

DATE: 01/02/2024

MATERIAL SUBMITTALS FOR: City of Massillon, Lake Ave. and Amherst Intersection Improvement

Submitted	Reference No.	Description
X	50	608 Concrete Walk
X	60	608 Curb Ramps
X	70	609 Curb, Type 6
X	80	611 Catch Basin, MASS 7030-R
X	130	625 Spec Grounding
N/A	140	625 Spec Power Service, Including Permits
X	150	625 Spec Signal Cabeling Complete Including Conduit and Pull Boxes, APP
X	160	625 Spec Power Wiring Complete Including Conduit and Boxes, APP
X	170	630 Spec Sign Including Arm Mounted (R10-11)
	180	632 Signal Support TC 81.22 Design No. 2, Including Foundation
	190	632 Signal Support TC 81.22 Design No. 4, Including Foundation
	200	632 Signal Support TC 81.22 Design No. 12, Including Foundation
X	210	632 Vehicular Signal Head, (LED), 3-Section
X	220	632 Vehicular Signal Head, (LED), 5-Section
X	230	632 Pedestrian Signal Head (LED), Type D2
X	240	632 Pedestrian Pushbutton
X	250	632 Controller, Cabinet and Foundation, APP
N/A	260	632 Spec Removal of Existing Traffic Signal System, Incl. Foundations
N/A	270	632 Spec Covering of Signal Heads and Pedestrian Heads
X	280	632 Spec Video Detection System
N/A	290	632 Spec Training and Software for Video Detection System
X	300	633 Spec Uninterruptible Power Supply (UPS)

SUBMITTAL SHOP DRAWING REVIEW

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL CONFORMANCE WITH THE INFORMATION GIVEN IN THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. NOTHING HERE IN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; PERFORMANCE, SELECTING FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

BY 
DATE 1/15/2024

☒ APPROVED
☐ APPROVED AS NOTED

☐ NOT APPROVED
☐ REVISE/RESUBMIT

RELIABLE READY MIX

1606 Allen Avenue S.E. • Canton, Ohio 44706 • Ph. 330-453-8266 • Fax 330-453-8543

CUSTOMER:	SHELLY CO.	DATE:	12-29-2023
ATTN:	ROB WOODHALL	PROJECT:	*PROJECT/ LAKE AVE & AMHERST INTERSECTION IMPROVEMENTS MASSILLON

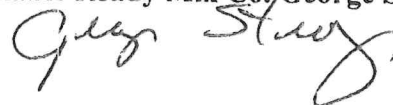
As requested, Reliable Ready Mix Co. is submitting the following mix design and material information for the above-referenced project:

DESIGN MIX : 4000# ODOT Q C MISC 57 LMST A/E
JMF# C 75072MC1A
MIX CODE : QCMISC.

Cement, PLC-Type 1L ASTM C595 IL	Heidelberg Materials	600	lbs.
Fly Ash Type F	S G S Tec Services	NA	lbs
Limestone # 57 40017-01	Stoneco-Carey 703.13	1677	lbs
Limestone # 8 lbs 40017-01	Stoneco-Carey 703.02	NA	lbs
Limestone # 467- 4,57,8 BLEND	Stoneco -Clay Center 008467	NA	lbs
Sand lbs 43007-01	Allied Corp Canton 703.02	1300	lbs
Water lbs	City Of Canton	258	lbs
Air Entertainment	Sika Air 260	6	oz per yd=7%
**Super Plasticizer	Sika SPMN@ Pump	0	oz per cwt/cmt
Water Reducer	Sika Plast 200	0	oz per cwt/cmt
Non Chloride	SikaSet NC	0	oz per cwt/cmt
MVRA 900	Logistic Mvra 900	0	oz per cwt/cmt
Fiber/2"Macro	Sika MacroMS20	0	lbs per yard
*TARGET SLUMP 4" H2O			
*TARGET AIR: DESIGN 7%			
AGG. CORR. FACTOR 0.3			

If you have any questions or need any additional information, please contact me at (330) 453-8266 or reliablestrong@hotmail.com. Please include RRM in All design Breaks from Labs.

Reliable Ready Mix Co., George Strong



GEO TEST, LLC.
2340 Navarre Road
Canton, Ohio 44706
(330) 956-4098

REPORT OF CONCRETE CYLINDER STRENGTH TEST

REPORT DATE: July 26, 2023

PROJECT NO: GT 23006-9
PROJECT: Misc 2023 Testing - Test Pour
Allen Ave. Plant-Canton, Ohio
CLIENT: Reliable Ready Mix
ADDRESS: 1606 Allen Avenue S. E.
Canton, Ohio 44707

FIELD TEST CONDITIONS AND RESULTS (ASTM C 31)

PLACEMENT LOCATION: Test Pour - QCMISC

DATE CAST:	June 28, 2023	BATCH WEIGHTS
DATE RECEIVED:	June 30, 2023	CONCRETE SUPPLIER:
TIME CYLINDERS CAST:	--	Reliable Ready Mix
AMBIENT TEMP:	67° F	BATCH TICKET NO:
CONCRETE TEMP: (ASTM C 1094)	77° F	TRUCK NUMBER:
AIR CONTENT, %: (ASTM C231)	6.0 %	MIX DESIGN NUMBER:
SLUMP, INCHES: (ASTM C 143)	4.50"	QCMISC
WATER ADDED:	--	CEMENT:
DESIGN STRENGTH:	4,500 psi	602 lbs.
CONCRETE CONTRACTOR:	--	FLYASH:
CAST BY:	Client	WATER:
UNIT WEIGHT:	144.4 PCF	200 lbs.
YIELD:	26.3	FINE AGGREGATE:
		1306 lbs. Sand
		COARSE AGGREGATE:
		1688 lbs. # 57 Limestone
		COARSE AGGREGATE:
		--
		ADMIXTURE:
		4.6 oz/yd AE 260
		W/C RATIO:
		.33
		TOTAL BATCH WEIGHT:
		3796 lbs.

LABORATORY TEST RESULTS (ASTM C 39)

LAB NO.	TEST DATE	AGE (DAYS)	TOTAL LOAD (lbs.)	DIAMETER (in)	X-SECTIONAL AREA (in. ²)	CYLINDER WEIGHT (lbs.)	COMPRESSIVE STRENGTH (psi)	PERCENT OF SPECIFICATION	TYPE OF FRACTURE
1730-a	07-01-23	3	49500	4.00	12.566	8.4	3940	88%	3
1730-b	07-05-23	7	61300	4.00	12.566	8.5	4880	108%	4
1730-c	07-26-23	28	68630	4.00	12.566	8.5	5462	121%	1
1730-d	07-26-23	28	74910	4.00	12.566	8.4	5953	132%	5
Specification @ 28 days: 4,500 psi									
Average at 28 days :							5710	127%	

THESE TEST RESULTS ARE REPRESENTATIVE OF THE ABOVE-REFERENCED TRUCK/BATCH ONLY

TYPE 1 - Cones on both ends	TYPE 3 - Columnar/Vertical Cracks	TYPE 5 - Side Fracture at top or bottom
TYPE 2 - Cone/Vertical Cracks	TYPE 4 - Diagonal Fracture	TYPE 6 - Cylinder End Pointed

Reviewed By:

David Dickens

David Dickens
Geologist/Laboratory Manager



WERTZ GEOTECHNICAL ENGINEERING, INC.
DRILLING | MATERIAL TESTING | ENGINEERING

400 COLLIER DRIVE
DOYLESTOWN, OHIO, 44230
(330) 991-0041
office@wertzgeo.com

Joseph A Jeffries
5211 Street NE
Louisville, OH 44641

ATTN: Jason Cunningham

REPORT NUMBER: #1A

RE: Concrete Compressive Strength Testing Report (ASTM C-39) for the Old Dominion Freight Line Project, Canton, OH; WGE #20235146

CONCRETE PLACEMENT LOCATION: Parking Lot Repair, 50' West

DATE CAST:	August 2, 2023	CONCRETE SUPPLIER:	Reliable Ready Mix
TIME CYLINDERS CAST:	7:35 am	BATCH TICKET NUMBER:	112920
AIR TEMPERATURE:	64°	TRUCK NUMBER:	325
CONCRETE TEMP:	68°	MIX DESIGN NUMBER:	QCMISCBL
AIR CONTENT, %:	5.5%	CEMENT:	600 lbs.
SLUMP, INCHES:	6.0"	WATER:	30 gal.
ADDED ON-SITE:	2 gal. Super	FINE AGGREGATE:	1300 lbs.
DESIGN STRENGTH:	4500psi	COARSE AGGREGATE:	1677 lbs. Limestone
CONTRACTOR:	Joseph Jeffries	ADMIXTURES:	AE260 3 oz./yd
CAST BY:	Tom Jones	ADMIXTURES:	Forta Ferro Fiber 5.0 lbs.

LABORATORY TRACKING NO.	SET NO.	DATE TESTED	AGE (DAYS)	TOTAL LOAD (lbs.)	COMPRESSIVE STRENGTH (psi)	CYLINDER WEIGHT (lb)	CROSS SECTIONAL AREA (in. ²)	FRACTURE TYPE
1105	1-a	8-8-23	6	44450	3537	8.2	12.57	2
1105	1-b	8-9-23	7	49561	3944	8.3	12.57	3
1105	1-c	8-30-23	28	60136	4785	8.2	12.57	3
1105	1-d	8-30-23	28	60151	4787	8.3	12.57	2
1105	1-e	8-30-23	28	57131	4546	8.3	12.57	3
STRENGTH SPECIFICATION AT 28 DAYS:					4500			

NOTE: THESE TEST RESULTS ARE REPRESENTATIVE OF THE ABOVE-REFERENCED TRUCK/BATCH ONLY

FRACTURE TYPES

TYPE 1 - Cones on both ends	TYPE 3 - Columnar/Vertical Cracks	TYPE 5 - Side Fracture at top or bottom
TYPE 2 - Cone/Vertical Cracks	TYPE 4 - Diagonal Fracture	TYPE 6 - Cylinder End Pointed

☐ Delivered by Client ☒ Test results comply with specifications
☒ Picked up by WGE ☐ LOW 28-DAY BREAK (s) SPARE held for 56-day break

Wertz Geotechnical Engineering, Inc.
400 Collier Drive, Doylestown, Ohio 44230 | (330) 454-1113

CTL Engineering, Inc.
450 Grant Street Suite 110, Akron, OH, 44311
Phone : 330-994-1590 Fax : 330-994-1597
Email : ctlakron@ctleng.com

Consulting Engineers - Testing - Inspection Services - Analytical Laboratories

AN EMPLOYEE OWNED COMPANY



Established 1927

CONCRETE TESTING REPORT

CLIENT : Beaver Constructors Inc
2000 Beaver Place Ave. SW
Canton, OH 44706

Attention : Jon Elkins

PROJECT : Marathon Materials Testing

PROJECT NO. : 22020015AKR

DATE PLACED : 09/06/2023
DATE RECEIVED : 09/07/2023
DATE ISSUED : 10/04/2023

FIELD DATA - ASTM C31, C138, C143, C172, C231, C1064

CONTRACTOR : Beaver Constructors

CONCRETE SUPPLIER : Reliable Ready Mix

CYLINDER MADE BY : Made by Client

INSPECTOR :

WEATHER :
HIGH TEMP (F) :
LOW TEMP (F) :

MIX PLACED : Class C, 4000 psi, Air-Entrainment

DESCRIPTION : This mix contains High-Range Water Reducer

SPECIFICATIONS		
	MAX	MIN
AIR	0.0	0.0
SLUMP	0.0	0.0
w/ ADMIX	0.0	0.0
W/C	0.00	

STRUCTURE :

ELEVATION :

PLACEMENT LOCATION : PCR PAD SLAB / South main Sub

TICKET NO.	TIME BATCH	TIME PLACE	LOAD SIZE (cy)	AIR (%)				SLUMP (in)				DENSITY (pcf)	BATCH WT. (lbs)	YIELD (cf/cy)	TEMP (F)	WATER ADDED (gal)	SET NO.	LOCATION OF TEST SAMPLE
				1	2	3		1	2	3	4							
113786																		

4 PCR PAD SLAB /
South main Sub

CTL Engineering, Inc.
450 Grant Street Suite 110, Akron, OH, 44311
Phone : 330-994-1590 Fax : 330-994-1597
Email : ctlakron@ctleng.com

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CONCRETE TESTING REPORT

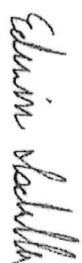
AIR : 1 - At Discharge / 2 - At Placement / 3 - Air Loss
SLUMP : 1-Initial Slump / 2 - After Water / 3 - After HRWR / 4 - After Pump

INITIAL CURING METHOD : Not Defined
INITIAL CURING TEMP (F) HIGH : LOW :

REMARKS :

SAMPLE NUMBER	DATE TESTED	AGE (days)	WEIGHT (lbs)	DIAM. (in)	LAB DATA - ASTM C39, C1231			TYPE OF BREAK	CONDITION OF SAMPLE	AVERAGE STRENGTH	LAB TECH
					AREA (in ²)	LOAD (lbs)	COMPRESSIVE STRENGTH (psi)				
4 - A	09/13/2023	7	8.10	4.01	12.62	53240	4230	Type 2-F	No Issues		M Silvers
4 - B	09/20/2023	14	8.25	4.01	12.62	59250	4700	Type 2-F	No Issues		M Silvers
4 - C	09/27/2023	21	8.25	4.01	12.62	61340	4860	Type 5-F	No Issues		M Silvers
4 - D	10/04/2023	28	8.35	4.01	12.62	68930	5460	Type 2-F	No Issues	5460	M Silvers
4 - E	HOLD										

CC : Addressee,
Beaver Constructors,
Reliable Ready Mix,
Beaver Constructors

Respectfully Submitted,
CTL Engineering, Inc.

Edwin Isabella, P.E.
Project Manager

Results relate only to the items tested.
This report shall not be reproduced, except in full, without the prior written approval of the agency.

Offices: Ohio, Indiana, Kentucky, West Virginia, India

22020015AKR-C03
09/06/2023
Page 2 of 2

CTL Engineering, Inc.
450 Grant Street Suite 110, Akron, OH, 44311
Phone : 330-994-1590 Fax : 330-994-1597
Email : ctlakron@ctleng.com

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CONCRETE TESTING REPORT

CLIENT : Beaver Constructors Inc
2000 Beaver Place Ave. SW
Canton, OH 44706
Attention : Jon Elkins

PROJECT : Marathon Materials Testing
PROJECT NO. : 22020015AKR

DATE PLACED : 08/22/2023
DATE RECEIVED : 08/23/2023
DATE ISSUED : 09/19/2023

FIELD DATA - ASTM C31, C138, C143, C172, C231, C1064

CONTRACTOR : Beaver Constructors
CONCRETE SUPPLIER : Reliable Ready Mix
CYLINDER MADE BY : Made by Client

INSPECTOR :

WEATHER :
HIGH TEMP (F) :
LOW TEMP (F) :

MIX PLACED : Class C, 4000 psi, Air-Entrainment
DESCRIPTION : This mix contains High-Range Water Reducer

SPECIFICATIONS		
AIR	MAX 0.0	MIN 0.0
SLUMP	0.0	0.0
W/ ADMIX	0.0	0.0
W/C	0.00	

STRUCTURE : Piers & Curb

ELEVATION :

PLACEMENT LOCATION : NPT Coalescer Piers and Curb

TICKET NO.	TIME BATCH	TIME PLACE	LOAD SIZE (cy)	AIR (%)				SLUMP (in)				DENSITY (pcf)	BATCH WT. (lbs)	YIELD (cf/cy)	TEMP (F)	WATER ADDED (gal)	SET NO.	LOCATION OF TEST SAMPLE
				1	2	3		1	2	3	4							
113422	10:20		5.00														3	Coalescer Piers
TOTAL PLACEMENT SIZE : 5.0 cubic yards																		

Offices: Ohio, Indiana, Kentucky, West Virginia, India

22020015AKR-C03
08/22/2023
Page 1 of 2

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CONCRETE TESTING REPORT

AIR : 1 - At Discharge / 2 - At Placement / 3 - Air Loss
SLUMP : 1-Initial Slump / 2 - After Water / 3 - After HRWR / 4 - After Pump

INITIAL CURING METHOD : Not Defined
INITIAL CURING TEMP (F) HIGH : LOW :

REMARKS :

SAMPLE NUMBER	DATE TESTED	AGE (days)	WEIGHT (lbs)	DIAM. (in)	LAB DATA - ASTM C39, C1231			TYPE OF BREAK	CONDITION OF SAMPLE	AVERAGE STRENGTH	LAB TECH
					AREA (in ²)	LOAD (lbs)	COMPRESSIVE STRENGTH (psi)				
3 - A	08/29/2023	7	8.55	4.01	12.62	56610	4480	Type 2-F	No Issues		M Silvers
3 - B	09/05/2023	14	8.50	4.01	12.62	59620	4730	Type 2-F	No Issues		M Silvers
3 - C	09/12/2023	21	8.55	4.01	12.62	68190	5400	Type 2-F	No Issues		M Silvers
3 - D	09/19/2023	28	8.60	4.01	12.62	70360	5570	Type 2-F	No Issues	5570	M Silvers
3 - E	HOLD										

CC : Addressee,
Beaver Constructors,
Reliable Ready Mix,
Beaver Constructors

Respectfully Submitted,
CTL Engineering, Inc.

Edwin Isabella
Edwin Isabella, P.E.

Project Manager

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22020015AKR-C03
08/22/2023
Page 2 of 2

RELIABLE READY MIX

1606 Allen Avenue S.E. • Canton, Ohio 44706 • Ph. 330-453-8266 • Fax 330-453-8543

CUSTOMER:	SHELLY CO.	DATE:	12-29-2023
ATTN:	ROB WOODHALL	PROJECT:	*PROJECT/ LAKE AVE & AMHERST INTERSECTION IMPROVEMENTS MASSILLON

As requested, Reliable Ready Mix Co. is submitting the following mix design and material information for the above-referenced project:

DESIGN MIX : 4000# ODOT QCI FA LMST BLEND A/E
JMF# C 75072011A
MIX CODE : QCI

Cement, PLC-Type 1L ASTM C595 IL	Heidelberg Materials	451	lbs.
Fly Ash Type F	S G S Tec Services	141	lbs
Limestone # 57 40017-01	Stoneco-Carey 703.13	1560	lbs
Limestone # 8 lbs 40017-01	Stoneco-Carey 703.02	220	lbs
Limestone # 467- 4,57,8 BLEND	Stoneco -Clay Center 008467	NA	lbs
Sand lbs 43007-01	Allied Corp Canton 703.02	1108	lbs
Water lbs	City Of Canton	284	lbs

Air Entertainment	Sika Air 260	6	oz per yd=7%
**Super Plasticizer	Sika SPMN@ Pump	0	oz per cwt/cmt
Water Reducer	Sika Plast 200	0	oz per cwt/cmt
Non Chloride	SikaSet NC	0	oz per cwt/cmt
MVRA 900	Logistic Mvra 900	0	oz per cwt/cmt
Fiber/2"Macro	Sika MacroMS20	0	lbs per yard
*TARGET SLUMP 4" H2O			
*TARGET AIR: DESIGN 7%			
AGG. CORR. FACTOR 0.3			

If you have any questions or need any additional information, please contact me at (330) 453-8266 or reliablestrong@hotmail.com. Please include RRM in All design Breaks from Labs.

Reliable Ready Mix Co, George Strong





Date: 6/26/2023
PRODUCER/SUPPLIER:
CLASS OF CONCRETE:

Reliable Ready Mix - PCCJMF
QC 1

SUBMITTAL STATUS:

APPROVED

JMF #

C75072011A

MIX DESIGN

AGGREGATES:

Source	Size / Type	Sp. Gr.	Abs.	SSD Design Wt	
Stoneco - Carey, OH (40017-01)	No. 57 Agg, 703.02 Concrete (Limestone)	2.70	1.26	1560	TOTAL 2888
Stoneco - Carey, OH (40017-01)	No. 8 Agg, 703.02 Concrete (Limestone)	2.70	1.49	220	
Central-Allied Enterprises - Canton, OH (43007-01)	Sand, 703.02 Concrete	2.65	0.79	1108	

CEMENTITIOUS MATERIALS:

Source	Material	Sp. Gr.			
Heidelberg Materials - Union Bridge, MD	BLENDED CEMENT 1L	3.08		451	TOTAL 592
Separation Technologies - Cardinal - Brilliant, OH	FLY ASH CLASS F	2.47		141	
DESIGN AIR: 7.0%	MAXIMUM W/Cm: 0.480	Water		284	34.1 GAL

ADMIXTURES:

Source	Admix Type	
Sika Corporation	AEA	Dose the admixtures according to the Manufacturer's recommendations; contract requirements; and project needs.
Sika Corporation	A	
Sika Corporation	F	
Sika Corporation	B	

CONCRETE PROPERTIES

DESIGN STRENGTH (psi)	4000	AGG. CORR. FACTOR	0.3	THEORETICAL UNIT WT	139.4
3 DAY STRENGTH (psi)		TOTAL WEIGHT	3764	ABSOLUTE VOLUME	27.00
7 DAY STRENGTH (psi)		SPECIAL DESIGN INFO:	NONE		
28 DAY STRENGTH (psi)					

REMARKS:

Check the above information for accuracy. Notify OMM within 3 business days of incorrect information.

The aggregate design weights provided above are in Saturated Surface Dry (SSD) condition. Adjustments to the batch weights and mix water are to be made to compensate for the moisture of the aggregates during mixing to assure that the specified W/Cm ratio is not exceeded.

Changes to aggregate, cementitious material or admixture sources require a new JMF #.



Heidelberg
Materials

Mill Test Certificate Report

Type: EcoCem PLC-Type IL (10)

Grind Number: May-23

Test Period: 05/01/23
to: 05/31/23

Certification

Heidelberg Materials certifies that at time of shipment, the portland cement designated as Type IL manufactured at the Mitchell, Indiana plant conforms to the standard composition and physical requirements of the current Standard Specification for Blended Cement of ASTM C-595 and AASHTO M240 for Type IL. This certification carries no other express or implied warranties and Heidelberg Materials, is not responsible for improper use or workmanship of the described cement.

General Information

Supplier: Heidelberg Materials

Source Location: Mitchell Plant

Address: 180 N. Meridian Road

Mitchell, IN 47446

Contact:

Telephone: 812-849-2191

Test Data on ASTM "Standard" Requirements

Chemical Requirements (ASTM C-595, Table 1)			Physical Requirements (ASTM C-595, Table 2)		
Item	Limit	Results	Item	Limit	Results
SO ₃	D	2.72	Fineness:		
Loss on Ignition	10 max	5.67	% Passing 45µm (No. 325)	A	96.17
Additional Data			Blaine Fineness (m ² /Kg)	A	460
			Density (g/cm ³)	A	3.07
C3A		8.3	Autoclave Expansion (%)	0.8 max	0.00
Chlorides		0.010	Vicat Setting Time:		
Equivalent Alkalies		0.47	Initial Set (minutes)	45 min	162
Notes: A: no applicable limit D: if SO ₃ exceeds 3.0%, C-1038 shall not be more than 0.020%			Air Content (%)	12 max	7.2
			Compressive Strengths Mpa:		
			1-Day		13.97
			3-Day	13.0 min	26.51
			7-Day	20.0 min	32.96
			28-Day	25.0 min	42.30
			Compressive Strengths, PSI:		
			1-Day		2026
			3-Day	1690 min	3844
			7-Day	2950 min	4782
			28-Day	3620 min	6134
			Mortar Bar Expansion, C-1038, %	Max 0.020	-

June 13, 2023
Date

Quality Control Manager:



TEC SERVICES

Testing • Engineering • Consulting

Client: Mr. Eric Koehler
Separation Technologies, LLC
188 Summerfield Court --Suite 201
Roanoke, VA 24019

Date: June 9, 2023
TEC Services Project No: TEC 12-0988
TEC Laboratory No: 23-750

REPORT OF FLY ASH TESTS

REPORT OF FLY ASH TESTS			
Date Sampled: DS 3/2-3/17		Start Date: March 2, 2023	
Manufacturer: Cardinal		End Date: March 17, 2023	
		Date Received: May 2, 2023	
Chemical Analysis	Results (wt%)	Specification (Class F)	
		ASTM C618-23e1	AASHTO M295-19
Silicon Dioxide (SiO ₂)	45.3	----	----
Aluminum Oxide (Al ₂ O ₃)	22.5	----	----
Iron Oxide (Fe ₂ O ₃)	20.29	----	----
Sum of Silicon Dioxide, Iron Oxide & Aluminum Oxide (SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃)	88.1	50.0 % min.	50.0 % min.
Calcium Oxide (CaO)	4.3	18.0 % max.	18.0 % max.
Magnesium Oxide (MgO)	0.8	----	----
Sodium Oxide (Na ₂ O)	0.49	----	----
Potassium Oxide (K ₂ O)	1.67	----	----
"Sodium Oxide Equivalent (Na ₂ O+0.658K ₂ O)"	1.59	----	----
Sulfur Trioxide (SO ₃)	1.09	5.0 % max.	5.0 % max.
Loss on Ignition	2.1	6.0 % max.	5.0 % max.
Moisture Content	0.09	3.0 % max.	3.0 % max.
Available Alkalies			
Sodium Oxide (Na ₂ O) as Available Alkalies	0.09	----	----
Potassium Oxide (K ₂ O) as Available Alkalies	0.33	----	----
Available Alkalies as "Sodium Oxide Equivalent (Na ₂ O+0.658K ₂ O)"	0.31	----	1.5 % max.
Physical Analysis			
Fineness (Amount Retained on #325 Sieve)	18.3%	34 % max.	34 % max.
Strength Activity Index (Using Lehigh Leeds Alabama Portland Cement)			
At 7 Days:			
Control Average, psi: 4440	Test Average, psi: 3960	89%	75 % min. [†] (of control)
At 28 Days:			
Control Average, psi: 5670	Test Average, psi: 4880	86%	75 % min. [†] (of control)
Water Requirements (Test H ₂ O/Control H ₂ O)			
Control, mls: 242	Test, mls: 236	98%	105 % max. (of control)
Autoclave Expansion	-0.03%	----	± 0.8 % max.
Specific Gravity:	2.47	----	----

[†] Meeting the 7 day or 28 day strength activity index will indicate specification compliance.

* Optional

The results of our testing indicate that this sample complies with ASTM C618-23e1 and AASHTO M295-19 specifications for Class F pozzolans.

Respectfully Submitted,

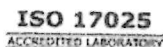
SGS TEC Services

Dean Roosa

Dean Roosa
Project Manager

Shawn P. McCormick

Shawn McCormick
Laboratory Principal



SGS TEC SERVICES
235 Buford Drive | Lawrenceville GA 30046
770-995-8000 | www.tecservices.com





The Shelly Company, Northeast
Kent Regional Lab
1353 Middlebury Road
Kent, Ohio 44240

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F +1 (330) 673 6342

www.shellycompany.com

January 6, 2023

To whom it may concern,

Re: Alkali-Silica Reactivity

This letter is to confirm that our Carey and Clay Center Limestone are 100% Dolomitic and have 0% Deleterious matter which would react with Alkali. It will meet specifications for ASTM C-1260. Please see attached test results.

If you have questions or need further information, feel free to contact me.

Yours sincerely,

Matthew Parcher
Quality Control Manager

T + 1 (330) 405-5189
C + 1 (216) 789-6993
E mparcher@shellyco.com



A CRH COMPANY

Plant 162_00378-Copley Rail Yard

Product 215-OHDOT 57 LS Wy 04017-42

Period: 10/06/2022 - 01/06/2023

Name/Title Alec Bright

Report Date 01/06/2023

Procedure	Sieve/Test	Result	Unit	OHDOT 57 LS Wy 04017-42
	1 1/2" (37.5mm)	100	%	100-100
	1" (25mm)	100	%	95-100
	3/4" (19mm)	86	%	
	1/2" (12.5mm)	30	%	25-60
	3/8" (9.5mm)	12	%	
	#4 (4.75mm)	5	%	0-10
	#8 (2.36mm)	4	%	0-5
	Grad Loss	0.212	%	
	Wash Loss (#200/75um)	2.7	%	
	Total Moisture	3.09	%	

Plant 162_00378-Copley Rail Yard

Product 208-OHDOT 8 LS Wy 04017-42

Period: 10/06/2022 - 01/06/2023

Name/Title Alec Bright

Report Date 01/06/2023

Procedure	Sieve/Test	Result	Unit	OHDOT 8 LS Wy 04017-42
	1/2" (12.5mm)	100	%	≥100
	3/8" (9.5mm)	90	%	85-100
	#4 (4.75mm)	19	%	10-30
	#8 (2.36mm)	6	%	0-10
	#16 (1.18mm)	5	%	0-5
	Grad Loss	0.039	%	
	Wash Loss (#200/75um)	3.1	%	
	Total Moisture	2.74	%	



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www.shellycompany.com

January 06, 2023

To whom it may concern:

Re: Canton Concrete Sand

The Shelly Company states that our Concrete Sand, produced at our Canton quarry (04307-01), meets the requirements of ASTM C33 "Standard Specifications for Concrete Aggregates". Please see attached for C33 testing results.

If you have questions or need further information, feel free to contact me.

Yours sincerely,

Matthew Parcher
Quality Control Manager

T + 1 (330) 405-5189
C + 1 (216) 789-6993
E mparcher@shellyco.com

Statistical Analysis Report

Plant 162_01426-Canton #1 S&G Aggregate
Product 171-OHDOT Natural Sand Gravel 02/05 C1 04307-01
Specification OHDOT Concrete Sand Gravel 04307-01
Period 01/06/2022 - 01/06/2023

Sample Id	Date	3/8" (9.5mm) (%)	#4 (4.75mm) (%)	#8 (2.36mm) (%)	#16 (1.18mm) (%)	#30 (.6mm) (%)	#50 (.3mm) (%)	#100 (.15mm) (%)	#200 (75µm) (%)	Pan (%)	Grad Loss (%)	Wash Loss (# 200/75µm) (%)	Absorption (%)	Total Moisture (%)
1490289020	05/31/2022 09:21	100	100	93	73	53	21	3	0.7	0.0	0.00	0.5		
203380409	06/03/2022 13:07	100	100	94	75					0.0	0.00			
251262690	06/06/2022 13:36	100	100	94	73	53	25		1.1	0.0	0.00	0.9		
203378920	06/13/2022 14:11	100	100	93	70	49	22	5	1.1	0.0	0.00	0.9		4.2
138295411	06/20/2022 12:15	100	100	93	69	48	20	4	1.0	0.0	0.00	0.8		4.3
1382958022	06/27/2022 07:06	100	100	92	69	48	21	5		0.0	0.00			
1187344842	07/05/2022 11:46												0.68	
393115224	07/05/2022 13:31	100	100	93	69	47	19	4	1.0	0.0	0.00	0.8		3.9
365675543	07/11/2022 14:14	100	100	94	73	53	23	4	0.8	0.0	0.00	0.6		3.6
1461110219	07/18/2022 09:17	100	100	92	70	51	24	5	1.1	0.0	0.00	1.0		
406304856	07/25/2022 06:49	100	100	93	71	51	22	4	1.0	0.0	0.00	0.8		4.6
1187345121	07/27/2022 06:40	100	100	93	72	51	22	3	0.7	0.0	0.00	0.5		
312243860	08/01/2022 07:45	100	100	93	71	51	21	3	0.7	0.0	0.00	0.5		3.9
365677845	08/22/2022 13:26	100	100	94	73	52	21	3	0.7	0.0	0.00	0.6		4.4
406305300	08/29/2022 13:36	100	100	94	72	50	19	3	0.7	0.0	0.00	0.5		3.7
915814480	09/06/2022 14:03	100	100	94	74	52	18	2	0.5	0.0	0.00	0.4		3.4
1001570855	09/12/2022 14:40	100	100	94	74	53	21	4	1.1	0.0	0.00	0.9		4.7
5657083	09/19/2022 13:31	100	100	94	74	51	16	2	0.5	0.0	0.00	0.3		4.4
1315884097	09/26/2022 09:20	100	100	94	73	52	18	2	0.5	0.0	0.00	0.4		
939492089	10/03/2022 13:49	100	100	93	72	50	18	3	0.7	0.0	0.00	0.5		4.4
1001569058	10/10/2022 14:01	100	100	93	69	48	18	3	0.7	0.0	0.00	0.5		4.3
1650230039	10/17/2022 13:53	100	100			44	15	2	0.5	0.0	0.00	0.4	0.79	3.7
1315882946	10/19/2022 13:58	100	100			43	14	2	0.4	0.0	0.00	0.4		3.7
1315884168	10/24/2022 09:46	100	100	92	67	45	15	2	0.6	0.0	0.00	0.3		4.0

StonemontQC 01/06/2023

CRH Americas Materials (AMAT)

Statistical Analysis Report

Plant 162_01426-Canton #1 S&G Aggregate
Product 171-OHDOT Natural Sand Gravel 02/05 C1 04307-01
Specification OHDOT Concrete Sand Gravel 04307-01
Period 01/06/2022 - 01/06/2023

Sample Id	Date	3/8" (9.5mm) (%)	#4 (4.75mm) (%)	#8 (2.36mm) (%)	#16 (1.18mm) (%)	#30 (.6mm) (%)	#50 (.3mm) (%)	#100 (.15mm) (%)	#200 (75µm) (%)	Pan (%)	Grad Loss (%)	Wash Loss (# 200/75µm) (%)	Absorption (%)	Total Moisture (%)
496780663	10/31/2022 13:37	100	100	92	67	45	15	2	0.5	0.0	0.00	0.4	0.77	4.1
276674879	11/07/2022 10:48	100	100	94	72	51	18	3	0.6	0.0	0.00	0.5		4.0
1832026850	11/14/2022 13:33	100	100	93	68	45	14	2	0.5	0.0	0.00	0.4		3.9
276672995	11/21/2022 09:07	100	100	93	68	45	15	2	0.4	0.0	0.00	0.3		3.8
1695048123	11/28/2022 12:34	100	100	93	68	45	17	3	0.8	0.0	0.00	0.6		4.8
43037454	12/05/2022 10:25	100	100	94	70	47	17	2	0.5	0.0	0.00	0.5		3.9
3/8"														
	Count	29	29	29	29	29	29	29	29	29	29	29	3	24
	Min	100	100	91	65	43	14	2	0.4	0.0	0.00	0.3	0.68	3.0
	Max	100	100	94	75	57	26	6	1.7	0.0	0.30	1.4	0.79	5.2
	Range	0	0	3	10	14	12	4	1.3	0.0	0.30	1.1	0.11	2.2
	Mean	100	100	93	71	49	19	3	0.8	0.0	0.01	0.6	0.75	4.1
	St Dev	0.0	0.0	0.9	2.7	3.4	3.3	1.2	0.32	0.00	0.056	0.28	0.059	0.48
	Lower Spec (LSL)	100	95	70	38	18	5	0	0					
	Upper Spec (USL)	100	100	100	80	60	30	10	5					
	PWS	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0					

BUILDING TRUST



Sika Corporation · 201 Polito Avenue · Lyndhurst, NJ 07071 · USA

CONTACT

Nathaniel Artman
Concrete Specialist
Phone: +1.330.495.0109
Mobile: +1.330.495.0109
artman.nathaniel@us.sika.com

RE: CERTIFICATE OF COMPLIANCE - SIKAIR-260

January 1, 2023

This is to confirm that Sika Air-260, air entraining admixture, conforms to the requirements of ASTM C260/AASHTO M 154.

Sika Air-260 is manufactured under quality control conditions by Sika Corporation. Sika Air-260 exhibits the typical physical properties as stated in the current data sheet for the product found at Sika's website www.usa.sika.com when used as directed within the product's shelf life. **Always read the current applicable product data sheet, safety data sheet and label prior to use.**

Results may differ based upon statistical variations depending upon mix design, mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKAI SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SIKAI SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Sincerely,

A handwritten signature in black ink, appearing to read "Nathaniel Artman".

Nathaniel Artman, EI
Concrete Specialist

** THIS CERTIFICATE OF COMPLIANCE IS VALID AS OF THE ISSUE DATE SET FORTH ABOVE*

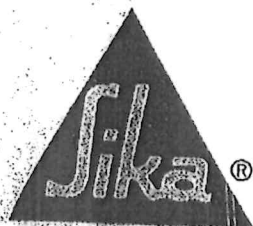
SIKAI CORPORATION

201 Polito Avenue · Lyndhurst · NJ 07071 · USA
Phone: +1 201 933 8800 · Fax: +1 201 933 6225 · www.usa.sika.com

Sika® Air 260

Air Entraining Admixture

Description	Sika Air-260 is a unique, synthetically manufactured surfactant for the air entrainment of concrete. Sika Air-260's patented formula provides superior control of the air content and finishability in air-entrained concrete. Sika Air-260 increases concrete's durability, making it more resistant to the damaging effects of freezing and thawing, while improving workability and reducing bleeding. Sika Air-260 meets the requirements of ASTM C 260.
Applications	Sika Air-260 is designed for use in exterior and interior concrete such as highway paving, curbs and gutters, sidewalks, driveways, slabs, walls, or other areas needing protection from freeze-thaw damage or the harmful effect of de-icing salts. Sika Air-260 is effective in increasing the workability of the concrete, especially in lean or harsh mixes.
Advantages	▪ Increases resistance to freeze-thaw cycles and scaling. ▪ Improves workability. ▪ Reduces bleeding. ▪ Improves appearance of architectural concrete. ▪ Reduces size and number of capillary channels, increasing impermeability ▪ Substantially increases durability. ▪ Provides superior air-void system.
How to Use	
Dosage	The recommended dosage range for Sika Air-260 is 0.1 to 6.0 ounces per 100 lbs. (7 to 400 ml/100kg) of cementitious material. Various concrete materials, slump, ambient air temperature, additions of pozzolanic materials, mixing time, and type and brand of cement will affect dosage rates. It is recommended that trial mixes be conducted in order to determine the dosage to obtain the required percentage of entrained air. In addition, a regular program of air tests should be instituted in order to adjust the dosage to changing conditions. Please contact your local Sika representative or Sika's technical service department at 1-800-933-7452 for any assistance in dosage recommendations.
Mixing	Measure the required quantity per batch manually or with automatic dispenser equipment. Add Sika Air-260 to mixing water or sand. Do not mix with dry cement. Combination with other Admixtures: When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Combination with other admixtures, may affect the amount of entrained air in the mix. If multiple admixtures are used, actual air content should be verified as per applicable ASTM standards to ensure desired level of air entrainment is achieved.



Packaging

Sika Air-260 is available in 55 gallon drum (208 liter), 275 gallon totes (1040 liters) drums and bulk delivery.

Storage and Shelf life

Sika Air-260 should be kept above 38°F (3°C). If product drops below 38°F (3°C), DO NOT USE and immediately contact our Technical Department. DO NOT USE PRESSURIZED AIR FOR AGITATION.

Shelf life when stored in original packaging in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year from the date of manufacture

Typical Data**Appearance**

Brown liquid.

Specific Gravity

Approx. 1.01

CAUTION

WARNING: IRRITANT. Contains Tall oil fatty acids (CAS: 61790-12-3). Fatty acids, castor-oil (CAS: 61789-44-4), sodium hydroxide (CAS: 1310-73-2) and 2,2'-oxybisethanol (CAS: 111-46-6). Causes eye/skin irritation. Harmful if swallowed. May cause respiratory tract irritation.

Handling and Storage

Avoid direct contact. Wear personal protective equipment (chemical resistant goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Open doors and windows during use. Use a properly fitted NIOSH respirator if ventilation is poor. Wash thoroughly with soap and water after use. Remove contaminated clothing and launder before reuse.

First Aid

Eyes – Hold eyelids apart and flush thoroughly with water for 15 minutes. **Skin** – Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. **Inhalation** – Remove to fresh air. **Ingestion** – Do not induce vomiting. Dilute with water. Contact physician. In all cases contact a physician immediately if symptoms persist.

Clean Up

Use personal protective equipment (chemical resistant gloves/ goggles/clothing). Without direct contact, sweep up spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable local, state, and federal regulations.

KEEP CONTAINER TIGHTLY CLOSED • KEEP OUT OF REACH OF CHILDREN • NOT FOR INTERNAL CONSUMPTION • FOR INDUSTRIAL USE ONLY

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at www.sikausa.com or by calling 800-933-7452.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at www.sikausa.com or 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Sika shall not be liable under any legal theory for SPECIAL OR CONSEQUENTIAL DAMAGES. Sika shall not be responsible for the use of this product in a manner to infringe on any patent or any other intellectual property rights held by others.

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Fax: (514) 697-3087
www.sika.ca

1-800-933-SIKA



Regional Information and Sales Centers. For the location of your nearest Sika representative, contact your regional center.

U.S.:
North East Region: Fairless Hills, PA, Phone: (215) 295-6800
South East Region: Conyers, GA, Phone: (770) 760-1300
North Central Region: Marion, OH, Phone: (800) 851-1515
South Central Region: Mesquite, TX, Phone: (972) 289-6489
Western Region: Santa Fe Springs, CA, Phone: (562) 903-3650

Canada: Ontario: Mississauga, ON, Phone: (905) 795-3177,

Alberta: Edmonton, AB, Phone: (780) 486-6111

Quality Certification Numbers: Lyndhurst: FM 59711 (ISO 9001), FM 70421 (QS 9000), Marion: FM 69715, Kansas City: FM 69107, Santa Fe Springs: FM 69408

Sika is a registered trademark. Made in USA. Printed in USA



GEO TEST, LLC.
2340 Navarre Road
Canton, Ohio 44706
(330) 956-4098

REPORT OF CONCRETE CYLINDER STRENGTH TEST

REPORT DATE: July 25, 2023

PROJECT NO: GT 23006-7
 PROJECT: Misc 2023 Testing - Test Pour
 Allen Ave. Plant-Canton, Ohio
 CLIENT: Reliable Ready Mix
 ADDRESS: 1606 Allen Avenue S. E.
 Canton, Ohio 44707

FIELD TEST CONDITIONS AND RESULTS (ASTM C 31)

PLACEMENT LOCATION: Test Pour - QC1

DATE CAST:	June 27, 2023	BATCH WEIGHTS
DATE RECEIVED:	June 28, 2023	CONCRETE SUPPLIER:
TIME CYLINDERS CAST:	11:40 am	Reliable Ready Mix
AMBIENT TEMP:	67° F	BATCH TICKET NO:
CONCRETE TEMP:(ASTM C 1094)	76° F	TRUCK NUMBER:
AIR CONTENT, %: (ASTM C231)	6.4 %	MIX DESIGN NUMBER:
SLUMP, INCHES: (ASTM C 143)	4.50"	QC1
WATER ADDED:	--	CEMENT:
DESIGN STRENGTH:	4,000 psi	448 lbs.
CONCRETE CONTRACTOR:	--	FLYASH:
CAST BY:	Client	141 lbs.
UNIT WEIGHT:	141.6 PCF	WATER:
YIELD:	26.2	233 lbs.
		FINE AGGREGATE:
		1110 lbs. Sand
		COARSE AGGREGATE:
		1570 lbs. # 57 Limestone
		COARSE AGGREGATE:
		220 lbs. # 8 Limestone
		ADMIXTURE:
		13.0 oz/yd AE 260
		W/C RATIO:
		.52
		TOTAL BATCH WEIGHT:
		3722 lbs.

LABORATORY TEST RESULTS (ASTM C 39)

LAB NO.	TEST DATE	AGE (DAYS)	TOTAL LOAD (lbs.)	DIAMETER (in)	X-SECTIONAL AREA (in. ²)	CYLINDER WEIGHT (lbs.)	COMPRESSIVE STRENGTH (psi)	PERCENT OF SPECIFICATION	TYPE OF FRACTURE
1726-a	06-30-23	3	34730	4.00	12.566	8.4	2760	69%	3
1726-b	07-04-23	7	43190	4.00	12.566	8.4	3440	86%	3
1726-c	07-25-23	28	53750	4.00	12.566	8.4	4227	107%	4
1726-d	07-25-23	28	52440	4.00	12.566	8.4	4173	104%	1
Average at 28 days :							4220	106%	

Specification @ 28 days. 4,000 psi

THESE TEST RESULTS ARE REPRESENTATIVE OF THE ABOVE-REFERENCED TRUCK/BATCH ONLY

TYPE 1 - Cones on both ends	TYPE 3 - Columnar/Vertical Cracks	TYPE 5 - Side Fracture at top or bottom
TYPE 2 - Cone/Vertical Cracks	TYPE 4 - Diagonal Fracture	TYPE 6 - Cylinder End Pointed

Reviewed By:

David Dickens

David Dickens
 Geologist/Laboratory Manager

Client: **Stanley Miller Construction Co.** Date Sampled: **10/12/23**
Project: **Stark County - PID: 109592 - Farber Street Bridge** Date Rec'd in Lab: **10/13/23**
Location: **Rear Abutment Footing** Producer: **Reliable Ready Mix**
Contractor: **Stanley Miller Construction Co.** Lot: **01**
Conc. Desc.: **QC1** Sublot: **03**
Sampled By: **CTL** C143 - Slump: **4.75"**
Transported By: **Smith** C231 - Entrained Air: **6.80%**
Invoice#: **93489** C1064 - Temp: **60 °**
Issued: **11/09/23** C138 - Unit Wt: **142.64 lbs./cu.ft.**

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231209A	11/09/23	28	4.01 / 12.6293	8.35	74820	5924	3	Powell
231209B	11/09/23	28	4.01 / 12.6293	8.35	72990	5779	5	Powell
231209C	11/09/23	28	4.01 / 12.6293	8.35	74880	5929	5	Powell

The Average of Three 28 Day Tests is 5,880 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services

Client:	Stanley Miller Construction Co.	Date Sampled:	10/12/23
Project:	Stark County - PID: 109592 - Farber Street Bridge	Date Rec'd in Lab:	10/13/23
Location:	Rear Abutment Footing	Producer:	Reliable Ready Mix
Contractor:	Stanley Miller Construction Co.	Lot:	01
Conc. Desc.:	QC1	Sublot:	03
Sampled By:	Smith	C143 - Slump:	4.75"
Transported By:	Smith	C231 - Entrained Air:	6.80%
Invoice#:	93489	C1064 - Temp:	60 °
Issued:	11/09/23	C138 - Unit Wt:	142.64 lbs./cu.ft.

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231208A	11/09/23	28	4.01 / 12.6293	8.30	77970	6174	6	Powell
231208B	11/09/23	28	4.01 / 12.6293	8.30	79890	6326	5	Powell
231208C	11/09/23	28	4.01 / 12.6293	8.30	77830	6163	3	Powell

The Average of Three 28 Day Tests is 6,220 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services

Client:	Stanley Miller Construction Co.	Date Sampled:	10/12/23
Project:	Stark County - PID: 109592 - Farber Street Bridge	Date Rec'd in Lab:	10/13/23
Location:	Rear Abutment Footing	Producer:	Reliable Ready Mix
Contractor:	Stanley Miller Construction Co.	Lot:	01
Conc. Desc.:	QC1	Sublot:	01
Sampled By:	Smith	C143 - Slump:	3.50"
Transported By:	Smith	C231 - Entrained Air:	5.50%
Invoice#:	93473	C1064 - Temp:	57 °
Issued:	11/09/23	C138 - Unit Wt:	145.08 lbs./cu.ft.

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231197A	11/09/23	28	4.01 / 12.6293	8.50	96080	7607	5	Powell
231197B	11/09/23	28	4.01 / 12.6293	8.50	102230	8095	3	Powell
231197C	11/09/23	28	4.01 / 12.6293	8.50	101870	8066	5	Powell

The Average of Three 28 Day Tests is 7,920 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services

Client:	Stanley Miller Construction Co.	Date Sampled:	10/12/23
Project:	Stark County - PID: 109592 - Farber Street Bridge	Date Rec'd in Lab:	10/13/23
Location:	Rear Abutment Footing	Producer:	Reliable Ready Mix
Contractor:	Stanley Miller Construction Co.	Lot:	01
Conc. Desc.:	QC1	Sublot:	02
Sampled By:	Smith	C143 - Slump:	5.00"
Transported By:	Smith	C231 - Entrained Air:	5.70%
Invoice#:	93481	C1064 - Temp:	62 °
Issued:	11/09/23	C138 - Unit Wt:	144.52 lbs./cu.ft.

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231203A	11/09/23	28	4.01 / 12.6293	8.40	76090	6025	5	Powell
231203B	11/09/23	28	4.01 / 12.6293	8.40	79870	6324	5	Powell
231203C	11/09/23	28	4.01 / 12.6293	8.40	72570	5746	5	Powell

The Average of Three 28 Day Tests is 6,030 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services

Client:	Stanley Miller Construction Co.	Date Sampled:	10/20/23
Project:	Stark County - PID: 109592 - Farber Street Bridge	Date Rec'd in Lab:	10/21/23
Location:		Producer:	Reliable Ready Mix
Contractor:	Stanley Miller Construction Co.	Lot:	01
Conc. Desc.:	QC1	Sublot:	07
Sampled By:	Smith	C143 - Slump:	5.50"
Transported By:	Smith	C231 - Entrained Air:	7.30%
Invoice#:	93662	C1064 - Temp:	58 °
Issued:	11/17/23	C138 - Unit Wt:	141.80 lbs./cu.ft.

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231258A	11/17/23	28	4.01 / 12.6293	8.35	80990	6413	5	Powell
231258B	11/17/23	28	4.01 / 12.6293	8.35	79340	6282	5	Powell
231258C	11/17/23	28	4.01 / 12.6293	8.25	79760	6316	5	Powell

The Average of Three 28 Day Tests is 6,340 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services

Client:	Stanley Miller Construction Co.	Date Sampled:	10/12/23
Project:	Stark County - PID: 109592 - Farber Street Bridge	Date Rec'd in Lab:	10/13/23
Location:	Rear Abutment Footing	Producer:	Reliable Ready Mix
Contractor:	Stanley Miller Construction Co.	Lot:	01
Conc. Desc.:	QC1	Sublot:	03
Sampled By:	CTL	C143 - Slump:	4.75"
Transported By:	Smith	C231 - Entrained Air:	6.80%
Invoice#:	93489	C1064 - Temp:	60 °
Issued:	11/09/23	C138 - Unit Wt:	142.64 lbs./cu.ft.

Note:

**Report on Compressive Strength of Cylindrical Concrete Specimens
ASTM C39**

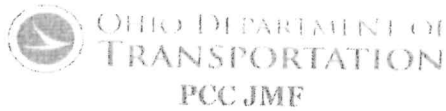
Lab#	Date of Test	Days Old	Diameter / Cross Area	Weight	Max Load	Comp. Strength	Break Type	Technician
231209A	11/09/23	28	4.01 / 12.6293	8.35	74820	5924	3	Powell
231209B	11/09/23	28	4.01 / 12.6293	8.35	72990	5779	5	Powell
231209C	11/09/23	28	4.01 / 12.6293	8.35	74880	5929	5	Powell

The Average of Three 28 Day Tests is 5,880 psi

Respectfully Submitted,



Nathaniel Powell,
Director of Inspection and Testing Services



Date: 6/26/2023

PRODUCER/SUPPLIER:

CLASS OF CONCRETE:

Reliable Ready Mix - PCCJMF
QC MISC

SUBMITTAL STATUS:

APPROVED

JMF #

C75072MC1A

MIX DESIGN

AGGREGATES:

Source	Size / Type	Sp. Gr.	Abs.	SSD Design Wt	
Stoneco - Carey, OH (40017-01)	No. 57 Agg, 703.02 Concrete (Limestone)	2.70	1.26	1677	TOTAL 2977
Central-Allied Enterprises - Canton, OH (43007-01)	Sand, 703.02 Concrete	2.65	0.79	1300	
0					

CEMENTITIOUS MATERIALS:

Source	Material	Sp. Gr.			
Heidelberg Materials - Union Bridge, MD	BLENDED CEMENT 1L	3.08		600	TOTAL 600
DESIGN AIR: 7.0%	MAXIMUM W/Cm: 0.430	Water	258		30.9 GAL

ADMIXTURES:

Source	Admix Type	
Sika Corporation	AEA	Dose the admixtures according to the Manufacturer's recommendations; contract requirements; and project needs.
Sika Corporation	A	
Sika Corporation	F	
Sika Corporation	B	

CONCRETE PROPERTIES

DESIGN STRENGTH (psi)	4000	AGG. CORR. FACTOR	0.3	THEORETICAL UNIT WT	142.0
3 DAY STRENGTH (psi)		TOTAL WEIGHT	3835	ABSOLUTE VOLUME	27.00
7 DAY STRENGTH (psi)		SPECIAL DESIGN INFO:	NONE		
28 DAY STRENGTH (psi)					

REMARKS:

Check the above information for accuracy. Notify OMM within 3 business days of incorrect information.

The aggregate design weights provided above are in Saturated Surface Dry (SSD) condition. Adjustments to the batch weights and mix water are to be made to compensate for the moisture of the aggregates during mixing to assure that the specified W/Cm ratio is not exceeded.

Changes to aggregate, cementitious material or admixture sources require a new JMF #.



Heidelberg
Materials

Mill Test Certificate Report

Type: EcoCem PLC-Type IL (10)

Test Period: 05/01/23

Grind Number: May-23

to: 05/31/23

Certification

Heidelberg Materials certifies that at time of shipment, the portland cement designated as Type IL manufactured at the Mitchell Indiana plant conforms to the standard composition and physical requirements of the current Standard Specification for Blended Cement of ASTM C-595 and AASHTO M240 for Type IL. This certification carries no other express or implied warranties and Heidelberg Materials, is not responsible for improper use or workmanship of the described cement.

General Information

Supplier: Heidelberg Materials

Source Location: Mitchell Plant

Address: 180 N. Meridian Road

Mitchell, IN 47446

Contact:

Telephone: 812-849-2191

Test Data on ASTM "Standard" Requirements

Chemical Requirements (ASTM C-595, Table 1)			Physical Requirements (ASTM C-595, Table 2)		
Item	Limit	Results	Item	Limit	Results
SO ₃	D	2.72	Fineness		
Loss on Ignition	10 max	5.67	% Passing 45µm (No. 325)	A	96.17
			Blaine Fineness (m ² /Kg)	A	480
			Density (g/cm ³)	A	3.07
Additional Data					
C3A		6.3	Autoclave Expansion (%)	0.8 max	0.00
Chlorides		0.010	Vicat Setting Time		
Equivalent Alkalies		0.47	Initial Set (minutes)	45 min	162
Notes:					
A: no applicable limit			Air Content (%)	12 max	7.2
D: if SO ₃ exceeds 3.0%, C-1038 shall not be more than 0.020%					
			Compressive Strengths Mpa:		
			1-Day		13.97
			3-Day	13.0 min	26.51
			7-Day	20.0 min	32.98
			28-Day	25.0 min	42.30
			Compressive Strengths, PSI:		
			1-Day		2026
			3-Day	1880 min	3844
			7-Day	2960 min	4782
			28-Day	3620 min	6134
			Mortar Bar Expansion, C-1038, %	Max 0.020	-

June 13, 2023
Date

Quality Control Manager:



The Shelly Company, Northeast
Kent Regional Lab
1353 Middlebury Road
Kent, Ohio 44240

T +1 (330) 673 2970
F +1 (330) 673 6342

www.shellycompany.com

January 6, 2023

To whom it may concern,

Re: Alkali-Silica Reactivity

This letter is to confirm that our Carey and Clay Center Limestone are 100% Dolomitic and have 0% deleterious matter which would react with Alkali. It will meet specifications for ASTM C-1260. Please see attached test results.

If you have questions or need further information, feel free to contact me.

Yours sincerely,

Matthew Parcher
Quality Control Manager

T + 1 (330) 405-5189
C + 1 (216) 789-6993
E mparcher@shellyco.com

Plant 162_00378-Copley Rail Yard

Product 215-OHDOT 57 LS Wy 04017-42

Period: 10/06/2022 - 01/06/2023

Name/Title Alec Bright

Report Date 01/06/2023

Procedure	Sieve/Test	Result	Unit	OHDOT 57 LS Wy 04017-42
	1 1/2" (37.5mm)	100	%	100-100
	1" (25mm)	100	%	95-100
	3/4" (19mm)	86	%	
	1/2" (12.5mm)	30	%	25-60
	3/8" (9.5mm)	12	%	
	#4 (4.75mm)	5	%	0-10
	#8 (2.36mm)	4	%	0-5
	Grad Loss	0.212	%	
	Wash Loss (#200/75um)	2.7	%	
	Total Moisture	3.09	%	



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1353 Middlebury Road
Kent, Ohio 44240

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F +1 (330) 673 6342

www.shellycompany.com

January 06, 2023

To whom it may concern:

Re: Canton Concrete Sand

The Shelly Company states that our Concrete Sand, produced at our Canton quarry (04307-01), meets the requirements of ASTM C33 "Standard Specifications for Concrete Aggregates". Please see attached for C33 testing results.

If you have questions or need further information, feel free to contact me.

Yours sincerely,

Matthew Parcher
Quality Control Manager

T + 1 (330) 405-5189
C + 1 (216) 789-6993
E mparcher@shellyco.com

Statistical Analysis Report

Plant 162_01426-Canton #1 S&G Aggregate
Product 171-OH-DOT Natural Sand Gravel 02/05 C1 04307-01
Specification OHDOT Concrete Sand Gravel 04307-01
Period 01/06/2022 - 01/06/2023

Sample Id	Date	3/8" (9.5mm) (%)	#4 (4.75mm) (%)	#8 (2.36mm) (%)	#16 (1.18mm) (%)	#30 (.85mm) (%)	#50 (.3mm) (%)	#100 (.15mm) (%)	#200 (75µm) (%)	Pen (%)	Grad Loss (%)	Wash Loss (# 200/75µm) (%)	Absorption (%)	Total Moisture (%)
1490289020	05/31/2022 09:21	100	100	93	73	53	21	3	0.7	0.0	0.00	0.5		4.0
203380409	06/06/2022 13:07	100	100	94	75	53	21			0.0	0.00			
251252690	06/06/2022 13:36	100	100	94	73	53	25		1.1	0.0	0.00	0.9		
2033378920	06/13/2022 14:11	100	100	93	70	49	22	5	1.1	0.0	0.00	0.9		4.2
1382954111	06/20/2022 12:15	100	100	93	69	48	20	4	1.0	0.0	0.00	0.8		4.3
1382859022	06/27/2022 07:06	100	100	92	69	48	21	5		0.0	0.00			
1187344642	07/06/2022 11:46												0.68	
393115224	07/05/2022 13:31	100	100	93	69	47	19	4	1.0	0.0	0.00	0.8		3.9
365675543	07/11/2022 14:14	100	100	94	73	53	23	4	0.8	0.0	0.00	0.6		3.6
1461110219	07/18/2022 09:17	100	100	92	70	51	24	5	1.1	0.0	0.00	1.0		
406304856	07/25/2022 08:49	100	100	93	71	51	22	4	1.0	0.0	0.00	0.8		4.6
1187345121	07/27/2022 06:40	100	100	93	72	51	22	3	0.7	0.0	0.00	0.5		4.2
312243860	08/01/2022 07:45	100	100	93	71	51	21	3	0.7	0.0	0.00	0.5		3.9
365677845	08/22/2022 13:26	100	100	94	73	52	21	3	0.7	0.0	0.00	0.5		3.8
406305300	08/29/2022 13:36	100	100	94	72	50	19	3	0.7	0.0	0.00	0.6		4.4
915814480	09/06/2022 14:03	100	100	94	74	52	18	2	0.5	0.0	0.00	0.5		3.7
1001570855	09/12/2022 14:40	100	100	94	74	53	21	4	1.1	0.0	0.00	0.4		3.4
5657083	09/19/2022 13:31	100	100	94	74	51	16	2	0.5	0.0	0.00	0.9		4.7
1315884037	09/26/2022 09:20	100	100	94	73	52	18	2	0.5	0.0	0.00	0.3		4.4
939492089	10/03/2022 13:49	100	100	93	72	50	18	3	0.7	0.0	0.00	0.4		
1001569058	10/10/2022 14:01	100	100	93	69	48	18	3	0.7	0.0	0.00	0.5		4.4
1650230039	10/17/2022 13:53	100	100	93	69	44	15	2	0.5	0.0	0.00	0.5	0.79	4.3
1315882946	10/19/2022 13:58	100	100	93	69	43	14	2	0.4	0.0	0.00	0.4		3.7
1315884168	10/24/2022 09:46	100	100	92	67	45	15	2	0.6	0.0	0.00	0.3		3.7
														4.0

Statistical Analysis Report

Plant 162_01426-Canton #1 S&G Aggregate
Product 171-OHDOT Natural Sand Gravel 02/05 C1 04307-01
Specification OHDOT Concrete Sand Gravel 04307-01
Period 01/06/2022 - 01/06/2023
Sample Id Date

Sample ID	Date	3/8" (9.5mm) (%)	#4 (4.75mm) (%)	#8 (2.36mm) (%)	#16 (1.18mm) (%)	#30 (.6mm) (%)	#50 (.3mm) (%)	#100 (.15mm) (%)	#200 (75µm) (%)	Per (%)	Grad Loss (%)	Wash Loss (# 200/75µm) (%)	Absorption (%)	Total Moisture (%)
496780563	10/31/2022	100	100	92	67	45	15	2	0.5	0.0	0.00	0.4	0.77	4.1
276674979	11/07/2022	100	100	94	72	51	18	3	0.6	0.0	0.00	0.5		4.0
1832926850	11/14/2022	100	100	93	68	45	14	2	0.5	0.0	0.00	0.4		3.9
276672395	11/21/2022	100	100	93	68	45	15	2	0.4	0.0	0.00	0.3		3.8
1695048123	11/29/2022	100	100	93	68	45	17	3	0.8	0.0	0.00	0.5		4.8
43037454	12/05/2022	100	100	94	70	47	17	2	0.5	0.0	0.00	0.5		3.9

Count	29	29	29	29	29	29	29	29	29	29	29	29	3	24
Min	100	100	91	66	43	14	2	0.4	0.0	0.00	0.30	0.3	0.68	3.0
Max	100	100	94	75	57	26	6	1.7	0.0	0.30	1.4	1.1	0.79	5.2
Range	0	0	3	10	14	12	4	1.3	0.0	0.30	1.1	0.6	0.11	2.2
Mean	100	100	93	71	49	19	3	0.9	0.0	0.01	0.6	0.056	0.75	4.1
St Dev	0.0	0.0	0.9	2.7	3.4	3.3	1.2	0.32	0.00	0.056	0.28	0.059	0.059	0.48
Lower Spec (LSL)	100	95	70	38	18	5	0							
Upper Spec (USL)	100	100	100	80	50	30	10	5						
PWS	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0						

BUILDING TRUST



Sika Corporation • 201 Polito Avenue • Lyndhurst, NJ 07071 • USA

CONTACT

Nathaniel Artman
Concrete Specialist
Phone: +1.330.495.0109
Mobile: +1.330.495.0109
artman.nathaniel@us.sika.com

RE: CERTIFICATE OF COMPLIANCE - SIKA AIR-260

January 1, 2023

This is to confirm that Sika Air-260, air entraining admixture, conforms to the requirements of ASTM C260/AASHTO M 154.

Sika Air-260 is manufactured under quality control conditions by Sika Corporation. Sika Air-260 exhibits the typical physical properties as stated in the current data sheet for the product found at Sika's website www.usa.sika.com when used as directed within the product's shelf life. Always read the current applicable product data sheet, safety data sheet and label prior to use.

Results may differ based upon statistical variations depending upon mix design, mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Sincerely,

Nathaniel Artman, EI
Concrete Specialist

* THIS CERTIFICATE OF COMPLIANCE IS VALID AS OF THE ISSUE DATE SET FORTH ABOVE

SIKA CORPORATION
201 Polito Avenue • Lyndhurst • NJ 07071 • USA
Phone: +1 201 933 8800 • Fax: +1 201 933 6225 • www.usa.sika.com

Sika® Air 260

Air Entraining Admixture

Description	Sika Air-260 is a unique, synthetically manufactured surfactant for the air entrainment of concrete. Sika Air-260's patented formula provides superior control of the air content and finishability in air-entrained concrete. Sika Air-260 increases concrete's durability, making it more resistant to the damaging effects of freezing and thawing, while improving workability and reducing bleeding. Sika Air-260 meets the requirements of ASTM C 260.
Applications	Sika Air-260 is designed for use in exterior and interior concrete such as highway paving, curbs and gutters, sidewalks, driveways, slabs, walls, or other areas needing protection from freeze-thaw damage or the harmful effect of de-icing salts. Sika Air-260 is effective in increasing the workability of the concrete, especially in lean or harsh mixes.
Advantages	▪ Increases resistance to freeze-thaw cycles and scaling. ▪ Improves workability. ▪ Reduces bleeding. ▪ Improves appearance of architectural concrete. ▪ Reduces size and number of capillary channels, increasing impermeability. ▪ Substantially increases durability. ▪ Provides superior air-void system.
How to Use	
Dosage	The recommended dosage range for Sika Air-260 is 0.1 to 6.0 ounces per 100 lbs. (7 to 400 ml/100kg) of cementitious material. Various concrete materials, slump, ambient air temperature, additions of pozzolanic materials, mixing time, and type and brand of cement will affect dosage rates. It is recommended that trial mixes be conducted in order to determine the dosage to obtain the required percentage of entrained air. In addition, a regular program of air tests should be instituted in order to adjust the dosage to changing conditions. Please contact your local Sika representative or Sika's technical service department at 1-800-933-7452 for any assistance in dosage recommendations.
Mixing	Measure the required quantity per batch manually or with automatic dispenser equipment. Add Sika Air-260 to mixing water or sand. Do not mix with dry cement. Combination with other Admixtures: When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Combination with other admixtures, may affect the amount of entrained air in the mix. If multiple admixtures are used, actual air content should be verified as per applicable ASTM standards to ensure desired level of air entrainment is achieved.



Packaging

Sika Air-260 is available in 55 gallon drum (208 liter), 275 gallon totes (1040 liters) drums and bulk delivery.

Storage and Shelf Life

Sika Air-260 should be kept above 38°F (3°C). If product drops below 38°F (3°C), DO NOT USE and immediately contact our Technical Department. DO NOT USE PRESSURIZED AIR FOR AGITATION.

Shelf life when stored in original packaging in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year from the date of manufacture.

Typical Data

Appearance

Brown liquid.

Specific Gravity

Approx. 1.01

CAUTION

WARNING: IRRITANT. Contains Tall oil fatty acids (CAS: 61790-12-3), Fatty acids, castor-oil (CAS: 61789-44-4), sodium hydroxide (CAS: 1310-73-2) and 2,2'-oxybisethanol (CAS: 111-46-6). Causes eye/skin irritation. Harmful if swallowed. May cause respiratory tract irritation.

Handling and Storage

Avoid direct contact. Wear personal protective equipment (chemical resistant goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Open doors and windows during use. Use a properly fitted NIOSH respirator if ventilation is poor. Wash thoroughly with soap and water after use. Remove contaminated clothing and launder before reuse.

First Aid

Eyes - Hold eyelids apart and flush thoroughly with water for 15 minutes.
Skin - Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. **Inhalation** - Remove to fresh air. **Ingestion** - Do not induce vomiting. Dilute with water. Contact physician. In all cases contact a physician immediately if symptoms persist.

Clean Up

Use personal protective equipment (chemical resistant gloves/ goggles/clothing). Without direct contact, sweep up spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable local, state, and federal regulations.

KEEP CONTAINER TIGHTLY CLOSED • KEEP OUT OF REACH OF CHILDREN • NOT FOR INTERNAL CONSUMPTION • FOR INDUSTRIAL USE ONLY

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and instructions relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s).

Sika reserves the right to change the properties of its products without notice. All sales of Sika products are subject to its current terms and conditions of sale which are available at www.sikausa.com or by calling 800-933-7482.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at www.sikausa.com or 800-933-7482. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of removal. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR SPECIAL OR CONSEQUENTIAL DAMAGES. Sika shall not be liable under any legal theory in a manner to infringe on any patent or any other intellectual property rights held by others.

Sika Corporation
201 Polite Avenue
Lyndhurst, NJ 07071
Phone: (201) 833-8800
Fax: (201) 833-8225
www.sikausa.com

Sika Canada Inc.
801, Delmar Avenue
Pointe-Claire, QC H9R 4A0
Phone: (514) 697-2610
Fax: (514) 697-3067
www.sika.ca

1-800-933-SIKA

Regional Information and Sales Centers. For the location of your nearest Sika representative, contact your regional center.

U.S.: North East Region: Fairless Hills, PA, Phone: (215) 295-6300
South East Region: Conyers, GA, Phone: (770) 760-1300
Western Region: Santa Fe Springs, CA, Phone: (562) 903-3850

North Central Region: Marion, OH, Phone: (603) 851-1545
South Central Region: Mesquite, TX, Phone: (972) 269-6448

Canada: Ontario: Mississauga, ON, Phone: (905) 795-3177

Alberta: Edmonton, AB, Phone: (780) 466-6111

Quality Certification Numbers: Lyndhurst: PA 61711 (ISO 9001), PA 76421 (ISO 14001), Marlton: PA 69716, Kansas City: PA 61101, Santa Fe Springs: PA 64428
Sika is a registered trademark. Made in USA. Printed in USA.





PRODUCT DATA SHEET

ADA IN-LINE CAST-IN-PLACE REPLACEABLE WET SET COMPOSITE TWS PANEL

View additional photos, drawings and specifications on our website: www.adatale.com.

Please call (800) 372-0519 with any questions

DOMGEOMETRY: In accordance with ADA Regulations for Detectable Warning Surfaces on Curb Ramps: Truncated domes with a diameter of nominal 0.9", a height of nominal 0.2", and an in-line spacing of 1.60"-2.40" max.

DIMENSIONS: TWS Units are available in 24"x36", 24"x48", 24"x60", 36"x48", and 36"x60" sizes. TWS Units may also be custom configured to accommodate specific project requirements. TWS Units measure 1/4" nominal thickness and features a 3/4" x 1" thick wide perimeter flange with air release vents.



Cleveland 1-800-362-9267
Canton 1-877-258-7601
Toledo 1-800-860-3352
www.chasehipps.com

MATERIAL: A homogenous glass and carbon reinforced composite which is colorfast and UV stable. Truncated domes are fiberglass reinforced for enhanced durability. The color of the TWS Panel is uniform throughout and does not rely on any type of paint coating to achieve color stability. Standard colors include: Federal Yellow, Brick Red, Clay Red, Safety Red, Gray, Black, and Blue.

INSTALLATION: Panels are equipped with 1/2" x 1 1/2" heavy duty steel bolts (fasteners) protruding 1/2" from panel body. The bolts (fasteners) are secured into corrosion resistant concrete inserts. This ensures that the bolts (fasteners) are securely embedded 2" into the concrete. Bolts (fasteners) are covered with a structural water tight cap. The TWS Unit is firmly pressed into place in the freshly poured concrete. The TWS Units may be replaced by removing the bolts and inserting a new interchangeable TWS Unit in the existing recess. The original inserts remain in place. The TWS Unit may be replaced in minutes.

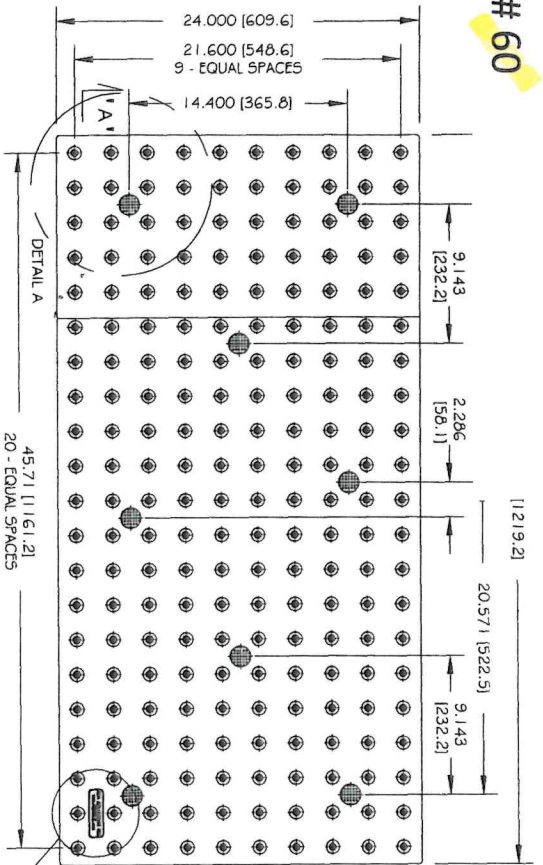
PHYSICAL CHARACTERISTICS:

Compressive Strength	28,900 psi	ASTM D 695
Flexural Strength	29,300 psi	ASTM D 790
Water Absorption	.07%	ASTM D 570
Slip Resistance	1.18 Dry, 1.05 Wet	ASTM C 1028
Flame Spread Index	20	ASTM E 84
Salt Spray	No Change (200 hours)	ASTM B 117
Chemical Stain Testing	No Deterioration	ASTM D 543
Abrasion Resistance	549	ASTM C 501
Accelerated Weathering	Delta E<5.0 (2,000 hours)	ASTM G 155
Tensile Strength	11,600 psi	ASTM D 638
Load Bearing at 16,000#	No Damage	AASHTO-H20
Freeze/Thaw/Heat	No Disintegration	ASTM C 1026

ADA SOLUTIONS, INC.

323 Andover Street, Suite 3; Wilmington, MA 01887 Tel: 800.372.0519 Fax: 978.262.9125

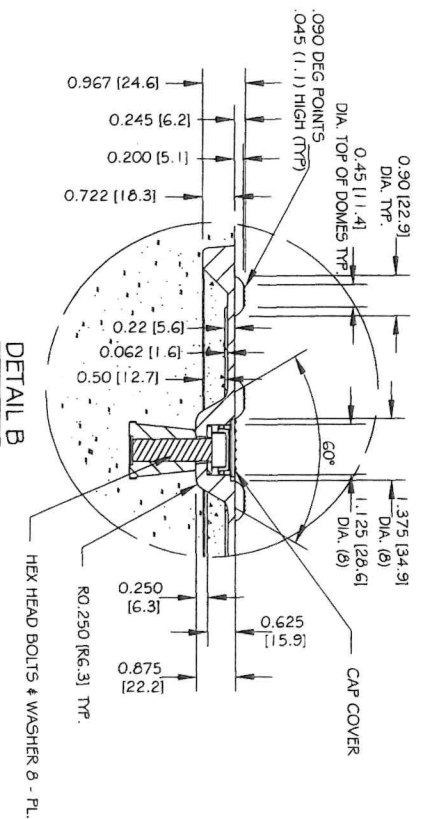
www.adatale.com



TOP OF PANEL

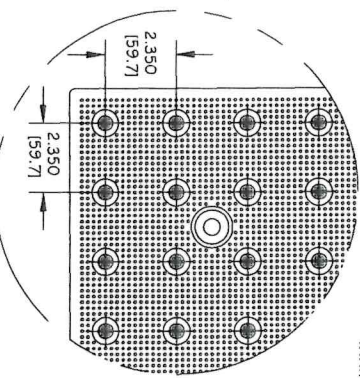
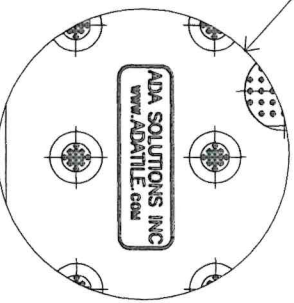
ELEVATION

SECTION A-A



DETAIL B

HEX HEAD BOLTS & WASHER 8 - PL.

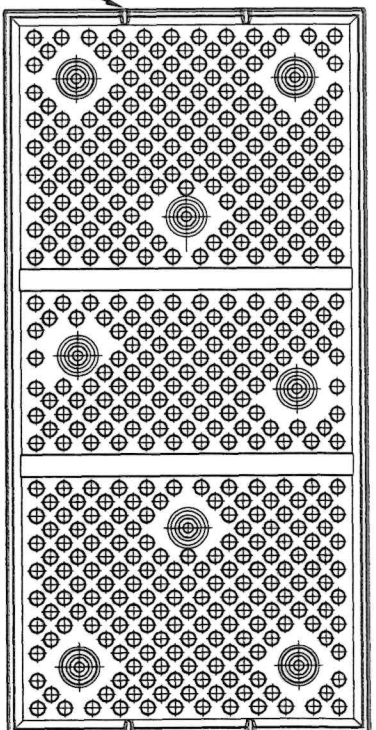


DETAIL A

FIELD DOT 7 DOME LAYOUT

AIR VENTS LOCATED ON THE ENDS OF THE TWS UNIT

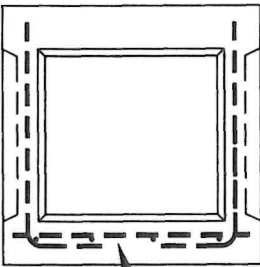
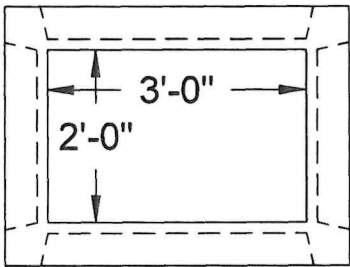
BOTTOM OF PANEL



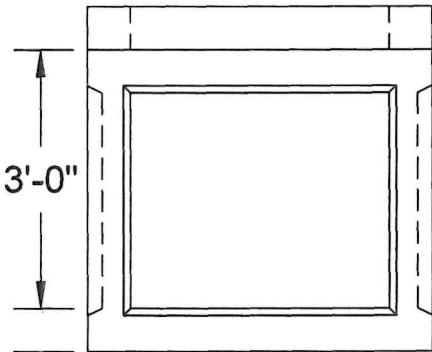
Distributed By:
Phipps
The Chase & Company
Cleveland 1-800-362-9267
Canton 1-877-258-7601
Toledo 1-800-860-3352
www.clinsephipps.com

ALL DIMENSIONS NOMINAL PRIMARY DIMENSION INCHES mm IN PARENTHESES	
TRADE	PART NO.
TACTILE WARNING SURFACE	2448NVRREP
MATERIAL	SIC COMPOSITE
PROJECT WET SET ADA REPLACEABLE TACTILE WARNING SURFACE UNIT 8-BOLT LOCATIONS 2.350" (59.7mm) IN LINE TRUNCATED DOME PART SIZE 24" (610mm) x 48" (1219mm) PLANS AND DETAILS	
DRAWING NO.	DATE
ADA-REP2448	06-15-17
 ADA SOLUTIONS, INC. DETECTABLE WARNING SURFACES FOR PEDESTRIAN CROSSINGS WWW.ADATILE.COM PHONE: (800)372-0519 EMAIL: INFO@ADATILE.COM	

Massillon: Amherst & Lake NE
B/R# 80



#4 @ 12" EW
#4 Verticals Each Corner
2" Cover
4T Utility Anchors in Top



3",4",6" Grade
Rings as required

- NOTES:
- 1) CONCRETE: 5,000 PSI @ 28 DAYS.
 - 2) REINFORCING GRADE 60 ASTM A615.
 - 3) EUCLID TUF-STRAND FIBER REINFORCED



	NAME	DATE
DRAWN	AJB	6/23/2020
CHECKED	DZ	

PROPRIETARY AND CONFIDENTIAL
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USA PRECAST CONCRETE. ANY
REPRODUCTION IN PART OR AS A WHOLE
WITHOUT THE WRITTEN PERMISSION OF
USA PRECAST CONCRETE IS
PROHIBITED.

Stock Catch Basin 24"x36"x36"		
SIZE DWG. NO.	REV	
A USACG109	0	
SCALE: NTS		SHEET 1 OF 1

SUBMITTAL SHOP DRAWING REVIEW

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

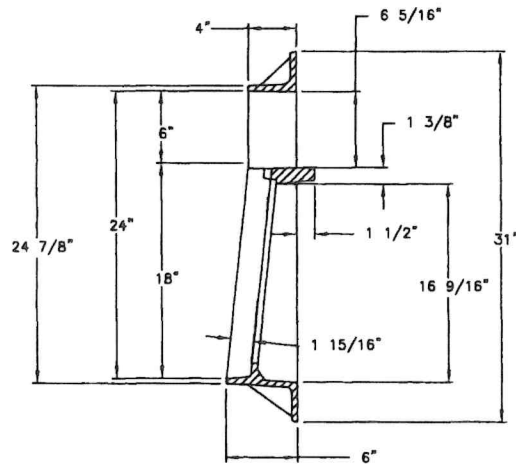
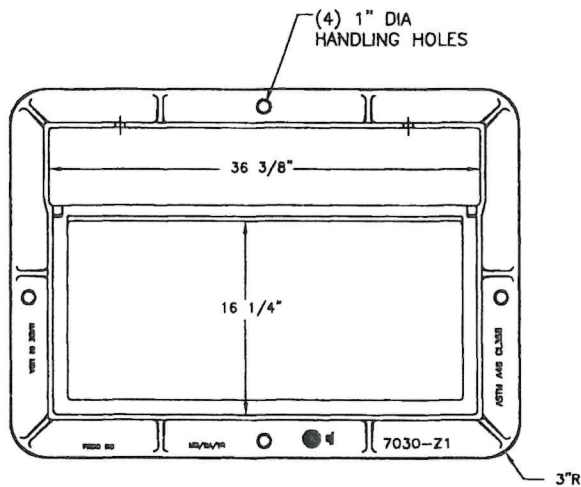
BY [Signature]
DATE 11/5/2024

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☐ APPROVED AS NOTED

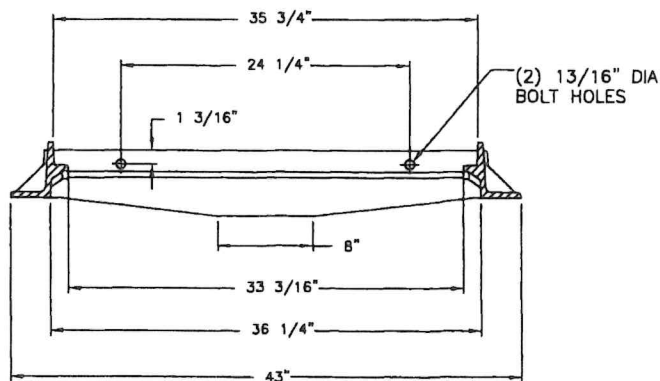
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REVISE/RESUBMIT

Massillon: Amherst & Lake NE
B/R# 80

7030Z1 Curb Inlet Frame



FRAME SECTION



FRAME SECTION

Product Number

00703012

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Heavy Duty
- Open Area
n/a
- Coating
Dipped
- ✓ Designates Machined Surface

Estimated Weight

- 179 lb

Certification

- ASTM A48
- AASHTO H20
- Country of Origin:USA

Drawing Revision

03/15/2004 Designer: JIJ
3/2/2018 Revised By: MAH

Disclaimer

Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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Contact
800 626 4653
ejco.com

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

APPROVED
APPROVED AS NOTED

BY
DATE

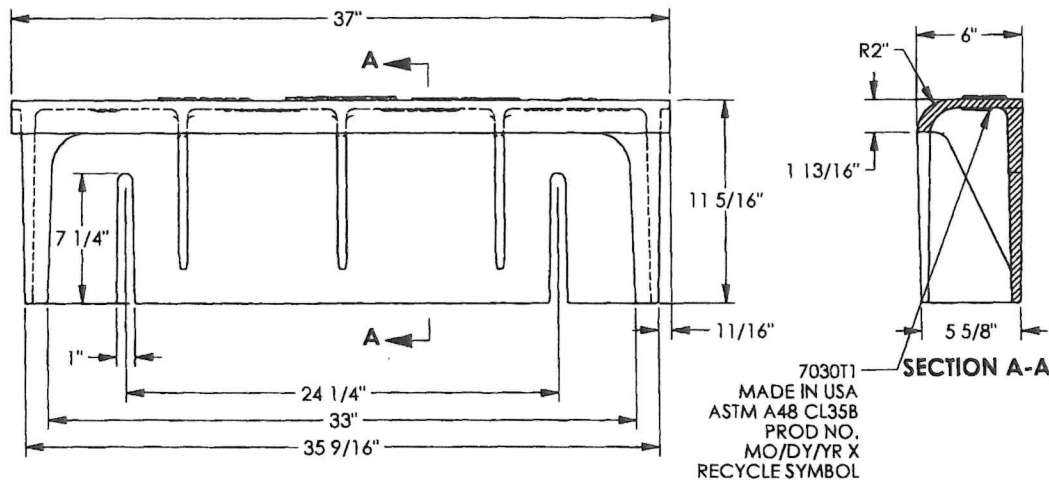
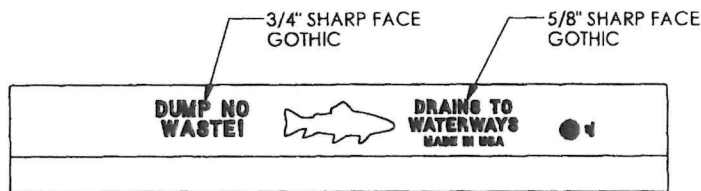
1/5/2024

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() REVISED

Massillon: Amherst & Lake NE

B/R# 80

7030T1 Hood



Product Number

00703064

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Heavy Duty
- Open Area
n/a
- Coating
Dipped
- √ Designates Machined Surface

Certification

- ASTM A48
- Country of Origin: USA

Drawing Revision

- 01/30/2018 Designer: DEF
- 03/15/2018 Revised By: DEF

Disclaimer

Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

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APPROVED AS NOTED

BY *[Signature]*
DATE 1/5/2024

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REVIS/RESUBMIT

Massillon: Amherst & Lake NE
B/R# 80

7030M2 Grate



Product Number
00703040

Design Features

- Materials
Gray Iron (CL35B)
- Load Rating
Heavy Duty
- Open Area
260 Sq. Inches
- Coating
Dipped
- √ Designates Machined Surface

Certification

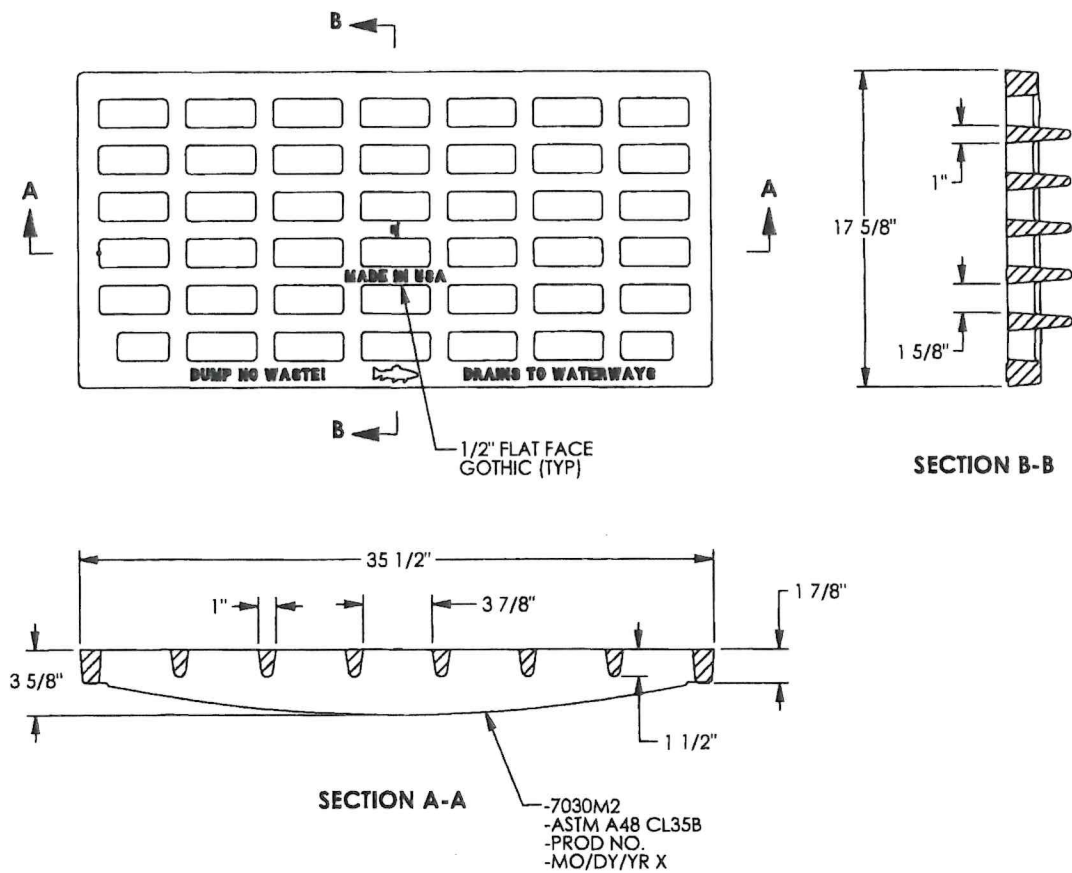
- ASTM A48
- AASHTO M306
- Country of Origin: USA

Drawing Revision
08/02/2000 Designer: DEW
08/09/2022 Revised By: DEF

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

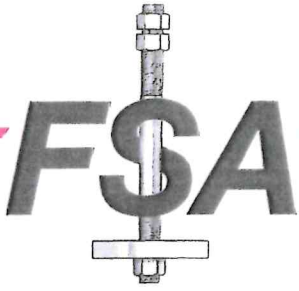
BY: [Signature]
DATE: 1/5/2024

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☐ REVISE/RESUBMIT

Massillon: Amherst & Lake NE
B/R# 130

Ground Rods



L _____
D [_____]

Enter Additional
Information Here. ▶

Qty	D Rod Diameter	L Rod Length
75	3/4"	10'

Company Name: GRAYBAR ELECTRIC Project Reference: _____
PO#: _____ FSA Work Order# (to be completed by FSA): N/A
Submitted by: _____ Date: _____ Approved by: RICHARD CODISPOTI Date: 10/23/19

Steel Grade:

☐ ASTM F1554 - Grade 36 ☒ 304 Stainless Steel ☐ Other _____

Finish:

☒ Plain ☐ Hot-Dip Galvanized ☐ Mechanically Galvanized
☐ Other _____

3/4" x 10" Stainless Steel Ground Rods Are UL Listed / ODOT Approved

SUBMITTAL SHOP DRAWING REVIEW
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BY Table R
DATE 11/5/2024
CITY OF MASSILLON, OHIO
MASSILLON, OHIO
() NOT APPROVED
() REVISER/SUBMIT
() APPROVED
() APPROVED AS NOTED

Please Include Additional Requests in Your Email.
Shims, Anchor Bolt Sleeves and Other Items Available Upon Request

Advanced Digital Cable, Inc.	Specification Sheet for 14 awg stranded 2 conductor IMSA 19-1	Date:	2/19/03
		Part Number:	8102
Drawn by:	Customer Approval:	UL Type:	



Construction Details:

This cable is constructed with a core composed of two low density polyethylene insulated 14 awg stranded bare copper conductors cabled together with two fibrillated polypropylene fillers and an overall clear polyester tape wrap. A black polyvinyl chloride jacket completes the package.

Physical Specifications

Conductors: 2 – 14 awg (7/.0242) bare copper .076” nom.

Dielectric: 25 mil wall of low density polyethylene to a nominal diameter of .126”. See color code.

Cable: 2 -14 awg in a 3.00” left hand lay with two .100” fibrillated polypropylene fillers and an overall clear polyester tape wrap to a nominal diameter of .256”.(10% min. overlap)

Jacket: 45 mils of black 90 deg. C sunlight, moisture, and flame resistant polyvinyl chloride to a nominal diameter of .346”.

Print: Indent printing:
ADVANCED DIGITAL CABLE IMSA 19-1 YYYY 600V
Replace “YYYY” with year of manufacture.

Put-up: Reels per customer requirements.

Color Code

Quantity	Color
1	Black
1	White

Electrical and Mechanical Testing

Conductor: Conforms to ASTM B-3 and B-8

Insulation: Conforms to IMSA Spec. 19-1 requirements.
Min. average thickness: .025”
Min. thickness any pt.: .022”

Spark Testing: 7,500 volts AC at 1,000 to 3,500 Hertz.

Jacket: Conforms to IMSA Spec. 19-1 requirements.
Min. average thickness: .045”
Min. thickness any pt.: .036”

Dielectric test: 2,500 volts AC at 60 Hertz for 1 minute per UL 83.

Additional Testing: Physical and visual. Continuity and cross testing on each shipping length of finished cable.

REVIEW
SUBMITTAL SHEET FOR REVIEW
CORRECTIONS OR COMMENTS MADE ON THE SHEET BY THE REVIEWER DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE DRAWING. THE CONTRACTOR IS RESPONSIBLE FOR THE REVIEW OF THE GENERAL CONFORMANCE WITH THE INFORMATION IN THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION IN THE CONTRACT DOCUMENTS. NOTHING HEREIN SHALL BE CONSIDERED AS A CONTRACTOR'S RESPONSIBILITY FOR THE FOLLOWING: CORRELATING ALL QUANTITIES AND DIMENSIONS OF CONSTRUCTION WITH THE FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION, OR OTHER WORK WITH THAT OF ALL OTHER TRADES, AND THE SAFETY OF THE WORK IN A SAFE AND SATISFACTORY MANNER.

BY DATE 1/15/2024

() NOT APPROVED
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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

APPROVED
() APPROVED AS NOTED

Advanced Digital Cable, Inc.	Specification Sheet for 14 awg stranded 3 conductor IMSA 19-1	Date:	2/19/03
		Part Number:	8103
Drawn by:	Customer Approval:	UL Type:	



Construction Details:

This cable is constructed with a core composed of three low density polyethylene insulated 14 awg stranded bare copper conductors cabled together with an overall clear polyester tape wrap. A black polyvinyl chloride jacket completes the package.

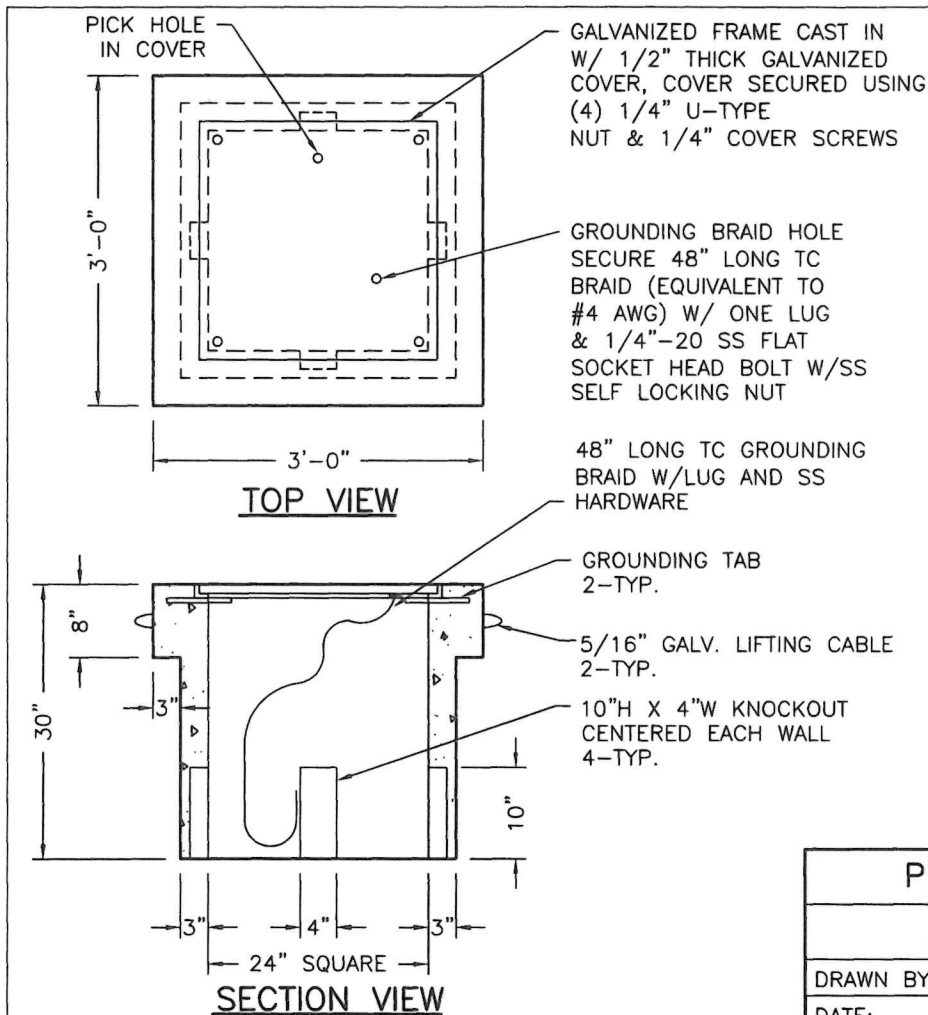
Physical Specifications		Electrical and Mechanical Testing	
Conductors:	3 – 14 awg (7/.0242) bare copper .076" nom.	Conductor:	Conforms to ASTM B-3 and B-8
Dielectric:	25 mil wall of low density polyethylene to a nominal diameter of .126". <u>See color code.</u>	Insulation:	Conforms to IMSA Spec. 19-1 requirements. Min. average thickness: .025" Min. thickness any pt.: .022"
Cable:	3 -14 awg in a 3.50" left hand lay with an overall clear polyester tape wrap to a nominal diameter of .275".(10% min. overlap)	Spark Testing:	7,500 volts AC at 1,000 to 3,500 Hertz.
Jacket:	45 mils of black 90 deg. C sunlight, moisture, and flame resistant polyvinyl chloride to a nominal diameter of .365".	Jacket:	Conforms to IMSA Spec. 19-1 requirements. Min. average thickness: .045" Min. thickness any pt.: .036"
Print:	Indent printing: ADVANCED DIGITAL CABLE IMSA 19-1 YYYY 600V Replace "YYYY" with year of manufacture.	Dielectric test:	2,500 volts AC at 60 Hertz for 1 minute per UL 83.
Put-up:	Reels per customer requirements.	Additional Testing:	Physical and visual. Continuity and cross testing on each shipping length of finished cable.

Color Code

Quantity	Color
1	Black
1	White
1	Red

Advanced Digital Cable, Inc.	Specification Sheet for 14 awg stranded 7 conductor IMSA 19-1	Date:	2/19/03																
		Part Number:	8107																
Drawn by:	Customer Approval:	UL Type:																	
																			
Construction Details: This cable is constructed with a core composed of seven low density polyethylene insulated 14 awg stranded bare copper conductors cabled together with an overall clear polyester tape wrap. A black polyvinyl chloride jacket completes the package.																			
Physical Specifications Conductors: 7 – 14 awg (7/.0242) bare copper .076” nom. Dielectric: 25 mil wall of low density polyethylene to a nominal diameter of .126”. <u>See color code.</u> Cable: 7 – 14 awg in a 5.50” left hand lay with an overall clear polyester tape wrap to a nominal diameter of .382”. (10% min. overlap) Jacket: 45 mils of black 90 deg. C sunlight, moisture, and flame resistant polyvinyl chloride to a nominal diameter of .472”. Print: Indent printing: ADVANCED DIGITAL CABLE IMSA 19-1 YYYY 600V <i>Replace “YYYY” with year of manufacture.</i> Reels per customer requirements Put-up: Color Code <table><tr><th>Quantity</th><th>Color</th></tr><tr><td>1</td><td>Black</td></tr><tr><td>1</td><td>White</td></tr><tr><td>1</td><td>Red</td></tr><tr><td>1</td><td>Green</td></tr><tr><td>1</td><td>Orange</td></tr><tr><td>1</td><td>Blue</td></tr><tr><td>1</td><td>White/Black</td></tr></table>		Quantity	Color	1	Black	1	White	1	Red	1	Green	1	Orange	1	Blue	1	White/Black	Electrical and Mechanical Testing Conductor: Conforms to ASTM B-3 and B-8 Insulation: Conforms to IMSA Spec. 19-1 requirements. Min. average thickness: .025” Min. thickness any pt.: .022” Spark Testing: 7,500 volts AC at 1,000 to 3,500 Hertz. Jacket: Conforms to IMSA Spec. 19-1 requirements. Min. average thickness: .045” Min. thickness any pt.: .036” Dielectric test: 2,500 volts AC at 60 Hertz for 1 minute per UL 83. Additional Testing: Physical and visual. Continuity and cross testing on each shipping length of finished cable.	
Quantity	Color																		
1	Black																		
1	White																		
1	Red																		
1	Green																		
1	Orange																		
1	Blue																		
1	White/Black																		

Massillon: Amherst & Lake NE
B/R# 150



NOTES:

1. PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI.
2. PRECAST CONCRETE REINFORCED WITH 6" X 6" 6GA. WIRE MESH, BENT AROUND ALL CORNERS.
3. TAGS LETTERED 'ELECTRIC' OR 'TRAFFIC' BUILT PER ODOT SPEC. 725.08-B.1. TAG TO BE 2" X 10" X .0625" GR.304 STAINLESS STEEL SECURED USING (8) 1/4" ALUMINUM RIVETS. TAG TO HAVE 1" HIGH EMBOSSED LETTERS.
4. PULL BOX FRAME TO HAVE RED LABEL "LUBRICATE SCREWS"

REF. 150
QTY: 1

Please advise logo requirement

HL-30.11 (2015)

PRECAST 24" X 24" PULL BOX

ELECTRICAL SALES COMPANY

DRAWN BY: BK	SCALE: 3/4"=1'-0"	DRAWING NO.:
DATE: 4-19-11	REV: 12/16/15 RP	PULLBOX2424

MACK INDUSTRIES, INC.

201 COLUMBIA ROAD, VALLEY CITY, OHIO 44280

(330) 483-3111

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151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

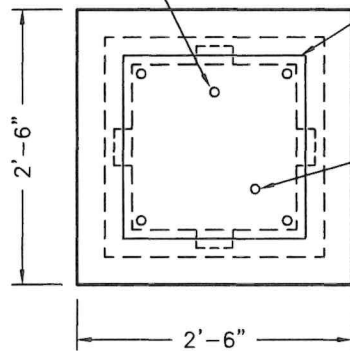
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Massillon: Amherst & Lake NE
B/R# 160

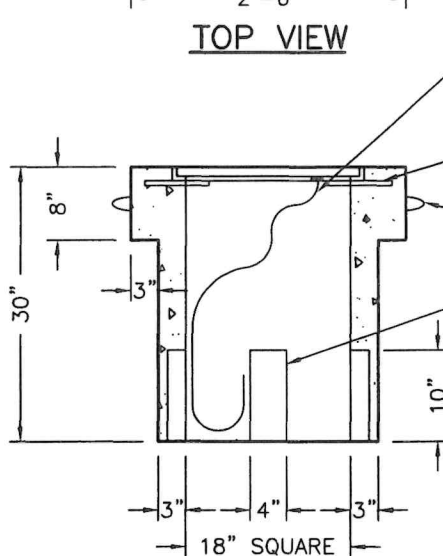
PICK HOLE
IN COVER



GALVANIZED FRAME CAST IN
W/ 1/2" THICK GALVANIZED
COVER, COVER SECURED USING
(4) 1/4" U-TYPE
NUT & 1/4" COVER SCREWS

GROUNDING BRAID HOLE
SECURE 48" LONG TC
BRAID (EQUIVALENT TO
#4 AWG) W/ ONE LUG
& 1/4"-20 SS FLAT
SOCKET HEAD BOLT W/SS
SELF LOCKING NUT

TOP VIEW



48" LONG TC GROUNDING
BRAID W/LUG AND SS
HARDWARE

GROUNDING TAB
2-TYP.

3/16" GALV. LIFTING CABLE
2-TYP.

10"H X 4"W KNOCKOUT
CENTERED EACH WALL
4-TYP.

SECTION VIEW

NOTES:

1. PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI.
2. PRECAST CONCRETE REINFORCED WITH 6" X 6" 6GA. WIRE MESH, BENT AROUND ALL CORNERS.
3. TAGS LETTERED 'ELECTRIC' OR 'TRAFFIC' BUILT PER ODOT SPEC. 725.08-B.1. TAG TO BE 2" X 10" X .0625" GR.304 STAINLESS STEEL SECURED USING (8) 1/4" ALUMINUM RIVETS. TAG TO HAVE 1" HIGH EMBOSSED LETTERS.
4. PULL BOX FRAME TO HAVE RED LABEL "LUBRICATE SCREWS"

REF. 160
QTY: 1

Please advise logo requirement

HL-30.11 (2015)

PRECAST 18" X 18" PULL BOX

ELECTRICAL SALES COMPANY

DRAWN BY: BK	SCALE: 3/4"=1'-0"	DRAWING NO.:
DATE: 4-19-11	REV: 12/16/15 RP	PULLBOX1818

MACK INDUSTRIES, INC.

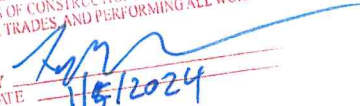
201 COLUMBIA ROAD, VALLEY CITY, OHIO 44280

(330) 483-3111

SUBMITTAL SHOP DRAWING REVIEW

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. NOTHING HEREIN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; PERFORMANCE, SELECTING FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

BY: 
DATE: 1/5/2024

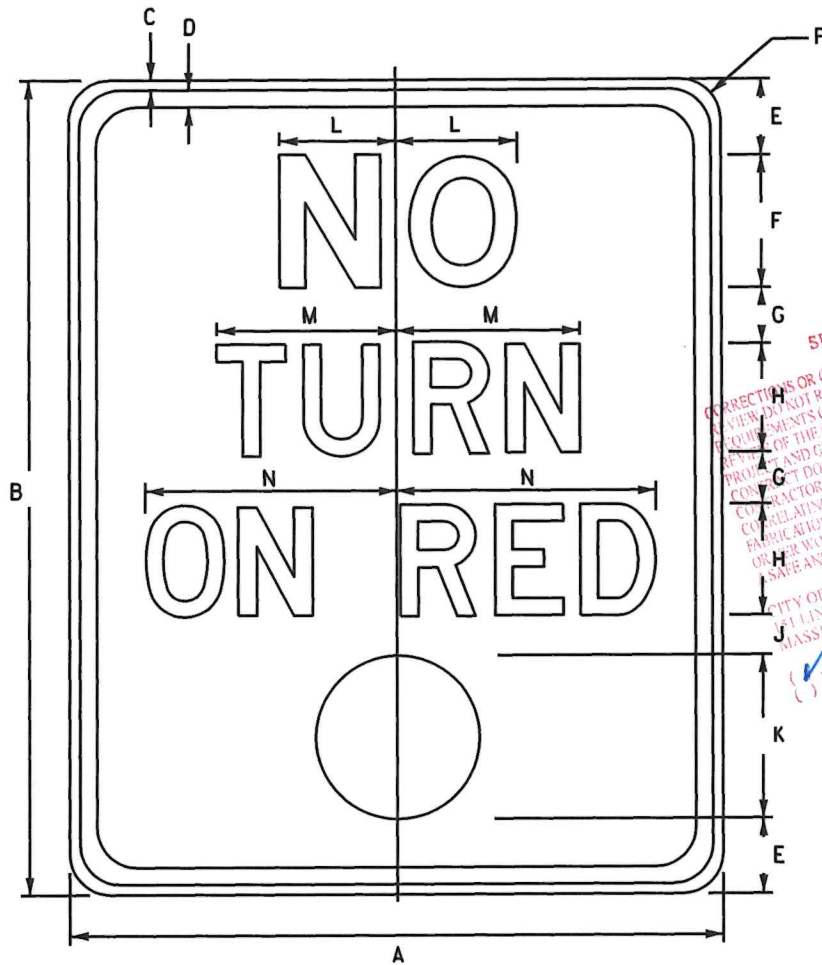
APPROVED
APPROVED AS NOTED

() NOT APPROVED
() REVIEW IN PROGRESS

STANDARD SIGN DESIGN

ODOT - OFFICE OF TRAFFIC ENGINEERING

DATE : 10/17/08	COLORS : SEE BELOW	SERIES : REGULATORY	CODE NO. : R10-11
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SUBMITTAL SHOP DRAWING REVIEW
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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646
BY [Signature]
DATE 11/5/2024
() NOT APPROVED
() REVISER/SUBMIT
() APPROVED
() APPROVED AS NOTED



ALL DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
18	24	.375	.625	2.375	4E	1.75	3D	.75	5	3.742
24	30	.375	.625	2.75	5E	2	4D	1.5	6	4.681
36	48	.625	.875	4.75	8E	3.5	6D	1.5	10	7.491

M	N	P
4.806	6.972	1.5
6.41	9.299	1.5
9.616	13.950	2.25

COLORS: LEGEND/ BORDER - BLACK
SYMBOL - RED
BACKGROUND - WHITE

Galaxy T-Spar Sign Bracket

Pelco's Galaxy T-Spar Sign Bracket was designed to work with a 2" square perforated tube. The single cable plate allows for an easy installation and the tube saddle allows multi-directional adjustability. The perforated tube is sold separately.

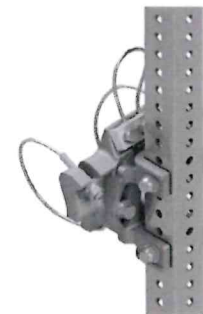
Massillon; Amherst & Lake NE
B/R# 170
Qty. 8



Galaxy T-Spar Assy, Cable Mount



AB-3056 - Cable Length: 96" - Cable: [] - Coating: []
See Note: Blank=Galv, SS=Stainless, PNC=Process No Color, P__=Paint



Shown with tube.
Sold separately.

Note:
Cable Length: 62", 84", 96", 110", 120", 132", 144", 220", or 280".

Perforated Tube, 2" x 12 Ga Steel, Galv



SE-4191 - Length: 72"=6' Tube - Coating: GLV=Galvanized, P__=Paint

SUBMITTAL SHOP DRAWING REVIEW

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

BY: [Signature]
DATE: 1/5/2024

() APPROVED
() APPROVED AS NOTED

() NOT APPROVED
() REVISE/RESUBMIT

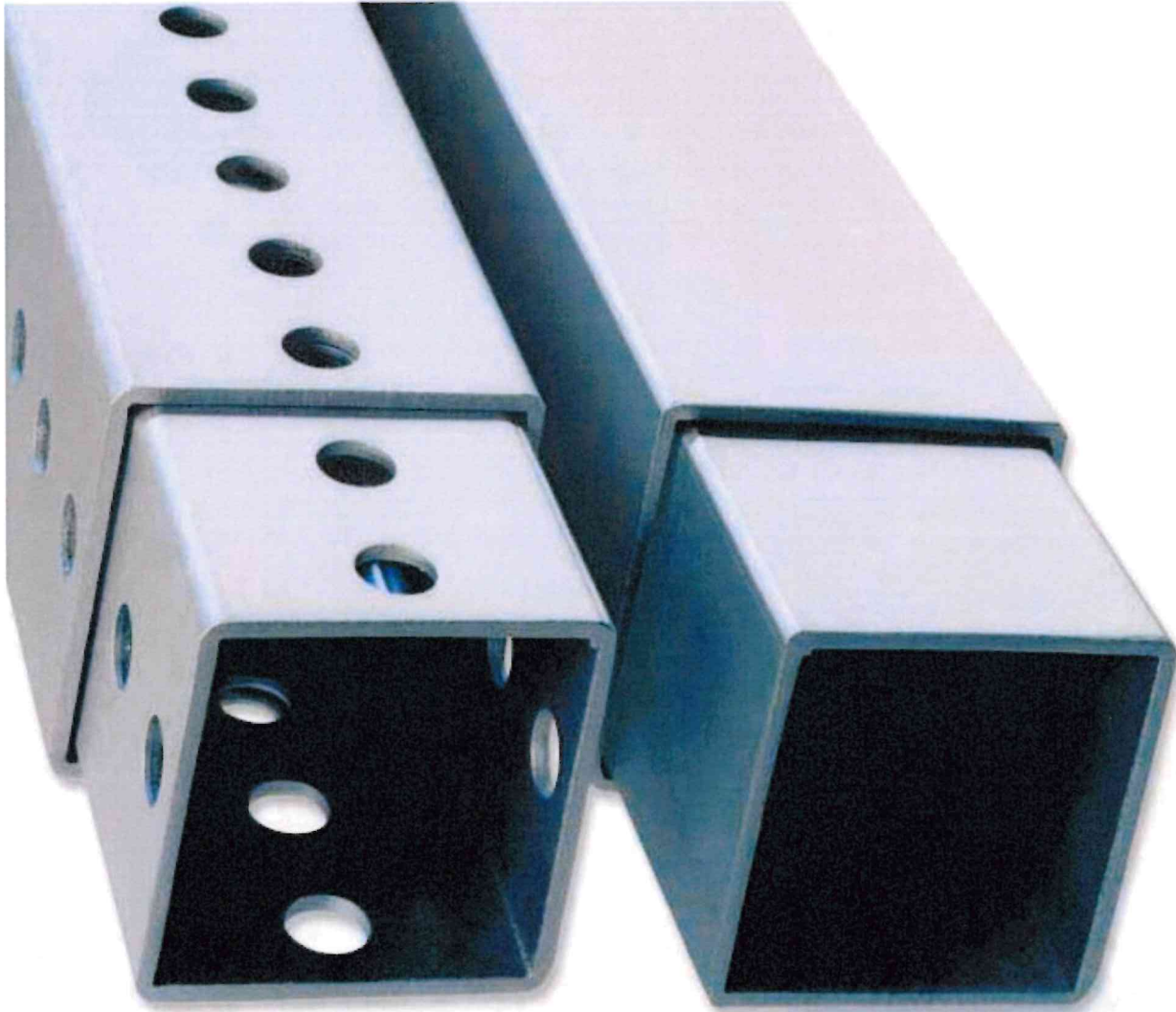
- Note: 1. All assemblies are supplied standard with stainless fasteners. Stainless upgrade shall include stainless steel cable.
2. See Reference Section for clamp kit pole diameters.
3. See Reference Section for available paint colors.



Massillon; Amherst & Lake NE
B/R# 170
Qty. 8
3# Drive Post, 30"

TELESPAR®

TELESCOPING SQUARE TUBING



FOR INDUSTRIAL & OEM APPLICATIONS

SUBMITTAL SHOP DRAWING REVIEW

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CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

☒ APPROVED
☐ APPROVED AS NOTED

BY
DATE

Fredrick
1/5/2024

☐ NOT APPROVED
☐ REVISE/RESUBMIT

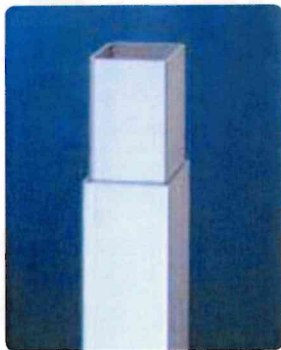
The TELESPAR® System...

**PULLING IT ALL
TOGETHER...
Telespar Offers
Solutions!**

Versatile, Reusable, Economical

The Telespar system has been designed to provide both flexibility and maximum savings in time and labor costs.

This versatile system has been successfully fulfilling in-plant support and product design needs for years.



Use the Telespar System to fill your building needs in almost any application: racks, shelving, ceiling grids, conveyor systems, interior partitions, adjustable platforms, material handling devices, scaffolds, strapping machines, hangers, support members, protective railings, sign supports, etc. No special welding, tools or assembly procedures are necessary with the Telespar System.

One of the secrets to Telespar's versatility is its ability to telescope. Smaller sizes fit smoothly and snugly into the next larger size. This is made possible by the latest in high-speed roll-forming technology with high-frequency resistance welding. This produces smooth corner welds within very close tolerances, reducing your fabrication costs.

Telespar standard perforated tubing comes in eight sizes, from 1" to 2-1/2" square, in 10 and 12 gauge. Perforated holes are 7/16" spaced on 1" centers, except for 1" and 1-1/4" which have 11/32" holes on 1" centers. Sections without holes are available in all sizes.

Telespar comes in two standard finishes: Pre-Galv Plus™ and plain (lightly oiled) surface. The Telespar System includes a complete line of zinc-electroplated fittings, fasteners and accessories for splicing, extending and reinforcing.

TUBE SIZES

Tube Size	Wall Thickness Gauge & Inch	Non-Perforated		Perforated	
		Wt./Ft., Lbs.	Part No.	Wt./Ft., Lbs.	Part No.
1" x 1"	12 (.105)	1.203	11F10	1.110	11F12
1-1/4" x 1-1/4"	12 (.105)	1.560	12F10	1.430	12F12
1-1/2" x 1-1/2"	12 (.105)	1.917	14F10	1.702	14F12
1-3/4" x 1-3/4"	12 (.105)	2.274	16F10	2.060	16F12
2" x 2"	12 (.105)	2.631	20F10	2.416	20F12
2-1/4" x 2-1/4"	12 (.105)	2.988	22F10	2.773	22F12
2-1/2" x 2-1/2"	12 (.105)	3.356	24F10	3.141	24F12
2" x 3"	12 (.105)	3.356	2030F10	3.034	2030F12
2-3/16" x 2-3/16"	10 (.135)	3.662	21H10	3.432	21H12
2-1/2" x 2-1/2"	10 (.135)	4.236	24H10	4.006	24H12

12-Inch Polycarbonate Signal

What, exactly, is a signal?

A traffic signal is a signaling device that is positioned at road intersections, and other sites that control traffic. The signals are designed to ensure an orderly flow of traffic for vehicles, motorcycles, bicycles, and pedestrians by displaying colored lights in a sequence of phases. The colors signal the user to proceed (green), warn that a signal is changing to red (yellow) or prohibits any traffic from proceeding (red).

Why do agencies use signals?

Traffic signals provide an opportunity for pedestrians or vehicles to safely cross an intersection from different directions. Traffic signals can also alleviate traffic capacity of an intersection or a given route which leads to lowering emissions from vehicles that are waiting in traffic.

How do signals benefit the driving public?

Traffic signals increase the overall safety for all roadway users by reducing traffic collisions and providing efficient intersection operations. Traffic signals also provide a continuous movement of traffic at a defined speed along a given route which contributes to reducing commuting times.

SUBMITTAL SHOP DRAWING REVIEW
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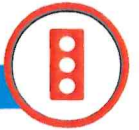
CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

☐ APPROVED
☒ APPROVED AS NOTED

BY
DATE

1/15/2024

☐ NOT APPROVED
☐ REUSE RESULT



Housing

The housing of each section is a one-piece molded, ultraviolet, and heat-stabilized polycarbonate unit. Two integrally-cast hinge lugs and latch screws are cast on each side of the housing. Built upon a symmetrical concept, each housing is capable of providing either right or left-hand door openings. While the left hinge is standard, the right hinge must be specified. The top and bottom of the housing have openings to accommodate standard 1½-inch pipe brackets. Each signal section is rigidly attached, one above the other, by means of corrosion-resistant bolts and a washer attachment that allows sections to be rotated about a vertical axis. Alternate means for attaching sections together are available. The housing consists of four matching punch-out locations on the top and bottom of each section to allow sections to be bolted together with four 1½-inch and 10-32 corrosion-resistant screws.

The top and bottom of the signal housing have an integrally-cast Shurlock boss. The radial angular grooves of the Shurlock boss, when used with Shurlock fittings, provide positive five-degree increment positioning of the entire signal head to eliminate rotation or misalignment of the signal. Each housing has molded bosses for one five and one six-position terminal block. Each housing has provisions for easily adding a back-plate. Hinge pins, door latching hardware, visor back-plate, and lens clip screws are high-quality stainless steel.

Housing Door

The housing door of each section is a one-piece molded ultraviolet and heat-stabilized polycarbonate unit. Two hinge lugs are molded into one side and two latch jaws are molded onto the other side. The door is attached to the housing by means of two stainless steel hinge pins. Two stainless steel "eye" bolts and wing nuts on one side of the door allow for opening and closing the signal door without the use of any special tools. A gasket groove on the inside of the door accommodates a weatherproof and mildew-proof resilient gasket which, when the door is closed, seals flat against the housing, creating a positive seal. The outer face of the door has four metal threaded inserts, equally spaced about the circumference of the lens opening, with four screws to accommodate the signal head visors. The door and visor overlap to prevent light escaping between visor and door.

Basic Specifications

- Dimensions - 14 in. H x 15¼ in. W x 7¾ in. D
- Weight, typical:
 - Single Section: 3.4lbs
- Standard Colors:
 - Dark Olive Green (matches Federal Standard 595b-14056)
 - Yellow (matches Federal Standard 595b-13538)
 - Dull Black (matches Federal Standard 595b-37038)

***BLACK HOUSING**
***BLACK VISOR CAPS**

Terminal Block

Each complete signal face is provided with a terminal block. The terminal block is placed in the bottom section, unless otherwise specified. The terminal block for a standard three-section head is a five-position, ten-terminal, barrier-type strip. To one side of each "Fast-on" terminal strip is the attached AC common, red, yellow, and green signal section leads, leaving the opposite screw clamp terminal for field wires.

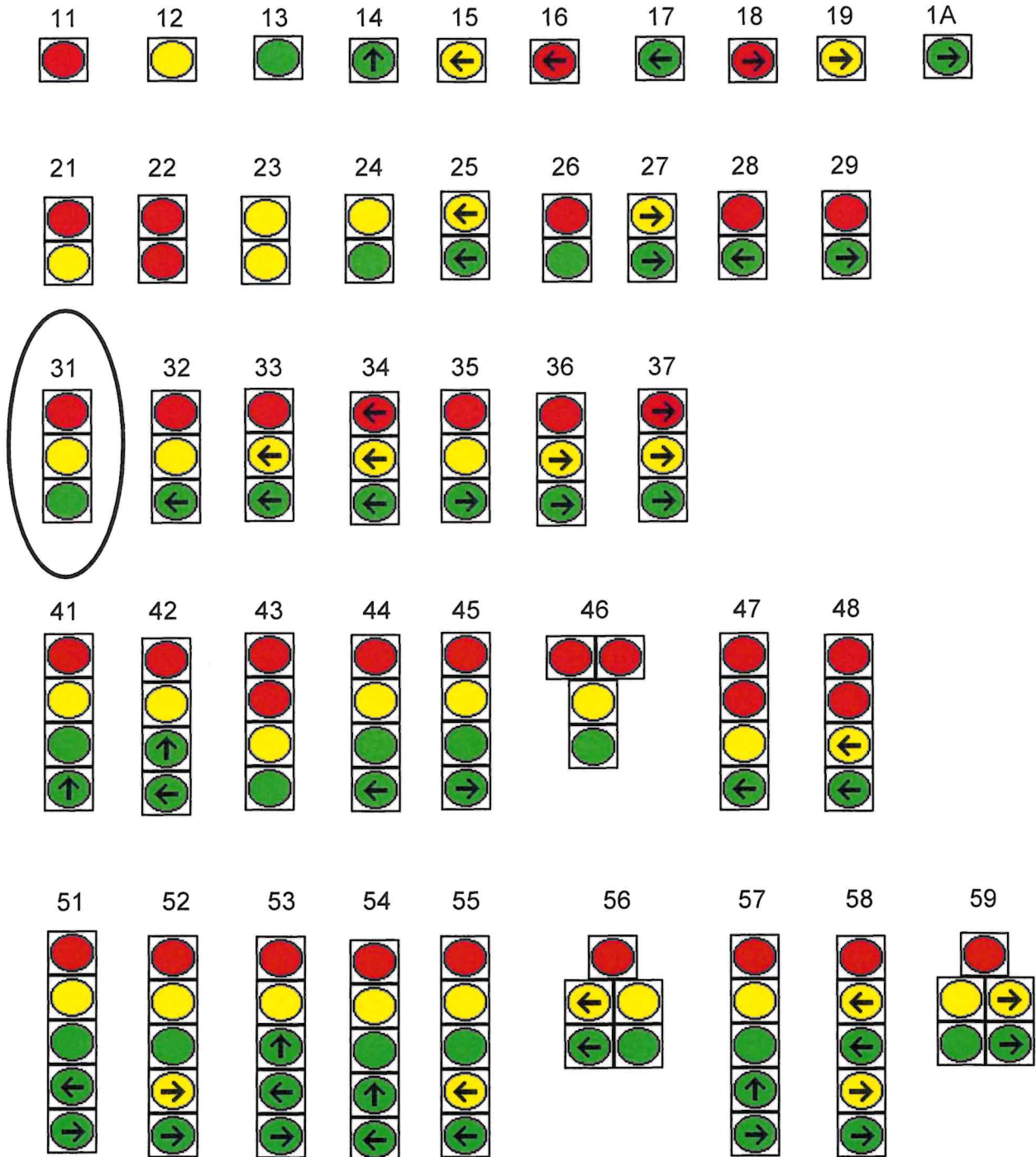
Visors

Visors are tunnel, full-circle, or cap, and are a minimum of ten inches long. Visors are molded from ultraviolet and heat-stabilized polycarbonate and include attaching tabs to facilitate installation.



FACE ARRANGEMENTS VERTICAL

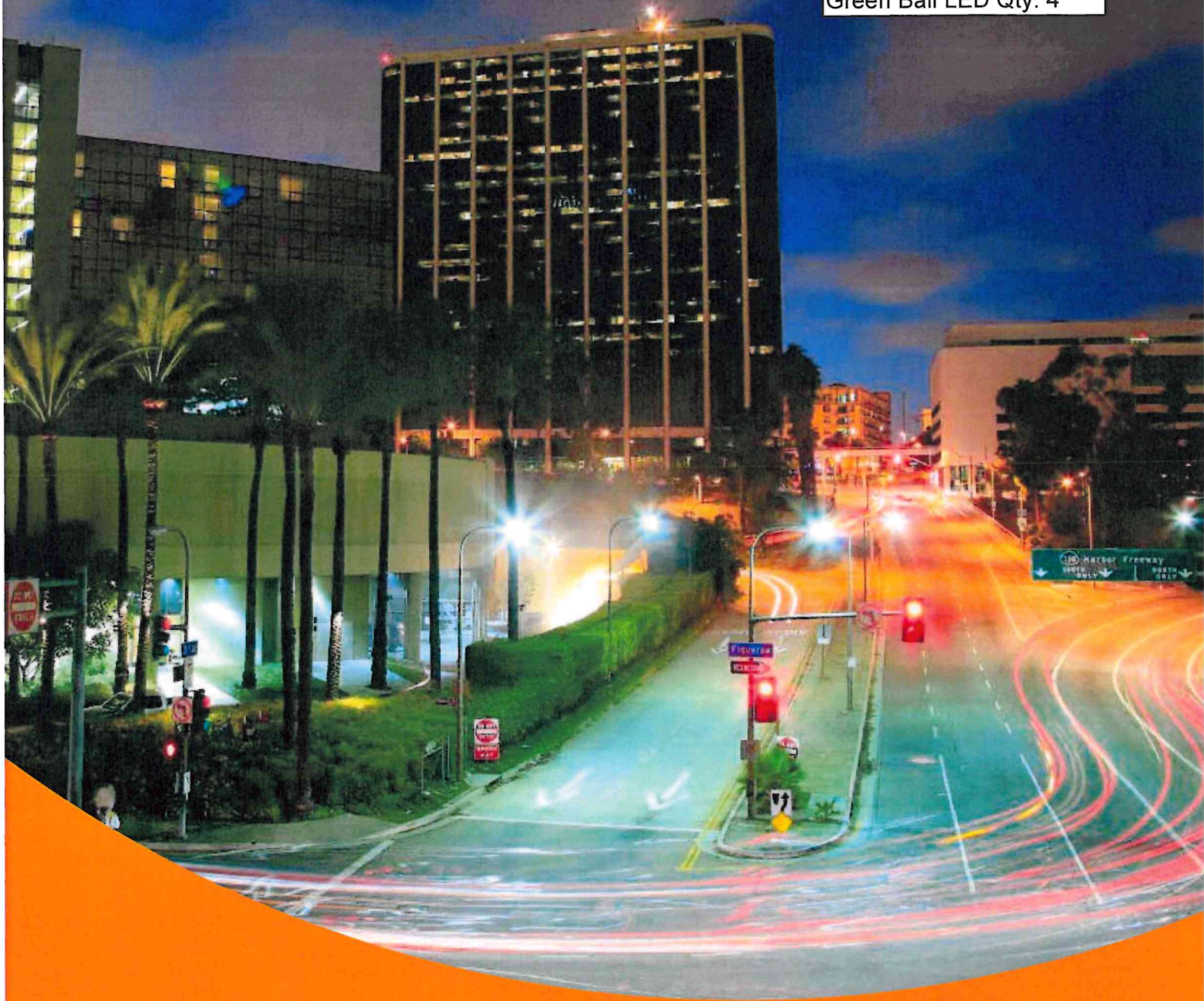
Signal Arrangements Qty. 4



.....Dialight

Massillon; Amherst & Lake NE
B/R# 210
Qty. 4

Red Ball LED Qty. 4
Yellow Ball LED Qty. 4
Green Ball LED Qty. 4



ITE Compliant LED Signal Modules

ITE Compliant LED Traffic Signal

Module Performance Specifications

All LED Ball Signal Modules - 8 inch (200mm) and 12 inch (300mm)

All shall be fully compliant to the ITE VTCSH LED Circular Supplement specifications dated and adopted June 27, 2005. Compliance to the ITE VTCSH-2 Interim Purchase Specification is not sufficient, and will not substitute for compliance to the ITE VTCSH LED Circular Supplement specifications. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek, that certify full compliance of all LED ball signal modules to the entire ITE specification. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Figure 2, Design Qualification Testing Flow Chart must be included without any exceptions, changes or omissions. The manufacturer must also submit a datasheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 12 inch (300mm) Arrow Signal Modules

All shall be fully compliant to the "Omni-directional" specifications of the ITE VTCSH - LED Vehicle Arrow Traffic Signal Supplement adopted July 1, 2007. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of all LED Arrow signal modules. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 1, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 16x18 Countdown Pedestrian Signal Modules

All shall be fully compliant to the ITE PTCSI Part-2: LED Pedestrian Traffic Signal Modules specifications adopted August 4, 2010 or the latest adopted version as listed on the ITE website at time of bid. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of LED signal modules, to these specifications. Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 2, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the exact catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number. Combination hand/person pedestrian signal modules shall incorporate separate power supplies for the hand and the person icons.

In addition to, and in excess of the above applicable ITE specification compliance, the on-board circuitry of all LED traffic signal modules shall include voltage surge protection, to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.8, NEMA Standard TS 2-2003. In addition, the module shall comply with the following standards: IEC 1000-4-5 at 3kV with a 2 ohm source impedance, ANSI/IEEE C62, 41-2002; IEC 61000-4-12 (6kV, 200A, 100kHz ring wave).

Warranty

Manufacturer shall provide at time of bid, a written warranty which provides for repair or replacement of modules that fail to function as intended due to workmanship or material defects within the first 60 months from date of delivery. Modules which exhibit luminous intensities less than the minimum as specified in the ITE specifications as indicated above, within the first 60 months from date of delivery shall be replaced or repaired.



Notes

CSA approved to the following applicable requirements:

- CSA Standard C22.2 No. 9.0-96 General Requirements for Luminaires
- CSA Std. No. C22.2 No. 250.0-04 Luminaires
- UL Std. No. 1598-2004 (May 2006) Luminaires

Uniform Appearance LED Traffic Signal Modules

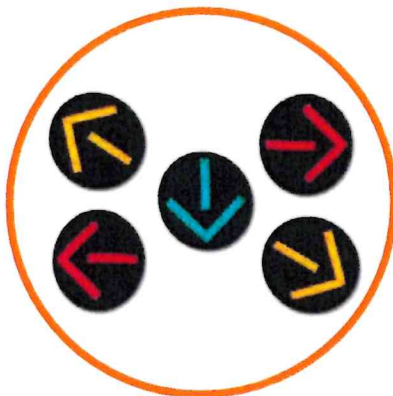


Features & Benefits

- *Fully compliant to ITE VTCSH-LED Circular Signal Supplement dated 6/27/2005
- Industry's lowest power for all colors
- Meets or exceeds ITE intensity, color & uniformity spec, including 49°C / 74°C requirements
- Temperature compensated power supplies for longer LED life
- Uniform appearance
- Expanded view radiation pattern suitable for span wire and steep grade applications
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- Manufactured with anti-capillary wires
- Conformal coated power supply
- Secondary lens treatment for abrasion resistance
- Patent No. 7,281,818 and other patents pending
- Intertek/ETL certified and listed on ETL certification program
- All units operate at 80-135VAC RMS, 60+/-3Hz

Part Number	Color	Lens Type	Dominant Wavelength (nm)	Typical Wattage at 25°C	Peak Minimum Maintained Luminous Intensity (cd)	Size (in)	*Meets ITE Spec	CSA Approved
433-1110-003XL	Red	Tinted	625	7	165	8	•	•
433-1170-003XL	Red	Clear	625	7	165	8	•	•
433-3130-901XL	Yellow	Tinted	590	8	410	8	•	•
433-3170-901XL	Yellow	Clear	590	8	410	8	•	•
433-2120-001XL	Green	Tinted	500	7	215	8	•	•
433-2170-001XL	Green	Clear	500	7	215	8	•	•
→ 433-1210-003XL	Red	Tinted	625	7	365	12	•	•
→ 433-1270-003XL	Red	Clear	625	7	365	12	•	•
→ 433-3230-901XL	Yellow	Tinted	590	9	910	12	•	•
→ 433-3270-901XL	Yellow	Clear	590	9	910	12	•	•
→ 433-2220-001XL	Green	Tinted	500	8	475	12	•	•
→ 4332270-001XL	Green	Clear	500	8	475	12	•	•

Omni-Directional Uniform Appearance LED Arrow



Features & Benefits

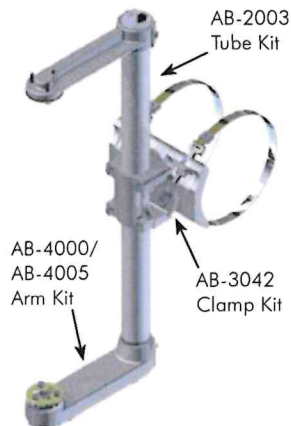
- *Fully compliant to ITE VTCSH-LED Vehicle Arrow Supplement dated 7/01/2007
- Allows for mounting in any orientation in the signal head
- Industry's lowest power for all colors
- Meets or exceeds ITE intensity, color & uniformity spec, including 49°C / 74°C requirements
- Temperature compensated power supplies for longer LED life
- Uniform appearance
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- Manufactured with anti-capillary wires
- Conformal coated power supply
- Secondary lens treatment for abrasion resistance
- Intertek/ETL certified and listed on ETL certification program
- All units operate at 80-135VAC RMS, 60+/-3Hz

Part Number	Color	Lens Type	Dominant Wavelength (nm)	Typical Wattage at 25°C	Peak Minimum Maintained Luminous Intensity (cd)	*Meets ITE Spec	CSA Approved
432-1314-001XOD	Red	Tinted	628	6	56.8	•	•
432-1374-001XOD	Red	Clear	628	6	56.8	•	•
431-3334-901XOD	Yellow	Tinted	590	7	141.6	•	•
431-3374-901XOD	Yellow	Clear	590	7	141.6	•	•
432-2324-001XOD	Green	Tinted	500	6	73.9	•	•
432-2374-001XOD	Green	Clear	500	6	73.9	•	•

1-Way Assemblies

Designed to accommodate all traffic signals, with the exception of optically programmed. The Tallon Series Astro-Brac is designed to be tough and durable. It features all-axis adjustability and is designed to facilitate the mounting of any size signal to any size mast arm or pole.

Massillon; Amherst & Lake NE
B/R# 210
Qty. 4



Astro-Brac Assy, Tallon Series, 1-Way Band Mount

Signal Section	Band Length	Coating
AB-0618 -		
1=1 Sec	29=29" Band	PNC=Process No Color
2=2 Sec	36=36" Band	P__=Paint
3=3 Sec	42=42" Band	
4=4 Sec	48=48" Band	
5=5 Sec	56=56" Band	

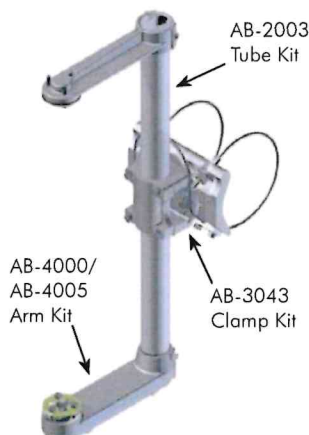
Note:

Stainless steel upgrade available: includes stainless clamp screw and slotted washer. Specify by including -SS in the part number, i.e., AB-0618-3-29-SS-PNC.



Astro-Brac

pelco
PELCO PRODUCTS, INC.



Astro-Brac Assy, Tallon Series, 1-Way Cable Mount

Signal Section	Cable Length	Coating
AB-0617 -		
1=1 Sec	62=62" Cable	PNC=Process No Color
2=2 Sec	84=84" Cable	P__=Paint
3=3 Sec	96=96" Cable	
4=4 Sec		
5=5 Sec		

Note:

Stainless steel upgrade available: includes stainless cable and slotted washer. Specify by including -SS in the part number, i.e., AB-0617-3-62-SS-PNC.



Astro-Brac Assy, Galaxy Series, 1-Way Cable Mount

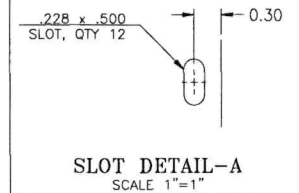
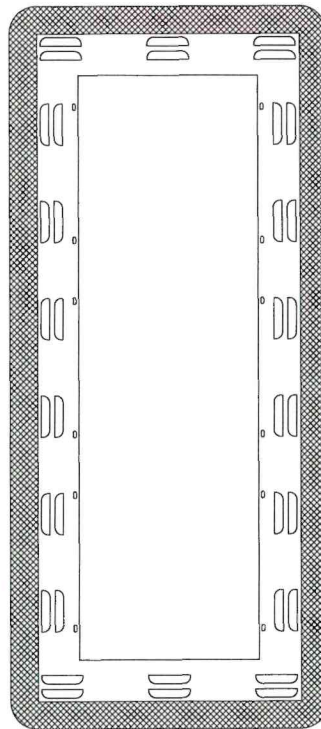
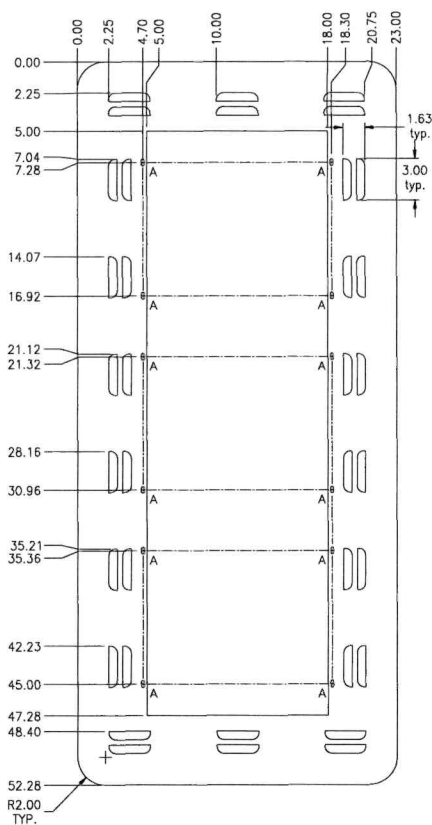
Signal Section	Cable Length	Coating
AG-0125 -		
1=1 Sec	62=62" Cable	PNC=Process No Color
2=2 Sec	84=84" Cable	P__=Paint
3=3 Sec	96=96" Cable	
4=4 Sec		
5=5 Sec		

Note:

Stainless steel upgrade available: includes stainless cable and slotted washer. Specify by including -SS in the part number, i.e., AG-0125-3-62-SS-PNC.



- Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. See Reference Section for clamp kit pole diameters.
3. See Reference Section for available paint colors.



NOTES:

- 1.) ALL DIMENSIONS ARE IN INCHES.
- 2.) TOLERANCES TO BE ± 0.031 ".
- 3.) MATERIAL TO BE 0.050" 6061-T6 ALUMINUM.
- 4.) ANODIZED ACCORDING TO MIL-A-8625 TYPE II OR TYPE I, POWDER COAT FINISH TO BE FLAT BLACK #37038.
- 5.) DEBUR ALL EDGES.
- 6.) NOTE ALTERNATING DIRECTION OF LOUVERS BY GROUP, PER ODOT.

Massillon, Amherst & Lake NE
B/R# 210
Qty. 4
With 2" Yellow Reflective Border Tape

REV 2: UPDATED NOTE: 3 & 4 (SJM)	9-16-22
REV 1: UPDATED LOUVER SIZE, QTY., AND DIM STYLE (SJM)	9-15-20
REVISIONS	DATE



TITLE 3 SECTION CLUSTER BACKPLATE, LOUVERED, ODOT			
DRAWN BY DWP	APPROVED BY	CAD 3SECECP1-LVDR2	SCALE FIT
DATE 8-29-11	DATE	REFERENCE ECPI SIGNALS P/N J.BPTA305BPAL	DRAWING No. DB-820

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12-Inch Polycarbonate Signal

What, exactly, is a signal?

A traffic signal is a signaling device that is positioned at road intersections, and other sites that control traffic. The signals are designed to ensure an orderly flow of traffic for vehicles, motorcycles, bicycles, and pedestrians by displaying colored lights in a sequence of phases. The colors signal the user to proceed (green), warn that a signal is changing to red (yellow) or prohibits any traffic from proceeding (red).

Why do agencies use signals?

Traffic signals provide an opportunity for pedestrians or vehicles to safely cross an intersection from different directions. Traffic signals can also alleviate traffic capacity of an intersection or a given route which leads to lowering emissions from vehicles that are waiting in traffic.

How do signals benefit the driving public?

Traffic signals increase the overall safety for all roadway users by reducing traffic collisions and providing efficient intersection operations. Traffic signals also provide a continuous movement of traffic at a defined speed along a given route which contributes to reducing commuting times.

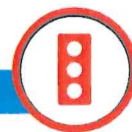
SUBMITTAL SHOP DRAWING REVIEW
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. NOTHING HEREIN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; PERFORMANCE; SELECTING FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

☒ APPROVED
☐ APPROVED AS NOTED

BY John P. [Signature]
DATE 1/5/2024

☐ NOT APPROVED
☐ REVISE/RESUBMIT



Housing

The housing of each section is a one-piece molded, ultraviolet, and heat-stabilized polycarbonate unit. Two integrally-cast hinge lugs and latch screws are cast on each side of the housing. Built upon a symmetrical concept, each housing is capable of providing either right or left-hand door openings. While the left hinge is standard, the right hinge must be specified. The top and bottom of the housing have openings to accommodate standard 1½-inch pipe brackets. Each signal section is rigidly attached, one above the other, by means of corrosion-resistant bolts and a washer attachment that allows sections to be rotated about a vertical axis. Alternate means for attaching sections together are available. The housing consists of four matching punch-out locations on the top and bottom of each section to allow sections to be bolted together with four 1½-inch and 10-32 corrosion-resistant screws.

The top and bottom of the signal housing have an integrally-cast Shurlock boss. The radial angular grooves of the Shurlock boss, when used with Shurlock fittings, provide positive five-degree increment positioning of the entire signal head to eliminate rotation or misalignment of the signal. Each housing has molded bosses for one five and one six-position terminal block. Each housing has provisions for easily adding a back-plate. Hinge pins, door latching hardware, visor back-plate, and lens clip screws are high-quality stainless steel.

Housing Door

The housing door of each section is a one-piece molded ultraviolet and heat-stabilized polycarbonate unit. Two hinge lugs are molded into one side and two latch jaws are molded onto the other side. The door is attached to the housing by means of two stainless steel hinge pins. Two stainless steel "eye" bolts and wing nuts on one side of the door allow for opening and closing the signal door without the use of any special tools. A gasket groove on the inside of the door accommodates a weatherproof and mildew-proof resilient gasket which, when the door is closed, seals flat against the housing, creating a positive seal. The outer face of the door has four metal threaded inserts, equally spaced about the circumference of the lens opening, with four screws to accommodate the signal head visors. The door and visor overlap to prevent light escaping between visor and door.

Basic Specifications

- Dimensions - 14 in. H x 15¼ in. W x 7¾ in. D
- Weight, typical:
 - Single Section: 3.4lbs
- Standard Colors:
 - Dark Olive Green (matches Federal Standard 595b-14056)
 - Yellow (matches Federal Standard 595b-13538)
 - Dull Black (matches Federal Standard 595b-37038)

***BLACK HOUSING**
***BLACK VISOR CAPS**

Terminal Block

Each complete signal face is provided with a terminal block. The terminal block is placed in the bottom section, unless otherwise specified. The terminal block for a standard three-section head is a five-position, ten-terminal, barrier-type strip. To one side of each "Fast-on" terminal strip is the attached AC common, red, yellow, and green signal section leads, leaving the opposite screw clamp terminal for field wires.

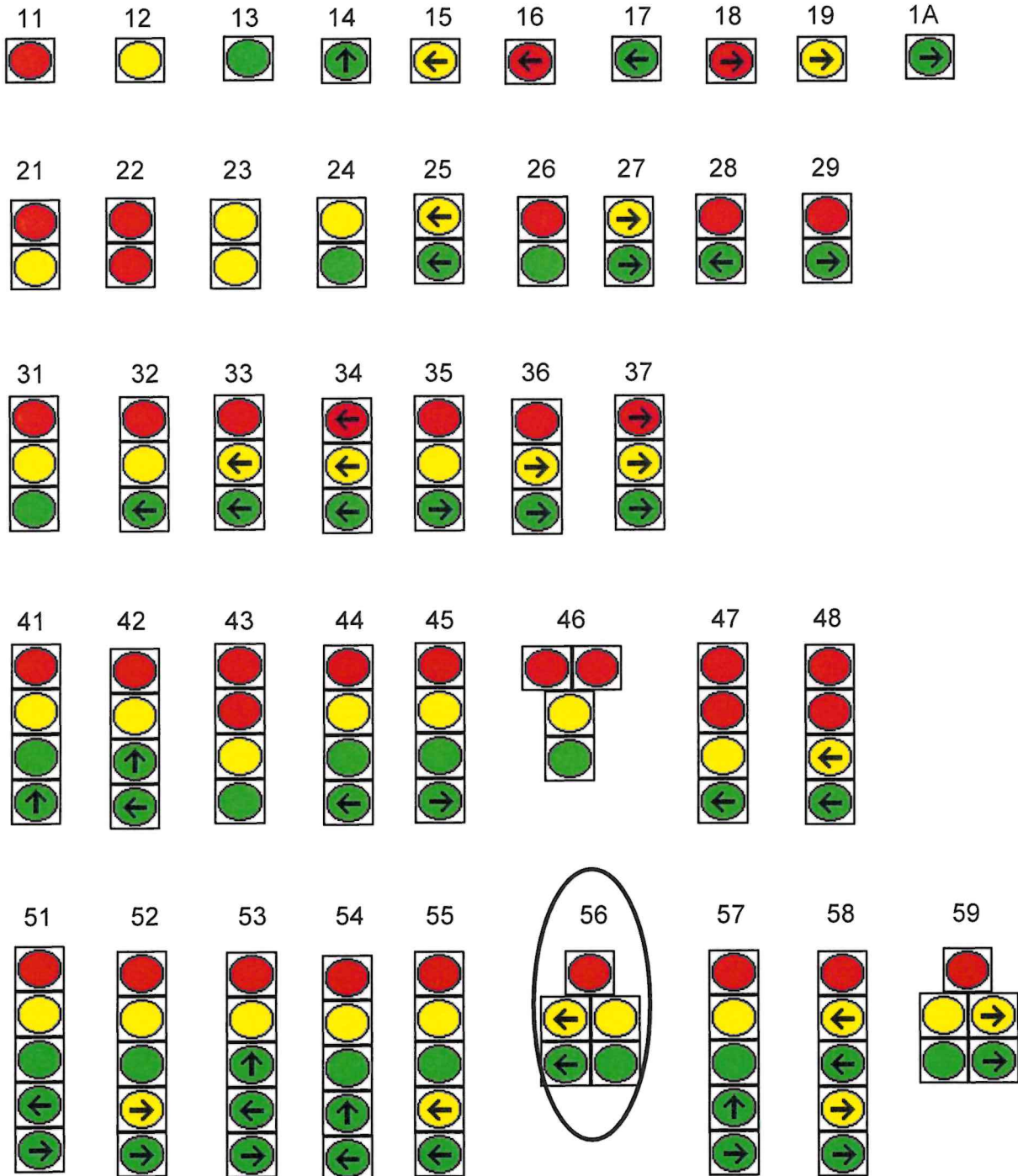
Visors

Visors are tunnel, full-circle, or cap, and are a minimum of ten inches long. Visors are molded from ultraviolet and heat-stabilized polycarbonate and include attaching tabs to facilitate installation.



FACE ARRANGEMENTS VERTICAL

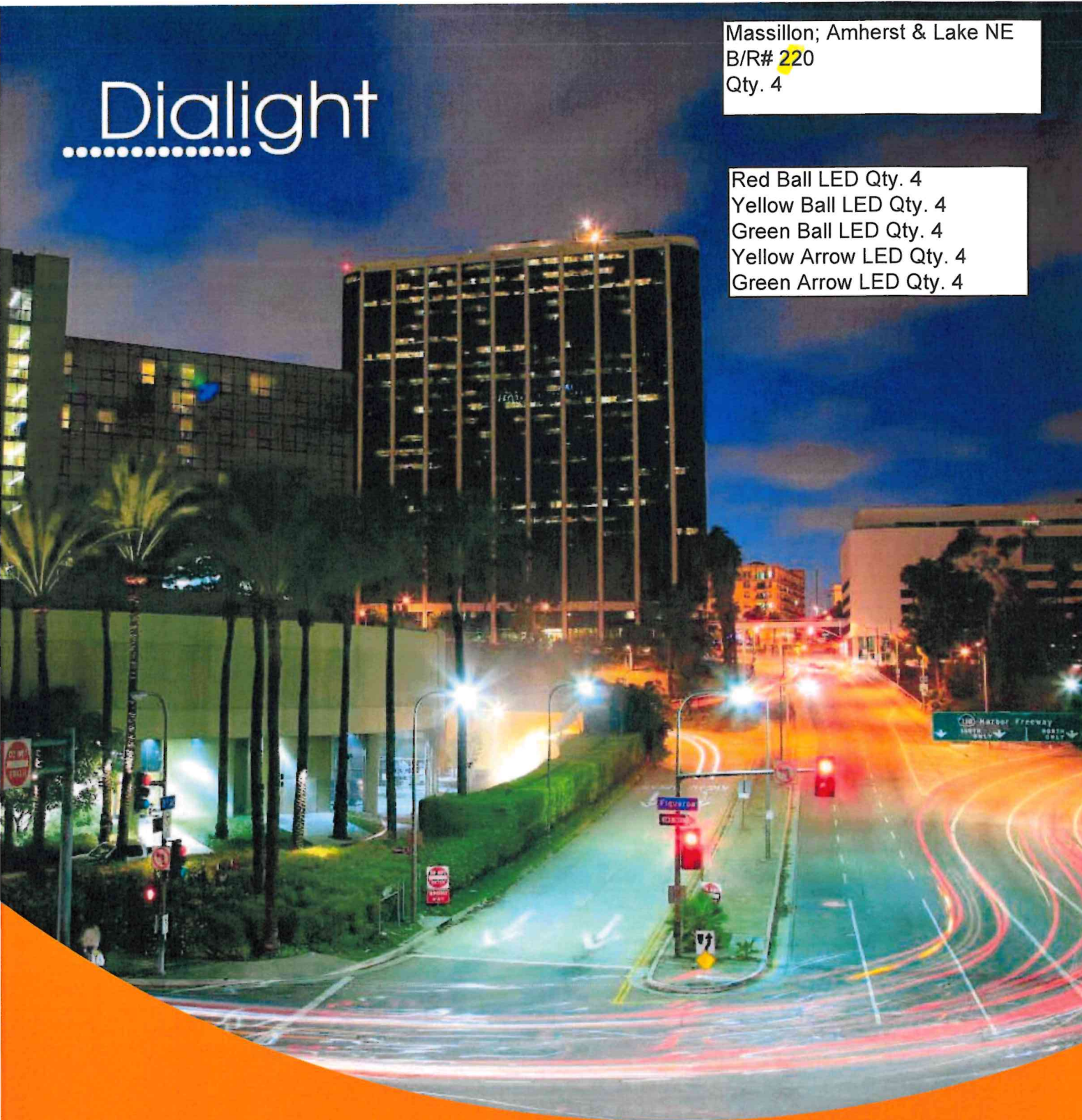
Signal Arrangements Qty. 4



.....Dialight

Massillon; Amherst & Lake NE
B/R# 220
Qty. 4

Red Ball LED Qty. 4
Yellow Ball LED Qty. 4
Green Ball LED Qty. 4
Yellow Arrow LED Qty. 4
Green Arrow LED Qty. 4

A nighttime photograph of a city street intersection. In the background, a tall, modern building with many lit windows stands against a dark sky. Palm trees line the sidewalk on the left. The street is illuminated by streetlights, and long, colorful light trails from cars are visible, curving through the intersection. A green highway sign for '149 Harbor Freeway' is visible on the right side of the road. The bottom of the image is overlaid with a solid orange shape.

ITE Compliant LED Signal Modules

ITE Compliant LED Traffic Signal

Module Performance Specifications

All LED Ball Signal Modules - 8 inch (200mm) and 12 inch (300mm)

All shall be fully compliant to the ITE VTCSH LED Circular Supplement specifications dated and adopted June 27, 2005. Compliance to the ITE VTCSH-2 Interim Purchase Specification is not sufficient, and will not substitute for compliance to the ITE VTCSH LED Circular Supplement specifications. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek, that certify full compliance of all LED ball signal modules to the entire ITE specification. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Figure 2, Design Qualification Testing Flow Chart must be included without any exceptions, changes or omissions. The manufacturer must also submit a datasheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 12 inch (300mm) Arrow Signal Modules

All shall be fully compliant to the "Omni-directional" specifications of the ITE VTCSH - LED Vehicle Arrow Traffic Signal Supplement adopted July 1, 2007. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of all LED Arrow signal modules. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 1, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 16x18 Countdown Pedestrian Signal Modules

All shall be fully compliant to the ITE PTCSI Part-2: LED Pedestrian Traffic Signal Modules specifications adopted August 4, 2010 or the latest adopted version as listed on the ITE website at time of bid. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of LED signal modules, to these specifications. Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 2, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the exact catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number. Combination hand/person pedestrian signal modules shall incorporate separate power supplies for the hand and the person icons.

In addition to, and in excess of the above applicable ITE specification compliance, the on-board circuitry of all LED traffic signal modules shall include voltage surge protection, to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.8, NEMA Standard TS 2-2003. In addition, the module shall comply with the following standards: IEC 1000-4-5 at 3kV with a 2 ohm source impedance, ANSI/IEEE C62, 41-2002; IEC 61000-4-12 (6kV, 200A, 100kHz ring wave).

Warranty

Manufacturer shall provide at time of bid, a written warranty which provides for repair or replacement of modules that fail to function as intended due to workmanship or material defects within the first 60 months from date of delivery. Modules which exhibit luminous intensities less than the minimum as specified in the ITE specifications as indicated above, within the first 60 months from date of delivery shall be replaced or repaired.



Notes

CSA approved to the following applicable requirements:

- CSA Standard C22.2 No. 9.0-96 General Requirements for Luminaires
- CSA Std. No. C22.2 No. 250.0-04 Luminaires
- UL Std. No. 1598-2004 (May 2006) Luminaires

Uniform Appearance LED Traffic Signal Modules

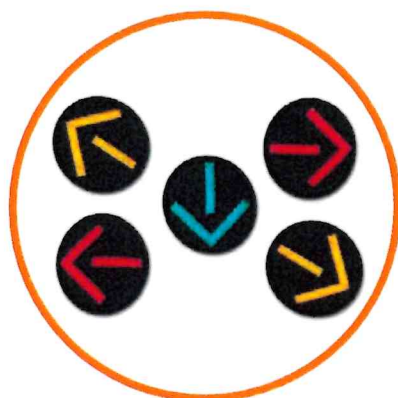


Features & Benefits

- *Fully compliant to ITE VTCSH-LED Circular Signal Supplement dated 6/27/2005
- Industry's lowest power for all colors
- Meets or exceeds ITE intensity, color & uniformity spec, including 49°C / 74°C requirements
- Temperature compensated power supplies for longer LED life
- Uniform appearance
- Expanded view radiation pattern suitable for span wire and steep grade applications
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- Manufactured with anti-capillary wires
- Conformal coated power supply
- Secondary lens treatment for abrasion resistance
- Patent No. 7,281,818 and other patents pending
- Intertek/ETL certified and listed on ETL certification program
- All units operate at 80-135VAC RMS, 60+/-3Hz

Part Number	Color	Lens Type	Dominant Wavelength (nm)	Typical Wattage at 25°C	Peak Minimum Maintained Luminous Intensity (cd)	Size (in)	*Meets ITE Spec	CSA Approved
433-1110-003XL	Red	Tinted	625	7	165	8	•	•
433-1170-003XL	Red	Clear	625	7	165	8	•	•
433-3130-901XL	Yellow	Tinted	590	8	410	8	•	•
433-3170-901XL	Yellow	Clear	590	8	410	8	•	•
433-2120-001XL	Green	Tinted	500	7	215	8	•	•
433-2170-001XL	Green	Clear	500	7	215	8	•	•
→ 433-1210-003XL	Red	Tinted	625	7	365	12	•	•
→ 433-1270-003XL	Red	Clear	625	7	365	12	•	•
→ 433-3230-901XL	Yellow	Tinted	590	9	910	12	•	•
→ 433-3270-901XL	Yellow	Clear	590	9	910	12	•	•
→ 433-2220-001XL	Green	Tinted	500	8	475	12	•	•
→ 433-2270-001XL	Green	Clear	500	8	475	12	•	•

Omni-Directional Uniform Appearance LED Arrow



Features & Benefits

- *Fully compliant to ITE VTCSH-LED Vehicle Arrow Supplement dated 7/01/2007
- Allows for mounting in any orientation in the signal head
- Industry's lowest power for all colors
- Meets or exceeds ITE intensity, color & uniformity spec, including 49°C / 74°C requirements
- Temperature compensated power supplies for longer LED life
- Uniform appearance
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- Manufactured with anti-capillary wires
- Conformal coated power supply
- Secondary lens treatment for abrasion resistance
- Intertek/ETL certified and listed on ETL certification program
- All units operate at 80-135VAC RMS, 60+/-3Hz

Part Number	Color	Lens Type	Dominant Wavelength (nm)	Typical Wattage at 25°C	Peak Minimum Maintained Luminous Intensity (cd)	*Meets ITE Spec	CSA Approved
432-1314-001XOD	Red	Tinted	628	6	56.8	•	•
432-1374-001XOD	Red	Clear	628	6	56.8	•	•
→ 431-3334-901XOD	Yellow	Tinted	590	7	141.6	•	•
→ 431-3374-901XOD	Yellow	Clear	590	7	141.6	•	•
→ 432-2324-001XOD	Green	Tinted	500	6	73.9	•	•
→ 432-2374-001XOD	Green	Clear	500	6	73.9	•	•



PH: 405-340-3434
FAX: 405-340-3435
Edmond, OK 73013
www.pelcoinc.com

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Massillon; Amherst & Lake NE

B/R# 220

Qty. 4

With Stainless Steel Cable

REF:

TITLE:

Astro-Brac Galaxy Assy for Cluster Mnt w/
Uppers, 17" CTC, Galv Cable Mount, Alum

AG-0168

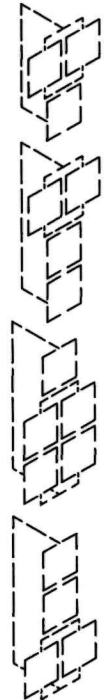
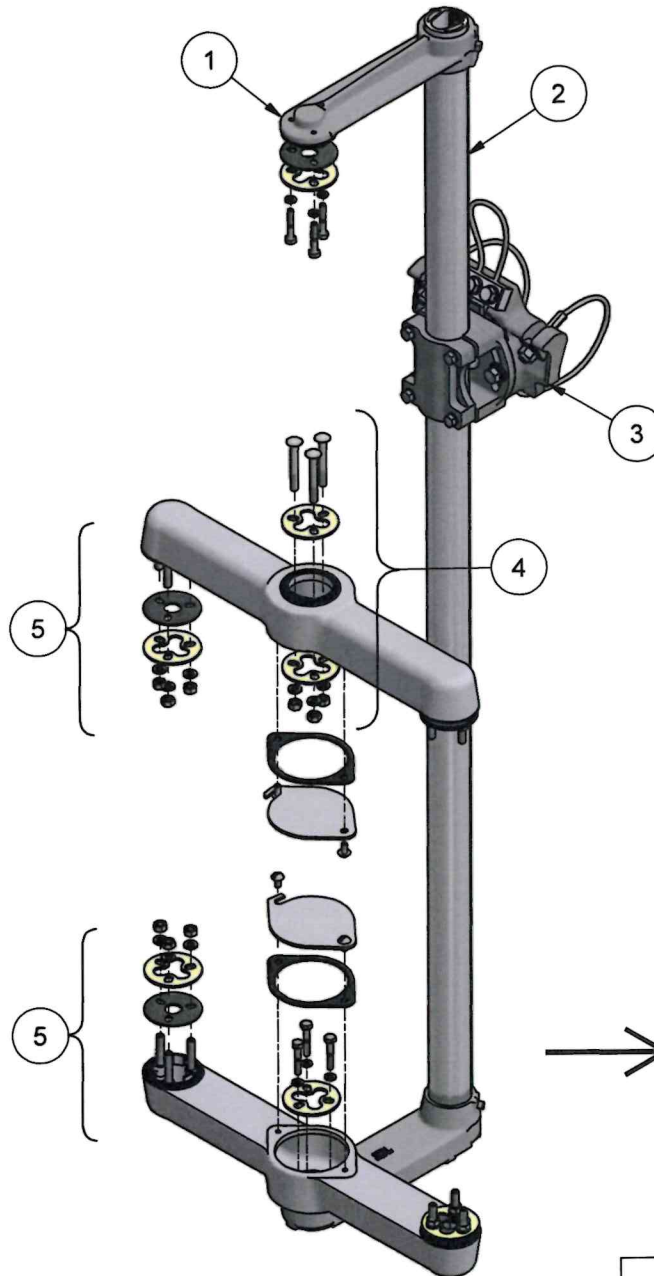
PART NO

AG-0168-62-PNC

Cable Length

Process No Color=PNC

Paint=PXX



Cable Length	Pole Dia	w/ Ty-Back
62"	7.0"	4.5"
84"	10.5"	7.6"
96"	12.4"	9.6"
110"	14.6"	11.8"
120"	16.2"	13.4"
132"	18.2"	15.3"
144"	20.1"	17.2"
220"	32.2"	29.3"
280"	35.0"	35.0"

OPTIONS

Cable Length:

Min 4" Pole Dia, See Chart for Max

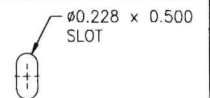
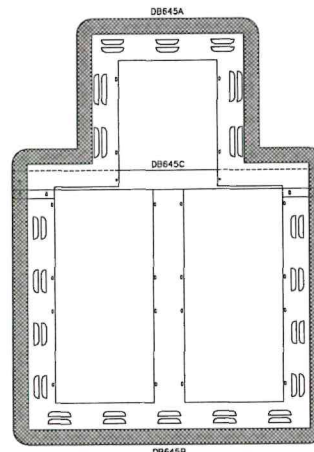
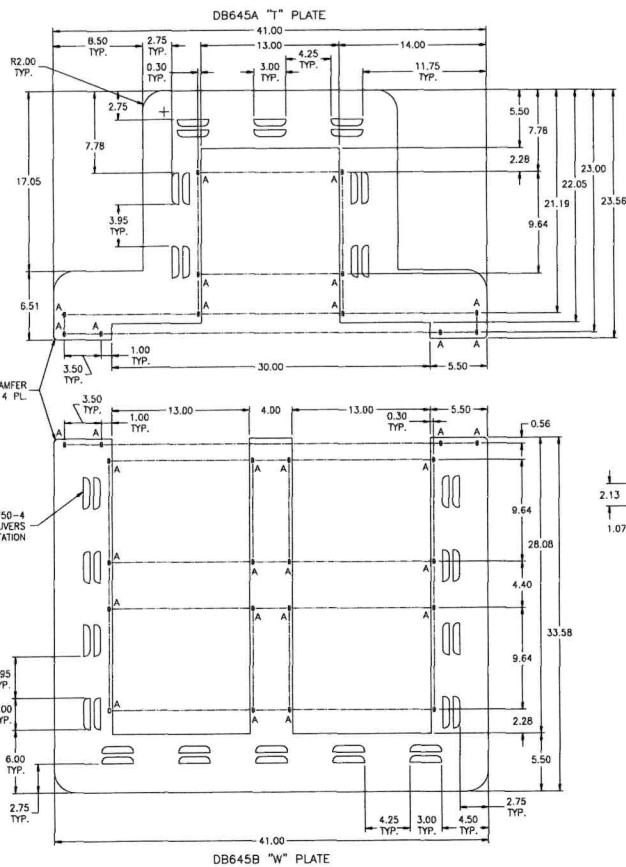
Paint

Note: Bracket will accommodate multiple configurations by moving the hardware kits.

ITEM	PART NUMBER	DESCRIPTION	QTY
1	AB-4000-PXX	Astro-Brac Arm Kit, 1-Way 8-1/2" CTC, Alum	1
2	AB-2003-58	Gusseted Tube w/ PVC Insert, 1-1/2" TOE x 58", Alum	1
3	AB-3055-L-PXX	Astro-Brac Clamp Kit, Galaxy, Galv Cable, Alum	1
4	SE-3117-SS	Hardware Kit, Signal-to-Signal, 5/16"-18, Zinc Slotted Washer & Stainless Hardware	1
5	SE-5059-PXX	Upper Arm Assy, Tri-Stud, 2-Way, 17" CTC, Alum	2

Pelco Assy, idw 1/25/17

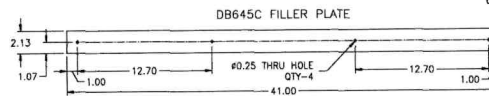
CBJ	3/7/2017	KAK	3/9/2017	TWO	3/9/2017	RKV	3/15/2017	REV:	DATE:	REV CHK'D:	DATE:	SHEET 1 OF 1
DRAWN:	DATE:	CHECKED:	DATE:	MEG ENG:	DATE:	QA:	DATE:					



SLOT DETAIL-A
32-PLACES
SCALE 1"=1"

NOTES:

- 1.) ALL DIMENSIONS ARE IN INCHES.
- 2.) TOLERANCES TO BE ± 0.031 ".
- 3.) MATERIAL TO BE 0.050" 6061-T6 ALUMINUM.
- 4.) ANODIZED ACCORDING TO MIL-A-8625 TYPE II OR TYPE I, POWDER COAT FINISH TO BE FLAT BLACK #37038.
- 5.) DEBUR ALL EDGES.
- 6.) NOTE ALTERNATING DIRECTION OF LOUVERS BY GROUP, PER ODOT.



Massillon, Amherst & Lake NE
B/R# 220
Qty. 4
With 2" Yellow Reflective Border Tape

REV 5: UPDATED NOTE: 3 & 4 (SJM)	9-16-22
REV 4: UPDATED LOUVER SIZE (SJM)	9-15-20
REVISIONS	DATE



TITLE 5 SECTION CLUSTER BACKPLATE, LOUVERED			
DRAWN BY DWP	APPROVED BY	CAD 5SECECP1-SWODr5	
DATE 8-29-11	DATE	SCALE FIT	DRAWING No. DB-819
REFERENCE SPAN WIRE MTD., ECPI SIGNALS, ODOT P/N J.BPTA565BSPAL			

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PEDESTRIAN SIGNAL HOUSING

Massillon; Amherst & Lake NE
B/R# 230
Qty. 8
Black Housing

12" Housing

16" Housing

Aluminum

Polycarbonate

IN BLACK

FAW



16 inch housing shown
in federal yellow



12 inch housing shown
in black

DETECTION

PARKING

SIGNALS

SIGNS

SOFTWARE

SPECIALTY

Overview

McCain's Pedestrian Signal Housings are designed to be used in conjunction with standard or LED pedestrian signal modules to promote pedestrian safety at intersections. McCain housings exceed the Institute of Transportation Engineers (ITE) standards, offering a low maintenance and durable housing in either die cast aluminum or injection molded polycarbonate resin. They are available in 12" or 16" styles, and the 12" housings are available in 1-section or 2-section varieties. The 12" polycarbonate housings are reinforced with a 10 percent fiberglass fill for superior strength and durability unmatched by standard polycarbonate resins. The fiberglass fill is optional on the 16" polycarbonate housings.

Benefits

- 12" or 16" styles
- Rugged aluminum or polycarbonate construction
- Designed for standard symbol or word pedestrian signal modules including LED
- Door-hinge hardware can be removable and reversible or permanently attached
- Highly customizable including a variety of fabrication, mounting, and visor options
- 16" available with Vantage Visor™ for increased visibility and impact protection

Product Description

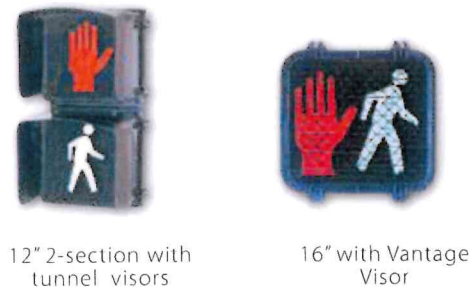
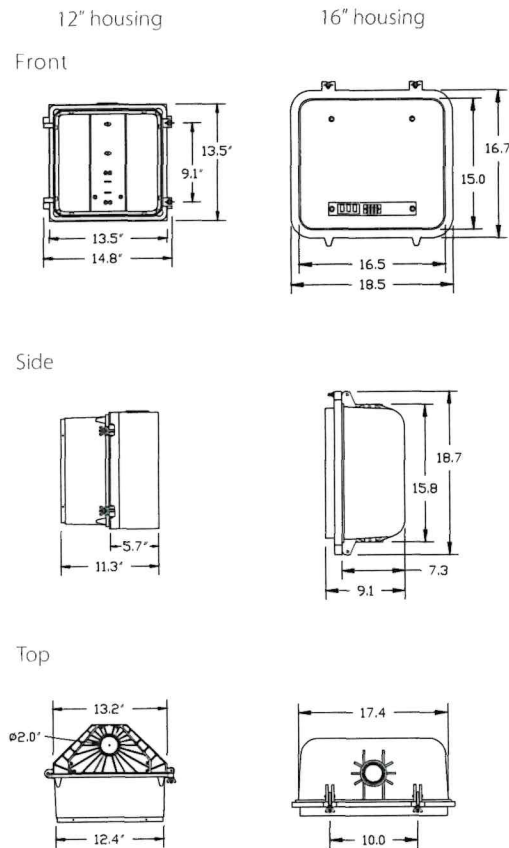
The McCain Pedestrian Signal Housing is available in 12" and 16" styles and a variety of configurations including aluminum or polycarbonate construction, with a number of options (see Options for details).

The door is attached with stainless steel detent-type clevis or roll pins and eye bolt/wing nut assemblies. Two equally spaced mounting lugs, integrally cast into the top and bottom of the 16" and the sides of the 12", allow the doors to hinge from either direction. When clevis pins are used, the door and eye bolt assemblies can be removed and rotated without the use of any tools, facilitating maintenance.

All interior mounting locations on the 16" housing are symmetrically positioned, allowing the rotation of components when using the bi-directional McCain Clamshell Mount to mount to the right or left side.

REVIEW
CORRECTIONS OR COMMENTS MADE ON THE SHOWN DURING THIS REVIEW DO NOT RELIEVE THE USER AND SPECIFICALLY THE DESIGN ENGINEER OF THE REQUIREMENTS OF THE GENERAL CONFORMANCE WITH THE INTENT OF THE PROJECT AND ALL OTHER COMPLIANCE WITH THE INTENT OF THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, PERFORMANCE, COORDINATION, CORRELATION, QUANTITIES, QUALITY OF WORK, AND THE FINISHING OF ALL WORK IN A SAFE AND SATISFACTORY MANNER.
CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646
APPROVED
COMPLETED AS NOTED
BY DATE
1/15/2024
NOT APPROVED
REVISOR/SUBMIT

Pedestrian Signal Housing



Hand/Man modules
(sold separately)



16" Vantage Visor
(sold separately)

Standard Features

- Stainless steel hardware includes hinge pins (detent-type clevis or roll) and eye bolt/wing nuts (latch)
- Terminal block with quick-disconnect fittings on one side of each terminal position and screw clamps on the other side

General Specifications

Dimensions*:	12" Housing	16" Housing
Housing:	13.2" H x 13.2" W x 5.7" D	15.8" H x 17.4" W x 7.3" D
Door (incl. tabs):	13.5" H x 15.0" W x 5.6" D	18.7" H x 18.5" W x 1.8" D
Overall:	14.0" H x 15.0" W x 11.3" D	18.7" H x 18.5" W x 9.1" D
Material:	Polycarbonate: Ultraviolet and heat stabilized, flame retardant, permanently colored, 10% fiberglass reinforcement (12" standard, 16" optional)	
Finish(es):	Aluminum: Type 360, reduced corrosion, increased powder coat adhesion Polycarbonate: Colored resins integral to housing Aluminum: Powder coated	
Color(s):	Federal yellow, signal green, black, or custom colors	
Access:	Front door (1), 16": hinged top or bottom 12": hinged left or right	
Latching System:	Eye bolt assemblies	
Mounting:	Standard signal hardware	
Environmental:	Operating temperature: -37° C to +74° C Humidity: 0 to 95% (non-condensing)	
Shipping Weight:	12": Poly 5 lbs, Al 9 lbs 16": Poly 9 lbs, Al 10 lbs	

* Dimensions are approximate and vary based on material used

Options

- Polycarbonate 10% fiberglass fill for added durability (optional on 16", standard on 12")
- Modules: LED; international Hand/Man symbol, "WALK"/"DON'T WALK" words
- Visors: Vantage Visor (16" only), tunnel, or cap (12" only)
- Clamshell mount (16" only - housing available pre-drilled for mount)
- Custom terminal blocks
- Door hardware permanent (roll pins) or removable (clevis pins)



16" Tunnel visor
(sold separately)



16" Clamshell mount
(sold separately)

.....Dialight

Massillon; Amherst & Lake NE
B/R# 230
Qty. 8



ITE Compliant LED Signal Modules

ITE Compliant LED Traffic Signal

Module Performance Specifications

All LED Ball Signal Modules - 8 inch (200mm) and 12 inch (300mm)

All shall be fully compliant to the ITE VTCSH LED Circular Supplement specifications dated and adopted June 27, 2005. Compliance to the ITE VTCSH-2 Interim Purchase Specification is not sufficient, and will not substitute for compliance to the ITE VTCSH LED Circular Supplement specifications. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek, that certify full compliance of all LED ball signal modules to the entire ITE specification. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Figure 2, Design Qualification Testing Flow Chart must be included without any exceptions, changes or omissions. The manufacturer must also submit a datasheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 12 inch (300mm) Arrow Signal Modules

All shall be fully compliant to the "Omni-directional" specifications of the ITE VTCSH - LED Vehicle Arrow Traffic Signal Supplement adopted July 1, 2007. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of all LED Arrow signal modules. These tests should include but not be limited to the luminous intensity measurements and requirements outlined in the ITE specification sections 6.4.4 through 6.4.4.4.2 (25°C and 74°C / 49°C). Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 1, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number.

All LED 16x18 Countdown Pedestrian Signal Modules

All shall be fully compliant to the ITE PTCSI Part-2: LED Pedestrian Traffic Signal Modules specifications adopted August 4, 2010 or the latest adopted version as listed on the ITE website at time of bid. Additionally, prior to bid award, the manufacturer shall submit to purchaser, reports from ETL/Intertek that certify full compliance of LED signal modules, to these specifications. Evidence of full compliance to all required testing methods, procedures and sections as outlined in the above ITE document Attachment 2, "Design Qualification Testing Flow Chart" must be included without any exceptions, changes or omissions. The manufacturer must also submit a data sheet showing the exact catalog number of the items submitted on the bid and the Independent Lab report must show full qualification of this catalog number. Combination hand/person pedestrian signal modules shall incorporate separate power supplies for the hand and the person icons.

In addition to, and in excess of the above applicable ITE specification compliance, the on-board circuitry of all LED traffic signal modules shall include voltage surge protection, to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.8, NEMA Standard TS 2-2003. In addition, the module shall comply with the following standards: IEC 1000-4-5 at 3kV with a 2 ohm source impedance, ANSI/IEEE C62, 41-2002; IEC 61000-4-12 (6kV, 200A, 100kHz ring wave).

Warranty

Manufacturer shall provide at time of bid, a written warranty which provides for repair or replacement of modules that fail to function as intended due to workmanship or material defects within the first 60 months from date of delivery. Modules which exhibit luminous intensities less than the minimum as specified in the ITE specifications as indicated above, within the first 60 months from date of delivery shall be replaced or repaired.



Notes

CSA approved to the following applicable requirements:

- CSA Standard C22.2 No. 9.0-96 General Requirements for Luminaires
- CSA Std. No. C22.2 No. 250.0-04 Luminaires
- UL Std. No. 1598-2004 (May 2006) Luminaires

Uniform Appearance Hand & Person Pedestrian Signals



Features & Benefits

- *Fully compliant to ITE PTCSI Part 2 LED Pedestrian Traffic Signal Module Specification dated 3/09/2004
- Meets or exceeds ITE uniformity ratio of not more than 1 to 5 between the max and the min luminance values as measured in (.5") dia spots
- Manufactured with anti-capillary wires
- Conformal coated power supply
- Fuse and transient suppressor incorporated for superior line and load protection
- Independent dedicated power supplies for added safety and reliability
- Intertek/ETL certified and listed on ETL certification program
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- All units operate at 80-135VAC RMS, 60+/-3Hz

Part Number	Size	Description	Typical Wattage at 25°C		Min. Luminance (cd/m2)		*Meets ITE Spec	CSA Approved
			Hand	Person	Hand	Person		
430-6450-001X	16 x 18	Side-by-side Hand and Person	9	7	1,400	2,200	•	•
430-6472-001X	16 x 18	Overlay Hand and Person	11	7	1,400	2,200	•	•
430-5770-001X	12 x 12	Hand Only	8	N/A	1,400	N/A	•	•
430-7771-001X	12 x 12	Person Only	N/A	6	N/A	2,200	•	•
430-6772-001X	12 x 12	Overlay Hand and Person	8	10	1,400	2,200	•	•

Uniform Appearance Countdown Pedestrian Signals



Features & Benefits

- *Fully compliant to ITE PTCSI Part 2 LED Pedestrian Traffic Signal Module Specification dated 8/04/2010
- MUTCD compliant for countdown applications
- Full preemption compatibility
- Up to 8 units can be connected in parallel without affecting the monitoring of the Hand/Person
- Manufactured with anti-capillary wires
- Three (3) independent dedicated power supplies for added safety and reliability
- Intertek/ETL certified and listed on ETL certification program
- Reduced off state icon visibility results in increased pedestrian safety by eliminating the potential to misinterpret the signal
- Conformal coated power supply
- New improved one piece housing design
- Improved optical design to provide superior uniform appearance of the icons
- Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- All units operate at 80-135V AC RMS, 60+/-3Hz

Part Number	Housing Size	Symbol Color			Typical Wattage at 25°C			Min. Luminance (cd/m2)			*Meets ITE Spec	CSA Approved
		Countdown	Hand	Person	Countdown	Hand	Person	Countdown	Hand	Person		
430-6479-001X	16 x 18	Portland Orange	Portland Orange	Lunar White	8	11	10	1,400	1,400	2,200	•	•
430-7773-001X	12 x 12	Portland Orange	N/A	N/A	5	N/A	N/A	1,400	N/A	N/A	•	•

Aluminum 1-Way Side-of-Pole with Cast Nipples

Pelco's Side-of-Pole assemblies are designed to mount traffic and pedestrian signals on the side of traffic signal poles with an upper and lower arm. Available in aluminum or iron, and 1-1/2" NPS, tri-bolt, or tri-stud, and a vast array of hubs to accommodate both 1-way or 2-way signal configurations.

Massillon; Amherst & Lake NE
B/R# 230
Qty. 8



SE-3000
Upper Arm Assy



SE-3001
Lower Arm Assy



1-Way Upper & Lower Arm Assy, 10" Nipples

SE-3036 -

Coating



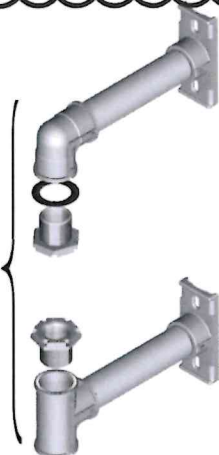
PNC=Process No Color

P__=Paint

COLOR: BLACK

Note:
See Components Section for choice of hub plates.

SE-3036
Upper & Lower
Arm Assy



1-Way Upper & Lower Arm Assy, 10" Nipples, Universal Hub Plates

SE-3215 -

Coating



PNC=Process No Color

P__=Paint

SE-3036
Upper & Lower
Arm Assy



1-Way Upper & Lower Arm Assy, 10" Nipples, Large Pole Hub Plates

SE-3148 -

Coating



PNC=Process No Color

P__=Paint

Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. See Reference Section for available paint colors.

Hubs & Mounting Brackets

Massillon; Amherst & Lake NE
B/R# 230
Qty. 8
Qty. 16 Hub Plates



Hub Plate, Flat Back, 1-1/2" NPS, Alum

SE-0415 -
Coating
PNC=Process No Color
P__=Paint



Hub Plate, 4" Pipe, 1-1/2" NPS, Alum

SE-0454 -
Coating
PNC=Process No Color
P__=Paint



Hub Plate, Large Pole, 1-1/2" NPS, Alum

SE-0357 -
Coating
PNC=Process No Color
P__=Paint

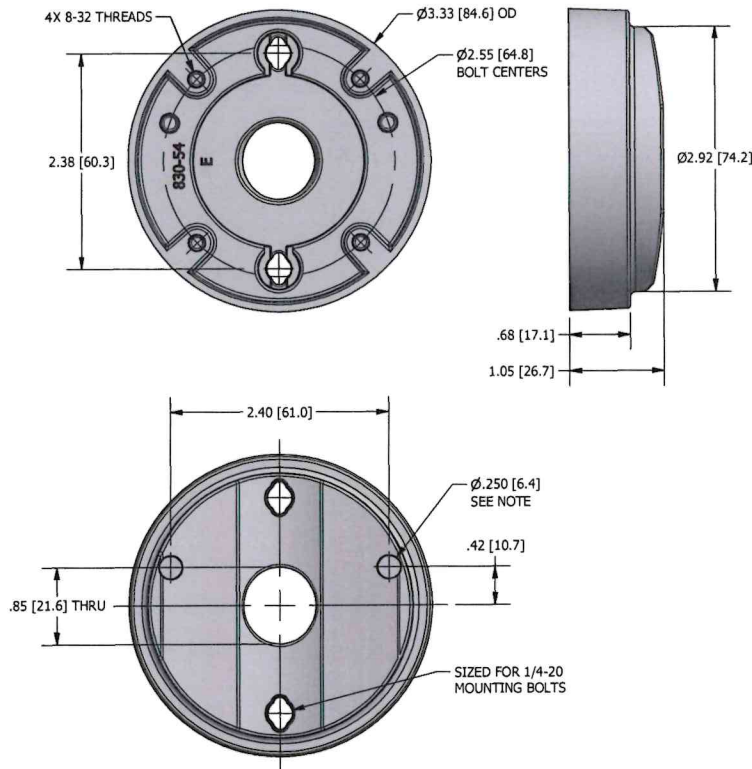
COLOR: BLACK

Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. Double set screw option available. Specify by including -DS in the part number, i.e., SE-0415-DS-PNC.
3. See Reference Section for available paint colors.



Massillon; Amherst & Lake NE
B/R# 240
Qty. 8

BDPM3-X: UNIVERSAL BULLDOG POLE MOUNT



This cast aluminum Universal Bulldog Pole Mount is uniquely designed to provide either: a very strong and low profile mounting option for Polara's Bulldog Push Button, or as an adapter to a variety of existing mountings. With Polara's Bulldog Button attached to this mount (and directly to the pole), the main body of the button extends only 1.5" from the pole.

The low profile design restricts anyone who attempts to use the button as a foothold to climb the pole. It is also a very rugged solution to vandals who try to damage the buttons. This mount, along with the Bulldog Push Button, is the most vandal resistant button available on the market.

Polara Engineering's Universal Adapter can be used to mount a Bulldog Push Button directly to an existing Pelco and some Teeco mounting cups. This mounting is designed to provide a strong mount for Polara's Bulldog Push Button. The low profile Bulldog adapter mounting system adds less than 3/4" of extension from the existing button cup or frame. Order as PA-1X (for "X" see below) to ensure correct mounting hardware is included for this option.

Polara installs high quality stainless steel helicoils to use with stainless steel button screws. Should the agency ever have to replace a pushbutton, the screws can be removed easily versus dealing with bi-metal corrosion issues that occur with other aluminum mounts.

To designate color replace "X" in part number (BDPM3-X or PA-1X) with:

→ "B" for Black
"G" for Green
"Y" for Yellow

Material: Powder Coated Cast Aluminum, Stainless Steel Hardware

Note: These holes are not drilled out. They are provided as a simple drill template for the installer to use should they require them.

SUBMITTAL SHOP DRAWING REVIEW

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS, NOTHING HERE IN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; PERFORMANCE; SELECTING FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

APPROVED
APPROVED AS NOTED

BY
DATE

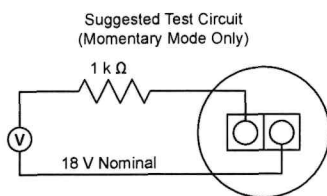
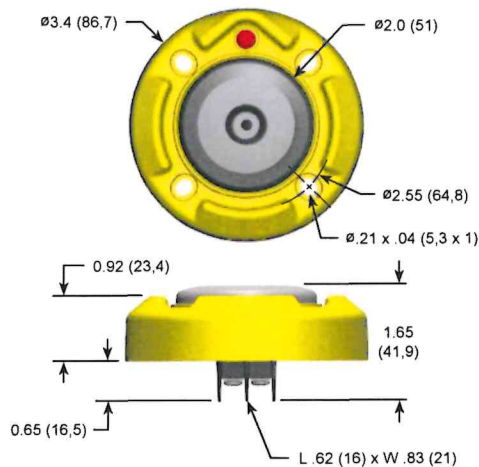
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REVISE/RESUBMIT



Massillon; Amherst & Lake NE
B/R# 240
Qty. 8

BDSP-014 – Bulldog III Series Vandal Resistant ADA Compliant Push Button for TS1 Cabinets with Relay Isolators



BDSP-014-Y model shown.
Dimensions are in inches (millimeters).

This button is a highly vandal resistant button with essentially no moving parts. It is pressure activated, but can withstand an impact from a baseball bat or hammer. When the switch activates, you hear a beep and the LED will flash. When the button is released you will hear a second beep. BDSP-014 meets the relay driving requirements of older electromechanical relay based PED isolators found in some TS1 Cabinets.

Body Material: Aluminum, Powder Coated

Button Material:

Standard: 316 Stainless Steel
Arrow Button: Anodized 6061 Aluminum, Nickel Plated Black Powder Coat on area surrounding arrow

Piezo Driven Solid State Switch:

Operating Force: 3.0 lbs. Maximum
Operating Temperature: -30°F to +165°F (-34°C to +74°C)
Operating Voltage: 12-36 VDC, 9-25 VAC RMS (18 VDC Typ.)
MTBF: 8,800,000 hours Typ.
Switch Operating Life: Greater than 300 million operations
"Off" Current: 15μA Typ.
"On" Resistance: 5Ω Typ.
Maximum "On" Current: 350 mA (over-current protected) Typ.
Maximum "On" Time: 11 sec. Typ.
Debounce Time: 85 ms Typ.

LED Operation: Approx 0.025 sec. LED flash each time button is pressed.

LED Specifications:

Luminous Intensity: 0.3 Lux @ 1 meter Minimum (Red)
Viewing Angle: 155° Typ.

Beeper:

Volume: 68 dB @ 1 meter Typ.
Beep on Press: 3.5 kHz
Beep on Release: 2.6 kHz
Beep Length: 50 ms Typ.

Terminal screws include washers (clamping plates) intended for bare wire. Crimp Terminals are not recommended.

Warranty: 5 Years, free from manufacturers defects

See page 2 for additional design compliance and ordering information.

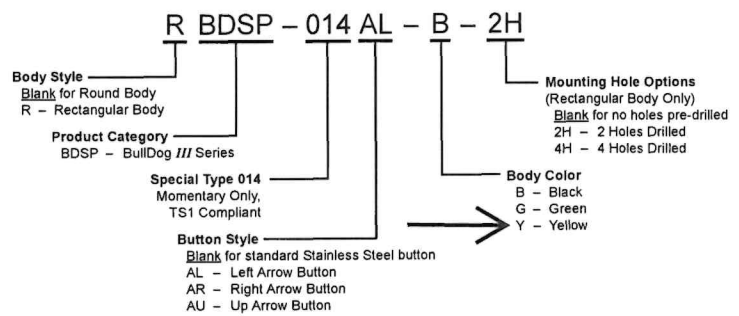


Design Compliance

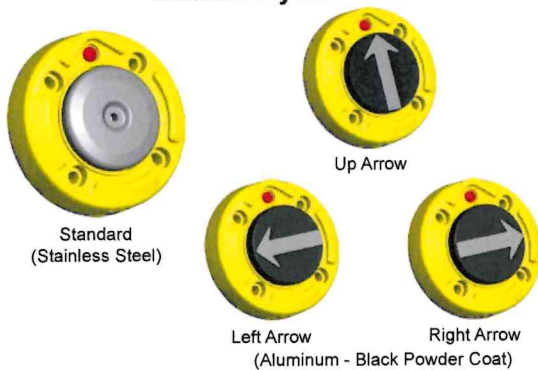
Test Type	Compliance
Activation Force	MUTCD 2009 - 4E
Temperature and Humidity	NEMA TS 2
Transient Voltage Protection	NEMA TS 2
Transient Suppression	IEC 61000-4-4, IEC 61000-4-5
Lightning and Power Protection	GR-1089-CORE, Extended to 6000V-400A, 25 reps, 60VAC-15 mins.
Electronic Noise	FCC Title 47, Part 15, Class A
Mechanical Shock and Vibration	NEMA TS 2
Ingress of Water	NEMA 250 - 6P, Rain, Snow, etc...
Ingress of Water	NEMA 250 - 6P, Submersion
Salt Spray and Corrosion	NEMA 250 - 6P
Ingress of Foreign Objects	NEMA 250 - 6P
Electrical Reliability	NEMA TS 4

Note: Applicable sections only of reference standards. All specifications are subject to change without notice.

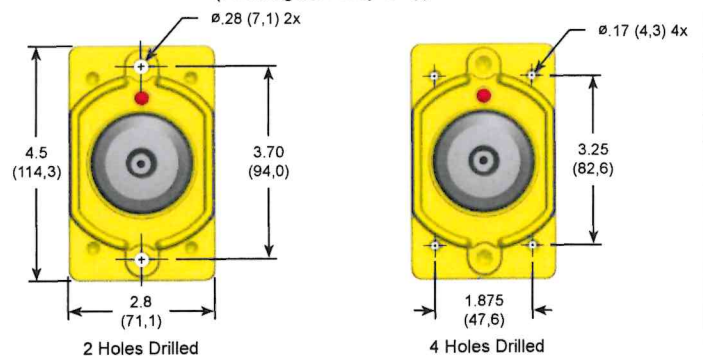
Product Ordering Information



Button Styles



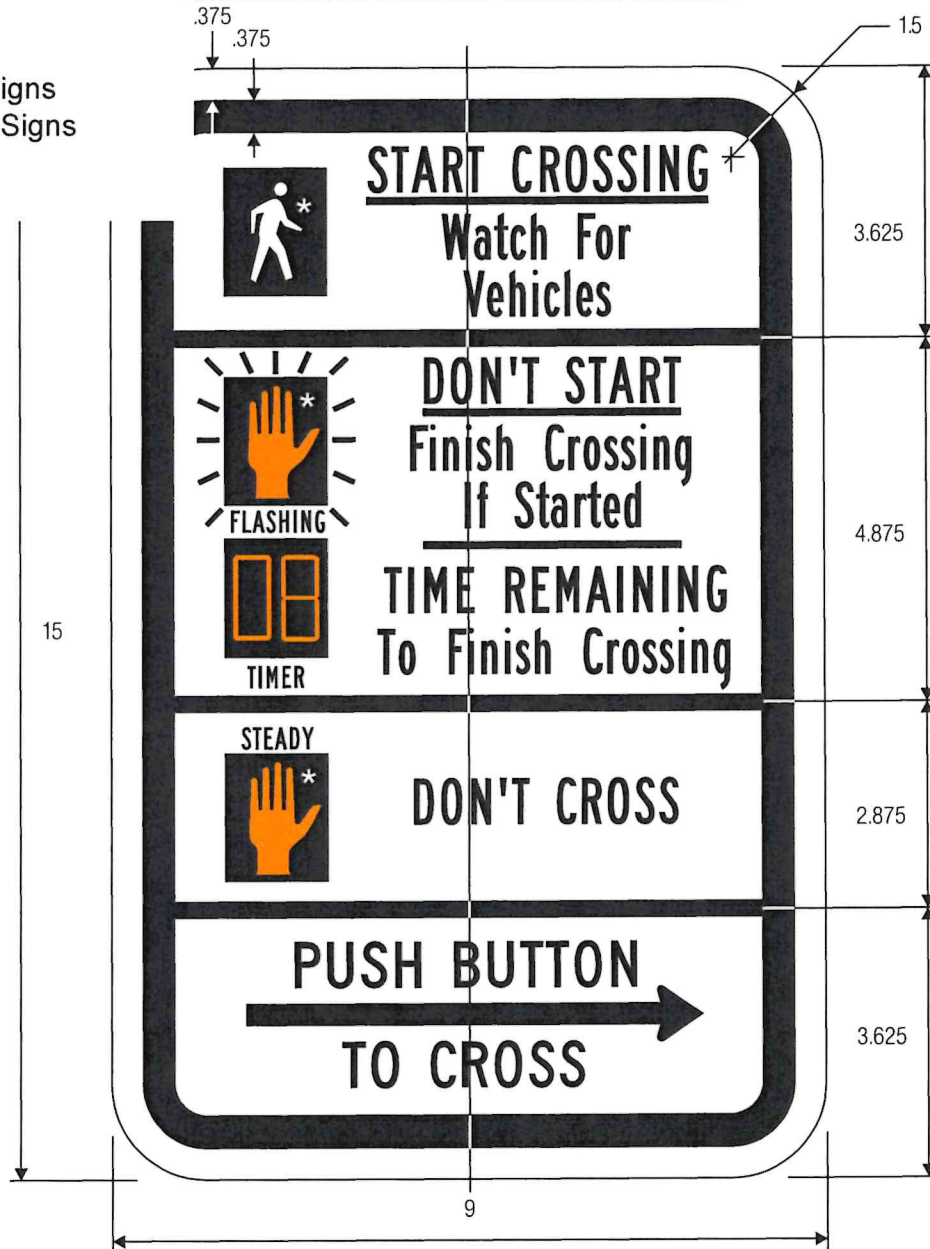
Mounting Hole Options (Rectangular Body Only)



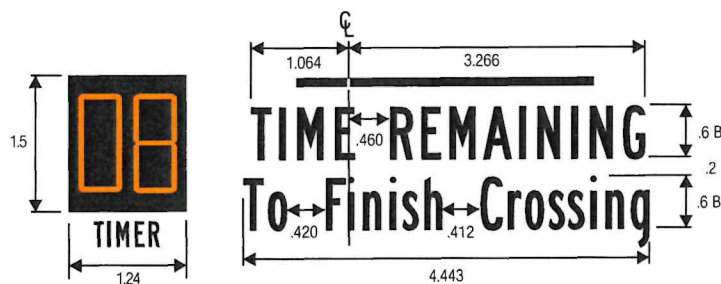
Massillon; Amherst & Lake NE
 B/R# 240
 Qty. 8
 Qty. 4 Left Arrow Signs
 Qty. 4 Right Arrow Signs

This design has been copied from FHWA's 2012 Supplement to the
 the Standard Highway Signs handbook.

R10-3e
 April 20, 2012



R10-3e
 COUNT-DOWN PEDESTRIAN



* See Appendix A for symbol design.

COLORS: LEGEND, BORDER
 BACKGROUND

UPRAISED HAND SYMBOL, TIMER
 PEDESTRIAN SYMBOL

- BLACK
- WHITE (RETROREFLECTIVE)
- ORANGE (RETROREFLECTIVE) ON BLACK
- WHITE (RETROREFLECTIVE) ON BLACK

Cobalt Shelfmount
Cobalt Rackmount
2070 Series

Next-Gen Advanced Transportation

Massillon; Amherst & Lake NE
B/R# 250
Qty. 1



Overview

Cobalt is the next-generation in Advanced Transportation Controller (ATC) specifically designed for the mobile computing environment. Fully meeting ATC standards, Cobalt features a breakthrough hardened seven-inch touchscreen Graphical User Interface (GUI) matched with Linux-based OS that makes programming and access to functions the easiest in the industry.

Cobalt is designed to support Connected and Automated Vehicle (CAV) programs. Combined with the Connected Vehicle Co-Processor (CVCP) module, Cobalt fully supports Signal Phase and Timing (SPaT)/MAP data messaging capabilities, providing a fundamental Vehicle-to-Infrastructure (V2I) element for connected vehicle applications.

The controller technology benefits the driving public by ensuring safety. The traffic signal controller represents one of the most important intelligent technology and communication components of a signalized intersection. The Cobalt ATC family of controllers are designed to increase safety and traffic signal operations for years to come.

Key Features

- **Large seven-inch color TFT LCD display**
- **Touch-screen display for intuitive, graphical programming**
- **High brightness and contrast display for increased outdoor readability**
- **Linux, open architecture real-time multi-tasking operating system**
- **Alternative Web browser-based user interface allows remote programming and status observation**



SUBMITTAL SHOP DRAWING REVIEW
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151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

☒ APPROVED
() APPROVED AS NOTED

BY
DATE

John H.
11/5/2024

() NOT APPROVED
() REVISIT/RESUBMIT

Cobalt Shelfmount Hardware

Cobalts Shelfmount ATC controllers can be configured with Econolite's robust Cobalt touch or Cobalt ASC application software package, or other Linux application software meeting current ATC standards. OS software upgrades can be made easily by USB memory stick, SD card, or Ethernet via Econolite's Windows software installation application.

Cobalts Shelfmount ATC controllers includes a high-power, Linux-based engine board that is compliant with the ATC 6.25 and 6.34 standards for a NEMA TS2 Type-1 or Type-2 I/O and provides connectors that support four Ethernet ports, two USB ports, and an SD card slot. Additionally, Cobalt's seven-inch color, high brightness TFT LCD module with touchscreen capabilities is readable in direct sunlight, can be operated with gloved hands, and is not affected by condensation or water drops.

Hardware Details

- Supports Econolite Linux-based software or other pre-qualified ATC/Linux software
- ATC Engine Board:
 - Fully compliant with the ATC Standard version 6.25 and proposed ATC Standard 6.34
 - 233MHz PowerQUICC II Pro-processor that provides 10 times more processing power than previous generation controller processor
 - 128Mbytes of DDR2 DRAM memory for application and OS program execution
 - 64 Mbytes of FLASH for storage of OS Software and user applications
 - 2MB of SRAM memory for non-volatile parameter storage
- Two integral Ethernet switches for two networks, ENET1 and ENET2:
 - Advanced Graphics Controller
 - Enables Cobalt's enhanced graphics user interface
 - Touch screen capability means the keyboard never has to be used
 - Replaces traditional text menu selection with graphical selections
- Two USB 2.0 ports used to:
 - Update application software
 - Upload or download configuration
 - Upload logged data
- Datakey socket for an optional 3.3V Datakey, 2 through 32MB
- SD Memory Card socket
- CPU Active LED
- Three communications ports standard:
 - NEMA-ATC SDLC serial port 1
 - 25 pin serial port 2
 - 9 pin console serial port
- Built in speaker for enhanced audio controller feedback
- Integral carrying handle in back of controller
- Power Supply:
 - Meets all requirements of ATC standard 6.34
 - External 24VDC protected by a self-resetting electronic fuse
- Operating System:
 - Linux 2.6.3x or later kernel and Board Support Package (BSP)
 - Compliant to ATC Standard V. 6.25 Annex B specifications

Hardware Options

- Two user interface options:
 - Advanced Display with graphics and touch-screen (Standard)
 - Basic Display with text and textual menus only—no touch or graphics
- Two models:
 - TS2 Type-2 connector
 - TS2 Type-1 connector
- Communications module options:
 - FSK Module that can be configured for RS232 operation
 - 2070 TEES 2009 standard 6A, 6B, and 7A plug-in modules

- Datakey 3.3V, 2 through 32MB

Control Features

- 16 phases, 8 configurable concurrent groups in 4 timing rings
- 16 pedestrian phases that can be configured as pedestrian overlaps
- Dynamic max operation
- Extendable walk and pedestrian clearance
- Advanced walk
- Bike input and green timing
- Extendable red clearance

Coordination Features

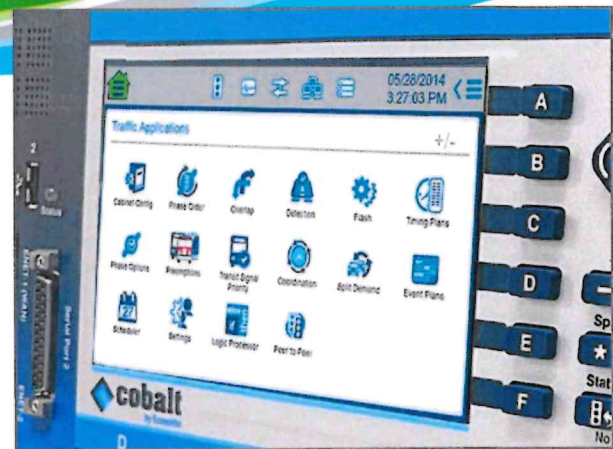
- 120 coordination patterns, each with its own cycle, offsets and split plan selection
- 120 split plans, each with its own coordinated phases, vehicle and pedestrian recall and phase omits
- Offset and split entries displayed in percent or seconds
- Automatic permissive periods
- Fixed or floating force-off
- Crossing arterial coordination
- Quick-sync feature

Preemption Features

- Ten preemption sequences. Each may be configured as priority, first-come-first-serve, or bus preemption operation
- ECPI interlock to provide added monitoring
- Railroad gate-down input and timing
- Conditional delay when entering preemption
- Multiple exit preemption options

Time-Based Features

- 200 schedule programs, configurable for any combination of months, days of the week, and days of the month
- Fixed or floating exception day programs that override the day plan event on a specific day
- 16 day plan events that can use any of the 100 action plans



Status Display Features

Keyboard selection of detailed dynamic status displays for each of the main controller unit functions including: controller, coordinator, preemptor, time base, detectors, and MMU

Detector Features

- 64 vehicle detectors
- 16 system or speed detectors
- Unique detector types and operation
- Individually assignable to phase and functions
- Lock/non-lock function by detector
- 4 detector plans
- 4 detector diagnostic plans
- Individually assignable to phase and functions
- Logging of volume and/or occupancy assignable by detector
- 4 pedestrian diagnostic plans

Logging Features

- **Separate buffers for detector activity, detector failures, controller events, and MMU events**
- Logged data can be:
 - Viewed on front panel
 - Retrieved via a RS-232 terminal port, USB flash drive, or SD Card
 - Transferred via telemetry to a traffic management center

Cobalt Touch Software

(Requires Cobalt ATC hardware including the Advanced Graphics Controller)

- All the ASC/3-LX Software features, plus the following:
 - *Full-color graphic interface with touch-screen capability*
 - *Provides menu selection using touch selections*
 - *Programming uses touch data entry allowing touch gestures to select yes/no, select enable/disable, pull-down list selections and more*
 - *Screen can be swiped to advance to another screen*

ASC/3-LX Software (General)

- Field-proven for over 8 years
- Allows for an agency-specific default database
- Automatic backup of controller database to optional Datakey or manual back up to USB flash drive
- Context sensitive help
- Hyperlink feature allows jumping from a status field to the screen where data is defined
- 100-statement logic processor to test inputs, outputs or timers and take actions based on the results
- Optional software includes EOS, ASC/3, and Adaptive

Connected Vehicle Co-Processor

Cobalt ATC is designed to support the Connected Vehicle Co-Processor (CVCP) module. The CVCP module is intended to allow third-party-developed and processor-intensive connected vehicle applications, including leveraging SAE J2735 (5.9 GHz DSRC), to be used with Cobalt or any other properly equipped ATC-compliant traffic controller.

Systems

- NTCIP level 2 compliance
- Supports Centrac's®, Aries® and TS2 NTCIP Level 2-compliant central applications

Specifications

- **Temperature:**
 - -34.6°F to +165°F (-37°C to +74°C)
- **Power:**
 - 110VAC @ 50/60 HZ or optional 220/240 VAC @ 50/60 HZ
 - Fuse protection for either 110 or 220/240V
 - Protection for the 24VDC supply is provided by a resettable electronic fuse
- **Dimensions:**
 - 14.84" W x 8.50" H x 6.13" D



Learn more
about additional
Controller products



www.econolite.com



1250 N. Tustin Avenue, Anaheim, CA 92807



sales@econolite.com



714-630-3700

Complies With The New
NEMA MMU2 Standard and
MUTCD Requirements



SmartMonitor

MMU2-16LE SERIES

NEMA LCD MALFUNCTION MANAGEMENT UNIT

-
- MMU2-16LEip with Ethernet Port
 - MMU2-16LE with EIA-232 Port

Whether you're a **NOVICE** or **EXPERT** Signal Technician, wouldn't it be great if you could:

- ☐ Use a built-in SETUP WIZARD to **quickly and accurately configure** the Signal Monitor to the exact requirements of the cabinet and intersection?
- ☐ Use a MENU DRIVEN LCD interface to **view** vital cabinet operational details such as field signal voltages, historical event logs, and monitor configuration data?
- ☐ Use a built-in DIAGNOSTIC WIZARD to **automatically diagnose** cabinet malfunctions and **pinpoint** faulty signals?

If your answer is Yes, the **MMU2-16LE SmartMonitor®** is for YOU!

NEW MMU2-16LE SmartMonitor® ENHANCED FEATURES

NEMA TS2-2003 (R2008) Standard
Including Amendment #4:

NEMA Standard
Flashing Yellow Arrow PPLT:

Standardized Communications:

Full Intersection & Status Display:

Event Logging:

Setup Wizard:

Diagnostic Wizard:
and Help System

TS-1 Type 12 with SDLC Mode:

Program Card Memory:

Signal Sequence History Log:

LEDguard®:

EDI RMS-Engine:

ECcom PC Software:

The MMU2-16LE *SmartMonitor®* meets all specifications of the NEMA Standard TS2-2003 (R2008) for the MMU2 configuration while maintaining compatibility with NEMA TS1-1989 Assemblies.

The MMU2-16LE *SmartMonitor®* supports MUTCD Flashing Yellow Arrow PPLT operation and meets / exceeds the NEMA Standard MMU2 requirements of TS-2 Amendment #4-2012, providing modes for both TS-2 or TS-1 cabinet configurations.

Real-time SDLC communications with the Controller Unit exchanges field input status, Controller Unit output status, fault status, MMU programming, and time and date.

Two high contrast, large area Liquid Crystal Displays (LCD) continuously show full RYG(W) intersection status. A separate graphic LCD provides a menu driven user interface to status, signal voltages, configuration, event logs, and the Help system.

A time-stamped nonvolatile event log records the complete intersection status as well as AC Line events, configuration changes, monitor resets, temperature and true RMS voltages.

Use the built-in Setup Wizard to configure the Nema Enhanced settings of the *SmartMonitor®* by answering a short series of questions regarding intersection design and operation.

The Diagnostic Wizard *automatically pinpoints* faulty signals and offers trouble-shooting guidance. The integrated Help System provides context sensitive operational assistance.

The MMU2-16LE *SmartMonitor®* can be configured to operate with the Port 1 SDLC function and Diagnostic Wizard enabled in a TS-1 twelve channel cabinet with no cabinet wiring changes.

Enhanced settings of the MMU2-16LE *SmartMonitor®* are stored in nonvolatile memory on the EDI Program Card. Moving the Program Card to another MMU2-16LE automatically transfers all settings.

The five Signal Sequence History logs stored in nonvolatile memory graphically display up to 30 seconds of signal status prior to each fault event.

This EDI innovative signal threshold technique can be used to increase the level of monitoring protection when using LED based signal heads.

A DSP coprocessor converts AC input measurements to True RMS voltages, virtually eliminating false sensing due to changes in frequency, phase, or sine wave distortion.

Access to the MMU2-16LE data is provided by the industry standard EDI ECcom Windows based software for status, event log retrieval, configuration, and data archival.

EBERLE DESIGN INC.

3510 East Atlanta Avenue
Phoenix, AZ 85040 USA
www.EDITraffic.com

Tel (480) 968-6407
Fax (602) 437-1996





PS-250

Heavy Duty Cabinet Power Supply

The ideal power source when using high current devices such as video detection cards.

The PS-250 Cabinet Power Supply is a shelf mounted unit which supplies regulated DC power, unregulated AC power, and a line frequency reference for the Detector Rack, BIUs, load switches, and other auxiliary equipment. The PS-250 meets and/or exceeds all requirements of the NEMA TS2-2003 (R2008) Standard.

All TS-2 Type 1 cabinet assemblies require the use of this unit as well as any TS-2 Type 2 cabinet assemblies that utilize Bus Interface Units (BIU).

Each EDI PS-250 Cabinet Power Supply is put through a rigorous three part Total Quality Assurance program and tested under the extreme environmental conditions experienced on the street. It is this commitment to quality and performance that EDI products are known for, providing years of trouble free operation.

PS-250 OPERATIONAL FEATURES

Basic Functions: The PS-250 provides four outputs rated over the full -30°F to 165°F (-34°C to +74°C) Nema operating temperature range:

- ☒ +12 VDC rated at 5 Amps
- ☒ +24 VDC rated at 3 Amps
- ☒ 12 VAC rated at 0.25 Amps
- ☒ 60 Hz Line Frequency Reference rated at 50 mAmps
- ☒ Input Voltage Operating Range is 89 Vac to 135 Vac at 50/60 Hz
- ☒ Power Factor Corrected

Display Indicators: A separate LED indicator is provided to display output status and fuse integrity for the four supply outputs. The Line Frequency Reference LED indicator pulses to show 60 Hz activity.

Input / Output Pins:	Pin	Function
	A	AC Neutral
	B	Line Frequency Reference Output
	C	AC Line Input
	D	+12 VDC Output
	E	+24 VDC Output
	F	Reserved
	G	Logic Ground
	H	Earth Ground
	I	12 VAC Output
	J	Reserved

Test Points: Individual test jacks are provided for the +12 VDC output, +24 VDC output, and Logic Ground reference.

Output Protection: The +12 VDC, +24VDC, and 12 VAC outputs are fused for over-current protection. Each output is protected against voltage transients by a 1500 Watt suppressor.

Dimensions: **Compact Size:** 6.0 inches High x 4.0 inches Wide x 8.4 inches Deep

EBERLE DESIGN INC.

3510 East Atlanta Avenue
Phoenix, AZ 85040 USA
www.EDIttraffic.com

Tel (480) 968-6407
Fax (602) 437-1996



TRAFFIC CONTROL / AC SERVICE

HE1750



DESCRIPTION

The HE1750 has been specifically designed for use on both type 170 and on NEMA controllers. Because of the high quality of this protector, it may be used as a standalone device without the use of an external line filter. If an external line filter is required, it is recommended that a HESCO/RLS line filter be used.

The HE1750 (like the popular HE1800) is a multi-stage, high energy suppressor that incorporates a sophisticated, inline EMI/RFI filter. The inline filter has been designed to effectively reject random noise and spikes from 10KHz to 25MHz. The primary and secondary clamp stages are separated by an inductive network; yet work together to give clamp voltages of under 395 volts at 20KA (8 x 20us).

The HE1750 also incorporates the use of warning/failure indicators in addition to remote sensing for monitoring by a central computer. If random data base memory loss or any other transient interference is effecting the safe operation of one or more of your intersections, the HE1750 surge protector will quickly and effectively eliminate the problem.

SPECIFICATIONS

Peak Surge Current	
8 x 20us.....	48KA
Max Clamp Voltage.....	395VAC
Response Time.....	<5nS
Continuous Service Current.....	15 Amps Max
Operating Temperature.....	-40 to 85c
Dimensions (in.).....	4.6W x 3.1L x 1.9H
Mounting.....	Aluminum Base Plate

HESCO/RLS Incorporated
1470 Kastner Place, Suite 112
Sanford, FL 32771
Fax (407) 321-2344

For more information and product
support call us at...

1-800-547-4868

FEATURES

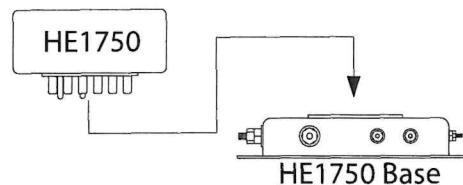
- Modular Design
- Multi-Stage Surge Arrestor
- Effectively Protects Against Lightning and Other Power Surges
- Dry Relay Contact Remote Sensing Circuit
- Immediately Self-Restores After Each Surge
- LED Warning / Failure Indicators

PIN ASSIGNMENTS

Line In.....	1,2
Neutral In.....	11,12
Ground.....	3,4,9,10
Line Out.....	5
Neutral Out.....	7
Relay NC.....	8
Relay Com.....	6

MIL-STD-220A INSERTION LOSS DATA

Frequency	Insertion Loss (dB)
60Hz.....	0
10Khz.....	35
50Khz.....	71
100Khz.....	72
500Khz.....	75
2MHz.....	67
5MHz.....	57
10MHz.....	52
20MHz.....	38



**CAUTION: Disconnect Power Prior to
Installing or Removing Unit**

Massillon; Amherst & Lake NE
B/R# 250
Qty. 1



Your source for quality, reliable surge protection.

SDLC PRO1

DESCRIPTION

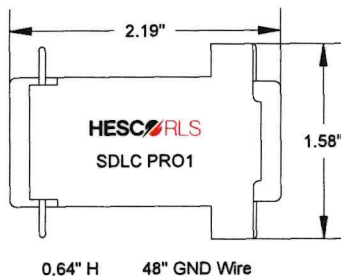
The SDLC PRO1 is a silicone avalanche diode based, 15 pin surge protector designed to protect NEMA TS-2 synchronous data link control circuits.

This surge protector was designed to tightly limit the level of transients passed through data lines.

SPECIFICATIONS

Operating Voltage.....5 VDC
Operating Current.....1.5 A
Clamping Voltage
 Forward.....< 8 VDC
 Reverse.....< 7 VDC
Peak Pulse Current.....60 A
Frequency Range.....0 to 20 MHz
Insertion Loss.....< 0.1 dB @ 20MHz
Connection Type.....DB-15
Operating Temp.....- 40° to + 85°C

DIMENSIONS



HESCO/RLS
220 Springview Commerce Drive
Unit 190
DeBary, FL 32713

For more information and product
support call us at...

1-800-547-4868



FEATURES

Port Mounted
Positive and Negative Clamping
Easy Installation
5 Year Warranty

PIN OUT

PIN #	FUNCTION
1	Rx Data +
2	Logic Ground
3	Rx Clock +
4	Logic Ground
5	Tx Data +
6	Logic Ground
7	Tx Clock +
8	Logic Ground
9	Rx Data -
10	Port 1 Disable
11	Rx Clock -
12	Earth Ground
13	Tx Data -
14	Reserved
15	Tx Clock -

www.hescorls.com

Protect It! Surge Protector with 6 Right-Angle Outlets, 6 ft. (1.83 m) Cord, 1340 Joules, Diagnostic LEDs, Metal Case

MODEL NUMBER: TLM626



Highlights

- 6 outlets / 6-ft. (1.83 m) cord
- 1340 joule rating
- Rugged metal case

Package Includes

- TLM626 surge suppressor
- Instruction manual and warranty information

Description

Tripp Lite's TLM626 surge suppressor offers complete AC surge suppression for comprehensive protection of workstations, personal computers, home stereos, televisions, VCRs, DVD players and other sensitive electronics. Heavy grade AC surge suppression shields connected equipment from damage and performance problems due to transient surges. TLM626 offers 6 right-angle outlets, a 6-ft. (1.83 m) power cord and diagnostic LEDs to warn of wiring problems and suppressor damage. AC surge suppression rated at 1340 joules shields equipment from surges and line noise. Rugged metal housing with 2 designated transformer plug outlets offers convenient protection of desktop computer equipment and accessories. \$75,000 Ultimate Lifetime Insurance (U.S., Canada, and Puerto Rico only).

PLUG/OUTLETS: Input - 6-ft. (1.83 m) AC line cord with NEMA 5-15P plug/Output - 6 NEMA 5-15R right-angle outlets

ELECTRICAL: 120V AC, 50/60Hz, 15A (Requires NEMA 5-15R wall receptacle)

FORMAT: Metal strip

SUPPRESSION: AC: 150V RMS Clamping/1340 joules/400V UL1449 3rd Edition

Features

- 6 right-angle outlets
- 6-ft. (1.83 m) cord
- Surge suppression rating: 1340 joules
- EMI/RFI noise filtering
- 15 amp resettable circuit breaker protects against overload
- Diagnostic LEDs confirm suppressor "protection present" (green) and "grounded" (red) status
- Convenient keyhole slots allow secure mounting on wall or desk
- Can accommodate up to 2 transformers without blocking adjacent outlets
- Rugged metal case provides extra safety and durability
- Illuminated power switch
- \$75,000 Ultimate Lifetime Insurance (U.S., Canada, and Puerto Rico only) covers connected equipment
- Automatic shutoff permanently cuts power to outlets if protection circuit is incapacitated, preventing equipment damage and indicating replacement is required

Specifications

OVERVIEW	
UPC Code	037332132291
INPUT	
Nominal Input Voltage(s) Supported	120V AC
Recommended Electrical Service	120V (110-125V)
Input Cord Gauge Type	14 gauge; SJT
Input Cord Gauge (AWG)	14
Voltage Compatibility (VAC)	120
Maximum Surge Amps	60000
Input Plug Type	NEMA 5-15P
Input Cord Details	SJT
Input Cord Length (ft.)	6
Right-Angle Plug	No
Input Cord Length (m)	1.83
Integrated Cord Clip	No
OUTPUT	
Frequency Compatibility	50 / 60 Hz
Output Receptacles	(6) 5-15R
Circuit Breaker (amps)	15
Overload Protection	15A resettable combo switch / circuit breaker
Transformer Accommodation	(4) Yes
Outlet Orientation	Single row of outlets
Right-Angle Outlets	Yes
USER INTERFACE, ALERTS & CONTROLS	
Diagnostic LED(s)	Yes
Switches	Combination AC circuit breaker and 2 position on/off power switch
Diagnostic LED Details	Built-in LEDs confirm suppressor "protection present" (green) and "grounded" (red) status
SURGE / NOISE SUPPRESSION	
AC Suppression Joule Rating	1340

AC Suppression Response Time	< 1 ns
Protection Modes	Includes full normal mode (H-N) and common mode (N-G / H-G) line suppression
UL1449 Let Through Rating	400V
EMI / RFI Filtering	Up to 20 dB
Automatic Shut-Off	Yes
DATALINE SURGE SUPPRESSION	
Cable (Coax) Protection	No
Network (Ethernet) Protection	No
Telephone/DSL Protection	No
PHYSICAL	
Material of Construction	Metal
Power Cord Color	Black
Form Factors Supported	Supports floor / wall / desktop placement
Housing Color	Light Gray
Mounting Holes or Slots	Yes
Slot or Hole Mount Measurement (Center to Center)	225 mm
Outlets Measurement (Center to Center)	Distance between standard outlets = 30.40mm; Distance between transformer and standard outlets = 45mm
Receptacle Color	Light gray
Shipping Dimensions (hwd / in.)	12.00 x 4.60 x 2.50
Shipping Dimensions (hwd / cm)	30.48 x 11.68 x 6.35
Shipping Weight (lbs.)	1.60
Shipping Weight (kg)	0.73
Unit Dimensions (hwd / in.)	1.500 x 12.250 x 2.250
Unit Dimensions (hwd / cm)	3.8 x 31.1 x 5.7
Unit Weight (lbs.)	1.8
Unit Weight (kg)	0.82
FEATURES & SPECIFICATIONS	
Antimicrobial	No
Rotatable Outlets	No
STANDARDS & COMPLIANCE	
Product Certifications	cUL Listed; UL 1449; UL 1363; UL Listed
Product Compliance	RoHS



1000 Eaton Boulevard
Cleveland, OH 44122
United States

WARRANTY & SUPPORT	
Product Warranty Period (Worldwide)	Lifetime limited warranty
Connected Equipment Insurance (U.S., Canada & Puerto Rico)	\$75,000 Ultimate Lifetime Insurance



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Massillon; Amherst & Lake NE
B/R# 250
Qty. 1
Qty. 4 BIU's

Traffic Cabinet Components and Accessories

BIU

What, exactly, is a BIU?

The Bus Interface Unite (BIU) is a rack module that interfaces 24V logic I/O signals to the Synchronous Data Link Control (SDLC) serial bus of TS2 Type-1 traffic cabinets. The BIU is required in all TS2 Type-1 cabinets and in TS2 Type-2 cabinets when controller I/O interface is through the SDLC bus.

About BIU

It is required in all TS2 Type-1 cabinets and in TS2 Type-2 cabinets when controller I/O interface is through the SDLC bus, not via TS1 MS-A, B, and C connectors.

Physically, the BIU-64 consists of a circuit board and a front panel. A male 64-pin DIN 41612 Type-B series connector provides the connection to the backplane of the rack. A female 15-pin metal shell D subminiature connector with latching blocks provides the connection to the SDLC cable. The front panel provides separate indicator lights for Power, Transmit, and Valid Data. It also provides a handle for easy removal of the unit from the rack. A separate TS2 cabinet power supply provides the required 24 VDC power plus a 60 Hz line-timing reference.



Hardware

The BIU measures 2.34 in. W x 4.50 in. H x 6.60 in. D. Low-profile components are used in order to facilitate an optional half-width front plate unit which measures 1.17 in. x 4.5 in. x 6.60 in. The BIU will slide freely into two rack card-guides having a nominal slot width of 0.075 in. and a maximum slot width of 0.125 in.

An aluminum handle is provided on the front panel to allow easy removal of the BIU from the rack. Nominal outer dimensions of the handle shall be 1 in. x 2½ in.

The card rack connector on back of the BIU is a male 64-pin DIN 41612 type-B series. The connector is centered at the edge of the circuit board and oriented with Pin 1 located on top. The circuit board edges align with the connector per DIN 41612.

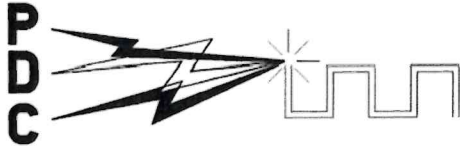
The Port-1 SDLC bus connector on the front panel of the BIU is a 15-pin metal shell sub-miniature type with female gold plated contacts. The connector is equipped with latching blocks and mates with a male 15-pin D-type cable connector that is equipped with spring latches (Amp part number 745012-1 or equivalent).

The front panel made of 0.090 in. sheet aluminum and is finished with a durable protective coating. Two indicator lamps are provided on the front panel, as specified by the TS2 Standard, for Power and Transmit. In addition, the front panel provides a Valid Data indicator, which lights whenever a Valid Data frame is received. The Power light flashes during absence of Line Frequency Reference (LFR) from the cabinet power supply. The BIU operates with internally generated 60 Hz reference in the absence of the LFR signal.

Pin Assignments

- Port-1 (SDLC bus) pin assignments shall be as specified in Section 8.6.2.1 of the TS2 Standard:
 - 1 - Rx Data
 - 2 - Logic Ground
 - 3 - Rx Clock +
 - 4 - Logic Ground
 - 5 - Tx Data
 - 6 - Logic Ground
 - 7 - Tx Clock +
 - 8 - Logic Ground
 - 9 - Rx Data -
 - 10 - Not Used
 - 11 - Rx Clock -
 - 12 - Earth Ground
 - 13 - Tx Data -
 - 14 - Reserved
 - 15 - Tx Clock -





DATA SHEET SSF-86-3

Massillon; Amherst & Lake NE
B/R# 250
Qty. 1

Solid State Flasher:

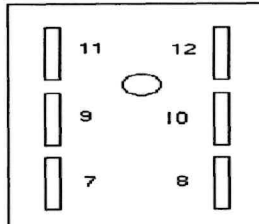
Description:

The PDC model SSF-86 solid state flasher is a dual circuit flasher designed for the Traffic Control Industry. This unit is conservatively rated up to 20 A per circuit. The flash rate is 56.25 flashes per minute and does not vary due to voltage or temperature variations. With the zero voltage switching design, there are no contacts to wear out or deteriorate due to arcing or corrosion. Also, extended life of the bulbs can be expected as well as reduced Radio Frequency Interference (RFI). The extruded aluminum heatsink provides more than adequate heat dissipation.

Connector Pinout:

FIG 1.

Pin	Function
7	Load #1
8	Load #2
9	Chassis ground
10	AC-
11	AC+
12	Spare



Mates with a Beau P-5406-LAB or equivalent

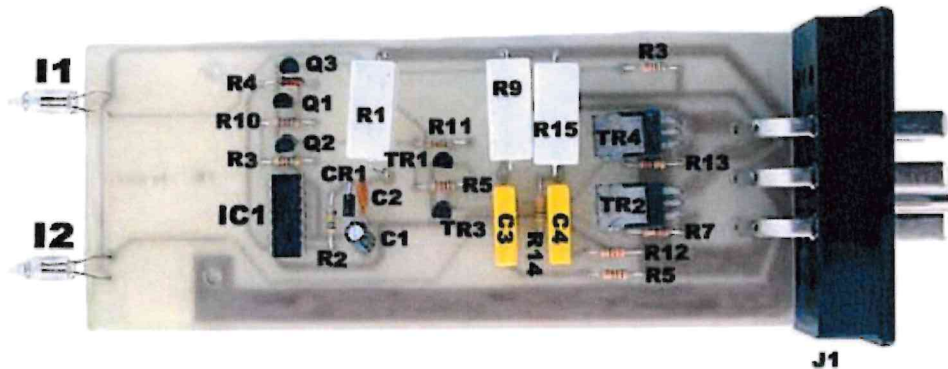
Electrical Characteristics:

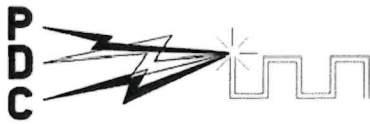
Zero voltage turn on-----
Zero voltage turn off-----
Tungsten Lamp or Gas Tubing Transformer load-----
Operating Voltage-----
Mechanical-----

0V $\pm$ 5 degrees
0A $\pm$ 5 degrees
Up to 20 A max.
60-135 VAC
Length.....8.40 inches
Width.....1.70 inches
Height.....4.18 inches
Weight.....1.135 lbs

Operating Temperature : Full load from -35 to $+74$ degrees C

Guarantee: The flasher is fully guaranteed against all failures due to manufacturing defects for two years.





DATA SHEET SSS-86I/O

Massillon; Amherst & Lake NE
B/R# 250
Qty. 1
Qty. 12 Loadswitches

Solid State Loadswitch with Output Indicators:

Description:

The PDC SSS-86I/O Solid State Loadswitch is a tri-pack solid state relay package designed specifically for the Traffic Control Industry. This unit meets NEMA specification TS1-1983, section 5, and has indicators for both the input and output signals.

Each switch will turn it's rated load ON or OFF within 10 deg. of the first zero cross-over point & within 5 deg. on succeeding alterations randomly timed input command signal.

The electronics are enclosed in a dust resistant, metal enclosure providing mechanical protection and excellent heat sinking for the heat generating components in the circuit. The electronic components are easily accessible by removing the cover with a screwdriver.

Installation:

The switchpac inter mates with any standard NEMA loadbay or with the model 332 cabinet output file. It is easily installed or removed by grasping the handle. Connector P1 pin outs are shown in FIG 1. The connector mates with a PDC BCS-12 or equal.

PIN	FUNCTION
1	+115VAC, 60 Hz
2	Chassis Ground
3	A Output (Red, Don't Walk)
4	Not Assigned
5	B Output
6	A Input (Red, Don't Walk)
7	C Output (Green, Walk)
8	B Input (Yellow)
9	+24 VDC
10	C Input (Green, Walk)
11	-115 VAC, 60 Hz
12	Not Assigned

P1
(P1 as viewed from the outside of the product looking directly at the connector)

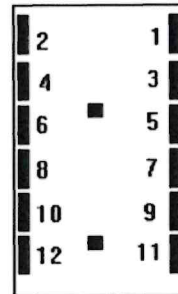


FIG 1.

General Characteristics:

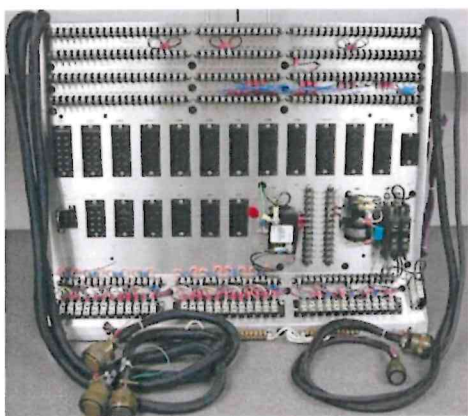
Load	voltage.....120 VAC
	current (max)..... 15.0 Amps
(Tungsten Filament Load)	
Control Signal	voltage..... +24VDC
	current 20.0 MA (max)
Switching	1st alternation after.....+10 Degrees of line voltage at the zero signal is applied. crossover point.
	Succeeding alterations.....+5 Degrees of line voltage at the zero crossover point.
Off State	dv/dt.....100 V per microsecond
	line to load resistance.....15 K Ohms Min
	leakage current.....less than 20 MA
Isolation	voltage.....2500 VDC Min
	resistance.....10 Meg Ohms Min
Surge Current	one cycle.....175 Amps RMS Min
	one second.....40 Amps RMS Min
Life	operations.....30 million Min
Mechanical	length.....8.40 inches
	width.....1.74 inches
	height.....4.185 inches
	weight.....1.135 LBS

Guarantee: The SSS-86I/O is fully guaranteed against all failures due to manufacturing defects for two years.

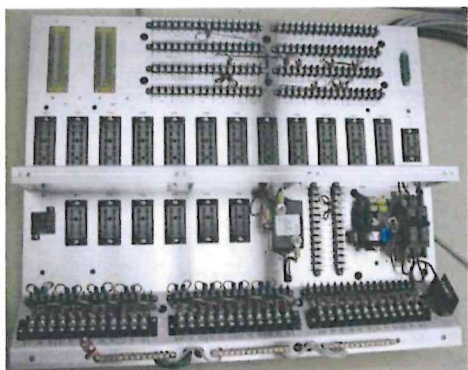
Adjustments: The switchpac has no adjustments



**NEMA TS2 Type 2
12 Position Cabinet Assembly**



**NEMA TS2 Type 2
12 Position Wired Panel**



**NEMA TS2 Type 1
12 Position Wired Panel**

NEMA Wired Cabinet Assemblies

NEMA TS1/NEMA TS2-1/NEMA TS2-2

Path Master, Inc. wired cabinet assemblies are designed and built to meet all current NEMA requirements, both in TS1 and TS2 configurations. All panels are constructed from 3.18mm (.125") aluminum and include the following list of features:

- Field terminals for signal hook-up are mounted at 45° for ease of maintenance and installation.
- All electrical connections to the backside of the panel are soldered in place. All electrical connections to the front side of the panel use crimp terminals with threaded fasteners.
- All main power panel devices are fastened to the lower right portion of the main panel including all circuit breakers, line filters and load relays. An option side mounted power panel is available.
- The wiring harnesses to the controller and monitor are protected with a nylon mesh or "Snake Skin".
- The front side of the backpanel is permanently silk-screened with both functional descriptions and terminal reference numbers. The backside is silk-screened with terminal reference numbers.
- All plug-in and panel mounted devices are identified with silk-screened designations.
- Flash programming is made from the front of the panel with the use of a screwdriver.
- All NEMA defined controller functions are terminated and accessible from the front of the backpanel.
- Available in 4, 8, 12, and 16 load switch positions in both NEMA TS1 and NEMA TS2 configurations.
- All load switches and flashers are mounted in a single horizontal row and include an adjustable support bracket.

Specifications

NEMA TS2 Type 1

8 Position	558mmH x 508mmW	(22"H x 20"W)
12 Position	558mmH x 686mmW	(22"H x 27"W)
16 Position	558mmH x 864mmW	(22"H x 34"W)

NEMA TS1/TS2 Type 2

4 Position	380mmH x 406mmW	(15"H x 16"W)
8 Position	508mmH x 508mmW	(20"H x 20"W)
12 Position	558mmH x 686mmW	(22"H x 27"W)
16 Position	521mmH x 864mmW	(20.5"H x 34"W)

Large Single Door

Massillon; Amherst & Lake NE
B/R# 250
Qty. 1

APX Enclosures, Inc.

200 Oregon Street Mercersburg, PA 17236

Phone: (717) 328-9399 Fax: (717) 328-2447 www.apx-enclosures.com

APPLICATION - NEMA 3R

APX Enclosures, Inc. 3R large single door enclosures are designed to house electronic controls, terminals, and instruments, and to **provide protection from rain, sleet, snow, dripping water and corrosion**, while providing ventilation.

INDUSTRY STANDARD:

U.L. Type 3R, 4X

STANDARD CONSTRUCTION:

(For details see specification sheets.)

A. ENCLOSURE:

1. The complete enclosure is made from .125" thick aluminum alloy type 5052-H32 to provide a strong and rigid construction. ~~Alternative material is 14 gauge type 304 stainless steel. (Specifier must choose the material to be used.)~~
2. Each enclosure is equipped with two adjustable "C" mounting channels on both side walls, and back wall, providing versatile positioning of shelves, or optional panels or rack mounting angles.
3. The door frame opening is double flanged on all four sides. These flanges increase the strength of door opening and help prevent dust and liquids from dropping into the enclosure when the door is opened.
4. All exterior seams are ground smooth or sealed weathertight with silicone sealant.
5. Pole or wall mounted enclosures have welded stiffener plates to reinforce the top and bottom of rear wall. Welded bottom plates are standard on pole mounted enclosures. A removable bolt-on bottom plate is available as an option.
6. (3R only) Enclosures have provisions for mounting a forced-air fan system that can be thermostatically controlled, and air is exhausted through a slotted vent system in the roof overhang.

B. DOOR:

1. All doors are equipped with a three-point latching mechanism with nylon rollers at the top and bottom.
2. Each door handle is .75" stainless steel round bar and has provisions for a padlock.
3. (3R only) The standard main door lock is Corbin #1548-1 or equal.
4. (3R only) A louvered air vent with filter-retaining brackets and a disposable paper filter element is provided.
5. The main door is sealed with closed-cell neoprene gasket.
6. The continuous door hinge is .075" thick stainless

APPLICATION - NEMA 4X

APX Enclosures, Inc. 4X large single door enclosures are designed to house electronic controls, terminals, and instruments, and to **provide protection from rain, sleet, snow, dripping water and corrosion**, as well as hosedown, splashing water, oil or coolant seepage.

NEMA 3R SHOWN



- steel with a .25" stainless steel hinge pin.
7. The switch compartment with removable back panel is standard and also made from .125" thick aluminum alloy type 5052-H32. This back can optionally be replaced with a clear lexan window to provide for limited access inspection of operating components or instrumentation.
8. The switch compartment door hinge is 14 gauge stainless steel with a .120 stainless steel hinge pin.

C. FINISH:

1. Natural aluminum enclosures are mill finish per federal specification QQA-250/8.
2. Painted enclosures are treated with an iron phosphate coating and dried by radiant heat.

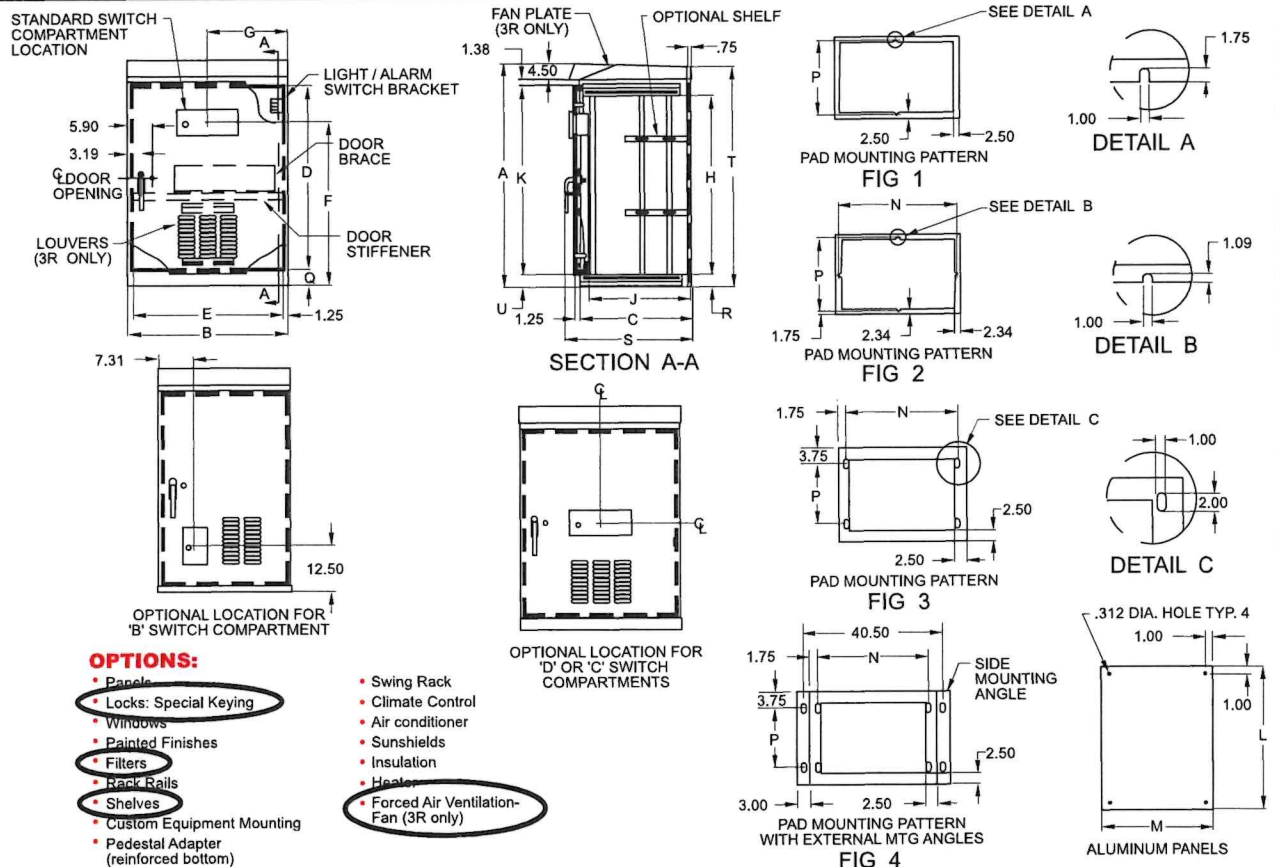
FOR NEMA TYPE 4X RATING:

DELETE all vents and main door lock (Corbin #1548-1), and Corbin R357SGS switch compartment lock.
ADD Chicago #1703-100-G switch compartment lock. All through holes are sealed.



LARGE SINGLE DOOR

LARGE SINGLE DOOR



DIMENSIONS (inches)

CATALOG NUMBER	MOUNTING OPTIONS			OVERALL ENCLOSURE			DOOR OPENING		SWITCH COMPARTMENT LOCATION		AVAILABLE EQUIPMENT SPACE		DOOR HEIGHT	PANEL SIZE		PAD MTG. PATTERN		MISCELLANEOUS DIMENSIONS				
	PED	POLE	PAD	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
FIG.1																						
TC301815	YES	YES	YES	30.00	18.00	15.00	21.00	15.50	16.81	8.00	19.00	11.31	23.25	22.63	15.00	N/A	12.50	2.00	3.00	18.62	28.50	.88
TC362015	YES	YES	YES	36.00	20.00	15.00	27.00	17.50	23.25	10.00	25.00	11.31	29.25	28.63	17.00	N/A	12.50	2.00	3.00	18.62	34.50	.88
TC412516	YES	YES	YES	41.00	25.00	16.00	32.00	22.50	28.25	12.50	30.00	12.31	34.25	33.63	22.00	N/A	13.50	2.00	3.00	19.62	39.50	.88
TC512516	YES	YES	YES	51.00	25.00	16.00	42.00	22.50	34.25	12.50	40.00	12.31	44.25	43.63	22.00	N/A	13.50	2.00	3.00	19.62	49.50	.88
FIG.2																						
TC503017	NO	YES	YES	50.00	30.00	17.00	39.00	27.50	37.25	15.00	39.00	13.31	41.25	42.63	27.00	26.50	13.50	4.00	3.00	20.62	48.50	2.88
TC503617	NO	NO	YES	50.00	36.00	17.00	39.00	33.50	37.25	18.00	39.00	13.31	41.25	42.63	33.00	32.50	13.50	4.00	3.00	20.62	48.50	2.88
TC583617	NO	NO	YES	58.00	36.00	17.00	47.00	33.50	45.25	18.00	47.00	13.31	49.25	50.63	33.00	32.50	13.50	4.00	3.00	20.62	56.50	2.88
TC583017	NO	NO	YES	58.00	30.00	17.00	47.00	27.50	45.25	15.00	47.00	13.31	49.25	50.63	27.00	26.50	13.50	4.00	3.00	20.62	56.50	2.88
TC763017	NO	NO	YES	76.00	30.00	17.00	65.00	27.50	63.25	15.00	65.00	13.31	67.25	68.63	27.00	26.50	13.50	4.00	3.00	20.62	74.50	2.88
FIG.3																						
TC363624	NO	NO	YES	36.00	36.00	24.00	25.00	33.50	23.25	18.00	25.00	20.31	27.25	28.63	33.00	32.50	18.50	4.00	3.00	27.62	34.50	2.88
TC443624	NO	NO	YES	44.00	36.00	24.00	33.00	33.50	31.25	18.00	33.00	20.31	35.25	36.63	33.00	32.50	18.50	4.00	3.00	27.62	42.50	2.88
TC553826	NO	NO	YES	55.00	38.00	26.00	44.00	35.50	39.37	19.00	44.00	22.31	46.25	48.25	35.00	34.50	18.50	4.00	3.00	29.62	53.50	2.88
TC554426	NO	NO	YES	55.00	44.00	26.00	44.00	41.50	39.37	22.00	44.00	22.31	46.25	48.25	41.00	40.50	18.50	4.00	3.00	29.62	53.50	2.88
TC594426	NO	NO	YES	59.00	44.00	26.00	48.00	41.50	43.37	22.00	48.00	22.31	50.25	52.25	41.00	40.50	18.50	4.00	3.00	29.62	57.50	2.88
TC723618	NO	NO	YES	72.00	36.00	18.00	61.00	33.50	45.00	18.00	61.00	14.31	63.25	65.25	45.00	32.50	13.50	4.00	3.00	21.62	70.50	2.88
TC773826	NO	NO	YES	77.00	38.00	26.00	66.00	35.50	50.00	19.00	66.00	22.31	68.25	70.25	35.00	34.50	18.50	4.00	3.00	29.62	75.50	2.88
TC774426	NO	NO	YES	77.00	44.00	26.00	66.00	41.50	50.00	22.00	66.00	22.31	68.25	70.25	41.00	40.50	18.50	4.00	3.00	29.62	75.50	2.88



FOUNDATION SYSTEMS & ANCHORS

Threading • Fabricating • Special An

Massillon; Amherst & Lake NE

B/R# 250

Qty. 1

Qty. 4 Anchor Bolts

2300 Allen Avenue S.E. • Canton, Ohio 44707

Phone: (330) 454-1700 • 800-776-7331 • Fax (330) 454-2336

www.fsabolt.com

DRAWING SUBMITTAL FORM

PROJECT REFERENCE:

CUSTOMER: Pathmaster PO# _____

FSA WORK ORDER # W/A

STEEL SPECIFICATIONS

A36 _____ A36M55/F1554 GR 55 X A687/F1554 GR 105 _____ OTHER _____

FINISH

PLAIN _____

HOT-DIP GALVANIZED (A153/A123) X

OTHER _____

THREADING

UNC-CLASS 2A (CUT) _____

UNC-CALSS 2A (ROLLED) X

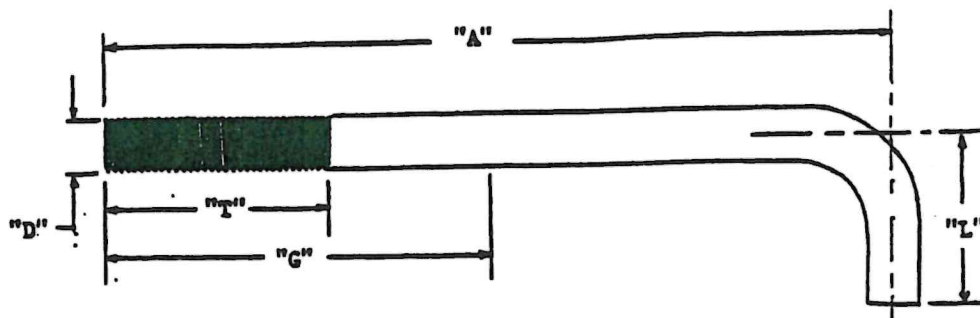
OTHER _____

HARDWARE

HEAVY HEX NUTS (A563 GR A) _____ (A563 GR DH/A194-2H) 1

FLATWASHERS (F436) 1 (USS) _____

LOCKWASHERS _____

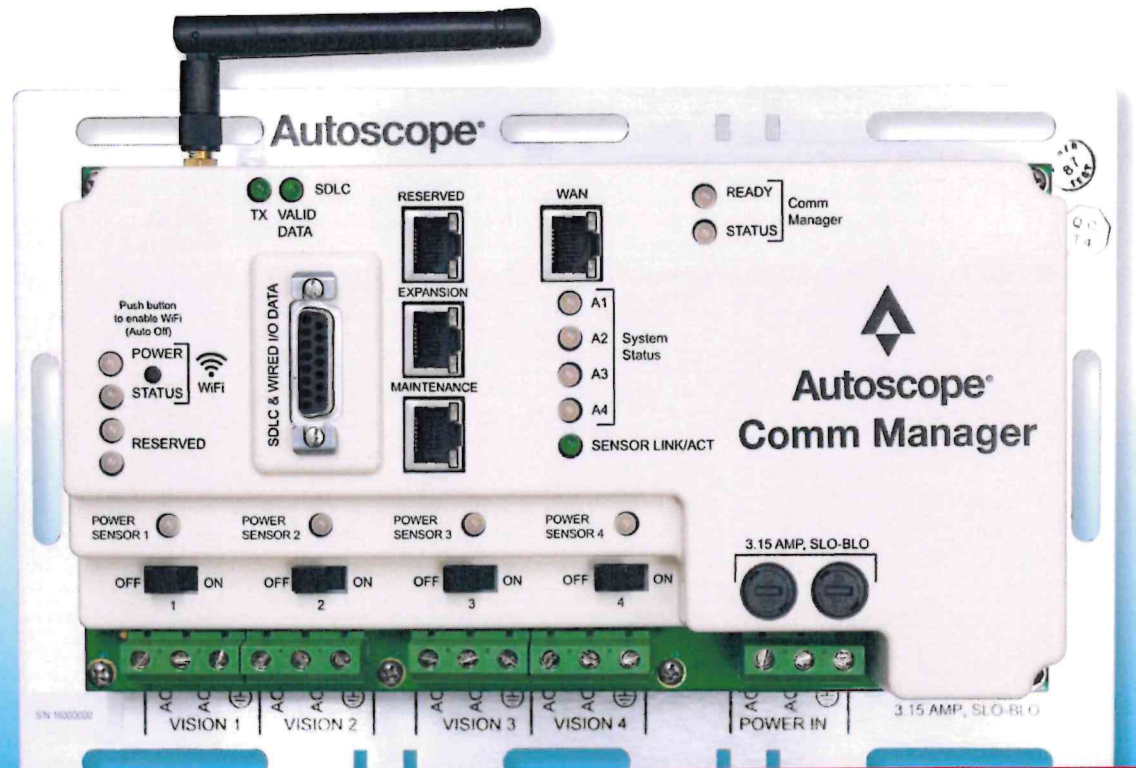


QTY	D	A	L	T	G
	3/4"	17"	3"	6"	Full length

SUBMITTED BY: Monica Upm APPROVED BY: _____
DATE: 9-10-10 DATE: _____

Autoscope® Comm Manager

Massillon; Amherst & Lake NE
B/R# 280
Qty. 1



► The Autoscope Comm Manager is a device facilitating remote and local communication as well as power to Vision sensors.

About the Comm Manager

The Autoscope Comm Manager is a powerful device facilitating remote and local communication to Vision sensors. The Vision Comm Manager supports 3-wire-only branch cable connections to the sensors, interface to the optional Vision I/O 24™ module and well as full 10/100/1000 Ethernet communication to a local laptop or workstation at the Traffic Management Center (TMC). The Comm Manager protects other cabinet components from branch cable transient surges. The Comm Manager provides quick wireless access via password protected 802.11g Wi-Fi or direct CAT-5 Ethernet cable to Vision sensors for purposes of zoom, configuration or routine maintenance. The maintenance port acts as a DHCP server, assigning an IP address to the connected device.

Due to the Comm Managers small footprint, installation in a traffic cabinet is fast and tech-friendly. A standard CAT-5 cable connects the Comm Manager to an agency's network. A single IP address is all that is required to connect the Vision Comm Manager to personnel at the TMC. Traffic management professionals can collect traffic data and view High-Definition, h.264 video streams, individually or in a quad display. Individual and quad video includes detection overlay for monitoring system performance. Detection zones may also be created or modified remotely with this simple network architecture.

At A Glance

- Space saving support for 1-4 Vision sensors
- Single IP Address for agency network integration
- Secure 802.11g Wi-Fi access point, password protected, 10-minute inactivity timeout, on-off pushbutton
- 1000ft cable distances between sensor and Comm Manager
- Simultaneous support for TS1, wired I/O and TS2 SDLC Port 1

SUBMITTAL SHOP DRAWING REVIEW

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. NOTHING HEREIN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, PERFORMANCE, SELECTING FABRICATION PROCESS AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

CITY OF MASSILLON
1ST LIAISON
MASSILLON, OHIO 44860

APPROVED
APPROVED AS NOTED

BY
DATE

11/5/2024



ECONOLITE



Description

Power and communication to Vision sensors is conducted via the Vision Comm Manager. Vision Comm Manager supports SDLC and wired I/O interface for convenient integration to TS1, 170/2070/33x and TS2 cabinets. The robust and proven broadband-over-power cable technology has a remarkable throughput of 70-90 Mb/sec. This is more than sufficient bandwidth to simultaneously transmit traffic data, and multiple streams of HD video.

Application

Autoscope Vision is capable of concurrently satisfying multiple transportation management objectives:

- Stop bar vehicle detection
- Bicycle detection and differentiation
- Advance vehicle detection up to 600 feet from Vision sensor
- Traffic data collection
- HD video surveillance

Vision Comm Manager Specifications

► Connectors

- Input power: one (1), 3-position compression block
- Output power to Vision sensors: four (4), 3-position compression blocks
- Two (2) USB
- Four (4), 10/100/1000 Ethernet: WAN, Maintenance, Expansion, Reserved

► Communications

- Wi-Fi 802.11(b/g/n)
- WAN Ethernet Port 10/100/1000
- Maintenance Ethernet Port 10/100/1000
- Broadband-Over-Power 70-90 Mbps

► Environmental

- -29° F to +165° F (-34° C to +74° C)
- 0 to 95% relative humidity, non-condensing

► Dimensions and Weight

- 11" x 7" x 2.5" (28 cm x 18 cm x 6 cm)
- 2.3lbs (1.04 kg)

► Video Output

- Digital streaming H.264 720p, 30fps
- Variable bitrate selectable 100-5000Kbps

► Power

- 89-265 VAC, 50/60 Hz from the transient-protected side of cabinet
- Minimum 15W typical without sensors
- 75 Watts typical with four (4) Vision sensors
- 140 Watts Maximum
- 2 spare fuses
- High-energy transient surge protection

► Indicators

- Wi-Fi LEDs – active or inactive
- SDLC LEDs – indicate valid data
- Ethernet Port LEDs – indicate speed of network connection
- Power Sensor LED – indicate power to sensor
- Comm Manager LED - indicator for readiness and status
- System Status LED - indicating individual sensor status
- Sensor LINK/ACT LED - indicates communication between the Comm Manager and at least 1 Vision sensor

► Warranty

- Three-year factory warranty
- Extended warranty packages available to six years

► Regulatory

- NEMA TS2 2003 Compliant
- CE EN 55022
- CE EN 55024
- EN 61000-6-1
- ICES
- FCC Part 15, Class A



What, exactly, is Autoscope Vision?

Autoscope Vision is an integrated high-definition (HD) camera-processor sensor solution that delivers the highest levels of accuracy and performance for stop bar vehicle detection, bicycle detection and differentiation, advance vehicle detection, traffic data collection, and HD video surveillance.

Why do agencies use Vision?

Autoscope Vision builds on more than two decades of proven above-ground video detection expertise. Its built-in local WiFi provides quick and simple set up – using the new Supervisor Software - an entire intersection can be programmed in just minutes. Installation and integration is also simple with 3-wires-only.

How does Vision benefit the driving public?

Autoscope Vision provides high performance vehicle detection and bicycle differentiation using state-of-the-art algorithms and a high definition video sensor. It delivers full ITS capabilities for traffic engineers to use in strategically managing their traffic infrastructure. Autoscope Vision helps. Autoscope Vision helps improve safety, reduce vehicle emissions, and mitigate traffic congestion.

SUBMITTAL SHOP DRAWING REVIEW

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June 15/2024

BY _____
DATE _____

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44866

() APPROVED
() APPROVED AS NOTED



Description

Autoscope Vision is an integrated camera-processor sensor solution that provides high performance stop bar vehicle detection, bicycle detection and differentiation, advance vehicle detection, traffic data collection, and HD video surveillance. It also supports local WiFi and streaming video to mobile computing devices.

Autoscope Vision utilizes an ITO faceplate heater and hydrophilic coated lens to maintain optimal performance during inclement weather while reducing the frequency of cleaning.

Power and communication to Vision sensors is conducted via the Vision Comm Manager™. Vision Comm Manager supports SDLC and wired I/O interface.

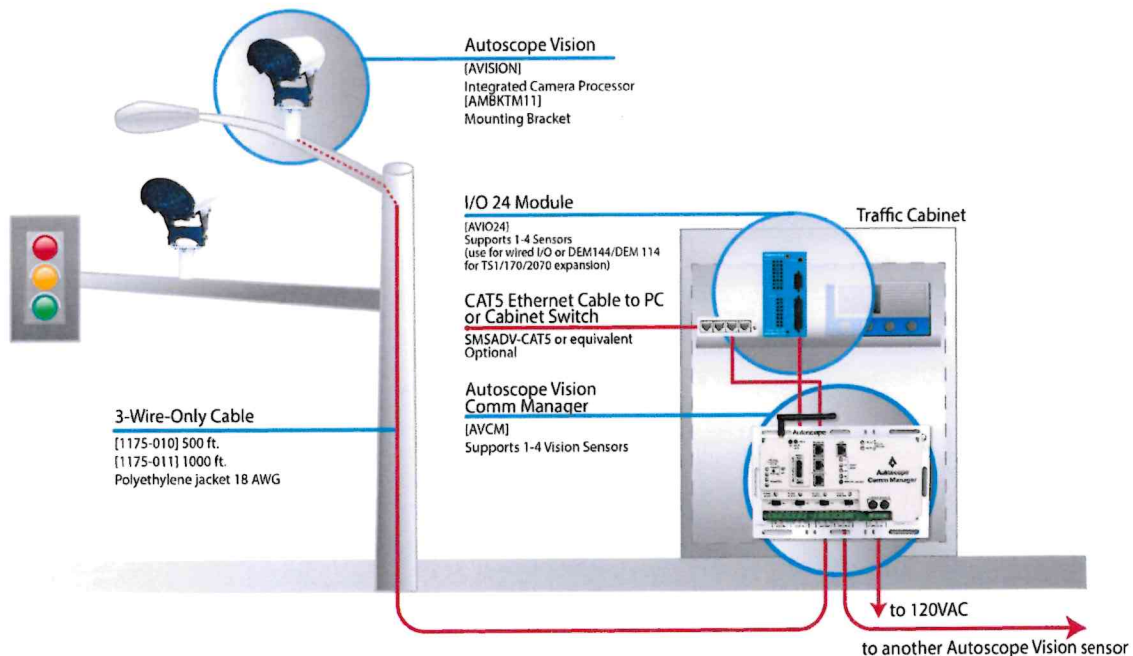
Application

Autoscope Vision is capable of simultaneously satisfying multiple transportation management objectives:

- Stop bar vehicle detection
- Bicycle detection and differentiation
- Advance vehicle detection up to 600 feet from Vision sensor
- Traffic data collection
- HD video surveillance

Vision Sensor Specifications

- Temperature
 - -34°C to $+60^{\circ}\text{C}$ (-29°F to 165°F)
 - Meets TS2 standards
 - Relative humidity of 0 to 95%, non-condensing
- Power
 - 16W typical, 18W maximum
 - 89 to 265 VAC
 - 60/50 Hz
 - Indium Titanium Oxide (ITO) and hydrophilic faceplate
- Dimensions
 - H x W x L (with sunshield and bracket):
7" x 5.5" x 22.5"
(177.8 mm x 140 mm x 571.5mm)
 - 6.5 lbs (2.95 kg)



Camera Bracket

Pelco's manufactures 1-piece and 2-piece brackets for various camera styles. Special brackets with mounting holes other than listed below are available upon request.

Massillon; Amherst & Lake NE
B/R# 280

Qty. 1

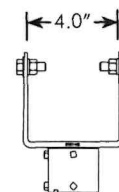
Qty. 4 Mounting Bracket



Camera Bracket, 1-Piece Tilt & Pan, Alum 1-1/2" NPS Internal Threads

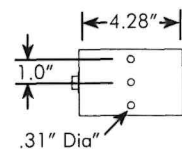
SH-0514 - Coating
PNC=Process No Color
P__=Paint

COLOR: BLACK



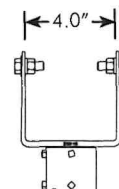
Camera Bracket, 2-Piece Tilt & Pan, Alum 1-1/2" NPS Internal Threads

SH-0515 - Coating
PNC=Process No Color
P__=Paint



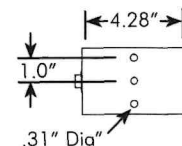
Camera Bracket, 1-Piece Tilt & Pan, Alum 1-1/2" NPS External Threads

SH-0535 - Coating
PNC=Process No Color
P__=Paint



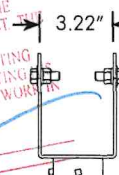
Camera Bracket, 2-Piece Tilt & Pan, Alum 1-1/2" NPS External Threads

SH-0541 - Coating
PNC=Process No Color
P__=Paint



Camera Bracket, 1-Piece Tilt & Pan, Alum 1-1/2" NPS Internal Threads

SH-0537 - Coating
PNC=Process No Color
P__=Paint



- Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. Special brackets available upon request.
3. See Reference Section for available paint colors.

CAMERA MTGS

pelco
PELCO PRODUCTS, INC.

Aluminum Tubes

Supplied in lengths shown below, Pelco's vertical support tubing is made from high strength aluminum alloy. A unique shape and vinyl insert insures a complete weather proof wiring installation anywhere along the entire length of the tube.

The standard 46" tube will accommodate all signal combinations up to 3-Section 12". Tubes are also available in 58" and 74" lengths for 4 and 5-Section combinations.

Massillon; Amherst & Lake NE
B/R# 280

Qty. 1

Qty. 4 Astro-Brac Tube Kits



Astro-Brac Gusseted Tube w/ Vinyl Insert, 1-1/2" x Length, Threaded One End



AB-0306
Gusseted Tube



AB-0233
Vinyl Insert

AB-2003 - Length - Coating
23=23"
37=37"
46=46"
58=58"
74=74"

COLOR: BLACK

PNC=Process No Color
P__=Paint

Astro-Brac Gusseted Tube w/ Vinyl Insert, 1-1/2" x Length, Threaded Both Ends



AB-0307
Gusseted Tube



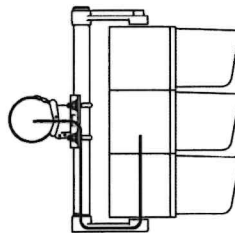
AB-0233
Vinyl Insert

AB-2007 - Length - Coating
23=23"
37=37"
46=46"
58=58"
74=74"

PNC=Process No Color
P__=Paint

Concealed Wiring Installation

Pelco's aluminum gusseted tubes allow wire entry at any point. Vinyl insert conceals wiring from mast arm to signal head. Simply run wire throughout field-drilled hole in mast arm, through Astro-Brac, and into support tube. Hollow lower arm provides a channel for wire to be fed into signal head.



Note: 1. Lengths up to 120" maximum are available upon request. Specify by including Length in the part number, i.e., AB-2003-120-PNC.
2. See Reference Section for available paint colors.

Galaxy Series Clamp Kits

The Galaxy is designed using a single cable plate which allows for easy installation, as well as the multi-directional adjustable tube saddle for strength. These high tensile aluminum alloy clamp kits provide strength with maximum adjustability and complete clamping versatility. Comes complete with all necessary attaching hardware.

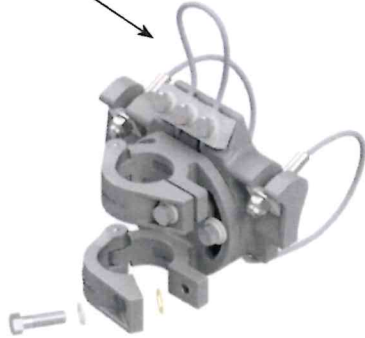
Massillon; Amherst & Lake NE
B/R# 280

Qty. 1

Qty. 4 Astro-Brac Clamp Kits



AB-0512
Cable Kit



Astro-Brac, Galaxy Hinged Clamp Kit, Cable Mount

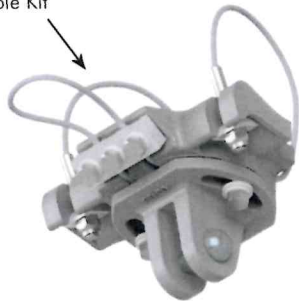
AG-3055 - Cable Length: **96"** - Cable: - Coating:
See Note Blank=Galv PNC=Process No Color
SS=Stainless P=Paint

COLOR: BLACK

Note:

Cable Length: 62", 84", 96", 110", 120", 132", 144", 220", or 280".

AB-0512
Cable Kit



Astro-Brac, Galaxy Series Clamp Kit, Cable Mount, 3/4" Clevis, Free-Swinging

AG-3014 - Cable Length: - Stainless Upgrade: - Bushing: - Coating:
See Note Blank=Galv SS=Stainless SB=Stainless Bushing PNC=Process No Color P__=Paint

Note:

Cable Length: 62", 84", 96", 110", 120", 132", 144", 220", or 280".
Stainless upgrade to include stainless cable and pins.

- Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. See Reference Section for clamp kit pole diameters.
3. See Reference Section for available paint colors.



Massillon; Amherst & Lake NE
B/R# 280
Qty. 1
Qty. 1000' of Cable

Advanced Digital Cable, Inc.	Specification Sheet for 16 awg 3 conductor PVC/ Nylon	Date:	05/18/07								
		Part Number:	AST-6603TC								
Drawn by:	Customer Approval:	UL Type:	TC								
 <u>Construction Details:</u> This cable is constructed with a core composed of three polyvinyl chloride insulated and Nylon jacketed 16 awg stranded tinned copper conductors cabled together and a black sunlight resistant polyvinyl chloride jacket completes the package.											
<u>Physical Specifications</u> Conductors: 3 – 16 awg (26/30") tinned copper .059" nom. Dielectric: 15 mil wall of 105C polyvinyl chloride to a nominal diameter of .088". <u>See color code.</u> Skin: 5 mil wall of Nylon jacket to a nominal diameter of .098" Cable: 3 –16 awg conductors in a 3" left hand lay to a nominal diameter of .215" Jacket: 45 mils of black 90 deg. C sunlight, moisture, and flame resistant polyvinyl chloride to a nominal diameter of .305". Print: White Ink: ADVANCED DIGITAL CABLE 16/3 CAMERA (UL) TYPE TC 90C 600V E195597 SUN RES DIR BUR Put-up: Reels per customer requirements. <u>Color Code</u> <table border="1"><thead><tr><th>Quantity</th><th>Color</th></tr></thead><tbody><tr><td>1</td><td>Black</td></tr><tr><td>1</td><td>White</td></tr><tr><td>1</td><td>Green</td></tr></tbody></table>		Quantity	Color	1	Black	1	White	1	Green	<u>Electrical and Mechanical Testing</u> Conductor: Conforms to ASTM B-3 and B-8 Insulation: Conforms to UL 62 type TFN requirements. Min. average thickness: .015" Min. thickness any pt.: .013" Nylon: Conforms to UL 62 type TFN requirements. Min. thickness any pt.: .004" Spark Testing: 6,000 volts AC at 1,000 to 3,500 Hertz. Jacket: Conforms to UL 1277 requirements. Min. average thickness: .045" Min. thickness any pt.: .036" Dielectric test: 2,000 volts AC at 60 Hertz for 1 minute per UL 1277. Additional Testing: Physical and visual Continuity and cross testing on each shipping length of finished cable.	
Quantity	Color										
1	Black										
1	White										
1	Green										



Massillon; Amherst & Lake NE
B/R# 300
Qty. 1
Qty. 4 Batteries
Sealed AGM

SLA1185

Technical Specifications

Nominal Voltage 12V

Nominal Capacity 100Ah (10 Hr Rate to 1.75V/cell)

Chemistry Lead Acid -AGM

Physical Specifications

Length 307mm 12.09in

Width 168mm 6.61in

Height 208mm 8.19in

Height w/Terminal 230mm 9.06in

Weight (+/- 5%) 29.5kg 64.9lbs

Terminal Type Flag

Case Material ABS

Charging Specifications

Charge Voltage Battery Per Cell

Float 13.5V~13.8V 2.25V~2.30V

Cycle 14.4V~15.0V 2.40V~2.45V

Max. Charge Current 30A

Capacity Specifications

5 Second Discharge Current 1200A

Self Discharge (to 80% capacity) 3 Months 91%

6 Months 82%

12 Months 64%

Internal Resistance 5mΩ(25°C)

Temperature Specifications

Operating Temperature Capability -40° F (-40° C) to 140° F (60° C)

Recommended parameters for optimal battery life and performance:

Charging: 32° F to 104° F (0° C to 50° C), Discharging: 5° F to 122° F (-15° to 50° C),

Storage: 50° to 77° F (10° C to 25° C)



FEATURES:

- Used in several types of application
- Approved for all modes of transport
- More efficient connections between plates & terminals
- VRLA technology to eliminate spills and over-pressure
- Maintenance-free

SUBMITTAL SHOP DRAWING REVIEW
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF THE GENERAL COMPLIANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND DOCUMENTS. NOTHING HEREIN AUTHORIZES ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: CONFORMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, PERFORMANCE, SELECTING FABRIC ALIQUOT PROCESS AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS OR HER WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

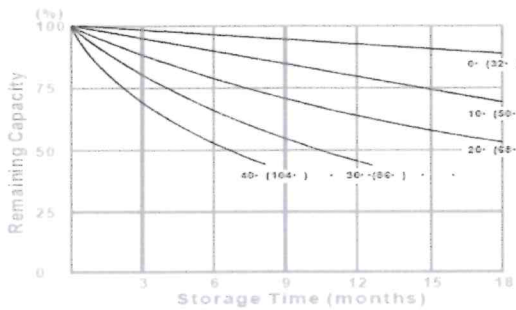
BY *[Signature]*
DATE 11/5/2024

CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO 44646

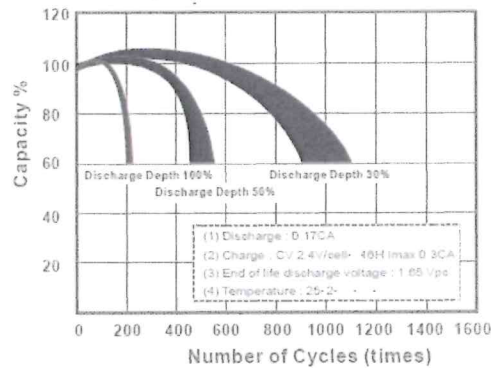
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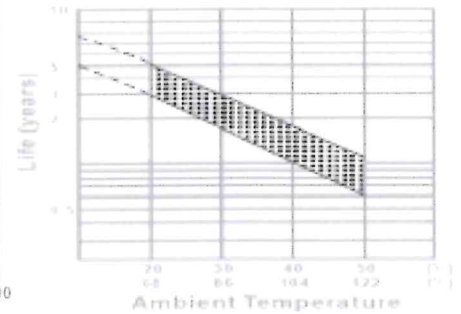
Capacity Retention Characteristics



Cycle Service Life



Trickle (or float) Service Life



Constant Current Discharge Characteristics: A (25°C)

F.V/Time	5 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
1.85V/cell	202.00	7.12	43.60	22.60	16.10	9.71	5.09
1.80V/cell	267.00	83.70	50.80	23.70	16.70	10.00	5.26
1.75V/cell	305.00	92.10	56.50	24.80	17.20	10.20	5.38
1.70V/cell	336.00	101.00	60.60	25.70	17.60	10.40	5.48
1.67V/cell	346.00	103.00	61.50	26.10	17.80	10.50	5.53
1.60V/cell	375.00	111.00	64.90	27.20	18.10	10.70	5.64

Constant Power Discharge Characteristics: W (25°C)

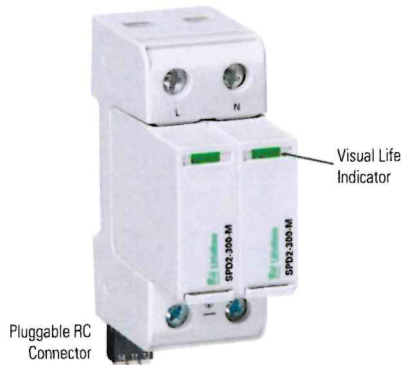
F.V/Time	5 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
1.85V/cell	458.00	163.00	112.00	47.20	31.30	18.00	10.40
1.80V/cell	512.00	174.00	116.00	49.70	32.80	19.20	10.70
1.75V/cell	549.00	183.00	119.00	51.80	34.20	20.00	11.00
1.70V/cell	584.00	191.00	122.00	52.20	35.20	20.80	11.20
1.67V/cell	600.00	195.00	125.00	54.00	36.00	21.50	21.80
1.60V/cell	649.00	206.00	126.00	55.20	36.70	21.80	11.50

Surge Protection Devices

SPD2 2P+0 SERIES

Massillon; Amherst & Lake NE
B/R# 300
Qty. 1

Class II/Type 2/Type 1 CA Pluggable Multi-Pole



Description

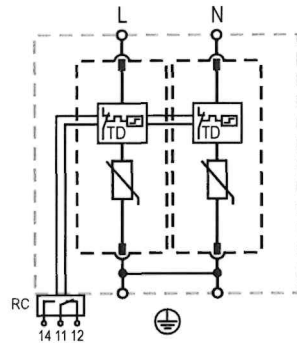
Surge protection devices (SPDs) provide equipment protection from transient overvoltage events lasting micro-seconds. By limiting the overvoltage to the equipment during these events, costly damage and downtime can be mitigated.

The surge protection devices for the 2+0 configuration are available for 120 V to 600 V nominal voltage sub-distribution board applications.

Features & Benefits

FEATURES	BENEFITS
Capability to clamp and withstand high-energy transients	Ensures low-residual voltage during high-energy surge events and higher nominal discharge current to prevent disruption, downtime, and degradation or damage to equipment
UL Recognized and VDE-IEC compliant in single part number	One component can be utilized globally, reducing inventory needs and simplifying allocation of parts
Interlocking tab mechanism	Secures module to withstand vibration
No additional overcurrent protection devices required in UL applications	Reduces the number of components and costs required for protection
Compact footprint	Increases panel design flexibility
Visual life indicator	Quick visual determines module replacement status to avoid loss of protection
Pluggable modules	Fast and simple to replace, minimizing maintenance and downtime. No tools required
Thermal protection	Eliminates catastrophic failure
IP20 protection rating	Finger-safe design increases worker protection

Internal Configuration



Legend

L	Line	RC	Remote Contacts
N	Neutral	TD	Thermal Disconnection
⊕	Protective Earth		

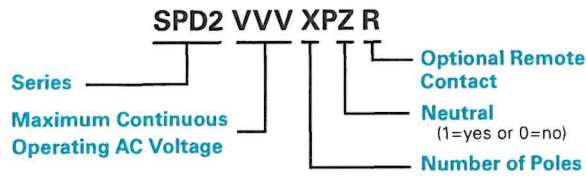
Module & Base Ordering Information

Ordering Number	IEC Electrical								UL Electrical				Single Unit Weight
	Nominal AC Voltage (50/60Hz) (U_n)	Maximum Continuous Operating AC Voltage (U_c)	Nominal Discharge Current (8/20 μ s) (I_n)	Maximum Discharge Current (8/20 μ s) (I_{max})	Voltage Protection Level (U_p)	Short-Circuit AC Current Rating (I_{SCCR})	TOV Withstand 5 s (U_{5s})	TOV 120 min (U_{120}) / Mode	Maximum Continuous AC Operating Voltage (MCOV)	Voltage Protection Rating (VPR)	Nominal Discharge Current (8/20 μ s) (I_n)	Short-Circuit Current Rating (SCCR)	
SPD2-150-2P0-R	120 V	150 V	20 kA	50 kA	1250 V	25 kA / 50 kA	229 V	229 V / Withstand	150 V	600 V	20 kA	200 kA	252 g (0.556 lb)
SPD2-300-2P0-R	240 V	300 V	20 kA	50 kA	1500 V	25 kA / 50 kA	337 V	442 V / Safe Fail	300 V	900 V	20 kA	150 kA	266 g (0.587 lb)
SPD2-350-2P0-R	277 V	350 V	20 kA	50 kA	1750 V	25 kA / 50 kA	403 V	529 V / Safe Fail	350 V	1000 V	20 kA	200 kA	276 g (0.609 lb)
SPD2-480-2P0-R	400 V	480 V	20 kA	50 kA	2300 V	25 kA / 50 kA	581 V	762 V / Safe Fail	480 V	1500 V	20 kA	200 kA	286 g (0.631 lb)
SPD2-550-2P0-R*	480 V	550 V	20 kA	50 kA	2500 V	25 kA / 50 kA	697 V	915 V / Safe Fail	550 V	2000 V	20 kA	200 kA	290 g (0.639 lb)
SPD2-750-2P0-R	600 V	750 V	20 kA	35 kA	3400 V	25 kA / 50 kA	871 V	1143 V / Safe Fail	750 V	2500 V	20 kA	200 kA	318 g (0.702 lb)

Surge Protection Devices

SPD2 2P+0 SERIES

Module & Base Part Numbering System



Module Only Part Numbering System



Replacement Module Ordering Information

Ordering Number	IEC Electrical								UL Electrical				Single Unit Weight
	Nominal AC Voltage (50/60Hz) (U_n)	Maximum Continuous Operating AC Voltage (U_c)	Nominal Discharge Current (8/20 μ s) (I_n)	Maximum Discharge Current (8/20 μ s) (I_{max})	Voltage Protection Level (U_p)	Short-Circuit AC Current Rating (I_{scac})	TOV Withstand 5 s (U_T)	TOV 120 min (U_T)/Mode	Maximum Continuous AC Operating Voltage (MCOV)	Voltage Protection Rating (VPR)	Nominal Discharge Current (8/20 μ s) (I_n)	Short-Circuit Current Rating (SCCR)	
SPD2-150-M	120 V	150 V	20 kA	50 kA	1250 V	25 kA / 50 kA	229 V	229 V / Withstand	150 V	600 V	20 kA	200 kA	54 g (0.120 lb)
SPD2-300-M	240 V	300 V	20 kA	50 kA	1500 V	25 kA / 50 kA	337 V	442 V / Safe Fail	300 V	900 V	20 kA	150 kA	61 g (0.135 lb)
SPD2-350-M	277 V	350 V	20 kA	50 kA	1750 V	25 kA / 50 kA	403 V	529 V / Safe Fail	350 V	1000 V	20 kA	200 kA	66 g (0.146 lb)
SPD2-480-M	400 V	480 V	20 kA	50 kA	2300 V	25 kA / 50 kA	581 V	762 V / Safe Fail	480 V	1500 V	20 kA	200 kA	71 g (0.157 lb)
SPD2-550-M*	480 V	550 V	20 kA	50 kA	2500 V	25 kA / 50 kA	697 V	915 V / Safe Fail	550 V	2000 V	20 kA	200 kA	74 g (0.163 lb)
SPD2-750-M	600 V	750 V	20 kA	35 kA	3400 V	25 kA / 50 kA	871 V	1143 V / Safe Fail	750 V	2500 V	20 kA	200 kA	87 g (0.192 lb)

Specifications

Network Systems	IT, TN-S
Mode of Protection	L-PE, N-PE
Nominal Discharge Current (8/20 μs) (I_n)	20 kA
Maximum Discharge Current (8/20 μs) (I_{max})	Up to 50 kA
Protective Elements	High Energy MOV
Response Time (t_A)	< 25 ns
Back-Up Fuse (max)	315 A / 250 A Gg
Number of Ports	1
Mechanical & Environmental	
Operating Temperature Range (T_o)	-40 °C to +80 °C (-40 °F to +185 °F)
Permissible Operating Humidity (RH)	5% to 95%
Altitude (max)	4,000 m (13,123 ft)
Terminal Screw Torque (M_{max})	4.5 Nm (39.9 lbf-in)
Conductor Cross Section (max)	35 mm ² (2 AWG) (Solid, Stranded)/ 25 mm ² (4 AWG) (Flexible)
Mounting	35 mm DIN Rail, EN60715
Degree of Protection	IP20 (built-in)
Housing Material	Thermoplastic: Extinguishing Degree UL 94 V-0

Thermal Protection	Yes
Operating State/Fault Indication	Green Flag/No Green Flag
Remote Contact Switching Capacity	AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
Remote Contact Conductor Cross Section (max)	1.5 mm ² (16 AWG) (Solid)
Standards Passed*	IEC 61643-11:2011 EN 61643-11:2012 UL 1449, 4th edition; E320116
Dimensions & Packaging	
2TE Module and Base	H 90.0 mm (3.54"); W 36.0 mm (1.42"); D 70.0 mm (2.76")
1TE Replacement Module	H 45.0 mm (1.77"); W 18.0 mm (0.71"); D 57.2mm (2.25")
Package Dimensions	
2TE Module and Base	H 102.0 mm (4.01"); W 46.0 mm (1.81"); D 110.0 mm (4.33")
1TE Replacement Module	H 102.0 mm (4.01"); W 28.0 mm (1.10"); D 110.0 mm (4.33")

*SPD2-550-2P0-R and SPD2-550-M are UL Listed only

Warranty – Visit www.littelfuse.com/warranty for details.

Disclaimer Notice – Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/product-disclaimer.

Massillon; Amherst & Lake NE
B/R# 300
Qty. 1

EP1100



Product Description

The EP1100 Line Interactive UPS series of power supplies provides filtered and regulated AC output power of proper voltage to operate traffic signals, conflict monitors, camera equipment, lighting, and additional applications used in Departments of Transportation and Intelligent Traffic Systems (DOT/ITS). Built in intelligence provides continuous operation during brownout and voltage spike with Automatic Voltage Regulation. A heavy duty battery charger and robust inverter provide backup power and recharging when line voltage is present. Status monitoring capabilities are provided through LCD display, serial interface, and optional Ethernet network card for remote monitoring.

Specifications

General	
Parameter	Specification
Dimensions:	5.25H x 17.0W x 9.0D
Weight:	42 lbs.
Mounting:	Rack, Shelf
Temperature Range:	-34°C to +74°C
Humidity:	Up to 95%
Safety Standards:	UL1778:2014 Ed. 5, CSA 22.2#107.3:2014 Ed.3, NEMA TS-2-2016v03.07, RoHS Compliant

Input	
Parameter	Specification
AC Circuit Breaker:	20 Amps
DC Circuit Breaker:	50 Amps
Connection:	Hard wired to terminal blocks
Phase:	Single phase 3-wire
Voltage:	120V Nominal
Frequency	60Hz

Output	
Parameter	Specification
Connection:	Hard wired to Terminal Blocks
Phases:	Single phase 3-wire
Output Capacity:	1,100W
Voltage:	Rated voltage $\pm 2\%$
Current Capacity:	5.4A
Rated Frequency:	60Hz
Frequency Regulation:	$\pm 1\%$
Voltage Waveform:	Sine wave
Distortion Factor:	Linear load: 3% or less 100% rectifier load: 7% or less
Response Time:	4ms or less
Load Power Factor:	0.7

Battery System	
Parameter	Specification
Connection:	Anderson SB50
Voltage:	48VDC
Charger Capacity:	10A
Temperature:	-5.0mV/°C/Cell

Network Communication	
Parameter	Specification
Network Connectivity:	Ethernet 10/100/1000 BASE -T
Protocols:	TCP/IP, HTTP, UDP, SMNP, SMTP, SNMP, NTCIP
Connection:	RJ45

Dry Contact Relays	
Parameter	Specification
Switching:	60 watts, 62.5VA

*Specifications subject to change



Multilink Inc.
580 Ternes Ln
Elyria, OH 44035
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www.gomultilink.com

Massillon; Amherst & Lake NE
B/R# 300
Qty. 1

Multilink
Simply More...

Safety Automatic Transfer Switch

Universal/Line Interactive
010-505-20



Product Description

The Safety Automatic Transfer Switch pairs with a universal transfer switch and pairs with the EP line interactive series of UPS systems. It provides automatic power source selection, generator capabilities, and alarm reporting via dry contact relays. Includes maintenance bypass switch.

Specifications

Parameter	Specification
Output Capacity	2kW
Cooling System	Convection
Operating Temperature	-37°C - + 74°C
Dimensions (W x H x D)	19" x 3.5" x 10"

Specifications Cont.

AC Input	Specification
Connections	Terminal Blocks 4-14AWG
Phase	Single Phase 3-Wire
Voltage	120V Nominal
Frequency	60Hz
Input Power Factor	0.98-1.0
Power Consumption	3W

AC Output	Specification
Output Power Connection	Terminal Block 4-14AWG
Phases	Single Phase 3-Wire
Voltage	120V Nominal
Voltage Regulation	Rated Voltage $\pm 5\%$
Current Capacity	16.67A @120V
Rated Frequency	60Hz
Voltage Waveform	Sine Wave
Transfer Time	5 Cycles or Less
Load Power Factor	0.7-1.0
Over Current Protection	20A UPS Input Circuit Breaker and Internal Fuses
Overload Capability	150%
AC Outlet Capacity	6A MAX

Transfer Relays	Specification
Output Transfer Relay	30A/277VAC
MAINS/GEN Power Relay	30A/277VAC

Dry Contact Sense Relays	Specification
Switching Power	60W
Switching Voltage	12VDC
Max Switching Current	5A
Carrying Current	2A

Contact Us

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Email: engsupport@gomultilink.com	Email: engsupport@gomultilink.com	Email: hquinones@gomultilink.com



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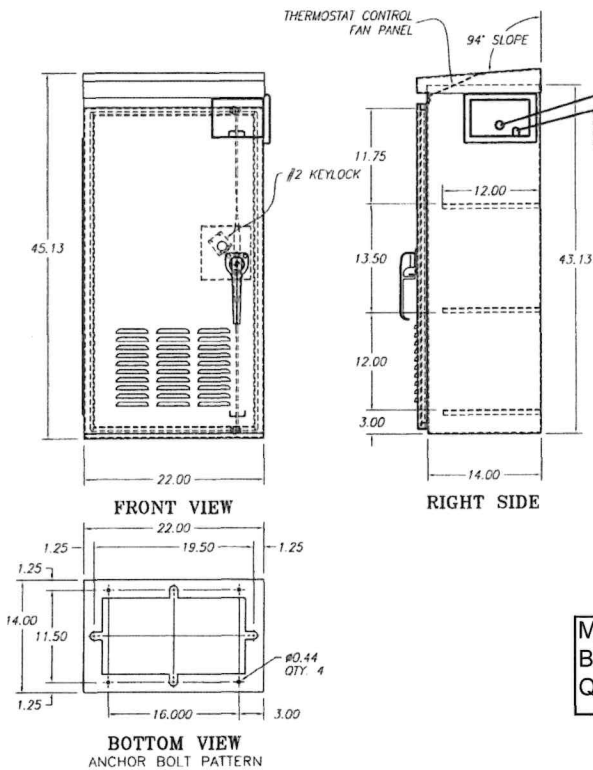


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Contact Us

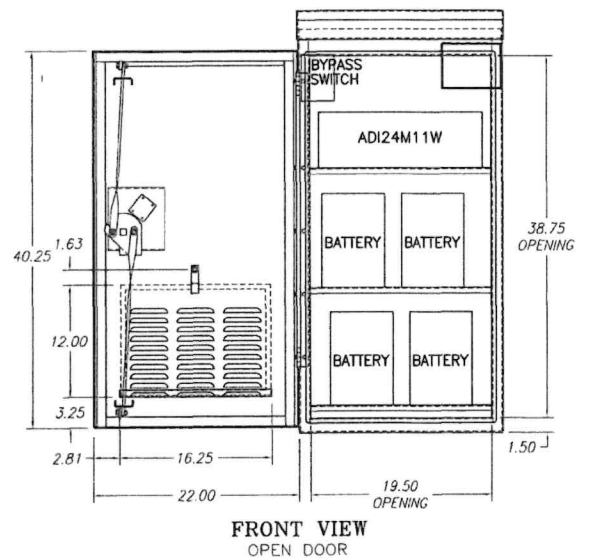
North America	Europe, Middle East & Africa	Latin & South America
Tel: +1 440 366 6966	Tel: +1 440 366 6966	Tel: +1 440 366 6966
Fax: +1 440 366 6802	Fax: +1 440 366 6802	Mobile: +1 440 366 6802
Email: engsupport@gomultilink.com	Email: engsupport@gomultilink.com	Email: lasupport@gomultilink.com

SPECIFICATIONS



NOTE:
 BATTERY HEATER MATS (QTY. 2) INSTALLED
 ON UNDERSIDE OF BATTERY SHELVES

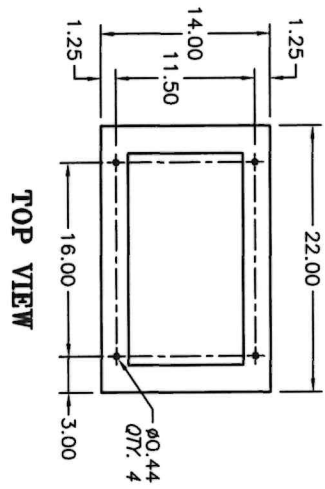
Massillon; Amherst & Lake NE
 B/R# 300
 Qty. 1



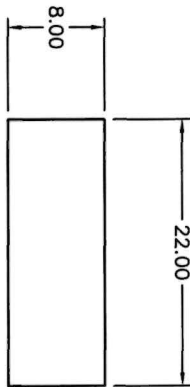
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REVISIONS		DATE	
 PATH MASTER Where Traffic Meets Technology			
TITLE			
UPS BATTERY ENCLOSURE CABINET WITH GENERATOR ACCESS DOOR			
DESIGNED BY	DWP	APPROVED BY	CAD
DATE	7-2-10	SCALE	NONE
REFERENCE	P/N: HC-UPS-4BG		DRAWING No.
			DB-

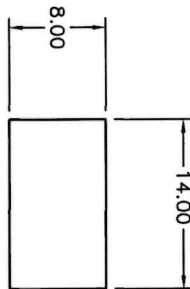
Massillon; Amherst & Lake NE
 B/R# 300
 Qty. 1



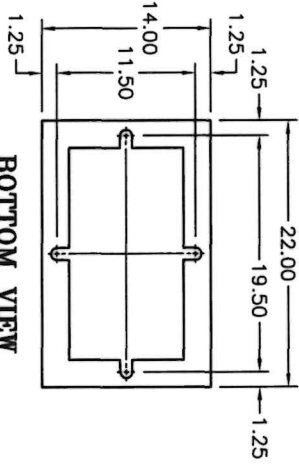
TOP VIEW



FRONT VIEW



RIGHT SIDE



BOTTOM VIEW
 ANCHOR BOLT PATTERN

FEATURES:

FULL SEAMWELD BATTERY BASE
 MADE FROM 0.125" ALUMINUM, #5052-H32
 NATURAL ALUMINUM FINISH

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PATH MASTER
 Where Traffic Meets Technology

REVISIONS

DATE

TITLE

CABINET RISER FOR
 HC-UPS-48 ENCLOSURE

DRAWN BY

DWP

APPROVED BY

HYRUPS48

DATE

11-20-07

SCALE

NONE

REFERENCE

P/N: HY-RSE-UPS-48

DRAWING No.

DB-662

Dialight

556 Series

High Intensity LED Panel Mount Indicators for 1" Mounting Hole Watertight - NEMA4X IP66



FEATURES

- ▲ Daylight viewable
- ▲ Safety standards - UL and NEMA
- ▲ Tamperproof / Designed for high durability
- ▲ Long life, lasting up to 100k hours
- ▲ Uniform illumination - multi-LED construction
- ▲ Lens options:
 - Low profile flat
 - Wide angle domed

APPLICATIONS

The 556 Series LED Panel Mount Indicators incorporate both InGaP and AlInGaP technologies to offer higher intensities. This is a highly durable package, designed to withstand outdoor applications susceptible to rain, dust and sunlight.

- Instrument panels
- Safety applications
- Vending, gaming
- Lane control
- Display lighting
- Transportation - rail, bus, airline
- ... and many more!

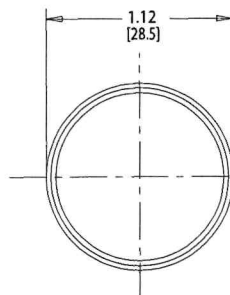
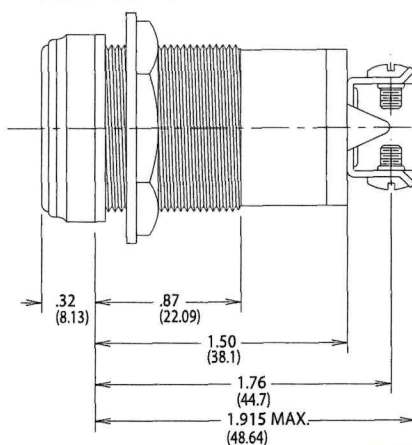
SPECIFICATIONS

- ▲ Available in red, yellow, green, blue, white, orange and cyan
- ▲ Voltage range of 12 to 125 VDC, 125 and 230 VAC
- ▲ Watertight seal from front of panel meets NEMA 4X IP66
 - Maximum Mounting Torque - 40 in./lb.
- ▲ Housing material: Nickel plated brass
- ▲ Lens material: Polycarbonate 94 - VO

- ▲ UL recognized - File #E156890
- ▲ Front mounting in 1" clearance hole
- ▲ Operating temperature: -30°C to +85°C
- ▲ Storage temperature: -40°C to +100°C

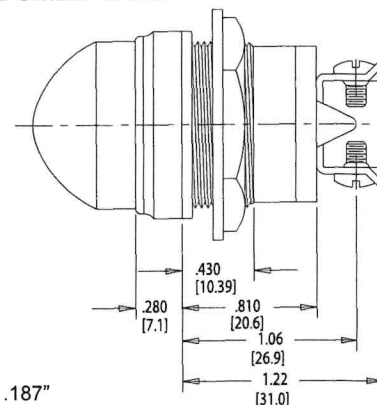
Dimensions in inches [mm]
All measurements are typical

FLAT LENS



Max. panel thickness:
Flat .600" Dome .187"

DOMED LENS



Polarity marking indicated on housing
near positive supply terminal

Please see back of page for part numbers and additional specifications.

Dialight reserves the right to make changes at any time
in order to supply the best product possible.



Dialight Corporation

1501 Route 34 South • Farmingdale, NJ 07727 USA

Tel: (1) 732-919-3119 • Fax: (1) 732-751-5778 • www.dialight.com

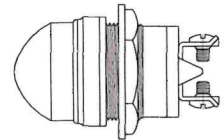
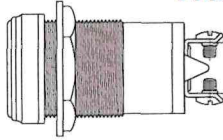

a Roxboro Group Company

MDEL556X001_D



556 Series

High Intensity LED Panel Mount Indicators
for 1" Mounting Hole
Watertight - NEMA4X IP66



FLAT LENS - 12 AND 24 VDC

DOMES LENS - 12 AND 24 VDC

PART NUMBER	COLOR	VOLTAGE (VDC)	CURRENT (mA)	TYPICAL INTENSITY (fL)
556-1003-304	White	12	60	4000
556-1503-304	Red	12	95	3000
556-1603-304	Green	12	60	4000
556-1683-304	Cyan	12	60	4000
556-1703-304	Yellow	12	95	3000
556-1803-304	Blue	12	60	1200
556-1903-304	Orange	12	95	3000
556-1004-304	White	24	32	4000
556-1504-304	Red	24	46	3000
556-1604-304	Green	24	32	4000
556-1684-304	Cyan	24	32	4000
556-1704-304	Yellow	24	46	3000
556-1804-304	Blue	24	32	1200
556-1904-304	Orange	24	46	1200

PART NUMBER	COLOR	VOLTAGE (VDC)	CURRENT (mA)	TYPICAL INTENSITY (fL)
556-3003-304	White	12	60	1200
556-3503-304	Red	12	95	1300
556-3603-304	Green	12	60	1800
556-3683-304	Cyan	12	60	1800
556-3703-304	Yellow	12	95	1300
556-3803-304	Blue	12	60	480
556-3903-304	Orange	12	95	480
556-3004-304	White	24	32	1200
556-3504-304	Red	24	46	1300
556-3604-304	Green	24	32	1800
556-3684-304	Cyan	24	32	1800
556-3704-304	Yellow	24	46	1300
556-3804-304	Blue	24	32	480
556-3904-304	Orange	24	46	480

FLAT LENS - 125 AND 230 VAC

DOMES LENS - 125 AND 230 VAC

PART NUMBER	COLOR	VOLTAGE (VAC)	CURRENT (mA)	TYPICAL INTENSITY (fL)
556-1005-304	White	125	9	1800
556-1505-304	Red	125	10.5	1200
556-1605-304	Green	125	9.5	1800
556-1685-304	Cyan	125	9.5	1800
556-1705-304	Yellow	125	10.5	1200
556-1805-304	Blue	125	9.5	500
556-1905-304	Orange	125	10.5	500
556-1009-304	White	230	7	1800
556-1509-304	Red	230	7	1200
556-1609-304	Green	230	7	1800
556-1709-304	Yellow	230	7	1200
556-1809-304	Blue	230	7	500
556-1909-304	Orange	230	7	1800

PART NUMBER	COLOR	VOLTAGE (VAC)	CURRENT (mA)	TYPICAL INTENSITY (fL)
556-3005-304	White	125	9	700
556-3505-304	Red	125	10.5	500
556-3605-304	Green	125	9.5	700
556-3685-304	Cyan	125	9.5	700
556-3705-304	Yellow	125	10.5	500
556-3805-304	Blue	125	9.5	180
556-3905-304	Orange	125	10.5	180
556-3009-304	White	230	7	700
556-3509-304	Red	230	7	500
556-3609-304	Green	230	7	700
556-3709-304	Yellow	230	7	500
556-3809-304	Blue	230	7	180
556-3909-304	Orange	230	7	180

Other voltages are available.
Please contact our factory for more information.

Dialight reserves the right to make changes at any time
in order to supply the best product possible.



Dialight Corporation

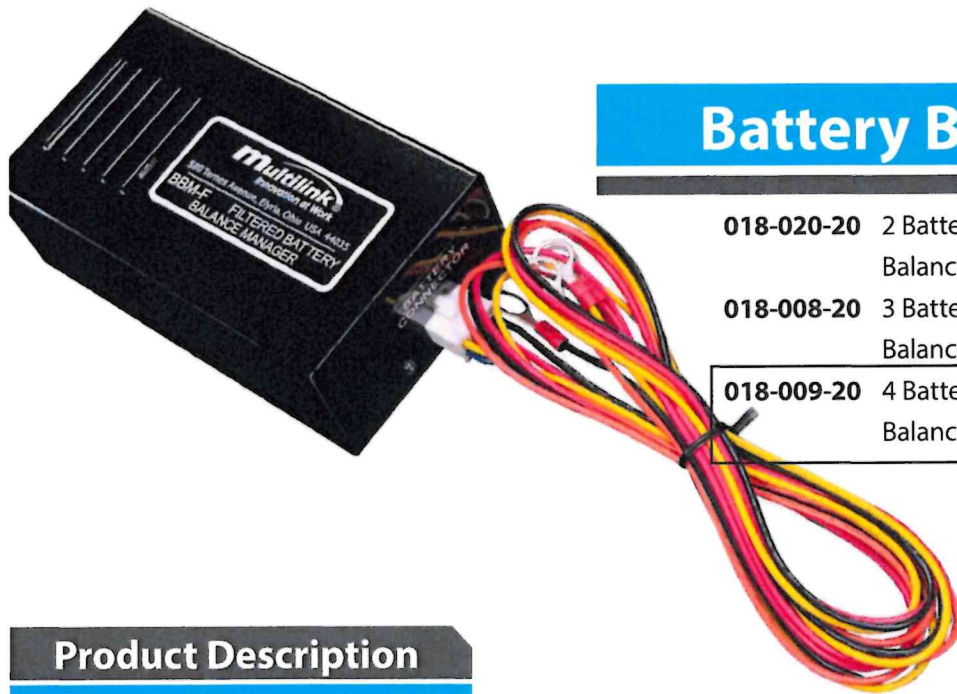
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MDEL556X001_D

Massillon; Amherst & Lake NE
B/R# 300
Qty. 1



Battery Balancer

- 018-020-20** 2 Battery External Battery Balancer Kit, 24V
- 018-008-20** 3 Battery External Battery Balancer Kit, 36V
- 018-009-20** 4 Battery External Battery Balancer Kit, 48V

Product Description

The BBM PLUS Second Generation Battery Balance Manager has been designed as a universal battery balancer for both three and four battery systems. The BBM PLUS auto-configures for a three or four battery string, depending on the output wire harness connected. An additional feature provides a low voltage disconnect which disables the battery balancer if battery voltage decreases to a preset limit. This feature protects the batteries from extremely deep discharge and permanent damage if the charger in the CATV power supply cannot charge the batteries for any reason.

Features & Benefits

No need to maintain matched battery sets for field replacement.

Combine new replacements with older batteries in existing strings. (*1)

Active battery charge equalization at float voltages.

Automatically and correctly tracks charger voltage and temperature compensation.

Battery string charges at full charger current, up to maximum of CATV supply capability.

Evenly distributes charge across all batteries in the string preventing potential undercharge and overcharge damage.

Low battery cutoff reduces risk of over-discharge damage during prolonged periods of no charge.

¹ Replacement battery must be same type, chemistry, size, and AH rating.

Specifications

General	
Parameter	Specification
Balance Rate	150 hours typical to +/-65 mV after complete discharge/charge cycle, using new 100AH gel batteries.
Maximum String Charge	Up to the maximum delivered by CATV power supply charger.
Maximum Balance Current	Up to 1A
Balance Accuracy	±65mVDC, between batteries
Protection	One Time Fuse
Environmental	-40C to +60C, 0-99% RH non-condensing
Dimensions	2.125"H x 6.000"W x 3.437"D
Weight Approx.	1.25 lbs.



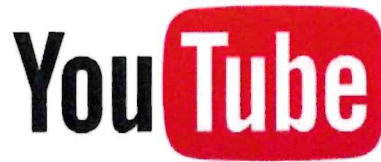
Multilink Inc.
580 Ternes Ln
Elyria, OH 44035
Tel: (440) 366-6966
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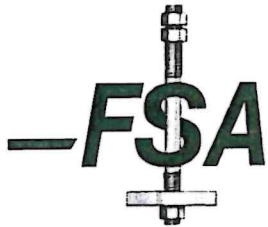


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FOUNDATION SYSTEMS & ANCHORS

Threading • Fabricating • Special An

Massillon; Amherst & Lake NE
B/R# 300
Qty. 1
Qty. 2 Anchor Bolts

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Phone: (330) 454-1700 • 800-776-7331 • Fax (330) 454-2336
www.fsabolt.com

DRAWING SUBMITTAL FORM

PROJECT REFERENCE:

CUSTOMER: Pathmaster PO# _____
FSA WORK ORDER # W/A

STEEL SPECIFICATIONS

A36 _____ A36M55/F1554 GR 55 X A687/F1554 GR 105 _____ OTHER _____

FINISH

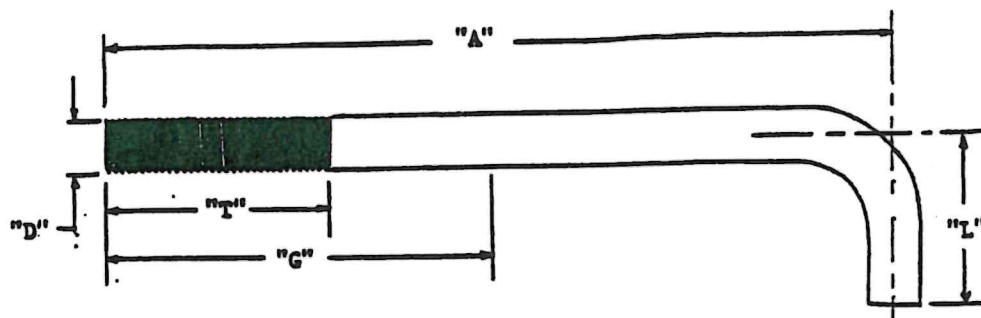
PLAIN _____
HOT-DIP GALVANIZED (A153/A123) X
OTHER _____

THREADING

UNC-CLASS 2A (CUT) _____
UNC-CALSS 2A (ROLLED) X
OTHER _____

HARDWARE

HEAVY HEX NUTS (A563 GR A) _____ (A563 GR DH/A194-2H) 1
FLATWASHERS (F436) 1 (USS) _____
LOCKWASHERS _____



QTY	D	A	L	T	G
	3/4"	17"	3"	6"	Full length

SUBMITTED BY: Monica Vain APPROVED BY: _____
DATE: 9-10-10 DATE: _____