Morton Illinois

Public Works Department

MORTON STANDARD CONSTRUCTION DETAILS

STANDARDS AVAILABLE ONLINE
https://www.morton-il.gov

EFFECTIVE DATE:
JANUARY 1, 2026

VILLAGE OF MORTON

STANDARD CONSTRUCTION DETAILS

INDEX

GENERAL NOTES

The standard drawings contained herein have been adopted by the VILLAGE OF MORTON, ILLINOIS, for use in development within the Village of Morton. They may also be required, when deemed appropriate, for development within one and one-half (1-1/2) miles of the corporate limits of the Village of Morton.

These standards have been adopted in an effort to standardize construction and shall be the minimum required standards. Special conditions may warrant the use of other types of construction.

All sanitary sewer and water main construction shall be done in accordance with these standards and the latest edition of the *Standard Specifications for Water and Sewer Main Construction in Illinois*.

All other construction shall be done in accordance with these standards and the latest edition of the *Standard Specifications for Road and Bridge Construction (Current Edition)*, as published by the Illinois Department of Transportation.

In instances of discrepancies between the Village of Morton Standards and the *Standard Specifications for Water and Sewer Main Construction in Illinois* and the *Standard Specifications for Road and Bridge Construction,* the more stringent (as determined by the Village) shall apply.

All sections, details, and notes shown within the Village Standards are intended to be typical and apply to similar situations throughout, unless otherwise noted.

As required by the Village of Morton's Subdivision Ordinance, those installing public improvements are required to certify completed improvements to the Village. In order to provide this certification, the subdivider/developer is required to arrange and pay for construction inspection. All underground construction work shall require full-time inspection and all other construction activities shall be inspected to the satisfaction of the Village. The qualifications of the inspectors shall be subject to the Village's review and approval. Additionally, if adequate inspection is not being performed, the Village reserves the right to stop and require corrections to construction activities.

The subdivider’s/developer’s engineer shall submit certified “as-built” construction plans to the Village Engineer, for his records and shall include one of each of following three (3) formats, paper, pdf and CAD. Both paper plans and pdf should be identical and directly derived (plotted and exported) from the project CAD file(s). The paper plans shall be produced on 24”x36” (Arch D) size sheets and on durable paper with a minimum rating of (35lb or 130g/M^2), the pdf shall contain all plan information associated with the CAD file including layers, and CAD file(s) (typically .dwg, .dgn or GIS formats) shall be a complete copy of and contain all information associated with the work both existing and proposed. Versions of both pdf and CAD files shall be confirmed to be compatible with current versions of Village software prior to submittal.

SUMMARY OF PROCEDURES

The following summary of procedures indicates the normal process for the development of subdivisions and the party responsible for the completion of each step:

	FUNCTION	RESPONSIBILITY
1.	Optional pre-application meeting with the Plan Director	Subdivider / Developer
2.	Submit preliminary plat to Plan Director	Subdivider / Developer
3.	Submit preliminary plat to Plan Commission with comments of Plan Director, Village Engineer, Plat Officer and Zoning Enforcing Officer	Plan Director
4.	Review preliminary plat	Plan Commission
5.	Submit preliminary plat to Village Board	Plan Director
6.	Review preliminary plat	Village Board
7.	Submit construction plans, specifications and estimates of cost to the Plan Director for delivery to the Village Engineer	Subdivider / Developer
8.	Review construction plans and hold pre-construction conference	Village Engineer
9.	Submit final plat to Plan Director along with financial guarantee for improvements	Subdivider / Developer
10.	Check final plat for compliance with preliminary plat and submit to Plan Commission	Plan Director
11.	Review final plat	Plan Commission
12.	Submit final plat to Village Board	Plan Director
13.	Review final plat and financial guarantee	Village Board and Attorney
14.	Pay all required fees to the Village	Subdivider / Developer
15.	Record final plat with permission of subdivider	Village Clerk
16.	Certify completed construction to Village	Subdivider / Developer
17.	Submit as-built plans to the Village Engineer	Subdivider / Developer
18.	Conditionally accept improvements	Village Engineer
19.	Provide two-year guarantee of improvements	Subdivider / Developer
20.	Correct defects at end of two years	Subdivider / Developer
21.	Final acceptance of improvements	Village Engineer
22.	Release guarantee	Village Board

FEES

In order to partially defray the cost of reviewing plans, as well as to recover the expense of recording fees, certain fees shall be paid to the Village, as set forth below:

PRELIMINARY PLAT FEE
A fee of one hundred fifty dollars ($150.00) per plat shall be paid to the Village, prior to submission of a request for preliminary plat approval.

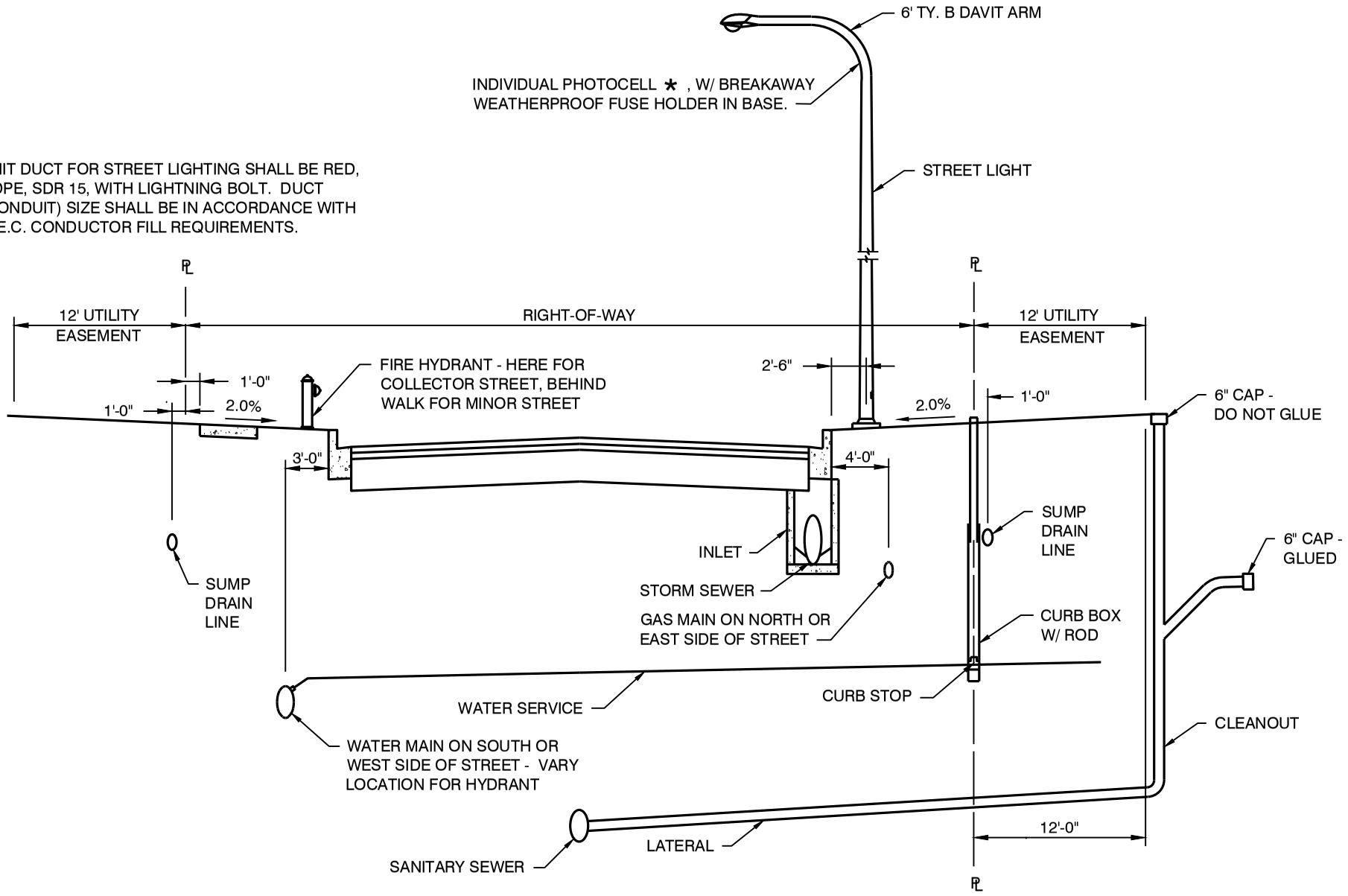
FINAL PLAT FEE
A fee of one hundred fifty dollars ($150.00) per plat, plus fifteen dollars ($15.00) per lot, shall be paid to the Village, prior to submission of a request for final plat approval. This fee includes the cost of recording the plat.

ENGINEERING FEES FOR CONSTRUCTION PLAN REVIEW
A deposit of one thousand dollars ($1,000.00) for expected engineering fees, for the review of the construction plans, shall be paid to the Village after the preliminary plat is approved and before construction plans are submitted. For additional engineering fees, refer to Sec. 11-2-6 of the Village Municipal Code.

ENGINEERING FEES FOR INSPECTION
The subdivider/developer shall pay a minimum of three dollars ($3.00) per centerline foot of streets and two dollars ($2.00) per linear foot for sewers outside of streets for engineering inspection fees. Said payment shall be made before or contemporaneous with final plat approval. In the event there is no plat, said payment shall be made before construction is begun.

* MINOR RES: LITHONIA, DSX1 LED, 30C, 1000, 40K, T2S, MVOLT, MA, PER, DNAXD OR APPROVED EQUAL, 30' MOUNTING HEIGHT
C/I & RES. COL: LITHONIA, DSX1 LED, 30C, 1000, 40K, T2S, MVOLT, MA, PER, DNAXD OR APPROVED EQUAL, 30' MOUNTING HEIGHT
MAJOR: LITHONIA, DSX1 LED, 40C, 1000, 40K, T2S, MVOLT, MA, DNAXD OR APPROVED EQUAL, 45' MOUNTING HEIGHT

NOTE: UNIT DUCT FOR STREET LIGHTING SHALL BE RED, HDPE, SDR 15, WITH LIGHTNING BOLT. DUCT (CONDUIT) SIZE SHALL BE IN ACCORDANCE WITH N.E.C. CONDUCTOR FILL REQUIREMENTS.



TYPICAL STREET & UTILITY LAYOUT

SCALE 1" = 10'

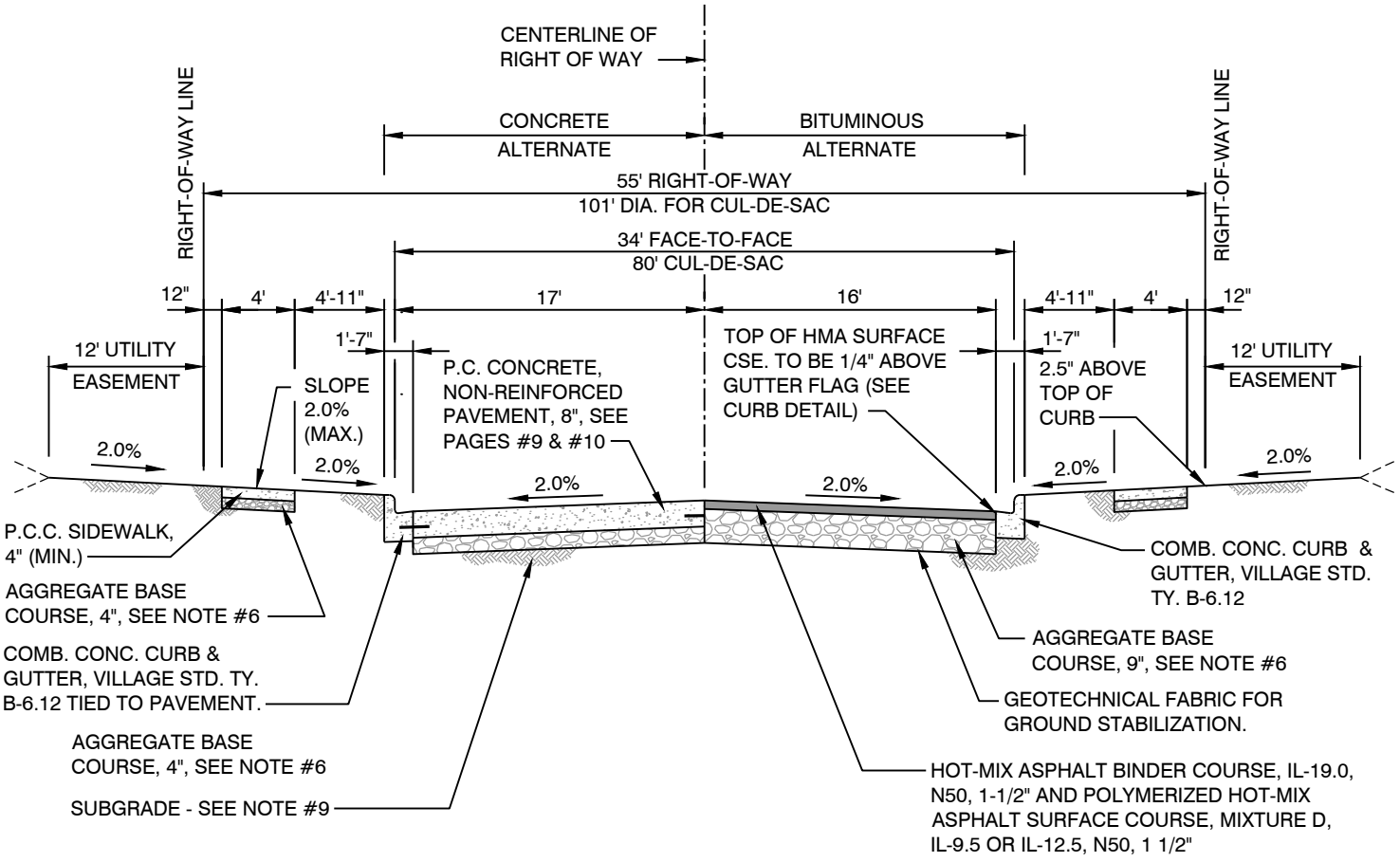
NOTE: ON CAPITOL PROJECTS, PLACE CLEANOUT JUST BEHIND RIGHT OF WAY LINE

STREET CLASSIFICATION	R.O.W. WIDTH	PAVEMENT WIDTH FOC - FOC	MIN. ℄ RADIUS	MIN. PROFILE GRADE	MAX. PROFILE GRADE	FLEXIBLE PAVEMENT SECTION				RIGID PAVEMENT SECTION	
						AGGREGATE BASE CSE	HMA BINDER BASE CSE IL-19.0, N50	HMA BINDER CSE IL-19.0, N50	POLYMER HMA SURFACE CSE MIX D N50	AGG BASE CSE	CONCRETE PAVEMENT
MINOR RESIDENTIAL STREET	55'	34'	100'	0.50%	7.00%	9"		1.5"	1.5"	4"	8" NON-REINFORCED
RESIDENTIAL COLLECTOR STREET	68'	38'	500'	0.50%	7.00%	HMA BASE CSE ALT.	8"	2"	2"	4"	8" NON-REINFORCED
						13"	HMA BASE CSE ALT.	4"	2"		
MINOR COMMERCIAL / INDUSTRIAL STREET	55'	34'	100'	0.50%	7.00%	HMA BASE CSE ALT.	8"	2"	2" (H.D.)	4"	8" NON-REINFORCED
						13"	HMA BASE CSE ALT.	4"	2" (H.D.)		
COMMERCIAL / INDUSTRIAL COLLECTOR STREET	68'	38'	500'	0.50%	7.00%	4"	10"	2.5"	2" (H.D.)	6"	10" REINFORCED

GENERAL NOTES:

1. ALL STREETS UTILIZING AN AGGREGATE BASE UNDER FLEXIBLE PAVEMENT SHALL INCLUDE GEOTECHNICAL FABRIC FOR GROUND STABILIZATION.
2. CURB AND GUTTER IS REQUIRED ON ALL STREETS. PAVEMENT WIDTH INDICATED IS FROM FACE-TO-FACE OF CURB.
3. SIDEWALKS ARE REQUIRED ON ALL STREETS.
4. ALL HOT-MIX ASPHALT SURFACE COURSES SHALL BE POLYMER MODIFIED.
5. RECYCLED MATERIAL SHALL NOT BE ALLOWED IN ANY OF THE HOT-MIX ASPHALT COURSES.
6. SEE PAGE #29 FOR SPECIFICATIONS FOR HOT-MIX ASPHAT MIXTURES.
7. BIKE TRAILS (MULTI-USE PATHS SHALL BE PROVIDED AS SHOWN ON THE VILLAGE OFFICIAL MAP (ADDITIONAL R.O.W. NEEDED).

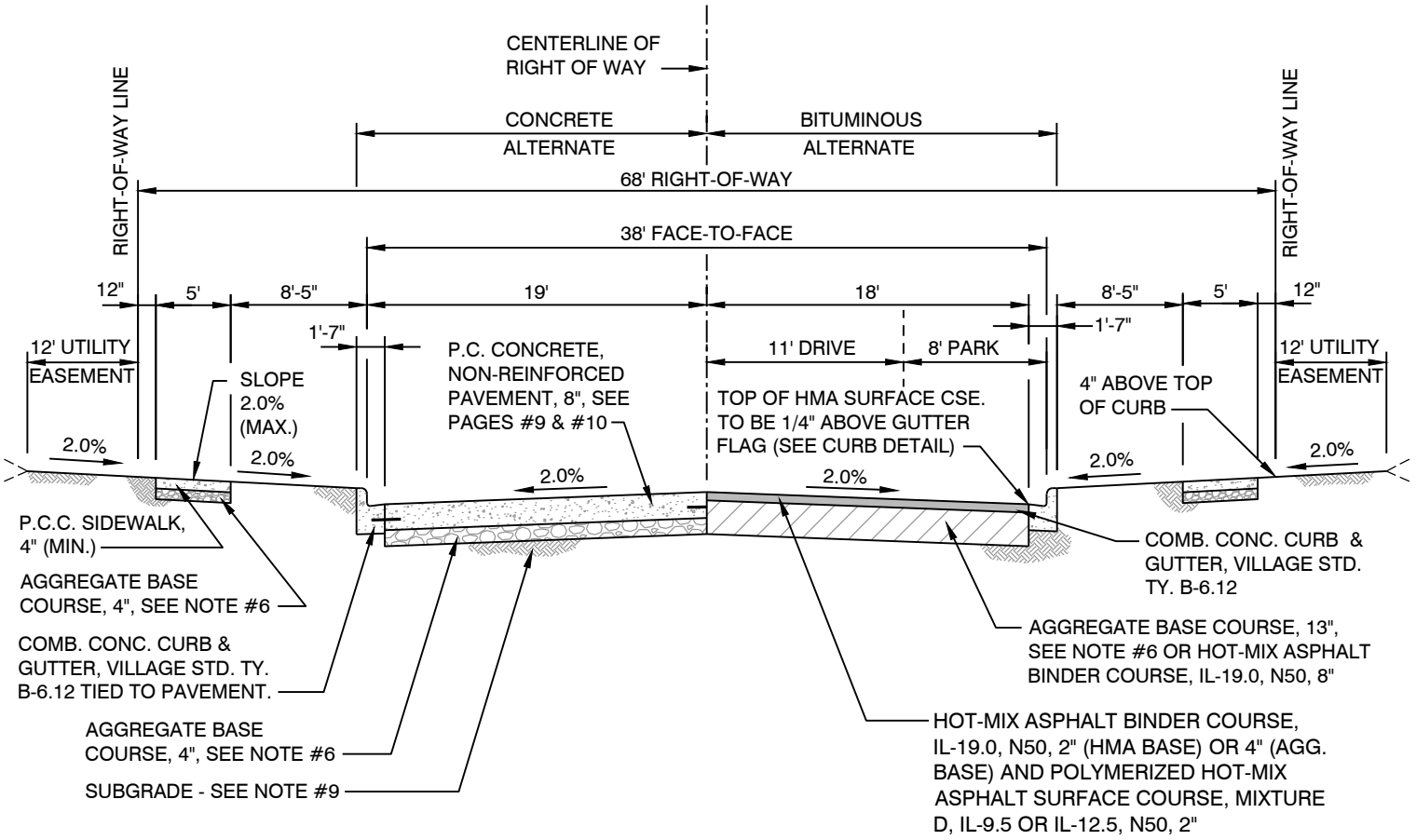
STREET CLASSIFICATION / DESIGN STANDARDS



GENERAL NOTES:

1. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.
2. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB AND GUTTER SHALL MATCH JOINTS IN PAVEMENT.
3. SIDEWALKS SHALL BE 6" (MIN.) THICK THROUGH DRIVEWAYS (7" AT COMMERCIAL AND 8" AT INDUSTRIAL LOCATIONS).
4. P.C.C. PAVEMENT DETAILS ARE SHOWN 0N PAGES #9 AND #10 (NON-REINFORCED) & PAGES #11 & #12 (REINFORCED).
5. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.
6. SEE PAGE #31 FOR AGGREGATE BASE COURSE, TYPE B (CA-6).
7. NO RECYCLED MATERIAL IN HOT-MIX ASPHALT MIXTURES. POLYMER MUST BE APPROVED BY VILLAGE. SEE PAGE #29 FOR SPECIAL PROVISION FOR HOT-MIX ASPHALT MIXTURES.
8. COMPACTED HMA SURFACE COURSE SHALL BE 1/4" ABOVE THE GUTTER PAN. EDGE TO BE NEAT, COMPACTED AND UNIFORM. (SEE CURB DETAIL)
9. ALL SUBGRADES AND AGGREGATE BASE COURSES SHALL BE CUT UNIFORMLY TO THEIR PROPER DEPTH/GRADE, COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR AND/OR PROOF ROLLED WITH A FULLY LOADED TANDEM TRUCK. PROOF ROLL SHALL BE WITNESSED BY ENGINEER. ROLLING, CRACKING, AND/OR DEFORMATION SHALL BE CORRECTED AS DETAILED IN SPECIAL PROVISIONS AND OR AS DIRECTED BY ENGINEER.

MINOR RESIDENTIAL STREET



GENERAL NOTES:

1. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.

2. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB AND GUTTER SHALL MATCH JOINTS IN PAVEMENT.

3. SIDEWALKS SHALL BE 6" (MIN.) THICK THROUGH DRIVEWAYS (7" AT COMMERCIAL AND 8" AT INDUSTRIAL LOCATIONS).

4. P.C.C. PAVEMENT DETAILS ARE SHOWN 0N PAGES #9 AND #10 (NON-REINFORCED) & PAGES #11 & #12 (REINFORCED).

5. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.

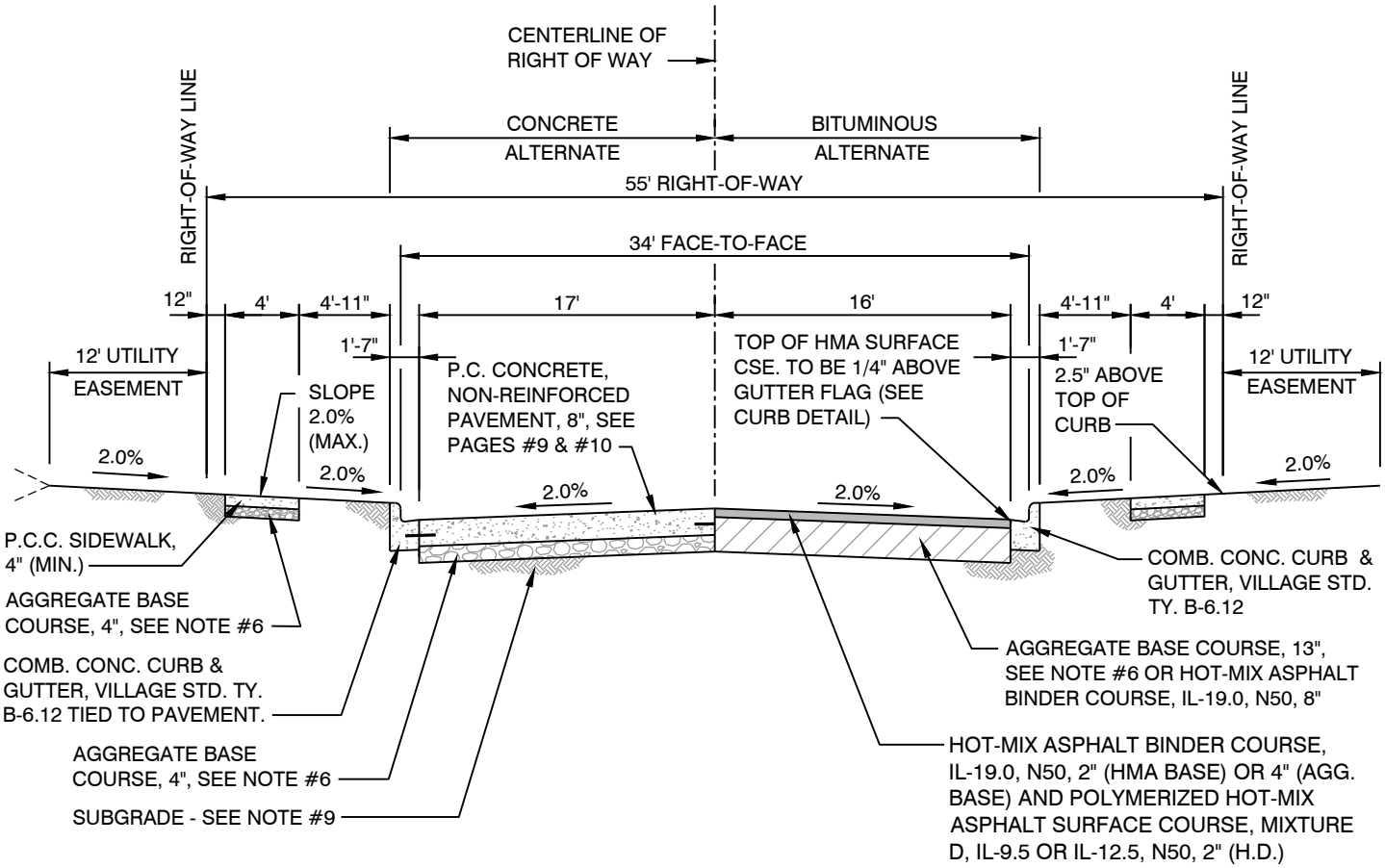
6. SEE PAGE #31 FOR AGGREGATE BASE COURSE, TYPE B (CA-6).

7. NO RECYCLED MATERIAL IN HOT-MIX ASPHALT MIXTURES. POLYMER MUST BE APPROVED BY VILLAGE. SEE PAGE #29 FOR SPECIAL PROVISION FOR HOT-MIX ASPHALT MIXTURES.

8. COMPACTED HMA SURFACE COURSE SHALL BE 1/4" ABOVE THE GUTTER PAN. EDGE TO BE NEAT, COMPACTED AND UNIFORM. (SEE CURB DETAIL)

9. ALL SUBGRADES AND AGGREGATE BASE COURSES SHALL BE CUT UNIFORMLY TO THEIR PROPER DEPTH/GRADE, COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR AND/OR PROOF ROLLED WITH A FULLY LOADED TANDEM TRUCK. PROOF ROLL SHALL BE WITNESSED BY ENGINEER. ROLLING, CRACKING, AND/OR DEFORMATION SHALL BE CORRECTED AS DETAILED IN SPECIAL PROVISIONS AND OR AS DIRECTED BY ENGINEER.

RESIDENTIAL COLLECTOR STREET



GENERAL NOTES:

1. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.

2. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB AND GUTTER SHALL MATCH JOINTS IN PAVEMENT.

3. SIDEWALKS SHALL BE 6" (MIN.) THICK THROUGH DRIVEWAYS (7" AT COMMERCIAL AND 8" AT INDUSTRIAL LOCATIONS).

4. P.C.C. PAVEMENT DETAILS ARE SHOWN 0N PAGES #9 AND #10 (NON-REINFORCED) & PAGES #11 & #12 (REINFORCED).

5. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.

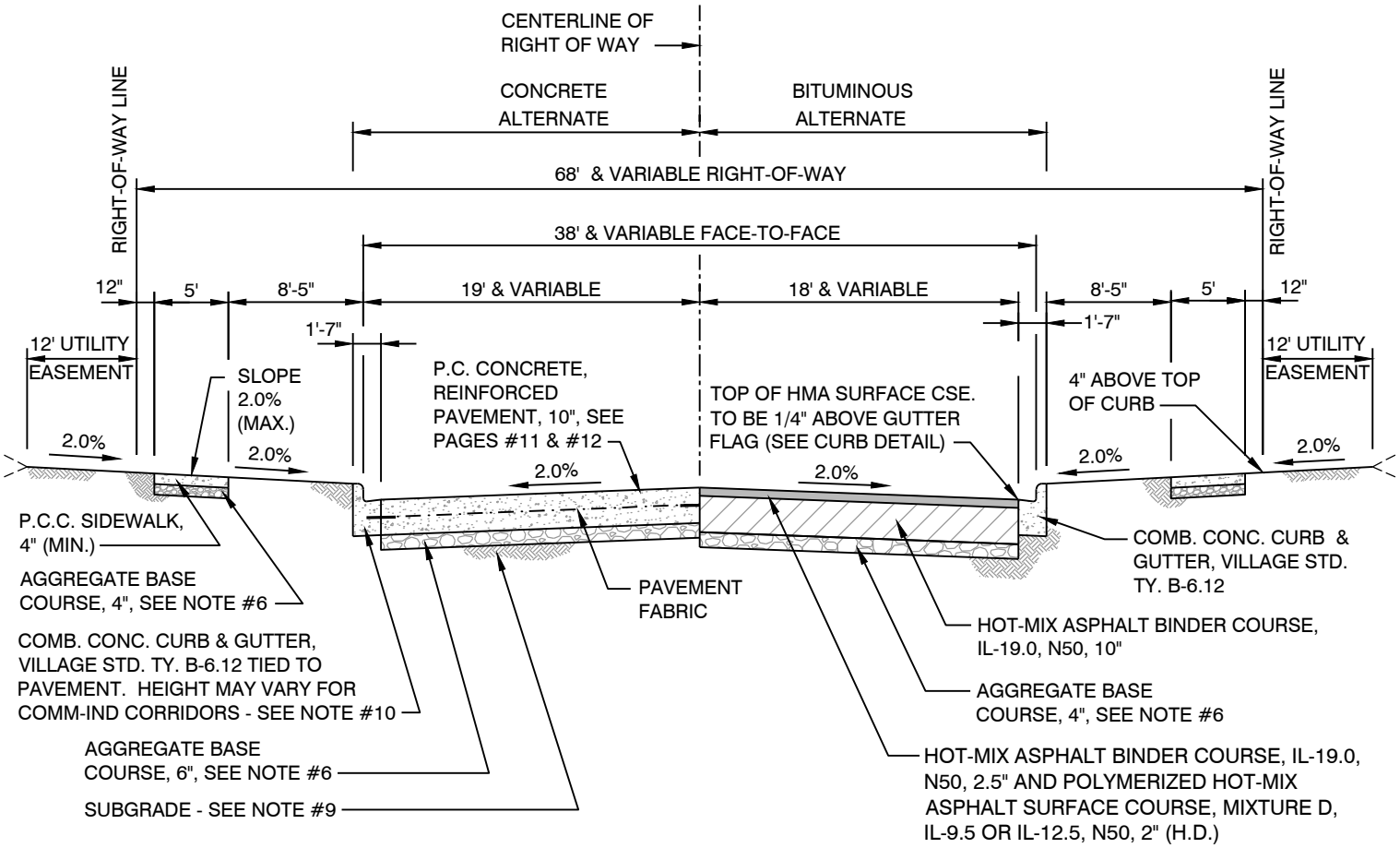
6. SEE PAGE #31 FOR AGGREGATE BASE COURSE, TYPE B (CA-6).

7. NO RECYCLED MATERIAL IN HOT-MIX ASPHALT MIXTURES. POLYMER MUST BE APPROVED BY VILLAGE. SEE PAGE #29 FOR SPECIAL PROVISION FOR HOT-MIX ASPHALT MIXTURES.

8. COMPACTED HMA SURFACE COURSE SHALL BE 1/4" ABOVE THE GUTTER PAN. EDGE TO BE NEAT, COMPACTED AND UNIFORM. (SEE CURB DETAIL)

9. ALL SUBGRADES AND AGGREGATE BASE COURSES SHALL BE CUT UNIFORMLY TO THEIR PROPER DEPTH/GRADE, COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR AND/OR PROOF ROLLED WITH A FULLY LOADED TANDEM TRUCK. PROOF ROLL SHALL BE WITNESSED BY ENGINEER. ROLLING, CRACKING, AND/OR DEFORMATION SHALL BE CORRECTED AS DETAILED IN SPECIAL PROVISIONS AND OR AS DIRECTED BY ENGINEER.

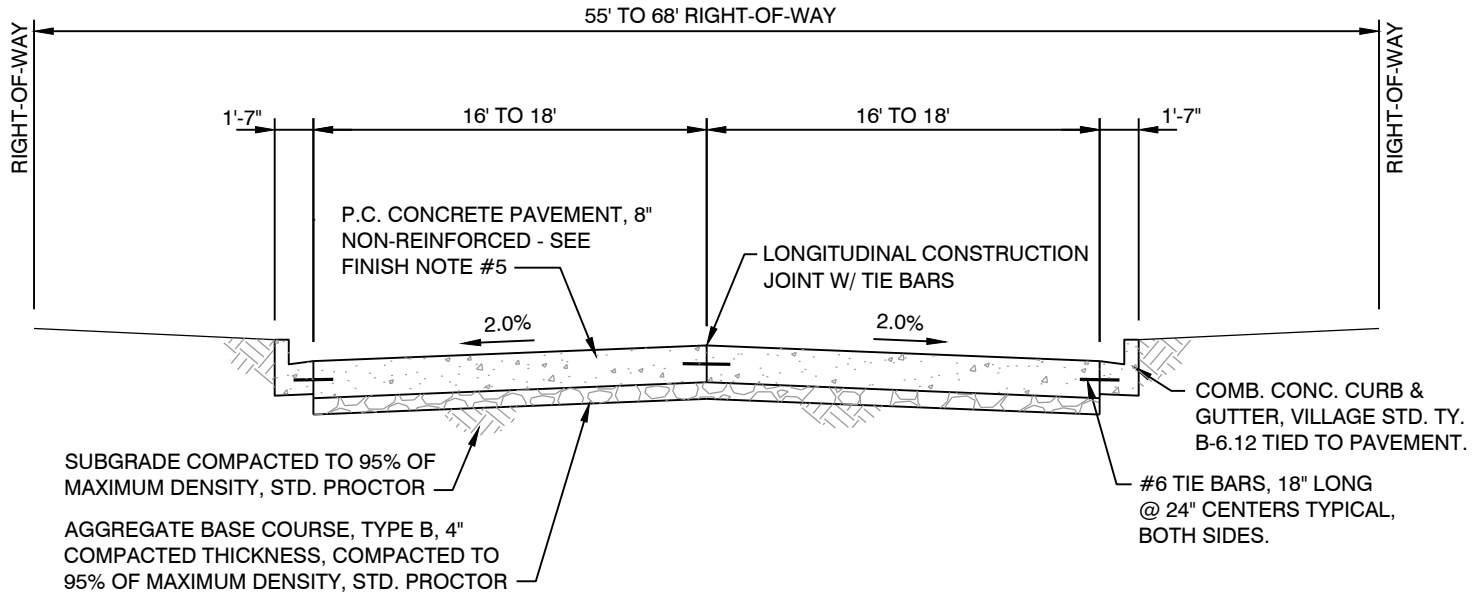
MINOR COMMERCIAL-INDUSTRIAL STREET

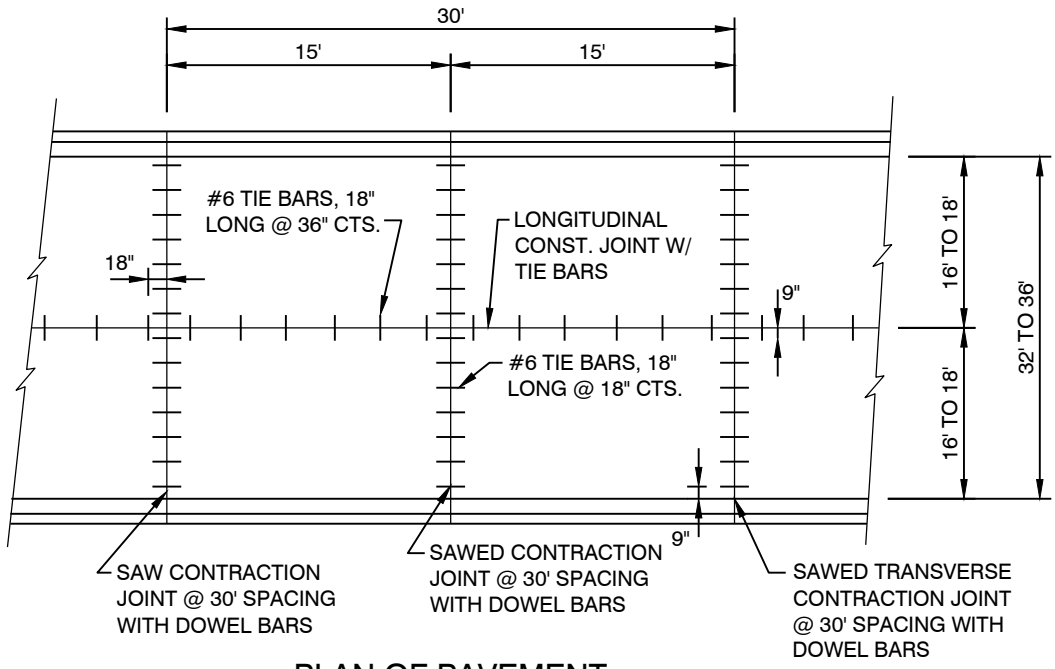


GENERAL NOTES:

1. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.
2. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB AND GUTTER SHALL MATCH JOINTS IN PAVEMENT.
3. SIDEWALKS SHALL BE 6" (MIN.) THICK THROUGH DRIVEWAYS (7" AT COMMERCIAL AND 8" AT INDUSTRIAL LOCATIONS).
4. P.C.C. PAVEMENT DETAILS ARE SHOWN 0N PAGES #9 AND #10 (NON-REINFORCED) & PAGES #11 & #12 (REINFORCED).
5. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.
6. SEE PAGE #31 FOR AGGREGATE BASE COURSE, TYPE B (CA-6).
7. NO RECYCLED MATERIAL IN HOT-MIX ASPHALT MIXTURES. POLYMER MUST BE APPROVED BY VILLAGE. SEE PAGE #29 FOR SPECIAL PROVISION FOR HOT-MIX ASPHALT MIXTURES.
8. COMPACTED HMA SURFACE COURSE SHALL BE 1/4" ABOVE THE GUTTER PAN. EDGE TO BE NEAT, COMPACTED AND UNIFORM. (SEE CURB DETAIL)
9. ALL SUBGRADES AND AGGREGATE BASE COURSES SHALL BE CUT UNIFORMLY TO THEIR PROPER DEPTH/GRADE, COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR AND/OR PROOF ROLLED WITH A FULLY LOADED TANDEM TRUCK. PROOF ROLL SHALL BE WITNESSED BY ENGINEER. ROLLING, CRACKING, AND/OR DEFORMATION SHALL BE CORRECTED AS DETAILED IN SPECIAL PROVISIONS AND OR AS DIRECTED BY ENGINEER.
10. HEIGHT MAY VARY (B-6.12 / B-9.12) FOR COMMERCIAL-INDUSTRIAL CORRIDORS. CURB HEIGHT TRANSITIONS (6"-9" & 9"-6") TO BE DONE IN A MANNER TO MINIMIZE ABRUPT GRADE CHANGES AND IN LOCATION(S) AS SPECIFIED IN PLANS AND OR AS DIRECTED BY THE ENGINEER.

COMMERCIAL-INDUSTRIAL COLLECTOR STREET



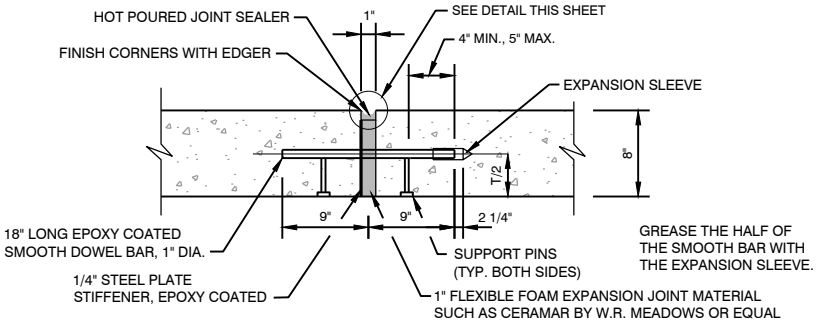


PLAN OF PAVEMENT

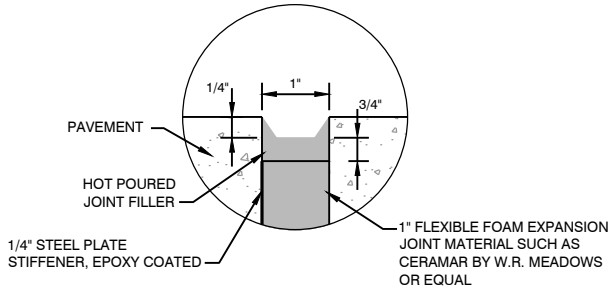
GENERAL NOTES:

1. "HOT POURED JOINT SEALER" (TY. 2, BLACK) IS TO BE USED FOR FILLING ALL CONTRACTION JOINTS, EXPANSION JOINTS, CONSTRUCTION JOINTS & CURB /PAVEMENT JOINTS.
2. EDGE ALL EDGES AT CURB & GUTTER AND PAVEMENT.
3. ALL REBAR SHALL BE EPOXY COATED.
4. SEE PAGE #10 FOR JOINT DETAILS. ALL SAWCUTS SHALL BE STRAIGHT, SQUARE AND MIN. DEPTH REQUIRED TO CONTROL CRACKING (T/3) THROUGHOUT THE ENTIRE JOINT. WHEN SOFT-CUTTING CARE SHOULD BE TAKEN TO NOT MAR THE FINISH.
5. FINAL FINISH SHALL BE TYPE "B" (COURSE BROOM FINISH). BROOMING SHALL BE DONE TRANSVERSE.
6. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO PAVEMENT, FRONT, FACE, AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT ADDITION.
7. SEE PAGE #34 FOR SPECIAL PROVISIONS FOR PORTLAND CEMENT CONCRETE.

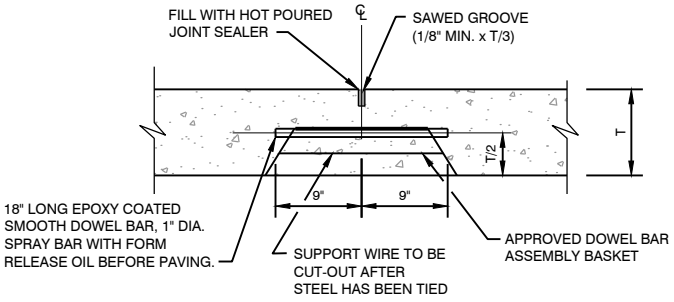
NON-REINFORCED PAVEMENT DETAIL



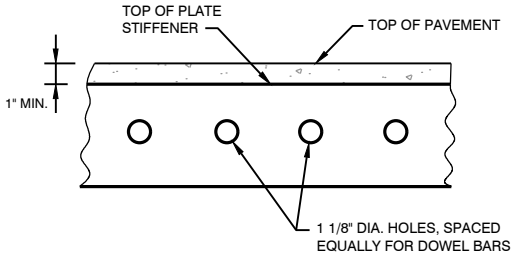
DETAIL OF EXPANSION JOINT FOR "T" = 8"



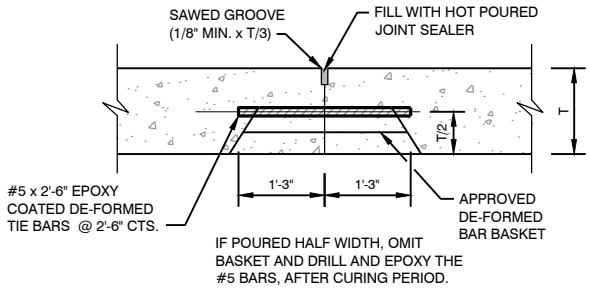
EXPANSION JOINT SEALING DETAIL



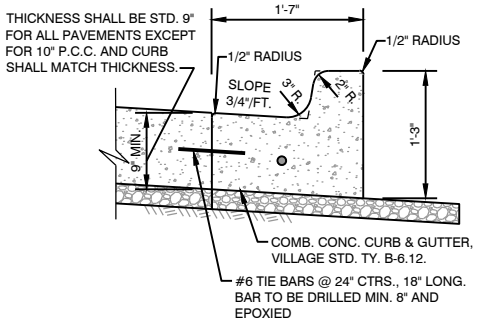
DETAIL OF SAWED TRANSVERSE CONTRACTION
JOINT WITH APPROVED DOWEL BAR ASSEMBLY



STEEL PLATE STIFFENER (EPOXY COATED)

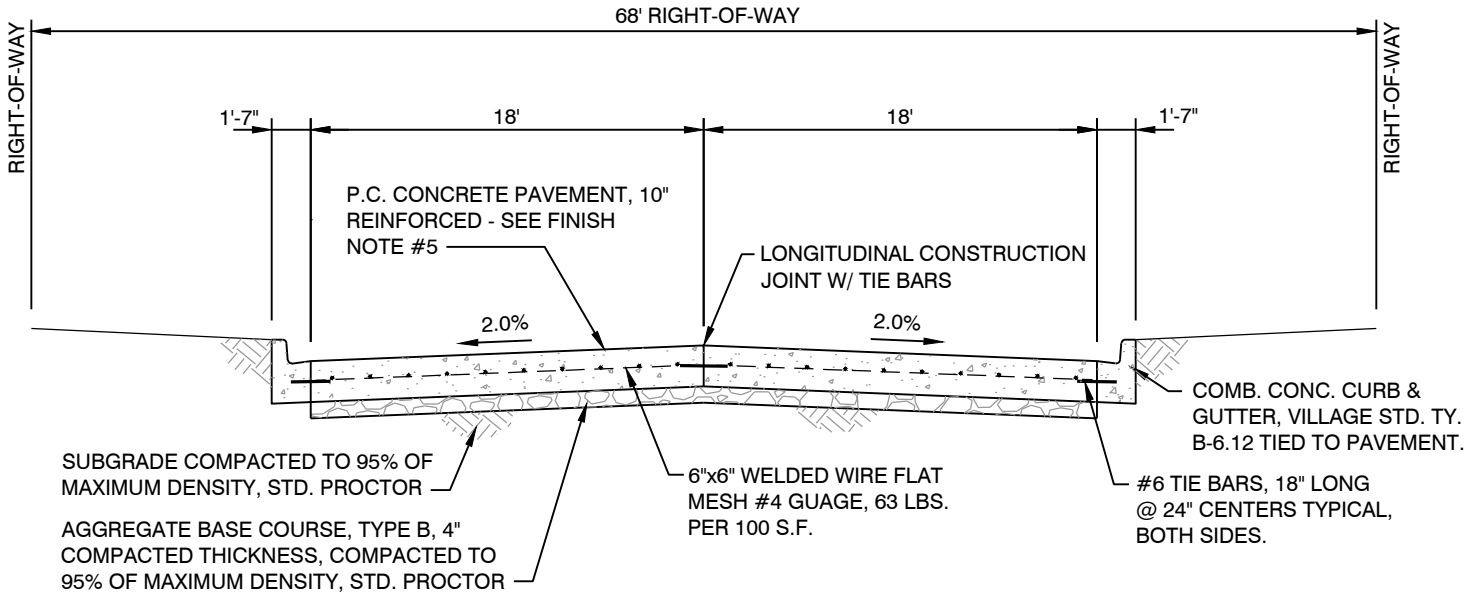


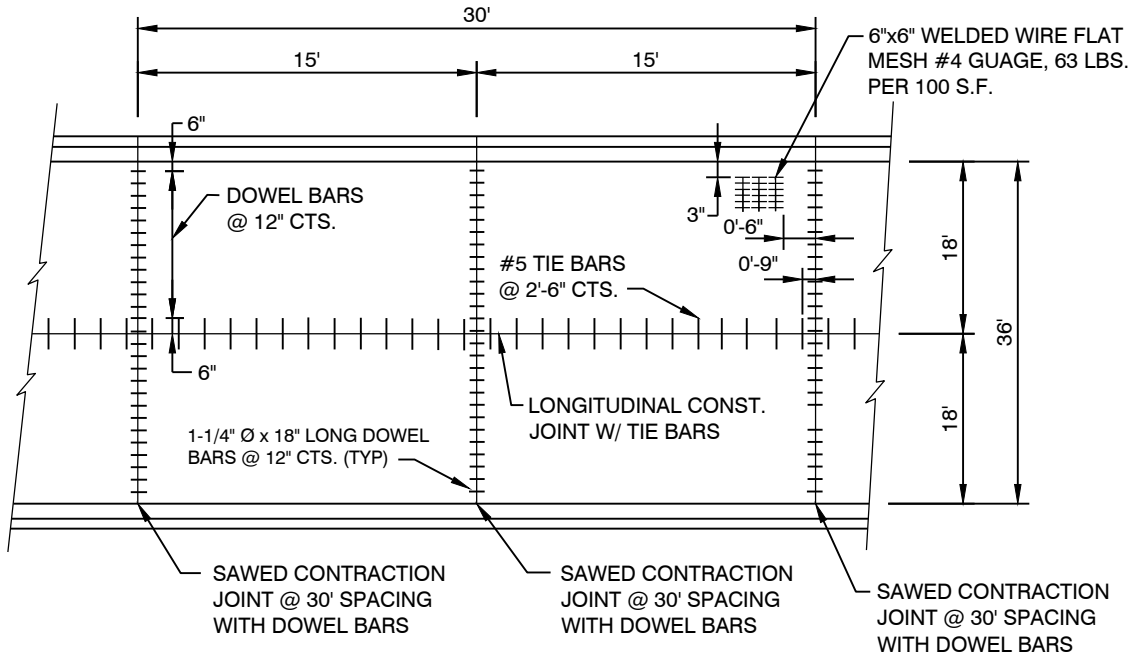
DETAIL OF ℄ LONGITUDINAL JOINT
WITH EPOXY COATED TIE BARS



DETAIL AT EDGE OF PAVEMENT AND
COMB. CONC. CURB & GUTTER

JOINT DETAILS FOR NON-REINFORCED P.C.C. PAVEMENT





PLAN OF PAVEMENT

GENERAL NOTES:

1. "HOT POURED JOINT SEALER" (TY. 2, BLACK) IS TO BE USED FOR FILLING ALL CONTRACTION JOINTS, EXPANSION JOINTS, CONSTRUCTION JOINTS & CURB /PAVEMENT JOINTS.

2. EDGE ALL EDGES AT CURB & GUTTER AND PAVEMENT.

3. ALL REBAR SHALL BE EPOXY COATED.

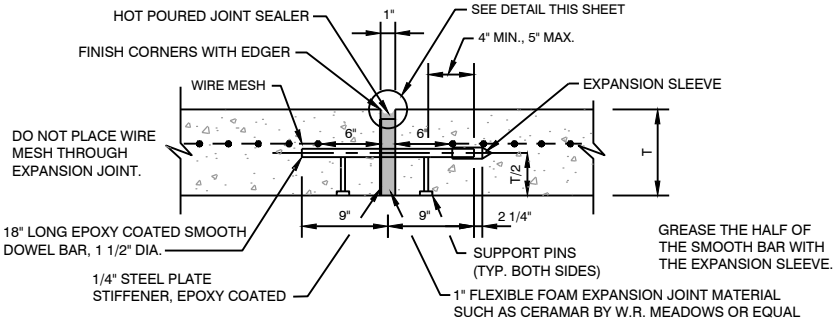
4. SEE PAGE #12 FOR JOINT DETAILS. ALL SAWCUTS SHALL BE STRAIGHT, SQUARE AND MIN. DEPTH REQUIRED TO CONTROL CRACKING (T/3) THROUGHOUT THE ENTIRE JOINT. WHEN SOFT-CUTTING CARE SHOULD BE TAKEN TO NOT MAR THE FINISH.

5. FINAL FINISH SHALL BE TYPE "B" (COURSE BROOM FINISH). BROOMING SHALL BE DONE TRANSVERSE.

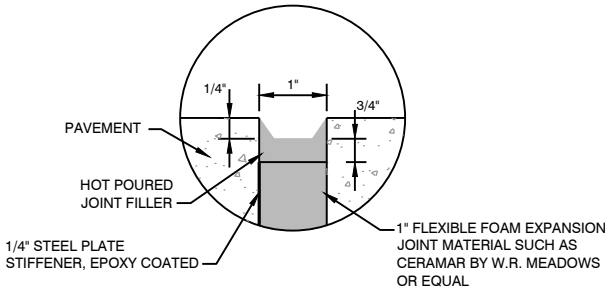
6. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO PAVEMENT, FRONT, FACE, AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT ADDITION.

7. SEE PAGE #34 FOR SPECIAL PROVISIONS FOR PORTLAND CEMENT CONCRETE.

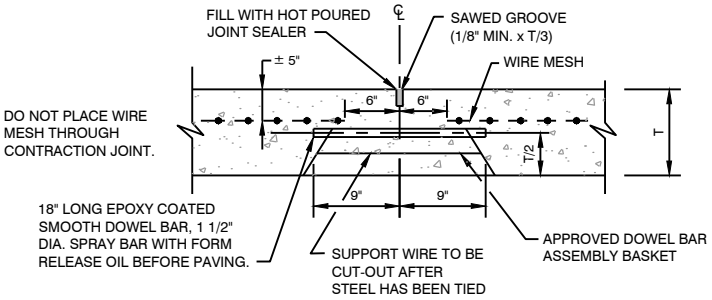
REINFORCED PAVEMENT DETAIL



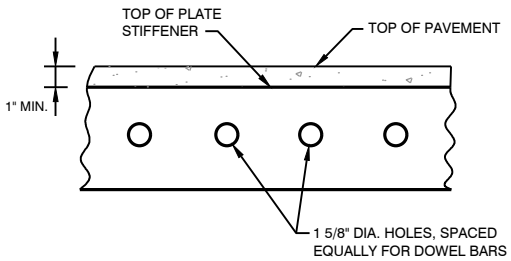
DETAIL OF EXPANSION JOINT



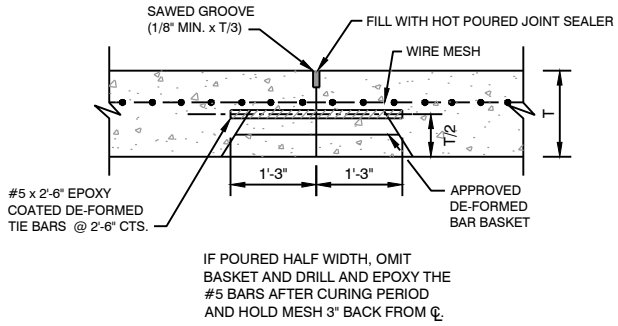
EXPANSION JOINT SEALING DETAIL



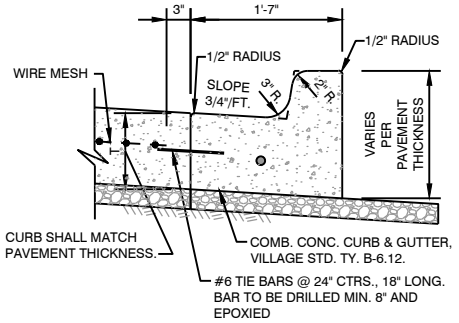
DETAIL OF SAWED TRANSVERSE CONTRACTION JOINT
WITH WIRE MESH AND APPROVED DOWEL BAR ASSEMBLY



STEEL PLATE STIFFENER (EPOXY COATED)

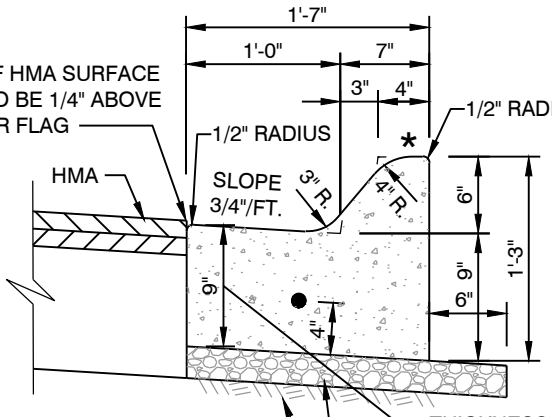


DETAIL OF ℄ LONGITUDINAL JOINT
WITH EPOXY COATED TIE BARS



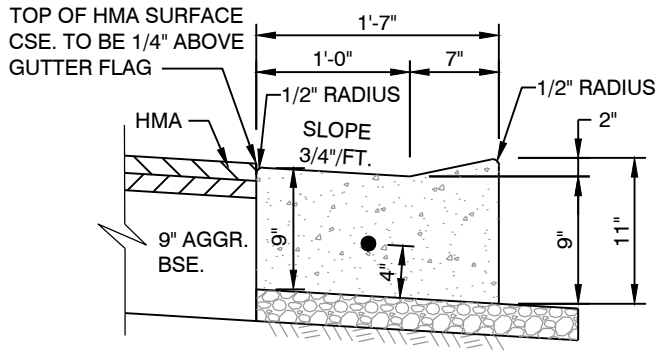
DETAIL AT EDGE OF PAVEMENT AND
COMB. CONC. CURB & GUTTER

JOINT DETAILS FOR REINFORCED P.C.C. PAVEMENT



SUBGRADE COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR. (TYPICAL) AND PLACE ROCK 3"-4", COMPACTED (CA-06), UNDER CURB AS AN EXTENSION OF ROAD SUBGRADE. NO FABRIC SHALL BE PLACED UNDER CURB.

THICKNESS SHALL BE STD. 9" FOR ALL PAVEMENTS EXCEPT FOR 10" P.C.C. AND CURB SHALL MATCH THICKNESS.

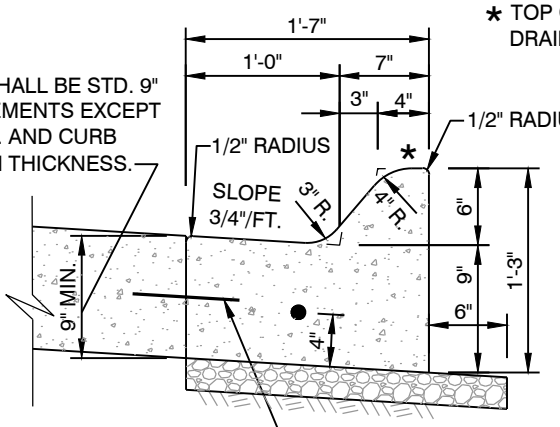


FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS USE 1 1/4" DIA. SMOOTH DOWEL BAR, 18" LONG WITH A METALLIC EXPANSION SLEEVE ON ONE END. GREASE THE HALF OF BAR WITH EXPANSION SLEEVE. FOR EXISTING RESIDENTIAL OR COMMERCIAL DRIVEWAY CURB & GUTTER REPLACEMENTS 3/4" (#6) DEFORMED OR 1" (#8) SMOOTH BARS MAY BE USED ON EITHER END IN LIEU OF 1 1/4".

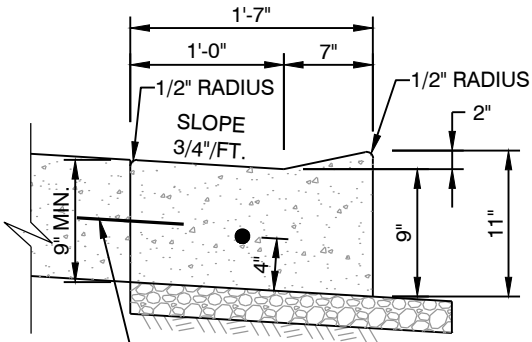
FLEXIBLE PAVEMENT

* TOP OF CURB TO BE FLAT OR DRAIN TOWARDS STREET

THICKNESS SHALL BE STD. 9" FOR ALL PAVEMENTS EXCEPT FOR 10" P.C.C. AND CURB SHALL MATCH THICKNESS.



#6 TIE BARS @ 24" CTRS., 18" LONG. BAR TO BE DRILLED MIN. 8" AND EPOXIED



#6 TIE BARS @ 24" CTRS., 18" LONG. BAR TO BE DRILLED MIN. 8" AND EPOXIED

DEPRESSED CURB

RIGID PAVEMENT

GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE. THE FACE OF THE CURB SHALL BE STAMPED WITH AN "S", "W" OR "D" AT LOCATIONS OF SANITARY LATERALS, WATER VALVES AND SERVICE AND SUMP DRAIN LINES, RESPECTIVELY. MISSING CHARACTERS SHALL BE ENGRAVED BY A PROFESSIONAL.

2. ALL BARS TO EPOXY COATED, DRILLED AND EPOXIED. EMBEDDED AND OR MACHINE PLACED BARS ARE NOT ALLOWED.

3. FOR CURB & GUTTER ADJACENT TO PAVEMENT, PROVIDE NO. 6 TIE BARS AT 24" O.C., 18" LONG.

4. EXPANSION JOINT MATERIAL SHALL BE 1" FLEX/FOAM EXPANSION JOINT, SUCH AS CERAMAR BY W.R. MEADOWS, NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.

5. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO FRONT, BACK, FACE AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

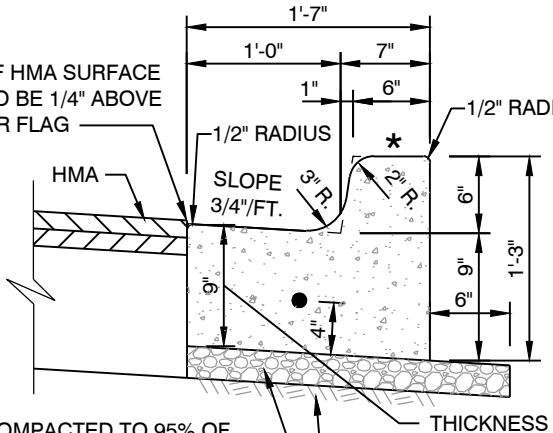
6. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.

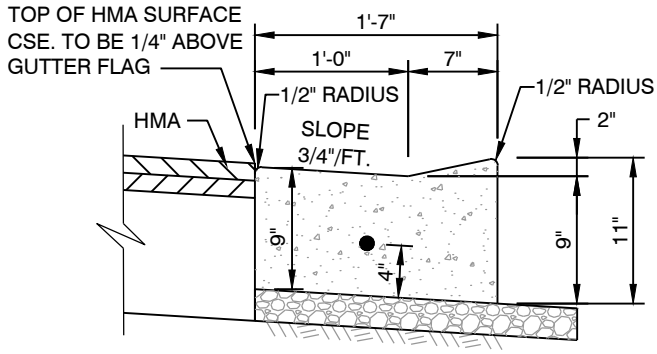
7. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB SHALL MATCH JOINTS IN PAVEMENT.

8. ANY CONCRETE THAT SPILLS OUT FROM UNDER THE MULE OR FORM, ON EITHER SIDE SHALL BE REMOVED PRIOR TO PLACING NEW BASE MATERIAL OR NEW PAVEMENT.

9. ALL CURB AND GUTTER SHALL BE VIBRATED AND CONSOLIDATED, INCLUDING THE HEAD OF THE CURB. ANY UNCONSOLIDATED CURB AND GUTTER DEMONSTRATING HONEYCOMB, BEE-HOLES OR OTHER ANOMALY WILL BE CONSIDERED FOR REMOVAL AND REPLACEMENT AT CONTRACTOR'S EXPENSE.

COMBINATION CONCRETE CURB AND GUTTER, TYPE M-6.12





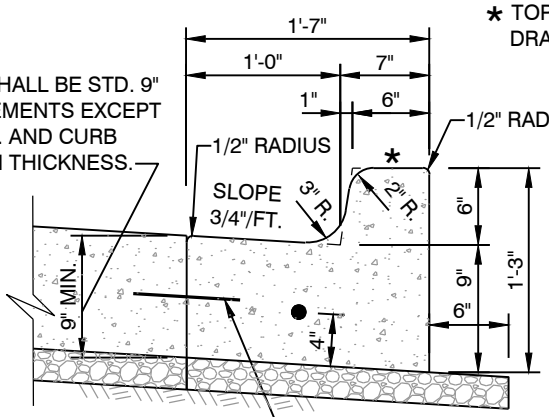
SUBGRADE COMPACTED TO 95% OF MAXIMUM DENSITY, STD. PROCTOR. (TYPICAL) AND PLACE ROCK 3"-4", COMPACTED (CA-06), UNDER CURB AS AN EXTENSION OF ROAD SUBGRADE. NO FABRIC SHALL BE PLACED UNDER CURB.

THICKNESS SHALL BE STD. 9" FOR ALL PAVEMENTS EXCEPT FOR 10" P.C.C. AND CURB SHALL MATCH THICKNESS.

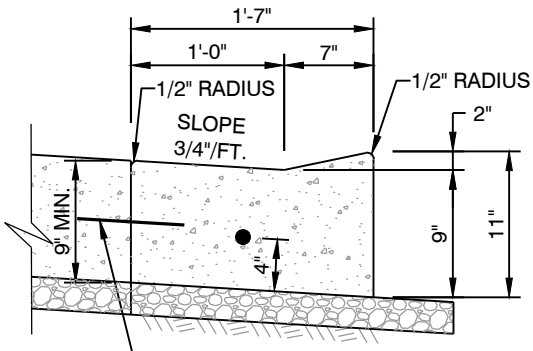
FLEXIBLE PAVEMENT

* TOP OF CURB TO BE FLAT OR DRAIN TOWARDS STREET

FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS USE 1 1/4" DIA. SMOOTH DOWEL BAR, 18" LONG WITH A METALLIC EXPANSION SLEEVE ON ONE END. GREASE THE HALF OF BAR WITH EXPANSION SLEEVE. FOR EXISTING RESIDENTUAL OR COMMERCIAL DRIVEWAY CURB & GUTTER REPLACEMENTS 3/4" (#6) DEFORMED OR 1" (#8) SMOOTH BARS MAY BE USED ON EITHER END IN LIEU OF 1 1/4".



#6 TIE BARS @ 24" CTRS., 18" LONG. BAR TO BE DRILLED MIN. 8" AND EPOXIED



#6 TIE BARS @ 24" CTRS., 18" LONG. BAR TO BE DRILLED MIN. 8" AND EPOXIED

DEPRESSED CURB

RIGID PAVEMENT

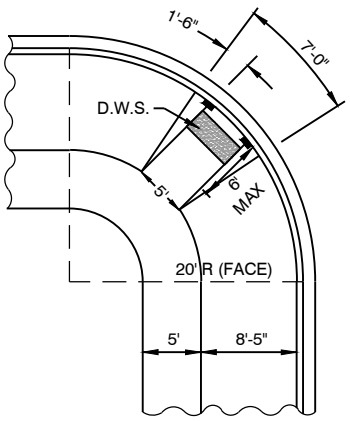
GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE. THE FACE OF THE CURB SHALL BE STAMPED WITH AN "S", "W" OR "D" AT LOCATIONS OF SANITARY LATERALS, WATER VALVES AND SERVICE AND SUMP DRAIN LINES, RESPECTIVELY. MISSING CHARACTERS SHALL BE ENGRAVED BY A PROFESSIONAL.
2. ALL BARS TO EPOXY COATED, DRILLED AND EPOXIED. EMBEDDED AND OR MACHINE PLACED BARS ARE NOT ALLOWED.
3. FOR CURB & GUTTER ADJACENT TO PAVEMENT, PROVIDE NO. 6 TIE BARS AT 24" O.C., 18" LONG.
4. EXPANSION JOINT MATERIAL SHALL BE 1" FLEX/FOAM EXPANSION JOINT, SUCH AS CERAMAR BY W.R. MEADOWS, NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.
5. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO FRONT, BACK, FACE AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
6. FOR NEW CONSTRUCTION OR CAPITAL IMPROVEMENTS PROVIDE EXPANSION JOINTS IN THE CURB AND GUTTER AT INTERSECTION RETURNS, INLET BOXOUTS, OR OTHER LOCATIONS APPROVED BY THE ENGINEER, FILL WITH APPROVED SEALER.
7. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C. IN THE CURB AND GUTTER. FILL WITH APPROVED JOINT SEALER. WITH CONCRETE ALTERNATE, JOINTS IN CURB SHALL MATCH JOINTS IN PAVEMENT.
8. ANY CONCRETE THAT SPILLS OUT FROM UNDER THE MULE OR FORM, ON EITHER SIDE SHALL BE REMOVED PRIOR TO PLACING NEW BASE MATERIAL OR NEW PAVEMENT.
9. ALL CURB AND GUTTER SHALL BE VIBRATED AND CONSOLIDATED, INCLUDING THE HEAD OF THE CURB. ANY UNCONSOLIDATED CURB AND GUTTER DEMONSTRATING HONEYCOMB, BEE-HOLES OR OTHER ANOMALY WILL BE CONSIDERED FOR REMOVAL AND REPLACEMENT AT CONTRACTOR'S EXPENSE.

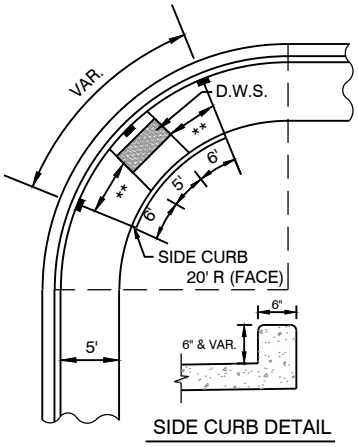
COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12

▬ SIDEWALK SUPPORT

D.W.S. - DETECTABLE WARNING STRIP AS PER A.D.A. REQUIREMENTS

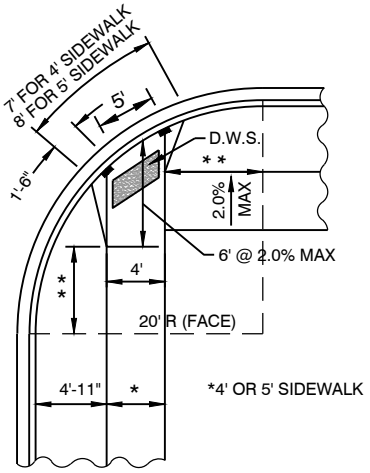


COLLECTOR



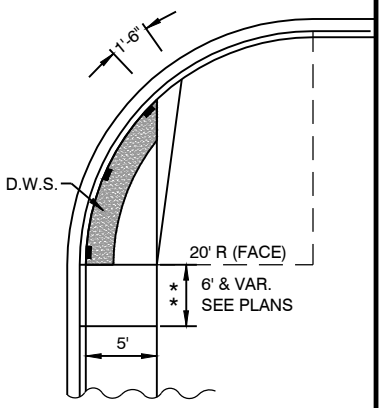
SIDE CURB DETAIL

COLLECTOR OR RESIDENTIAL



**TRANSITION SIDEWALK AT 12:1 MAX. SLOPE

MINOR RESIDENTIAL OR MINOR COMMERCIAL/INDUSTRIAL



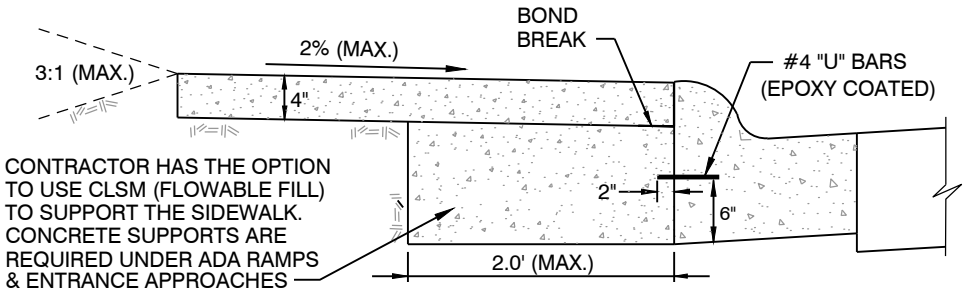
**TRANSITION SIDEWALK AT 12:1 MAX. SLOPE

MINOR RESIDENTIAL OR MINOR COMMERCIAL/INDUSTRIAL

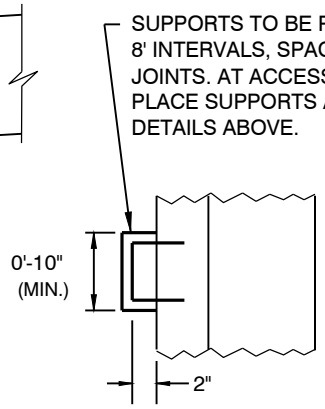
NOTES:

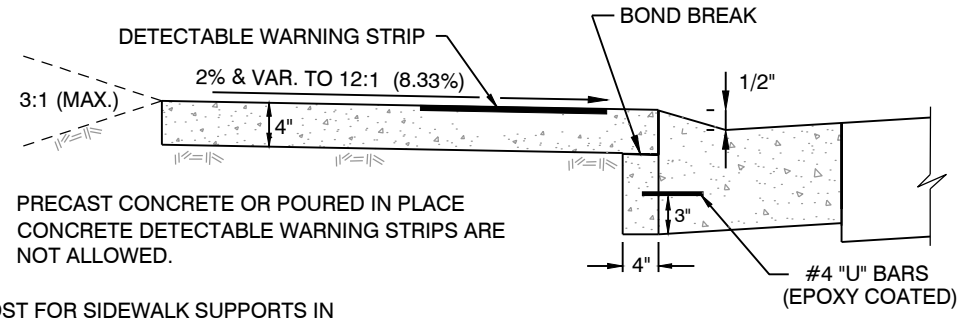
ALL FACES OF SIDE CURB TO BE FORMED. EDGE TOP OF CURB - BOTH FRONT AND BACK.

MEMBRANE CURING COMPOUND SHALL BE APPLIED TO FRONT, BACK AND TOP OF SIDE CURB. CURING AND PROTECTION TO BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT EDITION

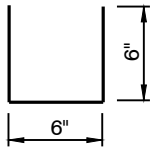


FULL HEIGHT CURB





DEPRESSED CURB

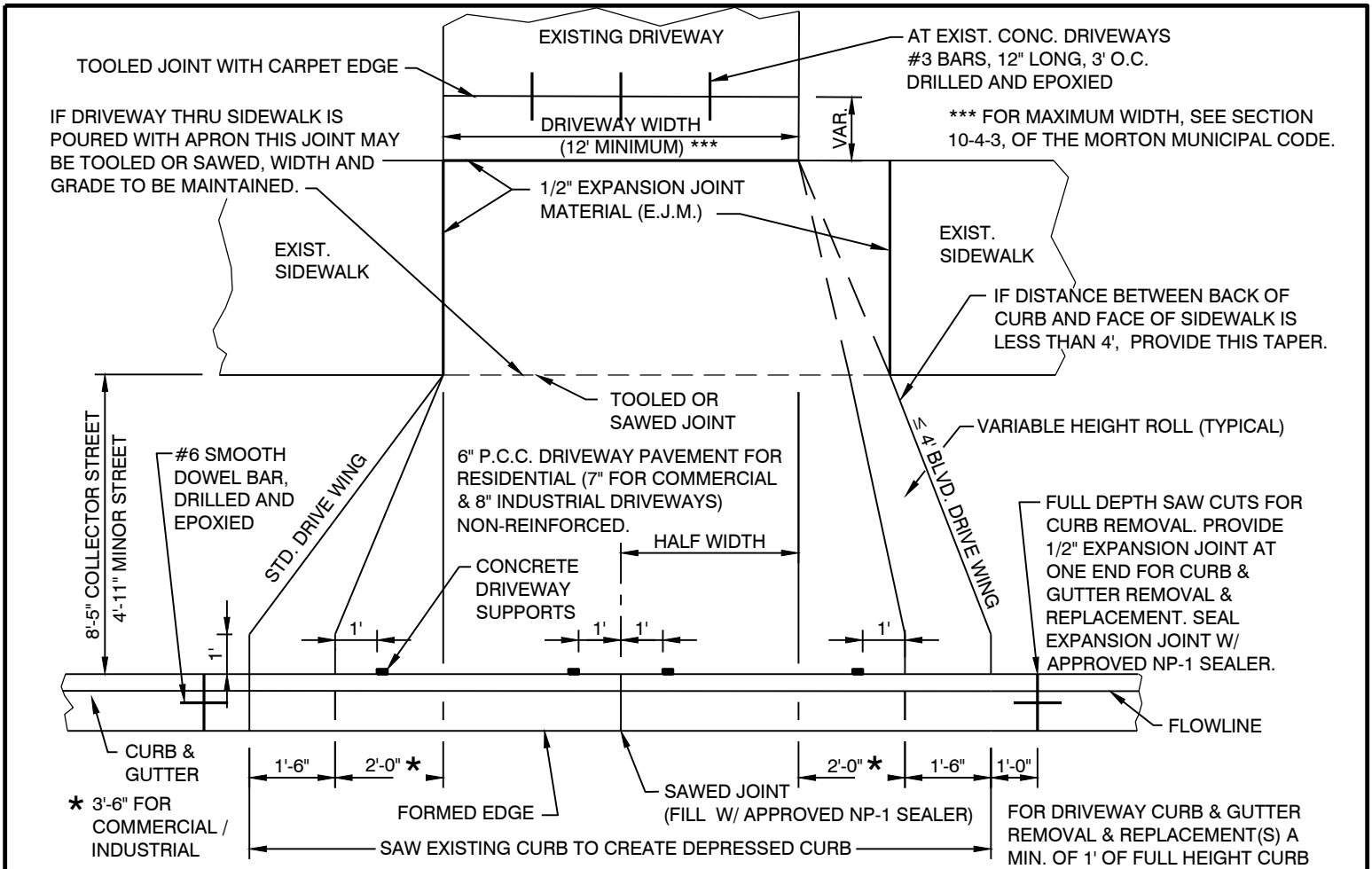


#4 "U" BARS

COST FOR SIDEWALK SUPPORTS IN MAINLINE AND ACCESSIBLE RAMP CURB TO BE INCLUDED IN CURB & GUTTER

SIDEWALK SUPPORTS

NOTE: ALL MAINLINE CURBSIDE SIDEWALK TO RECEIVE SIDEWALK SUPPORTS PLACED AT 4' TO 8' INTERVALS, SPACED TO MISSED JOINTS. AT ACCESSIBLE RAMPS, PLACE SUPPORTS AS SHOWN IN DETAILS ABOVE.



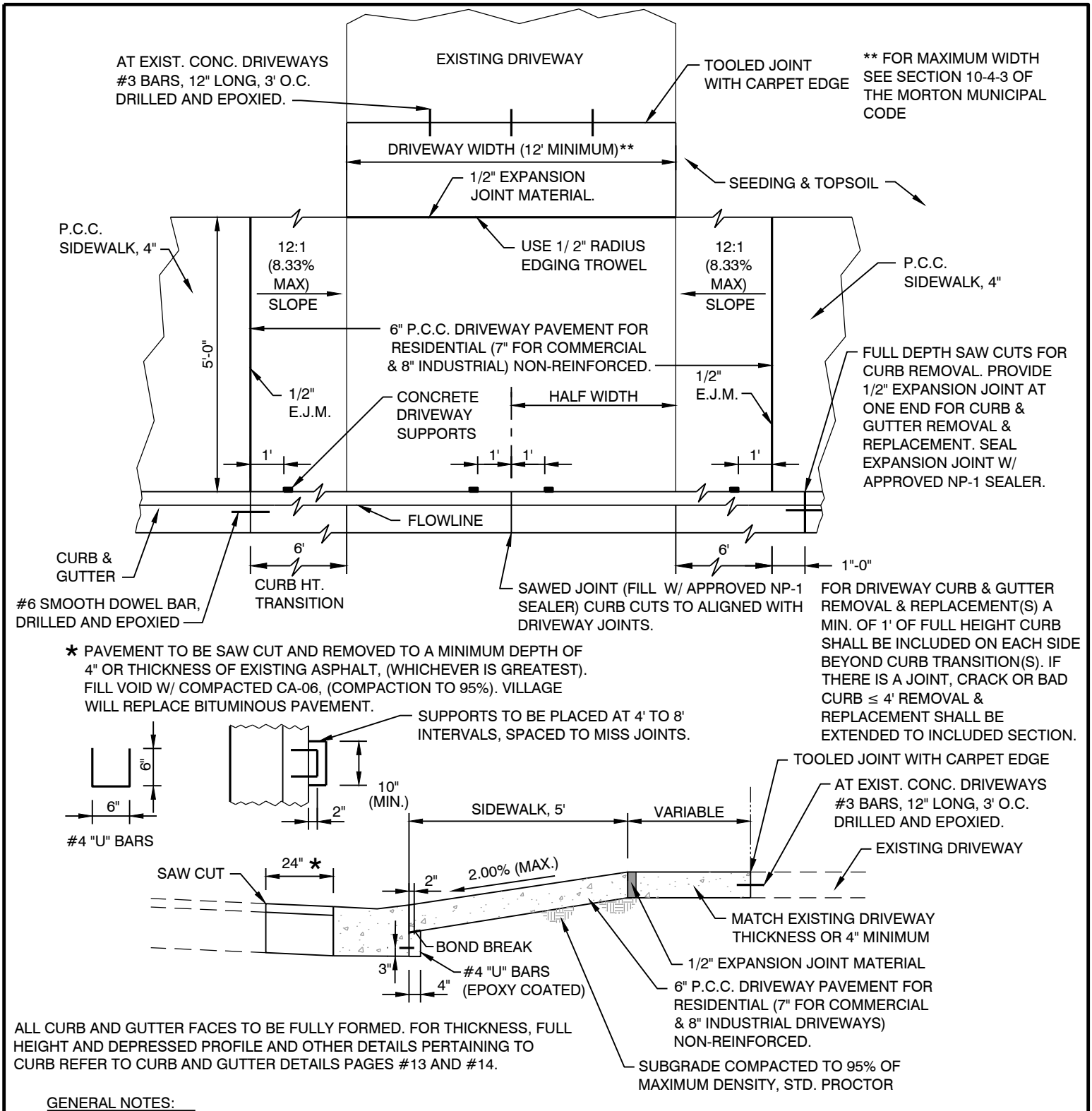
ALL CURB AND GUTTER FACES TO BE FULLY FORMED. FOR THICKNESS, FULL HEIGHT AND DEPRESSED PROFILE AND OTHER DETAILS PERTAINING TO CURB REFER TO CURB AND GUTTER DETAILS PAGES #13 AND #14.

GENERAL NOTES:

1. V.O.M OFFICIAL MUST SEE FORMS IN PLACE BEFORE PLACING CONCRETE.
2. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO DRIVEWAY PAVEMENT, FRONT, FACE, AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT ADDITION.
3. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.
4. EXPANSION JOINT MATERIAL SHALL BE 1/2" FLEX/FOAM EXPANSION JOINT, SUCH AS NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.
5. ALL DRIVEWAY SUPPORTS TO BE AS SHOWN.

STANDARD DRIVEWAY DETAILS

(WITH BOULEVARD SIDEWALKS)



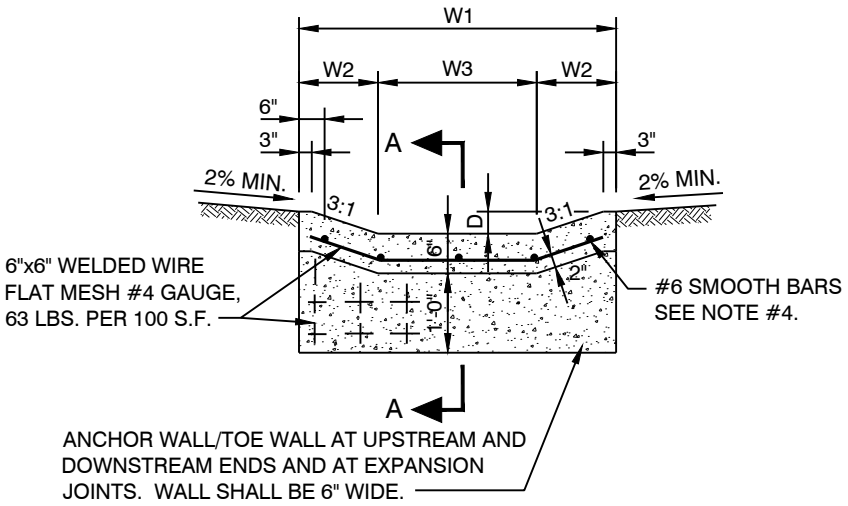
ALL CURB AND GUTTER FACES TO BE FULLY FORMED. FOR THICKNESS, FULL HEIGHT AND DEPRESSED PROFILE AND OTHER DETAILS PERTAINING TO CURB REFER TO CURB AND GUTTER DETAILS PAGES #13 AND #14.

GENERAL NOTES:

1. V.O.M OFFICIAL MUST SEE FORMS IN PLACE BEFORE PLACING CONCRETE.
2. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO DRIVEWAY PAVEMENT, FRONT, FACE, AND PAN OF COMBINATION CONCRETE CURB & GUTTER. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT ADDITION.
3. SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.
4. EXPANSION JOINT MATERIAL SHALL BE 1/2" FLEX/FOAM EXPANSION JOINT, SUCH AS NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.
5. ALL DRIVEWAY SUPPORTS TO BE AS SHOWN.

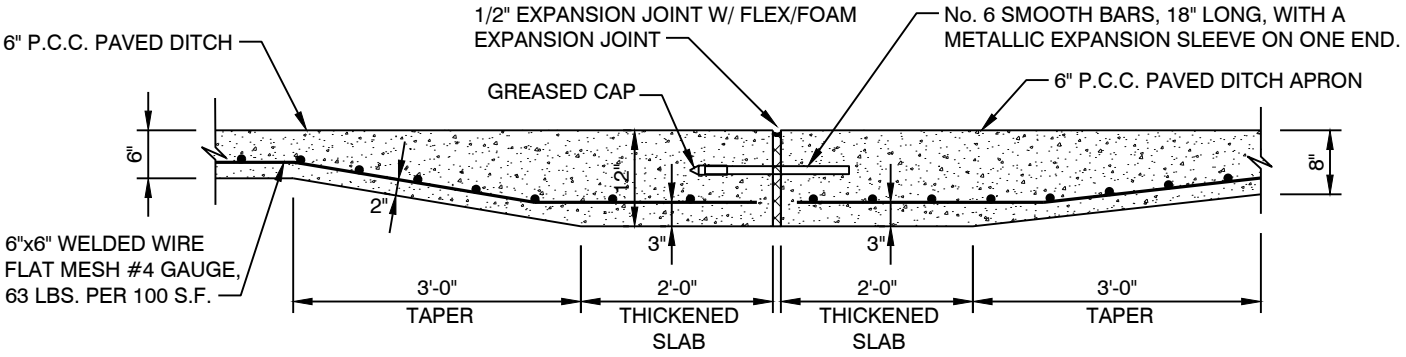
STANDARD DRIVEWAY DETAILS

(WITH CURB-SIDE SIDEWALKS)

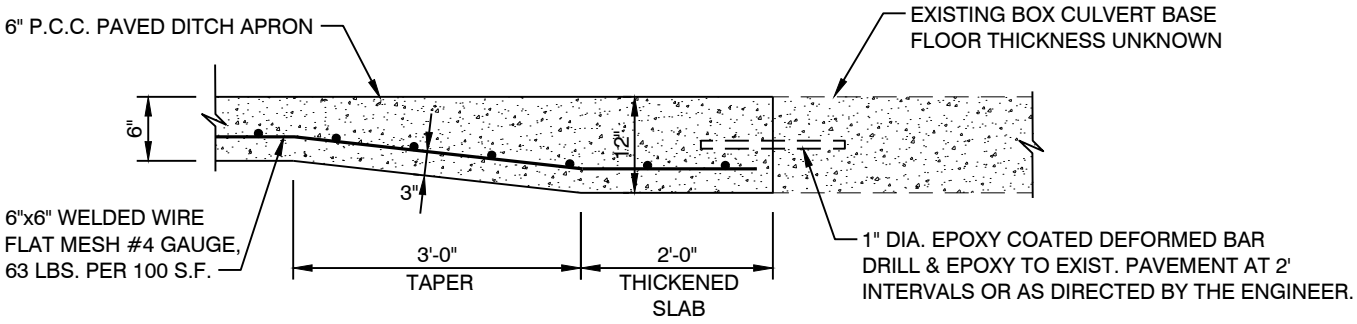


W1 WIDTH	D DEPTH	W2 WING	W3 BTM	CROSS SECT AREA
2.0'	0.08' (1")	0.50' (6")	1.0' (12")	0.255
3.0'	0.17' (2")	0.75' (9")	1.5' (18")	0.563
4.0'	0.25' (3")	1.0' (12")	2.0' (24")	1.020
STANDARD 5.0'	0.50' (6")	1.5' (18")	2.0' (24")	1.750
6.0'	0.58' (7")	2.0' (24")	2.0' (24")	2.680
7.0'	0.75' (9")	2.5' (30")	2.0' (24")	3.735
8.0'	0.92' (11")	3.0' (36")	2.0' (24")	5.000

ELEVATION



SECTION A-A



SECTION EXISTING CULVERT

GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.

2. THE STANDARD PAVED DITCH SHALL BE 5' WIDE, ALTERNATE WIDTHS (SMALLER OR LARGER) MAY BE UTILIZED WHEN ADEQUATE INFORMATION IS PROVIDED OR OTHER REASONS AS DETERMINED BY ENGINEER.

3. PAVED DITCHES SHALL BE REQUIRED FOR LONGITUDINAL GRADES (DITCHES, SWALES ETC.) WHICH ARE <1%, WHERE LOW FLOWS OR PERENNIAL WETNESS IS TO BE ANTICIPATED, IN AREAS OF HIGH SCOUR POTENTIAL AND FOR OTHER REASONS AS DETERMINED BY ENGINEER.

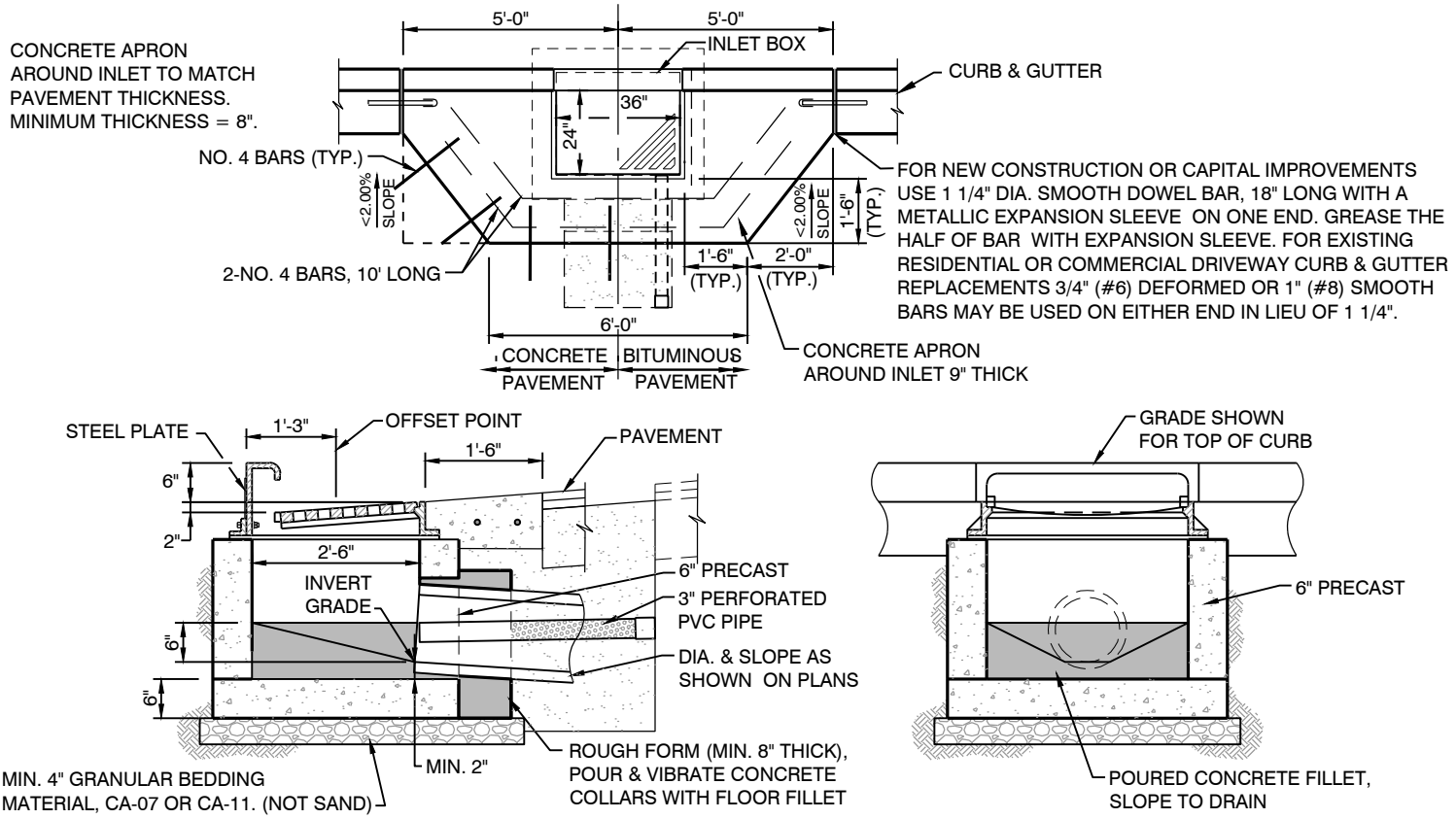
4. PROVIDE 1/2" EXPANSION JOINTS AT WORK STOPPAGE POINTS, AND AT A MAXIMUM OF 200' O.C. USE No. 6 SMOOTH BARS, 18" LONG, WITH A METALLIC EXPANSION SLEEVE ON ONE END. GREASE THE HALF OF BAR WITH THE EXPANSION SLEEVE. EXPANSION JOINT MATERIAL SHALL BE FLEX/FOAM EXPANSION JOINT, SUCH AS CERAMAR BY W.R. MEADOWS, NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.

5. MEMBRANE CURING COMPOUND SHALL BE APPLIED TO TOP, SIDES AND END OF PAVED DITCH. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

6. PROVIDE SAWED CONTRACTION JOINTS AT 20' O.C., MIN. 2" DEEP OR T/3.

7. ALL REINFORCEMENT BARS TO BE EPOXY COATED.

PAVED DITCH, VILLAGE STANDARD



GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.

2. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.

3. 10' OF "CURB" WITHIN THE ISOLATION IS INCIDENTAL TO THE INLET, BUT WHEN THE ADJACENT CURBS ARE POURED THEY SHALL BE POURED INTO THE ISOLATION BY A MIN. OF 2' ON EACH SIDE AND THEN CUT OFF WITH A SAW.

4. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL STRUCTURES AND SHALL BE REVIEWED BY THE ENGINEER.

5. SLOTTED OPENINGS IN BACK OF HOOD SHALL BE COVERED USING 1/4" MIN. STEEL PLATES AND SHALL BE PLACED ON THE BACK OF THE HOOD AND INSTALLED WITH PROPER NUTS AND WASHERS. HOOD BOLTS TO BE 5/8" X 2 1/2" MINIMUM, WITH ONE FLAT WASHER AND ONE LOCK WASHER EACH SIDE.

6. POURED CONCRETE FILLET SHALL BE SHAPED TO DRAIN TO OUTLET WITH AVAILABLE GRADE, WITH BROOM FINISH WHEN GRADE AND IN/OUT INVERTS ALLOW FILLET EDGES SHALL BE SET ABOVE INVERT BY D/2.

7. ALL PIPES TO BE FULLY INSTALLED INTO STRUCTURE AND MAY PROJECT BY NOMINAL AMOUNT WITHOUT CONFLICTING WITH OTHER PIPES OR AS DETERMINED BY ENGINEER OR SHALL BE CUT FLUSH WITH INTERIOR WALL UNLESS OTHERWISE SPECIFIED.

8. HOOD TO BE SET TO MATCH TOP OF ADJACENT CURB, FRAME TO BE SET TO MAINTAIN STANDARD OPENING AS DETAILED UNLESS ADJACENT PAVEMENT ELEVATION REQUIRES VARIANCE, HEIGHT TO BE APPROVED BY ENGINEER.

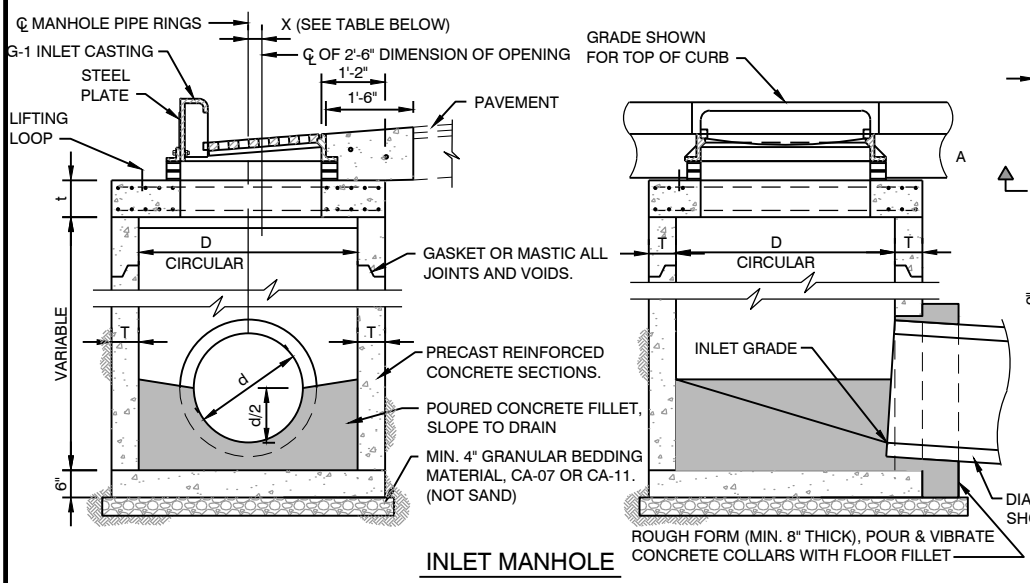
9. ROCK TEMP DRAIN / PERMANENT UNDERDRAIN TO BE INSTALLED AS SPECIFIED AND OR SHOWN ON PLANS AND SHALL BE CONSTRUCTED USING CLEAN WASHED ROCK CA-07 (SAME MATERIAL AS PIPE BEDDING). ROCK SHALL EXTEND ALL THE WAY THRU SUBGRADE AND AGGREGATE BASE TO BOTTOM OF PAVEMENT TO EFFECT DRAINAGE. MAINTENANCE OF ROCK MAY BE NECESSARY DURING CONSTRUCTION TO EFFECT FUNCTION OF TEMP. DRAIN. PERFORATED PIPE (3" PVC WITH 3 /8" DIA. HOLES TYP.) OR WHAT THE REEM ALLOWS SHALL BE STUBBED INTO BOTH THE INLET AND INTO ROCK BED (2'-3') AND SHOULD BE PLACED THRU THE STRUCTURE IN THE ANNULAR SPACE BETWEEN THE STRUCTURE AND THE STORM SEWER NEAR THE SPRINGLINE, BUT NOT IN THE FLOWLINE OR FILLET. PERFORATE AND GLUE CAP ON END OF PIPE. THIS IS INTENDED TO ACT AS A TEMPORARY DRAIN FOR SUBGRADE AND AS A LONG TERM UNDERDRAIN.

10. INLET BOXES SHALL BE PLACED ACCURATELY. THE INSIDE BACK OF THE INLET BOX IS TO BE IN LINE WITH THE BACK OF THE PROPOSED OR EXISTING CURB & GUTTER. INLET BOXES THAT ARE MORE THAN ONE INCH (1") OUT OF ALIGNMENT, SHALL BE REMOVED AND RESET AT THE CONTRACT0R'S EXPENSE.

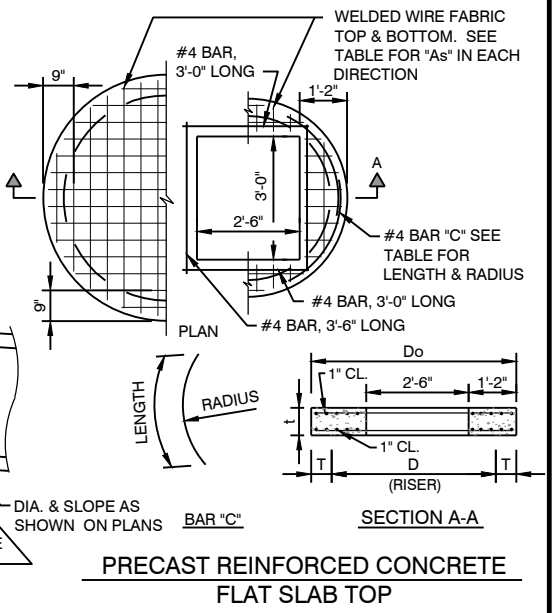
11. INLET BOXES SHALL BE PRECAST BOXES WITH 6" WALLS AND FLOOR. THE INLET BOXES SHALL BE CONSTRUCTED SO THE MAXIMUM ADJUSTMENT HEIGHT SHALL NOT EXCEED 10".

12. EXPANSION JOINT MATERIAL SHALL BE 1" FLEX/FOAM EXPANSION JOINT, SUCH AS CERAMAR BY W.R. MEADOWS, NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.

G-1 INLET, VILLAGE STANDARD



INLET MANHOLE



PRECAST REINFORCED CONCRETE FLAT SLAB TOP

TABLE					REINFORCEMENT "As" WELDED WIRE FABRICS		BAR "C"	
X	D	T	Do	t	EACH DIRECTION	BAR SIZE	LENGTH	RADIUS
0'-0"	4'-0"	5"	4'-10"	6"	.70 SQ.IN./LIN.FT.	#5	4'-6"	2'-2"
0'-7"	5'-0"	6"	6'-0"	8"	.70 SQ.IN./LIN.FT.	#5	5'-0"	2'-8"

3 EMBEDDED LIFTING LOOPS REQUIRED PER SLAB -TYPICAL-

GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.

2. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.

3. 10' OF "CURB" WITHIN THE ISOLATION IS INCIDENTAL TO THE INLET, BUT WHEN THE ADJACENT CURBS ARE POURED THEY SHALL BE POURED INTO THE ISOLATION BY A MIN. OF 2' ON EACH SIDE AND THEN CUT OFF WITH A SAW.

4. FLAT TOP MANHOLE SHALL BE USED ONLY WHEN CORBEL TOP CAN NOT BE USED. TOP OF FLAT SLAB TO BE BELOW BOTTOM OF P.C.C. PAVEMENT, BITUMINOUS BINDER COURSE AND AGGREGATE BASE COURSE.

5. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL STRUCTURES AND SHALL BE REVIEWED BY THE ENGINEER.

6. SLOTTED OPENINGS IN BACK OF HOOD SHALL BE COVERED USING 1/4" MIN. STEEL PLATES AND SHALL BE PLACED ON THE BACK OF THE HOOD AND INSTALLED WITH PROPER NUTS AND WASHERS. HOOD BOLTS TO BE 5/8" X 2 1/2" MINIMUM, WITH ONE FLAT WASHER AND ONE LOCK WASHER EACH SIDE.

7. POURED CONCRETE FILLET SHALL BE SHAPED TO DRAIN TO OUTLET WITH AVAILABLE GRADE, WITH BROOM FINISH WHEN GRADE AND IN/OUT INVERTS ALLOW FILLET EDGES SHALL BE SET ABOVE INVERT BY D/2.

8. ALL PIPES TO BE FULLY INSTALLED INTO STRUCTURE AND MAY PROJECT BY NOMINAL AMOUNT WITHOUT CONFLICTING WITH OTHER PIPES OR AS DETERMINED BY ENGINEER OR SHALL BE CUT FLUSH WITH INTERIOR WALL UNLESS OTHERWISE SPECIFIED.

9. HOOD TO BE SET TO MATCH TOP OF ADJACENT CURB, FRAME TO BE SET TO MAINTAIN STANDARD OPENING AS DETAILED UNLESS ADJACENT PAVEMENT ELEVATION REQUIRES VARIANCE, HEIGHT TO BE APPROVED BY ENGINEER.

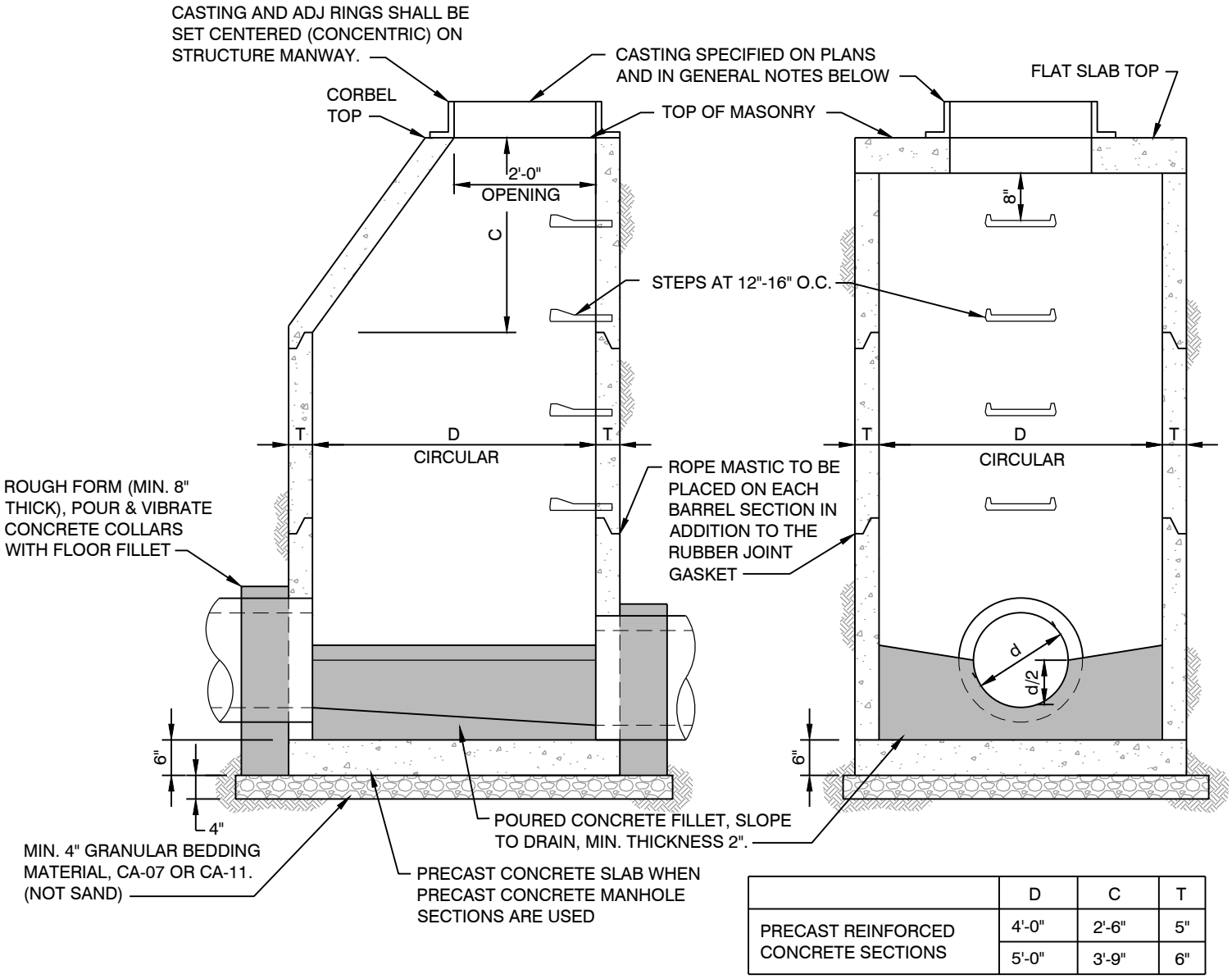
10. ROCK TEMP DRAIN / PERMANENT UNDERDRAIN TO BE INSTALLED AS SPECIFIED AND OR SHOWN ON PLANS AND SHALL BE CONSTRUCTED USING CLEAN WASHED ROCK CA-07 (SAME MATERIAL AS PIPE BEDDING). ROCK SHALL EXTEND ALL THE WAY THRU SUBGRADE AND AGGREGATE BASE TO BOTTOM OF PAVEMENT TO EFFECT DRAINAGE. MAINTENANCE OF ROCK MAY BE NECESSARY DURING CONSTRUCTION TO EFFECT FUNCTION OF TEMP. DRAIN. PERFORATED PIPE (3" PVC WITH 3 /8" DIA. HOLES TYP.) OR WHAT THE REEM ALLOWS SHALL BE STUBBED INTO BOTH THE INLET AND INTO ROCK BED (2'-3') AND SHOULD BE PLACED THRU THE STRUCTURE IN THE ANNULAR SPACE BETWEEN THE STRUCTURE AND THE STORM SEWER NEAR THE SPRINGLINE, BUT NOT IN THE FLOWLINE OR FILLET. PERFORATE AND GLUE CAP ON END OF PIPE. THIS IS INTENDED TO ACT AS A TEMPORARY DRAIN FOR SUBGRADE AND AS A LONG TERM UNDERDRAIN. SEE PAGE #19 G-1 INLET, VILLAGE STANDARD FOR DETAILS.

11. INLET BOXES SHALL BE PLACED ACCURATELY. THE INSIDE BACK OF THE INLET BOX IS TO BE IN LINE WITH THE BACK OF THE PROPOSED OR EXISTING CURB & GUTTER. INLET BOXES THAT ARE MORE THAN ONE INCH (1") OUT OF ALIGNMENT, SHALL BE REMOVED AND RESET AT THE CONTRACT0R'S EXPENSE.

12. INLET BOXES SHALL BE PRECAST BOXES WITH 6" WALLS AND FLOOR. THE INLET BOXES SHALL BE CONSTRUCTED SO THE MAXIMUM ADJUSTMENT HEIGHT SHALL NOT EXCEED 8".

13. EXPANSION JOINT MATERIAL SHALL BE 1" FLEX/FOAM EXPANSION JOINT, SUCH AS CERAMAR BY W.R. MEADOWS, NOMAFLEX BY NOMACO AND OR APPROVED EQUAL. FIBERBOARD OR ASPHALT EXPANSION JOINT (AEJ) IS NOT PERMITTED. E.J. MATERIAL TO BE INSTALLED STRAIGHT, SQUARE AND THROUGHOUT THE ENTIRE JOINT.

INLET MANHOLE, TYPE G-1, VILLAGE STANDARD

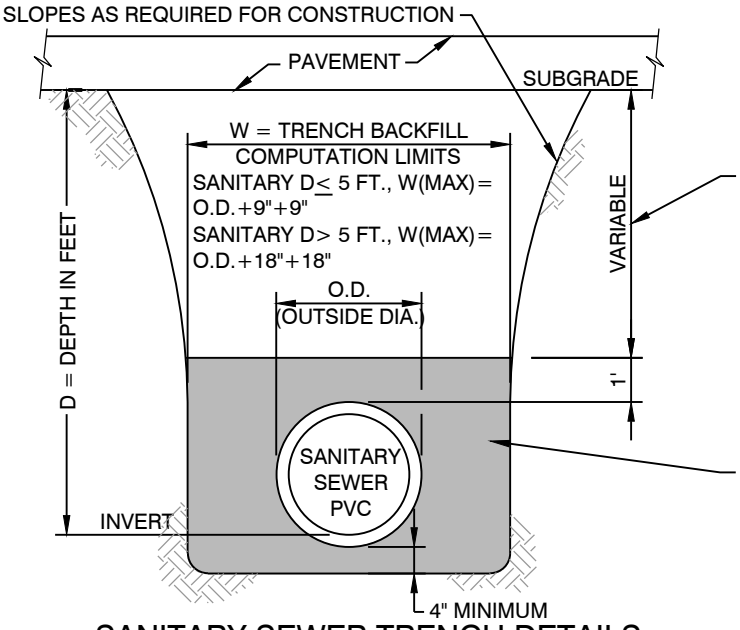


	D	C	T
PRECAST REINFORCED CONCRETE SECTIONS	4'-0"	2'-6"	5"
	5'-0"	3'-9"	6"

GENERAL NOTES:

1. ALL CONCRETE SHALL BE IDOT APPROVED, SEE PAGE #34 FOR SPECIAL PROVISION FOR PORTLAND CEMENT CONCRETE.
2. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.
3. FLAT TOP MANHOLE SHALL BE USED ONLY WHEN CORBEL TOP CAN NOT BE USED. TOP OF FLAT SLAB TO BE BELOW BOTTOM OF P.C.C. PAVEMENT, BITUMINOUS BINDER COURSE AND AGGREGATE BASE COURSE.
4. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL STRUCTURES AND SHALL BE REVIEWED BY THE ENGINEER.
5. POLYPROPYLENE PLASTIC STEPS AT 12"-16" O.C. AS MFG. BY AMERICAN STEP CO. (ML-10-NCR) POSITION STEPS OVER OUTLET PIPE.
6. ADJUSTING RINGS, CASTINGS AND BARREL SECTIONS SHALL BE PLACED IN ROPE MASTIC.
7. POURED CONCRETE FILLET SHALL BE SHAPED TO DRAIN TO OUTLET WITH AVAILABLE GRADE, WITH BROOM FINISH WHEN GRADE AND IN/OUT INVERTS ALLOW FILLET EDGES SHALL BE SET ABOVE INVERT BY D/2.
8. ALL PIPES TO BE FULLY INSTALLED INTO STRUCTURE AND MAY PROJECT BY NOMINAL AMOUNT WITHOUT CONFLICTING WITH OTHER PIPES OR AS DETERMINED BY ENGINEER OR SHALL BE CUT FLUSH WITH INTERIOR WALL UNLESS OTHERWISE SPECIFIED.

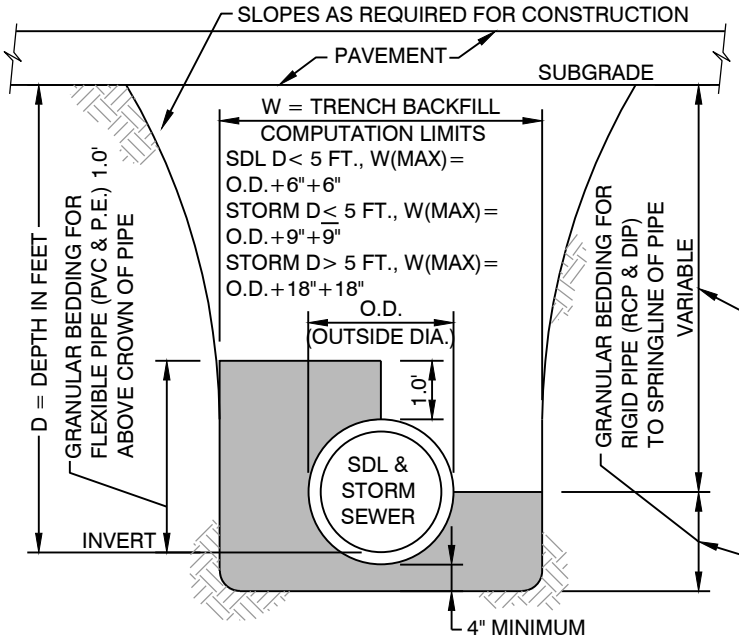
STORM SEWER MANHOLE



UNDER PROPOSED STREETS, DRIVEWAYS AND TO END OF LATERALS - PROPOSED TRENCH BACKFILL (PAY ITEM) - MATERIAL TO BE CA-6. COMPACTION TO BE BY MECHANICAL METHODS TO A MINIMUM OF 95% OF THE STANDARD LABORATORY DENSITY. EACH COMPACTED LIFT NOT TO EXCEED 8". ALL TRENCHES SHALL THEN BE FLOODED.

APPROVED GRANULAR BEDDING TO 1' ABOVE TOP OF PIPE (CA-07 OR CA-11, NOT SAND)

SANITARY SEWER TRENCH DETAILS



BEDDING STONE FOR ALL SEWERS SHALL BE AS FOLLOWS:

"WELL COMPACTED" APPROVED BEDDING MATERIAL, CONSISTING OF LIMESTONE CHIPS, CRUSHED STONE OR SLAG, OR OTHER GRANULAR MATERIAL APPROVED BY THE ENGINEER THAT CAN BE READILY AND THOROUGHLY COMPACTED, "SHALL BE PLACED THE ENTIRE WIDTH OF THE TRENCH AND FOR THE LENGTH OF THE PIPE". SAND OR OTHER FINE MATERIALS THAT HAVE A TENDENCY TO FLOW UNDER PRESSURE WHEN WET WILL NOT BE ACCEPTABLE FOR PIPE BEDDING. GRADATION SHALL BE CA-7 OR CA-11 OR APPROVED ALTERNATE.

PROPOSED TRENCH BACKFILL UNDER PAVEMENT AND 5' BEHIND CURB, SIDEWALK OR SHOULDER - MATERIAL TO BE CA-6. COMPACTION TO BE BY MECHANICAL METHODS TO A MINIMUM OF 95% OF THE STANDARD LABORATORY DENSITY. EACH COMPACTED LIFT NOT TO EXCEED 8". ALL TRENCHES SHALL THEN BE FLOODED.

APPROVED GRANULAR BEDDING TO MIDDLE OF CONCRETE OR DUCTILE IRON PIPE (CA-07 OR CA-11, NOT SAND)

SDL & STORM SEWER TRENCH DETAILS

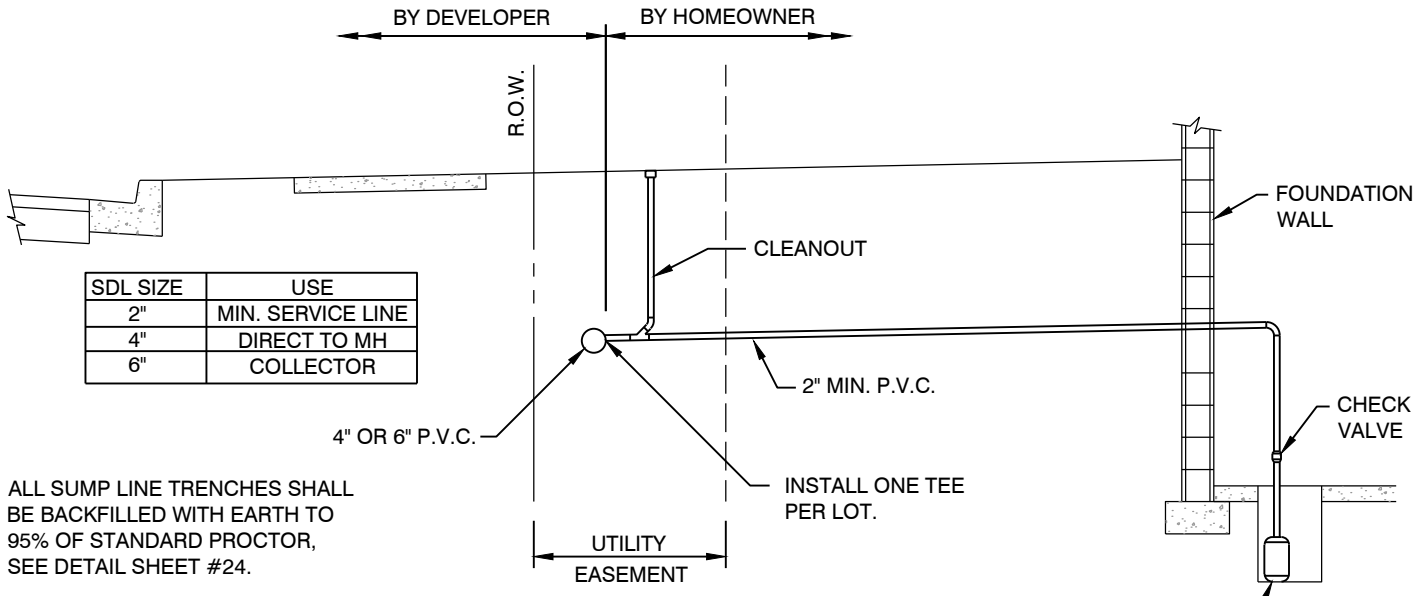
TRENCH COMPACTION REQUIREMENTS:

1. ALL TRENCHES, (SANITARY, STORM, STORM DRAIN LINES AND WATER), UNDER PAVEMENTS AND WITHIN FIVE (5) FEET OF THE BACK OF CURB, SHALL BE BACKFILLED WITH CA-6, AS SPECIFIED ON PAGE #31.
2. THE CA-6 SHALL MECHANICALLY COMPACTED TO A MINIMUM OF 95% OF THE STANDARD LABORATORY DENSITY. EACH COMPACTED LIFT SHALL NOT EXCEED EIGHT (8) INCHES.
3. AFTER THE TRENCHES HAVE BEEN COMPACTED, TRENCHES SHALL THEN BE WATER FLOODED. PRIOR TO FLOODING, THE TOP TWO (2) FEET OF MATERIAL SHALL BE REMOVED FROM THE TRENCHES, FOR A MINIMUM WIDTH OF TWO (2) FEET. TRENCHES SHALL THEN BE FLOODED TO THE TOP OF THE TRENCHES AND THEN TIME SHALL BE ALLOWED FOR THE WATER TO SOAK INTO THE TRENCH. FLOODING SHALL BE DONE AT LEAST TWO (2) TIMES OVER 2 CONSECUTIVE DAYS.
4. THE WIDTH OF THE FLOODING TRENCH SHALL BE BASED ON THE WIDTH OF THE TRENCH, MEASURED AT THE TOP OF THE TRENCH. FLOODING TRENCHES SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING:

TOP OF TRENCH WIDTH	WIDTH OF FLOODING TRENCH
≤ 8'	2'
8' - 12'	3'
12' - 16'	4'

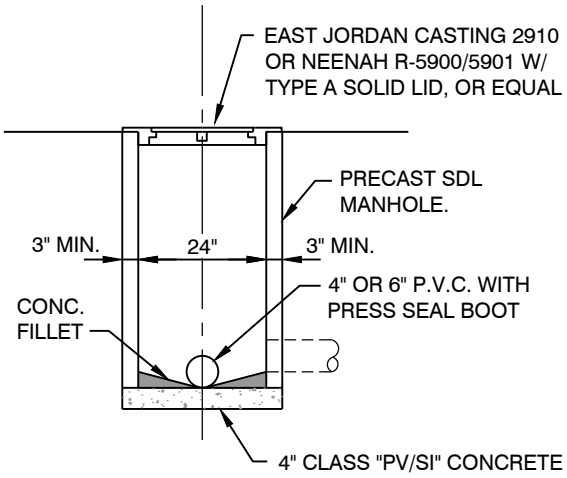
5. IF THE WIDTH OF THE TOP OF THE TRENCH EXCEEDS SIXTEEN (16) FEET, THE WIDTH OF THE FLOODING TRENCH, AND/OR THE NUMBER OF FLOODING TRENCHES, WILL BE DETERMINED BY THE ENGINEER AND THE VILLAGE.
6. EARTH BACKFILL SHALL BE COMPACTED TO 95% MINIMUM STANDARD PROCTOR.

TRENCH DETAILS, COMPACTION AND FLOODING REQUIREMENTS

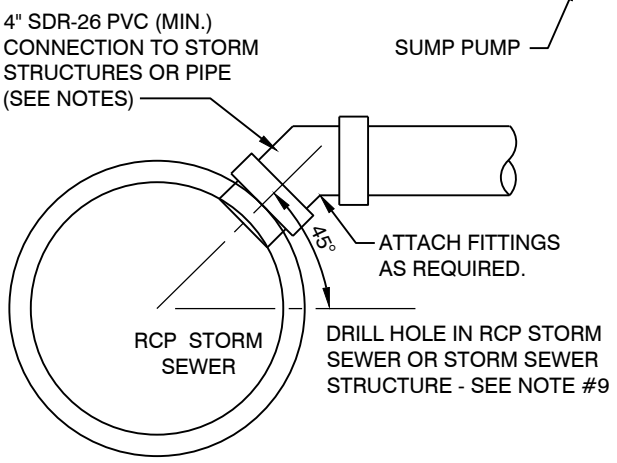


SDL SIZE	USE
2"	MIN. SERVICE LINE
4"	DIRECT TO MH
6"	COLLECTOR

ALL SUMP LINE TRENCHES SHALL BE BACKFILLED WITH EARTH TO 95% OF STANDARD PROCTOR, SEE DETAIL SHEET #24.



SUMP DRAIN LINE MANHOLE

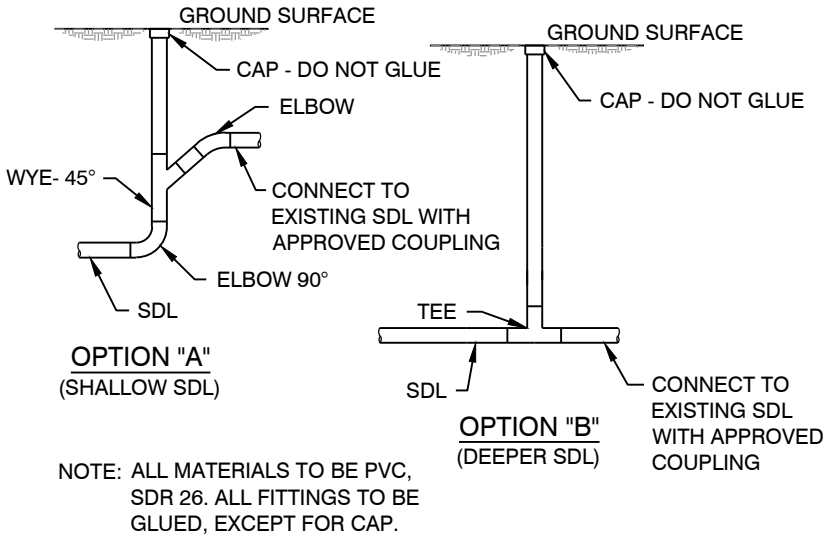


SDL CONNECTION TO STRUCTURES OR PIPE

GENERAL NOTES:

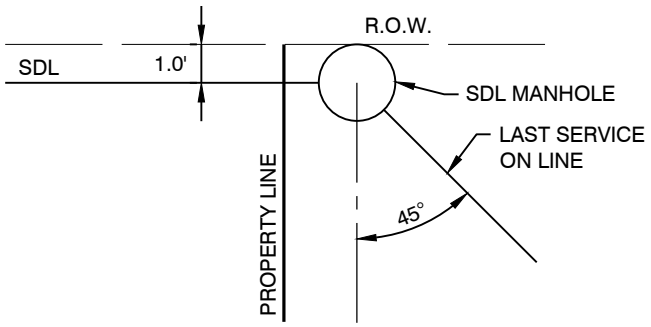
1. SUMP DRAIN LINES SHALL BE DRAINED TO STORM SEWER INLETS OR DRAINAGE DITCHES.
2. P.V.C. PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF A.S.T.M. D-3034 SDR 26.
3. MANHOLES SHALL BE PROVIDED AT A MAX. SPACING OF 300' O.C. AND ON THE END OF ALL LINES.
4. LATERAL CONNECTIONS AT MAIN LINE SHALL BE MADE WITH APPROVED FACTORY FITTING.
5. CASTING FRAME AND LID TO BE COATED WITH A WATER BASE ASPHALT PAINT.
6. PRECAST MANHOLES ARE AVAILABLE WITH PRESS SEAL BOOTS AND POURED INVERTS. PRECAST UNITS MUST BE APPROVED BY THE VILLAGE.
7. IN NEW SUBDIVISIONS EACH LOT SHALL BE PROVIDED ONE SDL CONNECTION PER LOT TO THE SDL COLLECTION / STORM SEWER SYSTEM OR SHALL BE PROVIDED AN ALTERNATE DISCHARGE POINT AS SPECIFIED ON PLAT.
8. ALTERNATE DISCHARGE POINTS MAY NOT DRAIN ACROSS, CAUSE STANDING WATER OR ADVERSELY AFFECT ADJOINING PROPERTIES OR THE PUBLIC ROW AND MUST BE PLACED AS LEAST 1/ 2 THE DISTANCE FROM ANY SETBACK TO THE PROPERTY LINE.
9. FOR ALL NEW CONSTRUCTION PIPE CONNECTIONS SHALL BE DONE BY PRECASTING HOLES OR BOOTING STRUCTURES. FOR ALL OTHER CONNECTIONS REQUIRING HOLES TO BE DRILLED IN EXISTING STRUCTURES OR PIPES THEY SHALL BE DONE WITH THE USE OF A DIAMOND CORE DRILL BIT (V.O.M. SUPPLIED). BITS ARE SIZED TO MATCH THE O.D. OF 2" SCH. 40 AND 4", 6" & 8" SDR-26 PIPE AND SHALL BE USED FOR ALL CONNECTIONS TO STRUCTURES OR TAPS TO PIPES.
10. PIPE TO BE CHAMFERED AND DRIVEN INTO CORE HOLE AND CAULKED ON THE OUTSIDE AS NECESSARY. CONNECTIONS TO STRUCTURES PIPE MAY PROJECT NOMINALLY BUT FOR "DIRECT TAPS" INTO STORM SEWER PIPE SDL PIPE SHALL BE CUT TO BE FLUSH WITH INSIDE OF PIPE WALL.

SUMP DRAIN LINE DETAILS

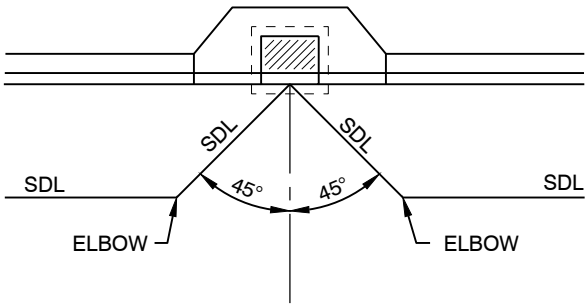


NOTE: ALL MATERIALS TO BE PVC, SDR 26. ALL FITTINGS TO BE GLUED, EXCEPT FOR CAP.

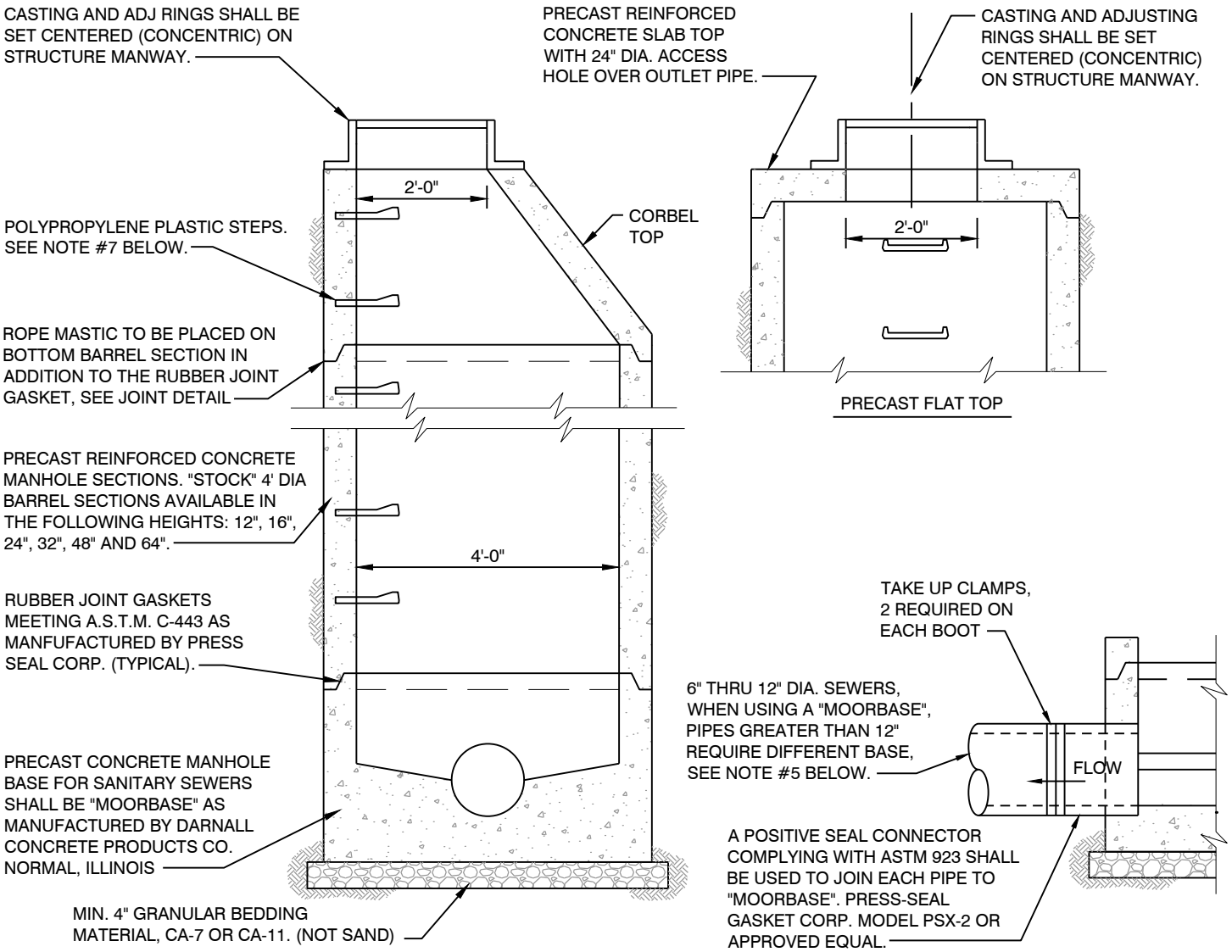
SUMP DRAIN LINE CLEANOUT



SUMP DRAIN LINE MANHOLE LOCATION



SUMP DRAIN LINE STRUCTURE CONNECTION



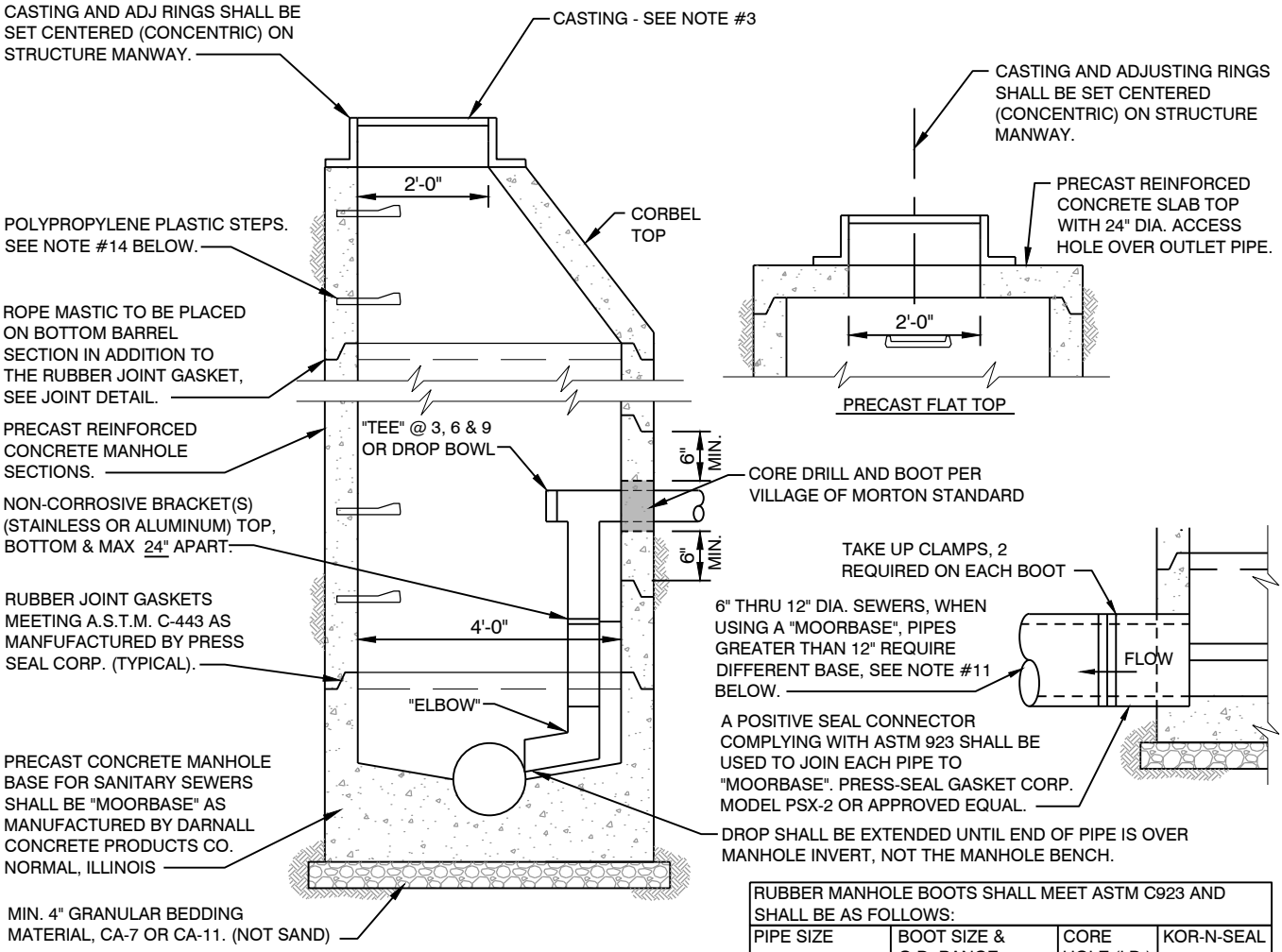
STANDARD INCREMENTS OR "STEPS" BETWEEN PIPE INVERTS SHALL BE AS FOLLOWS:

6" SDR-26 PVC (O.D. = 6.275") - 0.10'(1.2") - 0.35'(4.2") - 0.60'(7.2")
8" SDR-26 PVC (O.D. = 8.400") - 0.10'(1.2") - 0.27'(3.2") - 0.44'(5.3")
10" SDR-26 PVC (O.D. = 10.50") - 0.10'(1.2") - 0.27'(3.2")
12" SDR-26 PVC (O.D. = 12.50") - 0.10'(1.2")
ALL INCREMENTS SHOWN ABOVE ARE AS MEASURED FROM OUTLET INVERT USE OF PIPE MATERIALS WITH LARGER O.D.'S MAY REQUIRE LARGER BOOT.

GENERAL NOTES:

1. CASTINGS SHALL BE SET IN APPROVED MASTIC.
2. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.
3. CONNECTION OF PIPE TO MANHOLE SHALL BE BY APPROVED METHOD.
4. CORBEL TOPS SHALL BE USED STANDARD, FLAT TOPS SHALL BE USED ONLY WHEN CORBEL TOP CAN NOT BE USED DUE TO CONFLICTS SUCH AS PIPE DEPTH AND PIPE DIAMETER (O.D.) CLEARANCE REQUIREMENTS. TOP OF FLAT SLAB TO BE BELOW BOTTOM OF P.C.C. PAVEMENT, BITUMINOUS BINDER COURSE AND AGGREGATE BASE COURSE.
5. FOR SANITARY SEWER GREATER THAN 12", A DIFFERENT MANHOLE BASE WILL BE REQUIRED AND MUST BE APPROVED BY THE VILLAGE. PLAN SHEETS FOR NEW SUBDIVISIONS AND ALL RE-CONSTRUCTIONS SHALL SHOW STRUCTURE INFORMATION INCLUDING: STRUCTURE DIAMETER (Ø), RIM ELEV, PIPE INVERTS, SIZES, TYPES AND ANGLES °.
6. ALL NEW SANITARY MANHOLES TO BE VACUUM TESTED IN ACCORDANCE WITH ATM C1244-02, IN THE PRESENCE OF THE ENGINEER.
7. POLYPROPYLENE PLASTIC STEPS AT 12"-16" O.C. AS MFG. BY AMERICAN STEP CO. (ML-10-NCR) POSITION STEPS OVER OUTLET PIPE.

SANITARY SEWER MANHOLE, 4' DIAMETER

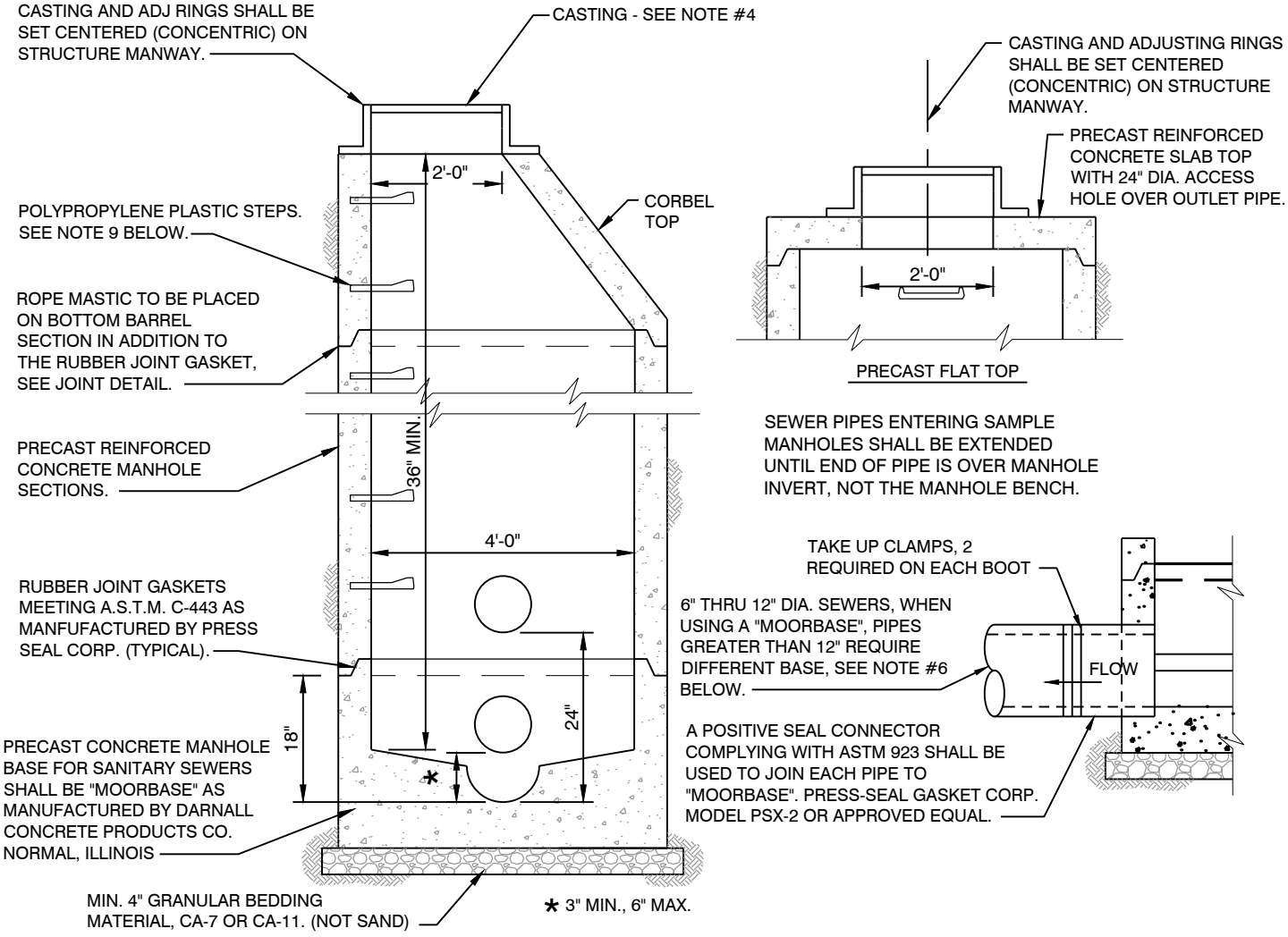


RUBBER MANHOLE BOOTS SHALL MEET ASTM C923 AND SHALL BE AS FOLLOWS:			
PIPE SIZE	BOOT SIZE & O.D. RANGE	CORE HOLE (I.D.)	KOR-N-SEAL
6" SDR-26 PVC	6" (6.00" - 6.75")	10.0"	S406-10AW
8" SDR-26 PVC	8" (7.50" - 9.00")	12.0"	S406-12AW
10" SDR-26 PVC	10" (9.50" - 11.25")	14.0"	S106-14AW
12" SDR-26 PVC	12" (11.25" - 13.00")	16.0"	S106-16AW

GENERAL NOTES:

1. CASTINGS SHALL BE SET IN APPROVED MASTIC.
2. CONNECTION OF PIPE TO MANHOLE SHALL BE BY APPROVED METHOD.
3. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.
4. CONNECTION OF ALL PIPES (MAINS & LATERALS) SHALL UTILIZE A RESILIENT CONNECTOR BOOT MEETING ASTM C923 AND SHALL BE USED TO JOIN EACH PIPE TO "MOORBASE". KOR-N-SEAL, 106/ 406 SERIES BY TRELLEBORG PIPE SEALS OR APPROVED EQUAL. 2 TAKE UP CLAMPS SHALL BE REQUIRED ON EACH BOOT.
5. THE CORE HOLE SHALL BE OF THE DIAMETER SPECIFIED FOR USE WITH THE BOOT AND THE FINISHED I.D. OF THE CORE HOLE MUST HAVE AT LEAST 6" OF CLEARANCE TO ANY MANHOLE JOINT (BOTH INSIDE & OUTSIDE).
6. DROP CONNECTIONS MAY NOT BE INSTALLED INTO CORBEL SECTIONS.
7. CONNECTIONS REQUIRING CORING OF MOORBASE WILL REQUIRE USING A BIT SIZED FOR BOOT FOR THE WALL ONLY AND A BIT SIZED FOR THE PIPE FOR ANY CLEARANCES NEEDED IN/ THRU BENCH. REQUIRED CLEARANCES TO BE MAINTAINED.
8. DROP SHALL UTILIZE EITHER A TEE OR DROP BOWL AT TOP OF DROP ASSEMBLY. TEE SHALL BE INSTALLED AS SHOWN AND NOT FACING UPWARD. DROP BOWL SHALL BE "A6" SERIES BY RELINER / DURAN, INC. AND INSTALLED PER MFG.
9. DROP PIPE AND FITTINGS SHALL BE 6" SDR-26 SOLVENT WELD AND SHALL BE ATTACHED TO MANHOLE USING NON-CORROSIVE BRACKETS AND HARDWARE APPROVED BY THE VILLAGE OF MORTON.
10. CORBEL TOPS SHALL BE USED STANDARD, FLAT TOPS SHALL BE USED ONLY WHEN CORBEL TOP CAN NOT BE USED DUE TO CONFLICTS SUCH AS PIPE DEPTH AND PIPE DIAMETER (O.D.) CLEARANCE REQUIREMENTS. TOP OF FLAT SLAB TO BE BELOW BOTTOM OF P.C.C. PAVEMENT, BITUMINOUS BINDER COURSE AND AGGREGATE BASE COURSE.
11. FOR SANITARY SEWER GREATER THAN 12", A DIFFERENT MANHOLE BASE WILL BE REQUIRED AND MUST BE APPROVED BY THE VILLAGE. PLAN SHEETS FOR NEW SUBDIVISIONS AND ALL RE-CONSTRUCTIONS SHALL SHOW STRUCTURE INFORMATION INCLUDING: STRUCTURE DIAMETER (Ø), RIM ELEV, PIPE INVERTS, SIZES, TYPES AND ANGLES °.
12. ALL NEW SANITARY MANHOLES TO BE VACUUM TESTED IN ACCORDANCE WITH ATM C1244-02, IN THE PRESENCE OF THE ENGINEER.
13. FOR SETTING RINGS AND CASTINGS, USE ROPE TAR BETWEEN CONCRETE TO CONCRETE SURFACES AND CONCRETE TO STEEL SURFACES. FOR RUBBER ADJUSTING RINGS, USE ONE TUBE OF NP-1 CAULK ON EACH SIDE OF ADJUSTING RING.
14. POLYPROPYLENE PLASTIC STEPS AT 12"-16" O.C. AS MFG. BY AMERICAN STEP CO. (ML-10-NCR) POSITION STEPS OVER OUTLET PIPE.

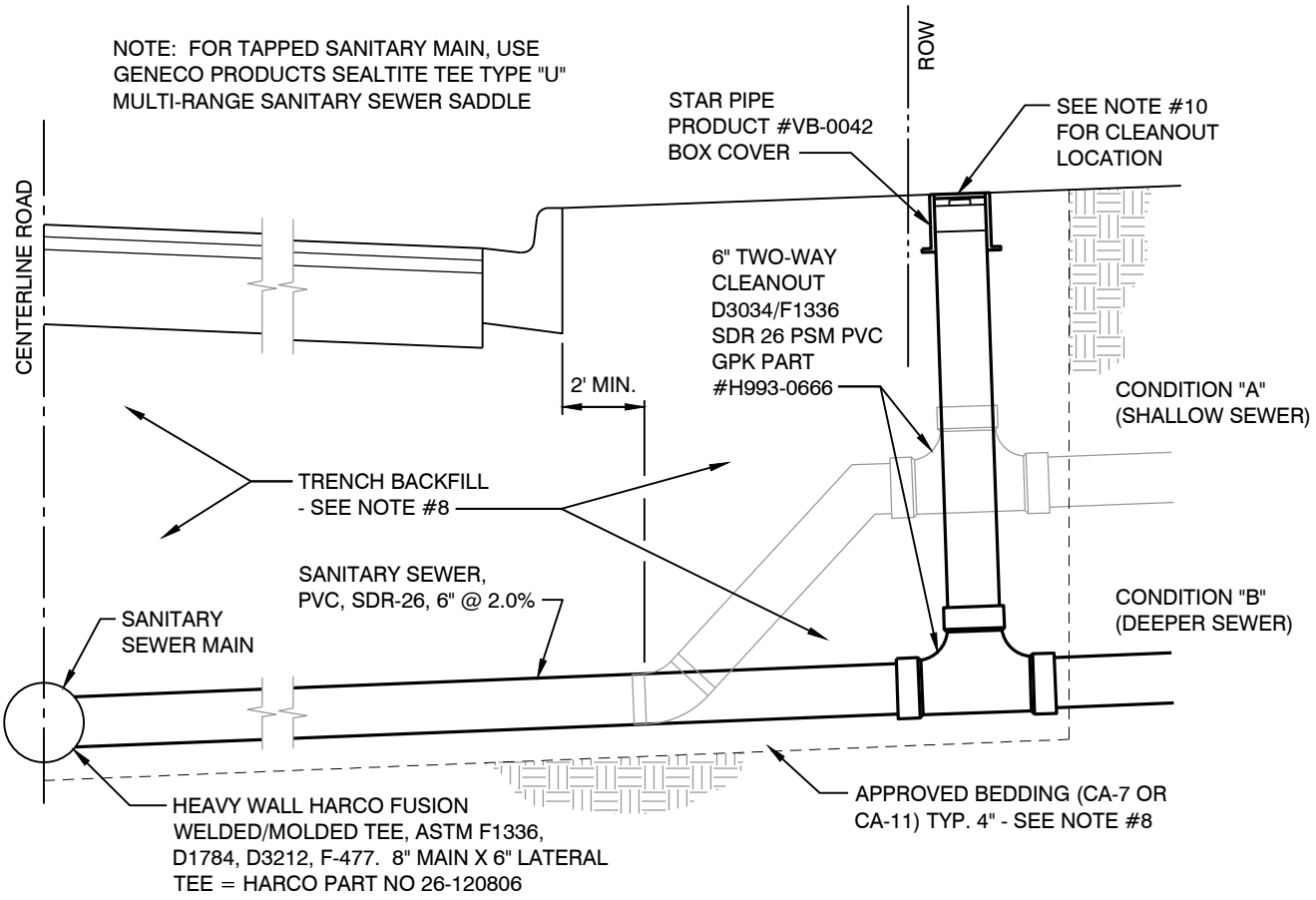
SANITARY SEWER MANHOLE, 4' DIAMETER WITH INSIDE DROP



GENERAL NOTES:

1. CASTINGS SHALL BE SET IN APPROVED MASTIC.
2. CONNECTION OF ALL PIPES (MAINS & LATERALS) SHALL UTILIZE A RESILIENT CONNECTOR BOOT MEETING ASTM C923 AND SHALL BE USED TO JOIN EACH PIPE TO "MOORBASE". KOR-N-SEAL, 106/ 406 SERIES BY TRELLEBORG PIPE SEALS OR APPROVED EQUAL. 2 TAKE UP CLAMPS SHALL BE REQUIRED ON EACH BOOT.
3. SAMPLE MANHOLE SHALL BE A MINIMUM OF 36" FROM BENCH TO INSIDE TOP OF PRECAST.
4. SEE PAGE #35 FOR CASTINGS AND ADJUSTMENT NOTES.
5. CORBEL TOPS SHALL BE USED STANDARD, FLAT TOPS SHALL BE USED ONLY WHEN CORBEL TOP CAN NOT BE USED DUE TO CONFLICTS SUCH AS PIPE DEPTH AND PIPE DIAMETER (O.D.) CLEARANCE REQUIREMENTS. TOP OF FLAT SLAB TO BE BELOW BOTTOM OF P.C.C. PAVEMENT, BITUMINOUS BINDER COURSE AND AGGREGATE BASE COURSE.
6. FOR SANITARY SEWER GREATER THAN 12", A DIFFERENT MANHOLE BASE WILL BE REQUIRED AND MUST BE APPROVED BY THE VILLAGE. PLAN SHEETS FOR NEW SUBDIVISIONS AND ALL RE-CONSTRUCTIONS SHALL SHOW STRUCTURE INFORMATION INCLUDING: STRUCTURE DIAMETER (Ø), RIM ELEV, PIPE INVERTS, SIZES, TYPES AND ANGLES °.
7. ALL NEW SANITARY MANHOLES TO BE VACUUM TESTED IN ACCORDANCE WITH ATM C1244-02, IN THE PRESENCE OF THE ENGINEER.
8. FOR SETTING RINGS AND CASTINGS, USE ROPE TAR BETWEEN CONCRETE TO CONCRETE SURFACES AND CONCRETE TO STEEL SURFACES. FOR RUBBER ADJUSTING RINGS, USE ONE TUBE OF NP-1 CAULK ON EACH SIDE OF ADJUSTING RING.
9. POLYPROPYLENE PLASTIC STEPS AT 12"-16" O.C. AS MFG. BY AMERICAN STEP CO. (ML-10-NCR) POSITION STEPS OVER OUTLET PIPE.

SANITARY SAMPLE MANHOLE, 4' DIAMETER



GENERAL NOTES:

1. ALL WORK TO FOLLOW ILLINOIS STATE PLUMBING CODE INCLUDING RULES FOR MAINTAINING SEWER / WATER SEPARATION (HORZ. & VERT.) AND MIN. 3' COVER.
2. ALL PIPE AND FITTINGS 4"-15" SHALL BE SDR-26 (HEAVY WALL), ASTM D3034 & F1336
3. ALL FITTINGS PAST THE MAINLINE TEE SHALL BE SOLVENT WELD (SW) ACCORDING TO ASTM D2564/D2855. MAINLINE TEES, REPAIR COUPLINGS, AND OTHER NECESSARY GASKETED (G) FITTINGS SHALL BE INSTALLED ACCORDING TO ASTM D3212. GASKETED (G) FITTINGS SHALL NOT BE INSTALLED USING SW.
4. VERTICAL & HORIZONTAL TRANSITIONS SHALL BE DONE WITH 45° (MAX.) FITTING. 90° FITTINGS SHALL NOT BE USED UNLESS APPROVED IN ADVANCE BY THE ENGINEER OR INSPECTOR. IF APPROVED, 90° FITTING SHALL BE "LONG-SWEEP" TYPE.
5. CONNECTION TO EXISTING LATERAL, IF PVC, SHALL BE MADE WITH (SW) COUPLING OR (G) REPAIR COUPLING. ONLY DISSIMILAR MATERIALS (VCP, CIP, OR ORANGEBURG) MAY USE APPROVED MISSION BAND, STRONGBACK OR FERNCO COUPLING (GAP NOT TO EXCEED ¼").
6. LATERAL TO BE INSTALLED AT 2.0% IN ROW UNLESS OTHERWISE INDICATED OR APPROVED BY THE ENGINEER.
7. SANITARY LATERALS LAID PARALLEL TO ONE ANOTHER SHALL MAINTAIN 2' BETWEEN PIPES.
8. TRENCH BACKFILL SHALL BE DONE ACCORDING TO STANDARD DETAIL ON PAGE #22.
9. MAINLINE SEWER SHALL BE LAID AT PRESCRIBED GRADE WITH PIPE LASER AND SHALL HAVE AIR & MANDREL PERFORMED AT 30 DAYS.
10. FOR CAPITAL IMPROVEMENT PROJECTS, CLEANOUT SHALL BE LOCATED DIRECTLY BEHIND ROW. FOR NEW HOUSE CONSTRUCTION, CLEANOUT SHALL BE LOCATED WITHIN 5' OF HOUSE.

SANITARY LATERAL, CLEANOUT, AND PIPE ASSEMBLY DETAILS

POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIXTURE D, N50

LOCATION (S) AND MIXTURE USE (S)	POLY. HOT-MIX ASPHALT SURFACE COURSE: MAINLINE, INCIDENTAL, DRIVES
AC / PG:	SBS 64 - 28
RAP %: (MAX.)	0%
DESIGN AIR VOIDS:	4.2% @ Ndes = 50
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 9.5 OR IL 12.5
FRICTION AGGREGATE:	MIXTURE D

POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIXTURE D, N50, HD

LOCATION (S) AND MIXTURE USE (S)	POLY. HOT-MIX ASPHALT SURFACE COURSE: MAINLINE, INCIDENTAL
AC / PG:	SBS 70 - 28
RAP %: (MAX.)	0%
DESIGN AIR VOIDS:	4.2% @ Ndes = 50
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 9.5 OR IL 12.5
FRICTION AGGREGATE:	MIXTURE D

HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50

LOCATION (S) AND MIXTURE USE (S)	HOT-MIX ASPHALT BINDER COURSE: MAINLINE, INCIDENTAL, BASE COURSE
AC / PG:	PG 64 - 22
RAP %: (MAX.)	0% (20% - 25% FOR BINDER BASE COURSE)
DESIGN AIR VOIDS:	4.2% @ Ndes = 50
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 19.0
FRICTION AGGREGATE:	N/A

MINIMUM COMPACTED LIFT THICKNESS - SURFACE AND BINDER	
MIXTURE	THICKNESS, INCHES
IL 9.5 IL 12.5 IL 19.0 IL 25.0	1 1/4" 1 1/2" 2 1/4" * 3"
MINIMUM COMPACTED LIFT THICKNESS - LEVELING BINDER	
MIXTURE	THICKNESS, INCHES
IL 9.5 IL 9.5 OR 12.5	1 1/4" 1 1/4" TO 2"

* IF LESS THAN 2 1/4", COMPACT TO SATISFACTION OF THE ENGINEER.

SPECIFICATIONS FOR HOT-MIX ASPHALT MIXTURES

THE GEOTECHNICAL FABRIC FOR GROUND STABILIZATION SHALL BE A NON - WOVEN FABRIC, EQUAL TO CARTHAGE MILLS FX - 80HS, LINQ GTF 180EX, TERRATEX N08, PROPEX GEOTEX 801 OR TC MIRAFI 180N, AND SHALL MEET OR EXCEED THE FOLLOWING PROPERTIES:

PHYSICAL PROPERTY		RANGE OF VALUES
GRAB TENSILE STRENGTH (LBS.)	ASTM D 4632	200
GRAB ELONGATION @ BREAK (%)	ASTM D 4632	15
BURST STRENGTH (PSI)	ASTM D 3786	330
TRAPEZOIDAL TEAR STRENGTH (LBS.)	ASTM D 4533	80
WEIGHT (OZ./YD.^{2})	ASTM D 3776	8
WATER FLOW RATE (GPM/FT.^{2})	ASTM D 4491	80

THE GEOTECHNICAL FABRIC FOR BASE REPAIR SHALL BE A WOVEN FABRIC, EQUAL TO AMOCO 2006, TNS W300, LINQ GTF 300, PROPEX GEOTEX 315 ST OR TC MIRAFI 600X, AND SHALL MEET OR EXCEED THE FOLLOWING PROPERTIES:

PHYSICAL PROPERTY		RANGE OF VALUES
GRAB TENSILE STRENGTH (LBS.)	ASTM D 4632	300
GRAB ELONGATION @ BREAK (%)	ASTM D 4632	15
BURST STRENGTH (PSI)	ASTM D 3786	600
TRAPEZOIDAL TEAR STRENGTH (LBS.)	ASTM D 4533	120
WATER FLOW RATE (GPM/FT.^{2})	ASTM D 4491	4

ABOVE VALUES TO BE MINIMUM AVERAGE ROLL VALUES. IF ABNORMAL OR UNUSUAL CONDITIONS EXIST, A DIFFERENT TYPE OF FABRIC MAY BE REQUIRED, AS DIRECTED BY THE VILLAGE. CONTRACTOR MAY BE REQUIRED TO SUBMIT, TO THE VILLAGE, A PHYSICAL PROPERTY SHEET FOR THE TYPE OF FABRIC THAT HE OR SHE INTENDS TO USE.

REQUIRED PROPERTIES FOR GEOTECHNICAL FABRICS

THIS ITEM OF WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF SECTION 351 OF THE STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER. GEOTECHNICAL FABRIC SHALL BE REQUIRED FOR ALL FLEXIBLE PAVEMENT USING AGGREGATE BASE COURSES. MATERIAL SHALL MEET ALL REQUIREMENTS OF SECTION 1004 OF THE STANDARD SPECIFICATIONS, EXCEPT AS REVISED BELOW:

ARTICLE 1004.01 (c) GRADATION:

SIEVE SIZE	% PASSING
1 1/2"	100
1"	90 - 100
1/2"	60 - 90
NO. 4	30 - 52
NO. 16	10 - 35
NO. 200	6 - 13

ARTICLE 1004.01 (d) PLASTICITY

PLASTICITY INDEX SHALL BE BETWEEN 3% AND 9%.

THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, SUBMIT TO THE ENGINEER A SAMPLE, OF SUFFICIENT SIZE, OF THE AGGREGATE TO BE USED FOR THE AGGREGATE BASE COURSE, TYPE B, AND A MATERIAL CERTIFICATION FROM THE MATERIAL SUPPLIER, AT LEAST 15 DAYS PRIOR TO STARTING CONSTRUCTION. THIS SAMPLE SHALL BE TESTED BY THE ENGINEER FOR ACCEPTANCE. EXPENSE OF THE TEST SHALL BE BORNE BY THE CONTRACTOR.

AGGREGATE BASES SHALL BE IN PLACE THROUGH ONE WINTER (THE FREEZE - THAW CYCLE) BEFORE PLACING ASPHALT.

SPECIAL ATTENTION IS CALLED TO ARTICLE 351.10 OF THE STANDARD SPECIFICATIONS. PROOF ROLLING SHALL BE REQUIRED ON ALL AGGREGATE BASES, PRIOR TO PLACEMENT OF THE SURFACE COURSES. THE NUMBER OF PASSES REQUIRED OF THE LOADED TANDEM SHALL BE DETERMINED BY THE ENGINEER, WITH THE MAXIMUM NUMBER BEING AS SPECIFIED IN THIS ARTICLE.

ADDITIONALLY, ONCE THE AGGREGATE BASE HAS BEEN PROOF ROLLED AND CONDITIONALLY APPROVED, SHOULD CONDITIONS CHANGE BEFORE PLACEMENT OF ANY OF THE SURFACE COURSES, SUCH AS A RAINFALL EVEN, IT MAY BE NECESSARY TO RE - PROOF ROLL THE BASE, AS DIRECTED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

AGGREGATE BASE COURSE, TYPE B (CA-6)

STREET NAME SIGNS

BLANKS:	9" BLANKS, .080" ALUMINUM THICKNESS, STAMPED FOR QUIK PUNCH POSTS
SHEETING:	SINGLE-SIDED, HIGH INTENSITY, GREEN BACKGROUND WITH WHITE BORDER
LETTERING:	6" UPPERCASE, WITH 4.5" LOWER CASE
HARDWARE:	DRIVE RIVET WITH NYLON WASHER AND CHERRY MATE DRIVE RIVET

POST:	2" QUIK PUNCH
ANCHOR:	OMNI DIRECTIONAL
HARDWARE:	RAIN CAP, CORNER BOLT, RIVET

TWO (2) SIGNS PER STREET. ALL SIGNS TO BE MOUNTED IN ACCORDANCE WITH M.U.T.C.D. STANDARDS.

OTHER SIGNS

ALL OTHER SIGNS SHALL BE HIGH INTENSITY SHEETING, AS APPROVED BY THE VILLAGE OF MORTON, WITH THE SAME POSTS AS ABOVE.

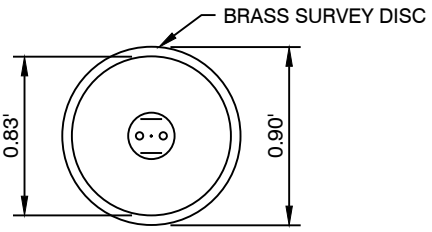
STREET SIGNAGE SPECIFICATIONS

MATERIALS:

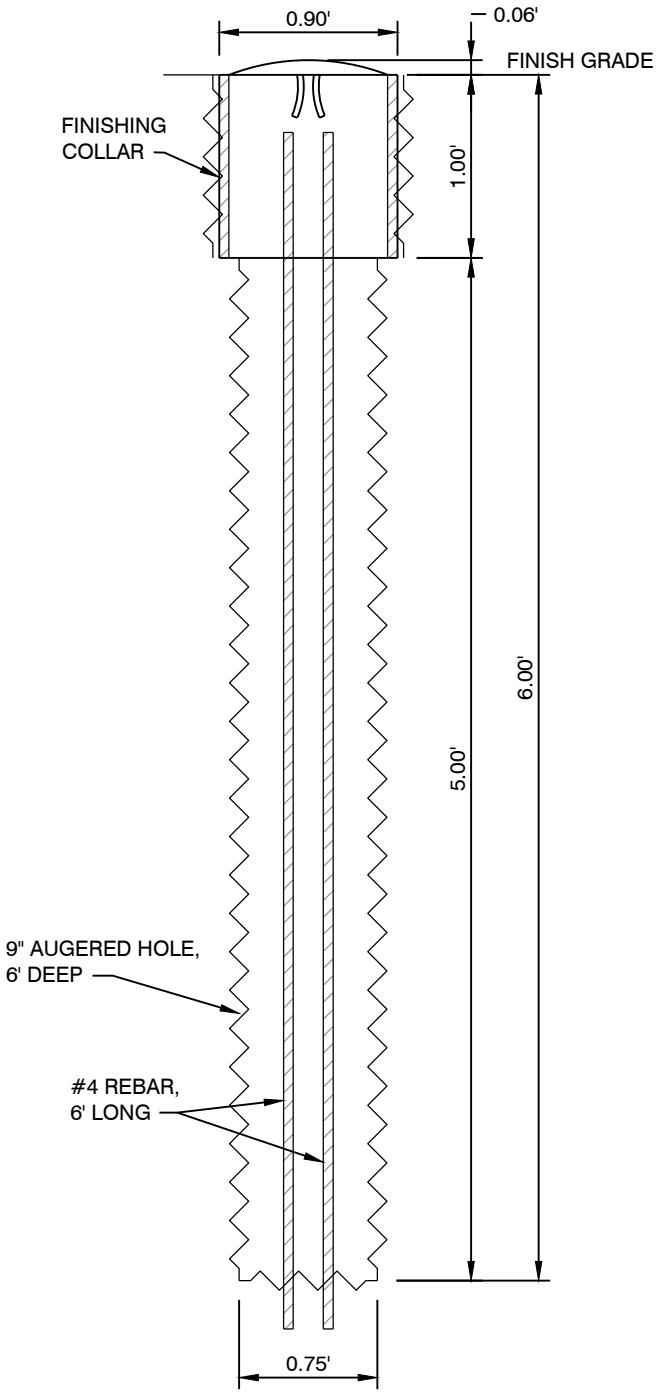
CONCRETE	1 - MONUMENT HOLE = ±0.121 CUBIC YARDS OF 4000# WHITE ROCK
REINFORCING	2 - #4 REBAR, 6' LONG
FINISHING COLLAR	1 - 10" SDR - 26, PVC, 1' LONG
MONUMENT	1 - 4" BRASS SURVEY MONUMENT

GENERAL NOTES:

1. HOLES TYPICALLY DRILLED WITH A "POLE TRUCK" EQUIPPED WITH A 9" AUGER WHICH LEAVES ABOUT A 9.5"-10" HOLE DEPENDING ON THE SOIL.
2. THE PVC FINISHING COLLAR IS MADE FROM 10" PVC WHICH DEPENDING ON THE DRILLING MAY REQUIRE A MINOR AMOUNT OF SHAVING AT THE TOP OF THE HOLE TO ACCOMMODATE THE COLLAR.
3. HOLES MAY FILL QUICKLY WITH GROUND WATER AND MUST BE PUMPED PRIOR TO PLACEMENT OF CONCRETE.
4. REBAR INSTALLED AFTER ABOUT 3/4 OF THE CONCRETE IS PLACED IN HOLE AND SHOULD BE LEFT DOWN FROM THE TOP OF THE PVC ABOUT 2-3", TO PREVENT POP-OUTS AND TO ALLOW ROOM FOR THE MONUMENT STEM TO BE PLACED IN THE TOP WITHOUT INTERFERENCE WITH THE REBAR.
5. HEIGHT OF FINISHED MONUMENT TOP SHOULD BE NO TALLER THAN 1" ABOVE SURROUNDING GRADE TO ALLOW FOR MOWING, SNOW PLOWING AND OTHER SAFETY CONSIDERATIONS.
6. PRIOR TO PLACEMENT OF BRASS DISC THE CONCRETE SHOULD BE ROUGH FINISHED WITH A MOUND BROUGHT TO THE CENTER OF THE FINISHING COLLAR SO THAT THE DISC MAY BE PLACED IN THE MIDDLE OF THIS MOUND AND PUSHED DOWN INTO THE CONCRETE THEREBY PUSHING OUT THE AIR FROM UNDER THE DISC AND PROMOTING GOOD EMBEDMENT OF THE DISC IN THE FOUNDATION. THE CONCRETE SHOULD THEN BE FINISHED AROUND THE DISC SUCH THAT THE DISC IS SMOOTH WITH THE TOP OF THE MONUMENT AND THE TOP OF THE MONUMENT IS CONVEX. THE DISC SHOULD BE PLACED IN THE CENTER OF THE FINISHING COLLAR.
7. IF THE LOCATION HAS DECENT GROUND COVER IT MAY BE POSSIBLE TO CUT THE SOD OUT PRIOR TO DRILLING THE HOLES AND REPLACE THE SOD AROUND THE MONUMENT. IF NOT, THE AREA SHOULD BE SEEDED AND COVERED WITH A STRAW BLANKET (DS-75).
8. ALL REINFORCEMENT BARS TO BE EPOXY COATED.



PLAN VIEW



PROFILE VIEW

G.I.S. MONUMENT

1. GENERAL:

CONCRETE FOR PAVEMENT, PATCHING, DRIVEWAYS, CURB AND GUTTER, SIDEWALK, PAVED DITCH AND MEDIANS TO BE IN ACCORDANCE WITH THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE PORTLAND CEMENT CONCRETE SHALL BE AN IDOT PV/SI MIX DESIGN WITH FREEZE THAW CRUSHED STONE (WHITE ROCK).

2. JOINT MATERIALS:

EXPANSION JOINT MATERIAL SHALL BE FLEX/FOAM EXPANSION JOINT, OF THE THICKNESS SPECIFIED, AS MANUFACTURED BY RIGHT POINTE COMPANY, OR APPROVED EQUAL. THIS EXPANSION MATERIAL SHALL BE USED ON PAVEMENTS, CURB AND GUTTER, SIDEWALK, ENTRANCES, PAVED DITCH OR ANY OTHER REQUIRED EXPANSION JOINT IN VILLAGE RIGHT-OF-WAY. CELLOTEX EXPANSION MATERIAL WILL NOT BE ALLOWED IN VILLAGE RIGHT-OF-WAY.

3. CURING:

CONCRETE SHALL BE CURED WITH TWO COATS OF WHITE MEMBRANE CURING COMPOUND. CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 1020.13 OF THE IDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

SPECIAL PROVISIONS FOR PORTLAND CEMENT CONCRETE

CASTINGS

CASTINGS GENERALLY PROVIDE THE CONNECTION/ ACCESS FROM THE SURFACE OF THE GROUND TO THE SUBSURFACE OF THE STRUCTURE. THE TYPE, SIZE, DURABILITY AND PROPER INSTALLATION OF THESE CASTINGS PLAY AN IMPORTANT ROLE IN THE FUNCTION OF THE INFRASTRUCTURE AS A WHOLE. THIS IS WHY THE VILLAGE OF MORTON SPECIFIES A THICKER FLANGED CASTING THAN THE IDOT TY-1 CASTING TO PREVENT BREAKAGE AND PROVIDE DURABILITY.

1. ALL CASTINGS SHALL BE HEAVY DUTY WITH A MINIMUM RATING MEETING ASTM A48 CL. 35, MARKED "MADE IN U.S.A." AND SHALL BE ASPHALT DIPPED, SEE TABLE (35.01).
2. 9" MANHOLE CASTING SHALL BE USED AS STANDARD UNLESS ADJUSTMENT AND OR CLEARANCE CONDITIONS REQUIRE USE OF A SHORTER CASTING, AND SHALL BE APPROVED BY ENGINEER.
3. ALL SIZES (9",7"&4") OF SANITARY SEWER CASTINGS MAY BE SPECIFIED AS WATERPROOF, BOLT DOWN TYPE ASSEMBLIES AND SHALL BE USED FOR TRUNK SEWERS AND WHEN SPECIFIED BY V.O.M.
4. SANITARY SEWER LIDS SHALL BE A HEAVY DUTY SOLID COVER, CAST WITH GASKET SEAL, CONCEALED PICK HOLE AND WITH MORTON, ILLINOIS CITY EMBLEM CAST IN CENTER OF LID AND LETTERED "SANITARY SEWER".
5. STORM SEWER LIDS SHALL BE A HEAVY DUTY OPEN GRATE, WHEN SPECIFIED BY V.O.M A SOLID COVER, CAST WITH CONCEALED PICK HOLE AND WITH THE WORD "STORM" CAST-IN THE CENTER OF LID SHALL BE USED.
6. STORM CASTINGS INCLUDING OPEN GRATES AND INLET HOODS SHALL BE CAST WITH A "FISH EMBLEM" AND MARKED "DUMP NO WASTE - DRAINS TO WATERWAY"
7. DIAGONAL BAR GRATE WITH MAXIMUM SLOT OPENINGS OF 1" - 1 1/2" SHALL BE STANDARD GRATE USED ON INLETS, THE USE OF VANE GRATES SHALL BE REQUIRED ON INLETS WITH PROFILE GRADES EXCEEDING (5%).
8. SLOTTED OPENINGS IN BACK OF INLET HOOD SHALL BE COVERED USING 1/4" MIN. STEEL PLATES AND INSTALLED ON THE BACK OF THE HOOD WITH THE USE OF PROPER NUTS AND WASHERS.
9. INLET HOODS AND DEPRESSED BACKS SHALL BE PROVIDED AND SECURED WITH PROPER MOUNTING HARDWARE, BOLTS SHALL BE 5/8"X2.5" MINIMUM, WITH ONE FLAT WASHER EACH SIDE AND ONE LOCK WASHER & NUT.
10. SPECIAL CONDITIONS MAY REQUIRE VARIATIONS OF THE ASSEMBLY (FRAME, LID/GRATE AND HOOD) AND SHALL BE APPROVED BY ENGINEER.
11. MANHOLE CASTINGS AND THEIR ADJUSTMENTS SHALL BE PLACED ACCURATELY AND ALIGNED CONCENTRICALLY WITH THE CENTER OF THE STRUCTURE MANWAY AND MAY NOT VARY MORE THAN 1".
12. INLET CASTINGS AND THEIR ADJUSTMENTS SHALL BE PLACED ACCURATELY AND ALIGNED CONCENTRICALLY WITH THE BACK OF THE INET OR CURB AND MAY NOT VARY MORE THAN 1".
13. ALL CASTINGS AND ADJUSTMENTS SHALL BE CHECKED TO MAINTAIN PROPER ALIGNMENT, ESPECIALLY DURING NEW CONSTRUCTION.
14. PROPER SEALING AND ADHERANCE OF BOTH THE CASTING AND ANY REQUIRED ADJUSTMENTS TO THE STRUCTURE SHALL BE PERFORMED USING APPROVED ADHESIVE SEALANTS, SEE TABLE (35.02).

Table 35.01 - Casting Assemblies - Frame, Lid, Grate & Hood

Structure Type	Height	Frame #		Type	Lid / Grate #		Hood Type	
		East Jordan	Neenah		East Jordan	Neenah	East Jordan	Neenah
Sanitary Manholes (All Types)	9" (#2)	EJ1050Z	17120001	CL	EJ1020AGS	10155580 (#4)		
	7"	EJ1022Z3	1772-C	CL	EJ1020AGS	10155580 (#4)		
	4"	EJ1880Z	16470001	CL	EJ1020AGS	10155580 (#4)		
Storm Manholes	9" (#2)	EJ1050Z	17120001	CL	TY-A (OL)	10772308 (CL)		
	7"	EJ1022Z3	1772-C	OL	M1 (OL)	20150032 (OL)		
	4"	EJ1880Z	16470001					
Sump Drain Manhole	3/4" or 4"	EJ2910	59000007	CL		59000265		
Inlet & Inlet Manhole	6" Curb	EJ7510	32462001	Diagonal	M1 (#7)	32460027	EJ7030-T1	32900043
	9" Curb	EJ7510	32462001	Diagonal	M1 (#7)	32460027	EJ7030-T4	
	1-1/2" Curb	EJ7510	32462001	"S"	M2	32463002	EJ7030-T3	30677008
	6" Curb	EJ7510	32462001	Vane	M1 (#7)	32463000	EJ7030-T1	32900043

Table 35.02 - ADHESIVES & SEALANTS

INTERFACE TYPE	ADHESIVE / SEALANT TYPE
Concrete to Concrete	Butyl Rope Tar
Concrete to Iron	Butyl Rope Tar
Rubber adjustments	Sealant, NP-1, Min. 2 tube/side
*Joint sealant may be substituted for rope tar if applied liberally.	

CASTING ADJUSTMENTS

GENERALLY, DRAINAGE STRUCTURES (SANITARY & STORM) ARE INTENDED TO BE INSTALLED PLUM AND LEVEL WHEREAS ROADWAYS, CURBS OR OTHER AT GRADE SURFACES ARE SLOPED TO DRAIN. THEREFORE ADJUSTMENTS SHALL BE MADE BETWEEN THE STRUCTURE AND THE CASTING TO MAKE THE CASTING MATCH THE ELEVATION AND PROFILE OF THE ADJOINING GRADE.

1. CASTINGS SHALL BE ADJUSTED TO HEIGHT AND SLOPE USING APPROVED ADJUSTING RINGS. SHIMS OF ANY KIND (BRICKS, WOOD, WASHERS, ROPE TAR, ETC) ARE NOT APPROVED ADJUSTMENT MATERIALS.
2. MINIMUM CONCRETE ADJUSTING RING THICKNESS 4", TOTAL ADJUSTMENT NOT TO EXCEED 10", MAX RING ADJUSTMENTS 1 CONCRETE, 2 RUBBER.
3. STRUCTURES SHALL BE PROVIDED WITH THE MINIMUM NUMBER OF RUBBER ADJUSTMENT(S) NECESSARY, NO MORE THAN 2, IN ORDER TO MATCH THE SLOPE(S) OF THE ADJOINING GRADE.
4. PROFILE GRADE LIMITS FOR NEW CONSTRUCTION RANGE BETWEEN 0.50% MIN AND 7.00% MAX., (SEE PAGE #4) THE VILLAGE RESERVES THE RIGHT TO DETERMINE TYPE OF ADJUSTMENT REQUIRED.
5. FOR MANHOLES WHOSE CASTINGS ARE PLACED ON THE CENTERLINE OF THE ROAD THE CASTING SHALL BE ADJUSTED TO MATCH THE PROFILE GRADE BUT 0.02' (1/4") BELOW PROPOSED CL GRADE.

CASTINGS AND ADJUSTMENTS

Philosophy: It is the intent of this policy to provide control over stormwater runoff from properties such that the run-off rate (Q) is no greater after development, than it was before development, given the case of a 2 Year, 30 Minute Storm; storage is required for a 25 Year, 30 Minute Storm.

Methodology: The Rational Method of Calculating Run-off: Q=CIA where:

Q = flow (ft^3 / sec. of CFS)
Q_I = Pre-Development Run-off Rate (Initial)

Q_P = Developed Run-off Rate (Post-Development)

C = coefficient of run-off

0.95 paved, gravel, roof

0.50 R-1 subdivision

0.30 grass

0.25 agriculture (All Pre-Development Conditions)

I = Intensity of Storm

2 Year / 30 Minute Storm = 2.24 in/hr

25 Year / 30 Minute Storm = 3.94 in/hr

A = Area (in acres)

Example # 1: 1 Acre of farm Ground to 1 Acre of Pavement and/or roof

Q_I = 0.25 x 2.24 x 1 = 0.56 cfs

Q_P = 0.95 x 3.94 x 1 = 3.743 cfs

Storage = 3.743 - 0.56 = 3.183 cfs x 60 sec./min. x 30 min. = 5729.40 $ft.^3$

Release Rate = Q_I = 0.56 cfs

Example # 2: 10 Acres of Farm Ground to a Subdivision

Q_I = 0.25 x 2.24 x 10 = 5.60 cfs

Q_P = 0.50 x 3.94 x 10 = 19.70 cfs

Storage = 19.70 - 5.60 = 14.10 cfs x 60 sec./min. x 30 min. = 25,380 $ft.^3$

Release Rate = Q_I = 5.60 cfs

Silt-In Compensation: If detention is in an earthen basin, the design should be 5% greater to account for "silting in"; Example # 1 would be increased to 6,015.87 $ft.^3$, while Example # 2 would be increased to 26,649 $ft.^3$

Design Criteria:
- No vegetated, earthen slopes shall exceed a $3_{(H)}:1_{(V)}$ grade.
- Detention basin bottoms and ditches with less than 1% slope shall require a "hardened" bottom, Constructed with either a paved ditch or equivalent such as "turf-lock" pavers.
- Storm sewer constructed within the Village Right-of-Way must use approved material.
- Stormwater detention calcs. must show work and shall be included on the plans.
- No trees, bushes or other landscaping which would impair the function of the detention basin shall be placed within the detention basin and or below the HWL.

NOTE: Developments which are large, complex or extra sensitive to drainage considerations may require more sophisticated analysis. The Village of Morton maintains the sole right to determine adequacy of stormwater detention.

Watermain Material Specifications
Village of Morton, Morton, Illinois
(Revised August 2025 – CD, LKB)

Table of Contents

GENERAL:

1) All Watermain Materials incorporated into the Village of Morton Water Distribution System shall be of Domestic Manufacture (i.e. manufactured within the boundaries of the United States) and shall meet all applicable specifications of the **American Water Works Association (AWWA)**.

   NOTE: The Village of Morton Water Distribution System consists of watermain piping, service and any appurtenances maintained by the Village of Morton up to the outlet of the curb stop (service valve).

2) A Material Listing shall be made available upon request to the Village of Morton and include the following:

   Material Description, Name of the Manufacturer and the Name of the Supplier

WATERMAIN PIPE*:*

All pipe used for watermain shall be:

1) ***Ductile Iron with Bell and Spigot Joints*** (either 'Tyton' or 'Fastite').

   Watermain pipe will be supplied with proper gaskets and lubrication.

   All Ductile Iron pipe supplied for watermain shall be a minimum: Class 50 for 8" and larger and Class 52 for 4" and 6"

2) ***High Density Polyethylene (HDPE) pipe:*** Refer to HDPE Watermain Installation Standards for approved HDPE Pipe and Material and Installation Standards.

GATE VALVES:

1) Valves shall meet the AWWA C515 standard with the valve body, bonnet, wedge, stuffing box and operating nut constructed of ductile iron.

Additionally, all valves shall be:

...Resilient wedge type rated for 250 psig, cold working pressure. The ductile iron wedge shall be *one piece* casting covered internally and externally with EPDM rubber. The wedge shall be symmetrical and seal equally well in either flow direction.

...Valves shall be **NSF Standard 61** certified.
...The stem shall be sealed by three O-rings. The top two O-rings shall be replaceable under full operating pressure with the valve in the full open position.
...All internal and external surfaces of the valve body and bonnet shall have a fusion-bonded coating that complies with the **ANSI/AWWA C550** standard.
...All bolts and nuts shall be 304 stainless, factory-installed and not smaller than 5/8" in diameter. All bolts and nuts shall be hex head inch sizes. (Socket head and metric not allowed)

NOTE: The following valves meet the above criteria and are approved for use in the Village of Morton Water System:

...***American Flow Control Series 2500-1*** and
...***Mueller A-2361 RWGV MJ x MJ***

2) All MJ Valve shall be supplied with approved retainer fittings, gaskets and accessories. Valves with ***Romac-Alpha Ends*** or ***Mueller Hymax Grip Restraint*** are an alternate restraint joint connection.
3) All valves shall be supplied with U.S. Made, 5 ¼", 'Screw-type' Cast Iron Valve Boxes (such as: 'Tyler' and 'Jordon' brands) with a Lid that has **WATER** inscribed on it.
4) All valve boxes shall be installed on valves by use of a
    - Valve Box Adapter II as manufactured by:
      Adaptor Inc., 2151 South 54th. Street,
      West Allis, Wisconsin, 53219 (414) 764-6733
      or equal, sized for the valve application

HYDRANTS

1) All new hydrants shall be:
   3-Way, (2)- 2 ½ ", (1) 4 ½" Nozzles
   National Standard Threads
   Open Left
   16" Upper Standpipe (for Pacer)
   with 6" MJ Boot

   The following are approved hydrants for use in the Village of Morton Water System:

   - ***Waterous PACER WB-67-250***

- ***Mueller Super Centurian 200 A425***

2) Each hydrant shall be installed with a 6” Auxiliary Valve *(See Gate Valves)*

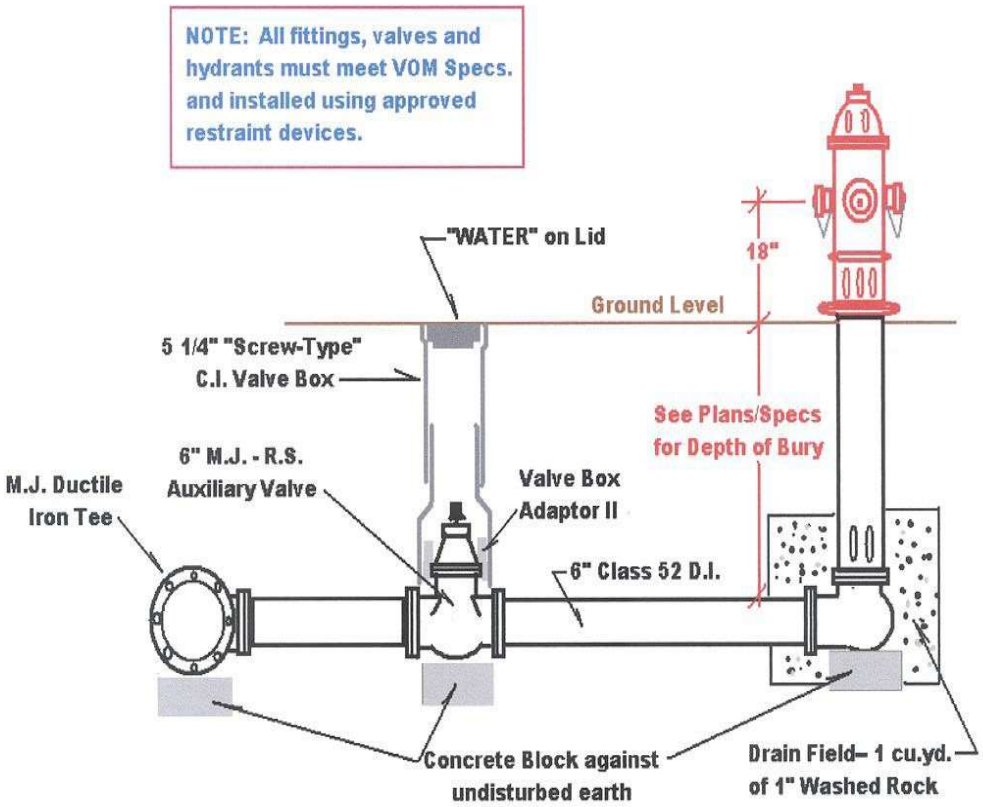
3) Hydrant leads hall be: 6” DI (Class 52) or ‘Grade-Lock Adapter’, if necessary.

4) All hydrants and auxiliary valves shall be provided with approved retainer fittings and accessories. *(See Retainers and Glands)*

STANDARD SPECIFICATION FOR INSTALLATION OF FIRE HYDRANT

Village of Morton ... Morton, Illinois

[HYDDRAW] (Revised February 2005)



WATERMAIN FITTINGS

1) Watermain fittings include: tees, crosses, reducing fittings, sleeves, caps, plugs, grade-lock adapters, etc., made in the U.S.A.

2) All fittings shall be made of Cements lined, Ductile Iron

3) All fittings shall be: *Mechanical (MJ) Joint* or *Alpha Restrained Joint*

4) All fittings shall be provided with approved retainer fittings, and accessories (gaskets and bolts).

5) All ¾"-10 T-Head Bolts and Nuts shall be coated with a Fluorocarbon coating 0.0005-0.0025 thickness (AWWA C111/A21.11-00)

6) *Romac Alpha Restrained Joints* (couplings and valves) are acceptable on all pipe sizes and materials.

RETAINER FITTINGS (GLANDS)

All Mechanical Joint (MJ) fittings including valves and hydrants shall have retainer glands installed using manufacturer installation specifications.

... Following are approved Retainer Glands for Ductile Iron:

1) **...Uni-Flange (UFR 1400-DA-x-RB-U)** -- *Ford Meter Box Co, Inc*
2) **...EBBA 1100 Megalug** – *EBBA Iron, Inc*
3) Others of the aforementioned type may be used *if approved* by the Village of Morton

NOTE: Retainer Glands of the **"Set Screw"** type (ie.Columbus Standard) are not approved for use.

... Following are approved Retainer Glands for PVC Pipe

1) **...Uni-Flange (UFR 1500-CA-x-RB-U)** -- *Ford Meter Box Co, Inc.*
2) **...Romac Grip Ring** –*Romac Industries*
3) **...EBBA 2100 Megaflange Adapter** – *EBBA Iron, Inc*
4) **... EBBA Series 2000PEC** – *EBBA Iron, Inc*

JOINT RESTRAINT DEVICES

Joint Restraint Devices may be required on pipe joints in some situations of Watermain Construction.

... <u>Following Approved for Ductile Iron and PVC – Pipe x Mechanical Joint</u>

1) **... Uni-Flange (Series 1300-C)** for Ductile Iron and C-900 PVC
...Ford Meter Box Co.,Inc
2) **... Uni-Flange (Series 1300-S)** for C-905 PVC
....Ford Meter Box Co., Inc.
3) **... Romac (Style 612)** for Ductile Iron and C-900 PVC
....Romac Industries, Inc.
4) **... EBBA Series 2000PEC** ***...EBBA Iron, Inc***

... <u>Following Approved for Ductile Iron – Pipe Bell Joints</u>

1) **... Uni-Flange (Series 1390-C)** ...Ford *Meter Box Co., Inc*.

2) **... Romac (Style 611) ...**Romac Industries Inc.

3) **... EBBA 1700 MEGALUG Harness** ...*EBBA Iron, Inc*

4) **... EBBA 1100HD Split MEGALUG Harness** ...*EBBA Iron, Inc*

... <u>Following Approved for PVC / C900 – Pipe Bell Joints</u>

1) ... **Uni-Flange (Series 1350-C)** ...*Ford Meter Box Co., Inc*

2) ... **Uni-Flange (Series 1390-C)** ...*Ford Meter Box Co., Inc.*

3) ... **Romac (Style 611)** ...*Romac Industries Inc.*

4) ... **Certa-Lok (Spline Style)** ...*Westlake Pipe & Fittings*

5) **... EBBA 1500TD Tru-Dual** ...*EBBA Iron, Inc*

6) **... EBBA 1600 MEGALUG Harness** ...*EBBA Iron, Inc*

RESIDENTIAL HDPE SERVICE PIPE

All Residential water services installed new or replaced in the Village of Morton, must meet the following *minimum specifications* for piping material:

1) High Density Polyethylene Pipe (HDPE) is the only piping allowed for use in Residential service. Other piping material must be approved for use in writing, by the Superintendent of Public Works.

2) The *minimum* size for plastic water service shall be *1" CTS.
**(Copper Tube Size) Refer to the Illinois State Plumbing Code, Section 890.1200 for proper sizing of service piping to meet customer demand requirements*

3) All HDPE pipe used for water service shall be: PE 4710 Polyethylene – *SDR 9 **(Standard Dimension Ratio)*

4) HDPE pipe shall be rated for a minimum of 160 psig. Shall have a minimum Hydrostatic Design Stress of 630 psig. A Hydrostatic Design Basis of 1250 psi and a Minimum Burst-Pressure of 630 psig.

5) All fittings used for connections shall be made of Brass (made in the USA) and be of Compression type.

6) HDPE tubing shall be installed with 'Internal Stainless Metallic Stiffener's

NOTE: 'Hose-Band Clamps' are not allowed for use.
Compression/Flare adapters are available upon request.

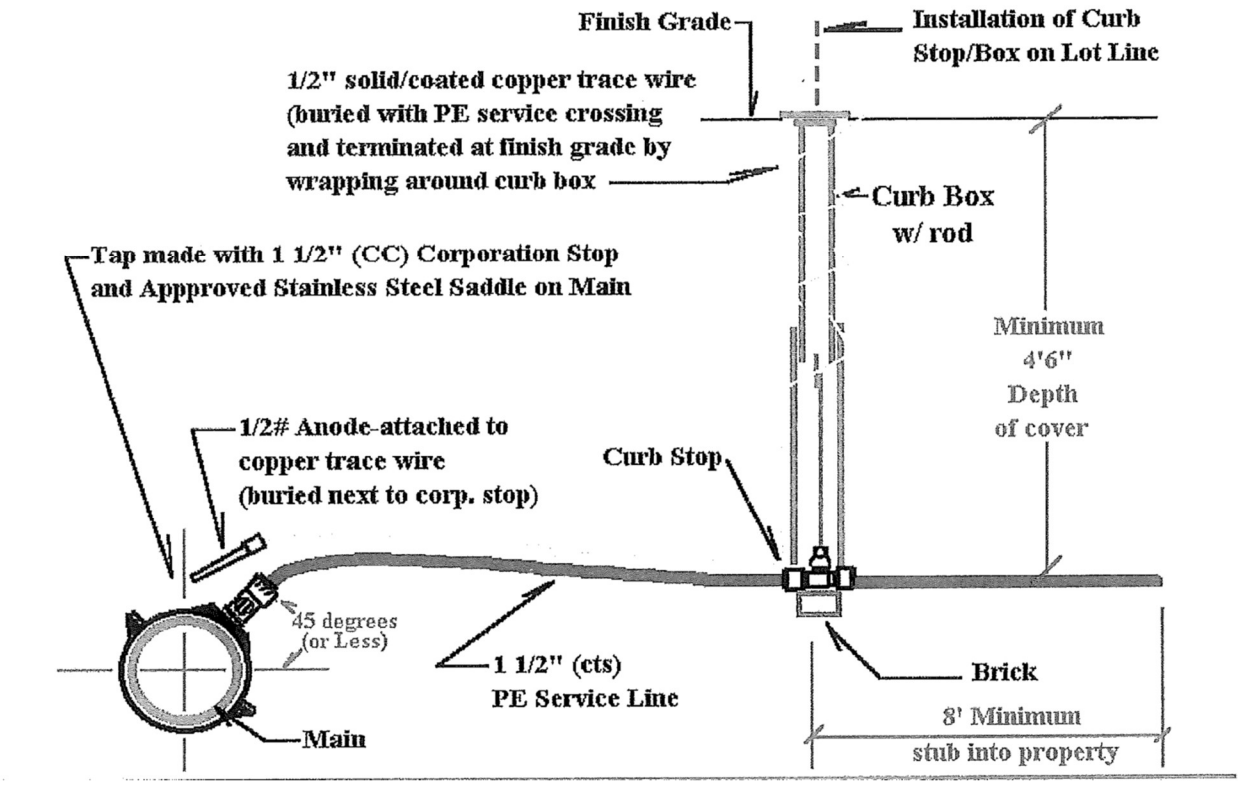
NEW SUBDIVISION: RESIDENTAL PIPING STANDARD

To meet the water demand requirements of new larger residential homes and to insure compliance with the requirements for water service sizing as outlined in the **Illinois State Plumbing Code, Section 890.1200,** following is the standard *minimum specification* for water service materials installed in the Village of Morton Water System for New Residential Water Service (Subdivision Standard).

1) The minimum size for **HDPE** water service shall be **1 ½" *CTS**
*(Copper Tube Size)
2) See Residential Service Pipe Standards Page 8 (3-6)

Construction Note: All service crossings shall be installed with a #12 solid/coated

copper trace wire buried within 6" of the PE service pipe. It shall be terminated at the main by attaching a 1/2# anode that shall be placed at the corporation stop or by attaching the copper trace wire to the nut on the saddle. The trace wire shall be terminated at the curb stop by wrapping the trace wire around the curb box with the wire accessible at the finish grade. *(The anode and copper wire shall be purchase at cost from the Village of Morton -- Water Distribution Dept.)* **[Refer to Diagram Below]**



NOTE: Minimum Depth of Cover is: 4 feet (09/25)

BRASS FITTINGS for ALL RESIDENTAL SERVICES

Service Saddle...shall be:

1) Power Seal 3450AS with (Power Joint Compression)
2) Romac 101N or 202N with (Mueller CC Thread)

Corporation Stop...shall be:

1) Mueller 200 Ball Corporation Valve (B-25008)
2) Ford Ball Corporation Valve (#FB1000-6-Q-NL)

Curb Stop...shall be:

1) Mueller 300 Ball Curb Stop (B-25209)

2) Ford Ball Curb Stop (#B44-666-Q-NL)

Curb Box...Shall be:

1) Mueller H-10310 Box – Supplied with rod
2) Ford Meter EA1-45-40-18R – Supplied with rod

COMMERCIAL SERVICE PIPE:

All Commercial water services install new or replaced, must meet the following minimum specifications for piping and materials.

Sizes 1 ½" and 2" ...HDPE Tubing is the only approved piping for Commercial use. (See Plastic Pipe Specifications – Below)

Sizes 4" and Larger ...Ductile Iron (Made in USA) is the only pipe approved for use for Commercial Service.

Note: C900 PVC may be approved in some applications with the approval of the Director of Public Works.

...Plastic (HDPE) Water Service Specifications

1) All HDPE pipe used for water service shall be: PE 4710 Polyethylene *SDR 9 **(Standard Dimension Ratio)*
2) HDPE pipe shall be rated for a minimum of 160 psig. Shall have a minimum Hydrostatic Design Stress of 630 psig. A Hydrostatic Design Basis of 1250 psi and a Minimum Burst-Pressure of 630 psig.
3) All fittings used for connections shall be made of Brass (made in the USA) and be of Compression type.
4) HDPE tubing shall be installed with 'Internal Stainless Metallic Stiffener's.

NOTE: *'Hose-Band Clamps' are not allowed for use. Compression/Flare adapters are available upon request.*

... Ductile Iron Water Service *(4" and larger)*

1) All water main pipe used for Commercial service in sizes 4" and larger shall be: Ductile Iron with Bell and Spigot Joints, with proper gaskets.
2) All ductile iron used for water service shall be a minimum of:

....Class 52 for 4" thru 6"

....Class 50 for 8" and larger

3) All fittings used to make connection to the Village owned curb stop (valve) will be Ductile Iron Mechanical Joint with approved Retainer Fittings.

DI WATER MAIN INSTALLATION STANDARDS

Village of Morton, Morton, Illinois

(Revised September 2025 - CD, LKB)

TABLE OF CONTENTS

I. GENERAL

The Village of Morton has adopted the following standards for installation of water main and related appurtenances.

- **STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS - EIGHTH EDITION 2020**
- **AWWA STANDARD FOR INSTALLATION OF DUCTILE-IRON WATER MAINS AND THEIR APPURTENANCES (AWWA C600-23)**
- **AWWA STANDARD FOR DISINFECTING WATER MAINS (AWWA-651-23**)

Exceptions and/or additions to the above standards are covered in sections that follow this section.

II. DEPTH OF COVER

Minimum Depth of Cover shall be 4 feet, unless stated otherwise on Water Permit or Job Specifications.

III. JOINT RESTRAINT

- The Village of Morton requires that all mechanical joint fittings (valves, hydrants, tees, bends, etc.) must be installed using **approved retainer fittings**.

- In addition, the Village of Morton requires that an additional length of pipe must be restrained on each side of bends or vertical offsets, branch outlets of tees, before reducers, and before dead-ends (valves or hydrants). In addition to retaining the fittings themselves, any pipe that contains joints (bell and spigot, bolted couplings) that fall within these lengths must be restrained.

- These restrained lengths of pipe vary according to the parameters of the job... pipe size and type, test pressures, depth of bury, soil conditions, and trench preparation. Following is a Thrust Restraint Chart that shows these Recommended Restraint Lengths based upon parameters that are most common in the Village of Morton:

THRUST RESTRAINT CHART

Recommended Restrained Lengths

Nom. Pipe Size (in.)	90 degree Elbow	45 degree Bend	22.5 degree Bend	11.25 degree Bend	Size/Size Tee	Valve, Hydrant, or Dead-End
4 in.	16 ft.	7 ft.	3 ft.	2 ft.	12 ft.	12 ft.
6 in.	23 ft.	10 ft.	5 ft.	3 ft.	18 ft.	18 ft.
8 in.	**30 ft.**	**12 ft.**	**6 ft.**	**3 ft.**	**23 ft.**	**23 ft.**
10 in.	36 ft.	15 ft.	7 ft.	4 ft.	28 ft.	28 ft.
12 in.	43 ft.	18 ft.	9 ft.	4 ft.	33 ft.	33 ft.

Recommended restrained length for tees are for the branch outlet and assume a minimum attached length of pipe of **10 ft**. on each side of the run.

Thrust Restraint Chart based upon Parameters shown below and by use of DIPRA Thrust Restraint Calculator. Other parameters can be run on this program.

Class 52 Ductile Iron Pipe	
Soil	CL (Normal)
Ave. Depth of Bury	4 ft.
Trench Type	Type 3
Test Pressure	100 PSI
Safety Factor	2 : 1

IV. LEAKAGE / PRESSURE TEST

- Leakage and Pressure Testing must be performed before water samples are taken to a certified lab for bacteriological analysis.

- **Pressure Testing** will be performed at a *minimum Test Pressure of* ***100 psi*** (with no variation of plus or minus 5 psi) for a *duration of at least one* ***(1) hour***. Any defective pipe, fittings, services, hydrants or other appurtenances shall be replaced, and the test repeated until satisfactory to the Engineer.

- After the completion of the pressure test, a **Leakage Test** will be performed using a *minimum Test Pressure* ***of 100 psi*** for a *duration of one* ***(1) hour*** with No *leakage* allowed greater than shown on the chart below.

Allowable Leakage at 100 psi Test Pressure

Nominal Pipe Diameter	4 in.	6 in.	8 in.	10 in.	12 in.
Allowable Leakage Per 100- ft. of Pipeline in GPH	*0.30*	*0.45*	*0.60*	*0.75*	*0.90*

Ordinance 02-35 amending Title 8 Chapter 4 and Title 11 Chapter 5 of the Morton Municipal Code RE Hydrostatic Pressure Testing in New Subdivisions is as follows:

"For new mains, all Hydrostatic pressure and leakage testing (including filling, flushing and disinfection testing) shall be performed by the Village of Morton Water Department with the cost to be paid by the developer or contractor."

"The fee for one set of tests shall be set by the Director of Public Works and is due before the work is to be done. If the system fails to pass any of the tests, retesting shall be done at an additional time and material cost, which is also the responsibility of the developer or contractor.

V. DISINFECTION OF WATER MAINS

- As per Illinois Standard 41-2.14B:

"Before being placed into service, all new mains.....shall be chlorinated so that the initial chlorine residual is not less than 50 mg/l and that a chlorine residual of not less than twenty-five (25 mg/l) remains in the water after standing twenty-four (24) hours in the pipe."

- This can be done by Liquid Chlorine or Other Chlorine-Bearing Compounds. The easiest method, however, is with **Tablet Disinfection** during the installation of new pipe. Tablet Disinfection is best suited to short extensions (up to 2500 ft.) and small diameters (up to 12 in.). Because preliminary flushing is not possible with this method, cleanliness is of the utmost importance and it shall not be used if trench water or foreign material has entered the main.

- Tablets should be placed in the top half of each section of pipe and attached by use of EMI 5005 adhesive, or 100% Silicone adhesive.

- All adhesives shall meet specifications, ASTM C920 Type S NS class 25, TT-S-00230C, TT-S-01543A, MIL-A-46106A, FDA 21 CFR 177.2600, UL-File No. E163851 / E224060, and USDA Approved.

- Use the following chart to determine the number of tablets required for each length of 20' pipe to achieve 50 MG/L Dosage using 5-grain tablets of Hypochlorite (HTH).

Nominal Pipe Size in Inches	**4 in.**	**6 in.**	**8 in.**	**10 in.**	**12 in.**
No. of 5-grain Hypochlorite Tablets (HTH) Required per 20' Length of Pipe	*2*	*3*	*4*	*7*	*10*

- Filling the main with water should be done slowly, so that the water velocity shall be less than one (1) foot per second.

- Treated water shall be retained for at least **twenty-four (24)** hours. After this period, the chlorine residual shall be at least twenty-five (25) mg/l.

- All valves connected to the existing system, shall remain in the closed position. during the disinfection process to ensure that the strongly chlorinated water does not flow back into the water supply. All other valves within the new system (line valves, hydrant valves) should be operated and remain open during the disinfection process.

VI. FLUSHING AND BACTERIAL TESTING

- All water mains shall be satisfactorily disinfected prior to use. In accordance with the requirements of AWWA 651-99, at least one set of samples shall be collected from every 1,200 feet of new water main, plus one set from the end of the line and at least one set from each branch. Satisfactory disinfection shall be demonstrated in accordance with the requirements of ***35 Ill. Adm. Code 625.203.***

- After pressure/leakage testing and disinfection of water mains, all chlorine treated water shall be flushed from the system a minimum of Two volumes and to a point where the chlorine residual is **no more than** 4.00 mg/l and **not less than** 1.00 mg/l

- Flushing should be accomplished by use of a hydrant meter so that "unaccounted" water can be calculated.

- Sampling must be taken by a Certified Operator from the Village of Morton.

- Sampling is best done from a service tap with a copper tubing outlet.

- Two consecutive samples will be taken to a Certified Lab for bacteriological testing and must be shown to be free of bacterial contamination before being placed into service.

- Should any sample not pass, chlorination procedure for disinfection shall be repeated until satisfactory results are obtained on successive samples taken at least 24 hours apart.

VII. WATER MAIN INSTALLATION CHECKLIST

1. Must have a Construction Permit from the Illinois E.P.A.
2. Main is installed with correct amount of HTH tablets per length of pipe.
3. Introduce water slowly into the new system.
4. Shutoff valve connected to existing system.
5. Make sure all other new line valves and hydrant valves are open.
6. Disinfection must remain at least 24 hours.
7. Pressure Test -- 100 psi for 1 hour (min.). (Repair defects and Re-Test)
8. Leakage Test -- 100 psi for 1 hour (min.).
9. Open valve to system with hydrant open at end of project.
10. Flush main with hydrant meter.
11. Leave valve (connected to system) in open position.
12. Collect required number of samples and take to Certified Lab for testing
13. Before operation of new system, must have Operating Permit or partial Operating Permit from the Illinois E.P.A.
14. Open all valves into the existing system.

HDPE WATER MAIN INSTALLATION STANDARDS

Village of Morton, Morton, Illinois

(Revised – August 2025 – CD, LKB)

HDPE WATER MAIN INSTALLATION STANDARDS

Village of Morton, Morton, Illinois

(Revised – August 2025 – CD, LKB)

I. GENERAL

HDPE may be used for water main in the Village of Morton in special situations, such as, loops, large services, boring applications and subdivision rehabilitation or any situation where the use of Ductile Iron would be impracticable.

The use of HDPE as water main, may only be used if approved by the Superintendent of Public Works and installed using approved methods.

The following standards for water main installation are still applicable.

- **STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS - EIGHTH EDITION 2020**
- **AWWA STANDARD FOR INSTALLATION OF HIGH-DENSITY (HDPE) WATER MAINS AND THEIR APPURTENANCES (AWWA C906-21) (AWWA M55 Manual-Second Edition)**
- **VILLAGE OF MORTON WATER MAIN INSTALLATION STANDARDS**
- **ALL APPLICABLE PIPE MANUFACTURER JOINING PROCEDURES.**

Exceptions and/or additions to the above standards are covered in sections that follow in this section.

II. APPROVED HDPE WATER MAIN PIPE

All HDPE pipe approved for use as water main shall be:

- PE4710 – SDR 11.0
- 4 in. thru 8 in. ... IPS (Iron Pipe Size)
- 10 in. and larger ... IPS or DIPS (Ductile Iron Pipe Size) as approved by design and the Superintendent of Public Works
- 160 PSI Pressure Rating (Long term Hydrostatic Basis of 1600 psi)
- 40 - 50 ft. sticks (Coiled pipe not allowed for 8" or larger HDPE)

III. APPROVED PIPE MANUFACTURERS

Following are approved pipe manufacturers for HDPE water main pipe:

WL Plastics
Corporate Office:
3575 Lone Star Circle, Suite 300
Fort Worth, TX. 76177
682-831-2700
www.wlpastics.com

The Performance Pipe
General Office:
PO Box 269006
Plano, TX 75026-9006
1(800) 527-0662
www.performancepipe.com

GF Central Plastics
General Office:
9271 Jeronimo Rd.
Irvine, CA. 92618
714-731-8800
www.gfps.com

JM Eagle
General Office:
5200 West Century Blvd
Los Angeles, CA
1(800) 621-4404
www.jmeagle.com

TESTING:

If requested, the supplier shall furnish the following:

1) Information and specifications as to its resistance to chemicals and Environmental Stress Crack Resistance.

2) Property values, such as density, melt index, tensile yield, etc. as well as the ASTM test methods used to arrive at those values.

3) Recommended Fusion Procedures and Fusion Qualification Test Procedures.

SHIPPING:

Care should be exercised during the transportation of Polyethylene pipe/tubing to protect against scratching, gouging, or abrasions of the pipe. Upon delivery, any pipe inspected and found to be less than satisfactory in marking and/or handling will be rejected and refused without unloading.

➢All Polyethylene pipe/tubing in coils form, shall be shipped with plastic end caps.

➢All Polyethylene pipe/tubing in straight length form, shall be shipped by tarping the leading ends of all stacks on the truck.

IV. APPROVED JOINING METHODS FOR HDPE

HDPE pipe used for water main may only be joined by use of one of the following approved methods:

1. ***BUTT Heat Fusion***
2. ***Electro-Fusion***
3. ***Ductile Iron Mechanical Joint Fittings w/ HDPE MJ Adapter***

V. BUTT HEAT FUSION JOINING PROCEDURE

General

In heat fusion joining, mating surfaces are prepared by cleaning, and facing, simultaneously melted with a hot-plate heater, the heater is removed, and the melted surfaces are pressed together and held under pressure. as the molten materials cool, they mix and fuse into a permanent, monolithic joint.

Set-Up Parameters

HEATING TOOL SURFACE TEMPERATURE --
Minimum 425 degree F -- Maximum 450 degree F (204 -- 243C)

- Heating tool surfaces must be up to the specified temperature before you begin.
- All points on both heating tool surfaces where surfaces will contact the pipe must be within the prescribed minimum and maximum temperatures.
- *Temperatures must be checked with a calibrated Pyrometer*
- Heating tool surfaces must be clean. *(Always wipe tool surfaces with a clean cotton cloth before heating pipe faces)*

INTERFACE PRESSURE -- ***Minimum 60 psi -- Maximum 90 psi***

Interface pressure is used to calculate a fusion joining pressure value for hydraulic butt fusion machines or manual machines equipped with a torque wrench. (Hydraulic machines such as, McElroy 28, TracStar series, 412, etc. must be used to Butt fuse 6" and larger HDPE pipe.) For hydraulic machines, the interface pressure, the fusion surface area, the machine's carriage cylinder size and internal drag pressure, and if necessary, the pressure needed to overcome external drag resistance, are used to calculate hydraulic fusion joining pressure gauge settings. The equipment manufacturer's instructions are used to calculate this value.

Interface pressure and fusion machine hydraulic fusion joining pressure gauge settings are not the same.

Butt Fusion Procedure

- **Secure.** Clean the inside and outside of the component (pipe or fitting) ends by wiping with a clean, dry, lint-free cloth or paper towel. Align the component ends in the machine. ***Do not force pipes into alignment against open fusion machine clamps***. Component ends should protrude past the clamps enough so that facing will be complete. Bring the ends together and check high-low alignment. Adjust alignment as necessary by tightening the high side down. Make sure clamps are properly secured to prevent slippage of the component ends.

- **Face.** Place the facing tool *(with sharp, clean blades)* between the component ends, and face them to establish smooth, clean, parallel mating surface. If stops are present, face down to the stops. Remove all shavings from pipe ends after facing *(Check for shavings inside pipe walls)* ***Do not touch the component ends with your hands after facing***, oils from your hands can contaminate the facing surface.

- **Align.** Bring the component ends together, check alignment and *check for slippage against fusion pressure*. Look for complete contact all around both ends with no detectable gaps, and outside diameters in high-low alignment. ***If high-low is above plus or minus 10 percent of pipe wall thickness, adjust high side down, and always re-face pipe ends and inspect afterwards.***

- **Melt.** Verify that the heating tool is maintaining the correct temperature. *(Temperatures must be checked with a calibrated Pyrometer)* Place the heating tool between the component ends and move the ends against the heating tool. The initial contact should be under moderate pressure to ensure full contact. Hold the ends against the heating tool ***without force***.

Beads *(melt swell)* of melted polyethylene will form against the heating tool at the component ends. When the proper melt bead size is formed, quickly separate the ends, and remove the heating tool.

Table 1 ... Approximate Melt Bead (Swell) Size

Pipe Size	***Approximate Melt Bead (Swell) Size***
2" to 4"	1/8" to 3/16"
6" to 12"	3/16" to 1/4"
12" -- 24"	1/4" to 7/16"

- **Join.** Immediately after heating tool removal, ***QUICKLY*** inspect the melted

ends, then bring the ends together applying the correct joining force, using 60-90 psi interfacial pressure. ***DO NOT SLAM***. The correct joining force will form a double bead that is rolled over to the surface on both ends.

- **Hold.** Hold joining force against the ends until the joint is cool. The joint is cool enough for ***GENTLE*** handling when the bead is cool to the touch. Cool for about 30-90 seconds per inch of pipe diameter. *(Cooling time should be adjusted according to ambient outside temperature and weather conditions.)*

  Heavier wall thickness pipe will require longer cooling times. Complete cooling of joint should occur before ROUGH handling of pipe, such as lifting with machinery, installing in trench and Pressure Testing.

- **Inspect.** On both sides, the double bead should be rolled over to the surface, and be uniformly rounded and consistent in size all around the pipe. *(Comparison should be made to examples of proper joints as found in the Pipe Manufacture's Qualification Guide.)*

  If a joint fails the visual inspection, it must be cut out.

  Reference Material: Performance Pipe Bulletin PP 750-TN-05

- **Cold Weather Fusion Recommendations (Below 55 degrees F)**

  - Keep pipe and fittings clear of ice, snow, dirt, and other contaminants.
  - Shield areas to be fused with wind break or cover.
  - In cold weather, pipe diameters and socket fittings will normally contract. Keep fittings in cab of truck to reduce exposure.
  - To obtain proper melt patterns: **Increase Melt Time Cycles. DO NOT** Increase temperature or Pressure of Pipe and/or Fittings on Heating Tool Faces.
  - Trial melt patterns on pipe and fittings under field conditions may have to be done to establish proper melt patterns.
  - On butt fusion, the time required to obtain initial Melt Swell Bead will automatically extend the total time cycle.
  - Consider using Electro-fusion for cold weather repairs and saddle installation.
  - When in doubt about weather affecting the fusion joint; postpone the fusion, if possible, to a better day.

VI. CONTRACTOR QUALIFICATION

Any contractor installing HDPE for use as water main in the Village of Morton, must be qualified by training and testing to make approved joints with HDPE water pipe.

1) Training.

- All contractor personnel used as fusion joining technicians, must meet with Village of Morton (VOM) employees and discuss the requirements and procedures of HDPE installation within the Village of Morton.
- All personnel employed by an engineering firms used as inspectors of the water main project, must also attend the VOM training program on HDPE installation.

2) Inspection of Fusion Equipment.

- All equipment used to make a HDPE fusion joint, must be inspected and approved for use by the Superintendent of the Village of Morton Water Distribution Department.
- The Superintendent will determine that the equipment has been properly maintained and is in good condition for use and will verify that the equipment provided has the proper heating tool, facers and adapters.
- The Electrofusion Processor (Control Box) must be calibrated annually.

3) Testing.

- All contractor personnel used as fusion joining technicians, must make a total of (3) fusion joints, that will be cut out and visually and destructively tested. The joints must be made and tested by using the following procedure.

a) All joints made for testing must be made with the same equipment approved for use during the water main project. (See VI (2) above.)
b) All joints made for testing must be made under the same ambient weather conditions that the HDPE will be installed during the project.
c) The contractor employee will use the pipe manufacturers' current approved procedures for making the fusion joint.
d) The contractor employee will use the fusion equipment manufacturer's procedure and guidelines for making the fusion joint.
e) An employee from the Village of Morton Water Distribution must be present to witness all joints made for testing.
f) All joints made for testing must be visually inspected and found to have the same appearance as the photographs of a joint that is acceptable under the pipe manufacturer's "Recommended Joining Procedures" and Guide Material.
g) Cut 2-3 straps from each joint that are 1 in. wide and 12 inches in length with the fusion bead being in the middle of the strap. Visually examine each strap for voids or discontinuities on the cut surface of the strap.
h) Deform each sample strap by bending (refer to manufacturer's guideline material). **No failure** can initiate in the fusion ***joint area***.

VII. GENERAL GUIDELINES FOR ELECTROFUSION

1) Material Compatibility:

Electro-fusion Fittings must be produced from a pre-blended virgin resin that has a ***PPI listing of PE4710*** and have been qualified and manufactured in compliance with ***ASTM D3350***. This resin must carry a ***NSF/ANSI Standard 61-2024*** listing for use with potable water. The fittings must be tested to the requirements of AWWA C906. All electro-fusion fittings must be ***pressure rated to 160 PSI***.

2) Environmental Conditions:

The temperature limits are **-20 F to 122 F.**

- When fusing below (0) F, special care must be exercised, and portable heating of the immediate work area is recommended.
- On warm sunny days, the pipe and fitting surface should be checked with a pyrometer to ensure the surface does not exceed (122) F. Portable shades may be required.
- Humidity is not a factor with Electro-fusion; however the pipe and fittings must be kept dry. Additional wiping with an alcohol prep. may be necessary.

3) Out-Of-Round:

- For Straight Pipe: Cannot be out-of-round by more than **2%.**

4) When installing couplings, ensure the water flow is completely shutoff. Any water will contaminate the joint.

5) Do not disturb the cables or the fitting; or remove the clamps until the required post-fusion cooling times. (Refer to manufacturer's literature and guidelines)

6) Actual heating times may vary, depending upon conditions, however, they may not vary greater than +/- 25% of the stated heating times published in manufacturer's literature or on the Fitting Barcode.

7) STEPS OF TYPICAL ELECTROFUSION PROCEDURE:

A) Cut pipe ends square.

B) Mark proper insertion depth on both ends of the pipe.
(Pipe should butt together at the center of the coupling)

C) Using the appropriate tools, scrape off surface oxidation of all the areas of the pipe to be fused. Remark pipe, if necessary. Scraping should reduce the average outside diameter of the pipe by the amounts indicated below:

PIPE SIZE	***REDUCTION IN PIPE O.D.***
1 1/4"IPS and smaller	004 - .012"
2"IPS and larger	. 008 - .024"

D) Remove all shavings from pipe. Scraped pipe and adjoining surfaces must be clean and dry.

E) Secure one end of pipe into alignment clamp so that the end of pipe is at the centerline of the clamp.

F) Remove coupling from its protective bag and clean both coupling and pipe end with approved alcohol prep.

G) Slide coupling fully onto clamped pipe end.

H) Install second pipe end into alignment clamp until it butts against first pipe, then secure with the clamp.

I) Clean the second pipe end with an approved alcohol prep.; and slide the coupling over the second pipe end centering it by use of the insertion depth marks or centering marks on the alignment clamp.
[Improper positioning of the coupling on the pipe may result in a failed joint]

PERFORM THE FOLLOWING STEPS ACCORDING TO THE MANUFACTURE'S PROCEDURES DEPENDING ON TYPE OF CONTROL BOX USED AND TYPE OF FUSION PROCESS (SELF REGULATION, BARCODE OR MANUAL).

J) Attach terminals to fitting.

K) Activate fusion cycle.

L) Remove terminals and perform visual inspection and/or verification of a completed fusion. (refer to manufacturer's literature and guidelines)

M) Allow proper cooling time before removing alignment clamps. (refer to manufacturer's literature and guidelines)

VIII. JOINING WITH MECHANICAL JOINT (MJ) DUCTILE IRON FITTINGS AND MJ ADAPTER

• The polyethylene MJ Adapter is the perfect connection for joining HDPE water pipe to any ANSI/AWWA C153 ductile iron MJ fittings, particularly hydrant tees, in-line main valves and solid sleeve couplings. ***MJ Adapter eliminates the need for thrust blocking or retaining fittings.***

1) Material Compatibility:

Polyethylene MJ Adapters must be produced from a pre-blended virgin resin that has a ***PPI listing of PE4710*** and have been qualified and manufactured in compliance with ***ASTM D3350***. This resin must carry a ***NSF Standard 61*** listing for use with potable water. The fittings must be tested to the requirements of ***ANSI/AWWA C906***. All electro-fusion fittings must be ***pressure rated to 160 PSI***.

2) Installation Procedure:

a) Slide on ductile iron MJ back-up gland onto HDPE pipe end. Be sure that the lip extension of the gland is pointing toward the plain pipe end, followed by the gasket with the tapered edge of the gasket also towards the plain pipe end.

b) Fuse on MJ Adapter to plain pipe end using Butt or Electro-fusion Procedure.

c) After proper cooling, lubricate gasket and plain end of MJ Adapter using approved pipe lubricant meeting AWWA C111.

d) Insert the MJ Adapter into the socket end of the ductile iron MJ fitting and press or tap the gasket firmly and evenly into the gasket recess. Keep joint straight during assembly.

e) Push the gland toward the fitting and center it around the pipe with the gland end against the gasket. Insert the tee bolts and hand tighten nuts. (T-bolt head should be against the fitting flange) **Note*: Order MJ Adapter with accessory kit, which includes gland and longer T-bolts All T-bolts & Nuts must be Fluorocarbon coated.*** With the gland positioned and centered around the pipe, continue to tighten the T-bolts/ Set joint deflection after joint assembly but before tightening bolts. (*Max. deflection 5 degrees*)

f) Tighten the T-bolt to the same torque recommended in AWWA C-111. ***(75-90 ft-lb for 4" thru 24" sizes)*** Tighten in an alternating manner (12 o'clock, 6 o'clock, 9 o'clock, 3 o'clock), maintaining the same gap between the gland and the face of the MJ fitting. Repeat the process until all bolts are within the approximate torque range. ***(Use of a torque wrench is recommended)***