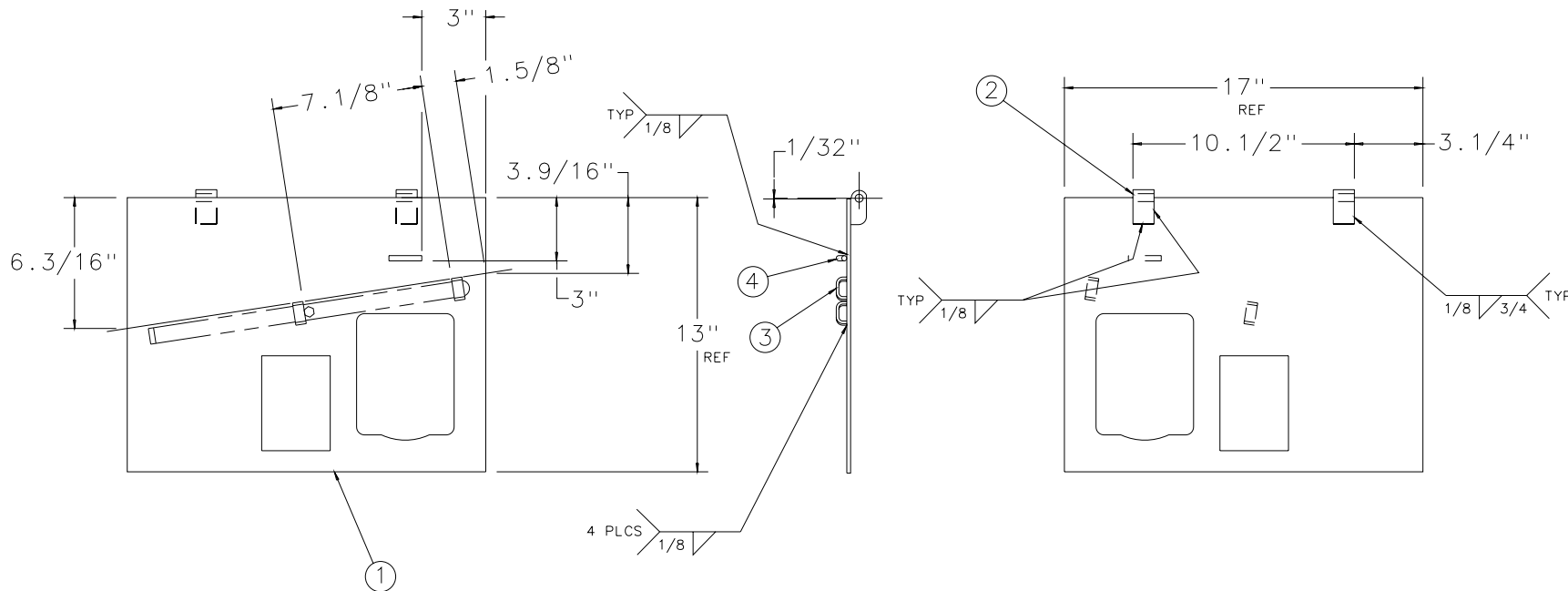


DRILL #7 Δ
TAP 1/4-20 UN
4 PLCS
EQ. SPACED
ON 5.7/8
DIA B.C.

PART NO: 23-0024
EST WT: 44.4 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 8 TO 16 --1/32 16 IN AND UP --1/16						CHECKED:	
DECIMAL: 1 PLACE --.1 2 PLACE --.01 3 PLACE --.005	ANGULAR: --1/32	1	KDB	5/9 89	1/4-20 WAS 10-32 TAPPED HOLES	APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: DOOR W/C (RH)					SCALE: 1/8	DATE: 1/18/89	DWG. NO.: 23-0024C

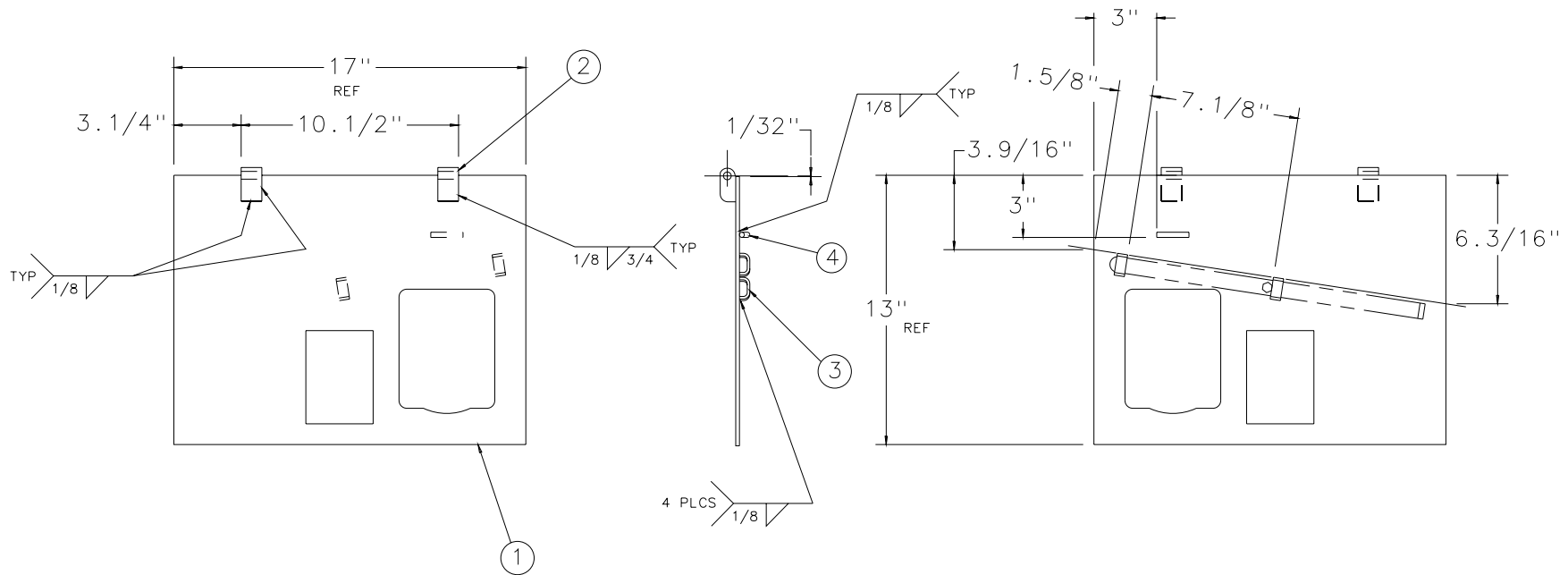
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0287	B	SHEET, COMP. DOOR LH	1	9.08
2	00-0304	A	HINGE BLOCK	2	0.30
△ 3	00-0083	A	BAR, GUIDE	2	0.03
△ 4	00-0164	A	WIRE GUIDE	1	0.02



PART NO: 23-0025
EST WT: 10.0 LBS

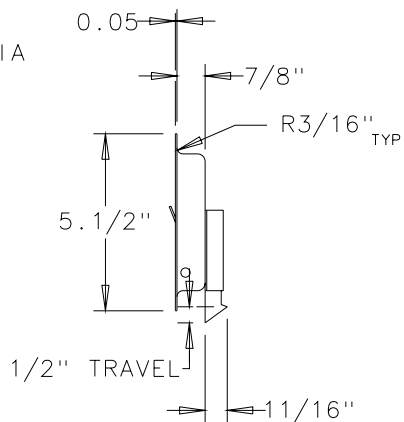
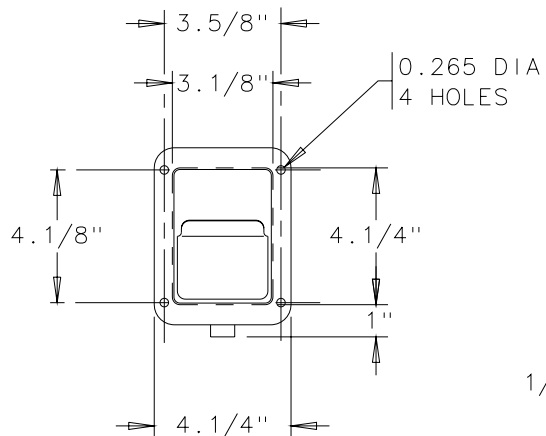
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN --1/32 6 IN AND UP --1/16 DECIMAL: 1 PLACE --0.1 2 PLACE --0.01 3 PLACE --0.005		DRAWN: KDB CHECKED: APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
2 KDB 10/9 89 1 KDB 5/9 89	ITEM 3 WAS P/N 00-0087, DUPLICATE P/N ADDED ITEM 4		PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			SCALE: 1/4 DATE: 2/22/89	DWG. NO. 23-0025C

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0287	B	SHEET, COMP. DOOR LH	1	9.08
2	00-0304	A	HINGE BLOCK	2	0.30
△ 3	00-0083	A	BAR, GUIDE	2	0.03
△ 4	00-0164	A	WIRE GUIDE	1	0.02



PART NO: 23-0026
EST WT: 10.0 LBS

STD. TOLERANCES: FRACTIONAL: 8 TO 6 IN --1/32 6 IN AND UP --1/16 DECIMAL: 1 PLACE --0.1 2 PLACE --0.01 3 PLACE --0.005		DRAWN: KDB CHECKED: APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO. 87-3
2 KDB 10/9/89 1 KDB 5/9/89	ITEM 3 WAS P/N 00-0087, DUPLICATE P/N ADDED ITEM 4		REVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				TITLE: REAR COMP. DOOR RH W/C SCALE: 1/4 DATE: 2/22/89 DWG. NO. 23-0026C



PADDLE HANDLE DOOR LATCH

TYPE: PADDLE HANDLE, NON-LOCKING,
 MATERIAL: BOLT - PLATED STEEL
 BODY - STAINLESS STEEL
 HANDLE - STAINLESS STEEL
 MOUNTING: FLUSH, 4-BOLT
 BOLT: SLAM ACTION, SINGLE POINT
 ENGAGEMENT
 EST WT: 1 LB

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

A.L. HANSEN MFG CO
701 PERSHING ROAD
WAUKEGAN, ILLINOIS 60085

1-DS STAINLESS

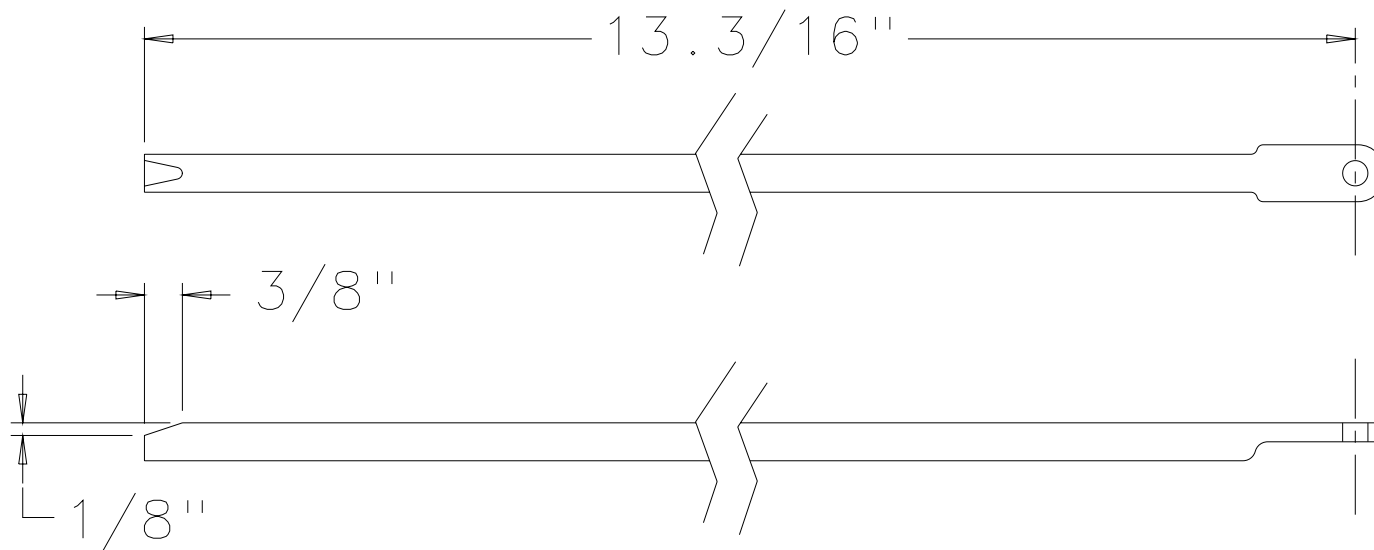
PAUL MOORE COMPANY
77 CIRCLE FREEWAY
CINCINNATI, OHIO 45246

1-DS STAINLESS

AUSTIN HARDWARE
1790 RADDISON RD NE
PO BOX 34007
MINNEAPOLIS, MINN 55434

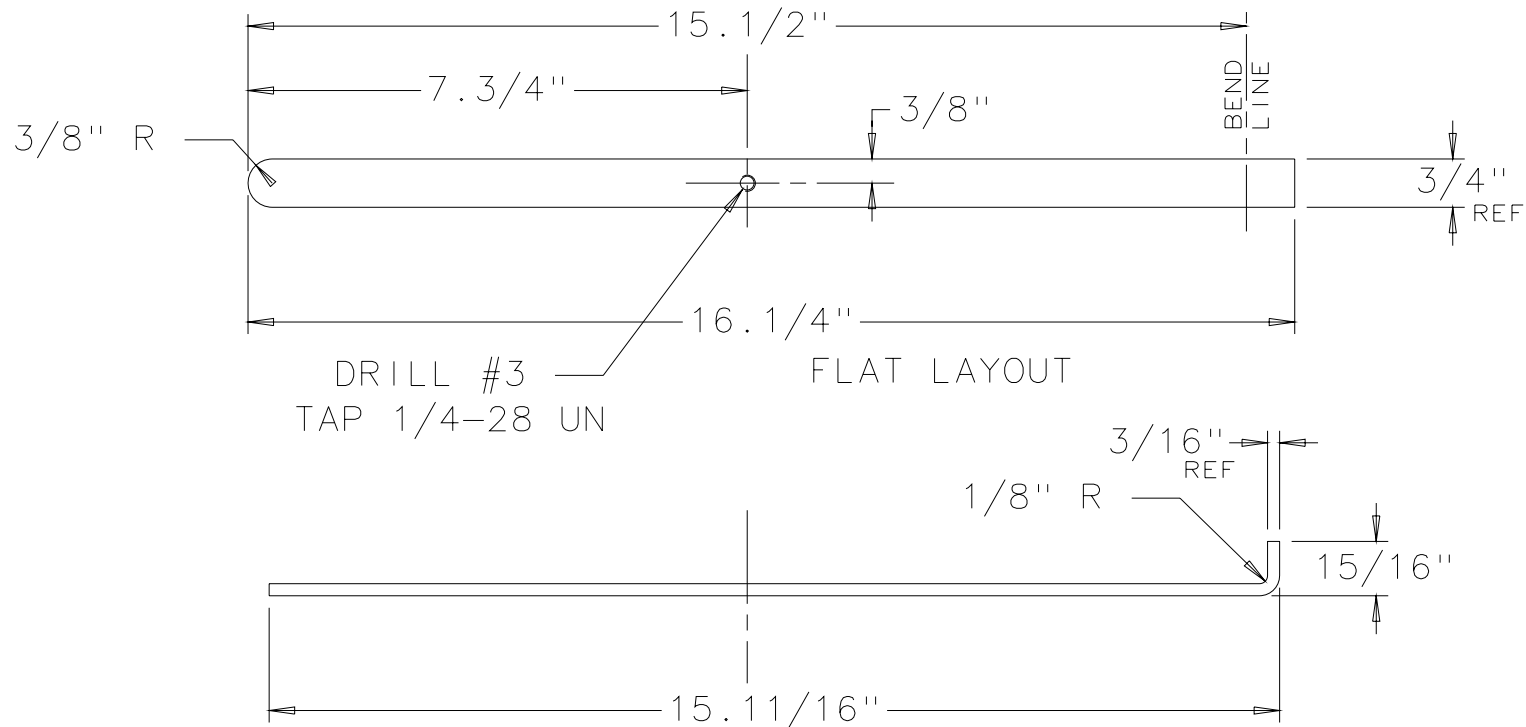
1-DS STAINLESS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG		DRAWN: R. GREENLAW CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
NO.	BY	DATE		REVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				PROJECT NO.: 90-4
TITLE: LATCH, DOOR		PADDLE HANDLE	SCALE: 1 = 4	DATE: 07 DEC 94
FFES PART NUMBER: 23-0030				DWG. NO. 23-0030B



PART NUMBER: 23-0034
 MATERIAL: MAKE FROM LATCH ROD PART
 OF P\N 23-0004 OR 23-0005

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN. +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			PROJECT NO.: 87-3	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: LATCH ROD					SCALE: 1/2	DATE: 5/11/89	DWG. NO. 23-0034A	



PART NO: 23-0035
 MATERIAL: BAR, FLAT HR 3/16 X 3/4
 UNS G10200
 FFES SPEC NO: AB-00303AA
 EST WT: 0.64 LBS

STD. TOLERANCES								DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16							CHECKED: *		
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005	ANGULAR: +-1 DEG						APPROVED:		
		NO.	BY	DATE	REVISION				PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION									
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: DOOR STOP							SCALE: 1/2	DATE: 5/12/89	DWG. NO. 23-0035B

WATER VALVE 6"

TYPE: BUTTERFLY
 SIZE: DIAMETER: 6" NOMINAL
 THICKNESS: 2-1/8"
 MOUNTING: BOLT FLANGE
 TWELVE 7/16" DIA HOLES ON 9-1/8" BC
 FLUID TYPE: WATER
 PRESSURE RATING: 75 PSI MINIMUM
 ACCESSORIES: VALVE TO BE SUPPLIED WITH LEVER TYPE HANDLE
 EST WT: 11.6 LBS W/HANDLE

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

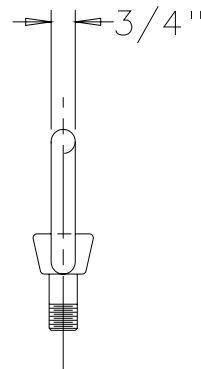
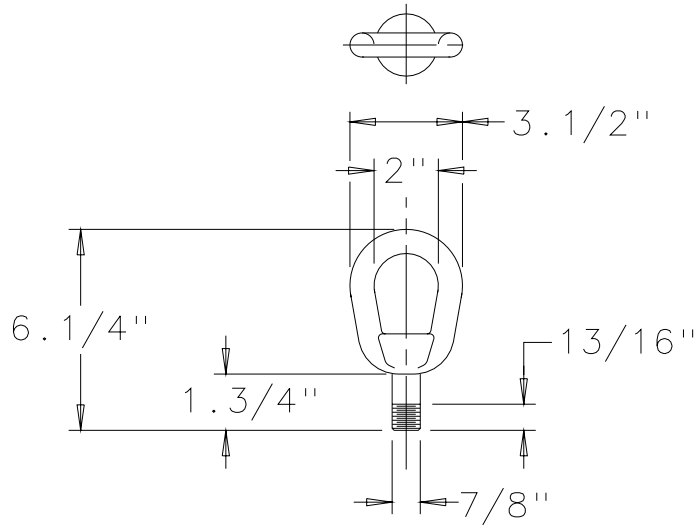
PART NO

BETTS INDUSTRIES INC
 1800 PENNA AVE W
 BOX 888
 WARREN, PA 16365

WD601ALU001

STD. TOLERANCES								DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION		
FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16								CHECKED: KDB				
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG						APPROVED:				
NO.	BY	DATE	REVISION									
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										PROJECT NO.: 91-2		
TITLE: VALVE, WATER 6"										SCALE: FULL	DATE: 8/4/92	DWG. NO. 23-0041B

FFES PART NO. 23-0041



LIFTING EYE

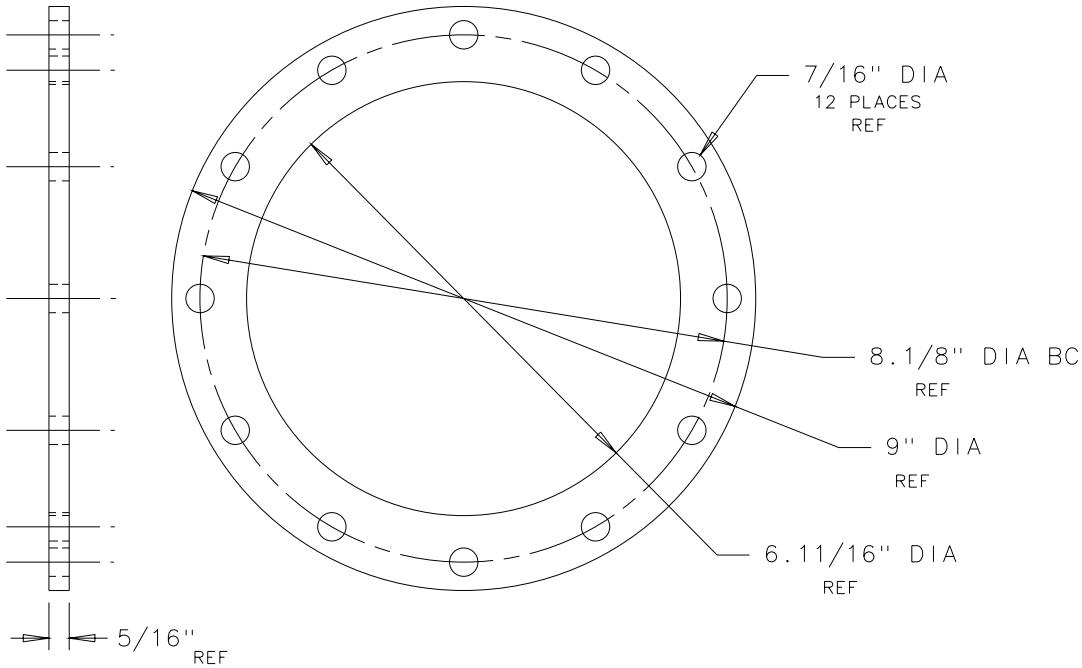
TYPE: DROP FORGED
 MATERIAL: STEEL
 FINISH: GALVANIZED
 SHANK: THREADED
 THREAD SIZE: 7/8" - 9UN CLASS 2A
 WORK LOAD LIMIT: 7200 LBS
 EST WT: 2.09 LBS

APPROVED MANUFACTURERS PART NO. APPROVED MANUFACTURERS PART NO.

McMASTER-CARR SUPPLY CO.
 P.O. BOX 4355
 CHICAGO, ILLINOIS
 60680-4355

8890T23

STD. TOLERANCES								DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:								CHECKED: KDB	
0 TO 6 IN. + - 1/32								APPROVED:	
6 IN AND UP + - 1/16									
DECIMAL:	ANGULAR:								
1 PLACE + - 0.1	+ - 1 DEG								
2 PLACE + - 0.01									
3 PLACE + - 0.005									
		NO.	BY	DATE	REVISION				
<p>FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>									PROJECT NO.: 91-2
FFES PART NO: 23-0043		TITLE: LIFTING EYE 7200 LB			SCALE: 1 = 4		DATE: 10 JUN 93		DWG. NO. 23-0043B



WELD FLANGE

USE: WITH 6" WATER DUMP VALVE
FFES P/N 23-0041
MATERIAL: MILD STEEL
EST WT: 2.54 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

BETTS INDUSTRIES INC
1800 PENNA AVE W
BOX 888
WARREN, PA 16365

WF601MS

STD. TOLERANCES				DRAWN: R. GREENLAW	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:	
NO.	BY	DATE	REVISION		

MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION

FOREST FIRE EXPERIMENT STATION

P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 91-2

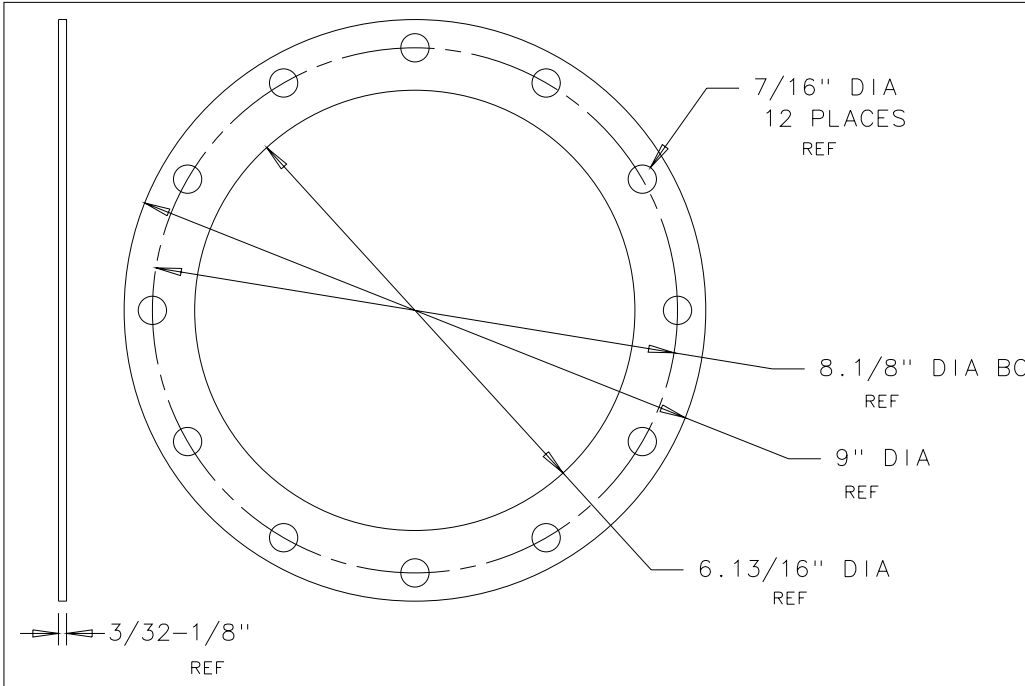
FFES PART NO. 23-0046

TITLE: WELD FLANGE

SCALE:
1/2

DATE:
8/4/92

DWG. NO. 23-0046B



GASKET

USE: WITH 6" WATER DUMP VALVE
 FFES P/N 23-0041
 MATERIAL: CORK WITH NITRILE OR NEOPRENE BINDER
 STANDARDS: MUST MEET ASTM F104
 EST WT: 0.08 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

BETTS INDUSTRIES INC
 1800 PENNA AVE W
 BOX 888
 WARREN, PA 16365

RGA601CB

STD. TOLERANCES									
FRACTIONAL :									
0 TO 6 IN + - 1/32									
6 IN AND UP + - 1/16									
DECIMAL :		ANGULAR :							
1 PLACE + - 0.1		+ - 1 DEG							
2 PLACE + - 0.01									
3 PLACE + - 0.005									
NO.	BY	DATE	REVISION						

DRAWN:
R. GREENLAW
 CHECKED:
KDB
 APPROVED:

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION

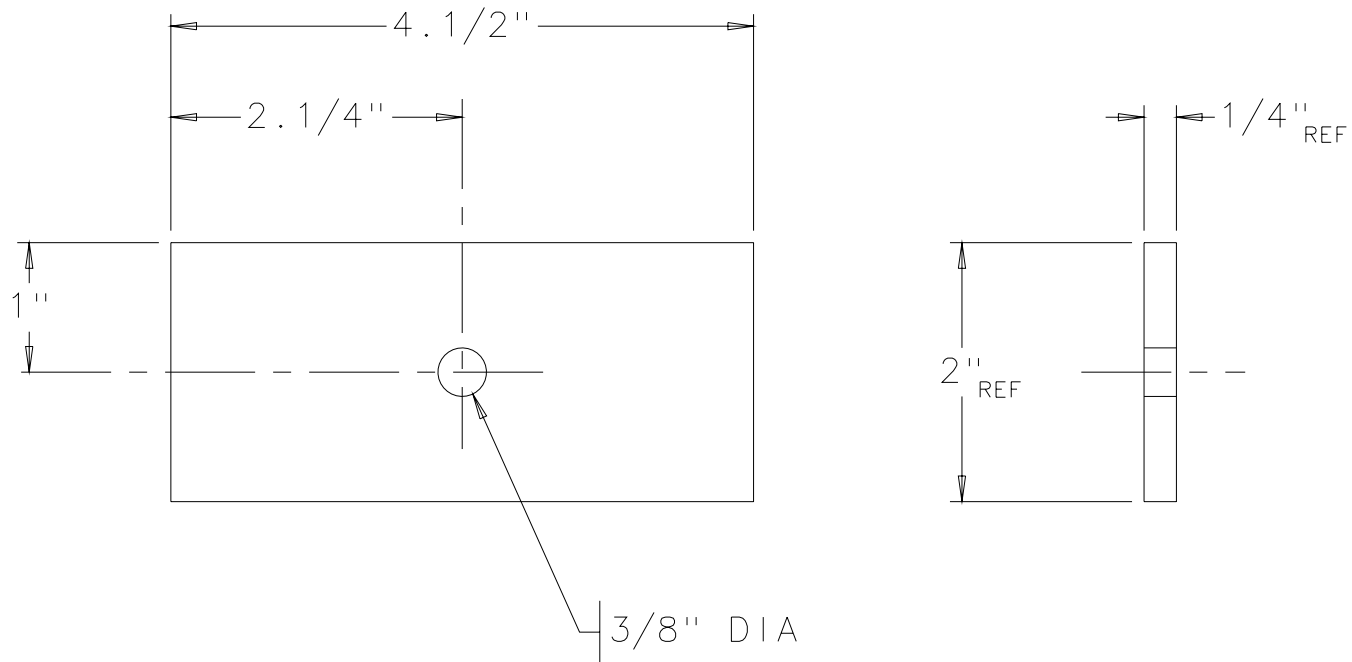
FOREST FIRE EXPERIMENT STATION

P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 91-2

FFES PART NO. 23-0047

TITLE:	GASKET	SCALE:	1/2	DATE:	8/4/92	DWG. NO.:	23-0047B
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PART NUMBER: 23-0050
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 0.62 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: LID CLAMP, CENTER				SCALE: FULL	DATE: 09 SEP 94	PROJECT NO.: 91-2 DWG. NO. 23-0050B

WATER VALVE 6"

TYPE: BUTTERFLY
 SIZE: DIAMETER: 6" NOMINAL
 THICKNESS: 2-1/8"
 MOUNTING: BOLT FLANGE
 TWELVE 7/16" DIA HOLES ON 9-1/8" BC
 FLUID TYPE: WATER
 PRESSURE RATING: 75 PSI MINIMUM
 ACCESSORIES: VALVE TO BE SUPPLIED WITH LEVER TYPE HANDLE
 EST WT: 11.6 LBS W/HANDLE

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

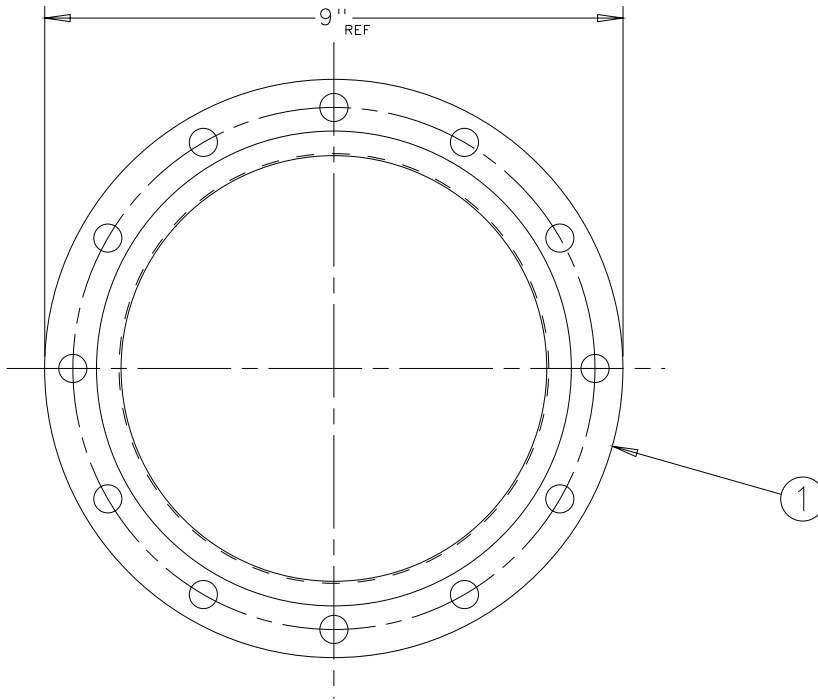
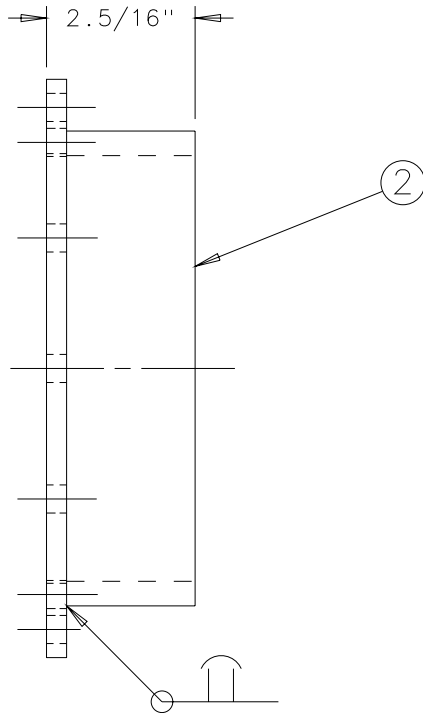
BETTS INDUSTRIES INC
 1800 PENNA AVE W
 BOX 888
 WARREN, PA 16365

WD601ALU001

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:		
		NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: VALVE, WATER 6"						SCALE: FULL	DATE: 8/4/92	DWG. NO. 23-0041B

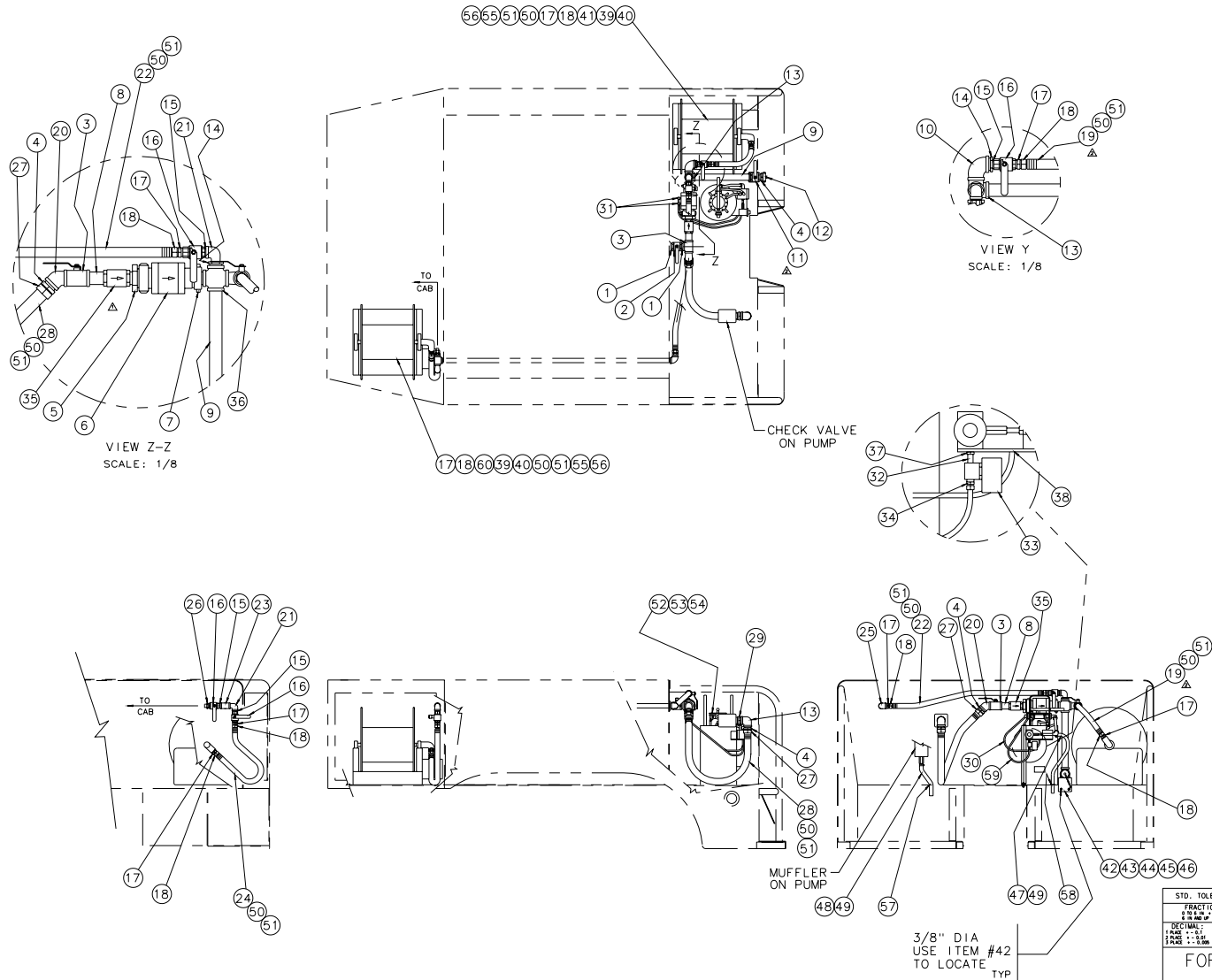
FFES PART NO. 23-0041

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	23-0046	B	WELD FLANGE	1	2.54
2	P96-CAKA		COUPLING, HALF 6" SCHEDULE 40 BLACK STEEL	1	5.65



PART NUMBER: 23-0060
EST WT: 8.60 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				APPROVED:		
ANGULAR: + - 1 DEG		NO.	BY	DATE	REVISION	
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: 6" FLANGE TO 6" NPT FEM				SCALE: 1 = 2	DATE: 12 DEC 94	DWG. NO. 23-0060B



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST MT
1	P24-CGNA		NIPPLE, CLOSE 1 1/2" SCHD 40 GALV	2	0.40
2	26-0028	B	VALVE, RECIRCULATION 1 1/2" NPT	1	1.58
3	P24-AGT		TEE 1 1/2" SCHD 40 GALV	1	1.85
4	H24FH-24MHCH		ADAPTER 1 1/2" M NPT X 1 1/2" M NPSH CAST BRASS HEX	3	0.60
5	H40MH-24MTCB		ADAPTER 2 1/2" M NPT X 1 1/2" M NPT CAST BRASS HEX	1	2.63
6	REF		DIFFERENTIAL PRESSURE VALVE	REF	
7	H40FN-24MTCB		ADAPTER 2 1/2" F NH X 1 1/2" M NPT CAST BRASS FITN LUG	1	1.00
8	P24-CGN2B		NIPPLE 1 1/2" X 3 1/2" LG SCHD 40 GALV	1	0.79
9	P24-CGN74L		PIPE 1 1/2" X 18 1/2" LONG SCHD 40 GALV	2	4.19
10	P24-AGLB		ELBOW, ST 90 1 1/2" SCHD 40 GALV	1	1.50
11	26-0027	B	VALVE, BUTTERFLY 1 1/2" NPT BRASS	1	1.59
12	H24FH-CAPSCR		CAP 1 1/2" NPSH HEX CAST BRASS LUG	1	0.45
13	P24-AGL		ELBOW 90 1 1/2" SCHD 40 GALV	2	1.36
14	P24-AGRA16		BUSHING 1 1/2" M NPT X 1 F NPT SCHD 40 GALV	2	0.52
15	P16-CGNA		NIPPLE, CLOSE 1" SCHD 40 GALV	4	0.22
16	26-0031	B	VALVE, BALL 600 PSI NPT CAST BRASS	4	1.80
17	H16MT-16MBH		ADAPTER 1 M NPT X 1 M NPSH CAST BRASS	8	0.38
18	H16FH-16ALBS		ADAPTER 1 F NPSH HEX SWG X 1 SHANK BRASS	8	0.44
19	26-9413	B	HOSE 1" ID 300 PSI RED	22	0.04
20	P24-AQLC		ELBOW ST 45 1 1/2" SCHD 40 GALV	1	1.24
21	P16-AQLB		ELBOW, ST 90 1" SCHD 40 GALV	2	0.68
22	26-9413	B	HOSE 1" ID 300 PSI RED	48	0.04
23	P16-AGT		TEE 1" SCHD 40 GALV	1	0.93
24	26-9413	B	HOSE 1" ID 300 PSI RED	32	0.04
25	P16-AGL		ELBOW 1" SCHD 40 GALV	1	0.67
26	H16MT-12MCH		ADAPTER 1 M NPT X 3/4" F NPT CAST BRASS HEX	1	0.30
27	H24FH-24MLCS		ADAPTER 1 1/2" SHANK CAST BRASS	2	1.28
28	26-9415	B	HOSE 1 1/2" ID 300 PSI RED	48	0.08
29	H24FH-24MTCB		ADAPTER 1 1/2" M NPT X 1 1/2" F NPSH CAST BRASS	1	0.91
30	32-0011	B	TUBE, NYLON 1/2" OD BLACK	40	0.01
31	32-0012	B	ELBOW, MALE 90 1/2" TUBE X 3/8" NPT COMPRESSION	2	0.19
32	P04-KAN20		NIPPLE 1/4" X 2 1/2" LONG BRASS	1	0.10
33	26-0036	B	FOAM CONTROL VALVE ASSY	1	1.18
34	32-0013	B	CONNECTOR, MALE 1/2" TUBE X 1/2" NPT COMPRESSION	1	0.13
35	26-0029	B	VALVE, CHECK 1 1/2" NPT	1	2.12
36	P24-AGX		CROSS 1 1/2" SCHD 40 GALV	1	2.10
37	P06-KARA04		BUSHING 3/8" M NPT X 1/4" F NPT BRASS	1	0.18
38	32-0014	B	CONNECTOR, MALE 1/2" TUBE X 3/4" NPT COMPRESSION	1	0.16
39	H16MH-16ALBH		ADAPTER 1 M NPSH HEX X 1 SHANK BRASS	2	0.31
40	26-0030	B	NOZZLE, WATER/FOAM 1 NPSH	2	0.92
41	26-9413	B	HOSE 1" ID 300 PSI RED	95	0.45
42	26-0026	B	BRACKET, PIPE RETAINER	1	1.31
43	33-0061	B	U-BOLT 1/2" PIPE 5/16-18UN X 1 1/2"	1	0.21
44	TS-05GG08		CAPSCREW 5/16-18UN X 1 1/2" LG GRADE 5 PLATED	2	0.05
45	WS05-BC		WASHER, SPRING LOCK 5/16	2	0.01
46	TS-05GP		NUT, HEX 5/16-18UN PLATED	2	0.02
47	26-9411	B	HOSE 1/2" ID 300 PSI RED	24	0.02
48	26-9412	B	HOSE 3/4" ID 300 PSI	12	0.03
49	33-0062	B	CLAMP, HOSE 1 3/16 - 1 3/4 WORM DRIVE 1/2" STAINLESS	2	0.03
50	26-0005	B	BANDING MATERIAL TYPE 201 SS	24	0.04
51	26-0004	B	BUCKLES TYPE 201 SS	24	0.01
52	26-0022	B	FOAM PROPORTIONER PRESS SELF CONTAINED	REF	
53	H12MG-08FTOH		ADAPTER 1/2" F NPT (NYLON)	1	0.03
54	P08-PAP		PLUG 3/4" F NPT (NYLON)	1	0.01
55	26-0032	B	HOSE GUARD 2	2	0.53
56	28-0527	B	TUBE, HEAT SHRINK 2" 0-5	0.16	
57	33-0063	B	GROMMET 1 1/2" ID SPOOL TYPE RUBBER	1	0.05
58	33-0064	B	GROMMET 1" ID SPOOL TYPE RUBBER	1	0.03
59	32-0011	B	TUBE, NYLON 1/2" OD BLACK	40	0.01
60	26-9413	B	HOSE 1" ID 300 PSI	95	0.45

EST WT: 157 LBS

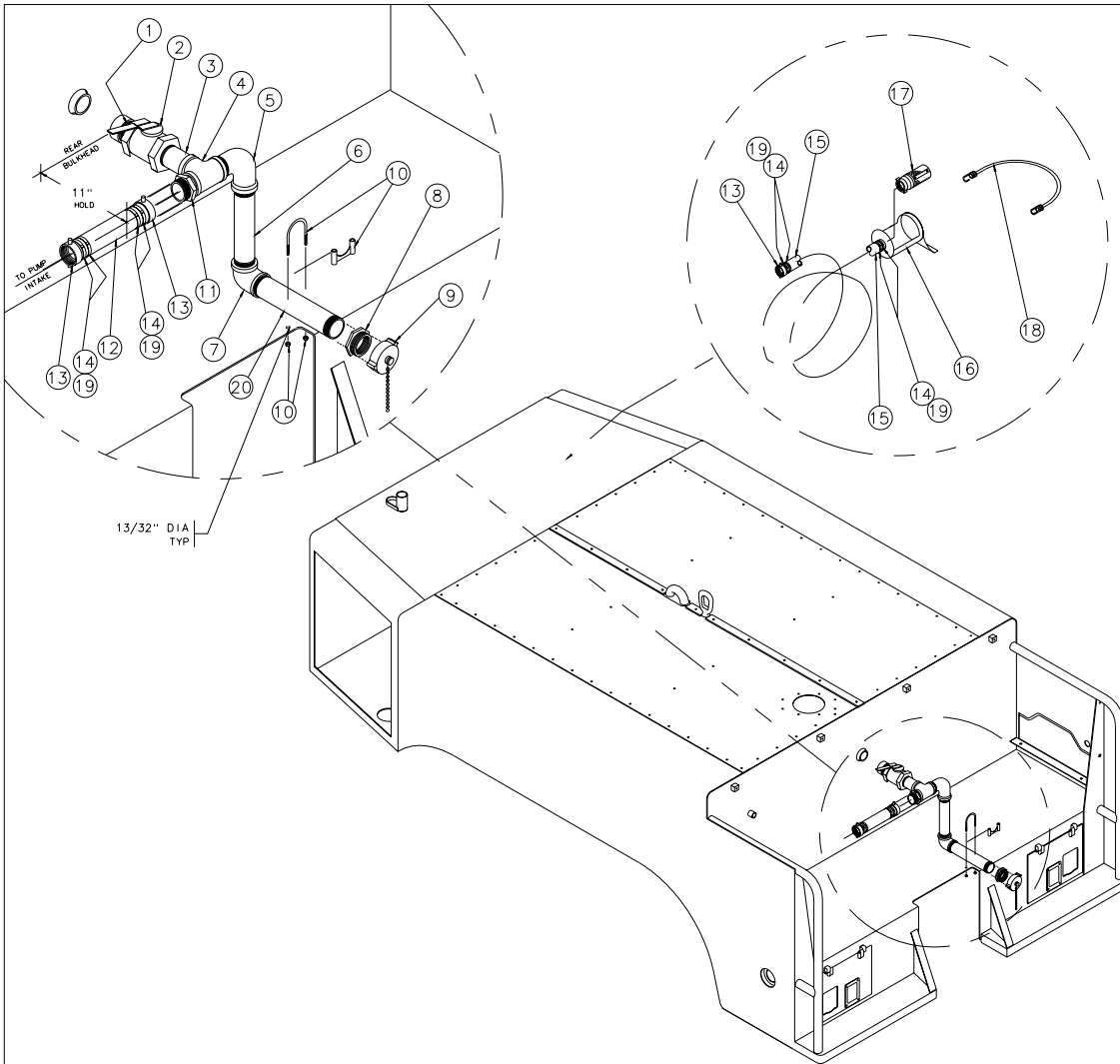
3/8" DIA
USE ITEM #42
TO LOCATE
TYP

STD. TOLERANCES						DRAWN:	KDB
FRACTIONAL:	± .005	2 DECIMAL:	± .001	3 DECIMAL:	± .0005	CHECKED:	
ANGLES:	± .05	LOCATED:	± .001	DATE:		APPROVED:	
PLACES:	± .001	DATE:		REVISION:			

FOREST FIRE EXPERIMENT STATION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 90-4
DATE: 1/24/93
SCALE: 1/16

MICHIGAN DNR
FOREST MANAGEMENT DIVISION
PROJECT NO.: 26-9801D



ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	P32-CGNA		NIPPLE, CLOSE 2" NPT SCHEDULE 40 GALVANIZED	1	0.60
2	26-0033	X	VALVE, BALL 2" NPT FULL FLOW 800 PSI BRASS	1	5.10
3	P32-CGN2B		NIPPLE 2" NPT X 3 1/2" LONG SCHEDULE 40 GALVANIZED	1	1.52
4	P32-AGT		TEE 2" NPT SCHEDULE 40 GALVANIZED	1	2.81
5	P32-AGLB		ELBOW, STREET 90 2" NPT SCHEDULE 40 GALVANIZED	1	1.86
6	P32-AGNB		NIPPLE 2" NPT X 11" LONG SCHEDULE 40 GALVANIZED	1	3.35
7	P32-AGL		ELBOW, 90 2" NPT SCHEDULE 40 GALVANIZED	1	1.83
8	H32FT-32MHCH		ADAPTER 2" FEMALE NPT X 2" MALE NPSH CAST BRASS, HEX	1	0.75
9	H32FH-CAPSXR		CAP 2" FEMALE NPSH W/ CHAIN	1	0.47
10	33-0065	X	U-BOLT 3/8" - 1.0" FULL CIRCLE W/ 3/8" HIGH NUTS, PLATED	1	0.63
11	H32MT-32MHCH		ADAPTER 2" MALE NPT X 2" MALE NPSH CAST BRASS, HEX	1	1.00
12	26-9404	X	HOSE, SUCTION 2" 18.25 IN	3	0.05
13	H32FH-32MSRP		ADAPTER 2" FEMALE NPSH SHRVEL 2" HOSE SHANK	3	0.86
14	26-0005	B	BANDING MATERIAL, 3/8" WIDTH 201 SS	12 FT	0.04
15	26-9404	X	HOSE, SUCTION 2" 15 FT	0.59	
16	B-437	X	DRAFT BUCKET	1	6.75
17	REF		FOOT VALVE / STRAINER 2" NPSH	REF	1.66
18	15-0007	X	CORD, SHOCK ASSEMBLY 3/8" 20" LONG	1	0.25
19	26-0004	B	BUCKLES, 3/8" SIZE 201 SS	8	0.01
20	P32-AGN60L		PIPE 2" NPT X 15" LONG SCHEDULE 40 GALVANIZED	1	

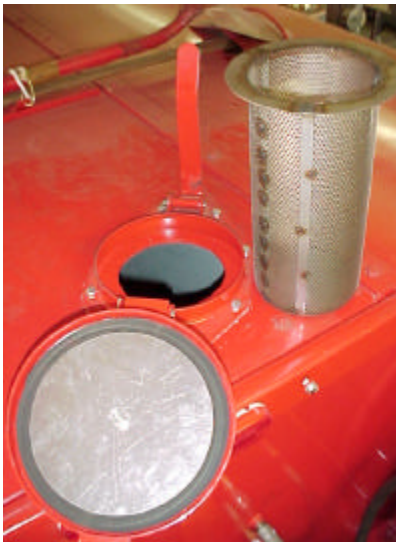
EST WT: 45 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR
FRACTIONAL: ± 0.015" ± 0.005" ± 0.0025"						CHECKED:	
DECIMAL: ± 0.015" ± 0.005" ± 0.0025"						APPROVED:	FOREST MANAGEMENT DIVISION
ANGULAR: ± 1.0° ± 0.5°						NO. BY DATE	PROJECT NO.: 96-4
<p>FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>							DWG NO: 26-9807D
<p>TITLE: WATER PLUMBING, SUCTION SCALE: 1/16 DATE: 7/11/97</p>							

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

March 2001



Design Packet 63C Filler Port and Strainer Drawings

Filler Port Drawings

The REC filler port (23-9804) is a rugged mild steel fabrication that provides years of service without maintenance. The usable fill opening is 7 inches in diameter. The port does not vent. The REC tank designs use a separate venting system. This item bolts to the tank lids found in all REC 6x6 tank designs.

Filler port strainer (#23-0032) inserts in the filler port to filter larger objects (greater than 1/8 inch). The perforation of the strainer is adequate to strain the flow from most portable centrifugal pumps. Its use prevents unwanted debris from getting into the tank during drafting or other fill procedures. The strainer is made of stainless steel to reduce corrosion problems.



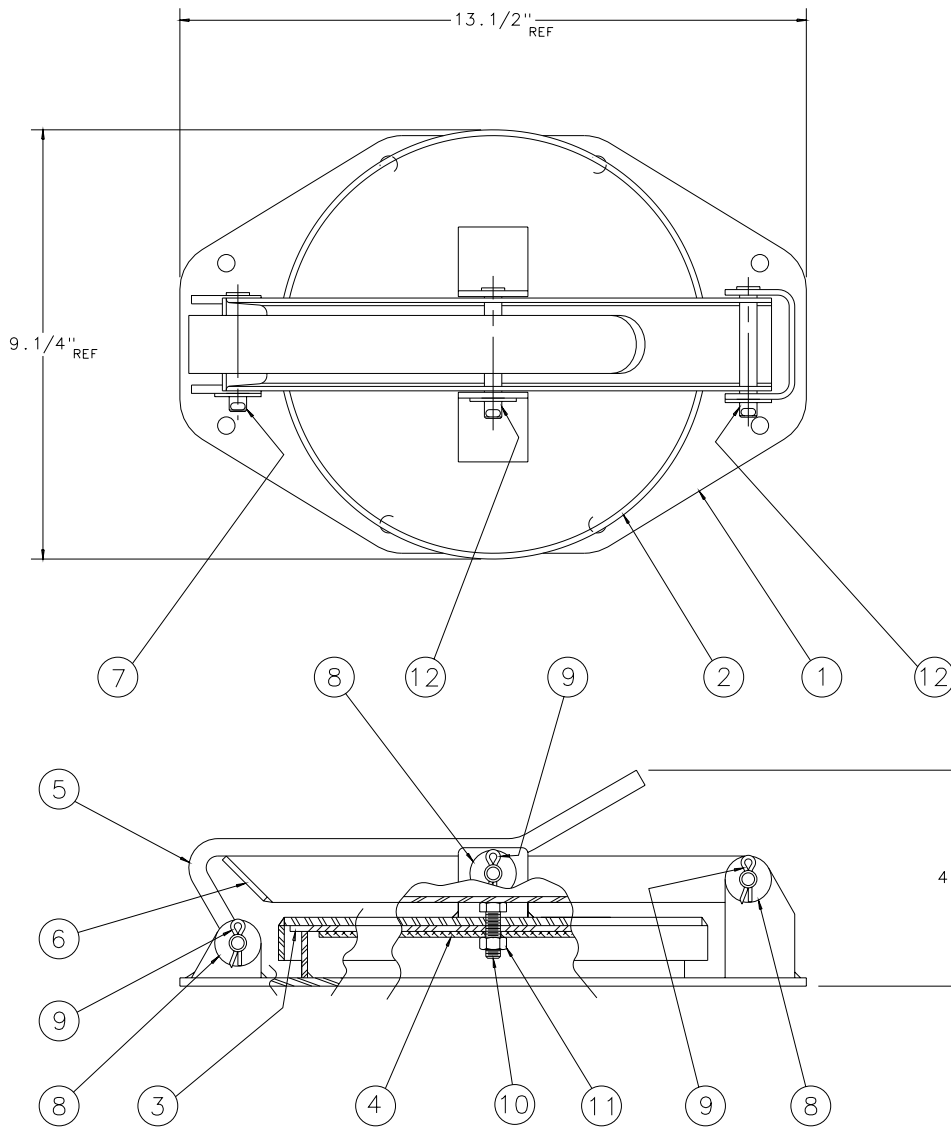
Figure 1 - Filler Port Lid Closed



Figure 2 - Filler Port Open with Strainer

Drawing List

Drawing Number	Drawing Name
23-9804C	Filler Port 6" A/C
23-0061C	Base W/C
23-0062B	Cover W/C
23-0063B	Gasket
23-0064B	Gasket Retainer
23-0065B	Latch W/C
23-0066B	Hinge Bar W/C
00-0969A	Latch Anchor
00-0970B	Hinge Anchor
00-0971B	Neck
00-0972C	Base Plate
00-0973B	Angle
00-0974B	Cover
00-0975B	Rim
00-0976A	Latch Hinge
00-0977B	Latch Bar
00-0978A	Sheet
00-0979B	Channel
23-0032C	Strainer, Filler Port
00-0353C	Strainer Wall
00-0354B	Flange, Strainer
00-0355A	Bottom, Strainer
00-0356B	Strip



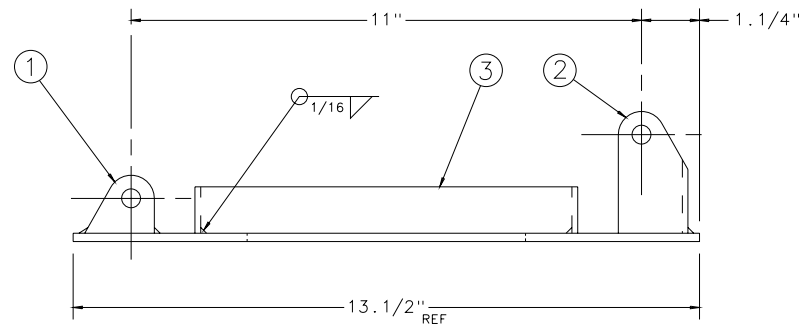
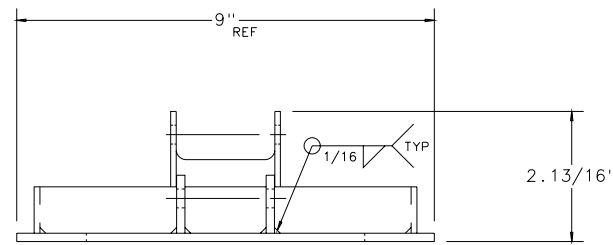
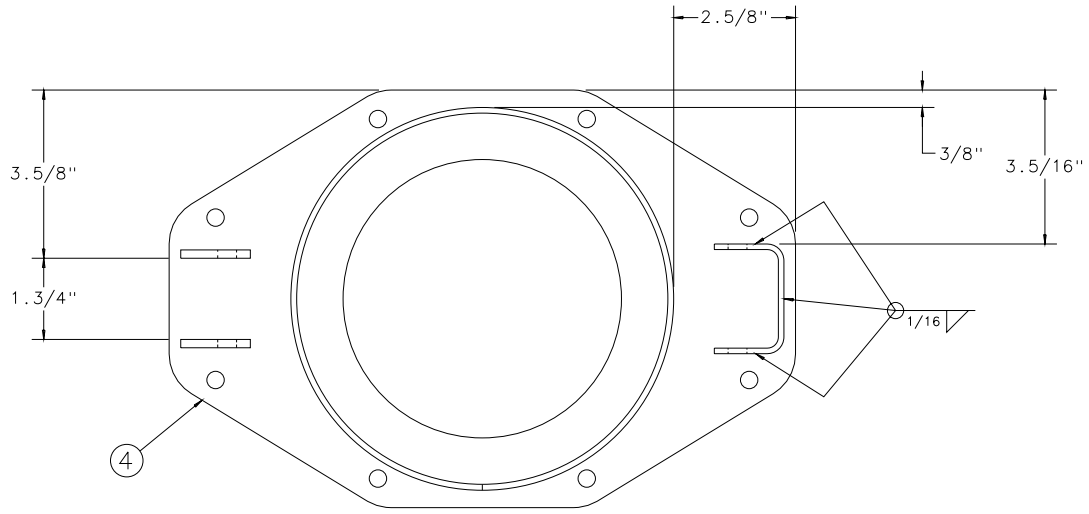
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	23-0061	C	BASE W/C	1	5.20
2	23-0062	B	COVER W/C	1	4.50
3	23-0063	B	GASKET	1	
4	23-0064	B	GASKET RETAINER	1	0.54
5	23-0065	B	LATCH W/C	1	1.63
6	23-0066	B	HINGE BAR W/C	1	1.58
7	R24-C150AA		PIN, CLEVIS 3/8" DIA X 2-1/2" LONG STEEL	1	0.08
8	WS-06BA		WASHER, FLAT 3/8" PLATED USS	3	0.01
9	R10-B48AB		PIN, COTTER 5/32" DIA X 3/4" LONG PLATED STEEL	3	0.01
10	TS-05GG08		SCREW, CAP HEX HD 5/16"-18UN X 1" LONG GRADE 5 PLATED	1	0.03
11	TS-05GP		NUT, HEX DOUBLE CHAMFER 5/16"-18UN PLATED	1	0.02
12	R24-C166AA		PIN, CLEVIS 3/8" DIA X 2-3/4" LONG STEEL	2	0.09

LATCH ADJUSTMENT
 TO SEAL COVER, ADJUST
 ITEM #10 UP OR DOWN
 LOCK WITH ITEM #11

PART NUMBER: 23-9804
 EST WT: 14.0 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. ± 1/32" 6 IN. AND UP ± 1/16"		DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION	PROJECT NO.: 90-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 23-9804C
TITLE: FILLER PORT 6" A/C			SCALE: 1 = 2	DATE: 07 FEB 95

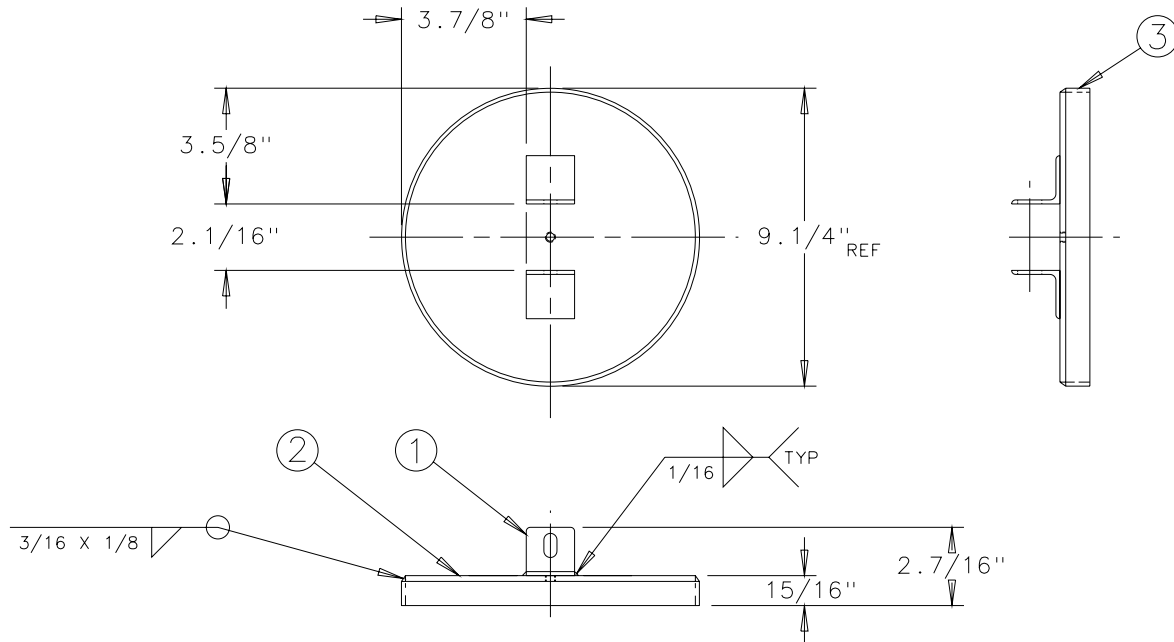
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0969	A	LATCH ANCHOR	2	0.06
2	00-0970	B	HINGE ANCHOR	1	0.32
3	00-0971	B	NECK	1	0.89
4	00-0972	C	BASE PLATE	1	3.70



PART NUMBER: 23-0061
EST WT: 5.20 LBS

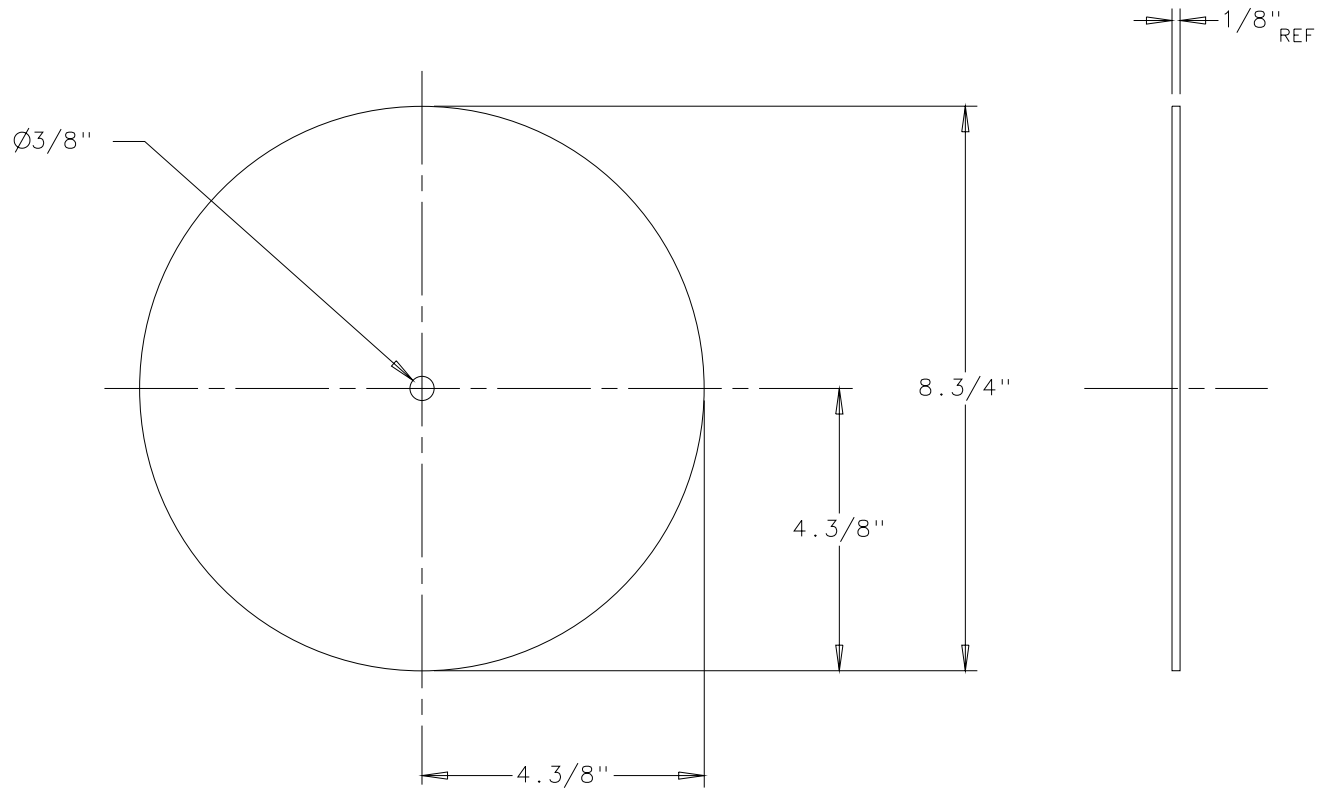
STD. TOLERANCES FRACTIONAL: 0 TO 0.16 ± 1/32 6 IN AND UP ± 1/16		DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
NO. BY DATE REVISION		PROJECT NO.: 90-4		DWG. NO. 23-0061C
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		SCALE: 1 = 2 DATE: 25 JAN 95		
TITLE: BASE W/C		TITLE:		

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0973	B	ANGLE	2	0.15
2	00-0974	B	COVER	1	3.22
3	00-0975	B	RIM	1	0.76



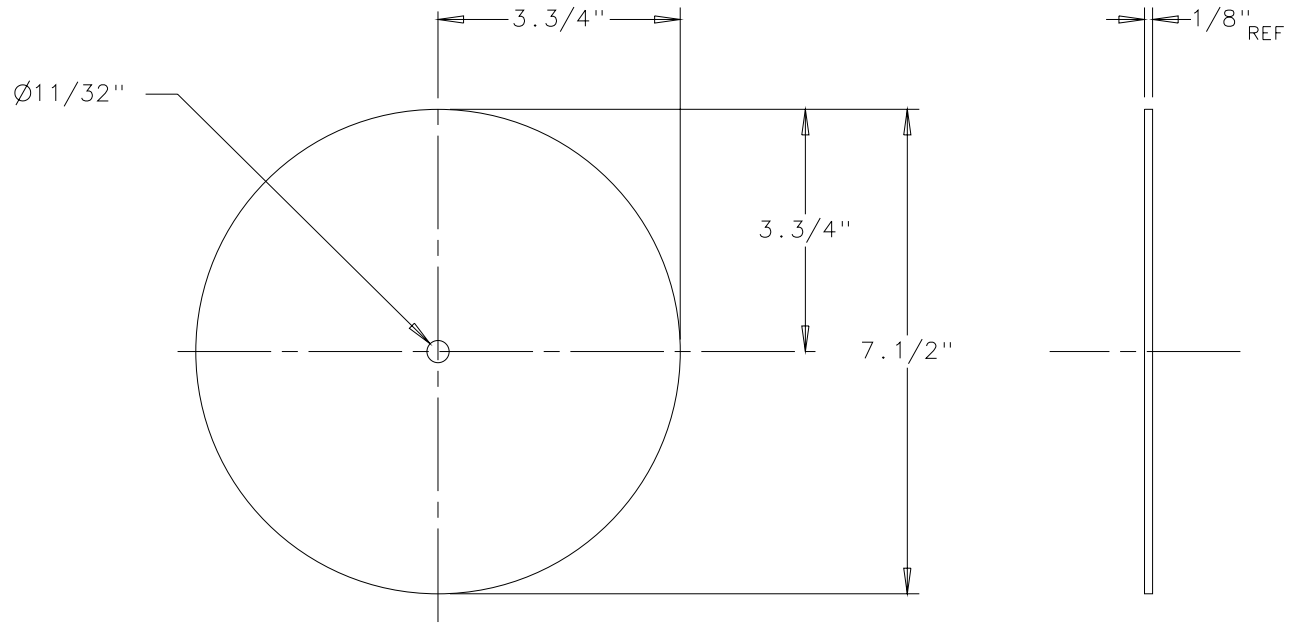
PART NUMBER: 23-0062
EST WT: 4.50 LBS

STD. TOLERANCES FRACTIONAL : 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL : 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR : + - 1 DEG		DRAWN: R. GREENLAW CHECKED: KBD APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO. : 90-4	
NO.	BY	DATE		REVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: COVER W/C		SCALE: 1 = 4	DATE: 27 JAN 95	DWG. NO. 23-0062B



PART NUMBER: 23-0063
 MAT'L: MAKE FROM FFES P/N 33-0028
 EST WT: ____ LBS

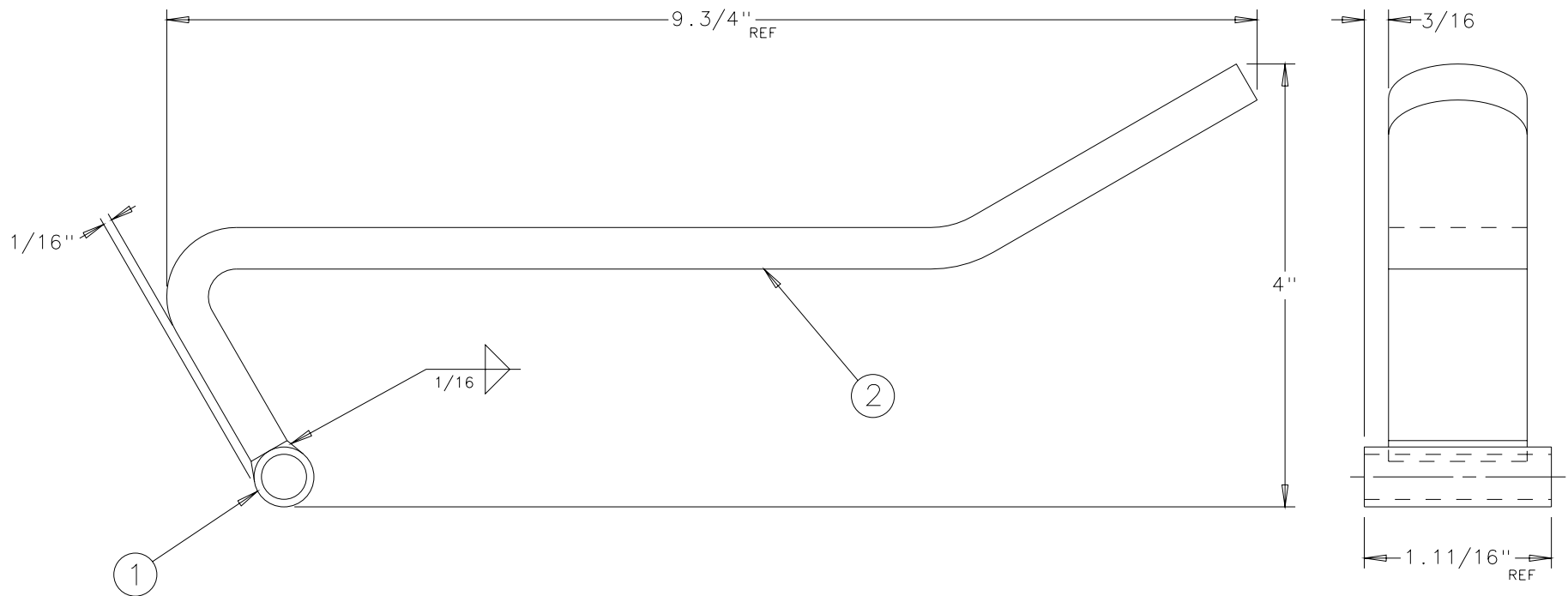
STD. TOLERANCES								DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16								CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG						APPROVED:	
NO.	BY	DATE	REVISION						
FOREST FIRE EXPERIMENT STATION									
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 90-4
TITLE: GASKET						SCALE: 1" = 2"	DATE: 31 JAN 95	DWG. NO.: 23-0063B	



PART NUMBER: 23-0064
 MAT'L: SHEET, 1/8" ALUMINUM 3' X 8'
 UNS A93003
 FFES SPEC NO: AA-12538AT
 EST WT: 0.54 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
TITLE: GASKET RETAINER					SCALE: 1 = 2	DATE: 31 JAN 95	DWG. NO. 23-0064B

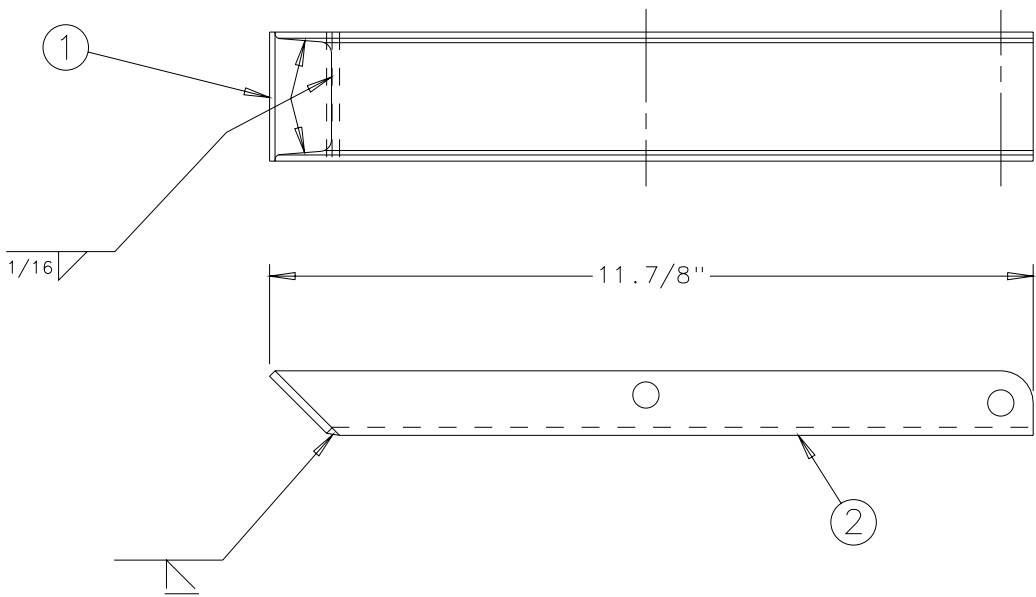
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0976	A	HINGE	1	0.05
2	00-0977	B	LATCH BAR	1	1.54



PART NUMBER: 23-0065
EST WT: 1.63 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		NO.	BY	DATE	
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 90-4	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: LATCH W/C				SCALE: FULL	DATE: 07 FEB 95	DWG. NO. 23-0065B	

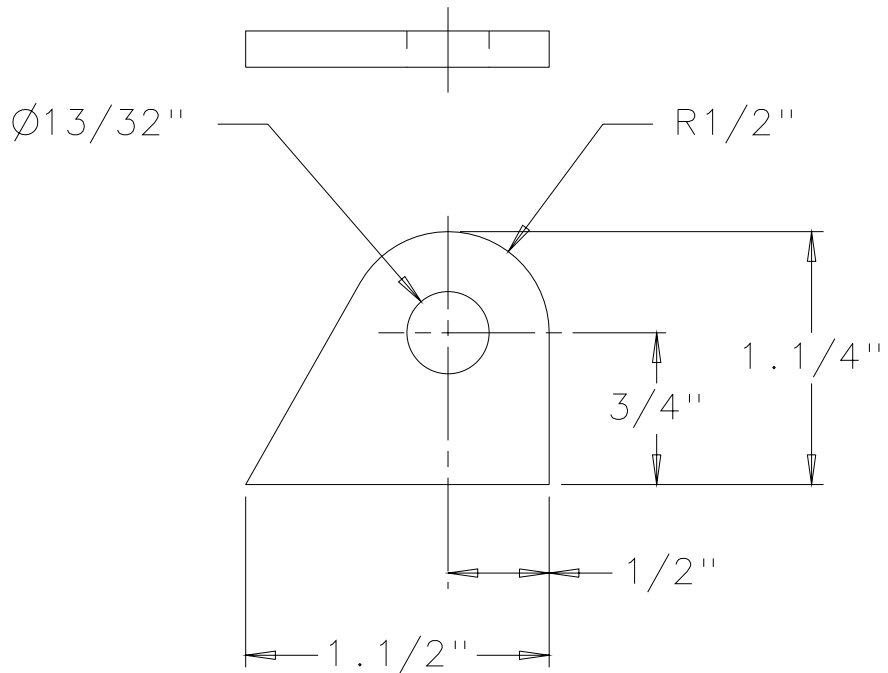
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0978	A	SHEET	1	0.08
2	00-0979	B	CHANNEL	1	1.46



NOTE
BREAK ALL SHARP EDGES

PART NUMBER: 23-0066
EST WT: 1.58 LBS

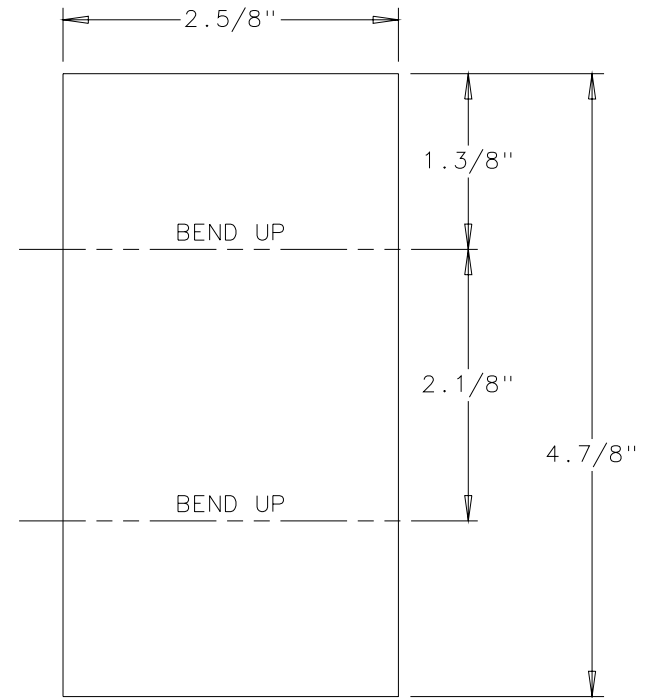
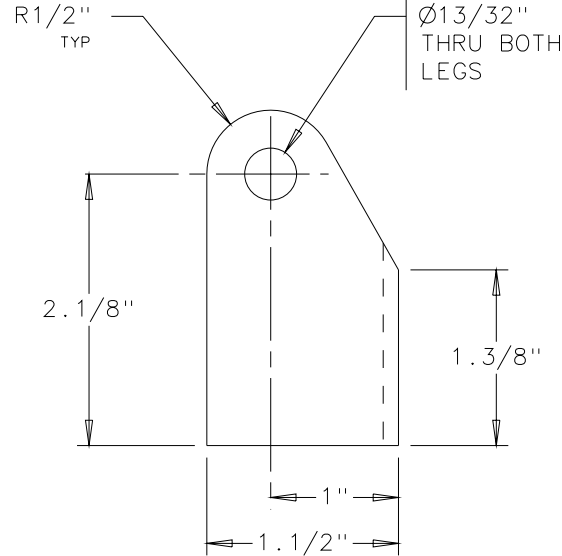
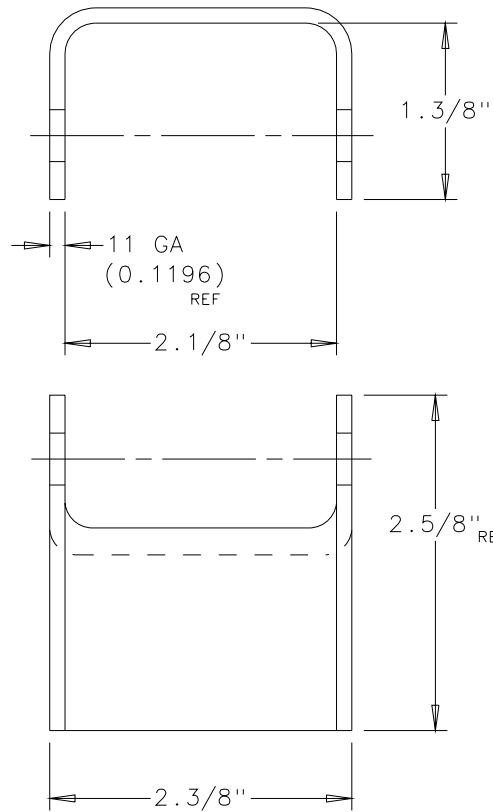
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		DRAWN: R. GREENLAW CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
NO. BY DATE	REVISION	PROJECT NO.: 90-4	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			DWG. NO.: 23-0066B
TITLE: HINGE BAR W/C		SCALE: 1 = 2	DATE: 02 FEB 95



7 GA
(0.1793)
REF

PART NUMBER: 00-0969
 MAT'L: SHEET, 7 GA (0.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.06 LBS

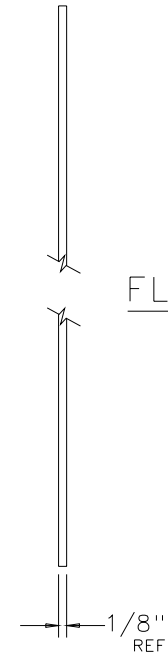
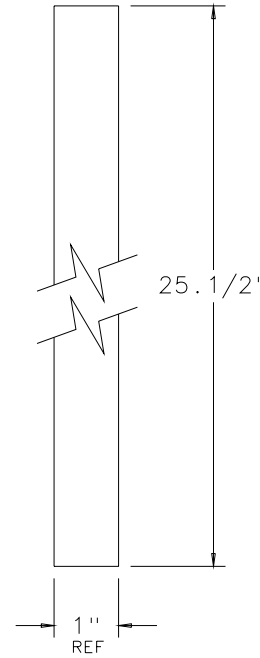
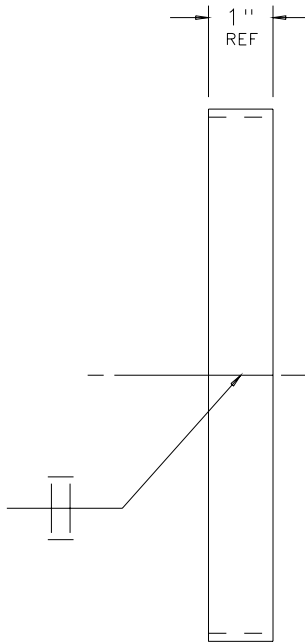
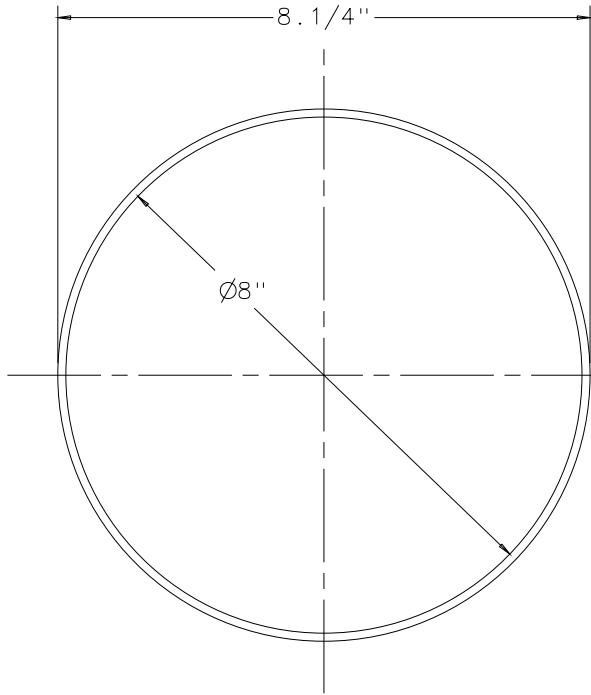
STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
TITLE: LATCH ANCHOR					SCALE: FULL	DATE: 24 JAN 95	DWG. NO. 00-0969A



FLAT LAYOUT

PART NUMBER: 00-0970
 MAT'L: SHEET, 11 GA (0.1196) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 0.32 LBS

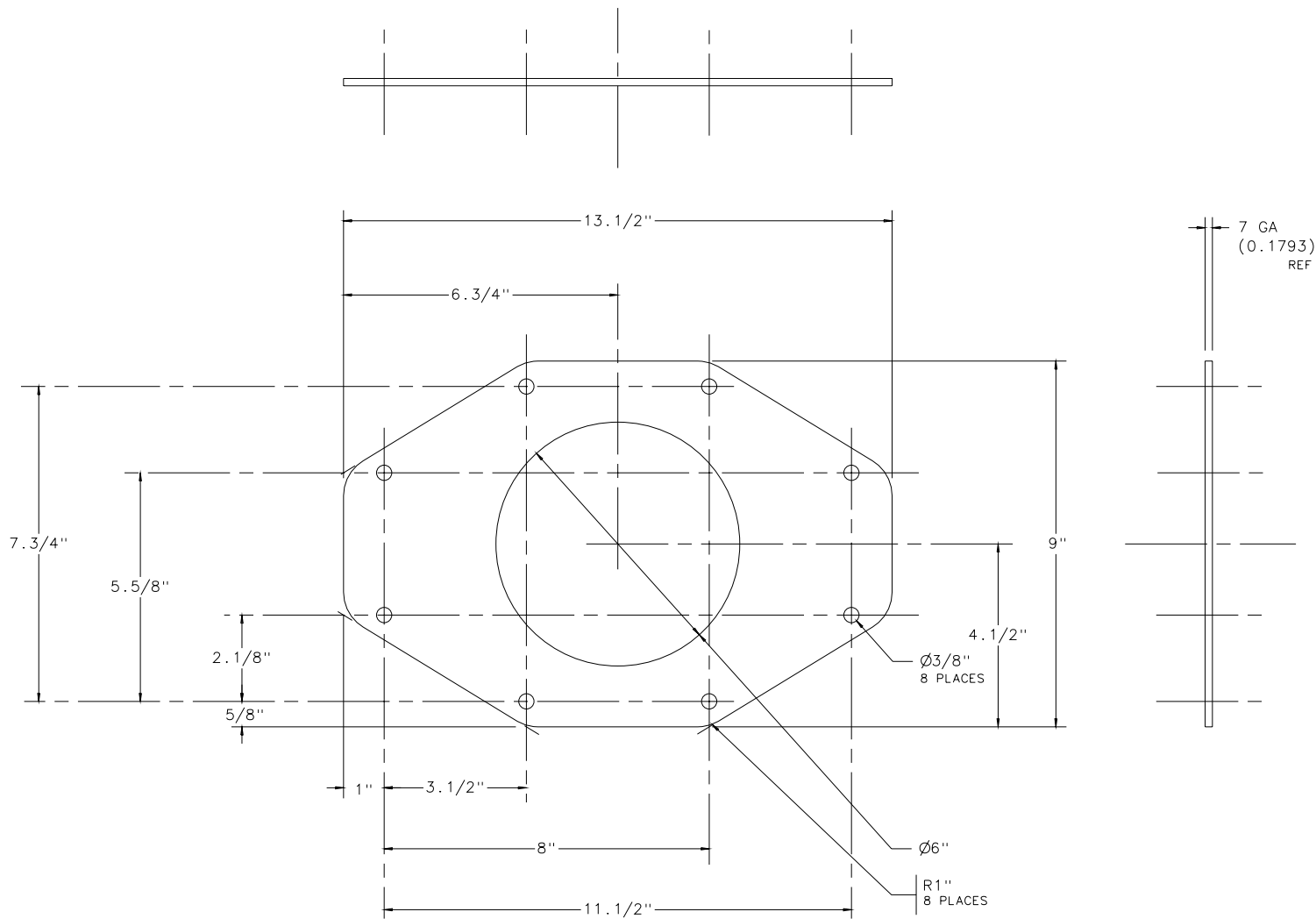
STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: HINGE ANCHOR				SCALE: FULL	DATE: 24 JAN 95	PROJECT NO.: 90-4 DWG. NO.: 00-0970B



FLAT LAYOUT

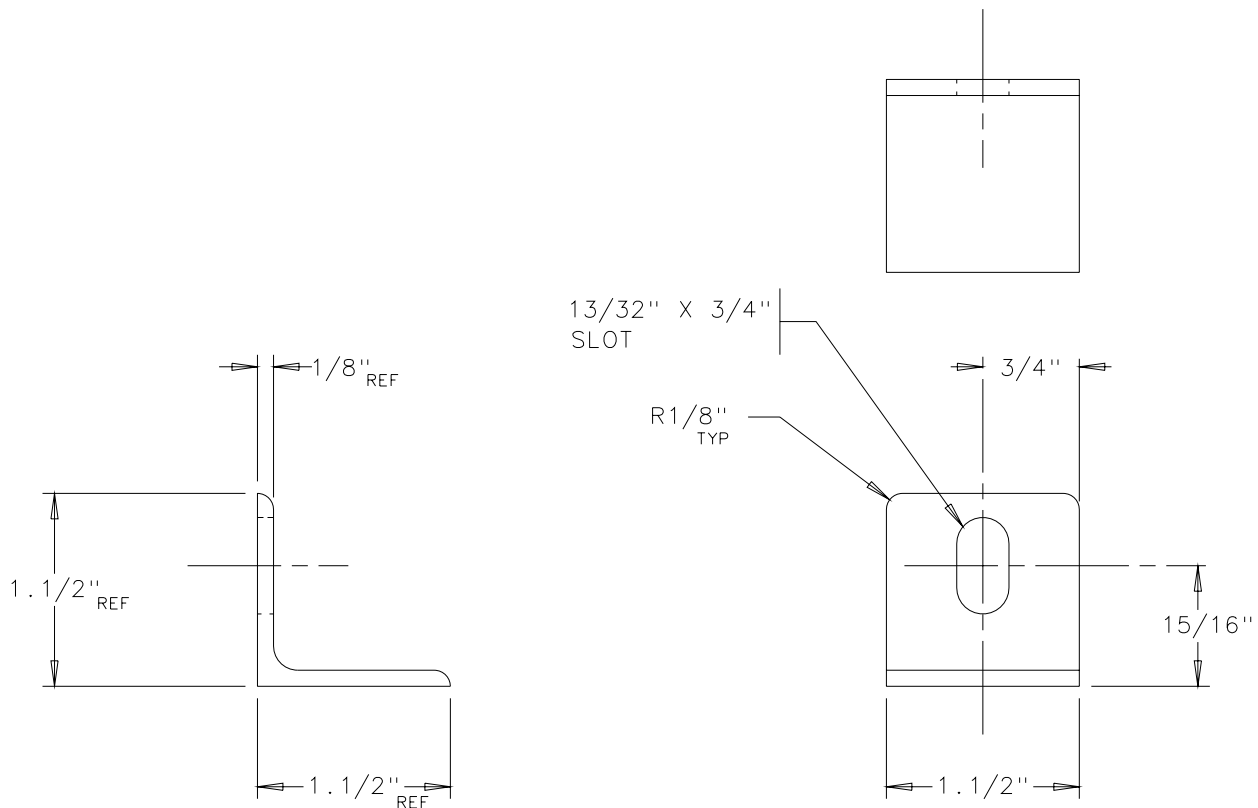
PART NUMBER: 00-0971
 MAT'L: BAR, FLAT 1/8" X 1" HR
 UNS G10080
 FFES SPEC NO: AB-00204AH
 EST WT: 0.89 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 90-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: NECK				SCALE: 1 = 2	DATE: 24 JAN 95	DWG. NO. 00-0971B



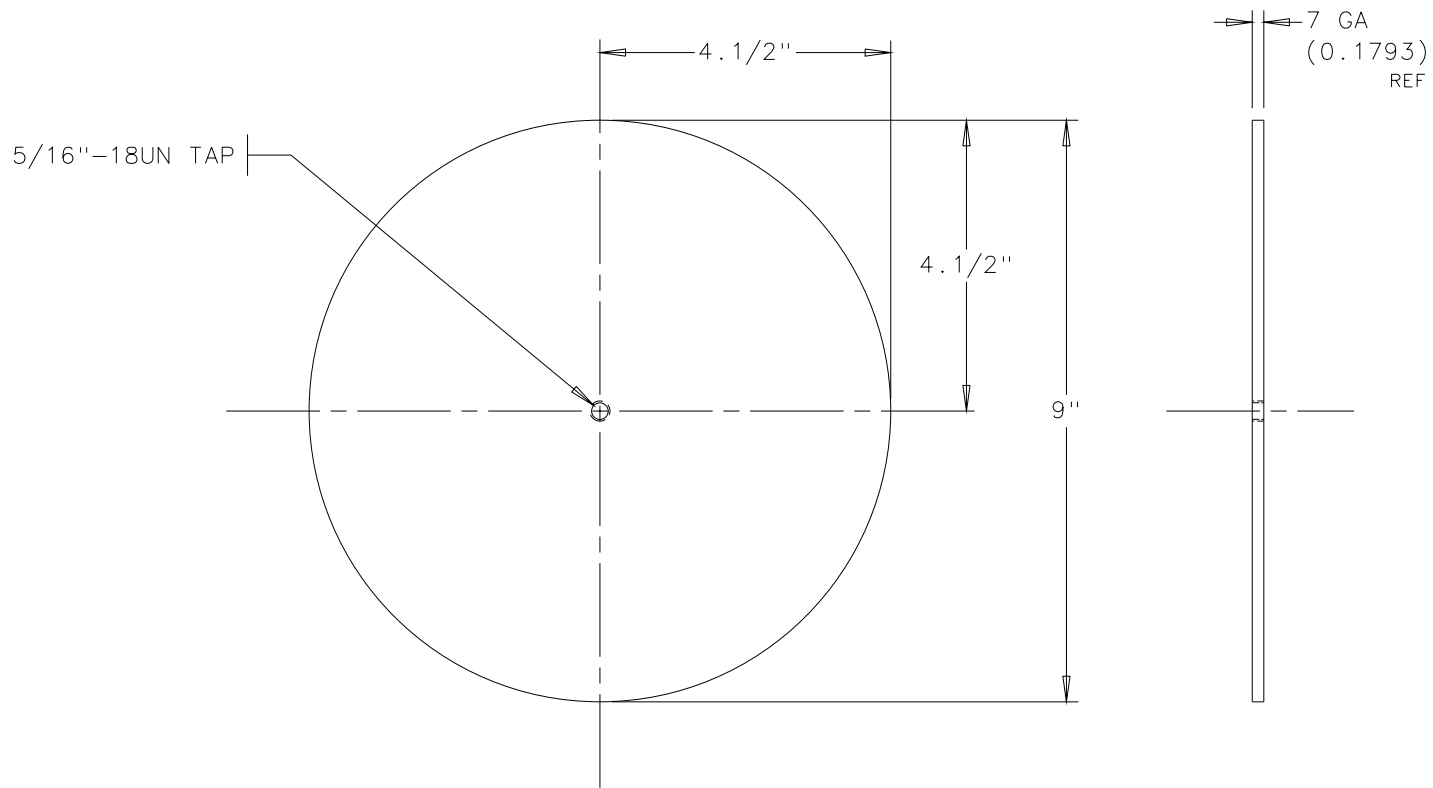
PART NUMBER: 00-0972
 MAT'L: SHEET, 7 GA (0.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.70 LBS

STD. TOLERANCES		DRAWN: R. GREENLAW		MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16		CHECKED: KDB			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		APPROVED:			
ANGULAR: + - 1 DEG		NO.	BY	DATE	REVISION
FOREST FIRE EXPERIMENT STATION					PROJECT NO.: 90-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: BASE PLATE			SCALE: 1 = 2	DATE: 24 JAN 95	DWG. NO.: 00-0972C



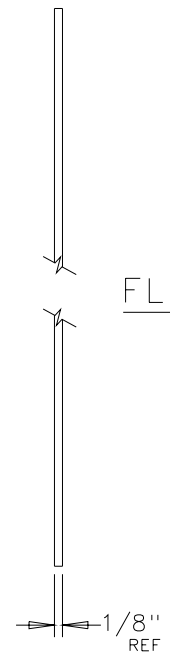
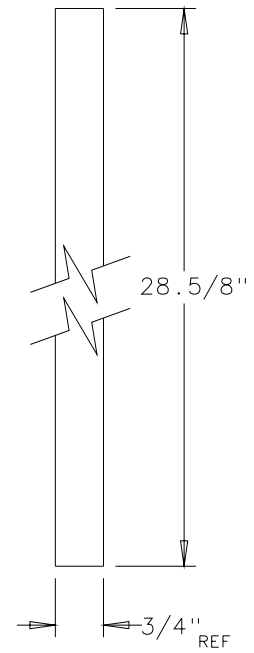
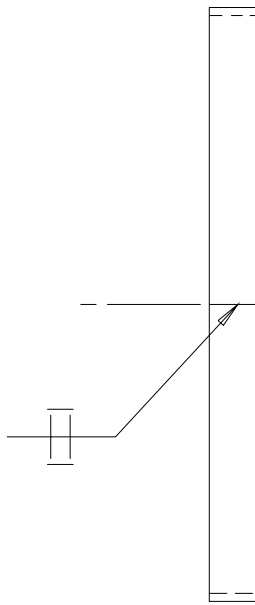
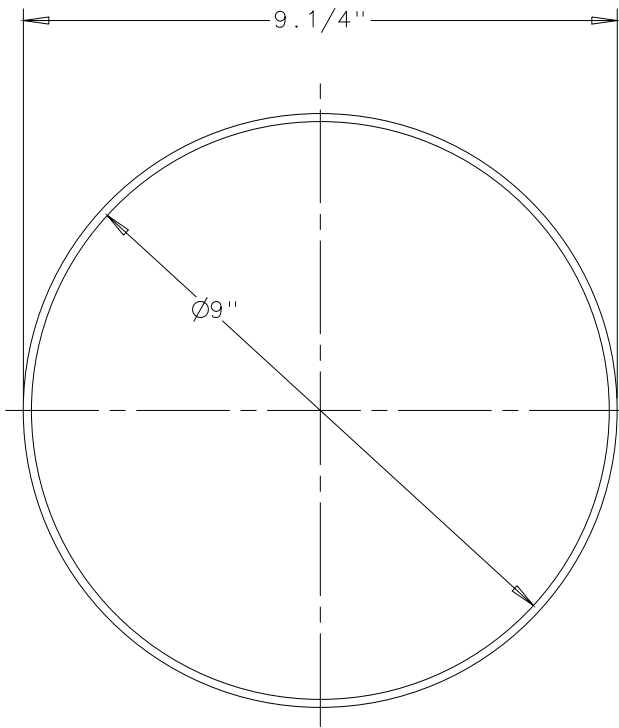
PART NUMBER: 00-0973
 MAT'L: ANGLE, 1.1/2" X 1.1/2" X 1/8"
 UNS K02600
 FFES SPEC NO: AK-20606AG
 EST WT: 0.15 LBS

STD. TOLERANCES								DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						APPROVED:	
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 90-4
TITLE: ANGLE						SCALE: FULL	DATE: 27 JAN 94	DWG. NO.: 00-0973B	



PART NUMBER: 00-0974
 MAT'L: SHEET, 7 GA (0.1793) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.22 LBS

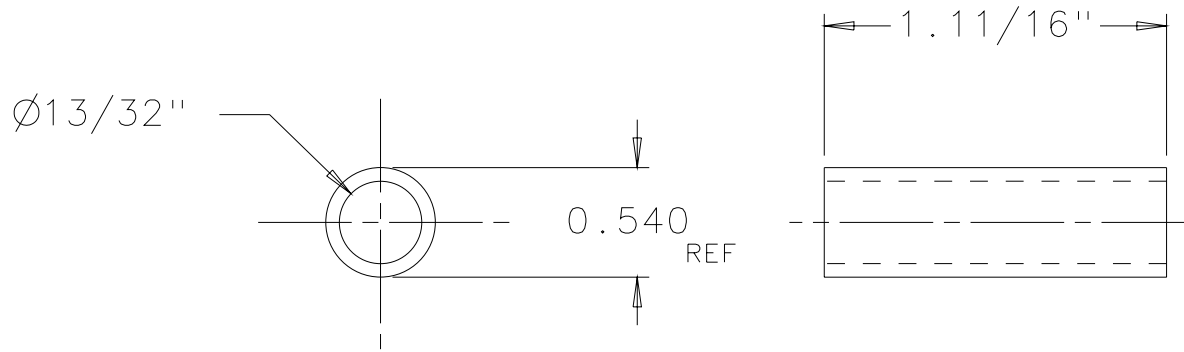
STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
TITLE: COVER					SCALE: 1 = 2	DATE: 26 JAN 95	DWG. NO. 00-0974B



FLAT LAYOUT

PART NUMBER: 00-0975
 MAT'L: BAR, FLAT 1/8" X 3/4" HR
 UNS G10080
 FFES SPEC NO: AB-00203AH
 EST WT: 0.76 LBS

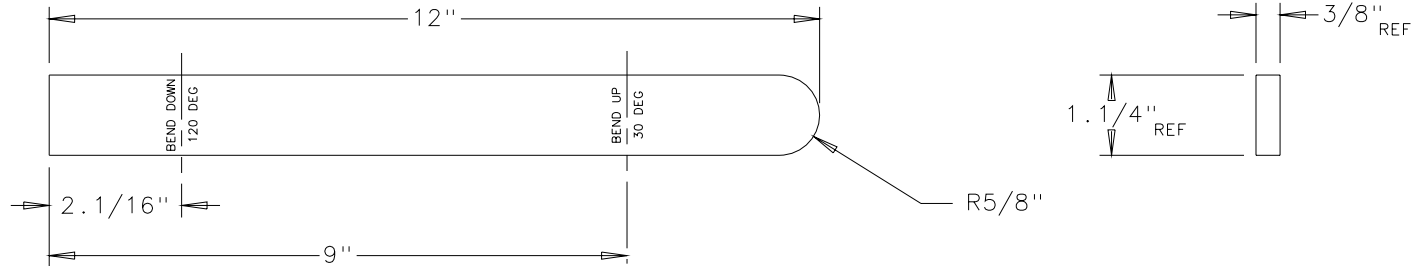
STD. TOLERANCES							DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16							CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG					APPROVED:		
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION									
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: RIM						SCALE: 1 = 2	DATE: 27 JAN 95	PROJECT NO.: 90-4	
								DWG. NO.: 00-0975B	



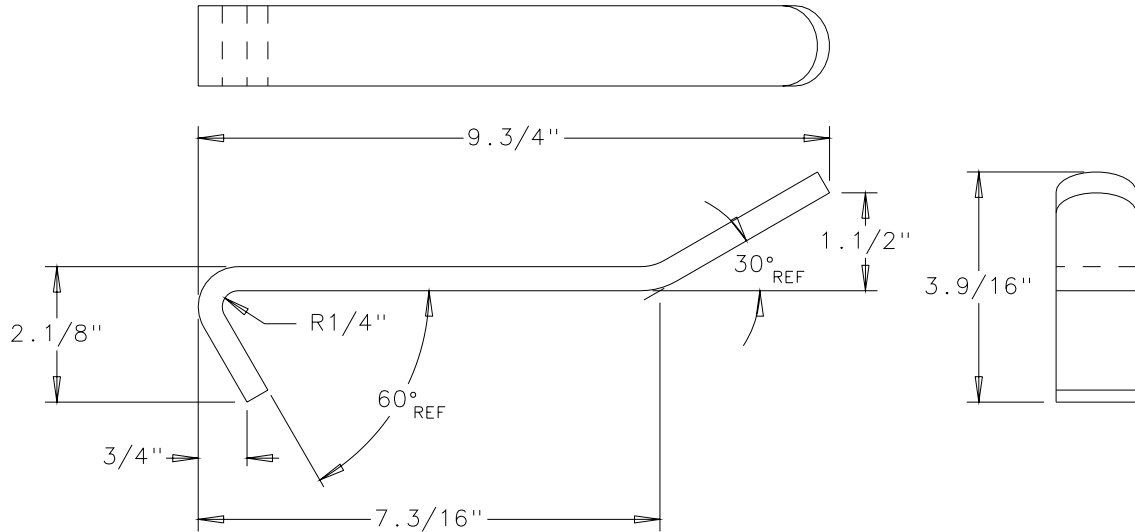
PART NUMBER: 00-0976
 MAT'L: PIPE, 1/4" NOM SCH 40 BLACK
 UNS K03000
 FFES SPEC NO: AF-04004AD
 EST WT: 0.05 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 90-4
TITLE: LATCH HINGE					SCALE: FULL	DATE: 07 FEB 95	DWG. NO. 00-0976A	

FLAT LAYOUT

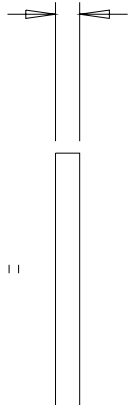
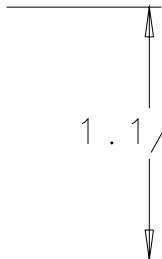
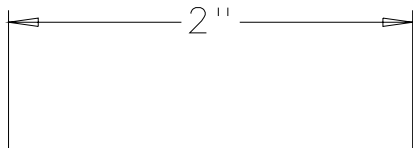


NOTE
 USE BENDING FIXTURE
 PART NUMBER 18-0113
 BREAK ALL SHARP EDGES



PART NUMBER: 00-0977
 MAT'L: BAR, FLAT 3/8" X 1.1/4" HR
 UNS G10200
 FFES SPEC NO: AB-00605AA
 EST WT: 1.54 LBS

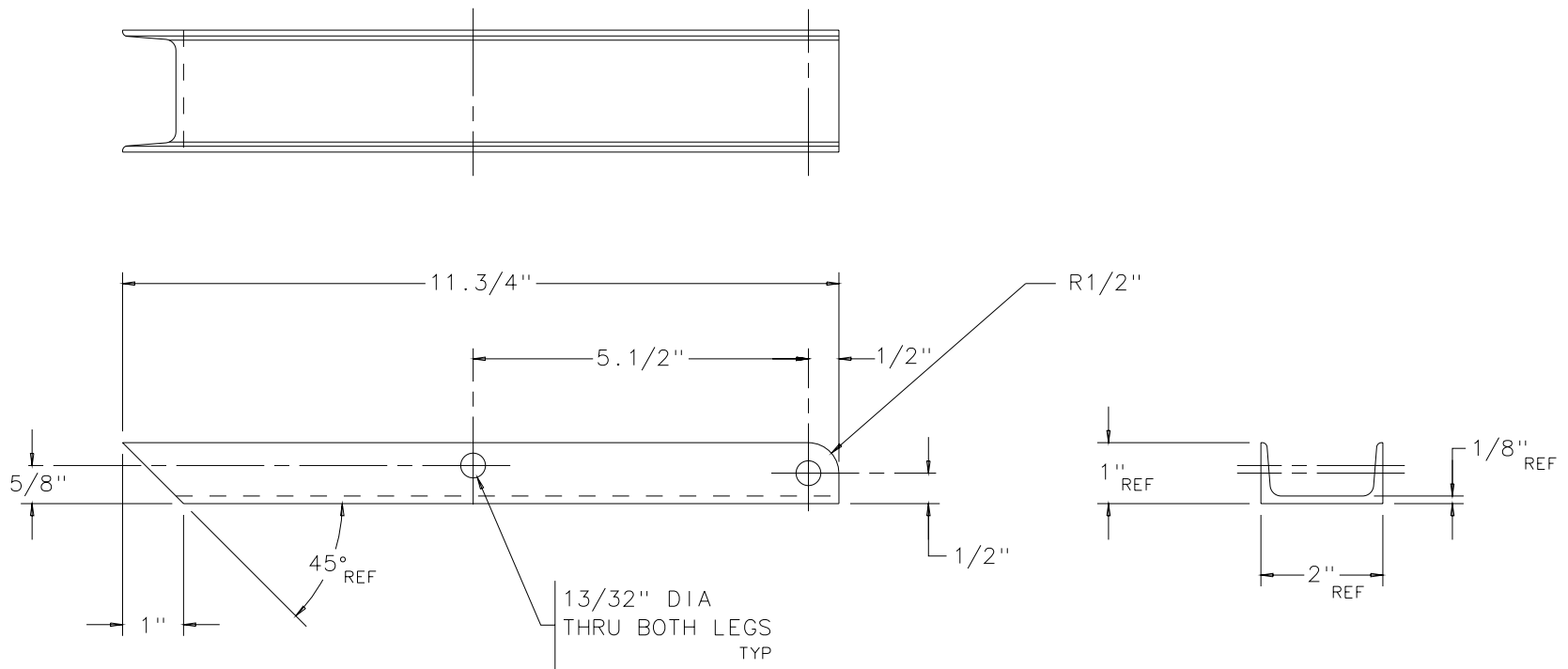
STD. TOLERANCES								DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:								CHECKED: KDB	
0 TO 6 IN +- 1/32								APPROVED:	
6 IN AND UP +- 1/16									
DECIMAL:	ANGULAR:								
1 PLACE +- 0.1	+ - 1 DEG								
2 PLACE +- 0.01									
3 PLACE +- 0.005									
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION									
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: LATCH BAR							SCALE: 1 = 2	DATE: 07 FEB 95	DWG. NO. 00-0977B
									PROJECT NO.: 90-4



11 GA
(0.1196)
REF

PART NUMBER: 00-0978
 MAT'L: SHEET, 11 GA (0.1196) HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 0.08 LBS

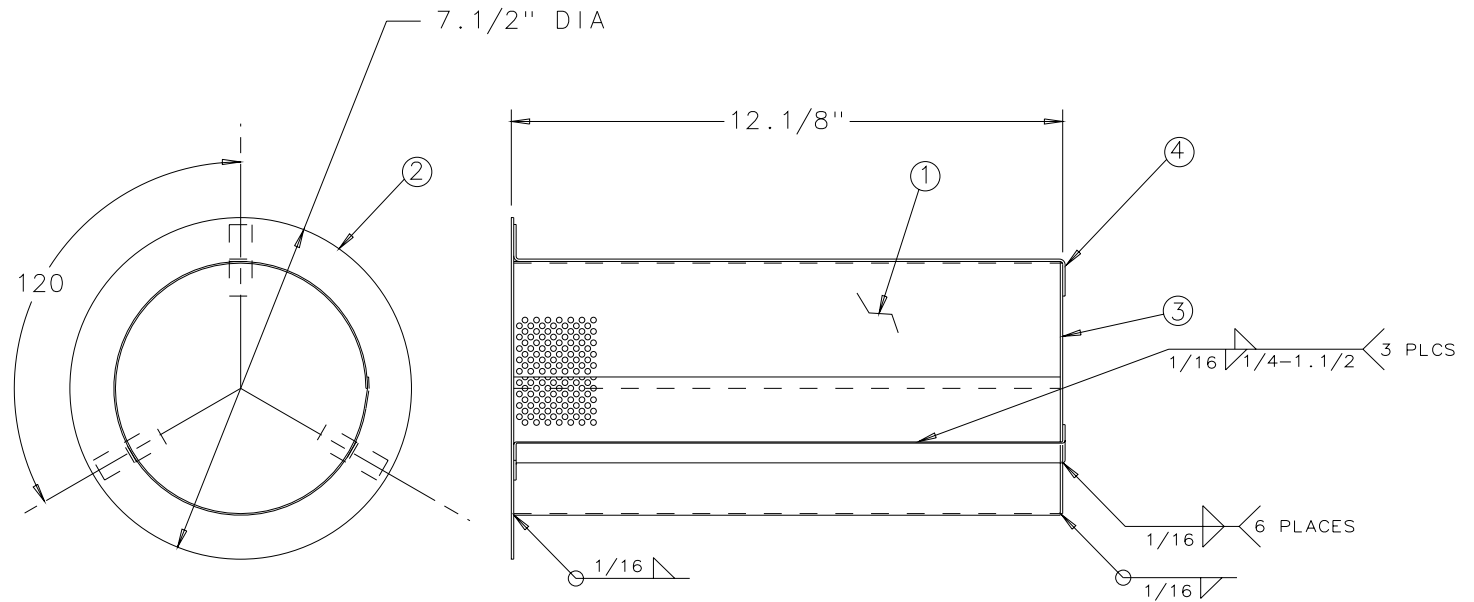
STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005						APPROVED:	
ANGULAR: + - 1 DEG		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
TITLE: SHEET			SCALE: FULL		DATE: 02 FEB 95		DWG. NO. 00-0978A



PART NUMBER: 00-0979
 MAT'L: CHANNEL, BAR 2" X 1" X 1/8"
 UNS K02600
 FFES SPEC NO: AJ-B0012AG
 EST WT: 1.46 LBS

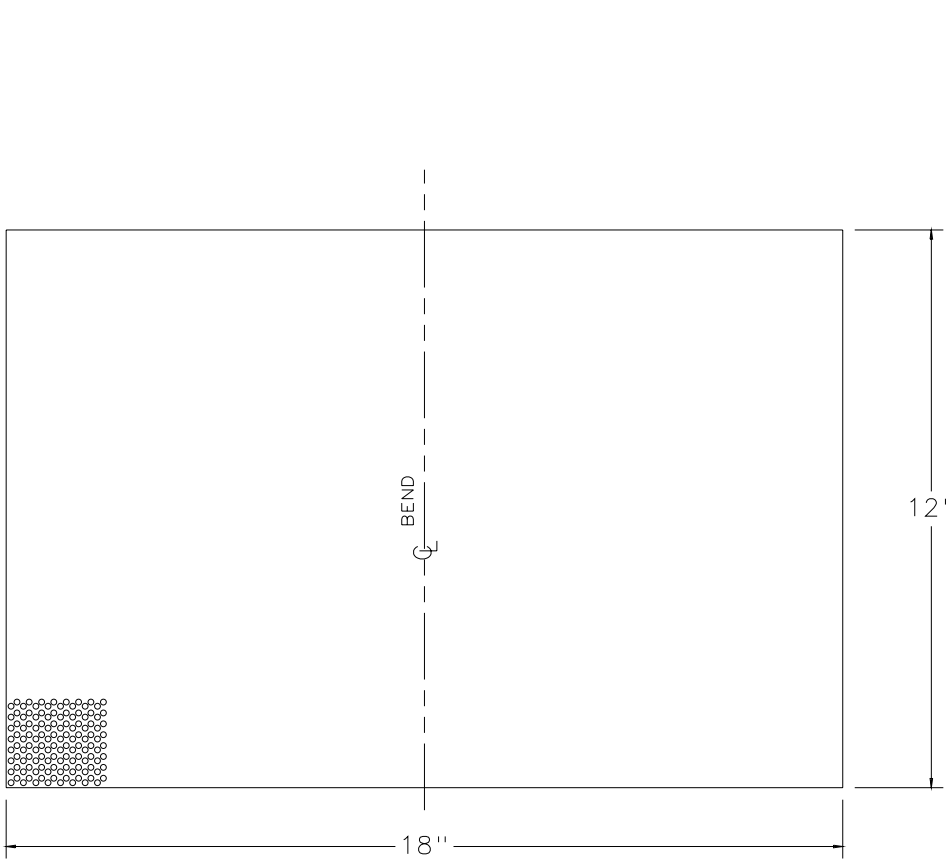
STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CHANNEL				SCALE: 1 = 2	DATE: 02 FEB 95	PROJECT NO.: 90-4 DWG NO. 00-0979B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0353	C	STRAINER WALL	1	1.50
2	00-0354	B	FLANGE, STRAINER	1	0.22
3	00-0355	A	BOTTOM, STRAINER	1	0.32
4	00-0356	B	STRIP	3	0.09

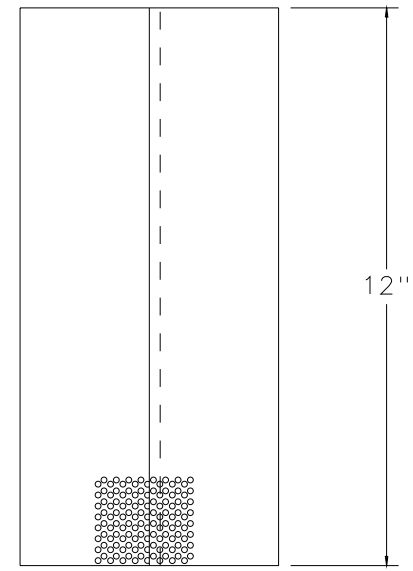
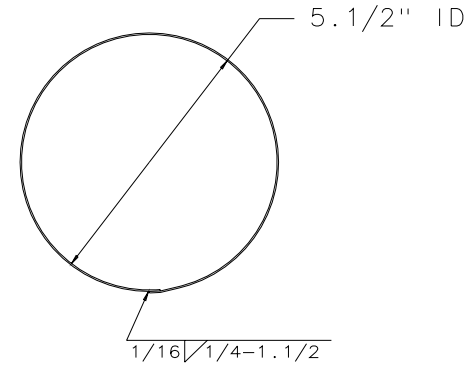


PART NUMBER: 23-0032
EST WT: 2.42 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 8 IN AND UP **1/32 6 IN AND UP **1/16						CHECKED: *		
DECIMAL: 1 PLACE ** 0.1 2 PLACE ** 0.01 3 PLACE ** 0.005	ANGULAR: ** 1 DEG	NO.	BY	DATE	REVISION	APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3	
TITLE: STRAINER, FILLER PORT						SCALE: 1/2	DATE: 5/15/89	DWG. NO.: 23-0032C



FLAT LAYOUT

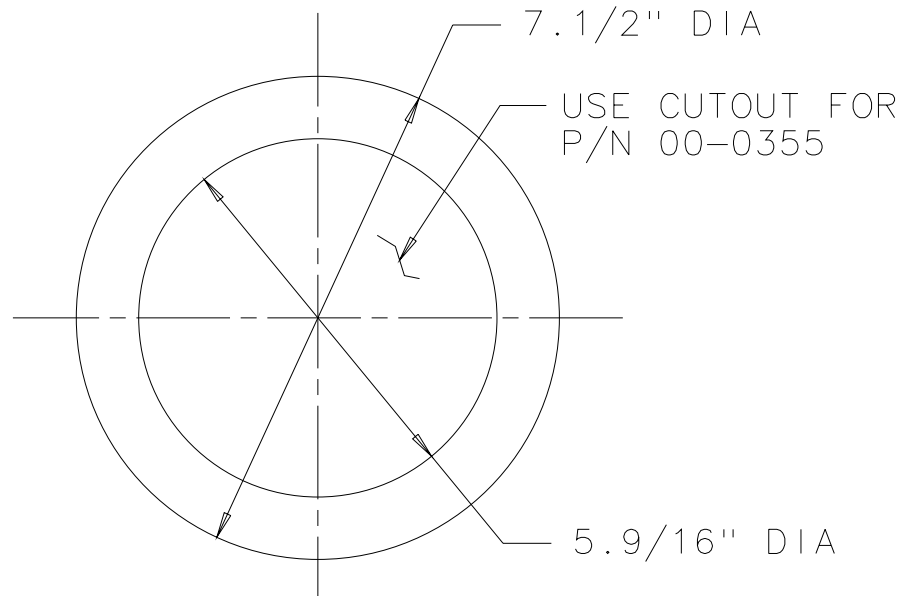
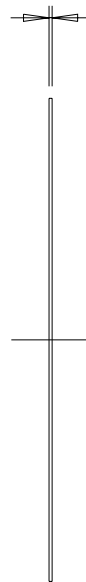


PART NO: 00-0353
 MATERIAL: SHEET, PERFORATED 20 GA 36 X 96
 1/8 DIA HOLES 40% OPEN
 UNS S30400
 FFES SPEC NO: AA-G2038BE
 EST WT: 1.50 LBS

NOTE: USE FIXTURE 18-0015

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN --1/32 6 IN AND UP --1/16 DECIMAL: 1 PLACE --0.1 2 PLACE --0.01 3 PLACE --0.005 ANGULAR: --1 DEG		DRAWN: KDB CHECKED: * APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 87-3		
TITLE: STRAINER WALL		SCALE: 1/2	DATE: 5/12/89	DWG. NO. 00-0353C

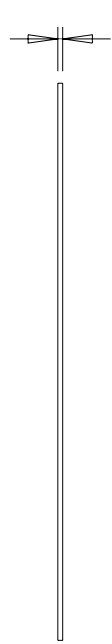
18 GA (.048)



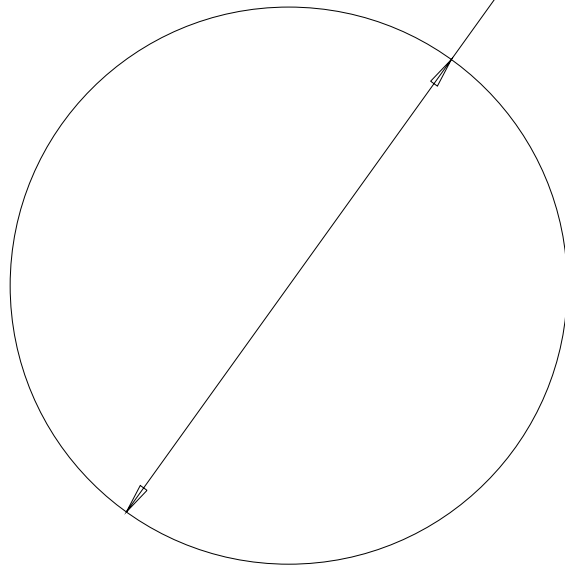
NOTE: USE TEMPLATE 18-0016

PART NUMBER: 00-0354
 MATERIAL: SHEET 18 GA (.048) STAINLESS
 UNS S30400
 FFES SPEC NO: AA-G1838AX
 EST WT: 0.27 LBS

STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: Ø TO 6 IN. ±1/32 6 IN AND UP ±1/16						CHECKED: *		
DECIMAL: ANGULAR:						APPROVED:		
1 PLACE ± 0.1 ± 1 DEG 2 PLACE ± 0.01 3 PLACE ± 0.005				NO.	BY	DATE	REVISION	
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 87-3
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: FLANGE, STRAINER						SCALE: 1/2	DATE: 5/15/89	DWG. NO. 00-0354B



18 GA (.048)

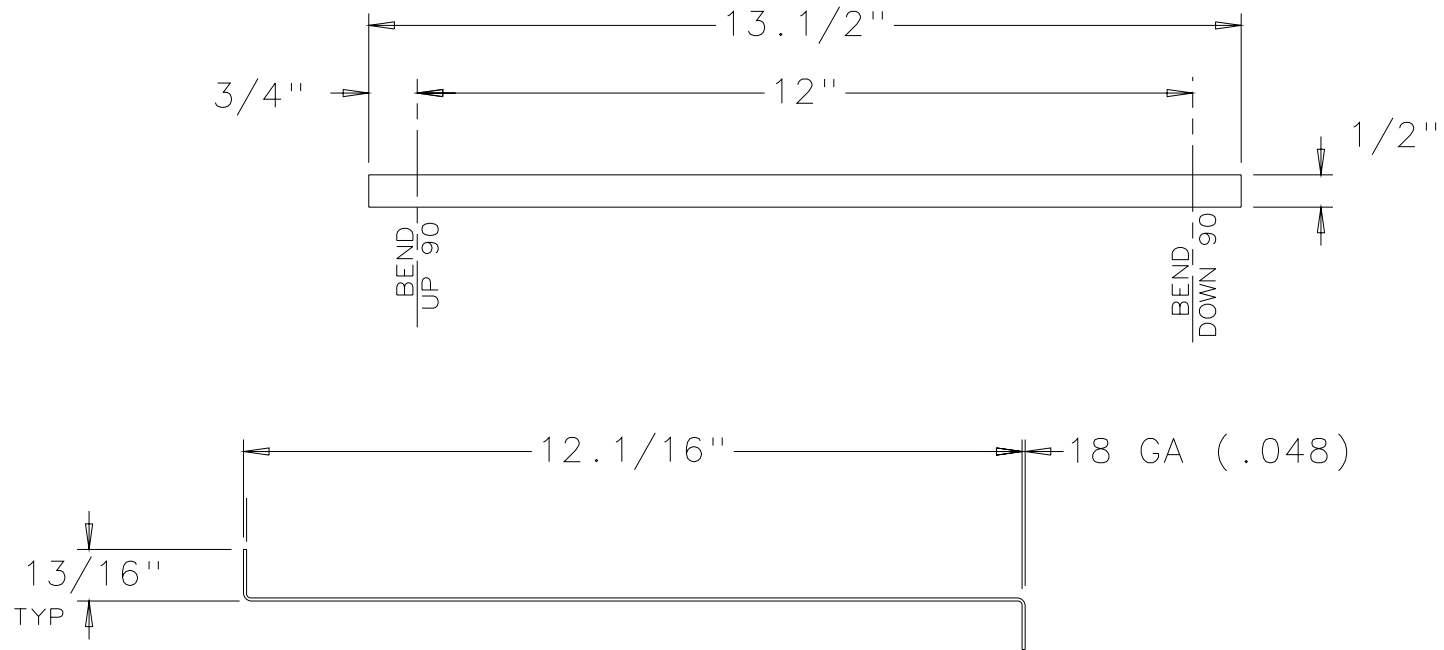


5.1/2" DIA

NOTE: USE TEMPLATE
18-0016

PART NUMBER: 00-0355
 MATERIAL: SHEET 18 GA (.048)
 STAINLESS
 UNS S30400
 FFES SPEC NO: AA-G1838AX
 EST WT: 0.32 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 87-3
TITLE: BOTTOM, STRAINER					SCALE: 1/2	DATE: 5/15/89	DWG. NO. 00-0355A



PART NUMBER: 00-0356
 MATERIAL: SHEET 18 GA (.048) STAINLESS
 UNS S30400
 FFES SPEC NO: AA-G1838AX
 EST WT: 0.09 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
						CHECKED: *		
								APPROVED:
NO. BY DATE REVISION						FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 87-3
TITLE: STRIP						SCALE: 1/2	DATE: 5/15/89	DWG. No. 00-0356B

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

March 2001



Design Packet 63D Pneumatic Controlled Emergency Light Mast

Pneumatic Controlled Mast

The military 6x6's are great vehicles for off-road fire work, but sometimes the lights get in the way. In the 1980's we designed a pneumatic controlled telescoping mast to raise and lower the standard rotating beacon emergency light. It has fifteen years of proven use in forest conditions allowing the operator to lower the light beneath the cab when operating in the woods. On the highway it can be raised above the cab in a matter of seconds with a flick of a switch.

An electric controlled switch on the dash activates an air valve on the pneumatic cylinder. The system uses a small amount of air from the air brake system storage tank. It has a maximum lift capacity of 100 pounds. The air in the cylinder is bled through a restrictor to lower the mast. Adjustments can be made to cushion the drop.

The drawing packet details the mechanical parts of the system. These will work with either the REC 2.5 ton or 5 ton 6x6 tank designs. The concept can be used with other vehicles as well. Note that items #6 and #7 shown in drawing #32-9800D may need to be changed in order to adapt to the location and port size of the truck's air storage tank. The electric system needed to activate the air valves is not shown. Photo #1 shows an example dash plate with the toggle switches and indicator light suggested to operate the system. These are wired to the pneumatic valves and emergency beacon as noted by the manufacturers of these parts.



Figure 2 - Dash Panel with Toggle Switches

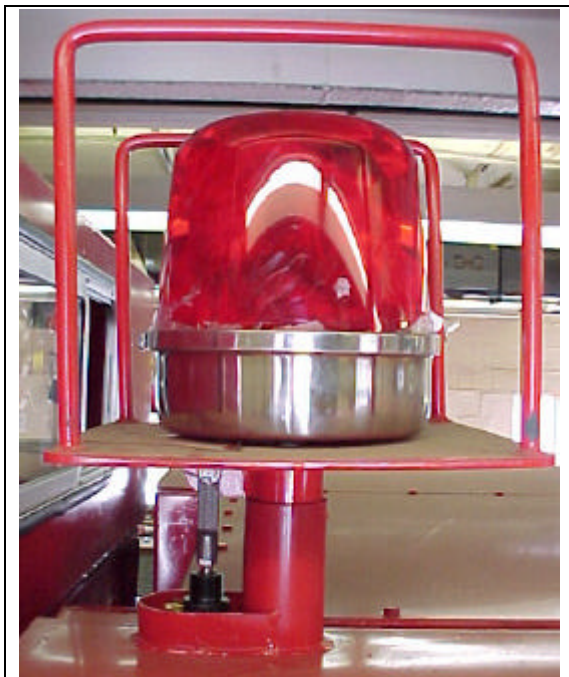


Figure 1 - Rotating Light on Mast

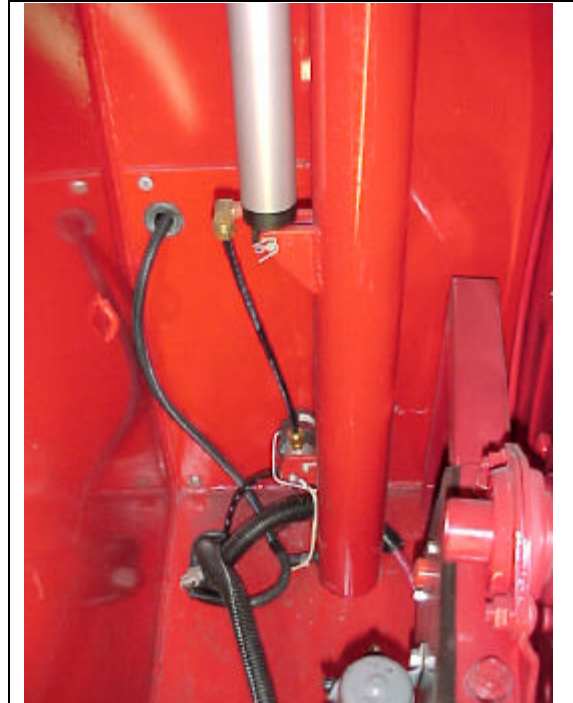
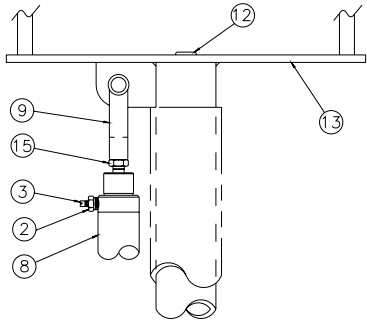


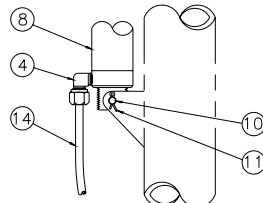
Figure 3 - Lower Light Mast with Cylinder Fitting Mounts

Drawing List

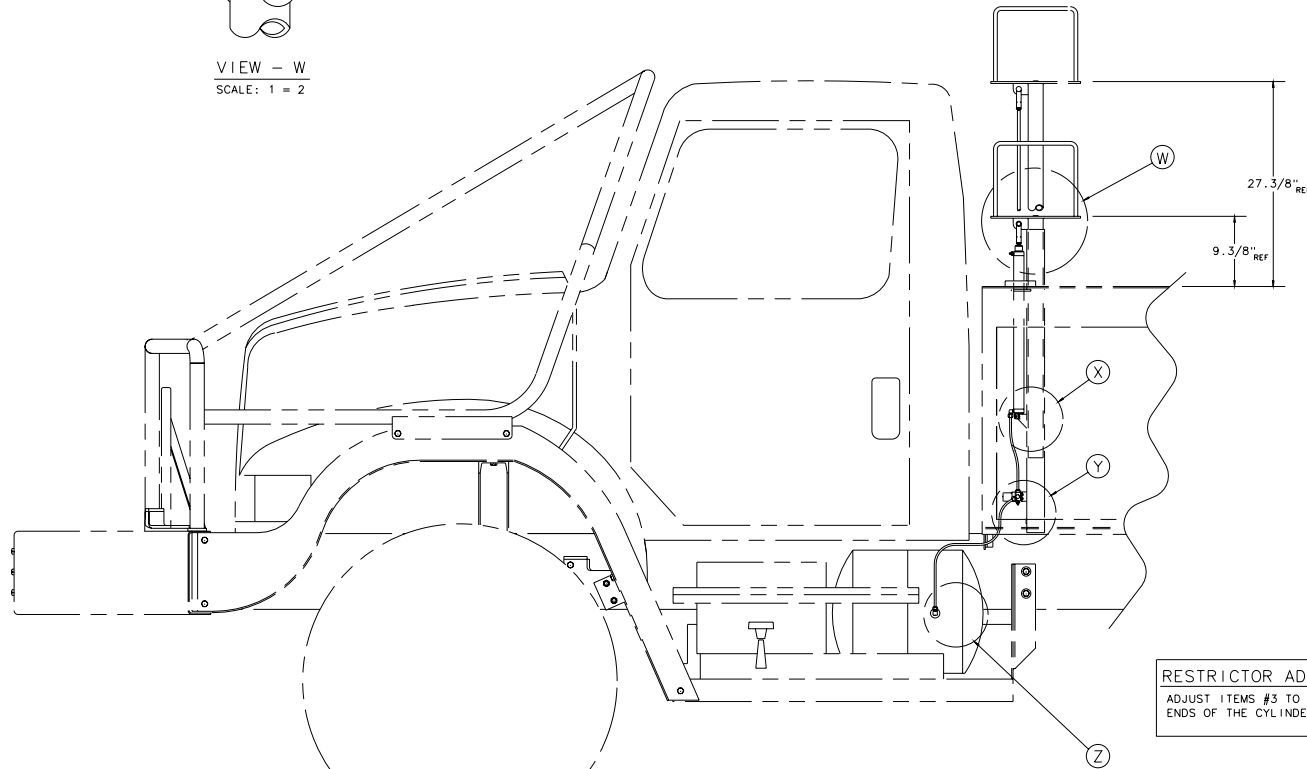
Drawing Number	Drawing Name
32-9800D	Light Mast, Telescoping A/C Navistar 4800
33-0000B	Yoke End, Female 3/8-24 UN Right Hand w/Pin
32-0001B	Cylinder, Air 1-1/8" Bore 18" Stroke
32-0004B	Valve, 3-Way Air 1/8" NPT 12 VDC
32-0008B	Plug, Restrictor 10-32 UN Nylon
32-0010B	Bushing, Adapter 1/8" NPT M x 10-32 UN F Brass
32-0015B	Tube, Nylon 1/4" Black
32-0017B	Elbow, Male 90 Deg 1/4 Tube x 1/8 NPT Compression
32-0018B	Elbow, Male 90 Deg 1/4 Tube x 1/4 NPT Compression
28-8004C	Light Mast W/C
00-0028A	Bar, Air Valve Mtg
00-0029A	Pivot, Air Cyl
00-0030A	Guide, Air Cyl
00-0032B	Pivot, Air Cylinder
00-0033B	Light Mast Head
00-0705B	Brush Bar
00-0706A	Tube
00-0830B	Light Mast Tube S/W
00-0831A	Mast Tube



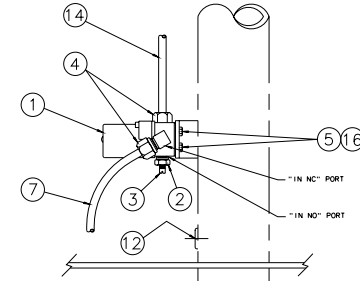
VIEW - W
SCALE: 1 = 2



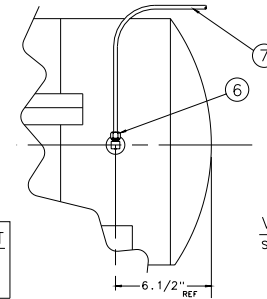
VIEW - X
SCALE: 1 = 2



RESTRICTOR ADJUSTMENT
ADJUST ITEMS #3 TO CUSHION THE ENDS OF THE CYLINDER STROKE



VIEW - Y
SCALE: 1 = 2

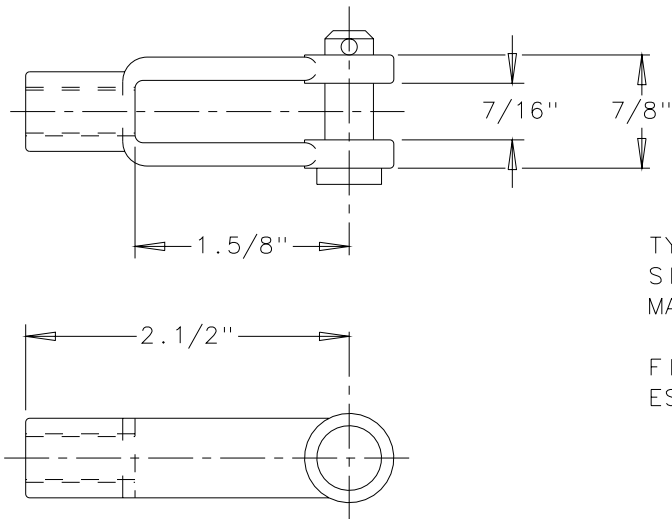


VIEW - Z
SCALE: 1 = 4

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	32-0004	B	VALVE, 3-WAY AIR 1/8" NPT 32 USC	1	0.27
2	32-0010	B	BUSHING, ADAPTER 1/8" NPT M X 10-32UN F BRASS	2	0.01
3	32-0008	B	PLUG, RESTRICTOR 10-32UN NYLON	2	0.01
4	32-0017	B	ELBOW, MALE 90 DEG 1/4 TUBE X 1/8 NPT COMPRESSION	3	0.06
5	TS-01NF03		SCREW, MACHINE 8-32UN X 3/8" LONG HEX HD, STAINLESS STEEL	2	0.01
6	32-0018	B	ELBOW, MALE 90 DEG 1/4 TUBE X 1/4 NPT COMPRESSION	1	0.09
7	32-0015	B	TUBE, NYLON 1/4 BLACK	30"	0.05
8	32-0001	B	CYLINDER, AIR 1 1/8" BORE 18" STROKE	1	2.63
9	33-0000	B	YOKE END, FEMALE 5/8-24 UN RIGHT HAND W/ P.I.N	1	0.20
10	R16-C074AC		PIN, CLEVIS 1/4" DIA X 1 1/4" LONG 18-8 STAINLESS	1	0.02
11	R06-B04BAC		PIN, COTTER 3/32" DIA X 1 1/2" LONG 18-8 STAINLESS	1	0.01
12	33-0001	B	GROMMET 5/16 ID SPOOL TYPE RUBBER	2	0.01
13	28-8004	C	LIGHT MAST W/C	10"	20.5
14	32-0015	B	TUBE, NYLON 1/4 BLACK	1	0.02
15	TS-06HPB		NUT, JAM 3/8"-24UN HEX HD GRADE 5 PLATED	1	0.02
16	WS-01BC		WASHER, LOCK #8 SPRING TYPE PLATED	2	

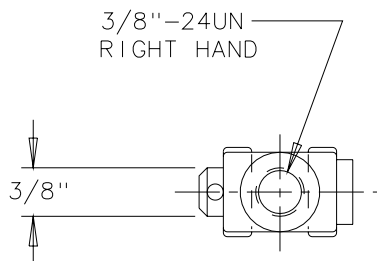
EFFECTIVE MODELS: 420-91N & 420-94N

STD. TOLERANCES						DRAWN:	R. GREENLAW	
FRACTIONAL:						CHECKED:	KOB	
DECIMAL:						APPROVED:		
ANGULAR:						NO.	BY	
DATE						DATE		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							MICHIGAN DNR FOREST MANAGEMENT DIVISION	
EST WT: 24.0 LBS							PROJECT NO.: 90-4	
TITLE: LIGHT MAST, TELESCOPING A/C							NO. 32-9800D	
SCALE: 1 = 8							DATE: 23 APR 96	



YOKE END

TYPE: RIGHT HAND FEMALE THREADED-STEM
 SIZE: 3/8" NOM
 MATERIAL: YOKE: FORGED STEEL
 PIN: STEEL
 FINISH: PLAIN
 EST WT: 0.20 LBS



APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

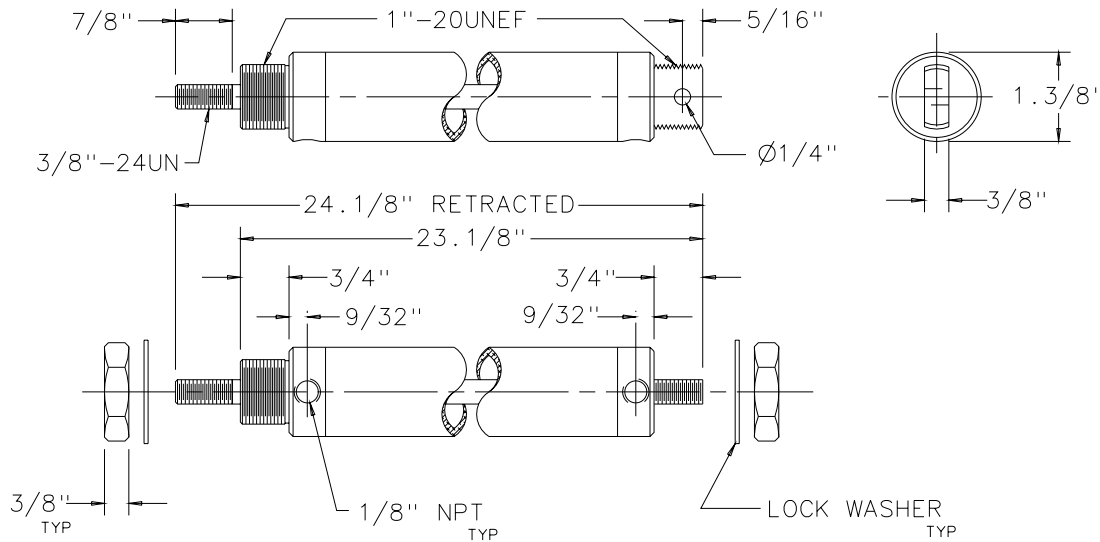
McMASTER-CARR SUPPLY CO
 PO BOX 4355
 CHICAGO, IL 60680-4355

6071K14

STD. TOLERANCES								DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16								CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						APPROVED:	
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 90-4
PART NUMBER: 33-0000		TITLE: YOKE END, FEMALE			3/8-24 UN RIGHT HAND W/ PIN		SCALE: FULL	DATE: 04 APR 96	DWG. NO. 33-0000B

CYLINDER, AIR

TYPE: DOUBLE ACTING
 SIZE: BORE: 1.1/8"
 STROKE: 18"
 ROD DIA: 3/8"
 PORTS: 1/8 NPT FEMALE
 OPERATING PARAMETERS:
 WORKING PRESSURE: 250 PSI MAX
 TEMPERATURE RANGE: -30 DEG F to +230 DEG F
 MATERIAL: TUBE: ALUMINUM ALLOY W/HARD COAT FINISH
 PISTON ROD: STAINLESS STEEL
 PISTON: BRASS
 SEALS: BUNA N
 CUSHIONS: BUNA N
 HEADS: STEEL, BLACK OXIDE FINISH
 EST WT: 2.82 LBS



APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

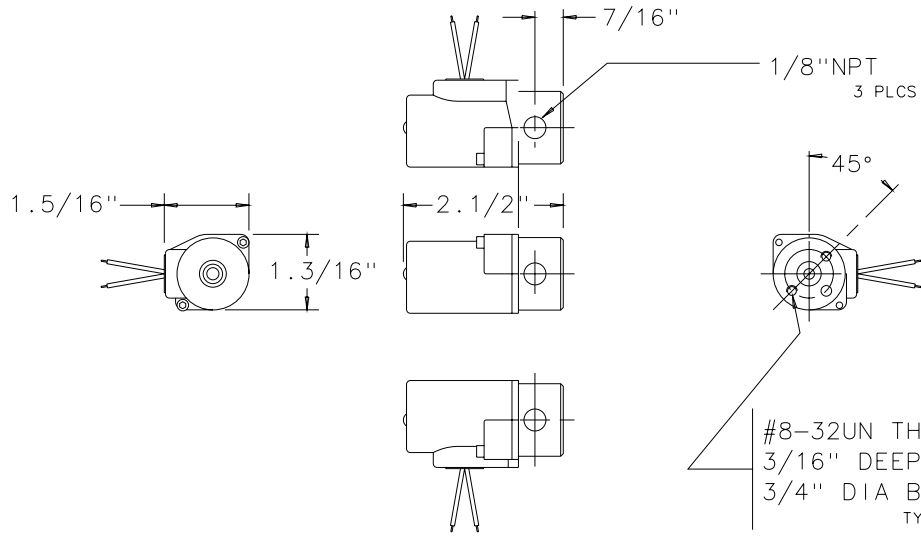
CLIPPARD INSTRUMENT LABORATORY, INC
 7390 COLERAIN ROAD
 CINCINNATI, OH 45239

18D-18

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION		
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB				
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:				
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4	
PART NUMBER: 32-0001		TITLE: CYLINDER, AIR		1.1/8" BORE 18" STROKE		SCALE: 1 = 2	DATE: 09 APR 96	DWG. NO. 32-0001B

VALVE, AIR

TYPE: IN-LINE
 ACTUATION: SOLENOID
 SPEED: 300 CYLCES/MINUTE MAX
 PORTING: 3 WAY
 SIZE: 1/8 NPT FEMALE
 OPERATING CONDITIONS:
 WORKING PRESSURE: 100 PSI MAX
 TEMPERATURE: -30 DEG F to +130 DEG F
 OPERATING SPEEDS: TO 300 CPM
 FLOW: PSIG X 0.06 CFM MAX
 CONTROL:
 VOLTAGE: 12 VDC
 CURRENT: 0.55 AMP
 DUTY: CONTINUOUS
 MATERIALS: ALUMINUM, BUNA-N, STEEL & POLYESTER
 EST WT: 0.27 LBS



APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

HUMPHREY PRODUCTS
 PO BOX 2008
 KILGORE at SPRINKLE ROAD
 KALAMAZOO, MI 49003

31E1 12VDC

STD. TOLERANCES					
FRACTIONAL:					
0 TO 6 IN + - 1/32					
6 IN AND UP + - 1/16					
DECIMAL:	ANGULAR:				
1 PLACE + - 0.1	+ - 1 DEG				
2 PLACE + - 0.01					
3 PLACE + - 0.005					
		NO.	BY	DATE	REVISION

DRAWN:
 R. GREENLAW
 CHECKED:
 KDB
 APPROVED:

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION

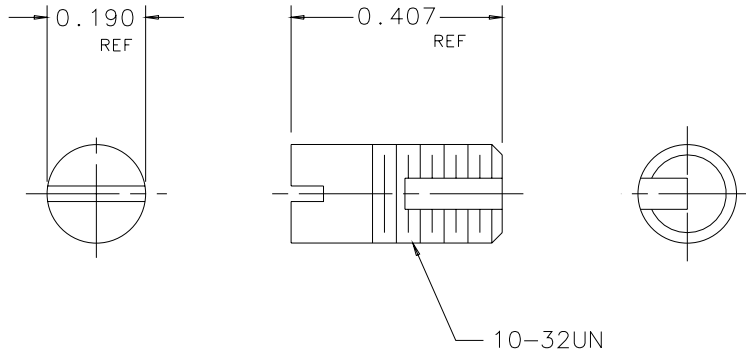
FOREST FIRE EXPERIMENT STATION

P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 90-4

PART NUMBER: 32-0004

TITLE: VALVE, 3-WAY AIR	SCALE: 1/8" NPT 12 VDC 1 = 2	DATE: 12 APR 96	DWG. NO. 32-0004B
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PLUG, RESTRICTOR

TYPE: SPLIT METERING SCREW
 SIZE: 10-32UN
 MATERIAL: NYLON
 EST WT: 0.01 LBS

REF

APPROVED MANUFACTURERS

PART NO

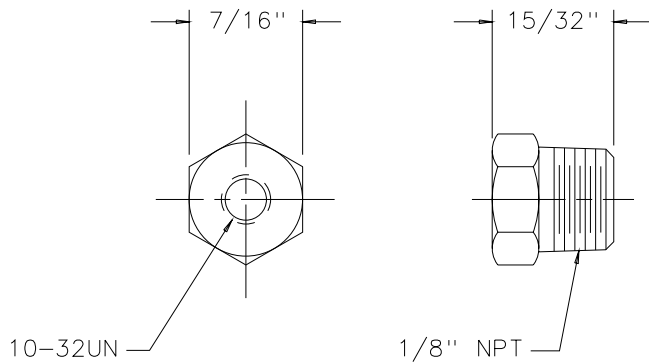
APPROVED MANUFACTURERS

PART NO

HUMPHREY PRODUCTS
 PO BOX 2008
 KILGORE at SPRINKLE ROAD
 KALAMAZOO, MI 49003

97-21

STD. TOLERANCES				DRAWN: R. GREENLAW				MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB					
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				ANGULAR: + - 1 DEG					
				NO. BY DATE REVISION				APPROVED: FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 90-4	
PART NUMBER: 32-0008			TITLE: PLUG, RESTRICTOR			10-32UN NYLON	SCALE: NONE	DATE: 05 APR 96	DWG. NO. 32-0008B



BUSHING

TYPE: ADAPTER BUSHING
 SIZE: 1/8" NPT M X 10-32UN F
 MATERIAL: BRASS
 EST WT: 0.01 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

PART NO

HUMPHREY PRODUCTS
 PO BOX 2008
 KILGORE at SPRINKLE ROAD
 KALAMAZOO, MI 49003

RBF

STD. TOLERANCES					
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16					
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG				
		NO.	BY	DATE	REVISION

DRAWN:
R. GREENLAW
 CHECKED:
KDB
 APPROVED:

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION

FOREST FIRE EXPERIMENT STATION

P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 90-4

PART NUMBER: 32-0010

TITLE: BUSHING, ADAPTER 1/8" NPT M X 10-32UN F
 BRASS

SCALE:
NONE

DATE:
05 APR 96

DWG. No. 32-0010B

TUBE, NYLON

TYPE: AIR BRAKE (SAE J844 TYPE B)
 SIZE AND CHARACTERISTICS:

ID: 0.170
 OD: 1/4
 BEND RADIUS: 2" MIN

OPERATING PARAMETERS:

PRESSURE: 150 PSI WORKING
 1200 PSI BURST MIN
 TEMPERATURE: -40 DEG F TO 200 DEG F
 FLUIDS: AIR, WATER, FUEL

CONSTRUCTION:

TUBE: TYPE 11 NYLON (BLACK)

LABELING: LABEL PER FMVSS-106 BRAKE HOSE
 EST WT: 0.02 LB/FT

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

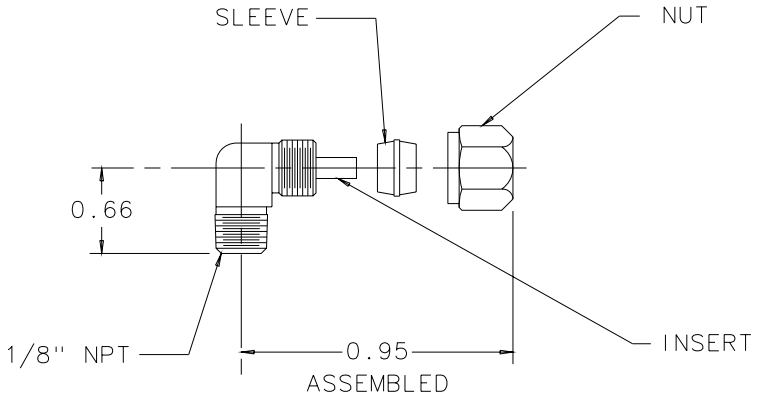
PART NO

PARKER-HANNIFIN CORP
 HOSE PRODUCTS DIVISION
 30240 LAKELAND BLVD
 WICKLIFFE, OHIO 44092

PFT-4A BLACK

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
PART NUMBER: 32-0015						TITLE: TUBE, NYLON 1/4" BLACK SCALE: NONE DATE: 04 APR 96	DWG. NO. 32-0015B

ELBOW, MALE 90 DEG



TYPE: COMPRESSION FITTING, 90 DEG ELBOW
 SIZE: TUBE: 1/4 OD
 THREAD: 1/8 NPT
 FLOW DIA: 0.137"
 OPERATING CONDITIONS:
 WORKING PRESSURE: 150 PSI MAX
 TEMPERATURE: -40 DEG F TO +200 DEG F
 MATERIAL: BODY, SLEEVE, & NUT: BRASS
 INSERT: STAINLESS STEEL
 EST WT: 0.06 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

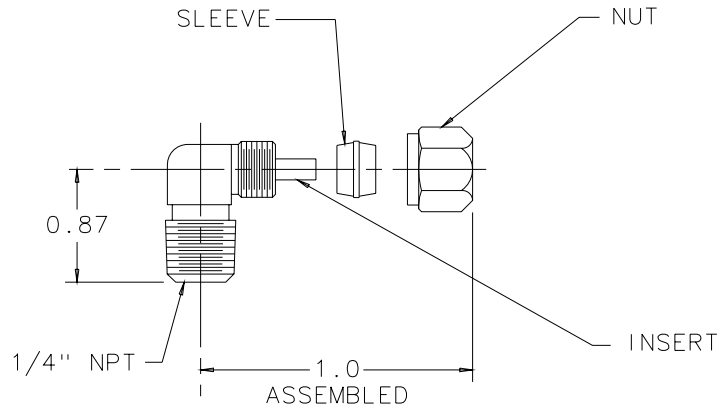
PART NO

PARKER-HANNIFIN CORP
 BRASS PRODUCTS DIVISION
 300 PARKER DRIVE
 OTSEGO, MI 49078

269NTA-4-2

STD. TOLERANCES FRACTIONAL : 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL : 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR : + - 1 DEG		NO. BY DATE REVISION	DRAWN: R. GREENLAW CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 90-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		SCALE: FULL DATE: 08 APR 96		
PART NUMBER: 32-0017		TITLE: ELBOW, MALE 90 DEG 1/4 TUBE X 1/8 NPT COMPRESSION		DWG. No. 32-0017B

ELBOW, MALE 90 DEG



TYPE: COMPRESSION FITTING, 90 DEG ELBOW
 SIZE: TUBE: 1/4 OD
 THREAD: 1/4 NPT
 FLOW DIA: 0.137"
 OPERATING CONDITIONS:
 WORKING PRESSURE: 150 PSI MAX
 TEMPERATURE: -40 DEG F TO +200 DEG F
 MATERIAL: BODY, SLEEVE, & NUT: BRASS
 INSERT: STAINLESS STEEL
 EST WT: 0.09 LBS

APPROVED MANUFACTURERS

PART NO

APPROVED MANUFACTURERS

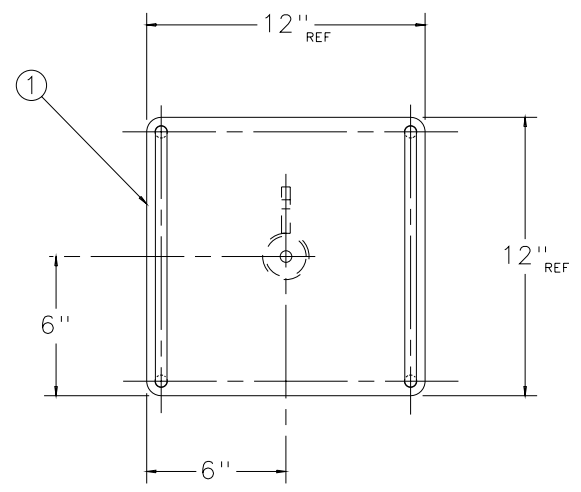
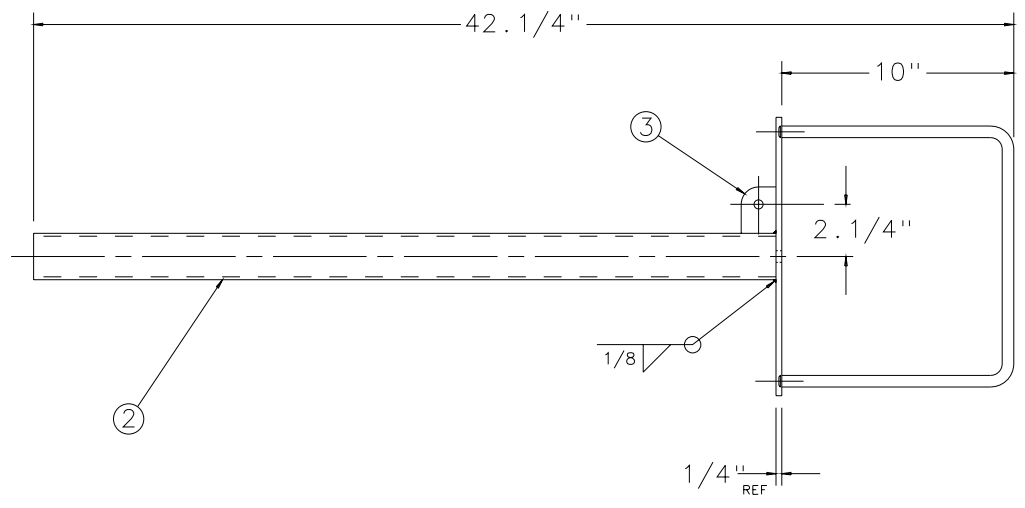
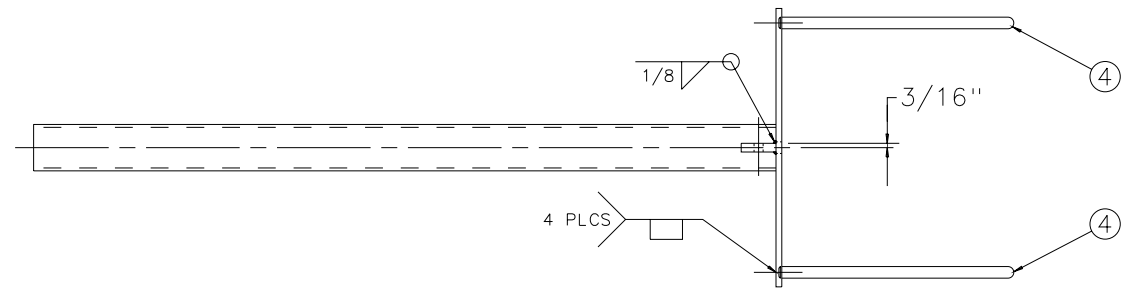
PART NO

PARKER-HANNIFIN CORP
 BRASS PRODUCTS DIVISION
 300 PARKER DRIVE
 OTSEGO, MI 49078

269NTA-4-4

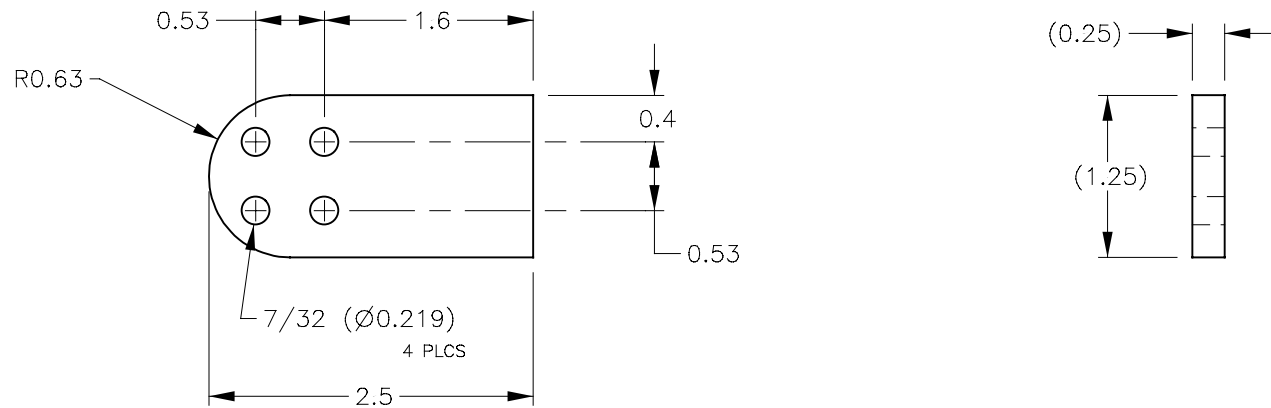
STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG	NO.	BY	DATE	REVISION	APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 90-4
PART NUMBER: 32-0018		TITLE: ELBOW, MALE 90 DEG		1/4 TUBE X 1/4 NPT COMPRESSION	SCALE: FULL	DATE: 08 APR 96	DWG. NO.: 32-0018B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0033	B	LIGHT MAST HEAD	1	9.97
2	00-0706	A	TUBE	1	6.67
3	00-0032	B	PIVOT, AIR CYLINDER	1	0.29
4	00-0705	B	BRUSH BAR	2	1.58



PART NUMBER: 28-8004
EST WT: 20.5 LBS

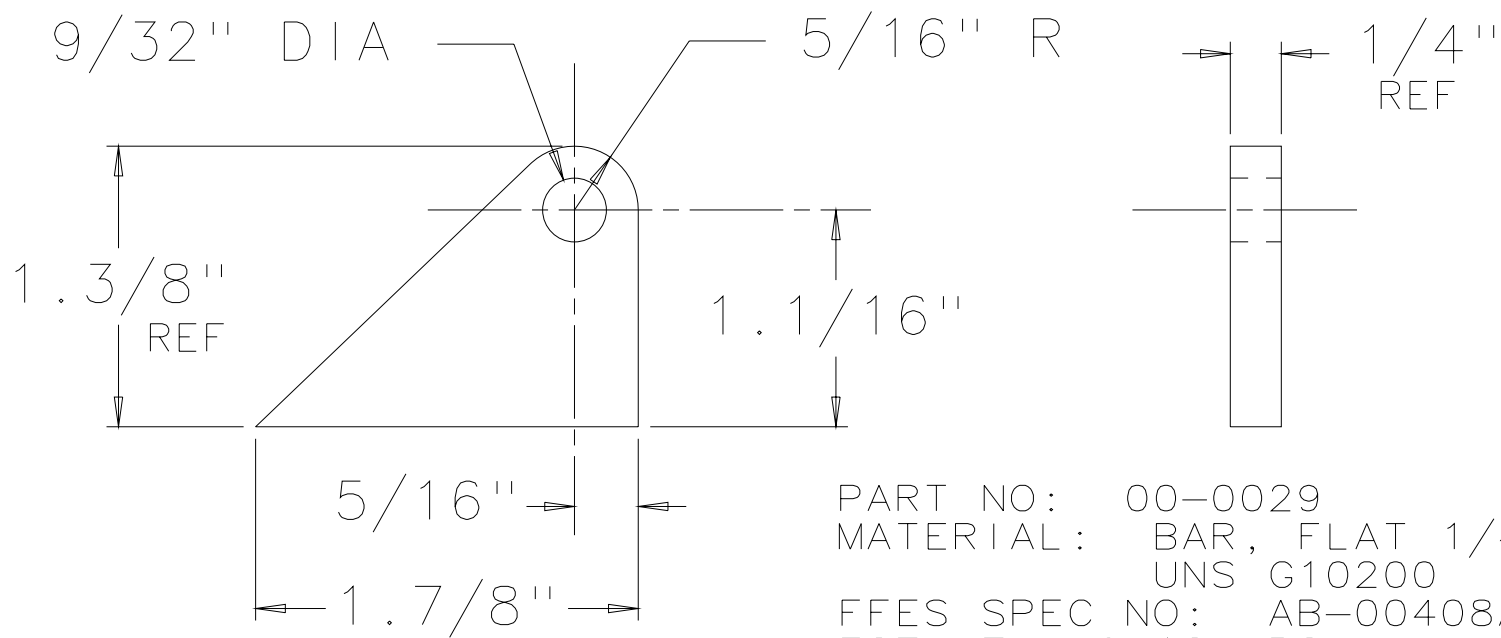
STD. TOLERANCES: FRACTIONAL: 0 TO 0.16 ± 1/32" 6 IN AND UP ± 1/16"		DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION	PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 28-8004C
TITLE: LIGHT MAST W/C			SCALE: 1 = 4	DATE: 09 JUN 93



PART NO: 00-0028
 MATERIAL: BAR, FLAT 1/4 X 1 1/4 HR
 UNS G10200
 FFES SPEC NO: AB-0405AA
 EST WT: 0.20 LBS

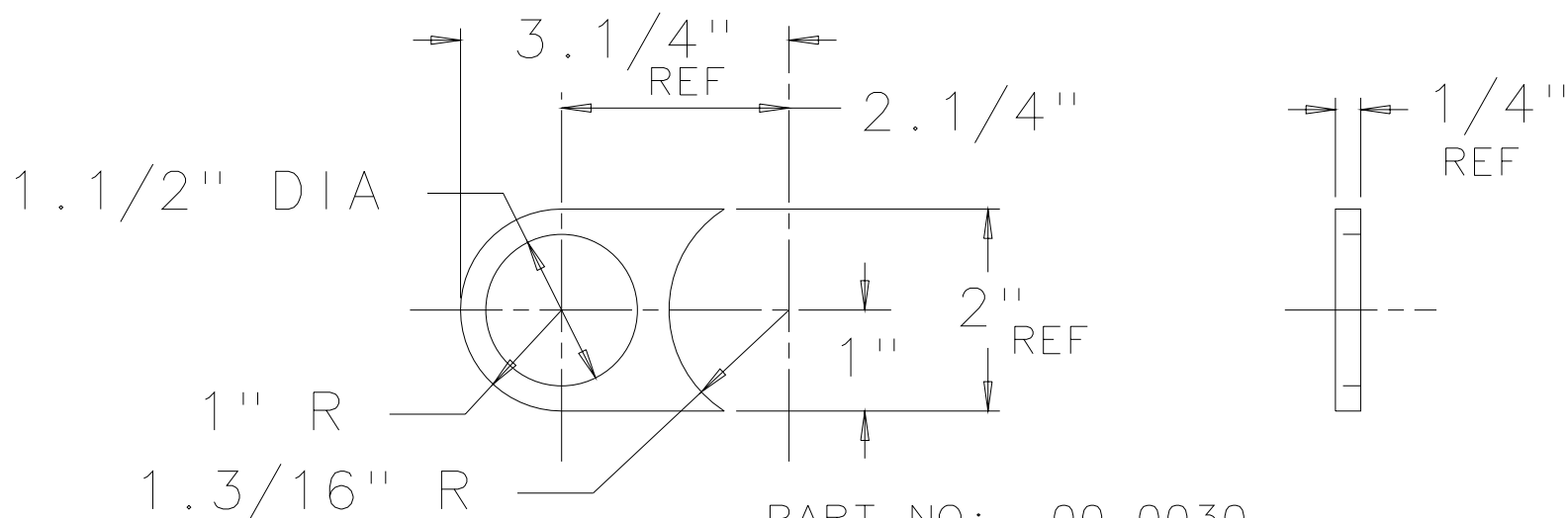
STD. TOL.								DRAWN:
DECIMAL:								CHECKED:
1 PLACE + - 0.06								APPROVED:
2 PLACE + - 0.03								
3 PLACE + - 0.005								
ANGULAR:	1	KDB						
+ - 1 DEG.	NO.	BY	DATE					
DATE:	PART RE-DESIGNED							
03/02/00	REVISION							
SCALE:	FOREST FIRE EXPERIMENT STATION							
FULL	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
PROJECT NO.:	TITLE: BAR, AIR VALVE MTG							DWG. NO. 00-0028B
87-3								





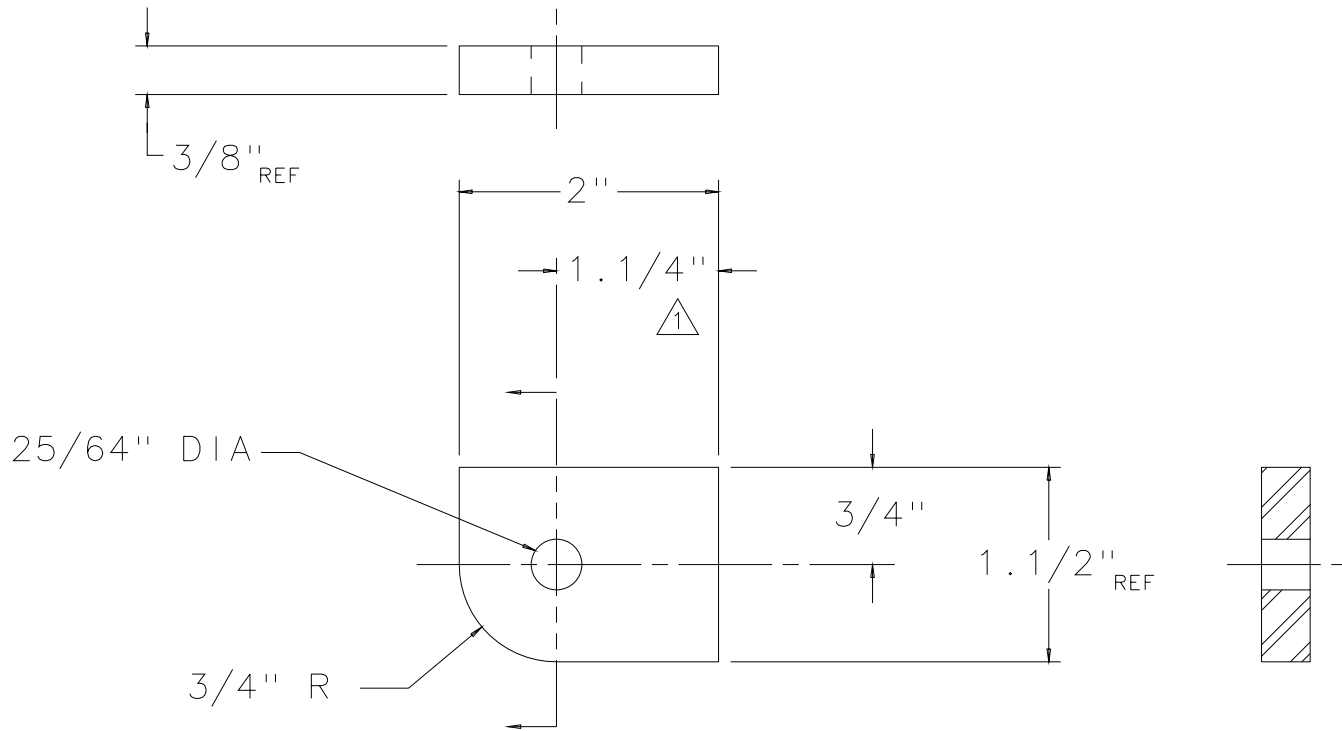
PART NO: 00-0029
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 0.10 LBS

STD. TOLERANCES						DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3
TITLE: PIVOT, AIR CYL						SCALE: FULL	DATE: 12/28/88	DWG. NO. 00-0029A



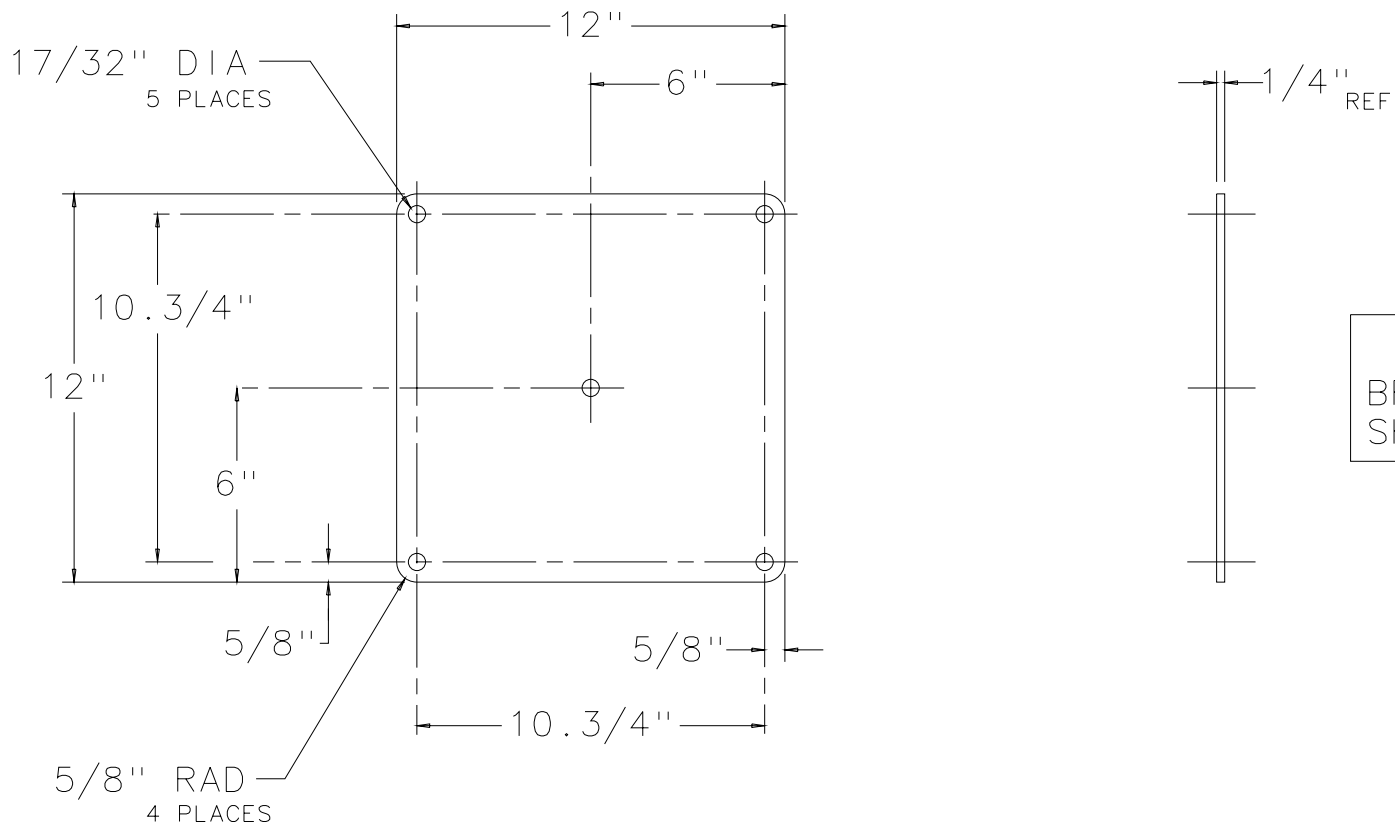
PART NO: 00-0030
 MATERIAL: BAR, FLAT 1/4 X 2 HR
 UNS G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 0.16 LBS

STD. TOLERANCES				DRAWN: KDB		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: *		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION						DWG. NO. 00-0030A
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: GUIDE, AIR CYL				SCALE: 1/2	DATE: 12/28/88	



PART NUMBER: 00-0032
 MAT'L: BAR FLAT 3/8" X 1 1/2" HR
 UNS G10200
 FFES SPEC NO: AB-00606AA
 EST WT: 0.29 LBS

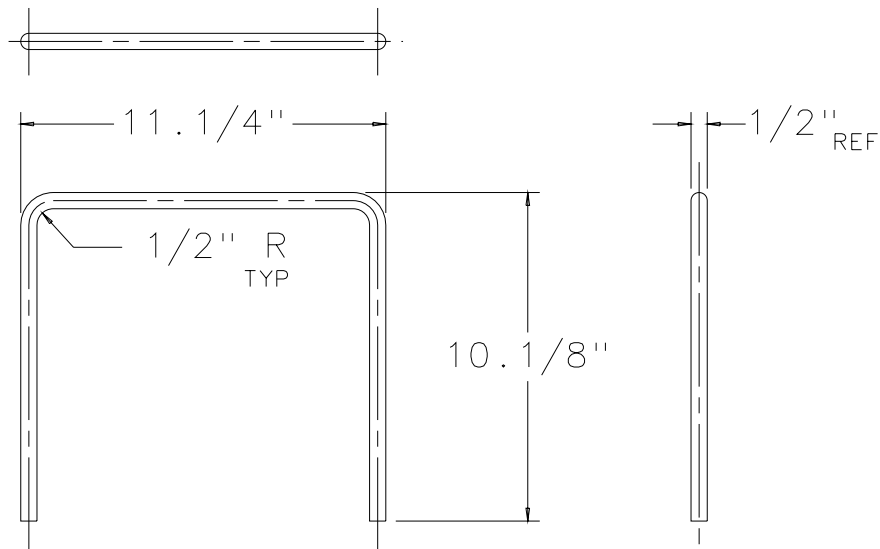
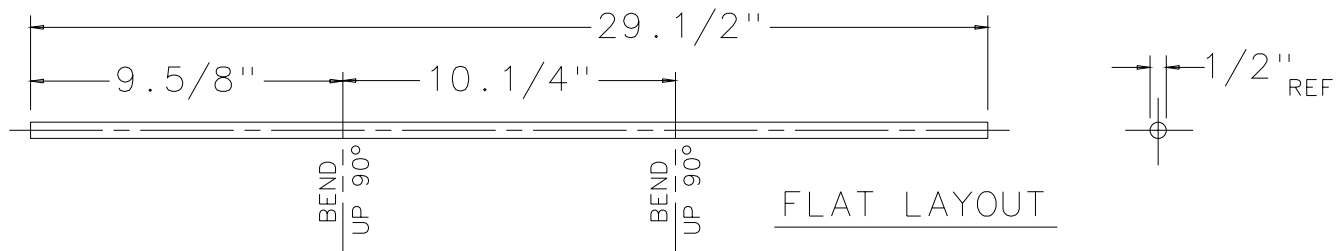
STD. TOLERANCES						DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				ANGULAR: + - 1 DEG		APPROVED:			
1 REG 4/93				1 1/4" DIM WAS 1.5/16", REDRAWN FROM "A"- SIZE					
NO.				BY		DATE		REVISION	
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 87-3	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: PIVOT, AIR CYLINDER						SCALE: FULL		DATE: 21 APR. 93	
								DWG. NO. 00-0032B	



NOTE
BREAK ALL
SHARP EDGES.

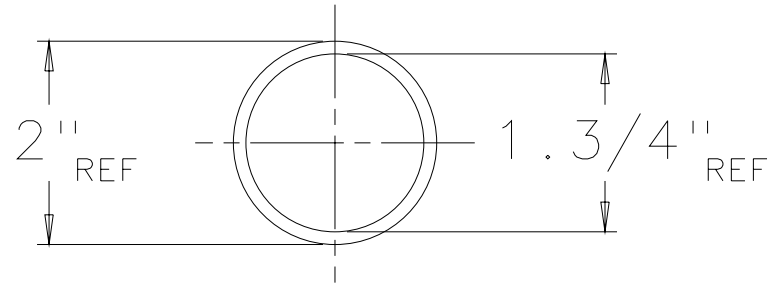
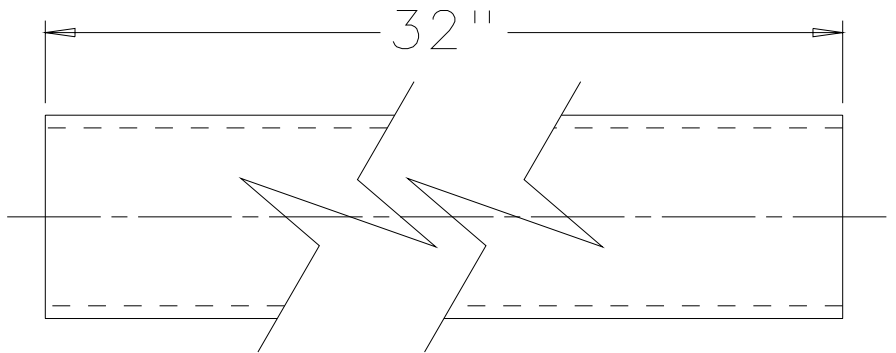
PART NUMBER: 00-0033
 MAT'L: PLATE 1/4"
 UNS G10150
 FFES SPEC NO: AA-00448BC
 EST WT: 9.97 LBS

STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
		1 LLP 7/97		CENTER HOLE WAS 1/2"		
		NO.	BY	DATE	REVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: LIGHT MAST HEAD				SCALE: 1" = 4"	DATE: 22 APR. 93	PROJECT NO.: 87-3 DWC NO.: 00-0033B



PART NUMBER: 00-0705
 MAT'L: BAR, ROUND 1/2" DIA HR
 UNS G10200
 FFES SPEC NO: AC-00050AA
 EST WT: 1.58 LBS

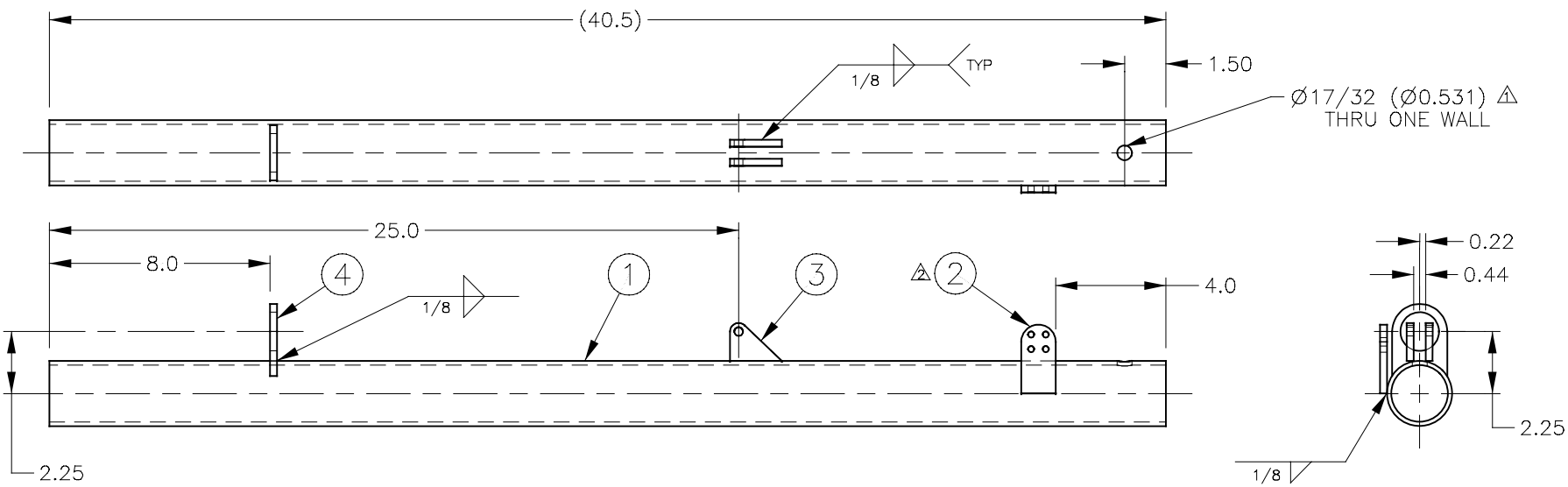
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FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BRUSH BAR				SCALE: 1" = 4'	DATE: 30 APR 93	PROJECT NO.: 89-1 DWG. NO.: 00-0705B




PART NUMBER: 00-0706
 MAT'L: TUBE, ROUND 2" OD X 1/8" WALL DOM
 UNS G10260
 FFES SPEC NO: AD-20004AM
 EST WT: 6.67 LBS

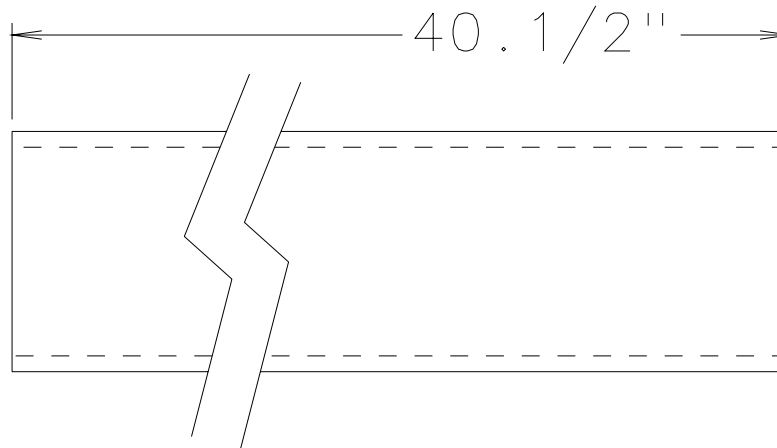
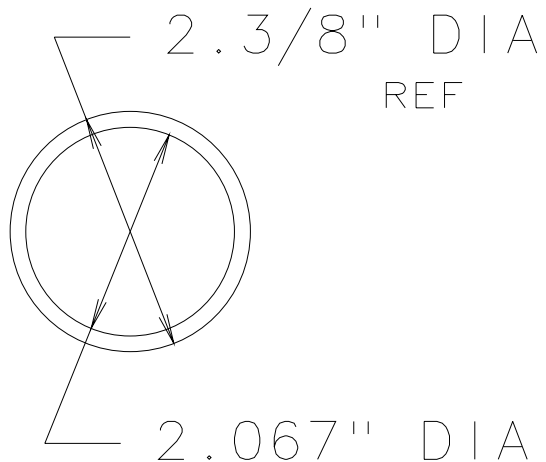
STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		PROJECT NO.: 87-3
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 00-0706A
TITLE: TUBE					SCALE: 1 = 2	DATE: 21 APR. 93	

COMPONENT LIST				
ITEM	PART NO	DWG	DESCRIPTION	QTY
1	00-0831	A	MAST TUBE	1
2	00-0028	A	BAR, AIR VALVE MTG	1
3	00-0029	A	PIVOT, AIR CYLINDER	2
4	00-0030	A	GUIDE, AIR CYLINDER	1



PART NO: 00-0830
EST WT: 13.2 LBS

STD. TOL.						DRAWN: DGP
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005	2	DGP	3/00	PART REVISED AND RE-POSITIONED WAS Ø1/2"		CHECKED:
ANGULAR: + - 1 DEG.	1	LLP	7/97	REVISION		APPROVED:
DATE: 03-02-00	FOREST FIRE EXPERIMENT STATION					 FOREST MANAGEMENT DIVISION
SCALE: 1/4	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
PROJECT NO.: 91-2	TITLE: LIGHT MAST TUBE S/W					DWG. NO. 00-0830B



PART NO: 00-0831
 MATERIAL: PIPE 2 NOM SCH 40 BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 12.3 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005						DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
						CHECKED:	
						APPROVED:	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: MAST TUBE					SCALE: 1/2	DATE: 5/6/92	DWG. NO. 00-0831A

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

April 2001



Design Packet 63E

Protective Cabs for U.S. Military 2-1/2 Ton and 5 Ton 6x6 Trucks

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

Protective Cabs for U.S. Military 2-1/2 Ton and 5 Ton 6x6 Trucks

Introduction

Many excess vehicles come with a canvas-covered driving compartment, or with no overhead operator protection at all. There are no guidelines or drawings readily available from the military for fabricating a protective cab. In the 1970's REC designed a steel cab for U.S. Military 6x6 trucks. It was recently refined and is documented here.

There are two styles of cabs found on the pre-1990's US military 6x6. Most 6x6's have cabs based on the U.S. Army Tank-Automotive Command "REO style" 2-1/2-ton and 5-ton units produced from the 1950's to 1980's. These vehicles were produced by several manufacturers through the years but the cab design was not changed. Often these trucks are referred to as the "REO-style" in reference to the REO Company which built the first of this style of 6x6. Note again that the cab is the same for either the 2-1/2-ton or 5-ton.

The 1950 Korean War vintage GMC 2-1/2-tons had a different cab. These trucks also had

unreliable automatic transmissions and are likely out of service. Because of this, we have not included GMC-style designs in this project.

How you make the cabs will depend on what skills and tools are available. These are not easy to craft. The bends we made conformed to the radius of dies we had. Some changes may be necessary to accommodate your resources. The manufacturing tolerances of the cab portion of these vehicles were not held tight. We have provided some places to make adjustment when installing the cab top to compensate for this. Be aware that getting the cab top, lower cab, and doors to align like they came from a modern factory will be difficult on some 6x6's. Each individual truck is a little different.

NOTE: The military ordered some 6x6's with hard tops. It is possible to find one to install. These tops are not as durable as REC's, but provide a less expensive alternative if available.

Procedure for Fabricating and Installing a Protective Cab on a "REO" Style 6X6 Truck

The finished cab will be similar in shape, to the truck's original canvas canopy. Remove the original canvas canopy and all fasteners that will interfere with the new steel protective cab.

The REO protective cab consists primarily of three 11 gauge steel panels, one piece of 2" x 2" x 1/8" angle iron, and two pieces of 1-1/4" x 1-1/4" x 1/8" angle iron. Each steel panel has two 90 degree bends of 2.5 inch radius near each end. The rough length of all three panels is 8 feet.

The panels are mitered to blend the bend radii as close as practical. We had 2.5 inch radius dies to make the bends. If you use another

radius, the dimensions will need adjusting to get a proper fit. Note that the radius of the bends in all the panels are the same. Because the radius is the same, the mitered corners of each panel blend making the fabrication easier. In order to do this, we chose not to match the shape of the lower cab which is not a true radius. Hence the rear cab mounting strip (35-0098) is sized to overhang the lower cab at the outer rear corners (Figure 1). We provide a sample hole pattern on the mounting strip, but this can be adjusted.

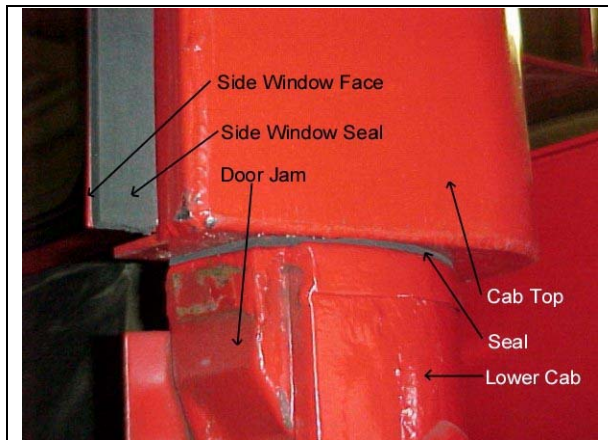


Figure 1 - View of lower rear cab corner from outside. Note the placement of closed-cell foam seals. The rear outside corners overhang so that we did not need to match the curve of the lower cab.

Tack weld the panels, mounting strip, angle, and tubing together using the lower cab for a fixture. It is wise to finish the welds at the upper rear mitered corner before the cab is removed. These welds will cause the cab top to clam if done off the fixture. The rest of the final welds will be easier if the cab top is removed. Remove the entire cab and weld all joints with a continuous weld inside and outside. Grind all outside welds smooth then prime and paint.

The wire guides provided for wire routing. Operators like to have a dome light for night use. A sample mount bracket is shown in the drawings. Both of these items are optional.

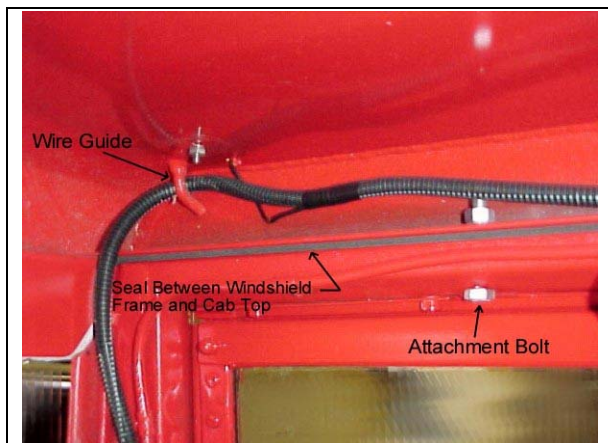


Figure 2 - View of inside left front corner showing the seal with the windshield frame, a cab top attachment bolt, and use of the wire guide for cabling.

After prime and painting, the top can be installed. Hard, closed cell foam seals are needed between the cab top and the top of the windshield as well as the rear lower cab. The seal thickness can be adjusted to shim the cab top to plumb.

Bolt the front of the cab top to the top of the windshield frame in five places (see Figure 2). Also bolt the rear of the top to the lower rear of the cab (see Figure 3).

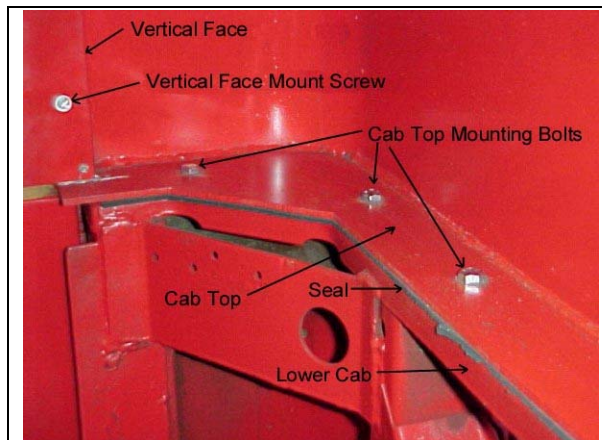


Figure 3 - Inside lower right of cab top mounted to lower cab.

The adjustable window jam faces (00-1251, 00-1252) allow for the top to have fore-to-aft mounting adjustment. Install closed cell foam weatherstrips between the window and adjustable jam strips. The thickness of the foam will be determined by the gap.

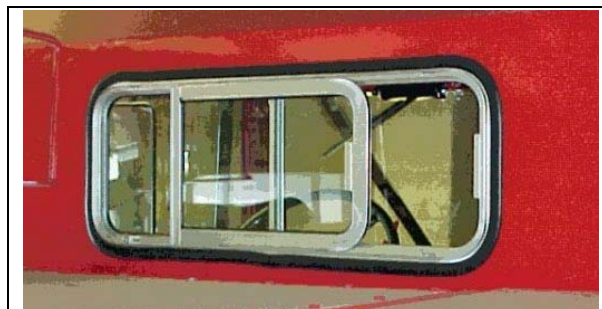


Figure 4 - The rear of the REC cab showing a sliding rear window held in by typical window seal material. The sliding window adds ventilation when needed but is more expensive than fixed glass.

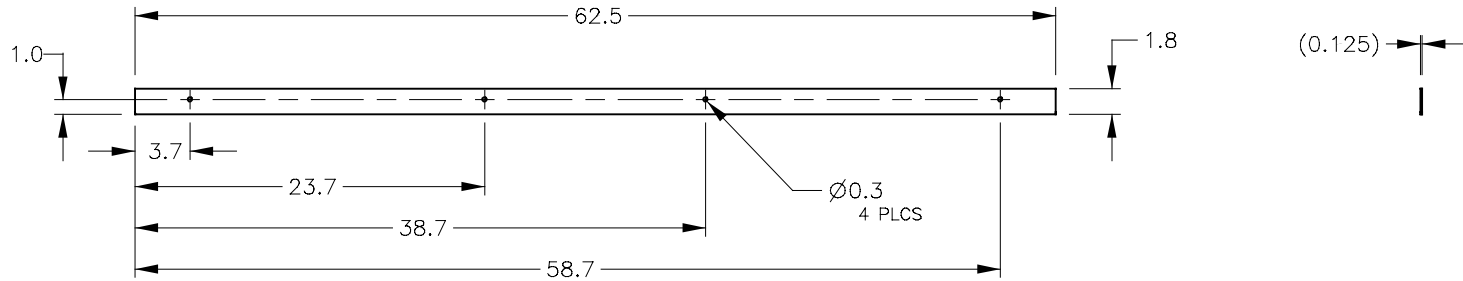
Install rear window (safety glass) by using rubber molding (see Figure 4). Local auto glass shops can help and will be able to supply glass and window molding. Molding should be pre-cut and fitted to window opening before attempting to install glass.

When the cab is positioned on the truck for final installation, drill all additional holes and bolt it in place.

Tear drop shaped amber clearance/identification lights mount easily near the front edge of the cab top. These are one of the motor vehicle safety requirements for trucks of this size. The five 3-hole drill pattern shown in drawing 00-1248 is for mounting the lights. If a different style is used, add the appropriate holes.


Drawing List

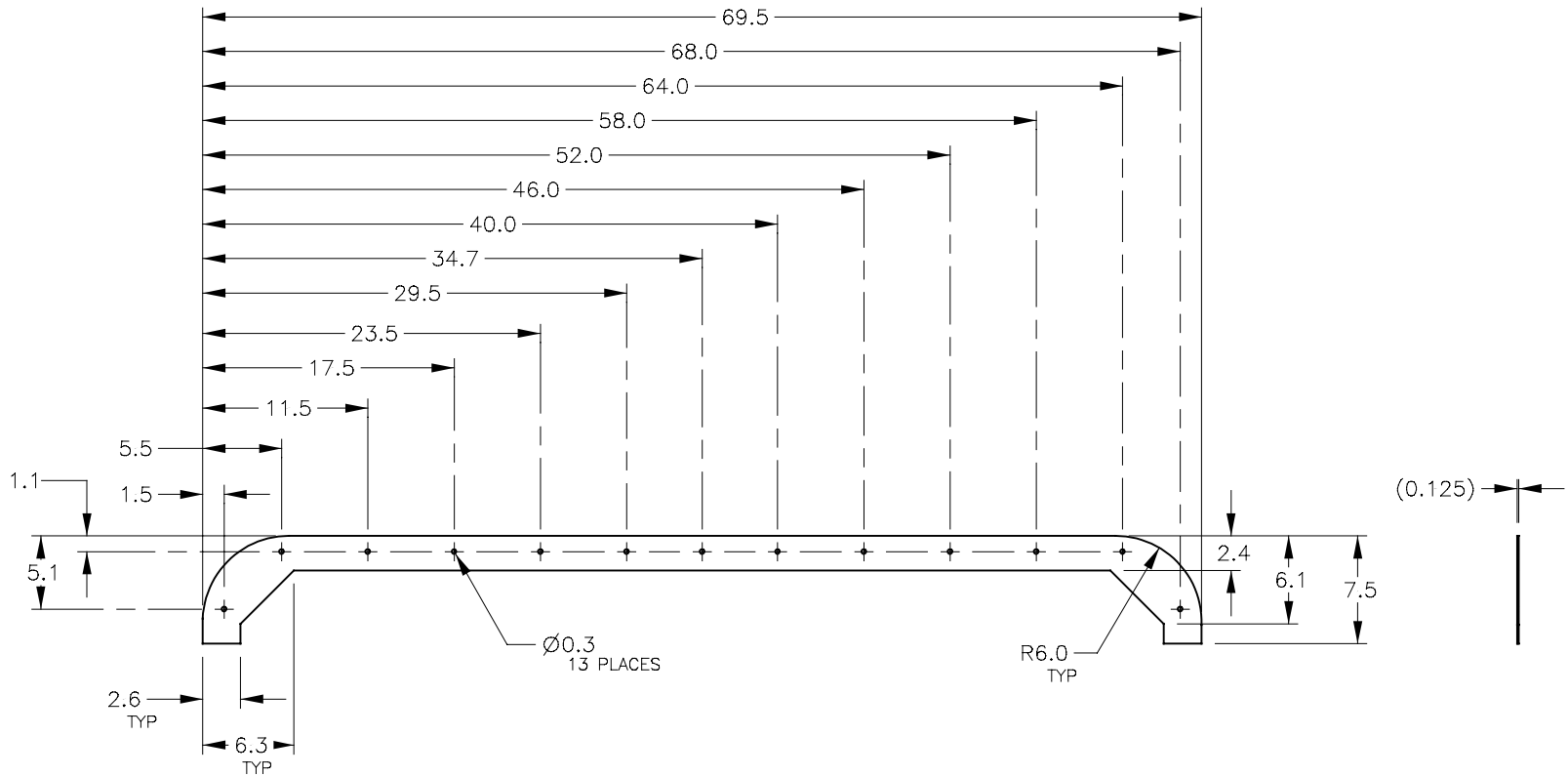
Drawing Number	Drawing Name
35-0011C	Cab Top A/C
35-0010B	Windshield Gasket
35-0009B	Rear Cab Gasket
35-0008D	Cab Top W/C
28-8002B	Dome Light Mount
00-1258B	Dome Light Mount S/W
00-1257B	Dome Light Mount Tube
00-1256B	Front Angle S/W
00-1252B	Vertical Face
00-1251B	Horizontal Face
00-1250B	Vertical Tube
00-1249B	Horizontal Tube
00-1248D	Top Sheet
00-1247D	Upper Rear Panel
00-1246D	Rear Panel
00-1245C	Bottom Mtg. Strip
00-1244C	Front Angle
00-0164A	Wire Guide




PART NO:35-0010
 MAT'L:RUBBER SHEETING, CLOSED CELL

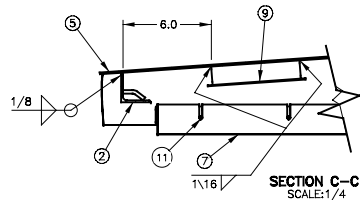
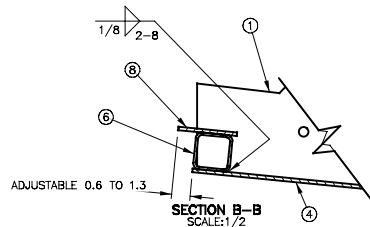
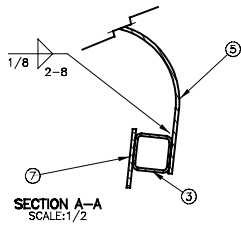
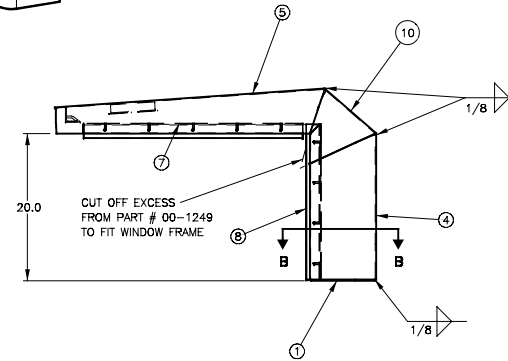
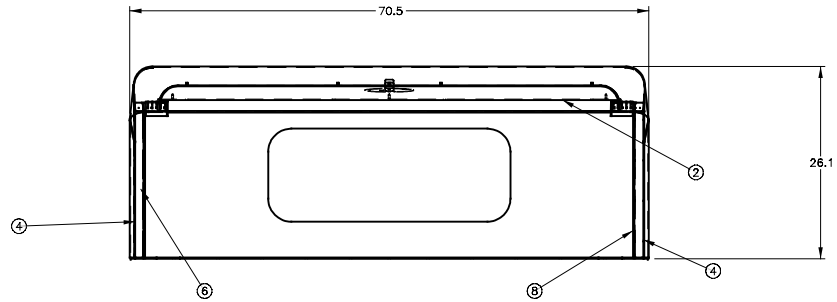
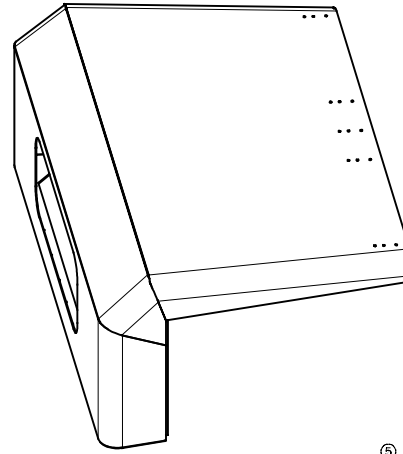
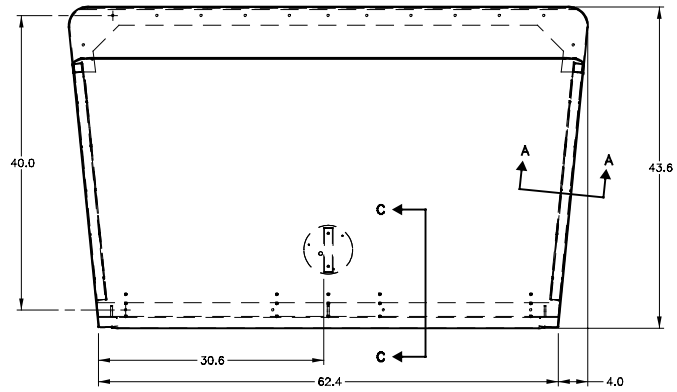
NOTE: CUT FROM PART NO: 33-0028

STD. TOL.								DRAWN: DGP
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005								CHECKED:
ANGULAR: + - 1 DEG.								APPROVED:
DATE: 01/07/99	NO.	BY	DATE	REVISION				
SCALE: 1/8	FOREST FIRE EXPERIMENT STATION							 FOREST MANAGEMENT DIVISION
PROJECT NO.:	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
	TITLE: WINDSHIELD GASKET							DWG. NO. 35-0010B



PART NO:35-0009
 MAT'L:RUBBER SHEETING, CLOSED CELL
 NOTE: CUT FROM PART NO: 33-0028

STD. TOL.								DRAWN: DGP
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005								CHECKED:
ANGULAR: + - 1 DEG.								APPROVED:
DATE: 01/07/99	NO.	BY	DATE	REVISION				
SCALE: 1/8	FOREST FIRE EXPERIMENT STATION							 FOREST MANAGEMENT DIVISION
PROJECT NO.:	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
	TITLE: REAR CAB GASKET							DWG. NO. 35-0009B

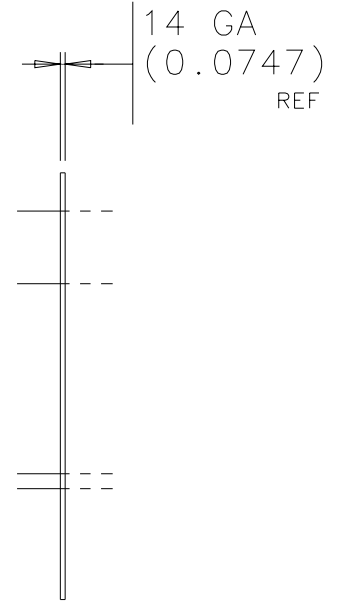
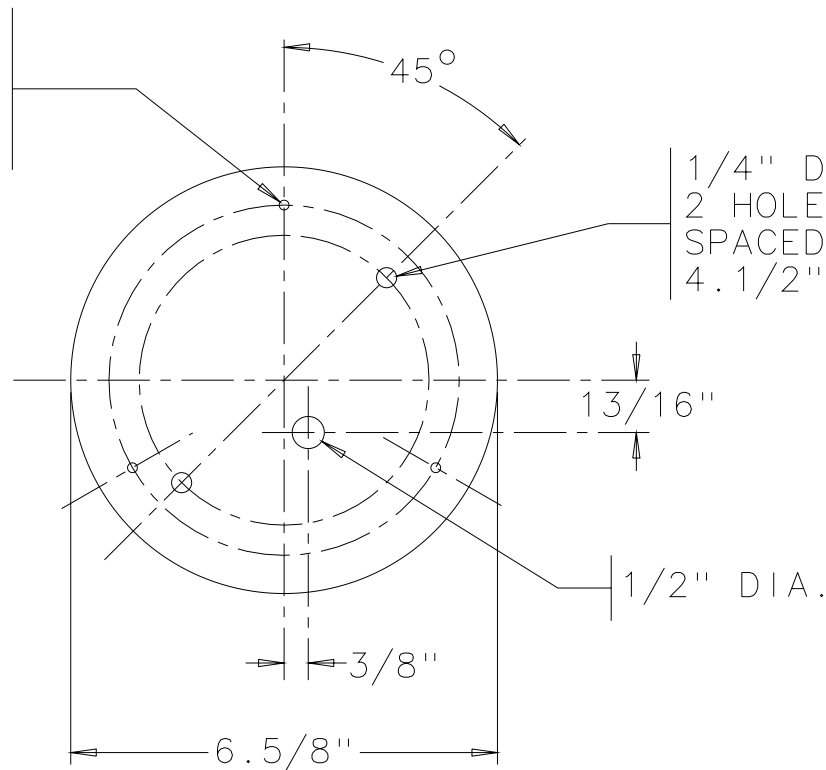


COMPONENT LIST					
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1245	C	BOTTOM MTG STRIP	1	10.9
2	00-1256	B	FRONT ANGLE S/W	1	8.68
3	00-1249	B	HORIZONTAL TUBE	2	3.28
4	00-1246	C	REAR PANEL	1	42.8
5	00-1248	C	TOP SHEET	1	90.5
6	00-1250	B	VERTICAL TUBE	2	2.12
7	00-1251	B	HORIZONTAL FACE	2	1.98
8	00-1252	B	VERTICAL FACE	2	0.68
9	00-1258	B	DOME LIGHT MOUNT S/W	1	1.34
14	00-1247	C	UPPER REAR PANEL	1	24.0
10	00-1247	D	UPPER REAR PANEL	1	24.0
			10-32 x 1/2 PLATED		
11	SS-1032F08HF2		SCREW, HEX HEAD SELF TAPPING	18	

PART NO: 35-0008
EST WT: 191 LBS

STD. TOL:						DRAWN:	
DECIMAL:						DCP	
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2 PLACE: ± .005						APPROVED:	
3 PLACE: ± .000							
ANGULAR:							
± .1 DEG.							
DATE:	01/06/99	FOREST FIRE EXPERIMENT STATION				DNR	
SCALE:	1/8	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				FOREST MANAGEMENT DIVISION	
PROJECT NO.:		TITLE: CAB TOP W/C				DWC NO. 35-0008D	

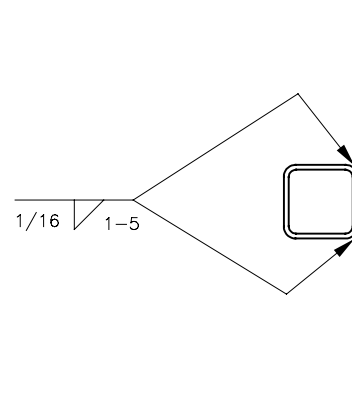
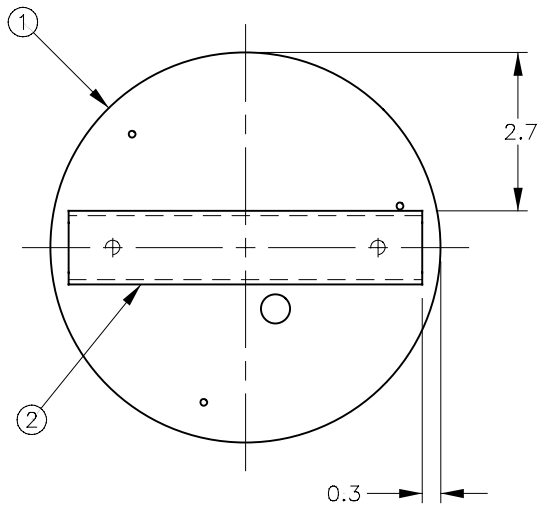
#31 DRILL
 3 HOLES EQUALLY
 SPACED ON
 5.7/16" DIA BC




PART NUMBER: 28-8002
 MAT'L: SHEET, 14 GA H R PICK & OILED
 ASTM A569
 FFES SPEC NO: AA-G1448AP
 EST WT: 0.72 LBS

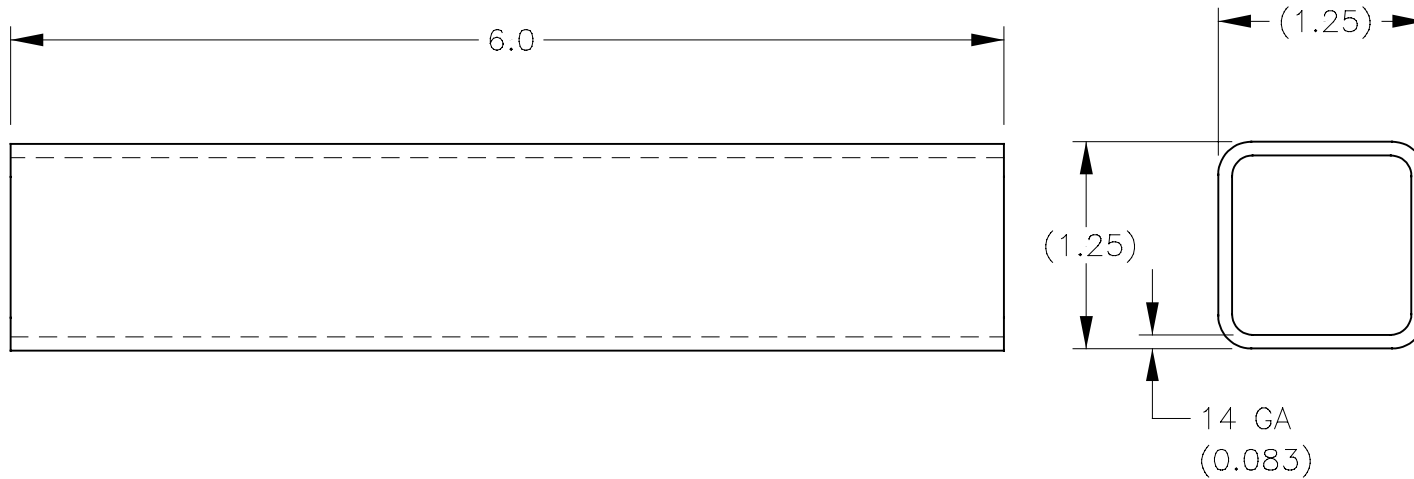
STD. TOLERANCES				DRAWN: R. GREENLAW		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION							PROJECT NO.: 89-1
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: DOME LIGHT MOUNT			SCALE: 1" = 2"	DATE: 24 FEB 93	DWG. NO. 28-8002B		

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	28-8002	B	DOME LIGHT MOUNT	1	0.72
2	00-1257	A	DOME LIGHT MOUNT TUBE	1	0.62




PART NO: 00-1258
EST WT: 1.34 LBS

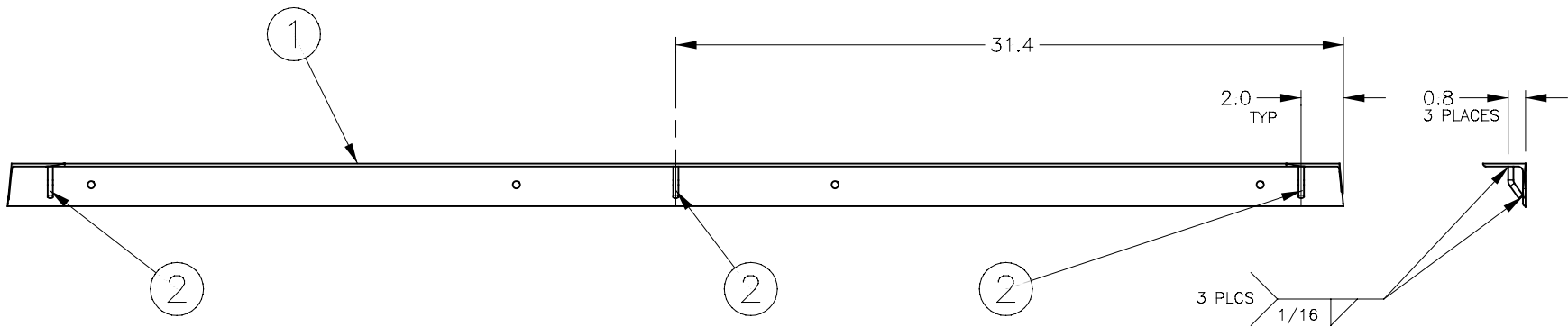
STD. TOL.						DRAWN: DGP	 DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION		APPROVED:	
DATE: 03/10/99	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
SCALE: 1/2							
PROJECT NO.:	TITLE: DOMELIGHT MOUNT S/W						
							DWG NO. 00-1258B




PART NO: 00-1257
 MATERIAL: TUBE, SQ 1 1/4 X 1 1/4 X 14 GA WA
 G10100
 FFES SPEC NO: AE-12501AL
 EST WT: 0.62 LBS

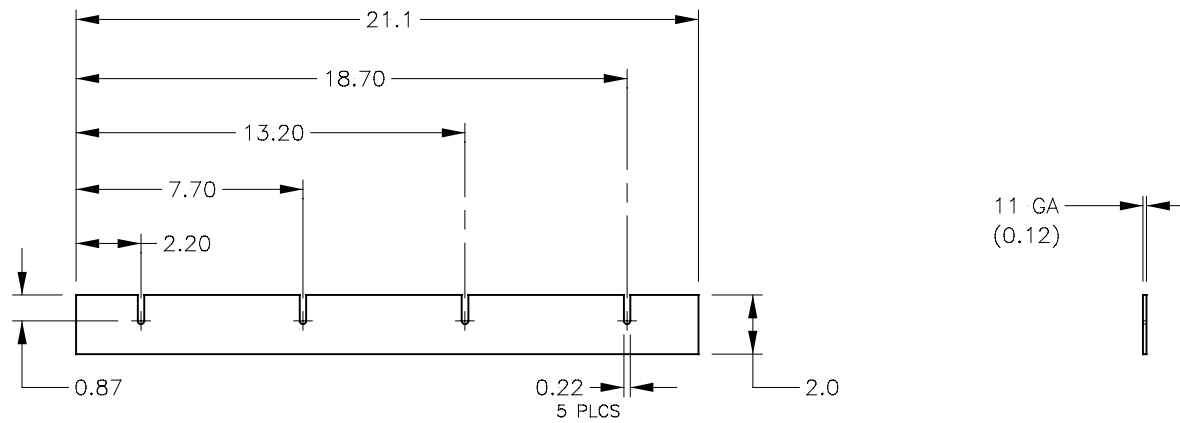
STD. TOL.						DRAWN: DGP	 FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.						APPROVED:	
	NO.	BY	DATE	REVISION			
DATE: 03/10/99	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
SCALE: 1/2							
PROJECT NO.:	TITLE: DOME LIGHT MOUNT TUBE					DWG. NO. 00-1257B	

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1244	C	FRONT ANGLE	1	8.61
2	00-0164	A	WIRE GUIDE	3	0.02



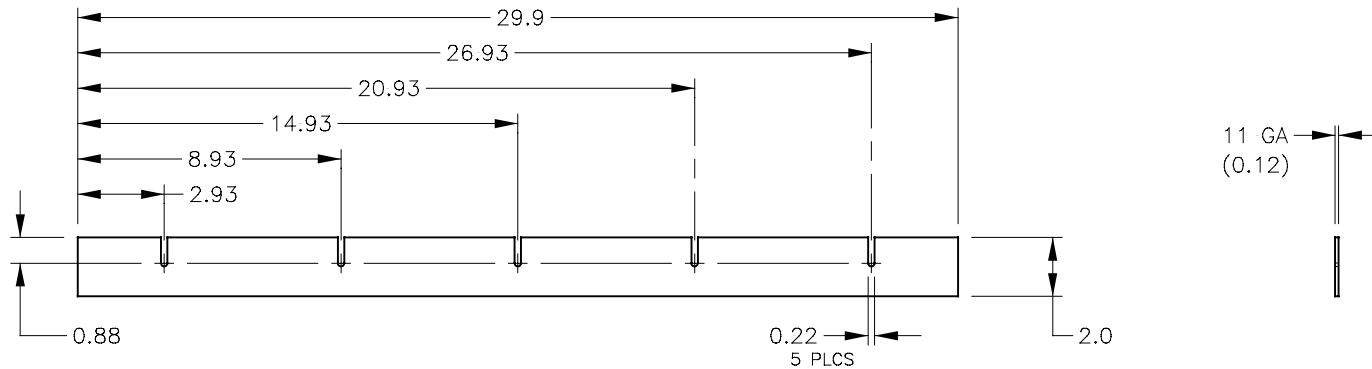
PART NO: 00-1256
EST WT: 8.67 LBS

STD. TOL.						DRAWN: DGP	 DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION		APPROVED:	
DATE: 03/10/99	FOREST FIRE EXPERIMENT STATION						
SCALE: 1/5	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
PROJECT NO.:	TITLE: FRONT ANGLE S/W						DWG No. 00-1256B




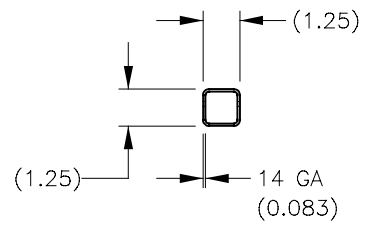
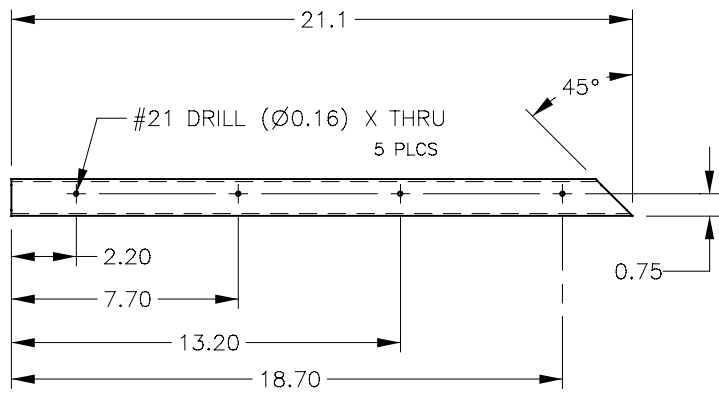
PART NO: 00-1252
 MAT'L: SHEET, 11 GA, 4 X 8, HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 0.68 LBS

STD. TOL.						DRAWN: DGP	 DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION		APPROVED:	
DATE: 04/01/99	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
SCALE: 1/4							
PROJECT NO.:	TITLE: VERTICAL FACE						DWG. NO. 00-1252B




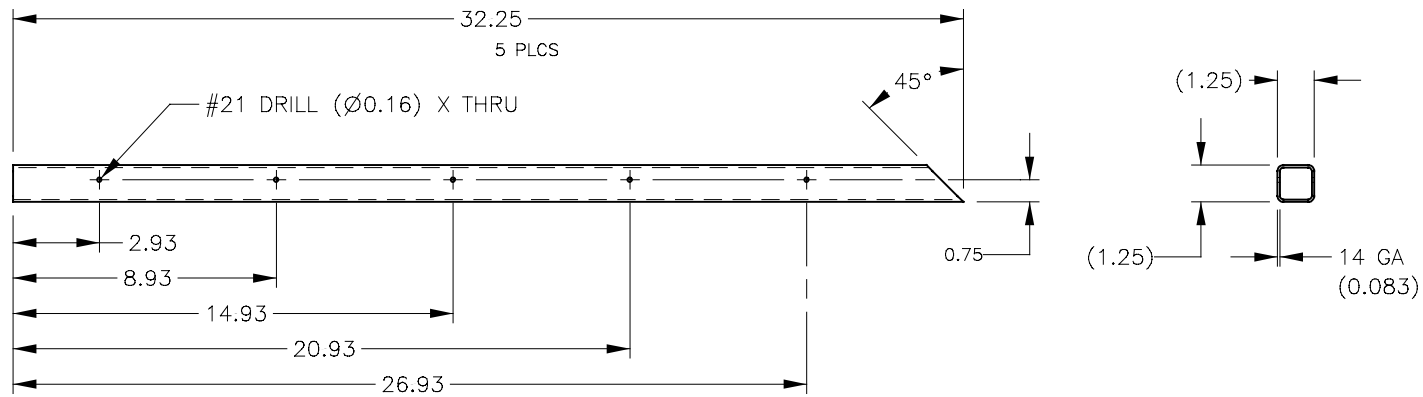
PART NO: 00-1251
 MAT'L: SHEET, 11 GA, 4 X 8, HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 1.99 LBS

STD. TOL.						DRAWN: DGP	 FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:	
ANGULAR: + - 1 DEG.	NO.	BY	DATE	REVISION		APPROVED:	
DATE: 04/01/99	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-1251B
SCALE: 1/4	PROJECT NO.:						TITLE: HORIZONTAL FACE




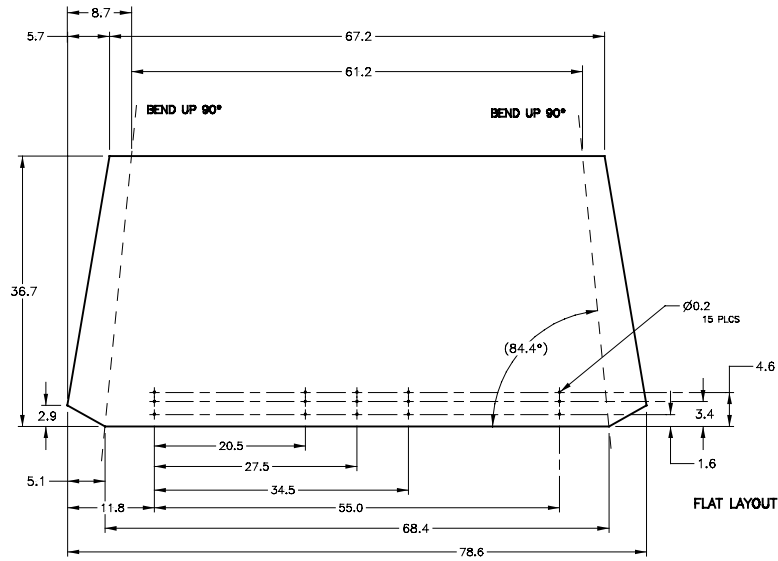
PART NO: 00-1250
 MAT'L: TUBE, SQ 1-1/4 X 1-1/4 X 14 GA WA
 G10100
 FFES SPEC NO: AE-122501AL
 EST WT: 2.12 LBS

STD. TOL.						DRAWN: DGP
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:
ANGULAR: + - 1 DEG.						APPROVED:
DATE: 04/01/99	NO.	BY	DATE	REVISION		
SCALE: 1/4	FOREST FIRE EXPERIMENT STATION					
PROJECT NO.:	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: VERTICAL TUBE	 FOREST MANAGEMENT DIVISION					
	DWG. NO. 00-1250B					



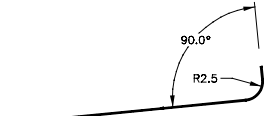
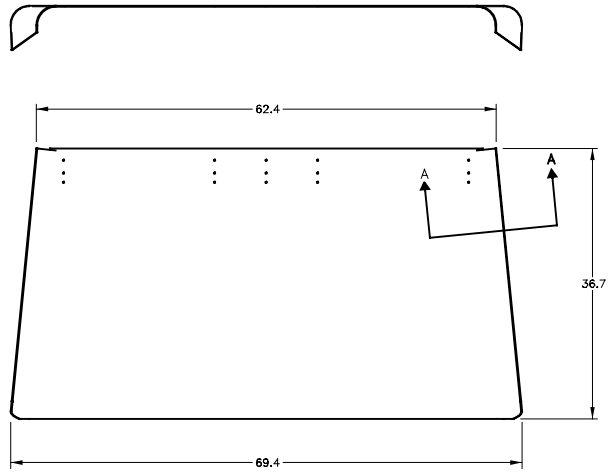
PART NO: 00-1249
 MAT'L: TUBE, SQ 1-1/4 X 1-1/4 X 14 GA WA
 G10100
 FFES SPEC NO: AE-122501AL
 EST WT: 3.28 LBS

STD. TOL.						DRAWN: DGP
DECIMAL: 1 PLACE + - 0.06 2 PLACE + - 0.03 3 PLACE + - 0.005						CHECKED:
ANGULAR: + - 1 DEG.						APPROVED:
DATE: 04/01/99	NO.	BY	DATE	REVISION		
SCALE: 1/4	FOREST FIRE EXPERIMENT STATION					
PROJECT NO.:	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: HORIZONTAL TUBE	 FOREST MANAGEMENT DIVISION					
	DWG. NO. 00-1249B					

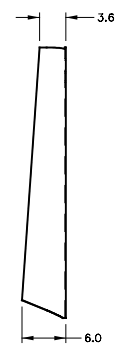


11 GA
(0.12)

FLAT LAYOUT

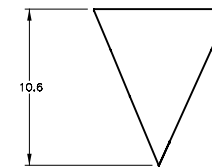
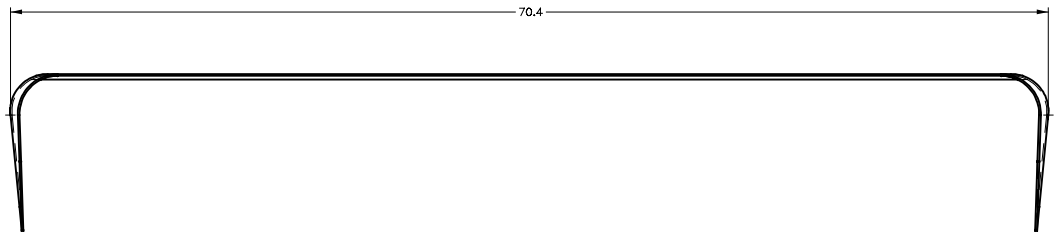
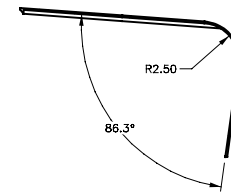
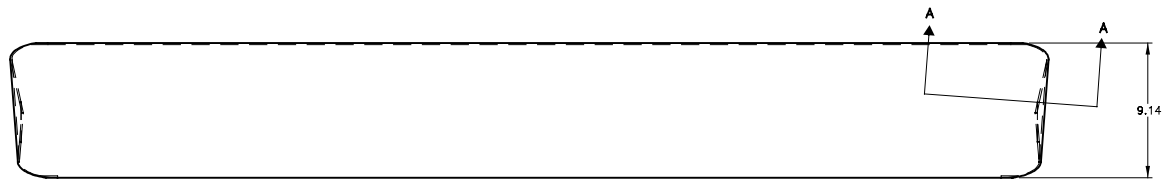
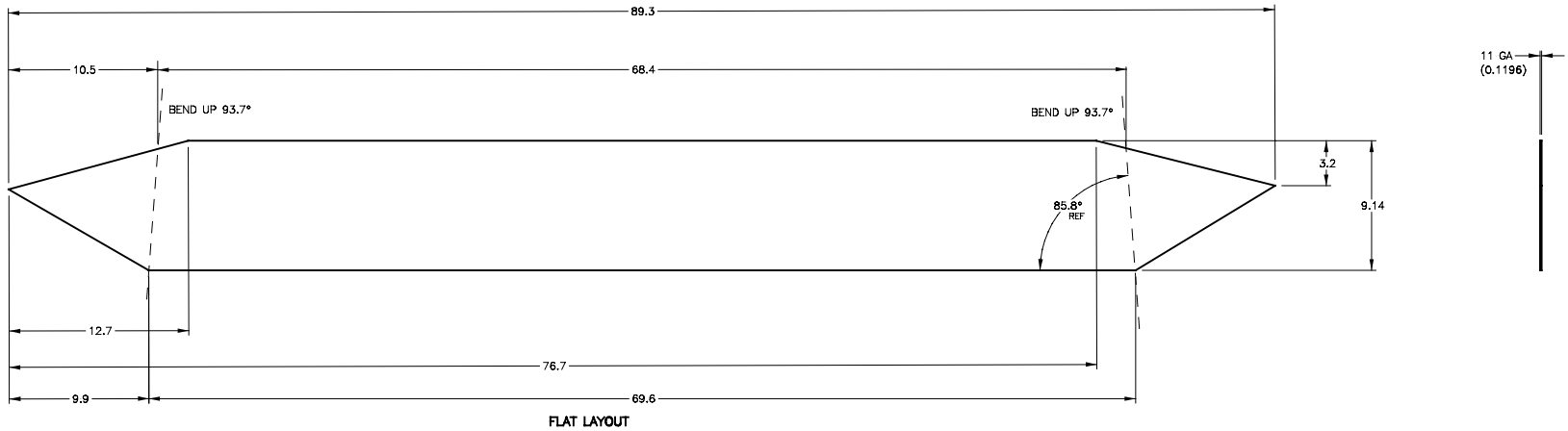


SECTION A-A



PART NO: 00-1248
 MAT'L: SHEET, 11 GA, 4 X 8, HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 90.6 LBS

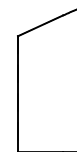
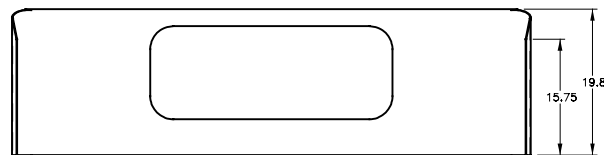
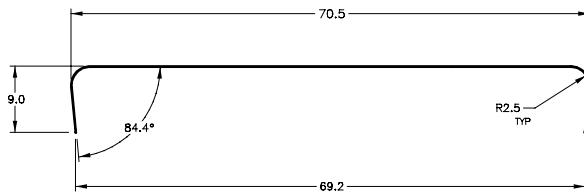
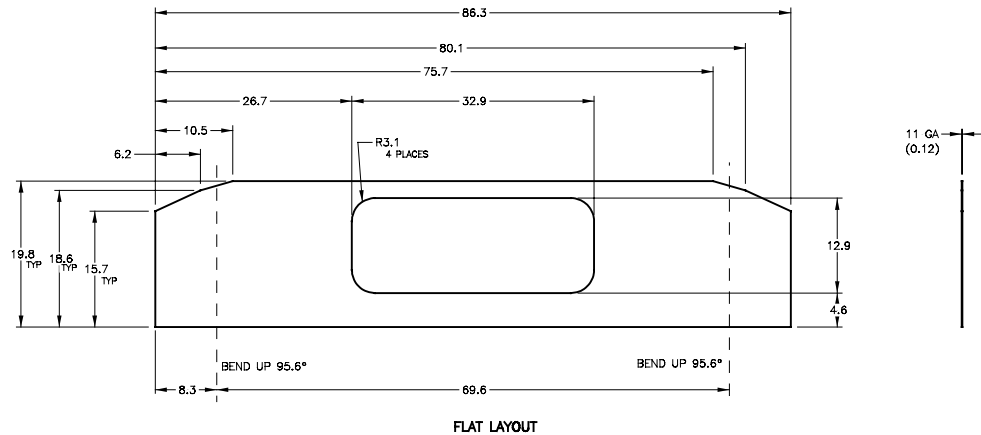
STD. TOL.							DRAWN: DCP
DECIMAL:							CHECKED:
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2 PLACE + - 0.02							
3 PLACE + - 0.005							
ANGULAR:							
+ - 1 DEG.							
DATE:	12/22/98	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					DNR FOREST MANAGEMENT DIVISION
SCALE:	1/8	PROJECT NO.: TOP SHEET					DWG. NO.: 00-1248D



PART NO: 00.1247
 MAT'L: SHEET, 11 GA. 4 X 8, HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 24.0 LBS

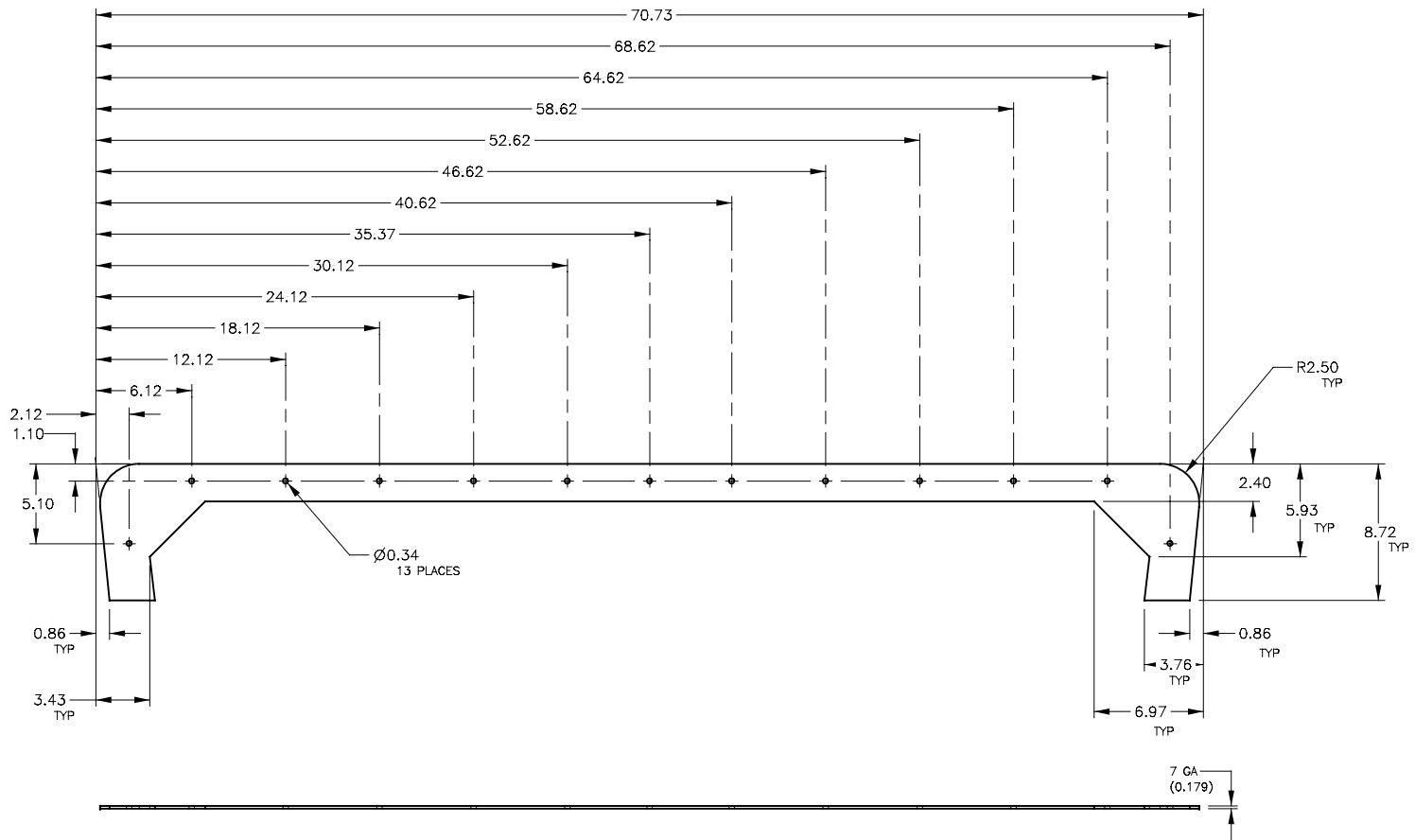
STD. TOL.										DRAWN: DCP
DECIMAL:										CHECKED:
1 PLACE + - 0.05										APPROVED:
2 PLACE + - 0.02										
3 PLACE + - 0.005										
ANGULAR:										
+ - 1 DEG.										
DATE:	01/05/99	FOREST FIRE EXPERIMENT STATION								
SCALE:	1/4"	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
PROJECT NO.:		TITLE: UPPER REAR PANEL								DWG. NO. 00-1247D






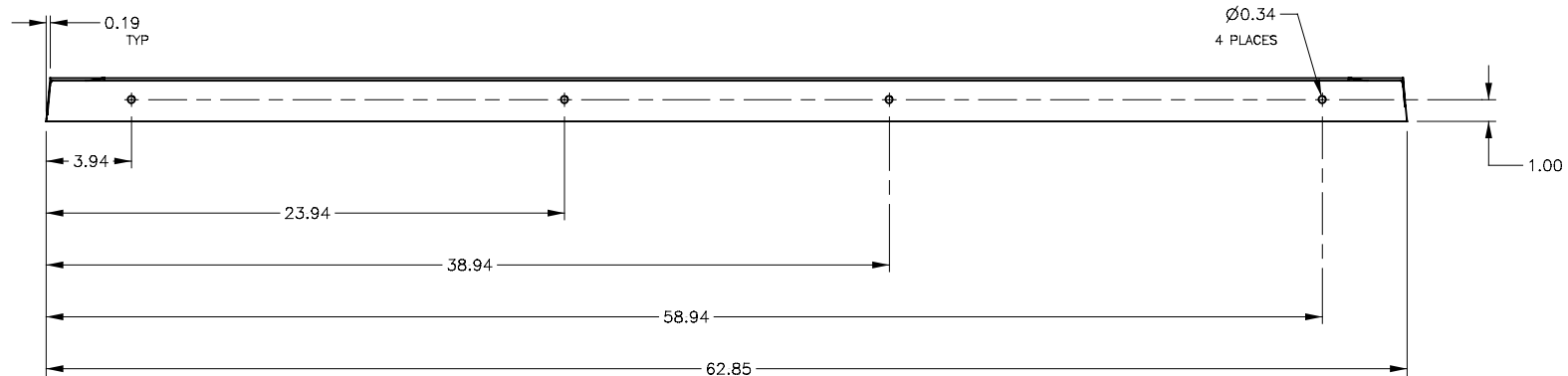
PART NO: 00-1246
 MAT'L: SHEET, 11 GA, 4 X 8, HR P&O
 ASTM A569
 FFES SPEC NO: AA-G1148AP
 EST WT: 42.9 LBS

STD. TOL.						DRAWN: DCP
DECIMAL:						CHECKED:
1 PLACE + - 0.05						APPROVED:
2 PLACE + - 0.02						
3 PLACE + - 0.005						
ANGULAR:						
+ - 1 DEG.						
DATE:	10/05/99	FOREST FIRE EXPERIMENT STATION				DNR
SCALE:	1/8	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				FOREST MANAGEMENT DIVISION
PROJECT NO.:		TITLE: REAR PANEL				DWG. NO. 00-1246D

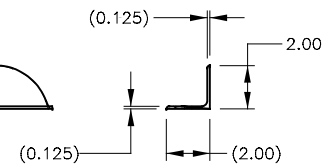
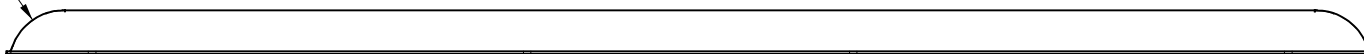


PART NO: 00-1245
 MAT'L: SHEET, 7 GA 3 X 8 HR P&O
 ASTM-A569
 FFES SPEC NO: AA-G0730AP
 EST WT: 10.9 LBS


STD. TOL.						DRAWN: DGP
DECIMAL:						CHECKED:
1 PLACE + - 0.08						APPROVED:
2 PLACE + - 0.03						
3 PLACE + - 0.005						
ANGULAR:	NO.	BY	DATE	REVISION		
+ - 1 DEG.						
DATE: 12/16/98	FOREST FIRE EXPERIMENT STATION					 FOREST MANAGEMENT DIVISION
SCALE: 1/5	P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
PROJECT NO.:	TITLE: BOTTOM MTG. STRIP					DWG. NO. 00-1245C

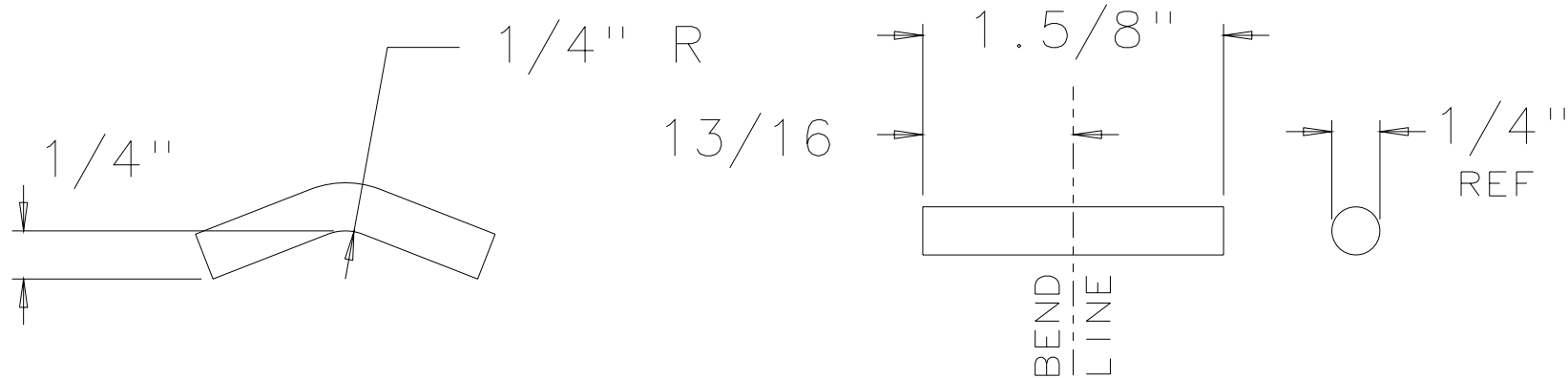


R2.5
TYP



PART NO: 00-1244
 MAT'L: ANGLE, 2x2x1/8
 K02600
 FFES SPEC NO: AK-20808AG
 EST WT: 8.61 LBS

STD. TOL.									DRAWN: DGP
DECIMAL:									CHECKED:
1 PLACE ± - 0.08									APPROVED:
2 PLACE ± - 0.03									
3 PLACE ± - 0.009									
ANGULAR:									
± - 1 DEG.									
DATE: 12-16-19									
SCALE: 1/4	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								 FOREST MANAGEMENT DIVISION
PROJECT NO.:	TITLE: FRONT ANGLE								DWG. NO. 00-1244C



PART NO: 00-0164
 MATERIAL: BAR, RD 1/4 DIA HR
 UNS K02600
 FFES SPEC NO: AC-00025AG
 EST WT: 0.02 LBS

STD. TOLERANCES					DRAWN: KDB	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16					CHECKED: *	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005					APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 87-3
TITLE: WIRE GUIDE				SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0164A

ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

November 2001



Design Packet 63F-2 Brush Protection Drawings for 2.5 Ton 6x6 Trucks

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

Brush Protection for 2.5 Ton 6x6 Trucks

The REC brush protection package for 2.5-ton 6x6 models was developed to help protect components and body panels from damage when operating off-road. There are four assemblies.

The bumper replaces the original bumper. It consists of a boxed section of similar shape to the original. This gives it strength should a tree be struck. This design packet shows how to replace the original bumper because the FEPP units usually have twisted bumpers. It is often easier to start from scratch than to modify them for strength. However, you may wish to box in the rear of the existing bumper instead. In either case, these drawings show a proven concept for wildfire use.

Fuel tank guards protect the fuel tanks, air system, and some electric components from underside impact. In conjunction with the bumper, they also support the fender guard assembly. Together these assemblies provide a rub rail on each side of the vehicle, protecting the chassis sheet metal.

The cab guard assembly consists of the grill guard and limb risers. The grill guard helps protect the radiator from jill pokes and supports the limb risers. The limb risers help guide limbs up and over the cab. This protects mirrors, windshield, and exhaust components. It also provides better visibility to the driver by lifting limbs out of the vision path.

All assemblies and components are basic steel forming and welding operations. They have had years of actual use in tough off-road conditions.



The bumper and fuel tank guard are fastened to the frame. The fender guard connects between them. The grill guard and limb risers sit on top of the bumper and fender guard.



The fender guard is connected to the bumper. In combination with the grill guard, they protect the cab sheet metal.



The exhaust stack is rerouted behind the limb risers for protection.

Drawing List - Bumper

Drawing Number	Drawing Name
29-9810D	Bumper Modification
00-1100B	Bumper Corner (RH)
00-1099C	Rear Channel (RH)
00-1089A	Shim
00-1092B	Cover Sheet
00-1090B	Bar
00-1093C	Rear Channel (LH)

Drawing List - Fuel Tank Guards

Drawing Number	Drawing Name
29-9812D	Tank Guard Assembly
29-0078B	Tank Access Panel LH
29-0077B	Tank Access Panel RH
29-0076D	Fuel Tank Guard LH W/C
29-0075D	Fuel Tank Guard RH W/C
00-1151B	Forward Plate LH
00-1150B	Mounting Angle LH
00-1117D	Bottom Plate LH
00-1116C	Center Plate LH
00-1115C	Rear Plate LH
00-1114B	Side Guard Angle LH
00-1113B	Rear Mounting Angle
00-1112D	Bottom Plate RH
00-1111C	Rear Plate RH
00-1110B	Forward Plate
00-1109B	Rear Mounting Angle
00-1108B	Mounting Angle
00-1107B	Side Guard Angle RH
00-1106B	Angle Stop
00-1105B	Short Angle Stop
00-1104C	Center Plate RH
00-0164A	Wire Guide

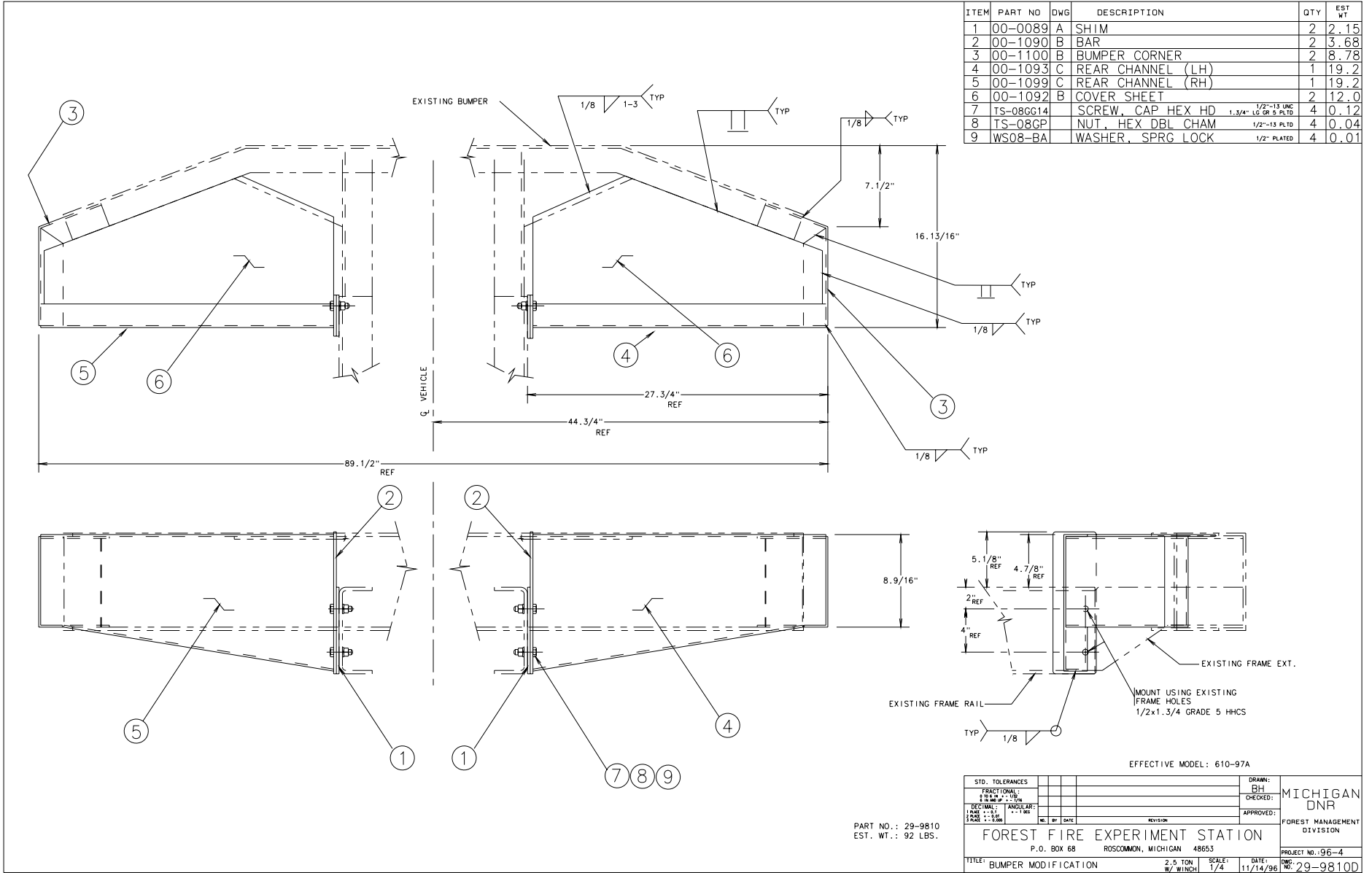
Drawing List - Fender Guards

Drawing Number	Drawing Name
29-9816D	Fender Guard Assembly
00-1349B	Horizontal Channel
00-1350B	Vertical Channel
00-1351B	Spacer Channel
00-1352B	Angle Channel
00-1343C	Fender Brace LH S/W
00-1344C	Fender Brace RH S/W
00-1348C	Stiffener
00-1345A	Top Plate
00-1353A	Upper Gusset
00-1346A	Mounting Plate
00-1354A	Lower Gusset
00-1347B	Brace
00-1137D	Fender Guard LH S/W
00-1124D	Fender Guard RH S/W
00-1129B	Vertical Angle LH
00-1121B	Top Angle
00-1130B	Rear Angle LH
00-1131B	Front Angle LH
00-1120B	Top Angle
00-1123B	Gusset
00-1149A	Filler Plate
00-1118B	Vertical Angle RH
00-1122B	Front Angle RH

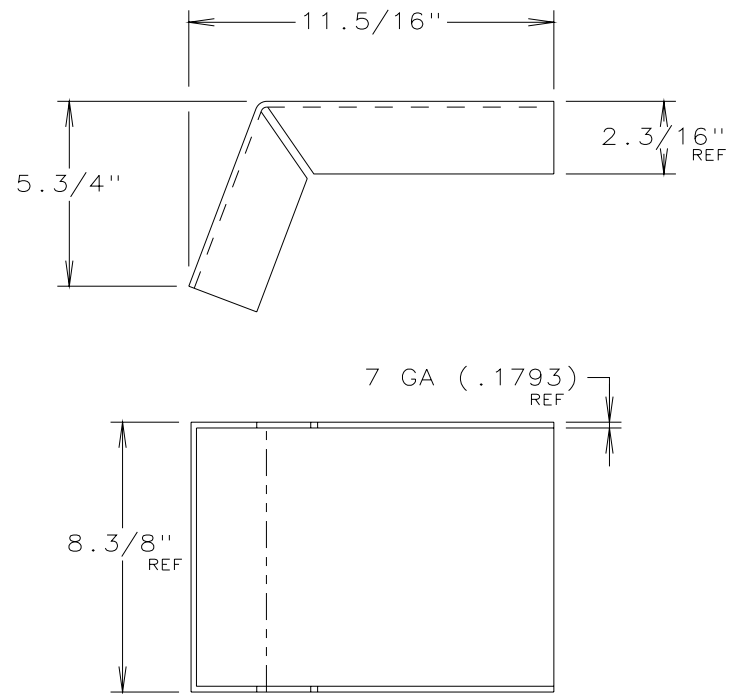
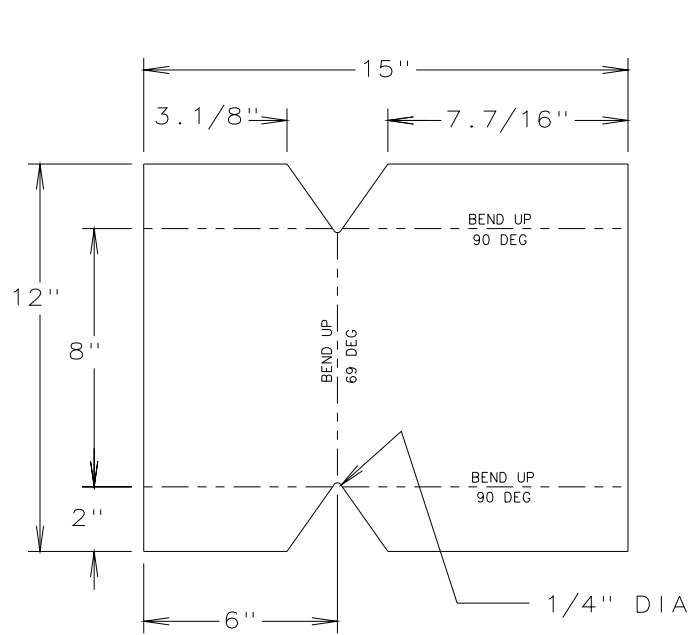
Drawing List - Limb Risers and Grill Guard

Drawing Number	Drawing Name
29-9811D	Cab Guard A/C
00-1136D	Grill Guard S/W
00-1141C	Lower Pipe LH
00-1140C	Lower Pipe RH
00-1139B	Upper Pipe
00-1138A	Limb Riser
00-1135B	Side Panel
00-1134B	Center Panel
00-1133B	Pipe, Horizontal
00-1132C	Cross Mounting Bar
00-1128B	Mounting Bar
00-1127B	Pipe, Vertical
00-1126B	Pipe, Vertical
00-1125B	Pipe, Vertical
00-0849A	Nozzle Fixture Mount
00-0714B	Pipe, Cross

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0089	A	SHIM	2	2.15
2	00-1090	B	BAR	2	3.68
3	00-1100	B	BUMPER CORNER	2	8.78
4	00-1093	C	REAR CHANNEL (LH)	1	19.2
5	00-1099	C	REAR CHANNEL (RH)	1	19.2
6	00-1092	B	COVER SHEET	2	12.0
7	TS-08GG14		SCREW, CAP HEX HD 1/2"-13 UNC 1.3/4" LG GR 5 PLTD	4	0.12
8	TS-08GP		NUT, HEX DBL CHAM 1/2"-13 PLTD	4	0.04
9	WS08-BA		WASHER, SPRG LOCK 1/2" PLATED	4	0.01



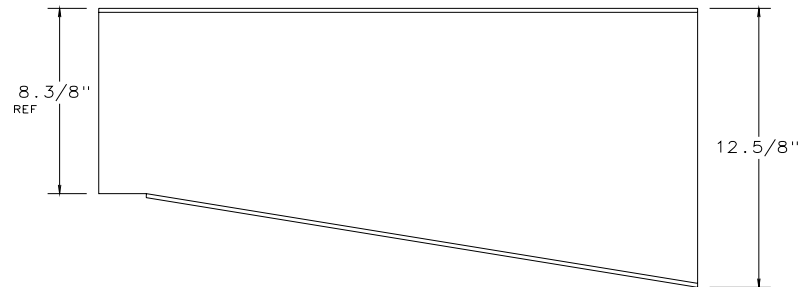
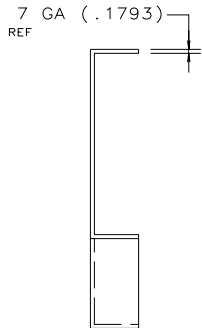
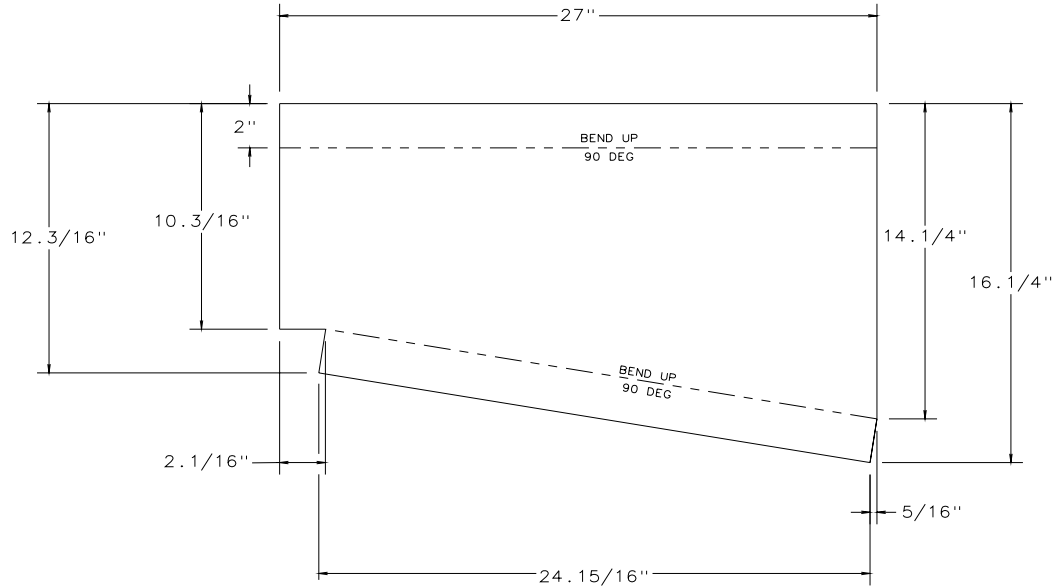
Return to Drawing Index



PART NO.: 00-1100
 MAT'L: SHEET, FLAT, 7 GA 4X8 P&O
 ASTM A569
 F.F.E.S. SPEC NO.: AA-G00748AP
 EST. WT.: 8.78 LBS.

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: BH		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		NO.	BY	DATE		APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: BUMPER CORNER (RH)						SCALE: 1/4	DATE: 11/26/96	DWG. NO.: 00-1100B

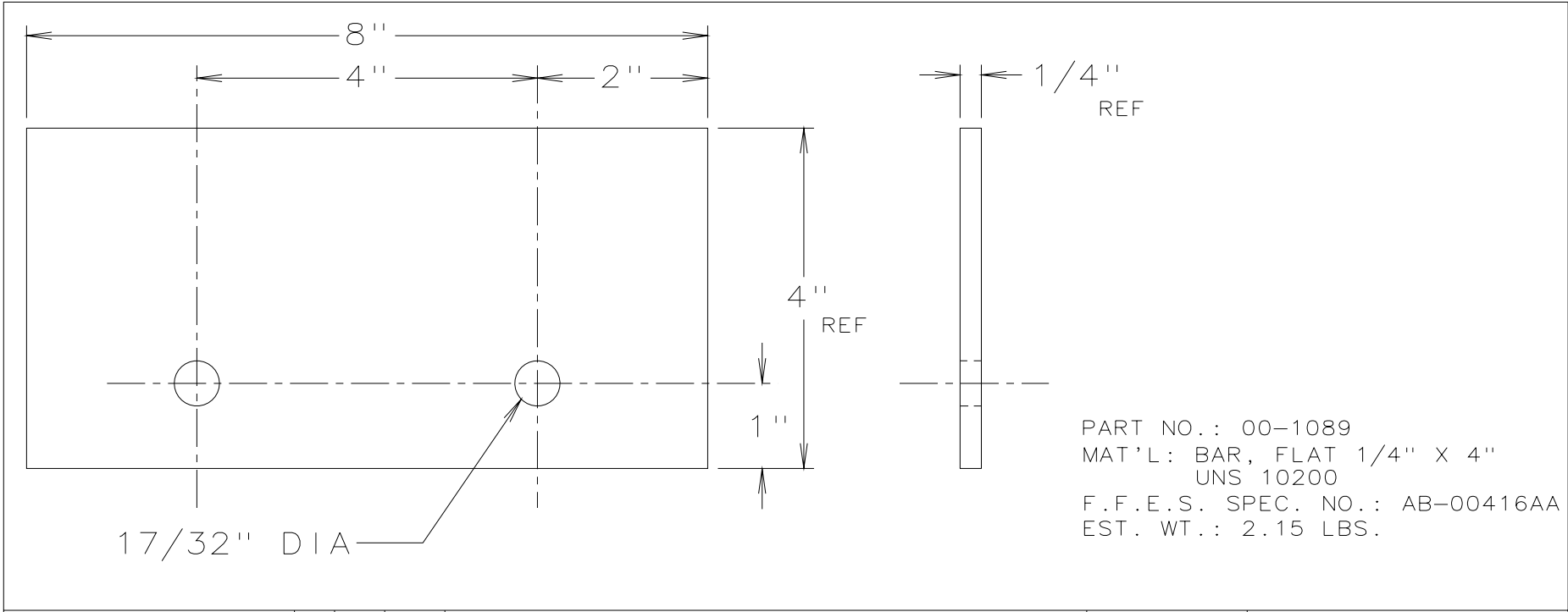
Return to Drawing Index



PART NO.: 00-1093
 MAT'L: SHEET, FLAT, 7 GA 4X8 P&O
 ASTM A569
 F.F.E.S. SPEC. NO.: AA-G00748AA
 EST. WT.: 19.2 LBS.

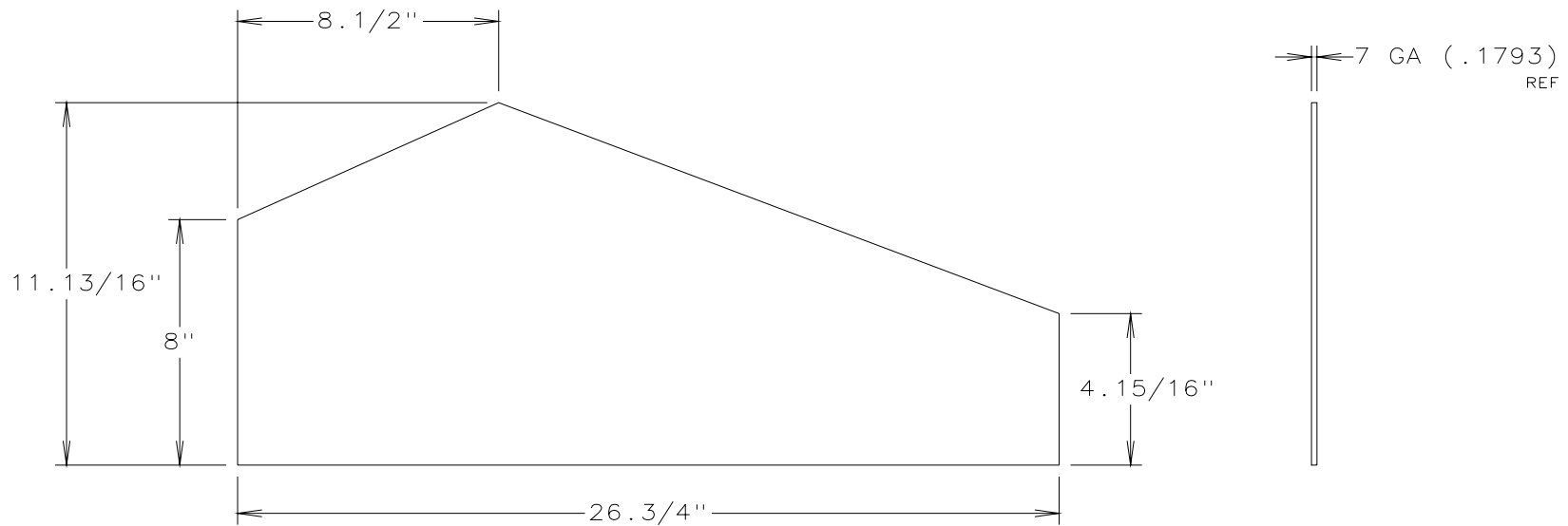
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FRACTIONAL:				CHECKED: BH		
0 TO 6 IN. + .1/32 6 IN AND UP + .1/16				APPROVED:		
DECIMAL:		ANGULAR:		NO. BY DATE		REVISION
1 PLACE + .01 2 PLACE + .001 3 PLACE + .0005		+ .1 DEG - .1 DEG				
FOREST FIRE EXPERIMENT STATION				P.O. BOX 68		ROSCOMMON, MICHIGAN 48653
TITLE: REAR CHANNEL (RH)				SCALE: 1/4		DATE: 11/22/96
				PROJECT NO.: 96-4		DWG. NO.: 00-1099C

Return to Drawing Index



PART NO.: 00-1089
 MAT'L: BAR, FLAT 1/4" X 4"
 UNS 10200
 F.F.E.S. SPEC. NO.: AB-00416AA
 EST. WT.: 2.15 LBS.

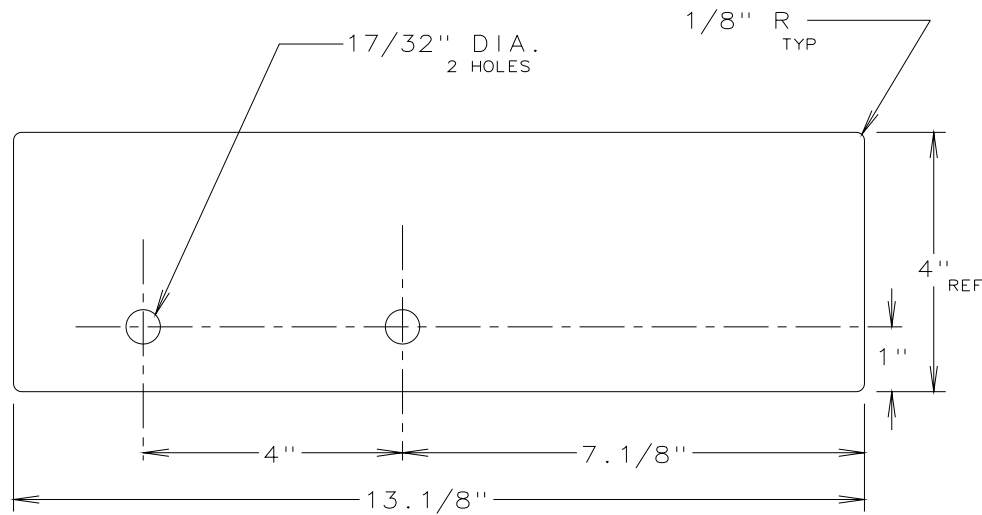
STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: BH	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: SHIM					SCALE: 1/2	DATE: 11/22/96	DWG. NO.: 00-1089A



PART NO.: 00-1092
 MAT'L: SHEET, FLAT, 7 GA 4X8 P&O
 ASTM A569
 F.F.E.S. SPEC. NO.: AA-G00748AA
 EST. WT.: 12.0 LBS.

STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						APPROVED:	
NO.	BY	DATE	REVISION						
<p style="text-align: center;">FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>									PROJECT NO.: 96-4
TITLE: COVER SHEET							SCALE: 1/4	DATE: 11/22/96	DWG. NO.: 00-1092B

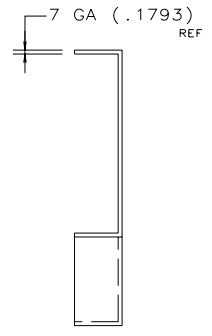
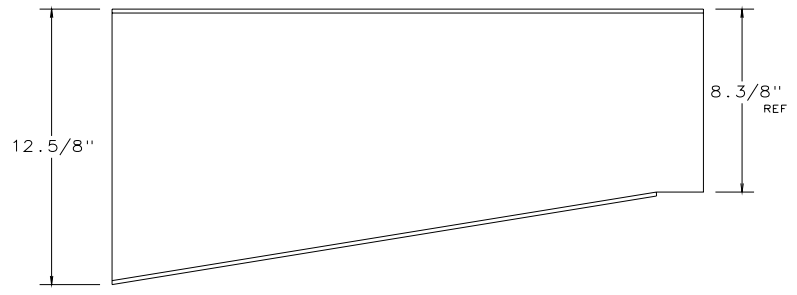
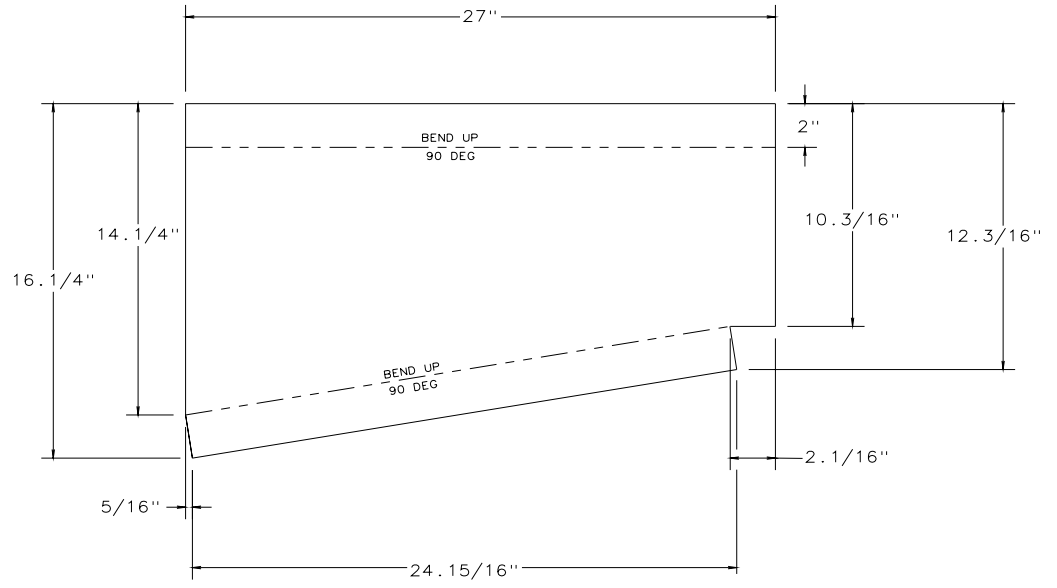
Return to Drawing Index



PART NO.: 00-1090
 MAT'L: BAR, FLAT, 1/4" X 4"
 UNS G10200
 F.F.E.S. SPEC. NO.: AB-00416AA
 EST. WT.: 3.68 LBS.

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		NO. BY DATE REVISION	DRAWN: LLP CHECKED: BH APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			SCALE: 1/2 DATE: 11/22/96	
TITLE: BAR				

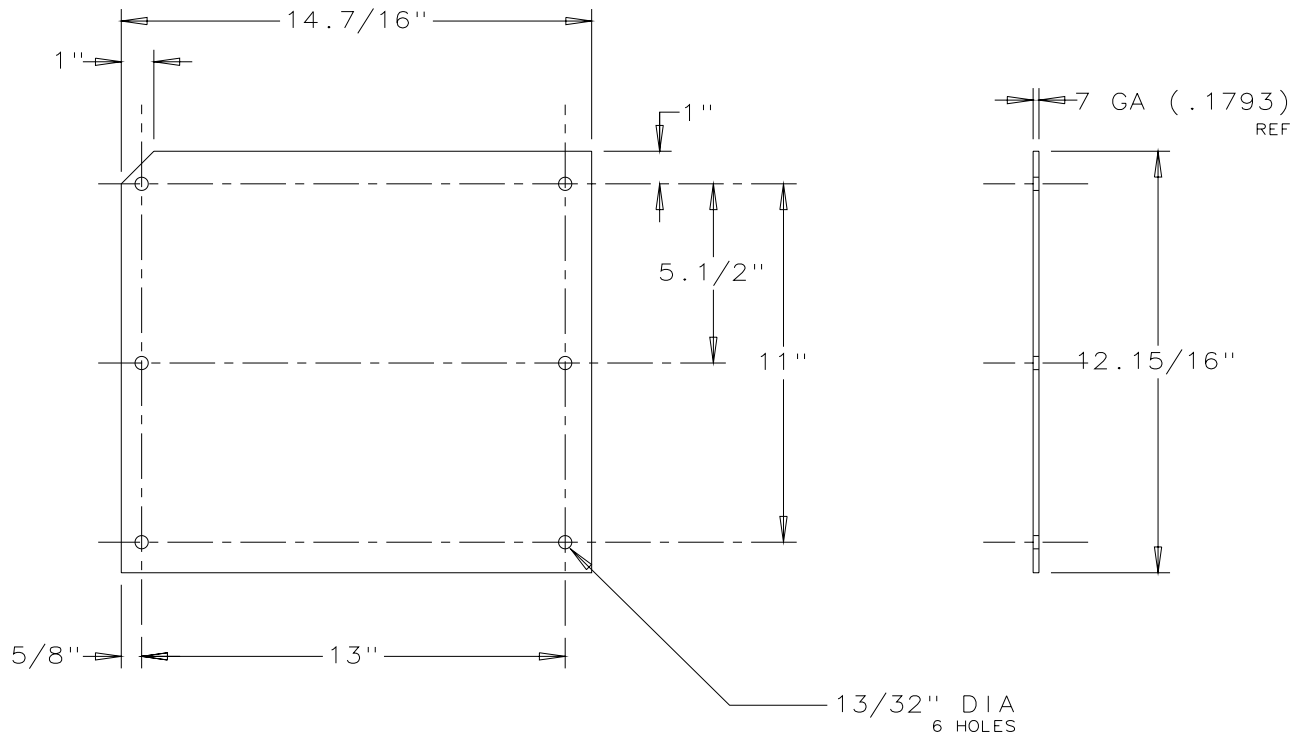
Return to Drawing Index



PART NO.: 00-1093
 MAT'L: SHEET, FLAT, 7 GA 4X8 P&O
 ASTM A569
 F.F.E.S. SPEC. NO.: AA-G00748AA
 EST. WT.: 19.2 LBS.

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:				CHECKED: BH		
DECIMAL:		ANGULAR:		APPROVED:		
NO. BY DATE		REVISION				
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68		ROSCOMMON, MICHIGAN		48653		PROJECT NO.: 96-4
TITLE: REAR CHANNEL (LH)		SCALE: 1/4		DATE: 11/22/96		DWG. NO.: 00-1093C

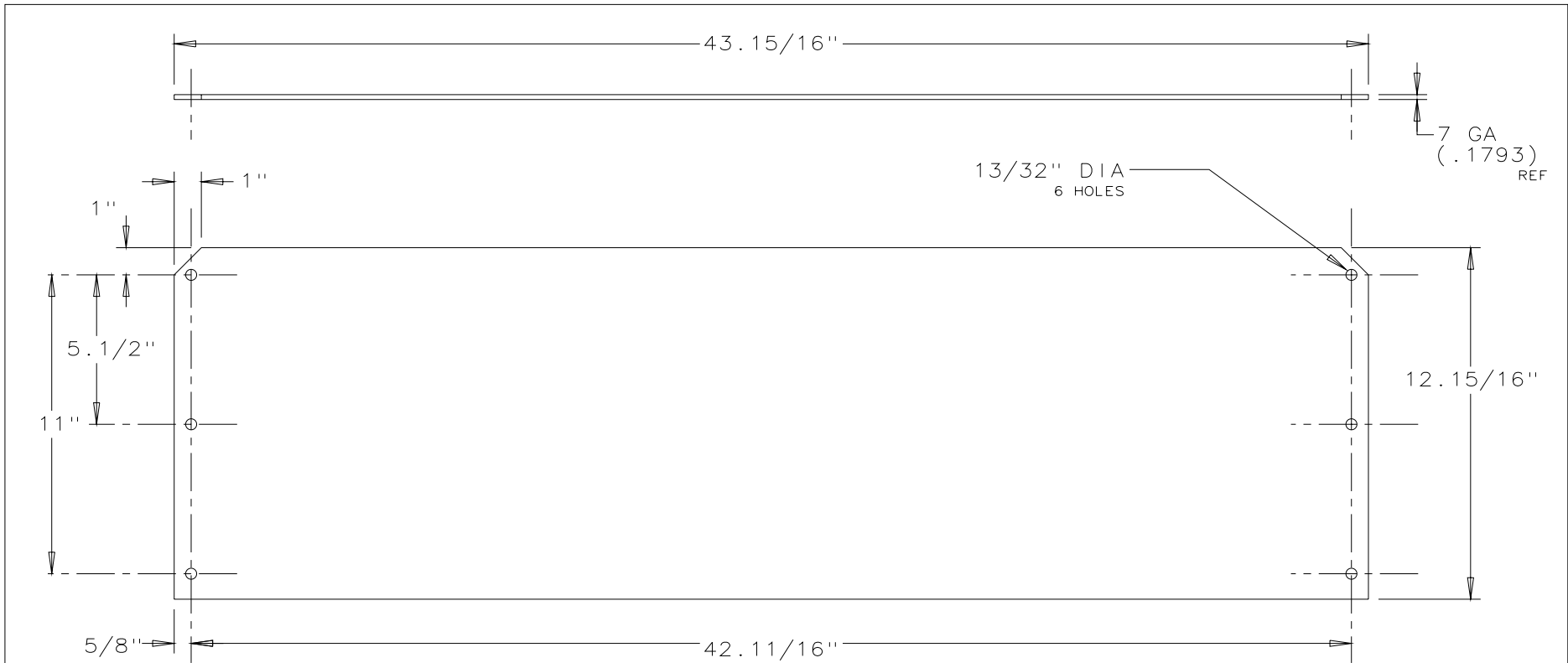
Return to Drawing Index



PART NO.: 29-0078
 MAT'L: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES. SPEC. NO.: AA-G0748AP
 EST. WT.: 9.31 LBS.

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16						CHECKED: BH	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:	
		NO.	BY	DATE	REVISION		PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG. NO. 29-0078B
TITLE: TANK ACCESS PANEL LH					SCALE: 1/4	DATE: 1/17/97	

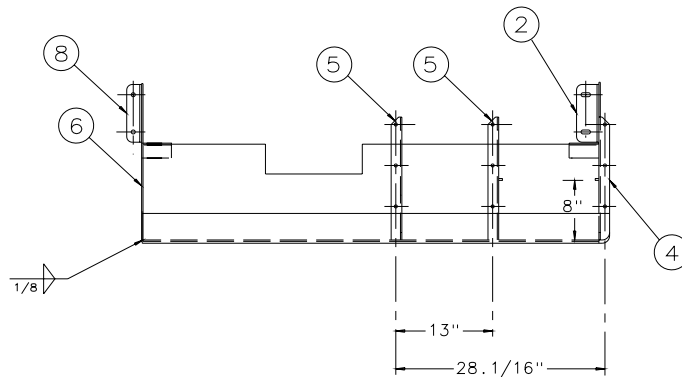
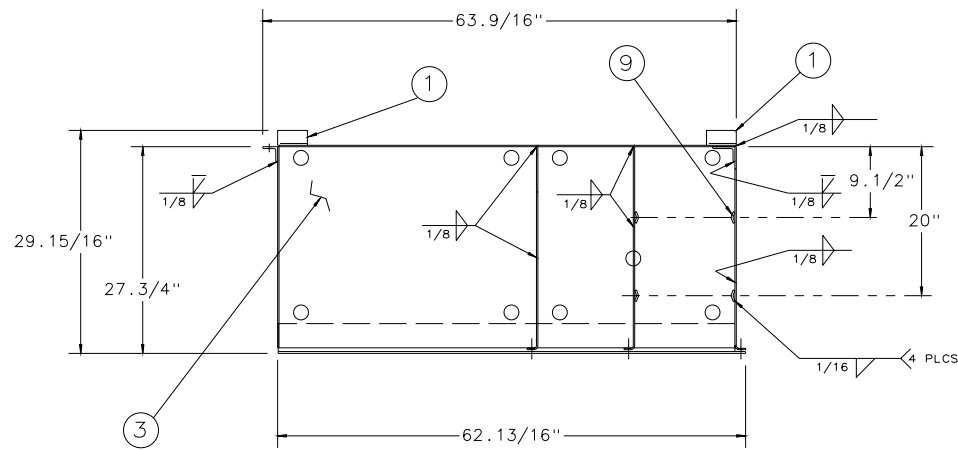
Return to Drawing Index



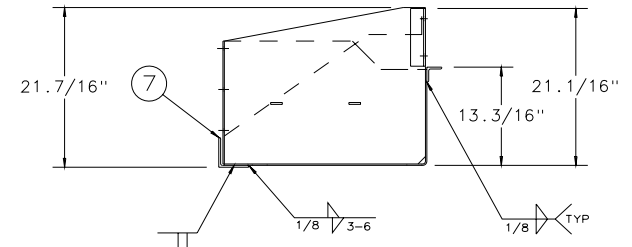
PART NO.: 29-0077
 MAT'L: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST. WT.: 28.7 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16						CHECKED: BH		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
		NO.	BY	DATE	REVISION		PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: TANK ACCESS PANEL RH					SCALE: 1/4	DATE: 1/17/97	DWG. NO. 29-0077B	

Return to Drawing Index



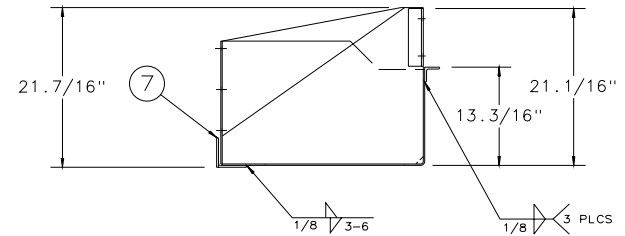
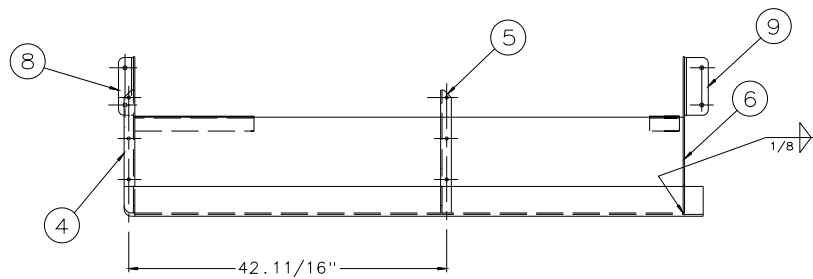
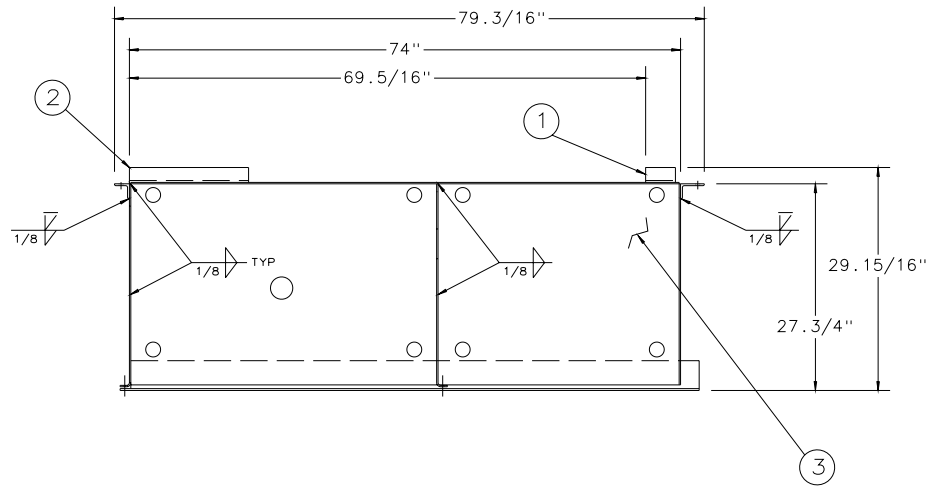
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1105	B	SHORT ANGLE STOP	2	1.04
2	00-1113	B	REAR MOUNTING ANGLE	1	2.65
3	00-1117	D	BOTTOM PLATE LH	1	129
4	00-1115	C	REAR PLATE LH	1	27.2
5	00-1116	C	CENTER PLATE LH	2	21.8
6	00-1151	B	FORWARD PLATE LH	1	17.0
7	00-1114	B	SIDE GUARD ANGLE LH	1	34.5
8	00-1150	B	MOUNTING ANGLE	1	2.06
9	00-0164	A	WIRE GUIDES	4	0.02



PART NUMBER: 29-0076
EST WT: 260 LBS

STD. TOLERANCES						DRAWN: BAH
FRACTIONAL:						CHECKED: SH
DECIMAL:						APPROVED:
SCALE: 1" = 8"	1	11/22/96	ADDED PART NO. 00-0164A			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						MICHIGAN DNR FOREST MANAGEMENT DIVISION
TITLE: FUEL TANK GUARD LH W/C						PROJECT NO.: 96-4 DWG NO.: 29-0076D

Return to Drawing Index

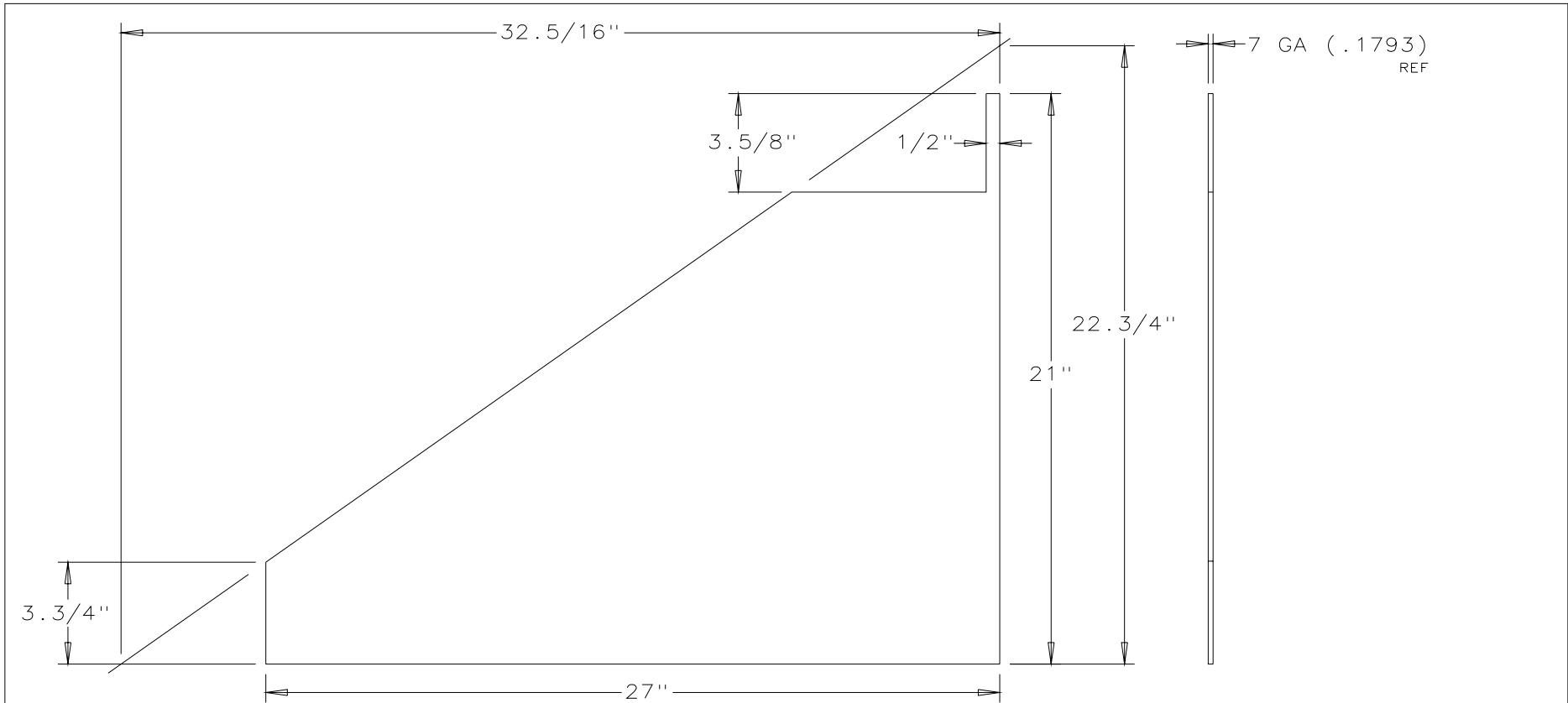


ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1105	B	SHORT ANGLE STOP	1	1.06
2	00-1106	B	ANGLE STOP	1	4.25
3	00-1112	D	BOTTOM PLATE RH	1	147
4	00-1111	C	REAR PLATE RH	1	27.2
5	00-1104	C	CENTER PLATE RH	1	21.8
6	00-1110	B	FORWARD PLATE RH	1	17.7
7	00-1107	B	SIDE GUARD ANGLE RH	1	42.8
8	00-1108	B	MOUNTING ANGLE	1	2.06
9	00-1109	B	REAR MOUNTING ANGLE	1	2.65

PART NUMBER: 29-0075
EST WT: 267 LBS

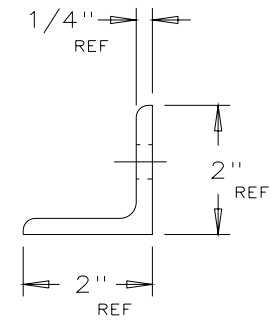
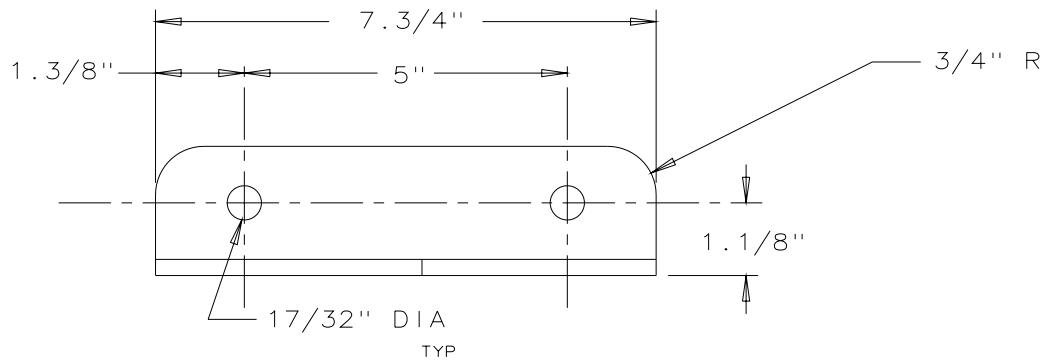
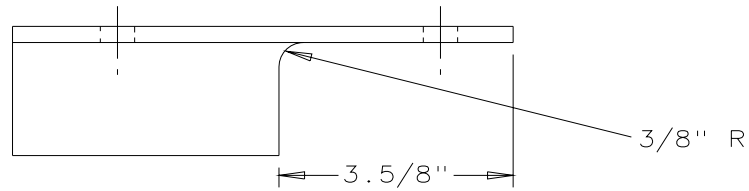
STD. TOLERANCES						DRAWN: BAH	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 1/16" ±0.0015" 1/8" ±0.0025" 3/16" ±0.0035" 1/2" ±0.0050"						CHECKED: BH	
DECIMAL: 0.0005" 0.0010" 0.0015" 0.0020"						APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DATE: 11/22/96	PROJECT NO.: 96-4
TITLE: FUEL TANK GUARD RH W/C						SCALE: 2.5 TON 1 = 8	DWG NO: 29-0075D

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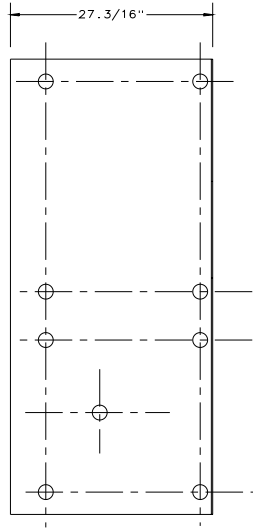
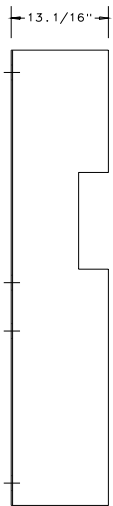
PART NO.: 00-1151
 MAT'L: SHEET, 7 GA 4X8 P&O
 ASTM 569
 F.F.E.S. SPEC. NO.: AA-G00748AP
 EST. WT.: 17.0 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: FORWARD PLATE LH					SCALE: 1/4	DATE: 2/03/97	DWG. NO: 00-1151B

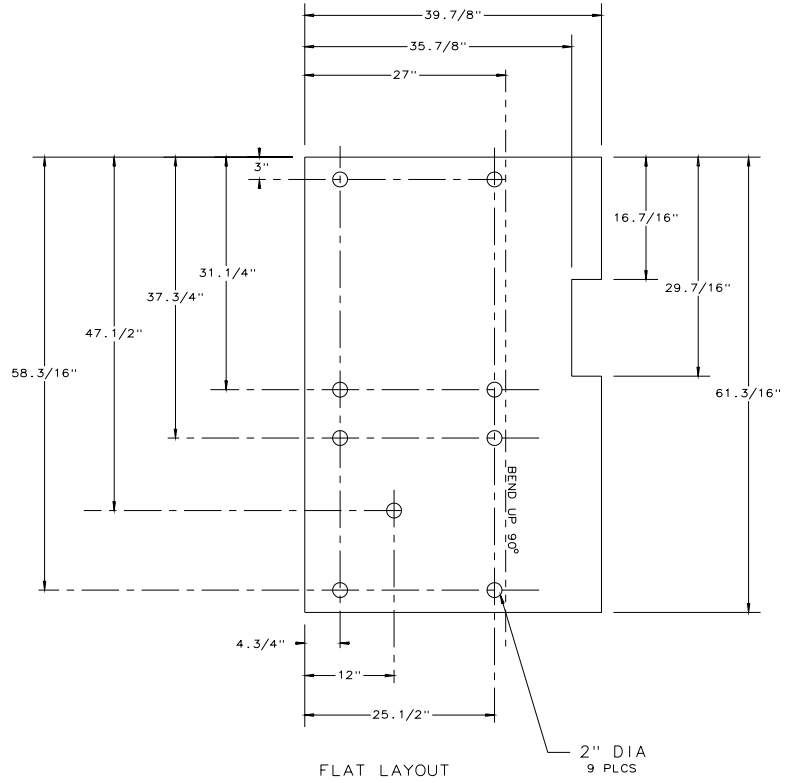


PART NUMBER: 00-1150
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 2.06 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: MOUNTING ANGLE LH					SCALE: 1/2	DATE: 2/03/97	DWG. NO. 00-1150B	

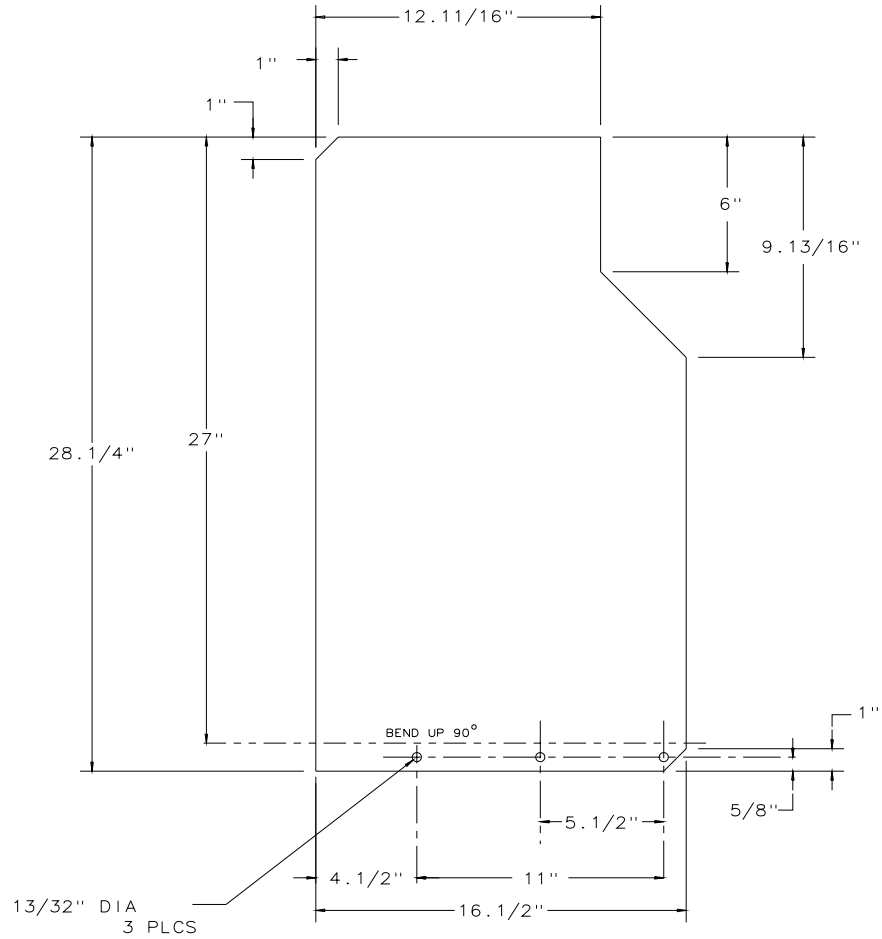
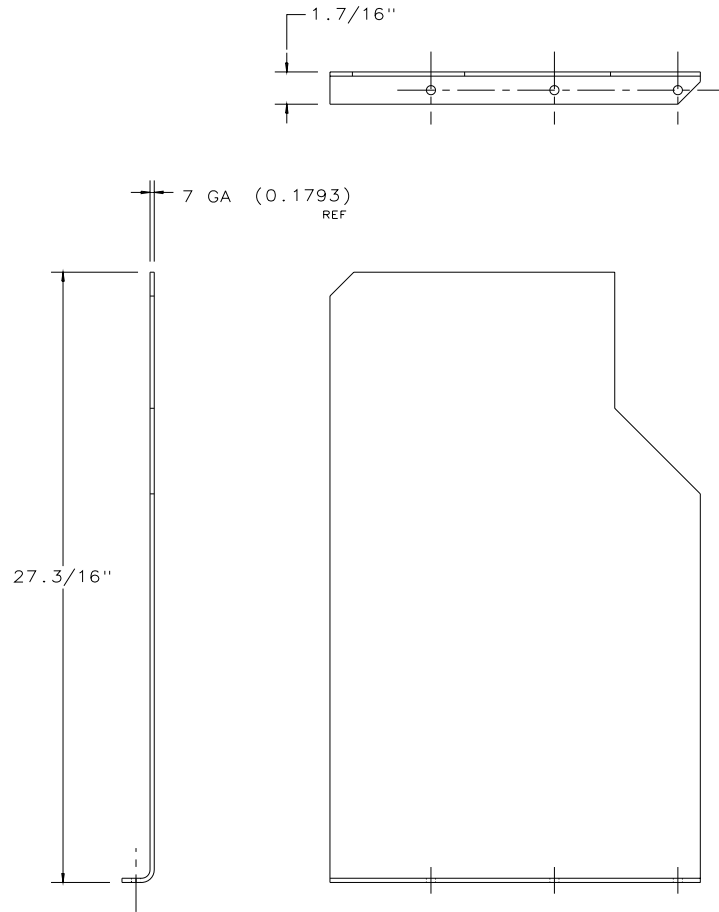


7 GA
(0.1793)
REF



PART NUMBER: 00-1117
 MATL: SHEET 7 GA 4X8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 129 LBS

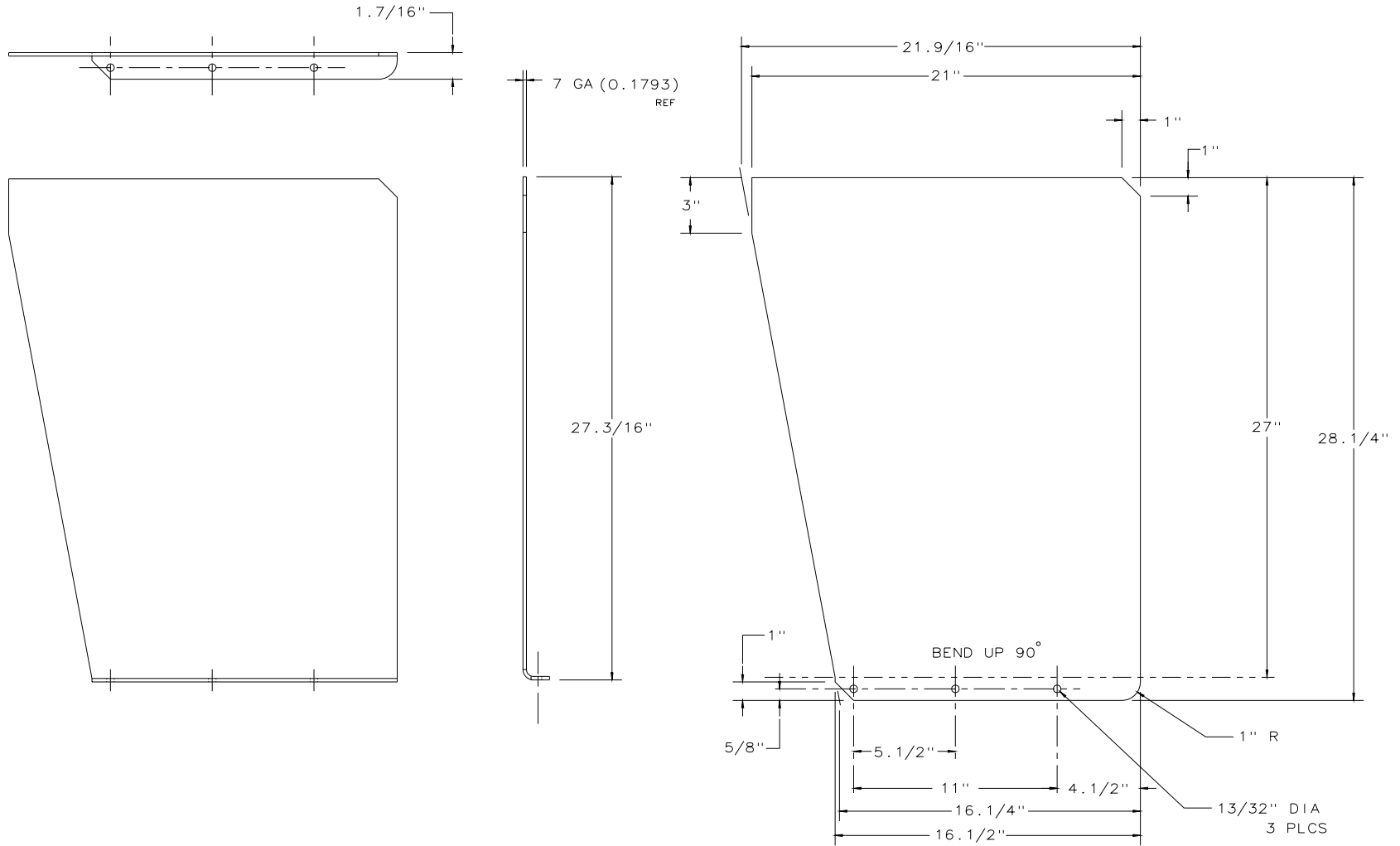
STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 1/8" MINIMUM						CHECKED: EKH	
DECIMAL: 0.005" MINIMUM						APPROVED:	
DATE	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: BOTTOM PLATE LH	SCALE: 1/8	DATE: 12/6/96	Dwg. No.:		00-1117D		



PART NUMBER: 00-1116
 MATL: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 21.8 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16				CHECKED: BH		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CENTER PLATE LH				SCALE: 1/4	DATE: 12/6/96	PROJECT NO.: 96-4 DWG. NO.: 00-1116C

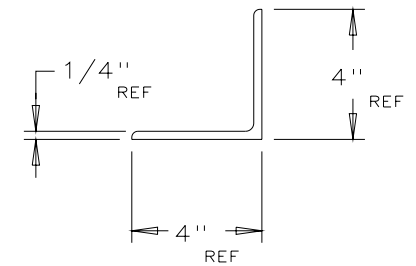
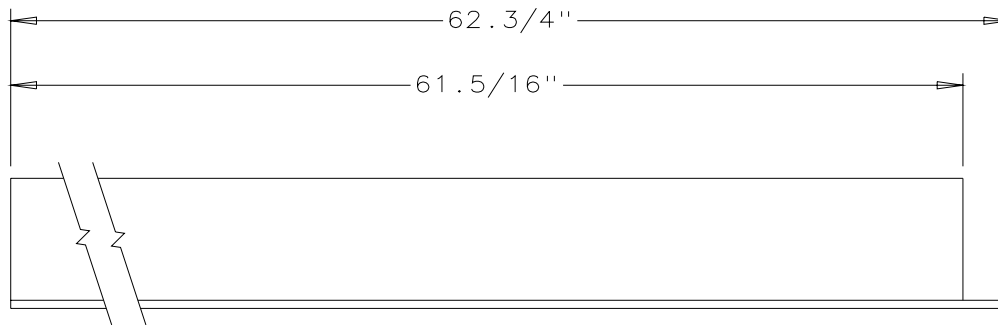
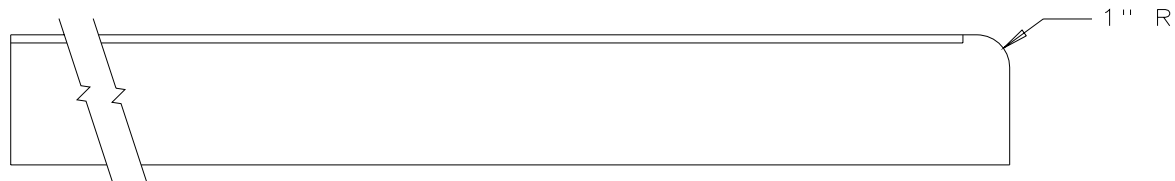
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PART NUMBER: 00-1115
 MATL: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 27.2 LBS

STD. TOLERANCES				DRAWN: LLP				MICHIGAN DNR	
FRACTIONAL: 0 TO 8 IN. ± 1/32 6 IN. AND UP ± 1/16				CHECKED: BH					FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005				ANGULAR: ± 1 DEG					
NO.				BY				DATE	
NO.				REVISION				APPROVED:	
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 96-4	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: REAR PLATE LH						SCALE: 1/4"	DATE: 12/6/96	DWG. NO. 00-1115C	

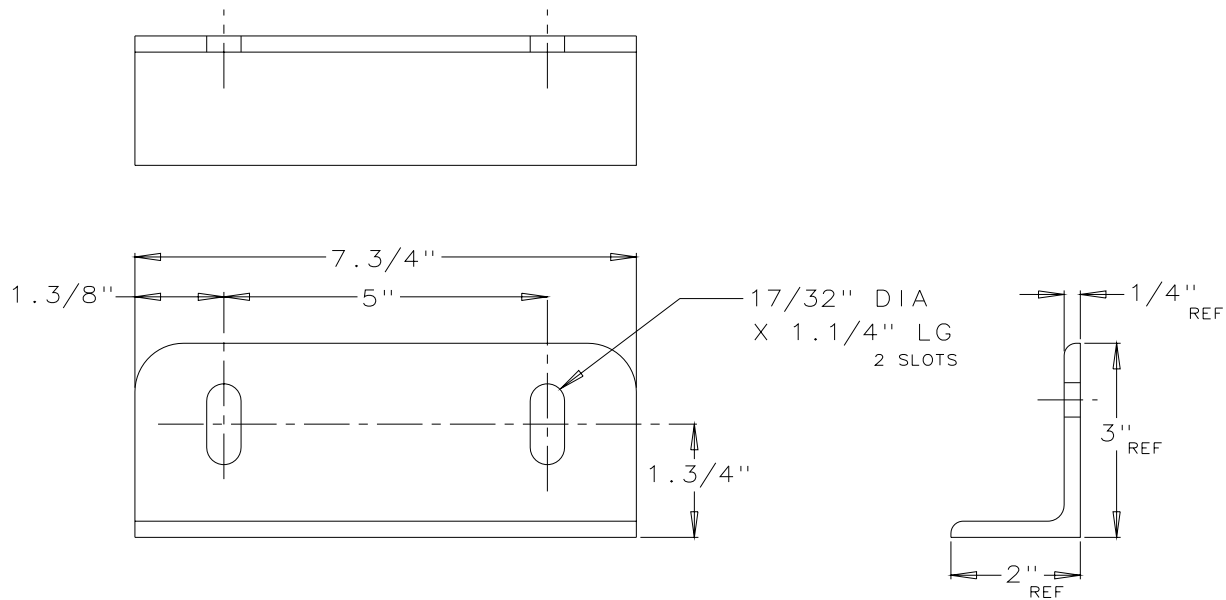
Return to Drawing Index



PART NUMBER: 00-1114
 MATL: ANGLE 4" X 4" X 1/4"
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 34.5 LBS

STD. TOLERANCES									DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:									CHECKED: BH	
0 TO 6 IN + - 1/32									APPROVED:	
6 IN AND UP + - 1/16										
DECIMAL:		ANGULAR:								
1 PLACE + - 0.1		+ - 1 DEG								
2 PLACE + - 0.01										
3 PLACE + - 0.005										
	NO.	BY	DATE	REVISION						
FOREST FIRE EXPERIMENT STATION										
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										
TITLE: SIDE GUARD ANGLE LH								SCALE: 1 = 4	DATE: 12/6/96	DWG. NO.: 00-1114B
										PROJECT NO.: 96-4

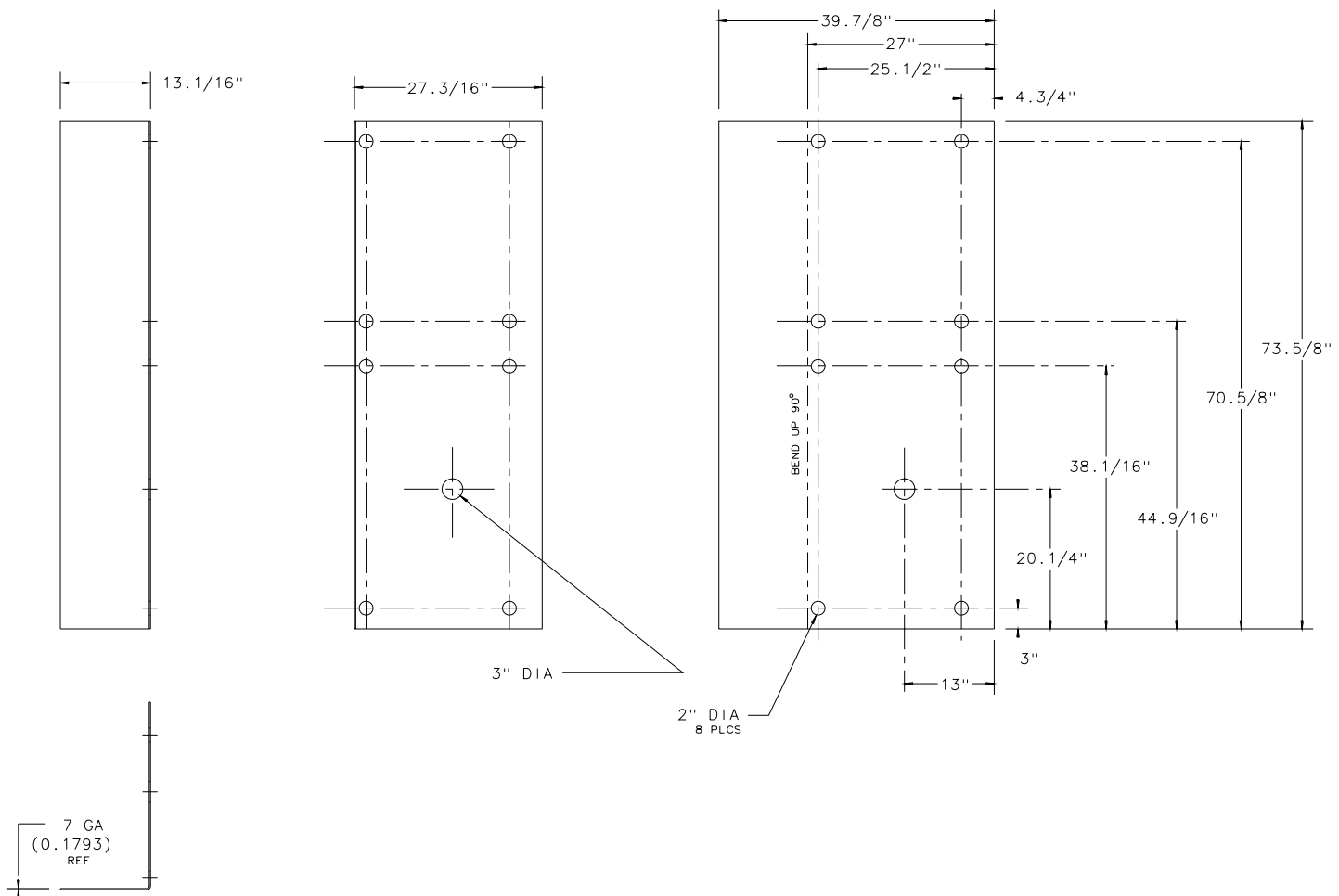
Return to Drawing Index



PART NO.: 00-1113
 MAT'L: ANGLE, 3" X 2" X 1/4"
 K20600
 F.F.E.S. SPEC NO.: AK-01208AG
 EST. WT.: 2.65 LBS.

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: BH			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: REAR MOUNTING ANGLE					SCALE: 1/2	DATE: 12/6/96	DWG. NO.: 00-1113B

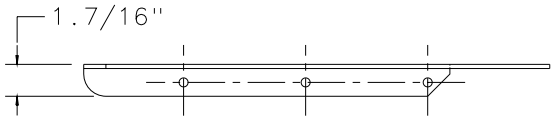
Return to Drawing Index



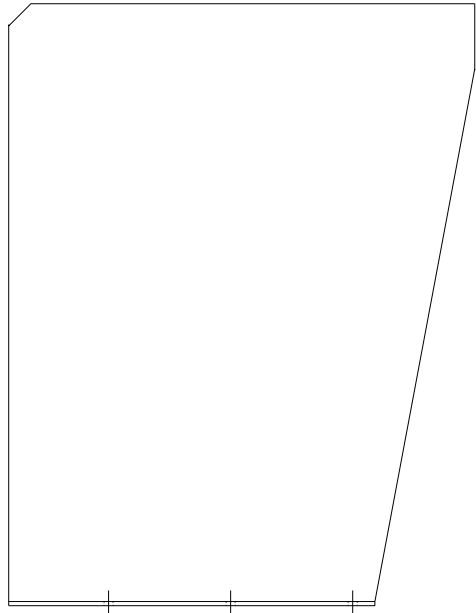
PART NUMBER: 00-1112
 MATL: SHEET 7 GA 4XB HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 147 LBS

STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR		
FRACTIONAL:								CHECKED: SH			
DECIMAL:								APPROVED:			
DESIGNER:									FOREST MANAGEMENT DIVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4		
TITLE: BOTTOM PLATE RH									SCALE: 1/8	DATE: 12/5/96	ENG. NO: 00-1112D

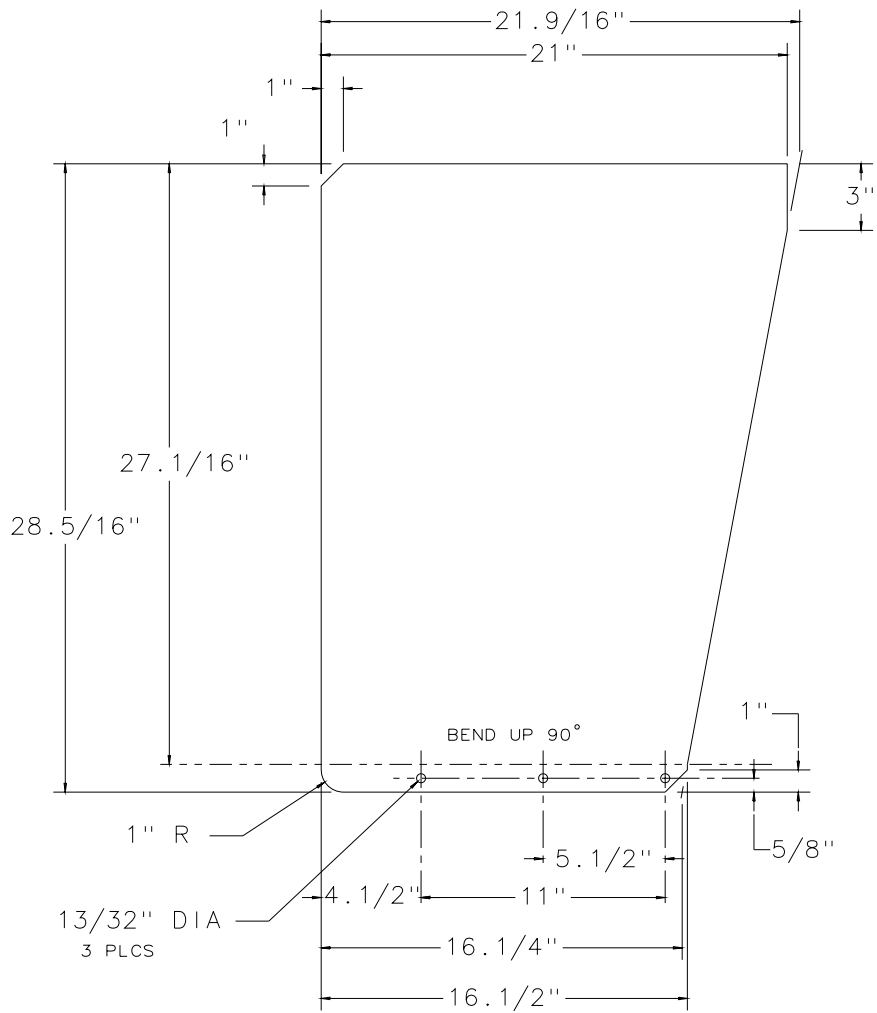
Return to Drawing Index



7 GA
(0.1793)
REF



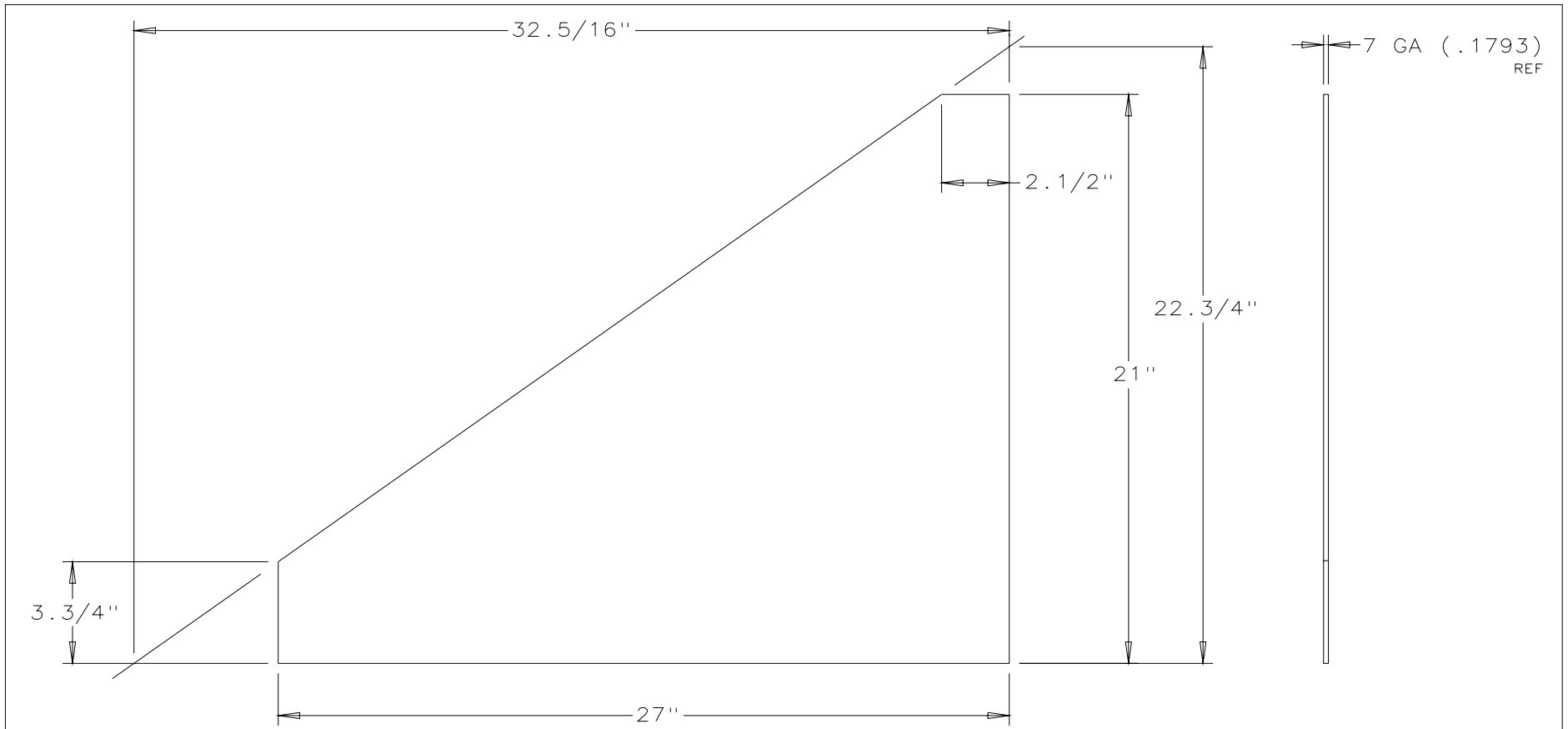
27.3/16"



PART NUMBER: 00-1111
 MATL: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 27.2 LBS

STD. TOLERANCES		DRAWN: LLP		MICHIGAN DNR
FRACTIONAL: 8 TO 6 IN +-1/32 6 IN AND UP +-1/16		CHECKED: BH		
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005		APPROVED:		FOREST MANAGEMENT DIVISION
ANGULAR: 1 DEG +-1.0 DEG		REVISION		PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION				DWG. NO. 00-1111C
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: REAR PLATE RH		SCALE: 1/4	DATE: 12/5/96	

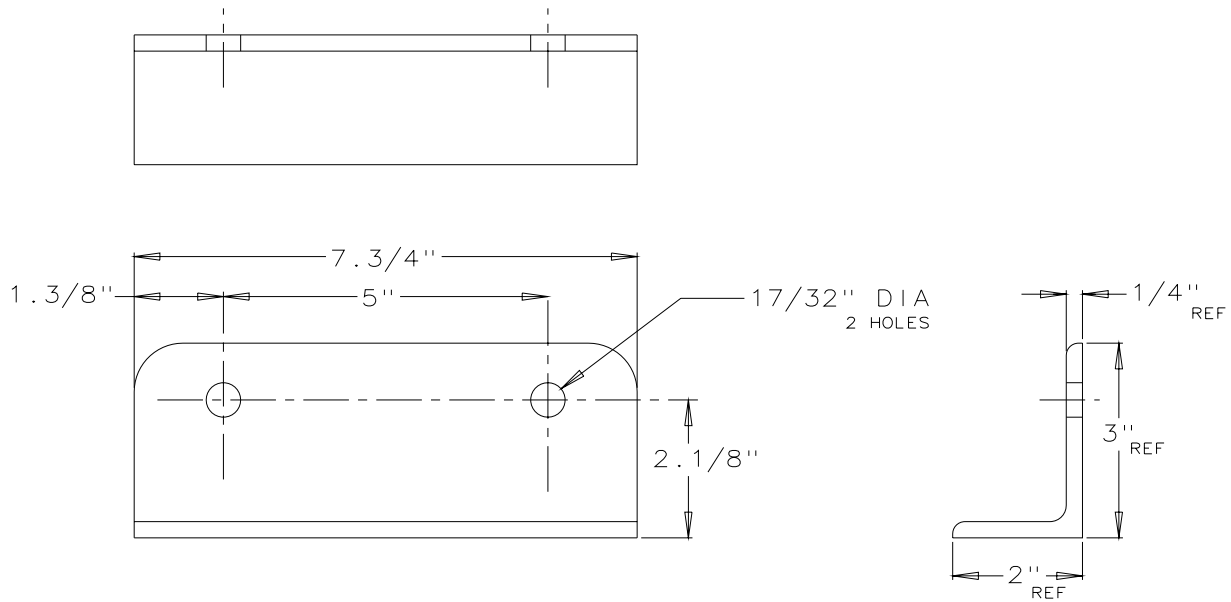
Return to Drawing Index



PART NO.: 00-1110
 MAT'L: SHEET, 7 GA 4X8 P&O
 ASTM 569
 F.F.E.S. SPEC. NO.: AA-G00748AP
 EST. WT.: 17.7 LBS

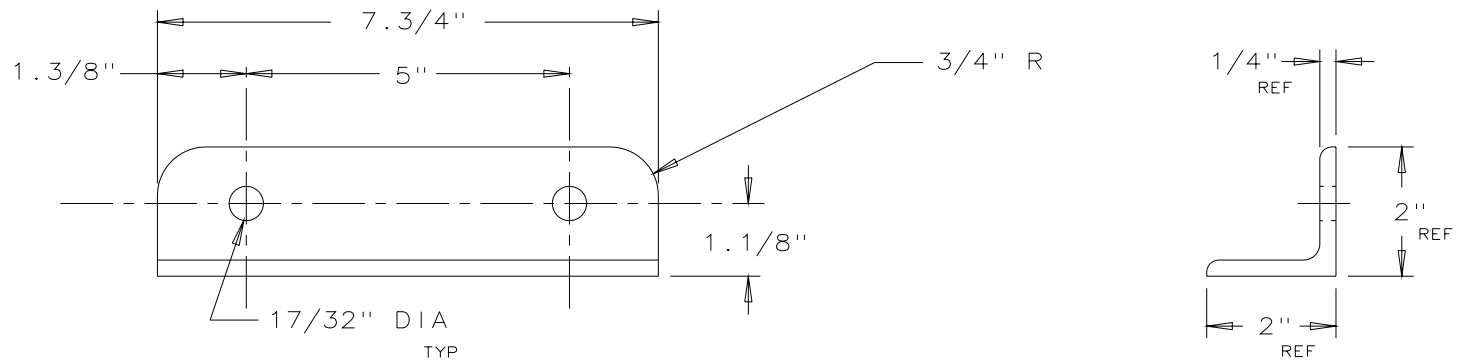
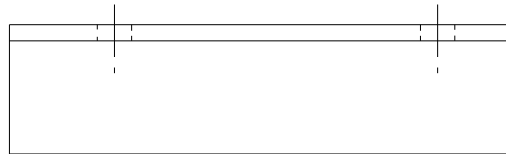
STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: BH			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: FORWARD PLATE					SCALE: 1/4	DATE: 12/3/96	PROJECT NO.: 96-4
							DWG. NO.: 00-1110B

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PART NO.: 00-1109
 MAT'L: ANGLE, 3" X 2" X 1/4"
 K20600
 F.F.E.S. SPEC NO.: AK-01208AG
 EST. WT.: 2.65 LBS.

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16				CHECKED: BH		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: REAR MOUNTING ANGLE				SCALE: 1/2	DATE: 11/27/96	PROJECT NO.: 96-4 DWG. NO.: 00-1109B

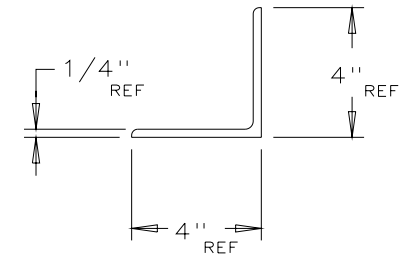
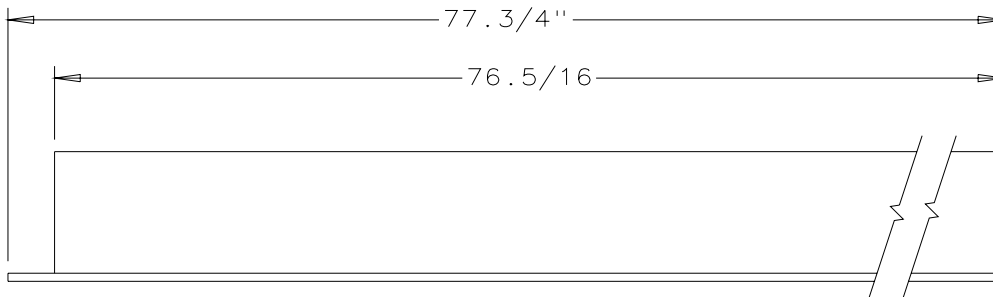
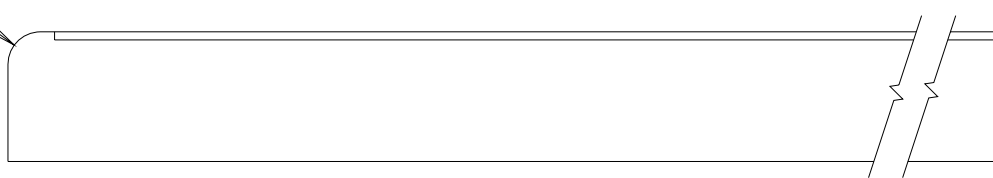


PART NUMBER: 00-1108
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 2.06 LBS

STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16								CHECKED: BH	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG							APPROVED:	
		NO.	BY	DATE	REVISION				PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION									DWG. NO. 00-1108B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: MOUNTING ANGLE							SCALE: 1/2	DATE: 11/27/96	

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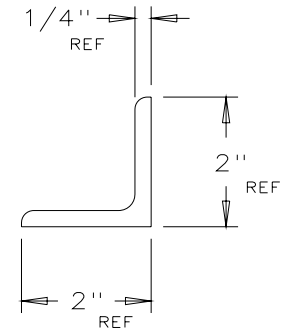
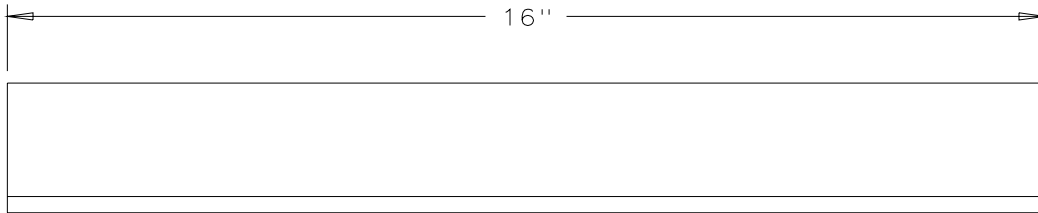
1" R



PART NUMBER: 00-1107
 MATL: ANGLE 4" X 4" X 1/4"
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 42.8 LBS

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED:		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: SIDE GUARD ANGLE RH						SCALE: 1 = 4	DATE: 11/27/96	DWG. NO.: 00-1107B

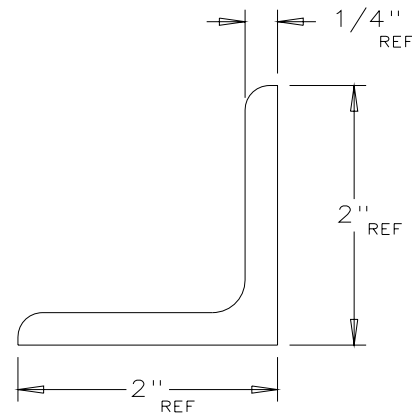
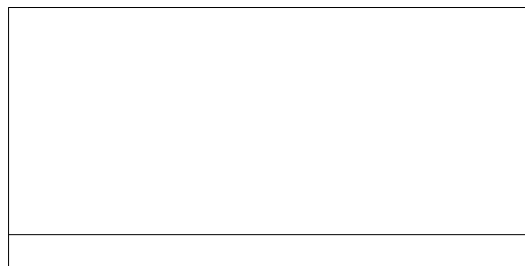
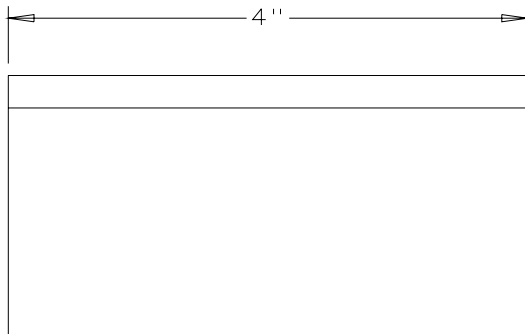
Return to Drawing Index



PART NO.: 00-1106
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 4.25 LBS

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: BH		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: ANGLE STOP						SCALE: 1 = 2	DATE: 11/27/96	DWG. NO. 00-1106B

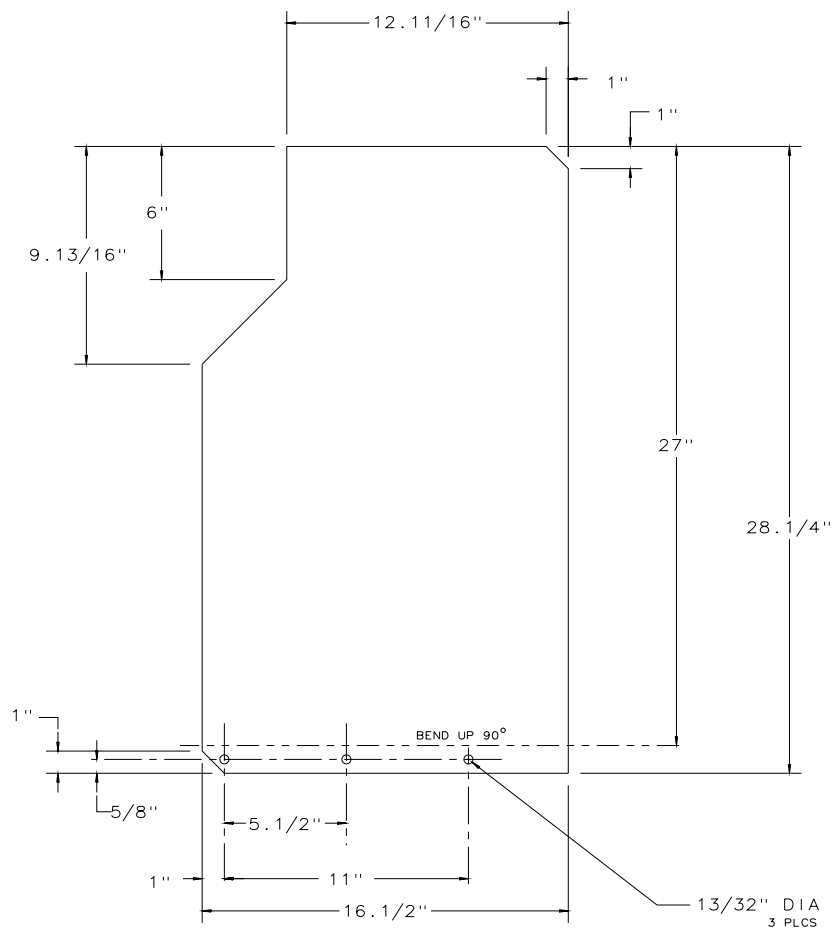
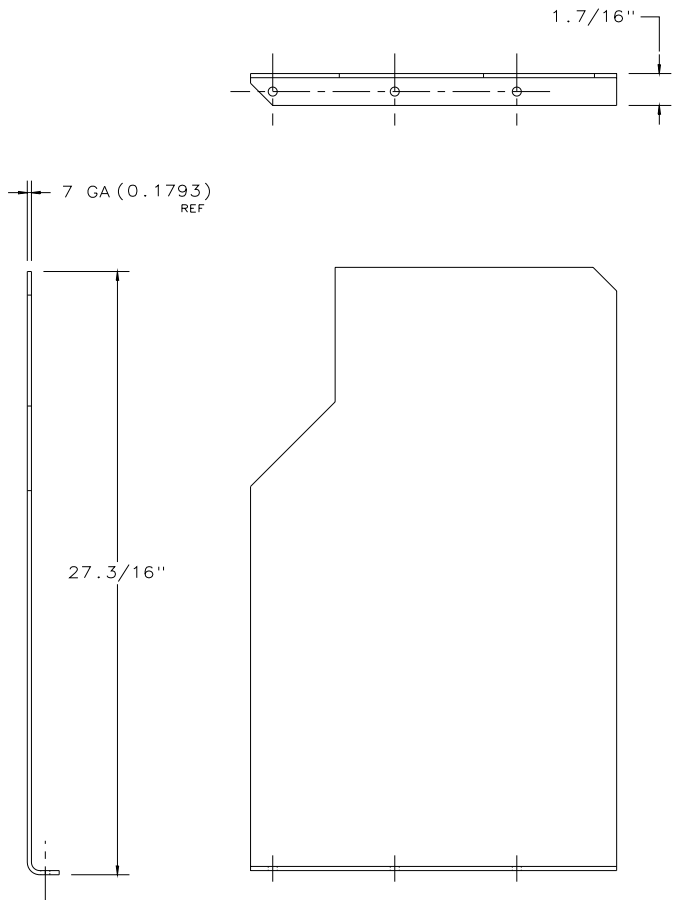
Return to Drawing Index



PART NO.: 00-1105
 MAT'L: ANGLE, 2" X 2" X 1/4"
 K02600
 F.F.E.S. SPEC. NO.: AK-00808AG
 EST. WT.: 1.06 LBS.

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: BH		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION						DWG. NO. 00-1105B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: SHORT ANGLE STOP				SCALE: FULL	DATE: 11/26/96	

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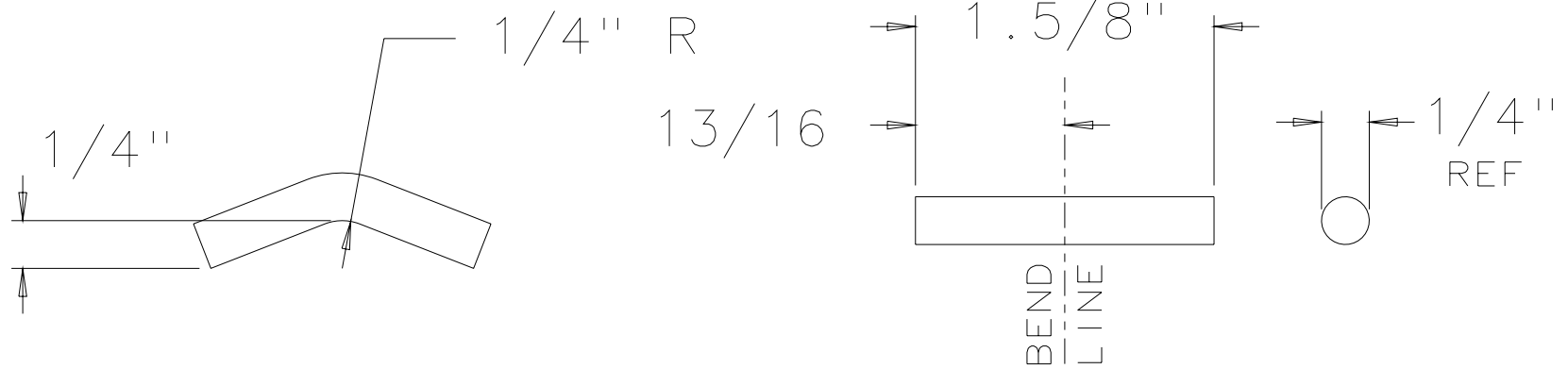


PART NUMBER: 00-1104
 MATL: SHEET 7 GA 4X8 P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 21.8 LBS

STD. TOLERANCES				DRAWN: LLP	
FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16				CHECKED: BH	
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:	
NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION					
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: CENTER PLATE RH				SCALE: 1/4	DATE: 12/5/96
				PROJECT NO.: 96-4	
				DWC NO: 00-1104C	

MICHIGAN
 DNR
 FOREST MANAGEMENT
 DIVISION

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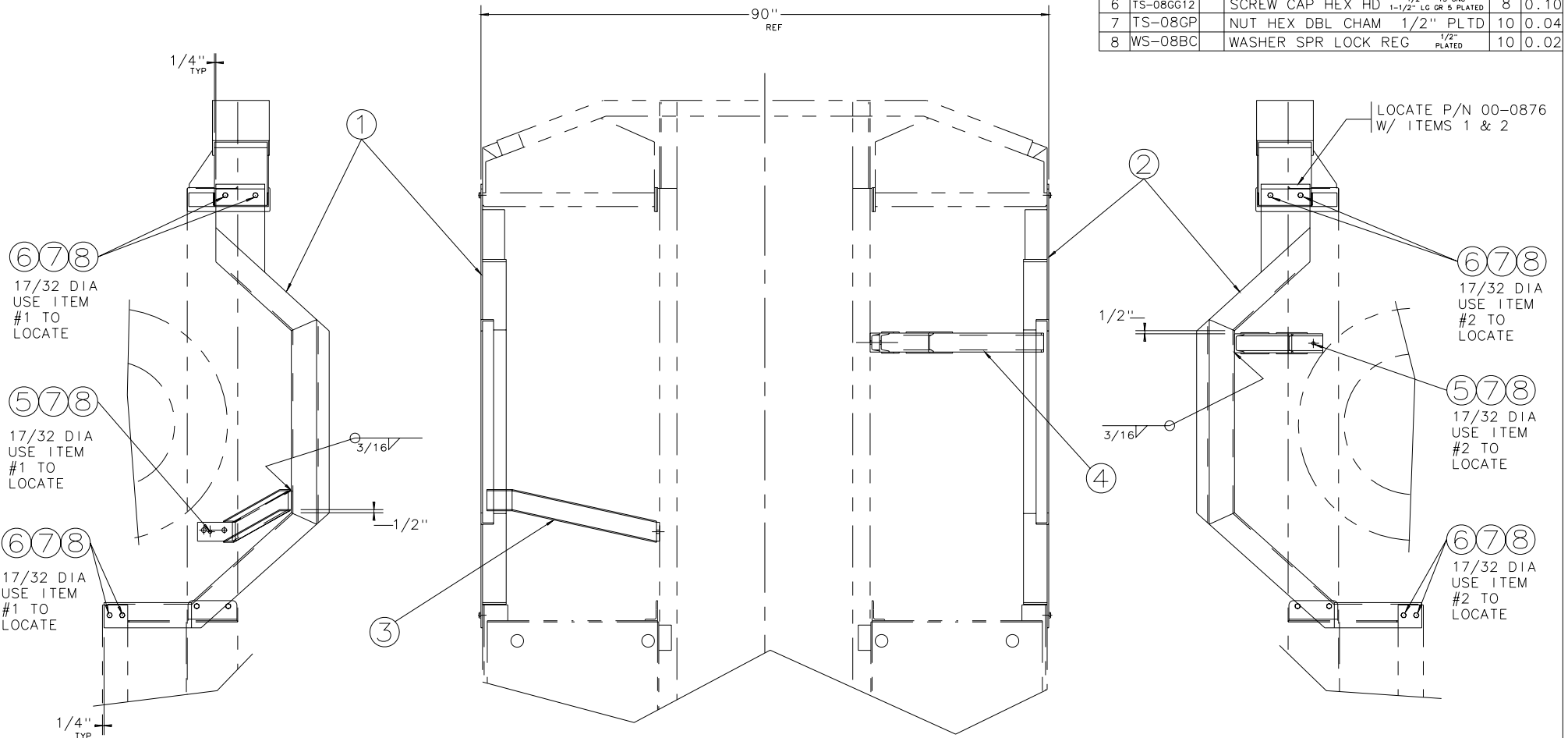


PART NO: 00-0164
 MATERIAL: BAR, RD 1/4 DIA HR
 UNS K02600
 FFES SPEC NO: AC-00025AG
 EST WT: 0.02 LBS

STD. TOLERANCES						DRAWN: KDB	MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: *		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 87-3
TITLE: WIRE GUIDE					SCALE: FULL	DATE: 3/17/89	DWG. NO. 00-0164A	

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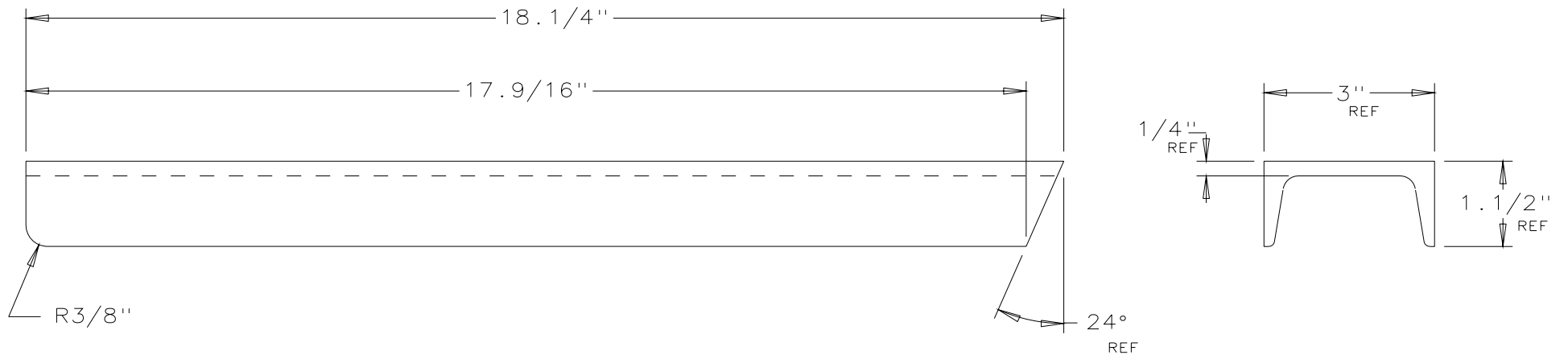
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1137	D	FENDER GUARD LH S/W	1	62.0
2	00-1124	D	FENDER GUARD RH S/W	1	62.0
3	00-1343	C	FENDER BRACE LH S/W	1	18.4
4	00-1344	C	FENDER BRACE RH S/W	1	18.3
5	TS-08GG14		SCREW CAP HEX HD 1/2" - 13 UNC 1-3/4" LG GR 5 PLATED	2	0.12
6	TS-08GG12		SCREW CAP HEX HD 1/2" - 13 UNC 1-1/2" LG GR 5 PLATED	8	0.10
7	TS-08GP		NUT HEX DBL CHAM 1/2" PLTD	10	0.04
8	WS-08BC		WASHER SPR LOCK REG 1/2" PLATED	10	0.02



PART NO.: 29-9816
EST. WT.: 161 LBS

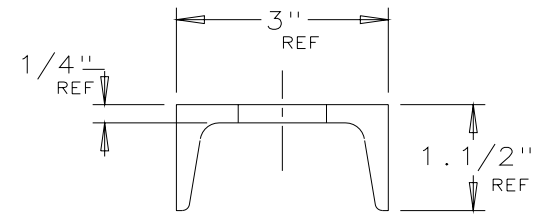
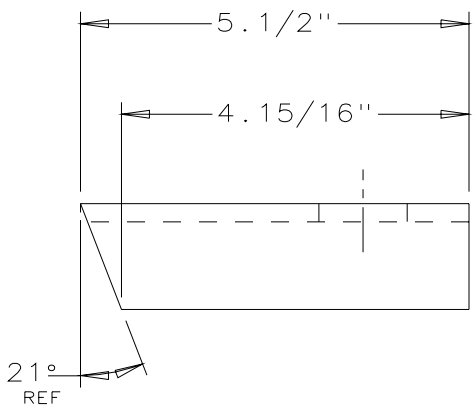
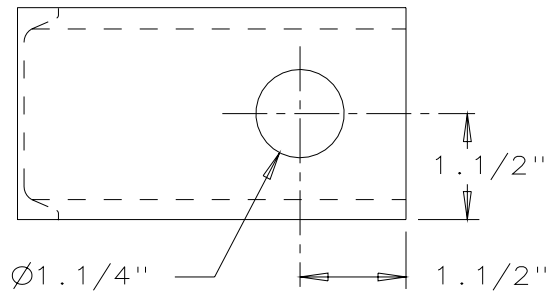
STD. TOLERANCES		DRAWN: DGP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FUNCTIONAL: ± 0.005" ± 0.005" ± 0.005" ± 0.005"		CHECKED: KLB		
DECIMAL: ± 0.005" ± 0.005" ANGULAR: ± 0.1 DEG ± 0.1 DEG ± 0.1 DEG		APPROVED:		
NO. BY DATE		REVISION		PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION				PROJECT NO.: 29-9816D
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: FENDER GUARD ASSEMBLY		SCALE: 1/8"	DATE: 4/12/01	

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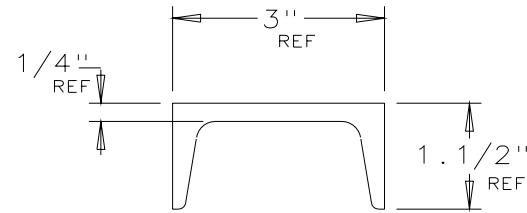
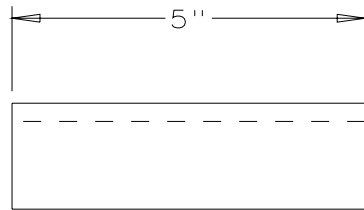
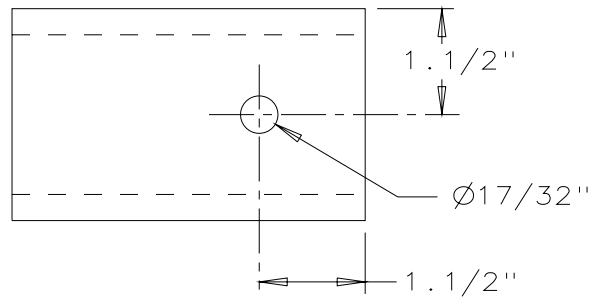
PART NO.: 00-1349
 MAT'L: CHANNEL, 3X5.0#/FT
 KO2600
 FFES SPEC. NO.: AH-03050AG
 EST. WT.: 7.40 LBS.

STD. TOLERANCES								DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED: *	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: HORIZONTAL CHANNEL							SCALE: 1/2	DATE: 04/14/01	DWG. NO.: 00-1349B



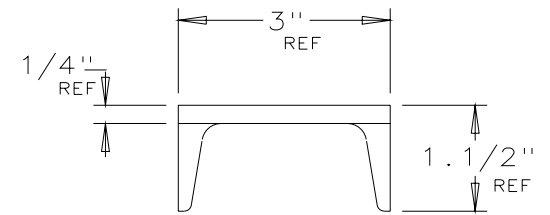
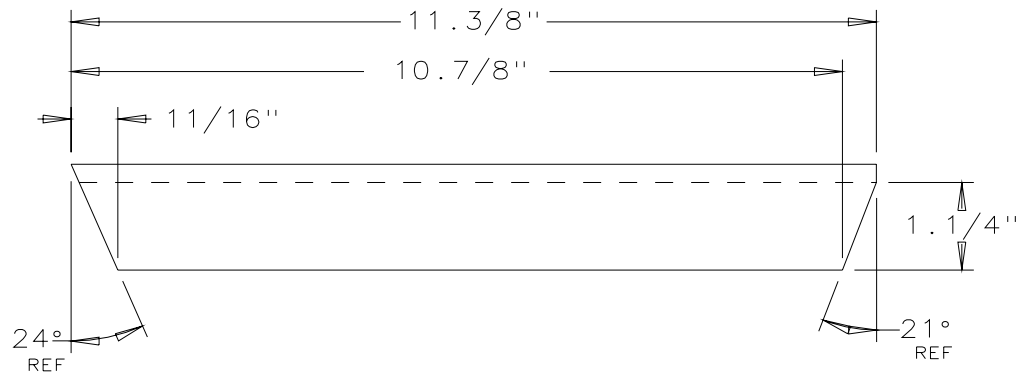
PART NO.: 00-1350
 MAT'L: CHANNEL, 3X5.0#/FT
 KO2600
 FFES SPEC. NO.: AH-03050AG
 EST. WT.: 2.21 LBS

STD. TOLERANCES						DRAWN: DGP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION								DWG. NO.: 00-1350B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: VERTICAL CHANNEL						SCALE: 1/2	DATE: 04/14/01	



PART NO.: 00-1351
 MAT'L: CHANNEL, 3X5.0#/FT
 KO2600
 FFES SPEC. NO.: AH-03050AG
 EST. WT.: 2.08 LBS

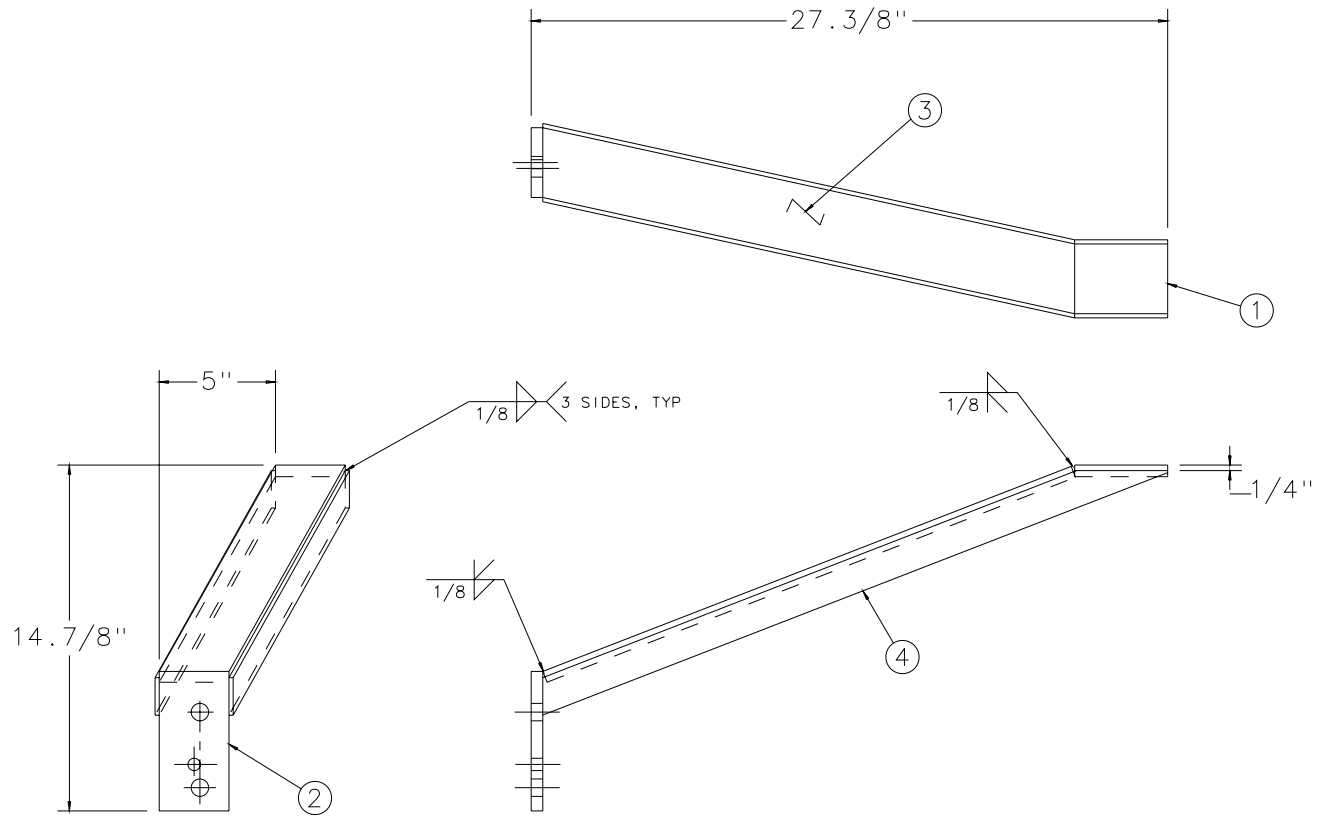
STD. TOLERANCES				DRAWN: DGP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: SPACER CHANNEL				SCALE: 1/2	DATE: 04/14/01	PROJECT NO.: 96-4 DWG. NO.: 00-1351B



PART NO.: 00-1352
 MAT'L: CHANNEL, 3X5.0#/FT
 KO2600
 FFES SPEC. NO.: AH-03050AG
 EST. WT.: 4.65 LBS.

STD. TOLERANCES								DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG						APPROVED:	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: ANGLE CHANNEL							SCALE: 1/2	DATE: 04/14/01	DWG. NO.: 00-1352B

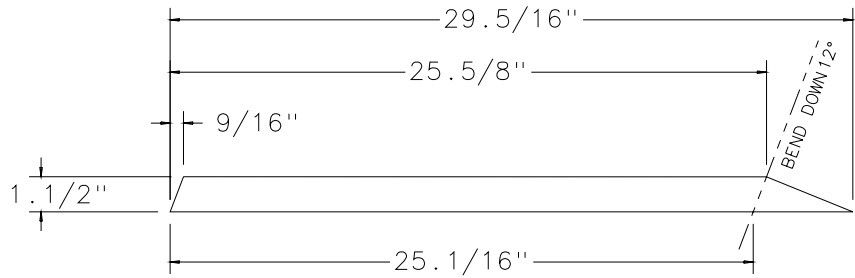
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1345	A	TOP PLATE	1	1.70
2	00-1346	A	MOUNTING PLATE	1	2.36
3	00-1347	B	BRACE	1	10.6
4	00-1348	C	STIFFENER	1	2.07



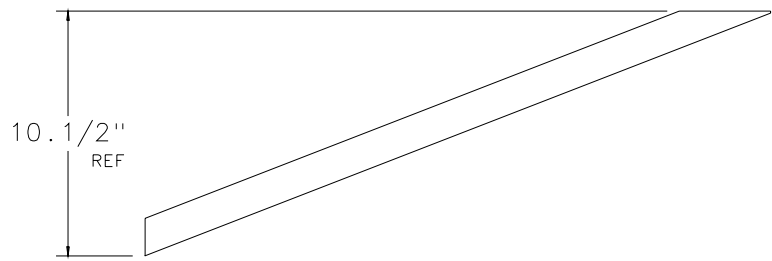
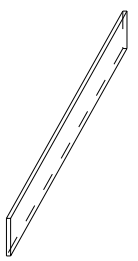
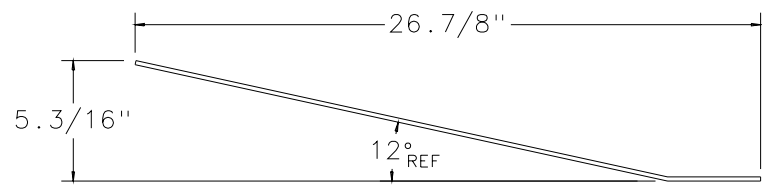
PART NUMBER: 00-1343
EST WT: 19.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16		DRAWN: DGP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 96-4		DWG. NO.: 00-1343C
TITLE: FENDER BRACE LH S\W		SCALE: 1 = 4	DATE: 13 APR 01	

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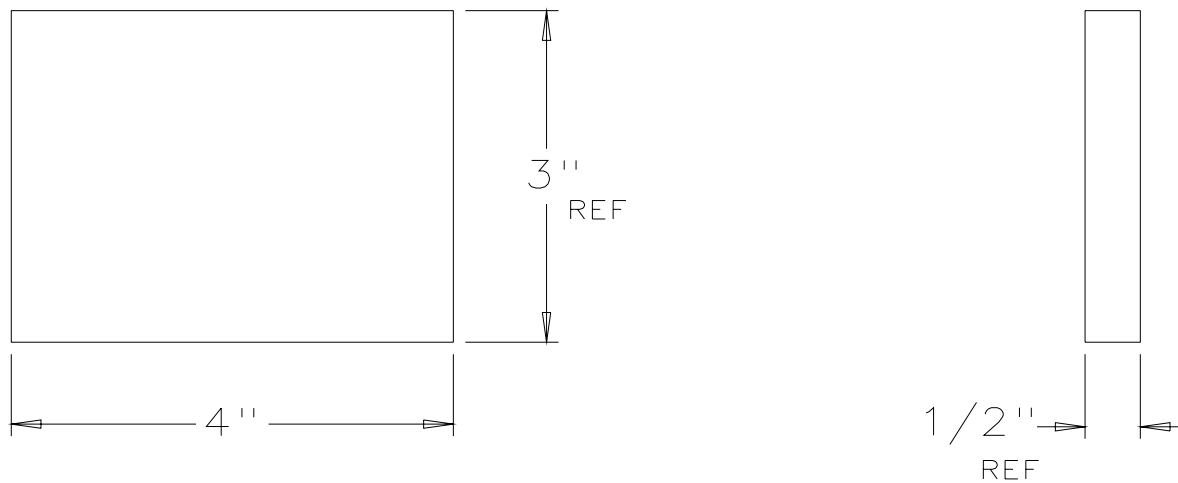


FLAT LAYOUT



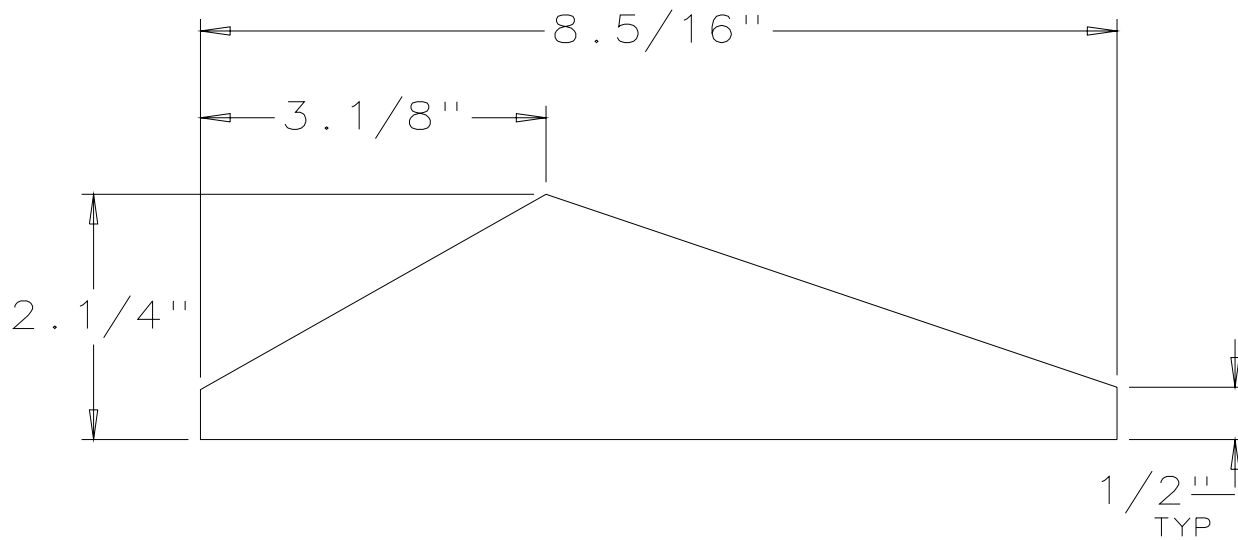
PART NO.: 00-1348
 MAT'L: SHEET 7GA 3X8 HR P&O
 ASTM A569
 FFES SPEC NO.: AA-G0738AP
 EST. WT.: 2.07 LBS

STD. TOLERANCES				DRAWN: DGP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN. AND UP ± 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION		PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION						DWG. NO.: 00-1348C
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: STIFFENER				SCALE: 1 = 4	DATE: 13 APR 01	



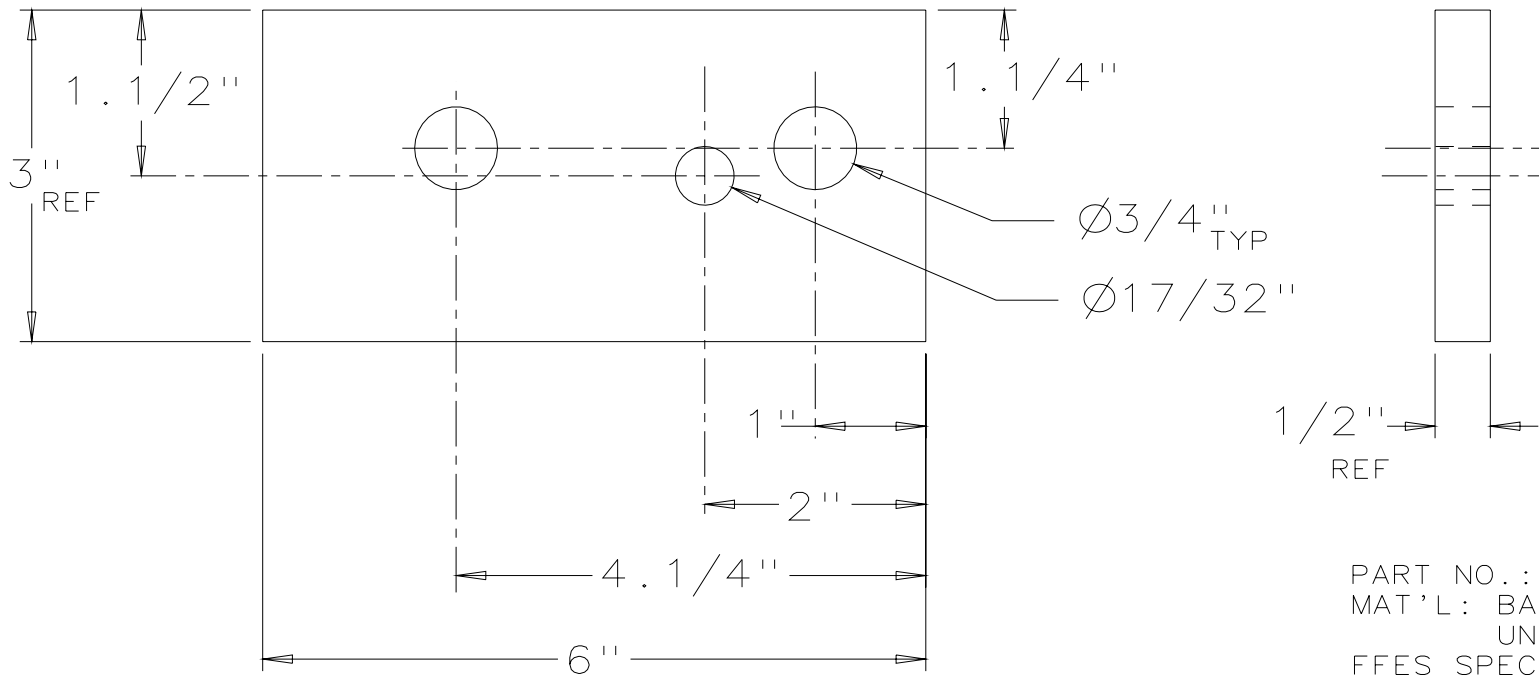
PART NO.: 00-1345
 MAT'L: BAR, FLAT 1/2X3 HR
 UNS G10200
 FFES SPEC NO.: AB-00812AA
 EST. WT.: 1.70 LBS

STD. TOLERANCES						DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: TOP PLATE					SCALE: 1/2	DATE: 04/17/01	DWG. NO. 00-1345A



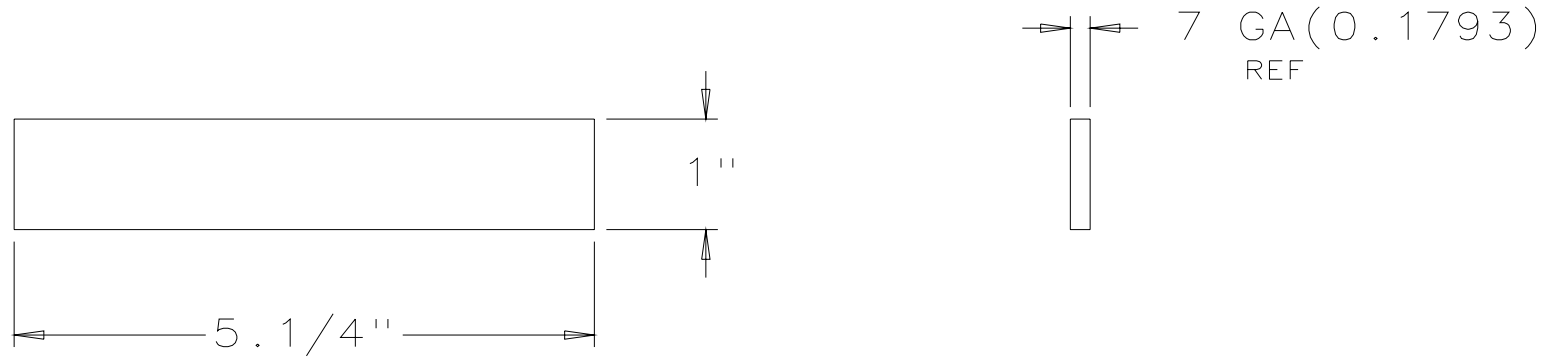
PART NO.: 00-1353
 MAT'L: SHEET 7GA 3X8 HR P&O
 ASTM A569
 FFES SPEC NO.: AA-G0738AP
 EST. WT.: 0.71 LBS

STD. TOLERANCES						DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005	ANGULAR: +- 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
<h1>FOREST FIRE EXPERIMENT STATION</h1> <p>P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>							PROJECT NO.: 96-4
TITLE: UPPER GUSSET					SCALE: 1/2	DATE: 04/17/01	DWG. NO.: 00-1353A



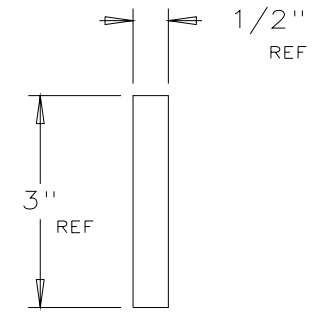
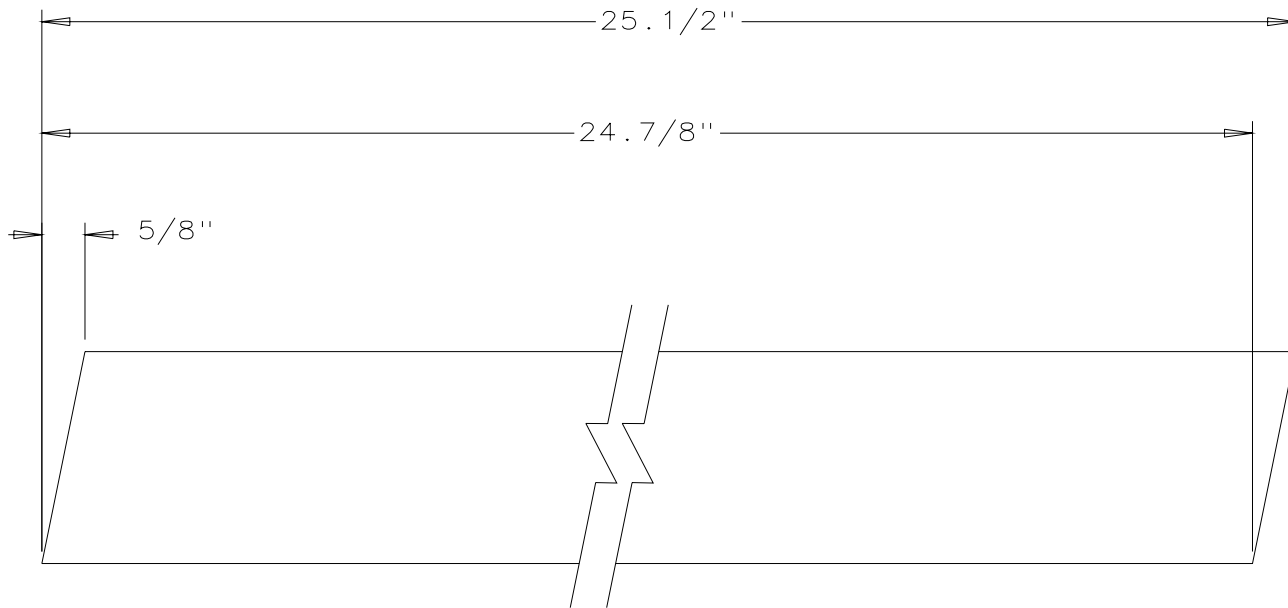
PART NO.: 00-1346
 MAT'L: BAR, FLAT 1/2X3 HR
 UNS G10200
 FFES SPEC NO.: AB-00812AA
 EST. WT.: 2.36 LBS

STD. TOLERANCES						DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$						CHECKED: KDB	
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005	ANGULAR: ± 1 DEG					APPROVED:	
		NO.	BY	DATE	REVISION		
<h1>FOREST FIRE EXPERIMENT STATION</h1> <p>P.O. BOX 68 ROSCOMMON, MICHIGAN 48653</p>							PROJECT NO.: 96-4
TITLE: MOUNTING PLATE					SCALE: 1/2	DATE: 04/17/01	DWG. NO.: 00-1346A



PART NO.: 00-1354
 MAT'L: SHEET 7GA 3X8 HR P&O
 ASTM A569
 FFES SPEC NO.: AA-G0738AP
 EST. WT.: 0.27 LBS

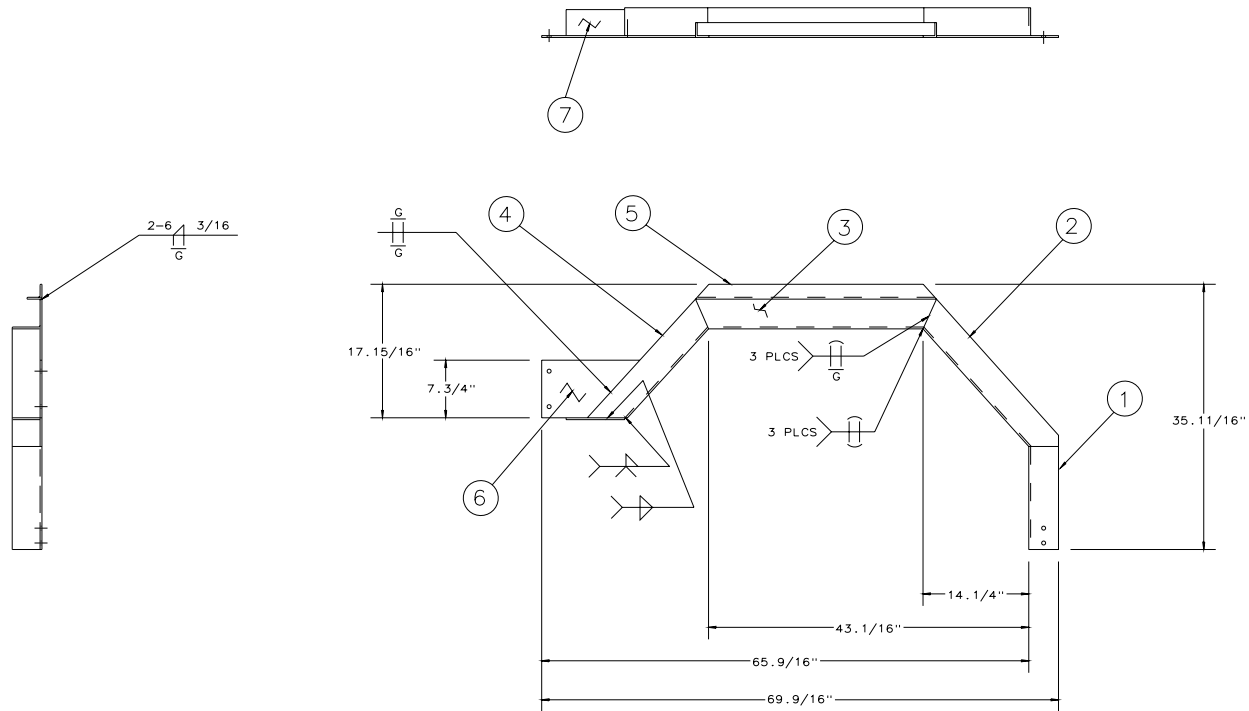
STD. TOLERANCES						DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL:	ANGULAR:					APPROVED:	
1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	+ - 1 DEG	NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: LOWER GUSSET					SCALE: 1/2	DATE: 04/17/01	DWG. NO. 00-1354A



PART NO.: 00-1347
 MAT'L: BAR, FLAT 1/2X3 HR
 G10200
 FFES SPEC. NO.: AB-00812AA
 EST. WT.: 10.6 LBS.

STD. TOLERANCES								DRAWN: DGP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL:								CHECKED: KDB		
0 TO 6 IN + - 1/32								APPROVED:		
6 IN AND UP + - 1/16										
DECIMAL:		ANGULAR:								
1 PLACE + - 0.1		+ - 1 DEG								
2 PLACE + - 0.01										
3 PLACE + - 0.005										
NO.	BY	DATE	REVISION							
FOREST FIRE EXPERIMENT STATION										
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										
TITLE: BRACE								SCALE: 1/2	DATE: 04/14/01	DWG. NO.: 00-1347B
PROJECT NO.: 96-4										

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1129	B	VERTICAL ANGLE LH	1	7.63
2	00-1130	B	REAR ANGLE LH	1	12.4
3	00-1121	B	TOP ANGLE	1	18.3
4	00-1131	B	FRONT ANGLE LH	1	9.66
5	00-1120	B	TOP ANGLE	1	8.43
6	00-1123	B	GUSSET	1	5.30
7	00-1149	A	FILLER PLATE	1	1.95

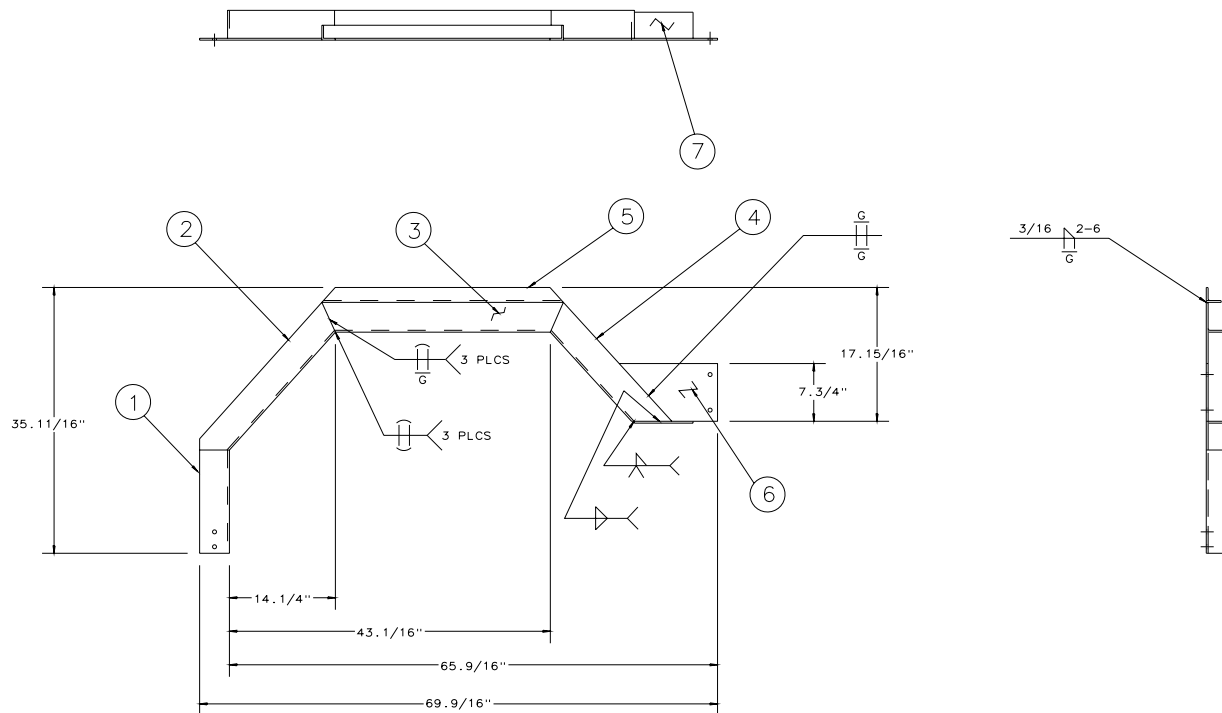


PART NUMBER: 00-1137
EST WT: 64.0 LBS

STD. TOLERANCES						DRWN:	LLP	
FRACTIONAL:	± 1/32"	± 1/16"	± 1/8"	± 1/4"	± 1/2"	CHECKED:	BH	
DECIMAL:	± 0.005"	± 0.010"	± 0.020"	± 0.050"	± 0.100"	APPROVED:		
ANGLE:	± 1/2°	± 1°	± 2°	± 5°	± 10°	MICHIGAN DNR FOREST MANAGEMENT DIVISION		
NO.	BY	DATE	REVISION		PROJECT NO.: 96-4			
FOREST FIRE EXPERIMENT STATION							P.O. BOX 68 ROSCOMMON, MICHIGAN 48653	
TITLE: FENDER GUARD LH S/W							SCALE: 1/8"	DATE: 12/17/96
							DWG. NO.: 00-1137D	

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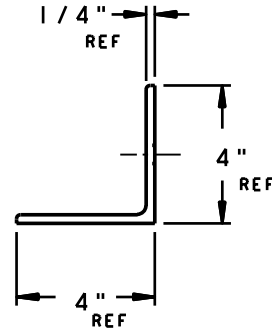
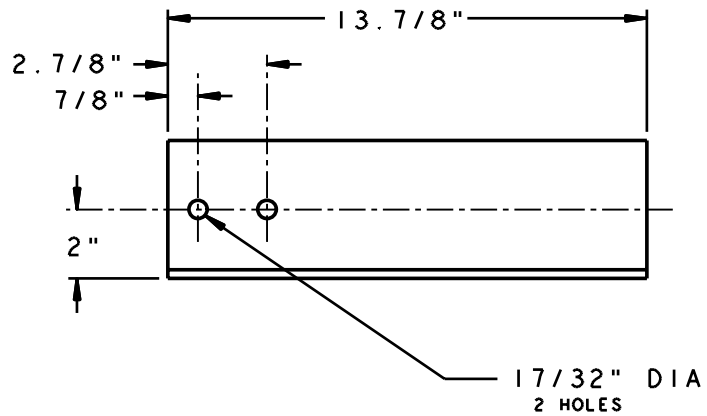
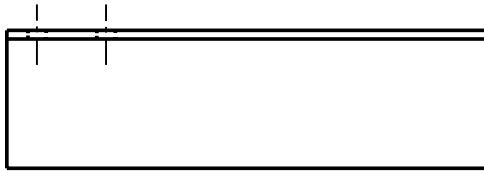
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1118	B	VERTICAL ANGLE RH	1	7.63
2	00-1119	B	REAR ANGLE RH	1	12.4
3	00-1121	B	TOP ANGLE	1	18.3
4	00-1122	B	FRONT ANGLE RH	1	9.66
5	00-1120	B	TOP ANGLE	1	8.43
6	00-1123	B	GUSSET	1	5.30
7	00-1149	A	FILLER PLATE	1	1.95



PART NUMBER: 00-1124
EST WT: 64.0 LBS

STD. TOLERANCES				DRAWN:	LLP
FRACTIONAL:	± 0.005	± 0.010	± 0.015	CHECKED:	BH
DECIMAL:	± 0.005	± 0.010	± 0.015	APPROVED:	
ANGULAR:	± 0.005	± 0.010	± 0.015		
FACE:	± 0.005	± 0.010	± 0.015		
NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION				MICHIGAN DNR	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				FOREST MANAGEMENT DIVISION	
TITLE: FENDER GUARD RH S/W				SCALE: 1/8"	DATE: 12/17/96
				PROJECT NO.:	96-4
				DWG. NO.:	00-1124D

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PART NUMBER: 00-1129
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 7.63 LBS

STD. TOLERANCES					
FRACTIONAL:					
0 TO 6 IN. ± 1/32					
6 IN AND UP ± 1/16					
DECIMAL:	ANGULAR:				
1 PLACE ± 0.1	± 1 DEG				
2 PLACE ± 0.01					
3 PLACE ± 0.005					
NO.	BY	DATE	REVISION		

DRAWN:
LLP
 CHECKED:
 APPROVED:
BH

MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION

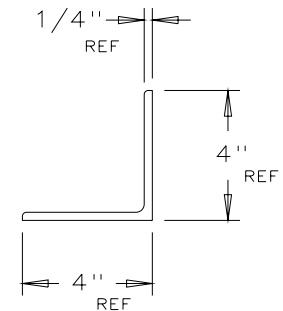
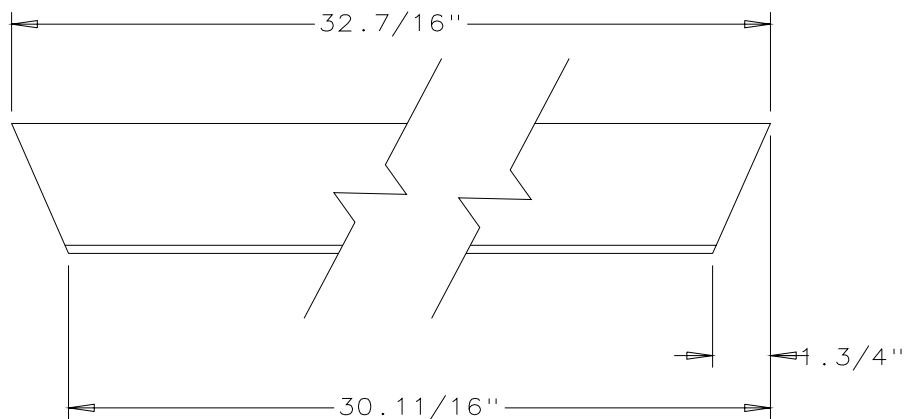
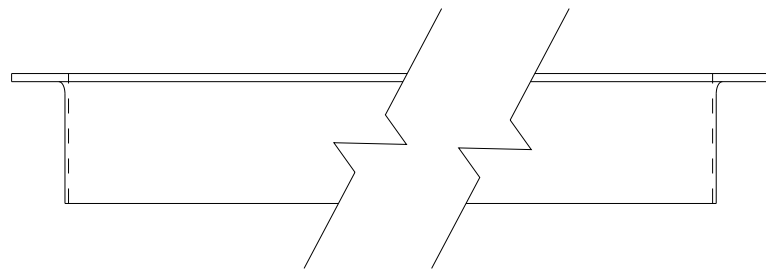
FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 96-4
 DWG. NO.: 00-1129B

TITLE: VERTICAL ANGLE LH

SCALE: 1/4

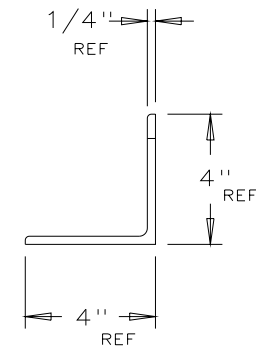
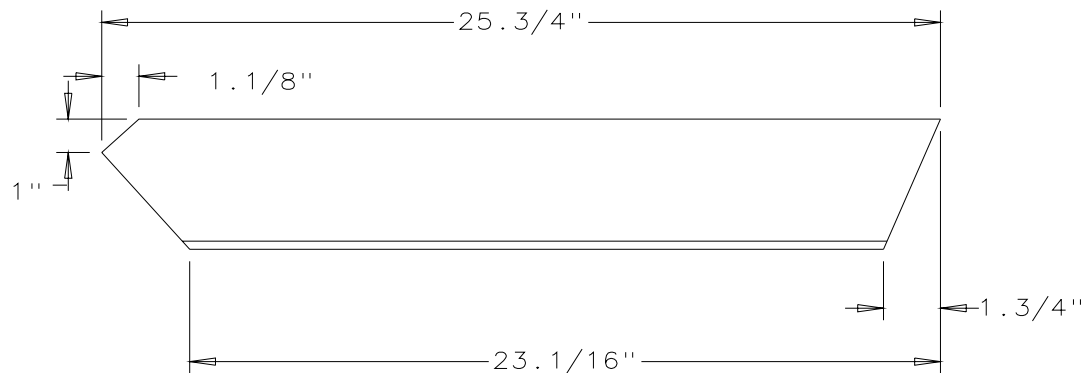
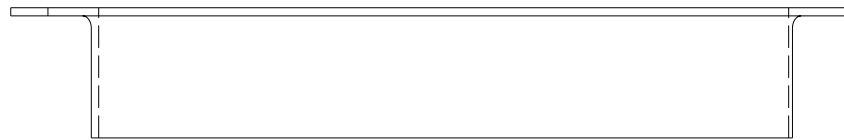
DATE: 12/17/96



PART NUMBER: 00-1121
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 18.3 LBS

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: BH		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		NO. BY DATE		APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: TOP ANGLE						SCALE: 1/4	DATE: 12/16/96	DWG. NO. 00-1121B

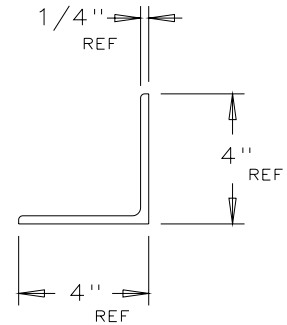
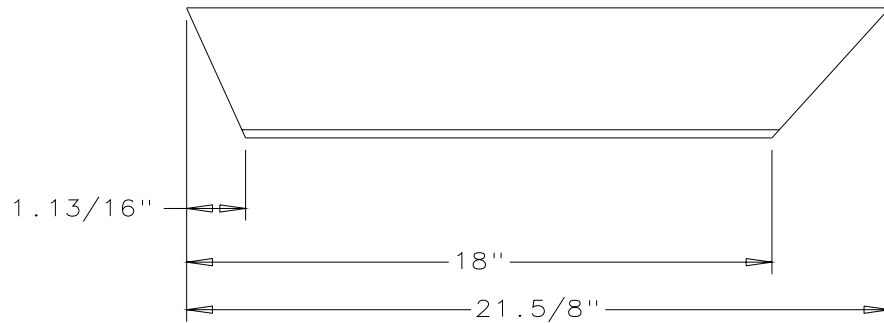
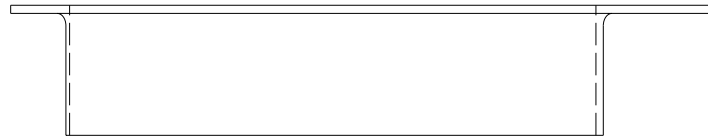
Return to Drawing Index



PART NUMBER: 00-1130
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 12.4 LBS

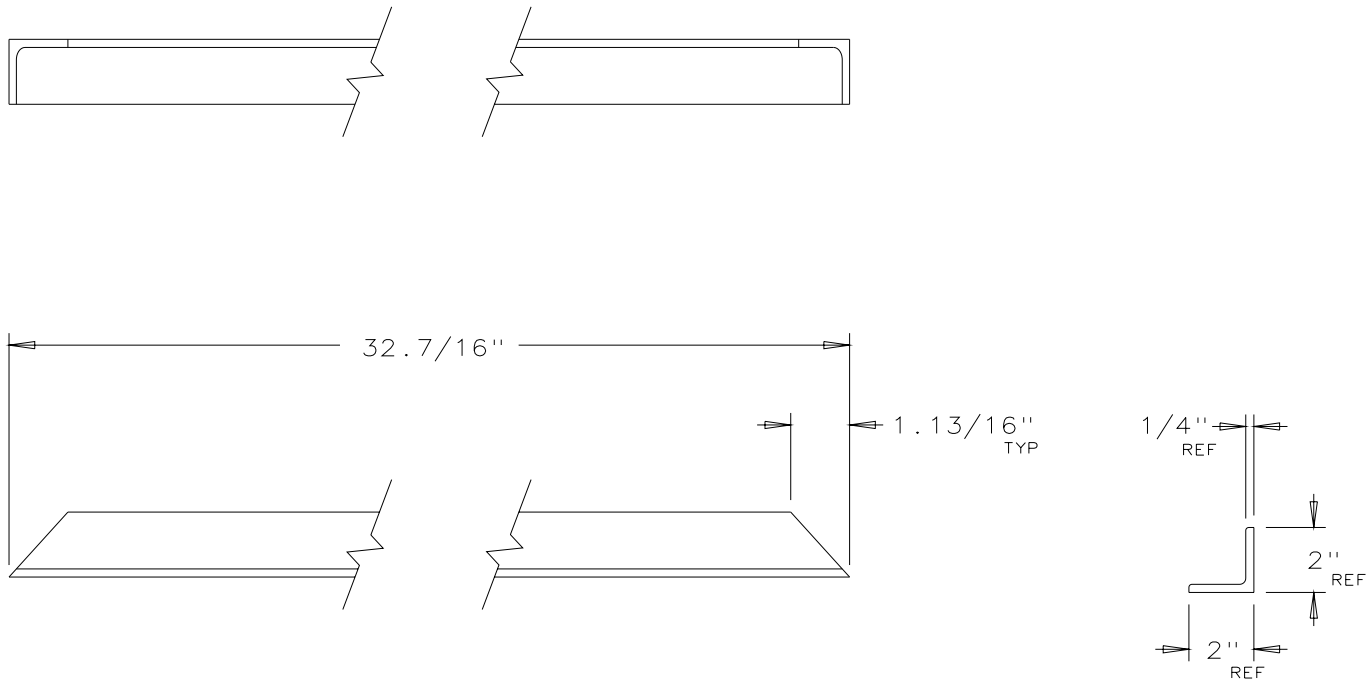
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FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16								CHECKED:	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		NO.	BY	DATE	REVISION	APPROVED: BH	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: REAR ANGLE LH							SCALE: 1/4	DATE: 12/17/96	DWG. NO.: 00-1130B

Return to Drawing Index



PART NUMBER: 00-1131
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 9.66 LBS

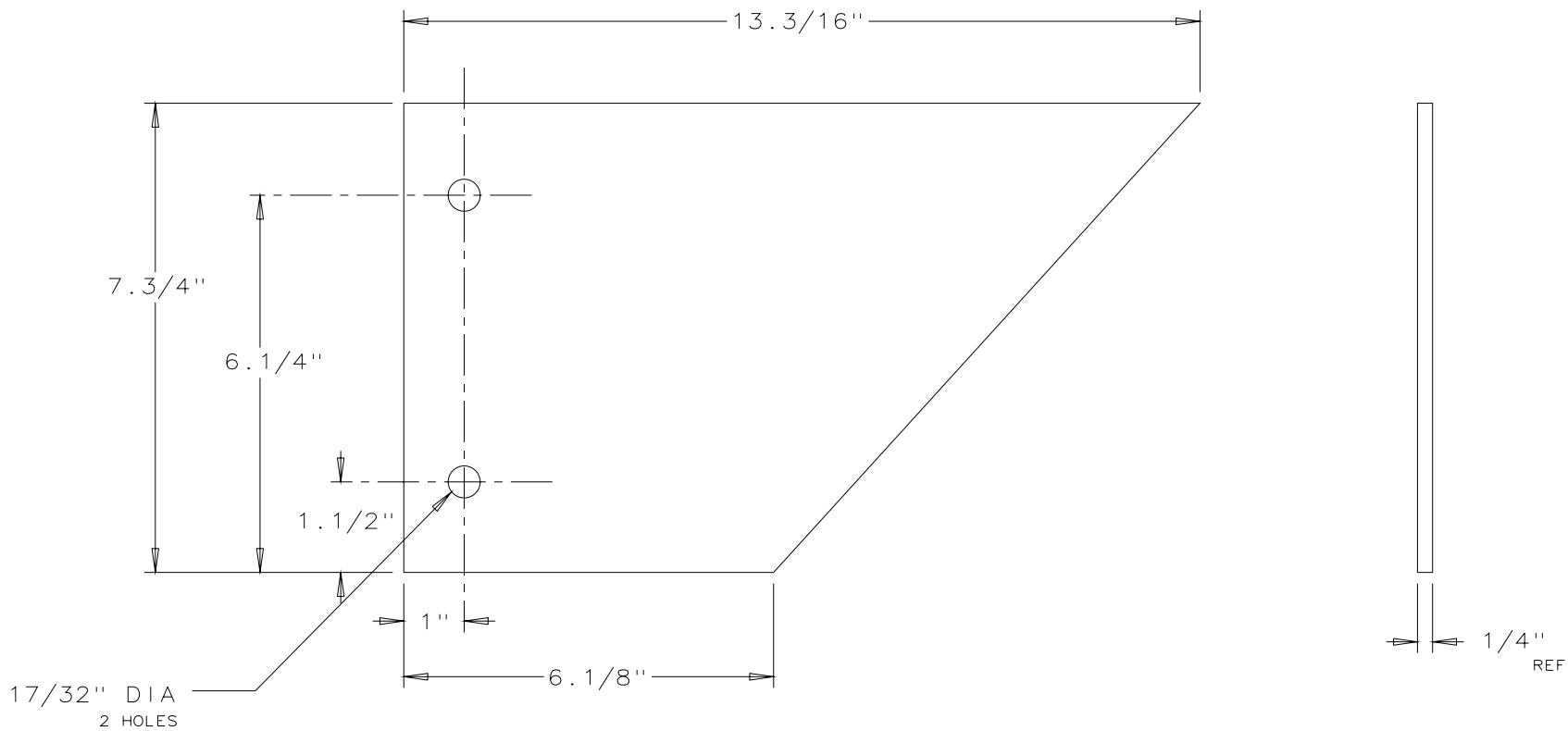
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DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED: BH		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 96-4
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: FRONT ANGLE LH				SCALE: 1/4	DATE: 12/17/96	DWG. NO.: 00-1131B



PART NUMBER: 00-1120
 MATL: ANGLE 2 X 2 X 1/4
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 8.43 LBS

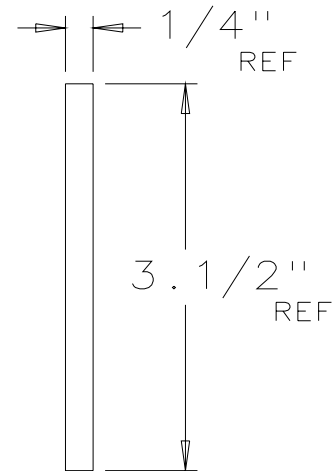
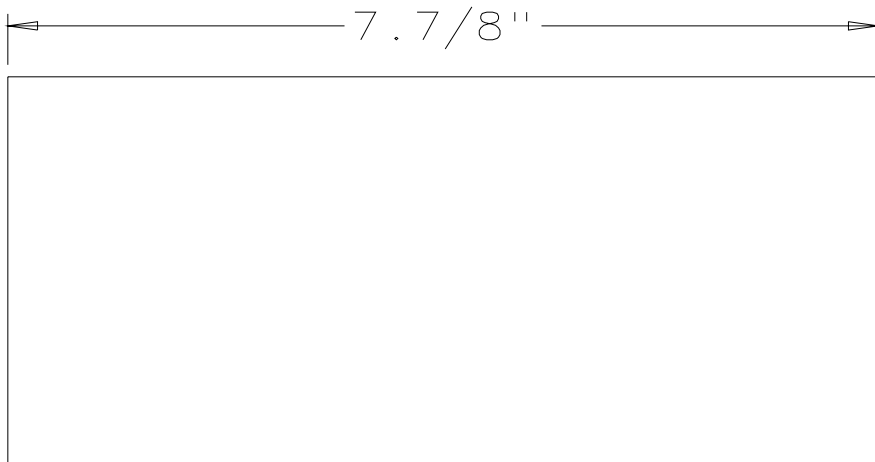
STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN: +- 1/32 6 IN AND UP: +- 1/16								CHECKED: BH	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG						APPROVED:	
		NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: TOP ANGLE							SCALE: 1/4	DATE: 12/16/96	DWG. NO.: 00-1120B

Return to Drawing Index



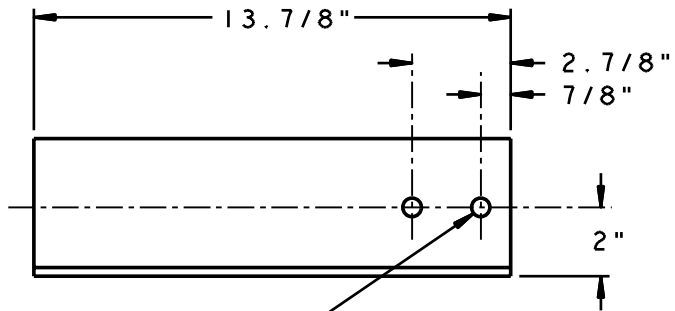
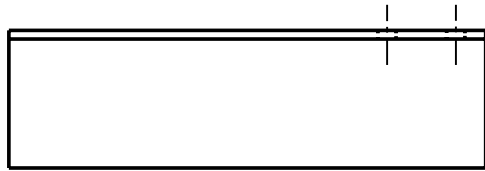
PART NO.: 00-1123
 MAT'L: PLATE 1/4"
 G10150
 FFES SPEC. NO.: AA-00448BC
 EST. WT.: 5.30 LBS.

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: BH		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: GUSSET						SCALE: 1/2	DATE: 12/16/96	DWG. NO.: 00-1123B

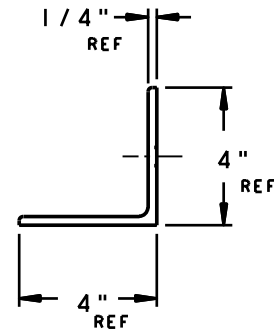


PART NO.: 00-1149
 MAT'L: BAR, FLAT 1/4" X 3.1/2"
 UNS G10200
 FFES SPEC NO.: AB-00432AA
 EST. WT.: 1.95 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: BH	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005	ANGULAR: + - 1 DEG					APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: FILLER PLATE					SCALE: 1/2	DATE: 1/28/97	DWG. NO.: 00-1149A



17/32" DIA
2 HOLES



PART NUMBER: 00-1118
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 7.63 LBS

STD. TOLERANCES					
FRACTIONAL:					
0 TO 6 IN + - 1/32					
6 IN AND UP + - 1/16					
DECIMAL:	ANGULAR:				
1 PLACE + - 0.1	+ - 1 DEG				
2 PLACE + - 0.01					
3 PLACE + - 0.005					
NO.	BY	DATE	REVISION		

DRAWN:
LLP
 CHECKED:
BH
 APPROVED:

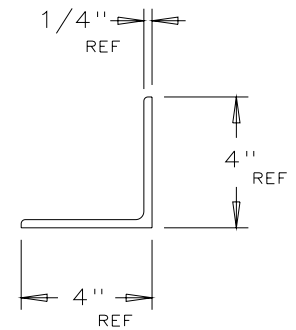
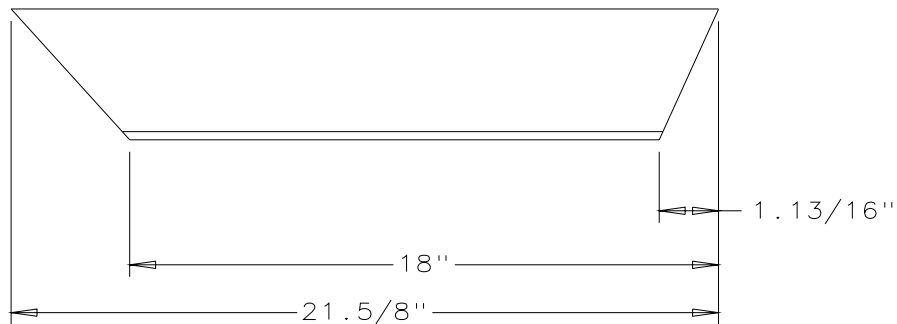
MICHIGAN
DNR
 FOREST MANAGEMENT
DIVISION

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 96-4
 DWG. NO. 00-1118B

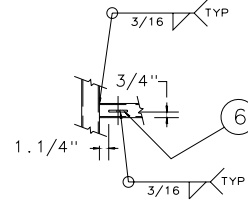
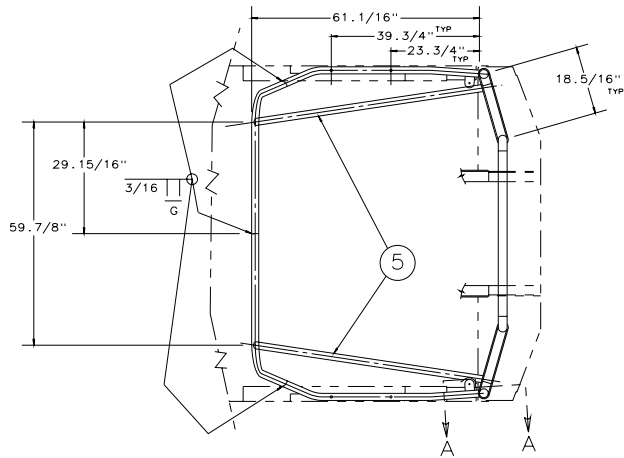
TITLE: VERTICAL ANGLE RH SCALE: 1/4 DATE: 12/16/96

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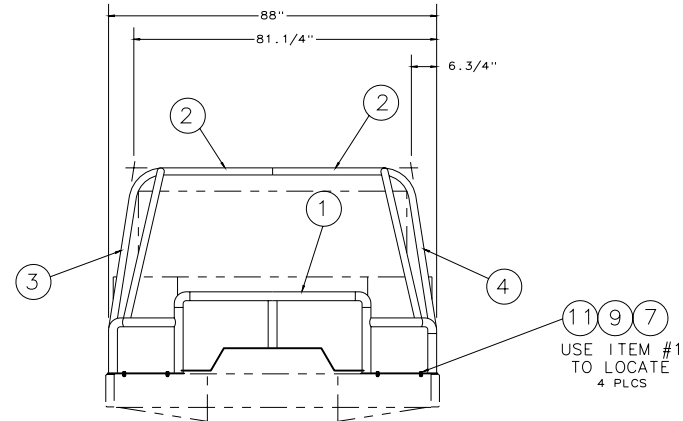
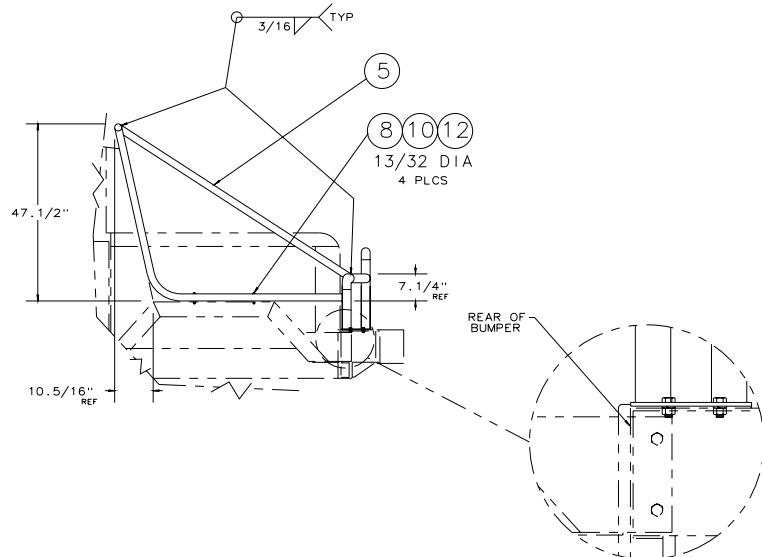


PART NUMBER: 00-1122
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 9.66 LBS

STD. TOLERANCES										DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL:										CHECKED: BH		
0 TO 6 IN + - 1/32										APPROVED:		
6 IN AND UP + - 1/16												
DECIMAL:		ANGULAR:										
1 PLACE + - 0.1		+ - 1 DEG										
2 PLACE + - 0.01												
3 PLACE + - 0.005												
	NO.	BY	DATE	REVISION								
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653												
TITLE: FRONT ANGLE RH										SCALE: 1/4	DATE: 12/16/96	DWG. NO. 00-1122B
										PROJECT NO.: 96-4		



SECTION A-A
SCALE 1=8



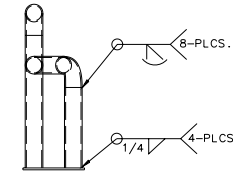
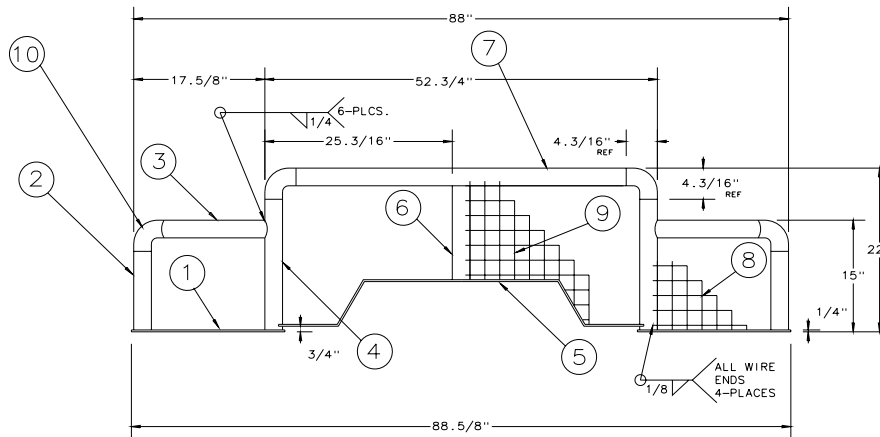
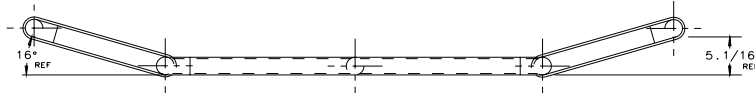
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1136	D	GRILL GUARD S/W	1	70.0
2	00-1139	B	UPPER PIPE	2	13.2
3	00-1140	C	LOWER PIPE RH	1	16.5
4	00-1141	C	LOWER PIPE LH	1	16.5
5	00-1138	A	LIMB RISER	2	15.8
6	00-0849	A	NOZZLE FIXTURE MOUNT	2	0.48
7	TS-08GG12		SCREW CAP HEX HD 1-1/2" LG GR 5 PLATED	4	0.08
8	TS-06GG24		SCREW CAP HEX HD 3/8" - 16 UN 3" LG GR 5 PLATED	4	0.09
9	TS-08GP		NUT HEX DBL CHAM 1/2" - 13 UN PLATED	4	0.04
10	TS-06GP		NUT HEX DBL CHAM 3/8" - 16 UN PLATED	4	0.02
11	WS-08BC		WASHER SPR LOCK REG 1/2" PLATED	4	0.02
12	WS-06BC		WASHER SPR LOCK REG 3/8" PLATED	4	0.01

PART NO: 29-9811
EST WT: 163 LBS

EFFECTIVE MODEL: 610-97A

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR	
FRACTIONAL: ± 0.005						CHECKED: BHI		
DECIMAL: ± 0.005						APPROVED:	FOREST MANAGEMENT DIVISION	
ANGULAR: ± 0.005							PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							DWG NO: 29-9811D	
TITLE: CAB GUARD A/C							SCALE: 2.5 TON 1/16	DATE: 1/10/97

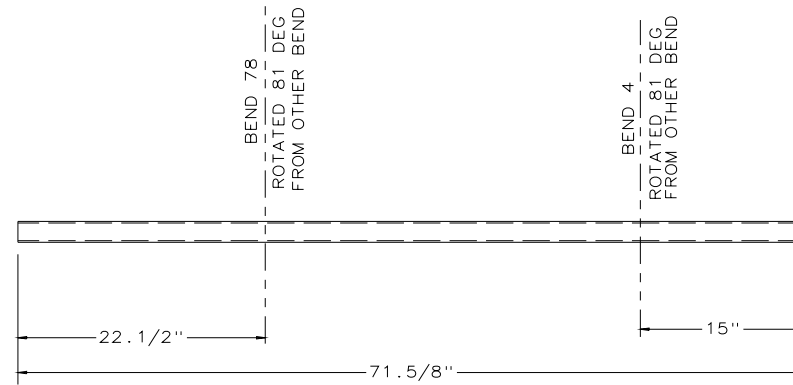
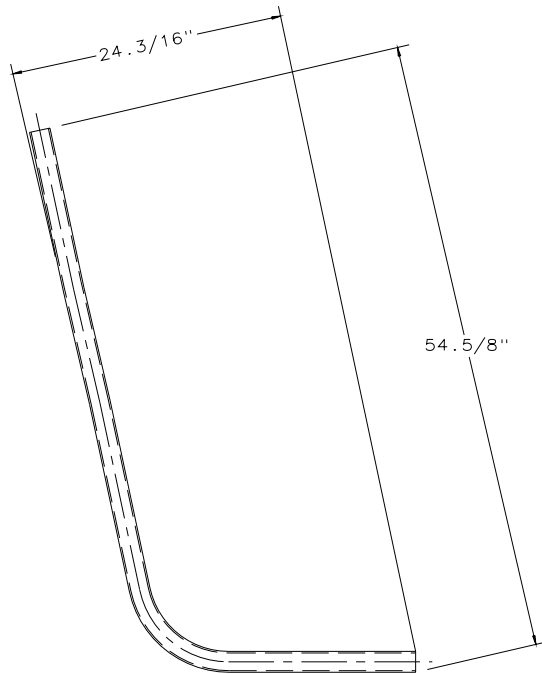
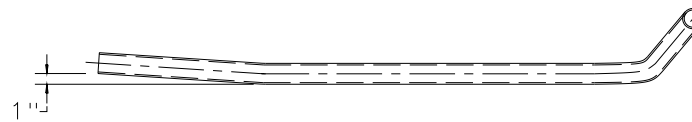
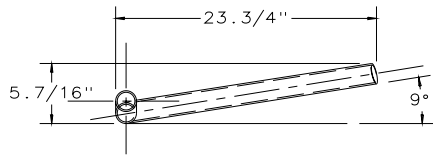
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-1128	B	MOUNTING BAR	2	4.38
2	00-1125	B	PIPE, VERTICAL	2	3.17
3	00-1133	B	PIPE, HORIZONTAL	2	4.28
4	00-1126	B	PIPE, VERTICAL	2	5.26
5	00-1132	C	CROSS MOUNTING BAR	1	7.90
6	00-1127	B	PIPE, VERTICAL	1	3.79
7	00-0714	B	PIPE, CROSS	1	13.5
8	00-1135	B	SIDE PANEL	2	2.45
9	00-1134	B	CENTER PANEL	2	4.18
10	P32-CALV		ELBOW, BUTT WELD 90° 2" LR	4	1.50



PART NUMBER: 00-1136
EST WT: 80 LBS

STD. TOLERANCES						DRAWN:		
FRACTIONAL:						L.L.P.		
DECIMAL:						CHECKED:		
ANGULAR:						B.H.		
APPROVED:								
NO. BY DATE REVISION							MICHIGAN DNR	
FOREST FIRE EXPERIMENT STATION							FOREST MANAGEMENT DIVISION	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4	
TITLE: GRILL GUARD S/W							SCALE:	DATE: 12/19/96
							DWG NO.:	00-1136D

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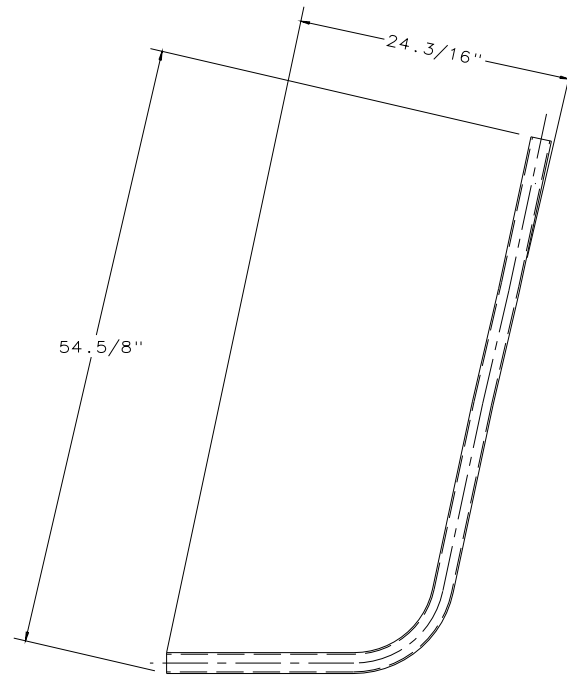
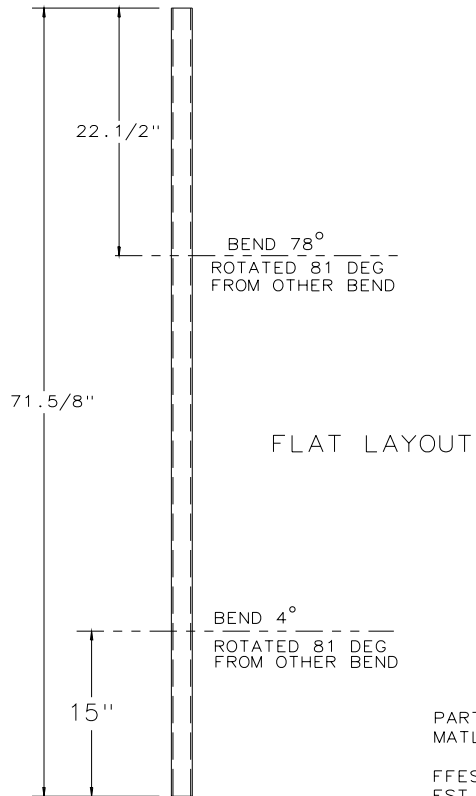
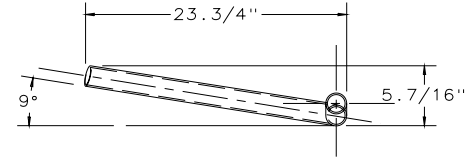
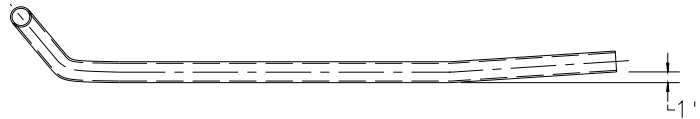


FLAT LAYOUT

PIPE BENDER STROKE
 REQ'D TO PRODUCE BENDS
 81 DEGREE BEND -
 4 DEGREE BEND -

PART NUMBER: 00-1141
 MATL: PIPE 1-1/2" BLK STRUCTURAL
 UNS: K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 16.5 LBS

STD. TOLERANCES		DRAWN: LLP		MICHIGAN DNR
FRACTIONAL: 0 TO 8 IN. ± 1/32 6 IN AND UP ± 1/16		CHECKED: BH		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		APPROVED:		
ANGULAR: ± 1 DEG		REVISION		FOREST MANAGEMENT DIVISION
NO. BY DATE		PROJECT NO.: 96-4		DWC NO: 00-1141C
TITLE: LOWER PIPE LH		SCALE: 1/8		
DATE: 12/30/96		DATE: 12/30/96		



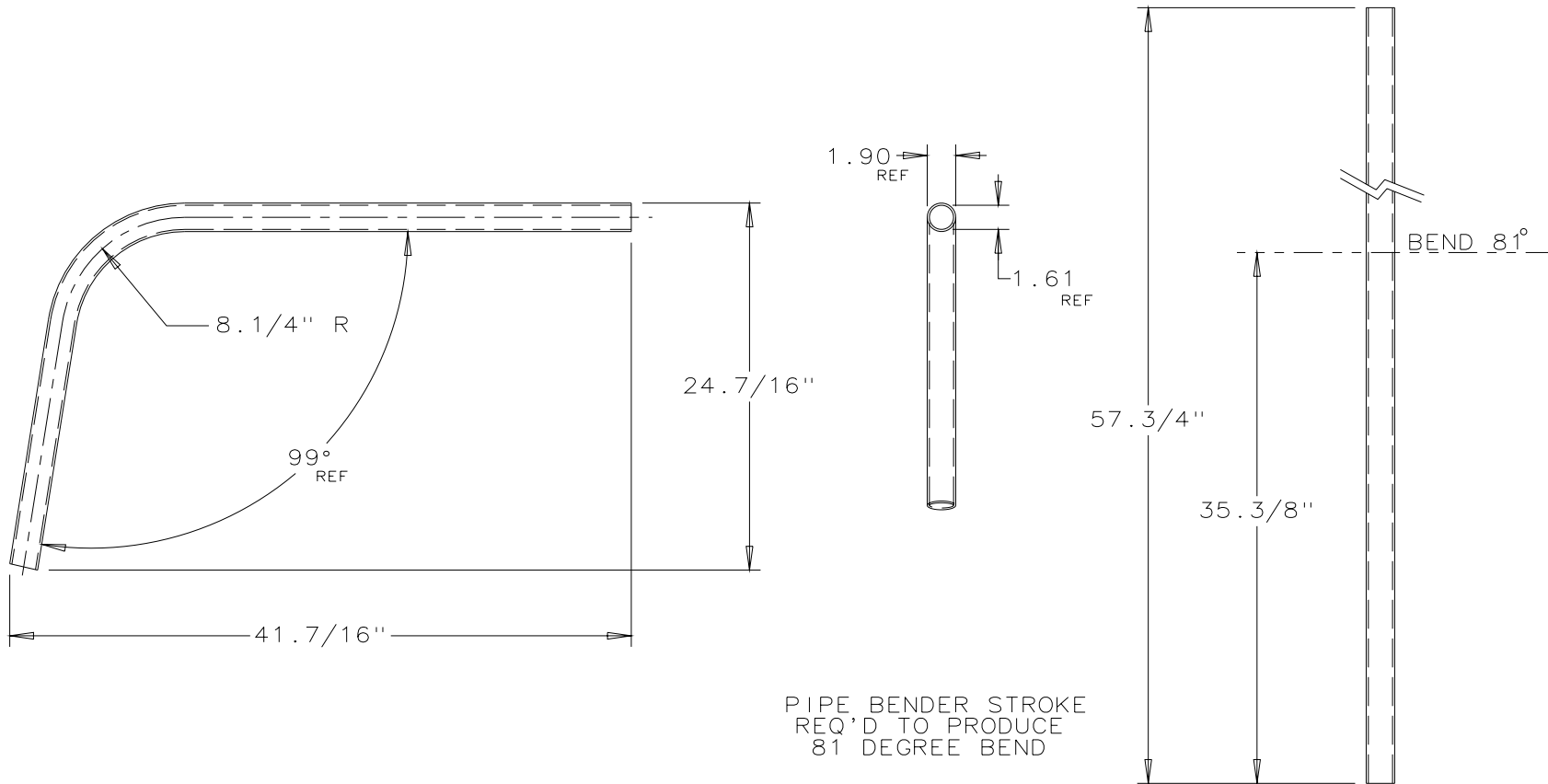
PIPE BENDER STROKE
REQ'D TO PRODUCE BENDS
81 DEGREE BEND -
4 DEGREE BEND -

PART NUMBER: 00-1140
MATL: PIPE 1-1/2" BLK STRUCTURAL
UNS: K03000
FFES SPEC NO: AF-04024AY
EST WT: 16.5 LBS

STD. TOLERANCES				DRAWN: LLP	
FRACTIONAL: 0 TO 6 IN. ± 1/32				CHECKED: BH	
6 TO 18 IN. ± 1/16				APPROVED:	
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		REVISION	
NO.	BY	DATE			
FOREST FIRE EXPERIMENT STATION					
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: LOWER PIPE RH				SCALE: 1/8	DATE: 1/06/96
				PROJECT NO.: 96-4	
				DWC. NO. 00-1140C	

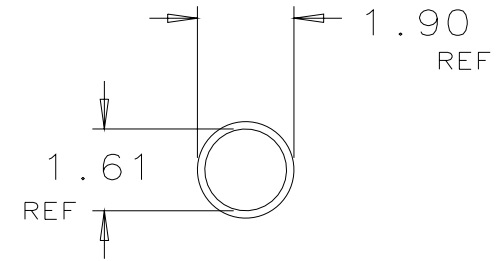
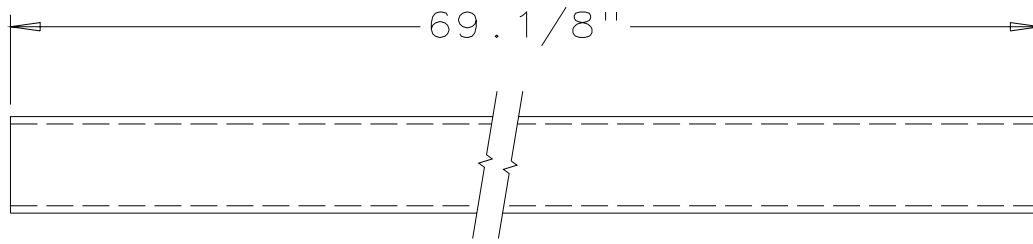
MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION

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PART NUMBER: 00-1139
 MATL: PIPE 1-1/2 BLK STRUCTURAL
 UNS: K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 13.2 LBS

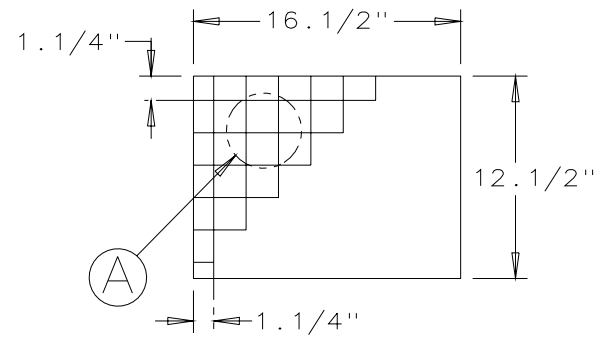
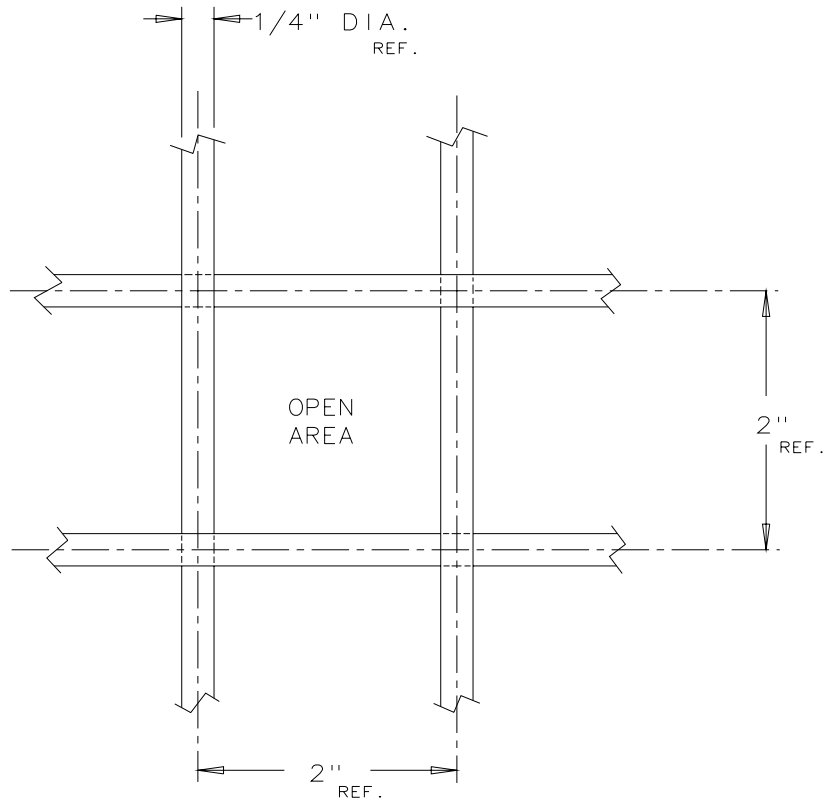
STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: BH		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 96-4
TITLE: UPPER PIPE						SCALE: 1/8	DATE: 12/30/96	DWG. NO.: 00-1139B



NOTE:
 LENGTH SPECIFIED IS LONGER
 THAN REQ'D, CUT TO FIT AT ASSY

PART NUMBER: 00-1138
 MATL: PIPE 1-1/2 BLK STRUCTURAL
 UNS: K03000
 FFES SPEC NO: AF-04024AE
 EST WT: 15.8 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: BH		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 96-4
TITLE: LIMB RISER				SCALE: 1/4	DATE: 12/30/96	DWG. NO. 00-1138A

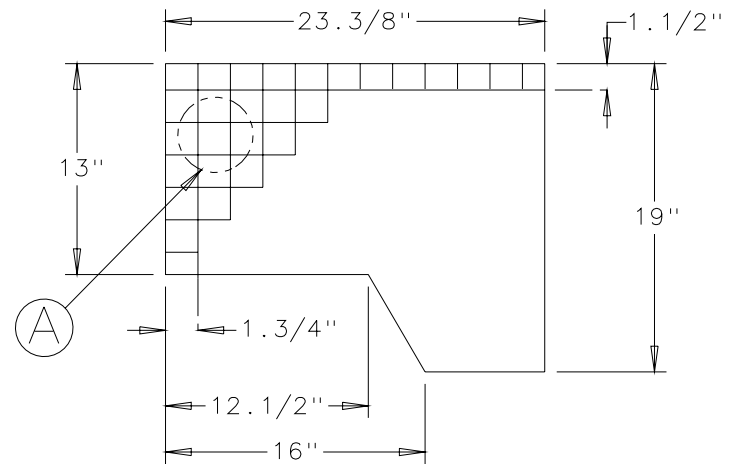
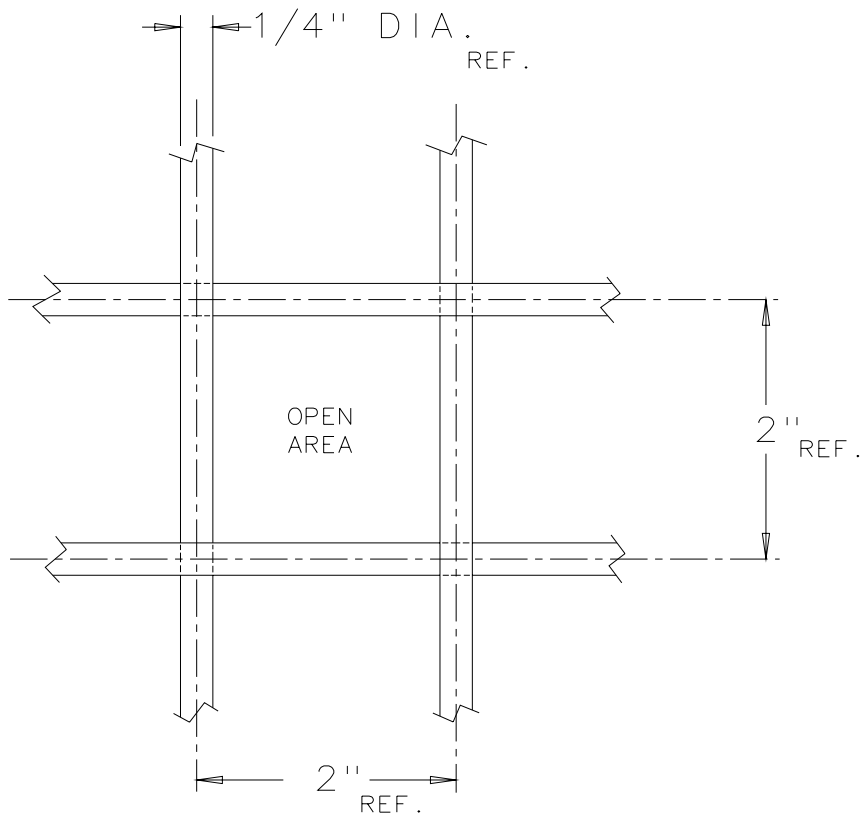


DETAIL "A"

SCALE: FULL

PART NUMBER: 00-1135
 MAT'L: CLOTH, WIRE 1/4" DIA. WIRE
 1.3/4" SQUARE OPENING, STEEL
 UNS G10200
 FFES SPEC NO: AR-32858AA
 EST WT: 2.45 LBS

STD. TOLERANCES						DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION		
FRACTIONAL: Ø TO 6 IN. +-1/32 6 IN AND UP +-1/16						CHECKED:				
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005				ANGULAR: +- 1 DEG		APPROVED: BH				
				NO.	BY	DATE	REVISION	PROJECT NO.: 96-4		
FOREST FIRE EXPERIMENT STATION								SCALE: 1/8	DATE: 12/18/96	DWG. NO.: 00-1135B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653										
TITLE: SIDE PANEL										

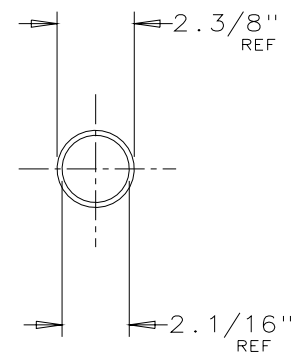
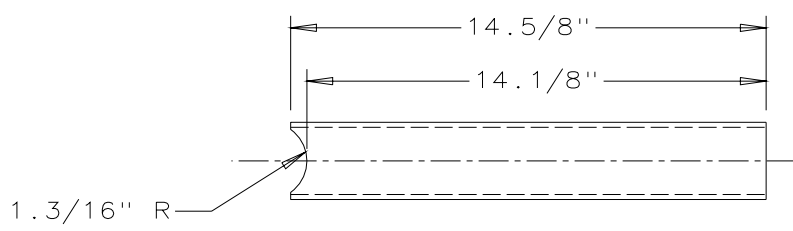


DETAIL "A"

SCALE: FULL

PART NUMBER: 00-1134
 MAT'L: CLOTH, WIRE 1/4" DIA WIRE
 1.3/4" SQUARE OPENING, STEEL
 UNS G10200
 FFES SPEC NO: AR-33248AA
 EST WT: 4.18 LBS

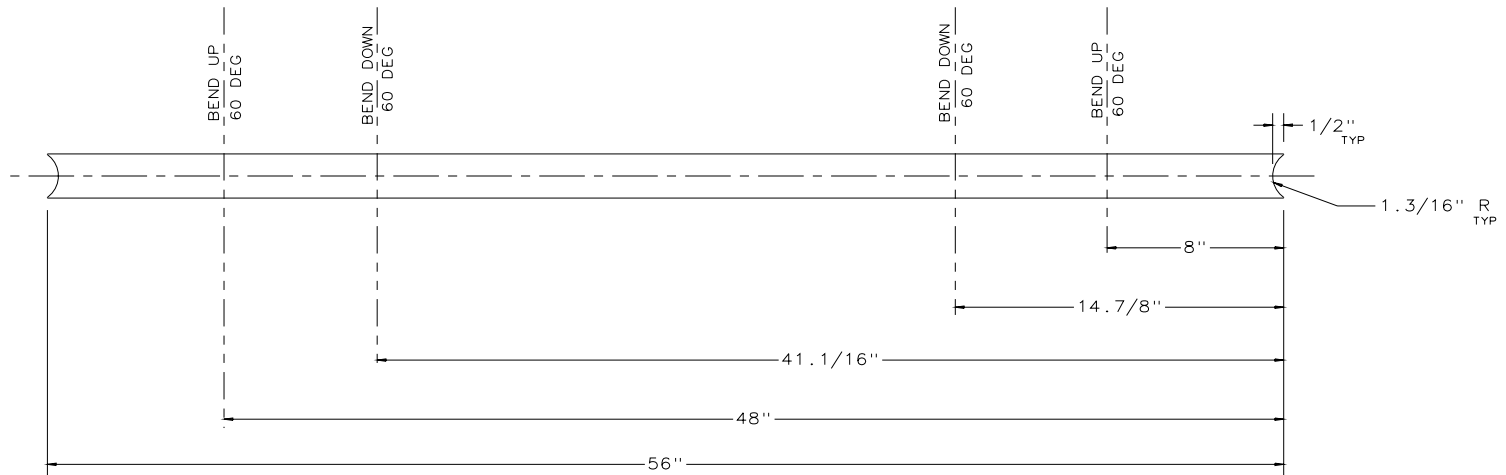
STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED: BH		
ANGULAR: -- 1 DEG				REVISION		PROJECT NO.: 96-4
FOREST FIRE EXPERIMENT STATION						DWG. NO. 00-1134B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CENTER PANEL				SCALE: 1/8	DATE: 12/18/96	



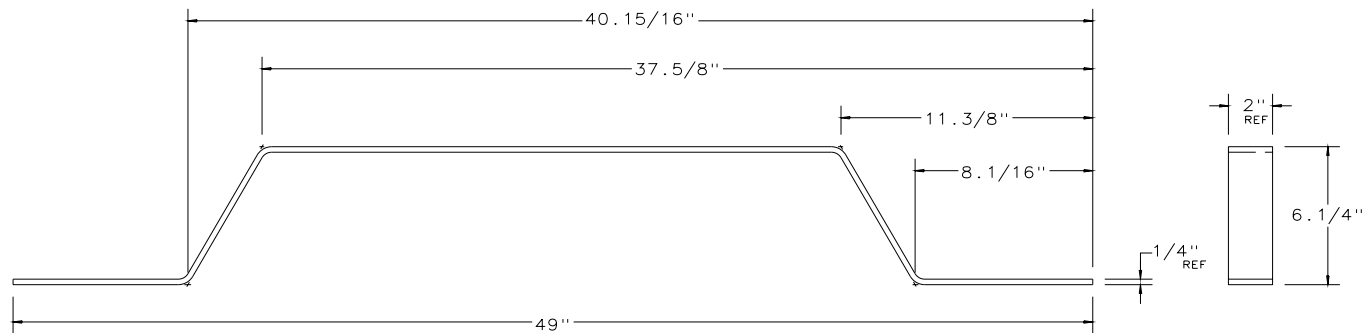
PART NUMBER: 00-1133
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 4.28 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. +-1/32 6 IN AND UP +-1/16						CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG				APPROVED: BH	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: PIPE, HORIZONTAL					SCALE: 1/4	DATE: 12/18/96	DWG. NO. 00-1133B

Return to Drawing Index

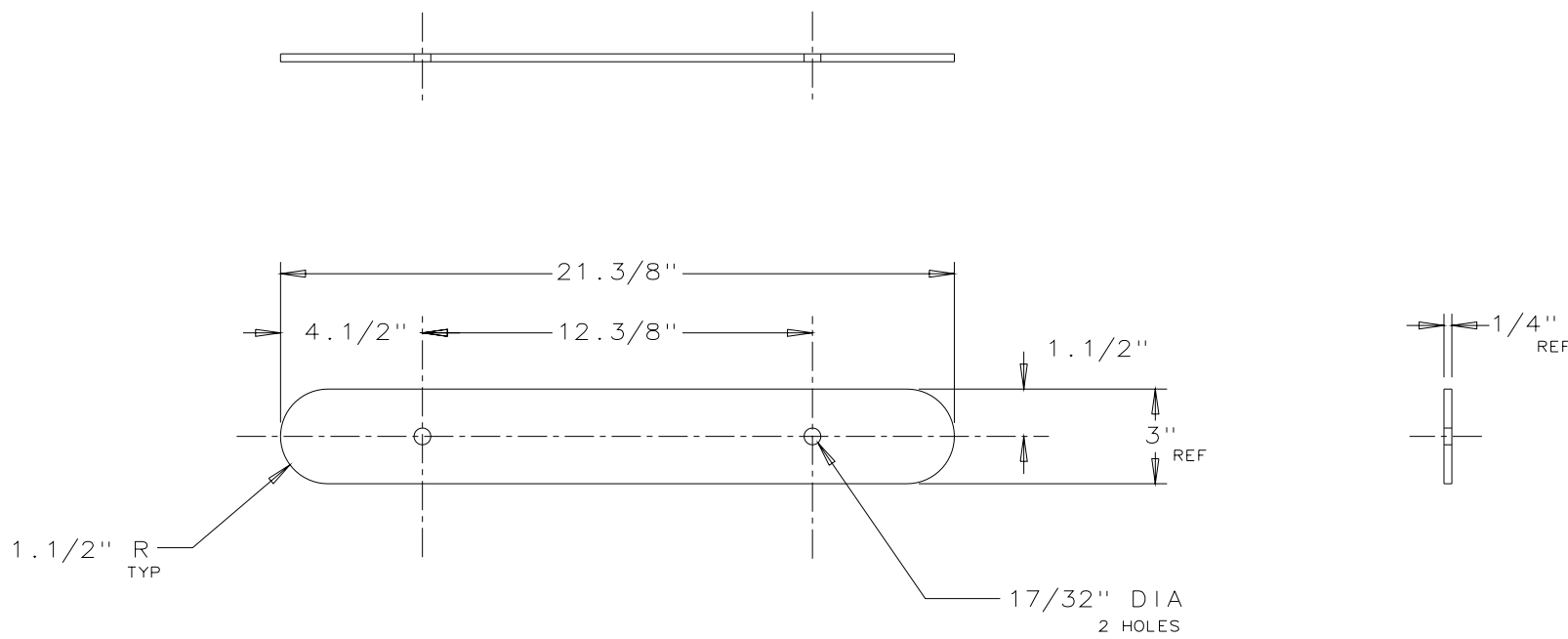


FLAT LAYOUT



PART NO: 00-1132
 MAT'L: BAR, FLAT 1/4" X 2" HR
 UNS: G10200
 FFES SPEC. NO.: AB-00408AA
 EST. WT.: 7.90 LBS

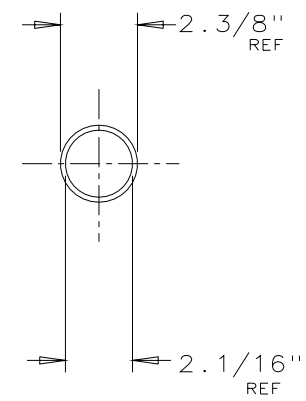
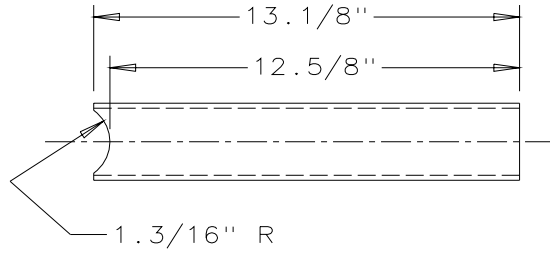
STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR
FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16				CHECKED:		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG		APPROVED: BH		FOREST MANAGEMENT DIVISION
NO.	BY	DATE	REVISION		PROJECT NO.: 96-4	
FOREST FIRE EXPERIMENT STATION						DWG. NO.: 00-1132C
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CROSS MOUNTING BAR				SCALE: 1/4"	DATE: 12/18/96	



PART NUMBER: 00-1128
 MAT'L: BAR, FLAT 1/4" x 3" HR
 UNS: G10200
 FFES SPEC NO: AB-00412AA
 EST WT: 4.40 LBS

STD. TOLERANCES				DRAWN: LLP		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED:		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED: BH		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: MOUNTING BAR				SCALE: 1/4	DATE: 12/17/96	PROJECT NO.: 96-4
						DWG. NO.: 00-1128B

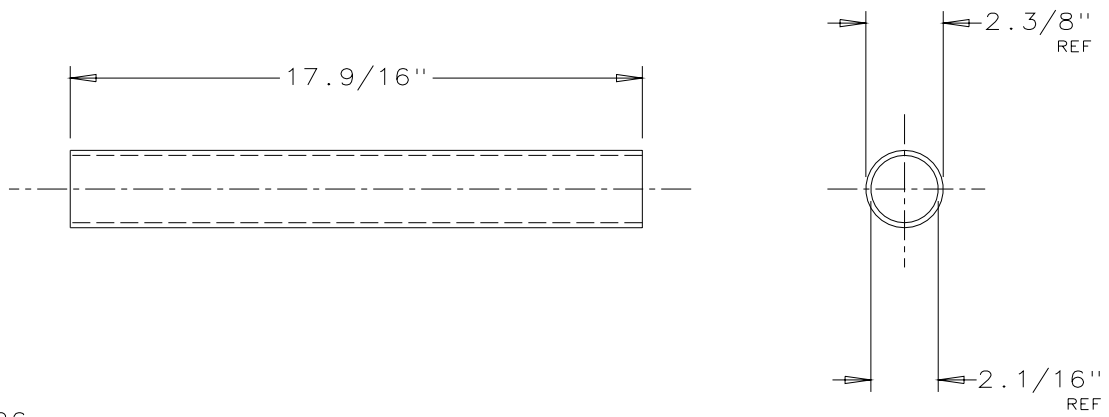
Return to Drawing Index



PART NUMBER: 00-1127
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 3.79 LBS

STD. TOLERANCES						DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED:	
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005		ANGULAR: -- 1 DEG				APPROVED: BH	
	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 96-4
TITLE: PIPE, VERTICAL					SCALE: 1/4	DATE: 12/17/96	DWG. NO. 00-1127B

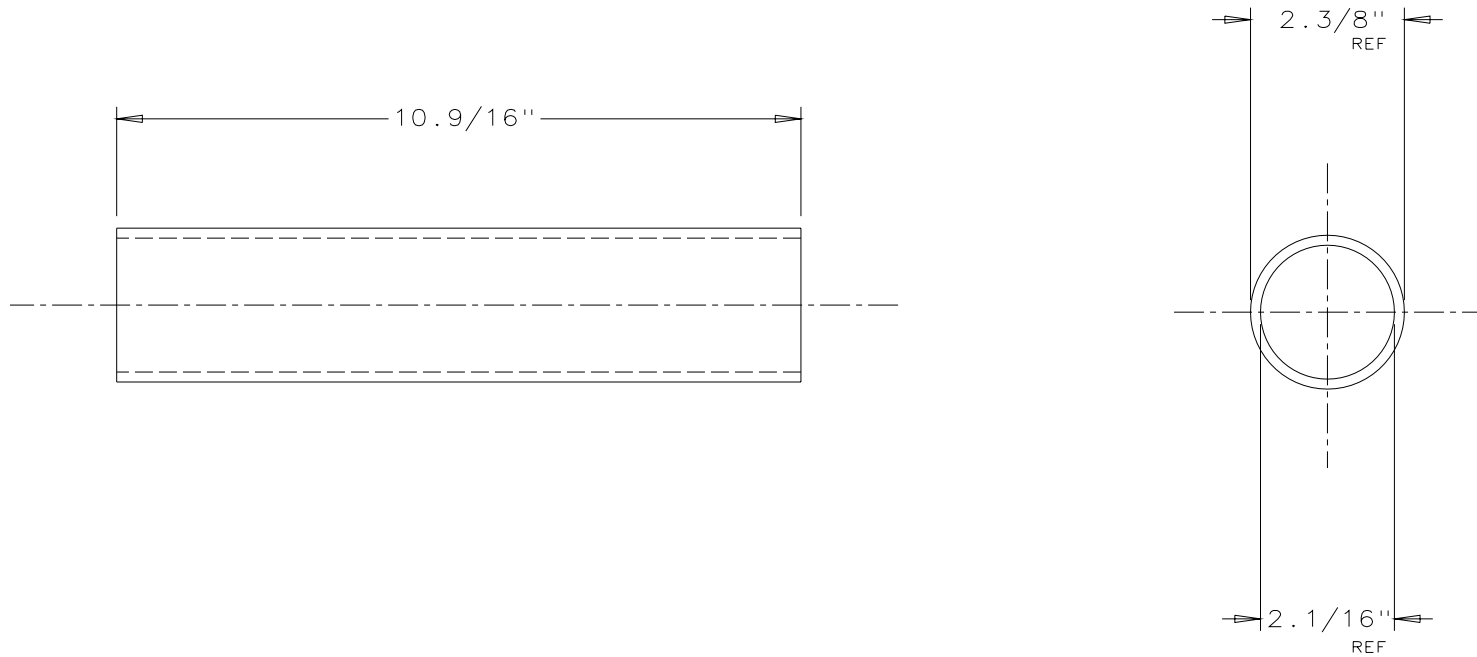
Return to Drawing Index



PART NUMBER: 00-1126
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 5.26 LBS

STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16								CHECKED:	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: +- 1 DEG				APPROVED: BH	
	NO.	BY	DATE	REVISION					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 96-4
TITLE: PIPE, VERTICAL							SCALE: 1/4	DATE: 12/17/96	DWG. NO. 00-1126B

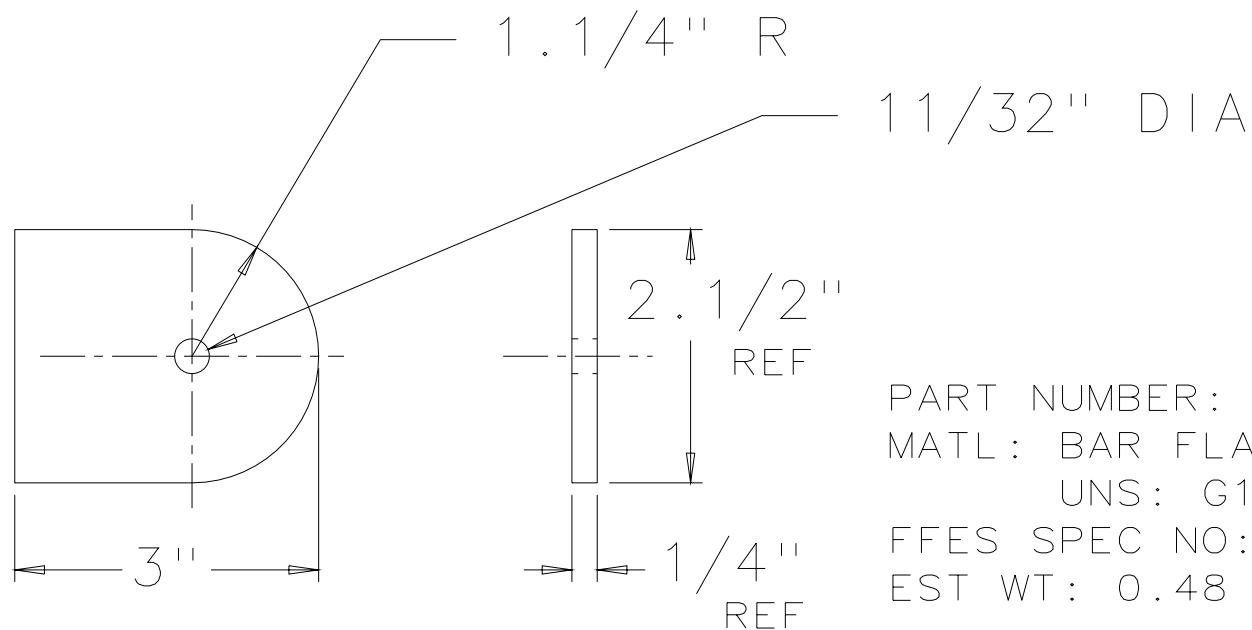
Return to Drawing Index



PART NUMBER: 00-1125
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 3.17 LBS

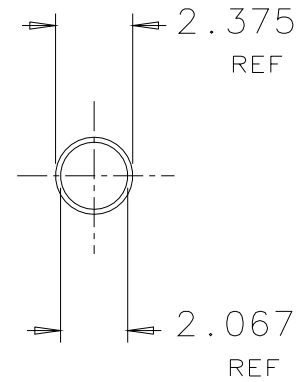
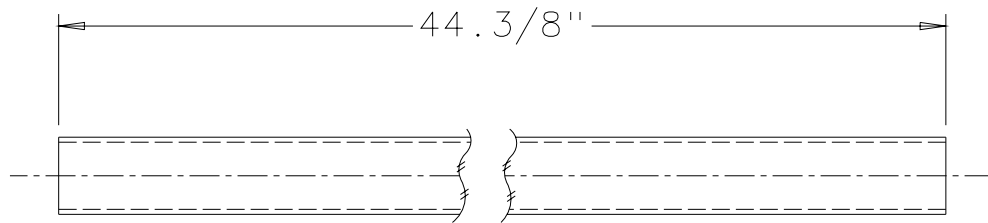
STD. TOLERANCES								DRAWN: LLP	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16								CHECKED:	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				NO.	BY	DATE	REVISION	APPROVED: BH	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.:	96-4
TITLE: PIPE, VERTICAL							SCALE: 1/2	DATE: 12/17/96	DWG. NO. 00-1125B

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PART NUMBER: 00-0849
 MATL: BAR FLAT 1/4 X 2-1/2 HR
 UNS: G10200
 FFES SPEC NO: AB-00410AA
 EST WT: 0.48 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB	
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005	NO.	BY	DATE	REVISION		APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: NOZZLE FIXTURE MOUNT					SCALE: 1 = 2	DATE: 15 JUL 93	DWG. NO. 00-0849A



PART NUMBER: 00-0714
 MAT'L: PIPE, 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 13.5 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG				NO.	BY	DATE
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				REVISION		PROJECT NO.: 91-2
TITLE: PIPE, CROSS				SCALE: 1 = 4	DATE: MAY 5, 1993	DWG. NO. 00-0714B

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ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

November 2001



Design Packet 63F-5 Brush Protection Drawings for 5 Ton 6x6 Trucks

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

Brush Protection for 5 Ton 6x6 Trucks

The REC brush protection package for 5-ton 6x6 models was developed to help protect components and body panels from damage when operating off-road. There are four assemblies.

The bumper replaces the original bumper. It consists of a boxed section of similar shape to the original. This gives it strength should a tree be struck. This design packet shows how to replace the original bumper because the FEPP units usually have twisted bumpers. It is often easier to start from scratch than to modify them for strength. However, you may wish to box in the rear of the existing bumper instead. In either case, these drawings show a proven concept for wildfire use.

Fuel tank guards protect the fuel tanks, air system, and some electric components from underside impact. In conjunction with the bumper, they also support the fender guard assembly. Together these assemblies provide a rub rail on each side of the vehicle, protecting the chassis sheet metal.

The cab guard assembly consists of the grill guard and limb risers. The grill guard helps protect the radiator from jill pokes and supports the limb risers. The limb risers help guide limbs up and over the cab. This protects mirrors, windshield, and exhaust components. It also provides better visibility to the driver by lifting limbs out of the vision path.

All assemblies and components are basic steel forming and welding operations. They have had years of actual use in tough off-road conditions.



The major parts of the REC brush protection design.



The crossmember attaches to the 5-Ton's U-shaped frame crossmember.



The mirrors can be hidden behind the limb risers by changing the hinge point.



Mirror out.



The REC bumper accommodates trucks with or without a winch.



The fender grill guards bolt to the bumper.

Drawing List - Bumper

Drawing Number	Drawing Name
29-9803D	Bumper w/Winch
29-9802D	Bumper w/o Winch
29-0052B	Winch Angle Bracket
29-0053B	Frame Doubler
29-0054B	Spacer
29-0055B	Bumper Mount W/C
29-0056D	Bumper W/C
29-0067C	Radiator Guard W/C
00-0684B	Channel, Frame
00-0685B	Channel, Frame (Double)
00-0777B	Bracket, Bumper Mtg.
00-0766B	Frame Extension
00-0764B	Support Channel S/W
00-0763C	Top Sheet
00-0767B	Back Sheet
00-0768B	Box Flange
00-0769D	Bumper Body
00-0851C	Radiator Guard
00-0852A	Mounting Tab
00-0876A	Bar
00-0776B	Angle, Bumper Mtg.
00-0775B	Gusset
00-0765B	Bumper Support Channel

Drawing List - Fuel Tank Guards

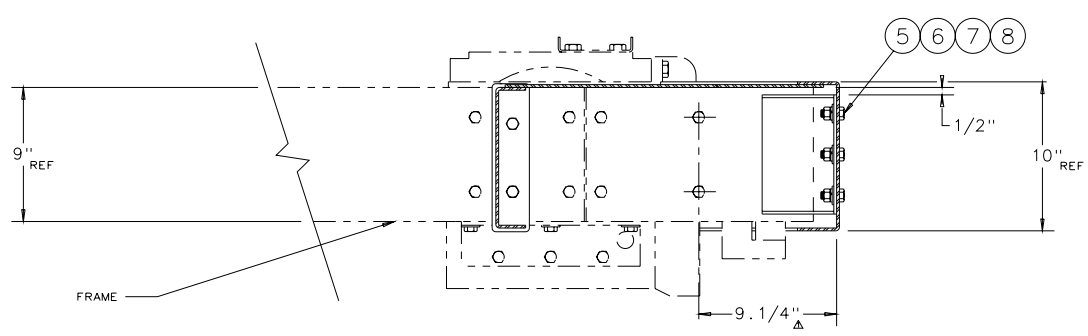
Drawing Number	Drawing Name
29-9805D	Tank Guard Assembly
29-0057B	Tank Access Panel
29-0058D	Fuel Tank Guard LH W/C
00-0754B	Long Angle Stop
00-0755B	Angle Stop
00-0756A	Short Angle Stop
00-0757D	Bottom Plate LH
00-0758C	Rear Plate LH
00-0759C	Center Plate LH
00-0760B	Forward Plate LH
29-0059D	Fuel Tank Guard RH W/C
00-0761B	Side Guard Angle LH
00-0762B	Mounting Angle
00-0753D	Bottom Plate RH
00-0752C	Rear Plate RH
00-0751C	Center Plate RH
00-0750C	Forward Plate RH
00-0853B	Side Guard Angle RH
29-0062D	Cross Member
00-0724B	Cross Member Mount
00-0725B	Spacer, Long
00-0726B	Spacer, Short
00-0727B	Notch Stiffener
00-0728B	Channel Reinforcement
00-0729C	Cross Member Channel
00-0854A	Gusset
29-0063C	Fuel Filter Guard W/C
00-0722B	Filter Guard Support
00-0723C	Fuel Filter Guard

Drawing List - Fender Guards

Drawing Number	Drawing Name
29-9806D	Fender Guard Assembly
29-0060D	Fender Guard LH W/C
29-0061D	Fender Guard RH W/C
00-0737D	Fender Guard LH S/W
00-0736D	Fender Guard RH S/W
00-0731C	Fender Brace Rear
00-0738C	Fender Brace Front
00-0749B	Vertical Angle LH
00-0748B	Rear Angle LH
00-0747B	Rear Angle RH
00-0746B	Top Angle
00-0745B	Top Angle
00-0744B	Front Angle LH
00-0743B	Front Angle RH
00-0741B	Vertical Angle RH
00-0742A	Gusset
00-0734C	Brace Rear
00-0733A	Rib
00-0730A	Gusset
00-0686C	Brace Front
00-0739A	Rib
00-0740A	Rib

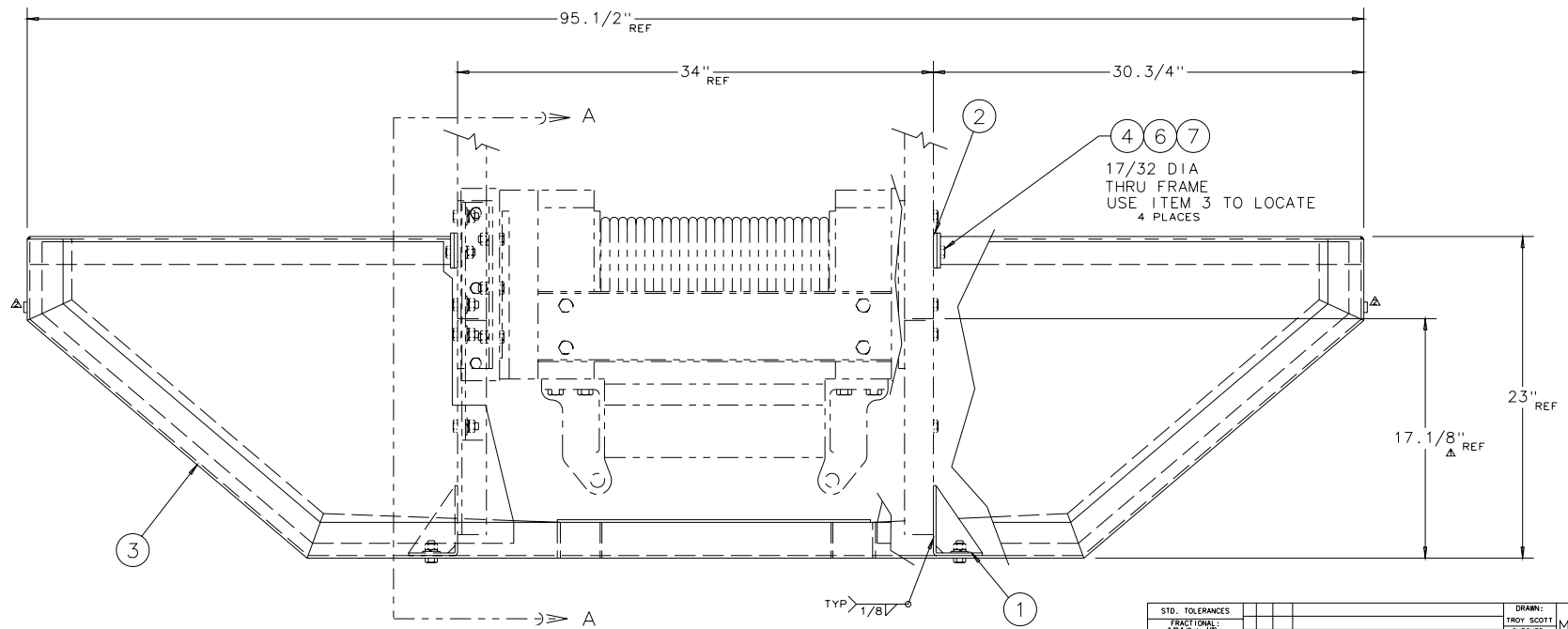
Drawing List - Limb Risers and Grill Guard

Drawing Number	Drawing Name
29-9804D	Cab Guard Assembly
00-0707D	Grill Guard S/W
00-0708B	Mounting Bar
00-0709B	Pipe, Vertical
00-0710B	Pipe, Horizontal
00-0711B	Pipe, Vertical
00-0719B	Upper Pipe
00-0720C	Lower Pipe RH
00-0721C	Lower Pipe LH
00-0848A	Limb Riser
00-0849A	Nozzle Fixture Mount
29-0066B	Spacer
00-0712B	Pipe, Cross
00-0713B	Pipe, Vertical
00-0714B	Pipe, Cross
00-0715B	Side Panel
00-0716B	Center Panel



SECTION A - A

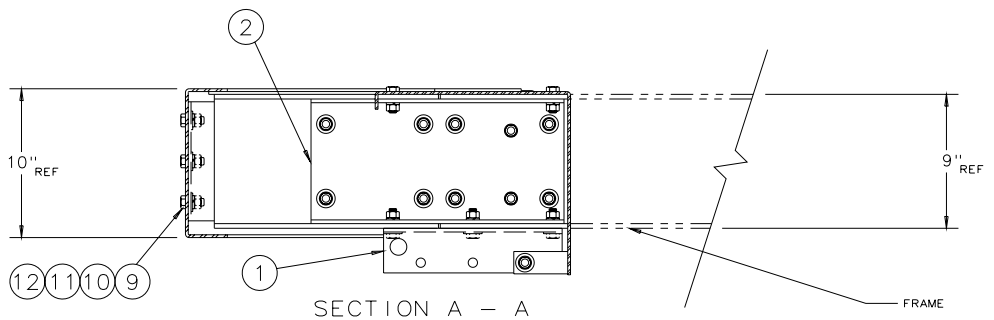
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0777	B	BRACKET, BUMPER MTG	2	4.20
2	29-0054	B	SPACER	2	1.73
3	29-0056	D	BUMPER W/C	1	190
4	TS-08GG14		SCREW, CAP HEX HD 1/2"-13 UNC 1.3/4" LG GR 5 PLTD	4	0.12
5	TS-08GG10		SCREW, CAP HEX HD 1/2"-13 UNC 1.1/4" LG GR 5 PLTD	6	0.10
6	TS-08GP		NUT, HEX DBL CHAM 1/2"-13 UNC PLTD	10	0.04
7	WS08-BC		WASHER SPRG LOCK REG: 1/2" PLATED	10	0.01
8	WS08-BA		WASHER FLAT USS 1/2" PLTD	6	0.03



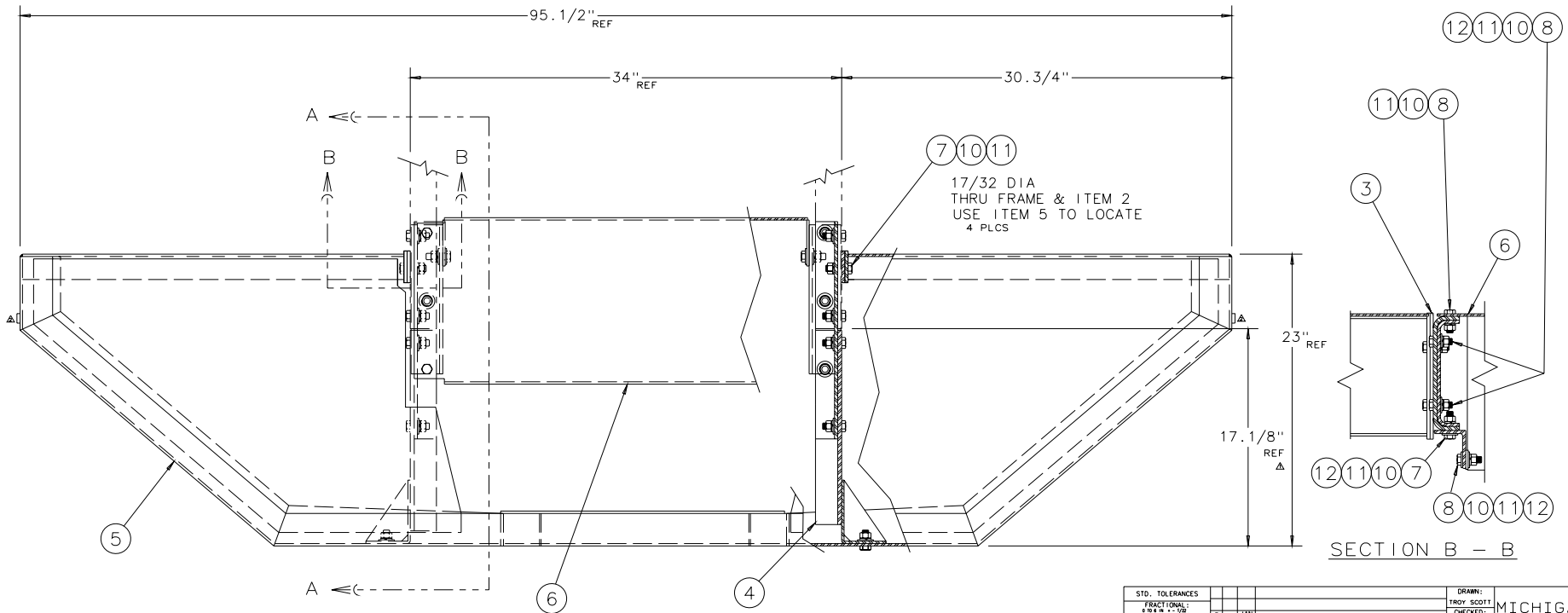
PART NUMBER: 29-9803
EST WT: 204 LBS

STD. TOLERANCES		DRAWN: TROY SCOTT		MICHIGAN DNR	
FRACTIONAL: 1/16" - 1/8" 1/4" 3/8" 1/2" 3/4" 1"	DECIMAL: .005" .010" .015" .020" .030" .040" .050" .060" .070" .080" .090" .100"	2	REG: JAN PER REV 1 ON 29-0056		CHECKED: KDB
ANGULAR: ±.5° ±1° ±2°	1	REG: JAN 17/78 WAS 16/58" 3/16" WAS 8/34" BUMPER	1	APPROVED:	FOREST MANAGEMENT DIVISION
FACE: ±.008	NO. BY DATE	REVISION			
FOREST FIRE EXPERIMENT STATION				PROJECT NO.: 91-2	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 29-9803D	
TITLE: BUMPER W/ WINCH		FEP: 5-TON	SCALE: 1 = 4	DATE: 06 AUG 93	

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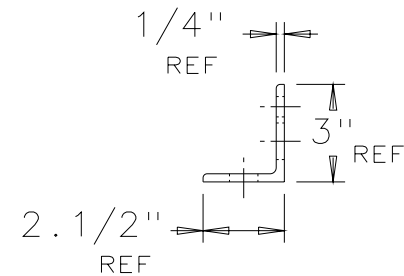
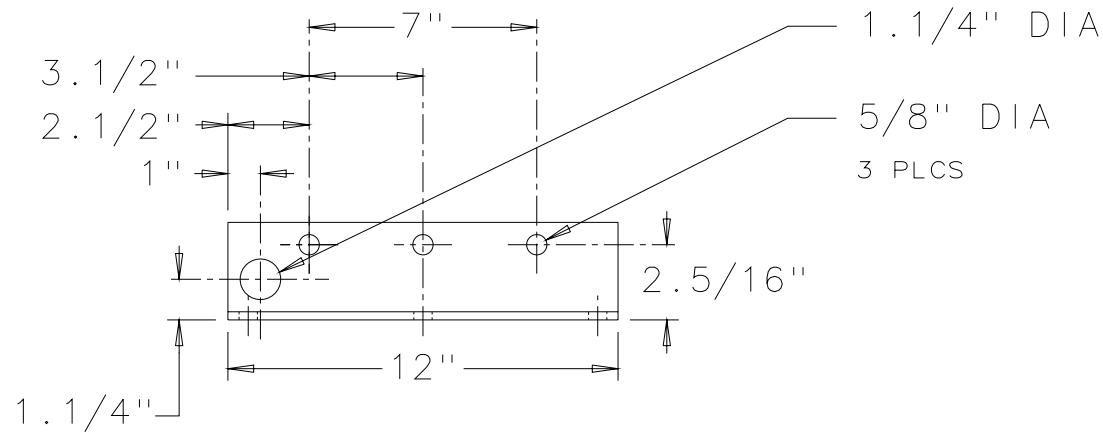
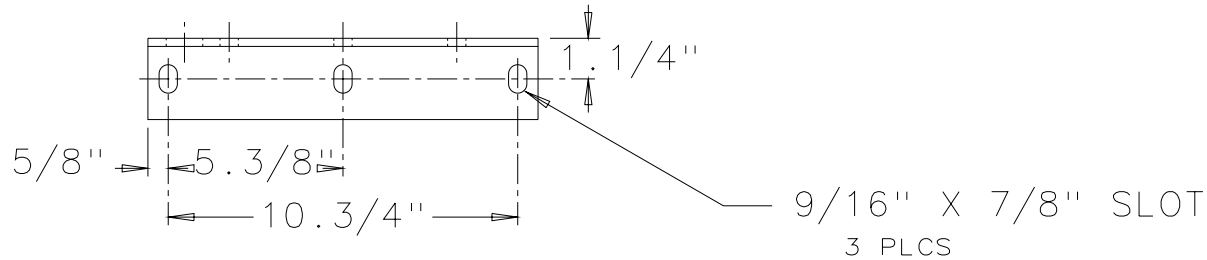
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	29-0052	B	WINCH ANGLE BRACKET	2	4.28
2	29-0053	B	FRAME DOUBLER	2	13.0
3	29-0054	B	SPACER	2	1.73
4	29-0055	B	BUMPER MOUNT W/C	2	20.2
5	29-0056	D	BUMPER W/C	1	1.190
6	29-0067	C	RADIATOR GUARD W/C	1	40.2
7	TS-08GG14		SCREW, CAP HEX HD 1/2"-13 UNC 1.3/4" LG GR 5 PLTD	10	0.12
8	TS-08GG12		SCREW, CAP HEX HD 1/2"-13 UNC 1.1/2" LG GR 5 PLTD	22	0.11
9	TS-08GG10		SCREW, CAP HEX HD 1/2"-13 UNC 1.1/4" LG GR 5 PLTD	6	0.10
10	TS-08GP		NUT, HEX DBL CHAM 1/2"-13 UNC PLTD	38	0.04
11	WS08-BC		WASHER SPRG LOCK REG: 1/2" PLATED	38	0.01
12	WS08-BA		WASHER FLAT USS: 1/2" PLTD	32	0.03



PART NUMBER: 29-9802
EST WT: 315 LBS

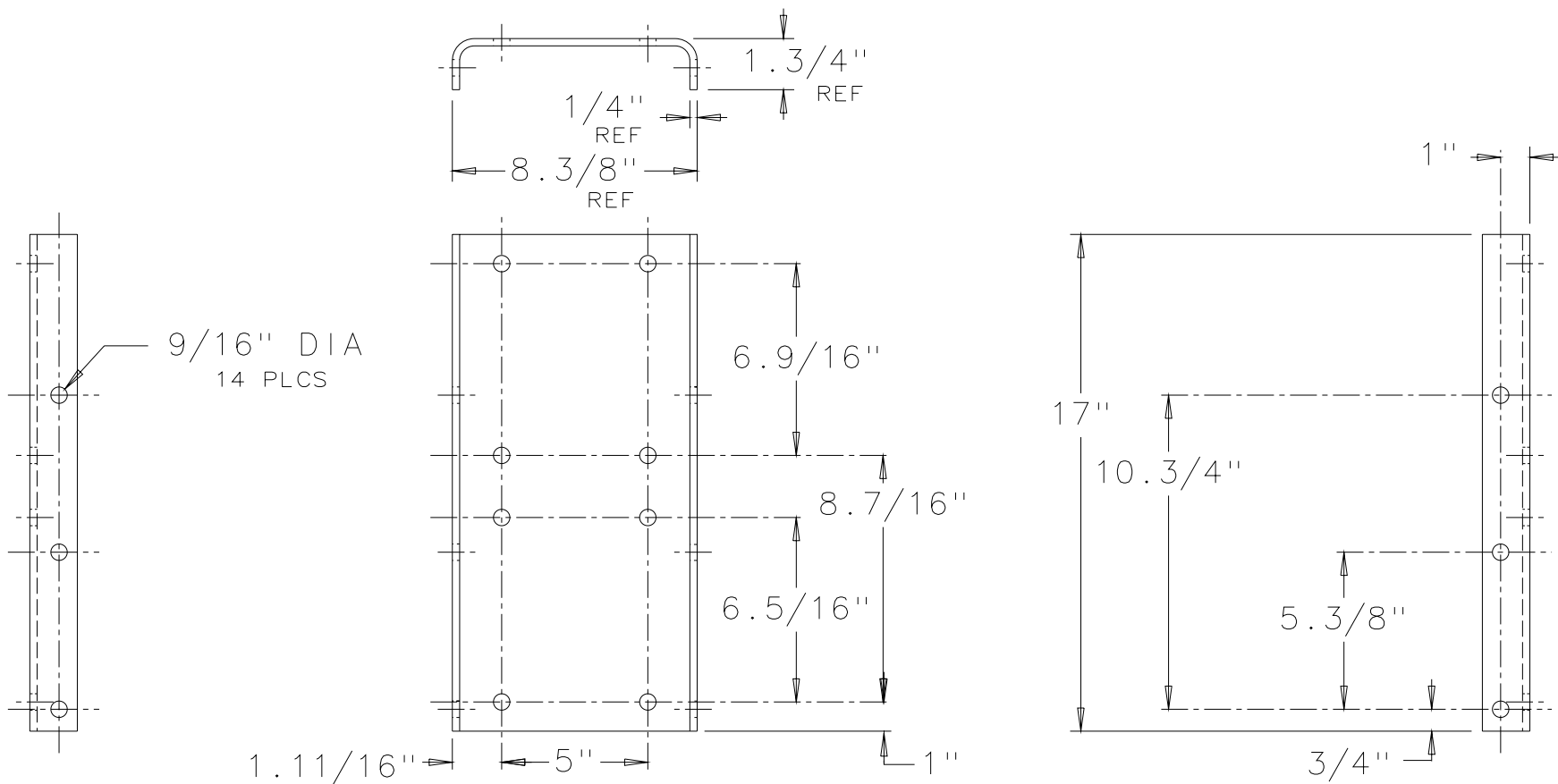
STD. TOLERANCES					DRAWN: TROY SCOTT
FRACTIONAL:	2	REG. (ANSI)	PER REV 1 OF 29-0056	CHECKED: KDG	MICHIGAN DNR
DECIMAL:	1	REG. (ASME)	17/32" DIA MIN. 18 0/16" BUMPER MOUNT FORWARD TO PROVIDE CLEARANCE FOR STEERING ARM SWING	APPROVED:	FOREST MANAGEMENT DIVISION
ANGLE:					
FACE:					
SIZE:					
FOREST FIRE EXPERIMENT STATION					
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: BUMPER W/O WINCH 5-TON SCALE: 1 = 4 DATE: 05 AUG 93 DWG. NO: 29-9802D					

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PART NUMBER: 29-0052
 MATL: ANGLE 3 X 2.1/2 X 1/4
 K02600
 FFES SPEC NO: AK-41210AG
 EST WT: 4.28 LBS

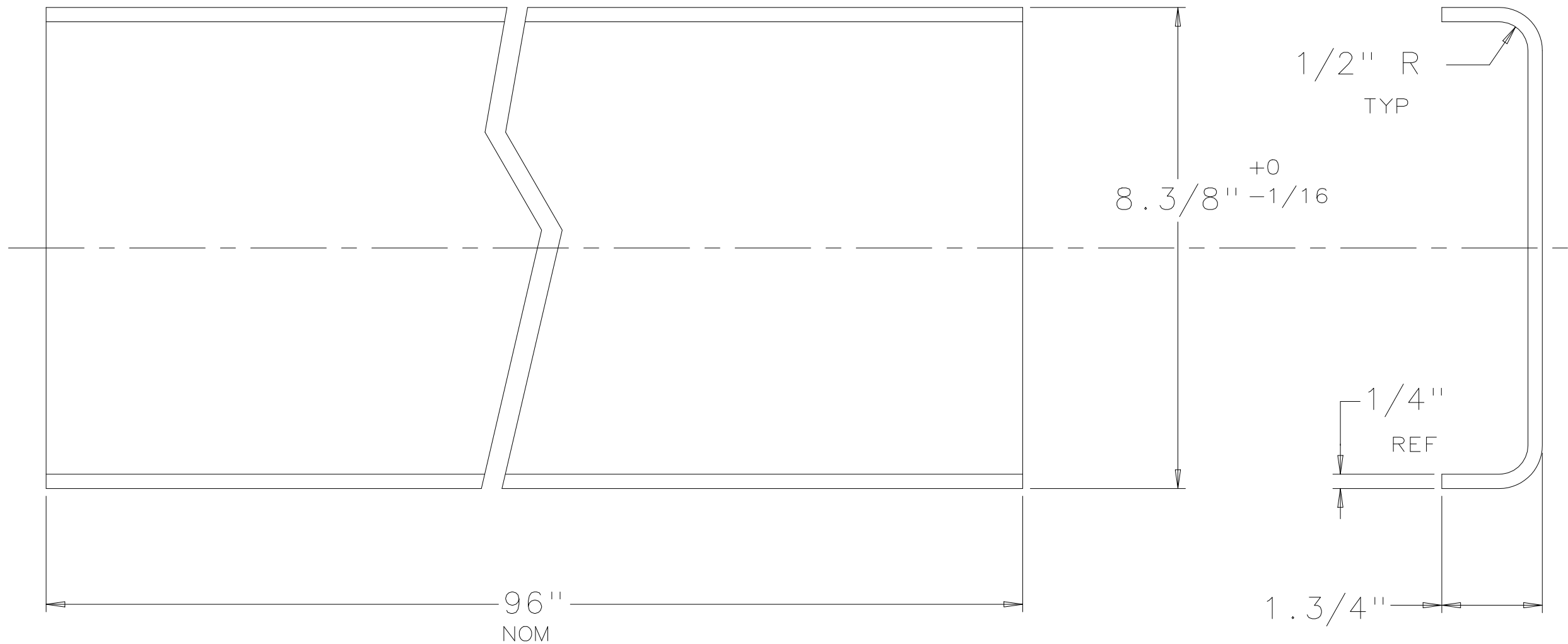
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FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: ++ 1 DEG				NO.	BY	DATE
REVISION						
FOREST FIRE EXPERIMENT STATION						
P. O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: WINCH ANGLE BRACKET				SCALE: 1" = 4"	DATE: 06-01-1993	PROJECT NO.: 91-2
						DWG. NO. 29-0052B



PART NUMBER: 29-0053
 MAT'L: MAKE FROM PART NO. 00-0685
 EST WT: 13.0 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: -- 1 DEG				NO.	BY	DATE
REVISION						
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 29-0053B
TITLE: FRAME DOUBLER				SCALE: 1" = 4"	DATE: 06-01-1993	

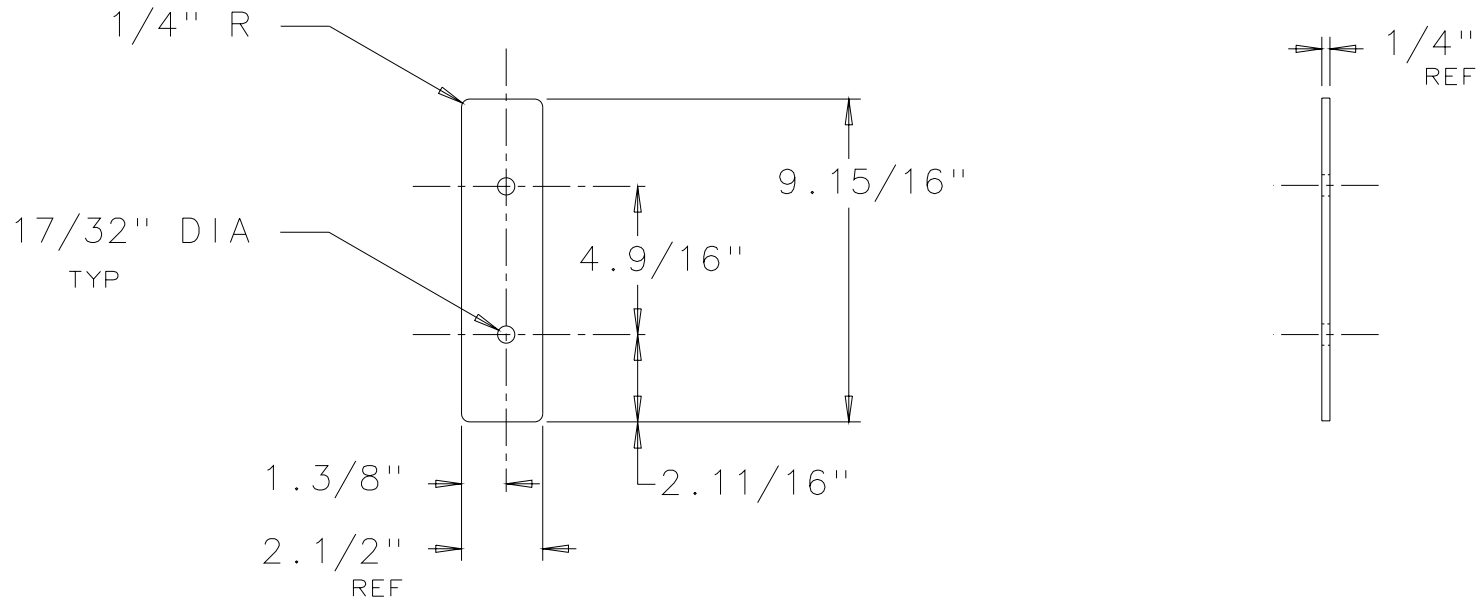
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NOTE: MUST NEST INTO PART 00-0684

PART NO: 00-685
 MAT'L: SHEET 1/4" HR
 G10150
 FFES SPEC NO: AA-00448BC
 EST WT: 73.9 LBS

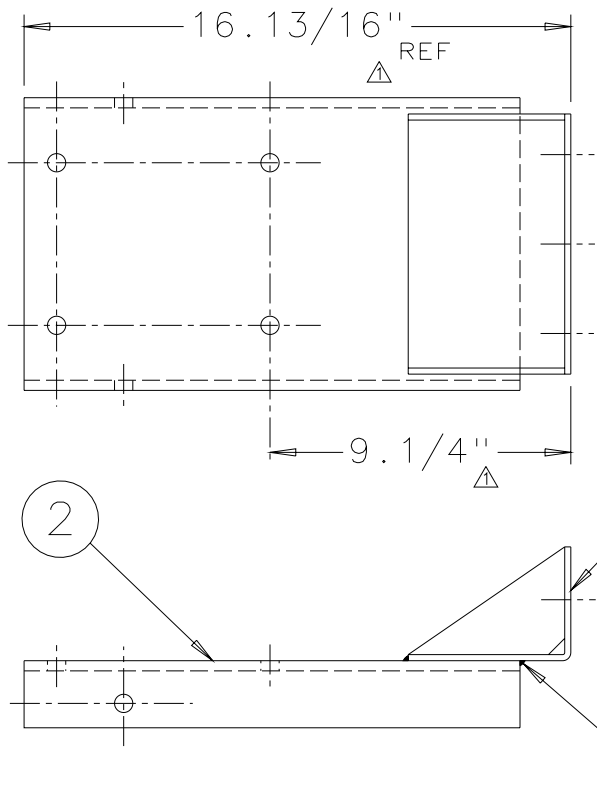
STD. TOLERANCES						DRAWN: BAH	MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16						CHECKED: KDB		
DECIMAL:	ANGULAR:					APPROVED:		
1 PLACE ± 0.1	± 1 DEG						FOREST MANAGEMENT DIVISION	
2 PLACE ± 0.01								
3 PLACE ± 0.005								
		NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION								
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: CHANNEL, FRAME (DOUBLER)					SCALE: 1=2	DATE: 12/16/92	DWG. NO. 00-0685B	



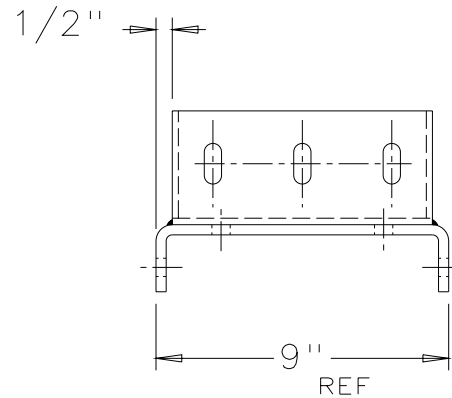
PART NUMBER: 29-0054
 MAT'L: BAR FLAT 1/4 X 2.1/2 HR
 G10200
 FFES SPEC NO: AB-00410AA
 EST WT : 1.73 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: + - 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: SPACER					SCALE: 1 = 4	DATE: 06-01-1993	DWG. NO.: 29-0054B

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ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0777	B	BRACKET, BUMPER MTG	1	4.20
2	00-0766	B	FRAME EXTENSION	1	15.9

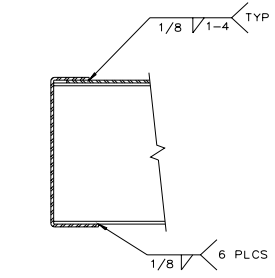
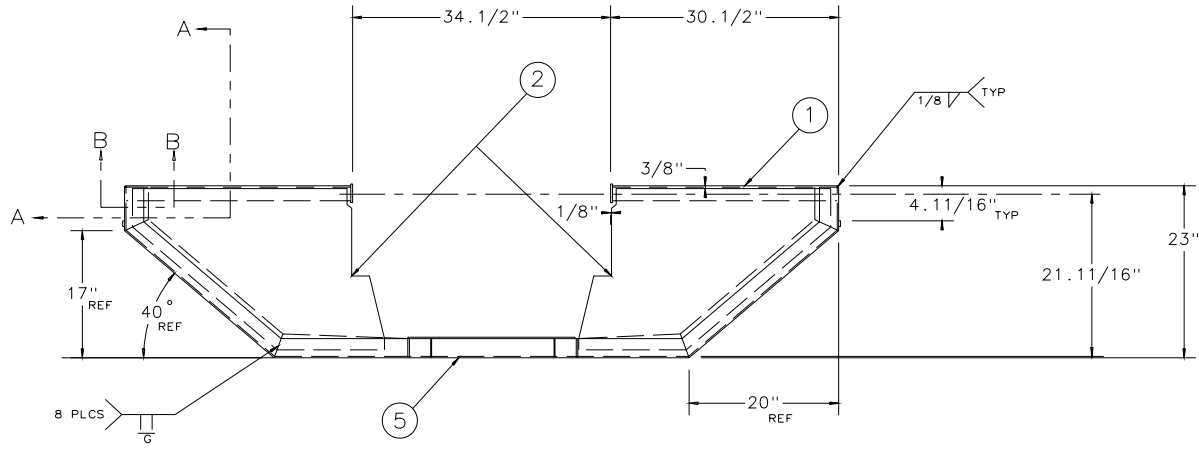


PART NUMBER: 29-0055
EST WT: 20.2 LBS

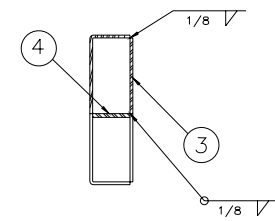
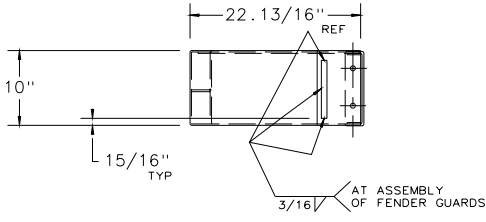
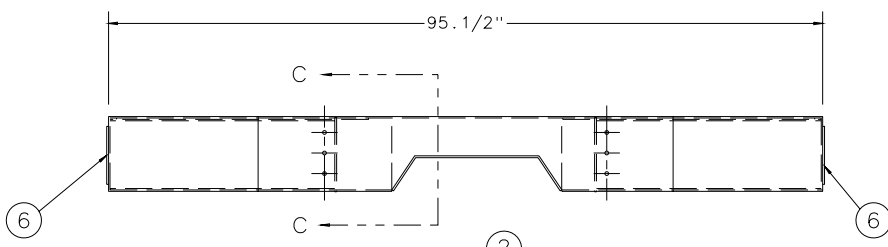
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$ DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG				1 REG JAN 1994 NO. BY DATE		16.13/16" WAS 16.5/16". 9.1/4" WAS 8.3/4" BUMPER MOVED FORWARD FOR STEERING ARM SWING CLEARANCE REVISION		DRAWN: TROY SCOTT CHECKED: KDB APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2			
TITLE: BUMPER MOUNT W/C						SCALE: 1 = 4		DATE: 06-01-1993		DWG. NO. 29-0055B	

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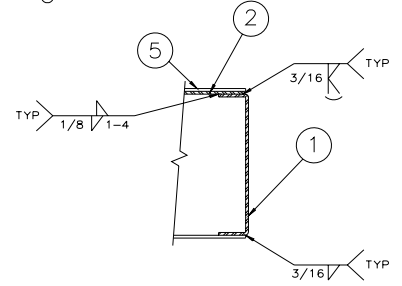
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0764	B	SUPPORT CHANNEL S/W	2	21.5
2	00-0763	C	TOP SHEET	2	25.8
3	00-0767	B	BACK SHEET	1	6.55
4	00-0768	B	BOX FLANGE	1	4.86
5	00-0769	D	BUMPER BODY	1	81.5
6	00-0876	A	BAR	2	0.41



SECTION B-B
SCALE 1 = 4



SECTION C-C
SCALE 1 = 4



SECTION A-A
SCALE 1 = 4

STD. TOLERANCES						DRAWN:	TRAVY SCOTT
FRACTIONAL:						CHECKED:	KDB
DECIMAL:						APPROVED:	
DATE:	11-11-93	1	REG. DES.	1	1	PROJECT NO.:	91-2
SCALE:	1/8"	1	1	1	1	DWG. NO.:	29-0056D

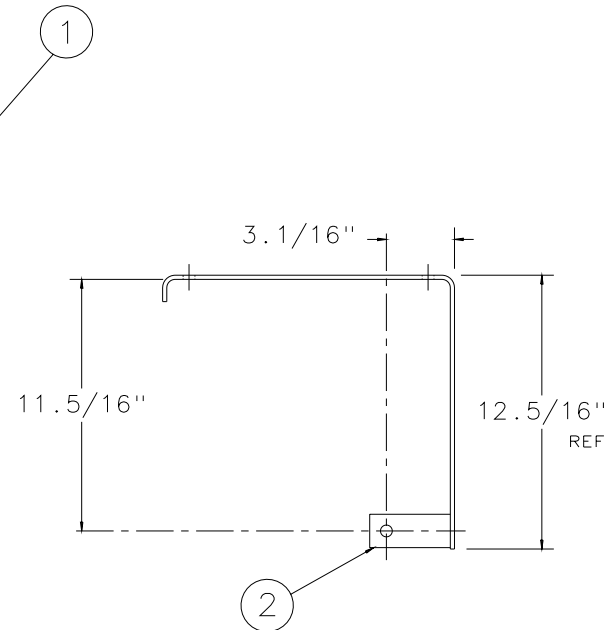
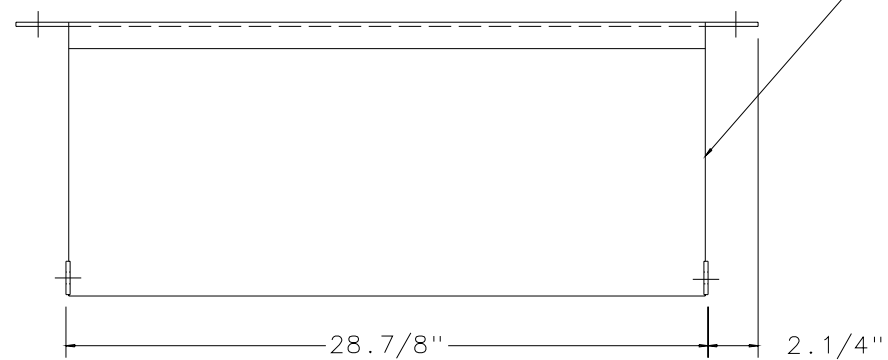
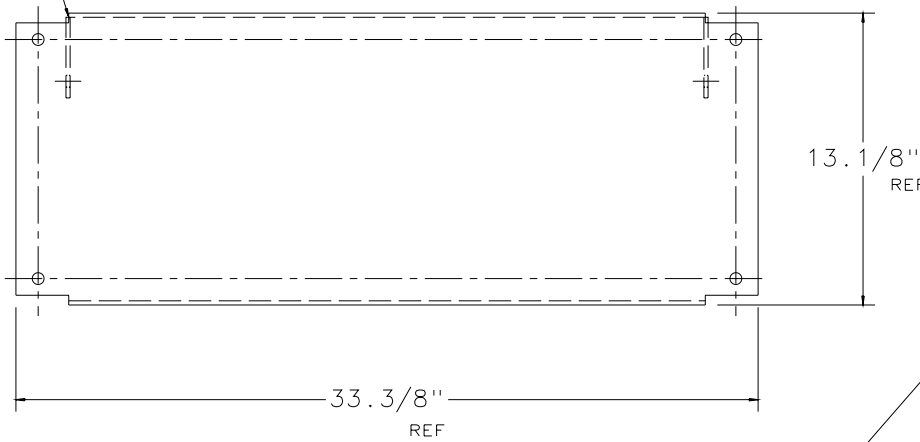
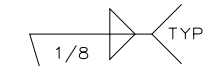
PART NUMBER: 29-0056
EST WT: 190 LBS

FOREST FIRE EXPERIMENT STATION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

MICHIGAN DNR
FOREST MANAGEMENT DIVISION

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ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0851	C	RADIATOR GUARD	1	40.5
2	00-0852	A	MOUNTING TAB	2	0.27

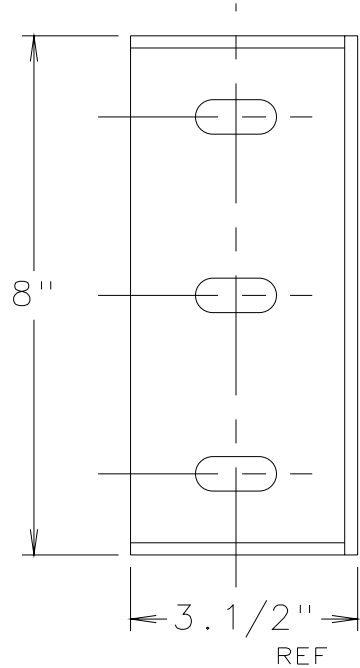
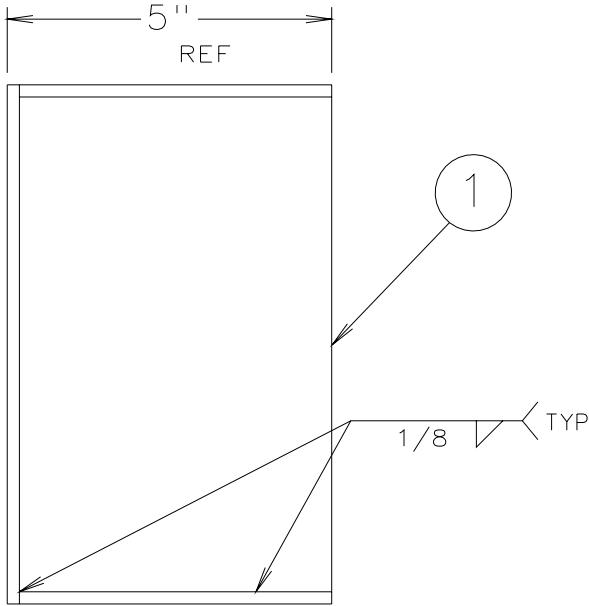


PART NUMBER: 29-0067
EST WT: 41.2 LBS

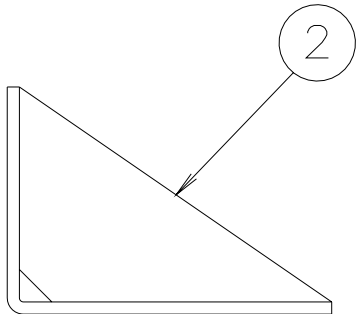
STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 8 TO 6 IN **1/32 6 IN AND UP **1/16						CHECKED: KDB	
DECIMAL: 1 PLACE **0.1 2 PLACE **0.01 3 PLACE **0.005						APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: RADIATOR GUARD W/C				FEPP 5-TON	SCALE: 1 = 4	DATE: 05 AUG 93	DWG. NO. 29-0067C

Return to Drawing Index

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0776	B	ANGLE, BUMPER MTG	1	3.21
2	00-0775	B	GUSSET	2	0.40

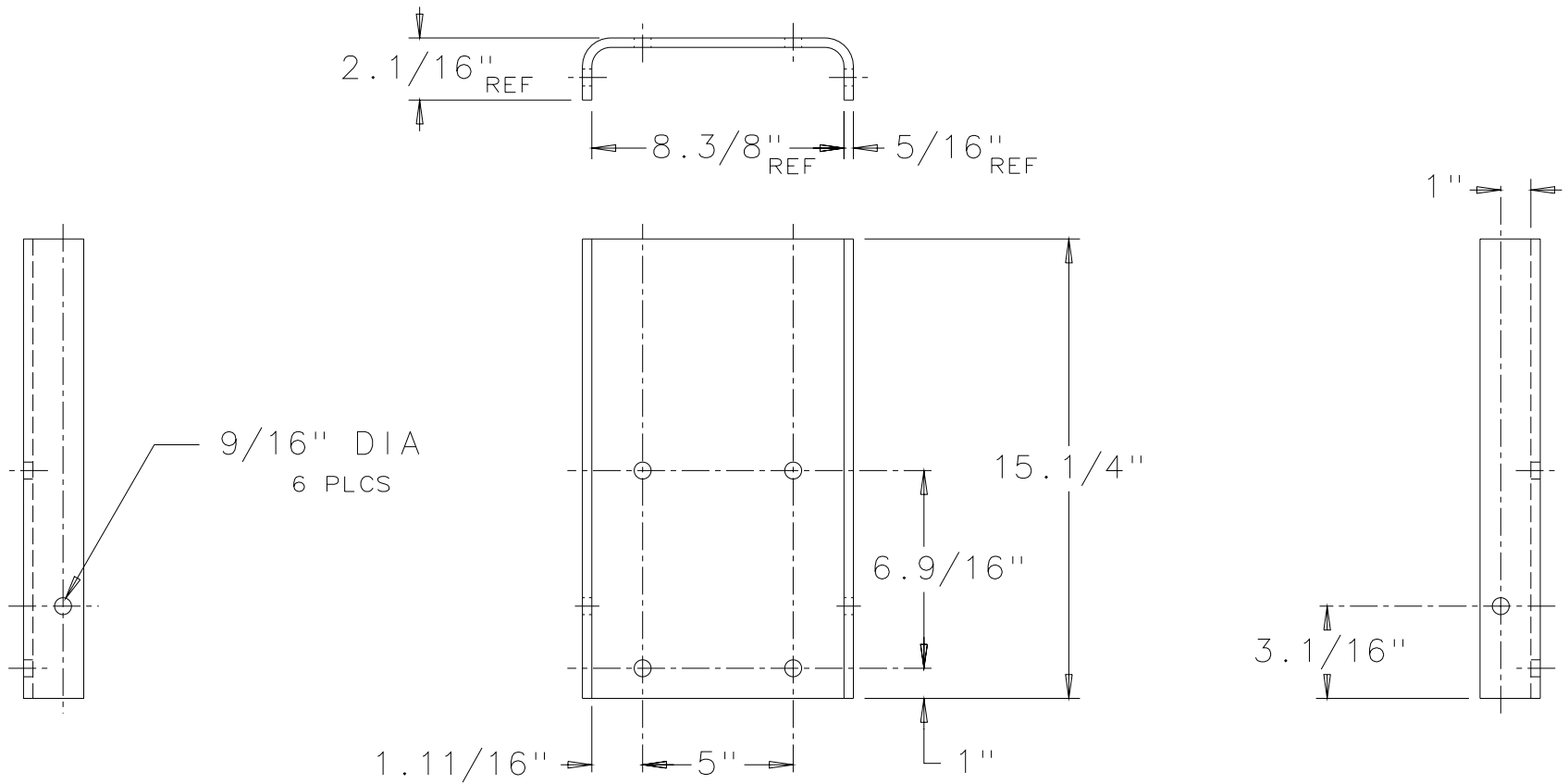


PART NO: 00-0777
EST WT: 4.20 LBS



STD. TOLERANCES				DRAWN: BAH		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BRACKET, BUMPER MTG				SCALE: 1=2	DATE: 12-19-1991	PROJECT NO.: 91-2 DWG. NO. 00-0777B

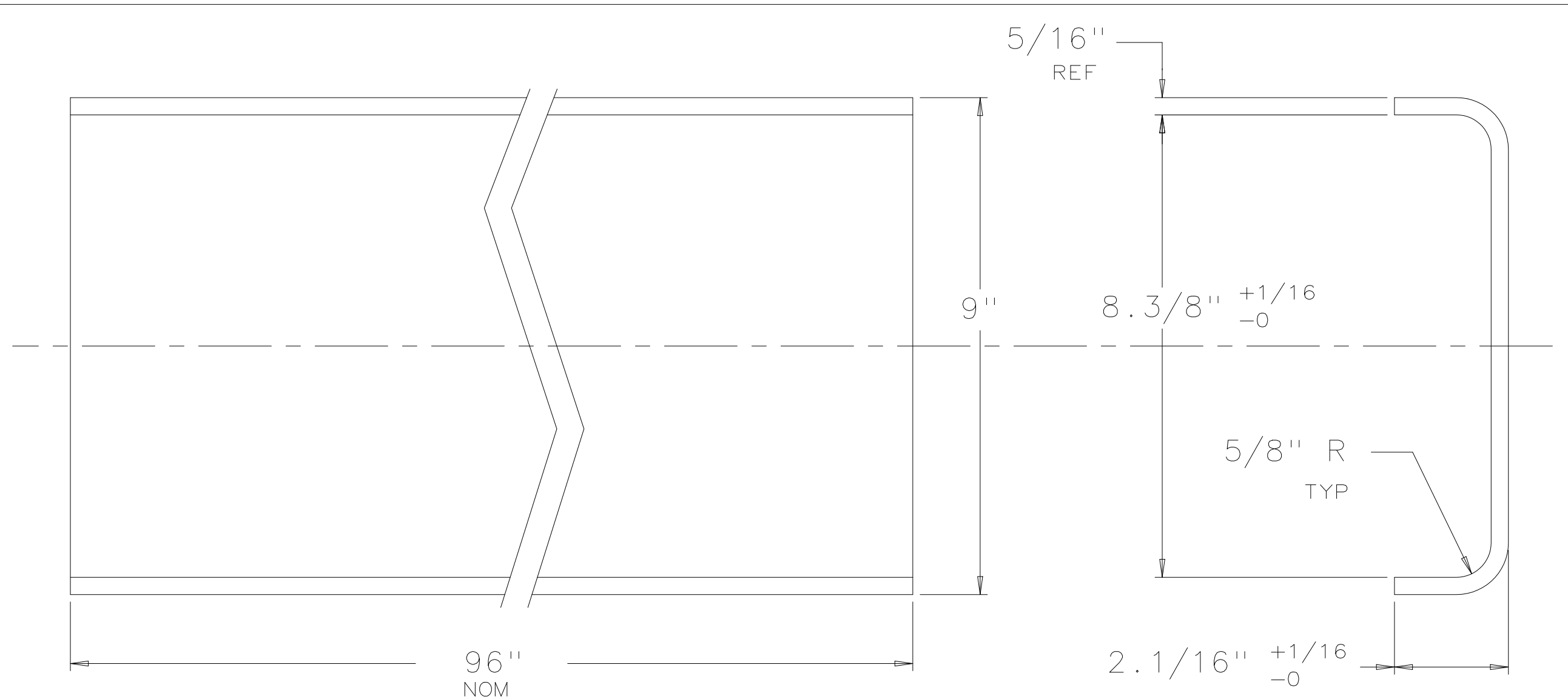
Return to Drawing Index



PART NUMBER: 00-0766
 MAT'L: MAKE FROM PART NO. 00-0684
 EST WT: 15.9 LBS

STD. TOLERANCES			DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$			CHECKED: KDB			
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005			APPROVED:			
ANGULAR: ± 1 DEG						
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: FRAME EXTENSION				SCALE: 1 = 4	DATE: 06-01-1993	DWG. NO. 00-0766B
PROJECT NO.: 91-2						

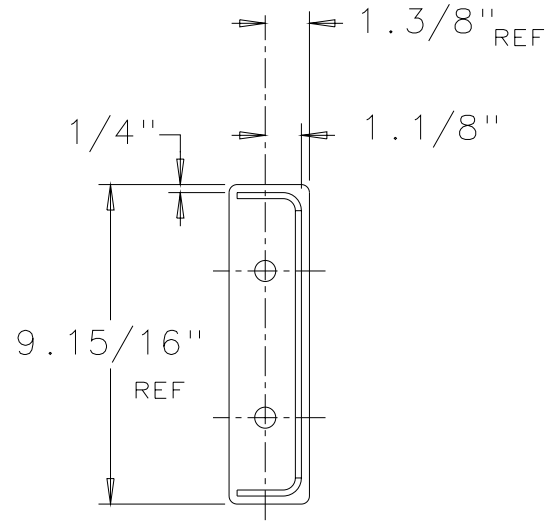
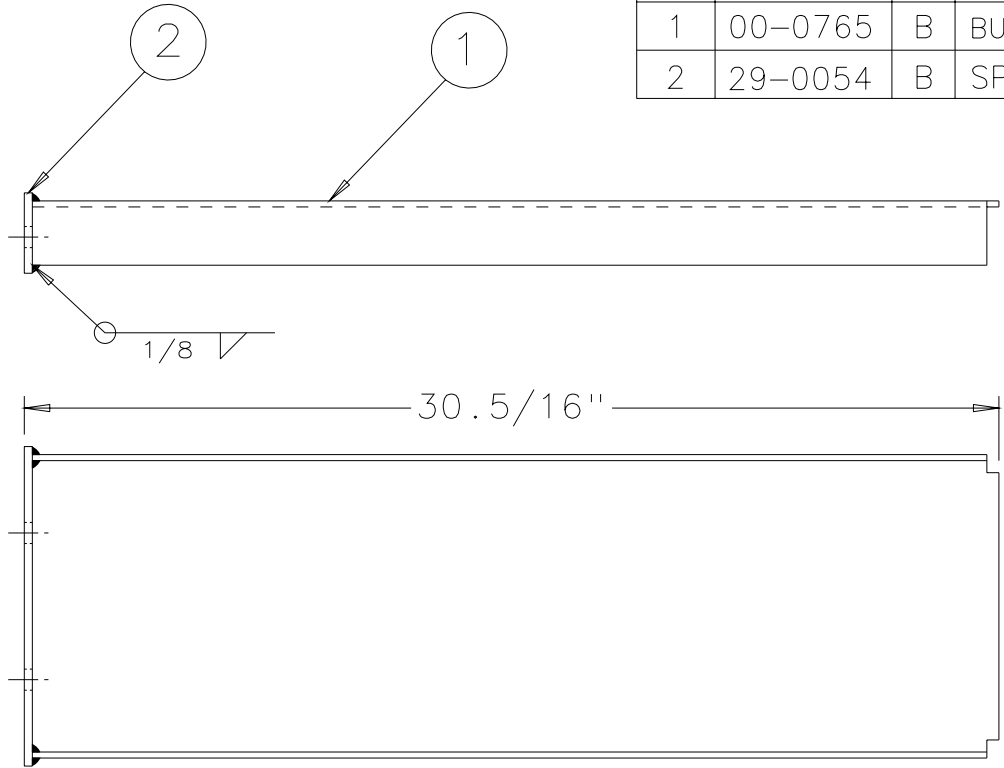
Return to Drawing Index



PART NO: 00-0684
 MAT'L: SHEET 5/16" HR
 G10150
 FFES SPEC NO: AA-00548BC
 EST WT: 101 LBS

STD. TOLERANCES				DRAWN: BAH		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CHANNEL, FRAME				SCALE: 1=2	DATE: 12/16/92	DWG. NO. 00-0684B

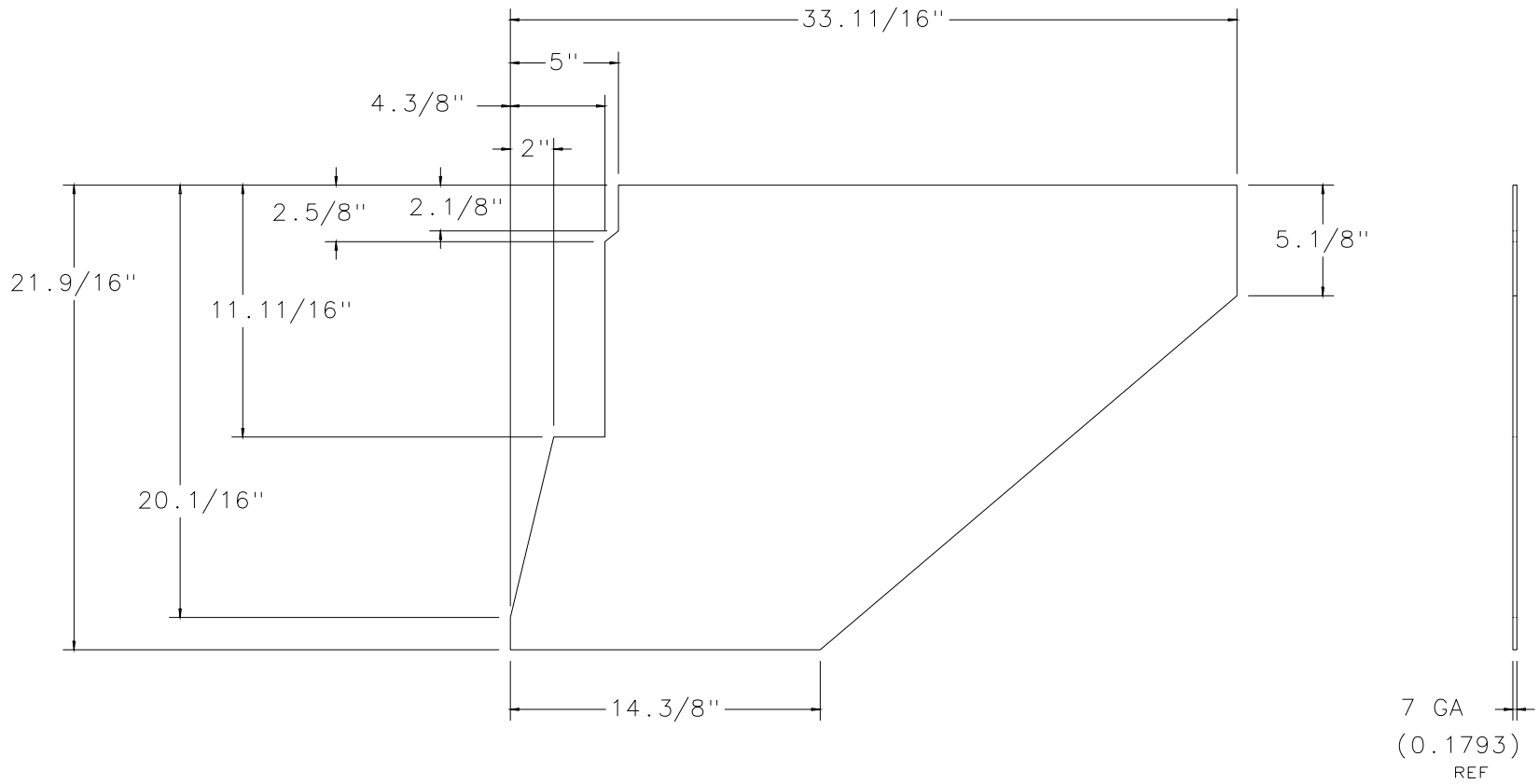
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0765	B	BUMPER SUPPORT CHANNEL	1	19.4
2	29-0054	B	SPACER PLATE	1	1.73



PART NUMBER: 00-0764
EST WT: 21.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG				DRAWN: TROY SCOTT CHECKED: KDB APPROVED:				MICHIGAN DNR FOREST MANAGEMENT DIVISION			
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						SCALE: 1 = 4		DATE: 06-01-1993		DWG. NO. 00-0764B	
TITLE: SUPPORT CHANNEL S/W											

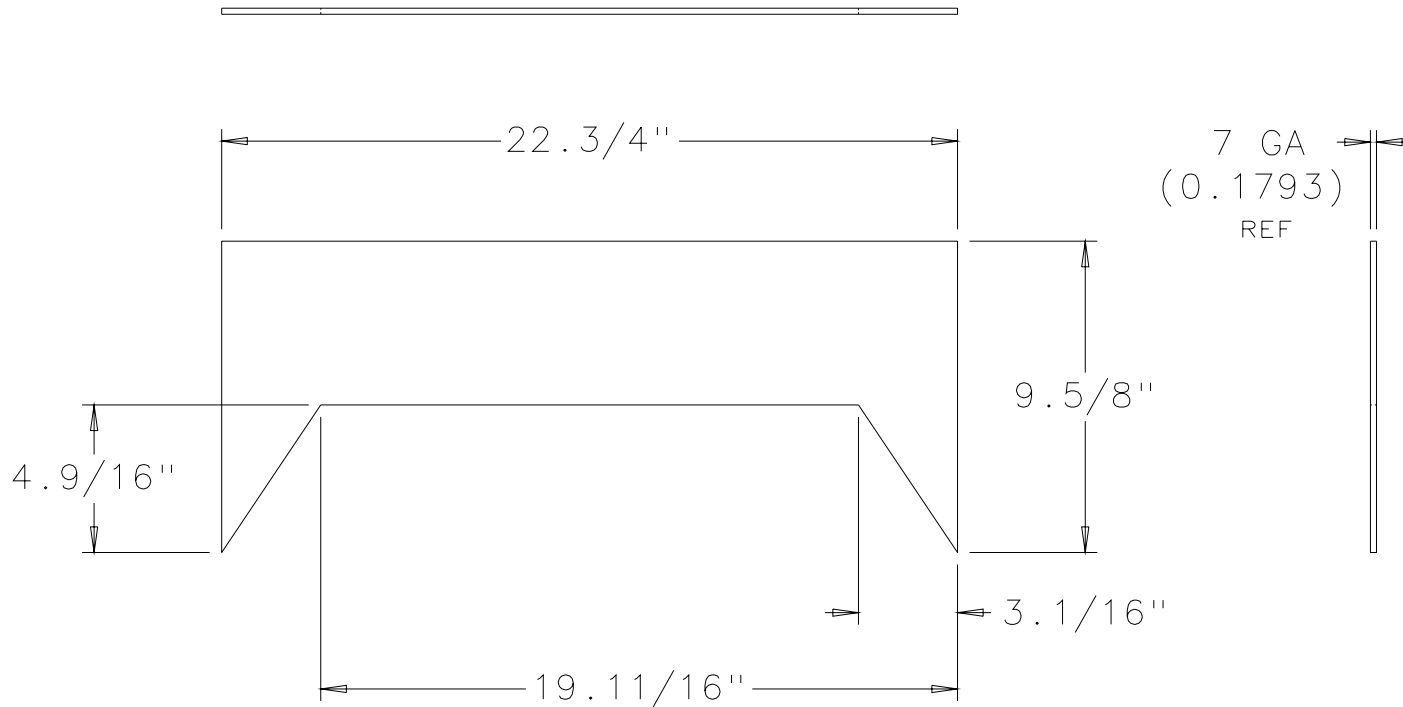
Return to Drawing Index



PART NUMBER: 00-0763
 MAT'L: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 25.8 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT	
FRACTIONAL: 8 IN AND UP **1/16				CHECKED: KDB	
DECIMAL: 1 PLACE **0.1 2 PLACE **0.01 3 PLACE **0.005		ANGULAR: **1 DEG		APPROVED:	
NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: TOP SHEET				SCALE: 1 = 4	DATE: 06-01-1993
				PROJECT NO.: 91-2	
				DWS. NO. 00-0763C	

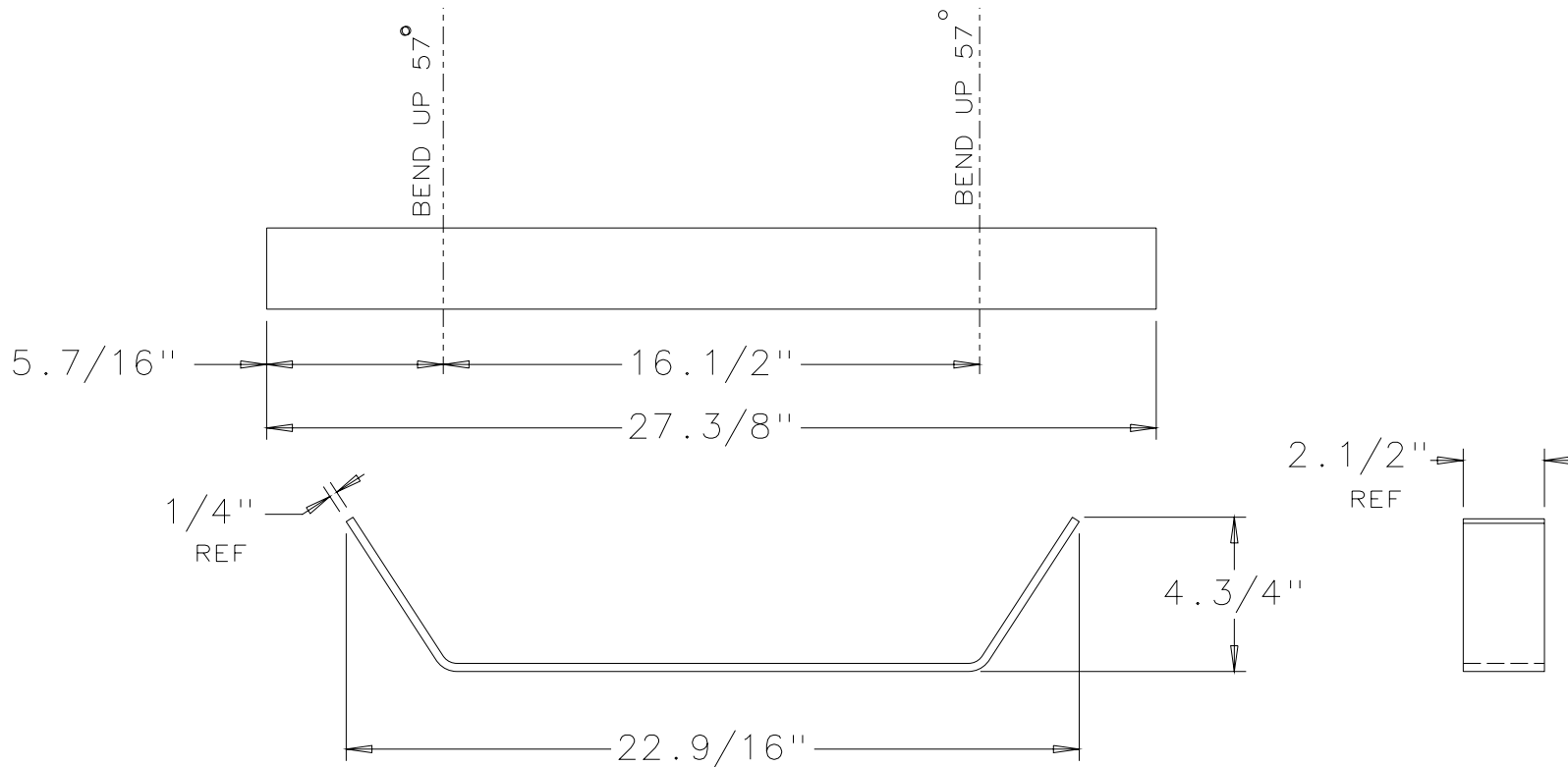
MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION



PART NUMBER: 00-0767
 MAT'L: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 6.55 LBS

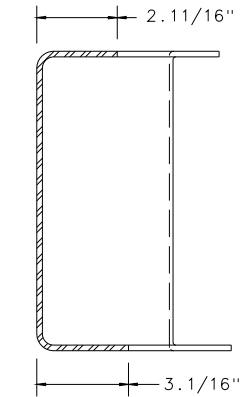
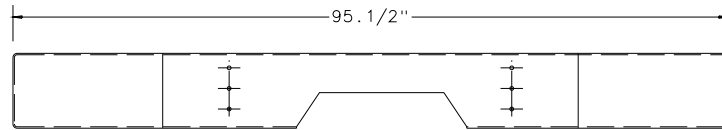
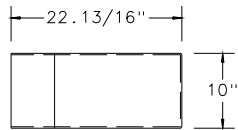
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$				CHECKED: KDB		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005				APPROVED:		
ANGULAR: ± 1 DEG				NO.	BY	DATE
				REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: BACK SHEET				SCALE: 1" = 4"	DATE: 06-01-1993	DWG. NO. 00-0767B

Return to Drawing Index

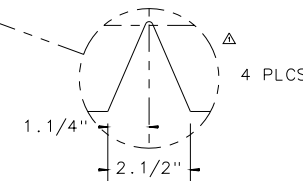
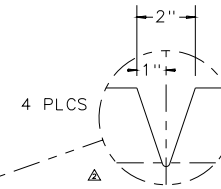
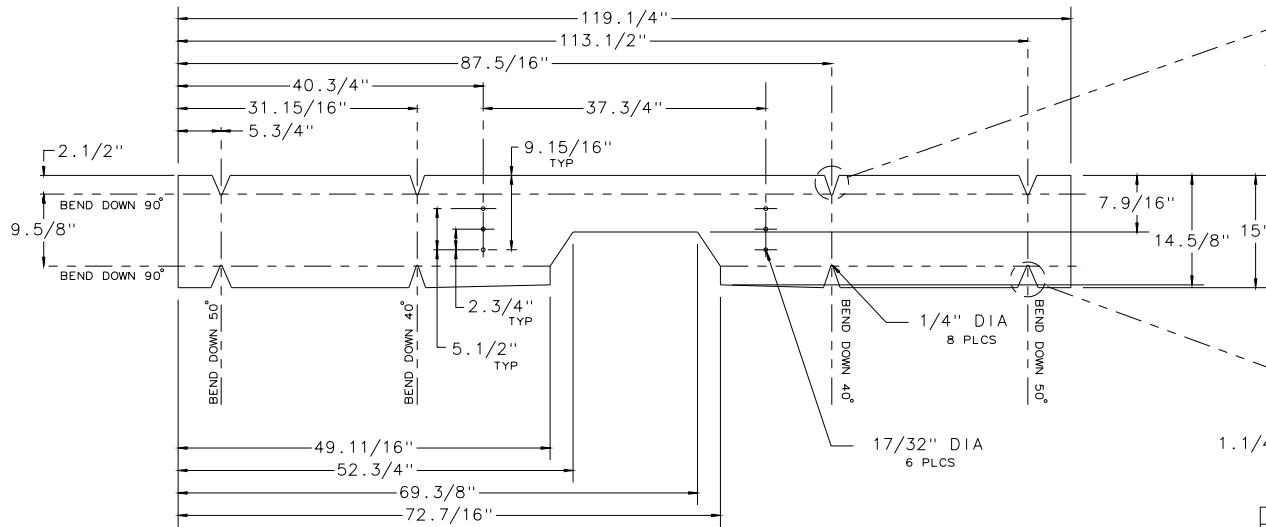


PART NUMBER: 00-0768
 MAT'L: BAR, FLAT 1/4 X 2-1/2 HR
 G10200
 FFES SPEC NO: AB-00410AA
 EST WT: 4.86 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$				CHECKED: KDB		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005				APPROVED:		
ANGULAR: ± 1 DEG				NO.	BY	DATE
				REVISION		
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BOX FLANGE				SCALE: 1 = 4	DATE: 06-01-1993	DWG. NO. 00-0768B

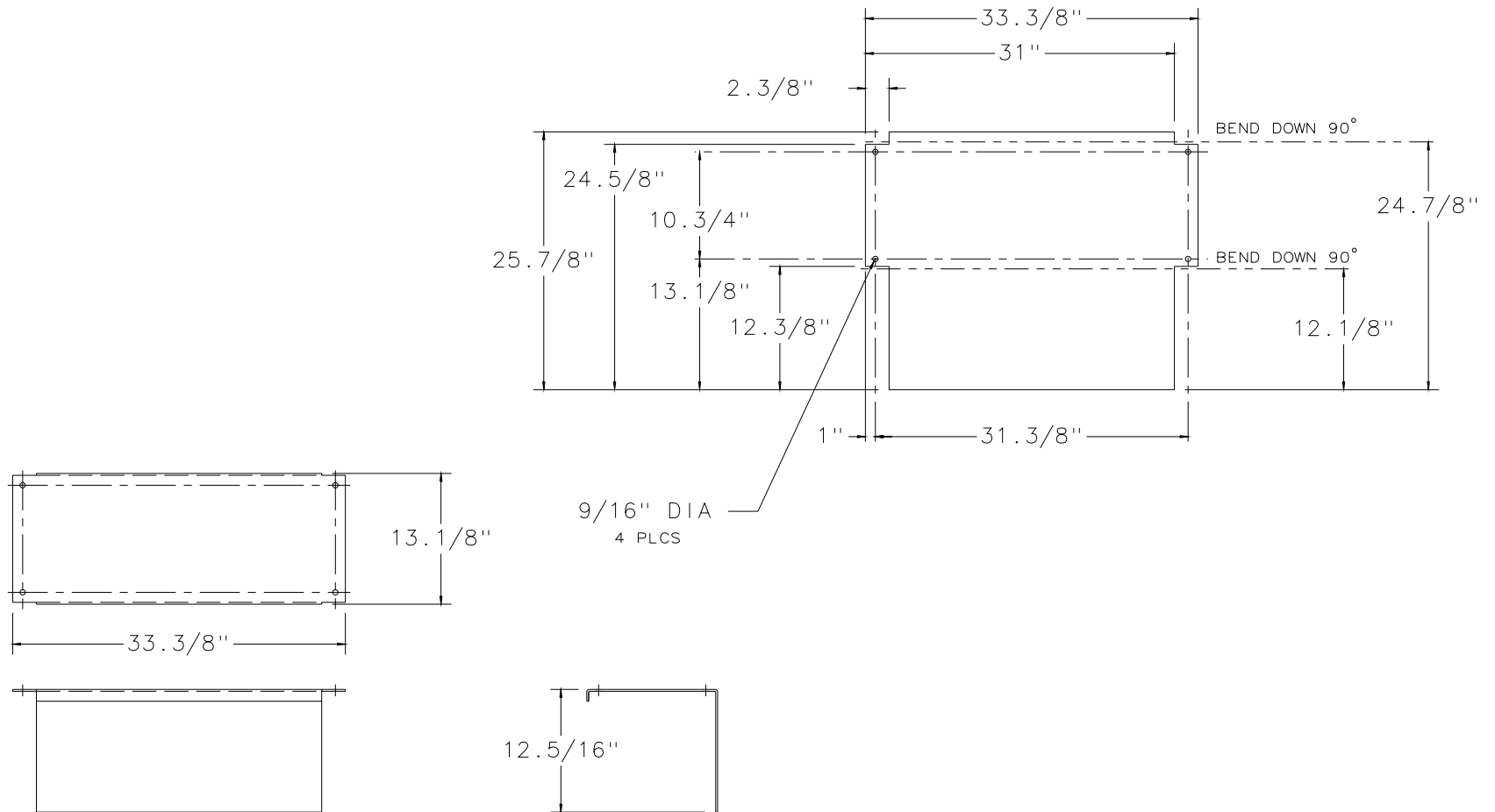


SECTION A - A
SCALE: 1 = 2



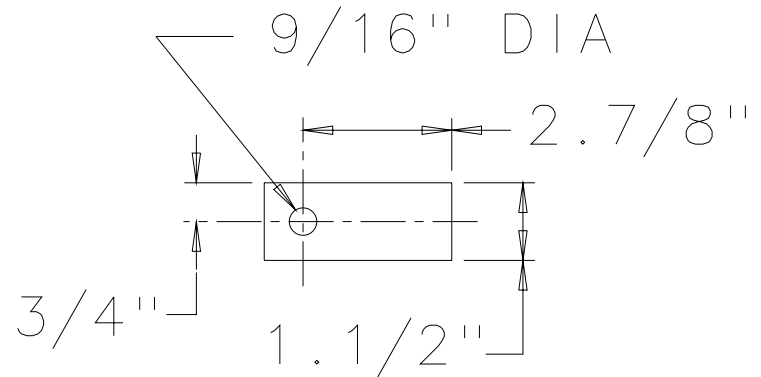
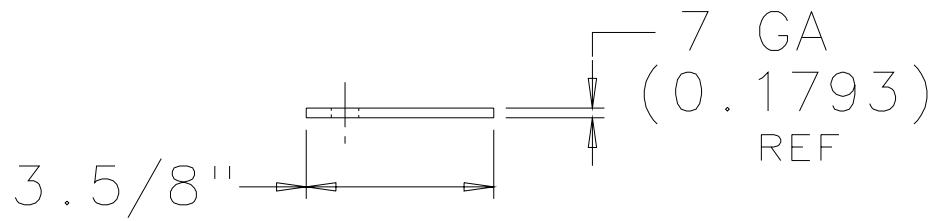
PART NUMBER: 00-0769
 MAT'L SHEET 7GA 4XB HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WGT: 81.5 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FUNCTIONAL: ±0.000" - 0.005"						CHECKED: KDB		
DECIMAL: ANGULAR: ±0.000" ±0.005" ±0.000" ±0.005"						APPROVED:		
DATE: 06-01-1993	BY: JLS	DATE: 06-01-97	REVISION: 1	DESCRIPTION: MODIFIED NOTCHES FOR EASIER BENDING			PROJECT NO.: 91-2	
TITLE: FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							SCALE: 1 = 8	DATE: 06-01-1993
TITLE: BUMPER BODY							DATE: 06-01-1993	PROJECT NO.: 00-0769D



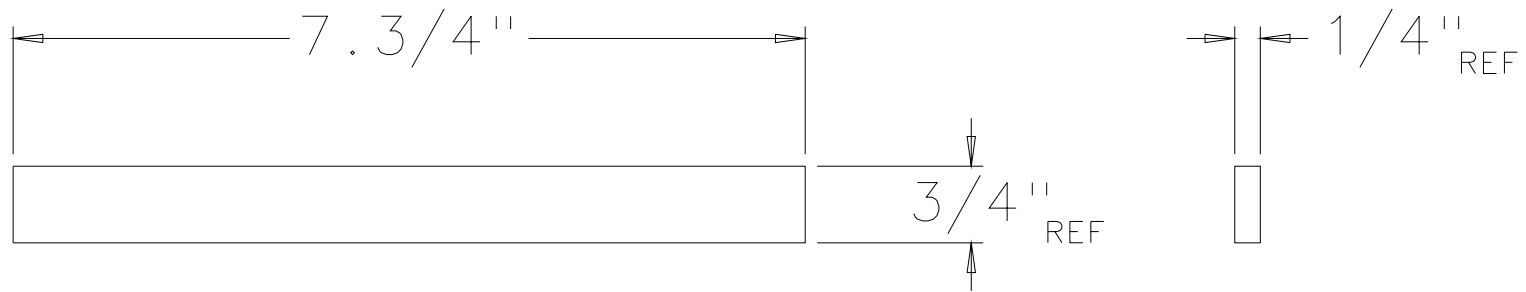
PART NUMBER: 00-0851
 MATL: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 40.5 LBS

STD. TOLERANCES								DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 8 TO 6 IN --1/32 6 IN AND UP --1/16								CHECKED: KDB	
DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005	ANGULAR: -- 1 DEG							APPROVED:	
		NO.	BY	DATE	REVISION				PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION									
P. O. BOX 68 ROSCOMMON, MICHIGAN 48653									
TITLE: RADIATOR GUARD							SCALE: 1 = 8	DATE: 04 AUG 93	DWG. NO. 00-0851C



PART NUMBER: 00-0852
 MATL: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.27 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: MOUNTING TAB				SCALE: 1 = 4	DATE: 05 AUG 93	DWG. NO. 00-0852A



PART NUMBER: 00-0876
 MAT'L: BAR, FLAT $\frac{1}{4}$ " X $\frac{3}{4}$ " HR
 UNS G10200
 FFES SPEC NO: AB-00403AA
 EST WT: 0.41 LBS

STD. TOLERANCES						DRAWN: R. GREENLAW	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB	
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG				APPROVED:	
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: BAR					SCALE: 1 = 2	DATE: 26 JAN 94	DWG. NO. 00-0876A

5"

3.1/2"

8"

1.1/4"

8"

5.1/2"

2.3/4"

1.5/8"

3.5/16"

8.1/8"

BEND 90°

7 GA
(0.1793)
REF

17/32 x 1.1/4 SLOT
3 PLCS

PART NO: 00-0776
MAT'L: SHEET, 7 GA HR
PICKLED & OILED
ASTM A569
FFES SPEC NO: AA-G0748AP
EST WGT: 3.21 LBS

STD. TOLERANCES					
FRACTIONAL:					
0 TO 6 IN. + - 1/32					
6 IN AND UP + - 1/16					
DECIMAL:	ANGULAR:				
1 PLACE + - 0.1	+ - 1 DEG				
2 PLACE + - 0.01					
3 PLACE + - 0.005					
NO.	BY	DATE	REVISION		

DRAWN:
BAH
CHECKED:
KDB
APPROVED:

MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION

FOREST FIRE EXPERIMENT STATION
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

PROJECT NO.: 91-2

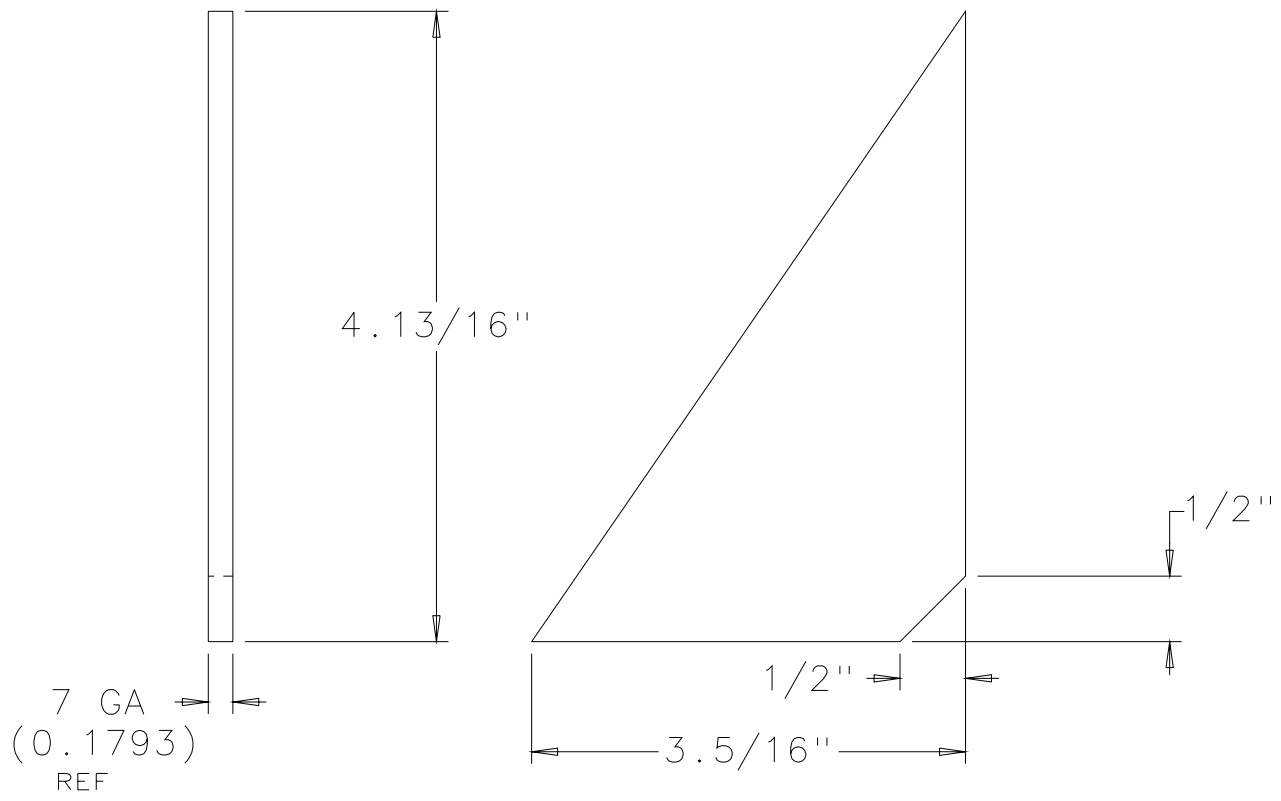
TITLE: ANGLE, BUMPER MTG

SCALE:
1=2

DATE:
12-18-1991

DWG. NO. 00-0776B

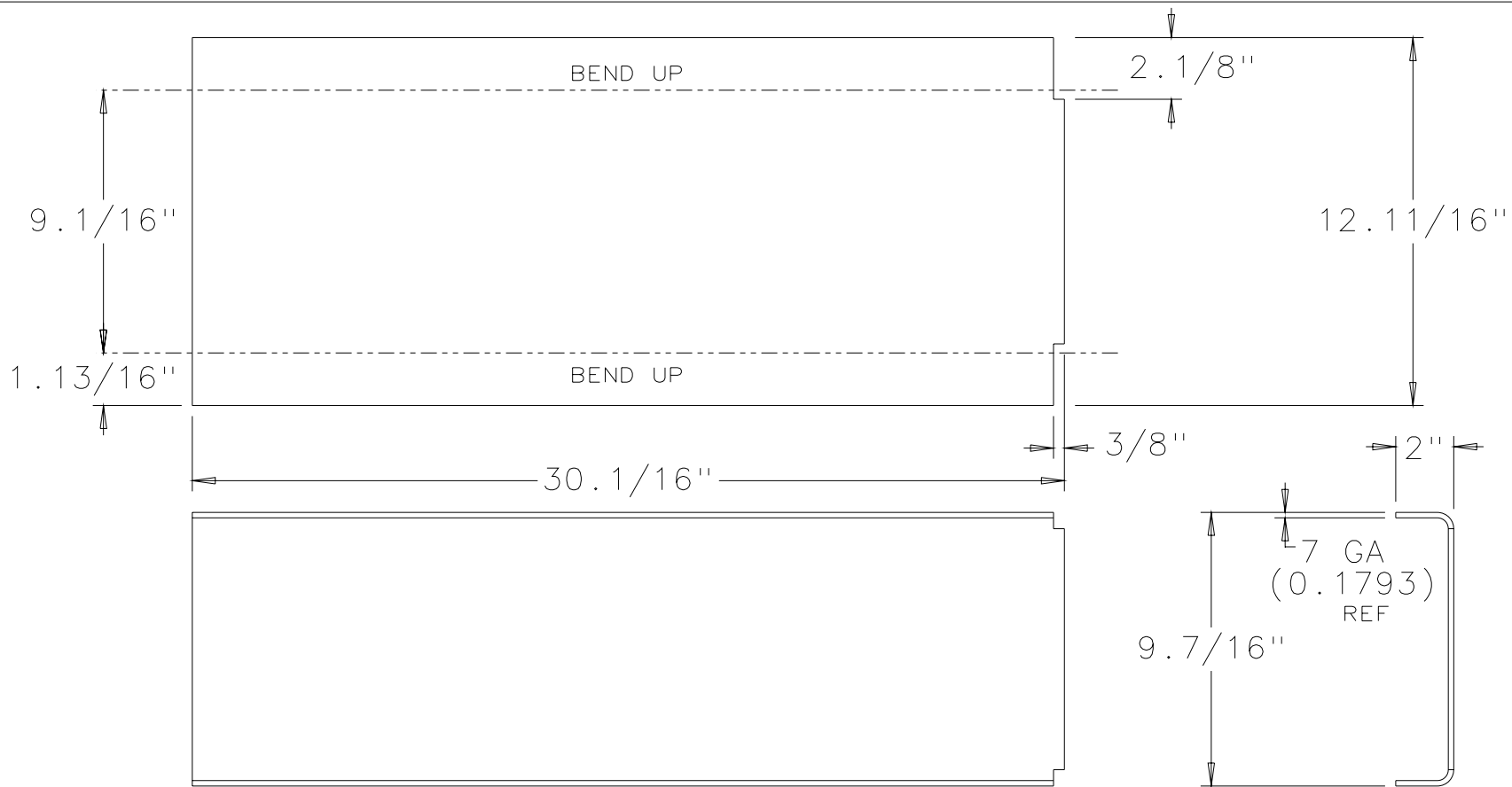
Return to Drawing Index



PART NO: 00-0775
 MATL: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.40 LBS

STD. TOLERANCES				DRAWN: BAH		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN. +- 1/32 6 IN AND UP +- 1/16				CHECKED: KDB			
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005		ANGULAR: +- 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: GUSSET					SCALE: FULL	DATE: 12-18-1991	DWG. NO. 00-0775B

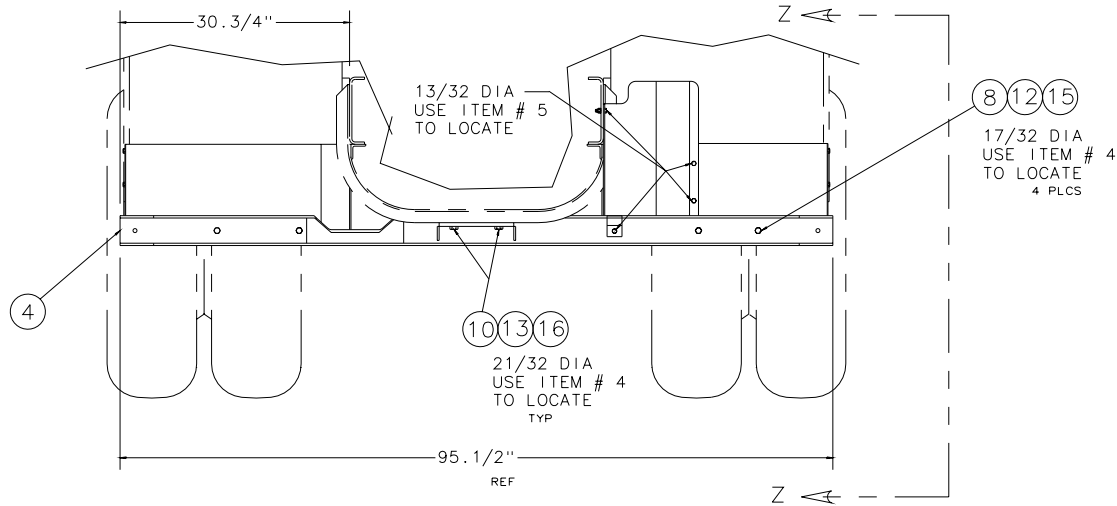
Return to Drawing Index



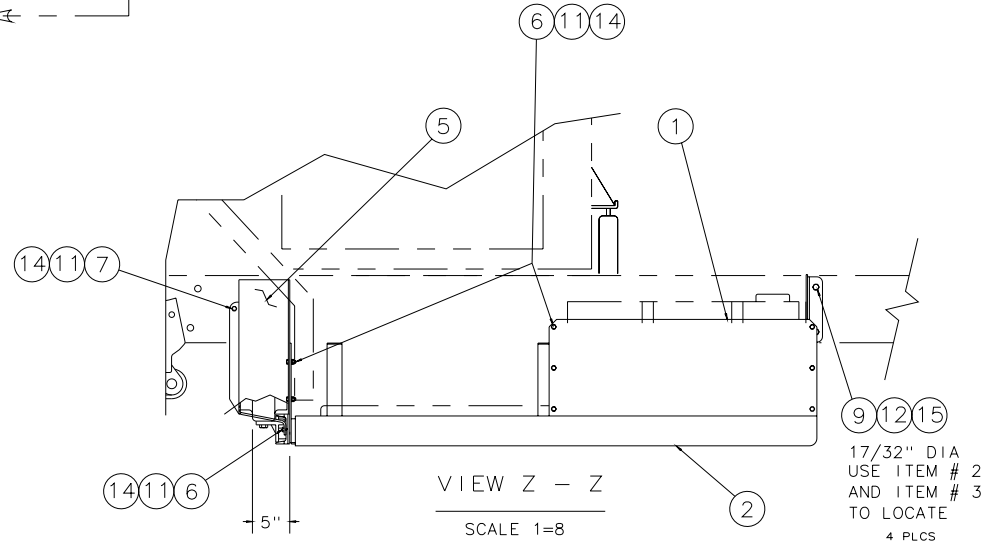
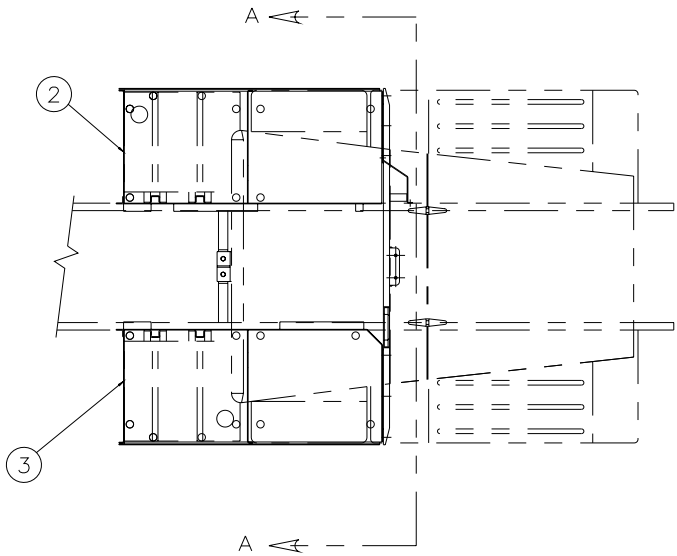
PART NUMBER: 00-0765
 MATL: SHEET 7GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 19.4 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: Ø TO 6 IN $±1/32$ 6 IN AND UP $±1/16$				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE $±0.1$ $±1$ DEG 2 PLACE $±0.01$ 3 PLACE $±0.005$				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BUMPER SUPPORT CHANNEL				SCALE: 1" = 4"	DATE: 06-01-1993	PROJECT NO.: 91-2
						DWG. NO. 00-0765B

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	29-0057	B	TANK ACCESS PANEL	2	26.3
2	29-0058	D	FUEL TANK GUARD LH W/C	1	255
3	29-0059	D	FUEL TANK GUARD RH W/C	1	270
4	29-0062	D	CROSSMEMBER	1	70.6
5	29-0063	C	FUEL FILTER GUARD W/C	1	14.8
6	TS-06GG08		SCREW CAP HEX HD $\frac{3}{8}$ " - 16 UNC	15	0.04
7	TS-06GG12		SCREW CAP HEX HD $1\frac{1}{2}$ " - 13 UNC	1	0.05
8	TS-08GG12		SCREW CAP HEX HD $1\frac{1}{2}$ " - 13 UNC	4	0.08
9	TS-08GG10		SCREW CAP HEX HD $1\frac{1}{4}$ " - 13 UNC	4	0.10
10	TS-10GG12		SCREW CAP HEX HD $1\frac{1}{2}$ " - 13 UNC	2	0.18
11	TS-06GP		NUT HEX DBL CHAM $\frac{3}{8}$ " PLATED	16	0.02
12	TS-08GP		NUT HEX DBL CHAM $\frac{1}{2}$ " PLATED	8	0.04
13	TS-10GP		NUT HEX DBL CHAM $\frac{5}{8}$ " PLATED	2	0.08
14	WS-06BC		WASHER SPR LOCK REG $\frac{3}{8}$ " PLATED	16	0.01
15	WS-08BC		WASHER SPR LOCK REG $\frac{1}{2}$ " PLATED	8	0.02
16	WS-10BC		WASHER SPR LOCK REG $\frac{5}{8}$ " PLATED	2	0.03



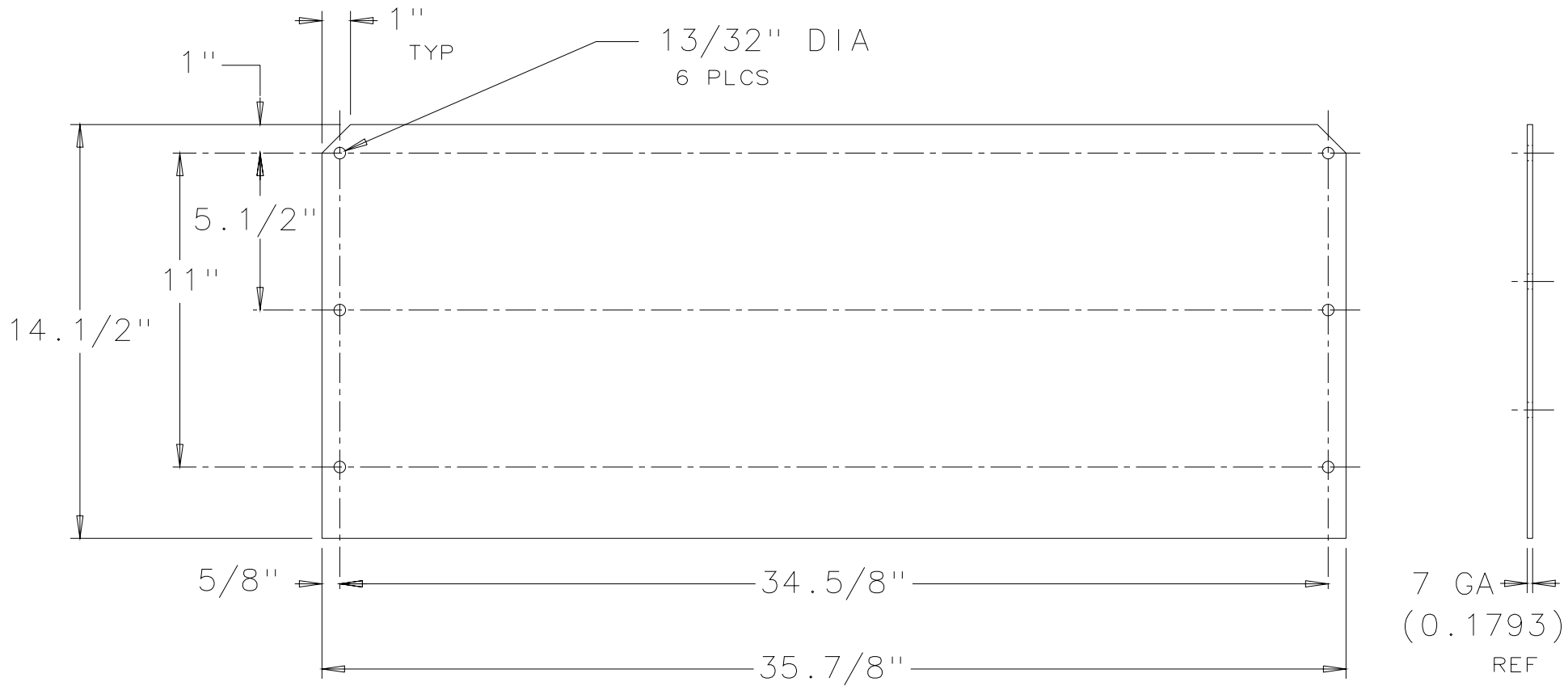
SECTION A - A
SCALE 1=8



VIEW Z - Z
SCALE 1=8

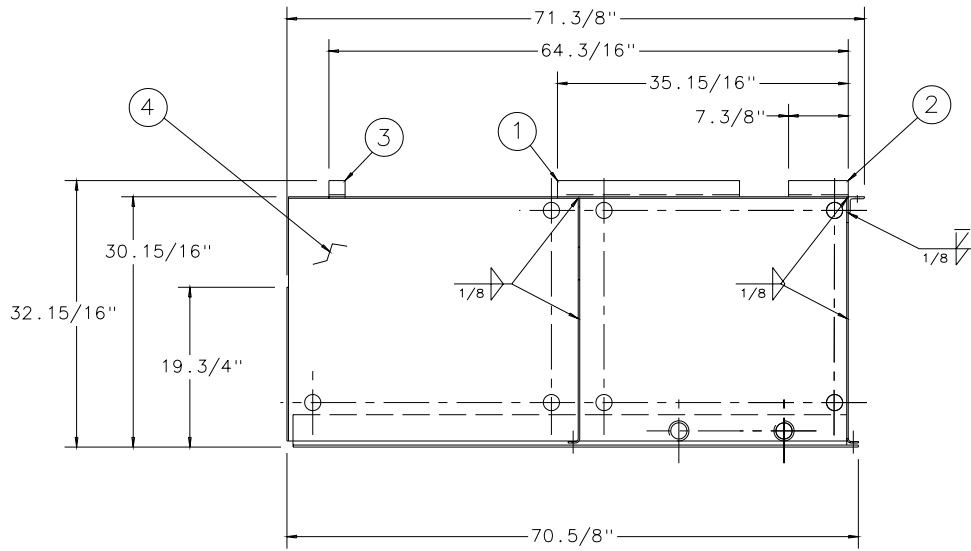
PART NUMBER: 29-9805
EST WT: 666 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:						CHECKED: KCD	
DECIMAL:						APPROVED:	
ANGULAR:							
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: TANK GUARD ASSEMBLY FEPP 5-TON SCALE: 1 = 16 DATE: 17 AUG 93 DWG NO: 29-9805D							

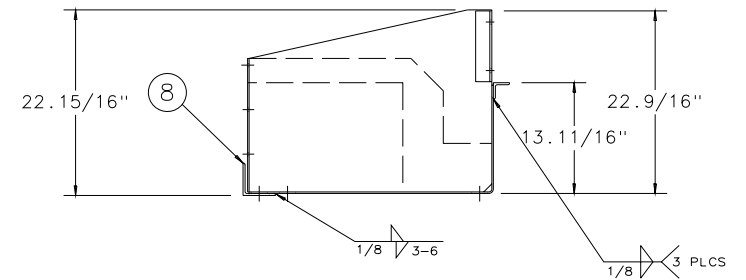
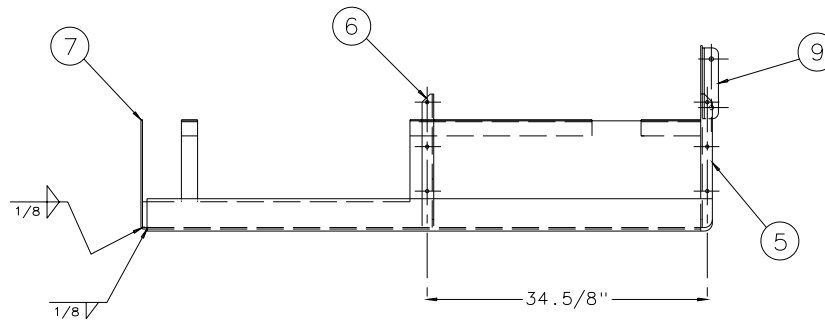


PART NUMBER: 00-0
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 26.3 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: -- 1 DEG		
NO.	BY	DATE	REVISION			APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: TANK ACCESS PANEL				SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 29-0057B

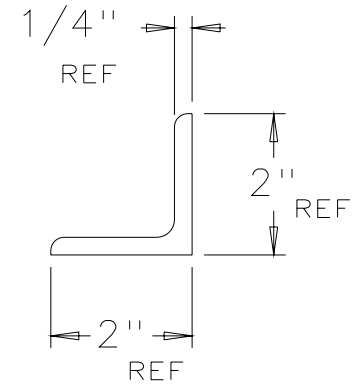
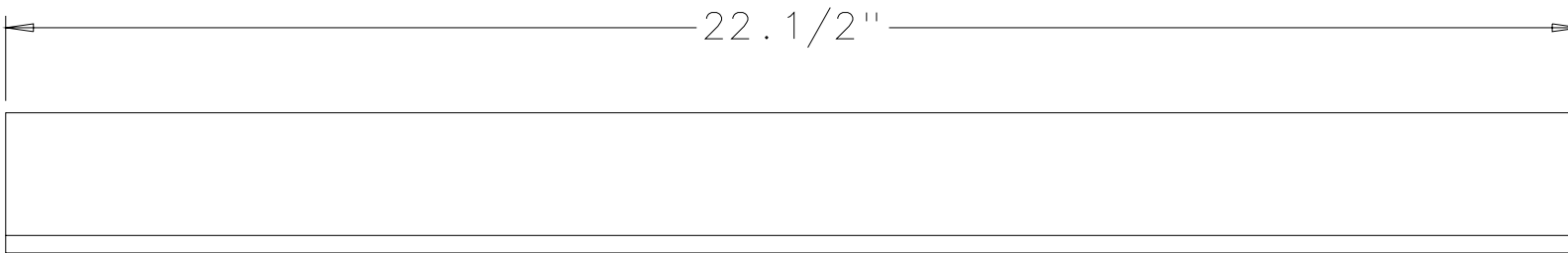


ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0754	B	LONG ANGLE STOP	1	5.98
2	00-0755	B	ANGLE STOP	1	1.96
3	00-0756	A	SHORT ANGLE STOP	1	0.53
4	00-0757	D	BOTTOM PLATE LH	1	136
5	00-0758	C	REAR PLATE LH	1	31.2
6	00-0759	C	CENTER PLATE LH	1	22.5
7	00-0760	B	FORWARD PLATE LH	1	13.0
8	00-0761	B	SIDE GUARD ANGLE LH	1	37.3
9	00-0762	B	MOUNTING ANGLE	1	2.29



PART NUMBER: 29-0058
EST WT: 255 LBS

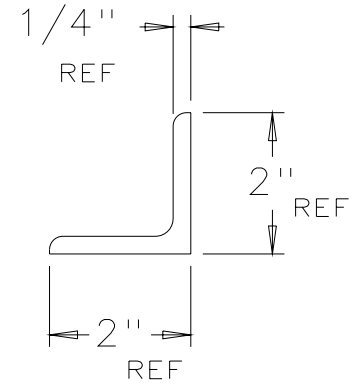
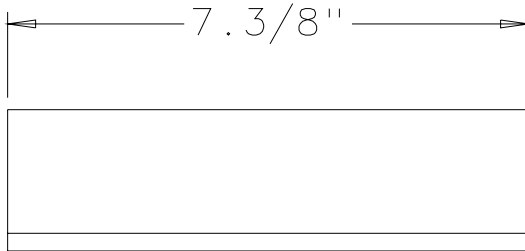
STD. TOLERANCES		DRAWN:		MICHIGAN DNR
FRACTIONALS: ± 1/16" - 1/32"		TROY SCOTT		
DECIMALS: ± 0.005" - 0.010"		CHECKED:		FOREST MANAGEMENT DIVISION
ANGLES: ± 1/16°		KDEB		
PLACES: ± 0.001"		APPROVED:		PROJECT NO.: 91-2
NO. BY DATE REVISION				
FOREST FIRE EXPERIMENT STATION				DWG. NO.: 29-0058D
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: FUEL TANK GUARD LH W/C		SCALE: 1 = 8	DATE: 06-20-1993	



PART NUMBER: 00-0754
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 5.98 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0754B
TITLE: LONG ANGLE STOP				SCALE: 1 = 2	DATE: 06-20-1993	

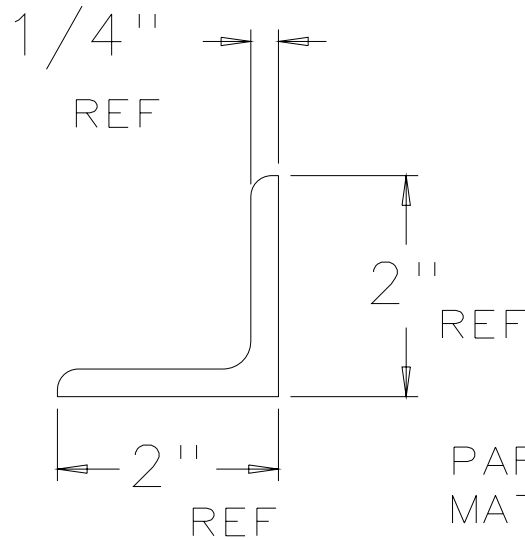
Return to Drawing Index



PART NUMBER: 00-0755
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 1.96 LBS

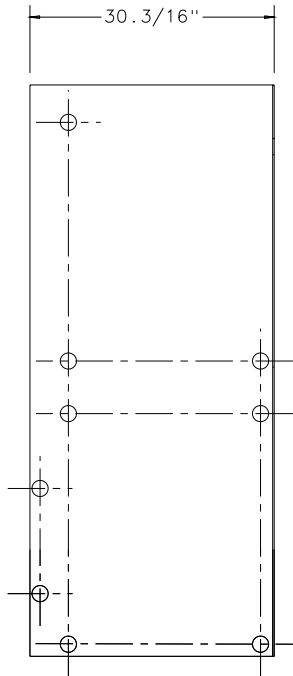
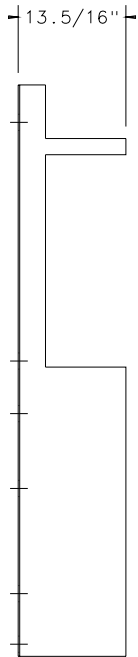
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0755B
TITLE: ANGLE STOP				SCALE: 1 = 2	DATE: 06-20-1993	

Return to Drawing Index

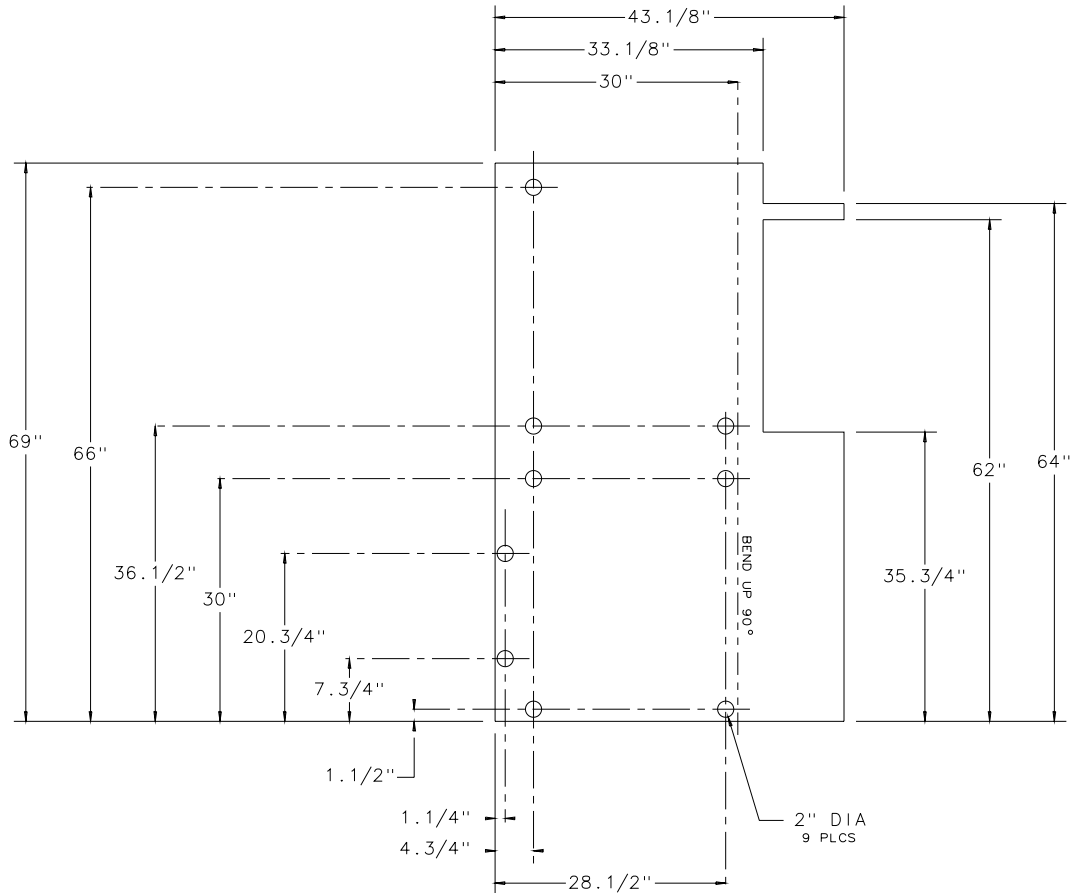


PART NUMBER: 00-0756
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 0.53 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: SHORT ANGLE STOP					SCALE: 1 = 2	DATE: 06-20-1993	DWG. NO. 00-0756A



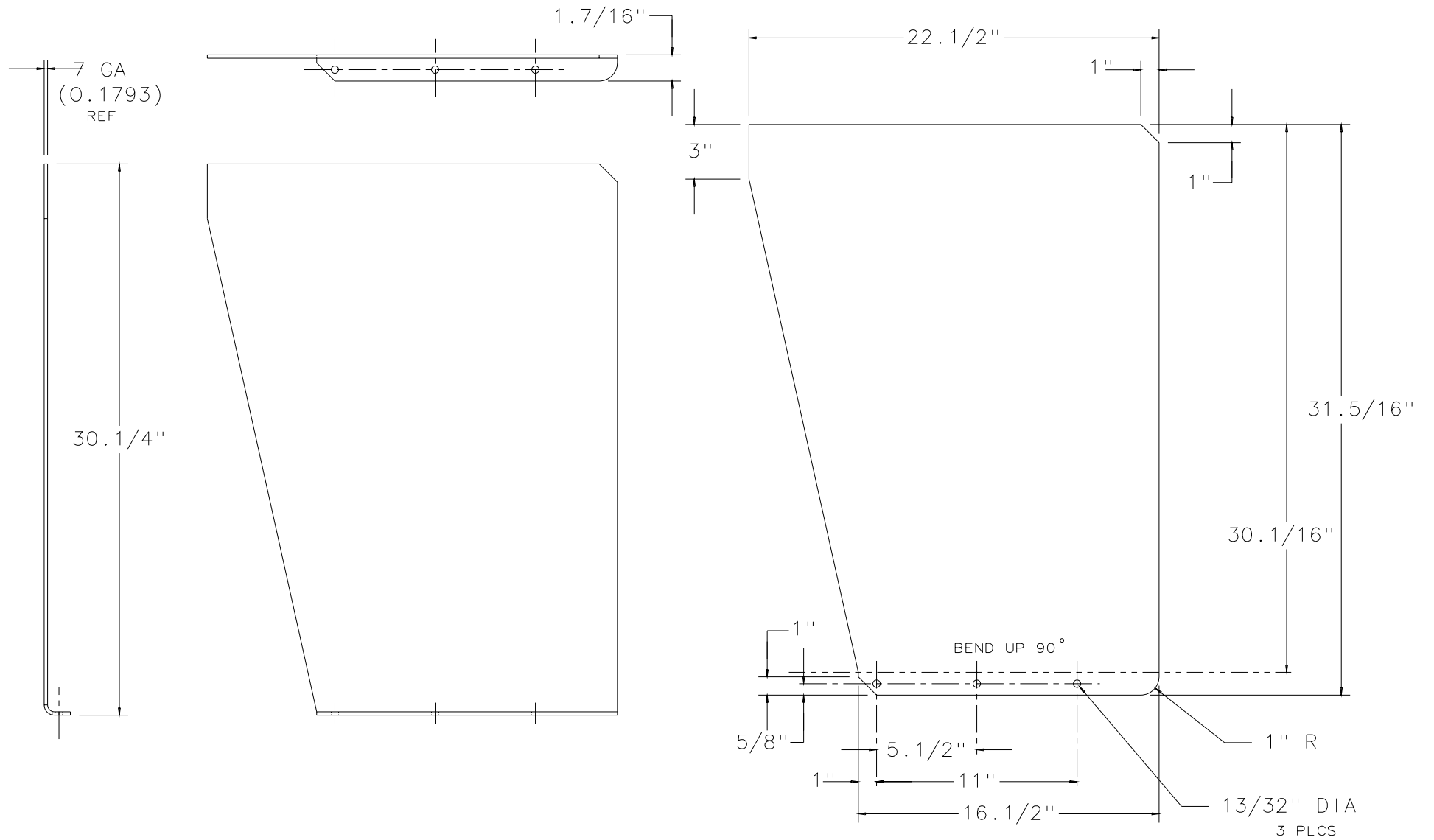
7 GA
(0.1793)
REF



PART NUMBER: 00-0757
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 136 LBS

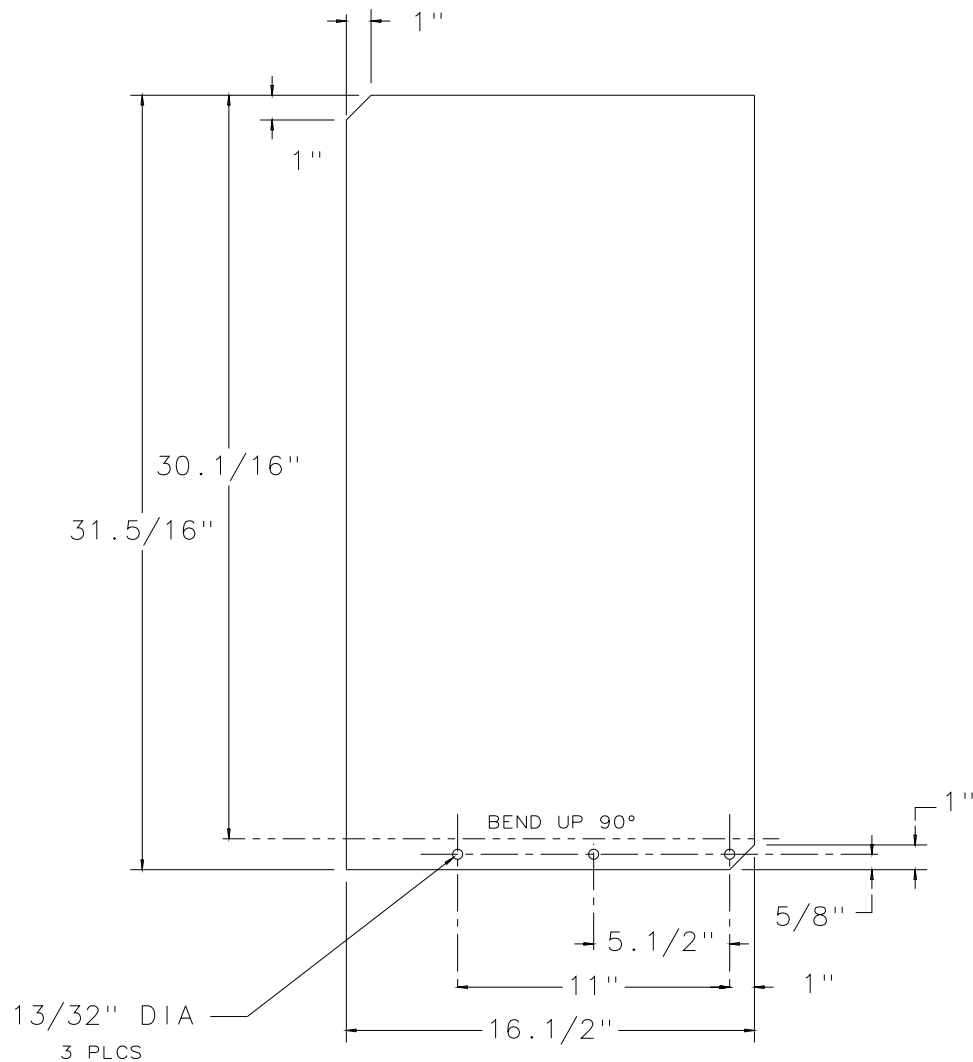
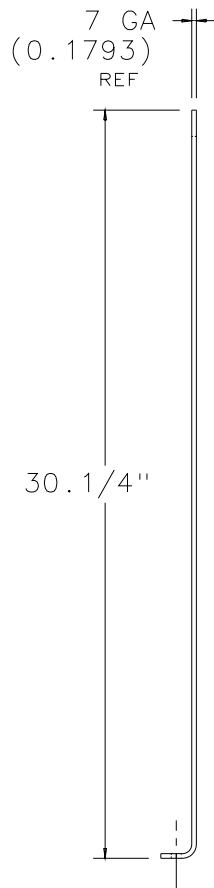
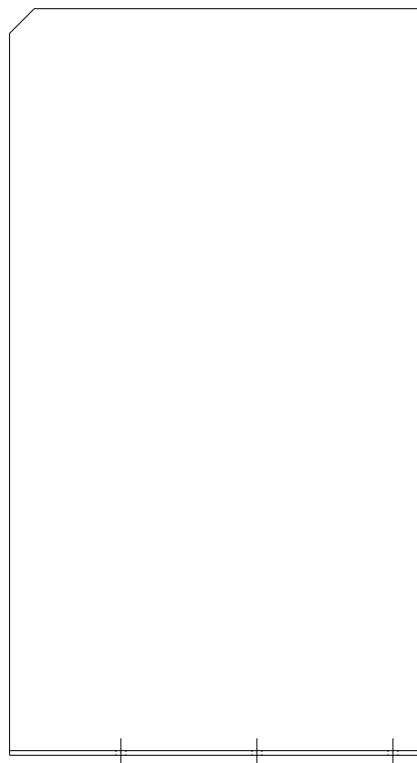
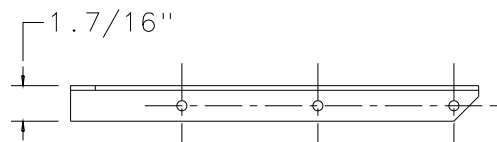
STD. TOLERANCES						DRAWN: TROY SCOTT	
FRACTIONAL: ± 1/16" - 1/8"						CHECKED: KJDB	
DECIMAL: ± 0.005" - 0.015"						APPROVED:	
ANGLE: ± 0.005" - 0.015"							
PLATE: ± 0.005" - 0.015"							
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P. O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: BOTTOM PLATE LH						SCALE: 1" = 8"	DATE: 06-20-1993
						DWG. NO: 00-0757D	PROJECT NO.: 91-2

MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION



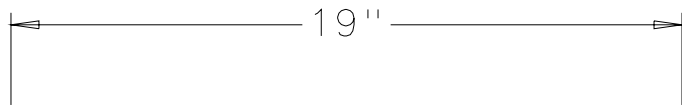
PART NUMBER: 00-0758
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 31.2 LBS

STD. TOLERANCES								DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 8 TO 6 IN --1/32 6 IN AND UP --1/16								CHECKED: KDB		
DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005								APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2		
TITLE: REAR PLATE LH								SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 00-0758C

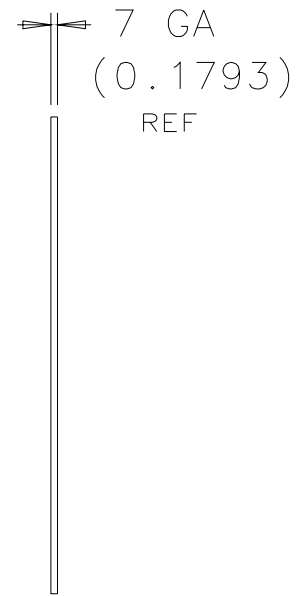


PART NUMBER: 00-0759
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 25.9 LBS

STD. TOLERANCES								DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16								CHECKED: KDB		
DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005								APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2		
TITLE: CENTER PLATE LH							SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 00-0759C	

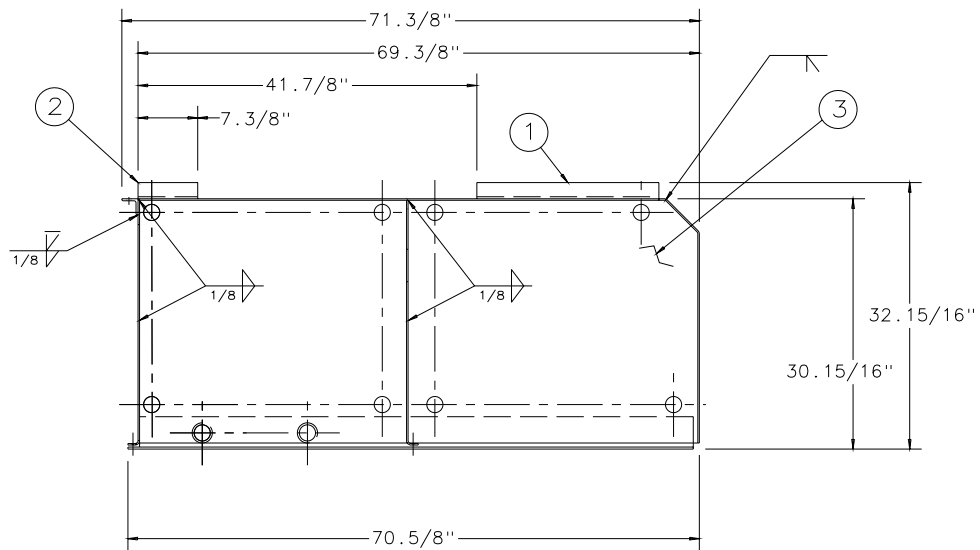


13.1/2"

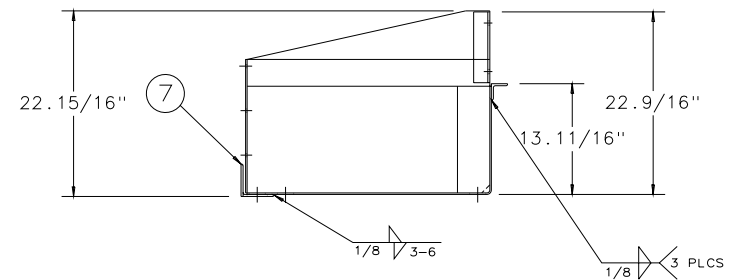
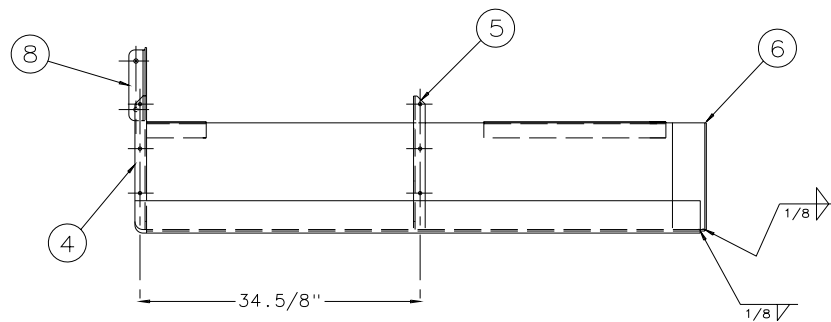


PART NUMBER: 00-0760
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 13.0 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: -- 1 DEG		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: FORWARD PLATE LH				SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 00-0760B



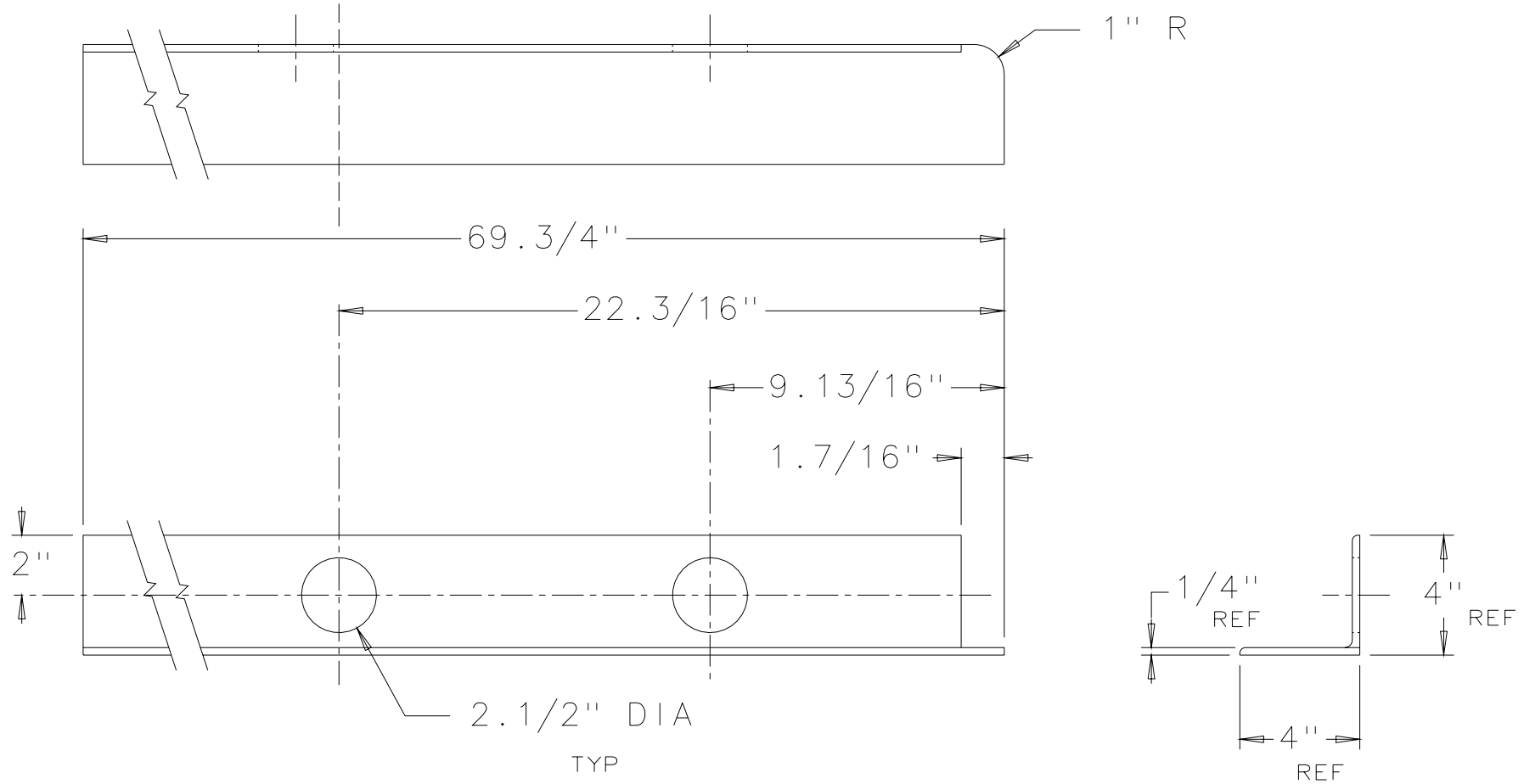
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0754	B	LONG ANGLE STOP	1	5.98
2	00-0755	B	ANGLE STOP	1	1.96
3	00-0753	D	BOTTOM PLATE RH	1	144
4	00-0752	C	REAR PLATE RH	1	31.2
5	00-0751	C	CENTER PLATE RH	1	25.9
6	00-0750	C	FORWARD PLATE RH	1	21.1
7	00-0853	B	SIDE GUARD ANGLE RH	1	37.3
8	00-0762	B	MOUNTING ANGLE	1	2.29



PART NUMBER: 29-0059
EST. WT.: 273 LBS

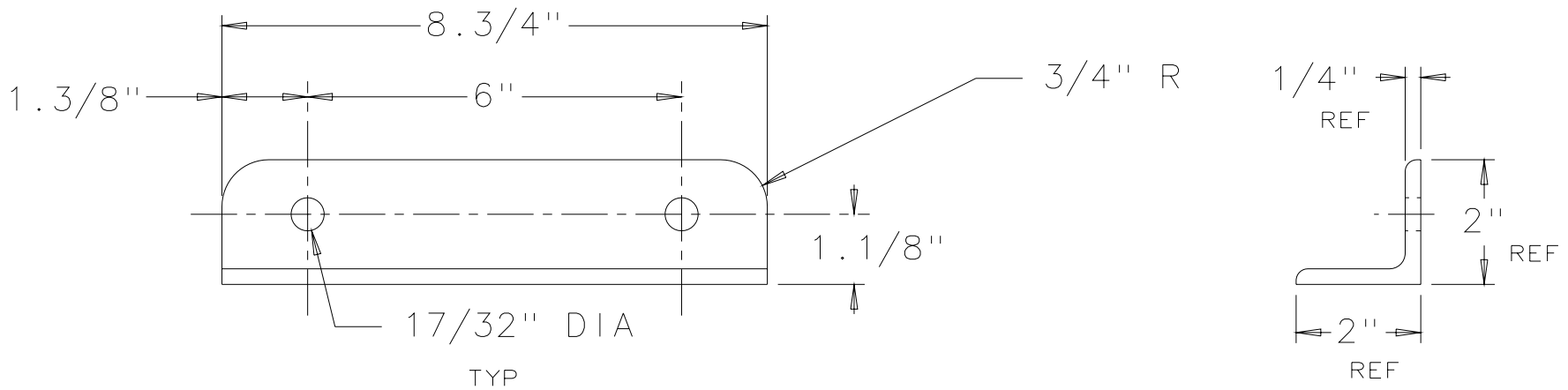
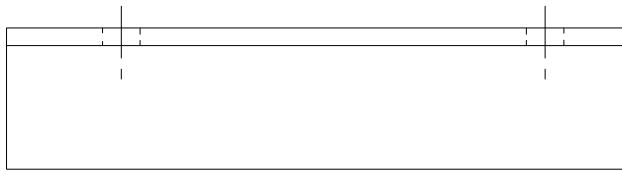
STD. TOLERANCES		DRAWN: TROY SCOTT		MICHIGAN DNR
FRACTIONALS: ± 1/16" - 1/8"		CHECKED: KDB		
DECIMALS: ± 0.005" - 0.015"		APPROVED:		FOREST MANAGEMENT DIVISION
ANGLES: ± 1/8°		NO. BY DATE REVISION		
FOREST FIRE EXPERIMENT STATION				PROJECT NO.: 91-2
P. O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO.: 29-0059D
TITLE: FUEL TANK GUARD RH W/C		SCALE: 1" = 8"	DATE: 06-20-1993	

Return to Drawing Index



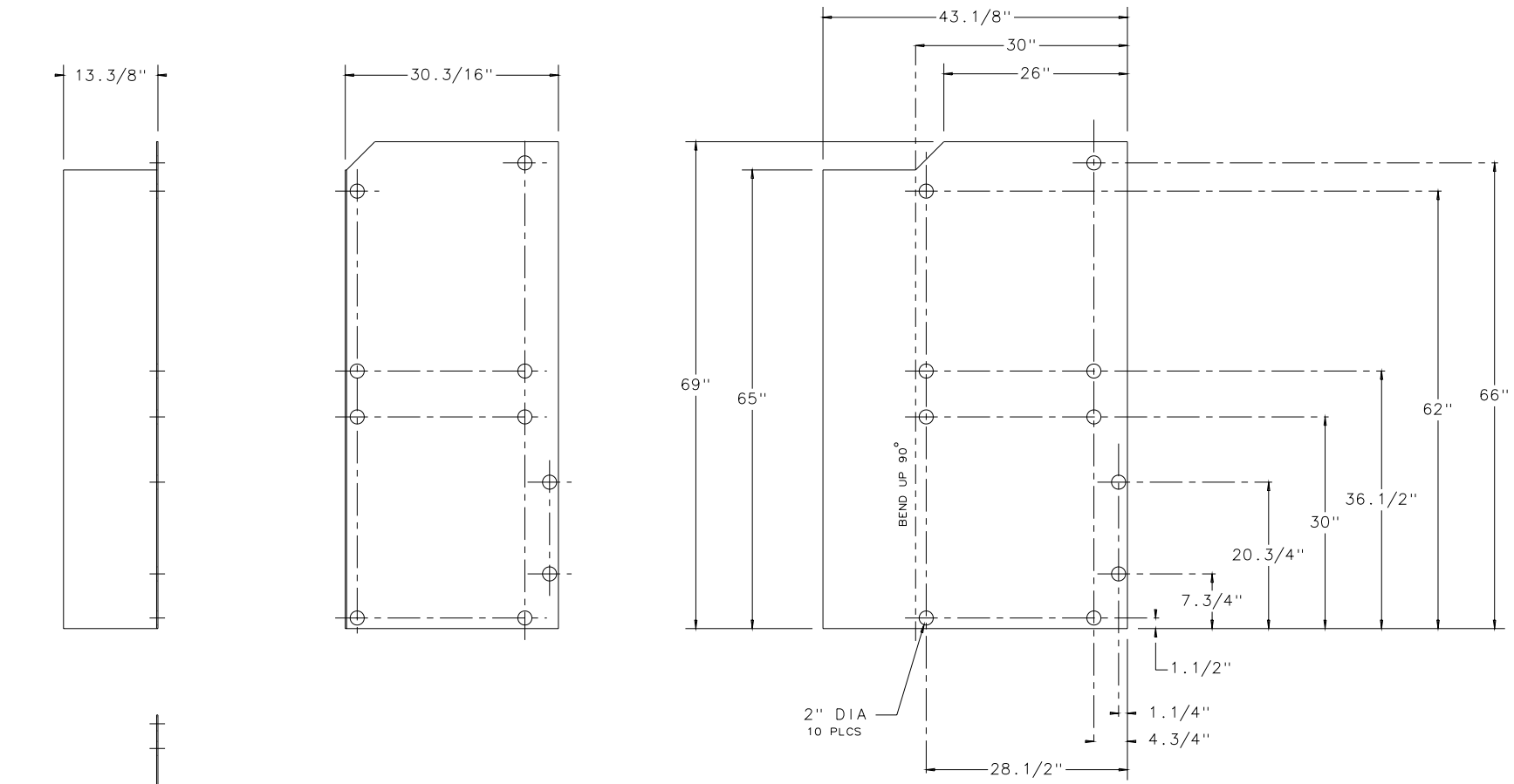
PART NUMBER: 00-0761
 MATL: ANGLE 4" X 4" X 1/4"
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 37.3 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR
FRACTIONAL: 8 TO 6 IN $\pm 1/32$ 6 IN AND UP $\pm 1/16$				CHECKED: KDB		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005				ANGULAR: ± 1 DEG		
NO.	BY	DATE	REVISION		APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						FOREST MANAGEMENT DIVISION
TITLE: SIDE GUARD ANGLE LH				SCALE: 1" = 4"	DATE: 06-20-1993	PROJECT NO.: 91-2 DWG. NO. 00-0761B



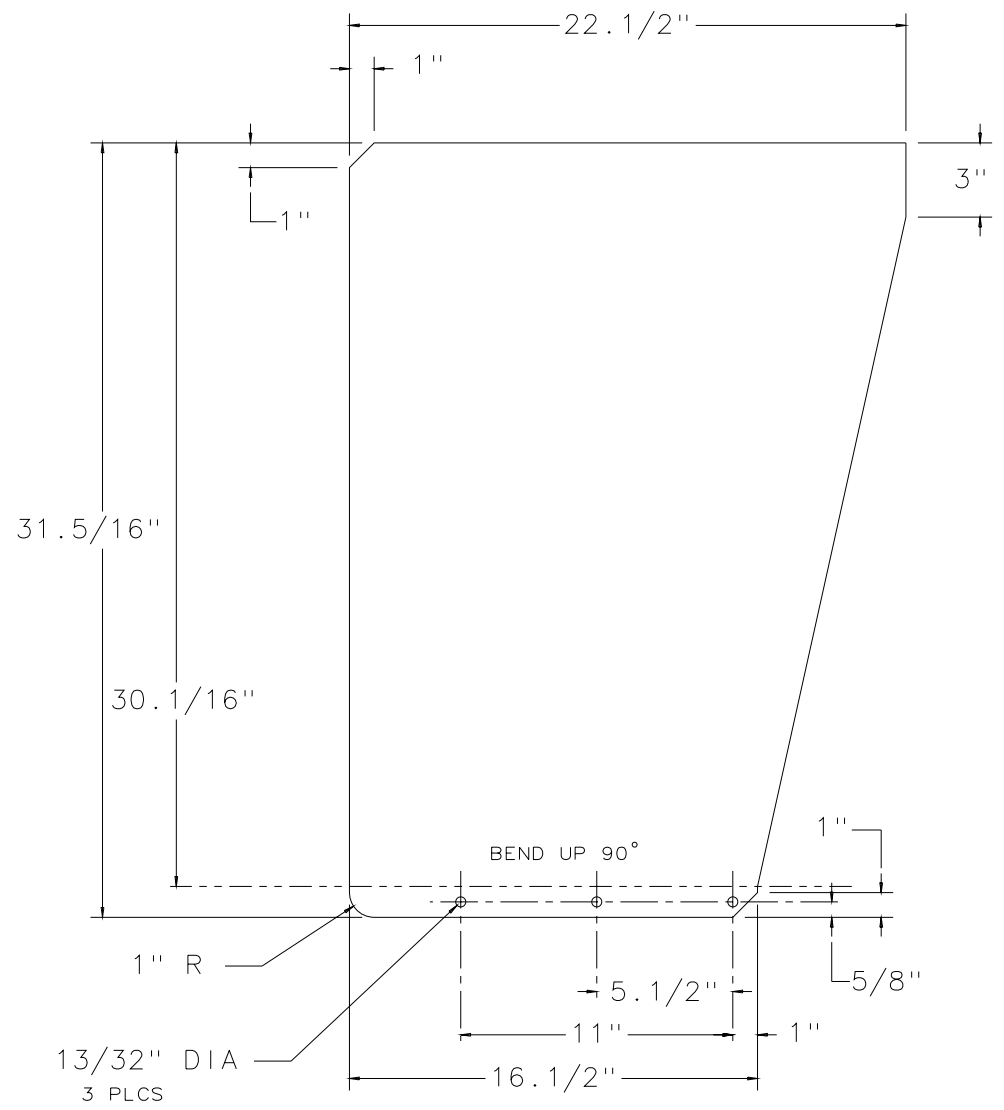
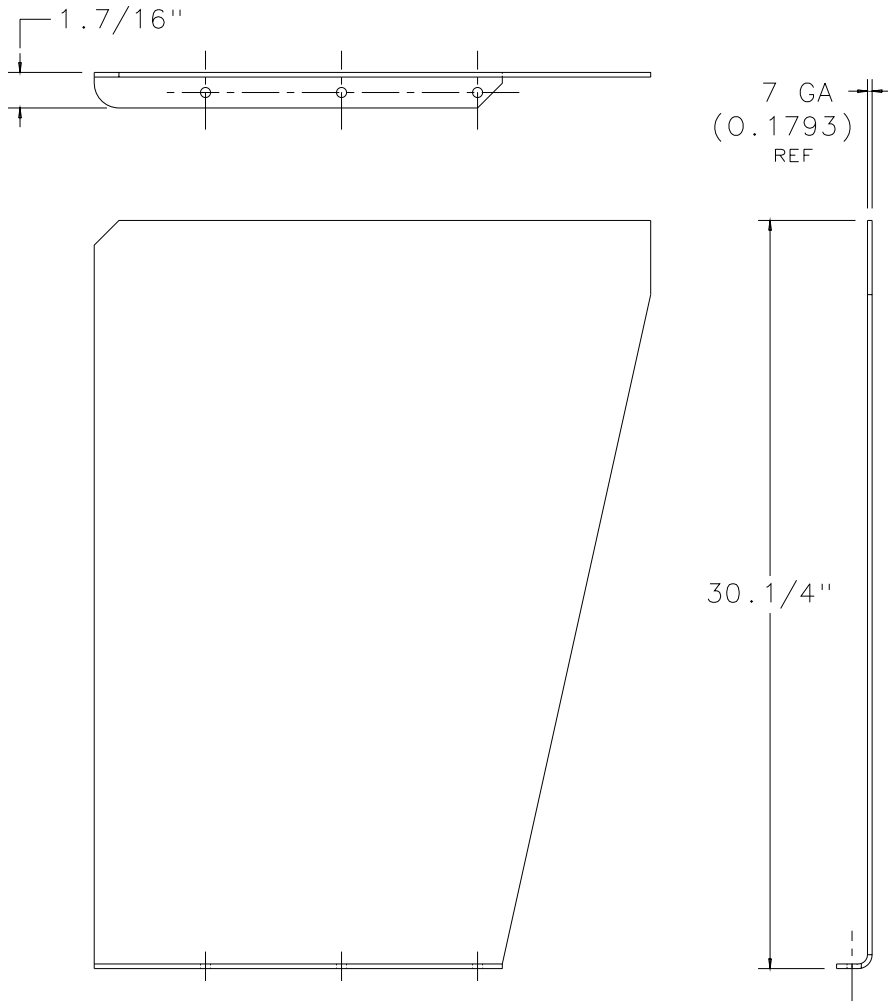
PART NUMBER: 00-0762
 MATL: ANGLE 2" X 2" X 1/4"
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 2.29 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: -- 1 DEG		
NO.	BY	DATE	REVISION			APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: MOUNTING ANGLE			SCALE: 1 = 2	DATE: 06-20-1993	DWG. NO. 00-0762B	



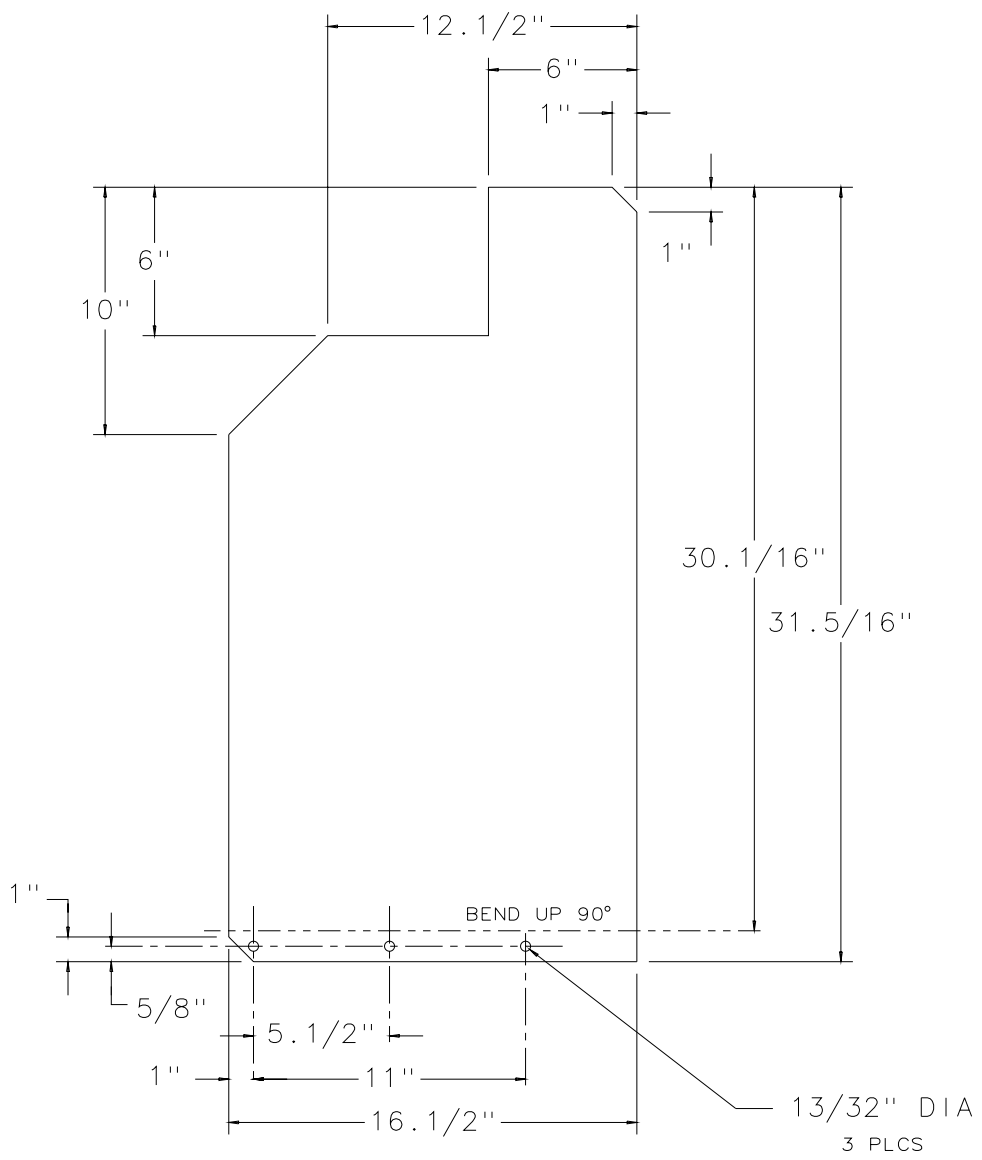
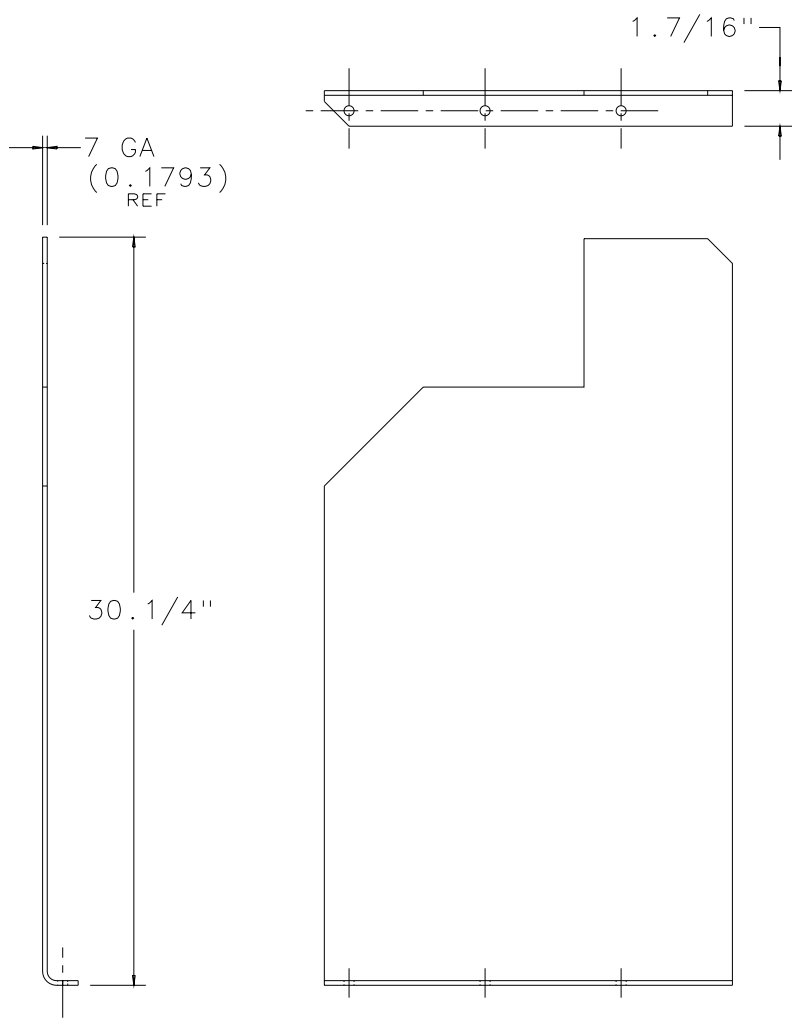
PART NUMBER: 00-0753
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 144 LBS

STD. TOLERANCES		DRAWN: TROY SCOTT		MICHIGAN DNR
FRACTIONAL: ± 1/16" ± 1/32"		CHECKED: KDB		
DECIMAL: ± 0.005" ± 0.010"		APPROVED:		FOREST MANAGEMENT DIVISION
ANGULAR: ± 1/4° ± 1/2°		PROJECT NO.: 91-2		
FACE: ± 0.005" ± 0.010"		DATE: 06-20-1993		NO: 00-0753D
TITLE: BOTTOM PLATE RH		SCALE: 1" = 8"		



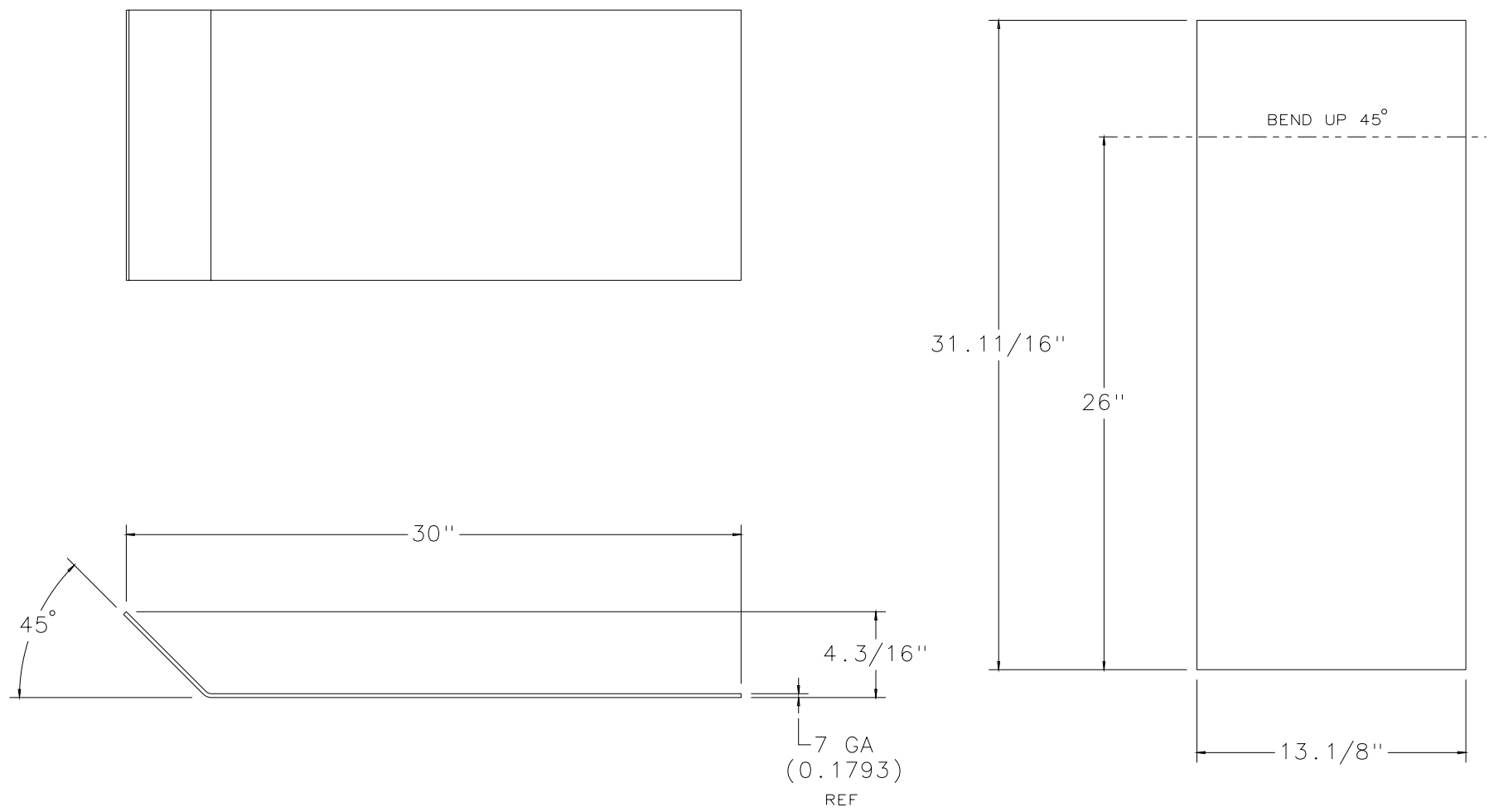
PART NUMBER: 00-0752
 MATL: SHEET 7 GA 4X8 HR
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 31.2 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 8 TO 8 IN -- 1/32 6 IN AND UP -- 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005						APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: REAR PLATE RH						SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 00-0752C



PART NUMBER: 00-0751
 MATL: SHEET 7 GA 4X8 HR STEEL
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 22.5 LBS

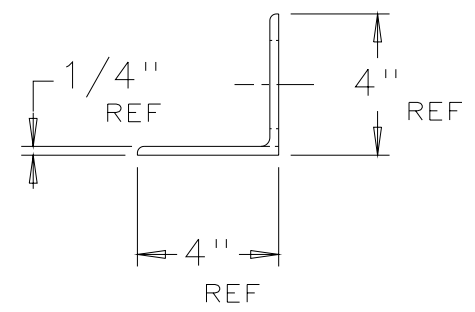
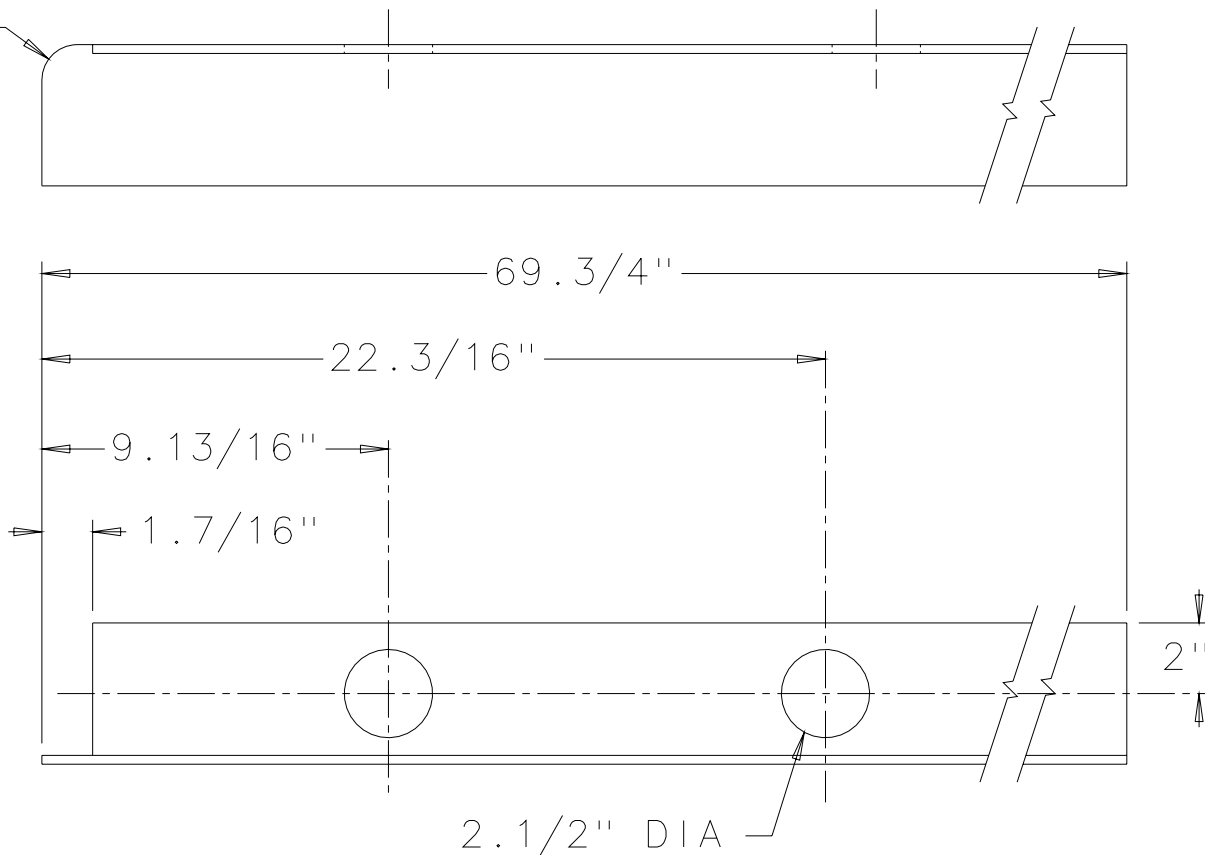
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. ± 1/32 6 IN AND UP ± 1/16 DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005 ANGULAR: ± 1 DEG		DRAWN: TROY SCOTT CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		PROJECT NO.: 91-2 DWG. NO.: 00-0751C	
TITLE: CENTER PLATE RH		SCALE: 1 = 4	DATE: 06-20-1993



PART NUMBER: 00-0750
 MATL: SHEET 7 GA 4X8 HR STEEL
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 21.1 LBS

STD. TOLERANCES								DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 8 TO 8 IN -- 1/32 6 IN AND UP -- 1/16								CHECKED: KDB		
DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005								APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653									PROJECT NO.: 91-2	
TITLE: FORWARD PLATE RH								SCALE: 1 = 4	DATE: 06-20-1993	DWG. NO. 00-0750C

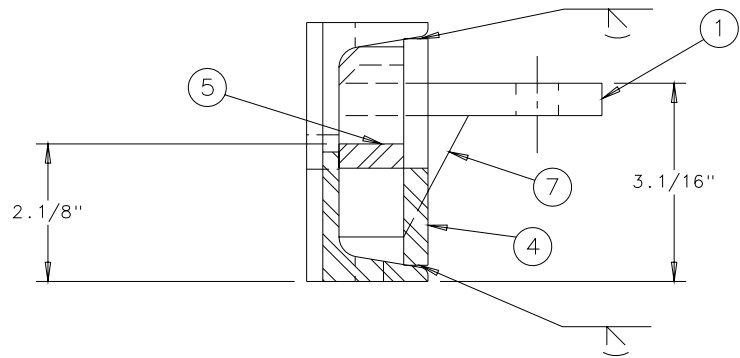
1" R



2.1/2" DIA
TYP

PART NUMBER: 00-0853
 MATL: ANGLE 4" X 4" X 1/4"
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 37.3 LBS

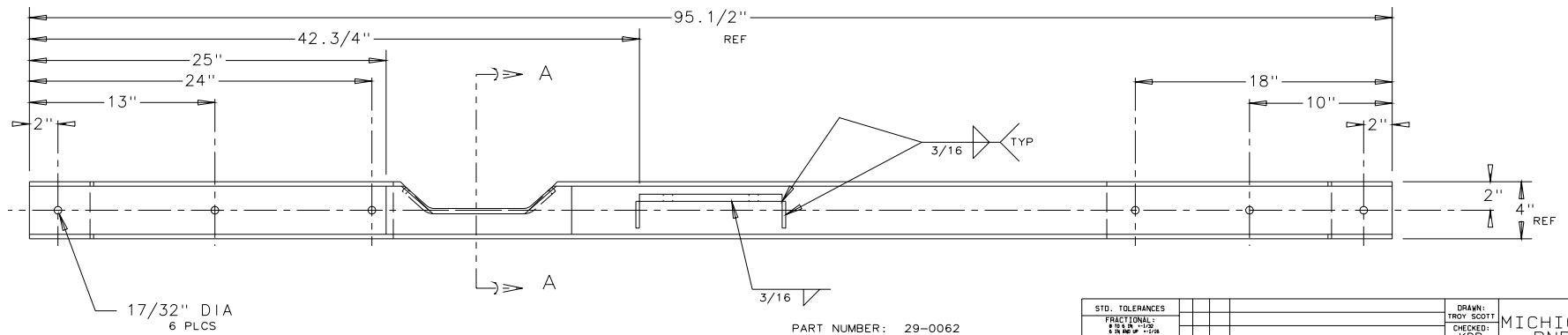
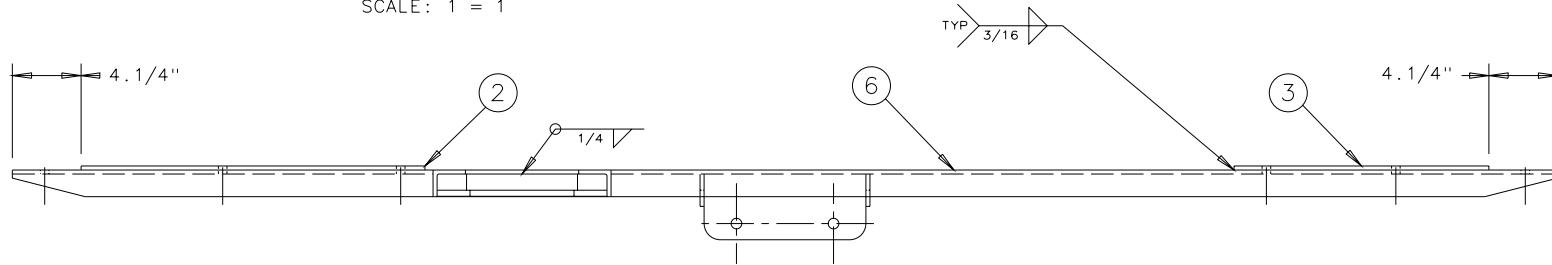
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION							
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB									
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:									
ANGULAR: -- 1 DEG				NO.	BY	DATE	REVISION	PROJECT NO.: 91-2					
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								SCALE: 1 = 4		DATE: 06-20-1993		DWG. NO. 00-0853B	
TITLE: SIDE GUARD ANGLE RH													



SECTION A - A

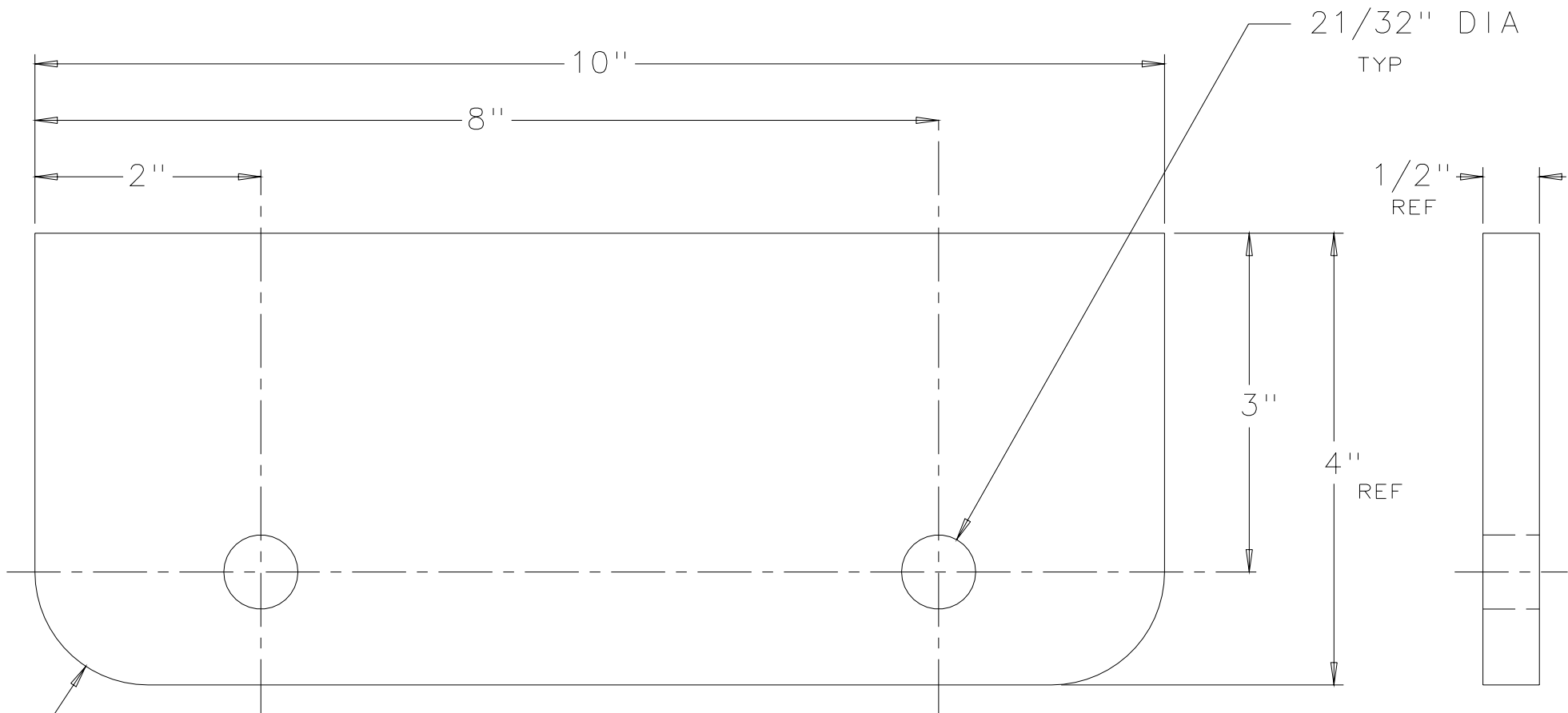
SCALE: 1 = 1

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0724	B	CROSSMEMBER MOUNT	1	5.49
2	00-0725	B	SPACER LONG	1	6.01
3	00-0726	B	SPACER SHORT	1	4.46
4	00-0727	B	NOTCH STIFFENER	1	1.22
5	00-0728	B	CHANNEL REINFORCEMENT	1	2.98
6	00-0729	C	CROSSMEMBER CHANNEL	1	50.0
7	00-0854	A	GUSSET	2	0.20



PART NUMBER: 29-0062
EST WT: 72.0 LBS

STD. TOLERANCES		DRAWN: TROY SCOTT		MICHIGAN DNR
FRACTIONALS: 1/16, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8		CHECKED: KJDB		
DECIMALS: .0005, .001, .002, .005, .010, .015, .030, .060, .125		APPROVED:		FOREST MANAGEMENT DIVISION
ANGLES: 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165		NO. BY DATE REVISION		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION				DWG NO.: 29-0062D
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: CROSS MEMBER		SCALE: 1 = 4	DATE: 4 JULY 93	



21/32" DIA
TYP

1/2" REF

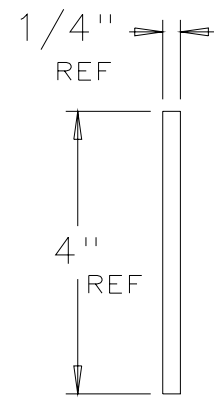
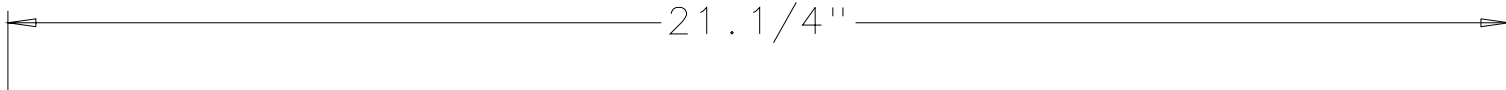
4" REF

1" R
TYP

PART NUMBER: 00-0724
 MATL: BAR, FLAT 1/2 X 4 HR
 G10200
 FFES SPEC NO: AB-00816AA
 EST WT: 5.49 LBS

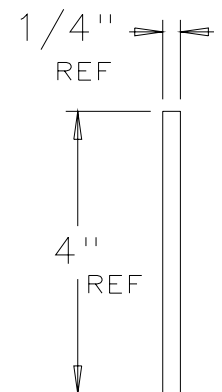
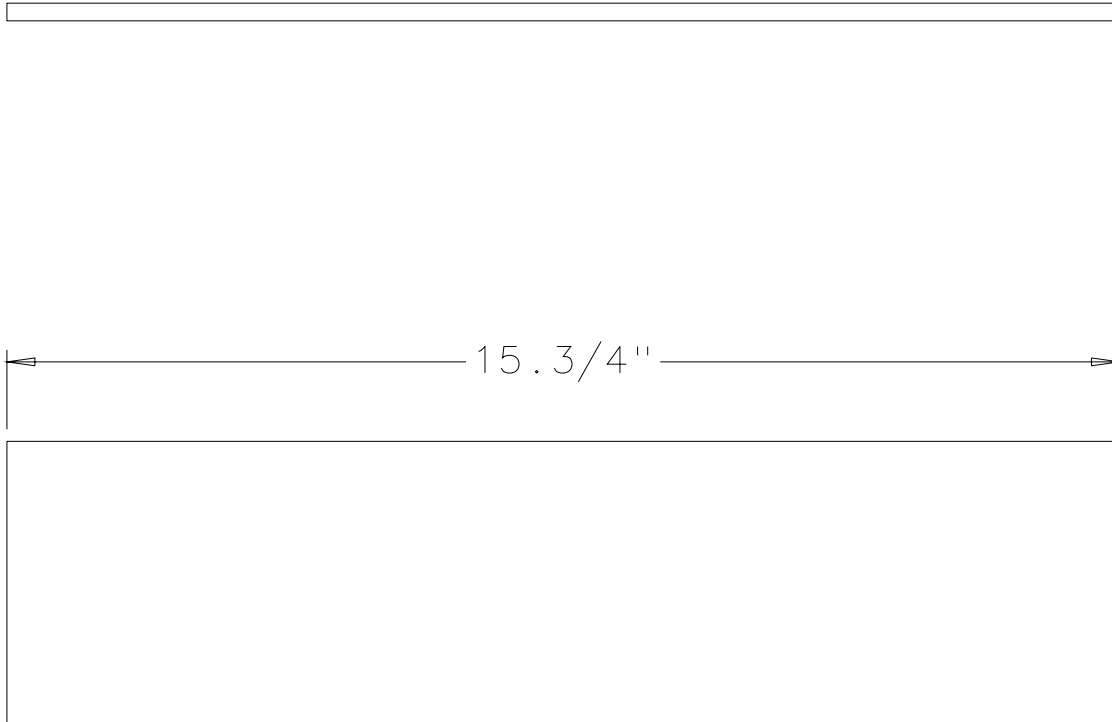
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: -- 1 DEG				NO. BY DATE		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0724B
TITLE: CROSSMEMBER MOUNT				SCALE: FULL	DATE: 4 JULY 93	

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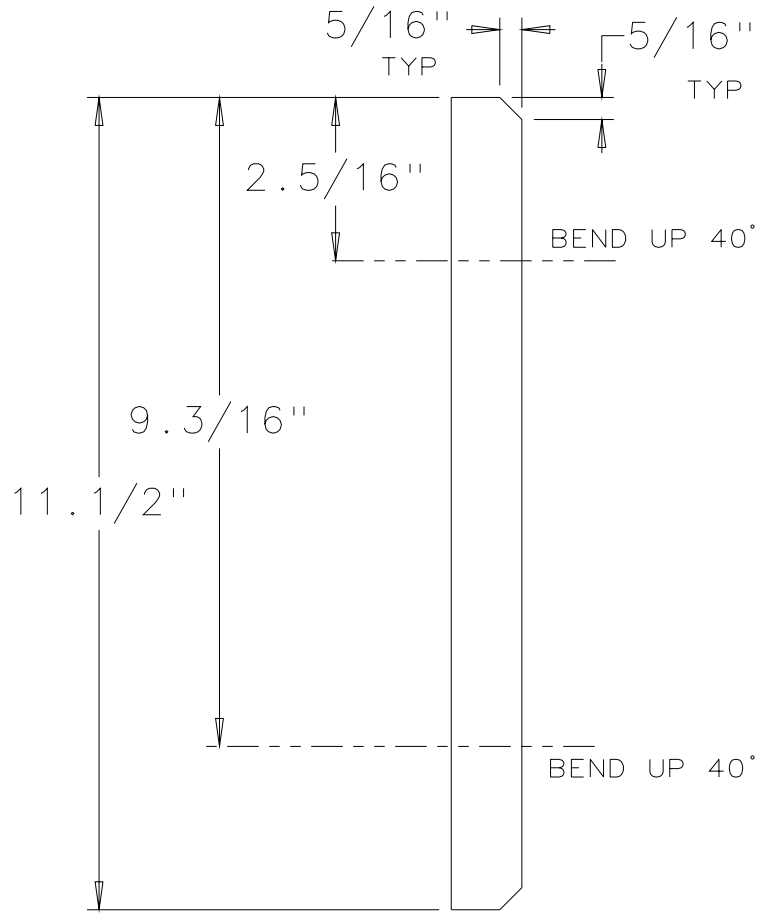
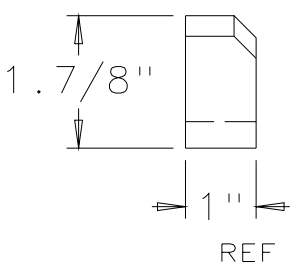
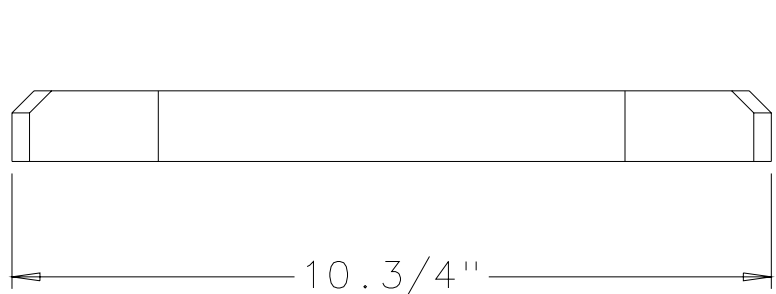
PART NUMBER: 00-0725
 MATL: BAR FLAT 1/4 X 4 HR
 G10200
 FFES SPEC NO: AB-00416AA
 EST WT: 6.01 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: SPACER, LONG				SCALE: 1" = 2"	DATE: 4 JULY 93	DWG. NO. 00-0725B



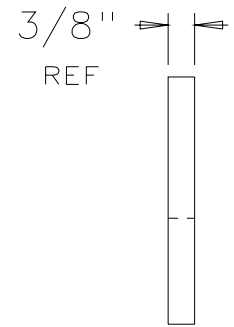
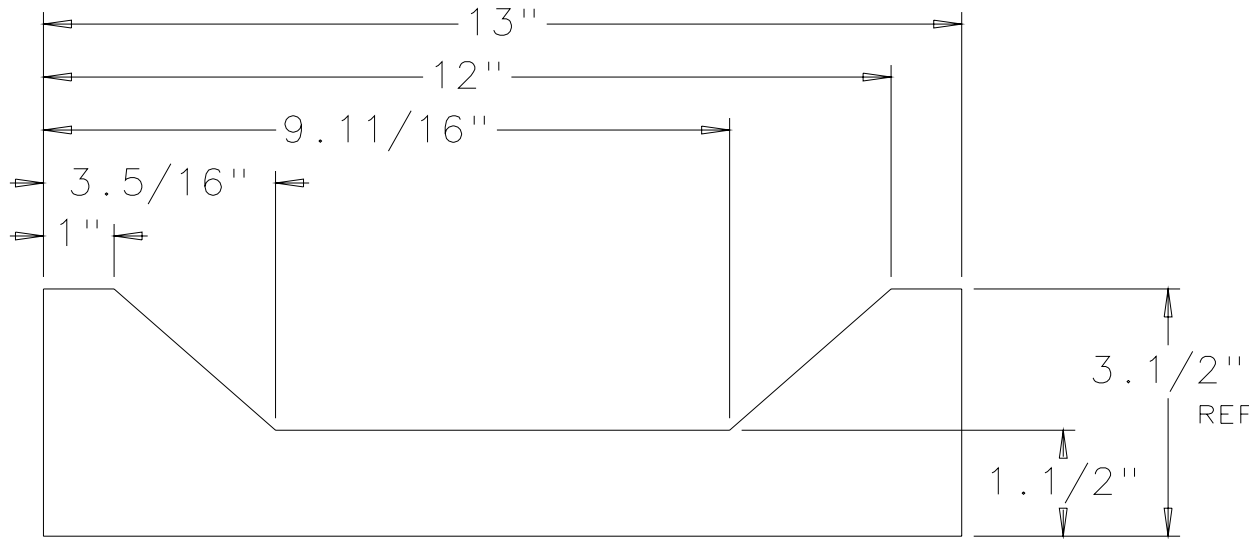
PART NUMBER: 00-0726
 MATL: BAR FLAT 1/4 X 4 HR
 G10200
 FFES SPEC NO: AB-00416AA
 EST WT: 4.46 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: SPACER, SHORT			SCALE: 1" = 2"	DATE: 4 JULY 93	DWG. NO. 00-0726B	



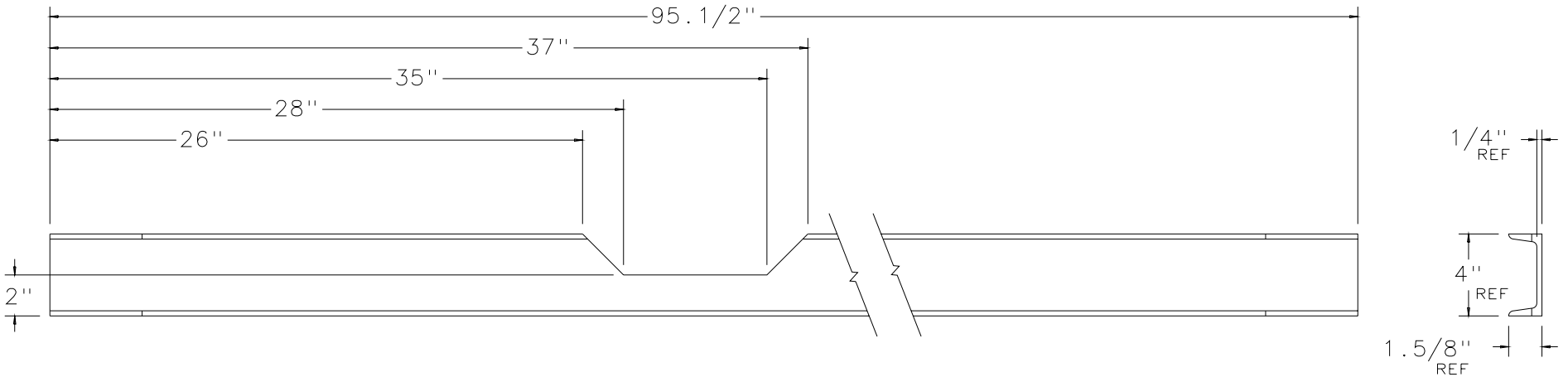
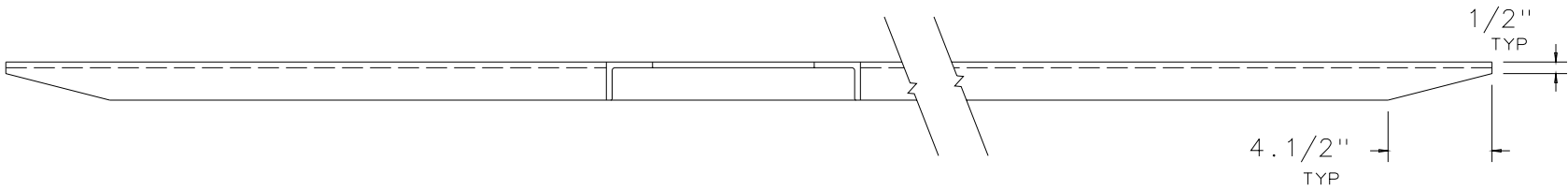
PART NUMBER: 00-0727
 MATL: BAR FLAT 3/8 X 1 HR
 G10200
 FFES SPEC NO: AB-00604AA
 EST WT: 1.22 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB			
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:			
ANGULAR: -- 1 DEG							
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: NOTCH STIFFENER						SCALE: 1" = 2"	DATE: 4 JULY 93
						DWG. NO. 00-0727B	PROJECT NO.: 91-2



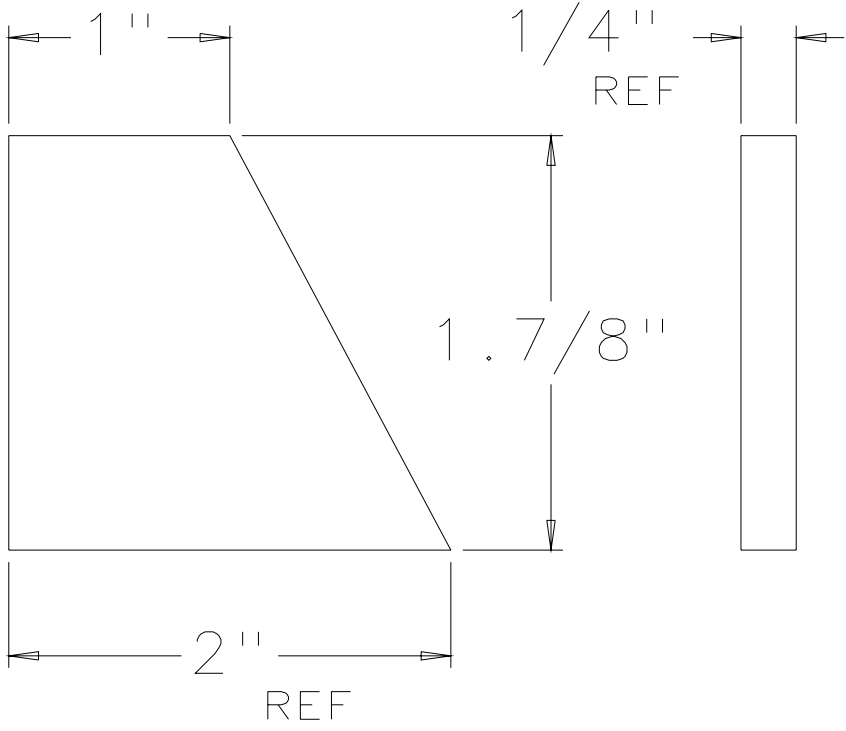
PART NUMBER: 00-0728
 MATL: BAR FLAT 3/8 X 3-1/2 HR
 G10200
 FFES SPEC NO: AB-00614AA
 EST WT: 2.98 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +-0.1 2 PLACE +-0.01 3 PLACE +-0.005				APPROVED:		
ANGULAR: -- 1 DEG						
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CHANNEL REINFORCEMENT				SCALE: 1" = 2"	DATE: 4 JULY 93	DWG. NO.: 00-0728B



PART NUMBER: 00-0729
 MATL: CHANNEL 4 X 6.25 #/FT
 K02600
 FFES SPEC NO: AH-04062AG
 EST WT: 50.0 LBS

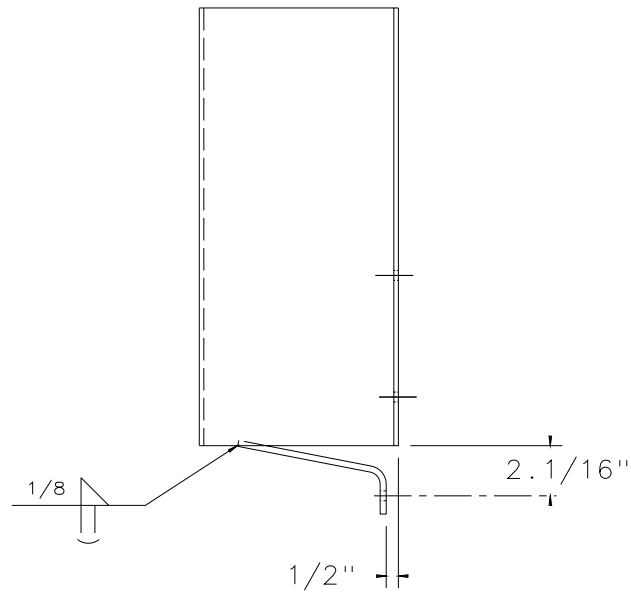
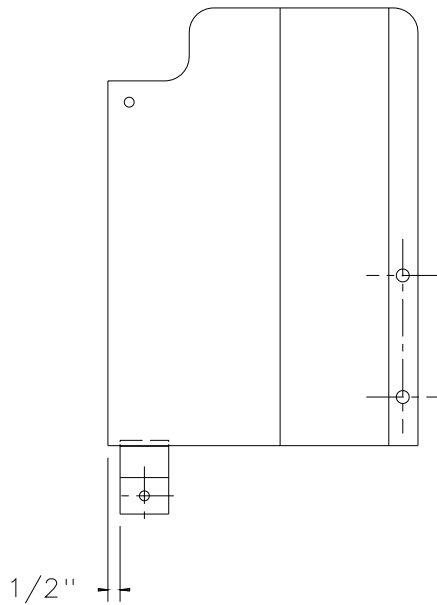
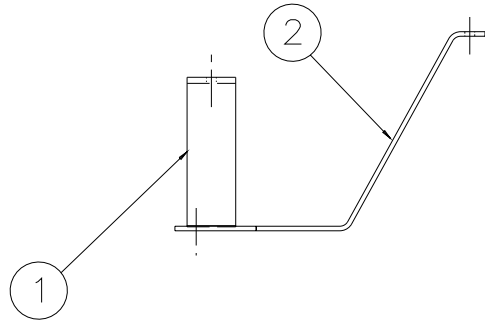
STD. TOLERANCES FRACTIONAL: 8 TO 6 IN -- 1/32 6 IN AND UP -- 1/16 DECIMAL: 1 PLACE -- 0.1 2 PLACE -- 0.01 3 PLACE -- 0.005 ANGULAR: -- 1 DEG	NO. BY DATE REVISION	DRAWN: TROY SCOTT CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2 DWG. NO. 00-0729C
TITLE: CROSSMEMBER CHANNEL			SCALE: 1 = 4
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		DATE: 4 JULY 93	



PART NUMBER: 00-0854
 MATL: BAR, FLAT 1/4 X 2 HR
 G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 0.20 LBS

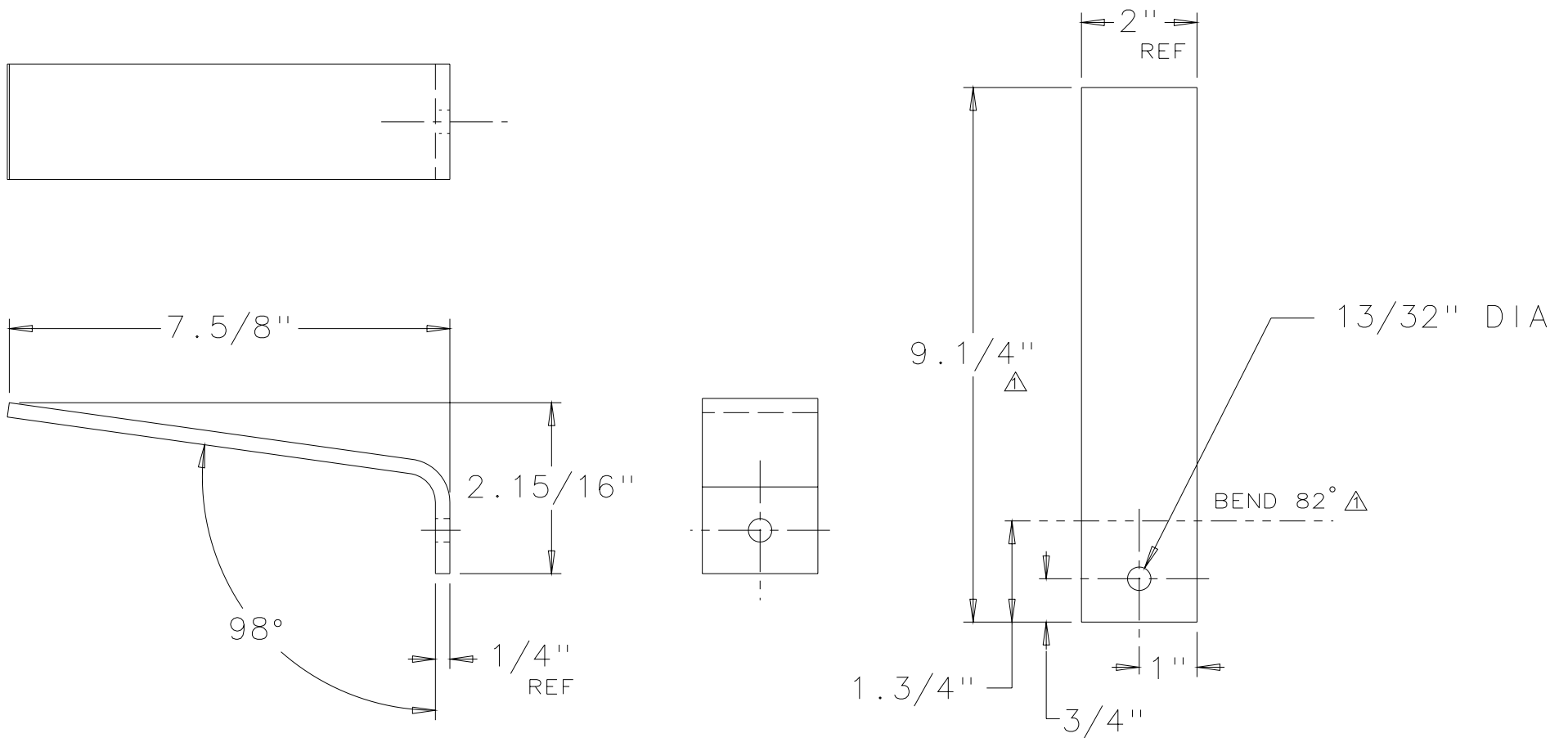
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG		NO. BY DATE REVISION	DRAWN: TROY SCOTT CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653			PROJECT NO.: 91-2	
TITLE: GUSSET		SCALE: 1 = 1	DATE: 2 SEPT 93	DWG. NO. 00-0854A

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0722	B	FILTER GUARD SUPPORT	1	1.09
2	00-0723	C	FUEL FILTER GUARD	1	14.3



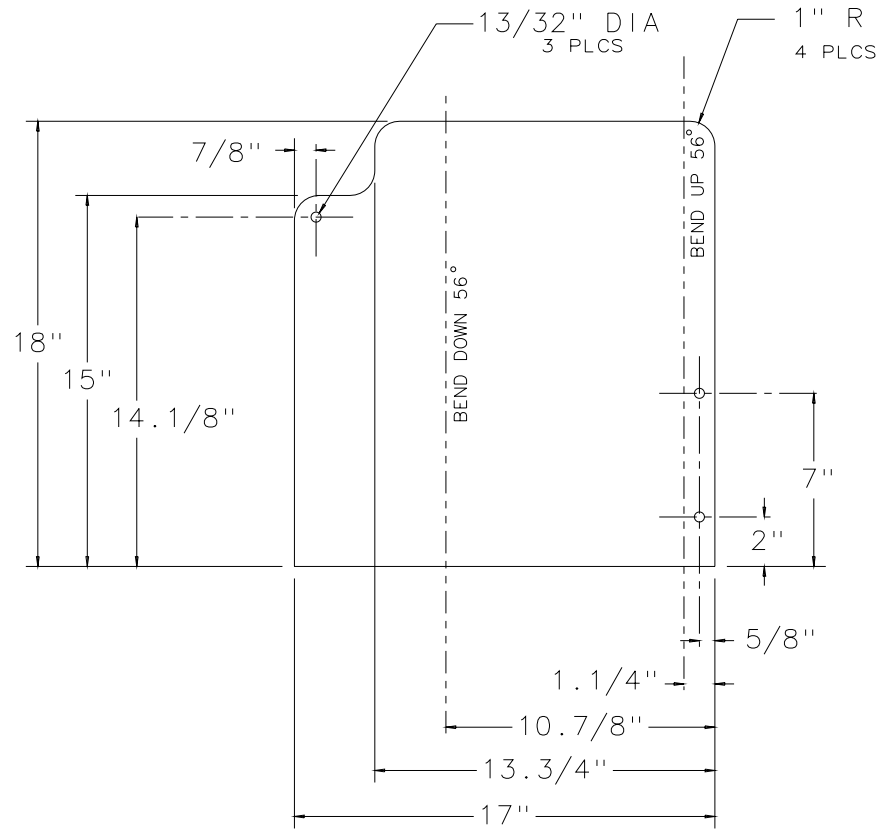
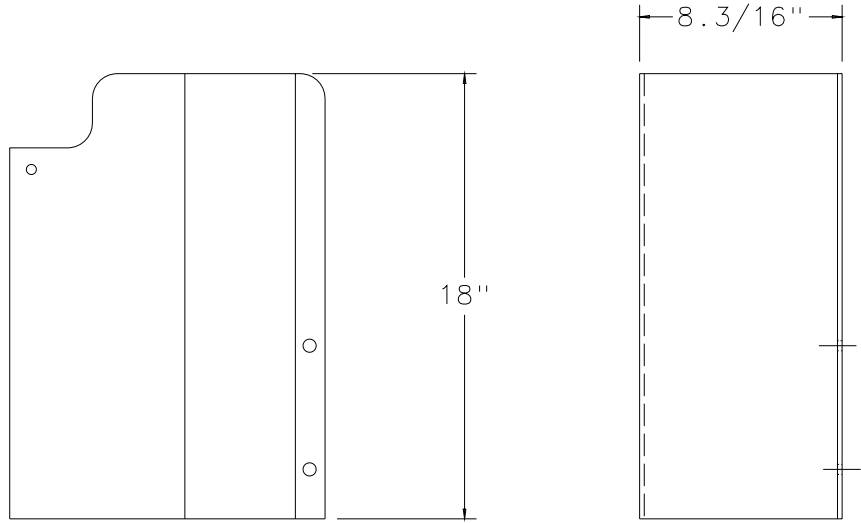
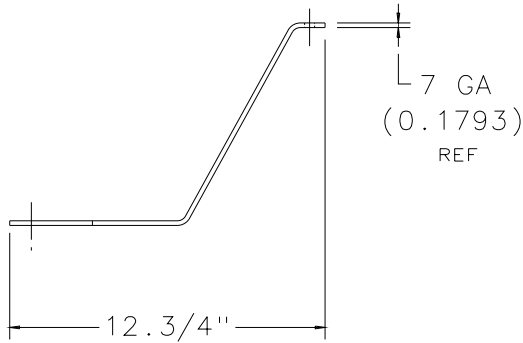
PART NUMBER: 29-0063
EST WT: 16.2 LBS

STD. TOLERANCES FRACTIONAL: 8 TO 6 IN. $\pm 1/32$ 6 IN AND UP $\pm 1/16$		DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB		
ANGULAR: ± 1 DEG		APPROVED:		
1 LLP/7/97 REDESIGNED FOR EASIER INSTALLATION		NO. BY DATE REVISION		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG. NO. 29-0063C
TITLE: FUEL FILTER GUARD W/C			SCALE: 1 = 4	DATE: 4 JULY 93



PART NUMBER: 00-0722
 MATL: BAR FLAT 1/4 X 2 HR
 G10200
 FFES SPEC NO: AB-00408AA
 EST WT: 1.09 LBS

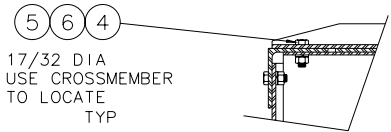
STD. TOLERANCES						DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: -- 1 DEG		APPROVED:		
1	LLP	7/97	9 3/4	WAS	7 3/4,	82 DEG	WAS 79	
NO.				BY		DATE		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION								DWG. NO. 00-0722B
P.O. BOX 68				ROSCOMMON, MICHIGAN		48653		
TITLE: FILTER GUARD SUPPORT						SCALE: 1" = 2"	DATE: 4 JULY 93	



PART NUMBER: 00-0723
 MATL: SHEET 7 GA 4X8 HR STEEL
 PICKLED & OILED
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 14.8 LBS

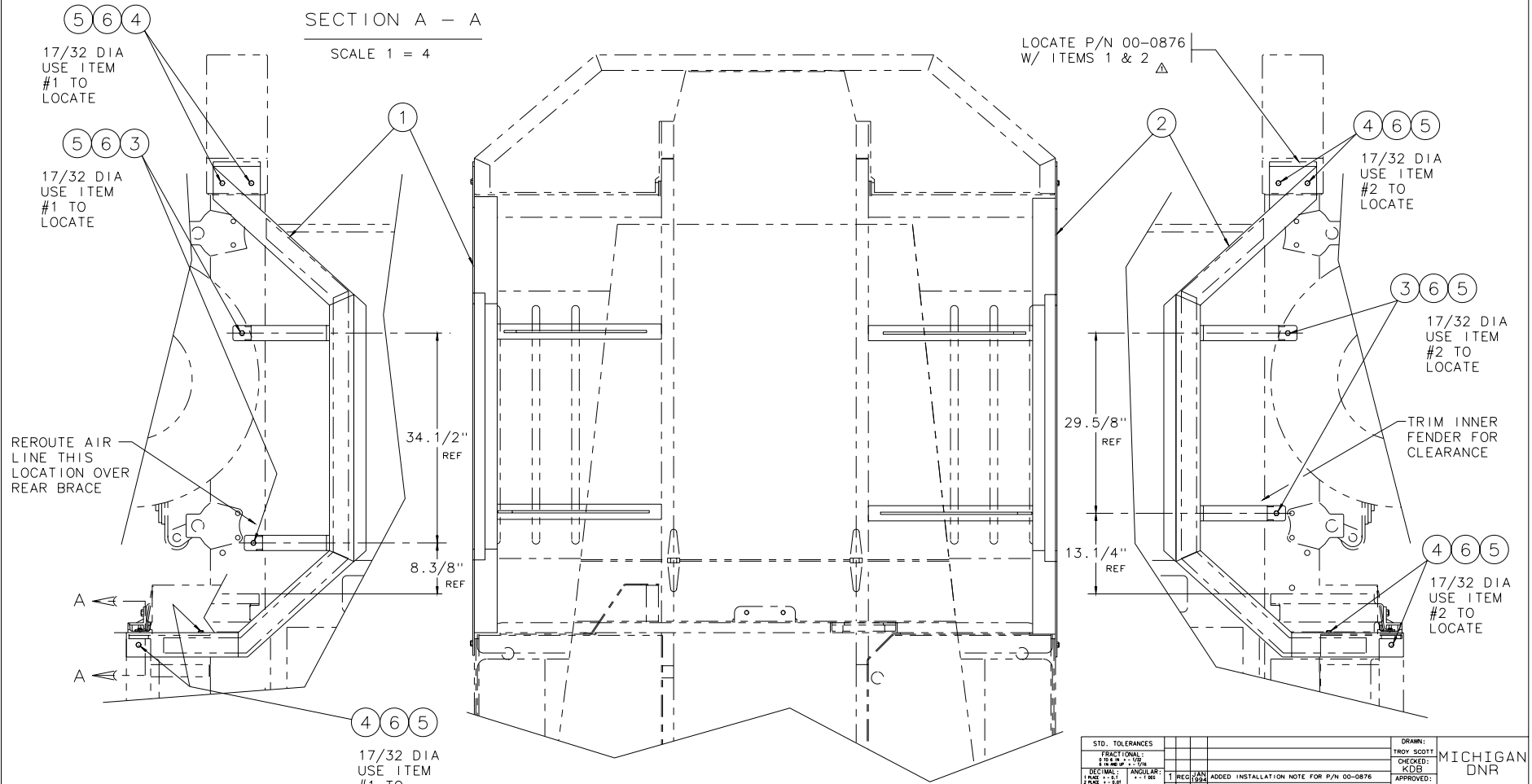
STD. TOLERANCES								DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 8 TO 8 IN --1/32 6 IN AND UP --1/16								CHECKED: KDB	
DECIMAL: 1 PLACE --0.1 2 PLACE --0.01 3 PLACE --0.005	ANGULAR: --1 DEG	1	LLP	7/97	REDESIGNED FOR EASIER INSTALLATION			APPROVED:	
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 91-2	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								DWG. NO. 00-0723C	
TITLE: FUEL FILTER GUARD							SCALE: 1 = 4	DATE: 4 JULY 93	

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	29-0060	D	FENDER GUARD LH W/C	1	108
2	29-0061	D	FENDER GUARD RH W/C	1	108
3	TS-08GG14		SCREW CAP HEX HD 1-3/4" LG GR 5 PLATED	4	0.12
4	TS-08GG12		SCREW CAP HEX HD 1-1/2" LG GR 5 PLATED	10	0.10
5	TS-08GP		NUT HEX DBL CHAM 1/2" PLTD	14	0.04
6	WS08-BC		WASHER SPR LOCK REG 1/2" PLATED	14	0.02



SECTION A - A

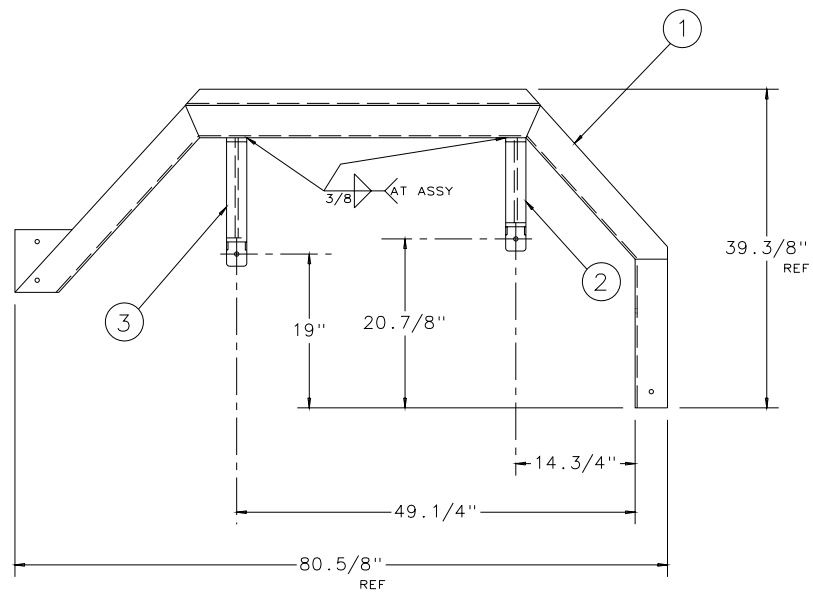
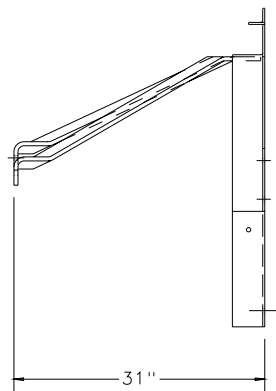
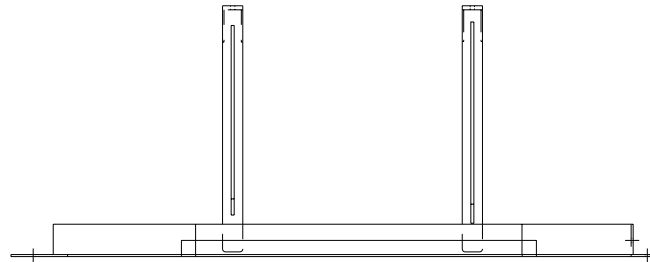
SCALE 1 = 4



PART NUMBER: 29-9806
EST WT: 219 LBS

STD. TOLERANCES					DRAWN:	
FRACTIONAL:	±0.005	±0.010	±0.015	±0.030	FRY SCOTT	
DECIMAL:	±0.005	±0.010	±0.015	±0.030	CHECKED:	KDB
ANGLE:	±0.010	±0.020	±0.030	±0.040	APPROVED:	
THREAD:	±0.010	±0.020	±0.030	±0.040	REVISION:	
ADDED INSTALLATION NOTE FOR P/N 00-0876					MICHIGAN DNR	
FOREST FIRE EXPERIMENT STATION					FOREST MANAGEMENT DIVISION	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					PROJECT NO.: 91-2	
TITLE: FENDER GUARD ASSEMBLY			FEPP 5-10N	SCALE: 1 = 8	DATE: 14 SEP 93	PWC NO: 29-9806D

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0737	D	FENDER GUARD LH S/W	1	76.0
2	00-0731	C	FENDER BRACE REAR	1	15.7
3	00-0738	C	FENDER BRACE FRONT	1	16.0

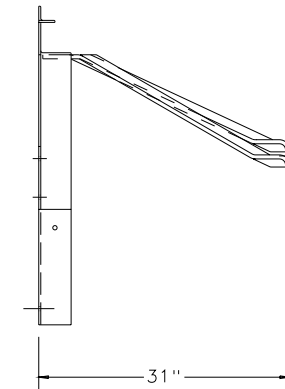
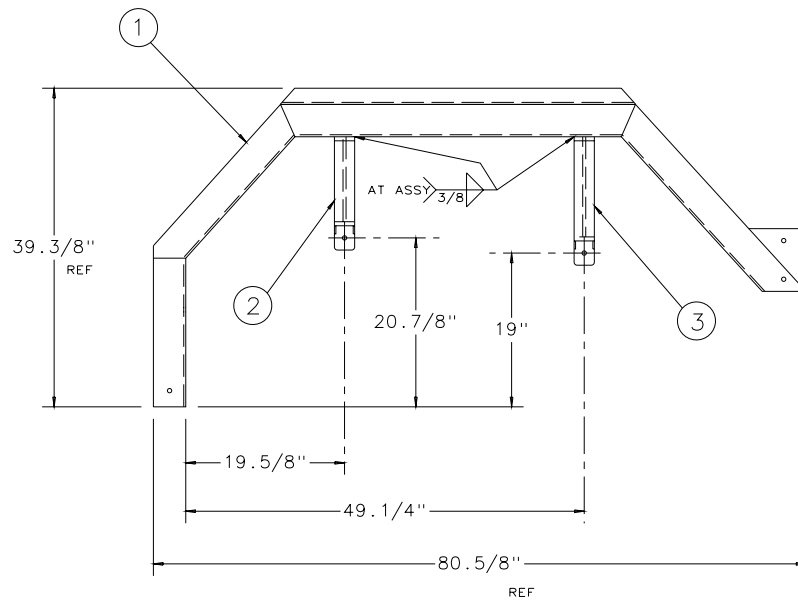
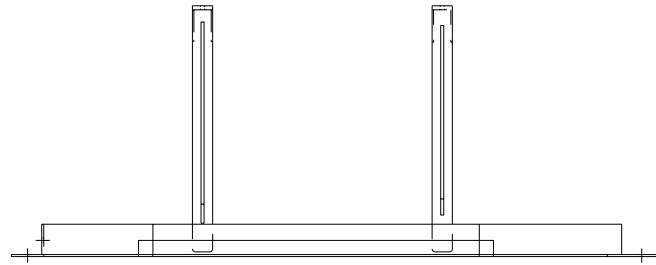


PART NUMBER: 29-0060
EST WT: 108 LBS

STD. TOLERANCES		DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:		TROY SCOTT	CHECKED:	
DECIMAL:		KDB	APPROVED:	
ANGLE:				PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DWG NO.: 29-0060D
TITLE: FENDER GUARD LH W/C				SCALE: 1 = 8 DATE: 25 JUN 93

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ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0736	D	FENDER GUARD RH S/W	1	76.0
2	00-0731	C	FENDER BRACE REAR	1	15.7
3	00-0738	C	FENDER BRACE FRONT	1	16.0

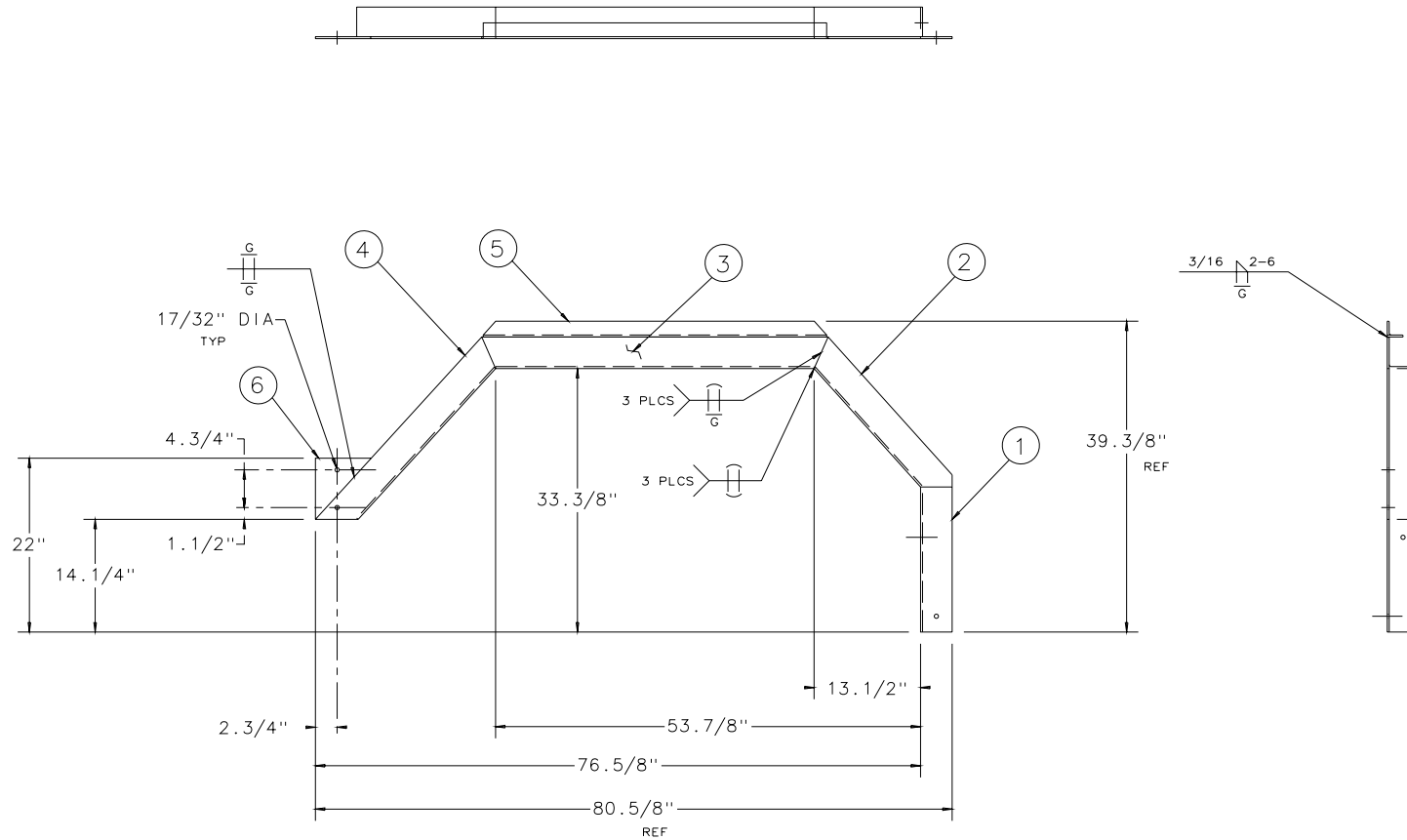


PART NUMBER: 29-0061
EST WT: 108 LBS

STD. TOLERANCES				DRAWN:		TROY SCOTT	
FRACTIONAL:				CHECKED:		KDB	
DECIMAL:				APPROVED:			
ANGULAR:				NO.		DATE	
PLANE:				REVISION:			
SPACE:							
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: FENDER GUARD RH W/C						SCALE: 1 = 8	
						DATE: 25 JUN 93	
						DWG. NO.: 29-0061D	
						PROJECT NO.: 91-2	
						FOREST MANAGEMENT DIVISION	
						MICHIGAN DNR	

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ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0749	B	VERTICAL ANGLE LH	1	10.1
2	00-0748	B	REAR ANGLE LH	1	11.8
3	00-0746	B	TOP ANGLE	1	22.7
4	00-0744	B	FRONT ANGLE LH	1	17.1
5	00-0745	B	TOP ANGLE	1	11.4
6	00-0742	A	GUSSET	1	1.92

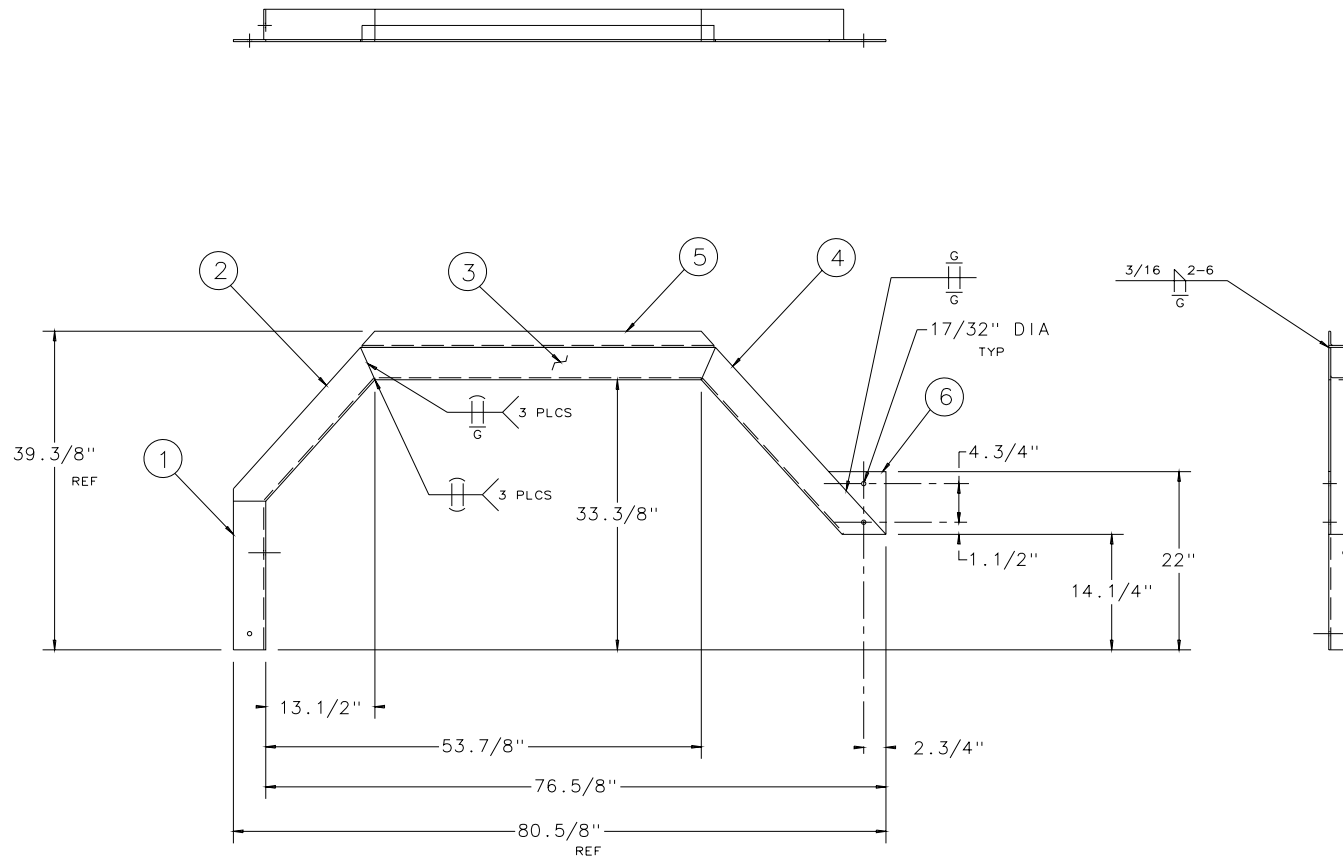


PART NUMBER: 00-0737
EST WT: 76.0 LBS

STD. TOLERANCES		DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:		TROY SCOTT	CHECKED:	
DECIMAL:		KDB	APPROVED:	
ANGULAR:				PROJECT NO.: 91-2
PLACES:				DWG NO.: 00-0737D
NO. REV. DATE		REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				
TITLE: FENDER GUARD LH S/W		SCALE: 1 = 8	DATE: 25 JUN 93	

Return to Drawing Index

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0741	B	VERTICAL ANGLE RH	1	10.1
2	00-0747	B	REAR ANGLE RH	1	11.8
3	00-0746	B	TOP ANGLE	1	22.7
4	00-0743	B	FRONT ANGLE RH	1	17.1
5	00-0745	B	TOP ANGLE	1	11.4
6	00-0742	A	GUSSET	1	1.92

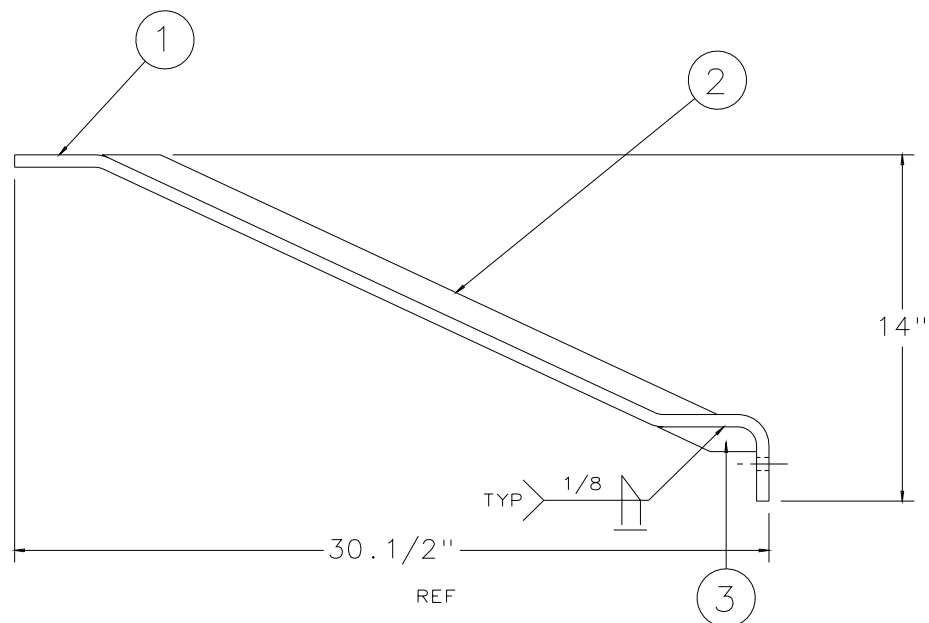
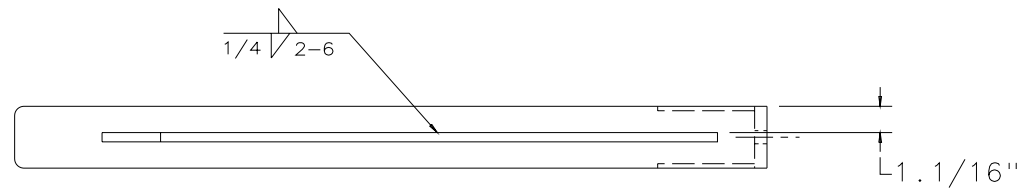


PART NUMBER: 00-0736
EST WT: 76.0 LBS

STD. TOLERANCES		DRAWN:									
FRACTIONAL:		TROY SCOTT									
DECIMAL:		CHECKED:									
ANGULAR:		KDB									
PLACES:		APPROVED:									
PLACES:		FOREST MANAGEMENT									
PLACES:		DIVISION									
<table border="1"> <thead> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> <th>REVISION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				NO.	BY	DATE	REVISION				
NO.	BY	DATE	REVISION								
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653											
TITLE: FENDER GUARD RH S/W			SCALE: 1 = 8 DATE: 25 JUN 93 DWG. NO.: 00-0736D								

Return to Drawing Index

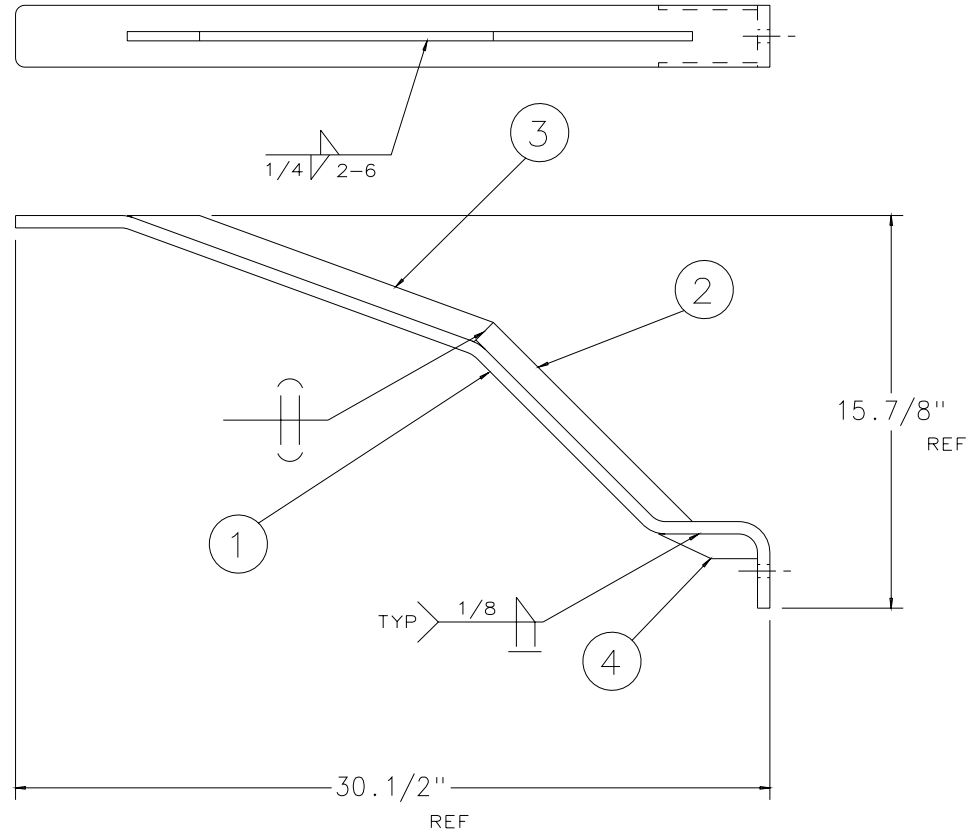
ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0734	C	BRACE REAR	1	12.5
2	00-0733	A	RIB	1	2.65
3	00-0730	A	GUSSET	2	0.15



PART NUMBER: 00-0731
EST WT: 15.8 LBS

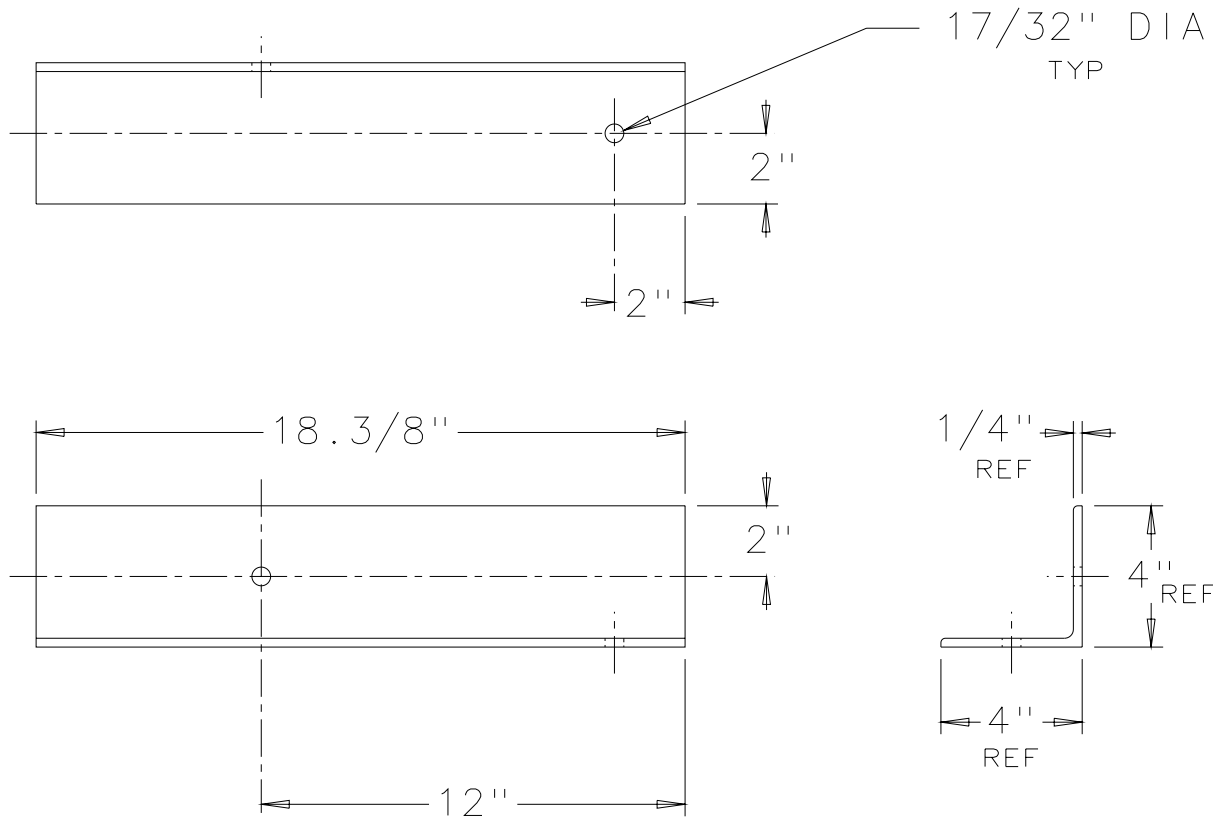
STD. TOLERANCES FRACTIONAL: 0 TO 6 IN. \pm -1/32 6 IN AND UP \pm -1/16 DECIMAL: 1 PLACE \pm -0.1 2 PLACE \pm -0.01 3 PLACE \pm -0.005 ANGULAR: \pm -1 DEG		DRAWN: TROY SCOTT CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2 DWG. NO. 00-0731C
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		TITLE: FENDER BRACE REAR SCALE: 1 = 4 DATE: 25 JUN 93	

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0686	C	BRACE FRONT	1	13.1
2	00-0739	A	RIB	1	2.61
3	00-0740	A	RIB	1	1.46
4	00-0730	A	GUSSET	2	0.15



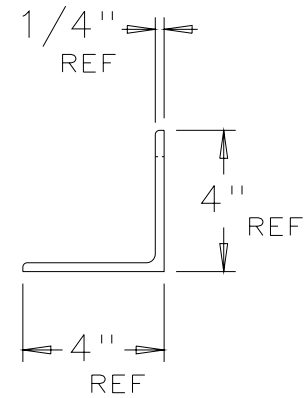
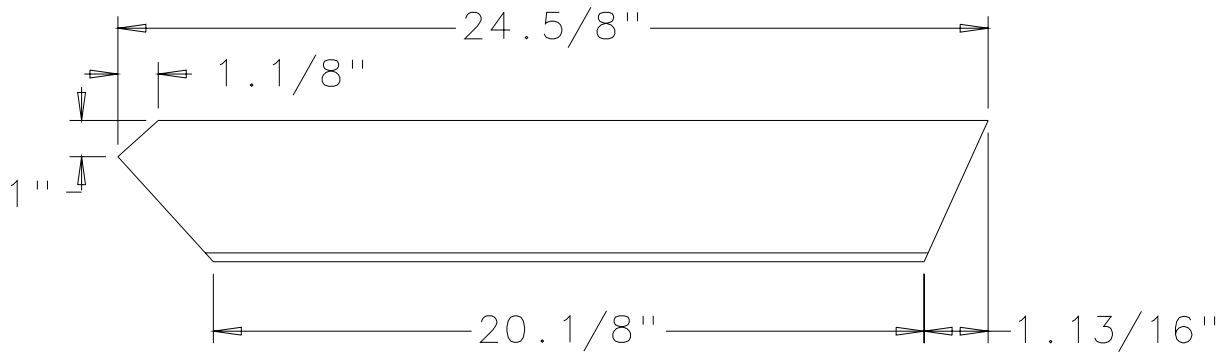
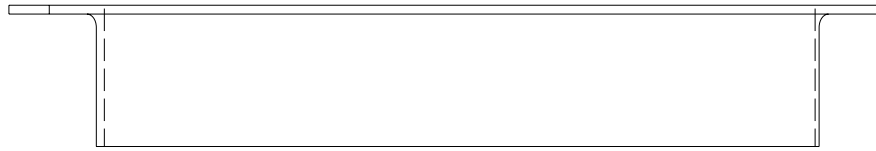
PART NUMBER: 00-0738
EST WT: 16.5 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16 DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005 ANGULAR: + - 1 DEG		1 KDB 2-94 3-94 4-94 5-94 6-94 7-94 8-94 9-94 10-94 11-94 12-94 13-94 14-94 15-94 16-94 17-94 18-94 19-94 20-94 21-94 22-94 23-94 24-94 25-94 26-94 27-94 28-94 29-94 30-94 31-94 32-94 33-94 34-94 35-94 36-94 37-94 38-94 39-94 40-94 41-94 42-94 43-94 44-94 45-94 46-94 47-94 48-94 49-94 50-94 51-94 52-94 53-94 54-94 55-94 56-94 57-94 58-94 59-94 60-94 61-94 62-94 63-94 64-94 65-94 66-94 67-94 68-94 69-94 70-94 71-94 72-94 73-94 74-94 75-94 76-94 77-94 78-94 79-94 80-94 81-94 82-94 83-94 84-94 85-94 86-94 87-94 88-94 89-94 90-94 91-94 92-94 93-94 94-94 95-94 96-94 97-94 98-94 99-94 100-94	DRAWN: TROY SCOTT CHECKED: KDB APPROVED:	MICHIGAN DNR FOREST MANAGEMENT DIVISION PROJECT NO.: 91-2 DWG. NO. 00-0738C
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653		TITLE: FENDER BRACE FRONT SCALE: 1 = 4 DATE: 25 JUN 93	ADDDED CENTER BEND FOR TIRE CLEARANCE REVISION	



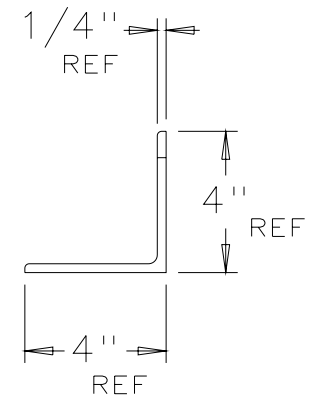
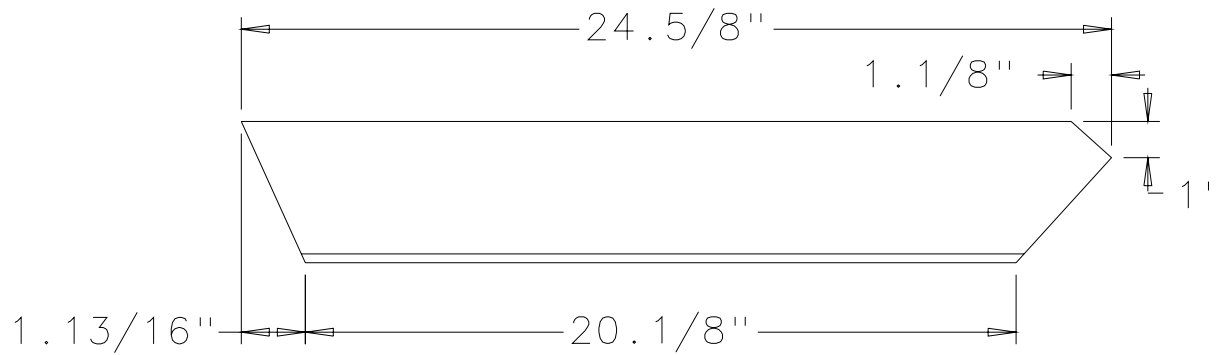
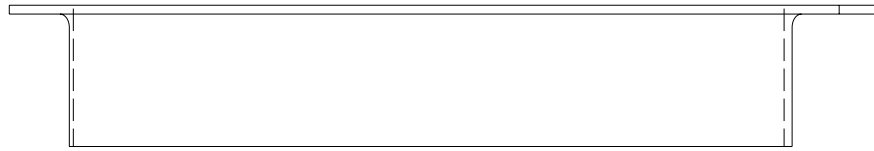
PART NUMBER: 00-0749
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 10.1 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				TROY SCOTT		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				CHECKED: KDB		
ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION						DWG. NO. 00-0749B
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: VERTICLE ANGLE LH				SCALE: 1 = 4	DATE: 25 JUN 93	



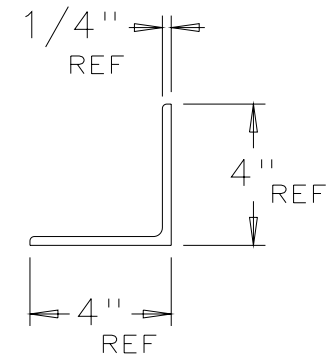
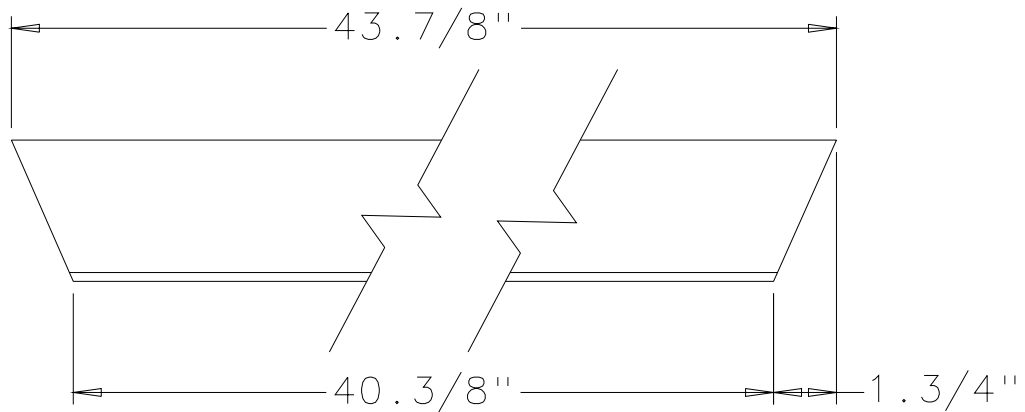
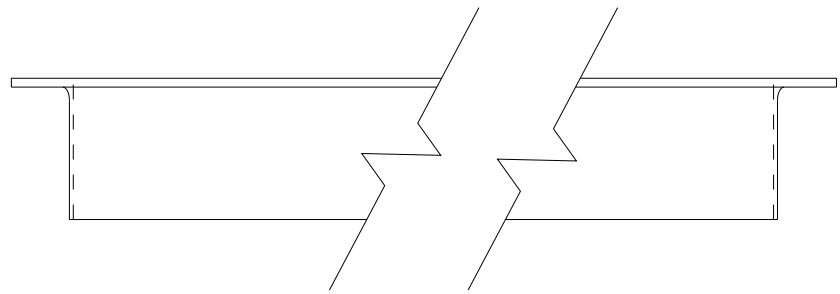
PART NUMBER: 00-0748
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 11.8 LBS

STD. TOLERANCES						DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:						TROY SCOTT		
0 TO 6 IN + - 1/32						CHECKED:		
6 IN AND UP + - 1/16						KDB		
DECIMAL:		ANGULAR:				APPROVED:		PROJECT NO.: 91-2
1 PLACE + - 0.1		+ - 1 DEG						
2 PLACE + - 0.01				NO.		BY		DWG. NO. 00-0748B
3 PLACE + - 0.005				DATE		REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: REAR ANGLE LH						SCALE: 1" = 4"		DATE: 25 JUN 93



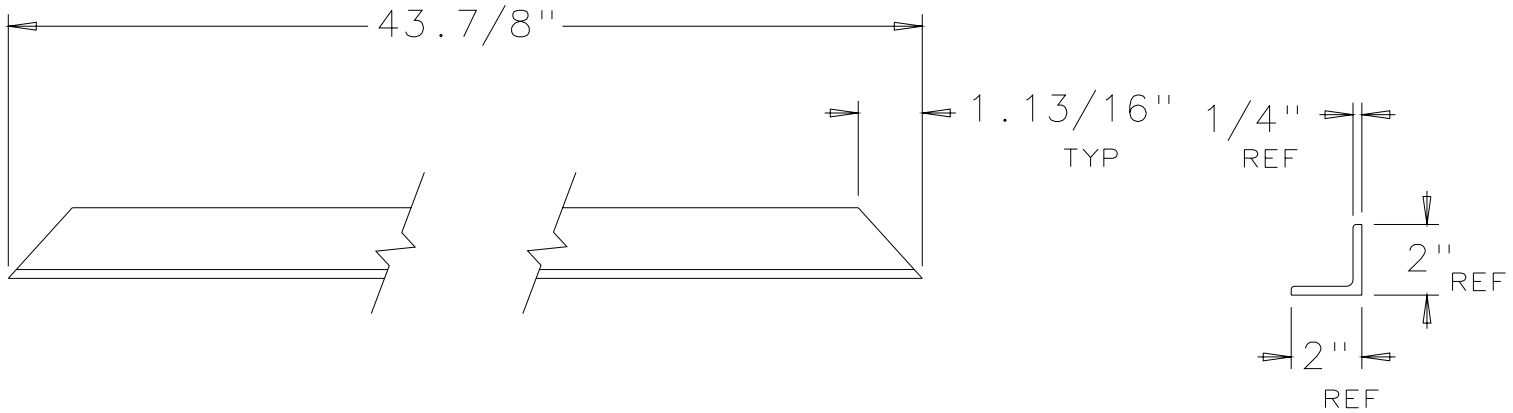
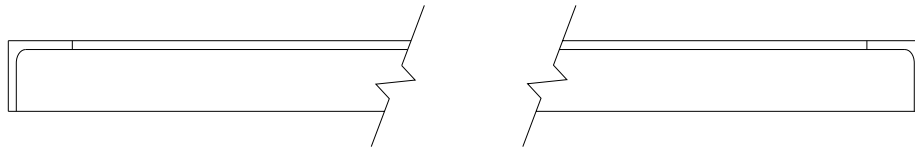
PART NUMBER: 00-0747
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 11.8 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				TROY SCOTT		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				CHECKED: KDB		
ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 00-0747B
TITLE: REAR ANGLE RH				SCALE: 1" = 4"	DATE: 25 JUN 93	



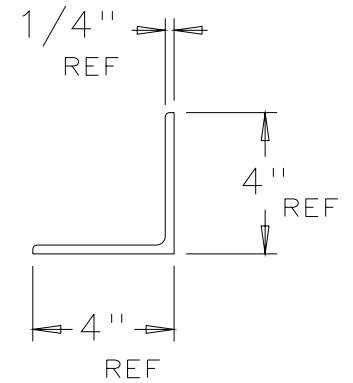
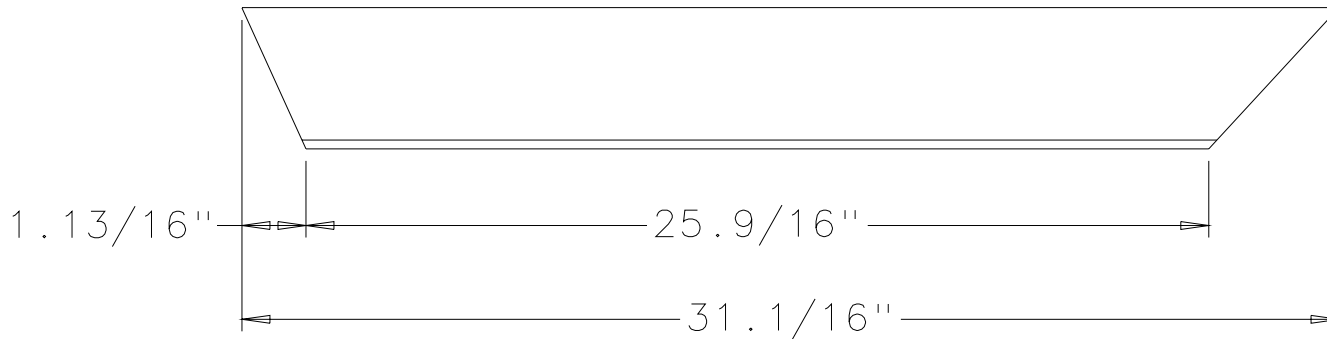
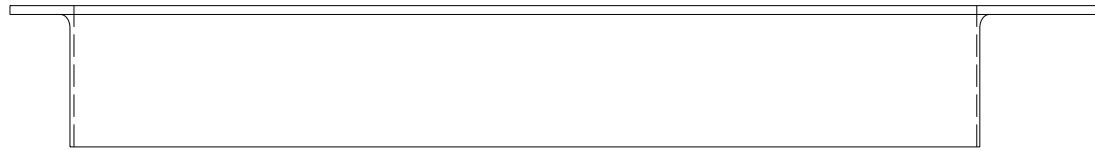
PART NUMBER: 00-0746
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 22.7 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				TROY SCOTT		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005				CHECKED: KDB		
ANGULAR: + - 1 DEG				APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: TOP ANGLE				SCALE: 1 = 4	DATE: 25 JUN 93	DWG. NO.: 00-0746B



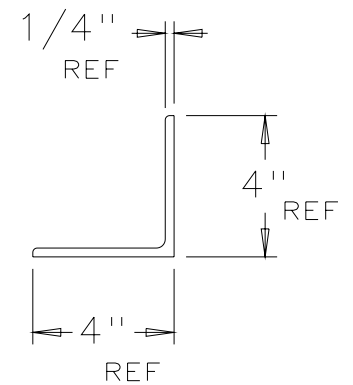
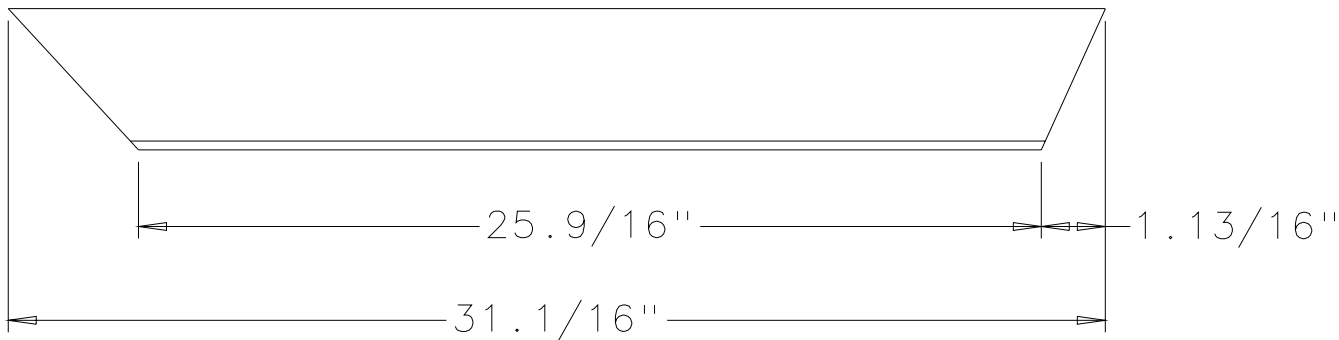
PART NUMBER: 00-0745
 MATL: ANGLE 2 X 2 X 1/4
 K02600
 FFES SPEC NO: AK-40808AG
 EST WT: 11.4 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KBD		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: TOP ANGLE				SCALE: 1 = 4	DATE: 25 JUN 93	DWG. NO. 00-0745B



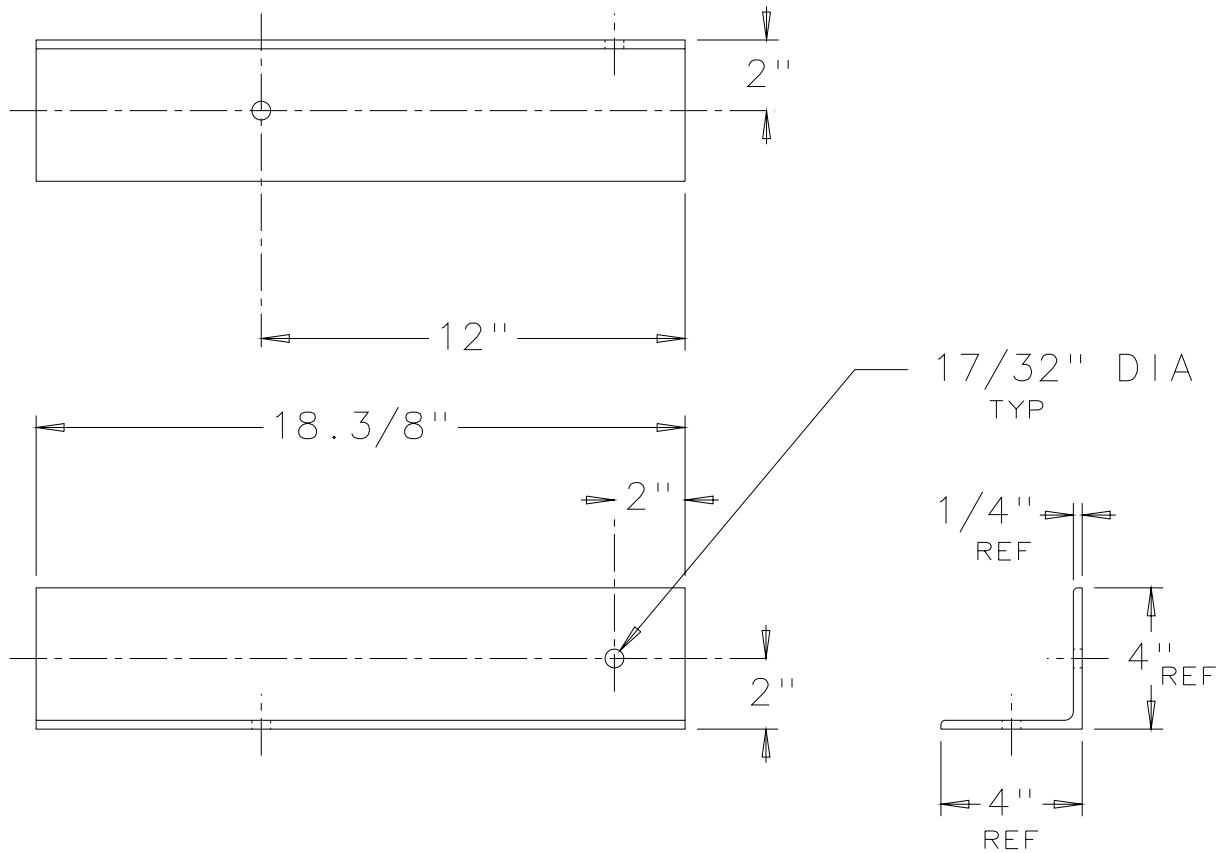
PART NUMBER: 00-0744
 MATL: ANGLE 4 X 4 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 17.1 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: FRONT ANGLE LH				SCALE: 1 = 4	DATE: 25 JUN 93	PROJECT NO.: 91-2 DWG. NO.: 00-0744B



PART NUMBER: 00-0743
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 17.1 LBS

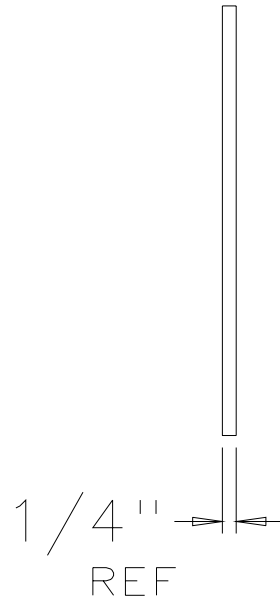
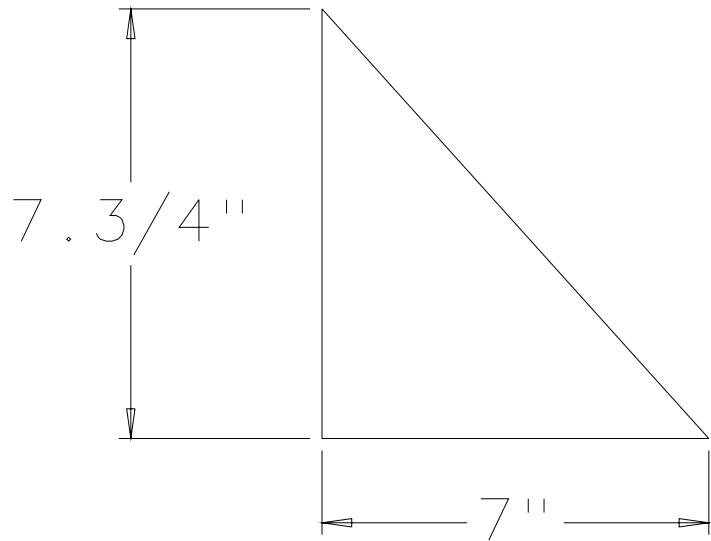
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: FRONT ANGLE RH				SCALE: 1 = 4	DATE: 25 JUN 93	DWG. NO.: 00-0743B



PART NUMBER: 00-0741
 MATL: ANGLE 4 X 4 X 1/4
 K02600
 FFES SPEC NO: AK-41616AG
 EST WT: 10.1 LBS

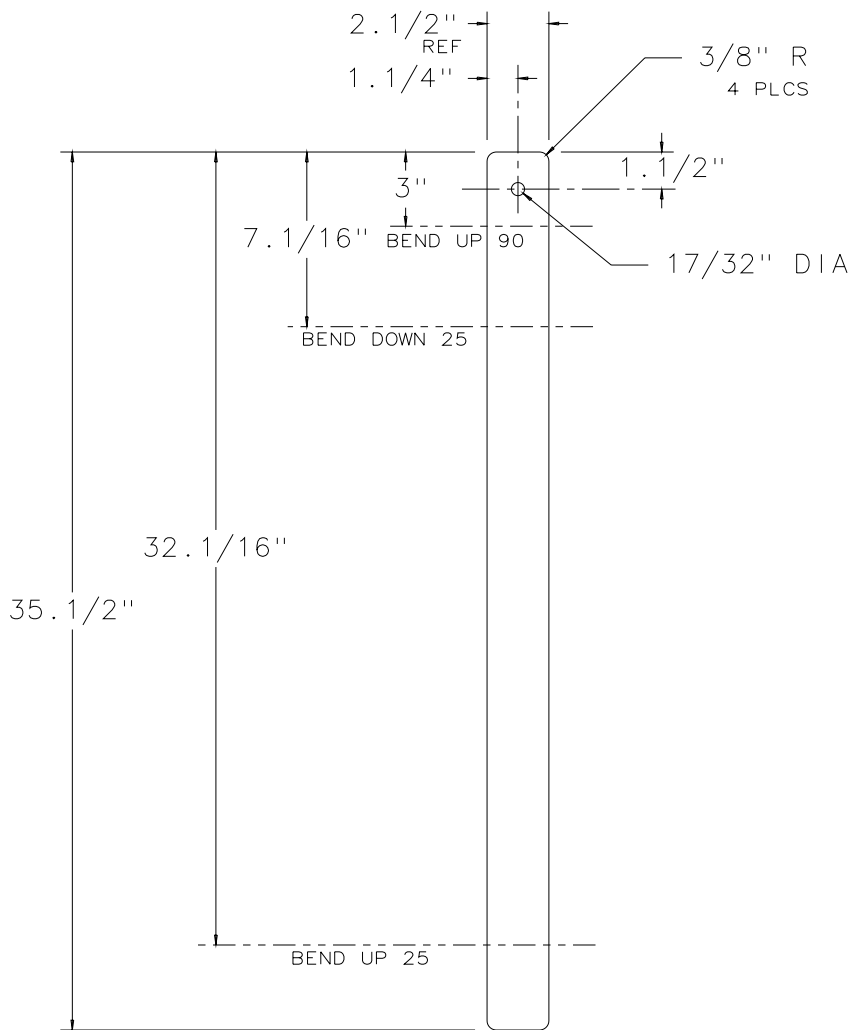
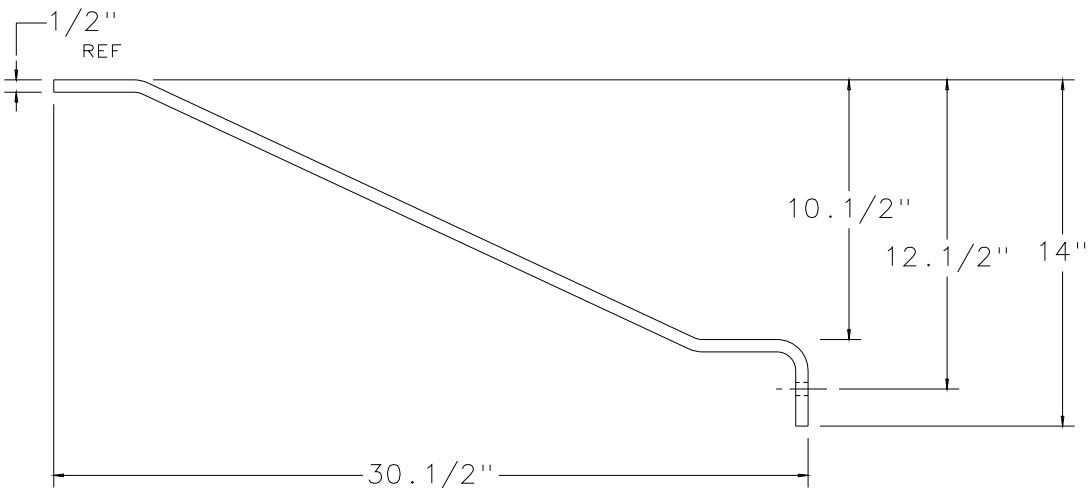
STD. TOLERANCES				DRAWN: TROY SCOTT			MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: VERTICLE ANGLE RH				SCALE: 1 = 4	DATE: 25 JUN 93	DWG. NO. 00-0741B	

Return to Drawing Index



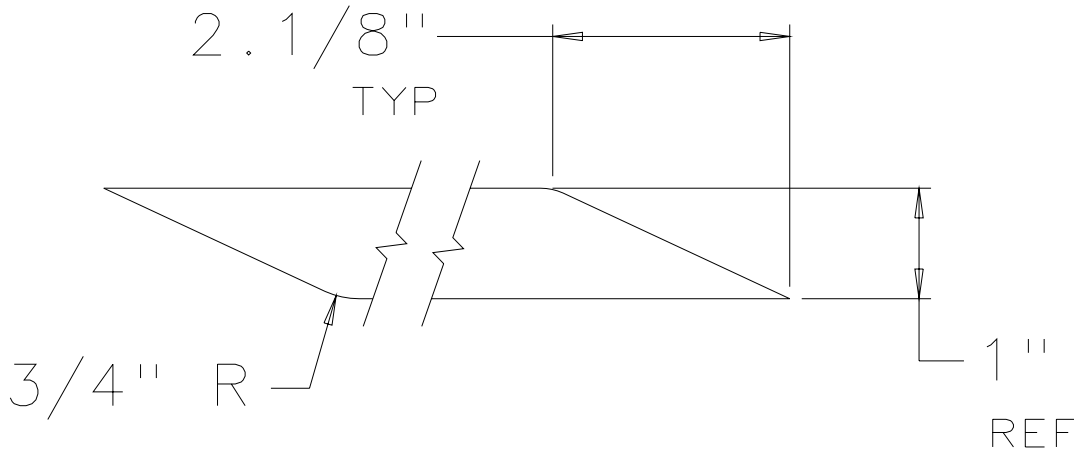
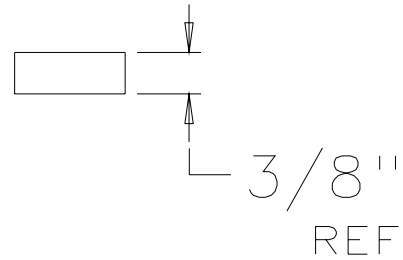
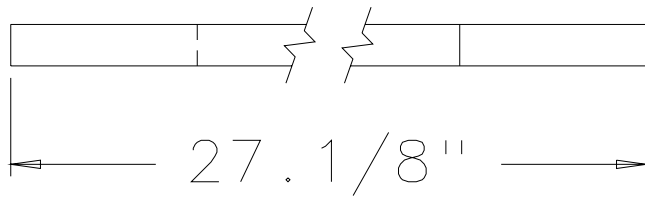
PART NUMBER: 00-0742
 MATL: PLATE 1/4
 G10150
 FFES SPEC NO: AA-00448BC
 EST WT: 1.92 LBS

STD. TOLERANCES						DRAWN:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16						TROY SCOTT		
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		ANGULAR: ± 1 DEG				CHECKED: KDB		
NO.	BY	DATE	REVISION			APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: GUSSET					SCALE: 1 = 4	DATE: 25 JUN 93	DWG. NO.: 00-0742A	



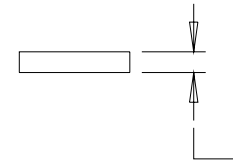
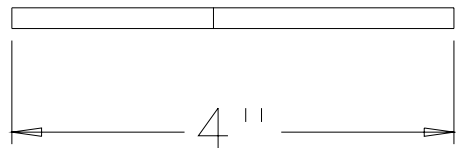
PART NUMBER: 00-0734
 MATL: BAR FLAT 1/2 X 2-1/2 HR
 G10200
 FFES SPEC NO: AB-00810AA
 EST WT: 12.5 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:				TROY SCOTT		
0 TO 6 IN + - 1/32				CHECKED:		
6 IN AND UP + - 1/16				KDB		
DECIMAL:		ANGULAR:		APPROVED:		PROJECT NO.: 91-2 DWG. NO. 00-0734C
1 PLACE + - 0.1		+ - 1 DEG				
2 PLACE + - 0.01				NO.		
3 PLACE + - 0.005				BY		
				DATE		
				REVISION		
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BRACE REAR				SCALE: 1 = 4		DATE: 25 JUN 93

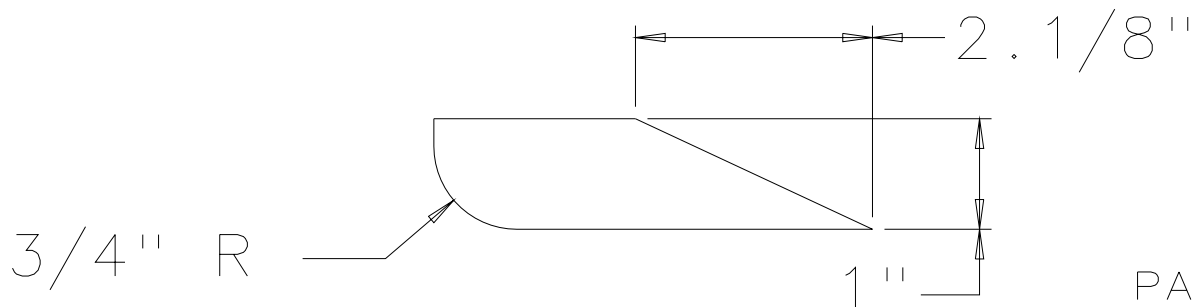


PART NUMBER: 00-0733
 MATL: BAR FLAT 3/8 X 1 HR
 G10200
 FFES SPEC NO: AB-00604AA
 EST WT: 2.65 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT			MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB			
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:			
NO.	BY	DATE	REVISION				
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: RIB				SCALE: 1/2	DATE: 25 JUN 93	DWG. NO. 00-0733A	

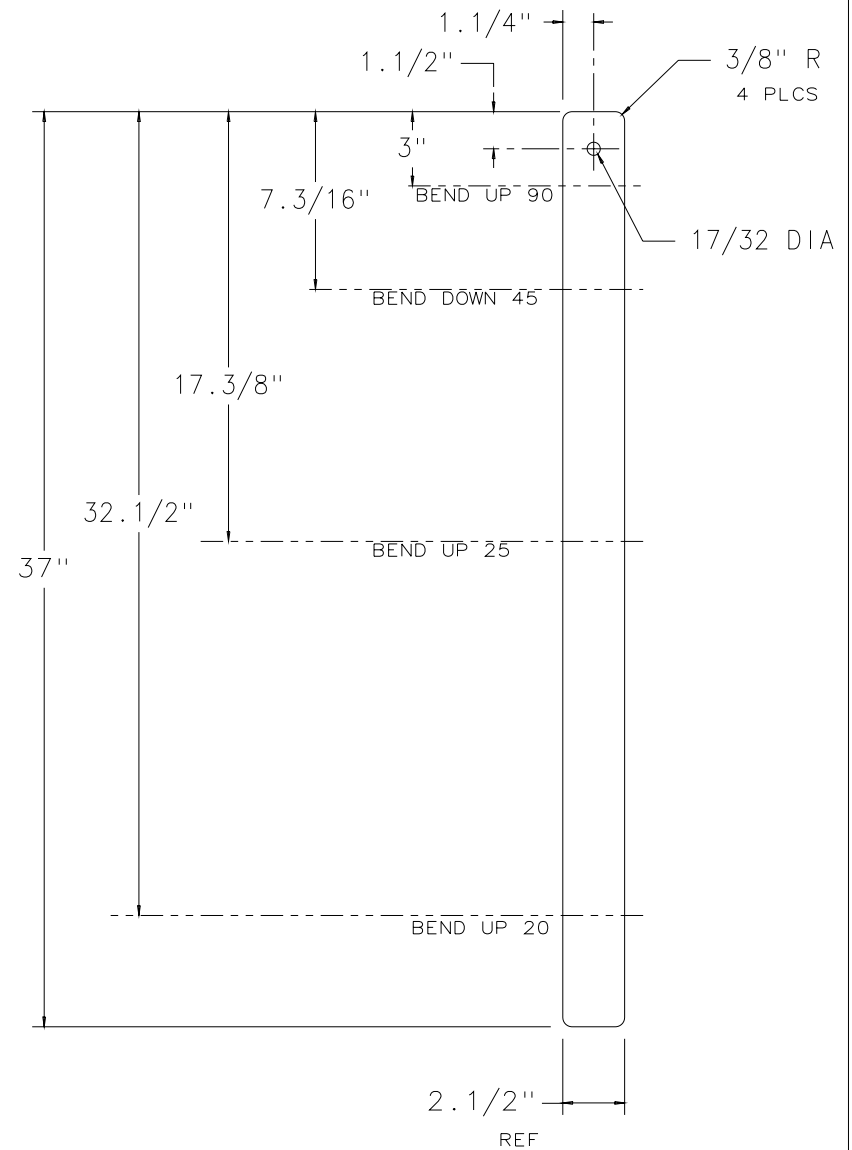
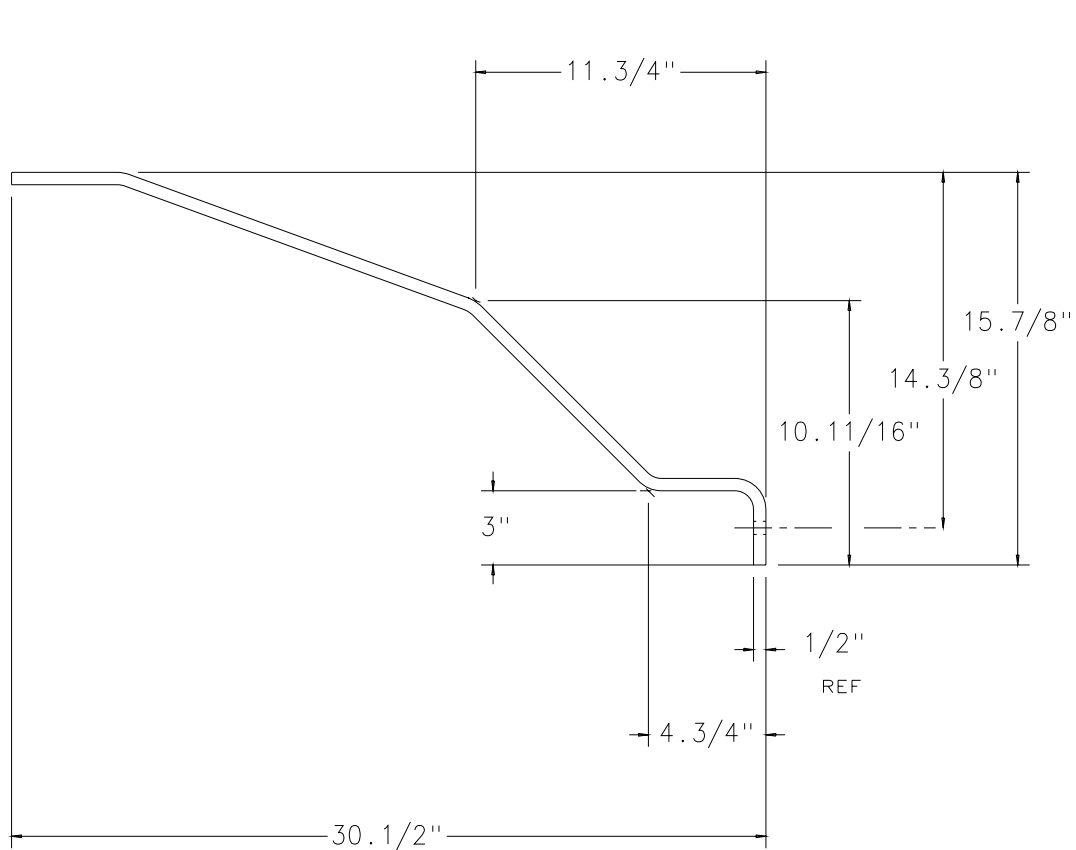


7 GA
(0.1793)
REF



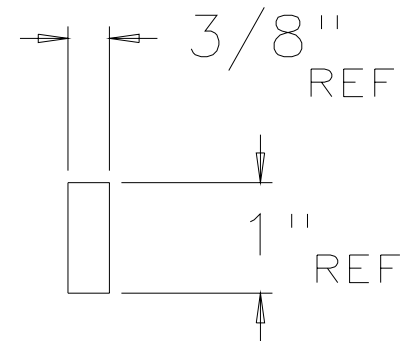
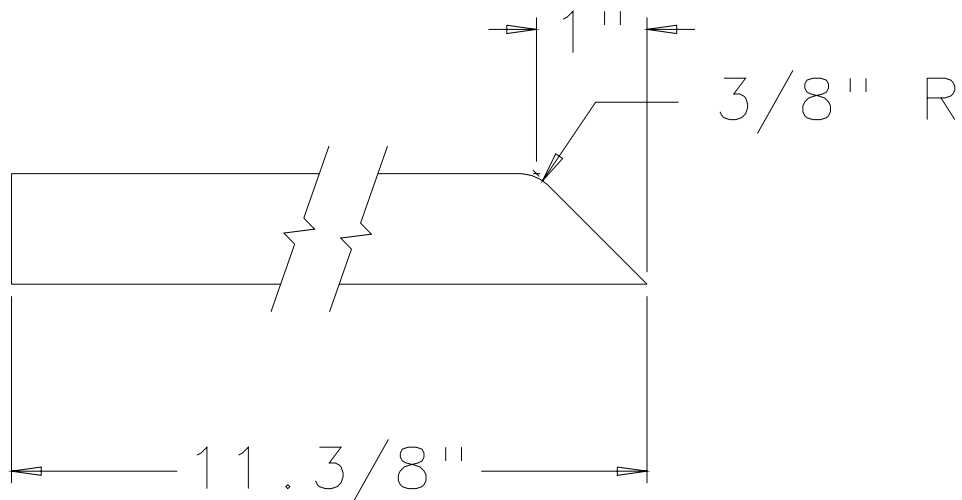
PART NUMBER: 00-0729
 MATL: SHEET 7GA 4X8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 0.15 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB		FOREST MANAGEMENT DIVISION
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:		
ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION		PROJECT NO.: 91-2	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								DWG. NO. 00-0730A
TITLE: GUSSET					SCALE: 1/2	DATE: 25 JUN 93		



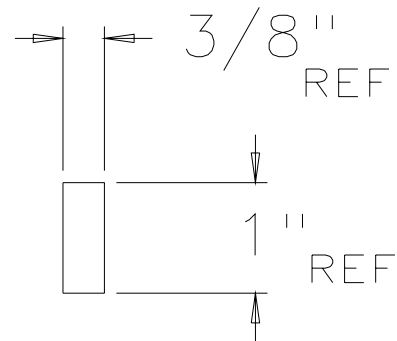
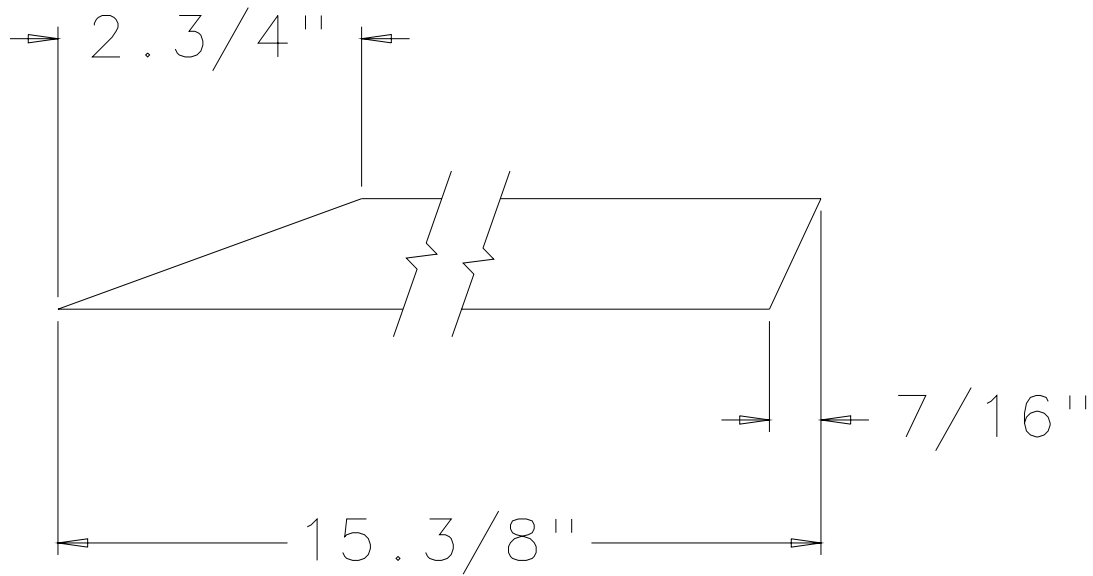
PART NUMBER: 00-0686
 MATL: BAR, FLAT 1/2 X 2.1/2 HR
 G10200
 FFES SPEC NO: AB-00810AA
 EST WT: 13.1 LBS

STD. TOLERANCES				DRAWN:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL:				TROY SCOTT		
0 TO 6 IN + - 1/32				CHECKED:		
6 IN AND UP + - 1/16				KDB		
DECIMAL:		ANGULAR:		PER REV 1 P/N 00-0738C		APPROVED:
1 PLACE + - 0.1		+ - 1 DEG		NO. BY DATE		
2 PLACE + - 0.01				REVISION		
3 PLACE + - 0.005						
FOREST FIRE EXPERIMENT STATION						
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: BRACE FRONT					SCALE:	DATE:
					1 = 4	25 JUN 93
						PROJECT NO.: 91-2 DWG. NO. 00-0686C



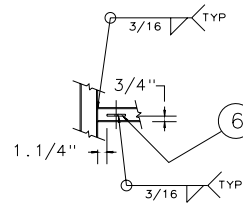
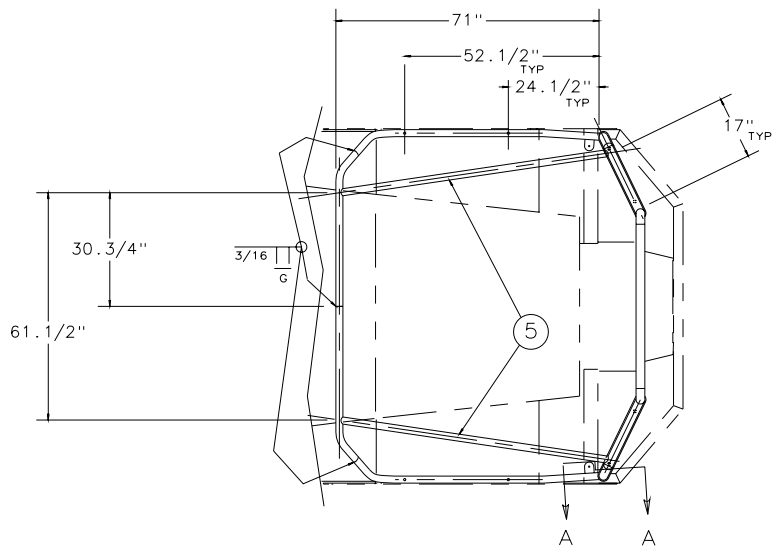
PART NUMBER: 00-0739
 MATL: BAR FLAT 3/8 X 1 HR
 G10200
 FFES SPEC NO: AB-00604AA
 EST WT: 1.15 LBS

STD. TOLERANCES						DRAWN:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						TROY SCOTT		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		1	KDB	12/94	PER REV 1 P/N 00-0738	CHECKED: KDB		
ANGULAR: + - 1 DEG		NO.	BY	DATE	REVISION	APPROVED:		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: RIB					SCALE: 1/2	DATE: 25 JUN 93	DWG. NO.: 00-0739A	



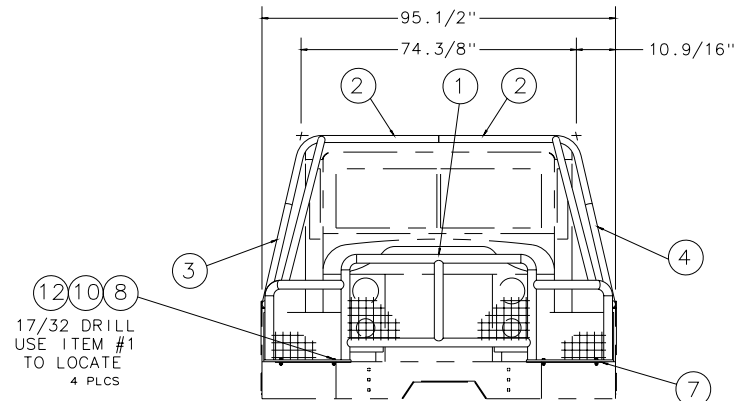
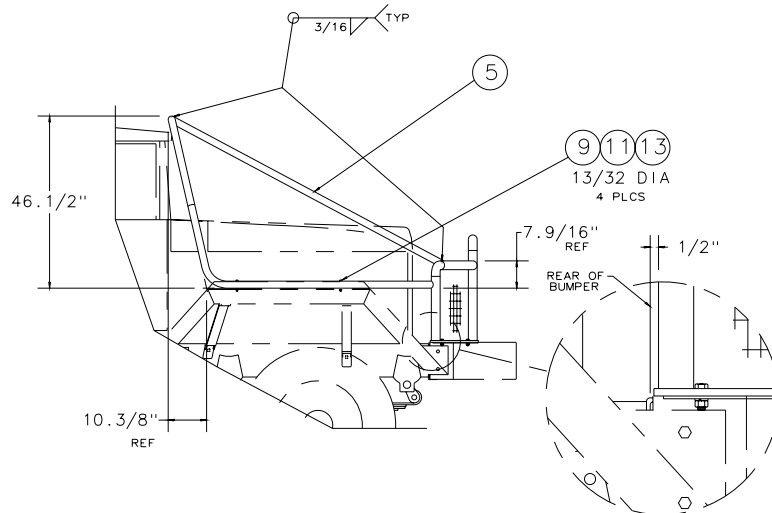
PART NUMBER: 00-0740
 MATL: BAR FLAT 3/8 X 1 HR
 G10200
 FFES SPEC NO: AB-00604AA
 EST WT: 1.46 LBS

STD. TOLERANCES						DRAWN:	MICHIGAN DNR FOREST MANAGEMENT DIVISION	
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						TROY SCOTT		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		1	KDB	12/94		CHECKED: KDB
		NO.	BY	DATE	REVISION			APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2	
TITLE: RIB					SCALE: 1/2		DATE: 25 JUN 93	
							DWG. NO. 00-0740A	



SECTION A-A
SCALE 1=8

ITEM	PART NO	DWG	DESCRIPTION	QTY	EST WT
1	00-0707	D	GRILL GUARD S/W	1	12.0
2	00-0719	B	UPPER PIPE	2	13.2
3	00-0720	C	LOWER PIPE RH	1	18.6
4	00-0721	C	LOWER PIPE LH	1	18.6
5	00-0848	A	LIMB RISER	2	18.8
6	00-0849	A	NOZZLE FIXTURE MOUNT	2	0.48
7	29-0066	B	SPACER	2	3.27
8	TS-08GG12		SCREW CAP HEX HD 1/2" - 13 UN 1-1/2" LG GR 5 PLATED	4	0.08
9	TS-06GG24		SCREW CAP HEX HD 3/8" - 16 UN 3" LG GR 5 PLATED	4	0.09
10	TS-08GP		NUT HEX DBL CHAM 1/2" - 13 UN PLATED	4	0.04
11	TS-06GP		NUT HEX DBL CHAM 3/8" - 16 UN PLATED	4	0.02
12	WS08-BC		WASHER SPR LOCK REG 1/2" PLATED	4	0.02
13	WS06-BC		WASHER SPR LOCK REG 3/8" PLATED	4	0.01

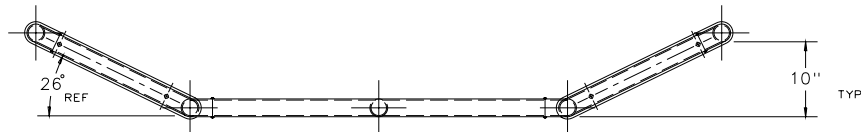


12 10 8
17/32 DRILL
USE ITEM #1
TO LOCATE
4 PLCS

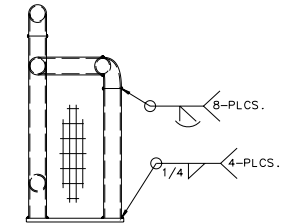
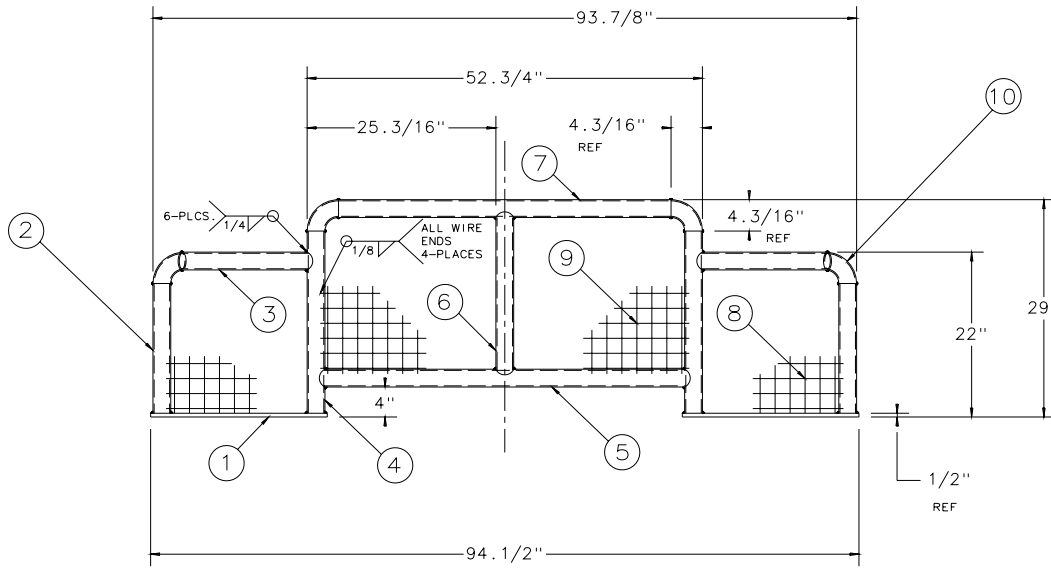
PART NUMBER: 29-9806
EST WT: 234 LBS

STD. TOLERANCES		FRAC: 1/16 - .001	DEC: .001	ANG: .01	SCALE: 1=8	DATE: 15 SEP 93	DRW: TROY SCOTT	CHECKED: KOB	APPROVED:	MICHIGAN DNR	
FOREST FIRE EXPERIMENT STATION							PROJECT NO.: 91-2		DIVISION		
TITLE: CAB GUARD ASSEMBLY							SCALE: 1=8	DATE: 15 SEP 93	DWG. NO.: 29-9804D		

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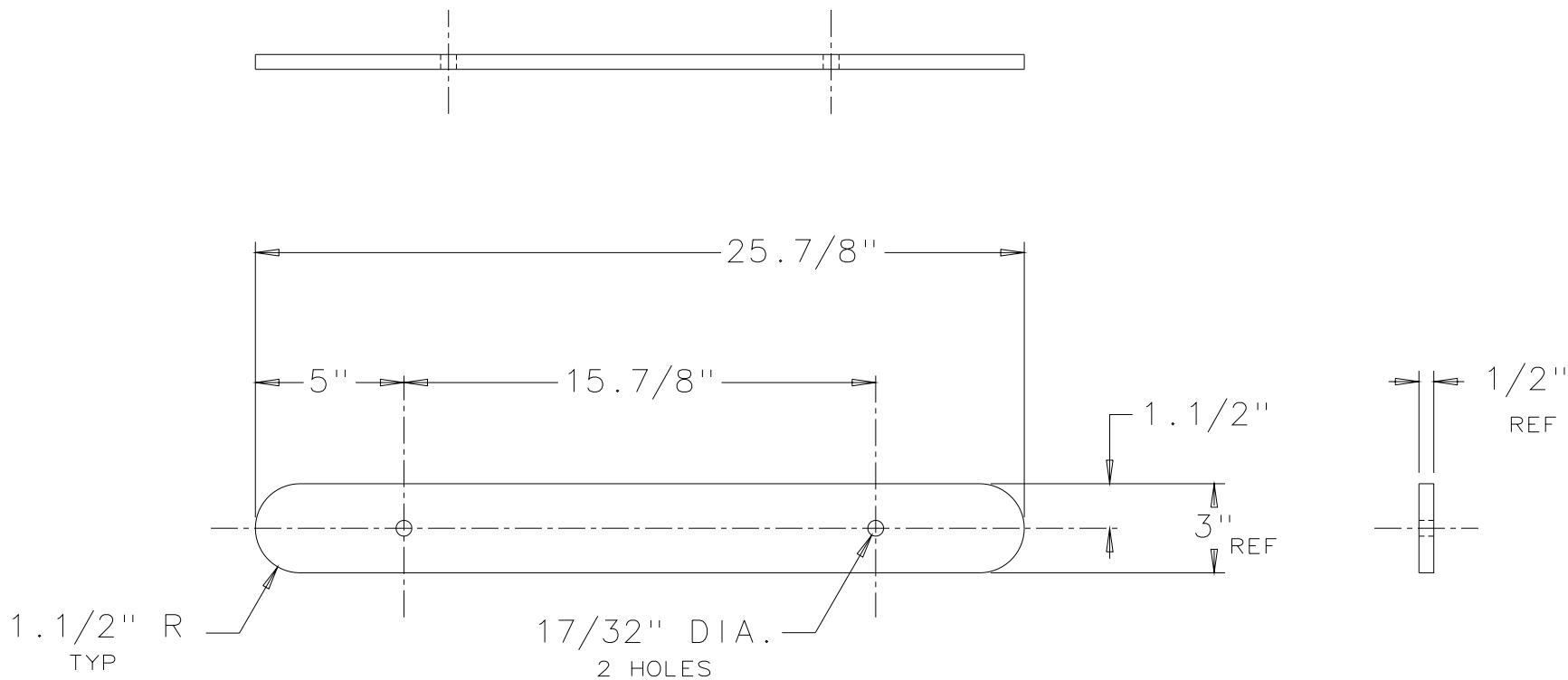
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1	00-0708	B	MOUNTING BAR	2	10.4
2	00-0709	B	PIPE, VERTICAL	2	5.27
3	00-0710	B	PIPE, HORIZONTAL	2	5.76
4	00-0711	B	PIPE, VERTICAL	2	7.40
5	00-0712	B	PIPE, CROSS	1	14.8
6	00-0713	B	PIPE, VERTICAL	1	6.31
7	00-0714	B	PIPE, CROSS	1	13.5
8	00-0715	B	SIDE PANEL	2	4.27
9	00-0716	B	CENTER PANEL	2	5.05
10	P32-CALV		ELBOW, BUTT WELD 90° 2\"/>		



PART NUMBER: 00-0707
EST WT: 120 LBS

STD. TOLERANCES				DRAWN:	TRAY SCOTT
FRACTIONAL:	1/16	1/8	3/16	CHECKED:	KDB
DECIMAL:	0.0005	0.001	0.002	APPROVED:	
ANGLE:	15	30	45	PROJECT NO.: 91-2	
REV. BY DATE REVISION				FOREST MANAGEMENT DIVISION	
TITLE: GRILL GUARD S/W				DATE: MAY 5, 1995	
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				SCALE: 1" = 8"	
5-TON MIL 6X6				DWG NO: 00-0707D	

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PART NUMBER: 00-0708
 MAT'L: BAR, FLAT 1/2" x 3" HR
 UNS: G10200
 FFES SPEC NO: AB-00812AA
 EST WT: 10.4 LBS

STD. TOLERANCES				
FRACTIONAL:				
0 TO 6 IN +-1/32				
6 IN AND UP +-1/16				
DECIMAL:	ANGULAR:			
1 PLACE +- 0.1	+- 1 DEG			
2 PLACE +- 0.01				
3 PLACE +- 0.005				
	NO.	BY	DATE	REVISION

DRAWN:
TROY SCOTT
 CHECKED:
KDB
 APPROVED:

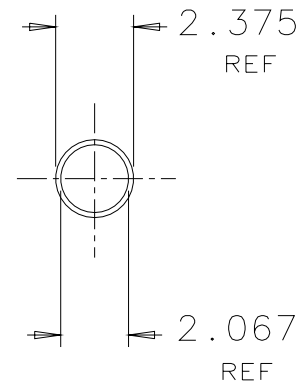
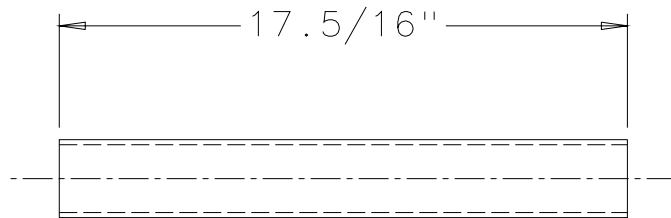
MICHIGAN
DNR
 FOREST MANAGEMENT
DIVISION
 PROJECT NO.: 91-2

FOREST FIRE EXPERIMENT STATION
 P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

TITLE: MOUNTING BAR

SCALE: 1 = 4
 DATE: MAY 5, 1993

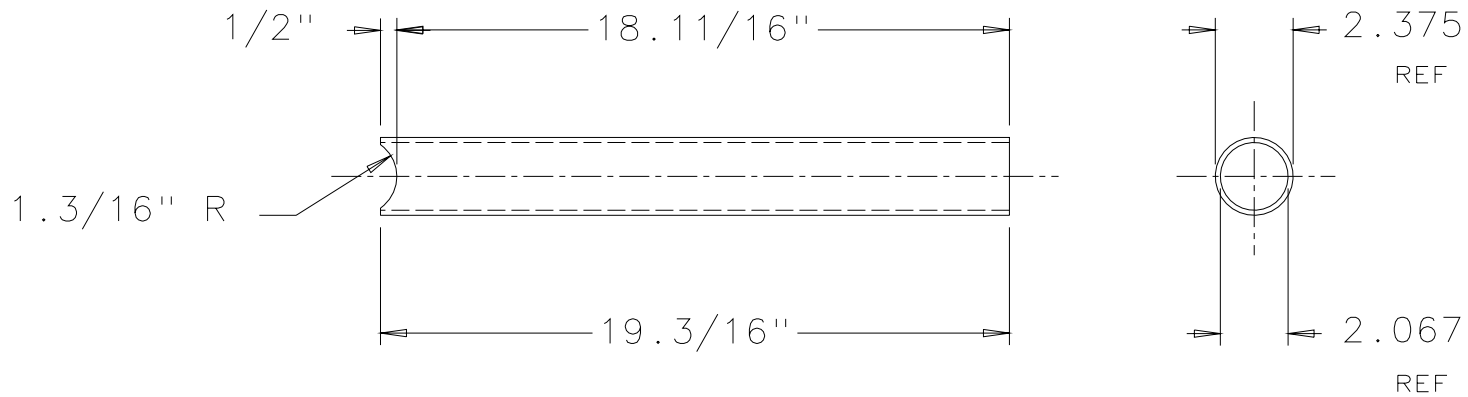
DWG. NO. 00-0708B



PART NUMBER: 00-0709
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 5.27 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN. +1/32 6 IN AND UP +1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG				NO.	BY	DATE
				REVISION		
FOREST FIRE EXPERIMENT STATION						PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0709B
TITLE: PIPE, VERTICAL				SCALE: 1 = 4	DATE: MAY 5, 1993	

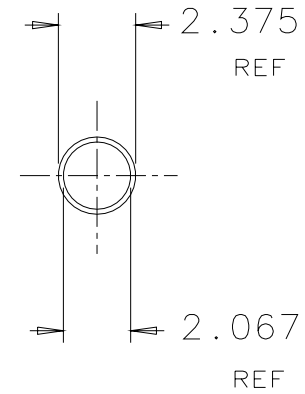
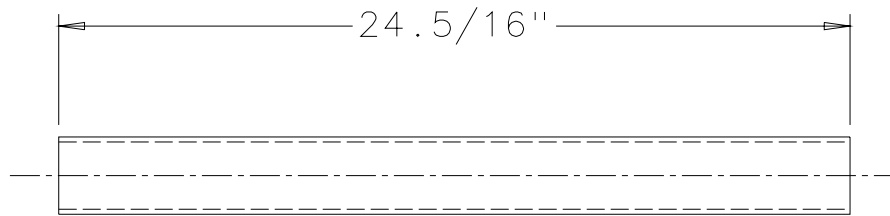
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PART NUMBER: 00-0710
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 5.76 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGLAR: +- 1 DEG				NO. BY DATE REVISION		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0710B
TITLE: PIPE, HORIZONTAL				SCALE: 1" = 4"	DATE: MAY 5, 1993	

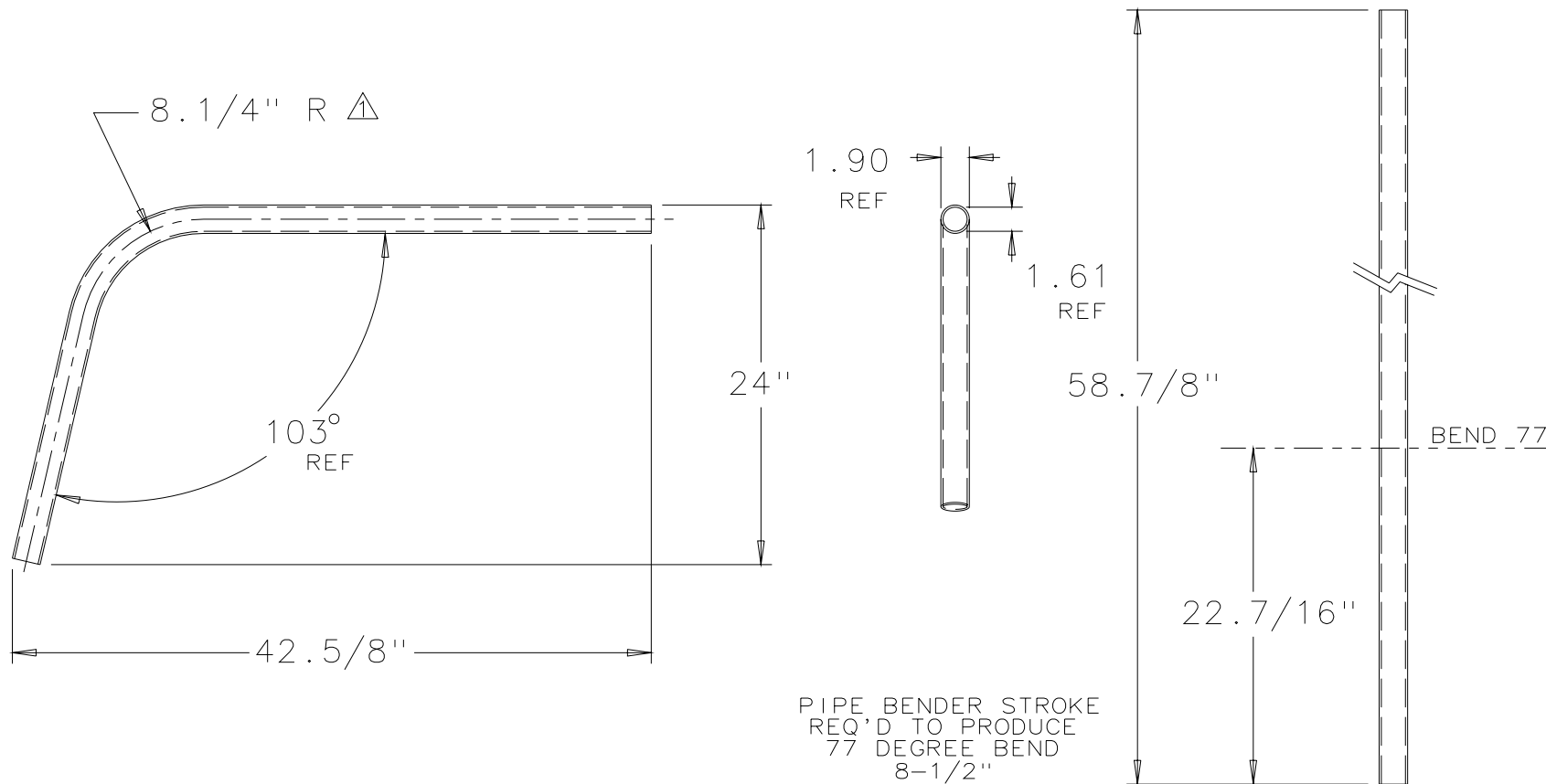
Return to Drawing Index



PART NUMBER: 00-0711
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 7.40 LBS

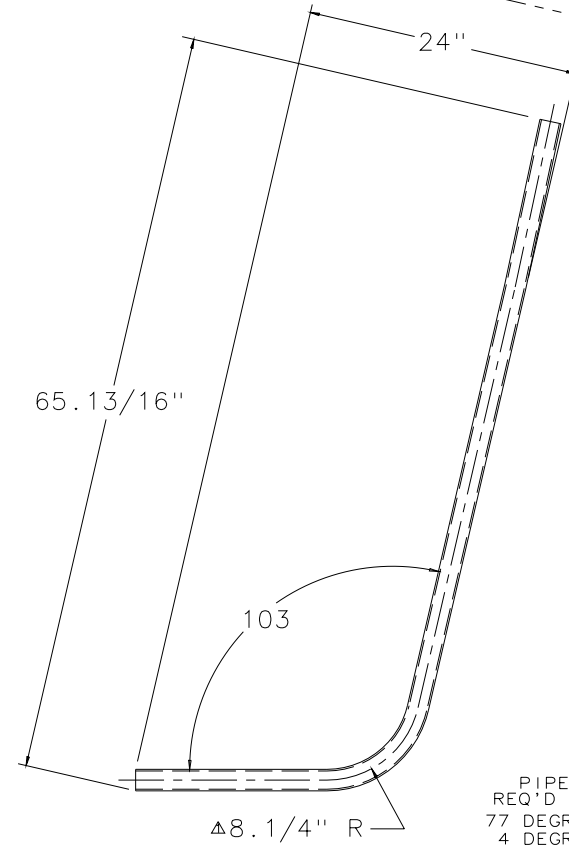
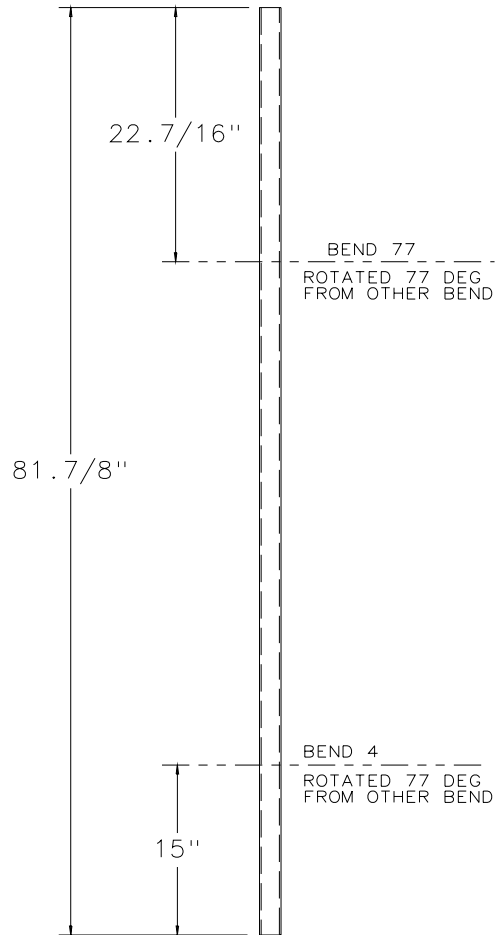
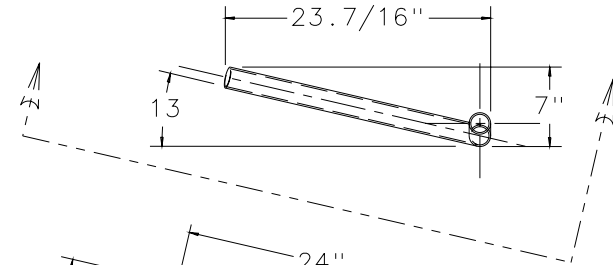
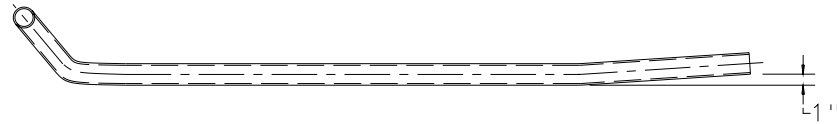
STD. TOLERANCES						DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16						CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				NO.	BY	DATE	APPROVED:	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								PROJECT NO.: 91-2
TITLE: PIPE, VERTICAL						SCALE: 1 = 4	DATE: MAY 5, 1993	DWG. NO. 00-0711B

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PART NUMBER: 00-0719
 MATL: PIPE 1-1/2 BLK STRUCTURAL
 UNS: K03000
 FFES SPEC NO: AF-04024AY
 EST WT: 13.2 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		1 LLP 7/97		APPROVED:		
				NO. BY DATE		REVISION		
RADIUS WAS 6". LENGTH AND BEND LOCATION CHANGED ACCORDINGLY								
FOREST FIRE EXPERIMENT STATION								PROJECT NO.: 91-2
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653								
TITLE: UPPER PIPE						SCALE: 1 = 8	DATE: 15 JUL 93	DWG. NO.: 00-0719B

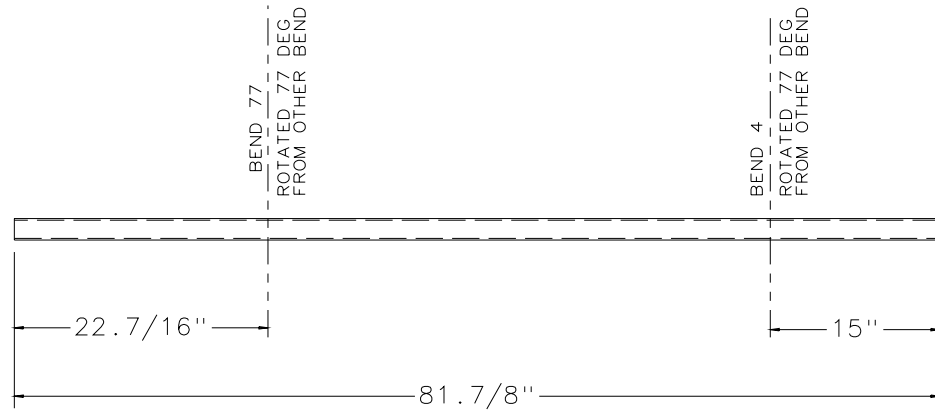
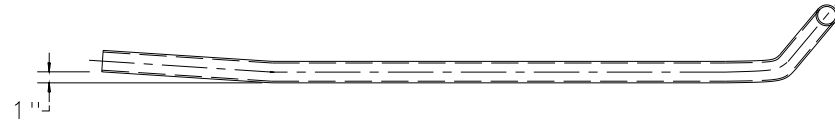
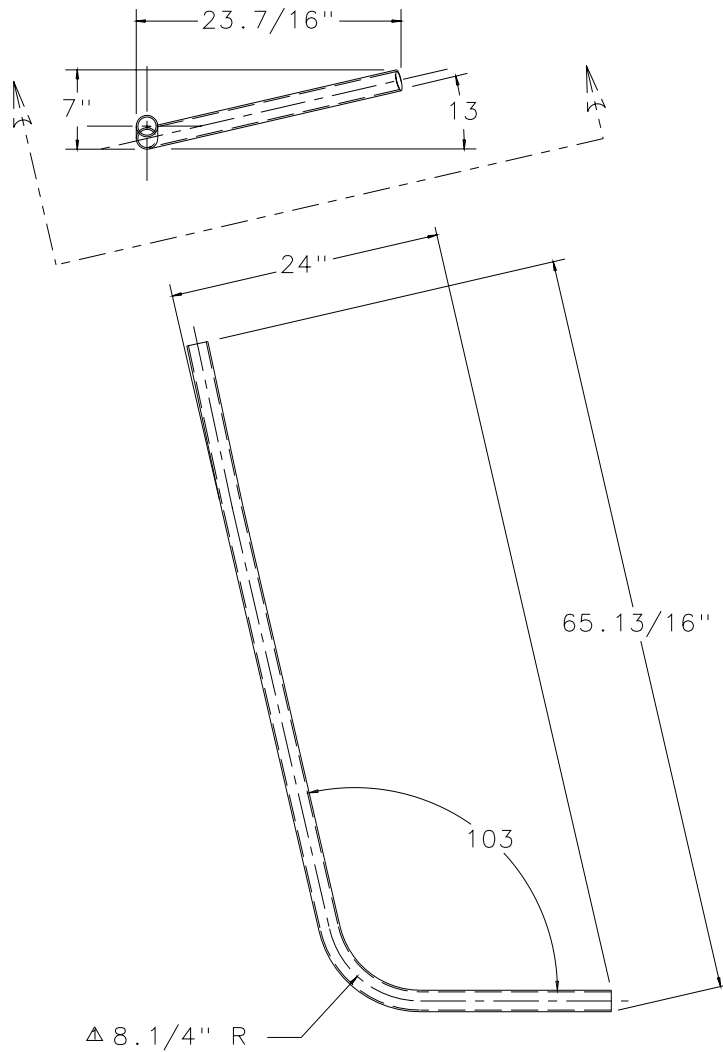


PIPE BENDER STROKE
REQ'D TO PRODUCE BENDS
77 DEGREE BEND -
4 DEGREE BEND -

PART NUMBER: 00-0720
MATL: PIPE 1-1/2" BLK STRUCTURAL
UNS: K03000
FFES SPEC NO: AF-04024AY
EST WT: 18.6 LBS

STD. TOLERANCES				DRAWN:	
FRACTIONAL:				TROY SCOTT	
0 TO 6 IN ± 1/32				CHECKED:	
6 IN AND UP ± 1/16				KDB	
DECIMAL:		ANGULAR:		APPROVED:	
1 PLACE ± 0.1		± 1 DEG		1 LLP 7/97	
2 PLACE ± 0.01				WAS 6" R	
3 PLACE ± 0.005				REVISION	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE: LOWER PIPE RH				SCALE: 1" = 8'	DATE: 15 JULY 93
				PROJECT NO.: 91-2	
				DWG. NO.: 00-0720C	

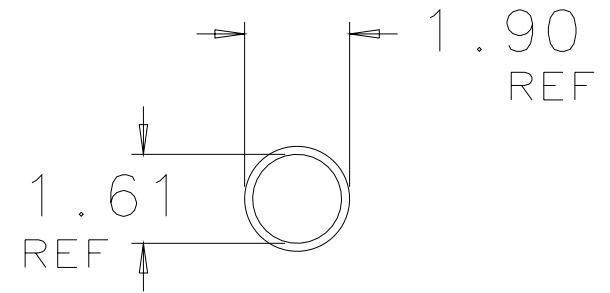
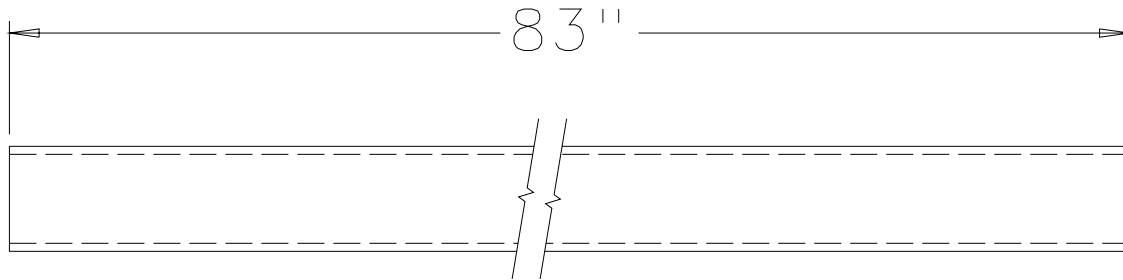
MICHIGAN
DNR
FOREST MANAGEMENT
DIVISION



PIPE BENDER STROKE
REQ'D TO PRODUCE BENDS
77 DEGREE BEND -
4 DEGREE BEND -

PART NUMBER: 00-0721
MATERIAL: PIPE 1-1/2" BLK STRUCTURAL
UNS: K03000
FFES SPEC NO: AF-04024AY
EST WT: 18.6 LBS

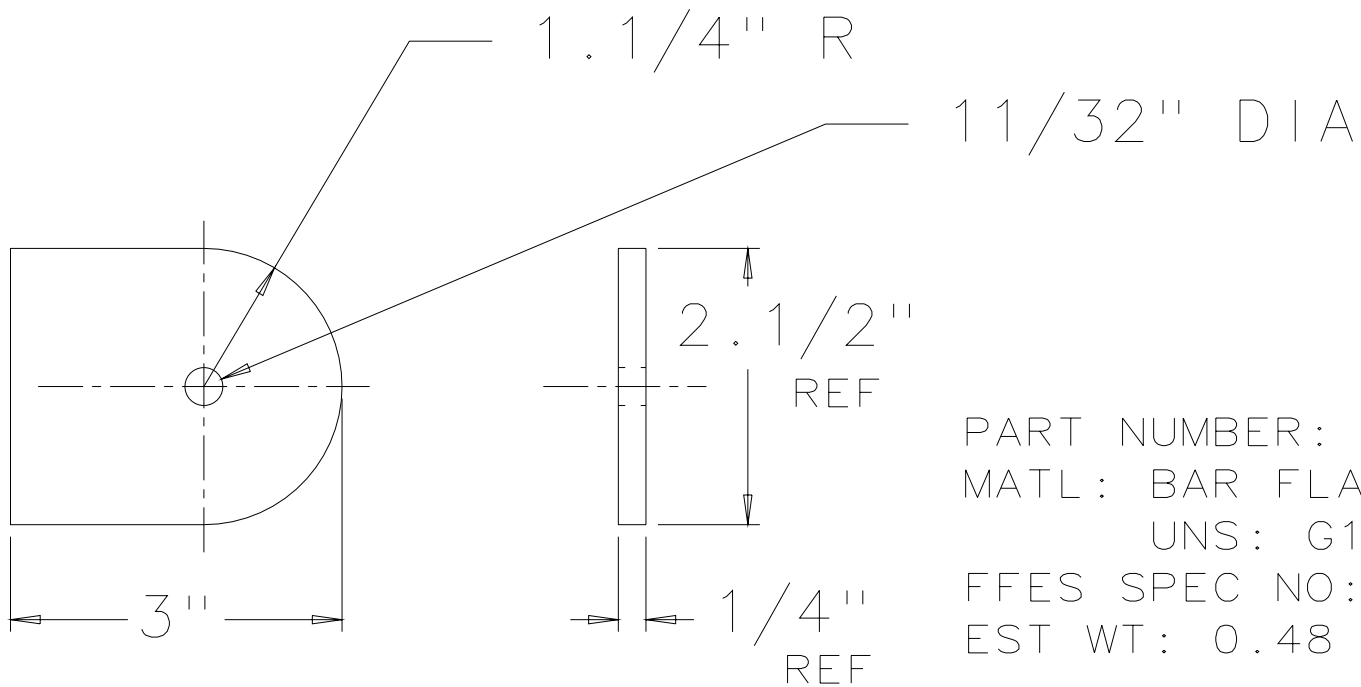
STD. TOLERANCES		DRAWN:		MICHIGAN DNR	
FRACTIONAL: 0 TO 6 IN ± 1/32 6 IN AND UP ± 1/16		TROY SCOTT			
DECIMAL: 1 PLACE ± 0.1 2 PLACE ± 0.01 3 PLACE ± 0.005		CHECKED: KDB			
ANGULAR: ± 1 DEG		APPROVED:		FOREST MANAGEMENT DIVISION	
NO.		BY	DATE	REVISION	PROJECT NO.: 91-2
1		LLP	7/97	WAS 6" R	DWG. NO.: 00-0721C
FOREST FIRE EXPERIMENT STATION					
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					
TITLE:		SCALE:	DATE:		
LOWER PIPE LH		1" = 8"	15 JULY 93		



NOTE:
LENGTH SPECIFIED IS LONGER
THAN REQ'D, CUT TO FIT AT ASSY

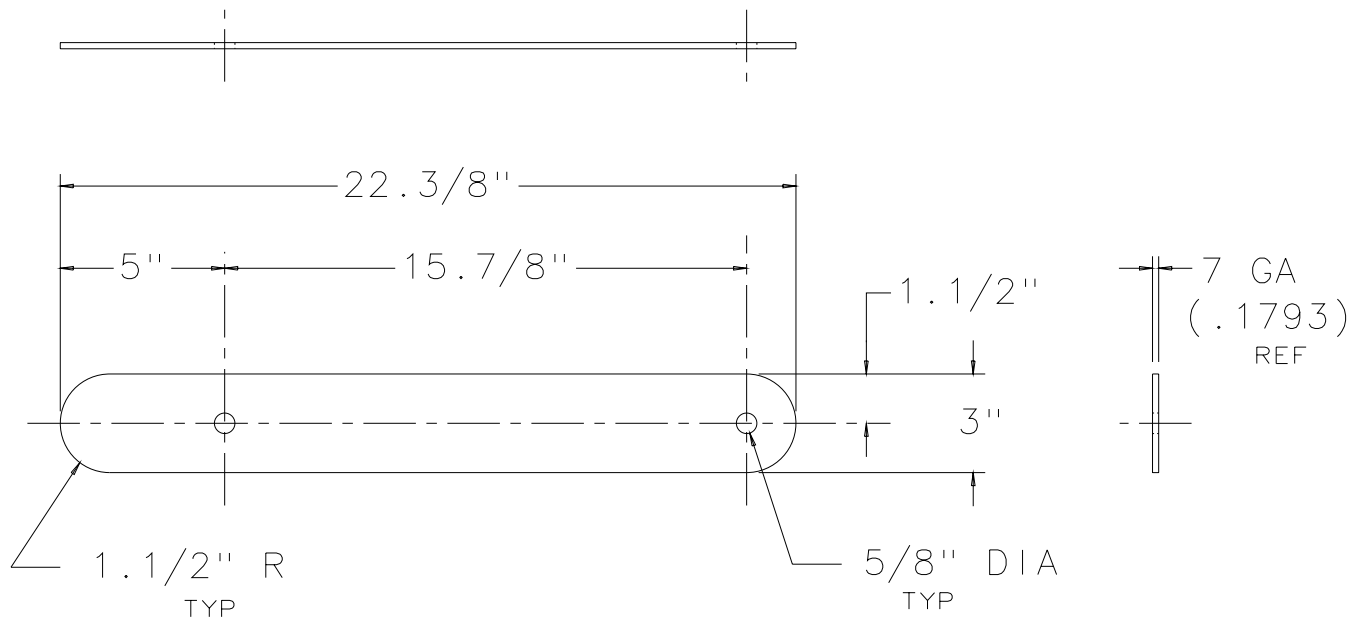
PART NUMBER: 00-0848
 MATL: PIPE 1-1/2 BLK STRUCTURAL
 UNS: K03000
 FFES SPEC NO: AF-04024AE
 EST WT: 18.8 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG		NO.	BY	DATE	REVISION		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: LIMB RISER					SCALE: 1 = 4	DATE: 15 JUL 93	DWG. NO. 00-0848A



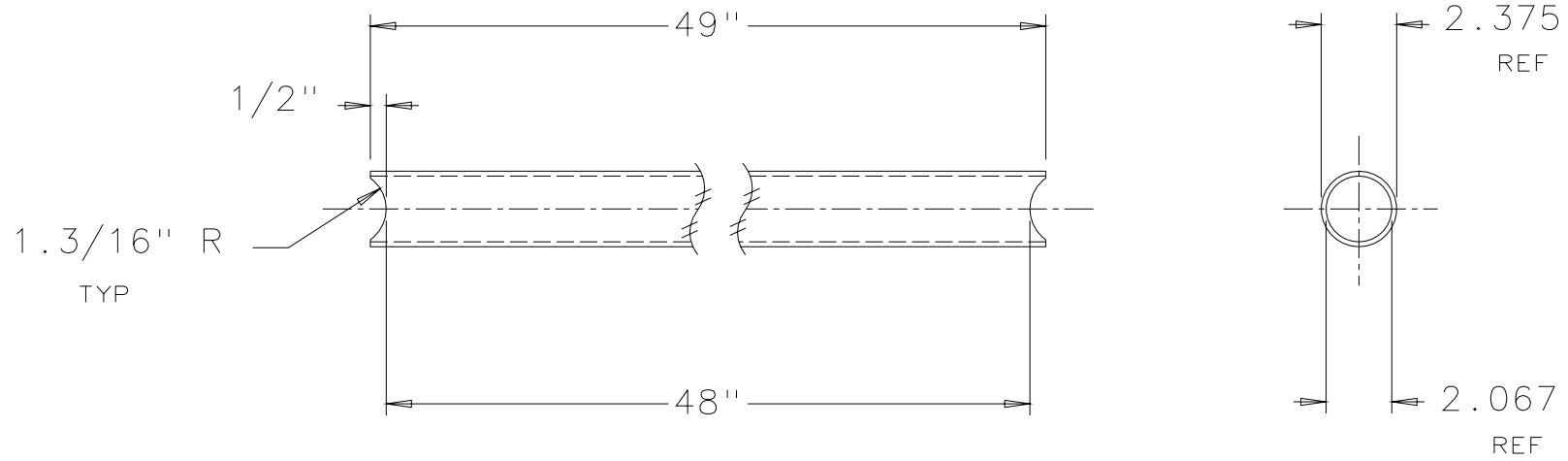
PART NUMBER: 00-0849
 MATL: BAR FLAT 1/4 X 2-1/2 HR
 UNS: G10200
 FFES SPEC NO: AB-00410AA
 EST WT: 0.48 LBS

STD. TOLERANCES						DRAWN: TROY SCOTT	MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16						CHECKED: KDB	
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005						APPROVED:	
ANGULAR: +- 1 DEG	NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							PROJECT NO.: 91-2
TITLE: NOZZLE FIXTURE MOUNT					SCALE: 1 = 2	DATE: 15 JUL 93	DWG. NO. 00-0849A



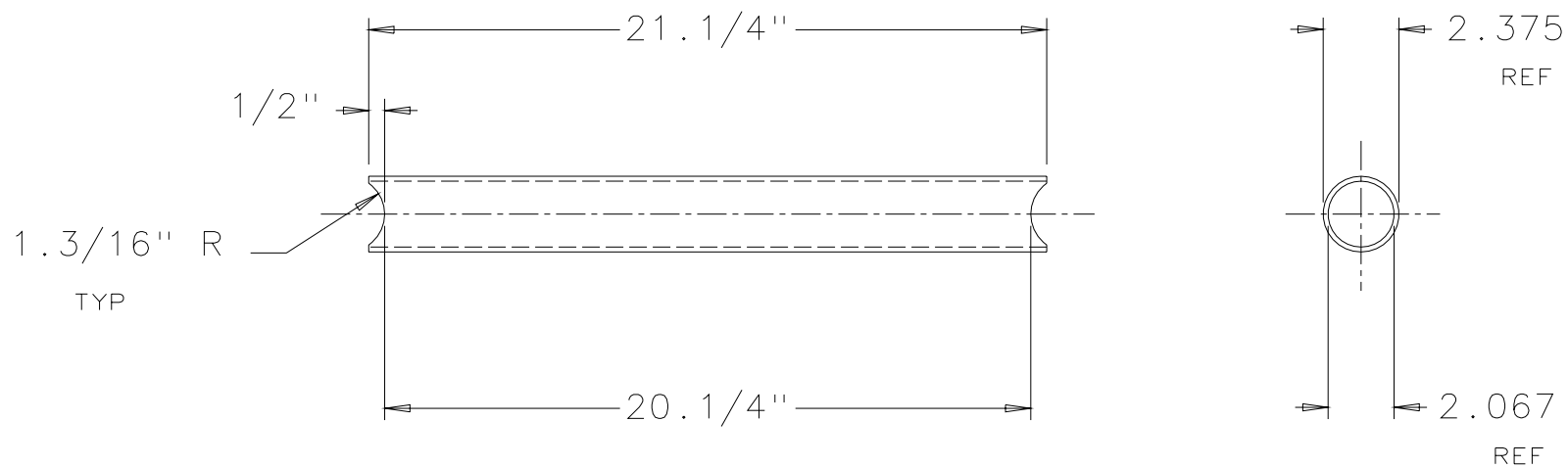
PART NUMBER: 29-0066
 MATL: SHEET 7 GA 4X8 HR P&O
 ASTM A569
 FFES SPEC NO: AA-G0748AP
 EST WT: 3.27 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16				CHECKED: KDB		
DECIMAL: 1 PLACE + - 0.1 2 PLACE + - 0.01 3 PLACE + - 0.005		ANGULAR: + - 1 DEG		APPROVED:		
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: SPACER				SCALE: 1 = 2	DATE: 15 SEP 93	PROJECT NO.: 91-2 DWG. NO. 29-0066B



PART NUMBER: 00-0712
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 14.8 LBS

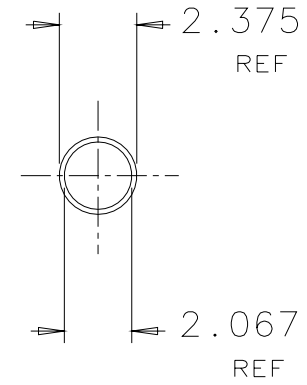
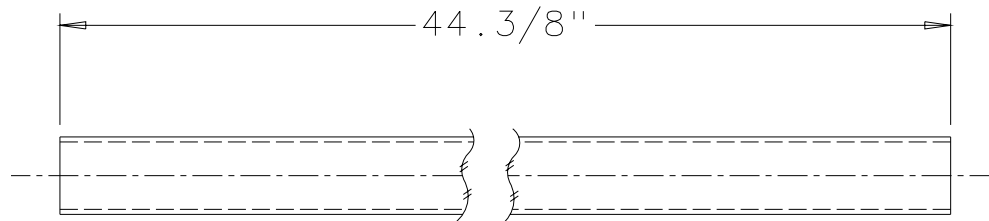
STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN ++1/32 6 IN AND UP ++1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				ANGULAR: +- 1 DEG		
NO.	BY	DATE	REVISION			APPROVED:
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						PROJECT NO.: 91-2
TITLE: PIPE, CROSS				SCALE: 1 = 4	DATE: MAY 5, 1993	DWG. NO. 00-0712B



PART NUMBER: 00-0713
 MAT'L: PIPE 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 6.31 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: Ø TO 6 IN. +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG						
NO.	BY	DATE	REVISION			
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: PIPE, VERTICAL				SCALE: 1 = 4	DATE: MAY 5, 1993	DWG. NO. 00-0713B
						PROJECT NO.: 91-2

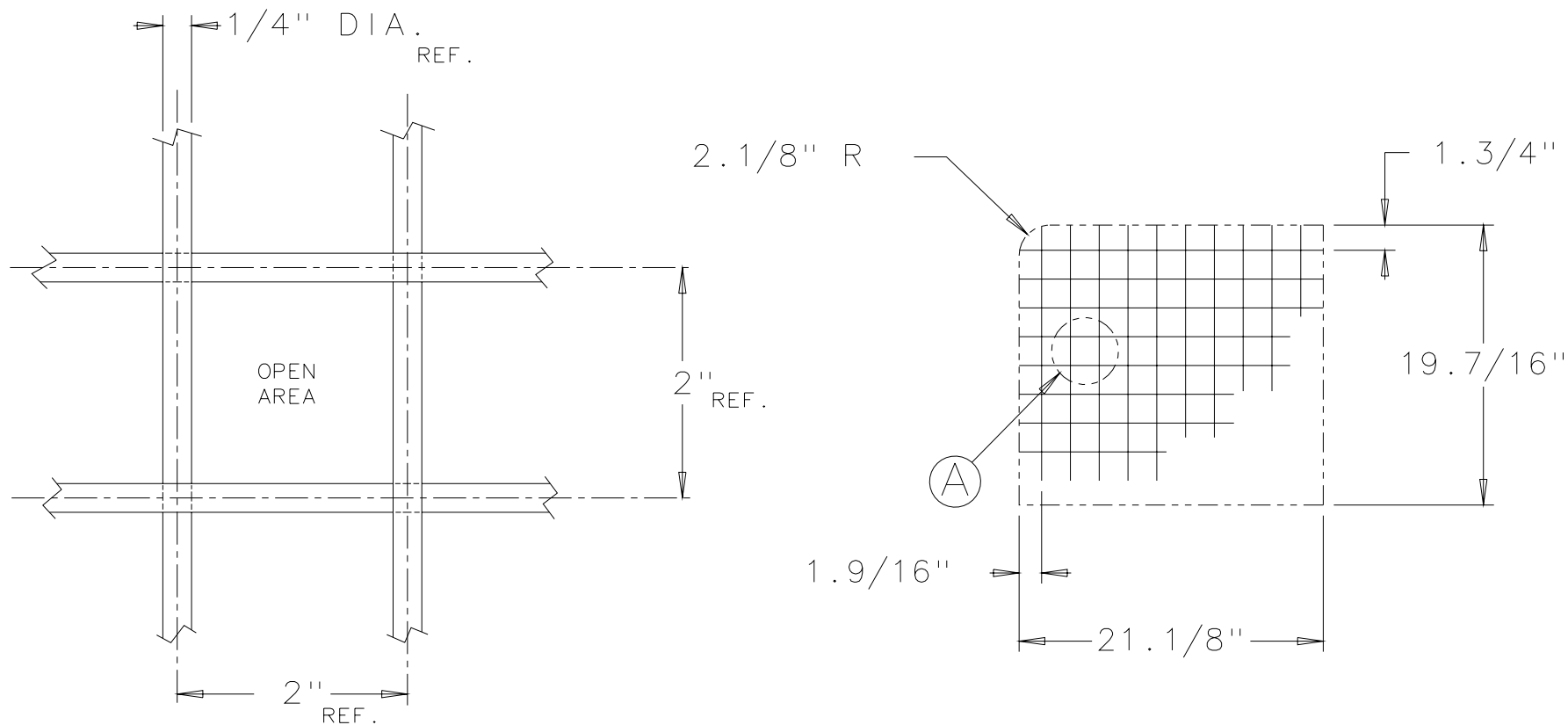
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PART NUMBER: 00-0714
 MAT'L: PIPE, 2" NOM BLACK STRUCTURAL
 UNS K03000
 FFES SPEC NO: AF-04032AY
 EST WT: 13.5 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: Ø TO 6 IN ++1/32 6 IN AND UP ++1/16				CHECKED: KDB		
DECIMAL: ANGULAR: 1 PLACE +- 0.1 +- 1 DEG 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
NO.	BY	DATE	REVISION			PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0714B
TITLE: PIPE, CROSS				SCALE: 1 = 4	DATE: MAY 5, 1993	

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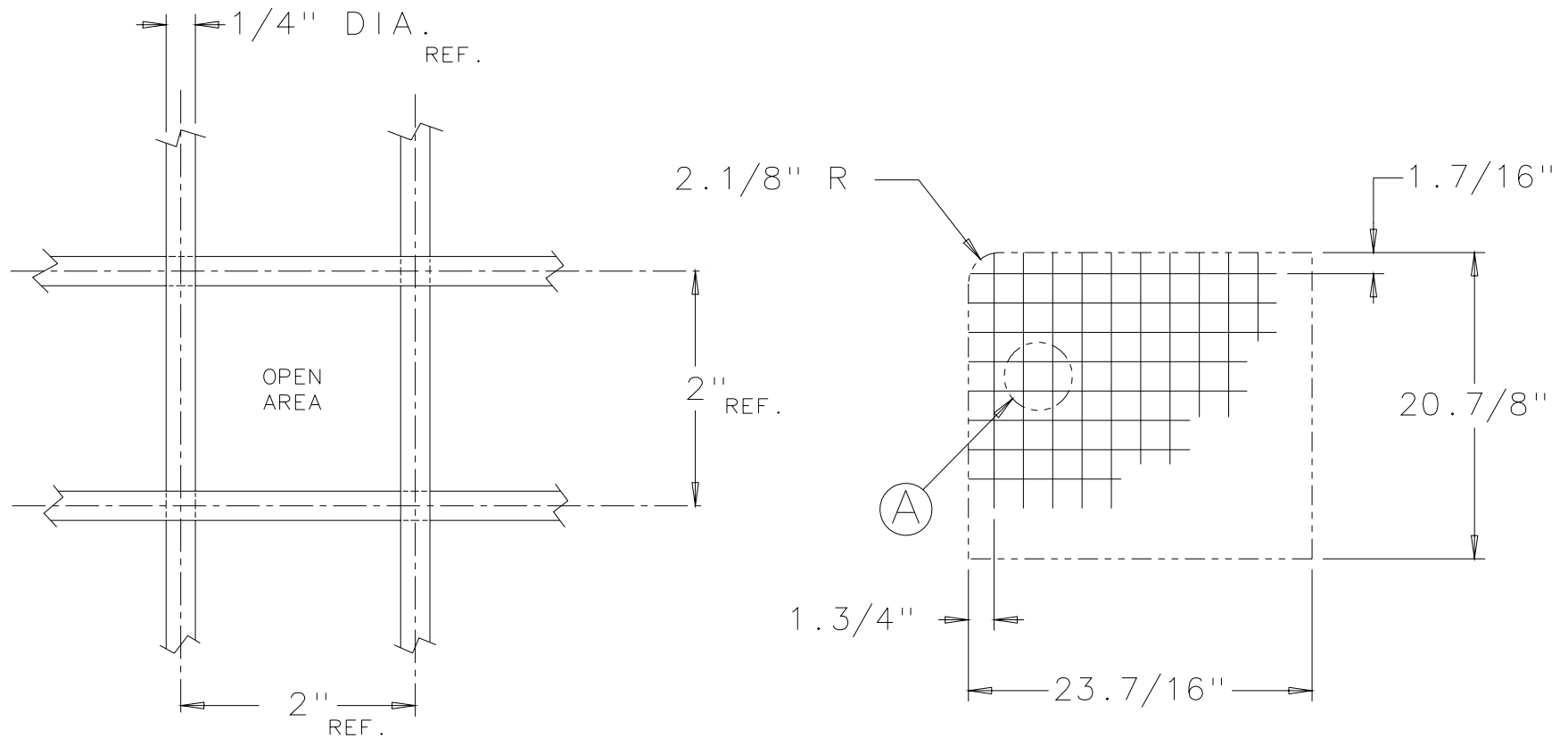


DETAIL "A"

SCALE: FULL

PART NUMBER: 00-0715
 MAT'L: CLOTH, WIRE 1/4" DIA. WIRE
 1 3/4" SQUARE OPENING, STEEL
 UNS G10200
 FFES SPEC NO: AR-32858AA
 EST WT: 4.27 LBS

STD. TOLERANCES				DRAWN: TROY SCOTT		MICHIGAN DNR FOREST MANAGEMENT DIVISION
FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16				CHECKED: KDB		
DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005				APPROVED:		
ANGULAR: +- 1 DEG				NO. BY DATE		PROJECT NO.: 91-2
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 00-0715B
TITLE: SIDE PANEL				SCALE: 1 = 8	DATE: MAY 5, 1993	



DETAIL "A"

SCALE: FULL

PART NUMBER: 00-0716
 MAT'L: CLOTH, WIRE 1/4" DIA WIRE
 1.3/4" SQUARE OPENING, STEEL
 UNS G10200
 FFES SPEC NO: AR-33248AA
 EST WT: 5.05 LBS

STD. TOLERANCES FRACTIONAL: 0 TO 6 IN +-1/32 6 IN AND UP +-1/16 DECIMAL: 1 PLACE +- 0.1 2 PLACE +- 0.01 3 PLACE +- 0.005 ANGULAR: +- 1 DEG				DRAWN: TROY SCOTT CHECKED: KDB APPROVED:		MICHIGAN DNR FOREST MANAGEMENT DIVISION
NO. BY DATE		REVISION		PROJECT NO.: 91-2		
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						
TITLE: CENTER PANEL				SCALE: 1 = 8	DATE: MAY 5, 1993	DWG. NO. 00-0716B

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ROSCOMMON EQUIPMENT CENTER

**Project Number 63
6x6 Wildland Fire Engines**

April 2007

Design Packet 63G-1

Adding a 12-Volt Alternator to a Cummins Engine Powered (M809 Series) 6x6

Adding a 12-Volt Alternator to a Cummins Engine Powered (M809 Series) 6x6

Introduction

Military 6x6 vehicles have 24-volt electric systems. Agencies converting these trucks to fire engines need to have 12 volts available to power radios, hose reel rewind motors, auxiliary pump engine starters, and other common automotive accessories. Over the years, REC has suggested several ways to accomplish this for the multi-fuel and gasoline powered 6x6 vehicles. One popular method is to keep the 24-volt system for powering the existing vehicle

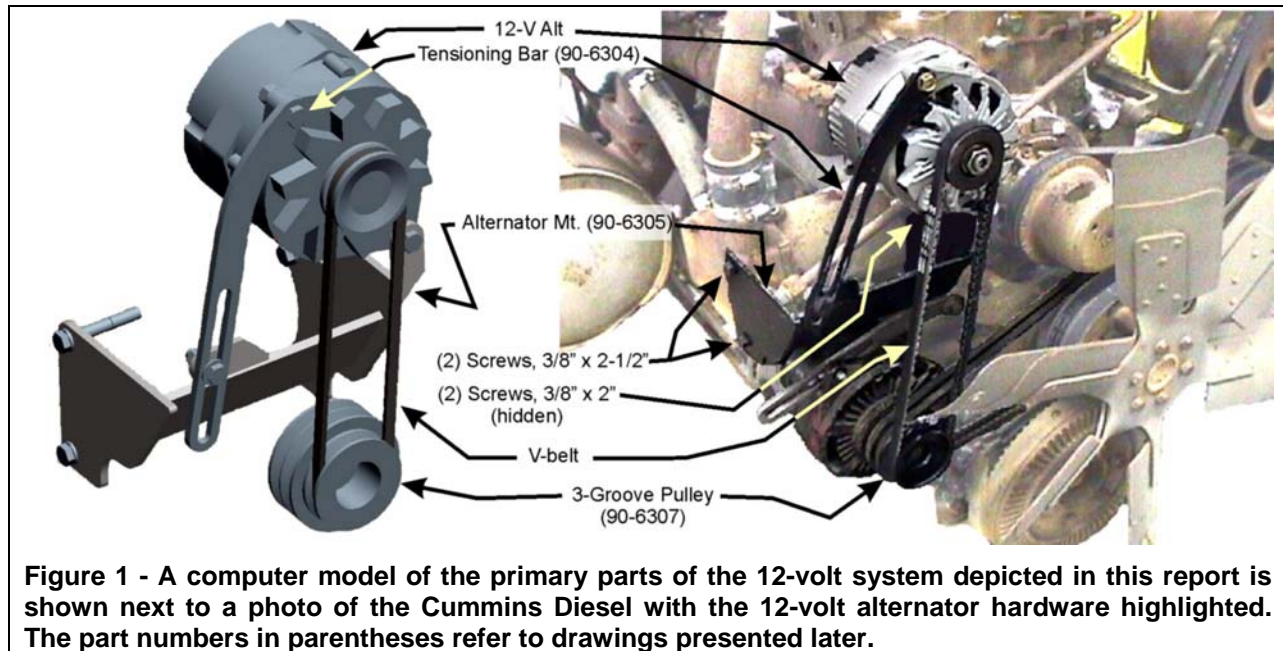
needs and add a separate 12-volt system for any new electric powered components. In this document, REC provides details for utilizing this method for a 5-ton 6x6 vehicle with a Cummins diesel engine. It shows how to mount and drive the 12-volt alternator. Download REC Newsnote 9 from www.RoscommonEquipmentCenter.com to correctly wire the system after the alternator is mounted.

Parts Fabrication

Figure 1 shows the important fabricated and purchased parts of this system. Two major parts need to be made to mount and drive the 12-volt alternator. A 3-groove pulley is machined to replace the one mounted on the engine's existing 24-volt alternator. This pulley, shown in drawing 90-6307, adds an additional belt groove for driving a 12-volt alternator.

The alternator bracket (90-6305) is fabricated to mount the 12-volt alternator. It is mounted using four

existing holes; two found in the engine block and two at the outside of the water-cooling jacket. Note that the alternator bracket has bosses welded at the two mounting holes that correspond with the holes in the engine block. These bosses provide clearance between the bracket and mating engine components. The length of the bosses can be adjusted to compensate for variations in the water jacket casting or to provide clearance for the fillets of the casting.



Parts Purchased

The system utilizes the Delco 27SI, 100-amp alternator, a widely available 12-volt alternator that produces relatively high amperage even when the engine is idling. However, the system can be adapted to accommodate most passenger car or light truck alternators with "V" belt drive. The tension arm, NSN 5340-00-009-0016 shown in the assembly drawing 90-6308, can be purchased through GSA sources for a few dollars. Drawing 90-6304 shows the dimensions, should you prefer to

fabricate it or cannot purchase through GSA. All the belts are 3/8-inch V-belts. The drive belt for the 12-volt alternator is a Gates XL 7365 or equivalent.

The additional thickness of the 12-volt alternator bracket requires longer mounting screws than the originals. A capscrew, lock washer, and nut are needed to attach the alternator to the bracket. These fasteners are specified on the assembly drawing, *Alt and Mount Assembly* (90-6308).

Assembly

- Remove the pulley from the 24-volt alternator and replace it with the newly machined 3-groove pulley (90-6307).
- Remove the four-3/8-inch screws from the water jacket casting in the

area shown in Figure 1 and mount the fabricated alternator bracket (90-6305). Grind the bracket bosses to provide clearance with the fillets of the engine block casting or cooling jacket surface if necessary. Use

longer screws to mount the bracket to the holes. The 3/8-16UN x 2" long, hex head cap screws are used "inside" or closest to the engine block. The 3/8-16UN x 2-1/2" long screws are used on the "outside" and thread into the cooling jacket housing.

- Mount the 12-volt alternator to the bracket at the swivel point. Check to see if the 12-volt alternator's drive pulley is in line with the drive pulley added to the 24-volt alternator.

Misalignment will cause increased wear to the v-belt, shortening its life or causing it to fail at an inopportune time. You may need to make adjustments to the

alternator bracket if the alignment is poor.

- Add the tensioning bar between the 12-volt alternator and its mounting bracket. Adjust the tension for the belts of both the new alternator and the 24-volt alternator. Remember to check the belt tension regularly and look for belt wear.
- Install the electric wiring and distribution fuse center for the 12-volt system. The 12-volt alternator requires an outside electric source to excite its electric field. REC Newsnote 9 illustrates how to wire this type of system.

Drawing List

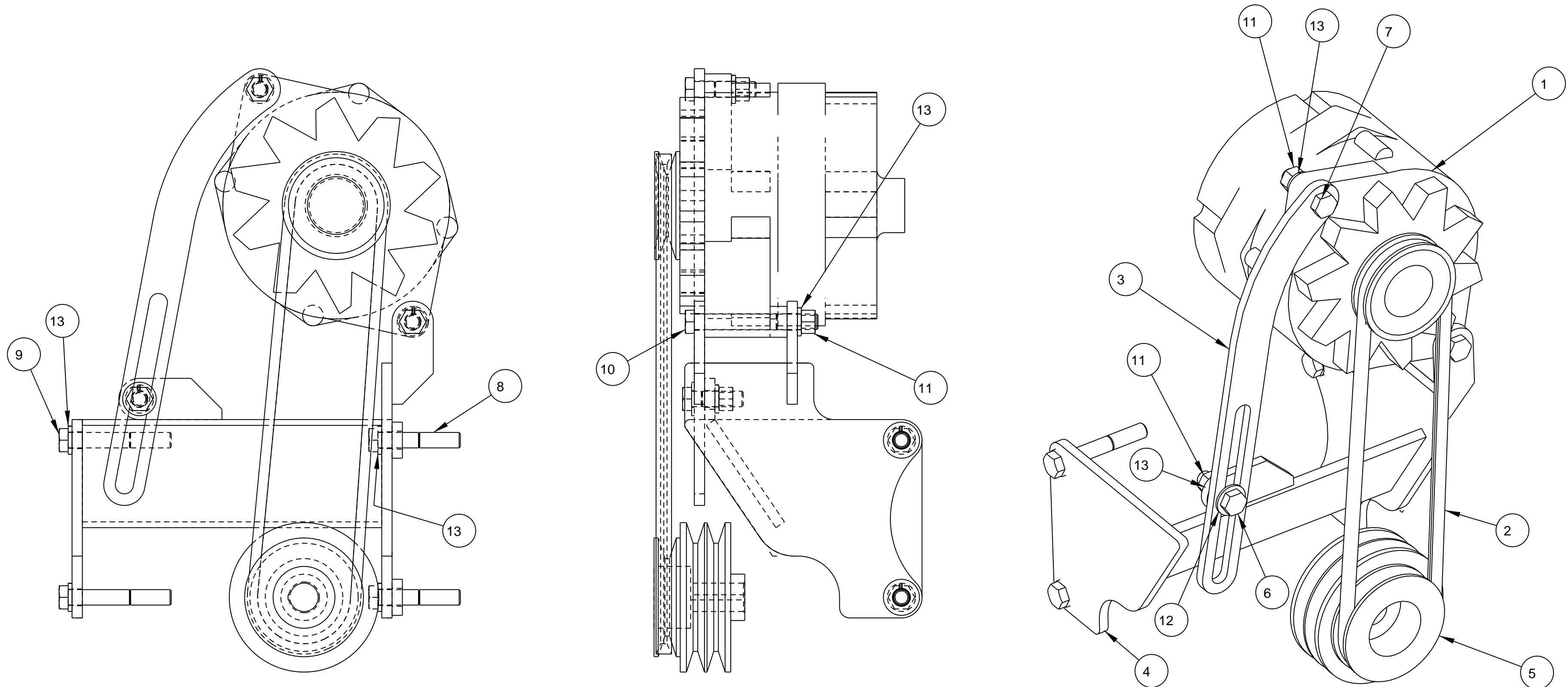
Drawing Number	Drawing Name
90-6308C	Alt and Mount Assembly
90-6300A	Bar Spreader
90-6301A	Mount Tab
90-6302A	Plate LH Mount
90-6303B	Plate RH Mount
90-6304A	Tensioner NSN11642060
90-6305C	Alternator Mount Weld
90-6306A	Spacer
90-6307B	Sheave, 3 Groove

Disclaimer

This report has been developed for the guidance of member states, provinces, federal agencies and their cooperators. The National Association of State Foresters and the State of Michigan assume no responsibility for the interpretation or use of this information. The use of trade, firm or corporation names is for the information and convenience of the user. Such use does not constitute an official evaluation, conclusion, recommendation, endorsement or approval of any product or service to the exclusion of others, which may be suitable.

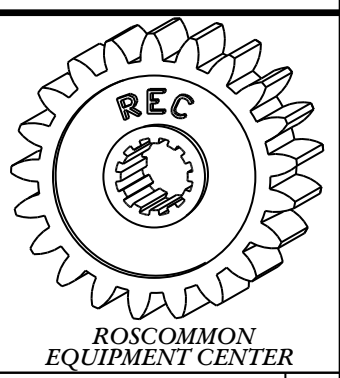
Acknowledgements: Thank you to Jim Burk and his staff at the South Dakota Wildfire Suppression Equipment Shop for sharing their concept with REC..

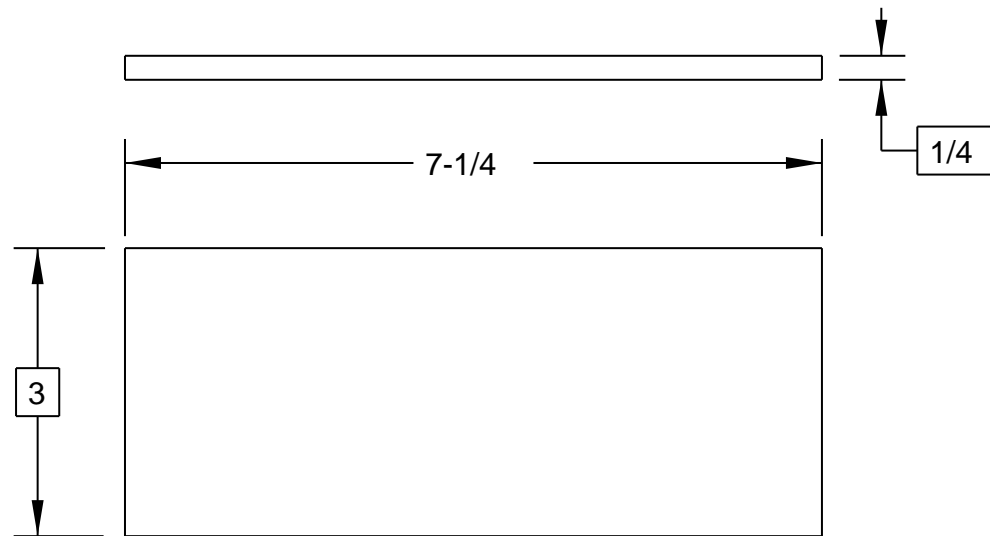
ITEM	PART NO.	DWG	DESCRIPTION	QTY
1	28-9005		ALTERNATOR 12VDC 100A	1
2			3/8" V-BELT NSN: 3030-01-005-3750	1
3	90-6304	A	TENSIONER NSN11642060	1
4	90-6305	C	ALTERNATOR MOUNT WELD	1
5	90-6307	B	SHEAVE, 3 GROVE	1
6	TS-06GG10		SCREW, HEX HEAD CAP 3/8-16UN X 1 1/4 GR 5 PLTD	1
7	TS-06GG12		SCREW, HEX HEAD CAP 3/8-16UN X 1 1/2 GR 5 PLTD	1
8	TS-06GG16		SCREW, HEX HEAD CAP 3/8-16UN X 2 GR 5 PLTD	2
9	TS-06GG20		SCREW, HEX HEAD CAP 3/8-16UN X 2 1/2 GR 5 PLTD	2
10	TS-06GG24		SCREW, HEX HEAD CAP 3/8-16UN X 3 GR 5 PLTD	1
11	TS-06GP		NUT, HEX 3/8-16UN GRADE 5 PLATED	3
12	WS06-BB		WASHER, FLAT 3/8, SAE PLATED	1
13	WS06-BC		WASHER, LOCK 3/8, SPRING TYPE, REG PLTD	7



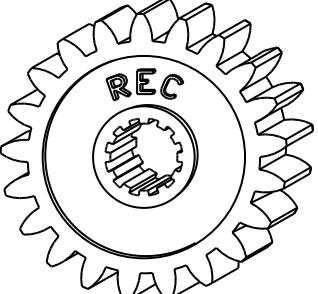
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EST WT: 21.08 LBS

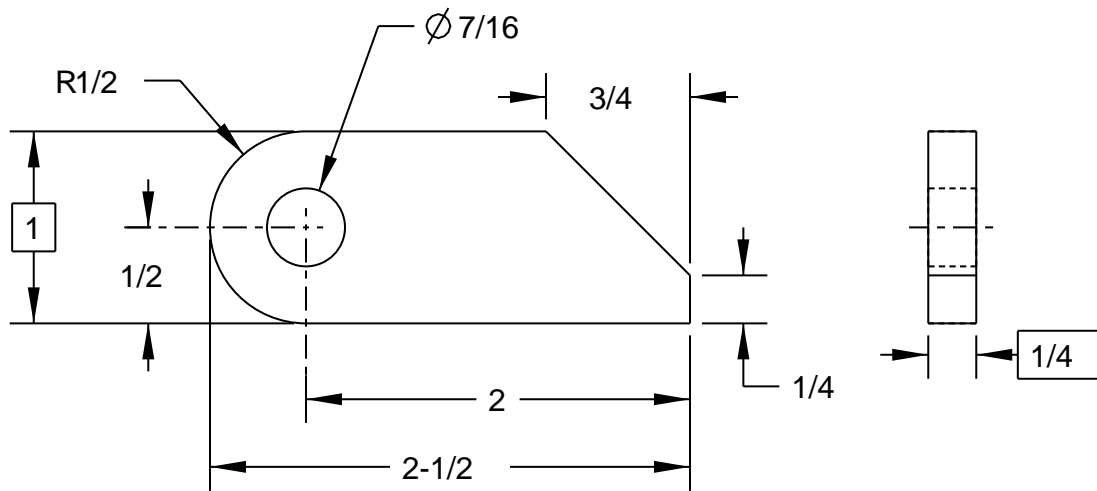
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DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DATE: 26-Sep-2006
PROJECT NO.: 63G	TITLE: ALT AND MOUNT ASSEMBLY				SCALE: 1/2
					DWG. NO. 90-6308
					SIZE: C



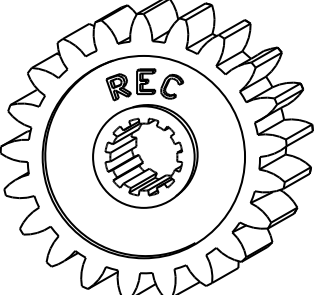


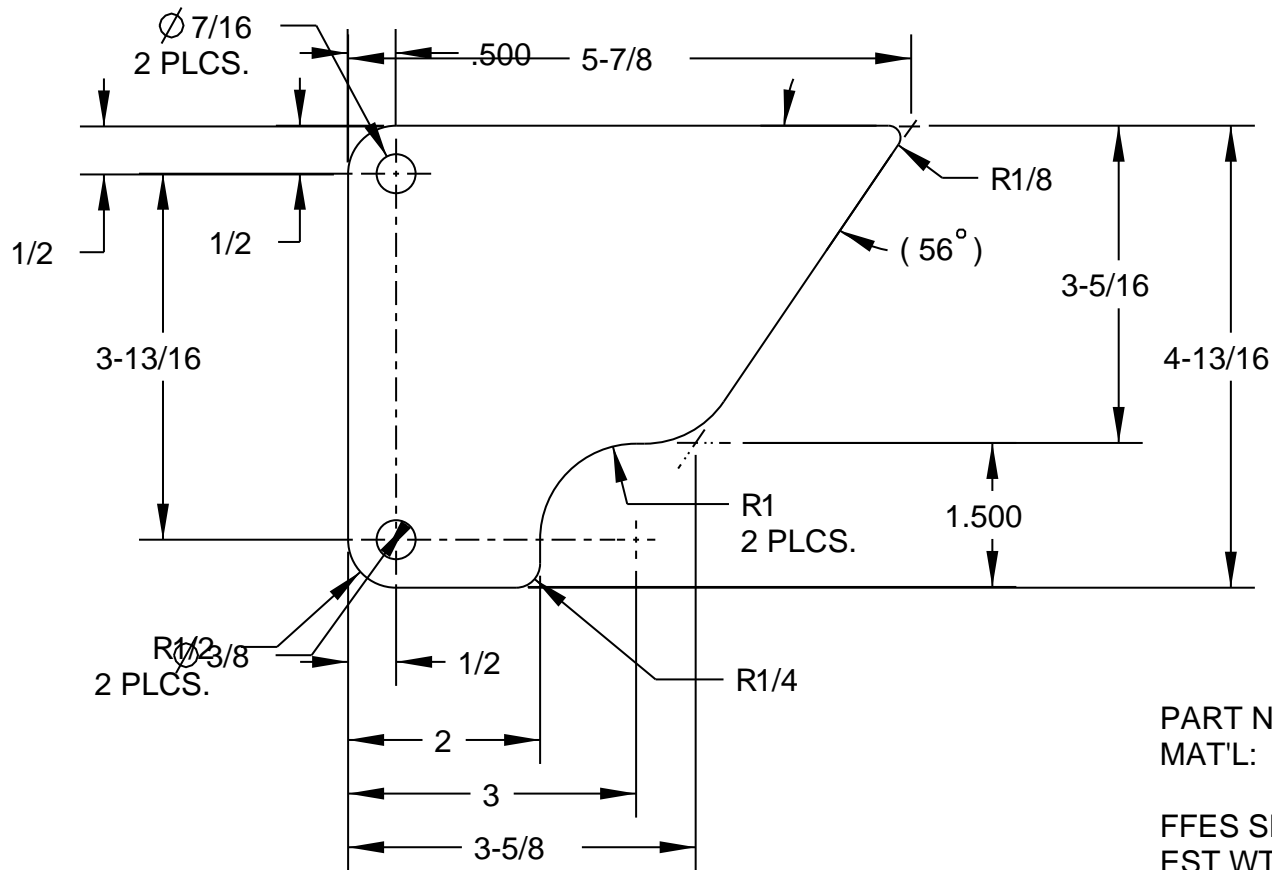
PART NO: 90-6300
 MAT'L: BAR, FLAT 1/4 X 3 HR
 G10200
 FFES SPEC NO: AB-00412AA
 EST WT: 1.54 LBS

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FRACTIONAL 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						DESIGNED: DCM	
ANGULAR: + - 1 DEG.						APPROVED: KDB	
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 22-Sep-2006	
	NO.	BY	DATE	REVISION		SCALE: 1/2	DWG. NO. 90-6300
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
PROJECT NO.: 63G	TITLE: BAR SPREADER						



PART NO: 90-6301
 MAT'L: BAR, FLAT 1/4 X 1 HR
 G10200
 FFES SPEC NO: AB-00404AA
 EST WT: 0.14 LBS

STD. TOL.						DRAWN: DCM	 ROSCOMMON EQUIPMENT CENTER	
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ANGULAR: + - 1 DEG.						APPROVED: KDB		
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 22-Sep-2006		
PROJECT NO.: 63G	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						SCALE: FULL	
TITLE: MOUNT TAB							DWG. NO. 90-6301	SIZE: A



PART NO: 90-6302
 MAT'L: BAR, FLAT 1/4 X 5 HR
 G10200
 FFES SPEC NO: AB-00420AA
 EST WT: 1.31 LBS

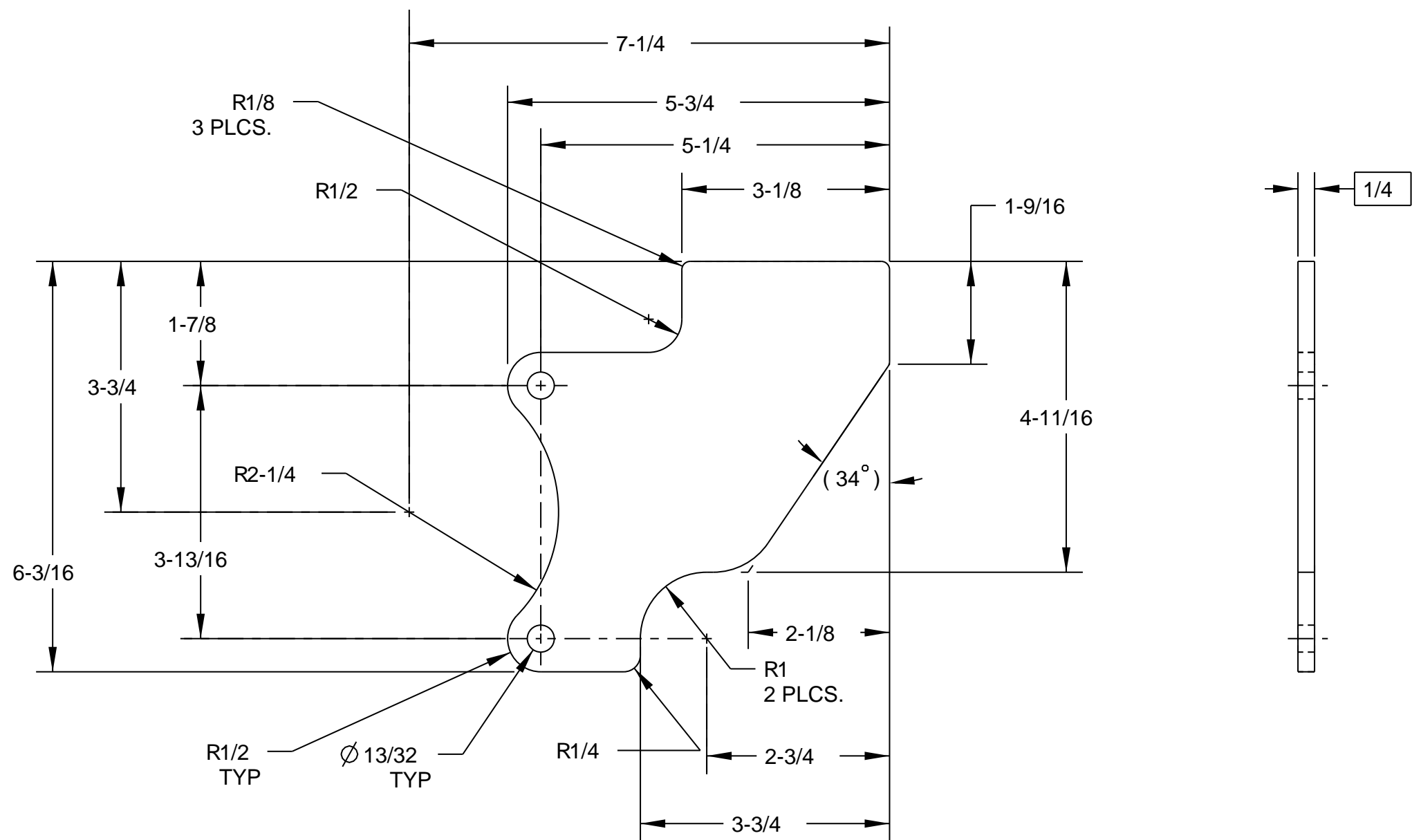
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DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 22-Sep-2006	
						SCALE: 1/2	
PROJECT NO.: 63G	TITLE: PLATE LH MOUNT					DWG. NO. 90-6302	SIZE: A

FOREST FIRE EXPERIMENT STATION

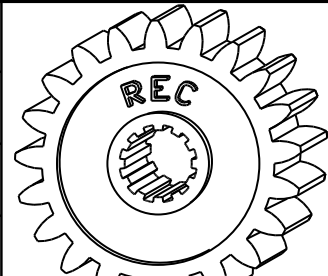
P.O. BOX 68 ROSCOMMON, MICHIGAN 48653

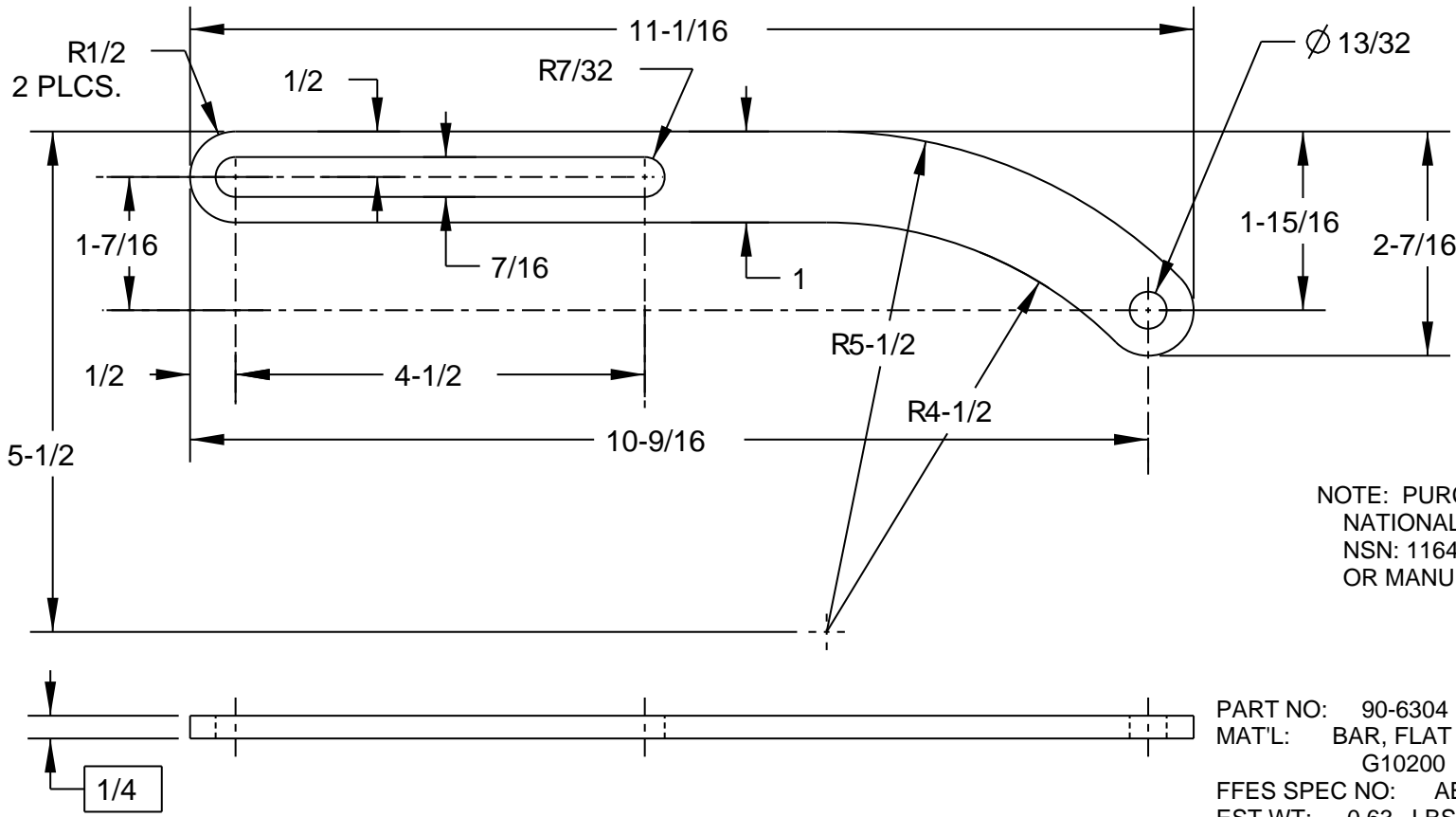
NO. BY DATE

REVISION



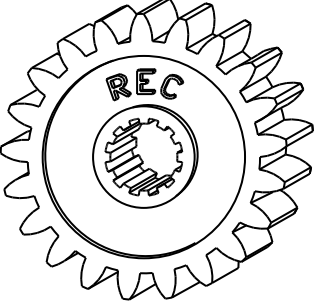
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 MAT'L: BAR, FLAT 1/4 X 7 HR
 G10200
 FFES SPEC NO: AB-00428AA
 EST WT: 1.49 LBS

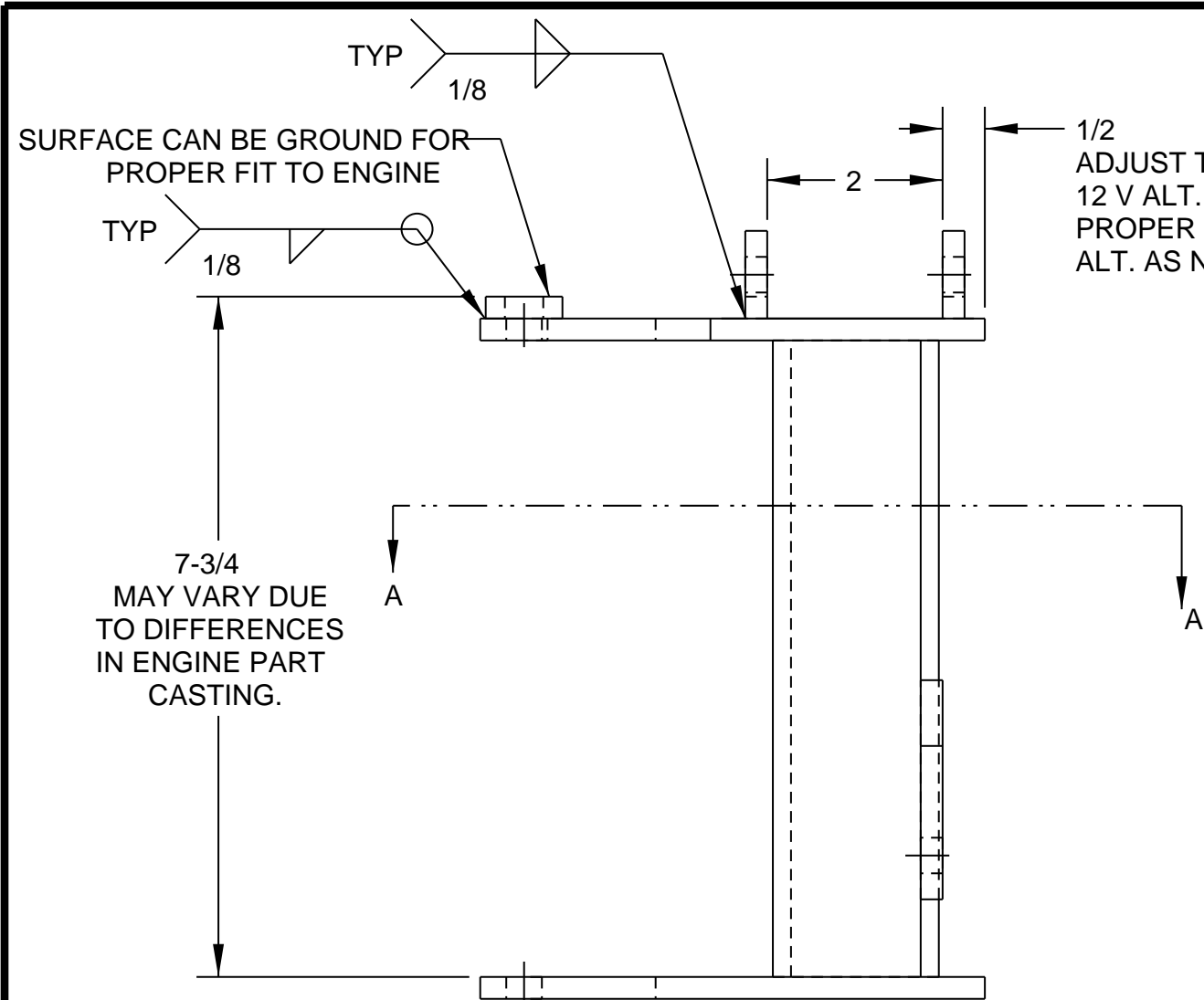
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FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						DESIGNED: DCM	
ANGULAR: + - 1 DEG.						APPROVED: KDB	
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 22-Sep-2006	
PROJECT NO.: 63G						SCALE: 1/2	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653							
TITLE: PLATE RH MOUNT						DWG. NO.: 90-6303	SIZE: B



NOTE: PURCHASE PART USING
NATIONAL STOCK NO.
NSN: 11642060
OR MANUFACTURE PART

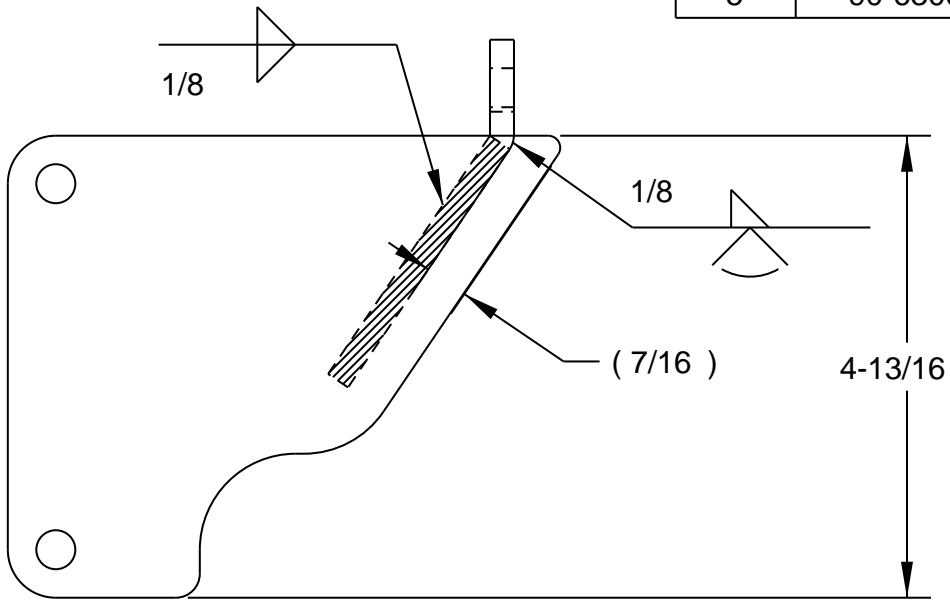
PART NO: 90-6304
MAT'L: BAR, FLAT 1/4 X 2-1/2 HR
G10200
FFES SPEC NO: AB-00410AA
EST WT: 0.63 LBS

STD. TOL.						DRAWN: DCM	 <p>ROSCOMMON EQUIPMENT CENTER</p>
FRACTIONAL 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						DESIGNED: DCM	
ANGULAR: + - 1 DEG.						APPROVED: KDB	
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 22-Sep-2006	
PROJECT NO.: 63G						SCALE: 1/2	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO. 90-6304	SIZE: A
TITLE: TENSIONER NSN11642060							



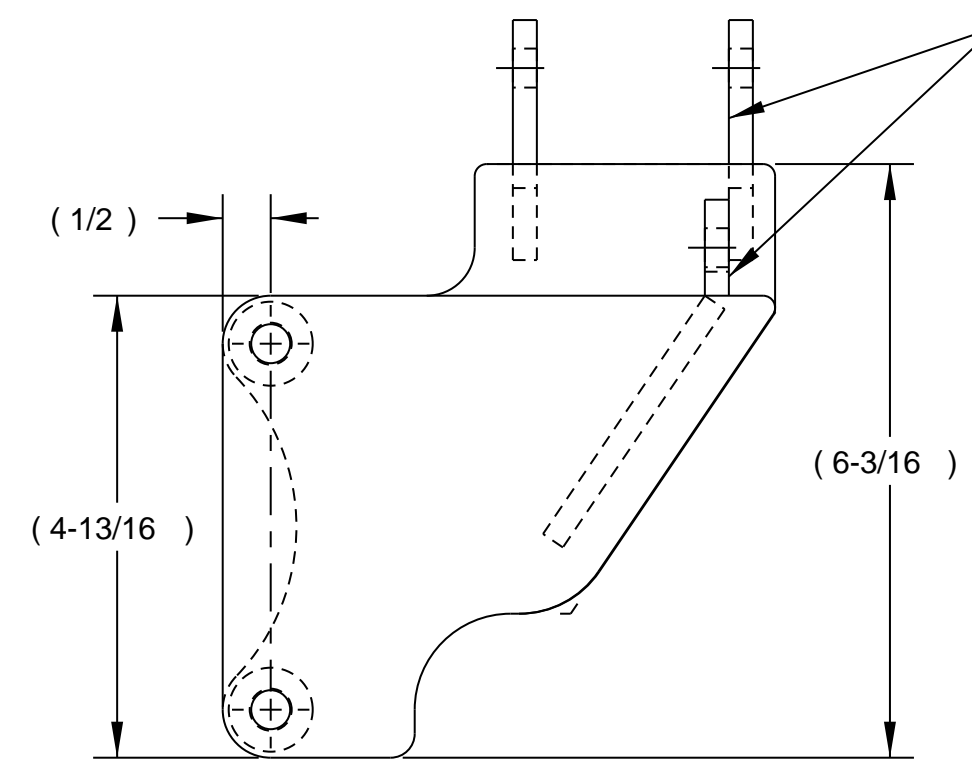
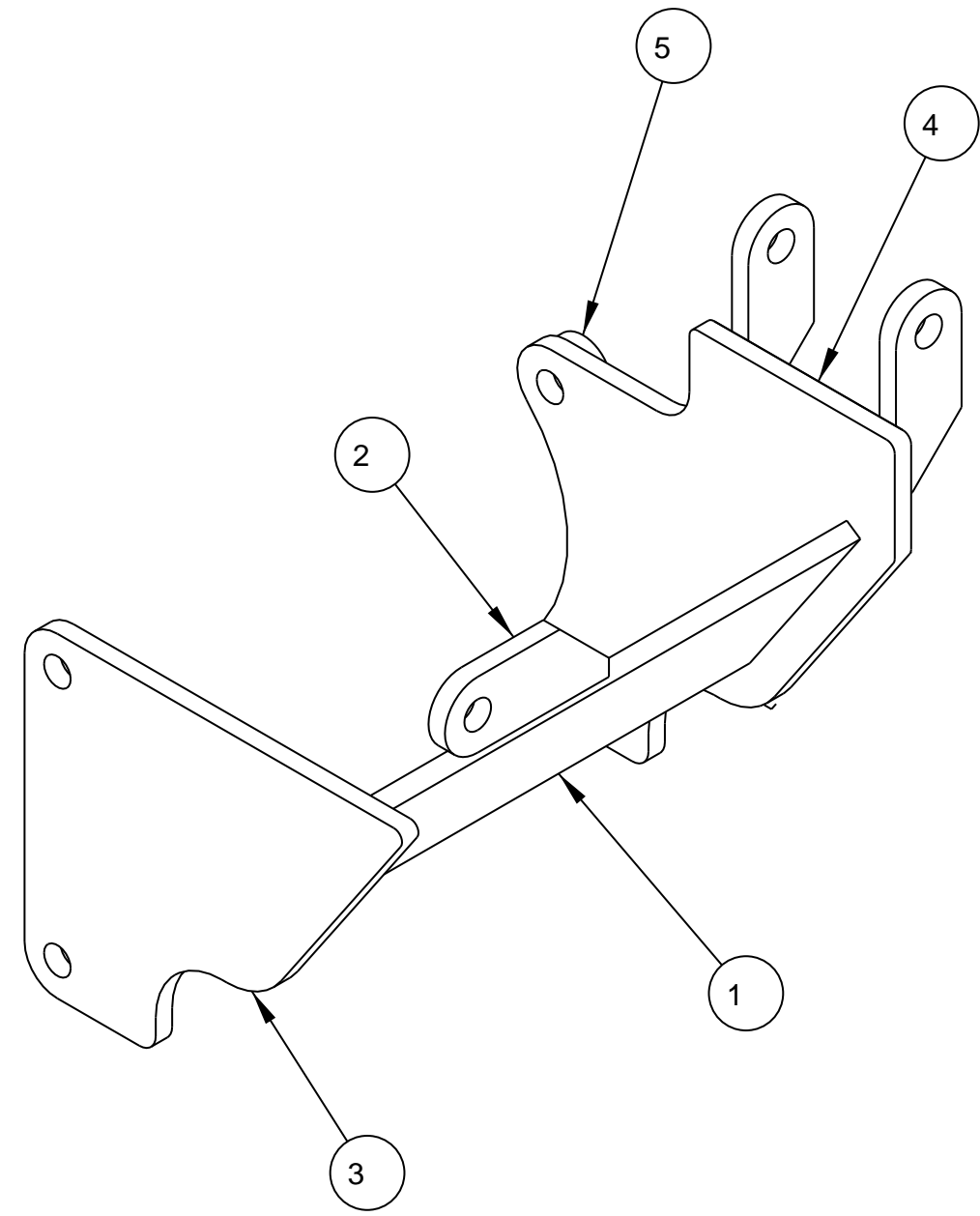
1/2
ADJUST TO ALIGN THE
12 V ALT. PULLEY TO THE
PROPER GROOVE ON 24 V
ALT. AS NEEDED.

7-3/4
MAY VARY DUE
TO DIFFERENCES
IN ENGINE PART
CASTING.

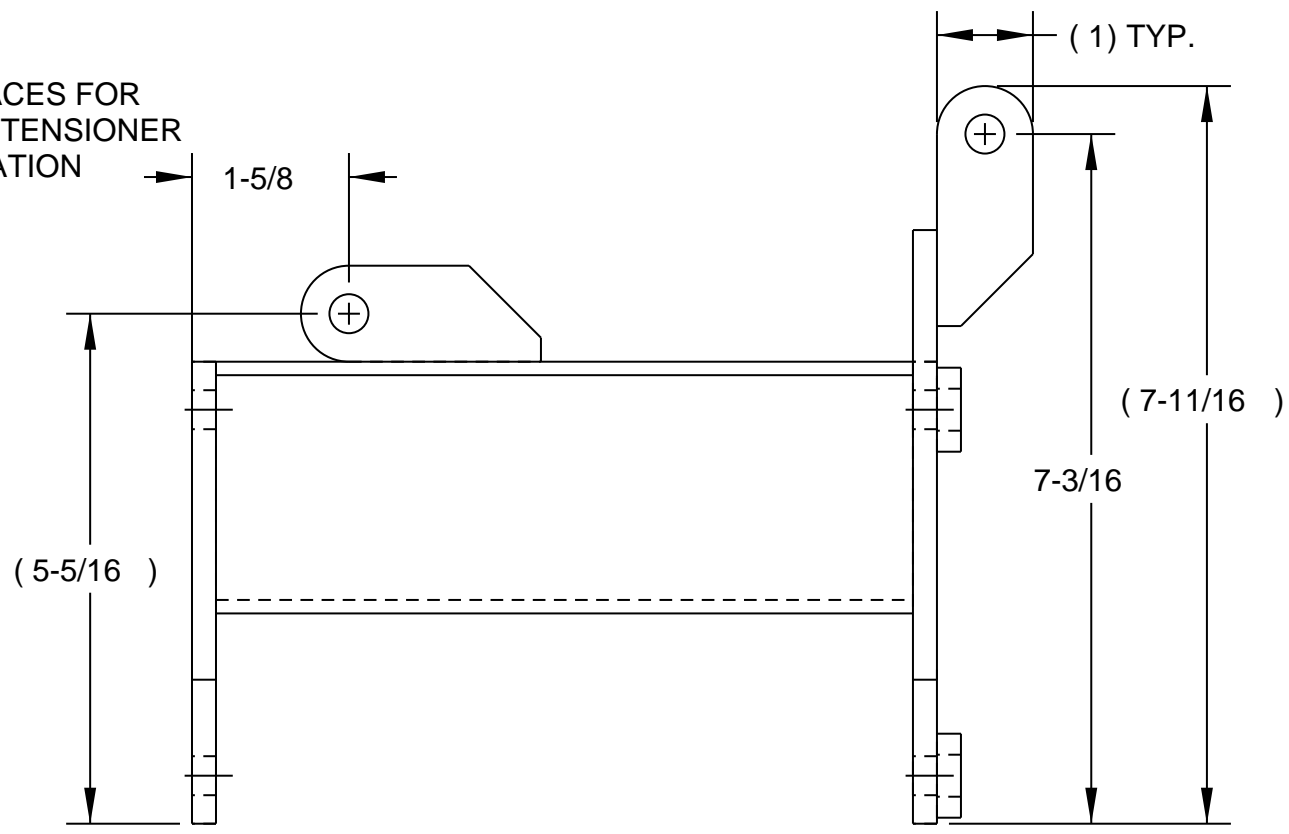


SECTION A-A

ITEM	PART NO.	DWG	DESCRIPTION	QTY
1	90-6300	A	BAR SPREADER	1
2	90-6301	A	MOUNT TAB	3
3	90-6302	A	PLATE LH MOUNT	1
4	90-6303	A	PLATE RH MOUNT	1
5	90-6306	A	SPACER	2

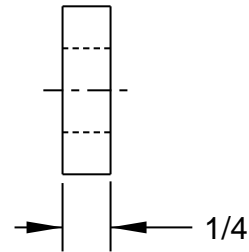
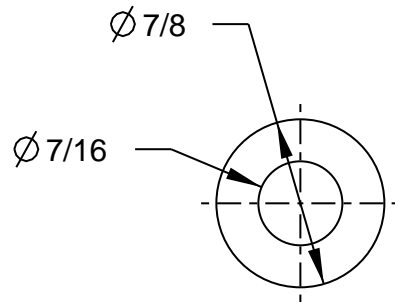


ALIGN FACES FOR
PROPER TENSIONER
INSTALLATION

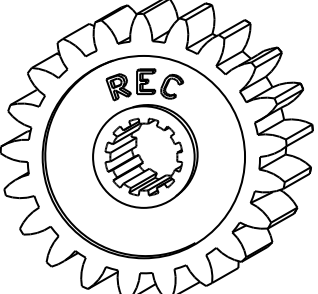


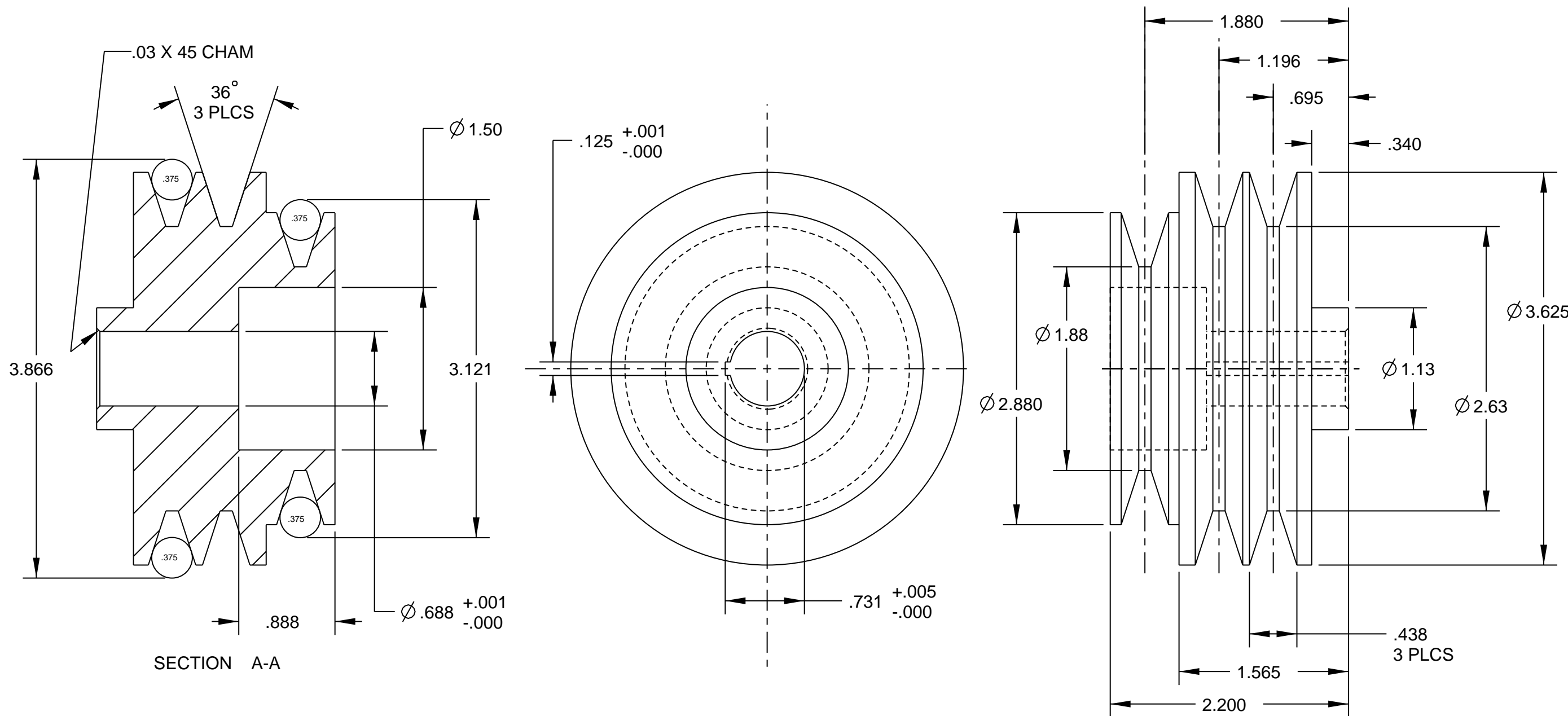
PART NO: 90-6305
EST WT: 4.82 LBS

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ANGULAR: + .1 DEG.					APPROVED: KDB
DECIMAL: 1 PLACE + .005 2 PLACE + .001 3 PLACE + .0005	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653				DATE: 22-Sep-2006
PROJECT NO.: 63G					TITLE: ALTERNATOR MOUNT WELD
					ROSCOMMON EQUIPMENT CENTER
					DWG. NO. 90-6305
					SIZE: C



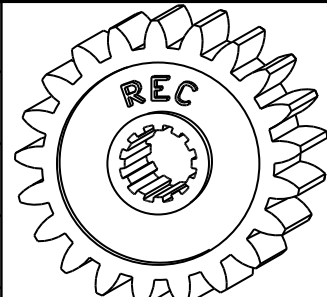
PART NO: 90-6306
 MAT'L: BAR, ROUND 1 CD
 G10180
 FFES SPEC NO: AC-00100AW
 EST WT: 0.03 LBS

STD. TOL.						DRAWN: DCM	 ROSCOMMON EQUIPMENT CENTER
FRACTIONAL 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						DESIGNED: DCM	
ANGULAR: + - 1 DEG.						APPROVED: KDB	
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005	NO.	BY	DATE	REVISION		DATE: 22-Sep-2006	
	FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653					SCALE: FULL	
PROJECT NO.: 63G	TITLE: SPACER					DWG. NO. 90-6306	SIZE: A



SECTION A-A

PART NO: 90-6307
 MAT'L: BAR, RD 4" DIA CAST GREY IRON
 A36-76 C40
 FFES SPEC NO: AC-00400AV
 EST WT: 3.17 LBS

STD. TOL.						DRAWN: KDB	 ROSCOMMON EQUIPMENT CENTER
FRACTIONAL: 0 TO 6 IN + - 1/32 6 IN AND UP + - 1/16						DESIGNED: DCM	
ANGULAR: + - 1 DEG.						APPROVED: KDB	
DECIMAL: 1 PLACE + - 0.05 2 PLACE + - 0.01 3 PLACE + - 0.005						DATE: 25-Sep-2006	
PROJECT NO.: 63G						SCALE: FULL	
FOREST FIRE EXPERIMENT STATION P.O. BOX 68 ROSCOMMON, MICHIGAN 48653						DWG. NO.: 90-6307	SIZE: B
TITLE: SHEAVE, 3 GROOVE							

ROSCOMMON EQUIPMENT CENTER

**Project Number 63 M939
6x6 Wildland Fire Engines**

September 2009



Design Packet 63M939

***Military M939 Series
6x6 Truck Evaluation***

REC Project No. 63 M939
Military M939 Series 6x6 Truck Evaluation

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Introduction

The Federal Excess Personal Property (FEPP) and the more recent Fire Fighter Property (FFP) programs allow wildfire agencies and rural fire departments to supplement their wildland fire engine fleet by providing access to military 6x6 units that are no longer used by the Federal agencies. Because they are excess to the Federal agencies needs, they are usually the older units that have been replaced by more up to date versions. The Department of Defense, the primary initial user of these units, goes through a redesign cycle approximately every 15-20 years. As this cycle works, the units are approximately 20 years old when wildland fire agencies acquire them through one of the excess property programs.

The first 5-ton units available through FEPP in the early 1970s were designated the M39 series. They were produced from the 1950s through the early 1970s. The next version, the M839 series (commonly referred to as the 800 series), was used by the military until the introduction of the M939 series in the mid 1990s.

Currently the M939 series, or 900 series, is becoming more prevalent in the screening process and the 800 series, that agencies have used for many years, is becoming harder to find.

The Roscommon Equipment Center (REC) has assembled this information as a tool for cooperating fire agencies to use when considering using one of the 900 series units.

900 Series Information

Within each series there are a number of models. Each model is designed to perform a specific job within the military and each has its own

specifications and ratings for that specific job. Table 1 lists the models of the 900 series.

Table 1	
Model Number	Vehicle Description
M923	Cargo Truck without Winch (Dropside)
M925	Cargo Truck with Winch (Dropside)
M927	Cargo Truck without Winch XLWB (Extra Long Wheelbase)
M928	Cargo Truck with Winch XLWB
M929	Dump Truck without Winch
M930	Dump Truck with Winch
M931	Tractor Truck without Winch
M932	Tractor Truck with Winch
M934	Expansible Van without Winch
M936	Medium Wrecker with Winch

Another factor within the series is the design variant. Over the design life of the series changes are made. If the changes are significant then a variation or variant number is assigned. Each

model within the 900 series has three variations: the original design, variant A1 and variant A2. The distinctions between the variations are shown in Table 2

Table 2	
Variant	Deviation from the Original 900 Series Design
A1	Super Single Tires replaced Dual Tires on Rear
A2	Super Single Tires replaced Dual Tires on Rear Turbo Charged Engine Central Tire Inflation (CTI)

The differences between the 800 and 900 series are substantial. The 900 series is noticeably taller, six to ten inches, depending on the variant. No dual rear wheels on variant A1 and A2. The engine exhaust and intake are located behind the cab instead of in front. Differences less noticeable at first glance, are the automatic transmission, the full air brakes, tilt forward hood, and a hydraulic driven winch on models equipped with one.

The height of the truck does cause some concerns during off road operation, but mostly in garage head room. The combination of a taller truck and a tilt forward hood requires extensive head room. The tilt forward hood has the advantage of allowing better access to work on the engine compartment but it requires approximately ten feet of over head clearance to open fully.

On the later variations (A1 and A2) 14.00 x 20 tires were used. This allows the use of single rear tires instead of duals for the same payload. This has many advantages in off road operations. Also, while the ground pressure on the rear tires may be the same or slightly increased with the single tires, the front tires have a substantial reduction in ground pressure.

With the exhaust and intake behind the cab they are better protected and the in cab noise levels should be reduced. However, this location does cause a loss of cargo space. Also, when adding

apparatus, design considerations will have to be made to account for not only the physical size of these systems but the air flow requirements and the dispersion of the exhaust heat as well.

The transmission is quite simple to operate. When starting out, the transmission can be placed in the 1-5 range (the highest forward range), it operates the same as an automatic transmission in an automobile would in "Drive," starting out in lower range and shifting automatically as speed increases. It can be set in any range 1-2 through 1-5 and will automatically shift to lower ranges as required. The lowest range is labeled 1 and even with the transfer case in high range it appears to have substantial power.

The improved braking of the 900 Series is noticeable. The switch to a completely air system from the air over hydraulic, used on the earlier series, is an improvement. The system uses "wedge" type brake actuation which allows the components to be mounted in less vulnerable locations for off road operations, but will have increased maintenance considerations over the more common "S cam" type actuation systems.

The winch on the 900 Series is hydraulic driven as opposed to the mechanical drive winch on the 800 Series. With a hydraulic driven winch there is no shear pin to fail, to totally disable the winch. The maximum pull is limited by the hydraulic system pressure. If overloaded the winch simply stalls.

Payload and Weight Distribution

There is one tremendous drawback to the 900 series; limited payload. The M39 and M839 series, for the most part, actually had two payload ratings, one rating for "Cross Country" (CC) operation and one for "On Highway" (OH) operation. While each model within the series had specific weight ratings, the nominal ratings for these series were 5 ton (10,000 lbs.) CC and 10 ton (20,000 lbs.) OH.

The CC rating accounted for the severe duty the military expected during off road operations. It was a reduced rating to help extend the life of the vehicle in severe off road and even battle conditions.

Before the introduction of the 900 series, the military dropped the OH rating and started listing only the CC rating. Table 3 shows the available payload for all 900 series models as published in the military operator's manual for this series.

Table 3		
Model Number	Empty Vehicle Weight (lbs.)	Payload (lbs.)
M923	21,600	10,000
M923A1	22,175	
M923A2	20,930	
M925	22,360	10,000
M925A1	23,275	
M925A2	22,030	
M927	27,749	10,000
M927A1	25,035	
M927A2	23,790	
M928	27,811	10,000
M928A1	26,135	
M928A2	24,890	
M929	25,888	10,000
M929A1	25,065	
M929A2	24,890	
M930	26,624	10,000
M930A1	26,165	
M930A2	24,920	
M931	22,089	15,000
M931A1	21,140	
M931A2	19,895	
M932	22,841	15,000
M932A1	22,242	
M932A2	20,995	
M934	29,949	5,000
M934A1	29,280	
M934A2	28,035	
M936	39,334	7,000
M936A1	38,155	
M936A2	36,910	

As can be seen in Table 3, the models with the most available payload are the 931 and 932 units. In order to help determine what capability a converted 900 series unit might have, REC obtained a M931A2 Truck Tractor. The truck was stripped of all apparatus used for towing to get as

close to a bare chassis as possible. Then it was weighed without personnel in the cab to get a starting point for design considerations. Table 4 lists the weights REC measured and the load ratings from the dash board plate on the unit.

Table 4		
	Gross Rating (lbs.)	As Weighed plus Fuel (lbs.)*
Front Axle	9,830	9,790
Inter Axle	12,635	4,730
Rear Axle	12,635	4,755
Total	35,100	19,275

*The fuel tank was partially full when weighed. REC calculated the effects of a full fuel tank and added it to the figures.

Additionally, by REC calculations, if two 200 lb. persons were in the cab, it would increase the front axle loading to 10,050 lbs. This would exceed the front axle weight rating without further

apparatus. From this it was determined that all weight for any equipment added to these units would need to be added to the rear axle set only.

This information rules out the installation of forward mounted brush protection.

Subtracting the sum of the weighed amounts, 19,275 lbs., from the GVWR of 35,100 lbs., leaves a total available payload of 15,825 lbs. The "Quick and Dirty Calculator" from the REC web site estimates a tank with a capacity of up to 1400 gallons and a basic water handling system, could

be added to this chassis. Due to the age of the chassis and the severity of the expected duty, it may be beneficial to reduce this. REC Newsnote 3 recommends a 10-15 percent reduction.

Extra equipment added such as a larger than normal pump, extra pumps, hand tools, portable water tanks, etc., would also reduce the amount of water the chassis could carry.

Conclusion

While the 900 series 6x6 units now available through FEPP and FFP have many new features that make them more user friendly and comfortable, the lower rated payloads limit their flexibility for conversion into wildland fire suppression units. With the very low or nonexistent front axle payload, wildfire agencies and rural fire departments will need to carefully consider what equipment to add and where it is placed on the unit.

At this point REC does not have plans to develop apparatus designs specifically for the 900 series. While brush armor designed for earlier 6x6s does not appear to be an option, the designs for the tank in Project Packet 63A-5, and the water handling examples in Packet 63B, are adaptable to this unit. However, adjustments to account for lower payload will need to be made.