FULL SIZE
3.1 Mailbox Turnout in Curb and Gutter Section
4.1 PC Concrete Islands and Medians Accessible to the Disabled
5.1 Standard Outlet for Curb and Gutter
6.1 Precast Reinforced Concrete Flat Slab Top Centered and Offset Manhole - 36" Opening
10.1 Box Culvert End Sections
11.1 Concrete End Sections for Parallel Pipe Culverts 15 " thru 84 " Dia.
12.1 Concrete End Sections for Parallel Pipe Arch Culverts 15" thru 84" Dia.
13.1 Traversable Pipe Grate for Box Culvert End Section
14.1 Traversable Pipe Grate for Parallel Drainage Structure
20.1 Hot-Mix Asphalt Approaches and Mailbox Returns
25.1 Entrance Approaches - Urban Area
26.1 ADA Curb Ramp Pavement Removal And Replacement
32.1 Sewer and Water Main Crossings
33.1 Concrete Collars for Pipe or Box Culvert Extensions
34.1 Work Zone Sign Details
35.1 Urban Lane Inside Closure, Multilane, 2W, with Mountable Median
36.1 Temporary Road Closure Expressway
37.1 Traffic Control for Three Lane Section
38.1 Traffic Control for Transition Areas
39.1 Traffic Control Typical Weave
40.1 Traffic Control for Road Closure
41.1 Typical Pavement Markings
53.1 Remove and Re-erect Steel Plate Beam Guardrail
54.1 Traffic Barrier Terminal, Type 2 (27" height)
55.1 Guardrail Reflectors, Type C (Special)
68.1 Slotted Drain Pipe (Variable Height)
71.1 Detail of Flood Gate
72.1 40' Single Lane Median Crossover ( 45 mph Work Zone Speed Limit)
$73.1 \quad 50$ ' Single Lane Median Crossover ( 45 mph Work Zone Speed Limit)
74.1 64' Single Lane Median Crossover ( 45 mph Work Zone Speed Limit)
75.1 40' Single Lane Median Crossover ( 55 mph Work Zone Speed Limit)
$76.1 \quad 50$ ' Single Lane Median Crossover ( 55 mph Work Zone Speed Limit)
77.1 64' Single Lane Median Crossover ( 55 mph Work Zone Speed Limit)
78.1 88' Single Lane Median Crossover ( 55 mph Work Zone Speed Limit)
79.1 40' Two Lane Median Crossover (45 mph Work Zone Speed Limit)
80.1 50' Two Lane Median Crossover ( 45 mph Work Zone Speed Limit)
81.1 64' Two Lane Median Crossover ( 45 mph Work Zone Speed Limit)
82.1 40’ Two Lane Median Crossover ( 55 mph Work Zone Speed Limit)
83.1 50' Two Lane Median Crossover ( 55 mph Work Zone Speed Limit)
84.1 64' Two Lane Median Crossover ( 55 mph Work Zone Speed Limit)
85.1 88' Two Lane Median Crossover ( 55 mph Work Zone Speed Limit)
86.1 Beveled Pipe \& Guard Detail for Median Crossover
90.1 Traffic Barrier Terminal, Type 6B (Special)
92.1 Details of Planting and Bracing Trees
3.1 Use when a mailbox turnout is needed in a curb \& gutter section and there isn't a parking lane or a mail delivery lane.
4.1
5.1 Use this when you need an outlet for curb and gutter, other than type B-6.24
10.1
11.1
12.1
13.1
14.1
20.1

Use this when there are cross walks that will go through an island or median. Specify which option the contractor is required to use when building the Concrete Median (Special).

This is to be used whenever we have a precast box culvert.
This is to be used for pipe culverts, Class D under all sideroads.
This is to be used for EQRS pipe culverts, Class D under all sideroads.
Use this whenever a cross drainage box culvert end section needs traversable pipe grates. Also include Standard 542311.

Use this whenever you use District Standards 10.1, 11.1 \& 12.1 and the culvert is within the main line clear zone.

Include for rural entrances and sideroads on 3R projects, reconstruction projects, or for new entrances. Do not include on 3P or Smart resurfacing projects.
25.1
26.1
32.1
33.1

Include for urban entrances with curb \& gutter on 3R projects, reconstruction projects, or for new entrances. Do not include on 3P or Smart resurfacing projects.

Use this on all projects with ADA curb ramps requiring HMA replacement in front of curb \& gutter.

Include in urban projects with proposed storm sewers or water mains.
Use this for pipe or box culvert extensions. Fill in the information in the table for the Bill of Materials.
53.1 Use this to remove and re-erect an old type steel plate beam guardrail which has 6 " block outs and a $271 / 2^{\prime \prime}$ rail height.
Work Zone Sign Details. Include this when you have any of the following:

- Include in projects where the clear width through a work zone with temporary concrete barrier wall will be 16.0 feet or less.
- Include when using Traffic Control and Protection Standard 701316 or 701321.
- Use this in conjunction with the special provision Traffic Control for Narrow Lanes which is under the Traffic Control Plan. Use this on one-lane stage construction jobs when the lane is less than $13^{\prime}-6$ " measured from the toe of the barrier wall to the guardrail or bridge wall.
- Use this when using District Standard 37.1 and 38.1.
- Use this on low volume entrances that are between the traffic signals on Highway Standard 701316 or 701321.
- Include this for any milling of the mainline pavement.
54.1
55.1
68.1

Use this when it is necessary to close the inside lane on an urban project. Also include Highway Standard 701606 and the pay item for 701606.

Use this district standard for any short term closure of an expressway at a diamond interchange.

Use this district standard for work that will require a lane closure in a three lane section such as a truck climbing lane.

Use this district standard when there is a transition from a four lane section that transitions to a two lane section.

Include on 4 lane highways where the contractor may change a portion of the work to the opposite lane.

Include for a mainline road closure.
Include in projects with pavement marking or raised reflective pavement markers.
(an

Use this when installing a Traffic Barrier Terminal, Type 2 on the old type of steel plate beam guardrail with a $271 / 2^{\prime \prime}$ rail height.
This will be used on all projects with guardrail, permanet barrier wall, and bridge structures. Use pay item (X7820007 Guardrail Reflectors. Type C (Special)). (Do not use the pay items Guardrail Reflectors Type A \& B or Barrier Wall Reflectors Type B \& C).

Use if a property owner has a fenced field with livestock and a stream or river. The flood gate will be placed near the right-of-way to prevent livestock from leaving the field through the waterway. During high water, the flood gate will open to let water and debris through.
72.1, 73.1, 74.1, Use on single lane median crossovers of the median width specified and for
75.1, 76.1, 77.1, 78.1 the work zone speed limit. Include District Standard 86.1. If there are overlays on the existing PCC pavement, installing tie bars into the existing PCC pavement will not work. Talk to the Construction Field Engineer or your Project Engineer for more information.
79.1, 80.1, 81.1, Use on two lane median crossovers of the median width specified and for the 82.1, 83.1, 84.1, 85.1
90.1

Use this on 4-lane highways that go under dual structures and the piers required shielding. The outside of the piers are shielded with impact attenuators. The gap between the piers is shielded using Traffic Barrier Terminal Type 6B (Special). The Traffic Barrier Terminal Type 6B (Special) is required on both sides of the piers.
Design Note: The length of the double thrie beam between the piers must be added on the elevation on the District Standard.
92.1 Include when planting new ball \& burlapped trees.

## MAILBOX TURNOUT IN CURB AND GUTTER SECTION



ALL DIMENSIONS ARE IN INCHES UNLESS
OTHERWISE NOTED.

|  | UsER NMEE = Dootrositaz | DESIGNED <br> DRAWN | REVISED REVISED |  | STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION | REGION 2 / DISTRICT 2 STANDARD |  |  |  |  |  | sEction |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | CHECKED | REvsED | 10-17-11 |  |  |  |  |  |  |  |  | CONTRACT |  |
| \% | Plotore $=31202024$ | date | REVISED |  |  | SCALE: | SHEET | ¢ | Sheits sta. |  |  | Iumos | Rouer |  |



## STANDARD OUTLET FOR CURB \& GUTTER



## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



FLAT SLAB TOP JOINT CONFIGURATIONS FOR D = 4'-0" AND D = 6'-0'
(Shown at access hole)


SECTION THRU FLAT SLAB TOP FOR D $=4^{\prime}-0^{\prime \prime}$ AND D $=6^{\prime}-0^{\prime \prime}$


SECTION THRU FLAT SLAB TOP FOR D = 8'-0" AND D = 10'-0"


PLAN - FLAT SLAB TOP FOR D = 4'-0"
(Showing layout of reinforcement bars and c bars)

\#6 bars bottom. Bundle
$\begin{gathered}\text { first bar with closest WWR bar } \\ \text { to the opening and place }\end{gathered}$
to the opening and place
second bar $\pm 3$ away
PLAN - FLAT SLAB TOP FOR D = 4'-0
(Showing layout of welded wire reinforcement and c bars) of the Contrac
tapered tops.
Lifting holes shall be located in the sections as per the manufacturer's recommendations.

## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



PLAN - FLAT SLAB TOP FOR D = 8'-0'
(Showing layout of reinforcement bars and c bars)


PLAN - FLAT SLAB TOP FOR D = 8'-0'
(Showing layout of welded wire reinforcement and c bars)

## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING



PLAN - FLAT SLAB TOP FOR D $=10^{\prime}-0^{\prime \prime}$
(Showing layout of reinforcement bars and c bars)

FLAT SLAB TOP REINFORCEMENT FOR D $=4$ '-0


FLAT SLAB TOP REINFORCEMENT FOR D =6'-0

| Location | WWR (each direction) |  | Rebar |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | A $_{s}$ (min.) | Spacing (max.) | $A_{S}$ (min.) | Spacing (max.) | Bar Size |
| Bottom <br> Mat | $* 0.88$ sq. in.fft. | $6^{\prime \prime}$ | See plan view for rebar orientation and <br> spacing and this table for bar size | \#6" |  |

\#6 bars bottom. Bundle bar with closest WWR ba
to the the opening and place
second bar +3 " away second bar $\pm 3$ " away

# PLAN - FLAT SLAB TOP FOR D = 10'-0 <br> (Showing layout of welded wire reinforcement and c bars) 

FLAT SLAB TOP REINFORCEMENT FOR D = $8^{\prime}-0^{0}$


LAT SLAB TOP REINFORCEMENT FOR D = 10'-0"

| Location | WWR (each direction) |  | Rebar (each direction except as not |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathrm{A}_{s}$ (min.) | Spacing (max.) | $\mathrm{A}_{s}$ (min.) | Spacing (max.) | Bar Size |
| $\begin{aligned} & \hline \hline \text { Top } \\ & \text { Mat } \end{aligned}$ | 0.11 sq. in./ft. | 18 " | 0.11 sq. in./ft. | $18{ }^{\prime \prime}$ | \#3 or \#4 |
| Bottom | * 0.88 sq. in./ft. | $6 "$ | See plan view for rebar orientation and spacing and this table for bar size |  | \#6 |



## PRECAST REINFORCED CONCRETE FLAT SLAB TOP CENTERED AND OFFSET MANHOLE - 36" OPENING




SECTION A-A





## CONCRETE END SECTIONS FOR

## PARALLEL PIPE CULVERTS 15" THRU 84" DIA.

QUANTITIES

| Pipe I.D. | Tables IB, IC, IIIA, AND IIIB |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Concrete yd ${ }^{3}$ |  |  | Reinforcement without Lap lbs. |  |  | Reinforcement with Lap lbs. |  |  |
|  | Slope of End Section |  |  | Slope of End Section |  |  | Slope of End Section |  |  |
|  | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 |
| $15 "$ | 1.4 | 1.9 | 2.8 | 250 | 330 | 510 | 270 | 350 | 540 |
| 18" | 1.6 | 2.2 | 3.4 | 290 | 400 | 600 | 310 | 420 | 640 |
| $21^{\prime \prime}$ | 2.0 | 2.7 | 4.2 | 330 | 450 | 690 | 360 | 480 | 740 |
| $24 "$ | 2.3 | 3.2 | 5.0 | 370 | 510 | 790 | 400 | 550 | 850 |
| 301 | 3.1 | 4.3 | 6.7 | 490 | 680 | 1060 | 520 | 720 | 1130 |
| 36" | 3.9 | 5.5 | 8.7 | 580 | 810 | 1270 | 620 | 870 | 1360 |
| 42 " | 4.9 | 6.9 | 10.9 | 720 | 1020 | 1610 | 770 | 1080 | 1710 |
| $48{ }^{\prime \prime}$ | 6.0 | 8.6 | 13.7 | 940 | 1320 | 2090 | 1010 | 1420 | 2240 |
| $54 "$ | 6.9 | 9.8 | 15.7 | 1090 | 1540 | 2440 | 1160 | 1650 | 2610 |
| 60 | 8.1 | 11.6 | 18.6 | 1410 | 2000 | 3190 | 1530 | 2180 | 3480 |
| 66 " | 9.5 | 13.6 | 21.8 | 1650 | 2360 | 3780 | 1780 | 2560 | 4100 |
| 72 | 10.9 | 15.7 | 25.2 | 1840 | 2630 | 4220 | 1990 | 2850 | 4580 |
| $78{ }^{\prime \prime}$ | 12.4 | 17.9 | 28.9 | 2110 | 3040 | 4900 | 2280 | 3280 | 5290 |
| $84 "$ | 14.1 | 20.3 | 32.8 | 2710 | 3910 | 6320 | 2970 | 4290 | 6950 |
| The above quantities are estimates and provided for information only. Actual quantities may vary depending upon the final layout of reinforcement and number of segments determined by the Contractor. |  |  |  |  |  |  |  |  |  |



PARALLEL PIPE ARCH CULVERT END SECTION DIMENSIONS
REINFORCEMENT SCHEDULE


SECTION D-D

## CONCRETE END SECTIONS FOR

## PARALLEL PIPE ARCH CULVERTS 15" THRU 84" DIA.



| PIPE ARCHES |  |  |
| :---: | :---: | :---: |
| Equivalent Round Size | $\mathrm{A}_{\text {s1m }}$ |  |
|  | $\begin{array}{\|l\|l\|} \hline \text { Bar } \\ \text { Size } \end{array}$ | $\begin{gathered} \text { Bar } \\ \text { Spacing } \end{gathered}$ |
| $15 "$ | \#4 | 12" |
| $18{ }^{\prime \prime}$ | \#4 | $12^{\prime \prime}$ |
| $21^{\prime \prime}$ | \#4 | 12" |
| $24 "$ | \#4 | $12{ }^{\prime \prime}$ |
| 301 | \#4 | $12^{\prime \prime}$ |
| $36 "$ | \#4 | $12^{\prime \prime}$ |
| $42^{\prime \prime}$ | \#4 | $12^{\prime \prime}$ |
| $48^{\prime \prime}$ | \#4 | $12^{\prime \prime}$ |
| $54 "$ | \#4 | $8{ }^{\prime \prime}$ |
| 60 | \#4 | $8{ }^{\prime \prime}$ |
| $66^{\prime \prime}$ | \#4 | $8{ }^{\prime \prime}$ |
| 72 | \#5 | $8{ }^{\prime \prime}$ |
| $78{ }^{\prime \prime}$ | \#5 | $8{ }^{\prime \prime}$ |
| $84 "$ | \#5 | $8^{\prime \prime}$ |

5.00.94

## CONCRETE END SECTIONS FOR <br> PARALLEL PIPE ARCH CULVERTS 15" THRU 84" DIA.

QUANTITIES

| Equivalent Round Size | Table IIA, Corrugation: 21 " $x^{3 / 2}$ " |  |  |  |  |  |  |  |  | Table IIA, Corrugation: $3^{\prime \prime} \times 1$ 1 |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Concrete yd ${ }^{3}$ |  |  | Reinforcement without Lap lbs. |  |  | Reinforcement with Lap lbs. |  |  | Concrete yd ${ }^{3}$ |  |  | Reinforcement without Lap Ibs. |  |  | Reinforcement with Lap lbs. |  |  |
|  | Slope of End Section |  |  | Slope of End Section |  |  | Slope of End Section |  |  | Slope of End Section |  |  | Slope of End Section |  |  | Slope of End Section |  |  |
|  | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 | 1:4 | 1:6 | 1:10 |
| 15" | 1.3 | 1.8 | 2.7 | 240 | 320 | 480 | 250 | 330 | 500 | - | - | - | - | - | - | - | - | - |
| $18{ }^{\prime \prime}$ | 1.5 | 2.1 | 3.2 | 270 | 360 | 540 | 290 | 370 | 570 | - | - | - | - | - | - | - | - | - |
| $21^{1}$ | 1.8 | 2.5 | 3.8 | 310 | 420 | 630 | 330 | 450 | 670 | - | - | - | - | - | - | - | - | - |
| $24 "$ | 2.1 | 2.8 | 4.4 | 360 | 480 | 730 | 380 | 510 | 780 | - | - | - | - | - | - | - | - | - |
| 30 | 2.7 | 3.7 | 5.7 | 420 | 570 | 860 | 440 | 610 | 920 | - | - | - | - | - | - | - | - | - |
| $36{ }^{\prime \prime}$ | 3.4 | 4.6 | 7.2 | 520 | 700 | 1070 | 550 | 740 | 1140 | 3.6 | 5.0 | 7.8 | 560 | 770 | 1200 | 600 | 820 | 1270 |
| $42^{\prime \prime}$ | 4.1 | 5.7 | 8.9 | 630 | 860 | 1340 | 660 | 910 | 1420 | 4.4 | 6.1 | 9.6 | 640 | 890 | 1380 | 680 | 940 | 1470 |
| $48^{\prime \prime}$ | 5.0 | 7.0 | 11.0 | 740 | 1010 | 1560 | 780 | 1070 | 1650 | 5.5 | 7.7 | 12.2 | 800 | 1120 | 1750 | 840 | 1180 | 1860 |
| $54 "$ | 5.9 | 8.4 | 13.2 | 940 | 1320 | 2060 | 1000 | 1400 | 2190 | 6.4 | 9.1 | 14.4 | 980 | 1380 | 2170 | 1050 | 1470 | 2310 |
| 60" | 6.9 | 9.7 | 15.4 | 1050 | 1470 | 2300 | 1110 | 1560 | 2440 | 7.4 | 10.6 | 16.8 | 1120 | 1580 | 2500 | 1190 | 1680 | 2670 |
| 66 " | 8.0 | 11.3 | 17.9 | 1190 | 1680 | 2630 | 1260 | 1780 | 2800 | 8.7 | 12.4 | 19.7 | 1320 | 1870 | 2960 | 1390 | 1980 | 3140 |
| 72 | 9.1 | 12.9 | 20.6 | 1540 | 2190 | 3490 | 1660 | 2350 | 3770 | 9.9 | 14.1 | 22.4 | 1660 | 2360 | 3760 | 1790 | 2550 | 4060 |
| $78{ }^{\prime \prime}$ | - | - | - | - | - | - | - | - | - | 11.1 | 15.9 | 25.5 | 1880 | 2700 | 4320 | 2010 | 2900 | 4640 |
| $84 "$ | - |  | - | - | - | - | - | - | - | 12.4 | 17.8 | 28.5 | 2050 | 2940 | 4690 | 2200 | 3150 | 5040 |



## TRAVERSABLE PIPE GRATE FOR BOX CULVERT END SECTIONS

PIPE-GRATE SCHEDULE FOR BOX CULVERT END SECTIONS


2-17-2017

## TRAVERSABLE PIPE GRATE FOR PARALLEL DRAINAGE STRUCTURE

 drainage structures.

The Contractor may install the thru bolts using drilling and grouting in lie
of providing a formed hole using steel pipe. Installation shall be in of providing a formed hole using steel pipe. Installation shall be in accordance with Article 509.06 using a method that results in the annulus
surrounding the bolt being completely filled with adhesive. The method of surrounding the bolt being completely filled with achesive. The method of
drilling shall not result in spalled concrete at the exit face. Epoxy grouted thru bolts shall be snug tightened followed by an additional $1 / 3$ turn on the
interior nut at final installation. Cost included with Traversable Pipe Grate.

LONGITUDINAL SECTION


PLAN VIEW


VIEW B-B

## TRAVERSABLE PIPE GRATE FOR PARALLEL DRAINAGE STRUCTURE

PIPE GRATE SCHEDULE FOR PARALLEL BOX CULVERTS

| （＜2 FT COVER） |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| box SIZE |  | SLOPE OF END SECTION |  |  |  |  |  |
|  |  | 1：4 |  | 1：6 |  | 1：10 |  |
| SPAN （FT．） | RISE <br> （FT．） | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | $\begin{gathered} \text { Total Length } \\ \text { of Pipe } \end{gathered}$ | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Total Length } \\ & \text { of Pipe } \end{aligned}$ | $\begin{gathered} \hline \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length |
| 3 | ， | 5 ＠2－7＂ | 12＇－11＂ | 8 ＠2－7＂ | 20＇8＂ | 12 ＠2＇－7＂ | 31－0＂ |
| 3 | 3 | 7 ＠2＇－7＂ | 18＇－1＂ | 11 ＠2＇－7＂ | 28＇－5＂ | 17 ＠2－7＂ | $43^{\prime \prime}-11^{\prime \prime}$ |
| 4 | 2 | 5 ＠3－7＂ | $17^{\prime}-11^{\prime \prime}$ | 8 ＠3＇7＂ | 28＇－8＂ | 13 ＠3＇7＂ | 46 ＇7＂ |
| 4 | 3 | 8 ＠3＇7＂ | 28＇8＂ | 11 ＠3＇－7＂ | 39＇－5＂ | 18 ＠3＇－7＂ | 64＇－6＂ |
| 4 | 4 | 10 ＠3－7＂ | $35^{\prime}-10^{\prime \prime}$ | 14 ＠3＇7＂ | 50＇－2＂ | 23 ＠3＇7＂ | 82＇－5＂ |
| 5 | 2 | 6 ＠4＇－7＂ | 27＇－6＂ | 8 ＠4＇－7＂ | 36＇－8＂ | 13 ＠4－7＂ | 59＇－7＂ |
| 5 | 3 | 8 ＠4＇－7＂ | 36＇－8＂ | 11 ＠4－7＂ | 50＇－5＂ | 18 ＠4＇－7＂ | 82＇－6＂ |
| 5 | 4 | 10 ＠4＇－7＂ | $45^{\prime}-10^{\prime \prime}$ | 14 ＠4＇－7＂ | 64＇－2＂ | 23 ＠4＇－7＂ | 105＇5＂ |
| 5 | 5 | 12 ＠4＇－7＂ | 55＇－0＂ | 17 ＠4＇－7＂ | $77^{\prime}-11^{\prime \prime}$ | 28 ＠4＇－7＂ | $1288^{-4}$ |
| 6 | 2 | 6 ＠5＇－7＂ | 33＇－6＂ | 8 ＠5＇－7＂ | 44＇8＂ | 13 ＠5＇7＂ | 72＇－7＂ |
| 6 | 3 | 8 ＠5＇－7＂ | 44＇－8＂ | 11 ＠5＇－7＂ | 61＇5＂ | 18 ＠5＇－7＂ | 100＇－6＂ |
| 6 | 4 | 10 ＠5－7＂ | $55 \cdot 10{ }^{\prime \prime}$ | 14 ＠5－7＂ | 78＇－2＂ | 23 ＠5－7＂ | 128－5＂ |
| 6 | 5 | 12 ＠5－7＂ | 67－0＂ | 17 ＠5－7＂ | $94^{4}-11^{\prime \prime}$ | 28 ＠ $5^{\prime} 7{ }^{\text {\％}}$ | 156＇4＂ |
| 6 | 6 | 14 ＠5－7＂ | 78＇－2＂ | 20 ＠5－7＂ | 111＇－8＂ | 33 ＠5＇－7＂ | 184＇－3＂ |
| 7 | 2 | 6 ＠6＇－7＂ | 39＇－6＂ | 8 ＠6＇－7＂ | 52－8＂ | 13 ＠6＇－7＂ | 85＇－7＂ |
| 7 | 3 | 8 ＠6＇－7＂ | 52＇－8＂ | 11 ＠6＇－7＂ | 72＇－5＂ | 18 ＠6＇－7＂ | $118^{\prime} 6^{\prime \prime}$ |
| 7 | 4 | 10 ＠6＇－7＂ | $65^{\prime}-10^{\prime \prime}$ | 14 ＠6＇7＂ | 92＇－2＂ | 23 ＠6＇7\％ | 151＇－5＂ |
| 7 | 5 | 12 ＠6＇－7＂ | 79＇0＂ | 17 ＠6＇－7＂ | 111＇－11＂ | 28 ＠6＇7\％ | 184－4＂ |
| 7 | 6 | 14 ＠6＇－7＂ | 92＇－2＂ | 20 ＠6＇－7＂ | 131＇－8＂ | 33 ＠6＇－7＂ | 217＇－3＂ |
| 7 | 7 | 16 ＠6＇－7＂ | 105＇4＂ | 23 ＠6＇77＂ | 151＇－5＇ | 38 ＠6＇77＂ | 250＇－2＂ |
| 8 | 2 | 6 ＠7－7＂ | 45＇－6＂ | 8 ＠7＇－7＂ | 60＇－8＂ | 13 ＠7＇フ＂ | 98－7＂ |
| 8 | 3 | 8 ＠${ }^{1}-7$－ | 60＇－8＂ | 11 ＠$\square^{\prime}-7$＂ | 83＇－5＂ |  | 136＇6＂${ }^{\prime \prime}$ |
| 8 | 4 | 10 ＠7＇7＂ | $75^{\prime}-10^{\prime \prime}$ | 14 ＠7－7＂ | 106＇2＂ | 23 ＠7－7＂ | 174＇－5＂ |
| 8 | 5 | 12 ＠7－7＂ | 91－0＂ | 17 ＠7－7＂ | 128＇－11＂ | 28 ＠ フ＇ブ $^{\text {－}}$ | 212＇－4＂ |
| 8 | 6 | 14 ＠ $7^{\prime-7 " 1}$ | 106＇2＂ | 20 ＠${ }^{\prime}$－7＂ | $151-8{ }^{\prime \prime}$ | 33 ＠${ }^{\text {®－7＂}}$ | 250＇－3＂ |
| 8 | 7 | 16 ＠7－7＂ | $121-4{ }^{\prime \prime}$ | 23 ＠7－7＂ | 174－5＂ | 38 ＠ 7＇－7＂$^{\text {c }}$ | 288＇－2＂ |
| 8 | 8 | 18 ＠ 7－7＂$^{\text {c }}$ | 136＇6＂ | 26 ＠${ }^{\text {－}}$－7＂ | 197－2＂ |  | $3266^{\prime \prime} 1^{\prime \prime}$ |
| 9 | 2 | 6 ＠8＇－7＂ | 51－6＂ | 8 ＠8＇－7＂ | 68＇－8＂ | 13 ＠8＇7＂ | 111＇－7＂ |
| 9 | 3 | 8 ＠8＇7＂ | 68＇－8＂ | 11 ＠8＇7＂ | 94 ＇5＂ | 18 ＠8＇7\％ | 154＇－6＇ |
| 9 | 4 | 10 ＠8＇－7＂ | $85^{\prime}-10^{\prime \prime}$ | 14 ＠8＇－7＂ | 120＇－2＂ | 23 ＠ $8^{-7} \mathbf{7}^{\prime \prime}$ | 197＇－5＂ |
| 9 | 5 | 12 ＠8＇－7＂ | 103＇0＂ | 17 ＠8＇－7＂ | 145＇－11＂ | 28 ＠8＇－7＂ | 240＇－4＂ |
| 9 | 6 | 14 ＠8＇－7＂ | 120＇－2＂ | 20 ＠8＇－7＂ | 171＇－8＂ | 33 ＠8＇－7＂ | 283＇－3＂ |
| 9 | 7 | 16 ＠8＇7＂ | $137-4{ }^{\prime \prime}$ | 23 ＠8＇7＂ | 197＇－5＂ | 38 ＠88＇7＂ | 326＇－2＂ |
| 9 | 8 | 18 ＠8＇－7＂ | 154＇－6＂ | 26 ＠8＇－7＂ | 223＇－2＂ | 43 ＠8＇7\％ | 369＇－1＂ |
| 9 | 9 | 20 ＠8＇－7＂ | 171＇－8＂ | 30 ＠8＇－7＂ | 257＇－6＂ | 48 ＠8＇－7＂ | $412 \cdot 10{ }^{\prime \prime}$ |
| 10 | 2 | 6 ＠9－7＂ | 57－6＂ | 9 ＠9－7＂ | 86＇－3＂ | 14 ＠9－7＂ | 134＇－2＂ |
| 10 | 3 | 8 ＠9＇－7＂ | 76＇8＂ | 12 ＠9＇－7＂ | 115＇0＂ | 19 ＠9＇－7＂ | 182＇－1＂ |
| 10 | 4 | 10 ＠9＇－7＂ | $95^{\prime \prime}-10^{\prime \prime}$ | 15 ＠9＇－7＂ | 143＇－9＂ | 24 ＠9＇7＂ | 230＇－0＂ |
| 10 | 5 | 12 ＠9＇－7＂ | 115＇0＂ | 18 ＠9＇－7＂ | 172＇－6＂ | 29 ＠9＇－7＂ | 277＇－11＂ |
| 10 | 6 | 14 ＠9＇－7＂ | 134＇－2＂ | 21 ＠9＇－7＂ | 201＇－3＂ | 34 ＠9＇－7＂ | 325＇－10＂ |
| 10 | 7 | 16 ＠9－7＂ | $153{ }^{-4}{ }^{4}$ | 24 ＠9＇－7＂ | 230＇0＂ | 39 ＠9－7＂ | 373＇－9＂ |
| 10 | 8 | 18 ＠9＇－7＂ | 172＇－6＂ | 27 ＠9＇－7＂ | 258＇9＂ | 44 ＠9＇－7＂ | 421＇－8＂ |
| 10 | 9 | 20 ＠9＇－7＂ | 191＇－8＂ | 30 ＠9＇－7＂ | 287＇－5＂ | 49 ＠9＇－7＂ | 469＇－7＂ |
| 10 | 10 | 22 ＠9－7＂ | 210＇－10＂ | 33 ＠9＇－7＂ | 316＇－3＂ | 54 ＠9－7＂ | 517＇－6＂ |

PIPE GRATE SCHEDULE FOR PARALLEL BOX CULVERTS

| （＜2 FT COVER） |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BOX SIZE |  | SLOPE OF END SECTION |  |  |  |  |  |
|  |  | 1：4 |  | 1：6 |  | 1：10 |  |
| $\begin{aligned} & \text { SPA } \\ & (\text { (FT.) } \end{aligned}$ | $\stackrel{\text { RISE }}{\text {（FT）}}$ | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length of Pipe |
| 11 | 2 | 6 ＠10＇－7＂ | 63＇－6＂ | 9 ＠10＇7＂ | $95^{\prime \prime}$－3＂ | 14 ＠10＇－7＂ | $148{ }^{\prime} 2{ }^{\prime \prime}$ |
| 11 | 3 | 8 ＠10＇－7＂ | 84＇－8＂ | 12 ＠10＇－7＂ | 127－0＂ | 19 ＠10＇－7＂ | 201＇－1＂ |
| 11 | 4 | 10 ＠10＇7＂ | 105＇－10＂ | 15 ＠10＇－7＂ | 158＇－9＂ | 24 ＠10＇7＂ | 254＇－0＂ |
| 11 | 6 | 14 ＠10＇7＂ | $148{ }^{-2}{ }^{\prime \prime}$ | 21 ＠10＇－7＂ | 222＇－3＂ | 34 ＠10＇－7＂ | 359＇－10＂ |
| 11 | 8 | 18 ＠10＇－7＂ | 190＇－6＂ | 27 ＠10＇－7＂ | 285＇－9＂ | 44 ＠10＇－7＂ | $4655^{-8 \prime}$ |
| 11 | 10 | 23 ＠10＇－7＂ | 243＇－5＂ | 33 ＠10＇－7＂ | 349＇－3＂ | 54 ＠10＇－7＂ | 571 ＇6＂ |
| 11 | 11 | 25 ＠10＇－7＂ | 264＇－7＂ | 36 ＠10＇－7＂ | 381＇－0＂ | 59 ＠10＇－7＂ | 624＇－5＂ |
| 12 | 2 | 6 ＠11－7＂ | 69＇－6＂ | 9 ＠11＇－7＂ | 104＇－3＂ | 15 ＠11＇－7＂ | 173＇－9＂ |
| 12 | 3 | 8 ＠11＇7＂ | 92＇－8＂ | 12 ＠11＇－7＂ | 139－0＂ | 20 ＠11－7＂ | 231＇－8＂ |
| 12 | 4 | 10 ＠11－7＂ | 115＇－10＂ | 15 ＠11＇－7＂ | 173＇－9＂ | 25 ＠11－7＂ | 289＇－7＂ |
| 12 | 6 | 15 ＠11－7＂ | 173－9＂ | 21 ＠11＇－7＂ | 243＇－3＂ | 35 ＠11－7＂ | 405＇5＂ |
| 12 | 8 | 19 ＠11－7＂ | 220＇－1＂ | 27 ＠11＇－7＂ | 312＇－9＂ | 45 ＠11＇－7＂ | $521 \cdot{ }^{-3 \prime}$ |
| 12 | 10 | 23 ＠11－7＂ | 266＇－5＂ | 33 ＠11＇－7＂ | 382＇－3＂ | 55 ＠11－7＂ | 633＇－1＂ |
| 12 | 12 | 27 ＠11－7＂ | 312＇－9＂ | 39 ＠11＇－7＂ | 451＇－9＂ | 65 ＠11－7＂ | 752＇－11＂ |

PIPE GRATE SCHEDULE FOR PARALLEL BOX CULVERTS

| （＞2 FT COVER） |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| box size |  | SLOPE OF END SECTION |  |  |  |  |  |
|  |  | 1：4 |  | 1：6 |  | 1：10 |  |
| SPAN （FT．） | RISE <br> （FT．） | Pipes No．／Length | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | Total Length of Pipe |
| 3 | 2 | 5 ＠2＇－7＂ | 12＇－11＂ | 7 ＠2＇－7＂ | 18－1＂ | 11 ＠2－7＂ | 28－5＂ |
| 3 | 3 | 7 ＠2＇－7＂ | 18＇1＂ | 10 ＠2＇－7＂ | 25＇－10＂ | 16 ＠2＇－7＂ | 41＇4＂ |
| 4 | 2 | 5 ＠3＇7＂ | 17＇－11＂ | 7 ＠3＇－7＂ | 25＇－1＂ | 12 ＠3＇－7＂ | 43＇－0＂ |
| 4 | 3 | 7 ＠3＇7＂ | 25＇－1＂ | 10 ＠3＇7＂ | $35^{\prime}-10^{\prime \prime}$ | 17 ＠3＇－7＂ | 60＇－11＂ |
| 4 | 4 | 9 ＠3＇－7＂ | 32＇－3＂ | 13 ＠3－7＂ | $46^{\prime} 7{ }^{\prime \prime}$ | 22 ＠3＇－7＂ | 78＇－10＂ |
| 5 | 2 | 5 ＠4＇－7＂ | 22＇－11＂ | 7 ＠4＇－7＂ | 32＇－1＂ | 12 ＠4＇－7＂ | $55^{\prime}-0 \mid$ |
| 5 | 3 | 7 ＠4＇－7＂ | 32＇－1＂ | 11 ＠4－7＂ | 50＇5＂ | 17 ＠4＇－7＂ | 77＇－11＂ |
| 5 | 4 | 9 ＠4＇－7＂ | 41－3＂ | 14 ＠4－7＂ | 64＇－2＂ | 22 ＠4＇－7＂ | 100＇－10＂ |
| 5 | 5 | 11 ＠4＇－7＂ | 50＇5＂ | 17 ＠4－7＂ | $77^{\prime}-11^{\prime \prime}$ | 27 ＠4＇－7＂ | 123＇－9＂ |
| 6 | 2 | 5 ＠5＇－7＂ | 27＇－11＂ | 8 ＠5＇－7＂ | 44－8＂ | 12 ＠5－7＂ | 67－0＂ |
| 6 | 3 | 7 ＠5＇－7＂ | 39－1＂ | 11 ＠5－7＂ | 61＇5＂ | 17 ＠5－7＂ | 94＇－11＂ |
| 6 | 4 | 10 ＠5－7＂ | 55＇－10＂ | 14 ＠5－7＂ | 78＇－2＂ | 23 ＠5－7＂ | 128＇－5＂ |
| 6 | 5 | 12 ＠5－7＂ | 67－0＂ | 17 ＠5－7＂ | $94^{\prime}-11^{\prime \prime}$ | 28 ＠5－7＂ | 156＇4＂ |
| 6 | 6 | 14 ＠5－7＂ | 78＇－2＂ | 20 ＠5－7＂ | 111－8＂ | 33 ＠5－7＂ | 184＇－3＂ |

## traversable pipe grate for parallel drainage structure

PIPE GRATE SCHEDULE FOR PARALLEL PIPE CULVERTS 15" THRU 84" DIA.

| Pipe I.D. | SLOPE OF END SECTION |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1:4 |  | 1:6 |  | 1:10 |  |
|  | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | $\begin{aligned} & \text { Total Length } \\ & \text { of Pipe } \end{aligned}$ |
| 15 " | 3 @ 0'-11" | 2'9" | 4 @ 0'-11" | $3^{\prime}-8{ }^{\prime \prime}$ | 6 @ 0'-11" | $5^{\prime}-6{ }^{\prime \prime}$ |
| 18 " | 3 @ 1'-1" | $3^{\prime}-3{ }^{\prime \prime}$ | 5 @ 1'-1" | 5'5" | 7 @ 1'-1" | 7'-7" |
| $21 "$ | 4 @ 1'5" | $5^{\prime}-8{ }^{\prime \prime}$ | 5 @ 1'-5" | 7-1" | 9 @ 1'5" | 12'-9" |
| $24 "$ | 5 @ 1'-7" | 7'-11" | 6 @ 1'-7" | $9^{9}-6{ }^{\prime \prime}$ | 10 @ 1-7" | 15'-10" |
| 301 | 6 @ 2'-1" | 12'-6" | 8 @ 2'-1" | 16'-8" | 13 @ 2'-1" | 27-1" |
| $36 "$ | 7 @ 2'-7" | 18'-1" | 10 @ 2'-7" | $25^{\prime}-10^{\prime \prime}$ | 15 @ 2'-7" | 38-9" |
| $42^{\prime \prime}$ | 8 @ 3'-1" | 24'8" | 11 @ 3'-1" | $33^{\prime \prime}-11^{\prime \prime}$ | 18 @ 3'-1" | 55'6" |
| $48{ }^{\prime \prime}$ | 9 @ 3'-7" | 32'-3" | 13 @ 3'-7" | 46'7" | 21 @ 3'-7" | 75'3" |
| $54 "$ | 10 @ 4'-1" | $40^{\prime}-10^{\prime \prime}$ | 14 @ 4'-1" | 57'-2" | 23 @ 4'-1" | 93'-11" |
| 60 " | 11 @ 4'-7" | 50'-5" | 15 @ 4'-7" | 68'9" | 25 @ 4'-7" | 114'-7" |
| 66 " | 12 @ 5-1" | 61-0" | 17 @ 5-1" | 86'-5" | 28 @ 5'-1" | 142'-4" |
| 72 | 13 @ $5^{\prime}-7{ }^{\prime \prime}$ | 72'-7" | 18 @ 5'7" | 100'-6" | 30 @ 5-7" | 167'-6" |
| $78{ }^{1}$ | 14 @ 6'-1" | 85'-2" | 20 @ 6'-1" | 121'-8" | 33 @ 6'-1" | 200'-9" |
| 84 " | 15 @ 6'-7" | 98-9" | 21 @ 6'-7" | 138'-3" | 35 @ 6'-7" | 230'-5" |

## TRAVERSABLE PIPE GRATE FOR PARALLEL DRAINAGE STRUCTURE

PIPE GRATE SCHEDULE FOR PARALLEL PIPE ARCH CULVERTS 15" THRU 84" DIA.

| SLOPE OF END SECTION |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pipe I.D. | Table IIA, Corrugation : |  |  | $21^{1 \times 1 / 2 "}$ |  |  |
|  | 1:4 |  | 1:6 |  | 1:10 |  |
|  | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \end{gathered}$ | Total Length of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length of Pipe of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Total Length } \\ & \text { of Pipe } \\ & \hline \end{aligned}$ |
| 15" | 2 @ 1'-1" | 2'-2" | 3 @ 1'-1" | $3^{\prime}$-3" | 5 @ 1'-1" | 5'-5" |
| $18{ }^{\prime \prime}$ | 3 @ 1'-5" | 4'-3" | 4 @ 1'-5" | $5^{\prime}-8{ }^{\prime \prime}$ | 6 @ 1-5" | 8'-6" |
| $21 "$ | 3 @ 1-7" | 4'9" | 5 @ 1'-7" | 7-11" | 7 @ 1'-7" | 11-1" |
| $24 "$ | 4 @ 1'-11" | $7{ }^{7}-8{ }^{\prime \prime}$ | 5 @ 1'-11" | $9{ }^{\text {9-7" }}$ | 8 @ 1'-11" | 15'4" |
| 301 | 4 @ 2'-7" | 10'4" | 6 @ 2'-7" | 15'6" | 10 @ 2'-7" | 25'-10" |
| $36 "$ | 5 @ 3'-1" | 15'-5" | 7 @ 3'-1" | 21-7" | 12 @ 3'-1" | 37-0" |
| $42^{\prime \prime}$ | 6 @ 3'-9" | 22'-6" | 9 @ 3'-9" | 33-9" | 14 @ 3'-9" | $52^{2}-6 "$ |
| $48^{\prime \prime}$ | 7 @ 4'-5" | 30'-11" | $10 @ 4{ }^{\prime}-5{ }^{\prime \prime}$ | 44'-2" | 16 @ 4'-5" | 70'-8" |
| $54 "$ | 8 @ 4'-11" | 39-4" | 11 @ 4'-11" | 54-1" | 18 @ 4-11" | 88'-6" |
| $60 "$ | 8 @ 5-7" | 44-8" | 12 @ 5-7" | 67-0" | 20 @ 5-7" | 111-8" |
| 66 " | 9 @ 6'-1" | 54-9" | 13 @ 6'-1" | 79'-1" | 22 @ 6'-1" | 133'-10" |
| 72 | 10 @ 6'-7" | $65^{\prime}-10^{\prime \prime}$ | 15 @ 6'-7" | 98-9" | 24 @ $6^{\prime}-7{ }^{\prime \prime}$ | 158'-0" |
| 78" | - | - |  |  | - | - |
| $84 "$ | - | - |  | - | - | - |

PIPE GRATE SCHEDULE FOR PARALLEL PIPE ARCH CULVERTS 15" THRU 84" DIA.

| SLOPE OF END SECTION |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pipe I.D. | Table IIA, Corrugation: $\quad 3 \mathrm{l} \times 1$ 1" |  |  |  |  |  |
|  | 1:4 |  | 1:6 |  | 1:10 |  |
|  | $\begin{gathered} \text { Pipes } \\ \text { No. } / \text { Length } \\ \hline \end{gathered}$ | $\begin{gathered} \text { Total Length } \\ \text { of Pipe } \end{gathered}$ | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length of Pipe of Pipe | $\begin{gathered} \text { Pipes } \\ \text { No. / Length } \\ \hline \end{gathered}$ | Total Length |
| $15 "$ | - | - | - | - | - |  |
| 18 " | - | - | - | - | - |  |
| $21^{\prime \prime}$ | - | - | - | - | - | - |
| $24 "$ | - | - | - | - | - | - |
| 30 " | - | - | - | - | - |  |
| $36 "$ | 6 @ 2'-11" | 17'-6" | 8 @ 2'-11" | 23'4" | 13 @ 2'-11" | 37'-11" |
| $42^{\prime \prime}$ | 7 @ 3'-5" | 23'-11" | 10 @ 3'-5" | 34'-2" | 15 @ 3-5" | 51-3" |
| 48 " | 8 @ 4-1" | 32'-8" | 11 @ 4'-1" | 44'-11" | 18 @ 4-1" | 73'-6" |
| $54 "$ | 9 @ 4'-7" | 41-3" | 12 @ 4'-7" | 55-0" | 20 @ 4'-7" | 91'-10" |
| $60 "$ | 9 @ 5'-1" | 45'9" | 14 @ 5'-1" | 71-2" | 22 @ 5-1" | 111'-10" |
| $66^{\prime \prime}$ | 10 @ 5-9" | 57'-6" | 15 @ 5'-9" | 86'-3" | 24 @ 5-9" | 138'-0" |
| $7{ }^{\prime \prime}$ | 11 @ 6'-5" | 70'-7" | 16 @ 6'-5" | 102'-8" | 26 @ 6'5" | 166'-10" |
| $78{ }^{\prime \prime}$ | 12 @ 6'-11" | 83'-0" | 17 @ 6'-11" | 117'-7" | 28 @ 6'-11" | 193'-8" |
| $84 "$ | 12 @ 7-7" | 91-0" | 18 @ 7'-7" | 136'-6" | 30 @ 7 -7" | 227'-6" |

## traversable pipe grate for parallel drainage structure

| PIPE GRATE SCHEDULE FOR PARALLEL ELLIPTICAL PIPE CULVERTS 15" THRU 72" DIA. |
| :--- |
| Pipe I.D. |

## HOT-MIX ASPHALT APPROACHES AND MAILBOX RETURNS




## ADA CURB RAMP PAVEMENT REMOVAL AND REPLACEMENT


general notes
SEE STANDARD 606001 FOR CONCRETE CURB AND COMBINATION CURB AND GUTTER DETALLS not shown.

SEE STANDARD 420001 FOR KEYED CONSTRUCTION JOINT DETALLS
SAW CUTting/ SCORING Shall be included in the unit cost of hot-mix asphalt surface removal.

Full depth pavement removal shall be included in the unit cost of combination CURb And gutter removal
portland cement concrete needed to fill in the formwork area in front of the Combination curb and gutter shall be included in the unit cost of combination CONCRETE CURB AND GUTTER.
there is a change in radius and the distance between the new combination CURB AND GUTTER AND THE EXISTING PAVEMENT IS 4FT OF GREATER, THE PCC IN FRONT THE EXISTING PAVEMENT WITH TIE BARS. TIE BARS SHALL BE INCLUDED IN THE UNIT COST OF COMBINATION CONCRETE CURB AND GUTTER.
construction sequence

1. REMOVE EXISTING FULL DEPTH PAVEMENT AND CURB AND GUTTER
2. FORM AND POUR COMBINATION CONCRETE CURB AND GUTTER
3. REPLACE FULL DEPTH PAVEMENT WITH PORTLAND CEMENT CONCRETE
(UP TO З" FROM FINISHED SURFACE ELVATION TO ALLOW FOR HMA OVERLAY)
4. HOT-MIX ASPHALT REMOVAL AND REPLACEMENT.
notes:
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED
** COST INCLUDED IN OTHER PAY TTEMS PER GENERAL NOTES


## CONCRETE COLLARS FOR PIPE OR BOX CULVERT EXTENSIONS

Bill of Materials



PLAN OF CULVERT WITH ANGLED WING WALLS
Proposed Pipe or
Box Culvert Extension


CULVERT CONNECTION WITHOUT EXISTING HEADWALL


FRONT

(\#4) $\cup$ bar

(\#4) $\mathrm{U}_{1}$ bar


PLAN OF CULVERT WITH STRAIGHT HEADWALL
Concrete Collas sau be
Concrete Collars shall be constructed of Class SI Concrete in
accordance with Section 503 of the Standard Specifications Reinforcement bars shall conform to Section 508 of the Reinforcement bars shall
Standard Specifications.
Expansion bolts shall be $3 / 4 \varnothing$ hooked bolts and shall conform to
The concrete will be paid
The concrete will be paid for at the contract unit price per cubic
yard for CONCRETE COLLAR. Reinforcement will be paid for at the contract unit price per pound for REINFORCEMENT BARS. Expansion Bolts, when required, will be paid for at the contract unit
price each for EXPANSION BOLTS $3 / 4$ inch, which price shall include price each furnishing, drilling holes, and installing the expansion bolts complete in place. These bolts shall extend at least 9 inches into the new concrete.



2-\#4 bars
\& $1 . \#$ - 41 b bars
Per collar


 | DESIGNED |
| :--- | :--- |
| ORAWN |
| CAECKED |
| COTE | $\square$



## WORK ZONE SIGN DETAILS

## NO PASSING ZONES NOT STRIPED NEXT X MILES

 ncluded in the cost of the specified trafficcontrol standards and shall not be paid sepa
All Illinois Standard signs shall conform to the latest edition of the "Illinois Standard Highway Signs Boat
effect on the date of invitation for bids.
Signs shall meet the applicable portions of Sections 701 signs shall meet the applicable portions
and 720 of the Standard Specifications.
All dimensions are in inches unless otherwise noted.

## WORK ZONE SIGN DETAILS



| colorLEGEND and border <br> BACKGROUND |
| :--- |
| SIGN SIZE DIMENSIONS <br>  BLACK <br> FL ORA  |
| $48 \times 48$ |
| 48.00 |
| 3.00 |

non-REFLECTORIZED
REFLECTORIZED
(1) Ilinois Standard signs w12-1102 and W12-1103 shall be

## MAX wIDTH XX' - XX" X MILES AHEAD

| SIGN SIZE | SERIES BY LINE | MARGIN | BORDER |
| :---: | :---: | :---: | :---: |
|  | 1 |  |  |
| $48 \times 48$ | $12 C$ | 0.750 | 1.250 |


| SIGN SIZE | SERIES BY LINE |  |  |  |  | MARGIN |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | BORDER |  |  |  |  |  |
|  | 1 | 2 | 3 | 4 |  |  |
| $48 \times 48$ | $6 C$ | $8 D$ | $6 D$ | $6 D$ | 0.750 | 1.250 |

Sign not to scale
XX'-XX" WIDTH AND X MLLES ARE VARIABLE
TOP AND BOTTOM OF BACKGROUND WHITE

## WORK ZONE SIGN DETAILS

# NO OVERSIZE OVERWEIGHT LOADS XX MILES AHEAD 

## TO ACTIVATE SIGNAL

Permit Loads - Loads Over 13 Feet; 3.0" Radius, 1.3 " Border;
[NO OVERSIZE - - D; [OVERWEIGHT LOADS] D 85\% spacing; [XX MILES AHEAD] D Table of letter and object lefts.




## TEMPORARY ROAD CLOSURE EXPRESSWAY



## TRAFFIC CONTROL FOR THREE LANE SECTION

## CASE 1



[^0]
## TRAFFIC CONTROL FOR THREE LANE SECTION

## CASE 2



SYMBOLS
work area

- sign
- flagger with traffic control sign

CONE, DRUM OR BARRICADE
(1) Use flagger and flagger signs only when
(2) Cones at $20^{\prime}$ centers for $250^{\prime}$. Additional cones may be placed at $40^{\prime}$ centers. When drums or type I or II barricades are used, the interval
between devices may be doubled.
THIS TRAFFIC CONTROL DETALL SHALL BE INCLUDED
INTHE COST OF SPECIFIET TRAFFIC CONTROL IN THE COST OF SPECIF
STANDARDS OR ITEMS.
*If THE WORK ENDS WITHIN 2500 FEET OF THE TRANSITION WHEN THE SPEED IS 40 MPH OR 1500 FEET FRR ALL other speeds, the climbing lane shall remain closed

## TRAFFIC CONTROL FOR THREE LANE SECTION

## CASE 3

SYMBOLS
NIV workarea

- sign

Cones at $20^{\prime}$ centers for $255^{\prime}$. Additional cones may be placed at 40' centers. When drums or
type I or II barricades are used, the interval type I or II barricades are used, the inte

- Flagger with traffic control sign

CONE, DRUM OR BARRICADE
this traffic control detall shall be included

Standards or items.

STATE OF ILLINOIS
NNT OF TRANSPORTATION

## TRAFFIC CONTROL FOR THREE LANE SECTION <br> CASE 4







## TRAFFIC CONTROL TYPICAL WEAVE



## TYPICAL PAVEMENT MARKINGS

MEDIAN PAVEMENT MARKING
TYPICAL PAVEMENT MARKING FOR FLUSH MEDIAN

** All dimensions are in inches unless otherwise noted.
TYPICAL ISLAND OFFSET SHOULDER WIDTH

TYPICAL MARKING FOR PAINTED ISLANDS


## TYPICAL PAVEMENT MARKINGS

ARROW LAYOUT


SYMBOLS
$4 \begin{gathered}\text { ONE-WAY } \\ \text { AMBER MARKER }\end{gathered}$
$\triangleleft$ ONE-WAY $\begin{aligned} & \text { CRYSTAL MARKER }\end{aligned}$
$-\begin{aligned} & \text { TWO-WAY } \\ & \text { AMBER MARKE }\end{aligned}$

ALL DIMENSIONS ARE IN INCHE
UNLEESS OTHERWIIE NOTED.
 $\left.\begin{array}{c}\text { See Typical } \\ \text { Drawing at right }\end{array}\right)$

TYPICAL PAVEMENT MARKING FOR FLUSH MEDIAN


RECOMMENDED SPACING BETWEEN DIAGONALS (IN FEET)

| Speed Limit | Continuous Median Area | Intersection Channelization | Objects (Isjands) <br> (Islands) |
| :---: | :---: | :---: | :---: |
| less than 30MPH | $50^{\prime}$ | ${ }^{15}$ | $10^{\prime}$ |
| $30-40 \mathrm{MPH}$ | $75^{\prime}$ | $20^{\prime}$ | $15^{\prime}$ |
| 45 MPH \& over | $75 '$ | $30^{\prime}$ | $20^{\prime}$ |



## TYPICAL PAVEMENT MARKINGS



| DESISNE | Revised | ${ }^{6.27 .14}$ |  |
| :---: | :---: | :---: | :---: |
| drawn | REVISED | ${ }^{8.27 .13}$ | STATE OF ILLINOIS |
| CHECKED | REVISED | 11-28-12 | ment of transpor |

## TYPICAL PAVEMENT MARKINGS


4" Wide at all other locations.
NOTE: GORE HATCHING PLACED ONLY


ENTRANCE RAMP


CLOVERLEAF



## REMOVE AND REERECT STEEL PLATE BEAM GUARDRAIL



## REMOVE AND REERECT STEEL PLATE BEAM GUARDRAIL



## REMOVE AND REERECT STEEL PLATE BEAM GUARDRAIL



Note:
Note.
Iftis necessary for $D$ to be more than ance
1ess then 10 oppe ourb and outter
 (Std. 606001 ) sha
of the guardrail.

GUARDRAIL PLACED BEHIND CURB
( $\mathrm{D}=\mathrm{O}$ desirable to maximum)


FOOTING FOR POST WHEN IMPERVIOUS MATERIAL IS ENCOUNTERED


CABLE ASSEMBLY
(40,000 lbs. min. breaking strength)
Tighten to taut tension.

## TRAFFIC BARRIER TERMINAL, TYPE 2 (27" HEIGHT)



## GUARDRAIL REFLECTORS, TYPE C (SPECIAL)

## REFLECTORS FOR GUARDRAIL BLOCK OUT OR DELINEATOR POST



MOUNTED ON A GUARDRAIL BLOCK OUT

## REFLECTORS S BLOCK OUTS.

REFLLCTORS MOUNTED ON WOODEN OR PLASTIC OR METAL

WITH WAAHERS O.
WITH WASHERS.
ADDITIONAL SHEETING MAY BE ADDED AS NEEDED
FOR TURN AROUNDS AS SHOWN IN THE PLANS
TOP OF RELLECTOR PLACED FLUSH WIT
TOP OF FOST UNLESS DOUBLE SIDED

 THAT THE REFLECTOR IS ABOVE
TOP OF THE POST AND VISBLE.
$10124 \times 1{ }^{1 / 2}$, Bolts with washers And NuT
(ADDITIONAL HOLES MAY BE DRILLED AS NEEDED)


## SLOTTED DRAIN PIPE



$\frac{\text { GAP PLATE ( OPTIONAL) }}{\text { MAR BE PLCEED DRECTIY }}$
OVER BANLGOLTOTROROVIDE
CONTNUOUS FORM FOR GROUTING.



TYPICAL PIPE SECTION


GRATE WELDING DETALL

SECTION A-A







Use apporved end con con to pe.
CONNECTIONS
The Coruuated Steel Ipe shall have a minimum of two rerolled anular ends.
The S Sotteded Drain hand s shall be modified
HuGGGER Bands
infiltation of the backill.
When the Slotted Drain is banded together, the adjicent grates shall have a maximum 3 " gap. GRATES
The grates shall be manufactured from A ATM A 670 , Grade 36 steel. The spacers and bearing
bars sidids) shall be $31 / 16$ material $\pm 0.0088$.



or an in-place spacer pulled perrendicular to the tearing bar
$T=12.000$
$T=12$

## galvanizing

The grate and plate extenders shal be galvanized in accordance with ASTM A123 except
with 2 oz. galvanizen coating.
GRATE ATACHED TO CSP
The e arte shall be fillet welded with a minimum weld 1 " 1 ong to to CSP on each side of the
grate a tevery y ther corrugation.
tolerances - finished slotited drain - 20' Lengith


|  | DESIINED | Reviseo | ${ }^{1.05516}$ |
| :---: | :---: | :---: | :---: |
|  | ${ }_{\text {drame }}^{\text {CHECKED }}$ | REVISED ReVISED | ${ }^{6.27 .14}$10.18 .1 |
| P10, |  |  |  |

## DETAIL OF FLOOD GATE



DETAIL OF CAST-IN-PLACE CONCRETE DEADMAN




## 40' SINGLE LANE MEDIAN CROSSOVER

TYPICAL SECTION

(POSTED SPEED LIMIT 55 MPH, WORK ZONE SPEED LIMIT 45 MPH)

GENERAL NOTES
of currention Standardid Specifications
Sloted drain shall be constructed of 14 or 16 gauge corruated metal
roadway pipe modified to accommodate sotod drain as shown.
Pavement, subbase, \& shoulder quantities are:
Ebbows and Caps shal be considered included to the
SLOTED
.

```
See District Standard 61.2 or 68.1 for details for the sotted drain.
See Districit Standard 86.1 for details for the beveled pipe \(\&\) guard.
The crossover is designed using a 45 mph design speed.
The end of the pipe guard shall be set where a minimum \(1: 4\)
front \(\mathbf{t}\) sope can be constructed from each side of pipe guard to the HMA shoulder.
Section 420 of the 10 ( (Jointed) shal be constructed accorraing to Section 42 of the Standard
\(420001.420101, \& 420106\)
The PCC Pavement 10 " JJoited) shall be tied to adiacent existing
 according to the applicable portions of ofricice \(420.05(\) and \()\) of the Standard Specifications. The cost of the b
cost of the PCC Pavement 10 (
(ointed).
(1340.88 Sq.Yds.)) AGGREGATE SUBGRADE IMPROVEMENT, 12
(1340.88 Sq.Yds.)) AGGREGATE SUBGRADE IMPROVEMENT, 12
(1340.88 Sq.Yds.)) AGGREGATE SUBGRADE IMPROVEMENT, 12
(1250.80 Sq. पG5.) P.C.C. PAVEMENT 10" (JOINTED)
(1250.80 Sq. पG5.) P.C.C. PAVEMENT 10" (JOINTED)
(1250.80 Sq. पG5.) P.C.C. PAVEMENT 10" (JOINTED)
(402.52 Sq.Yds.) 2" HMA SURFACE COURSE, MX "C", N50
(402.52 Sq.Yds.) 2" HMA SURFACE COURSE, MX "C", N50
(402.52 Sq.Yds.) 2" HMA SURFACE COURSE, MX "C", N50

TYPICAL PLAN
Contractor shall be erequiried tos saw fulu-dienth alongove the shoulde remolined, the
Contractors sha be requirid to saw full-depth along the shoulder
pavement shal remain in place and be used as shoulders. The cost of Sawing
shall be included in the Pavement Removal.
TRAFFIC CONTROL STANDARD 701416 IS TO BE USED WITH THIS DETALL



\section*{40' SINGLE LANE MEDIAN CROSSOVER}


TYPICAL PLAN


\section*{50' SINGLE LANE MEDIAN CROSSOVER}

TYPICAL SECTION (POSTED SPEED LIMIT 65 MPH OR HIGHER, WORK ZONE SPEED LIMIT 55 MPH
GENERAL NOTES


Contractor shall be reauired to saw full.depth along the shoulde
TYPICAL PLAN
pavement shal remain in place and be used as shoulders. The cost of Sawing
shall be included in the Pavement Removal
Longitudinaljoints shall be sawed at a max 12 w width. All joints shall be sealed.
RAFFIC CONTROL STANDARD 701416 IS TO BE USED WITH THIS DETAIL

\section*{64' SINGLE LANE MEDIAN CROSSOVER}

TYPICAL SECTION (POSTED SPEED LIMIT 65 MPH OR HIGHER, WORK ZONE SPEED LIMIT 55 MPH



SECTION A-A
(USE TO MAIITAIN MEDIAN DRAINAGE THROUGH THE Crossover)

(1) Duct tape or wood blocks shall be used to cover slotted
drain during construction of crossover paving
SECTION A-A

Constrction of median crossover sh
of furrent Standard Specifications.
Sloteded drain shal be constructed of 14 ,
. ouried to accommodate sioted drain as shown.
```

(2651.79 Sq. Yds.) AGGREGATE SUBGRADE IMPROVEMENT, 12
(2509.74 Sq. Yds.) AG.) P.C.C. PAVEMENT 10"(JOINTED)
(2509.74 Sq.Yds.)

```

Ebbows and Caps shall be considered included to the
SLOTTED DRAN 12 " WiTH
" SLOT.
See District Standard 61.2 or 68.1 for details for the stoted drain
See District Standard 86.1 for details tor the beveled pipe \& guard.
The crossover is designed using a 55 mph design speed.
The end of the pipe guard shall be set where a minimum \(1: 4\)
front siope can be constructed from each side of pipe guard to the tront slope ana
HMA shoulder.
The PCC Pavement \(10^{0 \prime}\) (JOINTED) shall be constructed according to Section 420 of the Standard
\(420001.420101 . \& 420106\)

The PCC Pavement 10 " JJointed) shall be tied to adiacent exising Concrete pavement and the concrete e encasement for the soteted dran The tie bars shall be No.6 bars 24 " Iong @ 30 " cts, and installe
according to the applicable portions of ofricicle \(42.05(\) ) of the according to the epplicable portions of Atitile 420.05(b) of the cost of the PCC Pavement 10 " (JUINTED).


40' TWO LANE MEDIAN CROSSOVER

TYPICAL SECTION

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{7}{|c|}{table of offsets and drops} \\
\hline \[
\begin{aligned}
& \text { Sistanerefeet } \\
& \text { fornocation } \\
& \text { Sation }
\end{aligned}
\] & 0 & \[
\begin{array}{r}
76.95^{\prime \prime} \\
\text { (B) } \\
\hline
\end{array}
\] & \({ }^{100}\) & \({ }^{125}\) & \({ }^{150}\) & \[
\begin{gathered}
188.69 \\
\text { (C) }
\end{gathered}
\] \\
\hline \[
\begin{gathered}
\text { Offisels feet } \\
\text { from } \\
\text { foiside edge } \\
\text { of pavenent }
\end{gathered}
\] & \[
\begin{aligned}
& 200 \\
& \text { (4) }
\end{aligned}
\] & \({ }^{18}\) & 14.22 & 10.70 & 7.79 & 6.00 \\
\hline \[
\begin{gathered}
\text { Diop feet } \\
\text { tom } \\
\text { toisideade } \\
\text { of pavenent }
\end{gathered}
\] & 0.4 & \({ }^{0.36^{\prime}}\) & \(0.28^{\circ}\) & 0.21 & \(0.16^{\prime}\) & 0.12 \\
\hline
\end{tabular}
(POSTED SPEED LIMIT 55 MPH, WORK ZONE SPEED LIMIT 45 MPH)

(1) Duct tape or wood blocks shall be used to cover slotted
drain during construction of crossover paving
SECTION A-A

\section*{GENERAL NOTES}

\section*{Construction of median crossovers
of current Standard Specifications.}

odified to accommodate sloteted drain oas shown.
```

(1685.28 Sq. Yds.) AGGREGATE SUBGRADE IMPROYEMENT, (12,

```
(1685.28 Sq. Yds.) AGGREGATE SUBGRADE IMPROYEMENT, (12,
(1572.43 Sq. Yas.) P.C.C. PAVEMENT 10"(JINTRED)
(1572.43 Sq. Yas.) P.C.C. PAVEMENT 10"(JINTRED)
(511.45 Sq. Yds.) - HMMA SUORACER CO" URSE, MIX "C", N50
```

(511.45 Sq. Yds.) - HMMA SUORACER CO" URSE, MIX "C", N50

```

Ebbows and Caps shall be considered included to the
SLOTTED DRAN 12 WITH 6 S Sod
See District Standard 61.2 or 68.1 for details for the sloted drain

The crossover is designed using a 45 mph design speed.
The end of the pipe guard shal be set where a minimum 1:4
tront slope can be constructed from each side of pipe guard to the HMA shoulder.
PCC Pavement 10 " (JOINTED) shal be constructed accerding to Section 42 of the Standard
\(420001.420101 . \& 420106\)

The PCC Pavement 10 " JJointed) shall be tied to adiacent existing

 Standard Speeificitions. The cost of the eas
cost of the PCC Pavement 10 " (JINTED).

TYPICAL PLAN
Contractors shal be ee equiried to so saw full-deopth alonog the shoulder ine
Contracior sha se required to saw full-deph along the shoulded
pavement shal remain in place and be used as shoulders. The cost of Sawing
shall be included in the Pavement Removal.
Longitudiralionits shall be sawed ata max 12 ' width. All joints shall be sealed
50' TWO LANE MEDIAN CROSSOVER
(POSTED SPEED LIMIT 55 MPH, WORK ZONE SPEED LIMIT 45 MPH)


\section*{Sloted drain shal be constructed of 14 or 16 gauge corrugated me
roadway pipe modified to toccommodate sloted sfar}
of current Standard Speecifications
Pavement subbase \& shurder
(2029.23 Sq. Yds.) AGGREGATE SUBGRADE IMPROVEMENT, (iz
(2029.23 Sq. Yds.) AGGREGATE SUBGRADE IMPROVEMENT, (iz
(195.24 Ta, Yas.) P.C.C. PAVEMENT 10" (JONTTED)
(195.24 Ta, Yas.) P.C.C. PAVEMENT 10" (JONTTED)
(586.07 Sq.Yds.) - HMMA SHOURACE COURSE, MIX "C", N50
(586.07 Sq.Yds.) - HMMA SHOURACE COURSE, MIX "C", N50
Ebows and Caps shall be considered included to the
SLOTTED DRAN 12 WITH W SCOT
See District Standard 61.2 or 68.1 for details for the sloteded drain
The crossover is designed using a 45 mph design speed.
The end of the pipe guard shal be set whera a minimum \(1: 4\)
tront slope can be constructed from each side of pipe guard to the
HMA shoulder.
The PCC Pavement 10 " (JOINTED) shal be constructed according to Section 220 of the Standard
\(420001.420101 . \& 420106\)
The PCC Pavement 10 " (Jointed) shall be tied to adiacent exising

 Standard Specificions. The oost of the bas
cost of the PCC Pavement 10 " (JOINTED)

(1) Duct tape or wood blocks shall be used to cover slotted drain during construction of crossover paving

SECTION A-A

\section*{Construction of median crossover
of current Standard Specifications}

Sloted drain shall be const
roadway pipe modified to accommodate s soteded drain as shown.
Pavement, subbase, \& shoulder quantities are:
```

(2534.76 Sq. Yds.) AGgREGATE SUBGRADE IMPROvEmeNT, 12

```
(2534.76 Sq. Yds.) AGgREGATE SUBGRADE IMPROvEmeNT, 12
(1239.89 SG.Y Yas.) P.C.C. PAVEMENT 10" (JINTNTED)
```

(1239.89 SG.Y Yas.) P.C.C. PAVEMENT 10" (JINTNTED)

```


```

Embows and Caps shall be considered included to the

```
Embows and Caps shall be considered included to the 
See District Standard 61.2 or 68.1 for details for the sotted drain.
See District Standard 61.2 or 68.1 for details for the sotted drain.
The crosover is designed using a 45mph design speed.
The crosover is designed using a 45mph design speed.
The end of the pipe guard shall be set where a minimum 1:4
The end of the pipe guard shall be set where a minimum 1:4
HMA shoulder.
HMA shoulder.
The PCC Pavement 10" (JOINTED) shall be constructed acoording to
The PCC Pavement 10" (JOINTED) shall be constructed acoording to
Section 220 of the Standard
Section 220 of the Standard
The PCC Pavement 10" (Joiteod) shall be tied to adiacent existing
```

The PCC Pavement 10" (Joiteod) shall be tied to adiacent existing

```


```

Me te ars shal be No.6 bars24" Iong @ 30" cts, and instan

```
```

Me te ars shal be No.6 bars24" Iong @ 30" cts, and instan

```


```

cost of the PCCC Pavement. \0" (JONNTED).

```
```

cost of the PCCC Pavement. \0" (JONNTED).

```

TYPICAL PLAN

6 Cfrom edge of pavement. The 6 'adiacentt the edge of
pavement shal remain in place and be used as shoulders. The cost of Sawing
shall be included in the Pavement Removal
Longitudinaljoints shall be sawed at a max \(11^{\prime}\) width. All joints shall be seale.

\section*{40' TWO LANE MEDIAN CROSSOVER}

TYPICAL SECTION (POSTED SPEED LIMIT 65 MPH OR HIGHER, WORK ZONE SPEED LIMIT 55 MPH)


(1) Duct tape or wood blocks shall be used to cover slotted
drain during construction of crossover paving
SECTION A-A

Construction of median crossover
of current Standard Specificaions
Sloted drain shal be cons
roadway pine modified to
.
Pavement, subbase, \& shoulder quantities are:
```

(2142.56 Sq. Yds.) AGGREGATE SUBGRADE IMPRovEmENT, 12
(2003.87 Sq.Yas.) AGGREGATE SUEGRADE IMPROVEMENT, (12.)
*)
\
Embows and Caps shall be considered included to the
See Distric Standard 61.2 or 68.1 ford deails for the sotted drain.
See District Standard 86.1 for details for the beveled pipe \& guard.
The crossover is designed using a 55mph design speed.
The end of the pipe guardshall be set where a minimum 1:4
\#}\mathrm{ HMM shoulder.
SCC Pavement 10" (JONTED) shal be constructed according
Section 420ofthe standard
The PCC Pavement 10" (Jointed) shall be tied to adiacent exsting
Concrete pavement and the concrete encasement fo the sloted dra
Thetie bars shall be N.0.6 bars 24" Iong @ 30" cts, and instald
\atand,
Sol

```
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{table of offsets and drops} \\
\hline \[
\begin{gathered}
\substack{\text { istancer feet } \\
\text { totomocolion } \\
\text { sation }}
\end{gathered}
\] & 0 & \begin{tabular}{l}
100.35 \\
(B)
\end{tabular} & \({ }^{125}\) & \({ }^{150}\) & \({ }^{175}\) & 200 & \[
\begin{array}{|c}
20.57^{2} \\
\hline
\end{array}
\] \\
\hline \[
\begin{gathered}
\text { Offstist feet } \\
\text { from inside edge } \\
\text { of pavement }
\end{gathered}
\] & \[
\begin{aligned}
& 201 \\
& \text { (4) }
\end{aligned}
\] & \({ }^{18}\) & \(14.88^{\circ}\) & 12.07 & 9.60' & 7.48' & 6.00 \\
\hline \[
\begin{gathered}
\text { Dior feet } \\
\text { from inise e ede } \\
\text { of pavenent }
\end{gathered}
\] & \(0.40^{\prime}\) & \({ }^{0.36^{\prime}}\) & \(0.30^{\circ}\) & 0.24 & 0.19 & 0.15 & 0.12 \\
\hline
\end{tabular}

\section*{50' TWO LANE MEDIAN CROSSOVER}

TYPICAL SECTION (POSTED SPEED LIMIT 65 MPH OR HIGHER, WORK ZONE SPEED LIMIT 55 MPH)


Uniess otherise specified, when the median crossoveris to be removed, the
Contractor shall be required to saw full-deopth lonong the shoulder ine

TYPICAL PLAN
pavement shal remain in place and be used as shoulders. The cost of Sawing
shall be included in the Pavement Removal

ITh Contil standard

\section*{64' TWO LANE MEDIAN CROSSOVER}

TYPICAL SECTION (POSTED SPEED LIMIT 65 MPH OR HIGHER, WORK ZONE SPEED LIMIT 55 MPH)



SECTION A-A

(1) Duct tape or wood blocks shall be used to cover slotted
drain during construction of crossover paving
SECTION A-A
IWHEN CROSSOVER IS AT MEDAN HIGH PINT)

Construction of median crossover
of urrent Standard Specificaions.
Slotted drain shall be constructed of 14
. 10 accommodate stoted drain as shown.


Ebbows and Caps shall be considered included to the
SLOTTED DRAN 12 " WiTH
" SLOT.
See District Standard 612 or 68.1 for details for the soted
See Districit Standard 86.1 for details for the beveled pipe \& guard.
The crossover is designed using a 55 mph design speed.
The end of the pipe guard shall be set where a minimum 1:4
tront slope can be constructed from each side of p pipe guard to the Trion siop ear
HMA shoulder.
The PCC Pavement \(10^{0 \prime}\) (JOINTED) shall be constructed according to Section 420 of the Standard

The PCC Pavement 10 " JJointed) shall be tied to adiacent exising
 The tie bars shall be No.6 bars 24 " Iong @ 30 " cts, and installe
according to the applicable portions of ofricicle \(42.05(\) ) of the



Unless otherwise specified, when the median crossover is to be removed, the
Contractor shal be ereuired to saw full-depht along the shoulder IIT
Gfrom edge of pavement The 6 'adiacento the e edge of
TYPICAL PLAN
pavement shal Iremain in place and be used as shoulders. The cost of Saving
shall be included in in e Pavement Removal
Longitudianajionts shall be sawed at a max 12 ' width. Al joints shall be sealed
TAFIC CON RROLSTANDARD 71416 IS TO BE USED WTH THIS DEEAL


\section*{BEVELED PIPE \& GUARD DETAIL FOR MEDIAN CROSSOVER}


GENERAL NOTES:
Details shown hereon are for the construction of beveled pipe and guard. Alternate designs, methods of construction or materials may be submitted to the Engineer for approval. All methods of construction and materials

Reinforcing steel used in construction of "Beeveled Pipe and Guard" shall be deformed bars meeting the requirements of Article 1006.10 of the accordance with ASTM A 123 specifications.
Concrete used in construction
Concrete used in construction of the beveled pipe and guard shall be
The corruated metal pipe shall be cut to fit the \(1: 8\) foreslope. Slots
shall be cut into the C MP for placement of the 'b' and 1 c ' bars. Atter shall be cut into the C.M.P. for placement of the 'b' and 'c' c bars. After
the foreslope has been placed, the ' b ' and c c ' bars shall be fited into the foreslope has been placed, the ' \(b\) ' and ' \(c\) ' bars shall be fited into
the slots cut in the C.M.P. so they will be in proper position when the concrete collar is poured
This work shall be paid for at the contract unit price per Each for "Beveled Pipe and Guard", as shown hereon and as directed by the Engineer



SECTION B-B

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{ TABLE OF DIMENSIONS } \\
\hline \begin{tabular}{c} 
PIPE \\
SIZE
\end{tabular} & A & B & C & D \\
\hline 12 & \(9^{\prime} 6^{\prime}\) & 36 & \(6^{\prime}\) & \(10^{\prime}\) \\
\hline 18 & \(13^{\prime}-10^{\prime \prime}\) & 42 & \(10^{\prime}-4^{\prime \prime}\) & \(14^{\prime}-10^{\prime \prime}\) \\
\hline
\end{tabular}

TYPICAL SECTION THRU centerline of median crossover

* With standard washers. After tightening, cut
the anchor bolts flush with the nuts and damage
the nuts to prevent them from loosing.


GENERAL NOTES
his work shall be done according to Section 631 of the Standard Specifications and this detai
See Standard 630001 for details of
guardrail not shown.
hrie beam rail shall be bolted to block-out
at all posts.
Posts located above pier foundation shall have plate
attached to post and anchored to foundaton.
All slope ratios are expressed as units
of vertical displacement to units of
a displacement ( V : H )
All dimensions are in inches
he Traffic barrier Terminal, Type 6B (Special) will
be measured for payment, complete in place, in units of each.
This work shall be paid for at the contract unit price
per each for TRAFFIC BARRIER TERMINAL, TYPE 6B (SPECIAL)


\section*{TRAFFIC BARRIER TERMINAL, TYPE 6B (SPECIAL)}


SECTION A-A

MODIFIED THICKNESS DETAIL WOOD BLOCKOUTS A, B, C, \& D



WOOD BLOCKOUT DETAIL
|-


THRIE BEAM END SHOE DETAIL


WOOD BLOCKOUT D


WOOD BLOCKOUT C


WOOD BLOCKOUT A \& B

\section*{DETAILS OF PLANTING AND BRACING TREES}
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Small & A & B & c & D & E & F \\
\hline TREE SIZE & DIAMETER OF BALL OR ROOT SYS. & \begin{tabular}{l}
DEPTH \\
of hole EXCAVATION
\end{tabular} & WIDTH OF HOLE
EXCAVATION & THICKNESS OF MULCH COVER & \[
\begin{aligned}
& \text { DEPTH } \\
& \text { OF BALL OR } \\
& \text { ROOT SYS. }
\end{aligned}
\] & Volume of MULCH COVER CU. YDS. \\
\hline 5'-6' & 16 & 10 & 30 & 4 & 12 & 0.54 \\
\hline 5'-6' BB & 16 & 10 & 30 & 4 & 12 & 0.54 \\
\hline 6'-7' BB & 18 & 12 & 30 & 4 & 14 & 0.54 \\
\hline 7'-8' BB & 20 & 11 & 30 & 4 & 13 & 0.54 \\
\hline \(8^{\prime}-10^{\prime}\) BB & 24 & 14 & 36 & 4 & 16 & 0.61 \\
\hline \(10^{\prime}-12^{\prime}\) BB & 26 & 15 & 36 & 4 & 17 & 0.61 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline LARGE & A & в & c & D & E & F \\
\hline TREE SIZE & DIAMETER OF BALL OR ROOT SYS. & DEPTH of hole excavation & WIDTH OF HOLE EXCAVATION & THICKNESS OF MULCH Cover & DEPTH
OF BALL OR ROOT SYS. & volume of MULCH COVER CU. YDS. \\
\hline 0-2 & 20 & 11 & 36 & 4 & 13 & 0.61 \\
\hline 2-21/2 BB & 24 & 14 & 48 & 4 & 16 & 0.78 \\
\hline \(2^{1 / 2}-3 \mathrm{BB}\) & 28 & 17 & 48 & 4 & 19 & 0.78 \\
\hline 3-31/2 BB & 32 & 17 & 60 & 4 & 19 & 0.96 \\
\hline 31/2-4 \({ }^{\text {BB }}\) & 36 & 20 & 60 & 4 & 22 & 0.96 \\
\hline 4-41/2 BB & 40 & 22 & 72 & 4 & 24 & 1.16 \\
\hline \(41 / 2-5 \mathrm{BB}\) & 44 & 24 & 72 & 4 & 26 & 1.16 \\
\hline \(5-51 / 2 \mathrm{BB}\) & 48 & 27 & 84 & 4 & 29 & 1.38 \\
\hline
\end{tabular}
\(11 /\) SCREW EYES STAGGERED VERTICALLY. APPROXIMATELY
EVERY 6.


TREES OVER \(4 ½\) IN DIAMETER

all dimensions are in inches ALL DIMENSIONS ARE ININCH```


[^0]:    THIS TRAFFIC CONTROL DETAIL SHALL BE INCLUDED
    IN THE COST OF SPECIIED TRAFFIC COTROL ITHE COST OF SPECIFII
    STANDARDS OR ITEMS.

