ATTACHMENT A

Flashing School Zone Sign Assembly
With Speed Feedback Sign

(or approved equal in the opinion of the Engineer)

⊟TAPCO®

TRAFFIC & PARKING CONTROL CO., INC.

Blinker
LED Products

BlinkerSign® LED Enhanced BlinkerRadar®
Speed Limit Driver Feedback Sign

A TAPCO LED-enhanced BlinkerRadar® sign advances the concept of driver feedback to a new level of effectiveness. At the core of each unit lies a TAPCO BlinkerRadar® Full Matrix LED Radar Driver Feedback Sign with 12" character height. This is combined with a "SCHOOL, SPEED LIMIT XX WHEN FLASHING, YOUR SPEED" signface enhanced with 6 white LEDs around signface perimeter and 4 amber LEDs surrounding the word "SCHOOL".

A programmable Time Clock allows scheduling of the amber LEDs (typically set to flash continually during times when school children are present or during school functions). This increases the overall visibility to over 1 mile (line of sight). With the added benefit of solar power, this sign can be easily installed and deployed in minutes without the need for expensive trenching and electrical work. Extremely effective and easy to set up and program.

Ideal for city and residential streets, urban corridors, private roads and industrial parks, the 12" character height BlinkerRadar® sign delivers features and functionality required to encourage drivers to adhere to posted speed limits. The small, modular profile is easy to install and maintain. 3 year warranty, ISO9001 certified facility

- Crystal bright visibility by design with amber LEDs
- 12" speed display numbers with 2-line 3" 'SLOW DOWN' text, 12" emoticon 'smile' or 'sad' face
- Weatherproof sealed electronics modular platform for ease of installation
- Bluetooth class 1 communications allows for wireless connectivity for BlinkerRadar® programming and the transfer of information

SPEED | **MESSAGE** | **EMOTICONS**

⑧ Bluetooth™

Speed analysis is simplified with the included BlinkerRadar™ Configuration and Collection software. The license free sign management program is menu driven and comes with a pre-programmed and automatically generated set of reports that provide traffic engineers with an uncomplicated view of speed data statistics along with the option to download raw data for additional comparative analysis.

12" Solar model includes: Driver Feedback sign, mounting bracket, insulated battery box w/charge controller, 85W solar panel with mounting bracket, 12V 99AH battery, and conduit/wiring (to connect box, sign & panel), BlinkerRadar® Configuration and Collection Software

BlinkerRadar® Windows PC software allows you to control display settings and behavior of your BlinkerRadar™ traffic signs directly, or by uploading schedules. Schedules and settings can be uploaded via Bluetooth at the BlinkerRadar™ location, within the 30' typical range. Dial up modem connections and direct serial connections are supported in signs equipped with the proper hardware.

Data is continually captured by the BlinkerRadar®: average traffic speeds, traffic volume, over-speed limit occurrences, etc. This data can be downloaded via Bluetooth (within 30' typical range of sign). Diagnostic data of the display is also captured and available for download: temperature, volts, battery levels, on/off state, display errors, light information and impact detection.

The BlinkerRadar™ can gather data even when the display is left blank. A BlinkerRadar™ run on solar power/ battery can be moved from place to place, providing information on where the speed limit is regularly broken and congestion problems.

- Configure BlinkerRadar™ sign schedules & day plans, speed limits, thresholds, alert behaviors and messages.
- Download data collected by the BlinkerRadar™ including: average traffic speeds, traffic volume, over-speed limit occurrences, temperature, volts, battery levels, on/off state, display errors, light information and impact detection.
- View collected data as customizable graphs and charts.

ATTACHMENT B

Speed Feedback Sign

(or approved equal in the opinion of the Engineer)

**12" Driver Feedback Smart
Sign Model M75-12DFB-000X**

KEY FEATURES

- Modular design for quick, easy installation and service- Electronic display dismounts from sign structure with no tools required
- Modular components secured in place with vandal resistant lock bar and hardware
- Digits display in amber LEDs to provide speed sensitive violator warning without being distracting
- Engineered with intelligent power features- PowerMiser mode activates automatically to preserve functionality even with low power input. Smart use of power maximizes battery life expectancy and reduces replacement frequency
- Full Featured Configuration, Scheduling, and Data Collection software suite and Android App included at no additional cost.
- Lifetime software updates and sign firmware available via our website free of charge.
- Bluetooth remote programming with traffic data collection using SafetyCalm™ software
- UL/ULC listed products available for simple, code compliant installation
- Solar or 110V AC ready (power packages sold separately)
- K-band (24.15GHz) radar, range 1,000+ feet
- Unlimited technical support
- 3 year limited warranty
- Made in America

SPECIFICATIONS

Chassis Dimensions: 24" x 30" x 1-7/8" (WxHxD)

Total Weight: 24 Lbs

Construction: 3/16" thick aluminum brackets and 1/8" face; standard 3% tilt bracket configuration; flat mount brackets optional. Weatherproof, NEMA 3R electronics box (ECS): 1/16" (.06", 1.58mm) thick aluminum enclosure attached to 1/8" thick mounting plate. ECS is removable from chassis as a complete unit. Provisions for padlocking in place are provided. Face: 1/4" high impact polycarbonate with high contrast mask; anti-glare, graffiti and sunlight resistant; Standard DOT powder coat green color (addition colors optional)

Power Specs:

9V-30VDC, 12VDC Nominal (Battery protection at 11.5VDC and 10.8VDC; startup at 12.3VDC), 100mW standby; 2W stealth; 10W average consumption (100% traffic)

Power Options: AC power kit, Solar kits: 140Watt (M75-S0LAR-000N), 90W (M75-SOLAR-000C) and 60W(M75-SOLAR-000S) kits available, Battery charger kit

Available Solar Panel Dimension: 140W: 26.57" W x 59.06" L x 1.38" D. 90W: 26.57" W x 37.01" L x 1.38" D

Operating Temperature- Internal Components: -34°C to +74°C/ -29°F to +165°F. Ambient Environment: -34°C to +60°C/ -29°F to +140°F

Display Specs:

LEDS: Amber (590nM); 20,000 CDA/SQ meter; 1/2 angle 15°; Rated 100,000 hours; 20,000 CDA/M^2. Auto Dimming employed. Speed display 12" high numbers

Face Sheeting: 3M™ Diamond Grade™; high visibility prismatic, long life protective sheeting; white; fluorescent yellow; green; fluorescent orange (additional colors optional); 'YOUR SPEED' Legend 6" high highway gothic font (MUTCD compliant)

Viewable range: 1,000 feet; legible range: 750 feet

Radar Specs:

Speed Resolution and Range: min 5 mph; max 140 mph in 1 mph steps (min 8 kph, max 225 kph in 1.6 kph steps)

Radar Specification and Range: K-band (24.15GHz) direct sensing; license free (FCC part 15 compliant); average range at 1,000 feet (depending on vehicle size)

Communication Specs:

SafetyCalm™ software included; for PC and Android

Event Data: (60 days with a circular buffer):applied voltage (VDC); internal temperature (°C); ambient light (lux); display functional status; traffic status; shock sensor events; parameter events

Vehicle speed data logging capacity 90 days with circular buffer (oldest reading replaced by newest) based on 24/7 operation

Programmable Display Features: min speed limit; speed limit; over speed; max speed to display, display type: blank (stealth mode); actual speed; speed limit; flashing digits; steady digits; programmable alternating red digits; programmable integrated white strobe LEDs (10 per digit); external beacon control

Schedules: Repeating daily 9 events; repeating weekly 9 events; non-repeating dated 9 events; (27 events in each 24 hour period 365 days per year while powered)

Bluetooth Class 1 Connectivity (V2.1 +EDC) min at 30' (FCC Certified); RS232 port; App for Android optional

System Requirements: Windows XP, Windows Vista or Windows 7 operating system; 1024 x 768 or better screen resolution; Bluetooth Class 1 or 2 adapters (capabilities: V1.0, V1.2, V2.0, V2.1 +EDC); 16.5MB min disk space
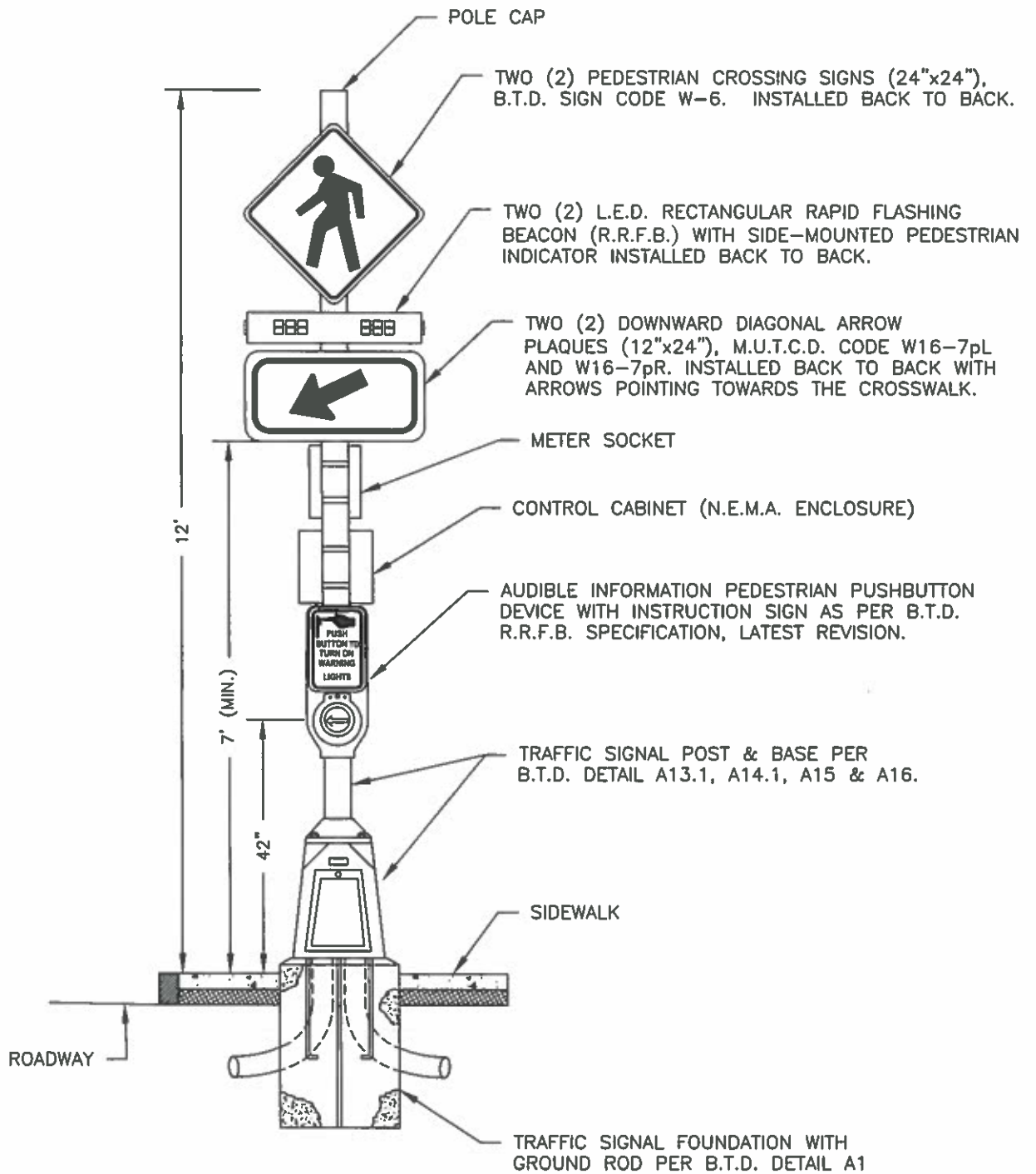

BACK OF SIGN
MOUNTING HOLE PATTERN
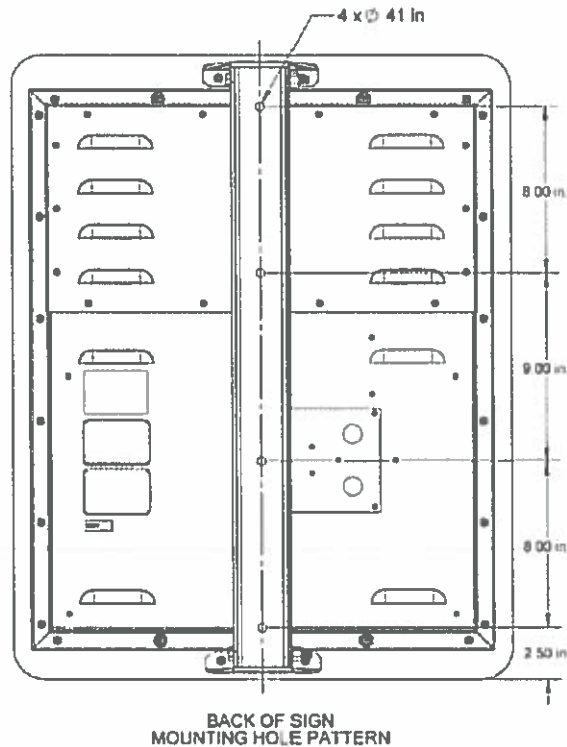
ATTACHMENT C

Specifications for
Rapid Rectangular Flashing Beacon
Crosswalk Signs

(or approved equal in the opinion of the Engineer)

RECTANGULAR RAPID
FLASHING BEACON - 120VAC

POLE CAP

TWO (2) PEDESTRIAN CROSSING SIGNS (24"x24"),
B.T.D. SIGN CODE W-6. INSTALLED BACK TO BACK.

TWO (2) L.E.D. RECTANGULAR RAPID FLASHING
BEACON (R.R.F.B.) WITH SIDE-MOUNTED PEDESTRIAN
INDICATOR INSTALLED BACK TO BACK.

TWO (2) DOWNWARD DIAGONAL ARROW
PLAQUES (12"x24"), M.U.T.C.D. CODE W16-7pL
AND W16-7pR. INSTALLED BACK TO BACK WITH
ARROWS POINTING TOWARDS THE CROSSWALK.

METER SOCKET

CONTROL CABINET (N.E.M.A. ENCLOSURE)

AUDIBLE INFORMATION PEDESTRIAN PUSHBUTTON
DEVICE WITH INSTRUCTION SIGN AS PER B.T.D.
R.R.F.B. SPECIFICATION, LATEST REVISION.

PUSH
BUTTON TO
TURN ON
WARNING

LIGHTS

TRAFFIC SIGNAL POST & BASE PER
B.T.D. DETAIL A13.1, A14.1, A15 & A16.

SIDEWALK

ROADWAY

12'

7' (MIN.)

42"

TRAFFIC SIGNAL FOUNDATION WITH
GROUND ROD PER B.T.D. DETAIL A1

NOT TO SCALE

A42

TAPCO
TRAFFIC & PARKING CONTROL CO., INC.

Solar, Wireless LED Solutions

LED Rectangular Rapid-Flash Beacon (RRFB) 3.0

Increased Conspicuity for Pedestrian Crossings and School Zone Crossings

- Provides clear & positive warning
- Driver yielding rates of 80% to 90%
- More effective than round beacons
- Solar = Zero operating costs
- No maintenance required
- Clean, uncomplicated installation
- LED Indicators for pedestrians
- BlinkSync™ wireless synchronization
- Certified SAE JA595-compliant LEDs

RRFB studies show a dramatic increase of driver compliance in yielding to pedestrians at high-risk uncontrolled crossings. RRFBs have produced 80% to 90% yielding rate, highest of all devices that do not feature a red display, and up to 4 times greater than a regular round beacon. RRFBs cost less than other devices that produce similar vehicular yield rates.

RRFB feature multiple arrays of brilliant LEDs that, when activated, flash a warning in a specified, alternating 'wig-wag' pattern, thereby commanding the attention of drivers by *Day And Night*. Additional side-mounted LED arrays flash concurrently to let pedestrians know that the unit is flashing. Optional self-powered remote pushbutton activation available.

TAPCO's RRFB feature aimable LEDs in a sturdy housing with a closed top and bottom, and no exposed wiring. See reverse for specifications.

12110.73

APPLICATIONS

- School Crossings
- Pedestrian Crossings
- Shared Ped/Bicycle Crossings
- Roundabouts

BENEFITS

- Significantly higher driver awareness and compliance
- Hi-intensity Day-Viz™ LEDs command attention, both by day and by night
- Increased visibility

FEATURES

- Multiple units are wirelessly synchronized, flash in unison
- LED output automatically to maximize autonomy and battery efficiency
- Installation onto new or existing sign poles
- Stand-alone, self-powered remote pushbutton bollard available

Multiple Solar-Powered beacons flash in unison, wirelessly synchronized by BlinkSync™ technology

Left side of street

Right side of street

STANDARD SPECIFICATIONS FOR RRFB 3.0 SYSTEM[†]

Rectangular Rapid-Flash Beacon

FHWA Approval, Optional Use of RRFB	Interim FHWA Approval Memorandum (1A-11)
Light Bar Housing	Powder coated aluminum
LED Indications (2 per direction)	6 amber LED array , ~ 5" x 2", SAE J595 certified
Flash Pattern	MUTCD recommended 'wig-wag' flash pattern
Pedestrian LED Indication	4 amber LED array , ~ 4" x 1½"
Mounting Hardware (enclosed)	Stainless steel/aluminum; accommodates 2⅜" to 4½" O.D. poles

Electronics System

Housing Cabinet	Rated NEMA 4x, 11 & 12 & UL508A polyester cabinet, lockable clasps
Solar Panel: Fully Rotatable 360° (25.75" x 25.25" x 1.4375")	55 watt solar panel set at 40° or 60°. Conforms to IP-67. Includes aluminum mounting bracket for 2⅜" to 4½" O.D. pole.
Batteries (one per assembly)	12V, 40AH Sealed Gel battery requires no periodic watering. Sealed construction eliminates corrosive acid fumes and spills.
Battery Lifespan	Up to 3 years
Autonomy	Up to 30 days without sun

BlinkerBeam® Wireless Communication System

Frequency	900 MHz FHSS
Range	Up to 3 miles with optional external antennas. For system separation over 900', a site survey is recommended for optimal performance.
Radio	Operates on 900 MHz frequency hopping spread spectrum network. Operating range from 3.6vdc to 15vdc
Programmability	Up to 50 systems in one network
Push-button Activation*	ADA pushbutton, typical (<120 millisecond)

*Optional remote, stand-alone pushbutton including self-contained, replaceable battery with typical two-year life

Programming

RS232 Communications Port
Programming via Windows basic software: Optional wireless cellular or internet programming

W11-2 Ped, W11-15 Ped/Bike & S1-1 School Xing Signs; W1 6-7P & W16-9P Plaques

Sign Substrate (30" or 36" signs)	.080" Highway grade aluminum
Reflective Sheeting	3M™ DG³ FYG 4083 with anti-graffiti overlay
Hardware	Zinc-plated steel anti-vandal fasteners for signs and RRFB units
MUTCD Compliance	MUTCD Section 2A Compliant

BlinkSync™ Wireless, Synchronized Device Activation Systems

Multiple units in one system will flash in synchronized patterns to avoid light noise of system operation. Ideal for multiple units flashing in the same direction, without the need for wiring.

Aimable LED arrays

GSA Contract Holder

TOP

L.SIDE   FRONT   R.SIDE   BACK

† Specifications are subject to change without notice. For additional specifications and details, please contact us!

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ATTACHMENT E

**Aerial Maps and Photos
For approximate sign locations**

Taylor Road, Acton MA

School Zone Signs

Photo 1 - By 92 Taylor Road
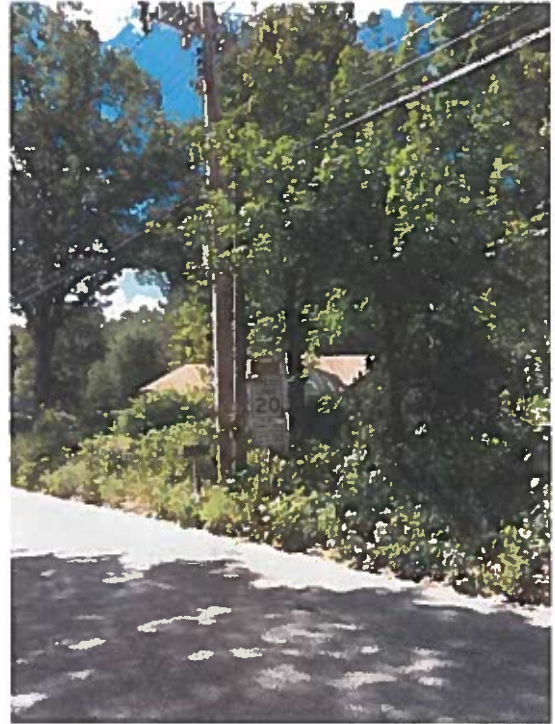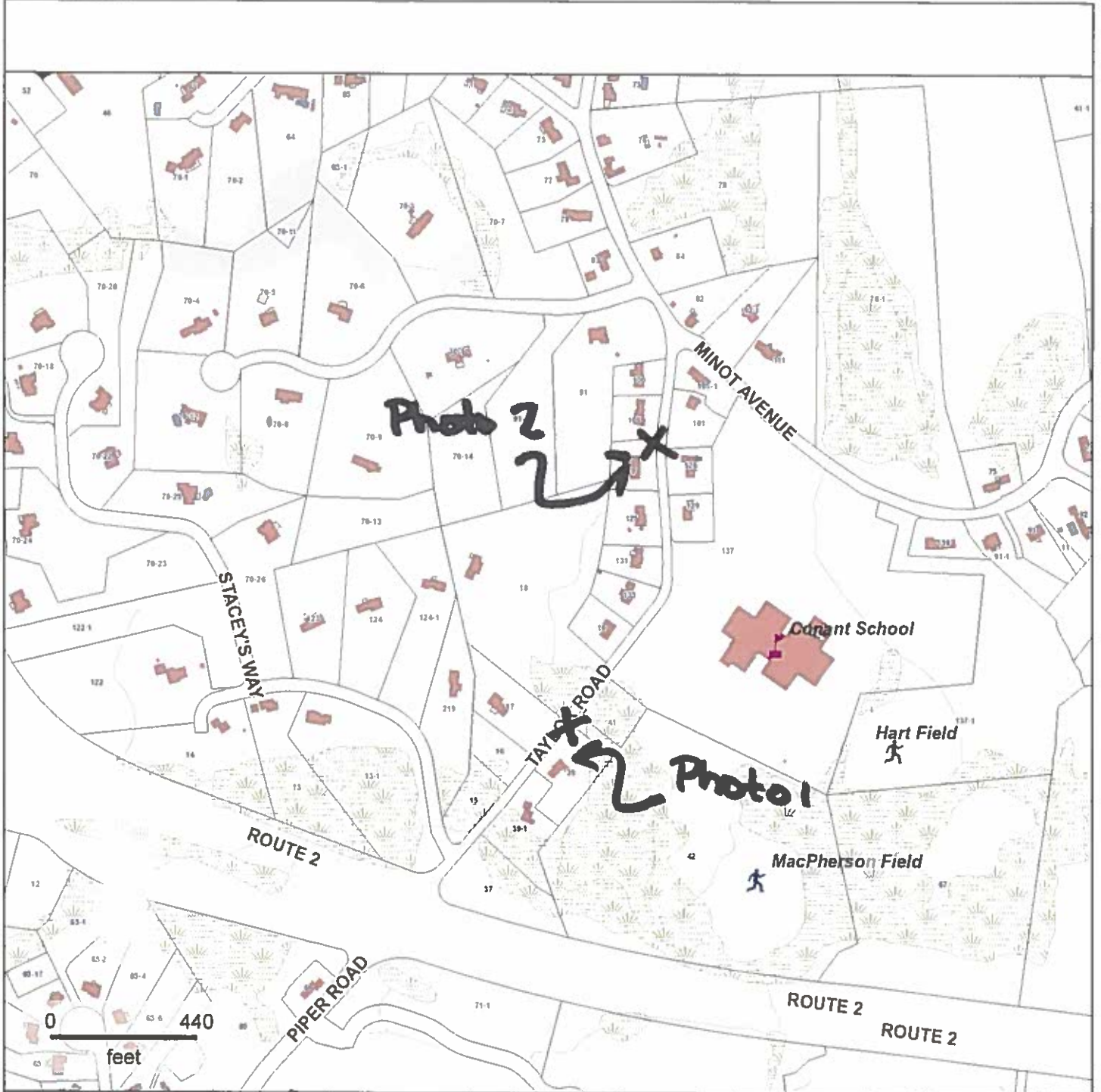

Photo 2 - By 69 Taylor Road

STACEY'S WAY

MINOT AVENUE

Photo 2

TAYLOR ROAD

Photo 1

Conant School

Hart Field

MacPherson Field

ROUTE 2

PIPER ROAD

ROUTE 2

ROUTE 2

0   440
feet

INCORPORATED · 1735
ACTON

WESTFORD
CARLISLE
LITTLETON
BOXBOROUGH
CONCORD
STOW
MAYNARD
SUDBURY

Main Street, Acton MA
Speed Feedback Sign Locations

Photo 1 - By 512 Main Street

Photo 2 - By 455 Main Street

Main Street, Acton MA

Crosswalks

Photo 3 – by Newtown Road

Photo 4 – by the Memorial Library

Photo 5 – by Nagog Hill Road

Photo 6 – by Hayward Road