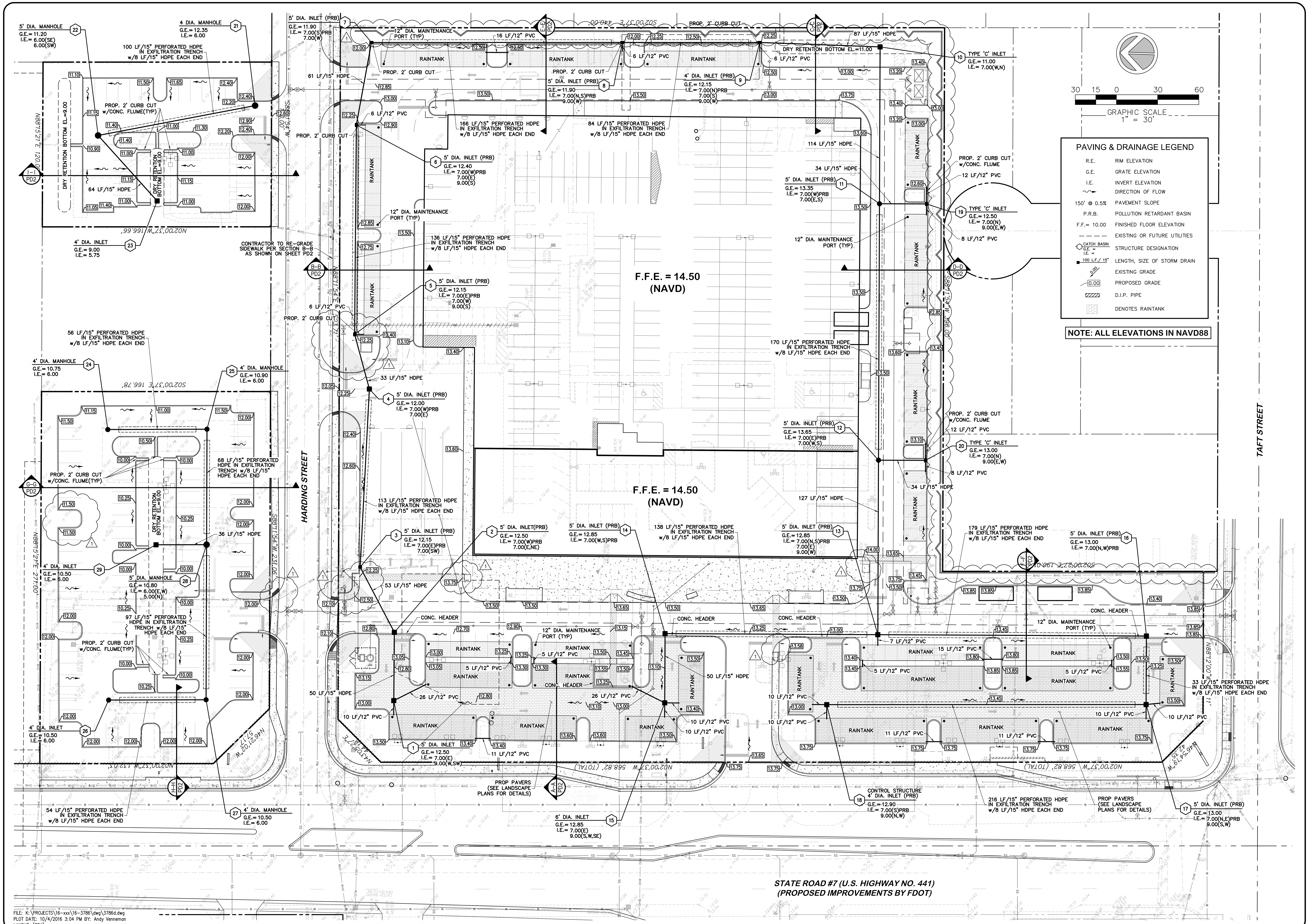

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Certificate of Auth. # 7097
Phone (954)777-3123
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REVISIONS

NO.	DATE:	DESCRIPTION
1	9/23/16	PER TAC REVIEW

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

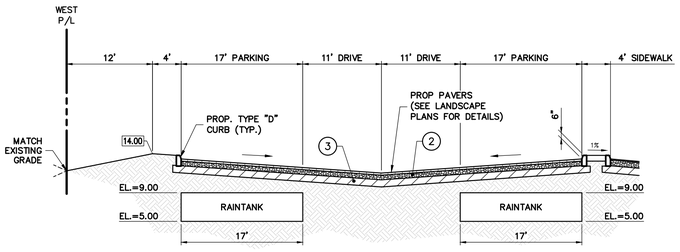
PAVING, GRADING & DRAINAGE PLAN

DATE:	Oct. 2016
SCALE:	1" = 30'
DESIGNED BY:	M.G.
DRAWN BY:	A.E.V.
JOB NUMBER	16-3786
SHEET No.	PD1

SEAL

Oct 04 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890



SECTION "A-A"

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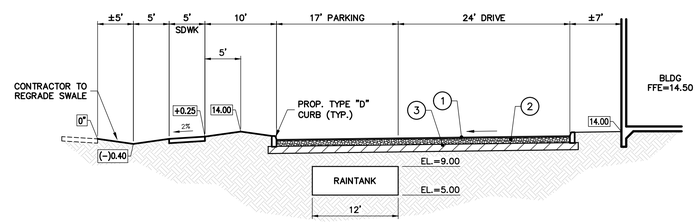

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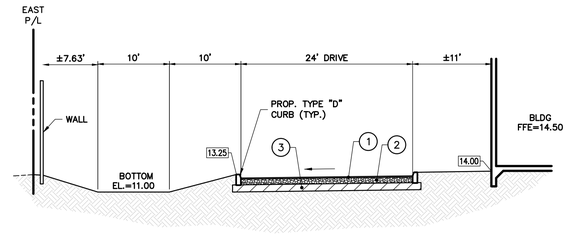

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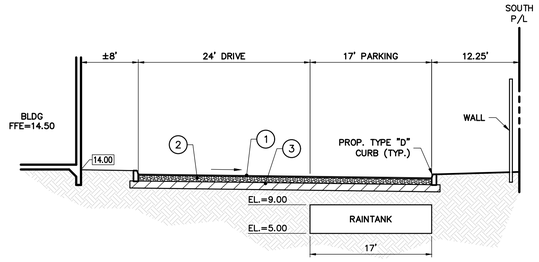

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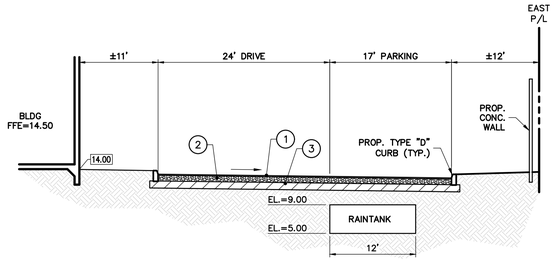
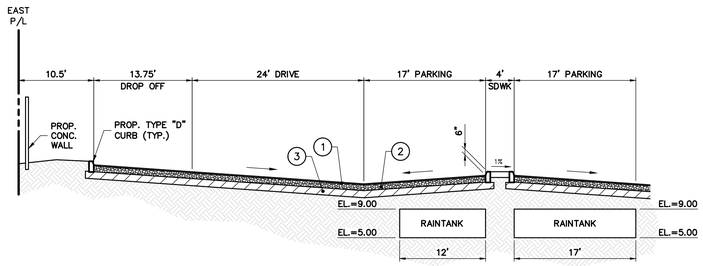


SECTION "E-E"

SCALE: 1"=10'

NOTES:

1. THE WEARING SURFACE SHALL BE 1–1/2" THICK, DOUBLE COURSE, TYPE S–III ASPHALTIC CONCRETE, OVER PRIME COAT.
2. THE BASE COURSE SHALL BE 8" LIMEROCK (70% CALCIUM), COMPACTED IN ACCORDANCE WITH A.A.S.H.T.O. SPECIFICATION T–180 TO 98% MAXIMUM DENSITY.
3. ALL ORGANIC AND YEILDING MATERIAL WITHIN THE LIMITS SHOWN SHALL BE REMOVED AND REPLACED WITH CLEAN FILL. THE SUBBASE SHALL EXTEND 12" BELOW THE BASE COURSE, SHALL BE COMPACTED IN ACCORDANCE W/ AASHTO SPECIFICATIONS T180 TO 98% MAXIMUM.



SECTION "F-F"

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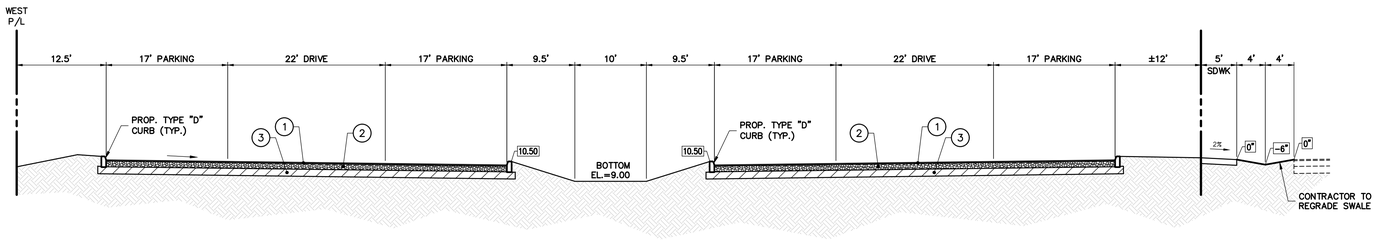

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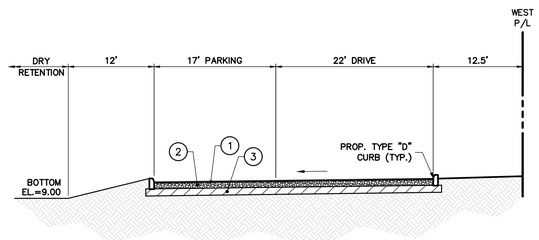

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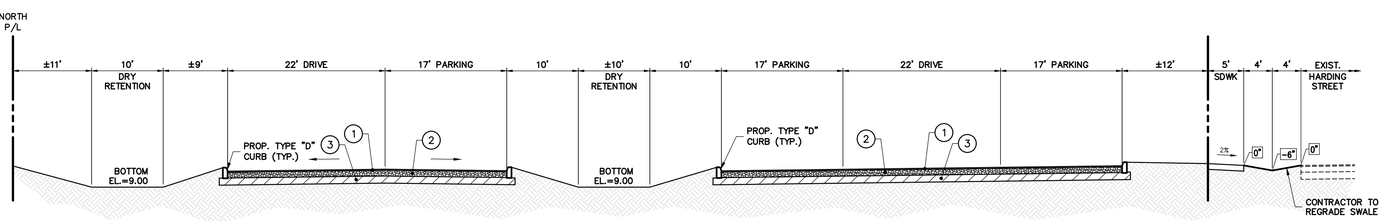

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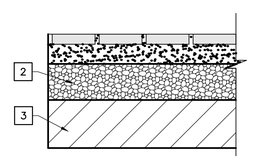

PAVER BLOCK SECTION

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LAYOUT: [PD2]

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REVISIONS

NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

PAVING, GRADING & DRAINAGE DETAILS

DATE: Aug. 2016

SCALE: N.T.S.

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

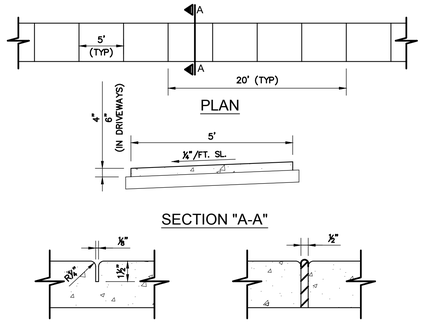
JOB NUMBER 16-3786

SHEET No. PD2

SEAL

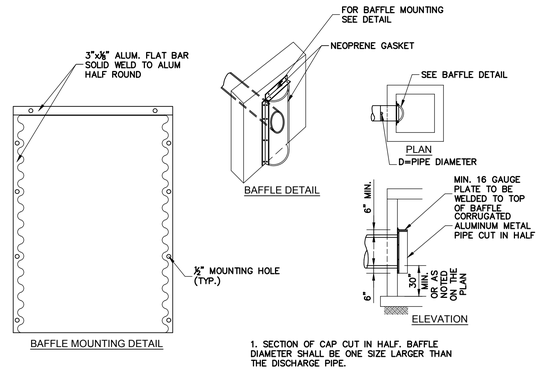
Aug 18 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890



NOTE:
ALL CONCRETE SHALL BE 3000 P.S.I., 4" THICK 6" THICK W/ 6"x6" W.W.M. AT DRIVEWAYS ONLY

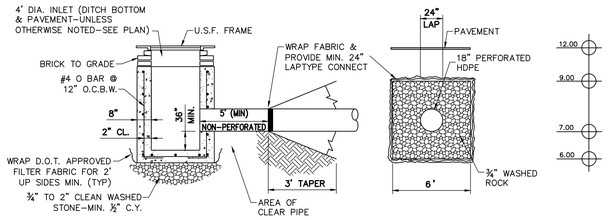
SIDEWALK DETAIL



1. SECTION OF CAP CUT IN HALF. BAFFLE DIAMETER SHALL BE ONE SIZE LARGER THAN THE DISCHARGE PIPE.

POLLUTION RETARDANT BASIN

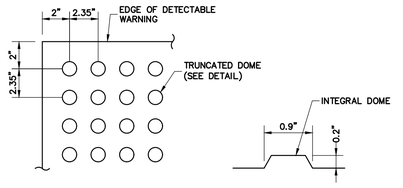
(ALL STRUCTURES SEE PLAN FOR BAFFLE LOCATION)



NOTE:
COMPACT TRENCH BACKFILL AND SOIL WITHIN MIN. 5' OFF TRENCH TO MIN. 95% OF MAX. DRY DENSITY PER ASTM D-1557.

EXFILTRATION TRENCH DETAIL ON-SITE (MAIN CAMPUS)

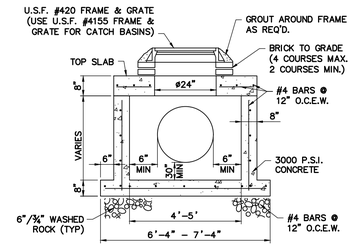
N.T.S



All Sidewalk Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 36" Inches From The Back Of Curb.

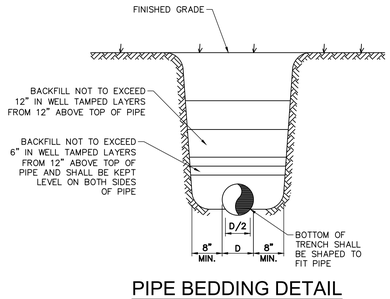
CURB RAMP DETECTABLE WARNING

N.T.S.

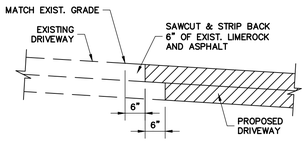


4'-5' DIAM. CATCH BASIN OR MANHOLE

N.T.S

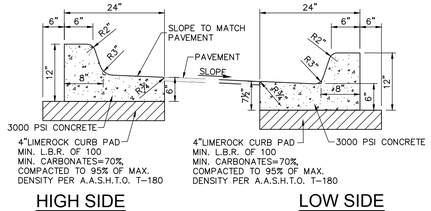


PIPE BEDDING DETAIL



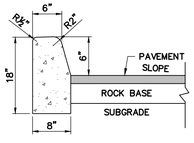
ASPHALT TIE-IN DETAIL

N.T.S.



TYPE "F" CURB AND GUTTER

N.T.S.



TYPE "D" CURB

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REVISIONS

NO.	DATE:	DESCRIPTION:

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

PAVING, GRADING & DRAINAGE DETAILS

DATE: Aug. 2016

SCALE: N.T.S.

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

JOB NUMBER 16-3786

SHEET No. PD3

SEAL

Aug 18 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

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LAYOUT: [PD3]

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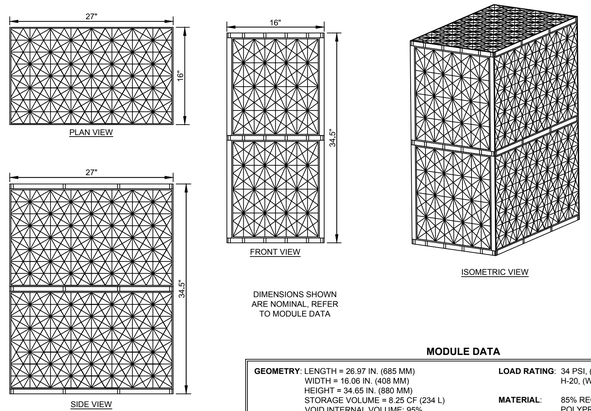


MODULE DATA

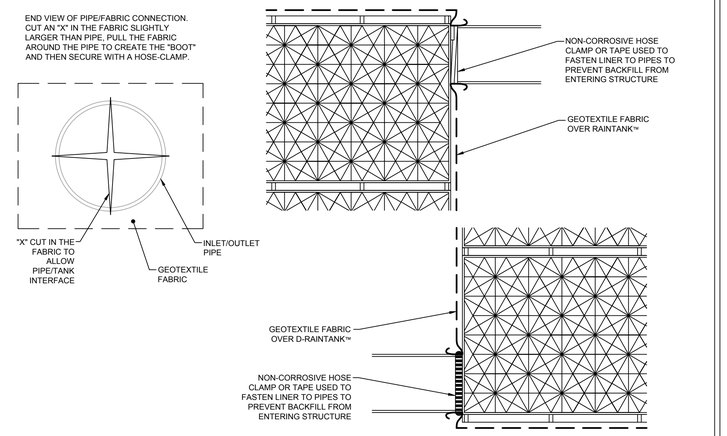
GEOMETRY:	LENGTH = 26.97 IN. (685 MM) WIDTH = 16.06 IN. (408 MM) HEIGHT = 34.65 IN. (880 MM) STORAGE VOLUME = 8.25 CF (234 L) VOID INTERNAL VOLUME: 95% VOID SURFACE AREA: 90%	**LOAD RATING**:	34 PSI, (MODULE ONLY) H-20, (WITH ACF COVER SYSTEM)
		MATERIAL:	85% RECYCLED POLYPROPYLENE

Atlantis Water Management
"Water Management for Life"

D-RAINTANK™ - DOUBLE MODULE

ACF

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



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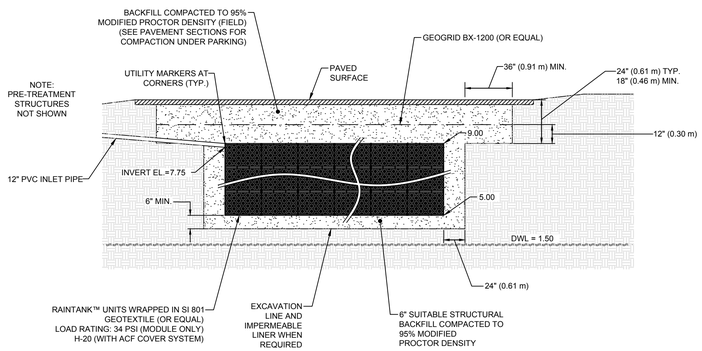
D-RAINTANK™ TYPICAL TANK INLET/OUTLET DETAIL

ACF

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

NOTE: FOR COMPLETE MODULE DATA, SEE APPROPRIATE RAINTANK™ SHEET (SINGLE MODULE, DOUBLE MODULE, TRIPLE MODULE, QUAD MODEL, OR PENTA MODEL).



Atlantis Water Management
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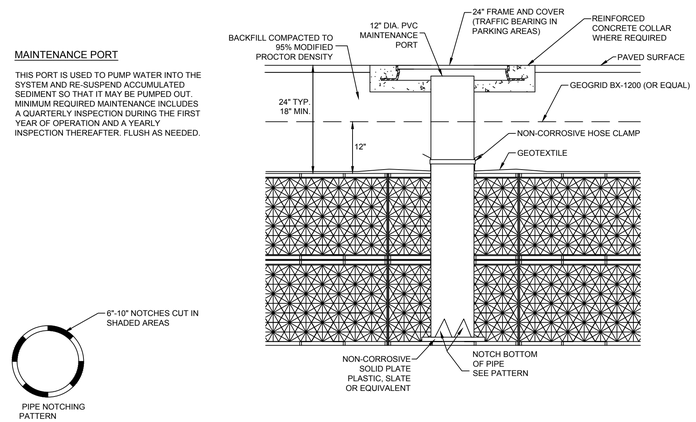
D-RAINTANK™ - H20 LOADS

ACF

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

MAINTENANCE PORT

THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.



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D-RAINTANK™ TYPICAL MAINTENANCE PORT

ACF

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

UNDERGROUND STORMWATER DETENTION SYSTEM (USDS)
MATERIAL & INSTALLATION SPECIFICATIONS

TECHNICAL SPECIFICATION:

PART 1 GENERAL

1.01 General Provisions
A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.
1.02 Description of Work
A. Work Included:
1 Provide excavation and base preparation per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. See 2.02 Materials.
2 Provide Underground Stormwater Detention System (USDS) and all related products including storage media, geotextiles, geogrids, inlet and outlet pipe with connections and installation per the manufacturer's instructions furnished under this section.
B. Related Work:
1 Subgrade excavation and preparation under Section 02300 - Earthwork.
2 Subsurface drainage materials - Section 02700 - Subsurface Drainage and Structures, as needed.

1.03 Quality Assurance
A. All materials must be manufactured in ISO certified facilities.
B. Installation: Performed only by skilled work people with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
1.04 Submittals
A. Submit manufacturer's product data and installation instructions.
B. Submit product sample for review. Reviewed and accepted samples will be returned to the Contractor.
C. Submit material certificates for geotextile, geogrid, base course and backfill materials.
1.05 Delivery, Storage, and Handling
A. Protect all materials from damage during delivery and store UV sensitive materials under tarp to protect from sunlight – including all plastics - when time from delivery to installation exceeds one week. Storage should occur on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
1.06 Project Conditions
A. Review manufacturer's recommended installation procedures and coordinate installation with other work affected, such as grading, excavation, utilities, construction access and erosion control to prevent all non-installation related construction traffic over the completed USDS installation, especially with loads greater than design loads.
B. Cold weather:
1 Do not use frozen materials or materials mixed or coated with ice or frost.
2 Do not build on frozen ground or wet, saturated or muddy subgrade.
3 Care must be taken when handling plastics when air temperature is at 40 degrees or below as plastic becomes brittle.

C. Protect partially completed installation against damage from other construction traffic when work is in progress and following completion of backfill by establishing a perimeter with highly visible construction tape, fencing, or other means until construction is complete.
D. Protect adjacent work from damage during USDS installation.
E. Pre-Treatment Systems to remove debris and heavy sediments MUST be in place and functional PRIOR to operation of the USDS. Additional measures may be needed if unit is operational during construction.

PART 2 – PRODUCTS

2.01 Availability
A. The underground storage system must:
a. Be modular in nature
b. Fit into the footprint of the specified system
c. Have a minimum of 5 years of use in the United States
d. Have a minimum of 1 million cubic feet installed and performing
e. Meet the following requirements:

TEST	VALUE	UNIT
NET VOID AREA	95	%
SERVICE TEMPERATURE	-20 - 130	DEGREES FAHRENHEIT
UNIT WEIGHT (Single Segment w/two internal plates)	□ 13.5	LBS
OPENING SIZE	□ 1.5	SQUARE INCHES
RIB ORIENTATION	LINEAR & PARALLEL	-
UNCONFINED CRUSH STRENGTH□ (5" x 5" Plate)	34	PSI
UNCONFINED CRUSH STRENGTH□ (11" x 16" Plate)	45	PSI
UNCONFINED CRUSH STRENGTH□ (16" x 27" Plate)	30	PSI
DIAGONAL STRENGTH□ (16" x 27" Plate)	19	PSI
90 DAY CREEP STRAIN	□ 0.5	%

*All tests performed on units with two internal plates

B. Approved Products include Atlantis Matrix D-RainTank®
Manufactured by:
Atlantis Corporation Pty Ltd Unit 3, 19-21 Gibbes Street Chatswood, NSW –2067 Australia

2.02 Materials
A. Base of Excavation: Shall be smooth, level and free of lumps or debris. Compact to at least 95% Standard Proctor Density (or as required by Engineer) unless infiltration of stormwater into subgrade is desired. A thin layer (3") of material (See Section C) is recommended to establish a level working platform. (May not be needed in areas with sandy soils meeting requirements of Section C below.) A CBR ≥5 must be achieved prior to beginning installation of RainTanks. If the base is pumping or appears excessively soft, a geotechnical engineer should be consulted for advice. In many cases a stabilization geotextile and 6" of compactable material that drains well will be sufficient to amend the bearing capacity of the soil.
B. Geotextile: Most applications require ACF N080 or equivalent nonwoven geotextile with a nominal weight of 8 oz per square yard. Applications involving native clay soils requiring water to infiltrate/exfiltrate through the geotextile as a primary mode of introducing or removing water from the USDS should use a woven monofilament such as Propex 111F or equivalent (not required in areas with sandy soils). Geotextile should be appropriate for the soil type and depth, and completely wrap the USDS.
C. Side Backfill: Structural fill, sand or other free-draining materials < 1.5" in diameter and compactable to 95%. Must be free from lumps, debris and any sharp objects that could cut the geotextile. Material is used for base, backfill along the sides of the structure, and top cover. Must be compacted with powered mechanical compactor in lifts that do not exceed 12" to provide a settlement-free surface. Even when "self-compacting" backfill materials are selected, a vibratory compactor must be used.
D. Top Backfill: Use Side Backfill material for first 12" above the USDS. Top backfill should be between 12"(300mm) minimum and 36" (500mm) maximum depth compacted in 6" lifts. To support H20 loads, top cover should be 18" minimum depth (24" recommended), reinforced with a geogrid 12" above the USDS. Material above the geogrid may vary based on the intended use of the surface area. In no case should clays be used to backfill the USDS.
E. Geogrid: Use Huesker Fornit 30 or equivalent to reinforce backfill above the USDS to support H20 loads (otherwise, not required). Geogrid should extend 3 feet beyond the excavation footprint.
F. Utility Marker: If required, use metallic tape at corners of install to mark the area for future utility detection.

PART 3 EXECUTION

3.01 Inspection
A. Examine prepared excavation for smoothness, compaction and level. Check for presence of high water table, which must be kept at levels below the bottom of the USDS structure at all times. A CBR ≥5 must be achieved prior to beginning installation of RainTanks. If the base is pumping or appears excessively soft, a geotechnical engineer should be consulted for advice. In many cases a stabilization geotextile and 6" of compactable material that drains well will be sufficient to amend the bearing capacity of the soil. Do not start installation of the USDS until unsatisfactory conditions are corrected.
B. Installation commencement constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Project Manager or Engineer for resolution prior to installation.
3.02 Preparation
A. Using Side Backfill Material (Section 2.02 C) level the base of the excavated area as per engineering detail to establish a working platform for the USDS.
B. It is helpful to identify the outline of the structure on the floor of the excavation, using spray paint or chalk line, to ensure squareness during module placement.
3.03 Installation of the USDS
A. If a liner is being used in the system to harvest stormwater or prevent groundwater intrusion, install per manufacturer's recommendations and per engineering detail.
B. Lay geotextile on the base of the excavation and sidewalls with extra material on side to wrap the top of the USDS. If engineering drawings do not require geotextile on the base of the excavation, place fabric a minimum of 20"(500mm) inside the excavated area to secure the material.
C. Install the USDS. If RainTank modules are being used, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks.
D. Wrap the USDS in geotextile fabric from the sides and the top to prevent soil entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to (optional) liner during placement.
E. Identify locations of inlet, outlet, inspection ports, and any other penetrations of the geotextile and (optional) liner, securing pipe into boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent damage to geotextile, (optional) liner or pipe.
F. Backfilling with recommended backfill, compacting in 12" (max) lifts. Place backfill CAREFULLY to avoid shoving or damaging system components. Use a powered mechanical compactor to compact backfill on structure sides with care to avoid damage to geotextile or (optional) liner.
G. Backfill above system should be compacted in 6" lifts (do not use drivable rolling compactors with 6" of cover). Alternately, a single 12" lift of backfill may be placed and compacted over the system so long as compaction goals can be obtained. When backfill reaches an elevation 12" above the USDS, place a layer of geogrid directly over the top of the backfill (required only when there will be traffic loads (H20 loads) above the system), extending 3' beyond the excavation walls.
H. Place sufficient sandy gravel backfill (Section 2.02 E) material over geogrid to ensure support of design loads. Place cover backfill in 6" lifts and compact with vibrating plates or walk-behind rollers (do not use drivable rolling compactors) to a minimum of 95% Standard Proctor Density, with a minimum depth of 6" (12" is recommended) and a maximum depth of 36" or as specified on engineering drawings. Take care to PLACE backfill on top of structure to avoid damage to structure, geotextile or (optional) liner, using low pressure tire or track vehicles.
I. Ensure that all unrelated construction traffic be kept away from the limits of excavation until the project is complete and final surface materials are in place.
J. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
K. Backfill depth over USDS must be a MINIMUM of 18" prior to Proof Rolling area directly above USDS. If backfill depth is less than 18" and proof rolling is required, contact engineer or manufacturer's representative for assistance.
3.04 Cleaning
A. Perform cleaning during the installation of work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

PART 4 – USING THE SYSTEM

4.01 Maintenance Requirements
A. Maintenance efforts should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will prevent contamination of the USDS system and stormwater released from the site. Pre-treatment systems should be inspected as directed by the manufacturer (for proprietary systems) or at least quarterly for the first year of use, yearly thereafter. Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
B. If the USDS system included Inspection or Maintenance Ports, it will be necessary to inspect the system for accumulation of sediments. This is done by removing the cap of the port and using a measuring device long enough to reach the bottom of the USDS and stiff enough to push through the loose sediments, allowing a depth measurement.
C. If sediment has accumulated beyond an acceptable level, it will be necessary to flush the USDS. This can be done by pumping water into the Maintenance Port or adjacent structure, allowing the turbulent flows through the USDS to re-suspend the fine sediments. If multiple Maintenance Ports have been installed, water should be pumped into each port to maximize flushing efficiency. Sediment-laden water can be pumped out and either captured for disposal or filtered through a Dirtbag™ if permitted by the locality.

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Fax (954)777-3114

REVISIONS

NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD
HOLLYWOOD FLORIDA

PAVING, GRADING & DRAINAGE DETAILS

DATE: Aug. 2016
SCALE: N.T.S.
DESIGNED BY: M.G.
DRAWN BY: A.E.V.
JOB NUMBER 16-3786
SHEET No. PD4

SEAL
Aug 18 2016
CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786ddt.dwg
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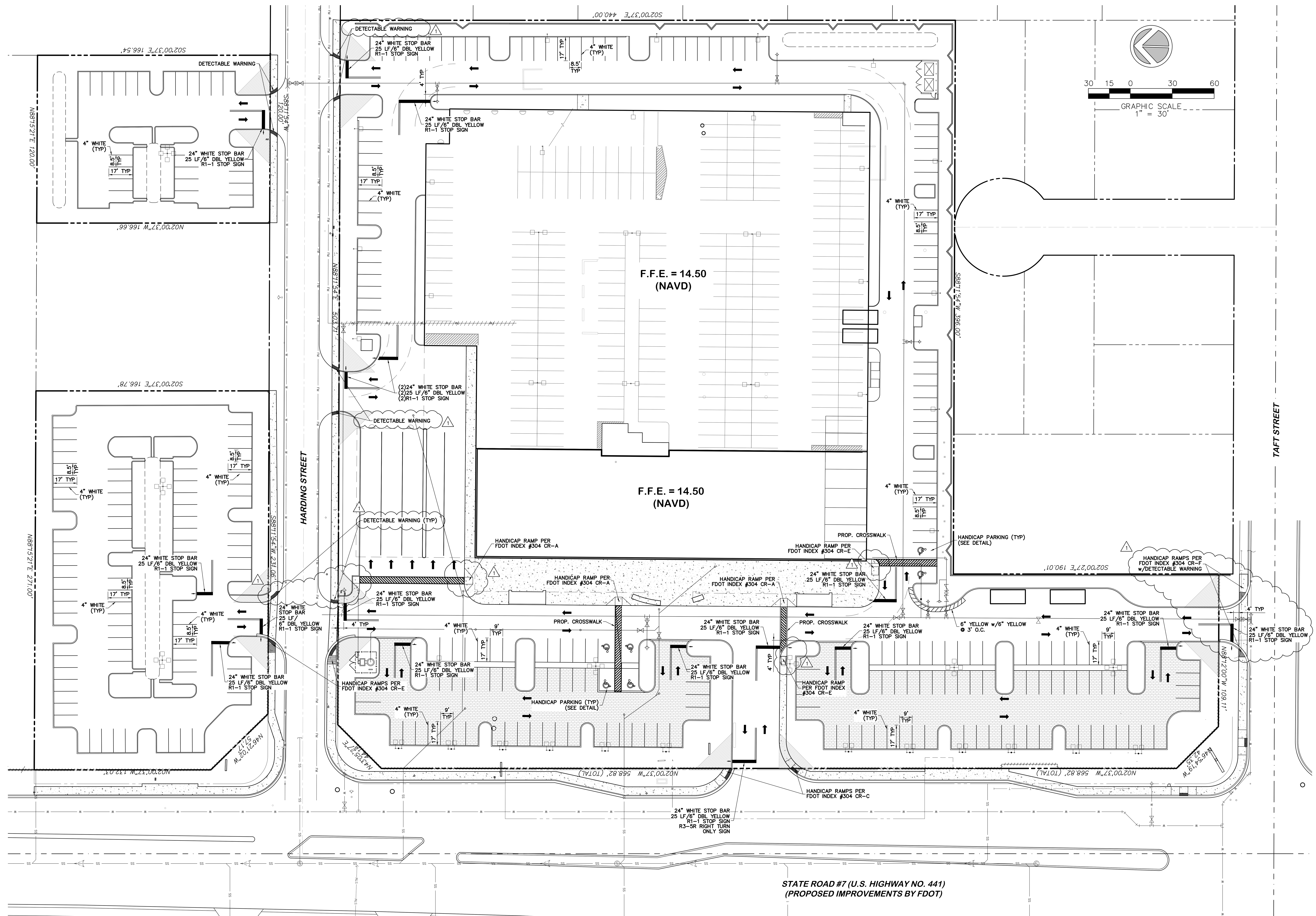

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REVISIONS

NO.	DATE:	DESCRIPTION
1	9/23/16	PER TAC REVIEW

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

PAVEMENT MARKING AND SIGNAGE PLAN

DATE: Oct. 2016

SCALE: 1" = 30'

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

JOB NUMBER 16-3786

SHEET No. PMS1

SEAL

Oct 04 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

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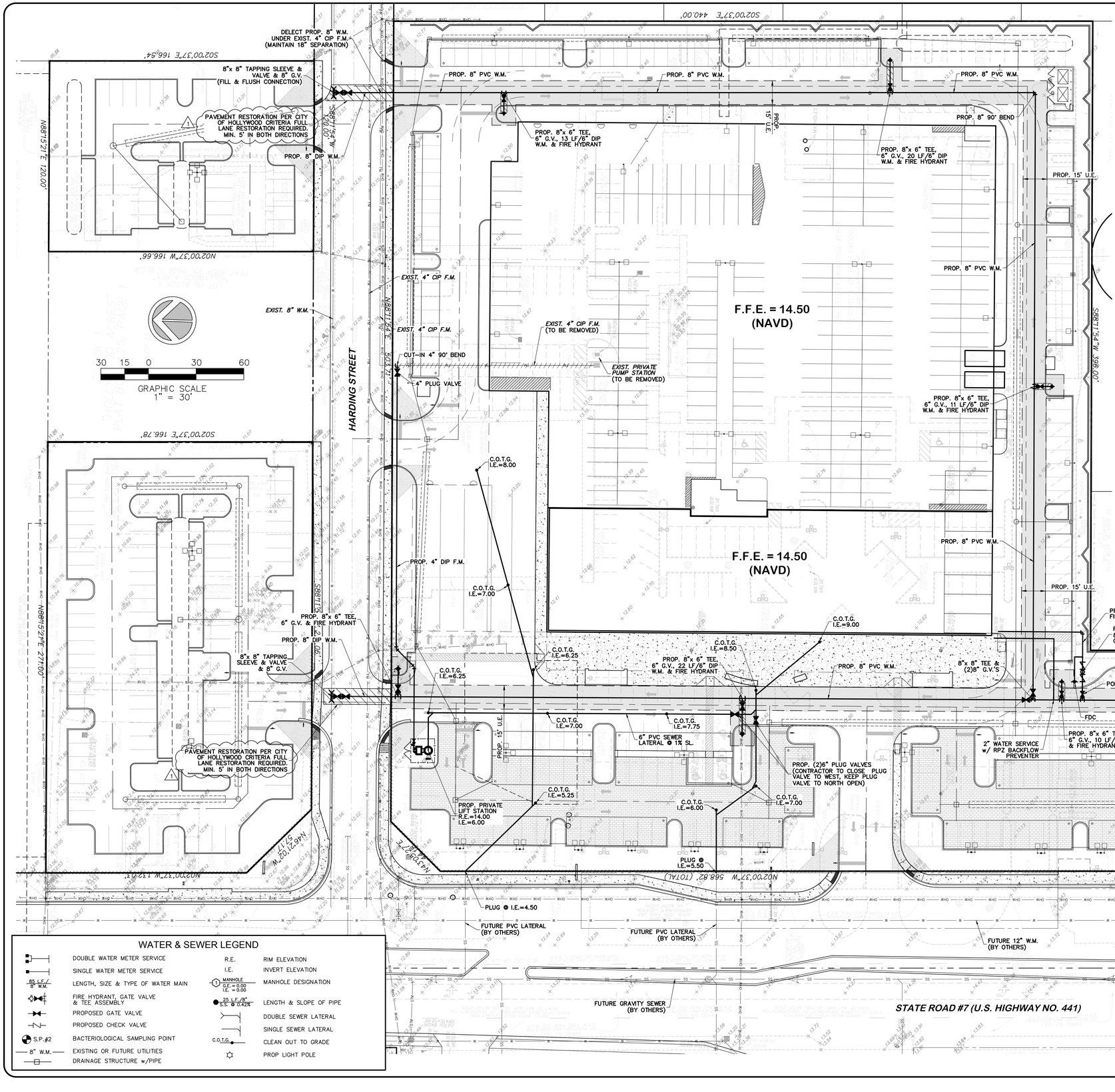

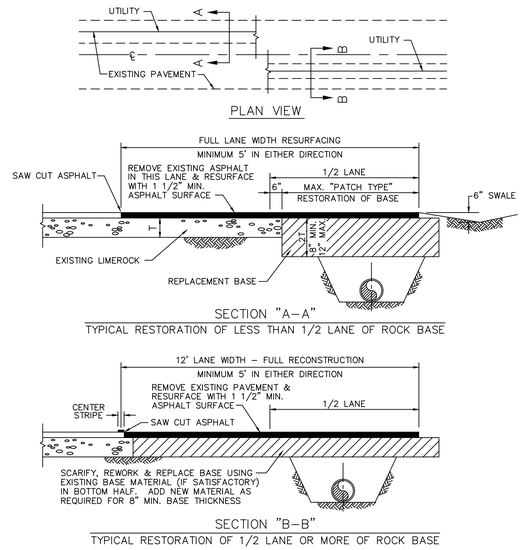

NOTES:

1. BASE MATERIAL SHALL HAVE A MINIMUM L.B.R. OF 100 AND A MINIMUM CARBONATE CONTENT OF 70%.
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM THICKNESS LAYERS WITH EACH LAYER COMPACTED AS REQUIRED AND TESTED PRIOR TO THE PLACEMENT OF THE SUCCEEDING LAYERS.
3. SUBGRADE MATERIAL SHALL BE GRANULAR AND SHALL HAVE A MINIMUM L.B.R. OF 40.
4. BACKFILL SHALL BE PLACED AND COMPACTED IN 8" LAYERS, BUT TESTING WILL BEGIN 12" ABOVE THE INSTALLED FACILITY.
5. ALL EDGES OF EXISTING ASPHALT PAVEMENT WHERE RESURFACING WILL ABUT SHALL BE SAW CUT TO STRAIGHT LINES, PARALLEL TO OR PERPENDICULAR TO THE ROADWAY, PRIOR TO THE RESURFACING.
6. RESURFACING MATERIAL SHALL BE OF THE SAME MIX AS THE EXISTING SURFACE, AND SHALL BE APPLIED A MINIMUM OF ONE AND ONE-HALF INCHES AND A MAXIMUM OF TWO INCHES IN THICKNESS.
7. REFER TO SPECIFICATIONS FOR DETAILED PROCEDURES.

NOTE: ALL DIP W.M. TO BE CLASS 52

NOTE: ALL ELEVATIONS IN NAVD88

WATER & SEWER LEGEND

	DOUBLE WATER METER SERVICE	R.E.	RIM ELEVATION
	SINGLE WATER METER SERVICE	I.E.	INVERT ELEVATION
SS L.F./ 8" W.M.	LENGTH, SIZE & TYPE OF WATER MAIN	MANHOLE I.E. = 0.00 I.E. = 0.00	MANHOLE DESIGNATION
	FIRE HYDRANT, GATE VALVE & TEE ASSEMBLY	22 LF/8" S.S. @ 0.42%	LENGTH & SLOPE OF PIPE
	PROPOSED GATE VALVE		DOUBLE SEWER LATERAL
	PROPOSED CHECK VALVE		SINGLE SEWER LATERAL
S.P.#2	BACTERIOLOGICAL SAMPLING POINT	C.O.T.G.	CLEAN OUT TO GRADE
8" W.M.	EXISTING OR FUTURE UTILITIES		PROP LIGHT POLE
	DRAINAGE STRUCTURE w/PIPE		

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REVISIONS

NO.	DATE:	DESCRIPTION
1	9/23/16	PER TAC REVIEW

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

WATER AND SEWER PLAN

DATE: Oct. 2016

SCALE: 1" = 30'

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

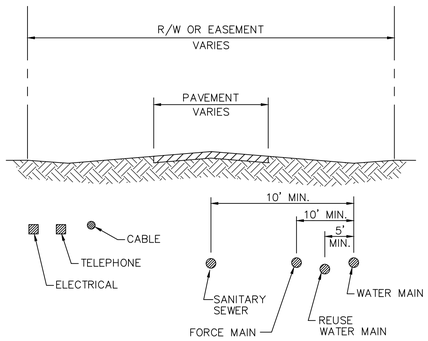
JOB NUMBER 16-3786

SHEET No. WS1

SEAL

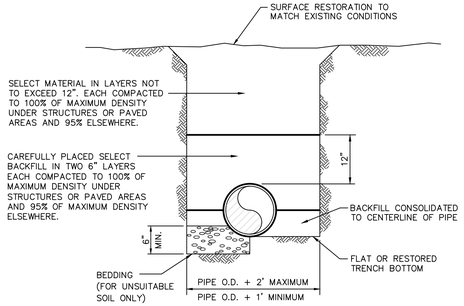
Oct 04 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890



TYPICAL RIGHT-OF-WAY EASEMENT

N.TS.



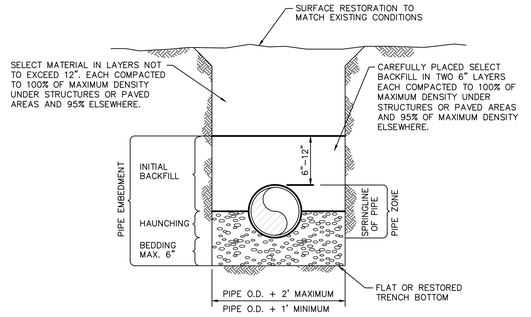
W=TRENCH WIDTH D=DIAMETER

PIPE LAYING CONDITION TYPICAL SECTION

N.TS.

NOTES:

1. BEDDING MATERIAL WHEN NECESSARY, SHALL BE CLEAN SANDY SOIL WHENEVER AVAILABLE WITHIN THE LIMITS OF CONSTRUCTION. IMPORTED BEDDING SHALL BE WELL GRADED 3/4" MAX. SIZED CRUSHED LIMEROCK. ALL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY BEFORE ANY PIPE IS LAID.
2. DENSITY TESTING SHALL BE IN ACCORDANCE WITH AASHTO T-180 AND ASTM D-3017.

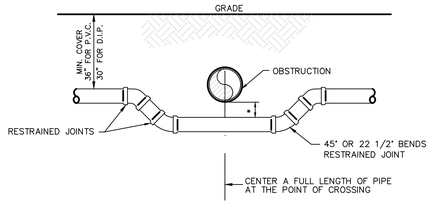


PVC PIPE LAYING CONDITION TYPICAL SECTION

N.TS.

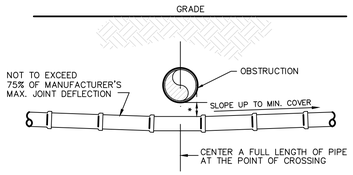
NOTES:

1. BEDDING AND HAUNCHING SHALL BE WELL GRADED 3/4" MAX. SIZE CRUSHED LIMEROCK
2. DENSITY TESTING SHALL BE IN ACCORDANCE WITH AASHTO T-180 AND ASTM D-3017.



SPECIAL UTILITY CROSSING FITTING TYPE

* REFER TO WATER AND SEWER SEPARATION NOTES PER D.E.R. REQUIREMENTS

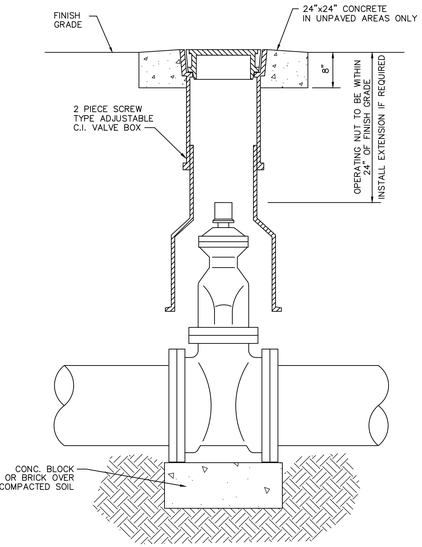


STANDARD UTILITY CROSSING DEFLECTION TYPE

* REFER TO WATER AND SEWER SEPARATION NOTES PER D.E.R. REQUIREMENTS

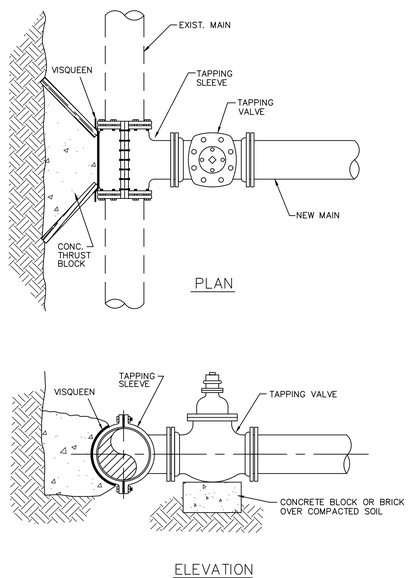
UTILITY CROSSING DETAIL

N.TS.



TYPICAL GATE VALVE AND VALVE BOX

N.TS.

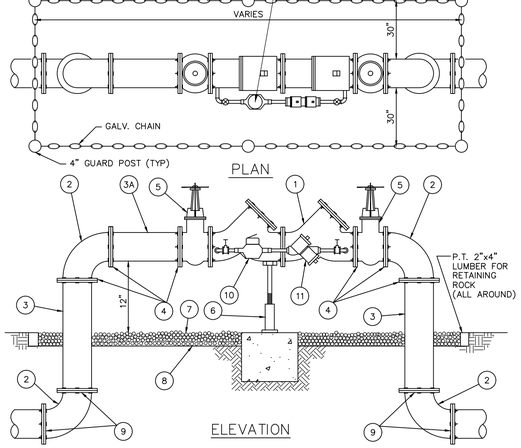


NOTES:

1. NOTIFY THE CITY OF HOLLYWOOD 48 HOURS IN ADVANCE OF PROPOSED TAP.
2. TAPPING MUST BE DONE IN THE PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.

TYPICAL TAPPING SLEEVE AND VALVE

N.TS.



FIRE PROTECTION SYSTEM APPLICATIONS

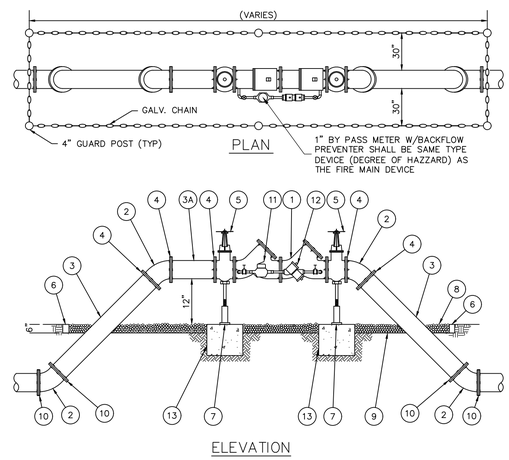
MATERIALS					
ITEM	QUANT.	DESCRIPTION	ITEM	QUANT.	DESCRIPTION
1	1	4",6",8" VALVE,DOUBLE CHECK	6	1	SCREW JACK/ANCHORED
2	4	4",6",8" BEND-90°	7	0	PEA GRAVEL
3	2	4",6",8" D.I.P. SPOOL PIECE	8	0	PLASTIC LINER/WEED STOP (5 MILS)
3A	1	4",6",8" D.I.P. SPOOL PIECE(24" LONG)	9	4	RESTRAINED JOINTS
4	5	4",6",8" FLANGE, D.I.P.	10	1	LOW FLOW METER
5	2	4",6",8" VALVE, GATE	11	1	VALVE, BYPASS DOUBLE CHECK

NOTES:

1. FIELD ADJUST AND CUT ITEM 3 TO THE PROPER LENGTH.
2. ALL PIPING SHALL BE D.I.P. CL 50/52 AS APPLICABLE TO MINIMUM STANDARDS.
3. ALL LOW FLOW METER PIPING SHALL BE BRASS OR COPPER.
4. PROTECTIVE 4" GALV. GUARD POSTS SHALL BE SPACED EVENLY APART AS SHOWN ABOVE OR IN ACCORDANCE WITH INSPECTOR'S DIRECTIONS. CHAIN SHALL BE LOOPED THROUGH EYELETS CAST IN CONCRETE TOP.
5. USE 45° BENDS WHEN WORKING AREA IS NOT LIMITED.

DOUBLE DETECTOR CHECK VALVE AND BACKFLOW PREVENTER 90°

N.TS.



FIRE PROTECTION SYSTEM APPLICATIONS

MATERIALS					
ITEM	QUANT.	DESCRIPTION	ITEM	QUANT.	DESCRIPTION
1	1	4",6",8" VALVE,DOUBLE CHECK	7	2	SCREW JACK/ANCHORED
2	4	4",6",8" BEND-45°	8	0	PEA GRAVEL
3	2	4",6",8" D.I.P. SPOOL PIECE	9	0	PLASTIC LINER/WEED STOP (5 MILS)
3A	1	4",6",8" D.I.P. SPOOL PIECE(24" LONG)	10	4	RESTRAINED JOINTS
4	5	4",6",8" FLANGE, D.I.P.	11	1	LOW FLOW METER
5	2	4",6",8" VALVE, GATE	12	1	VALVE, BYPASS DOUBLE CHECK
6	2	P.T. 2"x4" LUMBER (ALL AROUND)	13	1	16"x16"x16" CONC. SUPPORT

NOTES:

1. FIELD ADJUST AND CUT ITEM 3 TO THE PROPER LENGTH.
2. ALL PIPING SHALL BE D.I.P. CL 50/52 AS APPLICABLE TO MINIMUM STANDARDS.
3. ALL LOW FLOW METER PIPING SHALL BE BRASS OR COPPER.
4. PROTECTIVE 4" GALV. GUARD POSTS SHALL BE SPACED EVENLY APART AS SHOWN ABOVE OR IN ACCORDANCE WITH INSPECTOR'S DIRECTIONS. CHAIN SHALL BE LOOPED THROUGH EYELETS CAST IN CONCRETE TOP.
5. USE 45° BENDS WHEN WORKING AREA IS NOT LIMITED.

DOUBLE DETECTOR CHECK VALVE AND BACKFLOW PREVENTER 45°

N.TS.

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REVISIONS

NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD
HOLLYWOOD FLORIDA
WATER AND SEWER DETAILS

DATE: Oct. 2016
SCALE: N.T.S.
DESIGNED BY: M.G.
DRAWN BY: A.E.V.
JOB NUMBER 16-3786
SHEET No. WS2
SEAL

Oct 31 2016
CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

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LAYOUT: [WS2]

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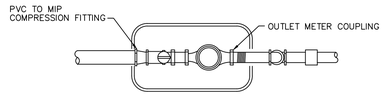
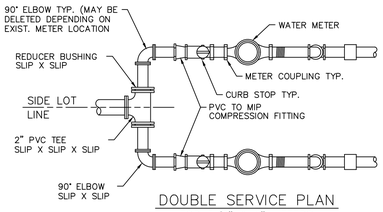
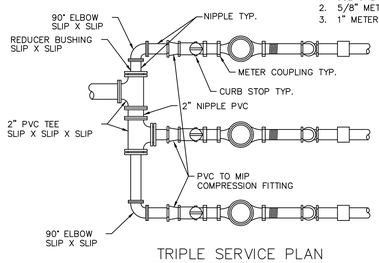


SINGLE SERVICE PLAN
FOR 5/8" & 1" METERS



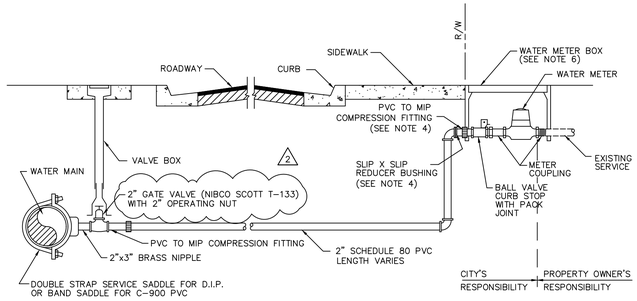
DOUBLE SERVICE PLAN
FOR 5/8" & 1" METERS

NOTES:
1. USE ONE METER BOX PER METER.
2. 5/8" METERS REQUIRE 3/4" PIPING.
3. 1" METERS REQUIRE 1" PIPING.



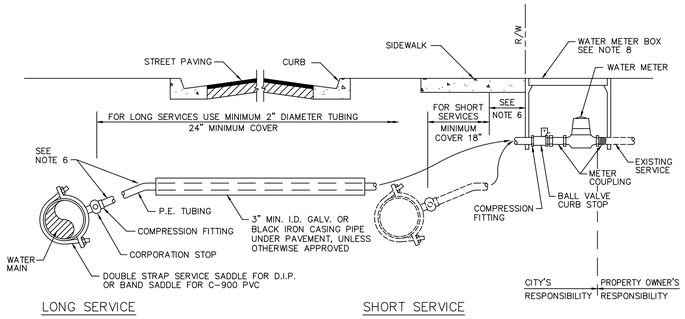
TRIPLE SERVICE PLAN
FOR 5/8" & 1" METERS

TYPICAL 5/8" & 1" METER INSTALLATION
N.TS.



NOTES:
1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED NOT LESS THAN 18" ON CENTER.
2. SERVICE CONNECTIONS RUN FROM THE WATER MAIN TO THE METER AND INCLUDE THE SERVICE CLAMP, THE CORPORATION STOP OR GATE VALVE (DEPENDING ON METER SIZE), PIPING, THE CURB STOP AND ALL NECESSARY FITTINGS.
3. SERVICE CONNECTION PIPES AND FITTINGS CROSSING UNDER PAVEMENT SHALL BE A MINIMUM OF 2" IN DIAMTER.
4. FOR 1", 1-1/2" AND 2" METERS, THE NIPPLE AND ACCESORIES BETWEEN THE 2" 90° BEND OR 2" TEE AND THE METER SHALL BE THE SAME SIZE AS THE METER.
5. THE WATER METER, METER BOX AND COVER BY THE CITY OF HOLLYWOOD. 2
6. ELEVATION OF TOP OF WATER METER BOX SHALL BE SET AT THE SAME ELEVATION AS PROPOSED GRADE AT BACK OF SIDEWALK AND THE METER DIAL SHALL BE MAX. 8" BELOW METER COVER.
7. EXISTING SERVICE CONNECTIONS TO BE DISCONNECTED SHALL BE REMOVED AND PLUGGED AS REQUIRED.
8. DETAIL SHALL BE SAME FOR 1 1/2" SERVICE AND METER

TYPICAL SERVICE CONNECTION (P.V.C. PIPING)
N.TS.

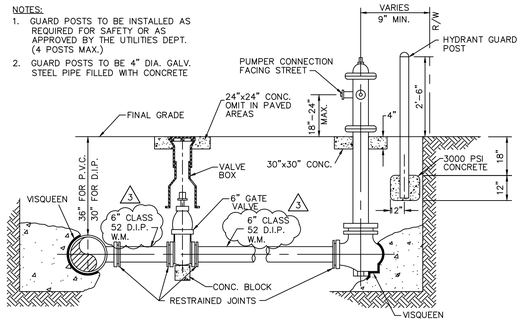


LONG SERVICE SHORT SERVICE

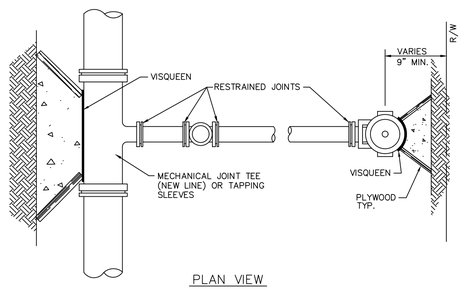
NOTES:
1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED NOT LESS THAN 18" ON CENTER.
2. P.E. TUBING SHALL BE IN ACCORDANCE WITH AWWA STANDARD C901, "POLYETHYLENE (P.E.) PRESSURE PIPE, TUBING, 1/2" THROUGH 3" FOR WATER".
3. SERVICE PIPE SHALL BE THE SAME SIZE AS THE WATER METER EXCEPT THAT NO SERVICE PIPE SHALL BE SMALLER THAN 1", AND PIPE CROSSING UNDER PAVEMENT MUST BE 2" MINIMUM.
4. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 2' BEYOND THE EDGE OF PAVED STREETS.
5. APPROVED TYPE COPPER TUBING MAY BE USED IN PLACE OF PLASTIC.
6. FOR 1" SERVICE LINES THE MINIMUM RADIUS SHALL BE 14". FOR 2" SERVICE LINES THE MINIMUM RADIUS SHALL BE 21'.
7. THE WATER METER, METER BOX AND COVER BY THE CITY OF HOLLYWOOD.
8. ELEVATION OF TOP OF WATER METER BOX SHALL BE SET AT THE SAME ELEVATION AS PROPOSED GRADE AT BACK OF SIDEWALK AND THE METER DIAL SHALL BE MAX. 6" BELOW METER COVER.

TYPICAL SERVICE CONNECTION (P.E. PIPING)
N.TS.

NOTES:
1. GUARD POSTS TO BE INSTALLED AS REQUIRED FOR SAFETY OR AS APPROVED BY THE UTILITIES DEPT. (4 POSTS MAX.)
2. GUARD POSTS TO BE 4" DIA. GALV. STEEL PIPE FILLED WITH CONCRETE

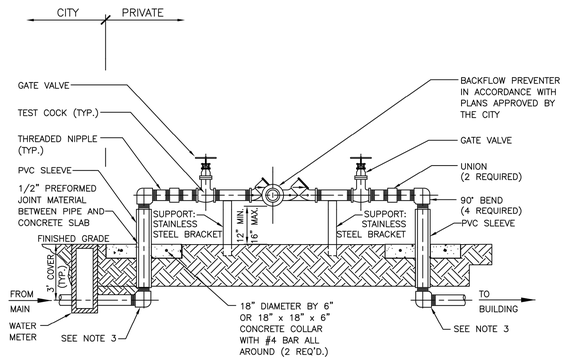


ELEVATION



PLAN VIEW

TYPICAL FIRE HYDRANT INSTALLATION
N.TS.



NOTES:
1. ALL PIPE AND FITTINGS 2" AND SMALLER SHALL BE THREADED BRASS. ALL 3" PIPE TO BE GALVANIZED STEEL.
2. ALL PIPE FITTINGS 4" AND LARGER SHALL BE CEMENT-LINED DUCTILE IRON WITH FLANGED FITTINGS FOR ABOVEGROUND USE. MECHANICAL JOINT FITTINGS SHALL BE USED UNDERGROUND WITH RESTRAINED JOINTS AND THRUST COLLARS.
3. APPROVED RESTRAINED ALL JOINTS ON UNDERGROUND DUCTILE IRON PIPING 4" AND LARGER.
4. ALL ABOVEGROUND DUCTILE PIPING, FITTINGS AND VALVES SHALL BE PAINTED RUST-OLEUM BLUE OR APPROVED EQUAL.
5. PROVIDE STAINLESS STEEL SUPPORT BRACKET AND PVC SLEEVE AS SHOWN ON DETAIL.

REDUCED PRESSURE BACKFLOW PREVENTER

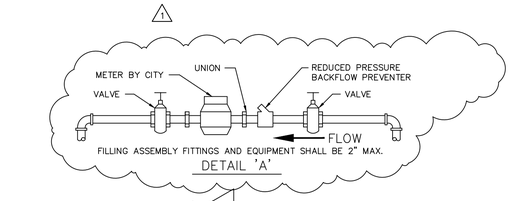
TESTING AND DISINFECTION
1. NO CONNECTIONS TO THE EXISTING LINES SHALL BE MADE UNTIL THE PRESSURE AND BACTERIOLOGICAL TESTS HAVE BEEN PERFORMED ON THE PROPOSED WATER MAINS AND THE SYSTEM IS ACCEPTABLE TO THE CITY OF HOLLYWOOD AND BROWARD COUNTY PUBLIC HEALTH UNIT (BCPHU).
2. THE PRESSURE TEST SHALL BE FOR 2 HOURS AT 150 PSI AND IN ACCORDANCE WITH ANSI/AWWA STANDARD C600-05. PRESSURE TEST SHALL BE WITNESSED BY THE CITY OF HOLLYWOOD. THE ALLOWABLE LEAKAGE SHALL BE LESS THAN THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FORMULA:

$$L = \frac{S\,D\,\sqrt{P}}{148{,}200}$$

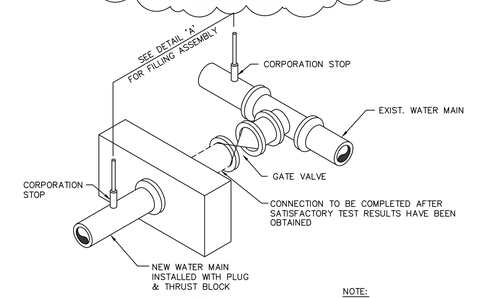
L = THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR.
S = THE LENGTH OF PIPE BEING TESTED.
D = THE NOMINAL DIAMETER OF THE PIPE BEING TESTED.
P = THE AVERAGE TEST PRESSURE IN POUNDS PER SQUARE INCH.

3. THE COMPLETE LENGTH OF THE PROPOSED WATER MAIN SHALL BE TESTED, IN LENGTHS NOT TO EXCEED 2,000 FEET PER TEST.
4. PROPOSED WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH ANSI/AWWA STANDARD C651-05 AND BACTERIOLOGICALLY TESTED FOR TWO CONSECUTIVE DAYS. THE CITY OF HOLLYWOOD WATER TREATMENT PLANT LABORATORY WILL BE THE SOLE SAMPLER AND WILL PROVIDE BACTERIOLOGICAL TESTING.

TESTING AND DISINFECTION
N.TS.

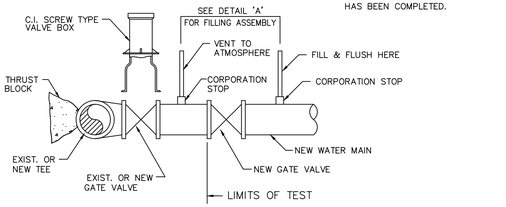


DETAIL 'A'



METHOD "A"

NOTE:
REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON NEW MAIN AFTER FILLING & FLUSHING HAS BEEN COMPLETED.



METHOD "B"

FILLING AND FLUSHING DETAIL
N.TS.

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REVISIONS

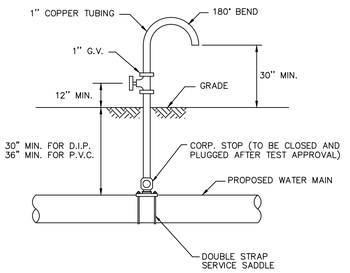
NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD
HOLLYWOOD FLORIDA
WATER AND SEWER DETAILS

DATE: Oct. 2016
SCALE: N.T.S.
DESIGNED BY: M.G.
DRAWN BY: A.E.V.
JOB NUMBER 16-3786
SHEET No. WS3

SEAL
Oct 31 2016
CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786wsdt.dwg
PLOT DATE: 10/31/2016 11:32 AM BY: Andy Venneman
LAYOUT: [WS3]

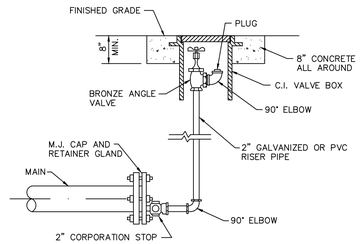


NOTE:

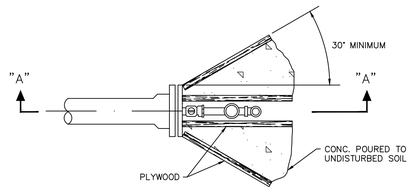
SAMPLING POINT SHALL NOT BE REMOVED UNTIL APPROVAL IS OBTAINED FROM BROWARD COUNTY PUBLIC HEALTH UNIT (B.C.P.H.U.)

SAMPLE POINT DETAIL

N.T.S.



SECTION "A–A"



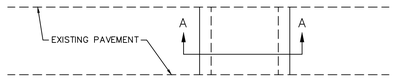
PLAN VIEW

NOTES:

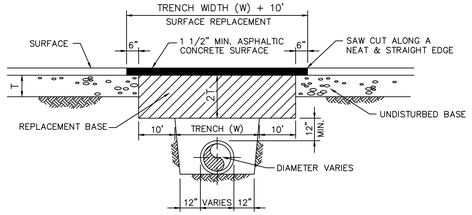
1. PIPE JOINT COMPOUND SHALL BE APPLIED TO MALE THREADS ONLY.
2. COAT ALL EXPOSED THREADS WITH BITUMASTIC BEFORE BACKFILLING.
3. 2" TAP IN BOTTOM OF CAP ON MAIN.
4. PLYWOOD AND CONCRETE TO HAVE A HEIGHT EQUAL TO THE DIAMETER OF THE PIPE.

2" TERMINAL BLOW-OFF DETAIL

N.T.S.



PLAN VIEW



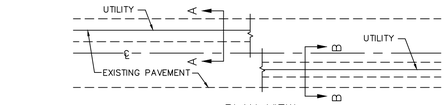
SECTION "A–A"

NOTES:

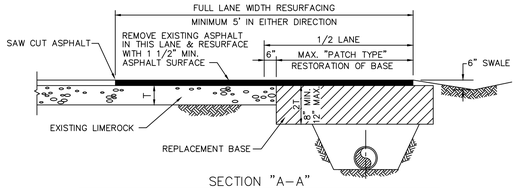
1. REPLACED BASE MATERIAL OVER TRENCH SHALL BE TWCE THE THICKNESS OF THE ORIGINAL BASE, MINIMUM 12", MAXIMUM 18".
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM (LOOSE MEASUREMENT) LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T–180.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. SURFACE TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.
5. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE EXISTING SURFACE.
6. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 AND A MINIMUM CARBONATE CONTENT OF 70%.
7. IF THE TRENCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL REPLACED WITH A PERMANENT PATCH.
8. BACKFILL SHALL BE IN ACCORDANCE WITH DETAIL OF PIPE LAYING CONDITION TYPICAL SECTION, EXCEPT AS SHOWN ABOVE.

FLEXIBLE PAVEMENT RESTORATION PERPENDICULAR UTILITY INSTALLATION (CITY STREETS ONLY)

N.T.S.

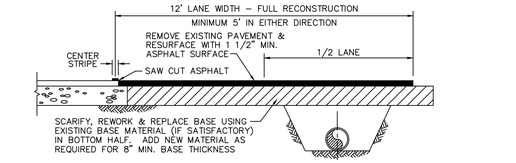


PLAN VIEW



SECTION "A–A"

TYPICAL RESTORATION OF LESS THAN 1/2 LANE OF ROCK BASE



SECTION "B–B"

TYPICAL RESTORATION OF 1/2 LANE OR MORE OF ROCK BASE

NOTES:

1. BASE MATERIAL SHALL HAVE A MINIMUM L.B.R. OF 100 AND A MINIMUM CARBONATE CONTENT OF 70%.
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM THICKNESS LAYERS WITH EACH LAYER COMPACTED AS REQUIRED AND TESTED PRIOR TO THE PLACEMENT OF THE SUCCEEDING LAYERS.
3. SUBGRADE MATERIAL SHALL BE GRANULAR AND SHALL HAVE A MINIMUM L.B.R. OF 40.
4. BACKFILL SHALL BE PLACED AND COMPACTED IN 8" LAYERS, BUT TESTING WILL BEGIN 12" ABOVE THE INSTALLED FACILITY.
5. ALL EDGES OF EXISTING ASPHALT PAVEMENT WHERE RESURFACING WILL ABUT SHALL BE SAW CUT TO STRAIGHT LINES, PARALLEL TO OR PERPENDICULAR TO THE ROADWAY, PRIOR TO THE RESURFACING.
6. RESURFACING MATERIAL SHALL BE OF THE SAME MIX AS THE EXISTING SURFACE, AND SHALL BE APPLIED A MINIMUM OF ONE AND ONE–HALF INCHES AND A MAXIUMUM OF TWO INCHES IN THICKNESS.
7. REFER TO SPECIFICATIONS FOR DETAILED PROCEDURES.

FLEXIBLE PAVEMENT RESTORATION PARALELL UTILITY INSTALLATION (CITY STREETS ONLY)

N.T.S.

WATER AND SEWER SEPARATION NOTES:

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 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE.

WHERE SANITARY SEWERS & GRAVITY SEWERS MUST CROSS A WATER MAIN WITH LESS THAN 18 INCHES VERTICAL DISTANCE, THE GRAVITY SEWER SHALL BE PVC SDR 26 AND THE 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 12 INCHES MUST BE MAINTAINED AT ALL CROSSINGS. MAINTAIN 18" VERTICAL SEPARATION BETWEEN WATER AND FORCE MAIN.

ALL CROSSING 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 INCHES VERTICAL CLEARANCE, THE NEW PIPE SHALL BE ARRANGED TO MEET THE CROSSING REQUIREMENTS ABOVE.

A MINIMUM 10 FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN IN PARALLEL INSTALLATIONS WHENEVER POSSIBLE.

IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10 FOOT HORIZONTAL SEPARATION, 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 AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

ALL DIP SHALL BE CLASS 51 OR HIGHER. ADEQUATE PROTECTIVE MEASURES AGAINST CORROSION SHALL BE USED AS DETERMINED BY THE DESIGN.

WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18" IN PARALLEL INSTALLATION, THE WATER MAINS SHALL BE CONSTRUCTED OF D.I.P. AND THE GRAVITY SEWER SHALL BE CONSTRUCTED OF PVC SDR–26 OR C–900 WITH A MINIMUM VERTICAL CLEARANCE OF 12".

PIPE MARKINGS:

ALL PIPE AND PIPE FITTINGS INSTALLED UNDER THIS PROJECT WILL BE COLOR CODED OR MARKED IN ACCORDANCE WITH SUBPARAGRAPH 62–555.320(21)(B)3, F.A.C., USING BLUE AS A PREDOMINANT COLOR. (UNDERGROUND PLASTIC PIPE WILL BE SOLID–WALL BLUE PIPE, WILL HAVE A CO–EXTRUDED BLUE EXTERNAL SKIN, OR WILL BE WHITE OR BLACK PIPE WITH BLUE STRIPES INCORPORATED INTO, OR APPLIED TO, THE PIPE WALL; AND UNDERGROUND METAL OR CONCRETE PIPE WILL HAVE BLUE STRIPES APPLIED TO THE PIPE WALL. PIPE STRIPED DURING MANUFACTURING OF THE PIPE WILL HAVE CONTINUOUS STRIPES THAT RUN PARALLEL TO THE AXIS OF THE PIPE, THAT ARE LOCATED AT NO GREATER THAN 90–DEGREE INTERVALS AROUND THE PIPE, AND THAT WILL REMAIN INTACT DURING AND AFTER INSTALLATION OF THE PIPE. IF TAPE OR PAINT IS USED TO STRIPE PIPE DURING INSTALLATION OF THE PIPE, THE TAPE OR PAINT WILL BE APPLIED IN A CONTINUOUS LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND THAT IS LOCATED ALONG THE TOP OF THE PIPE; FOR PIPE WITH AN INTERNAL DIAMETER OF 24 INCHES OR GREATER, TAPE OR PAINT WILL BE APPLIED IN CONTINUOUS LINES ALONG EACH SIDE OF THE PIPE AS WELL AS ALONG THE TOP OF THE PIPE. ABOVEGROUND PIPE WILL BE PAINTED BLUE OR WILL BE COLOR CODED OR MARKED LIKE UNDERGROUND PIPE.)

WATER SYSTEM NOTES:

1. 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–21.4–03. 20" AND SMALLER PIPE SHALL BE PRESSURE CLASS 350; 24" AND LARGER, PIPE SHALL BE PRESSURE CLASS 250.

2. 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.

3. 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. C550–05 AND C116/A21.53–00.

4. RESTRAINED JOINT PIPE SHALL BE USED FOR ALL BENDS, TEES, CROSSES, PLUGS, AND FIRE HYDRANTS.

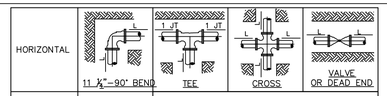
GENERAL PRESSURE PIPE NOTES

1. THERE SHALL BE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE.

2. ALL TRENCHING, PIPE–LAYING, BACKFILL, PRESSURE TESTING MUST COMPLY WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, CITY AND HEALTH DEPARTMENT STANDARDS AND REGULATIONS.

3. THESE NOTES AND THE DETAIL SHEETS THAT ACCOMPANY THESE PLANS ARE TYPICAL IN NATURE. THE MAIN PLANS AND SPECIFICATIONS PROVISIONS WILL TAKE PRECEDENCE OVER ANY NOTE CONTAINED ON THIS OR OTHER DETAIL SHEETS.

4. THE CONTRACTOR MUST POT HOLE AND VERIFY THE LOCATION, SIZE, AND ELEVATION OF EXISTING PRESSURE MAINS BEFORE MAKING A TIE–IN.



	HORIZONTAL/VERTICAL UP L, (FEET)						VERTICAL DOWN L1, (FEET)			
Diameter	11 1/4°	22 1/2°	45°	90°	Tee* (Branch)	Valves and Dead End	11 1/4°	22 1/2°	45°	90°
4	2	5	10	24	50	50	5	10	21	50
6	3	7	14	34	70	70	7	14	29	70
8	4	9	18	43	90	90	9	18	37	90
10	5	10	21	52	109	109	11	22	45	109
12	6	12	25	60	127	127	12	25	52	127
16	7	15	31	75	161	161	16	32	67	161
18	8	16	34	82	177	177	17	35	73	177
20	9	18	37	89	192	192	19	38	80	192
24	10	20	42	102	223	223	22	44	92	223
30	12	24	50	120	264	264	26	53	110	264
36	13	24	56	135	302	302	30	60	125	302
42	15	30	62	149	336	336	33	67	139	336

NOTE:
THE NOTED REQUIREMENTS WERE CALCULATED IN ACCORDANCE WITH "THRUST RESTRAINT FOR DUCTILE IRON PIPE," VERSION 3.3 BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS:

SOIL CONDITIONS: SAND/SILT
LAYING CONDITION: 3
MINIMUM COVER: 2.5 FT
SAFETY FACTOR: 1.5
BARE PIPE

IF FIELD CONDITIONS DIFFER FROM THE ABOVE, CONTRACTOR SHALL NOTIFY BCWWS.

SINGLE FITTING RESTRAIN JOINT DUCTILE IRON PIPE
150 PSI TEST PRESSURE
N.T.S.

RESTRAINED JOINT REQUIREMENTS SINGLE FITTING

ALL RESTRAINED JOINTS TO BE MEGA-LUG

Sun-Tech Engineering, Inc.
Engineers - Planners - Surveyors
1600 West Oakland Park Boulevard
Ft. Lauderdale, FL 33311
www.suntecheng.com
Certificate of Auth. # 7097
Phone (954)777-3123
Fax (954)777-3114

REVISIONS

NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD
HOLLYWOOD FLORIDA
WATER AND SEWER DETAILS

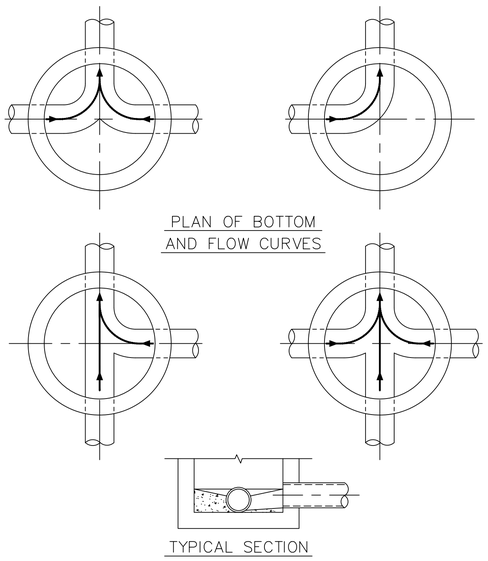
DATE: Oct. 2016
SCALE: N.T.S.
DESIGNED BY: M.G.
DRAWN BY: A.E.V.
JOB NUMBER 16-3786
SHEET No. WS4

SEAL

Oct 31 2016

CLIFFORD B. LOUTAN, P.E.
FL. REG. NO. 56890

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786wsdt.dwg
PLOT DATE: 10/31/2016 11:32 AM BY: Andy Venneman
LAYOUT: [WS4]

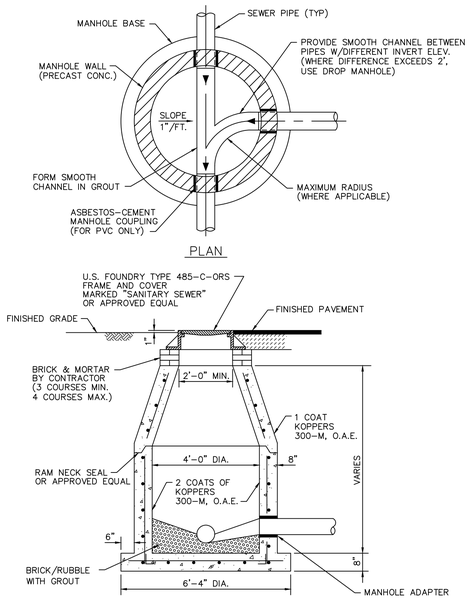


NOTES:

1. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
2. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING SMOOTH FLOWS.
3. CHANNELS FOR FUTURE CONNECTIONS (STUBS) SHALL BE CONSTRUCTED FILLED WITH SAND & COVERED WITH 1" OF MORTAR.
4. WHEN FLOW LINE DEFLECTS MORE THAN 45°, A DROP OF 0.10' IS REQUIRED.

MANHOLE FLOW PATTERNS

N.TS.

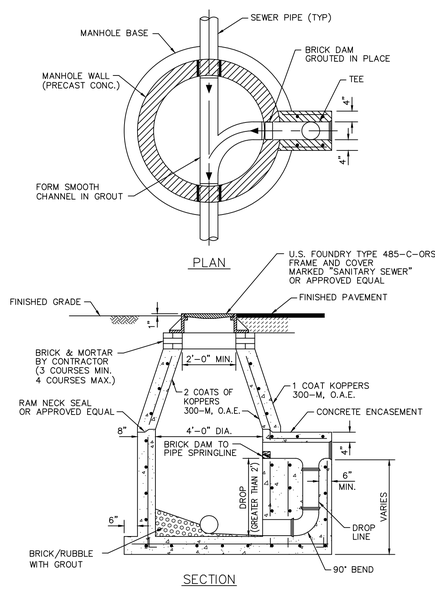


NOTES:

1. SHOP DRAWINGS, SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER, SHOWING ALL DIMENSIONS AND CALCULATIONS, INCLUDING CONCRETE REINFORCEMENT, SHALL BE SUBMITTED TO THE CITY PRIOR TO INSTALLATION.
2. THE BOTTOM SLAB SHALL BE CAST MONOLITHICALLY WITH THE LOWER WALL SECTION.

STANDARD PRECAST MANHOLE

N.TS.



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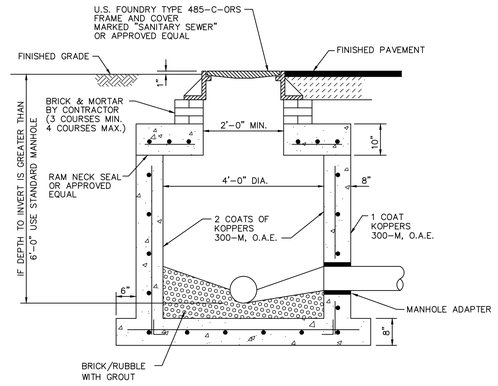
2. THE BOTTOM SLAB SHALL BE CAST MONOLITHICALLY WITH THE LOWER WALL SECTION.
3. ALL PIPE WORK SHALL BE CLASS 50 D.I.P., ENCASED FITTINGS SHALL BE CLASS 350.

DROP MANHOLE DETAIL

N.TS.

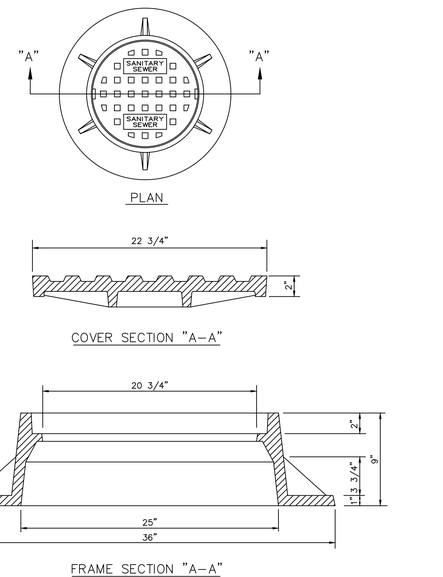


NOTES:

1. SHOP DRAWINGS, SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER, SHOWING ALL DIMENSIONS AND CALCULATIONS, INCLUDING CONCRETE REINFORCEMENT, SHALL BE SUBMITTED TO THE CITY PRIOR TO INSTALLATION.
2. THE BOTTOM SLAB SHALL BE CAST MONOLITHICALLY WITH THE LOWER WALL SECTION.

SHALLOW MANHOLE DETAIL

N.TS.

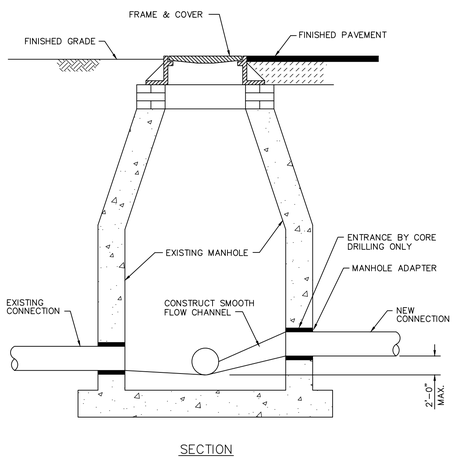


NOTES:

1. LETTERS ON COVER TO BE 3/8" HIGH, 1/4" TO 5/16" THICK AND FLUSH WITH TOP OF COVER.
2. ALL BEARING SURFACES TO BE MACHINED.
3. MINIMUM WEIGHTS: COVER – 160 LBS., TOTAL – 400 LBS.

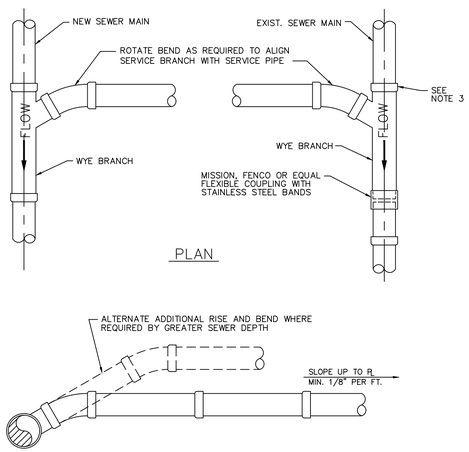
MANHOLE FRAME AND COVER

N.TS.



NEW CONNECTION TO EXISTING MANHOLE

N.TS.

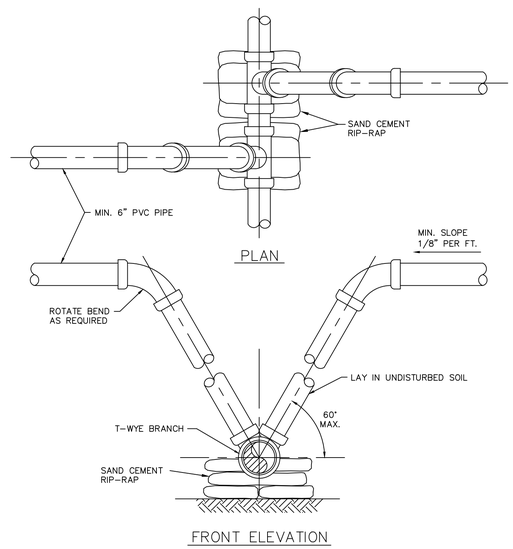


NOTES:

1. SINGLE SERVICE CONNECTIONS SHALL USE 6" PIPE AND FITTINGS.
2. USE RISER CONNECTIONS WHERE INVERT OF SEWER IS GREATER THAN 7'-0" DEEP.
3. WHERE BELL OF WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND FLEXIBLE COUPLING.

WYE BRANCH CONNECTION

N.TS.



NOTES:

1. MODIFIED RISER CONNECTION TO BE USED ONLY WHEN DIRECTED BY THE CITY.
2. 3/4" DRAINFIELD LIMEROCK MAY BE USED AS BEDDING OVER UNDISTURBED SOIL WITH P.V.C. PIPE.
3. SINGLE SERVICE CONNECTIONS SHALL USE 6" PIPE AND FITTINGS.

SANITARY SEWER LATERAL MODIFIED RISER

N.TS.

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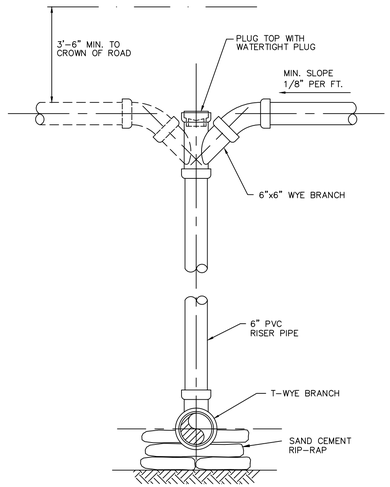
TOYOTA OF HOLLYWOOD
HOLLYWOOD FLORIDA
WATER AND SEWER DETAILS

DATE: Oct. 2016
SCALE: N.T.S.
DESIGNED BY: M.G.
DRAWN BY: A.E.V.
JOB NUMBER 16-3786
SHEET No. WS5

SEAL
Oct 31 2016
CLIFFORD B. LOUTAN, P.E.
FL. REG. NO. 56890

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786wsdt.dwg
PLOT DATE: 10/31/2016 11:32 AM BY: Andy Venneman
LAYOUT: [WS5]

K:\PROJECTS\16-xxx\16-3786\dwg\3786wsdt.dwg, WS5, 10/31/2016 11:32:55 AM, 1:1, Sun-Tech Engineering, Inc. (AEV), Sun-Tech Engineering, Inc. (AEV)

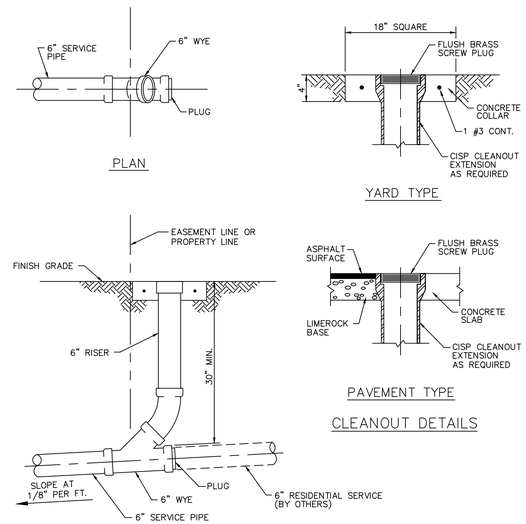


NOTES:

1. RISER CONNECTION TO BE USED ONLY WHEN INVERT OF SEWER IS GREATER THAN 7'-0" OR WHEN DIRECTED BY THE CITY.
2. SINGLE SERVICE CONNECTIONS SHALL USE 6" PIPE AND FITTINGS.

SANITARY SEWER LATERAL VERTICAL RISER

N.TS.



SINGLE SERVICE CONNECTION

SEWER SERVICE CONNECTION AND CLEANOUT AT PROPERTY LINE

N.TS.

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786wsdt.dwg
PLOT DATE: 10/31/2016 11:33 AM BY: Andy Venneman
LAYOUT: [WS6]

Sun-Tech Engineering, Inc.
Engineers - Planners - Surveyors
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REVISIONS

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TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

WATER AND SEWER DETAILS

DATE: Oct. 2016

SCALE: N.T.S.

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

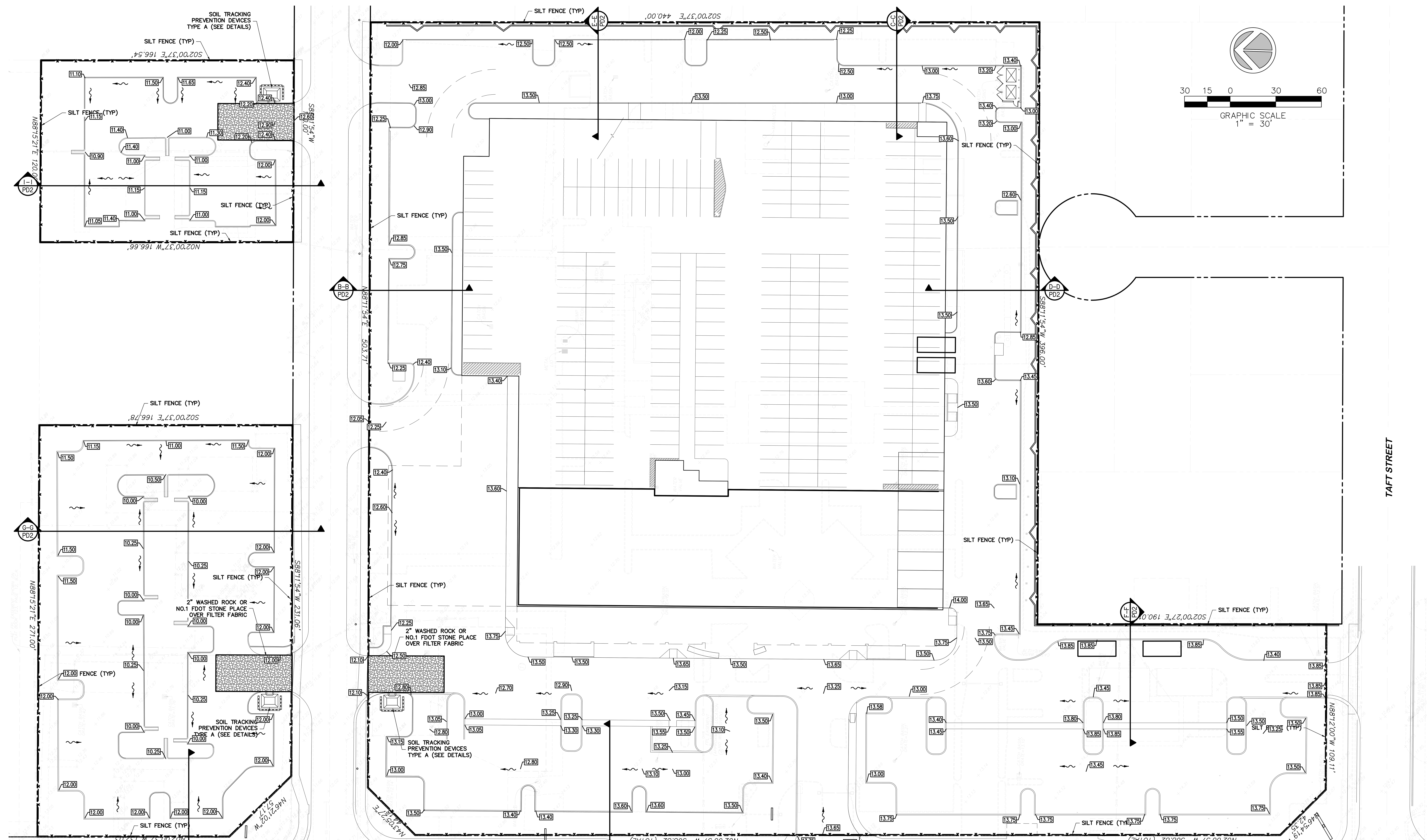
JOB NUMBER 16-3786

SHEET No. WS6

SEAL

Oct 31 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890



NOTES:

1. THIS PLAN REFLECTS REQUIREMENTS APPLICABLE TO PROTECTING SURFACE WATER RESOURCES IN STORMWATER MANAGEMENT SITE PLANS OR SITE PERMITS APPROVED BY STATE, TRIBAL OR LOCAL OFFICIALS.

2. SEDIMENT CONTROL MEASURES ARE TO BE MAINTAINED SO THAT SEDIMENT IS REMOVED FROM SEDIMENT BARRIERS WHEN THE DESIGN CAPACITY IS REDUCED BY 50%

TOTAL SITE = 1.12 Ac.
SITE AREA TO BE DISTURBED = 1.12 Ac.
WETLAND AREA TO BE MITIGATED = 00.00 Ac.

RUNOFF COEFFICIENT "C"
BEFORE CONSTRUCTION = 0.90
DURING CONSTRUCTION = 0.80
AFTER CONSTRUCTION = 0.80

LEGEND

~~>	OVERLAND FLOW
0.00	PROPOSED GRADE

FILE: K:\PROJECTS\16-xxx\16-3786\dwg\3786spp.dwg
PLOT DATE: 10/31/2016 11:33 AM BY: Andy Venneman
LAYOUT: [SPP1]

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REVISIONS

NO.	DATE:	DESCRIPTION

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

STORMWATER POLLUTION PREVENTION PLAN

DATE: Oct. 2016

SCALE: 1" = 30'

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

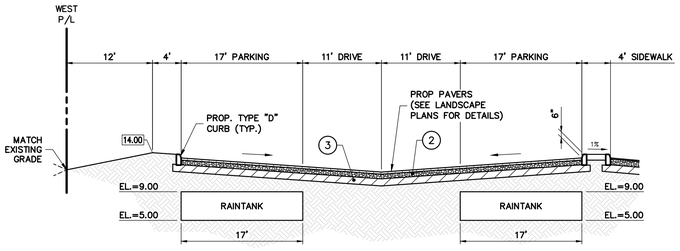
JOB NUMBER 16-3786

SHEET No. SPP1

SEAL

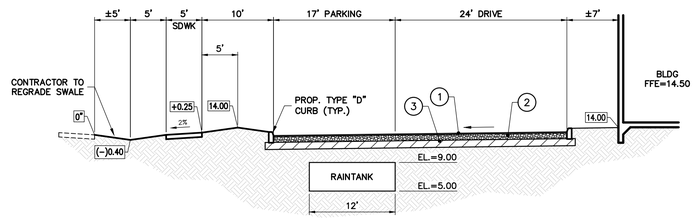
Oct 31 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890



SECTION "A-A"

SCALE: 1"=10'



SECTION "B-B"

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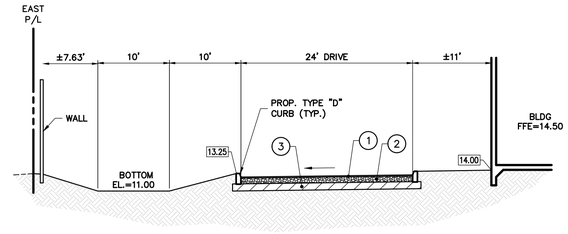

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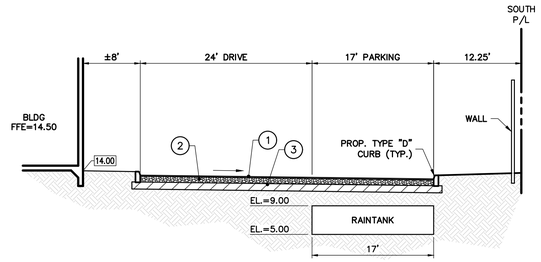

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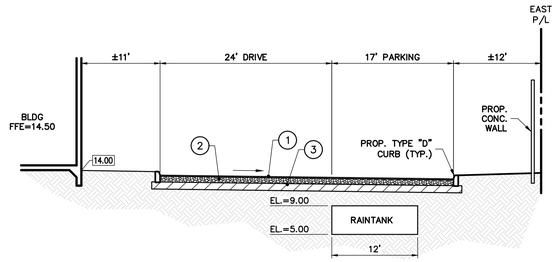
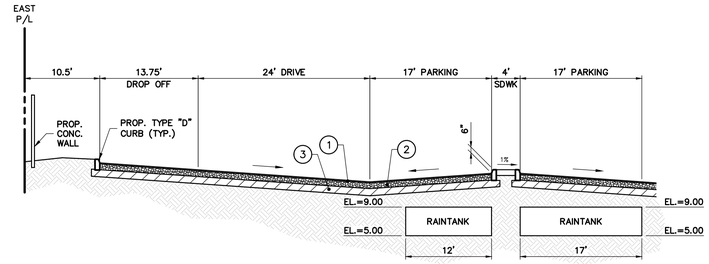


SECTION "E-E"

SCALE: 1"=10'

NOTES:

1. THE WEARING SURFACE SHALL BE 1–1/2" THICK, DOUBLE COURSE, TYPE S–III ASPHALTIC CONCRETE, OVER PRIME COAT.
2. THE BASE COURSE SHALL BE 8" LIMEROCK (70% CALCIUM), COMPACTED IN ACCORDANCE WITH A.A.S.H.T.O. SPECIFICATION T–180 TO 98% MAXIMUM DENSITY.
3. ALL ORGANIC AND YEILDING MATERIAL WITHIN THE LIMITS SHOWN SHALL BE REMOVED AND REPLACED WITH CLEAN FILL. THE SUBBASE SHALL EXTEND 12" BELOW THE BASE COURSE, SHALL BE COMPACTED IN ACCORDANCE W/ AASHTO SPECIFICATIONS T180 TO 98% MAXIMUM.



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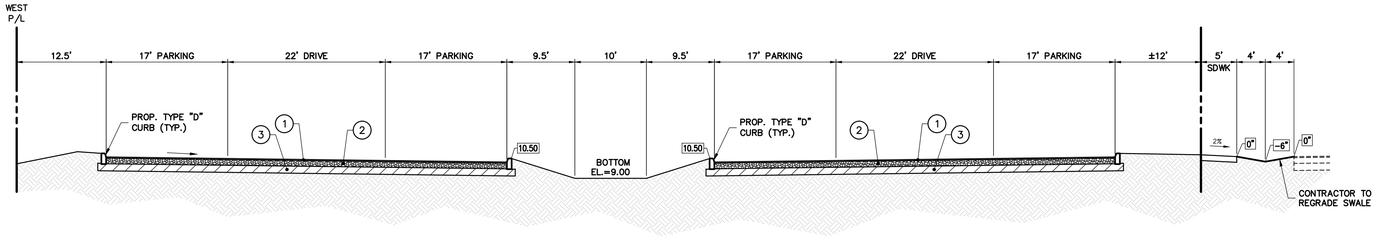

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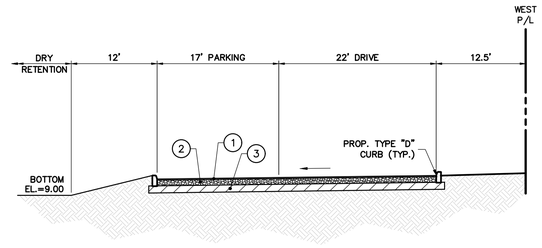

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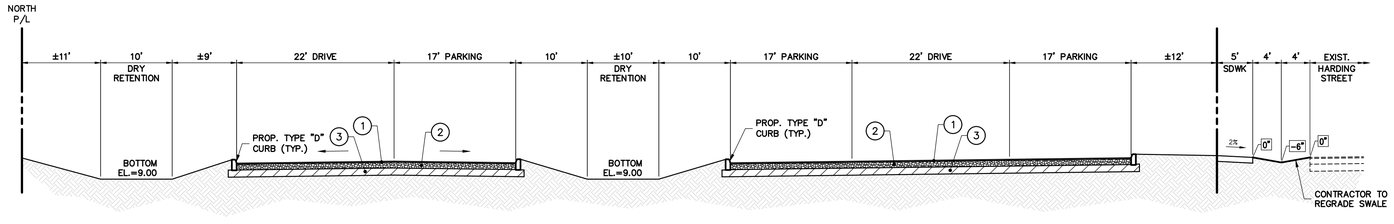

SECTION "I-I"

SCALE: 1"=10'

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PLOT DATE: 10/31/2016 11:33 AM BY: Andy Venneman
LAYOUT: [SPP2]

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REVISIONS

NO.	DATE:	DESCRIPTION:

TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

STORMWATER POLLUTION PREVENTION DETAILS

DATE: Oct. 2016

SCALE: N.T.S.

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

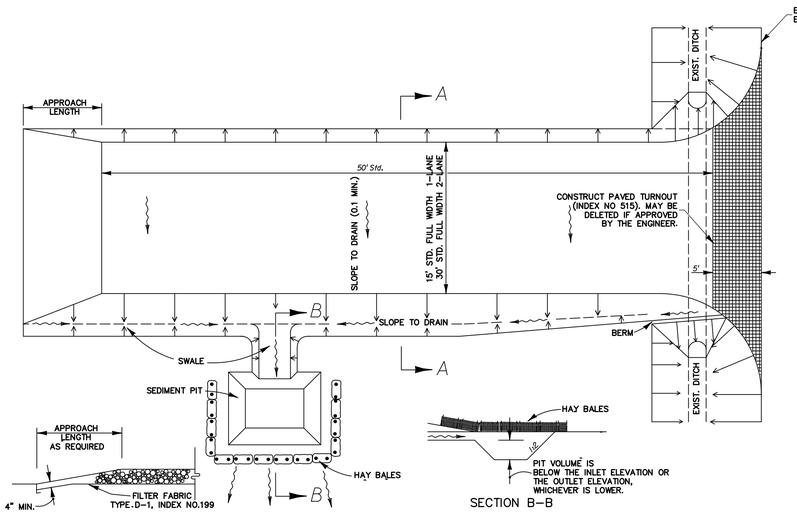
JOB NUMBER 16-3786

SHEET No. SPP2

SEAL

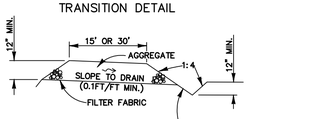
Oct 31 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

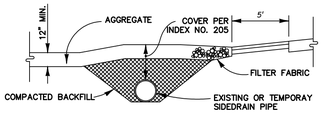


TRANSITION DETAIL

SECTION B-B



SECTION A-A



RURAL CONNECTION DETAIL

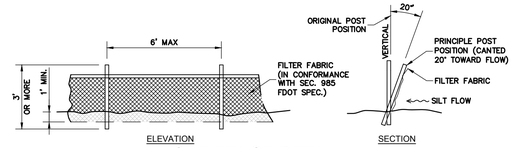
SOIL TRACKING PREVENTION DEVICE - TYPE 'A'

GENERAL NOTES

1. A SOIL TRACKING PREVENTION DEVICE (S.T.P.D.) SHALL BE CONSTRUCTED AT ALL LOCATIONS DESIGNATED BY THE ENGINEER FOR POINTS OF EGRESS FROM UNSTABILIZED AREAS OF THE PROJECT TO PUBLIC ROADS WHERE OFFSITE TRACKING OF MUD COULD OCCUR. TRAFFIC FROM UNSTABILIZED AREAS OF THE CONSTRUCTION PROJECT SHALL BE DIRECTED THRU A S.T.P.D. BARRIERS, FLAGGING, OR OTHER POSITIVE MEANS SHALL BE USED AS REQUIRED TO LIMIT AND DIRECT VEHICULAR EGRESS ACROSS THE S.T.P.D.
2. THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE TECHNIQUE TO MINIMIZE OFFSITE TRACKING OF SEDIMENT. THE ALTERNATIVE MUST BE REVIEWED AND APPROVED BY THE ENGINEER APPROVED TO ITS USE.
3. ALL MATERIALS SPILLED, DROPPED OR TRACKED ONTO PUBLIC ROADS (INCLUDING THE S.T.P.D. AGGREGATE AND CONSTRUCTION MUD) SHALL BE REMOVED DAILY, OR MORE FREQUENTLY IF SO DIRECTED BY THE ENGINEER.
4. AGGREGATES SHALL BE AS DESCRIBED IN SECTION 901 EXCLUDING 901-2.3. AGGREGATES SHALL BE FDOT SIZE #1. IF THIS SIZE IS NOTE AVAILABLE, THE NEXT AVAILABLE SMALLER SIZE AGGREGATE MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. SIZES CONTAINING EXCESSIVE SMALL AGGREGATE WILL TRACK OFF THE PROJECT AND ARE UNSUITABLE.
5. THE SEDIMENT PIT SHOULD PROVIDE A RETENTION VOLUME OF 3600 CUBIC FEET/ACRE OF SURFACE AREA DRAINING TO THE PIT. WHEN THE S.T.P.D. IS ISOLATED FROM OTHER DRAINAGE AREAS, THE FOLLOWING PIT VOLUMES WILL SATISFY THIS REQUIREMENT:

   $15'x50' = 100\ FT^3$ $30'x50' = 200\ FT^3$

   AS AN OPTION TO THE SEDIMENT PIT, THE WIDTH OF THE SWALE BOTTOM CAN BE INCREASED TO OBTAIN THE VOLUME. WHEN THE SEDIMENT PIT OR SWALE VOLUME HAS BEEN REDUCED TO ONE HALF, IT SHALL BE CLEANED. WHEN A SWALE IS USED, HAY BALES OR SILT FENCE SHALL BE PLACE ALONG THE ENTIRE LENGTH.
7. THE SWALE DITCH DRAINING THE S.T.P.D, SHALL HAVE A 0.2% MINIMUM AND A 1.0% MAXIMUM GRADE ALONG THE S.T.P.D. AND TO THE SEDIMENT PIT.
6. MITERED END SECTIONS ARE NOT REQUIRED WHEN THE SIDE DRAIN PIPE SATISFIES THE CLEAR ZONE REQUIREMENTS.
8. THE S.T.P.D. SHALL BE MAINTAINED IN A CONDITION THAT WILL ALLOW IT TO PERFORM ITS FUNCTION. TO PREVENT OFFSITE TRACKING, THE S.T.P.D. SHALL BE RINSED (DAILY WHEN IN USE) TO MOVE ACCUMULATED MUD DOWNWARD THRU THE STONE. ADDITIONAL STABILIZATION OF THE VEHICULAR ROUTE LEADING TO THE S.T.P.D. MAY BE REQUIRED TO LIMIT THE MUD TRACKED.
9. A S.T.P.D. SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR SOIL TRACKING PREVENTION DEVICE, EA. THE UNIT PRICE SHALL CONSTITUTE FULL COMPENSATION FOR CONSTRUCTION, MAINTENANCE, REPLACEMENT OF MATERIALS, REMOVAL, AND RESTORATION OF THE AREA UTILIZED FOR THE S.T.P.D.; INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING, TEMPORARY PIPE (INCLUDING M.E.S. WHEN REQUIRED), FILTER FABRIC, AGGREGATE, PAVED TURNOUT (INCLUDING ASPHALT AND BASE CONSTRUCTION), DITCH STABILIZATION, APPROACH ROUTE STABILIZATION, SEDIMENT REMOVAL AND DISPOSAL, WATER, RINSING AND CLEANING OF THE S.T.P.D. AND CLEANING OF PUBLIC ROADS, GRASSING AND SOD. HAY BALES SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR HAY OR STRAW BALE, EA. SILT FENCE SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR STAKED SILT FENCE, LF.
10. THE NOMINAL SIZE OF A STANDARD S.T.P.D. IS 15'x50' UNLESS OTHERWISE SHOWN IN THE PLANS. IF THE VOLUME OF ENTERING AND EXITING VEHICLES WARRANT, A 30' WIDTH S.T.P.D. MAY BE USED IF APPROVED BY THE ENGINEER. WHEN A DOUBLE WIDTH (30') S.T.P.D. IS USED, THE PAY QUANTITY SHALL BE 2 FOR EACH LOCATION.



SILT FENCE DETAIL

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TOYOTA OF HOLLYWOOD

HOLLYWOOD FLORIDA

STORMWATER POLLUTION PREVENTION DETAILS

DATE: Oct. 2016

SCALE: N.T.S.

DESIGNED BY: M.G.

DRAWN BY: A.E.V.

JOB NUMBER 16-3786

SHEET No. SPP3

SEAL

Oct 31 2016

CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

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LAYOUT: [SPP3]