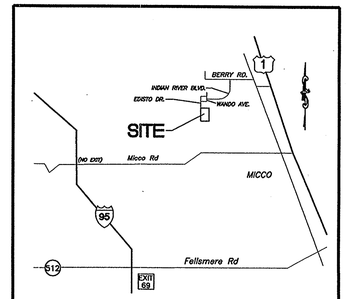
RIVER RIDGE ESTATES

ROADWAY, GRADING and UTILITY CONSTRUCTION PLANS

SECTION 09, TOWNSHIP 30 S, RANGE 38 E

BREVARD COUNTY, FLORIDA

DECEMBER 2004



VICINITY MAP

SITE INFORMATION

OWNER/APPLICANT
GLO DEVELOPMENT, LLC
3300 43RD AVENUE SUITE 4 & 5
VERO BEACH, FLORIDA 32960
772-299-0626

ENGINEER
MOSBY, MOIA & BOWLES, INC.
2455 14TH AVENUE
VERO BEACH, FLORIDA 32960
772-569-0035

SURVEYOR
WILLIAM B ZENTZ AND ASSOCIATES, INC.
684 OLD DIXIE HIGHWAY
VERO BEACH, FLORIDA 32962
772-567-7552

ZONING
GU

LAND USE
AGRICULTURAL

DENSITY
PROJECT AREA = 81.655 AC
MAXIMUM DENSITY = 1 UNIT / 5 ACRES
DENSITY PROVIDED 1 UNIT / 5.83 ACRES
TOTAL # UNITS = 14

BUILDING HEIGHT
MAXIMUM BUILDING HEIGHT = 35 FEET

CONSTRUCTION SCHEDULE
START CONSTRUCTION MARCH 2005
END CONSTRUCTION OCTOBER 2005

PERMITS REQUIRED
BREVARD COUNTY PRELIMINARY PLAT/FINAL ENGINEERING APPROVAL
BREVARD COUNTY CONSTRUCTION PERMIT
BREVARD COUNTY CONCURRENCY PERMIT
BREVARD COUNTY TREE REMOVAL / LAND CLEARING PERMIT
S.J.R.W.M.D. 40C-42 DISCHARGE PERMIT
FDEP POTABLE WATER PERMIT
FDEP NPDES NOTICE OF INTENT

FLOOD ZONE
THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE 'X' PER F.I.R.M. PANEL No. 120 61C 0620 E, DATED APRIL 3, 1989.

SANITARY SEWER SOURCE
ON-SITE SEPTIC SYSTEM

POTABLE WATER SOURCE
ON-SITE WELLS

TAX PARCEL I.D. NUMBER(S)
30-38-09-00251.0-0000.00

TRAFFIC STATEMENT
ADT = 14 UNITS x 10.1 TRIPS/DWELLING UNIT=142 TRIPS

SITE ADDRESS
EDISTO ROAD
BREVARD COUNTY

PROJECT DESCRIPTION
THE PROPOSED PROJECT IS A 14 LOT SINGLE FAMILY RESIDENTIAL SUBDIVISION. THE MINIMUM LOT SIZE IS 217,800 SQ.FT. APPROXIMATE LENGTH OF ROADWAY IS 2191 FEET. ALL PROPOSED ROADWAYS ARE TO BE DEDICATED AS PUBLIC.

LEGAL DESCRIPTION
THE WEST 1/2 OF THE NORTHWEST 1/4 OF SECTION 9, TOWNSHIP 30 SOUTH,
RANGE 38 EAST, BREVARD COUNTY, FLORIDA,
TOGETHER WITH
THE WEST 40 FEET OF THE NORTHWEST 1/4
OF THE NORTHWEST 1/4 OF
SECTION 9, TOWNSHIP 30 SOUTH, RANGE 38 EAST, BREVARD COUNTY, FLORIDA.

OWNER

GLO DEVELOPMENT, LLC
3300 43RD AVENUE SUITE 4 AND 5
VERO BEACH, FLORIDA 32960
PHONE (772) 299-0826

ENGINEER

MOSBY MOIA BOWLES AND ASSOCIATES, INC.
CONSULTING ENGINEERS
2455 - 14TH AVENUE
VERO BEACH, FLORIDA 32960
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FAX (772) 778-3617

SURVEYOR

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VERO BEACH, FL 32962
PHONE (772) 567-7552

INDEX OF DRAWINGS

LAND DEVELOPMENT DIVISION
APPROVED
FOR
CONSTRUCTION

THIS SHALL SERVE AS AUTHORIZATION FOR CONSTRUCTION INCLUDING CLEARING, DRAINAGE, ROADS, SEWER AND WATER.

ALL REVISIONS, CHANGES, OR DEVIATIONS FROM THESE PLANS MADE WITHOUT THE PROPER APPROVAL FROM THIS DIVISION SHALL BE DEEMED A VIOLATION OF THE BREVARD COUNTY CODES AND REGULATIONS.

APPROVED BY: Kelly Cameron DATE: 5-16-05

PERMIT NO. 05-19

THIS APPROVED PLAN EXPIRES:

RECEIVED
MAY 16 2005
ENG. INSPECTION

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

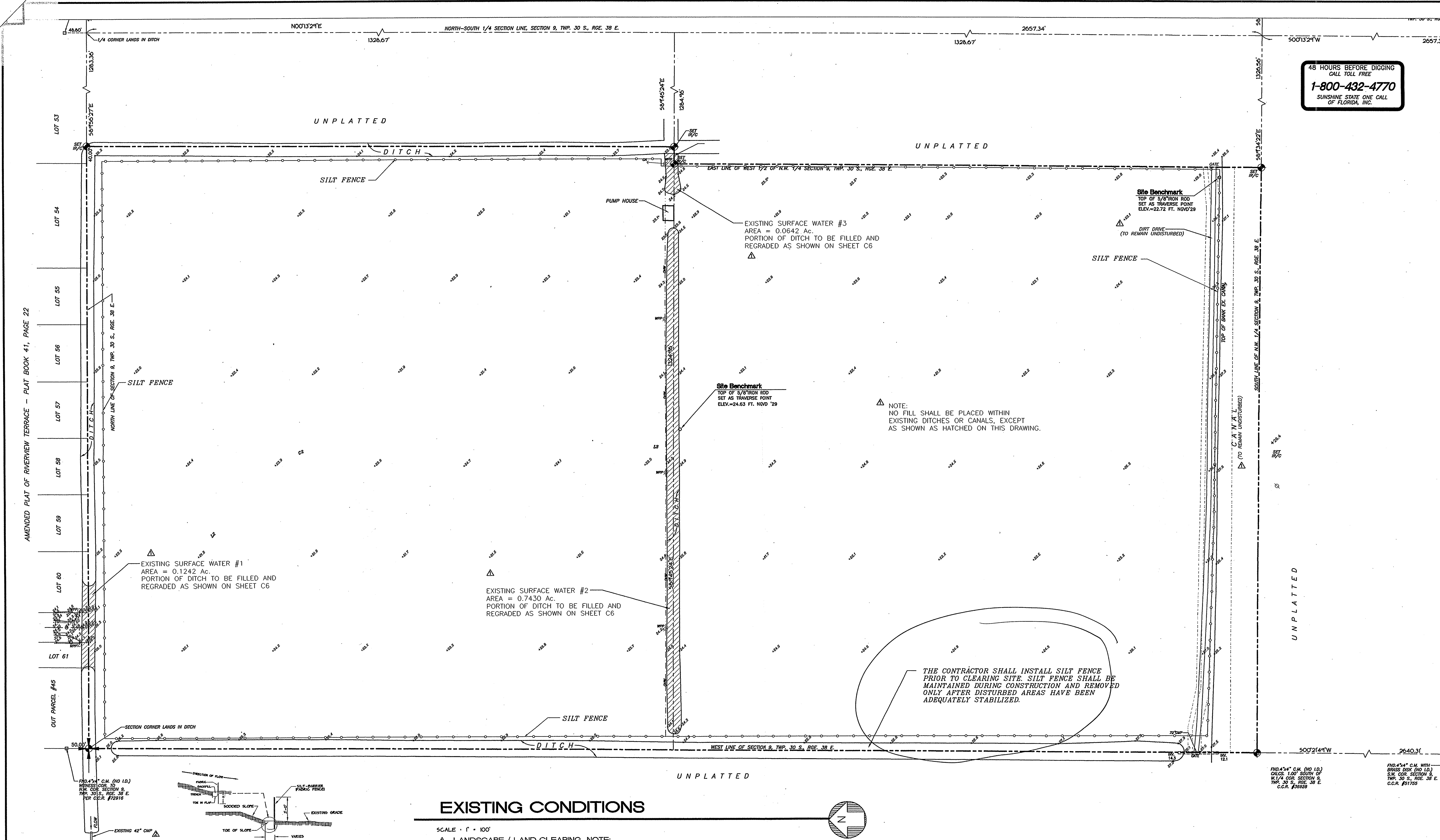
BRUCE A. MOIA
REGISTERED
No. 47529
STATE OF FLORIDA
PROFESSIONAL ENGINEER

☐ BRUCE A. MOIA, FL. P.E. #47529
☐ AARON J. BOWLES, FL. P.E.#55313

SHEET 1 OF 8

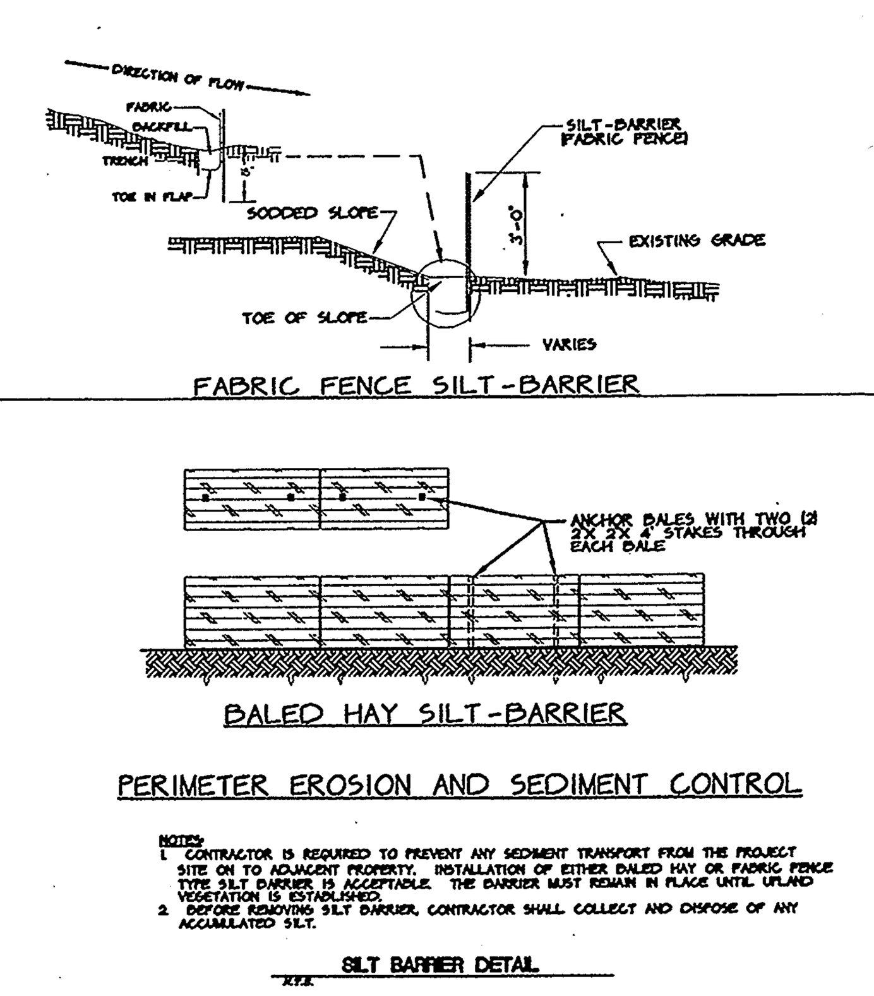
ENGINEER'S PROJECT NO. 04-294

SD04110004 APLAN 051605 SDA04-11-004 MAY 13 2005.



EXISTING CONDITIONS

SCALE · 1" · 100'



LANDSCAPE / LAND CLEARING NOTE:

1. ANY NON-NATIVE INVASIVE SPECIES WITHIN THE SITE BOUNDARY SHALL BE REMOVED PRIOR TO CERTIFICATE OF COMPLETION.
2. THIS SITE PLAN WILL COMPLY WITH BREVARD COUNTY ORDINANCE 02-26 REGARDING THE REMOVAL AND CONTROL IN PERPETUITY OF ALL NON-NATIVE INVASIVE SPECIES OF PLANTS.
3. THIS SITE PLAN WILL COMPLY WITH BREVARD COUNTY ORDINANCE 02-35 REGARDING SOIL PREPARATION AND MAINTENANCE IN PERPETUITY FOR ANY REQUIRED PLANTED LANDSCAPE.
4. THE METHOD OF IRRIGATION FOR PLANTS ON THIS SITE WILL BE INDIVIDUAL WELLS PER LOT AND A WELL FOR COMMON AREA LANDSCAPE EASEMENT.
5. PER SEC. 62-4365 (f) OF THE BREVARD COUNTY LAND CLEARING AND TREE PROTECTION ORDINANCE, SEEDING AND MULCHING SHALL BE APPLIED TO ESTABLISH A 60 PERCENT VEGETATIVE COVER WITHIN 30 DAYS AFTER CLEARING AND GRADING OF A SUBDIVISION HAS OCCURRED.
6. ANY STATE AND FEDERAL PERMITS THAT MAY BE REQUIRED AS A RESULT OF LAND CLEARING AND LANDSCAPING ACTIVITIES ARE THE RESPONSIBILITY OF THE OWNER OR DESIGNEE.
7. ANY CHANGES TO THE APPROVED LANDSCAPE AND/OR CLEARING PLAN WILL BE CONFIRMED IN WRITING THROUGH THE BREVARD COUNTY NATURAL RESOURCES MANAGEMENT OFFICE. FAILURE TO OBTAIN WRITTEN APPROVAL TO THE APPROVED LANDSCAPE AND/OR CLEARING PLAN BY THE BREVARD COUNTY NATURAL RESOURCES MANAGEMENT OFFICE MAY DELAY THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY AND/OR CERTIFICATE OF COMPLETION.

EXISTING CANOPY AREA

TOTAL EXISTING CANOPY AREA = NONE. SITE IS AN ABANDONED CITRUS GROVE.

PRESERVATION CALCULATIONS

1. TOTAL SITE ACREAGE = 81.655 AC
2. EXISTING CANOPY AREA = NONE
3. CANOPY PRESERVATION REQUIRED = NONE
4. CANOPY PRESERVATION PROVIDED = NONE
5. TRUNK PRESERVATION REQUIRED = NONE
6. TRUNK PRESERVATION PROVIDED = NONE

NOTE:
A 15' UNDISTURBED BUFFER TRACT IS PROPOSED ALONG THE SITE PERIMETER TO RETAIN ANY EXISTING VEGETATION.

NOTE:
CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTATION DURING CONSTRUCTION. ANY MONUMENTATION DISTURBED DURING CONSTRUCTION MUST BE REPLACED BY A FLORIDA LICENSED SURVEYOR.

BRUCE A. MOIA, FL. P.E. #47529
AARON J. BOWLES, FL. P.E. #55313

MOSBY MOIA BOWLES AND ASSOCIATES, INC.
CONSULTING ENGINEERS
2455 - 14TH AVENUE
VERO BEACH, FLORIDA 32960
PHONE (772) 569-0035
FAX (772) 778-3617

REVISIONS	DATE
1 REVISED PER BREVARD CTY & SJRWMD	1/12/05
2 REVISED PER BREVARD CTY 3/21/05	3/29/05
3	
4	
5	

JOB NO.	04-294
DESIGNED	BAM
DRAWN	WJA
CHECKED	BAM
DATE	NOV 2004
SCALE	1"=100'

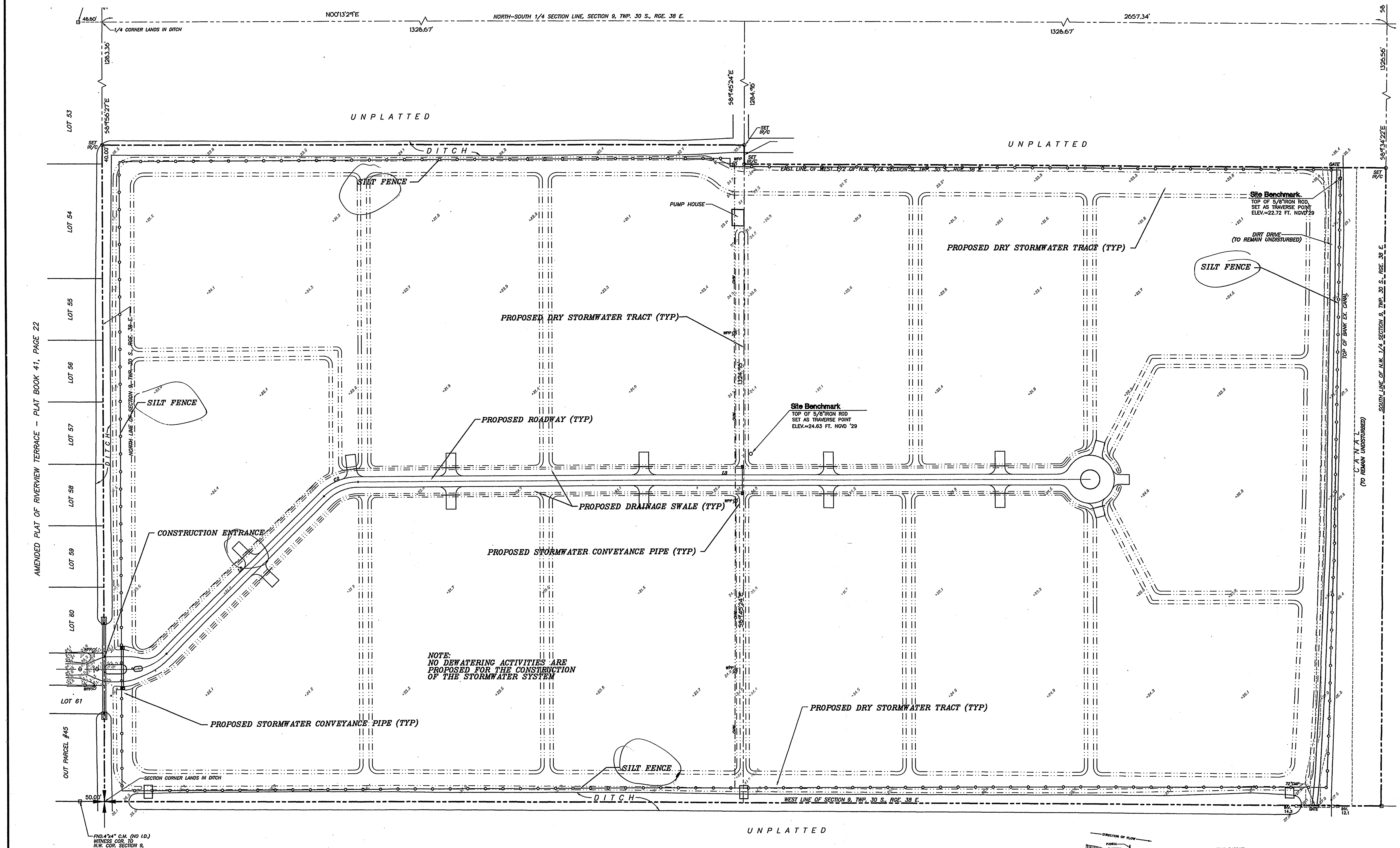
EXISTING CONDITIONS PLAN

RIVER RIDGE ESTATES SUBDIVISION
BREVARD COUNTY, FLORIDA

SHEET C2 OF 8

04-294

MAY 13 2005



SITE DATA

TOTAL SITE AREA = 81.655 ACRES
AREA TO BE DISTURBED = 81.655 ACRES

OUTFALL LOCATION

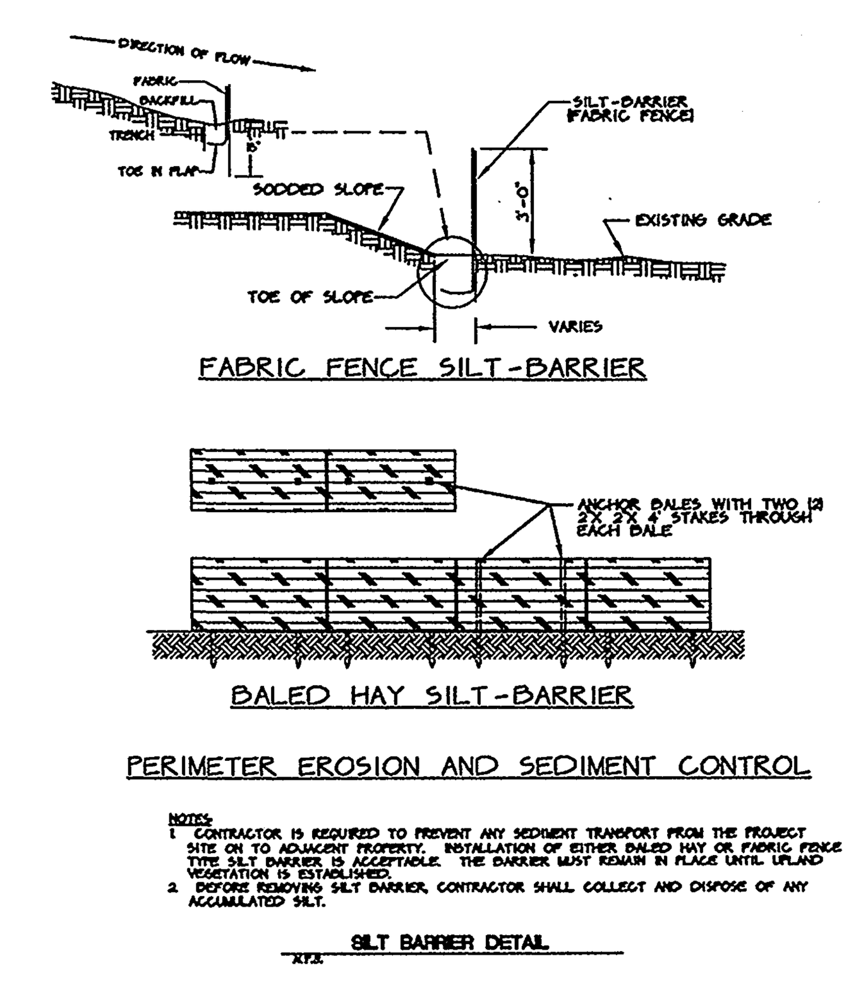
LATITUDE 27° 53' 17"
LONGITUDE 80° 32' 29"

SITE DESCRIPTION

THIS PROPOSED PROJECT INVOLVES CONSTRUCTION AND DEVELOPMENT OF A SINGLE FAMILY RESIDENTIAL SUBDIVISION. INFRASTRUCTURE IMPROVEMENTS CONSIST OF ROADWAYS, STORMWATER RETENTION TRACTS, DRAINAGE PIPES, AND SINGLE FAMILY HOMES. CONSTRUCTION OF THESE FACILITIES WILL INVOLVE CLEARING, GRUBBING, FILLING, EXCAVATION, GRADING AND STABILIZATION. POTENTIAL POLLUTION SOURCES INCLUDE SOIL EROSION AND SILTATION, TEMPORARY DEWATERING, AND DISCHARGES FROM CONSTRUCTION EQUIPMENT (I.E. OIL, GAS). THE CONTRACTOR SHALL INCORPORATE BEST MANAGEMENT PRACTICES AND EROSION CONTROLS AS SHOWN OR NOTED ON THIS PLAN TO MINIMIZE OR ELIMINATE THE POTENTIAL FOR POLLUTION DISCHARGES. THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM ALL WORK AND MAINTAIN ALL DEVICES IN ACCORDANCE WITH FDEP NPDES STANDARDS, AS WELL AS PERFORM ALL NECESSARY INSPECTION AND REPORTING.

STORMWATER POLLUTION PREVETION PLAN

SCALE : 1" = 100'



I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

☐ BRUCE A. MOIA, FL. P.E. #47529
☐ AARON J. BOWLES, FL. P.E. #55313

48 HOURS BEFORE DIGGING CALL TOLL FREE
1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

04-294

REVISIONS	DATE
1 REVISED PER BREVARD CTY & SJRWMD	1/12/05
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STORMWATER POLLUTION PREVENTION PLAN

RIVER RIDGE ESTATES SUBDIVISION
BREVARD COUNTY, FLORIDA

SHEET C3 OF 8
04-294

MAY 1 3 2005

EROSION AND SEDIMENTATION CONTROL NOTES

CONSTRUCTION ACTIVITIES CAN RESULT IN THE GENERATION OF SIGNIFICANT AMOUNTS OF POLLUTANTS WHICH MAY REACH SURFACE OR GROUND WATERS. ONE OF THE PRIMARY POLLUTANTS OF SURFACE WATERS IS SEDIMENT DUE TO EROSION. EXCESSIVE QUANTITIES OF SEDIMENT WHICH REACH WATER BODIES OF FLOODPLAINS HAVE BEEN SHOWN TO ADVERSELY AFFECT THEIR PHYSICAL, BIOLOGICAL AND CHEMICAL PROPERTIES. TRANSPORTED SEDIMENT CAN OBSTRUCT STREAM CHANNELS, REDUCE HYDRAULIC CAPACITY OF WATER BODIES OF FLOODPLAINS, REDUCE THE DESIGN CAPACITY OF CULVERTS AND OTHER WORKS, AND ELIMINATE BENTHIC INVERTEBRATES AND FISH SPAWNING SUBSTRATES BY SILTATION. EXCESSIVE SUSPENDED SEDIMENTS REDUCE LIGHT PENETRATION AND THEREFORE, REDUCE PRIMARY PRODUCTIVITY.

MINIMUM STANDARDS

1. SEDIMENT BASIN AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTRIBUTING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UNSLOPE LAND DISTURBANCE TAKES PLACE.

2. ALL SEDIMENT CONTROL MEASURES ARE TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON BALANCE OF SITE. PERIMETER SEDIMENT BARRIERS SHALL BE CONSTRUCTED TO PREVENT SEDIMENT OR TRASH FROM FLOWING OR FLOATING ON TO ADJACENT PROPERTIES.

3. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT UNDISTURBED FOR MORE THAN ONE YEAR.

4. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

5. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE REVIEWER, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.

6. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

7. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE SEDIMENT BASIN SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE ANTICIPATED SEDIMENT LOADING FROM THE LAND-DISTURBING ACTIVITY. THE OUTFALL DEVICE OR SYSTEM DESIGN SHALL TAKE INTO ACCOUNT THE TOTAL DRAINAGE AREA FLOWING THROUGH THE DISTURBED AREA TO BE SERVED BY THE BASIN.

8. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.

9. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

10. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

11. SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAIN SYSTEM, DITCH OR CHANNEL. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

12. BEFORE TEMPORARY OR NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

13. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

14. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

16. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES MUST BE PROVIDED TO ENSURE INTENDED PURPOSE IS ACCOMPLISHED. THE DEVELOPER, OWNER AND/OR CONTRACTOR SHALL BE CONTINUALLY RESPONSIBLE FOR ALL SEDIMENT LEAVING THE PROPERTY. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.

17. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

    A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.

    B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.

    C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.

    D. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.

18. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE WITH CURBS AND GUTTERS, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL SUBDIVISION LOTS AS WELL AS TO LARGER LAND-DISTRIBUTING ACTIVITIES.

19. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, IN THE OPINION OF THE REVIEWER. DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

20. PROPERTIES AND WATERWAYS DOWNSTREAM FROM CONSTRUCTION SITE SHALL BE PROTECTED FROM SEDIMENT DISPOSITION AND EROSION.

21. PHASED PROJECTS SHOULD BE CLEARED IN CONJUNCTION WITH CONSTRUCTION OF EACH PHASE.

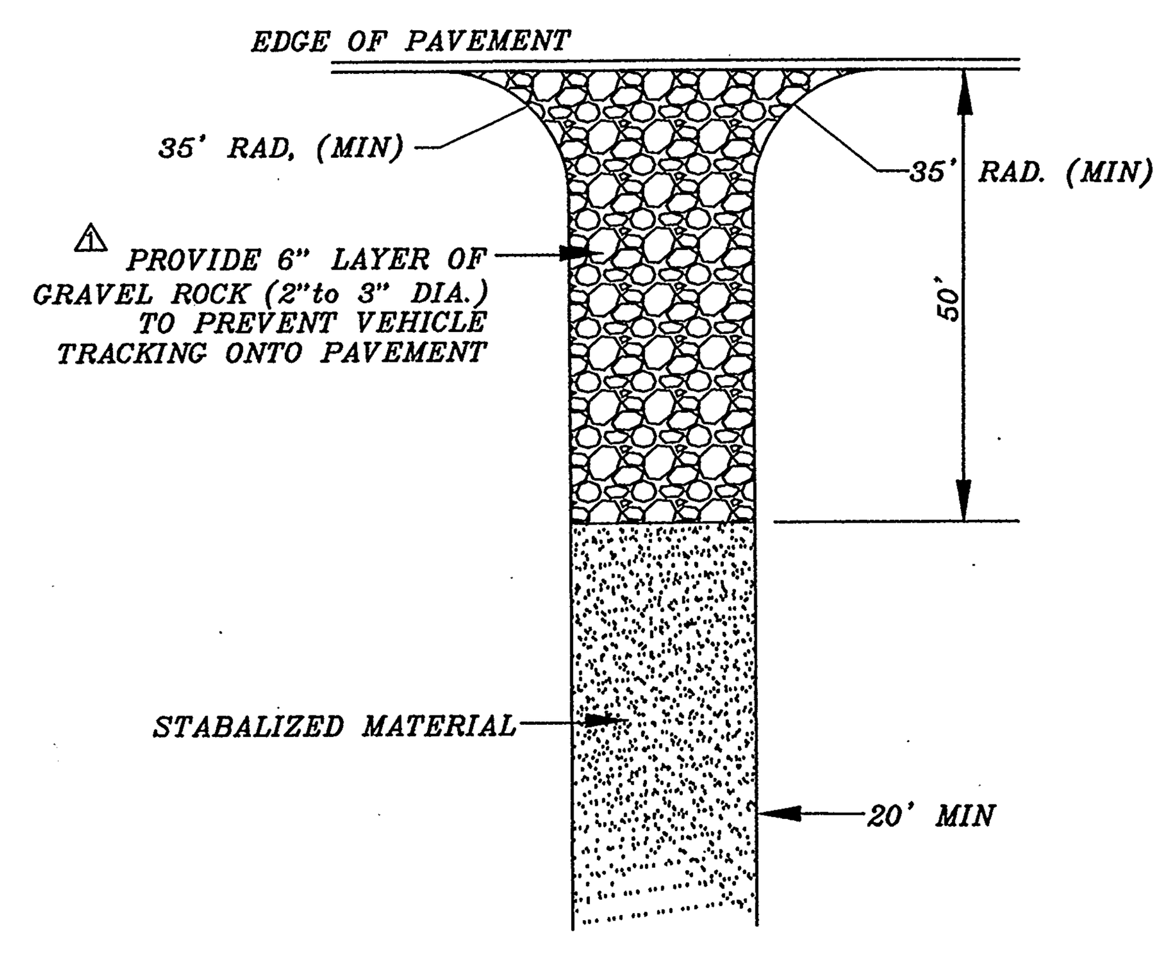
22. EROSION CONTROL DESIGN AND CONSTRUCTION SHALL FOLLOW THE REQUIREMENTS IN INDEX NOS. 101, 102 AND 103 OF FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS.

23. THE REVIEWER MAY APPROVE MODIFICATIONS OR ALTER PLANS TO THESE EROSION CONTROL CRITERIA DUE TO SITE SPECIFIC CONDITIONS.

24. CONTRACTOR SHALL CLEAN ACCESS POINTS TO EXISTING ROADS ON A DAILY BASIS

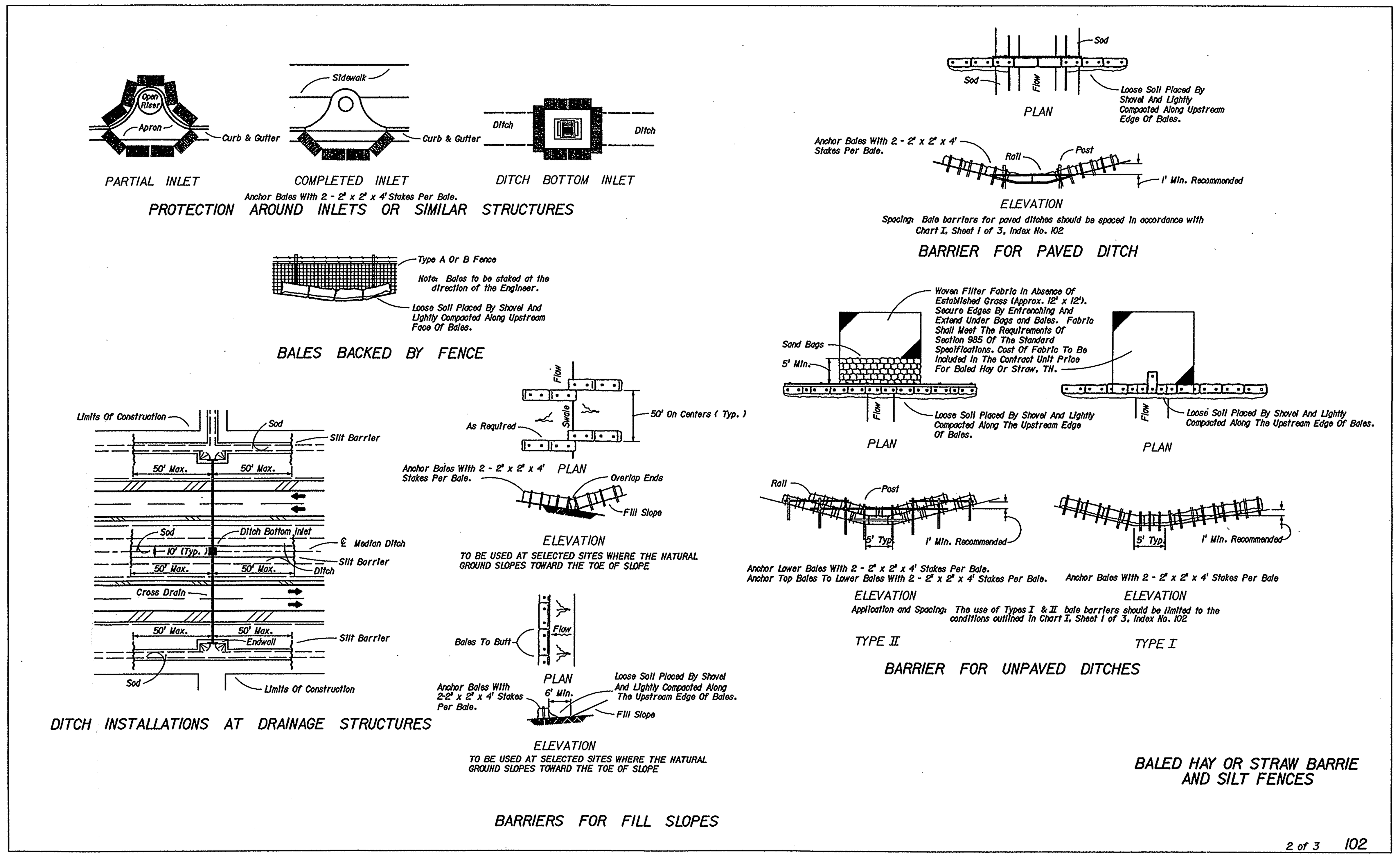
25. CONTRACTOR SHALL ROUTINELY INSPECT ALL EROSION CONTROL MEASURES ON A WEEKLY BASIS AND MAKE ANY NECESSARY REPAIRS.

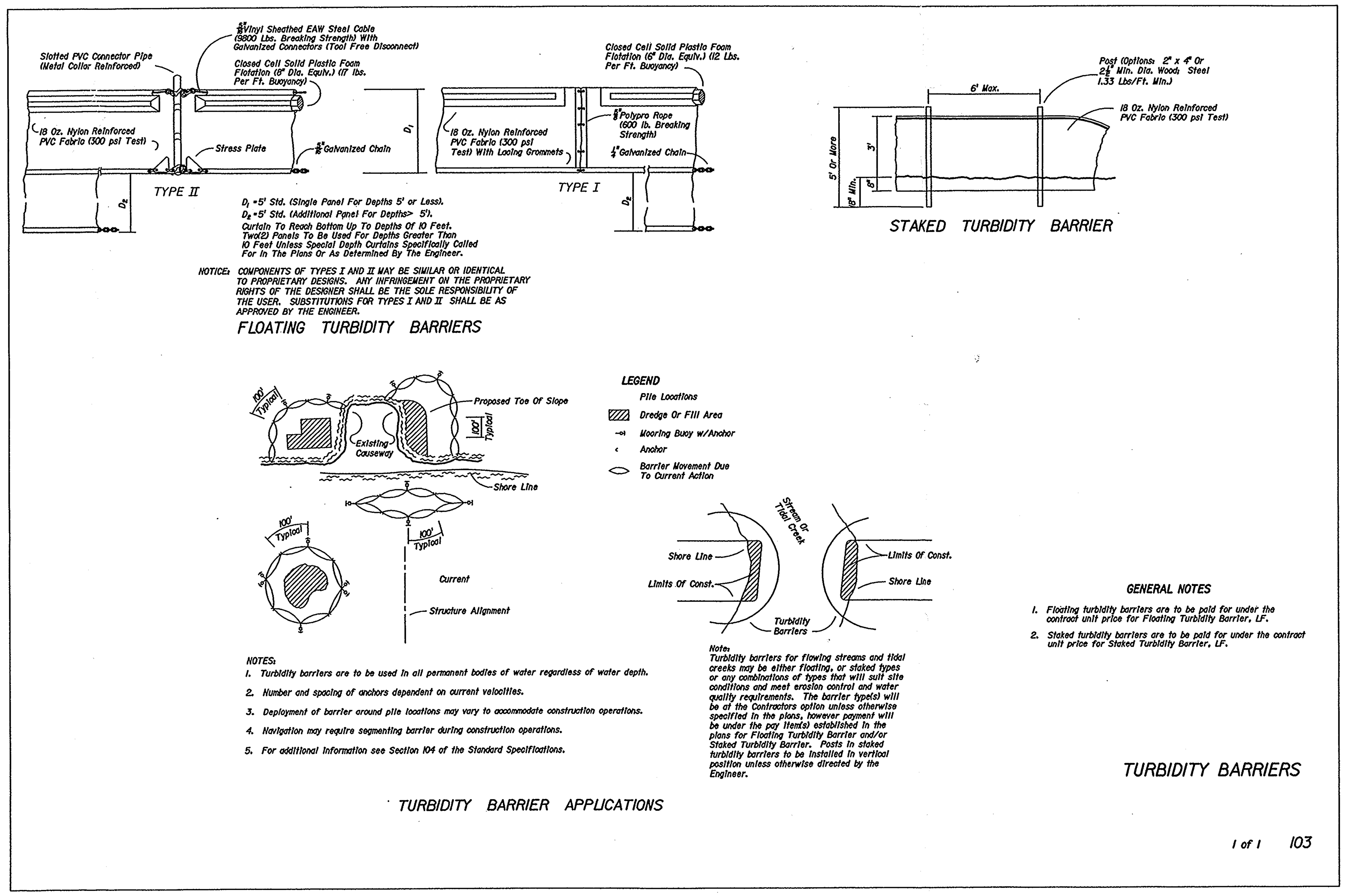
04-294

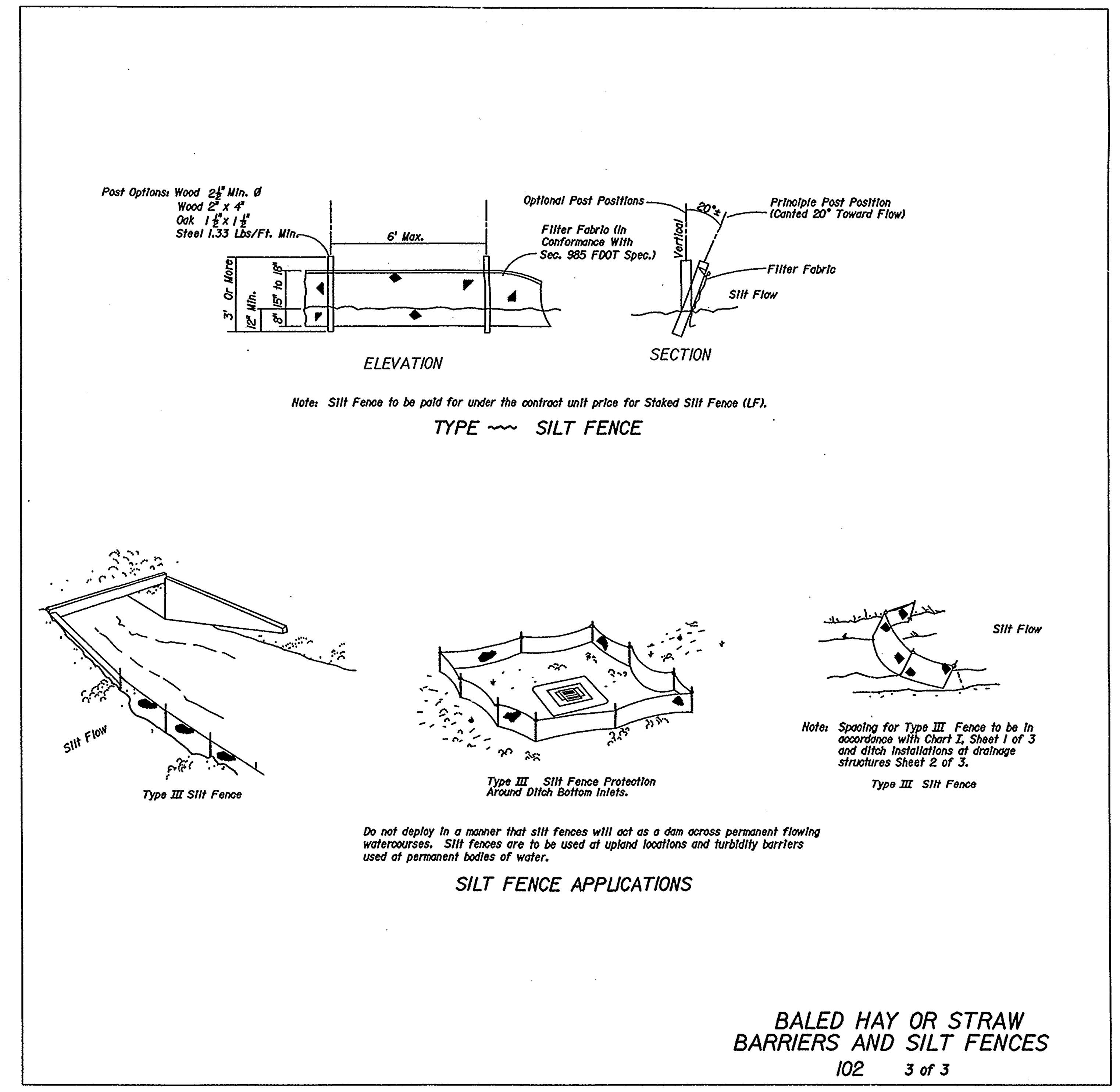


CONSTRUCTION ENTRANCE DETAIL

NOTE: CONTRACTOR TO SWEEP STREETS OR PROVIDE ADDITIONAL BMP'S TO PREVENT VEHICLES TRACKING AND EROSION.







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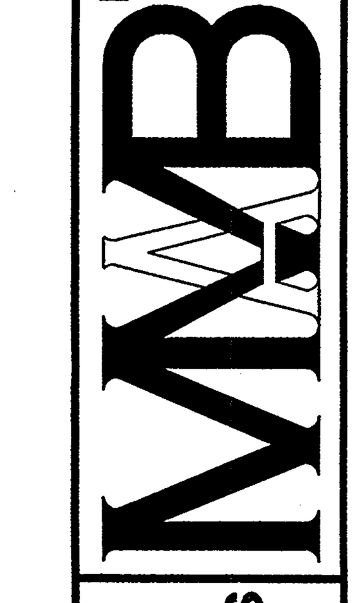

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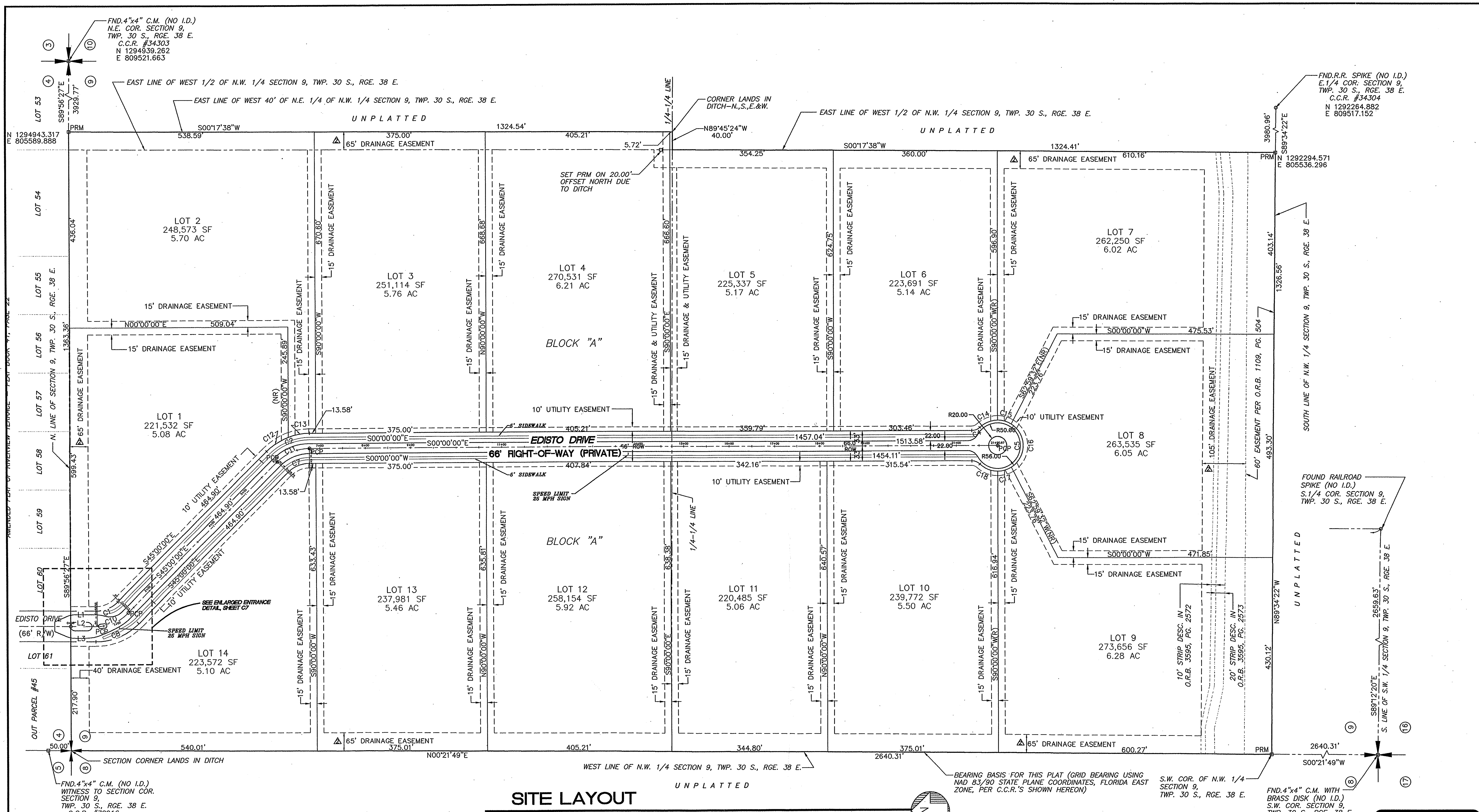
STORMWATER POLLUTION PREVENTION PLAN DETAILS

RIVER RIDGE ESTATES SUBDIVISION
BREVARD COUNTY, FLORIDA

SHEET C4 OF 8
04-294

MAY 1 3 2005



SITE LAYOUT

SCALE : 1" = 100'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD	CHORD BEARING
C1	67.00'	45°20'33"	53.02'	51.65'	S22°19'44"E
C2	133.00'	45°00'00"	104.46'	101.79'	N22°30'00"W
C3					
C4	25.00'	47°14'01"	20.61'	20.03'	S23°37'00"E
C5	56.00'	274°28'01"	268.26'	76.05'	N90°00'00"E
C6	25.00'	47°14'01"	20.61'	20.03'	N23°37'00"E
C7	70.00'	45°00'00"	54.98'	53.58'	N22°30'00"W
C8	130.00'	45°20'33"	102.88'	100.22'	S22°19'44"E
C9	25.00'	90°17'00"	39.39'	35.44'	N44°47'57"W

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD	CHORD BEARING
C10	100.00'	45°20'33"	79.14'	77.09'	S22°19'44"E
C11	100.00'	45°00'00"	78.54'	76.54'	N22°30'00"W
C12	130.00'	24°04'43"	54.63'	54.23'	N32°57'39"W
C13	130.00'	20°55'17"	47.47'	47.21'	N10°27'39"W
C14	56.00'	47°14'01"	46.17'	44.87'	N23°37'00"W
C15	56.00'	32°23'33"	31.66'	31.24'	N16°11'46"E
C16	56.00'	115°12'55"	112.61'	94.57'	N90°00'00"E
C17	56.00'	32°23'33"	31.66'	31.24'	S16°11'46"E
C18	56.00'	47°14'01"	46.17'	44.87'	S23°37'00"W

LINE TABLE		
LINE	BEARING	LENGTH
L1	S00°20'33"W	55.55'
L2	S00°20'33"W	55.39'
L3	S00°20'33"W	55.22'

TRAFFIC NOTES:

1. SEE ENTRANCE DETAIL, SHEET C7 FOR TRAFFIC CONTROL SIGNAGE AT ENTRANCE.
2. ALL SIGNAGE SHALL BE HIGH INTENSITY.
3. ALL STRIPPING SHALL BE THERMOPLASTIC. CONSTRUCTION.

UTILITY NOTE:

1. REGARDLESS OF PRIVATE OR PUBLIC DEDICATIONS THERE WILL BE NO UTILITY CONNECTIONS, METER BOXES OR VALVE BOXES IN EXISTING OR PROPOSED SIDEWALK OR DRIVEWAY AREAS.

PERIMETER BUFFER NOTES:

1. THE REQUIREMENT FOR THE 15' PERIMETER BUFFER WAS WAIVED BY BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS AGENDA DATED 12/14/04.

FIRE HYDRANT NOTES:

1. HYDRANT SHALL BE A MIN. OF 6 FEET AND A MAX. OF 8 FEET FROM EDGE OF PAVEMENT.
2. STEAMER CONNECTION (4 ½") SHALL BE BETWEEN 18" AND 24" ABOVE GRADE.
3. HYDRANT ACCESS SHALL BE MAINTAINED DURING CONSTRUCTION.
4. LANDSCAPING SHALL NOT BE LOCATED WITHIN 7.5' OF THE FRONT OF AND 4' TO THE REAR OF ANY HYDRANT OR FORE DEPT. CONNECTION.
5. WATER FOR FIRE FIGHTING PURPOSES SHALL BE INDICATED WITH A BLUE ROADWAY REFLECTOR, PLACED ONE FOOT OFF THE CENTERLINE OF THE ROADWAY FACING THE FIRE HYDRANT, NEW OR EXISTING.
6. WATER FOR FIRE FIGHTING PURPOSES SHALL BE AVAILABLE AT THE TIME COMBUSTIBLES ARE BROUGHT TO THE SITE.
7. ACCESS SHALL BE PROVIDED BY AN UNOBSTRUCTED ALL–WEATHER DRIVING SURFACE CAPABLE OF SUPPORTING THE LOADS IMPOSED BY RESPONDING APPARATUS OF NOT LESS THAN 20 FOOT AND SHALL BE MAINTAINED DURING CONSTRUCTION.
8. (△2) ALL HYDRANTS SHALL BE READILY ACCESSIBLE WITHOUT THE NEED TO TRAVERSE SWALES, DITCHES, ETC.
9. (△2) GATES SHALL HAVE A CLEAR OPENING WIDTH OF 14 FEET MINIMUM.

△2 FLAG LOT APPROVAL NOTE

THE REQUIREMENT FOR ALLOWING FLAG LOT IS REQUESTED OF THE BREVARD COUNTY BOARD OF COUNTYFOR LOTS #2, 7, AND 9.

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SUNSHINE STATE ONE CALL OF FLORIDA, INC.

☐ BRUCE A. MOIA, FL. P.E. #47529
☐ AARON J. BOWLES, FL. P.E.#55313

MOSBY MOIA BOWLES AND ASSOCIATES, INC.
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JOB NO.	04–294
DESIGNED	BAM
DRAWN	WJA.
CHECKED	BAM
DATE	NOV 2004
SCALE	1"=100'

REVISIONS	DATE
△1 REVISED PER BREVARD CTY & SJRWMD	1/12/05
△2 REVISED PER BREVARD COUNTY 3/21/05	3/22/05
3	
4	
5	
6	

SITE LAYOUT PLAN

RIVER RIDGE ESTATES SUBDIVISION

BREVARD COUNTY, FLORIDA

SHEET C5 OF 8

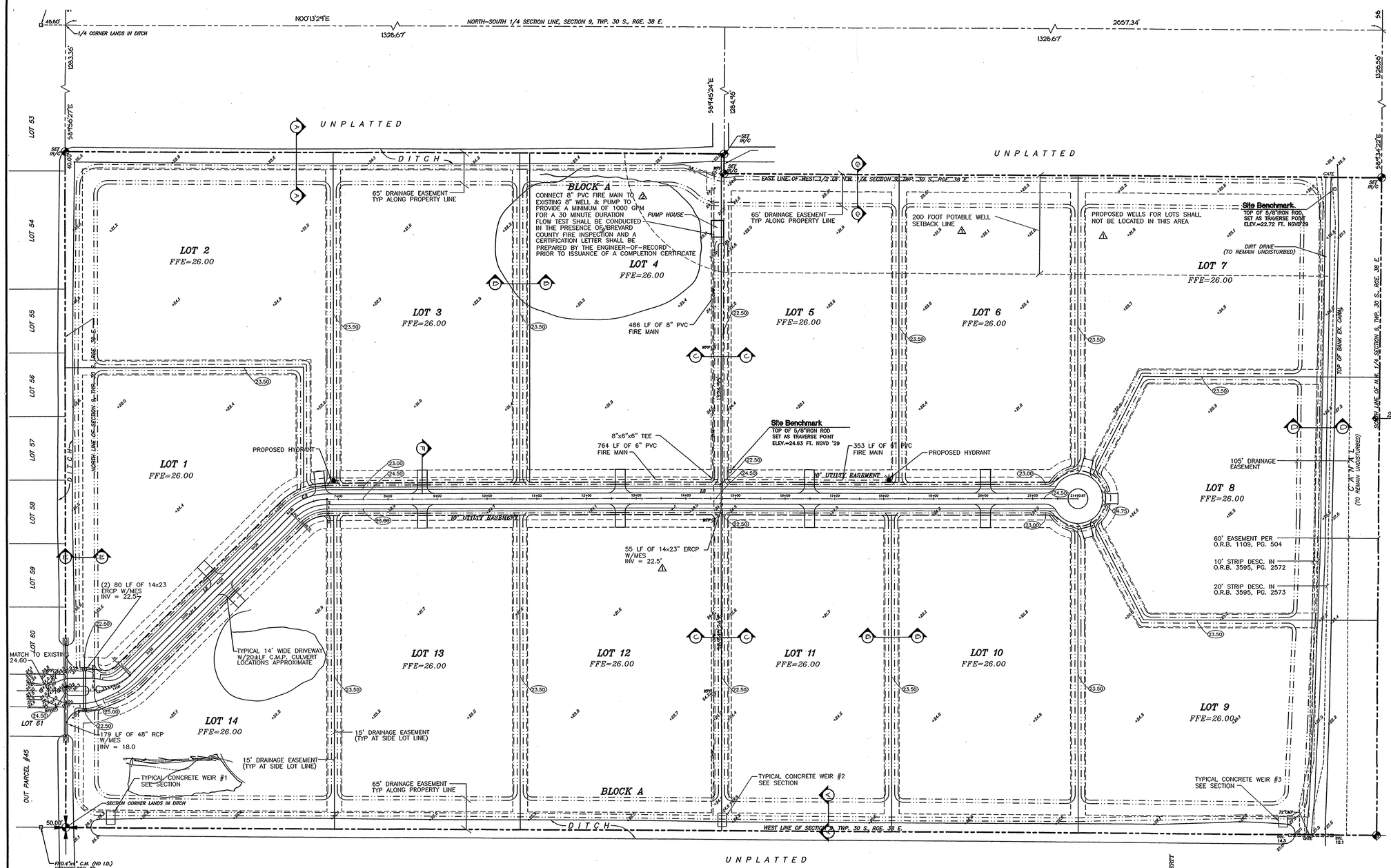
04–294

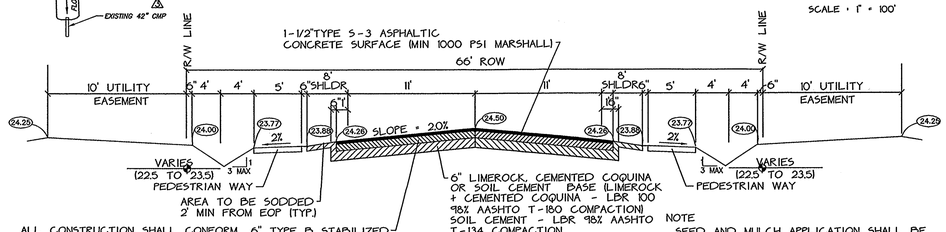
04-294

MAY 1 3 2005

PAVING GRADING AND UTILITY PLAN

SCALE : 1" = 100'





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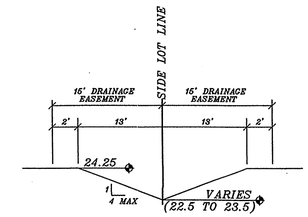
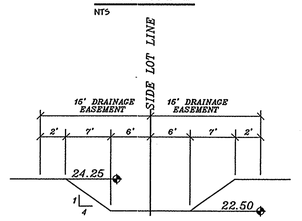
TYPICAL ROADWAY SECTION
NTS



SECTION B-B
NTS



SECTION C-C
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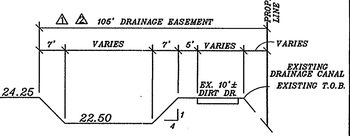

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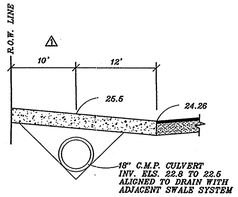
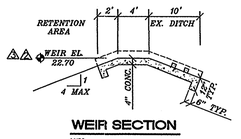


TYP. DRIVEWAY SECTION
SECTION F
NTS



WEIR SECTION
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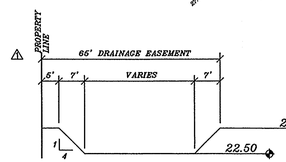

SECTION G-G
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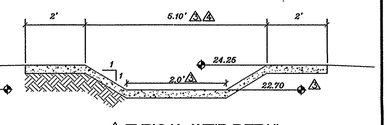

TYPICAL WEIR DETAIL
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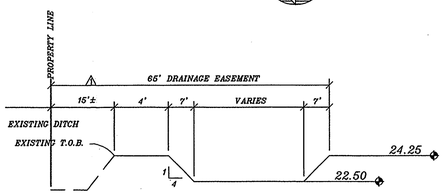

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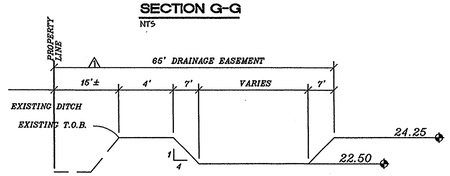

SECTION A-A
NTS

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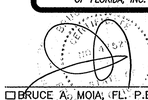
SUNSHINE STATE ONE CALL OF FLORIDA, INC.



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JOB NO.	04-234
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SCALE	1"= 100'

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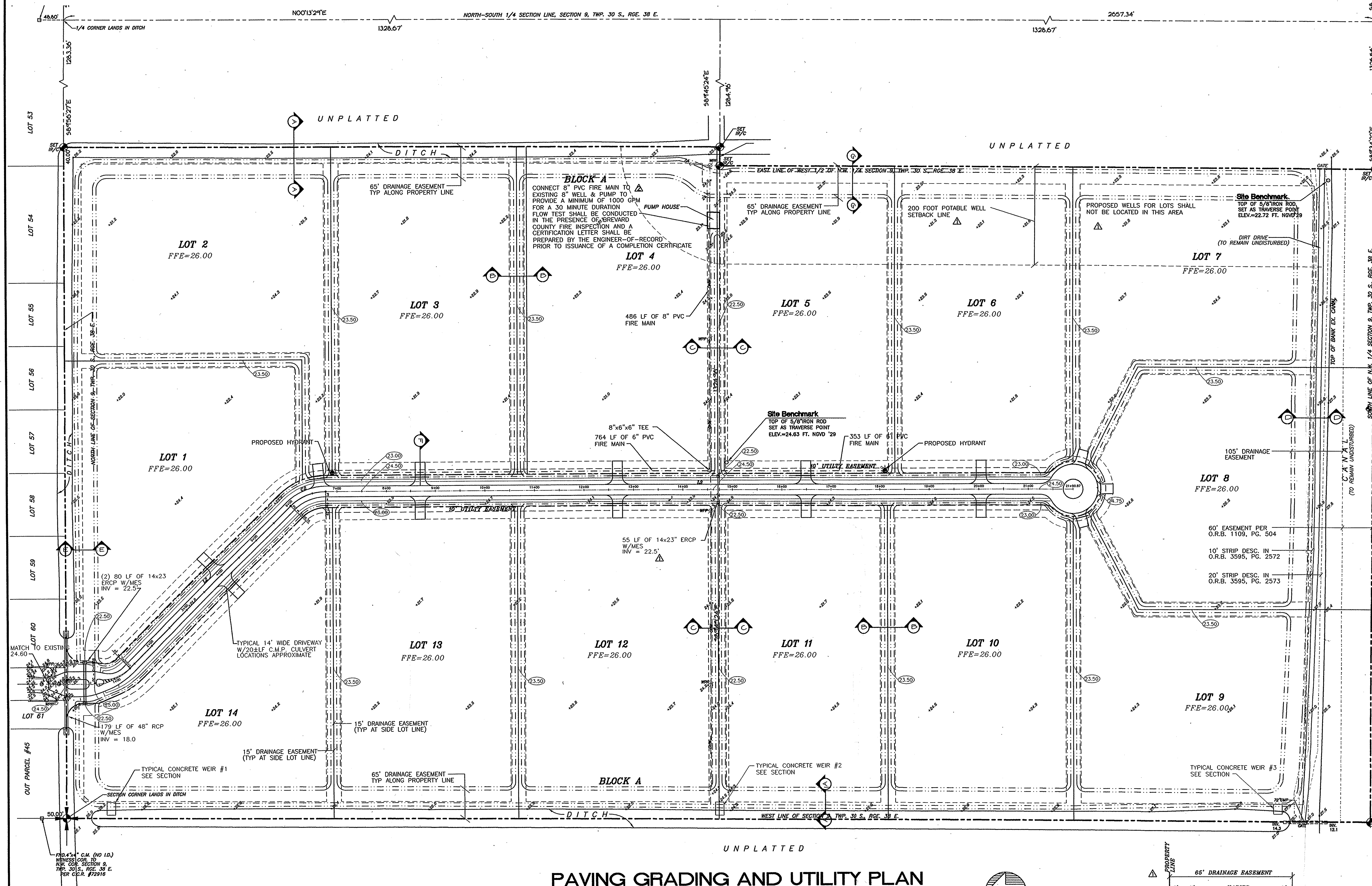
PAVING, GRADING AND UTILITY PLAN

RIVER RIDGE ESTATES SUBDIVISION
BREVARD COUNTY, FLORIDA

SHEET C6 OF 8
04-294

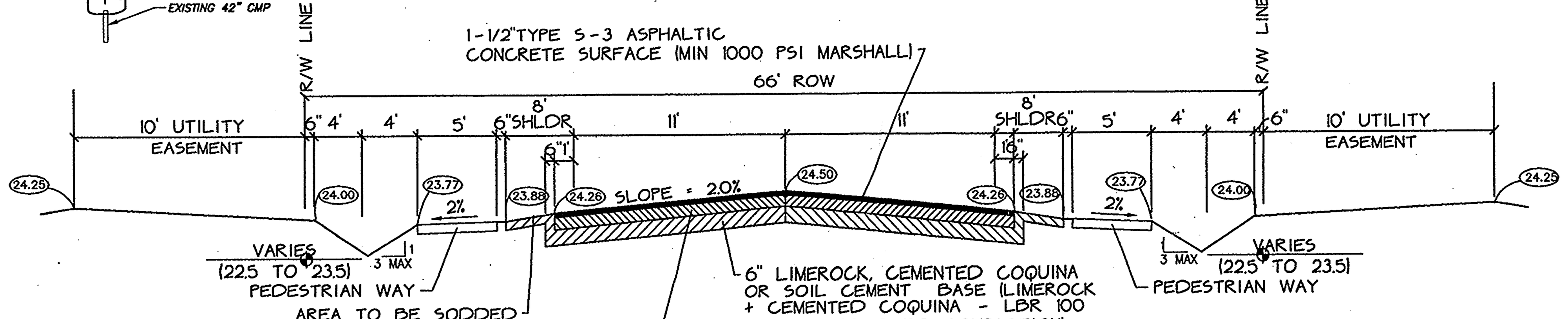
04-294

MAY 1 3 2005



PAVING GRADING AND UTILITY PLAN

SCALE : 1" = 100'



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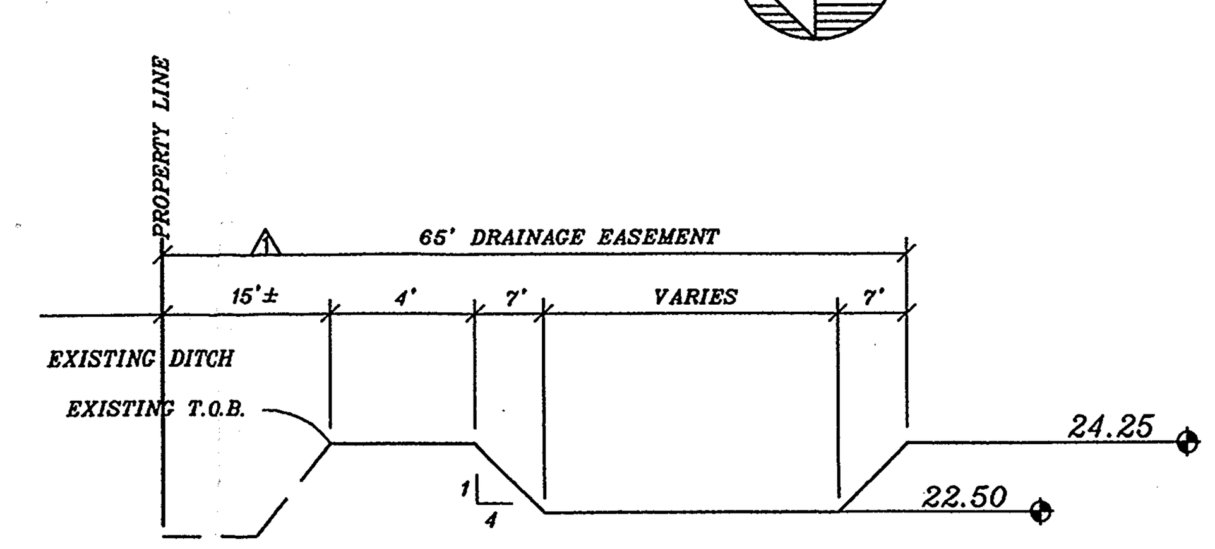

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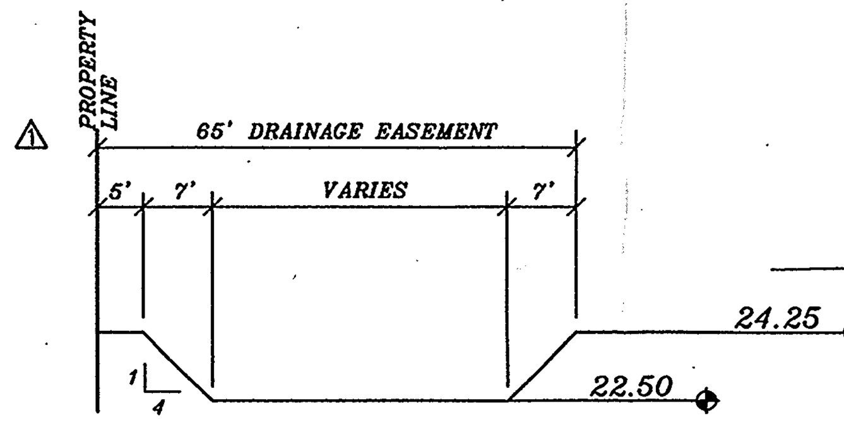

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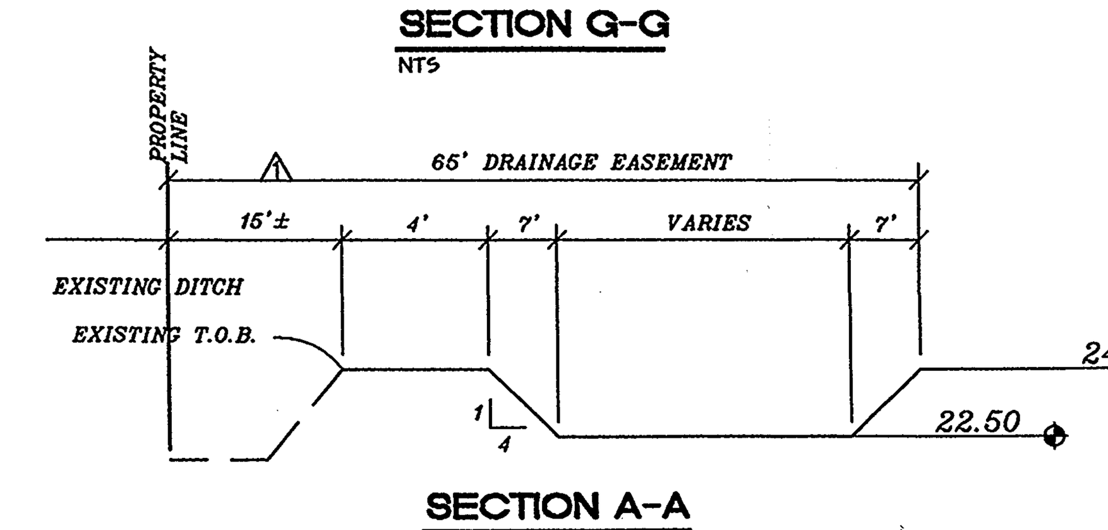

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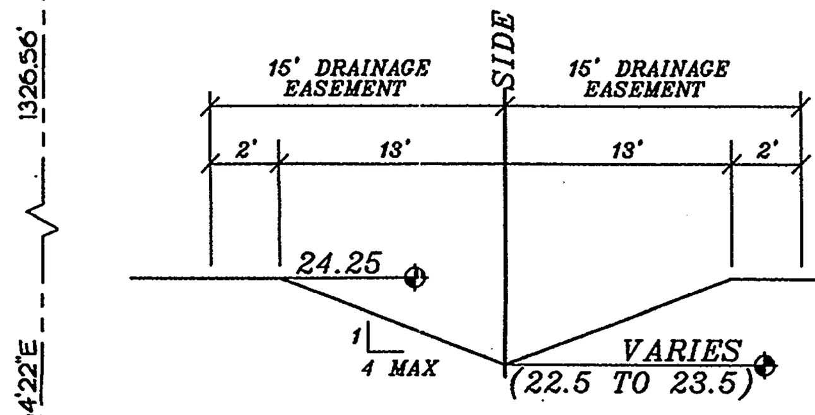

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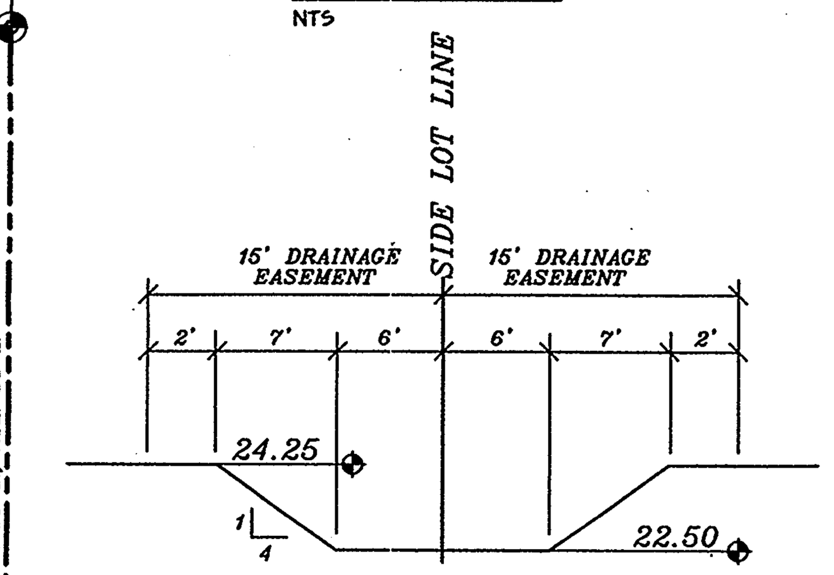

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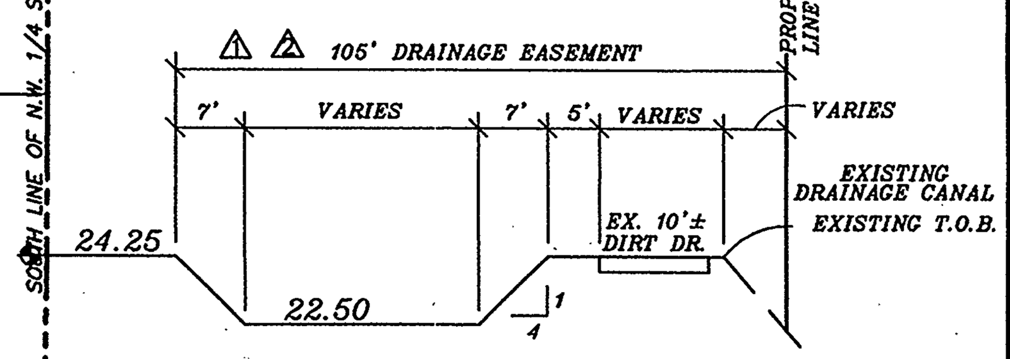

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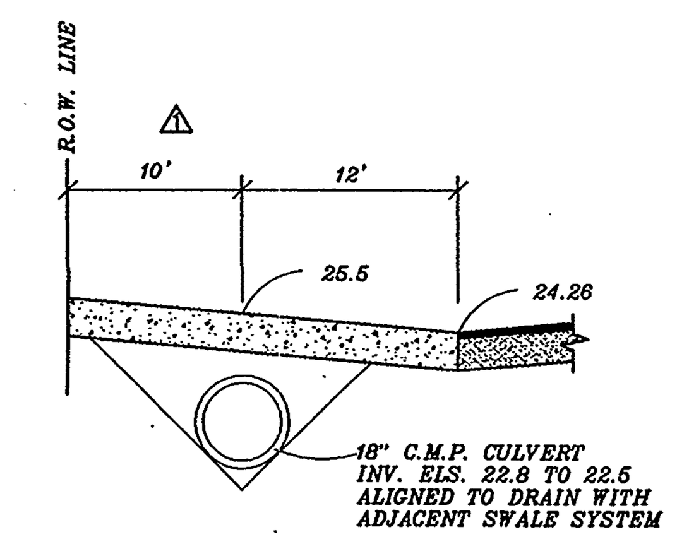

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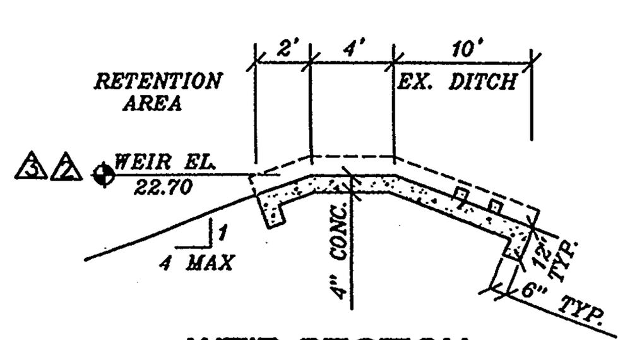

WEIR SECTION
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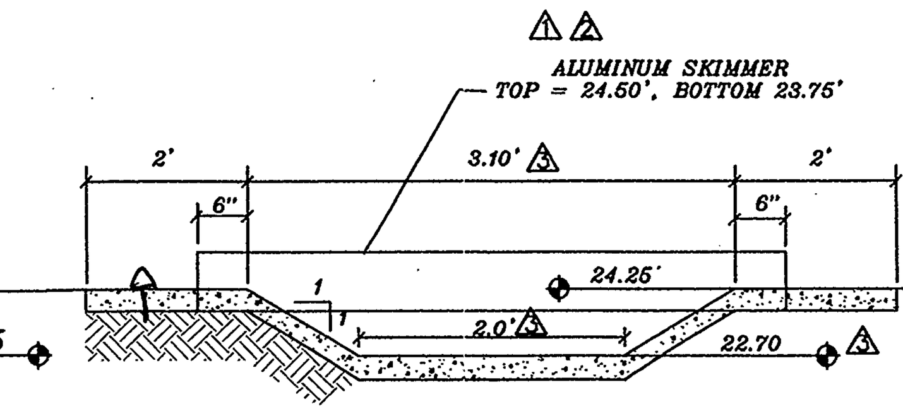

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PAVING, GRADING AND UTILITY PLAN

RIVER RIDGE ESTATES SUBDIVISION
BREVARD COUNTY, FLORIDA

SHEET C6 OF 8
04-294

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MAY 1 3 2005

ROADWAY

GENERAL

IT IS INTENDED THAT THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION BE USED WHERE APPLICABLE FOR VARIOUS WORK, AND THAT WHERE SUCH WORDING THEREIN REFERS TO THE STATE OF FLORIDA AND ITS DEPARTMENT OF TRANSPORTATION AND PERSONNEL, SUCH WORDING IS INTENDED TO BE REPLACED WITH THAT WORDING WHICH WOULD PROVIDE PROPER TERMINOLOGY, THEREBY MAKING SUCH "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AS THE "STANDARD SPECIFICATIONS" FOR THIS PROJECT.

IF WITHIN THAT PARTICULAR SECTION ANOTHER SECTION, ARTICLE OR PARAGRAPH IS REFERRED TO, IT SHALL BE A PART OF THE STANDARD SPECIFICATIONS ALSO.

ALL WORK SHALL BE IN WORKMANLIKE MANNER AND SHALL CONFORM WITH ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL REGULATIONS AND/OR CODES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES REQUIRED TO BEGIN WORK.

THE CONTRACTOR SHALL GIVE THE ENGINEER 24 HOURS NOTICE PRIOR TO REQUESTING INSPECTIONS AND SHALL SUPPLY ALL EQUIPMENT NECESSARY TO PROPERLY TEST AND INSPECT THE COMPLETED WORK.

THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF TWO YEARS FROM THE DATE OF PROJECT ACCEPTANCE, DURING WHICH ALL FAULTY CONSTRUCTION AND/OR MATERIALS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

GRADING

THE CONTRACTOR SHALL PERFORM ALL GRADING NECESSARY TO ACHIEVE THE PROPOSED PLAN GRADES INCLUDING TYPICAL SECTIONS.

ALL WORK SHALL BE IN ACCORDANCE WITH SECTION 120 OF THE STANDARD SPECIFICATIONS.

STAKING

CONSTRUCTION STAKING WILL BE PERFORMED BY THE CONTRACTOR.

STABILIZING

STABILIZED SUBGRADE SHALL BE CONSTRUCTED TO THE FLORIDA BEARING VALUE AS PER PLAN FOR THE DEPTH AND LIMITS SHOWN ON THE PLAN, AND IN ACCORDANCE WITH SECTION 160 OF THE STANDARD SPECIFICATIONS.

(TYPE C STABILIZATION). ALL STABILIZED AREAS SHALL BE COMPACTED TO AT LEAST 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.

BASE COURSE

THE BASE SHALL BE CONSTRUCTED OF EITHER LIMEROCK MATERIAL IN ACCORDANCE WITH SECTION 911 OR CEMENTED COQUINA SHELL MATERIAL IN ACCORDANCE WITH SECTION 915 OF THE STANDARD SPECIFICATIONS.

LIMEROCK BASE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 200 AND CEMENTED COQUINA SHELL BASE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 250 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE ROCK PIT CERTIFICATION FOR CEMENTED COQUINA SHELL MATERIAL. BASE SHALL BE COMPACTED BY AT LEAST 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180. BASE SHALL BE APPROVED PRIOR TO PRIME COAT.

PRIME AND TACK COAT

PRIME AND TACK COAT FOR THE BASE SHALL BE IN ACCORDANCE WITH SECTION 300 OF THE STANDARD SPECIFICATIONS.

ASPHALTIC CONCRETE SURFACE COURSE (A.C.S.C.)

TYPE S-1 ACSC SHALL BE CONSTRUCTED FOR THE DEPTH AND LIMITS SHOWN ON THE PLAN, IN ACCORDANCE WITH SECTIONS 320, 330 AND 331 OF THE STANDARD SPECIFICATIONS.

TESTING

THE CONTRACTOR SHALL RETAIN THE SERVICES OF AN APPROVED INDEPENDENT TESTING LABORATORY TO CONDUCT ALL REQUIRED TESTS ON SUBGRADE, BASE AND SURFACE COURSE MATERIALS. TEST RESULTS MUST BE SUBMITTED PRIOR TO ANY REQUEST FOR PAYMENT ON THE ABOVE ITEMS.

THE SCHEDULE FOR TESTING OF THE ROAD CONSTRUCTION SHALL BE AS FOLLOWS:

A. SUBGRADE:

(1) FLORIDA BEARING VALUE TESTS SHALL BE TAKEN AT INTERVALS OF NOT MORE THAN 200 FEET, OR CLOSER AS MIGHT BE NECESSARY IN THE EVENT OF VARIATIONS IN SUBSOIL CONDITIONS.

(2) DENSITY TESTS SHALL BE TAKEN AT INTERVALS OF NOT MORE THAN 200 FEET OR CLOSER AS MIGHT BE NECESSARY.

B. BASE:

(1) DENSITY TESTS SHALL BE TAKEN AT INTERVALS OF NOT MORE THAN 500 FEET OR CLOSER AS MIGHT BE NECESSARY.

ALL TESTING SHALL BE TAKEN IN A STAGGERED SAMPLING PATTERN FROM A POINT 1 1/2 INCHES INSIDE THE LEFT EDGE, TO THE CENTER, TO A POINT 12 INCHES INSIDE THE RIGHT EDGE OF THE ITEM TESTED.

IF ANY TEST INDICATES THAT THE WORK DOES NOT MEET THE SPECIFICATIONS, THE SUBSTANDARD AREA SHALL BE REWORKED OR CORRECTED AND RETESTED, AT THE CONTRACTOR'S EXPENSE, UNTIL THE PROVISIONS OF THESE SPECIFICATIONS ARE MET.

ALL PASSING TESTS SHALL BE PAID FOR BY THE OWNER. ALL FAILING TESTS SHALL BE PAID FOR BY THE CONTRACTOR.

CLEAN-UP

THE CONTRACTOR MUST PROVIDE CLEAN-UP OF EXCESS CONSTRUCTION MATERIAL UPON COMPLETION OF THE PROJECT. THE SITE MUST BE LEFT IN A NEAT, CLEAN, GRADED CONDITION.

DRAINAGE SPECIFICATIONS

STORM INLETS AND MANHOLES SHALL BE CONSTRUCTED IN GENERAL ACCORDANCE WITH SECTION 425 OF THE STANDARD SPECIFICATIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION.

CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 3000 PSI.

ALL REINFORCING STEEL TO BE ASTM A 615-72 GRADE 40, FYP = 40,000 PSI, AND SHALL BE HANDLED AND PLACED IN ACCORDANCE WITH ACI 318-71.

PRECAST CONCRETE MANHOLES AND STORM INLETS MAY BE USED UPON THE ENGINEER'S APPROVAL OF THE MANUFACTURER'S SHOP DRAWINGS.

STORM SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 430 AND RELATED SECTIONS OF THE STANDARD SPECIFICATIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION.

CONCRETE

UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 PSI. ALL WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE AND THE APPLICABLE BUILDING CODES HAVING JURISDICTION IN THE AREA.

CULVERT PIPES

REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE IN ACCORDANCE WITH SECTION 941 OF THE STANDARD SPECIFICATIONS.

PRECAST LIMITS

ALL STORM INLETS SHALL BE PRECAST REINFORCED CONCRETE IN ACCORDANCE WITH THE DETAILS SHOWN HEREIN THE PROJECT DETAILS. TYPE II PORTLAND CEMENT SHALL BE USED IN THE CONCRETE MIX. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 PSI.

RECORD DRAWINGS

CONTRACTOR SHALL KEEP AND MAINTAIN RECORD DRAWINGS ON THE PROJECT SITE AT ALL TIMES WHICH SHALL BE ANNOTATED BY THE CONTRACTOR DEPICTING ANY CHANGES MADE IN THE FIELD WHICH DIFFER FROM THE CONTRACT DRAWINGS. RECORD DRAWINGS SHALL INCLUDE, BUT NOT LIMITED TO, INVERT AND TOP ELEVATIONS OF CULVERTS AND INLET STRUCTURES. CONTRACTOR SHALL SUBMIT COMPLETE AND FINAL RECORD DRAWINGS TO ENGINEER UPON COMPLETION OF PROJECT AND PRIOR TO FINAL INSPECTION AND FINAL PAYMENT.

INSPECTION

MINIMUM CONSTRUCTION INSPECTION CHECKPOINTS

THE ENGINEER SHALL BE NOTIFIED:

A. PRIOR TO ANY MAJOR DEVIATION FROM THE APPROVED PLANS.

B. PRIOR TO BACKFILLING ANY PIPE TRENCHES.

C. UPON COMPLETION OF SUBGRADE GRADING AND COMPACTION.

D. UPON BEGINNING OF SPREADING OF ROCK BASE MATERIAL.

E. UPON COMPLETION OF GRADING AND COMPACTION OF THE BASE MATERIAL AND PRIOR TO PRIMING.

F. IMMEDIATELY PRIOR TO AND UPON APPLICATION OF A.C.S.C.

G. UPON COMPLETION OF CONSTRUCTION.

STANDARD ENGINEERING NOTES

GENERAL

1. THE REQUIREMENTS OF BREVARD COUNTY UTILITIES STANDARD SPECIFICATIONS AND STANDARD DETAILS SHALL GOVERN ALL UTILITIES WORK. WHERE A CONFLICT EXISTS IN THE REQUIREMENTS OF A REFERENCED MATERIAL OR INSTALLATION STANDARD AND THE REQUIREMENTS OF A STATE OR LOCAL AGENCY HAVING JURISDICTION ARE MORE STRINGENT, THESE REQUIREMENTS SHALL PREVAIL.
2. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE, AT ALL TIMES, ONE COPY OF THE LOCAL GOVERNING AGENCIES UTILITIES STANDARD SPECIFICATIONS AND STANDARD DETAILS, ONE COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS, AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.
3. CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL SITE CONDITIONS BEFORE STARTING CONSTRUCTION.
4. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.
5. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS BEFORE COMMENCING WORK.
6. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.
7. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

CONSTRUCTION IN STREETS AND ROAD RIGHT-OF-WAYS

1. OPEN ROAD CUTS REQUIRES PRIOR APPROVAL OF THE CITY, COUNTY, STATE OR ANY OTHER AGENCY WHICH MAY HAVE JURISDICTION.
2. ALL CONSTRUCTION, MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AND STANDARDS.
3. ALL AREAS IN EXISTING RIGHT-OF-WAYS DISTURBED BY CONSTRUCTION SHALL RECEIVE SOLID SOD.
4. STREET OR HIGHWAY RESTORATION TO BE DONE AS PER LOCAL OR STATE AGENCY HAVING JURISDICTION.
5. THE CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE STATE, COUNTY AND CITY AUTHORITIES REGARDING CLOSING OR RESTRICTING THE USE OF PUBLIC STREETS OR HIGHWAYS.
6. TRAFFIC CONTROL ON ALL COUNTY AND STATE HIGHWAY RIGHT-OF-WAYS SHALL MEET THE REQUIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (U.S. DOT/FHA) AND THE REQUIREMENTS OF THE STATE AND ANY LOCAL AGENCY HAVING JURISDICTION.

TECHNICAL SPECIFICATIONS

SCOPE:

THESE SPECIFICATIONS ARE TO ASSIST THE ENGINEER, DEVELOPER AND CONTRACTOR IN WORK AND METHODS APPROVED BY THE LOCAL GOVERNING AGENCIES.

THE ABOVE MENTIONED ARE RESPONSIBLE FOR THE FOLLOWING:

1.) ACQUIRING ALL PERMITS, LICENSES AND FEES FOR PROJECTS CONSTRUCTED INCLUDING ALL TESTS.

2.) COMPLETE COORDINATION WITH ALL UTILITY COMPANIES INVOLVED.

3.) COMPLIANCE WITH ANY AND ALL GOVERNING AGENCIES INVOLVED.

4.) RELOCATION, EXTENSION, ENLARGEMENT OR REFURBISHMENT OF ANY IMPACTED AREAS OF SERVICE IN OR OUT OF THE LOCAL GOVERNING AGENCY.

5.) ALL WORK IS TO BE DONE AT NO COST TO THE LOCAL GOVERNING AGENCY.

MATERIALS

A.) DRAINAGE PIPING:

1.) REINFORCED CONCRETE PIPE (RCP) SHALL BE MANUFACTURED BY REPUTABLE MANUFACTURING PRACTICES, FREE OF HONEY COMBS, EXPOSED STEEL OR BLEED THROUGH FROM REINFORCING AND SMOOTH FINISH AT BELL AND SPIGOT ENDS.

2.) ASPHALT COATED CORRUGATED METAL PIPE (ACCMP)SHALL BE OF STEEL MATERIAL MANUFACTURED BY REPUTABLE MANUFACTURING PRACTICES, FREE OF DENTS, GOUGING OR AREAS NOT PROTECTED BY BITUMINOUS MATERIALS.

3.) ALUMINUM PIPE SHALL BE MANUFACTURED BY REPUTABLE MANUFACTURING PRACTICES, FREE OF DENTS AND GOUGING. ALUMINUM PIPING MAY REQUIRE ARCHING FOR LOAD BEARING AREAS AS DETERMINED BY DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

4.) ALL JOINTS SHALL BE WRAPPED WITH FILTER FABRIC.

5.) SAFETY BARS SHALL BE PLACED ON PIPE AND MITERED END SECTIONS WHERE DETERMINED NECESSARY.

6.) OUTFALL END RUN TO DITCHES SHALL HAVE A MITERED END SECTION WITH SAFETY BARS TO MATCH EXISTING DITCH BANK SLOPE WITH APPROPRIATE EROSION CONTROL MEASURES.

B.) DRAINAGE STRUCTURES:

1.) ALL DRAINAGE STRUCTURES SHALL MEET SPECIFIC PLANNED USE AS DETERMINED BY THE DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

2.) ALL CATCH BASINS, INLETS OR MANHOLE STRUCTURES SHALL BE OF PRECAST REINFORCED TYPE UNLESS OTHERWISE APPROVED.

3.) ALL STRUCTURES SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS AS DESIGNATED BY THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM C-478) 4000 PSI CONCRETE.

4.) ALL STRUCTURES SHALL BE FREE OF DEFECTS SUCH AS CRACKING, HONEY COMBS AND EXPOSED STEEL REINFORCING INCLUDING BLEED THROUGH.

5.) SHOP DRAWINGS SHALL BE SUBMITTED BEFORE ORDERING MATERIAL FOR PLANNED PROJECT. CORRESPONDING SHALL BE BETWEEN THE DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

C.) OUTFALL SPECIFICATIONS:

1.) OUTFALL STRUCTURES SHALL INCLUDE ALUMINUM SKIMMERS, WEIR DEVICES, WEEP HOLES AND DRAW DOWN SYSTEMS AS DETERMINED BY DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

2.) HARDWARE TO ATTACH DEVICES TO OUTFALL STRUCTURES SHALL BE STAINLESS STEEL MATERIAL.

D.) MANHOLE COVERS + GRATES:

1.) MANHOLE FRAMES, COVERS AND GRATES SHALL MEET SPECIFIC PLANNED USE AS DETERMINED BY DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

2.) MANHOLE FRAMES AND COVERS SHALL BE OF CAST IRON MATERIALS, FREE FROM CRACKS, HOLES OR COLD SHUTS. FRAMES AND COVERS SHALL CONFORM TO A MINIMUM STANDARD OF USF 1260 SERIES OR EQUIVALENT WITH COVERS STATING "STORM SEWER."

3.) FRAMES AND GRATES SHALL BE OF CAST IRON MATERIALS, FREE FROM CRACKS, HOLES AND COLD SHUTS. FRAMES AND GRATES SHALL CONFORM TO A MINIMUM STANDARD OF USF 4160-6210 OR EQUIVALENT.

4.) THROAT INLET SHALL BE USED EXCLUSIVELY WHERE PRACTICABLE AS DETERMINED BY THE DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.

5.) 3' (FOOT) TRANSITION SHALL BY UTILIZED FROM TOP INLET TO BACK OF CURBS.

RETENTION AREAS:

1.) RETENTION ON SITE SHALL MEET REQUIREMENTS FOR A 25 YEAR STORM PRE-POST EVENT.

2.) RETENTION AREAS SHALL BE SODDED ABOVE THE NORMAL WATER LINE AS A STANDARD RETENTION AREAS SHALL BECOME THE RESPONSIBILITY OF THE OWNER OR LEGAL ENTITY FOR PROPERTIES. RETENTION AREAS SHALL BE SODDED/STABILIZED FROM THE WATER LINE TO THE OUTSIDE LIMITS OF THE MAINTENENCE AREA PRIOR TO RECIEPT OF A CERTIFICATE OF COMPLETTION.

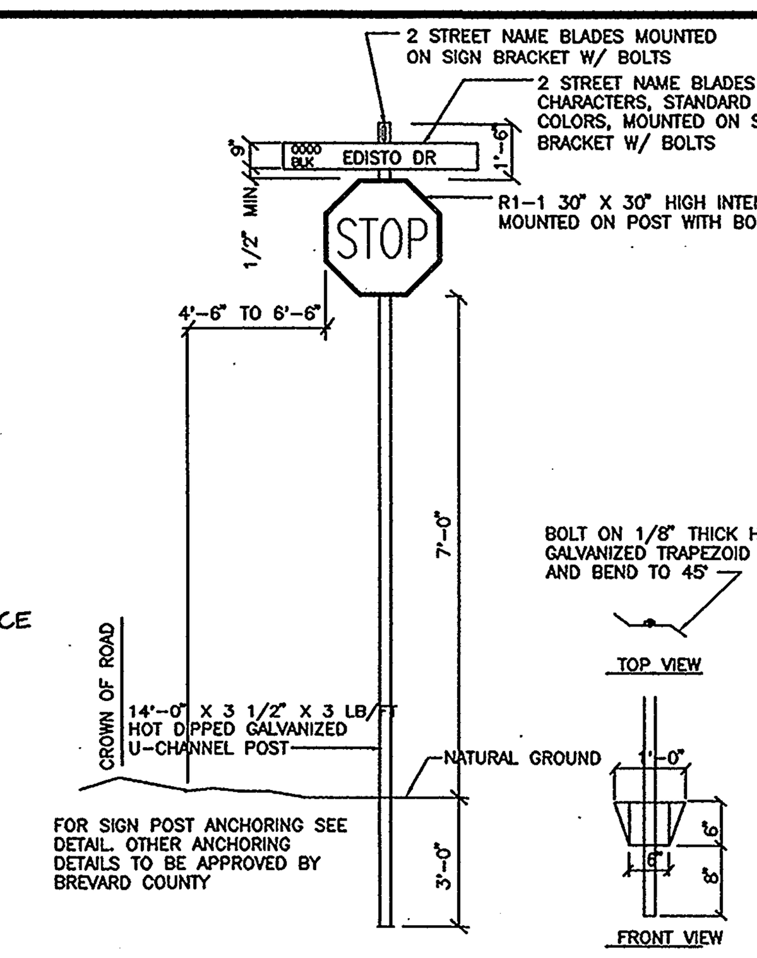
3.) STORMWATER PONDS SHALL BE ROUGH GRADED PRIOR TO THE PLACEMENT OF PAVEMENT. STRIPPED AREAS SHALL DRAIN TOWARD PONDS FOR SEDIMENT CONTROL.

GENERAL NOTES:

A 24 HOUR NOTICE BY CONTRACTOR FOR REQUIRED INSPECTIONS FOR THE ABOVE MENTIONED FACILITIES SHALL BE GIVEN.

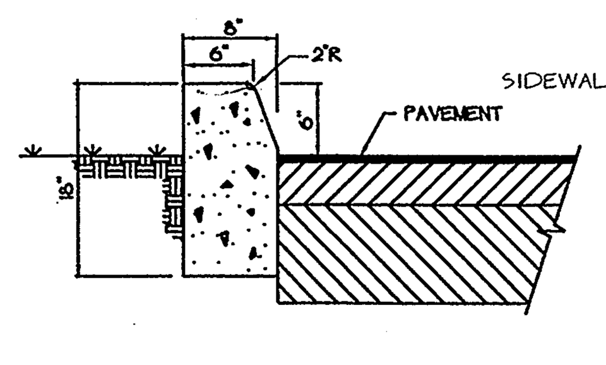
GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL SITE CONDITIONS BEFORE STARTING CONSTRUCTION.
2. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.
3. CONTRACTOR SHALL OBTAIN ALL REQUIRED BUILDING PERMITS BEFORE COMMENCING WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE FOR CONSTRUCTION OPERATIONS.
5. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
6. ALL SUBDIVISION CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE APPLICABLE ORDINANCES OF BREVARD COUNTY, FLORIDA.
7. ALL WATER AND SEWER CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE APPLICABLE ORDINANCES OF THE BREVARD COUNTY, FLORIDA.
8. CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL SUB-GRADE AND BASE. TESTS SHALL BE PREPARED PER AASHTO T-180 METHOD.
9. SLOPE GRADES FROM ELEVATIONS SHOWN TO EXISTING GRADE AT PROPERTY LINE. MAXIMUM SLOPE 3:1.
10. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE FOR ANY INSPECTION.
11. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH M.U.T.C.D. STANDARDS, LATEST EDITION.
12. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST EDITION.
13. IF DEWATERING IS REQUIRED FOR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT S.J.R.W.M.D. AND INDIAN RIVER COUNTY AND OBTAIN ANY REQUIRED DEWATERING PERMITS. DISCHARGE FROM DEWATERING OPERATION SHALL BE SUBJECTED TO SETTLING, SCREENING, FILTRATION AND/OR ANY MEASURES REQUIRED TO PREVENT THE DISCHARGE OF TURBID WATER.
14. ALL DISTURBED AREAS WITHIN THE ROAD RIGHT OF WAY SHALL BE REGRADED AND STABILIZED WITH SOD WITHIN THREE DAYS OF FINAL GRADING.



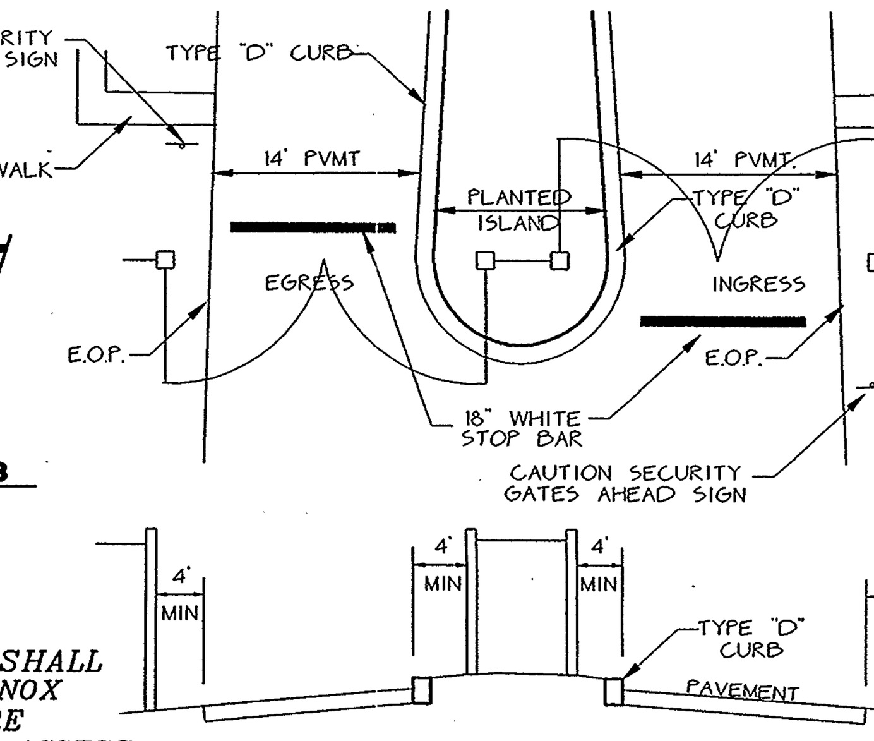
STREET SIGN INSTALLATION DETAIL

NTS



TYPE "D" CONCRETE CURB

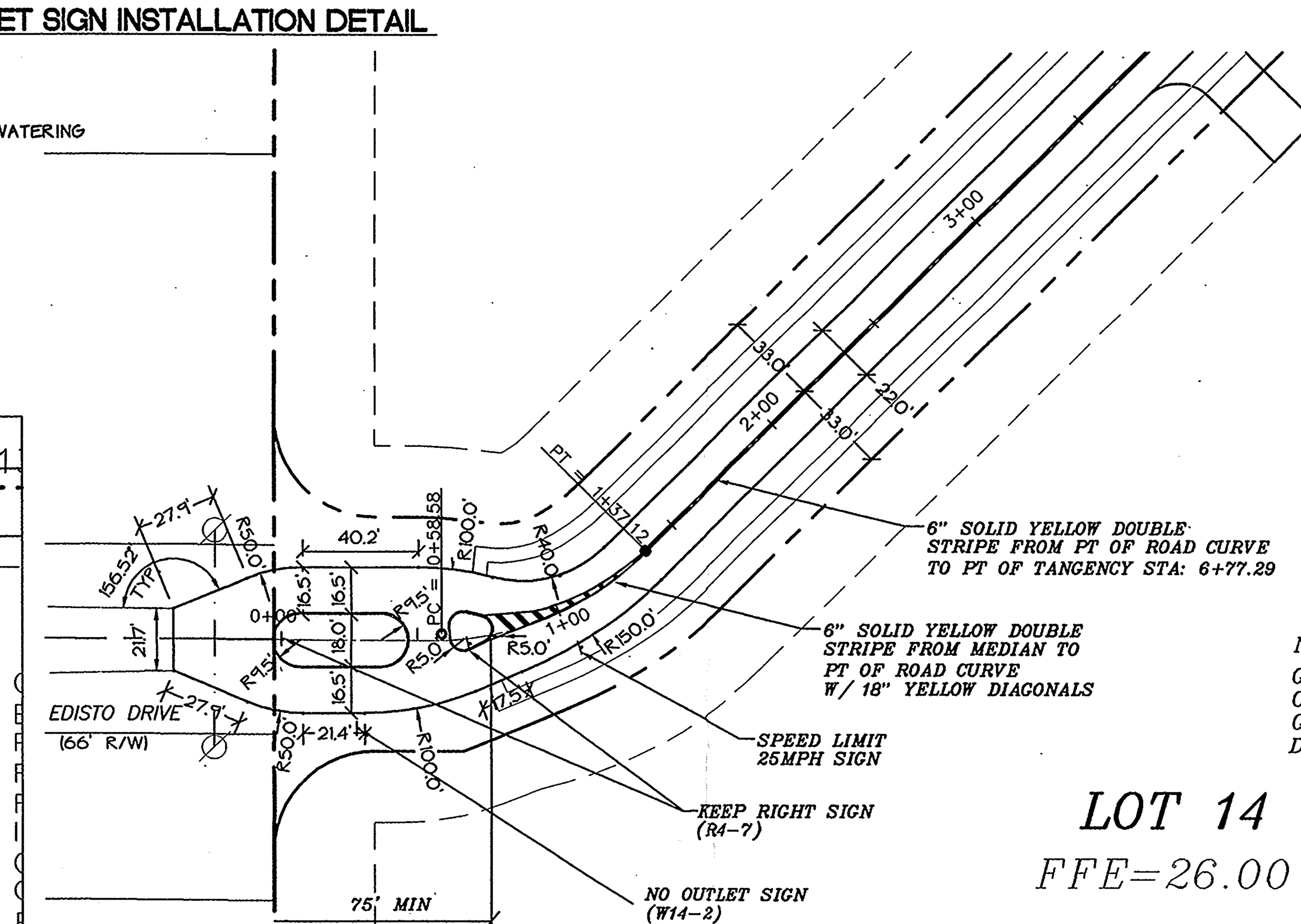
N.T.S.



NOTE:
CONTRACTOR SHALL INSTALL A KNOX BOX FOR FIRE DEPARTMENT ACCESS

GATE PLACEMENT DETAIL

N.T.S.

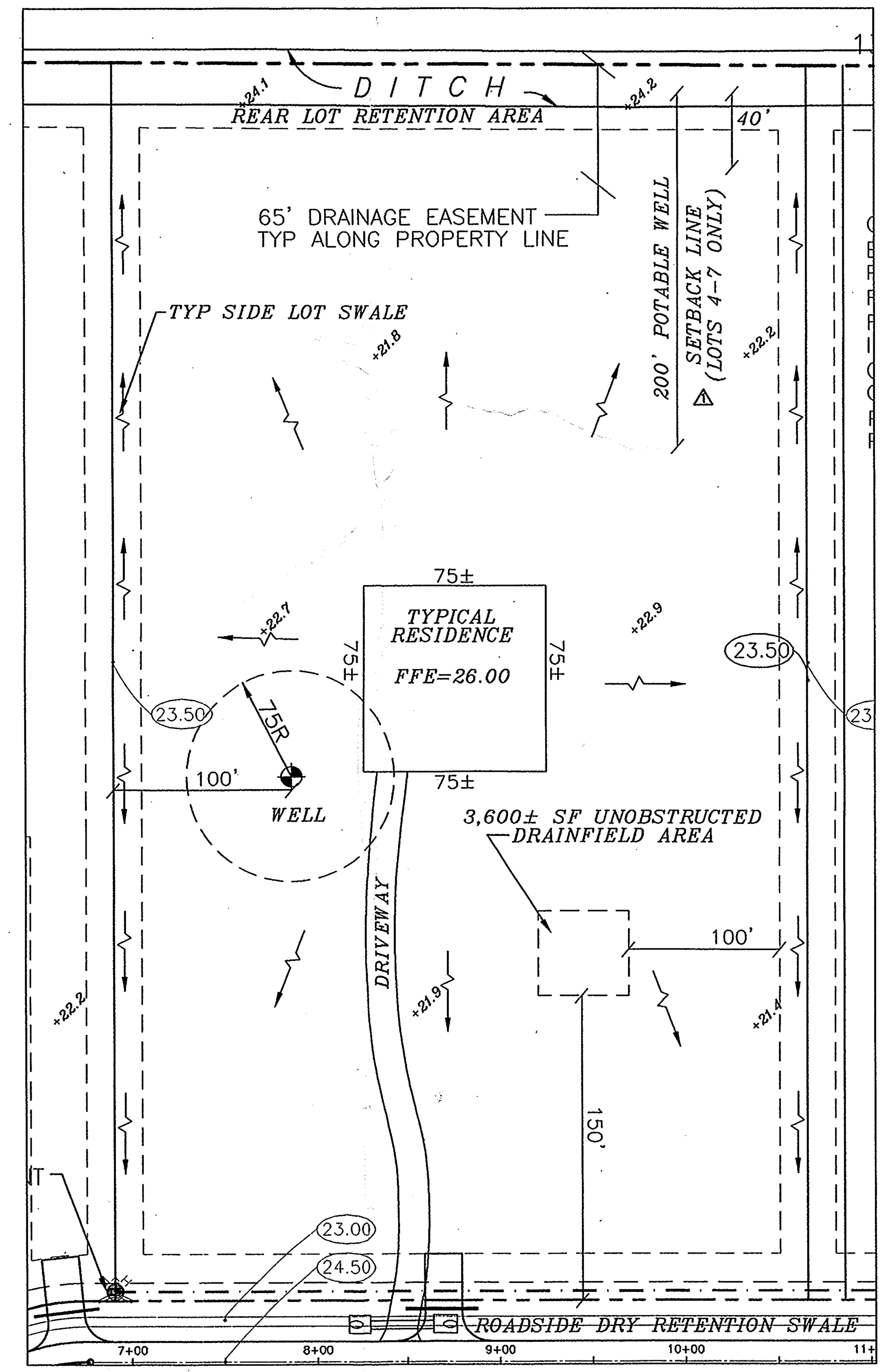


NOTE:
GATES REMOVED FOR CLARITY. SEE GATE PLACEMENT DETAIL ABOVE.

LOT 14
FFE=26.00

DRIVEWAY ENTRANCE ENLARGEMENT

1"=50'

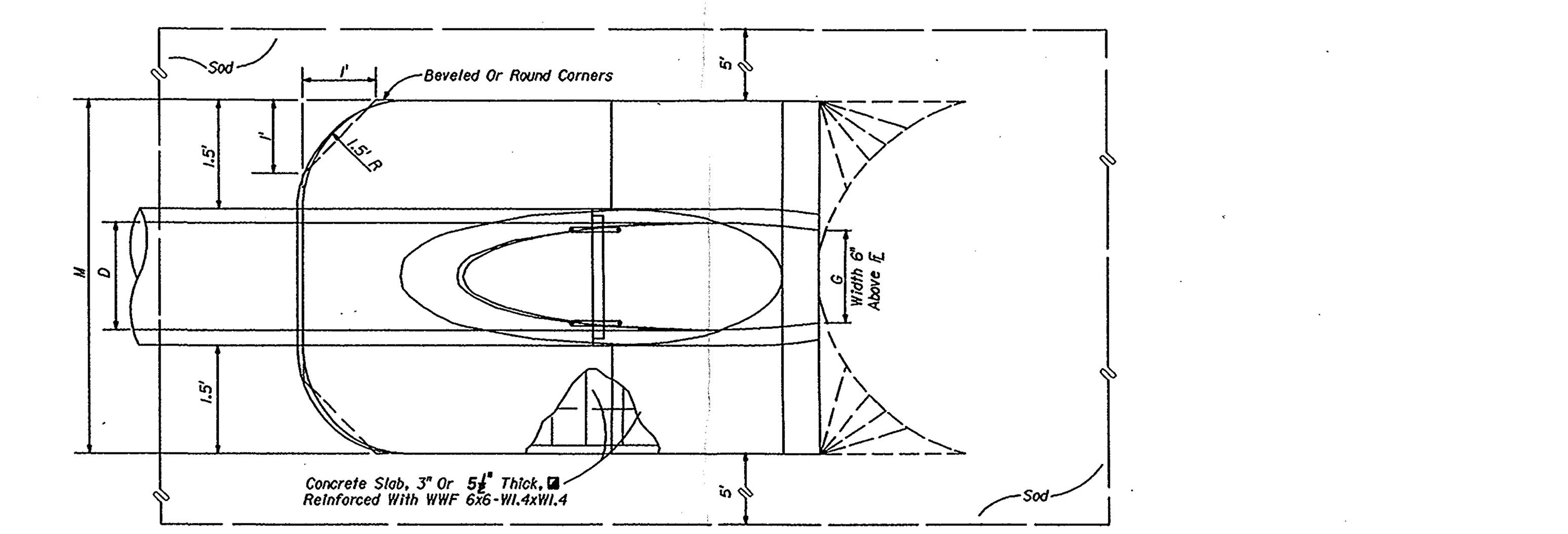


TYPICAL LOT GRADING AND LAYOUT PLAN

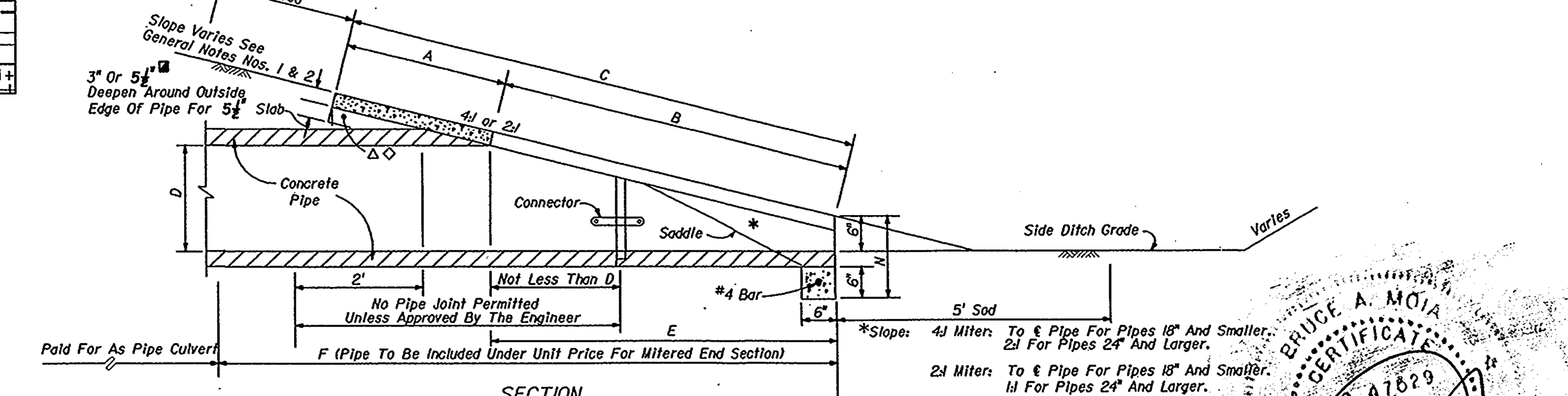
NTS

NOTE:
LOCATION AND ELEVATION OF EACH OSTDS SHALL BE LOCATED BY A COUNTY ENVIRONMENTAL HEALTH SPECIALIST AT THE TIME OF HOME CONSTRUCTION PERMITTING.

DIMENSIONS AND QUANTITIES									M					5½" CONCRETE SLAB (CY)				SODDING (SQ. YDS.)			
	D	X	A	B	C	E	F	G	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	N	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
2:1 Slope	15"	2'-7"	1.92'	2.18'	4.10'	2.06'	5'	1.22'	4.63'	7.21'	9.79'	12.37'	1.19'	0.38	0.58	0.77	0.96	21	24	27	30
	18"	2'-10"	1.97'	2.74'	4.71'	2.56'	6'	1.41'	4.92'	7.75'	10.58'	13.42'	1.21'	0.44	0.65	0.87	1.09	22	25	28	31
	24"	3'-5"	2.06'	3.85'	5.91'	3.56'	7'	1.73'	5.50'	8.92'	12.33'	15.75'	1.25'	0.54	0.83	1.12	1.42	24	28	32	35
	30"	4'-3"	2.15'	4.95'	7.10'	4.56'	8'	2.00'	6.08'	10.33'	14.58'	18.83'	1.29'	0.66	1.09	1.50	1.91	26	31	35	40
	36"	5'-1"	2.25'	6.08'	8.33'	5.56'	9'	2.24'	6.67'	11.75'	16.83'	21.92'	1.33'	0.81	1.38	1.95	2.51	28	34	39	45
	42"	6'-0"	2.34'	7.21'	9.55'	6.56'	10'	2.45'	7.25'	13.25'	19.25'	25.25'	1.38'	0.97	1.70	2.45	3.19	30	37	43	50
	48"	6'-9"	2.43'	8.33'	10.76'	7.56'	11'	2.65'	7.83'	14.58'	21.33'	28.08'	1.42'	1.13	2.04	2.93	3.84	32	39	47	54
	54"	7'-8"	2.52'	9.44'	11.96'	8.56'	12'	2.83'	8.42'	16.08'	23.75'	31.42'	1.46'	1.31	2.44	3.58	4.72	34	42	51	59
	60"	8'-6"	2.62'	10.56'	13.18'	9.56'	14'	3.00'	9.00'	17.50'	26.00'	34.50'	1.50'	1.51	2.89	4.28	5.68	36	45	55	64
	66"	9'-2"	2.71'	11.68'	14.39'	10.56'	15'	3.18'	9.58'	18.75'	27.92'	37.08'	1.54'	1.68	3.25	4.84	6.43	38	48	58	68
	72"	10'-0"	2.80'	12.80'	15.60'	11.56'	16'	3.30'	10.16'	20.16'	30.16'	40.16'	1.58'	1.89	3.74	5.59	7.45	40	51	62	73
4:1 Slope	15"	2'-7"	2.27'	4.09'	6.36'	4.03'	8'	1.22'	4.63'	7.21'	9.79'	12.37'	1.19'	0.57	0.87	1.15	1.44	23	26	29	32
	18"	2'-10"	2.36'	5.12'	7.48'	5.03'	9'	1.41'	4.92'	7.75'	10.58'	13.42'	1.21'	0.66	0.99	1.31	1.65	25	28	31	35
	24"	3'-5"	2.53'	7.18' △	9.71'	7.03' △	11'	1.73'	5.50'	8.92'	12.33'	15.75'	1.25'	0.85	1.30	1.75	2.20	28	32	36	40
	30"	4'-3"	2.70'	9.25'	11.95'	9.03'	13'	2.00'	6.08'	10.33'	14.58'	18.83'	1.29'	1.10	1.74	2.39	3.05	31	36	41	46
	36"	5'-1"	2.87'	11.31' ◇	14.18'	11.03' ◇	15'	2.24'	6.67'	11.75'	16.83'	21.92'	1.33'	1.32	2.21	3.08	3.96	34	40	46	52
	42"	6'-0"	3.05'	13.37'	16.42'	13.03'	17'	2.45'	7.25'	13.25'	19.25'	25.25'	1.38'	1.58	2.76	3.91	5.09	38	44	51	58
	48"	6'-9"	3.22'	15.43'	18.65'	15.03'	19'	2.65'	7.83'	14.58'	21.33'	28.08'	1.42'	1.85	3.30	4.73	6.17	41	48	56	63
	54"	7'-8"	3.39'	17.49'	20.88'	17.03'	21'	2.83'	8.42'	16.08'	23.75'	31.42'	1.46'	2.14	3.95	5.77	7.58	44	52	61	69
	60"	8'-6"	3.56'	19.55'	23.11'	19.03'	23'	3.00'	9.00'	17.50'	26.00'	34.50'	1.50'	2.45	4.66	6.87	9.07	47	56	66	75
	66"	9'-2"	3.73'	21.62'	25.35'	21.03'	25'	3.18'	9.58'	18.75'	27.92'	37.08'	1.54'	2.88	5.54	8.18	10.84	49	59	69	80
	72"	10'-0"	3.91'	22.68'	26.59'	23.03'	27'	3.30'	10.16'	20.16'	30.16'	40.16'	1.58'	3.54	6.61	9.87	13.13	52	63	74	85



TOP VIEW-SINGLE PIPE



SECTION

SINGLE AND MULTIPLE ROUND CONCRETE PIPE

FDOT INDEX 272
MITERED END SECTION

BRUCE A. MOIA, FL. P.E. #47529
AARON J. BOWLES, FL. P.E.#55313

REVISIONS	DATE
1 REVISED PER BREVARD CTY & SJRWMD	1/12/05
2 REVISED PER BREVARD COUNTY 3/21/05	3/29/05
3	
4	
5	
6	

JOB NO.	04-294
DESIGNED	BAM
DRAWN	WJA
CHECKED	BAM
DATE	NOV 2004
SCALE	AS SHOWN

MOSBY MOIA BOWLES AND ASSOCIATES, INC.
CONSULTING ENGINEERS - CA #3728
2455 - 14TH AVENUE
VERO BEACH, FLORIDA 32960
PHONE (772) 569-0035
FAX (772) 778-3617

PAVING AND DRAINAGE AND NOTES

RIVER RIDGE ESTATES SUBDIVISION

BREVARD COUNTY, FLORIDA

SHEET C7 OF 8

04-294

WATER SYSTEM

GENERAL

Cross Connection Control

There shall be no physical connection between a potable water supply and any other system which would allow questionable water to enter any system by pressure, vacuum, gravity or any other means. County approved backflow-preventing device shall be provided on potable water services serving any property using or installing reclaimed water.

Florida Administrative Code

Systems shall be designed and constructed in accordance with these standards and Chapter 62-555 Florida Administrative Code. Where these standards and Chapter 62-555 F.A.C. conflict, the more restrictive requirements shall apply.

"Ten States Standards"

"Recommended Standards for Water Works" ("Ten States Standards") is an excellent guide for design and construction and has been used in the development of these standards.

Calculations

Calculations verifying the adequacy of the existing and proposed systems shall be provided by the Engineer. The system shall be designed using peak domestic flow plus fire flow. Minimum peak domestic flow shall be calculated using 3.50 persons per dwelling, 100 gallons per capita per day and a peak factor of four. Fire flow shall meet Fire Department requirements. The calculations shall be clear, logical and understandable and shall be made using Hardy-Cross or other acceptable method.

Markings

Markings on piping and valve and meter box covers shall accurately describe the use of the facility.

Water for Construction

Water used for construction shall be metered and paid for.

DESIGN AND CONSTRUCTION STANDARDS

Minimum Cover

Minimum cover to finished grade over a water main shall be thirty-six (36) inches, unless otherwise provided herein.

Dead Ends

Permanent dead ends will not be approved unless they are reasonably unavoidable. Dead ends on water mains shall be equipped with a blow-off or fire hydrant for flushing purposes.

Pipe Materials

DR-18, AWWA C-900 polyvinyl chloride (PVC) pipe shall be used for water mains.

Minimum Pipe Size

The minimum size of the water main shall be four (4) inches.

Design Flow and Pressure

Delivered flows for water mains shall meet peak domestic requirements plus fire flow with a residual pressure not less than 20 p.s.i. Design velocity shall not exceed five (5) feet per second.

Fire Protection Plan

Fire hydrants shall be provided in all water distribution systems and extensions thereof. A Fire Department approved plan is required prior to review of plans.

Fire Hydrant Location

Hydrants shall be located near road lines with pumper discharge nozzle facing the roadway. Hydrants shall be placed to minimize their vulnerability to traffic.

Pressure

The water mains and fittings shall be designed to withstand normal pressure and pressure surges (water hammer).

Friction Losses

Friction losses through mains shall be based on the Hazen and Williams' formula or other acceptable method. A "C" factor of 120 shall be used to calculate friction losses.

Joint Restraints

Joint restraints may be utilized in lieu of thrust blocking. Nappco Uni- Flange Series 1350/Megalug by EBAA Iron, Grip Ring by ROMAC Industries, Allgrip 3600 by Star Pipe Products or approved equal joint restraints shall be used to restrain PVC pipe joints.

Thrust Blocks

All valves, bends, tees, crosses and dead ends may be constrained with adequate reaction or thrust blocks of poured in place concrete having a minimum compressive strength of 2500 p.s.i. after 28 days. Preliminary information for thrust blocking must be submitted for review and approval by the Water Resources Department prior to construction.

Sprinkler Systems

Fire sprinkler systems shall be equipped with a double detector check valve with by-pass line with double backflow-prevention device and booster pumps as may be required to comply with applicable fire protection codes. A reduced pressure zone shall be provided for fire sprinkler systems using chemicals, foam and/or antifreeze.

Valves

Valving shall be designed to facilitate the isolation of each section of pipeline between intersections of the grid system. The minimum number of valves at an intersection shall be one less than the number of pipes forming the intersection.

Valves shall be installed at intervals of not more than 1,000 linear feet (LF) on transmission mains, at intervals of not more than 700 LF on main distribution loops and feeders, and on all primary branches connected to these lines. In high density areas, valves shall be installed as necessary to minimize the number of persons affected by a break.

Effectiveness of valve placement shall be the primary criterion in determining valve location.

Service Lines and Taps

Minimum water service size shall be 3/4 inch for a single service and 1 inch for a double service.

Service taps on the main shall be spaced at a minimum distance of 18 inches. If two or more taps are required at the minimum spacing, they shall be offset 45 degrees alternately to each side of the center line of the crown of the water main. Service taps are prohibited within 18 inches of pipe joints.

All service line taps shall have corporation stops and stainless steel, double strap saddles approved by the County. All service lines shall be installed in accordance with the construction details of this manual.

Service lines shall be polyethylene (copper tube size) in accordance with ASTM D2566.

Meter Installation

Construction drawings shall include a typical meter installation detail for each size meter to be installed.

Meters shall be installed by the County. Meter boxes shall be provided by the contractor who constructed the water main and installed by the County. The water meter boxes shall be delivered to the Mims Water Treatment Plant, 2262 High Drive, Mims, FL 32754, prior to acceptance of the water main by the County.

Water meters shall be placed at the property line. In developments where the property line is not clearly defined (condominiums) the meter shall be placed for ready access. Services crossing under parking tracts shall have their meters placed prior to the crossing so that the County is not responsible for maintenance of these lines.

Special Construction

Subaqueous crossings. The pipe shall be concrete encased at least two feet past the toe of slope for canal and ditch crossings.

Water mains shall be flanged D.I.P. with stainless steel bolts when installed in an aerial crossing.

04-294

Electronic Disks and Wire

Electronic disks shall be provided at fittings, valves, crosses, tees and changes in direction. Disks shall also be provided at the termination of water services. Disks shall be full range APC1252 by Automated Products Co., Austin, Texas. An insulated continuous copper wire #14 UF shall lay on top of the pipe for location purposes. Wire ends are to be spliced together with a wire nut. Each fire hydrant shall have one wrap of the wire around the barrel located at final grade and connected to the wire on the water main. Wire should be brought up in each valve box with an excess of 4 feet in length. Gutters, curbs, etc. shall have an etch placed into it to show the lateral location. An appropriate brass disk that is County approved may be used.

Concrete

All cement used in the work shall be a well-known brand of true Portland Cement and shall conform to the Standard Specifications for Portland Cement, ANSI/ASTM Designation C150. Unless otherwise permitted, the Contractor shall use only one brand of cement in the work and under no condition shall be used more than one brand of cement in the same structure. Cement which for any reason has become partially set or contains lumps or cakes will be rejected and shall be removed from the site. Concrete shall be of Type I cement.

The cement shall be mixed with potable water and washed masonry sand (and course aggregate if applicable) in an approved batch machine or mixer. Measuring boxes or other approved measuring apparatus shall be such that the proportions can be accurately determined. The quantity of water to be added, which will vary with the degree of dryness of the material and with the weather conditions, shall be accurately measured for each batch of concrete. Means shall be provided by which a measured quantity of water can be introduced at any stage of the process. The mixing shall be done in a thorough and satisfactory manner and shall continue until every particle of aggregate is completely covered with cement paste. The mixing time for each batch shall not be less than one minute after the materials are in the mixer. The entire contents of the drum shall be discharged before recharging. Retempering of concrete, which has partly hardened, will not be permitted.

Castings

Castings for valves, vaults, and other appurtenances shall conform to, and be tested in accordance with the specifications for Gray Cast Iron, ANSI/ASTM A48, Class 30.

Castings that are to be located within dedicated public rights-of-way, or any other locations subject to vehicular traffic, shall have all bearing surfaces machined so that fitting parts will not rattle or rock under traffic.

All castings shall be subject to a hammer test before installation.

Excavation and Backfill

Machine excavation shall be carried to the depth above the final pipeline grade that will allow the final grading, using hand tools. If excavation is carried below the required depth, the overcut depth shall be backfilled with Type"B" backfill material or bedding material compacted to provide pipe support at least equal to that of the original material. Contractor may, at his option, elect to overcut the trench using machine excavators and backfill with Type "B" backfill or bedding material, as above, to minimize the hand excavation. If Contractor so elects, the depth of overcut shall be such that a minimum of two inches of compacted backfill material will result under the lowest projection of the pipe bell.

Type "B." This material shall be a select granular material free from organic matter and of such size and gradation that the desired compaction can be readily attained.

Type "D." This material shall be unclassified material obtained from the Contractor's excavations. The material shall be substantially free from wood, roots and other organic matter. The maximum size of stone shall not exceed three (3) inches.

Trees, stumps and roots within the limits of the trench excavation shall be removed to a depth of at least 12 inches below the bottom of trench. Stump and root holes shall be refilled to existing grade and compacted by water puddling or tamping. No stumps, roots, or organic matter of any description shall remain under concrete slabs or footings.

The trench shall be excavated so that the pipe can be laid to the alignment and grades shown on drawings.

The trench shall be dry when the bottom is prepared. A continuous trough shall be excavated by hand to receive the bottom 120 degrees of the pipe barrel. In addition, bell holes shall be excavated so that after placement only the barrel of the pipe receives bearing pressure from, and is uniformly supported by, the bottom of the trench. Preparation of the trench bottom and placement of the pipe shall be such that the final position of the pipe is true to line and grade and uniformly supported throughout the barrel of each pipe length. When pipe is placed in backfill over rock or other material, additional backfill of the same material shall be tamped on each side of the barrel to the height of the spring line, thus forming a trough of firm bedding.

Wherever excavation of the trench exposes unsuitable materials such as peat, soft clay, quicksand or other unstable material in the bottom of the trench which, in the opinion of Developer's Engineer, is unsuitable foundation upon which to lay or support the pipe backfill and expected superimposed loads, such unsuitable materials shall be removed to a depth necessary to reach material having adequate bearing capacity and a width of trench at least equal to the minimum trench width as specified. The spaces created by removal of this unsuitable material shall be backfilled using Type "B" backfill or bedding material. The backfill material shall be placed in 8-inch layers and compacted, using mechanical compaction equipment, to a dry density equal to 98 percent under roads, curb and gutter, and 95 percent in all other places, of the maximum dry density as determined by the Standard Proctor Compaction Test, AASHTO T-99, each layer being compacted to the required density prior to placing the next layer.

After the pipe has been properly laid and inspected, Type "D" backfill shall be carefully placed around the pipe to a depth of six inches over the pipe. The backfill material shall be carefully placed loosely in horizontal layers, equally on both sides of the pipe, and shall be spaded, "walked-in" and compacted with hand tampers to obtain a firm, dense support for the pipe. When one such layer is completed on both sides of the pipe a second layer shall be started. The backfill material shall not be obtained from the trench walls within one foot above top of pipe. Use mechanical tamping equipment. No further backfilling will be permitted until the initial backfill has been accomplished by an approved method.

Above the level of the initial backfill, the trench shall be filled with material placed in accordance with one of the following classifications: 1) Compacted Backfill: Materials for compacted backfill shall be Type "D" except as otherwise shown on drawings or specified. The backfill material shall be placed in horizontal layers not exceeding twenty-four inches in loose depth and compacted by power operated tampers, rollers, or vibratory equipment to a specified dry density as determined by AASHTO T-99. Each layer shall be compacted to the specified density prior to placing subsequent layers. The thickness of the loose layer may be increased when in-place densities show that the specified density can be obtained. Compacted backfill shall be used in all street and road rights-of-way. 2) Plain Backfill: Material for plain backfill shall be Type "D." Plain backfill shall be placed where compacted backfill is not required. The backfill material may be placed in layers, each layer being compacted so that a depression does not form along the trench line. Any depression formed by settlement of the backfill shall be immediately filled by Contractor.

The Developer shall hire a testing laboratory approved by the County to perform density testing of backfill. One set of density tests shall be performed at 200 foot intervals along the water main. Brevard County reserves the right to require density tests at other locations as the inspector may deem necessary.

Each set of density tests shall consist of one test 2 feet above the crown of the pipe and one test for each one foot interval up to the bottom of the subgrade or to the ground surface if not under a road.

The minimum required field densities are as follows: 98% of the maximun density determined by the Standard Proctor Compaction Test, AASHTO T-99, under roads, curb and gutter; 95% of the maximun density per AASHTO T-99 in shoulders and outside road rights-of-way.

Check Valves

Check valves shall conform to and be tested in accordance with the AWWA standard for Swing-Check valves for Ordinary Water Works Service, AWWA C508. They shall be horizontally mounted, single disc, swing type with a full diameter passage providing minimum pressure loss.

Valves shall be of the non-slamming type designed for the future installation of outside lever and spring. Disc faces and seat rings shall be bronze.

Acceptable manufacturers of check valves shall be the following: Crane, American, Dresser, Mueller, U.S. Pipe, Clow, and Kennedy, or approved equal.

Street Restoration

Backfill, base, pavement, driveways, shoulders, curb, etc. shall conform with the latest revisions of the requirements of the agency maintaining the existing street. A copy of required permits shall be submitted to the Water Resources Department prior to construction within the street.

Pipelaying and Joining

Each pipe shall be laid true to line and grade so as to form a close concentric joint with the adjoining pipe, preventing offsets in the flow line. The interior of the pipe shall be cleaned of all dirt and superfluous materials prior to joining the next section.

Water Control

Contractor shall furnish, install and operate all necessary machinery, appliances and equipment to keep the excavations reasonably free from water during construction, and shall dewater and dispose of the water so as not to cause injury to public or private property or to cause a nuisance or a menace to the public. Contractor shall at all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, and shall have available at all times competent workmen for the operation of the pumping equipment.

The control of ground water shall be such that softening of the bottom of excavations, or formation of "quick" conditions or "boils" shall be prevented. Dewatering systems shall be designed and operated so as to prevent the removal of the natural soils. Well point holes shall be backfilled and compacted to grade with existing sand. Sand shall be graded from fine to coarse, free from objectionable material.

The static water level shall be drawn down to 6 inches below the bottom of the excavation so as to maintain the undisturbed state of the natural soils and allow the placement of backfill to the required density. The dewatering system shall be installed and operated so that the ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.

Material Handling

Every precaution shall be taken to prevent injury to pipe and piping materials during transportation and delivery to the work site. Under no condition shall pipe be dropped, bumped or dragged. If in the process of transportation, unloading or handling, any pipe or fitting is damaged, it shall be rejected by the County Utility Inspector and immediately removed from the site. Pipe fittings and specials shall be stored in a manner which will assure the protection of the material from damage and keep it clean. All materials shall be stored in a suitable fashion such that the quality shall not be degraded.

Hydrostatic Tests

The newly laid pipe, or any valved section thereof, shall be subjected to a hydrostatic pressure test in which test pressure shall be maintained for a period of two (2) hours. The test pressure of 150 psi shall be maintained within 5 psi throughout the duration of the test. Leakage during the test shall not exceed the allowable leakage specified in ANSI/AWWA C605. The test procedures of ANSI/AWWA C600, Section 4 shall be observed.

The pressure test shall be applied by means of a pump connected to the pipe by the Contractor at the Contractor's expense in a manner satisfactory to the Water Resources Department Engineer or his designated representative.

Any defects discovered during this test shall be remedied by the Contractor at the Contractor's expense and the test repeated before final acceptance.

Contractor shall give Developer's Engineer and County forty-eight hours advance notice of the time when the installation is ready for hydrostatic tests. Tests shall be run in the presence of the County's Inspector.

The mains may be subjected to a hydrostatic pressure test and inspected and tested for leakage at any time after the trench has been partially backfilled, provided that the concrete thrust blocking has cured at least five days if ordinary cement was used, or that the blocking has cured at least two days if high early-strength cement was used.

Disinfection

Before the system is put into operation, all water mains and appurtenances and any item of new construction with which the water comes into contact shall be thoroughly disinfected and flushed. Valves in the lines being disinfected shall be opened and closed several times during the sterilization period.

Disinfecting and flushing shall be in accordance with AWWA C651. Chlorine shall be flushed from the new main until measurements show that the chlorine residual in the water leaving the main is not higher than that generally prevailing in the system supplying water to the new main. An alternative method of flushing may be required on large and/or excessively long lines. A procedure for flushing shall be submitted for review.

Bacteriological Testing

After the Water system has been disinfected and thoroughly flushed as specified herein, County personnel will take samples of water from remote points of the distribution system in suitable sterilized containers. Samples shall be taken from the same location(s) on two consecutive days.

County personnel shall forward the samples to a certified testing laboratory, for bacterial testing. If tests of such samples indicate the presence of coliform organisms, the disinfection as outlined above shall be repeated until tests indicate the absence of coliform organisms. The bacterial tests shall be satisfactorily completed in accordance with DEP requirements before the system is placed in operation. Testing and retesting shall be performed at the Developer's expense. The results of the tests shall be forwarded to the Water Resources Department along with the DEP certificate of completion. The Water Resources Department Design and Review Division will forward the Certificate of Completion, the record drawings and the test results to DEP.

PIPE

Polyvinyl Chloride (PVC) Pipe

Polyvinyl chloride (PVC) pipe four (4) inches through twelve (12) inches in diameter shall conform to the requirements of AWWA C-900 and shall be DR-18, as made by J - M Pipe or approved equal.

PVC pipe fourteen (14) inches and larger shall be UNI-B-11 (latest version) approved cast iron O.D. DR-25 with factory installed gaskets meeting cell classification specified by ASTM D-1784 or approved equal.

PVC pipe two (2) inches and smaller shall be Schedule 40 with solvent weld joints and shall conform to the requirements of ASTM D1785, Class 1120 or 1220.

PVC pipes and fittings less than (4) incjes in diameter must bear the NSF mark on each installed piece.

Fittings for Schedule 40 plastic pipe shall be Schedule 40 and conform to ASTM D2466 for solvent weld socket joints. PVC material shall conform to ASTM D1784. Solvent cement shall be of the type recommended by pipe and fittings manufacturers.

PVC pipe shall have integral wall-thickened bell ends and shall be joined using one piece elastomeric gaskets. Solvent cement joining will not be permitted for pipes and fittings larger than two (2) inches.

PVC pipe shall be connected to cast or ductile iron fittings with mechanical joints when fittings are double polywrapped. Use of PVC fittings may be permitted when adequately restrained and approved by the Water Resources Department.

P.V.C. water main pipe shall be a solid blue color.

Ductile Iron Pipe (DIP)

Ductile iron pipe (DIP) three (3) inches in diameter and larger shall be cement lined and shall conform to and be tested in accordance with the current American National Standard Specification for Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-lined molds for Water or Other Liquids, ANSI/AWWA C110/A21.10. Ductile iron pipe less than three (3) inches in diameter shall conform to the manufacturer's standards, either centrifugally or statically cast with a minimum thickness of 0.25 inches. The ductile iron (nodular cast iron) shall conform to the Standard Specification for Ductile Iron Castings, ANSI/ASTM A536, with physical properties of Grade 60-42-10. Length of joints shall be either eighteen or twenty feet.

Ductile iron pipe and fittings shall be protected from deterioration on the outside of the pipe. Soil studies shall be conducted to determine if a bituminous coat and polyethylene sleeve outside are sufficient for protection of the pipe.

Ductile iron pipe and fittings shall be joined with any of the end types as specified below, unless a particular end type is specified. Flanged ends shall be used only where specifically noted on the drawings except that the valve connection end of all tapping sleeves shall be flanged.

Mechanical joints and push-on joints shall conform to and be tested in accordance with the American National Standard for Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings, ANSI/AWWA C111/A21.11 standard.

The American National Standard for Installation of Gray and Ductile Cast-Iron Water Mains and Appurtenances, AWWA C-600 shall govern the installation, as applicable. If the paint is damaged, the pipe and/or valve shall be cleaned by wire-brushing and given two coats of black asphalt paint.

Ductile iron water main pipe shall be marked by the following method:

Adhesive-backed underground utility marking tape shall be applied to the top of the pipe after the pipe has been laid in the trench. Adhesive-backed tape shall be 8 mil minimum thickness, 6 inches minimum width, and have a blue background color with black lettering reading, "CAUTION; POTABLE WATER LINE BURIED BELOW," or similar wording approved by Brevard County. Tape shall be Terra- Tape by Reef Industries, Houston, Texas, or approved equal.

FITTINGS, VALVES AND HYDRANTS

Ductile Iron fittings shall conform to and be tested in accordance with either the American National Standard for Ductile Iron Fittings, 3-inch through 48-inch for Water and Other Liquids, ANSI/AWWA C110/A21.10 or the American National Standard for Ductile Iron Compact Fittings, 3 inch through 12 inch, for Water and Other Liquids, ANSI/AWWA C153/A21.53. Pressure rating for fitting shall be 250 p.s.i. minimum. Fittings and valves shall be flanged or mechanical joint.

Gate Valves

Gate valves shall be resilient seat and they shall conform to and be tested in accordance with, "AWWA Standard for Resilient Seated Gate Valves, for Water and Sewerage Systems," ANSI/AWWA C509. The valve shall be bubble tight from either direction at a rated design working pressure of 200 p.s.i. The valve shall have a single disc gate with synthetic rubber seat bonded or mechanically attached to the disc; non-rising stem with 2" AWWA operating nut; counter clockwise opening, "o" ring stem seals, corrosion resistant interior coating acceptable for potable water.

Acceptable manufacturer of resilient seated gate valves is Mueller or approved equal.

Where flanges are specified on resilient seated gate valves they shall be ANSI B16.1, Class 125, cast iron flanges.

Tapping Sleeves and Valves

Topping sleeves shall have a full face rubber gasket and shall conform to and be tested in accordance with ASTM A-285. A pressure testing port shall be provided. Sleeve shall be shop coated and epoxy bonded to an average thickness of 12 mil. Tapping valves shall have a cast iron flanged inlet, class 125, ANSI B16.1 and a 2 inch square wrench nut. In instances where a full sleeve is not necessary, sleeve bands shall be stainless steel. Mechanical joint sleeve shall be used when tapping asbestos cement pipe size-on-size.

Acceptable manufacturers of tapping sleeves and valves are Mueller, American, and Kennedy, Smith-Blair, or approved equal.

Ball Valves

Ball valves shall conform to and be tested in accordance with the AWWA Standard for Ball Valves, ANSI/AWWA C507. Where ball valves are specified or required, they shall be double-seated with natural or synthetic rubber, bronze, or monel metal seats; designed for 150psi working pressure; flanged end; o-ring rotor bearing seals; constructed of high-tensile strength cast iron; equipped with totally enclosed manual operators, with open-closed indicator and handwheel with standard AWWA 2-inch operating nut for one-man operation at 150psi, unbalanced across the valve. Valves shall be tested by, and shall withstand without leak, a hydrostatic pressure of: (1) 250 p.s.i. on the valve body with rotor in the open position; and (2) 150p.s.i. on the side of the valve with the opposite side open to atmosphere.

Where flanges are specified on ball valves, they shall be ANSI B16.1, Class 125, cast iron flanges.

Acceptable manufacturers of ball valves are Allis-Chalmers, Henry Pratt, Williamette Iron and Steel or approved equal.

Butterfly Valves

Butterfly Valves shall be of the tight-closing, rubber-seat type, shall have a rated pressure of 150 psi, and shall be bubble-tight at this pressure with flow in either direction. The valves shall conform to and be tested in accordance with the AWWA Standard for Rubber-seated Butterfly Valves, ANSI/AWWA C504, Class 150B. The valve body shall be of the short-body flange type, constructed of cast iron conforming to either ASTM A126, Class B, or ANSI/ASTM A48, Class 40 or ductile iron ANSI/ASTM A536, Grade 65-45-12. Where flanges are specified they shall be ANSI B 16.1 Class 125, cast iron flanges. Valve discs shall be constructed of alloy cast iron conforming to ANSI/ASTM A436, Type 1, or cast iron conforming to ANSI/ASTM A48, Class 40, or ductile iron ANSI/ASTM A536 Grade 65-45-12. Valve shafts shall be constructed of 18-8, Type 304 or 316 stainless steel, ANSI/ASTM A296, Grade CF8, or monel. Valve seats shall be body or disc mounted, and shall be of natural or synthetic rubber compound with mating seat surfaces of 18-8, Type 304, or 316 stainless steel, or alloy cast iron conforming to ANSI/ASTM A436, Type 1, or bronze Grade A, D, or E. Valve bearings shall be corrosion resistant and self lubricating.

Manual butterfly valve operators shall be totally enclosed, permanently lubricated, suitable for buried service, and equipped with an opened-closed indicator, handwheel, and standard AWWA 2-inch operating nut for one-man operation at 150 psi, unbalanced across the valve. The handwheel shall be mounted in the horizontal position.

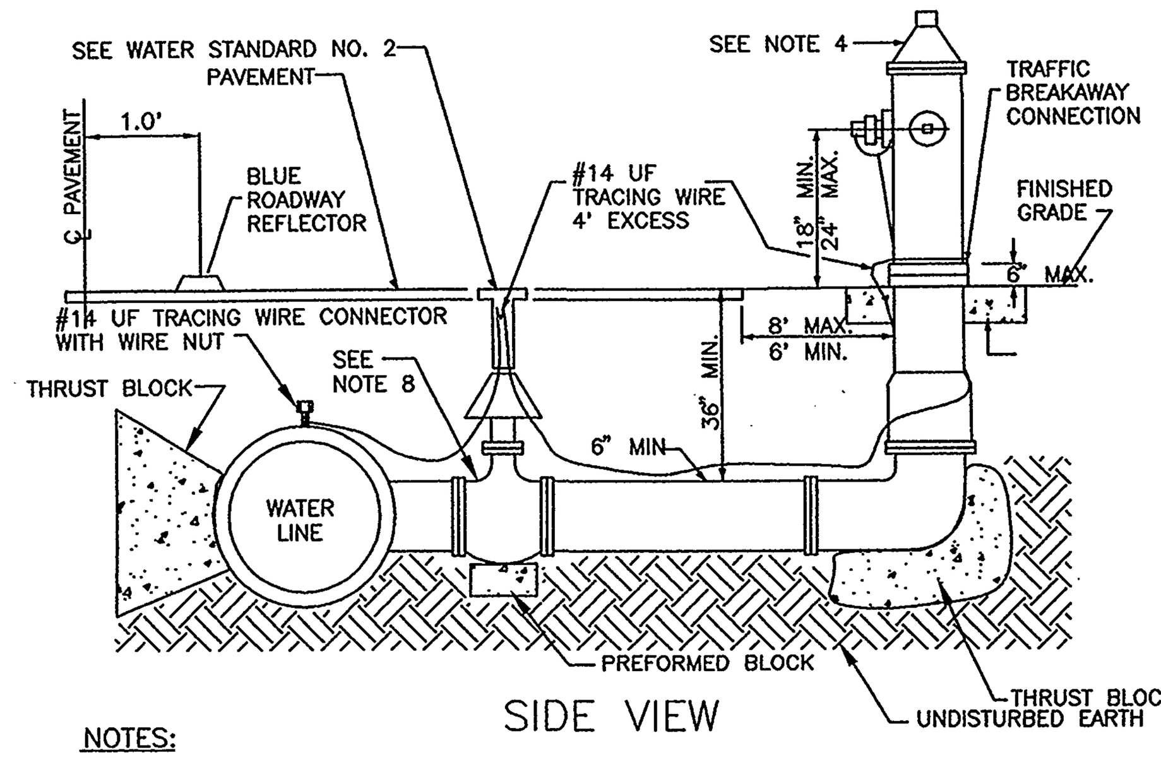
Interior and exterior surfaces of the butterfly valve, except seating surfaces, shall be thoroughly cleaned and coated with asphalt varnish conforming to Federal Specification TT-V-51C. For non-buried service, exterior surfaces shall be coated with two (2) coats of zinc chromate. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C504.

Acceptable manufacturer of butterfly valves is Pratt, or approved equal.

Backflow Prevention Devices

Backflow prevention devices shall conform to the following: AWWA C-506 (latest version) (R83) Reduced Pressure Principle Backflow Prevention Device.

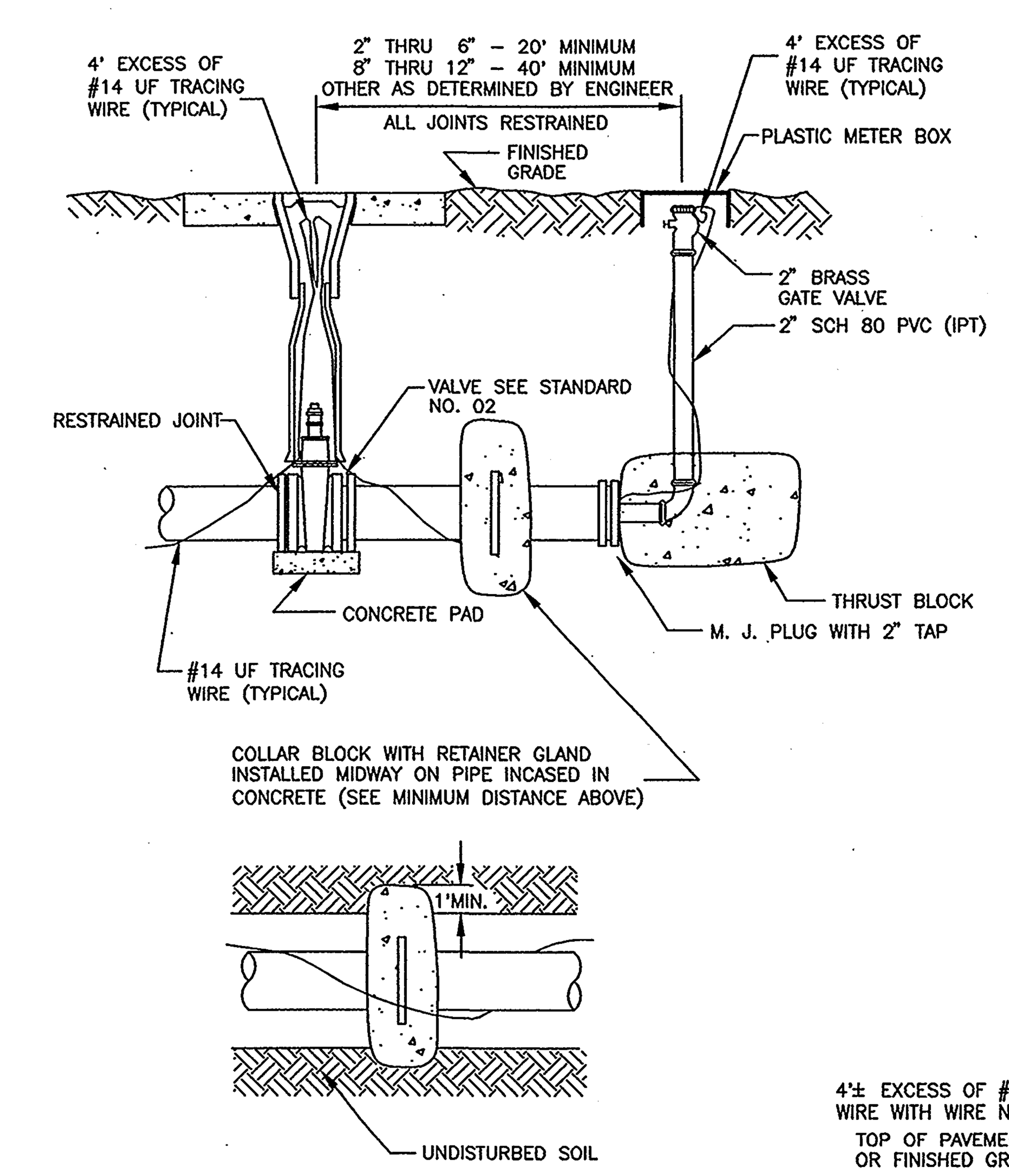
Acceptable manufacturers of backflow prevention devices are Watts or Febco or approved equal.



NOTES:

1) FIRE HYDRANTS SHALL CONFORM TO THE LATEST AWWA SPECIFICATION C-502 AND SHALL BE OF THE TRAFFIC MODEL TYPE, DRY BARREL.
2) ALL WORKING PARTS SHALL BE OF CAST IRON AND HIGH GRADE BRONZE.
3) ALL HOSE THREADS SHALL BE ANSI STANDARD THREADS.
4) FIRE HYDRANTS SHALL BE AS MANUFACTURED BY MUELLER, KENNEDY OR APPROVED EQUAL.
5) FIRE HYDRANTS SHALL BE PAINTED ONE COAT OF CORROSION-RESISTANT PRIMER AT THE FACTORY. TWO FINISH COATS OF COLOR, APPROVED BY FIRE DEPARTMENT, SHALL BE APPLIED TO HYDRANT AFTER INSTALLATION.
6) WORKING PRESSURE FOR FIRE HYDRANTS SHALL BE A MINIMUM OF 150 PSI.
7) VALVE BOXES SHALL BE OF STANDARD EXTENSION DESIGN AND MANUFACTURE AND SHALL BE MADE OF CAST IRON. VALVE BOXES SHALL BE BITUMINOUS-COATED.
8) 6" GATE VALVE NON-RISING STEM.
9) HYDRANT SHALL BE INSTALLED PLUMB AND TRUE.

FIRE HYDRANT DETAILS



TYPICAL 2" BLOW-OFF AND TESTING DETAIL

Hydrants and Hydrant Connections

Fire hydrants and Hydrant Connections shall conform to, and be tested in accordance with the AWWA Standard for Dry-Barrel Fire Hydrants, ANSI/AWWA C502. Hydrants shall have: breakable connection features and a breakable coupling on the stem immediately above the buried line which has a lower breaking point than the rest of the unit; 5 1/4 inch compression main valve; 6-inch inlet connection; standard bell or mechanical joint hub; 36-inch minimum buried length; one 4 1/2 inch and two 2 1/2 inch hose nozzles with National Standard threads; "O" ring seal; left (counter-clockwise) opening; and replaceable nozzle threads.

All working parts shall be of cast iron and high grade bronze. All hose threads shall be ANSI Standard threads. The 2 1/2 inch nozzles shall have 60 degree V-threads, 7 1/2 threads per inch, and a 3 1/16 inch outside diameter male thread. The 4 1/2 inch nozzle shall have four threads per inch and a 5 3/4 inch outside diameter male thread. Nozzles shall be easily replaceable.

Hydrant shoes shall be provided with lugs for strapping and hydrants shall be held in place with bolted rods designed to absorb all thrust. As an alternate, hydrants, valves, fittings and hydrant lead pipe may be fitted with lock-type joints approved by the Engineer and the Water Resources Department.

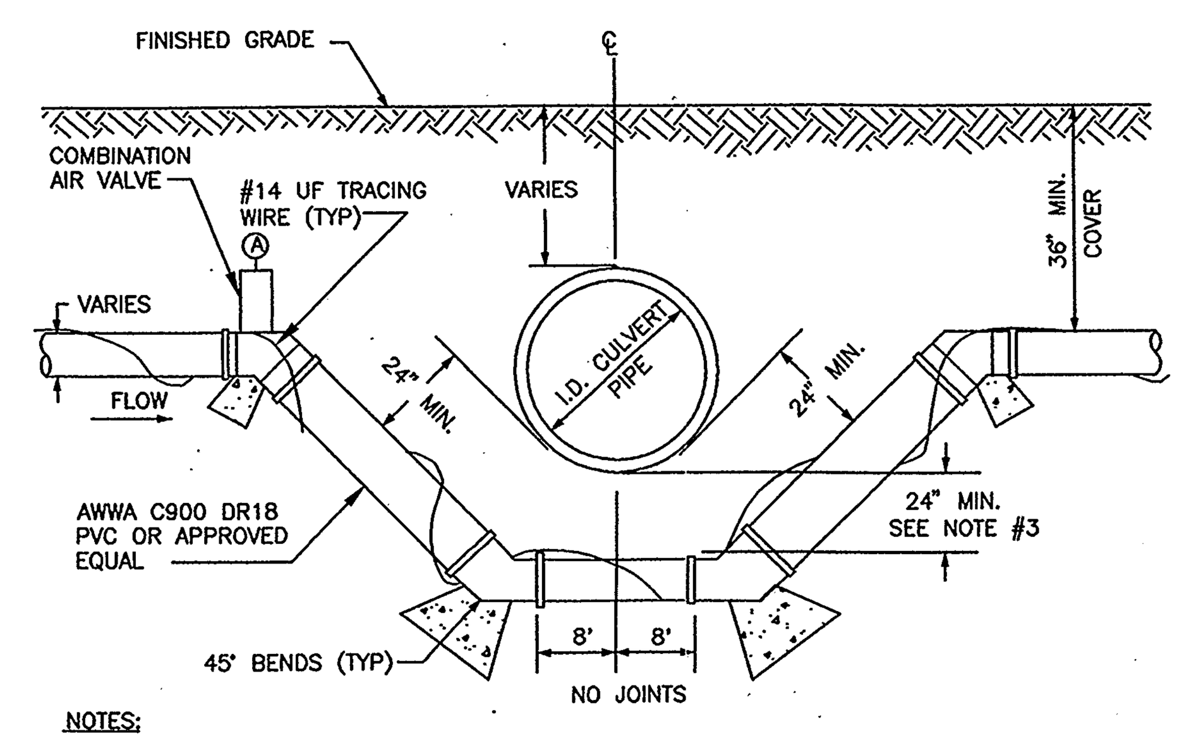
Nozzle caps with gaskets shall be provided for all outlets to provide a tight closure for the nozzles. Caps shall be securely chained to the barrel of the hydrant. Cap nuts shall have the same dimensions as the operating nut of the hydrant.

Fire hydrants shall be Mueller, Kennedy or approved equal.

Fire hydrant extensions shall be of proper design to accommodate the make of fire hydrant installed.

Fire hydrant branches (from main to hydrant) shall not be less than six (6) inches inside diameter. Each branch shall be provided with a gate valve located as close as possible to the main. Hydrants shall be located near road lines with pumper discharge nozzle facing the roadway. Hydrants shall be laid as to minimize their vulnerability to traffic.

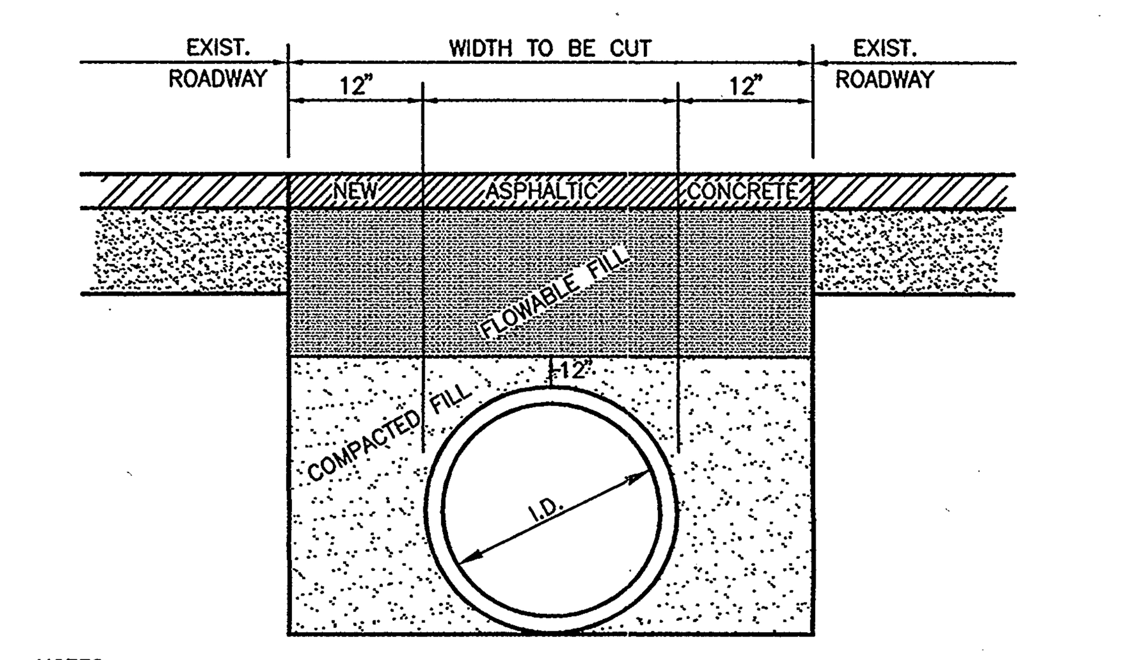
Hydrants shall be color coded in accordance with local Fire Department Standards.



NOTES:

1) USE THRUST BLOCKS WITH STAINLESS STEEL STRAPS WHERE NECESSARY.
2) THIS METHOD TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE STORM SEWER WITH 12" VERTICAL SEPARATION AND MAINTAIN 36" MINIMUM COVER TO FINISHED GRADE.
3) IF VERTICAL SEPARATION BETWEEN PRESSURE MAIN AND STORM SEWER IS LESS THAN 24", A CRADLE IS REQUIRED ON THE STORM SEWER.
4) SUBMIT SHOP DRAWING FOR EACH PARTICULAR SITUATION.
5) JOINTS FOR P.V.C. SHALL BE RESTRAINED WITH NAPPCO UNI-FLANGE SERIES 1350 OR APPROVED EQUAL.
6) JOINTS FOR D.I.P. SHALL BE RESTRAINED WITH EBAA IRON MEGALUG OR APPROVED EQUAL.

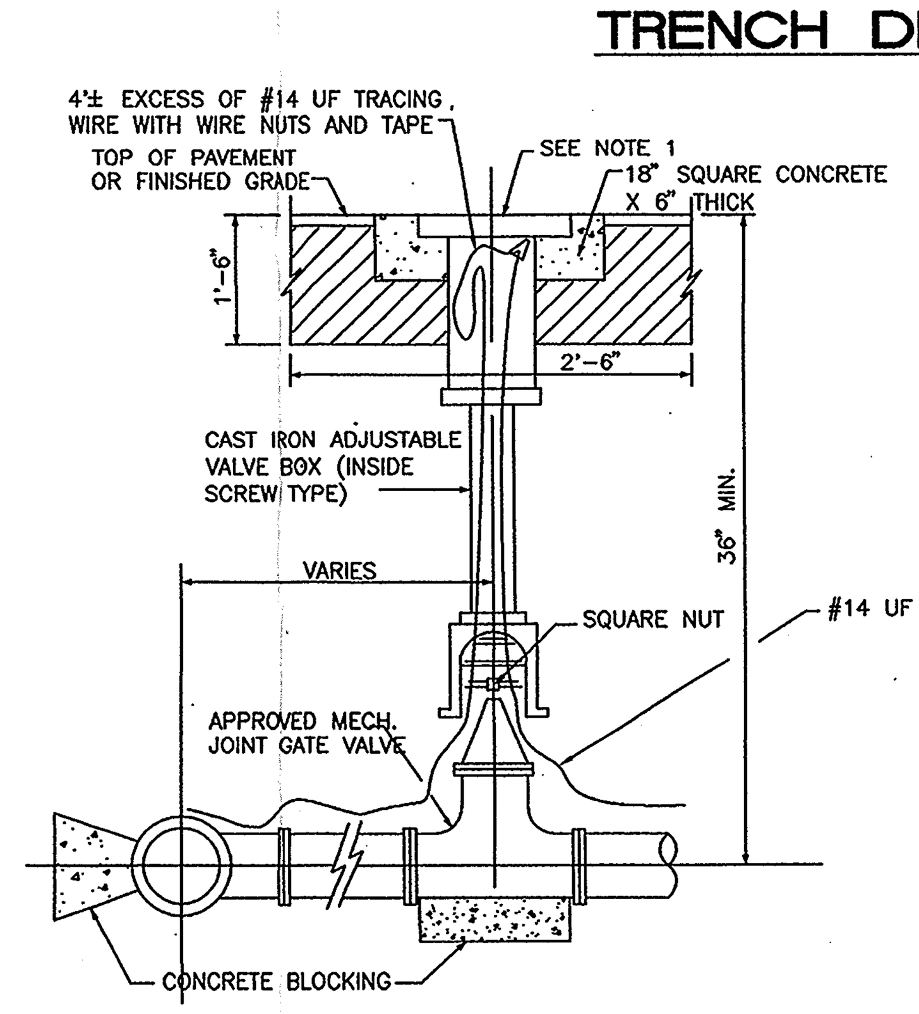
TYPICAL WATER MAIN CROSSING UNDER CULVERT



NOTES:

1. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED. SURFACE TREATMENT JOINTS SHALL BE LAPPED AND FEATHERED.
2. NEW ASPHALTIC CONCRETE SHALL BE 1.5" (MIN.) OF TYPE S-3, 1500 PSI, MFS. AND MATCH OR EXCEED EXISTING CONDITIONS
3. FLOWABLE FILL SHALL BE CLASS I, II, OR IP CEMENT (PER FDOT 921): WITH TYPE F FLY ASH (PER ASTM C618), CONCRETE SAND (PER FDOT 902), & WATER (PER FDOT 923) AND MEET FDOT REQUIREMENTS AS STATED IN MOST RECENT EDITION OF "UTILITY ACCOMMODATION MANUAL".
4. CONTRACTOR SHALL EXCAVATE BOTTOM OF TRENCH TO ALLOW FOR BELL SECTION OF PIPE.

TRENCH DETAIL



NOTES:

1) BRONZE OR CAST IRON COVER, MARKED "WATER".
2) DOUBLE WRAP FITTINGS IN VISQUEEN PRIOR TO POURING CONCRETE.
3) VALVE BOXES OVER 4' LONG SHALL INCLUDE EXTENSION OPERATOR. OPERATING NUT MUST BE WITHIN 30" OF GROUND SURFACE. EXTENSION OPERATOR MUST BE CONNECTED TO VALVE OPERATING NUT WITH A 3/8" STAINLESS STEEL BOLT AND NUT.

VALVE AND BOX

☐ BRUCE A. MOIA, FL. P.E. #47529
☐ AARON J. BOWLES, FL. P.E. #55313

REVISIONS	DATE
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JOB NO.	04-294
DESIGNED	BAM
DRAWN	WJA
CHECKED	BAM
DATE	NOV 2004
SCALE	AS SHOWN

MOSBY MOIA BOWLES AND ASSOCIATES, INC.
CONSULTING ENGINEERS · CA #5728
2455 - 14TH AVENUE
VERO BEACH, FLORIDA 32960
PHONE (772) 569-0035
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WATER DETAILS AND SPECIFICATIONS

RIVER RIDGE ESTATES SUBDIVISION

BREVARD COUNTY, FLORIDA

SHEET C8 OF 8

04-294

MAY 1 3 2005