VILLAGE OF HOFFMAN ESTATES

DEVELOPMENT REQUIREMENTS

AND STANDARDS MANUAL

VILLAGE OF HOFFMAN ESTATES
DEVELOPMENT SERVICES DEPARTMENT
TRANSPORTATION AND ENGINEERING DIVISION
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VILLAGE OF HOFFMAN ESTATES DEVELOPMENT REQUIREMENTS AND STANDARDS MANUAL

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I. PURPOSE, INTENT AND DEFINITIONS

A. General

The subdivision of land and the arrangement, character, extent, width, grade and location of all streets, alleys or other land to be dedicated for public use in such subdivision shall conform to the official plan of the Village of Hoffman Estates unless otherwise agreed by the Board of Trustees. All streets in such subdivision shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to their relation to the proposed uses of the land to be served by such streets. All public and private streets shall be completely improved to the full width of the right-of-way or lot and shall include sanitary and storm sewers, water mains, pavement, curb and gutter, sidewalks, street lighting, landscaping and related improvements and appurtenances.

In the case where conflicts arise between this document, the Municipal Code and the Rules and Regulations of other agencies, the Village of Hoffman Estates will make the final decision.

B. Definitions

A.A.S.H.T.O. – The American Association of State Highway and Transportation Officials.

Apron - An extension of a driveway lying between the public sidewalk (or right-of-way line if there is no sidewalk) and the curb and gutter of a street. The maintenance responsibility for this facility belongs with the owner of the driveway so extended.

Berm – A manmade, small hill or embankment-like facility made by the placement of earth, sand, gravel, rock, organic material, or other similar material usually linear in nature and used for screening or landscaping purposes and/or in conjunction with drainage facilities.

Block - That property abutting one side of a street and lying between the two nearest intersecting streets, or between the nearest such street or other boundary such as a railroad right-of-way, unsub divided acreage, or body of water; or between any of the foregoing and any other barrier to the continuity of development.

Building - any structure built for the support, shelter, or enclosure of persons, animals, or moveable property of any kind, and includes any structures as further defined by the Building Code of the Village of Hoffman Estates.

Comprehensive Plan - The plan for the long-range growth and development of the Village of Hoffman Estates including graphic and written proposals, such plan is formally adopted and is amended from time to time.

Corner or return Radii – The pavement radius of the arc between the edge of pavement of the through street or road access facility and the edge of pavement of the abutting road used to facilitate vehicular turning movements.

Detention Basin – A manmade facility for the temporary storage of storm water runoff with controlled release during or immediately following a storm.

Developer - Any person, group of persons, organizations, or owner, etc., whose concern and desire is to improve land in accordance with the Development Regulations of the Village of Hoffman Estates. See "Subdivider".

Development - The division of a parcel of land into two (2) or more parcels; the construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any buildings; any use or change in use of any buildings or land; any extension of any use of land or any clearing, grading, excavation, or other movement of land.

Discharge - The outflow of water, silt, or other mobile substances passing along a conduit, watercourse, or a channel, or released detention storage.

Drainage - The removal of surface water or groundwater from land by drains, grading, or other means. Drainage includes the control of runoff to minimize erosion and sedimentation during or after development and includes the means necessary for prevention or alleviation of flooding.

Drainage Area – The area contributing runoff water to a watercourse, drainage system, or detention basin. Also commonly referred to as a watershed.

Emergency Access – An access which is designated and utilized solely by emergency vehicles.

Engineering Director - The Director of Engineering in the Transportation and Engineering Division of the Development Services Development Department or the duly authorized representative.

Engineering Plans – A set of final engineering design plans, specifications, and estimates of cost containing all engineering elements necessary to construct a project.

Erosion – The detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

Gradient or Percent of Grade - The vertical rise in feet per 100 feet of horizontal distance (i.e., 1% grade is a rise of one foot in 100 feet.)

Grading – The proposed contouring of land to a specified level or slope with the intent of achieving proper drainage for development.

Improvements - Grading, street pavement, curbs, gutters, sidewalks, water mains, fire hydrants, sanitary sewers, storm sewers, culverts, trees, and other additions to the natural state of the land which increase its value, utility, or habitability in accordance with the provisions of these specifications.

1. Private Improvement - Any installed or constructed facility for which the responsibility of maintenance and ownership will be retained by the owner or a homeowner association.

2. Public Improvement - Any facility for which the Village of Hoffman Estates may ultimately assume the responsibility for maintenance and operation or which is constructed for general public use or benefit.

Lot – A single legally divided parcel of land.

Median – A portion of a divided highway or divided driveway separating the traveled ways for traffic flowing opposite directions. A median can either be raised or flush.

MUTCD – The Manual on Uniform Traffic Control Devices defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic.

Parkway - That part of the public street right-of-way not occupied by the street pavement and located between the back of the curb and the right-of-way line.

Plats - A map or illustration of a subdivision of land.

1. Concept Plan - A map indicating the proposed layout of the subdivision or proposed development in sufficient detail to provide adequate basis for a concept or preapplication review.
2. Preliminary Plat - A map showing all requisite details of a proposed subdivision or development submitted to the Village of Hoffman Estates for purposes of preliminary plan approval, prepared in conformance with the preliminary plat requirements of these specifications and Municipal Code.
3. Final Plat - The drawings and comments in conformance with the Final Plat requirements of these specifications and Municipal Code.

Preliminary Plan – A plan, preliminary in nature, showing proposed development, driveway, and road intersection geometrics, and all engineering and physical planning elements.

Ponding - The creation of pockets or depressions which provide no positive surface drainage and which, in the event of failure on the part of inlets or storm sewers will contain standing water. That portion of surface waters which are flowing will not be considered as ponding.

Project Guarantee - Any form of security including a cash deposit, letter of credit, bond, or instrument of credit in an amount and form accepted and approved by the Village of Hoffman Estates.

Retention Basin – A manmade facility designed with a permanent water body to retain a specified amount of storm water runoff with a controlled release. See detention definition.

Right-of-Way - Land, property, or interest therein, acquired for or used as a roadway or pedestrian way or other public use.

Roadway or Road - The paved area existing on the right-of-way and not the right-of-way width.

Standard Specifications - Refers to the Standard Specifications for Road and Bridge Construction, State of Illinois, Department of Transportation, Current Edition, as well as, Water and Sewer Main Construction in Illinois, Current Edition.

Storm Water Drainage System – All facilities used for conveying storm water to, through, or from a drainage area to the point of final outlet.

Subdivider - Any individuals, firms, associations, syndicates, corporations, co-partnerships, trusts, or other legal entities commencing proceedings under these specifications to effect a subdivision of land.

Subdivision Improvements - Site grading, sanitary sewer, storm sewer, water mains and related appurtenances, lot grading, soil erosion control and paving improvements as required in these specifications.

II. PRELIMINARY ENGINEERING REQUIREMENTS

A. General

In addition to Section 10-6-4 of the Municipal Code, the following requirements must be submitted on the preliminary engineering documents. Other requirements or documents may be necessary as directed by the Village.

1. All existing surface conditions in the vicinity of the proposed project must be shown such as driveways, adjacent intersections and roads. A

topographic survey with contour lines at 1 foot intervals and extending at least 200' offsite is required at preliminary engineering.

2. All existing and proposed buildings or building pads, setback lines, lots, right-of-way, easements, and parking areas must be delineated.

3. The proposed top of foundation elevation must be indicated, as well as preliminary grading information such as spot grades or contours including any offsite grading improvements.

4. Retaining walls, if needed, must be indicated.

5. All existing and proposed parking lots with driveways must be illustrated.

6. All paved areas must be bordered by a concrete curb.

7. All proposed sidewalks or bike paths must be shown.

8. All on-site and off-site roadway improvements (i.e., left-turn lanes, deceleration lanes, etc) must be shown.

9. The existing and proposed on-site and off-site water main distribution system with all valves and hydrants with preliminary pipe sizes must be shown. The Fire Department has specific requirements for hydrant locations.

10. The existing and proposed on-site and off-site collection system for the storm water and sanitary sewer systems must be shown, including all preliminary pipe sizes. Design calculations are not needed for the preliminary engineering phase, although any upstream flows or bypass area must be indicated.

11. Existing and proposed storm water detention areas must be shown including the proposed highwater elevation.

12. All floodplain areas must be delineated. Indicate the limits and elevation of the 100-year floodplain and floodway. This includes any water bodies, or channels or wetlands.

13. All parking lot lighting and street lighting must be indicated.

14. All boundary lines of the proposed development or subdivision must be indicated by a solid, heavy line and the total acreage encompassed thereby.

15. Survey data such as angles, bearings, dimensions, curve data, etc., shall be shown for the exterior lines and all roadway centerlines.

16. Existing Village of Hoffman Estates, Cook County Highway Department or IDOT streets are not to be open cut; specify utilities which will be augered.

III. FINAL ENGINEERING REQUIREMENTS

A. General

In addition to section 10-6-5 of the Municipal Code, the following Requirements must be submitted on the final engineering documents. Other requirements or documents may be necessary.

1. Title sheet to include, but not limited to, the project title, name and address of the developer/builder or owner and engineering firm, U.S.G.S. benchmark, location map, index of sheets, P.E. seal/signature and expiration date, legend, revision block, date of drawing, and JULIE note.

2. Overall Utility Sheet to include all site improvements in an overall view (buildings, pavement, utilities, right-of-way, easements, etc.). The existing conditions must be shown on the plans.

3. Grading Plan to include information listed in the grading and erosion control section of these specifications for the proposed project. The grading and utility information may not be shown on the same plan sheet. The grading plan must include any off-site drainage.

4. If the project is located within a floodplain, the floodplain limits must be delineated. All developments within the Village of Hoffman Estates are to be in full compliance with the floodplain and floodway regulations contained in Chapter 10-8 of the Subdivision Code.

5. Geometrics plan to include proposed layout of entire site with all appropriate curve data, building ties, radii, street centerline data, etc., clearly shown and/or noted. The relationship of all offsite features, such as driveways on the same or opposite side of the road, adjacent intersection geometrics, etc. should be shown.

6. Utility Plan to include all existing and proposed utility lines and appurtenances and properly labeled. Show proposed connections and means of connecting, materials, lengths, slopes, elevations and pipe diameters. All structures shall be numbered and horizontal control must be shown.

7. Easements must also be shown on the Utility Plan or a separate document must be submitted to illustrate that the easements and utilities coincide.

8. Proposed water, sanitary and storm services must be shown. The existing main lines that the services tie into should be clearly shown. The sizes and locations of all existing and proposed services and mains must be specified.

9. Complete storm water management calculations are required in final engineering. This includes but is not limited to storm sewer, detention, and restrictor calculations.

10. An inspection manhole near the building must be indicated on the sanitary service line for nonresidential development.

11. A final plat of survey for the project as required by the Municipal Code.

12. A traffic study may be required by the Director of Transportation and Engineering Division.

13. Road and utility profiles to include existing ground and proposed centerlines. All utility lines and structures with invert elevations and rim elevations. List all inverts of all pipes entering and leaving a proposed structure. Call out of lengths, slopes, elevations, depth of cover, diameters, etc.

14. Striping, signage & lighting plan to include but not be limited to roadways, parking and traffic striping. Show signs by letter designation and define in legend. Include MUTCD code, size and color for all signs. Call out light poles, fixtures, wiring, conduit, connections, etc. Identify total parking spaces, the lighting plan for parking lots must include lighting calculations. The lighting plan must follow the specifications contained therein.

15. Soil erosion control plan to include the items listed in the soil erosion control section in this manual and the following proposed drainage structures, swales, ponds and stockpiles. Show and explain how soil and trees will be protected at all times during construction. Show details of methods, materials and maintenance for all proposed soil erosion and sedimentation control. A 24-hour contact person and phone number must be indicated on the plans for correcting erosion deficiencies. A NPDES permit is required with any development.

16. Details should include but not be limited to the following.

    a. Pavement cross-sections

    b. Concrete curb and gutter

    c. Sidewalk and accessible ramps

    d. Detention basin or retention pond cross-sections

    e. Spillway detail including rip rap and dimensions

f. Street lights

g. Storm and sanitary manholes

h. Catch basins

i. Inlets

j. Valve vaults

k. Fire hydrants

l. Water main and sanitary service connection

m. Thrust blocks/megalugs

n. Trench cross sections for sanitary, storm and water

o. Flared-end sections and trash grate.

p. Driveway aprons

q. Stormwater Management

r. Auger detail

s. Drop manholes

t. Traffic signage and striping

u. Soil erosion and sedimentation control

v. Any unusual or special design

17. Quality of Plans

Plans must be clearly labeled and drawn. Identification as to appropriate engineering scale, North arrow, sheet title, number revision block and date prepared must appear on each sheet. Plans larger than 24" x 36" must be reduced to 24" x 36" with an appropriate scale when prints are made and submitted for review.

18. Ordinances

All plans and specifications submitted must be in accordance with Village of Hoffman Estates Municipal Code and other ordinances, and all applicable codes of other governmental agencies, including but not limited to the

following: Metropolitan Water Reclamation District of Greater Chicago, Illinois Environmental Protection Agency, Illinois Department of Transportation, Cook County Highway Department, Northern Illinois Gas Company, Commonwealth Edison, Army Corps of Engineers, Federal Emergency Management Agency, and AT&T.

19. Any other information which clearly shows the proposed improvement and design specifics.

B. Typical Approval Process

1. Typical Preliminary Approval

a. Preliminary package submittal

b. Village staff review process

c. Plan Commission and/or the Zoning Commission or Planning, Building or Zoning Committee approval

d. Village of Hoffman Estates Board approval

e. Preliminary mass grading permit, if necessary

2. Typical Final Approval Process

a. Final package submittal including, but not limited to, final engineering design plans and final plat of subdivision

b. Village staff review process

c. Plan Commission and/or Zoning Commission approval

d. Permits signed for submittal to MWRD, Army Corps, IEPA, etc.

e. Village of Hoffman Estates Village Board approval

f. Preconstruction meeting

g. Engineering fee, project guarantee and utility fees and deposits required before construction starts.

h. The final plat of subdivision recordation

i. Road Improvement Impact Fee

j. Approval for construction

IV. ROADWAY IMPROVEMENTS

A. General

The arrangement, character, extent, width, grade and location of all public or private streets shall be considered in their relation to existing and planned streets, to reasonable circulation of traffic within the subdivision and adjoining lands, to topographical conditions, to runoff of storm water, to public convenience and safety, appropriate relations to the proposed uses of the area to be served and must follow the comprehensive Road Improvement Plan. All traffic intersections and confluences must encourage safe and efficient traffic flow.

B. Pavement Design

1. All street pavements within the Village of Hoffman Estates shall be designed and constructed in accordance with one or more of the following as they apply:

   a. Municipal Code

   b. Standard Specifications

   c. Manual for Structural Design of Portland Cement Concrete Pavement, Department of Transportation, Current Edition.

   d. Manual for Structural Design of Bituminous Pavements on Projects Involving MFT and FAUS Funds, Department of Transportation, Current Edition.

   e. These specifications and standards herein.

2. The Pavement Width and Right-of-Way Table is intended to show minimum right-of-way widths and the design standards for a particular street classification. Should the Director of Transportation and Engineering decide that use or geometric considerations for a road or a part of a road warrant a greater right-of-way width, or a wider pavement width, the developer/owner would be notified. Variations to the requirements of table below may be considered only as exceptions.

PAVEMENT WIDTH AND RIGHT-OF-WAY WIDTH TABLE

STREET CLASSIFICATION	MINIMUM RIGHT-OF-WAY WIDTH	WIDTH BACK-OF-CURB TO BACK-OF-CURB
Major Street	100 ft., additional ROW required at intersections	48 ft. or each roadway shall be 27 ft. and median shall be 14 ft.
Collector Street	80 ft.	30 - 37 ft.
Minor Street	66 ft. [1]	27 ft.
Private Street	29' Easement	27 ft.

[1] Can be reduced to 60 ft if Developer can demonstrate that all required utilities can be accommodated within ROW.

3. The pavement thickness shall be as follows in the details in this manual.

4. Subgrade Design and Preparation

The subgrade of all roads shall be graded and rolled in accordance with Section 301 of the Standard Specifications. Particular attention is directed to the requirements for replacement of soft and unstable material as contained in Article 202.03. Embankment shall be placed and compacted in accordance with Section 207 of said Specifications. Subgrade stabilization fabric shall be placed on approved subgrade only.

At least one Standard density test (performed in accordance with AASHTO T99) shall be taken in each fill section, with the maximum distance between tests of 300 feet. One Standard Proctor Test shall be taken from each different source of borrowed material, if required by the Engineering Director. The Proctor and density tests must be submitted for review and approval by the Engineering Director. Upon approval of these tests, an inspection of the subgrade will be made by performing a proofroll test with a loaded semi-trailer truck. Any pumping, flexing, heaving, rutting, or other deficiencies of the subgrade will be cause for removal and replacement with suitable material. The subgrade must be approved prior to placing any stabilization fabric, curb and gutter or base material. A geotechnical stabilization fabric is required between the subgrade and the stone base, to be installed per manufacturer's recommendation.

5. Flexible Pavements

The design of all flexible pavements shall be based on the cross section detail for the type of street in question. The minimum cross-section for flexible pavements would consist of the following:

- Approved subgrade
- Geotechnical stabilization fabric
- Six inches aggregate subbase
- Bituminous aggregate base material with a minimum of 5 inches for minor and private streets and a minimum of 7 inches for collector and major streets.
- Bituminous binder asphalt meeting a minimum thickness of one and one-half (1½) inches or meeting structural requirements for thickness as the binder layer.
- Bituminous surface asphalt meeting a minimum thickness of one and one-half (1½) inches or meeting structural requirements for thickness as the surface layer.

All pavement materials can be placed from April 1 to November 1, weather permitting. Any work done after November 1, shall require written authorization from the Engineering Director. This authorization will in no way void the contractor's and developer's guarantee on the work done.

6. Rigid Pavements

Rigid pavements are not in use by the Village.

7. Driveways, Aprons and Parking Lots

a. Driveways for single-family residential buildings must be a minimum of ten (10) feet in width and a maximum of 30 feet.

b. Recommended basic driveway guidelines are shown in the Driveway Guideline Table below.

DRIVEWAY GUIDELINE TABLE

	Residential	Commercial	Industrial
Driveway width at Sidewalk One-way min/max Two-way	10/28	15/30 24	20/40 24
Right turn radius (R) or minimum flare	1'	15' (R)	20' (R)
Minimum spacing From property line From street corner ROW Between Driveways	 0 20 3	 10 20 3	 10 20 10
Minimum Angle (one-way)	45°	45°	30°
Minimum Angle (two-way)		70°	70°

c. Strategic Regional Arterial criteria for driveways may control on state roads. Review by other agencies may be required. The findings of the traffic study may require greater widths and/or radii to provide safe and efficient operation.

d. Driveways for residential buildings must follow the Apron Detail and be constructed of a minimum of 2" Bituminous Concrete Surface Class I over 6" CA-6 crushed stone or 4" concrete with 6" square No. 10 rigid wire fabric over 4" CA-6 crushed stone. Aprons for residential buildings must follow the Apron Detail and be constructed of 6" concrete with 6" square No. 10 rigid wire fabric over 4" CA-6 crushed stone. The grade or pitch of driveways shall not be toward or in the direction of the residence. The maximum slope on a driveway is 8% and the minimum slope is 2%.

e. Driveways and parking lots for commercial or industrial buildings shall be constructed of one and one-half inch (1½") of Bituminous Surface-Class I and one and one-half inches (1½") of Bituminous Concrete Binder-Class I over ten inches (10") of CA-6 crushed stone. The concrete apron shall consist of six inches (6") of reinforced concrete pavement with 6" x 6" No. 10 rigid wire fabric over 4" CA-6 crushed stone. A larger cross section may be required due to the truck volume or routing through a site.

f. Concrete must meet the SI requirements of the Standard Specifications.

8. Street Grades

The longitudinal gradient shall not be in excess of 7 percent on any street unless approved by the Engineering Director. The roadway slope shall be a minimum of 0.50 percent. The minimum slope for a curved road section is 1.0 percent. The cross-sectional slope must be 2 percent or ¼" per foot.

The minimum length of vertical curves shall be 50 feet for each one (1.0) percent difference of grade greater than 2 and in no case less than 50'. For each additional one (1.0) percent difference in grade over 2.0 percent, a 50-foot increment shall be added to the length of vertical curve. If the grade differential is less than two, a vertical curve is not required. In certain situations, the Transportation and Engineering Director may require vertical curve design to conform to AASHTO guidelines.

9. Sight Distances

The proposed design shall show at all points on the proposed roads that the minimum stopping sight distance follows Chapter 10-1-3, Intersection Sight Distance of the Municipal Code and AASHTO guidelines.

10. Curb and Gutter

a. All new streets, either public or private shall be bordered by concrete barrier curb (B.6-12). Curb depressions shall be provided at driveway locations and sidewalks and shall be poured in place. Horizontally sawcut curb and gutter is not allowed to create a depressed curb and gutter for the driveway. These improvements shall be in accordance with the standard specifications. Concrete shall follow the standard specifications contained herein for curb and gutter use.

b. Driveways to individual residential buildings do not require curb and gutter or concrete barrier curb. Driveways for multi-family residential buildings may require a mix of curb and gutter and no edge treatment to the driveway. Driveways to all other buildings require combination concrete curb and gutter or concrete barrier curb.

c. Please refer to the attached Curb Detail.

d. Backfilling of curb prohibited until three (3) days after placement (72 hours). Backfill should extend at least four (4) feet behind curb and six (6) inches from top of curb.

e. No pavement work allowed adjacent to curb and gutter for minimum of seven (7) days.

11. Sidewalks and Parkways

a. Sidewalks shall be constructed of Portland Cement Concrete in accordance with the Standard Specifications, Chapter 10-5-3 of the Village of Hoffman Estates Municipal Code and these specifications. Sidewalks are required along both sides of all streets and meeting all ADA requirements. Sidewalks must have a cross-slope of 1/8" per foot to provide for proper drainage.

The parkway between the sidewalk and curb and gutter must have a minimum 2% cross-slope. The sidewalk must be a minimum of 0.3' above the elevation of the top of curb. Sidewalks must have a 5" thickness except where a sidewalk crosses a driveway, and then the thickness shall be 6".

b. Detectable warning truncated domes shall be located at all intersections of pedestrian ways with hazardous vehicular areas (i.e. streets, alleys, and commercial driveways). The truncated domes shall be a pre-fabricated product with a minimum compressive strength of 10,000 psi. The products must be 2' deep and extend across the entire width of the depression. The depression width shall match the width of the approaching sidewalk.

12. Striping

All striping must conform to MUTCD requirements and material shall be Perform Marking tape from 3M.

13. Traffic Control

Coordinate no parking, whenever possible, with water main and light pole locations with the Municipal code requirements. There shall be no parking on the inside of curves.

C. Allowable Pavement Construction Materials

Only IDOT approved materials shall be used for roadway construction within the Village of Hoffman Estates.

D. Construction Requirements

All construction shall meet Village and State requirements for methods and procedures and all work must be fully inspected by the Village.

E. Material Testing

1. The developer/owner is responsible for all materials testing with the

construction of any public street as required by the Village of Hoffman Estates.

a.

2. Concurrent with construction of any pavement within the corporate limits of the Village of Hoffman Estates, the contractor/developer must furnish the Engineering Director with copies of the Certificate of Testing from the Illinois Department of Transportation, Cook County Highway Department or from a testing laboratory, which has been prequalified by the Illinois Department of Transportation for Bituminous Aggregate Mixture and Bituminous Mixture Class 1.

3. Prior to placement of the surface course, all streets must receive an inspection. Upon visual inspections and review of the core reports, the Village will determine what action, if any, will be necessary for street repair. All base and binder course failures will then be repaired to the Engineering Director's satisfaction. This may include, but not be limited to, replacement, patching, crack grouting, or cracksealing.

4. Certificates of Testing for Portland Cement Concrete shall be required to verify Portland Cement Concrete design for a minimum 28-day compressive strength of 3500 PSI. One set of cylinders (1-7 day break, 2-28 day breaks) shall be required for each day's pour or for every 50 cubic yards. All slump mix design, and air tests must meet standard specifications.

V. WATER DISTRIBUTION SYSTEM

A. General

1. All developments shall include provisions for the construction of a water distribution system complete with valves, fire hydrants, and other appurtenances. Any and all expenses incurred to extend said water supply would be at the owner's expense.

2. The water distribution system shall be designed in accordance with the Grading Schedule for Municipal Fire Protection recommended fire flows by the Insurance Services Offices, Illinois E.P.A. Division of the Public Water Supply Technical Policy statements and these Development requirements. In the event of a conflict between the specifications, the more stringent specification shall apply.

3. Before commencing the water main layout, the developer shall confer with the Village of Hoffman Estates to determine the required size and grades for any trunk water main traversing the subdivision to fit the Village of Hoffman Estates system requirements. Any water main required to accommodate said increment shall be submitted as part of the engineering plans. Water mains shall be extended to the edge of the development along public rights-of-way and at other points indicated by the Engineering

Director. Any and all expense to upgrade or extend the water mains within their property for the Village of Hoffman Estates system requirements will be at the owner's expense.

4. For all projects involving extensions to the water main system, there shall be submitted to the Engineering Director reproducible as-built plans showing the actual locations and grades of water mains, valve vaults and hydrants and the locations of the service connections to the main and terminus of the services.

B. Water Main Design

1. A complete water distribution system including providing at least two sources shall be designed to serve the entire development. The water mains shall be of adequate size to supply the required domestic consumption and fire flow demands throughout the system. The design engineer shall submit calculations showing flows in the system at various locations, which are adequate for a domestic consumption and fire flow demand with a required minimum twenty (20) psi residual pressure. Dead end water mains are not allowed in the Village, unless approved by the Director of Engineering. Dead ends exceeding 150' are not allowed. Water main shall be a minimum of 15 feet away from any structure.

2. Connection to existing water mains shall be accomplished without interruption of service unless otherwise directed by the Engineering Director. A pressure tap and valves must be provided at the point of all connections to the existing system.

3. Design Flow-Domestic and Fire Protection - For purposes of water main design, maximum day flows shall be based on the following:

MAXIMUM DAY FLOWS

LOCATION OR TYPE	DOMESTIC FLOW	FIRE
Residential:		
1. Single Family-Detached	100 gpcd	1500 gpm
2. Single Family-Attached (Townhome)-with approved firewall	100 gpcd	2000 gpm
3. Multifamily	100 gpcd	3000 gpm
Office	50 gpcd	3000 gpm
Commercial	60 gal/emp/shift	6000 gpm
Industrial	75 gal/person/shift	6000 gpm

Flow shall be calculated using a "C" factor of 100, ignoring fittings, and with a minimum residual pressure of twenty (20) psi.

4. Pipe Size - The minimum water main pipe size shall be eight inches (8") diameter. Six-inch diameter pipes shall only be used as a fire hydrant lead. Pipe size must be approved by the Director of Engineering.

5. Fire Hydrants

   a. Hydrants should be installed at all street intersections and the maximum spacing between hydrants shall not exceed 300 feet when measured along the normal route of travel between hydrants.

   b. The maximum distance between any non-residential structure and a fire hydrant shall not exceed 250 feet.

   c. A hydrant is required within 100 feet of any building automatic sprinkler system or standpipe system Fire Department connection.

   d. The maximum length for a fire hydrant lead is 50 feet.

   e. Water mains servicing a fire hydrant shall have a minimum internal diameter of 8 inches. All water mains servicing a hydrant shall be of a looped design so as to eliminate dead end mains. If a dead-end main cannot be avoided, the maximum distance for this main shall not exceed 150 feet. A hydrant shall also be located at the end of this main. All dead ends must be approved by the Director of Engineering.

   e. All fire hydrants are to be Mueller A-423 design with stainless steel trim or approved equal conforming to AWWA C-502 for dry barrel with a breakaway type flange and auxiliary gate valve.

   g. Engineering drawings showing hydrant locations, water main locations and sizes shall be submitted to the Fire Department for review and approval.

   h. All fire hydrant construction must follow the fire hydrant detail enclosed herein.

6. Valves and Vaults

   a. All valves should be resilient seating wedge valves. Valves shall be located on water mains so as to be able to isolate sections of main from the entire system with minimum disruption of service.

   b. Valves shall be installed so that not over 800' of water main, with

services, will be shut off at any time. Transmission lines with no service connections shall have valves located so that not over 1200' of main will be shut off at any time. Valves on water mains servicing single-family residential areas shall be installed so that no more than 800' of water main and/or no more than 20 units shall be affected when shutting off a section of main.

c. A valve is required whenever a water main enters or leaves the right-of-way to or from the backyard.

d. Valves shall be located so that it will require no more than four valves to be closed to isolate a section of water main.

e. Valve vaults shall be forty-eight inch (48") on water mains 10" or smaller and sixty inch (60") inside diameter for the water mains 12" or larger with offset cones for valves larger than eight inches (8"). Vaults are to have a monolithic bottom and bottom barrel with holes for pipes poured for correct size pipe and minimum 9" from bottom.

7. Air Release Valves - Air release valves or hydrants shall be placed on the water main at high points as deemed necessary by the Engineering Director to serve as air vents preventing air locking of the water main. These air release valves shall be of the APCO 200 A Type or an approved equal placed in vaults.

8. Thrust Blocks - Thrust blocks or megalugs shall be required at all hydrant tees and bends greater than 11¼ degrees Where undisturbed earth is not available or not likely to be available to support the thrust blocks, megalugs, shall be used as required by the Engineering Director. Thrust blocks are required on all dead-end water mains.

9. Separation of Water Mains and Sewers - Separation and protection of water mains from sewers shall comply with the Illinois E.P.A. Division of Public Water Supplies Technical Policy Statements, latest edition.

10. Service Connections

a. All water service lines shall be designed as one service connection with a minimum diameter necessary to provide adequate domestic use and fire use requirements.

b. Water service line servicing single-family residences including townhome units shall be a minimum of one and one-half inch (1½") diameter.

c. If the service connection is made on an asbestos cement pipe, then tapping saddles are not permitted. Connection must be made with a

stainless steel tapping sleeve.

C. Allowable Materials

1. Water Main Pipe

a. All pipes shall be ductile iron pipe conforming to ANSI A21.51 or AWWA C151 with a minimum thickness of Class 52.

b. All pipe shall have a minimum laying length of 18 feet.

c. Pipe joints shall be push-on joints or mechanical joints conforming to AWWA C-111 (ANSI 21.11).

d. All DIP shall be cement-mortar lined in accordance with AWWA C-104 (ANSI A21.4).

e. Alternate pipe materials may be allowed upon review and approval of the Engineering Director.

2. Water Main Fittings

a. All water main fittings shall be ductile iron fittings conforming to AWWA specification C-110 (ANSI 21.10).

b. Fittings shall be cement-lined in accordance with AWWA C-104 (ANSI A21.4).

c. Alternate fitting materials may be allowed upon review and approval of the Engineering Director.

d. All mechanical joint type fittings shall include bolts made of stainless steel.

3. Valves

a. All valves shall be iron body, resilient seated, bronze mounted, nonrising stem gate valves conforming to AWWA C-500. Valves shall be Mueller A-2360 with stainless trim.

Other valves may be allowed upon review and approval of the Engineering Director.

4. Valve Vaults

a. Valve vaults shall consist of precast reinforced concrete sections meeting ASTM C-478 and ASTM C-443 standards.

b. Adjusting rings shall be precast concrete rings. The total number of adjusting rings shall not exceed two for a maximum height of 12 inches.

c. Vault steps shall be polypropylene plastic manufactured by M. A. Industries (PSI-PF) or approved equal.

d. Flexible boots, meeting ASTM C-923, are required at all pipe openings.

e. The placing of valve vaults in paved areas shall be discouraged. In the event that it is unavoidable, all structures in PCC concrete shall be boxed out with 3/4" expansion material.

f. Frame and grates for valve vaults shall be Neenah R-1713 with a Type B lid, East Jordan 1050Z1 with Type A lid or approved equal, embossed with the "Village of Hoffman Estates" and "Water" and have concealed pick holes.

5. Fire Hydrants

a. Fire hydrants shall be dry barrel type with breakaway type flange and auxiliary gate valves and shall conform to AWWA C-502.

b. Hydrants shall have two (2), two and one-half inch (2½") hose nozzles and one (1), four and one-half (4½") National standard pumper nozzle. Hose threads shall be the standard NSHT.

c. Hydrants shall have a main valve opening of five and one-quarter inches (5¼") with a 6" auxiliary valve with mechanical joints. The auxiliary valve shall have a two-piece valve box and plastic valve box stabilizer.

d. Hydrants shall be painted red.

e. Hydrants shall be Mueller A-423. Other hydrants may be allowed upon review and approval of the Engineering Director.

f. The maximum length for a fire hydrant lead is 50 feet.

6. Service Connections

a. All water service lines less than three-inch (3") diameter shall be constructed of Type K copper with flared fittings outside of the building foundation. Service lines three-inches (3") and larger shall

be ductile iron conforming to allowable water main material specifications.

b. Service connection to the water main for services less than three-inch (3") diameter shall be with a Mueller double strap bronze service clamp and a corporation stop Mueller H-15020 or approved equal. Direct taps to the water main must be approved by the Director of Engineering.

Service connections to the water main for services three-inches (3") or larger shall be with a ductile iron fitting conforming to water main fitting specifications. Services three-inches (3") and larger shall have gate valves conforming to water main gate valve specifications. No tapping saddles are permitted on existing AC pipe for any size.

c. Each service less than a three-inch (3") diameter shall have a curb stop Mueller H-15151 and a curb box Mueller H-10302 or approved equal. All services three-inches and larger shall be located in a valve vault.

d. During construction, the contractor shall clearly identify the terminus of each service by placing a 6' long blue tipped 2" X 4" post vertically 2' in the ground over the end of the service.

e. B-boxes shall not be allowed in paved areas including streets, sidewalks, driveways, etc.

7. Bedding and Trench Backfill

Aggregate for bedding and for trench backfill shall conform to requirements of the Trench Backfill Detail and Standard Specifications. There will be no exceptions, tunnel rock or crushed concrete are not allowed.

D. Construction Requirements

1. Before construction can begin, an approved IEPA permit must be received by the Village of Hoffman Estates.

2. Water mains and appurtenances shall be installed in conformance with AWWA C-600, the material manufacturer's recommendations, the Standard Specifications for Water and Sewer Main Construction in Illinois and these requirements. In case of conflicts between the specifications, the more stringent specification shall apply.

3. Trench backfill shall be required in all locations where the water main trench is under or within two feet (2') of existing or proposed pavements including, but not limited to curb and gutter streets, sidewalks, and driveways. The trench backfill shall be mechanically compacted to not less than 95% of the

standard laboratory density.

4. Excavation and backfill for water mains shall conform to the Standard Specifications for Water and Sewer Main Construction in Illinois, latest edition.

5. Unless otherwise shown on the plans or indicated in the special provisions, all pipe shall be laid to a minimum depth of six (6) feet and a maximum of eight (8) feet as measured from the proposed ground surface or established grade to the top of the barrel of the pipe.

6. Sheeting and bracing shall be placed in the ditch, as may be necessary, for the safety of the work and public, for protection of the workers adjacent properties, or structures and for the proper installation of the work. Sheeting and/or bracing shall be progressively removed as the backfill is placed in such a manner as to prevent the caving in of the sides of the trench or excavation, and to prevent damage to the work.

7. The trench, unless otherwise specified, shall have a flat bottom conforming to the proposed grade to which the pipe is laid. The pipe shall be laid on four inches of crushed stone placed on sound soil cut true and even so that the barrel of the pipe will have a bearing for its full length. Bell holes shall be excavated for joints. Any part of the trench excavated below grade shall be replaced with material approved by the Engineering Director and thoroughly compacted.

8. Where water is encountered in the trench, it shall be removed during pipe laying and jointing operations. Trench water shall not be allowed to enter the pipe at any time.

9. Where corrosive soils are encountered which may be damaging to the pipe, a polyethylene wrapping, bonding or cathodic protection may be required by the Engineering Director.

10. All connections to the existing water system shall be made under full water service pressure unless otherwise approved by the Engineering Director.

11. Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflections at the joints.

    Maximum deflections at the pipe joints and laying radius for various pipe lengths are as found in the following standards:

    Ductile Cast Iron Pipe Mechanical Joints AWWA C600.
    Ductile Iron Pipe Push-On Joints AWWA C600.

    When rubber gasketed pipe is laid on a curve, the pipe shall be jointed in a

straight alignment and then moved into position. Trenches shall be made wider on curves for this purpose.

12. All valves shall be attached to the water main with a flange connector to facilitate removal of the valve. The valve vault shall be of sufficient size to accommodate the valve and connector.

13. Fire hydrants shall have a minimum of one-half (½) cubic yard of one inch (1") to one and one-half inch (1½") washed gravel placed at the base of the hydrant to provide drainage at the barrel.

    The breakline flange of hydrants shall be 0.2' above finished ground elevation. Hydrants in street rights-of-way shall be placed not less than three feet (3'), nor more than five feet (5'), from the back of curb and at least 1½' from the sidewalk.

    Hydrants shall not be placed closer than 30' to the building.

14. Water service lines shall have a minimum cover of five feet (5').

    Copper service lines shall be one continuous length of pipe from the water main to the B-box.

    Curb stops and curb boxes shall be located in public rights-of-way. Such curb stops and boxes shall not be located in any paved areas unless approved by the Engineering Director.

15. Tracer wire (12 gauge copper) with blue insulation shall be installed on the water main continuous run length from valve to valve with accessible termination points at all valves and fire hydrants.

E. Material Testing

1. Pressure Test

   The contractor shall pressure test the water main pipeline at all valved sections. The Engineering Director shall be notified of the time of the test a minimum of twenty-four (24) hours prior to the test. Pressure testing the pipeline using compressed air will not be allowed. The test shall be made by closing valves or by tied end caps and/or plugs and filling the pipe slowly with water.

   The test shall consist of holding a minimum hydrostatic pressure on the pipe of 150 pounds per square inch for a period of two hours based at the lowest elevation of the test section. A two-pound test gauge with a minimum capacity of 160 pounds will be required. It is recommended that the initial pressure be 3 to 5 PSI above the minimum required pressure due to possible

air in the line. The test shall begin and end at the same pressure. The water necessary to bring to initial pressure shall be measured by a means satisfactory to the engineer. The leakage shall be considered the amount of water entering the pipeline during the test period. The total allowable leakage shall meet the requirements of AWWA C600-82.

Any defective pipe, fittings, valves, or hydrants shall be replaced with new sections. All fire hydrant auxiliary valves shall be open throughout the test in the test section. At the conclusion of the test, a fire hydrant shall be opened to verify that both the pressure drops on the pressure gauge, and that the fire hydrant auxiliary valves are open. The contractor shall provide all of the equipment necessary for the testing.

All testing shall be done prior to the installation of service lines. Suitable means shall be provided for determining the quantity of water lost by leakage under the specified test pressure.

ALLOWABLE LEAKAGE PER 1000 FT OF PIPELINE TABLE* - *gph*

Avg. Test Pressure *psi*	Nominal Pipe Diameter – *in.*												
	6	8	10	12	14	16	18	20	24	30	36	42	48
250	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70
225	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41
200	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09
175	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77
150	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41
125	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03
100	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60

* For pipe with 18-ft nominal lengths. To obtain the recommended allowable leakage for pipe with 20-ft nominal lengths, multiply the leakage calculated from the table by 0.9. If the pipeline under test contains sections of various lengths, the allowable leakage will be the sum of the computed leakage for each size.

Allowable leakage shall not be greater than that computed as follows:

$$\frac{\text{Footage } X \text{ Allowable Leakage } X \text{ 2 hours}}{\text{1000 ft}} = \text{Gallon } X 128 \text{ oz/gal} = \text{Total Allowable Leakage in oz}$$

Leakage is defined as the quantity of water required to be supplied to the newly laid pipe necessary to maintain the 150 pound test pressure.

All pressure tests shall be done in the presence of the Engineering Director.

When deemed impractical by Engineering or Public Works to test the new water main installations between existing valves, a static pressure test using system pressure shall be applied from existing valve to existing valve for 24 hours. Excavation will be kept open and barricaded to observe any leakage.

2. Preliminary Flushing

Prior to chlorination, the water main shall be flushed as thoroughly as possible with the water pressure and outlets available. Flushing shall be done after the pressure test is made. It must be understood that such flushing removes only the lighter solids and cannot be relied upon to remove heavy material allowed to get into the main during pipe installation. If no hydrant is installed at the end of the main, a tap should be provided large enough to effect a velocity in the main of at least 2.5 feet per second.

3. Disinfection

a. The point of application of the chlorinating agent shall be at the beginning of the pipeline extension or any valved section of it and through a corporation stop in the top of the newly laid pipe. The injector for delivering the chlorine-gas into the pipe should be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension.

b. Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine-gas. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine applied to the water entering the newly laid pipe shall be at least 50 ppm, or enough to meet the requirements during the retention period. This may require as much as 100 ppm of chlorine in the water left in the line after chlorination.

c. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the existing line supplying water.

d. Treated water shall be retained in the pipe long enough to destroy all spore-forming bacteria. This retention period shall be at least twenty-four (24) hours. After the chlorine-treated water has been retained for the required time, and after proper flushing, the chlorine residual at the pipe extremities and at other representative points should be at least 1.0 ppm.

e. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with a chlorinating agent. Dechlorination may be required before discharging highly chlorinated water into the storm sewer.

f. All water mains shall be disinfected and tested according to the requirements of the "Standards for Disinfecting Water Mains," AWWA C651-86, and shall be performed by an independent firm

exhibiting experience in the methods and techniques of this operation, and shall be done in the presence of the Engineering Director. The Engineering Director shall be notified of the time of disinfection a minimum of twenty-four (24) hours prior to the disinfection.

4. Final Flushing and Testing

Chlorinated water will be flushed from all terminations prior to sampling. Bacteriological samples shall be taken at each connection to the existing water main. In accordance with Section 7.1 of the AWWA Standard "at least one sample shall be collected from the new main and one from each branch. In case of extremely long mains it is desirable that samples be collected along the length of the line as well as at its end." The maximum distance allowed between samples in any situation shall be 1000 feet. All branch connections 3" in diameter or larger, greater than or equal to 20 feet in length including building services, are to be considered branches for application of this rule. Samples should never be taken from an unsterilized hose or from a fire hydrant, because such samples seldom meet current bacteriological standards.

Samples shall be taken by the firm performing the disinfection of the main and in the presence of the Engineering Director. Samples shall be transported iced from the construction site to the IEPA approved laboratory. The laboratory shall be instructed to notify the Engineering Division and the Public Works Department of all unsatisfactory results. Two successive satisfactory samples are required. Successive samples shall be taken at least 24 hours apart.

VI. SANITARY SEWER SYSTEM

A. General

1. Except as otherwise provided herein, no residential, commercial or industrial subdivision or development shall be approved unless it is served by sanitary sewers connected to the Village of Hoffman Estates' sewer system.

2. Any building located within the Village of Hoffman Estates shall have sanitary sewer services connected to the sanitary sewer main line. Any and all expenses incurred to extend said sewer system would be totally at the owner's expense.

3. Before commencing the sewer layout, the developer shall confer with the Village of Hoffman Estates to determine the required size and grades for any trunk sewers traversing the subdivision to fit the Village of Hoffman Estates' available capacities of existing offsite facilities to the MWRD interceptor together with the estimated increment of flow caused by the subdivision or

development. Any sanitary sewer required to accommodate said increment shall be submitted as part of engineering plans. Sanitary sewers shall be extended to the edge of the development along public rights-of-way and at other points indicated by the Engineering Director. Any and all expense to upgrade or extend the sanitary sewer for Village of Hoffman Estates system requirements will be at the owner's expense.

4. All public sanitary sewers shall be constructed within public rights-of-way. If constructed outside the public rights-of-way, the sanitary sewers shall have easements dedicated for public utilities.

5. For all projects involving extensions to sanitary sewer mains, there shall be submitted to the Engineering Director reproducible drawings of the "as-built" plans showing the actual constructed locations and grades of sewers and manholes and the locations of the service connections to the main and terminus of the services.

B. Sanitary Sewer Design

1. Sewer mains shall be designed and installed according to the Metropolitan Water Reclamation District of Greater Chicago and "Standard Specifications for Water and Sewer Main Construction in Illinois," "The Municipal Code," "Illinois Manual of Procedures for the Administration of the Sewer Permit Ordinance," and these specifications. In case of conflict between the standards, the more stringent or restrictive requirements shall apply.

   Force mains must be designed to meet water main specifications.

2. Sewer Design Flows

   Design flows for all residential developments shall be based upon full development of the service area within the population served, estimated as follows:

   a.

TYPE OF DWELLING UNIT	NO. OF PERSONS
Studio	1
1 Bedroom	2
2 Bedroom	3
3 Bedroom	4
4 Bedroom	5

   b. (1) The peaking factor for maximum daily per capita design flow shall be calculated using the formula:

$$\text{Peaking Factor} = \frac{18+P^{0.5}}{4+P^{0.5}}$$

P = population served, in thousands

The actual need must be multiplied by the peaking factor.

c. For undeveloped residential areas where the details of future developments are now known, design population per acre may be estimated by the Engineering Director.

d. Design flows for nonresidential developments shall be based on full development of service area with the maximum daily per capita design flow calculated as follows in THE TABLE BELOW:

NONRESIDENTIAL DESIGN FLOWS

TYPE OF ESTABLISHMENT	UNIT	AVERAGE FLOW GALS/DAY/UNIT	FLOW FOR SEWER DESIGN IN GALS/DAY/UNIT*
Shopping Center	500 sf/person	50	200
Store	500 sf/ person	15	120
Office	300 sf/ person	15	100
Industrial	500 sf/ person	15	140
Restaurant	Meal Served	7	30
Theater	Per Seat	5	20
Hotel	Per Guest and Per Employee	60/25	400

* Quantities are exclusive of process water requirements which must be estimated and added.

* Office can also use 0.1gallons per square foot per day.

e. For nonresidential developments where the details of the development are not established, domestic design flows may be estimated by the Engineer. Such flow estimate shall not relieve the owner or developer of the responsibility of providing adequate sanitary sewer capacity to meet any and all future requirements within and through the development.

f. Sanitary sewer hydraulics shall be designed to provide design flow capacity, without surcharging, using Manning's formula:

(1) $$Q = A \times \frac{1.486}{n} \times R^{2/3} \times S^{1/2}$$

Where Q = design flow in units of cubic feet per second

A = area in units of square feet
R = Hydraulic radius
S = Slope in units of feet per foot
n = Roughness coefficient, in dimensionless units.

(2) Design mean velocity, flowing full, shall not be less than two (2) feet per second or greater than ten (10) feet per second.

(3) Sewers which will flow less than one-half (½) full at design maximum flow shall have a slope to provide a velocity not less than two (2) feet per second at the design maximum flow.

(4) Design flow shall include total allowable infiltration at any point based on 100 gallons per day per inch diameter per mile of sewer pipe.

(5) Minimum pipe slope for sanitary sewers are as follows:

Pipe	Minimum Slope
8 inch	0.45%
10 inch	0.30%
12 inch	0.25%
14 inch	0.20%
15 inch	0.18%
18 inch	0.15%

3. Minimum Sewer Size

a. Minimum sanitary sewer size shall be 8-inch diameter.

b. Minimum building sanitary service sewer size shall be 6-inch diameter.

c. Minimum length of sanitary sewer pipe shall be 18 feet.

4. Alignment - Sewer shall be laid straight in both horizontal and vertical planes between manholes. Curved alignments are not allowed.

5. Sewer Size Changes - Sanitary sewer of different diameter shall join only at manholes. The invert elevations shall be adjusted to maintain a uniform energy gradient by matching the top of pipe elevations of different pipe diameters.

6. Depth of Pipe Cover - All sanitary sewer pipe shall be laid to a minimum depth of five (5) feet measured from the existing or proposed ground surface to the top of the pipe barrel unless specifically allowed otherwise, by the Engineering Director.

   Pipes laid at depths of (20) feet or greater from top of pipe to rim grade shall be ductile iron pipe.

7. Sanitary Sewer Manhole - Manholes shall be provided at the following:

   a. Termination of existing and future lines.

   b. Changes in direction or alignment, horizontal or vertical.

   c. Changes in shape or pipe size.

   d. Junctions with other sewers.

   e. Access spacing shall be:

SANITARY SEWER ACCESS TABLE

Sewer Pipe Size (in inches)	Maximum Interval (in feet)
8 - 24"	400'
27" & larger	500'

   f. Drop manhole assemblies shall be provided at the junction of sanitary sewers where the difference in invert elevations is two (2) feet or greater. The entire drop assembly shall be cast in concrete monolithically with the manhole barrel section on the outside of the manhole. The drop pipe shall be constructed of Ductile Iron Pipe, Class 52. Drop manholes shall be 48" minimum inside diameter. Inside drops are not allowed.

   g. Manholes for sanitary sewers twenty-four inches (24") or less in diameter shall have a minimum inside diameter of forty-eight inches (48").
   Manholes for sanitary sewers twenty-seven inches (27") or larger in diameter or greater than twenty feet deep shall be sixty inches (60") inside diameter.

   h. All manholes shall be constructed of precast concrete and have two (2) coats of bituminous material applied on the outside of the manhole at the factory.

i. The placing of manholes in paved areas shall be discouraged. In the event that this is unavoidable, all structures in PCC concrete shall be boxed out with 3/4" expansion material.

8. Lift Station - Whenever possible, sanitary sewerage facilities shall be designed so as to avoid the necessity of providing lift stations.

a. If a lift station is part of the engineering design, it shall be shown in plan elevation. Specifications for said lift station shall be submitted with engineering plans. Lift stations shall be of the wet well type with submersible pumps, outside valve vault and accessories and shall conform in all respects to the standards established by the State of Illinois, Environmental Protection Agency and Metropolitan Water Reclamation District. However, every reasonable effort shall be made to avoid lift stations in the sanitary sewer design.

b. A separate source of power shall be furnished to each sewerage lift station. This shall be from another electrical source provided by a separately powered engine or second power source. Enclosure and mounting shall be subject to approval by the Engineering Director. An alarm shall be installed to the Village of Hoffman Estates master panel to identify failure at the lift station.

9. All vertical and horizontal spacing requirements shall follow Illinois Pollution Control Board Regulations and the Illinois Environmental Protection Agency, Division of Public Supplies, Technical Policy Statements.

C. Allowable Materials

1. Sewer Pipe

a. Ductile Iron Main - Conforming to the requirements of A.S.T.M. A-746 and Class 52.

b. Thick walled PVC Pipe - Conforming to the requirements of A.S.T.M. D-2241, SDR 26, push type joint.

2. Force Main

a. Ductile Iron Pipe - Conforming to A.W.W.A. Specifications C-151 - Class 52.

b. P.V.C. Pipe - Conforming to A.W.W.A. Specification C-900 - SDR-18.

3. Pipe Joints

   a. Ductile Iron Pipe - A.N.S.I. A-21.11 (A.W.W.A. C-111).

   b. P.V.C. Thick-Walled Pipe - A.S.T.M. D-3212 and F-477.

4. Pipe Sleeves for Auguring or Tunneling

   Steel Sleeves - Shall be 3/8" thick, of the diameter specified, with a continuous, circular 1/2" bead weld and shall meet the requirements of A.S.T.M. A-120.

5. Manholes

   a. Precast reinforced concrete conforming to A.S.T.M. C-478.

   b. Adjustment - No more than two (2) precast concrete adjusting rings with twelve (12) inch maximum height adjustment.

   c. Pipe and Frame Seals - All pipe connection openings shall be precast with watertight resilient rubber boots, for the pipe to manhole connection.

   d. Bottom Sections - All bottom sections shall be monolithically precast including bases and invert flow lines. Bases shall be a minimum of six inches thick and placed on a minimum of four inches of stone bedding.

   e. Manhole sides shall have a minimum thickness of five inches.

   f. E-Z stick rope type mastic to be used between barrel sections, rings, and frames.

   g. All manhole sections shall receive two coats of bituminous material applied at the factory.

6. Castings

   a. Manhole frame and cover - Neenah No. R-1713 with Type B lid, East Jordan 1050Z1 with Type A lid or approved equal, with self-sealing lid, embossed "Village of Hoffman Estates" and "Sanitary".

   b. Manhole steps - Steps on sixteen-inch centers are to be polypropylene plastic manufactured by M.A. Industries (PSI-PF) or approved equal.

   c. All sanitary sewer castings shall receive a external chimney seal such

as Cretex or approved equal.

d. Recessed or concealed pickholes shall be required.

e. Frames and covers for manholes located within floodplain areas and having a rim elevation below the flood protection elevations shall be watertight, lock-type covers - Neenah No. R-1916-C.

D. Construction Requirements

1. Specifications - All sanitary sewers shall be constructed in accordance with the provisions of the Standard Specifications for Water and Sewer Main Construction in Illinois, latest edition and these specifications. In case of conflict between the standards, the more stringent requirement shall apply.

2. Approvals and Permits - Construction of sanitary sewers and/or sewer service shall not commence until engineering plans and specifications have been approved by the Village of Hoffman Estates Board and permits for construction of the sewers have been issued by the Metropolitan Water Reclamation District and the Illinois Environmental Protection Agency.

3. Excavation and Foundation

a. The trench shall be excavated so that the flow line of the finished sewer shall be at the depth and grade shown on the approved plans. The trench for the pipe shall be excavated at least twelve (12) inches wider than the external diameter of the pipe. The width of the trench shall not exceed the external diameter of the pipe more than eighteen (18) inches at the top of the pipe or 32 inches minimum width.

If the excavation has been made deeper than necessary, the trench foundation shall be brought to proper grade by the addition of well-compacted bedding material. Where a firm foundation is not encountered at the grade established, due to soft, spongy or other unsuitable soil, (unless other special construction methods are called for on the plans or in the special provisions), all such unsuitable soil, under the pipe and for the width of the trench shall be removed and replaced with well-compacted bedding material.

b. Bedding, shall consist of gravel, crushed gravel, or crushed stone 1/4" to 3/4" in size. As a minimum, the material shall conform to the requirements of Article 704.01 of the Standard Specifications or ASTM C-33. The gradation shall conform to gradation of the Illinois Standard Specifications. The pipe shall be laid so that it will be uniformly supported and the entire length of the pipe barrel will have full bearing. No blocking of any kind shall be used to support the pipe. Bedding shall be required for all sanitary sewer

construction and equal to 1/4 of the outside diameter of the sewer pipe and shall not be less than four inches (4") and a minimum of six (6") inches in rock excavation.

4. Pipe Laying

a. Pipe shall be laid straight both horizontally and vertically between manholes. The curvature of sanitary sewers is not allowed unless, special circumstances dictate otherwise and approved by the Engineering Director.

b. Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned, and relaid. At times when pipe laying is not in progress, the open end of the pipe shall be closed with a watertight plug or by other means approved by the Engineering Director to ensure absolute cleanliness inside the pipe.

c. Pipe laying and joining shall be done in accordance with pipe manufacturer's recommendations.

d. Pipe shall not be dropped from delivery vehicles. All pipe shall be lowered into the trench with a suitable apparatus. In no case shall the pipe be dropped or thrown. Sanitary sewer pipe shall be handled in a manner that will minimize or prevent damage.

5. Sanitary Sewer Connections and Services

a. Connections to the sewer main shall be done by means of a wye fitting installed in the main.

b. When sewer mains are deeper than 12', risers shall be installed at connections such that service pipe shall be no more than 10' deep.

c. Unused wye fittings shall have socket ends sealed by watertight rubber or plastic stoppers suitably fastened or braced to prevent dislodging by back pressure from the main line.

d. Connections to existing sewer mains shall be made by installing a new wye fitting or machine cored hole and installation of a wye saddle in accordance with manufacturer's recommendations. All such connections shall be done in the presence of the Engineering Director.

e. Sewer services shall be installed as shown on the plans. They shall be constructed of 6" cast iron or PVC pipe, SDR 26. Sewer services shall be bedded and backfilled the same as sanitary sewers. The

length of service shall start at the 6" opening in the sewer wye branch and end at the property line; except where utilities are installed in front lot easements, services shall be extended 4' beyond such utilities to avoid later tunneling. The maximum length of a building service sewer shall preferably be at 120 feet and shall not exceed 150 feet. If the length is exceeded, an intermediate manhole shall be built. When the building service sewer connects to a sewer lateral of a size not larger than the size of the service sewer, a manhole shall be built at the point of connection.

The sewer service shall be temporarily plugged so the sanitary sewer can be air tested. The Contractor shall clearly identify the terminus of each service by placing a 6' long green tip 2" x 4" post vertically 2' in the ground over the end of the service. Four inch and 6" service sewers shall be laid at a minimum grade of 1.0' per hundred feet. Connections to existing sewers shall be made using pipe tapping machine and fittings. All sanitary services shall be minimum depth of 5' - 0' as measured over the pipe.

f. Construction Records - The contractor shall keep a record of the location of all sewer services by measurement to the nearest downstream manhole. Such records shall be delivered to the Engineering Director at the completion of the work and required information on the as-built plans.

6. Backfilling

a. Backfilling shall not be done until installation of the sewer has been inspected and approved by the Engineering Director.

b. All backfill must follow the Trench Cross Section Detail in this manual.

c. Sheeting and bracing shall be placed in the ditch, as may be necessary, for the safety of the work and public, for protection of workmen, adjacent properties, or structures and for the proper installation of the work. Sheeting and/or bracing shall be progressively removed as the backfill is placed in such a manner as to prevent the caving in of the sides of the trench or excavation, and to prevent damage to the work.

E. Material Testing

1. Air Test

Immediately after backfilling the entire length of the sewer trench, including stubs, it shall be air tested. The procedure for air testing shall be the time

pressure drop method as specified by the American Public Works Association. All testing shall be performed in the presence of the Engineering Director. The test shall meet the following specification:

Only one section or sections between manholes will be allowed for testing at a time.

2. Mandrel Test

All P.V.C. sanitary sewers shall be deflection tested with a mandrel. All PVC sanitary sewers shall meet the following specifications:

a. The 5% deflection test for pipe sizes six (6) to fifteen (15) inches in diameter is to be run using a nine-arm mandrel having a diameter equal to 95% of the base diameter of the pipe as established in ASTM D-3034. For pipe sizes eighteen (18) to twenty-seven (27) inches diameter, the nine-arm mandrel size shall be 95% of the inside diameter and wall thickness dimensions shown in Table 1 of ASTM F-679, latest issue. The test shall be performed without mechanical pulling devices.

b. The individual lines shall be tested no sooner than 45 days after they have been installed.

c. Wherever possible and practical, the testing shall initiate at the downstream lines and proceed towards the upstream lines.

d. No pipe shall exceed a deflection of 5%.

e. Where deflection is found to be in excess of 5% of the original pipe diameter, the contractor shall excavate to the point of excess deflection and carefully compact around the point where excess deflection was found. The line shall then be retested for deflection. However, should after the initial testing the deflected pipe fail to return to the original size, (inside diameter) the line shall be replaced.

3. Procedures

MWRD Request for Inspection (RFI) forms must be submitted to the Engineering Director and signed by the Inspection Engineer, Sewer Contractor and the Developer. Only those persons who have signed the original MWRD permit application form may sign the RFI. An inspection must be done by the sewer contractor, inspection engineer, MWRD and Village of Hoffman Estates. The sanitary sewer shall not be placed in operation until all agencies approve. All punch list deficiencies must be corrected before the Testing Certificate will be executed by the Village of

Hoffman Estates. Partial tests can be scheduled in segments of up to 1,800 L.F. when the permit is for larger projects.
It shall be the intention of this specification to secure a sewer system with a minimum amount of infiltration. Maximum allowable infiltration shall be 100 gallons per inch of diameter of sewer per mile per 24-hour day at any time for any section of the system. The joints shall be tight and visible leakage in the joints, or leakage in excess of that specified above, shall be repaired at the contractor's expense by means approved by the Engineering Director.

4. Infiltration/Exfiltration Testing

Prior to Village of Hoffman Estates approval of the sanitary sewer system and any connections to the system, the system shall have passed infiltration or exfiltration tests conducted by both the Metropolitan Water Reclamation District of Greater Chicago and the Village of Hoffman Estates.

5. Televised Sanitary Sewers - All sanitary sewer shall be televised by the contractor or developer and a copy of the DVD delivered to the Director of Engineering with the as-built plans.

VII. STORM SEWERS AND DRAINAGE SYSTEMS

A. General

All developments, whether public or private, shall include provisions for the construction of storm sewers and appurtenances. The storm sewer system shall be separated and independent of the sanitary sewer system.

Developer/owners are required to obtain a storm water permit from National Pollutant Discharge Elimination System (NPDES).

All storm sewers, streams or channels shall be designed to accommodate storm water runoff from all areas, which naturally flow to the area of development.

B. Storm Sewer Design

1. Design Flows - Storm sewers, streams and channels shall be designed on a ten-year storm frequency based on the rational method using the formula Q = c x i x A, where:

Q = runoff flow in cubic feet per second
c = runoff coefficient, characteristic of the tributary area in dimensionless units.
i = average rainfall intensity in inches per hour
A = tributary drainage area in acres

The rainfall intensity shall be based on Bulletin 70 by Illinois State Water Survey.

2. Drainage Area - The drainage area, in acres, used for design shall be the entire watershed tributary to the point in the storm sewer system under consideration. It shall include any tributary area that may be outside the development.

3. Rainfall Intensity

   a. The average rainfall intensity used for design shall be selected from rainfall-intensity curves based on Bulletin 70.

   b. The rainfall intensity for storm sewers shall be determined from the 10-year storm curves.

   c. The rainfall intensity for detention systems and streams or channels shall be determined from the 100-year storm curves.

   d. The elapsed duration time used to select the rainfall intensity shall be equal to the time of concentration defined as: the time (in minutes) for the flow from the most remote point of drainage area to reach the point under consideration.

   e. For storm sewer design, the maximum time of concentration to a storm sewer inlet shall be 20 minutes.

4. Runoff Coefficients

   The runoff coefficient is the ratio of runoff to rainfall and must follow MWRD requirements.

5. Storm Sewer, Stream and Channel Hydraulics

   a. Storm sewers, streams and channels shall be designed to provide flow capacity based on Manning's formula:

$$Q = (A)\ \frac{(1.486)}{n} \times R^{2/3} \times S^{1/2}$$

where:

Q = Quantity of flow in cubic feet per second
A = Area of the conduit in square feet
n = Roughness coefficient of the conduit - dimensionless
R = Hydraulic Radius = pipe area divided by wetted perimeter
S = Slope in feet per foot

b. Roughness Coefficients

(1)	Concrete pipe	n = 0.013
(2)	Channel - sodded	n = 0.020
(3)	Streams - clean	n = 0.030
(4)	Stream - obstructed	n = 0.150

c. Velocities - design velocities shall be:

(1) Storm sewers minimum 2 f.p.s.; maximum 10 f.p.s.

(2) Channels and streams

Lined - Minimum 2 f.p.s., maximum 10 f.p.s.
Unlined - Minimum 2 f.p.s., maximum 5 f.p.s.

6. Storm Sewers

a. Minimum storm sewer size in the R.O.W. shall be twelve inches (12"). The minimum storm sewer size in rear yard or grassed areas shall be ten inches (10").

b. Storm sewers shall be laid straight in both horizontal and vertical planes between structures unless otherwise approved by the Engineering Director.

c. Any storm sewer which discharges into a pond, lake or wetland must consist of the following pipe type to the nearest manhole from the discharge point. Advance Drainage System, N-12 in 20-foot lengths or approved equal.

d. All exposed storm sewer pipe ends shall have a flared-end section with a trash grate.

e. Storm sewers of differing diameters shall join at structures only. The invert elevations shall be adjusted to maintain a uniform energy gradient by matching the top of pipe elevations of the differing diameters.

f. Inlets shall be provided so that surface water is not carried across or around street intersections. Roadway inlets shall not exceed 300-foot spacing. Inlets shall be provided at all low points. The overland grass discharge course shall be limited to 200 feet wherever possible without flowing into a storm sewer pipe.

g. All sump pump discharges must be connected into the storm sewer

system. A residence shall have a storm sewer service to connect the sump pump discharge into the storm sewer.

h. Sump pump conveyance lines shall be four inches in diameter servicing one house and six inches when servicing more than one house and a minimum of 18 inches from invert to ground.

i. Minimum depth of cover to the top of the storm sewer pipe shall be 3.0'.

j. Manholes shall be provided at:

(1) Changes in direction - horizontal or vertical.

(2) Changes in shape or size of pipe.

(3) Junctions of pipes.

(4) Maximum spacing 400' for sewers 42" diameter and smaller; 500' for sewers 48' and larger.

k. The placing of manholes in paved areas shall be discouraged. In the event that this is unavoidable, all structures in PCC concrete shall be boxed out with 3/4" expansion material.

7. Drainage Ways

a. Existing stream and channels should be left intact and any changes subject to review and approval by the Illinois Department of Natural Resources, Office of Waterway, Division of Water Resource Management and the Army Corps of Engineers as required and the Engineering Director. New open channels may be provided, if approved by the Engineering Director, for locations servicing 80 acres or larger.

b. Where stream and channel are realigned or improved, the bottom shall be stabilized full width with RR-4 river rock minimum eight inch (8") diameter or grass paving block as approved by the Engineering Director. The banks shall be protected from erosion by a method approved by the Engineering Director.

c. An access maintenance easement shall be provided at the top of the bank of all streams and channels. The easement shall be kept free and clear of any and all structures, shrubbery, etc. The width shall be as necessary for the typical creek cross section.

d. If new channels are approved by the Engineering Director, they shall

be approved as follows:

(1) Side slopes - 6 horizontal to 1 vertical maximum.

(2) Minimum width of channel bottom is six feet (6').

(3) Bottom of channel shall be stabilized full width with RR-4 river rock or grass paving blocks as approved by the Engineering Director. The banks shall be protected from erosion by a method approved by the Engineering Director.

8. Floodplains

a. All construction in floodplains shall conform to Chapter 10-8 of the Municipal Code.

b. Compensatory storage at 1.5 to 1 shall be required for all fill and construction done within floodplain areas.

c. Streets near floodplain areas shall be designed such that the lowest elevation of the gutter flow line of minor streets and cul-de-sacs shall be at or above the base flood elevation and the lowest elevation of the gutter flow line on all other streets shall be one foot (1') above the base flood elevation.

C. Allowable Materials

1. Storm sewers shall be reinforced concrete pipe conforming to ASTM C-76 Wall B standards for round pipe or ASTM C-507 for elliptical pipe. Class of pipe shall conform to Section 603 of the Standard Specifications.

The following storm sewer pipe is allowed in paved and nonpaved areas in private development projects:

Advanced Drainage Systems N-12 or approved equal.

Alternate storm sewer materials may be allowed upon review and approval of the Engineering Director.

2. Storm sewer pipe joints shall be "O" ring joints conforming to ASTM C-361.

3. Manholes, catch basins and inlets shall be precast reinforced concrete conforming to ASTM C-478. All structures shall have precast pipe connection openings with watertight resilient rubber boots for the pipe to manhole connections.

4. Joints between manhole, catchbasin, and inlet sections shall be filled with

preformed bitumastic joint filler of sufficient size to completely seal.

5. Inlets and catch basins in paved areas are to have weepholes and filter fabric as per Village of Hoffman Estates detail.

6. Castings

   a. Inlet and catch basin frame and open grates in paved areas shall be Neenah R-2504 with Type D grate, East Jordan 1050Z1 with Type M1 grate or approved equal.

   b. Inlet and catch basin frame and grates in grassed areas shall be Neenah R-2540 with Type D grate, East Jordan 1020 with Type M1 grate or approved equal.

   c. Manhole frame and closed grates shall be Neenah R-1713 with Type B lid, East Jordan 1050Z1 with Type A lid or approved equal, embossed "Village of Hoffman Estates" and "storm".

   d. Steps shall be polypropylene plastic PS1-PF by M. A. Industries or approved equal.

7. Bedding and trench backfill for storm sewers shall conform to the Trench Cross Section detail in this manual.

D. Construction Requirements

1. Storm sewers shall be constructed in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois, the pipe manufacturer's recommendations, and these specifications. In case of conflicts between specifications, the more stringent shall apply.

2. Excavations for sewers which are beneath any existing or proposed pavements, driveways and sidewalks and any trenches within two feet (2') of such areas shall follow the Trench Cross Section detail in this manual.

3. Adjusting rings for manholes, catch basins, and inlets shall be limited to a maximum of two (2) rings and maximum height of twelve inches (12").

4. When adjusting rings are required on structures, a bituminous material coating shall be applied between the rings. Rubber adjusting rings will also be allowed.

5. Lifting holes in structure sections and sewer pipe shall be plugged with appropriate mixed concrete lift plugs and coated with bituminous material.

6. Headwalls and spillways are required and can be precast or poured in place.

All headwalls and spillways shall be designed in accordance with the state standard specifications.

7. Precast, poured-in-place, or HDPE flared-end sections are required on all storm sewers discharging into or draining a retention-detention facility. Trash grates are required with flared-end sections.

8. Wing walls or flared-end sections are required on all storm sewers or culverts under driveways or roadways.

E. Materials Testing

1. All sewers and appurtenances shall be cleaned prior to inspection and testing.

2. Upon completion of construction and prior to acceptance of the storm sewer and again prior to expiration of the maintenance guarantee, the storm sewers shall be inspected through use of standard methods which could include T.V. inspections by the contractor. All deficiencies noted during the final inspection shall be repaired by the contractor at their expense by means approved by the Engineering Director.

VIII. DETENTION REQUIREMENTS

A. General

1. All non-residential, commercial and industrial zoned development ½ acre or larger, and all residential developments five (5) acres or larger shall include provisions for storm water detention facilities following MWRD requirements.

2. All storm water detention facilities in any residential developments shall be located not less than 40 feet from the building. At a distance of 40 feet from any building, there must be 1.5 feet of vertical freeboard from the lowest grade adjacent to a building to the highest water elevation of the adjacent basin.

B. Design

1. All detention basins shall be designed in accordance with the requirements of the Metropolitan Water Reclamation District of Greater Chicago, these specifications and the Village of Hoffman Estates Municipal Code. In case of conflicts between the codes, the most stringent shall apply.

2. Best Management Practices must be followed in the design of any facility. Storm water quality must be addressed for each detention facility.

3. Detention basin discharge structures shall be designed such that they have sufficient capacity to discharge the allowable release rate from the development and any storm water flowing through the property from upstream tributary areas outside of the development. All basins shall have provisions for directing emergency overflow. The use of rip rap or other erosion control devices at the emergency overflow point is required. The emergency overflow point must not be located over or near the low flow storm sewer or any other storm sewer near the detention basin. The emergency overflow must be a minimum width of 15' and have a depth of 1 to 1.5 feet. This requires some amount of freeboard above the highwater line for the top of berm for the detention basin.

4. For the purpose of designing such storm water drainage systems, it shall be assumed that the runoff rate from upstream lands within the drainage basin is that which would result from a rainstorm of a three (3) year frequency at a runoff rate coefficient of 0.15 in cases where there are retention basins in the upstream drainage area.

    a. Whenever upstream detention facilities have a release rate that is less than the maximum permitted by this Subsection, then allowance shall be made for such reduced runoff rate in calculating the capacity of the drainage system structure.

    b. Whenever detention facilities have not been provided and are not required to be provided for any part of the upstream land in the drainage basin, then the bypass flow rate for subdivisions and developments for which storm water detention facilities are required by this Subsection shall use a runoff coefficient of not less than 0.35.

5. The detention volume required shall be that necessary to store the runoff of a 100-year rainfall, for any and all durations, from the fully developed drainage area tributary to the reservoir.

6. Dry detention basins shall be designed with side slopes not steeper than 3 horizontal to 1 vertical. The floor of basin shall have a slope of not less than two percent (2%). In order to prevent soil erosion and weed problems and to provide for usable active recreational areas during dry weather, the detention basin shall be landscaped including sodding and/or hydroseeding of the basin as required.

7. Retention basins or permanent ponds shall be graded such that the area one foot (1') above the normal water level to three feet (3') below normal water level has a slope of four (4) horizontal to one (1) vertical.

    All retention basins must have permanent shoreline erosion control consisting of deep rooted natural vegetation (not grass), rip rap or other means to control shoreline erosion. The Engineering Director must approve

any method used for shoreline erosion.

If rip rap is chosen, the area from two feet (2') above the normal water level to two feet (2') below normal water shall have a shoreline protection consisting of natural rocks with a minimum twelve inch (12") diameter placed on an erosion control fabric. Additional protection may be provided.

At the point three feet (3') below the normal water level, a ledge five feet (5') wide and flat shall be constructed. From the edge of this five foot (5') ledge, the ground shall slope at two (2) horizontal to one (1) vertical for an additional three foot (3') depth for a total minimum depth of 6'. If fish life is to be sustained in the basin, an area equal to twenty-five percent (25%) of the normal water surface area shall be a minimum of twelve feet (12') deep.

The ground above one foot (1') above the normal water elevation shall have a slope not steeper than ten (10) horizontal to one (1) vertical for a minimum horizontal distance of twenty feet (20'). Above this elevation, the slope within the basin shall not be steeper than six (6) horizontal to one (1) vertical nor shallower than two percent (2%).

8. Trapezoidal Open Channels

a. Open channels of trapezoidal design are discouraged but may be provided on an optional basis in lieu of enclosed storm sewer pipe. Open channels must be designed properly to handle the rainfall from a 100-year rain event.

b. No open channel shall be permitted with seventy five feet(75') of any residential structure.

C. Testing

The volume for all detention and retention basins must be verified with record drawings of the as-built condition.

IX. GRADING AND EROSION CONTROL

A. General

A grading plan is required for all land improvements. This would consist of existing and proposed contours for grading and drainage facilities within 100 feet of the site in all directions in USGS datum. All existing and proposed conditions must also be shown. Grading plans and Erosion Control plans shall be on separate sheets.

B. Design

1. Engineering Requirements

a. Grass slopes shall be a two percent minimum. Thirty-three percent maximum grass slope for non-residential and 25% maximum grass slope for residential.

b. Rear yard drainage from rear of lot to the house or horseshoe drainage is not allowed.

c. Driveway slope shall be between 2% and 8%.

d. There shall be 18 inches of freeboard from the lowest grade adjacent to a building and the overland flow crest point.

d. Minimum exposed foundation at the grass grade or natural grade at the foundation is 6".

2. Grading Plan Requirements are listed below and are not limited to:

a. Elevations at property corners, ROW line, top of curb grades at extended property line, high points, and swale breakpoints and any locations needed to define a drainage pattern. Proposed contours are required on all grading plans in addition to spot elevations.

b. Building pad locations.

c. A note is required on the plans stating that all stockpiles and basins must be seeded immediately for erosion control. This is in addition to silt fencing or hay bales used in the interim until the seeding is established. Any fast growing grass would be acceptable.

d. Top of foundation elevations with designations for changes in elevations for any walkout, English basements, drop siding, drop garage floor or exposed foundation.

e. Existing ground elevations near the tree which will be saved.
f. Driveway location and slope.

g. Required and provided storage volumes for detention as well as normal water line and high water line.

h. Garage floor elevations if not on typical lot cross-section.

i. Drainage arrows with slope shall be shown in parking lots or where needed to define the drainage pattern.

j. Location and rim elevations of all drainage structures.

k. Overland flow paths shall be indicated by large arrows.

l. Proposed street centerline elevations indicated every 100' and at high and low points.

m. Channel or swale flow elevations shall be indicated every 50'. Cross-sections may be required.

n. Grading legend.

o. Floodplain boundaries.

p. Retaining wall elevations and locations at top of and bottom of wall at all break points.

C. Top of Foundation Approval

1. Procedures

a. Within fourteen days after the foundation is constructed the owner/developer shall furnish to the Village of Hoffman Estates two (2) copies of the plat of survey prepared by a registered land surveyor attesting to the top of foundation elevation, together with a true United States Geological Survey elevation of the top of foundation.

b. No construction shall be permitted beyond the deck over the foundation, except for water, sewer and appurtenances thereto, unless the aforesaid survey has been approved by the Development Services Department.

2. Top of Foundation Survey Requirements

a. Proposed and as-built foundation elevations, including location and elevation for any step downs for walkouts, English or lookout basement units, or drop garage floor.

b. Foundation location on property with offsets from front and side property lines.

c. Driveway location

d. Location of all easements and setback lines on property.

e. Permit number and address of each lot/unit.

f. Stamp and signature of a registered land surveyor.

3. Top of Foundation Survey Approval

a. The as-built foundation elevation must be within 0.2' of the elevation as approved on the grading plan. Any difference greater than 0.2' will be subject to review and approval by the Engineering Director.

b. The structure must meet all setback requirements.

c. The structure must not be located within an easement.

4. The Village will review the survey within two days of submittal.

D. Final Grading Inspection

1. Procedures

a. Prior to the issuance of any Certificate of Occupancy, a final grading inspection must be conducted by the Transportation and Engineering Division. The Developer/Contractor is responsible for scheduling the inspection at least 24 hours in advance of the desired inspection time. Developer/Contractor may be present at the inspection.

b. The final grading inspection shall identify whether all grading requirements set forth in these specifications have been met.

c. No permanent Certificate of Occupancy shall be issued until the final grading inspection has been approved.

d. A temporary certificate of occupancy will be authorized only if, because of winter weather, the final grading of the lot cannot be completed.

e. For any temporary certificate of occupancy issued between November 1 and April 1, the Developer/Contractor shall have until June 1 to complete the work unless, in the opinion of the Village Engineer, weather is prohibiting work from being accomplished.

f. Prior to permanent occupancy of any structure, a final plat of survey must be submitted at least ten days prior to the final grading inspection, in which it is shown that the as-built grading is in conformance with the approved grading plan.

g. The Village Engineer may approve minor deviations from the grading plan provided that the changes do not adversely affect the drainage characteristics of the property in question or surrounding properties.

h. The Developer/General Contractor shall bear full responsibility of correcting all deficiencies revealed in the as-built survey as directed by the Village Engineer.

2. As-Built Survey Requirements

a. As-built top of foundation elevation, including any step down or change in elevation.

b. Garage floor elevation

c. Driveway slope

d. Spot grades at all lot corners, drainage breakpoints, every 25’ and any other locations needed to adequately show drainage paths.

e. Any existing trees that are on site or nearby, require spot elevation.

f. Existing rim elevations of drainage structures.

g. As-built contours at 1' intervals.

h. Location of structure with offsets from front and side property lines.

i. Any miscellaneous features influencing grading, such as the top and bottom of retaining walls, all break points, private walks, patios, etc.

j. Location and elevation of utility structures.

k. Address, lot number and permit number.

l. An original stamp or seal of a Professional Engineer or Registered Land Surveyor.

3. Areas to be Graded and Seeded or Sodded

All improved areas within the dedicated street area or private lot shall be graded with six inches of topsoil and sodded. Other public use areas such as outlots, detention basins or parks shall be graded and seeded or sodded in an approved manner. Core samples of soil from the private lots will be taken randomly to ensure 6” of topsoil. Restoration work shall be performed to the satisfaction of the Engineering Director. Seeding mixtures shall be Class I or Class II.

4. Erosion Control

All erosion, sedimentation and dust control shall follow Illinois Urban

Manual, Best Management Practices and the Village of Hoffman Estates Municipal Code.

Before land is cleared, graded, transported or otherwise disturbed by the movement of earth for construction projects within the Village of Hoffman Estates, all erosion control shall be in place and routinely maintained.

Trees and surface vegetation provide a natural means of sedimentation and erosion control. The clearing of healthy trees having a caliper of three (3) inches or greater or other types of surface vegetation shall not be permitted on undeveloped land without compliance of Section 10-8-11, Landscaping of the Village of Hoffman Estates Municipal Code and the obtaining of a Tree Removal Permit.

X. STREET SIGNAGE

A. General

1. All signage shall be fabricated in accordance with the latest revision of the Federal Highway Standards manual and the Manual on Uniform Traffic Control Devices publication. Typical signs, with their MUTCD codes and sizes are provided below.

MUTCD SIGN SPECIFICATIONS

Sign	MUTCD Code	Size
Stop	R1-1	30”x30”
Yield	R1-2	36”
Speed Limit	R2-1	24”x30”
No Parking (text varies)	R7-2a	12”x18”
Weight Limit	R12-1	24”x30”
Diamond Warning	W Series	30”x30”
School Crossing	S1-1	36”x36”

2. After the approval of the subdivision plat and installation of public improvements, the developer shall install throughout the subdivision, street signs of such number, type and size as shall have been approved by the Director of Public Works and Transportation. All signs shall follow the Manual on Uniform Traffic Control Devices standards.

B. Design

1. All postings shall be posted not less than 36” from back of curb unless conflicts exist with buried utilities. Village authorization is required to make any deviation to any posting with utility conflicts.

2. All signs, other than street name signs, shall be mounted to a height of 7' to the bottom of the first sign on the post if a multiple posting sign.

3. Postings with two signs should be mounted with the top sign at 7' bottom of sign with the second sign directly below leaving minimal or no gap between signs.

4. All U-channel sign posts shall be buried to a depth of not less than 42 inches below surface of ground. Quick punch base square posts 48 inches in length buried to no more than 2 inches of ground surface.

5. All postings except where shown on print shall be posted at or as close to the property lot line as possible. With situations of conflicting underground utilities, a Village official should be consulted.

6. All postings shall be plumb and true with a level or similar device and will be checked by the Village for accuracy of posting and will be rejected by the Village and be re-posted by contractor at the contractor's cost to re-install posting.

7. The Village's preference is to install street name signs on street light poles to a height of 14 feet. If a ground mount sign is required, install street name signs on Quick punch posts 9' from the bottom of the lowest sign to the ground.

8. Street name signs locations should be posted on corners as preferred below:
   a. 1st preference - SE corner
   b. 2nd preference - NW corner
   c. 3rd preference - Best visual location as viewed from a vehicle

9. Mounted street name signs shall have a standard width of 9 inches. The length of the face and blade shall be determined by the number of letters in the street name, including the prefixes and suffixes. The name plate shall have a minimum length of 30" and not to exceed 54" in length.

10. Street name faces to be mounted on flat aluminum metal sign blades shall have sufficient width and length to permit application and trimming to the finished sign blank 9" wide x 30", 36", 42", 48", or 54" in length.

11. The sign and/or face copy shall be in accordance with this specification. Corners of mounted street name signs shall be ½" in radius rounded. There shall be at each intersection two (2) street name signs, one (1) for each street-intersecting roadway.

C. Materials and Fabrication

1. All aluminum shall meet or exceed State of Illinois aluminum sign specification 5052-H3 alloy mil finish ASTM B-209-88, conversion coating ASTM B-4449-67A, Class 2, or, latest revisions and .080 aluminum thickness.

2. The sign face shall be reflective sheeting conforming to the specifications for "Prismatic Lens Reflective Sheeting Illinois type AZ and ASTM type 9, for Traffic Control Signs". The reflective sheeting shall be precoated with a pressure-sensitive adhesive protected by a removable liner. Signs must be fabricated with 3M VIP diamond grade reflective sheeting substrate with 1170 series 3M EC film, or 3M inks and clears. All School Zone warning signs must be 3M VIP 3983 fluorescent yellow green sheeting.

   a. Application

      For mounted regulatory signs, reflective sheeting shall be applied to sign blades that have been properly prepared. The sign faces shall be applied using the squeeze roller application in accordance with the recommendations of the sheeting manufacturer. Pictorial overlays, where required, shall be applied in accordance with the recommendations of the sheeting manufacturer.

   b. Processing

      When screen processing, reverse screen process color shall be coated with a clear finish. All screen processing and clear coating shall be in accordance with the recommendations of the sheeting manufacturer.

      Sign faces may be produced by direct application of cut out copy onto mechanically applied background in accordance with sheeting manufacturer's recommendations.

      Sign faces may also be produced by using "Scotchlite" Electronic Cuttable Film of equal or superior quality as background overlaid on "Scotchlite" Reflective sheeting of equal or superior quality (Legend Subsection C for electronic cutting spacing).

      All signs, if silk screened, shall be required to be certified in then 3M application process and must use 3M matched component system color inks and clears of equal or superior quality.

D. Mounting Materials

1. Posts

a. All postings must be on galvanized U-channel posts or galvanized Quick Punch style posts. 2 lb. /ft. galvanized posts are required on all postings less than 900 square inches of sign face. 3 lb. /ft. U-channel sign posts are required with 900 square inches of sign face or greater and on all stop and yield postings.

b. 1 ¾" x 1 ¾" x 12" galvanized square upright post Qwik Punch sign posts with 7/16" die-punched knockouts 1" on center on all four sides for the full length of the post.

c. 2" x 2" x 4' galvanized stubs base square Qwik Punch sign posts with 7/16" holes 1" on center holes on all four sides for the full length of the post with 90º corner bolts used to fasten the upright post and base post. Base post should be exposed 1" to 2" above surface.

2. Bolts and nuts to mount signs on u-channels:

a. 5/16" – 18 x 2" round head with square neck aluminum carriage bolt for use with 2 pound u-channel.

b. 5/16" – 18 x 2 ½" round head with square neck aluminum carriage bolt for use with 3 pound u-channel for 900 square inches postings or greater of sign face and on all postings. Also, all stop sign postings and yield signs.

c. Stainless steel strapping ¾" x .030 band-it C206, or equivalent (street light – aluminum cantilever).

d. Stainless steel I bolt flared leg bracket (for banding application for signs) (street light mount).

e. 5/16" nylon washer (for flange bracket bolt) nylon washer must be used on all sign mountings with postings to buffer metal to reflective sheeting mountings.

f. 2 lb. Post, aluminum carriage bolts or stainless steel 5/16" x 2".

g. 3 lb. Post, aluminum carriage bolts or stainless steel 5/16" x 2 ½"
h. Tuff-nut security nut 5/16" x 18.

i. U-channel posts with galvanized finish. Punched full length with 3/8" holes on 1" centers, with tapered bottom end. Weight – 2 lbs/foot, 12 foot lengths.

j. U-channel posts with galvanized finish. Punched full length with 3/8" holes on 1" centers, with tapered bottom end. Weight – 3 lbs/foot, 13 foot lengths.

3. Bolts and nuts to mount street name signs on quick punch posts.

a. 3/8" x ½" stainless steel hammer-hit drive rivet (drive) (quick punch mount).

b. ¼" x 1 ¼" aluminum compression blind rivet cherry (quick punch mount)

c. 36" aluminum cantilever with 5/16" – 18 x 1" stainless steel hex head bolts, 5/16"-18 stainless steel nuts, and 5/16" stainless steel washers (street light mount), or 3/16" stainless steel blind rivets with stainless steel mandrel.

d. Hex head zinc chromate steel lag screws 5/16" x 2" (street light mount – wood)

4. Heavy Duty Street Name Sign Brackets for Use on Street Lighting Postings

a. Cantilever post brackets designed to allow fastening with two bands to street light poles. Brackets shall be cantilever or an approved equivalent. Brackets to be made of high strength aluminum alloy (385 or equal) with a minimum tensile strength of 47, 000 psi. The brackets are to be fully degreased, tumbled, polished, and ready for installation with the pre-assembled 5/16" set screws or 3/16" stainless blind rivets with stainless steel mandrel. Signs are to be mounted 14' from bottom of sign to ground surface. Cantilevers are to be mounted with ¾" x .030 stainless steel strapping with stainless steel clips on concrete or metal streetlights. When mounting on wood posts, hex head chromate steel lag screws 5/16" x 2" are to be used.

XI. STREET LIGHTING

A. General

All development shall include the design and construction of street lighting facilities for the illumination of all roadways, public or private, which lie in or border the development and all parking lots within the development. Street lighting to be

accepted by the Village of Hoffman Estates shall be constructed within public right-of-way or in easements dedicated to the Village of Hoffman Estates.

B. Design

1. The street lighting system shall be an underground or single pole 240 volt, 1 phase, 60 hertz, multiple system fed from Commonwealth Edison's distribution system with a disconnect provided at the source.

2. The Contractor shall guarantee and warrant that the equipment, material and workmanship, regardless of the manufacturer will for a period of one (1) year from the date of final acceptance, satisfactorily serve the purpose for which they were installed. Any defective material or workmanship shall be repaired or replaced by the Contractor to the satisfaction of the Village of Hoffman Estates and without cost to the Village of Hoffman Estates.

3. Street light cable as-built plans are required with the installation of all streetlights. These as-built plans will show all cable locations within 6” of actual location.

4. ANSI Identification Decal - A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

5. Photometric Performance - Unless otherwise indicated, the light distribution shall be medium-cutoff Type III (M-C-III), as defined in the "American National Standard Practices for Roadway Lighting" as approved current edition by the "American National Institute: (ANSI) or current revision.

C. Allowable Materials and Workmanship

1. General

a. All materials must meet the requirements of this section. The materials shall be new or current manufacture, and of standard design free from all defects.

b. All work shall be done in accordance with the National Electrical Code and Village of Hoffman Estates regulations, and in case of differing standards, the more stringent materials and construction shall be required.

2. Light Standards - General

a. All roadway lighting standards shall be approximately 23' and 28' in height to provide for a maximum luminary mounting height of approximately 25' on minor streets and 30' on collector streets, and

shall be equipped with single member mast arm securely attached to the standard.

b. Roadway lighting standards shall be not less than 8" in diameter (except 25' aluminum poles may have 7" minimum diameter)

c. Fuses shall be installed in each lighting standard base, in the underground conductors, connected to the luminary, and shall be rated as per the luminary manufacturer's recommendations. Fuse holders shall be Bussman Mfg. Division, "Tron Waterproof In-The-Line Fuse Holder" with suitable fuses, or approved equal.

d. All lighting standards are to be installed at the angles and locations as shown on the plans, with mast arms installed perpendicular to the curb, or at angles indicated. Any change in location or angle must be approved by the Engineer.

3. Light Standards – (Aluminum)

a. The aluminum standards shall be spun drawn monotubes with bracket arms for luminaries with two (2) inch slip fitters. Four (4) aluminum cover leaves for covering nuts at the base of the pole and fastened with stainless steel cap screws shall be furnished and installed on each aluminum standard. All aluminum standards shall have a shoe base. Lighting standards shall have a flush type handhole. The poles shall be tapered-spun Aluminum Tube.

b. Unless otherwise indicated, the pole shall be designed and manufactured to withstand loadings of up to and including a 750-pound luminaire having an effective projected area of 1.6 square feet on a single 15-foot mast arm, and shall also withstand loadings of up to and including the same luminaire on each of two 12-foot arms (twin) oriented at any angle from 45 to 180 degrees apart, meeting the criteria of AASHTO for 80 mph wind loading with 104 mph gusts. These loading requirements shall include all luminaire and mast arm combination possible for the given pole height, up to and including the limits given. Information submitted for approval shall document satisfaction of the requirement.

c. The shaft shall be made of aluminum alloy conforming to current ASTM designation B221, alloy 6063 with final temper T6. The shaft shall be spun drawn to smooth circular, tubular, seamless, tapered design.

d. All exposed surfaces of the shaft shall be of smooth, even texture, free from marks and imperfections. The pole shall have a good satin ground finished, 50 grit or finer.

4. Handhole - There shall be an oval-shaped opening in the side of the shaft for the purpose of a handhole. Unless otherwise indicated, the centerline of the handhole shall be 18" from the bottom of the shaft. The handhole shall be 4 x 6 inches in size for poles with an 8 inch outside bottom diameter shaft with the 6-inch dimension being situated vertically and in the same plane as any one of the sides of the base. The handhole shall be 4 x 8 inches in size for poles with a 10-inch outside bottom diameter shaft with the 8-inch dimension being situated vertically and in the same plane as any one of the sides of the base. The opening in the shaft shall be reinforced with a handhole frame situated on the inside of the shaft and welded to the shaft. Each pole shaft shall contain an internal lug with a 3/8" diameter hole for the purpose of attaching a grounding conductor. The handhole cover shall be fastened to the frame with stainless steel screws. Unless otherwise indicated, the orientation of the handhole shall be such that its pole face shall be opposite to the pole face exposed to oncoming traffic and unless otherwise indicated the handhole shall be oriented on a face 90 degrees from mast arm orientation.

5. Cap - Top of the shaft shall be enclosed with a removable cap. The cap shall be secured in place with 300 series stainless steel screws. The design of the cap shall be such that it shall be such that it shall not permit entry of water into the shaft.

6. Anchor Bolt Covers - The anchor bolt coves shall be made from aluminum, conforming to current ASTM B108, S5AA-F or, B26, SG70A. The anchor bolt covers shall be fastened to the base with stainless steel screws.

7. Lens/Refractor - Unless otherwise specifically indicated, luminaries shall have lenses made of crystal clear, impact and heat resistant flat glass. The lens shall be held in such a manner as to allow for its expansion and contraction. Where refractors are specifically indicated or permitted, they shall be prismatic impact and heat resistant glass.

8. Gasketing - When closed for operation, the optical assembly shall be sealed with a gasket against the entry of moisture, dirt, and insects. The cover-reflector and socket-reflector junctions shall be sealed against the entry of moisture, dirt and insects with a thick, high density dacron felt gasket, securely attached by mechanical means, such as a retaining lip, or by a wide-temperature permanent adhesive in a manner acceptable to the Engineer.

9. Reflector - The reflector shall be made of aluminum sheet of such grade quality that the reflecting surface shall have a specular finish.

10. Mast Arm and Brackets - The single mast arm shall be made of aluminum alloy tube, round, seamless, conforming to the current ASTM Designation.

a. The mast arm shall have raceway openings extending through the bracket. Raceway openings shall be free of burns and rough edges that may be injurious to the wires.

b. The single member tapered elliptical mast arms shall be supplied with fabricated aluminum brackets welded to the arms. All welds shall be heat treated after welding. The arms shall be bolted to the shaft by four ½-inch stainless steel bolts for single member tapered elliptical arms.

c. All hardware shall be anodized aluminum conforming to the current ASTM Designation B 211, 2024-T4, or 300 series stainless steel.

d. Exterior surfaces of the mast arms shall be free of all protuberances, dents, cracks, or other imperfections.

11. Luminaires - The luminaire shall meet the physical and photometric requirements specified herein. It shall be optically sealed, mechanically strong and easy to maintain. Only the fixtures below will be allowed by the Village.

GENERAL ELECTRIC MODEL NUMBERS

Fixture	Model Number	Notes
HPS 150 W	M2AR15SOA1GMS31	No photocell
	M2AR15SOA2GMS31	With photocell
HPS 250 W	M2AR25SOA1GMS31	No photocell
	M2AR25SOA2GMS31	With photocell
HPS 250 W	M2AR40SOA1GMS31	No photocell
	M2AR40SOA2GMS31	With photocell

a. The luminaire shall be photometrically efficient. Luminaire efficiency, defined by the I.E.S. as "the ratio of luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used within", shall not be less than 67%. Submittal information shall include published efficiency data.

b. The luminaire shall be designed as to its size, shape and weight so that it does not aggravate the vibration characteristics of its respective pole and it shall be compatible with the pole.

c. The luminaire shall slip-fit on a two-inch pipe arm, and shall have a barrier to limit the amount of insertion. It shall not be necessary to remove more than the cover, reflector, and refractor or lens to mount the luminaire.

d. The luminaire shall be provided with a leveling surface and shall have a 4-bolt anchoring/attachment means so as to be capable of being tilted by +/-3 degrees and rotated to any degree with respect to the supporting arm.

e. The lampholder and ballast components shall be completely wired, with multi-tap connections made to heavy duty terminal board with plug-in (pressure) connectors. The leads shall be coded by tagging and/or color coding for proper identification. A complete wiring diagram coordinator with the wire identifications shall be displayed at the convenient location on the interior of the luminaire.

f. The luminaries shall be a standard line of luminaries equipped with one-piece reflector housings of anodized equipped with a hinged refractor holder that shall be securely held in place by a suitable latch. The luminary head shall embody a 2-inch slip fitter and shall be capable of being adjusted to permit the proper orientation of the light pattern on the street.

g. Any substitutions must be approved in writing by the Village of Hoffman Estates Public Works Department and the Director of Engineering.

12. Lamps – High pressure sodium lamps should meet approved General Electric model numbers above.

13. Ballasts - The ballast shall be integral to the luminaire. Integral ballast components shall be mounted in the rear of the luminaire on the inside of a removable door or on a removable mounting pad. Ballast wiring and lamp socket wiring shall be connected by means of a plug. Upon unplugging the ballast wiring, the entire ballast components shall remove for maintenance. The mounting adjustments and wiring terminals shall be readily accessible. The removable door or pad shall be secure when fastened in place and all individual components shall be secure upon the removable element. Each component shall be readily removable for replacement.

a. The ballast components shall be mounted and fastened within the luminaire housing in a manner such that the components will remain secure and capable of withstanding the pole vibrations. Each component shall be readily removable for replacement.

b. Unless otherwise indicated, the ballast shall be a high pressure sodium multi- tap ballast which is designed to ANSI Standards and shall be designed and rated for operation on 120/208/240/277 volt systems. It shall operate the lamp over a range of input voltages from 200 to 244 volts without damage to the ballast. It shall provide

lamp operation within lamp specifications for rated lamp life at input design voltage range.

c. Ballasts shall not be excessively noisy. Noticeably noisy ballasts, as determined by the Engineer, shall be replaced at no additional cost to the Village.

d. Submittal information shall include manufacturer's literature and data to confirm compliance with all specified requirements including an ANSI Standard Ballast Characteristic Graph (Trapezoid) diagram, with all items clearly identified.

e. Ballasts shall be of high quality grain oriented strip steel high power factor, constant wattage, and shall have a primary voltage rating of 240 volts. They shall be suitable for outdoor service and capable of starting the lamp at minus 20 degree F.

14. Unit Duct - Unit Duct shall be 3 No. 6 AWG THHN in 1 ½ inch duct, suitable for the direct burial installation. Unit Duct shall be installed so it is possible to withdraw a cable and pull a new one.

a. The minimum acceptable resistance to ground will be one megohm. Any section of wiring failing to pass the minimum insulation test of showing an obvious short circuit shall be replaced. There must be 2 feet of slack at the base of all light standards.

15. Control Stations - The lights shall be operated in groups or individual poles with disconnects located at the ComEd Service as per plan and protected by control stations, such as South Bend Controller Type MR-WO-6447 with GE Polyvolt Photoelectric Cell, which have these features:

a. Electric Controller suitable for operation on 240 volts, single phase, 60 hertz.

b. Double pole, single throw contacts, rate 30 amperes.

c. Circuit protection provided by two poles, 30 ampere, circuit breaker and build in lighting arresters.

d. Photo Electric Cell, shall be a Torx 2007S model, 240 volts mounted on top of enclosure at a minimum distance of 12 feet above ground.

The open ends of all conduits entering the control cabinet shall be effectively sealed with "Duct Seal", or other approved sealant to prevent moisture and gases from entering the control cabinet.

16. Com Ed Disconnect Box –

17. Lamp Socket – The lamp socket shall be mogul type, porcelain enclosed, and be provided with grips, or other suitable means to hold the lamp against vibration. The rating of the socket shall exceed the lamp starting voltage, or starting fuse voltage rating. This item shall included lamp for the luminaire, as specified under Basic Materials and Methods.

D. Construction Requirements

1. All construction is subject to the inspection of the Village of Hoffman Estates who shall be notified when construction work is being done on any work under this contract 48 hours in advance by calling the Transportation and Engineering Division at (847) 252-5800.

2. Lighting standards shall be installed on approved 8" Helix lighting foundation in accordance with details shown on the plans. For the Prairie Stone Business Park, approved concrete foundations shall be poured in place with anchor bolts for anchoring standards. Anchor bolts shall be set with wood or metal template and securely fastened in place to prevent movement during concrete pouring. Breakaway bolts are required. Class SI concrete shall be a 6-bag mix with a minimum compression strength of 3500 PSI. All foundations shall be installed at the angle as indicated on plans.

3. The lighting unit shall be set plumb on the foundation without the use of shims grout or any other leveling devices under the pole base. The mast arm or arms shall be set at right angles to the centerline of the pavement. (The leveling area of the luminaire shall be set in a plane parallel to the roadway taking into consideration the up-grade or down-grade and the superelevation of the roadway).

4. All lighting standards shall be located with the centerline 3' – 0" from the back of curb line, except where indicated otherwise on the drawings.

5. Trenches shall be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so a minimum of shoulder surface is disturbed.

6. The backfill material shall be placed in six (6) inch layers and each layer thoroughly tamped, or jetted with water, or both, as directed by the engineer. The compaction shall be equivalent to that of adjacent undisturbed earth. All driveway and sidewalk crossings shall be backfilled with Grade 9 stone (or CA-6) in 6 inch layers and thoroughly compacted in each layer.

7. Underground unit duct shall be buried at least 24" below finished grade. It shall be located 3' to 4' back of the curb or as directed by the Engineering Director or noted on plans. A yellow or red location tape shall be placed 3" above the unit duct in the trench.

8. All street crossings shall have 2" galvanized steel conduit used as a raceway for the underground cable with 2" insulating fiber bushings, extended at least 2 feet from each curb line.

9. All underground cable and unit duct shall be continuous. All splicing shall be done only in the light standards. Allow 2 feet of slack in wire in hand hole.

10. All luminaires must be exactly level and poles plumb before testing.

11. Luminaries shall be carefully installed in accordance with the luminaire manufacturer's recommendations and in accordance with the design requirements represented on the plans.

12. Unless otherwise indicated, luminaries shall be installed parallel to the plan of the roadway. After installation, if a nighttime check of the lighting indicates that any luminaries are misaligned, by visual inspection or other means, by the Engineer, the misaligned luminaries shall be corrected by the Contractor at no additional cost to the Village. Also, should the photometric results of the luminaries be such that, in the judgment of the Engineer, a tilt adjustment is warranted on selected luminaries, this adjustment shall be made by the Contractor at no additional cost to the Village.

13. All existing facilities are to be carefully JULIE located prior to drilling and trenching to avoid damage by the contractor. In cases where conflicts would exist, the Engineering Director must approve proposed moves. Where cable is not installed as indicated in plans or specifications, the location shall be accurately noted on a set of "As Built" plans which shall be submitted to the Village of Hoffman Estates for future use.

14. The splicing of the installed conductors to the Commonwealth Edison Company's underground feeders is made by the Commonwealth Edison Co. the contractor shall pay the cost of all such work required under the contract. All additional excavation required by the Commonwealth Edison Company for splicing shall be done as a part of the contract, and no additional compensation shall be made therefore.

E. Material Testing

1. General

a. After the installation is complete, the contractor shall conduct operating tests on the lighting system installed by the contractor. All equipment shall be demonstrated to operator in accordance with the plans and specifications. The footcandle level shall be determined by the low range (.02 to 5), high sensitivity cosine corrected, direct

reading, color corrected, self-leveling footcandle meter. Measurements shall be taken after a minimum 200 hours of normal operation.

b. The contractor shall furnish any and all instruments and personnel required for all tests. Before any testing can be arranged, the contractor must check for proper Luminary leveling, Lamp socket positioning a Pole Plumb.

2. Vibration Requirements - The detailed design and fabrication of the shaft and of the mast arms shall be such as to withstand 80 MPH AASHTO criteria for wind and vibrations, caused by the wind pressure.

a. There shall be no excessive vibrations in the shaft, mast arm(s) under moderate wind pressure, where damage may result to the luminaire(s) and/or its component parts, and/or mast arms(s). Where indicated on the plans, a dampening device, as an integral pat of the shaft, shall be installed in the shaft to alleviate such excessive vibrations. The pole shall be coordinated with all luminaires being provided on this project to be free of susceptibility to harmful harmonics and vibrations. Where indicated on the plans, the pole shall incorporate an internal vibration damper. The material submitted for approval shall address this requirement. The proposed vibration dampening device shall be submitted for Engineer's approval.

b. No information contained herein shall be construed to relieve the Contractor of the above requirements.

3. Certification and Guarantee - The submittal information shall include a written certification shall specifically identify the project route, location, section number, and contract number, as applicable and shall identify specifically the equipment covered by the certification. The certification shall be made on the Manufacturer's corporate stationary and it shall be dated and signed by a responsible officer of the company, with the signee's title listed.

a. In addition submittal information shall include the guarantee as specified under General Electrical Provisions.

b. The indicated mounting height shall be taken from the bottom of the pole shaft base plate and shall be obtained with a nominal mast arm rise of approximately 34 inches as specified elsewhere herein. This shall determine the required length of the pole shaft regardless of the actual mounting method of the pole.

c. Unless otherwise indicated, poles for mounting heights of 35 feet or

less shall have single piece shaft with an 8-inch outside bottom diameter tapering to 4.5 inches outside top diameter. The shaft shall be designed to accommodate loading of the mast arm configuration indicated, but the minimum design criteria shall be to accommodate loading on a single mast arm of length from 4 to 10 feet and loading on twin mast arms of length from 4 to 6 oriented 180 degrees apart, all with a minimum wall thickness of 0.188 inches. Where the indicated mast arm configuration exceeds these minimum criteria, the wall thickness shall be increased to satisfy the design loading requirements. Poles of mounting heights of 25 feet may have a 7 inch outside bottom diameter tapering to 4.5 inches outside top diameter providing the poles minimum wall thickness to be 0.188 inches, an 11-inch bolt circle can be achieved and all loading requirements are met.

d. Unless otherwise indicated, poles for mounting heights greater than 35 feet but less than 47.5 feet hall have a single piece shaft with a 10-inch outside bottom diameter tapering to 6 inches outside top diameter. The shafts shall be designed to accommodate loading of the mast arm configuration indicated, but the minimum design criteria shall be to accommodate loading on a single mast arm of length from 4 to 15 feet and loading on twin mast arms of length from 4 to 12 feet oriented 180 degrees apart, all with a minimum wall thickness of 0.250 inches. Where the indicated mast arm configuration exceeds these minimum criteria the wall thickness shall be increased to satisfy the design loading requirements.

XII. ENGINEERING DIVISION DEVELOPMENT REQUIREMENTS

A. Below is a list of Engineering Development requirements which are typically required for any new development. Depending on whether the development is commercial or residential would determine if the appropriate fee still applies. These fees would be requested at the time of Village Board approval and are required prior to construction.

1. Water Production Charge - Also called Water Connection Charge, this charge allows for connection to the existing water main system. The cost is $665 for each single-family unit and other developments are multiples of the single-family requirement.

2. Sewer Connection Fee - This allows for connection to the existing sanitary sewer. The cost is $625 for each single-family unit and other developments are multiples of the single-family requirement.

3. Water Availability Charge - This is the cost for the maintenance of the existing water system and new water system improvements. The cost is based on meter size. The water availability charge is waived when the

development places water main in accordance with Village requirements. This would include the proper sizing and extension of the water main to the farthest property line.

3. Project Guarantee Letter of Credit or Bond requirement guarantees the public improvements. The amount required is 110% of the public improvement costs and 25% of the private site improvements. The project guarantees can be reduced as improvements are completed and cannot be reduced below 10% of the original amount for each public improvement. The project guarantee must be submitted as a letter of credit, bond or cash deposit. Please refer to the format examples on page 72.

5. Road Improvement Impact Fee - The fee is to pay for regional traffic improvements as a result of the impact of traffic from new developments.

6. Engineering Plan Review and Construction Inspection Fee - This charge ranges from 3.5% to 7% of the public improvements cost estimate. The fee is used for staff time incurred from plan review and construction inspection.

7. Road Use Fee – This fee will be charged to a development when Village streets are used for access. The fee is based on the length of village streets affected and the duration of the project.

8. Recapture Ordinances

    a. Recapture Ordinance 2648 - EDA Sanitary Sewer Facility (expires 9/10/12)

    b. Recapture Ordinance 2649 - Relocation Cost of JAWA Main Branch (expires 12/31/10)

    c. Recapture Ordinance 2700 - Sanitary Sewer over sizing for Estates of Deer Crossing (expires 12/19/14)

    d. Recapture Ordinance 2710 - Northwest Tollway Interchanges recapture for all commercial areas for the Western Development Area south of the Tollway (expires 9/10/12)

    e. Resolution 1226 - Water Tower Donation for the Western Development Area south of the Tollway (valid until full amount is recovered)

    f. Recapture Ordinance 2884 - Hunters Ridge offsite sanitary sewer recapture for areas west of Rohrssen and Beverly Roads (valid until full amount is recovered)

    g. Recapture Ordinance 3274 – Columbine Boulevard (now Hoffman

Boulevard) Sanitary Sewer (expires 9/10/12)

h. Recapture Ordinance 3275 – Sutton Crossing Offsite Watermain and Sanitary Sewer (expires 3/5/11)

i. Recapture Ordinance 3480 – Beverly Water Tower (expires 3/17/13)

j. Recapture Ordinance 3502 – Shoe Factory Road Lift Station and Forcemain (expires 4/21/13)

This list is subject to change without notice.

BANK LETTERHEAD
IRREVOCABLE LETTER OF CREDIT

AMOUNT $_____ NO._____ DATE_____

Village Manager
Village of Hoffman Estates
1900 Hassell Road
Hoffman Estates, IL 60169

SAMPLE DOCUMENT

RE: (Subdivision or Development)

Dear Sir:

We hereby certify that the (Issuing Bank) Bank has established an Irrevocable Letter of Credit in favor of the Village of Hoffman Estates for the account of (Developer or Owner) in the amount of _____ Dollars $_____. We hereby authorize you to draw from (Issuing Bank) such credit by one or more bank drafts at sight for any sum or sums not exceeding $_____. Each draft hereunder must be accompanied by a statement executed by the duly authorized Village Manager of the Village of Hoffman Estates to the effect that such sum is due in accordance with the approved plans for construction of the public improvements and private improvements for the benefit of the public for the (Project Name) development approved by the President and Board of Trustees on the _____ day of _____, 20_____. The letter of credit funds may also be used for site restoration, clean up, erosion control, any other on-site or off-site development improvements or repairs and any fees required under Chapter 10 and 11 of the Hoffman Estates Municipal Code. All of the letter of credit funds shall be available to the Village to remedy any deficiencies related to the development that are not addressed by the developer. The distribution of any amount of the letter of credit funds to secure the installation of all improvements and remedy any deficiencies related to the development shall not be limited based upon any prior estimates or reductions in the letter of credit and shall not exceed the then current amount of the letter of credit. Each draft must bear the clause:

Drawn under (Issuing Bank) Bank
Letter of Credit No. _____, dated _____

The amount of any draft under this credit must be endorsed on the reverse side thereof and the presentation of each, if negotiated, shall be a warranty by the negotiating bank that such endorsement has been made. The Village may require a 15% administrative charge in the event the Letter of Credit is used to complete the public and private improvements. But in no event will the total exceed the then current amount of the letter of credit.

The principal amount of this Irrevocable Letter of Credit shall not be reduced for any improvements installed unless such reduction is approved by the Village Engineer in his/her sole discretion. The Village may submit its sight drafts as hereinabove provided without consent of (Developer or Owner) or any other party. If within ten days of the date such draft is presented in conformance with the terms of this Irrevocable Letter of Credit , and (Issuing Bank) fails to honor the same, (Issuing Bank) agrees to pay all attorneys' fees, court costs, and other expenses incurred by the Village in enforcing the terms hereof.

We hereby agree with the drawers, endorsers, and bona fide holders of all drafts drawn under and in compliance with the terms of this credit that such drafts will be duly honored upon presentation, if presented to this bank on or before 90 days after the expiration of this Letter of Credit.

This Irrevocable Letter of Credit expires _____, 20 ____.

This Irrevocable Letter of Credit shall be automatically extended for additional periods of one year from the present or each future expiration date unless thirty (30) days prior to such date the (Issuing Bank) Bank shall give written notice to the Village Manager, by certified mail, return receipt requested, that the (Issuing Bank) Bank has elected not to renew this Letter of Credit. The automatic extension shall be documented by sending an amendment with the revised expiration date to the Village Manager.

We further agree to furnish history of withdrawals and payouts in regard to public improvements and private improvements for the benefit of the public referenced by this letter upon request by the Village of Hoffman Estates.

Except so far as otherwise expressly stated herein, this Credit is subject to the Uniform Customs and Practice for Documentary Credits (Latest Revision), International Chamber of Commerce Publication No. 500.

Very truly yours,

(Issuing Bank) Bank

By: (President)

December 10, 2008

SURETY BOND

SAMPLE DOCUMENT

Bond No: _____ Principal Amount: $_____

KNOW ALL MEN BY THESE PRESENTS, that we, _____, as Principal, and _____, a _____ Corporation, as Surety, are held and firm bound unto as Obligee, in the penal sum of_____ _____ Dollars ($_____), lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, _____ has agreed to guaranty all costs under the agreement with the Village of Hoffman Estates, dated _____, 20___.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if the said Principal shall save the Obligee harmless from any loss, cost or damage by reason of its failure to meet said surety obligation.

Signed, sealed and dated this _____ day of _____, 20___.

_____ Principal

_____ Surety

By:_____

By:_____ Attorney-in-Fact

XII. SUBDIVISION ACCEPTANCE

A. General

Below is a summary of the acceptance procedures, which the Village of Hoffman Estates requires for completion of public streets and other publicly dedicated infrastructure, followed by acceptance of ownership and maintenance by the Village of Hoffman Estates. The information included herein will assist in understanding the timeline and requirements.

1. Final site inspections may be scheduled for April 1 through October 31 of each year. Contact should be made through the Director of Engineering (847) 252-5802 for an appointment. Please call at least seven days in advance when making appointments.

    a. Final inspection will include walking and inspecting the site's entire infrastructure and grading to confirm that all improvements comply with Village Ordinances and Village Codes, and that said improvements are ready for final inspection. For example, all structures such as manholes must be at the appropriate finish grade and visible. They must not be covered or filled in with soil, sod or debris. Punch lists will be generated based on the inspections.

    b. All storm and sanitary sewers must be cleaned and/or jetted prior to scheduling final inspections.

    c. All pavements must be swept clean from curb to curb.

    d. All street lighting must be a complete installation. All mounting studs/nuts/covers shall be in place and all wiring shall comply with Village standards. All ground wires shall be properly fastened, and all lamps shall be functioning correctly.

    e. The development should be at 100% completion prior to scheduling any final inspections. The subdivision could still be considered for acceptance if a few lots are not constructed.

    f. In the event that a final inspection is underway and the subject subdivision does not comply with the above, the inspections will be terminated at the Village's discretion and a reinspection fee will be assessed.

    g. Plant material and installation should meet the requirements as indicated in Article 4 – Landscaping of the Subdivision Code and the approved plans.

2. As-built plans and sanitary sewer video are required prior to any final site

inspections can be made. The pavement must be cored prior to surface placement. One blueline must be submitted for review and upon approval, three bluelines, one mylar and one CD with DWG and PDF files must be submitted.

3. Visual site inspections of all grading, pavement, curbs, sidewalks, signage and striping, parkways, and aprons are made by the Transportation and Engineering Division and the Public Works Department. A written punch list will be provided to the developer/owner. A representative of the developer must be present for the inspections.

4. Operational inspections of all fire hydrants, water main valves, buffalo boxes, sanitary sewer manholes, storm sewer manholes and street lighting will be made by the Transportation and Engineering Division and Public Works Department. The Planning Division will inspect all landscaping improvements.

5. All parkway trees must also be alive and in acceptable condition.

6. The Transportation and Engineering Division will do a final grading inspection of the entire site.

7. A punch list of deficiencies will be provided to the developer/owner. Reinspections will be made upon notification of completion of all punch list work items. Only subdivisions for which all inspections have been completed by November 30 will be considered by the Village Board for final acceptance of public improvements. If punch list work is completed after October 31, the rewalk site inspections will be made after completion of the punch list items and could be delayed until the following year.

8. All Park District punch lists and deeds must be completed with subdivision acceptance.

9. Other necessary transmittals, such as bill of sale, as-built drawings, maintenance letter of credit, Road Use Fee, etc., will be discussed and identified upon completion of site inspections.

10. Upon completion of the acceptance items, Village of Hoffman Estates staff will prepare a recommendation for acceptance of the public improvements, which will be presented to the Village of Hoffman Estates Public Works and Utilities Committee. All required documents (i.e., as-built plans, bill of sale, maintenance letter of credit, Road Use Fee etc.) must be received by the Village of Hoffman Estates prior to a recommendation being made. The Public Works Committee would then make a recommendation by the Village Board.

B. Maintenance and Responsibility

1. The maintenance of all unaccepted public improvements such as roadways and utilities shall be the responsibility of the developer/owner until acceptance is approved by the Village Board. This shall also include provision of all traffic control devices (signs, pavement markings, etc.) as shown on the approved plans. All such devices shall conform to Village of Hoffman Estates standards. It shall be the responsibility of the owner/developer to provide and install as such traffic control devices, and to maintain them in proper condition. Any maintenance, repair or replacement of these traffic control devices will be the responsibility of the contractor until such time as the streets and/or roadways are accepted into the Village of Hoffman Estates system.

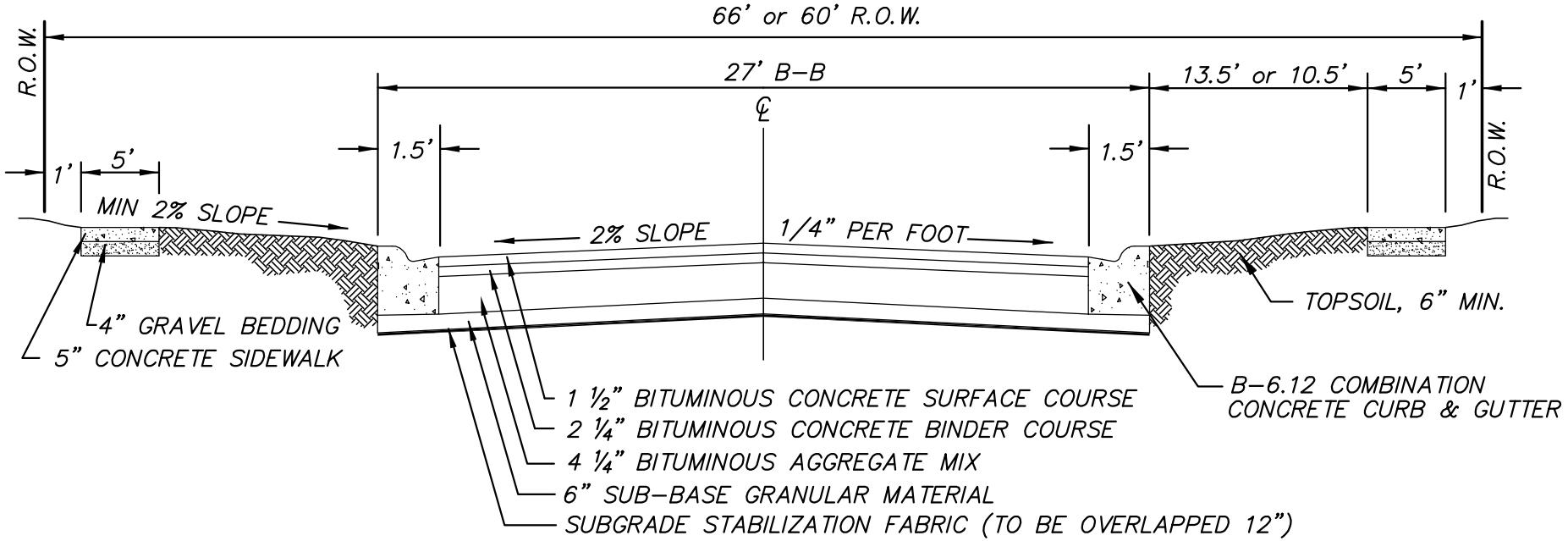
2. All public improvements such as utilities, streets, curbs, gutters and sidewalks shall be under warranty for all defects and failures for a period of one (1) calendar year.

   A Letter of Credit or Bond Guarantee for those improvements benefiting the Village of Hoffman Estates shall be for a period of one (1) year from the date of acceptance of such improvements.

VILLAGE OF HOFFMAN ESTATES DEVELOPMENT REQUIREMENTS AND STANDARDS MANUAL

DETAILS

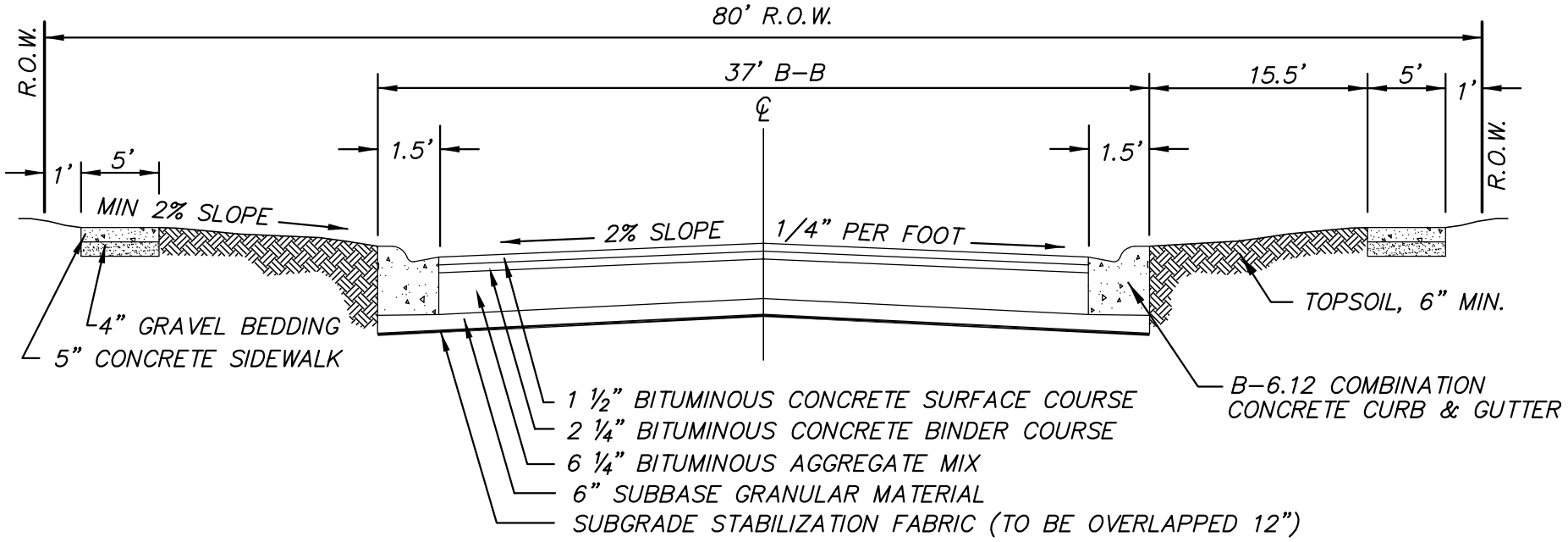
TABLE OF CONTENTS



NOTE: PRIOR TO PLACEMENT OF STABILIZATION FABRIC, SUBGRADE IS TO BE PROOFROLLED WITH THE VILLAGE ENGINEER PRESENT.
PAVEMENT MARKINGS TO BE 3M™ STAMARK™ TAPES.
60 FOOT ROW TO FOLLOW THE ABOVE DETAIL EXCEPT FOR A 10.5 FOOT PARKWAY.
CHECK WITH THE VILLAGE ENGINEER FOR CURRENT MIX DESIGNS.

CROSS SECTION FOR 66 & 60 FOOT ROW

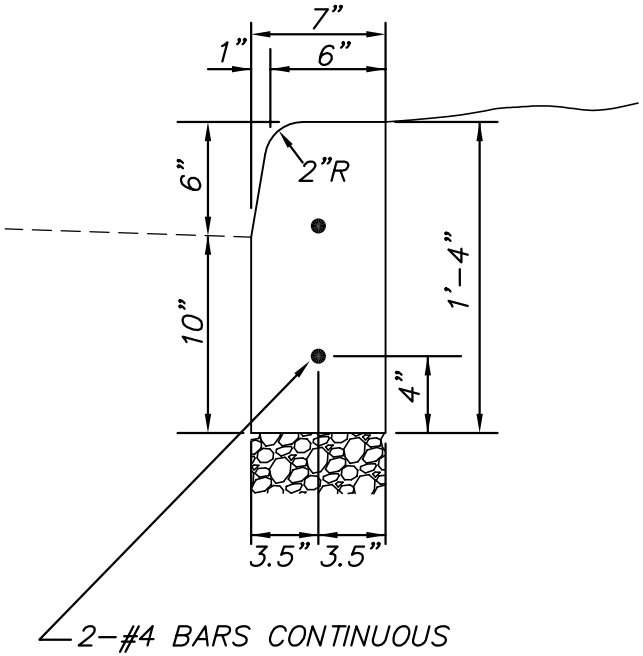
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: ROAD66.DWG		SHEET NO. 1 OF 1



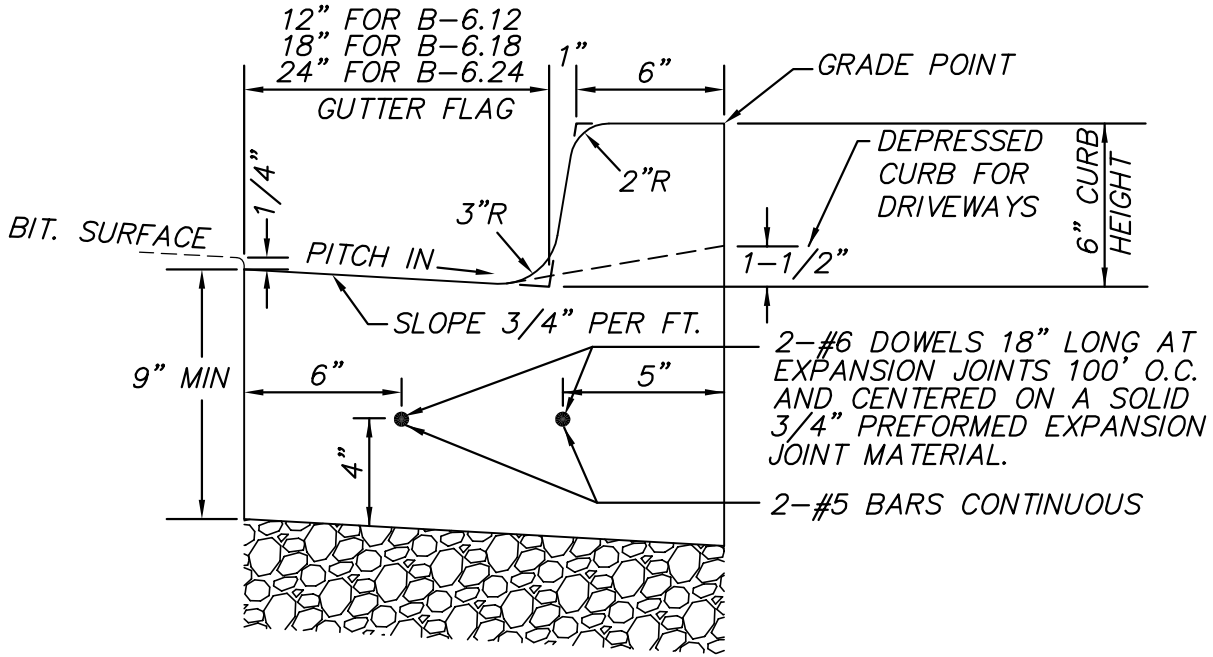
NOTE: PRIOR TO PLACEMENT OF STABILIZATION FABRIC, SUBGRADE IS TO BE PROOFROLLED WITH THE VILLAGE ENGINEER PRESENT. PAVEMENT MARKINGS TO BE 3M™ STAMARK™ TAPES. CHECK WITH THE VILLAGE ENGINEER FOR CURRENT MIX DESIGNS.

CROSS SECTION FOR ≥ 80 FOOT ROW

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: ROAD80.DWG		SHEET NO. 1 OF 1



6" BARRIER CURB



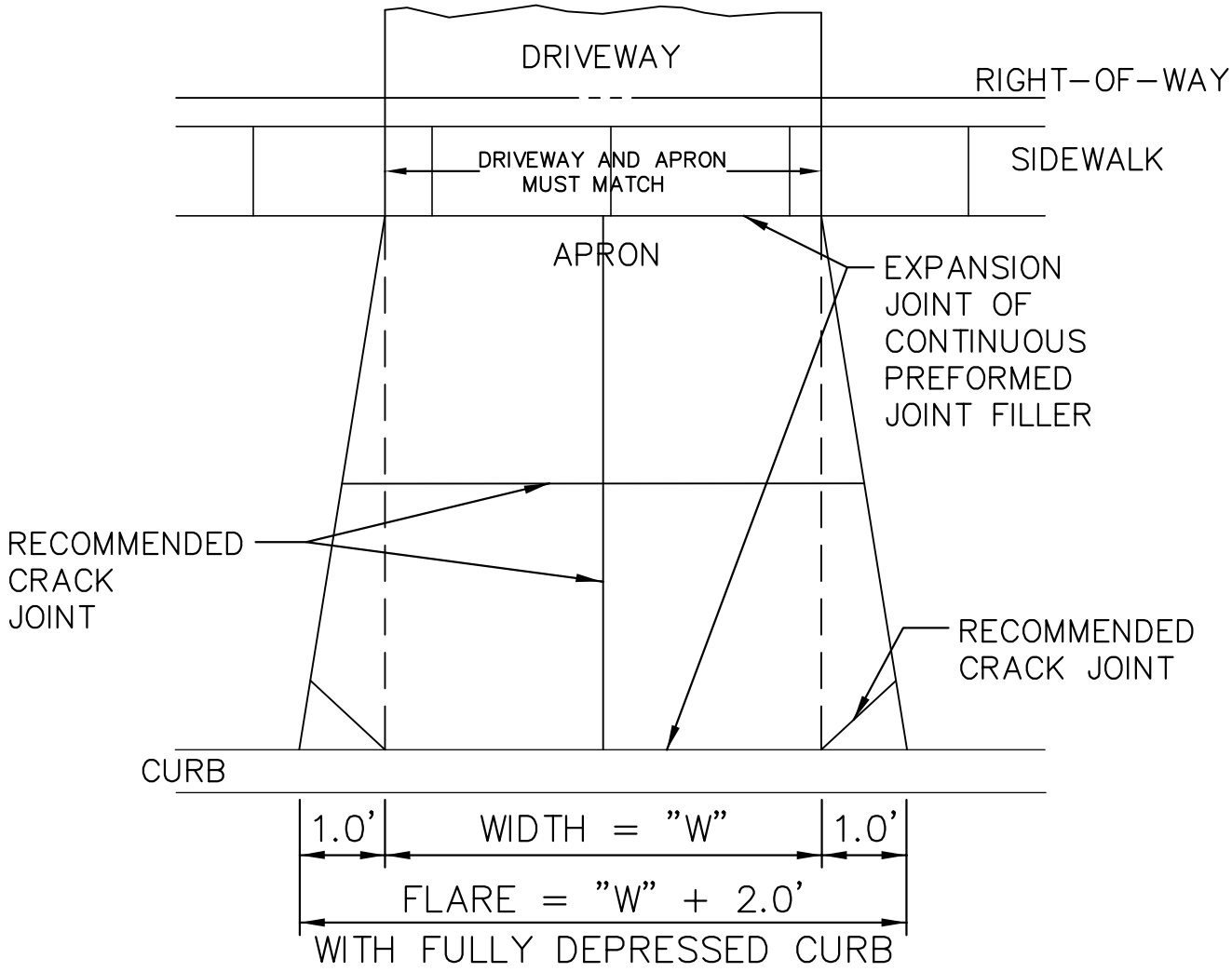
B-6.12 CURB & GUTTER

NOTES:

1. TAPER CURB TO 5'-0" EACH SIDE OF INLET WITH EXPANSION JOINTS.
2. CONTRACTION JOINTS TO BE TOOLED OR SAWCUT EVERY 15' TO A MINIMUM DEPTH OF 1 1/2".
3. MINIMUM 4" CA6 CRUSHED STONE BEDDING UNDER ALL CURBS.
4. ONLY CLASS SI CONCRETE SHALL BE USED.
5. DEPRESSED CURB FOR SIDEWALK RAMPS SHALL BE 0.5 INCHES IN HEIGHT.

CURB DETAILS

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: CURBS.DWG		SHEET NO. 1 OF 1



NOTE: MINIMUM WIDTH, "W" = 10', MINIMUM FLARE = 12'
MAXIMUM WIDTH, "W" = 28', MAXIMUM FLARE = 30'

NOTES:

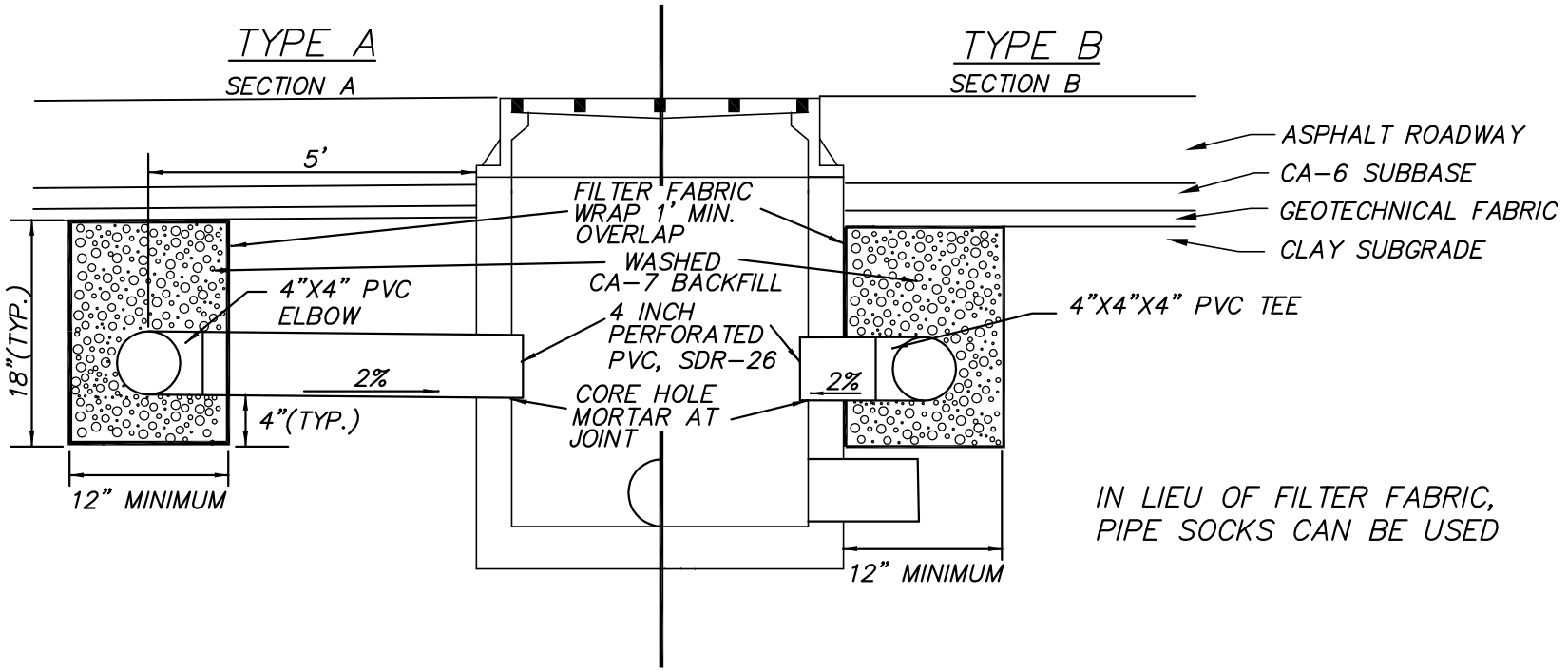
1. THE APRON SHALL CONSIST OF: 6" CONCRETE WITH 6" X 6", NO. 10 STEEL MESH REINFORCED, OVER 4" CA6 CRUSHED STONE OR GRAVEL. CONCRETE TO BE 6 BAG MIX, 3500 psi COMPRESSIVE STRENGTH

2. THE DRIVEWAY SHALL CONSIST OF THE FOLLOWING: 6" STONE AND 2" ASPHALT, OR 4" CONCRETE AND 4" STONE. W/ WIRE MESH REINFORCEMENT.

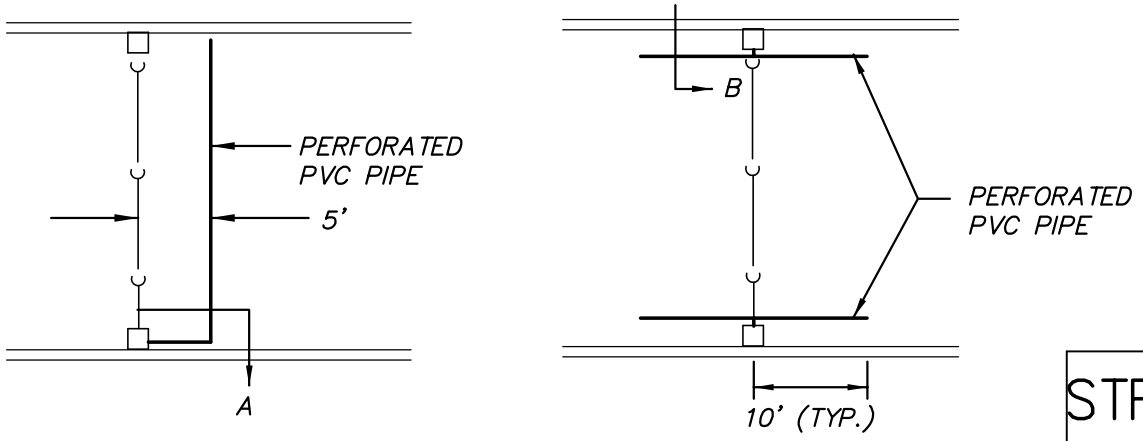
3. CONCRETE MUST BE CURED IN ACCORDANCE WITH IDOT SPECIFICATIONS.

APRON DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES *TRANSPORTATION & ENGINEERING DIVISION*			FILE NAME: DWDWTAIL.DWG		SHEET NO. 1 OF 1



PIPE UNDERDRAIN DETAIL



TYPE A

TYPE B

PIPE UNDERDRAIN DETAIL

STREET UNDERDRAIN DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
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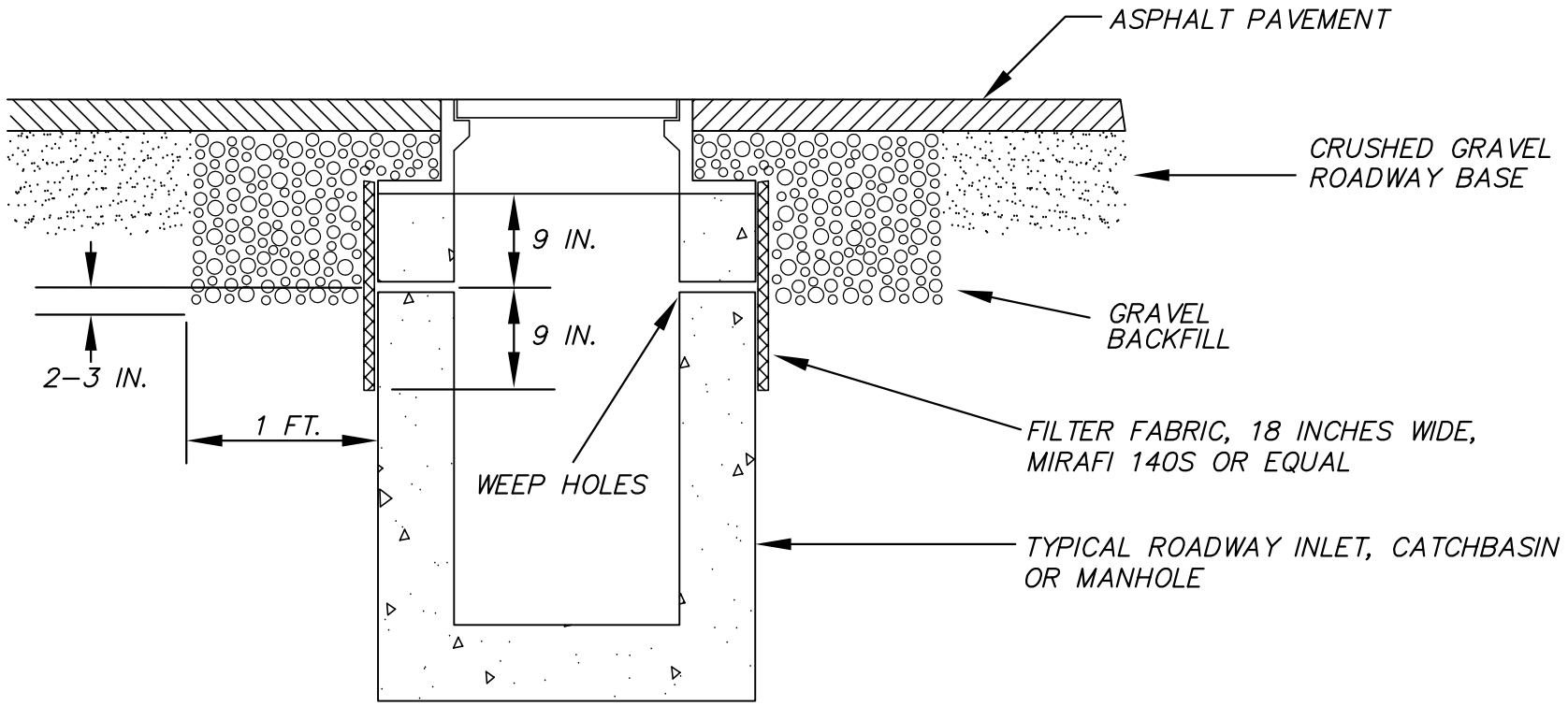
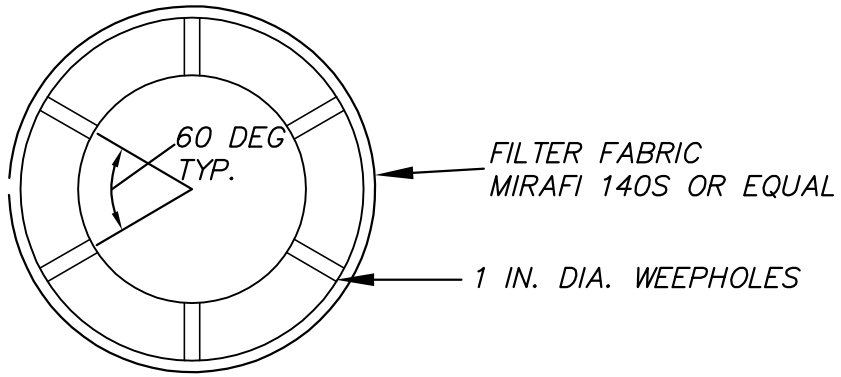


SIDE VIEW



TOP VIEW

NOTES

1. SECURE FILTER FABRIC WITH CLAMPS OR MASTIC.
2. ALL STORM STRUCTURES IN PAVEMENT SHALL FOLLOW THIS DETAIL.

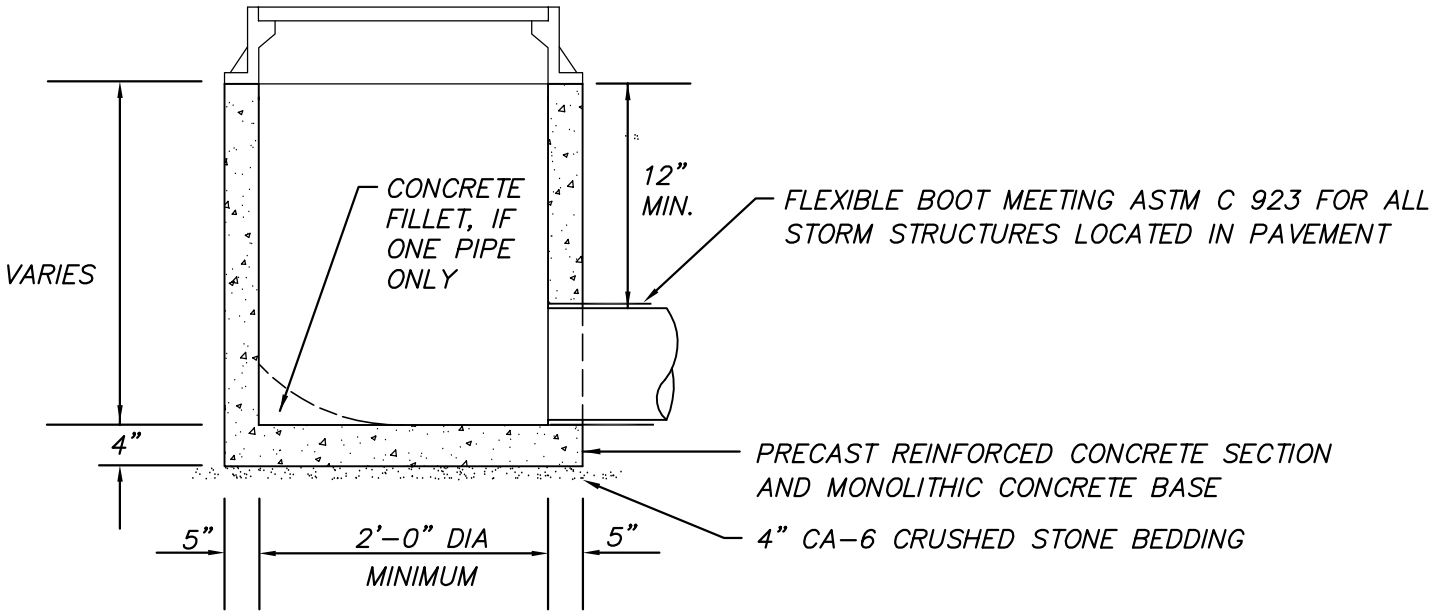
WEEPHOLE DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: WEEPHOLE.DWG		SHEET NO. 1 OF 1

FRAME AND GRATE TYPES

- FOR B6.12 CURB: EAST JORDAN 7221 WITH TYPE M1 GRATE & T1 BACK, NEENAH R–3010 WITH TYPE A GRATE & BARRED CURB BOX OR APPROVED EQUAL.*
- FOR M3.12 CURB: EAST JORDAN 7525 OR APPROVED EQUAL.*
- USE NEENAH R–2504 WITH TYPE D GRATE, EAST JORDAN 1050Z1 WITH TYPE M1 GRATE OR APPROVED EQUAL FOR STRUCTURES WITHIN DEPRESSED CURB AREAS.
- FOR YARD INLET: NEENAH R–2540 WITH TYPE D GRATE, EAST JORDAN 1020 WITH TYPE M1 GRATE OR APPROVED EQUAL.

* = CURB BOX MUST BE BARRED STYLE.



NOTES:

1. ONLY PRECAST STRUCTURES ALLOWED.
2. TWO ADJUSTING RINGS ALLOWED, MAXIMUM HEIGHT = 12".
3. FRAME AND GRATE SHALL BE MORTARED TO THE INLET STRUCTURE.
4. PRECAST CONCRETE BASE MUST BE INTEGRALLY CAST WITH THE LOWEST WALL SECTION.
5. ALL GRATES PROVIDED SHALL BE BICYCLE SAFE.
6. ALL STRUCTURES LOCATED IN THE PAVEMENT SHALL FOLLOW THE WEEPHOLE DETAIL.

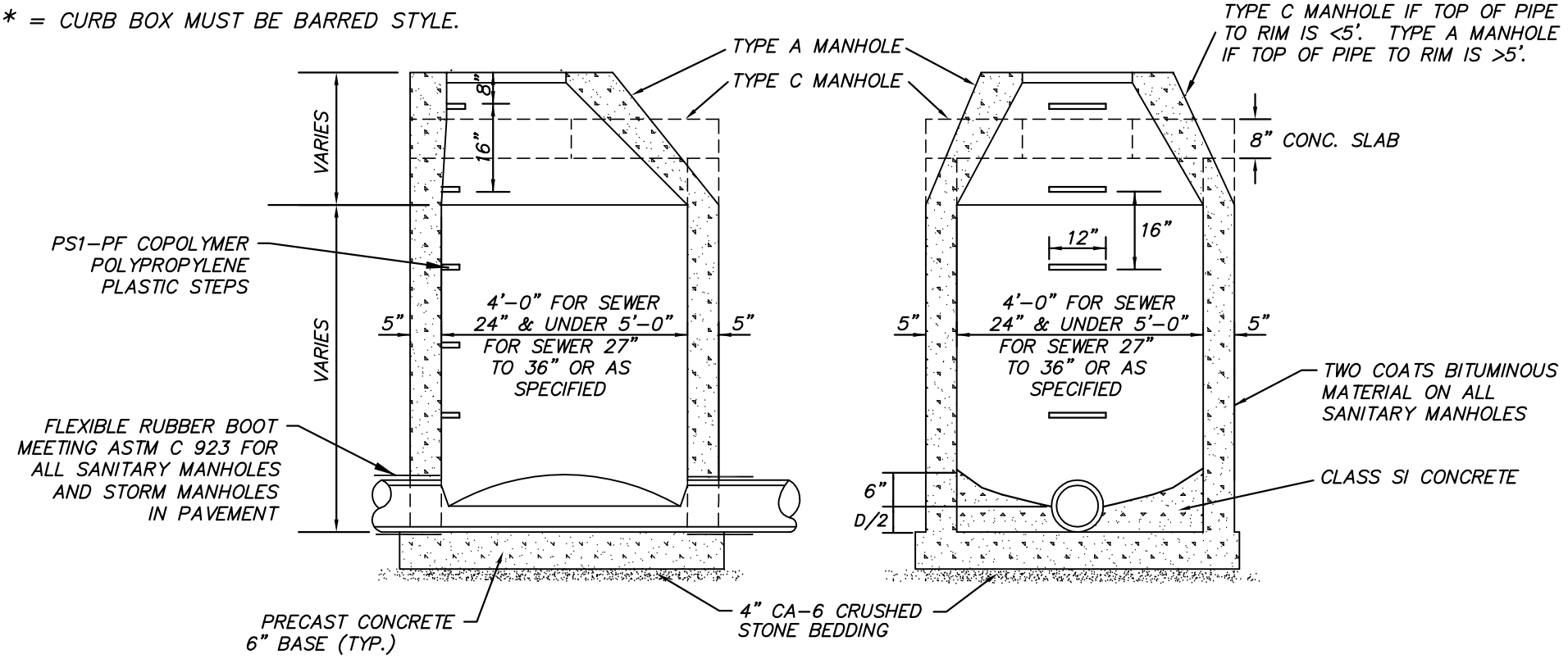
2' INLET DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: INLET.DWG		SHEET NO. 1 OF 1

FRAME AND GRATE TYPES

- FOR B6.12 CURB: EAST JORDAN 7221 WITH TYPE M1 GRATE & T1 BACK, NEENAH R–3010 WITH TYPE A GRATE & BARRED CURB BOX OR APPROVED EQUAL.*
- FOR M3.12 CURB: EAST JORDAN 7525 OR APPROVED EQUAL. *
- USE NEENAH R–2504 WITH TYPE D GRATE, EAST JORDAN 1050Z1 WITH TYPE M1 GRATE OR APPROVED EQUAL FOR STRUCTURES WITHIN DEPRESSED CURB AREAS.
- FOR CLOSED COVERS, USE NEENAH R–1713 WITH TYPE B LID, EAST JORDAN 1050Z1 WITH TYPE A LID OR APPROVED EQUAL.

* = CURB BOX MUST BE BARRED STYLE.



MANHOLE TYPES A & C

NOTES:

1. ONLY PRECAST STRUCTURES ALLOWED.
2. TWO ADJUSTING RINGS ALLOWED, MAXIMUM HEIGHT = 12".
3. MANHOLE SECTIONS TO BE JOINED WITH ROPE TYPE MASTIC (E–Z STICK OR EQUAL).
4. PRECAST CONCRETE BASE MUST BE INTEGRALLY CAST WITH THE LOWEST WALL SECTION.
5. ALL GRATES PROVIDED SHALL BE BICYCLE SAFE.
6. ALL SANITARY SEWER MANHOLES SHALL HAVE A CHIMNEY SEAL FROM CRETEX OR APPROVED EQUAL.
7. ALL STORM STRUCTURES LOCATED IN THE PAVEMENT SHALL FOLLOW THE WEEPHOLE DETAIL.

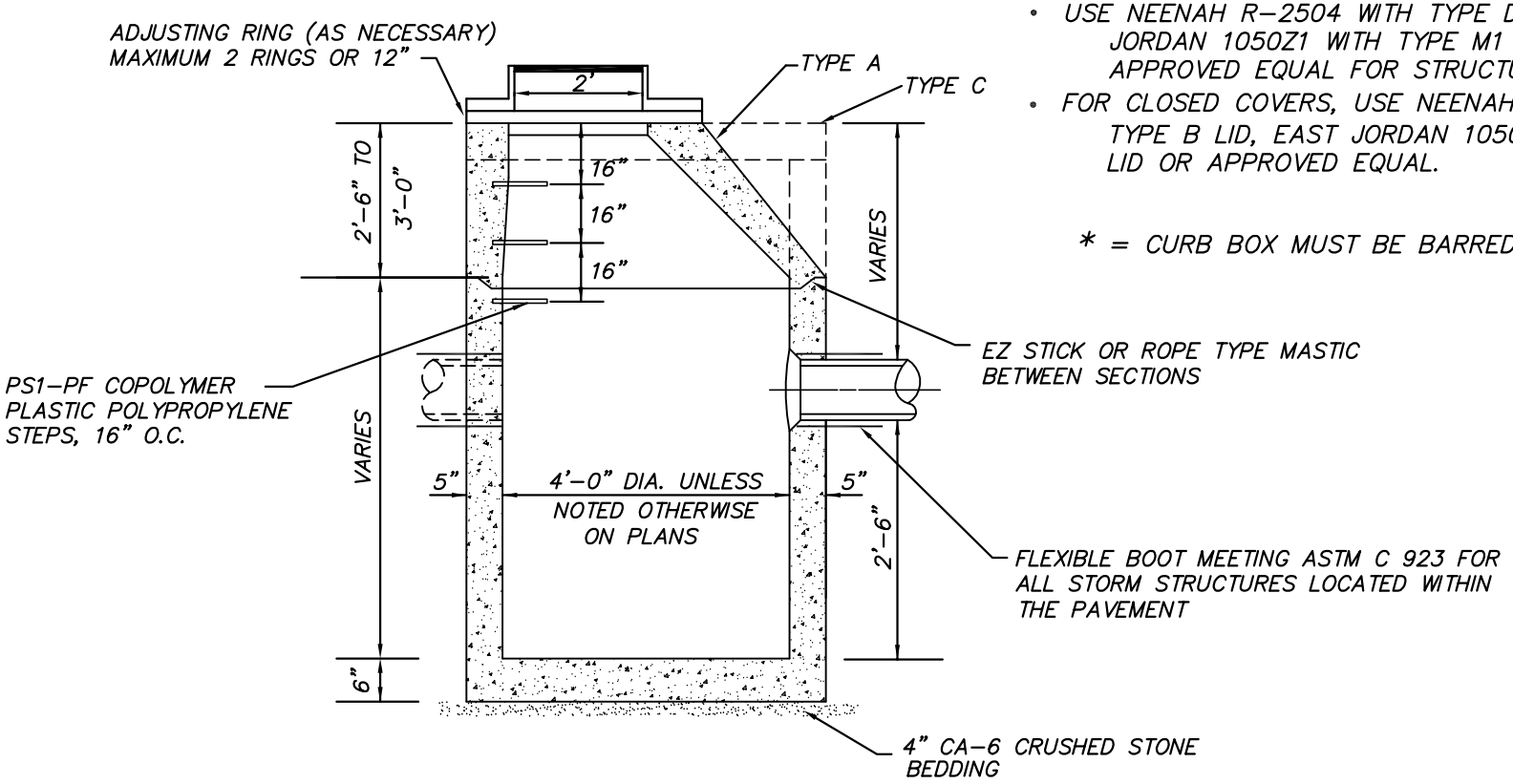
MANHOLE DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: MANHOLE.DWG		SHEET NO. 1 OF 1

FRAME AND GRATE TYPES

- FOR B6.12 CURB: EAST JORDAN 7221 WITH TYPE M1 GRATE & T1 BACK, NEENAH R–3010 WITH TYPE A GRATE & BARRED CURB BOX OR APPROVED EQUAL.*
- FOR M3.12 CURB: EAST JORDAN 7525 OR APPROVED EQUAL.*
- USE NEENAH R–2504 WITH TYPE D GRATE, EAST JORDAN 1050Z1 WITH TYPE M1 GRATE OR APPROVED EQUAL FOR STRUCTURES IN THE STREET.
- FOR CLOSED COVERS, USE NEENAH R–1713 WITH TYPE B LID, EAST JORDAN 1050Z1 WITH TYPE A LID OR APPROVED EQUAL.

* = CURB BOX MUST BE BARRED STYLE.



CATCH BASIN TYPE A & C

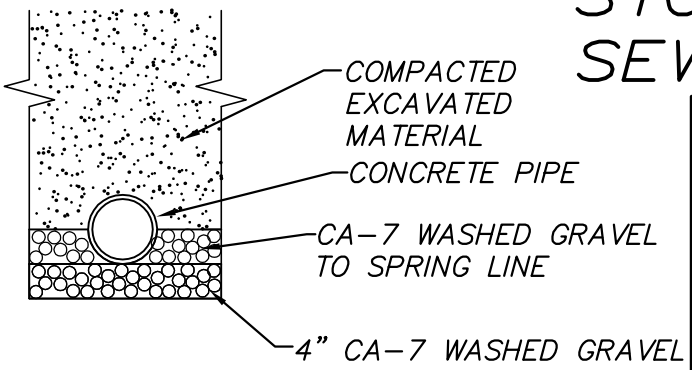
NOTES:
1. ONLY PRECAST STRUCTURES ALLOWED.
2. PRECAST CONCRETE BASE MUST BE INTEGRALLY CAST WITH THE LOWEST WALL SECTION.
3. THE FRAME AND GRATE SHALL BE MORTARED TO THE CONCRETE STRUCTURE.
4. ALL STRUCTURES LOCATED IN THE PAVEMENT SHALL FOLLOW THE WEEPHOLE DETAIL.

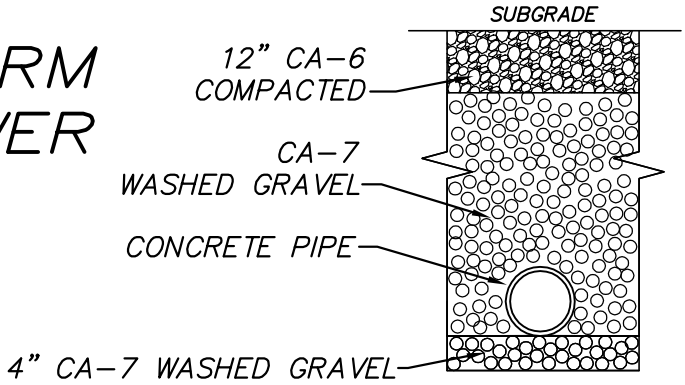
CATCH BASIN DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: CTCHBASN.DWG		SHEET NO. 1 OF 1

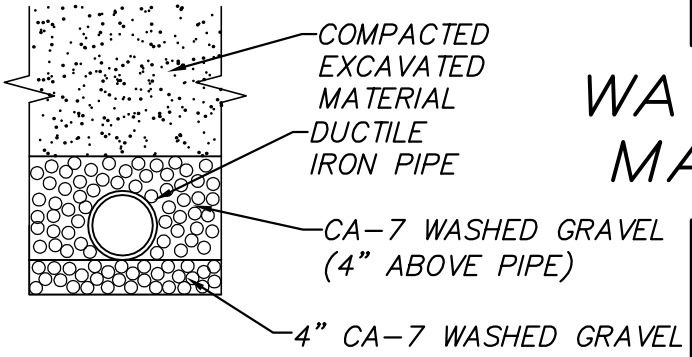
TRENCH BENEATH PARKWAY OR LANDSCAPE AREAS	TRENCH BENEATH PAVEMENT OR WITHIN TWO (2) FEET OF CURB & GUTTER OR SIDEWALK

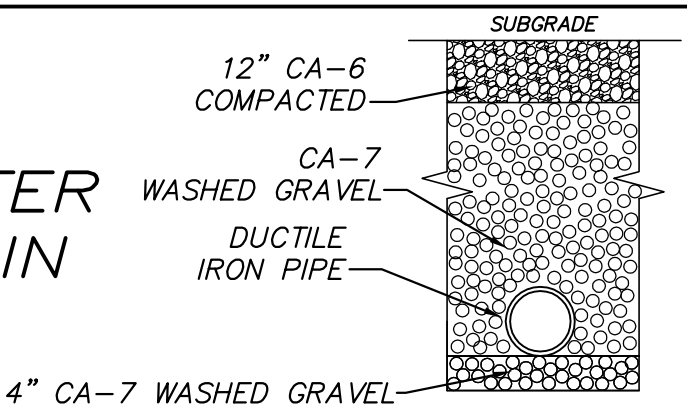
STORM SEWER



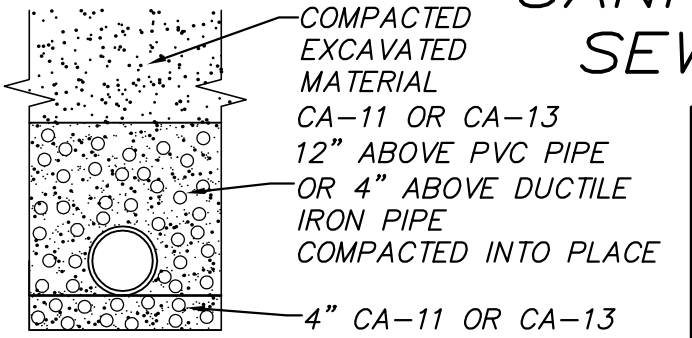


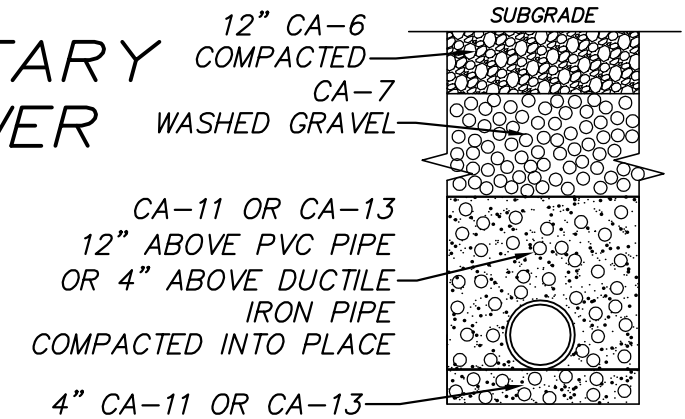
WATER MAIN





SANITARY SEWER





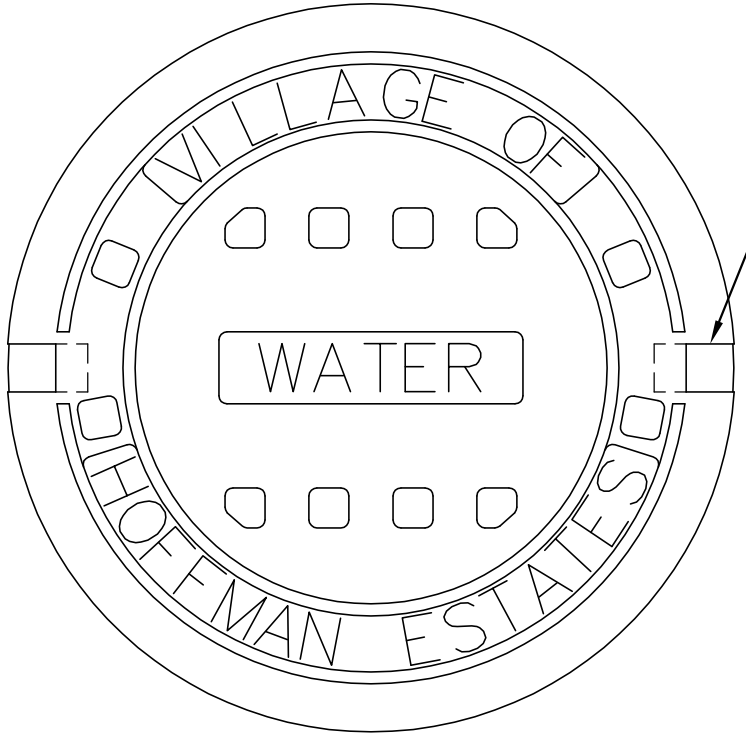
NOTE: ALL TRENCH WIDTHS SHALL EQUAL 4/3 PIPE DIA. + 8" OR A MINIMUM OF 32"

TRENCH BACKFILL DETAIL

SCALE: NONE	DATE: 2-16-07	DRAFTER: NOR	NO.	REVISIONS	BY	DATE
VILLAGE OF HOFFMAN ESTATES		FILE NAME: TYP-TREN2.DWG	1.	MISC UPDATES	SW	2/10
TRANSPORTATION & ENGINEERING DIVISION		SHEET NO. 1 OF 1				

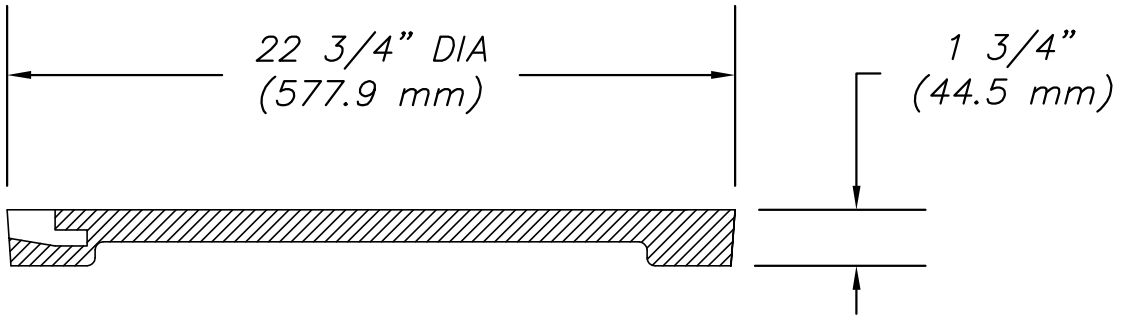
NOTE:

PRIVATE SYSTEMS OR SERVICES SHALL NOT INCLUDE "VILLAGE OF HOFFMAN ESTATES" ON THE WATER COVER.



(2) CONCEALED PICKHOLES

1 1/2" (38.1 mm) LETTERS (RECESSED FLUSH)



HEAVY DUTY

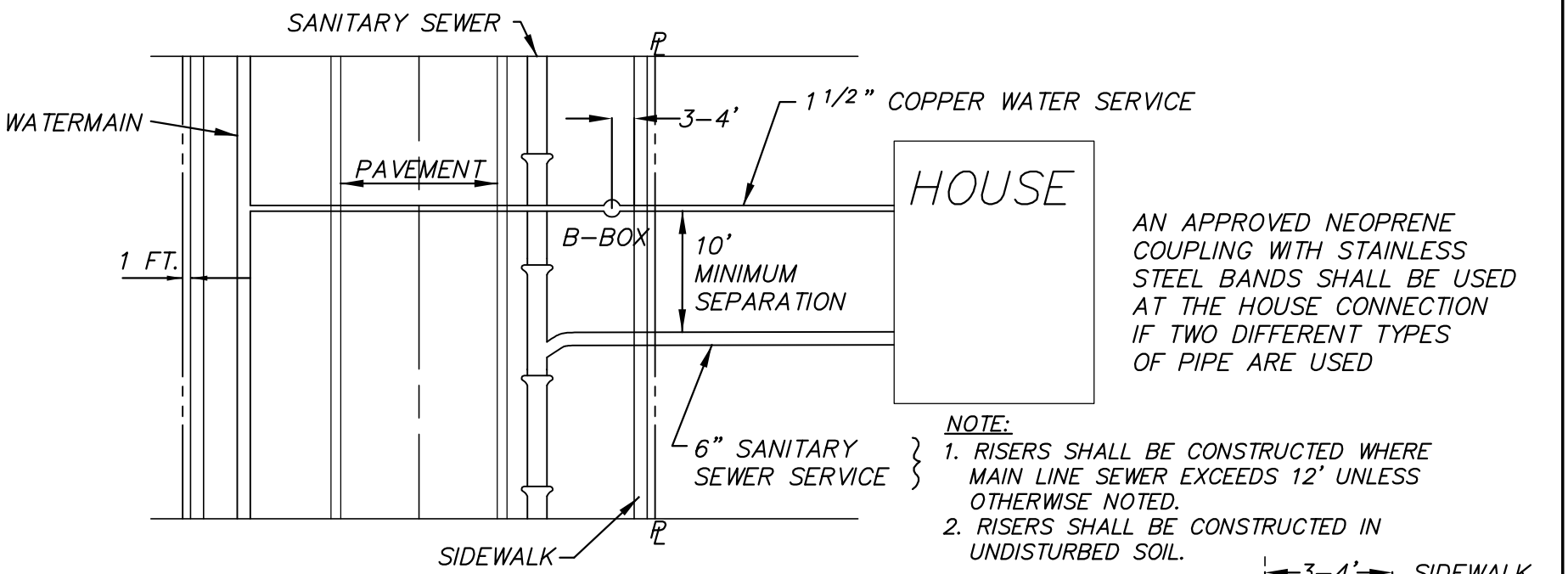
MAT'L ASTM A48 CL35

MACHINED BEARING SURFACE

COVER WT: 125 LBS (56.7 kg)

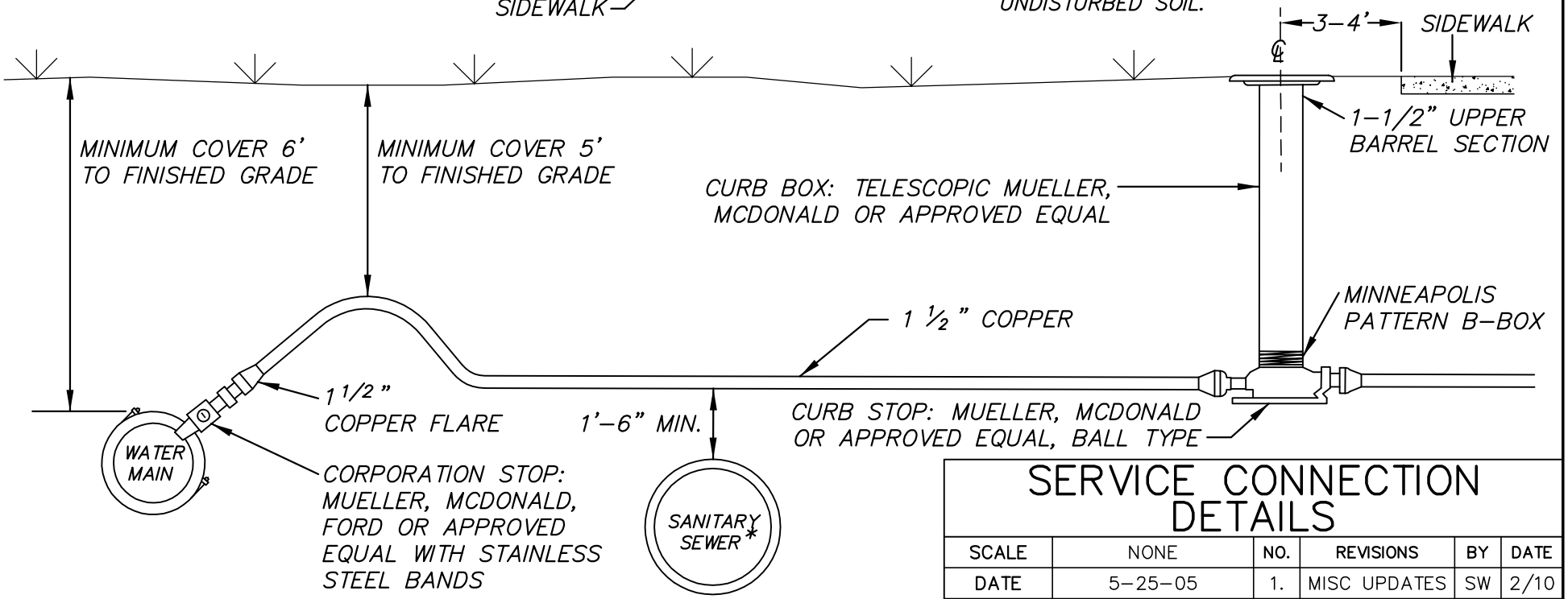
WATER COVER DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: H2OCOVER.DWG		SHEET NO. 1 OF 1



AN APPROVED NEOPRENE COUPLING WITH STAINLESS STEEL BANDS SHALL BE USED AT THE HOUSE CONNECTION IF TWO DIFFERENT TYPES OF PIPE ARE USED

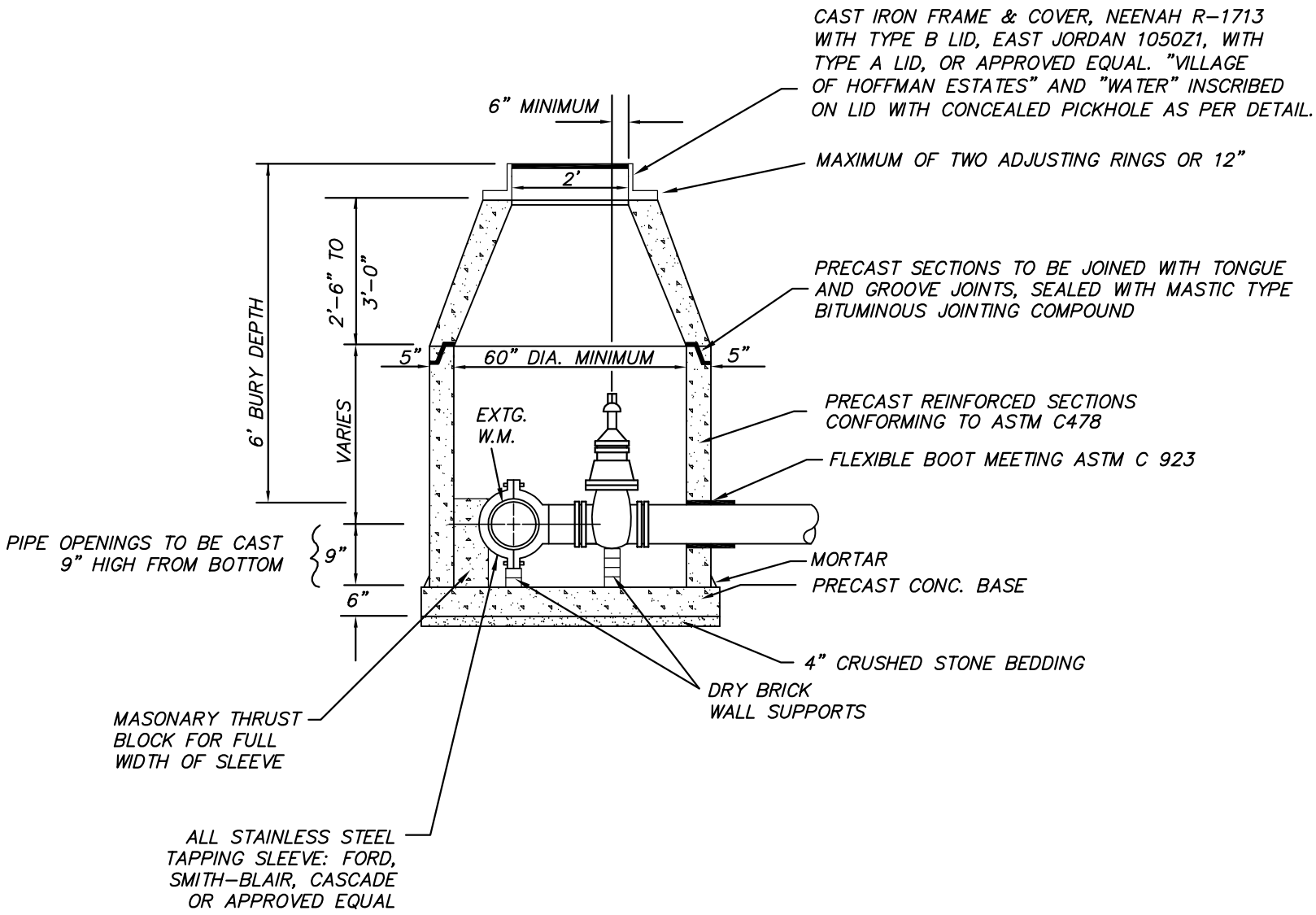
NOTE:
1. RISERS SHALL BE CONSTRUCTED WHERE MAIN LINE SEWER EXCEEDS 12' UNLESS OTHERWISE NOTED.
2. RISERS SHALL BE CONSTRUCTED IN UNDISTURBED SOIL.



* SANITARY SEWER SERVICE CONNECTION TO HAVE A MINIMUM 4' COVER TO FINISHED GRADE

SERVICE CONNECTION DETAILS

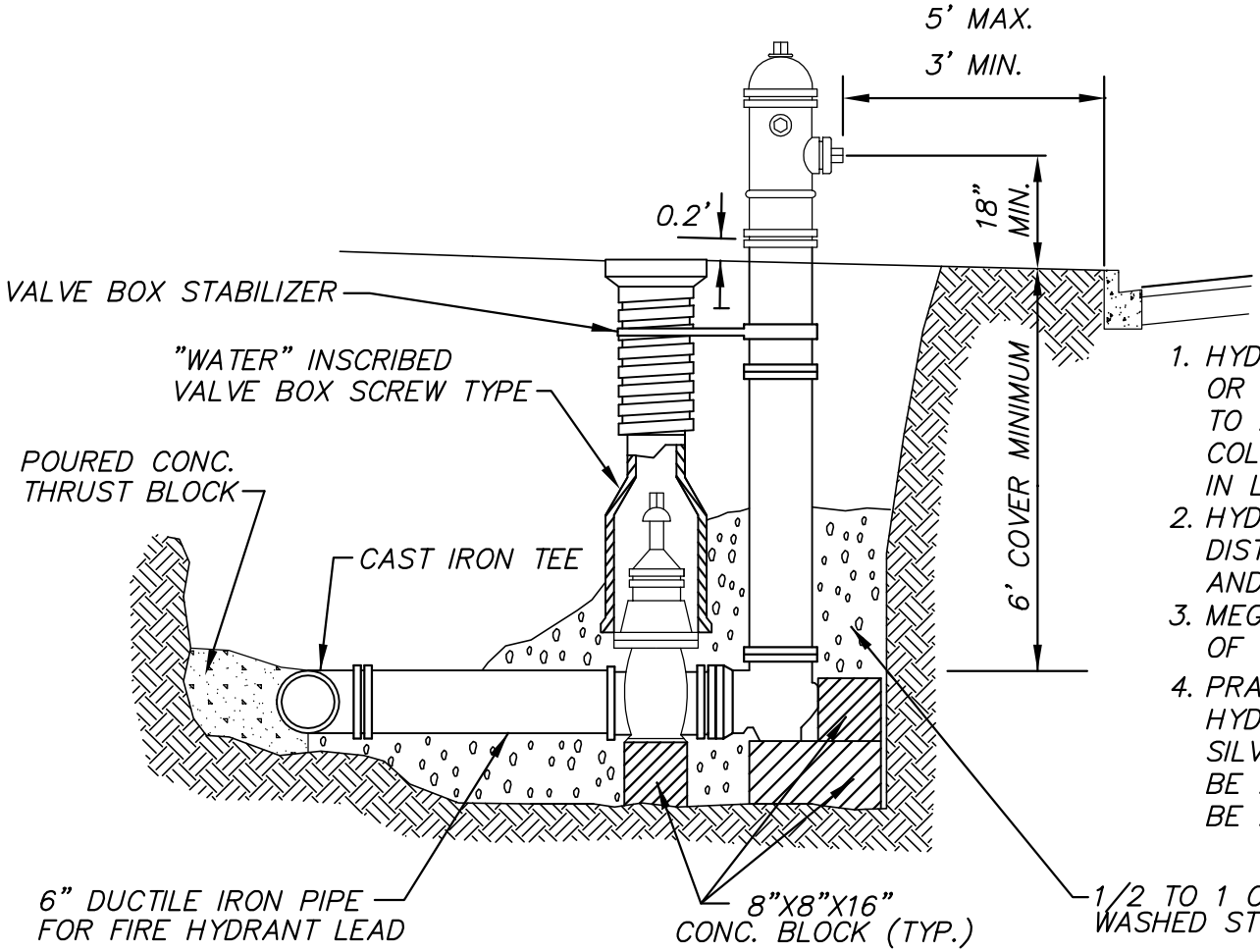
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: SERVCONN.DWG		SHEET NO. 1 OF 1



NOTE: USE TWO ROWS OF ROPE TYPE MASTIC BETWEEN BOTTOM BARREL AND BASE. WATER MAIN MUST BE PRESSURE TESTED AND CHLORINATED BEFORE USE.

PRESSURE CONNECTION DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: PRSSCONN.DWG		SHEET NO. 1 OF 1



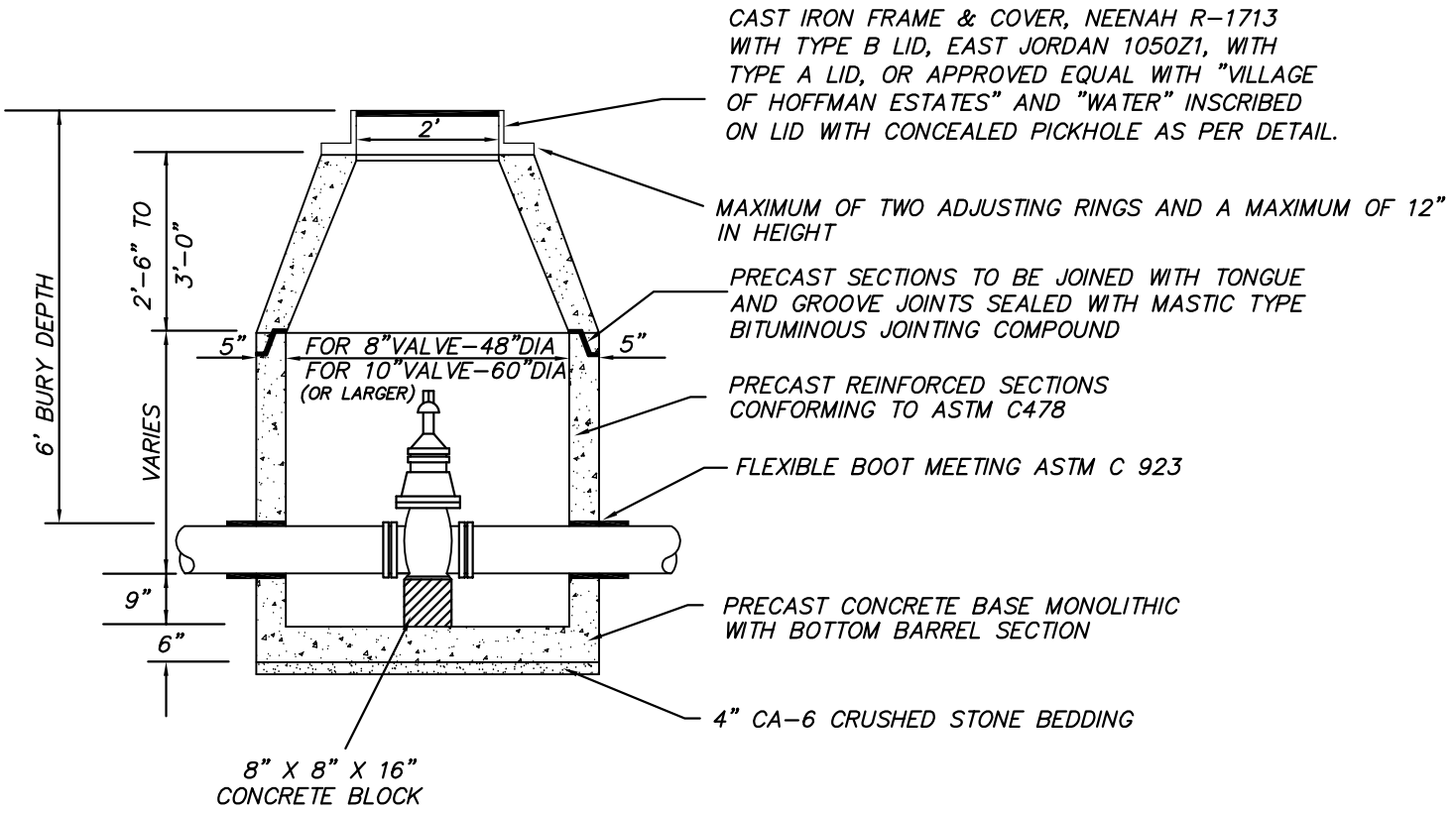
NOTES

1. HYDRANTS TO BE MUELLER A-423, OR APPROVED EQUAL, CONFORMING TO AWWA C-502. COLOR RED, WITH BREAK AWAY FLANGE IN LOCATIONS SHOWN ON THE PLANS.
2. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 3' FROM BACK OF CURB AND 1'- 6" FROM SIDEWALK.
3. MEGA-LUGS CAN BE USED IN LIEU OF THRUST BLOCKS.
4. PRAIRIE STONE BUSINESS PARK HYDRANTS SHALL BE GREEN WITH SILVER CAPS. GREEN PAINT SHALL BE ZH-G4441, SILVER PAINT SHALL BE AX1440-SWQ.

FIRE HYDRANT

FIRE HYDRANT DETAIL

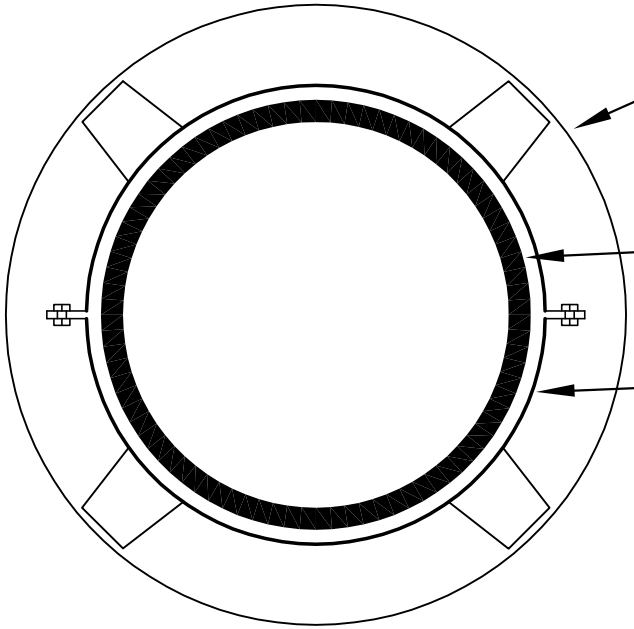
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: FRHYDRNT.DWG		SHEET NO. 1 OF 1



NOTE: WATER MAIN MUST BE PRESSURE TESTED AND CHLORINATED BEFORE USE.

VALVE VAULT DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: VALVEVLT.DWG		SHEET NO. 1 OF 1



STEEL CASING PIPE: ASTM 139
: GRADE 8
: 3/8 IN. MIN. WALL THICKNESS
: WELDED JOINTS
: FACTORY APPLIED BITUMINOUS PIPE COATING

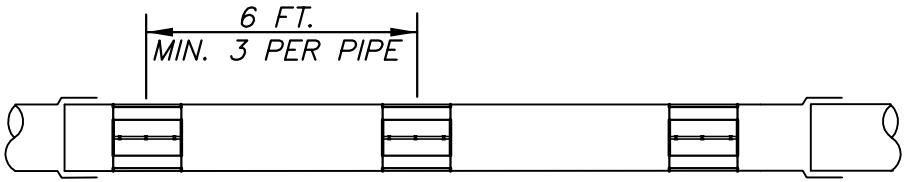
CARRIER PIPE AS PER PLANS TO BE RESTRAINED AND CAN BE OFF CENTERED AS PER SIZE OF CASTING SPACER

CASING CRADLE

END VIEW

NOTES

1. PROVIDE CONCRETE BULKHEAD AT EACH END OF CASING PIPE.
2. CRADLE SHALL BE POWERSEAL CASING CHOCK, MODEL 4810 BY POWERSEAL PIPELINE PRODUCTS CORP. OR CASCADE CASING SPACER OR APPROVED EQUAL.



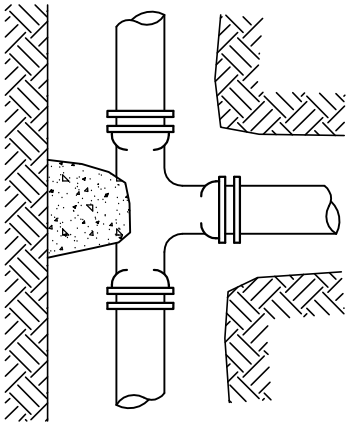
SIDE VIEW

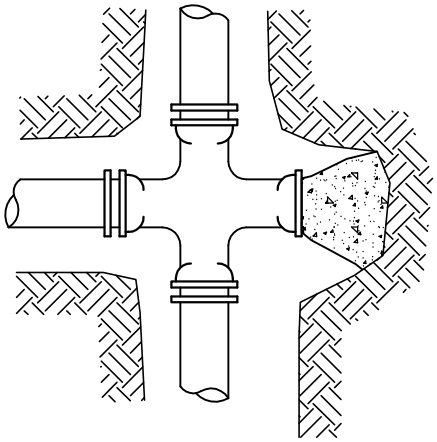
AUGER PIPE DETAIL

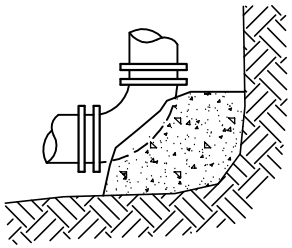
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: AUGER.DWG		SHEET NO. 1 OF 1

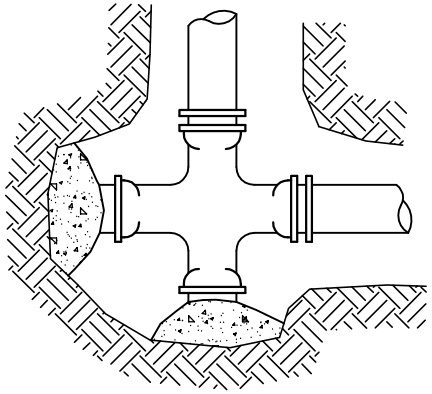
NOTES:

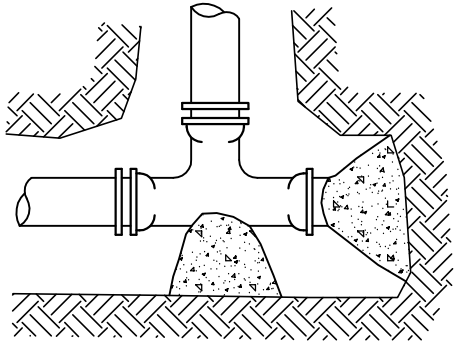
1. THRUST BLOCKS SHALL BE AT ALL TEES AND BENDS OF 11–1/4" OR GREATER AND AT ALL DEAD END WATER MAINS.
2. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
3. CONCRETE SHALL BE 3000 P.S.I. (MIN.)
4. MEGA–LUGS CAN BE USED IN LIEU OF THRUST BLOCKS.
5. IN POOR SOIL CONDITIONS OR IN FAILING OR FALLING TRENCH WALLS, MEGA–LUGS MUST BE USED.
6. FIELD LOK GASKET CAN BE USED IN LIEU OF THRUST BLOCKS.





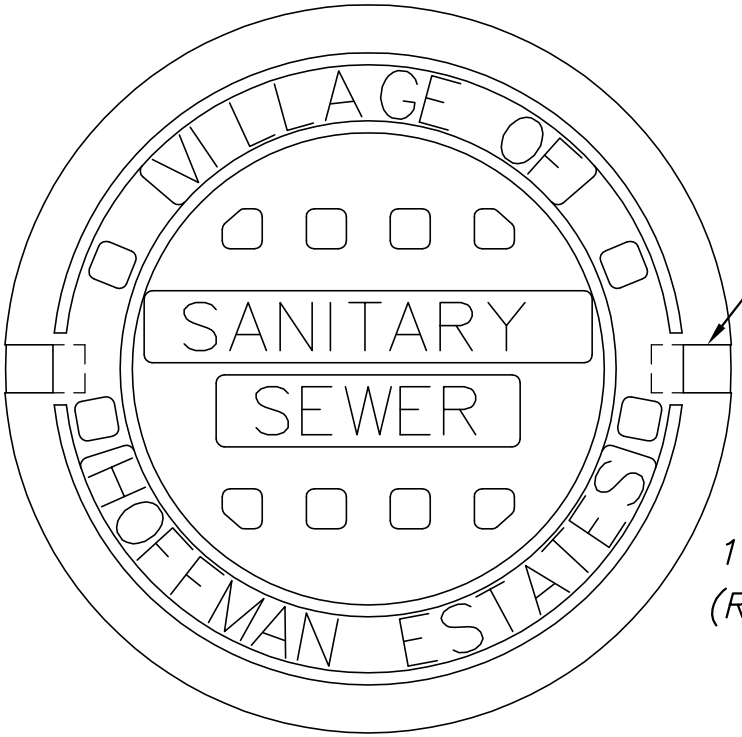






THRUST BLOCKING DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: THRSBLK.DWG		SHEET NO. 1 OF 1

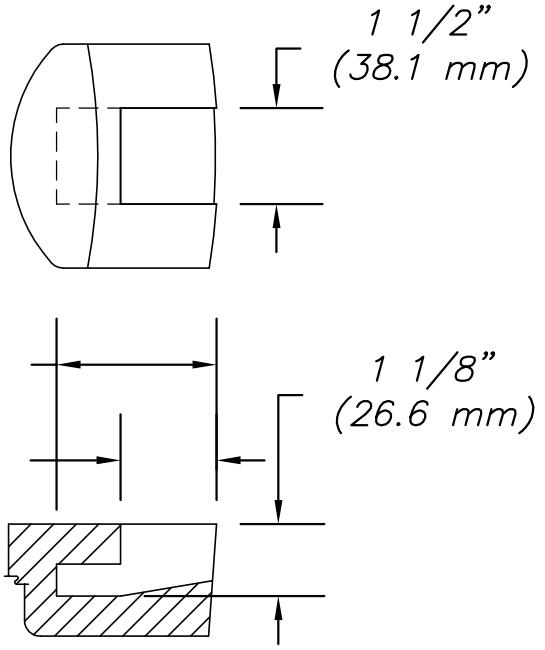


NOTE:

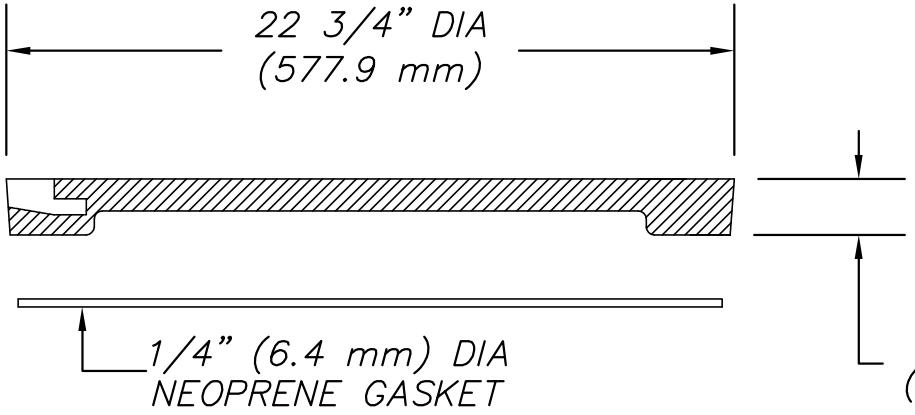
PRIVATE SYSTEMS OR SERVICES SHALL NOT INCLUDE "VILLAGE OF HOFFMAN ESTATES" ON THE SANITARY COVER.

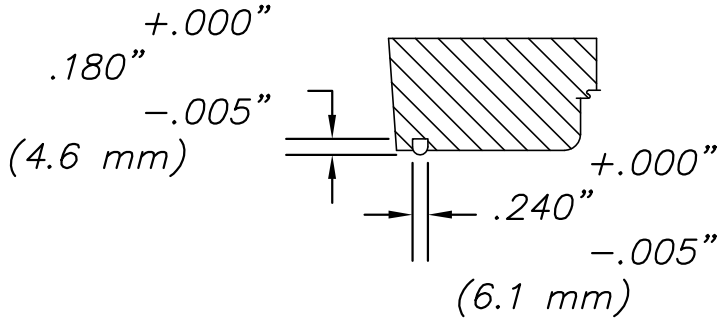
(2) CONCEALED PICKHOLES

1 1/2" (38.1mm) LETTERS (RECESSED FLUSH)



CONCEALED PICKHOLE DETAIL





GROOVE DETAIL

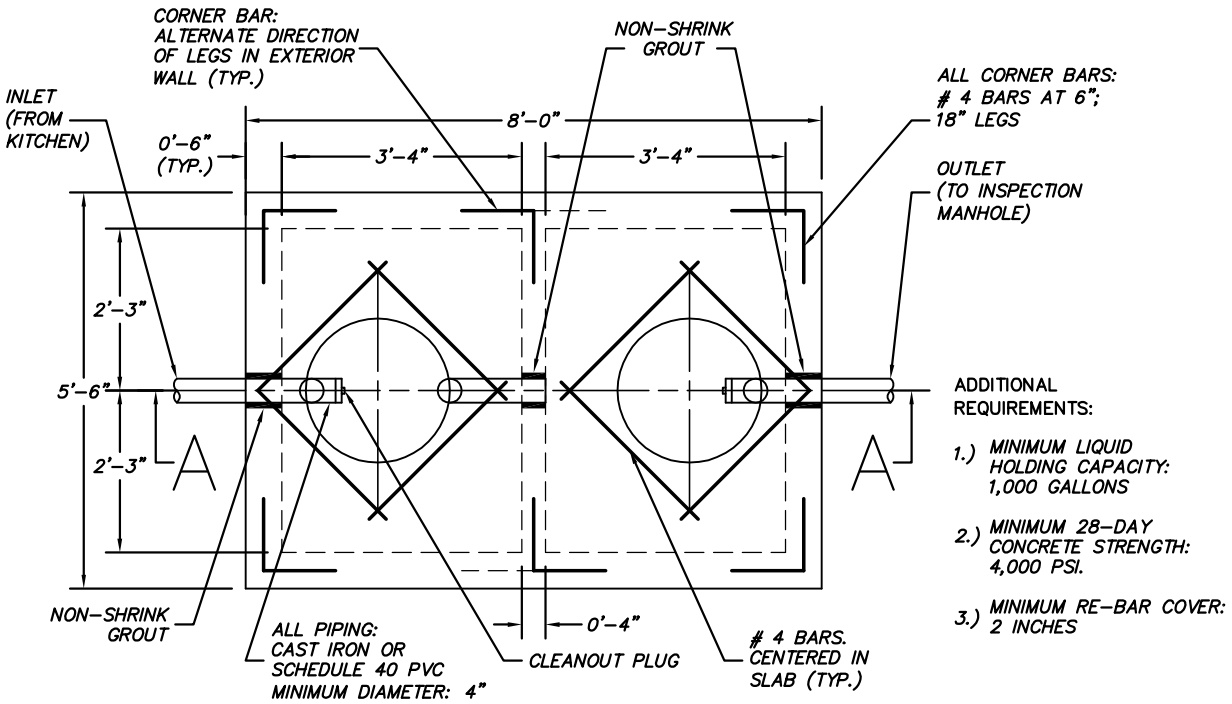
HEAVY DUTY
MAT'L ASTM A48 CL35
MACHINED BEARING SURFACE
COVER WT: 125 LBS (56.7kg)

MANHOLE COVER WITH GROOVED GASKET SEAL & CONCEALED PICKHOLES TO REDUCE SURFACE WATER INFLOW.

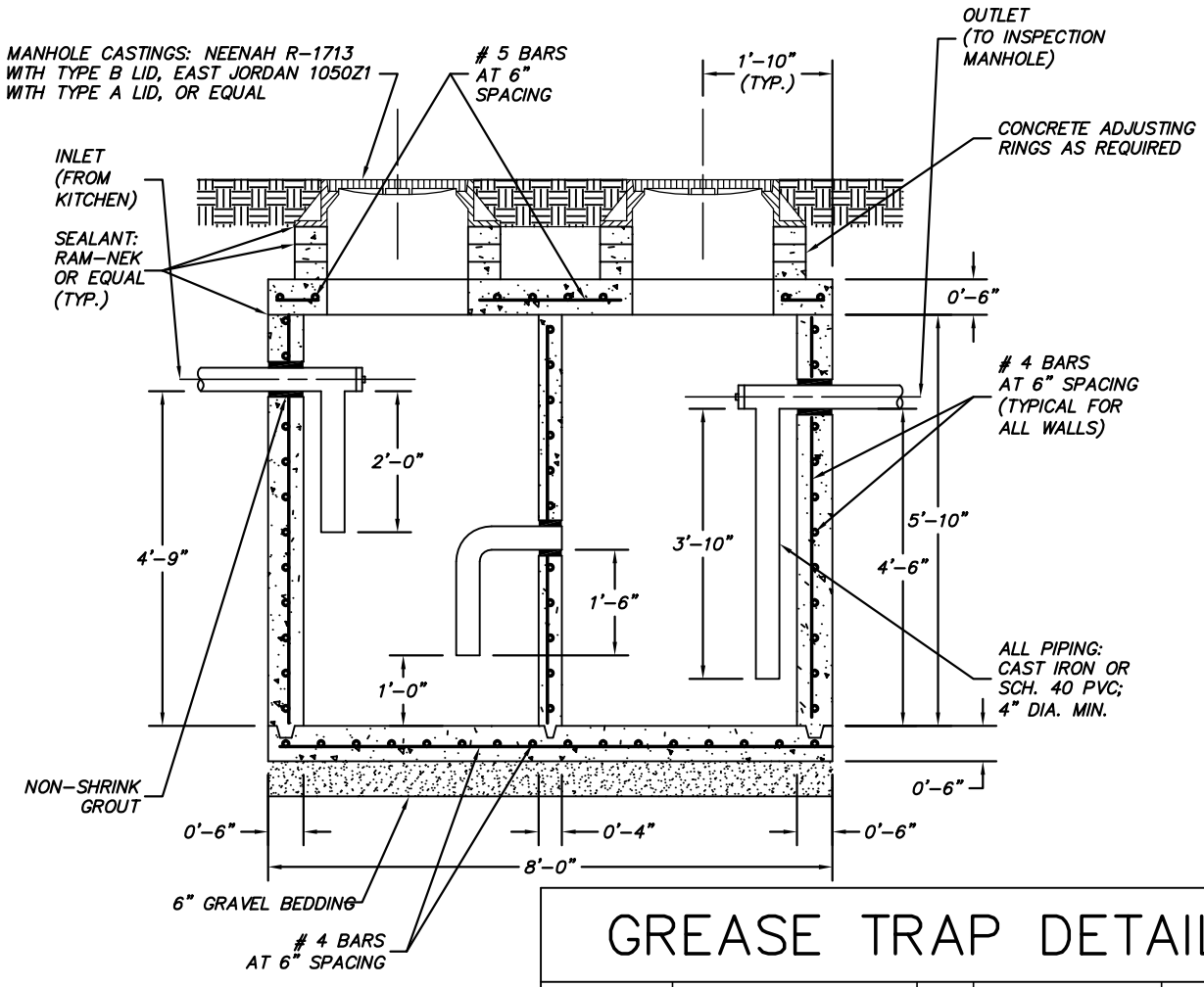
SANITARY COVER DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: SANCOVER.DWG		SHEET NO. 1 OF 1

PLAN VIEW

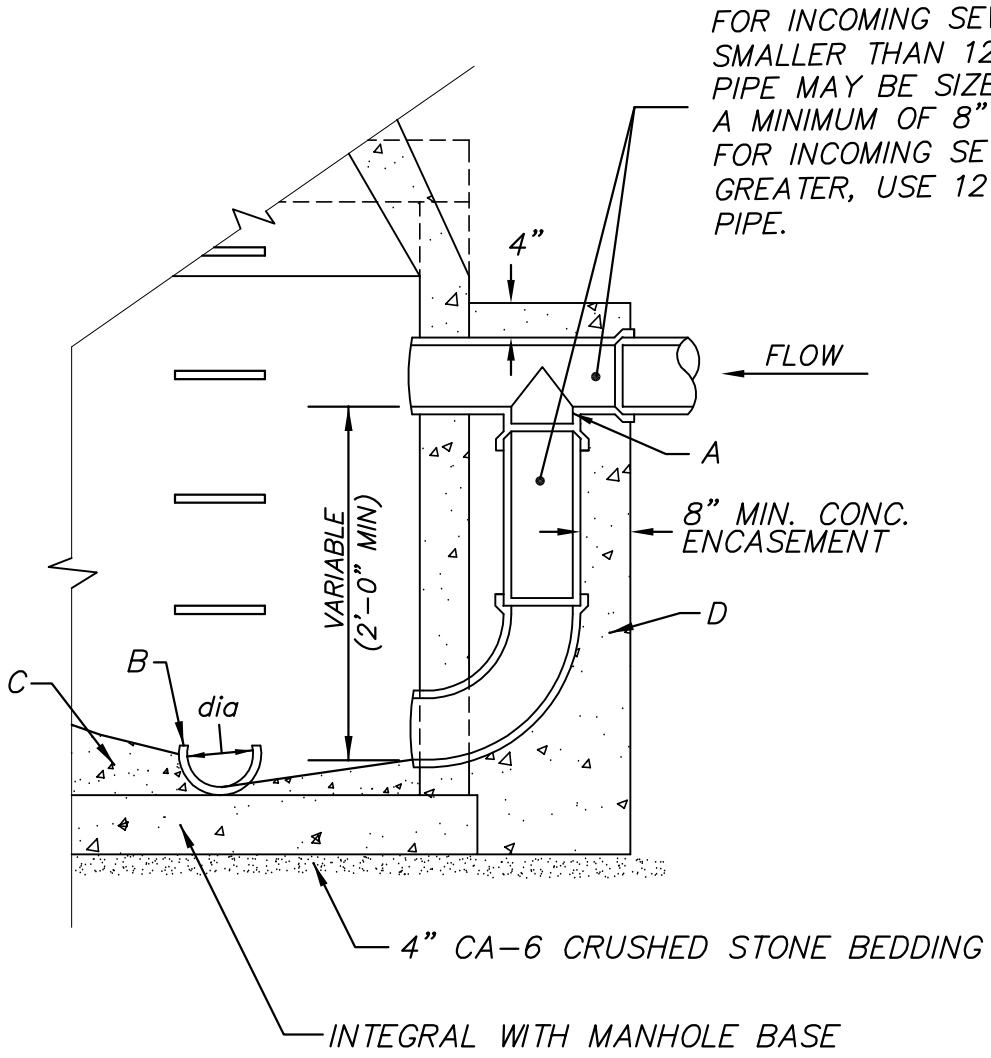


SECTION A



GREASE TRAP DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: GREASETR.DWG		SHEET NO. 1 OF 1



LEGEND

A. TEE BRANCH – DIP
B. MAINLINE SEWER (LARGEST DIAMETER)
C. MANHOLE BENCH FILLET – POURED IN PLACE CONCRETE UNLESS POURED WITH PRECAST REINFORCED CONCRETE BASE AND SIDEWALL
D. CLASS X CONCRETE IN ACCORDANCE WITH THE STATE OF ILLINOIS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

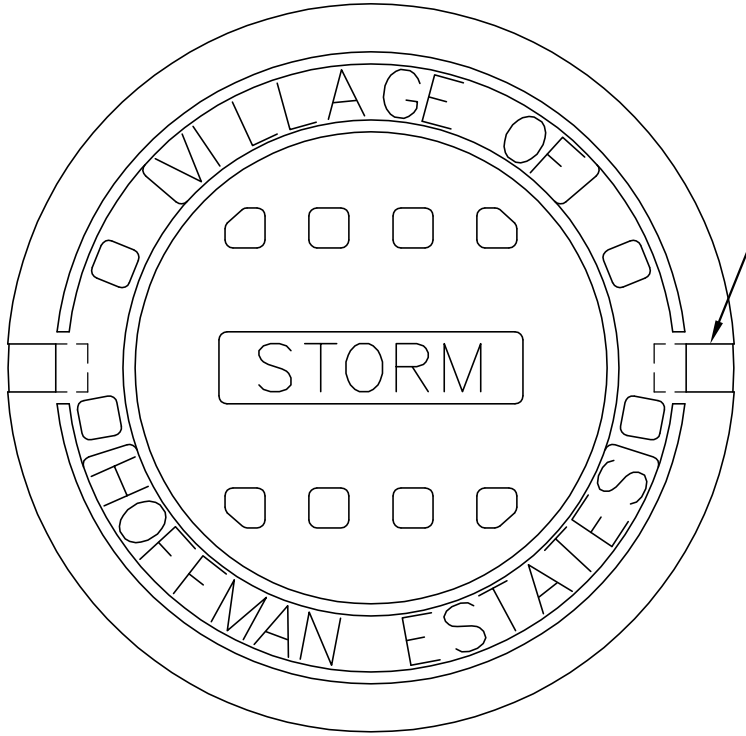
NOTES:
1. ALL JOINTS SHALL CONFORM TO ASTM C-425 SPECIFICATIONS EXCEPT FOR #2 BELOW.
2. MORTAR OR BITUMINOUS MASTIC JOINT ALLOWED (ONLY AS SHOWN).
3. ALL DROP PIPES MUST BE DUCTILE IRON PIPE.

DROP CONNECTION DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: DROPCONN.DWG		SHEET NO. 1 OF 1

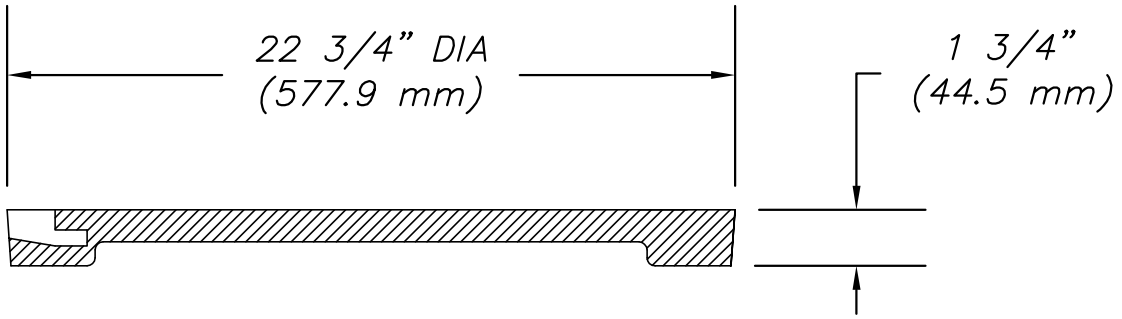
NOTE:

PRIVATE SYSTEMS OR SERVICES SHALL NOT INCLUDE "VILLAGE OF HOFFMAN ESTATES" ON THE STORM COVER.



(2) CONCEALED PICKHOLES

1 1/2" (38.1 mm) LETTERS (RECESSED FLUSH)



HEAVY DUTY

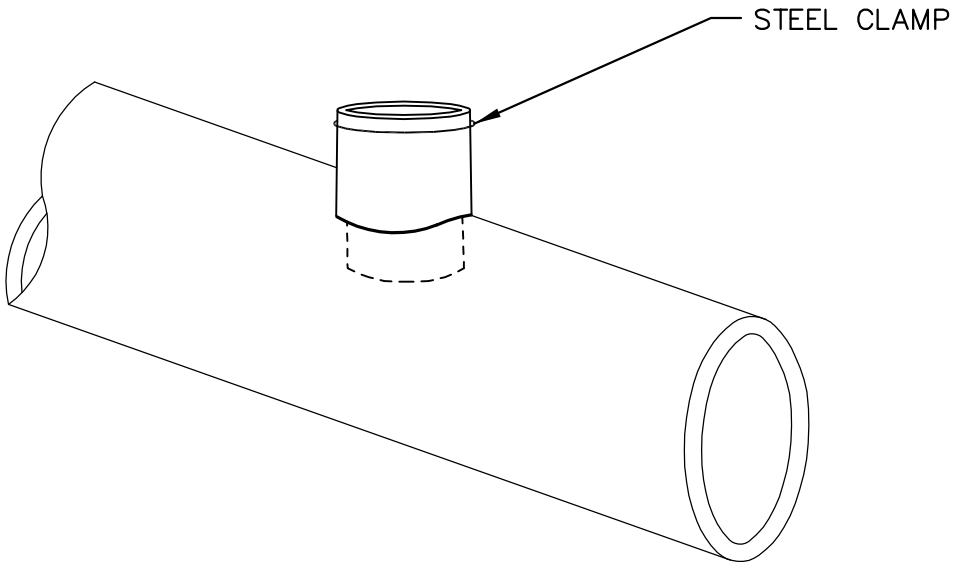
MAT'L ASTM A48 CL35

MACHINED BEARING SURFACE

COVER WT: 125 LBS (56.7 kg)

STORM COVER DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: STRMCVR.DWG		SHEET NO. 1 OF 1



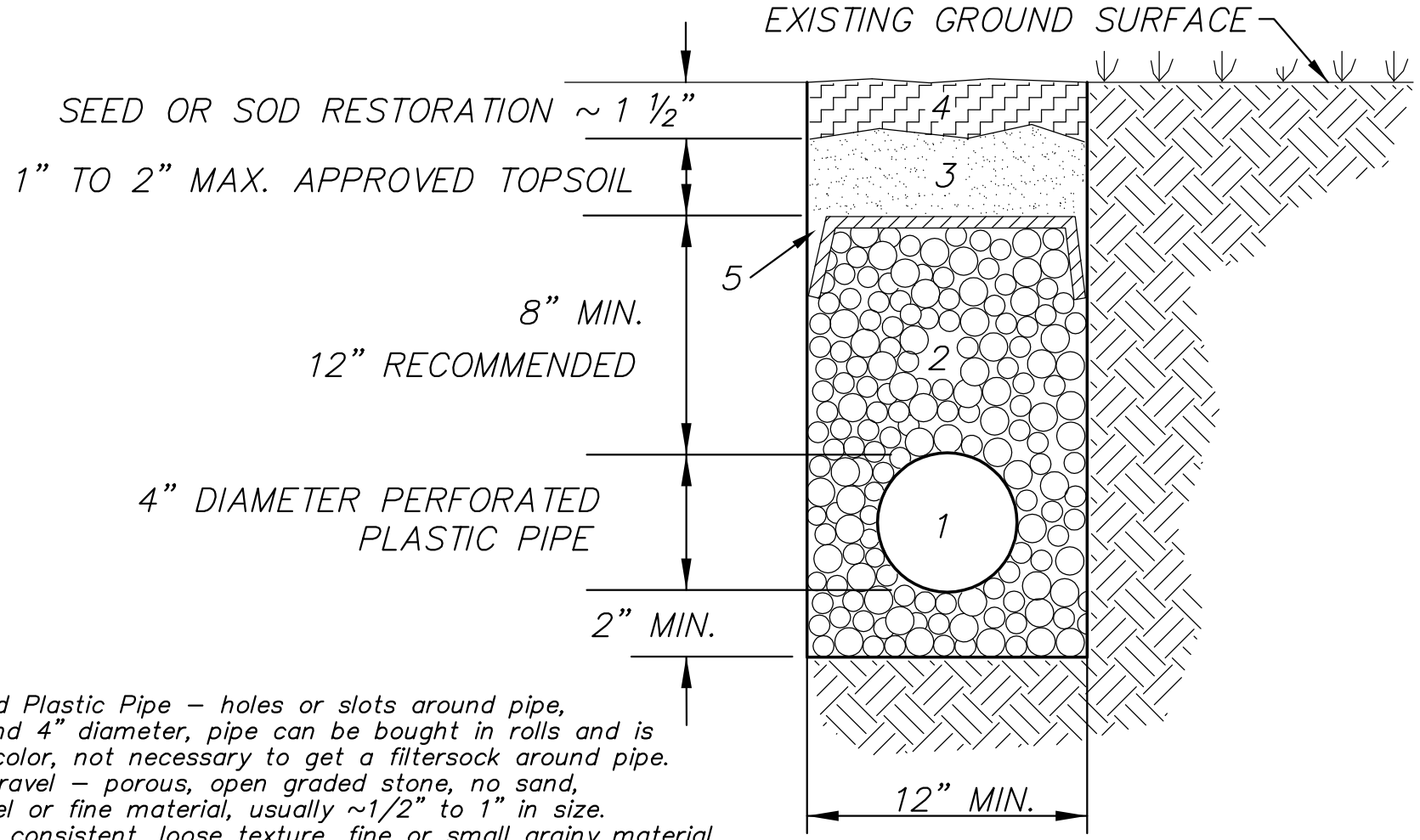
KOR–N–TEE CONNECTOR

NOTES:

1. THE HOFFMAN ESTATES TRANSPORTATION AND ENGINEERING DIVISION SHALL BE NOTIFIED BEFORE THE COMMENCEMENT OF WORK AND WHEN THE PIPE IS EXPOSED.
2. THE CONNECTION SHALL BE BACKFILLED COMPLETELY TO WITHIN SIX INCHES OF THE GROUND SURFACE WITH CA–6, CRUSHED GRAVEL OR CA–7 WASHED GRAVEL.
3. ONLY A PROFESSIONAL CONTRACTOR SHALL INSTALL THE CONNECTOR ACCORDING TO MANUFACTURERS REQUIREMENTS. THE PUBLIC WORKS DEPARTMENT IS NOT AVAILABLE TO ASSIST IN THE DIRECT CONNECTION TO THE STORM SEWER.
4. KOR–N–TEE SEWER CONNECTORS, PART NO. 006–5 THRU 9.
5. EXISTING PIPE SHALL BE CORED ONLY TO GAIN ACCESS.

DIRECT CONNECTION TO STORM SEWER DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES *TRANSPORTATION & ENGINEERING DIVISION*			FILE NAME: SADDLE.DWG		SHEET NO. 1 OF 1



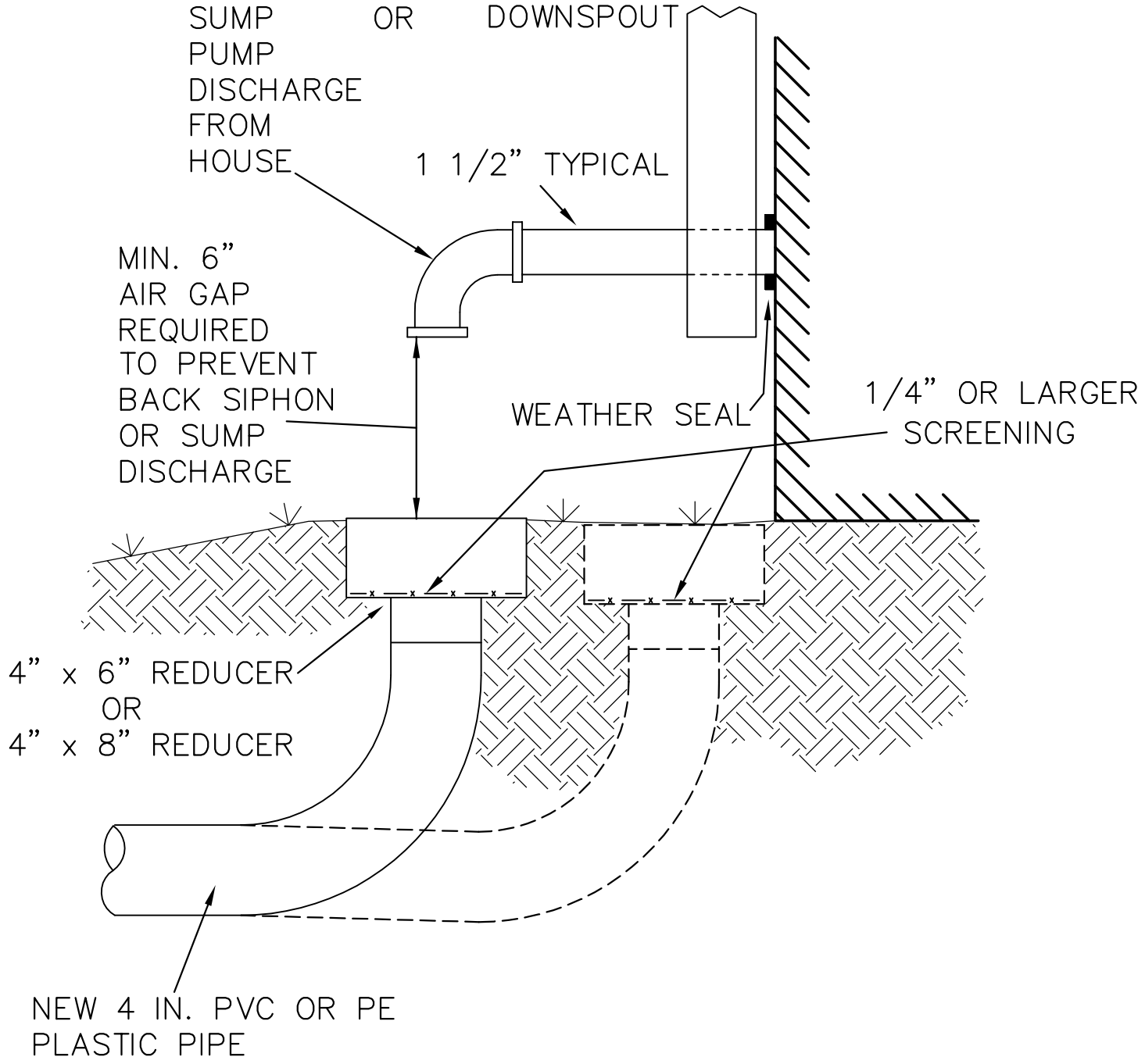
1. *Perforated Plastic Pipe – holes or slots around pipe, recommend 4" diameter, pipe can be bought in rolls and is black in color, not necessary to get a filtersock around pipe.*
2. *Washed Gravel – porous, open graded stone, no sand, pea gravel or fine material, usually ~1/2" to 1" in size.*
3. *Topsoil – consistent, loose texture, fine or small grainy material, recommend 1" to 2" maximum depth. Do not not use excavated dirt for the topsoil layer. Watch out for clays – yellow, brown, grey or black in color. The topsoil layer is critical for the system to work effectively.*
4. *Sod Restoration – or seeding can be used with 1 ½" additional topsoil to achieve 3" of topsoil coverage.*
5. *Filter Fabric – Used for erosion control, keeps topsoil from settling into stone layer.*
6. *A permit is required from the Code Enforcement Department Provide Plat with proposed work, $50 fee, (847) 781–2631.*
7. *Public Works Department can make the connection to the storm structure if the resident installs the pipe. Call Public Works at (847) 490–6800.*

JULIE Number: 1–800–892–0123

Another option is to bring the washed gravel to the top of the trench or to the existing ground surface.

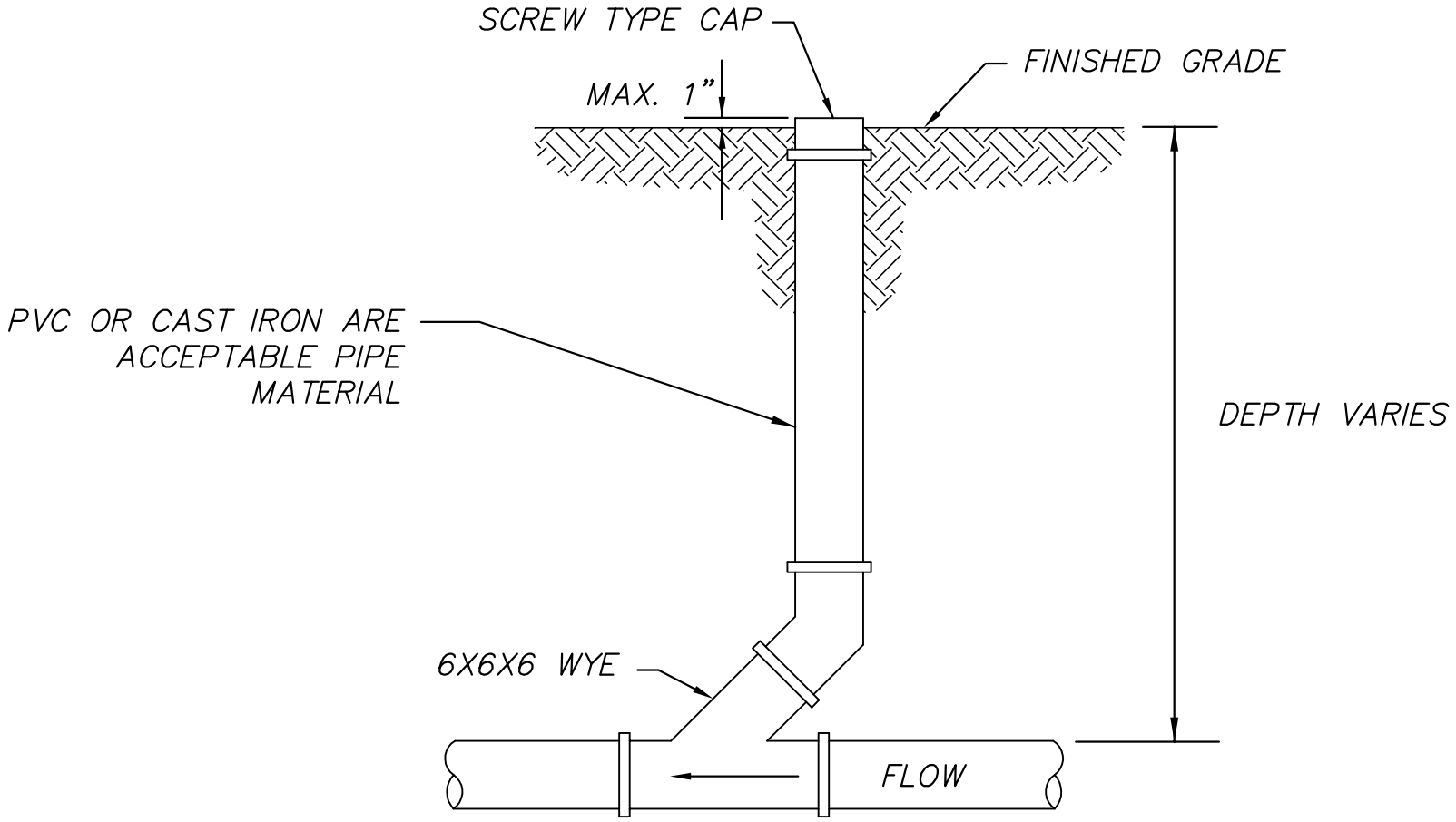
PERFORATED PIPE DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	7–18–08	1.	MISC UPDATES	SLW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES *TRANSPORTATION & ENGINEERING DIVISION*			FILE NAME: UNDRDRAN.DWG		SHEET NO. 1 OF 1



AIR GAP DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SLW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES *TRANSPORTATION & ENGINEERING DIVISION*			FILE NAME: AIRGAP.DWG		SHEET NO. 1 OF 1



CLEAN OUT DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: CLNOUT.DWG		SHEET NO. 1 OF 1

TREE PROTECTION FENCING SHALL CONSIST OF WOODEN SNOW FENCE SECURED TO METAL POSTS AT A MAXIMUM OF 8' INTERVALS. EROSION CONTROL FENCING IN CONJUNCTION WITH TREE PROTECTION FENCING MUST NOT BE TRENCHED INTO THE GROUND. AN ALTERNATE VILLAGE APPROVED METHOD MUST BE UTILIZED. AT A MINIMUM, SIGNS WHICH ARE LEGIBLE AT 10 FEET SHALL BE POSTED AND MAINTAINED AT INTERVALS NO LESS THAN 30 FT. WHICH CLEARLY STATE:
"TREE PROTECTION AREA. DO NOT ENTER.
DO NOT MOVE OR ALTER FENCE.
VIOLATION SUBJECT TO FINE OR WORK STOPPAGE."

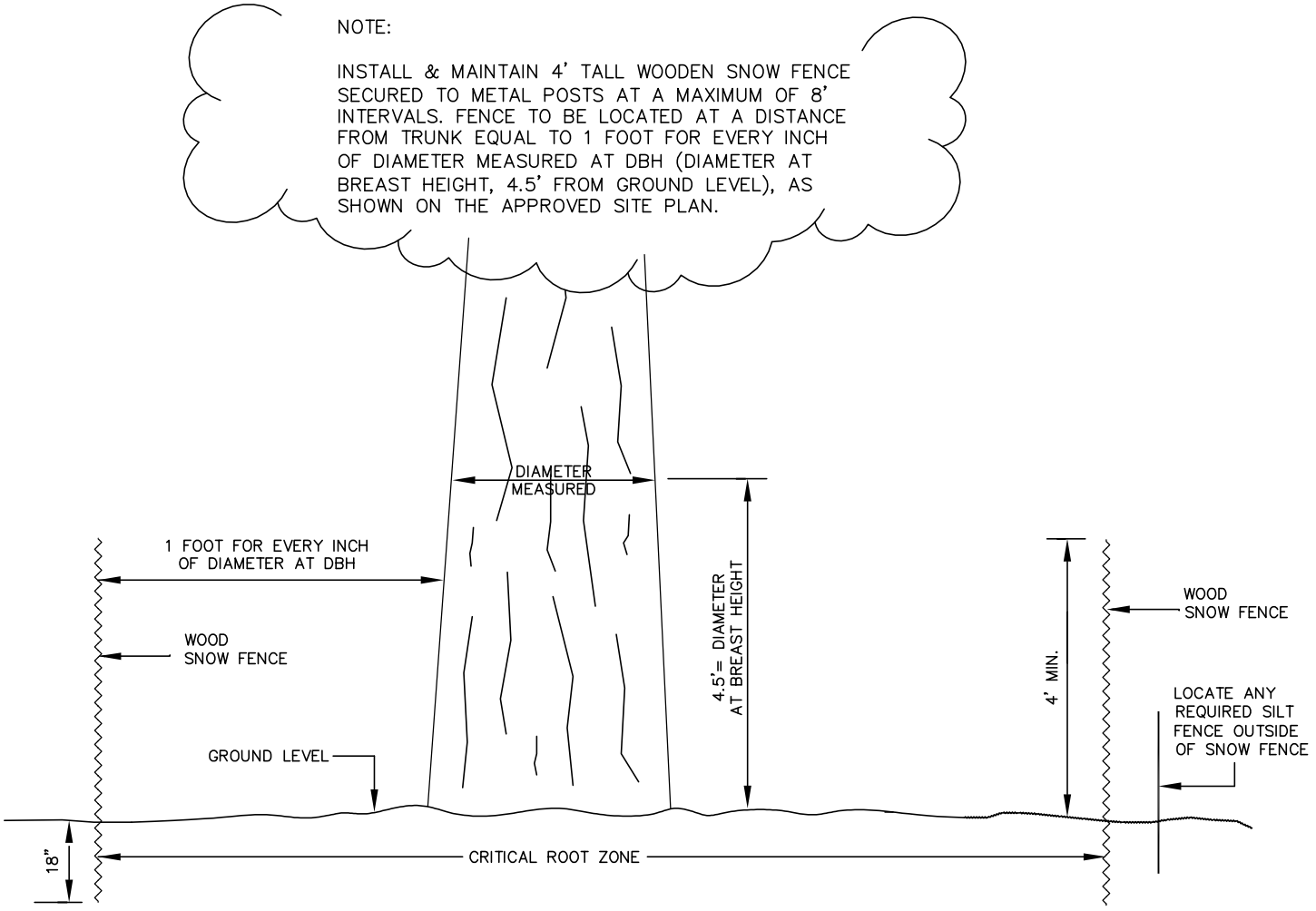
THE VILLAGE MAY, AT ITS OPTION, INSTALL THE FENCING UTILIZING FUNDS DEPOSITED WITH THE VILLAGE BY THE DEVELOPER FOR THAT PURPOSE. ALL TREE PROTECTION FENCING MUST BE INSTALLED AND MAINTAINED PRIOR TO ANY CONSTRUCTION AS APPROVED BY THE VILLAGE AS PART OF THE APPROVAL PROCESS. IN NO CASE SHALL TREE PROTECTION FENCING BE REMOVED, BREACHED, TEMPORARILY REMOVED, ALTERED, OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE VILLAGE.

THE REMOVAL, TEMPORARY REMOVAL, ALTERATION OR RELOCATION OF AN INSTALLED TREE PROTECTION FENCE WITHOUT WRITTEN AUTHORIZATION FROM THE DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE VILLAGE SHALL INCUR A PENALTY OF $100.00 PER OCCURRENCE. THE DEVELOPER/BUILDER SHALL BE RESPONSIBLE FOR PAYING THIS PENALTY.

ENTERING A TREE PRESERVATION AREA THAT WAS REQUIRED TO BE FENCED SHALL RESULT IN AN ADDITIONAL PENALTY OF $50 PER DIAMETER INCH FOR ANY TREE THAT IS DAMAGED IN THE OPINION OF THE VILLAGE, INCLUDING, BUT NOT LIMITED TO, GRADING, TRENCHING, LIMB OR BARK REMOVAL, STORAGE OF MATERIALS OR PARKING OF VEHICLES. THE COST OF ANY NECESSARY REMEDIAL TREE CARE ACTION, IN THE OPINION OF THE VILLAGE, SHALL BE THE RESPONSIBILITY OF THE BUILDER/DEVELOPER.

NOTE:

INSTALL & MAINTAIN 4' TALL WOODEN SNOW FENCE SECURED TO METAL POSTS AT A MAXIMUM OF 8' INTERVALS. FENCE TO BE LOCATED AT A DISTANCE FROM TRUNK EQUAL TO 1 FOOT FOR EVERY INCH OF DIAMETER MEASURED AT DBH (DIAMETER AT BREAST HEIGHT, 4.5' FROM GROUND LEVEL), AS SHOWN ON THE APPROVED SITE PLAN.

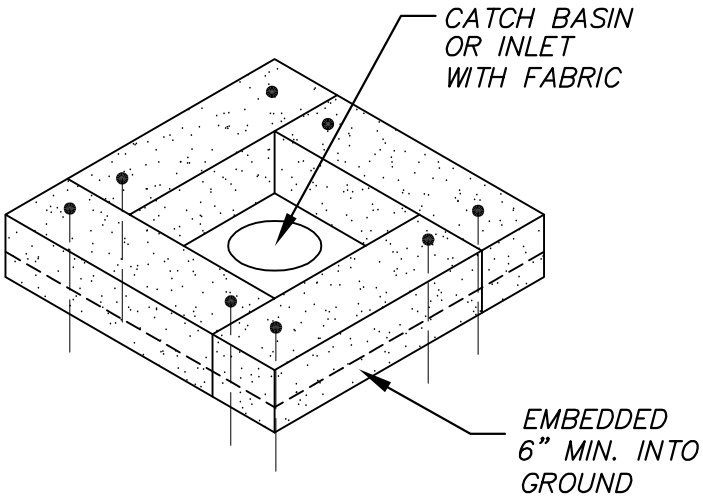


NOTE:

REFER TO THE VILLAGE OF HOFFMAN ESTATES' SUBDIVISION CODE SECTION 10-4-7 FOR FURTHER TREE PRESERVATION STANDARDS.

TREE PROTECTION DETAIL

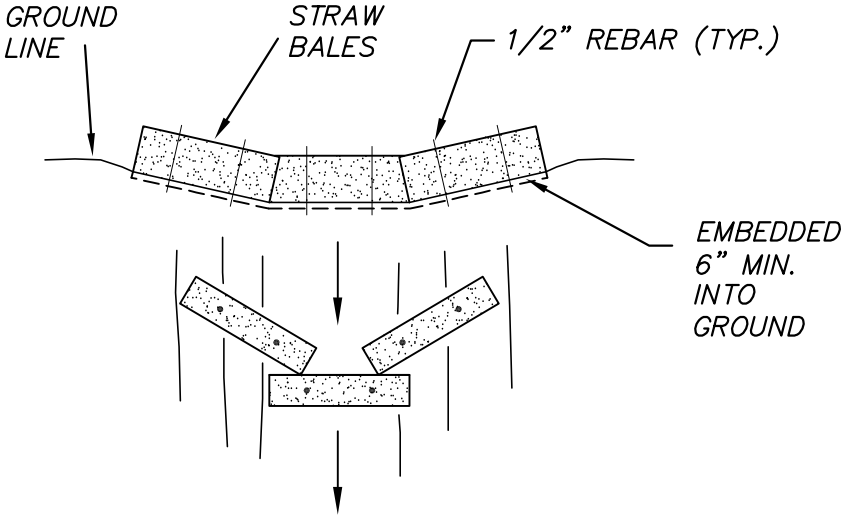
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES *TRANSPORTATION & ENGINEERING DIVISION*			FILE NAME: TREEPROT.DWG		SHEET NO. 1 OF 1



STRAW BALES AROUND

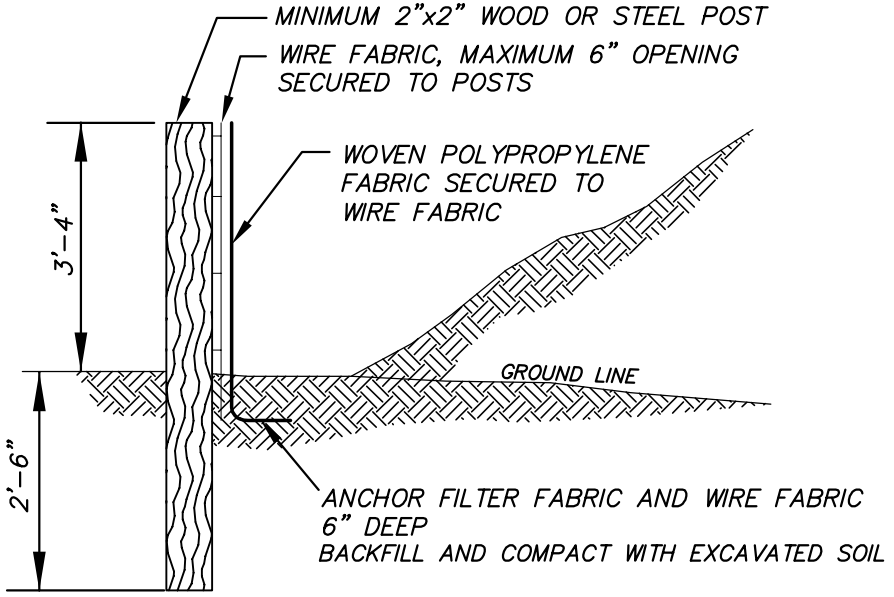
DRAIN AREA (TYPICAL)

ALL DRAINAGE STRUCTURES MUST
ALSO HAVE FABRIC BETWEEN
FRAME AND GRATE



DITCH CHECK DETAIL

1/2" REBAR (2 PER BALE)
TO BE DRIVEN A MINIMUM OF 2'
INTO THE GROUND



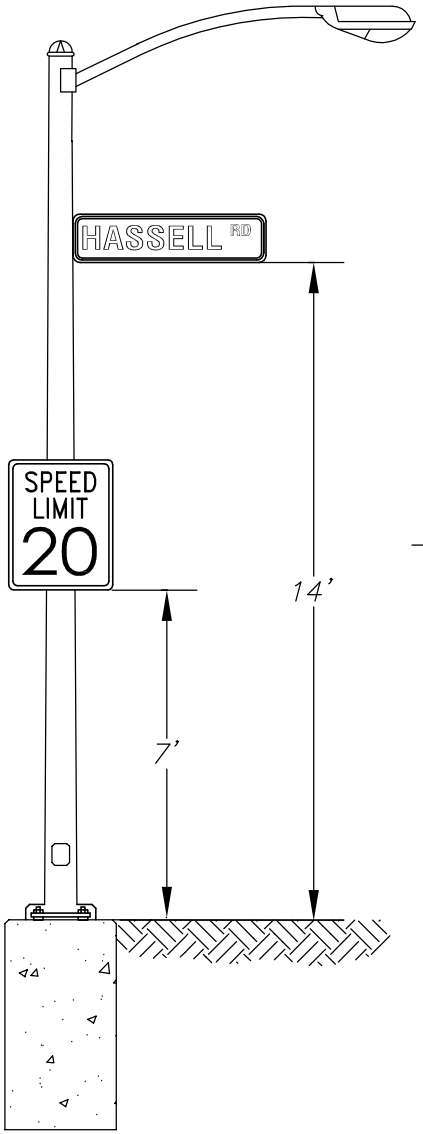
SILT FENCE DETAIL

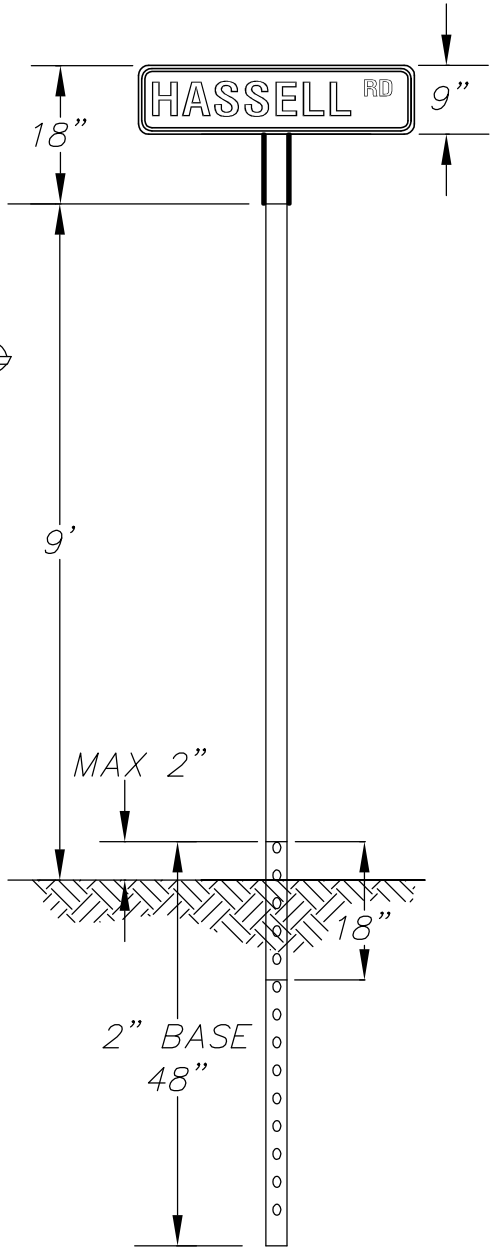
NOTES:

1. STRAW BALES MUST BE MAINTAINED ON A REGULAR BASIS.
2. EROSION CONTROL TO BE INSTALLED PRIOR TO THE START OF CONSTRUCTION.
3. THE SILT FENCES SHALL BE MAINTAINED WEEKLY AND AFTER EACH RAINFALL FOR THE ENTIRE DURATION OF CONSTRUCTION.
4. ALL EROSION CONTROL MUST FOLLOW THE ILLINOIS URBAN MANUAL.

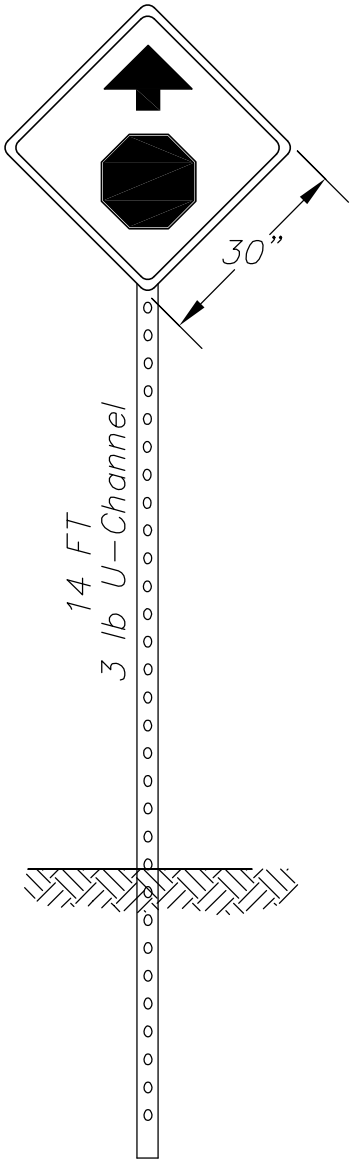
EROSION CONTROL DETAIL

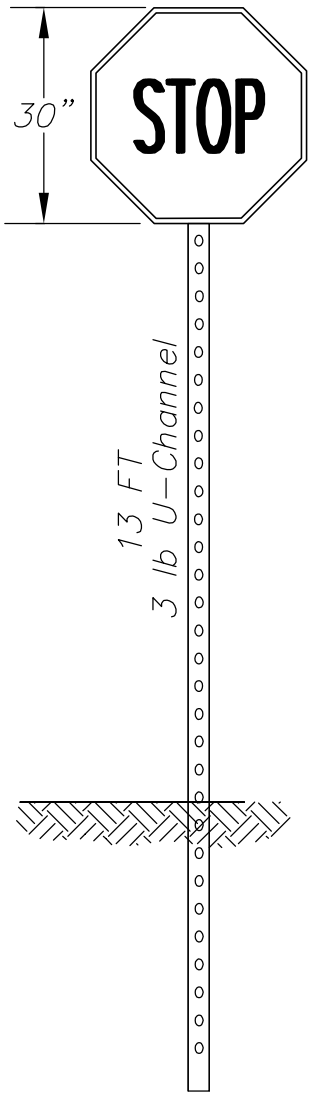
SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: EROSION.DWG		SHEET NO. 1 OF 1

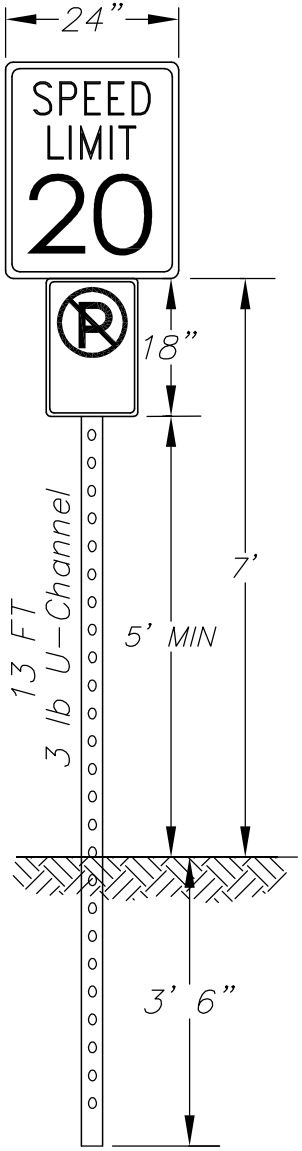




12 FT 1 3/4" 14 GAUGE
QUICK PUNCH POST
WITH 4 FT 2" 12
GAUGE BASE







SIGN POSTING DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	Sizes & Hts	SLW	10/07
DRAFTER	SLW	2.	MISC UPDATES	SLW	2/10
VILLAGE OF HOFFMAN ESTATES ENGINEERING DIVISION			FILE NAME: SIGNSPEC.DWG		SHEET NO. 1 OF 1

SINGLE MEMBER
8 FT MAST ARM

GE COBRA HEAD
H.P.S. LUMINAIRE

ALUMINUM POLE
(.188" WALL THICKNESS
OR GREATER)

30' TAPER 8" @ BASE
4.5" @ TOP
25' TAPER 7" @ BASE
4.5" @ TOP

STREET TYPE	FIXTURE	POLE
NON RESIDENTIAL COLLECTOR	400W HPS	30'
RESIDENTIAL COLLECTOR	250W HPS	30'
SECONDARY & CUL-DE-SACS	250W HPS	25'

HANDHOLE

3 IN. MAX.

3 FT

15 IN.

7 FEET

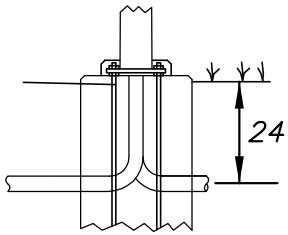
20 IN.

FACE OF POLE MIN. 36"
FROM BACK OF CURB. IF CONFLICTS
EXISTS WITH OTHER UTILITIES CONTACT
ENGINEERING DEPT. FOR LOCATION
CHANGE APPROVAL.

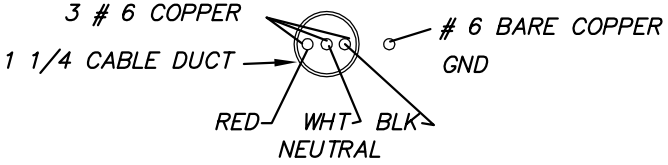
4 METAL RODS @
1" THICK X 40" LONG

4" HORIZONTAL PROJECTION

SIDE VIEW

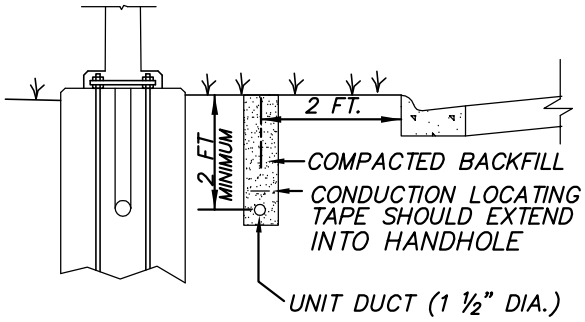


UNDERGROUND FOR STREET LIGHT ON CONTROLLER
CABLE DUCT DETAIL 3W 240V 1PH



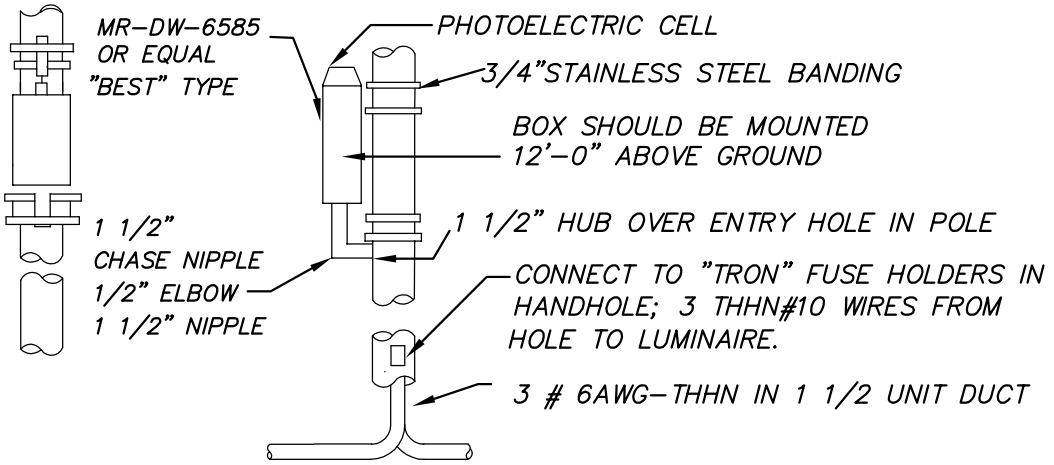
NOTE: CONNECT EACH POLE 120V ON ALTERNATING PHASES. USE HEB FUSE HOLDERS & 5A FNM FUSES.

TRENCH DETAIL



CONTROL STATION DETAIL

MAYSTEEL
CONTROLLER TYPE

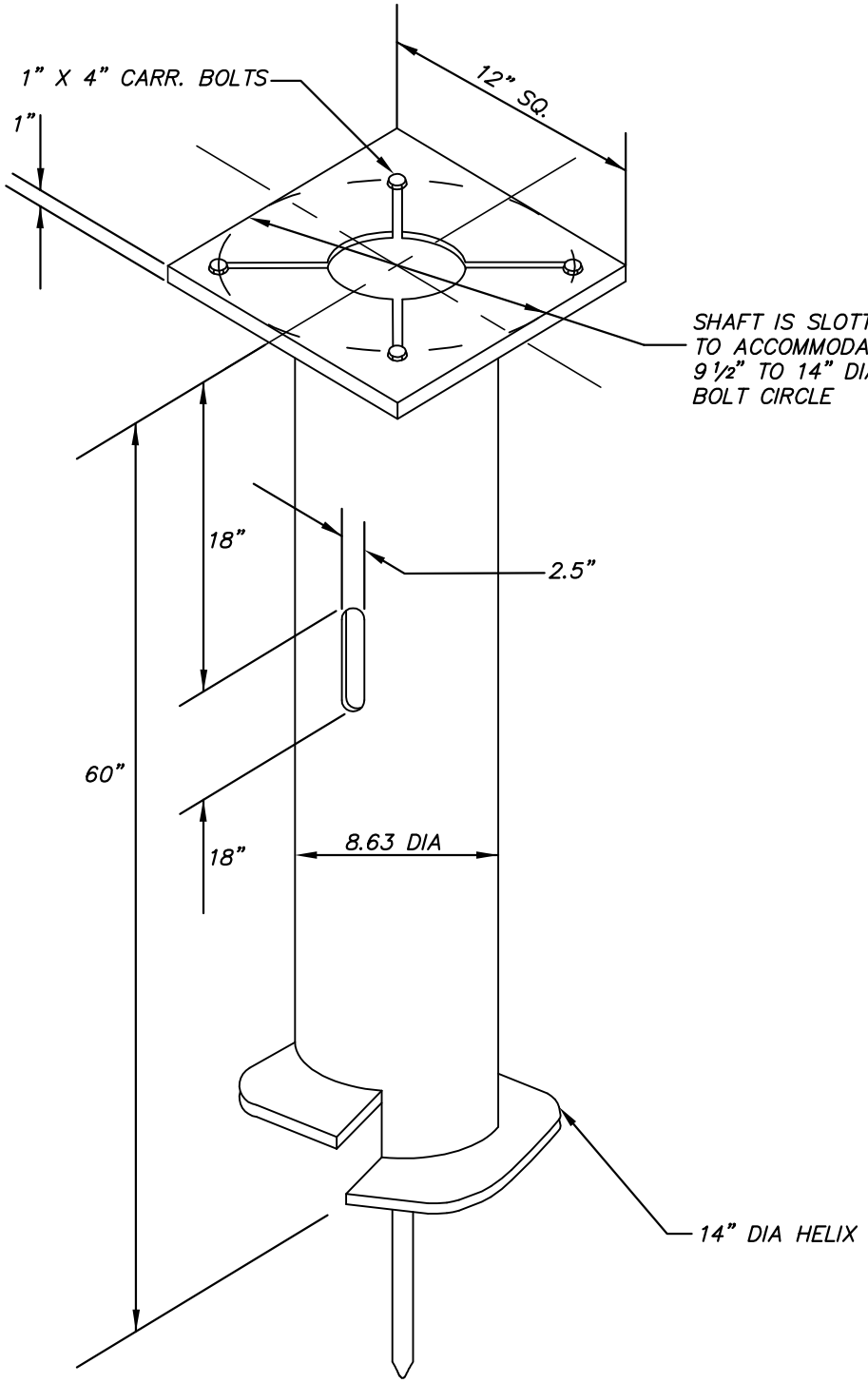


NOTES

1. VILLAGE PREFERS HELIX ANCHOR. SEE LIGHTING FOUNDATION DETAIL.
2. CONCRETE FOUNDATION CONSIST OF 6 BAG CONCRETE W/REINFORCEMENT CAGE #4 RE-BAR.

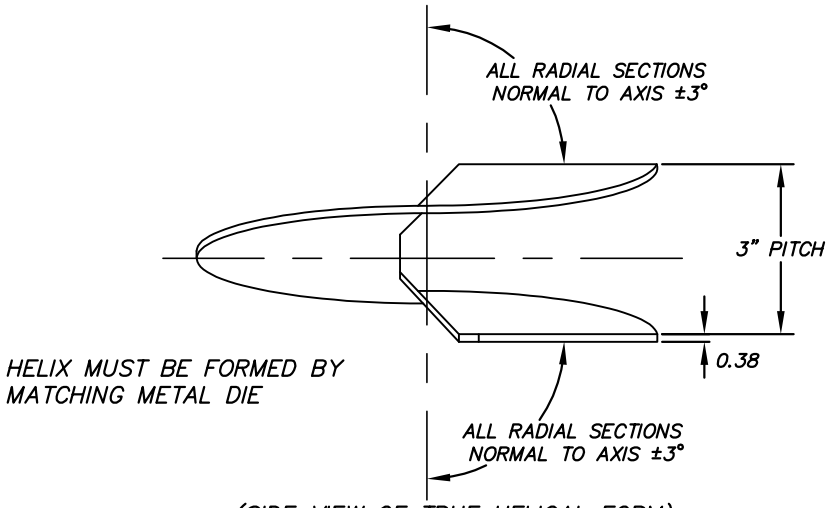
STREET LIGHT DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5-25-05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: STRLITE.DWG		SHEET NO. 1 OF 1



NOTES:

1. FINISH: HOT DIP GALVANIZE PER ASTM–A153
2. BASEPLATE TO BE PERPENDICULAR TO SHAFT AXIS (±1°) AND HOLE CENTERLINE CONCENTRIC (±.188) TO SHAFT AXIS.
3. STENCIL MIN. 1/2 IN. LETTERS MANUFACTURER'S NUMBER AFTER GALVANIZING.
4. PILOT POINT AND SHAFT AXES TO BE CONCENTRIC (±.125 FIM) AND IN LINE (±2°).
5. FLAME CUT SLOT PERPENDICULAR TO THE BASEPLATE, HELIX, AND PILOT POINT ON ALL WELDED AREAS.
7. FLAME CUT IRREGULARITIES PERMISSIBLE: (1) VALLEYS NOT TO EXCEED 3/32 IN. BELOW NOMINAL SURFACE LEVEL, (2) PEAKS OR POSITIVE IRREGULARITIES NOT OT EXCEED 1/32 IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
8. MANUFACTUREER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
9. ALL MATERIAL IS TO BE NEW, UNUSED AND MILL TRACEABLE MEETING THE FOLLOWING SPECIFICATIONS:
   - BASEPLATE: ASTM A36–(LATEST REVISION) STRUCTURAL STEEL (CONFORM TO AASHTO TECH. BUL. #270).
   - SHAFT: ASTM A252–(LATEST REVISION) GRADE 2, STEEL PIPE PILES. ALTERNATE MATERIAL: ASTM A53–(LATEST REVISION) TYPE E OR S, GRADE B, STEEL PIPE OR ASTM A500–(LATEST REVISION) GRADE B, STRUCTURAL STEEL TUBING.
   - HELIX: ASTM A635–(LATEST REVISION) HOT ROLLED STEEL.
   - PILOT POINT: ASTM A575–(LATEST REVISION) STEEL BAR.
   - BOLTS: CARR BOLT PER ANSI B–18.2.1, SAE J429 GRADE–5.
10. BASEPLATE IS PERMANENTLY STAMPED WITH MANUFACTURER'S IDENTIFICATION "ABC" IN 1/2" LETTERS AND DATE CODE IN 1/4" LETTERS.

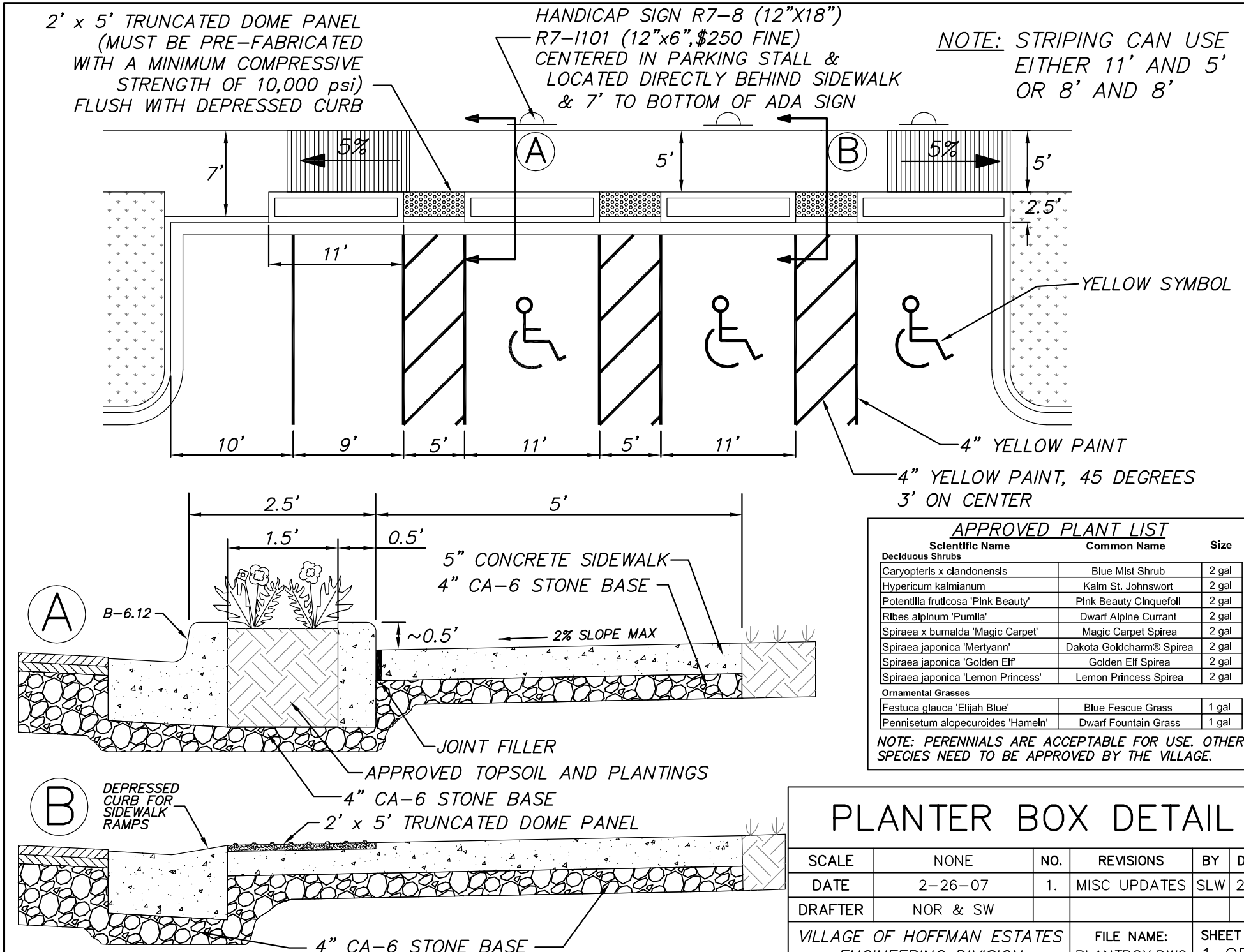


HELIX MUST BE FORMED BY MATCHING METAL DIE

(SIDE VIEW OF TRUE HELICAL FORM)

LIGHTING FOUNDATION DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	5–25–05	1.	MISC UPDATES	SW	2/10
DRAFTER	SLW				
VILLAGE OF HOFFMAN ESTATES TRANSPORTATION & ENGINEERING DIVISION			FILE NAME: LIGHTFDN.DWG		SHEET NO. 1 OF 1



APPROVED PLANT LIST

Scientific Name	Common Name	Size
Deciduous Shrubs		
Caryopteris x clandonensis	Blue Mist Shrub	2 gal
Hypericum kalmianum	Kalm St. Johnswort	2 gal
Potentilla fruticosa 'Pink Beauty'	Pink Beauty Cinquefoil	2 gal
Ribes alpinum 'Pumila'	Dwarf Alpine Currant	2 gal
Spiraea x bumalda 'Magic Carpet'	Magic Carpet Spirea	2 gal
Spiraea japonica 'Mertyann'	Dakota Goldcharm® Spirea	2 gal
Spiraea japonica 'Golden Elf'	Golden Elf Spirea	2 gal
Spiraea japonica 'Lemon Princess'	Lemon Princess Spirea	2 gal
Ornamental Grasses		
Festuca glauca 'Elijah Blue'	Blue Fescue Grass	1 gal
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gal

NOTE: PERENNIALS ARE ACCEPTABLE FOR USE. OTHER SPECIES NEED TO BE APPROVED BY THE VILLAGE.

PLANTER BOX DETAIL

SCALE	NONE	NO.	REVISIONS	BY	DATE
DATE	2-26-07	1.	MISC UPDATES	SLW	2/10
DRAFTER	NOR & SW				
VILLAGE OF HOFFMAN ESTATES ENGINEERING DIVISION			FILE NAME: PLANTBOX.DWG		SHEET NO. 1 OF 1