Item No. 15F

# TOWN OF LAUDERDALE-BY-THE-SEA

## AGENDA ITEM REQUEST FORM

Town Commission
Department Submitting Request

Commissioner Clottey
Dept Head's Signature

| | Commission Meeting Dates | Last date to turn in to Town Clerk's Office | | Commission Meeting Dates | Last date to turn in to Town Clerk's Office | | Commission Meeting Dates | Last date to turn in to Town Clerk's Office |
|---|---|---|---|---|---|---|---|---|
| ☐ | Nov 10, 2009 | Oct. 30 (5:00 p.m.) | ☐ | Jan 26, 2010 | Jan 15 (5:00 p.m.) | ☒ | March 23, 2010 | Mar 12 (5:00 p.m.) |
| ☐ | Dec 1, 2009 | Nov 20 (5:00 p.m.) | ☐ | Feb 9, 2010 | Jan 29 (5:00 p.m.) | ☐ | April 13, 2010 | April 2 (5:00p.m.) |
| ☐ | Dec 8, 2009 | Nov 25 (5:00 p.m.) | ☐ | Feb 23, 2010 | Feb 12 (5:00 p.m.) | ☐ | April 27, 2010 | April 16 (5:00p.m.) |
| ☐ | Jan 12, 2010 | Dec 31 (5:00 p.m.) | ☐ | Mar 9, 2010 | Feb 26 (5:00p.m.) | ☐ | May 11, 2010 | April 30 (5:00p.m.) |

NATURE OF AGENDA ITEM

| | | |
|---|---|---|
| ☐ Presentation | ☐ Resolution | ☐ New Business |
| ☐ Report | ☐ Ordinance | ☐ Manager's Report |
| ☐ Consent Agenda | ☐ Public Hearing | ☐ Attorney's Report |
| ☐ Bids | ☒ Old Business | ☐ Other |

EXPLANATION: Discussion and/or action to have the Town Engineer research the traffic flow on Imperial Lane to see if signage or a barrier is needed to prevent through traffic from A1A from entering this street

STAFF RECOMMENDATION: N/A

BOARD/COMMITTEE RECOMMENDATION: N/A

FISCAL IMPACT AND APPROPRIATION OF FUNDS: N/A

☐ Amount $_____ ☐ Acct # _____
☐ Transfer of funds required ☐ From Acct #_____
☐ Bid ☐ Grant ☐ Amount represents matching funds

This item was deferred at the January 12, 2009 Commission Mtg by Commissioner Silverstone.

ADDITIONAL INFORMATION REQUESTED AT THE JANUARY 26, 2010 COMMISSION MEETING BY COMMISSIONER CLOTTEY.

Town Attorney review required
☐ Yes ☒ No

Town Manager's Initials: _____

Revised 9/28/09

**John Olinzock**

**From:** James H. Barton [jbarton@chenandassociates.com] **Sent:** Thu 21-Jan-10 1:10 PM
**To:** John Olinzock
**Cc:** Peter Moore
**Subject:** RE: Barrier Arm Study
**Attachments:**

Just a quick response (after thinking about this)

BULB-OUT ONLY
ONE SIDE OF ROAD
(NO ARM)

Survey: $1,000

Design and Permitting: $5,000

Road Construction: $10,000 (no landscape or irrigation)

Sign and Striping: $1,000

These may be a bit high but good for budgeting purposes.

We haven't moved forward to see if the County would allow this yet. Do you want us to move forward on that?

James

```
..........+P
        0.*

    1,000.00+
    5,000.00+
   10,000.00+
    1,000.00+
   17,000.00*
```

James Barton, P.E.

Senior Engineer

ESRI Authorized Trainer

Chen and Associates

500 Australian Avenue South, Suite 615

West Palm Beach, FL 33401

Phone: 561.746.6900

# Quotations From Resident

March 8, 2010

Esther Colon
Town Manager
Lauderdale by the Sea
954 776 1857 Fax

Dear Ms. Colon,

For the past five months the residents of Imperial Lane have petitioned the town to take action with regard to the errant traffic problem on our street. The town engineer provided two options for barriers and since then it seems that we are at a standstill.

My neighbor Dr. Anthony Lamarca recently obtained quotes for a security arm himself which I have included in this fax. I would like to request that these be distributed to the mayor and the commissioners.

I am aware that a proposal to narrow the opening of the street and increase signage was put forward. I would like to know the result of this proposal.

Sincerely,

Jeannine Pearce Clark
271 Imperial Lane
Lauderdale by the Sea, FL 33308
Jpclark6@aol.com
954 478 9328

Arthur Velunza
L. A. Ornamental & Rack Corp
3708 North West 82nd Street
Miami, Florida 33147
Office: 305-696-0419
Fax: 305-696-0461
E-Mail: Arthur@LAOrnamental.com

# Quote For Gate System—February 4, 2010

**Anthony Lamarca**
**Imperial Lane**
**Lauderdale By The Sea**
**305-545-0993**
**Fax: 954-564-4326**

| Quantity | Description / Part Number | Price | Total |
|---|---|---|---|
| 2 | Viking B12 Commercial Barrier Operator with Battery Back Up 12' Wood Arm Included | 1,794.00 | 3,588.00 |
| 2 | Viking Green Load Spring for 12' Arms | 99.00 | 198.00 |
| 2 | Viking Solar Kit — Includes: (2) 40 Watt Solar Panels, (2) 35AH Batteries (1) Solar Charger, (1) Wire Harness | 1,475.00 | 2,950.00 |
| 4 | EMX LP Loop Detector with 4X8 Loop | 199.95 | 799.80 |
| | Installation for Equipment Mentioned Above | 1,600.00 | 1,600.00 |
| | | | |
| | | | |
| | | | |
| | | **Sub– Total** | **9135.80** |
| | | **Tax 7%** | **639.51** |
| | | **Total** | **9,775.31** |

Received Time Feb. 4. 1:38PM

Received Time Feb. 10. 9:31AM

MATRIX GATE SYSTEMS

1450 South Dixie Highway
Building D
Pompano Beach, FL 33060

# Estimate

| Date | Estimate # |
|---|---|
| 2/10/2010 | 311 |

| | |
|---|---|
| Phon... | 954-946-9499 |
| Fax # | 954-946-5233 |
| E-mail | Matrixgates12@bellsouth.net |

| Name / Address |
|---|
| Anthony Lamarca |

| Project |
|---|
| |

| Item | Description | Qty | Cost | Total |
|---|---|---|---|---|
| Custom Fa... | Custom Fabricate and install two swing barriers | 1 | 5,500.00 | 5,500.00T |
| Powder op... | All material to be powder coated black,white, or bronze. | 1 | 0.00 | 0.00T |
| LA 400 D... | SWING GATE KIT FOR DUAL GATES WITH BATTERY BACK UP | 1 | 0.00 | 0.00T |
| Solar 10 | 10 watt solar panels with brackets. | 1 | 0.00 | 0.00T |
| PB 1200 | REFLECTIVE PHOTOBEAM FOR SAFETY | 1 | 0.00 | 0.00T |
| | optional barrier arms with solar panels $ 8500.00 | | | |

All work to be done in a timely and professional manner.

Warranty is one year from completion of work. Warranty does not cover vandalism, abuse, misuse, accidents, unauthorized repairs and acts of gods.

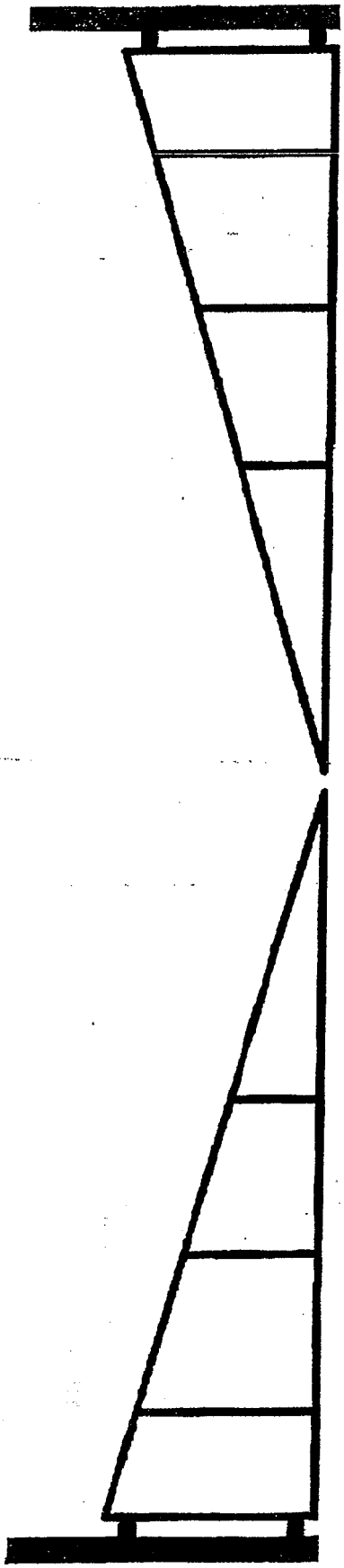
Terms are 50% deposit and 50% upon completion.

This quote does not include permit fees.

If quoting gate operators 110 vac to the operator is the owners responsibility.

| | |
|---|---|
| **Subtotal** | $5,500.00 |
| **Sales Tax (6.0%)** | $330.00 |
| **Total** | $5,830.00 |

Signature



Received Time Feb. 10. 9:31AM



Mar 08 2010 1:15RM HP LASERJET FAX

# Broward County Traffic Engineering

# Traffic Study

# Nu-Metrics Traffic Analyzer Study
# Computer Generated Summary Report
# City: LAUDERDALE BY THE SEA
# Street: IMPERIAL LA NEAR THOMAS WAY

A study of vehicle traffic was conducted with HI-STAR unit number 1297. The study was done in the EB lane on IMPERIAL LA NEAR THOMAS WAY in LAUDERDALE BY THE SEA, FL in BROWARD county. The study began on 02/09/2010 at 11:00 PM and concluded on 02/10/2010 at 11:00 PM, lasting a total of 24 hours. Data was recorded in 60 minute time periods. The total recorded volume of traffic showed 394 vehicles passed through the location with a peak volume of 156 on 02/10/2010 at 04:00 PM and a minimum volume of 0 on 02/10/2010 at 02:00 AM. The AADT Count for this study was 394.

## SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

**Chart 1**

| 0 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 to 44 | 45 to 49 | 50 to 54 | 55 to 59 | 60 to 64 | 65 to 69 | 70 to 74 | 75 > |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 63 | 125 | 56 | 65 | 15 | 13 | 12 | 17 | 10 | 5 | 1 | 3 | 1 | 0 |

At least half of the vehicles were traveling in the 20 - 24 mph range or a lower speed. The average speed for all classified vehicles was 25 mph with 51.3 percent exceeding the posted speed of 20 mph. The HI-STAR found 2.59 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 15 mph and the 85th percentile was 36.58 mph.

## CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

**Chart 2**

| 0 to 20 | 21 to 27 | 28 to 39 | 40 to 49 | 50 to 59 | 60 to 69 | 70 to 79 | 80 > |
|---|---|---|---|---|---|---|---|
| 333 | 9 | 19 | 7 | 8 | 3 | 2 | 5 |

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 342 which represents 88.60 percent of the total classified vehicles. The number of Small Trucks in the study was 19 which represents 4.90 percent of the total classified vehicles. The number of Trucks/Buses in the study was 7 which represents 1.80 percent of the total classified vehicles. The number of Tractor Trailers in the study was 18 which represents 4.70 percent of the total classified vehicles.

## HEADWAY

During the peak time period, on 02/10/2010 at 04:00 PM the average headway between the vehicles was 22.93 seconds. The slowest traffic period was on 02/10/2010 at 02:00 AM. During this slowest period, the average headway was 3600.0 seconds.

## WEATHER

The roadway surface temperature over the period of the study varied between 62 and 97 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

# Time/Speed Report

| | | |
|---|---|---|
| HI-Star ID: 1297 | Begin: 02/09/2010 11:00 PM | End: 02/10/2010 11:00 PM |
| Street: IMPERIAL LA NEAR THOMAS WAY | Lane: EB | Hours: 24:00 |
| State: FL | Oper: CP | Period: 60 |
| | Posted: 20 | Raw Count: 394 |
| County: BROWARD | AADT Factor: 1 | AADT Count: 394 |

| NC97 - mph | 0 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 to 44 | 45 to 49 | 50 to 54 | 55 to 59 | 60 to 64 | 65 to 69 | 70 to 74 | 75 > | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **02/09/2010** | | | | | | | | | | | | | | | | |
| [11:00 PM-12:00 AM] | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Daily Totals: | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **02/10/2010** | | | | | | | | | | | | | | | | |
| [12:00 AM-01:00 AM] | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [01:00 AM-02:00 AM] | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| [02:00 AM-03:00 AM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [03:00 AM-04:00 AM] | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [04:00 AM-05:00 AM] | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [05:00 AM-06:00 AM] | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| [06:00 AM-07:00 AM] | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| [07:00 AM-08:00 AM] | 0 | 2 | 9 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| [08:00 AM-09:00 AM] | 0 | 5 | 7 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| [09:00 AM-10:00 AM] | 0 | 9 | 11 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| [10:00 AM-11:00 AM] | 0 | 6 | 8 | 9 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 26 |
| [11:00 AM-12:00 PM] | 0 | 1 | 10 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| [12:00 PM-01:00 PM] | 0 | 16 | 10 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| [01:00 PM-02:00 PM] | 0 | 7 | 9 | 3 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| [02:00 PM-03:00 PM] | 0 | 6 | 14 | 10 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| [03:00 PM-04:00 PM] | 0 | 6 | 16 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| [04:00 PM-05:00 PM] | 0 | 2 | 27 | 7 | 47 | 13 | 12 | 12 | 17 | 9 | 5 | 1 | 3 | 1 | 0 | 156 |
| [05:00 PM-06:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [06:00 PM-07:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [07:00 PM-08:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [08:00 PM-09:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [09:00 PM-10:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [10:00 PM-11:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0 | 63 | 124 | 56 | 65 | 15 | 13 | 12 | 17 | 10 | 5 | 1 | 3 | 1 | 0 | 385 |
| Daily Totals: | 0 | 63 | 124 | 56 | 65 | 15 | 13 | 12 | 17 | 10 | 5 | 1 | 3 | 1 | 0 | 385 |
| Report Totals: | 0 | 63 | 125 | 56 | 65 | 15 | 13 | 12 | 17 | 10 | 5 | 1 | 3 | 1 | 0 | 386 |
| Report Percentages: | 0.00% | 16.32% | 32.38% | 14.51% | 16.84% | 3.89% | 3.37% | 3.11% | 4.40% | 2.59% | 1.30% | 0.26% | 0.78% | 0.26% | 0.00% | |

# Date/Time/Volume/Average Speed/Temperature Report

| | | |
|---|---|---|
| HI-Star ID: 1844 | Begin: 02/09/2010 11:00 PM | End: 02/10/2010 11:00 PM |
| Street: IMPERIAL LA NEAR THOMAS | Lane: WB | Hours: 24:00 |
| State: FL | Oper: CP | Period: 60 |
| | Posted: 20 | Raw Count: 371 |
| County: BROWARD | AADT Factor: 1 | AADT Count: 371 |

| NC97 | Count | Avg Speed | Temp | Wet/Dry |
|---|---|---|---|---|
| **02/09/2010** | | | | |
| [11:00 PM-12:00 AM] | 2 | 18 mph | 72 F | Dry |
| **02/10/2010** | | | | |
| [12:00 AM-01:00 AM] | 1 | 18 mph | 72 F | Dry |
| [01:00 AM-02:00 AM] | 0 | 0 mph | 70 F | Dry |
| [02:00 AM-03:00 AM] | 0 | 0 mph | 68 F | Dry |
| [03:00 AM-04:00 AM] | 2 | 22 mph | 66 F | Dry |
| [04:00 AM-05:00 AM] | 1 | 23 mph | 66 F | Dry |
| [05:00 AM-06:00 AM] | 0 | 0 mph | 64 F | Dry |
| [06:00 AM-07:00 AM] | 1 | 33 mph | 64 F | Dry |
| [07:00 AM-08:00 AM] | 6 | 22 mph | 64 F | Dry |
| [08:00 AM-09:00 AM] | 12 | 19 mph | 64 F | Dry |
| [09:00 AM-10:00 AM] | 18 | 24 mph | 70 F | Dry |
| [10:00 AM-11:00 AM] | 19 | 21 mph | 78 F | Dry |
| [11:00 AM-12:00 PM] | 20 | 24 mph | 85 F | Dry |
| [12:00 PM-01:00 PM] | 22 | 21 mph | 91 F | Dry |
| [01:00 PM-02:00 PM] | 15 | 23 mph | 93 F | Dry |
| [02:00 PM-03:00 PM] | 28 | 25 mph | 93 F | Dry |
| [03:00 PM-04:00 PM] | 21 | 26 mph | 91 F | Dry |
| [04:00 PM-05:00 PM] | 203 | 43 mph | 83 F | Dry |
| [05:00 PM-06:00 PM] | 0 | 0 mph | 82 F | Dry |
| [06:00 PM-07:00 PM] | 0 | 0 mph | 78 F | Dry |
| [07:00 PM-08:00 PM] | 0 | 0 mph | 76 F | Dry |
| [08:00 PM-09:00 PM] | 0 | 0 mph | 70 F | Dry |
| [09:00 PM-10:00 PM] | 0 | 0 mph | 66 F | Dry |
| [10:00 PM-11:00 PM] | 0 | 0 mph | 62 F | Dry |

# Nu-Metrics Traffic Analyzer Study
# Computer Generated Summary Report
# City: LAUDERDALE BY THE SEA
# Street: IMPERIAL LA NEAR THOMAS WAY

A study of vehicle traffic was conducted with HI-STAR unit number 1844. The study was done in the WB lane on IMPERIAL LA NEAR THOMAS WAY in LAUDERDALE BY THE SEA, FL in BROWARD county. The study began on 02/09/2010 at 11:00 PM and concluded on 02/10/2010 at 11:00 PM, lasting a total of 24 hours. Data was recorded in 60 minute time periods. The total recorded volume of traffic showed 371 vehicles passed through the location with a peak volume of 203 on 02/10/2010 at 04:00 PM and a minimum volume of 0 on 02/10/2010 at 01:00 AM. The AADT Count for this study was 371.

## SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin.

**Chart 1**

| 0 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 to 44 | 45 to 49 | 50 to 54 | 55 to 59 | 60 to 64 | 65 to 69 | 70 to 74 | 75 > |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 7 | 54 | 60 | 66 | 58 | 42 | 4 | 1 | 12 | 18 | 27 | 17 | 0 | 2 |

At least half of the vehicles were traveling in the 25 - 29 mph range or a lower speed. The average speed for all classified vehicles was 34 mph with 83.4 percent exceeding the posted speed of 20 mph. The HI-STAR found 17.3 percent of the total vehicles were traveling in excess of 55 mph. The mode speed for this traffic study was 25 mph and the 85th percentile was 57.44 mph.

## CLASSIFICATION

Chart 2 lists the values of the eight classification bins and the total traffic volume accumulated for each bin.

**Chart 2**

| 0 to 20 | 21 to 27 | 28 to 39 | 40 to 49 | 50 to 59 | 60 to 69 | 70 to 79 | 80 > |
|---|---|---|---|---|---|---|---|
| 301 | 18 | 14 | 9 | 10 | 4 | 2 | 10 |

Most of the vehicles classified during the study were Passenger Cars. The number of Passenger Cars in the study was 319 which represents 86.70 percent of the total classified vehicles. The number of Small Trucks in the study was 14 which represents 3.80 percent of the total classified vehicles. The number of Trucks/Buses in the study was 9 which represents 2.40 percent of the total classified vehicles. The number of Tractor Trailers in the study was 26 which represents 7.10 percent of the total classified vehicles.

## HEADWAY

During the peak time period, on 02/10/2010 at 04:00 PM the average headway between the vehicles was 17.65 seconds. The slowest traffic period was on 02/10/2010 at 01:00 AM. During this slowest period, the average headway was 3600.0 seconds.

## WEATHER

The roadway surface temperature over the period of the study varied between 62 and 93 degrees Fahrenheit. The HI-STAR determined that the roadway surface was Dry 100.00 percent of the time.

# Time/Speed Report

| | | |
|---|---|---|
| HI-Star ID: 1844 | Begin: 02/09/2010 11:00 PM | End: 02/10/2010 11:00 PM |
| Street: IMPERIAL LA NEAR THOMAS WAY | Lane: WB | Hours: 24:00 |
| State: FL | Oper: CP | Period: 60 |
| | Posted: 20 | Raw Count: 371 |
| County: BROWARD | AADT Factor: 1 | AADT Count: 371 |

| NC97 - mph | 0 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 to 44 | 45 to 49 | 50 to 54 | 55 to 59 | 60 to 64 | 65 to 69 | 70 to 74 | 75 > | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **02/09/2010** | | | | | | | | | | | | | | | | |
| [11:00 PM-12:00 AM] | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Daily Totals: | 0 | | 2 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 2 |
| **02/10/2010** | | | | | | | | | | | | | | | | |
| [12:00 AM-01:00 AM] | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [01:00 AM-02:00 AM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [02:00 AM-03:00 AM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [03:00 AM-04:00 AM] | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| [04:00 AM-05:00 AM] | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [05:00 AM-06:00 AM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [06:00 AM-07:00 AM] | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| [07:00 AM-08:00 AM] | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| [08:00 AM-09:00 AM] | 0 | 0 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| [09:00 AM-10:00 AM] | 0 | 1 | 8 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 |
| [10:00 AM-11:00 AM] | 0 | 3 | 6 | 7 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| [11:00 AM-12:00 PM] | 0 | 0 | 6 | 10 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 20 |
| [12:00 PM-01:00 PM] | 0 | 0 | 10 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| [01:00 PM-02:00 PM] | 0 | 1 | 6 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 14 |
| [02:00 PM-03:00 PM] | 0 | 1 | 3 | 11 | 11 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| [03:00 PM-04:00 PM] | 0 | 1 | 0 | 8 | 9 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| [04:00 PM-05:00 PM] | 0 | 0 | 1 | 0 | 34 | 51 | 41 | 2 | 1 | 12 | 17 | 27 | 16 | 0 | 1 | 203 |
| [05:00 PM-06:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [06:00 PM-07:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [07:00 PM-08:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [08:00 PM-09:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [09:00 PM-10:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [10:00 PM-11:00 PM] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0 | 7 | 52 | 60 | 66 | 58 | 42 | 4 | 1 | 12 | 18 | 27 | 17 | 0 | 2 | 366 |
| Daily Totals: | 0 | | 52 | | 66 | | 42 | | 1 | | 18 | | 17 | | 2 | |
| | | 7 | | 60 | | 58 | | 4 | | 12 | | 27 | | 0 | | 366 |
| Report Totals: | 0 | | 54 | | 66 | | 42 | | 1 | | 18 | | 17 | | 2 | |
| | | 7 | | 60 | | 58 | | 4 | | 12 | | 27 | | 0 | | 368 |
| Report Percentages: | 0.00% | | 14.67% | | 17.93% | | 11.41% | | 0.27% | | 4.89% | | 4.62% | | 0.54% | |
| | | 1.90% | | 16.30% | | 15.76% | | 1.09% | | 3.26% | | 7.34% | | 0.00% | | |

# Date/Time/Volume/Average Speed/Temperature Report

| | | |
|---|---|---|
| HI-Star ID: 1297 | Begin: 02/09/2010 11:00 PM | End: 02/10/2010 11:00 PM |
| Street: IMPERIAL LA NEAR THOMAS W | Lane: EB | Hours: 24:00 |
| State: FL | Oper: CP | Period: 60 |
| | Posted: 20 | Raw Count: 394 |
| County: BROWARD | AADT Factor: 1 | AADT Count: 394 |

| NC97 | Count | Avg Speed | Temp | Wet/Dry |
|---|---|---|---|---|
| **02/09/2010** | | | | |
| [11:00 PM-12:00 AM] | 1 | 18 mph | 74 F | Dry |
| **02/10/2010** | | | | |
| [12:00 AM-01:00 AM] | 1 | 18 mph | 72 F | Dry |
| [01:00 AM-02:00 AM] | 2 | 20 mph | 70 F | Dry |
| [02:00 AM-03:00 AM] | 0 | 0 mph | 68 F | Dry |
| [03:00 AM-04:00 AM] | 1 | 23 mph | 66 F | Dry |
| [04:00 AM-05:00 AM] | 1 | 13 mph | 66 F | Dry |
| [05:00 AM-06:00 AM] | 2 | 18 mph | 64 F | Dry |
| [06:00 AM-07:00 AM] | 3 | 18 mph | 64 F | Dry |
| [07:00 AM-08:00 AM] | 17 | 19 mph | 64 F | Dry |
| [08:00 AM-09:00 AM] | 21 | 19 mph | 62 F | Dry |
| [09:00 AM-10:00 AM] | 25 | 16 mph | 70 F | Dry |
| [10:00 AM-11:00 AM] | 27 | 20 mph | 80 F | Dry |
| [11:00 AM-12:00 PM] | 17 | 19 mph | 87 F | Dry |
| [12:00 PM-01:00 PM] | 34 | 16 mph | 93 F | Dry |
| [01:00 PM-02:00 PM] | 24 | 19 mph | 97 F | Dry |
| [02:00 PM-03:00 PM] | 34 | 19 mph | 97 F | Dry |
| [03:00 PM-04:00 PM] | 28 | 18 mph | 93 F | Dry |
| [04:00 PM-05:00 PM] | 156 | 34 mph | 82 F | Dry |
| [05:00 PM-06:00 PM] | 0 | 0 mph | 82 F | Dry |
| [06:00 PM-07:00 PM] | 0 | 0 mph | 76 F | Dry |
| [07:00 PM-08:00 PM] | 0 | 0 mph | 74 F | Dry |
| [08:00 PM-09:00 PM] | 0 | 0 mph | 68 F | Dry |
| [09:00 PM-10:00 PM] | 0 | 0 mph | 66 F | Dry |
| [10:00 PM-11:00 PM] | 0 | 0 mph | 62 F | Dry |

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# Traffic Calming Measures - Choker

**Description:**

- curb extensions at midblock or intersection corners that narrow a street by extending the sidewalk or widening the planting strip
- can leave the cross section with two narrow lanes or with a single lane
- at midblock, sometimes called parallel chokers, angled chokers, twisted chokers, angle points, pinch points, or midblock narrowings
- at intersections, sometimes called neckdowns, bulbouts, knuckles, or corner bulges
- if marked as a crosswalk, they are also called safe crosses

**Applications:**

- local and collector streets
- pedestrian crossings
- main roads through small communities
- work well with speed humps, speed tables, raised intersections, textured crosswalks, curb radius reductions, and raised median islands

**Design/Installation Issues:**

- some applications use an island which allows drainage and bicyclists to continue between the choker and the original curb line
- typically designed to narrow road to 20 feet for two-way traffic; typically avoid the use

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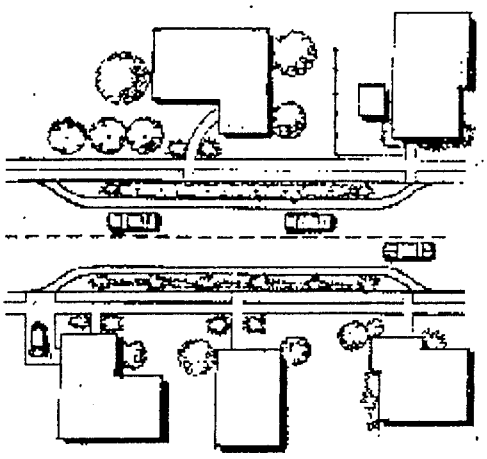

of widths between 13 and 17 feet
- adequate drainage is a key consideration
- provides opportunity for landscaping
- vertical delineators, bollards or object markers are often used to make visible to snowplow operators

**Potential Impacts:**

- can impact parking and driveway access
- reduces pedestrian crossing width and increases visibility of pedestrian
- speeds have typically been reduced on average by 4 percent for two-lane chokers and 14 percent for one lane chokers
- minor decrease in traffic for two-lane and 20 percent reduction for one-lane chokers
- collision data not available
- bicyclists prefer not to have the travelway narrowed into path of motor vehicles

**Emergency Response Issues:**

- preferred by many fire department/emergency response agencies to most other traffic calming measures

**Other/Special Considerations:**

- one-lane chokers rely on regulatory signs and driver courtesy to work

**Typical Cost:**

- approximately $7,000 to $10,000 (1997 dollars)

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**John Olinzock**

**From:** James H. Barton [jbarton@chenandassociates.com] **Sent:** Thu 21-Jan-10 1:10 PM
**To:** John Olinzock
**Cc:** Peter Moore
**Subject:** RE: Barrier Arm Study
**Attachments:**

Just a quick response (after thinking about this)

Survey: $1,000

Design and Permitting: $5,000

Road Construction: $10,000 (no landscape or irrigation)

Sign and Striping: $1,000

These may be a bit high but good for budgeting purposes.

We haven't moved forward to see if the County would allow this yet. Do you want us to move forward on that?

James

**James Barton, P.E.**

Senior Engineer

ESRI Authorized Trainer

**Chen and Associates**

500 Australian Avenue South, Suite 615

West Palm Beach, FL 33401

Phone: 561.746.6900

Mobile: 954.914.8488

Fax: 561.746.8333

Website: www.chenandassociates.com

*CE News Best Places to Work 2008 - "Highest Ranked Civil Engineering Firm in South Florida"*

*South Florida Business Journal 2007 - "Best of Places to Work South Florida"*

---

**From:** John Olinzock [mailto:johno@lauderdalebythesea-fl.gov]
**Sent:** Thursday, January 21, 2010 11:41 AM
**To:** James H. Barton
**Subject:** FW: Barrier Arm Study

Need ASAP.

**John E. Olinzock**

Assistant Town Manager

**Town of Lauderdale By-The-Sea**

**4501 Ocean Drive**

**Lauderdale By-The-Sea, FL 33308-3610**

**954-776-0576**

---

**From:** John Olinzock
**Sent:** Wed 20-Jan-10 3:24 PM
**To:** James H. Barton
**Subject:** RE: Barrier Arm Study

James,

It is back on the next agenda.

To do just the bulb-out or chicane, $10,000.00 plus what other items in your spreadsheet?

No gate.

Send a revised sheet. Call me if you have questions. Cell.

**John E. Olinzock**

Assistant Town Manager

**Town of Lauderdale By-The-Sea**

**4501 Ocean Drive**

**Lauderdale By-The-Sea, FL 33308-3610**

**954-776-0576**

---

**From:** James H. Barton [mailto:jbarton@chenandassociates.com]
**Sent:** Tue 08-Dec-09 2:44 PM
**To:** Esther Colon
**Cc:** John Olinzock
**Subject:** Barrier Arm Study

Esther,

Please note that we need more information to get a better cost estimate. Let me know if this is readily understandable or if you need additional information.

Thanks for the opportunity.

James

**James Barton, P.E.**

Senior Engineer

ESRI Authorized Trainer

**Chen and Associates**

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West Palm Beach, FL 33401

Phone: 561.746.6900

Mobile: 954.914.8488

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***South Florida Business Journal 2007 - "Best of Places to Work South Florida"***

# Town Engineer Report

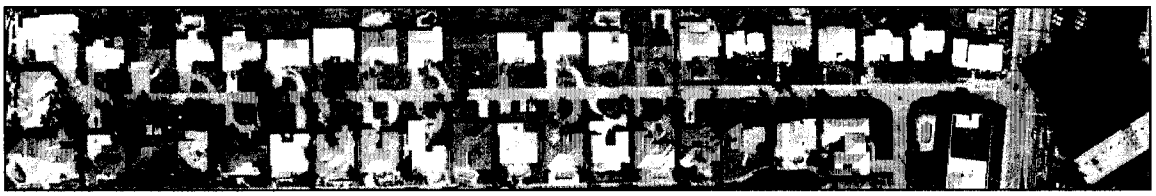
December 8, 2009

Esther Colon
Town Manager
Town of Lauderdale By the Sea

Subject: Traffic Barrier on Imperial Lane

The Town requested Chen and Associates to investigate the possibility of installing a traffic arm barrier on Imperial Lane. It was reported that many vehicles mistakenly go down Imperial Lane thinking it has an outlet, only to find it is a dead end.

Background



Imperial lane is at the south end of the Town. It connects to A1A at a signaled intersection at the east end. The west end is a cul-de-sac. The only exit is a turn south onto Thomas Way. Vehicles trying to get off A1A turn at the light thinking there is an outlet. The vehicles do not see the Dead End sign at the intersection of Thomas Way and continue down Imperial Lane. These vehicles cannot turn around as the street is 21ft in width (50ft Right of Way). They must go to the end of the street, 1500 ft, make a u-turn at the cul-de-sac and typically exit the street at an elevated speed.

A field visit confirmed that the intersection at Thomas Way is much wider than the rest of the road and the Dead End sign can be is easily missed by vehicles not familiar with the area.

Traffic Barrier Arm

Chen and Associates did some research on the possibility of installing a mast arm in the roadway on Imperial Lane. There were a list of issued that would need to be addressed before a proposal could be drafted. These include:

- Would another type of traffic calming method be acceptable
- Would there be a guard gate
- Would there be an arm barrier for entry only or for exit
- Would the residents want solar or electric power
- Would residents buzz in or would the arm barrier open to all vehicles
- How would visitors and emergency vehicles buzz in
- How many vehicles would wait in the queue
- Where would vehicles turn around if they had to leave
- Would there be landscape improvements

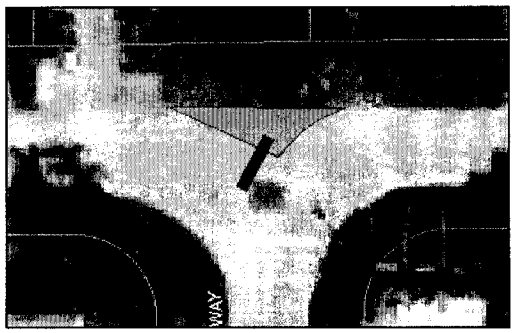
In order to get a basis for looking at costs, some locally available models were investigated. A list of contractors that have installed these before was requested from a local supplier. Some basic assumptions were made:

- Barrier arm installed at the intersection of Thomas Way and Imperial Lane. This would provide vehicles who don't want to enter sufficient room to turn around. If the arm is installed further down the road, the road must be widened to facilitate vehicle turnaround.
- No guard gate
- Entry barrier arm only
- The barrier arm will be 15' wide counterbalanced arm mounted on a pedestal base.
- It would be powered by electric supply
- It would require a concrete foundation,
- It would require installation of loop sensors to automatically open for any vehicle entering the street.

Site Plan Options

Option 1 has a barrier arm installed with the current road configuration. Due to the width of the road, the only location for the barrier arm is next to the driveway of resident at 215 Imperial. The arm in this location may not be effective due to the road width.

Option 2 has a modified road layout to partially close the intersection. This will naturally send vehicles around the corner that should not be going down Imperial, and will narrow the passage for the mast arm. This will serve as a double barrier for vehicles mistakenly going down the street.



For purposes of budgeting, a cost estimate has been made for design and installation. These values are based on the above assumptions and do not constitute a final quote. There are unknown variables. This cost estimate is provided as a guideline only.

| | Option 1 | Option 2 |
|---|---|---|
| Structural Design | $1,500 | $1,500 |
| Electrical Design | $2,500 | $2,500 |
| Survey | $1,500 | $1,500 |
| Plans and Permits | $7,000 | $7,000 |
| Construction | $15,000 | $25,000 |
| Construction Certifications | $2,500 | $2,500 |
| Total Cost Estimate | $30,000 | $40,000 |

This cost estimate is for discussion purposes only. There would have to be discussions with residents to finalize design elements before a proposal could be finalized.

Please review this information and call me if you have any questions.

Respectfully submitted

CHEN AND ASSOCIATES
James Barton P.E.

# Traffic Calming Measures

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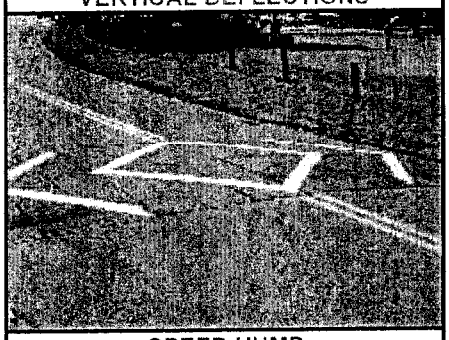
# Traffic Calming Measures

A series of fact sheets providing an overview of several traffic calming measures are available from this Web page. A photograph of a typical application as well as a plan-view sketch adapted from the Boulder, Colorado *Neighborhood Traffic Mitigation Program Toolkit* are included within each fact sheet.

Four types of measures are summarized:

- **Vertical deflections**, **horizontal shifts**, and **roadway narrowings** are intended to reduce speed and enhance the street environment for non-motorists.
- **Closures** (diagonal diverters, half closures, full closures, and median barriers) are intended to reduce cut-through traffic by obstructing traffic movements in one or more directions.

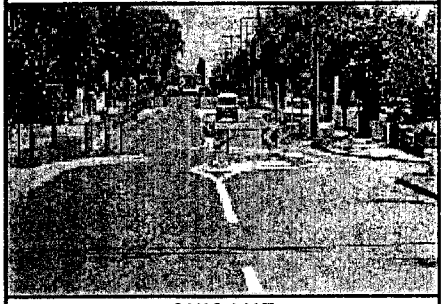
VERTICAL DEFLECTIONS



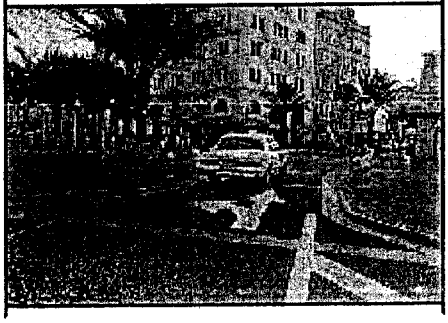
HORIZONTAL SHIFTS

SPEED HUMP

NEIGHBORHOOD TRAFFIC CIRCLE



SPEED TABLE



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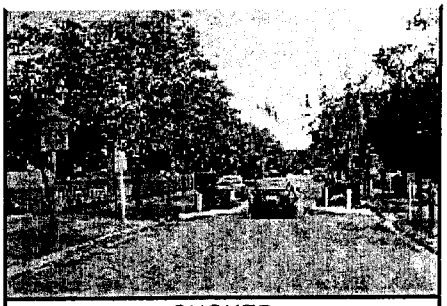

CHOKER

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The information provided on these fact sheets has been obtained from the research and experience of transportation engineering and planning professionals. The information is intended for informational purposes only and does not include ITE or FHWA recommendations on the best course of action.

*Photos of traffic calming devices were provided by Reid Ewing.*

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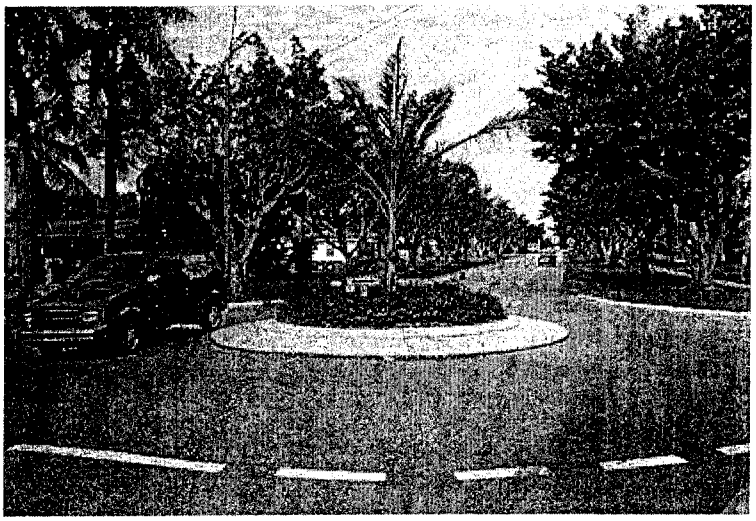
# Traffic Calming Measures - Neighborhood Traffic Circle

**Description:**

- raised islands, placed in intersections, around which traffic circulates
- motorists yield to motorists already in the intersection
- require drivers to slow to a speed that allows them to comfortably maneuver around them
- sometimes called intersection islands
- different from roundabouts

**Applications:**

- intersections of local or collector streets
- one lane each direction entering intersection
- not typically used at intersections with high volume of large trucks and buses turning left



**Design/Installation Issues:**

- typically circular in shape, though not always
- usually landscaped in their center islands, though not always
- often controlled by YIELD signs on all approaches, but many different signage approaches



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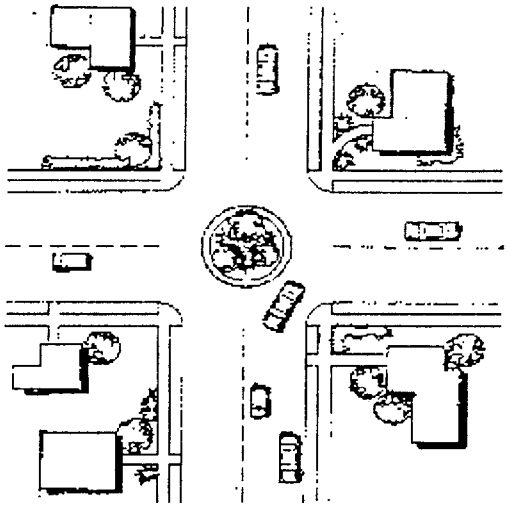

have been used
- key design features are the offset distance (distance between projection of street curb and center island), lane width for circling the circle, the circle diameter, and height of mountable outer ring for large vehicles such as school buses and trash trucks

**Potential Impacts:**

- no effect on access
- reduction in midblock speed of about 10 percent; area of influence tends to be a couple hundred feet upstream and downstream of intersection
- only minimal diversion of traffic
- intersection collisions have been reduced on average by 70 percent and overall collisions by 28 percent
- can result in bicycle/auto conflicts at intersections because of narrowed travel lane

**Emergency Response Issues:**

- emergency vehicles typically slow to approximately 13 mph; approximate delay of between 5 and 8 seconds per circle for fire trucks
- fire trucks can maneuver around traffic circles at slow speeds provided vehicles are not parked near the circle

**Other/Special Considerations:**

- large vehicles may need to turn left in front of the circle (which could be unsafe at higher volumes); legislation may be required to legally permit this movement
- quality of landscaping and its maintenance are key issues
- landscaping needs to be designed to allow adequate sight distance
- care must be taken to avoid routing vehicles through unmarked crosswalks on side-street approach

**Typical Cost:**

- approximately $3,500 to $15,000 (1997 dollars)

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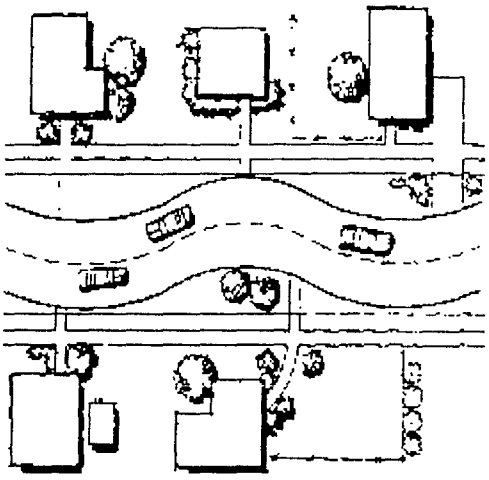
# Traffic Calming Measures - Chicane

**Description:**

- a series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves
- also called deviations, serpentines, reversing curves, twists, and staggerings

**Applications:**

- appropriate for midblock locations only
- most effective with equivalent volumes on both approaches
- typically, is a series of at least three curb extensions
- can use on-street parking to create chicane



**Design/Installation Issues:**

- unless well-designed, chicanes may still permit speeding by drivers cutting straight paths across the center line
- European manuals recommend shifts in alignment of at least one lane width, deflection angles of at least 45 degrees, and center islands to prevent drivers from taking a straight "racing line" through the feature

**Potential Impacts:**



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- no effect on access
- limited data available on their effect on speed, volume, and collisions
- street sweeping may need to be done manually
- can impact parking and driveway access
- provides opportunity for landscaping

**Emergency Response Issues:**

- limited data available on their effect on delay to emergency response
- emergency response typically prefer two-lane chicanes to speed humps

**Typical Cost:**

- reported costs range between $5,000 and $15,000 (1997 dollars)

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# Traffic Calming Measures - Choker

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- curb extensions at midblock or intersection corners that narrow a street by extending the sidewalk or widening the planting strip
- can leave the cross section with two narrow lanes or with a single lane
- at midblock, sometimes called parallel chokers, angled chokers, twisted chokers, angle points, pinch points, or midblock narrowings
- at intersections, sometimes called neckdowns, bulbouts, knuckles, or corner bulges
- if marked as a crosswalk, they are also called safe crosses

**Applications:**

- local and collector streets
- pedestrian crossings
- main roads through small communities
- work well with speed humps, speed tables, raised intersections, textured crosswalks, curb radius reductions, and raised median islands

**Design/Installation Issues:**

- some applications use an island which allows drainage and bicyclists to continue between the choker and the original curb line
- typically designed to narrow road to 20 feet for two-way traffic; typically avoid the use

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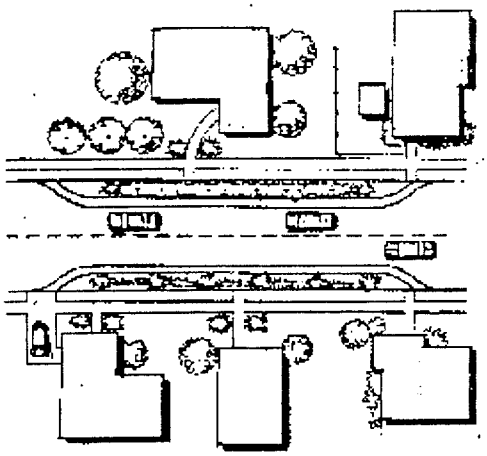

of widths between 13 and 17 feet
- adequate drainage is a key consideration
- provides opportunity for landscaping
- vertical delineators, bollards or object markers are often used to make visible to snowplow operators

**Potential Impacts:**

- can impact parking and driveway access
- reduces pedestrian crossing width and increases visibility of pedestrian
- speeds have typically been reduced on average by 4 percent for two-lane chokers and 14 percent for one lane chokers
- minor decrease in traffic for two-lane and 20 percent reduction for one-lane chokers
- collision data not available
- bicyclists prefer not to have the travelway narrowed into path of motor vehicles

**Emergency Response Issues:**

- preferred by many fire department/emergency response agencies to most other traffic calming measures

**Other/Special Considerations:**

- one-lane chokers rely on regulatory signs and driver courtesy to work

**Typical Cost:**

- approximately $7,000 to $10,000 (1997 dollars)

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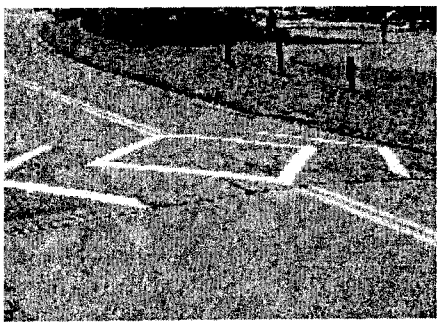
# Traffic Calming Measures - Speed Hump

**Description:**

- rounded raised areas of pavement typically 12 to 14 feet in length
- often placed in a series (typically spaced 300 to 600 feet apart)
- sometimes called road humps or undulations

**Applications:**

- residential streets
- not typically used on major roads, bus routes, or primary emergency response routes
- midblock placement, not at an intersection
- not on grades greater than 8 percent
- work well with curb extensions



**Design/Installation Issues:**

- typically 12 to 14 feet in length; other lengths (10, 22, and 30 feet) reported in practice in U.S.
- speed hump shapes include parabolic, circular, and sinusoidal
- hump heights range between 3 and 4 inches with trend toward 3 - 3 ½ inches maximum
- difficult to construct precisely; may need to specify a construction tolerance (e.g. ± 1/8 inch) on height
- often have signage (advance warning sign before first hump in series and warning

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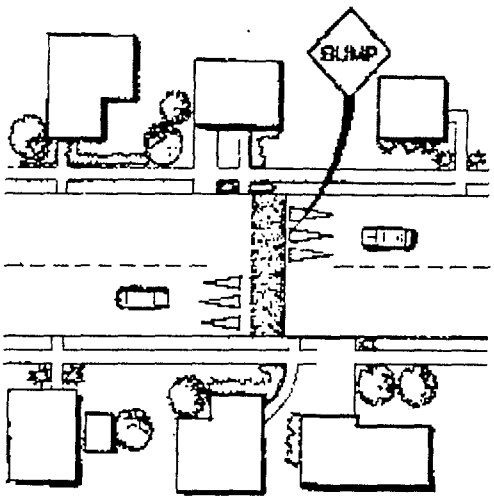


sign or object marker at hump)
- typically have pavement marking (zigzag, shark's tooth, chevron, zebra)
- taper edge near curb to allow gap for drainage
- some have speed advisories
- bicyclists prefer that it not cover or cross a bike lane

**Potential Impacts:**

- no effect on non-emergency access
- speeds determined by height and spacing; speeds between humps have been observed to be reduced between 20 and 25 percent on average
- based on a limited sample of sites, typical crossing speeds (85th percentile) of 19 mph have been measured for 3½ inch high, 12 foot humps and of 21 mph for 3 inch high, 14 foot humps; speeds have been observed to rise to 27 mph within 200 feet downstream
- speeds typically increase approximately 0.5 mph midway between humps for each 100 feet of separation
- studies indicate that traffic volumes have been reduced on average by 18 percent depending on alternative routes available
- studies indicate that collisions have been reduced on average by 13 percent on treated streets (not adjusted for traffic diversion)
- most communities limit height to 3-3½ inches, partly because of harsh ride over 4-inch high humps
- possible increase in traffic noise from braking and acceleration of vehicles, particularly buses and trucks

**Emergency Response Issues:**

- Concern over jarring of emergency rescue vehicles
- Approximate delay of between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulance with patient

**Typical Cost:**

- Approximately $2,000 (1997 dollars)

For additional detail, refer to ITE's Recommended Practice entitled *Guidelines for the Design and Application of Speed Humps.* Visit the ITE Bookstore for more information about this publication.

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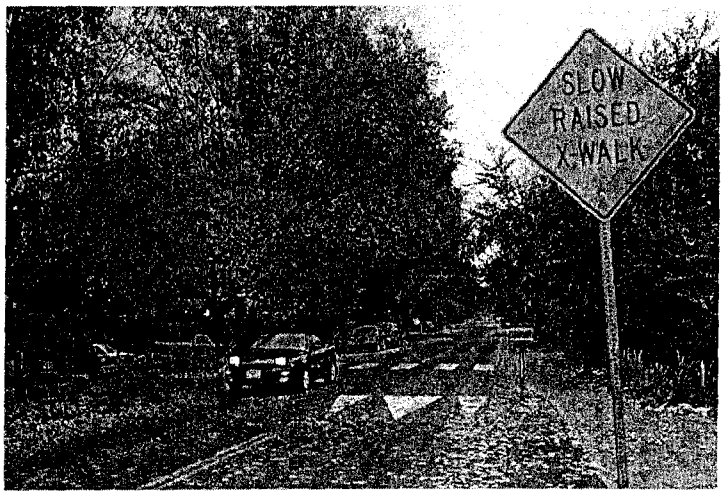
# Traffic Calming Measures - Speed Table

**Description:**

- long raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section
- **sometimes called flat top speed humps, trapezoidal humps, speed platforms, raised crosswalks, or raised crossings**

**Applications:**

- **local and collector streets**
- **main roads through small communities**
- **typically long enough for the entire wheelbase of a passenger car to rest on top**
- **work well in combination with textured crosswalks, curb extensions, and curb radius reductions**
- **can include a crosswalk**




**Design/Installation Issues:**

- typically 22 feet in the direction of travel with 6 foot ramps on each end and a 10 foot flat section in the middle; other lengths (32 and 48 feet) reported in U.S. practice
- most common height is between 3 and 4 inches (and reported as high as 6 inches)

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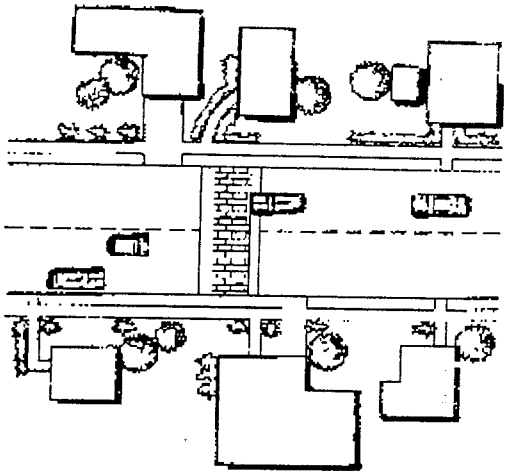

- ramps are typically 6 feet long (reported up to 10 feet long) and are either parabolic or linear
- careful design is needed for drainage

**Potential Impacts:**

- **no effect on access**
- **speeds are reduced, but usually to a higher crossing speed than at speed humps (typically between 25 and 27 miles per hour)**
- **traffic volumes have been reduced on average by 12 percent depending on alternative routes available**
- **collisions have been reduced on average by 45 percent on treated streets (not adjusted for traffic diversion)**
- **reported to increase pedestrian visibility and likelihood that driver yields to pedestrian**

**Emergency Response Issues:**

- **typically preferred by fire departments over 12 to 14-foot speed humps**
- **generally less than 3 seconds of delay per hump for fire trucks**

**Typical Cost:**

- **approximately $2,500 (in 1997 dollars) for asphalt tables; higher for brickwork, stamped asphalt, concrete ramps and other enhancements sometimes used at pedestrian crossings**

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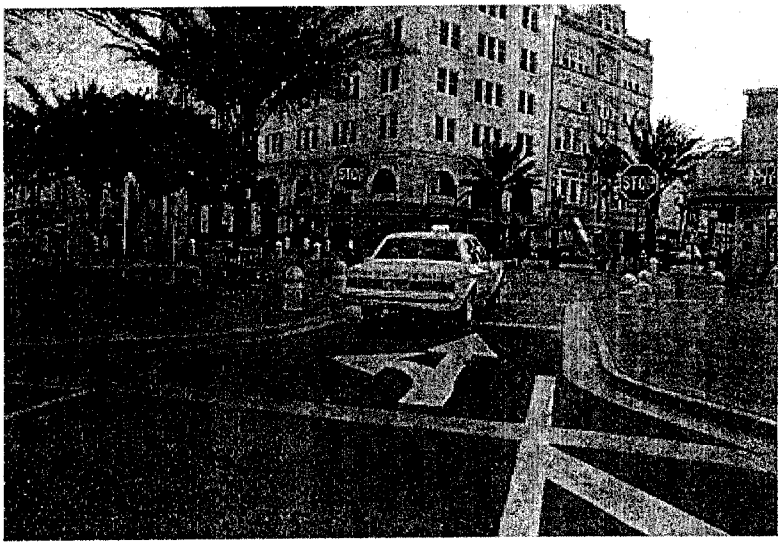
# Traffic Calming Measures - Raised Intersection

**Description:**

- flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps
- sometimes called raised junctions, intersection humps, or plateaus

**Applications:**

- work well with curb extensions and textured crosswalks
- often part of an area wide traffic calming scheme involving both intersecting streets
- in densely developed urban areas where loss of parking would be unacceptable



**Design/Installation Issues:**

- typically rise to sidewalk level
- may require bollards to define edge of roadway
- Canadian installations typically have gentle 1:40 slopes on ramps
- storm drainage modifications are necessary



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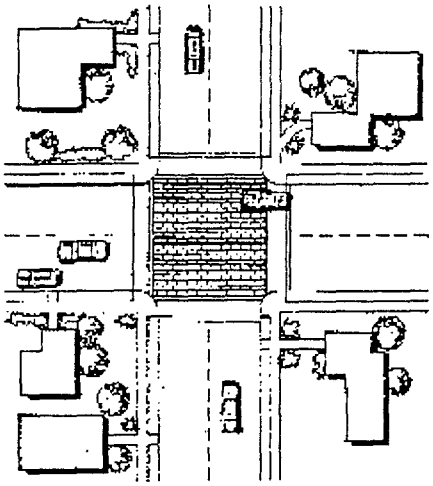

**Potential Impacts:**

- reduction in through movement speeds at intersection
- reduction in midblock speeds typically less than 10 percent
- no effect on access
- make entire intersections more pedestrian-friendly
- no data available on volume or safety impacts

**Emergency Response Issues:**

- slows emergency vehicles to approximately 15 miles per hour

**Typical Cost:**

- reported costs range between $15,000 and $50,000 (1997 dollars)

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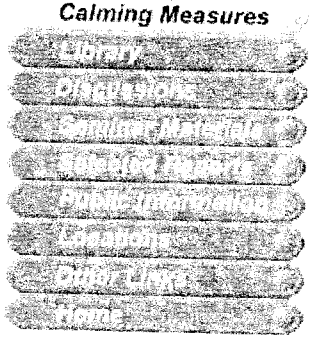
# Traffic Calming Measures - Center Island Narrowing

**Description:**

- raised islands located along the centerline of a street that narrow the travel lanes at that location
- sometimes called midblock medians, median slow points, or median chokers

**Aplications:**

- are often nicely landscaped to provide visual amenity and neighborhood identity
- can help pedestrianize streets by providing a mid-point refuge for pedestrians crossings
- sometimes used on wide streets to narrow travel lanes
- work well when combined with crosswalks

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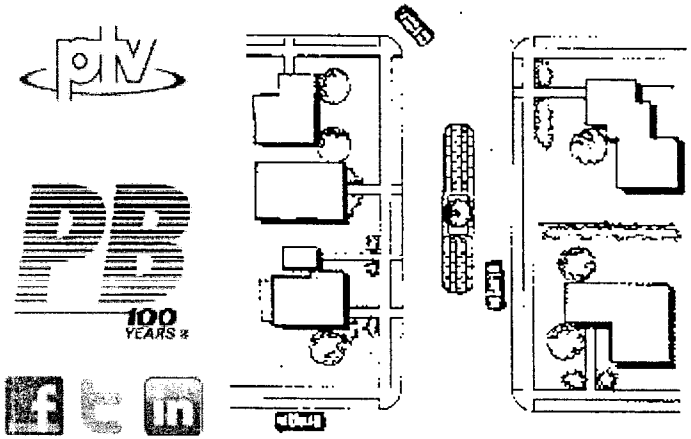

**Potential Impacts:**

- may reduce parking and driveway access
- reduces pedestrian crossing width
- may visually enhance the street through landscaping but may also limit visibility of pedestrian crossings
- bicyclists prefer not to have the travel way narrowed into path of motor vehicles
- collision, speed and volume data are not available

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SPEED HUMP | SPEED TABLE | RAISED INTERSECTION | CLOSURE | NEIGHBORHOOD TRAFFIC CIRCLE | CHICANE | CHOKER | CENTER ISLAND NARROWING

**Emergency Response Issues:**

- preferred by fire department/emergency response agencies to most other traffic calming measures

**Typical Cost:**

- reported costs range between $5,000 and $15,000 (1997 dollars)

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