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VILLAGE OF
VERSAILLES

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300 - ROADWAYS

STREET FUNCTIONAL CLASSIFICATIONS

A. ARTERIAL

A GENERAL TERM DENOTING A HIGHWAY PRIMARILY FOR THROUGH TRAFFIC, CARRYING HEAVY LOADS AND LARGE VOLUMES OF TRAFFIC, USUALLY ON A CONTINUOUS ROUTE.

B. COLLECTOR

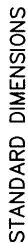
A THOROUGHFARE, WHETHER WITHIN A RESIDENTIAL, INDUSTRIAL, COMMERCIAL OR OTHER TYPE OF DEVELOPMENT, WHICH PRIMARILY CARRIES TRAFFIC FROM LOCAL STREETS TO ARTERIAL STREETS OR TO OTHER COLLECTOR STREETS INCLUDING THE PRINCIPAL ENTRANCE AND CIRCULATION ROUTES WITHIN RESIDENTIAL SUBDIVISIONS.

C. LOCAL

A STREET DESIGNED TO PROVIDE ACCESS TO ABUTTING PROPERTY AND HAS NO THROUGH TRAFFIC. IE. CUL DE SAC.

STREET FUNCTIONAL CLASSIFICATION	RIGHT-OF-WAY WIDTH (MIN.)	BACK-TO-BACK CURB (MIN.)
	(L.F.)	(L.F.)
ARTERIAL	*	*
COLLECTOR - RES.	60	36
INDUSTRIAL AND COMMERCIAL	60	37
LOCAL	50	31

* SEE DESIGN CRITERIA FOR PROPER DESIGN.



ITEM	DESCRIPTION	ARTERIAL	INDUSTRIAL & COMMERCIAL	COLLECTOR RESIDENTIAL	LOCAL
I	RIGHT-OF-WAY	*	60'	60'	50'
II	B\B CURB	*	37'	36'	31'
III	SIDEWALK WIDTH	5'	5'	5'	5'
IV	CURB LAWN WIDTH	6'	6'	6.5'	4'
V	ITEM 448	1-1/2"	1-1/2"	1-1/2"	1-1/2"
VI	ITEM 448	1-1/2"	1-1/2"	2-1/2"	2-1/2"
VII	ITEM 301	6"	6"	-	-
VIII	ITEM 304	2-4-1/2" LIFTS	2-3" LIFTS	2-6" LIFTS	2-5" LIFTS

NOTES

A. ALL WORK TO CONFORM TO ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS LATEST REVISION UNLESS OTHERWISE SPECIFIED.

B. ITEM 407 TACK COAT, SHALL BE REQUIRED WHEN 10 DAYS HAVE ELAPSED BETWEEN ASPHALT PAVEMENT LIFTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. APPLICATION RATE IS 0.10 GALLON PER SQUARE YARD.

C. NO CONCRETE PAVEMENT WILL BE ACCEPTED.

D. SIDEWALKS NOT REQUIRED IN INDUSTRIAL ZONING.

E. ALL BUTT JOINTS SHALL BE SEALED WITH PG 64-22 WITHIN 24 HOURS AFTER PLACEMENT OF ITEM 448.

F. IN AREAS WITH HIGH POTENTIAL OF PUSHING, SHOVING OR HEAVING, USE ITEM 448 ASPHALT CONCRETE SURFACE COURSE TYPE 1 H, PG. 70-22. IN SMALL QUANTITY AREAS USE TYPE 1, PG 64-22 WITH GILSONITE ADDITIVE.

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TYPICAL SECTIONS AND PAVEMENT COMPOSITION

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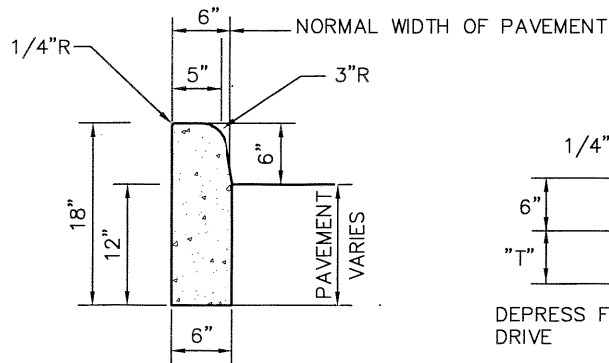
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Diagram illustrating the proposed roundabout design with the following dimensions and labels:

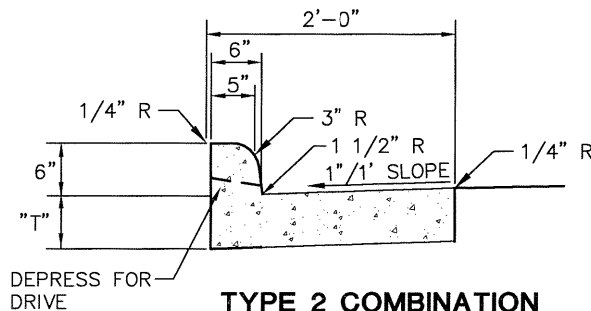
- COLLECTOR STREET
- 90°
- 25'R
- 50'R/W
- 31'B/B
- 5' CONCRETE WALK
- 15'R
- 60'R/W MIN.
- 36'B/B MIN.
- 175'R
- 50'R AT RIGHT-OF-WAY
- 60' R AT BACK-OF-CURB
- 40'R AT B/C
- 50'R AT R/W

MINIMUM CENTERLINE GRADES	.50%	.50%	.50%
MAXIMUM CENTERLINE GRADES	10%	7%	4%
MINIMUM LENGTH OF VERTICAL CURVE (SEE NOTE C).	25FT.	50FT.	100FT.
MINIMUM CENTERLINE RADIUS	250FT.	400FT.	600FT.
MINIMUM LENGTH TANGENT BETWEEN CURVES	50FT.	50FT.	100FT.
MINIMUM BACK-OF-CURB RADIUS	25FT.	25FT.	50FT.
MINIMUM HORIZONTAL VISIBILITY	200FT.	300FT.	500FT.
MINIMUM STOPPING SIGHT DISTANCE (MEASURED FROM 3.5' EYE-LEVEL TO 6" OBJECT HEIGHT)	200FT.	300FT.	500FT.
MAXIMUM CENTERLINE GRADE WITHIN 100' OF AN INTERSECTION	3%	3%	3%
RIGHT-OF-WAY WIDTH	50FT.	60FT.	60FT.
MINIMUM PAVEMENT WIDTH BACK-TO-BACK OF CURB	32FT.	40FT.	45FT.

- A.** THESE ARE MINIMUM DESIGN STANDARDS AND MAY BE REQUIRED TO BE INCREASED TO COMPLY WITH THE VILLAGE'S OFFICIAL THOROUGHFARE PLAN.
- B.** THE MAXIMUM LENGTH FOR CUL-DE-SAC STREET SHALL BE 600' CENTER-OF-STREET TO CENTER OF CUL-DE-SAC.
- C.** MINIMUM LENGTH OF VERTICAL CURVE CAN BE REDUCED OR ELIMINATED TO ALLOW FOR PROPER DRAINAGE, WITH APPROVAL OF THE VILLAGE.
- D.** STREETS SHALL INTERSECT ONE ANOTHER AT AN ANGLE AS NEAR TO A RIGHT ANGLE AS POSSIBLE. STREET INTERSECTIONS SHALL BE ROUNDED WITH A MINIMUM RADIUS OF 25' MEASURED AT THE BACK OF CURBS WHEN THE SAID INTERSECTION OCCURS AT RIGHT ANGLES. IF AN INTERSECTION OCCURS AT AN ANGLE OTHER THAN RIGHT ANGLE, IT SHALL BE ROUNDED WITH A CURVE OF A RADIUS ACCEPTABLE TO THE COMMISSION.
- E.** MULTIPLE INTERSECTIONS INVOLVING JUNCTIONS OF MORE THAN 2 STREETS SHALL BE AVOIDED.
- F.** FOUR-WAY INTERSECTIONS OF LOCAL STREETS SHOULD BE AVOIDED AN THREE-WAY OR T-INTERSECTIONS SHOULD BE ENCOURAGED WHEREVER POSSIBLE.
- G.** FOUR-WAY INTERSECTIONS SHOULD BE ENCOURAGED WHENEVER INVOLVING A COLLECTOR AND/OR ARTERIAL STREET.

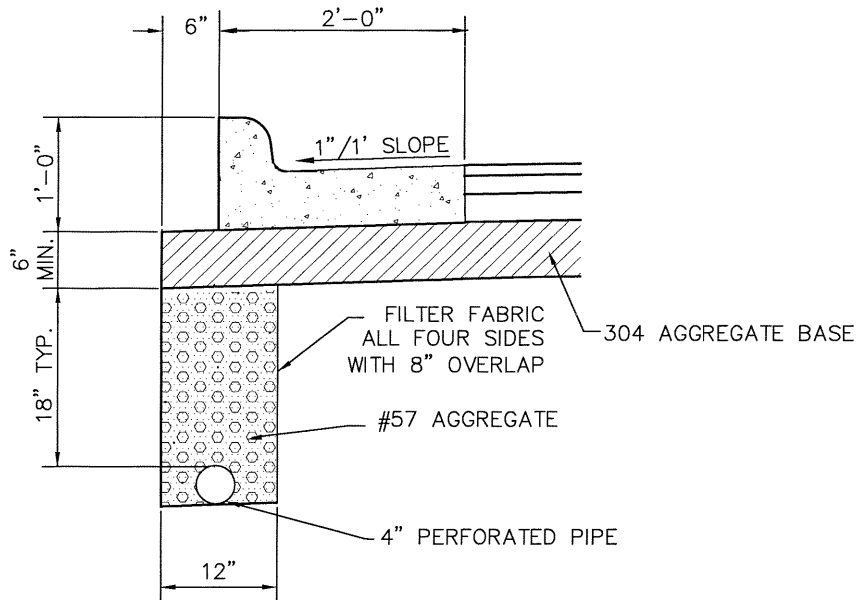


**TYPE 6
BARRIER CURB**



**TYPE 2 COMBINATION
CURB AND GUTTER**

T=6" LOCAL AND COLLECTOR
T=9" COMMERCIAL, INDUSTRIAL,
AND ARTERIAL



4" SHALLOW PIPE UNDERDRAIN DETAIL
(ONLY AS REQUIRED BY THE VILLAGE)

NOTES

- A. CONCRETE AND WORK SHALL MEET THE REQUIREMENT SET FORTH IN ODOT ITEM 609 CURBING. VILLAGE INSPECTION OF FORMS IS REQUIRED PRIOR TO POURING CONCRETE.
- B. CURBING SHALL HAVE CONTRACTION JOINTS EVERY 10'.
- C. MINIMUM OF 6" OF ODOT 304 SHALL BE PLACED UNDER CURBING.
- D. CURBING SHALL BE BACKFILLED IMMEDIATELY AFTER FORMS ARE REMOVED OR AS SOON AS PRACTICAL WHEN SLIP FORMING PRIOR TO OTHER CONSTRUCTION OPERATIONS.
- E. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES.
- F. APPLY SUPER DIAMOND CLEAR CURING AND SEALING COMPOUND, OR APPROVED EQUIVALENT PER MANUFACTURER'S RECOMMENDATION ON ALL SURFACES INCLUDING BACK IMMEDIATELY AFTER FINISHING SURFACES. ANY OTHER METHOD OR TYPE OF CURING COMPOUND MUST BE PREAPPROVED.
- G. CONCRETE SHALL BE ODOT CLASS A 4000 PSI CONCRETE, PROPORTIONING OPTIONS 1, 2, AND 3 NOT ALLOWED.
- H. CONCRETE SHALL CONTAIN 6% \pm 2% OF AIR ENTRANEMENT.
- I. TYPE 6 CURBS ARE FOR USE AROUND MEDIAN SECTION.
- J. MINIMUM TYPE AND GRADE OF CURB SHALL BE DETERMINED BY THE VILLAGE.
- K. UNLESS OTHERWISE SPECIFIED BY THE VILLAGE, 6" OF 304 AGGREGATE SHALL BE PLACED UNDER CURBING AND EXTEND 12" BEHIND BACK OF CURB.
- L. CURBING SHALL BE BACKFILLED IMMEDIATELY AFTER FORMS ARE REMOVED.
- M. JOINT LOCATIONS:
CONTRACTION JOINTS EVERY 10'
EXPANSION JOINTS EVERY 100' (OR LESS AS DETERMINED BY THE VILLAGE), AT INTERSECTIONS, AND WHERE CURBING IS TO ABUT EXISTING CONCRETE WORK.
- N. EXPANSION JOINTS SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC. 1-800-544-9538, MEETING ASTM D-1752 AND AASHTO 153-98.
- O. ALL UNDERGROUND UTILITY LATERALS SHALL BE MARKED IN THE TOP OF CURB WHILE IT IS BEING POURED AS FOLLOWS (UNLESS OTHERWISE DIRECTED BY THE VILLAGE):
"W" - WATER SERVICE
"SD" - STORM LATERAL
"S" - SANITARY LATERAL

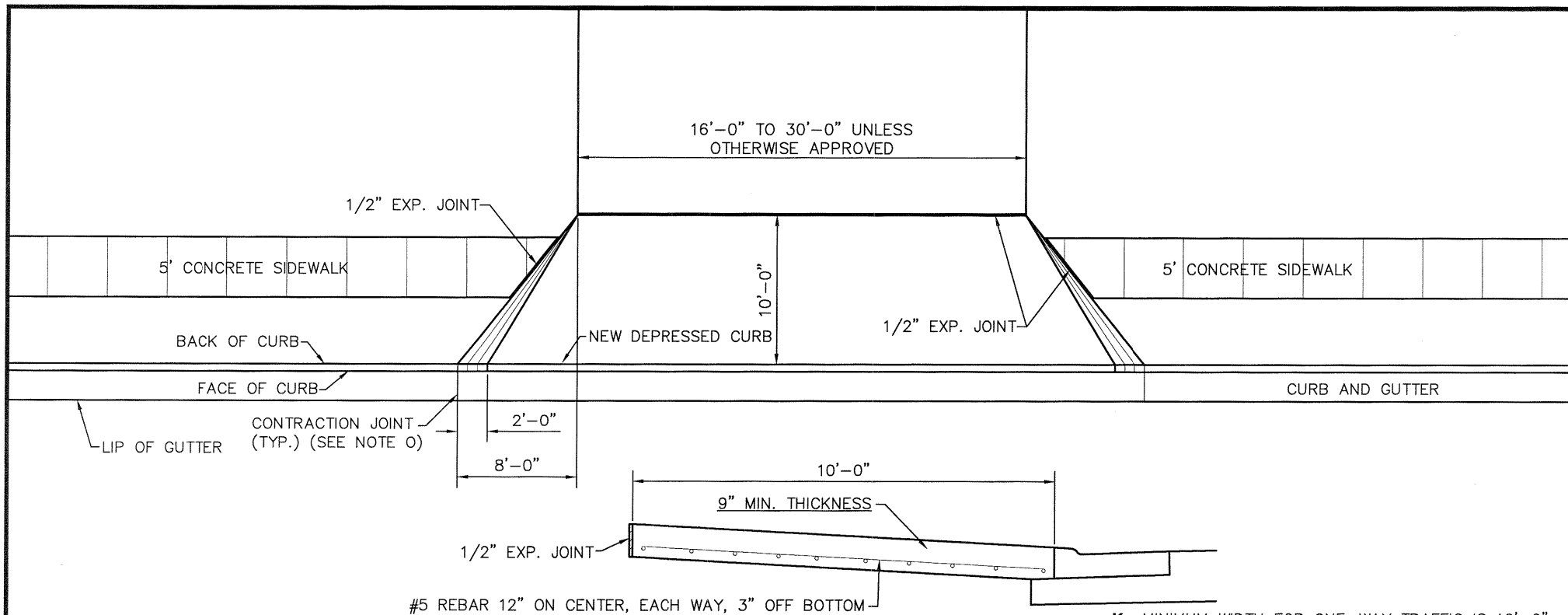
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CONCRETE CURB DETAILS

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NOTES

A. DRIVE APPROACHES SHALL MEET THE REQUIREMENTS OF ODOT ITEM 452 AND 499 CAST IN PLACE CONCRETE.

B. DRIVE APPROACHES SHALL NOT BE POURED MONOLITHICALLY WITH CURB.

C. MAXIMUM JOINT SPACING SHALL BE 10' LONGITUDINALLY AND TRANSVERSELY WITH JOINTS AT TAPERS.

D. DRIVE APPROACHES SHALL BE KEYED AT ALL CONSTRUCTION JOINTS.

E. EXPANSION JOINTS SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC.
1-800-544-9538, MEETING ASTM D-1752 AND AASHTO 153-98.

F. DRIVE APPROACHES TO BE POURED ON COMPACTED UNDISTURBED EARTH OR IF OVER EXCAVATED BY THE CONTRACTOR THE DRIVE APPROACH SHALL BE POURED ON COMPACTED GRANULAR BEDDING. VILLAGE INSPECTION OF FORM WORK IS REQUIRED PRIOR TO POURING CONCRETE.

G. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES. TEXTURE SHALL BE A MEDIUM BROOM WITH TOOL FINISH, VILLAGE TO REVIEW AND APPROVE FIRST POUR.

H. WHERE CURB AND GUTTER HAS NOT BEEN PROPERLY DROPPED AT DRIVE APPROACHES, THE CURB SHALL BE ENTIRELY REMOVED AND REPLACED BY THE CONTRACTOR OR OWNER AS DIRECTED BY THE VILLAGE.

I. WHERE ASPHALTIC CONCRETE PAVEMENT IS DISTURBED, THE ASPHALT SHALL BE REPLACED AS DIRECTED BY THE VILLAGE.

J. JOINTS SHALL BE CLEANED AND EDGED BY A 1/4" RADIUS EDGER. LONGITUDINAL JOINTS SHALL BE AS DIRECTED BY THE VILLAGE. EXPANSION JOINTS SHALL BE OF SUCH DIMENSIONS AS SHOWN ON STANDARD DRAWINGS FOR CONSTRUCTION JOINTS.

K. MINIMUM WIDTH FOR ONE-WAY TRAFFIC IS 16'-0". MINIMUM WIDTH FOR TWO-WAY TRAFFIC IS 25'-0". MAXIMUM WIDTH IS 30'-0" UNLESS OTHERWISE APPROVED BY THE VILLAGE.

L. THIS STANDARD DRAWING IS FOR GUIDELINE PURPOSES. EACH INDIVIDUAL DRIVE WILL NEED TO BE DESIGNED AND SUBMITTED TO THE VILLAGE FOR REVIEW AND APPROVAL.

M. CONCRETE SHALL BE ODOT CLASS C. (4000 PSI, 600 LB/CY CEMENT. PROPORTIONING OPTIONS 1, 2, AND 3 NOT ALLOWED.

N. CONCRETE SHALL CONTAIN 6% \pm 1% OF THE TOTAL AIR.

O. CURB IS TO BE REMOVED AND REPLACED DURING DRIVEWAY CONSTRUCTION. JOINTS BETWEEN EXISTING AND NEW CURB ARE TO BE 1/2" EXPANSION JOINTS.

P. APPLY SUPER DIAMOND CLEAR CURING AND SEALING COMPOUND, OR APPROVED EQUIVALENT PER MANUFACTURER'S RECOMMENDATION ON ALL SURFACES.

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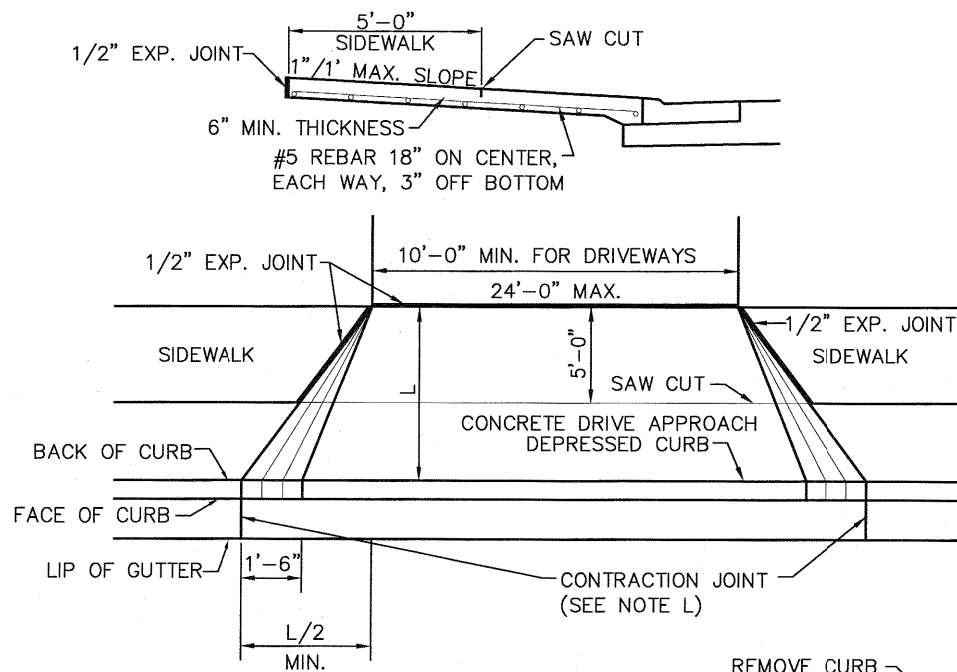
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COMMERCIAL AND INDUSTRIAL DRIVE APPROACH

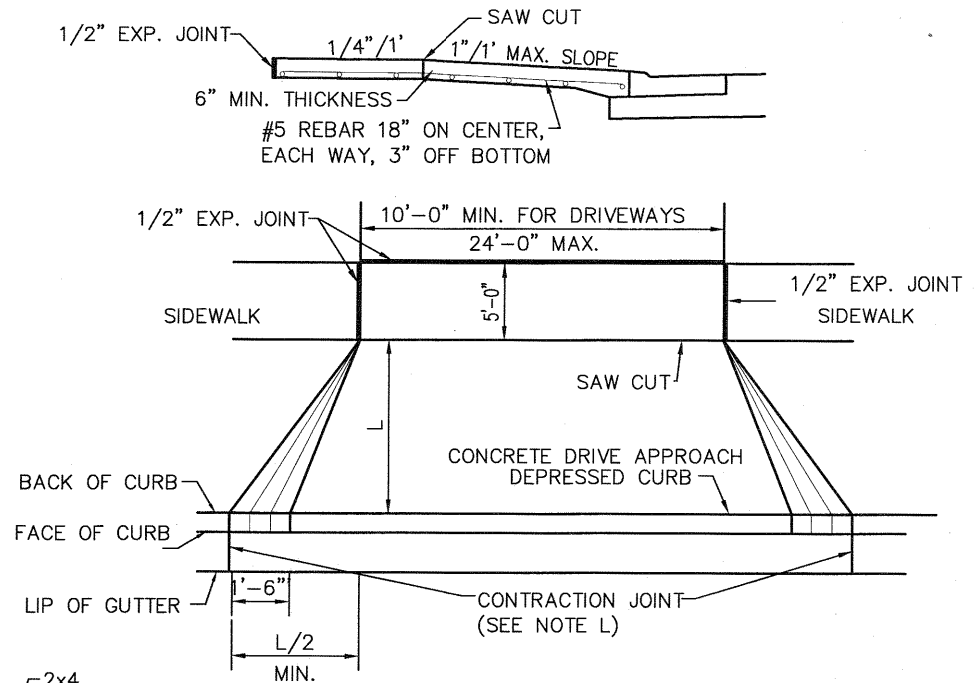
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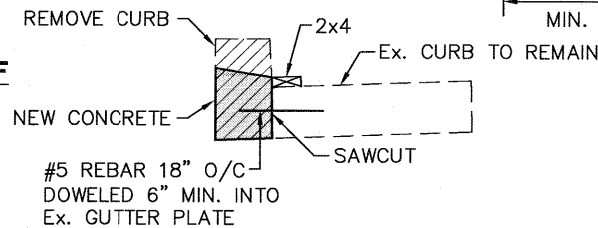
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**FOR CURB LAWNS OF
LESS THAN 6'-0"**



**FOR CURB LAWNS OF
6'-0" OR MORE**



NOTES

- A. DRIVE APPROACHES SHALL MEET THE REQUIREMENTS OF ODOT ITEM 452 AND 499 CAST-IN-PLACE CONCRETE.
- B. DRIVE APPROACHES SHALL NOT BE POURED MONOLITHICLY WITH CURB.
- C. MAXIMUM JOINT SPACING SHALL BE 10' LONGITUDINALLY, TRANSVERSELY AND AT TAPERS.
- D. EXPANSION JOINTS SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC. 1-800-544-9538, MEETING ASTM D-1752 AND AASHTO 153-98.
- E. DRIVE APPROACHES TO BE POURED ON COMPACTED UNDISTURBED EARTH OR IF OVER EXCAVATED BY THE CONTRACTOR THE DRIVE APPROACH SHALL BE POURED ON COMPACTED GRANULAR BEDDING. VILLAGE INSPECTION OF FORM WORK IS REQUIRED PRIOR TO POURING CONCRETE.

F. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES. TEXTURE SHALL BE A MEDIUM BROOM WITH TOOL FINISH, VILLAGE TO REVIEW AND APPROVE FIRST POUR.

G. WHERE CURB AND GUTTER HAS NOT BEEN PROPERLY DROPPED AT DRIVE APPROACHES, THE CURB SHALL BE ENTIRELY REMOVED AND REPLACED BY THE CONTRACTOR OR OWNER AS DIRECTED BY THE MUNICIPALITY OR THEY CAN CUT THE BACK OF CURB OFF AND INSTALL NEW CURB BY PINNING IT TO THE GUTTER PLATE AS PER THE DETAIL ABOVE.

H. JOINTS SHALL BE CLEANED AND EDGED BY A 1/4" RADIUS EDGER. LONGITUDINAL JOINTS SHALL BE AS DIRECTED BY THE VILLAGE. EXPANSION JOINTS SHALL BE OF SUCH DIMENSIONS AS SHOWN ON STANDARD DRAWINGS FOR CONSTRUCTION JOINTS.

I. WHERE ASPHALTIC CONCRETE PAVEMENT IS DISTURBED, THE ASPHALT SHALL BE REPLACED AS DIRECTED BY THE VILLAGE.

J. CONCRETE SHALL BE ODOT CLASS C (4000 PSI, 600 LB/CY) CEMENT. PROPORTIONING OPTIONS 1, 2, AND 3 NOT ALLOWED.

K. CONCRETE SHALL CONTAIN 6% \pm 1% OF TOTAL AIR.

L. WHEN CURB IS REMOVED AND REPLACED DURING DRIVEWAY CONSTRUCTION, JOINTS BETWEEN EXISTING AND NEW CURB ARE TO BE 1/2" EXPANSION JOINTS.

VILLAGE OF
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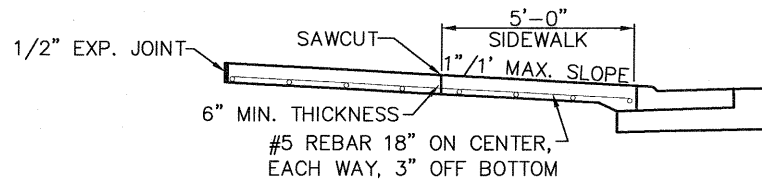
RESIDENTIAL DRIVE APPROACH

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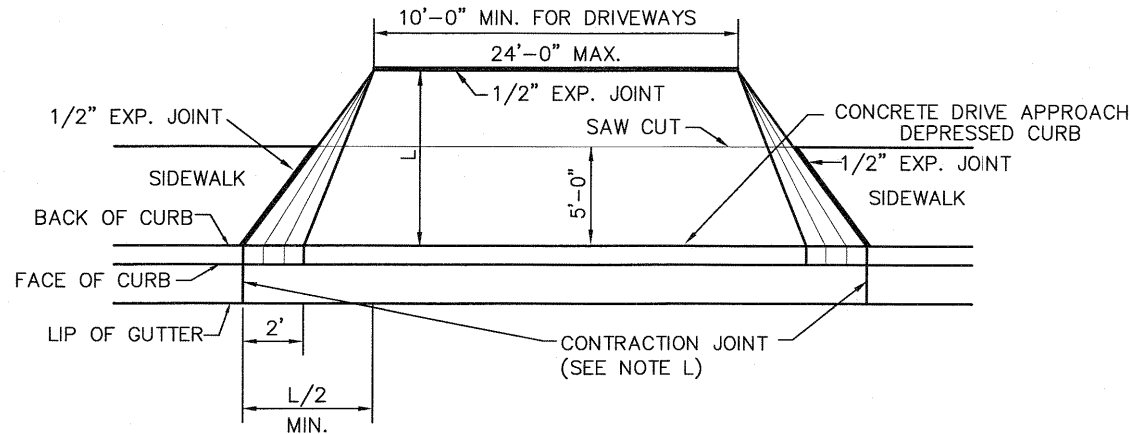
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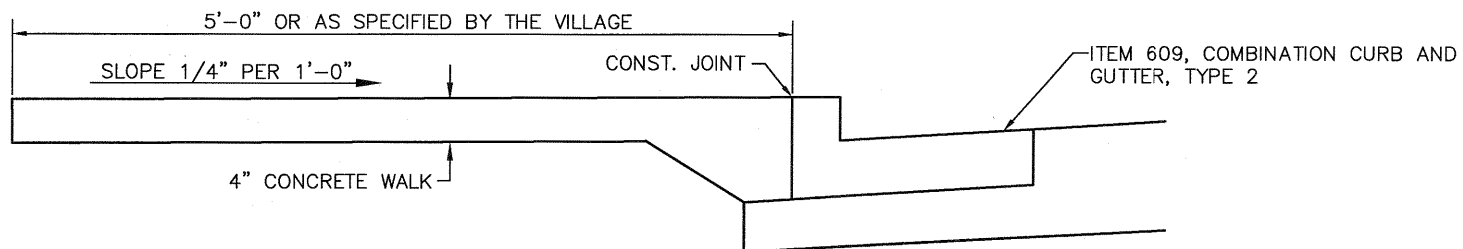


EXPANSION JOINTS SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC. 1-800-544-9538, MEETING ASTM D-1752 AND AASHTO 153-98.



DRIVE APRON WITH NO CURB LAWN

FOR DRIVEWAY NOTES SEE PAGE 300-7



CONCRETE SIDEWALK ABUTTING TYPE 2 CURB DETAIL

VILLAGE OF
VERSAILLES

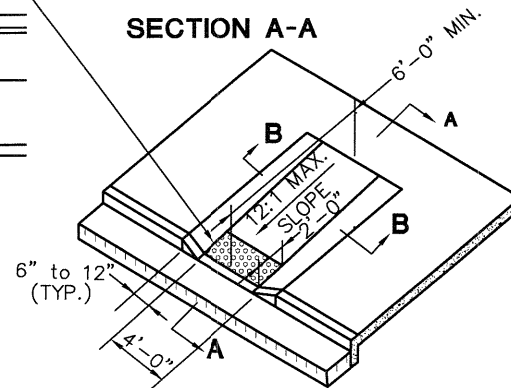
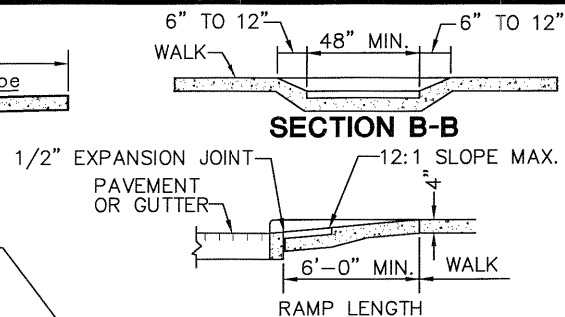
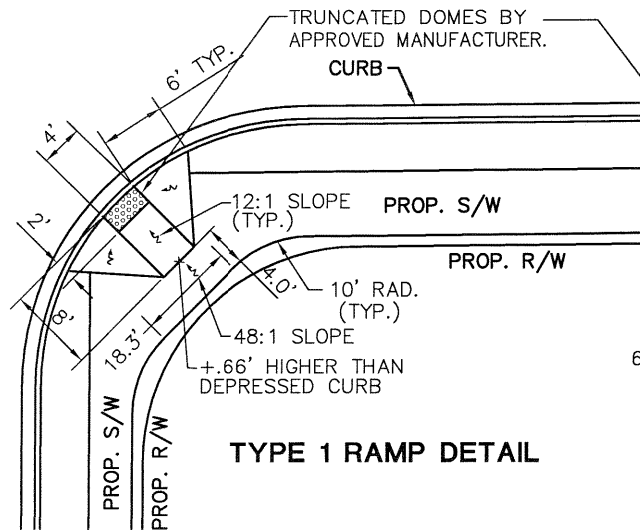
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RESIDENTIAL DRIVE APPROACH AND CONCRETE SIDEWALK DETAIL WITH NO CURB LAWN

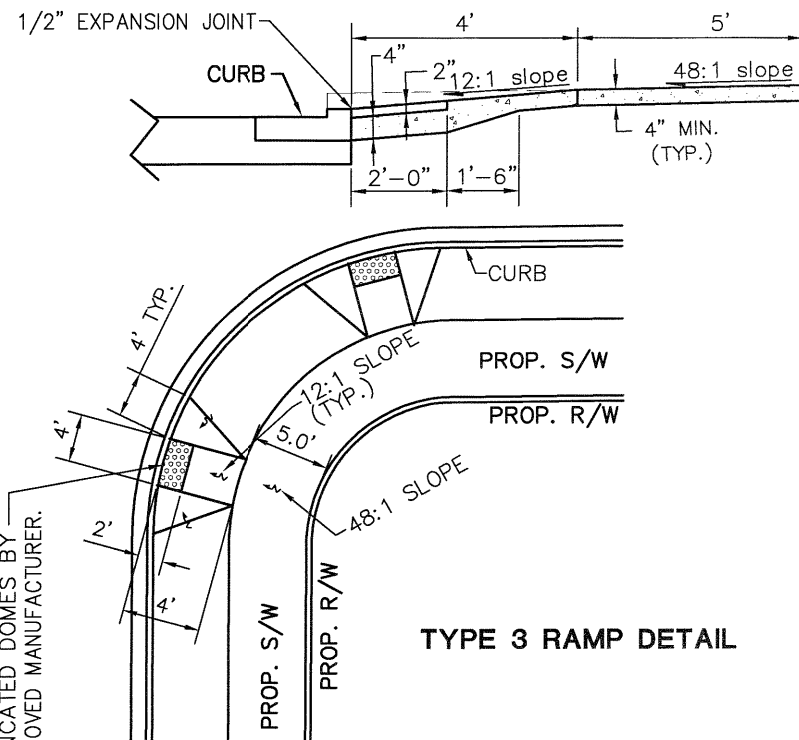
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TYPE 2 RAMP DETAIL



NOTES

- A.** VILLAGE TO SPECIFY TYPE 1, 2, OR 3 CURB RAMP.
- B.** ANY COMBINATION OF SIDE SLOPES ON OPPOSITE SIDES OF A RAMP MAY BE USED TO BEST FIT THE SITE CONDITIONS.
- C.** THE MINIMUM RAMP LENGTH IS 6' FROM BACK OF A 6" CURB AND MAY BE INCREASED WHERE FEASIBLE TO OBTAIN A FLATTER RAMP SLOPE OR TO BETTER BLEND WITH THE WALK CONFIGURATION.
- D.** WALK THICKNESS IN THE RAMP SLOPES SHALL BE 4" MINIMUM OR THICKER AS NECESSARY TO MATCH ADJACENT WALK THICKNESS.
- E.** CURB RAMPS SHALL MEET AND BE FINISHED TO AMERICANS WITH DISABILITIES ACT (A.D.A.) STANDARDS.
- F.** TEXTURE OF CONCRETE SURFACE SHALL BE OBTAINED BY COURSE BROOMING TRAVERSE TO THE RAMP SLOPES AND SHALL BE ROUGHER THAN ADJACENT WALK.
- G.** CURB RAMPS SHALL MEET THE REQUIREMENTS OF ODOT ITEM 608 UNLESS OTHERWISE SPECIFIED WITHIN.
- H.** CONCRETE SHALL BE ODOT CLASS C (4000 PSI, 600 LB/CY CEMENT). PROPORTIONING OPTIONS 1, 2, AND 3 NOT ALLOWED.
- I.** CONCRETE SHALL CONTAIN $6\% \pm 1\%$ OF TOTAL AIR.
- J.** FOR RECONSTRUCTION JOBS, THE CURB RAMPS WILL HAVE TO BE ADDRESSED BASED ON THE EXISTING CONDITIONS.

- K. TRUNCATED DOME SPECIFICATIONS:**
INSTALL DETECTABLE WARNINGS (TRUNCATED DOMES) FOR A DISTANCE OF 24" FROM THE BACK OF CURB FOR THE ENTIRE WIDTH OF THE RAMP OPENING WHERE IT IS FLUSH WITH THE PAVEMENT.

THE TRUNCATED DOMES SHALL BE PANELS
MANUFACTURED BY DETECTABLE WARNING SYSTEMS, INC.
OR EQUIVALENT:

DETECTABLE WARNING SYSTEMS, INC.
6435 JOSHUA TREE AVENUE
ORANGE, CA 92867.
866-999-7452
WWW.DETECTABLE-WARNING.COM

THE PANELS SHALL BE GLASS FIBER POLYMER CERAMIC CEMENT PANELS MOLDED IN THE SQUARE PATTERN. COLOR OF THE PANEL SHALL BE APPROVED BY THE OWNER PRIOR TO ORDERING.

- L. CURB RAMPS TO BE POURED ON COMPACTED UNDISTURBED EARTH OR IF OVER EXCAVATED BY THE CONTRACTOR THE CURB RAMP SHALL BE POURED ON COMPACTED GRANULAR BEDDING. VILLAGE INSPECTION OF FORM WORK IS REQUIRED PRIOR TO POURING CONCRETE.

- M. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES. TEXTURE SHALL BE A MEDIUM BROOM WITH TOOL FINISH, VILLAGE TO REVIEW AND APPROVE FIRST POUR.**

VILLAGE OF VERSAILLES

CHOICE	ONE
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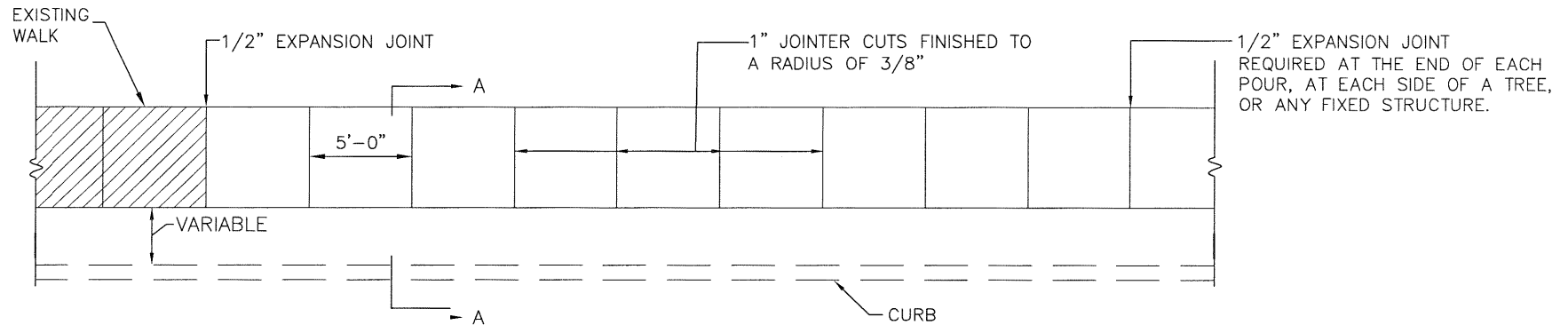
CURB RAMPS

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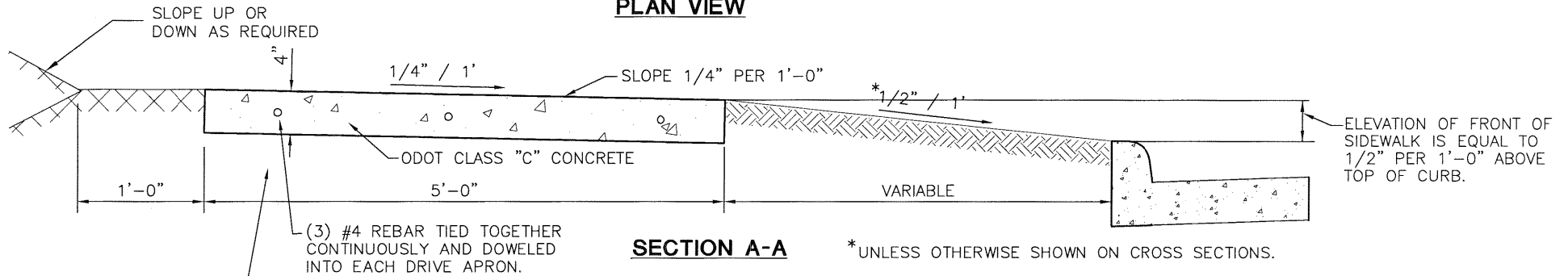
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PLAN VIEW



SECTION A-A

*UNLESS OTHERWISE SHOWN ON CROSS SECTIONS.

SIDEWALK NOTES

COMPACTED GRANULAR BEDDING ONLY IF OVER EXCAVATED, SEE NOTE A.

A. WALK TO BE POURED ON COMPACTED UNDISTURBED EARTH OR IF OVER EXCAVATED BY THE CONTRACTOR THE WALK SHALL BE POURED ON COMPACTED GRANULAR BEDDING, AND IT WILL BE AT THE COST OF THE CONTRACTOR AND INCIDENTAL TO ITEM 608 4" CONCRETE WALK. VILLAGE INSPECTION OF FORMWORK IS REQUIRED PRIOR TO POURING CONCRETE.

B. PROVIDE BROOM FINISH TO ALL EXPOSED SURFACES. TEXTURE SHALL BE A MEDIUM BROOM WITH TOOL FINISH, VILLAGE TO REVIEW AND APPROVE FIRST POUR.

C. CONCRETE SHALL CONFORM TO ODOT ITEM 499 CONCRETE. CONCRETE WORK SHALL CONFORM TO ODOT ITEM 608, UNLESS OTHERWISE SPECIFIED WITHIN.

D. PROVIDE EDGING AROUND ALL EXPOSED SURFACES.

E. APPLY SUPER DIAMOND CLEAR CURING AND SEALING COMPOUND, OR APPROVED EQUIVALENT PER MANUFACTURER'S RECOMMENDATION ON ALL SURFACES.

F. CONCRETE SHALL BE ODOT CLASS A 4000 P.S.I. CONCRETE PROPORTIONING OPTIONS 1, 2, AND 3 NOT ALLOWED. ALL SIDEWALKS SHALL HAVE A MIN. THICKNESS OF 4" AND REINFORCED WITH (3) #4 REBAR TIED TOGETHER CONTINUOUSLY AND DOWELED INTO EACH DRIVE APRON.

G. CONCRETE SHALL CONTAININ 6% ± 2% AIR ENTRANEMENT.

H. EXPANSION JOINTS SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC. 1-800-544-9538, MEETING ASTM D-1752 AND AASHTO 153-98 AND PLACED EVERY 100'.

VILLAGE OF
VERSAILLES

CHOICE
ONE
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CONCRETE SIDEWALK DETAIL

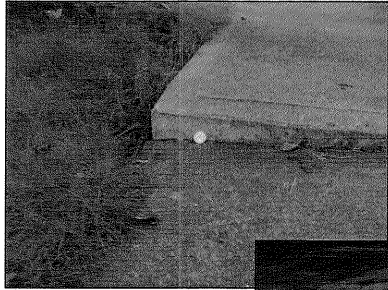
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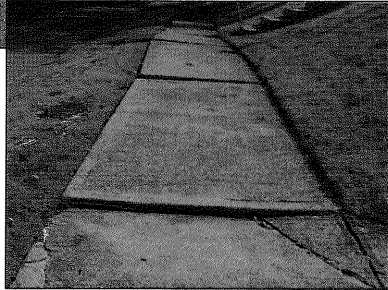
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EXAMPLE: 1/2 INCH TRIP HAZARD



ADJOINING BLOCKS OR PORTIONS THEREOF WHOSE EDGES DIFFER VERTICALLY BY MORE THAN 1/2 INCH.



EXAMPLE: DETERIORATION



ANY SIDEWALK THAT IS DETERIORATED OR SHOWS SURFACE SPALLING, LEAVING IT VERY ROUGH, UNSAFE, OR WITH AGGREGATE PROTRUDING.

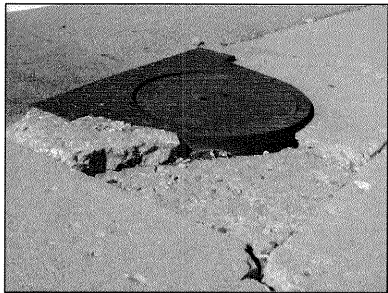
EXAMPLE: ABRUPT SLOPE



BLOCKS, OR PORTION OF BLOCKS, THAT CAUSE AN ABRUPT CHANGE OF 1 INCH PER FOOT (OR MORE) IN ANY DIRECTION OF THE SIDEWALK.



EXAMPLE: PLATES, COVERS, ETC.

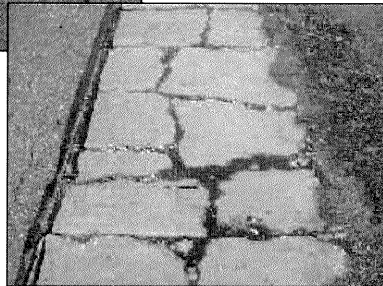


METAL OR OTHER PLATES, COVERS, OR GRATINGS THAT ARE NOT FLUSH (3/4 INCH OR MORE VERTICAL DIFFERENCE) WITH THE ADJOINING SIDEWALK SURFACE, ARE STRUCTURALLY UNSAFE, OR CAUSE A NUISANCE DUE TO SLIPPERY SURFACES ETC.

EXAMPLE: CRACKS



ANY SIDEWALK BLOCK (BASED ON 20 SQ. FT.) HAVING A CRACK OR CRACKS IN IT OF AT LEAST 3/4 INCH WIDE WITH A MINIMUM OF 4 LINEAL FEET IN ONE BLOCK. (VARIOUS SIZE BLOCKS WILL BE EVALUATED PROPORTIONALLY.)



PERMITS, INSPECTION, AND WORK RULES

- A.** NO PERSON SHALL TEAR UP OR DIG INTO ANY PUBLIC RIGHT-OF-WAY OR STREET FOR THE PURPOSE OF CONSTRUCTING OR REPAIRING THE SIDEWALK, CURBING, OR GUTTERS THEREON OR FOR ANY OTHER PURPOSE, WITHOUT HAVING FIRST OBTAINED A PERMIT FROM THE ENGINEERING DEPARTMENT TO DO SO.
- B.** THE CONTRACTOR MUST CALL THE CITY FOR AN INSPECTION AT LEAST THREE WORKING HOURS BEFORE HE PLANS TO POUR THE CONCRETE. THE CONTRACTOR OR HIS FOREMAN MUST BE ON THE JOB WHEN THE INSPECTOR ARRIVES. IF, BECAUSE OF WEATHER CONDITIONS OR FOR SOME OTHER REASON, IT WILL NOT BE POSSIBLE TO HAVE A PERSON ON THE JOB, THE CONTRACTOR IS REQUIRED TO CALL AND CANCEL THE INSPECTION.
- C.** THE CONTRACTOR IS CAUTIONED AGAINST ORDERING CONCRETE BEFORE THE INSPECTION IS MADE DUE TO POSSIBLE CORRECTION OF FORMS OR GRADE.
- D.** THE CONTRACTOR SHALL PROVIDE PROTECTION AND TRAFFIC CONTROL BARRICADES, LIGHTS, SIGNS, AND OTHER DEVICES AS HEREIN SPECIFIED TO PROVIDE WARNING AND PROTECTION FOR VEHICULAR TRAFFIC, PEDESTRIANS, AND THE WORK DURING THE REMOVAL, CONSTRUCTION AND CURING OF SIDEWALK, CURB AND GUTTER, AND DRIVEWAY APRONS.
- E.** THE CONTRACTOR WILL BE RESPONSIBLE FOR AN IMMEDIATE REMOVAL AND CLEANUP OF ALL EXCAVATED MATERIAL. NO EXCAVATED MATERIAL SHALL BE STORED ON THE PAVEMENT.
- F.** ALL CONTRACTORS INSTALLING NEW CURB ARE CAUTIONED THAT IT IS THEIR RESPONSIBILITY TO REPAIR THE STREET PER CITY SPECIFICATIONS BEFORE REMOVING YOUR BARRICADES.

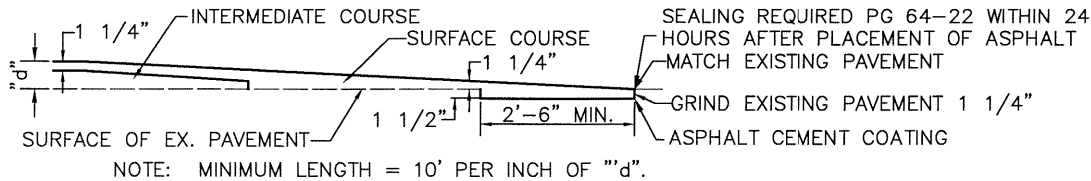
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

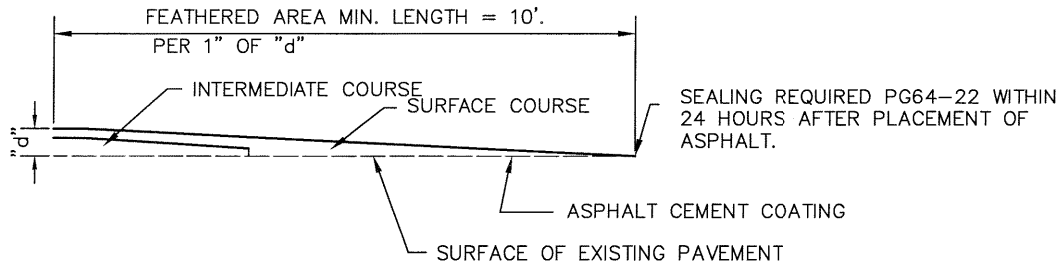
GUIDELINES FOR REPLACEMENT OF SIDEWALKS

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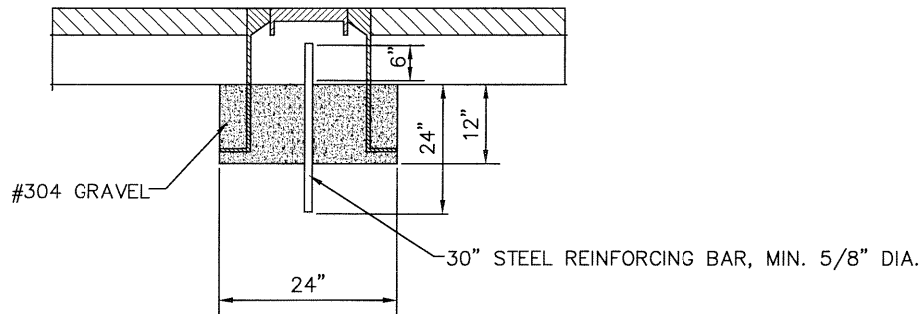
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BUTT JOINT DETAIL



FEATHERING DETAIL

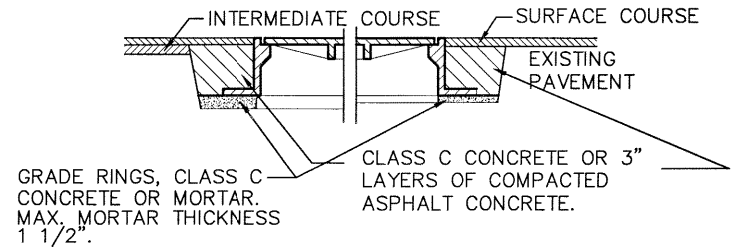


SURVEY MONUMENT DETAIL

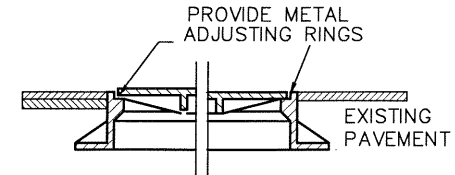
NOTES

- MONUMENT BOXES SHALL BE SET AT ALL STREET INTERSECTIONS AND CENTER POINTS OF CUL-DE-SACS.
- MONUMENT BOXES SHALL BE SET PRIOR TO THE LAYING OF ODOT ITEM 448 SURFACE COURSE ASPHALT UNLESS OTHERWISE PREAPPROVED.
- MONUMENT ASSEMBLIES SHALL BE NEENAH R-1978-A2 OR EAST JORDAN 8375.
- MONUMENT BOXES SHALL MEET THE REQUIREMENTS OF ODOT ITEM 604 UNLESS OTHERWISE SPECIFIED WITHIN.

MANHOLES ADJUSTED TO GRADE FOR OVERLAYS



USING CONCRETE OR MORTAR



USING METAL ADJUSTING RINGS

NOTES

METAL ADJUSTING RINGS SHALL:

- ATTACH SECURELY TO THE EXISTING FRAME BY WELDING OR MECHANICAL DEVICES.
- CONSIST EITHER OF CAST METAL HAVING AN INTEGRAL RIM AND SEAT, OR BE FABRICATED METAL WITH A STURDY CONNECTION BETWEEN THE SEAT AND RIM.
- PROVIDE AN EVEN SEAT FOR THE MANHOLE COVER.
- SHALL BE TYPE DESIGN ACCEPTABLE TO THE VILLAGE.
- ANY INSTALLATION UNACCEPTABLE TO THE VILLAGE SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

ASPHALT OVERLAY AND MONUMENT

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GENERAL

A. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH ODOT SPECIFICATIONS, LATEST REVISION.

PAVEMENT REPLACEMENT

A. WITHIN 24 HOURS AFTER PLACEMENT OF BACKFILL IN EXISTING STREETS, A TEMPORARY PAVEMENT SHALL BE INSTALLED AND THE STREET OPENED. TEMPORARY PAVEMENT SHALL CONSIST OF 8" OF COMPACTED ODOT SPECIFICATION 411 BASE AND A SURFACE COURSE OF ODOT SPECIFICATION 405 OR 409. THE SURFACE SHALL BE KEPT FLUSH WITH THE EXISTING STREET.

B. PERMANENT PAVEMENT REPLACEMENT SHALL EQUAL OR EXCEED THE EXISTING PAVEMENT. (MINIMUM PAVEMENT COMPOSITION, SEE PAGE 300-2.)

C. ANY SETTLEMENT OF A TRENCH CAUSING A DEPRESSION SHALL BE REFILLED AS REQUIRED BY THE VILLAGE AT THE CONTRACTOR'S EXPENSE. THIS PROVISION APPLIES FOR A ONE-YEAR PERIOD AFTER WORK IS ACCEPTED BY THE VILLAGE.

D. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE. COLD PATCH ALL TRENCHES TO 1" TO 1 1/2" WHEN FINAL ASPHALT WILL NOT BE REPLACED WITHIN 24 HOURS.

TRAFFIC CONTROL

A. THE CONTRACTOR SHALL MAINTAIN TRAFFIC CONTROL AT ALL TIMES WITH THE PROPER BARRICADES AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THESE CONTROL DEVICES SHALL BE IN PLACE PRIOR TO ANY WORK COMMENCING.

B. TRAFFIC SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE VILLAGE.

CURB STAKING AND ROADWAY

A. LINE AND GRADE EVERY 25' ON A CONVENIENT OFFSET WITH TACKED HUBS.

PAVEMENT (ASPHALT)

A. THE CONTRACTOR SHALL PROVIDE THE VILLAGE WITH A COPY OF THE NORMAL (MEDIUM TRAFFIC) ODOT 404 JOB MIX FORMULA FOR EACH PLANT THAT PROVIDES HOT MIXED ASPHALT TO THIS PROJECT. ALL MIXES SHALL FOLLOW ODOT JOB MIX FORMULA WITH THE EXCEPTION THAT THE BITUMEN CONTENT SHALL BE 0.2% HIGHER. SECTION 401.02 COMPOSITION OF THE CURRENT ODOT SPECIFICATIONS SHALL BE USED FOR ACCEPTANCE BASED ON THE INCREASED BITUMEN. A 448 OR 446 JOB MIX FORMULA WILL NOT BE ACCEPTABLE. RECYCLED ASPHALT SHALL NOT EXCEED 15% OF ANY 402 MIX PRODUCED. NO RECYCLED ASPHALT MAY BE USED IN THE ITEM 404 SURFACE COURSE.

B. THREE-WHEEL STEEL ROLLER SHALL BE USED FOR INITIAL BREAKDOWN ON ALL PROJECTS.

C. ALL WORK SHALL ADHERE TO ODOT'S LATEST REVISIONS AND TO THE VILLAGE SPECIFICATIONS WHICHEVER IS MORE STRINGENT SHALL PREVAIL UNLESS OTHERWISE APPROVED.

D. PATCHED AREAS SHALL BE SEALED ON THE PERIMETER OF THE PATCH WITH ASPHALT CEMENT.

E. ALL UTILITY ADJUSTMENTS -- MANHOLE, WATER VALVES, ETC., -- SHALL BE RAISED TO FINISHED GRADE BEFORE THE FINAL ASPHALT COURSE IS LAID.

F. ASPHALT CEMENT SHALL BE USED NEXT TO THE LIP OF GUTTER PRIOR TO THE FINAL ASPHALT LIFT BEING PLACED. (SS-1 TACK OR PG64-22 SEAL.)

G. TACK COAT SHALL BE APPLIED PRIOR TO THE PLACEMENT OF THE FINAL LIFT OF ASPHALT IF THE EXISTING ASPHALT LIFT IS DIRTY OR AFTER 3 DAYS UNLESS OTHERWISE APPROVED. TEMPERATURE MUST BE 50°F OR HIGHER.

H. NO ASPHALT SHALL BE PLACED OVER EXCAVATED TRENCHES UNLESS TRENCHES HAVE BEEN COMPACTED AS PER VILLAGE SPECIFICATIONS.

I. NO ASPHALT SHALL BE LAID UNLESS THE VILLAGE IS GIVEN PRIOR NOTICE AND THE AMBIENT TEMPERATURE IS 50°F OR GREATER UNLESS OTHERWISE APPROVED.

K. FINAL LIFT OF ASPHALT SHALL BE FINISHED TO 1/4" ABOVE THE LIP OF GUTTER.

L. TEMPERATURES FOR BREAKDOWN ROLLING SHALL BE 260°F PLUS 15°F AND FOR FINAL ROLLING 175°F PLUS 15°F.

M. ASPHALT CEMENT SHALL BE USED ON ALL JOINTS AND FEATHERED SURFACES PRIOR TO PLACEMENT OF THE NEXT COURSE OF ASPHALT TO THE ABUTTING JOINT, UNLESS OTHERWISE APPROVED.

N. 325°F IS THE MAXIMUM TEMPERATURE ASPHALT MATERIAL IS TO BE MIXED.

O. ALL EDGES TO BE TRIMMED BACK TO SOLID MATERIAL AND BE STRAIGHT AND NEAT AS PER THE VILLAGE'S INSTRUCTIONS.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

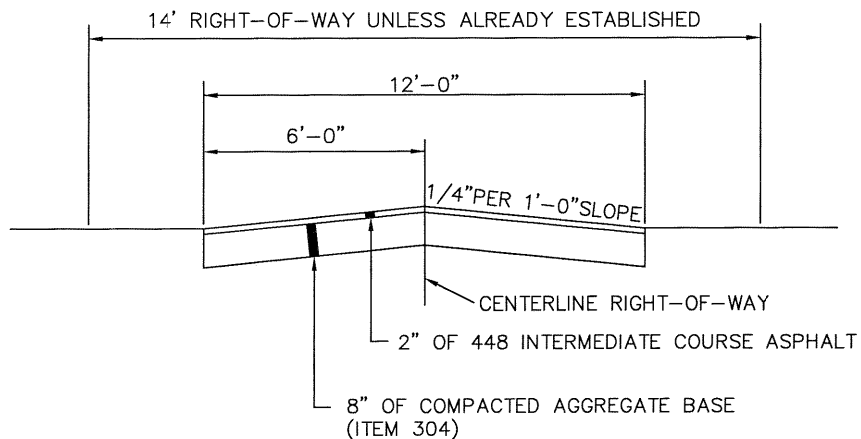
MISCELLANEOUS ROADWAY NOTES

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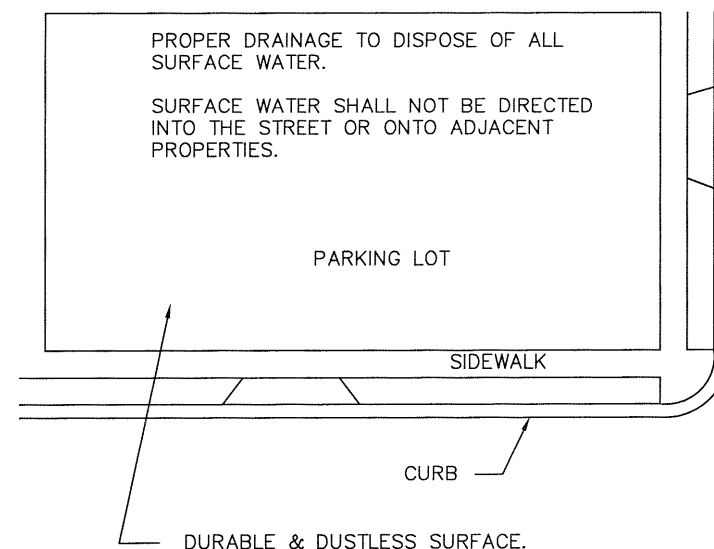
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TYPICAL ALLEY CONSTRUCTION

- A. MINIMUM STANDARD (UNLESS OTHERWISE APPROVED.)
- B. FOR RENOVATION OF EXISTING ALLEYS ONLY. NO NEW ALLEY'S WILL BE APPROVED WITHIN THE VILLAGE.

ADJACENT PARKING AREAS SHALL BE CONNECTED TO LIMIT THE NUMBER OF ACCESS DRIVES TO THE STREET.



PARKING LOT DETAIL

THE FOLLOWING ARE ACCEPTED LOT SURFACES (UNLESS OTHERWISE APPROVED).

- A. ASPHALT CONCRETE ITEM 448 INTERMEDIATE COURSE.
- B. CONCRETE

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

ALLEY AND PARKING LOT DETAIL

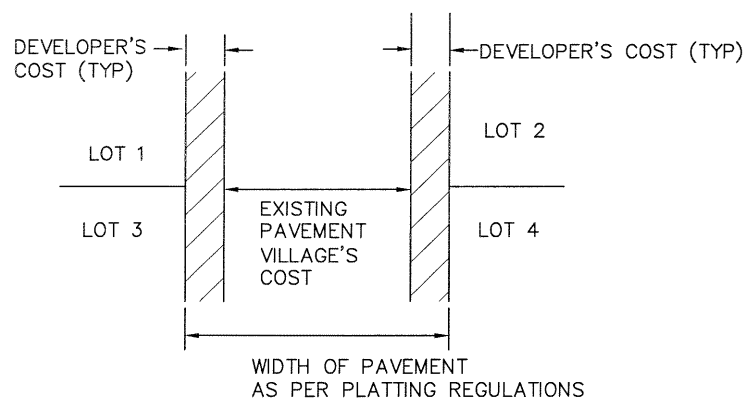
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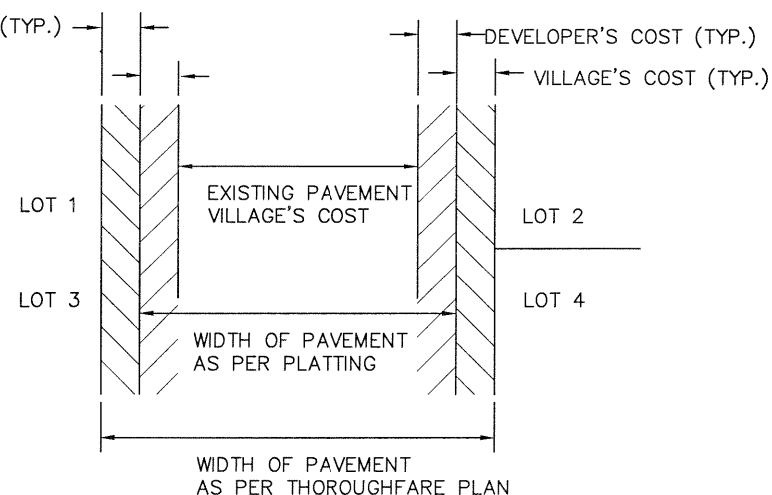
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EXAMPLE 'A'



STREET IMPROVEMENTS FROM EXISTING STREET WIDTH TO PLATTING REGULATION WIDTH

EXAMPLE 'B'



STREET IMPROVEMENTS FROM EXISTING STREET WIDTH TO THOROUGHFARE PLAN WIDTH

NOTES

- A.** IF BOTH SIDES OF A STREET ARE INCLUDED IN THE SUBDIVISION, THE DEVELOPER PAYS THE TOTAL COST FOR ADDITIONAL WIDTH OF EXCAVATION, PAVEMENT, CURB AND SIDEWALK INCLUDING COST TO BRING THE STORM SEWER SYSTEM, WATER, AND SANITARY SEWER UP TO STANDARDS.
- B.** IF ONE SIDE OF THE SUBDIVISION ABUTS AN EXISTING STREET, THE DEVELOPER SHALL PAY FOR THE TOTAL COST OF ONE SIDE FOR ADDITIONAL WIDTH OF EXCAVATION, PAVEMENT, CURB AND SIDEWALK INCLUDING COST TO BRING THE STORM SEWER SYSTEM, WATER, AND SANITARY SEWER UP TO STANDARDS.
- C.** THE VILLAGE PAYS CONSTRUCTION COST ON EXISTING STREET WIDTH AND ANY OVERSIZING TO MEET THOROUGHFARE PLAN.

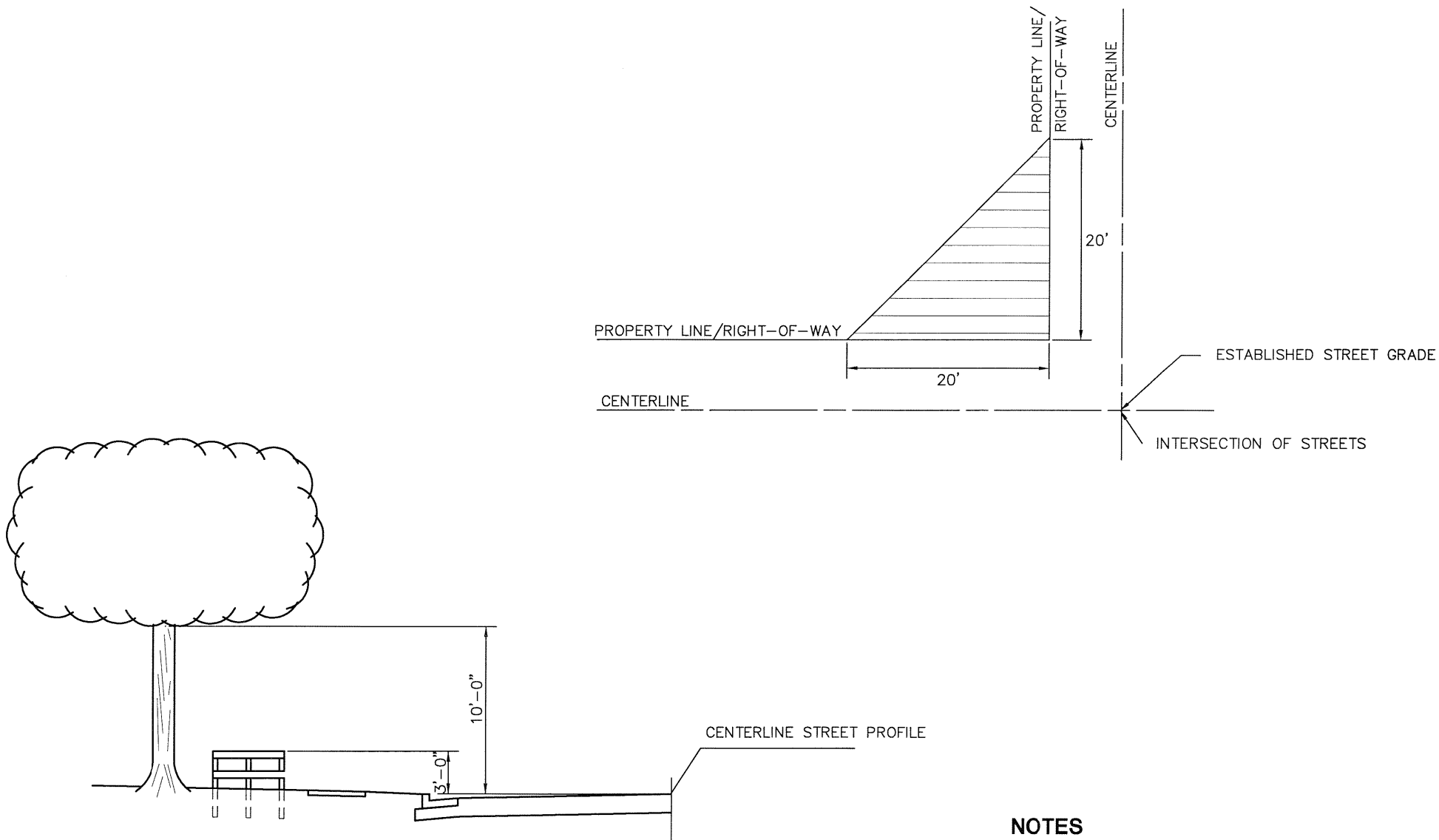
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

STREET IMPROVEMENT CONDITIONS

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VISION CLEARANCE EXHIBIT

NOTES

THERE SHALL NOT BE ANYTHING ABOVE 3' OR BELOW 10' OF THE ESTABLISHED STREET GRADE IN THE TRIANGULAR SHADED AREA.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

VISION CLEARANCE ON CORNER LOTS

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(OW-134)
ROAD WORK
AHEAD



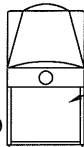
(OW-121)
ONE-LANE ROAD
AHEAD



(OW-125)
FLAGMAN AHEAD



FLAGMAN



WORK VEHICLE

STANDARD DRUM OR
TYPE 1 BARRICADE

FLAGMAN

(OW-125)
FLAGMAN AHEAD

(OW-121)
ONE-LANE ROAD
AHEAD

(OW-134)
ROAD WORK
AHEAD

NOTES

A. THE POLICE AND FIRE DEPARTMENTS SHALL BE NOTIFIED 24 HOURS IN ADVANCE OF ANY CONSTRUCTION. NO STREET SHALL BE CLOSED WITHOUT THE APPROVAL OF THE VILLAGE.

B. IF THE WORK IS TO COVER THE ENTIRE WIDTH OF THE STREET, ONE HALF OF THE STREET SHALL BE MAINTAINED FOR TRAFFIC WHILE ONE HALF OF THE STREET IS REPAIRED.

C. BARRICADE DISTANCE AND SEPARATION OF WARNING TO BE SPACED AS PER JOB SITE ACCORDING TO THE VILLAGE.

D. IF BARRICADES ARE TO BE LEFT UP OVERNIGHT, WARNING LIGHTS (FLASHERS) ARE TO BE USED.

E. ALL STREET CONTROL DEVICES APPLICABLE TO DIFFERENT WIDTH STREETS, TYPE OF CONSTRUCTION, ETC., SHALL CONFORM TO THE LATEST REVISION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, UNLESS OTHERWISE APPROVED BY THE VILLAGE AND SHALL BE IN PLACE AND PROPERLY DISPLAYED PRIOR TO THE COMMENCEMENT OF ANY WORK.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

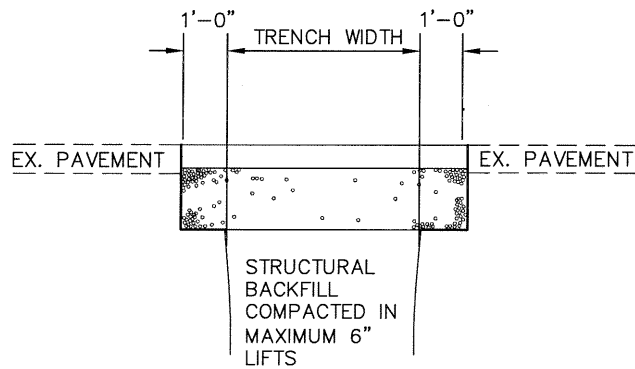
TRAFFIC CONTROL DEVICES STATIONARY OPERATIONS IN ONE LANE

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TYPICAL PAVEMENT RESTORATION DETAIL

TYPICAL PAVEMENT RESTORATION NOTES

MINIMUM GRAVEL PAVEMENT REPLACEMENT

2" OF ODOT #67 ON
12" OF ODOT ITEM 304, IN LIFTS OF 3" MAXIMUM

MINIMUM ASPHALT PAVEMENT REPLACEMENT

PERMANENT PAVEMENT REPLACEMENT SHALL EQUAL OR EXCEED THE EXISTING PAVEMENT COMPOSITION. (MINIMUM PAVEMENT COMPOSITION SEE PAGE 300-2 UTILIZING APPROPRIATE STREET CLASSIFICATION).

SOIL BORINGS SHALL BE CAPPED WITH A MINIMUM OF 9" OF ODOT CLASS C CONCRETE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

TYPICAL PAVEMENT RESTORATION DETAIL

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500 - GENERAL

TRAFFIC CONTROL DEVICE NOTES

- A.** ALL TRAFFIC CONTROL DEVICES SHALL BE PER THE LATEST REVISION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND APPROVED BY THE VILLAGE BEFORE INSTALLATION.
- B.** ALL SIGN POST SHALL BE STANDARD GALVANIZED STEEL POST UNLESS OTHERWISE APPROVED BY THE VILLAGE.
- C.** ALL STREET NAME SIGNS SHALL BE GREEN IN COLOR WITH WHITE LETTERING UNLESS OTHERWISE APPROVED BY THE VILLAGE.

DRAINS

A. ALL FIELD OR STORM DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE REPAIRED AND PROVIDED WITH UNOBSTRUCTED OUTLETS AS APPROVED AND DIRECTED BY THE VILLAGE AND MARKED ON THE RECORD DRAWINGS.

CONNECTIONS TO EXISTING PIPE

A. WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

UTILITY SEPARATION

A. ANY UNDERGROUND UTILITIES SUCH AS GAS, ELECTRIC, CABLE TV, TELEPHONE, ETC., SHALL HAVE 5' SEPARATION FROM ANY VILLAGE WATER OR SEWER LINES UNLESS OTHERWISE APPROVED.

UTILITIES

A. THE MAXIMUM LENGTH OF ANY UTILITY TRENCH TO BE OPEN AT ANY TIME SHALL BE 250' UNLESS OTHERWISE APPROVED.

COMPACTION METHODS

A. FLOODING SHALL NOT BE PERMITTED.
B. MECHANICAL DEVICES, HAND DEVICES, VIBRATING PLATES OR OTHER EQUIPMENT APPROVED BY THE VILLAGE IS ACCEPTABLE 1' ABOVE PIPE IN UNIFORM LIFTS OF 12" (LOOSE DEPTH) OF EXISTING NATIVE MATERIAL AND 6" OF GRANULAR BACKFILL. THE HEIGHT OF LIFTS WILL DEPEND UPON THE TYPE OF MECHANICAL EQUIPMENT BEING USED. THE HEIGHT WILL BE 6" FOR HAND OPERATED TOOLS AND UP TO 12" ON EQUIPMENT MOUNTED TOOLS. THE COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE MATERIAL UNDER THE HAUNCH OF THE PIPE.

C. JETTING IS APPROVED FOR ODOT 603, TYPE 2 GRANULAR MATERIAL ONLY AND IF A STORM DRAIN IS AVAILABLE AS A DRAINAGE OUTLET FOR THE REMOVAL OF

EXCESS WATER. A 4' MAXIMUM LIFT SHALL BE ADHERED TO. SATISFACTORY DRAINAGE SHALL BE PROVIDED BY THE USE OF DRAINAGE DITCHES, PUMPS OR OTHER EQUIPMENT.

D. DENSITY FOR THE ABOVE METHODS SHALL BE NO LESS THAN THAT OF THE SURROUNDING GROUND UNLESS OTHERWISE SPECIFIED.

TYPICAL NOTES - ALL SUBDIVISION CONSTRUCTION DRAWINGS

A. ALL CONSTRUCTION METHODS AND MATERIALS SHALL COMPLY WITH THE VILLAGE ENGINEERING STANDARDS OR ODOT WHICHEVER IS MORE RESTRICTIVE.

B. ALL COMPACTION SHALL MEET THE VILLAGE REQUIREMENTS. IF TESTING OF COMPACTED AREAS IS REQUESTED BY THE VILLAGE, SAID TESTING SHALL BE PERFORMED AT THE EXPENSE OF THE DEVELOPER.

C. THE VILLAGE WILL LOCATE AREAS IN NEED OF UNDERCUTTING UNLESS THE DEVELOPER CHOOSES TO HAVE AT HIS EXPENSE AN INDEPENDENT APPROVED TESTING COMPANY TO DETERMINE UNSUITABLE MATERIAL AREAS THAT NEED UNDERCUTTING.

D. ALL EMBANKMENT AREAS SHALL BE COMPACTED TO A MINIMUM OF 95% OF ASTM D698 STANDARD PROCTOR CURVE AND TESTED TO REPRESENT A DEPTH OF 12" UNLESS OTHERWISE SPECIFIED BY THE VILLAGE.

E. ALL UNPAVED AREAS WITHIN THE STREET RIGHT-OF-WAY SHALL BE SEEDED WITHIN 48 HOURS AFTER THE CURB IS BACKFILLED. STAKED STRAW BALES MAY BE REQUIRED IN ADDITION TO SEEDING TO CONTROL EROSION IF REQUESTED BY THE VILLAGE.

F. STORM WATER POLLUTION PREVENTION SHOULD BE A HIGH PRIORITY ON ALL CONSTRUCTION PROJECTS. ON ALL PROJECTS WHICH DISTURB AT LEAST 1 ACRES OF SOIL, A NPDES PERMIT IS REQUIRED FROM OEPA AND A COPY OF THE PERMIT MUST BE ON FILE AT THE VILLAGE OFFICE BEFORE CONSTRUCTION BEGINS.

SEEDING

A. ALL AREAS DESIGNATED FOR SEEDING SHALL HAVE A MINIMUM OF 6" OF TOPSOIL OVER THE ENTIRE AREAS. THE AREA SHALL BE RAKED, ROLLED, AND DRESSED READY FOR SEEDING. NO STONE OVER 1" IN SIZE PERMITTED.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

GENERAL NOTES

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LOW STRENGTH MORTAR BACKFILL

A. IN SITUATIONS WHERE UTILITIES CROSS HEAVILY TRAVELED STREETS OR IT MAY BE DIFFICULT TO GET ADEQUATE COMPACTION ON GRANULAR MATERIAL, LOW STRENGTH MORTAR BACKFILL WILL BE REQUIRED PER ODOT ITEM 613 TYPE 1 ONLY. THE VILLAGE MAY REQUIRE THIS TYPE OF BACKFILL AT THEIR DISCRETION WITH THE COST BEING BORE BY THE CONTRACTOR.

BORING/JACKING

A. MATERIALS.

CASING PIPE SHALL BE WELDED STEEL PIPE CONFORMING TO AWWA C-202.

B. INSTALLATION (CASING PIPE).

1. FURNISH PROCEDURE METHODS TO THE VILLAGE FOR APPROVAL.
2. ALL METHODS AND PROCEDURES SHALL BE APPROVED BY THE VILLAGE PRIOR TO CONSTRUCTION.
3. ADEQUATELY SUPPORT ALL TRENCHES AND BORING/JACKING PITS.
4. INSTALL TO LINE AND GRADE SHOWN.

C. INSTALLATION (CARRIER PIPE).

1. PLACE CONDUITS IN CASING PIPE TO SAME RELATIVE POSITIONS AS ADJACENT DUCT BY USE OF SPACERS.
2. FILL THE SPACE BETWEEN CONDUITS INSIDE THE CASING PIPE WITH CLEAN SAND OR OTHER APPROVED MATERIALS AS APPROVED BY THE VILLAGE.

STEEL CASING PIPE

- A.** STEEL PIPE SHALL HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI.
- B.** JOINTS BETWEEN THE SECTIONS OF PIPE SHALL BE FULLY WELDED AROUND THE COMPLETE CIRCUMFERENCE OF THE PIPE.
- C.** SIZE—A MINIMUM OF 4" GREATER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE.
- D.** A STEEL CASING PIPE WILL BE REQUIRED FOR STORM SEWER, WATERMAIN, AND SANITARY SEWER.

DIAMETER NOMINAL (INCHES)	NOMINAL THICKNESS (INCHES)
10 AND UNDER	0.188
12 & 14	0.250
16	0.281
18	0.312
20 & 22	0.344
24	0.375
26	0.406
28	0.438
30	0.469
32	0.500
34 & 36	0.532
38	0.562
40	0.594
42	0.625
44 & 46	0.657
48	0.688
50	0.719
52	0.750
54	0.781
56 & 58	0.812
60	0.844
62	0.875
64	0.906
66 & 68	0.938
70	0.969
72	1.000

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

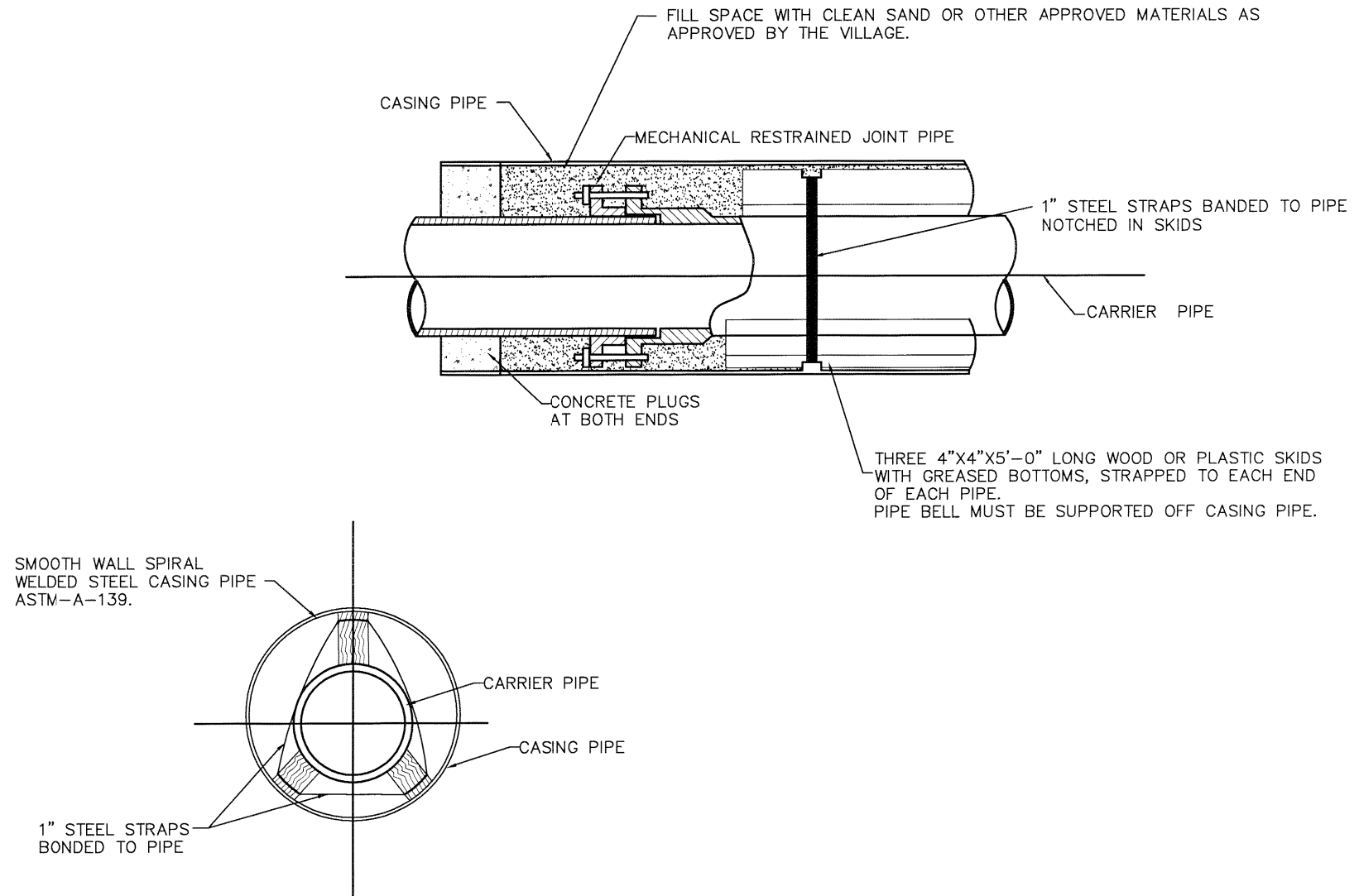
LOW STRENGTH MORTAR BACKFILL AND BORING/JACKING

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500-3



VILLAGE OF
VERSAILLES

CHOICE ONE
ENGINEERING

CASING PIPE DETAIL

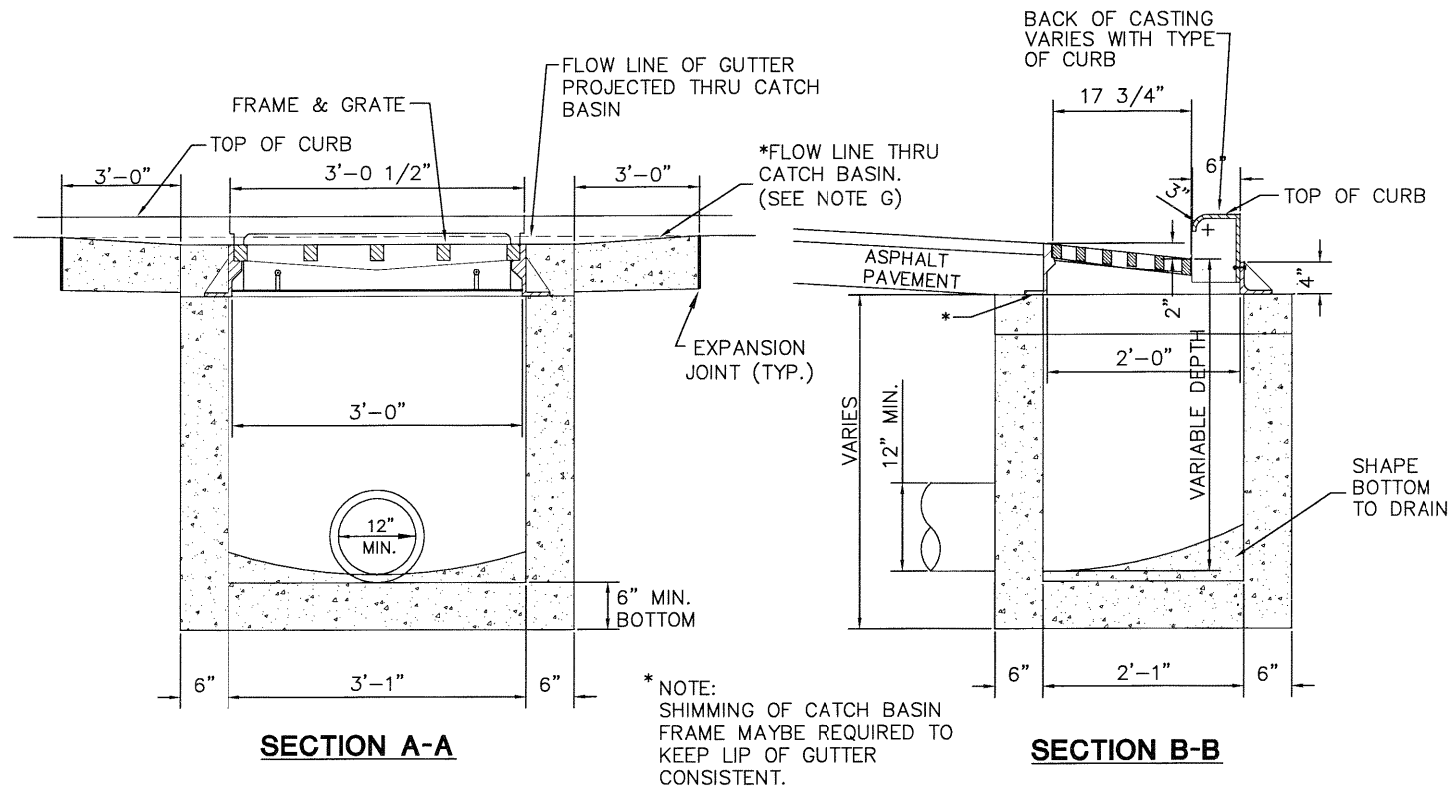
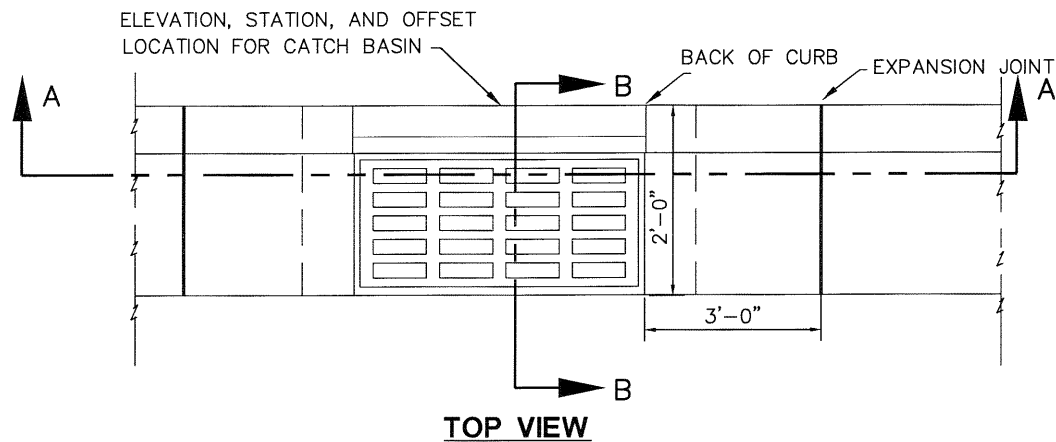
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600 - STORM DRAINAGE



NOTES

A. CASTING SHALL BE EAST JORDAN 7030 OR NEENAH R-3246 OR EQUIVALENT.

B. FOR TYPE 2 COMBINATION CURB AND GUTTER. THE BACK SHALL BE EAST JORDAN TYPE T4 OR NEENAH (3" RADIUS) (R-3246).

C. CATCH BASIN IN DRIVE APPROACHES (TO BE AVOIDED, IF POSSIBLE) THE BACKS SHALL BE EAST JORDAN TYPE T3 OR NEENAH (R-3246-1 WITH CURB PLATE).

D. STANDARD GRATE SHALL BE EAST JORDAN TYPE M2, NEENAH TYPE C, OR EQUIVALENT. ALL BAR EDGES TO BE ROUNDED 1/8" RADIUS.

E. CONCRETE, CAST-IN-PLACE, TO BE CLASS C. PRECAST CONSTRUCTION PERMITTED AND CONCRETE SHALL MEET THE REQUIREMENTS OF 706.13 WITH $6 \pm 2\%$ AIR VOID CONTENT IN THE HARDENED CONCRETE. KNOCKOUTS ARE REQUIRED IN PRECAST CONSTRUCTION. PRECAST WALLS SHALL HAVE A SUFFICIENT AMOUNT OF REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE.

F. CARE SHALL BE TAKEN WHEN CONNECTING TO AN EXISTING CATCH BASIN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO CATCH BASIN. PIPE TO INTRUDE INTO CATCH BASIN 1" ONLY AND PIPE MUST BE CUT PARALLEL TO CATCH BASIN. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND CATCH BASIN.

G. DROP FLOW LINE 1/2" WITHIN BLOCK OUT OF COMBINED CURB AND GUTTER WHILE KEEPING LIP OF GUTTER CONSISTENT WITH TOP OF CURB.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

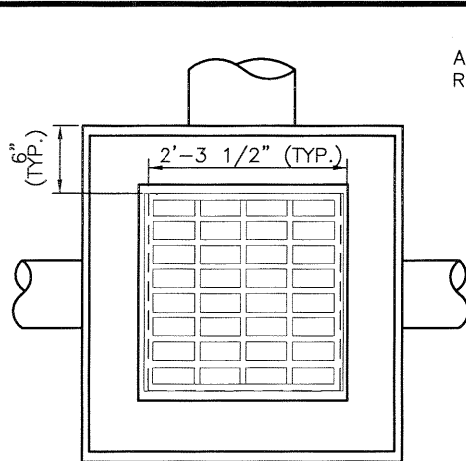
TYPE 1 CATCH BASIN

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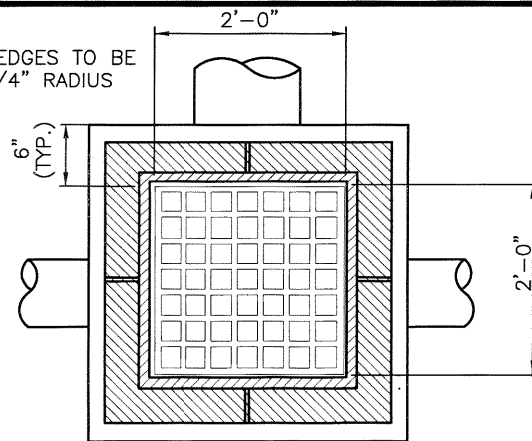
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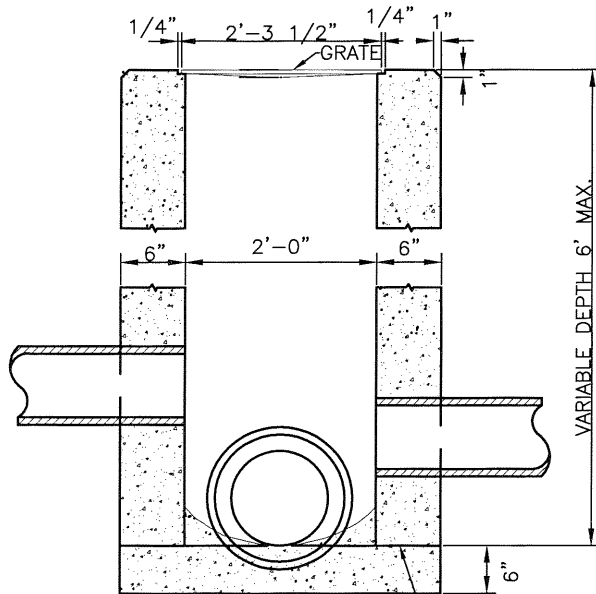


PLAN

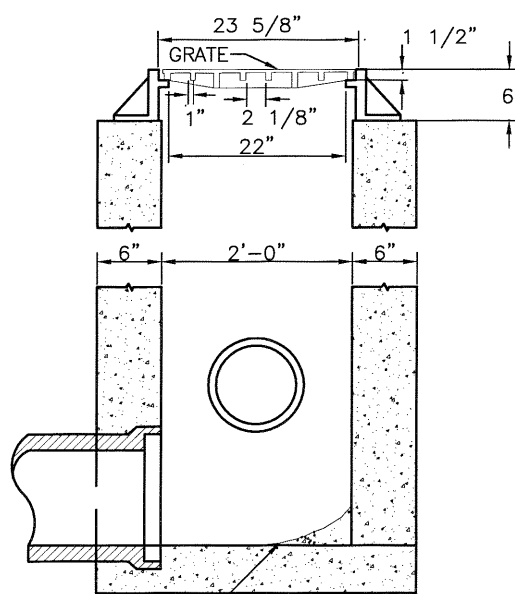
ALL GRATE EDGES TO BE
ROUNDED 1/4" RADIUS



PLAN



NONPAVED AREAS



PAVED AREAS

BOTTOM SLAB MAY BE CAST
SEPARATELY AND THE OUTLET
PIPE PLACED ON TOP OF IT WITH
THE BOTTOM SHAPED TO DRAIN.

PERMISSIBLE CONSTRUCTION JOINT

NOTES

- A.** LOCATION AND ELEVATIONS WHEN GIVEN ON THE PLANS IS TOP CENTER OF THE GRATE. WHEN SIDE OPENINGS ARE PROVIDED, ELEVATION SHALL BE THE FLOW LINE OF THE SIDE INLET.
- B.** GRATE FOR NONPAVED AREAS SHALL BE EAST JORDAN IRON WORKS 5110 TYPE M3 OR NEENAH CATALOG NO. R-4859-C OR EQUIVALENT.
- C.** GRATE ELEVATION TO BE PLACED 4" TO 6" BELOW NORMAL DITCH RETURNING TO NORMAL 10' EACH SIDE OF BASIN.
- D.** PRECAST CONSTRUCTION IS REQUIRED, UNLESS OTHERWISE APPROVED, AND CONCRETE SHALL MEET THE REQUIREMENTS OF 706.13 WITH $6\pm 2\%$ AIR VOID CONTENT IN THE HARDENED CONCRETE. KNOCKOUTS SHALL PROVIDED IN PRECAST CONSTRUCTION. PRECAST WALLS SHALL HAVE A SUFFICIENT AMOUNT OF REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE.
- E.** CATCH BASINS NOT PERMITTED IN PAVEMENT AREAS UNLESS USING A FRAME AND GRATE EQUIVALENT OF NEENAH CATALOG NO. R-3405 OR EAST JORDAN IRON WORKS NO. 5250.
- F.** FOR PIPES OVER 18" REFER TO ODOT CATCH BASIN 2-3 AND 2-4. FOR SIDE INLETS REFER TO ODOT CATCH BASIN 2-2-A.
- G.** CARE SHALL BE TAKEN WHEN CONNECTING TO AN EXISTING CATCH BASIN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO CATCH BASIN. PIPE TO INTRUDE INTO CATCH BASIN 1" ONLY AND PIPE MUST BE CUT PARALLEL TO CATCH BASIN. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND CATCH BASIN.

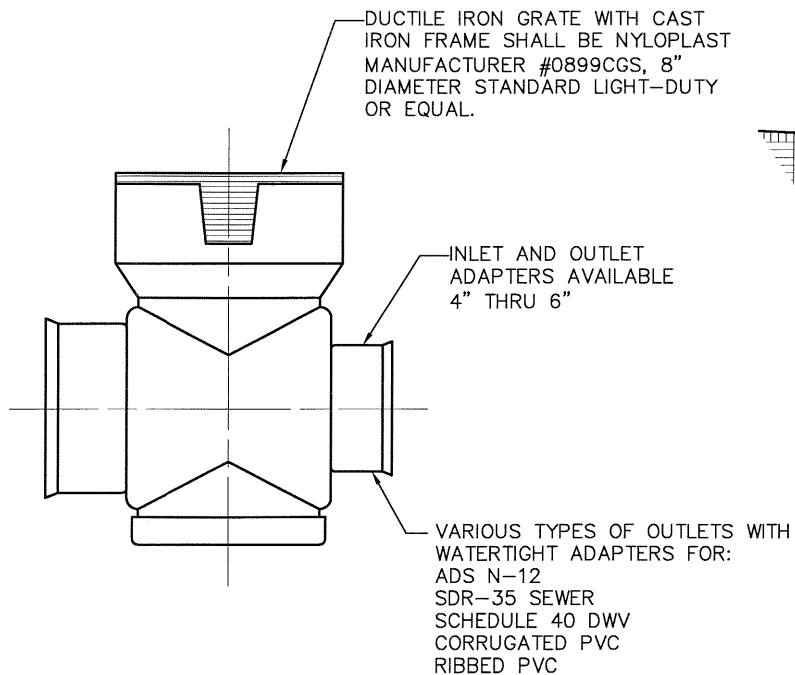
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

TYPE 2-2-B CATCH BASIN

REVISIONS:

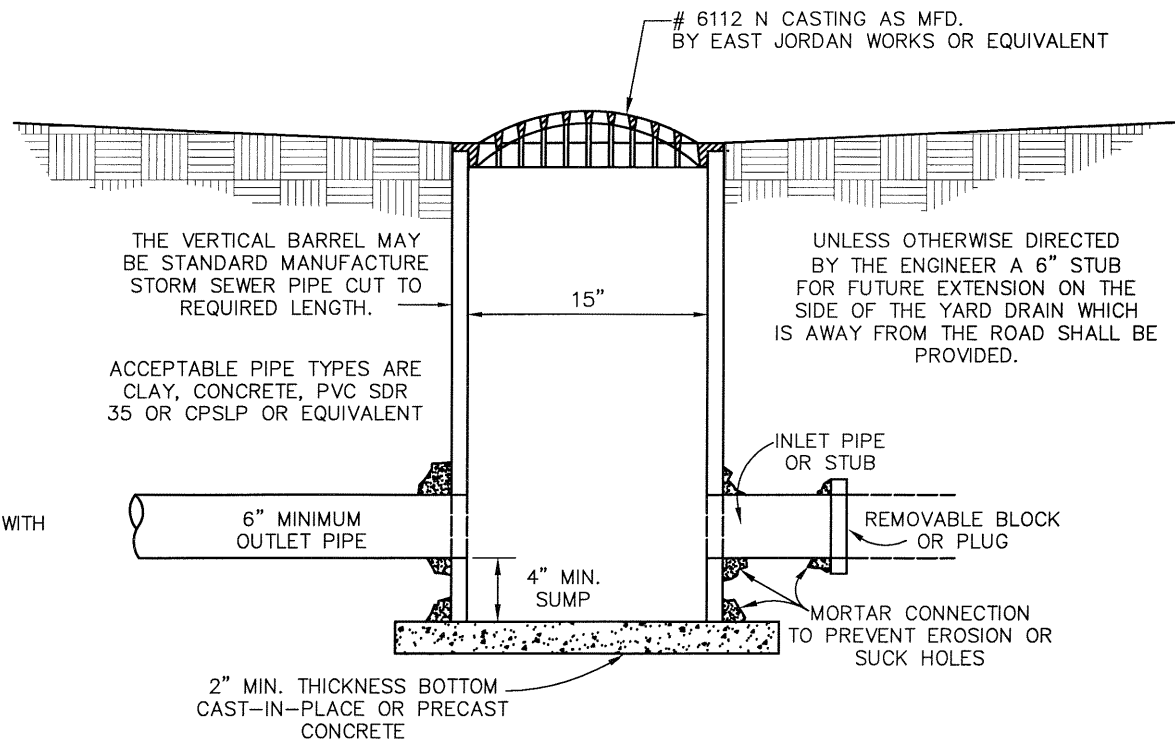
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TYPE 2 YARD DRAIN

—STANDARD OR CUSTOM DRAIN BASIN FOR VARIABLE INLET HEIGHT SHALL BE NYLOPLAST MANUFACTURER #2808AG OR EQUAL.

—CONTRACTOR TO INSTALL PER MANUFACTURER'S RECOMMENDATIONS.



TYPE 3 YARD DRAIN

YARD DRAIN

VILLAGE OF
VERSAILLES

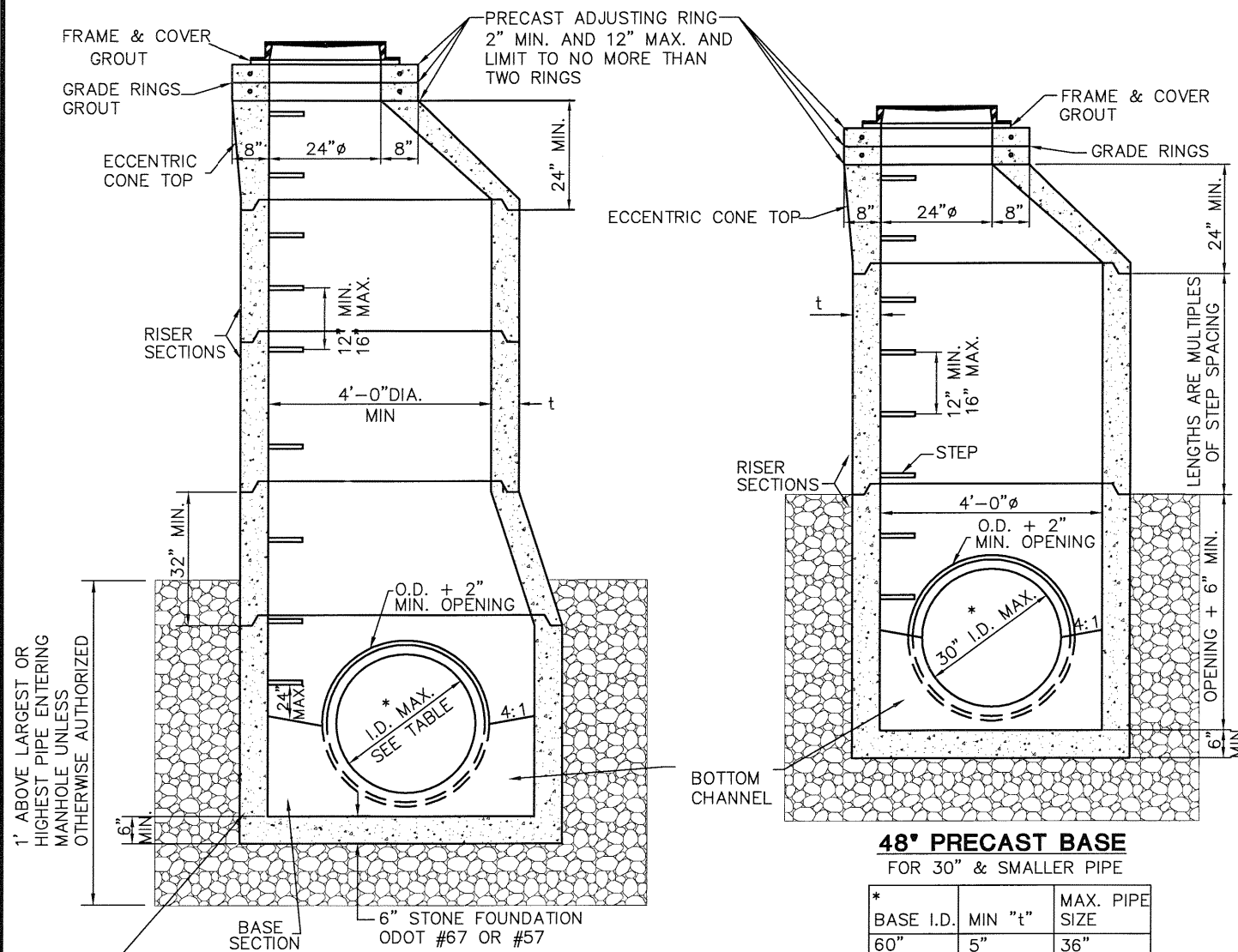
CHOICE
ONE
ENGINEERING

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60" TO 96" PRECAST BASE
SEE TABLE FOR MAXIMUM PIPE SIZES

PRECAST OR POURED IN PLACE BASE SECTION WITH 6" GRANULAR BEDDING. USE OF BARREL BLOCKS IS CONTINGENT UPON VILLAGE APPROVAL AND THEN ONLY IN SPECIAL CASES.

48" PRECAST BASE
FOR 30" & SMALLER PIPE

* BASE I.D.	MIN "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"

*DUE TO PIPE ORIENTATION, LARGER DIAMETER BASE THAN WHAT IS SPECIFIED TO ACCEPT PIPE MAY BE REQUIRED.

NOTES

A. STORM MANHOLE FRAME AND APPROVED VENTED LID SHALL BE EQUAL OF NEENAH NO. R-1767 OR EAST JORDON IRON WORKS NO. 1600 WITH "STORM" STAMPED ON LID.

B. TOP AND TRANSITION (OR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB.

C. OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES MAY BE PREFABRICATED OR CUT IN THE FIELD PROVIDED THE SIDES OF THE PIPE AT THE SPRING LINE DO NOT PROJECT INTO THE MANHOLE.

D. MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT SHALL COMPLY WITH ODOT REQUIREMENT OF 706.13 (ASTM C-478).

E. LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.

F. FOR PIPE SIZES LARGER THAN 60", REFER TO ODOT TYPE 4 TO 5 MANHOLE.

G. NO LATERALS MAY PROTRUDE INTO THE INTERNAL MANHOLE.

H. MAXIMUM SPACING SHALL BE 400'.

I. WHEN CONNECTING TO AN EXISTING STORM MANHOLE CARE SHALL BE TAKEN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO STORM MANHOLE AND PIPE MUST BE CUT PARALLEL TO STORM MANHOLE. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND STORM MANHOLE.

J. JOINTS BETWEEN SECTIONS TO BE EITHER MORTAR OR BITUMINOUS PIPE JOINT FILLER (ODOT 706.10)

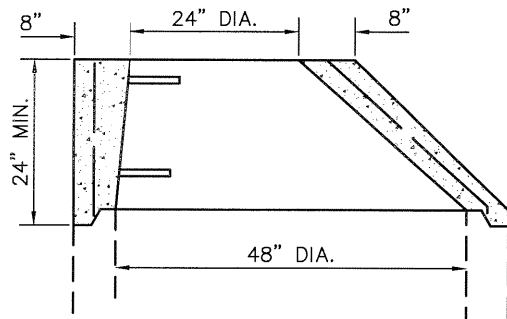
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

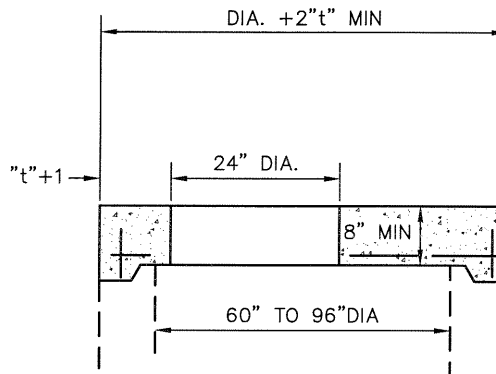
TYPE 3 STORM MANHOLE

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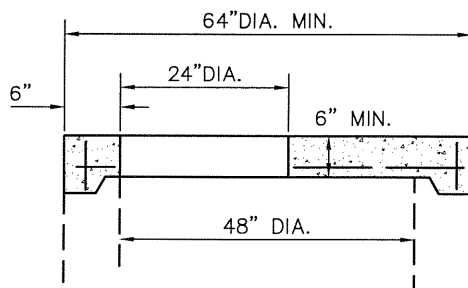
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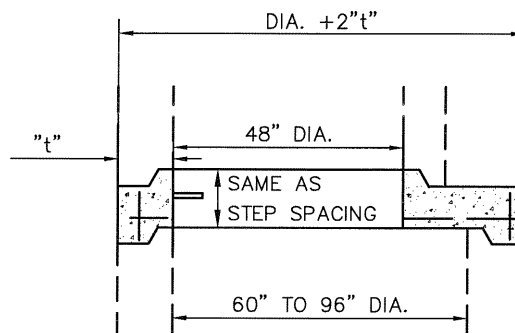
ECCENTRIC CONE TOP



FLAT SLAB TOP

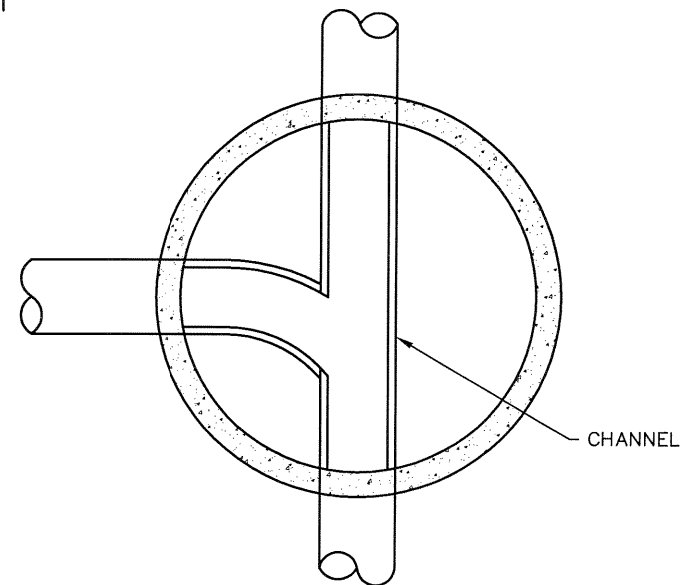


FLAT SLAB TOP



FLAT SLAB TRANSITION

BASE I.D.	MIN "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"



SECTIONAL PLAN

NOTE

ALL INVERTS TO BE CHanneled FOR OPTIMUM FLOW.

VILLAGE OF
VERSAILLES

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ONE
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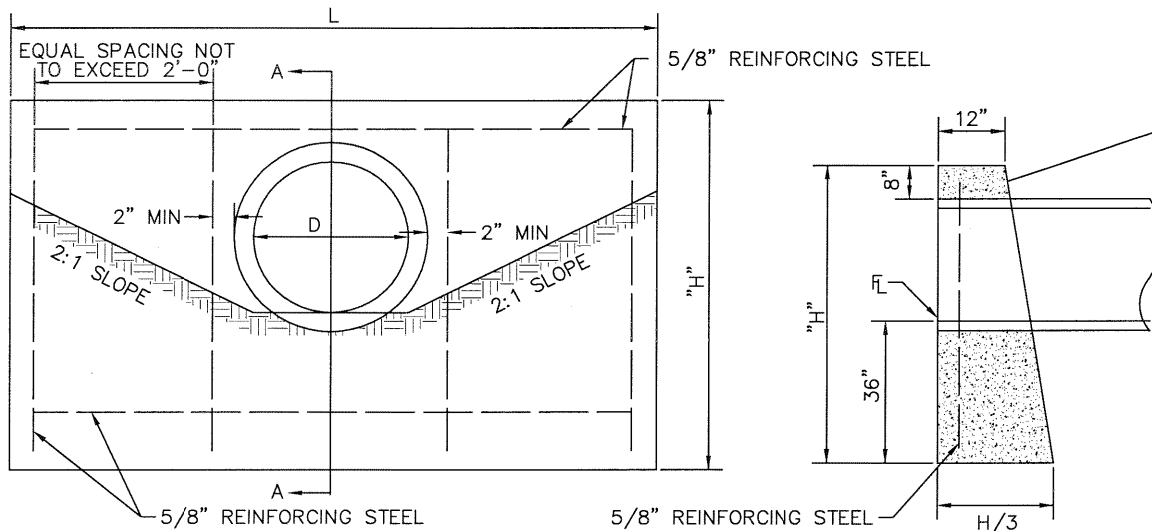
TYPE 3 STORM MANHOLE DETAILS

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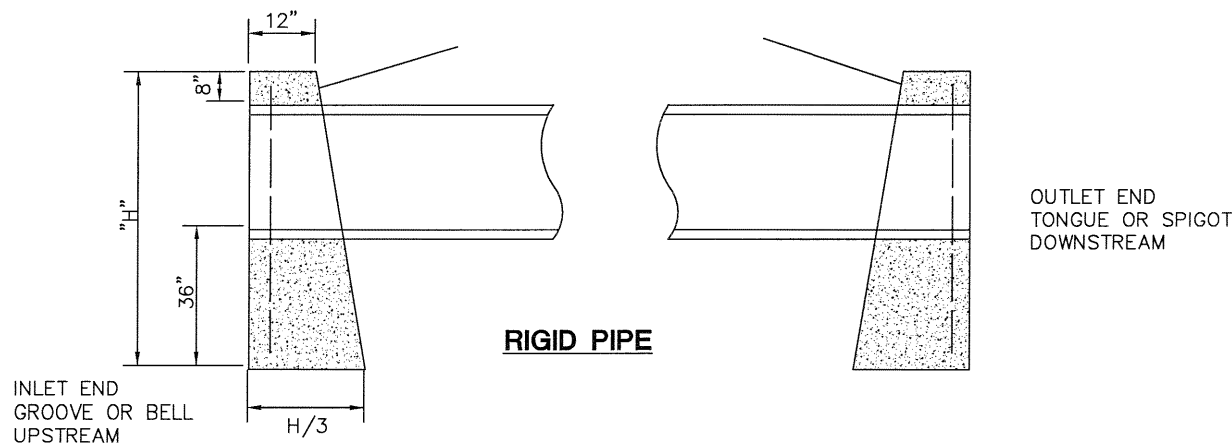
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ELEVATION

SECTION A-A



RIGID PIPE

NOTES

- A. THESE FULL HEIGHT HEADWALLS ARE FOR NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS.
- B. CONCRETE SHALL BE ODOT CLASS C. REINFORCED STEEL BARS SHALL BE 5/8" ROUND.
- C. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. IT WILL BE NECESSARY TO DETERMINE DIMENSIONS FOR THE HW-1 HEADWALL REQUIRED FOR REINFORCED ELLIPTICAL CONCRETE PIPE OR CORRUGATED METAL PIPE ARCHES IN ACCORDANCE WITH THE EQUATIONS LISTED ON THIS DRAWING.
- D. CHAMFER ALL EXPOSED CORNERS 3/4".
- E. WHERE THE SOIL BORINGS INDICATE A BEARING CAPACITY OF LESS THAN 2600 LBS. PER SQUARE FOOT, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE BASE.
- F. MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2".
- G. FOR PIPES HAVING A DIAMETER OR RISE OVER 36", REFERENCE ODOT HW-3 HEADWALLS FOR FULL HEIGHT HEADWALL.
- H. FOR SKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS, REFERENCE ODOT HW-2 HEADWALLS.
- I. HEADWALLS MAY BE PRECAST CONCRETE CONSTRUCTED TO THE ABOVE REQUIREMENTS. GROUT AROUND PIPE AFTER INSTALLATION.
- J. LAST 20± OF PIPE BEFORE HEADWALL SHALL BE REINFORCED CONCRETE PIPE.

DIMENSIONS			QUANTITIES ONE HEADWALL	
DIAMETER	HEIGHT	LENGTH	CONCRETE C.Y.	REINFORCING STEEL LBS.
15"	5'-2"	7'-0"	1.7	41
18"	5'-5"	8'-4"	2.2	57
21"	5'-8"	9'-8"	2.8	62
24"	5'-11"	11'-0"	3.3	69
30"	6'-5"	13'-8"	4.7	92
36"	7'-0"	16'-4"	6.5	105

- L CIRCULAR SECTIONS = $5D + 4T$
 L ELLIPTICAL OR PIPE-ARCH = $4R + 4T + S$
 H CIRCULAR SECTIONS = $D + T + 44"$
 H ELLIPTICAL OR PIPE-ARCH = $R + T + 44"$
 D = DIAMETER OF PIPE
 R = RISE OF PIPE
 S = SPAN OF PIPE
 T = THICKNESS OF BARREL
 L = LENGTH OF HEADWALL
 H = HEIGHT OF HEADWALL

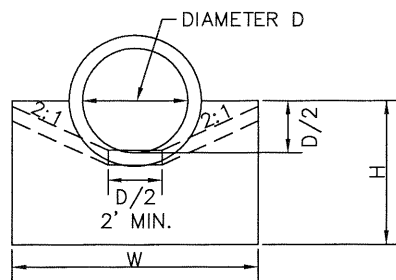
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

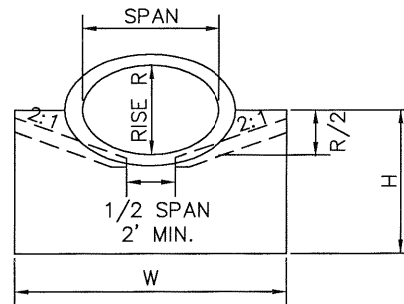
FULL-HEIGHT HEADWALLS

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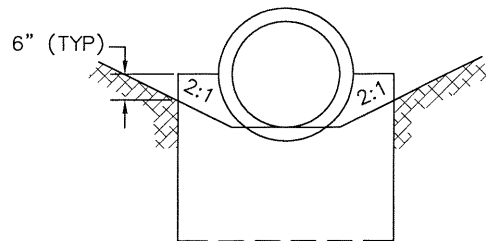
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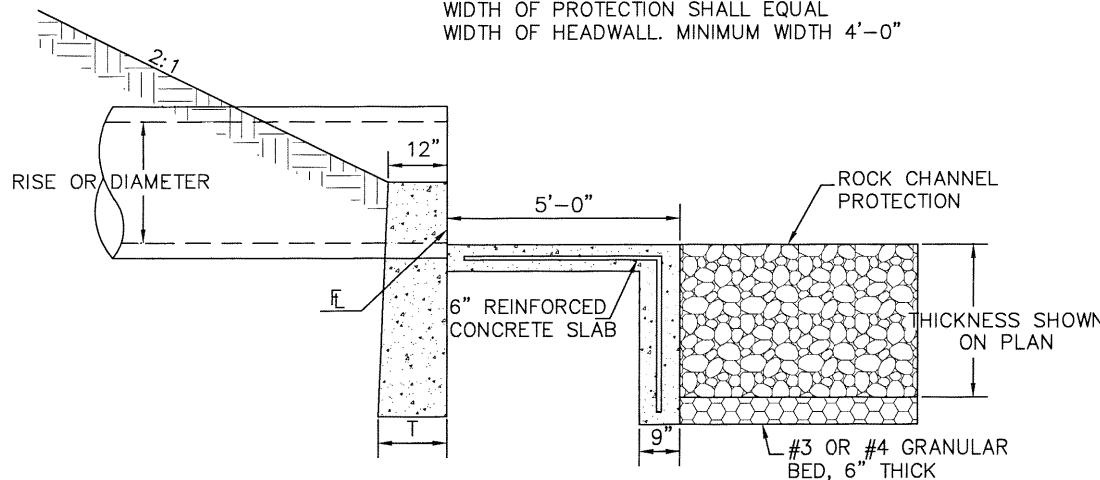
CIRCULAR



ELLIPTICAL



WIDTH OF PROTECTION SHALL EQUAL
WIDTH OF HEADWALL. MINIMUM WIDTH 4'-0"



OUTLET CHANNEL PROTECTION DETAIL

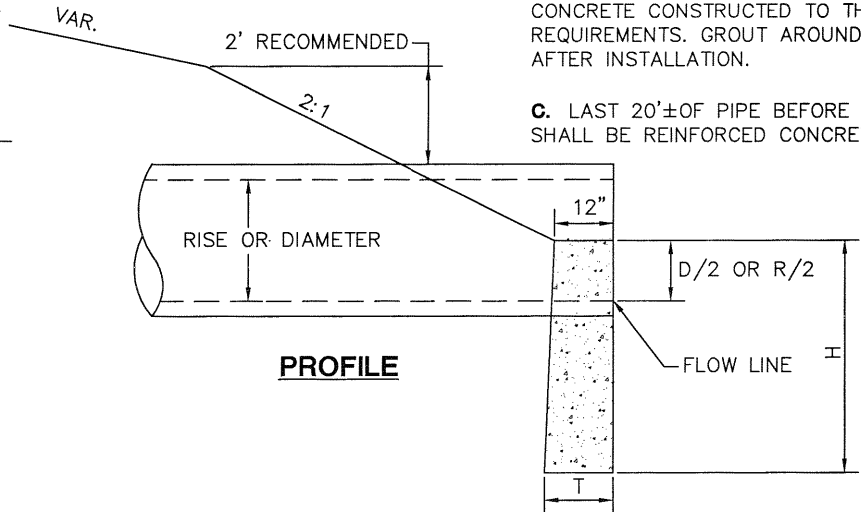
(CUTOFF WALL DEPTH 2'-6" MINIMUM IS VARIABLE TO MATCH REQUIRED THICKNESS OF ROCK.)

NOTES

A. CONCRETE FOR HEADWALLS SHALL BE ODOT CLASS C. CONCRETE QUANTITIES ARE BASED ON HEADWALLS ONLY.

B. HEADWALLS MAY BE PRECAST CONCRETE CONSTRUCTED TO THE ABOVE REQUIREMENTS. GROUT AROUND PIPE AFTER INSTALLATION.

C. LAST 20'± OF PIPE BEFORE HEADWALL SHALL BE REINFORCED CONCRETE PIPE.



PROFILE

HEADWALL FOR CONCRETE PIPE

N	CIRCULAR				CONC. C.Y.	ELLIPTICAL					CONC. C.Y.
	D	W	H	T		SPAN	RISE	W	H	T	
	12"	2'-0"	3'-0"	12"	.20	23"	14"	3'-0"	3'-2"	12"	.29
	15"	2'-6"	3'-2"	12"	.25	30"	19"	3'-7"	3'-4"	12"	.35
	18"	3'-0"	3'-3"	12"	.31	34"	22"	3'-11"	3'-5"	12"	.38
	21"	3'-6"	3'-4"	12"	.37	38"	24"	4'-6"	3'-6"	12"	.44
	24"	4'-0"	3'-6"	12"	.43	42"	27"	4'-8"	3'-7"	12"	.45
	27"	4'-6"	3'-8"	12"	.49	45"	29"	5'-2"	3'-8"	12"	.49
	30"	5'-0"	3'-9"	12"	.56	49"	32"	5'-5"	3'-10"	12"	.52
	33"	5'-6"	3'-10"	12"	.62	53"	34"	5'-11"	4'-0"	14"	.66
36"	6'-0"	4'-0"	12"	.69	60"	38"	6'-10"	4'-2"	14"	.82	
39"	6'-6"	4'-2"	12"	.77	68"	43"	8'-0"	4'-4"	16"	1.01	
42"	7'-0"	4'-3"	12"	.84	76"	48"	9'-2"	5'-0"	16"	1.34	
48"	8'-0"	4'-6"	14"	1.09	83"	53"	10'-4"	5'-2"	18"	1.65	
54"	9'-3"	4'-9"	14"	1.32	91"	58"	11'-6"	5'-5"	18"	1.97	
60"	10'-6"	5'-6"	16"	1.93	98"	63"	12'-7"	5'-7"	20"	2.38	
66"	11'-9"	5'-9"	18"	2.42	106"	68"	13'-9"	5'-10"	20"	2.69	
72"	13'-0"	6'-0"	18"	2.77	113"	72"	14'-9"	6'-0"	22"	3.14	
78"	14'-3"	6'-3"	20"	3.37	121"	77"	15'-11"	6'-3"	22"	3.49	
84"	15'-6"	6'-6"	22"	4.05	128"	82"	17'-0"	6'-5"	24"	4.04	

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

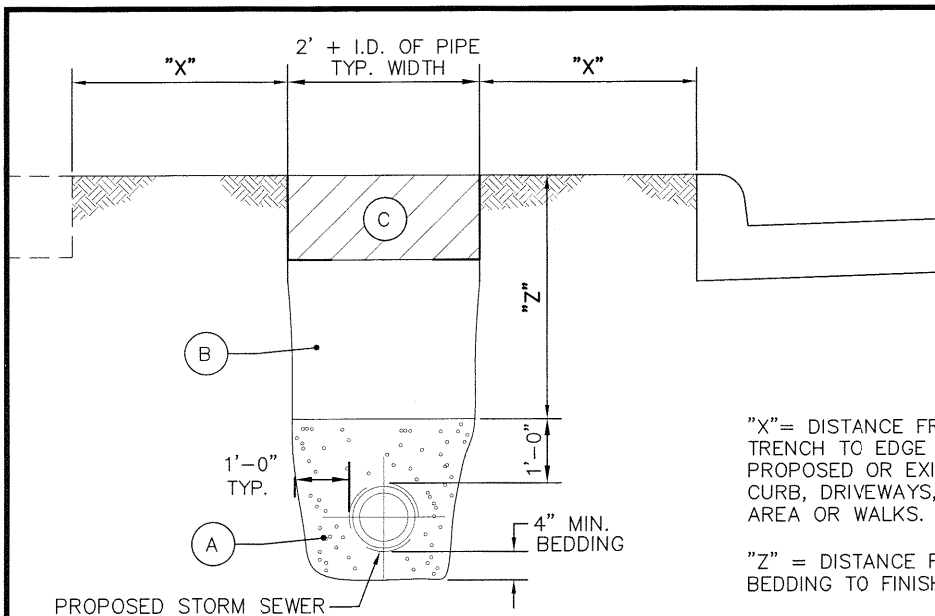
HALF-HEIGHT HEADWALL

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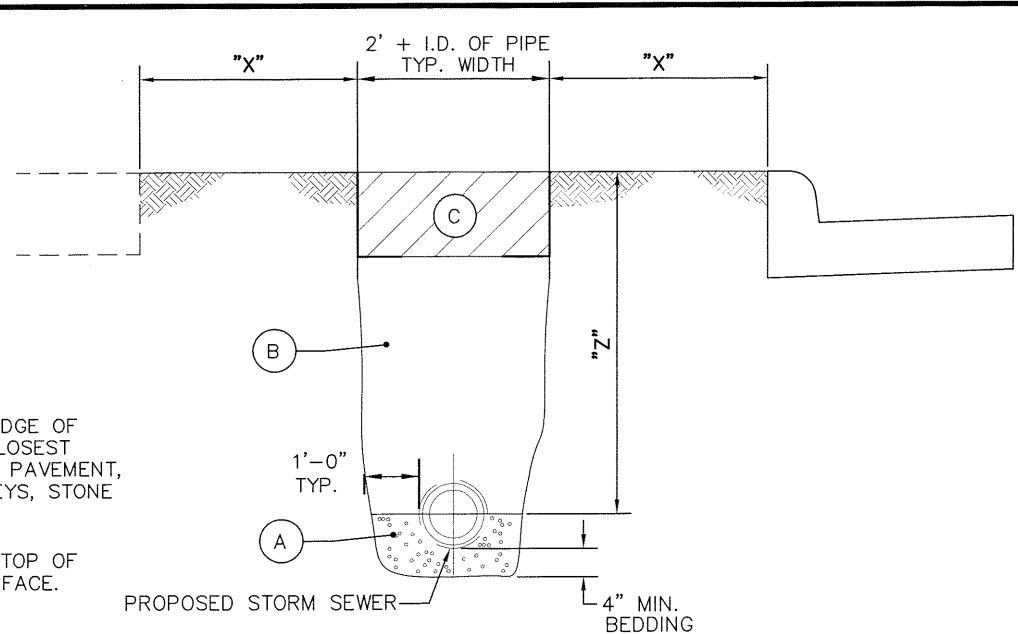
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STORM SEWER TRENCH DETAIL

(NON-RIGID PIPE)



STORM SEWER TRENCH DETAIL

(RIGID PIPE)

TRENCH DETAIL NOTES

A. STRUCTURAL BEDDING SHALL BE WASHED NATURAL GRAVEL, ODOT 603 TYPE 3 (#57, #9 OR #8), OR OTHER APPROVED EQUIVALENT WHEN IN CONTACT WITH ANY MATERIAL SUSCEPTIBLE TO CORROSION; OTHERWISE, STRUCTURAL BEDDING SHALL BE ODOT 603 TYPE 3 (#57, #9, OR #8) OR APPROVED EQUIVALENT. THIS BEDDING SHALL BE USED FOR ALL STORM SEWER MAIN, LATERALS, AND APPURTENANCES APPLICABLE TO THE STORM SEWER SYSTEM.

B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE VILLAGE. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH STRUCTURAL BACKFILL MATERIAL ODOT 603 TYPE 3 (#57 OR #8) OR LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613 TYPE 1 UNTIL THE TOP OF THE COMPACTED STRUCTURAL BACKFILL OR LOW STRENGTH MORTAR BACKFILL IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z"

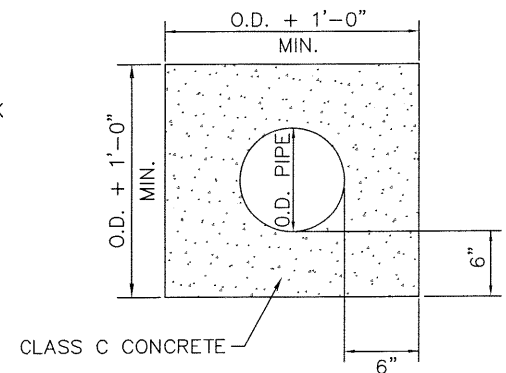
"X" = DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS.

"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-19.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.



CONCRETE ENCASEMENT DETAIL

VILLAGE OF
VERSAILLES

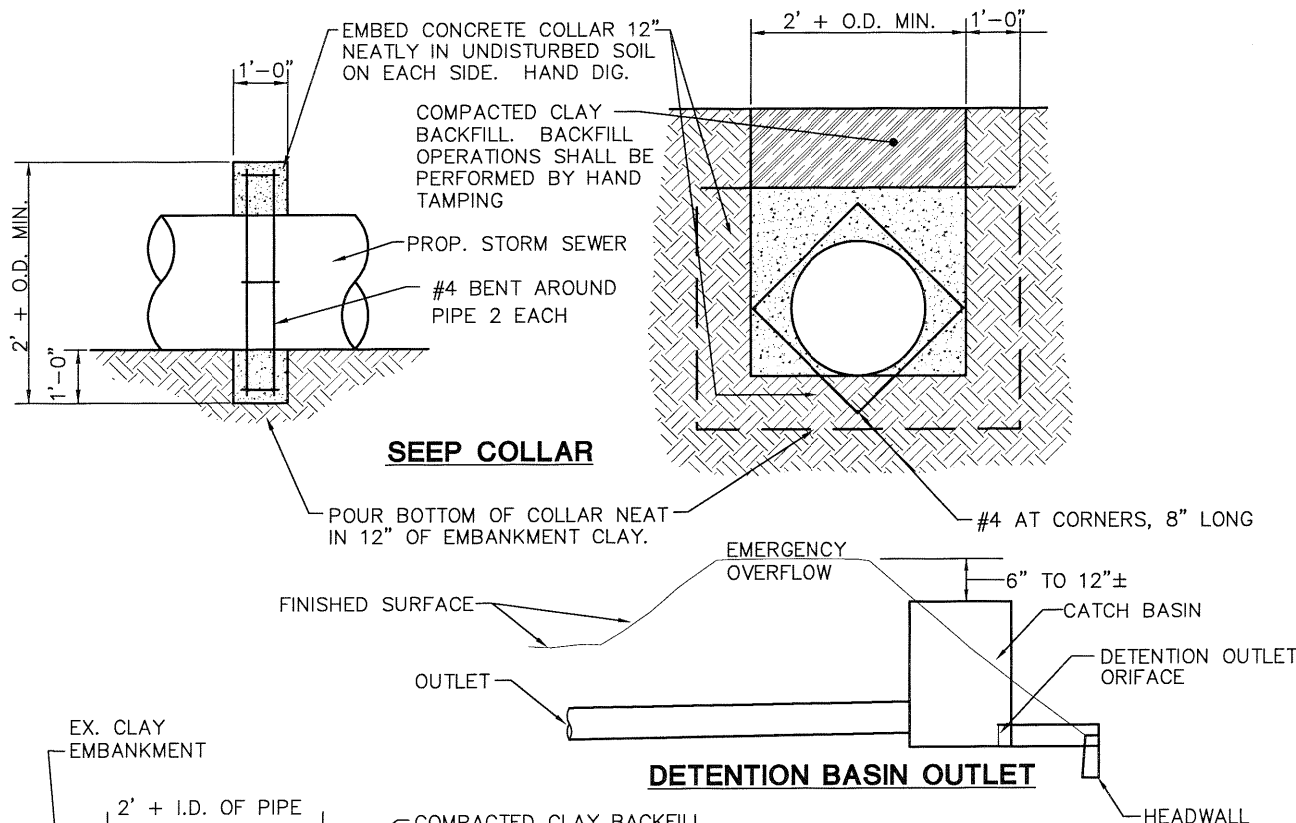
CHOICE
ONE
ENGINEERING

STORM SEWER TRENCH DETAILS

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06-27-08
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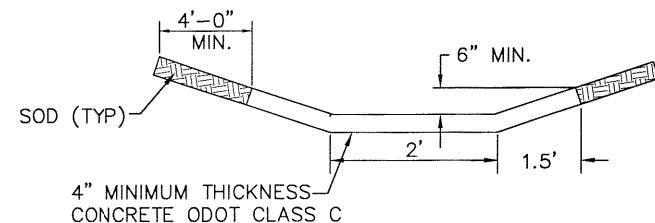
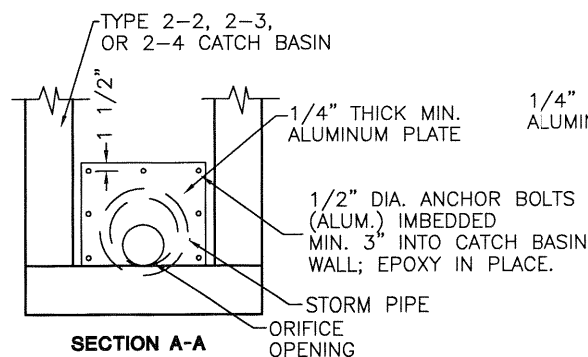


NOTES

- EXTRA COMPACTION AND CARE SHALL BE TAKEN TO ENSURE WATER SEALING OF DIKE AND PROPER CLAY BEDDING OF PIPE.
- COMPACTION REQUIREMENTS SHALL BE 95% STANDARD MAXIMUM DRY WEIGHT DENSITY.
- THIS SHALL BE REQUIRED AT ALL PIPES ENTERING OR EXITING THE DETENTION BASIN.

D. PAYMENT FOR THESE ITEMS SHALL BE INCIDENTAL TO ITEM 603.

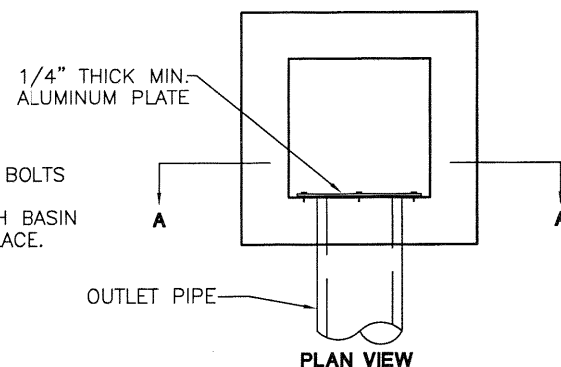
CLAY TRENCH DETAIL THROUGH DETENTION BASIN



PAVED CONCRETE CHANNEL DETAIL

NOTES

- ANY DETENTION BASINS WITH SLOPES LESS THAN 1% REQUIRE CONCRETE CHANNEL.
- DIFFERENT SHAPE OR SIZE OF CONCRETE CHANNEL MAY BE REQUIRED DEPENDING ON DESIGN.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH VILLAGE SPECIFICATIONS.
- BOTTOM OF DRAINAGE DITCH SHALL BE FORMED BEFORE PLACING CONCRETE, ALL FORMS SHALL BE SET TO GRADE AND ALIGNMENT.
- TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED AT 6 FOOT INTERVALS. THE GROOVES SHALL BE SAW CUT TO A MINIMUM DEPTH OF 1 INCH.



DETENTION/RETENTION OUTLET ORIFICE

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

DETENTION/RETENTION BASIN DETAILS

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NOTES

A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.

B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR THE DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.

C. ALL STORM SEWER CONSTRUCTION SHALL ADHERE TO ODOT SPECIFICATIONS LATEST REVISION OR WITH THE VILLAGE STORM SEWER SPECIFICATIONS, WHICHEVER IS APPLICABLE AND MORE RESTRICTIVE.

D. HUCKY PUCK IS REQUIRED ON ALL NON O-RING STORM SEWER AND MANHOLES, UNLESS OTHERWISE APPROVED.

E. WHEN A CASTING IS ABANDONED IT REMAINS VILLAGE PROPERTY.

F. ANY DETAILS OR NOTES NOT DIRECTLY ADDRESSED IN THESE ENGINEERING STANDARDS WILL BE REFERRED TO ODOT STANDARD DRAWINGS AND SPECIFICATIONS.

G. ALL STORM SEWER SHALL BE INSTALLED USING A LASER FOR GRADE AND ALIGNMENT.

H. ALL LOTS SHALL HAVE DIRECT ACCESS TO THE STORM SEWER FOR DOWN SPOUTS AND SUMP PUMPS.

UTILITY STAKING

A. OFFSET AND GRADE AT EACH MANHOLE, CATCH BASIN, AND OTHER STRUCTURES. OFFSET AND GRADE 50' AND 100' OUT FROM EACH MANHOLE UNLESS OTHERWISE APPROVED.

PIPE

A. ALL STORM SEWER PIPE SHALL HAVE A MINIMUM DIAMETER OF 12", UNLESS OTHERWISE APPROVED.

B. TYPES OF PIPE PERMITTED ARE STATED BELOW, UNLESS OTHERWISE APPROVED BY THE VILLAGE:

UP TO 48" DIAMETER

ODOT MATERIALS NUMBER

REINFORCED CONCRETE PIPE	706.02
REINFORCED CONCRETE ELLIPTICAL PIPE	706.04
CORRUGATED POLYETHYLENE SMOOTH-LINED PIPE	707.33
POLYVINYL CHLORIDE PLASTIC PIPE (NON-PERFORATED)	707.41
POLYVINYL CHLORIDE CORRUGATED SMOOTH-INTERIOR PIPE	707.42
POLYVINYL CHLORIDE PROFILE WALL PIPE	707.43
POLYVINYL CHLORIDE SOLID WALL PIPE	707.45

OVER 48" DIAMETER

ODOT MATERIALS NUMBER

REINFORCED CONCRETE PIPE	706.02
REINFORCED CONCRETE ELLIPTICAL PIPE	706.04

EXISTING TILE HOOKUPS

A. THE DRAINAGE TILE CURRENTLY CONNECTED TO THE EXISTING STORM SEWER SHALL BE CONNECTED TO THE PROPOSED STORM SEWER. ANY DRAINAGE TILE DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO A CONDITION EQUAL TO OR BETTER THAN ITS ORIGINAL CONDITION. ALL THE REMOVED, REPLACED, AND/OR CONNECTED TO THE STORM SEWER SHALL BE NOTED ON THE AS-BUILT DRAWINGS AND SHALL BE INSPECTED BY THE INSPECTOR BEFORE THEY ARE COVERED.

B. ALL FIELD OR STORM DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS OR PLUGGED AS APPROVED AND DIRECTED BY THE VILLAGE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

MISCELLANEOUS STORM NOTES

REVISIONS:
11-21-07

DATE
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NOTES

A. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED FOR ALL CONSTRUCTION PROJECTS HAVING SIGNIFICANT GRADING. THE CONTROLS ARE PROVIDED DURING CONSTRUCTION TO PREVENT SOIL ERODED FROM THE CONSTRUCTION AREA FROM ENTERING ADJACENT WATERWAYS AND PROPERTIES.

B. CONSTRUCTION ITEMS INCLUDE SEDIMENT BASINS, SEDIMENT DAMS, DIVERSION DIKES AND/OR DITCHES AND FILTER SILT FENCE BARRIER DIKES SHOWN ON ODOT STANDARD DRAWING DM-4.2, 4.3, 4.4, AND 5.1. OTHER MISCELLANEOUS EROSION CONTROL MEASURES INCLUDE REPAIR SEEDING AND MULCHING, COMMERCIAL FERTILIZER, WATER AND MOWING AND ROCK CHANNEL PROTECTION, COVERED IN ODOT SPECIFICATION ITEMS 659 AND 601.

C. THE SIZE OF THE ENTIRE DRAINAGE AREA CONTRIBUTING FLOW IS USED TO DETERMINE THE MOST EFFECTIVE EROSION CONTROL METHOD. IN MANY CASES, THE MAJOR PORTION OF THE CONTRIBUTING AREA WILL BE BEYOND THE PROJECT LIMITS, AND FOR THOSE CASES IT WILL BE NECESSARY TO CONTROL THE FLOW FROM OUTSIDE BEFORE IT REACHES THE AREA DISTURBED BY PROJECT CONSTRUCTION. FLOW FROM THE AREA DISTURBED BY CONSTRUCTION SHALL BE TREATED PRIOR TO COMBINING IT WITH OFF-PAVEMENT DRAINAGE.

D. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED FOR ALL SUBDIVISIONS AND INDIVIDUAL SITES UNLESS OTHERWISE APPROVED. THE CONTROL MEASURES ARE TO BE PROVIDED DURING CONSTRUCTION TO PREVENT EROSION FROM ENTERING ADJACENT WATERWAYS AND PROPERTIES.

E. THERE SHALL BE ONLY ONE CONSTRUCTION ENTRANCE OFF THE SITE, ENTRANCE TO BE CONSTRUCTED OF 8" OF #2 STONE, 75' LONG BY 20' WIDE. CONTRACTOR TO KEEP MUD OFF EXISTING STREETS, NO EQUIPMENT TO BE PARKED ON EXISTING STREETS. MORE THAN ONE ENTRANCE MUST BE APPROVED BY THE VILLAGE.

CONSTRUCTION

A. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSPECTED AND APPROVED BY THE VILLAGE UNLESS OTHERWISE APPROVED.

STORM WATER PERMITS

A. ON ALL PROJECTS WHICH DISTURB AT LEAST 1 ACRE OF SOIL, A NPDES PERMIT IS REQUIRED FROM OEPA AND A COPY OF THE PERMIT MUST BE ON FILE AT THE VILLAGE BEFORE CONSTRUCTION BEGINS.

B. EROSION CONTROL SUBMITTALS SHALL BE AS PER THE CURRENT STORM WATER MANAGEMENT ORDINANCE.

CONTROL MEASURES

A. DISTURB ONLY THE AREAS NEEDED FOR CONSTRUCTION.

B. REMOVE ONLY THOSE TREES, SHRUBS, AND GRASSES THAT MUST BE REMOVED FOR CONSTRUCTION; PROTECT THE REST TO PRESERVE THEIR ESTHETIC AND EROSION-CONTROL VALUES.

C. INSTALL SEDIMENT BASINS AND DIVERSION DIKES BEFORE DISTURBING THE LAND THAT DRAINS INTO THEM.

D. INSTALL EROSION AND SEDIMENT CONTROL PRACTICES AS INDICATED IN THE PLAN. THE PRACTICES ARE TO BE MAINTAINED IN EFFECTIVE WORKING CONDITION DURING CONSTRUCTION AND UNTIL THE DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED.

E. TEMPORARILY STABILIZE EACH SEGMENT, GRADED OR OTHERWISE DISTURBED LAND, INCLUDING THE SEDIMENT-CONTROL DEVICES NOT OTHERWISE STABILIZED, BY SEEDING AND MULCHING OR BY MULCHING ALONE. AS CONSTRUCTION IS COMPLETED, PERMANENTLY STABILIZE EACH SEGMENT WITH PERENNIAL VEGETATION AND STRUCTURAL MEASURES.

F. LEVEL DIVERSION DIKES, SEDIMENT BASINS, AND SILT TRAPS AFTER AREAS THAT DRAIN INTO THEM ARE STABILIZED. ESTABLISH PERMANENT VEGETATION ON THESE AREAS. SEDIMENT BASINS THAT ARE TO BE RETAINED FOR STORM WATER DETENTION MAY BE SEEDED TO PERMANENT VEGETATION AFTER THEY ARE BUILT.

G. DISCHARGE WATER FROM OUTLET STRUCTURES AT NON-EROSIVE VELOCITIES.

VILLAGE OF
VERSAILLES

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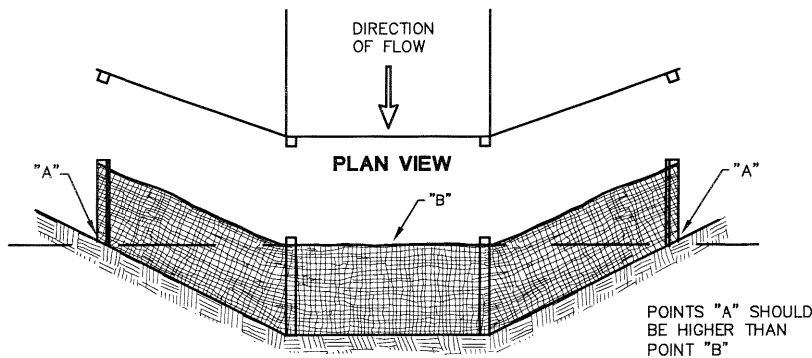
EROSION CONTROL NOTES

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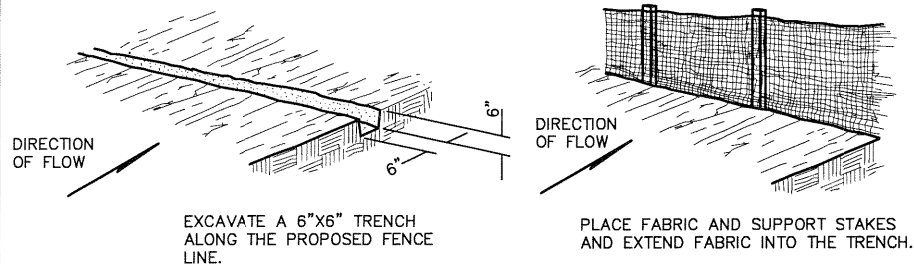
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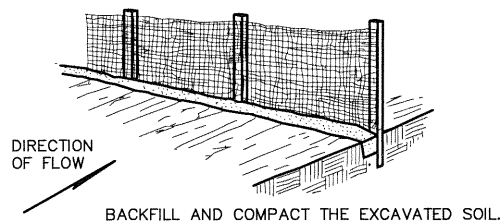


PLACEMENT AND CONSTRUCTION OF DITCH CHECK FILTER FABRIC FENCE



STEP 1

STEP 2



STEP 3

PLACEMENT AND CONSTRUCTION OF PERIMETER FILTER FABRIC FENCE CONSTRUCTION OF A FILTER BARRIER (SILT FENCE)

A. SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE LAND DISTURBANCE BEGINS.

B. ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE SO THAT WATER WILL NOT CONCENTRATE AT LOW POINTS IN THE FENCE AND SO THAT SMALL SWALES OR DEPRESSIONS WHICH MAY CARRY SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISSIPATED ALONG ITS LENGTH.

C. TO PREVENT WATER PONDED BY THE SILT FENCE FROM FLOWING AROUND THE ENDS, EACH END SHALL BE CONSTRUCTED UPSLOPE SO THAT THE ENDS ARE AT A HIGHER ELEVATION.

D. WHERE POSSIBLE, SILT FENCE SHALL BE PLACED ON THE FLATTEST AREA AVAILABLE.

E. WHERE POSSIBLE, VEGETATION SHALL BE PRESERVED FOR 5' (OR AS MUCH AS POSSIBLE) UPSLOPE FROM THE SILT FENCE. IF VEGETATION IS REMOVED, IT SHALL BE REESTABLISHED WITHIN 7 DAYS FROM THE INSTALLATION OF THE SILT FENCE.

F. THE HEIGHT OF THE SILT FENCE SHALL BE A MINIMUM OF 16" ABOVE THE ORIGINAL GROUND SURFACE.

G. THE SILT FENCE SHALL BE PLACED IN A TRENCH CUT A MINIMUM OF 6" DEEP. THE TRENCH SHALL BE CUT WITH A TRENCHER, CABLE LAYING MACHINE, OR OTHER SUITABLE DEVICE WHICH WILL ENSURE AN ADEQUATELY UNIFORM TRENCH DEPTH.

H. THE SILT FENCE SHALL BE PLACED WITH THE STAKES ON THE DOWNSLOPE SIDE OF THE GEOTEXTILE AND SO THAT 8" OF CLOTH IS BELOW THE GROUND SURFACE. EXCESS MATERIAL SHALL LAY ON THE BOTTOM OF THE 6" DEEP TRENCH. THE TRENCH SHALL BE BACKFILLED AND COMPACTED.

I. SEAMS BETWEEN SECTIONS OF SILT FENCE SHALL BE OVERLAPPED WITH THE END STAKES OF EACH SECTION WRAPPED TOGETHER BEFORE DRIVING INTO THE GROUND.

J. MAINTENANCE – SILT FENCE SHALL ALLOW RUNOFF TO PASS ONLY AS DIFFUSE FLOW THROUGH THE GEOTEXTILE. ALL THE GAPS AND TEARS IN THE FENCE MUST BE ELIMINATED AND REPAIRED. IF RUNOFF OVERTOPS THE SILT FENCE, FLOWS UNDER OR AROUND THE ENDS, OR IN ANY OTHER WAY BECOMES A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE: 1) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED, 2) ACCUMULATED SEDIMENT SHALL BE REMOVED, OR 3) OTHER PRACTICES SHALL BE INSTALLED.

CRITERIA FOR SILT FENCE MATERIAL

A. FENCE POSTS – THE LENGTH SHALL BE A MINIMUM OF 32" LONG. WOOD POSTS WILL BE 2"-BY-2" HARDWOOD OF SOUND QUALITY. THE MAXIMUM SPACING BETWEEN POSTS SHALL BE 10'.

B. SILT FENCE FABRIC SHALL BE ODOT TYPE C GEOTEXTILE FABRIC OR AS DESCRIBED BY THE CHART BELOW:

FABRIC PROPERTIES	
MINIMUM TENSILE STRENGTH	120 LBS.
MAXIMUM ELONGATION AT 60 LBS	50%
MINIMUM PUNCTURE STRENGTH	50 LBS.
MINIMUM TEAR STRENGTH	40 LBS.
MINIMUM BURST STRENGTH	200 PSI
APPARENT OPENING SIZE	≤ 0.84mm
MINIMUM PERMITTIVITY	1X10 ⁻² sec. ⁻¹
ULTRAVIOLET EXPOSURE STRENGTH RETENTION	70%

VILLAGE OF
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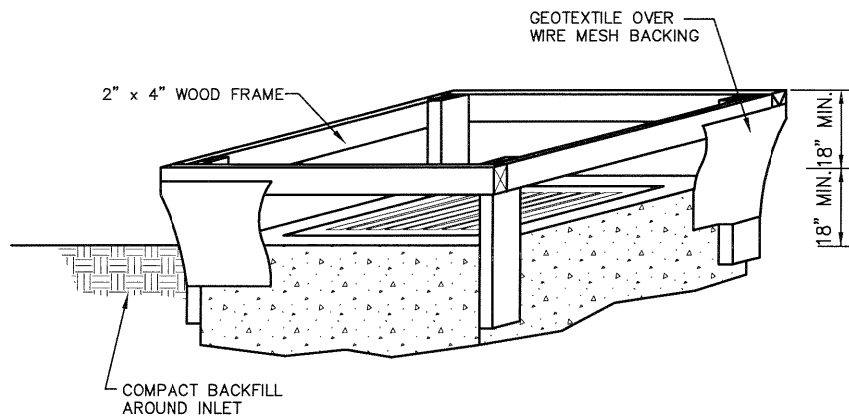
TEMPORARY EROSION CONTROL

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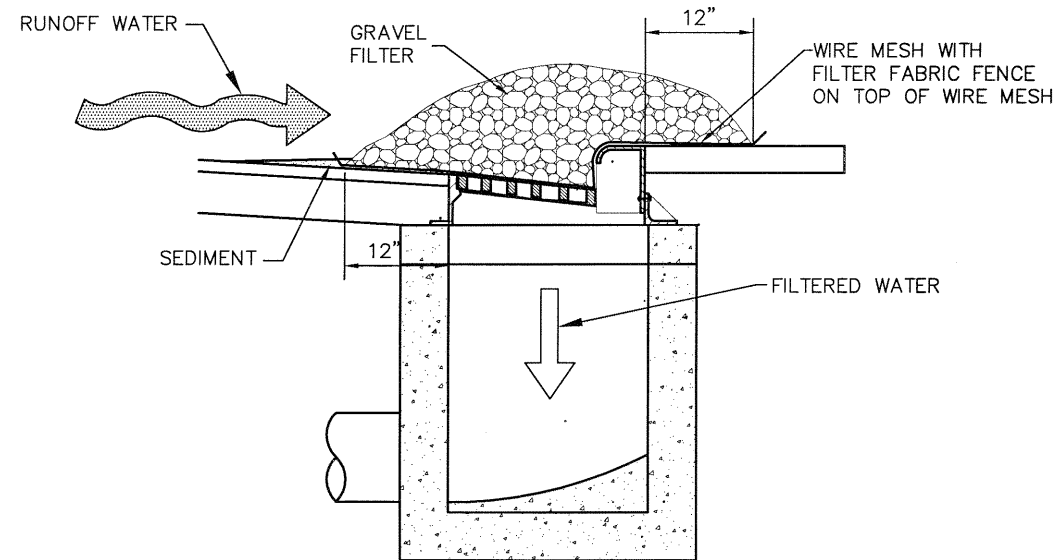
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INLET PROTECTION IN SWALES, DITCH LINES OR YARD INLETS

- A.** INLET PROTECTION SHALL BE CONSTRUCTED EITHER BEFORE UPSLOPE LAND DISTURBANCE BEGINS OR BEFORE THE STORM DRAIN BECOMES OPERATIONAL.
- B.** THE EARTH AROUND THE INLET SHALL BE EXCAVATED COMPLETELY TO A DEPTH A LEAST 18".
- C.** THE WOODEN FRAME SHALL BE CONSTRUCTED OF 2" BY 4" CONSTRUCTION GRADE LUMBER. THE 2" BY 4" POST SHALL BE DRIVEN 1' INTO THE GROUND AT FOUR CORNERS OF THE INLET AND AND THE TOP PORTION OF 2" BY 4" FRAME ASSEMBLED USING THE OVERLAP JOINT SHOWN. THE TOP OF THE FRAME SHALL BE AT LEAST 6" BELOW ADJACENT ROAD, IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC.
- D.** WIRE MESH SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT FABRIC WITH WATER FULLY IMPOUNDED AGAINST IT. IT SHALL BE STRETCHED TIGHTLY AROUND THE FRAME AND FASTENED SECURELY TO THE FRAME.
- E.** GEOTEXTILE SHALL HAVE AN EQUIVALENT OPENING SIZE OF 20-40 SIEVE AND BE RESISTANT TO SUNLIGHT. IT SHALL BE STRETCHED TIGHTLY AROUND THE FRAME AND FASTENED SECURELY. IT SHALL EXTEND FROM THE TOP OF THE FRAME TO 18" BELOW THE INLET NOTCH ELEVATION. THE GEOTEXTILE SHALL OVERLAY ACROSS ONE SIDE OF THE INLET SO THE ENDS OF THE CLOTH ARE NOT FASTENED TO THE SAME POST.
- F.** BACKFILL SHALL BE PLACED AROUND THE INLET IN COMPACTED 6" LAYERS UNTIL THE EARTH IS EVEN WITH NOTCH ELEVATION ON ENDS AND TOP ELEVATION ON SIDES.
- G.** A COMPACTED EARTH DIKE OR A CHECK DAM SHALL BE CONSTRUCTED IN THE DITCH LINE BELOW THE INLET IF THE INLET IS NOT IN A DEPRESSION, AND IF RUNOFF BY PASSING THE INLET WILL NOT FLOW TO A SETTING POND, THE TOP OF EARTH DIKES SHALL BE AT LEAST 6" HIGHER THAN THE TOP OF THE FRAME.



GRAVEL CURB INLET SEDIMENT FILTER (AS REQUIRED BY THE VILLAGE)

GRAVEL CURB INLET SEDIMENT FILTER NOTES

- A.** HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE PLACED OVER THE CURB INLET OPENING SO THAT AT LEAST 12 INCHES OF WIRE EXTENDS ACROSS THE INLET COVER AND AT LEAST 12 INCHES OF WIRE EXTENDS ACROSS THE CONCRETE GUTTER FROM THE INLET OPENING, AS ILLUSTRATED.
- B.** STONE SHALL BE PILED AGAINST THE WIRE SO AS TO ANCHOR IT AGAINST THE GUTTER AND INLET COVER AND TO COVER THE INLET OPENING COMPLETELY. ODOT NO. 1 COARSE AGGREGATE SHALL BE USED.
- C.** IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER PERFORMS ITS FUNCTION, THE STONE MUST BE PULLED AWAY FROM THE CATCH BASIN, CLEANED AND REPLACED.

VILLAGE OF
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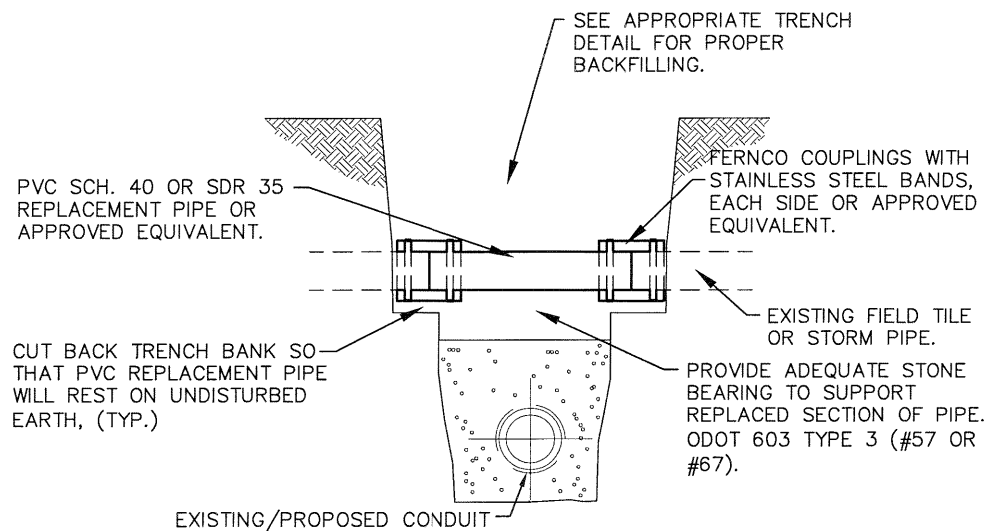
TEMPORARY EROSION CONTROL

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REPAIR OF EXISTING FIELD TILE OR STORM PIPE DETAIL

NOTES

CONCRETE REPAIRS OR PATCHES ARE UNACCEPTABLE.

VILLAGE OF
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REPAIR OF EXISTING FIELD TILE OR STORM PIPE DETAIL

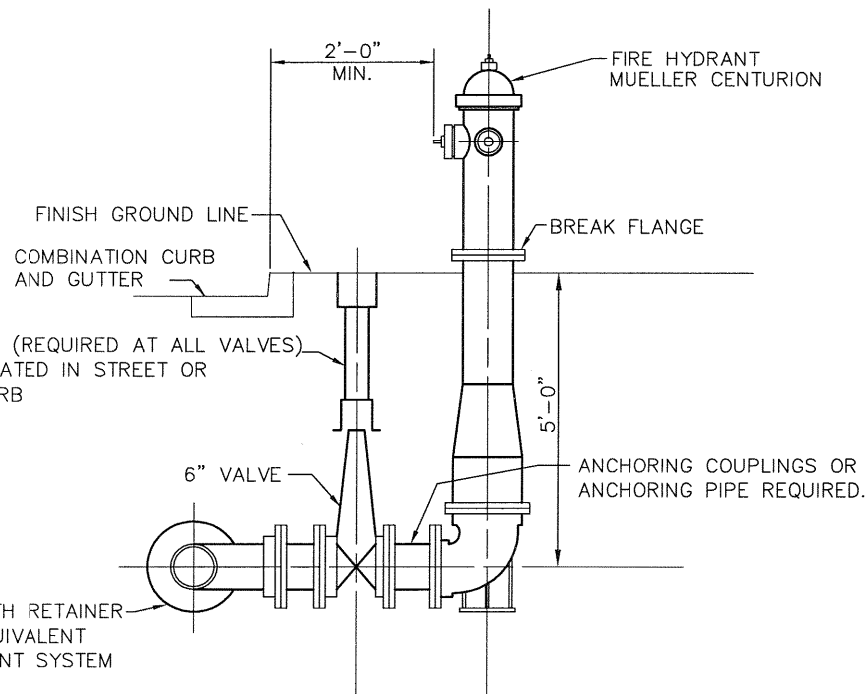
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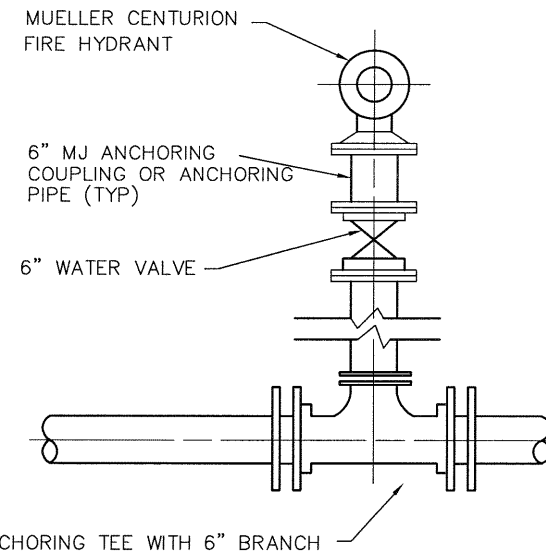
800 - WATER DISTRIBUTION



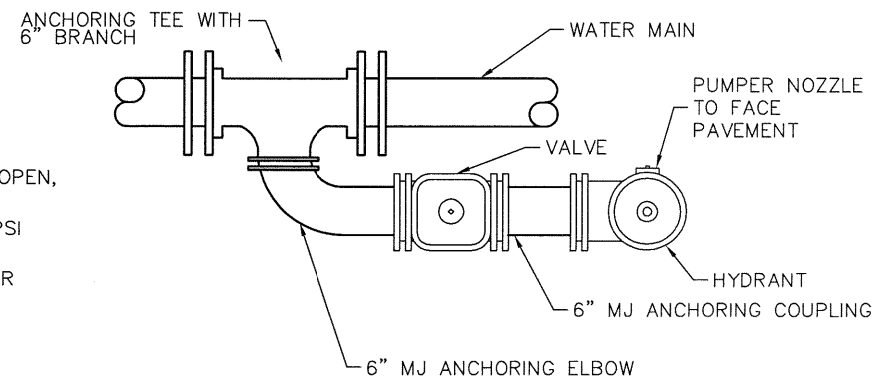
SECTION VIEW

NOTES

- A. FIRE HYDRANTS SHALL BE MUELLER CENTURION, A-423, MECHANICAL JOINT, WITH (2) 2-1/2" HOSE NOZZLES, (1) 5 1/4" PUMPER NOZZLE, NATIONAL STANDARDS THREADS CONFORMING TO AWWA CCW TO OPEN, BREAK FLANGES 3" ABOVE GRADE.
- B. GATE VALVES SHALL BE AWWA C-509, RESILIENT WEDGE, NONRISING STEM, MECHANICAL JOINT, 150 PSI WORKING PRESSURE, CCW TO OPEN WITH ARROW INDICATING OPEN DIRECTION, MUELLER OR EQUIVALENT.
- C. VALVE BOXES SHALL BE 3-PIECE CAST IRON 6" DIAMETER NOMINAL, ADJUSTABLE SCREW TYPE, COVER MARKED "WATER", DOMESTIC MADE ONLY.
- D. ALL FITTINGS TO BE RESTRAINED.
- E. ALL FITTINGS TO BE AWWA C-153 DUCTILE IRON, COMPACT.
- F. ALL VALVES AND HYDRANTS SHALL OPEN LEFT BY TURNING IN A COUNTERCLOCKWISE DIRECTION.
- G. CONTRACTOR TO FACE HYDRANT AS REQUIRED BY THE VILLAGE.
- H. WATER MAIN SHALL BE AWWA C151 DUCTILE IRON PIPE CLASS 350 OR C909 DR 18 CL 150, WITH SLIP-ON JOINTS WITH RUBBER GASKETS AND MEGALUG RESTRAINS OR EQUIVALENT.
- I. THE LAYING OF PIPE ON EXISTING DIRT WITH THE BELLS CUT OUT, SHALL NOT BE PERMITTED.
- J. THE OPEN ENDS OF ALL PIPES AND SPECIAL CASTINGS SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.



BASIC TEE DETAIL PLAN



**SPECIAL MECHANICAL JOINT
HYDRANT TEE DETAIL PLAN**

VILLAGE OF
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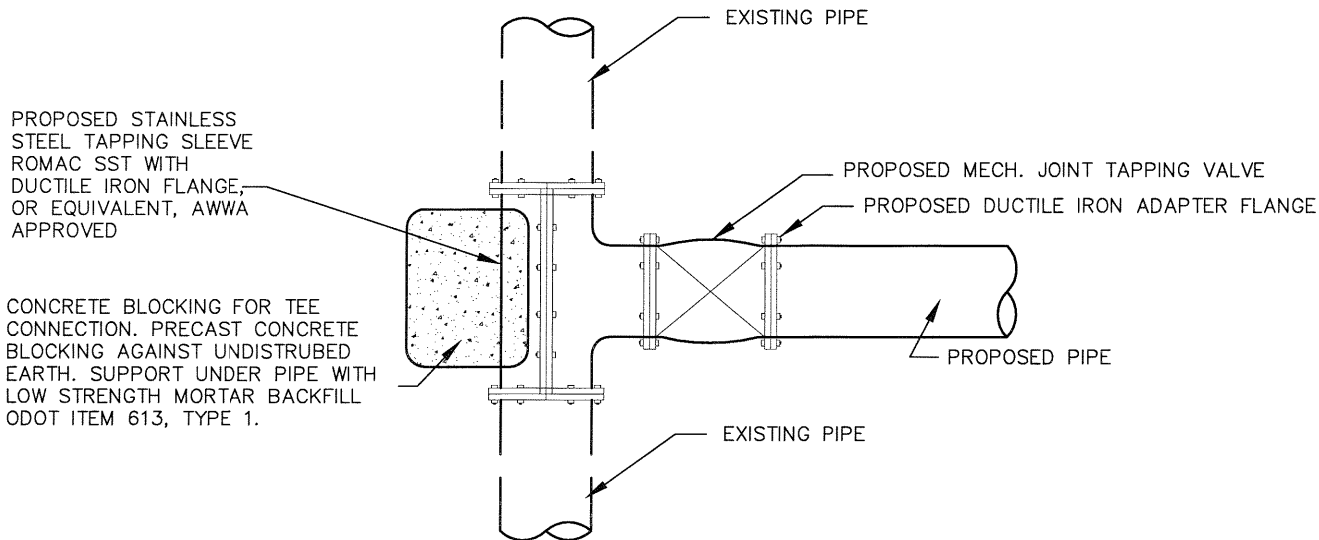
FIRE HYDRANT

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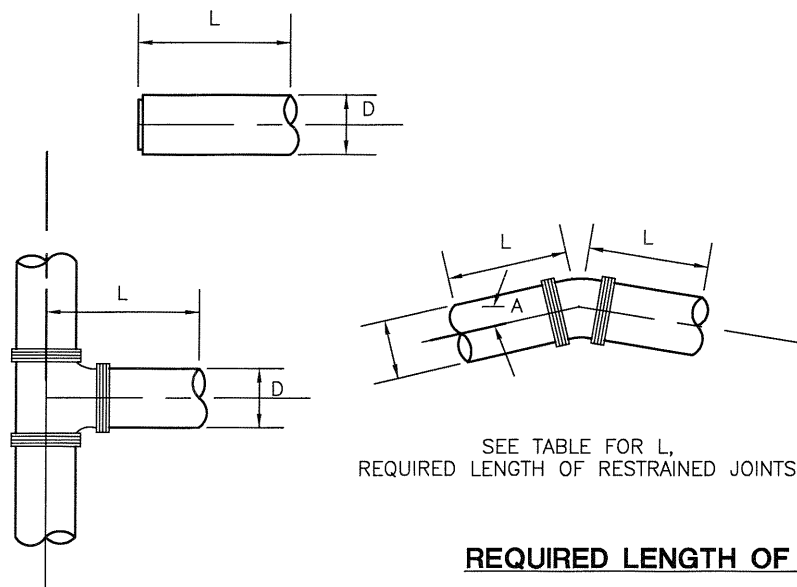
TAPPING SLEEVE AND VALVE DETAIL

NOTES

A. BELL JOINT RESTRAINTS – FOR PVC, USE EBAA IRON SERIES 1500 OR EQUIVALENT. FOR DIP, USE FIELD LOCK BY U.S. PIPE OR APPROVED EQUIVALENT.

B. MECHANICAL JOINT RESTRAINTS – EBAA IRON MEGALUG RETAINER GLAND OR EQUIVALENT.

C. CONTRACTOR TO USE RESTRAINED JOINTS UNLESS THRUST BLOCKING IS PREAPPROVED FOR SPECIAL CONDITIONS BY THE VILLAGE PRIOR TO THE BEGINNING OF CONSTRUCTION.



REQUIRED LENGTH OF RESTRAINED JOINTS IN FEET									
D-DIAMETER OF PIPE									
A ~ DEGREE OF DEFLECTION		4"	6"	8"	10"	12"	16"	20"	24"
	11 1/4'	*	*	*	*	*	5	5	6
	22 1/2'	*	2	3	5	6	8	10	12
	45°	4	8	12	14	20	30	36	45
	90°	12	26	38	48	66	98	125	145
	TEE	12	26	38	48	66	98	125	145
	END	12	26	38	48	66	98	125	145

*REQUIRED RESTRAINED JOINT AT FITTING AND ONE BELL JOINT FROM FITTING MINIMUM.

REQUIRED LENGTH OF RESTRAINED JOINTS FOR WATER MAINS

DESIGN PARAMETERS

LAYING CONDITIONS – TYPE 5
SOIL DESIGNATION – SILT
DEPTH OF COVER – 4'
DESIGN PRESSURE – 80 PSI
SAFETY FACTOR – 1.50
POLYWRAPPED PIPE
IF WORST CONDITIONS EXIST,
ADDITIONAL RESTRAINTS WILL BE
NECESSARY.

VILLAGE OF
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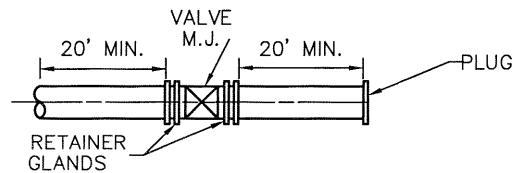
**RESTRAINING JOINTS AND
TAPPING SLEEVE FOR WATER MAINS**

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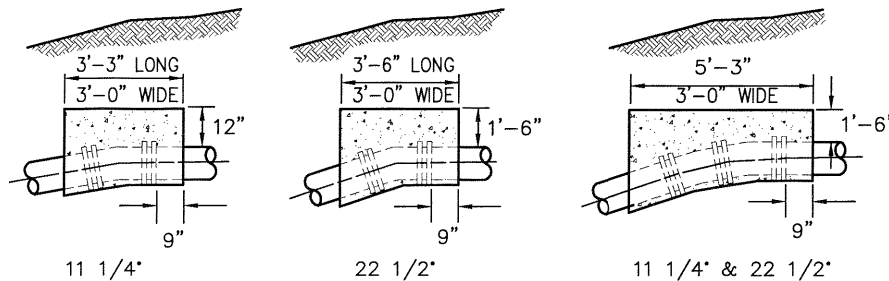
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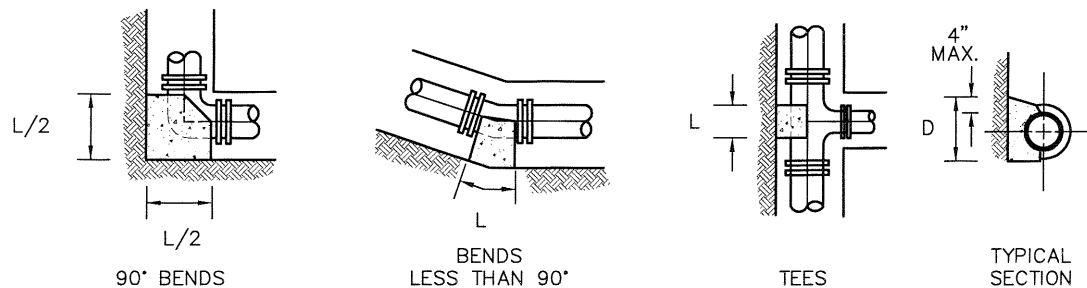
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DETAIL - END OF WATER LINE



CONCRETE BLOCKING FOR VERTICAL BENDS



CONCRETE BLOCKING FOR HORIZONTAL BENDS

BENDS								
SIZE OF OPENING	DEGREE OF BEND							
	11 1/4°		22 1/2°		45°		90°	
	L	D	L	D	L	D	L	D
3", 4", 6"	8"	6"	10"	6"	20"	6"	36"	6"
8"	9"	8"	14"	8"	24"	9"	50"	8"
12"	14"	12"	22"	12"	30"	16"	60"	15"
16"	18"	16"	24"	18"	33"	16"	70"	22"

TEES								
RUN	BRANCH							
	3", 4", 6"		22 1/2°		45°		90°	
	L	D	L	D	L	D	L	D
3", 4", 6"	16"	6"						
8"	14"	8"	18"	12"				
12"	9"	12"	18"	12"	24"	18"		
16"	8"	16"	14"	16"	28"	16"	30"	26"

NOTES

A. CARE SHALL BE TAKEN TO KEEP CONCRETE AWAY FROM MECHANICAL JOINTS BY PLACING VISQUEEN OR OTHER APPROVED MATERIAL OVER PIPE BEFORE PLACING OF CONCRETE.

B. CONCRETE FOR BLOCKING VALVES AND FITTINGS SHALL CONFORM TO SECTION ODOT 499 CLASS C.

C. CONTRACTOR SHALL USE THE THRUST BLOCKS AS SHOWN ONLY IF PREAPPROVED FOR SPECIAL CONDITION BY THE VILLAGE PRIOR TO BEGINNING CONSTRUCTION.

VILLAGE OF
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CONCRETE BLOCKING FOR WATER MAINS

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"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

MATERIAL SPECIFICATIONS

A. WATER MAIN SHALL BE AWWA C 151 DUCTILE IRON PIPE CLASS 350 OR C909 DR 18 CL 150, SLIP-ON JOINTS WITH RUBBER GASKETS. TRACER WIRE MUST BE INSTALLED ON ALL PIPE EXCEPT FOR DIP.

B. BELL JOINT RESTRAINTS – FOR PVC, USE EBAA IRON PIPE 1500 OR EQUIVALENT. FOR DIP, USE FIELD LOCK BY US PIPE OR APPROVED EQUIVALENT.

C. MECHANICAL JOINT RESTRAINTS – EBAA IRON MEGALUG RETAINER GLAND OR EQUIVALENT.

D. FIRE HYDRANTS – MUELLER CENTURION, A-423, MECHANICAL JOINT, WITH (2) 2 1/2" HOSE NOZZLES, (1) 5 1/4" PUMPER NOZZLE NATIONAL STANDARDS THREADS CONFORMING TO AWWA, CCW TO OPEN, BREAK FLANGES 3" ABOVE GRADE.

E. GATE VALVES – AWWA C-509, RESILIENT WEDGE, NON-RISING STEM, MECHANICAL JOINT, 150 PSI WORKING PRESSURE, CCW TO OPEN, WITH ARROW INDICATING OPEN DIRECTION.

F. VALVE BOXES – 3-PIECE CAST IRON 6" DIAMETER NOMINAL, ADJUSTABLE SCREW TYPE, COVER MARKED "WATER", DOMESTIC MADE ONLY.

G. SERVICE LINE – TYPE K COPPER TUBE OR SDR 9 200 psi CTS WITH COMPRESSION TYPE FITTINGS. TRACER WIRE MUST BE INSTALLED ON ALL PIPE EXCEPT FOR COPPER.

H. CURB STOP – BRASS CONFORMING TO AWWA C-800.

I. CURB BOXES – 2 1/2" SCREW TYPE, BUFFALO STYLE CAST IRON LID WITH PENTAGON HEAD PLUG EM2-45-67.

J. SERVICE CONNECTIONS WILL NOT BE MADE WITHOUT THE INSTALLATION OF A METER.

HYDROSTATIC TEST

A. AFTER THE PIPE HAS BEEN LAID AND BACKFILLED, ALL NEWLY LAID PIPE OR VALVED SECTION, SHALL BE SUBJECTED TO HYDROSTATIC PRESSURE AND LEAKAGE TEST. ALL WATER MAINS MUST BE HYDROSTATICALLY TESTED (AWWA C-600). THE TESTS MUST BE PERFORMED IN THE PRESENCE OF A REPRESENTATIVE OF THE VILLAGE OF VERSAILLES. THE LEAKAGE TEST PRESSURE SHALL BE NOT LESS THAN 150 PSI. THE DURATION OF THE LEAKAGE TEST SHALL NOT BE LESS THAN 2 HOURS. HYDROSTATIC PRESSURE SHALL BE APPLIED BY MEANS OF A PUMP TAKING WATER FROM AN AUXILIARY SUPPLY. ALL PIPING MUST BE PROPERLY FILLED AND FLUSHED TO DISPEL ALL AIR BEFORE THE TEST IS MADE USING POTABLE WATER.

B. LEAKAGE IS DEFINED AS THE QUANTITY OF WATER TO BE SUPPLIED INTO THE NEWLY LAID PIPE, OR ANY VALVED SECTION THEREOF, NECESSARY TO MAINTAIN THE SPECIFIED LEAKAGE TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR EXPELLED.

C. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE EXCEEDS THE LEAKAGE DETERMINED BY THE FOLLOWING FORMULA:

$$L = \frac{n}{7400} D \sqrt{P}$$

WHERE: n = NUMBER OF PIPE JOINTS

D = PIPE DIAMETER

P = TEST PRESSURE

L = ALLOWABLE LEAKAGE PER HOUR

THE FOLLOWING TABLE REPRESENTS THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR.

D. DURING THE HYDROSTATIC TEST, A THOROUGH EXAMINATION OF ALL PIPING, FITTINGS, VALVES, HYDRANTS, ETC. SHALL BE PERFORMED. LEAKING JOINTS SHALL BE TIGHTENED AND CRACKED OR OTHERWISE DEFECTIVE MATERIAL SHALL BE REMOVED AND REPLACED AND THE TEST SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.

AVG. TEST
PRESSURE
(PSI) BAR

ALLOWABLE LEAKAGE PER 1000 FT. (305M) OF PIPELINE (GPH+)											
NOMINAL PIPE DIAMETER- INCHES											
	3	4	6	8	10	12	14	16	18	20	24
450(31)	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82
400(28)	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60
350(24)	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37
300(21)	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12
275(19)	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99
250(17)	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85
225(16)	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70
200(14)	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55
175(12)	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38
150(10)	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21
120(9)	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01

DISINFECTION

A. AFTER SATISFACTORY HYDROSTATIC TESTING, THE COMPLETED WATER WORK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C-651.

B. MAINTAIN PIPES FREE OF DIRT AND FOREIGN MATTER DURING CONSTRUCTION BY DEWATERING TRENCH AND SEALING OPEN PIPE BARRELS. SWAB EACH LENGTH OF PIPE AS IT IS INSTALLED. UPON COMPLETION OF MAIN, ISOLATE MAIN SEGMENTS AND FLUSH PIPE AT 2 FPS VELOCITY.

C. STERILIZE MAIN IN ACCORDANCE WITH AWWA C-651. INJECT 3% TO 5% HYPOCHLORITE SOLUTION TO PROVIDE 50 TO 60 MG PER LITER CONCENTRATION IN MAIN. CHLORINE MAY BE PLACED IN EACH SECTION OF PIPE AT THE TIME OF INSTALLATION. SAMPLE WATER AT EACH HYDRANT OR IF NO HYDRANT IS AVAILABLE, AT A TAP IN THE PROPOSED LINE. ANALYZE SAMPLE USING D.P.D. REAGENT TO VERIFY FREE CHLORINE CONCENTRATION. MAINTAIN CONCENTRATION IN MAIN FOR 24 HOURS. SAMPLE HYDRANTS AT COMPLETION OF STERILIZATION VERIFYING MINIMUM CHLORINE RESIDUAL OF 20 MG PER LITER.

D. FLUSH CHLORINE SOLUTION TO WASTE INTO SANITARY SEWER AT A CONTROLLED RATE, NOT TO EXCEED 25 GPM. IF CHLORINE RESIDUAL DROPS IN 10 MG PER LITER, FLUSH MAIN AT 2 FPS AND REPEAT STERILIZATION PROCEDURE.

E. WATER SAMPLES – PERFORM BACTERIOLOGICAL TEST PER AWWA C-651. SAMPLE MAIN AT A TAP IN THE PROPOSED LINE. DELIVER SAMPLE TO STATE CERTIFIED LABORATORY. DELIVER COPIES OF LABORATORY REPORT TO THE VILLAGE IN THE EVENT OF DETECTION OF COLIFORM ORGANISM, REPEAT FLUSHINGS, STERILIZATION, AND SAMPLING OF MAINS UNTIL 2 CONSECUTIVE ACCEPTABLE TEST RESULTS ARE ACHIEVED. THIS IS TO BE PERFORMED PRIOR TO TRANSFER OF SERVICE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

WATER MAIN MATERIAL AND TESTING

REVISIONS:
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06-27-08

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NOTES

- A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.
- B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR THE DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.
- C. THE MINIMUM LENGTH OF PIPE NIPPLES SHALL BE 18".
- D. ALL CUSTOMERS SHALL MEET BACKFLOW PREVENTION REQUIREMENTS AS PER STATE OF OHIO AND EPA REGULATIONS.
- E. ALL WATERLINE CONSTRUCTION SHALL FOLLOW THE VILLAGE STANDARDS, OHIO DEPARTMENT OF TRANSPORTATION ITEM 638, AND AWWA STANDARDS WHICHEVER IS MORE RESTRICTIVE AS DETERMINE BY THE VILLAGE.

PIPE

- A. ALL PIPE FITTINGS SHALL BE DUCTILE IRON.

B.	WATER MAIN MINIMUM SIZE UNLESS OTHERWISE APPROVED	
	SINGLE AND TWO FAMILY	
	MULTI-FAMILY	8"
	COMMERCIAL	10"
	INDUSTRIAL	12"
IF THE WATER MAIN IS NOT LOOPED OR THE WATER MAIN LENGTH IN THE TOTAL DEVELOPMENT IS GREATER THAN 600', THE MINIMUM WATER MAIN SIZE SHALL BE 8".		

- C. DEADENDS NOT PERMITTED IF AT ALL POSSIBLE.

EXCAVATION AND PIPE LAYING

- A. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT AND AT OTHER TIMES OF INTERRUPTION OF THE WORK.

FITTINGS, VALVES AND HYDRANTS

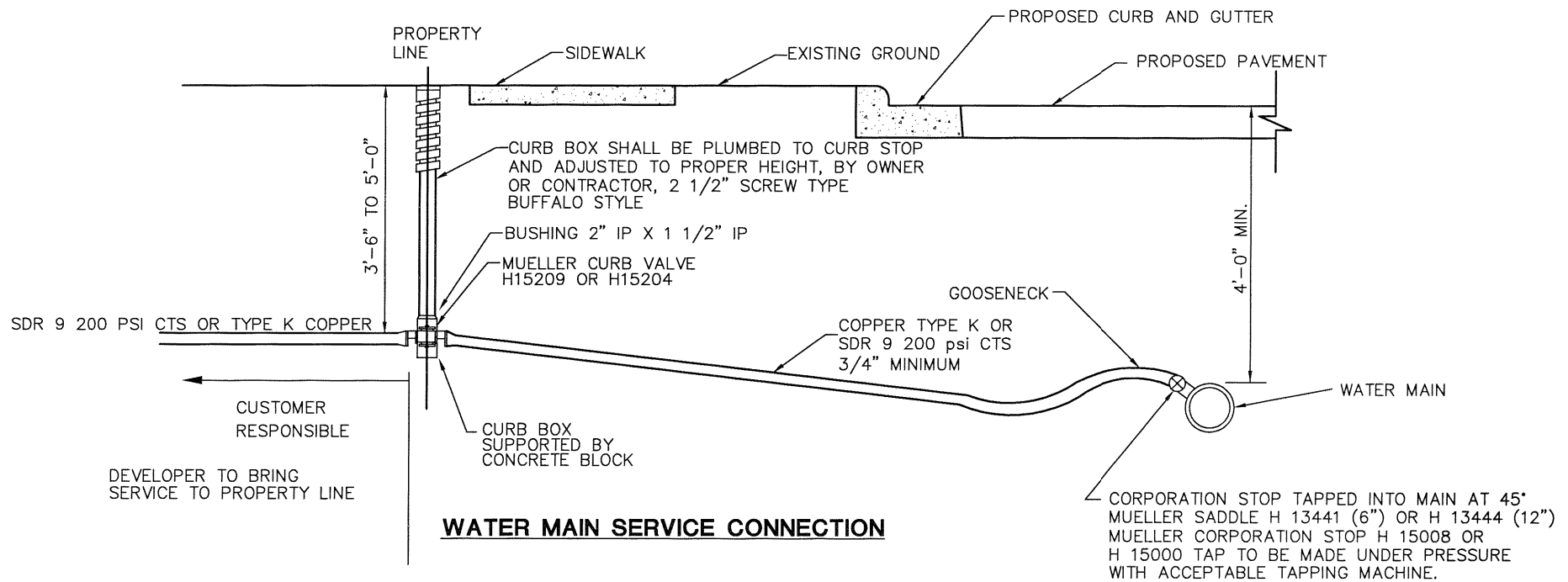
- A. FITTINGS OR SPECIALS IN SIZES 2" THROUGH 48" SHALL CONFORM TO ALL REQUIREMENTS OF ANSI A-21.10 (AWWA C-153). FITTINGS AND SPECIALS 12" AND SMALLER SHALL BE CLASS 250. LARGER FITTINGS AND SPECIALS SHALL BE CLASS 150. FITTINGS AND SPECIALS SHALL HAVE MECHANICAL JOINTS AND SHALL BE DUCTILE IRON.

B.	MAXIMUM SPACING UNLESS OTHERWISE APPROVED			
			HYDRANTS	VALVES
	SINGLE & TWO FAMILY RESIDENTIAL		500'	800'
	INDUSTRIAL, COMMERCIAL & MULTI-FAMILY		300'	500'

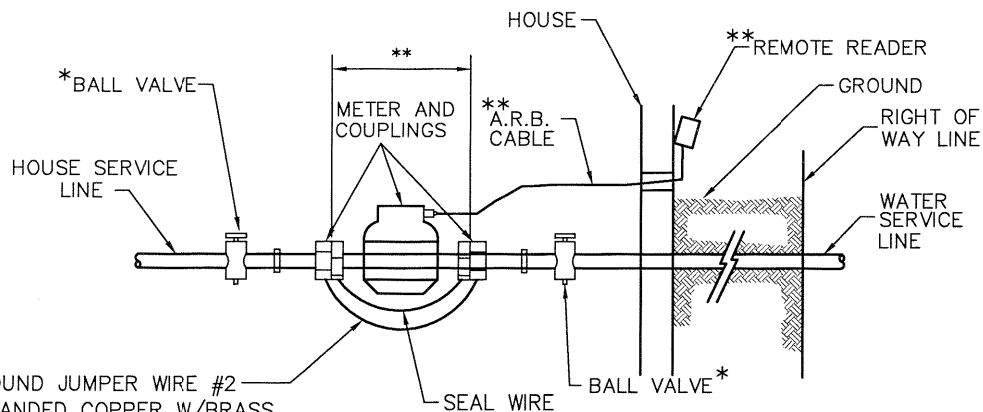
- C. ALL TEE'S AND CROSSES SHALL BE VALVED IN EACH DIRECTION UNLESS OTHERWISE APPROVED.

UTILITY STAKING

- A. OFFSETS EVERY 25' ON CURVES. OFFSETS EVERY 100' ON STRAIGHT SECTIONS. FLOW LINE OF WATER MAIN (CUT) MARKED EVERY 100' AND OFFSETS SHALL BE CLEARLY MARKED.



WATER MAIN SERVICE CONNECTION



GROUND JUMPER WIRE #2
STRANDED COPPER W/BRASS
GROUNDING CLAMP. REQUIRED
FOR ALL WATER SERVICES
EXCEPT PLASTIC UNLESS
GROUND IS ON VILLAGE SIDE
OF METER.

INSIDE WATER METER

*A GATE VALVE IS REQUIRED
ON EACH SIDE OF 3" AND
LARGER SERVICE LINES

**SUPPLIED BY VILLAGE

NOTES

- MINIMUM 3/4" WATER SERVICE SHALL BE COPPER TYPE K.
- WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".
- INSIDE METER SETTER PROVIDED WITH TAP FEE OR METER PIT PROVIDED WITH HIGHER TAP FEE. INSIDE SETTER CUSTOMER IS RESPONSIBLE FOR METER FREEZE UP. CUSTOMER INSTALLS METER AND REMOTE WIRE TO OUTSIDE.
- THE CURB BOX TO BE PLACED BETWEEN THE CURB AND PROPERTY LINE. METER PIT SHALL BE PLACED BEHIND PROPERTY LINE.
- CURB BOX MAY BE PLACED BETWEEN SIDEWALK AND PROPERTY LINE.
- TRACER WIRE MUST BE INSTALLED ON ALL PIPE EXCEPT FOR COPPER.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

WATER MAIN SERVICE CONNECTION

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NOTES

A. OUTSIDE METER PITS ARE DISCOURAGED, METER PIT INSTALLATION SHALL OCCUR ONLY WITH THE VILLAGE'S PERMISSION. THIS INSTALLATION SHALL NOT BE ALLOWED UNLESS IN THE JUDGMENT OF THE VILLAGE, THIS IS THE ONLY PRACTICAL METHOD TO SERVICE THE ACCOUNT.

B. CONCRETE METER PIT, OTHERS MUST BE APPROVED PRIOR TO INSTALLATION.

C. METER PIT AND CURB STOP TO BE LOCATED AS DIRECTED BY THE VILLAGE.

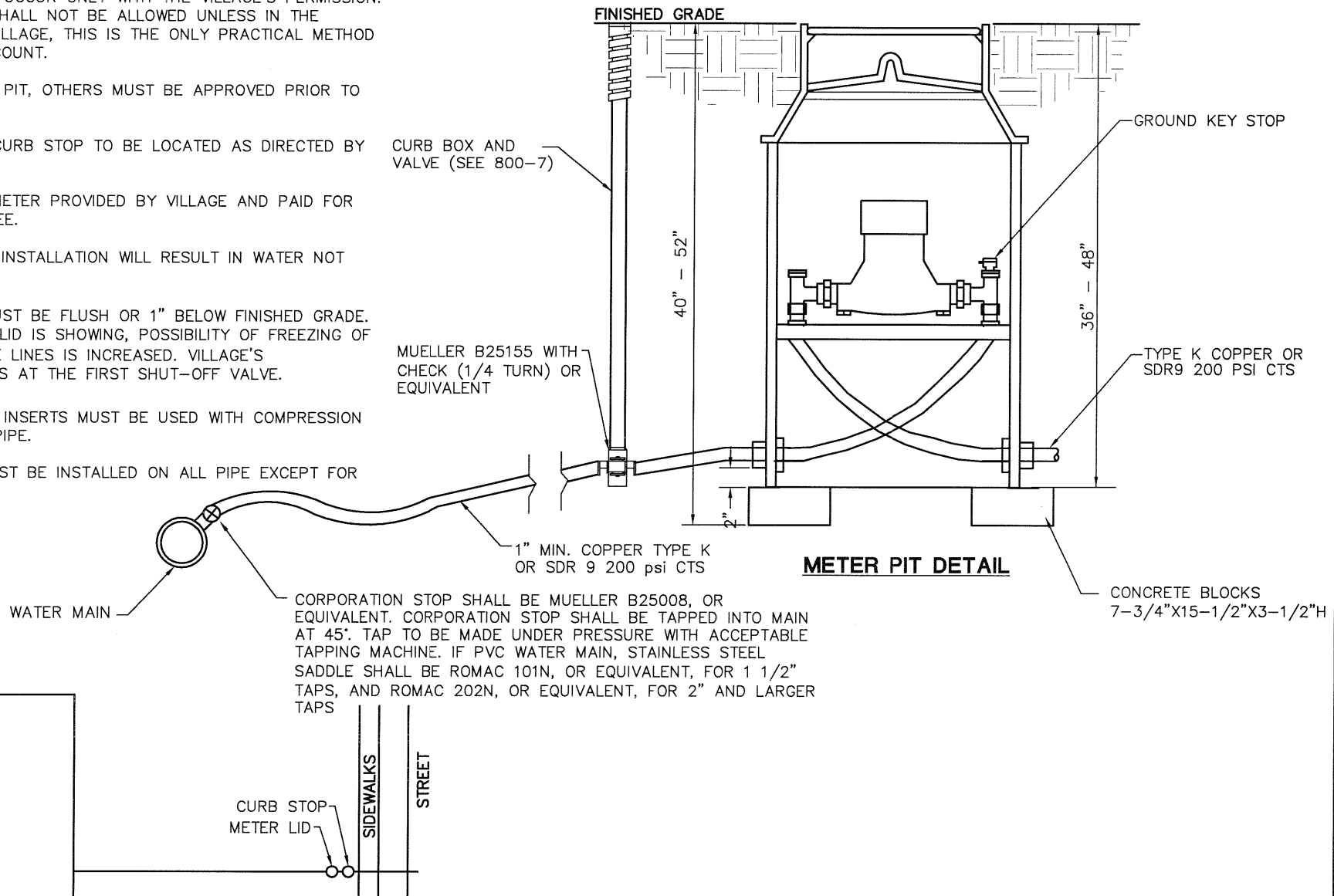
D. METER PIT AND METER PROVIDED BY VILLAGE AND PAID FOR THROUGH TAPPING FEE.

E. UNSATISFACTORY INSTALLATION WILL RESULT IN WATER NOT BEING TURNED ON.

F. METER PIT LID MUST BE FLUSH OR 1" BELOW FINISHED GRADE. IF FRAME OF METER LID IS SHOWING, POSSIBILITY OF FREEZING OF METERS AND SERVICE LINES IS INCREASED. VILLAGE'S RESPONSIBILITY STOPS AT THE FIRST SHUT-OFF VALVE.

G. STAINLESS STEEL INSERTS MUST BE USED WITH COMPRESSION FITTINGS ON SDR 9 PIPE.

H. TRACER WIRE MUST BE INSTALLED ON ALL PIPE EXCEPT FOR COPPER.



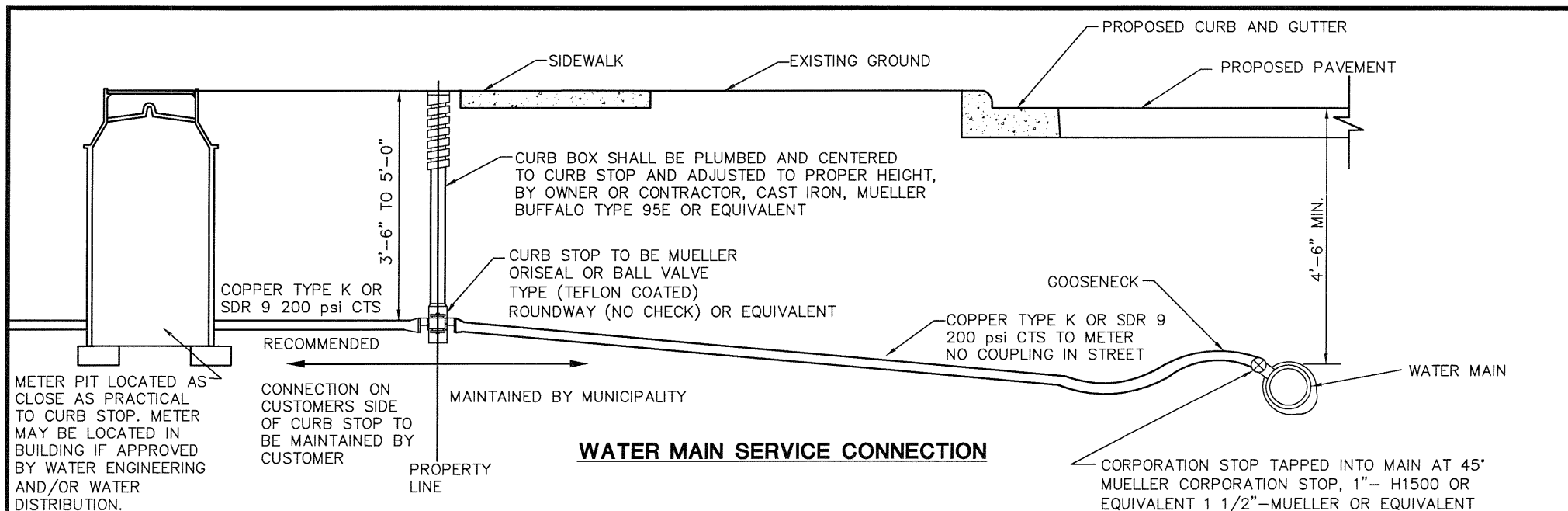
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

METER PIT INSTALLATION

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NOTES

A. WATER SERVICE SHALL BE SEAMLESS COPPER, TYPE K. 1" SERVICE (100' BETWEEN JOINTS), 1 1/2" SERVICE (60' BETWEEN JOINTS).

B. WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".

C. METER FURNISHED BY VILLAGE UNDER TAP FEE, METER PIT IS TO BE CUSTOMER RESPONSIBILITY..

D. CORPORATION STOP AND CURB STOP ARE TO BE MUELLER OR EQUIVALENT.

E. FLARED OR COMPRESSION FILLINGS.

G. STOP VALVE REQUIRED IMMEDIATELY AFTER SERVICE ENTERS BUILDING

H. PICKUP OF 3/4" SERVICE IS PERMITTED ONLY IF K-COPPER AND EXISTING STUB-IN WERE INSTALLED AS PART OF A MAIN EXTENSION

I. METER PIT TYPICALLY 3' FROM CURB STOP. MAY BE MOVED TO MEET FIELD CONDITIONS SUBJECT TO APPROVAL.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

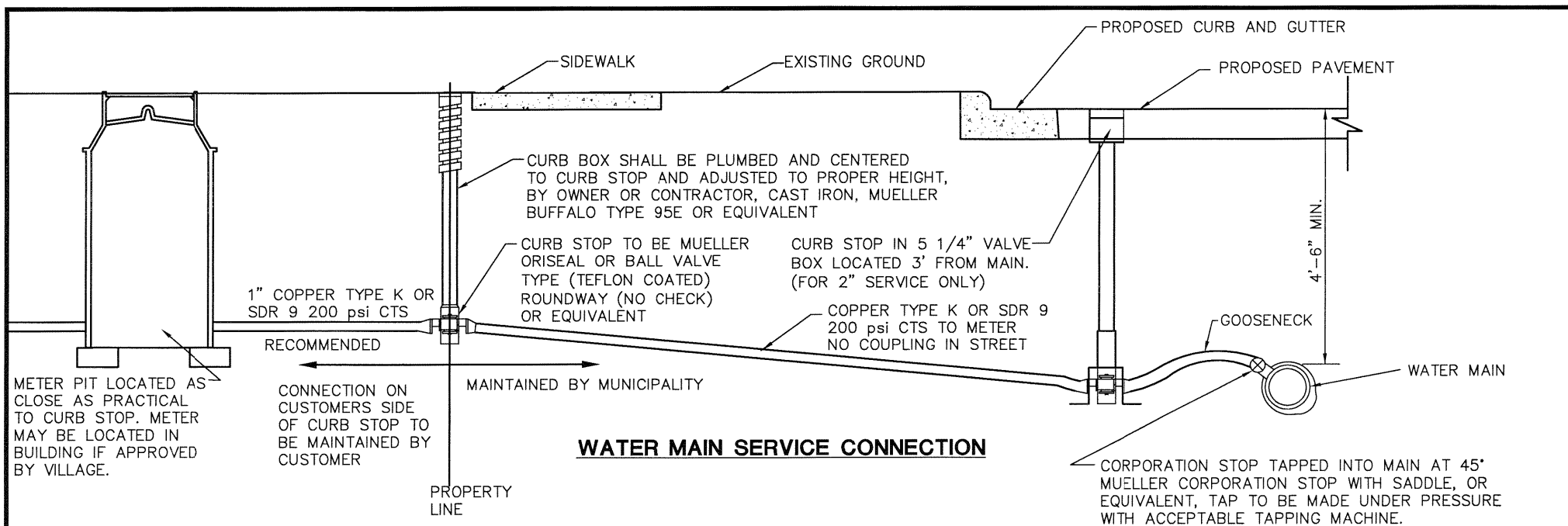
1"-1 1/2" WATER MAIN SERVICE CONNECTIONS FOR METERS UP TO 1"

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NOTES

- A. WATER SERVICE SHALL BE SEAMLESS COPPER, TYPE K [40' BETWEEN JOINTS]].
- B. WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".
- C. METER PIT AND METER FURNISHED BY MUNICIPALITY UNDER METER SET FEE.
- D. CORPORATION STOP AND CURB STOP ARE TO BE MUELLER OR EQUIVALENT.
- E. FLARED OR COMPRESSION FITTINGS.
- G. STOP VALVE REQUIRED IMMEDIATELY AFTER SERVICE ENTERS BUILDING
- H. 1" SERVICE SHALL BE INSTALLED WHERE BUILDINGS ARE MORE THAN 120' FROM WATERMAIN OR WHERE REQUIRED BY PLANS.

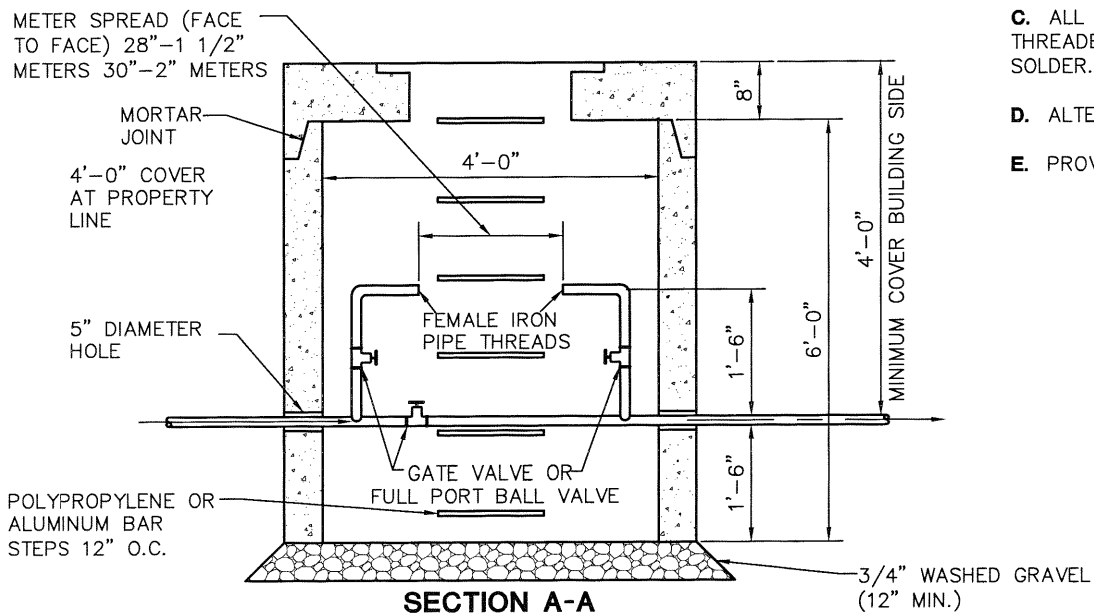
VILLAGE OF
VERSAILLES

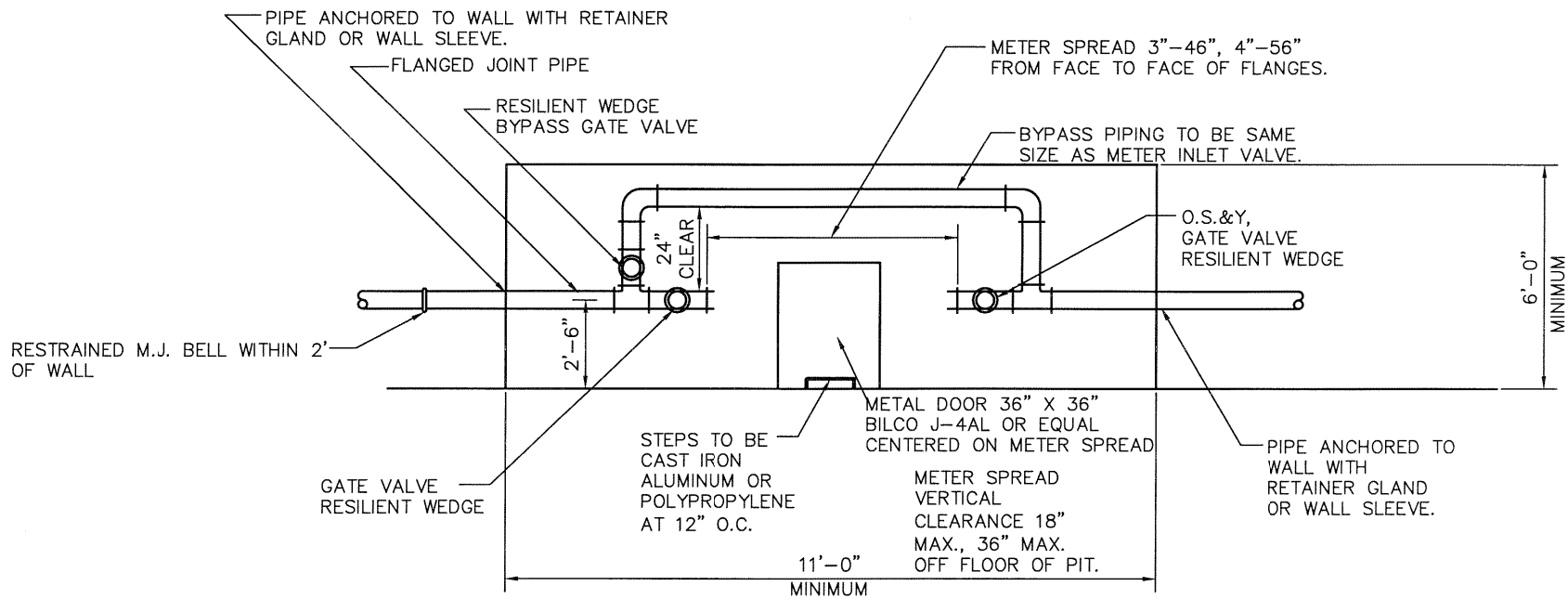
CHOICE
ONE
ENGINEERING

1 1/2"-2" WATER MAIN SERVICE CONNECTIONS FOR 1 1/2" OR 2" METERS

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NOTES.

- A. DIMENSIONS SHOWN ARE INSIDE MEASUREMENTS OF PIT.
- B. ALL PIPE SHALL BE CL53 DUCTILE WITH FLANGED ENDS.
(COPPER & BRASS MAY BE ACCEPTABLE. SUBMIT FOR APPROVAL)
- C. ALL VALVES SHALL BE FLANGED END, HANDWHEEL OPERATED, AND OS&Y GATE VALVES, RESILIENT WEDGE.
- D. PIT SHALL HAVE AN INSIDE HEIGHT OF 6' MINIMUM, FROM TOP OF GRAVEL.
- E. WALLS TO BE FORMED CONCRETE.
- F. PIT TO BE DESIGNED BY REGISTERED ENGINEER OR ARCHITECT AND APPROVED BY THE VILLAGE.
- G. 12" MINIMUM 3/4" WASHED GRAVEL IN BOTTOM OF PIT OR CONCRETE SLAB WITH SUMP HOLE.
- H. PIPING AND METER SHALL BE SUPPORTED
- I. ALTERNATE DESIGNS MAY BE SUBMITTED FOR APPROVAL. SUBMIT COMBINATION PIT INSTALLATIONS FOR APPROVAL CLEARANCES.

VILLAGE OF
VERSAILLES

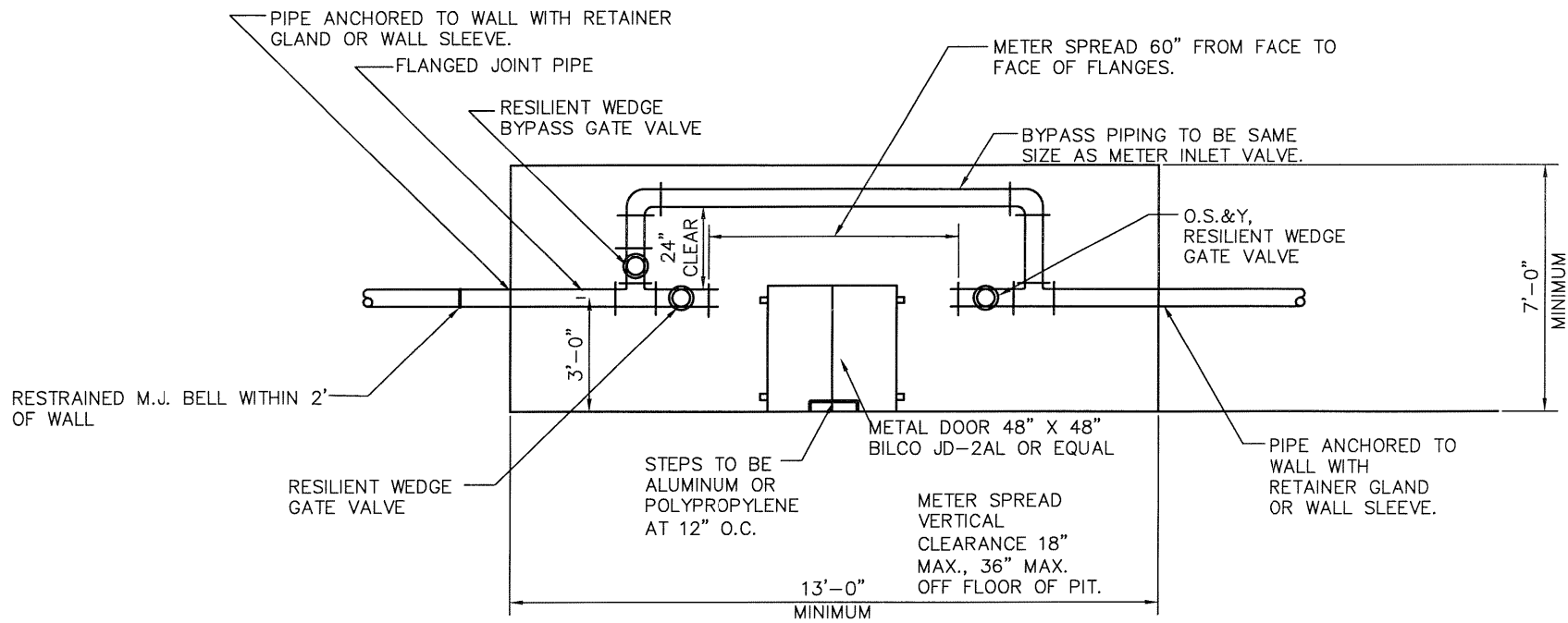
CHOICE
ONE
ENGINEERING

3" AND 4" WATER METER PIT INSTALLATIONS (FOR OFF ROAD USE ONLY)

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NOTES

- A. DIMENSIONS SHOWN ARE INSIDE MEASUREMENTS OF PIT.
- B. ALL PIPE SHALL BE CLASS 53 DUCTILE WITH FLANGED ENDS.
- C. ALL VALVES SHALL BE FLANGED END, HANDWHEEL OPERATED OS&Y GATE VALVES.
- D. PIT SHALL HAVE AN INSIDE HEIGHT OF 6' MINIMUM, FROM TOP OF GRAVEL.
- E. WALLS TO BE FORMED CONCRETE.
- F. PIT TO BE DESIGNED BY REGISTERED ENGINEER OR ARCHITECT AND APPROVED BY THE VILLAGE.
- G. 12" MINIMUM 3/4" WASHED GRAVEL IN BOTTOM OF PIT OR CONCRETE SLAB WITH SUMP HOLE.
- H. PIPING AND METER SHALL BE SUPPORTED AS APPROVED BY THE ENGINEER, AND WATER DISTRIBUTION.
- I. ALTERNATE DESIGN MAY BE SUBMITTED FOR APPROVAL SUBMIT COMBINATION PIT INSTALLATIONS FOR APPROVAL CLEARANCES.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

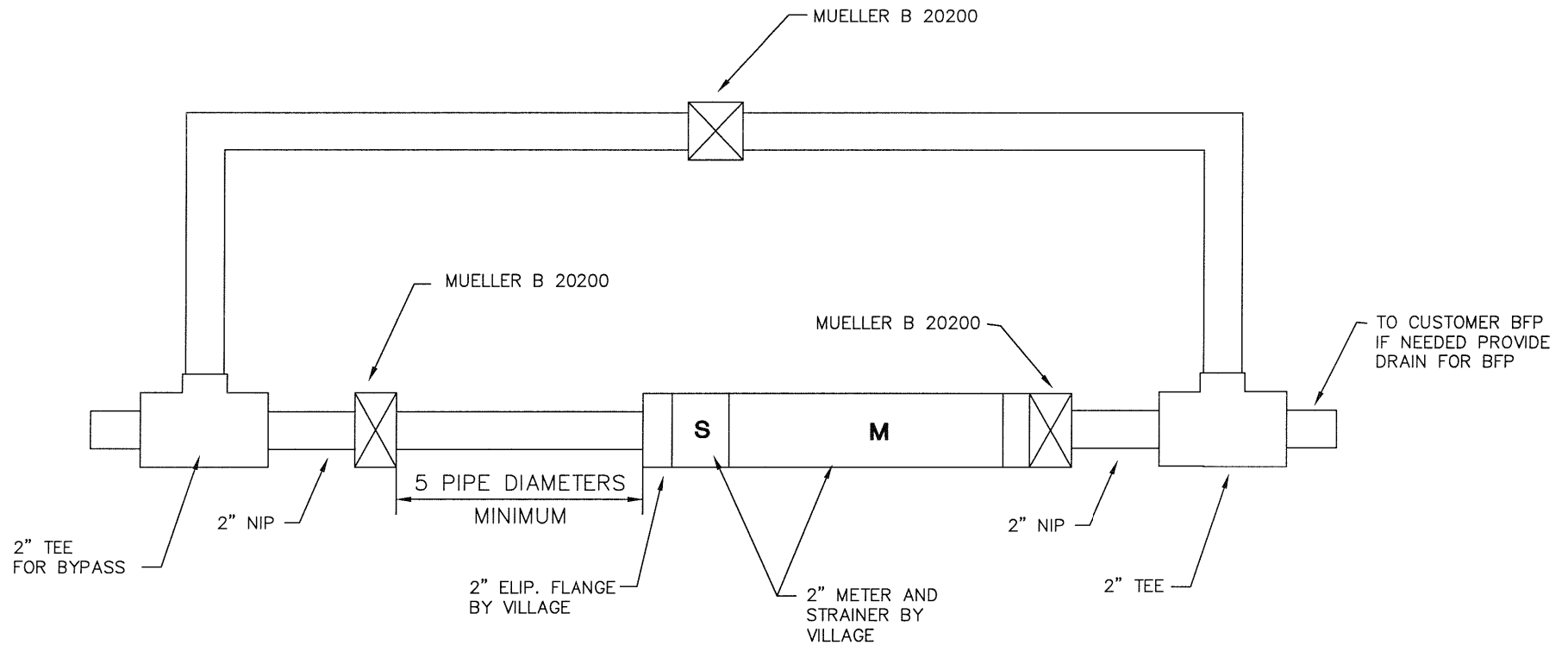
6" AND LARGER WATER METER PIT INSTALLATIONS (FOR OFF ROAD USE ONLY)

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NOTES

- A.** CENTERLINE OF METER TO BE NO MORE THAN 36" FROM THE FLOOR.
- B.** METER MUST BE MOUNTED HORIZONTALLY.
- C.** USE STAINLESS STEEL OR BRASS NUTS AND BOLTS.
- D.** METER BYPASS ASSEMBLY AND METER SETTING TO BE CONSTRUCTED OF PVC SCH. 80, BRASS OR COPPER. NO FEMALE PVC THREADS PERMITTED.
- E.** ALL PIPING TO BE THOROUGHLY SUPPORTED.
- F.** THE VILLAGE IS NOT RESPONSIBLE FOR MAINTENANCE OF INSIDE PLUMBING.
- G.** PROVIDE APPROVED BACKFLOW PREVENTER REGISTERED WITH THE VILLAGE AND THE COUNTY.
- H.** PROVIDE TWO OR THREE CONDUCTOR WIRE TO OUTSIDE OF BUILDING NEAR ELECTRIC METER 18-22 GAUGE WIRE.
- I.** BYPASS VALVE SHALL BE LOCKABLE.

VILLAGE OF
VERSAILLES

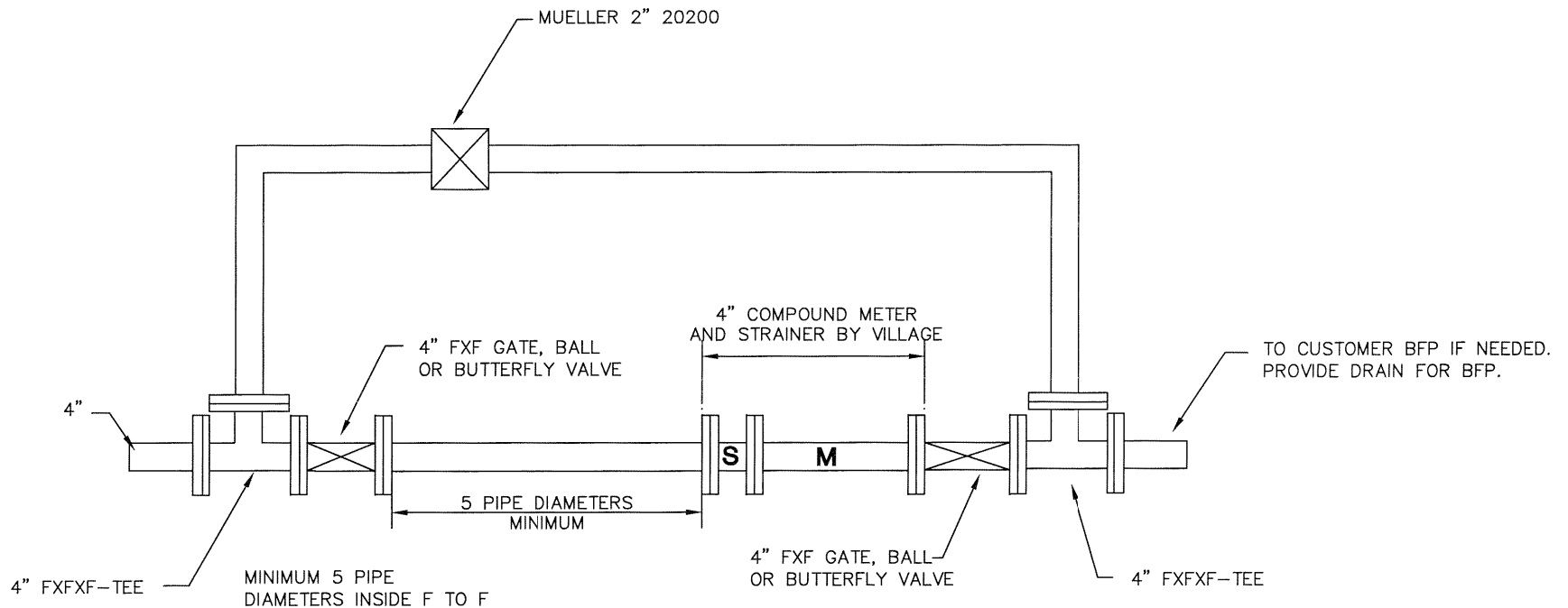
CHOICE
ONE
ENGINEERING

2" COMPOUND METER WITH BYPASS

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NOTES

- A. CENTERLINE OF METER TO BE NO MORE THAN 36" FROM THE FLOOR.
- B. METER MUST BE MOUNTED HORIZONTALLY.
- C. FULL FACE FLANGE GASKETS AND STAINLESS STEEL OR BRASS NUTS AND BOLTS TO BE USED.
- D. METER BYPASS ASSEMBLY AND METER SETTING TO BE CONSTRUCTED OF PVC SCH. 80, BRASS OR COPPER. NO FEMALE PVC THREADS PERMITTED.
- E. ALL PIPING TO BE THOROUGHLY SUPPORTED.
- F. THE VILLAGE IS NOT RESPONSIBLE FOR MAINTENANCE OF INSIDE PLUMBING.

- G. PROVIDE APPROVED BACKFLOW PREVENTER REGISTERED WITH THE VILLAGE AND THE COUNTY.
- H. PROVIDE 2 OR 3 CONDUCTOR WIRE TO OUTSIDE OF BUILDING NEAR ELECTRIC METER 18-22 GAUGE WIRE.
- I. BYPASS VALVE SHALL BE LOCKABLE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

4" COMPOUND METER WITH BYPASS

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NOTES

A. FOR 4" AND GREATER SERVICES

B. PIPING SHALL BE D.I.P. CLASS 53 TO RIGID FLANGE. FROM RIGID FLANGE THROUGH METER VALVES AND BYPASS TO BE DUCTILE, COPPER OR BRASS.

C. FOR 1 1/2" AND 2" SERVICES: WATER DEPARTMENT RECOMMENDS THE USE OF COPPER PIPING

D. FULL PORT BALL VALVES IN LIEU OF VALVES MAY BE INSTALLED FOR 1 1/2" AND 2" METERS MUST BE LOCKABLE.

E. BYPASS MANDATORY FOR ALL METERS. BYPASS VALVE TO BE LOCKABLE.

F. DUAL INSTALLATION FOR BACKFLOW PREVENTION DEVICES IS OPTIONAL FOR 1 1/2" - 2" METERS.

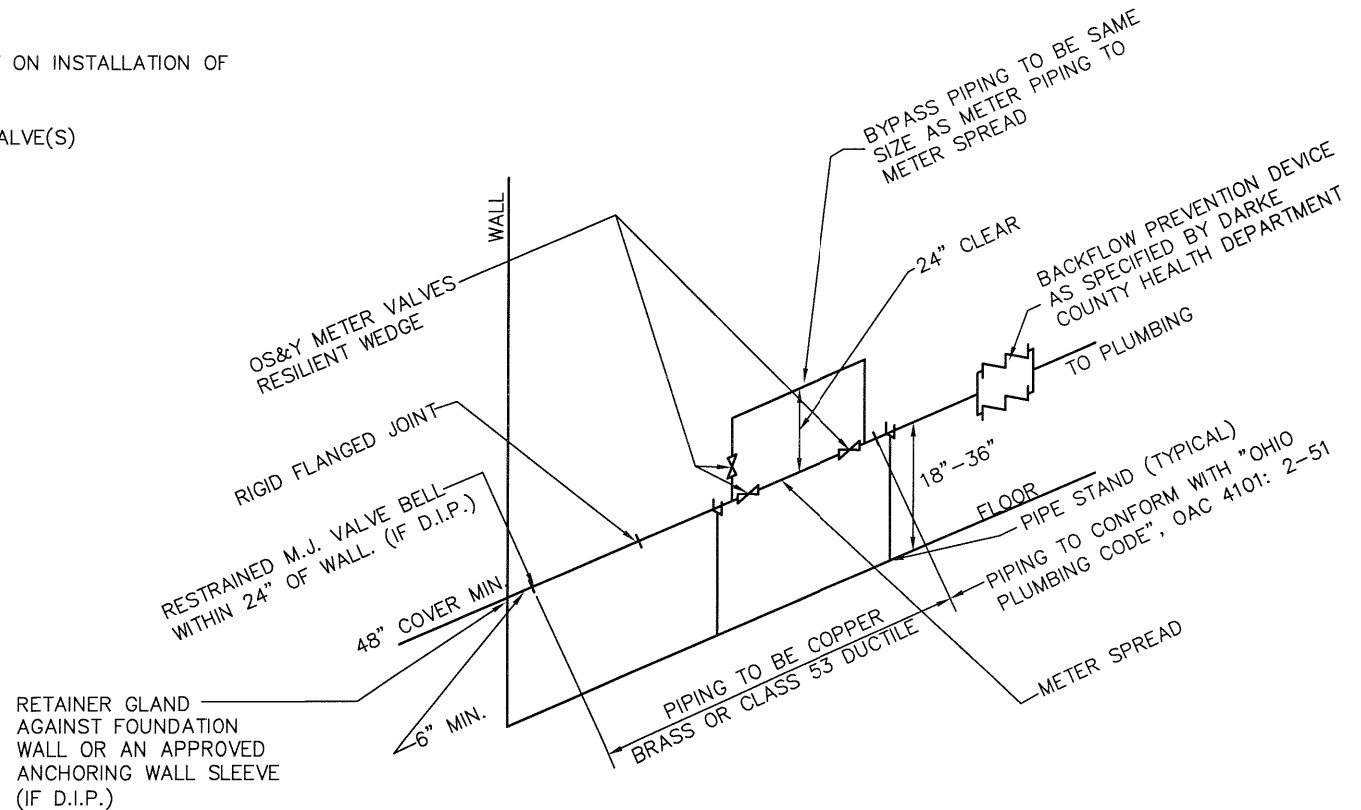
G. ALTERNATE DESIGNS MAY BE SUBMITTED TO WATER ENGINEERING FOR APPROVAL.

H. PROVIDE SPREADER DEVICE FOR PROPER ALIGNMENT ON INSTALLATION OF METER SPREAD.

I. NO FLANGE ADAPTERS BEFORE INITIAL SHUT-OFF VALVE(S)

METER SPREAD (FACE TO FACE)

1 1/2"	28"	F.I.P.
2"	30"	FLANGED
3"	46"	FLANGED
4"	56"	FLANGED
5"	60"	FLANGED
8" AND LARGER TO BE REVIEWED BY THE VILLAGE		
(F.I.P.— FEMALE IRON PIPE THREAD)		



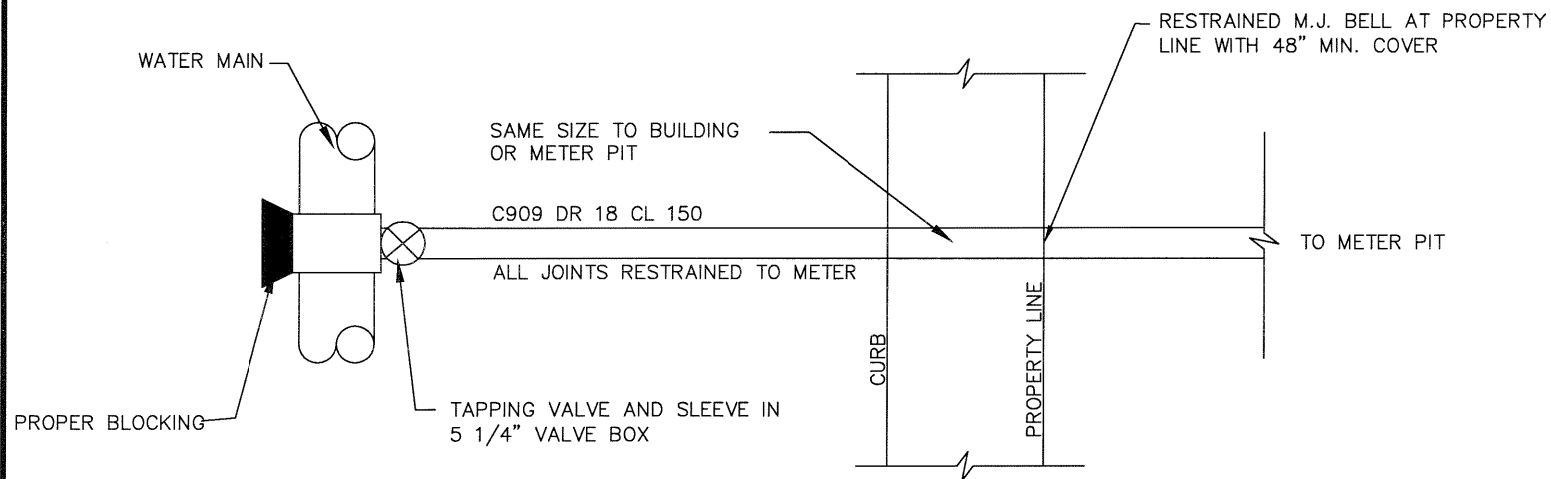
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

TYPICAL LARGER METER LAYOUT IN BUILDING

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SERVICE TEES ARE PERMITTED IF:

- A. SHOWN ON AN APPROVED SET OF CONSTRUCTION PLANS.
- B. 4" MINIMUM BRANCH AND SERVICE LINE WITH GATE VALVE WITHIN 3' OF MAIN.

NOTE:

- A. IF NO CLEARANCE BETWEEN BUILDING AND PROPERTY LINE, METER MAY BE LOCATED IN BUILDING IF APPROVED BY THE VILLAGE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

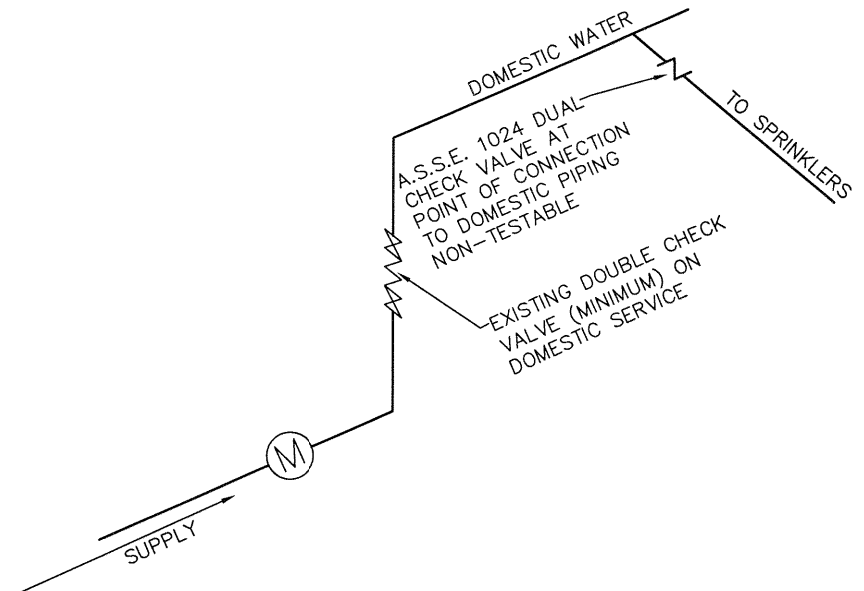
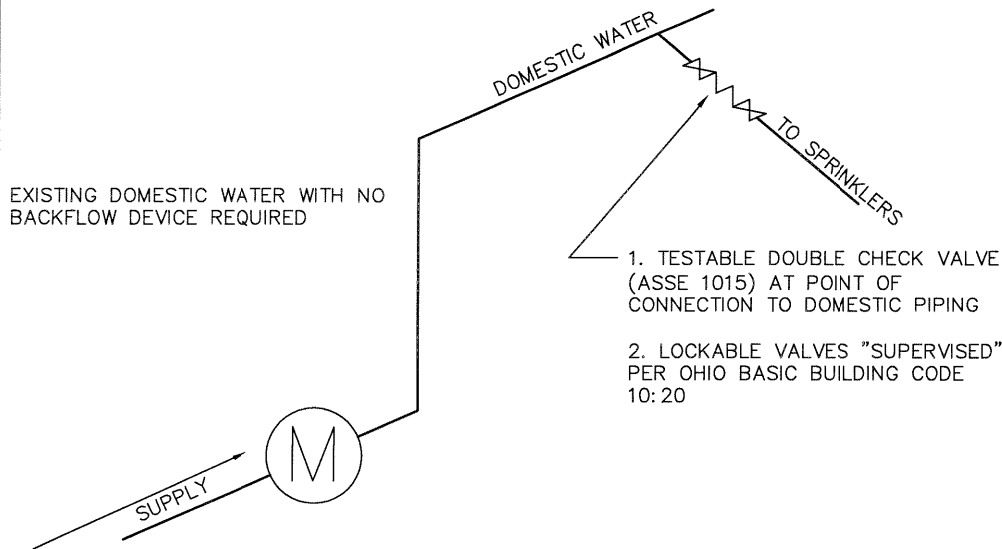
4" AND LARGER WATER MAIN SERVICE CONNECTION (DOMESTIC)

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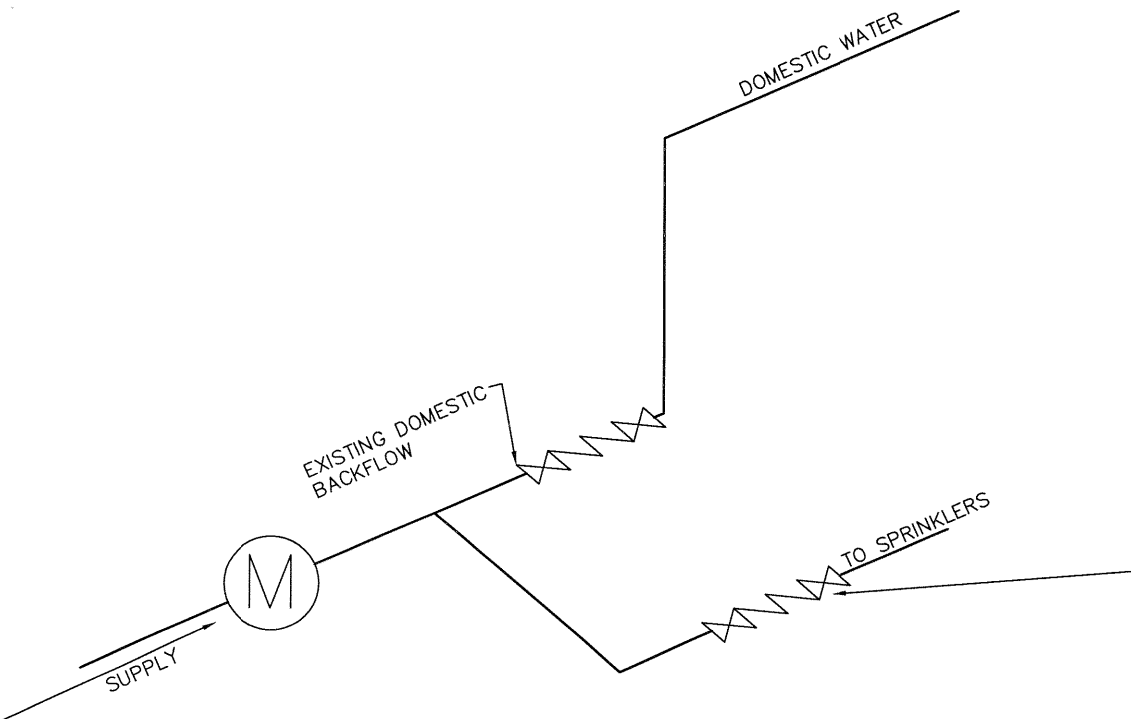
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NOTE:

A. ADDITION OF BACKFLOW DEVICE ONTO EXISTING FIRE SUPPRESSION SYSTEM WILL AFFECT ORIGINAL FLOW CALCULATION



VILLAGE OF
VERSAILLES

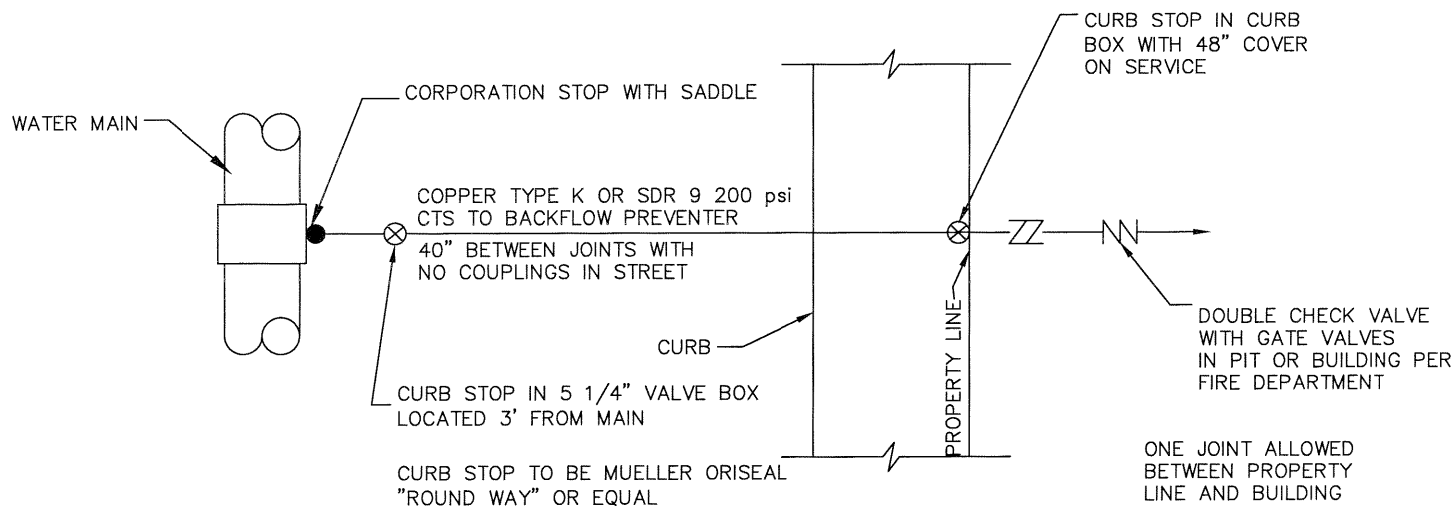
CHOICE
ONE
ENGINEERING

LIMITED AREA SPRINKLER SYSTEM DETAIL

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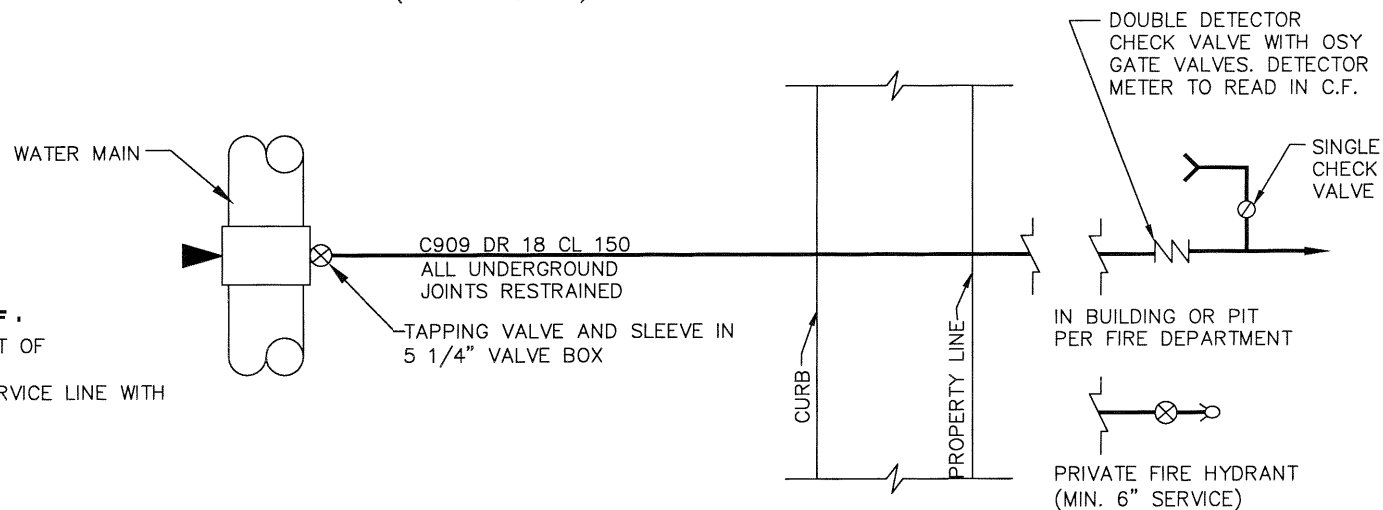
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2" FIRE LINE SERVICE (METER REQUIRED)

SERVICE TEES ARE PERMITTED IF :

1. SHOWN ON AN APPROVED SET OF CONSTRUCTION DRAWINGS.
2. 4" MINIMUM BRANCH AND SERVICE LINE WITH GATE VALVE WITHIN 3' OF MAIN.



4" AND LARGER FIRE LINE SERVICE (METER REQUIRED)

WALL/POST INDICATOR VALVES SHALL BE ADDED ON PREMISES AT FIRE DEPARTMENT REQUEST

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

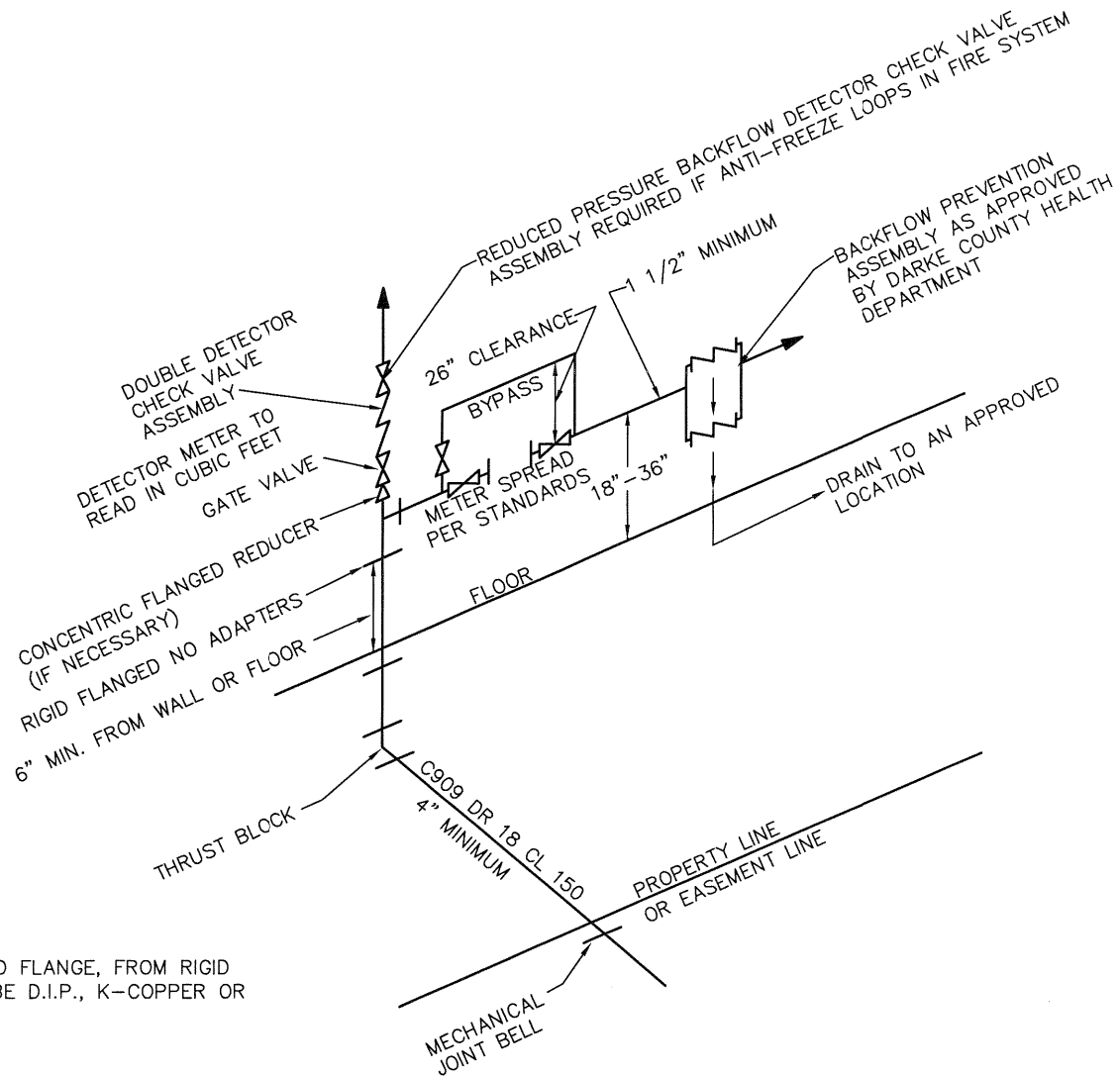
2" FIRE LINE AND 4" AND LARGER FIRE LINE

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NOTES

- ALL UNDERGROUND JOINTS MUST BE RESTRAINED.
- INSIDE PIPING SHALL BE D.I.P. CLASS 53 TO RIGID FLANGE, FROM RIGID FLANGE THROUGH METER VALVES AND BYPASS, TO BE D.I.P., K-COPPER OR BRASS.
- MINIMUM 1 1/2" WATER METER.
- ALTERNATE DESIGN MAY BE SUBMITTED TO VILLAGE FOR APPROVAL.
- COMBINATION SERVICE NOT PERMITTED INSIDE BUILDING IF THE DOMESTIC METER IS MORE THAN 75 FEET FROM THE PROPERTY/EASEMENT LINE.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

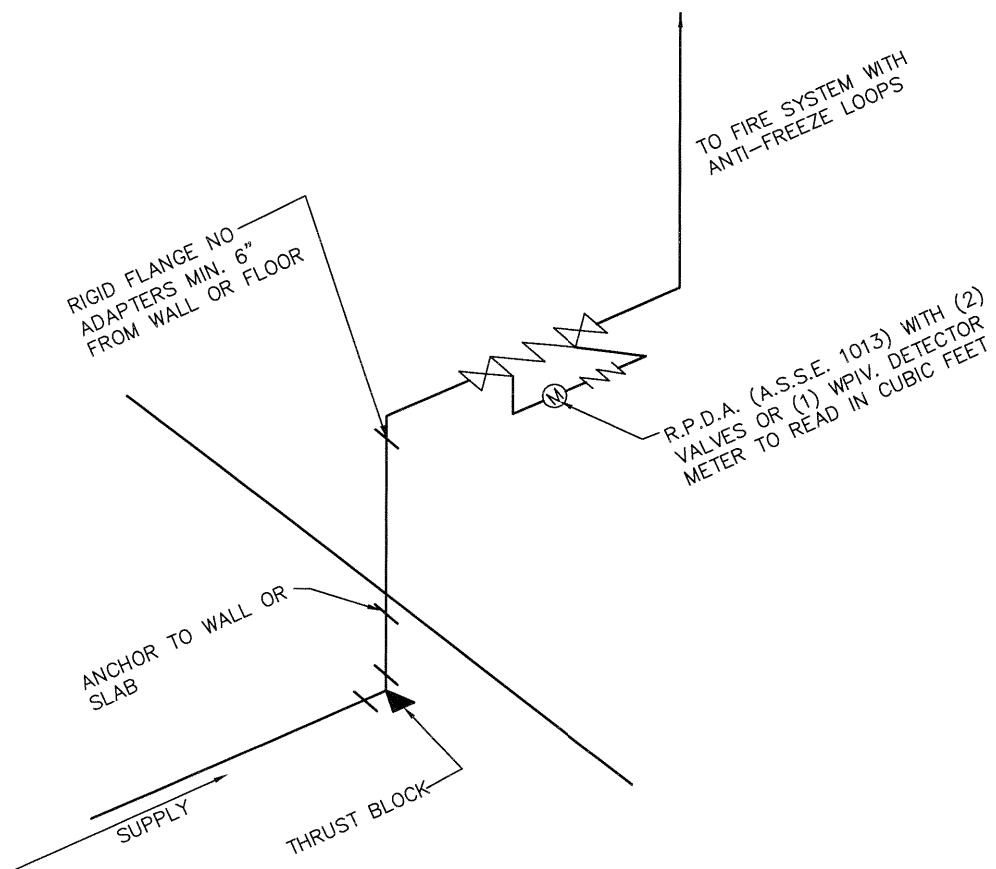
COMBINATION FIRE AND DOMESTIC IN BUILDING

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NOTE:

A. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE DELIVERED FOR INSTALLATION COMPLETELY ASSEMBLED BY THE ORIGINAL MANUFACTURER WITH ALL COMPONENTS AS APPROVED

B. ADDITION OF BACKFLOW DEVICE ONTO EXISTING FIRE SUPPRESSION SYSTEMS WILL AFFECT ORIGINAL FLOW CALCULATIONS

C. CLASS 53 DUCTILE IRON TO VALVE. ALL JOINTS RESTRAINED

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

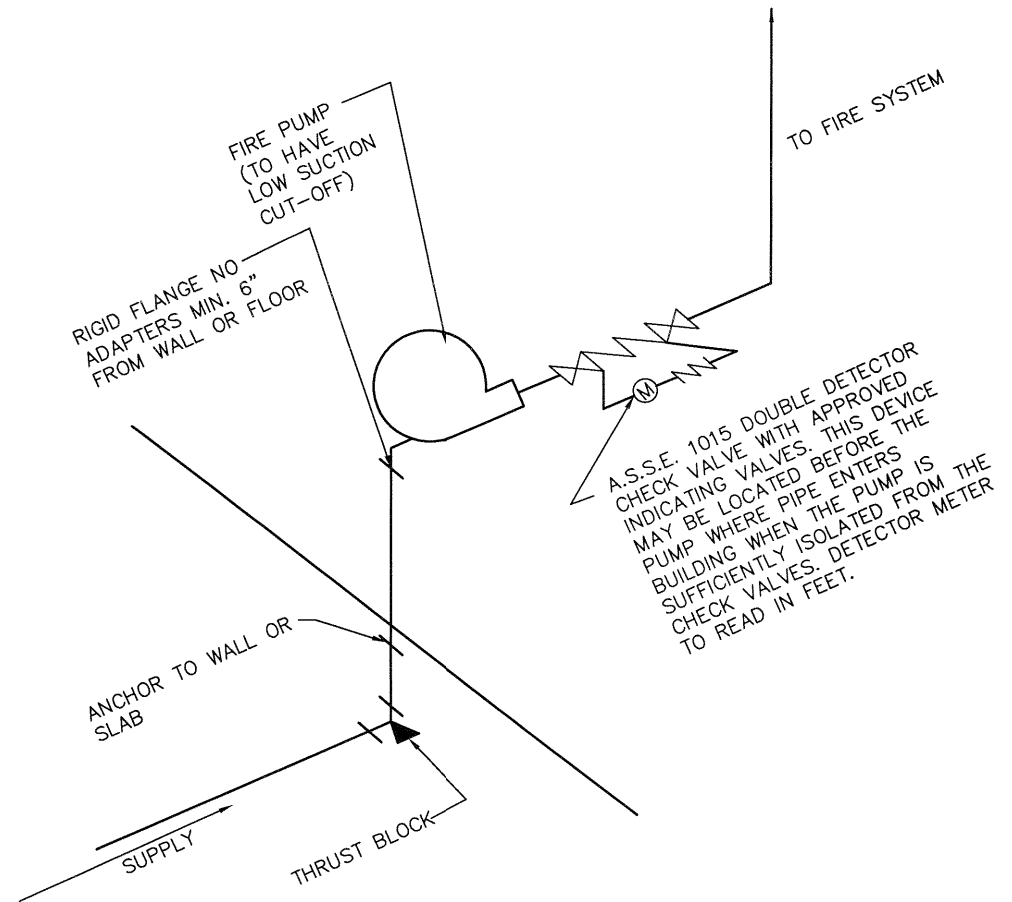
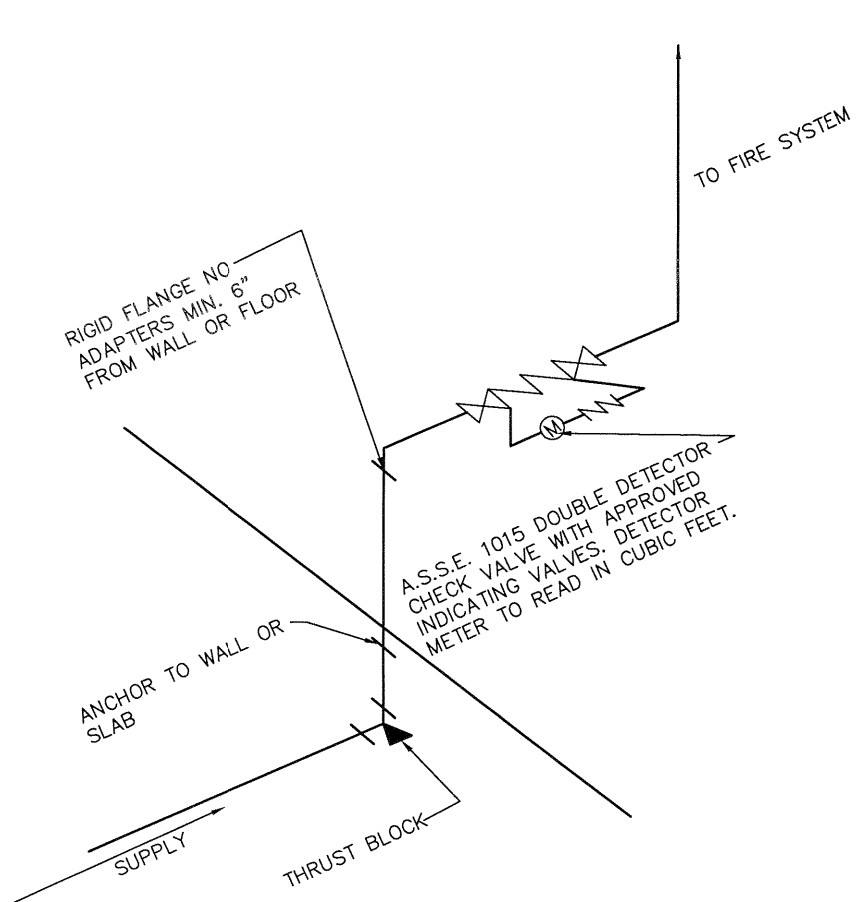
REDUCED PRESSURE DETECTOR ASSEMBLY

REVISIONS:

DATE
APPROVED:
04-11-07

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800-21



NOTE:

A. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE DELIVERED FOR INSTALLATION COMPLETELY ASSEMBLED BY THE ORIGINAL MANUFACTURER WITH ALL COMPONENTS AS APPROVED

B. CLASS 53 DUCTILE IRON TO VALVE. ALL JOINTS RESTRAINED

VILLAGE OF
VERSAILLES

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DOUBLE DETECTOR CHECK VALVE ASSEMBLY DETAIL

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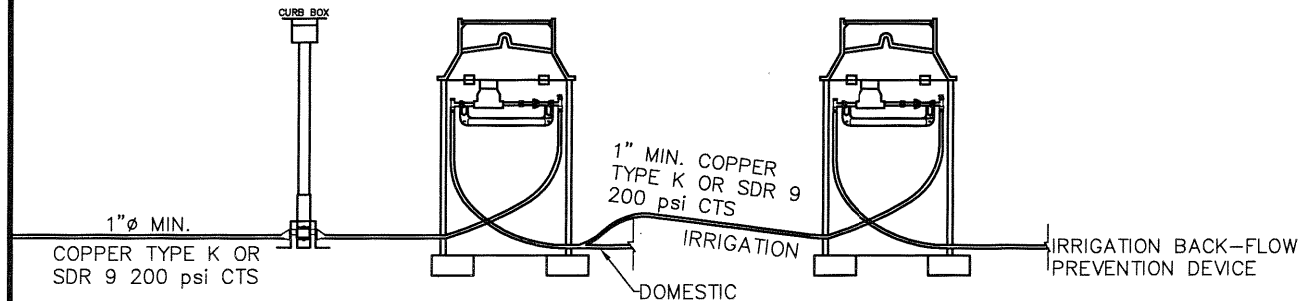
800-22

NOTES

- A. SEE "STANDARDS FOR TAPS, SERVICES AND METERS" FOR TYPICAL NOTES
- B. BACKFLOW PREVENTION DEVICE REQUIRED--CONTACT WATER ENGINEERING FOR APPROVED DEVICE.
- C. PROVIDE APPROVED DRAIN FOR IRRIGATION SYSTEM
- D. ALTERNATE DESIGNS MUST BE SUBMITTED FOR APPROVAL.
- E. TOP OF PIT LID TO BE INSTALLED AT FINISHED GRADE.
- F. THE CURB BOX MUST BE BROUGHT UP TO FINISH GRADE
- G. NO OUTLETS ARE ALLOWED BETWEEN METER AND THE BACKFLOW PREVENTER OR HOSE BIBB VACUUM BREAKER WITH THE EXCEPTION OF ONE SCREW PLUG--IN TAR WINTERIZING/DRAINAGE PURPOSES.
- H. THE UNDERGROUND WATER SERVICE SHALL BE K--COPPER UP TO THE BACKFLOW PREVENTER OR HOSE BIBB VACUUM BREAKER. ALL JOINTS FLARED TYPE JOINTS.
- I. IN CASE OF ADD--ON CONSTRUCTION (WITH AN EXISTING DOMESTIC METER AND SERVICE) LEAD FREE SOLDERED JOINTS WILL BE ACCEPTED AT THE TAKE--OFF TEE ONLY
- J. THE INSTALLATION SHALL BE INSPECTED BY THE VILLAGE.

INSTRUCTIONS FOR THE INSTALLATION OF IRRIGATION METERS AND BACKFLOW PREVENTERS FOR IRRIGATION

1. MAKE DRAWING OF THE PROPOSED IRRIGATION SYSTEM. THIS DRAWING MUST BE APPROVED BY VILLAGE AND DARKE COUNTY HEALTH DEPARTMENT.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE VILLAGE "STANDARDS FOR TAPS, SERVICES AND METERS".
3. GET THE NECESSARY PERMITS.
 - A) TAPPING FEE VERSAILLES
4. GET FORMS AT DARKE COUNTY HEALTH DEPARTMENT FOR EACH BACKFLOW PREVENTER TO BE INSTALLED, PRIOR TO DOING THE WORK.
5. AFTER THE BACKFLOW PREVENTERS HAVE BEEN INSTALLED PLEASE FILL OUT THE FORMS COMPLETELY WITH THE OWNER/LESSE'S NAME, ADDRESS (WHERE THE BACKFLOW PREVENTER WAS INSTALLED), LOCATION OF THE BACKFLOW PREVENTER, SIZE, MAKE, MODEL, AND SERIAL NUMBER OF THE BACKFLOW PREVENTER. PLEASE RETURN THE COMPLETED FORMS TO THE VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT.
6. CONTACT BOTH VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT AFTER THE WORK HAS BEEN COMPLETED. BACKFLOW PREVENTERS HAVE TO BE INSPECTED BY BOTH VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT



VILLAGE OF
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STANDARD INSTALLATION FOR IRRIGATION METERS AND BACKFLOW PREVENTER

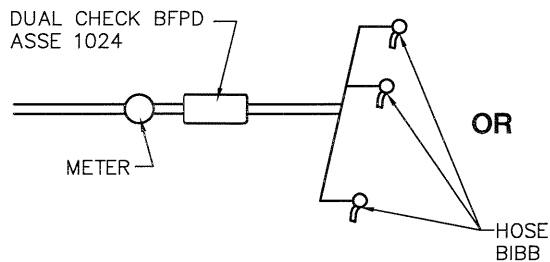
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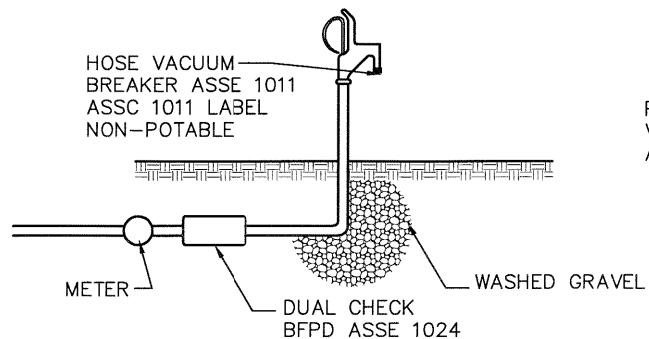
800-23

HOSE BIBB

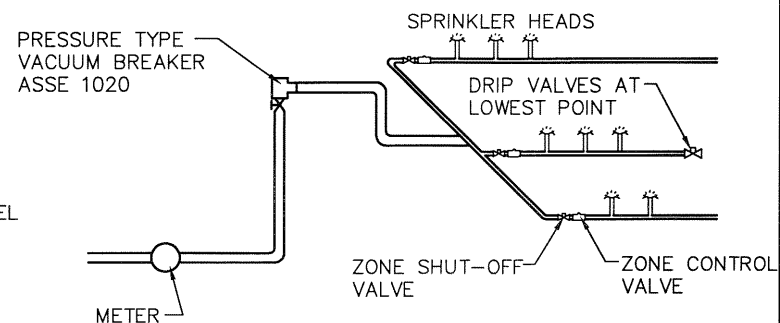


NON-RECERTIFIABLE BFPDS
(ASSE 1001, ASSE 1011) ON
HOSE BIBBS

YARD HYDRANT



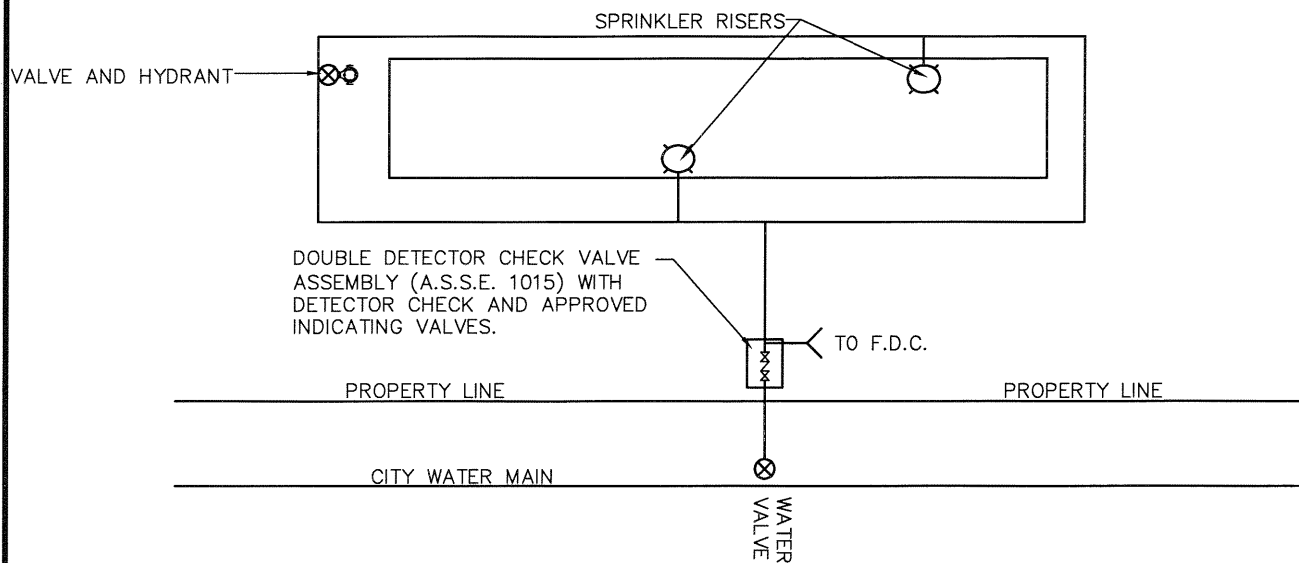
SPRINKLER SYSTEM



CONDITIONS

- A.** SHUT-OFF VALVES ARE ALLOWED DOWNSTREAM OF THE BFPD
- B.** THE PRESSURE TYPE VACUUM BREAKER MUST BE A MINIMUM OF 12" ABOVE THE HIGHEST SPRINKLER HEAD.

YARD MAIN SYSTEM ARRANGEMENT



NOTES

- A.** A DRAWING OF EACH PROPOSED IRRIGATION SYSTEM MUST BE APPROVED BY THE VILLAGE AND DARKE COUNTY HEALTH DEPARTMENT PRIOR TO CONSTRUCTION.
- B.** IF IRRIGATION SYSTEM IS NONE OF THE ABOVE, USE A REDUCED PRESSURE BACKFLOW PREVENTER, (ASSE 1013), AFTER THE WATER METER.

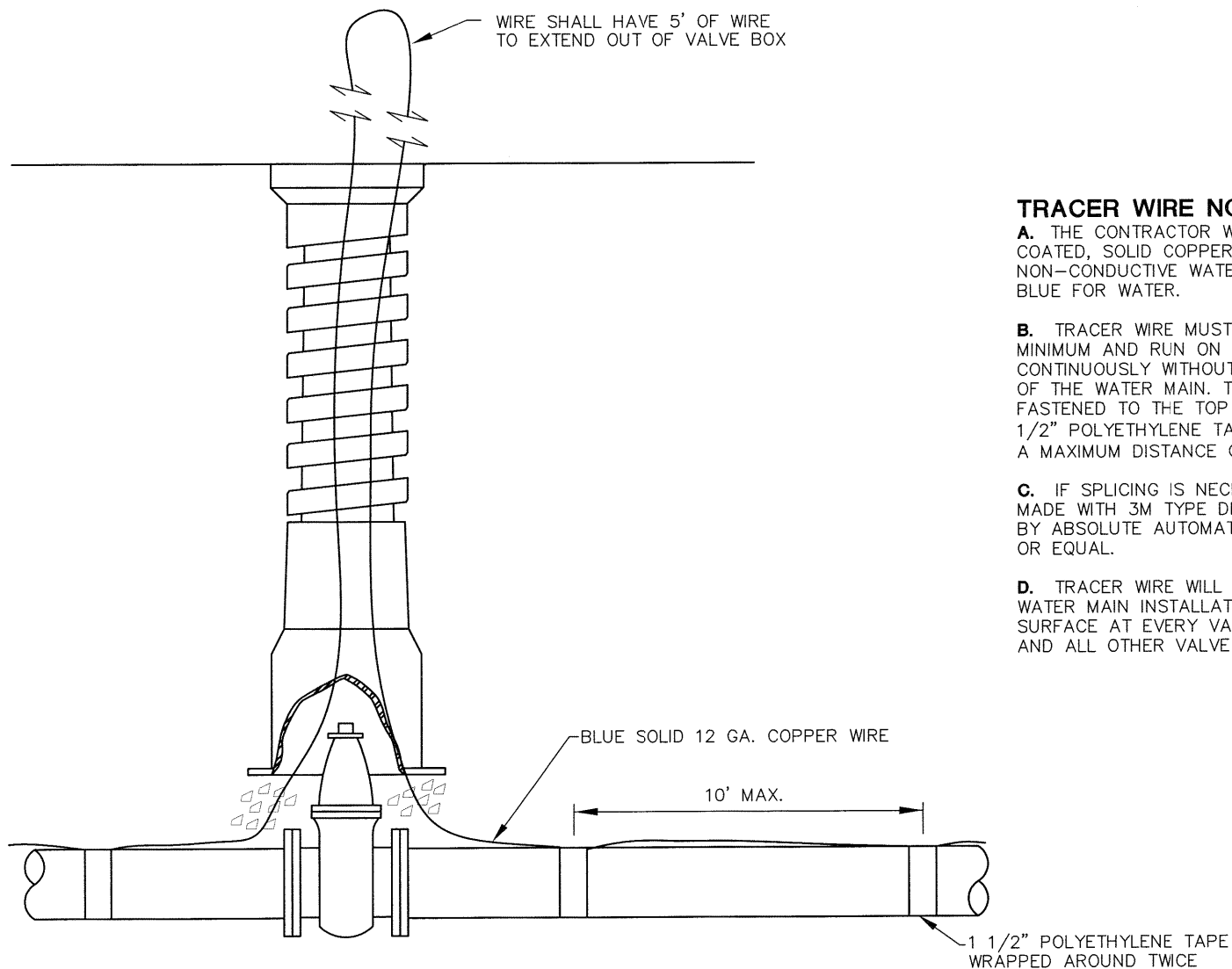
VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

IRRIGATION DETAILS

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TRACER WIRE NOTES

- A.** THE CONTRACTOR WILL FURNISH AND INSTALL A COATED, SOLID COPPER TRACER WIRE ON ALL NON-CONDUCTIVE WATER LINES. WIRE COLOR WILL BE BLUE FOR WATER.
- B.** TRACER WIRE MUST BE BLUE SOLID 12 GAUGE MINIMUM AND RUN ON TOP OF THE WATER MAIN CONTINUOUSLY WITHOUT SPLICES FOR THE FULL LENGTH OF THE WATER MAIN. THE TRACER WIRE SHALL BE FASTENED TO THE TOP OF THE WATER LINE WITH 1 1/2" POLYETHYLENE TAPE WRAPPED AROUND TWICE AT A MAXIMUM DISTANCE OF 10'.
- C.** IF SPLICING IS NECESSARY, ALL SPLICING SHALL BE MADE WITH 3M TYPE DBR, OR KLINK-IT II MODEL C8816 BY ABSOLUTE AUTOMATION, DIRECT BURY SPLICE KITS OR EQUAL.
- D.** TRACER WIRE WILL BE INSTALLED ON ALL NEW PVC WATER MAIN INSTALLATIONS AND WILL COME TO THE SURFACE AT EVERY VALVE BOX FOR A FIRE HYDRANT AND ALL OTHER VALVE BOXES FOR TERMINATION.

VILLAGE OF
VERSAILLES

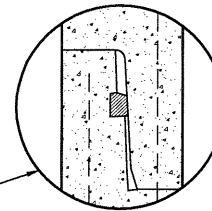
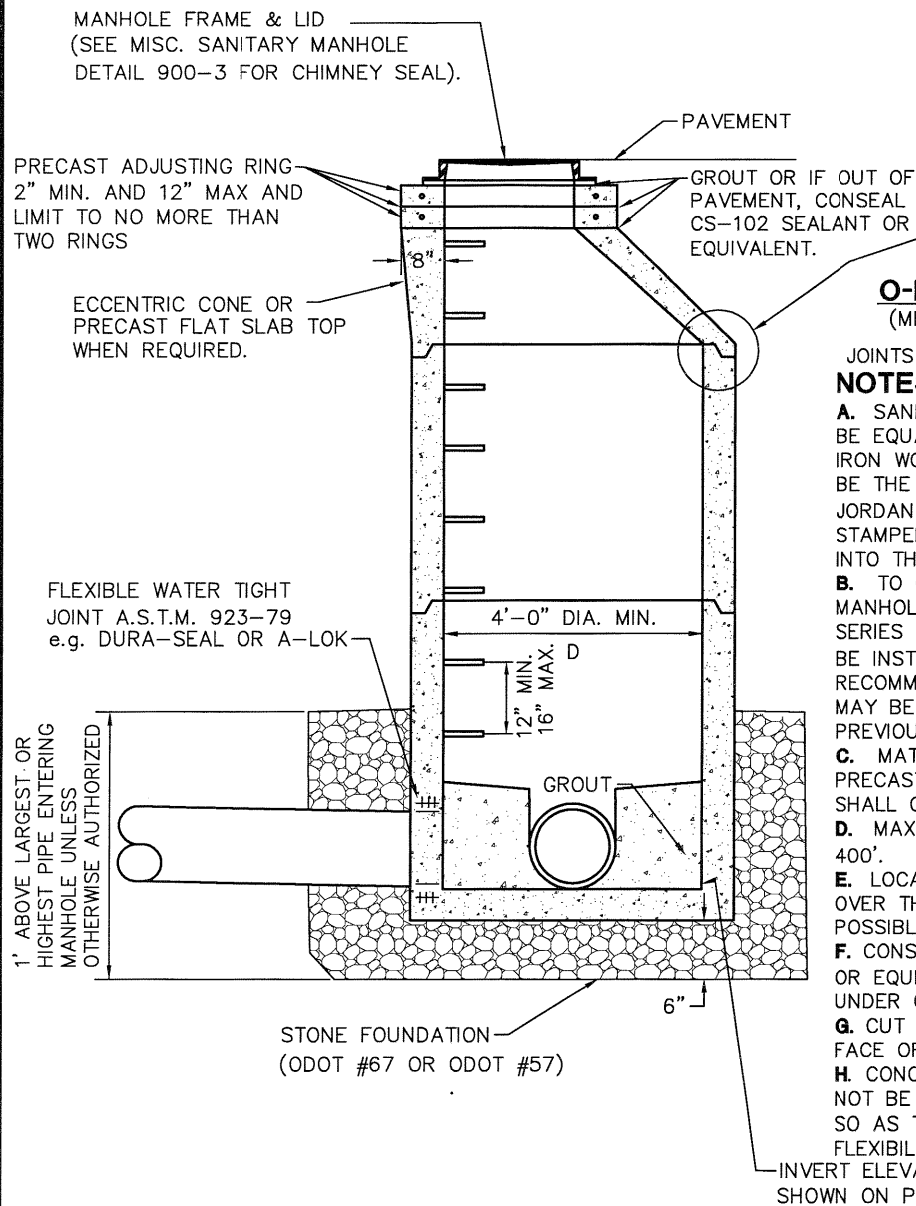
CHOICE
ONE
ENGINEERING

TRACER WIRE FOR WATER MAIN PIPE DETAIL

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900 - SANITARY SEWERS



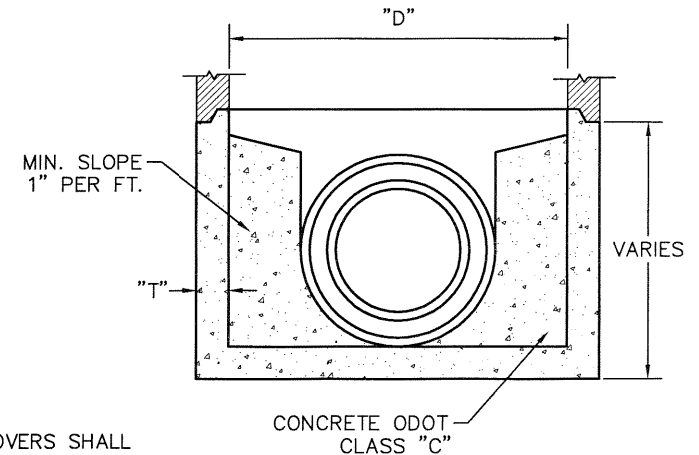
O-RING JOINT DETAIL (MEETING ASTM SPEC. 443)

JOINTS MUST BE KEPT TO A MINIMUM

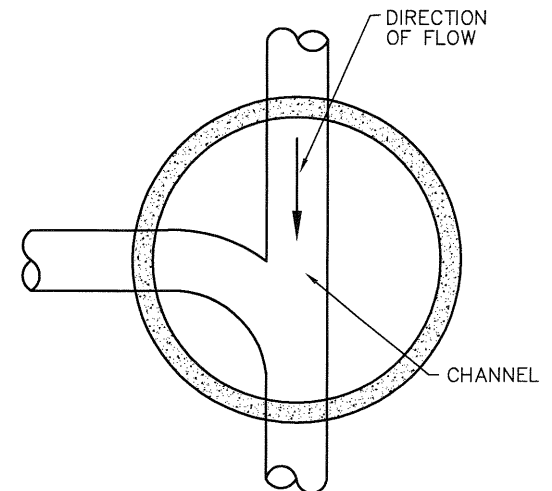
NOTES

- A.** SANITARY MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH NO. R-1767 OR EAST JORDAN IRON WORKS NO. 1600. WATERTIGHT MANHOLES SHALL BE THE EQUAL TO NEENAH NO. R-1916-D OR EAST JORDAN IRON WORKS NO. 1600-PT WITH "SANITARY" STAMPED ON LID. NO LATERALS SHALL PROTRUDE INTO THE INTERIOR MANHOLE.
- B.** TO CONNECT INTO EXISTING MANHOLE, THE MANHOLE SHALL BE CORED AND AN A-LOK XP SERIES FLEXIBLE CONNECTOR OR EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. NON-SHRINK GROUT ALTERNATIVE MAY BE USED IN SPECIAL CIRCUMSTANCES WHEN PREVIOUSLY APPROVED BY VILLAGE.
- C.** MATERIALS FOR BASES, RISERS, AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENTS SHALL COMPLY WITH ASTM C-478.
- D.** MAXIMUM SANITARY MANHOLE SPACING SHALL BE 400'.
- E.** LOCATE THE CENTERLINE OF MANHOLE COVERS OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- F.** CONSEAL CS-102 FLEXIBLE BUTYL RESIN SEALANT OR EQUIVALENT SHALL BE 3/8" X 1" MINIMUM STRIPS UNDER GRADE RINGS AND CASTING.
- G.** CUT PIPE SHALL NOT EXTEND BEYOND THE INSIDE FACE OF THE MANHOLE WALL.
- H.** CONCRETE PLACED INSIDE THE MANHOLE SHALL NOT BE PLACED BETWEEN THE PIPE AND THE OPENING SO AS TO INTERFERE IN ANY WAY WITH THE FLEXIBILITY OF THE JOINT.

PIPE SIZE	T	D
24" & UNDER	5"	48"
27" & ABOVE	6"	60"



PRECAST BASE SECTION



STANDARD INVERT CHANNEL

ALL INVERTS TO BE CHanneled FOR OPTIMUM FLOW.

VILLAGE OF
VERSAILLES

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ONE
ENGINEERING

TYPE 3 SANITARY MANHOLE

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MANHOLE FRAME & LID
(SEE MISC. SANITARY MANHOLE
DETAIL 900-4 FOR CHIMNEY SEAL).

PRECAST ADJUSTING RING
2" MIN. AND 12" MAX. AND
LIMIT TO NO MORE THAN
TWO RINGS

MANHOLE FRAME & LID

PAVEMENT

GROUT OR IF OUT OF PAVEMENT,
CONSEAL CS-102 SEALANT OR EQUIVALENT.
CONE SHALL BE ECCENTRIC

STANDARD TEE

RUBBER O-RING GASKETS

SEE STANDARD DRAWING 900-1
FOR BASE SECTION DETAIL

PRECAST BASE SECTION
WITH 6" GRANULAR BACKFILL

APPROXIMATELY 1'-0"

NOTES

A. LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER
WHENEVER POSSIBLE.

B. TYPE D MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS
GREATER THAN 2'-0".

C. ALL NOTES AND ASTM REFERENCES ON THE TYPE 3 SANITARY MANHOLE APPLY ON THE
TYPE D SANITARY DROP MANHOLE.

"A"	"B"
8", 10", & 12"	8"
15" & 18"	10"
21" & 24"	12"

DROP CONNECTION MANHOLE

CONCRETE ENCASEMENT

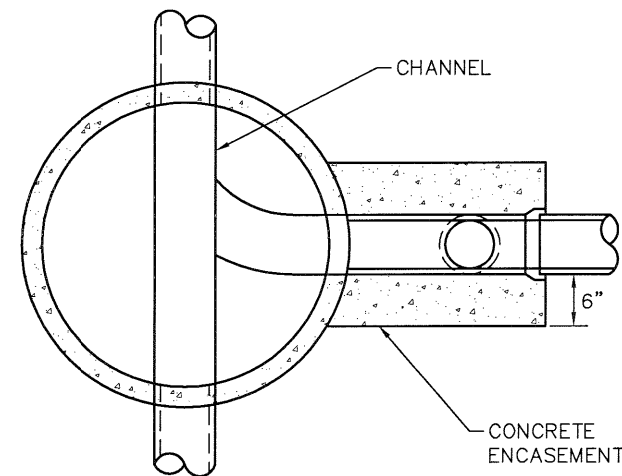
WHEN DROPS ARE PRECAST
6" MIN. MAY BE OMITTED

PVC PIPE

STANDARD 90°
SHORT ELBOW

CONCRETE ODOT
CLASS "C"

1' ABOVE LARGEST OR
HIGHEST PIPE ENTERING
MANHOLE UNLESS
OTHERWISE AUTHORIZED



SECTIONAL PLAN B-B

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

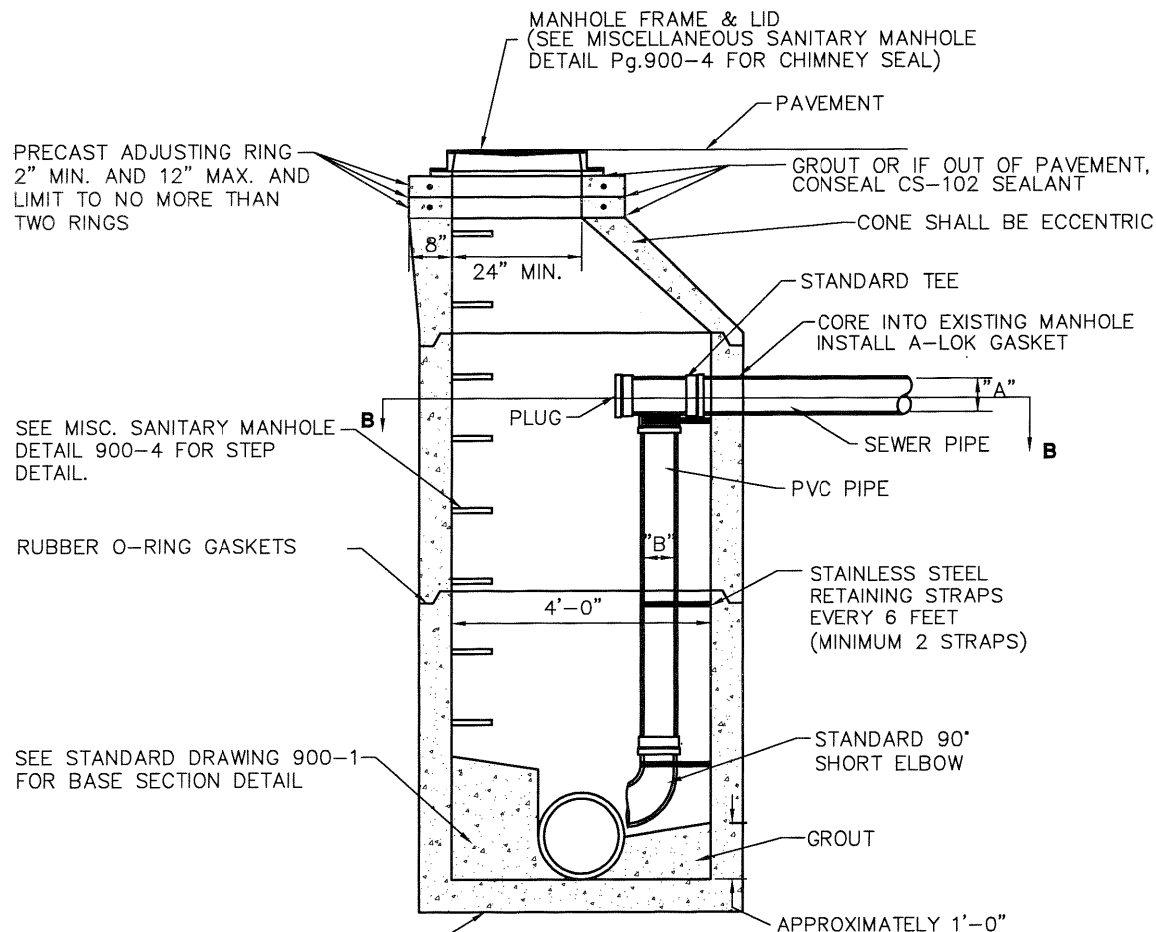
TYPE D SANITARY DROP MANHOLE

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"A"	"B"
8", 10", & 12"	8"
15" & 18"	10"
21" & 24"	12"

DROP CONNECTION MANHOLE

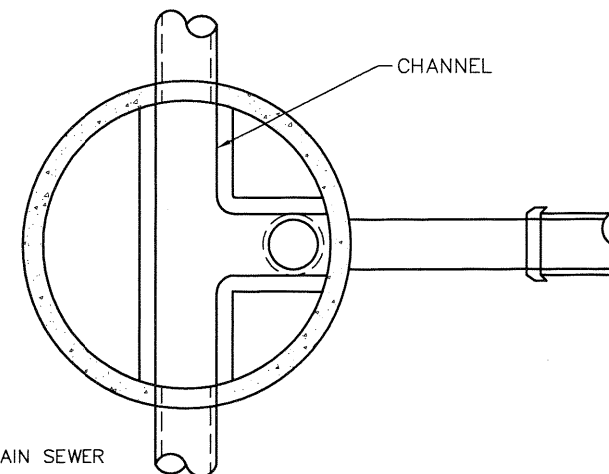
NOTES

A. FOR EXISTING MANHOLE ONLY WITH VILLAGE APPROVAL.

B. LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.

C. INSIDE DROP MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS GREATER THAN 2'0" AND ONLY IN SPECIAL CIRCUMSTANCES WHEN PRE-APPROVED BY THE VILLAGE.

D. ALL NOTES AND ASTM REFERENCES ON THE TYPE 3 SANITARY MANHOLE APPLY ON THE INSIDE DROP SANITARY MANHOLE.



SECTIONAL PLAN B-B

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

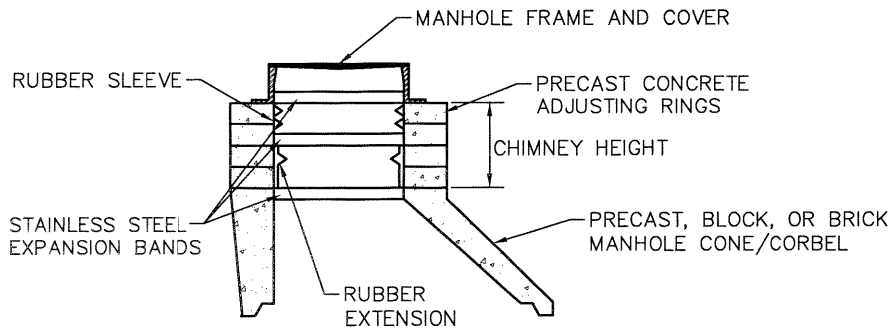
INSIDE SANITARY DROP MANHOLE

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DATE
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04-11-07

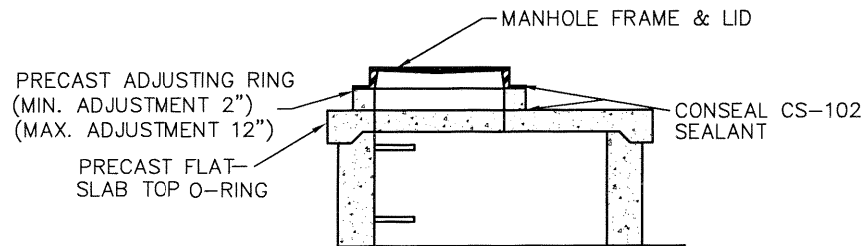
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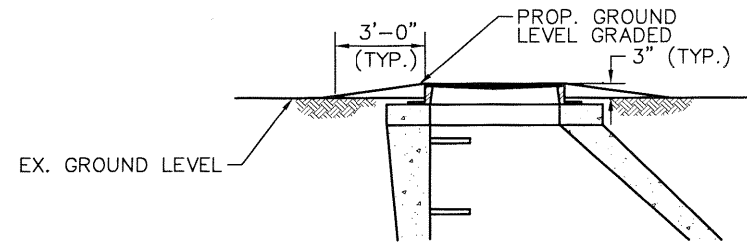


INTERNAL MANHOLE CHIMNEY SEAL

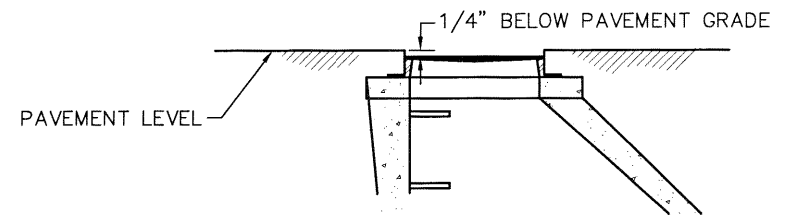
(ONLY WHEN REQUIRED BY VILLAGE)



FLAT TOP SLAB



TYPICAL OFF STREET MANHOLE GRADING



TYPICAL IN STREET MANHOLE GRADING

NOTES

- A. MANHOLE STEPS SHALL BE SECURLY INSTALLED INTO EACH MANHOLE SECTION, BY THE MANUFACTURER, PRIOR TO DELEVRY TO THE JOB SITE
- B. MANHOLE STEPS SHALL BE PF-1 STEP BY M.A. INDUSTRIES OR EQUIVLENT

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

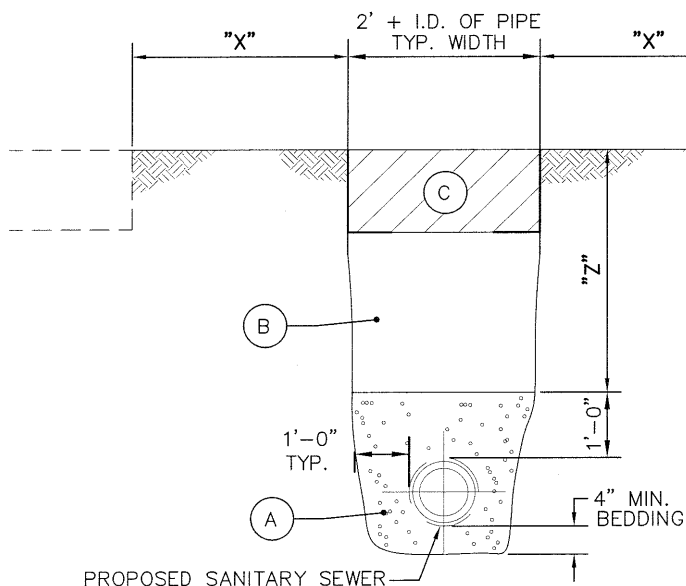
MISCELLANEOUS SANITARY MANHOLE DETAILS

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900-4



SANITARY SEWER TRENCH DETAIL

"X" = DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS.

"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

TRENCH DETAIL NOTES

A. STRUCTURAL BEDDING SHALL BE WASHED NATURAL GRAVEL, ODOT 603 TYPE 3 (#57, #9 OR #8), OR OTHER APPROVED EQUIVALENT WHEN IN CONTACT WITH ANY MATERIAL SUSCEPTIBLE TO CORROSION; OTHERWISE, STRUCTURAL BEDDING SHALL BE ODOT 603 TYPE 3 (#57, #9, OR #8) OR APPROVED EQUIVALENT. THIS BEDDING SHALL BE USED FOR ALL SANITARY SEWER MAIN, LATERALS, AND APPURTENANCES APPLICABLE TO THE SANITARY SEWER SYSTEM.

B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE VILLAGE. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH STRUCTURAL BACKFILL MATERIAL ODOT 603 TYPE 3 (#57 OR #8) OR LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613 TYPE 1 UNTIL THE TOP OF THE COMPACTED STRUCTURAL BACKFILL OR LOW STRENGTH MORTAR BACKFILL IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z".

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-19.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

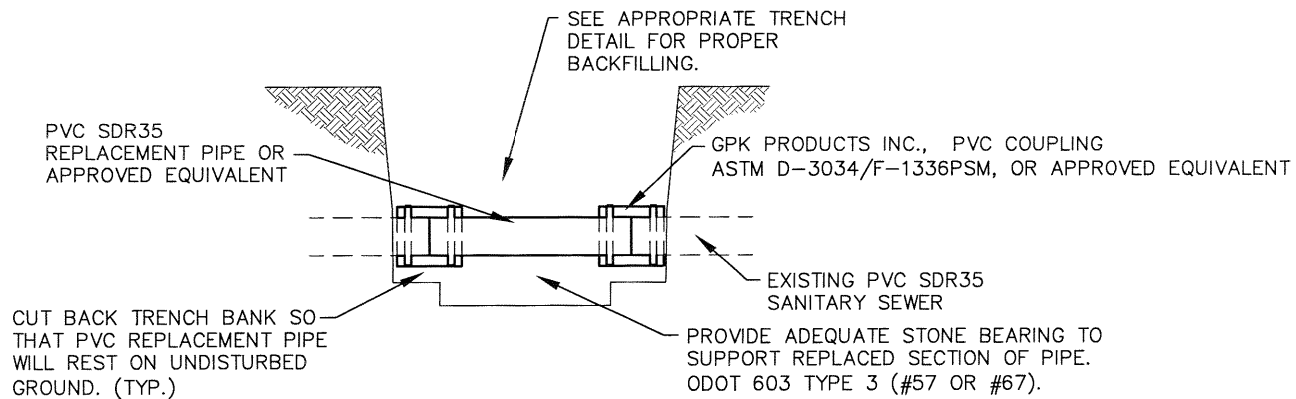
SANITARY SEWER TRENCH DETAIL

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04-22-09

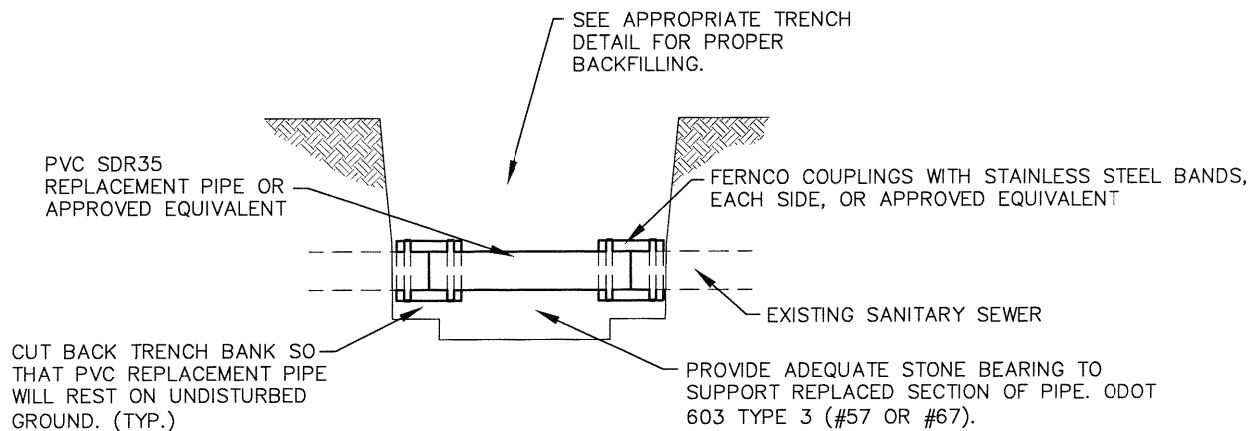
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REPAIR OF EXISTING PVC SDR35 SANITARY SEWER



REPAIR OF EXISTING SANITARY SEWER OTHER THAN PVC

VILLAGE OF
VERSAILLES

CHOICE
ONE
ENGINEERING

REPAIR OF EXISTING SANITARY SEWER PIPE DETAIL

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NOTES

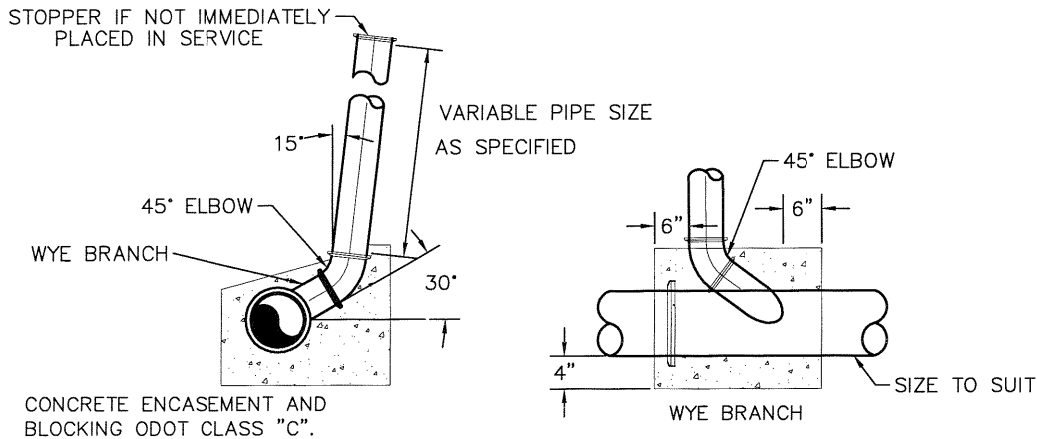
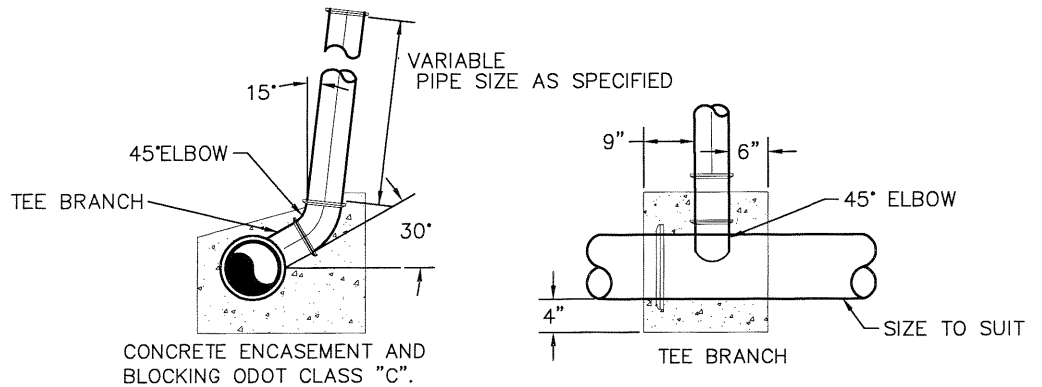
A. RISER PIPE TO BE BEDDED SOLIDLY AGAINST UNDISTURBED GROUND. ALSO, TEE MAY BE SUBSTITUTED FOR WYE BRANCH IF SPECIFIED, AND APPROVED BY VILLAGE.

B. ALL SERVICE LATERALS SHALL BE WYE BRANCHES UNLESS APPROVED BY VILLAGE.

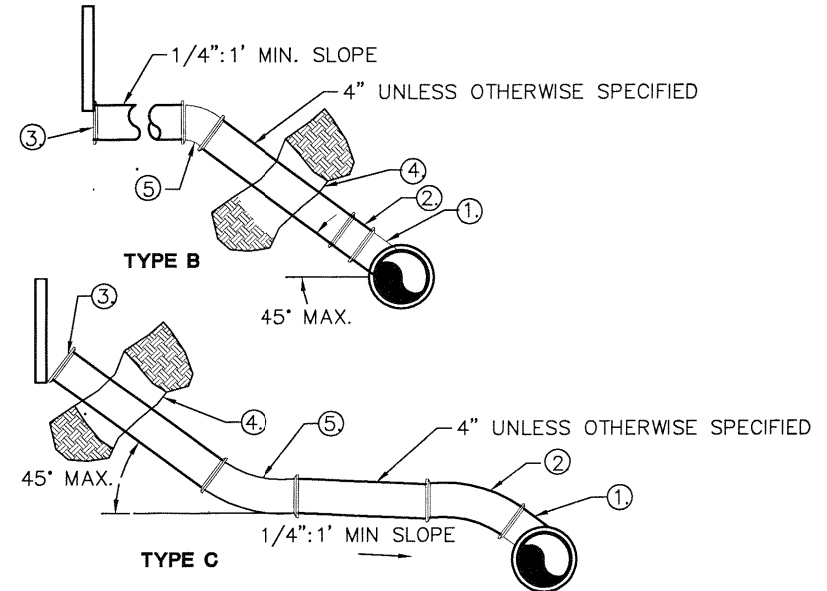
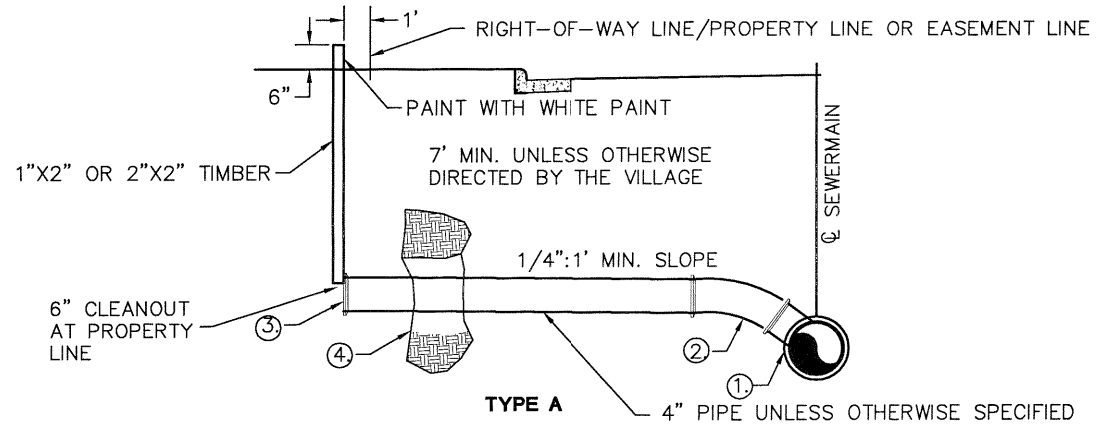
C. RISER PIPE TO BE INSTALLED SO THAT CONNECTING SERVICE SHALL HAVE A MINIMUM DEPTH OF 7' AT THE PROPERTY LINE UNLESS OTHERWISE DIRECTED BY THE VILLAGE.

D. CONCRETE ENCASEMENT AND BLOCKING REQUIRED IF DEPTH OF CONNECTION IS 12' OR GREATER.

E. EACH SANITARY LATERAL MUST BE IN SEPARATE TRENCHES, UNLESS APPROVED BY THE VILLAGE.



SERVICE RISER



- ① 4" TEE OR WYE—ROTATE 45° FROM HORIZONTAL UNLESS OTHERWISE SPECIFIED.
- ② 4" 1/8 BEND OR 1/16 BEND AS NEEDED.
- ③ CAP UNLESS JOINING EXISTING SERVICE LATERAL.
- ④ BED PIPE WITH 8" STRUCTURAL MATERIAL AND BACKFILL WITH STRUCTURAL MATERIAL TO 8" ABOVE PIPE. ODOT 603 TYPE 3 #57 OR #67.
- ⑤ EXACT RECORD OF BEND LOCATIONS MUST BE MADE, AS TO DEPTH FROM SURFACE AND DISTANCE FROM CENTERLINE OF SEWER, BEFORE BACKFILL IS PLACED.

SERVICE LATERAL

VILLAGE OF
VERSAILLES

CHOICE
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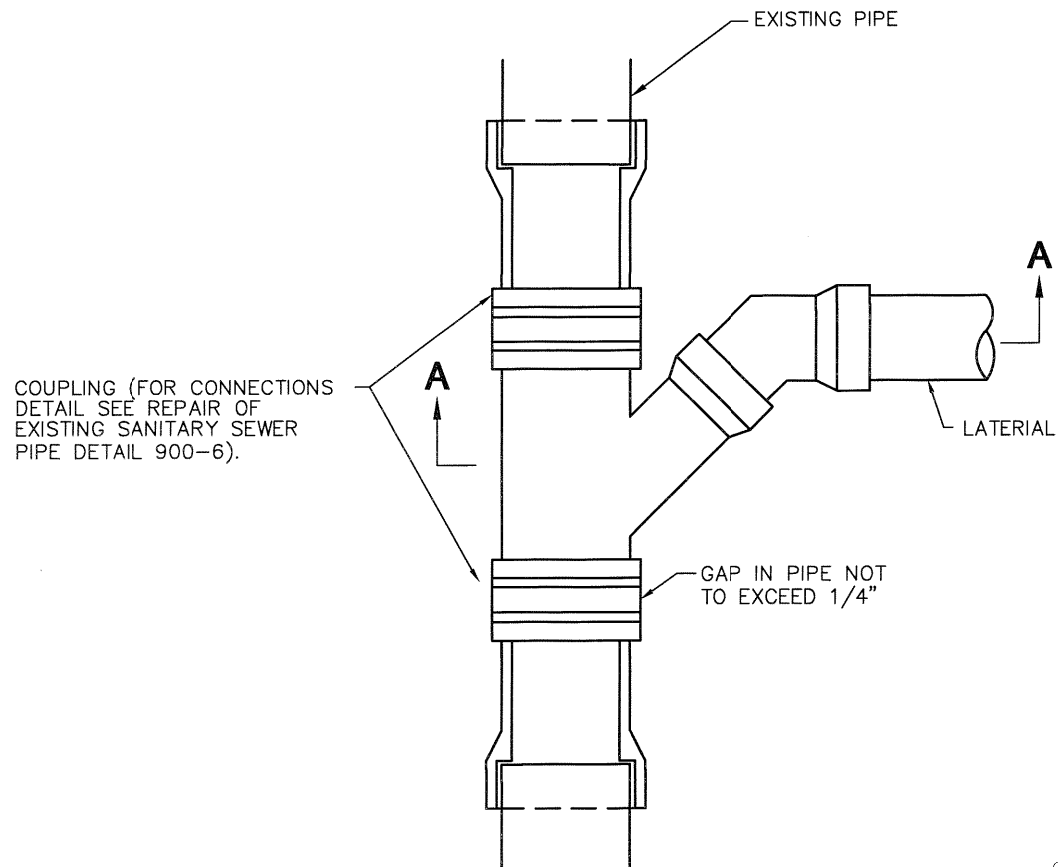
SERVICE RISER AND SERVICE LATERAL

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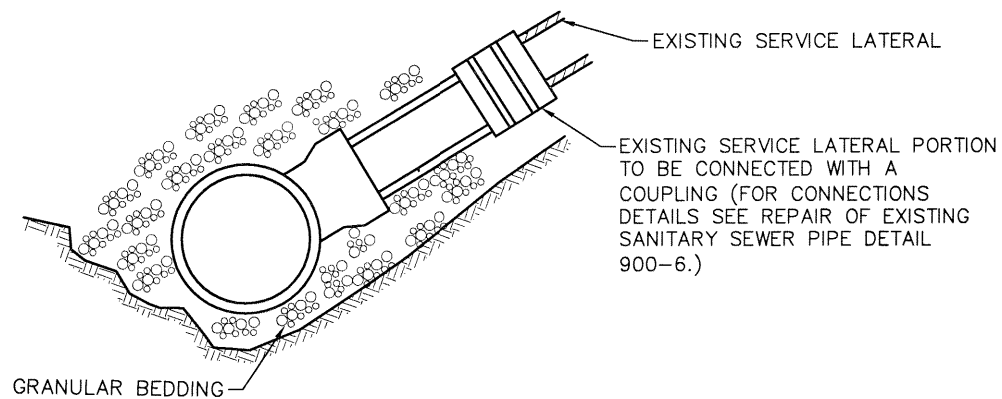
900-7



SERVICE LATERAL

NOTES

A WYE MAY BE CUT IN OR SADDLE PLACED ONLY IF AN EXISTING LATERAL IS NOT PROVIDED.



SECTION A-A

CONNECTION DETAIL

VILLAGE OF
VERSAILLES

CHOICE
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SANITARY SEWER CONNECTION DETAILS

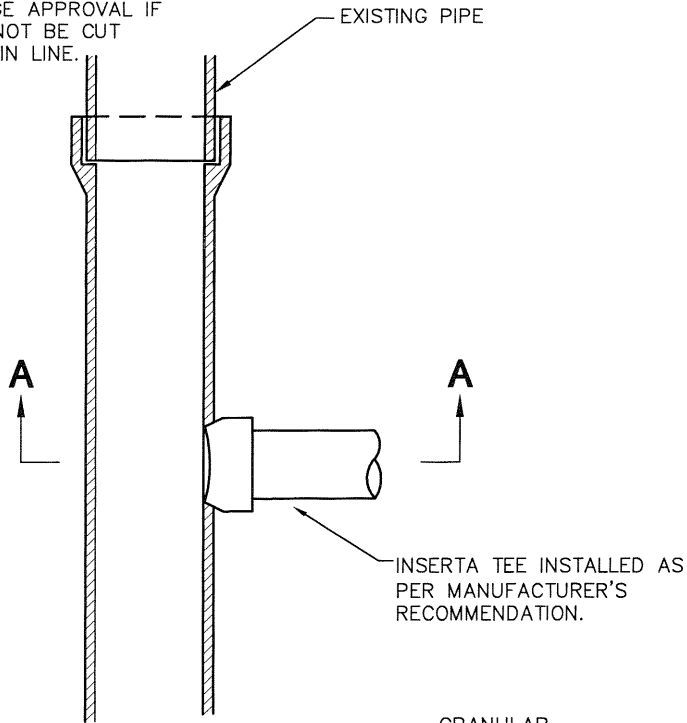
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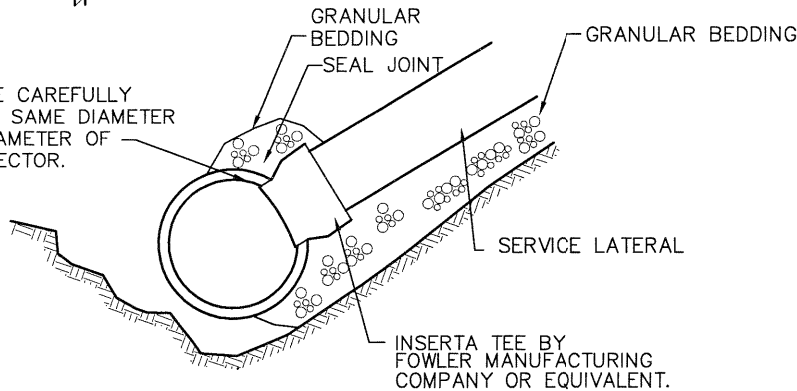
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SADDLE TYPE CONNECTION
MAY BE USED ONLY WITH
PRIOR VILLAGE APPROVAL IF
A TEE CAN NOT BE CUT
INTO THE MAIN LINE.

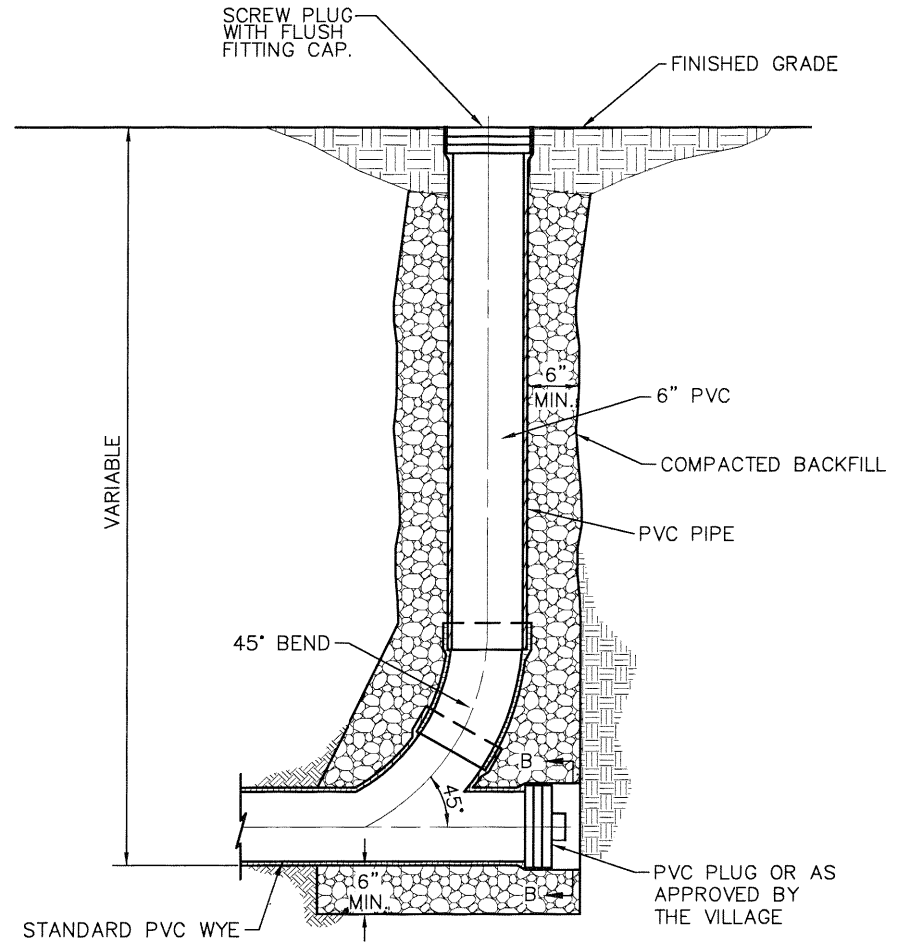


HOLE SHALL BE CAREFULLY
CORED AND BE SAME DIAMETER
AS OUTSIDE DIAMETER OF
LATERAL CONNECTOR.



OTHER SADDLE TYPES THAT MAY BE
APPROVED ON CASE-BY-CASE BASIS
DEPENDING ON SITUATIONS ARE ROMAC
STYLE "CB" SEWER SADDLE AND
DFW/HPI FLEXIBLE SADDLE.

SECTION A-A



CLEANOUT DETAIL AT SANITARY LATERALS ONLY

VILLAGE OF
VERSAILLES

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SANITARY SEWER CLEANOUT AND SADDLE DETAILS

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LOW PRESSURE AIR TEST

A. AFTER BACKFILLING, THE AIR TEST SHALL BE CONDUCTED BETWEEN TWO CONSECUTIVE MANHOLES. ALL PIPE OUTLETS MUST BE PLUGGED IN THE SECTION BEING TESTED WITH SUITABLE TEST PLUGS. ONE OF THE PLUGS USED AT A MANHOLE MUST BE TAPPED AND EQUIPPED FOR AN AIR INLET CONNECTION FOR FILLING THE LINE FROM THE AIR COMPRESSOR. AIR SHALL BE SUPPLIED SLOWLY TO THE TEST SECTION UNTIL THE INTERNAL PRESSURE REACHES APPROXIMATELY 4 PSI. IF THE PIPE IS BELOW EXISTING GROUNDWATER LEVEL, THE INTERNAL PRESSURE SHALL BE INCREASED BY THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE, BUT IN NO CASE SHOULD THE INTERNAL PRESSURE EVER EXCEED 5 PSI.

B. AT LEAST 2 MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE. WHEN THE PRESSURE HAS STABILIZED AND IS AT OR ABOVE 3.5 PSI, THE AIR SUPPLY SHALL BE DISCONNECTED AND TIMING SHALL BEGIN WITH A STOP WATCH. THE STOP WATCH SHALL BE ALLOWED TO RUN UNTIL THE PRESSURE HAS DROPPED 1.0 PSI. IF THE TIME SHOWN ON THE STOP WATCH IS GREATER THAN THE SPECIFIED MINIMUM TIME, THE SECTION SHALL BE CONSIDERED TO HAVE PASSED THE TEST. TIME MAY BE INTERPOLATED FROM THE FIGURES LISTED BELOW.

PIPE DIA. (IN.)	100 FT.	150 FT.	200 FT.	250 FT.	300 FT.	350 FT.	400 FT.
4	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	2:50	2:50	2:50	2:50	2:50	2:51
8	3:47	3:47	3:47	3:47	3:48	4:26	5:04
10	4:43	4:43	4:43	4:57	5:56	6:55	7:54
12	5:40	5:40	5:42	7:08	8:33	9:48	11:24
15	7:05	7:05	8:54	11:08	13:21	15:35	17:48
18	8:30	9:37	12:49	16:01	19:41	22:26	25:38
21	9:55	13:05	17:27	21:49	26:11	30:32	34:54
24	11:24	17:57	22:48	28:30	34:11	39:53	45:35

SPECIFICATION TIME FOR LENGTH (L) SHOWN (MIN-SEC)

*ALL TESTS SHALL BE WITNESSED BY A VILLAGE REPRESENTATIVE.

DEFLECTION TEST

A. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS TO PERMIT STABILIZATION OF THE SOIL-PIPE SYSTEM.

B. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF DEFLECTION EXCEEDS 5%, REPLACEMENT OR CORRECTION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF APPROVING AGENCY.

C. THE RIGID BALL OR MANDREL USED FOR THE DEFLECTION TEST SHALL HAVE A DIAMETER NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER OR AVERAGE INSIDE DIAMETER OF THE PIPE DEPENDING ON WHICH IS MANUFACTURED. THE PIPE SHALL BE MEASURED IN COMPLIANCE WITH ASTM D-2122 STANDARD TEST METHOD OF DETERMINING DIMENSIONS OF THERMOPLASTIC PIPE AND FITTINGS. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.

SANITARY SEWER TV REQUIREMENTS

BEFORE THE VILLAGE ACCEPTS ANY SANITARY SEWER AND BEFORE THE FINAL PAYMENT, THE CONTRACTOR WILL SUPPLY THE VILLAGE WITH PASSING VHS TAPE OR CD AND WRITTEN LOG OF THE ENTIRE NEW SYSTEM. THIS TAPE MUST SHOW THE LOCATION OF ALL LATERALS, THEIR CLOCK POSITIONS AND DISTANCE FROM THE MANHOLE. THE TAPE MUST ALSO SHOW A SYSTEM CLEAR OF ANY BENDS, BELLIES, LEAKS, PIPE IMPERFECTIONS, DEBRIS OR ANY CONDITIONS NOT SPECIFICALLY SHOWN ON THE PLANS. THE CONTRACTOR MUST ALSO SUPPLY A WRITTEN COPY OF ALL LATERAL LOCATIONS. ANY SEWER JETTING OR OTHER CLEANING ASSOCIATED WITH A PASSING VHS TAPE IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE VILLAGE SHALL REQUIRE THE USE OF A PAN AND TILT TYPE CAMERA TO REVIEW ALL LATERAL CONNECTIONS ON SEWER MAIN REPLACEMENT PROJECTS.

THE ABOVE PROCEDURES WILL BE AT THE CONTRACTOR'S EXPENSE.

THE VILLAGE RESERVES THE RIGHT TO A FINAL TELEVISIONING OF THE SEWER SYSTEM AT THE VILLAGE'S EXPENSE BEFORE THE PROJECT IS FINALIZED.

MANHOLE VACUUM TEST

ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED USING THE FOLLOWING PROCEDURES FROM ASTM C-1244.

A. PREPARATION OF THE MANHOLE

1. ALL LIFT HOLES SHALL BE PLUGGED.
2. ALL PIPES ENTERING THE MANHOLE SHALL BE TEMPORARILY PLUGGED TAKING CARE TO SECURELY BRACE THE PIPES AND PLUGS TO PREVENT THEM FROM BEING DRAWN INTO THE MANHOLE.

B. PROCEDURE

1. THE FIRST HEAD SHALL BE PLACED AT THE TOP OF THE MANHOLE IN THE CASTING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. A VACUUM OF 10" OF MERCURY (4.9 PSI) SHALL BE DRAWN ON THE MANHOLE, THE VALVE ON THE VACUUM LINE OF THE TEST HEAD CLOSED, AND THE VACUUM PUMP SHUT OFF. THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9" OF MERCURY (4.4 PSI).

3. THE MANHOLE SHALL PASS IF THE TIME FOR THE VACUUM READING TO DROP FROM 10" OF MERCURY (4.9 PSI) TO 9" OF MERCURY (4.4 PSI) MEETS OR EXCEEDS THE VALUES INDICATED ON THE TABLE.

4. IF THE MANHOLE FAILS THE INITIAL TEST, NECESSARY REPAIRS SHALL BE MADE BY AN APPROVED METHOD. THE MANHOLE SHALL THEN BE RETESTED UNTIL A SATISFACTORY TEST IS OBTAINED.

DIAMETER, INCHES

DEPTH (FT.)	48	60	72
TIME, SECONDS			
8 OR LESS	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

MINIMUM TEST TIMES FOR VARIOUS MANHOLE DIAMETERS

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NOTES

A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAY'S NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.

B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.

C. ROOF DRAINS, FOUNDATION DRAINS, SUMP PUMPS, AND OTHER CLEAR WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED.

D. WHEN A SEWER IS TO BE EXTENDED AT THE DOWNSTREAM MANHOLE OR FIRST MANHOLE IN THE NEW LINE, IT SHALL BE PLUGGED BEFORE CONSTRUCTION BEGINS. IF THE SEWER IS SMALLER OR EQUAL TO 12" DIAMETER, IT SHALL BE PLUGGED BY PLACING A POLY-ETHYLENE BAG APPROXIMATELY 6" INTO THE SEWER PIPE AND POURING CONCRETE INTO AND AROUND THE SEWER PIPE AS DIRECTED BY THE VILLAGE. SIZES LARGER THAN 12" WILL BE PLUGGED BY OTHER APPROVED METHODS. NO PLUGS SHALL BE REMOVED UNTIL CONSTRUCTION IS COMPLETED AND SOIL IS STABILIZED AND THEN ONLY AS DIRECTED BY THE VILLAGE.

E. CONSTRUCTION OF SANITARY SEWERS SHALL INCLUDE THE VILLAGE DYE TESTING AS DETERMINED BY THE VILLAGE OF ALL PIPES TO BE CONNECTED TO THE NEW SEWER PRIOR TO BACKFILLING.

F. WHEN A CASTING OR OTHER PUBLIC PROPERTY IS ABANDONED IT REMAINS VILLAGE PROPERTY.

G. NEW SEWERS MUST HAVE EPA PLAN APPROVAL.

EXCAVATION AND PIPE LAYING

A. THE LAYING OF THE PIPE SHALL COMMENCE AT THE LOWEST POINT, WITH THE BELL END LAID UPGRADE. THE PIPE SHALL BE CENTERED IN THE TRENCH AND ALL PIPE SHALL BE LAID WITH ENDS ABUTTING AND TRUE TO LINE AND GRADE.

B. LASER SHALL BE USED UNLESS OTHERWISE APPROVED.

UTILITY STAKING

A. LASER METHOD — OFFSET AND GRADE AT EACH MANHOLE. OFFSET AND GRADE 50' AND 100' OUT FROM EACH MANHOLE UNLESS OTHERWISE APPROVED.

TESTING

A. BEFORE ANY SEWER LINE IS PLACED INTO SERVICE OR ACCEPTED BY THE VILLAGE, IT SHALL BE SUBJECTED TO AND PASS LOW PRESSURE AIR TEST. EACH RUN BETWEEN MANHOLES, WITH ALL SERVICE LATERALS STUBBED INTO PROPERTY LINES, SHALL BE TESTED BEFORE BEING ACCEPTED. THE CONTRACTOR OR DEVELOPER SHALL FURNISH ALL EQUIPMENT AND MATERIAL NECESSARY TO CONDUCT THIS TEST. THE TRENCH SHALL BE COMPLETELY BACKFILLED BEFORE TESTING.

B. SEE SANITARY TESTING NOTES.

C. BEFORE FINAL ACCEPTANCE BY THE VILLAGE AND BEFORE ANY SERVICE LINE IS PUT INTO USE, ALL SANITARY SEWERS AND MANHOLES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER BY USE OF A SEWER-JET, OR EQUAL, TYPE OF EQUIPMENT.

HOUSE CONNECTIONS

A. NO SERVICE LINE SHALL BE ALLOWED TO CONNECT DIRECTLY INTO A MANHOLE, SUBJECT TO APPROVAL BY THE VILLAGE IN SPECIFIC CASES.

B. THE ENDS OF ALL SERVICE LINES OR TEES SHALL BE ACCURATELY LOCATED, MAPPED, AND GIVEN TO THE VILLAGE WITHIN 15 DAYS AFTER INSTALLATION.

C. BEFORE MAKING A CONNECTION TO AN EXISTING SEWER TAP OR SEWER LATERAL, THE CONTRACTOR SHALL CHECK THE EXISTING PIPE BY UTILIZING A SEWER EEL, STRAP, OR SEWER ROD TO SEE THAT THE EXISTING PIPE IS CONNECTED TO THE MAIN SEWER. IF NECESSARY, THE VILLAGE WILL PROVIDE, AT THE CONTRACTOR'S EXPENSE, A HYDRAULIC SEWER CLEANER WHICH WILL PRODUCE LARGE VOLUMES OF WATER TO CHECK THE LATERAL.

D. LATERALS FROM THE MAIN TO THE PROPERTY LINE SHALL BE 4" MINIMUM WITH CLEANOUT AT THE PROPERTY LINE.

E. A PERMIT TO OPEN INTO, ALTER, OR DISTURB ANY PUBLIC SEWER MUST BE OBTAINED.

F. ALL ABANDONED SEWER LATERALS SHALL BE CAPPED AT THE OWNER'S EXPENSE.

PIPE

A. ALL PIPE AND SPECIALS SHALL BE PVC SDR-35 UNLESS OTHERWISE APPROVED BY THE VILLAGE. MINIMUM DIAMETER OF PIPE SHALL BE 8".

B. DUCTILE IRON PIPE WILL BE USED IN STREAM CROSSINGS AND WHERE MAXIMUM SEPARATION CAN NOT BE MAINTAINED.

C. ALL JOINTS SHALL BE OF THE BELL AND SPIGOT TYPE, THE BELLS BEING FORMED INTEGRALLY WITH THE PIPE. THE BELL SHALL CONTAIN A FACTORY INSTALLED ELASTOMETRIC GASKET WHICH IS POSITIVELY RETAINED. NO SOLVENT CEMENT JOINTS WILL BE PERMITTED IN FIELD CONSTRUCTION EXCEPT AS SPECIFICALLY AUTHORIZED BY THE VILLAGE.

FLEXIBLE PIPES	MATERIAL SPECIFICATIONS	JOINT SPECIFICATIONS
POLYVINYL CHLORIDE	ASTM D-3034 (SDR-35) PIPE STIFFNESS = 46PSI	ELASTOMERIC GASKET ASTM D-3212
DUCTILE IRON	ANSI A-21.51 & AWWA C-151	ANSI A-21.11 & AWWA C-111

1. SDR = OUTSIDE DIAMETER DIVIDED BY WALL THICKNESS.

2. THE SPECIFICATIONS ABOVE SHALL BE THOSE MOST RECENTLY ADOPTED BY THE APPROPRIATE STANDARDS SETTING ORGANIZATIONS.

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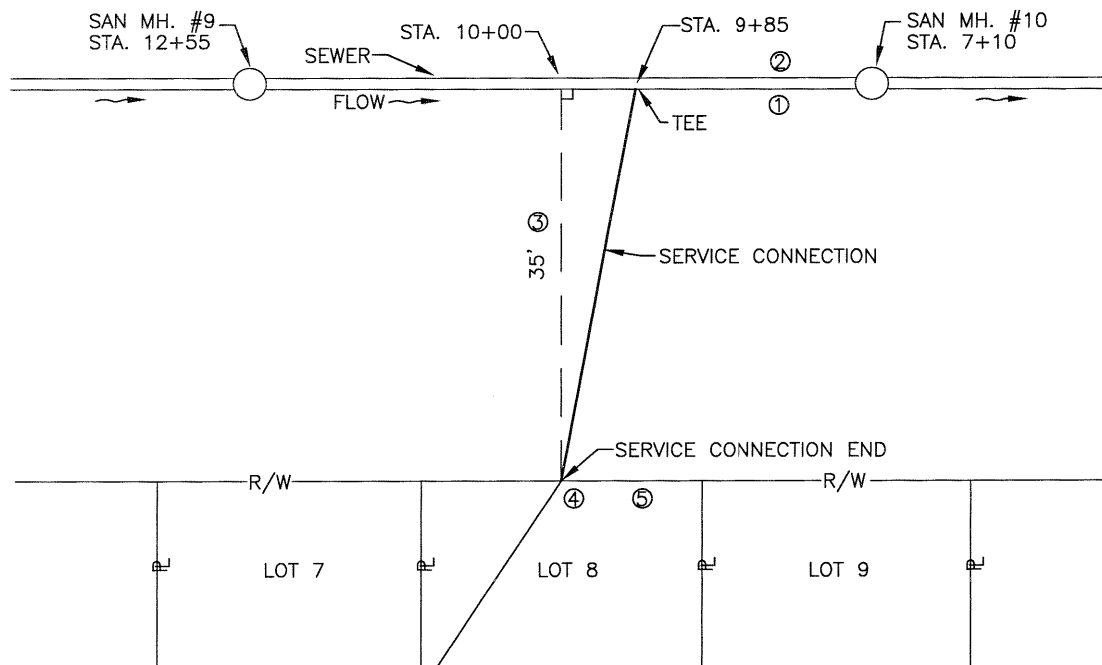
MISCELLANEOUS SANITARY SEWER NOTES

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EXAMPLE

1. 275'
2. 290'
3. 35'
4. 8.9'
5. 942.9

- ① HORIZONTAL DISTANCE OF TEE TO DOWNSTREAM MANHOLE.
- ② HORIZONTAL DISTANCE OF SERVICE CONNECTION END TO DOWNSTREAM MANHOLE ALONG SEWER.
- ③ PERPENDICULAR DISTANCE FROM SEWER TO SERVICE CONNECTION END.
- ④ DEPTH OF SERVICE CONNECTION END FLOW LINE TO ORIGINAL GROUND.
- ⑤ ELEVATION OF SERVICE CONNECTION END FLOW LINE.

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SEWER TELEVISION STANDARDS

A. ALL SEWER TELEVISION CONTRACTORS SHALL BE CERTIFIED BY NASSCO FOR PIPELINE ASSESSMENT AND CERTIFICATION.

B. SANITARY TELEVISION WORK SHALL COMPLY WITH NASSCO STANDARDS.

C. ALL TELEVISION WORK SHALL BE PERFORMED IN COLOR WITH THE PROPER AMOUNT OF ILLUMINATION TO CLEARLY SHOW THE ENTIRE PIPE DIAMETER.

D. THE CAMERA SHALL BE OF THE PAN AND TILT TYPE.

E. THE TELEVISION CONTRACTOR SHALL USE A VHS TAPE TO RECORD THE ENTIRE TELEVISION PROCESS.

F. AT THE START OF THE TELEVISION PROCESS, THE TAPE SHALL RECORD THE FOLLOWING:

- DATE/TIME
- OPERATOR AND COMPANY NAME
- SEWER PROJECT NAME
- ADDRESS OR INTERSECTION OF MANHOLE WORKING ON
- DIRECTION ON TELEVISION
- COUNTER SETTING

G. THE TAPE MUST SHOW THE COUNTER RECORDING THROUGHOUT THE TELEVISION PROCESS.

H. THE TAPE SHALL SHOW THE CLOCK POSITION AND DISTANCE FROM THE MANHOLE FOR EACH LATERAL.

I. THE OPERATOR SHALL PAN EACH SEWER JOINT AND NOTE ANY DEFICIENCIES ON THE TAPE.

J. THE OPERATOR SHALL PAN AND TILT EACH LATERAL AND SHALL POSITION THE CAMERA TO LOOK UP EACH LATERAL CONNECTION.

K. AT NO TIME SHALL THE OPERATOR ALLOW THE CAMERA HEAD TO BE SUBMERGED.

L. THE OPERATOR SHALL NOTE ANY DEFICIENCIES ON THE MAIN SCREEN.

M. THE OPERATOR SHALL KEEP AN ACCURATE LOG CONSISTING OF THE FOLLOWING:

- DIAGRAM OF SEWER FROM MANHOLE TO MANHOLE SHOWING DIRECTION OF FLOW.
- SHALL NOTE ALL SEWER laterals WITH CLOCK POSITIONS AND DISTANCE FROM MANHOLES.
- DEFICIENCIES IN THE SEWER PIPE INCLUDING BELLIES.
- SPECIAL NOTES DESCRIBING AREAS OF CONCERN.
- ANY DEFICIENCIES NOTED SHALL ACCOMPANY A DIGITAL PHOTO ATTACHED OR INCLUDED IN THE REPORT.

STANDARDS FOR BELLIES/DIPS IN SEWER MAINS

SANITARY SEWERS SHALL BE DECLARED AS "NOT APPROVED" IF BELLIES/DIPS IN THE MAIN LINE EXCEED THE FOLLOWING CRITERIA:

PIPE SIZES

SLOPE	8"	10"	12"	15"	18"	21"	24"	>27"
0.10%	2"	2.5"	3"	4"	4"	4"	4.5"	5"
0.12%	2"	2.5"	3"	4"	4"	4"	5"	5"
0.15%	2"	2.5"	3"	3.5"	3.5"	4"	4"	4"
0.22%	2"	2.5"	3"	3"	3.5"	3.5"	3.5"	4"
0.28%	2"	2"	2"	2"	2.5"	2.5"	3"	3"
0.40%	2"	2"	2"	2"	2"	2.5"	2.5"	2.5"
0.60%	1"	1"	1"	1"	1"	1"	1"	1"
1.00%	0"	0"	0"	0"	0"	0"	0"	0"

MAXIMUM ALLOWABLE BELLIES IN PIPE (INCHES)

SEWER TELEVISION PROCEDURES FOR NEW SEWER CONSTRUCTION

A. THE SANITARY SEWER SHALL BE COMPLETELY CLEAN AND FREE OF DEBRIS USING A HIGH PRESSURE JET RODDER CAPABLE OF SCOURING THE PIPE WALLS.

B. ALL DEBRIS SHALL BE VACUUMED OUT OF THE SEWER MAIN.

C. ONCE CLEANING HAS BEEN COMPLETED, THE CONTRACTOR SHALL RUN CLEAR WATER IN THE NEW SEWER MAIN TO FILL ANY POTENTIAL BELLIES IN THE LINE. THE CONTRACTOR SHALL CALCULATE THE VOLUME GALLON CAPACITY OF THE SEWER MAIN AND SHALL USE THAT MUCH WATER TO FILL POTENTIAL BELLIES/DIPS.

D. THE CONTRACTOR MAY RENT A WATER HYDRANT METER FROM THE VILLAGE TO PERFORM THIS TASK.

E. THE CONTRACTOR SHALL MAKE SURE THAT THERE IS NO FLOW EMANATING UPSTREAM. IF SO, THE CONTRACTOR SHALL STOP THIS FLOW DURING THE TELEVISIONING.

F. THE CONTRACTOR SHALL TELEVISION THE SEWER FOLLOWING THE TELEVISIONING STANDARDS.

SEWER TELEVISION PROCEDURES FOR SEWER RECONSTRUCTION PROJECTS

A. BEFORE COMMENCEMENT OF THE CLEANING PROCESS, THE TELEVISION CONTRACTOR SHALL NOTIFY ADJACENT AND AFFECTED PROPERTY OWNERS BY GOING DOOR-TO-DOOR AND NOTIFYING THEM OF THE POSSIBILITY OF SEWER BACKUP DURING THE CLEANING PROCESS.

B. THE SANITARY SEWER SHALL BE COMPLETELY CLEANED AND FREE OF DEBRIS USING A HIGH PRESSURE JET RODDER.

C. ALL DEBRIS SHALL BE VACUUMED OUT OF THE SEWER MAIN.

D. ONCE CLEANING HAS BEEN COMPLETED, THE CONTRACTOR SHALL BAG THE UPSTREAM MANHOLE AND PUMP THE SEWAGE FLOW DOWNSTREAM AND SHALL MAINTAIN PUMPING DURING THE TELEVISION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWER FLOODING AS A RESULT OF THEIR ACTIVITIES.

E. AFTER THE PUMP BYPASS HAS BEEN ESTABLISHED, THE CONTRACTOR SHALL RUN CLEAR WATER IN THE RECONSTRUCTED SEWER MAIN TO FILL ANY POTENTIAL BELLIES IN THE LINE. THE CONTRACTOR SHALL CALCULATE THE VOLUME GALLON CAPACITY OF THE SEWER MAIN AND SHALL USE THAT MUCH WATER TO FILL POTENTIAL BELLIES/DIPS.

F. THE CONTRACTOR MAY RENT A WATER HYDRANT METER FROM THE VILLAGE TO PERFORM THIS TASK.

G. THE CONTRACTOR SHALL TELEVISION THE SEWER FOLLOWING THE TELEVISIONING STANDARDS.

PASSING SANITARY SEWERS

A. THE VILLAGE WILL NOT PASS OR ACCEPT THE SANITARY SEWER FOR FINAL PAYMENT WITHOUT HAVING A PASSING VHS TAPE AND LOG OF THE SANITARY SEWER TELEVISION FOLLOWING THE STANDARDS PREVIOUSLY DESCRIBED.

B. ALL TELEVISION WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

C. THE VILLAGE RESERVES THE RIGHT TO A FINAL RE-TELEVISION AT THE CONTRACTOR'S EXPENSE IF DEFICIENCIES ARE NOTED ON THE INITIAL TELEVISION WORK AND AFTER THE CONTRACTOR MAKES THE NECESSARY REPAIRS.

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