

Wisconsin Department of Transportation

TRAFFIC INCIDENT MANAGEMENT ENHANCEMENT (TIME)

TIME PROCUREMENT LIST

Final Award Summary
Updated: April 28, 2015



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CONTRACT SUMMARIES

The purpose of the Traffic Incident Management Enhancement (TIME) Procurement List is to take advantage of WisDOT's ability to procure traffic control equipment at a quantity discount. The Department's incident response partners can thereby purchase these items at the quantity discount rate. The TIME Procurement List was developed to support the recommendations set forth in WisDOT's Emergency Traffic Control and Scene Management Guidelines.

TIME Procurement List Bid Award Contract

Contract Numbers: Refer MRO Contract #15-54500-200

Three vendors were selected to provide the items on the TIME Procurement List:

- **Contract # 407459 - Fastenal**
Customer Service/Phone Orders: 877-507-7555
Account Manager: Laura Mayville, lmayvill@fastenal.com or 608-222-3278
- **Contract # 407460 - Grainger**
Customer Service/Phone Orders: 866-265-9212
Account Manager: Devin Duckett, devin.duckett@grainger.com or 630-639-0448
- **Contract # 407461 - MSC Industrial**
Customer Service/Phone Orders: 800-764-6830
Account Manager: Vince Contini, continiv@mscdirect.com or 614-785-9198

Agencies that would like to purchase items from the procurement list should contact the appropriate vendor directly using the contact list above and the contract number. Also, all products can be purchased on WISBuy as well. For more information: wisbuy.wi.gov.

Questions/Concerns

If you have any questions or have any trouble ordering items from the TIME Procurement List, please contact Marquis Young at (414) 227-2157 or email marquis.young@dot.wi.gov.

TRAFFIC INCIDENT MANAGEMENT ENHANCEMENT PROCUREMENT LIST ITEM SUMMARY

	Fastenal	Grainger	MSC Industrial
TRAFFIC CONTROL AND WORK ZONE PRODUCTS			
TEMPORARY ARROW BOARDS (ADV. WARNING BOARDS)	X	X	X
TRUCK MOUNTED ARROW BOARDS	X	X	X
BARRICADES		X	X
VERTICAL PANELS		X	X
TRAFFIC CONES	X		X
COLLAPSIBLE TRAFFIC CONES			X
DRUMS		X	X
DRUM WARNING LIGHTS			X
FLEXIBLE DELINEATOR POSTS		X	X
ROAD FLARES		X	X
PERSONAL SAFETY PRODUCTS			
FLASHLIGHTS & FLASHLIGHT WAND	X	X	X
PANTS	X		X
VESTS (CLASS II)		X	
VESTS (CLASS III)	X		X
WINTER (BOMBER JACKETS	X		
WINDBREAKERS	X		
TRAFFIC SIGNS			
ROLL-UP SIGNS & STAND	X	X	X
SLOW/STOP PADDLES	X	X	X
OTHER			
BATTERIES	X	X	X
VEHICLE BEACON LIGHTS		X	X

TRAFFIC CONTROL & WORK ZONE PRODUCTS

The following sections provide a description and current prices for the items available under the four contracts discussed above.

1. ARROW BOARDS

TEMPORARY ARROWBOARDS (ADVANCE WARNING BOARDS)

Solar panels are all aluminum and are mounted to a heavy-duty, welded steel construction open deck stable trailer. Amber lamps have an automatic intensity control to ensure maximum visibility. Signs come equipped with 4-D deep-cycle batteries (L-16 battery). Signs are equipped with an on-board 24-amp or 30-amp battery charger unless priced separately below. Standard models have 24 degree horizontal x 8 degree vertical angularity. Wide angle models have a 33 degree horizontal x 11 degree vertical angularity. Signs can come with 15 or 25 lights and both models are 48" x 96".

The arrow functions are:

- Right or Left arrow
- Both arrows simultaneously
- 4-corner flashing
- Sequential arrows or chevrons

TEMPORARY ARROW BOARDS				
Grainger				
Type	Size	Manufacturer Name/Number	12V system - Cost (Each)	Solar- Cost (Each)
15 Bulbs	30" x 60"	WB5-LSA	\$1,721.00	-
	48" x 96"	WB8-LSA	\$2,060.00	-
		WTSP-LSA	-	\$4,452.00

VEHICLE-MOUNTED ARROW BOARDS

Vehicle-mounted arrow boards have a heavy gauge aluminum alloy panel with flat black enamel finish. Boards are available with 15 LED bulbs. The boards can run on a battery or 12 volt system and the control console circuitry is housed in a compact cabinet which mounts in the cab of the vehicle for easy operation. The applicable matching control panel, mounting brackets and assemblies for the bed rail rack mounting option are included in this bid price. Other mounting options, which are available for an additional fee, include tailgate mount, manual tilt, power tilt, bed floor rack, and bulk head rack mounting.

All boards meet Federal Part VI of MUTCD requirements for arrow panels. Boards are visible for one mile and, at a minimum, 18 degrees horizontal angle and 8 degrees vertical angle. The bulbs are sealed beam type lamps with yellow lenses or amber bulbs behind clear lenses and are equipped with an upper hood that surrounds not less than 180 degrees of the lamp.

The arrow functions are:

- Tri-function
- Sequential
- Flashing

The mode selections are:

- Both arrows simultaneously
- 4-corner flashing
- Sequential chevron
- Caution

Signs are available in the following sizes:

- 24" x 48" (15 lights)
- 30" x 60" (15 lights)
- 36" x 72" (15 lights)
- 48" x 96" (15 lights)

Vehicle- Mounted Arrow Boards				
Grainger				
Type	Size	Manufacturer Name/Numb.	12V system - Cost (Each) with Bed Rail Mounting Kit	Solar system - Cost (Each) with Bed Rail Mounting Kit
15 Bulbs (Over the Cab)	30" x 60"	WFB5-LSA	\$1,840	-
	48" x 96"	WFB8-LSA	\$2,237	-
15 Bulbs (Sturdy Skid Mount)	30" x 60"	WSSP 30x60-LSA	-	\$3,929
15 Bulbs (Universal Frame) 15	24" x 48"	WSSP-LSA	\$4,228	-

2. BARRICADES AND VERTICAL PANELS

BARRICADES

Reflective sheeting is adhered to all barricades. Barricade reflective sheeting is designed specifically for use on rigid traffic control devices; conform to type H reflective sheeting, ASTM D4956 Type III or IV, class I or better; and received a good or better rating in 1-year NTPEP tests for shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion and impact resistance. Barricades also conform to the crashworthiness criteria of NCHRP Report 350, test level 3.

Barricades are constructed of wood boards with angle iron legs, plastic boards with angle iron legs or 100% low density polyethylene. Barricades have a top rail that is punched to accept and support a barricade light. Stripe widths are 4" (only for use when permitted by MUTCD) or 6".

Sheeting is high intensity grade (meets ASTM D4956 spec type II, class I), high intensity grade prismatic (meets both ASTM D4956 Type III and Type IV specifications), diamond grade (exceeds ASTM D4956 spec type IX standards), or diamond grade fluorescent.

Type I:

- 36" Height minimum
- Minimum rail length of 24"
- Width of rail: 8" minimum to 12" maximum
- 2 reflectorized faces

Type II:

- 36" height minimum
- Minimum rail length of 24"
- Width of rail: 8" minimum to 12" maximum
- 2 reflectorized faces
- Minimum 270 square inches of reflective area

Type III:

- 48", 60", 72", 96" or 120" long panels
- Must be 96" if no sign attached
- Minimum 48" long if sign is attached
- Panels must be at least 8" high
- Sheeting is provided on both sides

		MCS							
Type		Diamond Grade		Diamond Grade Fluorescent		High Intensity Grade		High Intensity Grade Prismatic	
Size		4"	6"	4"	6"	4"	6"	4"	6"
Cost (Each) By Type	Barricade – Type I (Plastic Boards)	\$49.73	\$43.40	\$49.73	\$43.40	\$49.73	\$43.40	\$49.73	\$43.40
	Barricade – Type II (Plastic Boards)	\$53.93	\$55.20	\$53.93	\$55.20	\$53.93	\$55.20	\$53.93	\$55.20
	Barricade – Type III - (10' Plastic Boards)	\$271.70*	-	-	-	\$186.00	-	\$186.00	-
	Barricade – Type III – (4' Plastic Boards)	\$165.15*	\$133.33	-	\$133.33	\$133.33	\$133.33	\$133.33	\$133.33
	Barricade – Type III – (8' Plastic Boards)	\$168.00	\$168.00	\$168.00	\$168.00	\$168.00	\$168.00	\$168.00	\$168.00
	Type I (Polyethylene)	\$43.40	\$43.40	\$43.40	\$43.40	\$43.40	\$43.40	\$43.40	\$43.40
	Type II (Polyethylene)	\$55.20	\$55.20	\$55.20	\$55.20	\$55.20	\$55.20	\$55.20	\$55.20
	Type III (Polyethylene)	\$133.33	\$133.33	\$133.33	\$133.33	\$133.33	\$133.33	\$133.33	\$133.33
	Type III – 8' (Polyethylene)	\$168.00	-	\$168.00	-	\$168.00	-	\$168.00	-

*Note: Purchase Items from Grainger

VERTICAL PANELS

Vertical Panel sheeting is 8 inches wide and either 24 or 36 inches tall. Sheeting is high intensity grade. Base is included and made of rubber. Panels fold flat, are stackable and have an easy grip handle.

		Vertical Panels without Base	
		36" Tall	
	Type	Grainger	MCS
Cost (Each)	Diamond Grade / (Fluorescent)	\$49.73	-
	High Intensity Grade / (Prismatic)	-	\$26.26

3. TRAFFIC CONES

TRAFFIC CONES

All traffic cones meet the crashworthy requirements of NCHRP-350. All cones include high intensity grade reflective sheeting bands (which meet ASTM D4956 Spec Type III, Class 1) at 6" and 4" from the top of the cone as specified by the MUTCD. Cones are stackable. Cones have a mounting hole at the top for a light and/or sign. The following types of cones are available:

- **28" and 36" Cones** - cones are made of low density polyethylene material and have a minimum weight of 7 pounds.

28" Collapsible Cones - cones are 28" when extended and 3" tall when collapsed. Collapsible traffic cones meet the crashworthy requirements of NCHRP-350. All cones include high intensity grade reflective sheeting bands (which meet ASTM D4956 Spec Type III, Class 1) at 6" and 4" wide with the first band 3-4" from the top of the cone as specified by the MUTCD.

Cones are approximately 4" tall when collapsed and 28" tall when expanded to the full height. The cone is made of a durable and flexible orange mesh material. The base is made of rubber, weighs 5 pounds and the dimensions are 12" by 12". The entire cone, including the base, is constructed of entirely water resistant materials.

Please Note: Collapsible cones come as a set of four.

	FASTENAL	MCS	MCS
Type	28" Cones	36" Cones	Collapsible
Manufacturer Name/Number	2555-0100355	3650-10-MM	Traffic Devices Set of 4
Cost (Each)	\$16.90	\$23.21	\$120.89

4. DRUMS

Drums are certified to meet the crashworthy requirements of NCHRP 350 and the MUTCD. Reflective sheeting has a good or better rating in 1-year NTPEP tests for shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, flexibility and impact resistance. Drums are designed to inhibit roll after impact and have a rounded top to inhibit build up of dangerous materials. The drum handle accepts one or two type A or type C lights designed to be attached with a standard size bolt and bolt protector.

Drums are made of a high density polyethylene, are available with **no** base, with a **plastic base** or as **25 or 40 lb. drums with a rubber base**, and are filled with sand bags.

Drums have either 4" or 6" high intensity retroreflective bands in the following grades:

- High Intensity Grade (Meets ASTM D4956 Spec Type III, Class 1)
- High Intensity Grade Prismatic (Meets both ASTM D4956 Spec Type III and IV specifications)
- Diamond Grade (Exceeds ASTM D4956 Spec Type IX standards)
- Diamond Grade Fluorescent

	Grade	Grainger			MCS		
		Diamond Grade/ Fluorescent	High Intensity Grade	High Intensity Grade/ Prismatic	Diamond Grade/ Fluorescent	High Intensity Grade	High Intensity Grade/ Prismatic
Cost (Each)	25 lb Tire Base - 4"	-	-	-	\$55.99	\$47.32	\$47.32
	25 lb Tire Base - 6"	-	-	-	\$78.66	\$55.99	\$55.99
	25 lb Sand Bag Base - 4"	-	-	-	\$66.66	\$66.66	\$47.32
	25 lb Sand Bag Base - 6"	-	-	-	\$47.32	\$78.66	\$55.99
	25 lb Rubber Base - 4"	-	-	-	\$77.33	-	\$57.99
	25 lb Rubber Base - 6"	-	-	-	\$89.33	-	\$66.66
	40 lb Rubber Base - 4"	-	\$112.95	\$103.45	-	-	-
	40 lb Rubber Base - 6"	-	\$122.45	\$103.45	-	-	-

5. DRUM WARNING LIGHTS

Drum lights conform to NCHRP Report 350, test level 3. Drum lights are available in **Type A** or **Type C**. Type A drum lights have a low intensity, flashing warning light. The Type C drum lights have a steady burn light. The power source is 6V battery or 4 D-type batteries. Lights have a photocell.

	MCS
Type	Type A or Type C
Model #	Elign Molded Plastics 99-A02006
Cost (Each)	\$15.33

6. FLEXIBLE DELINEATOR POSTS

Flexible delineator posts meet the crashworthiness criteria of NCHRP report 350, test level 3. They are resistant to ultraviolet light, ozone, hydrocarbons, stiffening with age and a series of direct wheel impacts with speeds varying up to 65 mph and rebounds to a vertical position if struck by a standard vehicle. The weighted rubber base is designed to hold to the post securely using locking pins or other devices. The delineators have been tested for temperatures ranging between -20°F and 160°F. Delineator posts are available in 36"x 3" OD Clover Leaf base with Pins as listed in the table below.

Grainger	
36" x 3" OD Clover Leaf Base w/ Base and Pins	
Cost (Each)	\$34.19

7. ROAD FLARES

Road flares conform to Underwriters Laboratory UL912 and DOT and ICC specifications. Flares are coated in protective wax and have a lifetime limited warranty. Burn time is approximately 30 minutes. Flares come with a stand or without a stand. **Prices are given per case of 36 flares.**

Please note: For this item the price is given per quantify ordered, so the price decreases as the number of cases ordered increases.

	Grainger	MCS
	Road Flares - No Stand	Road Flares – w/ Stand
Cost (Case)	\$65.57	\$136.00

PERSONAL SAFETY PRODUCTS

8. FLASHLIGHTS AND FLASHLIGHT WAND

Flashlights have a 10 watt bulb with an adjustable beam from spot to flood. Functions are recessed, push button, self-cleaning and with a 3-position switch (on/off/blink). The flashlights are made of anodized machined aluminum with knurled design. All have a minimum 125 Lumen LED output and a minimum 51,700 Peak Beam Candlepower. Flashlights are water and shock resistant, are 0-ring sealed throughout, and come with a battery pack (where stated). Two types of flashlights, along with a flashlight wand, are available:

- **Rechargeable Flashlights** - have 5-cell (1/2-D) Nickel-Cadmium battery pack and a 60 minute run time per charge. The rechargeable flashlights are 12 19/32" long.
- **Standard Battery Flashlights** - produce power and light as stated above with a standard size battery. Flashlights range in size and are summarized in the table below.
- **Flashlight Wand** - attaches to a standard flashlight to direct and signal traffic. Wand length is 7" and color is orange. The tip of the wand is open to allow a direct beam of white light.
- **Flashlight Wind Up** - have 3 LED bulbs, no batteries required and operates over 30 minutes with one minute wind up.

	Type	Model #		
Cost (Each) By Type	Rechargeable	#3210	\$126.07	Grainger
	Standard	#3168	\$14.69	Fastenal
	Wand	#00007	\$10.70	Grainger
Cost (Each) By Type	Wind-Up	#SP1001	\$11.52	MCS

9. PANTS

Pants are Class E ANSI/ISEA 107-2004. The material is waterproof polyurethane coated 200-210 denier nylon or a polyester/mesh. Reflective bands are 3M Scotchlite reflective 9710 or 8725 or comparable. Pants are visible from a minimum distance of 1,000 feet. Each pant leg has elastic at the waist and ankles and 2" wide silver reflective tape for high visibility. Pants are available in multiple material types and colors as outlined in the table below.

	Material – Color	Model #	Fastenal
Cost (Each)	Polyester/Mesh – Fluorescent Orange	Majestic 75-7315	\$23.99
	Polyester/Mesh – Fluorescent Lime	Fastenal: 1053209	\$19.99

10. VESTS (CLASS II)

Class II Vests meet either ANSI/ISEA Class II 107-2004 or ANSI/ISEA Class II 207-2006.

- **Class II 107-2004** - vests without messages are available in sizes: Small - XXXL
- **Class II 107-2004** - vests with a message are available in sizes: Small - XXXL.
- **Class II 207-2006** - vests without messages are available in sizes: Small - XXXL
- **Class II 207-2006** - vests with a message are available in sizes: Small - XXXL

See sizing chart below.

Sizing	Size	Chest	Length	Arm Hole	Side Vent Width
	1. Small	40"	27"	28"	5"
	2. Med	48"	27"	28"	5"
	3. Large	56"	27"	28"	5"
	4. XL	64"	29"	28"	6"
	5. XXL	72"	29"	28"	6"
	6. XXXL	80"	29"	28"	6"

Vest material is a stop-rip fabric having a weight of 2.2 oz/yd or lighter. Fluorescent yellow base color material with a 4.5" orange trim. Neck holes in vest have ½" bias trim in yellow fabric. Armholes and bottom have ¾" 8910 3M Scotchlite or equal reflective binding around garment.

Vest side vent material is performance 3000 open weave 100% polyester and is fluorescent lime-yellow in color. ½" reinforcement bias shall be placed at the top of the vented area and there is a straight binding at the bottom for reinforcement.

Vest trim is 4½" wide cross grain 100% orange polyester in a fluorescent orange-red color that is piece-dyed for stability. 1" wide 8725 3M Scotchlite retroreflective material or equal will be applied 0.25" from each outside edge on the exposed face of the trip. Retroreflective material will be heat fused to the trim.

Performance as measured by testing procedures established by ANSI/ISEA 107-2004 or 207-2006.

Trim material will be sewn onto vest on front and back as seen in drawing:



Vest closures are all hook and loop – med-duty, fluorescent lime-yellow color or base fabric color; horizontal 1" x 4" loop pieces are sewn on the wearer's right hand front side of vest, locations are: 1½" down from the corner of the bias on center; 1½" up from the bottom of the vest on center; 1/8" above the trim on center in the middle. 1½" x 1½". Hook pieces are sewn on the wearer's left hand front side of the vest on the back, locations are: 1¼" down from the corner of the bias on center; 1¼" up from the bottom of the vest on center; just above the trim in the

middle. Shoulder hook and loop locations are 3" and 4" from top of the shoulder seam, front of vest – 1" strip hook and loop. Side hook and loop are located: 1" strip hook and loop along the front vent and vest material seam.

Vest pocket is located left inside breast. Pocket can be located 10½" down from the shoulder point, 3" in from the folded front edge on Medium and Large Vests or 11¼" down from the shoulder point and 3½" from the front edge on XL and XXL vests. Pocket has double layered front to accommodate pencils. Front layer of pocket measures 5¾" wide x 6" deep with four evenly spaced slots sewn. Second layer of pocket measures 5¾" wide x 6½" deep for a full width pocket.

Vests can be ordered with or without a message on the back of the vest. Please contact the vendor contact to for Message pricing.

Fastenal		
Type		107-2004 No Message
Cost (Each) By Size	Small - 5XL	\$11.99

11. VESTS (CLASS III)

Class III vests meet ANSI/ISEA Class III 107-2004 standards.

Vest material is a stop-rip fabric having a weight of 2.2 oz/yard or lighter. Base color is fluorescent yellow with a 4.5" orange trim. Closure is Velcro in the front and labeling is specific to marking per ANSI/ISEA 107-2004. Vests have one outside pocket and one inside right pocket.

Class III vests are available with or without a message on the back in sizes Medium – XXXL. Sizing charts and additional specifications as listed in Section 12. Class II Vest is applicable. Please contact the vendor contact to for Message pricing.

Fastenal		
Type		107-2004 No Message
Size (Each)	Small – 5XL	\$19.99

12. WINTER (BOMBER) JACKETS

Winter (bomber) jackets are compliant with ANSI 107-2004 Class III specifications. Jacket colors are available in orange and lime. Jacket is coated with weather resistant polyurethane. The hood is zip out with a drawstring and is contained in the collar. Jackets have multiple pockets. Winter (bomber) jackets have an inner liner; liner may or may not be removable. Removable liner can be worn alone and are compliant with ANSI 107-2004 Class II or Class III specifications.

Winter (bomber) jackets are available in sizes Small to 5-XL. Sizing charts and additional specifications are listed in Section 14 Vests (Class II).

		Fastenal	
	Type	Class III Non - Removable Liner	Class III – W/ Hood
Manufacturer Name/Number		Body Guard	MCR Safety
Cost (Each) by Size	Small – 5XL	49.99	92.59

13. WINDBREAKERS

Windbreakers are compliant with ANSI 107-2004 Class III specifications. Jacket color is a combination of orange and lime. Jacket is coated with weather resistant polyurethane. The hood is zip off or zip out with a drawstring; zip out hoods are contained in the collar. There is also a drawstring on the bottom of the jacket. Jackets have an inner liner and there are multiple pockets.

Windbreakers are available in sizes Small to 5-XL. Sizing charts and additional specifications are listed in Section 14 Vests (Class II).

		Fastenal	
	Color	Polyester/Mesh – Fluorescent Orange	Polyester/Mesh – Fluorescent Lime
Manufacturer Name/Number		MCR Safety	MCR Safety
Cost (Each) by Size	Medium	\$100.69	\$113.59
	Large	\$100.69	\$113.59
	X-Large	\$100.69	\$113.59
	2X-Large	\$104.79	\$118.19
	3X-Large	\$109.09	\$122.99
	4X-Large	\$113.49	\$127.89

14. ROLLUP SIGNS AND STANDS

Rollup signs are convenient for incident management personnel to store in their vehicles for easy access when incidents occur. Signs are available in **36"** or **48"** sizes. 48" width must be used in freeway applications.

The signs meet MUTCD standards and NCHRP 350 compatibility crash test requirements. Signs can withstand winds up to 65 mph. The frame is made of aluminum and steel construction with a wind relieving system. Legs are telescoping aluminum with two position height adjustments, anti-skid foot pads and four corner pockets. The minimum height from the ground is 12".

Signs are available in **fluorescent coral (pink)** or **fluorescent orange** with black text or graphic messages.

Corner pocket options are:

- **Delta Pocket:** ¾" deep, easiest to deploy, tough Lexan plastic, narrow width (rolls up smaller), and has 3 rivets for better holding power
- **Full Pocket:** Full depth, tough Lexan plastic
- **Half Pocket:** 1" depth, easier to deploy, tough Lexan plastic

Reflectivity options are:

- **High Intensity Grade** (Meets ASTM D4956 Spec Type III, Class 1)
- **High Intensity Grade Prismatic** (Meets both ASTM D4956 Type III and Type IV specifications)
- **Diamond Grade** (Exceeds ASTM D4956 Spec Type IX Standards)
- **Diamond Grade Fluorescent**

Please see table of messages under ROAD SIGNS (section 15) for a list of available messages. This list may not be all inclusive.

Fluorescent Coral (Pink) Roll Up Signs

The following prices apply for all 3 of the corner pocket options and for all four of the reflectivity options. ***This price is for the sign only and does not include the stand - stands and storage bags must be purchased separately.***

	Size	Model #	Grainger
Cost (Each) By Size	36" Signs	MDI Superbright	\$78.95
	48" Signs	MDI Superbright	\$116.95

Fluorescent Orange Roll Up Signs

The following prices apply for all 3 of the corner pocket options. ***This price is for the sign only and does not include the stand - stands and storage bags must be purchased separately.***

Cost (Each) By Size	Grainger	
	Grade	Diamond Grade / Fluorescent
	36" Signs	\$100.85 MDI Diamond Grade
	48" Signs	\$154.92 MDI Diamond Grade

Roll Up Stand and Storage Bags

Cost (Each)	Item	Model #	MCS	Grainger
	Stand	MDI 5012SSAL	-	\$120.60
	Storage Bag	MDISA-04196	\$31.57	-

15. SLOW / STOP PADDLES

Slow/Stop paddles are MUTCD compliant, octagonal, made of aluminum and are printed with letters a minimum of 6" high. STOP has a red background with white letters and border. SLOW has an orange background with black letters and border.

Paddles are available in High Intensity Grade (Meets ASTM D4956 Spec Type III, Class 1), High Intensity Grade Prismatic (Meets both ASTM D4956 Type III and Type IV specifications), Diamond Grade (Exceeds ASTM D4956 Spec Type IX standards) and Diamond Grade Fluorescent.

Paddles come in two sizes as follows:

- 18" paddles with a 10" wood dowel.
- 24" paddles with 60" wood dowel or 81" PVC tube.

Paddles shall come with a pre-attached handle. An additional plastic handle, either 60" or 72" in length, shall be available. Prices shall be provided for the sign with additional plastic handles. Prices shall also be provided for the sign and additional plastic handles separately.

Cost (Each) By Size	Grade	Grainger	Fastenal
		High Intensity / Prismatic Grade	High Intensity or Diamond Grade
	18" Sign w/ 10" Dowel	\$55.00*	\$72.80
	24" Sign w/ 81" Dowel	\$72.25	\$108.25

*Note: Purchase through Grainger

OTHER

16. BATTERIES

Batteries are required to provide a reliable energy supply for equipment and must provide sufficient voltage, between charging, to each of the lamps to provide at least 15 days of continuous operation, in any mode, at full daytime intensity. The following table provides an overview of all batteries available:

Most Common Name	Nominal Voltage (V)	Shape	Comments
AA	1.5	Cylinder	
AAA	1.5	Cylinder	
C	1.5	Cylinder	Can be replaced with alkaline AA cell using plastic sabot (stub case).
D	1.5	Cylinder	Can be replaced with alkaline AA cell using plastic sabot (stub case).
9 Volt	9	Rectangular	Many (not all) 9 V batteries are an array of 6 reversed-polarity (nub is negative while can is positive) AAAA cells welded together internally.
Lantern (Spring)	6	Square	<i>Springs are usually made so that leads for screw top can be fastened to them. In most applications this is fine (see next).</i> 6 V 700 mAh
Lantern (Screw)	6	Square	For uses that have high vibration/shock where the leads may be knocked off springs. 6 V 11Ah
CR2032	3	Coin	Standard Discharge Current: 0.2 mA. Maximum discharge current: 3 mA. Maximum pulse discharge current: 15 mA. Common battery in computers to keep the date and CMOS settings current when power is off.

		Fastenal	MCS	Grainger
Type	Manufacturer Name/Number	Batteries Cost (Each)		
AA	Duracell Fastenal: 0215008	\$0.23		
AAA	Duracell Fastenal: 0215010	\$0.23		
C	Duracell Fastenal: 0215007	\$0.52		
D	Duracell Fastenal: 0215006	\$0.63		
9 Volt	Duracell Fastenal: 0215009	\$1.88		
Lantern – Spring	Duracell Fastenal: 0237288	\$4.84		
Lantern – Screw	Interstate/DRY1405	\$6.08*		\$6.08*
CR2032	Duracell Fastenal: 0237288	\$0.53**	\$0.53**	

17. VEHICLE BEACON LIGHTS

Manufacturer of beacon lights including heavy duty LED beacons with five user-selectable flash patterns. Features include aluminum heat-sink, replaceable, color lens, increase visibility and reduce current draw. Specifications include operating voltage 12/24 V, 2 amps rated current, dia. 6.5 in. & height 5.5 in. Colors that are available for both LED and the Rotating beacons are amber, blue, clear and red.

Vehicle Beacon Lights		
Cost (Each) By Type	Type	Grainger
	Rotating (Amber, Red)	\$50.64
	Rotating (Blue)	\$123.00
	Rotating (Clear)	\$96.04
	LED (Amber, Clear, Red)	\$87.55
	LED (Blue)	\$87.53