

**IDAHO TRANSPORTATION DEPARTMENT**  
**PO. Box 7129**  
**Boise ID 83707-1129**

(208) 334-8000

[itd.idaho.gov](http://itd.idaho.gov)

**February 15, 2005**

**Transportation Board**

*Charles Winder*  
*Chairman*

*John X. Combo*  
*Vice Chairman*  
*District 6*

*John McHugh*  
*District 1*

*Bruce Sweeney*  
*District 2*

*Monte McClure*  
*District 3*

*Gary Black*  
*District 3*

*Neil Miller*  
*District 4*

*David Ekern, P.E.*  
*Director*

Mr. Stephen Moreno  
Division Administrator, Idaho Division  
Federal Highway Administration  
3050 Lakeharbor Lane, Suite 126  
Boise, ID 83703-6217

Attention: Richard A. Scarr

RE: Project No. STX 9833(800), Milwaukee Street Railroad Crossing; Key No. 9142

Dear Mr. Moreno:

Attached for FHWA approval is a Request for Experimentation: In-Roadway Flashing Light System at Rail-Highway Crossing on Milwaukee Street in Boise, Idaho.

If there are any questions, please contact Joseph H. Peagkir at 334-8561.

Sue Huggins  
Board Secretary

Sincerely,

Lance Johnson, P.E.  
Traffic and Highway Safety Engineer



REQUEST FOR EXPERIMENTATION:  
IN-ROADWAY FLASHING LIGHT SYSTEM  
AT RAIL-HIGHWAY CROSSING

In cooperation with the Idaho Northern and Pacific Railroad Company and Ada County Highway District, the Idaho Transportation Department proposes to participate in a rail-highway crossing safety experimental project to determine if a psychological barrier created by illuminated red flashing in-roadway warning lights can result in a favorable behavioral change in motorists approaching a railroad crossing when a train is approaching.

**Statement of the Problem**

Each year the Idaho Transportation Department compiles data concerning train-vehicle collisions at rail-highway grade crossings and publishes findings in its Idaho Rail-Highway Crash Bulletin.

The table below depicts train-vehicle collision data for 2000, 2001, 2002, 2003 and 2004:

<b>Year</b>	<b>Total</b>	<b>Killed</b>	<b>Injured</b>
2000	33	10	2
2001	18	1	8
2002	18	1	4
2003	18	3	
2004	24	4	12

The data collected indicates that most crashes are attributed to motorists' disregard of warning devices, inattentiveness or other vehicle code violations.

The site identified for this experimentation is the Milwaukee Ave, Boise, Idaho, Crossing Number 906394X. This nearly right angle crossing accommodates 5 lanes in the southbound direction and 2 lanes in the northbound direction. There are no gates, due to the width of the crossing. The crossing signal heads are mounted on an overhead structure. A high volume signalized intersection located just to the south of the crossing detracts from the crossing signals. Observations at this site indicate that vehicles park on the crossing/track almost every traffic signal cycle. During railroad preemption, the vehicles do not obey the railroad signal and keep crossing the tracks in front of the oncoming train. This crossing also averages one crash per year due to inattention.

The red in-roadway flashing warning lights should create a psychological deterrent to drivers at the grade crossing and will result in a reduction of train-vehicular conflicts. Also, the **installation** of a new experimental grade-crossing system accommodates the installation of the Light Emitting Diodes (LED) lights in its edge beam. The edge beam of the "BODAN" system runs parallel to the track on both sides of the crossing. The "BODAN" system is manufactured by Transpo Industries, Inc.

The Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, 2003 Edition, Section 4L-01, provides only for In-Roadway Lights at pedestrian crossings. Adoption of the red In-Roadway Lights for railroad crossings would require a change to this section and possibly Section 10D.



**Performance Measures *Project Goal:***

The goal of this safety experimental project is to enhance public safety at rail-highway grade crossings through implementation of innovative technology.

***Project Objective***

The first objective of this experiment is to determine any change in behavior among motorists approaching and passing over the crossing when the lights *are* activated.

**Proposed Solution**

The In-Roadway Flashing Lights will activate upon actuation of the active grade crossing warning system and shall cease operation at the termination of the active grade crossing warning system.

The In-Roadway Flashing Lights will display a flashing red signal indication when activated. The flash rate for In-Roadway Flashing Lights shall be at least 50 but not more than 60 flash periods per minute. The flash rate shall not be between 5 and 30 flashes per second to avoid frequencies that might cause seizures.

When the In-Roadway Flashing Lights are installed on multiple lane roadways, the minimum number of lights installed on the travel lanes will be two times the number of lanes plus one. The lights should *be* installed in the center of each travel lane and at each edge of each travel lane.

The In-Roadway Flashing Lights will be installed 5 to 12 feet from the nearest rail at the crossing and for the full width of the roadway along both sides and parallel to the tracks.

## **Project Evaluation**

The crossing will be video taped for a minimum of eight (8) hours, both during daylight and darkness and at peak traffic volumes, before the installation, and edited to document driver behavior. Thirty days after the installation of the "BODAN" crossing system, the crossing will be video taped for another eight (8) hours, both during daylight and darkness and at peak traffic volumes, and edited to document driver behavior. Another two (2) hour video tape will be made in 6 to 8 months, 12 to 14 months, and 18 to 20 months after installation, both during daylight and darkness and at peak traffic volumes, and edited to document driver behavior.

## **Reporting**

The proposed study period will be eighteen (18) months. Four (4) reports will be prepared and submitted to the Federal Highway Administration (FHWA). The initial report will be prepared upon completion of the pre-installation video taping sequence. Post-installation reports will be prepared at six (6) months and twelve (12) months, due to the FHWA within three (3) months after the study periods. The final evaluation report will be completed and submitted to the FHWA within three (3) months of the end of the experimentation period. If the use of the In-Roadway Lights is found to be effective, the final report will include recommended changes to the MUTCD.

## **Site Restoration**

Each participating agency *agrees* to restore the experiment site to a state complying with the provisions of the MUTCD:

- within three (3) months following the end of the time period of the experiment, or
- at any time that a participating agency determines that significant hazards are directly or indirectly attributable to the experimentation, or
  - if requested to do so by the Federal Highway Administration.

Restoration will include deactivation of the In-Roadway Flashing Lights.

If, as a result of experimentation, a request is made that the Manual be changed to include the red In-Roadway flashing lights at railroad crossing, then the experimental device may remain in place until an official rulemaking action has occurred.

## **BODAN(R)Rail Crossing from Transpo**



### ***BODAM Highway/Railroad Grade Crossing System***

BODANO is a unique precast reinforced polymer concrete crossing system used for highway/rail crossings.

Unlike other crossings, BODAN® does not rely on railroad ties for attachment or support. The modular design allows for easy removal to perform routine *track* inspection and maintenance.

Since BODANO uses a bridge design concept, the vehicle axle loads are transferred directly to the bridge rails. Panel tests show they are capable of withstanding loads in excess of 44,000 lbs.

To view the pdf files, you will need Adobe® Readers®



**Durable:** Modular precast polymer concrete impervious to salt, diesel fuel and moisture

**Unique:** Only system with optional imbedded LED warning lights

[Crossing Lights.pdf](#)

[Drawing.pdf](#)

Accessible: No lag bolts needed, the modular panels bridge to the rails

Easy: Panels can be removed for routine track maintenance

Strong: Steel reinforcements support HS 25 traffic The **BODAN®** system accommodates **curved** as loads **we** as multiple track crossings, switches and sidewalks. The components may be custom- Safe: Lifetime sbd-resistant surface molded to match your site.

BODAN®.pdf PowerPoint



[Home](#) [About Us](#) [Safety](#) [Distributor](#) [Materials](#) [Precast](#) [Contact](#)

<http://www.transpo.comibodan.htm>

12512005



**BCDAN® level Crossing Luminaires**

Applications: Railroad Crossing, Pedestrian Crosswalk Safety,  
Traffic Delineation, Tunnel, Platform Edge

Luminaire: Flush (zero elevation above ground level)

Light Source: Two LUXEON Star LEDs

Light Pattern: Bidirectional, Wide

Photometrics: From  $5^{\circ}$  to  $80^{\circ}$  **in vertical plane;  $\pm 65^{\circ}$  in horizontal plane in each direction. Peak intensity 15 candelas.**

Colors: **RED AMBER GREEN CYAN BLUE 7I**

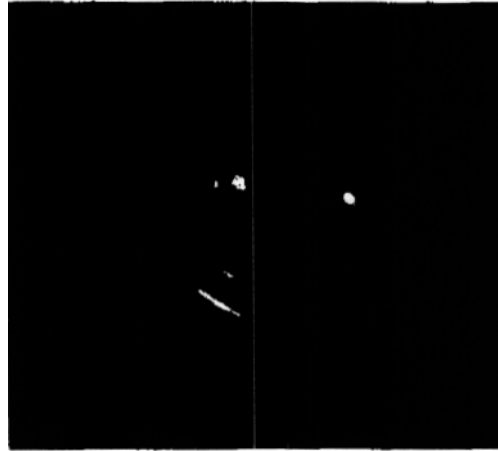
Electrical: LED power consumption 2.5-watts. Power inputs 120/240 volts AC; or low voltage operation AC/DC from 9-volts to 24-volts, polarity independent.

Mechanical: Drive over, snow plow proof,



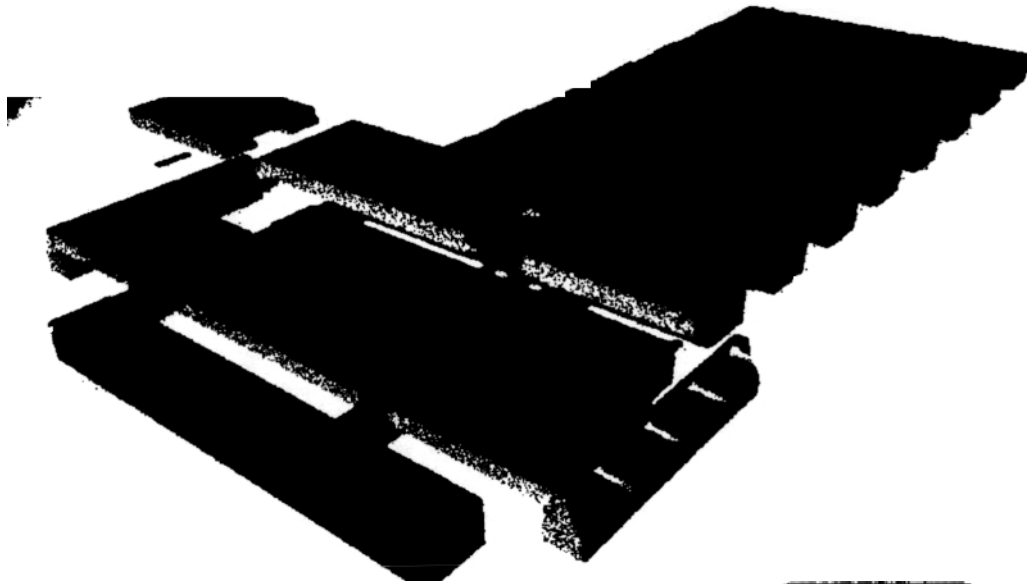
weatherproof,  
completely sealed  
against road salts &  
chemicals, shock  
and vibration  
resistant,  
2.5 inch O, 1.46  
inches deep,  
weight 6-ounces

**20 Jones Street, New Rochelle. NY 10901-6098**  
**Tel.914.636.1000 fax. 914.636.1282 [www.transpo.com](http://www.transpo.com)**



## **The Only Grade Crossing System With Built-in Warning Lights**

TRANSPOTS Boden Level-Crossing Safety high-strength precast polymer concrete panels that “bridge” between the rails end requires no fastening to the cross ties. The modular panels are maintenance free. **They’re designed for high load-carrying capacity, impervious to salt spray, moisture or diesel fuel and come with a skid and wear resistant surface. The Red warning lights alert approaching vehicles end are continuous on both sides of the crossing. This could eliminate the need for quad gates at crossings.**



**TRANSPRO**

INDUSTRIES, Inc.

**The Smart Solutions Company Tel 914-636-1000 Fax 914-636-1282**

U.s. Pam  
+doe 6.786.E and 5.808.764

Cell 1-888-321-7878 or visit us on our web site at [www.transp.com](http://www.transp.com) **BODAN®**

For Further Information On The Bodan Level Crossing System

## **BODAN Polymer Concrete Panels**

**The Polymer concrete material used for precasting the Bodan modular panel consists of an acrylic resin composite and specially formulated aggregate fillers. This highly formulated polymer concrete exhibits unique physical property performance characteristics vastly superior to those of Portland cement. Polymer Concrete is highly resistant to water and salt penetration thus preventing corrosion of the reinforcing bar and deterioration of the concrete.**

**Transpo has been manufacturing Polymer concrete material systems and precasts at its Castek facility in Berwick, PA for over 15 years. We have supplied polymer concrete materials for the repair of bridges, airport tarmacs, parking structures and commercial buildings. Precast Polymer concrete products include tunnel wall liners, retroreflective Jersey barriers, curbing, utility box covers, corrosion resistant drains, high voltage insulators, roof pavers, acid cells, architectural facia panels and BODAN modular panels.**

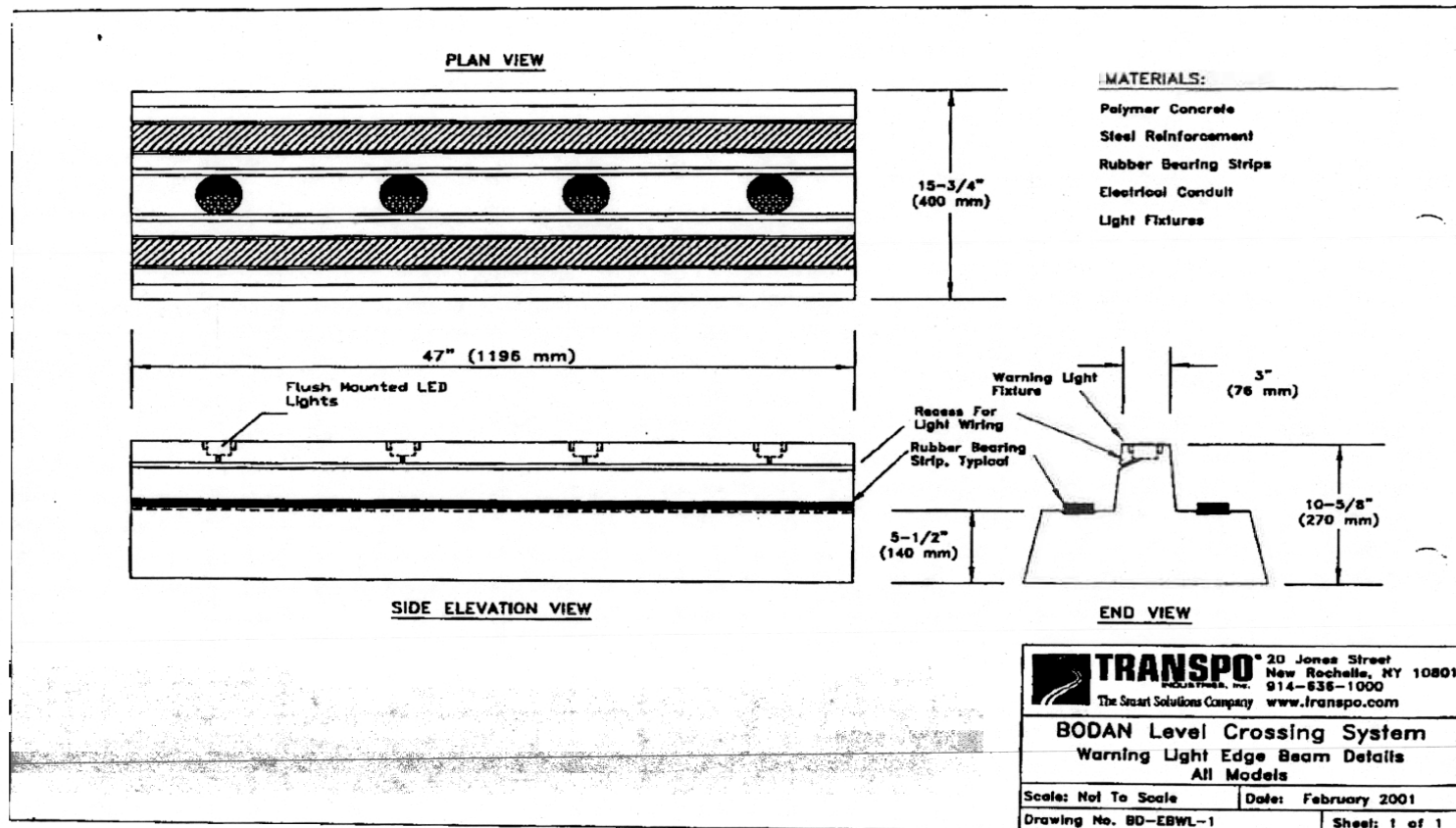
**The BODAN modular precast polymer concrete panels are maintenance free. They are impervious to salt spray, moisture or diesel fuel and have a lifetime skid resistant granular surface. The panels are designed for high load-carrying capacity with compressive strengths in excess of 14,000 psi.**

**I**

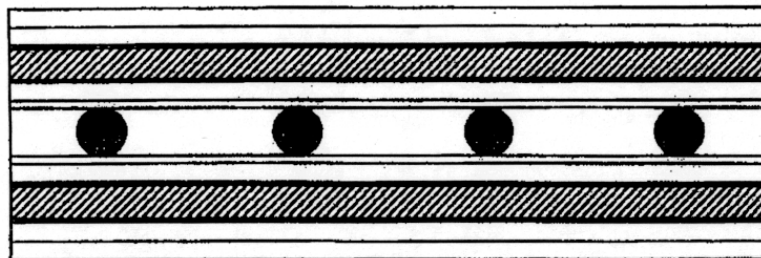
**As an added safety feature, red LED warning lights to alert approaching vehicles, are molded into the edge beam of the BODAN system which runs parallel to the track on both sides of the crossing.**

20 Jones Street, New Rochelle, NY 10801-6098  
 Tcl. 914.636.1000 • Fax: 914.636.1282 • Web: www.transpo.com

AN EQUAL OPPORTUNITY EMPLOYER



PLAN VIEW



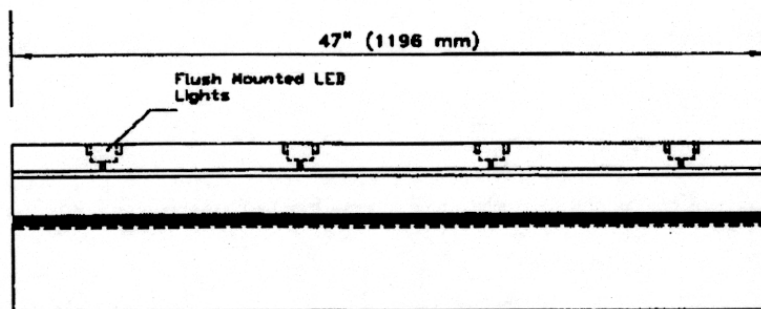
18-3/4"  
(400 mm)

MATERIALS:

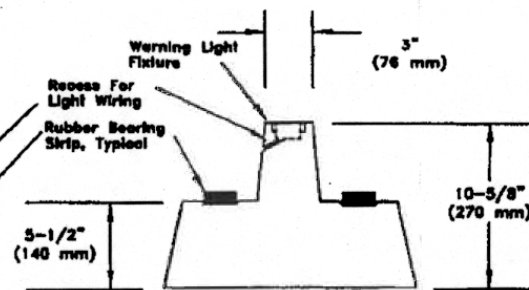
- Polymer Concrete
- Steel Reinforcement
- Rubber Bearing Strips
- Electrical Conduit
- Light Fixtures

47" (1196 mm)

Flush Mounted LED  
Lights



SIDE ELEVATION VIEW

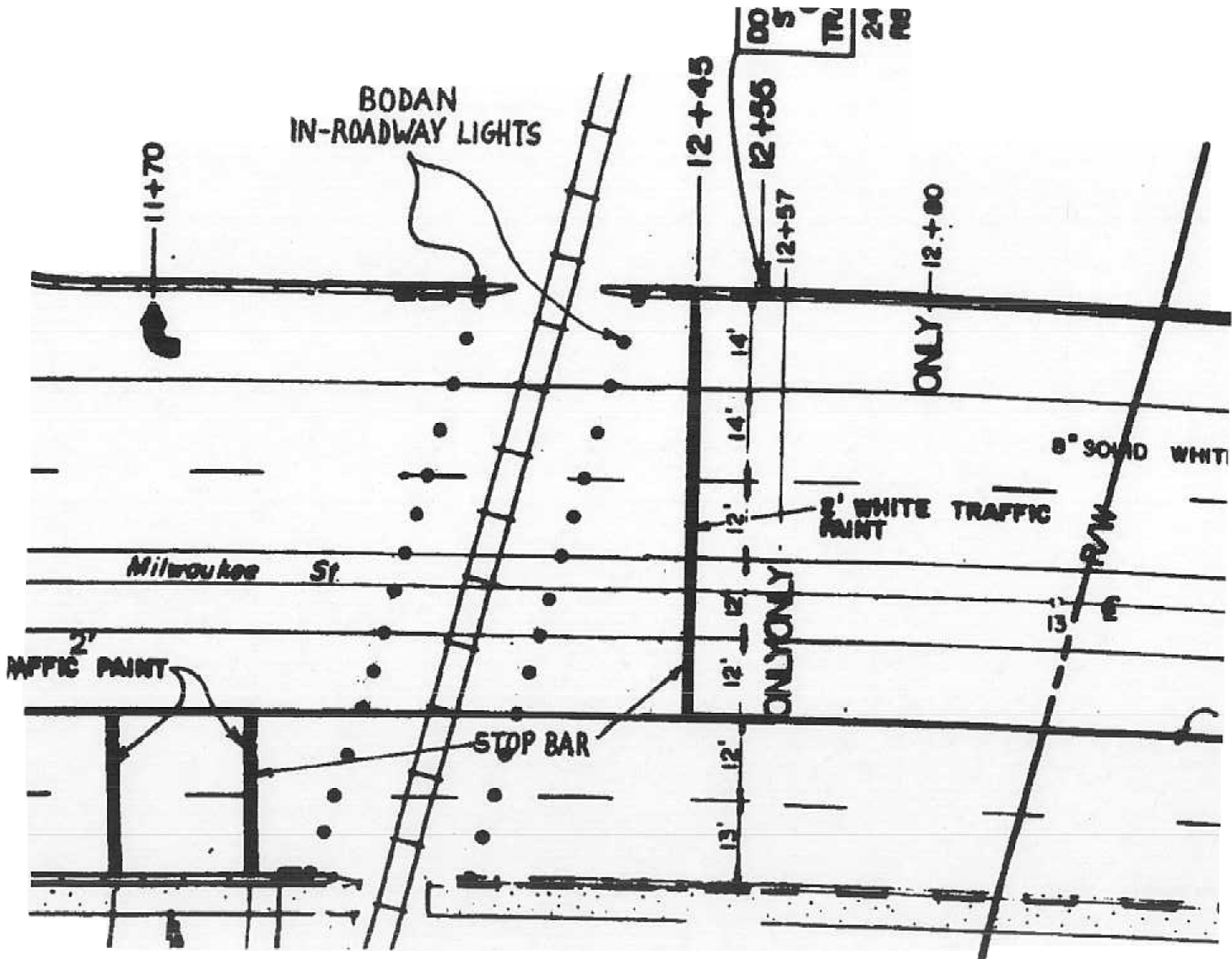


END VIEW

**TRANSPO** 20 Jones Street  
New Rochelle, NY 10801  
Industrial, Inc. 914-638-1000  
The Smart Solutions Company www.transpo.com

**BODAN Level Crossing System**  
Warning Light Edge Beam Details  
All Models

Scale: Not To Scale      Date: February 2001  
Drawing No. 80-EBWL-1      Sheet: 1 of 1



BODAN  
IN-ROADWAY LIGHTS

11+70

12+45

12+55

12+57

12+60  
ONLY

Milwaukee St.

8" SOLID WHIT

8' WHITE TRAFFIC  
PAINT

2'  
TRAFFIC PAINT

STOP BAR

ONLY

R/W

14'

14'

12'

12'

12'

12'

12'

13'

13'

DO NOT  
TRAVEL  
24 FE







Milwaukee St. MC RR Crossing, Boise, ID  
Milwaukee St. INPC RR Crossing, Boise, ID