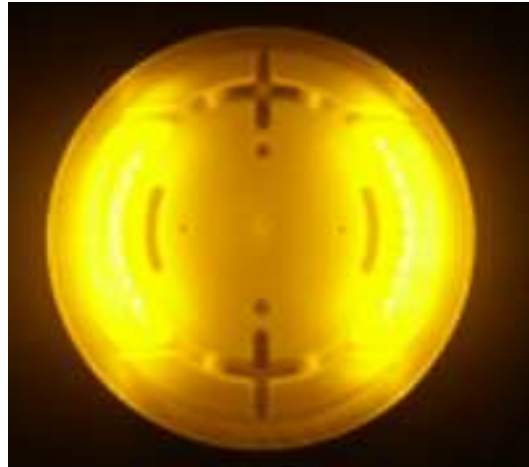


Optical Road Guidance



www.worldhighways.com

April 2011

WORLD HIGHWAYS

RDÜTES DU MONDE

Tunnels: Safety systems



INCLUDES OFFICIAL
IRF SECTION

EURO
edition

Bitumen Technology | GIS & Software | Formwork | Safety Barriers | Road Markings

IPT TECHNOLOGY

“Inductive Power Transfer” (IPT)

A safe, efficient form of wireless energy transfer.

COST ADVANTAGES

- Fast and easy installation
- Low maintenance
- Fast identification of faults
- Low power consumption

DURABILITY

- Waterproof, no corrosion
- Environmentally friendly
- Impervious to chemicals, debris

SAFETY

- Non sparking, removes electrocution danger and danger in refuelling situations
- Cable and light devices work reliably in case of fire
- Double isolation
- High light intensity
- High safety rating

3i Innovation owns the rights on the patented technology

BENEFITS OF INDUCTION

Wireless

*No Connections for Power
or communications*

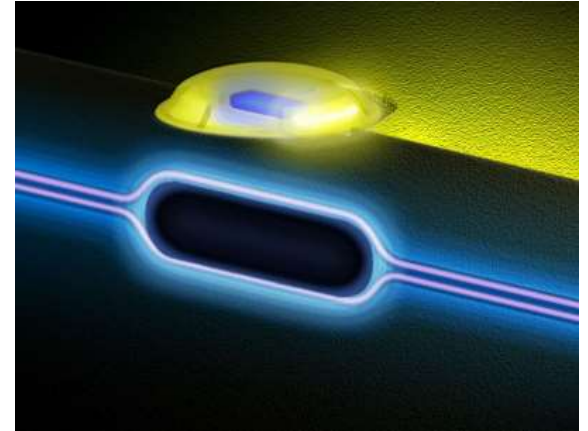
Low Power Consumption

High Frequency Power



Low loss Power

long distance - runs of 2km and 200 markers



TODAY'S ROAD GUIDANCE

Passive Delineation

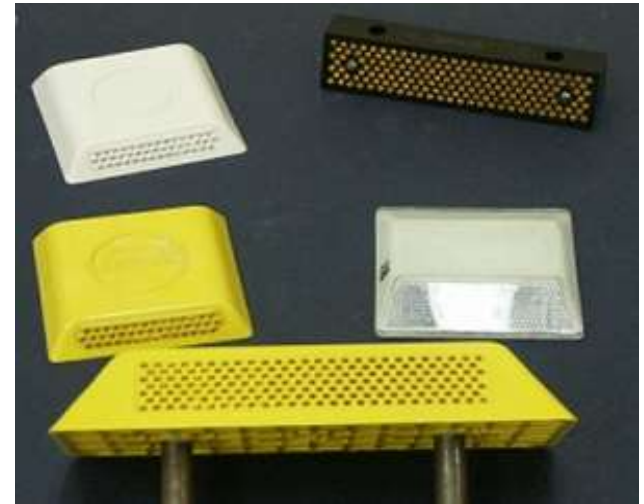
Dependant on External Light Sources

Examples:

- *painted lines*
- *raised pavement markers (RPMs)*
- *retro-reflective devices*
- *barriers, medians and curbs*

Important Limitations

- *require vehicle headlights at night*
(limits range especially in corners)
- *reduced visibility when moisture is present,*
rain & fog
- *overhead illumination reduces effectiveness*



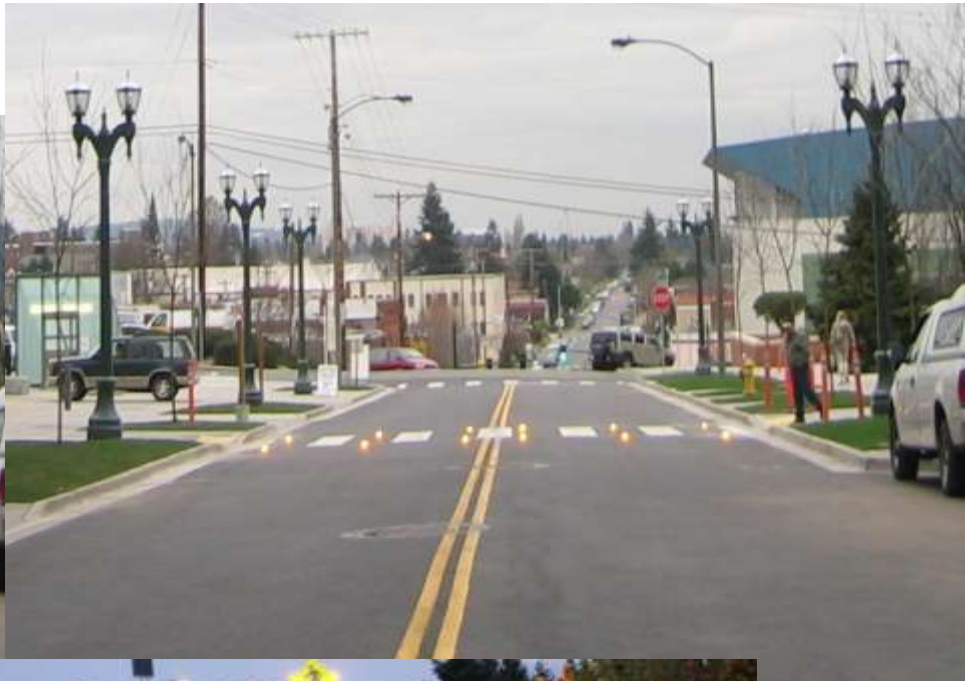
CROSSWALK WARNING SYSTEM SURPRISE ARIZONA



- REDUCES PEDESTRIAN VEHICLE INCIDENTS BY 80%
- RUN BY SOLAR POWER



CROSSWALK WARNING SYSTEMS



• 24/7 PERFORMANCE IN ALL WEATHER and LIGHT CONDITIONS



TURTLE LIGHTING PROJECT - BOCA RATON, FL



- REPLACES OVERHEAD LIGHTING WHILE MAINTAINING DRIVER SAFETY
- SIGNIFICANT POWER SAVING MEASURES WHILE IMPROVING DRIVER CONSPICUITY
- POSSIBLE CENTRAL GOVERNMENT FUNDING



STATE HIGHWAY 1 WELLINGTON, NEW ZEALAND



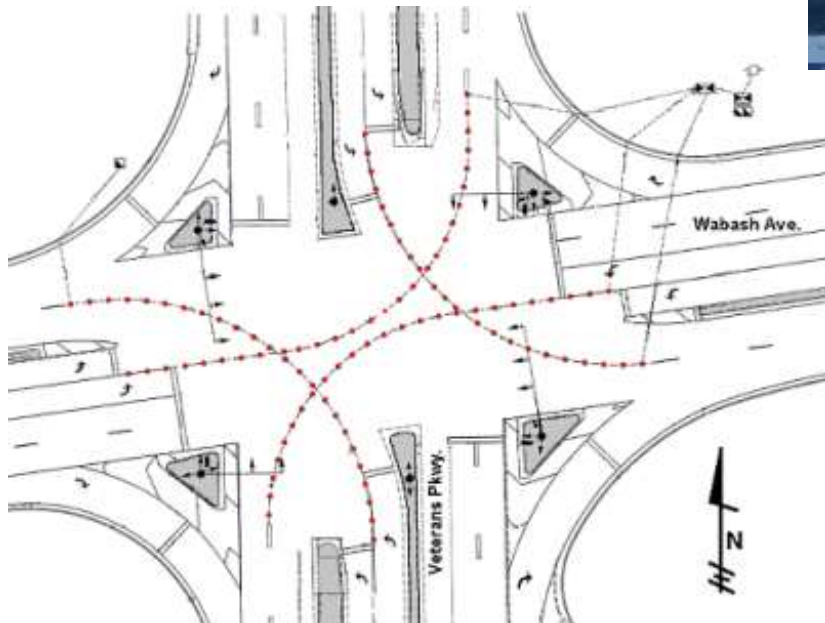
- DELINEATES SHARP CURVES
- CREATES A HIGH INTENSITY “SOFT” BARRIER OF LIGHT

DUAL LEFT TURN LANES - SPRINGFIELD, IL



- INTEGRATES WITH STANDARD SIGNAL INFRASTRUCTURE
- GUIDANCE THROUGH COMPLEX TRAFFIC PATTERNS

DUAL LEFT TURN LANES - SPRINGFIELD, IL



- IMPROVED TRAFFIC FLOWS
- ACCIDENT REDUCTION

RED LIGHT RUNNING SYSTEM – HOUSTON, TX



- ENHANCES CONTROL INFRASTRUCTURE



- REDUCED CONGESTION THROUGH SUBCONSCIOUS DRIVER RESPONSE

SMITH ST., COLLINGWOOD, MELBOURNE, AUSTRALIA 2008



- ILLUMINATES UNIQUE ROADWAY SITUATIONS

TRAMWAY DELINEATION COLOGNE, GERMANY 2009



- THE NEW STANDARD FOR TRAMWAY DELINEATION IN COLOGNE
- MULTIPLE SITES ACROSS THE CITY NOW INSTALLED

SCHOOL ZONE DELINEATION - EDMOND, OK



- SIGNIFICANTLY REDUCES SPEEDS WITHIN SCHOOL ZONES

EXIT RAMP - PORTUGAL



• FUNDING PROVIDED BY SHELL PETROL STATION

GUIDANCE TO YOUR MORNING COFFEE



*DISCLAIMER-WE ARE NOT ASSOCIATED WITH, OR PROMOTING ANY PARTICULAR FAST FOOD RESTAURANT

TERRACE TUNNEL – WELLINGTON, NEW ZEALAND 1996



• ENHANCES SAFETY IN DANGEROUS TUNNELS



MASSEY TUNNEL - VANCOUVER, BC, CANADA



- ACCENTUATES LANE LINES
- 26% REDUCTION IN VEHICLE COLLISIONS* refer ICBC Study

GENERAL HOLMES TUNNEL – SYDNEY AIRPORT, AUSTRALIA



- ENHANCES EXISTING LANE CONTROL SYSTEMS



McCLURE TUNNEL, SANTA MONICA CA



• INCREASES CONTRAST OF LANE DIVIDERS

SR20 TUNNEL - NORTH CASCADES, WA



- PROVIDES LOWER POWER CONSUMPTION THAN OVERHEAD LIGHTING



• REDUCES ACCIDENTS AT FREEWAY GORE AREAS

BUCHBERG TUNNEL, SWITZERLAND



•OPTICAL GUIDANCE SYSTEMS BECOME A EUROPEAN COMMISSION STANDARD

TUNNEL BURGHOLZ, GERMANY



- GERMAN 1+1 BAST APPROVED
- FIRST COMPANY IN THE WORLD TO BE AWARDED THIS CERTIFICATION



HENGSTACKER TUNNEL, GERMANY



• CONTINUES TO BE THE STANDARD FOR EUROPEAN TUNNELS



A71 TUNNEL CHAIN, GERMANY 2009



- Largest ever Optical Guidance contract awarded, which included Germany's longest single tunnel
- Total delineation over 60km and 6 Tunnels



BRIDGES



- PROVIDES FLEXIBLE INSTALLATION OPTIONS

AFBEELDING TUNNEL, HOLLAND



• PEDESTRIAN FIRE EGRESS SYSTEM

INHOUSE AND THIRD PARTY TESTING



• EXTENSIVE AND ONGOING TESTING PROGRAM

AREAS FOR CONSIDERATION

- Dangerous Curves
- Pedestrian and Rail crossings
- School zones
- Intersections
- Shared Access zones
- Tunnels
- Tidal Flow
- Fog
- Ice warning
- Overhead lighting replacement





Лефортово-
тоннель
смерти