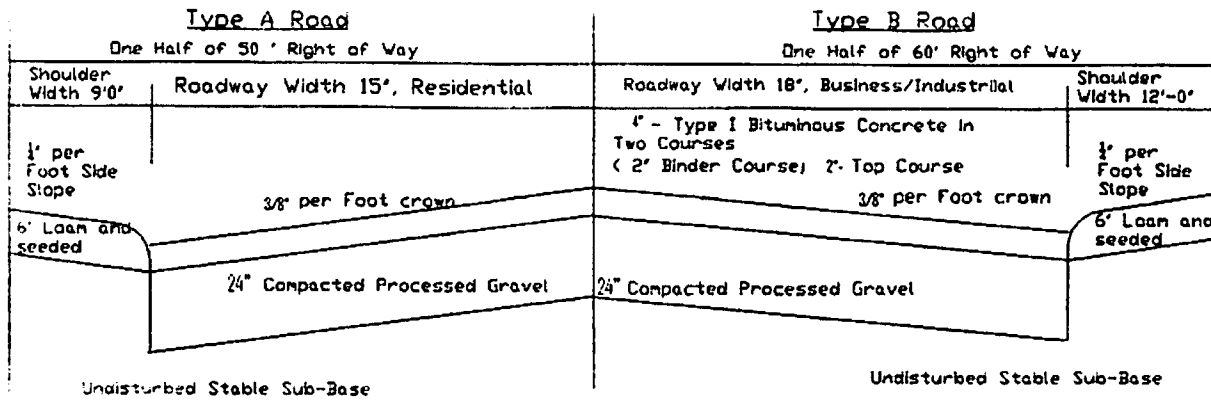
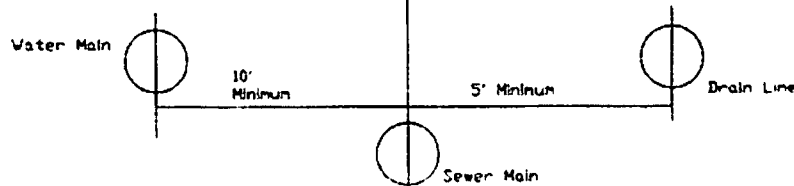
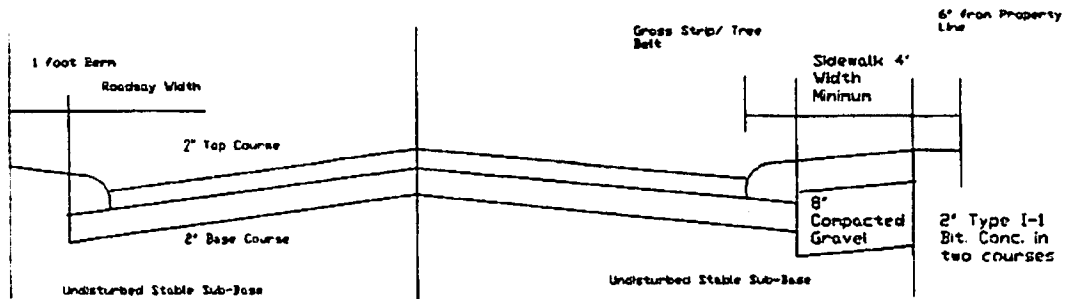


# Roadway Structure Cross-Section



## Roadway Cross-Section

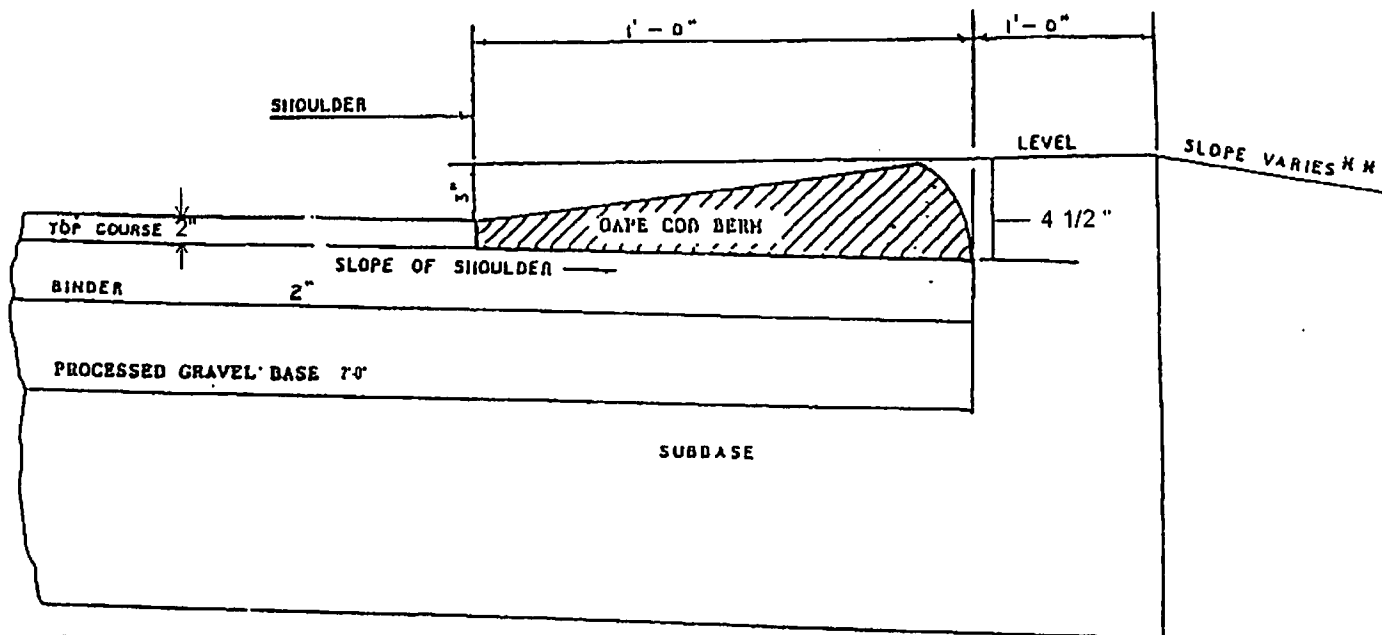


Roadway Cross Sections

Town of Granby MA  
 Planning Board  
 March 2005

COPY

# BITUMINOUS CONCRETE BERM

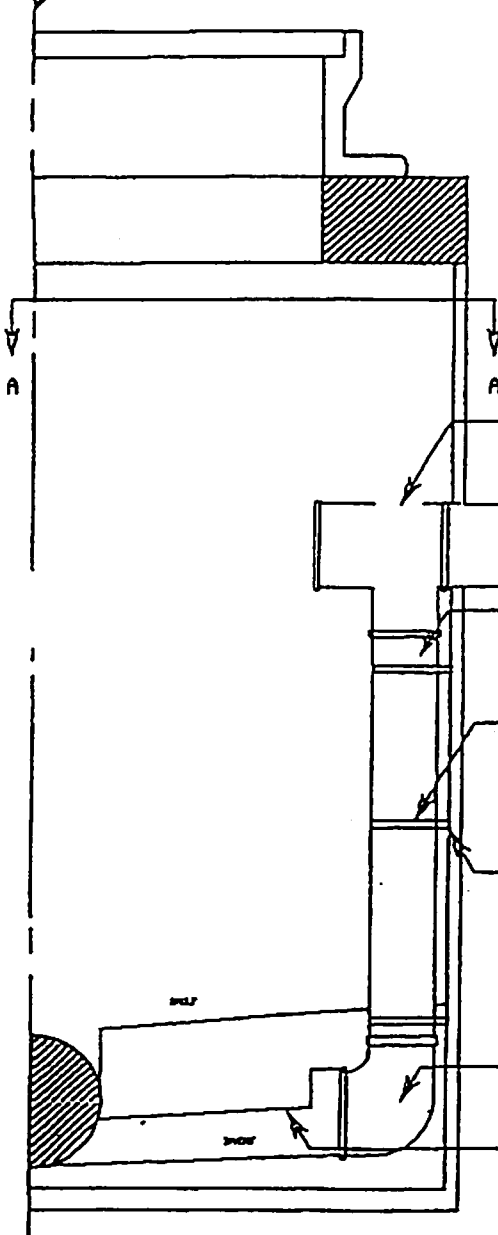


**Copy**  
**Not**

Bituminous Concrete Berm

Town of Granby MA  
Planning Board  
March 2005

CENTER LINE OF M.H.



TEE-VYE WITH  $\uparrow$  HOLE CUT OUT

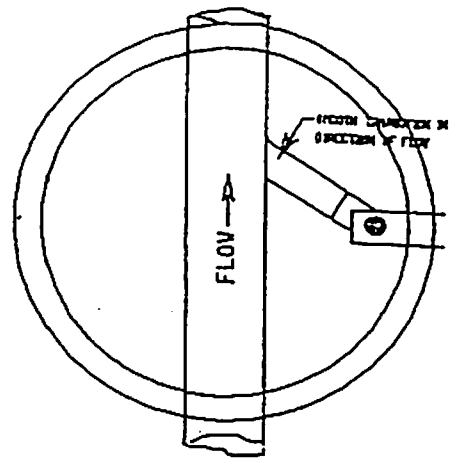
DROP PIPE TO BE SAME CLASS AND SAME SIZE OR LARGER AS INFLUENT PIPE.

1/4" X 1-1/4" ALUM. STRAPS  
MIN. 131 STRAPS 10.C.

(2) 3/8" X 2-1/4" S.S. PARABOLTS  
PER STRAP. PLACE BITUMINUM BTWN.  
ALUMIN. STRAP & CONCRETE WALL

90° BELL & SPIGOT ELBOW  
IN DIRECTION OF FLOW

PIPE CUT AT 1/2 DIAMETER



SECTION A-A

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Inside Drop Inlet

Town of Granby, MA  
Planning Board  
March 2005



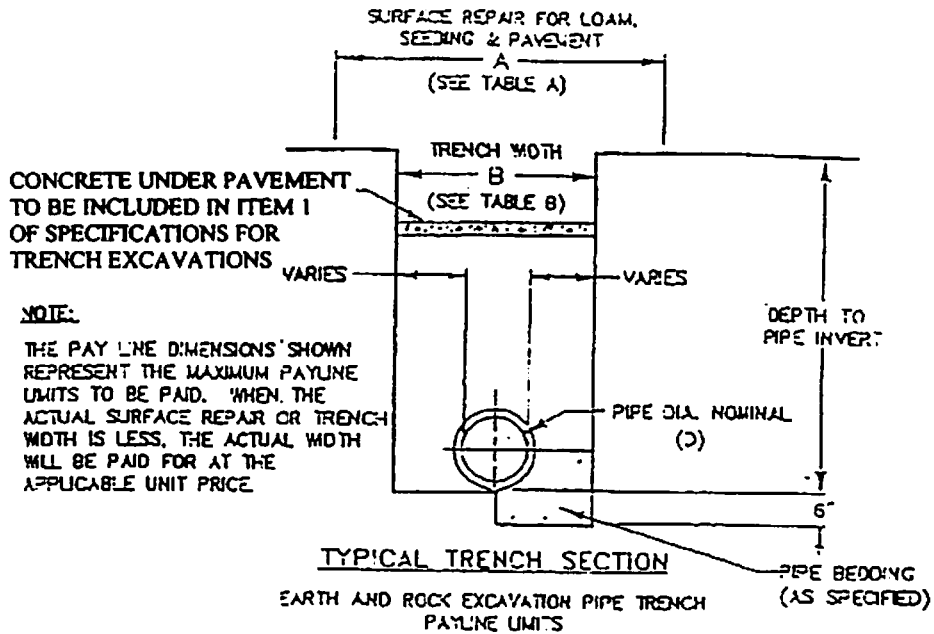


TABLE A SURFACE REPAIR PAY WIDTHS			
NOMINAL PIPE DIA. 0 - 24"		NOMINAL PIPE DIA. GREATER THAN 24"	
TEMPORARY PAVEMENT	PERMANENT PAVEMENT & LOAM & SEED	TEMPORARY PAVEMENT	PERMANENT PAVEMENT & LOAM & SEED
6'-5"	8'-6"	D + 4	D + 6

TABLE B EXCAVATION PAY WIDTHS AND ROCK EXCAVATION PAY WIDTHS	
NOMINAL PIPE DIA. 0-24"	NOMINAL PIPE DIA. GREATER THAN 24"
5'-0"	D + 3'-0"

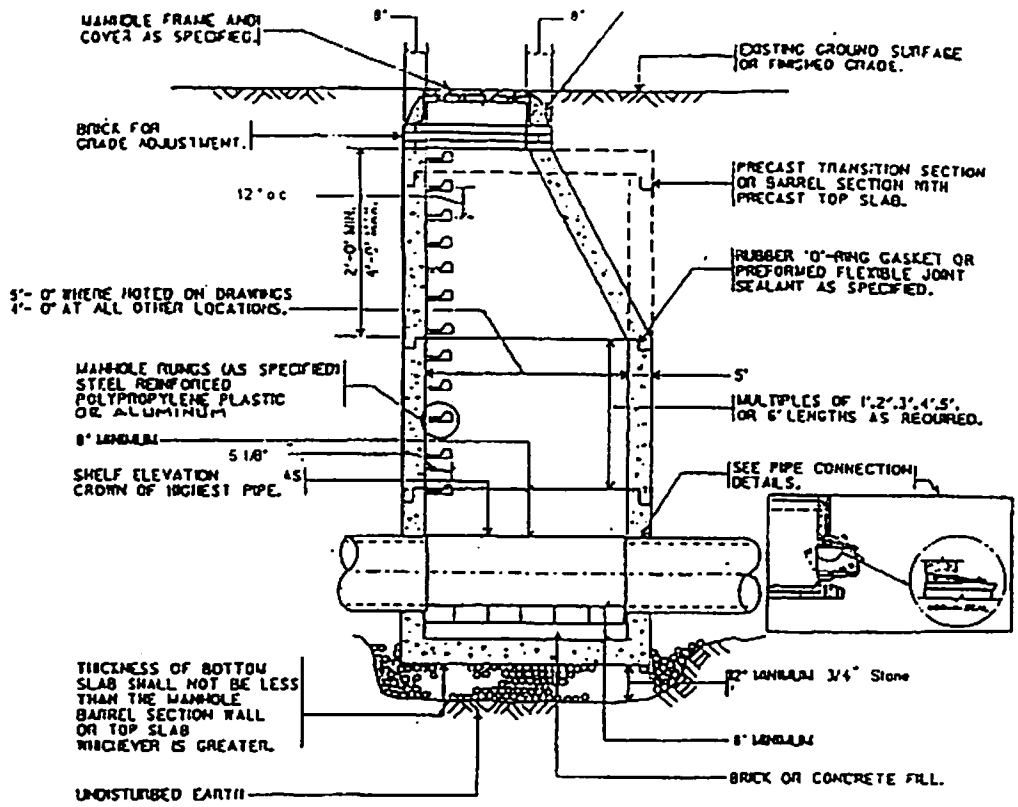
**NOTE:**

- PAYMENT DEPTH FOR ROCK (AS DEFINED HEREIN) WHICH IS ENCOUNTERED IN A TRENCH SHALL BE NO LESS THAN THREE(3) FEET.

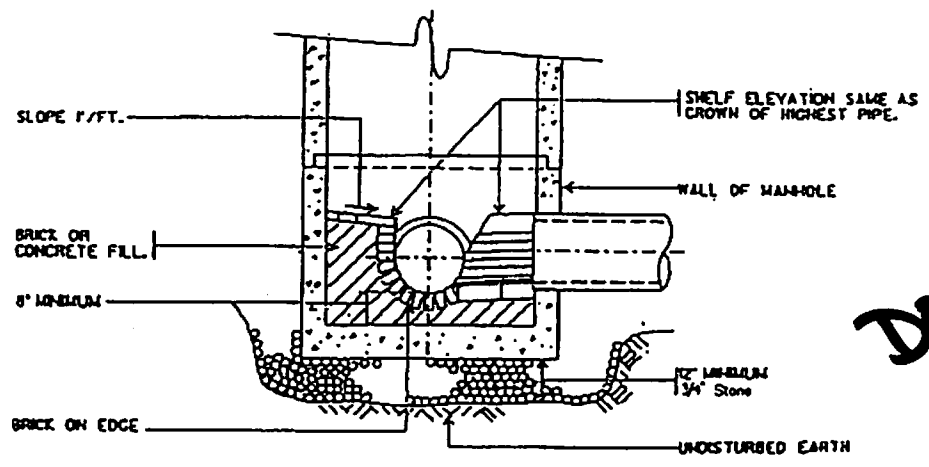
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Trench Pay Lines

Town of Granby, MA  
Planning Board  
March 2005



SECTION 0-8



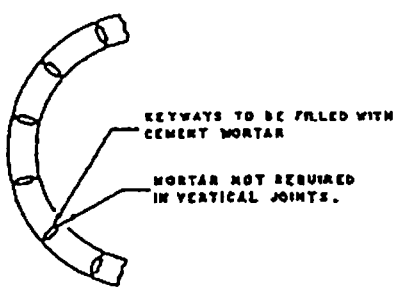
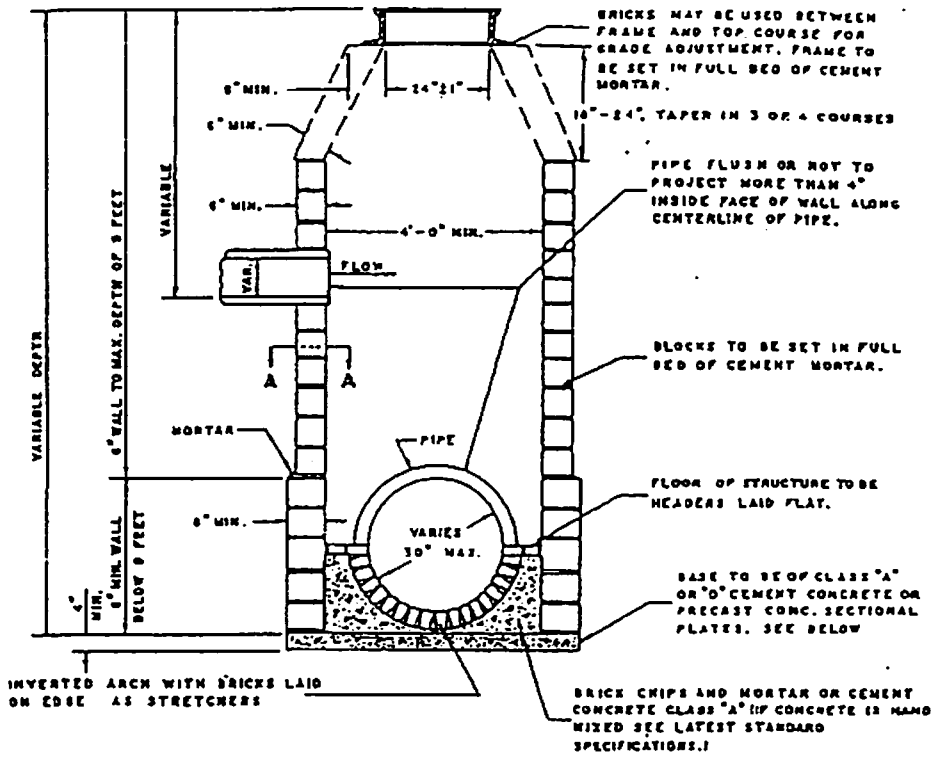
**DO NOT**  
COPY

Standard Precast  
Concrete Manhole

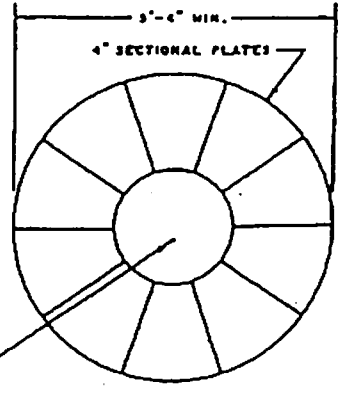
Town of Granby, MA  
Planning Board  
March 2005

# CONCRETE BLOCK MANHOLES MANHOLES OVER 9 FT. IN DEPTH

**NOTE:**  
MANHOLE DESIGN SHOWN IS FOR PIPE DIAMETER OF 30 INCHES OR LESS



**SECTION A-A**

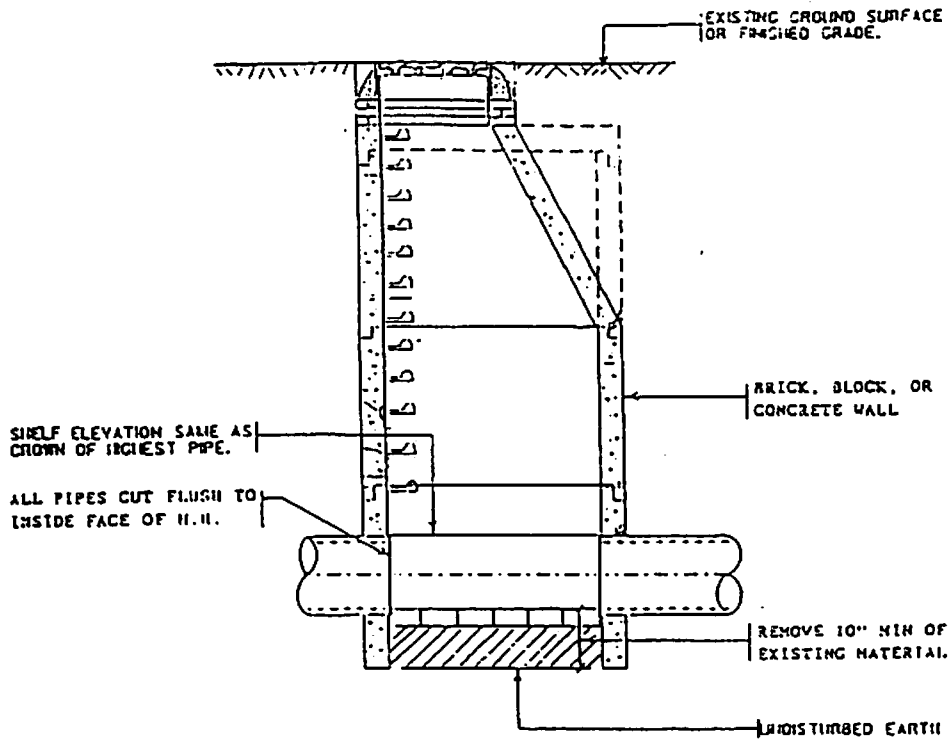


**PLAN OF BASE**

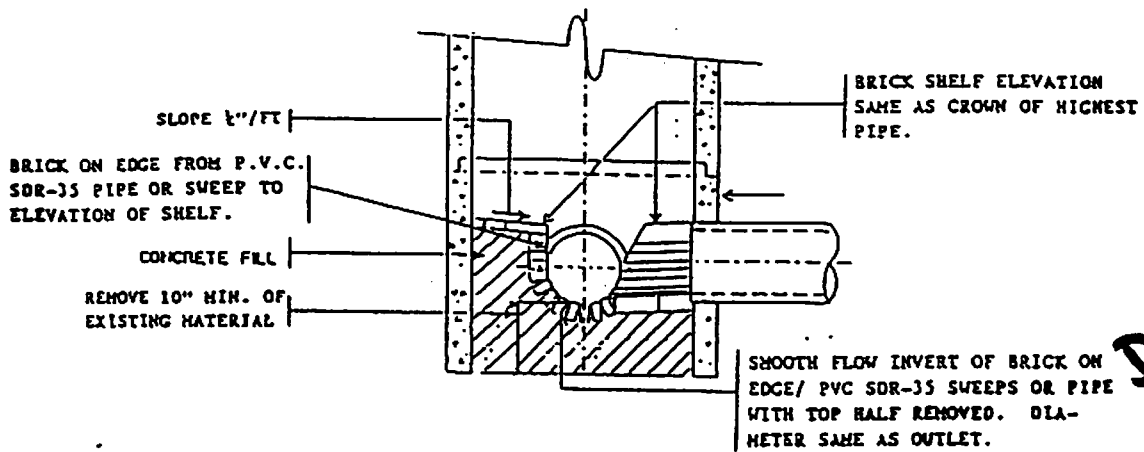
SOLID SECTION; OR FILL HOLE WITH BRICKS AND MORTAR; OR FILL WITH CLASS "A" OR "B" CONCRETE. (IF HAND MIXED SEE LATEST STANDARD SPECIFICATIONS)

**Do NOT  
COPY**

<b>Concrete Block Manhole Over 9' Depth</b>
Town of Granby, MA Planning Board March 2005



SECTION A-A



SECTION B-B

NOTE:

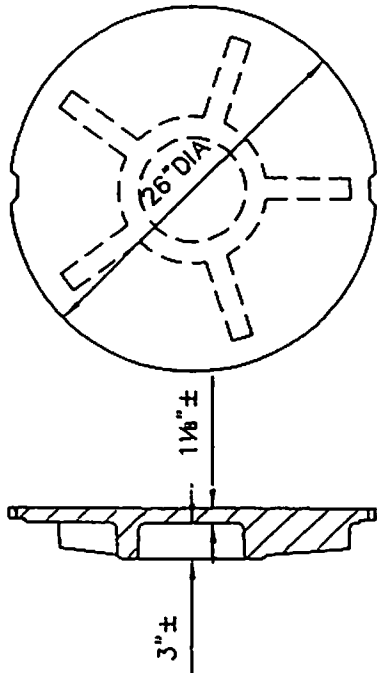
1. PLUG ALL INFILTRATION FROM 6" ABOVE CROWN OF HIGHEST PIPE DOWN TO UNDISTURBED EARTH.
2. ALL PIPES CUT FLUSH TO INSIDE FACE OF M.H.
3. CLEAN WALLS OF M.H.'S TO ALLOW NEW CONCRETE FILL TO ADHERE PROPERLY

Sanitary Manhole  
Invert Repair

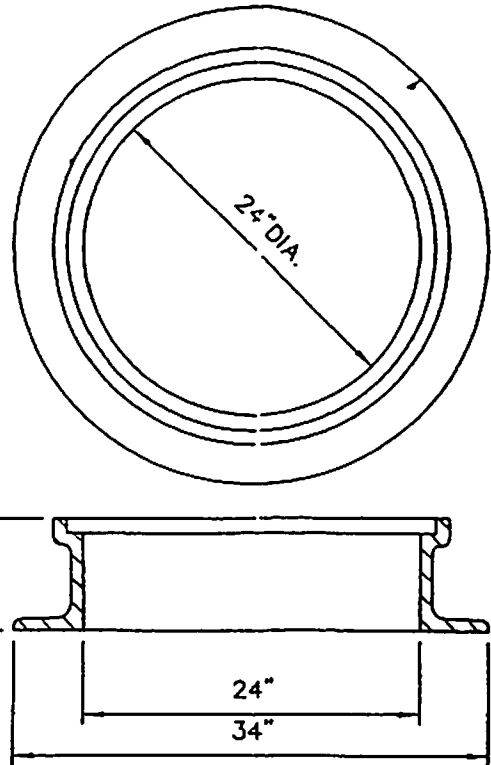
Town of Granby, MA  
Planning Board  
March 2005

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**STANDARD MANHOLE COVER**  
 MINIMUM WEIGHT: 200 LBS.



**STANDARD MANHOLE FRAME**  
 MINIMUM WEIGHT: 240 LBS.

**NOTES:**

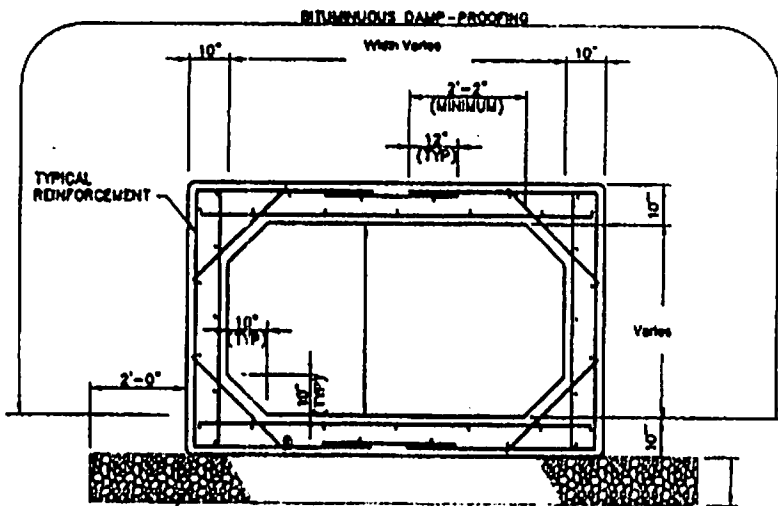
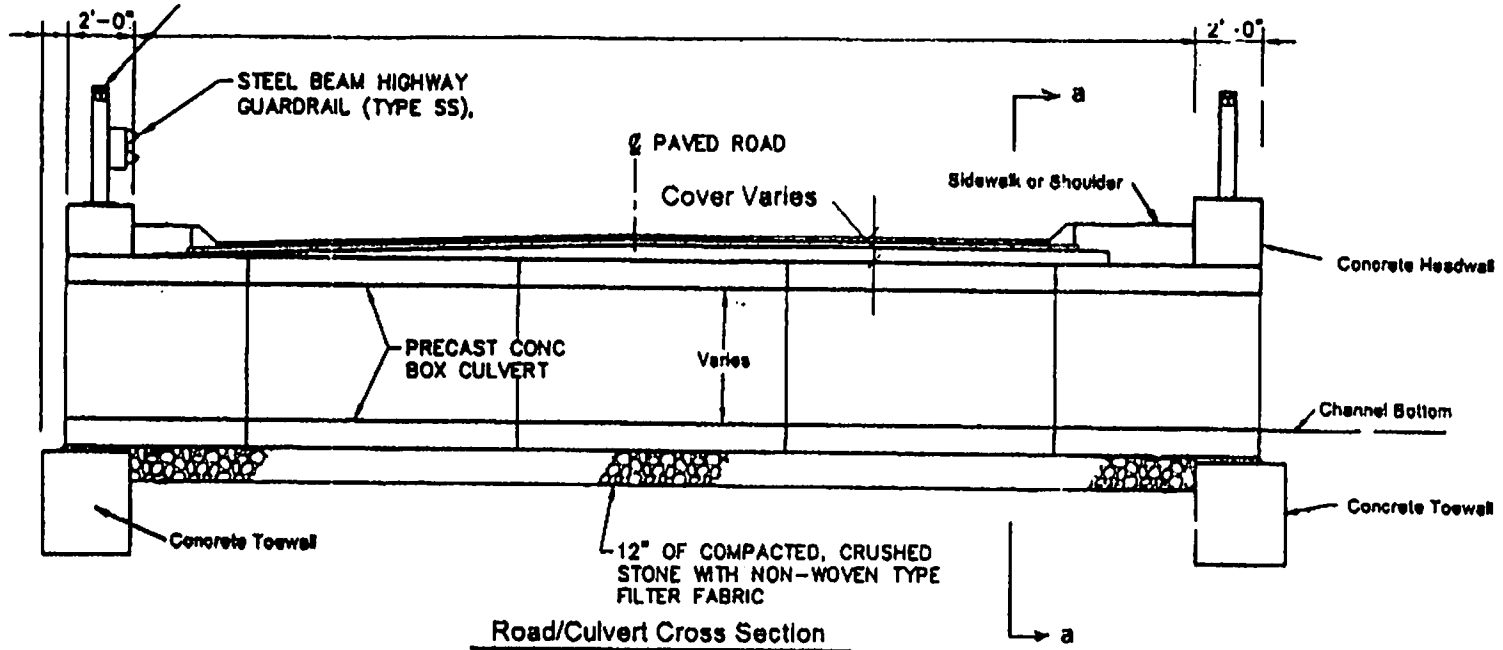
1. FRAME AND COVER SHALL BE PROVIDED FROM THE SAME MANUFACTURER.
2. LETTERING SHALL BE CAST INTO COVERS AS SPECIFIED.

**MANHOLE FRAME & COVER**  
 NO SCALE

**DO NOT  
 COPY**

Manhole Frame and Cover

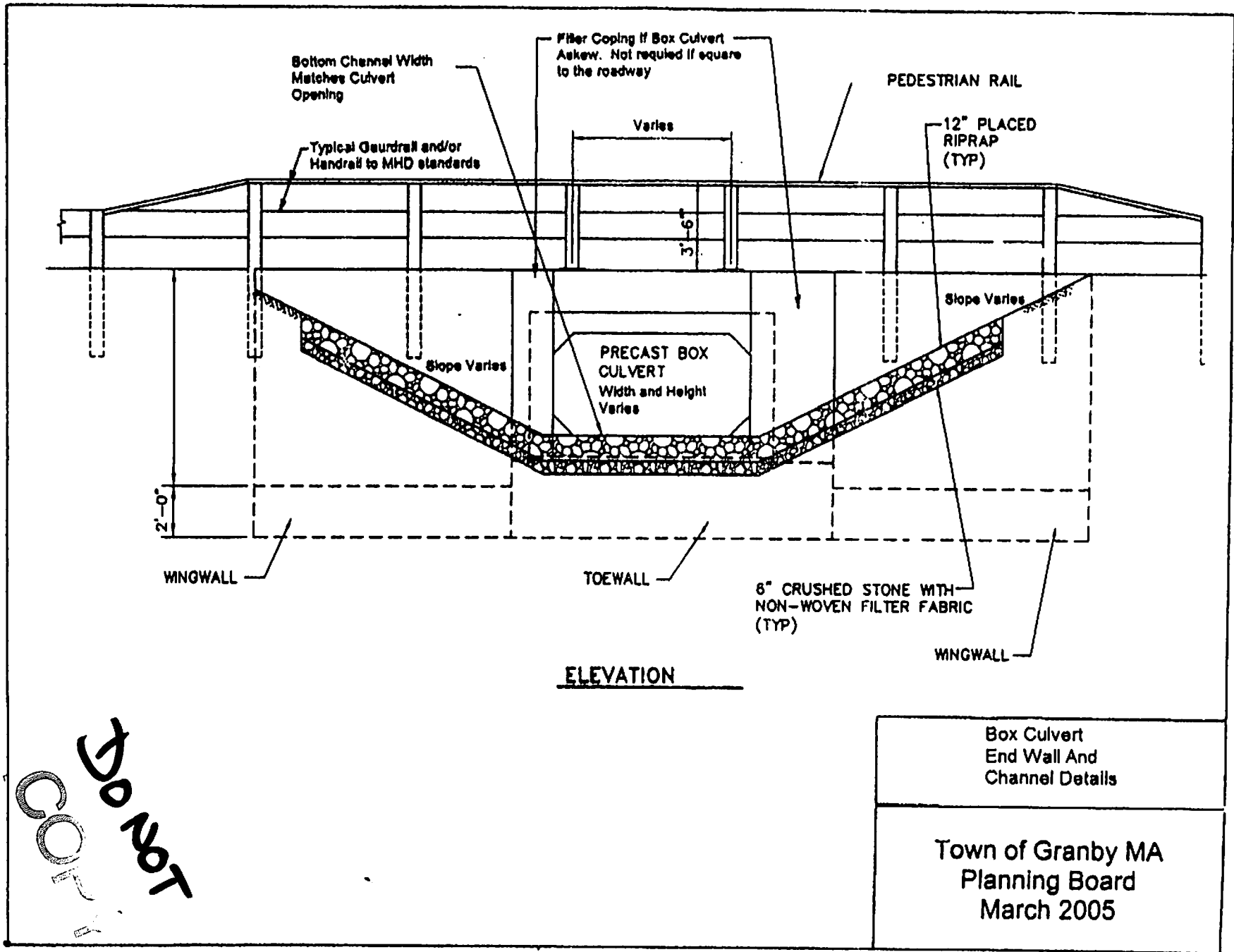
Town of Granby, MA  
 Planning Board  
 March 2005



Concrete Box Culvert  
Typical Structural Details

Town of Granby MA  
Planning Board  
March 2005

COPY

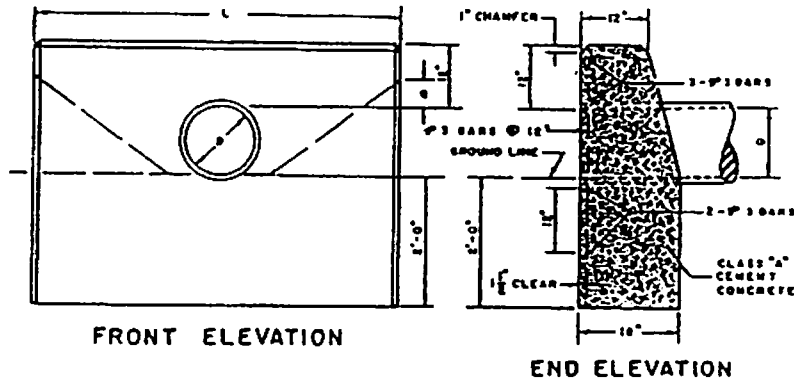


TOP COPY

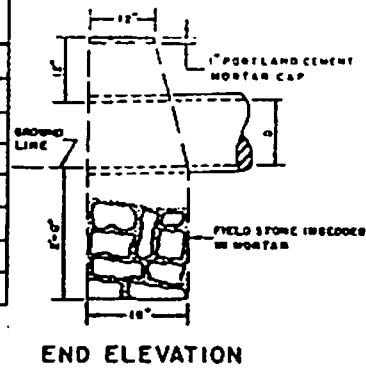
Box Culvert  
End Wall And  
Channel Details

Town of Granby MA  
Planning Board  
March 2005

## CONCRETE AND FIELD STONE MASONRY ENDS FOR 8" TO 30" PIPE CULVERT

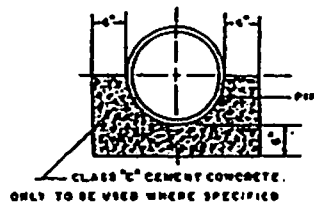


TRENCH C.P.M. 1'-0" DEPTH	PIPE DIAM.	1 1/2 : 1 SLOPE		2 : 1 SLOPE		TRENCH ESCAV. 1'-0" DEPTH		
		L	CONC. OP.P.M. CU. YDS.	STEEL LBS.	L		CONC. OP.P.M. CU. YDS.	STEEL LBS.
21.60	8"	4'-2"	0.77	15	5'-10"	1.08	21	27.40
23.91	10"	4'-10"	0.92	20	6'-8"	1.28	23	30.33
26.25	12"	5'-6"	1.08	21	7'-6"	1.49	29	33.23
29.75	15"	6'-6"	1.34	24	8'-9"	1.82	32	37.63
33.25	18"	7'-6"	1.61	30	10'-0"	2.18	39	42.00
37.35	21"	8'-6"	1.95	34	11'-6"	2.62	43	47.23
39.38	24"	9'-3"	2.16	35	12'-6"	2.97	50	50.73
43.75	30"	10'-6"	2.63	44	15'-0"	3.86	62	59.50
0		4" FOR 1 1/2 : 1 SLOPE		6" FOR 2 : 1 SLOPE				



### CONCRETE CRADLE FOR PIPE CULVERTS

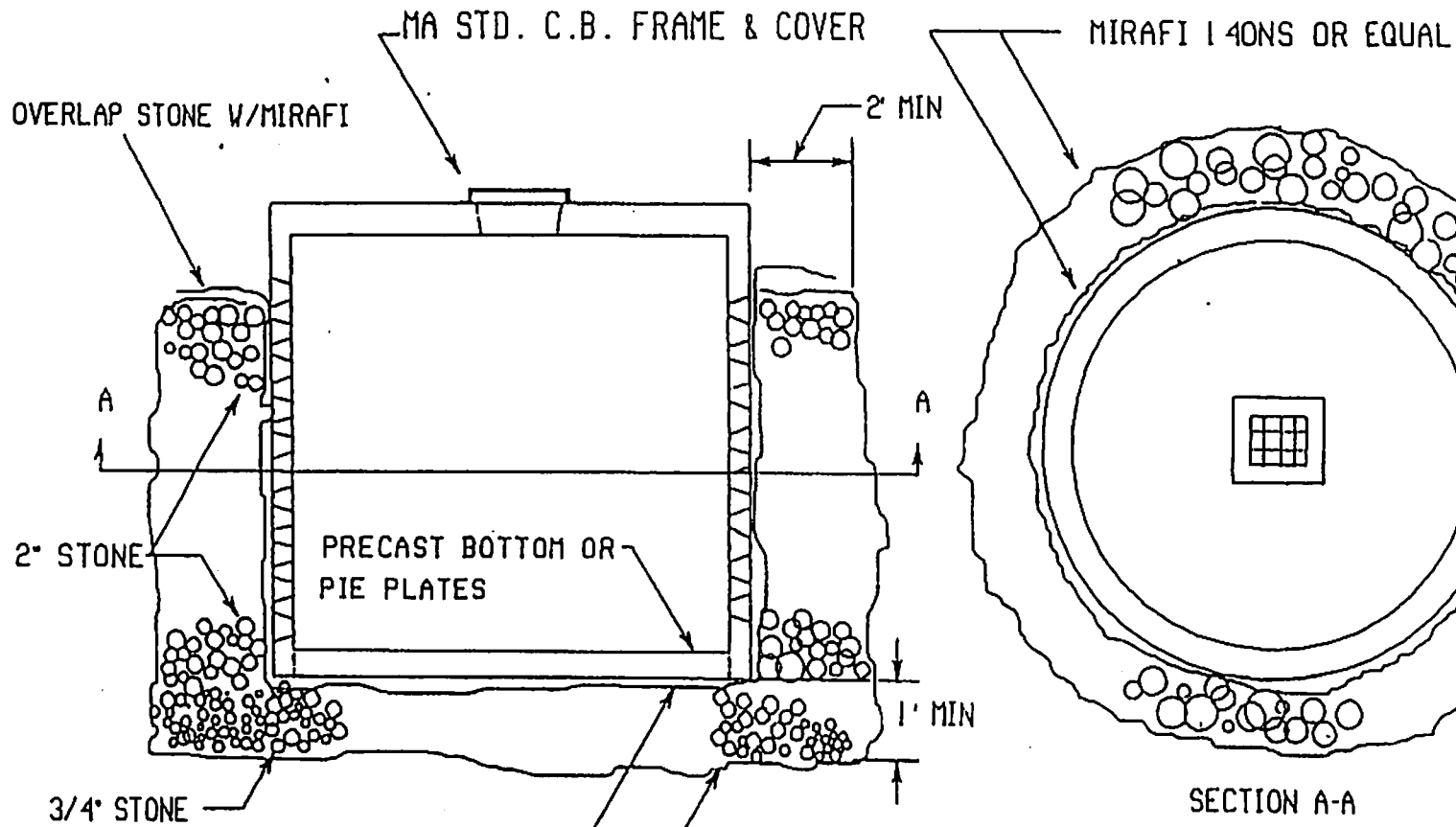
- NOTE:**
1. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST SPECIFICATIONS.
  2. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM.
  3. PAYMENTS WILL BE BASED ON THE ACCOMPANYING TABLE.



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Culvert Headwall

Town Of Granby  
Planning Board  
March 2205

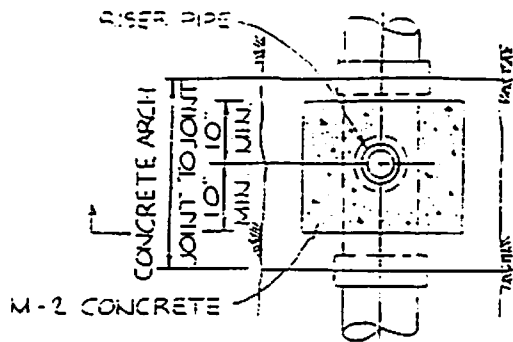


SECTION A-A

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Leaching Basin
Town of Granby MA Planning Board March 2005

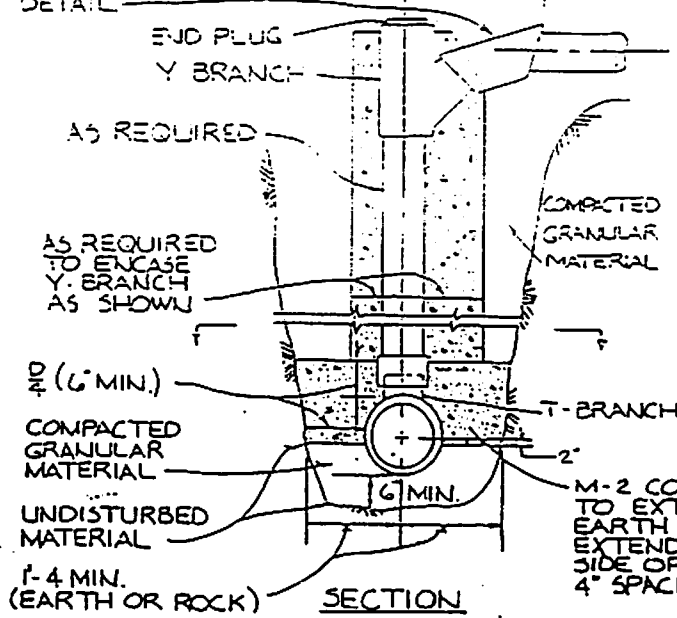


TRENCH BACKFILL TO BE PLACED AND COMPACTED CONCURRENTLY TO SAME ELEVATION ON EACH SIDE OF CHIMNEY

SECTIONAL PLAN

BUILDING CONNECTION WHERE REQUIRED REFER TO TYPICAL DETAIL

LIMIT OF PAYMENT FOR PIPE



M-2 CONCRETE ARCH TO EXTEND TO SIDE OF EARTH TRENCH. IN ROCK, EXTEND ARCH TO 4" FROM SIDE OF TRENCH & BACKFILL 4" SPACE WITH SAND.

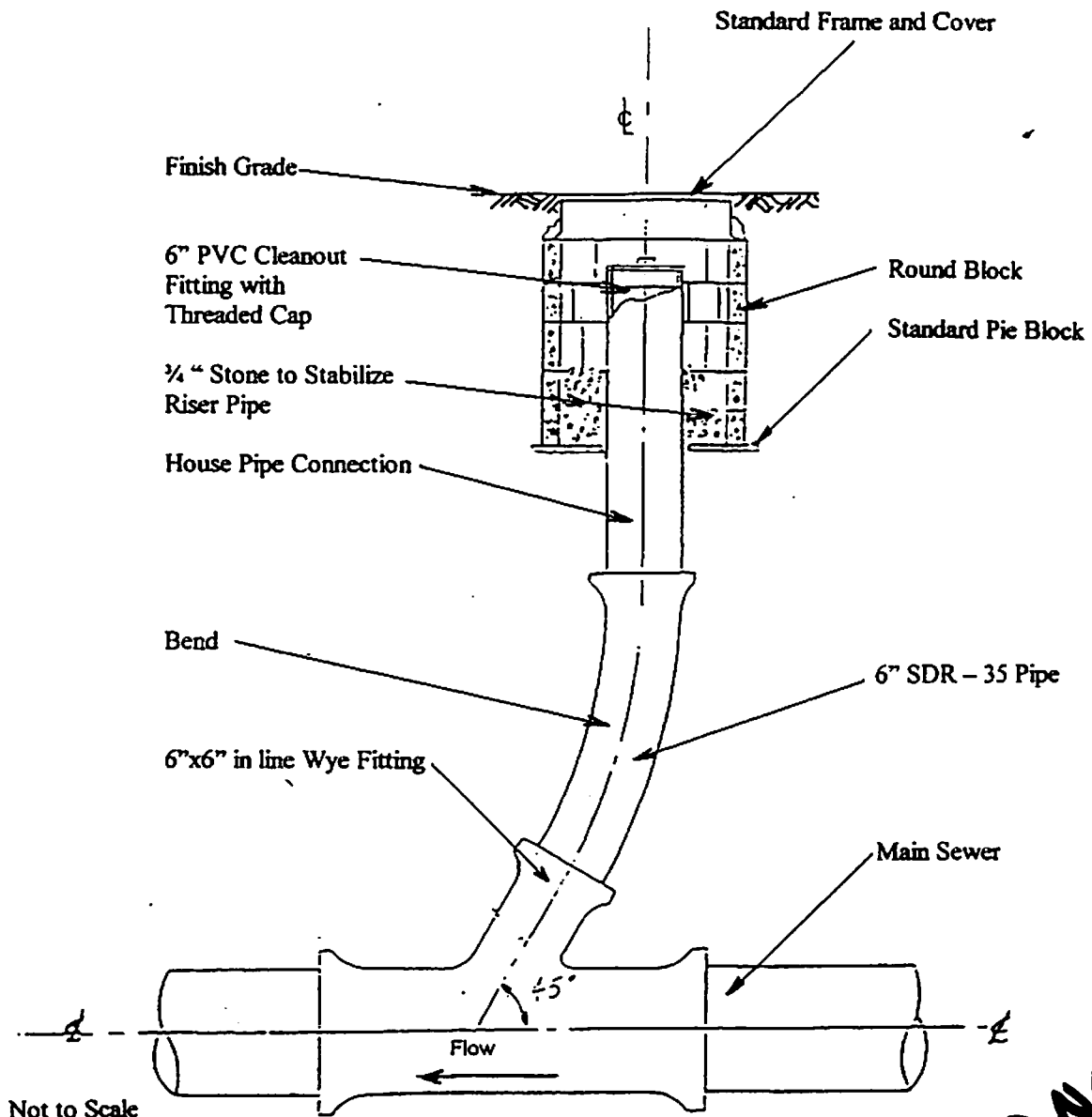
SECTION  
HOUSE CONNECTION CHIMNEY I

N.T.S.

**DON'T COPY**

Sewer Service Chimney

Town of Granby, MA  
Planning Board  
March 2005



Not to Scale

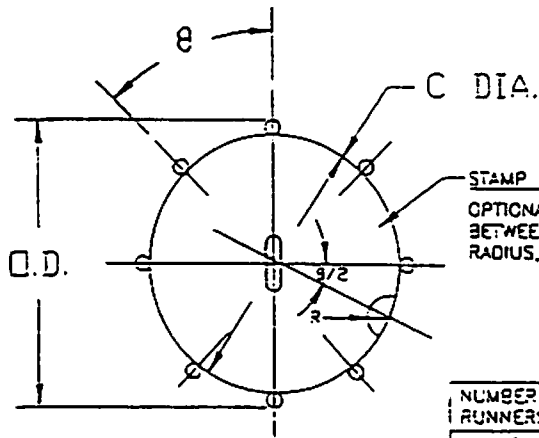
**Note:** Minimum Pitch for house service connections = 1/4" per foot  
 Location of connection to be determined in the field by the engineer

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Sewer Pipe Cleanout

Town of Granby, MA  
 Planning Board  
 March 2005

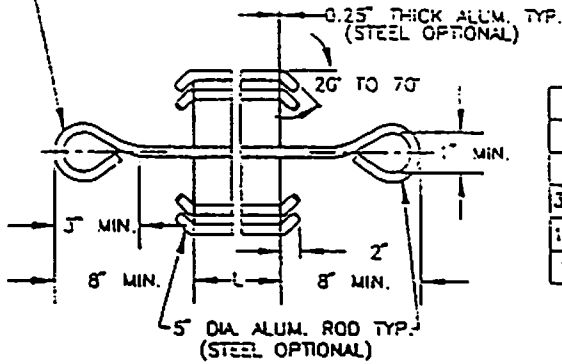
STAMPED IDENTIFICATION	5% LIMIT	
	O.D.	C
0-3034 DR-35 15"	13.20	12.20
0-3034 DR-35 12"	10.79	9.79
0-3034 DR-35 10"	9.08	8.08
0-3034 DR-35 8"	7.28	6.28



STAMP IDENTIFICATION ONE END TYP.  
 OPTIONAL-SCALLOPS (CENTERED BETWEEN RUNNERS)  
 RADIUS, R=1" FOR 10", 12" & 15" SIZE  
 R=3/4" FOR 8" SIZE  
 R=1/2" FOR 5" SIZE

NUMBER OF RUNNERS	7	8	9	10	11	12
ANGLE θ	51.43°	45°	40°	36°	32.73°	30°

NOTE: IF A SWIVEL CONNECTION IS DESIRED, USE A SWIVEL CUP ON THE PULL ROPE OR CABLE.



ALL DIMENSIONS IN INCHES

L	OVERALL LENGTH OF RUNNER MATERIAL REQUIRED L=4"
MIN.-MAX.	
4" TO 15"	
L	OVERALL LENGTH OF CENTER ROD MATERIAL REQUIRED L=26"
MIN.-MAX.	
3-1/2" TO 12"	
1-3/4" TO 10"	
1-1/4" TO 8"	

MANDREL DETAIL - FABRICATION & ASSEMBLY IN ACCORDANCE WITH ASTM D-3034 SEWER PIPE FOR DEFLECTION TESTING OF INSTALLED SEWER PIPE.

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Go-No-Go Gage Mandrel

Town of Granby, MA  
 Planning Board  
 March 2005



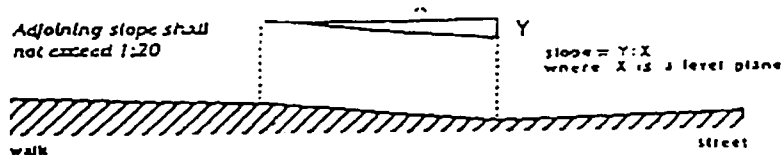
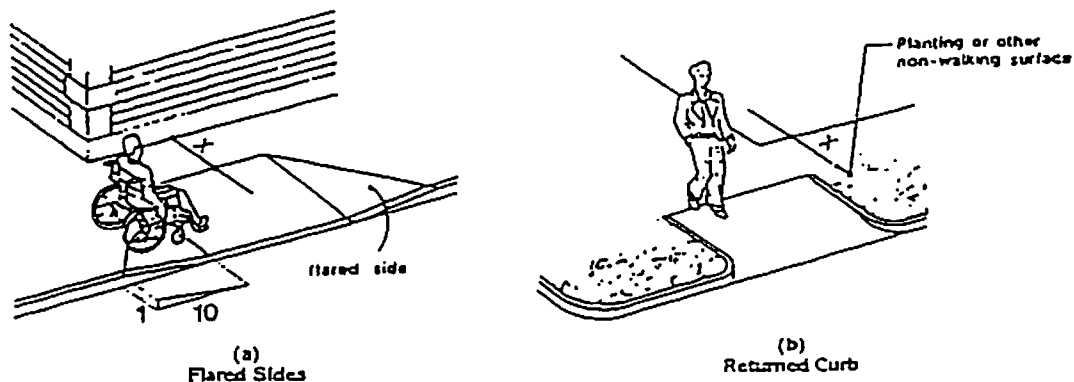


Fig. 11  
Measurement of Curb Ramp Slopes



YX is less than 48 in.  
then the slope of the flared side  
shall not exceed 1:12.

Fig. 12  
Sides of Curb Ramps

4.7.11 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48-in (1220 mm) long between the curb ramps in the part of the island intersected by the crossings (see Fig. 15(a) and (b)).

4.8 Ramps.

4.8.1° General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8.

4.8.2° Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps

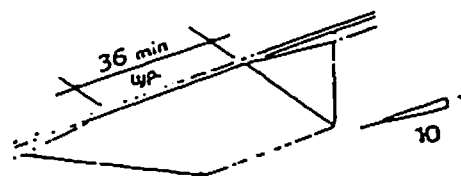


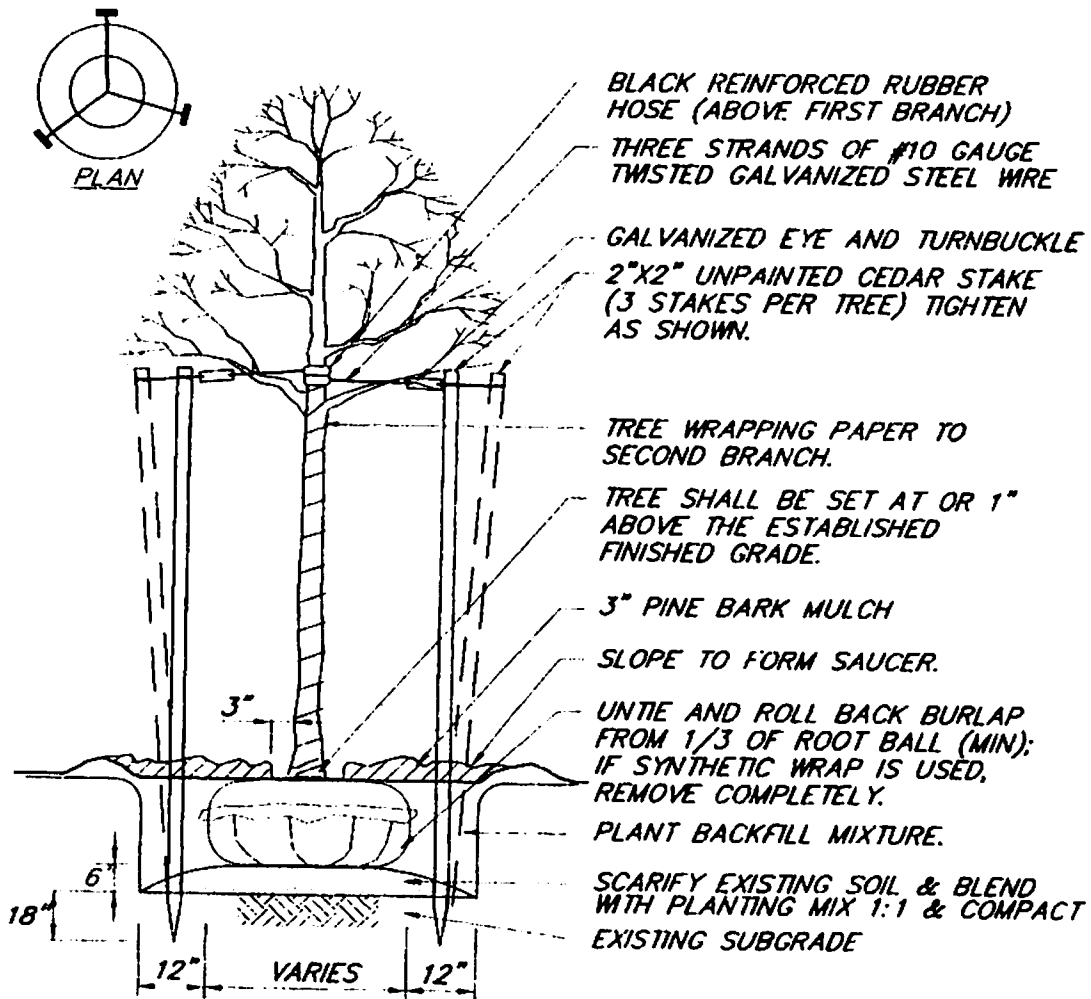
Fig. 13  
Built-Up Curb Ramp

and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as allowed in 4.1.6(3)(a) if space limitations prohibit the use of a 1:12 slope or less.

Handicapped Ramps

Town of Granby, MA  
Planning Board  
March 2005

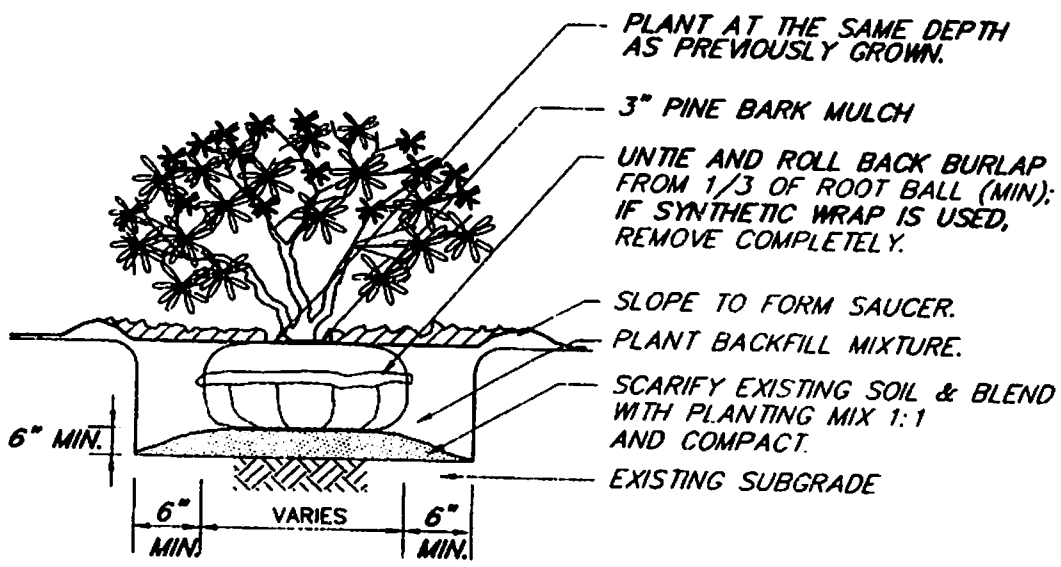
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## TREE PLANTING

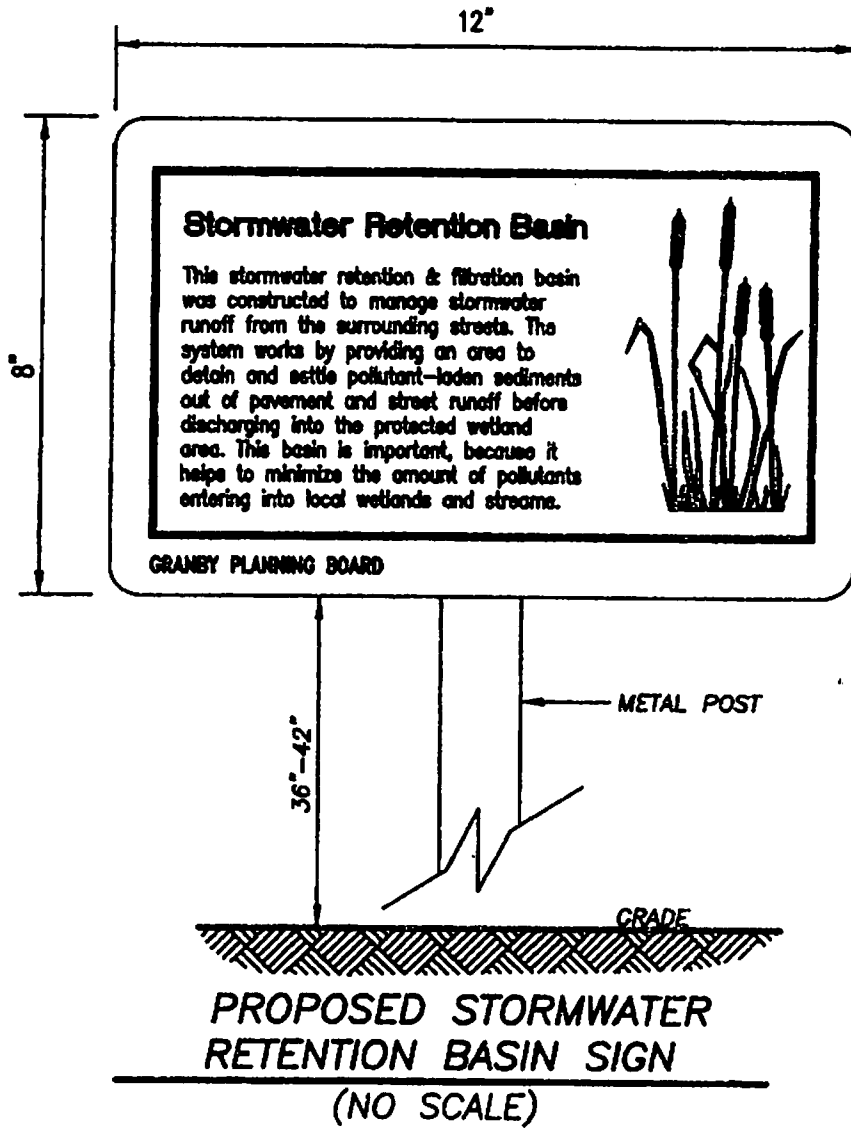
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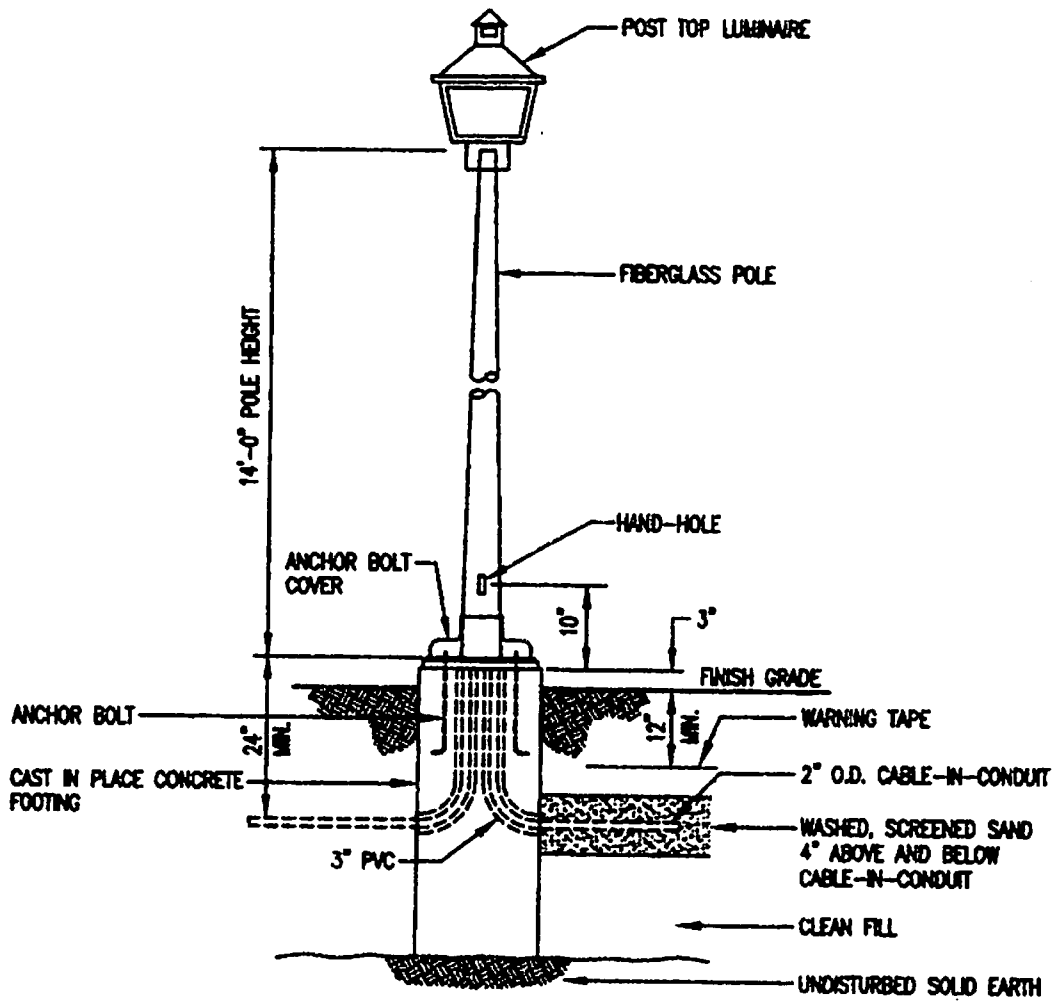


**SHRUB PLANTING**  
 NO SCALE

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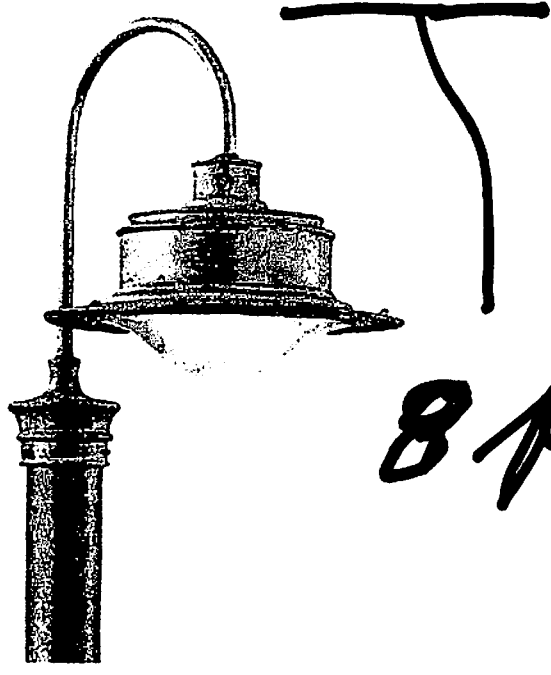


**BASE MOUNTED 14 FOOT FIBERGLASS  
POLE WITH LIGHT – MODEL CS6810**

(NOT TO SCALE)

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12/11/2006

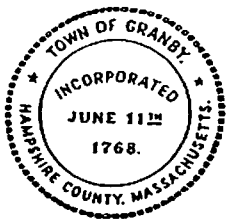


8 ft total height  
4 total

ON SENSORS

<http://images.lampsplus.com/images/67843.fpx?cell=330.330&qlt=75&cvt=jpeg>  
<http://images.lampsplus.com/images/67843.fpx?cell=330.330&qlt=75&cvt=jpeg>  
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12/9/2006  
12/9/2006  
12/9/2006  
12/9/2006



# TOWN OF GRANBY

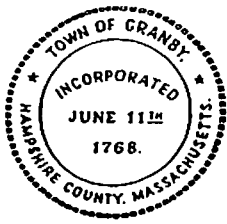
## GRANBY PLANNING BOARD

OCTOBER 2, 2006

### Approved "Peer Reviewer" List for Engineering Review & Oversight

PLANNING BOARD  
250 STATE STREET  
GRANBY, MA 01033  
(413) 467-7177  
FAX (413) 467-2080

- **Analytical Engineering, Inc.**  
Consulting Engineers  
Principle= William A. Shaheen, PH.D, P.E.  
49 South Street  
P.O. Box 153  
Granby MA 01033-0153  
Tel # (413) 467-3141; Fax # (413) 467—9075  
E-mail: billshaheen@analytical-engineering.com  
Website: www.analytical-engineering.com
- **Doucet & Associated, Inc.**  
Consulting Engineers  
251 Northampton St., Suite B  
Easthampton MA 01027  
Tel # (413) 529-1142; Fax # (413) 529-1062
- **Sherman and Frydryk Land Surveying & Engineering**  
Principle= Donald J Frydryk, P.E., P.L. S.  
Depot Village Professional Building  
3 Converse Street, Suite 203  
Palmer, MA 01069  
Tel # (413) 289-6210; Fax # (413) 289-1025
- **Robert H LeMaitre, P.E., P.L.S.**  
Civil Engineer & Land Surveyor  
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Ware, MA 01082  
Tel # (413) 967-5885
- **Tighe & Bond**  
Consulting Engineers & Environmental Specialist  
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Westfield, MA 01085  
Tel # (413) 562-1600; Fax # (413) 562-5317  
E-mail: info@tighebond.com  
Website: www.tighebond.com



# TOWN OF GRANBY

PLANNING BOARD  
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Transportation-Land Development-Environmental Services  
505 East Columbus Avenue  
Springfield MA 01105  
Tel # (413) 747-7113; Fax # (413) 747-0916
- **Heritage Surveys, Inc.**  
241 College Highway & Clark Street  
Post Office Box 1  
Southampton MA 01085-0001  
Tel # (413) 527-3600; Fax # (413) 527-8280  
E-mail: [bruce@heritagesurveys.com](mailto:bruce@heritagesurveys.com)  
Website: [www.heritagesurveys.com](http://www.heritagesurveys.com)
- **The Berkshire Design Group**  
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Tel # (413) 582-7000; Fax # (413) 582-7005  
E-mail: [bdg@berkshiredesign.com](mailto:bdg@berkshiredesign.com)  
Website: [www.berkshiredesign.com](http://www.berkshiredesign.com)