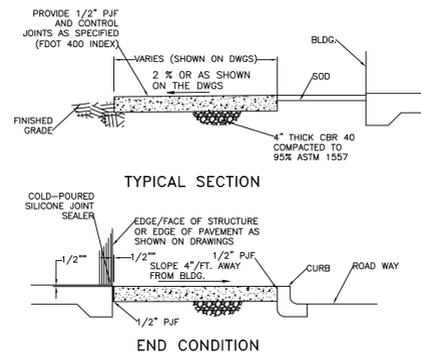


**WATER SYSTEM NOTES:**

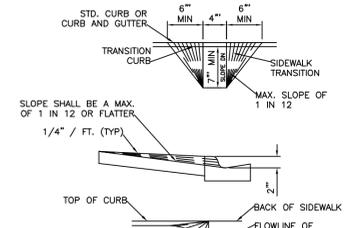
- Ductile iron water main pipe shall conform to the requirements of A.N.S.I./A.W.W.A. C-151/A 21.51-02 and lined and coated per A.N.S.I./A.W.W.A. C-104/A-214-95. 20" and smaller pipe shall be pressure class 350; 24" and larger, pipe shall be pressure class 250.
- All P.V.C. mains shall be series 1120, class 150 (DR 18) pressure pipe, conforming to A.N.S.I./A.W.W.A. C-900-97, or latest revision, and shall have push on joints, and iron pipe O.D.
- Fittings shall be ductile iron meeting A.N.S.I./A.W.W.A. C153/21.00 and shall be coated with 6 to 8 mil. Thickness coal tar epoxy conforming to the requirements of A.N.S.I./A.W.W.A. C550-01 and C116/A21.98.
- Tapping valves shall be Mueller H667 or approved equal.
- Gate valves 3" or less shall be NIBCO T-133 OR T-136 with malleable hand wheels. No substitutions allowed.
- Tapping sleeves shall be Mueller H615 or approved equal.
- Restrained joint pipe shall be used for all bends, tees, crosses, plugs, and fire hydrants. Thrust blocks shall not be allowed.
- All valves shall be furnished with extension type cast iron valve boxes of proper length for pipe depth. All boxes shall conform with A.W.W.A. specifications with a shaft of no less than 5 inches and have the word "WATER" cast in the cover. Base of valve box shall have a flared section to fit over stuffing box of valve.
- Gate valves 4" or larger shall meet A.W.W.A. C-500-02 specification (latest revision). Valves shall be Mueller Co. or approved equal.
- Fire hydrants shall be breakaway Mueller Co. Centurion model #A-423, or Metropolitan 250 Eddy Compression type F.H. or approved equal.
- Fire hydrants shall be installed with the center of the nozzle 18" above finished grade.
- All meter service connections shall be bronze from plug valve. No gate valves are to be used (2" or less).
- The City of Fort Lauderdale Public Services Department will take all bacteriological tests, to be scheduled via inspector. If otherwise specified in contract detailed specification and/or authorized by the engineer of record, bacteriological tests may be performed by a certified environmental testing laboratory.
- All connections to existing mains shall be made under the direction of the City of Fort Lauderdale.
- Pipe shall be tested under constant pressure of 150 P.S.I. for a minimum test period of 2 hours and shall not exceed the leakage requirements as per A.N.S.I./A.W.W.A. specifications of C-600-99 leakage formula:  
 $Q = (SD \sqrt{P}) / 133,200$   
 Q = ALLOWABLE LEAKAGE, IN GALLONS PER HOUR  
 D = DIAMETER OF THE PIPE TESTED, IN INCHES.  
 S = TOTAL LENGTH OF PIPE TESTED, IN FEET.  
 P = AVERAGE TEST PRESSURE, IN POUNDS PER SQUARE INCH.
- The minimum depth of cover over water mains is 36" except where shown differently on plans.
- Disinfection of mains shall comply with A.N.S.I./A.W.W.A. C-651-02 standard. Bacteriological sampling points shall be designated on the engineering plans. Minimum one sampling point at each end. Maximum space between sampling points is 1500 feet.
- Dead-end water mains 6" or larger shall terminate with a fire hydrant.
- There shall be no connection to an existing water main until pressure and bacteriological tests have been conducted and the results are approved and accepted by the City of Fort Lauderdale.
- All service lines shall be copper tubing, type "K", or plasticized polyethylene 340B, A.S.T.M. D-2737, S.D.R. 9, 200 P.S.I.
- Sanitary sewers and force mains should cross under water mains whenever possible. Sanitary sewers and force mains crossing water mains shall be laid to provide a minimum vertical distance of 18" between the invert of the upper pipe and the crown of the lower pipe whenever possible.
- Where sanitary sewer force mains must cross a water main with less than 18" vertical separation, both the sewer and water main shall be constructed of ductile iron pipe (DIP) at the crossing. Sufficient lengths of DIP must be used to provide a minimum separation of 10 feet between any two joints. All joints on the water main within 20 feet of the crossing must be mechanically restrained. A minimum vertical clearance of 6" must be maintained at all crossings.
- A minimum 10 foot horizontal separation shall be maintained between any type of sewer and water main in parallel installations whenever possible.

- The preferred separation between water mains and sewer mains shall be 10 feet. In cases where it is not possible to maintain a 6 foot horizontal separation between the water mains and sewer mains, one of the following conditions must be met. The minimum separation between water and sewer mains shall be 3 feet:
  - The water main must be laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer or force main at such elevation that the bottom of the water main is at least 18 inches above the top of the sewer.
  - The sewer or force main is encased in concrete or a watertight carrier pipe.
  - Both the sewer and the water main are constructed of pressure pipe tested to 150 p.s.i.
- Where it is not possible to maintain a vertical distance of 18" in parallel installations, the water main shall be constructed of DIP and the sanitary sewer or force main shall be constructed of DIP, with a minimum vertical clearance of 6". The water main should be above the sewer. Joints on the water main shall be located as far apart as possible from the joints on the sewer or force main (staggered joints).
- All crossings shall be arranged so that the sewer pipe joints and the water main pipe joints are equidistant from the point of crossing (pipes centered on the crossing).
- Where a new pipe conflicts with an existing pipe with less than 18" vertical clearance, the new pipe shall be arranged to meet the crossing requirements above.
- All DIP shall have adequate protective measures against corrosion and it shall be used only if as determined by the design engineer, based on field conditions.
- Retainer glands/mechanical joint restraint shall be used only if authorized by the Engineer and shall conform to A.N.S.I./A.W.W.A. standards C 111/A-21.11-00, or latest revision.
- All glands shall be manufactured from ductile iron as listed by underwriter's laboratory for 250 P.S.I. minimum water pressure rating.
- Glands shall be CLOW Corporation model F-105B, standard fire protection equipment company, or approved equal.
- Service saddles shall be ductile iron with stainless steel straps. Saddles shall be double strap type. All service saddles shall conform to A.N.S.I./A.W.W.A. C 111/A-21.11-00 and A.S.T.M. A588.
- All P.V.C. pipe shall be installed in accordance with the Uni-Bell plastic pipe Association's "Guide for installation of P.V.C. pressure pipe for Municipal water distribution system". Water distribution pipe shall be of "BLUE" color.
- Detector tape on all P.V.C. mains shall be installed 18" above the water main.
- All P.V.C. mains must have #6 copper wire, single strand, placed on top of pipe, shall be electrically continuous over the entire length of the pipe, and fastened every 10' with a #12 wire.
- All DIP shall be installed in accordance with A.N.S.I./A.W.W.A. C-600-99, or latest revision.
- Pipe deflection shall not exceed 75% of the maximum deflection recommended by the manufacturer.
- A continuous and uniform bedding shall be provided. Backfill material shall be tamped in layers around the pipe as shown on the plans and/or City of Fort Lauderdale Construction Standards and Specifications, January 1982. Rocks or stones larger than 3/4" diameter found in the trench shall be removed for a depth of at least 6" below the bottom of the pipe.
- All details and notes on this sheet shall be applicable unless otherwise superseded elsewhere in plans or specifications.

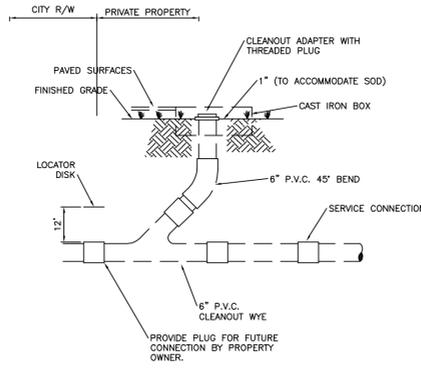
**GENERAL NOTE:**  
 ALL EXISTING PIPE SIZES WATER MAINS ARE TO BE CAPPED AND ABANDONED IN PLACE. NEW WATER SERVICE LINES SHALL BE INSTALLED TO SERVICE THE EXISTING PROPERTIES.



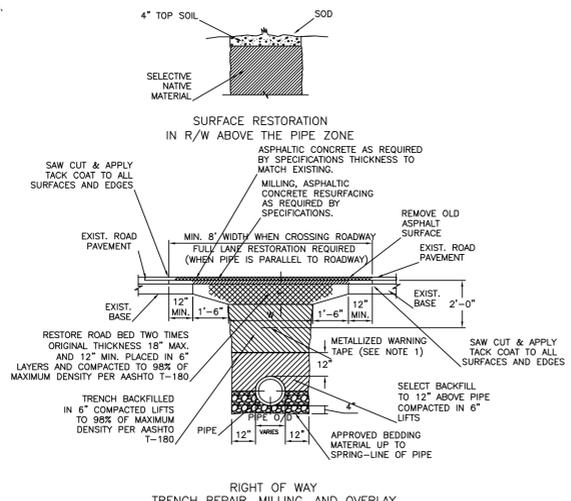
**TYPICAL SIDEWALK DETAILS** 103



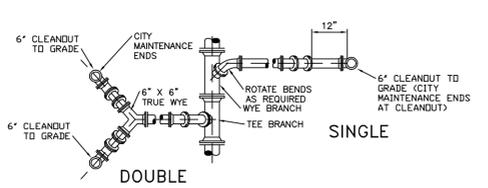
**CURB RAMP** 104



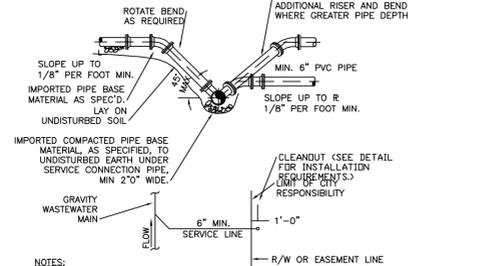
**TYPICAL CLEANOUT INSTALLATION** 209



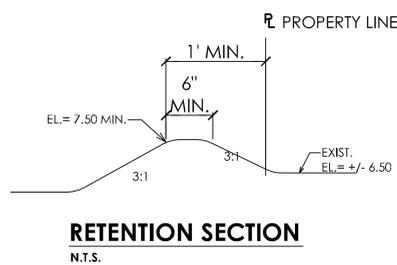
**TYPICAL TRENCH AND PAVEMENT RESTORATION FOR TRANSVERSE CROSSING** 100



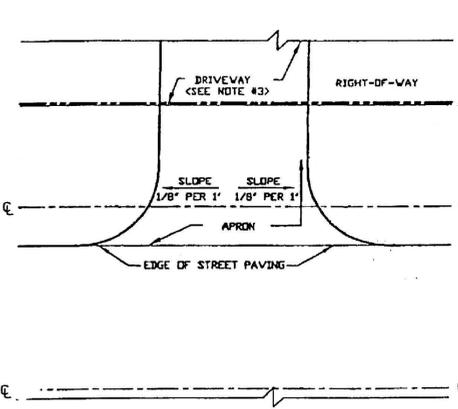
**SINGLE**  
**DOUBLE**



**TYPICAL WASTEWATER SERVICE CONNECTION** 208

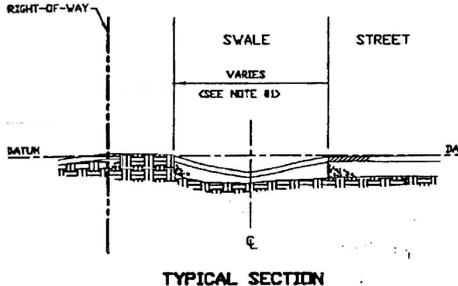


**RETENTION SECTION**  
N.T.S.

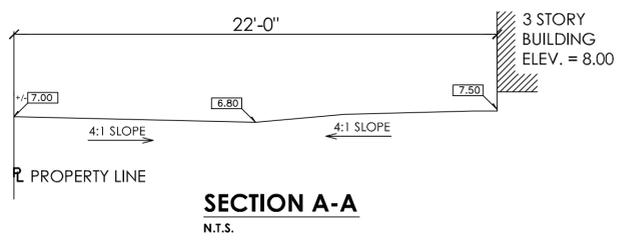


- APRONS:**
- APRONS SHALL BE 6" CONCRETE WITH 10X10-6X6 WIRE MESH (SEE NOTE #2) OR 6" COMPACTED ROAD WITH ROCK WITH 1/2" ASPHALT SURFACE.
  - APRONS SHOULD BE SLOPED TO DRAIN TO PERVIOUS SOD AREA AND NOT TO STREET
- GRASS SWALES:**
- UNDER ALL DRIVEWAY PERMITS GRASS SWALE MUST BE GRADED, PER CITY SPECIFICATIONS AND SODDED (SEE NOTE #1).
  - IF SOD AREA IS DEEMED INSUFFICIENT FOR STORM WATER CRITERIA AND LOCAL CONDITIONS ADDITIONAL SUBSURFACE DRAINAGE SHALL BE PROVIDED (E.G. FRENCH DRAIN)
- DRIVEWAYS:**
- MINIMUM OF 4" CONCRETE WITH 10X10 6X6 WIRE MESH (SEE NOTE #2) OR 1" ASPHALT OVER COMPACTED ROCK.

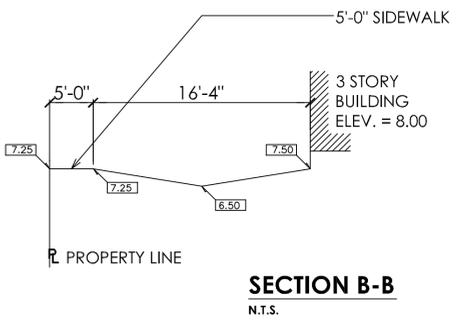
- NOTE:**
- DEPTH OF APRON IS BASED ON SLOPE OF 1/4' PER FOOT OF WIDTH FROM EDGE OF STREET TO TOP OF DRIVEWAY WHEN INSTALLED. DEPTH OF GRASS SWALE IS BASED ON SLOPE OF 1/2' PER FOOT OF WIDTH FROM EDGE OF STREET TO TOP OF SOD WHEN INSTALLED.
  - ALL CONCRETE MUST BE 3000 psi WITH CONTROL JOINT 20 FT ON CENTER.
  - DRIVEWAY MUST BE SLOPED TO DRAIN TO PERVIOUS AREA (GRASS) INSIDE PROPERTY AND NOT TO CITY'S RIGHT-OF-WAY.



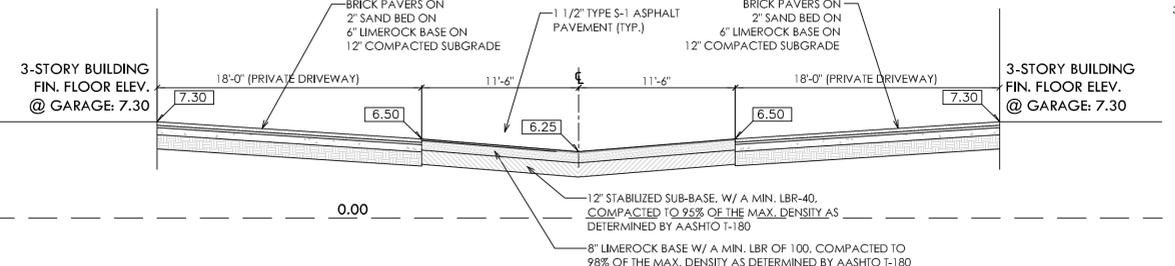
**TYPICAL SECTION**



**SECTION A-A**  
N.T.S.



**SECTION B-B**  
N.T.S.



**SECTION C-C**  
N.T.S.



**TRIO**  
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**PROJECT**

DIPLOMAT MALL

PROPOSED  
 DIPLOMAT TOWN HOMES

1425 E. HALLANDALE BEACH BLVD.  
 HALLANDALE BEACH, FLORIDA

**CONSULTANT**

**REVISIONS**

No.	DATE	DESCRIPTION

**PROJECT PHASE**

- SITE PLANNING
- SCHEMATIC DESIGN
- DESIGN DEVELOPMENT
- CONSTRUCTION DOCUMENTS

**SEWER/DRIVEWAY DETAILS**

PROJECT NUMBER:	RK01
ISSUED:	7/17/07
DRAWN BY:	MSG
CHECKED BY:	COB
FILENAME:	RK01

SEAL	SHEET
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**C-4**