STANDARD CONSTRUCTION SPECIFICATIONS

Roswell, Georgia

December 11, 2006

Revised October 2019

Revised September 2020

Revised November 2022

Revised April 2024

City of Roswell

38 Hill Street

Roswell, Georgia 30075

City of Roswell Standard Construction Specifications Changes – Summary

On July 6, 2009, Mayor and Council approved the following changes to Section 2 – Streets

Section 2.1.1 General

- The following language was added: "All projects in overlay districts shall conform to the approved overlay design guidelines for the respective area."

Section 2.1.3 Paving and Curbs

- Language was revised as follows: "Street paving widths measured from the edge of pavement to edge of pavement for major thoroughfares shall prevail as specified in the major thoroughfare plan. Other street widths shall be planned as the sum of the widths of the ultimate lanes for moving traffic, parking, bicycles and median width where appropriate. Lane widths shall be as shown in the revised Table 2.2."
- Sub-Section C. Curb Line Radius: now refers to Table 2.8 for complete intersection information.
- Sub-Section D. Bike Lanes: Priorities 4, 5, 6, and 7 were renumbered 3, 4, 5, and 6.
- Table 2.2 – Paving Widths was revised to reflect new Minimum Lane Widths and Standard Lane Widths.

Section 2.1.4 Grade and Alignment

- Table 2.3 – Street Grades was revised to reflect new Maximum Grades.
- Table 2.4 - Superelevations was deleted and language was added stating "Roads in the City of Roswell shall be designed with a superelevation rate of no greater than 4%."
- Table 2.5 – Vertical Curve K Values was deleted from Subsection B - Superelevation and replaced with the Table 2.4 – Vertical Curve K Values in Subsection C - Vertical Alignment:
- Table 2.6 Horizontal Alignment was deleted and replaced with Table 2.5 – Horizontal Alignment and a reference to AASHTO was added for additional guidance.
- Sub-Section E. Tangents, the language was revised as follows: "Minimum tangent lengths should be included between horizontal curves in order to provide sufficient super elevation runoff length per AASHTO. Any exceptions from this must be approved by the Director of Transportation."
- Table 2.7 – Tangent Lengths was deleted.

Section 2.15 Visibility

- Sub-Section A – Minimum Vertical and Subsection B – Minimum Horizontal were renamed Subsection B – Minimum Vertical and Horizontal Sight Distance
- Requirements were revised to include only a reference to the AASHTO Section covering Intersection Control as follows: "Refer to the sight distance sections of the AASHTO A Policy on Geometric Design of Highways and Streets, pages 654-678. These examples cover the range of turning behaviors and traffic control devices that may occur in the field."
- Sub-Section C – Intersection/Corner Sight Distance was renamed Subsection B – Intersection/Corner Sight Distance
- Table 2.8 - Vertical Sight Distance was deleted.
- Table 2.9 - Horizontal Sight Distance was deleted.

Section 2.1.6 Driveway Access

- Table 2.10 – Driveway Setbacks was renumbered to Table 2.6 - Driveway Setbacks.

Section 2.2.1 Street Construction

- Table 2.11 – Pavement Thickness was renumbered to Table 2.7 – Pavement Thickness.

Section 2.2.2 Materials and Testing

- Table 2.12 – Intersection Radii was renumbered to Table 2.8 – Intersection Radii.

On August 27, 2012, Mayor and Council amended by replacing Section 4 – Water Specifications in its entirety. Water details were added. The Table of contents and page numbers were updated to reflect the additional pages and revised section headings.

In October 2019 a fully revised document was presented to Mayor and Council. The standard specifications document was revised to bring the contents up-to-date with current policy and practice, and to delete redundant sections. The revised document was approved on November 12, 2019.

In September 2020, Roswell's Mayor and Council amended these specifications. Revisions to Sections 4.1, 4.3, & 4.4 were made which concern waterline installation. Section 7 was revised to include additional details. The revised document was approved by Roswell's Mayor and Council on September 14, 2020.

In November 2022, a revised document was presented to Mayor and Council. Sections 3.3.1 Storm Sewers and 3.3.2 Culverts were revised in its entirety. Additional changes included:

Section 3.3.2 Bedding and Backfill

- Language was added to require 57 stone 6" below pipe invert to the pipe's springline and compacted dirt from the pipe's springline to at least 2 feet above the pipe.
- References to HDPE pipe and CMP were removed.

Section 3.3.3 Pipe End Treatments

- Reference to metal end treatments was removed.

Section 4.1.6 Dead Ends

- This section was added to minimize creation of dead ends and promote looping within system. If dead ends are created, adequate flushing must be provided.

Section 4.2.1 General

- Restated bury depth requirements and setback requirements from back of curb.

Section 4.2.10 Water Main Valves

- Replaced Dresser valve with American since American is more commonly used in the industry.

Section 4.2.13 Curb Stops

- Added AY McDonald to acceptable manufacturer list.

Section 4.2.21 Fire Hydrants

- Removed Muller Super Centurion 250 and U.S. Pipe Model M94 from list of acceptable manufacturers.

Section 4.3.1.1 General

- Restated bury depth requirements and setback requirements from back of curb.
- Restated minimum pipe distance from building's foundation.
- Require one M&H Model 129 fire hydrant with i-Hydrant technology to be installed every four hydrants.

Section 6 Construction Details

- Updated *"Special" Dumpster Pad w/ Gravel Pit*, *Standard Dumpster Pad*, and *Trash Compactor Enclosure* details.

Section 7 Water Utility Construction Details

- Updated *W02B Trench Repair*, *W02C Trench Repair, W07 2" Sample Station, W07A 2" Blowoff Hydrant, and W11 ¾" Water Meter Installation* details.

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SECTION 1 - GENERAL

1.1 Purpose

These standard construction specifications are intended to supplement Roswell's Unified Development Code and Roswell Code of Ordinances. These specifications provide detail for standard design and construction specifications and are intended to serve as a general guide to developers, engineers and contractors so as to assure the provision of required standards of streets, utilities, and other facilities and services to new land developments in conformance with public improvement plans of the City of Roswell and also to provide uniform procedures and standards for observation both by the developer and by the city. These standard design specifications shall govern the construction of residential, industrial, commercial, apartments, condominiums and semi-public places, with regard to earth moving, storm drainage, street paving, water and sewer system, street lighting and installation of utilities.

All septic tank and sanitary sewer construction shall conform to the requirements of Fulton County. Where applicable a Fulton County sewer permit may be required to be issued prior to the issuance of grading or development permit.

SECTION 2 – TRANSPORTATION

2.1 Design Standards

2.1.1 Design References

Work covered in this section shall be done in accordance with the City of Roswell Unified Development Code (UDC) Article 11: Streets and Public Improvements. Design references include:

- The Georgia Department of Transportation drawing and specifications, latest editions
- AASHTO *Guide for the Development of Bicycle Facilities*, latest edition
- *Manual of Uniform Traffic Control Devices for Streets and Highways*, latest edition
- AASHTO *Policy on Geometric Design of Highways and Streets*, latest edition
- *NCHRP 672 Roundabouts: An Informational Guide*, 2nd Edition
- AASHTO *A policy on Geometric Design of Highways and Streets*, 6th Edition
- AASHTO *Guide for the Development of Bicycle Facilities*, latest edition
- The Georgia Department of Transportation *Standard Specifications Construction of Transportation System*, latest edition
- *2010 ADA Standards for Accessible Design*
- *Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way*
- *The Manual for Erosion and Sediment Control in Georgia*, latest edition

2.1.2 General

Proposed streets and the redesigning of existing streets shall conform to City of Roswell Unified Development Code (UDC) Article 11.3.6: Subdivision Access.

The arrangement of local streets shall permit practical patterns, shapes, and sizes of development parcels. Streets as a function of land use must not unduly hinder the development of land. Distances between streets, angles of intersections, numbers of streets and related elements all have a bearing on efficient lot layout of an area.

Interparcel access shall be provided to adjacent properties upon the determination that such access is in the best interest of the public health, safety or welfare. All development shall follow the guidelines set in UDC Article 11.3.6C: Mobility and UDC Article 11.3.7: Interparcel Access.

Street trees shall follow guidelines within the Unified Development Code.

The City of Roswell supports the use of context sensitive design solutions and will review projects on a case-by-case basis for conformance with this concept.

Roundabouts are the recommended intersection type for the City of Roswell. Single Lane Roundabouts and Mini-Roundabouts shall be considered inside developments where intersections meet the recommended volume thresholds. These intersections shall comply with the standards presented in NCHRP 672 "Roundabouts: An Informational Guide 2nd Edition"

Developments that are considering installing traffic calming or speed reduction devices should consult the established guidelines in the Residential Traffic Control Enhancement Policy and/or the Neighborhood Traffic Calming Program. The Director of Transportation has the authority to require elements of these policies.

2.1.3 Right-of-Way

2.1.3.1. Right-of-Way Width

Street right-of-way width for major streets shall be dedicated as required by the City Council or City of Roswell Department of Transportation (DOT). Street right-of-way widths shall be designed to meet UDC Article 11.4: Streets.

Table 2.1 – Right-of-Way Widths

Street Classification	**Minimum Right-of-Way Width**
Major Arterial	As shown on major thoroughfare plan
Collector	60 feet
Minor	50 feet
Dead-End	50 feet
Cul-de-Sac turn around (Radius)	60 feet
Alleys	20 feet

Additional street right-of-way width may be required to be dedicated at intersections or other locations fronting the property where turning lanes, storage lanes, medians or realignments are required for traffic safety and minimum right-of-way standards would be inadequate to accommodate the improvements.

Prior to the issuance of any development permit the required right-of-way width shall be dedicated to the City of Roswell on any existing street, as measured from the centerline of the road, along the entire frontage of the property.

Any development with property fronting on an existing City road for which there exists clearly defined plans by the GDOT or Roswell DOT, may be required to provide road improvements associated with the defined plans. In such cases, in lieu of the design and construction, at the discretion of the City Administrator, the developer shall escrow the dollar equivalency of required improvements (including curbing, utility relocation and drainage structures), as estimated by the City of Roswell DOT. These funds shall be deposited in the appropriate road construction account prior to the approval of the final subdivision plat by the Roswell City Council or within 30 days of the award of the construction contract, whichever comes first.

2.1.3.2 Right-of-Way Radius

The right-of-way shall parallel the back of curb or be mitered (20 foot minimum) to provide adequate area for utilities, sidewalk, sight distance and maintenance of the right-of-way.

2.1.3.3 Connectivity Program

During the process of development review, developers shall consult the City of Roswell Transportation Master Plan as a guide for identified right of way needed. Potential inter-parcel connections of streets, multiuse paths, trails, golf cart paths and/or pedestrian ways are suggested in the Connectivity Map within the Transportation Master Plan. After City review and approval, where owners mutually agree prior to the issuance of a land disturbance permit, the developer shall dedicate sufficient right-of-way to the City of Roswell and install necessary improvements for the construction of the connection according to requirements by the Director of Transportation for said connection. Exception to the requirement may be granted by the Director of Transportation or on appeal to the Mayor and City Council, if it is determined that the connection is not economically feasible; or impractical; or not in keeping with the current or future functional intent of the road connection according to the following protocol:

Conceptually, any one of the following priorities would be acceptable. The Director of Transportation shall endeavor to use the highest priority that works for the situation when there is insufficient connectivity.

Priority One: The Department of Transportation shall actively encourage the developer to facilitate the convenience and welfare of citizens encouraging economic development and redevelopment within commercial corridors endeavoring to provide connections from one commercial area to another commercial area.

Priority Two: The Department of Transportation shall actively encourage the developer to evaluate and voluntarily facilitate the provision of services to the citizens encouraging connections from residential areas to adjacent commercial area where mutually agreed to by the owners while employing appropriate traffic calming best practices.

Priority Three: The Department of Transportation shall actively encourage the developer to evaluate and voluntarily facilitate the health safety and welfare of citizens within sustainable communities encouraging connections between residential areas employing appropriate traffic calming best practices except where owners mutually agree gated communities provide best health, safety and welfare; or if it is determined that the connection is not economically feasible; or impractical; or not in keeping with the current or future functional intent of the road.

Priority Four: At a minimum, early in the development process, the Developer and the Director of Transportation shall jointly review opportunities to advance connections wherever they occur. The Department of Transportation shall actively encourage the development community to voluntarily provide the connections suggested with appropriate traffic calming as determined by the Director of Transportation.

2.1.4 Paving and Curbs

2.1.4.1 Street Paving Widths

Street paving widths shall be measured from the edge of pavement to edge of pavement. Other street widths shall be planned as the sum of the widths of the ultimate lanes for moving traffic, parking, bicycles, and median width where appropriate. Lane widths shall be designed to meet UDC Article 11.4: Streets.

All subdivisions or developments shall provide at least one means of ingress/egress from an improved road as determined by the City of Roswell DOT.

Existing streets shall be continued at the same or greater width, but in no case less than the required width provided herein.

2.1.4.2 Improvements Along State Highways

For any development that abuts a state highway or other right-of-way controlled by the State of Georgia, improvements to the roadway and the location and design of any street or driveway providing access from the state highway shall comply with the standards and requirements of the GDOT. A permit for the proposed access or improvements may be required to have been approved by the GDOT and incorporated into the construction drawings for the project prior to the issuance of a grading or development permit.

2.1.4.3 Curb Line Radius

Intersection radii shall be balanced based on the needs of the pedestrian and the needs of heavy vehicles. For areas with higher pedestrian traffic, smaller radii shall be used. For industrial areas or intersections with a large percentage of heavy vehicles, larger radii may be justified.

Larger radii may also be appropriate for intersections located at a skew. The minimum radius shall comply with requirements from Roswell Fire Department. The City of Roswell Transportation Director reserves the right to request AutoTurn analysis for heavy vehicle paths.

2.1.5 Grade & Alignment

2.1.5.1 Grades

The maximum allowable grades for all roads shall follow Chapters 5-8 in the AASHTO A Policy on Geometric Design of Highways and Streets, dependent on functional classification of the road and design speed. The minimum allowable grade shall be 0.5 percent.

Grades between 12 and 14 percent shall not exceed a length of 150 feet.

Grades must be requirements from the City of Roswell's Fire Marshall.

Existing street sections where unacceptable pooling, excessive gutter spread or hazardous conditions occur shall be reconstructed or otherwise improved to eliminate such conditions.

2.1.5.2 Superelevation

Streets in the City of Roswell that utilize superelevation shall be designed with a rate of no greater than 4%. Exceptions to this along existing infrastructure must meet AASHTO superelevation standards and be approved by the Director or Transportation.

2.1.5.3 Vertical Alignment

Table 2.4 – Vertical Curve K Values

DESIGN SPEED (MPH)	K – CREST CURVES	K – SAG CURVES
15	3	10
20	7	17
25	12	26
30	19	37
35	29	49
40	44	64
45	61	79
50	84	96
55	114	115
60	151	136
65	193	157

Unless otherwise specified by GDOT, all changes in street profile grades having an algebraic difference greater than 1 percent shall be connected by a vertical curve. The minimum length of the vertical curve required for safe stopping distance shall be calculated using AASHTO Policy on Geometric Design of Highways and Streets, latest edition. In no case shall that length be less than that calculated using the K values provided in Table 2.4.

In approaches to intersections, there shall be a suitable leveling of the street at a grade not exceeding three percent and not less than 1 percent for a minimum tangent length of 50 feet. This tangent length shall be measured from the edge of pavement of the intersecting street to the point of curvature in the approaching street.

2.4.5.4 Horizontal Alignment (radii of center line curvature)

Table 2.5 – Horizontal Radii

DESIGN SPEED (MPH)	MINIMUM HORIZONTAL RADII FOR 4%* SUPERELEVATION (FEET)
15	42
20	86
25	154
30	250
35	371
40	533
45	711
50	926
55	1190
60	1500

*See AASHTO Green Book for additional guidance

New streets that approach an intersection on a horizontal curve shall have a minimum centerline radius of 240 feet. Any street with a centerline radius less than 240 feet shall provide a minimum tangent section of 30 feet. This tangent section shall be measured along the centerline of the new street, from the right-of-way of the intersecting street, extended, to the point of tangency with the centerline of the curved section.

2.1.5.5 Tangents

Minimum tangent lengths should be included between horizontal curves in order to provide sufficient superelevation runoff length per AASHTO. Any exceptions from this must be approved by the Director of Transportation.

2.1.6 Visibility Requirements

2.1.6.1 Minimum Vertical and Horizontal Sight Distance

Refer to Section 3.2 of the 2018 7th edition of AASHTO A policy on Geometric Design of Highways and Streets. These examples cover the range of turning behaviors and traffic control devices that may occur in the field.

2.1.6.2 Intersection/Corner Sight Distance

Intersections shall be designed with adequate corner sight distance for each street that approaches a street of a higher category. Where necessary back slopes shall be flattened and horizontal or vertical curves lengthened.

Minimum corner sight distance requirements shall be calculated using the AASHTO Policy on Geometric Design of Highways and Streets, latest edition as may be amended from time to time.

Intersections shall be as nearly at right angles as possible, and no intersection shall be at an angle less than 75 degrees. Detailed designs of intersections may be required.

Street centerlines shall either directly align or be offset a minimum of one hundred 125 feet for intersecting streets on opposite sides of the through street and a minimum of 250 feet for streets on the same side of the through street.

Developments shall take intersection sight distance into account when proposing any sight distance obstruction.

2.1.7 Driveway Access

2.1.7.1 General

Traffic Impact Analyses shall be submitted in accordance with the requirements of UDC Article 13.10: Traffic Impact Analysis.

Driveways should be restricted to locations where movements into and out of them can occur in a safe and orderly manner.

Driveways should be designed to eliminate or minimize opposite lane encroachment while entering and exiting property.

All driveways are to be designed and constructed with sidewalk transitions as necessary.

Driveways are not to be installed closer than 10 feet to a catch basin, measured along the gutter line from the centerline of catch basin to the nearest edge of the driveway (extended). No catch basins will be allowed within driveway turning radii.

When the property frontage is less than 200 feet, only one driveway shall be considered for approval. Additional entrances/exits for property having street frontage in excess of two hundred (200) feet may be considered by Roswell DOT upon a showing that such additional entrances/exits are necessary and would not increase traffic congestion or otherwise reduce the safety and convenience of the traveling public.

All driveways are to be considered low volume intersections and to comply with minimum intersection/corner sight distance requirements contained in these regulations.

To allow for proper corner clearance, the minimum tangent curb length between a driveway radius and an intersection on local functional classified route shall be 100 feet whenever feasible based on available frontage.

If the closest intersection is or is likely to be signalized, then traffic movements to and from any driveway within 250 feet of an intersection as measured from the driveway radius return and the intersection radius return with a collector or an arterial shall be limited to right turns only. The Transportation Director may extend the 250 foot distance if sight distance issues exist.

All access points and driveways may be subject to further restriction and consideration as may be deemed necessary by the GDOT and/or Roswell DOT to insure safe, functional design and efficient operation of the streets.

For all developments where roundabouts are not the appropriate intersection type, roadway improvements to provide a separate left turn lane into the proposed development shall be considered on a case-by-case basis.

Access to all residential lots shall be from interior subdivision streets or roads where possible. Exceptions are subject to the approval of the Director of the Department of Transportation.

Residential driveways shall match Roswell's Detail D-1, D-2, or D-3 if grade allows for sidewalk installation. Non Residential driveways shall match either Roswell Detail D-1, D-2, D-3 or GDOT Detail A-2.

2.1.7.2 Residential Driveway Standards

All residential driveways are to be designed and constructed to the following standards.

- Width Minimum 14 feet
- Width Maximum 24 feet
- Radii or Flare: Minimum 5 feet
- Spacing from Street Intersection: Minimum 40 feet
- Angle of intersection with roadway: Not less than 75□
- Grade: if sidewalk is required use Roswell construction driveway detail D-1, D-2, or D-3, concrete depth of driveway shall be at least six (6") inches thick

Construction materials shall be concrete only within the public right-of-way, unless alternate treatment is requested by applicant or required within Historic District or special zone. Any exception would require approval by Transportation Director and require applicant / homeowner to maintain it in perpetuity.

Length: A minimum of twenty-five feet or to the edge of the right-of-way, whichever is greater, shall be paved with 6" of unreinforced concrete. Within Historic District, allowed materials include concrete or brick.

Where a residential driveway crosses a drainage swale a driveway culvert shall be sized to handle the 25-year storm event with minimum 18" diameter pipe and installed in accordance with Standard Specifications Section 3.3.2. Where the drainage swale is adjacent to an arterial or collector road additional storm events, up to and including the 100-year storm event may be required to be analyzed to prevent flooding of the street.

Driveways serving as part of a fire apparatus access road for multi-family residential shall not exceed 10% grade and must comply with all other International Fire Code requirements.

2.1.7.3 Non Residential Driveway Standards

Driveways servicing non-residential developments shall provide uninterrupted ingress/egress. The minimum distance required is measured from the street right-of-way line at the ingress/egress to the outer edge of any interior service drive or parking space with direct access to such drive as measured perpendicularly from the street. The length of the uninterrupted ingress/egress is determined based on the following table:

Table 2.6 – Driveway Setbacks

Maximum Peak Hour Volume	**Uninterrupted Ingress/Egress (feet)**
Up to 50 Vehicles	25
51 to 150 Vehicles	50
151 to 500 Vehicles	100
501 Vehicles and up	150

Driveways serving as part of a fire apparatus access road for non-residential properties shall not exceed 10% grade and must comply with all other International Fire Code requirements.

Non-residential driveways are to be constructed to the following standards:

- Width: Minimum 14 feet for one way access
  Maximum 18 feet for one way access
- Width: Minimum 24 feet for two way access
  Maximum 32 feet for two way access (driveways with medians or other design alternatives are subject to the approval of the Roswell DOT.
- Radii: Minimum 30 feet
  Maximum 50 feet
- Angle of intersection: not less than 75°
- Grade: Roswell D-1, D-2, D-3 detail or GDOT Construction Detail A-2

All driveways are to be designed and constructed with sidewalk transitions to comply with ADA/PROWAG requirements as necessary.

Note: Design standards may be varied with the approval of the Director of Transportation to meet the design intent of special design districts.

2.1.7.4 Deceleration Lanes

Deceleration lanes may be required for all developments. Requirements for constructing the lane(s) include but are not limited to sight distance, posted speed limit, classification of the existing street, volumes on the existing street, volumes to be generated by the development, vertical curvature, horizontal curvature, length of the property road frontage, hydrologic and environmental concerns. During the evaluation of the development's entrance, additional improvements, such as tapers, left turn lanes, by pass lanes, median modifications or other facilities may be required to enhance safety operations. The developer should contact the Roswell DOT at the earliest possible time to request the evaluation so that the appropriate construction plans are prepared and submitted through the plan review process

The developer shall be responsible for the relocation of public or private utilities and drainage structures as may be required for construction of the necessary entrance improvements.

2.1.8 Blocks and Cul-de-Sacs

Blocks and cul-de-sacs shall conform to UDC Article 11.3: Blocks and Access and UDC Article 11.4.15: Dead End Streets.

2.2 Construction Standards

2.2.1 Street Construction

2.2.1.1 General

Unless otherwise specifically set forth herein, all of the materials, methods of construction and workmanship for the work covered in reference to street construction shall conform to the GDOT Standard Specifications for the Construction of Roads and Bridges, latest edition.

As designated in the city of Roswell ordinance, the developer and/or builders shall be responsible for keeping dirt, mud, building materials, concrete, etc., off the pavement and gutter during construction of buildings in all developments covered by these regulations.

Before the streets are accepted by the City of Roswell, all litter and trash shall be removed from the dedicated rights-of-way and the surrounding areas.

Tracked vehicles shall not be driven on existing or new pavements. Any damages to the pavement caused by such action shall be repaired by the responsible party at his cost to the full satisfaction of the City Engineer.

2.2.1.2 Subgrade

Subgrade preparation shall be in accordance with GDOT specifications and these regulations.

Fill shall be placed in uniform, horizontal layers not more than 6 inches thick (loose measurement). Moisture content shall be adjusted as necessary to compact material to 95 percent of maximum dry density except for the top 12 inches that shall be compacted to 100 percent of maximum dry density. All compaction tests shall be based on modified proctor tests. Proof roll is required for RDOT inspector prior to placement of GAB. If a rain event occurs another proof roll may be required by RDOT inspector.

After the earth work has been completed, all storm drainage and other underground utilities have been installed under the road bed, and the back-fill in all such ditches thoroughly compacted, the subgrade shall be brought to the lines, grades and cross section shown on the plans.

If any sections of the subgrade are composed of unsuitable or unstable material, such material shall be removed to the depth directed by the authorized representative of the city and replaced with suitable, thoroughly compacted material.

Utility trenches cut in the subgrade shall be backfilled as specified herein. Compaction tests at the rate of one per 150 feet of trench shall be provided to verify compaction.

When the street is to be used for construction traffic before the paving work is completed, a layer of GAB can be laid as traffic surface if the developer so desires. This material shall not be used as part of the base material and shall be removed prior to paving

Provision shall be made to drain low points in road construction when the final paving surface is delayed.

Provide break in the berm section when the curbing has not been constructed. Use

2½ inch or six-inch pipe sections to provide drainage under curb to side slopes.

The subgrade must pass a roll test prior to placement of the base material. With the approval of the Engineering Division, a geo-textile or grid or used, or a geotechnical report with remedial recommendations may be requested prior to approval, to stabilize a subgrade that does not pass proof-rolling. The use of geo-textiles or grids shall be designed and approved by the engineer of record and submitted to Engineering Design and Transportation Department for approval prior to placement.

2.2.1.2 Paving

All pavement sections shall be designed by a qualified, registered professional engineer based on the 20 year projected traffic loads for that section and the existing subgrade conditions. The minimum acceptable pavement sections are as follows:

Table 2.7 – Pavement Thickness

Street Classification	Aggregate Base (GAB)	Asphalt Base (25 MM AC)	Binder (19 MM AC)	Topping (9.5 MM AC)
Arterials	12"	5″	3″	1.5"
Collectors	8″	3"	3″	1.5"
Local	6"	n/a	2"	1.5"

Final topping should not be installed until all major construction has been completed. Contact the City of Roswell Transportation Department for approval prior to topping roads.

If a delay in paving is reasonable expected the base shall be primed in accordance with GDOT specifications the same day that it is compacted. The prime coat shall be allowed to cure prior to paving. No traffic will be allowed on the primed section until sufficient time has passed to

allow the prime to thoroughly cure. The section may be rolled and sanded if necessary in accordance with GDOT specifications.

Bituminous tack coats shall be applied to all asphalt courses in accordance with GDOT specifications.

Where allowed rural streets do not require curb and gutter. The road base shall be extended 1 foot beyond the edge of pavement, and the shoulders shall extend 8 feet from the edge of pavement to a standard ditch section on each side. Otherwise the roadway shall comply with the standards for new street construction.

2.2.2 Materials and Testing

2.2.2.1 General

All material and methods of construction will be governed by the current GDOT specifications.

At the request of City Engineer, the contractor will furnish means of testing any soil or bases that might be in question by the City Engineer.

2.2.2.2 Acceptance of Bases and Paving

Core samples will be taken of all bases and paving before acceptance by the City of Roswell. If any core is deficient in thickness, by more than ½ inch for asphaltic concrete base courses or ¼ inch for binder/ wearing courses or ½ inch of the combination, additional cores shall be taken to determine the area of deficient thickness and the developer will be required to correct the defect before the streets are accepted by the city. The deficient area may be overlaid with the same type mixture being corrected or with an approved surface mixture. Any overlay must extend for a minimum of 300 feet for the full width of the course. When the surface is corrected it shall comply with the requirements of GDOT Standard Specifications Construction of Transportation Systems, Section 400 – Hot Mix Asphaltic Concrete Construction.

All paving done within the limits of streets right-of-way in the City of Roswell shall be governed by these same specifications.

All paving shall be approved by the City Engineer of Roswell.

2.2.2.3 Curb and Gutter

All new streets or street widening sections shall be provided with curb and gutter except where otherwise noted in these regulations or where not required per zoning. In those areas where curb

and gutter is not required drainage swales shall be provided in accordance with the design guidelines established in the stormwater design manual.

Where projects are constructed within existing developed areas the installation of the curb and gutter shall match the style of the existing curb and gutter that is most prevalent in that area.

Typical minimum section shall be 6 inches x 24 inches x 12 inches. See Appendix A Standard Details: Curb and Gutter Standard Detail. Concrete shall be class A (as defined by GDOT) and have minimum strength of 3000 pounds per square inch (psi) at 28 days.

Only vertical faced curbing shall be allowed, except as individually be approved by the Director of Transportation.

Line and grade shall be set by developer's engineer or surveyor. In all road sections that have been identified by the City of Roswell DOT for resurfacing within one year of the construction, the grade of the new gutter shall be placed 1 inch above the widening pavement grade in areas where drainage will not be adversely affected.

One-half inch expansion joints of pre-molded bitumastic expansion joint material shall be provided at all radius points, structures and at intervals not to exceed 200 feet in the remainder of the curb and gutter.

Special curbing designs (center islands, etc) shall individually be approved by the Director of Transportation.

Curb and gutter shall be set true to line and grade finished by skilled workmen to the section shown on the plans.

Inferior workmanship or construction methods resulting in unsightly curb and gutter will be cause for rejection of the finished work.

When property fronting on an existing city street is subdivided for development, curb and gutter shall be required along said street

Curbing required on existing city streets shall be located as required for new construction, or as directed by the Director of Transportation.

The cost of any catch basins, which must be constructed when an existing city street is required to be developed, will be paid by the developer.

All curbing shall be back-filled and landscaped.

Where projects are constructed within existing developed areas the installation of the curb and gutter shall match the style of the existing curb and gutter that is most prevalent in that area. Where there is existing granite curbing, it shall be restored throughout the construction area as well as off site within the public right of way to the nearest adjacent curb cut. Granite curbs and cuts shall be installed as per the Granite Curb Standard Detail in Section 10 – Construction Details.

Damage to curb and gutter caused by construction or development activity shall be repaired from joint to joint at no cost to the City within 30 days or prior to the issuance of a certificate of occupancy, whichever is earlier.

2.2.3 Street Cuts

2.2.3.1 General

All utility construction plans within the city right-of-way shall be reviewed and approved by the City of Roswell before construction begins.

Open street cuts are not permitted without approval from the City of Roswell DOT.

All pavements including sidewalks shall be repaved in accordance with the following specifications and references:

- Paved sidewalks cut or broken shall be repaved with concrete unless otherwise directed by the City Engineer. The width shall equal the width of the existing sidewalk and the depth shall be four inches. The concrete shall be Class A and shall be placed, finished, cured and protected in accordance with City Curb and Gutter Standard Detail.

- Before removing pavement, it shall be accurately marked with chalk line. Pavement shall be neatly cut with the pavement cutter along the marked lines. Surfacing and base course shall have a minimum bearing on undisturbed earth outside of excavation lines for pipelines, manholes and other appurtenances of at least six inches.

- No pavement shall be removed until completely broken and separated along the marked lines.

- All back filling of excavated portions requiring pavement replacement shall be mechanically tamped in six-inch layers using heavy-duty tampers such as pneumatic jackhammers with tamping foot attachment. Each layer shall be thoroughly tamped to a density equivalent to at least 95 percent of modified AASHTO T-99-49 Proctor curve.

2.2.3.2 Replacement of Cuts in Concrete

The trench shall be back-filled up to and within eight inches of the top of existing pavement unless otherwise directed by the Director of Transportation. The remaining sections shall be paved Class A, high early strength concrete.

All irregular edges and projections and cracked sections shall be removed before placing concrete.

Approved expansion joints shall be placed in the section to be paved to coincide with the existing expansion joints, or where ordered by the City Engineer.

The concrete shall be smooth and even and shall conform to the surface of the existing pavement. All concrete work shall be protected and cured in accordance with GDOT specifications.

2.2.3.3 Replacement of Cuts in Asphalt

The trench shall be back-filled up to and within 9.5 inches of the existing pavement unless otherwise directed by the Director of Transportation. Eight inches of the remaining section shall be paced with Class A, high early strength concrete.

All irregular edges of projections and cracked sections shall be removed before placing concrete.

All concrete work shall be protected and cured in accordance with GDOT specifications.

The remaining 1.5 inches shall be paved with Recycled Asphalt concrete 9.5 mm Superpave topping of hot plant mix asphalt in a method set out in the GDOT specifications

Open streets cuts in excess of 150 feet in length shall require the entire street width to be overlaid.

2.2.3.4 Replacement of Cuts in Unpaved Streets

The trench shall be back-filled in accordance with Section 2.2.3 up to and within four inches of the street level. The remaining four inches shall be filled up with No. 2 crushed stone, well compacted into place.

The base stone shall be kept at street level by the contractor until final acceptance of the project of the City Engineer without additional cost to the City.

2.2.4 Sidewalks

2.2.4.1 General

Sidewalks shall be installed in accordance with the City of Roswell Code of Ordinances, as amended. In general they shall conform to UDC Articles 11.4.10 to 11.4.16.

The developer shall dedicate sufficient right-of-way to the City of Roswell for the placement of the sidewalks required for the development.

In any subdivision, sidewalks shall be installed by the developer on all remaining lots not under construction prior to the release of the maintenance bond.

Sidewalks shall be installed along both sides of the road, including the perimeter of all cul-de-sacs. The Transportation Director or designee may waive sidewalk around non-essential areas including, but not limited to: fire access, turnarounds, or hammerheads or parking areas. Sidewalks shall be as indicated on the approved preliminary plat.

Sidewalks shall be installed in front of all common areas and within the right-of-way of all major and minor collectors and arterial streets prior to approval of the final plat.

Sidewalks shall be installed in front of all single-family residential lots where required by the approved plat prior to the issuance of the certificate of occupancy.

Damage to sidewalks or ramps caused by construction or development activity shall be repaired from joint to joint at no cost to the city within 30 days or prior to the issuance of a certificate of occupancy, whichever is earlier.

Sidewalks shall be installed in accordance with aesthetic guidelines as set forth by the Historic Preservation Commission for any development which takes place in the Historic District.

RDOT inspectors need to be called to inspect the forms prior to any pouring of concrete for all driveways, aprons, and sidewalks. Failure to do so may result in the City not accepting concrete work or granting or approving certificate of occupancy (C.O.'s) if out of compliance. Contact RDOT at 770-594-6420 and request to make an appointment with inspector to avoid rework at applicant expense.

Utility poles, guide wires, fire hydrants, and utility boxes must not block any portion of sidewalk or multi-use trail. The developer must remove any obstacles prior to either the certificate of occupancy being issued or the bond being released.

2.2.4.2 Construction Standards

Sidewalks shall be constructed of concrete at least 6 inches thick per the Standard Concrete Sidewalk Detail. Sidewalks within the Historic District shall be constructed of brick as shown on the standard construction drawing per the Brick Sidewalk Detail. Concrete shall have a minimum strength of 3000 psi at 28 days.

All ADA ramps and sidewalk within the intersection radii shall be constructed of concrete at least 8 inches thick.

Sidewalks shall have a maximum cross slope of ¼ - inch per foot. Sidewalk profile shall be no steeper than 5%. Sidewalk profile is allowed to exceed 5% if the slope of the road it is immediately parallel to is also greater than 5%.

Ramps shall be provided at all intersections. Ramps shall conform to the current Americans with Disabilities Act (ADA) standards.

In all areas requiring the installation of curb and gutter, non-rural road designations, the developer shall provide curb and gutter and all necessary drainage facilities in addition to the sidewalk.

Damage to existing sidewalks and ramps caused by construction or development activity shall be repaired from joint to joint at no cost to the city within 30 days or prior to the issuance of a certificate of occupancy, whichever is earlier.

All sidewalks that do not meet the current width standards shall be brought into compliance with the current standard prior to the issuance of a certificate of occupancy per UDC.

Pre-molded expansion joint to be placed at driveways, curbs or as called for on plans, and to be spaced at 40-foot intervals unless otherwise directed by the City Engineer. Construction or control joints shall be placed transversely at a factor of 1.5 times the width of the sidewalk.

Sidewalks shall be back-filled and landscaped.

2.2.5 Signing and Marking

All signing and markings shall conform to the MUTCD and the GDOT Standard Specifications, latest editions.

Street Name Signs shall be HIP (High Intensity Prismatic), 9 inch blanks with white legends and borders. Street Name Signs shall be colored green for public roads or blue for private roads. A standard 2 inch square x 10 feet long galvanized perforated post shall be used; or a decorative design submitted and approved by Roswell DOT may be used. The HOA would be responsible for future maintenance of this type of post and the Developer shall obtain a letter stating this conditions.

Traffic signs shall be approved by the Roswell DOT and shall conform to the standards outlined in the latest edition of the MUTCD. All new traffic signs shall be purchased and installed by the developer as indicated on the plans. Any fees required for street signs required by permit is for future maintenance.

All existing pavement markings shall be removed to the fullest extent possible from the pavement by any method that does not materially damage the surface or texture of the pavement. Any damage to the pavement or surfacing caused by the pavement marking removal or, if in the opinion of the Director of Transportation, the extent of removal has made

the intent of the striping unclear such that a hazard may exist the pavement shall be repaired by methods approved by the Director of Transportation, up to and including overlaying the existing asphalt. All asphalt overlay shall conform to the GDOT standards.

2.2.6 Traffic Signals

All traffic signals shall be designed and installed in accordance with GDOT Standard Specifications Construction of Transportation System. All traffic signals shall be inspected and approved by the City Department of Transportation.

2.2.7 Underground Utilities

All utilities within the curbs shall be installed and the ditches back-filled and thoroughly compacted in accordance with Section 2.2.3 before any pavement or base is installed.

All utility manholes and valve boxes shall be brought to the finished grade within the roadway section.

All utility locations shall correspond to the Typical Utility Section detail as closely as possible.

SECTION 3 – GRADING AND DRAINAGE

3.1 Grading and Drainage References

Grading and Drainage work shall be done in accordance with the City of Roswell Unified Development Code (UDC) Article 12: Environmental Protection. Design references include:

- The Manual for Erosion and Sediment Control in Georgia, latest edition
- The Georgia Stormwater Management Manual (GSMM), latest edition
- The Georgia Department of Transportation (GDOT) drawing and specifications, latest editions
- State of Georgia Safe Dams Program requirements, drawing and specifications, latest editions

3.2 Earthwork

Applicable permits shall be obtained prior to the commencement of land disturbing activities. Erosion and Sediment control installations and practices shall be implemented according to approved plans and in conformance with UDC Article 12.6: Soil Erosion, Sedimentation and Pollution Control.

3.2.1 Clearing and Grubbing

In accordance with the approved plans, the area within the grading section shall be cleared of all trees, brush, stumps, logs, grass, weeds, roots, vegetable matter, poles, stubs, rubbish, refuse dumps, sawdust piles, and all other objectionable matter resting on or protruding through the original ground surface or appearing or being placed on the area within the typical grading section before final acceptance of work.

This item also includes the removal and proper disposal of all the debris or any obstructions not to be salvaged such as fences and incidental structures within the proposed area to be graded, which might interfere with construction.

Clearing and grubbing operations shall be conducted in such a manner as to prevent damage to existing structures, equipment and any proposed work that has been completed, and to provide for the safety of workmen and other personnel on the job site.

3.2.2 Grading

Grading shall be done in accordance with the lines and grades shown on the approved grading plan.

Grading plans shall show existing and proposed contour lines at an interval of not more than 2 feet.

Grading plans shall outline the areas which are required to remain undisturbed (i.e., Tree Protection Areas, Undisturbed 100-Year Floodplain areas, Undisturbed Buffers Stream Buffers, etc.) and shall indicate protective fencing or staking to be placed around such areas.

If the proposed grading is within the jurisdiction of the Metropolitan River Protection Act, the grading shall be consistent with the River Corridor Certificate approved for the project.

Grading for all roads and improved ditches shall be shown.

All rock and boulders in the roadbed shall be excavated to a depth of at least 12 inches below the subgrade and the space backfilled to the correct grade with material suitable as subgrade.

All encountered materials found to be unsuitable for foundation or roadway purposes are shall be excavated and removed from the work area.

3.2.3 Embankments

Embankment material shall conform to Class I, II, III, IV, V or VI (GDOT 810) as appropriate for the embankment design and function.

The entire area upon which the embankment is to be placed shall be plowed, scarified and finely broken up to a depth of at least 6 inches and all cleavage plains shall be destroyed before the embankment is begun.

The embankment material shall be deposited and spread in uniform horizontal layers not to exceed 6 inches thick for the full width of the cross sections and the layers shall be kept level by any approved equipment.

Each layer shall be compacted at moisture content proper to permit the compaction specified below. Material containing too much water shall be dried to the correct moisture content. If the material is too dry, water shall be added and uniformly mixed with the soil before it is compacted.

The top 12 inches of embankment shall be compacted to at least 100% of the maximum laboratory dry density as determined by AASHTO method T-99. Embankment material located between 1 foot and 6 feet below the top of the embankment shall be compacted to at least 90% of maximum laboratory dry density. The measurements of depth as described above shall begin at an elevation equal to the bottom of subgrade treatment where subgrade treatment material is used.

Maximum slope in cut or fill sections shall be 2:1 (1 vertical foot of rise for every 2 feet of horizontal displacement).

When a cut is made in rock that requires blasting, slope may be changed to vertical slope upon the written approval of the City Engineer and only under the following conditions:

When accompanied by a certification from a Professional Engineer registered in the State of Georgia stating that the slope material is stable
In no instance shall the slope face be steeper than vertical
The slope face is free from all deleterious material and is not subject to long-term erosion due to excessive runoff on the face of the slope.

All slopes steeper than 3:1 shall be stabilized with Rolled Erosion Control Products or Hydraulic Erosion Control Products (matting) as specified in the Manual for Erosion and Sediment Control in Georgia, (Page 6-69, 2016 Edition). All slopes must be protected until a permanent vegetative stand is established.

Slopes over 10 feet in height shall be stabilized in stages by matting and vegetation. Stabilization measures shall be placed in vertical increments not to exceed 10 feet immediately at the completion of each 10 foot lift.

3.2 Retaining Walls

Free-standing retaining walls shall be designed in accordance with UDC Article 10.5 Retaining Walls.

Walls attached to a permitted structure or which, in the opinion of the City Engineer provide support for a structure, regardless of wall height, are regulated and permitted by the City of Roswell Building Department and are not the subject of this section.

When the necessity for an earth retaining structure is required for a vertical displacement of 8 feet or less, appropriate landscaping timbers, or approved equal, may be employed if no permanent structure is supported by the soil retained by the retaining wall. The use of railroad cross ties or other timber product will only be allowed in these instances as per detail.

3.3 Stormwater Pipes

This section provides general design criteria for public stormwater pipe installed under a public road or along a public road within the ROW. Refer to the City's Stormwater Utility website for identification of the City's extent of service / level of service. Sizing and location of all drainage structures shall be the responsibility of a registered professional engineer or land surveyor as per accepted standard design procedures, subject to approval by the City Engineer.

All storm drainage designs shall be in accordance with GSMM and GDOT details and specifications. Table 3.1 lists acceptable GDOT details and specifications.

GDOT standards shall be used in determining concrete class under fill, method of backfilling, and pipe installation.

Trench construction shall be in accordance with the GDOT specifications, OSHA standards, and City of Roswell Ordinances.

Table 3.1 – Acceptable Stormwater GDOT Details and Specifications

Design Item	**Preferred GDOT Standard Detail**
Pipe Culvert Concrete Headwalls	1001b
Rubble Masonry Headwalls for Pipe Culverts	1004a
Brick Manholes	1011a
Precast Reinforced Concrete Manhole	1011ap
Brick Drop Inlets	1019a
Precast Drop Inlet	1019ap
Culverts, Trench Construction, Bedding, and Backfill	1030d1, 1030d2, and 1030d3
Catch Basins	1033 suffix to fit conditions 1034 suffix to fit conditions
Circular Base Units and Risers for Catch Basins and Drop Inlets	1040
Flared End Sections for Pipes	1120
Inlet Headwalls – Outlet Headwalls	1125
Utility Cut Pavement Patching Details	1401
Reinforced Concrete Skewed Wingwalls, Toewalls, and Parapets	2405-1, 2405-2, 2405-3
Junction Boxes & Collars	9031u
Ditch Drop Inlets	D-4
Culvert Plugs	D-40
Rock Filter Dam	D-43
RipRap Outlet Protection	D-55A, D-55B
	GDOT Specification
Reinforced Concrete Pipe	843.2.01
Fully Coated or Aluminized Type II Corrugated Metal Pipe	840
Storm Pipe Installation	550
Bedding and Backfill	812.2.01 or 812.02.02

Changes in construction plans caused by field conditions shall be documented by the design engineer or surveyor and presented to the City Engineer.

3.3.1 General Design Criteria

The rational method shall be used to determine the size of stormwater pipes in accordance with the methodology provided in GSMM. Stormwater pipes shall be designed using the 100-year storm event.

Catch basins and/or drop inlets, including gutter spread, shall be designed by the developer's engineer or registered surveyor to GSMM and GDOT standards and are subject to approval by the City Engineer. Catch basins are not to be placed within the radius of a curb. Gutter spread calculations shall be included within the drawings or the Hydrology Report. The GDOT standard detail shall be labeled for each structure on the pipe profile. GDOT details shall be included within the drawing package.

Stormwater pipes shall be reinforced concrete pipe (RCP) with a minimum diameter of 18 inches. Private stormwater pipes connecting to a public structure shall also be RCP. Minimum and maximum allowable slopes for stormwater pipes are 0.5% and 10%, respectively. Additionally, minimum and maximum allowable velocities are 3 feet per second (fps) and 15 fps, respectively when discharging to another structure. Maximum allowable outlet velocity is 5 fps when discharging to ground, with adequate energy dissipation devices installed at the pipe outlet. Each pipe shall be profiled indicating size, material, class, percent slope, and length.

Energy dissipation devices, such as splash pads, riprap, stilling basins, etc., shall be provided at the outlet of every pipe. These structures or practices shall be designed in accordance with GSMM and The Manual for Erosion and Sediment Control in Georgia, latest editions. Energy dissipation practices shall be located entirely within the project site and shall not encroach upon any required buffer.

Maximum continuous length of pipe shall be 200 ft.

Minimum cover shall be 18 inches and maximum cover shall be as defined in GDOT Standard Construction Detail 1030D. Minimum cover for pipes under the road shall be 18 inches from the bottom of the base or subbase, if used, and the exterior crown of the pipe.

A minimum of 12 inches is required between underground utilities and exterior of the pipe.

Complete flow, velocity, and hydraulic grade line (HGL) computations shall be provided for all stormwater pipes. HGLs shall be shown on the stormwater pipe profiles for the 100-year design storm event. HGL calculations shall include any tailwater or backwater effect from downstream structures. The starting tailwater elevation for HGL calculations shall be the greater of the 100-year peak water surface elevation at the discharge point or 0.8 times the diameter of the outlet pipe. The maximum HGL shall be 1 foot below ground elevation or 1.5 feet below the centerline of the road, whichever is more stringent.

Stormwater pipes crossing under public roads shall conform to UDC Section 12.7: Flood Damage

Prevention.

Minimum 20-foot storm drainage easement shall be provided on all lines (pipes and open channels). The easement width may be increased depending on the depth of the pipe or the width of the open channel. Sufficient easement width shall be granted to allow for future maintenance activities.

Manholes or inlets shall be provided at all changes in pipe grades and direction. Stormwater structures shall not be placed in the roadway. Junction boxes shall have metal manhole frames and lids for access.

Existing channel flow shall not be constricted.

Subsurface drainage will be installed to control shallow ground water by intercepting side hill seepage or by lowering or regulating the ground water level where such conditions exist.

3.3.2 Bedding and Backfill

Backfill around and over culverts and minor structures shall be of selected material GDOT Type I or Type II (GDOT Standard Specifications 812.2.01 or 812.02.02).

Backfill with 57 stone from 6" below the pipe invert to the pipe's springline. Backfill with compacted dirt from the pipe's springline to a thickness of at least 2 feet above the pipe unless these dimensions exceed the proposed height of embankment, in which case the backfill shall be made and compacted to the height of the embankment.

Approved materials shall be placed in horizontal layers of not more than 6 inches loose. The backfill shall be placed and compacted so as to avoid unbalanced loading and to avoid placing undue stress on the structure. Compaction of these materials shall be accomplished by hand tamping or machine tamping. Required compaction levels are as follows:

Backfill within all street rights-of-way shall be compacted to 95% maximum density using the AASHTO Method T-99. The top 12 inches shall be compacted to 98% maximum density.

Backfill in all other areas shall be compacted to 95% maximum density using the AASHTO Method T-99.

All pipes shall be placed on stable earth of fine granular foundation, the characteristics of which would be expected to provide long-term stability. In all live stream pipe installations, in areas of low bearing solid or non-uniform foundations, in areas where rock is encountered at the foundation level, or in other locations where conditions warrant, a minimum of 6 inches of crushed stone bedding is required (maximum size of stone is 0.75 inches). Geogrids or geotextiles may also be required by the City Engineer in problem areas.

3.3.3 Pipe End Treatments

Headwalls or other end treatments are required on all pipes and at the end of all piped collection systems. Headwalls are to be precast concrete, stone masonry with reinforced footings or poured in place, or reinforced concrete with reinforced footings.

End treatments that conform to the slope may be masonry, precast concrete, reinforced concrete slope collars, or grouted riprap. Concrete flared end sections shall conform to GDOT Detail 1120.

3.3.4 Bridges

Bridges shall be designed on for the 100-year recurrence interval storm event.

Bridges shall be designed in accordance with GDOT Standard Specifications Sections 500-543, as applicable.

Bridge piling shall be driven to GDOT load standards for loading. Certification of pile load shall be by Professional Engineer registered in the State of Georgia.

3.4 Stormwater Management

3.4.1 Detention

A stormwater management report shall be provided for every project as required by the UDC Section 12.5: Stormwater Management.

Stormwater detention analysis shall be conducted for the 1-, 2-, 5-, 10-, 25-, 50- and 100-year design storms. Detention shall be provided such that post development storm flows do not exceed pre-developed design storms for the 1-year through the 25-year design storms. Safe conveyance shall be shown for the 50-and 100-year design storms. Additional detention may be required where the downstream conditions indicated that the design flow exceeds the

conveyance capacity of the receiving facility or potentially creates flooding conditions in downstream structures.

Detention facilities shall be designed using pre-developed flows as if the site is in forested condition. Detention facilities shall be designed using SCS method. Detention facilities shall conform to guidance in the Georgia Stormwater Management Manual.

All stormwater facilities shall be constructed with minimum 4:1 side slopes, or the facility shall be fenced. The fence shall be a minimum of 4 feet high and made of a durable material with a 12-foot wide access gate. The fence shall comply with all applicable zoning requirements.

Stormwater detention facilities shall be constructed in accordance with the approved plans and shall be in place and inspected prior to the initiation of other improvements. If the detention facility is planned to be a lake, micro pool or constructed wetland, temporary detention facilities shall be provided and shall remain in place until the feature has become a functional stormwater management facility.

Above ground stormwater detention facilities shall include a 20-foot wide access drive to the bottom of the facility sloping no greater than 15%.

Drainage easements shall be dedicated for all stormwater facilities.

A minimum freeboard of 2 feet is required from the design flood pool to the top of dam.

3.4.2 Water Quality

Water quality measures shall be installed in accordance with the UDC Section 12.5: Stormwater Management.

3.4.3 Channel Protection

Channel Protection shall be evaluated and included in the engineering design in accordance with the UDC Section 12.5: Stormwater Management.

Channel protection control may not be required at the discretion of the City Engineer for sites that discharge directly into larger streams, rivers, wetlands, lakes, or closed stormwater system where the reduction in the smaller flows will not have an impact on streambank or channel integrity.

3.5 Dams

3.5.1 Applicability

City of Roswell Dam Regulations shall apply to all new, rebuilt, or modified stormwater impoundment's including appurtenant works, with the exception of:

Any Category I dam requiring permitting under the control of the Georgia Safe Dams Program.
Any dam owned and operated by any department or agency of the United States Government.

Any newly constructed dam financially assisted by the United States Soil Conservation Service or any other department or agency of the United States government when such department or agency designed or approved plans and supervised construction and maintains a regular program of inspection of the dam.

Any dam licensed by the Federal Energy Regulatory Commission, or for which a license application is pending with the Federal Energy Regulatory Commission.

3.5.2 General Criteria

Any dam currently constructed and operating is hereby grandfathered in its present state with the owner thereof assuming all rights, responsibilities, and liabilities thereof. Any existing dam that is modified becomes subject to these requirements.

All new dams of 25 vertical feet in height (or greater) or impoundments containing a maximum storage volume of at least 100 acre-feet or dams that have been ruled Category II by the Safe Dams Program shall be designed and constructed according to Category I Standards, as promulgated by the Safe Dams Program, under the direction of a Professional Engineer licensed in the State of Georgia with documented experienced in the design and construction of dams. All existing dams as identified above which are modified under this Chapter shall follow the same Category I design/construction requirements.

A pre-design meeting shall be held with representatives of the Engineering Division to review any proposed dam or proposed dam changes for any dam over 15 vertical feet or impounding more than 50 acre feet. Depending on the level of downstream risk, and size of impoundment, City of Roswell shall require a dam breach analysis to be submitted for any proposed or existing dam contained within a proposed development, utilizing the National Weather Service's DAMBREAK program or other methodology approved by the Georgia Safe Dams Program.

When a dam breach analysis is required by City of Roswell, as a minimum a sunny day dam breach analysis shall be performed under full pool conditions.

Guidelines are available from the State of Georgia Safe Dams program (EPD) to assist the design/construction professional. Dam design documents shall include, but not be limited to:

- Technical Specifications
- Hydrology/hydraulic report
- Geotechnical Report (with Borrow Study, applicable)
- Drainage basin map with land use and land improvement parameters
- Existing topography of site
- Plan view of dam
- Cross sections at all critical points
- Complete details
- Professional Engineer contact information
- Designated contractor

Because of the variables associated with selecting spillway(s), outlet device(s) or appurtenant structure(s) to suit a given site condition, the design consultant is responsible for the selection, subject to the review and approval of the City Engineer. Maintenance, longevity of the system, blockage potential, and practicality of operations shall be considered

All risers (standpipes) shall be equipped with a debris deflector (trash rack) and an anti-vortex device. To facilitate outlet operation, curved or inclined a-ash racks designed to allow debris to rise with the water level are preferred. In all cases, trash racks shall be either hinged or removable to facilitate maintenance operations. Corrugated metal pipe is not permitted for standpipes

Principal Spillway: All spillways shall be analyzed (hydraulically rated) for both inlet and outlet control conditions using appropriate tailwater ratings. If a control-box or weir-box is affixed, then the coral system (inlet control box and outlet conduit) shall be hydraulically rated to determine the stage-discharge relationship.

Emergency Spillway(s): Emergency spillways may be excavated open channels, either vegetated or paved with reinforced concrete or weir sections of concrete walls, or, appropriately designed conduit. Any portion of an open channel spillway excavated into a dam embankment or other fill section must be paved with reinforced concrete equipped with appropriate seepage controls, underdrainage and cut-off walls.

Any portion of any spillway excavated into undisturbed residual soil shall be vegetated in accordance with the practices described in the "Manual for Erosion and Sediment Control in Georgia)" or protected against scour and erosion by other suitable measures if vegetation does not provide adequate stabilization. If the spillway is activated by storms smaller than the

50- year frequency, then vegetation alone will not be considered sufficient protection against scour according to these standards.

Emergency Draining of the Lake: Upon obtaining, evidence which indicates that a potentially hazardous condition may exist, such as:

- Excessive leakage transporting soil from the dam interior (i.e. piping).
- Slope failure, excessive scouring or other apparent soil instability.
- Longitudinal cracks, bulging, or shifts in alignment.
- Excessive sloughing or seepage.
- Failure of the spillways and/or outlet devices to function properly (due to clog age, damage or other deficiency).

The City Administrator has the authority to order the immediate and complete draining of the lake in whatever manner deemed necessary at the time and to require the owner to keep the pool down until remedial work, as is deemed most appropriate to create a safe dam condition, is completed and approved by the Stormwater Division.

No roadways shall be constructed over any permanent water impoundment structure if that roadway provides the only means of egress for any lot of record, without prior approval of the City of Roswell.

No utilities are permitted to pass through any dam, either longitudinally or transversely, unless approved by City of Roswell.

Install fencing (min 4-feet high) around all ponds deeper than 6-feet as measured vertically from the crest of the dam down to the invert of the lowest control structure when side slopes exceed 4:1 or appropriate safety measures as described in the Georgia Stormwater Management Manual are not provided. Gates to be at least 12-feet wide to permit access for maintenance equipment. City of Roswell is not responsible for the replacing of any unpermitted structures or plantings destroyed, removed or otherwise damaged during maintenance operations. Fencing shall not be installed across spillways or drainage ways.

A drainage easement and permanent access easement shall be established around the pond at the level of the dam crest to permanently prevent usage or modification of this flood storage area.

In addition to the storm events that are required in these dam regulations, any dam that impounds stormwater to meet the requirements of the City of Roswell Post Development Stormwater Management ordinance shall also be evaluated based on the storm required in that ordinance.

3.5.3 Specific Criteria

3.5.3.1 Low Dams

For earth fill dams equal to or less than 6 feet in height:

- Design shall be by a Professional Engineer licensed in the State of Georgia.
- Construction shall be performed by a qualified contractor who has sufficient skills and experience to perform this work.
- Design storm shall be at least SCS 24 hour 100-year event or equivalent approved Stormwater Management.
- A minimum freeboard of 2 feet is required from the design flood pool to the top of dam.
- All soil material shall be classified as CL or ML per ASTM-2487 and shall be compacted to 95% Standard Proctor per ASTM-698.
- Side slopes shall be no steeper than 3:1, unless approved by City of Roswell Engineering Division. Under no circumstance shall slope exceed 2:1.
- Crest width shall be not less than 8 feet.

For reinforced concrete or masonry dams equal to or less than 6 vertical feet in height:

- Design and construction supervision to be a Professional Engineer licensed in the State of Georgia.
- The design shall address and account for overturning, sliding uplift, and seepage with adequate safety factor and adequate freeboard.
- The design storm shall be at least SCS 24-hour 100-year design storm or approved equivalent.
- A minimum freeboard of 1.5 feet is required from the design flood pool to the top of dam.

3.5.3.2 Earthen Dam

Earthen Dams shall be defined as dams with vertical heights between 6 and 25 feet with less than 100 acre feet of storage as measured from the streambed at the downstream toe, to the top of dam.

Design, construction supervision, and certification of completion according to plans and specifications to be by a Professional Engineer licensed in the State of Georgia with experience in dam design.

The principal spillway shall be adequate to convey the 25-year flow at a minimum. If the principal spillway is designed to convey less than the 100-year design flow, the emergency spillway shall be appropriately armored against scouring.

Front and back slopes, each, shall not be steeper than 3:1 unless design includes a slope stability analysis that confirms and documents a steeper slope will be stable. In no condition, however, will a slope steeper than 2:1 be permitted.

All organic material and topsoil shall be removed from the entire footprint of the dam and the foundation certified by the design engineer or his/her designee.

Earthen fill shall be CL or ML material approved for use by the design engineer or his/her designee and placed and compacted to not less than 95% Standard proctor under the design engineer's direction.

Compaction records accompanied by a letter from the design engineer or his/her designee certifying that soil compaction meets design specification shall be forwarded to the City of Roswell Engineering Division.

A minimum freeboard of 2 feet is required from the design flood pool to the top of dam. Freeboard of dam above the design storm maximum pool shall be 2 feet in lieu of fetch calculations of wave height justifying a lesser freeboard. City of Roswell reserves the right to require additional freeboard above the nominal 2 feet requirement.

Crest width shall be not less than 8 feet.

3.5.3.3 Gravity Dam (reinforced concrete or masonry)

Design, construction supervision, and certification of completion according to plans and specifications to be by a Professional Engineer licensed in the State of Georgia with experience in dam design.

Design shall address and account for overturning, uplift, and seepage with adequate safety factory and adequate freeboard.

All slab on grade concrete, including concrete footings, shall be designed and constructed to control seepage and piping of foundation soil along the underside of the slab in incorporating cutoff walls, or other appropriate measures.

The principal spillway shall be adequate to convey the 25-year flow at a minimum. If the principal spillway is designed to convey less than the 100-year design flow, the emergency spillway shall be appropriately armored against scouring.

Freeboard of dam above the design storm maximum pool shall be 1.5 feet in lieu of fetch calculations of wave height justifying a lesser freeboard. City of Roswell reserves the right to require additional freeboard above the nominal 1.5 foot requirement.

All organic material and topsoil shall be removed from the entire footprint of the dam and the foundation certified by the design engineer.

Earthen fill (if any) shall be subject to the criteria specified above for earthen embankments.

3.6 Flood Plain

The UDC Section 12.7 Flood Damage Prevention shall govern the development of any applicable parcel.

SECTION 4 - WATER SPECIFICATIONS

4.1 General

4.1.1. Scope of Work

Supply all labor, equipment, materials and incidentals necessary to install and test all water supply piping and appurtenances as specified. Work shall include, but not be limited to all excavation, backfilling, sheeting, slope protection, drainage, concrete work, rip-rap, grading, and all other work necessary to complete the construction, installation, and testing of the pipe.

4.1.2. Qualifications

The pipe and fittings shall be designed, constructed, and installed in accordance with these Specifications as applicable.

4.1.3. Submittals and Testing

The Contractor shall submit, to the City of Roswell, prior to start of construction, a list of materials to be furnished. Submit shop drawings to the City of Roswell.

4.1.4. Inspection

All pipe and fittings to be installed may be inspected by the City of Roswell at the site of manufacturer for compliance with these Specifications.

4.1.5. Connection to Work by Others or Existing Lines

Contractor shall expose existing lines or lines installed by others to which new piping will connect and confirm or determine end connection type, pipe material, and pipe diameter and shall furnish and install appropriate piping and make proper connections.

4.1.6. Dead Ends

Dead ends shall be minimized by making appropriate tie-ins whenever practical to provide increased reliability of service and reduce head loss.

Dead ends shall be equipped with a means to provide adequate flushing. Flushing devices

should be sized to provide a velocity of at least 2.5 feet per second in the water main being flushed. They may be provided with a fire hydrant if flow and pressure are sufficient. No flushing device shall be directly connected to the sanitary sewer.

4.2 Products

4.2.1. General

All materials used shall be new.

All materials shall be of standard manufactured design that the manufacturer recommends for the service intended in accordance with AWWA or ASTM Standard Specifications.

All pipe and appurtenances shall be of the size shown on the Drawings and all equipment of the same type shall be from one manufacturer.

All public water lines shall have a 4-foot bury depth to the top of pipe and shall be located between 3 feet to 5.5 feet off of back of curb.

All public water lines shall be marked with continuous Electronic Marking System (EMS) Caution Tap as currently approved by the City of Roswell. This tape shall be installed with a maximum burial depth of 2-feet directly above the water line located below the tape. The frequency shall conform to the current frequency used by the City of Roswell for Water Lines.

4.2.2. Water Line Pipe Materials

Water line pipe materials shall be as follows:

- Water lines 4-inches in diameter and larger shall be ductile iron pipe.
- Water lines smaller than 4-inches in diameter shall be Schedule 80 polyvinyl chloride (PVC) pipe.
- Service lines ¾-inch diameter to 2-inch diameter shall be copper tubing or copper pipe.

4.2.3. Ductile Iron Pipe and Fittings

Ductile iron pipe shall meet the following requirements:

- Ductile iron pipe shall be minimum Pressure Class 350 and shall conform to ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51.
- Ductile iron used to manufacture ductile iron pipe shall have a minimum tensile strength of 60,000 PSI, minimum yield strength of 42,000 PSI, and minimum elongation of 10 percent.
- Joints for buried pipe shall be push-on joints conforming to ANSI/AWWA C111/A21.11.

- Joints for above grade (non-buried) pipe shall be flanged joints conforming to ANSI/AWWA C115/A21.15.
- Gaskets for standard push-on joints shall be plain rubber gaskets conforming to ANSI/AWWA C111/A21.11.
- Gaskets for restrained push-on joints shall be plain rubber gasket with restraining teeth conforming to ANSI/AWWA C111/A21.11.
- Gaskets for flanged joints shall be full face, 1/8" thick, plain rubber gaskets with dimensions conforming to ANSI/AWWA C115/A21.15.
- The interior of ductile iron pipe shall be coated with standard thickness cement-mortar in accordance with ANSI/AWWA C104/A21.4.
- The exterior of buried ductile iron pipe shall have an asphaltic coating in accordance with ANSI/AWWA C151/A21.51.
- The exterior of ductile iron pipe installed above the ground surface shall have a 1-mil, manufacturer applied, universal primer capable of accepting an epoxy coating.
- Hardware for flanged joints shall be heavy hex type, low carbon steel, zinc plated bolts conforming to ASTM A307, Grade B; heavy hex type, low carbon steel, zinc plated nuts conforming to ASTM A563, Grade B; and low carbon steel, zinc plated SAE flat washers conforming to ASTM F844.

Ductile iron fittings shall meet the following requirements:

- Standard ductile iron fittings shall conform to ANSI/AWWA C110/A21.10.
- Compact ductile iron fittings shall conform to ANSI/AWWA C153/A21.53.
- Ductile iron used to manufacture ductile iron fittings shall have a minimum tensile strength of 70,000 PSI, minimum yield strength of 50,000 PSI, and minimum elongation of 5 percent.
- Joints for buried fittings shall be mechanical joints conforming to ANSI/AWWA C111/A21.11.
- Joints for above grade (non-buried) fittings shall be flanged joints conforming to ANSI/AWWA C110/A21.10.
- Mechanical joints that require restraining shall be restrained with wedge type mechanical joint retainer glands for ductile iron pipe. Retainer gland dimensions shall conform to ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53.
- Gaskets for mechanical joints shall be plain rubber gasket conforming to ANSI/AWWA C111/A21.11.
- Gaskets for flanged joints shall be full face, 1/8" thick, plain rubber gasket with dimensions conforming to ANSI/AWWA C115/A21.15.
- The interior of ductile iron fittings shall be coated with double thickness cement-mortar in accordance with ANSI/AWWA C104/A21.4.
- The exterior of buried ductile iron fittings shall have an asphaltic coating in accordance with ANSI/AWWA C151/A21.51.
- The exterior of ductile iron fittings installed above the ground surface shall have a 1-mil, manufacturer applied, universal primer capable of accepting an epoxy coating.
- Hardware for mechanical joints shall be low carbon steel, zinc plated tee-head bolts in accordance with ANSI/AWWA C111/A21.11 and heavy hex type, low carbon steel, zinc plated nuts conforming to ASTM A563.

- Hardware for flanged joints shall be heavy hex type, low carbon steel, zinc plated bolts conforming to ASTM A307, Grade B; heavy hex type, low carbon steel, zinc plated nuts conforming to ASTM A563, Grade B; and low carbon steel, zinc plated SAE flat washers conforming to ASTM F844.

The pressure rating and manufacture date shall be shown on each joint of pipe and each fitting.

Every precaution shall be taken to prevent damage to the lining. If the lining is damaged or found to be faulty at the delivery site, the damaged or unsatisfactory portions shall be replaced or repaired with a lining in conformance with the recommendations of the manufacturer. All repairs shall be as smooth as practical and may not project into the waterway.

Acceptable Manufacturers:

- American Cast Iron Pipe Company
- U.S. Pipe and Foundry Company
- City of Roswell Approved Equal

4.2.4. Schedule 80 PVC Pipe and Fittings

Schedule 80 PVC pipe shall meet the following requirements:

- Schedule 80 PVC pipe shall conform to ASTM D1785.
- PVC shall meet the requirement of Cell Classification 12454 in conformance with ASTM D1784.
- Joints shall conform to ASTM D2672.
- Tracer wire shall be installed on all PVC pipe. Tracer wire shall meet the following requirements:
    - Direct burial #14 AWG solid, soft drawn, high strength copper clad steel wire.
    - 30-volt rating.
    - 30-mil high molecular weight, high density, polyethylene jacket in conformance with ASTM D1248. Color shall be blue.
    - Tracer wires shall be connected together using moisture displacement connectors with strain relief.

Schedule 80 PVC fittings shall meet the following requirements.

- Schedule 80 PVC fittings shall conform to ASTM D2467.
- PVC shall meet the requirement of Cell Classification 12454 in conformance with ASTM D1784.

4.2.5. Copper Pipe

Copper pipe shall meet the following requirements.

- Copper pipe shall conform to Federal Specifications WW-P-377 and ASTM B42 and ASTM B302.
- Copper pipe shall have plain ends and lengths standardized at 12 feet.

4.2.6. Copper Tubing

Copper tubing shall meet the following requirements.

- Copper tubing shall be Type K, seamless copper tubing conforming to ASTM B88.
- Copper tubing may be used in 20-foot straight lengths or 60-foot/100-foot coils.

4.2.7. Steel Casing Pipe

Steel casing pipe shall be new, seamless steel pipe conforming to ASTM A252, Grade 2.

Minimum thickness shall be ¼-inch.

Minimum tensile strength shall be 60,000 PSI.

Minimum yield strength shall be 35,000 PSI.

Minimum elongation in 2-inches shall be 25-percent.

Steel casing pipe shall be coated on the interior and exterior with bituminous asphalt.

4.2.8. Casing Spacers

Panel and riser shall be Type 304 stainless steel, cross-linked epoxy coated carbon steel, or thermoplastic powder coated carbon steel.

Liner shall be elastomeric PVC, 0.09 inches thick, with a Durometer "Shore A" hardness of 85-90 and a minimum 58,000 volt dielectric strength in accordance with ASTM D149.

Runners shall be glass reinforced polymer (nylon).

Acceptable Manufacturers:

- Advanced Products & Systems, Inc., Model SSI or Model SI

- Pipeline Seal and Insulator, Inc., Model S or Model C
- Power Seal Corporation, Model 4810
- City of Roswell Approved Equal

4.2.9. Polyethylene Encasement

Where indicated on the Drawings, the Contractor shall provide a polyethylene encasement over pipe, fittings and valves.

Ductile iron pipe that crosses or runs parallel to a gas transmission main, which is or may be cathodically protected, shall be encased in polyethylene tubing.

Polyethylene encasement material shall be minimum 8-mil, low density, flat tube, virgin polyethylene film conforming to ANSI/AWWA C105/A21.5.

Polyethylene encasement shall have the following properties.

- Tensile Strength: Minimum 3,600 PSI
- Elongation: Minimum 800%
- Dielectric Strength: Minimum 800 V/mil
- Impact Resistance: Minimum 600 grams
- Propagation Tear Resistance: Minimum 2,550 grams force

Securing tape shall be 2-inch wide PVC pipe tape, minimum 10-mil thickness, 245-percent elongation, and 30 PSI tensile strength.

4.2.10. Water Main Valves

General

- Valves 16-inches and smaller shall be gate valves.
- Valves 18-inches and larger shall be butterfly valves.
- Valves shall be placed at the intersection of all water mains.
- Valves shall be spaced at maximum 500 foot intervals in commercial districts and maximum 800 foot intervals in other districts.

Gate valves 3-inches and smaller shall meet the following requirements.

- Gate valve shall be 200 PSI Cold Working Pressure, brass body, non-rising stem, full port valves conforming to Federal Specification WW-V-54D, Class A, Type 1.
- Gate valve shall be NSF/ANSI Standard 61 compliant.

Gate valves 4-inches through 16-inches in size shall meet the following requirements.

- Resilient seated gate valve for water supply service conforming to AWWA C509.
- Valve body and bonnet shall be ASTM A126, Class B ductile iron.
- Disc shall be cast iron.
- Valve stem shall be cast bronze.
- Minimum 200 PSI working pressure.
- Buried valves shall have non-rising stem (NRS) operators with 2-inch operating nuts.
- Above grade (non-buried) valves shall have outside stem and yoke (OS&Y) operators.
- Gate valve shall open counterclockwise (left).
- Buried valves shall have MJ x MJ end connections.
- Above grade (non-buried) valves shall have FLG x FLG end connections.
- Interior and exterior surfaces shall be coated with fusion-bonded epoxy coating in conformance with AWWA C550.
- Gate valve shall be NSF/ANSI Standard 61 compliant.
- Acceptable Manufacturers:
    - American
    - M&H
    - Mueller
    - City of Roswell Approved Equal

Butterfly valves shall meet the following requirements.

- Resilient seated butterfly valve conforming to AWWA C504.
- Valve body shall be ASTM A126, Class B ductile iron.
- Valve disc shall be ASTM A126, Class B ductile iron with Type 316 stainless steel edge.
- Valve stem shall be Type 304 stainless steel conforming to ASTM A276.
- Minimum 200 PSI working pressure.
- Buried valves shall have geared operator with 2-inch operating nut.
- Above grade (non-buried) valves shall have geared operator with hand wheel.
- Butterfly valve shall open counterclockwise (left).
- Buried valves shall have MJ x MJ end connections.
- Above grade (non-buried) valves shall have FLG x FLG end connections.
- Interior and exterior surfaces shall be coated with fusion-bonded epoxy coating in conformance with AWWA C550.
- Butterfly valve shall be NSF/ANSI Standard 61 compliant.
- Acceptable Manufacturers
    - BIF Industries
    - Dresser
    - Henry Pratt Company
    - City of Roswell Approved Equal

Insertion Valves

- Permanent Valves that will be installed to be used as a permanent valve solution, the TEAM Valve will be utilized.

- The Insertion Valve shall conform to the following:

    - The Ductile Iron 250 p.s.i.g. Insertion Valve shall be a Resilient Wedge Gate Valve designed for use in potable water, raw water, reclaimed water, sewage, irrigation and backflow control systems. The design will allow the valve to be installed into an existing pressurized pipeline while maintaining constant pressure and service as usual. After closing the wedge and adequately restraining the valve body the downstream pipe can be completely removed and replaced (allowing for upsizing of the pipe if necessary). The host pipe shall not be a permanent component of the Insertion Valve.

    - NSF / ANSI Standard 61 Approved

    - The Insertion Valve shall be UL listed and approved to NSF / ANSI Standard 61- Drinking Water System Components

    - Certified Installer: Team Insertion Valve must be installed by companies trained and authorized by Team. All such installers have received written certificates and shall provide documentation validating their certification. This will ensure high quality installation and guarantee the warranty of the product.

    - Ductile Iron Construction:

        - The ductile iron body, bonnet and wedge provide strength and a pressure rating that meets or exceeds the requirements of AWWA C515. Insertion Valve shall be ductile iron construction meeting ASTM A536 Grade 65-45-12. Heavy-duty ductile iron construction for maximum toughness and strength.

        - Chemical and modularity tests shall be performed as recommended by the Ductile iron Society, on a per ladle basis. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.

        - Sizes 12" and smaller must be capable of working on Cast/Grey Iron or Ductile Iron Class A, B, C and D, IPS PVC, C900 and C909 PVC, Steel, AC

pipe diameters without changing either top or bottom portion of split valve body.

- 250 psig maximum working pressure. The pressure rating markings must be cast into the body of the Insertion Valve.

- After the installation of the Insertion Valve body on to the existing pipe a pressure test of 1.1 times that of the contents shall sustained for 15 minutes. Once the pressure test is affectively achieved the Insertion Valve body must not be moved in accordance with AWWA Standards. If the Insertion Valve is moved the pressure test must be completed again. The Insertion Valve must not be moved or repositioned once the pressure test is achieved.

- Resilient Wedge Gate Assembly:

  - The construction of the Resilient Wedge shall comply with AWWA C509 requirements.

  - The ductile iron wedge shall be fully encapsulated with EPDM rubber by a high pressure and high temperature compression or injection mold process. This will assure the ductile gate is fully coated with molded rubber – no exposed iron.

  - The resilient wedge shall seat on the valve body and not the pipe to obtain the optimum seating and flow control results. The resilient wedge shall be totally independent of the carrier pipe.

  - The resilient wedge shall not come into contact with the carrier pipe or depend on the carrier pipe to create a seal. Abrasion results thus shorting the life and quality of the shut down if the wedge contacts the pipe.

  - Pressure equalization on the down or upstream side of the closed wedge shall not be necessary to open the valve.

  - The wedge shall be symmetrical and seal equally well with flow in either direction.

  - The Resilient wedge must ride inside the body channels to maintain wedge alignment throughout its travel to achieve maximum fluid control regardless of high or low flow pressure or velocity.

- Oversized flow way. Unobstructed to provide optimum flow.

- Fusion-Bonded Epoxy:

  - The Insertion Valve is fully epoxy coated on the interior and the exterior. The fusion-bonded coating is applied prior to assembly so that even the bolt holes and body-to-bonnet flange surfaces are fully epoxy coated.

  - Valve shall be coated with a minimum of 10 mils epoxy in compliance with AWWA C550 and certified to ANSI/NSF-61.

- Gaskets and Triple O-Ring Stem Seals:

  - This Insertion Valve features triple O-Ring stem seals. Two O-Rings are located above, and one O-Ring is located below the thrust collar.

  - The lower two O-Rings provide a permanently sealed lubrication chamber that will make the valve easier to operate over a longer period of time. The upper O-Ring ensures that sand, dirt or grit cannot enter the valve to cause damage to the lower O-Rings. This is especially important for buried and sewage service applications.

  - Side flange seals shall be of the O-Ring type of either round, oval, or rectangular cross-sectional shape.

- Valve Stem & Thrust Washers:

  - The gate valve stem and wedge nut shall be copper alloy in accordance with Section 4.4.5.1 of the AWWA C515 Standard.

  - The NRS stem must have an integral thrust collar in accordance with Section 4.4.5.3 of AWWA C515 Standard. Two-piece stem collars are not acceptable. The wedge nut shall be independent of the wedge and held in place on three sides by the wedge to prevent possible misalignment.

  - Two thrust washers are used. One is located above, and one is located below the stem thrust collar. Two thrust washers ensure easy operation at all times.

  - NRS with AWWA standard turns.

- Operated by 2" square wrench nut according to ASTM A126 CL.B – open left or open right

- Hardware: Bolting materials shall develop the physical strength requirements of ASTM A307 with dimensions conforming to ANSI B18.2.1.

- Extended Life Value:

  - The stuffing box, operating stem and resilient wedge (complete bonnet and all moving parts) shall be removable, repairable and or replaceable under pressure. In other words, even while the valve is fully pressurized in the system all moving components can be removed under pressure. In the event the valve stem is broken or damaged the bonnet can be removed under pressure.

  - Internal pressure equalization system assures the safe entry and removal of the valve bonnet during initial installation as well as future maintenance. This alleviates the need for additional pipe penetration taps or foreign methods (i.e. compressed air or auxiliary water source) to equalize pressure.

- Split Restraint Devices:

  - Shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10.

  - The devices shall have a working pressure rating of 350 psi for 4-12 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes.

  - Chemical and modularity tests shall be performed as recommended by the Ductile iron Society, on a per ladle basis. Three test bars shall be incrementally poured per production shift as per U.L. specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.

  - Gland body wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.

  - Mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical

joint deflection during assembly as well as allowing joint deflection after assembly.

- Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts. Set screw pressure point type hardware shall not be used.

For temporary line stops for repairs the Advanced Valve Technologies (AVT) EZ-Valve or Hydrastop Valve is acceptable

4.2.11. Combination Air/Vacuum Release Valves

Combination Air/Vacuum (CAV) valves shall have a cast iron body, cover, and baffle, stainless steel float, bronze water diffuser and Buna-N seat with threaded fittings.

Acceptable Manufacturers

- APCO Valve and Primer Company
- Crispin Valve
- GA Industries
- City of Roswell Approved Equal

4.2.12 Corporation Stops

Corporation stops shall meet the following requirements.

- Brass corporation stops shall be low lead or lead free and shall conform to AWWA C800.
- ¾-inch and 1-inch corporation stop connections shall be AWWA/CC Taper Thread inlet x Pack Joint Copper Tube Size (CTS) Compression outlet or AWWA/CC Taper Thread inlet x Female Iron Pipe (FIP) Thread outlet.
- 1½-inch and 2-inch corporation stop connections shall be Male Iron Pipe (MIP) Thread inlet x Female Iron Pipe (FIP) Thread outlet.

Acceptable Manufacturers

- Cambridge Brass (Hays)
- The Ford Meter Box Company, Inc.
- Mueller Co.
- City of Roswell Approved Equal

4.2.13. Curb Stops

Brass curb stops shall be low lead or lead free and shall conform to AWWA C800.
Curb stop connections shall be Pack Joint Copper Tube Size (CTS) Compression inlet x Pack Joint Copper Tube Size (CTS) Compression outlet or Pack Joint Copper Tube Size (CTS) Compression inlet x Female Iron Pipe (FIP) Thread outlet.

Acceptable Manufacturers

- Cambridge Brass (Hays)
- The Ford Meter Box Company, Inc.
- Mueller Co.
- AY McDonald
- City of Roswell Approved Equal

4.2.14. Adapters and Unions

Adapters and unions for copper tubing and pipe shall be low lead or lead free and shall conform to AWWA C800.

Acceptable Manufacturers

- Cambridge Brass (Hays)
- The Ford Meter Box Company, Inc.
- Mueller Co.
- City of Roswell Approved Equal

4.2.15. Service Saddles

Service saddles shall meet the following requirements.

- Double strap service saddles conforming to AWWA C800.
- Ductile iron body conforming to ASTM A536.
- AWWA/CC Taper Thread or Female Iron Pipe (FIP) Thread.
- Carbon steel straps conforming to ASTM A108.
- Nuts shall be heavy hex type, low carbon steel, zinc plated conforming to ASTM A563 and washers shall be SAE flat washers, low carbon steel, zinc plated conforming to ASTM F844.
- Fusion bonded epoxy coating conforming to AWWA C213.
- Heavy duty, Buna N outlet gasket.
- Service saddle shall be NSF/ANSI Standard 61 compliant.

Acceptable Manufacturers

- The Ford Meter Box Company, Inc. Style F202
- Smith-Blair Style 313
- City of Roswell Approved Equal

4.2.16. Tapping Sleeves

Tapping sleeves shall meet the following requirements.

- Ductile iron mechanical joint tapping sleeve.
- Minimum 200 PSI working pressure.
- Minimum tap size shall be 6".
- Tapping sleeve shall have ¾" NPT test plug.
- Tapping sleeve shall be NSF/ANSI Standard 61 compliant.

Acceptable Manufacturers

- M & H Model 2174
- Mueller Model H-615
- City of Roswell Approved Equal

4.2.17. Steel Couplings

Steel couplings shall meet the following requirements.

- Bolted, sleeve-type steel couplings shall conform to AWWA C219.
- Minimum 150 PSI working pressure.
- Coupling sleeve shall be carbon steel with a minimum yield of 30,000 PSI.
- Follower flanges shall be carbon steel or ductile iron.
- Hardware shall be heavy hex type, low carbon steel, zinc plated bolts conforming to ASTM A307, Grade B and heavy hex type, low carbon steel, zinc plated nuts conforming to ASTM A563, Grade B.
- Gaskets shall be Buna-N rubber.
- Steel couplings shall have fusion bonded epoxy coating conforming to AWWA C213.
- Steel couplings shall be NSF/ANSI Standard 61 compliant.

Acceptable Manufacturers

- Dresser Manufacturing Company Style No. 38
- Smith-Blair Catalog No. 411
- City of Roswell Approved Equal

4.2.18. Sample/Blow-Off Station

2" sample station shall have 2-inch blow off valve and 3/8-inch sample port.

2" sample station shall have mechanical thermal control valve for freeze protection.

2" sample station shall be Hydro-Guard Safety-Guard BSS-02 BOSS Sample Station Model No. BSS-02-DIV-TCV.

2" Blow-Off Hydrant shall be Kupferle TruFlo TF500.

2" Blow-Off Hydrant shall have a 2" FIP inlet and 2" NPT outlet.

2" Blow-Off Hydrant shall be Freeze Proof.

4.2.19. Automatic Flushing System

Automatic flushing system shall have nine event battery powered programmer, RPZ backflow prevention, 2-inch nylon glass reinforced valve, self draining double check valve, and sampling capabilities.

Automatic flushing system shall have mechanical thermal control valve for freeze protection.

Automatic flushing system shall be Hydro-Guard High Profile Flushing System Model No. HG-5-RPZ-8021-TCV.

4.2.20. Backflow Preventers

Dual Check Backflow Preventer

- Brass dual check backflow preventer shall conform to AWWA C800 and shall be ASSE 1024 approved.
- Brass dual check backflow preventer shall have a maximum working pressure of 175 PSI.
- Acceptable Manufacturers
    - The Ford Meter Box Company, Inc.
    - City of Roswell Approved Equal

Double Check Backflow Preventer

- Double check backflow preventer shall conform to ASTM C510.
- Acceptable Manufacturers

- ¾" to 2" Double Check Backflow Preventers
  - Conbraco Model 40-104-A4T (¾"); 40-105-A4T (1"); 40-107-A4T (1½"); 40-108-A4T (2")
  - Flowmatic Model B9100U (¾"); B9101U (1")
  - Hersey Model FDC (all sizes)
  - Watts Model U-007QT-T-Z3 (all sizes)
  - Wilkins Model 950XLU (all sizes)

- 3" to 10" Double Check Backflow Preventers

  - Ames Model 2000DCA/2000SE (8")
  - Conbraco Model 40-100 (3")/10A (4")/10C (6")/10E (8")/10G (10")-03
  - Febco Model 805YD-OS&Y-RW
  - Hersey No. 2
  - Watts Model 007/709/770-OS&Y-RW-A
  - Wilkins Model 950-OS&Y

Reduced Pressure Zone (RPZ) Backflow Preventer

- Reduced pressure zone (RPZ) backflow preventer shall conform to ASTM C511.
- Acceptable Manufacturers

  - ¾" to 2" RPZ Backflow Preventers

    - Conbraco Series 40-200-02
    - Flowmatic B9200
    - Hersey FRP II with unions and T-handles
    - Watts U-009QT-Z3
    - Wilkins 975 XLUS

  - 3" to 10" RPZ Backflow Preventers

    - Ames Model 4000RP
    - Conbraco Series 40-200
    - Febco Model 825YD-OS&Y-RW
    - Hersey Model 6CM
    - Watts Model 909-OS&Y-RW-A
    - Wilkins Model 975-ROS&Y

4.2.21. Fire Hydrants

Fire hydrants shall meet the following requirements.

- Six inch, dry barrel, fire hydrant conforming to AWWA C502.
- Minimum 250 PSI working pressure.
- Fire hydrant shall have 6" MJ base connection.
- Fire hydrant shall have 5¼" main valve.
- Valve seats shall be bronze to bronze.
- Fire hydrant shall have automatic drain that closes fully when the main valve is open.
- Fire hydrant shall have one (1) 4½" pumper nozzle and two (2) 2½" hose nozzles. Nozzle threads shall be the standard adopted by the National Board of Fire Underwriters (NBFU). Nozzles shall have caps with gaskets and shall be fitted with chains.
- Fire hydrant shall have 1½" National Standard pentagon operating nut that opens counterclockwise.
- Fire hydrant color shall be silver.
- Minimum depth of bury shall be 4 feet.

Acceptable Manufacturers

- M&H Model 129

4.2.22. Cast Iron Valve Boxes for Water Main Valves

Valve boxes shall be cast-iron two or three piece with cast iron covers.

The barrel shall be one or two-piece, screw type, having 5-1/4-inch shaft.

Covers shall have "WATER" cast into the lid.

4.2.23. Valve Boxes for Service Line Valves

Valve boxes for service line valves shall be high density polyethylene or fiber reinforced plastic.

Valve boxes shall be minimum 6" diameter by 9" tall boxes with T-cover.

Valve box color shall be black.

Acceptable Manufacturers

- Carson/Oldcastle Precast, Inc.
- DFW Plastics, Inc.
- City of Roswell Approved Equal

4.2.24. Water Meter Boxes

¾" Meters

- Water meter boxes for ¾" water meters shall be Ford Meter Box Company, Inc. Long Yoke box Model LYLB 141-233-ROS-T with locking lid and 2" meter read hole.

1" and Larger Meters

- Water meter boxes for 1" and larger water meters shall be high density polyethylene or fiber reinforced plastic.
- Water meter box lids shall be cast iron T-cover with 2" diameter hole offset for touch read installation.
- Acceptable Manufacturers
    - Carson/Oldcastle Precast Inc. Specification Grade 1220-12
    - DFW Plastics, Inc. 1500.12.1

4.2.25. Meter Vaults and Valve Vaults

Meter vaults and valve vaults shall be precast concrete in accordance with ASTM C478.

Concrete compressive strength shall be 4,000 PSI at 28 days.

Tongue and groove joints with preformed butyl joint seals.

Vaults located inside right-of-way or in areas that may receive vehicle wheel loads shall be designed and rated for H-20 loading.

Minimum 48"x48" double door, aluminum access hatch. Access hatch shall be rated for 300 PSF, shall be hinged with tamper proof bolts, shall have automatic hold open arm, shall have flush aluminum drop handle, and shall have staple for pad lock. All hardware shall be Type 316 stainless steel.

Steps shall be copolymer polypropylene type with ½" Grade 60 steel reinforcing conforming to ASTM C478.

Steps shall be located at hatch and hatch shall be offset so that steps are accessible.

4.3 Execution

Care shall be taken in loading, transporting and unloading to prevent damage to the pipe or coatings. Pipe and fittings shall not be dropped. All pipe or fittings shall be examined before installation, and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the City of Roswell.

Pipe and fittings shall be subjected to a careful inspection just prior to being laid or installed. If any defective pipe is discovered after it has been laid it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional expense to the City of Roswell. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when installed or laid, shall conform to the lines and grades required.

Unless specifically indicated otherwise, underground piping shall slope uniformly between joints.

Contractor shall exercise extreme care when constructing piping to protect from damage all existing underground utilities, and all existing structures.

4.3.1 Installation

4.3.1.1. General

Pipe and fittings shall be installed using bedding, as shown on the drawings, and in accordance with requirements of AWWA except as otherwise provided herein. A firm, even bearing throughout the length of the pipe shall be constructed by tamping selected material at the sides of the pipe up to the spring-line. BLOCKING SUPPORTS WILL NOT BE PERMITTED. Bell holes shall be hand excavated to insure uniform bearing along the pipe barrel.

All pipe shall be sound and clean before laying. When pipe laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plug or other approved means. Good alignment shall be preserved in laying. The deflection at joints shall not exceed that recommended by manufacturer.

When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a bell shall be beveled to conform to the manufactured spigot end. Lining shall be undamaged.

Push-on joints shall be made in strict accordance with the manufacturer's instructions. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated. The plain end of the pipe is to be aligned with the bell of the pipe to which it is to be joined, and pushed home with a jack or

by other means. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.

Joints at fittings, and where designated on the drawings and/or as specified, shall be in accordance with the "Notes on Method of Installation" in ANSI/AWWA C111/A21.11 and the instructions of the manufacturer. To assemble the joints in the field, thoroughly clean the joint surfaces and rubber gasket with soapy water before assembly.

Unless otherwise noted, underground piping shall be push-on joint.

All fittings and other appurtenances needed upon the pipe lines shall be set and jointed as indicated on the Drawings or as required by the manufacturer.

If requested, the Contractor shall arrange for the pipe manufacturer to furnish information and supervise the installation of at least the first five (5) push-on joints.

The Contractor shall carefully regulate his equipment and construction operations such that the loading of the pipe does not exceed the loads for which the pipe is designed and manufactured. Any pipe damaged during construction operations shall be replaced at the Contractor's expense.

All piping shall be properly and adequately supported. Supports shall be provided as indicated on the Drawings. If the method of support is not indicated on the Drawings, piping shall be supported as directed by the City of Roswell.

The proper number of gaskets and all necessary joint materials, plus one extra gasket for every 50 joints or fraction thereof, shall be furnished with the pipe and fittings.

Pipe embedment shall conform to manufacturer's recommendations. Bedding and backfill for pipe shall be as shown on the Drawings.

All "Dead End" Lines shall have a blow-off station, flushing station, or hydrant installed on the end for flushing purposes, or equivalent.

All public water lines shall have a 4-foot bury depth to the top of pipe and shall be located between 3 feet to 5.5 feet off of back of curb.

Pipe shall not be installed within a minimum ten (10) foot distance of a building's foundation. This shall include any steps, decks, or porches attached to the building. The distance shall be measured edge to edge.

At least one (1) M&H Model 129 fire hydrant with i-Hydrant technology shall be installed every four hydrants.

4.3.1.2. Pipe Supports and Thrust Blocks

All piping shall be properly and adequately supported. Concrete piers and pads shall be provided as indicated on the Drawings. If the method of support is not indicated on the Drawings, exposed piping shall be supported as directed by the City of Roswell.

All fittings shall have two forms or restraint (i.e. thrust block and restrained joint glands; restrained joint glands and threaded rods; thrust block and threaded rods).

Longitudinal thrust along pressurized pipelines at bends, tees, reducers, and caps or plugs shall be counteracted by enough weight of concrete to counterbalance the vertical and horizontal thrust forces.

Pipe and fittings shall be protected by a minimum 10-mil plastic sheet prior to placing concrete thrust block.

Bearing area of thrust blocks shall be adequate to prevent any movement of the fitting and shall be of the size and dimensions as shown on the Drawings.

Concrete for thrust blocking shall be minimum 3000 PSI. Concrete shall be placed against undisturbed material, and shall not cover joints, bolts or nuts, or interfere with the removal of any joint. Wooden side forms shall be provided for thrust blocks.

Restrained joints shall be used as shown on the Drawings. Thrust blocks shall be used at all other locations or as directed by the City of Roswell.

All thrust blocking shall be inspected by the City of Rowell prior to the thrust block being buried.

4.3.1.3. Pressure and Leakage Tests of Underground Pressure Piping

Hydrostatic pressure and leakage tests shall conform to Section 4 of ANSI/AWWA C600 with the exception that the Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the line. The pressure gauge used for testing shall be laboratory calibrated suitable for the test pressure required.

The pressure required for the field hydrostatic pressure test shall be 150% of the maximum operating pressure of the section, or the pressure class of the pipe, whichever is greater. The Contractor shall provide temporary plugs and blocking necessary to maintain the required test pressure. Corporation cocks at least ¾-inches in diameter, pipe riser and angle globe valves shall be provided at each pipe dead-end and high point in order to bleed air from the line. Duration of pressure test shall be at least 2 hours. The cost of these items shall be included as a part of testing.

The contractor shall contact the City of Roswell prior to conducting any pressure test. A record

of successful pressure testing results will be provided by the contractor to the City of Roswell inspector at the time of observing the leakage testing.

The leakage test shall be a separate test at the maximum operating pressure as determined by the City of Roswell following the pressure test and shall be of not less than 2 hours duration. All exposed pipes, fittings, valves and joints will be carefully examined during the tests and all leaks evident at the surface shall be repaired and leakage eliminated regardless of total leakage as shown by test. Lines that fail to meet tests shall be repaired and retested as necessary until test requirements are complied with. Defective materials, pipes, valves and accessories shall be removed and replaced. The pipe lines shall be tested in such sections as may be directed by the City of Roswell by shutting valves or installing temporary plugs as required. The line shall be filled with water and all air removed and the test pressure shall be maintained in the pipe for the entire test period by means of a force pump to be furnished by the Contractor. Accurate means shall be provided for measuring the water required to maintain this pressure. The amount of water required is a measure of the leakage.

The amount of leakage that will be permitted shall be in accordance with AWWA C600 Standards for all pressure lines. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

Where:
L = Testing Allowance (Makeup Water), GPH
S = Length of Pipe Tested, ft
D = Nominal Diameter of Pipe, in
P = Test Pressure, PSIG

The Contractor may backfill the trench before he tests the line if he so desires, but he shall open up the trench at his own expense to repair any leaks.

The Contractor must submit his plan for testing to the City of Roswell for review at least three (3) days before starting the test. The Contractor shall remove and adequately dispose of all temporary blocking material and equipment after completion and acceptance of the field hydrostatic test, unless otherwise directed by the City of Roswell. The Contractor shall repair any damage to the pipe coating. Lines shall be totally free and clean prior to final acceptance.

4.3.1.4. Cleaning Mains

At the conclusion of the Work, the Contractor shall thoroughly clean the new pipeline by flushing with water or other means to remove all dirt, stones, and pieces of wood or other material that may have entered during the construction period. If, after this cleaning, obstructions remain they shall be removed.

4.3.1.5. Disinfection

Upon completion of the pressure and leakage test, the section of pipe to be disinfected shall be initially flushed using potable water. Flushing shall be accomplished at a minimum velocity of 2.5 feet per second and shall continue until the water runs clear.

Disinfection shall be accomplished by the continuous feed chlorination method in accordance with ANSI/AWWA C651. The following steps shall be employed:

- Begin filling main at a constant, measured rate with potable water. As water first flows in, begin adding chlorine at a point no more than ten feet from the beginning of the new main.
- Add chlorine at a rate to attain a 50 mg/l chlorine concentration. The acceptable method is by preparing a 1% solution with sodium hypochlorite or calcium hypochlorite.
- Continue adding chlorine at a rate to attain a minimum concentration of 50 mg/l. Measure the rate at regular intervals as given in AWWA M12 or with a high range test kit. Chlorine application shall continue until the entire main is filled.
- The chlorinated water shall be retained in the water main for a minimum of 24 hours. At the end of the 24-hour period the water in all portions of the main shall have a minimum chlorine residual of 10 mg/l.
- The heavily chlorinated water shall be flushed in a manner that is not detrimental to the environment. The method proposed shall be submitted to and approved by the City of Roswell prior to discharge. Final flushing shall continue until the chlorine residual is less than 1 mg/l.
- Contractor shall coordinate sampling with the City of Roswell. No earlier than 16 hours after final flushing, the City of Roswell will obtain bacteriological samples for testing.
- If bacteriological test results are unsatisfactory, the Contractor shall either flush the main with potable water or re-disinfected, as directed by the City of Roswell, prior to obtaining additional samples. Satisfactory bacteriological test results shall be obtained prior to placing the new main in service or prior to a final plat approval on which a new water service has been constructed.

4.3.1.6. Location of Water Line

Every effort shall be made to locate the water main outside of the pavement, but within existing or proposed right-of-way or easements. All public water lines shall have a minimum of a 4-feet bury depth to the top of pipe.

Placement in Existing Right-of-Way:

- For water mains located within existing or proposed street right-of- way, the preferred placement shall be outside of pavement between 3.5 feet to 5.5 feet behind back of curb.
- Allowances for future sidewalk shall be made.
- The location of the roadway, curb and gutter, sidewalk and other utilities shall be taken into account.
- If the is not enough right of way for placement of the water main, then the water main shall be placed under the curb and gutter.

Placement Outside of Existing Right-of-Way:

- Where water mains cannot be placed within right-of-way, easements shall be procured.
- Easements adjacent to the right-of-way shall be required for all water main installations along major arterial corridors and non- residential streets. The minimum width for a water line easement shall be twenty (20) feet with the water line placed in the middle of the easement.

Minimum Distance from Buildings - Water mains (not service lines) shall be located a minimum of 10 feet (10') horizontally from any part of a building structure or its foundation.

Minimum Distances from Utilities Other than Sewers:

- When practical, all utility lines not addressed in other sections (electric, cable, telephone) shall be separated a minimum of 3 feet (3') or per the respective owner's specifications. In the event of conflicting specifications, the more stringent shall apply.

- All drawings shall show the location of both underground and overhead utilities.

- Utility locations shall be derived from the most reliable and up-to- date information.

- Each utility shall receive a set of drawings prior to final submittal. On these drawings, they shall note changes or addition to utility information.

- Separation distance of water main from other utilities shall be determined by the representative of other utilities and the applicant.

- Any necessary relocation shall be closely coordinated with the respective utility representative.

Variance- A variance to the location of the water line may be considered by the City.

4.3.1.7. Separation of Water and Sewer Lines

There shall be no physical connection between a drinking water supply line and a sewer or appurtenance.

Water lines shall be laid at least ten (10) feet horizontally from a sewer or a sewer manhole whenever possible; the distance shall be measures edge-to-edge. When local conditions prevent a horizontal separation of ten (10) feet, the water line may be laid closer to a sewer or sewer manhole provided that:

- The bottom (invert) of the water main shall be at least eighteen (18) inches above the top (crown) of the sewer
- Where this vertical separation cannot be obtained, the sewer shall be constructed of ductile iron pipe and pressure tested in place without leakage prior to backfilling.
- The water line shall be laid in separate trenches or on an undisturbed earth shelf.

Where possible the water main shall pass over the sewer main with a vertical separation of at least eighteen (18) inches. When local conditions prevent a vertical separation of eighteen (18) inches between the bottom of the water main and the top of the sewer the following construction standards shall be used:

- The sewer shall be constructed of ductile iron pipe and pressure tested in place without leakage prior to backfilling.
- Adequate structural support for both the water and sewer mains shall be provided to prevent settling and excessive deflection of the joints.
- That length of sewer main shall be centered at the point of the crossing such that the joints shall be equidistant from the point of crossing.
- No deflection of the joints is permitted within ten (10) feet of the point of crossing.

4.3.1.8. Repair and Replacement

Any cracked or broken material, such as pipe, fittings, valves, or hydrants, shall be removed and replaced with sound pieces. Joints that leak shall be carefully remade. Remade joints and replaced material shall be re-tested under the same conditions of operation. If joints or materials are then found to be defective, they shall be remade and replaced until the line passes the required test.

Upon completion of back-filling and consolidation of the back-fill, all pavements removed for construction of the pipelines and appurtenance shall be replaced also and all pavements adjacent to pipe trenches, which may have been disturbed or damaged as the result of construction operations shall be removed and replaced and a load test conducted to prove proper consolidation of back-fill to sustain a load of 2500 pounds per square foot without undue settlement. Replacement shall be in accordance with the regulations of the Georgia Department of Transportation (GDOT) and the City of Roswell.

Pavement, including driveways, shall be replaced to a minimum width of nine inches beyond the top edges of each side of the trench excavation to allow solid bearing and to the depth as follows:

- Concrete pavement shall be replaced with a minimum depth of eight inches of concrete having a minimum compressive strength of 3,000 psi in 28 days.
- Asphalt paving shall be replaced with an 8-inch concrete cap and 1½-inches of Type "F" asphalt paving.
- For street cuts greater than 150 feet in length, the entire width of the roadway shall be overlaid with 1½-inches of Type "F" asphalt paving. When directed by the City of Roswell, the entire street width shall be milled 1½-inches prior to placing the surface course.
- Driveways and sidewalks shall be replaced with in-kind material.

4.4 Water Mains and Fire Hydrants on Private Property and Subdivision Developments

Due to a requirement of the Georgia Environmental Division (EPD), the City of Roswell will no longer allow (new) private master metered residential communities, whether gated or not, connections to the Roswell Water Utility's water system unless they obtain a permit from EPD to operate a water system.

Water mains of at least eight-inch pipe shall be installed; six-inch pipe may be used only where it completes a gridiron and then only up to 600 feet in length between interconnecting mains of approved diameter, unless otherwise approved by the Director of Public Works and the Fire Marshal. All pipe materials shall comply with the standards approved by the City of Roswell.

No main line smaller than eight inches shall serve more than one fire hydrant and automatic extinguishing system or one fire hydrant on any dead-end main more than 500 feet in length. All water mains shall be sized in accordance with NFPA 24, as adopted by the State of Georgia.

Fire hydrants shall be spaced not more than 500 feet apart, with additional fire hydrants located as necessary to Comply with the requirements of the International Fire Code and Appendices as adopted by the City of Roswell and approved by the Fire Marshal.

Water mains shall be of ductile iron or copper or a type listed for this service by a nationally recognized testing laboratory. They shall be installed at least 30 inches below grade and shall be tested hydrostatically at not less than 200-psi pressure for two hours in the presence of a representative of the city.

Hydrants, fittings, valves and Fire Department connections shall be approved by the Fire Department. Fire Department connections shall be not less than 18 inches or more than 36

inches above the level of the adjoining ground or paving. The thread of such connections shall be uniform with that used by the Fire Department.

Water mains and fire hydrants shall be installed, under water pressure and ready for firefighting before any construction with combustible material begins on-site.

All private fire lines shall be metered with a full flow meter. Variances can be provided to install a meter on the bypass line of the Double Detector Check Backflow Prevention Assembly.

SECTION5 - STREET LIGHTING

5.1 General

Street lighting design criteria for all residential streets shall conform to the design standards given in Section 20 of Illuminated Engineering Society (IES) Handbook latest edition and,

For all developments outside of the right-of-way where site lighting is required, those sites shall conform to City of Roswell Unified Development Code (UDC) Section 10.4 Outdoor Site Lighting.

5.2 Street illumination standard for residential streets.

The recommended illumination for all residential streets within a new development shall be 0.5 horizontal foot-candles or 0.5 lumens per square foot of the roadway pavement when the illuminating source is at its lowest output.

The lowest foot-candle value at any point on the road pavement shall not be less than one sixth of the average value, i.e. maximum to minimum ratio of 6:1.

The classification of luminary light distribution shall be IES distribution type MS III

Vertical light distribution M = medium
Vertical light control S = semi cut off or cut off
Lateral light distribution Type III

Mounting height. The following mounting heights with reference to output of lamp and type of lighting pattern are recommended.

Lamp	Output	IES	Mounting Height
150 Watt HPS	14500 Lumens	Type III Long	29 feet (1)
150 Watt HPS	14500 Lumens	Type III	16 feet

Notes: (1) 29 foot mounting height shall only be used in areas with existing overhead wiring.

The actual mounting height shall be as per luminary manufacturer's specifications and subject to approval by the city engineer.

All lighting types shall conform to UDC Section 10.4 Outdoor Site Lighting.

Luminary spacing: The spacing of the luminary shall be governed by factors such as location of utility poles, block lengths, property lines and geometric configurations of the terrain features, but the spacing of the luminaries shall be designed such that the average illumination on the roadway pavement shall be 0.5 foot candles or 0.5 lumens per square foot when the illuminating source is at its lowest output, and so designed spacing shall be approved by the city engineer.

5.3 Specifications and General Provisions

Mounting Poles:

The poles shall be as per latest regulations and standards of national electric code, the national electric safety code, the American National Standards Institute and (NEMA). The basic design criteria required is resistance to 100 mph winds including 1.3 gust factor.

All poles shall be black fiberglass.

The pole top shall have a top tenon of three inches outside diameter so as to fit a slip fitter.

The poles shall have hand hole 4-inch x 12-inch opening with an aluminum cover fitted to 2 SS pentahead screws. The center of handhold opening shall be approximately 24 inches from ground level.

Procedure for Subdivision Developers:

Upon submittal of engineering drawings, the developer shall show the layout of street lights. The layout must be approved by the Roswell Department of Transportation and zoning administrator prior to the issuance of the subdivision development permit. Fixtures and poles must be of a type that is recommended by the Roswell Department of Transportation and the utility company.

The developer shall pay all costs for poles, standards, and fixtures and any other related materials or items necessary for installation.

Prior to submitting the final subdivision plat to the planning commission for approval, the developer shall submit proof of payment for the complete installation of the street lighting according to the approved plans submitted to the Roswell Department of Transportation.

The developer shall pay the monthly operation costs of said streetlights until such time as one-half of the units are occupied and the maintenance bond, if required, has expired, unless waived by the Director of Transportation due to unusual circumstances.

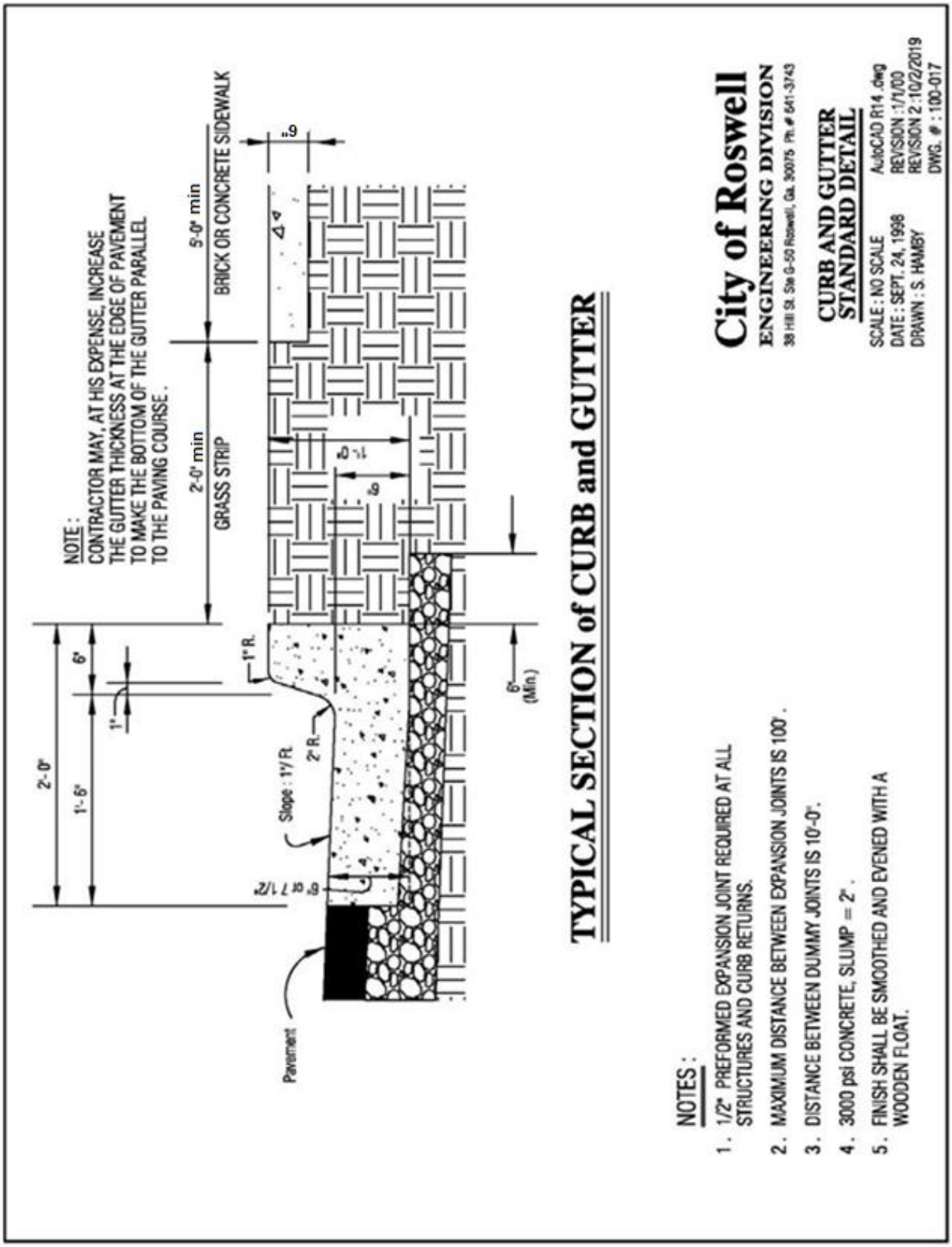
Luminaries: Luminaries of 150 watt high pressure sodium (HPS) with a lighting output of 14500 lumens. Luminaries used shall be approved by the city.

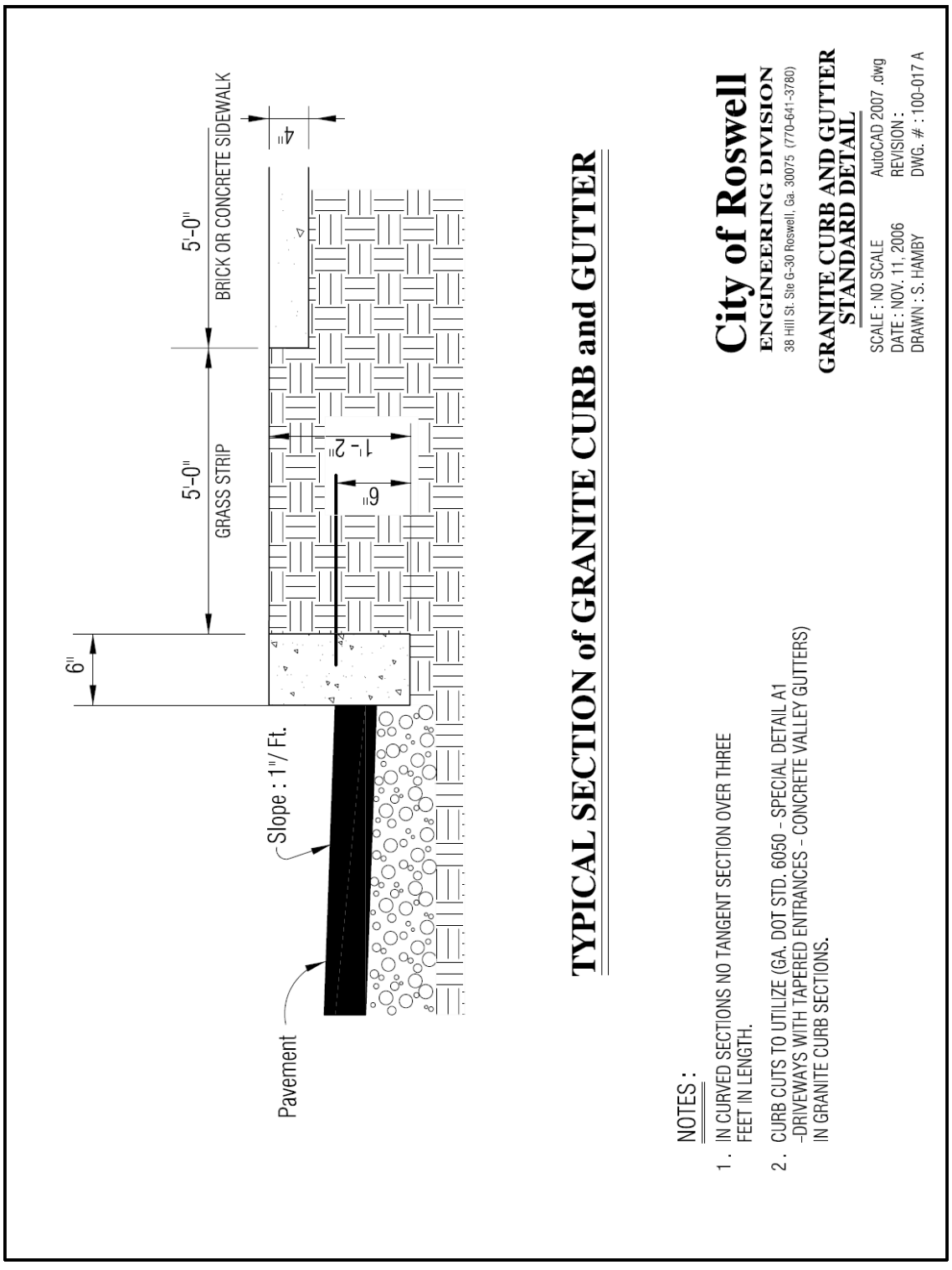
Luminaries shall be fitted with built in ballast and photoelectric control and shall conform to meet all the requirements of latest regulations and standards of (EEI) and NEMA depending upon the lamp load and type and circuit voltage.

Wiring and cable for street lighting:

All wiring and cabling shall conform to the Georgia Power specifications.

SECTION 6 – CONSTRUCTION DETAILS


NOTE :
CONTRACTOR MAY, AT HIS EXPENSE, INCREASE THE GUTTER THICKNESS AT THE EDGE OF PAVEMENT TO MAKE THE BOTTOM OF THE GUTTER PARALLEL TO THE PAVING COURSE.
5'-0" min
BRICK OR CONCRETE SIDEWALK
2'-0" min
GRASS STRIP
4"
9"
2'-0"
1'-6"
6"
1"
1" R.
2" R.
Slope : 1"/ ft
6" at 7 1/2"
6" (Min.)
Pavement
TYPICAL SECTION of CURB and GUTTER
NOTES :
1. 1/2" PREFORMED EXPANSION JOINT REQUIRED AT ALL STRUCTURES AND CURB RETURNS.
2. MAXIMUM DISTANCE BETWEEN EXPANSION JOINTS IS 100'.
3. DISTANCE BETWEEN DUMMY JOINTS IS 10'-0".
4. 3000 psi CONCRETE, SLUMP = 2".
5. FINISH SHALL BE SMOOTHED AND EVENED WITH A WOODEN FLOAT.
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-50 Roswell, Ga. 30075 Ph. # 641-3743
CURB AND GUTTER
STANDARD DETAIL
SCALE : NO SCALE
DATE : SEPT. 24, 1998
DRAWN : S. HAMBY
AutoCAD R14 .dwg
REVISION :1/1/00
REVISION 2 :10/2/2019
DWG. # : 100-017



TYPICAL SECTION of GRANITE CURB and GUTTER

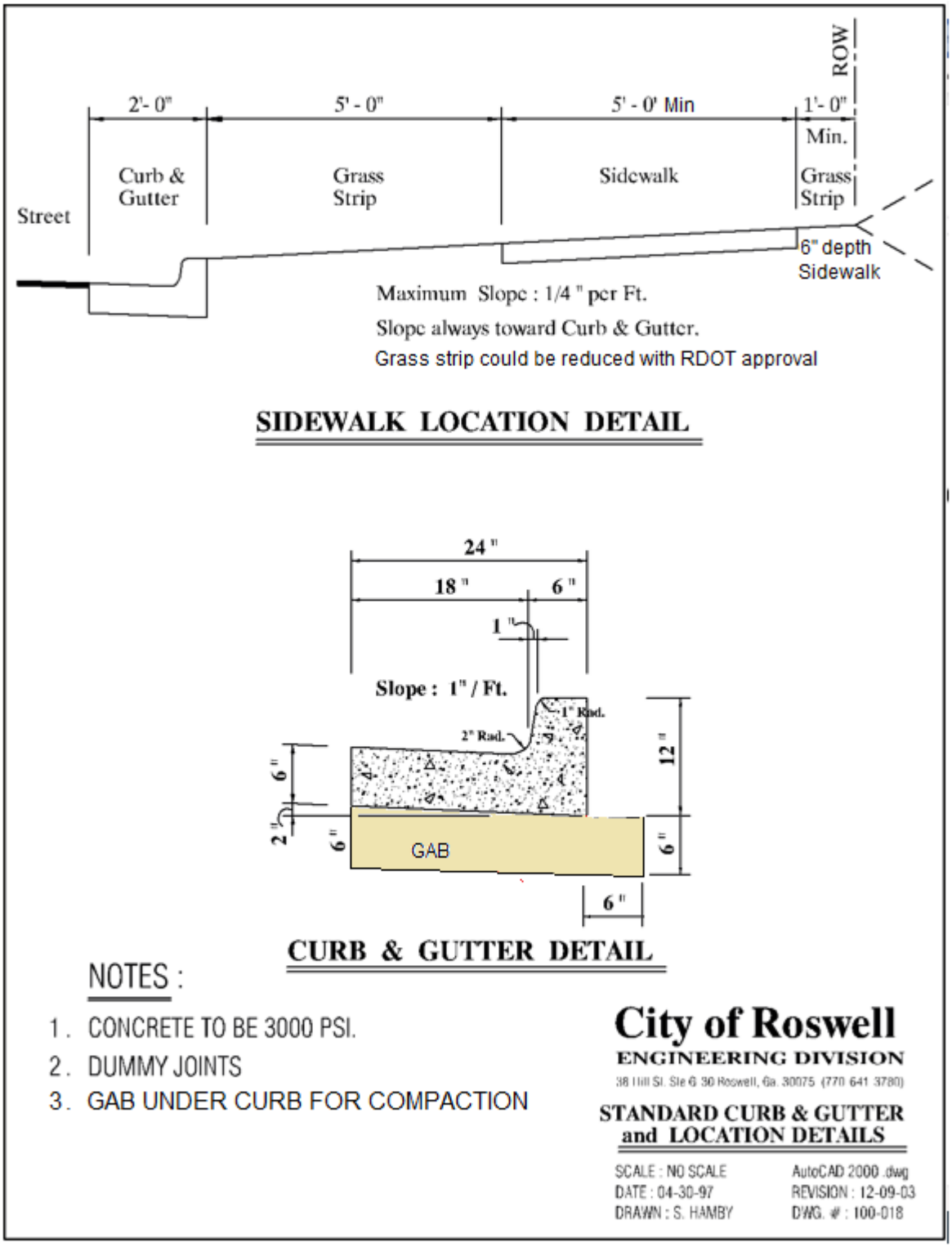
NOTES :

1. IN CURVED SECTIONS NO TANGENT SECTION OVER THREE FEET IN LENGTH.
2. CURB CUTS TO UTILIZE (GA. DOT STD. 6050 – SPECIAL DETAIL A1 –DRIVEWAYS WITH TAPERED ENTRANCES – CONCRETE VALLEY GUTTERS) IN GRANITE CURB SECTIONS.

City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-30 Roswell, Ga. 30075 (770-641-3780)

GRANITE CURB AND GUTTER STANDARD DETAIL

SCALE : NO SCALE AutoCAD 2007 .dwg
DATE : NOV. 11, 2006 REVISION :
DRAWN : S. HAMBY DWG. # : 100-017 A


ROW
2'- 0"
5' - 0"
5' - 0' Min
1'- 0"
Min.
Curb &
Gutter
Grass
Strip
Sidewalk
Grass
Strip
Street
6" depth
Sidewalk
Maximum Slope : 1/4 " per Ft.
Slope always toward Curb & Gutter.
Grass strip could be reduced with RDOT approval
SIDEWALK LOCATION DETAIL
24 "
18 "
6 "
1 "
Slope : 1" / Ft.
1" Rad.
2" Rad.
12 "
6 "
2 "
6 "
GAB
6 "
6 "
CURB & GUTTER DETAIL
NOTES :
1. CONCRETE TO BE 3000 PSI.
2. DUMMY JOINTS
3. GAB UNDER CURB FOR COMPACTION
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G 30 Roswell, Ga. 30075 (770 641 3780)
STANDARD CURB & GUTTER
and LOCATION DETAILS
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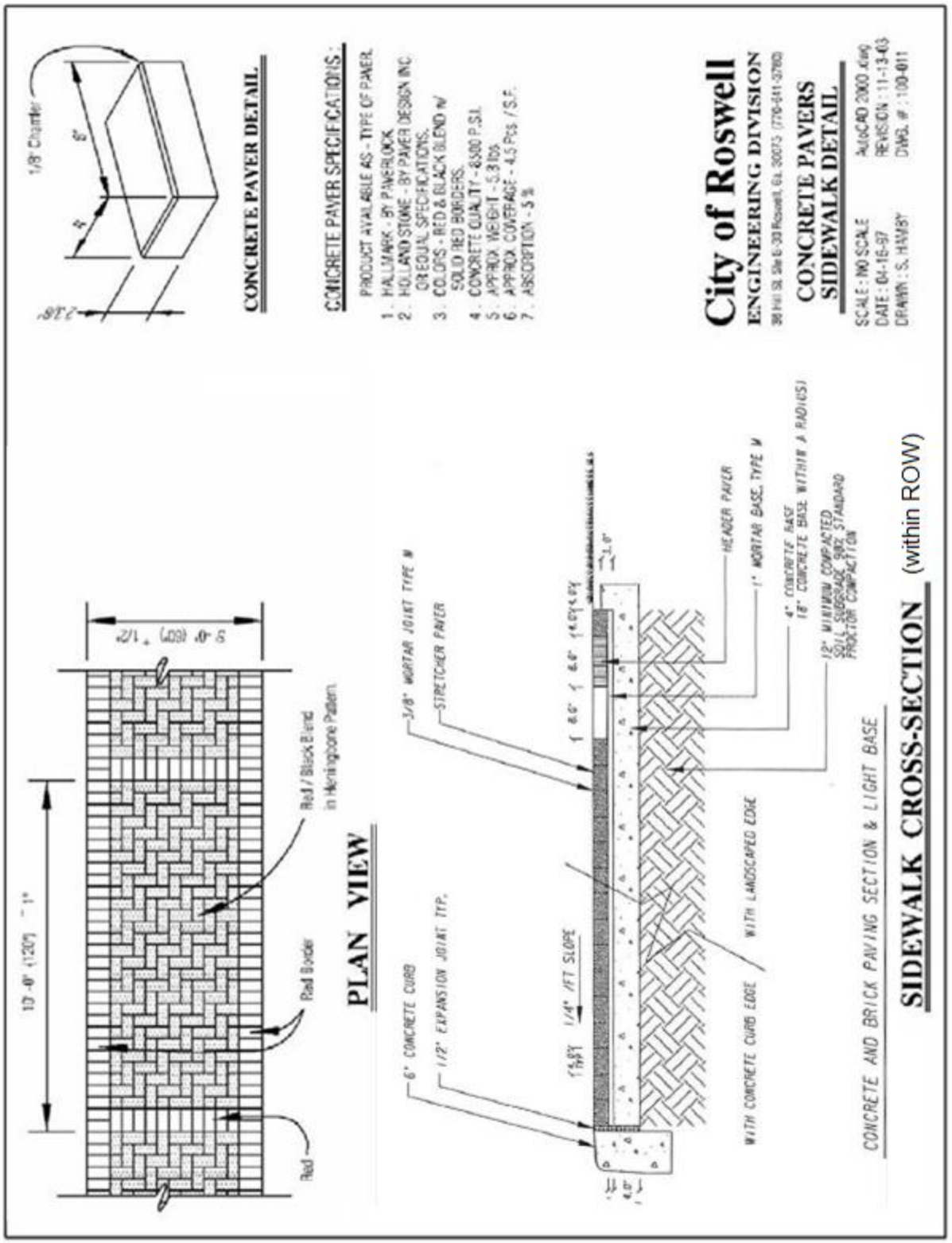
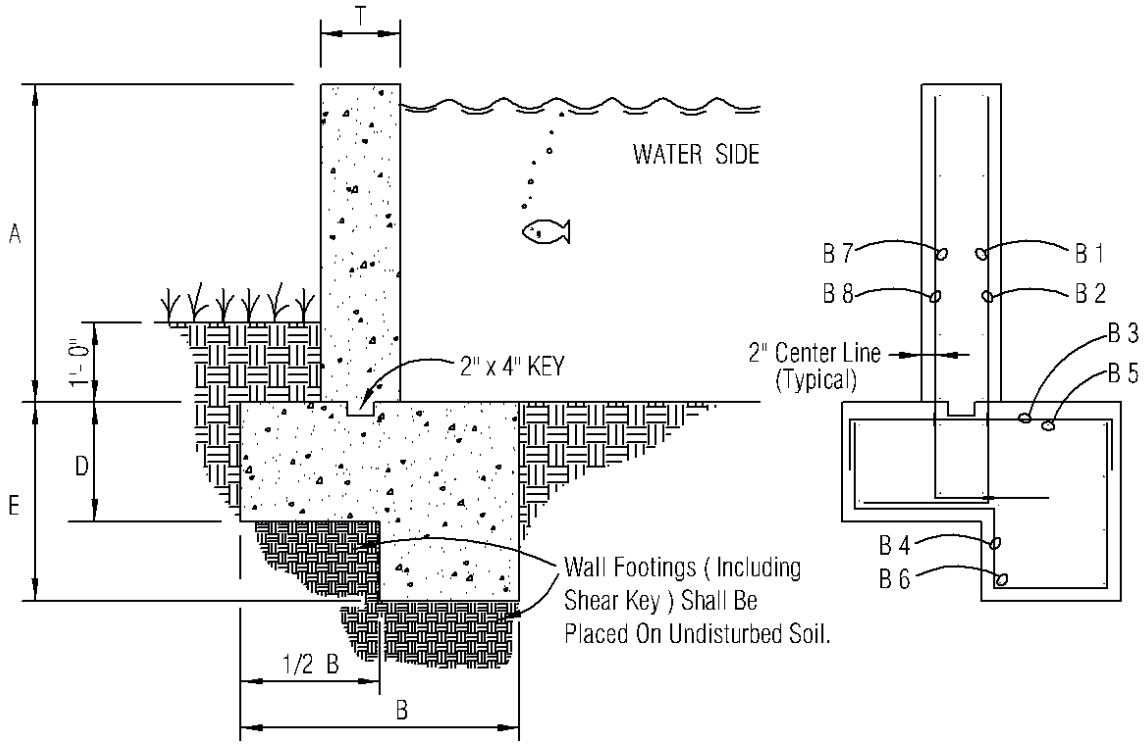
DATE : 04-30-97
DRAWN : S. HAMBY
AutoCAD 2000 .dwg
REVISION : 12-09-03
DWG. # : 100-018


CONCRETE PAVER DETAIL
1/8" Chamfer
8"
4"
2 3/8"
CONCRETE PAVER SPECIFICATIONS:
PRODUCT AVAILABLE AS - TYPE OF PAVER.
1. HALLMARK - BY PAVERLOCK
2. HOLLAND STONE - BY PAVER DESIGN INC OR EQUAL SPECIFICATIONS.
3. COLORS - RED & BLACK BLEND w/ SOLID RED BORDERS.
4. CONCRETE QUALITY - 6300 P.S.I.
5. APPROX. WEIGHT - 5.3 lbs
6. APPROX. COVERAGE - 4.5 Pcs / S.F.
7. ABSORPTION - 5 %
City of Roswell
ENGINEERING DIVISION
CONCRETE PAVERS
SIDEWALK DETAIL
SCALE: NO SCALE
DATE: 04-16-97
DRAWN: S. HAYSEY
AutoCAD 2000 dwg
REVISION: 11-13-03
DWG. #: 100-011
PLAN VIEW
10'-0" (120") ± 1"
5'-0" (60") ± 1/2"
Red / Black Blend in Herringbone Pattern
Red Border
Red
6" CONCRETE CURB
1/2" EXPANSION JOINT TYP.
1/4" /FT SLOPE
3/8" MORTAR JOINT TYPE M
STRETCHER PAVER
HEADER PAVER
1" MORTAR BASE, TYPE M
4" CONCRETE BASE
18" CONCRETE BASE WITHIN A RADIUS
12" MINIMUM COMPACTED SOIL SUBGRADE, SEE STANDARD PROCTOR COMPACTION
WITH CONCRETE CURB EDGE
WITH LANDSCAPED EDGE
CONCRETE AND BRICK PAVING SECTION & LIGHT BASE
SIDEWALK CROSS-SECTION (within ROW)



CROSS-SECTION VIEW **CROSS-SECTION of FRAME**

DIMENSIONS						BAR SIZE AND SPACING							
A	B	C	D	E	T	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8
2' - 4'	3' - 6'	1' - 0'	1' - 6'	2' - 6'	1 - 0"	#4 @ 12'	#4 @ 12'	#4 @ 12'	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
4' - 6'	5' - 0'	1' -6'	1' - 6'	3' - 0'	1 - 0"	#4 @ 12'	#4 @ 12'	#4 @ 12'	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
6' - 8'	7' - 0'	2' -0'	1' - 6'	3' - 3'	1 - 0"	#4 @ 12'	#4 @ 12'	#4 @ 12'	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
8' - 10	9' - 0'	2' - 6'	1' - 9'	4' - 0'	1 - 0"	#4 @ 12'	#5 @ 9"	#4 @ 12'	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
10' - 12'	11 - 0"	3' - 0'	1' - 9'	4' - 6'	1 - 2"	#4 @ 12'	#5 @ 6"	#5 @ 12'	#5 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
12' - 14'	12 - 6"	3' - 6'	2' - 0'	5' - 3'	1 - 4"	#4 @ 12'	#7 @ 8"	#6 @ 12'	#6 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"

NOTES :

1. SOURCE OF DATA IS FULTON COUNTY DETAIL FROM 1987 BY F.M.
2. 3000 PSF MAX. ALLOWABLE SCIL BEARING PRESSURE.
3. CONCRETE TO BE 3000 P.S.I. (TYPICAL)
4. ASTM A615 - GRADE 60 REINFORCEMENT.
5. THIS DESIGN TO BE USED ONLY AS A DEVICE TO DETAIN WATER.
6. ACCESS TO BE RESTRICTED BY 6' FENCE IF WALL EXCEEDS 4' IN HEIGHT.

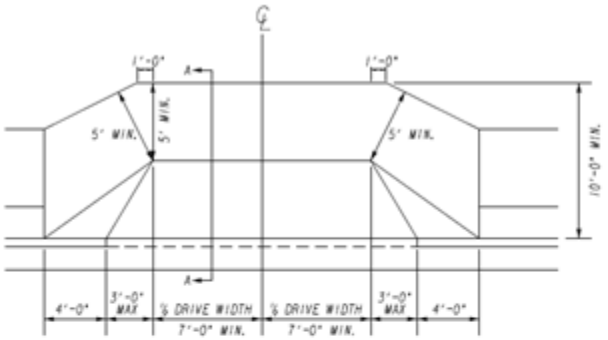
City of Roswell

ENGINEERING DIVISION

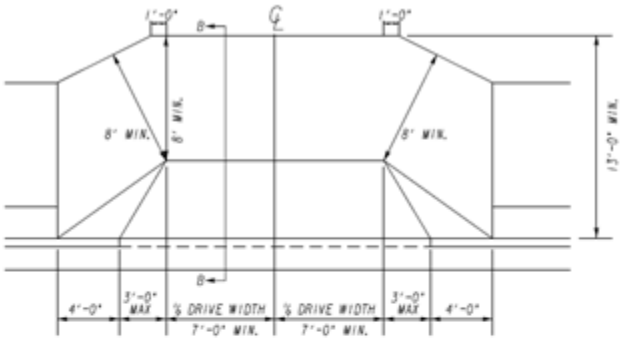
38 Hill St. Ste C 30 Roswell, Ga. 30075 (770 641 3780)

CONCRETE RETAINING WALL FOR DETENTION POND WEIR STRUCTURES

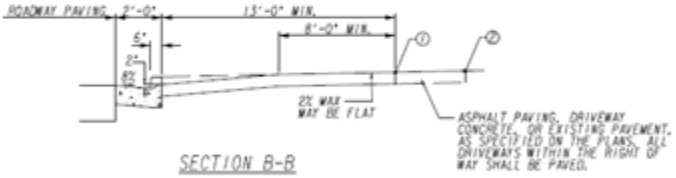
SCALE : NO SCALE AutoCAD 2000 .dwg
DATE : MAY 19, 1997 REVISION : 6/12/97
DRAWN : S. HAMBY DWG. # : 100-016



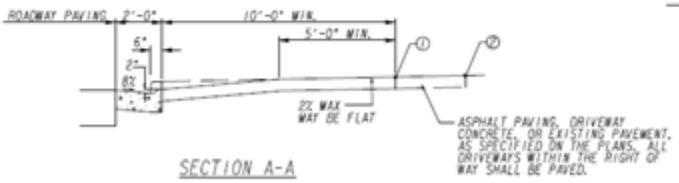
DRIVEWAY DETAIL D-1
DRIVEWAY WITH 5' OR 6' SIDEWALK



DRIVEWAY DETAIL D-2
DRIVEWAY WITH 8' OR 10' MULTI-USE TRAIL



SECTION B-B

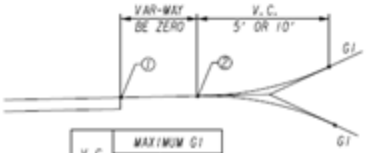


SECTION A-A

① IS THE BACK OF SIDEWALK SURFACE GRADE.

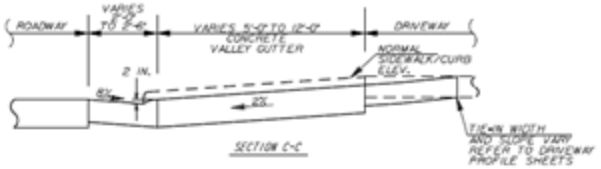
② IS THE BEGINNING OF THE DRIVEWAY TIE-IN.

NOTE: ① AND ② MAY COINCIDE

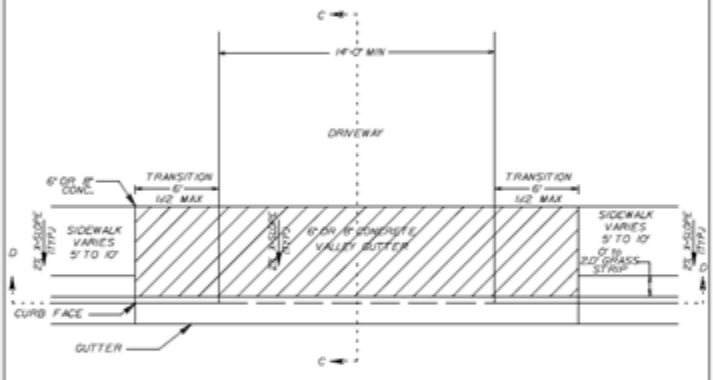


V.C.	MAXIMUM G1	
	CUT	FILL
5'	27%	16.67%
10'	28%	27%

MAXIMUM DRIVEWAY GRADES



SECTION C-C



SECTION D-D
PROFILE OF TRANSITION FROM STANDARD CURB TO 2 INCH HEIGHT EXAGGERATED VERTICALLY

Driveway Detail D-3
NOT TO SCALE

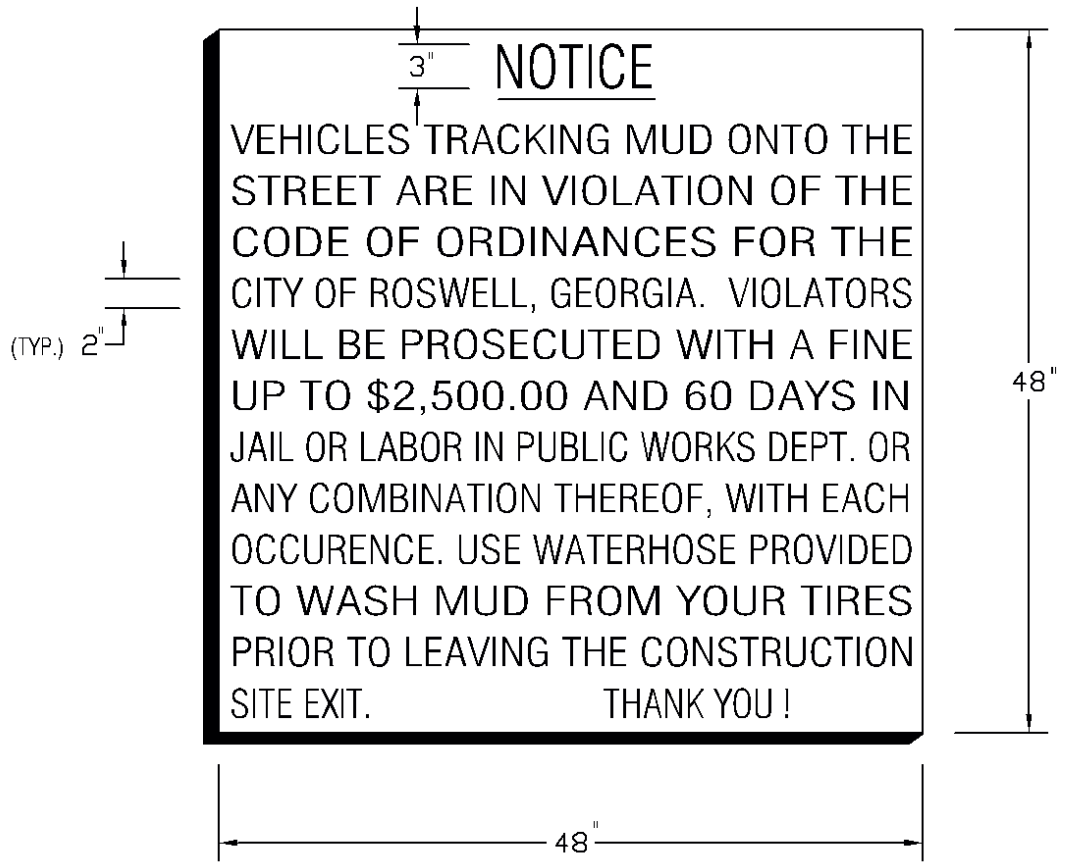
GENERAL NOTES:

1. DRIVES RECONSTRUCTED SHALL BE REPLACED IN KIND, I.E., ASPHALT FOR ASPHALT, CONCRETE FOR CONCRETE, AND PAVED TO THE RIGHT OF WAY LINE.
2. THE RIGHT OF WAY LINE SHALL BE PLACED A MINIMUM OF ONE FOOT BEHIND THE BACK OF SIDEWALK.
3. WIDTHS OF DRIVEWAYS SHALL COMPLY WITH CURRENT SPECIFICATIONS.
4. MAXIMUM DRIVEWAY GRADES SHOWN ABOVE ARE INTENDED FOR RESIDENTIAL DRIVEWAYS WHERE FLATTER GRADES ARE NOT FEASIBLE. GRADES FOR COMMERCIAL DRIVEWAYS OR FOR TRUCKS SHALL NOT BE GREATER THAN 10%.
5. CONCRETE TO BE MINIMUM 3000 P.S.I. (TYPICAL)
6. PREMOLDED EXPANSION JOINT TO BE PLACED AT DRIVEWAY, CURBS, OR AS CALLED FOR ON PLANS. EXPANSION JOINT EVERY 40', DUMMY JOINT EVERY 7'. (TYPICAL)
7. YELLOW ADA TILE AS REQUIRED. RED ADA TILE IS REQUIRED IN THE HISTORIC DISTRICT.

Roswell georgia

DRIVEWAY DETAILS

NOT TO SCALE MARCH 20, 2024



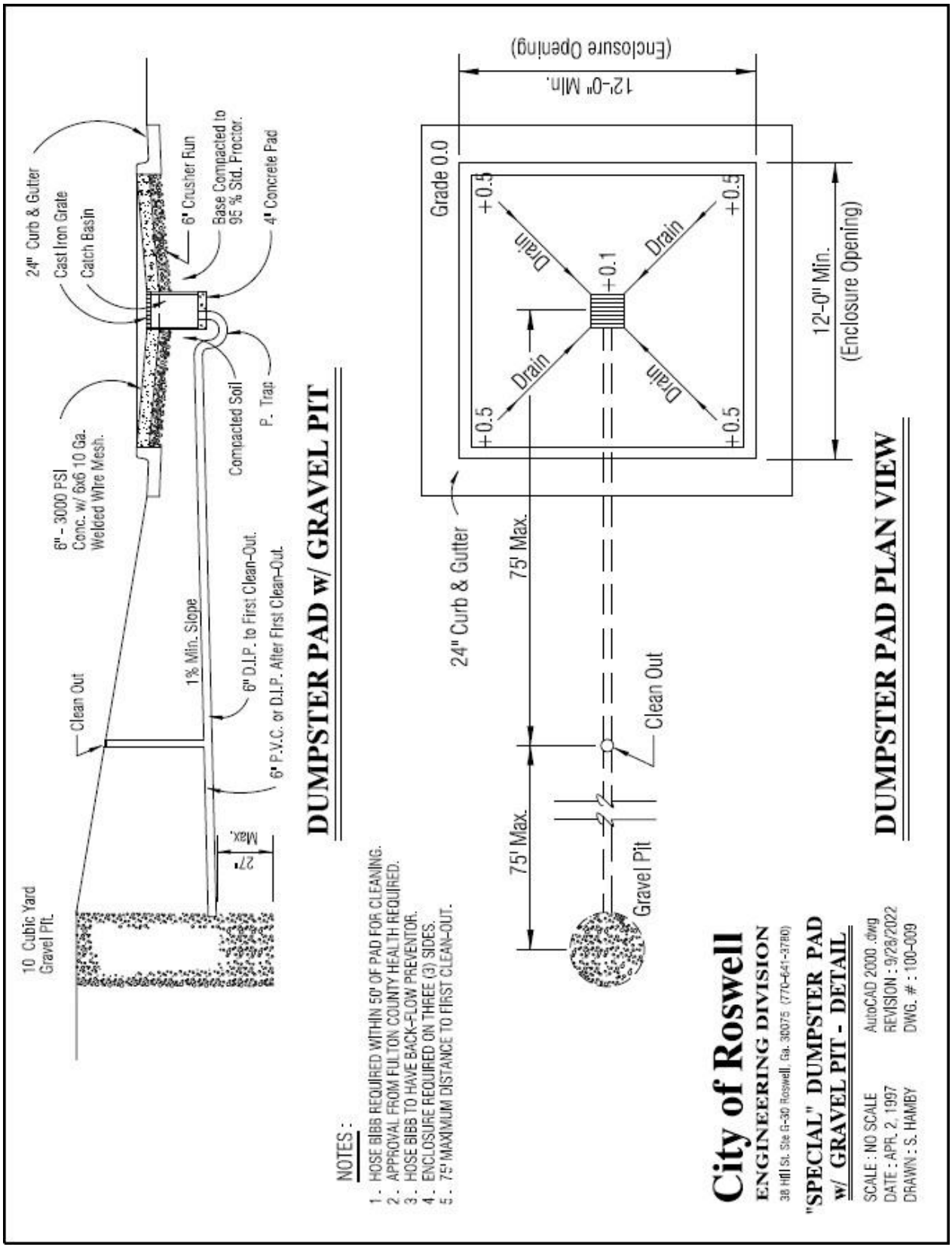
NOTES :

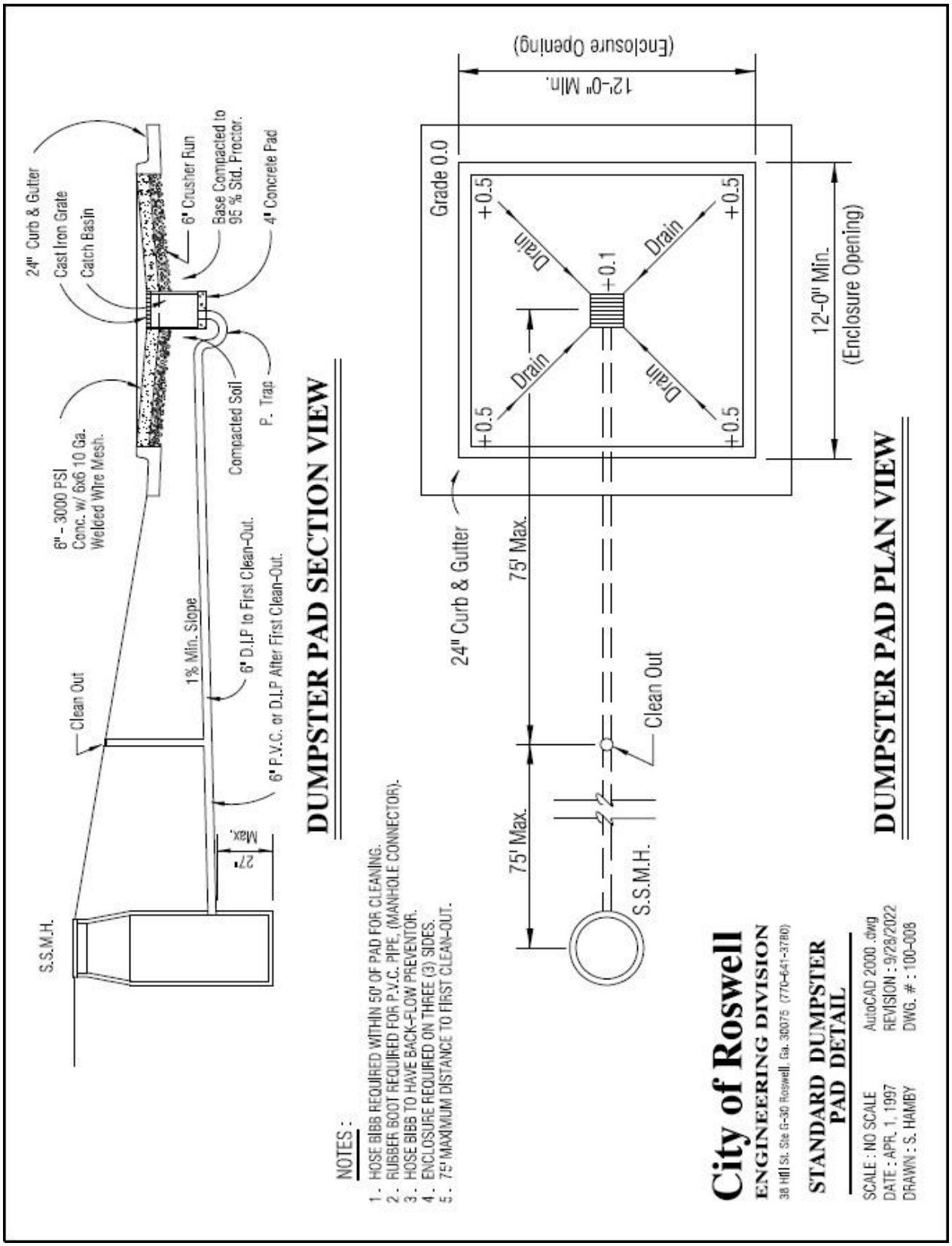
1. IN ADDITION TO THIS SIGN, A TEMPORARY WATER SUPPLY WITH A WATER HOSE, SHALL BE INSTALLED AT ALL CONSTRUCTION SITE EXITS.
2. SIGN MATERIALS TO BE, NOT LESS THAN 1/2" DURA-PLY PLYWOOD.
3. SIGN LETTERING TO BE " UPPER CASE " TYPICAL.

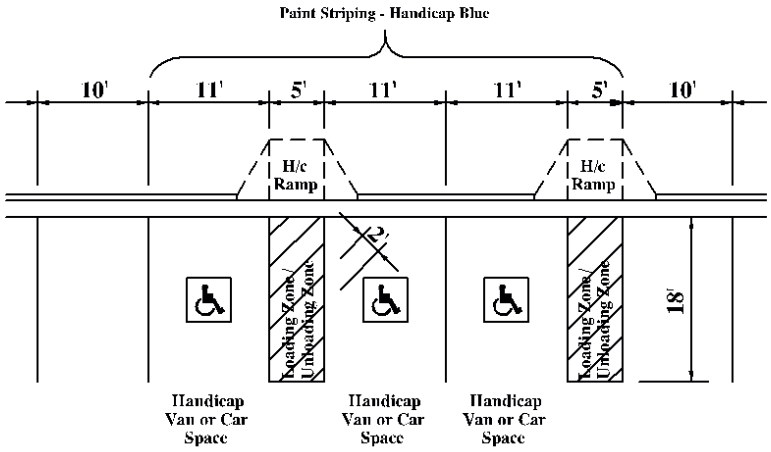
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-30 Roswell, Ga. 30075 (770-641-3780)

CONSTRUCTION EXIT SIGN

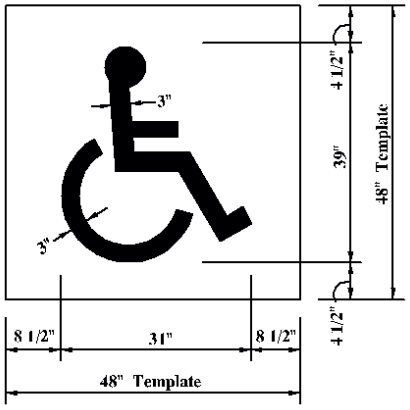
SCALE : 1"= 1'-0" AutoCAD 2000.dwg
DATE : FEB. 4, 1997 REVISION : 12-09-03
DRAWN : S. HAMBY DWG. # : 100-001


10 Cubic Yard Gravel Pit
Clean Out
1% Min. Slope
6" D.I.P. to First Clean-Out.
6" P.V.C. or D.I.P. After First Clean-Out.
Max. 27'
6" - 3000 PSI Conc. w/ 6x6 10 Ga. Welded Wire Mesh.
24" Curb & Gutter
Cast Iron Grate
Catch Basin
6" Crusher Run
Base Compacted to 95 % Std. Proctor.
4" Concrete Pad
Compacted Soil
P. Trap
DUMPSTER PAD w/ GRAVEL PIT
NOTES :
1. HOSE BIBB REQUIRED WITHIN 50' OF PAD FOR CLEANING.
2. APPROVAL FROM FULTON COUNTY HEALTH REQUIRED.
3. HOSE BIBB TO HAVE BACK-FLOW PREVENTOR.
4. ENCLOSURE REQUIRED ON THREE (3) SIDES.
5. 75' MAXIMUM DISTANCE TO FIRST CLEAN-OUT.
(Enclosure Opening)
12'-0" Min.
Grade 0.0
+0.5
+0.5
+0.1
+0.5
+0.5
Drain
Drain
Drain
Drain
24" Curb & Gutter
75' Max.
75' Max.
Clean Out
Gravel Pit
12'-0" Min.
(Enclosure Opening)
DUMPSTER PAD PLAN VIEW
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-30 Roswell, Ga. 30075 (770-641-3780)
"SPECIAL" DUMPSTER PAD w/ GRAVEL PIT - DETAIL
SCALE : NO SCALE
DATE : APR. 2, 1997
DRAWN : S. HAMBY
AutoCAD 2000 .dwg
REVISION : 9/28/2022
DWG. # : 100-009

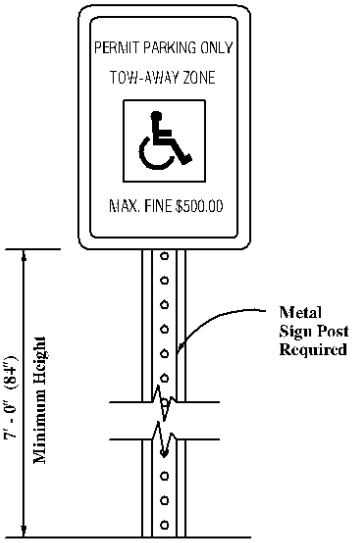

24" Curb & Gutter
Cast Iron Grate
Catch Basin
6" Crusher Run
Base Compacted to 95 % Std. Proctor.
4" Concrete Pad
6" - 3000 PSI Conc. w/ 6x6 10 Ga. Welded Wire Mesh.
Compacted Soil
P. Trap
1% Min. Slope
6' D.I.P to First Clean-Out.
6' P.V.C. or D.I.P After First Clean-Out.
Clean Out
S.S.M.H.
27'
Max.
DUMPSTER PAD SECTION VIEW
NOTES :
1.- HOSE BIBB REQUIRED WITHIN 50' OF PAD FOR CLEANING.
2.- RUBBER BOOT REQUIRED FOR P.V.C. PIPE, (MANHOLE CONNECTOR).
3.- HOSE BIBB TO HAVE BACK-FLOW PREVENTOR.
4.- ENCLOSURE REQUIRED ON THREE (3) SIDES.
5.- 75' MAXIMUM DISTANCE TO FIRST CLEAN-OUT.
(Enclosure Opening)
12'-0" Min.
Grade 0.0
+0.5
+0.5
+0.1
+0.5
+0.5
Drain
Drain
Drain
Drain
24" Curb & Gutter
75' Max.
75' Max.
Clean Out
S.S.M.H.
12'-0" Min.
(Enclosure Opening)
DUMPSTER PAD PLAN VIEW
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-30 Roswell, Ga. 30075 (770-641-3780)
STANDARD DUMPSTER PAD DETAIL
SCALE : NO SCALE
DATE : APR. 1, 1997
DRAWN : S. HAMBY
AutoCAD 2000 .dwg
REVISION : 9/28/2022
DWG. # : 100-008



UNIVERSAL PARKING SPACE DETAIL



HANDICAP SYMBOL / PAVEMENT DETAIL



HANDICAPPED PARKING SIGN DETAIL

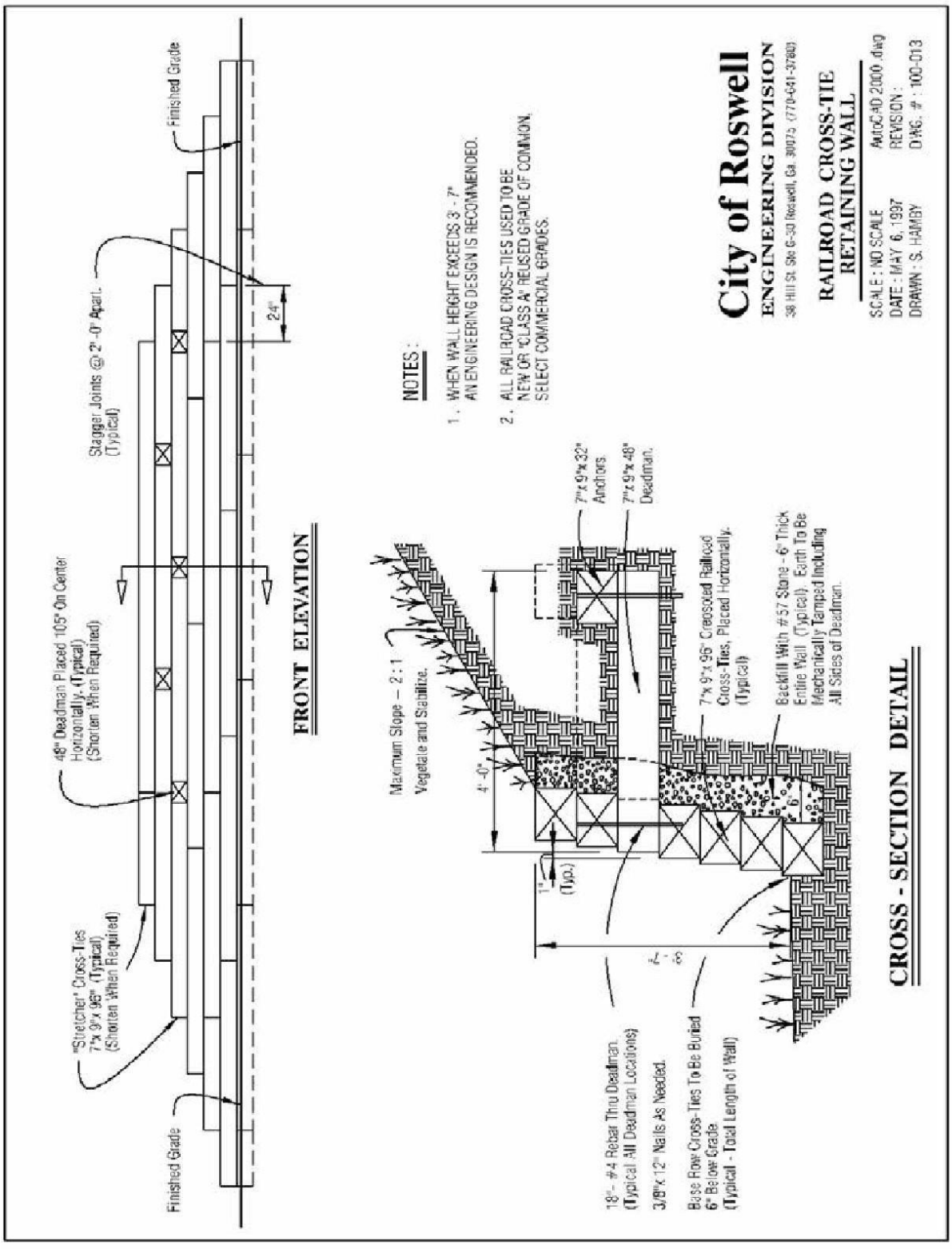
NOTES :

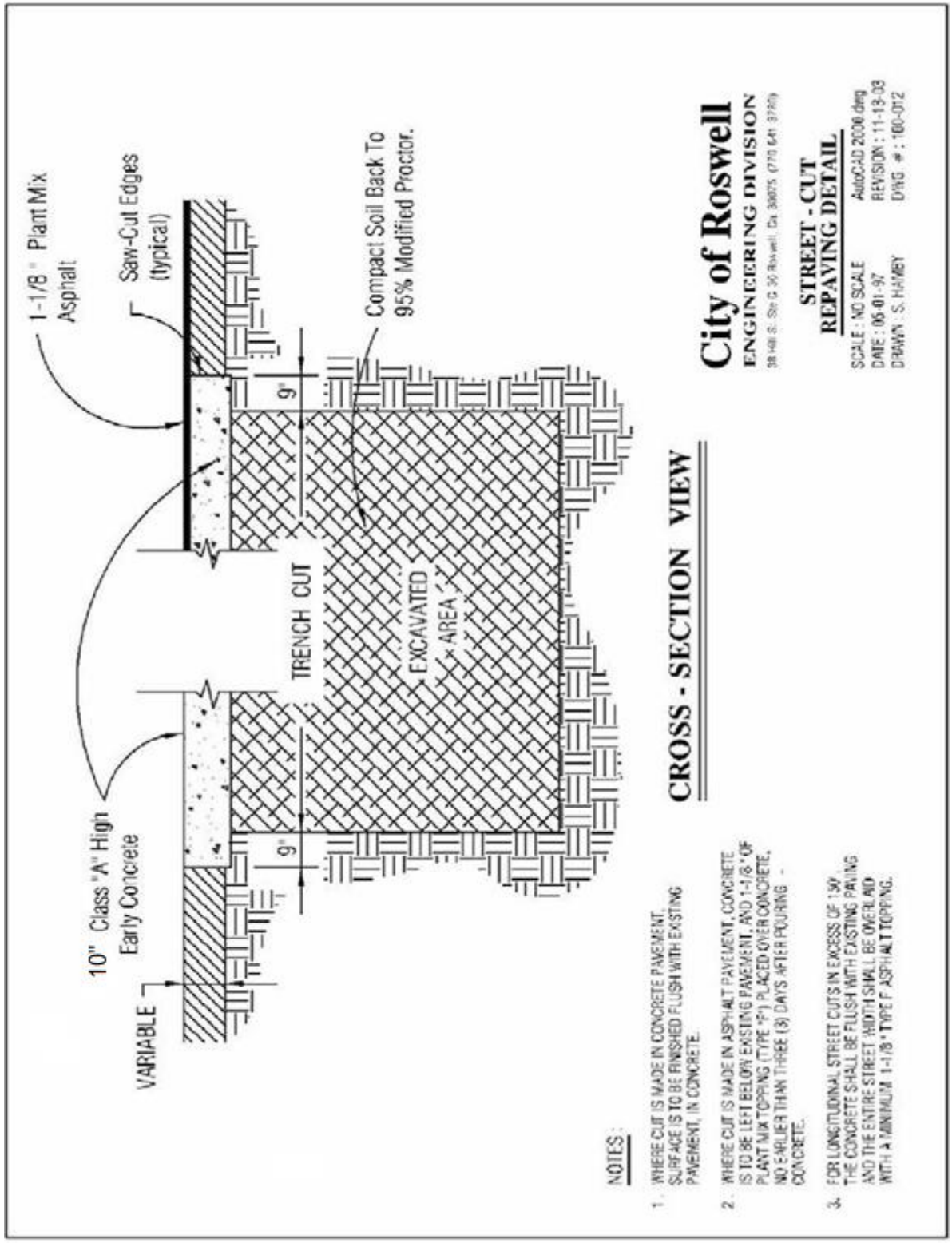
1. HANDICAPPED SYMBOL TO BE WHITE. (TYPICAL)
2. BACKGROUND TO BE COLORED HANDICAP BLUE. (TYPICAL)
3. LOADING / UNLOADING ZONE TO BE LOCATED AT THE RIGHT OR LEFT OF ALL HANDICAPPED SPACES.
4. ALL HANDICAPPED SPACE STRIPING TO BE PAINTED HANDICAP BLUE.
5. SIGN COLORS TO BE HANDICAP BLUE WITH WHITE PRINTING.
6. SIGN SIZE TO BE 18" HEIGHT x 12" WIDTH.
7. PARKING SPACE DETAILS TAKEN FROM THE ADA HANDBOOK, PAGE 73.

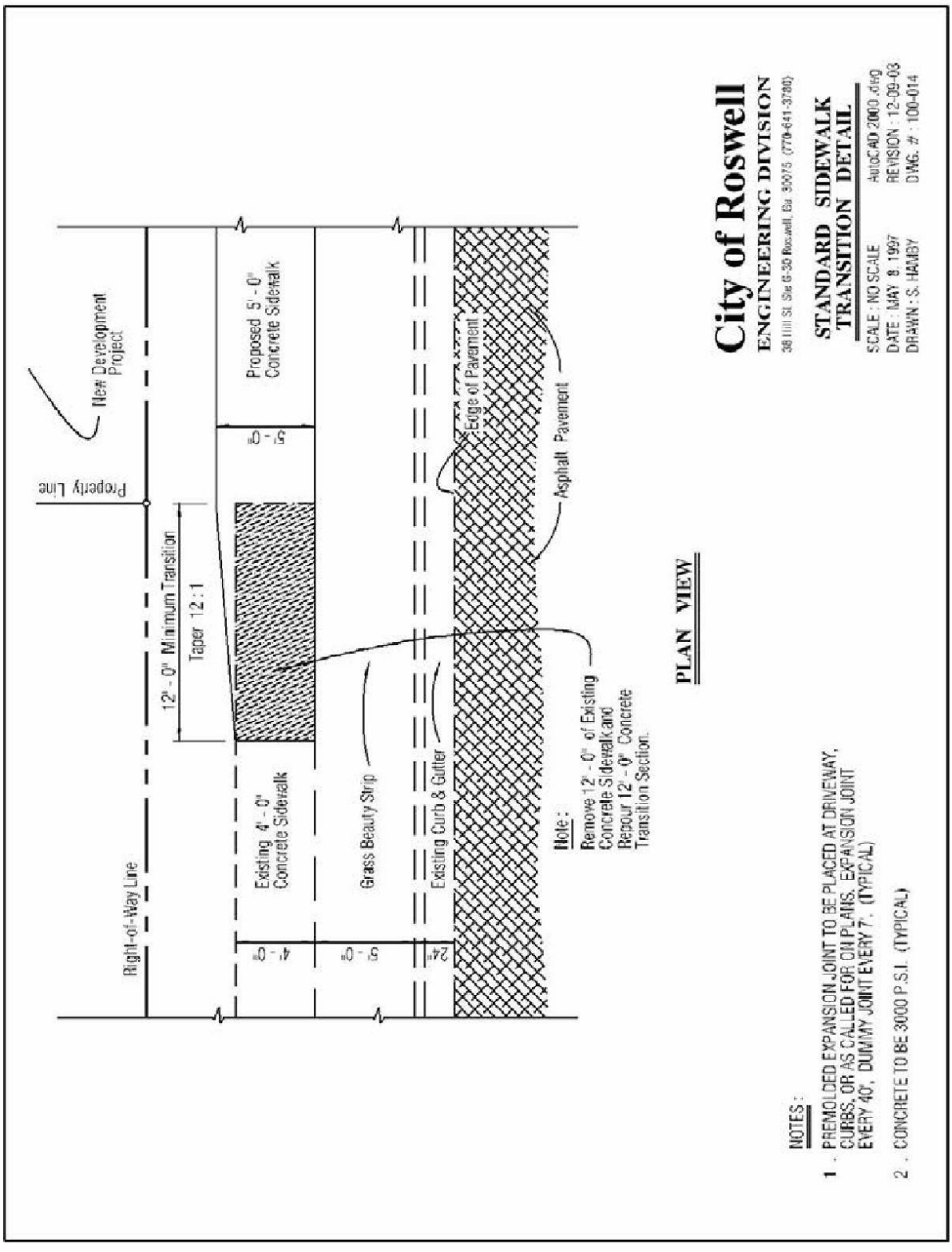
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G 30 Roswell, Ga. 30075 (770 641 3780)

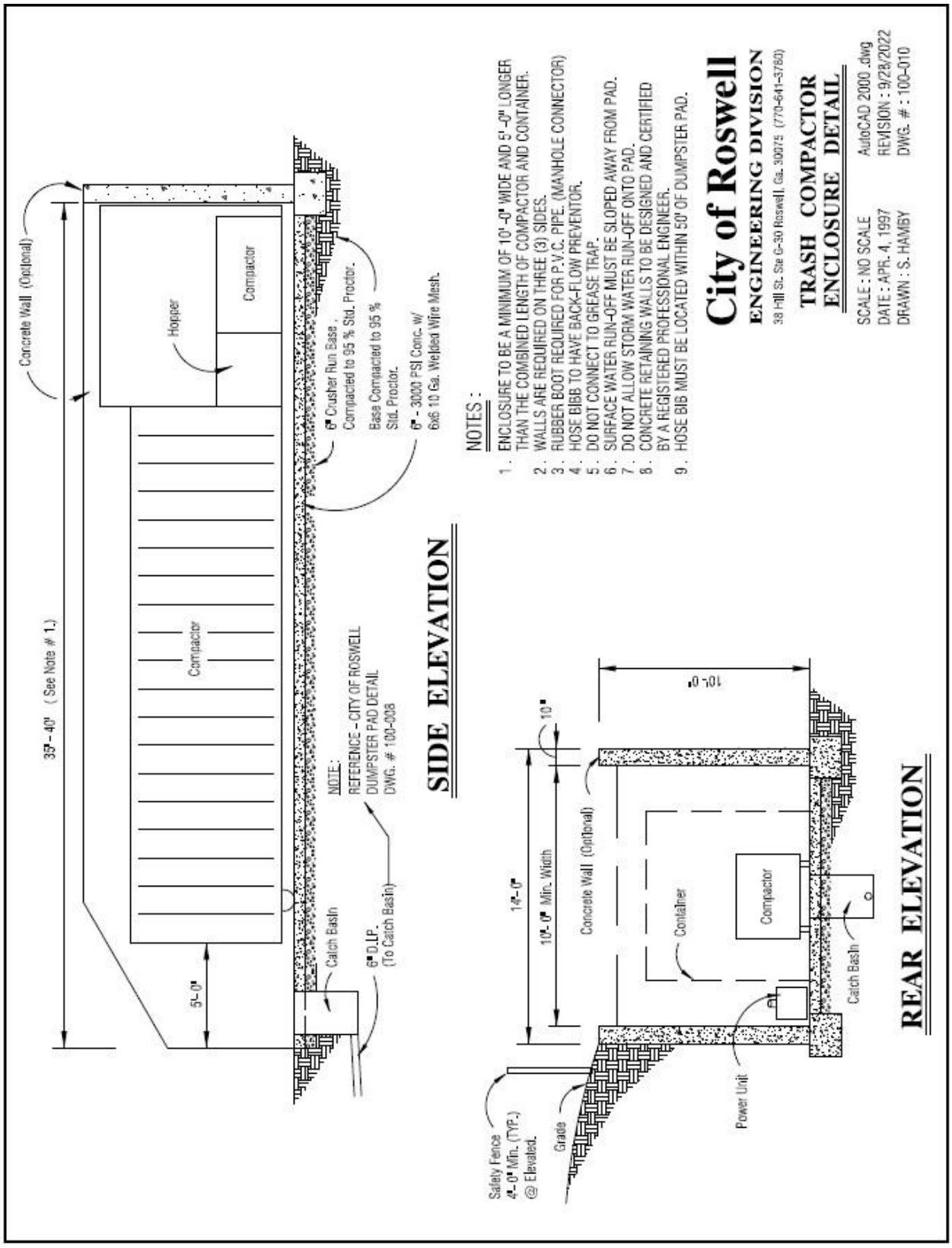
HANDICAPPED PARKING and SIGN DETAIL

SCALE : NO SCALE
DATE : FEB. 25, 1997
DRAWN : S. HANBY
AutoCAD 2000 .dwg
REVISION : 7/24/98
DWG. # : 100-005

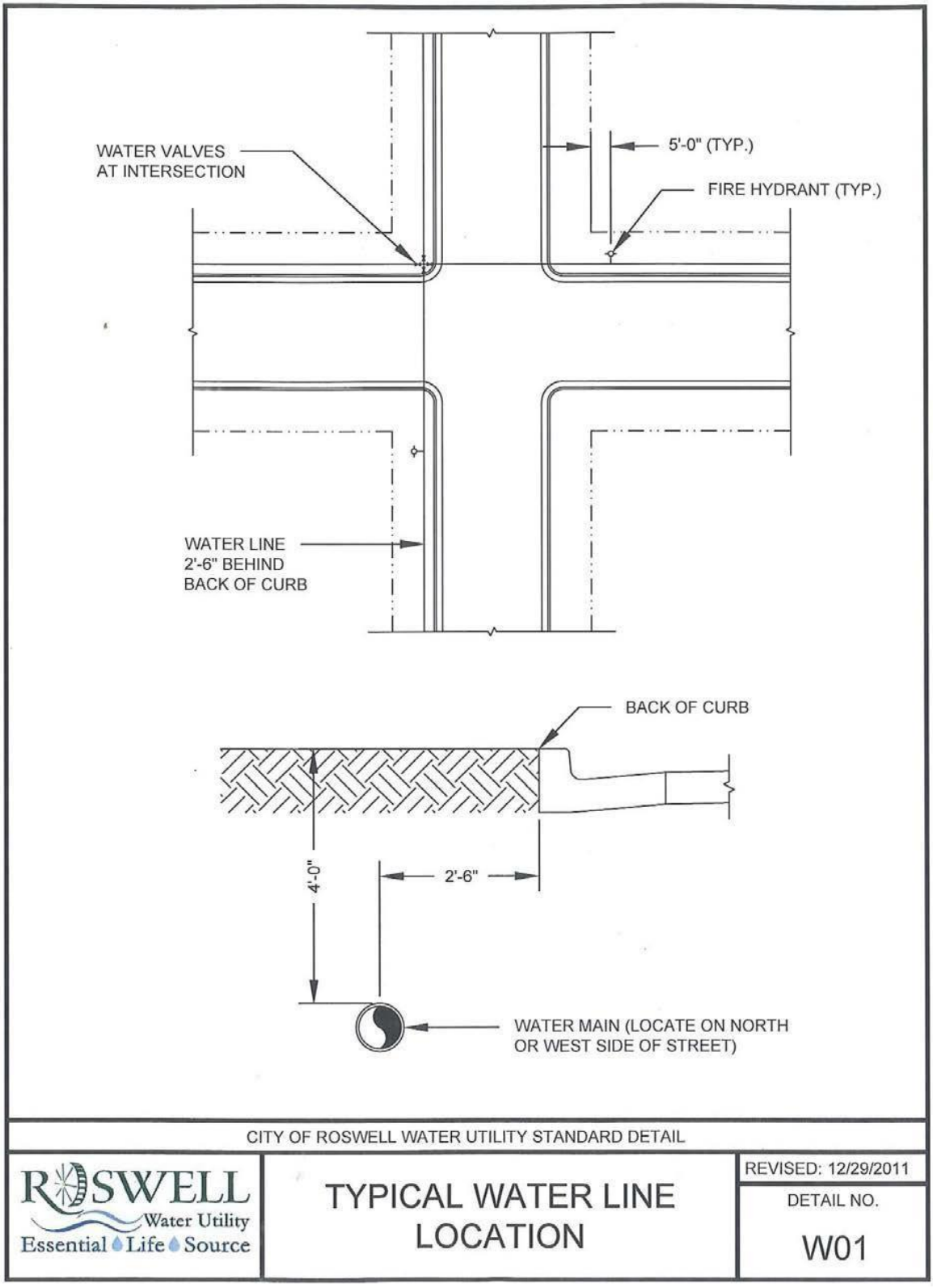

FRONT ELEVATION
Finished Grade
Stagger Joints @ 2'-0" Apart. (Typical)
48" Deadman Placed 105° On Center Horizontally. (Typical) (Shorten When Required)
"Stretcher" Cross-Ties 7"x 9"x 96" (Typical) (Shorten When Required)
Finished Grade
2'-6"
NOTES :
1. WHEN WALL HEIGHT EXCEEDS 3' - 7" AN ENGINEERING DESIGN IS RECOMMENDED.
2. ALL RAILROAD CROSS-TIES USED TO BE NEW OR "CLASS A" REUSED GRADE OF COMMON, SELECT COMMERCIAL GRADES.
Maximum Slope – 2 : 1
Vegetate and Stabilize.
4'-0"
7"x 9"x 32" Anchors
7"x 9"x 48" Deadman.
7"x 9"x 96" Creosoted Railroad Cross-Ties, Placed Horizontally. (Typical)
Backfill With #57 Stone - 6" Thick Entire Wall (Typical). Earth To Be Mechanically Tamped Including All Sides of Deadman.
1" (Typ.)
18" - #4 Rebar Thru Deadman. (Typical All Deadman Locations)
3/8"x 12" Nails As Needed.
Base Row Cross-Ties To Be Buried 6" Below Grade. (Typical - Total Length of Wall)
CROSS - SECTION DETAIL
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste 6-30 Roswell, Ga. 30075 (770-641-37603)
RAILROAD CROSS-TIE RETAINING WALL
SCALE : NO SCALE
DATE : MAY 6, 1997
DRAWN : S. HAMBY
AutoCAD 2000 .dwg
REVISION :
DWG. # : 100-013

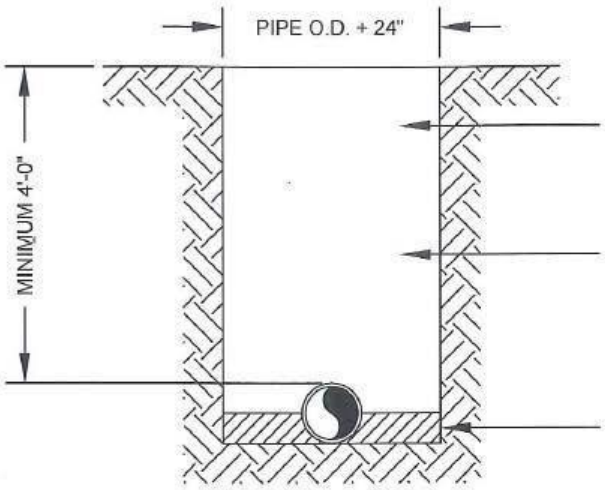

1-1/8" Plant Mix Asphalt
Saw-Cut Edges (typical)
Compact Soil Back To 95% Modified Proctor.
10" Class "A" High Early Concrete
VARIABLE
9"
9"
TRENCH CUT
EXCAVATED AREA
CROSS - SECTION VIEW
NOTES:
1. WHERE CUT IS MADE IN CONCRETE PAVEMENT, SURFACE IS TO BE FINISHED FLUSH WITH EXISTING PAVEMENT, IN CONCRETE.
2. WHERE CUT IS MADE IN ASPHALT PAVEMENT, CONCRETE IS TO BE LEFT BELOW EXISTING PAVEMENT, AND 1-1/8" OF PLANT MIX TOPPING (TYPE "F") PLACED OVER CONCRETE, NO EARLIER THAN THREE (3) DAYS AFTER POURING CONCRETE.
3. FOR LONGITUDINAL STREET CUTS IN EXCESS OF 1.5V THE CONCRETE SHALL BE FLUSH WITH EXISTING PAVING AND THE ENTIRE STREET WIDTH SHALL BE OVERLAID WITH A MINIMUM 1-1/8" TYPE F ASPHALT TOPPING.
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G 30 Roswell, Ga 30075 (770 641 3780)
STREET - CUT
REPAVING DETAIL
SCALE : NO SCALE
DATE : 05 01 97
DRAWN : S. HAMEY
AutoCAD 2006.dwg
REVISION : 11-18-08
DWG. # : 160-012


City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste 6-30 Roswell, Ga. 30075 (770-641-3780)
STANDARD SIDEWALK TRANSITION DETAIL
SCALE : NO SCALE
DATE : MAY 9, 1997
DRAWN : S. HAMBY
AutoCAD 2000 dwg
REVISION : 12-09-03
DWG. # : 100-014
PLAN VIEW
New Development Project
Property Line
Right-of-Way Line
12' - 0" Minimum Transition
Taper 12 : 1
Proposed 5' - 0" Concrete Sidewalk
5' - 0"
Existing 4' - 0" Concrete Sidewalk
4' - 0"
Grass Beauty Strip
5' - 0"
Existing Curb & Gutter
2'±
Edge of Pavement
Asphalt Pavement
Note :
Remove 12' - 0" of Existing Concrete Sidewalk and Repour 12' - 0" Concrete Transition Section.
NOTES :
1 . PREMOLDED EXPANSION JOINT TO BE PLACED AT DRIVEWAY, CURBS, OR AS CALLED FOR ON PLANS. EXPANSION JOINT EVERY 40', DUMMY JOINT EVERY 7'. (TYPICAL)
2 . CONCRETE TO BE 3000 P.S.I. (TYPICAL)


Concrete Wall (Optional)
39'- 40' (See Note # 1.)
Hopper
Compactor
Compactor
5'- 0"
Catch Basin
6" D.I.P.
(To Catch Basin)
NOTE:
REFERENCE - CITY OF ROSWELL
DUMPSTER PAD DETAIL
DWG. # 100-008
6" Crusher Run Base ,
Compacted to 95 % Std. Proctor.
Base Compacted to 95 %
Std. Proctor.
6" - 3000 PSI Conc. w/
6x6 10 Ga. Welded Wire Mesh.
SIDE ELEVATION
NOTES :
1. ENCLOSURE TO BE A MINIMUM OF 10'-0" WIDE AND 5'-0" LONGER THAN THE COMBINED LENGTH OF COMPACTOR AND CONTAINER.
2. WALLS ARE REQUIRED ON THREE (3) SIDES.
3. RUBBER BOOT REQUIRED FOR P.V.C. PIPE. (MANHOLE CONNECTOR)
4. HOSE BIBB TO HAVE BACK-FLOW PREVENTOR.
5. DO NOT CONNECT TO GREASE TRAP.
6. SURFACE WATER RUN-OFF MUST BE SLOPED AWAY FROM PAD.
7. DO NOT ALLOW STORM WATER RUN-OFF ONTO PAD.
8. CONCRETE RETAINING WALLS TO BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
9. HOSE BIB MUST BE LOCATED WITHIN 50' OF DUMPSTER PAD.
City of Roswell
ENGINEERING DIVISION
38 Hill St. Ste G-30 Roswell, Ga. 30075 (770-641-3780)
TRASH COMPACTOR
ENCLOSURE DETAIL
SCALE : NO SCALE
DATE : APR. 4, 1997
DRAWN : S. HAMBY
AutoCAD 2000 .dwg
REVISION : 9/28/2022
DWG. # : 100-010
10'- 0"
14'- 0"
10'- 0" Min. Width
10"
Concrete Wall (Optional)
Container
Compactor
Catch Basin
Power Unit
Grade
Safety Fence
4'- 0" Min. (TYP.)
@ Elevated.
REAR ELEVATION

SECTION 7 – WATER UTILITY CONSTRUCTION DETAILS


WATER VALVES
AT INTERSECTION
5'-0" (TYP.)
FIRE HYDRANT (TYP.)
WATER LINE
2'-6" BEHIND
BACK OF CURB
BACK OF CURB
4'-0"
2'-6"
WATER MAIN (LOCATE ON NORTH
OR WEST SIDE OF STREET)
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL
ROSWELL
Water Utility
Essential Life Source
TYPICAL WATER LINE
LOCATION
REVISED: 12/29/2011
DETAIL NO.
W01



SEE DETAILS W02B AND W02C FOR TRENCH REPAIR DETAILS

SELECT EARTH BACKFILL PLACED IN 6" LIFTS AND COMPACTED TO MINIMUM 95 PERCENT OF AASHTO T-99-49 PROCTOR CURVE.

FLAT BOTTOM TRENCH (I.E. UNDISTURBED EARTH) WITH SELECT EARTH BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE. SEE NOTES 4 AND 5.

NOTES:

1. DUCTILE IRON PIPE FOR WATER MAINS SHALL BE BEDDED IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND ANSI/AWWA C151/A21.51, MINIMUM TYPE 2 LAYING CONDITION. MORE STRINGENT LAYING CONDITIONS SHALL BE USED WHEN REQUIRED BY SERVICE CONDITION.
2. SELECT EARTH BACKFILL SHALL BE EXCAVATED SILTY SAND (SM) AND SILT (ML) MATERIAL THAT IS FREE FROM ROCKS LARGER THAN 3-INCHES IN DIAMETER, ASHES, CINDERS, REFUSE, ORGANIC MATERIAL, FROZEN SOIL, AND OTHER DELETERIOUS MATERIAL.
3. MINIMUM DEPTH OF COVER SHALL BE 4'-0" UNLESS OTHERWISE APPROVED BY THE CITY OF ROSWELL.
4. IF THE BOTTOM OF THE TRENCH IS ROCK, THE TRENCH SHALL BE EXCAVATED 6" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED TO THE BOTTOM OF THE PIPE WITH NO. 57 STABILIZATION STONE.
5. IF THE SOIL IN THE BOTTOM OF THE TRENCH IS DETERMINED TO BE UNSUITABLE, THE TRENCH SHALL BE OVER EXCAVATED TO A DEPTH DETERMINED BY THE CITY OF ROSWELL AND BACKFILLED TO THE BOTTOM OF THE PIPE WITH NO. 57 STABILIZATION STONE.

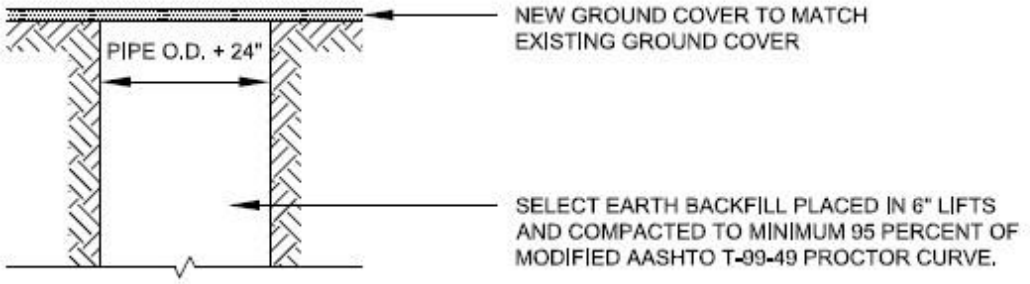
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

ROSWELL Water Utility Essential Life Source

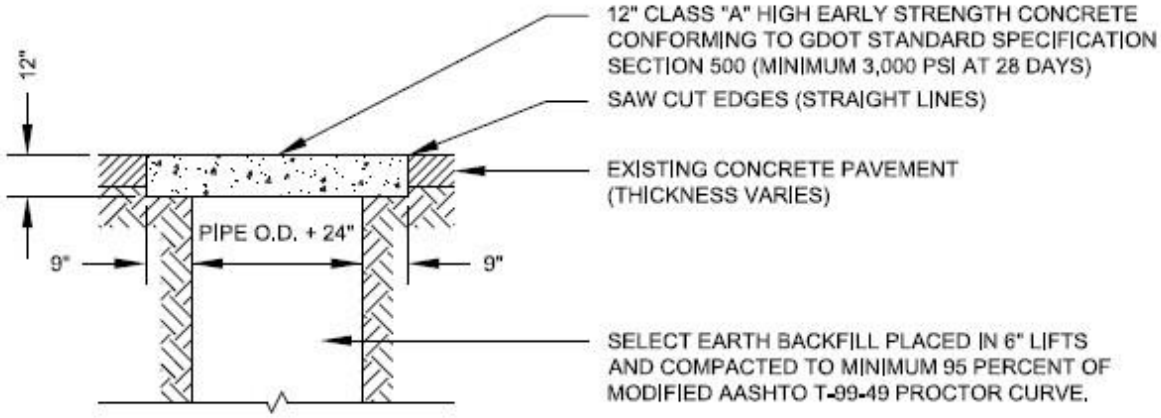
PIPE BEDDING DETAIL

REVISED: 12/29/2011

DETAIL NO. W02A



UNPAVED AREAS



CONCRETE PAVEMENT

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

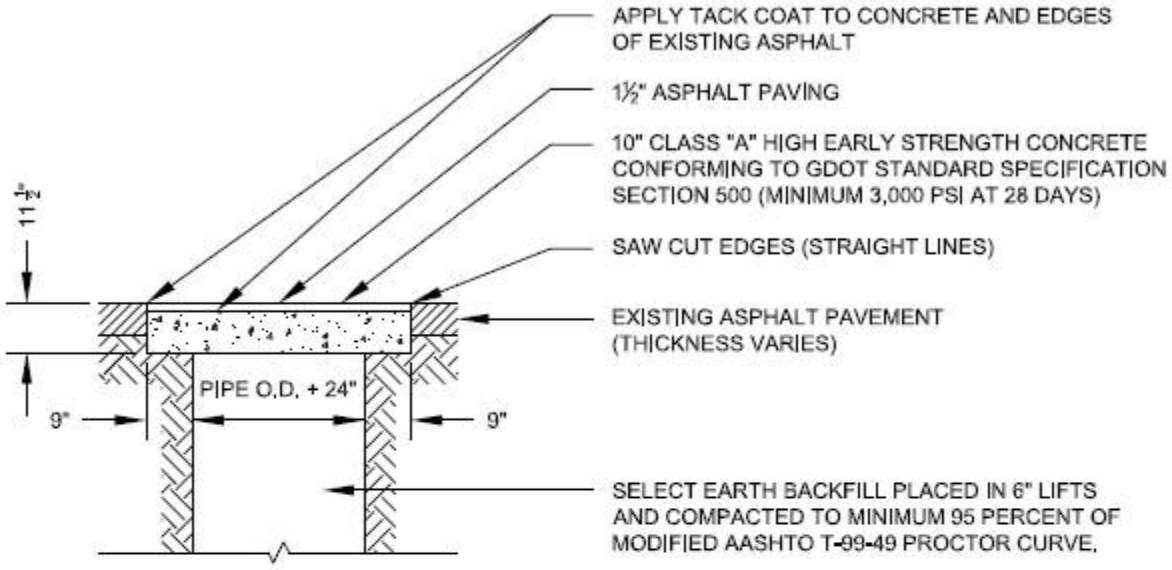
Roswell georgia

TRENCH REPAIR DETAIL

REVISED: 8/07/2020

DETAIL NO.

W02B

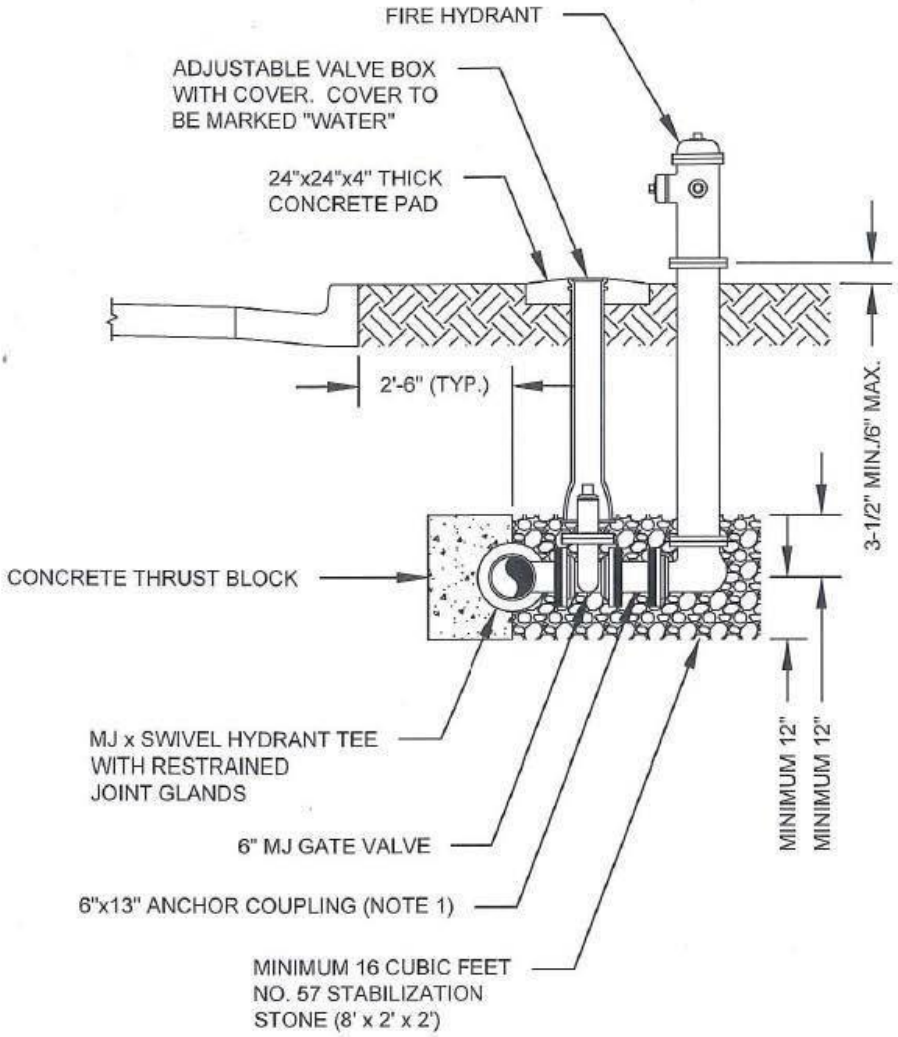


ASPHALT PAVEMENT

NOTES:

1. FOR LONGITUDINAL STREET CUTS IN EXCESS OF 150 FEET, THE ENTIRE ROADWAY SHALL BE MILLED 1½", THE CONCRETE SHALL BE FLUSH WITH THE MILLED PAVEMENT, AND THE ENTIRE STREET SHALL BE OVERLAID WITH 1½" OF ASPHALT PAVEMENT.
2. ASPHALT PAVEMENT SHALL BE 9.5-MM SUPER PAVE FOR LIGHTLY TRAVELED ROADS (MINOR STREETS) OR 12.5-MM SUPER PAVE FOR HEAVILY TRAVELED ROADS (MAJOR ARTERIAL AND COLLECTOR STREETS). COORDINATE WITH CITY OF ROSWELL DEPARTMENT OF TRANSPORTATION.
3. FOR STREET CUTS IN EXISTING ASPHALT PAVEMENT THAT IS SEVEN YEARS OLD OR LESS, MILLING AND RESURFACING SHALL EXTEND 50 FEET ON EACH SIDE OF THE CUT.
4. FOR STREET CUTS IN EXISTING ASPHALT PAVEMENT THAT IS MORE THAN SEVEN YEARS OLD, MILLING AND RESURFACING SHALL EXTEND 25 FEET ON EACH SIDE OF THE CUT.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL		
Roswell georgia	TRENCH REPAIR DETAIL	REVISED: 8/07/2020 DETAIL NO. W02C



NOTES:

1. LONGER ANCHOR COUPLINGS MAY BE USED WHEN REQUIRED. IF ANCHOR COUPLINGS ARE NOT USED, VALVE SHALL BE RODDED TO THE TEE AND HYDRANT SHALL BE RODDED TO THE VALVE USING A MINIMUM OF TWO (2) THREADED RODS ON EACH CONNECTION. THREADED RODS SHALL BE TYPE 316 STAINLESS STEEL CONFORMING TO ASTM A193, GRADE B8M, CLASS 2; NUTS SHALL BE TYPE 316 STAINLESS STEEL CONFORMING TO ASTM A194, GRADE 8M; AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL FLAT WASHERS.
2. INSTALL MINIMUM 10 MIL PLASTIC SHEET BETWEEN CONCRETE THRUST BLOCK AND WATER LINE PIPE AND FITTINGS.

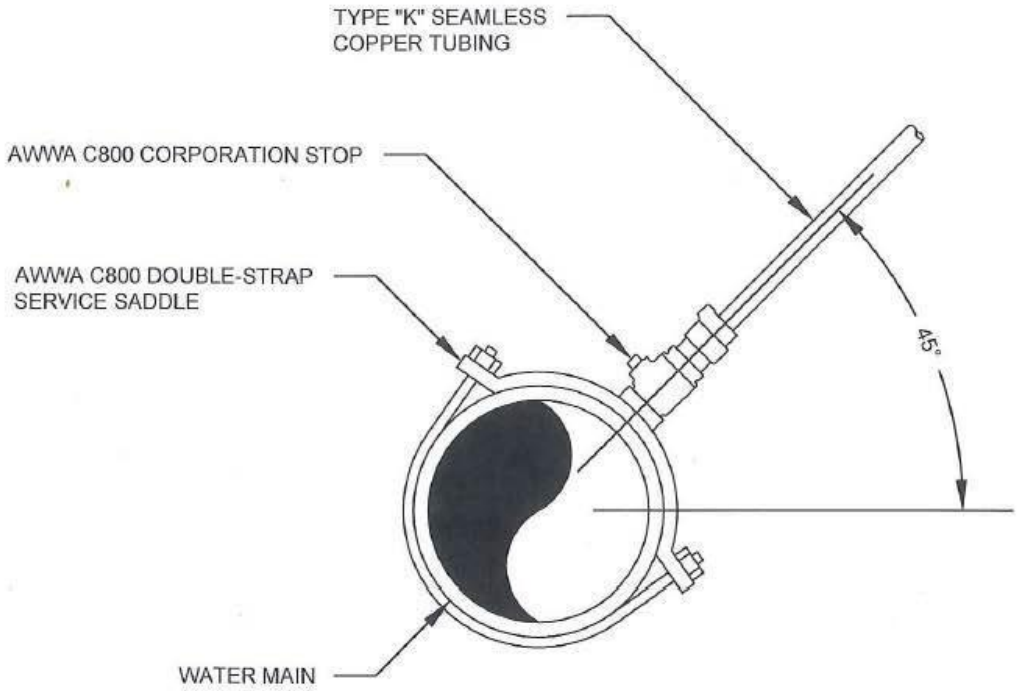
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

ROSWELL Water Utility
Essential Life Source

FIRE HYDRANT DETAIL

REVISED: 12/29/2011

DETAIL NO. W03



CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

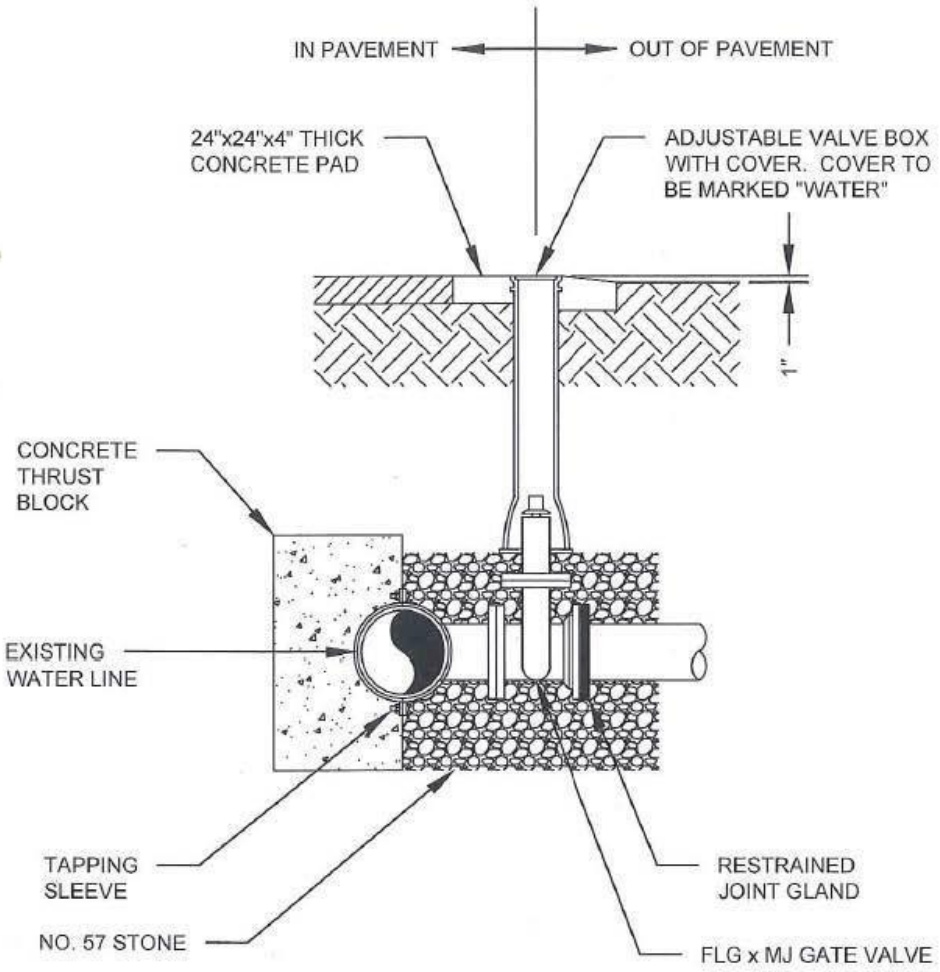
ROSWELL Water Utility
Essential Life Source

SERVICE SADDLE DETAIL

REVISED: 12/29/2011

DETAIL NO.

W04



NOTES:

1. INSTALL MINIMUM 10 MIL PLASTIC SHEET BETWEEN CONCRETE THRUST BLOCK AND WATER LINE PIPE AND FITTINGS.
2. MINIMUM TAP SIZE SHALL BE 6".

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

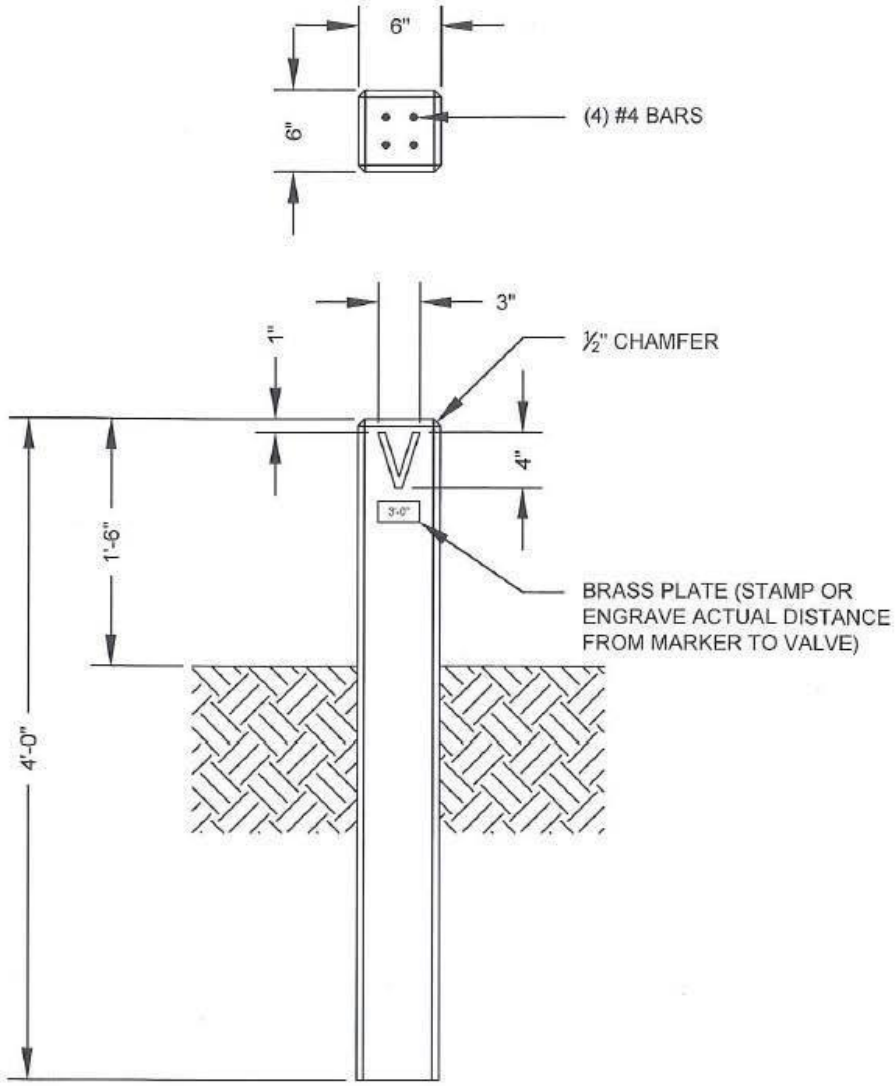
ROSWELL Water Utility
Essential Life Source

TAPPING SLEEVE DETAIL

REVISED: 12/29/2011

DETAIL NO.

W05



NOTES:

1. PROVIDE VALVE MARKER AT ALL VALVES THAT ARE LOCATED OUTSIDE OF THE PAVEMENT.
2. CONCRETE FOR VALVE MARKERS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

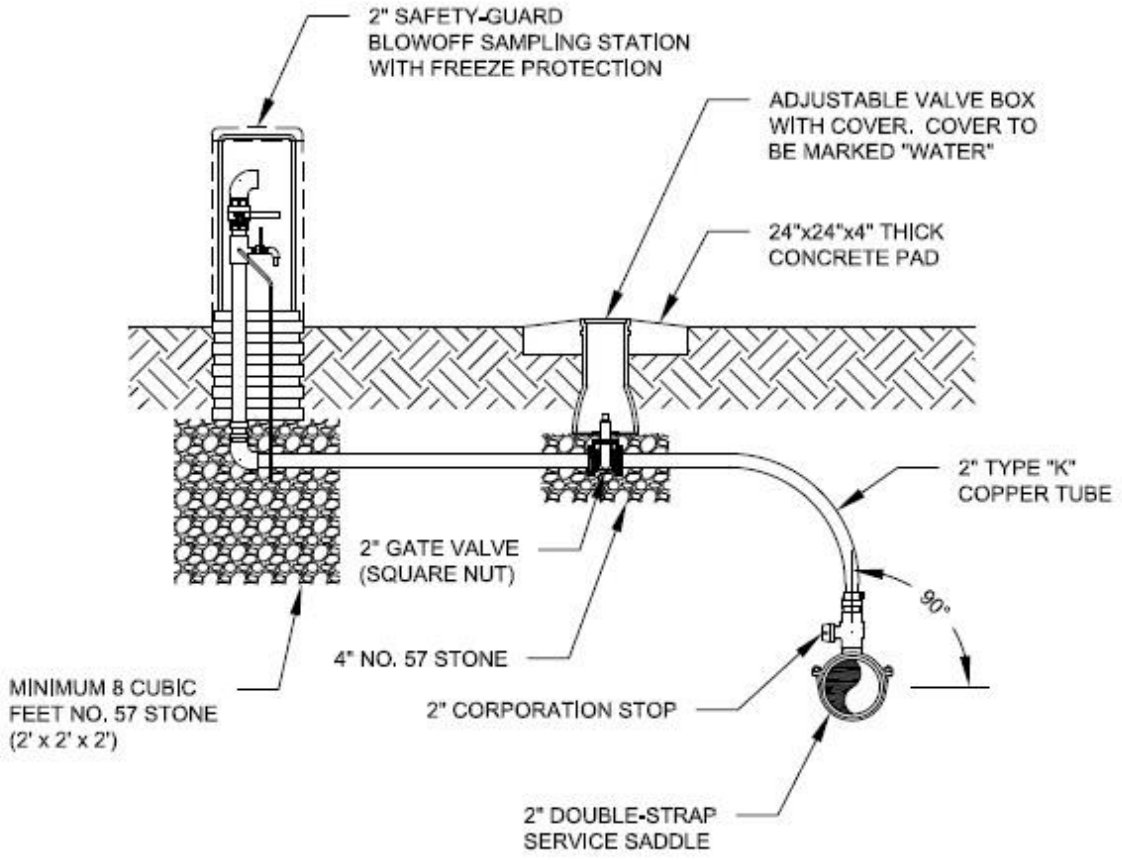
ROSWELL Water Utility
Essential Life Source

CONCRETE VALVE MARKER DETAIL

REVISED: 12/29/2011

DETAIL NO.

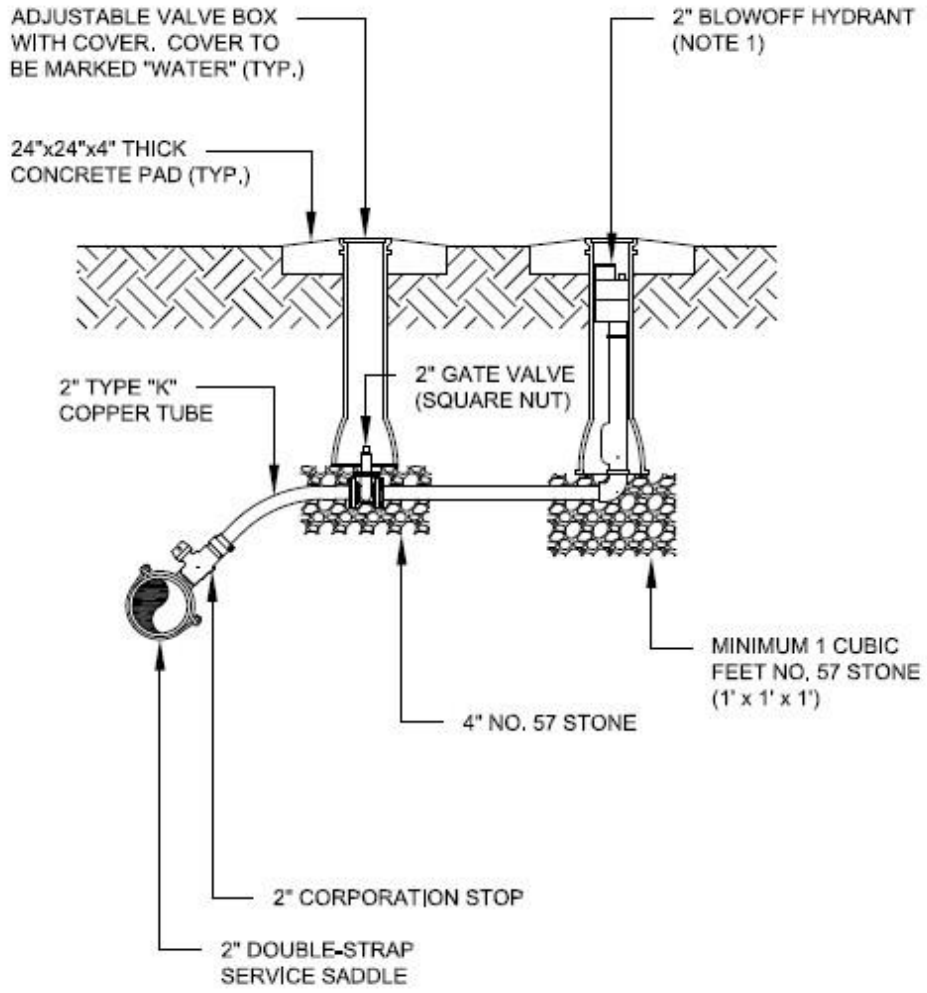
W06



NOTES:

1. CONTRACTOR TO PROVIDE ALL NECESSARY FITTINGS REQUIRED TO CONNECT SAFETY-GUARD BLOWOFF SAMPLING STATION TO WATER MAIN.

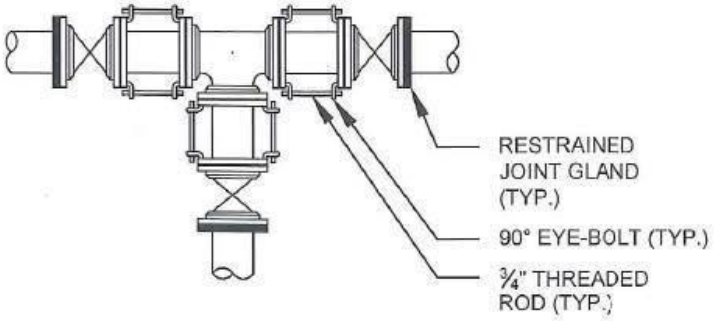
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL		
Roswell georgia	2" SAMPLE STATION DETAIL	REVISED: 8/06/2020 DETAIL NO. W07



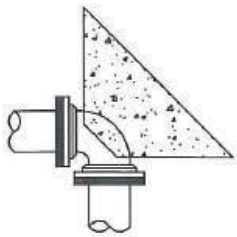
NOTES:

1. BLOWOFF HYDRANT SHALL BE TRUFLO MODEL TF500 MANUFACTURED BY THE KUPFERLE FOUNDRY CO. HYDRANT SHALL HAVE 2" FIP INLET AND 2" NPT OUTLET. HYDRANT SHALL BE FREEZE PROOF. HYDRANT SHALL BE PROVIDED WITH REMOVEABLE RISER PIPE AND "T" HANDLE WRENCH.
2. CONTRACTOR TO PROVIDE ALL NECESSARY FITTINGS REQUIRED TO CONNECT BLOWOFF HYDRANT TO WATER MAIN.

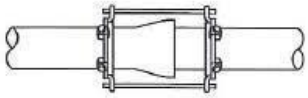
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL		
Roswell georgia	2" BLOWOFF HYDRANT DETAIL	REVISED: 7/23/2020 DETAIL NO. W07A



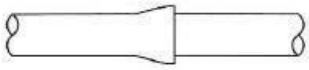
FITTING WITH TIE-RODS AND RESTRAINED JOINT GLANDS



FITTING WITH RESTRAINED JOINT GLAND AND THRUST BLOCK



TIE-RODS FROM RESTRAINED JOINT GLAND TO RESTRAINED JOINT GLAND



PUSH-ON JOINT WITH RESTRAINED JOINT GASKET

PIPE DIA. (IN)	ROD SIZE (IN)	MINIMUM # OF RODS
6	¾"	2
8	¾"	2
10	¾"	2
12	¾"	2
14	¾"	4
16	¾"	4

TIE-ROD CHART

NOTES:

1. RESTRAINED JOINT LENGTHS SHALL BE CALCULATED BY THE DESIGN ENGINEER.
2. ALL FITTINGS SHALL HAVE TWO FORMS OF RESTRAINT (I.E. THRUST BLOCK + RESTRAINED JOINT GLANDS, RESTRAINED JOINT GLANDS + THREADED RODS, THRUST BLOCK + THREADED RODS).
3. FITTINGS LOCATED WITHIN 5 FEET OF EACH OTHER SHALL BE TIED TOGETHER WITH THREADED ROD.
4. THREADED RODS AND 90° EYE BOLTS SHALL BE TYPE 316 HARDENED STAINLESS STEEL CONFORMING TO ASTM A193, GRADE B8M, CLASS 2; NUTS SHALL BE TYPE 316 STAINLESS STEEL CONFORMING TO ASTM A194, GRADE 8M; AND WASHERS SHALL BE 316 STAINLESS STEEL FLAT WASHERS.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

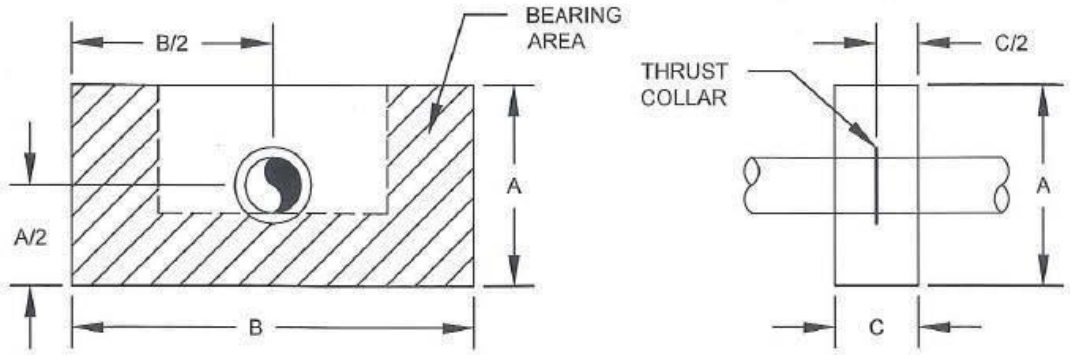
ROSWELL Water Utility
Essential Life Source

VALVE AND FITTING THRUST RESTRAINT

REVISED: 12/29/2011

DETAIL NO.

W08



PIPE DIA. (IN)	A DIM.	B DIM.	C DIM.	MINIMUM BEARING AREA (FT^2)	TOTAL BLOCK AREA (FT^2)	CONC. VOLUME (YD^3)	THRUST (LBF)
4	1'-6"	3'-0"	1'-6"	2.04	4.50	0.24	4,072
6	2'-0"	4'-0"	1'-6"	4.21	8.00	0.43	8,413
8	2'-5"	4'-10"	1'-6"	7.24	11.68	0.62	14,473
10	2'-11"	5'-10"	1'-6"	10.89	17.01	0.91	21,773
12	3'-5"	6'-10"	2'-0"	15.40	23.35	1.66	30,791
14	3'-10"	7'-8"	2'-0"	20.68	29.39	2.08	41,367
16	4'-4"	8'-8"	2'-0"	26.75	37.56	2.66	53,502

NOTES:

1. THRUST COLLAR DIMENSIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA.

   WORKING PRESSURE = 150 PSI
   SOIL BEARING CAPACITY = 2,000 PSF
   SAFETY FACTOR = 1.5

   THESE ARE THE MINIMUM DESIGN CRITERIA. IF ACTUAL WORKING PRESSURE IS GREATER THAN 150 PSI OR IF ACTUAL SOIL BEARING PRESSURE IS LESS THAN 2,000 PSF, DIMENSIONS SHALL BE RECALCULATED.

2. THRUST COLLAR CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI.

3. THRUST COLLAR SHALL BE WELDED ON BY DUCTILE IRON PIPE MANUFACTURER. ALTERNATIVELY, A RESTRAINED JOINT GLAND MAY BE USED.

4. THRUST COLLAR BEARING AREA SHALL BEAR AGAINST UNDISTURBED SOIL. BACKFILL THAT IS PLACED AGAINST THRUST COLLAR (NON-BEARING AREAS) SHALL BE COMPACTED TO MINIMUM 95 PERCENT AASHTO T-99-49 PROCTOR CURVE.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

ROSWELL Water Utility
Essential Life Source

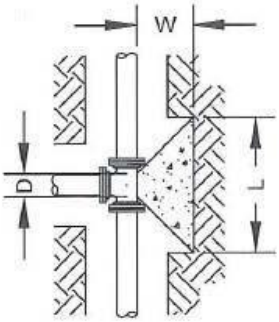
CONCRETE THRUST COLLAR DETAIL

REVISED: 12/29/2011

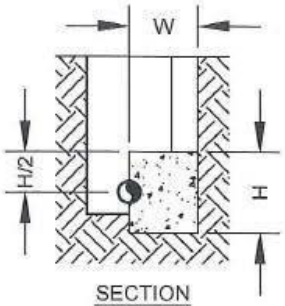
DETAIL NO.

W09

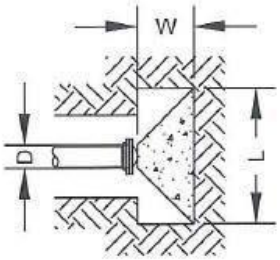
BEND PLAN



TEE PLAN



SECTION



DEAD-END PLAN

TEES AND DEAD-ENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD^3)	THRUST (LBF)
4	0'-6"	2'-2"	1'-1"	10	0.04	4,072
6	0'-8"	3'-0"	1'-6"	1'-2"	0.12	8,413
8	0'-10"	3'-10"	1'-11"	1'-6"	0.25	14,473
10	1'-0"	4'-8"	2'-4"	1'-10"	0.45	21,773
12	1'-2"	5'-8"	2'-10"	2'-3"	0.81	30,791
14	1'-4"	6'-6"	3'-3"	2'-7"	1.22	41,367
16	1'-6"	7'-4"	3'-8"	2'-11"	1.75	53,502
90° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD^3)	THRUST (LBF)
4	0'-6"	2'-6"	15	12	0.07	5,758
6	0'-8"	3'-6"	1'-9"	1'-5"	0.19	11,898
8	0'-10"	4'-8"	2'-4"	1'-11"	0.46	20,468
10	1'-0"	5'-8"	2'-10"	2'-4"	0.82	30,792
12	1'-2"	6'-8"	3'-4"	2'-9"	1.33	43,545
14	1'-4"	7'-8"	3'-10"	3'-2"	2.02	58,502
16	1'-6"	8'-10"	4'-5"	3'-8"	3.10	75,663
45° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD^3)	THRUST (LBF)
4	0'-6"	1'-10"	11	8	0.03	3,116
6	0'-8"	2'-8"	1'-4"	1'-0"	0.08	6,439
8	0'-10"	3'-4"	1'-8"	1'-3"	0.16	11,077
10	1'-0"	4'-2"	2'-1"	1'-7"	0.32	16,664
12	1'-2"	5'-0"	2'-6"	1'-11"	0.55	23,566
14	1'-4"	5'-8"	2'-10"	2'-2"	0.80	31,661
16	1'-6"	6'-6"	3'-3"	2'-6"	1.20	40,949
22½° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD^3)	THRUST (LBF)
4	0'-6"	1'-4"	8	5	0.01	1,589
6	0'-8"	1'-10"	0'-11"	0'-7"	0.02	3,283
8	0'-10"	2'-6"	1'-3"	0'-10"	0.06	5,647
10	1'-0"	3'-0"	1'-6"	1'-0"	0.11	8,495
12	1'-2"	3'-6"	1'-9"	1'-2"	0.18	12,014
14	1'-4"	4'-2"	2'-1"	1'-5"	0.30	16,141
16	1'-6"	4'-8"	2'-4"	1'-7"	0.42	20,875

NOTES:

1. THRUST BLOCK DIMENSIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA.

   WORKING PRESSURE = 150 PSI
   SOIL BEARING CAPACITY = 2,000 PSF
   SAFETY FACTOR = 1.5

   THESE ARE THE MINIMUM DESIGN CRITERIA. IF ACTUAL WORKING PRESSURE IS GREATER THAN 150 PSI OR IF ACTUAL SOIL BEARING CAPACITY IS LESS THAN 2,000 PSF, DIMENSIONS SHALL BE RECALCULATED.

2. THRUST BLOCK CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
3. THRUST BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL.
4. A MINIMUM 10 MIL PLASTIC SHEET SHALL BE PLACED BETWEEN CONCRETE AND PIPE.
5. ALL BOLTS SHALL REMAIN ACCESSIBLE. DO NOT COVER WITH CONCRETE.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

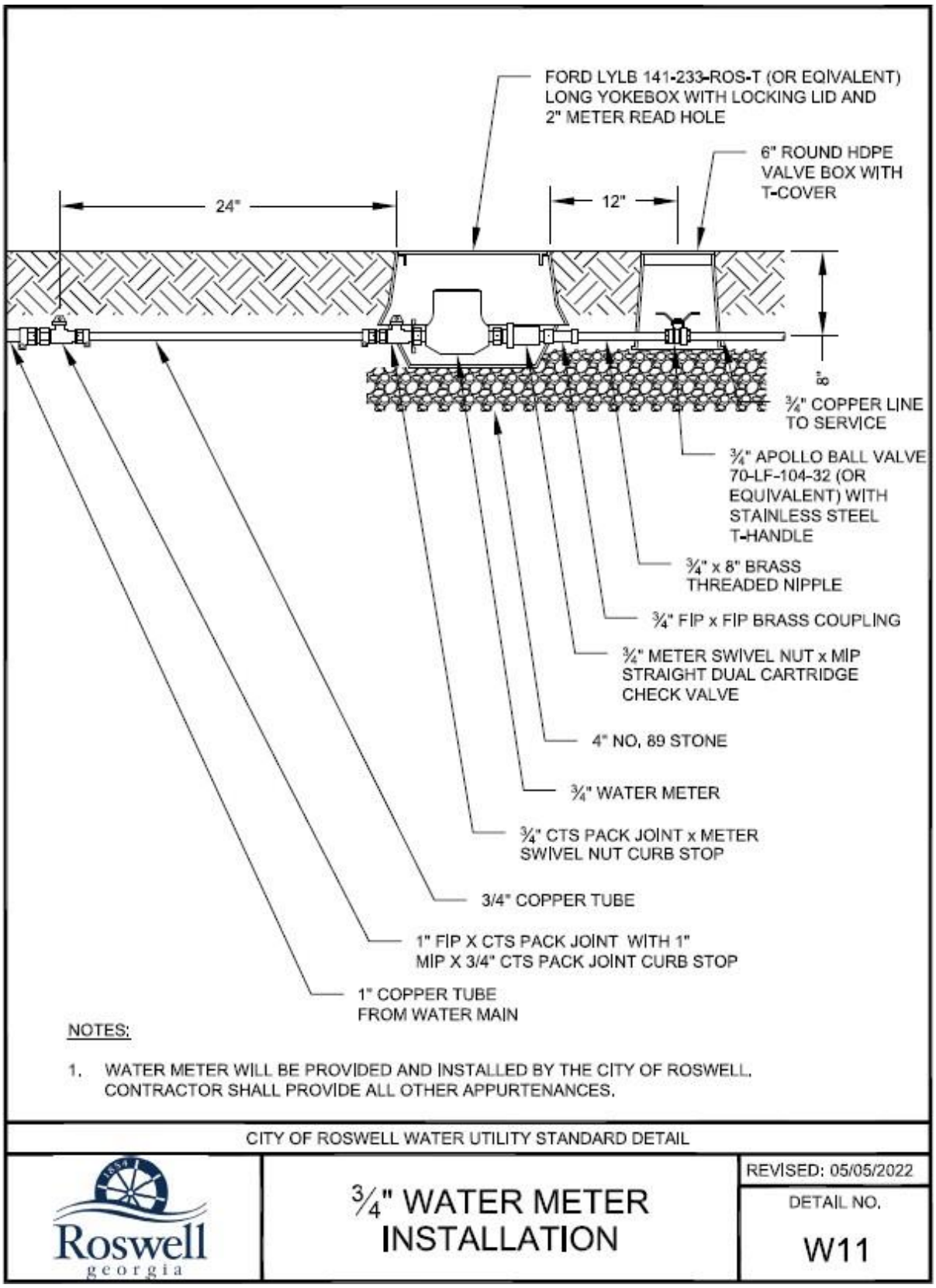
ROSWELL Water Utility
Essential Life Source

CONCRETE THRUST BLOCK DETAIL

REVISED: 12/29/2011

DETAIL NO.

W10



NOTES:

1. WATER METER WILL BE PROVIDED AND INSTALLED BY THE CITY OF ROSWELL. CONTRACTOR SHALL PROVIDE ALL OTHER APPURTENANCES.

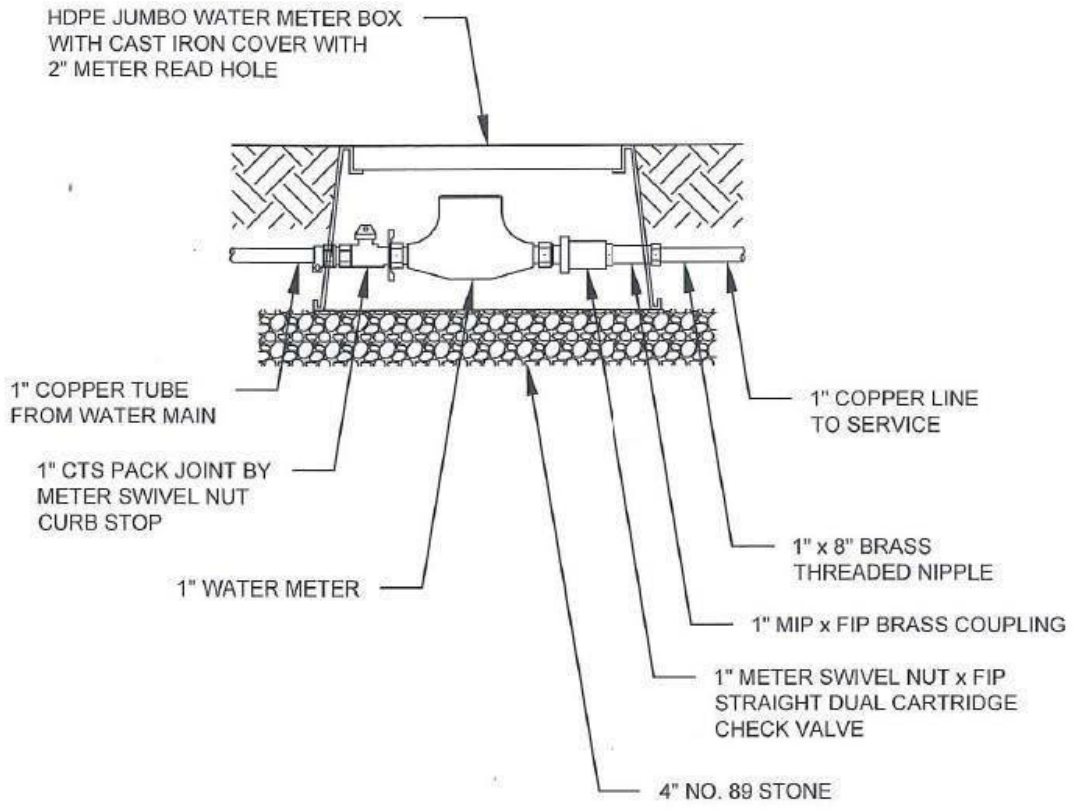
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

Roswell georgia

¾" WATER METER INSTALLATION

REVISED: 05/05/2022

DETAIL NO. W11



NOTES:

1. WATER METER WILL BE PROVIDED AND INSTALLED BY THE CITY OF ROSWELL. CONTRACTOR SHALL PROVIDE ALL OTHER APPURTENANCES.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

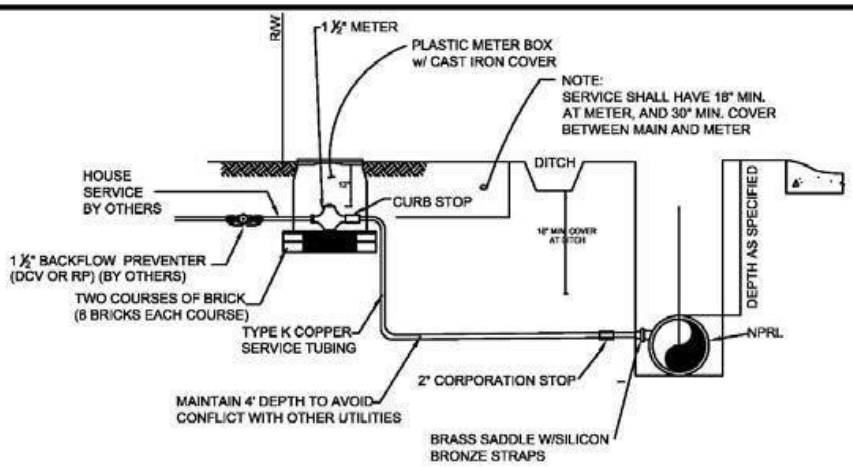
ROSWELL Water Utility
Essential Life Source

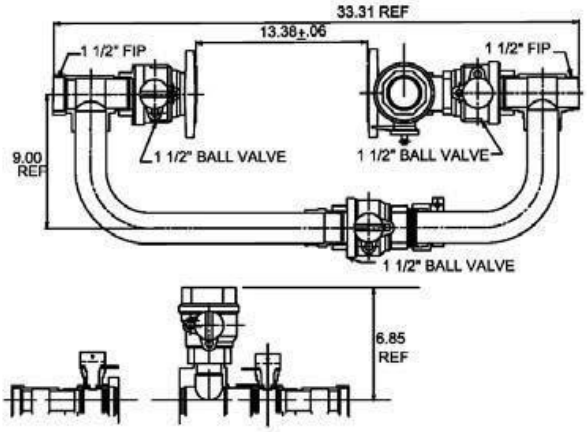
1" WATER METER INSTALLATION

REVISED: 12/29/2011

DETAIL NO.

W12



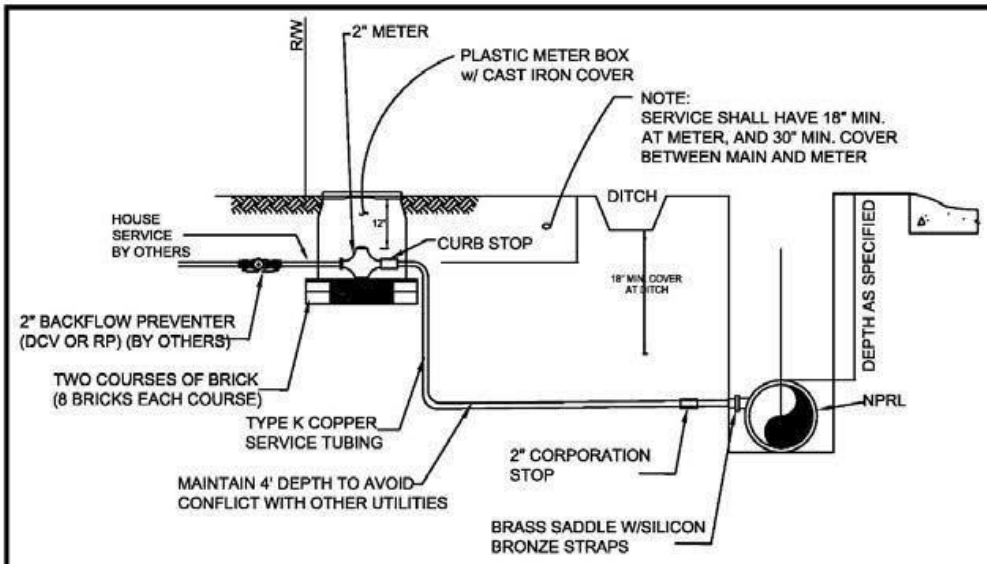


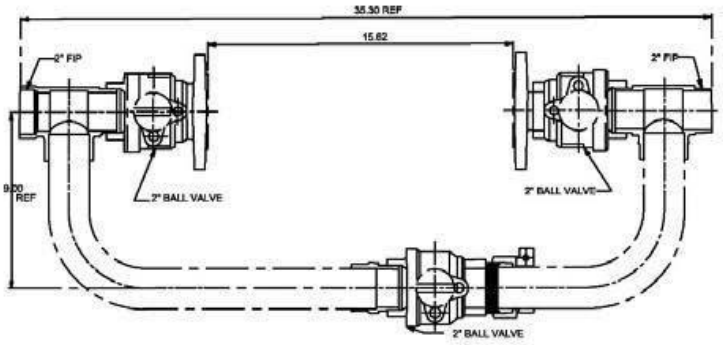
NOTES:

1. SERVICE LINE SHALL BE 1 ½" FROM THE MAIN TO THE METER.
2. USE ALL COMPRESSION GRIP JOINTS/PACK JOINTS.
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE AND/OR REPAIR METER.
4. METER BOX SHALL BE APPROXIMATELY 24" X 36".
5. TYPE K COPPER SERVICE LINE MUST BE CONTINUOUS FROM METER TO MAIN.
6. IF LONG SIDE TAP, THEN 1 ½" SERVICE LINE SHALL BE RUN IN 3" CASING PIPE (MINIMUM) WITH 30" BURY DEPTH.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

Roswell georgia	1 1/2" METER INSTALLATION	REVISED: 8/06/2020 DETAIL NO. W13





NOTES:

1. SERVICE LINE SHALL BE 2" FROM THE MAIN TO THE METER.
2. USE ALL COMPRESSION GRIP JOINTS/PACK JOINTS.
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE AND/OR REPAIR METER.
4. METER BOX SHALL BE APPROXIMATELY 24" X 36".
5. TYPE K COPPER SERVICE LINE MUST BE CONTINUOUS FROM METER TO MAIN.
6. IF LONG SIDE TAP, THEN 2" SERVICE LINE SHALL BE RUN IN 4" CASING PIPE (MINIMUM) WITH 30" BURY DEPTH.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

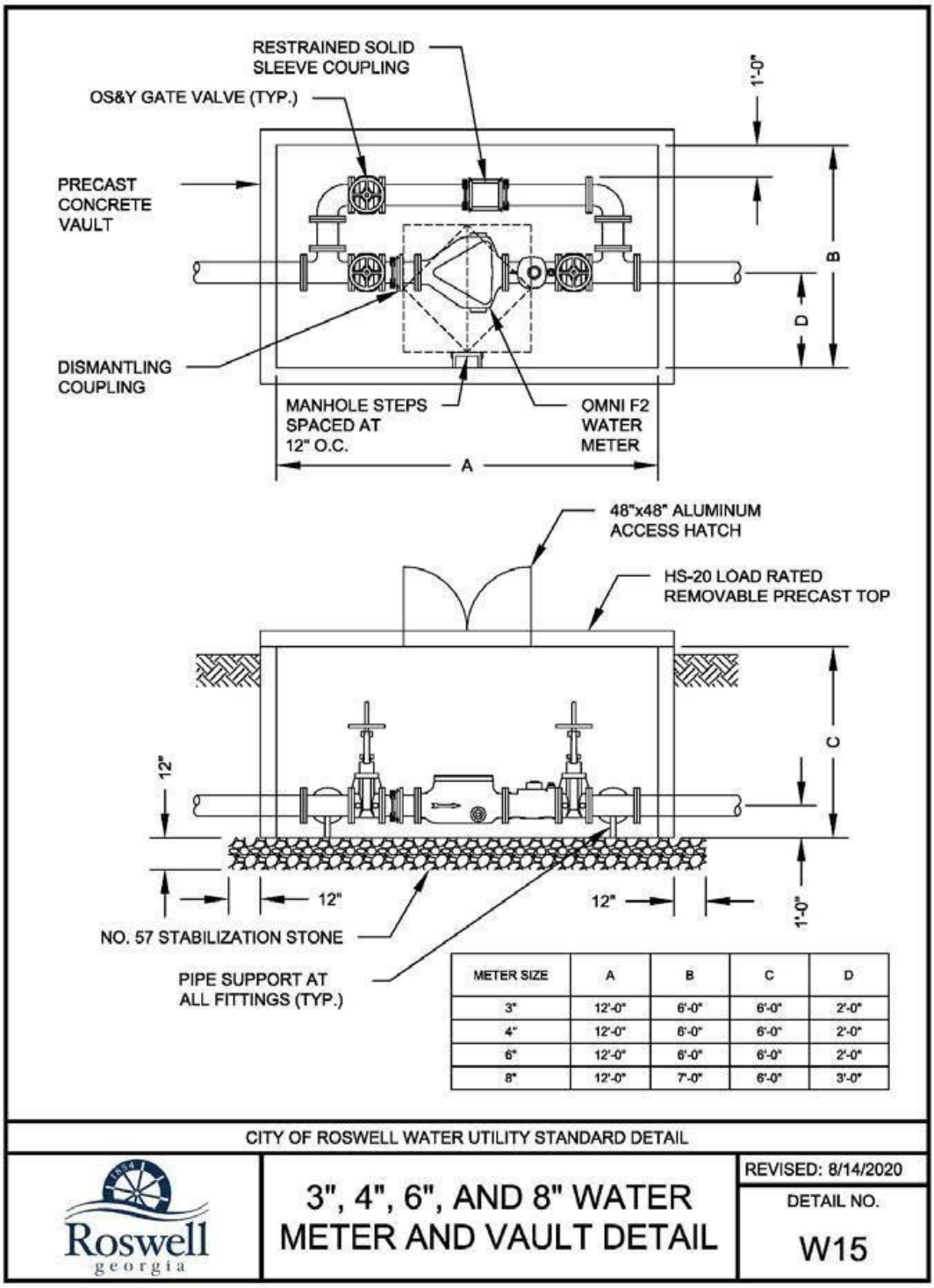
Roswell georgia

2" METER INSTALLATION

REVISED: 8/06/2020

DETAIL NO.

W14



METER SIZE	A	B	C	D
3"	12'-0"	6'-0"	6'-0"	2'-0"
4"	12'-0"	6'-0"	6'-0"	2'-0"
6"	12'-0"	6'-0"	6'-0"	2'-0"
8"	12'-0"	7'-0"	6'-0"	3'-0"

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

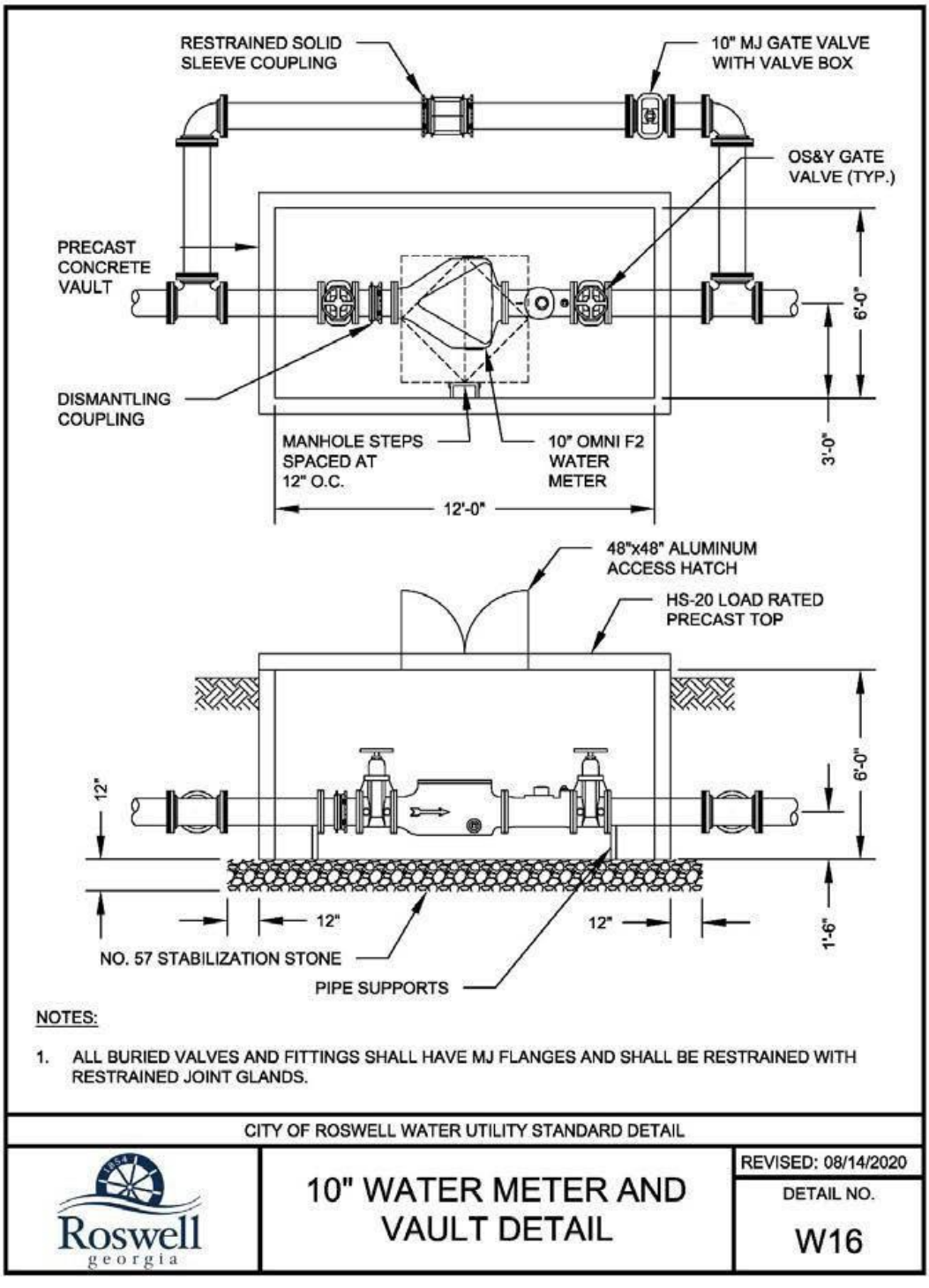
Roswell georgia

3", 4", 6", AND 8" WATER METER AND VAULT DETAIL

REVISED: 8/14/2020

DETAIL NO.

W15



NOTES:

1. ALL BURIED VALVES AND FITTINGS SHALL HAVE MJ FLANGES AND SHALL BE RESTRAINED WITH RESTRAINED JOINT GLANDS.

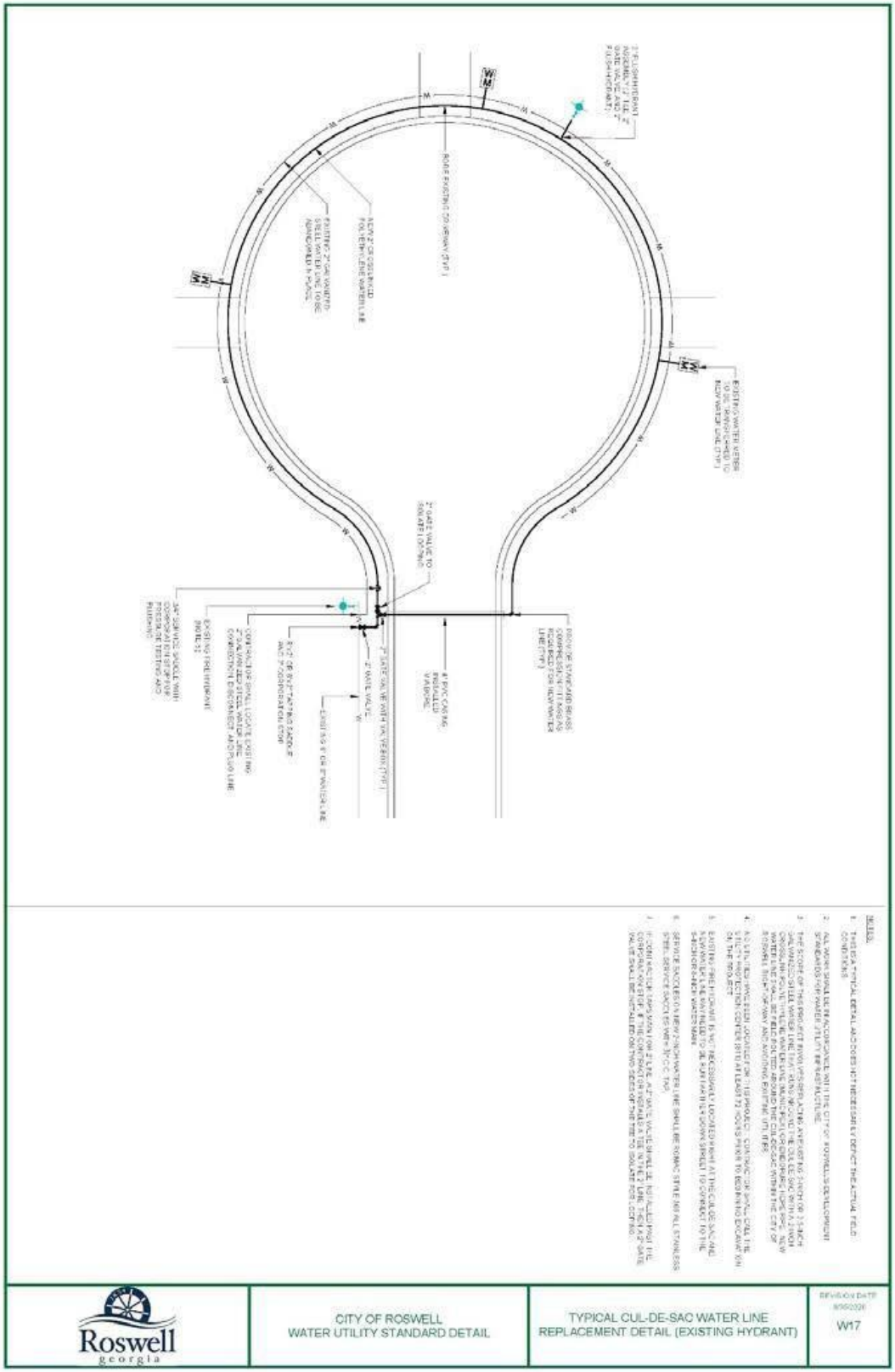
CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

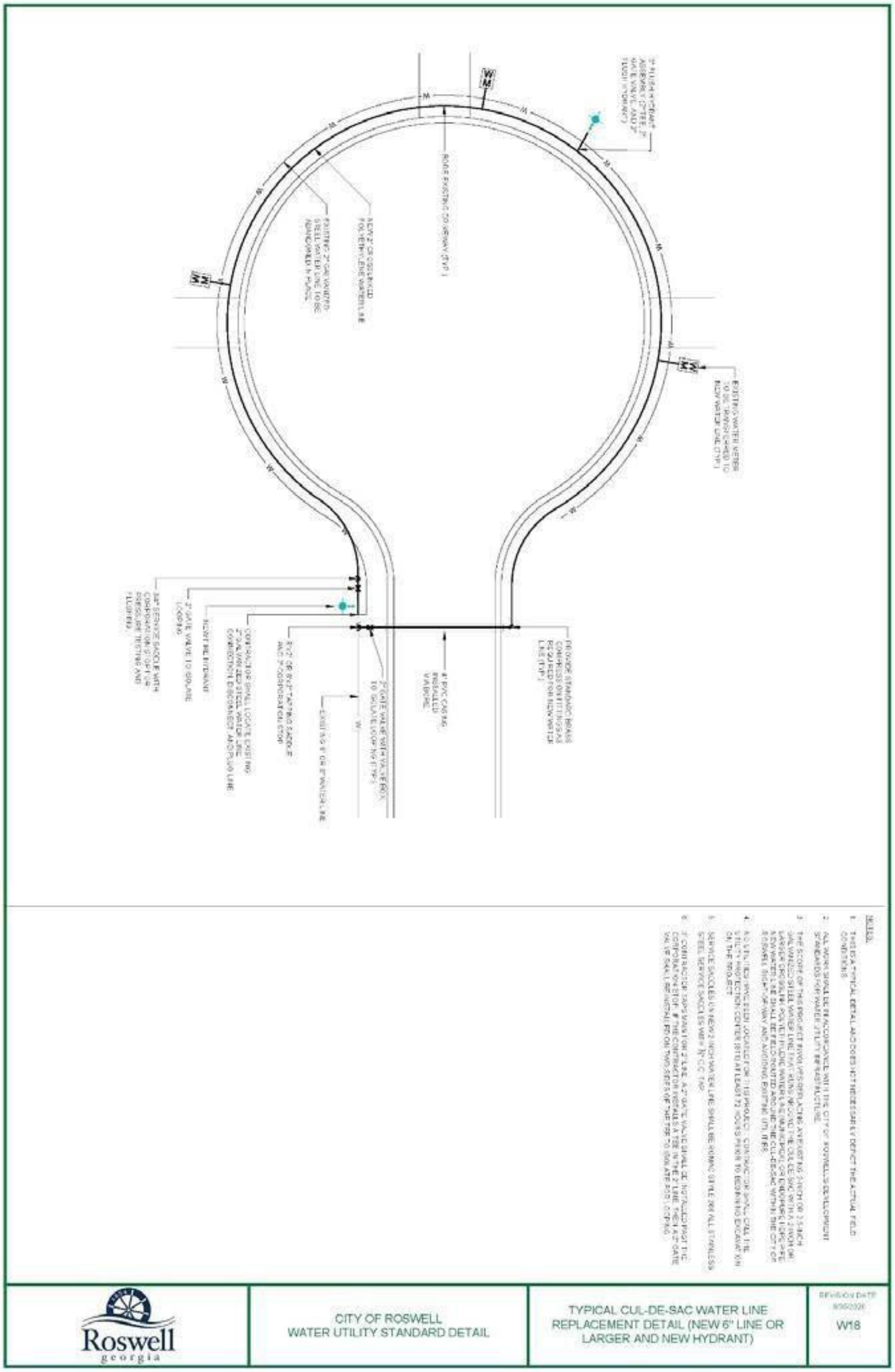
Roswell georgia

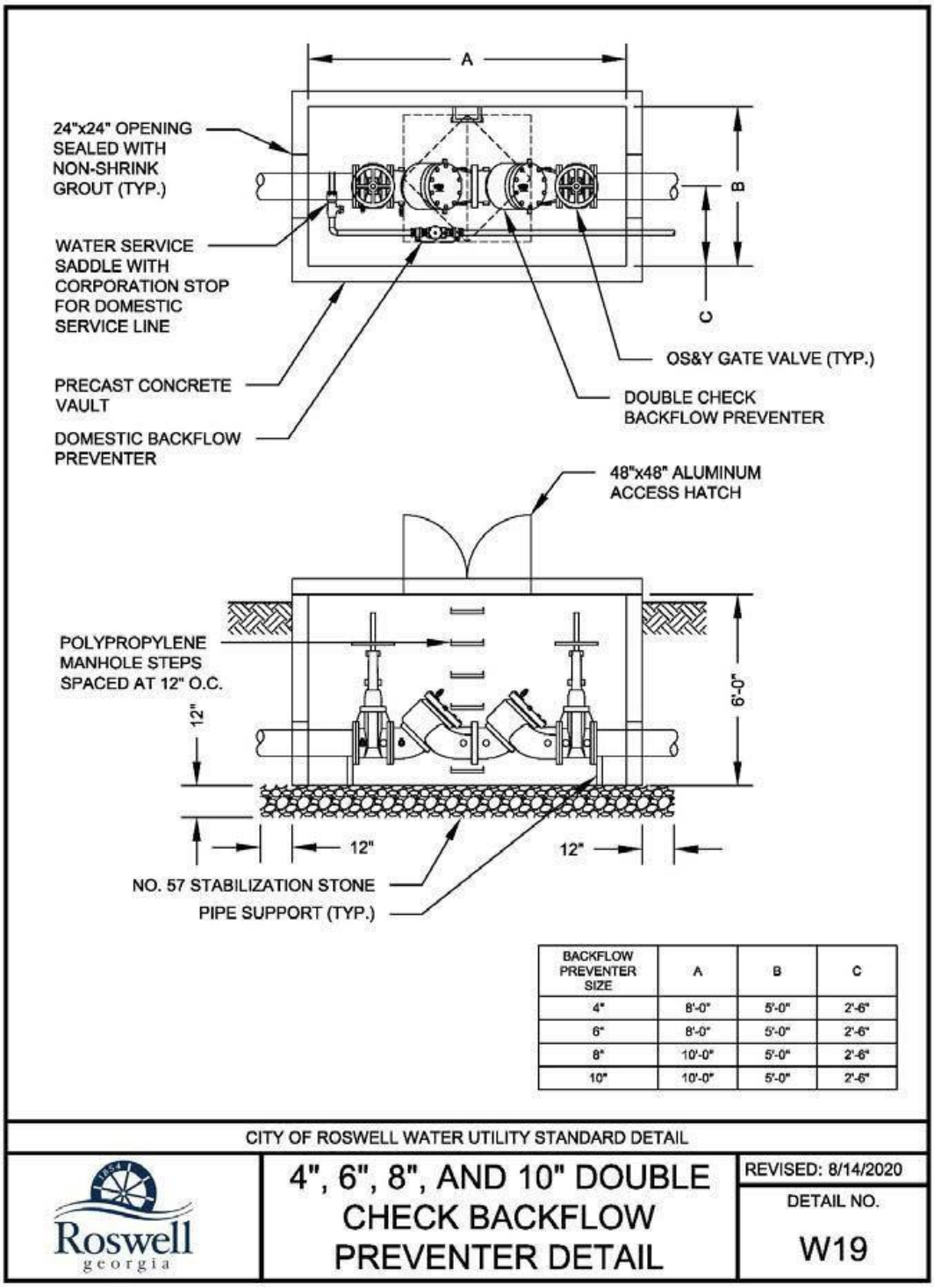
10" WATER METER AND VAULT DETAIL

REVISED: 08/14/2020

DETAIL NO. W16


NOTES:
1. THIS IS A TYPICAL DETAIL AND DOES NOT NECESSARILY DEPICT THE ACTUAL FIELD CONDITIONS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF ROSWELL'S DEVELOPMENT STANDARDS FOR WATER UTILITY IMPROVEMENTS.
3. THE SCOPE OF THIS PROJECT INCLUDES REPLACING EXISTING 2-INCH CAST IRON WATER LINE WITH 8-INCH DUCTILE IRON PIPE, CONNECTING TO EXISTING 8-INCH WATER LINE, INSTALLING NEW FIRE HYDRANT ASSEMBLY, AND ABANDONING EXISTING 2-INCH WATER LINE. ALL NEW WATER LINE SHALL BE FIELD ROUTED AROUND THE CUL-DE-SAC WITHIN THE CITY OF ROSWELL RIGHT-OF-WAY AND AVOIDING EXISTING UTILITIES.
4. ALL UTILITIES SHOWN ARE LOCATED FOR THIS PROJECT. CONTACT GEORGIA811 (811 OR 1-800-282-7411) UTILITY PROTECTION CENTER (PCC) AT LEAST 72 HOURS PRIOR TO BEGINNING EXCAVATION ON THE PROJECT.
5. EXISTING FIRE HYDRANT IS NOT RECOMMENDED FOR RELOCATION AT THIS CUL-DE-SAC AND NEW WATER LINE WAS PLACED TO BE FURTHER FROM INTERSECTION. IF EXISTING HYDRANT IS TO BE RELOCATED, SHALL BE ROUTED TO THE NEAREST EXISTING WATER MAIN.
6. SERVICE SADDLES ON NEW 2-INCH WATER LINE SHALL BE ROMAN STYLE, 360 ALL STAINLESS STEEL SERVICE SADDLES WITH 3/4" CC TAP.
7. IF CONFLICTION EXISTS IN THE ALIGNMENT SHOWN, THE CONTRACTOR SHALL NOTIFY THE CORPORATION STOP, & THE CONTRACTOR SHALL INSTALL TWO (2) 45° BENDS TO ROUTE AROUND THE CONFLICTION. THE NEW VALVE SHALL BE INSTALLED ON THE SIDE OF THE TEE TO ISOLATE FOR CUTTING.
Roswell
georgia
CITY OF ROSWELL
WATER UTILITY STANDARD DETAIL
TYPICAL CUL-DE-SAC WATER LINE
REPLACEMENT DETAIL (EXISTING HYDRANT)
REVISION DATE
8/30/2020
W17


CITY OF ROSWELL
WATER UTILITY STANDARD DETAIL
TYPICAL CUL-DE-SAC WATER LINE
REPLACEMENT DETAIL (NEW 6" LINE OR
LARGER AND NEW HYDRANT)
REVISION DATE
W18



BACKFLOW PREVENTER SIZE	A	B	C
4"	8'-0"	5'-0"	2'-6"
6"	8'-0"	5'-0"	2'-6"
8"	10'-0"	5'-0"	2'-6"
10"	10'-0"	5'-0"	2'-6"

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

Roswell georgia

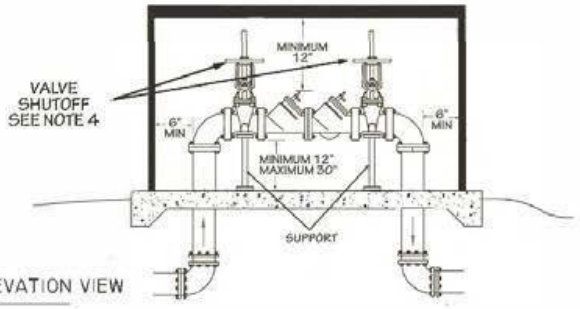
4", 6", 8", AND 10" DOUBLE CHECK BACKFLOW PREVENTER DETAIL

REVISED: 8/14/2020

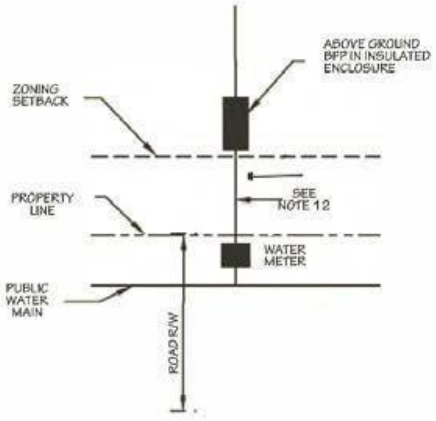
DETAIL NO.

W19

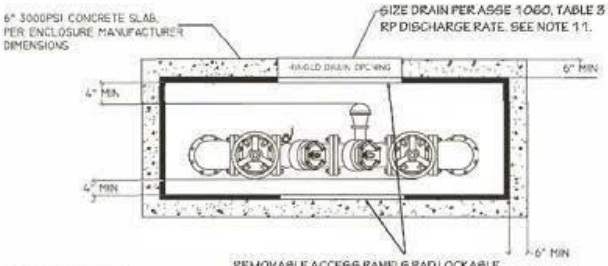
HIGH HAZARD OUTDOOR RPZ BACKFLOW PREVENTER DETAIL



ELEVATION VIEW



TYPICAL LOCATION REQUIREMENT FOR ABOVE GROUND INSTALLATION



PLAN VIEW

1. THE CUSTOMER/OWNER SHALL FURNISH AND HAVE INSTALLED A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER (BFP) ASSEMBLY IN A SIZE TO MATCH THAT OF THE REQUIRED METER AND/OR SERVICE PIPING.

2. 3/4" - 2" ASSEMBLIES SHALL INCLUDE A FULL-PORT BALL VALVE ON THE INLET AND OUTLET SIDES AND A UNION OR SWIVEL COUPLING NUT BETWEEN THE DEVICE AND EACH VALVE. UNIONS OR SWIVEL COUPLING NUTS TO BE INTEGRAL WITH THE DEVICE OR VALVES.

3. OUTDOOR INSTALLATION SHALL INCLUDE 120V LINE IN ACCORDANCE WITH CITY OF ROSWELL ELECTRIC CODE FOR OUTDOOR OPERATION FOR ENCLOSURE HEAT UNIT.

4. 3/4" THROUGH 2" SIZED ASSEMBLIES SHALL INCORPORATE QUARTER-TURN (QT) VALVE SHUTOFFS. 3" THROUGH 10" SIZED ASSEMBLIES SHALL INCORPORATE OS&Y VALVE SHUTOFFS.

5. THE DEVICE SHALL HAVE THREE TEST COCKS IN THE VERTICAL POSITION FITTED WITH BRASS OR PLASTIC THREADED PLUGS. A FOURTH TEST COCK SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE INLET SHUT-OFF VALVE.

6. ALL COMPONENTS OF THE ASSEMBLY SHALL BE EQUAL IN CORROSION RESISTANCE TO BRONZE OR STAINLESS STEEL TO RESIST ELECTROLYSIS.

7. ASSEMBLY SHALL HAVE REPLACEABLE SEATS.

8. ASSEMBLY SHALL BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY IN ACCORDANCE WITH ASSE STANDARD 1013 AND BEARS THE ASSE SEAL, AND CONFORM TO ALL CURRENT REQUIREMENTS OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, FOUNDATION FOR CROSS-CONNECTIONS CONTROL (USC-FCCC).

9. ASSEMBLY SHALL BE INDIVIDUALLY FACTORY TESTED, SHIPPED, AND INSTALLED AS A UNIT

10. ASSEMBLY SHALL NOT BE BURIED IN EARTH OR IN ANY LOCATION SUBJECT TO FLOODING, BUT INSTALLED ABOVE GROUND IN A HEATED AND INSULATED ENCLOSURE MEETING ASSE-1060 GUIDELINES, ADJACENT TO, AND AS CLOSE AS PRACTICAL TO, THE DOWNSTREAM SIDE OF THE METER INSTALLATION AND SHALL BE INSTALLED IN A HORIZONTAL POSITION ONLY. APPROVED ENCLOSURES INCLUDE HOT BOX/ROX, HYDROCOWL; OR APPROVED EQUIVALENT, MODEL NUMBERS DETERMINED BY BFP SIZE.

11. WATER EVACUATION DUE TO RELIEF VALVE DISCHARGE SHALL BE PROVIDED FOR ACCORDING TO ASSE 1060, TABLE 3 GUIDELINES.

12. UNDER NO CONDITION WILL A BYPASS OR ANY INTERVENING CONNECTION BE ALLOWED BETWEEN THE METER INSTALLATION AND RPZ-BFP ASSEMBLY.

13. PERMITS, PLAN APPROVALS, AND INSPECTIONS MUST BE OBTAINED AND SCHEDULED PRIOR TO WORK THRU THE DEPARTMENT OF PUBLIC WORKS, BACKFLOW-PREVENTION SUPERVISOR BY CALLING: (770) 641-3715.

14. ALL RPZ-BFP ASSEMBLIES SHALL BE TESTED AT TIME OF INSTALLATION AND AT LEAST SEMIANNUALLY THEREAFTER. A COPY OF ALL TEST AND MAINTENANCE REPORTS MUST BE SUBMITTED TO: CITY OF ROSWELL, DEPARTMENT OF PUBLIC WORKS, BACKFLOW-PREVENTION UNIT, TEST FORMS AND CERTIFIED TESTER LIST MAY BE OBTAINED THRU THE DEPARTMENT OF PUBLIC WORKS BY CALLING: (770) 641-3715.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

Roswell georgia

HIGH HAZARD OUTDOOR REDUCED PRESSURE ZONE BACKFLOW PREVENTER DETAIL

REVISED: 8/14/2020

DETAIL NO. W20

HIGH HAZARD INDOOR RPZ BACKFLOW PREVENTER DETAIL

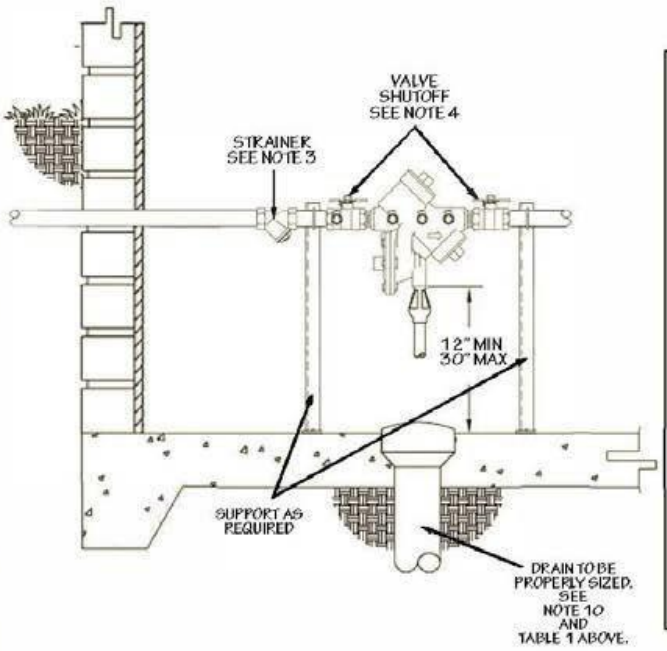
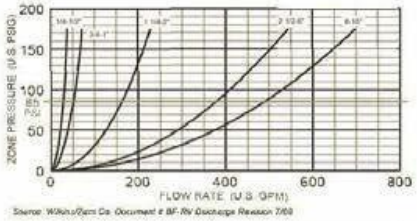


TABLE 1

Relief Valve Discharge Rates

(Worst case condition- if 1st check or relief valve is logged wide open) Backflow Preventers



Source: Wilkins/Zurn Co. Document # BF-RV Discharge Revision 7/09

Indoor Drain Requirements for RPZ Backflow Preventer

Pipe Size	¾"	¾" – 1"	1¼" – 2"	2½" – 6"	8" – 10"
Flow rate @ 25 psig	30 gpm	50 gpm	80 gpm	375 gpm	500 gpm
Minimum Drain Diameter – 6" decline per 100'	3"	4"	6"	8"	9"
Minimum Drain Diameter – 9" decline per 100'	3"	4"	4"	6"	8"
Minimum Drain Diameter – 12" decline per 100'	3"	4"	4"	6"	8"

1 gal (US) per min = 6.30888 x 10⁻⁵ m³/s = 0.227 m³/h = 0.06309 dm³/s (l/s) = 2.228 x 10⁻³ ft³/s = 0.1337 ft³/min = 0.8327 imperial gal (UK)/min

Source: Engineering Toolbox.com

1. THE CUSTOMER/OWNER SHALL FURNISH AND HAVE INSTALLED A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER (BFP) ASSEMBLY IN A SIZE TO MATCH THAT OF THE REQUIRED METER AND/OR SERVICE PIPING.

2. 3/4"- 2" ASSEMBLIES SHALL INCLUDE A FULL-PORT BALL VALVE ON THE INLET AND OUTLET SIDES AND A UNION OR SWIVEL COUPLING NUT BETWEEN THE DEVICE AND EACH VALVE. UNIONS OR SWIVEL COUPLING NUTS TO BE INTEGRAL WITH THE DEVICE OR VALVES.

3. INSIDE INSTALLATION SHALL HAVE A BRONZE STRAINER IMMEDIATELY UPSTREAM OF THE RPZ-BFP ASSEMBLY.

4. 3/4" THROUGH 2" SIZED ASSEMBLIES SHALL INCORPORATE QUARTER-TURN (QT) VALVE SHUTOFFS. 3" THROUGH 10" SIZED ASSEMBLIES SHALL INCORPORATE OS&Y VALVE SHUTOFFS.

5. THE DEVICE SHALL HAVE THREE TEST COCKS IN THE VERTICAL POSITION FITTED WITH BRASS OR PLASTIC THREADED PLUGS. A FOURTH TEST COCK SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE INLET SHUT-OFF VALVE.

6. ALL COMPONENTS OF THE ASSEMBLY SHALL BE EQUAL IN CORROSION RESISTANCE TO BRONZE OR STAINLESS STEEL TO RESIST ELECTROLYSIS.

7. ASSEMBLY SHALL HAVE REPLACEABLE SEATS.

8. ASSEMBLY SHALL BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY IN ACCORDANCE WITH ASSE STANDARD 1013 AND BEAR THE ASSE SEAL, AND CONFORM TO ALL CURRENT REQUIREMENTS OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, FOUNDATION FOR CROSS-CONNECTIONS CONTROL (USC-FCCC).

9. ASSEMBLY SHALL BE INDIVIDUALLY FACTORY TESTED, SHIPPED, AND INSTALLED AS A UNIT

10. ASSEMBLY SHALL NOT BE INSTALLED IN AN AREA PRONED TO FLOODING OR FREEZING AND SHALL BE INSTALLED AS CLOSE AS PRACTICAL TO THE OUTLET SIDE OF THE METER IN THE HORIZONTAL POSITION ABOVE A POSITIVE GRAVITY DRAIN WITH AIR GAP. DRAIN TO BE APPROPRIATELY SIZED TO ALLOW FOR MAXIMUM DISCHARGE OF WATER AS PER TABLE 1 ABOVE.

11. UNDER NO CONDITION WILL A BYPASS OR ANY INTERVENING CONNECTION BE ALLOWED BETWEEN THE METER INSTALLATION AND RPZ-BFP ASSEMBLY.

12. PERMITS, PLAN APPROVALS, AND INSPECTIONS MUST BE OBTAINED AND SCHEDULED PRIOR TO WORK THRU THE DEPARTMENT OF PUBLIC WORKS, BACKFLOW-PREVENTION SUPERVISOR BY CALLING: (770) 641-3715.

13. ALL RPZ-BFP ASSEMBLIES SHALL BE TESTED AT TIME OF INSTALLATION AND AT LEAST SEMIANNUALLY THEREAFTER. A COPY OF ALL TEST AND MAINTENANCE REPORTS MUST BE SUBMITTED TO: CITY OF ROSWELL, DEPARTMENT OF PUBLIC WORKS, BACKFLOW-PREVENTION UNIT. TEST FORMS AND CERTIFIED TESTER LIST MAY BE OBTAINED THRU THE DEPARTMENT OF PUBLIC WORKS BY CALLING: (770) 641-3715.

CITY OF ROSWELL WATER UTILITY STANDARD DETAIL

Roswell georgia

HIGH HAZARD INDOOR REDUCED PRESSURE ZONE BACKFLOW PREVENTER DETAIL

REVISED: 8/14/2020

DETAIL NO. W21

Detail: W22

CITY OF ROSWELL
DEPARTMENT OF PUBLIC WORKS
BACKFLOW – PREVENTION
"A community – environmental
Health protection program"

MINIMUM CONTAINMENT PROTECTION REQUIREMENT
COMMERCIAL NEW CONSTURCTION and RETROFIT INSTALLATIONS
(Non – hazardous)

SERVICE METER SIZES: ¾ inch thru 2 inch

DOUBLE CHECK VALVE (DCV) BACKFLOW PREVENTER (BFP)

SPECIFICATIONS: The CUSTOMER/OWNER shall furnish and have installed a **Double Check Valve (DCV) Backflow Preventer (BFP) Assembly** in a size to match that of the required service piping. The DCV-BFP assembly shall include a full-port ball valve on the inlet and outlet sides and a union or swivel coupling nut between the device and each valve. Unions or swivel coupling nuts to be integral with the device or valves. The device shall have three ball valve test cocks in the vertical position fitted with brass or plastic threaded plugs. A fourth test cock shall be provided on the up-stream side of the inlet shut-off valve. All components of the assembly, including ball valve handles and assembly bolts, shall be equal in corrosion resistance to bronze or stainless steel to, resist electrolysis. Access to both checking devices shall be by top and/or side entry for maintenance and repair of all interior parts and shall have replaceable seats.

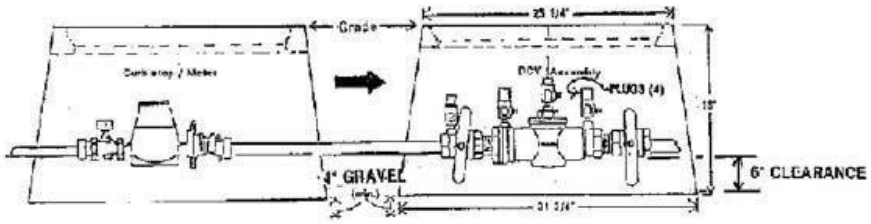
NOTE: The DCV-BFP assembly shall be certified by a nationally recognized testing laboratory in accordance with ASSE Standard 1015 and bear the ASSE seal. The DCV-BFP assembly shall have current approval from the University of Southern California Foundation for Cross-Connection control (USC-FCCC). Assembly to be individually factory tested, shipped, and installed as a unit.

APPROVED ASSEMBLIES: See reverse side for all approved assemblies.
(OVER>>>)

INSTALLATION INSTRUCTIONS: The DCV-BFP assembly shall not be buried in earth but installed in a Utility Box adjacent to, or as close as practical to, the outlet side of the meter installation. Under No condition will any connection be allowed between the service meter and a backflow preventer used for system containment.

APPROVED UTILITY BOXES: Carson Industries Model No.: 1730D-P12L
(or approved Equal) CDR Systems Corp. Model No.: A12-2436-18

TYPICAL UTILITY BOX INSTALLATION



NOTE: For final approval assembly must be centered in enclosure.
SEE THERMAL EXPANSION WARNING and DEVICE TEST PROCEDURES

Detail: W22 Continued

APPROVED DCV-BFP ASSEMBLIES

AMES	-	N/A – sizes not available
BUCKENER	-	N/A – unions not available
CONBRACO	-	¾" 40-104-A4T, 1" 401-05-A4T, 1- ½" 401-07-A4T 2" 401-08-A4T
CLA-VAL	-	N/A – unions not available
FEBCO	-	N/A – replaceable seats not available
FLOWMATIC	-	¾" B9100U, 1" B9101U
HERSEY	-	FDC – w/unions (all sizes)
WATTS	-	U-007QT-T-Z3 (all sizes)
WILKINS	-	950XLU (all sizes)

These assemblies and **only these assemblies have been approved as of 2/09/05.** For approval on any additional assemblies contact the phone number listed below (1-1/4" size assemblies are not allowed to be installed).

*** **SPECIAL CAUTION*****

THERMAL EXPANSION: When water is heated and stored in a consumer's water system, or a branch of the system, that has been closed by the installation of a backflow-prevention assembly, or any other checking device; an auxiliary relief valve, or expansion chamber, shall be installed to limit Thermal Expansion of the water being heated to not more than 80 psi static (no-flow) pressure at any fixture on the system.

IMPORTANT

ASSEMBLY TESTING: All Double Check Valve (DCV) Assemblies shall be tested at time of installation, and at least **ANNUALLY** there-after, by an approved Certified Tester.

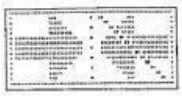
A copy of all Test and Maintenance Reports must be submitted to:

City of Roswell
Department of Public Works
Backflow-Prevention Unit
38 Hill Street, Suite 235
Roswell, Georgia 30075

Test forms and Certified Tester List may be obtained from:

Department of Public Works
BACKFLOW-PREVENTION UNIT
Phone – (770) 641-3715

Detail: W23



CITY OF ROSWELL
DEPARTMENT OF PUBLIC WORKS
BACKFLOW – PREVENTION
"A community environmental
Health protection program

MAXIMUM PROTECTION REQUIREMENT
COMMERCIAL/ESIDENTIAL NEW CONSTRUCTION AND RETROFIT INSTALLATION
(HAZARDOUS)

SERVICE METER SIZES: ¾-INCH THROUGH 2 INCH

REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER (BFP)

SPECIFICATIONS: The **CUSTOMER/OWNER** shall furnish and have installed a **Reduced Pressure Zone (RPZ) Backflow Preventer (BFP) Assembly** in a size to match that of the required meter and/or service piping. The RPZ-BFP assembly shall include a full-port ball valve on the inlet and outlet sides and a union or swivel coupling nut between the device and each valve. Unions or swivel coupling nuts to be integral with the devices or valves. The device shall have three ball valve test cocks in the vertical position fitted with **brass** or **plastic threaded plugs.** A fourth test cock shall be provided on the upstream side of the inlet shut-off valve. **Any device installed inside (isolation/containment purposes) shall** have a **bronze strainer** immediately **upstream of the RPZ-BFP assembly.** All interior/exterior components of the assembly shall be equal in corrosion resistance to bronze or stainless steel, to resist electrolysis. Access to both checking devices shall be made readily accessible (no more than 4'0" from centerline of device to top of grade/floor. **All** assemblies shall have replaceable seats and accessible top/side entry.

NOTE: The RPZ-BFP assembly shall be certified by a nationally recognized testing laboratory in accordance with ASSE Standard 1013 and the bear the ASSE seal. The RPZ-BFP assembly shall have current approval from the University of Southern California Foundation for Cross-connection Control (USC-FCCC). The RPZ-BFP Assembly shall be individually factory tested, shipped, and installed as a unit.

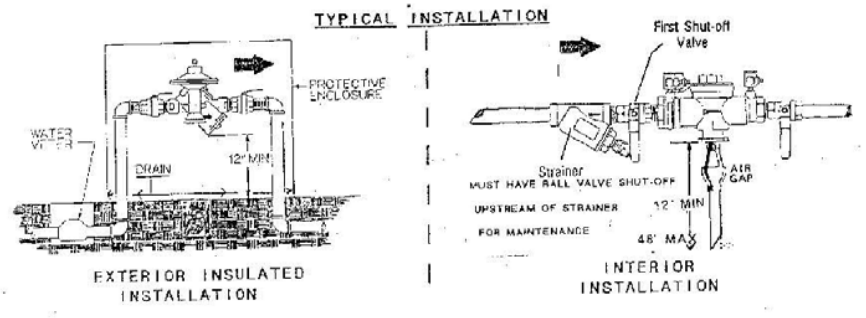
INSTALLATIONS INSTRUCTIONS: The RPZ-BFP assembly shall not be buried in earth, or in any location subject to flooding, but installed in an Insulated Enclosure above ground and adjacent to, or as close as practical to, the outlet side of the meter installed and shall be installed in a horizontal position only. Where relief valve discharge could cause water damage (**isolation/containment installation)** an approved drain with air gap attached to the RPZ-BFP device, shall be installed and piped to a positive gravity drain. Exterior RPZ-BFP assembly installations shall be housed in an insulated and heated enclosure to prevent freezing.
NOTE: Under **No** condition will any connection be allowed between the service meter and a RPZ-BFP assembly used for system containment.

APPROVED INSULATED ENCLOSURES: Hot Box/Rox or Hydrocowl. Model number to be determined by BFP size.
(OR APPROVED EQUAL)

********IMPORTANT: See Instructions and Illustration. Over>>>>>>>**

See THERMAL EXPANSION WARNING AND DEVICE TEST PROCEDURES – Over>>>

Detail: W23 Continued



APPROVED ASSEMBLIES: Hersey FRP II w/unions & "T" handles: Watts U-009QT-Z3: Wilkins 975 XLUS: Flowmatic B9200: Conbraco **40-200**-02 series;

NOTE: 1-1/4" assemblies are not allowed to be installed.

NOTE: For final approval assembly must be centered in enclosure.

SPECIAL **CAUTION**

THERMAL EXPANSION: When water is heated and stored in a consumer's water system, or a branch of the system, that has been closed by the installation of a backflow preventer or any other checking device; an auxiliary relief valve, or expansion chamber, shall be installed to limit Thermal Expansion of the water being to not than 80 psi static (no flow) pressure at any fixture on the system.

****IMPORTANT*****

ASSEMBLY TESTING: All Reduced Pressure Zone (RPZ-BFP) assemblies shall be tested at time of installation, and at least SEMIANNUALLY. THEREAFTER, by an approved Certified Tester.

A copy of all Test and Maintenance Reports must be submitted to:

City of Roswell
Department of Public Works
Backflow-Prevention Unit
38 Hill Street, Suite 235
Roswell, Georgia 30075

Test Forms and Certified Tester List may be obtained from:

Department of Public Works
BACKFLOW-PREVENTION UNIT
Phone: 770-641-3715

Detail: W24

CITY OF ROSWELL
DEPARTMENT OF PUBLIC WORKS
BACKFLOW – PREVENTION
"A community – environmental
Health protection program"

MINIMUM CONTAINMENT PROTECTION REQUIREMENT
NEW CONSTRUCTION AND RETROFIT INSTALLATION
(Non-hazardous)

SERVICE METER SIZES: 3- inch and larger

DOUBLE CHECK VALVE (DCV) BACKFLOW PREVENTER (BFP)

SPECIFICATION: The CUSTOMER/OWNER shall furnish and have installed a **Double Check Valve (DCV) Backflow Preventer (BFP) Assembly** in a size to match that of the required service piping. The DCV-BFP assembly shall be provided with a flanged resilient-seat OS&Y gate valve near the inlet and outlet sides of the device. The DCV device shall have three brass ball valve test cocks fitted with **brass or plastic threaded plugs.** A fourth test cock shall be provided on the **upstream** side of the inlet shut-off valve. The DCV device and shut-off valve bodies shall be equivalent to cast iron, coated inside and out, with **FDA-approved fused epoxy coating;** and assembled with bolts that are resistant to electrolysis. All DCV devices interior/exterior components of the assembly shall be of materials equal in corrosion resistance to bronze and/or stainless steel, to resist electrolysis. Access to both checking devices shall be by top-entry only, for maintenance and repair of all interior parts, and shall have replaceable seats.

NOTE: The DCV-BFP assembly shall be certified by a nationally recognized testing laboratory in accordance with ASSE Standard 1015 and bears the AASSE seal. The DCV-BFP assembly shall have current approval from the University of Southern California, Foundation for Cross-Connections Control (USC-FCCC). The DCV-BFP **Assembly** shall be individually factory **tested, shipped**, and **installed as a unit.**

INSTALLATIONS INSTRUCTIONS: The DCV-BFP assembly shall not be buried in earth but installed below ground in a Concrete Vault adjacent to, and as close as practical to, the downstream side of the meter installation; or with prior approval in the meter vault.
NOTE: Under **NO** condition will a bypass or any intervening connection be allowed between the meter installation and the DCV-BFP assembly.

ASSEMBLY TESTING: A DCV-BFP assemblies shall be tested at time of installation and at least ANNUALLY thereafter. A copy of all test and maintenance reports must be submitted to:

City of Roswell
DEPARTMENT OF PUBLIC WORKS
Backflow-Prevention Unit

Test forms and Certified Tester list may be obtained through the Department of Public Works by calling (770)641-3715.

******IMPORTANT: See instructions and Illustration. Over>>>>>>**

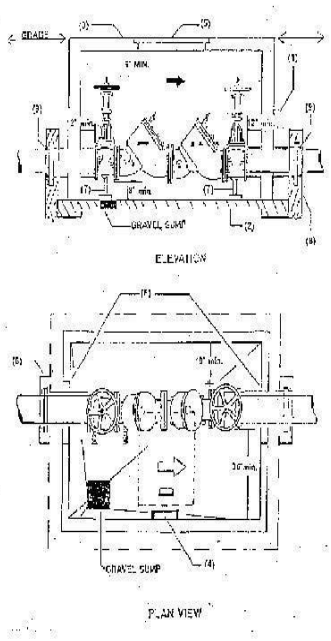
Detail: W24 Continued

APPROVED ASSEMBLIES: AMES – 2000DCA / 2000SE (8"), **HERSEY** - No. 2,
CONBRACO 40-100 (3") / 10A (4") / 10C (6") / 10E (8") / 10G (10")-03
FEBCO - 805YD-OS&Y-RW, WATTS - 007 / 709 / 770 –OS&Y-RW-A,
WILKINS – 950-OS&Y

These assemblies and **only these assemblies have been approved** as of 08/31/95. For approval of any additional assemblies contact the phone number listed below (2-1/2" size assemblies are not allowed to be installed).

PERMITS, PLAN APPROVALS, and **INSPECTIONS: MUST** be obtained and scheduled prior to work through the Depart of Public Works, Backflow-Prevention Unit by calling: **(770) 641-3715.**

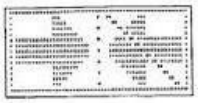
VAULT SPECIFICATIONS
(Minimum clearance dimensions)



TYPICAL VAULT INSTALLATION

(1) Vault shall be pre-cast reinforced concrete.
(2) Vault bottom 4" poured concrete slab, sloped to 4" X 4" gravel sump. Slab to be poured on 4" of No. 57 compacted stone.
(3) Vault top shall be reinforced concrete with 36" X 36" access opening, offset to ladder side.
(4) Access ladder doweled to wall and centered at access opening.
(5) Hatch cover: Bilco-aluminum single model #J-4AL; or equal.
(6) Vault inlet/outlet pipe openings to be sealed with grout or mortar, pipe must not support vault.
(7) BFP assembly to be supported at three (3) points with pipe stand.
(8) Thrust blocking (as required) and in accordance with CRDPW Dwg. No. A-1.
(9) Thrust tie road shall be bitumastic coated.
(10) All pipe and pipe fittings shall be ductile iron.
(11) Vault to be installed as close as practical to the property line of the premises and a Right of entry form legally executed and Forwarded to the BFP Coordinator.
(12) The customer/owner shall furnish and have installed all materials.

Detail: W25



CITY OF ROSWELL
DEPARTMENT OF PUBLIC WORKS
BACKFLOW-PREVENTION
"A community-environmental
Health protection program"

MINIMUM CONTAINMENT PROTECTION REQUIREMENT
NEW CONSTRUCTION and RETROFIT INSTALLATION
(Non-hazardous)

FIRE LINE (DEDICATED) SERVICE CONNECTION

DOUBLE DETECTOR CHECK (DDC) BACKFLOW PREVENTER (BFP)

SPECIFICATIONS: The **CUSTOMER/OWNER** shall furnish and have installed a **Double Detector Check (DDC) Backflow Preventer (BFP) Assembly** in a size to match that of the required fire line service connection. The DDC-BFP assembly shall be provided with a flanged **resilient-seat OS&Y gate** valve near the inlet and outlet sides of the device. The DDC device shall be provided with three brass ball valve test cocks fitted with **brass or plastic threaded plugs.** A fourth test cock must be provided on the **up-stream** side of the inlet shut-off valve. The device and shut-off valve bodies shall be equivalent to cast iron, coated inside and out with **FDA-approved fused epoxy coating;** assembled with bolts that are resistant to electrolysis. All DCV device interior components are to be of materials equal to bronze and/or stainless steel, check valves shall have replaceable seats, and be accessible by top-entry for maintenance and repair. The detector bypass line on the DDC-BFP assembly shall be of 3/4 inch copper pipe and have a bronze detector meter and a 3/4 inch DCV-BFP complete with unions and shut-off valves.
NOTE: The DDC-BFP assembly shall be classified or listed by the Underwriters Laboratories and Factory Mutual Insurance. The DDC-BFP assembly shall have approvals of and conform to all current requirements of the University of Southern California, Foundation for Cross-Connection Control (USC-FCCC). The DDC-BFP **assembly** is to be individually factory **tested, shipped, and installed as a unit.**

INSTALLATIONS INSTRUCTIONS: The DDC-BFP assembly shall not be buried in earth but installed below ground as in a concrete vault, and as close as practical to the property line of premises.
NOTE:. Under **NO** condition will any connection be allowed on the system other than for fire fighting or fire protection purposes.
DEVICE TESTING: All DDC-BFP Assemblies shall be tested at time of installation and annually thereafter. A copy of all test and maintenance reports must be submitted to:

City of Roswell
DEPARTMENT of PUBLIC WORKS
Backflow-Prevention section

Test forms and Certified List may be obtained through the
Department of Public Works by calling:

770-641-3715

IMPORTANT: See instructions and illustration. Over >>>>

Detail: W25 Continued

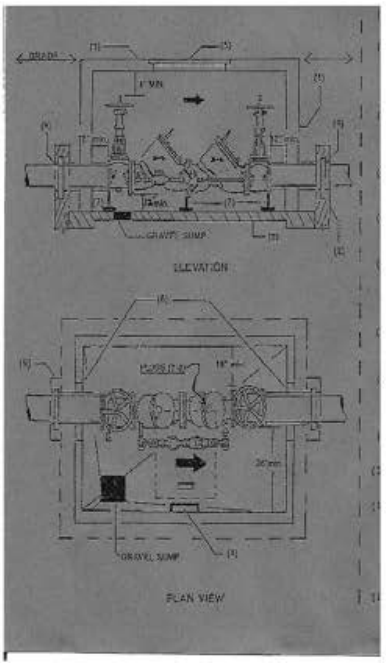
DDC-BFP Assembly – Fire Service Connection

APPROVED DEVICES:

AMES	- Model # 3000-DCDA
FEBCO	- Model # 806YD-DCDA
HERSEY	- Model # DDC II,
WATTS	- Model # 709DDC-OSY-GPM-RW-A,
WILKINS	- Model # 950-DAR; or approved equal

PERMITS, PLAN APPROVALS and INSPECTIONS: MUST be obtained and scheduled prior to work through the Department of Public Works, Backflow-Prevention Coordinator by Calling: (770) 641-3715.

TYPICAL VAULT INSTALLATION
(Minimum clearance dimensions.)



VAULT SPECIFICATIONS

(1) Vault shall be pre-cast reinforced concrete.
(2) Vault bottom 4" poured concrete slab, sloped to a 4" X 4" gravel sump. Slab to be on 4" of No. 57 compacted stone.
(3) Vault top shall be reinforced concrete with 36" X 36" access opening, offset to ladder side.
(4) Access ladder doweled to wall and centered at access opening.
(5) Hatch cover: Bilco-aluminum single model #J-4AL; or equal.
(6) Vault inlet/outlet pipe openings to be sealed with grout or mortar, pipe must not support vault.
(7) BFP assembly to be supported at three (3) points with pipe stand.
(8) Thrust blocking (as required) and in accordance With Dwg. No.A-1.
(9) Thrust tie roads shall be bitumastic coated.
(10) All pipe and pipe fittings shall be ductile iron.
(11) Vault to be installed as close as practical to the Property line of the premises and Right of Entry form legally executed and forwarded to the BFP Coordinator.
(12) The Customer/Owner shall furnish and have installed all materials.