

**CITY OF DuPONT
WASHINGTON
ORDINANCE NO. 11-923**

AN ORDINANCE OF THE CITY OF DUPONT, PIERCE COUNTY, WASHINGTON, RELATING TO THE AMENDMENT AND UPDATE OF EXISTING PUBLIC WORKS STREET AND WATER STANDARDS, COMBINING THE TWO SEPARATE CONSTRUCTION STANDARDS INTO A SINGLE COMPREHENSIVE GUIDE AND SPECIFICATION MANUAL TO REPLACE AND SUPERCEDE THE PREVIOUS EDITIONS OF THE CITY'S STREET AND WATER STANDARDS; REPEALING PORTIONS OF ORDINANCE NOS. 02-714, 02-715, and 07-831 AND THE STREET STANDARDS AND CONDITIONS AND STANDARDS FOR CONSTRUCTION OF DEVELOPER EXTENSIONS TO THE WATER SYSTEM ADOPTED OR AMENDED THEREIN; PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, in Ordinance Nos. 02-714, 02-715, and 07-831, the City of DuPont City Council adopted Street Standards and Conditions and Standards for Construction of Developer Extensions to the Water System ("Water System Standards") which provide and outline procedures, construction requirements, engineering specifications, and drawings to promote and encourage standardization of design elements associated with the construction or extension of water and road facilities and appurtenances; and

WHEREAS, the City Council desires to update and amend the existing Street Standards and Water System Standards to reflect current industry practices, standards and requirements, and to provide for consistency in the requirements, forms and details contained therein; and

WHEREAS, it is in the best interest of the City to combine the two separate Standards into a single comprehensive guide and specification manual that can be utilized by staff and designers and developers in the preparation and review of plans, studies, and/or reports for development and redevelopment construction or extension of road, water, or stormwater projects within the City of DuPont; and

WHEREAS, the City has developed a single "Public Works Standards" manual to meet the above purposes, and

WHEREAS, a State Environmental Policy Act (SEPA), Determination of Non-Significance (DNS) was issued by the DuPont SEPA Responsible Official on July 5, 2011 for the City of DuPont Public Works Standards; no comments or appeals were filed; and

WHEREAS, a First Reading of this Ordinance was held by the City Council at a regular thereof on September 13, 2011, prior to the subsequent adoption of the Public Works Standards on the

date indicated below.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF DuPONT, WASHINGTON, DO ORDAIN AS FOLLOWS:

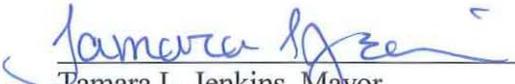
Section 1. City of DuPont Public Works Standards Adopted. The City Council hereby adopts the City of DuPont Public Works Standards manual, attached hereto as Exhibit A, a copy of which is on file at the office of the City Clerk.

Section 2. Repealer. Section 2 of Ordinance No. 02-714, Ordinance No. 02-715, Ordinance No. 07-831, and any Street Standards and/or Conditions and Standards for Construction of Developer Extensions to the Water System adopted or amended therein, are hereby repealed.

Section 3. Severability. Should any section, paragraph, sentence, clause or phrase of this Ordinance, or its application to any person or circumstance, be declared unconstitutional or otherwise invalid for any reason, or should any portion of this Ordinance be pre-empted by state or federal law or regulation, such decision or pre-emption shall not affect the validity of the remaining portions of this Ordinance, or its application to other persons or circumstances.

Section 4. Effective Date. This Ordinance shall be published in the official newspaper of the City and shall take effect and be in force (5) days after the date of publication.

ADOPTED by the City Council at a regular meeting thereof on the 13th day of September, 2011.


Tamara L. Jenkins, Mayor

ATTEST/AUTHENTICATED:


Erin Larsen, City Clerk

Approved as to form:


Bob C. Sterbank, City Attorney

Filed with the City Clerk: 9/14/11
Passed by the City Council: 9/13/11
Date of Publication: 9/16/11
Effective Date: 9/21/11

CITY OF DUPONT

PIERCE COUNTY,

WASHINGTON



PUBLIC WORK STANDARDS

G&O #07441
SEPTEMBER 2011



Gray & Osborne, Inc.
CONSULTING ENGINEERS

CITY OF DUPONT

PIERCE COUNTY,

WASHINGTON



PUBLIC WORK STANDARDS

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EXECUTIVE SUMMARY

The **City of DuPont “Public Works Standards”¹ Manual** is a comprehensive guide and specification manual for Designers and Developers to use in preparation of plans, studies, and/or reports for development and redevelopment construction or extension of road, water, or stormwater projects within the City of DuPont. The Manual provides a single reference guide for the *City’s Water System, Stormwater System, and Street Standards* and is divided into thirteen sections, which cover procedures, construction requirements, engineering specifications, standard details, as-built requirements, and City approved forms.

The City has adopted the standards herein to encourage standardization of design elements associated with public facilities extensions, building sites, and grading operations. These Standards are minimum requirements and are intended to assist, but not substitute for competent work by engineering and design professionals, and shall be used with good engineering practices. Special conditions or environmental constraints may require a more stringent design than would normally required under these Standards. The Developer shall note that higher standards and/or additional studies and/or environmental mitigation measures may, and will, in all likelihood, be imposed by the City when developing on, in, or adjacent to critical areas which include, but not limited to, steep embankments, creeks, ponds, lakes, wetlands, certain wildlife habitat, unstable soil, high water tables, wetland areas, etc. Prior to making any application, the applicants engineer is encouraged to meet with applicable city staff and gather any additional information that may be available for incorporation into their design.

Where improvements are not covered by these details nor by the Standard Specifications nor by the Standard Details, the City will be the sole judge in establishing appropriate Standards. Any improvements not specifically covered herein by these Standards must meet or exceed the current Standard Specification for Road, Bridge & Municipal Construction, State of Washington. Where these Standards conflict with any existing City ordinances or discrepancies exist within the body of this text, the higher standards shall be utilized as determined by the Public Works Director.

¹ The “Public Works Standards” incorporates the City of DuPont’s “Conditions and Standards for Construction of Developer Extensions to the Water System” and “Street Standards” (latest revisions) into a single document, and supersedes those previously separate standards.

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1. GENERAL CONSIDERATIONS

1.1 Applicability

The City of DuPont has adopted this Public Works Standards manual to encourage the standardization of design elements to provide for consistency and public safety assurance. These Standards are intended to assist, advise, and guide, not substitute for, competent work.

These Standards shall apply to all new development, redevelopment, or propose actions that would impact public roads, public right of way, or existing utility infrastructure, both public and private, within the City of DuPont's jurisdiction, which includes but not limited to, extension of transportation-related facilities, storm drainage, sanitary sewer, water, parks, open-space facilities used by the public, modifications of roadway features of existing facilities, required off-site road improvements for land developments, or capital improvement projects when so required by the City of DuPont. These Standards are not intended to apply to "resurfacing, restoration, and rehabilitation" projects as those terms are defined in the Local Agency Guidelines, WSDOT, as amended; however, the City may, at its discretion, consider the Standards as optional goals.

These Standards shall apply to every new placement and every planned, non-emergency replacement of existing utility poles and structures (transformers, telephone boxes, etc.) within the City of DuPont right-of-way.

1.2 Responsibility to Provide Public Improvements

The purpose of these Standards is to define requirements for the design and construction of public improvements to serve new and future developments or redevelopments. These include street, storm drainage, water, and sanitary sewer improvements as required by the development review process, City Ordinance, and other City policies adopted by the City Council or Mayor. Where not governed by building or other codes, standards for improvements on private property shall also be governed by these Standards for purposes of design and inspection. No work shall commence prior to City approval of the construction drawings. Designs submitted shall be stamped by a registered Professional Engineer licensed to practice in the State of Washington.

1.3 WSDOT/APWA Documents as Primary Design and Construction References

Except where these Standards provide otherwise, design detail, construction workmanship, and materials shall be in accordance with the following publications produced separately by Washington State Department of Transportation (WSDOT), or jointly by WSDOT and Washington State Chapter of American Public Works Association (APWA).

- 1.3.1 WSDOT/APWA Standard Specifications for Road, Bridge, and Municipal Construction, current edition as amended. These will be referred to as the “WSDOT/APWA Standard Specifications.”
- 1.3.2 The WSDOT/APWA Standard Plans for Road and Bridge Construction, current edition as amended. These will be referred to as the “WSDOT/APWA Standard Plans.”
- 1.3.3 WSDOT Design Manual, current edition as amended.

1.4 Other Specifications

The following shall be applicable when pertinent, when specifically cited in the Standards, or when required by state or federal funding authority. All specifications used shall be the current edition, unless otherwise stated.

- 1.4.1 Conditions and standards as set forth in the current edition of the City of DuPont Comprehensive Land Use Plan.¹
- 1.4.2 Conditions and standards as set forth in the current edition of the City of DuPont Water System Comprehensive Plan.¹
- 1.4.3 Adopted rules, regulations and ordinances of the DuPont Municipal Code.¹
- 1.4.4 Criteria set forth in the Local Agency Guidelines as amended and approved by Washington State Department of Transportation.
- 1.4.5 A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO), 2004, or current edition as adopted by WSDOT.
- 1.4.6 Department of Transportation Manual on Uniform Traffic Control Devices, “MUTCD,” as amended and approved by WSDOT, current edition.
- 1.4.7 Guide for the Development of Bicycle Facilities, adopted by AASHTO current edition.
- 1.4.8 Federal “Americans with Disabilities” Act (ADA).
- 1.4.9 State of Washington, Department of Ecology’s “Stormwater Management Manual for Western Washington” 2005 edition and all amendments and additions thereto, or current edition.
- 1.4.10 Rules and regulations of the State Board of Health regarding public water supplies as published by the State Department of Health.

¹ Available thru the City of DuPont’s website.

- 1.4.11 Conditions and standards as set forth in the American Water Works Association (AWWA) design manuals, current edition.
- 1.4.12 American Water Works Association (AWWA) Cross Connection Control Manual, current edition.
- 1.4.13 State of Washington Department of Health Water System Design Manual, current edition.
- 1.4.14 Conditions and standards as set forth in the State of Washington Department of Ecology “Criteria for Sewage Works Design,” current edition.
- 1.4.15 Associated Rockery Contractors, Standard Rock Wall Construction Guidelines, current edition.
- 1.4.16 American Society for Testing and Materials (ASTM), current edition.
- 1.4.17 Other specifications not listed may apply when required by the City.

1.5 Variances

Variances from these Standards may be granted by the Public Works Director upon evidence that such variances are consistent with the City’s Comprehensive Plans, in the public interest, and that requirements for safety, function, fire protection, appearance, and maintainability based upon sound engineering judgment are fully met. Variances must be approved prior to approval of the engineering drawings for construction. Any anticipated variances from these Standards which do not meet the Fire Code shall also require concurrence by the City Fire Chief.

Variance requests shall be submitted to the Public Works Director. A complete variance includes: variance filing fee; written narrative addressing the City’s standard to which the variance is being sought, the extent of the variance, how the variance meets the above referenced decisional criteria and related drawings. The burden of proof for granting the variance is the responsibility of the applicant.

When the variance affects street width, street classification, or plat design the Public Works Director shall consult with other affected city departments. The Public Works Director shall consider the variance and may solicit comments from other affected city departments or agencies prior to issuing the variance final decision. No public notice of the variance request is required. Appeals of final variance decisions shall be heard by the City’s Hearing Examiner using the Type II appeal process indicated in Chapter 25.175.060 of the DuPont Municipal Code.

1.6 Penalties and Financial Guarantees

Failure to comply with these Standards may result in denial of plan or development permit approval, revocation of prior approvals, legal action for forfeiture of financial guarantee, code enforcement, and/or other penalties as provided by law.

1.6.1 Construction Performance Guarantees: Any construction work on City right-of-way (both maintained and unmaintained) other than Capital Improvement Projects or City maintenance work shall be guaranteed by a financial guarantee. All work on private road and drainage facilities required as a condition of City approval process shall be guaranteed by a financial guarantee at the time of plat recording. The financial guarantee shall consist of a bond or assignment of funds submitted for an amount equal to 150 percent of the total contract bid amount or Engineer's estimated construction cost. The minimum financial guarantee for work within City right-of-way shall be \$5,000.00.

The amount of the financial guarantee may be reduced during construction, as determined by the City. At no time will the financial guarantee amount be reduced to less than 30 percent of the original amount or \$1,000.00, whichever is greater. The City will process no more than two reductions in the financial guarantee amount for partial completion of work.

1.6.2 Maintenance Performance Guarantees: The successful performance of the right-of-way improvements shall be guaranteed for a period of 2 years (or other period if updated by City Code or if deemed necessary due to unusual or special circumstances) from the latest date of either the acceptance of the completed work or Final Construction Approval. The amount of the financial guarantee shall be 15 percent of the value of the right-of-way improvements approved by the City. The form of the maintenance financial guarantee shall be determined by the City. The minimum Maintenance Bond for City right-of-way improvements shall be \$5,000. The minimum maintenance guarantee for all other work shall be \$1,000.00. Maintenance guarantees will not be required when the value of the right-of-way improvements or required performance guarantee does not exceed \$1,000.00.

1.7 Meaning of Terms

“Alley”	Access easements dedicated to the City, usually narrower than a street, which provides access to the rear boundary of residential properties and is not intended for general traffic circulation; privately maintained.
“ATB”	Asphalt Treated Base
“City”	City of DuPont

“Cul-De-Sac”	Short street having one end open to traffic and the other temporarily or permanently terminated by a vehicle turnaround
“CBR”	California Bearing Ratio is a penetration test that compares the bearing capacity of a material with that of a well graded crushed stone for evaluation of the mechanical strength of road subgrades and basecourses. The CBR rating measures the load bearing capacity of soils used to build roads.
“Design Speed”	The speed approved by the City for the design of the physical features of a road as established by Section 2 for residential and commercial access streets, or equal to 10 miles per hour above the current or expected posted speed limit for arterials. The design speed should be 5 miles per hour greater than the posted speed for roads posted with speed limits less than 40 miles per hour.
“Developer”	Any person, firm, partnership, association, joint venture or corporation or any other entity who undertakes to improve residential, commercial, or industrial property or to subdivide for the purpose of resale and profit.
“Driveway”	A privately maintained access to residential, commercial or industrial properties.
“Eyebrow”	A partial bulb located adjacent to the serving road that provides access to lots and serves as a vehicle turnaround.
“Joint-Use Driveway Tract”	A jointly owned and maintained tract or easement serving two properties.
“Landing”	A road or driveway approach area to any public or private road.
“Loop”	Road of limited length forming a loop, having no other intersecting road, and functioning mainly as direct access to abutting properties. A loop may be designated for one-way or two-way traffic.
“MUTCD”	Manual of Uniform Traffic Devices Department of Transportation Manual on Uniform Traffic Control Devices, “MUTCD,” as amended and approved by WSDOT, current edition.

“Neighborhood Traffic Circle”	A circular intersection constructed at the intersection of two urban residential local access streets for traffic calming. They are generally not channelized, may be uncontrolled or stop controlled, and may allow left turns to occur left (clockwise) of the central island.
“Off-Street Parking Space”	An area accessible to vehicles, exclusive of roadways, sidewalks, and other pedestrian facilities, that is improved, maintained, and used for the purpose of parking a motor vehicle.
“Pavement Width”	Paved area on shoulder-type roads or paved surface between curbs, thickened edge or gutter flow line on all other roads.
“Private Street”	A privately owned and maintained access provided for by a tract, easement or other legal means, typically serving three or more potential dwelling units.
“Professional Engineer”	A professional civil engineer currently licensed to practice in the State of Washington.
“Public Street”	Publicly owned facility providing access, including the roadway and all other improvements, inside the right-of-way.
“Right-of-Way”	All real property owned or held by the City in fee, or by way of easement, or dedicated to the public and located within the city, and used or intended for use as a street, alley, sidewalk, public way or easement for public or private utilities, whether developed or undeveloped.
“Road”	A facility providing public or private access including the roadway and all other improvements inside the right-of-way.
“Road and Street”	Will be considered interchangeable terms for the purpose of these Standards.
“Roadway”	Pavement width plus any non-paved shoulders.
“Roundabout”	An intersection design alternative that may be used in-place of stop control or signalization at physically centralized intersection to help improve problems and excessive delays at intersections.

“R Value”	Resistance Value
“Stormwater Management Manual”	Refers to the State of Washington, Department of Ecology’s “Stormwater Management Manual for Western Washington,” current edition.
“Shoulder”	The paved or unpaved portion of the roadway outside the traveled way that is available for emergency parking or non-motorized use.
“Standards”	The City of DuPont Public Works Standards.
“Traveled Way”	The part of the road made for vehicle travel excluding shoulders and auxiliary lanes.
“Utility”	A company providing public service such as gas, electric power, telephone, telegraph, water, sewer, or cable television, whether or not such company is privately owned or owned by a governmental entity.
“Urban Compact Roundabout”	Capacity is not a primary design consideration. Geometric design includes a raised splitter island, at grade pedestrian storage areas, non-mountable central island, and an apron surrounding the non-mountable part of the compact central island to accommodate large vehicles.
“Urban Single Lane Roundabout”	Capacity is a primary design consideration. The roundabout design is focused on achieving consistent entering and circulating vehicle speeds. Geometric design includes raised splitter island, pedestrian storage areas, non-mountable central island and preferably no apron.
“Work”	The labor, materials or both, superintendence, equipment, transportation, and other facilities necessary to complete the project.

1.8 Severability

If any part of these City of DuPont Public Works Standards as established by ordinance shall be found invalid, all other parts shall remain in effect.

1.9 Record Drawings and Geographic Information System Requirements

Following construction, the developer shall submit as-built drawings and electronic Geographic Information System (GIS) AutoCAD files in accordance with City of DuPont Ordinance No. 97-559.

Developer shall furnish the City with accurate drawings, plans and profiles, showing the location and curvature of all underground structures installed, including existing facilities where encountered and abandoned installations. Horizontal locations of utilities are to be referenced to street centerlines, as marked by survey monuments, and shall be accurate to a tolerance of plus or minus 1/2 foot. The depth of such structure may be referenced to the elevation of the finished street above said utility, with depths to the nearest 1/10 foot being shown in minimum of 50 foot intervals along the locations of said utility. The datum shall be per City datum as mandated by the City's Engineer. The City's vertical datum is based on National Geodetic Vertical Datum (1929) and the horizontal datum is based on Washington State Plane Coordinate System South (NAD 83). Hand-markup construction drawings are not acceptable to meet the City's as-built drawing requirement. Non-essential data may be removed from the drawings at the City's discretion.

Such as-built drawings shall be submitted to the City for review within 30 calendar days after completion of the work. Subsequent reviews and revisions are typically necessary to obtain as-built drawings consistent with City of DuPont Standards. Upon final review and acceptance of the as-built drawings, final as-built drawings on permanent reproducible Mylar, two sets of blackline drawings, a GIS AutoCAD base map file in the format as outlined in the City of DuPont GIS Ordinance 97-559, and a copy of the Pierce County approved sanitary sewer as-built drawings will be requested by the City in writing. Final approved as-built drawings shall include all sheets approved for construction and be submitted with the signed and dated City Standard As-built Certification Stamp. See Drawing No. 1.9. Upon receipt of the GIS AutoCAD base map, we will review the file(s) for compliance with the ordinance and request (if necessary) any required revisions that are not consistent with the Mylar drawings.

In the event that the Developer does not have qualified personnel to furnish the as-built drawings required by this section, he/she shall advise the Public Works Director 48 hours in advance in order that necessary field measurements may be taken during construction for the preparation of as-built drawings. All costs of such field inspection and measurement, to include preparation of the as-built drawings, shall be at the sole expense of the Developer.

2. STREET STANDARDS

2.1 Responsibility to Provide Road Improvements

2.1.1 Any land development which will impact the service level, safety, or operational efficiency of serving roads, as indicated in a traffic analysis, or is required by other City code or ordinance to improve such roads shall improve those roads in accordance with these Standards. The City's Traffic Impact Analysis Guidelines are provided in Section 13.

2.1.2 Any land development abutting and impacting existing roads shall improve the frontage of those roads in accordance with these Standards. The extent of improvements shall be based on an assessment of the impacts of the proposed land development by the City. The roads listed below are exempt from these Standards unless the function of the exempted road changes (i.e., addition of parking, travel or turn lanes, and traffic signals) or improvements are on the City's current six-year transportation plan.

Barksdale Avenue west of Santa Cruz Street	Hopewell Street
Brandywine Avenue	International Avenue North
Center Drive	Lapsley Drive
Davis Place	Louviers Avenue
DuPont Avenue	Manchester Place
Forcite Street	Penniman Street
Haskell Street	Santa Cruz Street
Hercules Street	Wilmington Drive

2.1.3 Any land development that contains internal roads shall construct or improve those roadways to these Standards.

2.1.4 It is the City's practice that it will not allow subdivisions to be recorded unless a recorded continuous public access to the subdivision exists. Nor will the City accept a road for maintenance until the road is directly connected to a City or other publicly maintained road.

2.1.5 All road improvement and development projects shall include pedestrian access as a part of the design. Where existing roadways are to be modified, pedestrian facilities shall be as described in Sections 2 and 3.

2.2 Road Drawings and Design Report

Drawings for roads and road drainage shall be prepared and submitted consistent with these Standards and in accordance with administrative rule published by the City. These requirements shall apply to public or private roads whether constructed by private party or public agency. Subject to review, the City may waive plan requirements, wholly or in part, based on the following criteria:

2.2.1 For improvements to existing roads if:

2.2.1.1 No more than 5,000 square feet will be cleared and graded within the right-of-way or easement; and

2.2.1.2 The existing grade or slope in the road right-of-way or easement does not exceed 12 percent; and

2.2.1.3 The work will not intercept a stream or wetland or otherwise impact natural surface drainage as set forth in City Code regarding Sensitive Areas and the Stormwater Management Manual; and

2.2.1.4 Drawings do not include a retention/detention facility; and

2.2.1.5 The work is required as a condition of short plat development, or right-of-way use permit, and involves less than 100 lineal feet of existing public road improvement; and

2.2.1.6 City Standard drawings, submitted with required permits, are sufficient to describe the improvement to be constructed.

2.2.2 The applicant shall submit a Design Report with the Drawings which includes:

- The classification and design speed of each road shown on the Drawings.
- The minimum horizontal and vertical curvature and sight distance criteria for each road classification.
- The horizontal curvature for each horizontal curve.
- The vertical curvature and stopping sight distance for each curve.
- The entering sight distance at each intersection.

2.3 Classifications

Street design must provide for the maximum trips anticipated. City streets are divided into three functional classifications: Arterials, Residential Streets, and Commercial and Industrial Streets. Function is the controlling element for classification and shall govern right-of-way, road width, and road geometrics. The layout of streets shall provide for the continuation of streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided.

2.4 Minimum Street Design Standard Tables

Tables 2.4-1, 2.4-2, 2.4-3, and 2.4-4 indicate the design criteria for each street functional classification.

2.5 Horizontal Curvature and Sight Design Values

- 2.5.1 The design values shown in Tables 2.5-1 and 2.5-2 are minimum values necessary to meet the requirements for a selected design speed and roadway classification. A maximum of 8 percent superelevation may be used, upon approval of the City, in design of improvements to existing arterials as necessary to meet terrain and right-of-way conditions. Superelevation run-off lengths on arterials and commercial access streets shall be calculated in accordance with the WSDOT Design Manual, current edition as amended.
- 2.5.2 Superelevation is not required in the design of horizontal curves on residential streets; however, horizontal curves must be designed based on design speed and selected cross section as indicated in Table 2.5-2. Superelevation may be used on residential streets as necessary to meet terrain and right-of-way conditions.

**TABLE 2.4-1
Arterial Roads¹**

CLASSIFICATION	COLLECTOR ARTERIALS
FUNCTION	Inter-community roads connecting residential neighborhoods with community centers and facilities
Access	Partially controlled with infrequent access to abutting properties
Land Use Area	
Arterial Spacing	Under 2 Miles
ADT	Over 2,000
CRITERIA	
A. Typical Road Type	Curb
B. Design Speed (MPH) ⁽²⁾	40
C. Standard Superelevation (Ft./Ft.) ⁽⁷⁾	Normal
D. Horizontal Curvature	See Table 2.5-1
E. Maximum Grade (%) ⁽³⁾	12
F. Standard Stopping Sight Distance (Ft.) ⁽⁴⁾	See Table 2.5-1
G. Standard Entering Sight Distance (Ft.) ⁽⁵⁾	See Table 2.5-1
H. Minimum Passing Sight Distance on 2-Lane Road (Ft.)	See Table 2.5-1
I. Minimum Traveled Way 2/3-Lane (Ft.) ⁽⁶⁾	22/34
J. Minimum Bike Lane Width (Ft.)	5
K. Sidewalk (Ft.)	5
L. Median Width (Ft.) – Optional	16
M. Minimum Landscape Strip (Ft.)	5
N. Minimum Right-of-Way Width (Ft.)	70
O. Type of Curb, Shoulder, and Ditch ⁽⁶⁾	Vertical Curb and Gutter
P. Notes: <ol style="list-style-type: none"> 1. Within the above parameters, geometric design requirements shall be determined for specific arterial roads consistent with the WSDOT Design Manual. 2. Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed. Curves shall be designed within parameters of B, C, and D above (See Section 2.5). 3. Maximum grade may be exceeded for short distances (See Section 2.11). 4. Standard Stopping Sight Distance shall apply unless otherwise approved by the Engineer (See Section 2.12). 5. Standard Entering Sight Distance (ESD) shall apply at intersections and driveways unless otherwise approved by the City (See Section 2.13). 6. Criteria for state and federal funding may require greater width. For guardrail installations, shoulders shall be two feet wider. 7. See Section 2.5, for allowed uses of superelevations greater than 4 percent. 	

TABLE 2.4-2

Commercial Access Streets¹
(See Drawing Nos. 2.4-2.1, 2.4-2.2, 2.4-2.3, and 2.4-2.4)

CLASSIFICATION	COMMERCIAL ACCESS STREETS			
Function	Streets abutting services, retail, office, and professional activities.		Streets abutting offices and professional activities.	
Access	Restricted-Urban Village		As needed, with some regulation.	
	OFFICE/RETAIL VILLAGE	TOWN CENTER/MIX USE	BUSINESS AND TECHNOLOGY PARK	BUSINESS AND TECHNOLOGY PARK (ADJACENT TO OPEN SPACE/SENSITIVE AREAS)
A. Typical Road Type	Curb	Curb	Curb	Curb
B. Design Speed (MPH) ⁽²⁾	30	30	35	35
C. Max. Superelevation (ft./ft.)	Normal	Normal	Normal	Normal
D. Horizontal Curvature Min. Radius (ft.) ⁽²⁾	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1
E. Maximum Grade (%) ⁽⁵⁾	12	12	12	12
F. Standard Stopping Sight Distance (ft.) ⁽⁴⁾	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1
G. Standard Entering Sight Distance (Ft) ⁽⁵⁾	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1	See Table 2.5-1
H. Min. Pavement Width (ft.) ⁽⁶⁾	40	40	44	62
I. Min. Right-of-Way Width (ft.) ⁽⁶⁾	61	65	65	85
J. Parking Lane (ft) Each Side	9	9	NA	9
K. Type of Curb/Shoulder	Vertical Curb and Gutter	Vertical Curb and Gutter	Vertical Curb and Gutter	Vertical Curb and Gutter
L. Sidewalk Width (ft.)	5	12	5	5
M. Landscape Strip (ft.)	5	0	5	5
N. Notes:				
1.	“Commercial Access Streets” serve multiple-dwelling, business, and industrial developments. The type of road will be determined at the time of the Preliminary Plat Approval.			
2.	Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed. Curves shall be designed within parameters of B, C, and D above (See Section 2.5).			
3.	Maximum grade may be exceeded for short distances (See Section 2.11).			
4.	Standard Stopping Sight Distance (SSD) shall apply unless otherwise approved by the Engineer (See Section 2.12).			
5.	Standard Entering Sight Distance (ESD) shall apply at intersections and driveways except on minor access streets unless otherwise approved by the Engineer (See Section 2.13).			
6.	Minimum pavement and right-of-way widths (or easement) shall be increased to accommodate turn lanes/pockets and utilities.			

TABLE 2.4-3

Industrial Access Streets
(See Drawing Nos. 2.4-2.5 and 2.4-2.6)

CLASSIFICATION	INDUSTRIAL ACCESS STREET⁽¹⁾	
Function	Local streets abutting manufacturing, processing, storing, and handling activities	
Access	As needed, with some regulation.	
	MAJOR	MINOR⁽⁷⁾
A. Typical Road Type	Curb	Curb
B. Design Speed (MPH) ⁽²⁾	35	30
C. Max. Superelevation (ft./ft.)	0.04	Normal
D. Horizontal Curvature Min. Radius (ft.) ⁽²⁾	See Table 2.5-1	See Table 2.5-1
E. Maximum Grade (%) ⁽³⁾	11	11
F. Standard Stopping Sight Distance (ft.) ⁽⁴⁾	See Table 2.5-1	See Table 2.5-1
G. Standard Entering Sight Distance (Ft) ⁽⁵⁾	See Table 2.5-1	See Section 2.13
H. Min. Pavement Width (ft.) ⁽⁶⁾	30	30
I. Min. Right-of-Way Width (ft.) ⁽⁶⁾	55	55
J. Parking Lane (ft) Each Side	NA	NA
K. Type of Curb/Shoulder	Vertical Curb and Gutter	Vertical Curb and Gutter
L. Sidewalk Width (ft.)	5	5 ⁽⁸⁾
M. Landscape Strip (ft.)	5	5
<p>N. Notes:</p> <ol style="list-style-type: none"> 1. The type of road will be determined at the time of the Preliminary Plat Approval. 2. Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed. Curves shall be designed within parameters of B, C, and D above (See Section 2.5). 3. Maximum grade may be exceeded for short distances (See Section 2.11). 4. Standard Stopping Sight Distance (SSD) shall apply unless otherwise approved by the Engineer (See Section 2.12). 5. Standard Entering Sight Distance (ESD) shall apply at intersections and driveways except on minor access streets unless otherwise approved by the Engineer (See Section 2.13). 6. Minimum pavement and right-of-way widths (or easement) shall be increased to accommodate turn lanes/pockets and utilities. 7. Minor is classified as a dead end street with no plans to extend. 8. The City may reduce sidewalk requirements to one side for Industrial Access streets where land use density warrants. 		

TABLE 2.4-4

Urban Residential Streets¹

Serving Single-Family and Multi-Family Dwelling Development (See Drawing Nos. 2.4-3.1, 2.4-3.2, 2.4-3.3, and 2.4-3.4)

CLASSIFICATION	NEIGHBORHOOD COLLECTOR	LOCAL ACCESS STREETS		
		SUBCOLLECTOR	ACCESS STREET	ONE-WAY ACCESS LOOP
Function	Streets connecting two or more neighborhoods and typically connecting to arterials or other neighborhood collectors.	Streets providing circulation within neighborhoods typically connecting to neighborhood collectors.	Permanent cul-de-sacs or short loops (2) connecting to subcollectors, not supportive of through traffic.	Permanent loops (2), with low traffic, providing circulation and access to off street parking within residential development boundaries.
Access	Restricted, access by alleys or local access streets.	Encouraged access from alleys	As needed with only minimal restrictions.	As needed with only minimal restrictions.
Potential number of Single-Family Dwelling Units	300 (Max.)	100 (Max.)	50 (Max.)	16 (Max.)
A. Design Speed (mph) ⁽³⁾	30	30	Low Speed, See Section 2.10	Low Speed, See Section 2.10
B. Max. Superelevation (ft/ft)	Normal	Normal	Normal	Normal
C. Horizontal Curve Min. Radius (ft)	See Table 2.5-2	See Table 2.5-2	Low Speed Curve See Section 2.10	Low Speed Curve See Section 2.10
D. Maximum Grade ⁽⁴⁾	12%	15%	15%	15%
E. Standard Stopping Sight Distance (ft) ⁽⁵⁾	See Table 2.5-2	See Table 2.5-2	150 ft.	150 ft.
F. Standard Entering Sight Distance (ft) ⁽⁶⁾	See Table 2.5-2	See Section 2.13	See Section 2.13	See Section 2.13
G. Min. Pavement Width (ft)	38	28	28 26 ⁽¹³⁾	20 ⁽⁷⁾
H. Min. Right-of-Way Width (ft) ⁽⁸⁾	59	49	49 for 28' pavement 47 for 26' pavement	41 for 20' pavement
I. Type of Curb/Shoulder	Vertical Curb and Gutter	Vertical Curb and Gutter	Vertical Curb and Gutter	Vertical Curb and Gutter
J. Parking Lane (ft) Each Side	8	NA	NA	NA
K. Sidewalk Width (ft) ^(9, 10)	5	5	5 ⁽¹¹⁾	5 ⁽¹¹⁾
L. Landscape Planter (ft)	5	5	5	5
M. Notes:	<ol style="list-style-type: none"> 1. Within the above parameters, geometric design for specific streets shall be consistent with AASHTO Policy on Geometric Design of Highways and Streets. 2. For One-Way Loops see Section 2.15. 3. Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed. Curves shall be designed within parameters of B, C, and D above (See Section 2.5). 4. Maximum grade may be exceeded for short distances. (See Section 2.11) 5. Standard Stopping Sight Distance (SSD) shall apply unless otherwise approved by the Engineer (See Section 2.12). 6. Standard Entering Sight Distance (ESD) shall apply at intersections and driveways on neighborhood collectors unless otherwise approved by the Engineer (See Section 2.13). 7. For road widths less than 26 feet, signing shall be provided to allow parking on only one side of street. 8. Right-of-way width may be reduced to minimum roadway width, plus sidewalks and planting strip, provided that all potential serving utilities and necessary drainage are otherwise accommodated on permanent easements. 9. Variations may be allowed, with City approval. 10. Sidewalk adjacent to school sites must be a minimum of eight feet. 11. If density is less than one dwelling unit per acre, sidewalk on one side is permitted. 12. The minimum street width shall be 26 feet if the street serves an alley. The alley approach shall be 18-foot-wide on 26-foot-wide streets. 13. Street width may be reduced to 26 feet provided the street does not serve more than 30 residential units and the horizontal radii are not less than 300'. 			

TABLE 2.5-1

**Arterial Roads and Commercial and Industrial Access Streets
Design Values**

Design Speed (mph)	30	35	40	45
Horizontal Curvature for Normal Crown Section, Radius (ft.)	430	610	830	1,080
Horizontal Curvature for 6% Superelevation, Radius (ft.)	273	380	509	656
Horizontal Curvature for 8% (maximum allowable on arterials) Superelevation, Radius (ft.) (requires approval of the Engineer)	250	350	465	600
Stopping Sight Distance (ft.)	200	250	325	400
Entering Sight Distance (ft.)	430	490	555	620
Passing Sight Distance (ft.) for a 2-Lane Road	1,100	1,300	1,500	1,650

TABLE 2.5-2

**Urban Residential Streets
Design Values**

Design Speed (mph)	25	30	35
Horizontal Curvature for 6% Superelevation, Radius (ft.)	135	215	320
Horizontal Curvature for 4% Superelevation, Radius (ft.)	145	230	345
Horizontal Curvature for 2% Superelevation, Radius (ft.)	155	250	375
Horizontal Curvature for Normal Crown Section, Radius (ft.)	180	300	460
Stopping Sight Distance (ft.)	150	200	250
Entering Sight Distance (ft.)	365	430	490
Minimum Run-Off Length (ft.)	80	90	100

2.6 Private Streets

2.6.1 Private streets shall not be gated.

2.6.2 Private streets may be approved only when they are:

2.6.2.1 Permanently established by right-of-way, tract, or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required improvements, to include provision for future use by adjacent property owners when applicable.

2.6.2.2 Built to City of DuPont Public Works Standards, as set forth herein.

2.6.2.3 Accessible at all times for emergency and public service vehicle use.

- 2.6.2.4 Not impacting the present or future public neighborhood circulation plan developed in the City of DuPont’s Comprehensive Plan or Capital Improvement Plan.
 - 2.6.2.5 Will not result in land locking of present or future parcels.
 - 2.6.2.6 Not needed as public roads to meet the minimum road spacing requirements of these Standards.
 - 2.6.2.7 If in a residential area designed to serve a maximum potential of 16 single-family dwelling units when the entire length of the private road system to the nearest public road is considered. The maximum potential is the number of dwelling units that can possibly be served by the road when physical barriers, zoning, or other legal constraints are considered.
 - 2.6.2.8 Maintained by a capable and legally responsible owner or owners association or other legal entity made up of all benefited property owners.
 - 2.6.2.9 Clearly described on the face of the plat, short plat, or other development authorization and clearly signed at street location as a private street, the maintenance of which the City is not responsible for.
- 2.6.3 The City of DuPont will not accept private streets for maintenance as public streets until such streets are brought into conformance with the current City Standards.
- 2.6.4 The City of DuPont will not accept private streets within short plats when the roads providing access to the plat are private and already have the potential to serve more than the number of lots specified in Section 2.6.2.7. Short plats proposed on properties to which the access is over private streets that do not meet the standards in this section shall be denied.

2.7 Vacant

2.8 Cul-De-Sacs and Eyebrows

- 2.8.1 Cul-de-sacs shall only be permitted when topography does not allow a street to be connected to another street, unless specifically approved by the City.
- 2.8.2 Whenever a cul-de-sac street serves more than six lots or extends more than 150 feet from the centerline of accessing street to the farthest extent of surfaced traveled way, a widened “bulb” shall be constructed as follows (See Drawing No. 2.8-1):

- 2.8.2.1 Minimum right-of-way diameter across bulb section: 110 feet in a permanent cul-de-sac. Right-of-way may be reduced, provided utilities and necessary drainage are accommodated on permanent easements within the development.
- 2.8.2.2 Minimum diameter of surfacing across bulb: 90 feet of paving.
- 2.8.2.3 Cul-De-Sac Island: Optional feature for any cul-de-sac when bulb paved diameter is 90 feet; mandatory when bulb paved diameter is greater than 90 feet. If provided, the island shall have full-depth vertical curb. The minimum diameter of the island shall be 40 feet and there shall be at least 25 feet of paved traveled way. Island shall be grassed or landscaped. It shall be maintained by the adjoining lot owners or an owners association.
- 2.8.2.4 Sidewalks shall be constructed on the perimeter of the cul-de-sac.
- 2.8.3 A cul-de-sac shall not be longer than 500 feet, measured from centerline of intersection street to the center of the bulb section. Exceptions to this rule will be considered by the City based on pertinent traffic planning factors such as topography, sensitive areas, and existing development. The cul-de-sac length may extend over 500 feet if there is provision for emergency turnaround near mid-length.
- 2.8.4 The City may require an off-street walk or an emergency vehicle access to connect a cul-de-sac at its terminus with other streets, parks, schools, bus stops, or other pedestrian traffic generators, if the need exists.
- 2.8.5 The maximum cross slope in a bulb shall not exceed 6 percent.
- 2.8.6 Eyebrows shall have a minimum paved radius and an island configuration as shown on Drawing No. 2.8-2. The pavement section provides for one way vehicle travel and parking on one side. The island shall be offset two feet from edge of traveled way.

2.9 Alleys

(See Drawing Nos. 2.9-1 and 2.9-2)

- 2.9.1 An alley is a private access with an easement dedicated to the City. Requirements of Section 2.10, 25 MPH, for horizontal curvature and stopping sight distance apply.
 - 2.9.1.1 Serves a maximum of 30 residential units, with a maximum length of 500 feet, unless approved by the City. Alleys must connect to a road, alley, cul-de-sac, or hammerhead at both ends. Except that dead end alleys that serve less than three lots on each side may be allowed.

- 2.9.1.2 When alleyway is to be provided with utilities, it shall be located within a City easement.
- 2.9.1.3 Minimum alley easement width 20 feet with a pavement surface of 16 feet (including thickened edge), based on a 5-foot structure setback. For differing structure setback requirements, alley configuration shall be designated to provide for safe turning access to properties.
- 2.9.1.4 Alleyways shall be provided with a paved surface, a thickened edge on one side and cross slope in one direction, or a V-section.
- 2.9.1.5 Public streets to which an alley connects or which provides access to the front boundary of the properties served by the alley shall be 26-foot minimum paved width with vertical curb. Alley entry shall be provided by a driveway cut.

2.10 Intersections and Low Speed Curves

2.10.1 Intersections:

- 2.10.1.1 Angle of intersection shall be between 85 and 95 degrees (measured from 10 feet beyond street classification right-of-way).
- 2.10.1.2 Minimum Centerline Radius (2-lane) shall be 55 feet.
- 2.10.1.3 Minimum Curb Radius at collector intersections shall be 35 feet.
- 2.10.1.4 Minimum Curb Radius at residential access street intersections where the highest classification involved is a subcollector shall be 25 feet.

2.10.2 Spacing between adjacent intersecting streets, whether crossing or T-connecting, shall be as follows:

<u>When highest classification involved is</u>	<u>Minimum centerline offset shall be:</u>
Principal Arterial (Center Drive)	600 feet
Collector Arterial	300 feet
Neighborhood Collector	150 feet
Any lesser street classification	100 feet

2.10.3 On sloping approaches at an intersection, landings shall be provided with grade not to exceed 1-foot difference in elevation for a distance of 30 feet approaching an arterial or 20 feet approaching a residential or commercial street, measured from future right-of-way line (extended) of intersecting street as provided in Section 2.4.

2.10.4 Entering Sight Distance: See Section 2.4 and Section 2.13 for design requirements. See Tables 2.5-1 or 2.5-2 for specific Entering Sight Distance values based on required design speed.

2.10.5 Low Speed Curves, applicable to Access and Minor Access Streets only. See Section 2.4.

	<u>Up to 75°</u>	<u>75° & Over</u>
A. Minimum Centerline Radius (2-lane)	100'	55'
B. Minimum Curb Radius	80'	35'
C. Minimum Property Line Radius	70'	25'

2.10.6 The City shall require the modification of existing curb ramps to meet ADA requirements and the installation of bulbs at an intersection if a traffic signal is installed or the street extends or intersects an existing street.

2.11 Maximum Grade and Grade Transitions

2.11.1 Maximum grade as shown in Section 2.4 may be exceeded for short distances (no more than 300 feet) upon showing that no practical alternative exists. Exceptions which exceed 15 percent will require verification by the Fire Marshal that additional fire protection requirements will be met. Grades exceeding 12 percent shall be paved with asphalt concrete (AC) or Portland cement concrete (PCC). Any grade over 20 percent must be Portland cement concrete.

2.11.2 Grade transitions shall be constructed as smooth vertical curves except in intersections where the difference in grade is 1 percent or less and upon approval of the City.

2.12 Stopping Sight Distance

Stopping Sight Distance (SSD) applied to street classifications as indicated in Section 2.4. See Tables 2.5-1 and 2.5-2 for specific SSD values based on required design speed.

2.12.1 Height of eye is 3.5 feet and height of object is 0.5 feet.

2.12.2 Minimum SSD for any downgrade averaging three percent or steeper as provided in Section 2.4., Tables 2.5-1 and 2.5-2 shall be increased (in feet) in accordance with the following on any downgrade averaging of three percent or steeper. Interpolate values for other design speeds and grades.

SSD ADJUSTMENT VALUES (Ft)

DESIGN SPEED (MPH)	DOWNGRADE		
	3%	6%	9%
40	20	40	70
30	10	20	30
20	0	10	20

2.12.3 Sag vertical curves on Access Streets with stopping sight distance less than that called for in Section 2.4 may be approved by the City if acceptable road lighting is provided throughout the curve and is maintained by a franchised utility.

2.12.4 Intersecting Stopping Sight Distance: Stopping sight distances for the design speeds of proposed commercial access streets, collector streets, and arterials must be met when intersecting existing arterials. Stopping sight distance on the approaches of all other proposed streets intersecting existing arterials shall be 125 feet.

2.13 Entering Sight Distance (ESD)

Entering Sight Distance applies on driveways and on streets approaching intersections as set forth in Section 2.4. Entering sight distance criteria will not apply on local access streets and on minor access streets (industrial). Specific ESD values for required design speeds are listed in Section 2.5, Tables 2.5-1 and 2.5-2.

2.13.1 Entering vehicle eye height is 3.5, measured from 10 feet back from edge of traveled way. Approach vehicle height is 4.25 feet.

2.13.2 Requirements of Section 2.5, Tables 2.5-1 and 2.5-2 apply to an intersection or driveway approach to a typical road under average conditions. In difficult topography the City may authorize a reduction in the ESD based on factors mitigating the hazard. Such factors may include an anticipated posted or average running speed less than the design speed or the provision of acceleration lanes and/or a median space allowing an intermediate stop by an approaching vehicle making a left turn.

2.13.3 Where a significant number of trucks will be using the approach road, the City Engineer may increase the entering sight distance requirements by up to 30 percent for single-unit trucks and 70 percent for semi-trailer combinations.

2.14 Medians (Optional Design Feature)

Median width shall be additional to, not part of, the specified width of traveled way. Edges shall be formed vertical curb road edges, at a minimum. Medians shall be landscaped. Medians shall be designed so as not to limit turning radii or sight distance at intersections. No portion of a side street median may extend into the right-of-way for an arterial street. The City may require revisions to medians as necessary to provide for new access points and to maintain required sight distance. Street trees and illumination standards shall be placed in the center of the median. The clear zone distance from the face of the curb shall be two feet.

2.15 One-Way Streets

Access streets, including loops, may be designated one-way upon a finding by the City that topography, other site features or neighborhood design make two-way traffic impractical.

2.16 Bus Zones and Turn-Outs

During the design of arterials and neighborhood collectors, the designer shall contact local school district(s) and Pierce Transit to determine bus zone (stop) locations and other bus operation needs. The roadway project shall provide wheelchair accessible landing pads at designated bus zones, and where required shall include turn-outs and shelter pads. Pedestrian and handicapped access improvements within the right-of-way to and from the bus loading zone or turn-out from nearby businesses or residences shall also be provided as part of the roadway improvement.

2.17 Intersections with Pierce County Roads

In the event that the City has jurisdiction on a development that requires the construction or improvement of a commercial driveway or street that intersects a Pierce County or Fort Lewis road, minimum intersection spacing, entering sight distance and landing requirements in accordance with these Standards shall be satisfied in addition to the requirements of all other applicable permits. In the instance that Pierce County or Fort Lewis standards exceed these Standards, the Pierce County and/or Fort Lewis Standards shall govern.

2.18 Slope, Wall, Drainage Easements, and Right-of-Way Reduction

2.18.1 Easements: Either the functional classification or particular design features of a road may necessitate slope, wall or drainage easements beyond the right-of-way line. Such easements may be required by the City in conjunction with dedication or acquisition of right-of-way.

2.18.2 Right-of-Way Reduction: In proposed developments served by underground utilities within easements, the right-of-way may be reduced, as allowed in Section 2.4 with the approval of the City. Where it is designed to reduce right-of-way to a minimum width, the right-of-way, plus easement, shall allow for construction and maintenance of sidewalks and drainage facilities, landscaping, sign placement and also allow sidewalk widening around mailbox locations, as required. On subcollectors, installation of fixed objects, other than required above ground utility structures, greater than four inches in diameter within four feet of back of sidewalk shall not be permitted.

2.19 Access and Circulation Requirements

No industrial major access, commercial access, or residential streets shall be longer than 500 feet unless the street is connected in at least two locations with another street that functions at a level consistent with Section 2.4.

2.20 Street Names

2.20.1 It is the policy of the City to use street names of local historical relevance that may include Native American names. The Native American names should be easy to pronounce. Each residential village should attempt to address a different theme or time period. When a preliminary plat or binding site plan is submitted, the DuPont Historical Society and/or Museum Association shall be notified by the City and that organization shall recommend a list of names to the developer and City staff prior to the public hearing. The developer shall consider the recommendation and then propose names for all streets prior to the Planning Agency recommendation. The City Council shall approve the names as part of final action on the preliminary plat or binding site plan application.

2.20.2 An address number will be assigned by the City to all lots prior to recording final plat or binding site plan.

2.21 Traffic Control and Signing

2.21.1 Traffic Control Devices: All traffic control devices shall conform to the current “Manual on Uniform Traffic Control Devices” (MUTCD) as adopted by the Washington State Department of Transportation (WSDOT).

2.21.2 Street Designation Signs: Street designation signs shall display street names and grid numbers. See Drawing No. 5.12-3.

2.21.3 Pavement Marking: All materials shall conform to the “State of Washington Standard Specifications for Road, Bridge, and Municipal Construction”, latest edition. All markings shall conform to the current “Manual on Uniform Traffic Control Devices” (MUTCD) as adopted by the Washington State Department of Transportation (WSDOT).

2.22 Right-of-Way

Right-of-way shall be conveyed to the City on a recorded plat or by a right-of-way dedication deed.

2.23 Street Frontage Improvements

2.23.1 All commercial and residential developments, plats, and short plats shall install street frontage improvements at the time of construction as required by the City. Such improvements may include curb and gutter, sidewalk, street, storm drainage, street lighting systems, utility relocations, landscaping and irrigation, street improvements, and street widening all per these Standards. Drawings shall be prepared by a licensed engineer currently registered in the State of Washington.

2.23.2 All frontage improvements shall be made across full frontage of property from centerline to right-of-way line.

2.23.3 Exceptions: When the City Council deems that the above such improvements cannot be accomplished at the time of building construction, a recorded agreement on forms provided by the City shall be completed which provide for these improvements to be installed at a later date by the applicant or by the applicant's signing of a waiver of protest in a Local Improvement District (LID).

2.24 Bulbs

Bulbs as indicated on Drawing No. 2.24 shall be required at all Arterials, Commercial Access Streets and Neighborhood Collector Streets unless waived by the City.

2.25 Neighborhood Traffic Circle

Locations for neighborhood traffic circles shall be approved by the City. The objective of neighborhood traffic circles is to reduce motor vehicle speeds and improve safety for non-motorized users of the right-of-way. Neighborhood traffic circles shall be designed in accordance with Drawing Nos. 2.25-1 and 2.25-2.

2.26 Roundabouts

Locations of roundabouts shall be approved by the City. Roundabouts shall be designed in accordance with Publication No. FHWA-RD-00-067 "Roundabouts: An Informational Guide." Channelization and signage shall be consistent with Drawing Nos. 2.26-1 and 2.26-2. The inscribed circle diameter and maximum entry design speeds are indicated below:

	Maximum Entry Design Speed	Inscribed Circle Diameter Range
Urban Compact	15 mph	80' – 100'
Urban Single Lane	20 mph	100' – 130'

3. DRIVEWAYS, WALKS, AND TRAILS

3.1 Driveways

Dimensions, slopes, and details shall be in accordance with Drawing Nos. 3.1-1 and 3.1-2.

3.1.1 Conditions for Approval of New Driveways:

- 3.1.1.1 Driveways directly giving access onto arterials will be denied if alternate access is available.
- 3.1.1.2 All abandoned driveway areas on the same frontage shall be removed and the curbing and sidewalk, or shoulder and ditch section, shall be properly restored.
- 3.1.1.3 Maintenance of driveway approaches shall be the responsibility of the owner whose property they serve.
- 3.1.1.4 For driveways crossing an open ditch section, culverts shall be adequately sized to carry anticipated stormwater flows and in no case be less than 12 inches in diameter. The property owner making the installation shall be responsible for determining proper pipe size. The City may require the owner to verify the adequacy of pipe size.

3.1.2 Location and Width of New Driveways:

- 3.1.2.1 Driveways that serve any use other than detached dwelling units may not be located closer than 150 feet to any street intersection or to any other driveway, whether on or off the subject property. Driveways that serve only residential use may not be located closer than 25 feet to any street intersection.
- 3.1.2.2 A residential driveway shall typically serve only one parcel.
- 3.1.2.3 On frontages 100 feet or less, no more than one driveway per lot shall be constructed; on frontages over 100 feet, two or more driveways per lot may be permitted, subject to approval by the City. The City may further limit or prohibit access to or from driveways onto arterial streets.
- 3.1.2.4 Joint-use driveways serving two adjacent parcels may be built on their common boundary upon formal written agreement by both property owners and approval of the City. The agreement shall be submitted to the City for review and recorded at the developer's expense prior to issuance of the related building permit for either of the affected lots.

The agreement shall specify the shared driveway use and maintenance requirements affecting the subject lots. The joint use driveway shall be a minimum of 12-feet wide. All costs to upgrade or relocate affected water meter, utility vault, light pole, etc., shall be borne by the developer.

- 3.1.2.5 Grade breaks, excluding the tie to the roadway, shall be constructed as smooth vertical curves. The maximum change in driveway grade shall be eight percent within any 10 feet of distance on a crest and 12 percent within any 10 feet of distance in a sag vertical curve. Driveways shall be graded to match into possible future widened road section without encroachment into graded shoulder or sidewalk. The design engineer for proposed developments shall consider the access driveway profile when designing the serving road to ensure that the required grade transitions can be maintained, considering building set back requirements and lot terrain conditions.
- 3.1.2.6 No driveway aprons shall extend into the street further than the face of the curb.
- 3.1.2.7 The angle between any driveway and the street shall be not less than 45°.
- 3.1.2.8 The two edges of each driveway shall be parallel.
- 3.1.2.9 Every driveway must provide access to a garage, carport, parking apron or other structure on private property requiring the entrance of vehicles. No public curb shall be cut unless a driveway is installed.
- 3.1.2.10 Existing driveways may be reconstructed as they exist provided such reconstruction is compatible with the adjacent road.
- 3.1.2.11 No commercial driveway shall be approved where backing onto the sidewalk or street will occur.
- 3.1.2.12 For commercial or industrial driveways with heavy traffic volumes or significant number of trucks, the City may require construction of the access as a road intersection. This requirement will be based on traffic engineering analysis submitted by the applicant that considers, among other factors, intersection spacing, sight distance and traffic volumes.
- 3.1.2.13 No driveway shall be located within 20 feet of a crosswalk.

- 3.1.2.14 No driveways shall be located so as to conflict with power poles, street lights, fire hydrants, traffic regulating devices or other above-ground facilities, and shall not create a hazard to pedestrians or motorists.

3.2 Sidewalks, Curbs, and Gutter

Sidewalks, curbs, gutters, and landscape strips are required as indicated in Tables 2.4-1, 2.4-2, 2.4-3, and 2.4-4. See Drawing Nos. 3.2-1, 3.2-2, 3.2-3, and 3.2-4.

3.3 Curb Ramps

On all streets with vertical curb, ramped sections to facilitate passage of handicapped persons shall be constructed through curb and sidewalk at street intersections and other crosswalk locations. See Drawing Nos. 3.3-1 and 3.3-2. Where a ramp is constructed on one side of the street, a ramp shall also be constructed on the opposite side of the street. Detectable warning surfaces are required by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway, for marked and unmarked crosswalks. Existing ramps shall be retrofitted with detectable warning patterns, as approved by the City, to meet current ADA requirements. See Drawing No. 3.3-3. Curb ramps shall be positioned so that a ramp opening is situated within the marked crosswalk or crossing area if unmarked.

3.4 Concrete Steps, Metal Handrail, and Handicapped Access Ramps

3.4.1 Steps shall only be used where acceptable alternative access is available for handicapped access and there is a need for a separate stairway. Where used, concrete steps shall be constructed in accordance with Drawing No. 3.4-1 or other design acceptable to the City and consistent with the WSDOT/APWA Standard Specifications. Handrails, whether for steps or other applications, shall be provided consistent with Drawing No. 3.4-1 and the WSDOT/APWA Standard Specifications.

3.4.2 Ramps used to provide handicapped access shall have a maximum slope of 12:1 with a maximum rise of 30 inches between landings. Landings shall have a minimum length of five feet and should be of sufficient width to allow wheel chairs to pass, generally five feet minimum width for two-way traffic. See Drawing No. 3.3-2.

3.5 Separated Pathways and Multi-Use Trails

Separated pathways and multi-use trails shall be provided where designated in drawings or where required by the City because of anticipated significant public usage. Separated facilities are typically located on an easement or within the right-of-way when separated from the roadway by a drainage ditch or barrier. Where separated pathways, or multi-use trails intersect with motorized traffic, sight distance, marking and signalization (if warranted) shall be as provided in MUTCD. All pathways and multi-use trails shall be

signed in accordance with the MUTCD. Trail Designation signs shall be installed at locations directed by the City and in accordance with Drawing No. 3.5. Facilities shall be designed as follows:

- 3.5.1 Neighborhood pathways must be surfaced for pedestrians. All surfaces shall be paved unless permitted otherwise by the City. Such pathways shall be a minimum 6-foot wide with at least one and 1/2-foot clearance to obstructions on both sides and 10-foot vertical clearance. Pathways shall be designed and located so as to avoid drainage and erosion problems. Pathways shall be constructed of two inches of asphalt concrete over 2-1/2 inches of crushed surfacing top course over cleared native material as approved by the City. When a pedestrian pathway is part of a natural system (sensitive area) paving requirements may be waived by the City.
- 3.5.2 Multi-purpose trails are typically designated for bicycle and pedestrian use and in general follow a right-of-way independent from any road. Multi-purpose trails shall be designed to bicycle path standards (Bike Path - Class I) as described in Section 3.7.

3.6 School Access

School access required as part of development approval shall be provided by an asphalt pathway or concrete sidewalk unless another alternative is available and approved by the City.

3.7 Bikeways

- 3.7.1 Bikeways are generally shared with other transportation modes, although they may be provided exclusively for bicycle use. Bikeways are categorized below based on degree of separation from motor vehicles and other transportation modes. This classification does not denote preference of one type over another. Bikeways are categorized as follows:

Bike Path (Class I): A separate paved multi-purpose trail for the principal use of bicycles and other non-motorized modes. Bike paths are 10-feet wide except in high usage areas where they shall be 12-feet wide.

Bike Lane (Class II): A portion of the road that is designated by pavement striping for exclusive bicycle use. Bicycle lanes may be signed as part of a directional route system. Bicycle lanes are 5-feet wide on curbed road and 4-feet wide as a shoulder bike lane.

Wide Curb Lane

(Class III): A road that provides a widened paved outer curb lane to accommodate bicycles in the same lane as motor vehicles. Lane width shall be increased at least 3 feet.

Shoulder: A lane contiguous to the traveled way but separated by a stripe. Most common in rural areas. Typically shared with occasional emergency vehicle access.

Shared Roadway: All roads not categorized above where bicycles share the roadway with motor vehicles.

3.7.2 A bikeway shall be provided:

3.7.2.1 Where indicated in the City's Comprehensive Plan.

3.7.2.2 Striping and signing shall be implemented as follows:

3.7.2.2.1 Pavement markings shall be used on bike lanes and paths according to MUTCD.

3.7.2.2.2 The design of all signalized intersections shall consider bicycle usage and the need for bicyclists to actuate the signal.

3.7.3 The planning and design of bikeways in any category shall be in accordance with Section 1020 of the WSDOT Design Manual and the AASHTO Guide for the Development of Bicycle Facilities, current edition.

4. SURFACING

4.1 Residential Streets, Sidewalks, and Pathways

The minimum paved section, with alternative combinations of materials, for residential streets, sidewalks and pathways shall be as indicated below. These sections are acceptable only on visually good, well-drained, stable compacted subgrade. Any proposed exception to these materials will be subject to soils strength testing and traffic loading analysis and subject to review and approval by the City.

TYPE OF FACILITIES	ASPHALT CONCRETE CLASS B	CRUSHED SURF. TOP COURSE	CRUSHED SURF. BASE COURSE	PORTLAND CEMENT CONCRETE
Residential Access Streets and Alleys	2" (3")*	1-1/2"	2-1/2"	
Sidewalks				Class 3000, 4"
Pathways	2"	2-1/2"		
Multi-Use Trails	2"	1-1/2"	2-1/2"	

* Neighborhood Collectors

Subgrade compaction for multi-use trails and paved pathways shall meet a minimum of 90 percent maximum density.

4.1.1 Driveways may be surfaced as desired by the owner, except:

4.1.1.1 On curbed streets with sidewalks, driveway shall be paved with Portland cement concrete Class 4000 from curb to back edge of sidewalk.

4.1.1.2 On shoulder and ditch section, driveway between edge of pavement and right-of-way line shall be surfaced with asphalt concrete.

4.1.2 Street Widening/Adding Traveled Way to Existing Roads:

4.1.2.1 When an existing asphalt paved street is to be widened, the edge of pavement shall be sawcut to provide a clean, vertical edge for joining to the new asphalt. After placement of the new asphalt section, the joint shall be sealed and the street overlaid one-inch, plus a prelevel course, full width throughout the widened area. The requirement for overlay may be waived by the City based on the condition of existing pavement and the extent of required changes to channelization.

4.1.2.2 When an existing shoulder is to become part of a proposed traveled way a pavement evaluation shall be performed. This evaluation shall analyze the structural capacity and determine any need for improvement. Designs based on these evaluations are subject to review and approval by the City. The responsibility for any shoulder material thickness improvement shall be considered part of the requirement for roadway widening.

- 4.1.2.3 Any widening of an existing roadway, either to add traveled way or paved shoulder shall have the same surfacing material as the existing roadway.

4.2 Requirements for Residential Streets on Poor Subgrade

The minimum material thicknesses indicated in Section 4.1 are not acceptable if there is any evidence of instability in the subgrade. This includes free water, swamp conditions, fine-grained or organic soil, slides or uneven settlement. If there are any of these characteristics, the soil shall be sampled and tested sufficiently to establish a pavement design that will support the proposed construction. Any deficiencies, including an R value of less than 55 or a CBR of less than 20, shall be fully considered in the design. Remedial measures may include, but are not limited to, a stronger paved section, a strengthening of subgrade by adding or substituting fractured aggregate, asphalt treated base, installing a geotextile, more extensive drainage or a combination of such measures. Both the soils test report and the resulting pavement design will be subject to review and approval by the City.

4.3 Arterials and Commercial Access Streets

Any pavement for arterials and commercial access streets shall be designed using currently accepted methodology that considers the load bearing capacity of the soils and the traffic-carrying requirements of the roadway. Drawings shall be accompanied by a pavement thickness design based on soil strength parameters reflecting actual field tests and traffic loading analyses. The analysis shall include the traffic volume and axle loading, the type and thickness of roadway materials, and the recommended method of placement. Pavement sections shall not be less than those required for neighborhood collectors.

4.4 Materials and Lay-Down Procedures

Materials and placement procedures shall be in accordance with WSDOT/APWA Standard Specifications and the following requirements:

- 4.4.1 Crushed surfacing top and base courses may be substituted for a structurally equivalent thickness of ATB. The substitution ratio of crushed surfacing to ATB shall be 1.6:1. Where base or top courses cannot be placed without possible contamination, then these courses shall be substituted by ATB.
- 4.4.2 During surfacing activities utility covers in roadway shall be adjusted in accordance with Section 9.2.6.
- 4.4.3 ATB may be used over isolated areas of unstable subgrade, providing the final lift of asphalt shall not be placed for a minimum of 6 months to allow time for the observation and repair of failures in the subgrade and ATB.

4.4.4 Asphalt pavers shall be self-contained, power propelled units. Truck mounted type pavers are not considered self-propelled. Truck mounted pavers shall only be used for paving of irregularly shaped or minor areas as approved by the City, or as follows:

1. Pavement widths less than 8 feet; and
2. Pavement lengths less than 150 feet.

4.5 Pavement Markings, Markers, and Pavement Tapers

(See Drawing Nos. 4.5-1, 4.5-2, and 4.5-3)

Pavement markings, markers or striping shall be used to delineate channelization, lane endings, crosswalks, and longitudinal lines to control or guide traffic. Channelization drawings or crosswalk locations shall be approved by the City. All markings shall conform to the current “Manual on Uniform Traffic Control Devices” (MUTCD) as adopted by the Washington State Department of Transportation (WSDOT).

Channelization shall be required when through traffic is diverted around a lane or obstacle; and when connecting full width streets with different cross sections; and when extending an existing street with a new cross section different than the existing one. The channelization shall provide tapers equal in length to the posted speed limit times the distance in feet of diversion from the road centerline or the original alignment of travel, or the offset distance, as applicable. Channelization shall also be required to redirect traffic back to their original alignment.

Left turn channelization shall include a minimum of 150 feet of full width lane to include storage and a reverse curve 90 feet in length for posted speeds up to 45 mph. The reverse curve may be included within the taper distance. A deceleration taper as shown in the WSDOT/APWA Standard Plans may be used in place of a reverse curve. Standard left turn lanes shall be 12-foot wide. Turn arrows, in accordance with Drawing No. 4.5-2, shall be installed in the lane 50 feet and 100 feet behind the stop bar, crosswalk, or stopping area. Additional storage may be required for long vehicles or anticipated left turn queues longer than the minimum storage.

Centerline for channelization shall consist of two four-inch yellow lines with a four-inch separation and Type 2YY raised pavement markers installed at 40-foot on center intervals in the gaps between the pavement marking lines. Edgelines for tapering through traffic back to the original alignment shall consist of four-inch white lines.

Pavement markings for channelization shall be reflective hot or cold applied plastic. Extruded or sprayed markings shall be dressed with glass beads for initial reflectance. All materials shall have beads throughout the material to maintain reflectance while the material wears.

Pavement markings shall be installed with hot applied thermoplastic on new asphalt, overlays, and asphalt in good condition, as determined by the City. Where authorized,

preformed Thermoplastic material shall be PreMark with ViziGrip made by Flint Trading Inc. and be applied using PreMark sealer, as applicable, per manufacturer's recommendations, or City approved equal. All material shall be 125-mil thickness and applied using appropriate installation procedures according to the manufacturer.

Crosswalk markings shall be installed, in accordance with MUTCD and standard engineering practices, at all intersections controlled by traffic signals and other areas approved by the City.

All pavement markings shall be laid out with spray paint and approved by the City before they are installed. Approval may require a three working day advance notice to have field lay-out approved by the City.

5. ROADSIDE FEATURES

5.1 General

Miscellaneous features included in this section shall be developed and constructed to encourage the uniform development and use of roadside features wherever possible. The design and placement of roadside features shall adhere to the specific requirements as listed for each feature.

5.2 Survey Monuments

5.2.1 All existing survey control monuments which are disturbed, lost, or destroyed during surveying or construction shall be replaced by a professional land surveyor currently licensed to practice in the State of Washington at the expense of the responsible builder or developer.

5.2.2 Monument Type. See Drawing Nos. 5.2-1, 5.2-2, and 5.2-3. Survey monuments shall be placed in accordance with recognized good practice in land surveying as follows:

5.2.2.1 Precast concrete monument with case and cover shall be installed on arterials and collectors. A survey monument with cast iron monument case and cover installed per City of DuPont Standards is required within the street pavement. The monument case shall be installed after the final course of surfacing has been placed, unless the monument falls within a planter area, then no case is required.

5.2.2.2 Cast-in-place concrete surface monument shall be installed on access roads. A cast-in-place concrete surface monument, with sufficient ferrous metal embedded to allow for detection by a magnetic detection device, per City of DuPont Standards, is required in off-road locations, or in roadway planter medians.

5.2.2.3 All lot and block corners shall be set with an iron pipe or steel reinforcing bar (5/8 inch or larger) at least 18 inches in length before recording of the plat. All lot corners shall be identified with the land surveyor's registration number.

5.2.3 Monument Locations: Appropriate monuments shall be placed:

5.2.3.1 At all street intersections;

5.2.3.2 At the PC and PTs of all horizontal curves, unless PI of curve lies within the traveled roadway;

- 5.2.3.3 At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway. In this case, PC and PT monuments shall not be required;
- 5.2.3.4 At all lot, block, and subdivisions bounding corners, control points, and angle points shall be marked by rebar and cap.

5.3 Mailboxes

- 5.3.1 During construction, existing mailboxes shall be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocation shall be coordinated with the U.S. Postal Service. The mailboxes shall be reinstalled at the original location or, if construction has made it impossible, to a location as outlined below and approved by the U.S. Postal Service.
- 5.3.2 The responsibilities for location and installation of mailboxes in connection with the construction or reconstruction of City roads are as follows:

The City will:

- 5.3.2.1 Require road improvement drawings to show clearly the designated location or relocation of mailboxes, whether single or in clusters.
 - 5.3.2.2 Require with this information any necessary widening or reconfiguration of sidewalks with suitable knock-outs or open strips for mailbox posts or pedestals.
 - 5.3.2.3 Require these drawings to bear a statement on the first sheet that the Collection Box Unit (C.B.U.) mailbox locations as shown on these drawings have been coordinated with the serving post office at DuPont, Washington as a prerequisite to plan approval.
 - 5.3.2.4 Require construction of mailbox locations in accordance with these drawings, through usual inspection and enforcement procedures.
- 5.3.3 Installation methods are as follows:
 - 5.3.3.1 Mailboxes, in the general case, shall be set in accordance with Drawing No. 5.3-1.
 - 5.3.3.2 Collection Box Unit's (C.B.U.) shall be installed by the Developer in accordance with Drawing No. 5.3-2.

5.4 Guard Rails

Guardrail installation shall conform to WSDOT/APWA Standard Plan C-1, Beam Guardrail Type 1 and C-2, Guardrail Placement. End anchors shall conform to WSDOT/APWA Standard Plan C-6, Beam Guardrail Anchor Type 1. Evaluation of embankments for guardrail installations shall be in accordance with Section 710.06 of the WSDOT Design Manual.

5.5 Retaining Walls

Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of eight feet in stable soil conditions which will result in no significant foundation settlement or outward thrust upon the walls. See Drawing No. 5.5-1. For heights over four feet or when soil is unstable, rock wall designs shall be by an engineer currently licensed to practice in the State of Washington. Rock walls over four feet high shall be subject to inspection by a professional engineer. The professional engineer shall continuously inspect the installation of the wall as it progresses and shall submit inspection reports, including compaction test results and photographs taken during the construction, documenting the techniques used and the degree of conformance to the design.

A metal handrail shall be installed where rockery is three feet or greater in height. Concrete retaining walls may be used in lieu of rock walls. The design of structural walls shall be by a professional engineer qualified in retaining wall design. Design calculations shall be submitted to the City.

5.6 Side Slopes

5.6.1 Side slopes shall generally be constructed no steeper than 2:1 on both fill slopes and cut slopes. Steeper slopes may be approved by the City upon showing that the steeper slopes, based on soils analysis, will be stable. Side slopes on projects funded by federal grants shall be constructed in conformance with Local Agency Guidelines.

5.6.2 Side slopes shall be stabilized by grass sod or seeding or by other planting or surfacing materials acceptable to the City.

5.7 Street Trees and Landscaping

5.7.1 Street trees and landscaping shall be incorporated into the design of road improvements for all classifications of roads, except as indicated in Table 2.4-1, Table 2.4-2, Table 2.4-3, and Table 2.4-4.

5.7.2 Planting strips are required as indicated in Section 2.4.

- 5.7.3 Street tree locations, planting, and staking shall conform to Standard Drawing Nos. 5.7-1 and 5.7-2.
- 5.7.4 New street trees shall not include aspen, poplar and cottonwood (*Populus* species); soft maples (selected *Acer* species); sweet gum (*Liquidambar styraciflua* and its cultivars); willows (*Salix* species); fruit-bearing orchard-type trees; or any other tree or shrub whose roots are likely to obstruct sanitary or storm sewers. Street tree species shall be selected from the City's most current recommended street tree list; the tree's mature size shall be appropriate to the space in which the tree is to be planted.
- 5.7.5 All trees shall be staked so as to be parallel to the walk and curbs. All tree plantings shall include the installation of an approved root barrier adjacent to walks and curbs for each tree, unless otherwise approved by the City.
- 5.7.6 All trees shall be trained to a single leader, with well-developed crowns; shall exhibit evidence of proper nursery pruning practices in accordance with American National Standards Institute (ANSI) standards; and shall have a 5-foot minimum branch height with a 2-inch minimum caliper at 6-inches above root crown. At the time of planting, all trees shall be free of mechanical injuries, disease, broken limbs, and other objectionable features that may affect the future form, health and structural integrity of the plant.

5.8 Parking Lots

A permit is required prior to surfacing any designated parking area. Drawings and specifications shall be submitted for review and approval by the City with respect to storm drainage discharge and on site retention or detention, matching street and/or sidewalk grades, access locations, parking layout, and to check for future street improvement conformity and City zoning regulations. A storm water system shall be provided in conformance with the City's Stormwater Standards.

Surfacing materials for parking lots for permanent facilities are: asphalt concrete pavement and cement concrete pavement. Combination grass/paving systems are approved surface material types, however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems will be irrigated and maintained. If the City determines the grass/paving system is not appropriate for the specific application, alternate approved surfacing materials shall be utilized. Parking lots for temporary building may be gravel surfaced.

5.9 Roadway Barricades

Temporary and permanent barricades shall conform to the standards described in Section 6F.63 of the Manual on Uniform Traffic Control Devices (MUTCD).

- 5.9.1 Type I or Type II barricades may be used when traffic is maintained through the area being constructed/reconstructed.
- 5.9.2 Type III barricades may be used when roadways and/or proposed future roadways are closed to traffic. Type III barricades may extend completely across a roadway (as a fence) or from curb to curb. Where provision must be made for access of equipment and authorized vehicles, the Type III barricades may be provided with movable sections that can be closed when work is not in progress, or with indirect openings that will discourage public entry. Where job site access is provided through the Type III barricades, the developer/contractor shall assure proper closure at the end of each working day.
- 5.9.3 In the general case, Type III permanent barricades shall be installed to close arterials or other through streets hazardous to traffic. They shall also be used to close off lanes where tapers are not sufficiently delineated.
- 5.9.4 Type III barricades shall be used at the end of a local access street terminating abruptly without cul-de-sac bulb or on temporarily stubbed off streets. Each such barricade shall be used together with an end-of-road marker.

5.10 Bollards

When necessary to deny motor vehicle access to an easement, tract, or trail, except for maintenance or emergency vehicles, the point of access shall be closed by a line of bollards. These shall include one or more fixed bollards on each side of the traveled way and removable, locking bollards across the traveled way. Spacing shall provide one bollard on centerline of trail and other bollards spaced at minimum 48 inches on center on access roads or trails. Bollard design shall be in accordance with Drawing No. 5.10 or other design acceptable to the City. No fire apparatus access roads shall be blocked in this manner without the concurrence of the Fire Marshall. Bollards shall be located at least 10 feet laterally from the paved edge of roadway.

5.11 Roadside Obstacles

Non-yielding or non-breakaway structures, including rockeries and retaining walls, which may be potential hazards to the traveling public shall be placed with due regard to safety. On roads with a shoulder or mountable curb, hazardous objects shall be placed as close to the right-of-way line as practical and a minimum of 10 feet from the edge of the traveled way or auxiliary lane. On urban roads with a vertical curb section, hazardous objects shall be placed as far from the edge of the traveled way or auxiliary lane as practical. Such an object shall not be placed in a sidewalk or within the clear zone. The clear zone is two feet from the face of vertical curb. Placement of any utility structures shall be in accordance with requirements of Section 9, to include constraints on placement of poles on the outside of curves.

5.12 Signage

(See Drawing Nos. 5.12-1, 5.12-2, and 5.12-3)

5.12.1 All vehicular control signs shall comply with the MUTCD, current edition. A plan indicating the location and type of signs shall be submitted for the City's review.

5.12.2 The developer shall verify street names and block number with the City prior to ordering street name signs.

6. ILLUMINATION

6.1 General

All new commercial or residential subdivisions, short plats or property development deemed by the City to require street lighting shall do so in accordance to these standards.

6.2 Design Standards

A street lighting plan submitted by the applicant and approved by the City shall be required for all street light installations. All public street light designs shall be prepared either by Puget Sound Energy or an engineering firm capable of performing such work and, once constructed; the street lighting system will be owned and maintained by PSE. If drawings are prepared by an engineering firm, the drawings must be prepared in accordance with PSE standards as well as the City's since PSE owns and maintains the City's street lights. All developments shall submit the lighting plan on a separate sheet. Street light layout drawings shall be on separate drawings from the street plan/profile sheets. The final locations shall be approved by the City and comply with these Standards.

Street Lighting drawings shall include:

- A. Street light location, light source type, height and connected wattage
- B. Conduits and Wire: location, type, size and trench depth
- C. Junction Boxes: locations and types (number of positions)

6.3 General Material Requirements

6.3.1 Conduit:

All conduit shall be buried with a minimum cover of 24 inches. All roadway crossings shall be Schedule 80 PVC. Schedule 40 PVC may be used in locations other than roadway crossings. Conduit shall be bedded in 2" of sand. Conduit material shall conform to Section 9-29 of WSDOT/APWA Standard Specifications.

6.3.2 Junction Boxes (when required):

Junction boxes shall be installed at locations as shown on the drawings. They will conform to WSDOT/APWA Standard Plan J-11a, Type 1 or as directed by PSE/INTOLIGHT. They shall be installed within the landscape strip and firmly bedded to prevent future settlement. Alternate junction box locations may be approved by the City on a case by case basis. Junction boxes for PSE/INTOLIGHT owned street lighting systems shall be supplied by PSE.

6.3.3 Conductors, Wires, Fuses, Etc.:

All wires installed for the purpose of PSE/INTOLIGHT owned and maintained street lighting systems shall be supplied, installed, owned and maintained by PSE.

Fuses for PSE/INTOLIGHT owned and maintained street lighting systems shall be supplied by PSE.

6.3.4 Location and Spacing:

In general, poles and luminaires shall be spaced as described below to provide average illumination of 0.4-foot candles on the roadway with a Uniformity Ratio of 6 to 1 (average/minimum), as prescribed for a Local-Residential classification with R 2/3 surface in IES Standard RP 8, "Roadway Lighting," current edition.

- A. Poles shall be spaced 36 inches from the face of the curb.
- B. Poles shall be spaced to provide the specified illumination. Locate poles on alternate sides of residential streets wherever possible. Calculations supporting the selected spacing shall be provided.
- C. Locate extra luminaires on corners if more than 50 feet from another luminaire.
- D. Locate an extra luminaire at the end of a cul-de-sac shorter than 50 feet.
- E. Street light conduit for wiring shall be located within the utility easement for power, gas, telephone, and cable TV wherever possible.

For all streets other than "local-residential", please refer to the I.E.S. Standards and provide photometric calculations.

6.4 Poles and Luminaire

Alternative materials may be used upon review and approval by the City.

6.4.1 Residential Areas:

6.4.1.1 Luminaire:

The standard residential luminaire street lights shall be Holphane Unique Solutions, 100 or 150 Watt HPS, Catalog No. UPTU100 HP121124 PG with integral photocell control.

6.4.1.2 Poles:

The standard residential street lighting pole shall be Ameron octagonal, Catalog No. SE0-4-113A, exposed aggregate with an acrylic finish. Total length shall be 16 feet 4 inches with a normal depth of bury of 3 feet 3 inches for a nominal fixture mounting height of 14 feet.

6.4.1.3 Lamps:

The lamp to be used in the standard residential fixture shall be an OSPAM/Sylvania LU100/PLUS/ECO Clear (10,000 lumens for 100W or 16,000 lumens for 150W) with an end-of-life depreciation factor of 0.76.

6.4.2 Arterials and Industrial Streets:

6.4.2.1 Luminaire:

The luminaire shall be Copper Lighting Tribute, 200 watts HPS.

6.4.2.2 Poles:

The concrete poles shall be Ameron octagonal, Catalog No. MEO-10-313A, exposed aggregate with an acrylic finish. Total length shall be 38.5 feet in length. The arms shall be:

Ameron aluminum davit type Catalog No. MO-AD-10 (single arm)
Ameron aluminum davit type Catalog No. MO-AD-10D (double arm).

Ameron aluminum elliptical arm type Catalog No. MO-AE may be used upon review and approval by the City.

6.4.2.3 Lamp:

The lamp shall be Lumalux Plus/ECO, 200 watts HPS.

7. DRAINAGE

7.1 General

- 7.1.1 Designs: Drainage facilities shall be designed consistent with the City's Stormwater Management Manual, latest edition. Structures shall be placed and constructed as shown in the Standard Drawings.
- 7.1.2 Specifications: Materials, construction, and testing are specified in the WSDOT/APWA Standard Specifications. The City reserves the right to amend, delete, or add additional specifications or Standard Drawings.
- 7.1.3 Conflicts: Where technical conflicts may occur between this document and the Stormwater Management Manual, the City shall determine which document governs.
- 7.1.4 If warranted based on the condition and capacity of the existing storm drainage infrastructure (or lack thereof), off-site improvements may be required, at the City's discretion, to mitigate impacts caused by the proposed development.

7.2 Road Ditches

The following standards shall only apply in design of drainage ditches not requiring drainage review under the provisions of the Stormwater Management Manual.

- 7.2.1 On grades up to 6 percent, grass lined ditches with grasses as specified in Section 7.2.2.4 shall be used for the drainage requirement. If grass cannot be readily established by usual seeding methods, other methods such as sodding or seeding with slope mat protection shall be used as necessary. For grades between 3 percent and 6 percent, grass lining alone may not be sufficient to stop erosion. Preferred methods to further reduce potential erosion problems include the use of check dams or wider ditch sections. Rock-lined ditches shall be avoided whenever possible.
- 7.2.2 Where the grade is over 6 percent and not over 9 percent, the City may direct use of a standard rock-lined ditch or alternatively a closed (pipe) drainage system under a paved shoulder with asphalt curb. Cul-de-sacs with over 6-percent grade shall be provided with pipe drainage and not with rock-lined ditches.

7.2.2.1 The standard rock lining shall be in accordance with the Stormwater Management Manual and Section 9-13.6 of the WSDOT/APWA Standard Specifications. Rock gradation shall be as follows:

Passing 8-inch square sieve	100%
Passing 3-inch square sieve	40% max.
Passing 3/4-inch square sieve	10% max.

7.2.2.2 Rocks shall be placed so as to form a firm, dense, protective mat conforming to the design surface of the ditch. Individual rocks shall not protrude more than 3 inches from that surface.

7.2.2.3 Where the grade exceeds 9 percent either pipe drainage or a special rock-lined ditch shall be provided unless otherwise approved by the City. The special rock-lined ditch shall be designed by a professional engineer, based on soils and hydraulic analyses. Design shall include rock sizing, together with filter rock gradations and/or filter fabric, and will be subject to approval by the City.

7.2.2.4 Grass seed mixture by weight may be 10 percent Colonial bentgrass, 40 percent Tall or Red fescue, 10 percent White Clover, hydroseeded at 120 lbs./acre or handseeded at 3 lbs./1,000 square feet. Where there is high groundwater, the following species may be substituted or added: Meadow or Pacific foxtail, Timothy, or Redtop.

7.3 Storm Sewers and Culverts

7.3.1 Minimum pipe size shall be 12-inch diameter for facilities that will be dedicated to the City.

7.3.2 The following pipes, specified in Section 9-05 of the WSDOT/APWA Standard Specifications are allowed: plain and reinforced concrete storm sewer pipe, ductile iron, polyvinyl chloride (PVC), lined corrugated polyethylene (LCPE) and solid wall polyethylene (SWPE) pipe.

7.3.3 LCPE pipe shall have a smooth interior wall meeting or exceeding Type III, Category 4 or 5, Grade P33 or P34, Class C per ASTM D1248, minimum cell Class ASTM D3350, 324420C. LCPE shall also meet or exceed the requirements of AASHTO M294, Type S.

7.3.4 PVC pipe shall require the use of bedding material for flexible pipe specified in Section 9-03 of WSDOT/APWA Standard Specifications.

7.3.5 LCPE and SWPE shall be bedded with gravel backfill for pipe bedding as specified in Section 9-03 of WSDOT/APWA Standard Specifications.

- 7.3.6 PVC, LCPE, and SWPE shall be tested using the deflection test procedure described in Section 7-17.3 of the WSDOT/APWA Standard Specifications. Unless otherwise specified, the mandrel for the deflection test shall have a minimum of nine runners equally spaced, a base length equal to or less than the diameter of the pipe, and a diameter no less than 95 percent of the base inside diameter of the pipe, which is described as follows:

For pipes with controlled inside diameter, PVC and SWPE: $\text{base inside diameter} = \text{average inside pipe diameter} - ((\text{inside diameter tolerance})^2 + (\text{out of roundness tolerance})^2)^{.5}$.

For SWPE up to 30 inches, the above equation simplifies to: $\text{base inside diameter} = \text{nominal diameter} \times 0.9665$.

For pipes with controlled outside diameter, LCPE: $\text{base inside diameter} = (\text{average outside diameter} - (2 \times \text{wall thickness}) - (\text{outside diameter tolerance})^2 + (12 \% \times \text{wall thickness})^2 + \text{roundness tolerance})^{.5}$.

Average diameter and tolerance shall be as specified by applicable ASTM standards. Pipe sections failing the mandrel test shall be replaced except that reshaping SWPE and LCPE sections to meet requirements shall be allowed if the original deformation is less than 20 percent.

- 7.3.7 Concrete pipe shall be rubber gasketed. Leak testing shall be conducted.
- 7.3.8 If the depth of a pipe exceeds eight feet or the City questions the pipe selection, then the selection of pipe material must be made by a professional engineer.
- 7.3.9 The projecting ends of culverts shall be beveled.

7.4 Catch Basins and Junctions

- 7.4.1 Use catch basins, rather than inlets, to collect water from road surfaces, unless approved by the City. See Drawing Nos. 7.4-1, 7.4-3, and 7.4-4.

7.4.2 Maximum spacing of structures for storm drainage conveyance lines running within an easement area shall be 350 feet for pipe grades greater than 0.3 percent and 200 feet for grades less than 0.3 percent. Maximum surface runs between inlet structures on the paved roadway surface shall be as follows:

<u>Roadway Slope (%)</u>	<u>Max. Spacing (ft)</u>
0.7 to 1.00	200
1.01 to 6.00	350
6.01 to 8.00	250
8.01 to 12	150

All catch basins, inlets, etc., shall be marked as shown in Drawing No. 7.4-2.

- 7.4.3 Connections to pipe systems shall be made with a catch basin or manhole on the mainline.
- 7.4.4 Connections to an existing system shall avoid directing project runoff through downstream quality/quantity control facilities. Receiving systems may have separate conveyance facilities: one connecting to quality/quantity facilities and one by-passing them. Connection shall be to the bypass system where available.
- 7.4.5 Use Type 2 catch basins where the depth to the invert of the pipe exceeds 5 feet. See Drawing Nos. 7.4-3 and 7.4-4.
- 7.4.6 Manholes may be used in lieu of catch basins if they do not collect surface water.
- 7.4.7 Roof and yard drains, or other concentrated flow from adjacent property shall not discharge over the surface of roadways or sidewalks.
- 7.4.8 Catch basins or manholes are required when joining differing types of pipes.

7.5 Frames, Grates, and Covers

7.5.1 Unless otherwise specified, use vaned grates with standard frame in the traveled way, gutter, or shoulder. Vaned grates shall not be located within crosswalks.

- 7.5.2 At sag vertical curves, or before intersections with a grade 4 percent or greater, use through curb inlet frames. Where through curb inlets cannot be used, three vaned inlets shall be used. One shall be located at the approximate low point and another on either side at 25-foot horizontal spacing, but not greater than 0.1 foot above the low point.
- 7.5.3 New catch basins that do not collect runoff shall use locking manhole covers. Existing catch basins which no longer collect runoff shall have their frame and grates replaced with solid covers.
- 7.5.4 All storm drains with solid lids shall be locking. Locking lids will be installed on all structures containing restrictor or plow devices. Storm drains with grates shall not be locking. Manufacturer as approved by the City.

7.6 Erosion Control

Provide erosion control as required in the Stormwater Management Manual.

Filter fabric fences shall be constructed of material designed specifically for erosion control. The fabric shall be composed of rot-proof woven or non-woven polymeric fibers and be free of chemical treatment or coating that may reduce permeability. The fabric shall meet the following test requirements: minimum 110 lbs. grab tensile strength per ASTM D-1682, minimum 40 lbs. puncture strength per ASTM D-751 Modified, and 20-100 Equivalent Opening Size (EOS) based on U.S. standard sieves.

7.7 Trenches

See Section 9.2

8. WATER SYSTEM STANDARDS

8.1 General

- 8.1.1 The type and class of materials to be used shall be as shown on the project drawings reviewed and approved by the City. Where no specific reference is shown, the following specifications shall govern the materials used. All materials shall be new and undamaged, of a known brand, with replacement parts readily available from the general Seattle/Tacoma area.
- 8.1.2 Prior to the installation of any facilities required for the project, all materials shall be approved by the City.
- 8.1.3 All specifications referenced herein shall be of the latest revision.
- 8.1.4 A preconstruction conference will be held at the City office prior to the start of construction.
- 8.1.5 The developer shall notify the City seven days in advance of proposed construction to allow for checking of materials to be used on the job.
- 8.1.6 Except as otherwise noted herein, all construction workmanship and materials shall be in accordance with the most current edition of the adopted standards of the City of DuPont, Washington State Department of Transportation/Washington State Chapter of the American Public Works Association Standard Specifications (WSDOT/APWA Standard Specifications for Road, Bridge, and Municipal Construction), as recommended in applicable American Waterworks Association (AWWA) specifications, and according to the recommendations of the manufacturer of the material or equipment used. The Contractor performing actual construction shall have a copy of the drawings and specifications on the job site at all times.
- 8.1.7 General Guarantee and Warranty:

The Developer shall be required, upon completion of the work and prior to acceptance by the City, to furnish the City a written financial guarantee covering all material and workmanship for a period of 2 years after the date of final acceptance of the work and shall make all necessary repairs during that period at his own expense, if such repairs are necessitated as the result of furnishing poor materials and/or workmanship. The amount of the financial guarantee shall be not less than 10 percent of the value of the water system extension or improvements. The Developer shall obtain warranties from the contractors, subcontractors and suppliers of material or equipment where such warranties are required, and shall deliver copies to the City upon completion of the work.

- 8.1.8 All water mains and appurtenances to be owned and operated by the City, up to and including water meters, backflow assembly vaults, and fire hydrants, shall be located in 15-foot-wide easements dedicated to the City. All of the proposed easements or easement revisions shall be verified to comply with said requirement. A Bill of Sale for the water system improvements within the easements shall be provided following construction and prior to final approval of the project and acceptance of the water system extension or improvements.
- 8.1.9 All damage to existing improvements during progress of the work on the structures covered by these Standards shall be repaired or restored by the Developer to the satisfaction of the City, using for such repair, materials and methods conforming to the requirements of the City's "Public Works Standards," Project Plans and Specifications, and any additional instructions issued therefore by the City, with the intent that such damaged improvements be restored to equal or superior condition existing prior to damage. If the Developer fails to furnish the necessary labor and materials for such repair, the City may cause said labor and materials for such repairs to be furnished by other parties, and the cost thereof shall be paid by the Developer.

8.2 Excavation and Backfill

(See Drawing Nos. 8.2-1, 8.2-2, and 8.2-3)

8.2.1 Clearing and Grubbing

- 8.2.1.1 Clearing and grubbing shall consist of the removal of all trees, stumps, brush, and debris and shall be confined within the limits of the easements obtained for the construction of this project, and/or existing public rights-of-way. Where necessary to facilitate construction, and not otherwise identified to be retained, trees shall be cleared and felled with sufficient care to prevent damage. Construction work in forested and native unimproved areas shall be conducted with extra precaution. Construction activity, stored materials and piles of earth shall not extend beyond the designated work limits. Trees and foliage which are not to be removed in construction shall be protected. Finished grades after completion shall match original grades, sloped to prevent ponding. Any surplus dirt or over burden piled around trees shall be removed to prevent future damage; such material shall be removed by hand if necessary.

- 8.2.1.2 All trees which are removed by the Developer shall become the property of the Developer and shall become his responsibility to remove from the site, unless otherwise noted in the easement stipulations or elsewhere in these specifications. Removal of clearing and grubbing debris shall be subject to the approval of the City and shall, in no way, constitute a hazard to the continuous operation of any existing utilities. Any damage to the existing utilities shall be repaired by the respective utility company, at the expense of the Developer. Any private improvements in the rights-of-way and easement areas shall not be removed until permission has been given by the City.
- 8.2.1.3 All fences adjoining any excavation or embankment that may be damaged or buried shall be carefully removed and temporarily erected on the adjoining property or stored for reinstallation as directed by the City.
- 8.2.1.4 No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. All waste material shall be hauled to a waste site arranged for by the Developer. Any permits required for disposal shall be secured and paid for by the Developer.
- 8.2.1.5 The Developer shall be responsible for all damage to existing improvements resulting from his operations.

8.2.2 Traffic Control

The Developer shall make suitable, safe, and adequate provision for necessary traffic around, over, or across the work in progress and shall schedule pavement patching to follow after backfill is completed.

8.2.3 Excavating in Paved Areas

Prior to excavating in paved areas, the existing road surface shall be cut 1 foot (minimum) back from the outer edge of the excavation with a cutter and removed. The cuts are to be made in clean, straight lines to insure a minimum of damage to existing pavements. All cuts in existing concrete pavement are to be made with a concrete saw, except that where the concrete has been overlaid with asphalt, the pavement will be cut with a cutter 1 foot (minimum) from the outer edge of the excavation on each side of the trench section. If the Developer fails to adequately protect the trench edges during trenching and backfilling, he will be required, at his own expense, to recut the edges prior to repairing the pavement.

8.2.4 Trench Excavation

- 8.2.4.1 Trench excavation shall be unclassified. The terms earthwork or excavation include all materials excavated or removed regardless of material characteristics. The Developer shall make his own estimate of the kind and extent of materials which will be encountered in the excavation.
- 8.2.4.2 Trenches shall be excavated to the line and depth so that all new pipelines constructed shall have neither less than 3, nor more than 5 feet of cover, measured from the top of the pipe to the approved finished grade in accordance with Drawing No. 8.2-2, unless otherwise approved by the City.
- 8.2.4.3 If a grade revision is made, the cover over the water main must remain within these limits. Otherwise, the water main shall be reconstructed. All added costs of inspecting such water main reconstruction shall be charged to the Developer.
- 8.2.4.4 The excavation shall be made in a straight grade through localized breaks in grade. The excavation shall be deepened gradually at changes in the street grades so that there are no abrupt changes in pipeline grade.
- 8.2.4.5 Where it is necessary to cross sanitary sewer or storm sewer trenches, all trench backfill shall be removed and replaced with mechanically compacted granular material to provide a uniform support for the full length of the pipe.
- 8.2.4.6 The root systems of all trees not to be removed which are located on or near the easements and right-of-way shall not be cut or disturbed, but shall be tunneled or otherwise protected by the Developer to ensure that no damage is done.
- 8.2.4.7 When so directed by the City, the trench shall be extended below the pipeline grades to permit the placing of foundation gravel.
- 8.2.4.8 The maximum length of open trench permissible on any line, in advance of pipe laying, will be 100 feet. Upon completion of work each day, all open trenches shall be completely backfilled, leveled, and temporarily graveled or patched.

8.2.5 Trench Safety Systems

- 8.2.5.1 The Developer shall be responsible for designing, providing, and installing sheeting, shoring, and bracing as necessary to protect workmen, the work, and existing utilities and other properties. All work involving sheeting, shoring, and bracing shall be done in accordance with all applicable local, State and Federal safety regulations, and shall be designed in accordance with the Washington State Safety Code, "Safety Standards for Construction Work," Chapter 296-155 WAC Part N.
- 8.2.5.2 Removal of sheeting, shoring, and bracing shall be accomplished in such a manner that there will be no damage to structures, pavements, facilities, utilities, and adjacent properties.
- 8.2.5.3 All trenches which exceed a depth of four feet shall be provided with safety systems that meet the requirements of the Washington Industrial Safety & Health Act, Chapter 49.17 RCW.

8.2.6 Dewatering and Control of Water

- 8.2.6.1 Where encountered during construction, the Developer shall dewater and dispose of the water so as not to cause injury to public or private property, or cause a nuisance or menace to the public. Dewatering systems shall be designed and operated so as to prevent the removal of natural soils.
- 8.2.6.2 During excavating, installation of water mains, placing of trench backfill, and the placing and setting of concrete, excavations shall be kept free of water. The static water level shall be drawn down below the bottom of the excavation so as to maintain the undisturbed state of the natural soils, and allow the placement of backfill to the required density. The dewatering system shall be installed and operated so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.
- 8.2.6.3 The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures, and water mains.

- 8.2.6.4 In carrying out the work within the limits of streams, or an area that will drain to a stream during a rain, the Developer is required to comply with the regulations of the appropriate local, State, and Federal agencies. Any isolated potholes remaining from the Developer's operations shall be provided with open water channels in such a manner that there will be a direct drainage outlet at the lowest elevation of the pothole.
- 8.2.6.5 Dust control water shall be applied as designated by the City and for such period of time as the City deems necessary.
- 8.2.6.6 The Developer shall contact the applicable agencies and secure such permits as may be necessary to cover his proposed method of operation within the areas described above. If no permit is necessary, and if directed by the City, he shall obtain a letter from the appropriate agency.

8.2.7 Foundation Gravel

- 8.2.7.1 Foundation gravel required in the bottom of the trench to provide proper pipe support shall be furnished by the Developer. The Developer shall perform all excavation of every description and of whatever substance encountered. Boulders, rocks, roots, and other obstructions shall be completely removed or cut out to the new width of the trench and to a depth 6 inches below the water main grade. Where material is removed from below water main grade, the trench shall be backfilled to grade with material satisfactory to the City and thoroughly compacted.
- 8.2.7.2 Foundation gravel shall be manufactured in accordance with the provisions of Section 9-03.12(1)B of the WSDOT/APWA Standard Specifications. The materials shall be uniform in quality and free from wood, roots, bark and other extraneous material. Materials also shall conform to and be placed in accordance with Section 4-04 of the WSDOT/APWA Standard Specifications.

8.2.8 Gravel Base

If the excavated material is unsuitable for backfill, or as directed by the City, water main trenches shall be backfilled with gravel base material. This material shall conform to and be placed in accordance with Section 4-02 of the WSDOT/APWA Standard Specifications. The material shall be in accordance with the provisions of Section 9-03.19 of the WSDOT/APWA Standard Specifications.

8.2.9 Trench Backfill

- 8.2.9.1 All brush, stumps, logs, planking, disconnected drains, boulders, paving, etc., shall be removed from the material to be used for backfilling the trench. No timber bracing, lagging, sheathing, or other lumber shall be left in any excavation.
- 8.2.9.2 Where, in the opinion of the City, the existing material removed from the trench is not suitable for roadway subgrade, gravel base or other approved material shall be used as backfill.
- 8.2.9.3 At all roadway and driveway crossings within existing paved rights-of-way, and in such additional locations as may be directed by the City, the trench shall be immediately backfilled after the pipe is installed and inspected, and shall be immediately provided with a temporarily graveled surface, and continually maintained on a daily basis until replaced with permanent repair as required.
- 8.2.9.4 All paved crossings shall have a temporary asphalt paved surface installed, which surface shall be a minimum of 2 inches in thickness, and fully maintained level with existing undisturbed pavement until replaced with permanent repair.
- 8.2.9.5 Sufficient cold mix to make immediate repairs and to maintain repairs until permanent repair is made, shall be on the job site.
- 8.2.9.6 The Developer shall be responsible for restoring to a condition equal to their original condition, any and all exiting culverts, ditches, drains, landscaping, or other facilities which are damaged as a result of the Developer's operations.

8.2.10 Compaction of Trench Backfill

Unless otherwise approved, compaction of trench material is required. The density of compacted backfill material shall meet requirements outlined in the WSDOT/APWA Standard Specifications.

8.3 Water Mains and Fittings

8.3.1 Design

- 8.3.1.1 Water mains and fittings to be installed shall be ductile iron for all sizes, unless specifically noted otherwise.

- 8.3.1.2 Water mains shall provide adequate domestic plus fire flow at the required residual pressure. Fire flow requirements will be determined by the local fire authority.
- 8.3.1.3 New water mains shall be sized in accordance with these Standards and the City's Water System Plan, current edition. The City may require installation of larger-sized mains if deemed necessary to meet fire protection and domestic requirements or for future service.
- 8.3.1.4 In single-family residential areas, the minimum water main size shall be 8-inch diameter for looped systems or dead ends with fire hydrants.
- 8.3.1.5 In multi-family residential and non-residential areas, the minimum water main size shall be 8-inch diameter for looped systems and 12-inch diameter for dead ends.

8.3.2 Ductile Iron Pipe

- 8.3.2.1 The ductile iron pipe shall conform to AWWA C151, and current amendments thereto. Grade of iron shall be a minimum of 60-42-10. The pipe shall be cement-lined in accordance with AWWA C104 to a minimum thickness of 1/16 inch and meet NSF Standards for potable water. The exterior shall be an asphaltic coating. Each length shall be plainly marked with the manufacturer's identification, year cast, thickness, class of pipe and weight. Bolts furnished for mechanical joint pipe shall be high strength ductile iron, with a minimum tensile strength of 50,000 psi. The class of ductile iron pipe shall be thickness Class 52 for all diameters.
- 8.3.2.2 The pipe shall have a nominal inside diameter of the size indicated on the Drawings. All pipe shall be of one manufacturer and be carefully installed in complete compliance with the manufacturer's recommendations and these Specifications.
- 8.3.2.3 All ductile iron pipes shall be furnished with mechanical joint or push-on type, employing a single gasket, such as "Tyton", except where otherwise calling for flanged ends. All joints and rubber gaskets shall conform to AWWA C111. Flanged joints shall conform to AWWA C110.
- 8.3.2.4 Restrained joint pipe shall be push-on joint pipe with "Field Lok" gaskets as furnished by U.S. Pipe or City approved equal. The restrained joint pipe shall meet all other requirements of the non-restrained pipe.

- 8.3.2.5 All pipes shall be joined by the manufacturer's standard coupling, be all of one manufacturer, and be carefully installed in complete compliance with the manufacturer's recommendations.
- 8.3.2.6 Joints shall be "made up" in accordance with the manufacturer's recommendations. Standard joint materials, including rubber ring gaskets, shall be furnished with the pipe. Material shall be suitable for the specified pipe size and pressures.

8.3.3 Ductile Iron Fittings

- 8.3.3.1 All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards for 350 psi pressure rating for mechanical joint fittings and 250 psi pressure rating for flanged fittings. All fittings shall be cement lined in accordance with AWWA C104 and be either mechanical joint or flanged.
- 8.3.3.2 Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., Megalug, or approved equal.
- 8.3.3.3 All couplings shall be ductile iron mechanical joint sleeves.

8.3.4 Water Pipe Installation

- 8.3.4.1 All pipes shall be installed in accordance with these specifications and the instructions of the manufacturer, subject to the approval of the City. All pipe ends shall be square with the longitudinal axis of the pipe, and any damage to the ends shall be cut off prior to installation, if approved by the City. When it is necessary to cut the pipe, the pipe shall be cut with approved cutting tools.
- 8.3.4.2 The pipe shall be laid in a straight grade through localized breaks in grade. The excavation shall be deepened gradually at changes in street grades so that there are no abrupt changes in pipeline grade. To maintain the required alignment, short lengths shall be used and joints shall be deflected or necessary bends shall be used. Bends shall be provided and approved in the field to suit construction and in accordance with the manufacturer's recommendations, so as not to exceed allowable deflection at pipe joints.

- 8.3.4.3 Each pipe section shall be carefully lowered into place onto bedding material that is placed to a minimum depth of four inches in the trench after inspecting it for defects and removing any gravel or dirt, etc., from the interior of the pipe.
- 8.3.4.4 Thrust blocking or restrained joints shall be provided at all fittings and bends in accordance with the Standard Details and conditions described herein.
- 8.3.4.5 A 10-foot horizontal separation between all sanitary sewer lines and water mains shall be maintained to meet Department of Ecology standards. A 5-foot horizontal separation is required between all water facilities and underground power, telephone, and other facilities unless otherwise approved by the City.

8.3.5 Alignment

All water mains shall be placed 5 feet north or east of the centerline of the street right-of-way. Unless otherwise specified, the location of the water mains, hydrants, valves, and principal fittings will be in accordance with the approved drawings. The Developer shall provide sufficient horizontal control, in the form of centerline stakes, property corners, or other markers, as required for proper pipe location.

8.3.6 Concrete Blocking (See Drawing No. 8.3-1)

- 8.3.6.1 Concrete blocking mix shall be Cement Concrete Class 3000 (min), and shall be cast in place and have a minimum of 1/4 square foot bearing against the fittings and two square feet bearing against undisturbed soil. Blocking shall bear against fittings only and shall be clear of Joints so as to permit taking up or dismantling the joint. All bends and tees shall be blocked in accordance with the Standard Details.
- 8.3.6.2 The developer shall install blocking which is adequate to withstand full test pressure as well as to continuously withstand operating pressures under all conditions of service. For concrete blocking based on 250-psi test pressure, with safe soil load bearing of 2,000 pounds per square foot. Pea gravel and other smooth surfaced rock are not acceptable as concrete mix aggregate.

8.3.6.3 Fittings shall be “blocked” with poured-in-place concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. Thrust blocks shall be poured as soon as possible after setting the fittings in place to allow the concrete to “set” before applying the pressure test. The concrete thrust blocks shall be in place before beginning the pressure test. Anchor blocks shall be allowed to set sufficiently to develop the necessary bond strength between the reinforcing rods and the concrete anchor before beginning the pressure test. A visqueen barrier shall be provided to protect glands, bolts and other miscellaneous materials required for this type of connection from the connector.

8.3.6.4 Fittings that cannot be blocked against an undisturbed earth wall shall be restrained with restrained joint pipe and fittings. See Drawing No. 8.3-3.

8.3.7 Road and Stream Crossings (See Drawing No. 8.3-4)

8.3.7.1 All highway crossings, stream crossings, and other locations determined by the Developer and/or the City require the installation of a steel pipe casing and laying the water main inside the casing.

8.3.7.2 Steel casing shall be of sufficient diameter, size, and strength to enclose the water main and to withstand maximum highway loading. Sizing and wall thickness of the casing are to be approved by the City. The carrier pipe shall be ductile iron, Class 52, restrained joint pipe, unless otherwise approved by the City. Casing spacers shall be installed at 10-foot intervals along the pipeline. The spacers shall be Uni-Flange UFRCS 1300 or approved equal. Sand backfill between the casing and the water main, or other approved means of pipe support, is required. The ends of the casing are to be sealed with low pressure grout or bricked and cemented after installation, backfill, and testing of the pipe are completed.

8.4 Service Connections

(See Drawing Nos. 8.4-1, 8.4-2, 8.4-3, 8.4-4, 8.4-5, 8.4-6, 8.4-7, and 8.4-8)

8.4.1 Conditions applicable to all Water Service Connections

8.4.1.1 All single family residential services shall include, at a minimum, 3/4-inch water meters.

8.4.1.2 The Developer shall submit water service and meter sizing calculations for review and approval by the City for all proposed service connections, except for single family residential services.

- 8.4.1.3 Separate water connections will be required for domestic, fire, and irrigation for all non-single family residential services.
- 8.4.1.4 All service connection shall be separately metered.
- 8.4.1.5 All non-single family residential services shall include required backflow prevention devices to be located outside of any proposed buildings.
- 8.4.1.6 Service connections off of fire hydrant runs shall not be made.

8.4.2 Existing Services

- 8.4.2.1 Prior to construction of new water mains, the Developer shall remove, tag and deliver any existing meters to the City of DuPont and temporarily jumper the meters to maintain service. The City staff will then inspect and overhaul the meters, and deliver them to the construction site when the Developer is ready to reinstall the meters.
- 8.4.2.2 The existing meters shall be relocated at the property line, where applicable. A new meter box shall be furnished by the Developer for each such service. Any meters damaged or clogged during construction will be replaced by the City and back charged to the Developer.
- 8.4.2.3 Following installation, testing and disinfection of water mains, the services shall be connected.

8.4.3 Ductile Iron Service Pipe

Service connections larger than 2-inch diameter shall be ductile iron pipe Class 52.

8.4.4 Polyethylene Service Pipe

- 8.4.4.1 1-1/2-inch and 2-inch-diameter service connections from the water main to the customer's service may be made with high density polyethylene (HDPE) pipe conforming to AWWA C902-78. The 2-inch-diameter services shall be supplied and installed with a 2-inch-diameter ball valve with 2-inch operating nut adapter and valve box at the main in accordance with the Standard Details.
- 8.4.4.2 3/4- and 1-inch-diameter service pipe from the water main to the customer's service shall be made with Performance 5100 Ultra-line ultra high molecular plastic pipe or approved equal.

8.4.4.3 All non-metallic service lines shall be continuous from the water main to the water service meter and shall include locating wire as specified in Section 8.9.

8.4.5 Meter Boxes

Meter boxes shall be Mid-States, Fog-Tite, or Raven, inverted with reading lid, or approved equal, in accordance with the Standard Details.

8.4.6 Service Saddles

All service connections shall be installed with service saddles, which shall be by Ford, in accordance with the Standard Details.

8.4.7 Water Meters

Water meters shall comply with the following standards for Sensus meters or most current Sensus equivalent:

Meter Size	Model	Meter Length	Unit of Measure	Type	Encoder
3/4"	SR II	7-1/2" [1]	Cubic Feet	Displacement	TR-PL & Radio
1"	SR II	10-3/4" [1]	Cubic Feet	Displacement	TR-PL & Radio
1-1/2"	SR	13" [1]	Cubic Feet	Displacement	TR-PL & Radio
2"	SRH	15-1/4" [1]	Cubic Feet	Compound	TR-PL & Radio
3"	SRH w/Strainer	[2]	Cubic Feet	Compound	TR-PL & Radio
4"	SRH w/Strainer	[2]	Cubic Feet	Compound	TR-PL & Radio
6"	SRH w/Strainer	[2]	Cubic Feet	Compound	TR-PL & Radio

8.5 Valves

Valves shall be installed at intervals not to exceed 1,000 feet. Valves shall be installed at each end of easements, unless otherwise approved by the City. Complete manufacturer’s specifications for the valves proposed for use shall be submitted to the City for approval. No valves shall be used which have not been approved by the City.

8.5.1 Gate Valves

- 8.5.1.1 Water main valves, 12 inch and smaller shall be resilient seat gate valves and conform with AWWA C500 and C509, except where superseded by the following: The valves shall be ductile iron body with epoxy coating inside and out with vulcanized resilient rubber wedge seat. The valves shall be non-rising stem, open to the left, and shall be equipped with standard 2-inch square operating nuts. Valves shall be equipped with “o-ring” packing. Valves shall be M&H, Mueller, or approved equal.
- 8.5.1.2 All 1-1/2-inch and 2-inch valves shall be ball valves or gate valves approved by the City. Said ball valves shall be equipped with a slotted operator, and with an adapting 2-inch square operating nut (Ford QT-67, or equal) secured with a stainless steel cotter pin.
- 8.5.1.3 Gate valves shall be set in the ground vertically and shall be opened and shut under pressure to check operation and, at the same time, show no leakage. See “Water Main Testing and Disinfection” Section 8.11 of these Standards for additional testing requirements. Valves 6 inches and larger that are not flanged to other fittings shall be blocked in accordance with the Standard Details.

8.5.2 Butterfly Valves

- 8.5.2.1 Water main valves larger than 12 inches shall be butterfly valves. Butterfly valves shall be Class 150 or better, and shall meet the requirements of AWWA C504. Valves shall be Dresser, M&H, or Pratt.
- 8.5.2.2 Valve shafts shall meet or exceed the strength requirements of AWWA C504 and be one-piece. Packing shall be “o-ring,” or other design approved by the City.
- 8.5.2.3 Butterfly valves to be installed underground shall have sealed mechanical operators, open to the left and have 2-inch standard square operating nuts.

8.5.3 Tapping Tee and Valve

The tapping tee sleeve shall be cast iron or stainless steel with a ductile iron or stainless steel flange. The tapping valve shall meet the specifications of the gate valves. All tapping sleeves and tapping valves shall be pressure tested prior to making connection to the existing main. The assembly shall be installed in accordance with the Standard Details.

8.5.4 Valve Boxes

- 8.5.4.1 Valves boxes shall be Rich 940 or City approved equal and be cast iron with adjustable sections; 18-inch top section and regular 24-inch base section as required. A valve cover marked "WATER" shall be provided.
- 8.5.4.2 Valve boxes shall be set flush in pavement. In gravel shoulder and in unimproved roadway areas, install a protective concrete collar and asphalt pad in accordance with Standard Details. Valve boxes shall be installed such that the slots in the valve box lid shall be oriented in the direction of the pipe. Where valve boxes are in asphaltic pavement, the cover shall be painted as directed by the City.

8.5.5 Valve Stem Extensions

The materials and requirements for the valve stem extension shall be in accordance with Drawing No. 8.5.

8.5.6 Valve Marker Posts

- 8.5.6.1 A concrete valve marker post shall be 4-inch minimum square section and a minimum of 42 inch in length, with beveled edges and containing at least one 3/8-inch x 37-inch bar of reinforcing steel. Valve Marker Posts shall be painted Kelly Moore 1700-64 KEL-GUARD ENAMEL INDIGO BLUE, or City approved substitute.
- 8.5.6.2 Valve markers shall be installed for all valves except fire hydrant valves and valves located in paved areas at a location as directed by the City. The markers shall be set to leave 18 inches exposed above ground. The exposed portion of the markers shall be painted with Kelly Moore 1700-64 KEL-GUARD ENAMEL INDIGO BLUE, or City approved substitute. The valve size and the distance to the valve, rounded off to the nearest foot, shall be stenciled on the marker in 2-inch-high numbers using black paint.

8.6 Fire Hydrants

(See Drawing Nos. 8.6-1 and 8.6-2)

8.6.1 General

- 8.6.1.1 In single-family residential areas, fire hydrants shall be installed at intervals not to exceed 600 feet and/or located no more than 350 feet from the back corner of any proposed lot. In all other areas, fire hydrants shall be installed at intervals not to exceed 300 feet or as required by the City Fire Chief.

- 8.6.1.2 Hydrant runs shall be a maximum of 50 feet in length.
- 8.6.1.3 Fire hydrants shall be a breakaway type and conform to AWWA Standard C502. Fire hydrants shall be M & H Style 929, AVK, Mueller Centurion, or Clow. All fire hydrants shall be approved by the National Board of Fire Underwriters.
- 8.6.1.4 Fire hydrants shall be non-rising stem compression-type which open counter-clockwise, and close with pressure. The main valve opening diameter shall be 5-1/4 inches and the hydrant barrel shall have a diameter of 7 inches unless otherwise specified. The hydrant seat and hydrant seat retaining ring shall be bronze. All external bolts, nuts and studs shall be cadmium plated in accordance with ASTM A165 Type HS or rust proofed by some other process approved by the City. Gaskets shall be of rubber composition.
- 8.6.1.5 Fire hydrants shall be equipped with one 5-inch Storz or equal pumper connection and with two 2-1/2-inch NST hose ports. Ports shall be fitted with renewable bronze nipples locked in place.
- 8.6.1.6 The fire hydrants shall be painted with two coats of Kelly-Moore 1700-63 KEL-GUARD ENAMEL SUNBURST YELLOW, or City approved substitute. See the Standard Details for additional specifications.
- 8.6.1.7 Fire hydrants shall be set as shown in the Standard Details. Fire hydrant ports are to be oriented as approved by the City Fire Chief.
- 8.6.1.8 In some instances, it may be necessary to make a cut or provide fill to set hydrants. Where this occurs, the area for at least a 3-foot radius around the hydrant shall be graded and leveled, and the cut or fill slopes shall be neatly graded by hand, unless otherwise approved by the City and the Fire Chief.
- 8.6.1.9 No tool other than an approved hydrant operating wrench shall be used when opening or closing hydrants.
- 8.6.1.10 Fire hydrants to be relocated shall be as shown on the Standard Details, by installing fittings, new ductile iron pipe and thrust restraint between the gate valve and the fire hydrant. New gaskets shall be installed at each connection.
- 8.6.1.11 All new and relocated hydrants located adjacent to a paved road shall have Type 2 raised pavement markers installed 6 inches from the centerline on the hydrant side of the road. See Section 8.6.3.

8.6.2 Fire Hydrant Guard Posts

8.6.2.1 The guard posts shall be precast reinforced concrete, 9 inches in diameter, 6-feet long. Paint shall be as for fire hydrants. See Section 8.6.1.6.

8.6.2.2 When directed by the City, guard posts shall be set with the tops of the posts at the same elevation as the top of the hydrant. The exposed portion of the posts shall be painted the same as for fire hydrants.

8.6.3 Raised Pavement Markers

Raised pavement markers for fire hydrant locations shall be Type 2, two-way blue and shall conform to Section 8-09 of the WSDOT/APWA Standard Specifications.

8.7 Blowoff and Air Release Assemblies

8.7.1 Blowoff Assemblies

Blowoff assemblies shall be located at the terminus of all dead-end water mains and at all low points of water mains, and shall be installed per Standard Details for “End-Line” and “In-Line” assemblies, as applicable. The blowoff assemblies shall be painted with Kelly Moore 1700-64 KEL-GUARD ENAMEL INDIGO BLUE, or City approved substitute. See Drawing Nos. 8.7-1 and 8.7-2.

8.7.2 Air and Vacuum Release Assemblies

8.7.2.1 Air and vacuum relief assemblies shall be located at all high points of water mains and shall be installed per Standard Details. The air and vacuum relief assemblies shall be painted with Kelly Moore 1700-64 KEL-GUARD ENAMEL INDIGO BLUE, or City approved substitute. See Drawing Nos. 8.7-3 and 8.7-4.

8.7.2.2 Water mains shall be constructed so that the valves may be installed in a convenient location for future access by the City.

8.8 Sampling Stations

(See Drawing No. 8.8)

8.8.1 Sampling stations shall be set at locations approved by the City and shall be installed per Standard Details. A minimum of one sampling station shall be provided per 50 residential units or portion thereof. A minimum of one sampling station shall be provided per plat unless waived by the City.

- 8.8.2 Sampling stations shall be Eclipse No. 88 or City approved equal with a lockable, non-removable, aluminum-cast housing and an all brass waterway. All working parts will be of brass and be removable from above ground. A copper vent tube will enable each station to be pumped free of standing water. The exterior piping shall be galvanized.
- 8.8.3 Each sampling station shall include a ball valve.
- 8.8.4 Sampling stations shall be set in the ground vertically and shall be opened and shut under pressure to check operation. A concrete base shall be provided at finished grade.

8.9 Locating Wire

- 8.9.1 All non-metallic water mains and services shall have 14-gauge solid copper wire and neoprene coating placed in the trench over the water line and the ends brought up into the valve or meter boxes.
- 8.9.2 Locating wire shall be 14-gauge solid copper, with neoprene coating. All connections or splicing shall be made with ILSCO split bolt connectors, Catalog No. 1 KS, or equal.

8.10 Connections to Existing Water Mains

(See Drawing Nos. 8.10-1 and 8.10-2)

8.10.1 General

- 8.10.1.1 Where necessary to connect to existing facilities, the operation of the existing facility shall be maintained while making the connection.
- 8.10.1.2 Wet tap connections shall be installed as shown on the Standard Details and the tapping valve shall remain closed.
- 8.10.1.3 Cut-in tees and crosses shall be installed as shown on the Standard Details and the valves on the branches of the tee or cross shall remain closed.
- 8.10.1.4 At connections of new piping to existing piping where no valve is installed to separate the system, all of the new piping, appurtenances and blocking shall have been installed, disinfected and tested up to the point of cutting into the existing line before the connection is made.

- 8.10.1.5 Provide the City with 48-hours notice prior to making connections to the existing system and proceed only after receiving permission. Assemble all necessary material and equipment 48 hours before starting work to allow the City inspector to examine the material for acceptability. Notify all affected customers at least 48 hours in advance. No cut-in connections or connections of new piping to existing piping will be scheduled on Fridays or Mondays.
- 8.10.1.6 Bolts, flanges, gaskets, couplings and all accessories shall be checked and assembled where possible by the Developer and verified by the City prior to shut down of the water system. Before connection or cut-in, the fittings, pipes, valves, and couplings shall be cleaned and sterilized with chlorine solution in the same manner as provided for the pipeline. The cleaning and sterilizing shall be done immediately prior to installation and in the presence of the City.
- 8.10.1.7 After connection to the existing system, the opening of the valves shall be done with the authorization of, and in the presence of the City's authorized representative.
- 8.10.1.8 The Developer shall not operate any valves or make any connections to the existing water main without prior approval of the City. The Developer shall make the necessary arrangements with the City for the connection to the existing water main.

8.10.2 Water Shutoff

- 8.10.2.1 Where it is necessary to shut off the existing mains to make a connection, the Developer shall notify the City 48 hours in advance of such shutoff and the City will shut off the mains. Once the water has been shutoff, the Developer shall diligently pursue to complete the connection so that the time required for the shut off may be held to a minimum.
- 8.10.2.2 All connections to existing mains shall be completed the same day as they are started. The Developer shall time his operations so that the water will not be shut off overnight or over weekends or during holidays.

8.11 Water Main Testing and Disinfection

8.11.1 General

- 8.11.1.1 All costs for testing and disinfection, including bacteriological sample testing shall be borne by the Developer.

- 8.11.1.2 All water from the City system shall be supplied through a metered double-check backflow assembly per the Standard Details, unless otherwise approved by the City.
- 8.11.1.3 All water mains and services located, or to be located, in City rights-of-way and easements shall be subject to the testing and disinfection requirements specified herein.
- 8.11.1.4 The water main pipes shall be disinfected and tested before being placed in service. Water for testing and disinfecting must be obtained by the Developer by arrangement with the City. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the Developer. Feed for the pump shall be from a barrel or other container, wherein the actual amount of “makeup” water can be measured periodically during the test period.
- 8.11.1.5 Prior to initiation of testing and disinfection procedures, the contractor shall complete the installation of the water main and all appurtenances such as valves, hydrants, hydrant collars, blowoffs, air release valves, service lines and meter setters.
- 8.11.1.6 The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.
- 8.11.1.7 Defective materials or workmanship, discovered as a result of the tests, shall be replaced by the Developer at the Developer's expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be rerun at the Developer's expense, until a satisfactory test is obtained.
- 8.11.1.8 It is the intent of the testing procedure to demonstrate the integrity of all water main system components the contractor installs in City right-of-way and easements. If the contractor’s work ends at the meter setter, the 150 psi leakage test must include the setter. The City will provide a jumper for the meter and the contractor is responsible for capping the outlet of the setter. The meter setter may be capped on the lot side of the sidewalk, at the contractor’s option. For meter setters 1-1/2 inch and larger, the contractor shall provide gaskets and bolts.

8.11.1.9 The contractor may develop his own sequence for the specified tests or perform partial tests prior to City witnessed tests. Before final acceptance, the contractor shall have successfully completed and passed the specified tests described in Sections 8.11.2, 8.11.3, and 8.11.4, as witnessed by the City.

8.11.2 Hydrostatic Test

The pipeline shall be subjected to a hydrostatic pressure test of 200 pounds per square inch (200 psi) for a period of not less than 15 minutes for all lines with gate valves 12 inch and smaller. System will pass if there are no sudden pressure drops.

8.11.3 Leakage Test

8.11.3.1 In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline. The leakage test shall be conducted at one hundred fifty pounds per square inch (150 psi) for a period of not less than two hours. The quantity of water lost from the main shall not exceed the number of gallons per hour determined by the formula:

$$L = \frac{ND(P)^{0.5}}{7,400}$$

In which L = allowable leakage, gallons/hour
N = number of joints in the length of pipeline tested
D = nominal diameter of the pipe in inches
P = average test pressure during the leakage test, psi.

8.11.3.2 When the building supply line has been extended to the point where a shutoff valve or cap is installed, the line shall be tested at 150 psi to demonstrate that there are no leaks at the meter setter/supply line connection. This connection shall be visibly checked by the City.

8.11.4 Main Line Valve Test

All main line valves shall be tested to 150 psi differential across the gate or butterfly valve. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrostatic tests shall be performed on every complete section of water main between two valves, and each valve shall withstand the same test pressure as the pipe with no pressure active in the section of pipe beyond the closed valve. System will pass if there are no sudden pressure drops.

8.11.5 Disinfection

8.11.5.1 The pipe shall also be disinfected when being tested. As each length of pipe is laid, calcium hypochlorite or other disinfecting agent, having an available chlorine content of about 65 percent shall be placed in the pipe in sufficient quantities to give a dosage of about 50 parts per million available chlorine, calculated on the volume of water which the pipe will contain.

8.11.5.2 This may be placed in the upstream or high pressure end of the pipe. The following table shows the amount of high test calcium hypochlorite which should be used in each 20-foot length of pipe of various sizes:

<u>PIPE SIZE</u> (Inside Diameter In Inches)	<u>HIGH TEST HYPOCHLORITE REQUIRED</u> (Ounces per 20-foot length to give 50 ppm available chlorine)
2, 3, 4 & 6	0.4
8, 10 & 12	0.7

8.11.5.3 The calcium hypochlorite or other disinfecting agent used for this purpose shall be furnished by the Developer.

8.11.5.4 When the line is completed and ready to disinfect, water shall be allowed the flow in slowly, so as to not displace the chlorine agent, until it appears at the far end of the line. The system shall then be allowed to stand for at least 24 hours. The line shall then be flushed through the fire hydrants or into the next section, until a test shows no more than 0.2 parts per million available chlorine. If any of the materials need to be replaced, the line shall again be disinfected and tested. The line may be pressure tested at the same time it is disinfected.

8.11.5.5 Disposal of chlorinated water shall be in accordance with Washington State Department of Ecology requirements.

8.11.5.6 The water system will not be acceptable to the City until receipt of a satisfactory report from the Washington State Department of Health on water samples submitted to that office for bacteriological analysis.

9. GENERAL UTILITIES

9.1 Standard Utility Locations Within the Right-of-Way

Utilities within the existing or proposed right-of-way shall be installed in the following locations:

<u>Utility</u>	<u>Designated Side of Center Line</u>
Sanitary Sewer	5 ft. south or west
Water	5 ft. north or east
Storm Drainage	north or east
Gas	south or west
Telephone	south or west
Power	south or west

Where existing utilities or storm drains are in place, new utilities shall conform to these Standards as nearly as practical and yet be compatible with the existing installations. Exceptions may be approved by the City when necessary to meet special requirements only if the public's best interest is served.

9.2 Underground Utility Installation

9.2.1 Utility Cuts on Existing Traveled Roads

In accordance with City Ordinance 480 and its amendments, all pavement types shall not be cut for a period of 5 years after the pavement has been constructed or resurfaced. In cases of emergency or construction failures or if all alternatives to pavement cutting have been exhausted, provisions to allow cutting of the pavement may be obtained if approved by the City. Provisions shall be conditioned on providing a standard asphalt patch and minimum 150 linear foot overlay for asphalt concrete pavement or standard cement concrete restoration for cement concrete pavements, unless otherwise approved by the City.

9.2.1.1 All final asphalt cuts will be made by sawcutting; wheel or jackhammer cuts will not be allowed unless the entire street is to be overlaid.

9.2.1.2 Backfill

A. All backfill under asphalt paving and/or within four feet of the edge of pavement will be crushed rock meeting WSDOT/APWA Standard Specification for crushed surfacing or other material deemed suitable by the City.

- B. All backfill under asphalt paving will be placed in layers and each layer will be mechanically compacted using vibratory compactors capable of attaining the required compaction. Minimum compaction for all trenches under asphalt or within 4 feet of the edge of pavement will be 95 percent of the Standard Proctor Density. Minimum density for all other areas within the public right-of-way shall be 90 percent of the Standard Proctor Density. Inspection and/or testing, if required by the City, shall be at the sole expense of the Developer.

9.2.1.3 Pipelines, Cable, and Wiring

- A. All buried pipelines, cable, or wiring installed within the public right-of-way shall have at least 36-inch minimum cover unless written approval by the City is secured prior to actual construction.
- B. All non-metallic pipelines shall have 16 gauge minimum size copper locator wires buried with the pipe. Locator wires shall be brought to the surface at approximate 400-foot intervals to allow locators to connect to the locator wires. Connection to residential gas meters or telephone pedestals will serve to meet this requirement.
- C. All utilities will be installed in conduit where they cross or lie under the traveled portion of the roadway or where they lie within two feet of the edge of pavement. Piping used as conduit shall be appropriately sized and shall be at least Schedule 40 PVC where other regulations do not exist and/or take precedence.

9.2.1.4 Restoration (See Drawing Nos. 9.2-1 and 9.2-2)

- A. A temporary patch of cold mix asphalt shall be installed on all asphalt cuts at the completion of the backfill and compaction process and at the end of each day during which a project is ongoing. Patches shall be maintained to conform to the original cross section and grades of the surrounding road. Required repairs to trench patches must be made within 24 hours when repairs are required to maintain the safety of the public roadway. Where Developer's, their agents or employees fail to make repairs required by the City within 24 hours, the City may cause the repairs to be made and the total cost of those repairs together with the City's overhead and attorney fees shall be borne by the Developer or the Developer's

bonding company. No new permits will be issued and no work will be allowed on other existing permits while any person, company, or entity is in default of any of the provisions of this ordinance.

- B. Final restoration must be completed as soon as possible using two-inch minimum thickness of Class B Asphalt Concrete Pavement (ACP). All patches will be constructed using best practices and are required to meet or exceed WSDOT/APWA Standard Specifications for thickness of asphalt, smoothness, and compaction. Sealing of all patch edges with hot asphalt following completion of each patch is required.
- C. Overlay's will be constructed of ACP meeting the WSDOT requirements for Class B ACP and will be at least 0.10 foot in thickness.
- D. On crossings required to be opened to traffic prior to final trench restoration, steel plates may be used as approved by the City.

9.2.2 On Proposed Roads (e.g., New Subdivisions)

Backfill compaction for trenches within the roadway of roads not open to public travel may be achieved throughout the entire depth of the trench by mechanical compaction as described in Section 9.2.1.2(B).

9.2.3 Controlled Density Backfill (See Drawing No. 9.2-3)

As an alternative to mechanical compaction, trench backfill above the bedding and below the base course or ATB may be accomplished by use of controlled density backfill (CDF) in a design mixture approved by the City.

9.2.4 Testing

- 9.2.4.1 Consistent with the above and prior to placing any surface materials on the roadway, it shall be the responsibility of the developer to provide density test reports certified by a professional engineer. A minimum of one test shall be taken within every 500 feet of trench length and at depths up to 50 percent of trench depth, or as directed by the City. Compaction of laterals or service line trenches shall be tested where directed by the City. Testing of CDF shall be in accordance with ASTM D4832.

9.2.4.2 Whichever compaction method the installer elects, the backfill below four feet must test to be not less than 90 percent maximum density and the upper four feet of backfill must test not less than 95 percent maximum density. Where this cannot be achieved, all affected backfill in the top 4 feet shall be removed and replaced by gravel base and mechanically compacted to 95 percent.

9.2.5 Notification and Inspection

9.2.5.1 Consistent with Section 10.2 of these Standards, any developers, utilities, or others intending to trench in existing or proposed traveled City roads shall notify the City not less than 2 working days prior to doing the work. This notification shall include:

- A. Location of the work.
- B. Method of compaction to be used.
- C. Day and hour when compaction is to be done.
- D. Day and hour when testing is to be done.

9.2.5.2 As set forth in Section 10.3 of these Standards, failure to notify may necessitate testing or retesting by the City at the expense of the Developer or Utility. Furthermore, the work may be suspended pending satisfactory test results.

9.2.6 Final Utility Adjustment to Finish Grade

9.2.6.1 All utility covers which are located on proposed asphalt roadways shall be temporarily placed at subgrade elevation prior to placing crushed surfacing material.

9.2.6.2 Water meter boxes shall not be located within sidewalks, driveways, or driveway approaches, unless otherwise approved by the City. Where driveway locations have not been established, meter boxes shall be located along the center of the lot line. If an existing meter box falls within sidewalks, driveways, or driveway approaches, the meter box shall be relocated.

9.2.6.3 Final adjustment of all covers and access entries shall be made following final paving by (See Drawing Nos. 9.2-4 and 9.2-5):

9.2.6.3.1 Sawcutting or neat-line jackhammering of the pavement around lids and covers. Opening should not be larger than 12 inches beyond the radius of the cover.

- 9.2.6.3.2 Removing base material, surfacing course, and frame; adding raising bricks; replacing frame and cover no higher than finished grade of pavement and no lower than 1/2 inch below the pavement.
- 9.2.6.3.3 Place 8-inch minimum thickness of cement concrete Class 3000 to within 2 inches of the top.
- 9.2.6.3.4 Filling the remaining two inches with asphalt concrete Class B hot mix, compacted and sealed to provide a dense, uniform surface.
- 9.2.6.3.5 Final adjustment of all covers and access entries shall be completed within 30 days of final paving.

9.2.7 Final Cleanup, Restoration of Surface Drainage and Erosion Control: In addition to restoration of the road as described above, the responsible utility shall care for adjacent areas in compliance with Sections 1-04.11 “Final Cleanup” and 8-02 “Roadside Restoration” in the WSDOT/APWA Standard Specifications. In particular:

- 9.2.7.1 Streets and roads shall be cleaned and swept both during and after the installation work.
- 9.2.7.2 Disturbed soils shall be final graded, seeded and mulched after installation of utility. In limited areas, seeding and mulching by hand using approved methods will be acceptable.
- 9.2.7.3 Ditch lines with erodible soil and subject to rapid flows may require seeding, jute matting, netting, or rock lining to control erosion.
- 9.2.7.4 Any silting of downstream drainage facilities, whether ditches or pipe and catch basins, which results from the utility installation shall be cleaned out and the work site restored to a stable condition as part of site cleanup.

10. CONSTRUCTION CONTROL AND INSPECTION

10.1 Basis for Control of the Work

- 10.1.1 Work performed in the construction or improvement of City roads, stormwater system, and/or water system, whether by or for a private developer, by City forces, or by City contractor, shall be done in accordance with these Standards, approved drawings, and specifications (Section 1.4). It is emphasized that no work may be started until such drawings are approved. Any revision to such drawings shall be approved by the City before being implemented.
- 10.1.2 The City will have authority to enforce the Standards as well as other referenced or pertinent specifications. The City will determine the amount of inspection required and will appoint project engineers, assistants, and inspectors as necessary to inspect the work. The Developer shall pay all inspection costs.
- 10.1.3 It is the responsibility of the developer, contractor or their agents to have an approved set of plans, permits, Standard Specifications, and the City's Standards available on the job site wherever work is being accomplished.
- 10.1.4 Failure to comply with the provisions of these Standards may result in stop work orders, removal of work accomplished, or other penalties as established by ordinance.

10.2 Subdivision, Commercial, and Right-of-Way Inspection

On all roads, stormwater system, and/or water system construction, proposed or in progress, which relates to subdivision, commercial, and right-of-way development, control and inspection will be done by the City. Table 10.2-1, Testing and Sampling Frequency Guide, indicates the minimum testing frequency required. The developer shall submit all testing results to the City.

Unless otherwise instructed by the City, construction events which require monitoring or inspection are identified as follows:

- 10.2.1 **Preconstruction Conference:** Four working days prior notice. Conference must precede the beginning of construction and include contractor, designing engineer, utilities, and other parties affected. Plan approvals and permits must be in hand prior to the conference. The applicant is responsible for notifying all affected parties.
- 10.2.2 **Clearing and Temporary Erosion/Sedimentation Control:** Two working days notice prior to initial site work involving drainage and installation of temporary water retention/detention and siltation control. Such work to be in accordance with the approved drawings.

- 10.2.3 Utility Installation: Two working days notice prior to trenching and placing of storm sewers, sanitary sewer, water, gas, power, telephone, and cable TV lines.
- 10.2.4 Utility and Storm Drainage Backfill and Compaction: One working day notice before backfill and compaction of storm sewers and underground utilities.
- 10.2.5 Subgrade Completion: One working day notice at stage that underground utilities and roadway grading are complete, to include placement of gravel base if required. Inspection to include compaction tests and certifications described in Section 10.4.
- 10.2.6 Curb and Sidewalk Forming: One working day notice to verify proper forming and preparation prior to pouring concrete.
- 10.2.7 Curb and Sidewalk Placement: One working day notice to check placement of concrete.
- 10.2.8 Crushed Surfacing Placement: One working day notice to check placement and compaction of crushed surfacing base course and top course.
- 10.2.9 Paving: Three working days notice in advance of paving with asphalt or Portland cement concrete.
- 10.2.10 Structural: Three working days notice prior to each of critical stages such as placing foundation piling or footings, placement and assembly of major components, and completion of structure and approaches. Tests and certification requirements will be as directed by the City.
- 10.2.11 Final Construction Inspection: Ten working days prior to overall check of road or drainage project site, to include completion of paving and associated appurtenances and improvements, cleaning of drainage system, and all necessary cleanup. Prior to approval of construction work and acceptance of City right-of-way, water, and/or stormwater improvements by council, the following must be submitted and approved by City staff: warranty and maintenance bond, performance bond for outstanding work, easement documents, final plat or right-of-way deeds, the developer/contractor shall pay any required fees, provide a certificate of monumentation, submit one photo mylar or ink-on-mylar set, two sets (minimum) of black line final, corrected drawings (as-built) reflecting all minor and design plan changes of the road and drainage systems. The record drawings shall be mylars. The City shall specify the number of black line sets as warranted by the type of improvement. Mylar drawings shall not have shading or adhesive addition in any areas. See Section 1.9 for requirements.
- 10.2.12 Final Maintenance Inspection: Thirty days prior to the end of the maintenance period. Prior to release of the maintenance guarantee, there shall be successful completion of the maintenance period as described in Section 1.7, repair of any failed facilities and the payment of any outstanding fees.

TABLE 10.2-1**Testing and Sampling Frequency Guide**

<u>Item</u>	<u>Type of Tests</u>	<u>Min. No.</u>	<u>Frequency</u>
Gravel Borrow	Grading and SE	1 Each	1-4000 Ton
Sand Drainage Blanket	Grading	1 Each	1-4000 Ton
Crushed Surf, Top Course	Grading, SE, and Fracture	1 Each	1-2000 Ton
Crushed Surf, Base Course	Grading, SE, and Fracture	1 Each	1-2000 Ton
Ballast	Grading, SE, and Dust Ratio	1 Each	1-2000 Ton
Backfill/Sand Drains	Gradation	1 Each	1-2000 Ton
Gravel Backfill for:			
Foundations	Grading, SE, and Dust Ratio	1 Each	1-1000 Ton
Walls	Grading, SE, and Dust Ratio	1 Each	1-1000 Ton
Pipe Bedding	Grading, SE, and Dust Ratio	1 Each	1-1000 Ton
Drains	Gradation	1 Each	1-100 Ton
PCC Structures: (Sidewalk, Curb and Gutter, Foundations)			
Course Aggregate	Gradation	1 Each	1-1000 Ton
Fine Aggregate	Gradation	1 Each	1-500 Ton
Consistency	Slump	1 Each	1-100 CY
Air Content	Air	1 Each	1-100 CY
Cylinders (28 day)	Compressive Strength	2 Each	1-100 CY
Cement:	Chemical and Physical Certification	1	1-Job
Asphalt Cement Concrete:			
Blend Sand	SE	1 Each	1-1000 Ton
Mineral Filler	S.G. and PI, Certification	1	1-Job
Completed Mix	Fracture, SE, Grading Asphalt Content Compaction	2 Each	5-400 Ton
Asphalt Materials	Certification	1	1-Job
Rubberized Asphalt	Certification	1	1-Job
Compaction Testing:			
Embankment	Compaction	1 Each	1-500 LF
Cut Section	Compaction	1 Each	1-500 LF
Crushed Surf-Top Course	Compaction	1 Each	1-500 LF
Crushed Surf-Base Course	Compaction	1 Each	1-500 LF
Ballast	Compaction	1 Each	1-500 LF
Trench Backfill	Compaction	1 Each	1-500 LF

SE = Sand Equivalency

SG = Specific Gravity

PI = Plasticity Index

10.3 Penalties for Failure to Notify for Inspection

Timely notification by the developer as noted above is essential for the City to verify through inspection that the work meets the appropriate standards. Failure to notify in time may oblige the City to arrange appropriate sampling and testing after-the-fact, with certification. Costs of such testing and certification shall be borne by the developer. At the time that such action is directed by the City, the City may prohibit or limit further work on the development until all directed tests have been completed and corrections made to the satisfaction of the City.

10.4 Embankment Construction Control in Developments

The provisions of Section 2-03 of the WSDOT/APWA Standard Specifications apply in all respects to development construction unless otherwise approved or instructed in writing by the City. The following elements are mentioned for clarification and emphasis:

10.4.1 Embankment and Cut Section Compaction: Compaction of the top 2 feet of fill subgrade and top 6 inches of cut subgrade shall meet a minimum 95 percent of maximum density in accordance with WSDOT/APWA Standard Specifications, Section 2-03.3(14)C - Method B. Subgrade fill below the top two feet shall be compacted to 90 percent of maximum density.

10.4.2 Testing for Density:

10.4.2.1 Prior to placing any surfacing material on the roadway, it will be the responsibility of the developer/contractor to provide density test reports reviewed and approved by a professional engineer. Optimum moisture content and maximum density shall be determined by methods cited in Section 2-03.3(14)D of WSDOT/APWA Standard Specifications or by other test procedures approved by the City. See Table 10.2-1 for testing frequency. For work to be accepted, tests must show consistent uniform density as required by tests referenced above.

10.4.2.2 Refer to Table 10.2-1 for testing and sampling frequency requirements.

10.4.2.3 In cases where tests do not meet the minimum standard, corrective action shall be taken such as adding water, aerating, replacing material or applying more compactive effort as directed by the developer's engineer. Retests shall show passing densities prior to placing the next lift of subgrade fill.

- 10.4.2.4 Finishing Subgrade: After the subgrade preparation has been completed, it shall be thoroughly checked by the developer/contractor using a level, string line, crown board, or other means to determine that the subgrade conforms to the typical section or special plan conditions prior to placing any surfacing material.

10.5 Traffic Control in Development Construction

- 10.5.1 Interim Traffic Control: The developer/contractor shall be responsible for interim traffic control during construction on or along traveled City streets. When street or drainage work is to be performed on City streets that are open to traffic, the developer/contractor will be required to submit a traffic control plan for approval by the City prior to beginning the work. Traffic control shall follow the guidelines of Section 1-07.23 of the WSDOT/APWA Standard Specifications. All barricades, signs and flagging shall conform to the requirements of the MUTCD Manual. Signs must be legible and visible and should be removed at the end of each work day if not applicable after construction hours.
- 10.5.2 Temporary Road Closures and Detours: When temporary road closures cannot be avoided the developer/contractor shall post "To Be Closed" signs a minimum of five days prior to the closing. The types and locations of the signs shall be shown on a detour plan. A detour plan must be prepared and submitted to the City at least 10 working days in advance, and approved prior to closing any City road. In addition, the developer/contractor must notify, in writing, local fire, school, law enforcement authorities Pierce County transit, and any other affected persons as directed by the City at least five days prior to closing.
- 10.5.3 Haul Routes: If the construction of a proposed development is determined by the City to require special routing of large trucks or heavy construction equipment to prevent impacts to surrounding roads, residences or businesses, the developer/contractor shall be required to develop and use an approved haul route.

When required, the haul route plan must be prepared and submitted to the City and approved prior to beginning or continuing construction. The haul route plan shall address routing, hours of operation, signage and flagging, daily maintenance, and restoration of City right-of-way.

If the developer/contractor's traffic fails to use the designated haul route, the City may prohibit or limit further work on the development until such time as the requirements of the haul route are complied with.

10.6 City Forces and City Contract Road Inspection

Road construction performed by City forces or by contract for the City will be inspected under the supervision of the City.

10.7 Call Before You Dig

Developers are responsible for timely notification of utilities in advance of any construction in right-of-way or utility easements. The utility One-Call Center phone number 1-800-424-5555 should be prominently displayed on the work site.

11. GENERAL NOTES AND DRAWINGS

11.1 General Notes (Street Construction)

1. A preconstruction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.
2. A copy of the approved roadway drawings must be on the job site whenever construction is in progress.
3. All workmanship and materials shall be in accordance with City of DuPont's Public Works Standards and Stormwater Management Manual and the most current edition of the State of Washington Standard Specifications for Road, Bridge, and Municipal Construction.
4. It is the responsibility of the Contractor to provide adequate temporary traffic control to ensure traffic safety during construction activities. Therefore, the Contractor shall submit a traffic control plan to the Public Works Department at least 48 hours prior to starting any work in the right-of-way. All traffic control devices shall conform to the "Manual on Uniform Traffic Control Devices" (MUTCD).
5. All curb and gutter, street grades, sidewalk grades, and any other vertical and/or horizontal alignment shall be staked by a professional engineer or surveying firm capable of performing such work.
6. Any roadway signage or striping removed or temporarily moved by the Contractor shall be restored so as to meet the current MUTCD standards.
7. Where new asphalt joins existing, the existing asphalt shall be cut to a neat vertical edge and tacked with Asphalt Emulsion type CSS-1 in accordance with the standard specifications. The joint shall be sealed with grade AR-4000W paving asphalt.
8. Compaction of subgrade, rock, and asphalt shall be in accordance with the WSDOT/APWA Standard Specifications. See City of DuPont Public Works Standards Table 10.2-1 for testing and sampling frequencies. Density test reports will be required for all public roadways.
9. Form and subgrade inspection by the City is required before placing concrete. Twenty-four hours advance notice is required for the scheduling of inspection.
10. Call underground utility locate line, 1-800-424-5555, prior to any excavation.
11. Dead-end streets shall be appropriately signed and barricaded.

12. Where a sidewalk is to be constructed above a slope or adjacent to a rockery or retaining wall, where the lowest finished elevation of the slope, rockery, or retaining wall is to be 30 inches or more below the finished elevation of the sidewalk, a safety railing shall be required when:
 - (a) The plane of the wall face is less than 4 feet in horizontal distance from the outside edge of the sidewalk.
 - (b) The plane of the wall face is greater than 4-foot horizontal distance to the outside edge of the sidewalk, but the slope down to the wall top exceeds three to one.
 - (c) The slopes adjacent to the sidewalk average greater than two to one.

11.2 Erosion/Sedimentation Control Notes

The Contractor shall provide erosion control methods according to the Washington State Department of Ecology's (WDOE) "Stormwater Management Manual for Western Washington." The following notes are only a few of the minimum requirements and should not be interpreted to exclude any erosion control practices as specified in the WDOE stormwater manual.

1. All limits of clearing and areas of vegetation preservation as prescribed on the plan shall be clearly flagged by the Engineer in the field and observed during construction.
2. All required sedimentation/erosion control facilities must be in operation prior to land clearing and/or other construction to insure that sediment laden water does not enter the natural drainage system. All erosion and sediment facilities shall be maintained in a satisfactory condition until such time that clearing and/or construction is completed and potential for on-site erosion has passed. The implementation, maintenance, replacement and additions to erosion/sedimentation control systems shall be the responsibility of the Contractor.
3. The erosion and sedimentation control systems depicted on this drawing are intended to be minimum requirements to meet anticipated site conditions. As construction progresses and as unexpected or seasonal conditions dictate, the Contractor should anticipate that more erosion and sedimentation control facilities will be necessary to insure complete siltation control on the proposed site. During the course of construction, it shall be the obligation and responsibility of the Contractor to address any new conditions that may be created by his activities and to provide additional facilities, over and above minimum requirements, as may be needed to protect adjacent properties and water quality of the receiving drainage system.

4. At no time shall more than 1 foot of sediment be allowed to accumulate within a catch basin. The Contractor shall be responsible for removing and disposing of the sediment. All catch basins, conveyance lines and ditches along **[street names]** shall be cleaned prior to paving.
5. The Contractor shall remove material dropped, washed or tracked from vehicles onto the City right-of-way or into the storm drainage system on **[street names]**. Debris shall not be washed into the storm drainage system.
6. Temporary erosion control facilities shall be inspected weekly and maintained within 24 hours following a storm event. Sediment shall be removed to ensure the facilities will function properly. The facilities shall be satisfactorily maintained until construction is completed and the potential for on-site erosion has passed.
7. All storm drain inlets made operable during construction shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or otherwise treated to remove sediment.
8. No disturbed soil shall remain unstabilized for more than two days.
9. Sediment trap/pond baffles shall be embedded in side slopes.

Construction Sequence

1. Install filter fabric and N.G.P.E. fence where indicated.
2. Identify limits of clearing.
3. Install rock-lined construction entrance.
4. Clear to limits shown on Drawings.
5. Rough grade roadway as designed and install interceptor ditches.
6. Install sediment traps and ponds.
7. Install sanitary sewer system.
8. Install domestic water system.
9. Install storm drainage system.

11.3 General Notes (Water System Construction)

1. All irrigation crossings shall have schedule 80 sleeves and the size shall be per the approved irrigation drawings.
2. Light poles shall be located a minimum of 3 feet from all underground utilities, including water meters. Light poles shall be located a minimum of 5 feet from fire hydrants.
3. Water mains and fittings to be installed shall be ductile iron for all sizes, unless specifically noted otherwise. The class of the ductile iron pipe shall be thickness Class 52 for all diameters.
4. Water mains shall maintain a minimum of 3 feet and a maximum of 5 feet of cover.
5. Utility crossings having less than 1 foot of vertical separation shall be constructed with Controlled Density fill (CDF) to prevent possible damage to either utility.
6. Water main deflections at joints are not to exceed manufacturer's recommendations plus an additional factor of safety of 50 percent.
7. Identify a minimum horizontal separation of 10 feet between sanitary sewer mains and water mains, both existing and proposed.
8. For proposed water mains, identify restrained joint fittings and push-on joints at locations where thrust blocks will not have sufficient undisturbed adjacent area for bearing.
9. Water service connections shall be made perpendicular to the main.
10. The water main pipes shall be disinfected and tested before being placed in service. All water main testing and disinfection shall be per City of DuPont Public Works Standards.
11. Water main stubouts that are not used shall be disconnected at the main, with a blind flange installed at the tee.
12. Tee connections to existing water mains shall be wet taps.
13. Separate water connections will be required for domestic, fire, and irrigation. All services shall include backflow prevention devices located outside of any proposed buildings.

14. All fire protection system installations, including pipelines and double detector check assemblies, are subject to the construction standards of NFPA 24 and to the inspection and testing requirements of the City of DuPont Fire Department.
15. The fire protection systems, including the backflow prevention devices, underground fire service lines, and fire department connections, are subject to separate review, permitting, and approval by the City of DuPont Fire Department.
16. Relocate the Fire Department Connections (FDCs) to planter islands or other locations, as feasible, to be outside of the building collapse zones.
17. The applicant shall furnish meter sizing calculations for domestic and fire water services. The sprinkler system design, including confirmation of the provided sizing for the fire line components shall be reviewed and approved by the City Building Department and Fire Department as part of the building permit process. Each fire line connection to a City water main will require a double detector check valve assembly (DDCVA) in an underground vault and a Fire Department Connection (FDC) within 50 feet of a fire hydrant.

12. STANDARD DETAILS

MISCELLANEOUS DETAILS

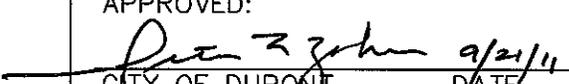
**LIST OF
MISCELLANEOUS DETAILS**

Construction Approval Block	1-1
As-built Certification Stamp	1.9-1

APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
City of Dupont

These drawings are approved for construction for a period of 12 months from the date shown hereon. The City reserves the right to make revisions, additions, deletions, or modifications should construction be delayed beyond this time limitation. The City, by approving these drawings, assumes no liability in regards to their accuracy or omissions.

CITY OF DUPONT			
CONSTRUCTION APPROVAL BLOCK			
APPROVED:  CITY OF DUPONT			DWG. NO. 1-1
DATE: 9/11	DRWN: J.C.	CHKD: D.M.	SCALE: NO SCALE

AS-BUILT CERTIFICATION:

I HEREBY DECLARE TO THE BEST OF MY KNOWLEDGE THAT THE INFORMATION SHOWN HEREON REFLECTS THE "AS-CONSTRUCTED CONDITIONS." THIS CERTIFICATION IS BASED UPON WORK PREPARED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING AND/OR SURVEYING PRACTICE.

INSERT STAMP

(JOHN SMITH, L.S. NO. 12345, OR P.E. NO. 12345)

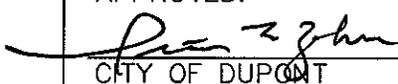
DATE: _____

NOTES:

****FOR REFERENCE ONLY****

****DO NOT ADD NOTES TO SHEETS****

1. PER CITY OF DUPONT GIS ORDINANCE NO. 97-559, THE OWNER'S REGISTERED LAND SURVEYOR OR ENGINEER SHALL CERTIFY THE ACCURACY OF THE RECORD DRAWINGS AND SHALL AFFIX HIS SEAL AND SIGNATURE TO ALL SHEETS CHANGED FROM THE APPROVED SET OF CONSTRUCTION DRAWINGS..
2. ON ALL SHEETS WITH NO CHANGES FROM THE APPROVED SET OF CONSTRUCTION DRAWINGS, ADD A LABEL THAT READS "**RECORD DRAWING**" WITH THE CURRENT DATE (e.g. **RECORD DRAWING MM/DD/YY**).

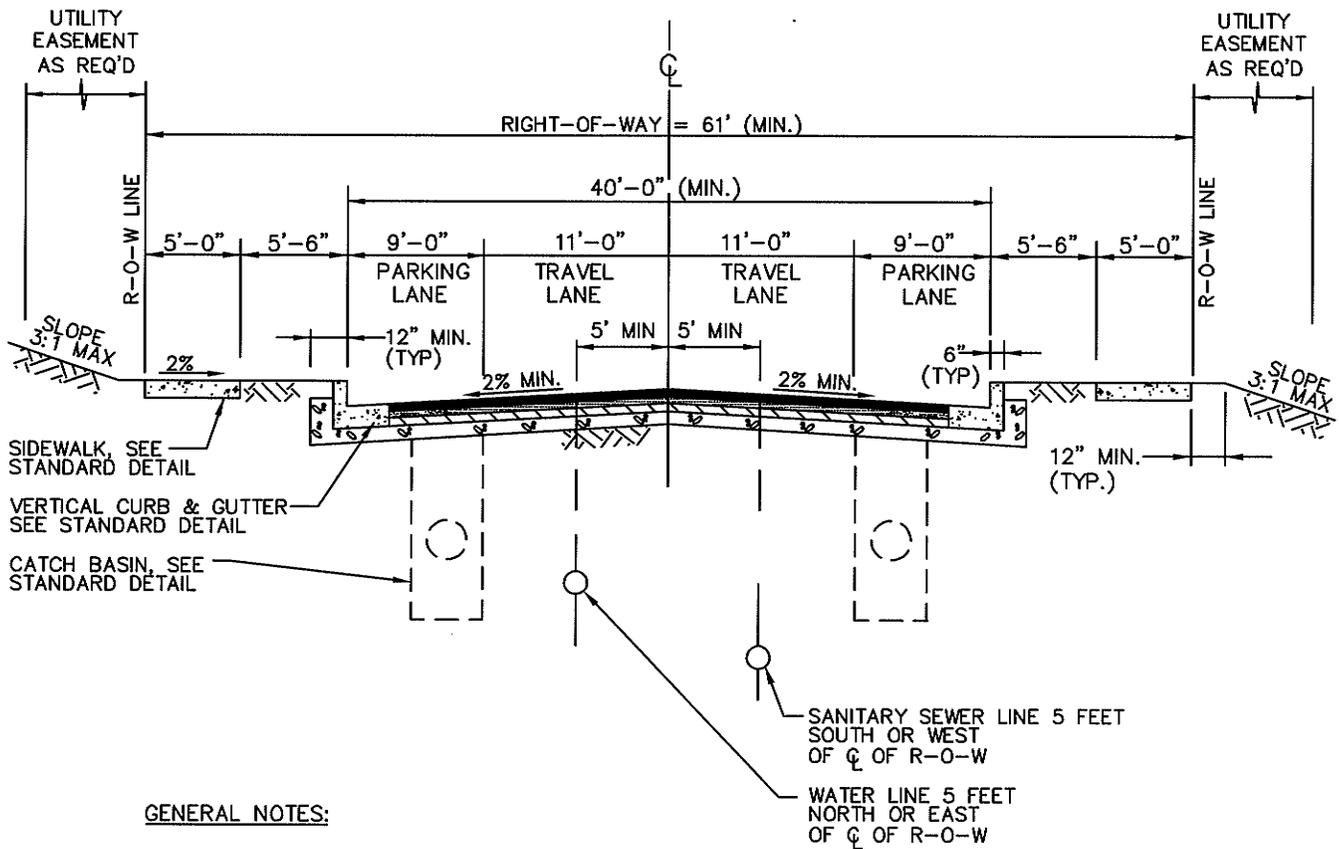
CITY OF DUPONT			
ASBUILT CERTIFICATION STAMP			
APPROVED:  CITY OF DUPONT			DWG. NO. 1.9-1
DATE: 9/11	DRWN: J.C.	CHKD: D.M.	SCALE: NO SCALE

STREET STANDARD DETAILS

LIST OF STREET STANDARD DETAILS

Commercial Access Street - Office/Retail Village	2.4-2.1
Commercial Access Street - Town Center/Mixed Use	2.4-2.2
Commercial Access Street - Business and Technology Park	2.4-2.3
Commercial Access Street - Business and Technology Park (Adjacent to Open Space/Sensitive Area)	2.4-2.4
Industrial Access Streets - Major	2.4-2.5
Industrial Access Streets - Minor	2.4-2.6
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Urban Residential Street - Sub Collector	2.4-3.2
Urban Residential Street - Access Street	2.4-3.3
Urban Residential Street – One Way Access Loop	2.4-3.4
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Concrete Alley Approach	2.9-2
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Neighborhood Traffic Circle Details	2.25-2
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Curb Ramp	3.3-2
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Pavement Markings	4.5-1
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Crosswalk Detail	4.5-3
Roadway Survey Case and Cover Monument	5.2-1
Roadway Survey Surface Monument	5.2-2
Off-Roadway Survey Monument	5.2-3
Mailbox Detail	5.3-1
Collection Box Unit (C.B.U.) Mailbox Installation	5.3-2
Rock Wall Detail	5.5-1
Street Tree Standards	5.7-1

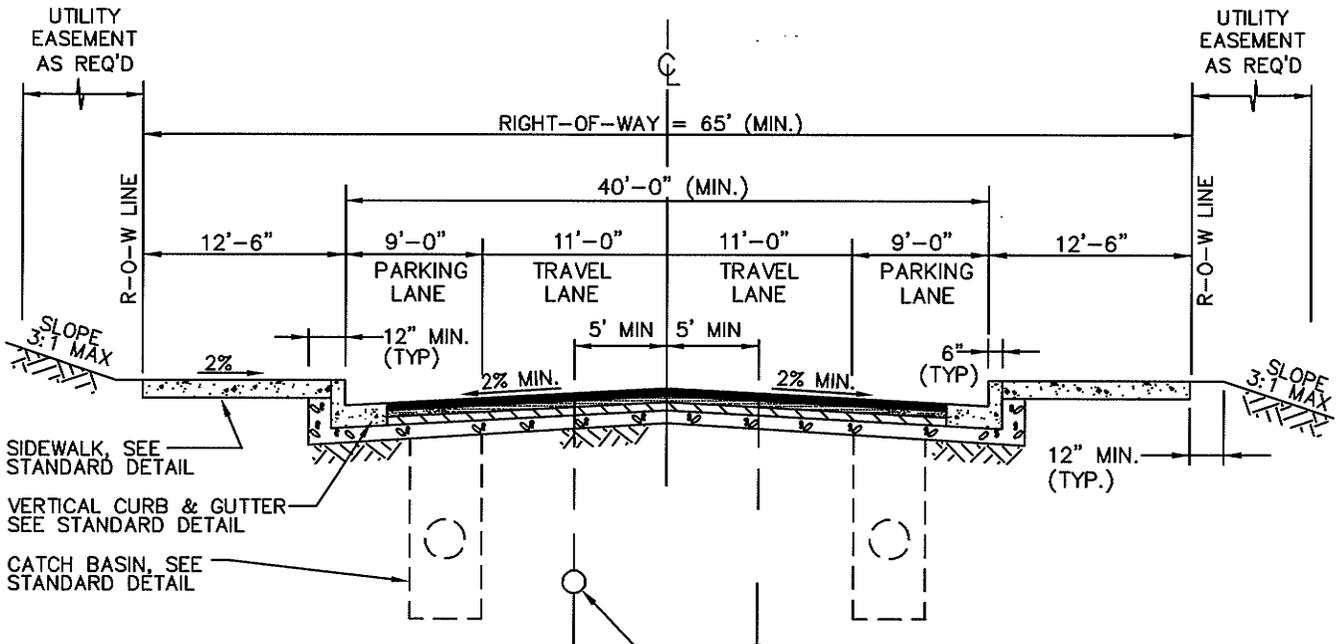
Street Tree Planting and Staking Detail	5.7-2
Bollard Detail	5.10
Vehicular Control Signs	5.12-1
Typical Street Name Sign	5.12-2
Street Sign Detail	5.12-3
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Catch Basin Type 2	7.4-3
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Asphalt Diamond Patch	9.2-2
CDF Encasement	9.2-3
Valve Box Adjustment	9.2-4
Manhole Grade Adjustment	9.2-5



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS SEE TABLE 2.4-2 OF THE PUBLIC WORKS STANDARDS
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

CITY OF DUPONT			
COMMERCIAL ACCESS STREET OFFICE/RETAIL VILLAGE			
APPROVED: <i>John E. T. N.</i> CITY OF DUPONT			DWG. NO. 2.4-2.1
DATE: 9/11		DRWN: E.T.	CHKD: T.N.
			SCALE: NO SCALE



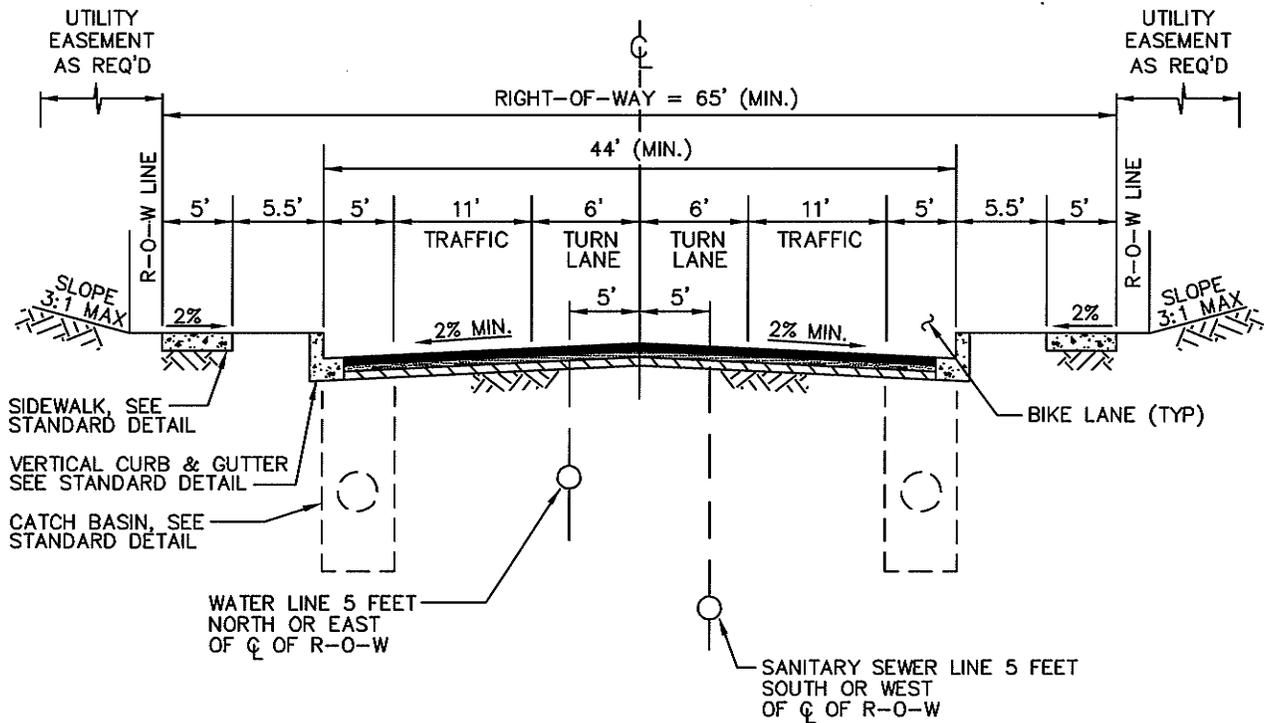
SIDEWALK, SEE STANDARD DETAIL
 VERTICAL CURB & GUTTER SEE STANDARD DETAIL
 CATCH BASIN, SEE STANDARD DETAIL

SANITARY SEWER LINE 5 FEET SOUTH OR WEST OF C OF R-O-W
 WATER LINE 5 FEET NORTH OR EAST OF C OF R-O-W

GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS SEE TABLE 2.4-2 OF THE PUBLIC WORKS STANDARDS
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

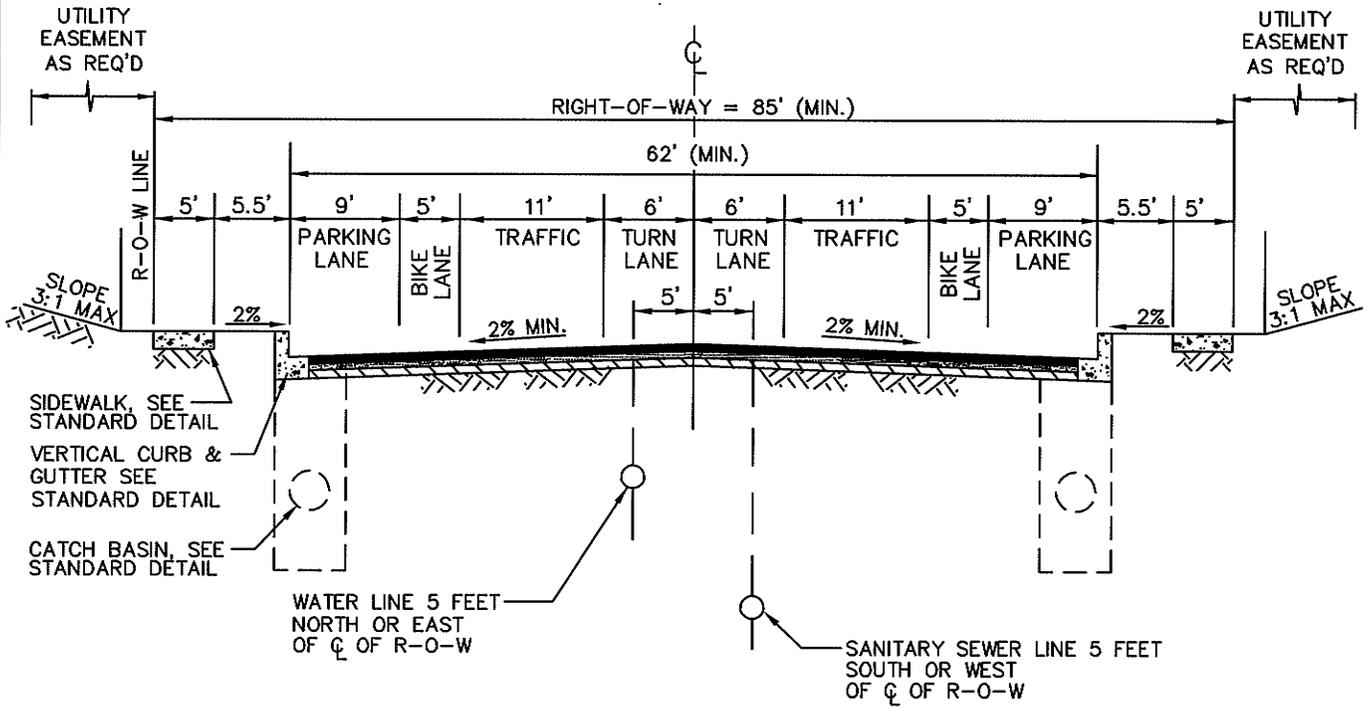
CITY OF DUPONT			
COMMERCIAL ACCESS STREET TOWN CENTER/MIXED USE			
APPROVED:		DWG. NO.	
<i>[Signature]</i> CITY OF DUPONT		9/21/11 DATE	
DATE:	DRWN:	CHKD:	SCALE:
9/11	E.T.	T.N.	NO SCALE



GENERAL NOTES:

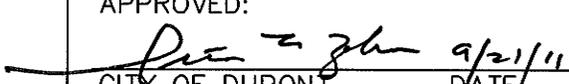
1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-2 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.
3. FOR STREETS ADJACENT TO OPEN SPACE/SENSITIVE AREAS SEE DWG. No. 2.4-2.4

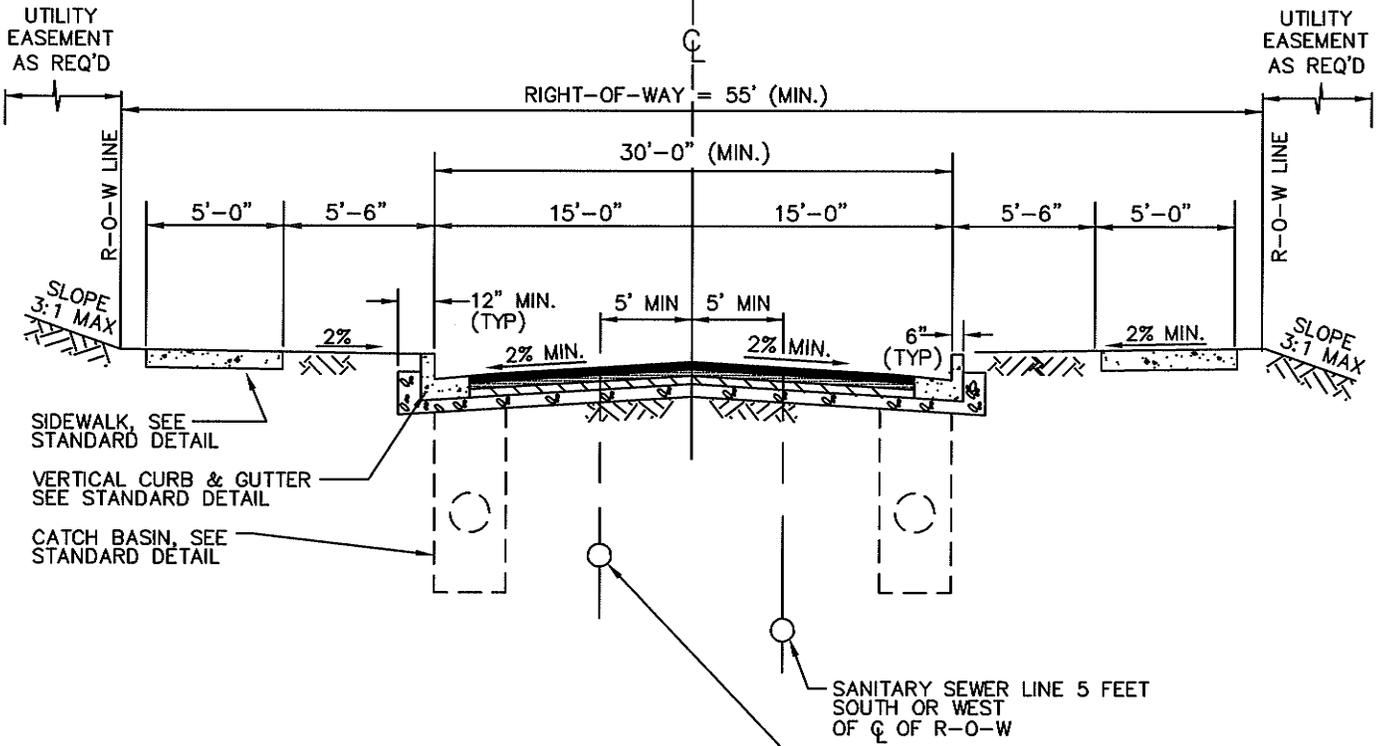
CITY OF DUPONT			
COMMERCIAL ACCESS STREET BUSINESS AND TECHNOLOGY PARK			
APPROVED: <i>John T. N.</i> CITY OF DUPONT			DWG. NO. 2.4-2.3
DATE: 9/11		DRWN: E.T.	CHKD: T.N.
			SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-2 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

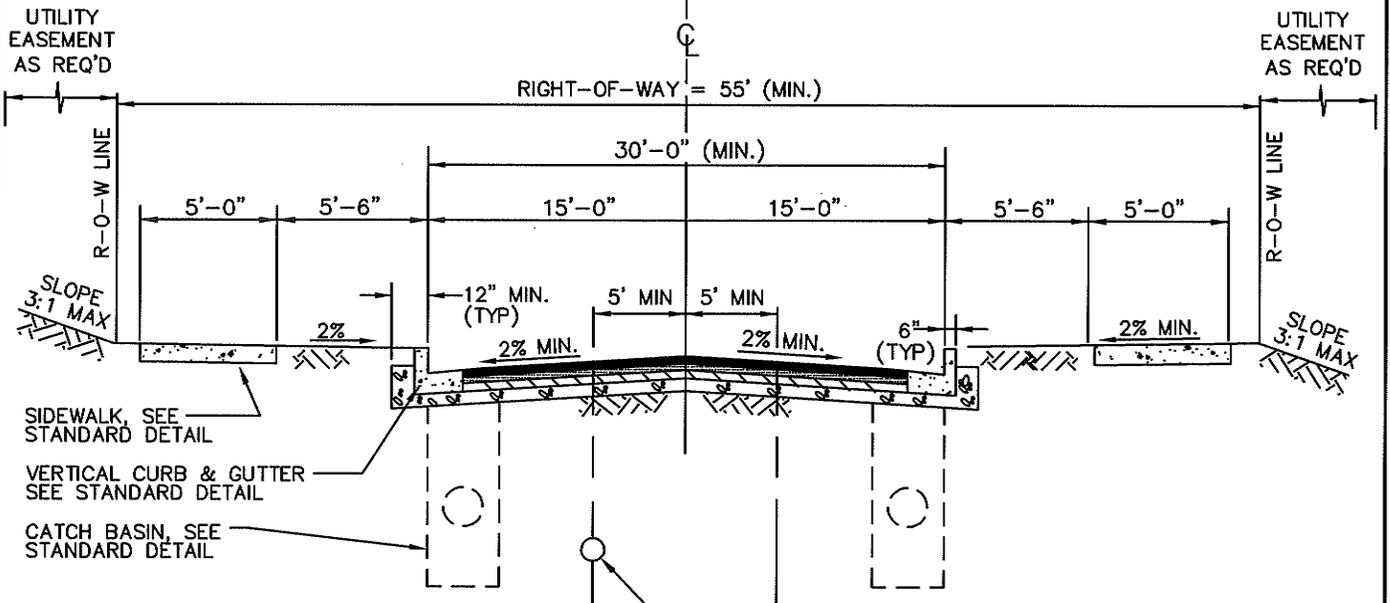
CITY OF DUPONT			
COMMERCIAL ACCESS STREET BUSINESS AND TECHNOLOGY PARK (ADJACENT TO OPEN SPACE/SENSITIVE AREAS)			
APPROVED:  CITY OF DUPONT			DWG. NO. 2.4-2.4
DATE: 9/11	DRWN: E.T.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS SEE TABLE 2.4-3 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.
3. MINIMUM PAVEMENT WIDTH IS SHOWN. TURN LANE/POCKET MAY BE REQUIRED BASED ON TRAFFIC IMPACT ANALYSIS.

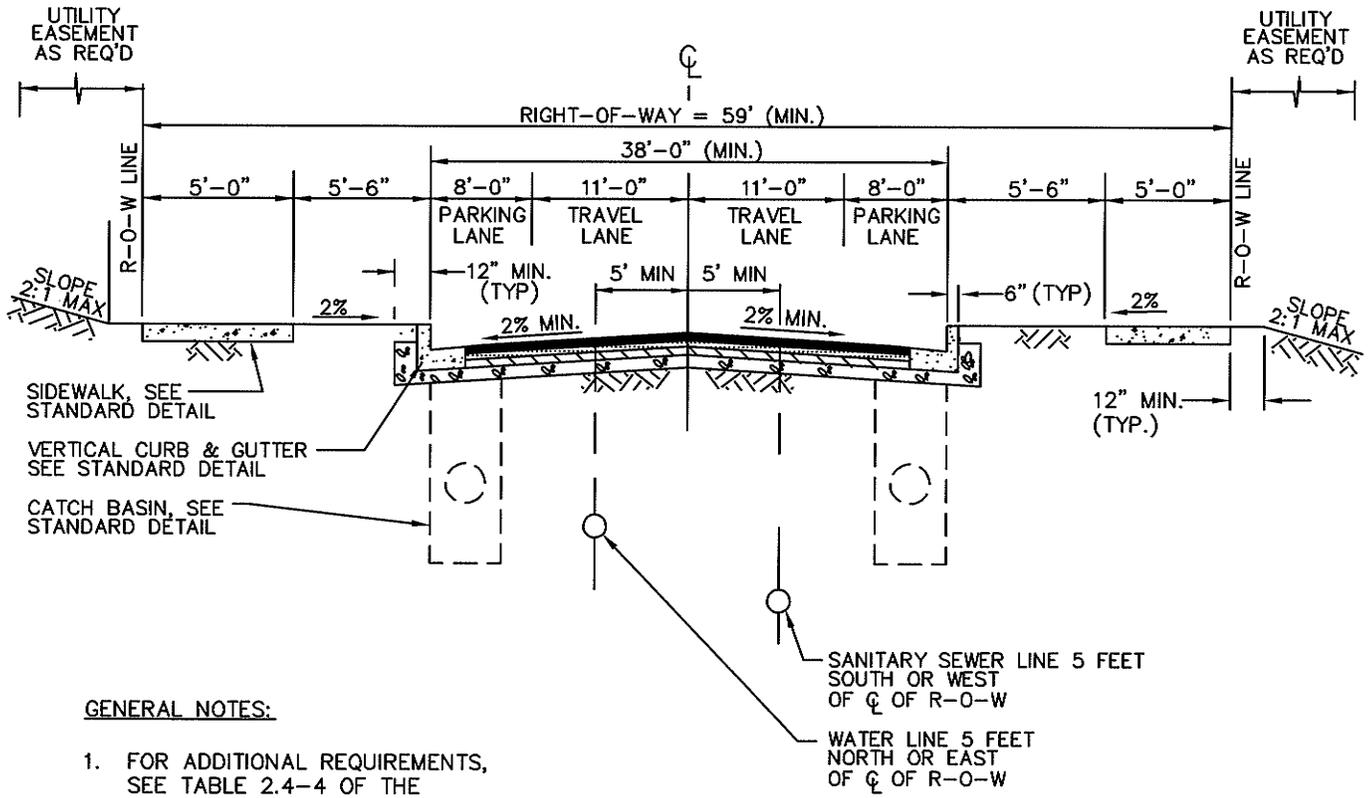
CITY OF DUPONT			
INDUSTRIAL ACCESS STREETS MAJOR			
APPROVED: <i>Paul A. John</i> 9/21/11 CITY OF DUPONT			DWG. NO. 2.4-2.5
DATE: 9/11	DRWN: E.T.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

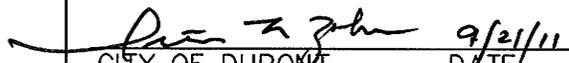
1. FOR ADDITIONAL REQUIREMENTS SEE TABLE 2.4-3 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

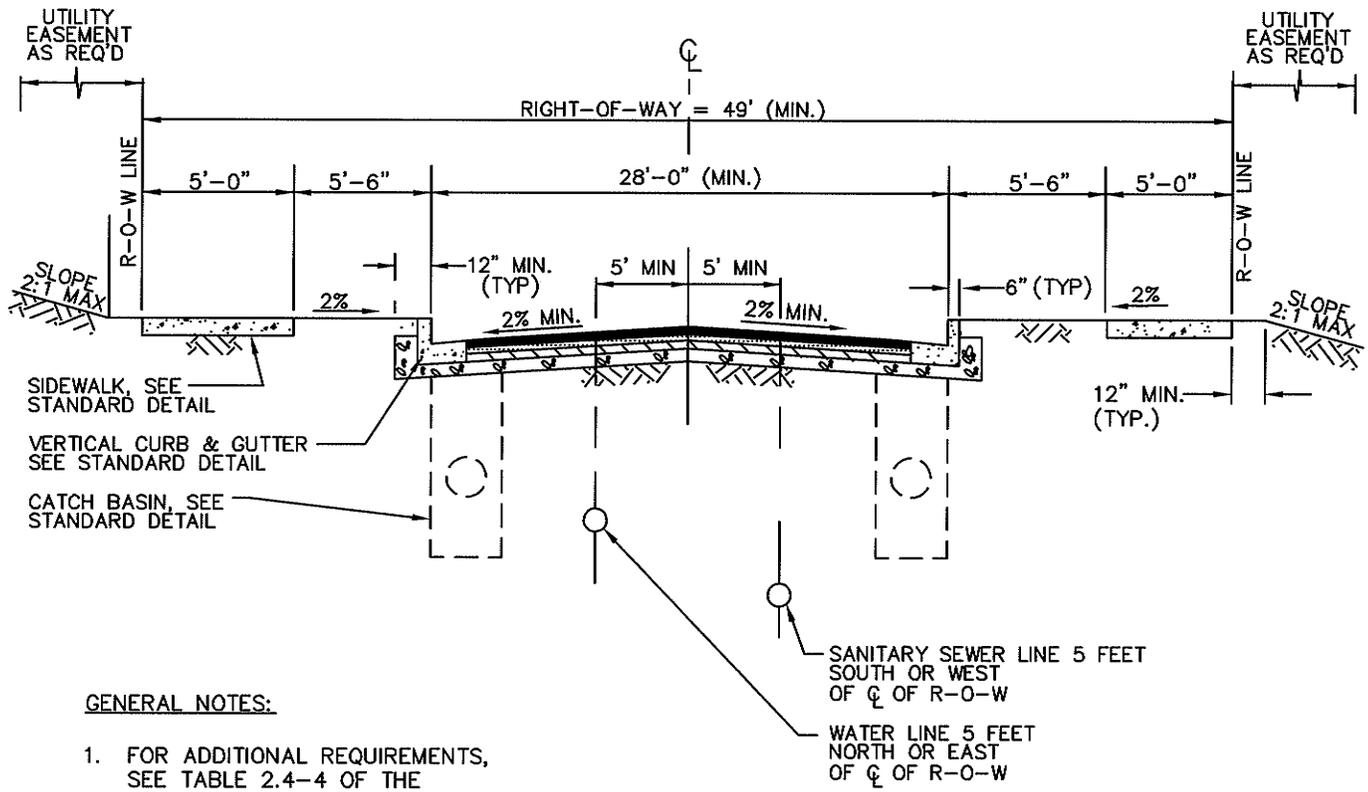
CITY OF DUPONT			
INDUSTRIAL ACCESS STREETS MINOR			
APPROVED: <i>John</i> CITY OF DUPONT			DWG. NO. 2.4-2.6
DATE 9/21/11			DATE
DATE: 9/11	DRWN: E.T.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-4 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

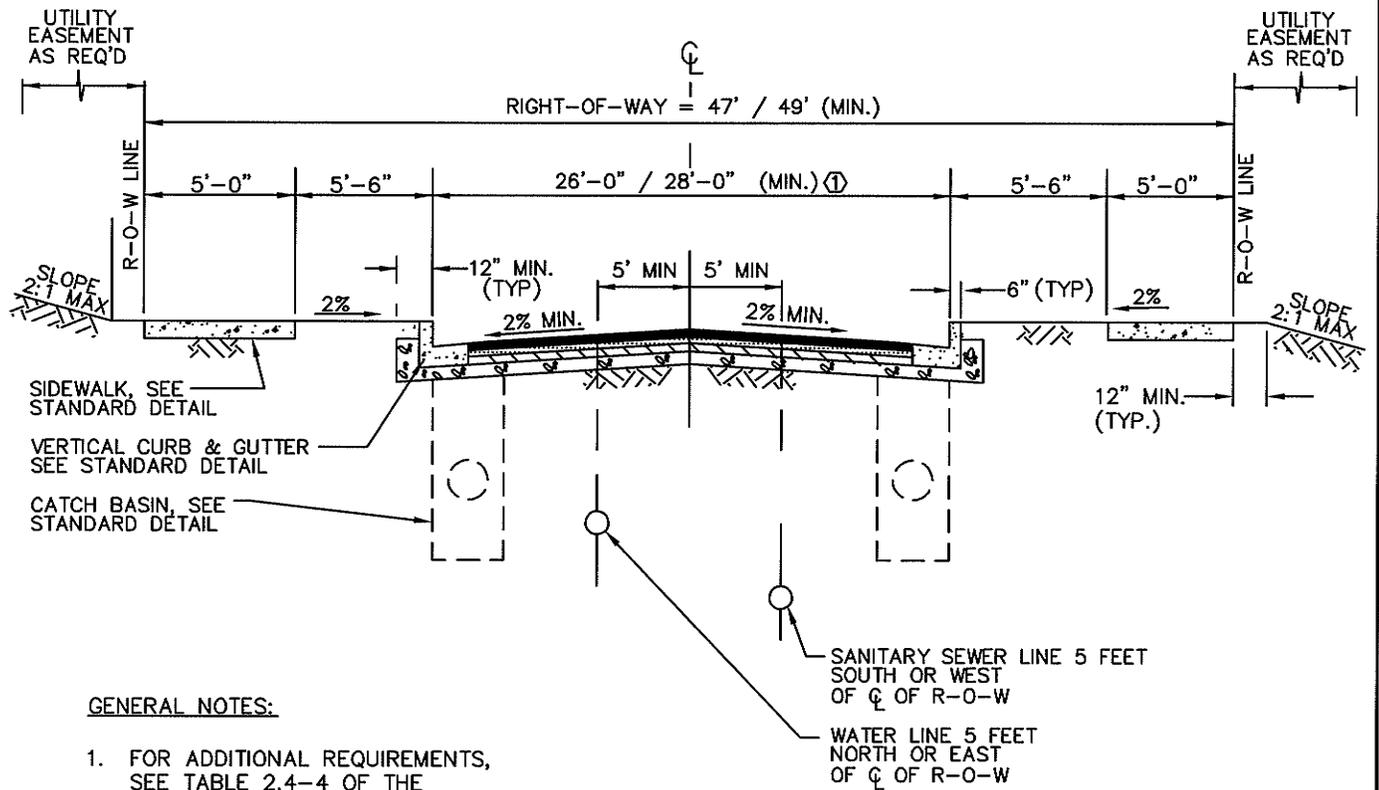
CITY OF DUPONT			
URBAN RESIDENTIAL STREET NEIGHBORHOOD COLLECTOR			
APPROVED:  CITY OF DUPONT			DWG. NO. 2.4-3.1
DATE: 9/11			DATE: 9/21/11
DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE	



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-4 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

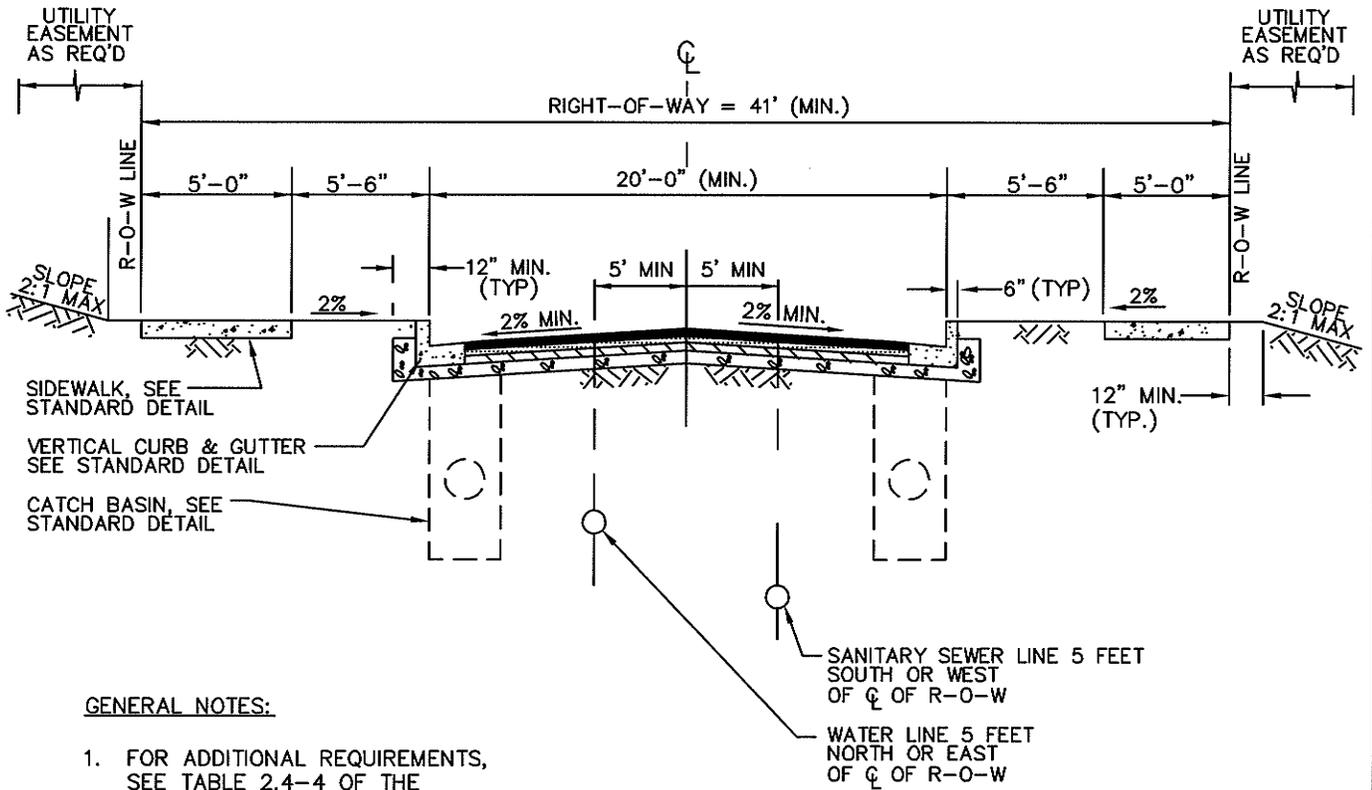
CITY OF DUPONT			
URBAN RESIDENTIAL STREET SUB COLLECTOR			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 2.4-3.2
DATE: 9/11		DRWN: L.G.	CHKD: T.N.
			SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-4 OF THE PUBLIC WORKS STANDARDS.
2. SIDEWALK MAY BE REQUIRED ON ONE SIDE ONLY PER TABLE 2.4-4.
3. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

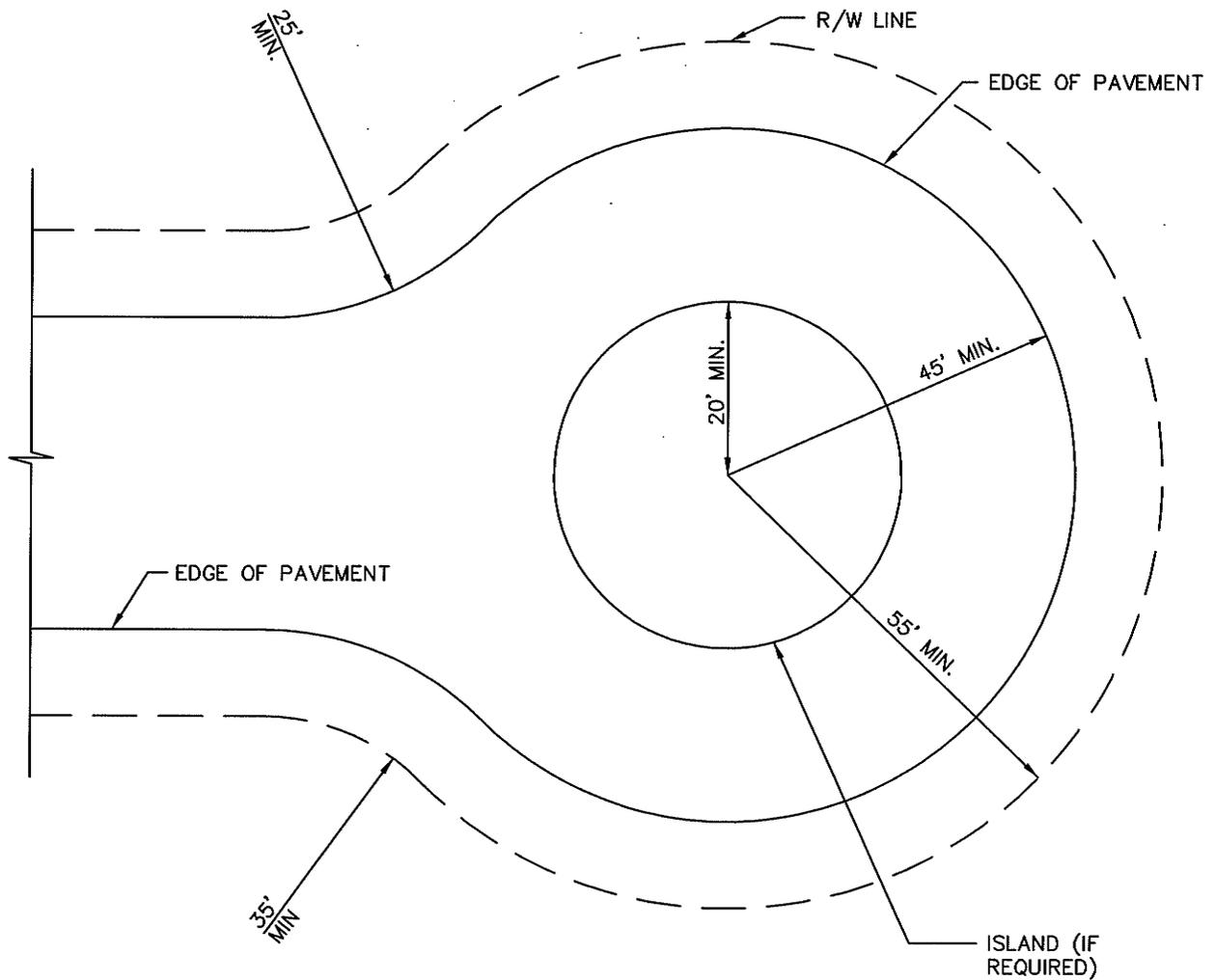
CITY OF DUPONT			
URBAN RESIDENTIAL STREET ACCESS STREET			
APPROVED: <i>John</i> CITY OF DUPONT			DWG. NO. 2.4-3.3
DATE: 9/11		DRWN: L.G.	CHKD: T.N.
DATE: 9/21/11			SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE TABLE 2.4-4 OF THE PUBLIC WORKS STANDARDS.
2. FOR ROAD WIDTHS LESS THAN 26 FEET, SIGNING SHALL BE PROVIDED TO ALLOW PARKING ON ONLY ONE SIDE OF THE STREET.
3. SIDEWALK MAY BE REQUIRED ON ONE SIDE ONLY PER TABLE 2.4-4.
4. PAVEMENT DESIGN SHALL BE BY A LICENSED ENGINEER.

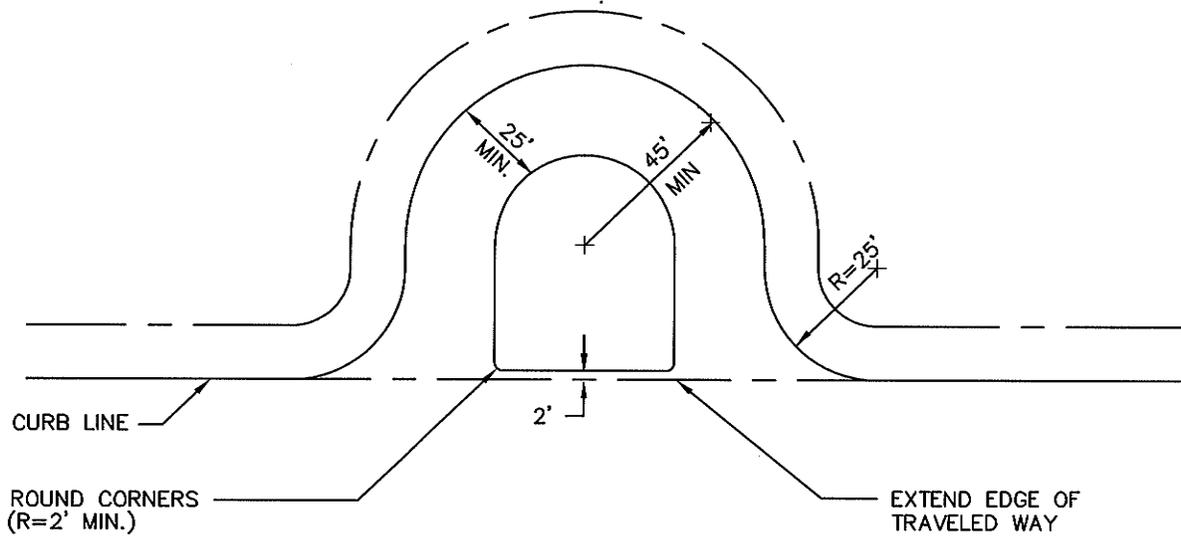
CITY OF DUPONT			
URBAN RESIDENTIAL STREET ONE WAY ACCESS LOOP			
APPROVED: <i>Paul R. John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 2.4-3.4
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.8 OF THE PUBLIC WORKS STANDARDS.
2. ISLAND IS MANDATORY WHEN RADIUS OF PAVED AREA EXCEEDS 45'.
3. ISLAND AT CENTER OF BULB SHALL HAVE A VERTICAL CURB IF ROADWAY SLOPED TO OUTER EDGE. OTHERWISE USE VERTICAL CURB AND GUTTER.

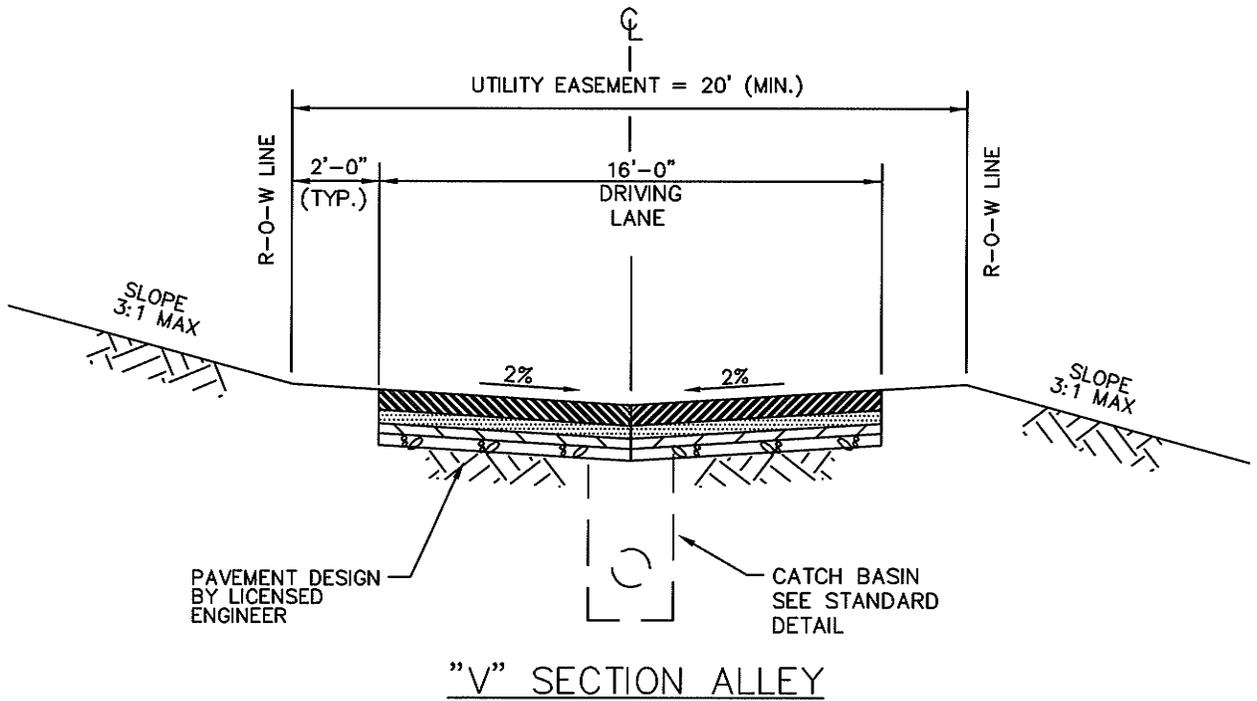
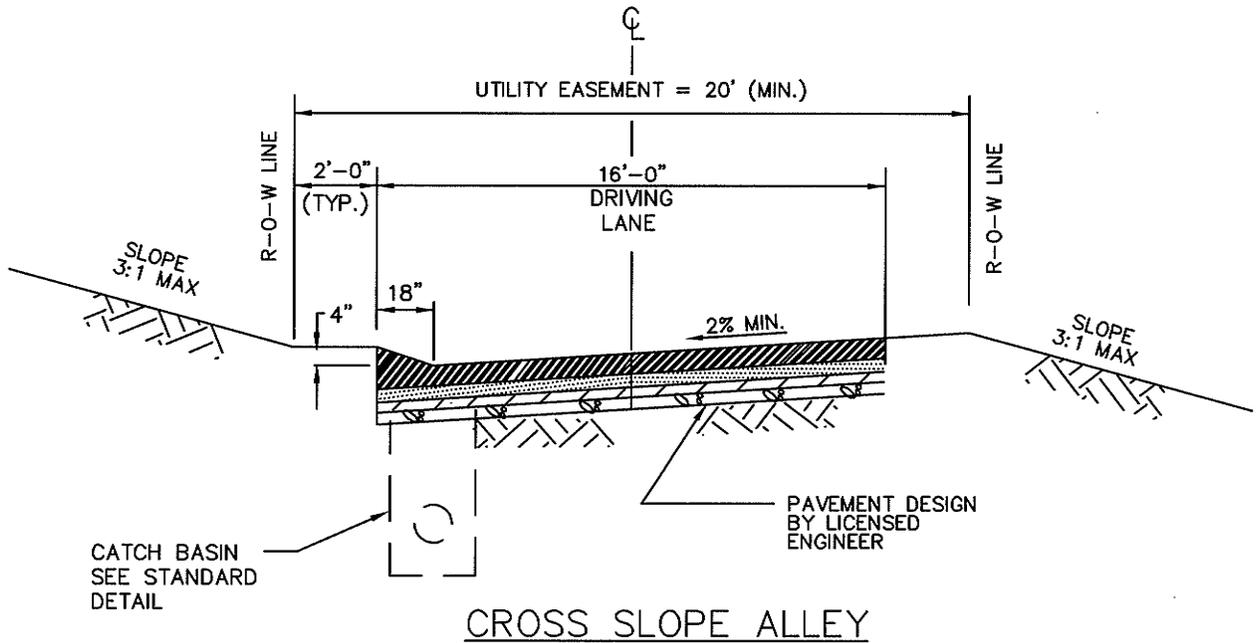
CITY OF DUPONT			
CUL-DE-SAC STREET SECTION			
APPROVED: <i>John</i> CITY OF DUPONT			DWG. NO. 2.8-1
DATE: 9/11		DRWN: L.G.	CHKD: T.N.
DATE: 9/21/11			SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.8.6 OF THE PUBLIC WORKS STANDARDS.
2. MINIMUM ISLAND DIAMETER SHALL BE 10 FEET.

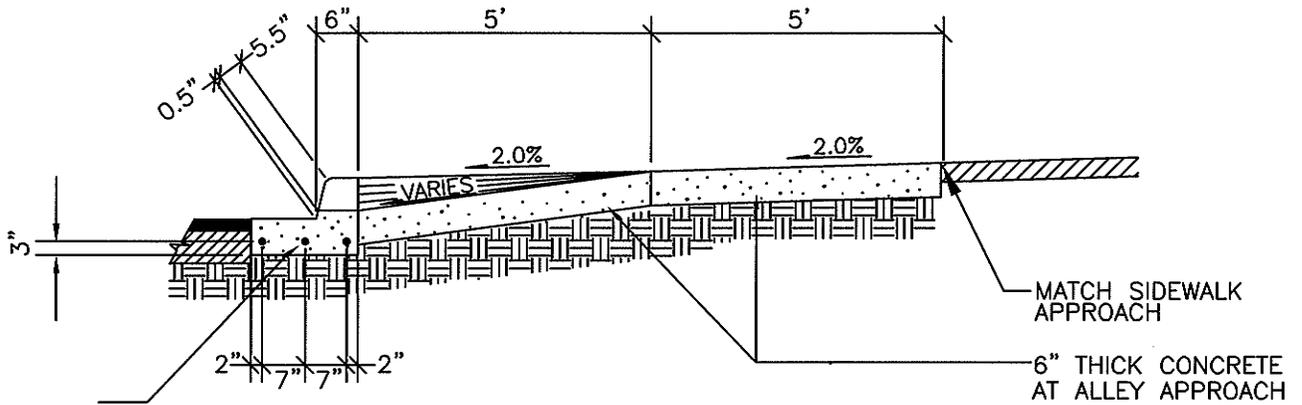
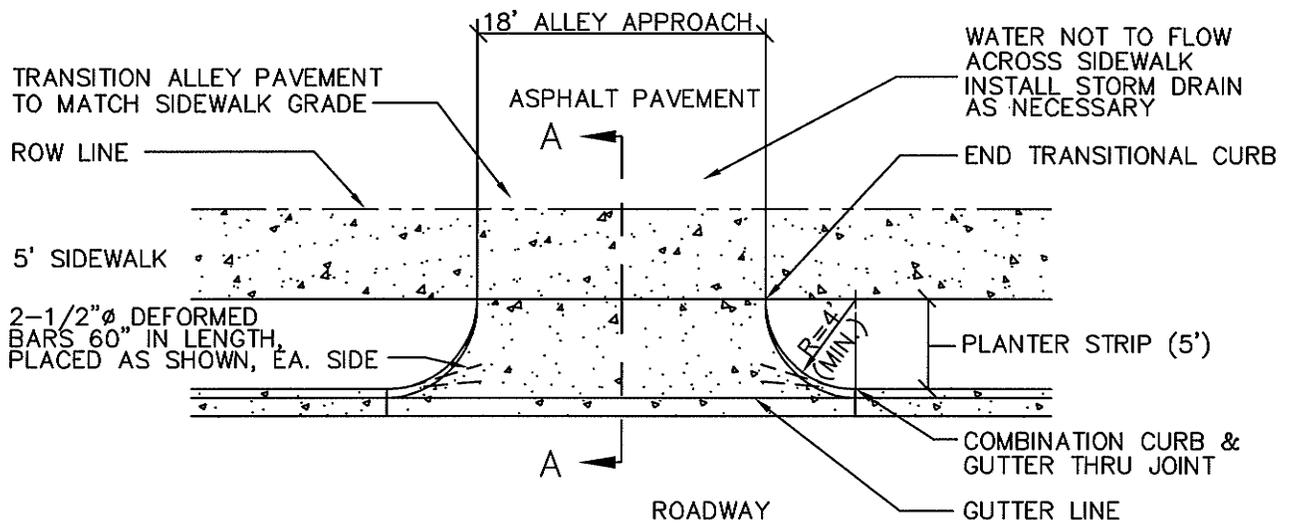
CITY OF DUPONT			
EYEBROW			
APPROVED: <i>Dez R John</i> CITY OF DUPONT			DWG. NO. 2.8-2
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.9 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
ALLEY SECTION			
APPROVED:			DWG. NO.
<i>John</i>			2.9-1
CITY OF DUPONT			DATE
9/11			9/21/11
DATE:	DRWN:	CHKD:	SCALE:
9/11	L.G.	T.N.	NO SCALE



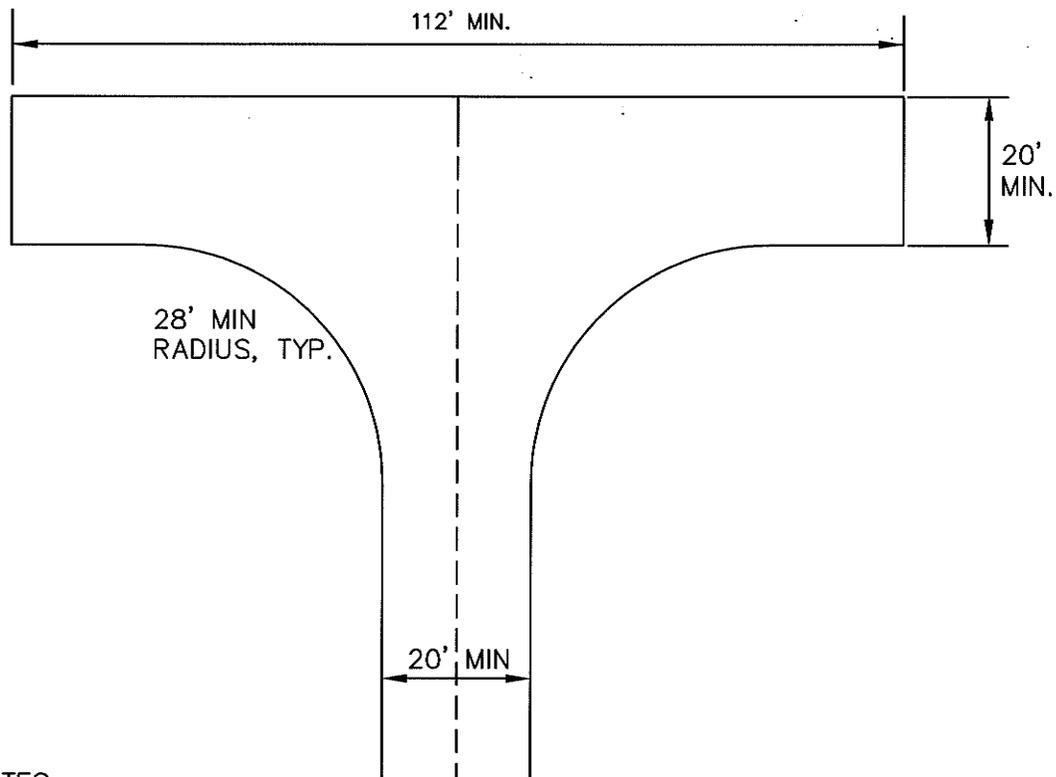
3- #4 BARS TO BE PLACED AT ALLEY APPROACH (TYP)

SECTION A-A

GENERAL NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.9 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
CONCRETE ALLEY APPROACH			
APPROVED:		DWG. NO.	
<i>Paul E. John</i>		2.9-2	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	M.S.	T.N.	NO SCALE



GENERAL NOTES:

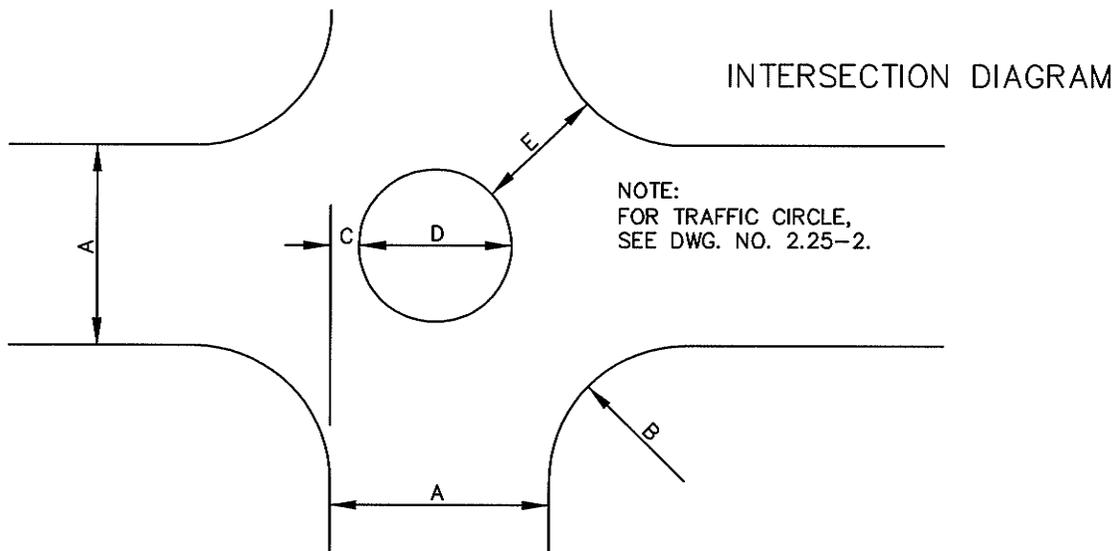
1. THIS ACCESS TURNAROUND SHALL ONLY BE UTILIZED IF SPECIFICALLY APPROVED IN WRITING BY THE CITY
2. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS.
3. THE FIRE ACCESS TURNAROUND SHALL BE MARKED AS A FIRE LANE.
4. MINIMUM ROAD WIDTH SHOWN DOES NOT INCLUDE ANY SHOULDER DIMENSIONS OR CURB DIMENSIONS, IF REQUIRED.
5. ALL LEGS OF THE TURNAROUND SHALL BE A MINIMUM OF 20 FEET.
6. THERE SHALL BE A MINIMUM OF 28 FEET INSIDE RADIUS BETWEEN THE FIRE ACCESS ROAD AND THE LEGS.
7. THE ALTERNATIVE FIRE APPARATUS ACCESS TURNAROUND SHALL MEET THE SAME GRADE AND SURFACING STANDARDS APPLIED STREETS.

CITY OF DUPONT			
FIRE ACCESS TURNAROUND			
APPROVED: <i>David K. Johnson</i> CITY OF DUPONT			DWG. NO. 2.9-3
DATE: 9/11		DRWN: K.B.	CHKD: T.N.
			SCALE: NO SCALE

A STREET WIDTH	B CURB RETURN RADIUS	C OFF-SET DISTANCE	D CIRCLE DIAMETER	E OPENING WIDTH
20'	<15'	RECONSTRUCT CURBS		
	15'	5.5'	9'	16'+
	18'	5.0'	10'	17'+
	20'	4.5'	11'	18'-
	25'	4.0'	12'	19'+
24'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	13'	16'
	15'	5.0'	14'	17'-
	20'	4.5'	15'	18'+
	25'	3.5'	17'	20'-
28'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	14'	16'+
	15'	5.0'	15'	17'-
	18'	4.5'	16'	18'-
	20'	4.5'	16'	18'+
	25'	3.5'	18'	20'-

OPTIMUM
CRITERIA

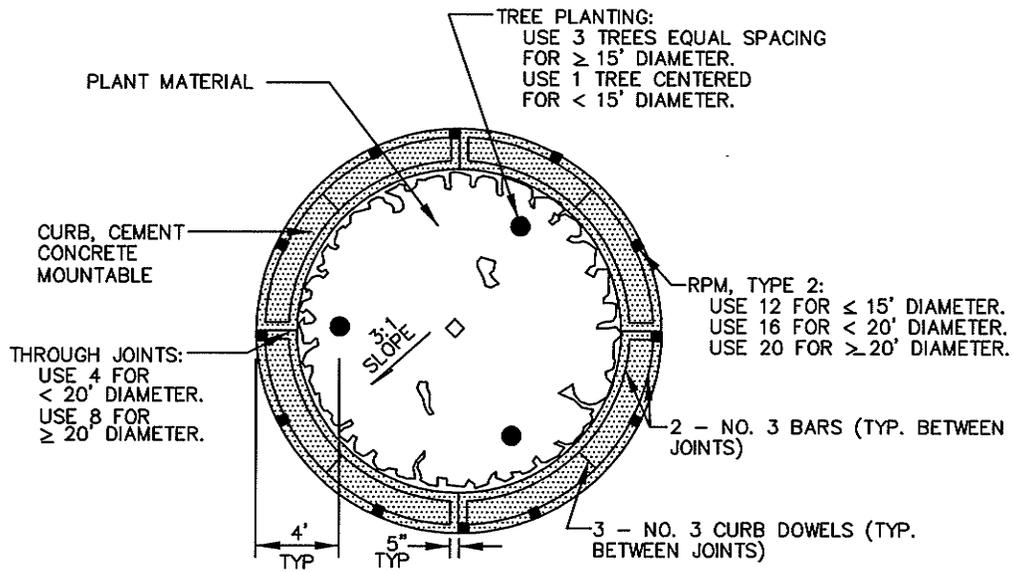
OFF-SET DISTANCE	OPENING WIDTH
5.5' MAX.	16' MIN.
5.0'	17' ±
4.5'	18' ±
4.0'	19' ±
3.5' OR LESS	20'



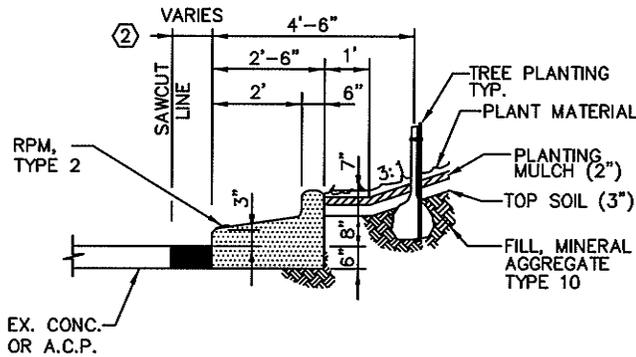
GENERAL NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.25 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
NEIGHBORHOOD TRAFFIC CIRCLE			
APPROVED: <i>Debra E. John</i> CITY OF DUPONT			DWG. NO. 2.25-1
DATE: 9/11	DRWN: P.G.B-M.	CHKD: T.N.	SCALE: NO SCALE



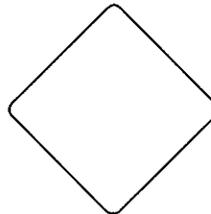
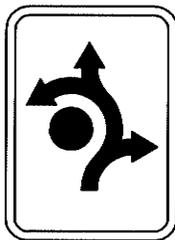
TYPICAL TRAFFIC CIRCLE



NOTES:

- CURB TO BE CONSTRUCTED OF CLASS 3,000 CONCRETE.
- SAWCUT EXISTING PAVEMENT (DEPTH UNKNOWN) AS CLOSE TO NEW CURB LINE AS PRACTICAL. PAVE SPACE BETWEEN SAWCUT AND NEW CURBING WITH 6" CL. "B" ASPHALT CONC. PAVEMENT.

TYPICAL SECTION A



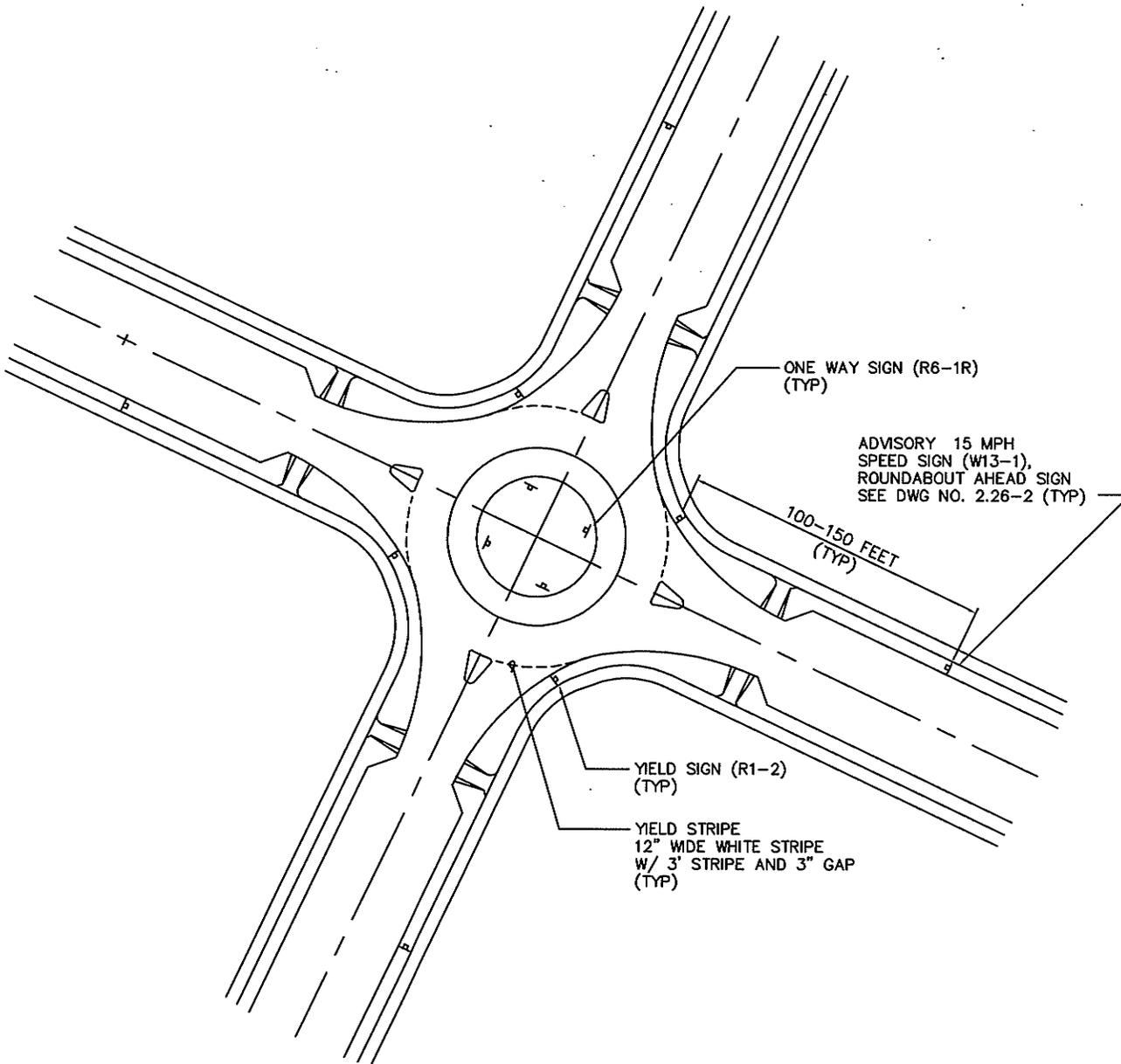
18" x 18" YELLOW HIGH INTENSITY TYPE 1 OBJECT MARKER PLACED IN CENTER OF TRAFFIC CIRCLE FOR EACH APPROACH.

24" x 30" BLACK ON YELLOW PLACED 75' TO 100' BACK FROM TRAFFIC CIRCLE ON EACH APPROACH.

GENERAL NOTE:

- FOR ADDITIONAL REQUIREMENTS, SEE SECTION 2.25 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
NEIGHBORHOOD TRAFFIC CIRCLE DETAILS			
APPROVED: <i>Patricia John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 2.25-2
DATE: 9/11	DRWN: P.G.B-M.	CHKD: T.N.	SCALE: NO SCALE



ONE WAY SIGN (R6-1R)
(TYP)

ADVISORY 15 MPH
SPEED SIGN (W13-1),
ROUNDABOUT AHEAD SIGN
SEE DWG NO. 2.26-2 (TYP)

100-150 FEET
(TYP)

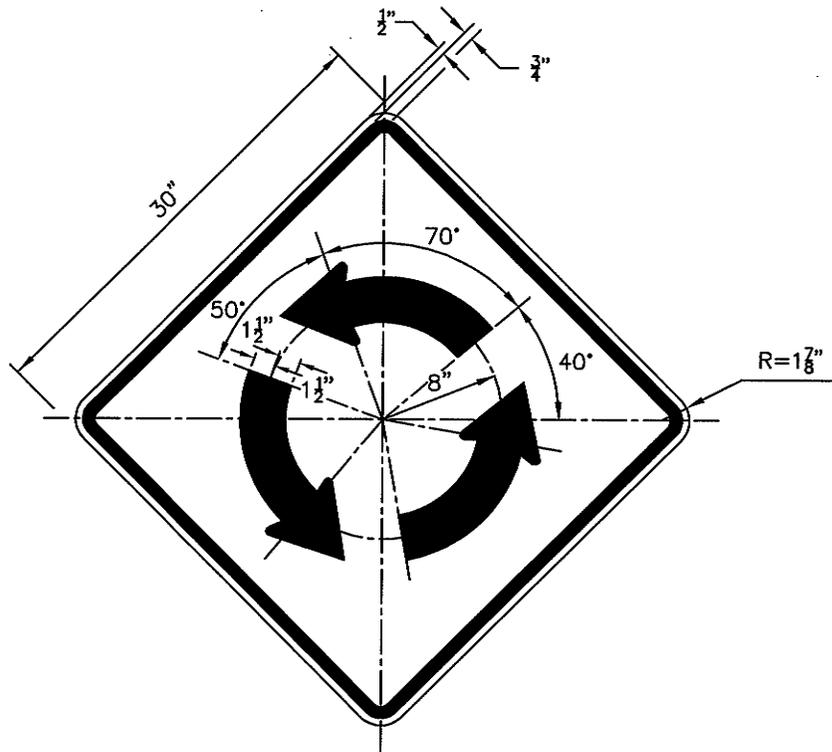
YIELD SIGN (R1-2)
(TYP)

YIELD STRIPE
12" WIDE WHITE STRIPE
W/ 3' STRIPE AND 3" GAP
(TYP)

GENERAL NOTE:

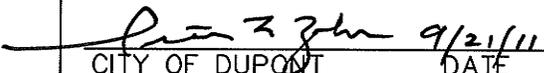
1. FOR ADDITIONAL REQUIREMENTS,
SEE SECTION 2.26 OF THE
PUBLIC WORKS STANDARDS.

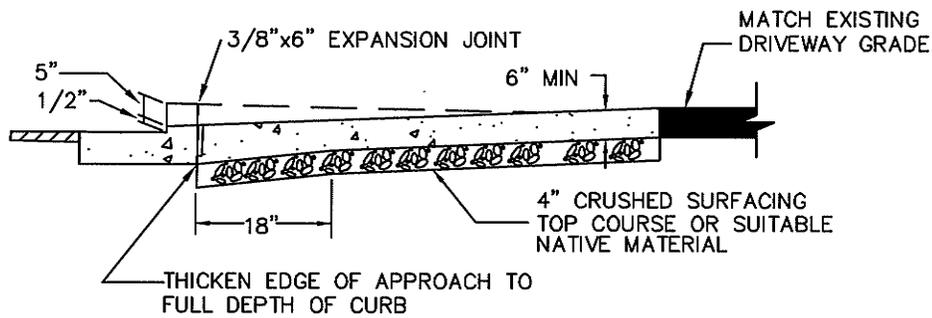
CITY OF DUPONT			
SAMPLE ROUNDABOUT CHANNELIZATION PLAN			
APPROVED: <i>Peter Z. John</i> CITY OF DUPONT			DWG. NO. 2.26-1
DATE: 9/11			DATE 9/21/11
DRWN: P.G.B.-M.	CHKD: T.N.	SCALE: NO SCALE	



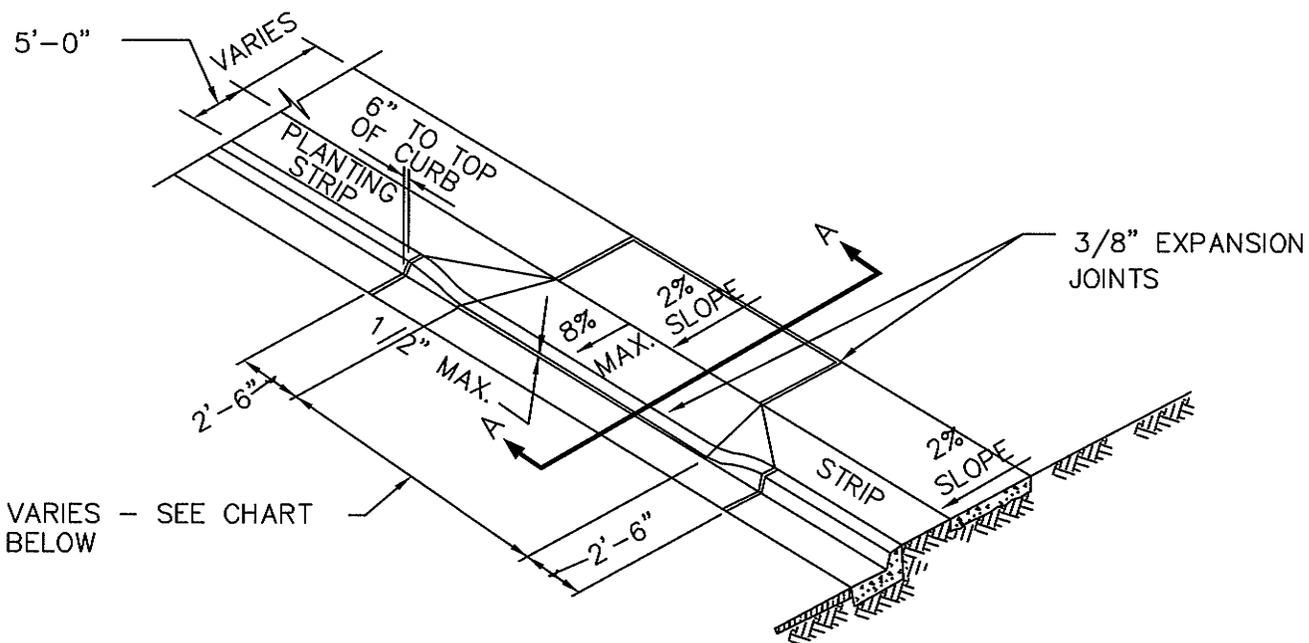
NOTES:

1. USE FHWA STANDARD ARROW DETAIL.
2. COLORS:
 LEGEND: BLACK (NON-REFL.)
 BACKGROUND: YELLOW (REFL)

CITY OF DUPONT			
ROUNDAABOUT AHEAD SIGN			
APPROVED:  CITY OF DUPONT			DWG. NO. 2.26-2
DATE: 9/11	DRWN: P.G.B-M.	CHKD: T.N.	SCALE: NO SCALE



SECTION A-A

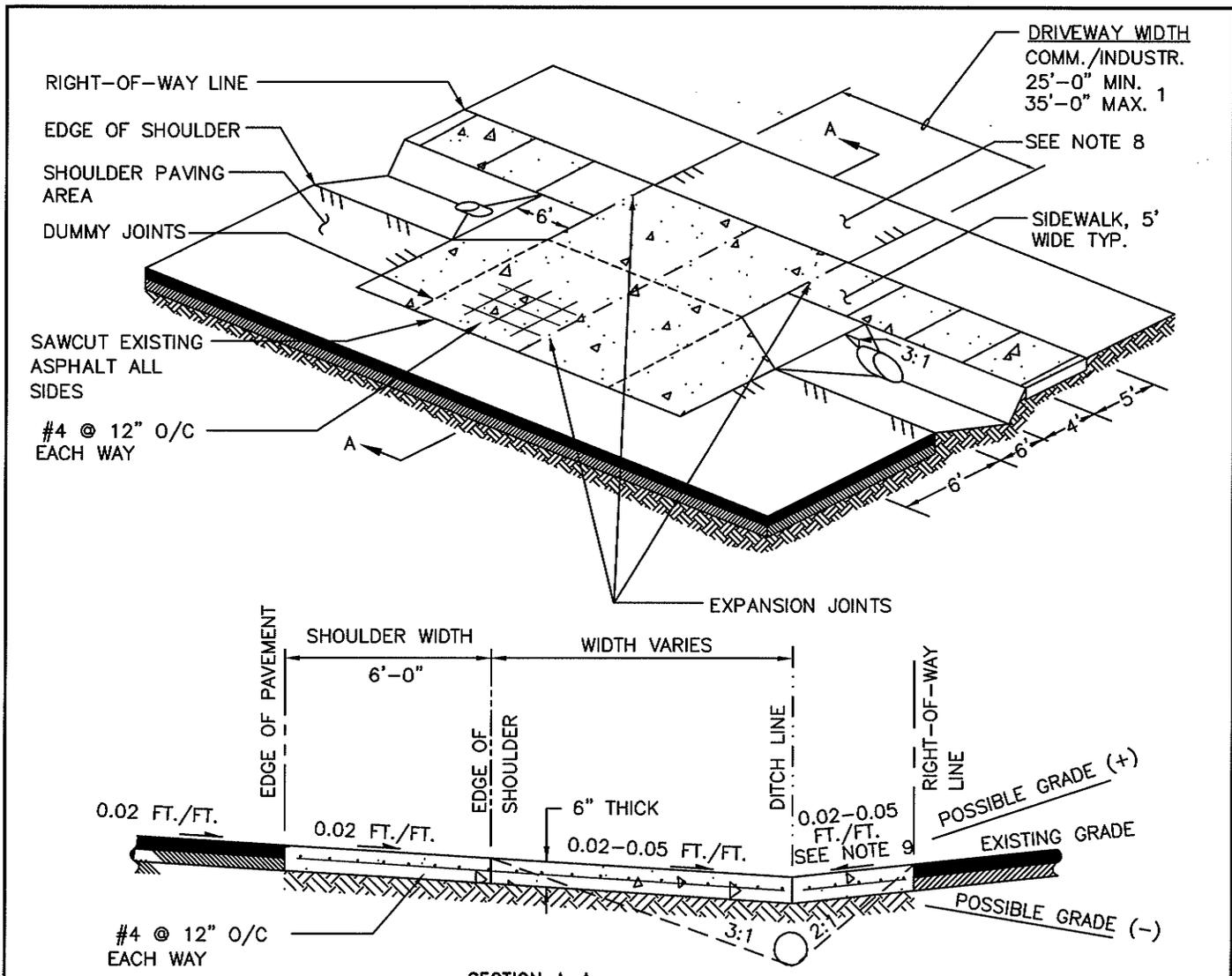


DRIVEWAY WIDTHS		
	MAX.(FT)	MIN.(FT)
COMM/INDUS	35'	25'
RESIDENTIAL	20'	10'

GENERAL NOTES:

- FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.1 OF THE PUBLIC WORKS STANDARDS.
- ALL COMMERCIAL/INDUSTRIAL DRIVEWAYS SHALL HAVE AN EXPANSION JOINT LOCATED MID-WIDTH.

CITY OF DUPONT			
DRIVEWAY APPROACH			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 3.1-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



DRIVEWAY WIDTH
COMM./INDUSTR.
25'-0" MIN.
35'-0" MAX. 1

SEE NOTE 8

SIDEWALK, 5'
WIDE TYP.

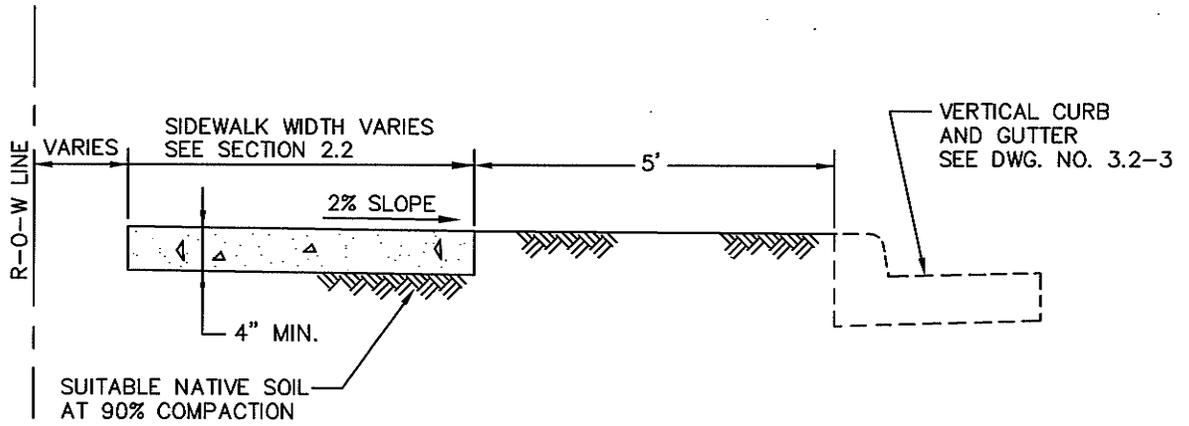
EXPANSION JOINTS

SECTION A-A

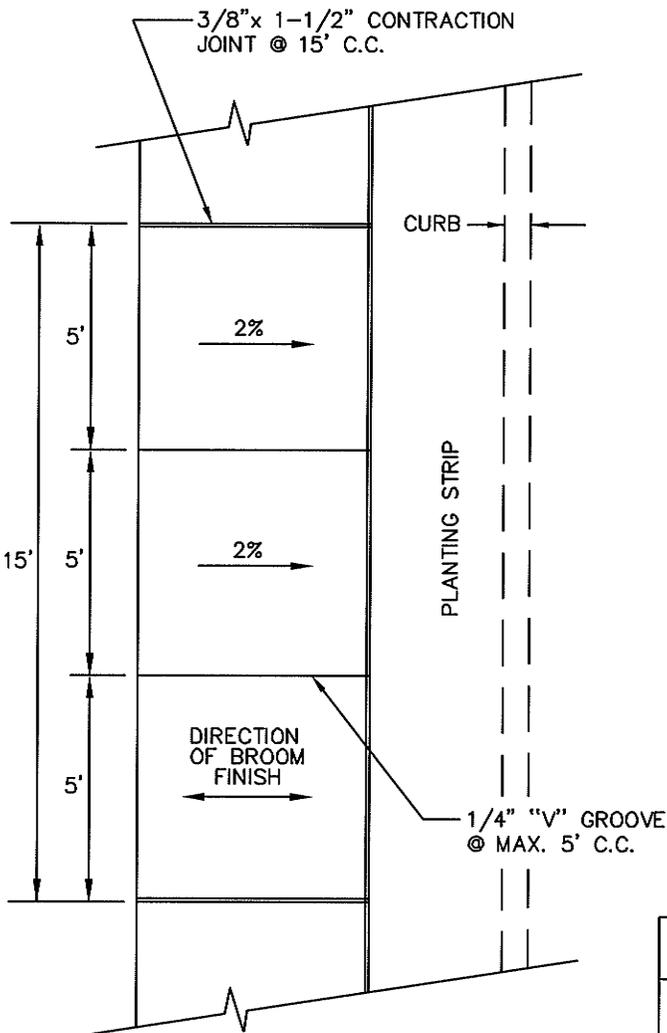
GENERAL NOTES:

1. COMMERCIAL/INDUSTRIAL DRIVEWAYS WIDER THAN 35' MAY BE APPROVED BY THE CITY CONSIDERING BOTH TRAFFIC SAFETY AND THE ACTIVITY BEING SERVED. ALL COMMERCIAL/INDUSTRIAL DRIVEWAYS AT A MIN. SHALL HAVE AN EXPANSION JOINT LOCATED MID-WIDTH.
2. PIPE SHALL BE:
 - A. SIZED TO CONVEY COMPUTED STORM WATER RUNOFF, AND
 - B. MIN. 12" DIAM., AND
 - C. EQUAL TO OR LARGER THAN EXISTING PIPES WITHIN 500' UPSTREAM.
3. EXPOSED PIPE ENDS SHALL BE BEVELED TO MATCH THE SLOPE FACE AND PROJECT NO MORE THAN 12" BEYOND SHOULDER SURFACE. PROJECTING HEADWALLS ARE NOT ACCEPTABLE.
4. PIPES WITH LESS THAN 12" OF COVER SHALL BE DUCTILE IRON.
5. HAND PLACED RIPRAP FOR ENERGY DISIPATION SHALL BE INSTALLED AT BOTH ENDS OF THE STORM PIPE.
6. PIPE SHALL BE INSTALLED IN A STRAIGHT UNIFORM ALIGNMENT AT A MIN. 0.5% SLOPE (0.5 FT. PER 100 FT.) WITH THE DOWNSTREAM END LOWER THAN THE UPSTREAM END.
7. PIPE MAY BE OMITTED IF ROADSIDE DITCH DOES NOT EXIST AND DRIVEWAY DOES NOT BLOCK NATURAL FLOW.
8. DRIVEWAY SLOPE SHALL MATCH TO BACK EDGE OF SHOULDER, BUT SHOULDER SLOPE AND EDGE OF SHOULDER SHALL NOT BE ALTERED AS A RESULT OF DRIVEWAY CONSTRUCTION.
9. DRIVEWAYS LOCATED ON THE PROPERTY SIDE OF THE RIGHT-OF-WAY SHALL BE PAVED.
10. THE DRIVEWAY SHALL NOT HAVE A CROSS SLOPE GREATER THAN 2% WHEN THE DRIVEWAY CROSSES THE SIDEWALK.

CITY OF DUPONT			
DRIVEWAY APPROACH (WITH SHOULDER AND DITCH)			
APPROVED: 9/21/11 CITY OF DUPONT	DATE	DWG. NO.	3.1-2
DATE: 9/11	DRWN: K.B.	CHKD: T.N.	SCALE: NO SCALE



SECTION

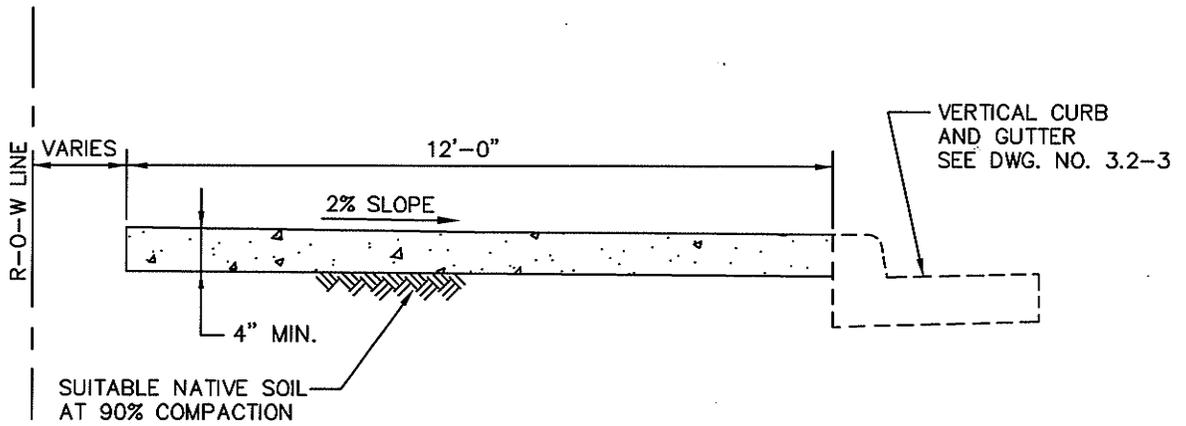


PLAN

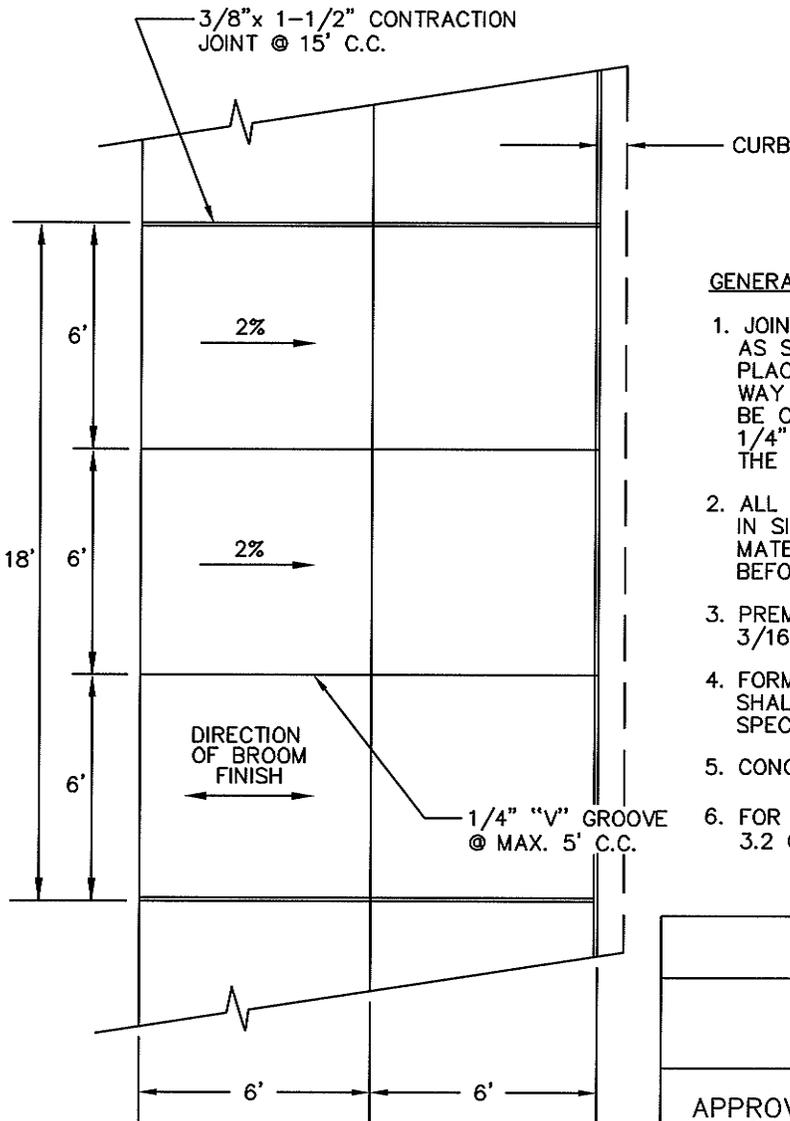
GENERAL NOTES:

1. JOINTS THRU AND DUMMY JOINTS SHALL BE AS SHOWN ABOVE. THRU JOINTS SHALL ALSO BE PLACED IN THE SIDEWALK SECTION AT DRIVEWAY AND ALLEY RETURNS. ALL JOINTS SHALL BE CLEAN AND EDGED WITH AN EDGE HAVING 1/4" RADIUS. JOINTS SHALL BE FLUSH WITH THE FINISHED SURFACE.
2. PREMOLDED JOINT FILLER SHALL BE 3/16" x 2" ASPHALT SATURATED FELT OR PAPER.
3. FORMS SHALL BE EITHER WOOD OR STEEL AND SHALL MEET ALL REQUIREMENTS OF THESE SPECIFICATIONS.
4. CONCRETE SHALL BE CLASS 3000.
5. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.2 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
SIDEWALK SECTION			
APPROVED: <i>Dean Z John</i> CITY OF DUPONT		DATE 9/21/11	DWG. NO. 3.2-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



SECTION

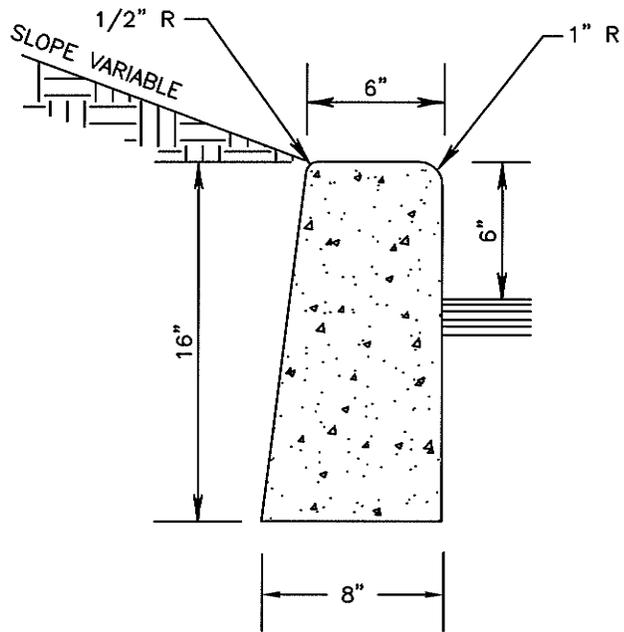


PLAN

GENERAL NOTES:

1. JOINTS THRU AND DUMMY JOINTS SHALL BE AS SHOWN ABOVE. THRU JOINTS SHALL ALSO BE PLACED IN THE SIDEWALK SECTION AT DRIVEWAY AND ALLEY RETURNS. ALL JOINTS SHALL BE CLEAN AND EDGED WITH AN EDGE HAVING 1/4" RADIUS. JOINTS SHALL BE FLUSH WITH THE FINISHED SURFACE.
2. ALL UTILITY POLES, METER BOXES, ETC. IN IN SIDEWALK AREAS SHALL HAVE 3/16" JOINT MATERIAL (FULL DEPTH) PLACED AROUND THEM BEFORE PLACING CONCRETE.
3. PREMOLDED JOINT FILLER SHALL BE 3/16" x 2" ASPHALT SATURATED FELT OR PAPER.
4. FORMS SHALL BE EITHER WOOD OR STEEL AND SHALL MEET ALL REQUIREMENTS OF THESE SPECIFICATIONS.
5. CONCRETE SHALL BE CLASS 3000.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.2 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
SIDEWALK SECTION RETAIL CORE			
APPROVED:		DWG. NO.	
<i>[Signature]</i>		3.2-2	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	L.G.	T.N.	NO SCALE



CITY OF DUPONT

CEMENT CONCRETE VERTICAL CURB

APPROVED:

Peter R. John 9/21/11
CITY OF DUPONT DATE

DWG. NO.

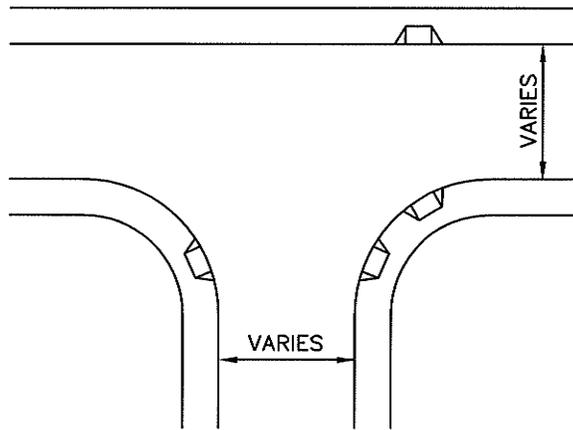
3.2-4

DATE:
9/11

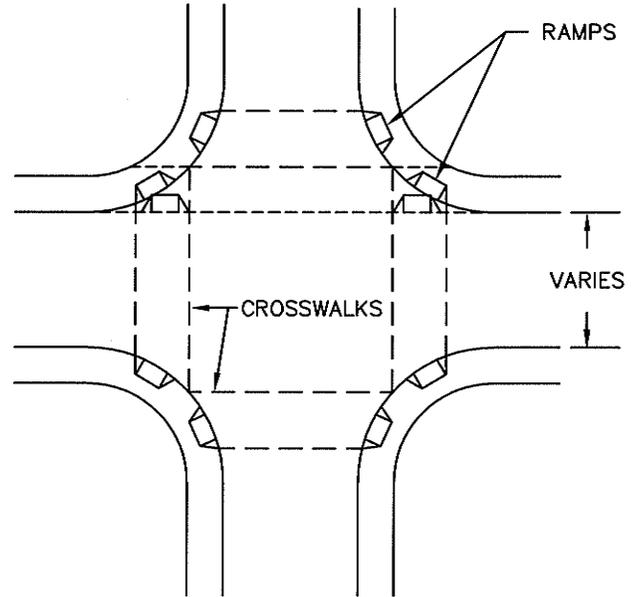
DRWN:
L.G.

CHKD:
T.N.

SCALE:
NO SCALE



RAMP LOCATIONS
ON RESIDENTIAL ACCESS STREETS

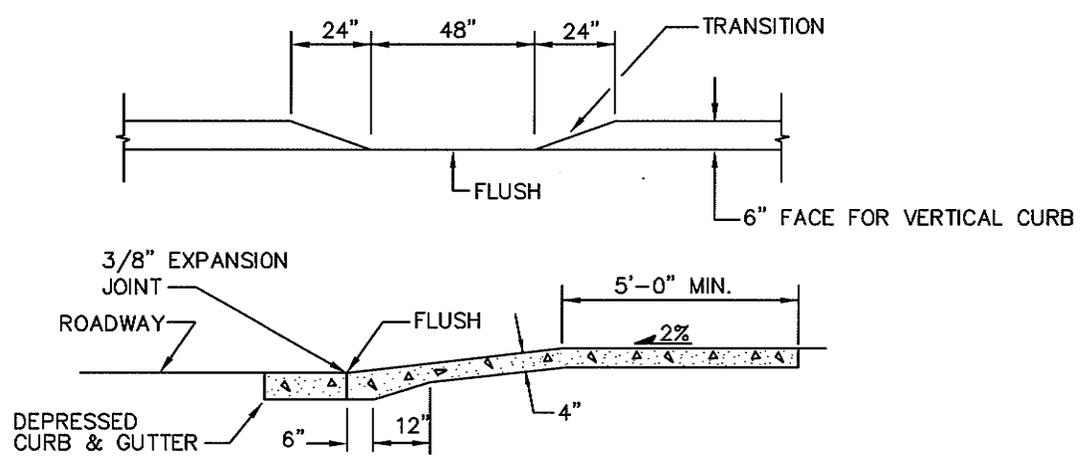
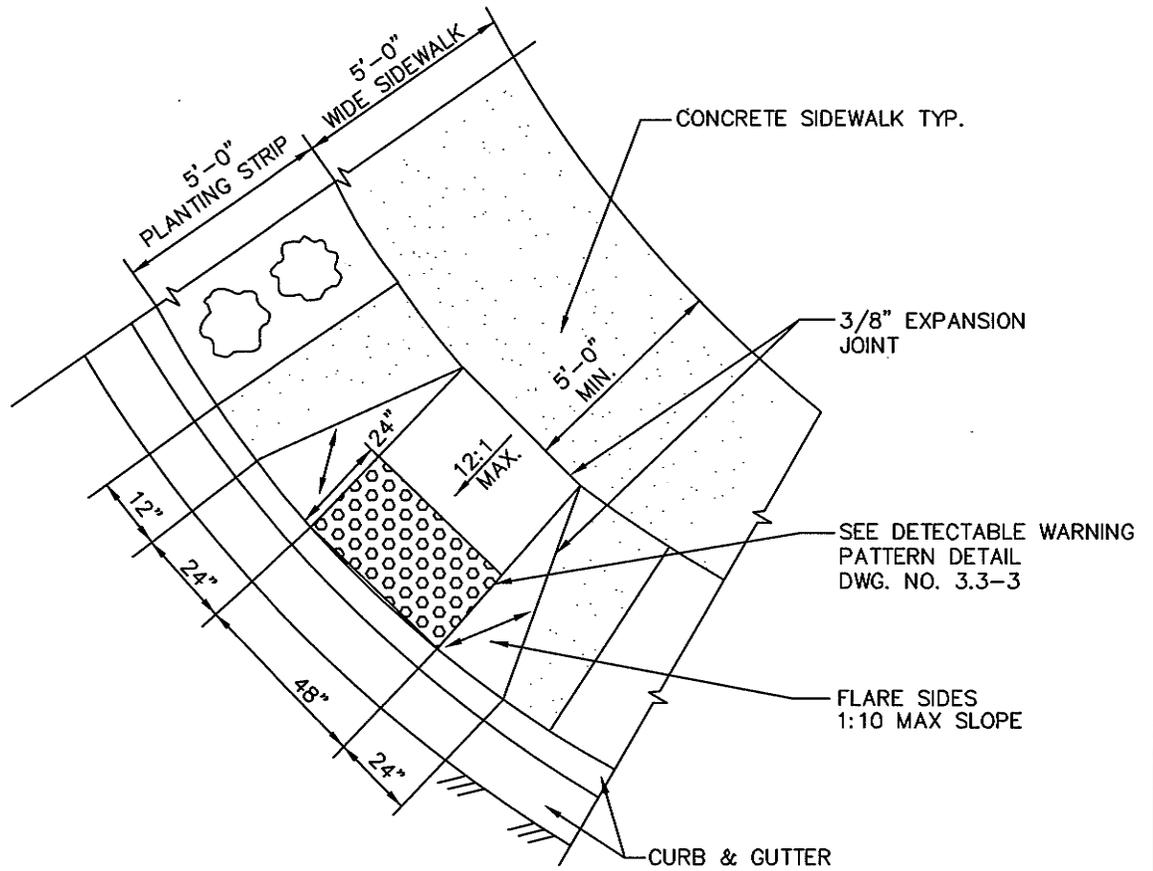


RAMP LOCATIONS
ON ARTERIALS AND COMMERCIAL
ACCESS STREETS

GENERAL NOTES:

1. CATCH BASIN AND INLETS SHALL BE OUTSIDE THE CURB RAMP (24" MIN. CLEARANCE FROM RAMP).
2. CARE SHALL BE TAKEN TO KEEP THE RAMP FROM CONFLICTING WITH HYDRANTS, POLES, INLETS, AND OTHER UTILITIES.
3. CONSTRUCT RAMP IN ACCORDANCE WITH DWG. NO. 3.3-2.
4. CROSSWALKS ARE NOT ALWAYS MARKED.
5. WHEN RAMPS ARE CONSTRUCTED ON ONE SIDE OF STREET, RAMPS SHALL BE CONSTRUCTED AT CORRESPONDING LOCATIONS ON OPPOSITE SIDE OF STREET.

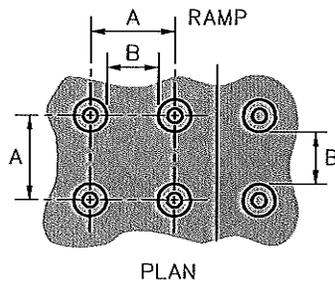
CITY OF DUPONT			
CURB RAMP LOCATIONS			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 3.3-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



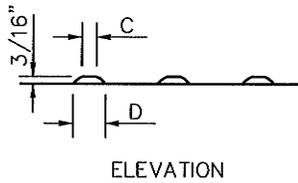
GENERAL NOTES:

1. CURB RAMPS SHALL BE PROVIDED AT ALL INTERSECTIONS, WHERE SIDEWALKS OCCUR.
2. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.3 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
CURB RAMP			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 3.3-2
DATE: 9/11	DRWN: J.C.	CHKD: D.M.	SCALE: NO SCALE



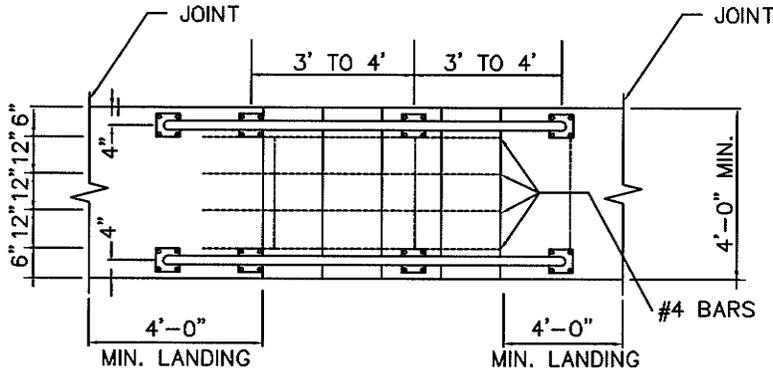
	MIN.	MAX.
A	1 5/8"	2 3/8"
B	5/8"	1 1/2"
C	7/16"	3/4"
D	7/8"	1 7/16"



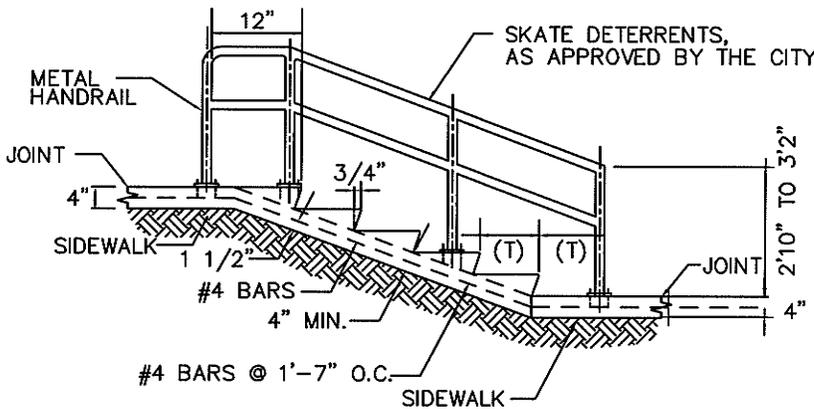
GENERAL NOTES:

1. PATTERN AREA SHALL BE YELLOW IN COLOR.
2. PRODUCT AND METHOD OF INSTALLATION SHALL BE APPROVED BY THE CITY AND MEET CURRENT MUTCD, ADA, ADAAG STANDARDS.
3. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.3 OF THE PUBLIC WORKS STANDARDS.

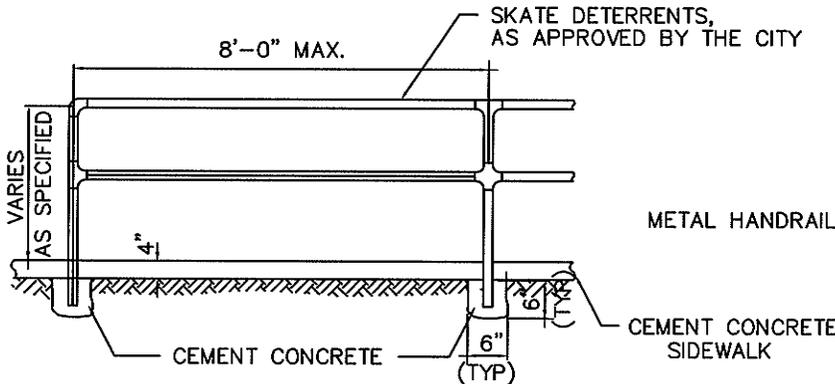
CITY OF DUPONT			
DETECTABLE WARNING PATTERN DETAIL (TRUNCATED DOMES)			
APPROVED: <i>Paul R. John</i> CITY OF DUPONT			DWG. NO. 3.3-3
DATE: 9/11		DRWN: J.C.	CHKD: D.M.
			SCALE: NO SCALE



CONCRETE STEPS
PLAN



CONCRETE STEPS
SECTION A-A



NOTES FOR
CONCRETE STEPS:

1. CONCRETE: CEMENT CONCRETE CLASS 3000.
2. ALL STEPS: SAME DIMENSIONS. WITHIN 3/8" MAX. DIFFERENCE.
3. RISERS: 7" MAX., 4" MIN.
4. TREADS (T): 12" MAX., 11" MIN. WITH TRANSVERSE 0.01 FT/FT SLOPE.
5. METAL HANDRAIL REQUIRED FOR 2 RISERS OR MORE. SEE NOTES BELOW.
6. REINFORCING BARS SHALL MEET THE REQUIREMENTS OF ASTM A-615, GRADE 60 AND ARE REQUIRED FOR 4 STEPS OR MORE.
7. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.4 OF THE PUBLIC WORKS STANDARDS.
8. MAX. VERTICAL DISTANCE BETWEEN LANDINGS IS 12'

NOTES FOR HANDRAILS:

1. GALVANIZED STEEL OR ALUMINUM.
2. 1 1/4" TO 2" O.D. ROUND OR OVAL PIPE.
3. WELDED, WITH SMOOTH SURFACE AND JOINTS.
4. POSTS SET IN MIN. 6" CONCRETE CLASS 3000.
5. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 3.4 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT

CONCRETE STEPS & METAL HANDRAIL

APPROVED:

Paul Z. John 9/21/11
CITY OF DUPONT DATE

DWG. NO.

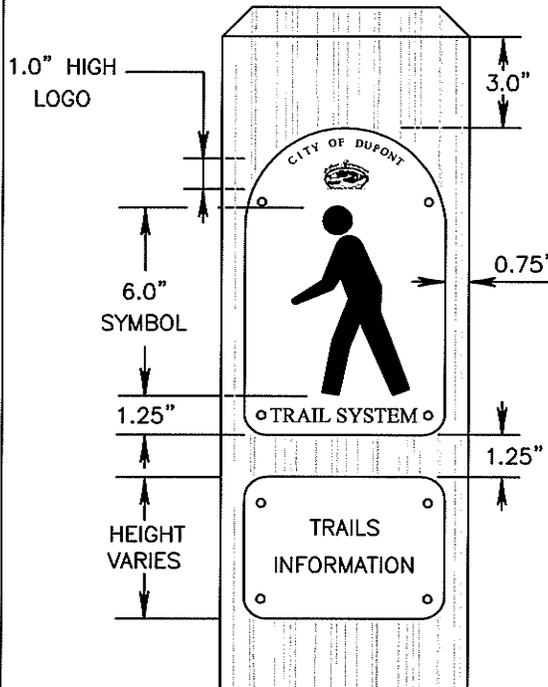
3.4-1

DATE:
9/11

DRWN:
L.G.

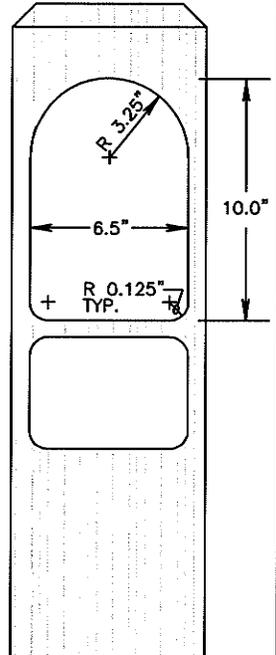
CHKD:
T.N.

SCALE:
NO SCALE

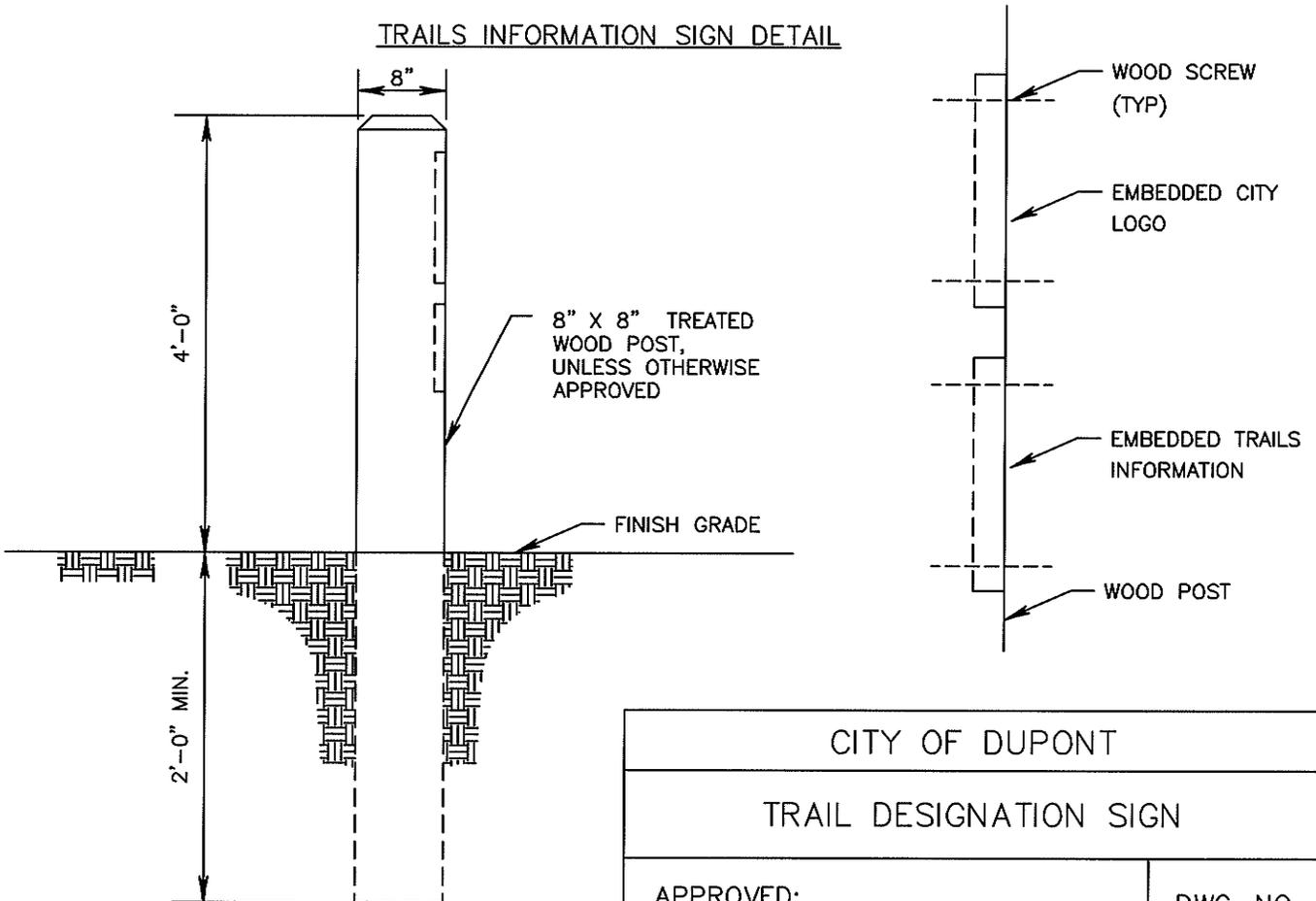


GENERAL NOTES:

1. SIGN SHALL BE REQUIRED ON ALL SIDES AS DIRECTED BY THE CITY.
2. SIGN TO BE PLACED WITH 4 TO 6 2" GALVANIZED WOOD SCREWS, EXTERIOR PHILIPS HEAD.
3. SIGN INFORMATION SHALL BE OF A PRE-APPROVED FORMAT PER THE CITY.
4. SIGN INFORMATION WILL VARY BASED ON TRAIL INFORMATION.
5. ALUMINUM SIGN SHALL BE INSTALLED FLUSH WITH FACE OF POST.
6. ALUMINUM SIGN SHALL BE BROWN WITH WHITE "TIMES NEW ROMAN" TEXT AND SYMBOLS.
7. "TRAIL SYSTEM" TEXT SHALL BE 0.5" IN HEIGHT AND ALL OTHER TEXT SHALL BE 0.25" IN HEIGHT.

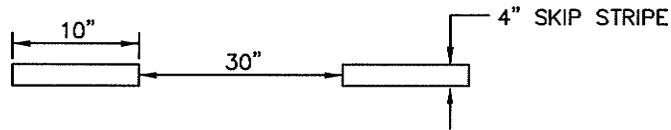


TRAILS INFORMATION SIGN DETAIL

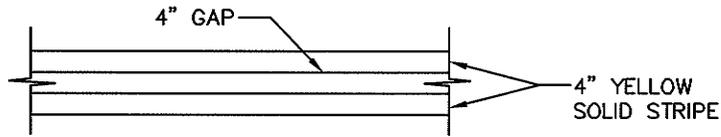


NOT TO SCALE

CITY OF DUPONT			
TRAIL DESIGNATION SIGN			
APPROVED: <i>Peter R. John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 3.5
DATE: 9/11	DRWN: P.G.B-M.	CHKD: T.N.	SCALE: NO SCALE



SKIP CENTERLINE STRIPE

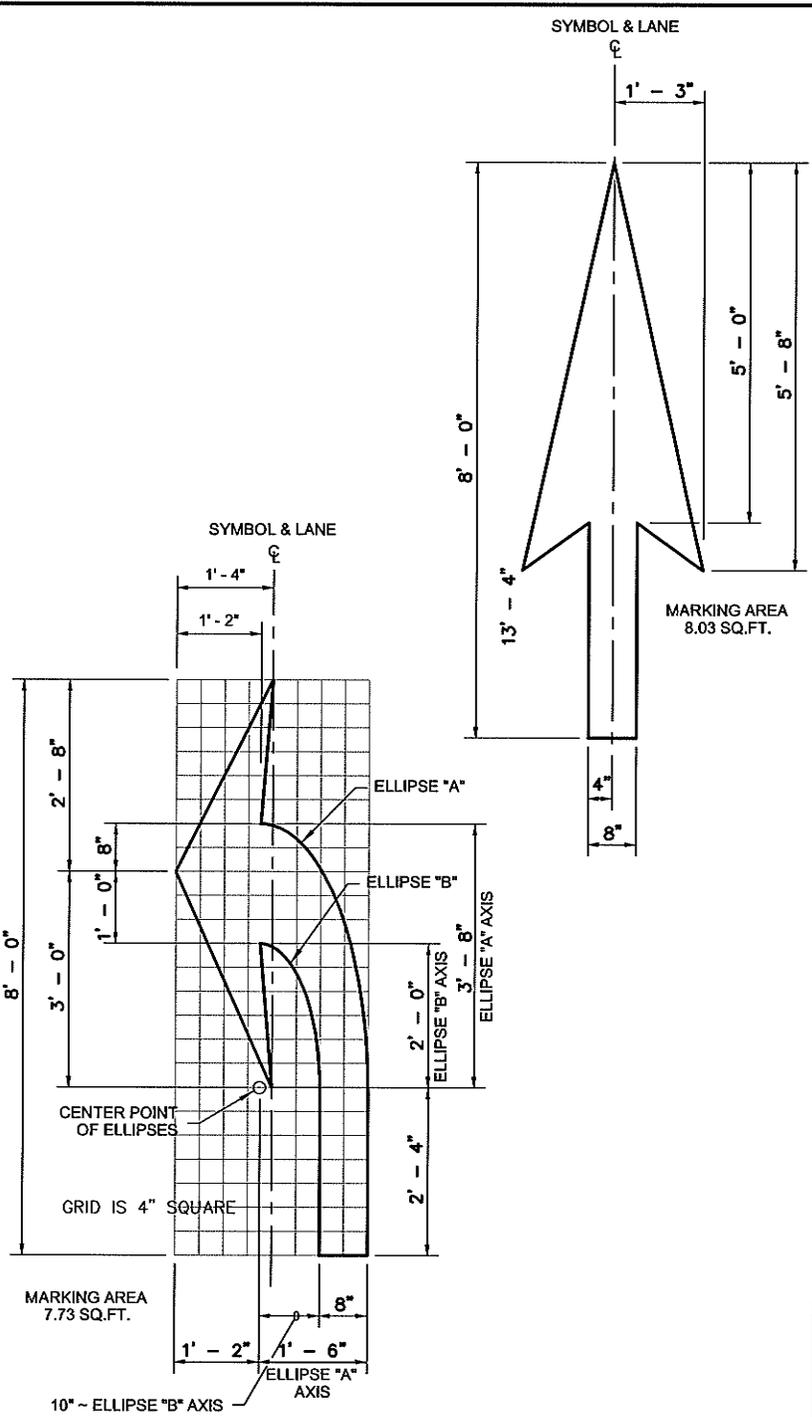
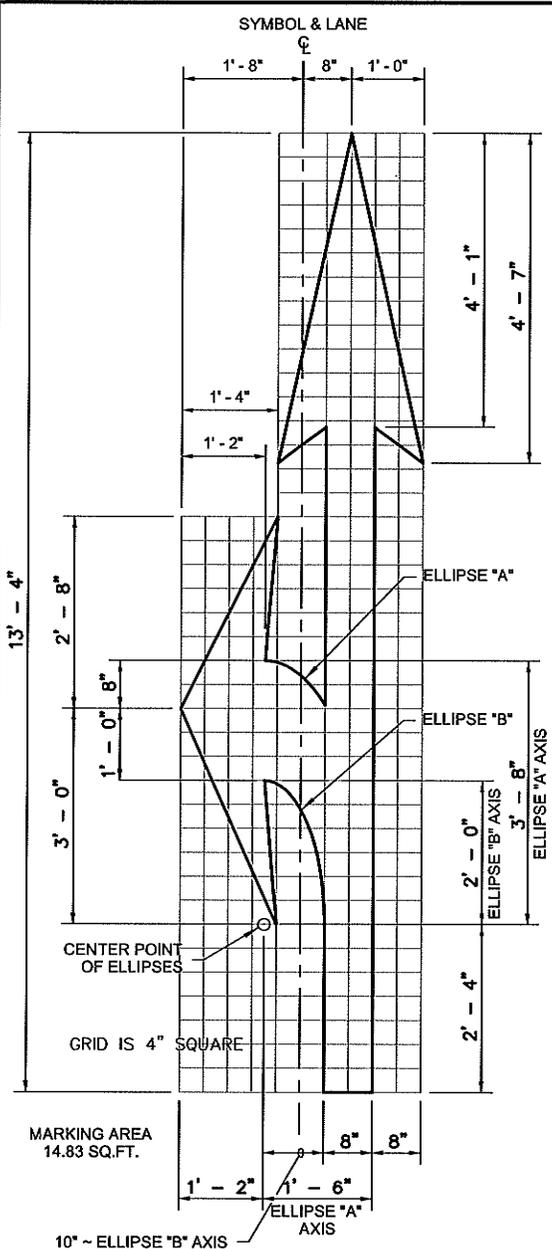


DOUBLE YELLOW CENTERLINE STRIPE

GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 4.5 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT MARKINGS SHALL BE INSTALLED WITH HOT APPLIED THERMOPLASTIC ON NEW ASPHALT, OVERLAYS AND ASPHALT IN GOOD CONDITION, AS DETERMINED BY THE CITY. WHERE AUTHORIZED, PREFORMED THERMOPLASTIC MATERIAL SHALL BE PREMARK WITH VIZIGRIP MADE BY FLINT TRADING INC. AND BE APPLIED USING PREMARK SEALER, OR CITY APPROVED EQUAL. ALL MATERIAL SHALL BE 125 MIL THICKNESS AND APPLIED USING APPROPRIATE INSTALLATION PROCEDURES ACCORDING TO THE MANUFACTURER.

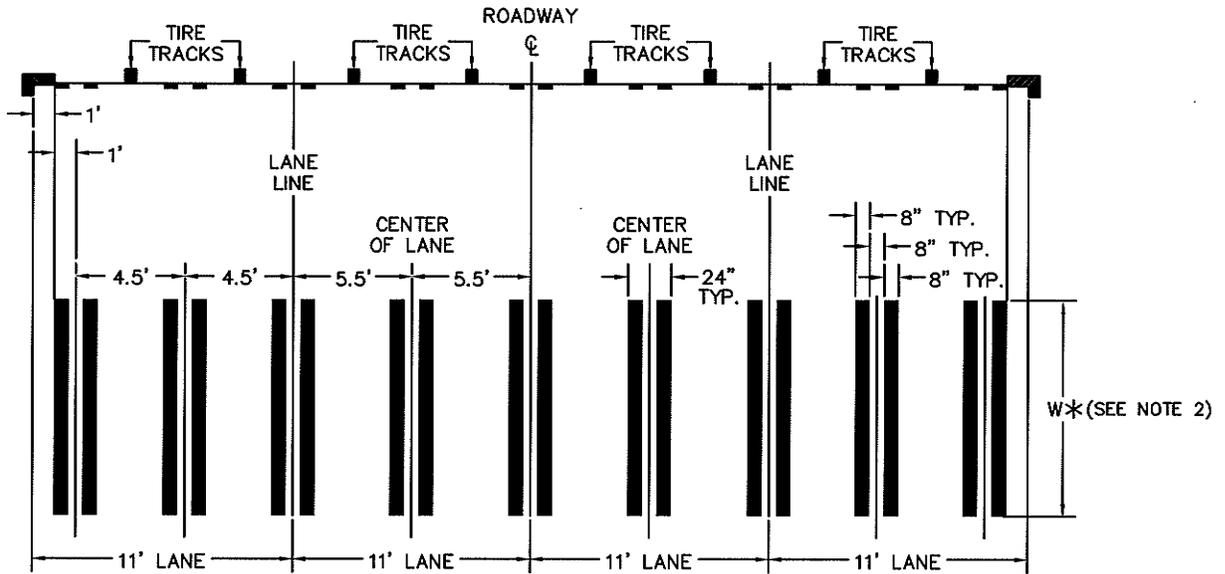
CITY OF DUPONT			
PAVEMENT MARKINGS			
APPROVED: <i>John Z John</i> CITY OF DUPONT			DWG. NO. 4.5-1
DATE: 9/11	DRWN: L.T.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 4.5 OF THE PUBLIC WORKS STANDARDS.
2. PAVEMENT MARKINGS SHALL BE INSTALLED WITH HOT APPLIED THERMOPLASTIC ON NEW ASPHALT, OVERLAYS AND ASPHALT IN GOOD CONDITION, AS DETERMINED BY THE CITY. WHERE AUTHORIZED, PREFORMED THERMOPLASTIC MATERIAL SHALL BE PREMARK WITH VIZIGRIP MADE BY FLINT TRADING INC. AND BE APPLIED USING PREMARK SEALER, OR CITY APPROVED EQUAL. ALL MATERIAL SHALL BE 125 MIL THICKNESS AND APPLIED USING APPROPRIATE INSTALLATION PROCEDURES ACCORDING TO THE MANUFACTURER.

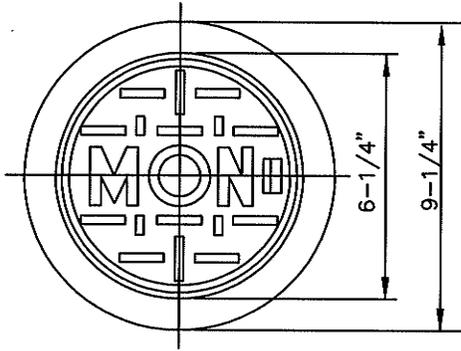
CITY OF DUPONT			
ARROW DETAILS			
APPROVED: <i>Pat Z John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 4.5-2
DATE: 9/11	DRWN: L.T.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ROADWAYS WITH MORE OR LESS LANES, THE SAME CONFIGURATION APPLIES TO KEEP THE BARS CENTERED ON THE LANE LINES, AND IN THE CENTER OF THE TRAVELED PORTION OF THE LANE TO MINIMIZE TIRE WEAR.
- * 2. THE WIDTH OF A CROSSWALK SHALL BE 8' WHEN CROSSING A RESIDENTIAL STREET, 10' ACROSS A STREET INTERSECTING AN ARTERIAL, AND 12' WHEN THE CROSSWALK IS CROSSING AN ARTERIAL.
3. PAVEMENT MARKINGS SHALL BE INSTALLED WITH HOT APPLIED THERMOPLASTIC ON NEW ASPHALT, OVERLAYS AND ASPHALT IN GOOD CONDITION, AS DETERMINED BY THE CITY. WHERE AUTHORIZED, PREFORMED THERMOPLASITC MATERIAL SHALL BE PREMARK WITH VIZIGRIP MADE BY FLINT TRADING INC. AND BE APPLIED USING PREMARK SEALER, AS APPLICABLE, PER MANUFACTURER'S RECOMMENDATIONS, OR CITY APPROVED EQUAL. ALL MATERIAL SHALL BE 125 MIL THICKNESS AND APPLIED USING APPROPRIATE INSTALLATION PROCEDURES ACCORDING TO THE MANUFACTURER.

CITY OF DUPONT			
CROSSWALK DETAIL			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 4.5-3
DATE: 9/11		DRWN: J.C.	CHKD: D.J.M.
			SCALE: NO SCALE

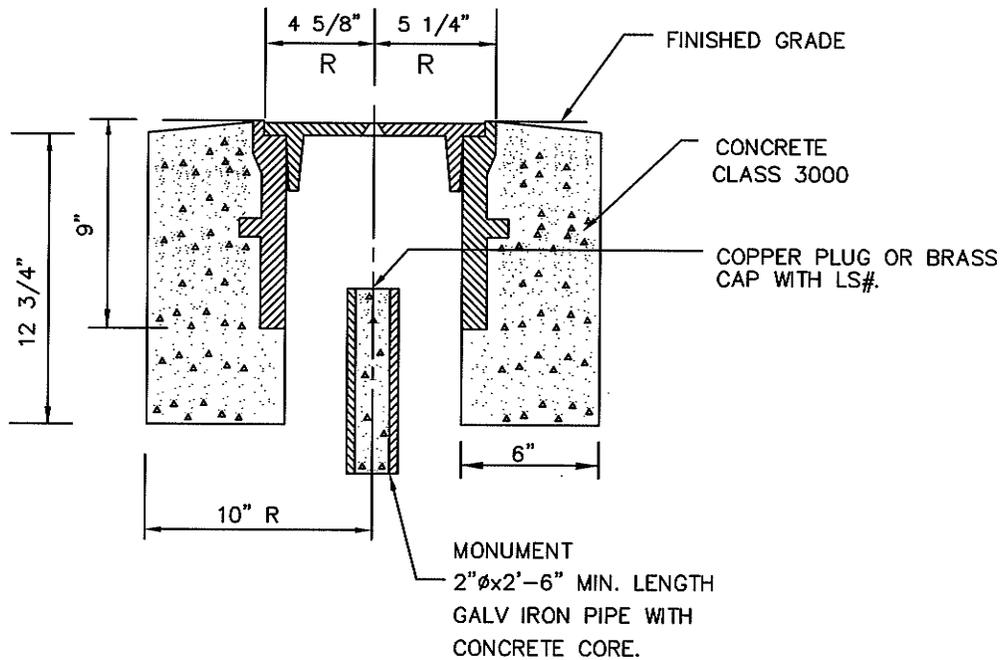


MONUMENT COVER

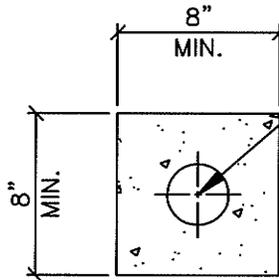
GENERAL NOTES:

1. CASTINGS SHALL BE GRAY IRON ASTM A 48, AASHTO M105, CLASS 30
2. MACHINE BEARING FACES OF COVER AND CASE TO INSURE POSITIVE FIT.
3. APPROXIMATE WEIGHTS, STANDARDS TO INSURE POSITIVE FIT.
4. CONCRETE SHALL BE CLASS 400

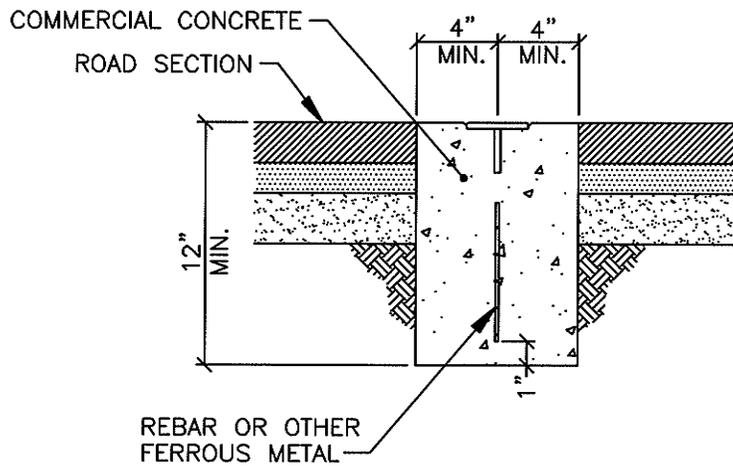
CASE	60 lbs
COVER	19 lbs
TOTAL	79 lbs
5. MONUMENT POSITION SHALL BE SET BY A PROFESSIONAL LAND SURVEYOR LICENSED BY THE STATE OF WASHINGTON WHOSE CERTIFICATE NUMBER SHALL BE STAMPED ON THE CAP.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.2 OF THE PUBLIC WORKS STANDARDS.



CITY OF DUPONT			
ROADWAY SURVEY CASE AND COVER MONUMENT			
APPROVED: CITY OF DUPONT	DATE 9/21/11	DWG. NO. 5.2-1	
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



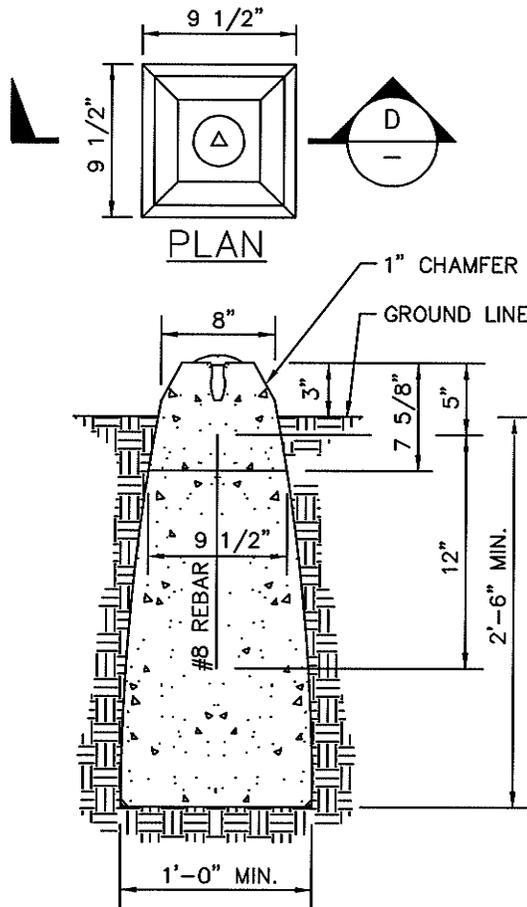
POINT SHALL BE DRILLED TO A DEPTH OF 3/16" MIN. (TOP OF CAP SHALL BE FLUSH W/ CONCRETE AND ASPHALT SURFACE)



GENERAL NOTES:

1. THIS MONUMENT TO BE USED PRIMARILY ON BITUMINOUS OR ASPHALT CONCRETE PAVEMENT FOR USE PRIMARILY IN SUBDIVISIONS AND MINOR ARTERIALS.
2. CONCRETE BASE DIMENSIONS SHOWN ARE MIN.. CONCRETE BASE NEED NOT BE FORMED.
3. CAP SHALL BE BRASS, ALUMINUM OR OTHER NON-FERROUS METAL, MIN. 2" DIA.
4. CONCRETE TO BE PLACED ON A FIRM AND UNYIELDING FOUNDATION.
5. MONUMENT POSITION SHALL BE SET BY A PROFESSIONAL LAND SURVEYOR LICENSED BY THE STATE OF WASHINGTON WHOSE CERTIFICATE NUMBER SHALL BE STAMPED ON CAP.
6. SUFFICIENT FERROUS METAL SHALL BE PLACED IN CONCRETE TO ALLOW DETECTION BY A METAL DETECTOR.
7. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.2 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
ROADWAY SURVEY SURFACE MONUMENT			
APPROVED: <i>John T. John</i> CITY OF DUPONT			DWG. NO. 5.2-2
DATE: 9/11		DRWN: M.S.	CHKD: T.N.
DATE: 9/21/11			SCALE: NO SCALE

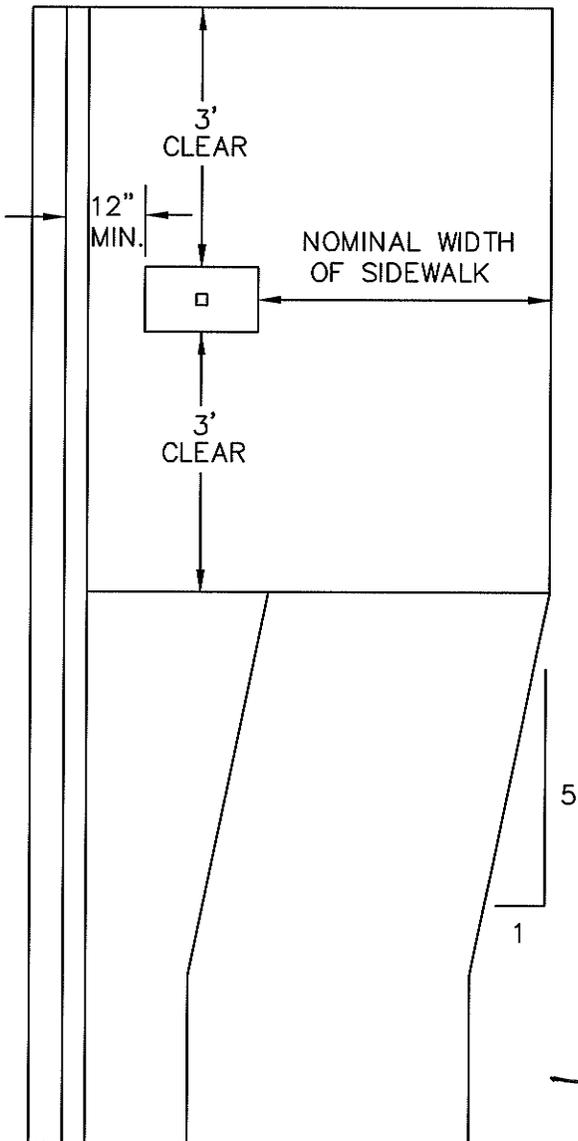
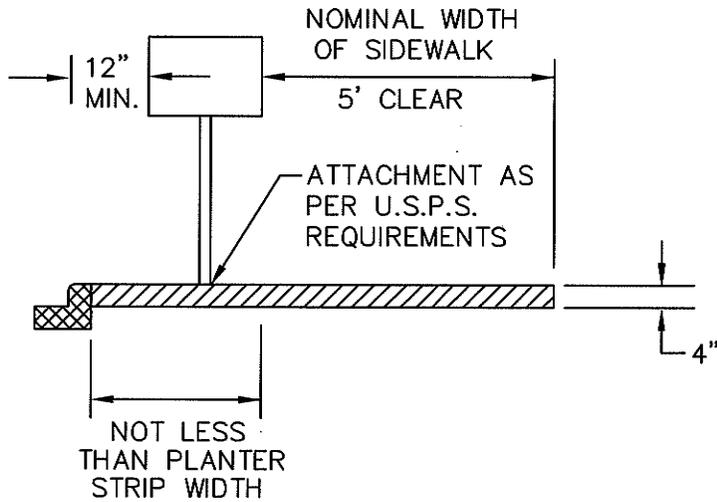


GENERAL INSTALLATION
SECTION D

GENERAL NOTES:

1. THE CAP SHALL BE OF A NON-FERROUS MATERIAL AND SHALL BE RIBBED TYPE TO PREVENT DISLODGING.
2. CONCRETE SHALL BE CLASS 4000.
3. THE HOLE SHALL BE 2.5' MIN. IN DEPTH OR 0.5' BELOW THE DEEPEST RECORDED FROST LINE. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE HOLE SO THAT THE CONCRETE IS ON FIRM, UNDISTURBED EARTH.
4. THE TOP OF THE CONCRETE SHALL BE TROWLED SMOOTH AND THE BRASS DISC SET IN THE CENTER WITH ITS TOP EDGE FLUSH AND LEVEL.
5. LS# SHALL BE STAMPED ON CAP.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.2 OF THE PUBLIC WORKS STANDARDS.

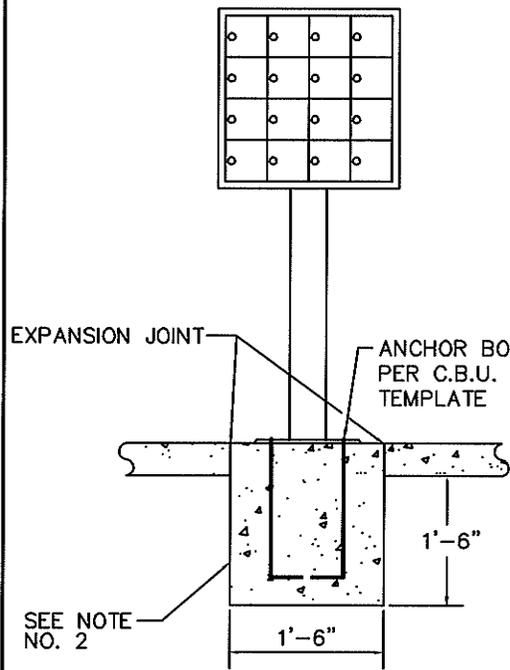
CITY OF DUPONT			
OFF-ROADWAY SURVEY MONUMENT			
APPROVED: <i>Peter Z. John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 5.2-3
DATE: 9/11	DRWN: L.T.	CHKD: T.N.	SCALE: NO SCALE



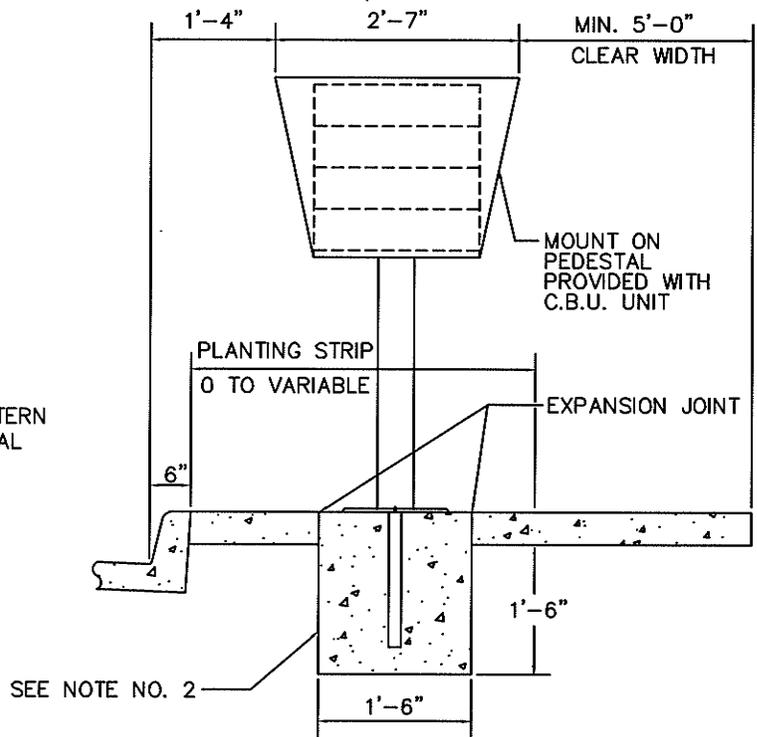
GENERAL NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.3 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
MAILBOX DETAIL			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 5.3-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



FRONT

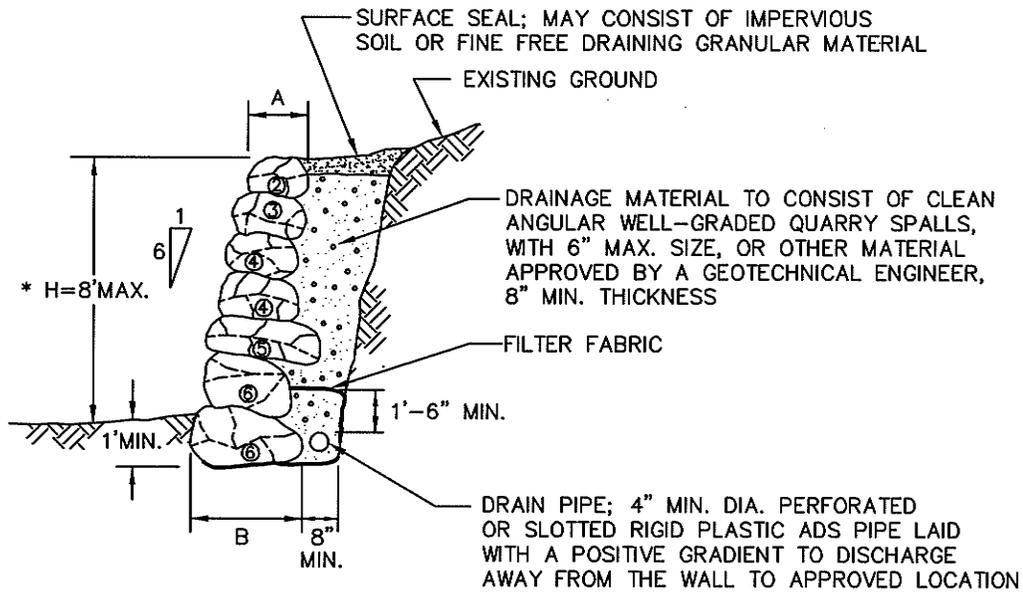


SIDE

GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.3 OF THE PUBLIC WORKS STANDARDS.
2. INSTALLATION OF C.B.U., INCLUDING CONSTRUCTION OF THE BASE, SHALL BE COMPLETED BY THE DEVELOPER.

CITY OF DUPONT			
COLLECTION BOX UNIT (C.B.U.) MAILBOX INSTALLATION			
APPROVED: <i>Paul J. John</i> CITY OF DUPONT			DWG. NO. 5.3-2
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



SECTION

SIZE	APPROXIMATE WEIGHT - LBS.	APPROXIMATE DIAMETER
1 MAN	50-200	12" - 18"
2 MAN	200-700	18" - 28"
3 MAN	700-2000	28" - 36"
4 MAN	2000-4000	36" - 48"
5 MAN	4000-6000	48" - 54"
6 MAN	6000-8000	54" - 50"

H	B	A
6'- 0" OR LESS	3'- 0"	2'- 0"
6'- 0' H ≤ 8'- 0"	4'- 4"	3'- 0"

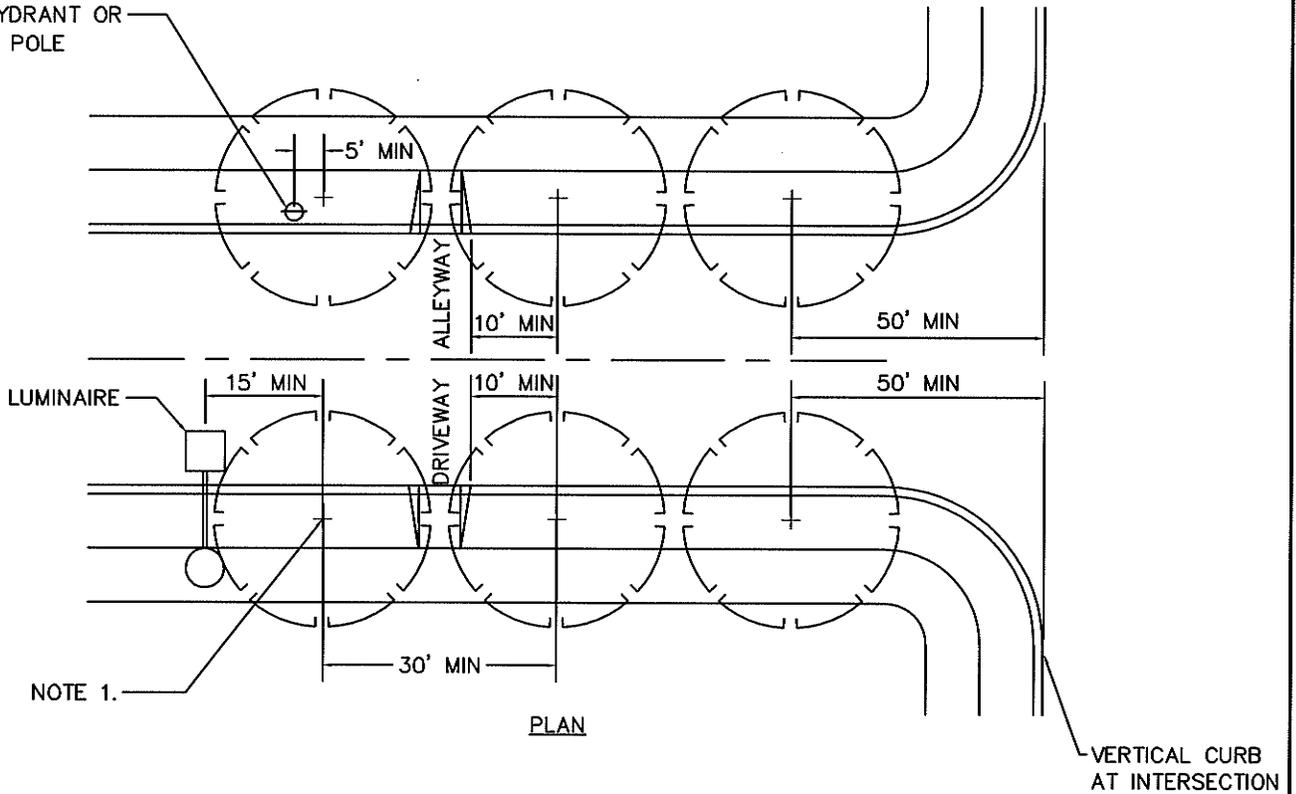
ROCKERY SCHEDULE

GENERAL NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.5 OF THE PUBLIC WORKS STANDARDS.
- * 2. FENCE OR HANDRAIL REQUIRED WHEN HEIGHT IS 3' OR GREATER.

CITY OF DUPONT			
ROCK WALL DETAIL			
APPROVED: <i>Don Z John</i> 9/21/11 CITY OF DUPONT			DWG. NO. 5.5-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE

FIRE HYDRANT OR
UTILITY POLE



NOTE 1.

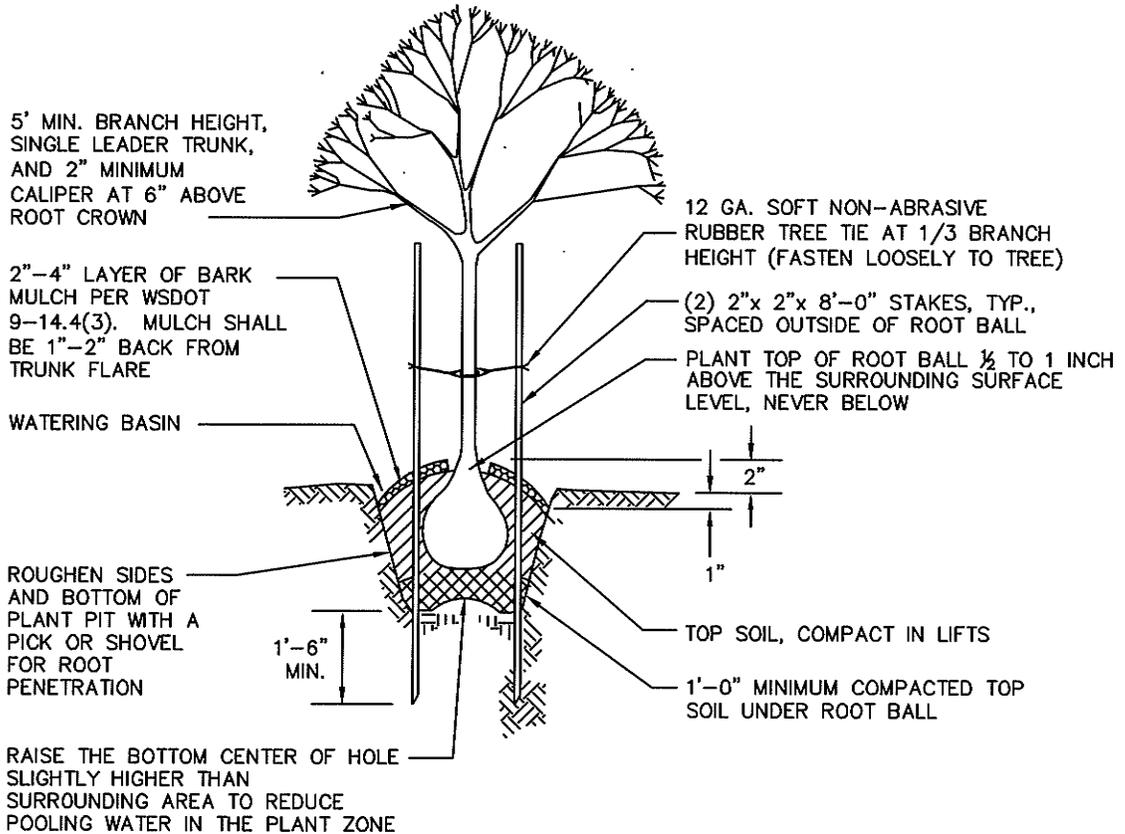
PLAN

VERTICAL CURB
AT INTERSECTION

GENERAL NOTES:

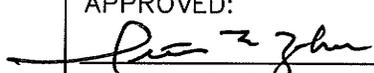
1. TREES SHALL GENERALLY BE PLANTED IN THE CENTER OF THE PLANTING STRIPS.
2. TREES SHALL BE STAKED IN A MANNER NOT TO OBSTRUCT SIDEWALK TRAFFIC.
3. IN CASE OF BLOCK-OUTS, MIN. CLEAR SIDEWALK WIDTH SHALL BE 5 FEET IN RESIDENTIAL OR 8 FEET IN BUSINESS DISTRICTS.
4. TREES SHALL BE PLANTED A MINIMUM OF 5 FEET FROM UNDERGROUND UTILITIES AND 15 FEET FROM STREET LIGHTS.
5. TREES SHALL NOT BE PLANTED WITHIN THE CLEAR ZONE SIGHT TRIANGLE.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.7 OF THE PUBLIC WORKS STANDARDS AND DWG. NO. 5.7-2.

CITY OF DUPONT			
STREET TREE STANDARDS			
APPROVED: <i>[Signature]</i> CITY OF DUPONT		DATE 9/21/11	DWG. NO. 5.7-1
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. PLANT ALL TREES ONE INCH HIGHER THAN LEVEL AT WHICH GROWN IN NURSERY.
2. TAKE CARE TO AVOID ROOTS WITH STAKES.
3. PLANT PIT SHALL BE AT LEAST 2 TIMES THE WIDTH OF THE ROOT BALL, BUT SHALL BE ONLY AS DEEP AS THE ROOT BALL.
4. ROOT BARRIER SHALL BE INSTALLED A MINIMUM OF 3' EACH SIDE OF CENTER OF ROOT BALL AT OR BELOW HARDSCAPE SURFACE ADJACENT TO CURBS AND PAVED SURFACES. ROOT BARRIER SHALL BE NDS PANEL EP-2450 (24"H X 24"L), OR CITY APPROVED EQUAL, INSTALLED PER MANUFACTURERS SPECIFICATIONS.
5. REMOVE ALL TAGS, WIRES, STRING, STRAPS, BURLAP, AND WIRE BASKETS FROM THE ROOT BALL. BEFORE PLANTING.
6. STAKING AND GUYING WIRES SHALL BE REMOVED AFTER (1) YEAR, FOLLOWING INSPECTION FOR VIGOR. REPLACE AS REQUIRED.
7. THE CITY SHALL APPROVE ALL STREET TREES AND PLANTING LOCATIONS ON SITE PRIOR TO PLANTING.
8. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.7 AND DWG. NO. 5.7-1 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
STREET TREE PLANTING AND STAKING DETAIL			
APPROVED: 		DATE 9/21/11	DWG. NO. 5.7-2
CITY OF DUPONT			
DATE: 9/11	DRWN: E.S.T.	CHKD: D.J.M.	SCALE: NO SCALE

1" CHAMFER
4 SIDES

HANDLES

1/8" MIN. THICK GALV.
STEEL OR ALUMINUM.
INTERIOR DIM. ARE 1/4"
GREATER THAN POST DIM.

CLASS 4000 CONC.

2" GALV. PIPE

FREE DRAINING
MATERIAL

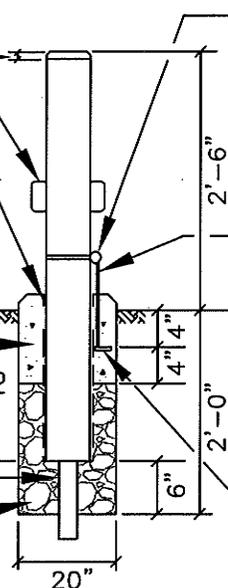
1/2" GALV. EYE BOLT
WITH WASHER AND NUT.
RECESSED NUT AND PIN
BOLT THREAD

500 LB. (MIN.) TEST
GALV. CHAIN ANCHORED
IN CONCRETE

1/2" GALV.
EYE BOLT

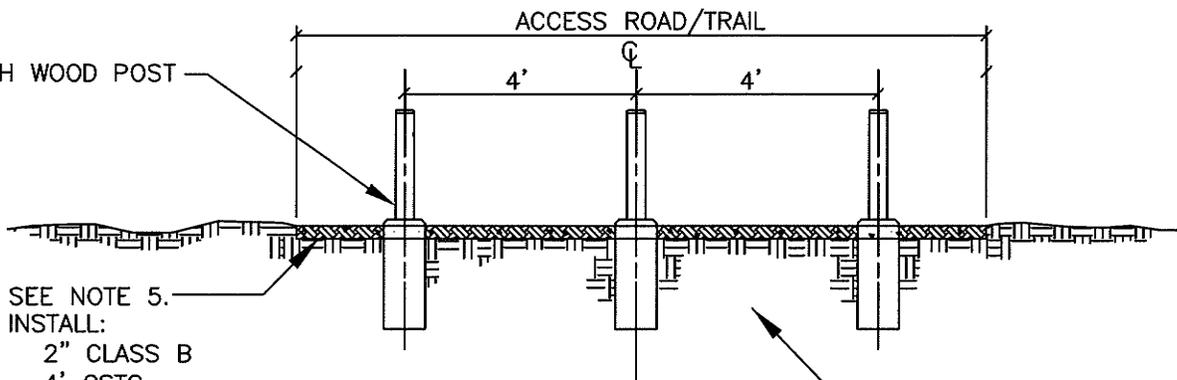
PADLOCK PROVIDED BY
CITY OF DUPONT WITH
MASTER KEY WHICH
OPENS ALL PADLOCKS

6" L x 3/8" Ø STEEL ROD,
CHAIN ANCHOR



REMOVABLE BOLLARD

8"x8" ROUGH WOOD POST
SEE NOTE 1



SEE NOTE 5.
INSTALL:
2" CLASS B
4' CSTC

TYPICAL BOLLARD PLACEMENT

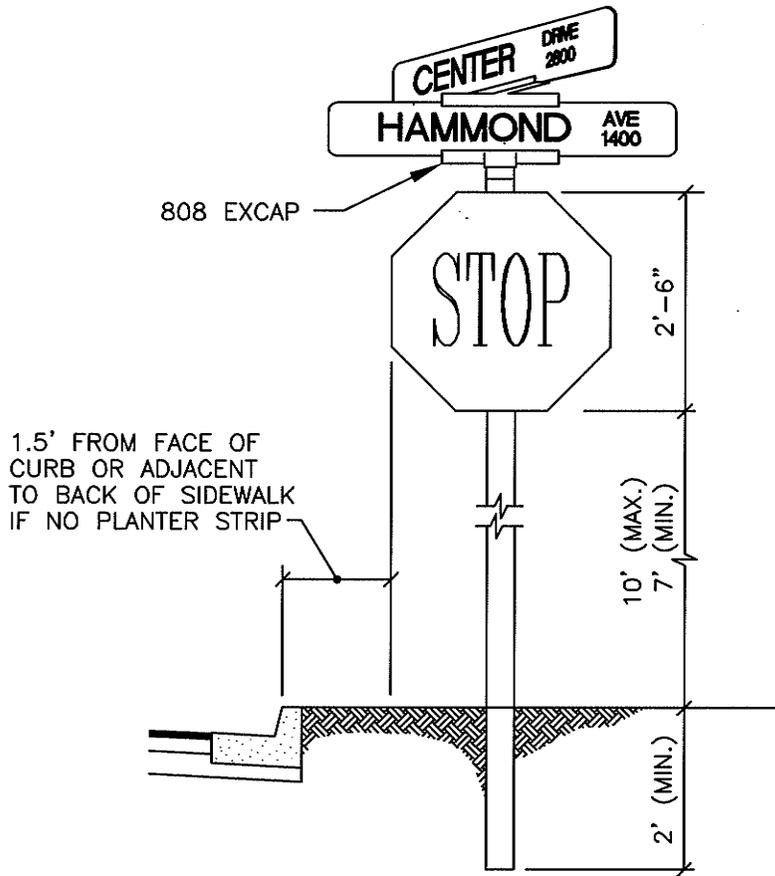
NOT TO SCALE

REMOVABLE
BOLLARD (TYP.)

GENERAL NOTES:

1. TIMBER SHALL BE DOUGLAS FIR OF DENSE CONSTRUCTION GRADE AND SHALL BE PRESSURE TREATED WITH WEATHER BORNE PRESERVATIVE (ACA, CCA, ACZA) IN ACCORDANCE WITH REQUIREMENTS OF WSDOT/APWA STANDARD SPECIFICATIONS SEC. 9-09.3(4).
2. STEEL TUBE SHALL CONFORM TO ASTM A53 OR ASTM A53 GRADE A.
3. NUTS, BOLTS, AND WASHERS SHALL CONFORM TO ASTM A307.
4. ALL STEEL PARTS SHALL BE GALVANIZED.
5. IF BOLLARDS ARE INSTALLED WITHIN A GRAVEL ROAD OR TRAIL, AN ASPHALT CONCRETE PAVEMENT APRON SHALL BE INSTALLED THE WIDTH OF THE ROAD/TRAIL AND 5 FEET BEYOND THE BOLLARDS.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.10 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
BOLLARD DETAIL			
APPROVED:		DWG. NO.	
<i>[Signature]</i>		5.10	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	J.C.	D.J.M.	NO SCALE

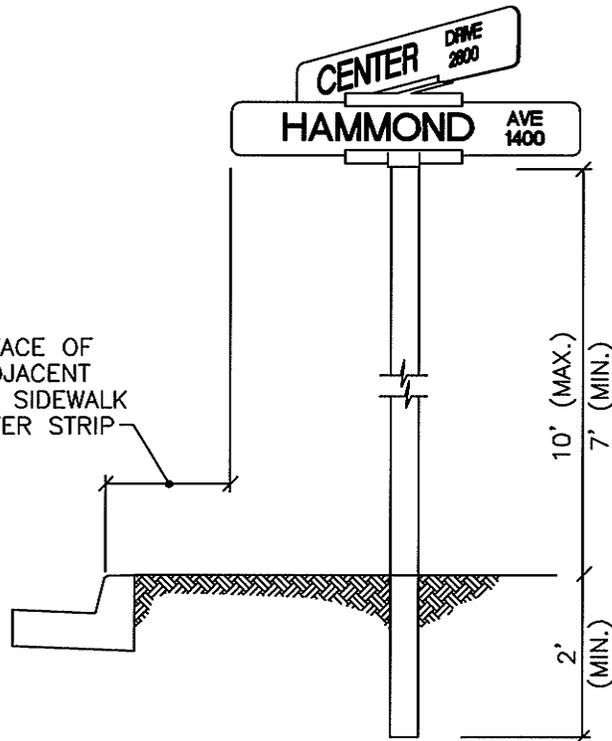


GENERAL NOTES:

1. POST: 4"x4"x12' PRESSURE TREATED WOOD.
2. PANELS TO BE STANDARD ALUMINUM WITH REFLECTIVE LETTERS COLOR TO BE DETERMINED BY REGULATORY INFORMATION
3. ALL VEHICULAR CONTROL SIGNS SHALL MEET THE CITY REQUIREMENTS OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
4. STOP SIGN MOUNTING: 2" LAG SCREWS WITH WASHERS.
5. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.12 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
VEHICULAR CONTROL SIGNS			
APPROVED: <i>Peter Z. John</i> CITY OF DUPONT			DWG. NO. 5.12-1
DATE: 9/11		DRWN: M.S.	CHKD: T.N.
			SCALE: NO SCALE

1.5' FROM FACE OF CURB OR ADJACENT TO BACK OF SIDEWALK IF NO PLANTER STRIP



GENERAL NOTES:

1. SIGN: SEE DWG. NO. 5.12-3
2. STREET SIGN MOUNTING: 808 EXCAP, 808 F PLATE OR CROSS PLATE.
3. POST: 4"x4" PRESSURE TREATED WOOD.
4. IF ADDITIONAL SIGN IS MOUNTED ON POLE, HEIGHT MUST BE GREATER TO ALLOW FOR 7' OF CLEARANCE FROM BOTTOM OF SIGN TO FINISHED GRADE.
5. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.12 OF THE PUBLIC WORKS STANDARDS.

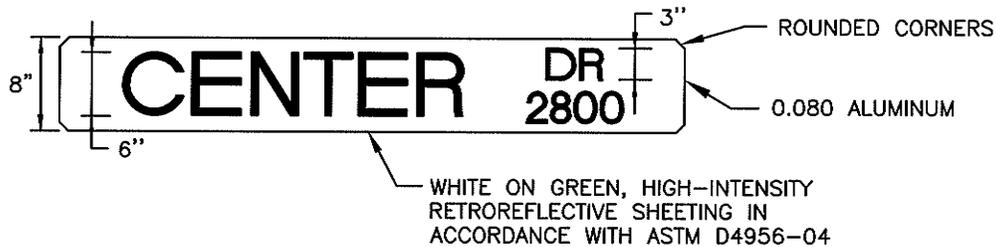
CITY OF DUPONT			
TYPICAL STREET NAME SIGN			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 5.12-2
DATE: 9/11	DRWN: M.S.	CHKD: T.N.	SCALE: NO SCALE

GENERAL NOTES:

1. ALL 4 INCH TALL LEGEND SHALL BE "C" SERIES TEXT. LEGEND NAME PLATES SHALL BE A MINIMUM LENGTH OF 24 INCHES AND A MAXIMUM LENGTH OF 42 INCHES. THE STANDARD HEIGHT SHALL BE 6 INCHES.
2. ALL 6 INCH TALL LEGEND SHALL BE "C" SERIES TEXT, UNLESS SPECIFIED OTHERWISE BY THE CITY ENGINEER. LEGEND NAME PLATES SHALL BE A MINIMUM LENGTH OF 24 INCHES AND A MAXIMUM LENGTH OF 48 INCHES. THE STANDARD HEIGHT SHALL BE 8 INCHES.
3. USE THE FOLLOWING STANDARD ABBREVIATIONS FOR STREET, AVENUE, BOULEVARD, ETC.

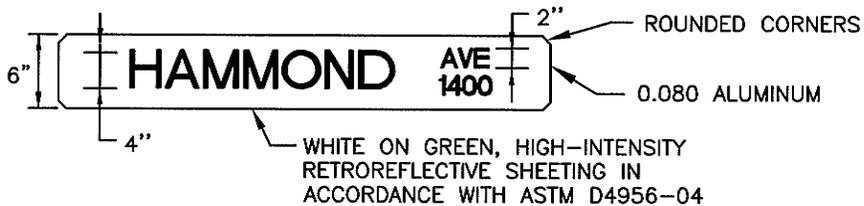
SUFFIX	ABBREVIATION	SUFFIX	ABBREVIATION
AVENUE	AVE	LOOP	LP
BOULEVARD	BLVD	PARKWAY	PKWY
CIRCLE	CIR	PLACE	PL
COURT	CT	ROAD	RD
DRIVE	DR	STREET	ST
LANE	LN	WAY	WAY

4. PERIODS, HYPHENS, COMMA, AND OTHER PUNCTUATION SHALL NOT BE USED.
5. ALL STREET NAME SIGNS SHALL BE DOUBLE SIDED, UNLESS SPECIFIED OTHERWISE BY THE CITY.
6. ALL CUL-DE-SACS AND DEAD END STREETS SHALL ONLY MOUNT THE NAME PLATE FOR THAT PARTICULAR CUL-DE-SAC OR DEAD END STREET.
7. STREET NAMES SHALL BE INSTALLED AT THE STOP SIGN LOCATION. THEY SHALL EITHER SHARE THE STOP/YIELD SIGN POST OR HAVE THE STREET NAME POST INSTALLED IN THE SAME LOCATION, UNLESS SPECIFIED OTHERWISE BY THE CITY.
8. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 5.12 OF THE PUBLIC WORKS STANDARDS.



STANDARD 6 INCH LEGEND NAME PLATE

ARTERIALS
COMMERCIAL ACCESS STREETS
INDUSTRIAL ACCESS STREETS



STANDARD 4 INCH LEGEND NAME PLATE

URBAN RESIDENTIAL STREETS

CITY OF DUPONT			
STREET SIGN DETAIL			
APPROVED: <i>John Zohn</i> CITY OF DUPONT			DWG. NO. 5.12-3
DATE: 9/11	DRWN: P.G.B-M.	CHKD: T.N.	SCALE: NO SCALE

SEE VERTICAL CURB AND GUTTER DETAIL FOR ADDITIONAL INFORMATION

CAST IRON FRAME

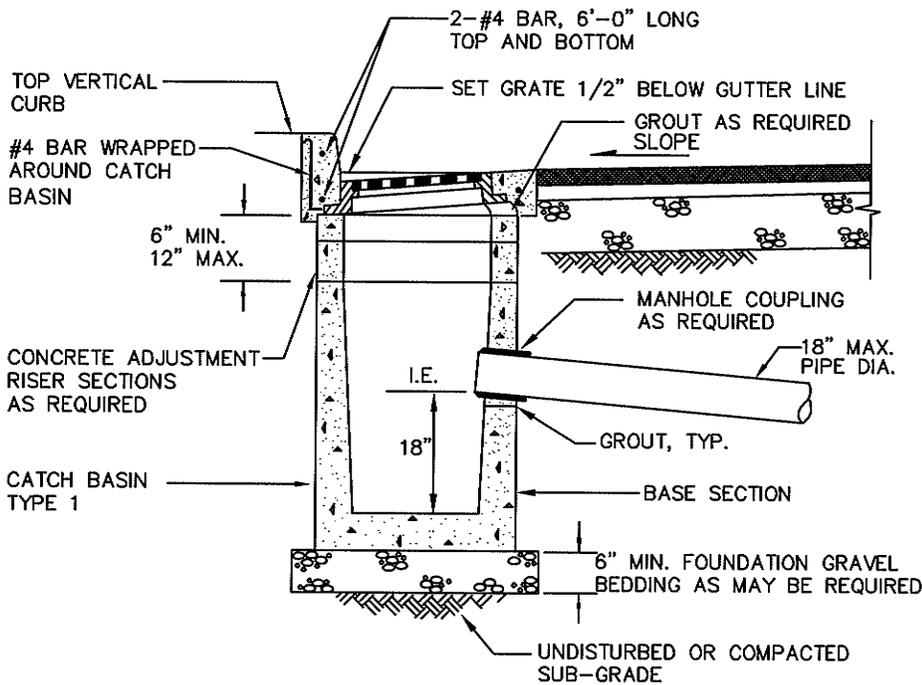
DUCTILE IRON GRATE

#4 BAR WRAPPED AROUND CATCH BASIN FRAME

2- #4 x 6' TOP AND BOTTOM, PLACE TOP BAR 3" FROM TOP OF THE CURB, PLACE BOTTOM BAR 3" FROM BOTTOM OF THE CURB

THRU JOINT, TYP. EACH SIDE

PLAN



ELEVATION

GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 7.4 OF THE PUBLIC WORKS STANDARDS.
2. TYPE I OR TYPE 1L CATCH BASIN IS USED FOR DEPTHS UP TO 5'-0" FROM THE TOP OF THE GRATE TO I.E. (INVERT)
3. CATCH BASINS TO BE CONSTRUCTED IN ACCORDANCE WITH C478 (AASHTO M199) AND ASTM C890 UNLESS OTHERWISE APPROVED BY THE CITY

CITY OF DUPONT

CATCH BASIN TYPE I

APPROVED:

DWG. NO.

CITY OF DUPONT

DATE

7.4-1

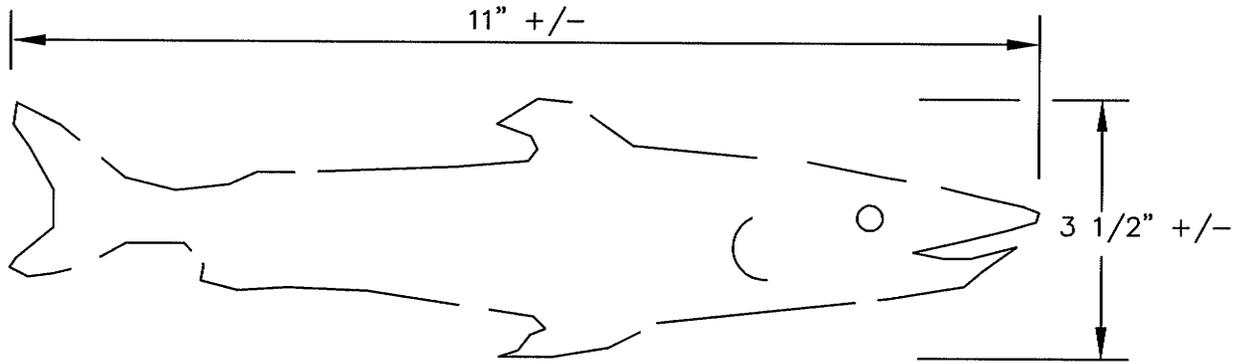
DATE:
9/11

DRWN:
L.T.

CHKD:
T.N.

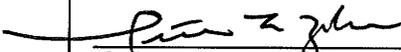
SCALE:
NO SCALE

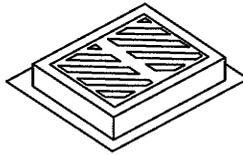
DUMP NO WASTE



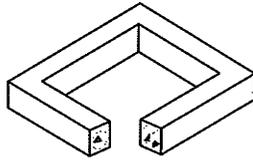
GENERAL NOTES:

1. LETTERING SHALL BE TWO INCHES HIGH AND PROPORTIONAL IN WIDTH.
2. LETTERING SHALL BE PAINTED WHITE.
3. CONTACT CITY HALL FOR STENCIL AVAILABILITY.

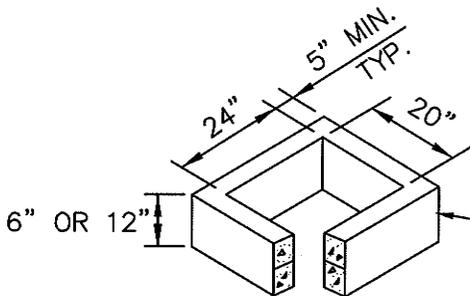
CITY OF DUPONT			
CATCH BASIN STENCIL			
APPROVED:  CITY OF DUPONT			DWG. NO. 7.4-2
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



FRAME AND OPEN GRATE, VANED GRATE, OR SOLID COVER.



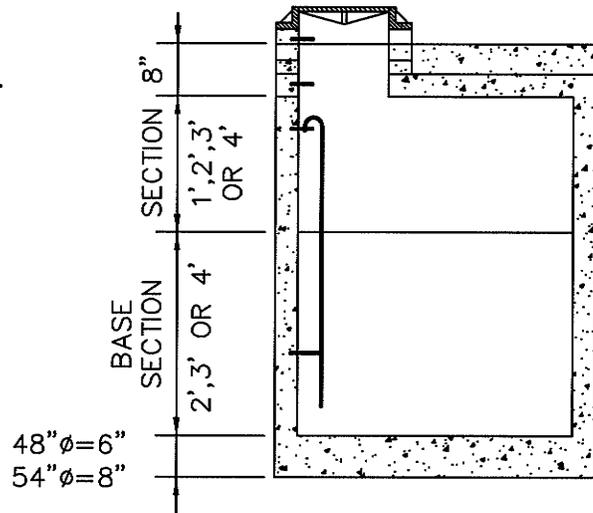
2"x4"x8" SOLID BRICK USED FOR FINAL ADJUSTMENT TO GRADE 6" HIGH MAX.



TOP SLAB WITH 24" ROUND ACCESS OR 20"x24" RECTANGULAR ACCESS

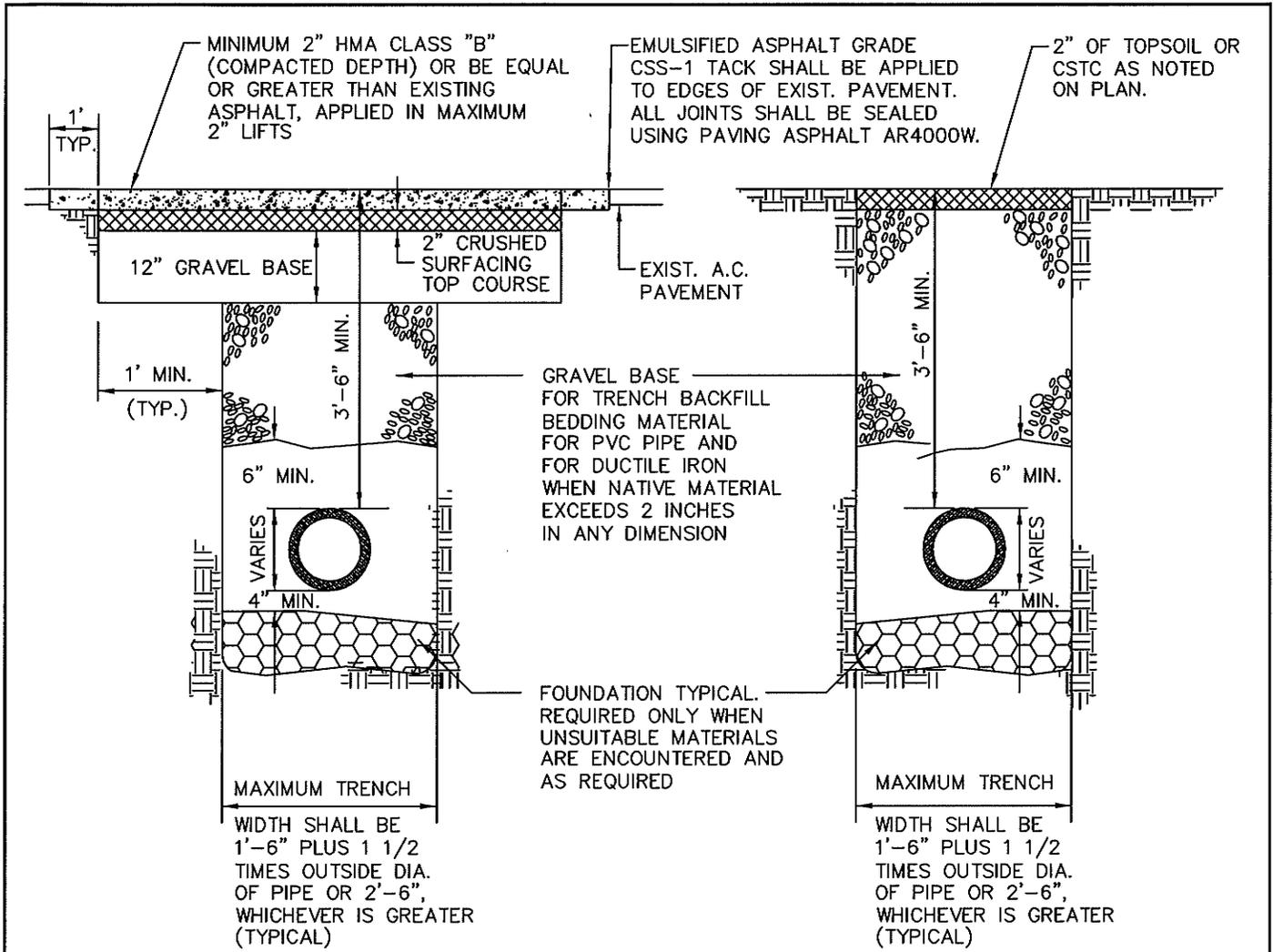
NOTES:

1. ALL TYPE 2 CB'S EQUIPPED WITH OPEN GRATES SHALL BE LOCKING TYPE.
2. ALL TYPE 2 CB'S NOT IN PAVED AREAS SHALL BE EQUIPPED WITH LOCKING LIDS.
3. CB'S SHALL BE SET SO THAT STEPS ARE DIRECTLY UNDER OPENING.
4. ALL TYPE 2 CB'S SHALL BE EQUIPPED WITH STEPS AND LADDER.
5. CONCRETE SHALL BE CLASS 4000.
6. MINIMUM DISTANCE FROM INVERT TO CB BOTTOM SHALL BE 2.0'.
7. CB SECTIONS AND LID WILL BE HS20 TRAFFIC LOAD CERTIFIED BY MFG.
8. HOLE SIZE - PIPE O.D. + 5" MAX
 MAX HOLE SIZE - 36" (28" CB)
 MAX HOLE SIZE - 42" (54" CB)
9. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 7.4 OF THE PUBLIC WORKS STANDARDS.



CATCH BASIN TYPE 2

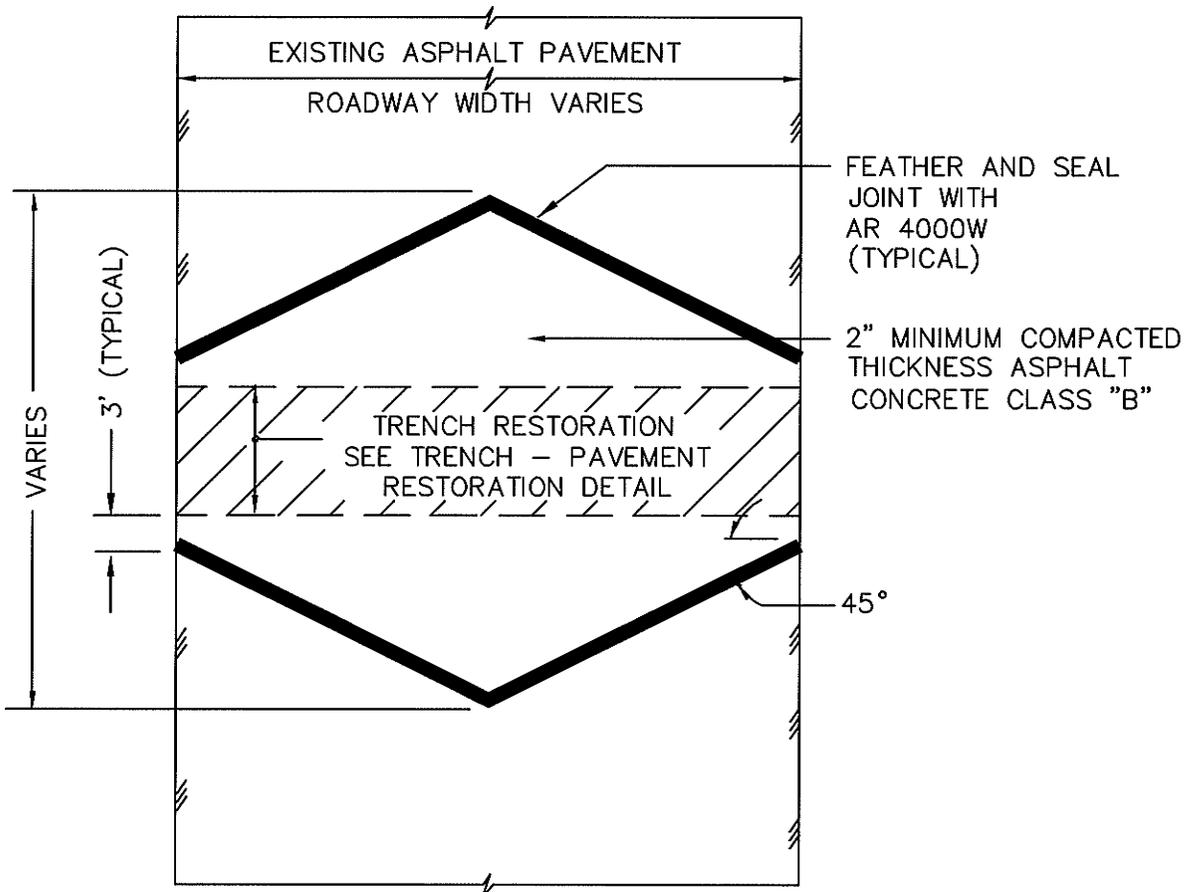
CITY OF DUPONT			
CATCH BASIN TYPE 2			
APPROVED: CITY OF DUPONT		DATE 9/21/11	DWG. NO. 7.4-3
DATE: 9/11	DRWN: M.C.	CHKD: D.J.M.	SCALE: NO SCALE



GENERAL NOTES:

1. ALL MATERIALS EXCEPT A.C.P. AND BEDDING MATERIAL SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY.
2. BEDDING SHALL CONFORM TO SECTION 7-08 OF THE WSDOT/APWA STANDARD SPECIFICATIONS.
3. COMPACTION: BEDDING SHALL BE COMPACTED TO 95% MAX. AS DETERMINED BY ASTM D1557.
4. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF DUPONT STANDARDS.
5. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
6. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 9.2 OF THE PUBLIC WORKS STANDARDS.

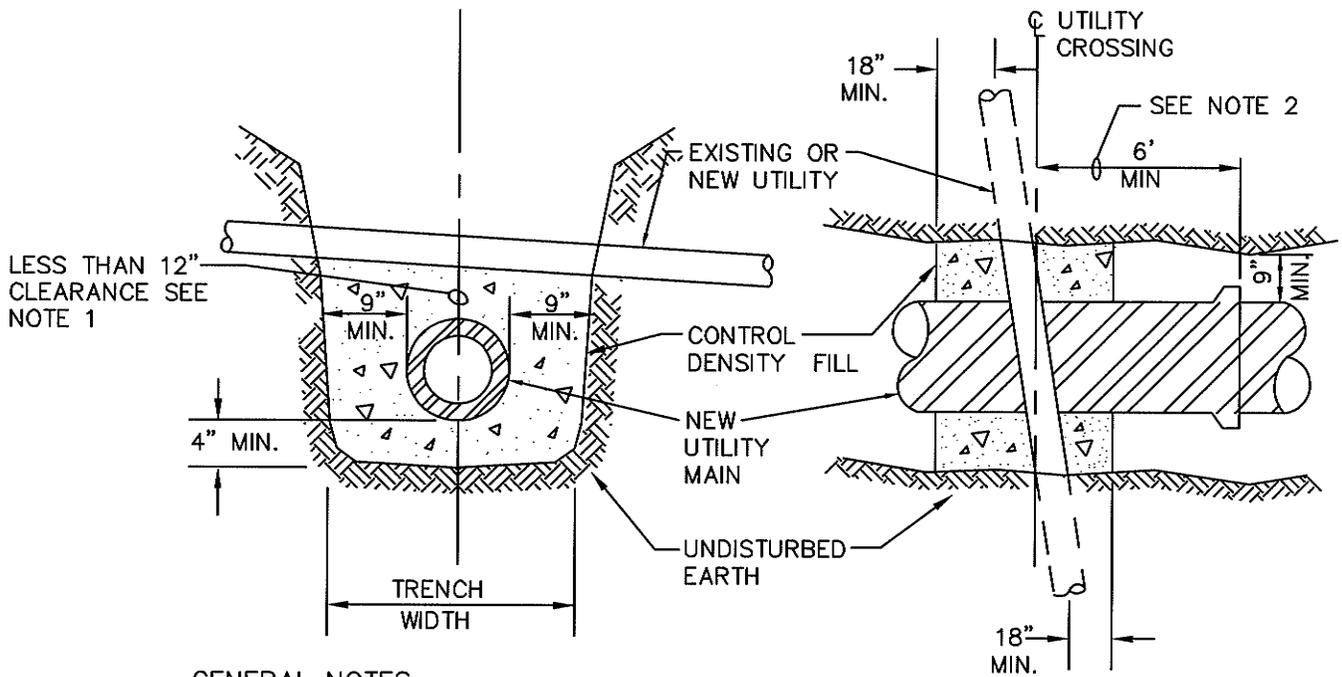
CITY OF DUPONT			
TRENCH - PAVEMENT RESTORATION			
APPROVED: 9/21/11			DWG. NO. 9.2-1
CITY OF DUPONT			DATE
DATE: 9/11	DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE



GENERAL NOTES:

1. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 9.2 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
ASPHALT DIAMOND PATCH			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 9.2-2
DATE: 9/11	DRWN: S.L.B.	CHKD: D.J.M.	SCALE: NO SCALE



GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE CDF PIPE ENCASEMENT AT ALL EXISTING UTILITY CROSSINGS IN THE EVENT THAT A 12" SEPARATION CANNOT BE PROVIDED. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SITE UTILITIES TO ANTICIPATE PROVIDING AND INSTALLING CDF ENCASEMENTS WHERE NECESSARY.
2. CONTRACTOR SHALL NOT CONSTRUCT ANY NEW PIPE JOINT WITHIN 6 FEET OF THE EXISTING CENTERLINE OF THE UTILITY CROSSING.

CITY OF DUPONT			
CDF ENCASEMENT			
APPROVED: <i>Paul R. John</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 9.2-3
DATE: 9/11	DRWN: J.C.	CHKD: D.M.	SCALE: NO SCALE

MIN. 2" COMPACTED THICKNESS
ASPHALT CONCRETE CLASS "B"
TO BE EQUAL TO OR GREATER
THAN EXISTING ASPHALT

SAW CUT, CLEAN AND TACK
EDGES WITH SEALER CSS1 AND
SEAL JOINTS WITH HOT ASPHALT
CEMENT (AR4000W)

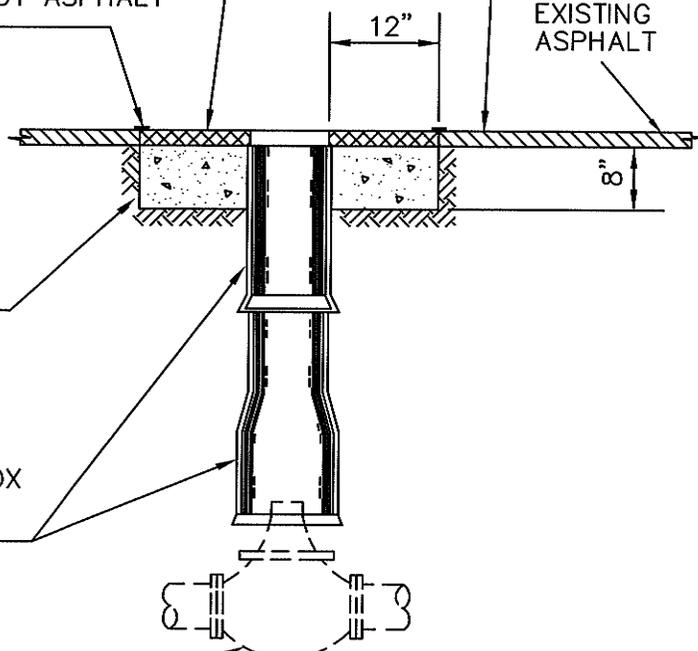
FINISHED GRADE

EXISTING
ASPHALT

CONCRETE COLLAR

CAST IRON VALVE BOX
AND COMPONENTS
RICH 940

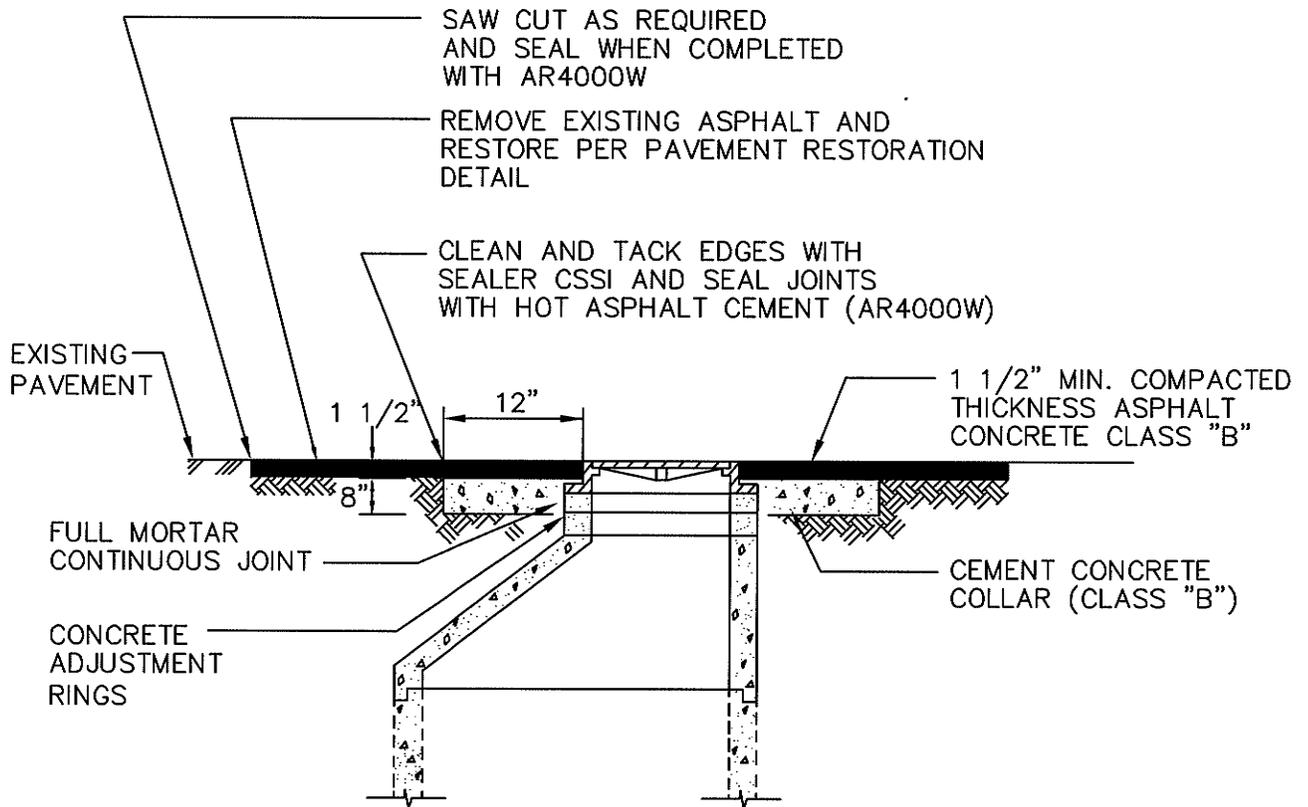
EXISTING VALVE



GENERAL NOTES:

1. ALL EXISTING CAST IRON VALVE BOXES SHALL BE ADJUSTED TO GRADE WITH CAST IRON COMPONENTS.
2. ALIGNMENT OF THE VALVE BOX SHALL BE THE DEVELOPERS RESPONSIBILITY AND CARE SHALL BE TAKEN TO ENSURE THAT THE VALVE MAY BE OPERATED.
3. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 9.2.6 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
VALVE BOX ADJUSTMENT			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 9.2-4
DATE: 9/11		DRWN: L.G.	CHKD: T.N.
			SCALE: NO SCALE



GENERAL NOTES:

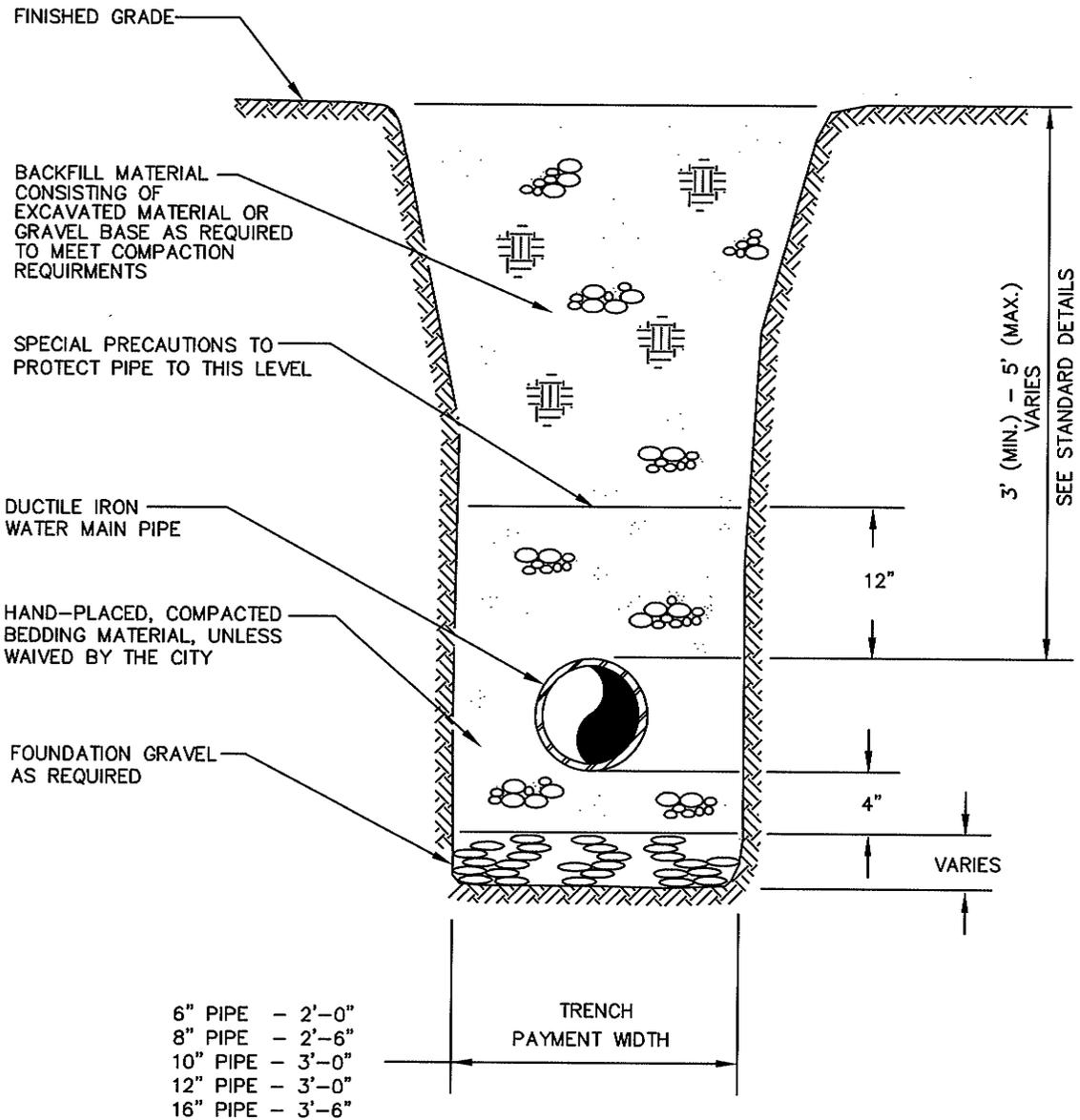
1. REMOVE EXISTING FRAME & LID, BRICKS, CONC. COLLAR, AND TOP RISER SECTION.
2. INSTALL NEW REINFORCED CONC. MANHOLE RISER SECTION (FIELD VERIFY HEIGHT), MINIMUM OF TWO CONC. ADJUSTMENT RINGS (FOUR MAX.), AND EXISTING FRAME AND COLLAR.
3. FOR ADDITIONAL REQUIREMENTS, SEE SECTION 9.2.6 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
MANHOLE GRADE ADJUSTMENT			
APPROVED: <i>Pat Z John</i> CITY OF DUPONT			DWG. NO. 9.2-5
DATE: 9/11			DATE: 9/21/11
DRWN: L.G.	CHKD: T.N.	SCALE: NO SCALE	

WATER SYSTEM STANDARD DETAILS

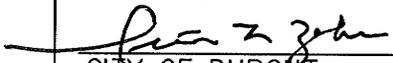
LIST OF WATER SYSTEM STANDARD DETAILS

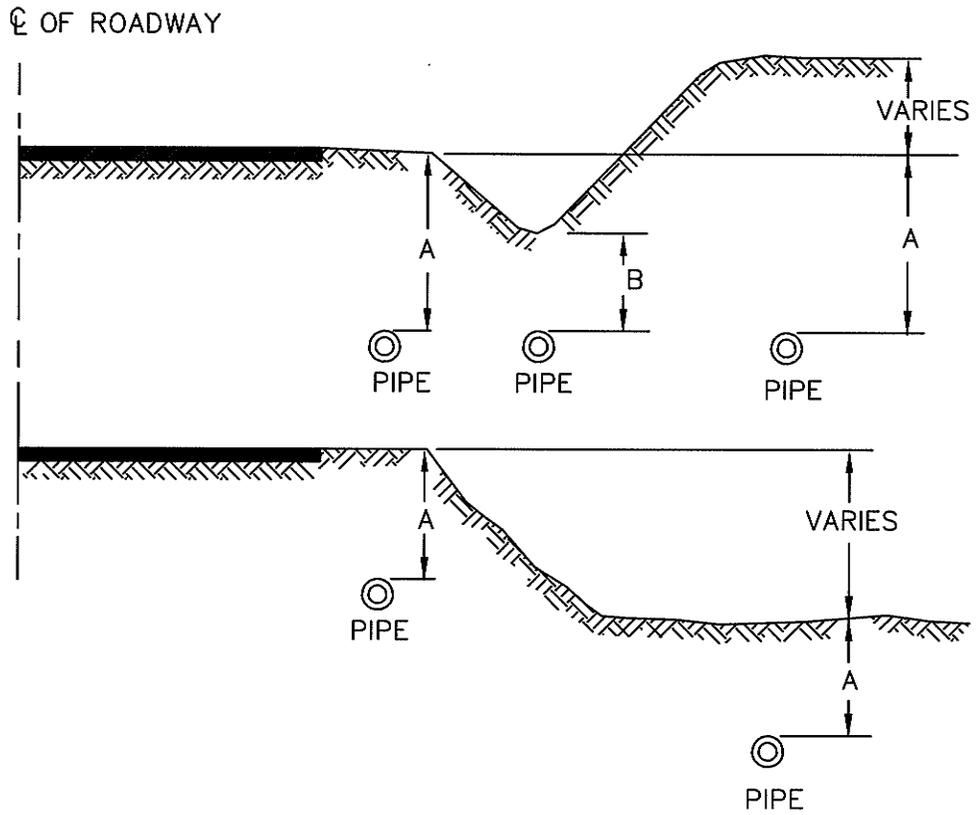
Water Main Trench Section	8.2-1
Water Main Depth Requirements	8.2-2
Typical Utility Crossing	8.2-3
Thrust Blocks	8.3-1
Vertical Anchor Blocks	8.3-2
Thrust Restraint for Ductile Iron Pipe	8.3-3
Encasement/Carrier Pipes	8.3-4
3/4" & 1" Service Connection	8.4-1
3/4" & 1" Dual Service Connection	8.4-2
1-1/2" & 2" Service Connection	8.4-3
3" & Larger Service Connection	8.4-4
3/4" to 2" Reduced Pressure Backflow Assembly	8.4-5
3" & Larger Reduced Pressure Backflow Assembly	8.4-6
2" & Smaller Double Check Valve Assembly	8.4-7
3" & Larger Double Check Valve Assembly	8.4-8
Water Valve Stem Extension	8.5
Fire Hydrant Installation	8.6-1
Fire Hydrant Relocation	8.6-2
2" In-Line Blowoff Assembly	8.7-1
2" End-Line Blowoff Assembly	8.7-2
1" Air & Vacuum Release Assembly	8.7-3
2" Air & Vacuum Release Assembly	8.7-4
Water Sampling Station	8.8
Wet Tap Water Main Connection	8.10-1
Cut-In Water Main Connection	8.10-2
Testing Connection	8.11
Fire Department Connection	11.3



NOTES:

- 1) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.2 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
WATER MAIN TRENCH SECTION			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.2-1
DATE: 9/11	DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE
DATE: 9/21/11		DATE	

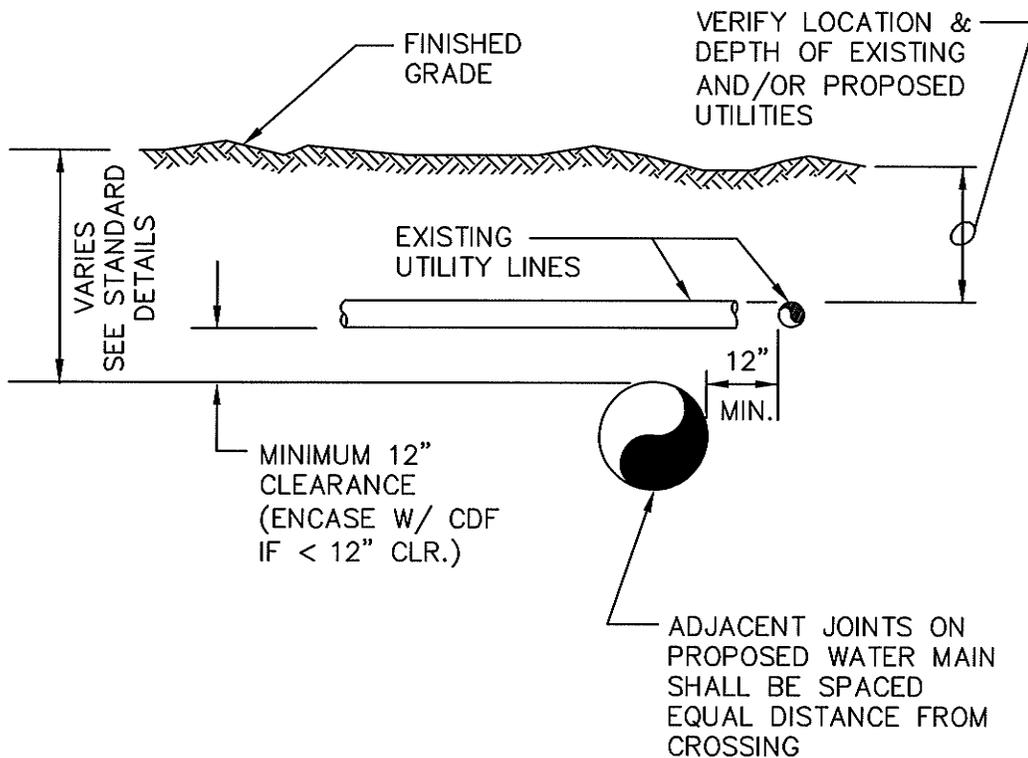


PIPE SIZE	A	B
6" - 12"	36"	24"
14" - 18"	42"	30"
20" & OVER	48"	36"

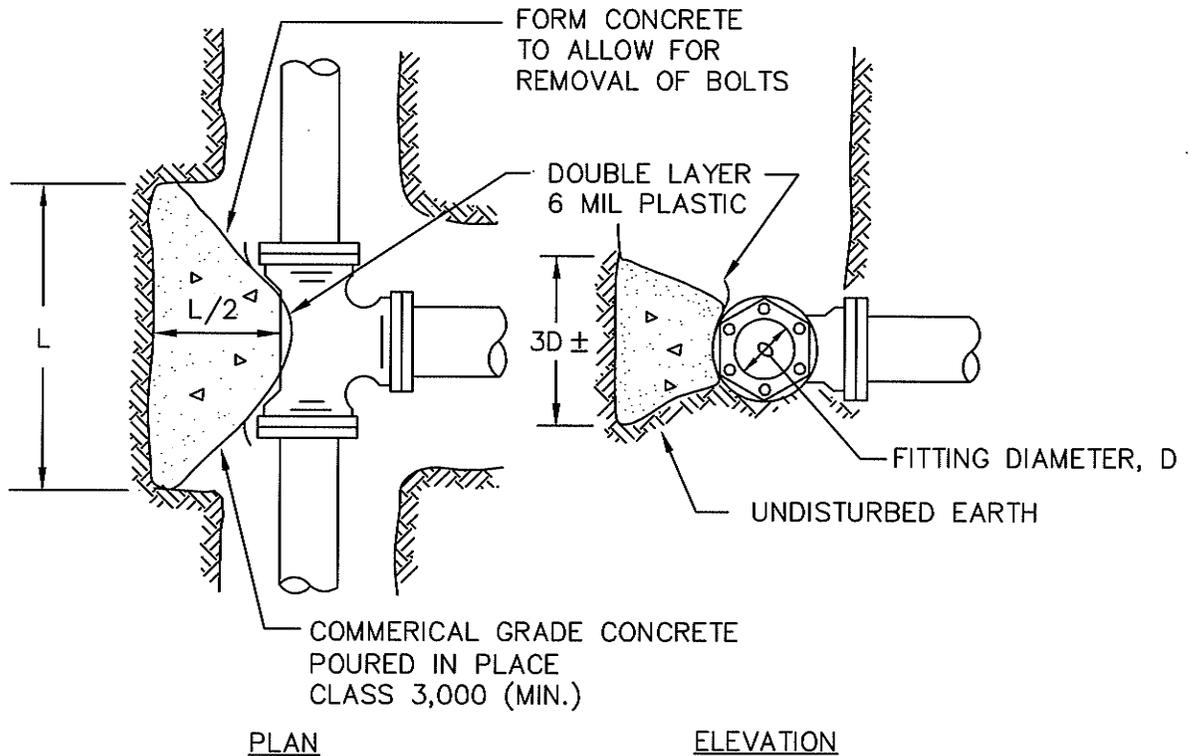
NOTES:

1. MAXIMUM COVER ON WATER MAINS SHALL BE 5' UNLESS OTHERWISE APPROVED BY THE CITY.
2. ALL DEPTH REQUIREMENTS SHALL BE MET UNLESS OTHERWISE APPROVED BY THE CITY.

CITY OF DUPONT			
WATER MAIN DEPTH REQUIREMENTS			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 8.2-2
DATE: 9/11			DATE: 9/21/11
DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE	



CITY OF DUPONT			
TYPICAL UTILITY CROSSING			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 8.2-3
DATE: 9/11			DATE: 9/21/11
DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE	



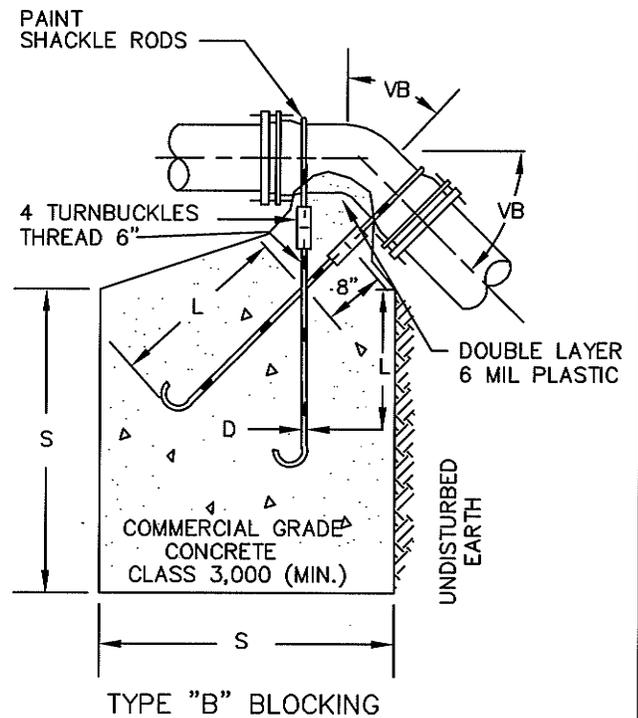
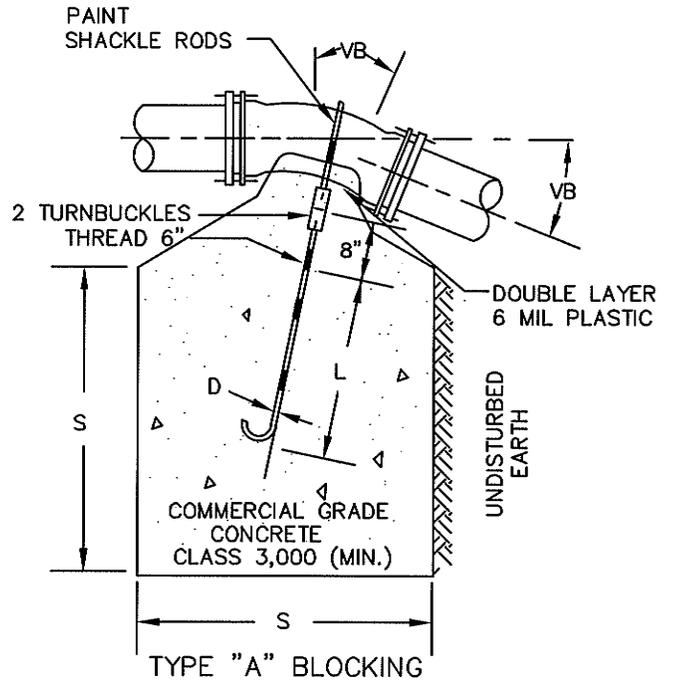
MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.

NOTES:

- 1) BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 2000 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED. DESIGN FOR THRUST BLOCK TO BE PROVIDED BY THE DEVELOPER.
- 2) THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN AND SIZING OF ALL BLOCKING BASED ON SOIL CONDITIONS, TEST PRESSURES, AND OTHER RELEVANT CONDITIONS, AND SHALL SUBMIT THE PROPOSED DESIGN AND SIZING TO THE CITY FOR REVIEW AND APPROVAL.
- 3) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.3.5 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
THRUST BLOCKS			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 8.3-1
DATE: 9/11		DRWN: L.L.	CHKD: T.N.
			SCALE: NO SCALE

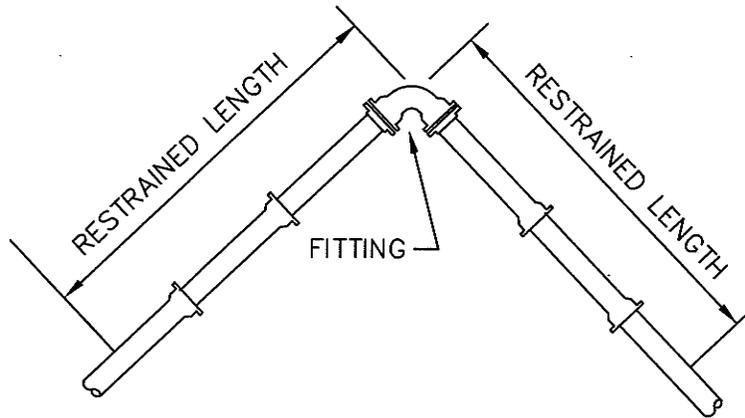
TYPE "A" BLOCKING						
FOR 11 1/4°-22 1/2° VERTICAL BENDS						
PIPE SIZE NOMINAL DIAMETER - INCHES	TEST PRESSURE PSI	VB	S	d	L	
		VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	SIDE OF CUBE (LIN. FT.)	DIAM. OF SHACKLE RODS (2) INCHES	DEPTH OF RODS IN CONCRETE (LIN. FT.)
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7		
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1		
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8		
TYPE "B" BLOCKING						
FOR - 45° VERTICAL BENDS						
		VB	S	d	L	
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



NOTES:

- THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN AND SIZING OF ALL BLOCKING BASED ON SOIL CONDITIONS, TEST PRESSURES, AND OTHER RELEVANT CONDITIONS, AND SHALL SUBMIT THE PROPOSED DESIGN AND SIZING TO THE CITY FOR REVIEW AND APPROVAL.
- FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.3 OF THE PUBLIC WORKS STANDARDS.

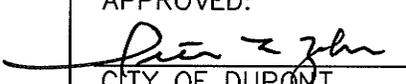
CITY OF DUPONT			
VERTICAL ANCHOR BLOCKS			
APPROVED:		DWG. NO.	
<i>John Z. John</i>		8.3-2	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	L.L.	T.N.	NO SCALE

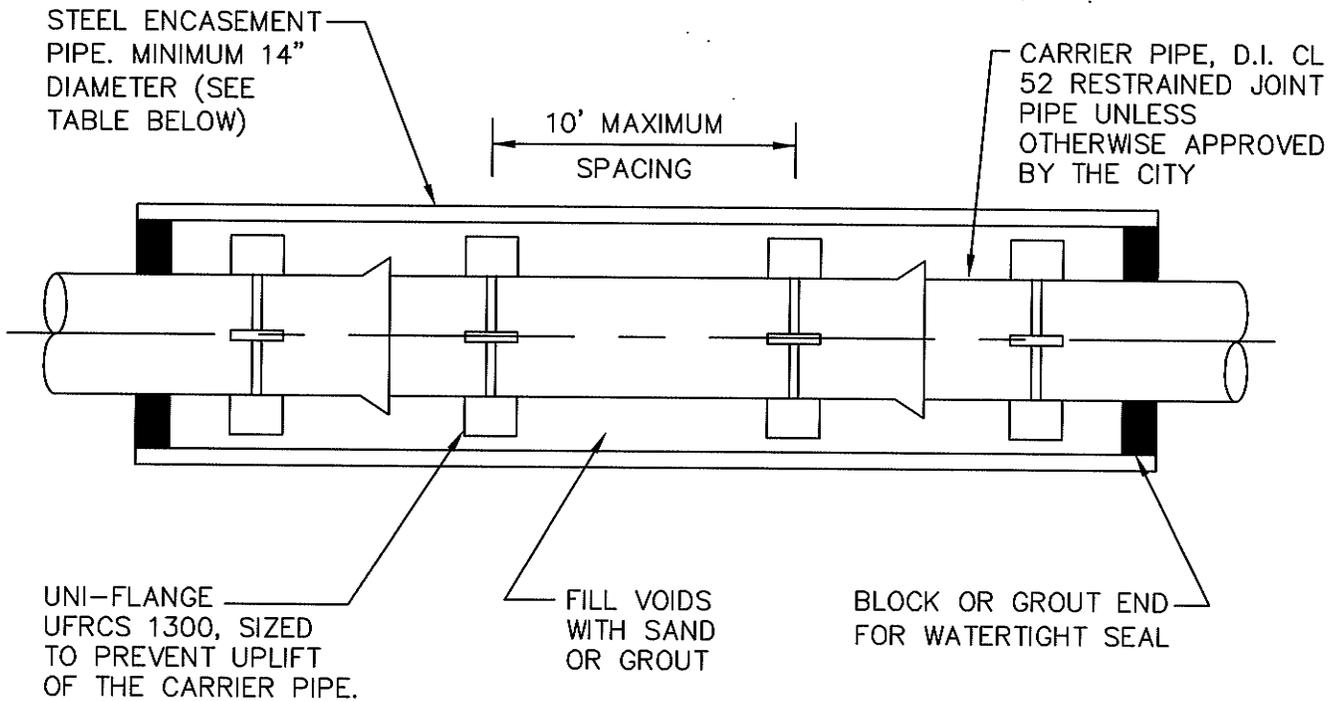


PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
	RESTRAINED LENGTH IN FEET				
4"	40	17	8	4	30
6"	55	23	11	6	39
8"	73	31	15	8	53
10"	88	37	18	9	67
12"	103	43	21	10	82
16"	133	55	27	13	110
18"	145	60	29	15	124

GENERAL NOTES:

- 1) RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED.
- 2) FOOTAGES ARE BASED ON 250 PSI PRESSURE AND 42 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED.
- 3) THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE RESTRAINED LENGTHS.

CITY OF DUPONT			
THRUST RESTRAINT FOR DUCTILE IRON PIPE			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.3-3
DATE: 9/11		DRWN: L.L.	CHKD: D.J.M.
			SCALE: NO SCALE



GENERAL NOTES:

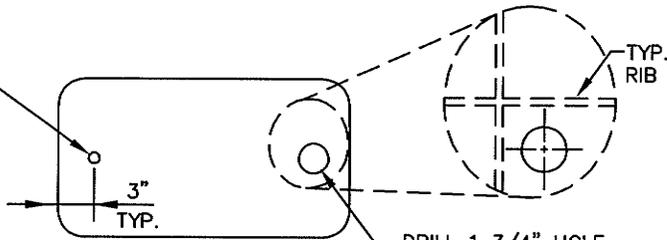
- 1) CARRIER PIPE SHALL BE PRESSURE TESTED PRIOR TO FILLING VOIDS WITH SAND.
- 2) CARRIER PIPE WITHIN THE LENGTH OF THE ENCASEMENT PIPE SHALL HAVE RESTRAINED JOINTS.

MINIMUM ENCASEMENT DIAMETERS	
CARRIER DIA.	ENCASEMENT DIA.
6"	14"
8"	18"
10"	21.5"
12"	23"
16"	30"

CITY OF DUPONT			
ENCASEMENT/CARRIER PIPES			
APPROVED: <i>[Signature]</i> CITY OF DUPONT		DATE 9/21/11	
DATE: 9/11		DRWN: L.L.	CHKD: D.J.M.
		SCALE: NO SCALE	DWG. NO. 8.3-4

DRILL 3/8"-1/2"Ø HOLE TO FACILITATE LID REMOVAL.

NOTE:
THE CENTER OF THE HOLE MUST BE AT LEAST 1" FROM UNDERNEATH RIBS UNLESS THE RIB SPACING ALLOWS THE NUT TO TIGHTEN AGAINST THE OPEN SIDE OF MORE THAN ONE RIB.

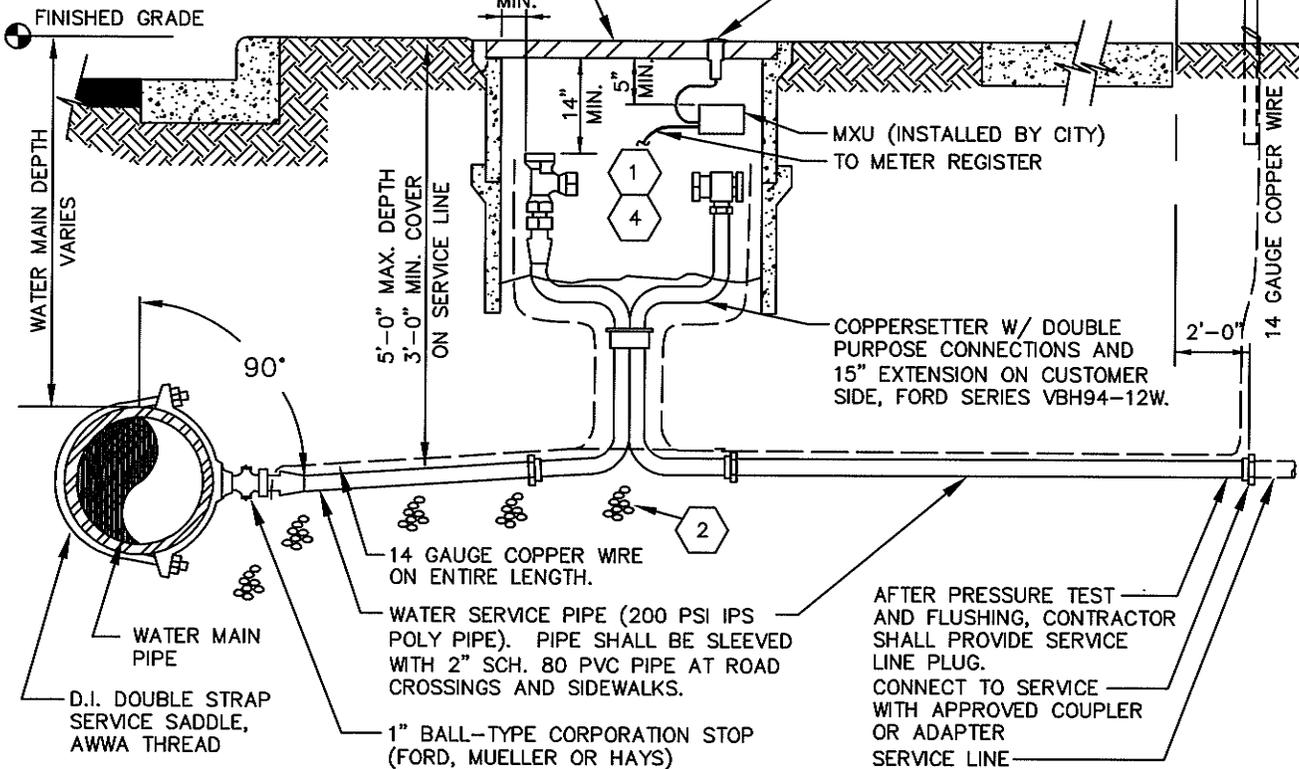


TYPICAL METER BOX LID

DRILL 1 3/4" HOLE TO ACCEPT METER TOUCH PAD.

METER BOX, MID-STATES BCF1324 BOX WITH CBC1324 LID OR FOG-TITE B-10 BOX WITH SOLID TRAFFIC LID, OR RAVEN. CENTER IN PLANTER STRIP.

SERVICE LINE MARKER POST
METER REGISTER TOUCH PAD (INSTALLED BY CITY)



NOTES:

- 1 METER NOT SHOWN FOR CLARITY. REFERENCE SENSUS WATER METER STANDARDS FOR TYPE AND DIMENSIONS FOR REQUIRED METER.
- 2 TRENCH BACKFILL FOR SERVICE PIPE SHALL CONSIST OF SAND AND PEA GRAVEL.
- 3 ANY METERS DAMAGED OR CLOGGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CITY AND THE COSTS SHALL BE REIMBURSED BY DEVELOPER.
- 4 "JUMPER" SHALL BE PROVIDED BY THE CITY.
- 5 THE CITY SHALL INSTALL THE METER TRANSCIVER UNIT (MXU) AND CONNECT THE MXU WIRING WITHIN THE METER ENCLOSURE.
- 6 FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.4 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT

3/4" & 1" SERVICE CONNECTION

APPROVED:

Don Z. John 9/21/11
CITY OF DUPONT DATE

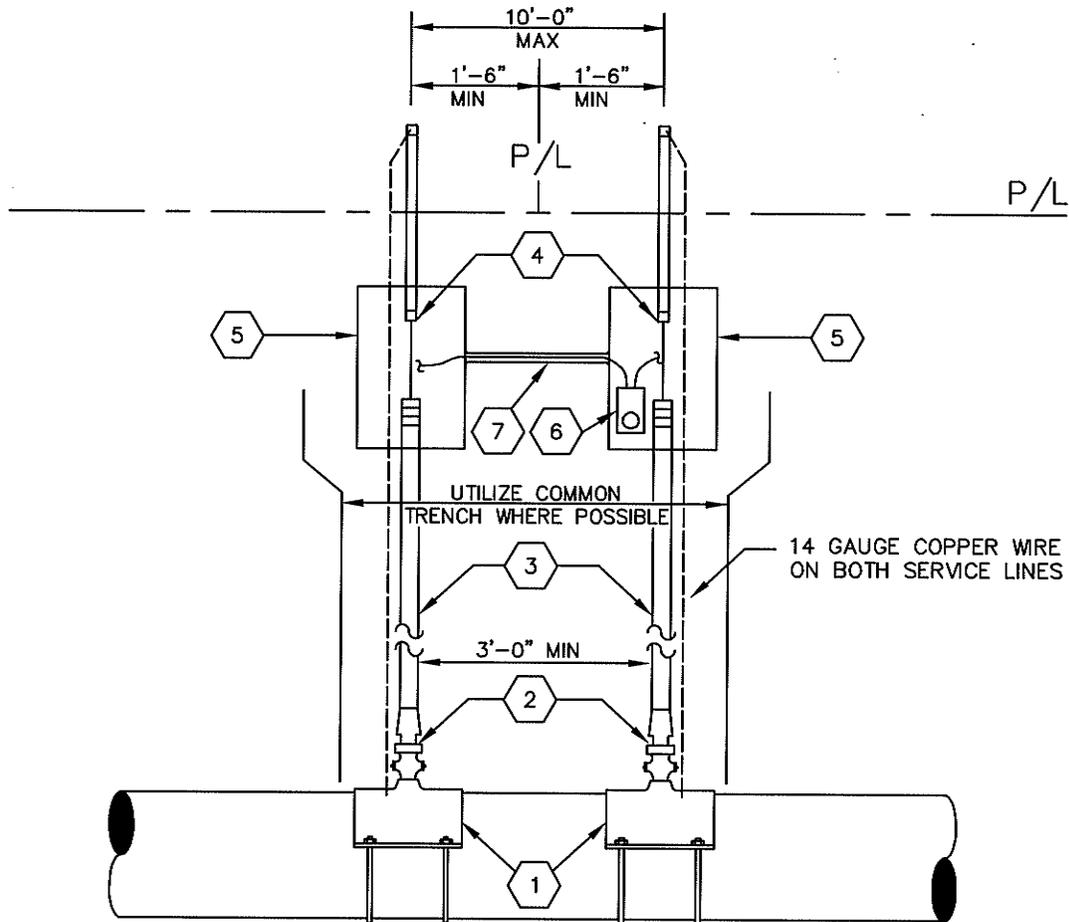
DWG. NO.
8.4-1

DATE:
9/11

DRWN:
L.L.

CHKD:
T.N.

SCALE:
NO SCALE



ITEM	QUANTITY	ITEM DESCRIPTION
1	2	D.I. DOUBLE STRAP SERVICE SADDLE, AWWA THREAD.
2	2	1" BALL-TYPE CORPORATION STOP (FORD, MUELLER, OR HAYS).
3	VAR	WATER SERVICE PIPE (200 PSI IPS POLY PIPE). PIPE SHALL BE SLEEVED WITH 2" SCH. 80 PVC PIPE AT ROAD AND SIDEWALK CROSSINGS.
4	2	COPPERSETTER W/ DOUBLE PURPOSE CONNECTIONS AND 15" EXTENSION ON CUSTOMER SIDE, FORD SERIES VBH94-12W.
5	2	METER BOX, MID-STATES BCF1324 BOX WITH CBC1324 LID, OR FOG-TITE B-10 BOX WITH SOLID TRAFFIC LID, OR RAVEN.
6	1	METER TRANSCIEVER UNIT (MXU) W/ TOUCH PAD (INSTALLED BY CITY)
7	1	3/4" PVC CONDUIT BY CONTRACTOR, SEAL BOTH ENDS.

NOTES:

- ALL SERVICES TO BE PAIRED AS INDICATED. USE OF A SINGLE METER WITH MXU SHALL BE LIMITED AND REQUIRES APPROVAL BY THE CITY. HOWEVER, IF DISTANCE BETWEEN SERVICES IS > 10', THEN A SINGLE SERVICE CONNECTION MUST BE USED.
- SEE THE 3/4" & 1" SERVICE CONNECTION DETAIL FOR MORE INFORMATION.
- FOR ADDITIONAL INFORMATION, SEE SECTION 8.4 OF THE PUBLIC WORKS STANDARDS.

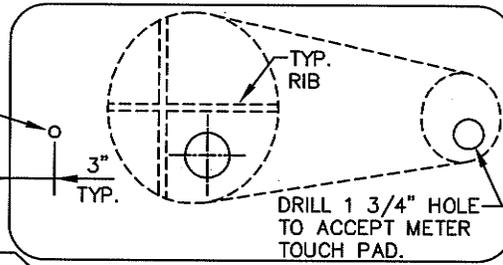
CITY OF DUPONT			
3/4" & 1" DUAL SERVICE CONNECTION			
APPROVED:		DWG. NO.	
<i>Don E. John</i> CITY OF DUPONT		9/21/11 DATE	
DATE:	DRWN:	CHKD:	SCALE:
9/11	L.L.	T.N.	NO SCALE

DRILL 3/8"-1/2"Ø HOLE TO FACILITATE LID REMOVAL.

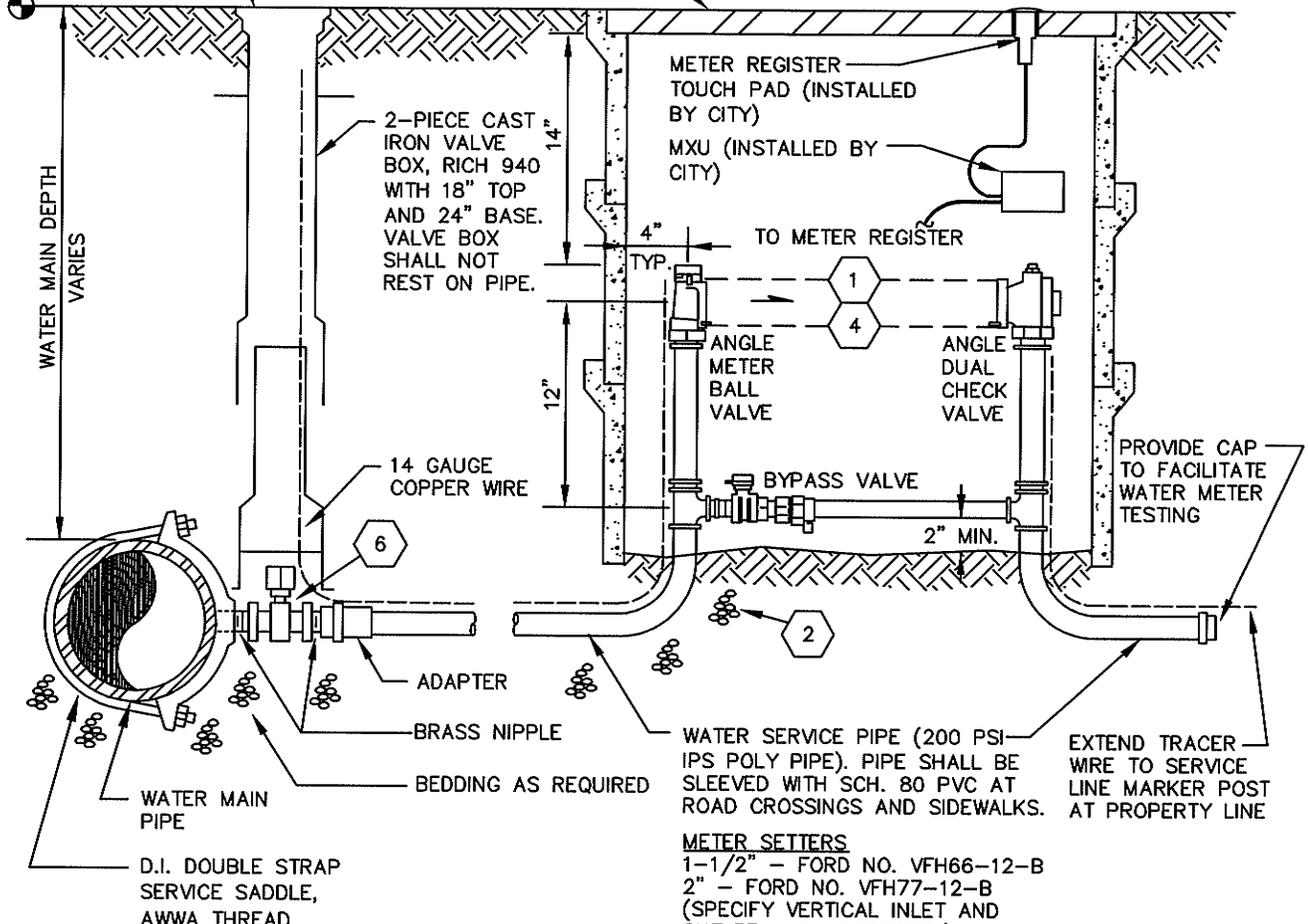
NOTE:
THE CENTER OF THE HOLE MUST BE AT LEAST 1" FROM UNDERNEATH RIBS UNLESS THE RIB SPACING ALLOWS THE NUT TO TIGHTEN AGAINST THE OPEN SIDE OF MORE THAN ONE RIB.

SET FLUSH WITH FINISHED GRADE
FINISHED GRADE

METER BOX, MID-STATES BCF1730-12 BOX WITH CBC-1730 LID OR FOG-TITE NO. 2 BOX WITH SOLID TRAFFIC LID, OR RAVEN.



TYPICAL METER BOX LID



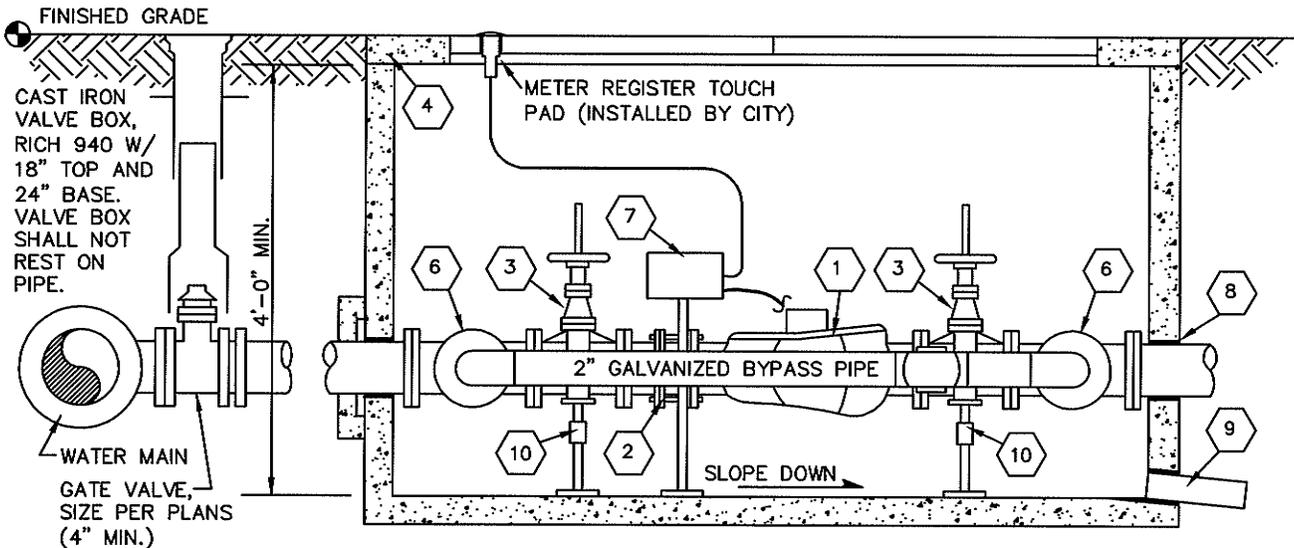
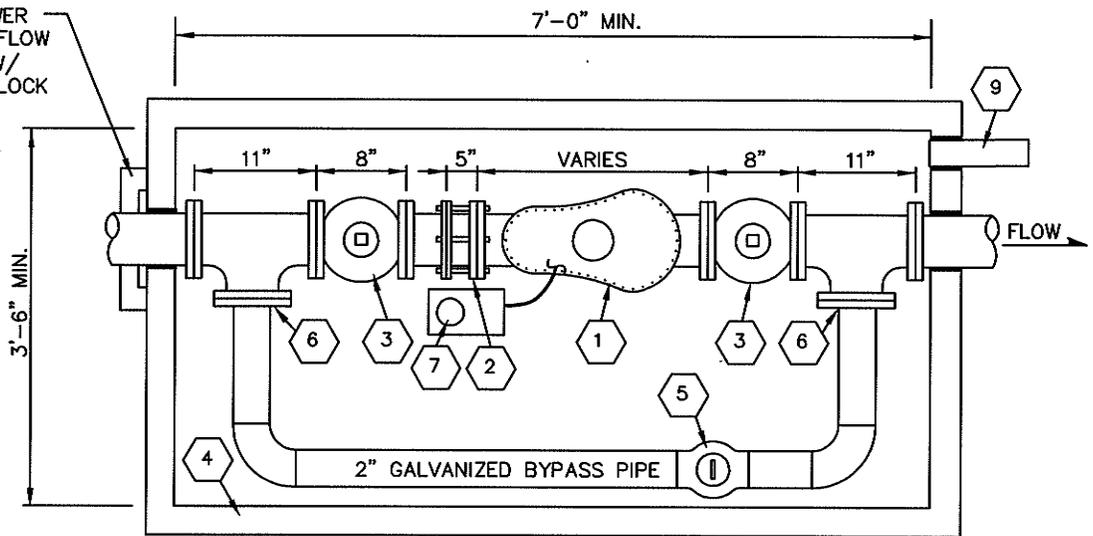
NOTES:

- 1 METER NOT SHOWN FOR CLARITY. REFERENCE SENSUS WATER METER STANDARDS FOR REQUIRED METER. VERIFY METER TYPE AND DIMENSIONS PRIOR TO ORDERING METER SETTER.
- 2 TRENCH BACKFILL FOR SERVICE PIPE SHALL CONSIST OF SAND AND PEA GRAVEL.
- 3 ANY METERS DAMAGED OR CLOGGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CITY AND THE COSTS SHALL BE REIMBURSED BY DEVELOPER.
- 4 "JUMPER" SHALL BE PROVIDED BY THE CITY.
- 5 THE CITY SHALL INSTALL THE METER TRANSCIEVER UNIT (MXU) AND CONNECT THE MXU WIRING WITHIN THE METER ENCLOSURE.
- 6 BALL VALVE FOR IRON PIPE, FORD NO. B11-666, B11-777, OR EQUAL WITH 2" OPERATING NUT ADAPTER, FORD NO. QT-67.
- 7 FOR ADDITIONAL INFORMATION, SEE SECTION 8.4 OF THE PUBLIC WORKS STANDARDS.

METER SETTERS
1-1/2" - FORD NO. VFH66-12-B
2" - FORD NO. VFH77-12-B
(SPECIFY VERTICAL INLET AND OUTLET WHEN ORDERING.)

CITY OF DUPONT			
1-1/2" & 2" SERVICE CONNECTION			
APPROVED:		DWG. NO.	
<i>[Signature]</i>		8.4-3	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	J.C.	D.M.	NO SCALE

MEGALUG FOLLOWER
INSTALLED ON INFLOW
SIDE OF VAULT W/
CONC. THRUST BLOCK



- 1) COMPOUND METER W/ STRAINER, SENSUS OR EQUAL, SIZE AS NOTED ON PLANS. (SEE METER TABLE). INSTALL ENCODER AS REQUIRED.
- 2) ROMAC STYLE FLANGED COUPLING ADAPTER.
- 3) RESILIENT SEAT G.V. (FLxFL) W/ NON-RISING STEM.
- 4) PRE-CAST CONCRETE VAULT, UTILITY VAULT CO., NO. 575-LA WITH SPRING LOADED, LOCKABLE STEEL PLATE COVER NO. 2-332P TYPICAL. VERIFY VAULT SIZE TO FIT COMPLETE ASSEMBLIES.
- 5) BALL VALVE WITH PADLOCK WING OR LOCKCAP (FORD).
- 6) BLIND FLANGE, DRILL AND TAP FOR 2" THREADED GALVANIZED PIPE.
- 7) METER TRANSCIVER UNIT WITH TOUCH PAD. INSTALLED BY CITY ON CONTRACTOR PROVIDED 1" SCH. 80 PVC SUPPORT.
- 8) WATER TIGHT RUBBER SEAL, TYP. ALL PENETRATIONS.
- 9) 6" PVC DRAIN TO DAYLIGHT OR TO STORM SYSTEM.
- 10) ADJUSTABLE STANCHIONS.

NOTES:

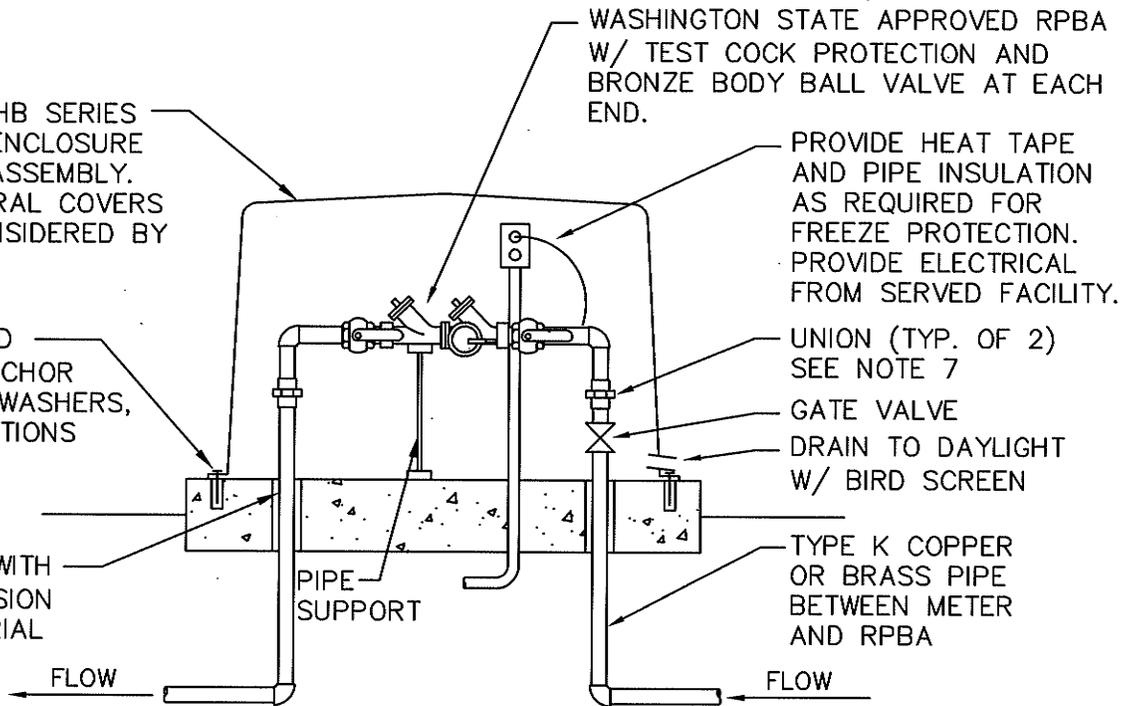
- 1) PROVIDE FLEXIBLE COUPLINGS ON BOTH INLET AND OUTLET PIPES OUTSIDE VAULT.
- 2) INLET AND OUTLET PIPE FLANGES SHALL BE A MINIMUM 6" FROM INSIDE WALL OF VAULT.
- 3) ALL PIPE TO BE DUCTILE IRON EXCEPT FOR 2" BYPASS LINE (GALVANIZED).
- 4) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.4 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
3" & LARGER SERVICE CONNECTION			
APPROVED:		DWG. NO.	
<i>Don Z Zeh</i> CITY OF DUPONT		9/21/11 DATE	
DATE:	DRWN:	CHKD:	SCALE:
9/11	P.E.	T.N.	NO SCALE

"HOT BOX" HB SERIES INSULATED ENCLOSURE SIZED FOR ASSEMBLY. ARCHITECTURAL COVERS WILL BE CONSIDERED BY CITY.

BOLT TO PAD W/ 3/8" ANCHOR BOLTS AND WASHERS, MIN. 4 LOCATIONS

WRAP PIPE WITH 1/2" EXPANSION JOINT MATERIAL



WASHINGTON STATE APPROVED RPBA W/ TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

PROVIDE HEAT TAPE AND PIPE INSULATION AS REQUIRED FOR FREEZE PROTECTION. PROVIDE ELECTRICAL FROM SERVED FACILITY.

UNION (TYP. OF 2) SEE NOTE 7

GATE VALVE

DRAIN TO DAYLIGHT W/ BIRD SCREEN

TYPE K COPPER OR BRASS PIPE BETWEEN METER AND RPBA

PIPE SUPPORT

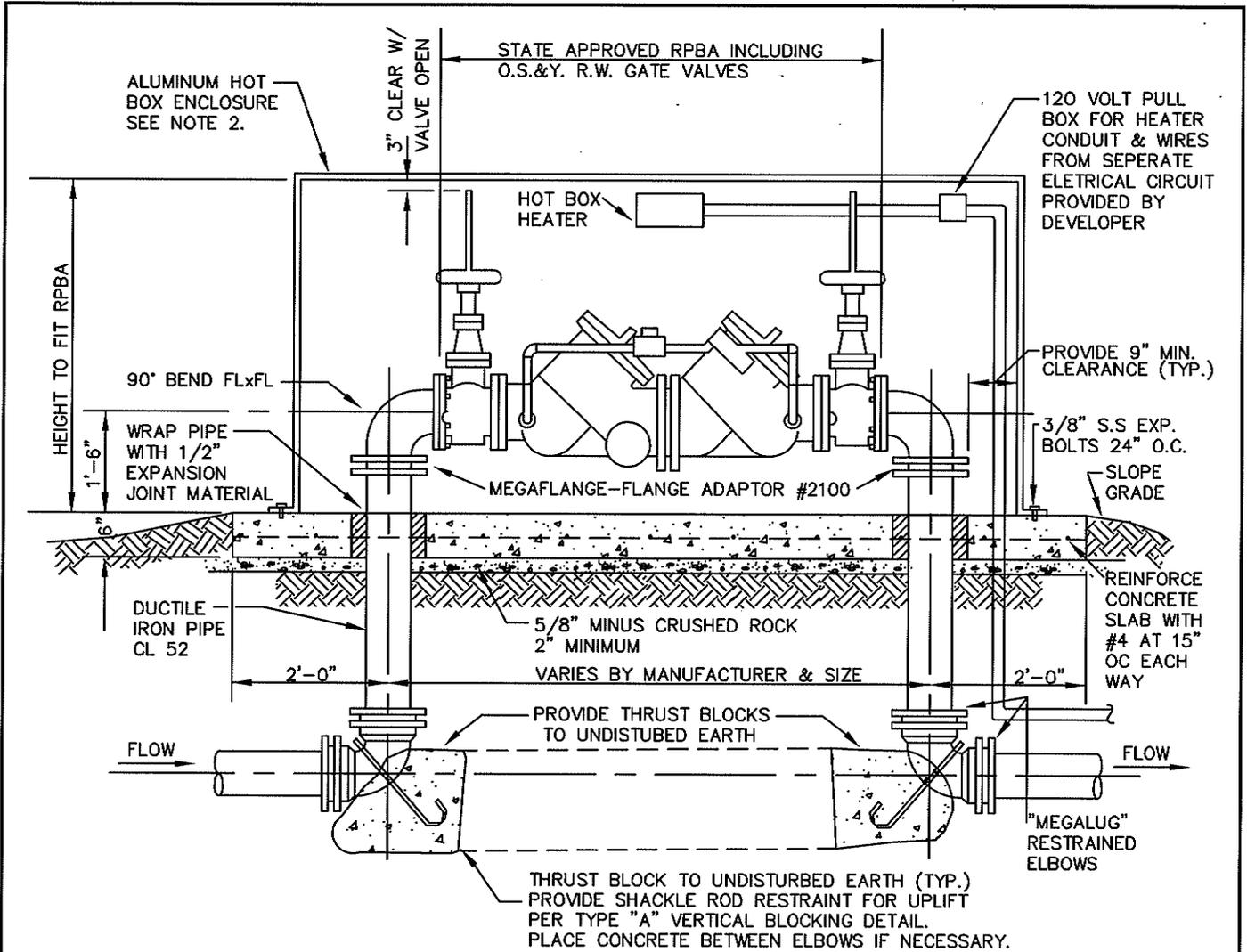
FLOW

FLOW

NOTES:

- 1) BACKFLOW ASSEMBLY SHALL BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH CURRENT APPROVED LIST.
- 2) CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
- 3) COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
- 4) SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
- 5) RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
- 6) PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.
- 7) DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.

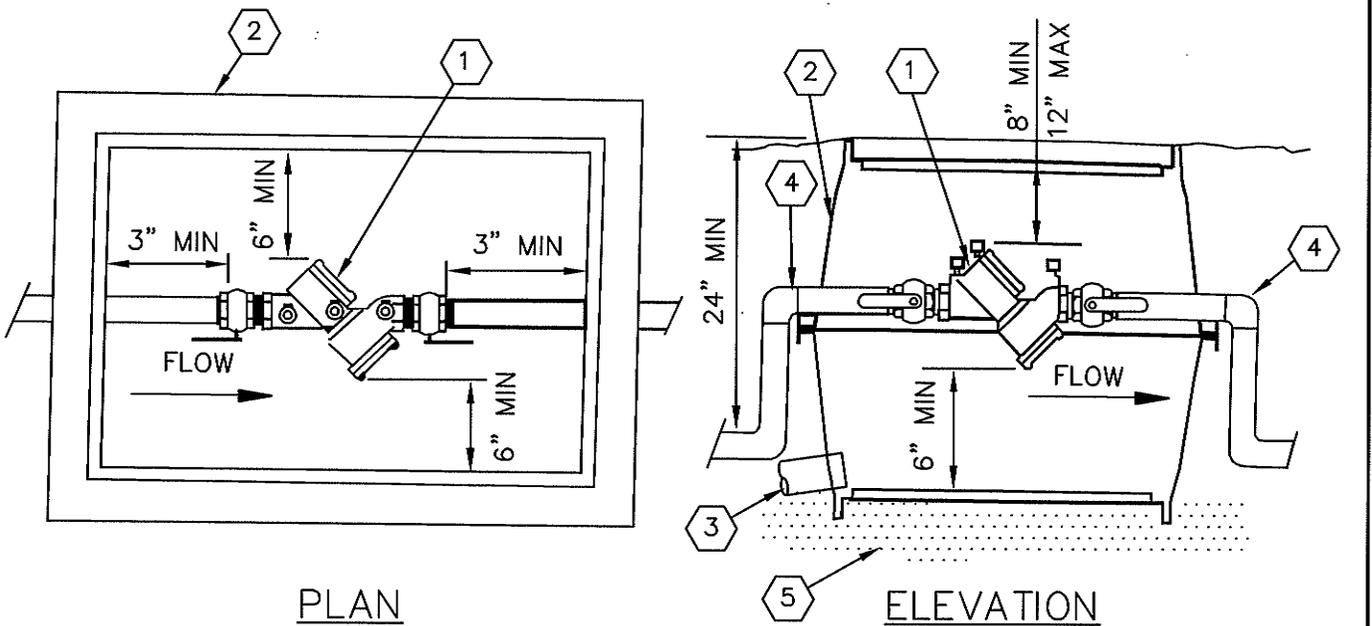
CITY OF DUPONT			
3/4" TO 2" REDUCED PRESSURE BACKFLOW ASSEMBLY			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 8.4-5
DATE: 9/11			DATE: 9/21/11
DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE	



GENERAL NOTES:

- 1) BACKFLOW ASSEMBLY SHALL BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH CURRENT APPROVED LIST.
- 2) ALUMINUM "HOT BOX" MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE EIGHT REQUIREMENTS. VALVE STEM SHALL NOT BE ALLOWED TO EXTEND OUTSIDE OF BOX.
- 3) HEATERS SHALL BE 2,000 WATT FOR 8" AND UNDER; 3,000 WATT FOR 10".
- 4) CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
- 5) COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STDS.
- 6) SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
- 7) RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
- 8) PRESSURE TEST AND DISINFECT PER A.W.W.A. STDS.

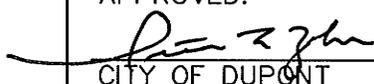
CITY OF DUPONT			
3" & LARGER REDUCED PRESSURE BACKFLOW ASSEMBLY			
APPROVED: CITY OF DUPONT			DWG. NO. 8.4-6
DATE: 9/11		DRWN: L.L.	CHKD: T.N.
DATE: 9/21/11			SCALE: NO SCALE



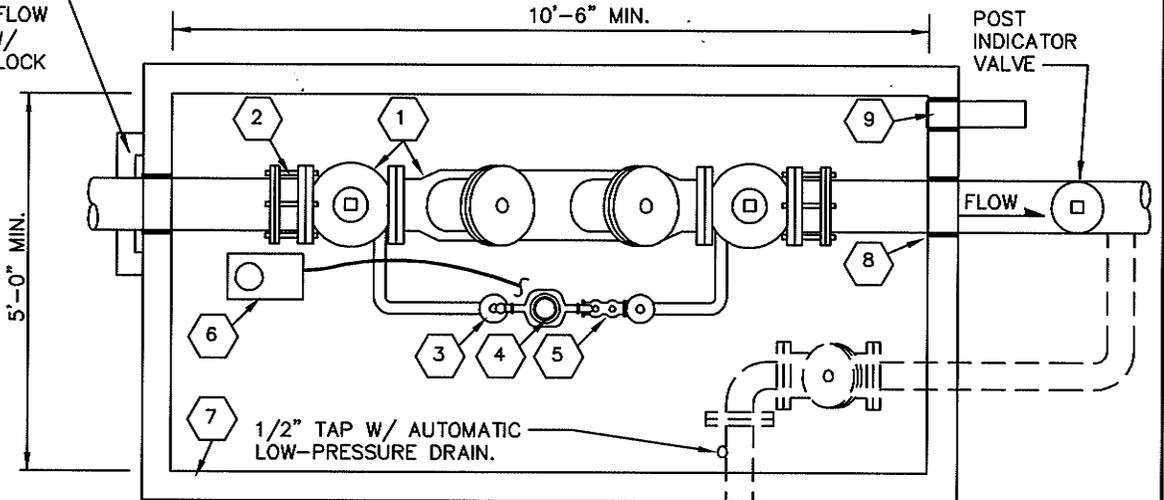
- ① STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA)
- ② METER BOX. FOG-TITE NO. 2 CONCRETE, OR MID STATES PLASTICS MSBCF 1730-12 COMPOSITE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
- ③ 4" PVC DRAIN TO CATCH BASIN OR DAYLIGHT. SCREEN BOTH ENDS.
- ④ BENDS MAY BE LOCATED INSIDE OR OUTSIDE OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATOR AND DCVA REPAIR OR MAINTENANCE.
- ⑤ PROVIDE FREE DRAINING BACKFILL BELOW BOX.

NOTES:

- 1) ALL TEST COCKS SHALL HAVE BRASS PLUGS.
- 2) TEST COCKS SHALL FACE UP OR SIDEWAYS, WHICHEVER IS MORE ACCESSIBLE.
- 3) COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
- 4) SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCVA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
- 5) DCVA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
- 6) PRESSURE TEST AND DISINFECT PER A.W.W.A. STDS.

CITY OF DUPONT			
2" & SMALLER DOUBLE CHECK VALVE ASSEMBLY			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.4-7
DATE: 9/11			DATE: 9/21/11
DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE	

MEGALUG FOLLOWER
INSTALLED ON INFLOW
SIDE OF VAULT W/
CONC. THRUST BLOCK

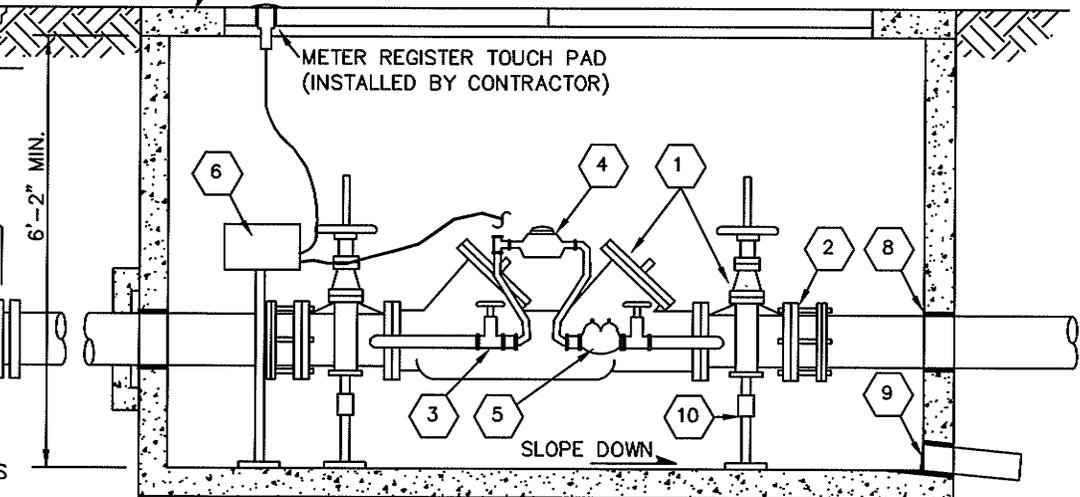


OPTIONAL 2-WAY FIRE DEPT.
PUMPER CONNECTION, TEE OFF
DOWNSTREAM MAIN AND PROVIDE WITH
INLINE 4" SWING CHECK VALVE. INSTALL
PER CITY AND FIRE DEPT. STANDARDS.

FINISHED GRADE

CAST IRON
VALVE BOX,
RICH 940 W/
18" TOP AND
24" BASE.
VALVE BOX
SHALL NOT
REST ON
PIPE.

WATER MAIN
GATE VALVE,
SIZE PER PLANS
4" MIN.



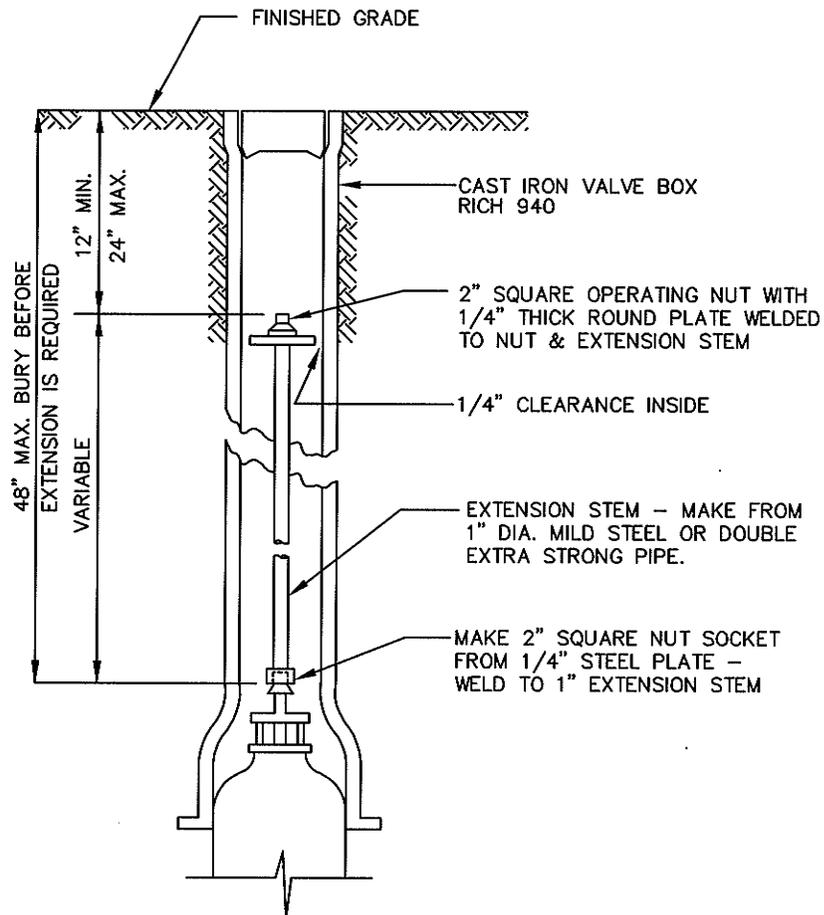
- 1 STATE DOH APPROVED DOUBLE-CHECK DETECTOR BACKFLOW PREVENTION ASSEMBLY WITH O.S. & Y.V., SIZE AS NOTED ON PLANS.
- 2 ROMAC STYLE FLANGED COUPLING ADAPTER, 6" MIN. FROM INSIDE VAULT WALL.
- 3 SHUT-OFF VALVES PER STATE REQUIREMENTS.
- 4 5/8"x3/4" SENSUS SR11-TRPL BYPASS METER (PER CITY WATER METER STANDARDS).
- 5 STATE DOH APPROVED 3/4" DOUBLE CHECK VALVE ASSEMBLY.
- 6 METER TRANSCIVER UNIT WITH TOUCH PAD. INSTALLED BY CITY ON CONTRACTOR PROVIDED 1" SCH. 80 PVC SUPPORT.

- 7 PRE-CAST CONCRETE VAULT, UTILITY VAULT CO., NO. 5106-LA WITH SPRING LOADED, LOCKABLE STEEL PLATE COVER NO. 2-332P TYPICAL. VERIFY VAULT SIZE TO FIT COMPLETE ASSEMBLIES.
- 8 WATER TIGHT RUBBER SEAL, TYP. ALL PENETRATIONS.
- 9 6" PVC DRAIN TO DAYLIGHT OR TO STORM SYSTEM.
- 10 ADJUSTABLE STANCHIONS (2 TOTAL).

NOTES:

- 1) PROVIDE FLEXIBLE COUPLINGS ON BOTH INLET AND OUTLET PIPES OUTSIDE VAULT.
- 2) A CERTIFIED TEST REPORT SHALL BE SUPPLIED TO THE CITY FOR EACH BACKFLOW ASSEMBLY.
- 3) ALL PIPE SHALL BE DUCTILE IRON EXCEPT FOR BYPASS (BRASS OR TYPE K COPPER).

CITY OF DUPONT			
3" & LARGER DOUBLE CHECK VALVE ASSEMBLY			
APPROVED:		DWG. NO.	
<i>[Signature]</i>		8.4-8	
CITY OF DUPONT		DATE	
9/11		9/21/11	
DATE:	DRWN:	CHKD:	SCALE:
9/11	P.E.	T.N.	NO SCALE



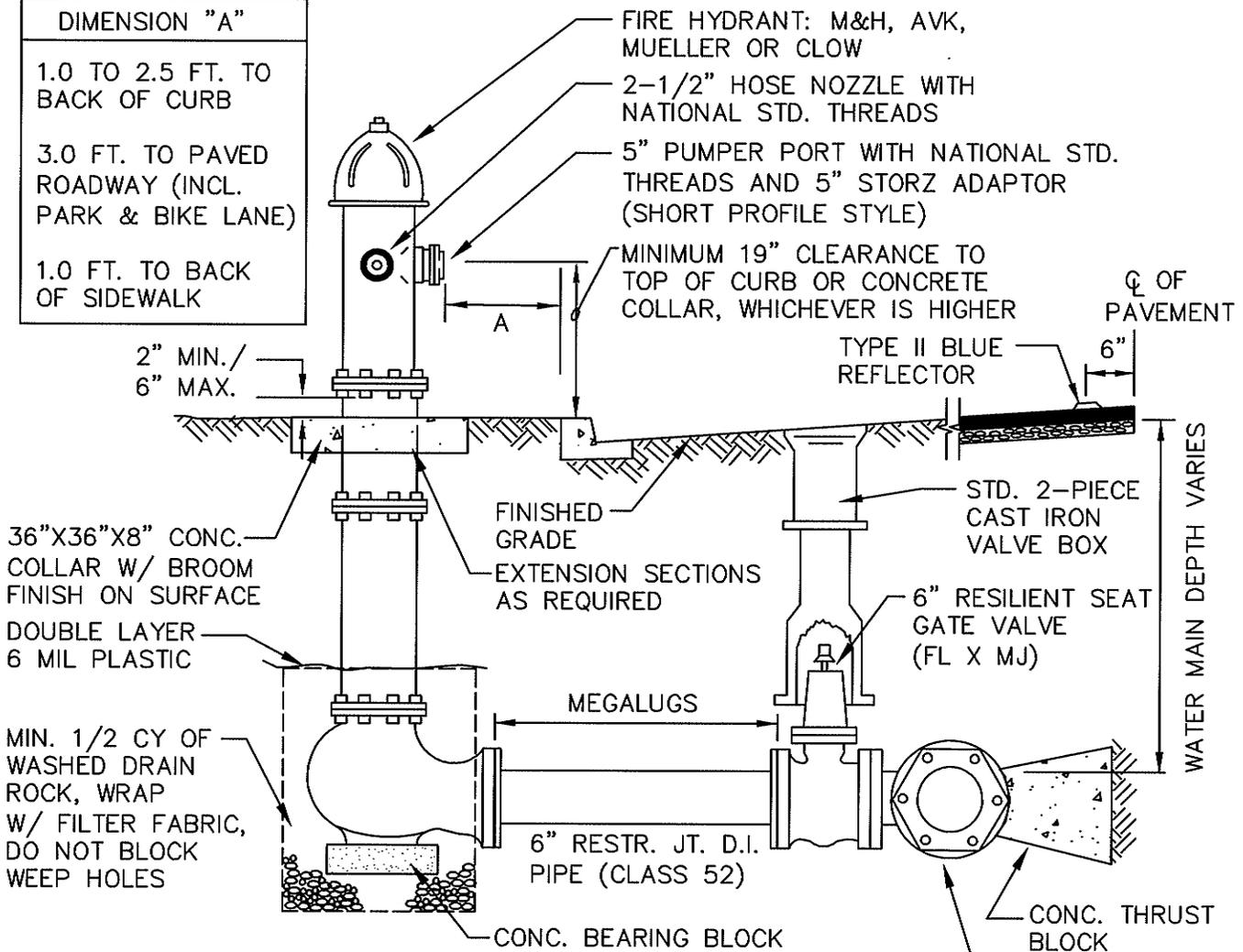
CITY OF DUPONT			
WATER VALVE STEM EXTENSION			
APPROVED: <i>Paul R. Johnson</i> 9/21/11 CITY OF DUPONT DATE			DWG. NO. 8.5
DATE: 9/11	DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE

DIMENSION "A"

1.0 TO 2.5 FT. TO BACK OF CURB

3.0 FT. TO PAVED ROADWAY (INCL. PARK & BIKE LANE)

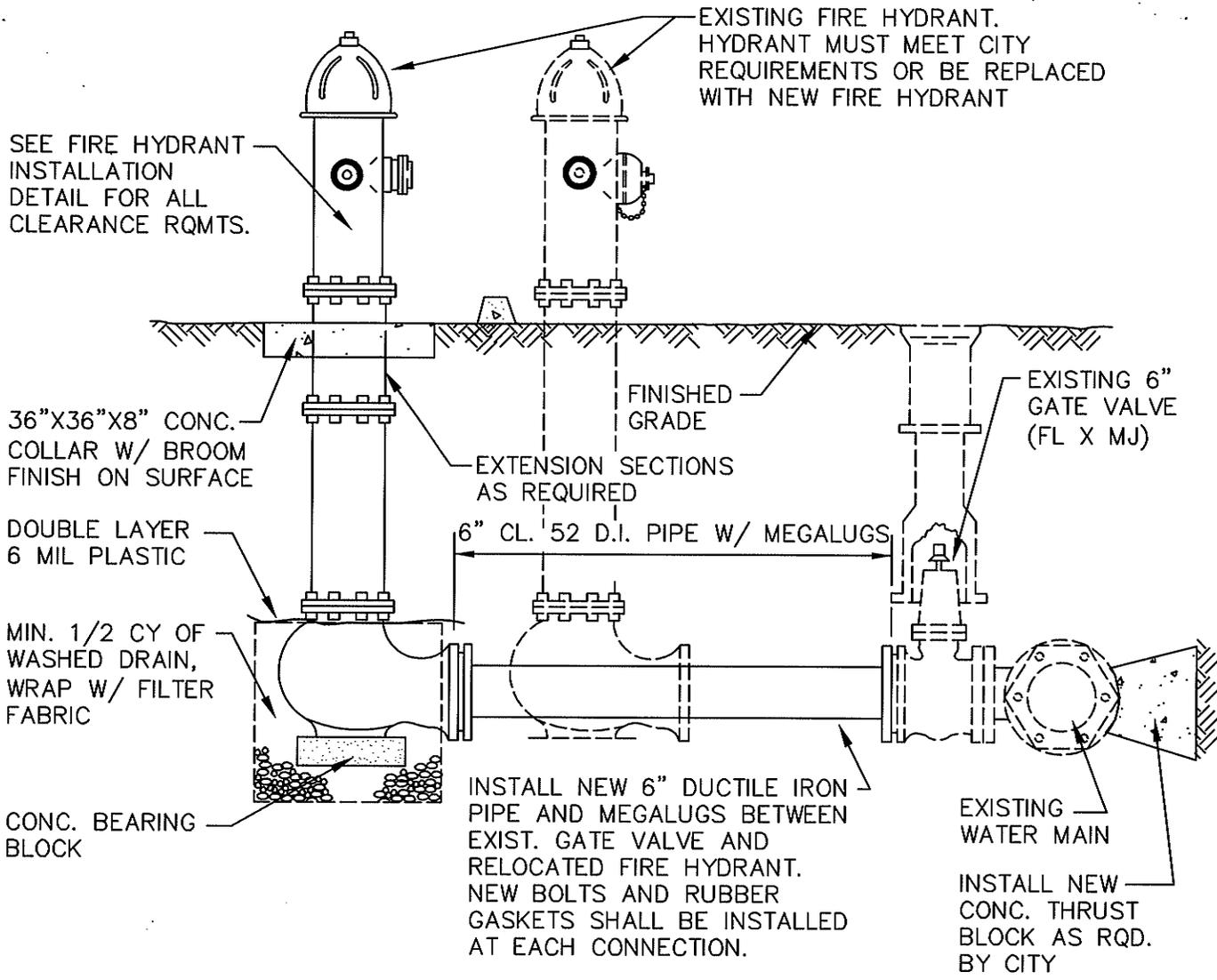
1.0 FT. TO BACK OF SIDEWALK



NOTES:

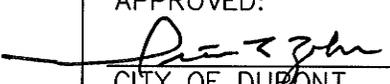
- 1) HYDRANT RUN PIPE SHALL BE MIN. 6" DIA.
- 2) MAXIMUM LENGTH OF 6" DIA. HYDRANT RUNS SHALL BE 50 FT. FOR HYDRANT RUNS GREATER THAN 6" DIA. OR LONGER THAN 50 FT., THE DEVELOPER'S ENGINEER SHALL SUBMIT FLOW CALCS. FOR REVIEW AND APPROVAL BY CITY.
- 3) ALL JOINTS ON HYDRANT RUN SHALL BE RESTRAINED PER CITY STDS.
- 4) INSTALL GUARD POSTS AS RQD. BY CITY.
- 5) PROVIDE MIN. 3 FT. CLR. AND LEVEL AREA AROUND HYDRANT.
- 6) ORIENT PUMPER PORT AS APPROVED BY CITY.
- 7) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.6 OF THE PUBLIC WORKS STANDARDS.

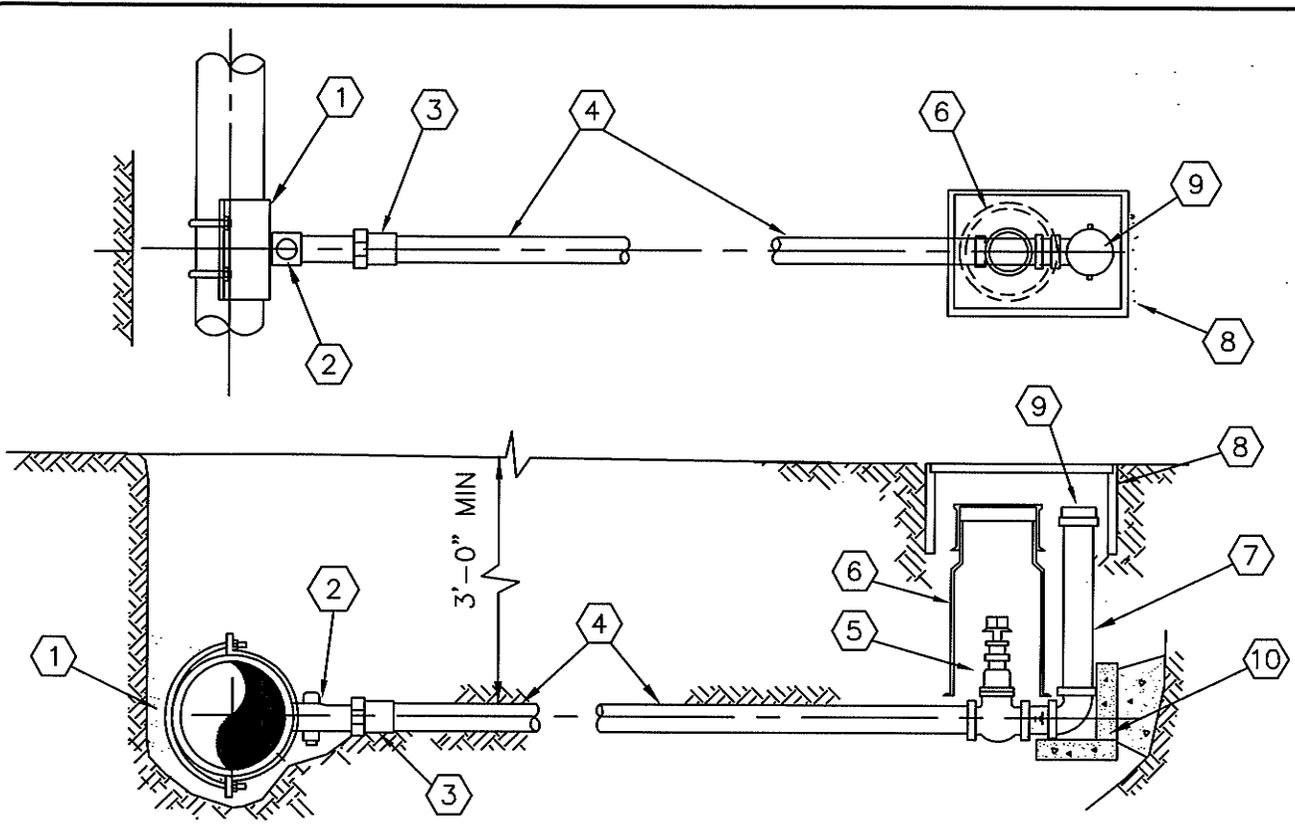
CITY OF DUPONT			
FIRE HYDRANT INSTALLATION			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 8.6-1
DATE: 9/11	DRWN: J.C.	CHKD: D.J.M.	SCALE: NO SCALE



NOTES:

- 1) SEE FIRE HYDRANT INSTALLATION DETAIL NOTES FOR ADDITIONAL REQUIREMENTS.
- 2) THE PUMPER PORT OF ALL RELOCATED FIRE HYDRANTS SHALL BE EQUIPPED WITH A 5" STORZ ADAPTOR (SHORT PROFILE STYLE)
- 3) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.6 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
FIRE HYDRANT RELOCATION			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.6-2
DATE: 9/11		DRWN: L.L.	CHKD: T.N.
DATE: 9/21/11			SCALE: NO SCALE



- 1) D.I. DOUBLE STRAP SERVICE SADDLE
- 2) 2" CORPORATION STOP
- 3) ADAPTOR
- 4) 2" 200 PSI IPS POLY PIPE
- 5) 2" GATE VALVE WITH SQUARE OPERATING NUT
- 6) CAST IRON VALVE BOX, RICH 940.
- 7) 2" GALVANIZED IRON PIPE & FITTINGS
- 8) METER BOX WITH SOLID LID, FOGTITE B-10, MID-STATES BCF1324-12, OR RAVEN SHALL BE H-20 LOAD RATED WHERE REQUIRED. (FIELD LOCATION TO BE CONFIRMED WITH CITY)
- 9) 2" BRASS COUPLING & 2" SQUARE BRASS PLUG (HAND TIGHTEN PLUG)
- 10) 2 - 2"x8"x16" CONC. SUPPORT BLOCKS & POURED CONC. SUPPORT

NOTES:

- 1) INSTALL DIELECTRIC COUPLINGS AT DISSIMILAR METALS.
- 2) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.7 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
2" IN-LINE BLOWOFF ASSEMBLY			
APPROVED: <i>Paul Z. John</i> CITY OF DUPONT			DWG. NO. 8.7-1
DATE: 9/11			DATE: 9/21/11
DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE	

METER BOX WITH SOLID LID, FOGTITE B-10, MID-STATES BCF1324-12, OR RAVEN, SHALL BE H-20 LOAD RATED WHERE REQUIRED. (FIELD LOCATION TO BE CONFIRMED WITH CITY)

2" BRASS COUPLING & 2" SQ. BRASS PLUG (HAND TIGHTEN PLUG)

24" MIN. TO 36" MAX. TO FINISHED GRADE

CONCRETE THRUST BLOCK SHALL NOT ENCASE ANY PORTION OF VALVE OR BOLTS

MJ PLUG

MJ X FL TEE (WRAP FITTING W/ 4 MIL. VISQ. PLASTIC)

WATER MAIN

CAST IRON VALVE BOX (RICH 940)

2" GALV. PIPE LENGTH AS REQUIRED

2 - 2"x8x16" CONC. BLOCKS & POURED CONC. SUPPORT

2" X 90° BEND (GALV.) (3 REQUIRED)

2" X 12" GALV. NIPPLE

REDUCING FLANGE TAPPED W/ 2" PORT

2 GALV. NIPPLES (HORIZ. LENGTH 6" VERT. LENGTH DET. BY COVER REQUIREMENT.)

2" GATE VALVE (THRD x THRD)

NOTE:

- 1) INSTALL DIELECTRIC COUPLINGS AT DISSIMILAR METALS.
- 2) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.7 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT

2" END-LINE BLOWOFF ASSEMBLY

APPROVED:

DWG. NO.

John Z. John
CITY OF DUPONT

9/21/11
DATE

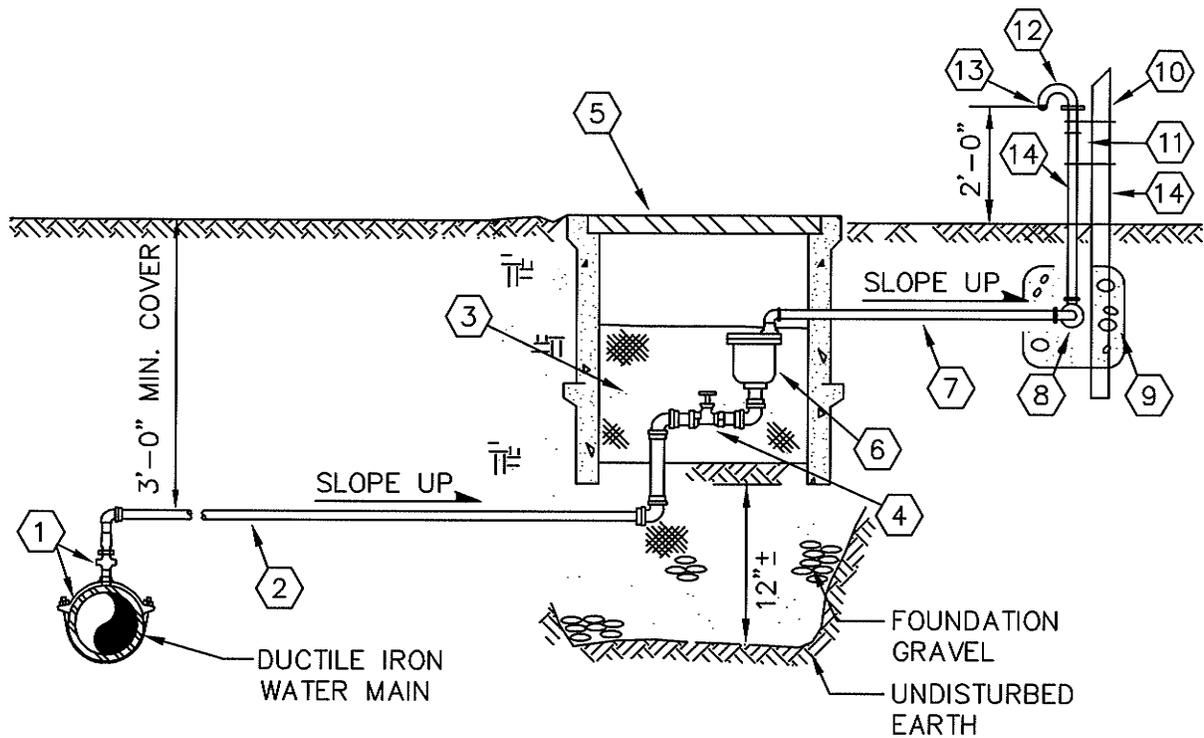
8.7-2

DATE:
9/11

DRWN:
L.L.

CHKD:
T.N.

SCALE:
NO SCALE

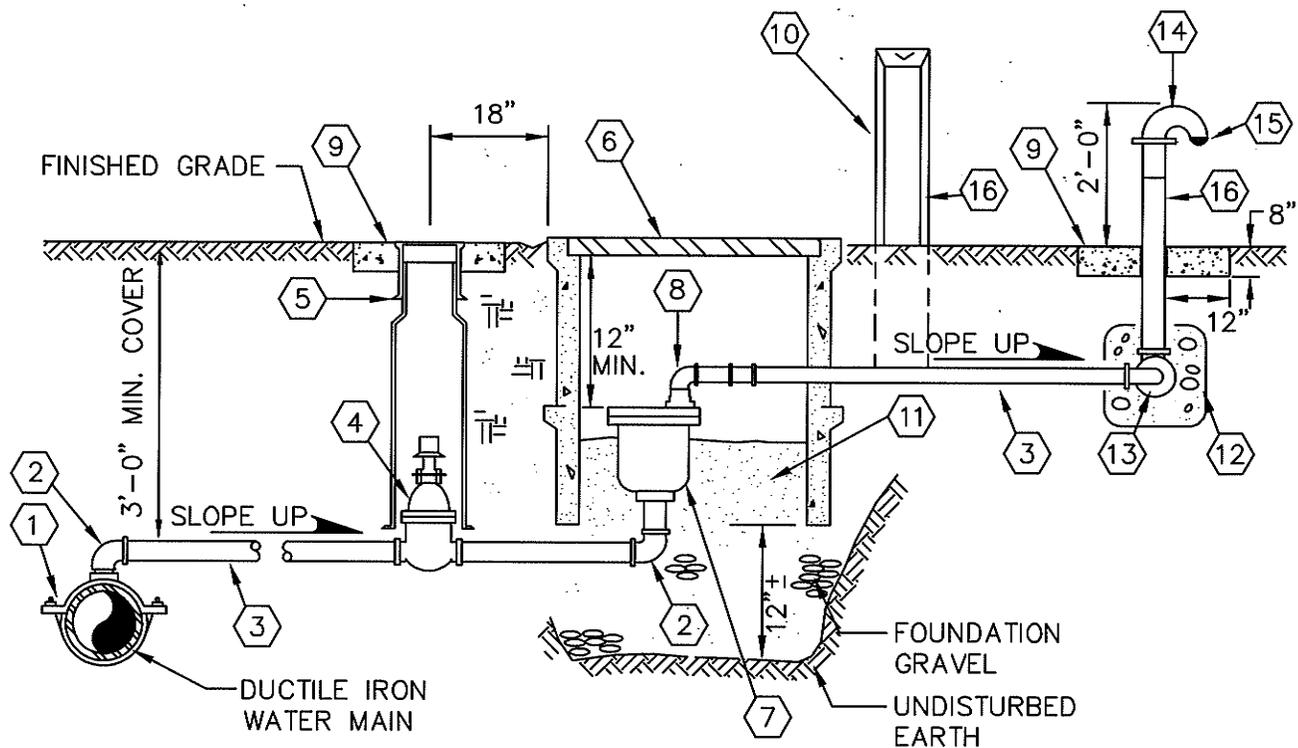


- | | |
|--|--|
| <p>① DOUBLE STRAP SERVICE CLAMP W/ 1" CORP. STOP</p> <p>② 1" WATER SERVICE PIPE (200 PSI IPS POLY PIPE). PIPE SHALL BE SLEEVED WITH 2" SCH. 80 PVC AT ROAD & SIDEWALK CROSSINGS.</p> <p>③ PEA GRAVEL</p> <p>④ 1" BALL VALVE (FORD)</p> <p>⑤ CONCRETE METER BOX, 17"X28" FOGTITE NO. 2, W/ DIAMOND PLATE STEEL SOLID COVER</p> <p>⑥ 1" AIR & VACUUM RELEASE VALVE, APCO OR CRISPIN MODELS ONLY</p> <p>⑦ 1" GALVANIZED IRON PIPE</p> | <p>⑧ MIN. 1/4 CY OF WASHED ROCK, WRAP WITH FILTER FABRIC</p> <p>⑨ 2, 1"X90° ELL. (GALV.) WITH WEEP HOLE IN ONE</p> <p>⑩ 4"X4" CONC. MARKER POST W/ DISTANCE & DIRECTION TO VALVE STENCILED IN BLACK</p> <p>⑪ ATTACH VENT TO POST W/ 2 EA. 316 STAINLESS STEEL BANDS</p> <p>⑫ 1" OPEN PATTERN RETURN BEND</p> <p>⑬ 1" BEEHIVE STRAINER</p> <p>⑭ PAINT PORTION ABOVE GROUND WITH TWO COATS OF BLUE PAINT</p> |
|--|--|

NOTES:

- 1) TAP WATER MAIN AT HIGH POINT LOCATION, AS APPROVED BY CITY.
- 2) ASSEMBLY SHALL BE INSTALLED IN NON-TRAFFIC AREA.
- 3) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.7 OF THE PUBLIC WORKS STANDARDS.

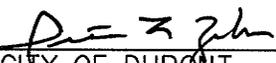
CITY OF DUPONT			
1" AIR & VACUUM RELEASE ASSEMBLY			
APPROVED:			DWG. NO.
CITY OF DUPONT			DATE 9/21/11
DATE: 9/11	DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE

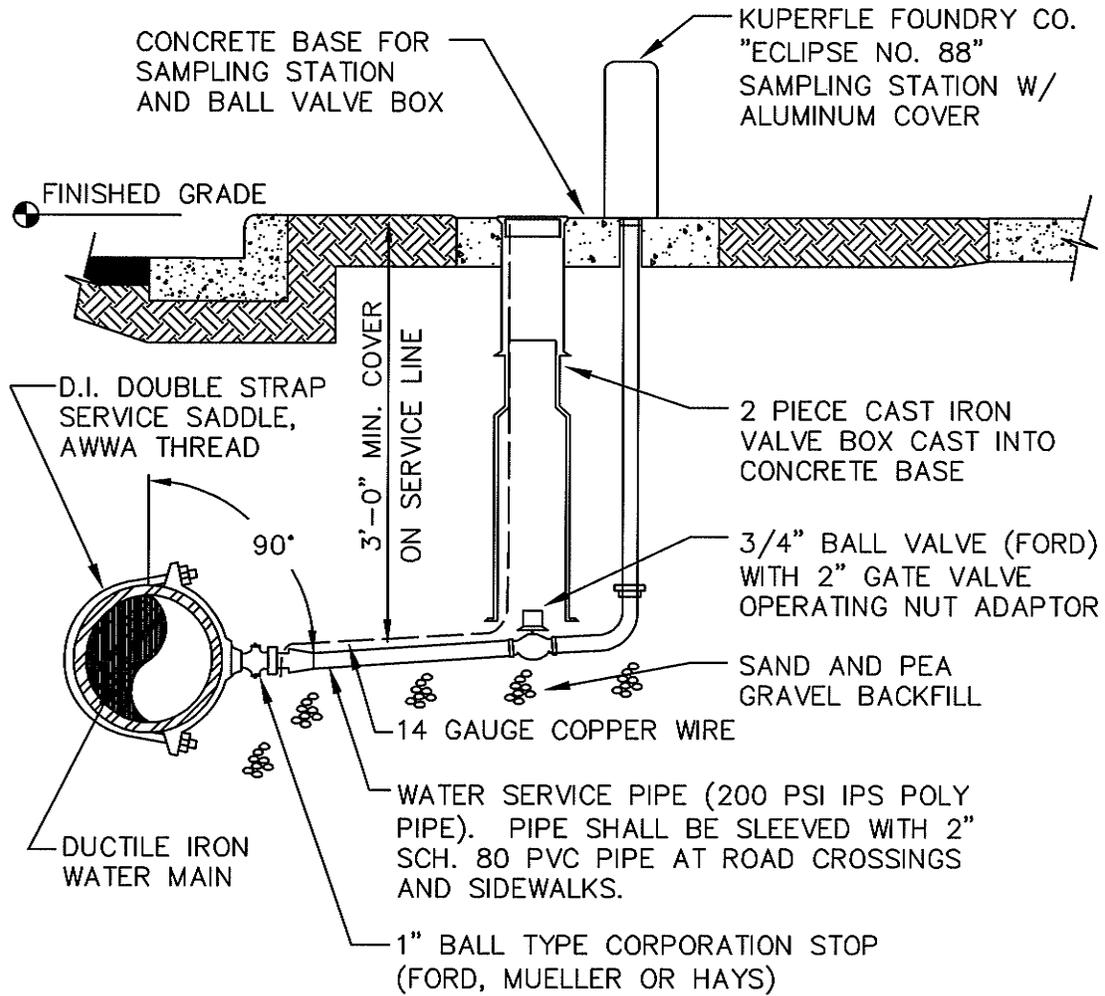


- | | |
|---|---|
| ① DOUBLE STRAP SERVICE CLAMP W/ 2" CORP. STOP | ⑨ CONCRETE COLLAR |
| ② 2" SWING JOINT | ⑩ 4"X4" CONC. MARKER POST W/ DISTANCE & DIRECTION TO VALVE STENCILED IN BLACK |
| ③ 2" GALVANIZED IRON PIPE | ⑪ PEA GRAVEL |
| ④ 2" AWWA RESILIENT SEAT GATE VALVE W/ OPERATING NUT | ⑫ MIN. 1/4 CY OF WASHED ROCK, WRAP WITH FILTER FABRIC |
| ⑤ CAST IRON VALVE BOX | ⑬ 2, 2"X90° ELL. (GALV.) WITH WEEP HOLE IN ONE |
| ⑥ CONCRETE METER BOX, 17"X28" FOGTITE NO. 2, W/ DIAMOND PLATE STEEL SOLID COVER | ⑭ 2" OPEN PATTERN RETURN BEND |
| ⑦ 2" AIR & VACUUM RELEASE VALVE, APCO OR CRISPIN MODELS ONLY | ⑮ 2" BEEHIVE STRAINER |
| ⑧ 2"X90° ELL | ⑯ PAINT PORTION ABOVE GROUND WITH TWO COATS OF BLUE PAINT |

NOTES:

- 1) TAP WATER MAIN AT HIGH POINT LOCATION, AS APPROVED BY CITY.
- 2) ASSEMBLY SHALL BE INSTALLED IN NON-TRAFFIC AREA.
- 3) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.7 OF THE PUBLIC WORKS STANDARDS.

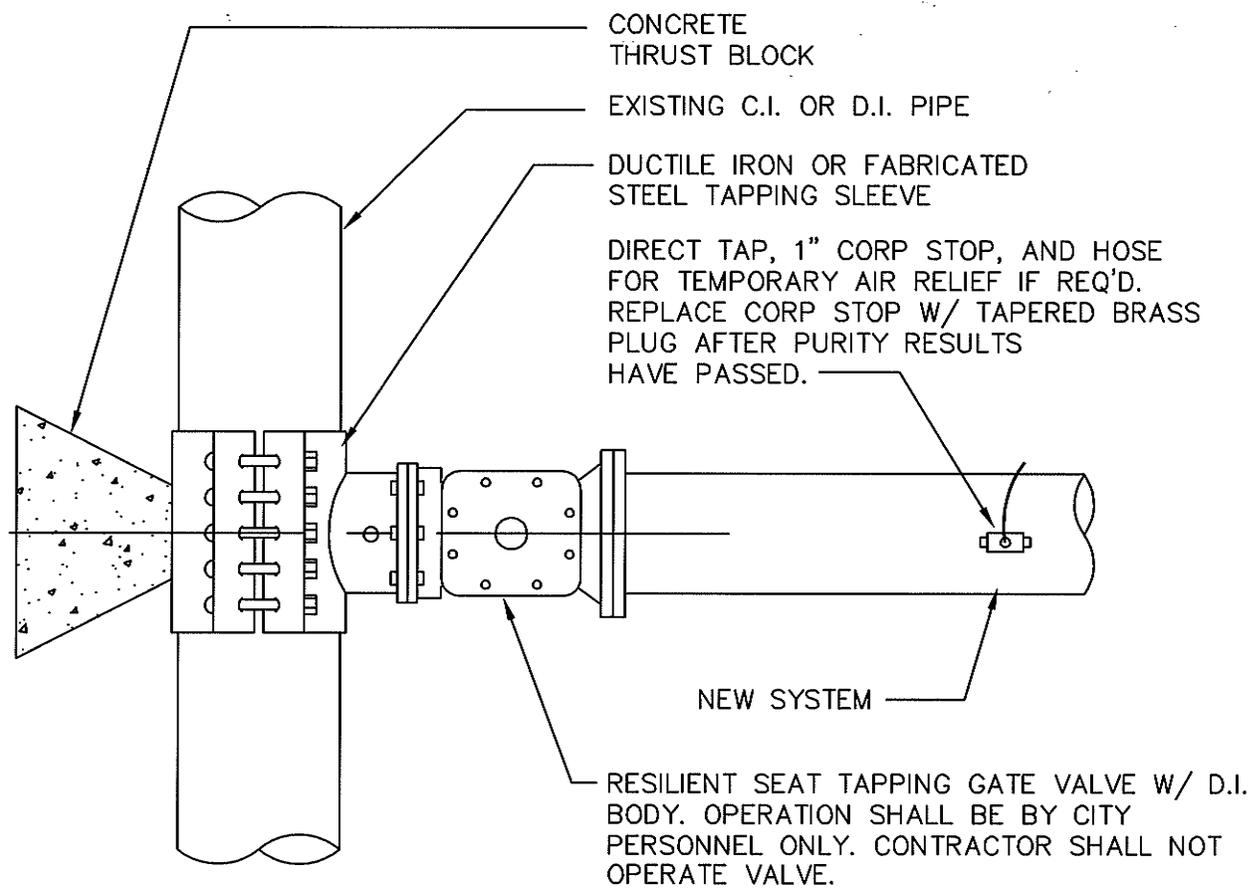
CITY OF DUPONT			
2" AIR & VACUUM RELEASE ASSEMBLY			
APPROVED:			DWG. NO.
 CITY OF DUPONT			8.7-4
9/21/11 DATE			
DATE:	DRWN:	CHKD:	SCALE:
9/11	L.L.	T.N.	NO SCALE



NOTES:

- 1) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.8 OF THE PUBLIC WORKS STANDARDS.

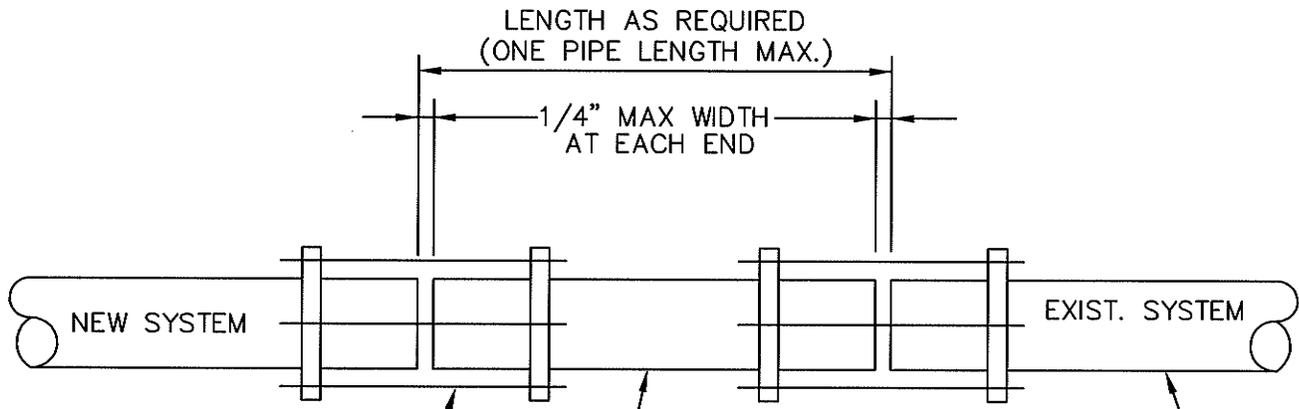
CITY OF DUPONT			
WATER SAMPLING STATION			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.8
DATE: 9/11	DRWN: L.L.	CHKD: T.N.	SCALE: NO SCALE



NOTES:

- 1) SIZE-ON-SIZE TAPPING TEES SHALL BE DUCTILE IRON MECHANICAL SLEEVE.
- 2) STEEL TAPPING TEES SHALL BE AT LEAST 2" SMALLER IN DIAMETER THAN THE EXISTING WATER MAIN AND SHALL BE EPOXY COATED.
- 3) TAPPING TEES SHALL BE PRESSURE TESTED TO 200 PSI
- 4) PLACE 2" PVC PIPE IN VALVE BOX TO INDICATE USE BY CITY STAFF ONLY
- 5) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.10 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
WET TAP WATER MAIN CONNECTION			
APPROVED: <i>John Z. John</i> CITY OF DUPONT			DWG. NO. 8.10-1
DATE: 9/11		DRWN: L.L.	CHKD: D.J.M.
			SCALE: NO SCALE



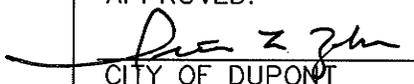
DUCTILE IRON SOLID SLEEVE
(STERILIZED) TYP.

STERILIZED PIPE SPOOL ASSEMBLED
WITH TEE OR CROSS AS REQUIRED.

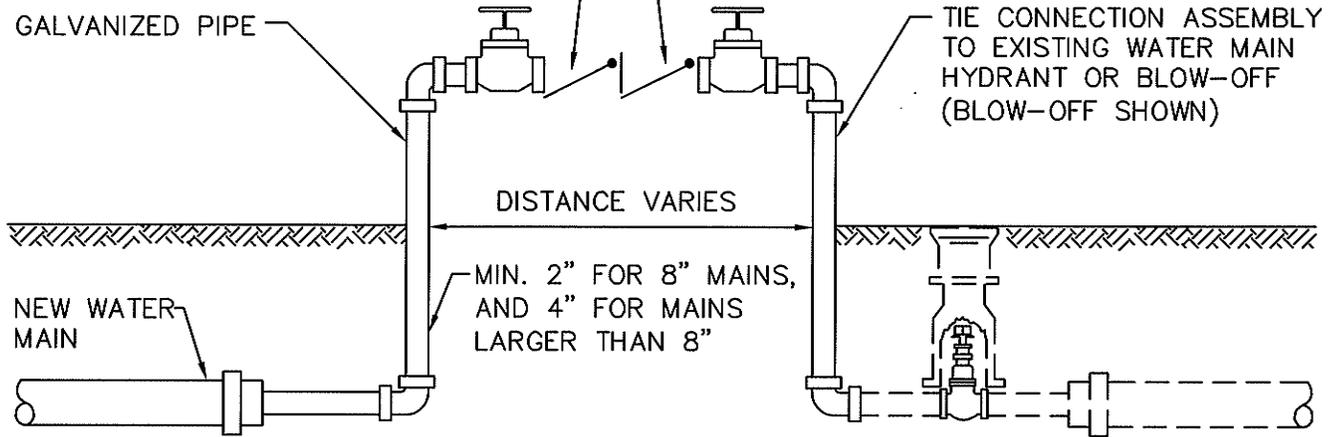
DISCHARGE PRESSURE PRIOR TO
REMOVAL OF THRUST BLOCK AND
CONNECTION TO EXIST. SYSTEM.

NOTES:

- 1) NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING.
- 2) IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED AT THE SOLE DISCRETION OF THE CITY AT ALL NEW INTERTIE LOCATIONS. VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY.
- 3) FOR ADDITIONAL REQUIREMENTS, SEE SECTION 8.10 OF THE PUBLIC WORKS STANDARDS.

CITY OF DUPONT			
CUT IN WATER MAIN CONNECTION			
APPROVED:  CITY OF DUPONT			DWG. NO. 8.10-2
DATE: 9/11	DRWN: L.L.	CHKD: D.J.M.	SCALE: NO SCALE

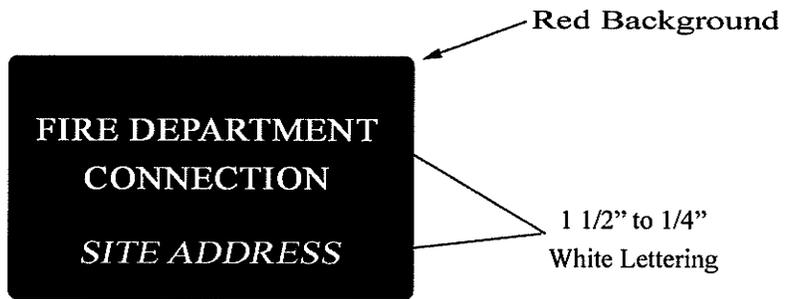
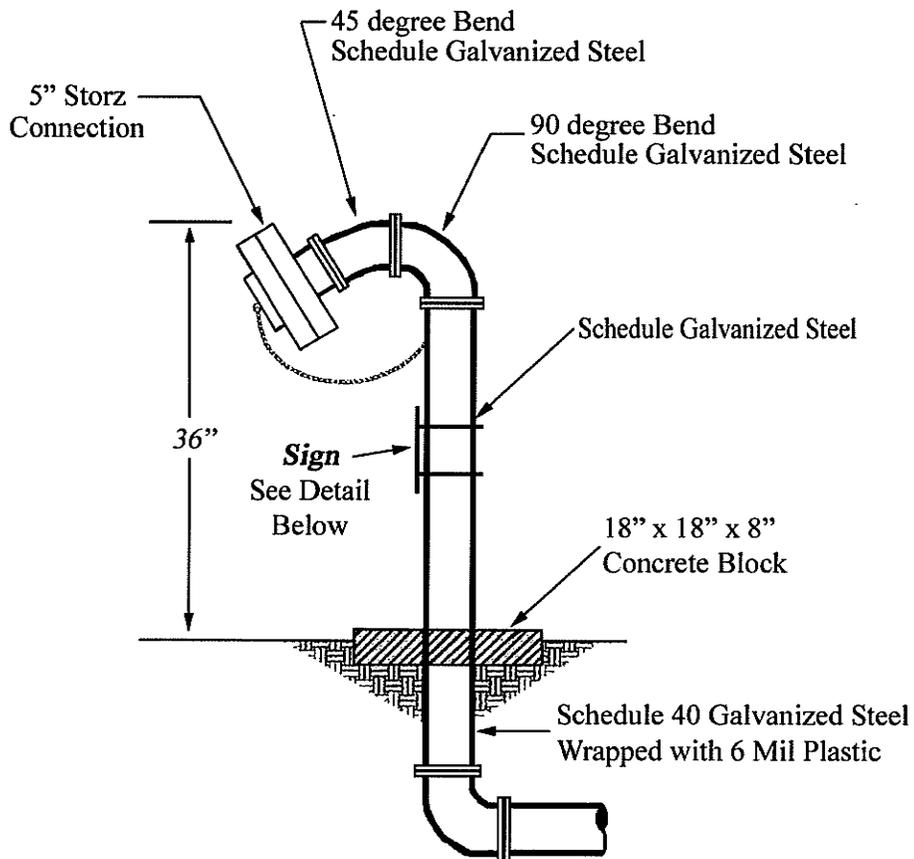
DOUBLE CHECK VALVES (TO MATCH PIPE DIAMETER) APPROVED IN WASHINGTON STATE, AND TESTED WHENEVER INSTALLED OR MOVED. PROVIDE CERTIFICATION TO CITY.



NOTES:

- 1) PROTECT INSTALLATION FROM DAMAGE AND FREEZING.
- 2) ALL WATER USED FOR FILLING AND FLUSHING SHALL BE METERED BY CITY. PROVIDE SPACE FOR INSTALLATION OF METER, OR INSTALL ON POINT OF DISCHARGE.
- 3) ALL NEW MAINS SHALL BE KEPT SEPARATE FROM THE CITY'S EXISTING SYSTEM UNTIL THE NEW MAINS ARE TESTED AND ACCEPTED. FINAL CONNECTION REQUIRES 100% INSPECTION BY THE CITY.

CITY OF DUPONT			
TESTING CONNECTION			
APPROVED: <i>Dean R. John</i> CITY OF DUPONT			DWG. NO. 8.11
DATE: 9/11		DRWN: L.L.	CHKD: T.N.
			SCALE: NO SCALE



CITY OF DUPONT			
FIRE DEPARTMENT CONNECTION			
APPROVED: <i>[Signature]</i> CITY OF DUPONT			DWG. NO. 11.3
DATE: 9/11	DRWN: J.C.	CHKD: D.J.M.	SCALE: NO SCALE

13. GUIDELINES AND FORMS

CITY OF DUPONT TRAFFIC IMPACT ANALYSIS GUIDELINES

The following are general guidelines for use in the submittal of a traffic impact analysis to the City of DuPont. Specific locations to be included in the analysis, boundaries of the study area, etc., will be determined by the City of DuPont as part of the application process. The applicant shall meet with the City Planner to determine the need for a traffic study and items to be included. Modifications to the attached guidelines may be incorporated at such time.

Typically, the threshold for determining whether a traffic impact analysis is required will be 25 peak hour trips (inbound and outbound) and/or 250 daily trips. This would include those developments in the rough range of 25 or more single-family residences, 35 or more apartments, or 10,000 square feet of office space, for example.

Trip generation shall be based on the current edition of the ITE Trip Generation Manual using the average trip rate. The regression equations will be used when average trip rates are not available. Trip generation for unusual land uses which are not found in the Trip Generation Manual shall be estimated from similar types of uses, field studies of similar uses, or based on number of employees, deliveries, expected clientele, etc., as appropriate. Discussion with the City of DuPont with respect to this issue can be included in the application screening process.

Level of service calculations shall be conducted using methodologies presented in the current edition of the Highway Capacity Manual. Level of service for signalized and unsignalized intersections should be expressed in terms of stopped delay per vehicle. Worksheets/computer print-outs of the capacity analyses should be included with the traffic impact analysis.

Level of service calculations will typically be required at the major intersections (signalized locations or major stop sign locations) which will be impacted by 25 or more total peak hour trips from the proposed development.

The City of DuPont considers level of service “D” to be acceptable. Appropriate mitigation should be proposed to maintain this level of service upon completion of the development. Exceptions to level of service “D” will be considered by the City at those locations where the potential mitigation (such as a traffic signal) is not reasonable or desirable. Typically, mitigation will be based on a fair-share or proportionate basis. Exceptions to this will be along the frontage of the development and for any improvements at the development’s access(es) (such as turn storage lanes, channelization, etc.) which will be entirely the responsibility of the development.

Peak hour turning movement counts shall be conducted as part of the analysis for those locations which will be analyzed with respect to level of service. The Consultant may use counts conducted by or available from the City if less than 12 months old.

Appropriate growth factors and/or inclusion of pipeline projects shall be used for projecting future volumes on roadways or at intersections for the project's horizon year. Special conditions such as project phasing or inclusion of adjacent projects may require additional analysis.

The traffic impact analysis shall be prepared under the direction of an active member of the Institute of Transportation Engineers (ITE).

TRAFFIC IMPACT ANALYSIS OUTLINE

The following describes a general outline for use in the preparation of traffic impact analyses for the City of DuPont. This outline is not intended to be all inclusive nor will all items be applicable for all types of development. The City of DuPont reserves the right to request additional information for unique or unusual developments.

I. INTRODUCTION/PROJECT DESCRIPTION

Elements to be included as part of narrative or as figure(s).

- Project name and proponent - Location of project
- Vicinity map
- Proposed uses, if known (e.g., names of stores)
- Project magnitude (square footage, number of units, etc.)
- Access locations
- Current and proposed zoning
- Description of current use of property
- Reduced copy of site plan (if available)
- Roadways/intersections to be impacted and reviewed in the analysis
- Horizon year of project (completion and occupancy); state phasing and time-frame if applicable
- Parking (if applicable)

II. INVENTORY OF EXISTING CONDITIONS

Elements to be included as part of narrative or as figure(s).

- Description of impacted streets in the area (number of lanes, width, pedestrian facilities, speed limit, lighting, etc.)
- Daily traffic volumes (if available), or estimated from peak hour counts
- Peak hour counts (as appropriate)
- Accident history (when required by the City)
- Capacity analyses at critical intersections
- Transit service

III. DEVELOPMENT IMPACTS

Elements to be included as part of narrative or as figure(s).

- Trip generation
- Trip distribution/assignment
- Capacity analyses (with and without the project) at critical locations for the horizon year
- Projected daily traffic volumes and peak hour volumes (with and without the project) for the horizon year
- Need for turn storage lanes at access(es) (if appropriate)

- Other concerns (if applicable, such as cut-through traffic in residential areas)

IV. CONCLUSIONS/RECOMMENDATIONS

- Brief summary of above analyses with recommendations

V. MITIGATION

- Appropriate mitigation shall be proposed for those locations which fall below level of service “D” or a discussion of why mitigation would not be appropriate. Capacity analyses should typically be included for mitigated locations.

VI. OTHER

- Unusual developments may require analysis of off- peak hours, the AM peak hour, weekends, or ability to serve large trucks, for example, if deemed necessary by the City of DuPont. Studies performed as part of an EIS document may also require additional analysis.

Six copies of the traffic impact analysis shall be submitted to the City of DuPont.



SITE WORK APPLICATION

CIVIL PLAN REVIEW

BUILDING SERVICES DIVISION
 1700 Civic Drive · DuPont, WA 98327
 P: (253) 912-5216 · F: (253) 964-1455
 www.ci.dupont.wa.us

OFFICIAL USE ONLY
Date Received _____
Received By _____
Permit No. _____

A cursory check of the plans against the plan checklist (see Street Standards/ Grading Plans Information) will be made by the City. If the plans meet the minimum checklist requirements as to content, they will be routed to the appropriate City staff and the plan review process will begin. If minimum checklist requirements are not met, plans will be returned to submitting Engineer/Applicant.

CIVIL PLAN REVIEW APPLICATION

Owner: _____
 Address: _____
 City & State: _____
 Zip: _____ Phone: _____

Applicant: _____
 Address: _____
 City & State: _____
 Zip: _____ Phone: _____
 Contact Person: _____ Phone: _____

Contractor: _____
 Address: _____
 Zip: _____ Phone: _____
 State Contractor Number: _____
 City License Number: _____

Engineer: _____
 Address: _____
 City & State: _____
 Zip: _____ Phone: _____

SUMMARY OF REQUEST (List type of uses)

No. of proposed dwelling units: _____

total sq. ft. of site: _____
 Total sq. ft. in buildings: _____

Total sq. ft. in paved and covered surfaces (include buildings, driveways, streets, sidewalks, and parking lots) _____

PROPERTY LOCATION

North South East West side of: _____
 (street name): _____
 between (street name): _____
 and (street name): _____
 Property Address: _____
 Section _____ Township _____ Range _____
 Assessor's Parcel No. _____

GRADING INFO

(Grading activities involving 5000 cubic yards or more requires engineering, or at the discretion of the City Building Official.)

Grading Quantities (cubic yards):
 Cut: _____ Fill: _____ Total: _____

An Environmental Checklist is required for grading activities exceeding 100 cubic yards, unless otherwise exempt.

Separate Grading Permit on file with the City? Y N

Environmental checklist on file with the City? Y N

If yes above, has the SEPA determination been rendered? _____

Land Use Approval
 To Proceed: _____ Comments: _____

I certify that I am the: Owner Contractor Agent
 I hereby certify that I have read & examined this application & state that the above information is correct. I agree to comply with all City Ordinances & State Laws, whether specified herein or not.

*****By leaving the contractor information section blank, I hereby certify further that contractors (General or subcontractors) will not be hired to perform any work in association with this permit.**

_____ _____ _____
 Print Name Signature Date

FOR OFFICE USE ONLY

Fire Flow Required _____ gpm

Water connection estimate: _____

Pierce County Sewer Permit: _____

Easements required: _____

Right-of-Way required: _____

Bonding required: _____

Misc. _____

CITY OF DUPONT PLAN CHECKLIST

Project: _____

Applicant: _____

Date Submitted: _____

Engineer: _____

Phone: _____

GENERAL

- Vicinity Map
- Legend (APWA Standard Symbols)
- North Arrow
- Scale Bar
- Datum-Bench Mark Elevation and Location (on all sheets where elevations are referenced)
- Title Block:
 - Title:
 - Design By:
 - Drawn By:
 - Date:
 - Checked By:
 - Signature Approval Block (see example below):
 - Sheet Number of Total Sheets:
- Section, Township, and Range (every plan/profile sheet)
- Engineers Stamp (signed and dated)
- Project Title (cover sheet)
- Utility System Map (showing all proposed utilities on one drawing)
- Revision Block
- Horizontal Scale: 1"=40' (or as other wise approved by the City)
- Approval Block (in upper right corner of each drawing)

APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
City Of DuPont

These drawings are approved for construction for a period of 12 months from the date shown hereon. The City reserves the right to make revisions, additions, deletions, or modifications should construction be delayed beyond this time limitation. The City, by approving these drawings, assumes no liability in regards to their accuracy or omissions.

DRAWING STANDARD ITEMS

- Centerline and Stations
- Edge of Pavement and Width
- Right-of-Way and Width
- Proposed Survey Monumentation Locations and Details
- Sidewalk and Width
- Roadway Sections
- Existing Utilities (above and below ground)
- Adjacent Property Lines, Ownership, Parcel Number, and Street Address
- Identify Street Names, Right-of-Way, Lots
- Identify/Match Existing Sheet Numbers and Stations
- Easements, Width, and Type
- Define Survey Baseline
- Stations for Structures
- Flow Direction Arrows

PROFILE PORTION STANDARD ITEMS

- Profile Grades (decimal FT./FT.)
- Existing Ground
- Scale (horizontal and vertical)
- Stationing
- Vertical Elevation Increments
- Existing Utilities (if available)

Miscellaneous:

- Detail Sheet
- General Notes

WATER

References: Section 8 of the City of DuPont Public Works Standards
(Available at City Hall or thru the City of DuPont's website).

Plan View:

- System Map Showing Existing and Proposed with line size, valves, and hydrants
- Existing Utility Conflicts
- Fixtures (need horizontal and vertical control):
 - Fire Hydrants (at all intersections)
 - Blow-Off (at end of line)
 - Vacuum and Air Release Valves When Required
- Tees, Crosses, Elbows, Adapters, and Valves Need Coupling Type, Meter Locations
- Valves (2 each tee, 3 each cross)
- Thrust Blocking Required at all Fittings Including In-Line Valves
- Distance from Sewer
- Service to Each Lot (include open tracts)
- All valves larger than 12" shall be butterfly valves
- All valves 12" and smaller are resilient seated gate valves
- Water sample stations have been provided, as required
- Minimum service line size between water main and a single residential meter is 1-inch
- All dead end mains closed with MJ caps, plugs, thrust blocks, and/or blow-off assemblies
- Thrust blocks have been provided for all fittings and bends
- Pipes connecting hydrants to mains are at least 6 inches in diameter and not longer than 50 feet
- Mains are located 5' northerly or easterly of street centerline (or City approved location)
- Irrigation system cross connection control

Profile View:

- Existing Utility Crossings
- Show Fixtures (tees, crosses, hydrants)
- Show Valves and Couplers
- Size of Water Main
- Length of Water Main in LF
- Cover Over Pipe (36" min for distribution and 42" cover for transmission)
- Grades

Miscellaneous

- Detail Sheet
- Water General Notes

STORM

- References: Stormwater Management Ordinance, Ord. #95-514
Stormwater Maintenance Requirements, Ord. #95-515
State of Washington, Department of Ecology (DOE) Stormwater Management Manual for Western Washington (2005)
Standard Specifications for Road, Bridge, and Road Construction
- Stormwater Site Plan (Report), which includes applicable minimum requirements per DOE manual:
 - Cover Sheet
 - Table of Contents
 - Section 1 - Project Overview
 - Section 2 - Site Plan including:
 - Vicinity Map
 - Location of structures, other impervious surfaces
 - Locations of stormwater runoff control facilities
 - Lot Layout
 - Setback Requirements
 - Existing Site Features
 - Water Quality Sensitive Areas
 - Road Rights-of-Way and Easements
 - Acreage and outlines of all drainage basins (including Off-Site Contributing Areas)
 - Average Slope
 - Routes of existing, construction, and future flows at all discharge points
 - Overland Flow Paths and Distances
 - Soil Types
 - Spot Water Surface Elevations, Discharges and Velocities for the Design Event
 - Existing stormwater drainage to and from the site
 - The length of travel from the farthest upstream end of a proposed drainage system to any proposed flow control and treatment facility
 - Section 3 – Existing Conditions Summary
 - Section 4 – Off -Site Analysis
 - Section 5 – Permanent Stormwater Control Plan
 - Existing Site Hydrology
 - Developed Site Hydrology
 - Performance Standards and Goals
 - Flow Control System
 - Water Quality System
 - Conveyance System Analysis and Design
 - Section 6 – Construction Stormwater Pollution Prevention Plan (SWPPP)
 - Section I – Construction SWPPP Narrative
 - Construction Stormwater Pollution Prevention Elements
 - Mark Clearing Limits
 - Establish Construction Access

- Control Flow Rates
 - Install Sediment Controls
 - Stabilize Soils
 - Protect Slopes
 - Protect Drain Inlets
 - Stabilize Channels and Outlets
 - Control Pollutants
 - Control De-Watering
 - Maintain BMP's
 - Manage the Project
- Project Description
- Existing Site Conditions
- Adjacent Areas
- Critical Areas
- Soils
- Erosion Problem Areas
- Construction Phasing
- Construction Schedule
- Financial/Ownership Responsibilities
- Engineering Calculations
- Section II – Erosion and Sediment Control Plans
 - General
 - Site Plan
 - Conveyance Systems
 - Location of Detention BMPs
 - Erosion and Sediment Control Facilities
 - Detailed Drawings
 - Other Pollutant BMPs
 - Monitoring Locations
- Section 7 – Special Reports and Studies
- Section 8 – Other Permits
- Section 9 – Maintenance and Operations Manual and Agreement:
 - Required Type and Frequency of Long-Term Maintenance Organization
 - Frequency of Sediment Removal
 - Cleaning of Catch Basins
 - Vegetation Control
 - City of DuPont Agreement for Inspection and Maintenance of Privately Maintained Storm Drainage Facilities, Form No. 6
- Section 10 – Bond Quantities Worksheet, Retention/Detention Facility Summary Sheet and Sketch, and Declaration of Covenants
- Project Engineers Certification
- Drawings and Specifications:
 - Vicinity Map
 - Project Boundaries
 - Contours
 - Major Drainage Features
 - Flow Path

- Site Map:
 - Existing Topography at Least 50 Feet Beyond Site Boundaries
 - Finished Grades
 - Existing Structures within 1,000 Feet of Project Boundary
 - Utilities
 - Easements, Both Existing and Proposed
 - Environmentally Sensitive Areas
 - 100-Year Flood Plain Boundary
 - Existing and Proposed Wells within 1,200 feet of Proposed Retention Facility
 - Existing and Proposed Fuel Tanks
 - Existing and Proposed On-Site Sanitary Systems within 100 Feet of Detention/Retention Facilities
 - Proposed Structures Including Roads and Parking Surfaces
 - Lot Dimensions and Areas
 - Proposed Drainage Facilities and Sufficient Cross-Sections and Details to Build

- Plan View - Conveyance System:
 - Station and Number at each Manhole/Catch Basin
 - Manhole/Catch Basin Type and Size
 - Manhole/Catch Basin Rim Elevation
 - Flow Direction with Arrow on Pipe/Channel
 - Type and Size of Pipe
 - Length of Pipe in Lineal Feet

- Profile View - Conveyance System:
 - Station and Number at each Manhole/Catch Basin
 - Rim Elevation
 - Invert In and Out
 - Length of Pipe in Lineal Feet
 - Grades (FT/FT)

Miscellaneous

- Detail Sheet
- Storm General Notes

STREET

Plan View:

- Flow Direction Arrows at Curb Returns Showing Grade
- Spot Elevations on Curb Returns
- Station PC, PT, PI, and Intersections
- Curve Information Delta, Radius, Length, and Tangent
- BCR and ECR (Begin Curb Radius, End Curb Radius)
- Identify All Field Design Situations
- Typical Sections
- Pavement Marking Details with Station and Offset
- Sidewalks:
 - Driveway Entrances:
 - Station
 - Width, Material
 - Driveway Type
 - Handicap Ramps-Detail and Type

Profile View:

- Vertical Information VPI, BVC, EVC, Low Point, High Point
- Show Grades in Decimal Form with (+ Or -) Slope
- Super Elevated Roadways:
 - Detail-Show Transitions
 - Special Detail Showing Gutter Flowing Adequately

Miscellaneous:

- Detail Sheet
- Street General Notes

ILLUMINATION

- Lighting
 - Station and Offset to Fixtures
 - Pole Type, Including Manufacturer and Model Number
 - Mounting Height, Arm Length, Anchor Bolt Size, and Pattern
 - Power Source:
 - Wire Size, Type, Conduit
 - Line Loss Calculations
 - Luminaire Type, Lamp Wattage
 - Location of Service Disconnects
 - J-Box Location (include station and offset)

Miscellaneous:

- Detail Sheet
- Lighting General Notes

MISCELLANEOUS

- Easements and/or Dedication Deeds

SANITARY SEWER

- Pierce County Utilities owns, maintains, and operates the sanitary sewer system within the City of DuPont. Pierce County must approve the sewer plans prior to grading or civil construction permit issuance. Letter from Pierce County approving sewer plans must be submitted for plan approval.

**CITY OF DUPONT
PERFORMANCE BOND**

Developer: _____

Project Name/Permit No.: _____

Surety: _____

Amount: _____

KNOW ALL MEN BY THESE PRESENTS: Whereas the City has approved construction plans dated _____ day of _____, 20____ for the construction of _____ **[project name and improvement description]**, in accordance with the City's regulations.

NOW, THEREFORE, we, the Developer and surety, are held and firmly bound to the State of Washington and to the City in the amount named above for the payment of which we do jointly and severally bind ourselves, our heirs, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the Developer, or the Developer's heirs, personal representatives, successors, and assigns shall well and truly keep all the provisions of the regulations of the City applicable to the work described in the City's regulations, and pay all laborers, mechanics, subcontractors, and materialman, and all persons who shall supply such person or subcontractors with provisions and supplies for carrying on such work and shall indemnify and save harmless the City, its officers and agents, from any pecuniary loss resulting from the breach of said regulations, including the obligation of the Developer to replace or correct any defective work or materials discovered by the City within two years from the date of acceptance of the completed work, then this obligation shall become void; otherwise, it shall remain in full force and effect.

No change, extension of time, alteration or addition to the work to be performed by the Developer shall affect the obligation of the principal or surety on this bond, and the surety waives notice of any such change, extension, alteration, or addition thereunder.

This bond is furnished pursuant to the requirements of Chapter 39.08 of the Revised Code of Washington, and the regulations of the City, and in addition to the foregoing, is made for the benefit of the City, together with all laborers, mechanics, subcontractors, materialmen, and all persons who supply such person or subcontractors with supplies and equipment for the carrying on of the work covered by this agreement, whether or not such work is deemed to be "public work" under the laws of the State of Washington.

In witness whereof, the principal and surety have caused this bond to be signed and sealed by their duly authorized officers or representatives this ____ day of _____, 20____.

Principal

Surety

Address

Address

City, State & Zip

City, State & Zip

Phone No. _____

Phone No. _____

Signature of Principal

Signature of Surety Official

Print Name and Title

Print Name and Title

Accepted by the City of DuPont this _____ day of _____, 20_____.

Mayor, City of DuPont

**CITY OF DUPONT
MAINTENANCE BOND**

Developer: _____

Surety: _____

Development: _____

Amount: _____

Bond No.: _____

We, _____, as principal, and _____, a corporation organized under the laws of the State of _____, and duly authorized to transact business in the State of Washington, as surety, are held and firmly bound unto the City of DuPont, Pierce County, Washington, in the amount of \$_____, for the payment of which sum we bind ourselves, and each of our executors, administrators, successors, and assigns, jointly and severally.

Now, therefore, the conditions of these obligations are such that if the principal shall replace or correct any part of parts of principal's _____

_____ **[describe project/improvements]** built by principal or principal's Contractor as required by Plans approved by the City on _____ day of _____, 20____ discovered by the City of DuPont to be defective in material or inefficient or otherwise unsatisfactory in operations, through faulty construction, materials or workmanship, or through any fault of design or detail arising with Contractor or manufacturer within two years of the acceptance of the completed work and transfer of title, then the obligation of Principal and Surety under this Bond shall be void, but otherwise it shall remain in full force and effect.

Such parts shall be replaced with parts constructed in accordance with designs and of material satisfactory to the City.

Upon the failure of the principal to perform the terms of this Bond, the Surety shall either perform the terms of the Bond itself or shall, upon demand by the Mayor of the City, release up to the full bonded amount to the City. We further agree that up to the full bonded amount shall be released to City of DuPont upon written demand by the Mayor of the City. The amount demanded by the City will be a good faith estimate of the actual cost of repairs.

We further agree that if it is necessary for the City to take any legal action against any signatory to this agreement to assure compliance with its terms, the City shall be entitled to its reasonable costs and attorney's fees.

We further agree that nothing of any kind or nature that will not discharge the principal shall operate as a discharge or release of the Surety, regardless of law, rule of equity or usage relating to the liability of sureties to the contrary notwithstanding.

It shall be the responsibility of both the principal and the surety to inform the City of DuPont, in writing, of any change of mailing address. The City will mail only to the last known address of principal and surety.

In witness whereof, the principal and surety have caused this bond to be signed and sealed by their duly authorized officers or representatives this ____ day of _____, 20____.

Principal

Surety

Address

Address

City, State & Zip

City, State & Zip

Phone No. _____

Phone No. _____

Signature of Principal

Signature of Surety Official

Print Name and Title

Print Name and Title

Accepted by the City of DuPont this ____ day of _____, 20____.

Mayor, City of DuPont

EASEMENT FOR UTILITIES

THIS EASEMENT is made on the ____ day of _____, 20____
("Effective Date") by _____, a Washington corporation
("Grantor").

1. Grant and Location of Easement. Grantor hereby grants and conveys to the City of DuPont, a municipal corporation ("Grantee"), its successors and assigns, a non-exclusive utility easement ("Easement") with immediate right of entry and continued access over, under, and across the real property legally described on Exhibit "A" and depicted on Exhibit "B"(easement area), attached hereto and incorporated herein.

2. Purpose of Easement. The purpose of this Easement is for the construction, improvement, maintenance, and repair of underground utilities, including but not limited to underground water, storm drainage, and other appurtenant structures.

3. Maintenance of Easement. Grantee shall maintain and repair the utility pipes, water mains, and its appurtenant structures so as not to damage the property burdened by this Easement, or any other property.

4. Interference. Grantor may use the surface above the Easement, PROVIDED that its use does not interfere with or cause damage to the utility pipes, water mains, and appurtenant structures, PROVIDED FURTHER that prior to constructing any building or planting any trees within the Easement Grantor shall obtain the written consent of Grantee, which consent shall not be unreasonably withheld. Grantor may construct a fence or other obstruction on Grantor's property, PROVIDED however that Grantor does not prohibit or impede Grantee's access to the Easement. Grantor may grant other non-exclusive easement rights in and to the Easement; PROVIDED, however, that no other utility pipe, line, or structure shall be located closer than five (5) feet parallel to the Grantee's utility pipe, water main, and/or appurtenances; and, PROVIDED FURTHER, that prior to installation of any utility pipe, line, or structure that crosses the Easement, Grantor shall obtain the written consent of Grantee, which consent shall not be unreasonably withheld. If, in exercising any right to use the surface above the Easement or grant other easements, the Easement is disturbed, Grantor shall return the Easement to its condition prior to its disruption, at Grantor's sole cost and expense.

5. Title. The Grantor warrants that the Grantor has good title to the above property.

6. Successor and Assigns. This agreement shall run with the property and be binding on the parties, their successors, and assigns.

A Washington corporation

By: _____

Its: _____

STATE OF WASHINGTON)

: ss.

County of Pierce)

On this day personally appeared before me _____ to me known to be the person who executed the within instrument as the _____ of _____, the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he/she is authorized to execute the said instrument and that the seal affixed in the corporate seal of said corporation.

GIVEN under my hand and official seal this _____ day of _____, 20_____.

(Type/Print Name)

Notary Public in and for the State of Washington, residing at _____. My appointment expires: _____.

Accepted by the City of DuPont this _____ day of _____, 20_____.

Mayor, City of DuPont

**CITY OF DUPONT
AGREEMENT FOR INSPECTION AND MAINTENANCE OF PRIVATELY
MAINTAINED STORM DRAINAGE FACILITIES**

Declaration of Covenant

In consideration of approval of the development known as

_____,
relating to real property legally described as follows:

The undersigned, as owner(s), covenant and agree that:

1. The owner and subsequent owners of the above described property shall maintain the approved storm drainage system shown on Exhibit A in compliance with the Operation and Maintenance Schedule, Exhibit B.
2. The owner shall, in accordance with the Operation and Maintenance Schedule, record and log maintenance performed. The Operation and Maintenance records shall be retained by the Owner for a minimum of three years and shall be available to the City for inspection at all reasonable times.
3. The owner shall provide access to the storm drainage system at reasonable times for regular inspection by the City or its authorized representative to ensure that the facility is maintained in proper working condition in accordance with the Operation and Maintenance Schedule.
4. If at any time, in accordance with the Operations and Maintenance Schedule, the City of DuPont reasonably determines that maintenance or repair work is required to be done to the existing, approved storm drainage facilities installed on the property described above the City shall give the current owner seven days notice that the City intends to perform such maintenance or repairs, or to have them performed by others.
5. If the owner has not completed or is not diligently pursuing the repair or maintenance of the system and it becomes necessary for the City of DuPont to perform the work, the current owners will assume responsibility for the cost of such maintenance or repair and will reimburse the City within thirty days of the receipt of the invoice. Overdue payments will require payment of interest at the current legal rate for liquidated judgments, and any costs or fees incurred by the City, should any legal action be required to collect such payments, will be borne by the parties responsible for said reimbursements.

6. If at any time the City of DuPont reasonably determines that the existing and approved storm drainage system on the property poses a hazard to life and limb, or endangers property, or adversely affects the safety and operations of a public way, due to failure, damage or non-maintenance of the existing on-site storm system, and that the situation is so adverse as to preclude written notice to said owners, the City may take the measures necessary to eliminate the hazardous situation (which will mean repair or clean out of the existing system only to the same standards as originally installed and approved) provided the City has first made a reasonable effort to locate said owner before acting.

The current owners will assume responsibility for the cost of such maintenance or repair; and will reimburse the City within thirty days of receipt of the invoice. Overdue payments will require payment of interest at the current legal rate for liquidated judgments, and any costs or fees incurred by the City, should any be borne by the parties responsible for said reimbursements.

7. The owner shall keep the City of DuPont informed at all times as to the name, address and telephone number of the contact person responsible for the performance of maintenance or repair work to the storm drainage facilities.

These covenants are intended to protect the value and desirability of the real property described above, and to benefit all the citizens of the City of DuPont. They shall run with the land and be binding on all parties having or acquiring from the current owners or their successors, any right, title or interest therein, and to the benefit of all the citizens of the City of DuPont.

8. Lien: The City shall have a lien for costs expended by it for any repairs or maintenance properly chargeable to the owner hereunder, which lien shall be prior in right to the lien of secured parties under deeds of trust, mortgages or real estate contracts, regardless of the date of their recordation, and which shall be recordable and enforceable in the manner provided for materialmen's contractors' liens pursuant to RCW Ch. 60.04 or any successor statute thereto.
9. Attorneys' fees and costs: Should any party institute proceedings to enforce any right hereunder, including filing a lien under paragraph 8, reasonable costs and attorneys' fees thereby incurred shall be awarded to the prevailing party in such proceeding.

Signature

Owner

Address

City, State, Zip

Phone

STATE OF WASHINGTON

ss. (INDIVIDUAL ACKNOWLEDGMENT)

City of DuPont

I, _____, Notary Public in and for the State of Washington, residing at _____, do hereby certify that on this ____ day of _____, 20____, personally appeared before me _____ to be known to be the individual described in and who executed the within instrument and acknowledged that _____ signed and sealed the same as _____ free and voluntary act and deed for the uses and purposes herein mentioned.

GIVEN UNDER MY HAND AND OFFICIAL SEAL

this ____ day of _____, 20 ____.

Notary Public in and for the State of
Washington, residing at
_____ in
said County. My commission expires
_____.

Accepted by the City of DuPont this ____ day of _____, 20_____.

Mayor, City of DuPont

City of DuPont
1700 Civic Drive
DuPont, Washington 98327

WATER AVAILABILITY FORM

Part A
To Be Completed By Applicant

Project Address: _____ Application Number: _____

Subdivision/Project Name: _____ Parcel: _____

Proposed Water Usage: _____ (Commercial) Residential # of Units: _____

Customer Type (circle one) Rural Residential Residential Multi-family Commercial Industrial

I, the undersigned, or my appointed representative have requested the following purveyor to certify willingness and ability to provide the indicated service. I have read and understand the information provided by the water purveyor on this Certificate, and acknowledge that the proposed project may require improvements to the water system which would incur my financial obligation. Prior to final approval for water service, operational responsibility, and financial obligation may be required.

Print Name _____ Signature _____

Address _____ City _____ State _____ Zip _____

Part B
To be completed by Water Purveyor

Water system to provide service: **CITY OF DUPONT** State ID# **20500P**

The proposed development is / is not within our approved service area (circle one).

This water utility will / will not be providing service (circle one).

Approved number of connections: **Unspecified**

Number of current/existing users: **2,300** Existing Storage: **4,000,000 gallons**

Water service will be provided by:

- _____ Direct connection to approved, existing water main
- _____ Extension of existing water main(s)
- _____ New water system in accordance with WAC 246-290

Water Purveyor Signature

Date

Revised: 1/1/2009