

SITE ENGINEERING PLANS
for
**PREMIER
INDUSTRIAL PARK**

18 Hargrove Grade (Units 1 - 12)
Palm Coast, Florida

*City of Palm Coast
Development Order No. _____
SP-100-04-02
6-9-04
[Signature]

PREMIER INDUSTRIAL PARK
Hargrove Grade
Palm Coast, FL.
Project No. 04053

Applicant:

ABE GREEN
39 NW 166th Street, Suite 5
Miami, FL. 33169

Owner:

ROBERT LEMON CONSTRUCTION, Inc.
411 S. Central Avenue
Flagler Beach, FL. 32136

Prepared By



B.H.R., Inc.

Engineers • Planners • Landscape Architects • Surveyors
One Corporate Drive, Suite 1-B • Palm Coast, Florida 32137 •
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Fl Certification Number: EB 0855 LC 0120 LB 6739

Advancing Quality of Life, by Design ●

Revised: May 18, 2004
Date: March 31, 2004

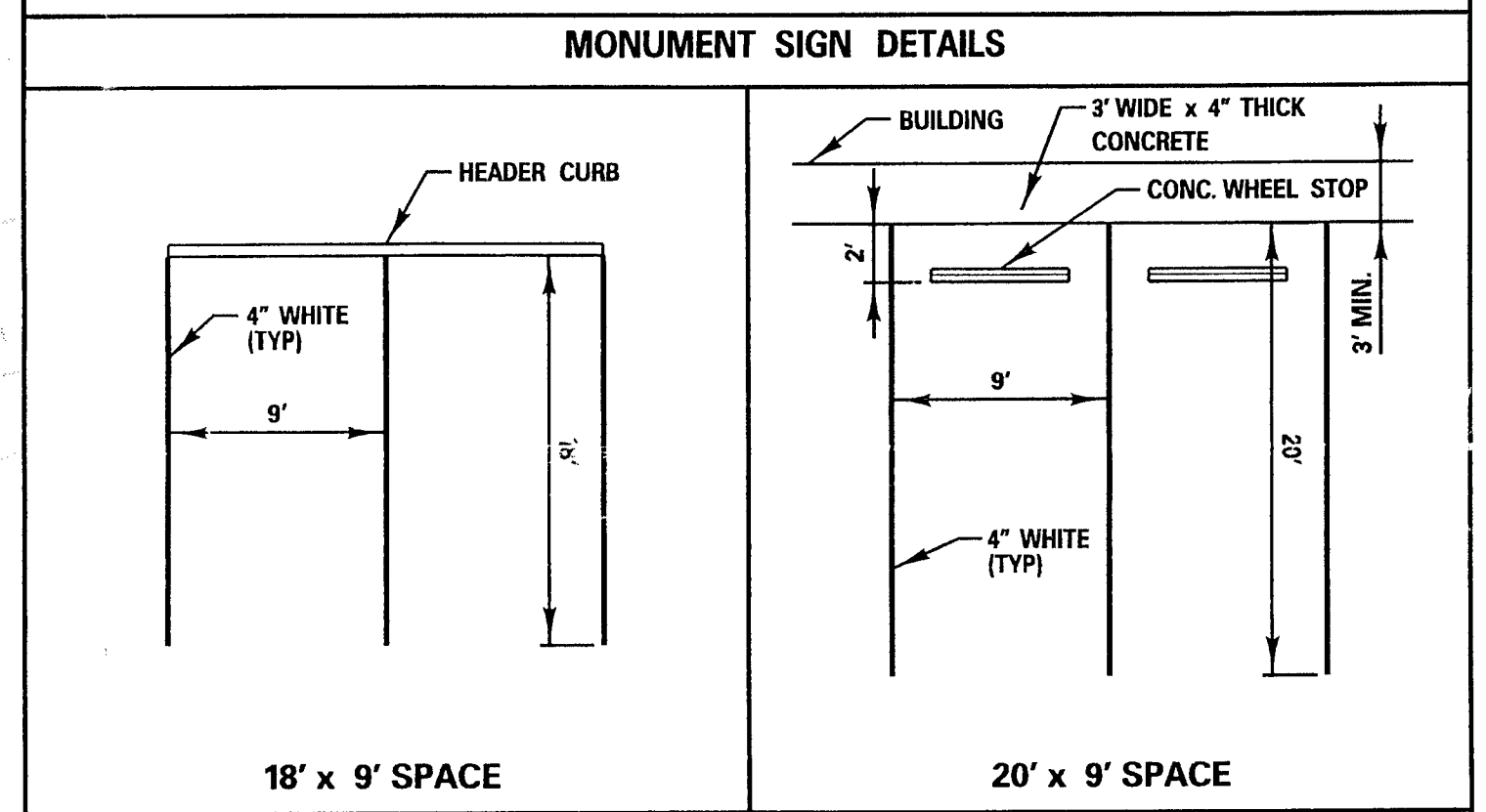
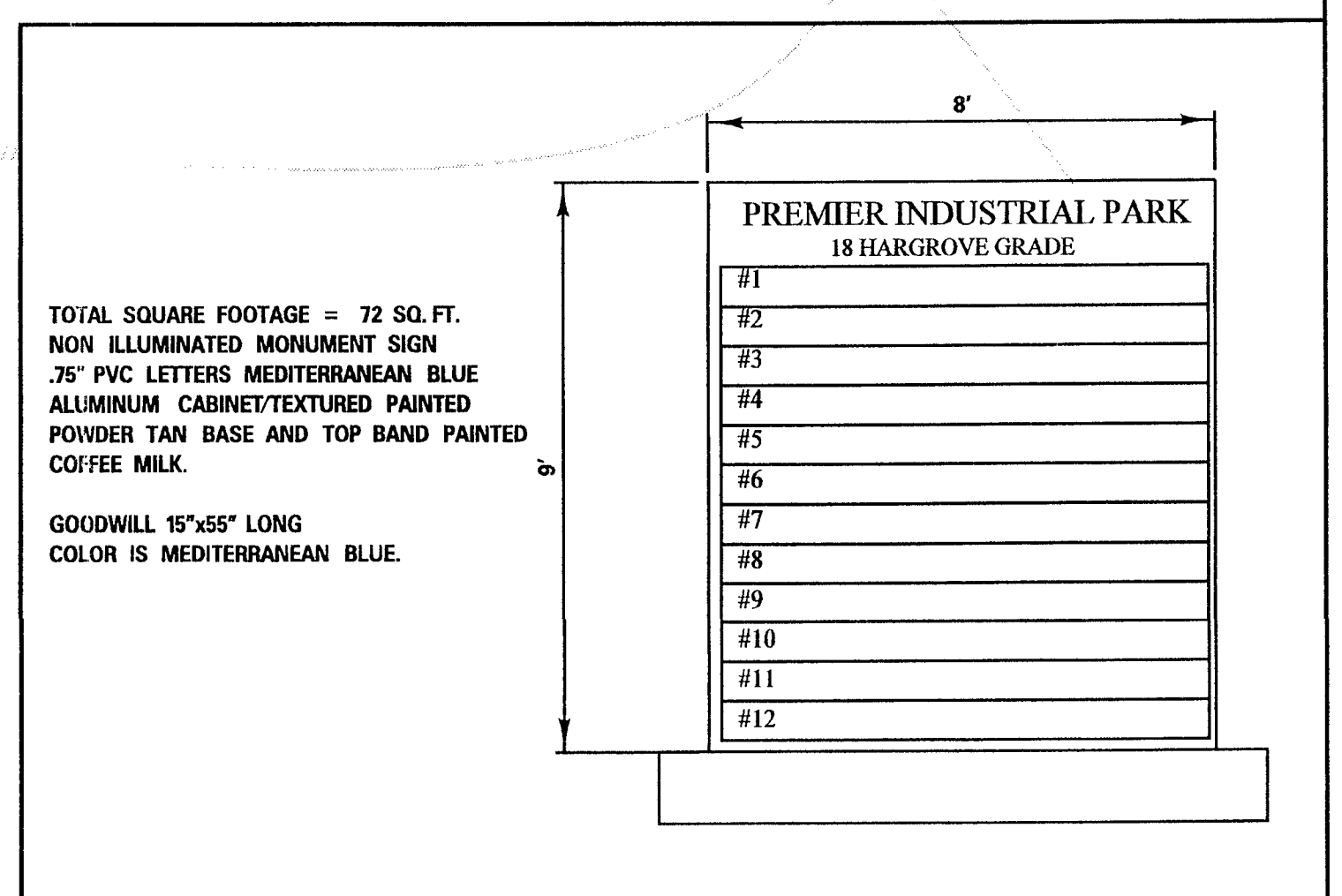
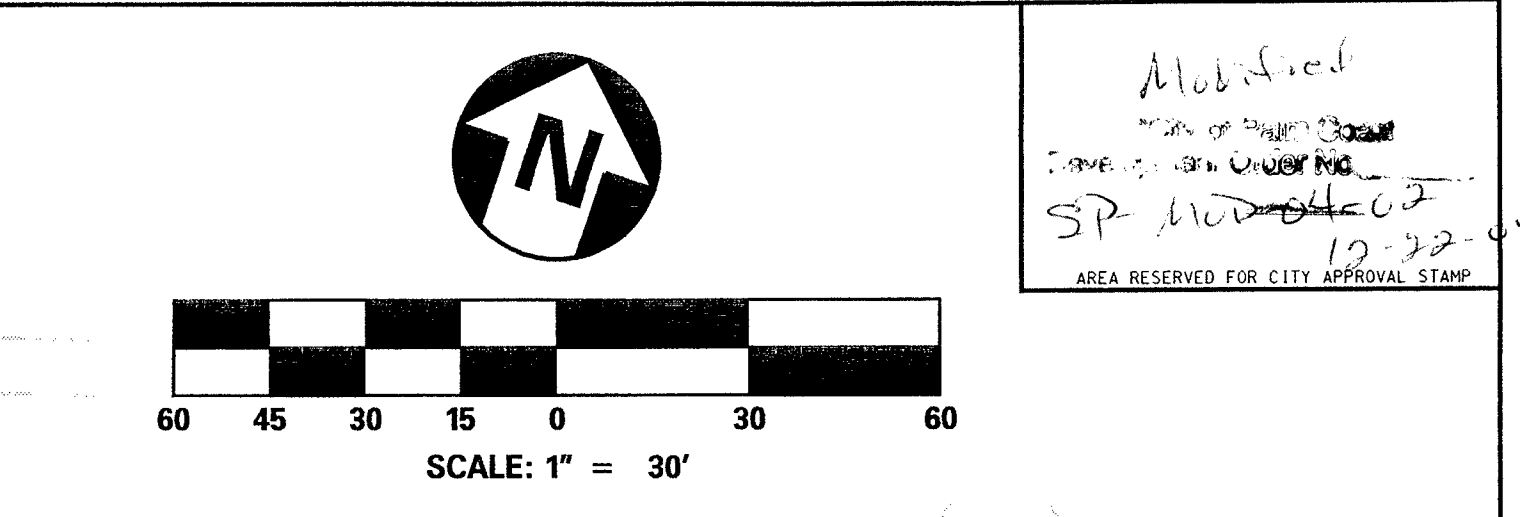
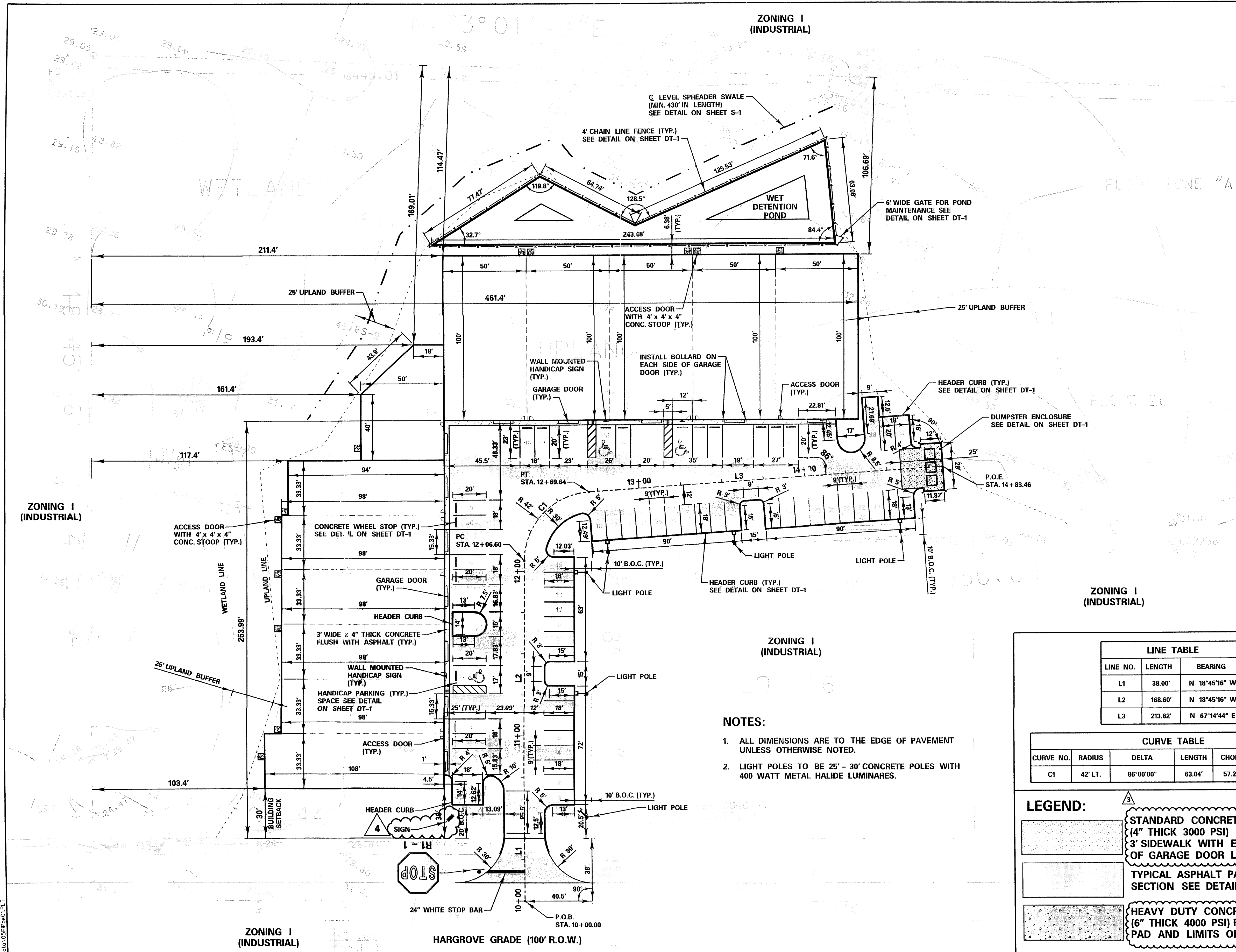
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1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
0	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management District and FDEP
No.	By	Date	Revision

Project No.: 04053

SPECIAL NPDES STORMWATER NOTE

The Contractor performing work on any project one (1) acre or larger shall file a "Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities" (NOI) in accordance with the Florida Department of Environment Regulation National Pollutant Discharge Elimination Program (NPDES) stormwater regulatory program. The NOI shall be filed not less than two (2) days before commencing construction and shall be submitted to:
NPDES Stormwater Notices Center, MS #2510
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

[Signature]
5/20/04



TYPICAL PARKING DIMENSIONS

SITE DATA

TOTAL SITE AREA	308,660 S.F. (7.09 Ac.) (100%) (INCLUDES WETLANDS)
IMPERVIOUS AREA	PAVEMENT: 31,042 S.F.
	BUILDING: 47,817 S.F.
	TOTAL: 78,859 S.F. (25.55%)
PERVIOUS AREA	229,801 S.F. (74.45%) (INCLUDES 176,052 S.F. WETLANDS)

REQUIRED PARKING : TOTAL BUILDING AREA = 47,817 S.F.
 180 SF OFFICE EACH UNIT* 12 UNITS@1 SPACE /300 SF =2160 SF/300 SF=8 SPACES
 44,637 SF WAREHOUSE @ 1 SPACE /1000 S.F. = 44,637 S.F./1000 S.F. = 44 SPACES
TOTAL REQUIRED PARKING = 54 SPACES

PROVIDED PARKING:
 55 SPACES (INCLUDES 3 HANDICAP SPACES)

ZONING: I (INDUSTRIAL)

REQUIRED SETBACKS: FRONT YARD - 30 FT
 REAR YARD - 20 FT
 SIDE YARD - 20 FT

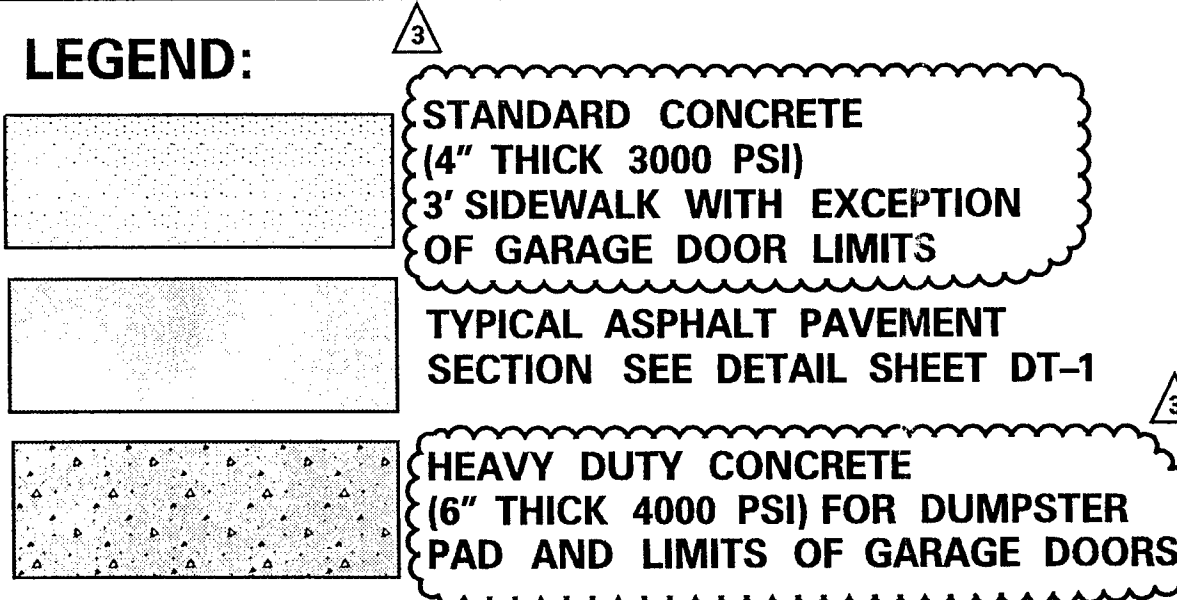
MAXIMUM BUILDING HEIGHT: 65'
 MAXIMUM SIGN - HEIGHT: 15'
 - AREA: 72 S.F.

LINE TABLE

LINE NO.	LENGTH	BEARING
L1	38.00'	N 18°45'16" W
L2	168.60'	N 18°45'16" W
L3	213.82'	N 67°14'44" E

CURVE TABLE

CURVE NO.	RADIUS	DELTA	LENGTH	CHORD	BEARING
C1	42' LT.	86°00'00"	63.04'	57.29'	N 24°14'44" E



- NOTES:**
- ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
 - LIGHT POLES TO BE 25' - 30' CONCRETE POLES WITH 400 WATT METAL HALIDE LUMINAIRES.

No.	By	Date	Revision
1	J.L.B.	12/08/04	Revised Sign Location
2	A.S.D.	6/16/04	Revised per QA/QC Review Comments Changed Concrete Thickness from 4" to 6" at Limits of Garage Doors
3	A.S.D.	6/01/04	Revised per City of Palm Coast and Review Comments
4	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
5	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and FDEP

Scale: 1" = 30'

Project Mgr: **A. Dance**

Designed by: **J. Bonanno**

Drawn by: **K. Howell**

QA/QC:

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DO NOT SCALE THIS DRAWING - DIMENSIONS AND NOTES TAKE PRECEDENCE. DRAWING IS REDUCED IF LESS THAN 22" x 34"

Premier Industrial Park
 Hargrove Grade
 Palm Coast, Fl.

Geometry, Pavement Markings
 And Signage Plan

Sheet No. **GE-1**
 5 of 16

Issue Date: **March, 2004**
 Project No. **04053**

Engineer Of Record
 Joseph I. Bonanno
 PE #57968

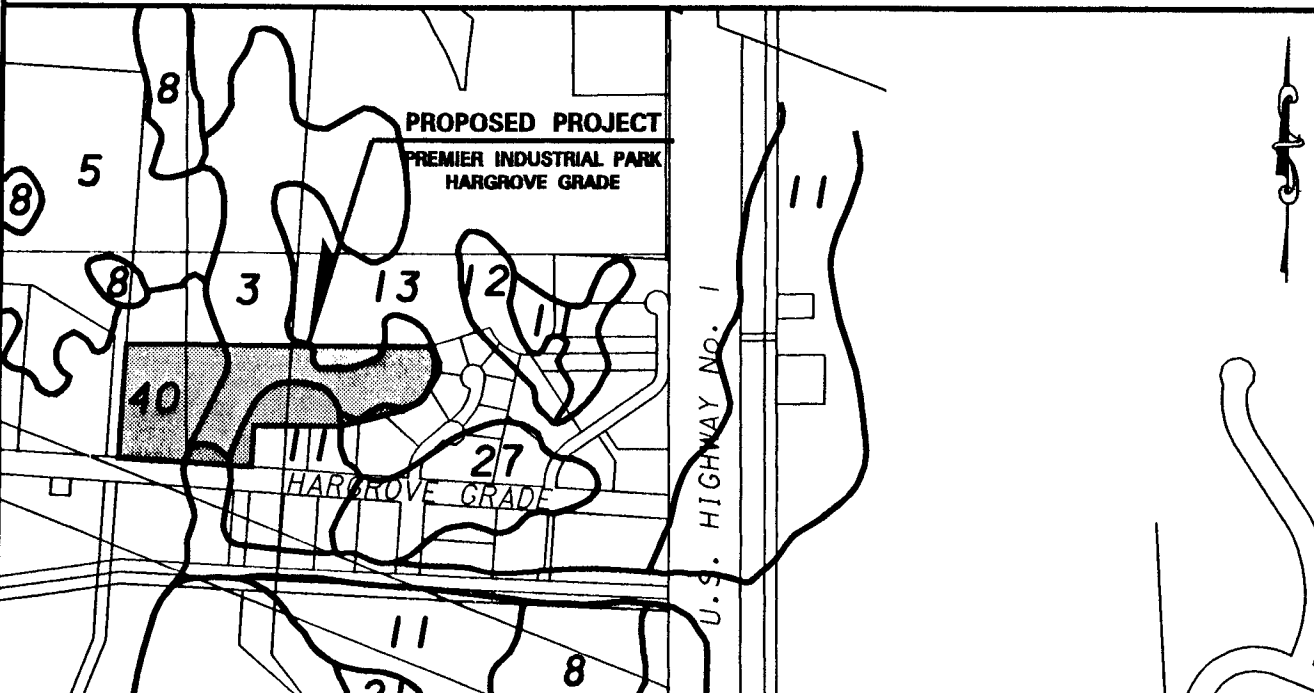
Released for construction by

City of Palm Coast
Development Order No. SP-1102-04-02
AREA RESERVED FOR CITY APPROVAL STAMP

INDEX OF DRAWINGS

SHEET NO.	DRAWING NO.	DESCRIPTION
1	CV	COVER
2	IN-1	GENERAL NOTES, LEGEND AND INDEX OF DRAWINGS
3	EX-1	EXISTING CONDITIONS
4	CL-1	CLEARING PLAN AND EROSION CONTROL
5	GE-1	GEOMETRY, PAVEMENT MARKING AND SIGNAGE PLAN
6	PD-1	PAVING AND DRAINAGE PLAN
7	WS-1	WATER AND SEWER PLAN
8	LS-1	LANDSCAPE PLAN
9	IRR-1	IRRIGATION PLAN
10	DT-1	PAVING AND DRAINAGE DETAILS
11	DT-2	WATER AND SEWER DETAILS
12	DT-3	LANDSCAPE AND IRRIGATION DETAILS
13	EC-1	EROSION CONTROL DETAILS
14	SWPP	SAMPLE STORM WATER POLLUTION PREVENTION PLAN
15	S-1	RETENTION POND PLAN, SECTION AND DETAILS
16	S-2	STRUCTURAL NOTES

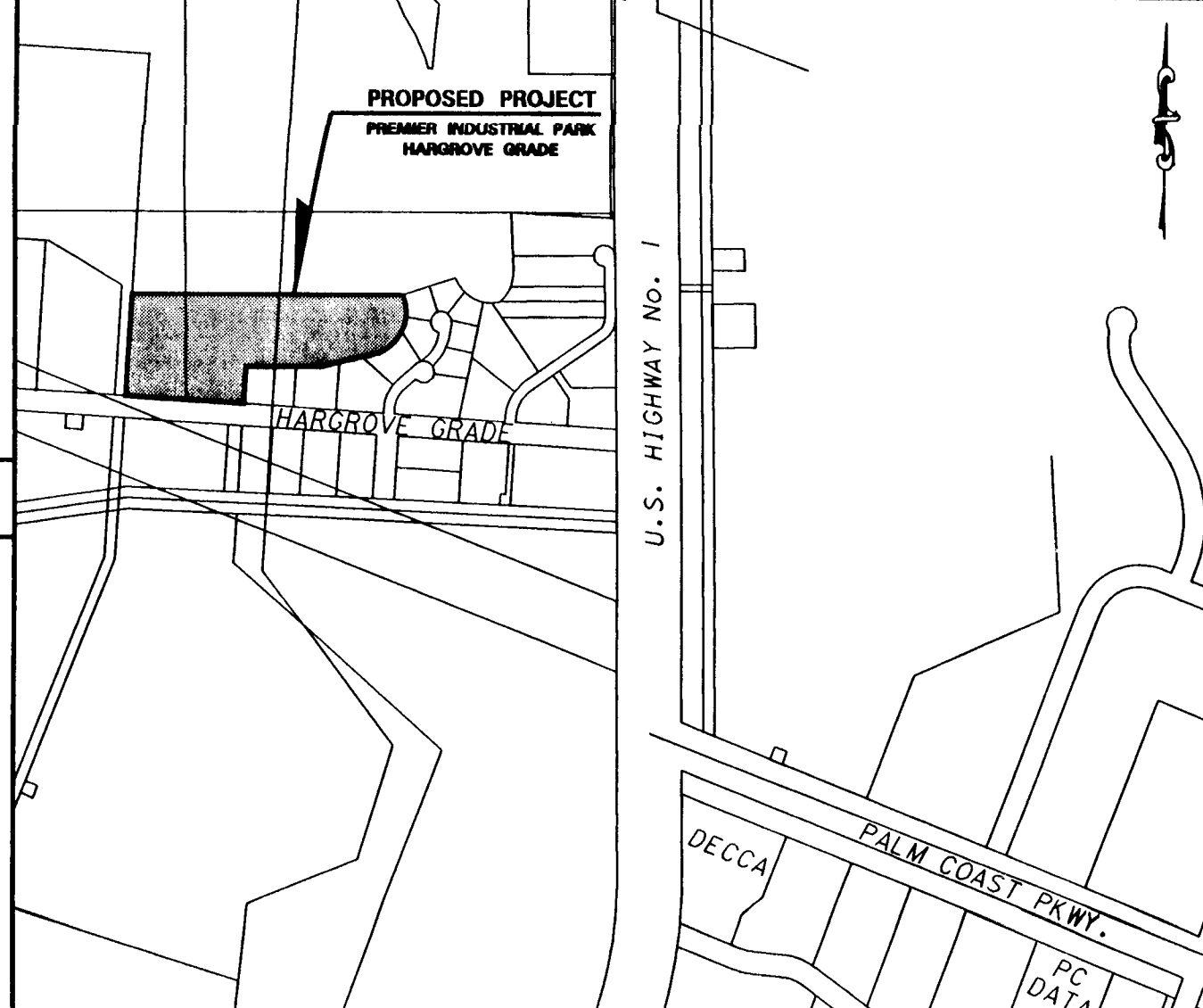
SOILS MAP



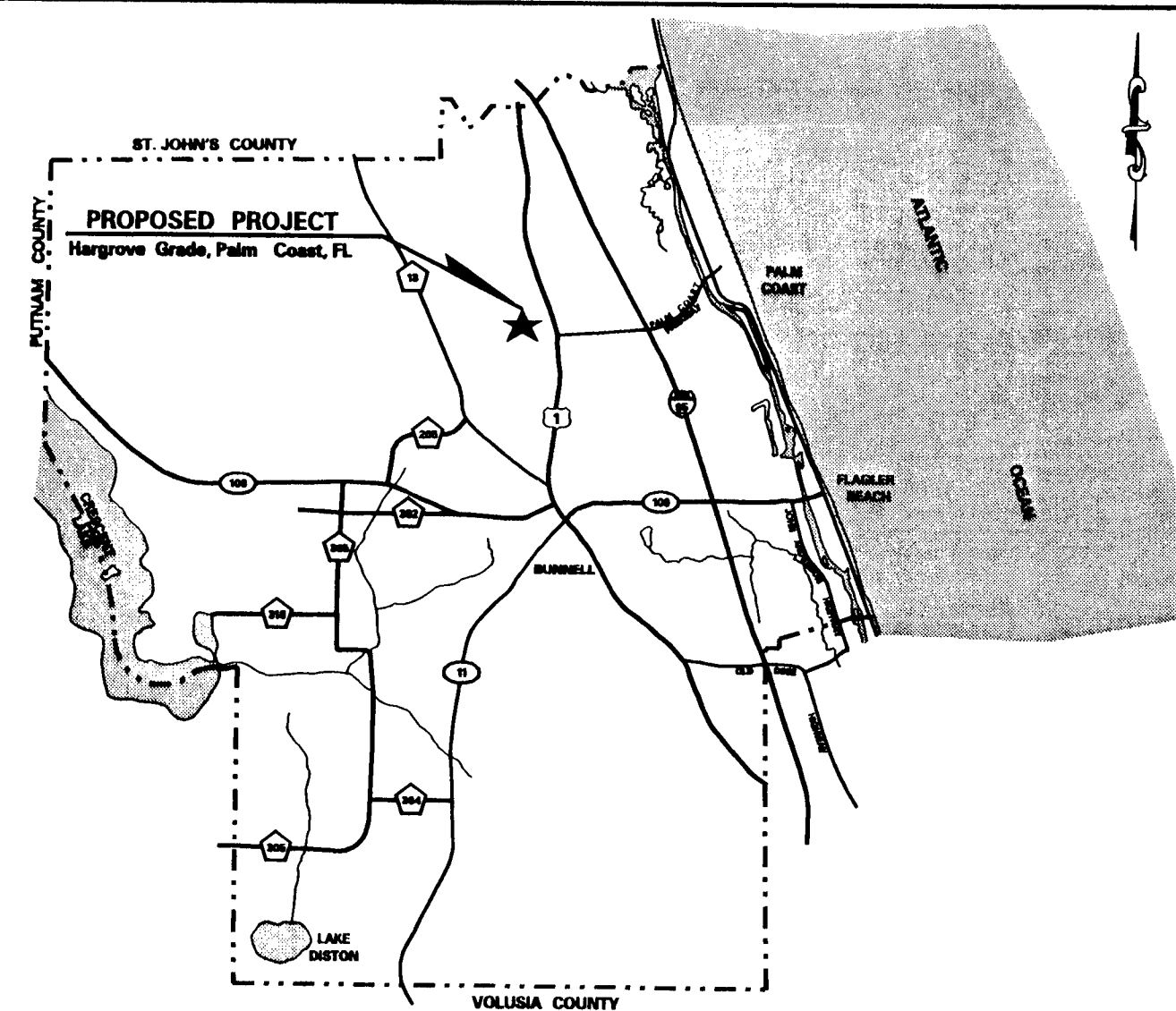
SOILS INDEX

SYMBOL	NAME
3	Samsula and Hontoon soils, depressional
5	Pineda-Wabasco complex
8	Hicoria, Riviera, and Gator soils, depressional
11	Myakka Fine Sand
12	Plant, Basinger, and St. Johns soils, depressional
13	Immokalee Fine Sand
21	Smyrna Fine Sand
27	Cassole Fine Sand
40	Pomona Fine Sand

LOCATION MAP



VICINITY MAP



SEWER NOTES

1) PIPE LENGTHS SHOWN REPRESENT SCALED DISTANCES BETWEEN MANHOLE CENTER LINES CLEAN OUTS OR FITTINGS ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS FOR HIS OR HER CONTRACT PRIOR TO ORDERING MATERIALS.

2) BECAUSE OF THE UNREASONABLE EXPENSE TO LOCATING ALL BURIED UTILITIES, SOME UTILITIES ARE SHOWN AS REPRESENTED BY ORIGINAL DESIGN DRAWINGS OR AS -BUILT-. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY CONFLICTS. VERIFICATION SHALL BE MADE SUFFICIENTLY AHEAD OF THE CONSTRUCTION SCHEDULE FOR THAT PARTICULAR AREA OF WORK TO ALLOW FOR ADJUSTMENTS IF CONFLICTS ARE FOUND. CONTRACTOR SHALL ALSO NOTIFY LOCAL UTILITY COMPANIES PRIOR TO BEGINNING THE WORK.

3) ALL CONSTRUCTION TO BE IN ACCORDANCE WITH LOCAL JURISDICTION'S STANDARDS, THE UTILITY COMPANY, AND DEPARTMENT OF ENVIRONMENTAL PROTECTION SPECIFICATIONS AND SUBJECT TO ANY CONDITIONS OF THOSE AGENCIES' PERMITS.

4) GRAVITY SEWER PIPE SHALL BE LAID WITH THE BELL END UPSTREAM WITH BEDDING IN COMPLIANCE WITH ASTM D221 - 4.

5) WHERE VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPE INVERT AND SANITARY MANHOLE INVERT, AT THEIR CONNECTION, EXCEEDS 2 FEET, EXTENSION DROP MANHOLES SHALL BE CONSTRUCTED.

6) CONNECTION OF PVC PIPE TO MANHOLES SHALL BE MADE USING A FLEXIBLE COUPLING APPROVED BY THE ENGINEER.

7) ALL MANHOLES SHALL BE COATED INSIDE AND OUT WITH TWO (2) COATS OF "MOBIL PAINTS" - "CATALYZED EPOXY COAT TAI-SPCC" PAINT 16-48-AC-7 OR APPROVED EQUAL.

8) ALL HOLES IN MANHOLE SECTIONS USED FOR THEIR HANDLING AND THE ANNULAR SPACE BETWEEN THE WALL AND ENTERING PIPES SHALL BE PLUGGED WATER TIGHT WITH EMBOCO NO. 93 NON-SHRINK MORTAR OR APPROVED EQUAL, APPLIED AND CURED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SO THERE WILL BE ZERO LEAKAGE THROUGH OPENINGS AND AROUND PIPES. THE MORTAR SHALL BE FINISHED SMOOTH AND FLUSH WITH THE ADJOINING INTERIOR AND EXTERIOR SURFACES.

9) CEMENT SHALL BE TYPE I PORTLAND CEMENT CONFORMING TO ASTM 150.

10) SAND SHALL COMPLY WITH ASTM C-344 EXCEPT THAT ALL SAND SHALL PASS SIEVE NO. 6.

11) POURED-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.

12) ALL MANHOLES SHALL BE 4 FEET INSIDE DIAMETER UNLESS OTHERWISE SHOWN WITH ECCENTRIC CONES, WITH TRAFFIC RATED FRAME AND COVERS.

13) FORCE MAIN PIPE MATERIAL SHALL BE AS FOLLOWS:

PVC WASTE WATER FORCE MAIN - ALL PVC PIPES OF NOMINAL DIAMETER 4 THROUGH 12 INCHES SHALL BE MANUFACTURED IN ACCORDANCE WITH ANS/AWWA STANDARD C900. THE PVC PIPE SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 160 PSI AND SHALL HAVE A DIMENSION RATIO OF 18 (DR-18). PIPE SHALL BE THE SAME OUTSIDE DIAMETER AS DUCTILE IRON PIPE AND BE NSF APPROVED FOR WASTE WATER USE.

DI DUCTILE IRON - ANSI A21.31 CLASS 2, PUSH-ON JOINT, INTERIOR AND EXTERIOR EPOXY OR POLY COATED.

14) THE CONTRACTOR SHALL SUPPLY ALL EQUIPMENT AND LABOR NECESSARY TO LAMP TEST THE SEWER LINES. THE CONTRACTOR WILL GIVE THE ENGINEER AND UTILITY COMPANY 48 HOURS NOTICE OF PROPOSED TESTING DATE. ANY LINES FOUND NOT TRUE TO LINE OR GRADE OR HOLDING WATER WILL BE RE-INSTALLED. THE CONTRACTOR SHOULD SCHEDULE THIS TESTING AFTER SUBGRADE COMPACTION BUT PRIOR TO FINISH PAVING OVER PIPES TO AVOID COSTLY REPAIRS.

15) AT THE REQUEST OF THE ENGINEER, LOCAL JURISDICTIONAL AGENCY OR UTILITY COMPANY, THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR AND TEST THE SEWER SYSTEM FOR INFILTRATION OR EX FILTRATION.

16) THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF "AS-BUILT" DRAWINGS ON MYLAR SHOWING THE EXACT LOCATION OF ALL UNDERGROUND SEWERAGE LINES ALONG WITH VERIFICATION OF INVERT AND COVERS, AND SUBMIT THEM TO THE ENGINEER PRIOR TO FINAL INSPECTION.

17) GRAVITY SEWER PIPE SHALL CONFORM TO ASTM 3034 (DR-30), PH 118, UNLESS OTHERWISE NOTED.

18) JOINTS FOR PVC SEWER SHALL BE RUBBER GASKETED TYPE CONFORMING TO ASTM D-3212 AND ASTM F-477.

19) ALL PVC SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE UN-BELL PLASTIC PIPE ASSOCIATION STANDARD UN-B-B.

20) ALL SEWER MAINS TO HAVE A MINIMUM COVER OF 3'-0" UNLESS OTHERWISE NOTED.

21) UNLESS OTHERWISE NOTED, MANHOLE TOP ELEVATIONS SHALL BE:

PAVED AREA - FLUSH WITH PAVEMENT
UNPAVED AREA - 0.25 FEET ABOVE FINISH GRADE MINIMUM

22) ALL SERVICE CONNECTIONS SHALL BE A MINIMUM OF 6 INCHES.

23) INSTALL MAGNETIC MARKERS AT THE END OF EACH SERVICE LINE OR OPPOSITE SIDES AND RECORD THEIR LOCATION.

24) WHEN THE MAXIMUM HEIGHT OF COVER IS MORE THAN 12 FEET, DIP (CLASS 9) OR (DR-30) PVC SHALL BE USED. DIP SHALL BE POLY OR EPOXY LINED.)

25) THE SEWER COLLECTION SYSTEM SHALL NOT BE PLACED IN SERVICE UNTIL THE SYSTEM HAS BEEN VISUALLY INSPECTED AND FLUSHED OF SEDIMENT AND DEBRIS, AND APPROVED BY THE ENGINEER AND D.E.P.

26) THE SEWER LINES SHALL BE TV INSPECTED AND THE ALIGNMENT BETWEEN MANHOLES CHECKED BY USING LIGHTS, LASER BEAMS OR OTHER SUITABLE MEANS, BY THE CONTRACTOR.

27) GRAVITY SEWER SHALL BE TESTED FOR DEFLECTION BY A GO-NO-GO MANDREL TEST AFTER ALL BACK FILL AND LIME ROCK HAVE BEEN PLACED AND APPROVED. DEFLECTION SHALL NOT EXCEED 5 PERCENT.

28) GRAVITY SEWER IS SHOWN AS FT / FT DIMENSIONS UNLESS OTHERWISE NOTED.

WATER NOTES

1) ALL CONSTRUCTION TO BE IN ACCORDANCE WITH LOCAL JURISDICTION'S STANDARDS, UTILITY COMPANIES, AND DEPARTMENT OF ENVIRONMENTAL PROTECTION SPECIFICATIONS, AND ANY CONDITIONS OF THEIR PERMITS.

2) PIPE LENGTHS SHOWN REPRESENT SCALED DISTANCES BETWEEN VALVES OR BRANCHES AND MAINS AND MAY VARY IN THE FIELD. CONTRACTOR TO VERIFY ALL DIMENSIONS FOR HIS OR HER CONTRACT PRIOR TO ORDERING MATERIAL.

3) BECAUSE OF THE UNREASONABLE EXPENSE OF LOCATING ALL BURIED UTILITIES, SOME UTILITIES ARE SHOWN AS REPRESENTED BY ORIGINAL DESIGN DRAWINGS OR AS-BUILT-. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY CONFLICTS. VERIFICATION SHALL BE MADE SUFFICIENTLY AHEAD OF THE CONSTRUCTION SCHEDULE FOR THAT PARTICULAR AREA OF WORK TO ALLOW FOR ADJUSTMENTS IF CONFLICTS ARE FOUND. CONTRACTOR SHALL ALSO NOTIFY LOCAL UTILITY COMPANIES PRIOR TO BEGINNING THE WORK.

4) DEFLECTIONS AT PIPE JOINTS SHALL NOT EXCEED THOSE RECOMMENDED BY THE PIPE MANUFACTURER. THE CONTRACTOR SHALL SUPPLY ALL FITTINGS AS REQUIRED TO ALIGN THE PIPES AS SHOWN ON THE CONSTRUCTION DRAWINGS INCLUDING VERTICAL DROPS AND RESSES FOR CONFLICTS WITH OTHER UTILITIES.

5) PIPE MATERIAL SHALL BE AS FOLLOWS:

PVC POLYVINYL CHLORIDE PIPE - PVC PIPE OF NOMINAL DIAMETER 4 THROUGH 12 INCHES SHALL BE MANUFACTURED IN ACCORDANCE WITH ANS/AWWA STANDARD C900, LATEST EDITION. THE PVC PIPE SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 160 PSI AND SHALL HAVE A DIMENSION RATIO OF 18 (DR-18). PIPE SHALL BE THE SAME OUTSIDE DIAMETER AS DUCTILE IRON PIPE AND BE NSF APPROVED FOR POTABLE WATER USE.

DI DUCTILE IRON PIPE SHALL BE CEMENT-MORTAR LINED, CLASS 150, MECHANICAL OR PUSH-ON JOINT AND SHALL MEET ALL THE REQUIREMENTS OF THE FOLLOWING ANS/AWWA C900 / A.21.31, ANS/AWWA C 111 / A. 21.11 FOR RUBBER GASKET JOINTS; ANS/AWWA C 160 / A.21.10 FOR THICKNESS DESIGN AND ANS/AWWA C 151 / A. 21.51 FOR DIP MODELS.

DR-8 POLYETHYLENE PLASTIC (SERVICE LINES ONLY) - ASTM D-3248 MATERIAL D-2228 PIPE, D-2727 TUBING, MINIMUM WORKING PRESSURE 150 PSI.

6) ALL GATE VALVES SHALL BE EQUIPPED WITH ADJUSTABLE CAST IRON VALVE BOX WITH COVER, WITH THREADED CAST IRON EXTENSIONS WHERE NEEDED, AND 24" x 24" x 4" CONCRETE PAD WITH NO. 8 RE BAR AROUND THE BOX.

7) THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND LABOR TO LAMP TEST AND DISINFECT THE WATER LINES IN ACCORDANCE WITH THE BACTERIOLOGICAL TESTING PROCEDURE OF THE COUNTY HEALTH DEPARTMENT AND THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THOSE SET FORTH IN ANSI/AWWA C900 AND LATEST REVISIONS. THE CONTRACTOR IS REQUIRED TO GIVE 48 HOURS ADVANCED NOTICE TO THE UTILITY AND LOCAL JURISDICTION PRIOR TO COMMENCING DISINFECTION PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLEARANCE OF THE LINES FROM THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

8) SAMPLE POINTS SHALL BE LOCATED AT THE FOLLOWING:

A) MAX. ELEV. 1,000 FEET OF THE NEW WATER MAIN.
B) THE END OF THE LINE (EACH LINE).
C) EACH BRANCH, IN EXCESS OF 40 FEET.
D) THE CONNECTION OF PROPOSED TO EXISTING.

9) CONTRACTOR SHALL MAINTAIN A CURRENT SET OF "AS-BUILT" DRAWINGS ON MYLAR SHOWING THE EXACT LOCATION OF ALL UNDERGROUND WATER LINE COMPONENTS AND SUBMIT THEM TO THE ENGINEER PRIOR TO FINAL INSPECTION.

10) FITTINGS FOR PVC PRESSURE PIPE AND DIP SHALL BE OF DUCTILE IRON, MECHANICAL JOINT, CEMENT-MORTAR LINED IN ACCORDANCE WITH ANSI 21.4 RATED AT 350 PSI AND SHALL COMPLY WITH ANS/AWWA C19 / A.19.18 AND CITY/AD.11.

11) INSTALLATIONS OF WATER LINES SHALL BE IN ACCORDANCE WITH ANS/AWWA C 900 (NOMINAL 100) FOR PVC PRESSURE PIPE AND C 900 FOR DUCTILE IRON PIPE.

12) ALL WATER MAINS 12 INCHES IN DIAMETER AND BELOW TO HAVE MINIMUM COVER OF 18 INCHES. ALL WATER MAINS 14 INCHES IN DIAMETER TO 24 INCHES IN DIAMETER TO HAVE MINIMUM COVER OF 36 INCHES UNLESS OTHERWISE NOTED.

13) WATER SUPPLY FACILITIES INCLUDING MAINS SHALL BE INSTALLED, CLEARED, DISINFECTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST APPLICABLE ANS/AWWA STANDARDS AND THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION RULES.

14) HYDROSTATIC TESTING (PRESSURE AND LEAKAGE TESTS) SHALL MEET THE REQUIREMENTS OF THE ANS/AWWA C 900, AND ANS/AWWA C900.

15) THE REQUIREMENTS OF THE CITY OF PALM COAST UTILITY DEPT. STANDARD SPECIFICATIONS AND STANDARD DETAILS SHALL GOVERN ALL UTILITIES WORK WHERE A CONFLICT EXISTS IN THE REQUIREMENTS OF A REFERENCED MATERIAL OR INSTALLATION STANDARD. THE REQUIREMENTS OF THE CITY OF PALM COAST UTILITY DEPT. SHALL PREVAIL. WHERE THE REQUIREMENTS OF A STATE OR LOCAL AGENCY HAVING JURISDICTION ARE MORE STRINGENT, THOSE REQUIREMENTS SHALL PREVAIL.

SITE / GEOMETRY NOTES

1) THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES THE STANDARD CITY OF PALM COAST UTILITY DEPT. STANDARD SPECIFICATIONS AND STANDARD DETAILS, ONE COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS, AND COPIES OF ANY APPLICABLE CONSTRUCTION PERMITS.

2) CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL SITE CONDITIONS BEFORE STARTING CONSTRUCTION.

3) ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.

4) CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS BEFORE COMMENCING WORK.

5) THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

6) NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

7) ALL CONSTRUCTION MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH LATEST LOCAL AND JURISDICTION'S STANDARDS, SOUTHERN BUILDING CODE, FLORIDA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE CONSTRUCTION SPECIFICATIONS, AND ANY PERMIT CONDITIONS IMPOSED BY LOCAL OR STATE PERMITS.

8) RIGHTS - OF - WAY RESTORATION TO BE DONE AS PER LOCAL JURISDICTION.

9) THE CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE STATE COUNTY AND CITY PALM COAST REGARDING ROAD OR RESTRICTING THE USE OF PUBLIC STREETS OR HIGHWAYS.

10) TRAFFIC CONTROL OF ALL COUNTY AND STATE HIGHWAY RIGHTS - OF - WAY SHALL MEET THE REQUIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) / FHWA AND THE REQUIREMENTS OF THE STATE AND ANY LOCAL AGENCY HAVING JURISDICTION.

11) REFER TO PAVING AND DRAINAGE DETAILS FOR TYPICAL SECTIONS OF THE ROADWAY.

12) ROADWAY SHALL HAVE A MINIMUM 30' RADIUS AT ALL INTERSECTIONS, UNLESS OTHERWISE NOTED.

13) ALL STAGS-OUT SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

14) BOUNDARY AND GEOMETRY INFORMATION PROVIDED BY EAST COAST LAND SURVEYORS 208 - 421 - 9223

15) BURIED UTILITIES ARE SHOWN AS REPRESENTED BY ORIGINAL DESIGN DRAWINGS OR AS -BUILT-. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES IN THE WORK AREAS (AS INDICATED ON THE PLANS OR NOT) PRIOR TO COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY CONFLICTS. VERIFICATION SHALL BE MADE SUFFICIENTLY AHEAD OF THE CONSTRUCTION SCHEDULE FOR THAT PARTICULAR AREA OF WORK TO ALLOW FOR ADJUSTMENTS IF CONFLICTS ARE FOUND. CONTRACTOR SHALL ALSO NOTIFY LOCAL UTILITY COMPANIES PRIOR TO BEGINNING THE WORK.

16) ALL SPOT ELEVATIONS ARE FLOW LINE ON PAVEMENT OR EDGE OF PAVEMENT ADJACENT TO CURB AND GUTTERS UNLESS OTHERWISE INDICATED AS "TC" (TOP OF CURB), ETC.

17) ALL DIMENSIONS ARE TO EDGE OF PAVEMENT OR FACE OF BUILDING UNLESS OTHERWISE NOTED OR SHOWN. CONTRACTOR TO FIELD STAKE AND VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES SUFFICIENTLY AHEAD OF THE PROPOSED CONSTRUCTION SCHEDULE TO ALLOW FOR ADJUSTMENTS. THE GEOMETRIC LAYOUT IS BASED ON THE ENGINEER'S INTERPRETATION OF THE BOUNDARY SURVEY OR OTHER INFORMATION PROVIDED BY THE OWNER AND AS REQUIRED BY LAW. ANY INTERPRETATIONS AS TO FIELD LOCATIONS OF THE PROPERTY OR OTHER FEATURES MUST BE MADE BY A SURVEYOR LICENSED TO PERFORM FIELD INTERPRETATIONS AND LAYOUTS.

18) CONTRACTOR SHALL REMOVE ANY EXCESS CUTS OR SUPPLY FILL AS NECESSARY TO BRING THE SITE TO THE PROPOSED GRADES INCLUDING EXCAVATION AND DISPOSAL OF ANY UNSUITABLE MATERIALS.

19) CONTRACTOR SHALL MAINTAIN A CURRENT SET OF MYLAR "AS - BUILT" DRAWINGS SHOWING THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE ALONG WITH VERIFICATION OF INVERT, GRADE, FRESH BLANK, AND OTHER CRITICAL ELEVATIONS AND SUBMIT THEM TO THE ENGINEER PRIOR TO FINAL INSPECTION. ONE (1) SET SHALL BE SUBMITTED TO LOCAL JURISDICTIONAL AGENCY AT THE COMPLETION OF WORK.

20) CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATION OF ALL UTILITIES. COORDINATION OF WORK WITH AND NOTIFICATION OF ALL UTILITY COMPANIES PRIOR TO COMMENCING WORK IS REQUIRED.

21) CONTRACTOR SHALL COMPLY WITH ALL LOCAL JURISDICTION'S STANDARDS AND ANY CONDITIONS OF PERMITS FOR THE PROJECT.

22) AFTER COMPLETION OF ALL CONSTRUCTION AND INSTALLATION WORK, THE CONTRACTOR SHALL MAINTAIN A SITE CLEAN UP OPERATION FOR REMOVAL OF ALL DEBRIS, TRASH, EXCESS OF MATERIAL AND EQUIPMENT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PRESENT THE PROJECT SITE CLEAN AND IN GOOD ORDER AT THE TIME OF FINAL ACCEPTANCE.

23) CONTRACTOR SHALL VERIFY CONFORMITY BETWEEN ENGINEER'S DRAWINGS AND OTHER DRAWINGS PERTAINING TO LOCATION, SIZE AND ELEVATIONS OF BUILDING SETBACKS AND LATERALS.

24) CONTRACTOR WILL NOT REMOVE OR DAMAGE ANY EXISTING TREES LOCATED IMMEDIATELY OUTSIDE THE LIMITS OF BUILDINGS OR PAVED AREAS, UNLESS OTHERWISE AUTHORIZED BY PROJECT MANAGER, ENGINEER, OR ARCHITECT.

25) CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH A REGISTERED SURVEYOR PRIOR TO COMMENCING WORK AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

26) TOPOGRAPHY IS BASED ON INFORMATION PROVIDED BY OWNER.

DRAINAGE NOTES

1) PIPE LENGTHS SHOWN REPRESENT SCALED DISTANCES BETWEEN MANHOLE CENTER LINES, CLEAN INLETS, ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS FOR HIS CONTRACT PRIOR TO ORDERING MATERIALS.

2) PIPES SHALL EXTEND THROUGH INLET AND MANHOLE STRUCTURES 1/2 - 1 INCH FROM FLUSH WITH THE INSIDE SURFACE OF THE WALL. CONCRETE SHALL BE CONSTRUCTED AROUND THEM NEATLY AND ALL SURFACES SHALL BE GROUTED SO AS TO PREVENT LEAKAGE.

3) FOR ALL CONCRETE STRUCTURES, ALL FINES AND IRREGULAR PROJECTIONS SHALL BE CHIPPED OFF FLUSH WITH THE SURFACE. ALL PROJECTIONS, WREDS, ETC. SHALL BE CUT OFF 1/2 - INCH BELOW THE SURFACE. ALL HOLES IN CONCRETE STRUCTURES USED FOR THEIR HANDLING OR OTHER AND THE ANNULAR SPACE BETWEEN THE WALL AND ENTERING PIPES SHALL BE PLUGGED WATER TIGHT WITH EMBOCO NO. 93 NON-SHRINK MORTAR OR APPROVED EQUAL, APPLIED AND CURED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SO THERE WILL BE ZERO LEAKAGE THROUGH OPENINGS AND AROUND PIPES. THE MORTAR SHALL BE FINISHED SMOOTH AND FLUSH WITH THE ADJOINING INTERIOR AND EXTERIOR SURFACES.

4) INSTALLATION SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE GIVEN BY THE CONSTRUCTION PLANS WITH THE BELL END UPSTREAM WITH INSTANTLY, BEDDING AND BACK FILLING IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS, ANY REGULATORY AGENCY'S SPECIFIC REQUIREMENTS AND IN CONFORMANCE WITH SECTION 436 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".

5) THE CONTRACTOR SHALL SUPPLY ALL EQUIPMENT AND LABOR NECESSARY TO LAMP TEST THE STORM DRAIN LINES. THE CONTRACTOR WILL GIVE THE ENGINEER AND PERMIT AGENCIES 48 HOURS NOTICE OF PROPOSED TESTING DATE. ANY LINES FOUND NOT TRUE TO LINE OR GRADE OR HOLDING WATER WILL BE RE-INSTALLED. THE CONTRACTOR SHOULD SCHEDULE THIS TESTING AFTER SUBGRADE COMPACTION BUT PRIOR TO FINISH PAVING OVER PIPES TO AVOID COSTLY REPAIRS.

6) AT THE REQUEST OF THE ENGINEER, LOCAL JURISDICTION OR OTHER PERMIT AGENCIES, THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR AND TEST THE STORM DRAINAGE SYSTEM FOR INFILTRATION OR EXFILTRATION.

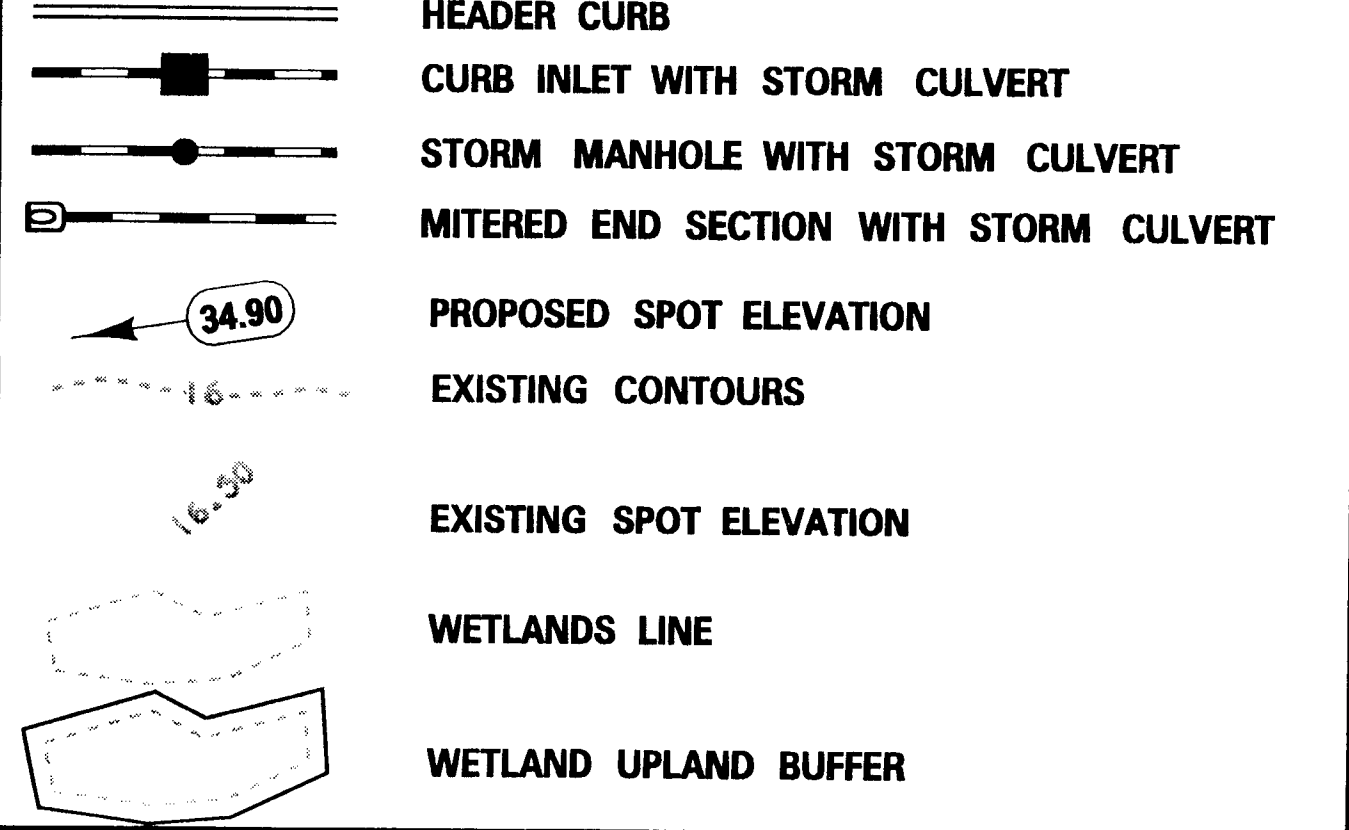
7) THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF MYLAR "AS - BUILT" DRAWINGS SHOWING THE EXACT LOCATION OF ALL UNDERGROUND STORM DRAIN LINES ALONG WITH VERIFICATION OF INVERT, TOP, OR GRADE, AND SUBMIT THEM TO THE ENGINEER PRIOR TO FINAL INSPECTION.

8) ALL DRAINAGE STRUCTURES SHALL COMPLY WITH THE "DOT" ROADWAY AND TRAFFIC DESIGN STANDARDS, UNLESS SPECIFICALLY DETAILLED OTHERWISE.

ABBREVIATIONS

@	= AT	PVI	= POINT OF VERTICAL INFLECTION
BOTT.	= BOTTOM	R.P.	= RADIUS POINT
DA-1	= BASIN I.D.	M.E.S.	= MITERED END SECTION
DIP	= DUCTILE IRON PIPE	M.H.	= MANHOLE
EL.	= ELEVATION	N.T.S.	= NOT TO SCALE
H.P.	= HIGH POINT	N.W.L.	= NORMAL WATER LEVEL
INV.	= INVERT	PVC	= POLYVINYL CHLORIDE
I.E.	= INVERT ELEVATION	RCP	= REINFORCED CONCRETE PIPE
L.F.	= LINEAR FEET	T.O.B.	= TOP OF BANK
L.P.	= LOW POINT	TYP.	= TYPICAL
M.H.	= MANHOLE	P.O.B.	= POINT OF BEGINNING
P.C.	= POINT OF CURVE	C4	= CURVE NUMBER
P.T.	= POINT OF TANGENCY	L1	= LINE NUMBER
P.A.C.	= POINT OF REVERSE CURVE	S-2	= DRAINAGE STRUCTURE NUMBER
P.O.C.	= POINT ON CURVE		

PAVING AND DRAINAGE



PALM COAST NOTES

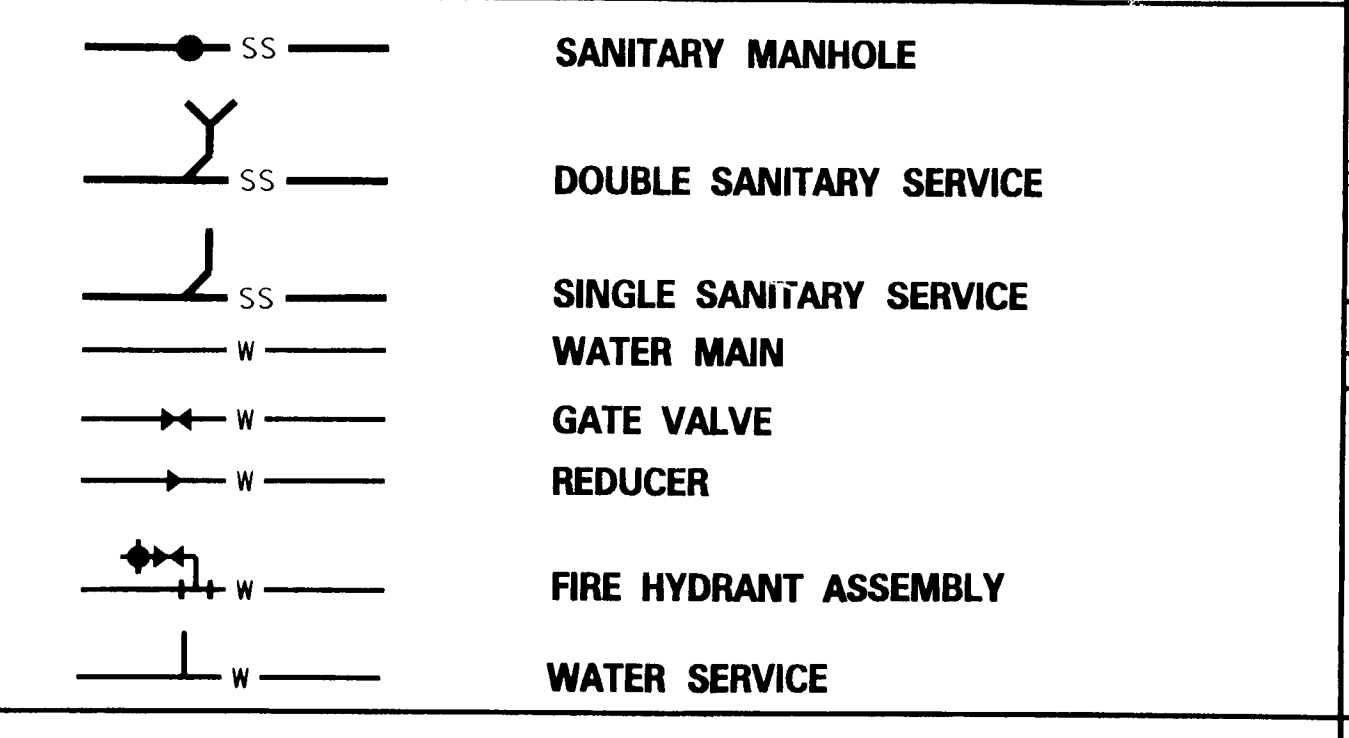
1) CONTRACTOR SHALL NOTIFY THE CITY OF PALM COAST A MINIMUM OF 48 HOURS PRIOR TO ANY TESTING BEING DONE ASSOCIATED WITH THE CONSTRUCTION.

2) CONTRACTOR SHALL FORWARD A COPY OF ALL TEST RESULTS TO THE CITY OF PALM COAST ENGINEER'S OFFICE.

3) CONTRACTOR SHALL ATTEND A MANDATORY PRE-CONSTRUCTION MEETING WITH THE CITY STAFF PRIOR TO ANY DISTURBANCE OF THE PROPERTY.

4) ALL UTILITIES ARE REQUIRED TO BE UNDERGROUND.

WATER AND SEWER



UTILITY NOTES

1) WHERE PARALLEL WATER AND SEWER MAINS HAVE LESS THAN 4 FOOT HORIZONTAL SEPARATION, 20 FOOT LENGTHS OF WATER QUALITY PIPE (I.e. DR-18 SEWER, DR-25 WATER) SHALL BE USED WITH THE JOINTS STAGGERED AT 4 FOOT INTERVALS. THE PIPES SHALL BE PLACED IN SEPARATE UNDISTURBED TRENCHES WITH THE WATER MAIN AT LEAST 12 INCHES ABOVE THE SEWER.

2) WHERE WATER AND SEWER MAINS CROSS WITH LESS THAN 12-INCHES OF VERTICAL CLEARANCE A 20 FOOT SECTION OF WATER QUALITY PIPE (I.e. DR-18 DR-25) SHALL BE CENTERED ON THE POINT OF CROSSING WITH THE WATER PIPE ABOVE THE SEWER PIPE. THE CONTRACTOR SHALL FIELD VERIFY THE VERTICAL SEPARATION. THE MINIMUM SEPARATION BETWEEN WATER AND SEWER PIPES IS TO BE 4-INCHES. OUTSIDE DIAMETER TO OUTSIDE DIAMETER.

3) ALL POTABLE WATER PIPE 3"(INCHES) IN DIAMETER OR LESS SHALL BE M.S.F.P.W. RATED.

4) ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PALM COAST UTILITY DEPT. STANDARD SPECIFICATIONS AND DETAILS AND ALL APPLICABLE STATE AND LOCAL REGULATIONS.

5) IF SOLVENT CONTAMINATION IS FOUND IN THE PIPE TRENCH, WORK SHALL BE STOPPED AND THE PROPER AUTHORITIES NOTIFIED. WITH APPROVAL OF THE PERMITTING AGENCY, DUCTILE IRON PIPE FITTINGS AND SOLVENT RESISTANT GASKET MATERIAL SHALL BE USED IN THE CONTAMINATED AREA. THE DUCTILE IRON PIPE SHALL EXTEND AT LEAST 100 FEET BEYOND ANY SOLVENT NOTED.

No.	By	Date	Revision
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2			
1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
0	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and FDEP

Scale: **Not To Scale**

Project Mgr. **T. Benton**

Designed by: **T. Benton**

Drawn by: **K. Howell**

QA/QC:

B.H.R., Inc.
 Engineers • Planners • Landscape Architects • Surveyors
 One Corporate Drive, Suite 1-B • Palm Coast, Florida 32137 •
 (386) 447-4993 • Fax: (386) 246-3787
 FI Certification Number: EB 0855 LC 0120 LB 6739

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Premier Industrial Park
 Hargrove Grade
 Palm Coast, Fl.

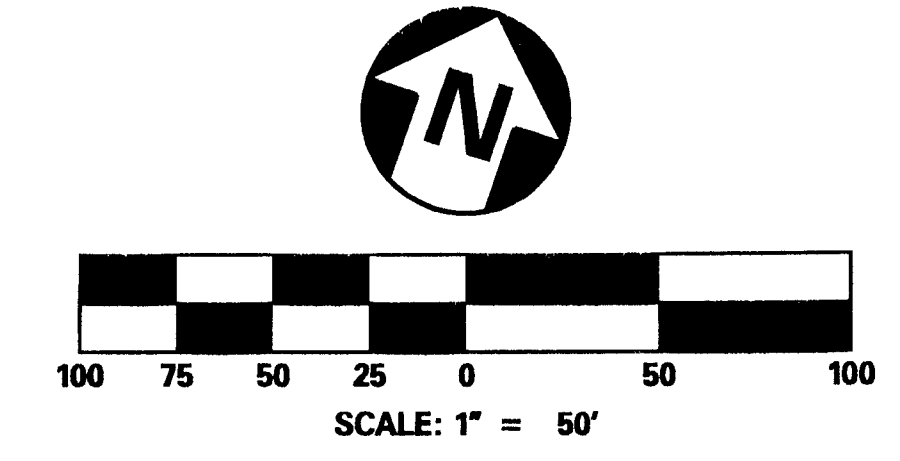
General Notes, Legend
 And Index of Drawings

Sheet No. **IN-1**
 2 of 16
 Issue Date **March, 2004**
 Project No. **04053**

Engineer Of Record
 Teresa V. Benton
 PE # 56987

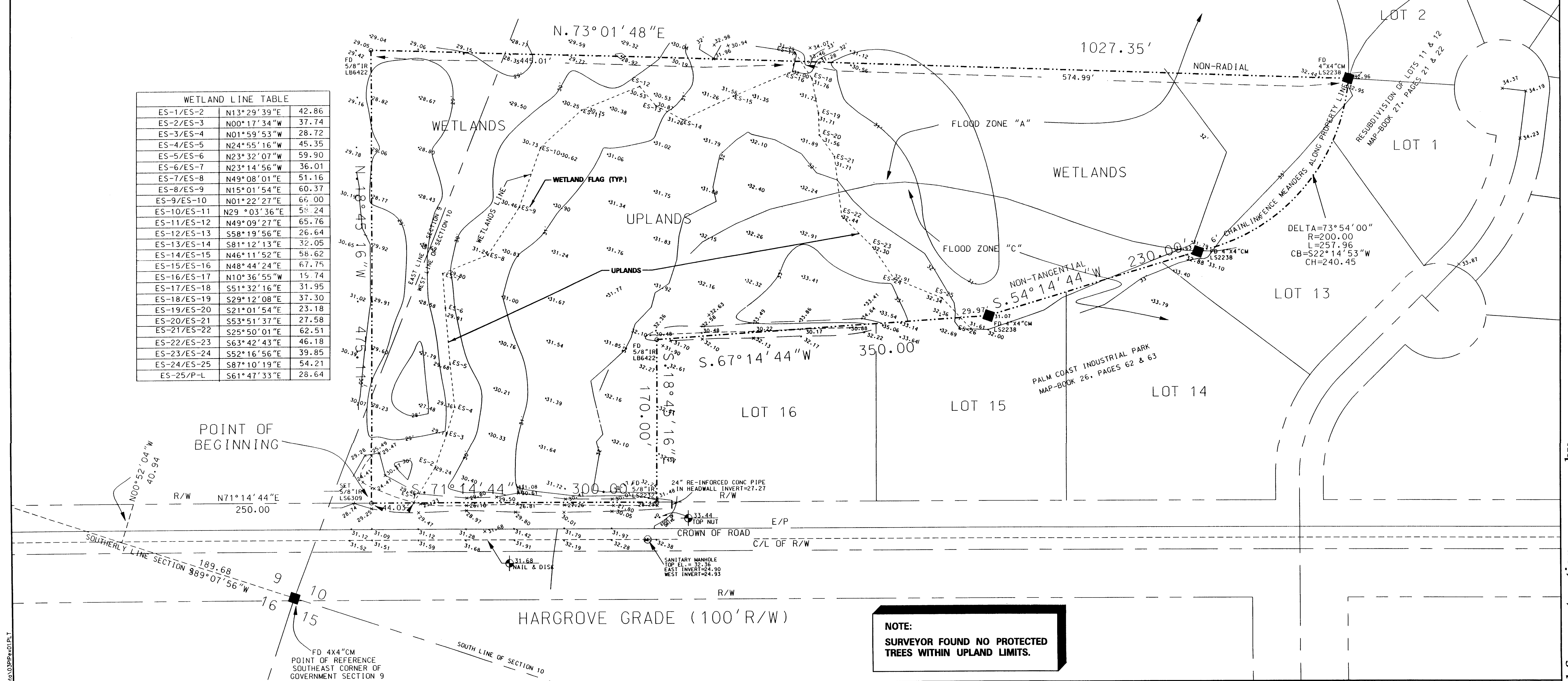
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Released for construction by



GOVERNMENT SECTION 10,
TOWNSHIP 11 SOUTH,
RANGE 30 EAST,
FLAGLER COUNTY, FLORIDA

WETLAND LINE TABLE		
ES-1/ES-2	N13°29'39"E	42.86
ES-2/ES-3	N00°17'34"W	37.74
ES-3/ES-4	N01°59'53"W	28.72
ES-4/ES-5	N24°55'16"W	45.35
ES-5/ES-6	N23°32'07"W	59.90
ES-6/ES-7	N23°14'56"W	36.01
ES-7/ES-8	N49°08'01"E	51.16
ES-8/ES-9	N15°01'54"E	60.37
ES-9/ES-10	N01°22'27"E	66.00
ES-10/ES-11	N29°03'36"E	58.24
ES-11/ES-12	N49°09'27"E	65.76
ES-12/ES-13	S58°19'56"E	26.64
ES-13/ES-14	S81°12'13"E	32.05
ES-14/ES-15	N46°11'52"E	58.62
ES-15/ES-16	N48°44'24"E	67.75
ES-16/ES-17	N10°36'55"W	15.74
ES-17/ES-18	S51°32'16"E	31.95
ES-18/ES-19	S29°12'08"E	37.30
ES-19/ES-20	S21°01'54"E	23.18
ES-20/ES-21	S53°51'37"E	27.58
ES-21/ES-22	S25°50'01"E	62.51
ES-22/ES-23	S63°42'43"E	46.18
ES-23/ES-24	S52°16'56"E	39.85
ES-24/ES-25	S87°10'19"E	54.21
ES-25/P-L	S61°47'33"E	28.64



NOTE:
SURVEYOR FOUND NO PROTECTED
TREES WITHIN UPLAND LIMITS.

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Scale: 1" = 50'
Project Mgr: T. Benton
Designed by: N/A
Drawn by: N/A
QA/QC:

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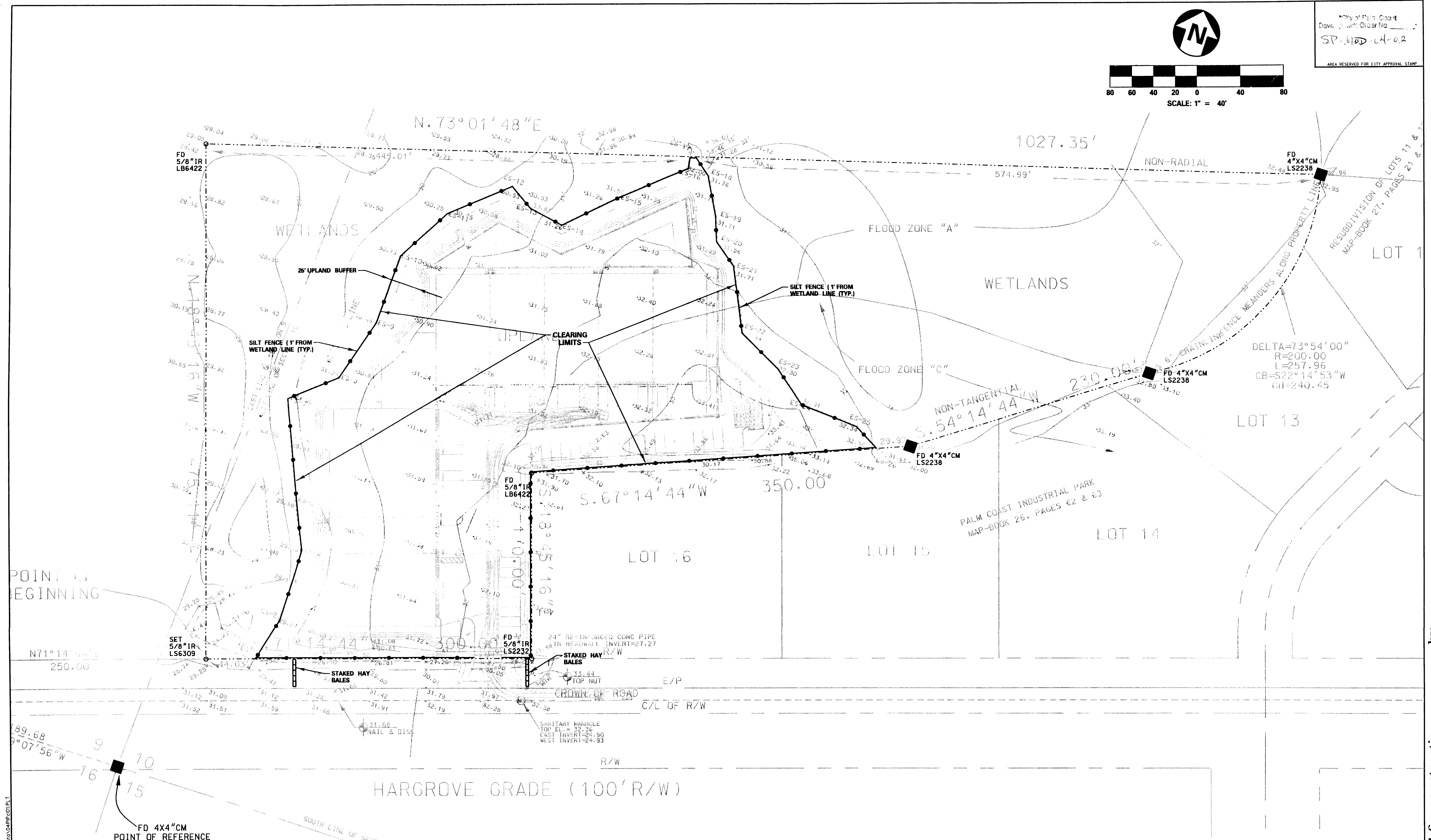
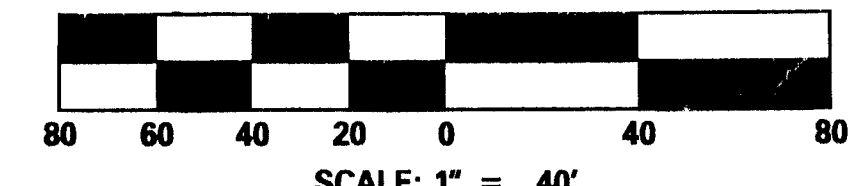
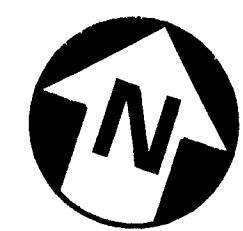
Premier Industrial Park
Hargrove Grade
Palm Coast, Fl.

Existing Conditions

T. Benton
5/20/04
Engineer of Record
Teresa V. Benton
PE # 56987

Sheet No.
EX-1
3 of 16
Issue Date
March, 2004
Project No.
04053

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1	T.V.B.	5/18/04
0	T.V.B.	3/21/04
No.	By	Date

Scale: 1" = 40'
 Project Mgr: T. Benton
 Designed by: T. Benton
 Drawn by: K. Howell
 QA/QC:

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Premier Industrial Park
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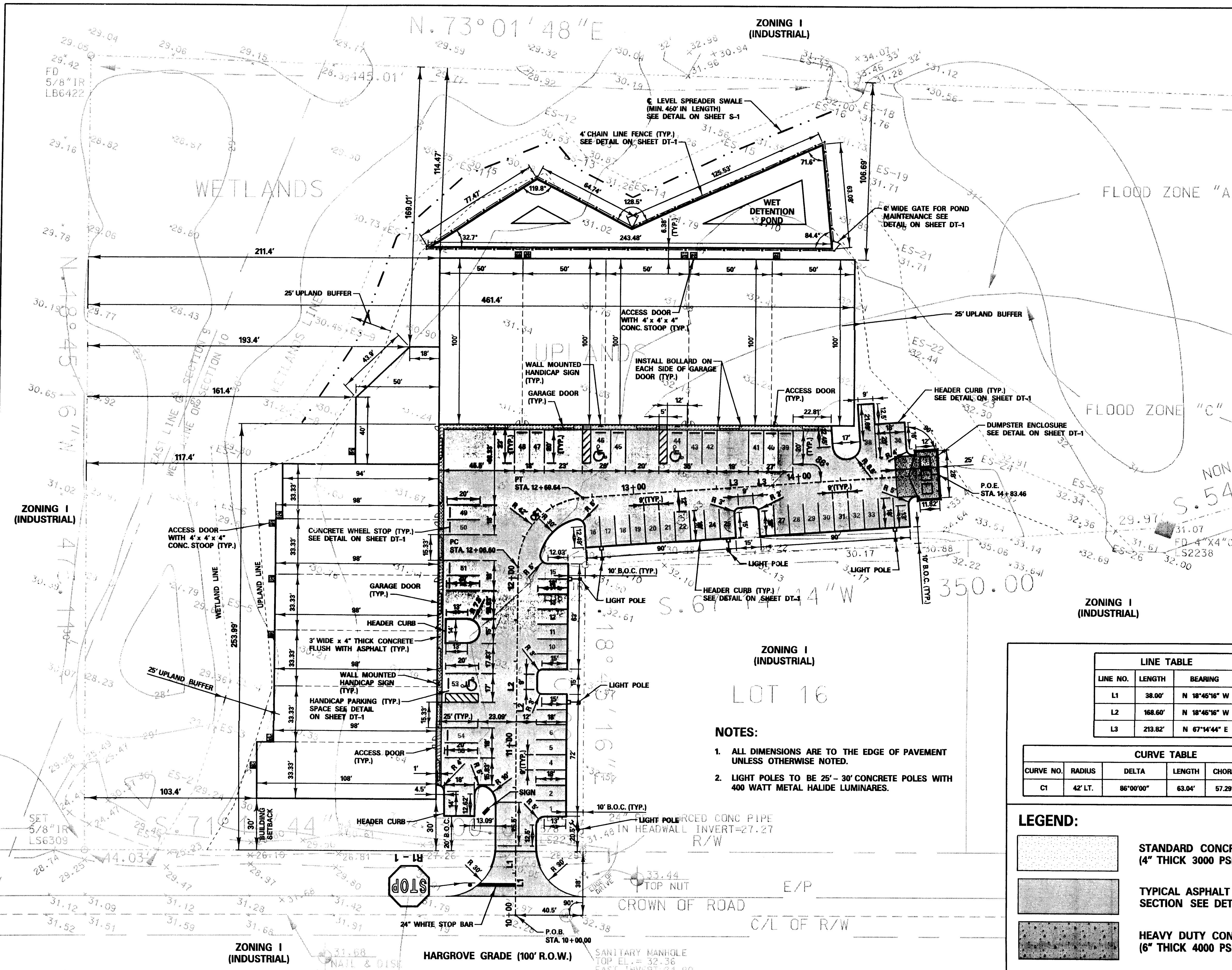
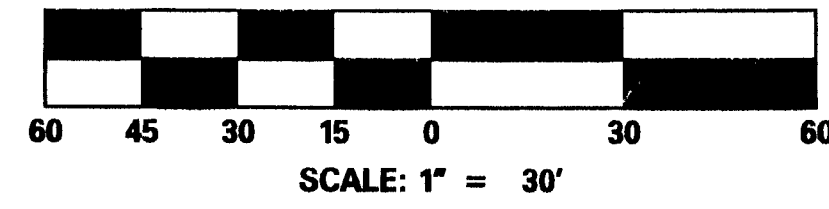
Clearing And Erosion
 Control Plan

Teresa V. Benton
 5/20/04
 Engineer Of Record
 Teresa V. Benton
 PE # 56987

Sheet No.
CL-1
 4 of 16
 Issue Date
March, 2004
 Project No.
04053

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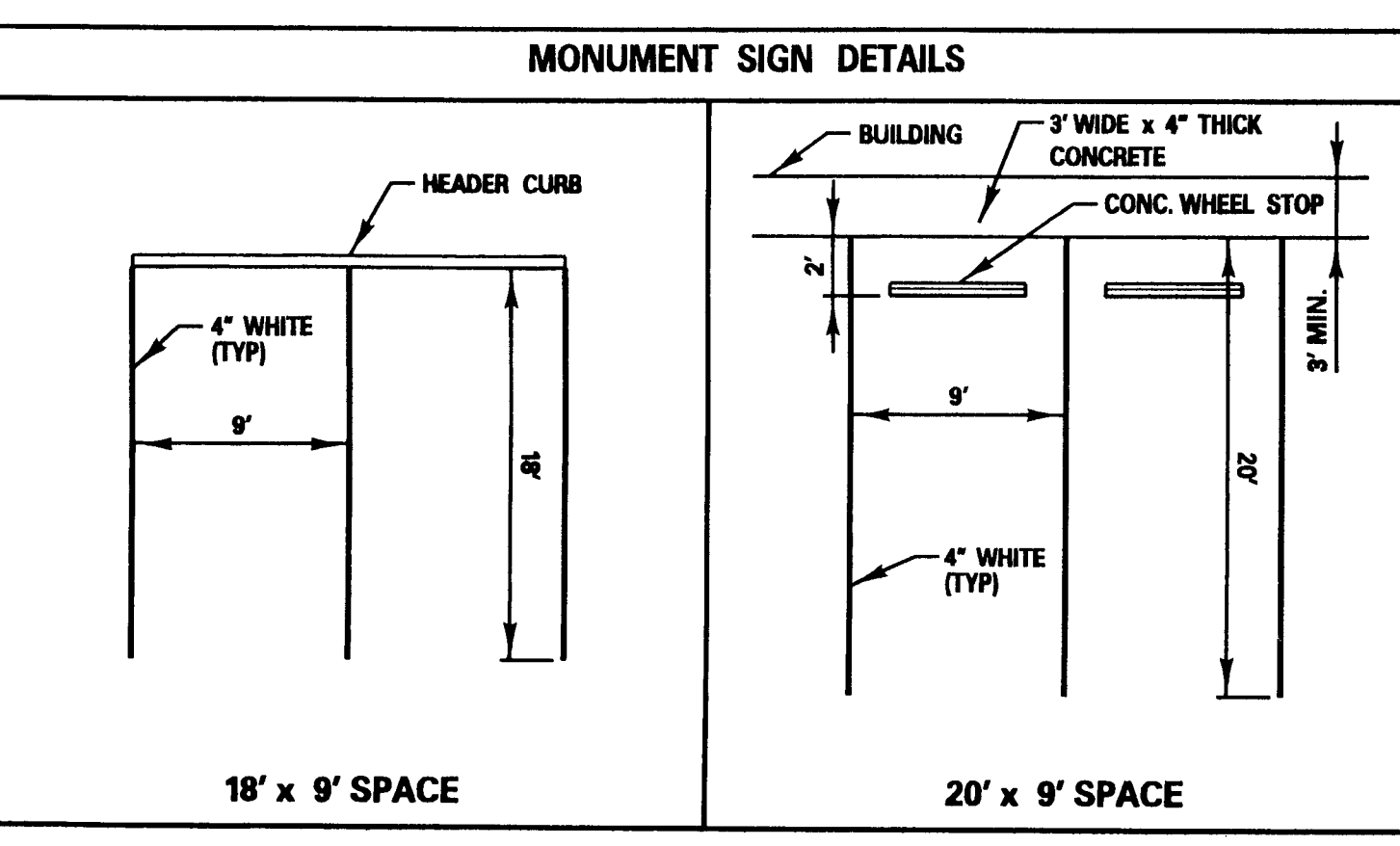
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PREMIER INDUSTRIAL PARK
18 HARGROVE GRADE

#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12

TOTAL SQUARE FOOTAGE = 72 SQ. FT.
NON ILLUMINATED MONUMENT SIGN
7/8" PVC LETTERS MEDITERRANEAN BLUE
ALUMINUM CABINET/TEXTURED PAINTED
POWDER TAN BASE AND TOP



TYPICAL PARKING DIMENSIONS

SITE DATA	
TOTAL SITE AREA	308,660 S.F. (7.09 Ac.) (100%) (INCLUDES WETLANDS)
IMPERVIOUS AREA	PAVEMENT: 31,042 S.F.
	BUILDING: 47,817 S.F.
	TOTAL: 78,859 S.F. (25.55%)
PERVIOUS AREA	229,801 S.F. (74.45%) (INCLUDES 176,052 S.F. WETLANDS)
REQUIRED PARKING : TOTAL BUILDING AREA = 47,817 S.F.	
180 SF OFFICE EACH UNIT* 12 UNITS@1 SPACE / 300 SF = 2160 SF/300 SF = 8 SPACES	
44,637 SF WAREHOUSE @ 1 SPACE / 1000 S.F. = 44,637 S.F./1000 S.F. = 44 SPACES	
TOTAL REQUIRED PARKING = 54 SPACES	
PROVIDED PARKING:	55 SPACES (INCLUDES 3 HANDICAP SPACES)
ZONING: I (INDUSTRIAL)	
REQUIRED SETBACKS:	FRONT YARD - 30 FT REAR YARD - 20 FT SIDE YARD - 20 FT
MAXIMUM BUILDING HEIGHT:	65'
MAXIMUM SIGN	- HEIGHT: 15' - AREA: 72 S.F.

LINE TABLE

LINE NO.	LENGTH	BEARING
L1	38.00'	N 18°45'16" W
L2	168.60'	N 18°45'16" W
L3	213.82'	N 67°14'44" E

CURVE TABLE

CURVE NO.	RADIUS	DELTA	LENGTH	CHORD	BEARING
C1	42' LT.	86°00'00"	63.04'	57.29'	N 24°14'44" E

- LEGEND:
- STANDARD CONCRETE (4" THICK 3000 PSI)
 - TYPICAL ASPHALT PAVEMENT SECTION SEE DETAIL SHEET DT-1
 - HEAVY DUTY CONCRETE (6" THICK 4000 PSI)

- NOTES:
- ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
 - LIGHT POLES TO BE 25' - 30' CONCRETE POLES WITH 400 WATT METAL HALIDE LUMINAIRES.

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T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
T.V.B.	3/21/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and ITRP
No.	By	Date

Scale: 1" = 30'

Project Mgr: T. Benton

Designed by: T. Benton

Drawn by: K. Howell

QA/QC:

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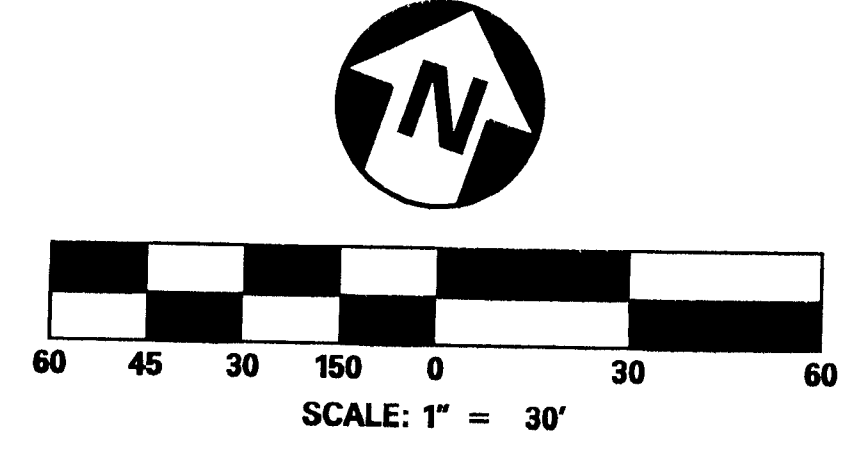
Premier Industrial Park
Hargrove Grade
Palm Coast, FL.

Geometry, Pavement Markings
And Signage Plan

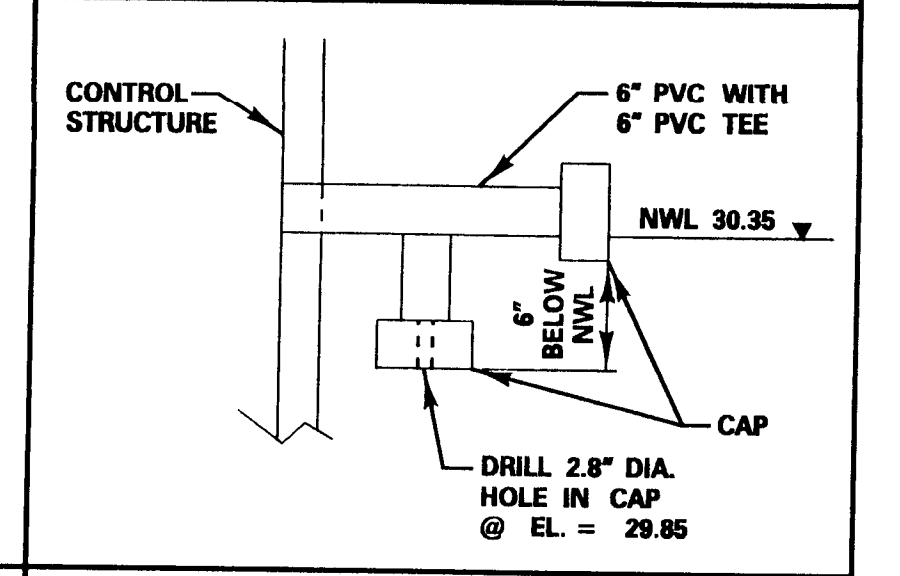
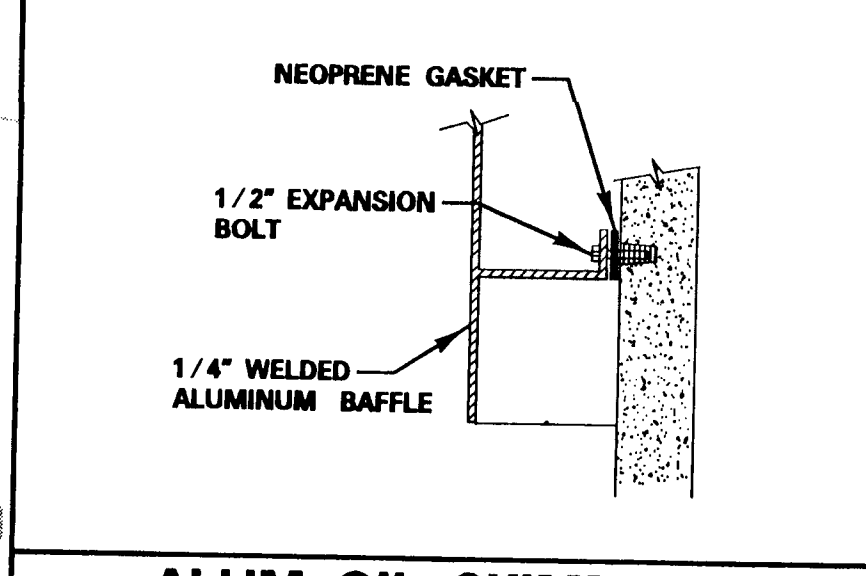
Engineer Of Record
Teresa V. Benton
PE # 56987

Sheet No.
GE-1
5 of 16
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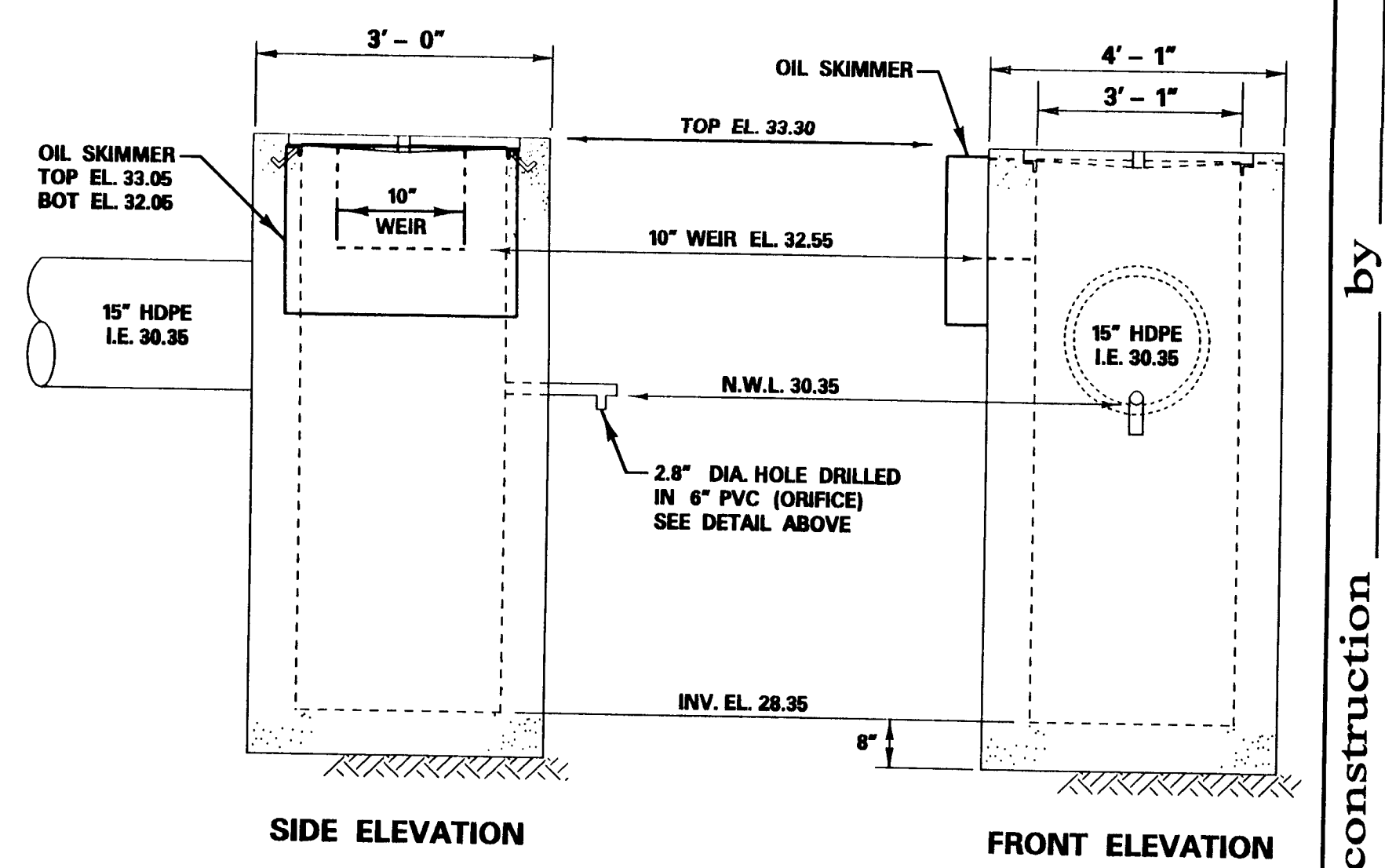
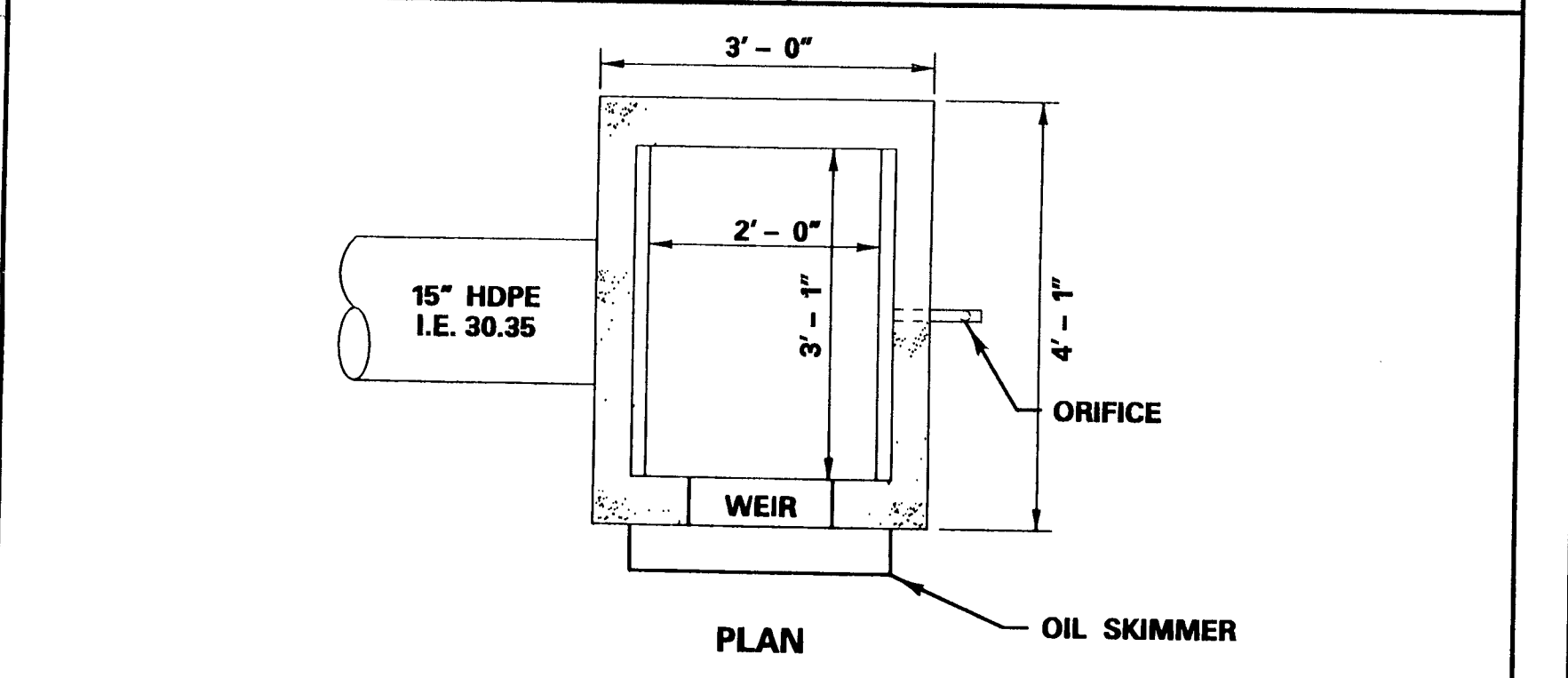


- S-1**
STORM MANHOLE
TOP EL. 34.15
I.E. 28.51 SE.
I.E. 24.38 W.
- S-2**
TYPE "E" INLET - WITH ALT. B STRUCTURE BOTTOM
TOP EL. 33.90
I.E. 28.59 NW. & SW.
- S-3**
TYPE "C" INLET - WITH ALT. B STRUCTURE BOTTOM
TOP EL. 33.90
I.E. 28.75 NE.
I.E. 30.25 SE.
I.E. 31.75 N. & NW.
- S-4**
TYPE "C" INLET
TOP EL. 34.00
I.E. 30.50 NW.
I.E. 31.75 SW.
- S-5**
MODIFIED TYPE "C" INLET
TOP EL. 33.30
10" SLOT EL. 32.65
ORIFICE I.E. 30.35 - SEE DETAIL BELOW

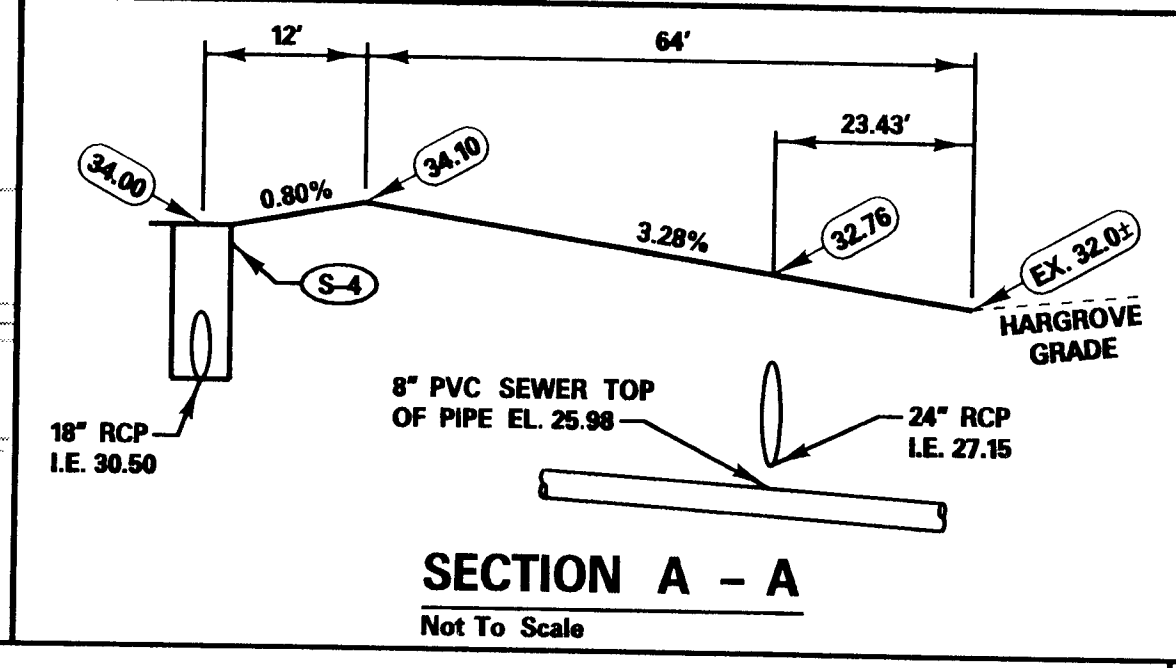
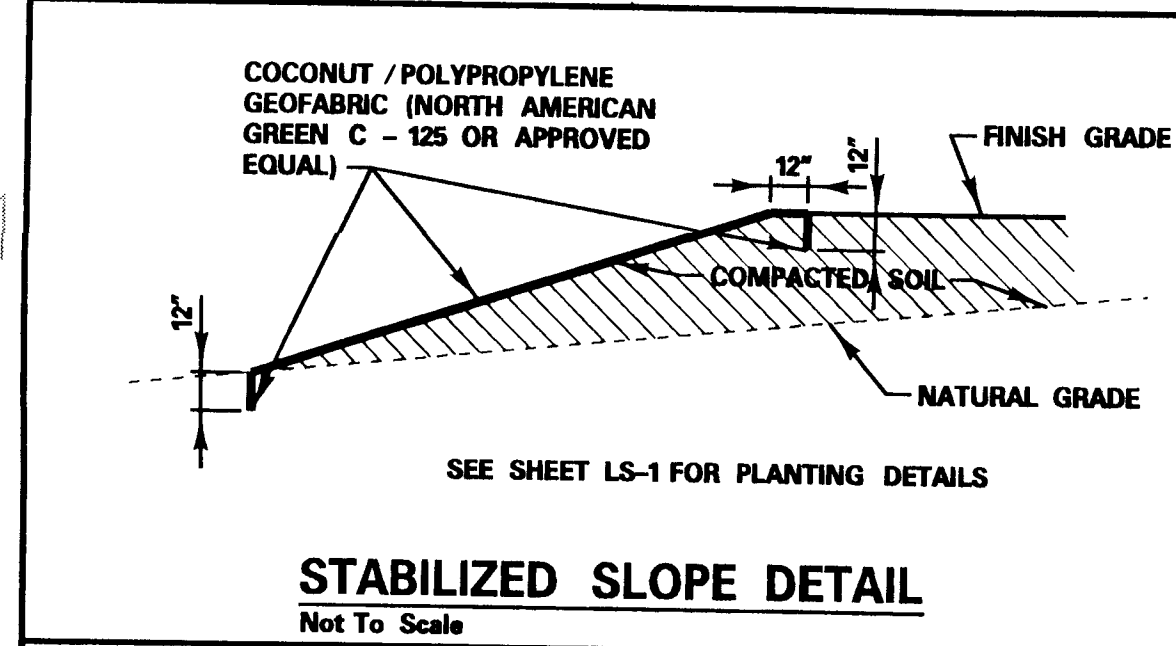


ALUM. OIL SKIMMER ATTACHMENT DETAIL

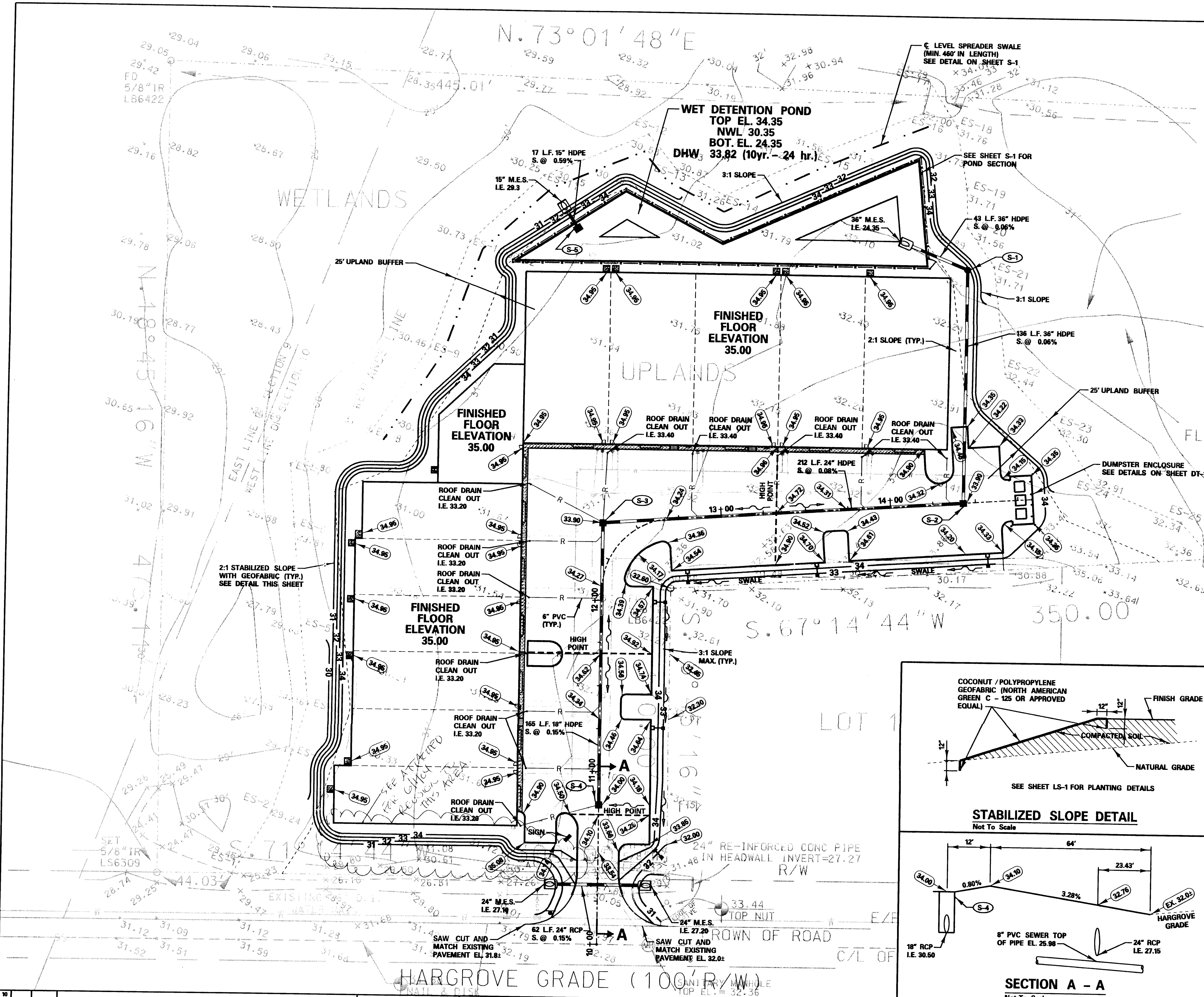
ORIFICE DETAIL



S-5 MODIFIED TYPE "C" INLET



SECTION A - A
Not To Scale



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Premier Industrial Park
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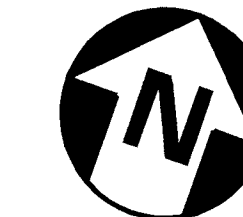
Paving And Drainage Plan

Engineer of Record
 Teresa V. Benton
 PE # 56987

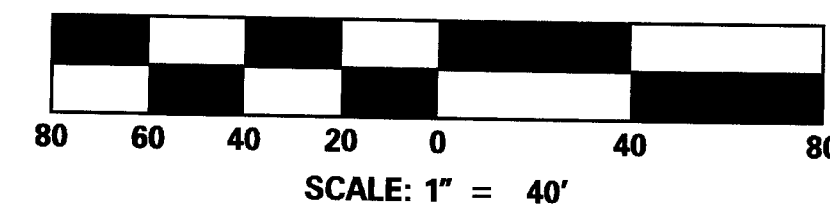
Sheet No.
PD-1
 6 of 16
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City of Palm Coast
Development Order No. 57-110-04-02
AREA RESERVED FOR CITY APPROVAL STAMP



PLANT SCHEDULE

SYM.	COMMON NAME	BOTANICAL NAME	SIZE	REMARKS
TREES				
TD	BALD CYPRESS	TAXODIUM DISTICHUM	3" DBH MIN.	(14' - 16' HT.)
UP	DRAKE ELM	ULMUS PARVIFOLIA 'ALLEE'	3" DBH MIN.	(14' - 16' HT.)
QV	LIVE OAK	QUERCUS VIRGINIANA	3" DBH MIN.	(14' - 16' HT.)
SHRUBS				
RI	INDIAN HAWTHORN	RAPHIOLEPIS INDICA	3 GAL. (16" HT. x 18" SP.)	(30" O.C.)
VO	SWEET VIBURNUM	VIBURNUM ODORATISSIMUM	7 GAL. (42" HT. x 24" SP.)	(3' O.C.)
JP	PARSONS JUNIPER	JUNIPERUS PARSONII	3 GAL. (14" HT. x 18" SP.)	(30" O.C.)
TA	ASIATIC JASMINE	TRACHELOSPERNIUM JASMINOIDES	1 GAL. (18" SP.)	(2' O.C.)
GROUND COVER				
SB	NATIVE CORD GRASS	SPARTINA BAKERI	4" PLUGS	(18" O.C.)
PC	PICKEREL WEED	PONTEDERIA CORDATA	4" PLUGS	(18" O.C.)
SOD				
SOD	BAHIA SOD	PASPALUM NOTATUM 'ARGENTINE'	LAY SOD FLAT AND EVENLY WITH NO GAPS.	

- GENERAL NOTES:**
- ALL PLANT MATERIALS TO BE FLORIDA NO. 1 GRADE AS DEFINED BY "GRADES AND STANDARDS FOR NURSERY PLANTS", FLORIDA DEPARTMENT OF AGRICULTURE CONTRACTOR TO TOTAL AND VERIFY ALL QUANTITIES.
 - ALL LANDSCAPING SHALL BE MAINTAINED BY 100% AUTOMATIC IRRIGATION SYSTEM. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF LANDSCAPE AREAS UNTIL ACCEPTANCE AT TIME OF FINAL INSPECTION.
 - ANY SUBSTITUTIONS SHALL BE ADDRESSED IN WRITING TO THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
 - ALL LANDSCAPING TO BE MULCHED WITH PINE BARK "MINI-NUGGETS". ALL MULCH SHALL BE APPLIED AT A MINIMUM DEPTH OF 3".
 - ALL CALIPER MEASUREMENTS REFERRED TO IN THESE PLANS SHALL BE MEASURED AT 4 1/2' ABOVE GROUND LEVEL.
 - ALL DISTURBED AREAS SHALL BE SODDED WITH BAHIA SOD OR NATIVE CORD GRASS. ALL AREAS DISTURBED WITHIN RIGHTS-OF-WAY SHALL BE SODDED WITH ARGENTINE BAHIA. THE CYPRESS TREES ARE TO BE HAND WATERED UNTIL ESTABLISHMENT BY MEANS OF THE HOSE BIBBS ALONG THE REAR OF THE BUILDINGS.

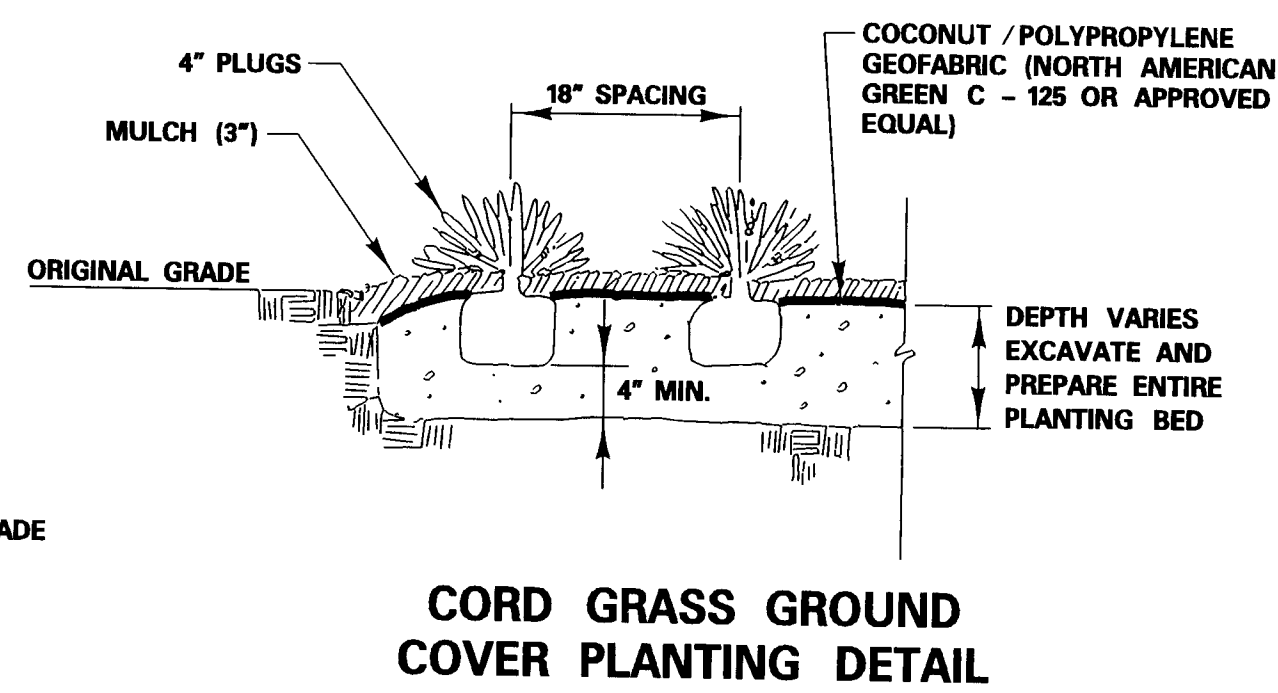
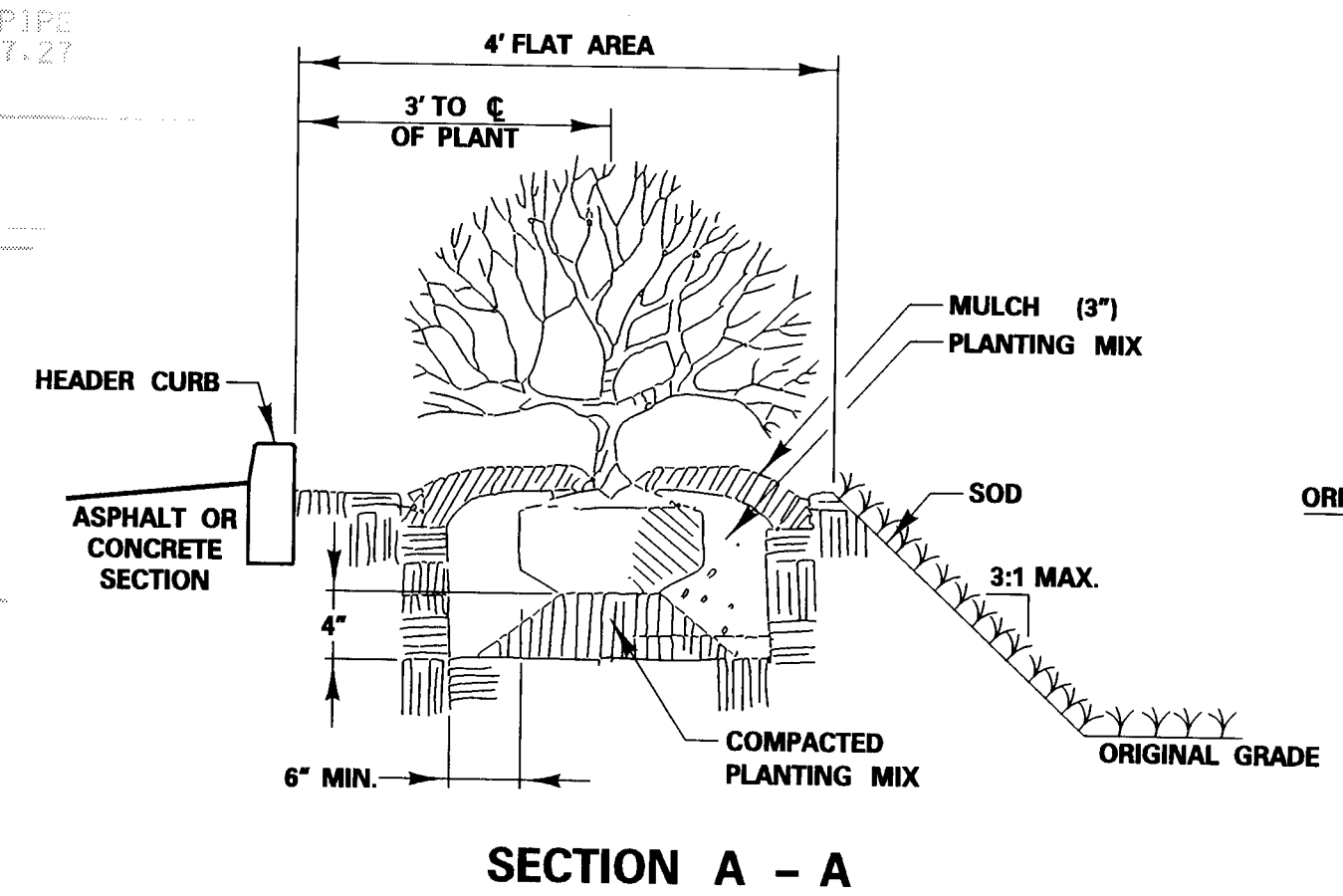
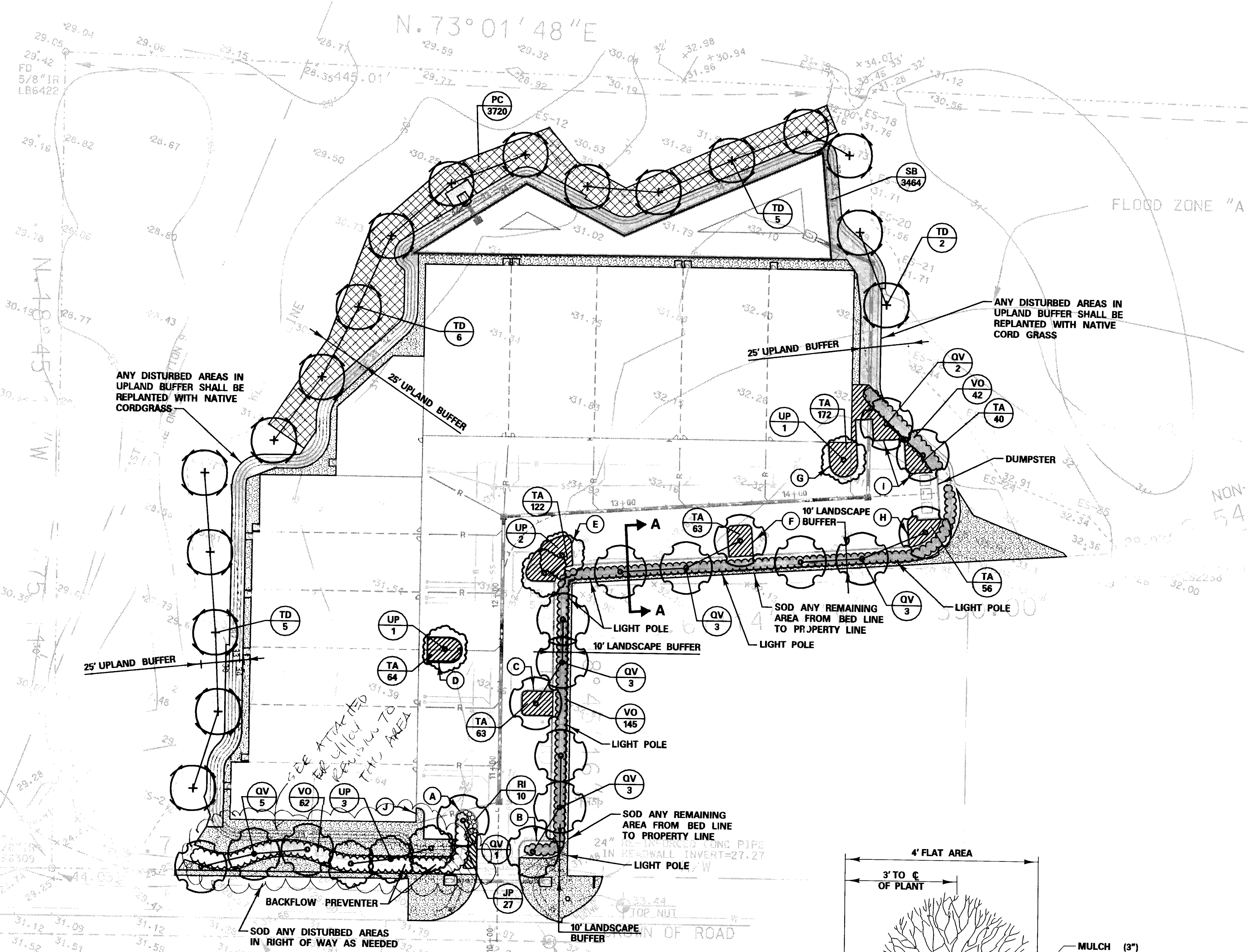
LANDSCAPE REQUIREMENT SUMMARY

HARGROVE GRADE PERIMETER - 202 LINEAR FEET
202 LF DIVIDED BY 25 = 8 TREES REQUIRED (5 NEW LIVE OAK, 3 NEW ELMS PROVIDED)
202' x 20' = 4,040 SF LANDSCAPE BUFFER REQUIRED (6,900 SF BUFFER PROVIDED)

SIDE / REAR PERIMETER - 1,350 LINEAR FEET (TOTAL)
1,350 LF DIVIDED BY 50 = 27 TREES REQUIRED (18 NEW CYPRESS AND 9 LIVE OAK PROVIDED)
1,350' x 10' = 13,500 SF LANDSCAPE BUFFER REQUIRED (27,600 SF BUFFER PROVIDED)

INTERIOR LANDSCAPE REQUIREMENTS - 31,159 SF VUA
31,159 SF x .10 = 3,116 SF INTERIOR LANDSCAPING REQUIRED (3,146 SF PROVIDED)
31,159 SF DIVIDED BY 4000 = 8 INTERIOR LANDSCAPE AREAS (250 SF MIN.) REQUIRED (8 PROVIDED)
1 SHADE TREE PER REQ'D ISLAND = 8 INTERIOR SHADE TREES REQUIRED (8 PROVIDED)

VUA TABLE		
ISLAND	AREA	CREDITS
A	192 SF	0
B	355 SF	0
C	250 SF	1
D	259 SF	1
E	507 SF	2
F	250 SF	1
G	295 SF	1
H	370 SF	0
I	590 SF	2
J	078 SF	0
TOTAL	3146 SF	8



10			
9			
8			
7			
6			
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2			
1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
0	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and FDEP
No.	By	Date	Revision

Scale: 1" = 40'
Project Mgr: T. Benton
Designed by: A. Dance
Drawn by: K. Howell
QA/QC:

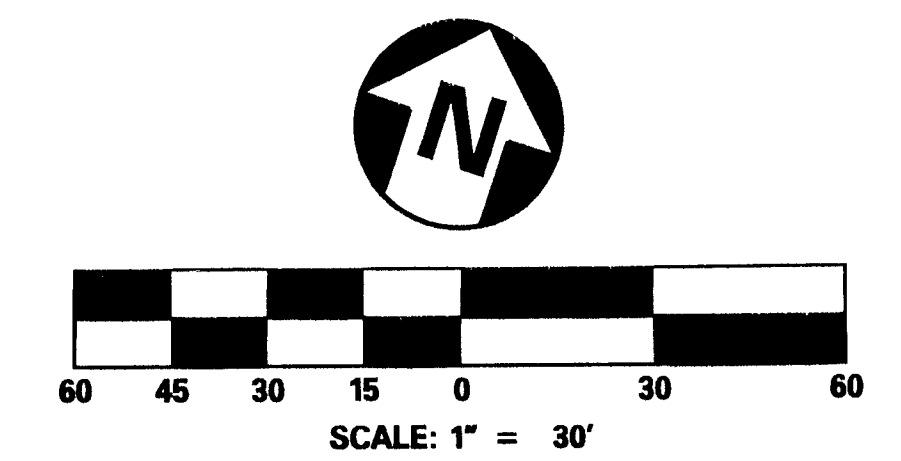
B.H.R., Inc.
Engineers • Planners • Landscape Architects • Surveyors
One Corporate Drive, Suite 1-B • Palm Coast, Florida 32137 •
(386) 447-4993 • Fax: (386) 246-3787
FI Certification Number: EB 0855 LC 0120 LB 6739
Advancing Quality of Life, by Design

Premier Industrial Park
Hargrove Grade
Palm Coast, Fl.

Landscape Plan

Sheet No. **LS-1**
8 of 16
Issue Date **March, 2004**
Project No. **04053**

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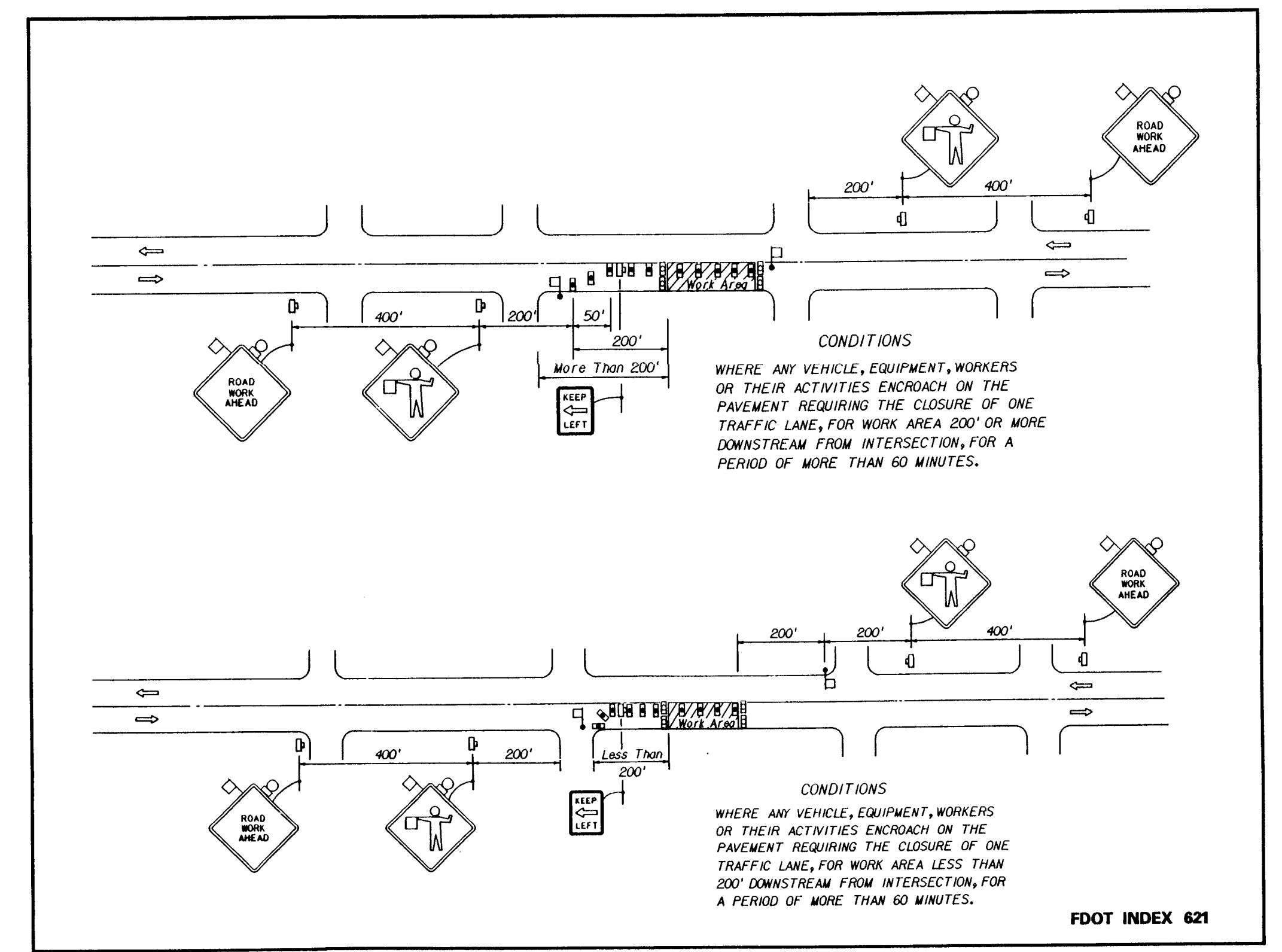
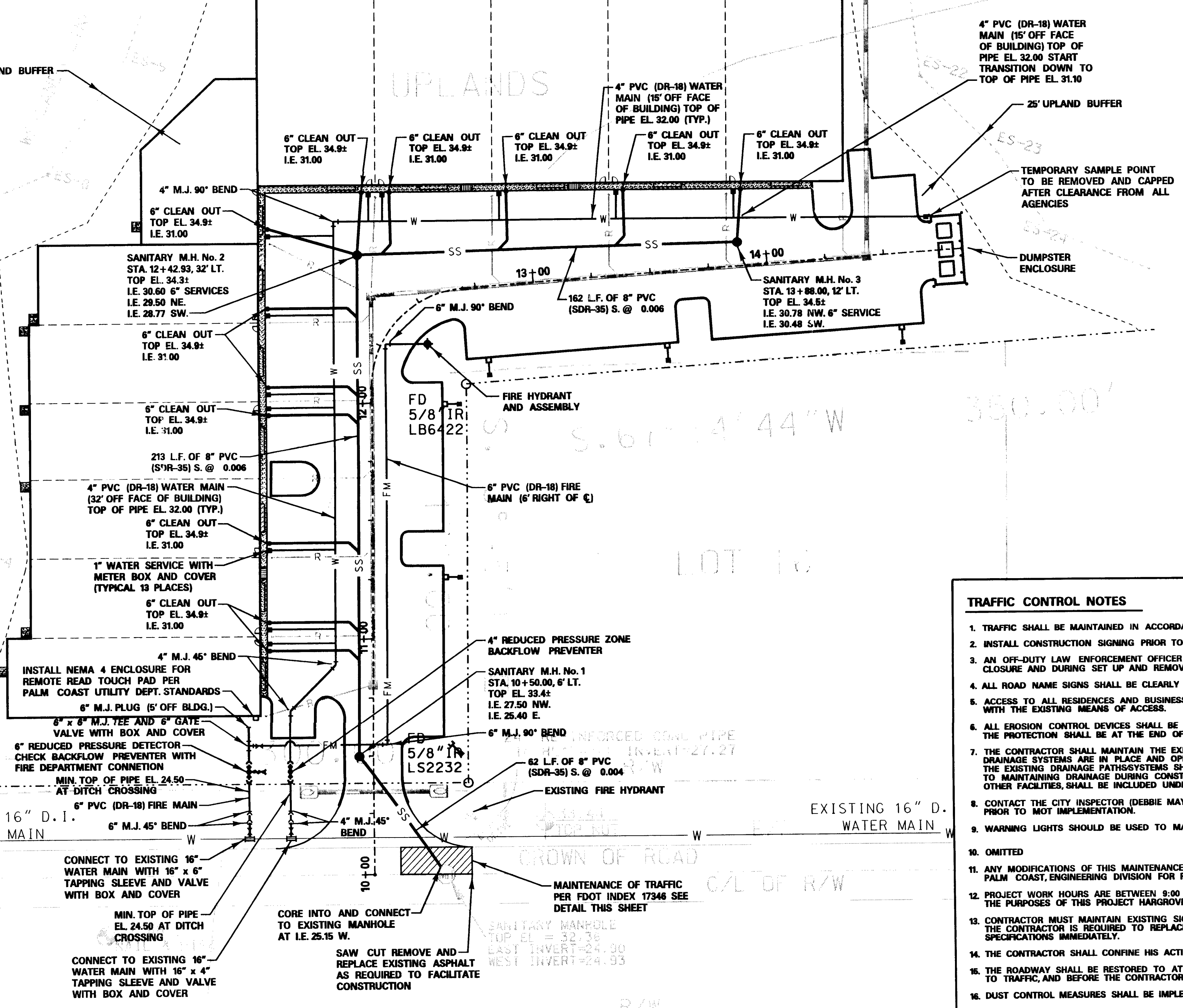


N. 18° 45' 16" W
475.11'

WETLANDS

UPLANDS

25' UPLAND BUFFER



- TRAFFIC CONTROL NOTES**
- TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH FDOT ROADWAY AND TRAFFIC STANDARDS, INDEX NO. 600 SERIES.
 - INSTALL CONSTRUCTION SIGNING PRIOR TO COMMENCEMENT OF CONSTRUCTION AND MAINTAIN SIGNING DURING CONSTRUCTION.
 - AN OFF-DUTY LAW ENFORCEMENT OFFICER WITH A MARKED LAW ENFORCEMENT VEHICLE WILL BE REQUIRED FOR ANY LANE CLOSURE AND DURING SET UP AND REMOVAL OF SPECIAL DETOURS.
 - ALL ROAD NAME SIGNS SHALL BE CLEARLY VISIBLE TO TRAFFIC DURING THE CONSTRUCTION PERIOD.
 - ACCESS TO ALL RESIDENCES AND BUSINESSES SHALL BE PROVIDED WHENEVER CONSTRUCTION INTERFERES WITH THE EXISTING MEANS OF ACCESS.
 - ALL EROSION CONTROL DEVICES SHALL BE INSTALLED BEFORE THE BEGINNING OF ANY CONSTRUCTION WORK. REMOVAL OF THE PROTECTION SHALL BE AT THE END OF THE PROJECT AND DIRECTED BY THE ENGINEER.
 - THE CONTRACTOR SHALL MAINTAIN THE EXISTING DRAINAGE PATHS/SYSTEMS DURING CONSTRUCTION UNTIL THE PROPOSED DRAINAGE SYSTEMS ARE IN PLACE AND OPERATING AS SHOWN IN THE CONSTRUCTION PLANS. ANY TEMPORARY CHANGES TO THE EXISTING DRAINAGE PATHS/SYSTEMS SHALL BE AS DIRECTED BY THE ENGINEER IN THE FIELD. ALL WORK-RELATED TO MAINTAINING DRAINAGE DURING CONSTRUCTION, INCLUDING TEMPORARY DRAINAGE STRUCTURES, SWALES, DITCHES OR OTHER FACILITIES, SHALL BE INCLUDED UNDER PAY ITEM NO. 2162-1.
 - CONTACT THE CITY INSPECTOR (DEBBIE MAY) @ 986-4714 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO MOT IMPLEMENTATION.
 - WARNING LIGHTS SHOULD BE USED TO MARK BARRICADES AT NIGHT AS NEEDED.
 - OMITTED
 - ANY MODIFICATIONS OF THIS MAINTENANCE OF TRAFFIC PLAN SHALL BE SUBMITTED TO THE CITY OF PALM COAST, ENGINEERING DIVISION FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION.
 - PROJECT WORK HOURS ARE BETWEEN 8:00 AM TO 4:00 PM ON COLLECTOR OR ARTERIAL STREETS, FOR THE PURPOSES OF THIS PROJECT HARGROVE GRADE SHALL BE CONSIDERED AN ARTERIAL STREET.
 - CONTRACTOR MUST MAINTAIN EXISTING SIGNING. IF SIGNS ARE DAMAGED DUE TO HIS ACTIVITY, THE CONTRACTOR IS REQUIRED TO REPLACE THEM IN ACCORDANCE WITH CURRENT CITY STANDARD SPECIFICATIONS IMMEDIATELY.
 - THE CONTRACTOR SHALL CONFINE HIS ACTIVE WORK AREA TO NO MORE THAN 1000 FEET AT A TIME.
 - THE ROADWAY SHALL BE RESTORED TO AT LEAST A LIMEROCK SURFACE BEFORE IT IS REOPENED TO TRAFFIC, AND BEFORE THE CONTRACTOR MOVES ON TO THE NEXT CONSTRUCTION ZONE.
 - DUST CONTROL MEASURES SHALL BE IMPLEMENTED ON ALL UNPAVED SURFACES UNTIL PAVED.

SYMBOLS		TYPICAL APPLICATIONS
	Work Area	Utility Work
	Sign with 18" x 18" Min. Orange Flag and Type B Light	Pavement Repair
	Type E or Type I Barricade Or Drum (With Steady Burning Light At Night Only, Cones May Be Used During Daylight Only)	Structure Adjustments
	Type I Or Type II Barricade Or Drum (With Flashing Light At Night Only)	
	Work Zone Sign	
	Flagger	

GENERAL NOTES

- Work operations shall be confined to one travel lane, leaving the opposing travel lane open to traffic.
- All vehicles, equipment, workers (except flaggers) and their activities are restricted at all times to one side of the roadway.
- For work operations of 60 minutes or less see Index No. 600.
- When vehicles in a parking zone block the line of sight to TCZ signs of work, TCZ signs are placed on the alternate direction roadway, the signs shall be post mounted and located in accordance with Index No. 735-2.
- If work area is confined to an outside auxiliary lane the work area shall be barricaded and the FLAGGER signs replaced by ROAD CONSTRUCTION AHEAD signs. Flaggers are not required.
- Flaggers shall be in sight of each other or in direct communication at all times.
- The ROAD CONSTRUCTION AHEAD and FLAGGER signs shall have a 18" x 18" (min) orange flag and a Type B light attached and operating at all times.
- Mesh signs may be used for maintenance and utility operations. Signs of any type B lights and orange flags are not required.
- The FLAGGER signs may be substituted for the general signs.
- All signs shall be post mounted if the clearance line exceeds 12 feet.
- The maximum spacing between devices shall be not greater than 25'.
- At crew change direction of traffic only and do not reflect pavement markings.
- Longitudinal alignments are to be adjusted to fit field conditions. See Index No. 600.
- For general TCC requirements and additional information refer to Index No. 600.

FDOT INDEX 621
TRAFFIC CONTROL, TRAVEL WORK ZONES
TWO-LANE, TWO-WAY, URBAN
DAY OR NIGHT OPERATIONS

HARGROVE GRADE (100' R/W)

NO.	DATE	BY	DESCRIPTION
1	5/18/04	T.V.B.	Revised per City of Palm Coast and QA/QC Review Comments
2	3/31/04	T.V.B.	First Submitted to the City of Palm Coast, St. Johns River Water Management and FIDEP
3			
4			
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6			
7			
8			
9			
10			

Scale: 1" = 30'

Project Mgr: T. Benton

Designed by: T. Benton

Drawn by: K. Howell

QA/QC:

B.H.R., Inc.
Engineers • Planners • Landscape Architects • Surveyors
One Corporate Drive, Suite 1-B • Palm Coast, Florida 32137 •
(386) 447-4993 • Fax: (386) 246-3787
FI Certification Number: EB 0855 LC 0120 LB 6739

Advancing Quality of Life, by Design

DO NOT SCALE THIS DRAWING - DIMENSIONS AND NOTES TAKE PRECEDENCE. DRAWING IS REDUCED IF LESS THAN 22" x 34"

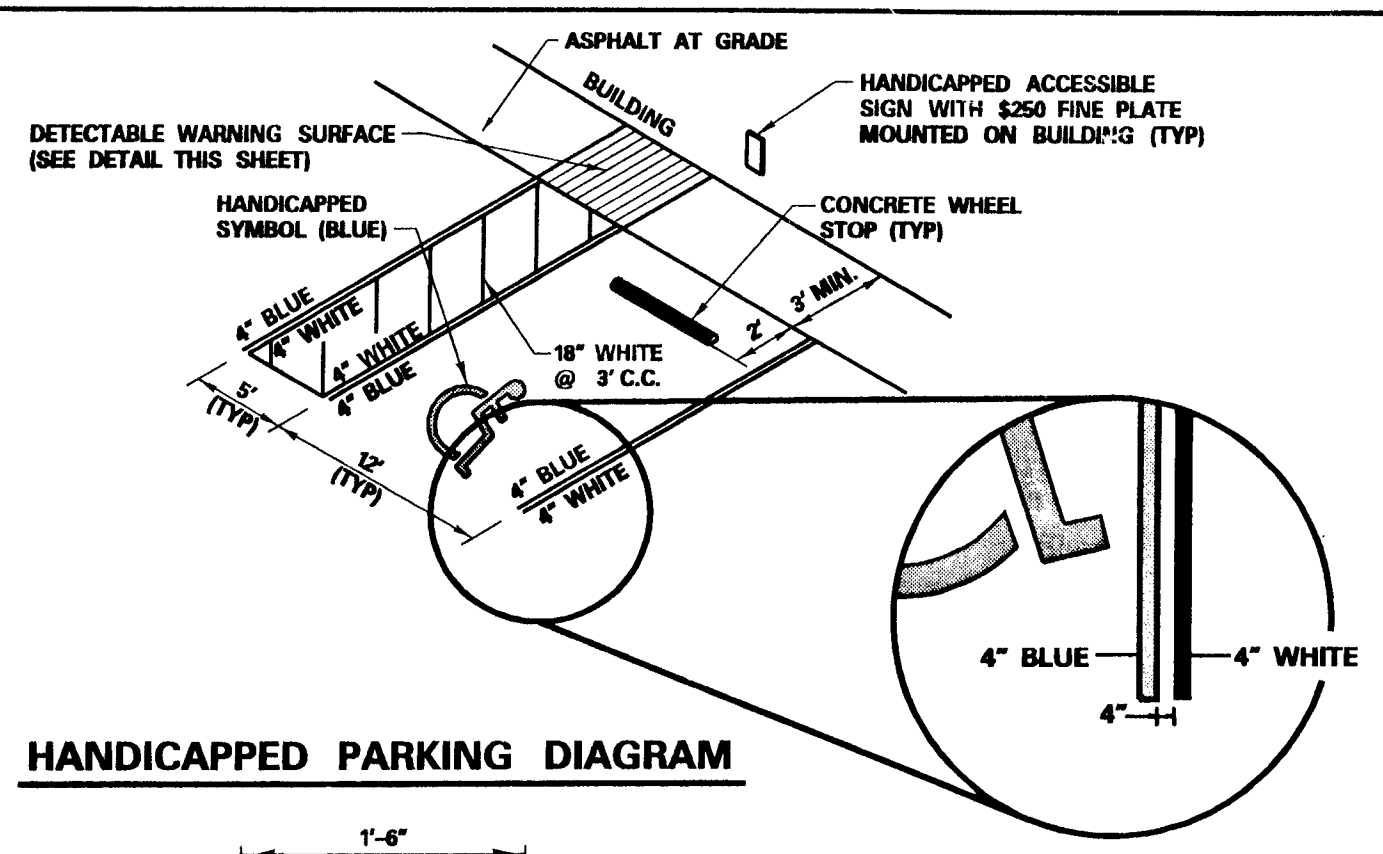
Premier Industrial Park
Hargrove Grade
Palm Coast, Fl.

Water And Sewer Plan

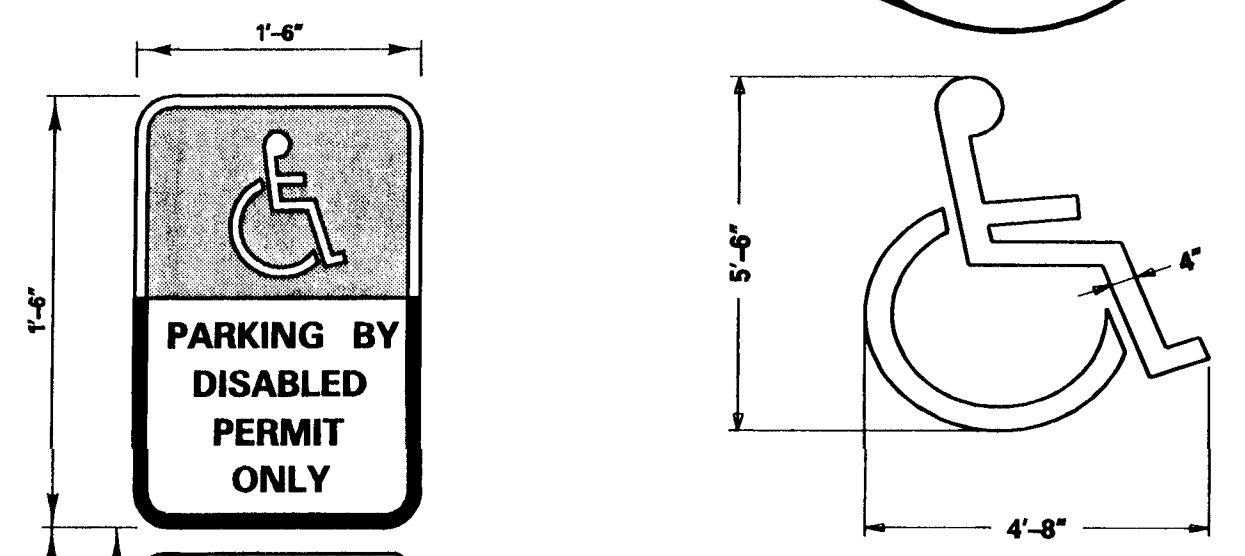
5/21/04
Engineer Of Record
Teresa V Benton
PE # 56987

Sheet No.	WS-1
	7 of 16
Issue Date	March, 2004
Project No.	04053

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HANDICAPPED PARKING DIAGRAM

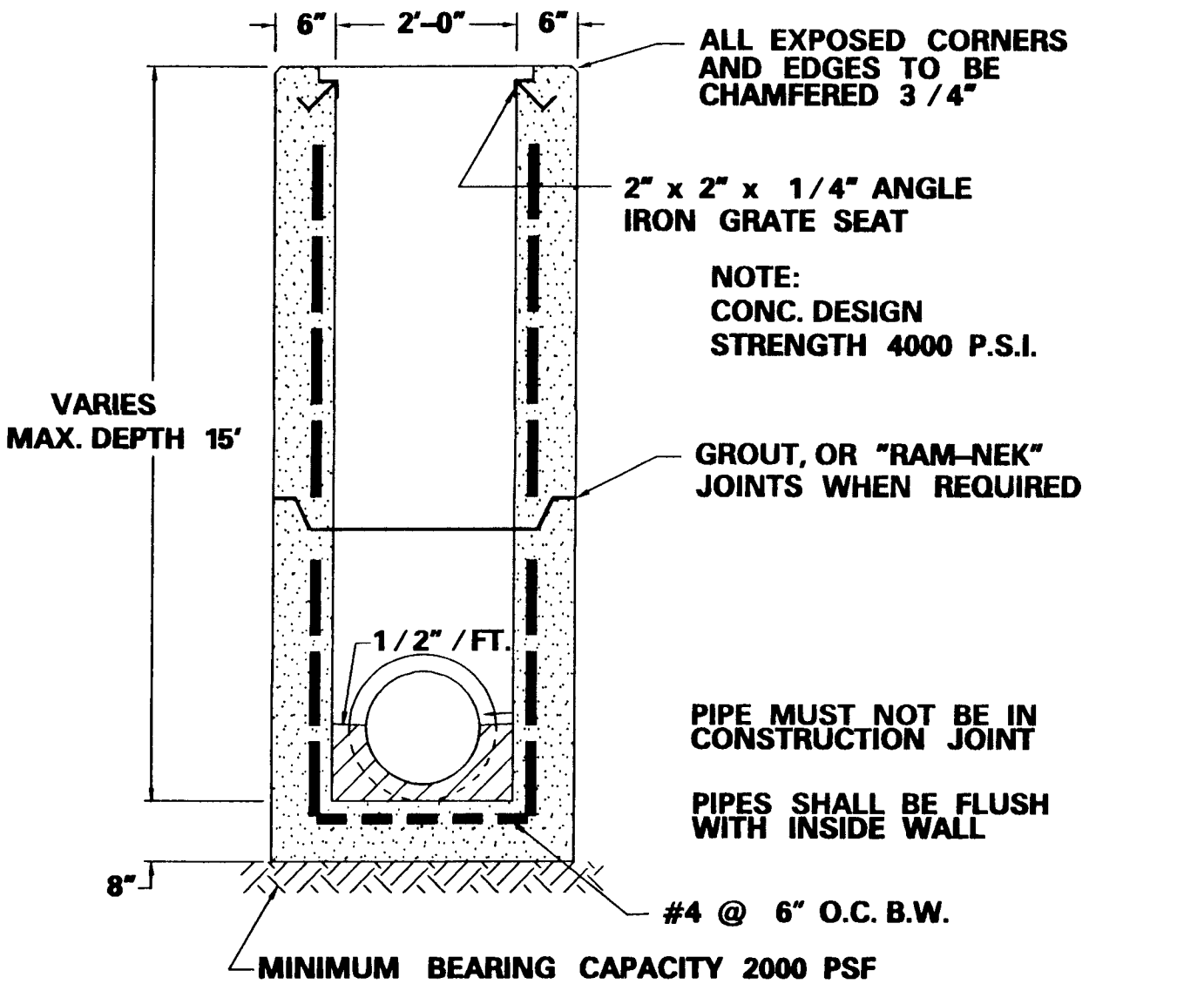
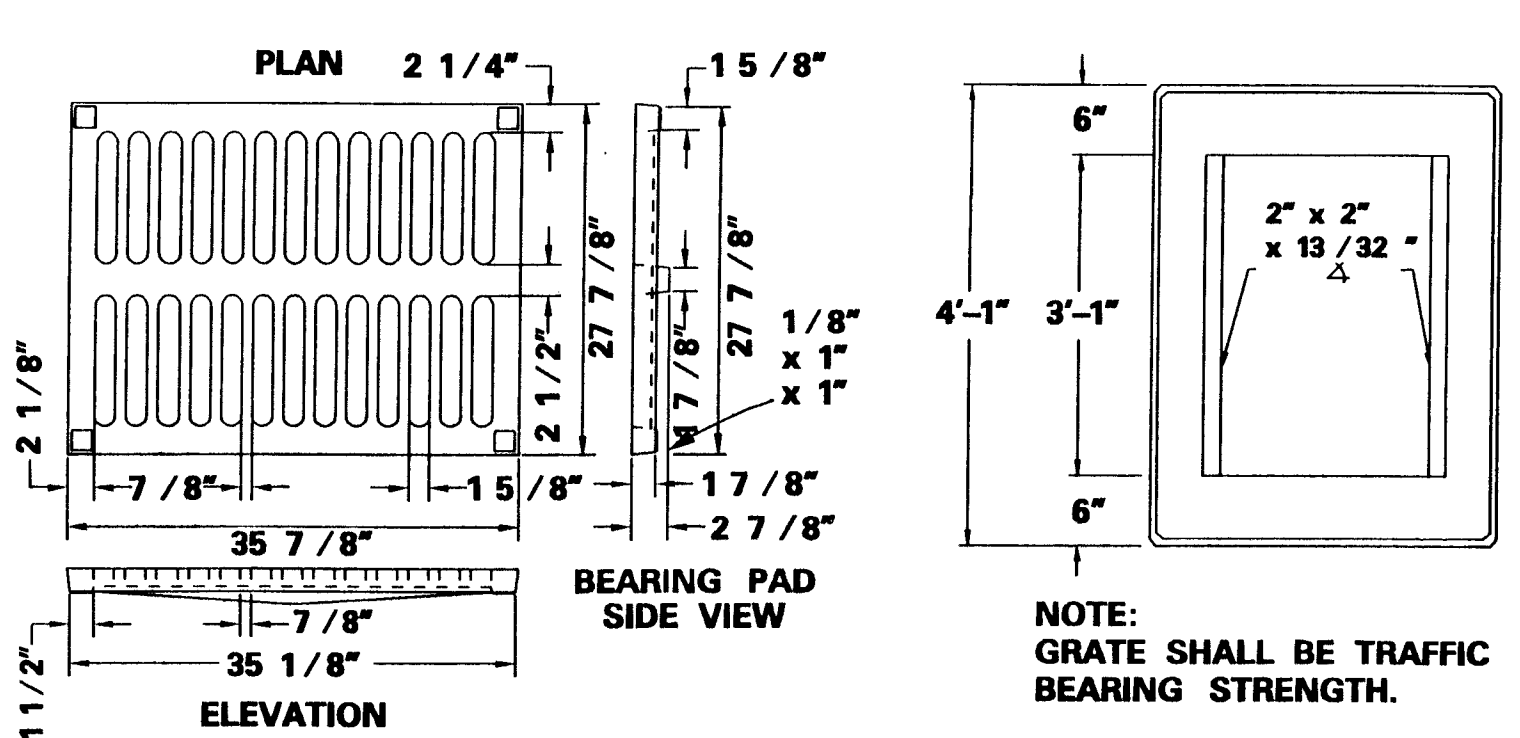


HANDICAP PARKING DETAILS

NOTES:
1. ALL SIGNS SHOWN SHALL CONFORM TO FEDERAL ACCESSIBILITY SPECIFICATIONS.
2. ALL SIGNS SHOWN SHALL BE REFLECTORIZED TO SHOW THE SAME COLOR BY NIGHT AS BY DAY.

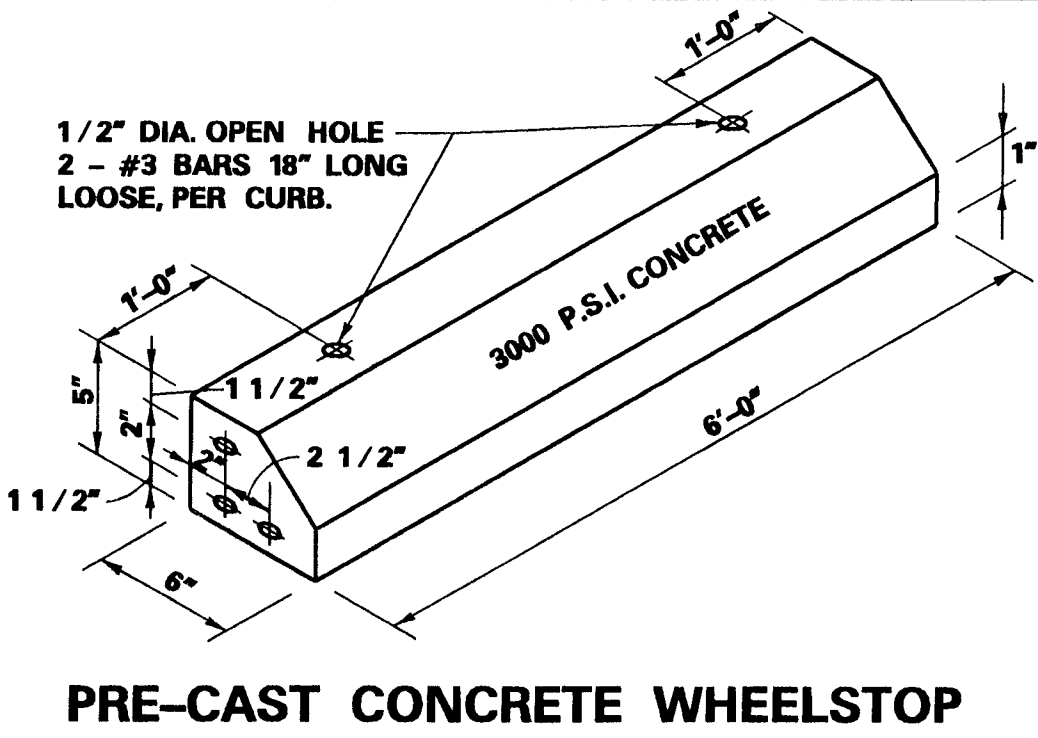
PROVIDE ADDITIONAL "VAN ACCESSIBLE" SIGNAGE AT LOCATIONS REQUIRED BY CODE AND/OR AS INDICATED ON DRAWINGS.

NOTE: PAINT SYMBOL ABOVE ONTO PAVED SURFACE WITH (2) COATS OF HANDI-CAP WHITE PAINT. MANUF. AS PER DEPT. OF TRANSPORTATION SPECS.

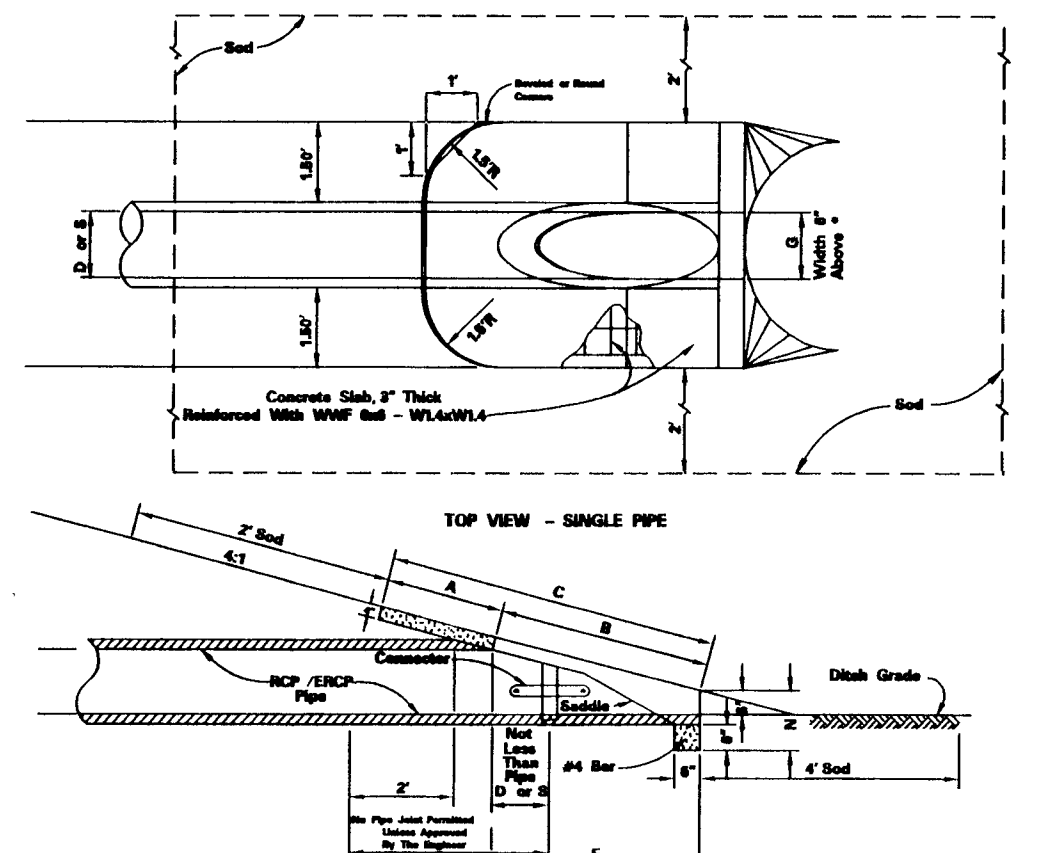


STORM SEWER TYPE "C" INLET

ALL EXPOSED CORNERS AND EDGES TO BE CHAMFERED 3/4"
2" x 2" x 1/4" ANGLE IRON GRATE SEAT
NOTE: CONC. DESIGN STRENGTH 4000 P.S.I.
GROUT, OR "RAM-NEK" JOINTS WHEN REQUIRED
PIPE MUST NOT BE IN CONSTRUCTION JOINT
PIPES SHALL BE FLUSH WITH INSIDE WALL
#4 @ 6" O.C. B.W.
MINIMUM BEARING CAPACITY 2000 PSF



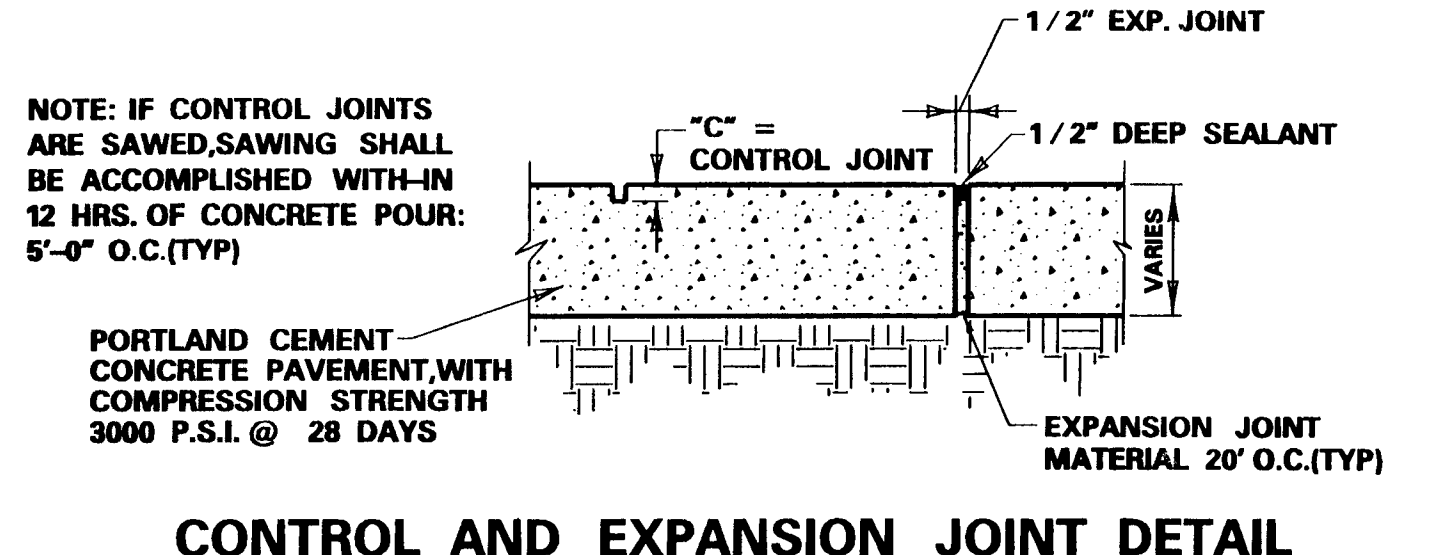
PRE-CAST CONCRETE WHEELSTOP



	D	X	A	B	C	E	F	G	M _s	N
2d Slope	15"	2'-7"	1.92'	2.18'	4.10'	2.05'	5'	1.22'	4.63'	1.19'
	18"	2'-10"	1.97'	2.74'	4.77'	2.52'	6'	1.41'	4.92'	1.29'
	24"	3'-5"	2.06'	3.85'	5.9'	3.56'	8'	1.73'	5.50'	1.29'
	30"	4'-3"	2.15'	4.55'	7.10'	4.56'	10'	2.00'	6.08'	1.29'
	36"	5'-1"	2.25'	5.06'	8.33'	5.56'	12'	2.24'	6.67'	1.33'
	42"	6'-0"	2.34'	7.21'	9.55'	6.56'	14'	2.49'	7.25'	1.38'
	48"	6'-9"	2.43'	8.33'	10.76'	7.56'	16'	2.65'	7.83'	1.42'
4d Slope	15"	2'-7"	2.27'	4.03'	6.36'	4.03'	8'	1.22'	4.63'	1.19'
	18"	2'-10"	2.36'	5.12'	7.48'	5.03'	9'	1.41'	4.92'	1.29'
	24"	3'-5"	2.53'	7.18'	9.71'	7.03'	11'	1.73'	5.50'	1.29'
	30"	4'-3"	2.70'	9.47'	11.94'	9.03'	13'	2.00'	6.08'	1.29'
	36"	5'-1"	2.87'	11.51'	14.18'	11.03'	15'	2.24'	6.67'	1.33'
	42"	6'-0"	3.05'	13.31'	16.42'	13.03'	17'	2.49'	7.25'	1.38'
	48"	6'-9"	3.22'	15.43'	18.65'	15.03'	19'	2.65'	7.83'	1.42'
54"	7'-8"	3.39'	17.49'	20.88'	17.03'	21'	2.82'	8.42'	1.46'	
60"	8'-6"	3.56'	19.55'	23.11'	19.03'	23'	3.00'	9.00'	1.50'	
66"	9'-2"	3.73'	21.62'	25.35'	21.03'	25'	3.18'	9.58'	1.54'	
72"	10'-0"	3.9'	22.68'	28.59'	23.03'	27'	3.30'	10.16'	1.58'	

POURED IN PLACE - MITERED COLLAR SECTION

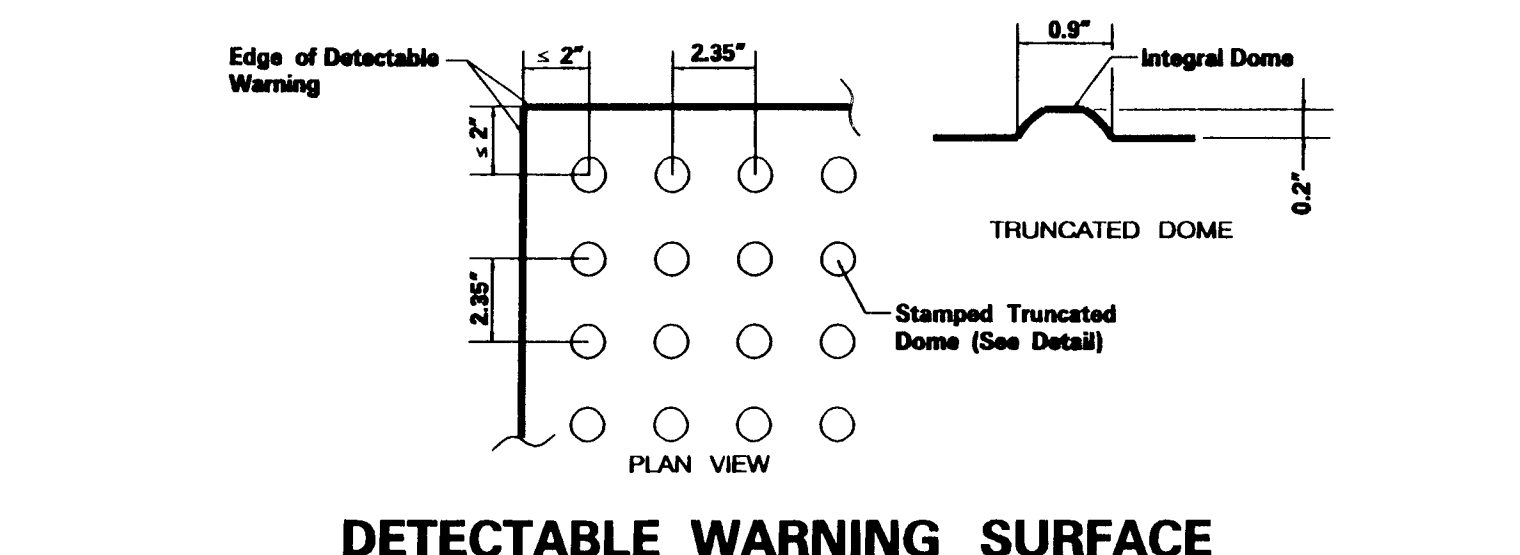
"X" = DISTANCE FROM CENTER OF PIPE TO CENTER OF PIPE.
"M_s" = DIMENSIONS FOR MULTIPLE PIPES.
FORMULA TO DETERMINE M_s FOR MULTIPLE PIPES = M_s + X (NO. OF PIPES - 1)
FOR "M_s" AND "X" DIMENSIONS, SEE TABLE ABOVE.



CONTROL AND EXPANSION JOINT DETAIL

NOTE: IF CONTROL JOINTS ARE SAWED, SAWING SHALL BE ACCOMPLISHED WITH-IN 12 HRS. OF CONCRETE POUR: 5'-0" O.C. (TYP)

EXPANSION JOINT MATERIAL 20" O.C. (TYP)

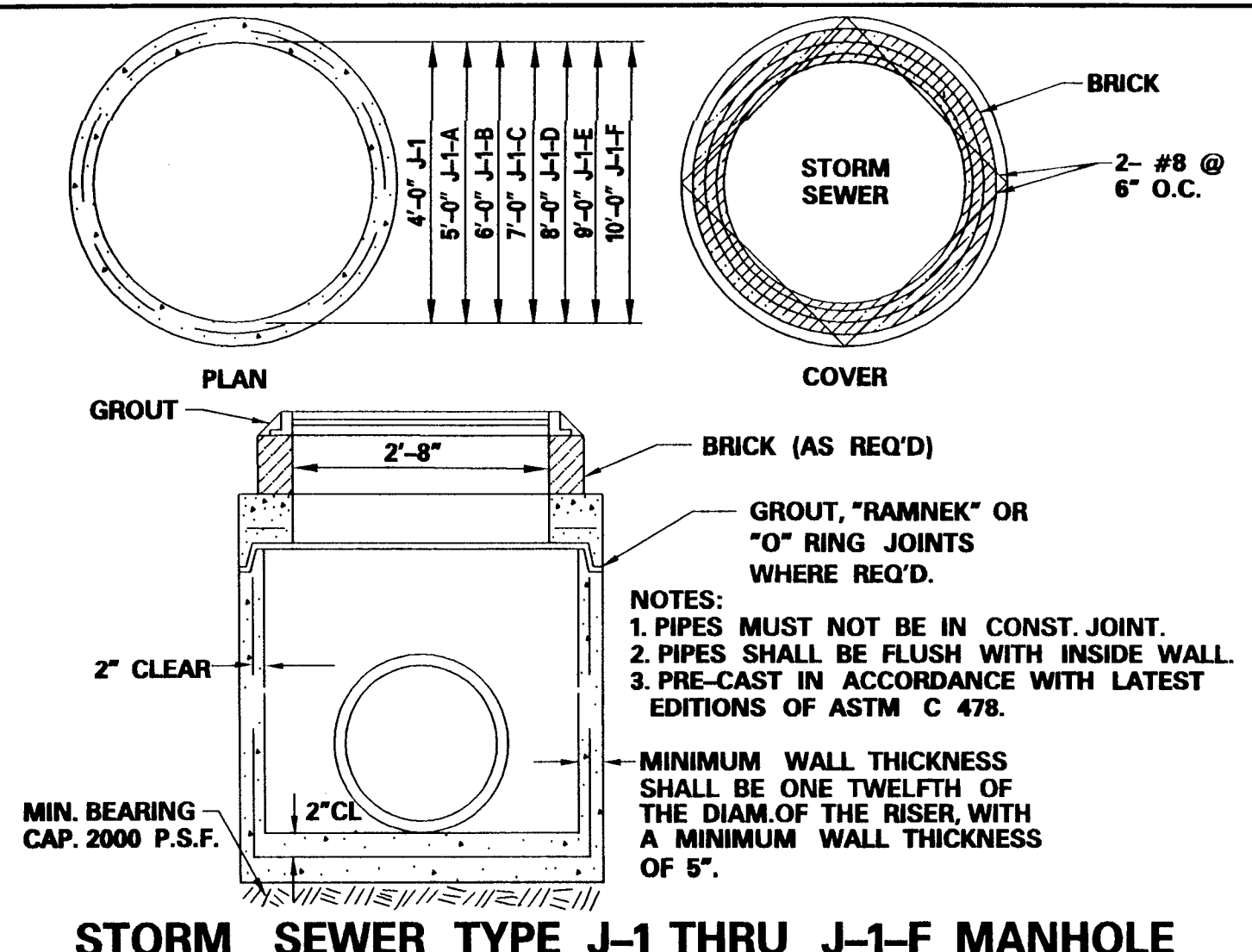
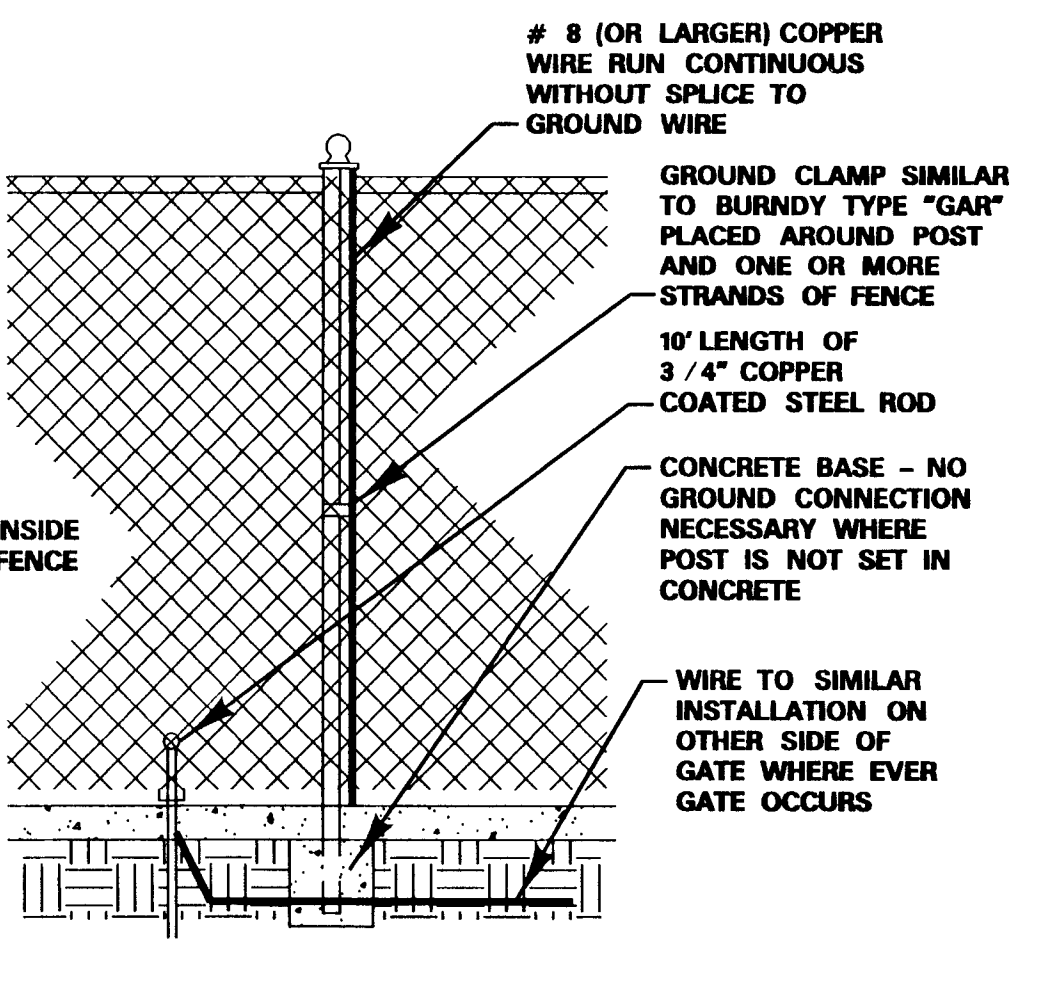


DETECTABLE WARNING SURFACE

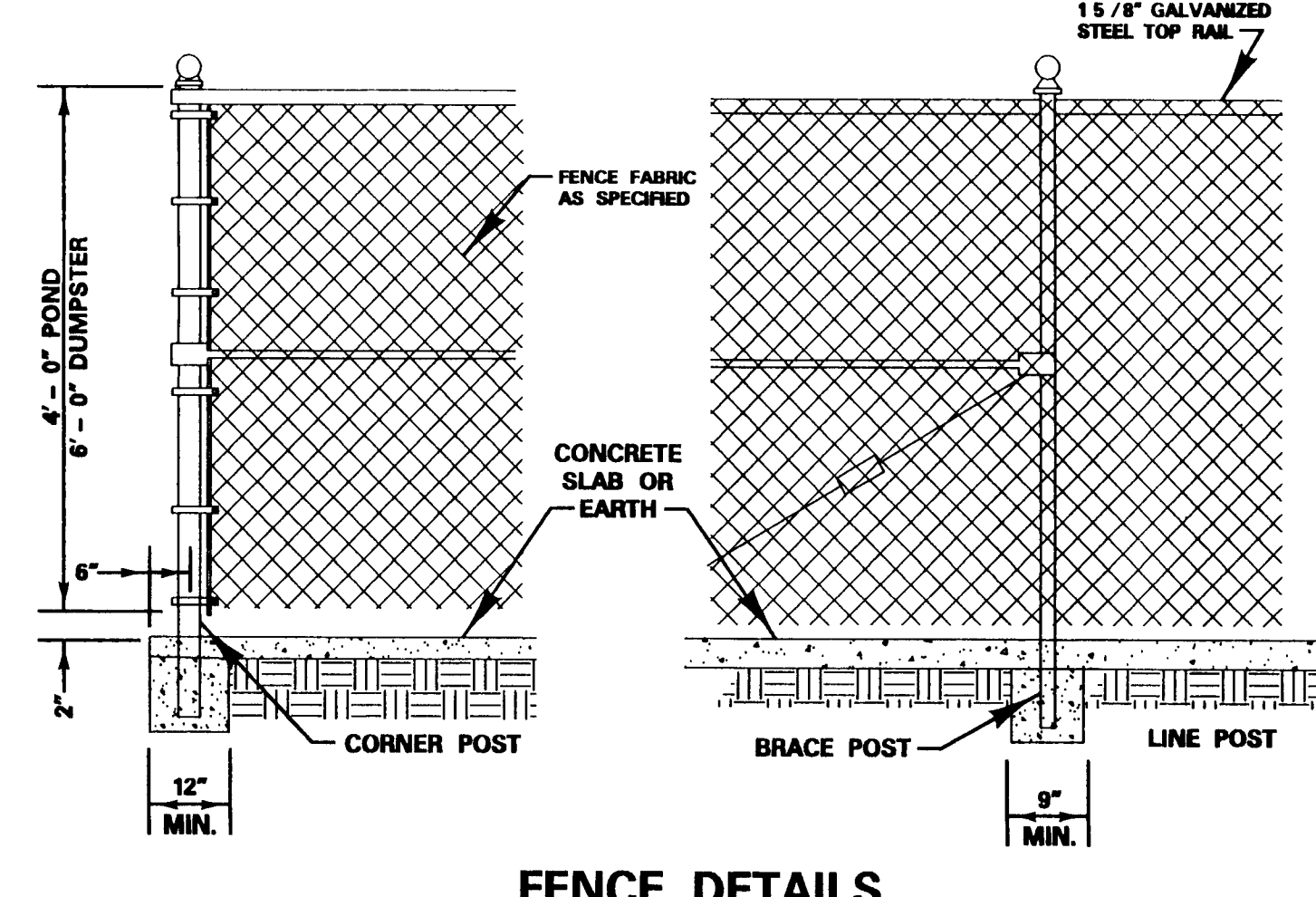
FENCE NOTES

- FENCE TO BE INSTALLED AS INDICATED ON SITE PLAN.
- GATE POST TO BE 4" O.D. GALVANIZED STEEL PIPE.
- CORNER POST TO BE 3" O.D. GALVANIZED STEEL PIPE.
- LINE POST TO BE 2 1/2" O.D. GALVANIZED STEEL PIPE.
- ALL FENCE SHALL BE GROUNDED AT LEAST EVERY 1000 FT.
- EVERY FENCE SHALL HAVE AT LEAST ONE GROUND.
- GROUND SHALL BE INSTALLED AT EVERY POINT WHERE POWER LINES OF 2300 VOLTS OR MORE CROSS FENCE AND AN ADDITIONAL GROUND 150 FT. EACH SIDE OF THIS POINT.
- GROUND WIRE SHOULD BE TIED TO STEEL FENCE POSTS AT 2 FT. INTERVALS.
- BONDING WIRE BETWEEN GATE POST NEED NOT BE INSTALLED WHERE EXISTING ROAD PAVING OR RAILROAD TRACKS WOULD MAKE INSTALLATION IMPRACTICAL.

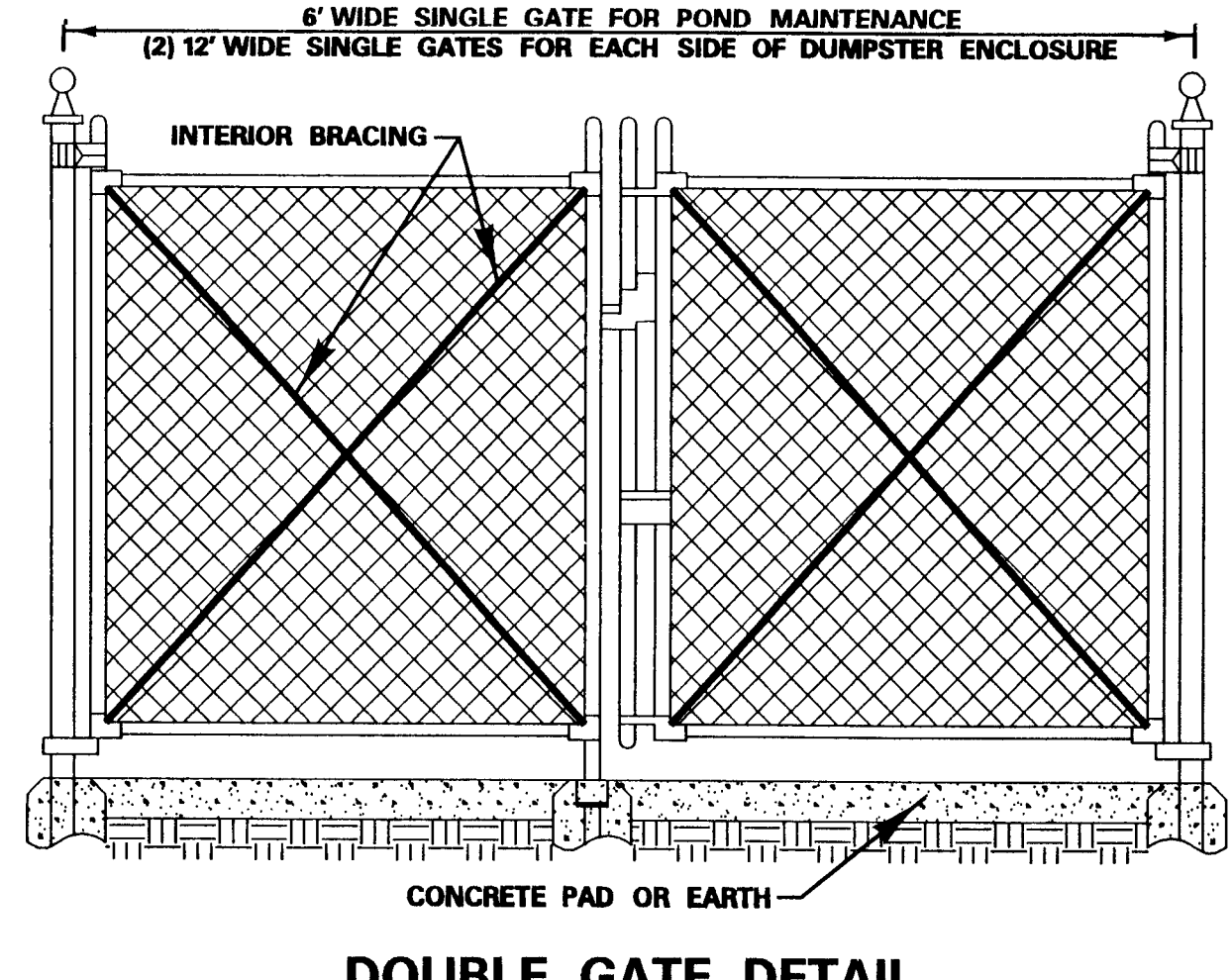
FENCE GROUNDING DETAIL



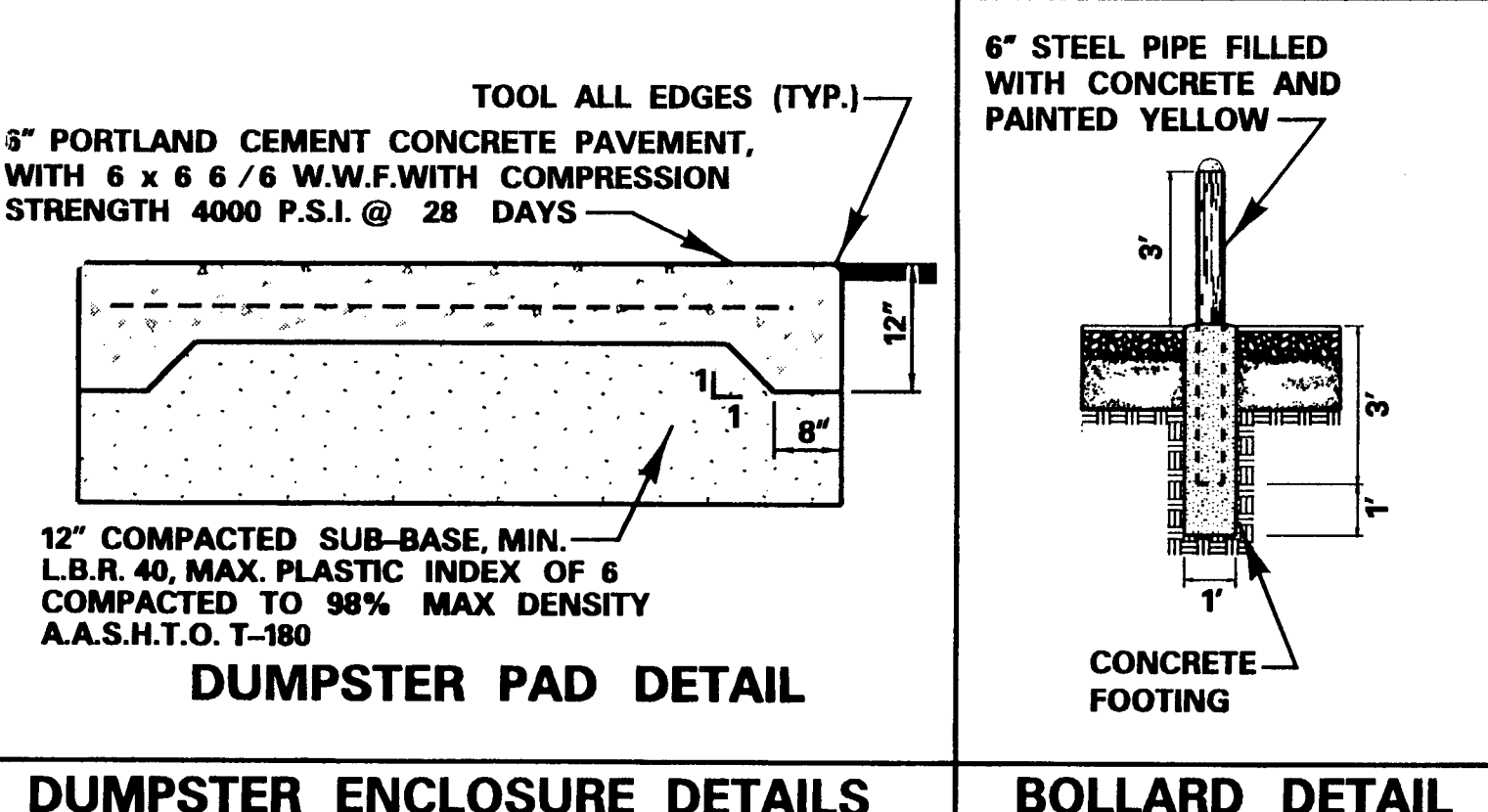
STORM SEWER TYPE J-1 THRU J-1-F MANHOLE



FENCE DETAILS



DOUBLE GATE DETAIL



DUMPSTER PAD DETAIL

BOLLARD DETAIL

DUMPSTER ENCLOSURE DETAILS

No.	By	Date	Revision
1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
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Premier Industrial Park
Hargrove Grade
Palm Coast, Fl.

Paving And Drainage Details

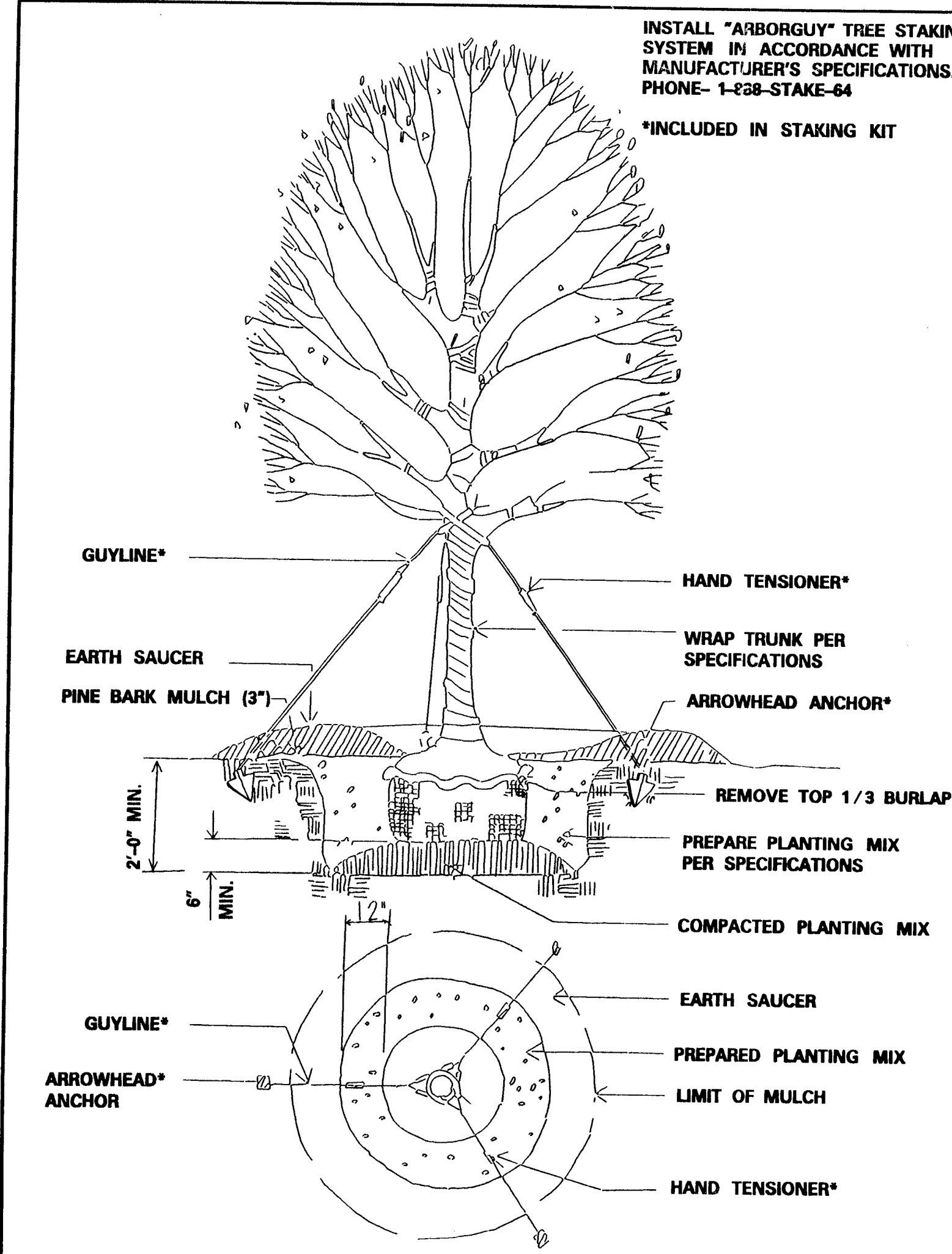
Sheet No. **DT-1**
10 of 16
Issue Date: **March, 2004**
Project No. **04053**

Engineer Of Record
Teresa V. Benton
PE # 56987

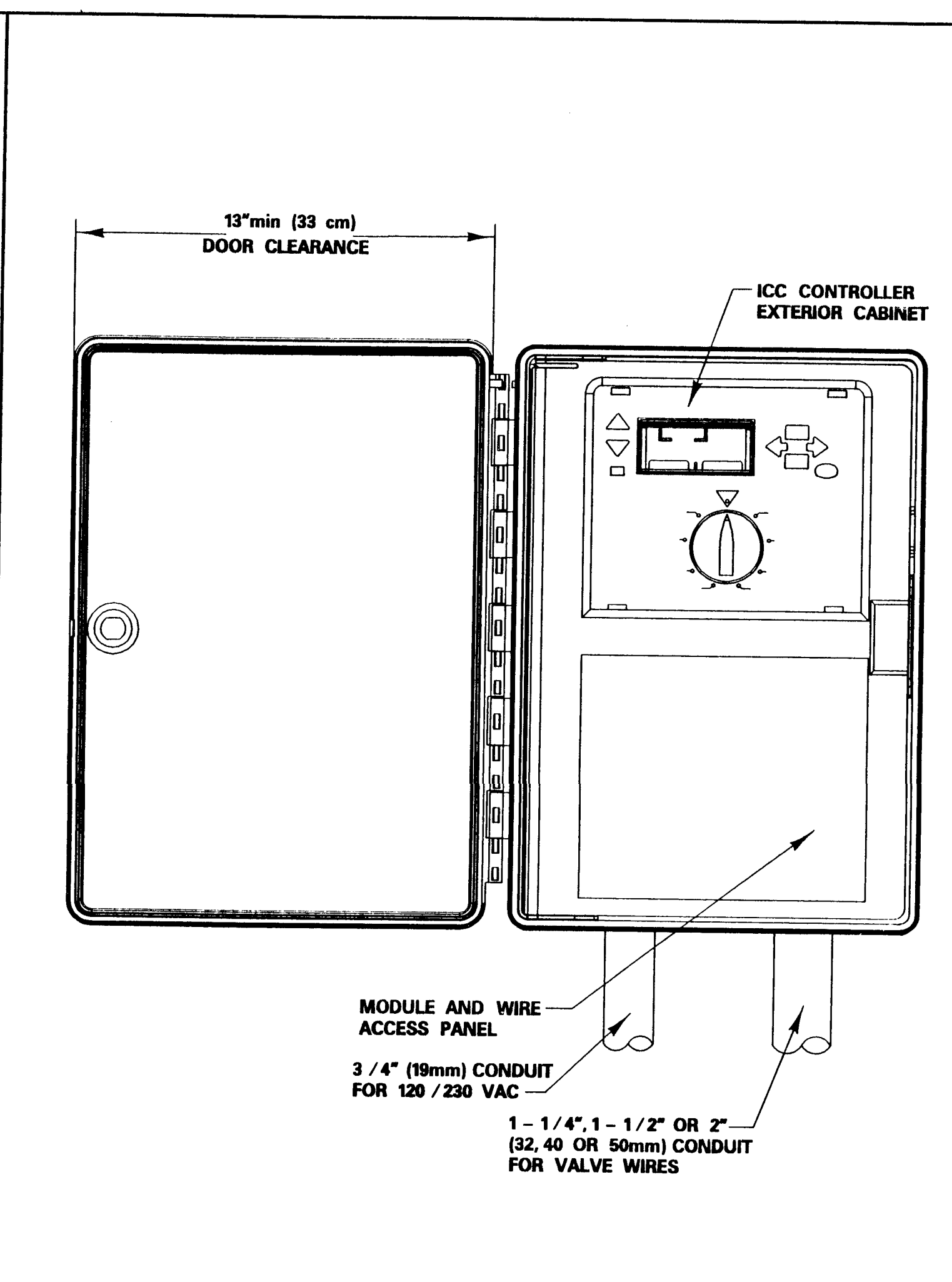
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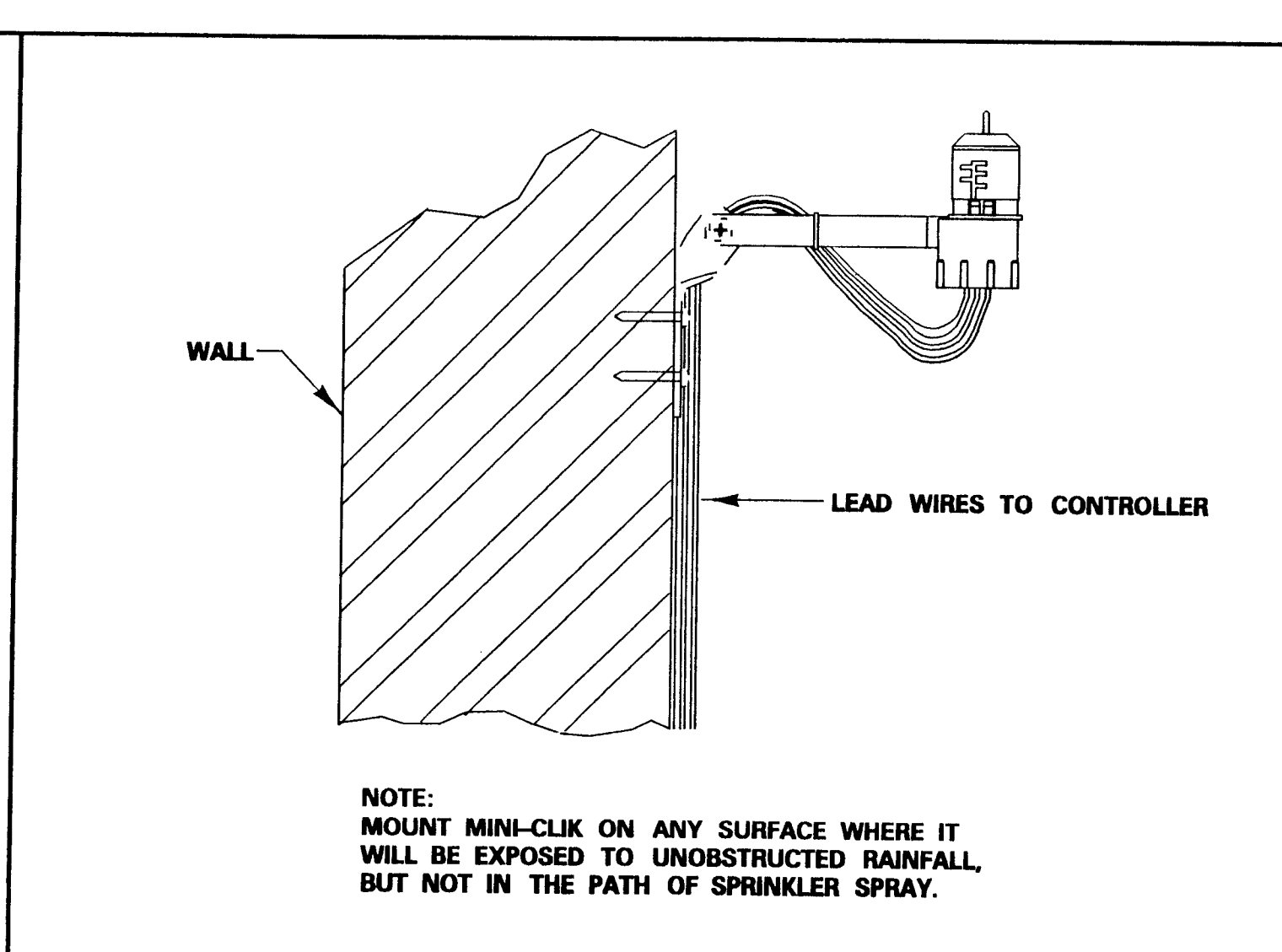
City of Palm Coast
Development Order No.
SP-1107-04-02
AREA RESERVED FOR CITY APPROVAL STAMP



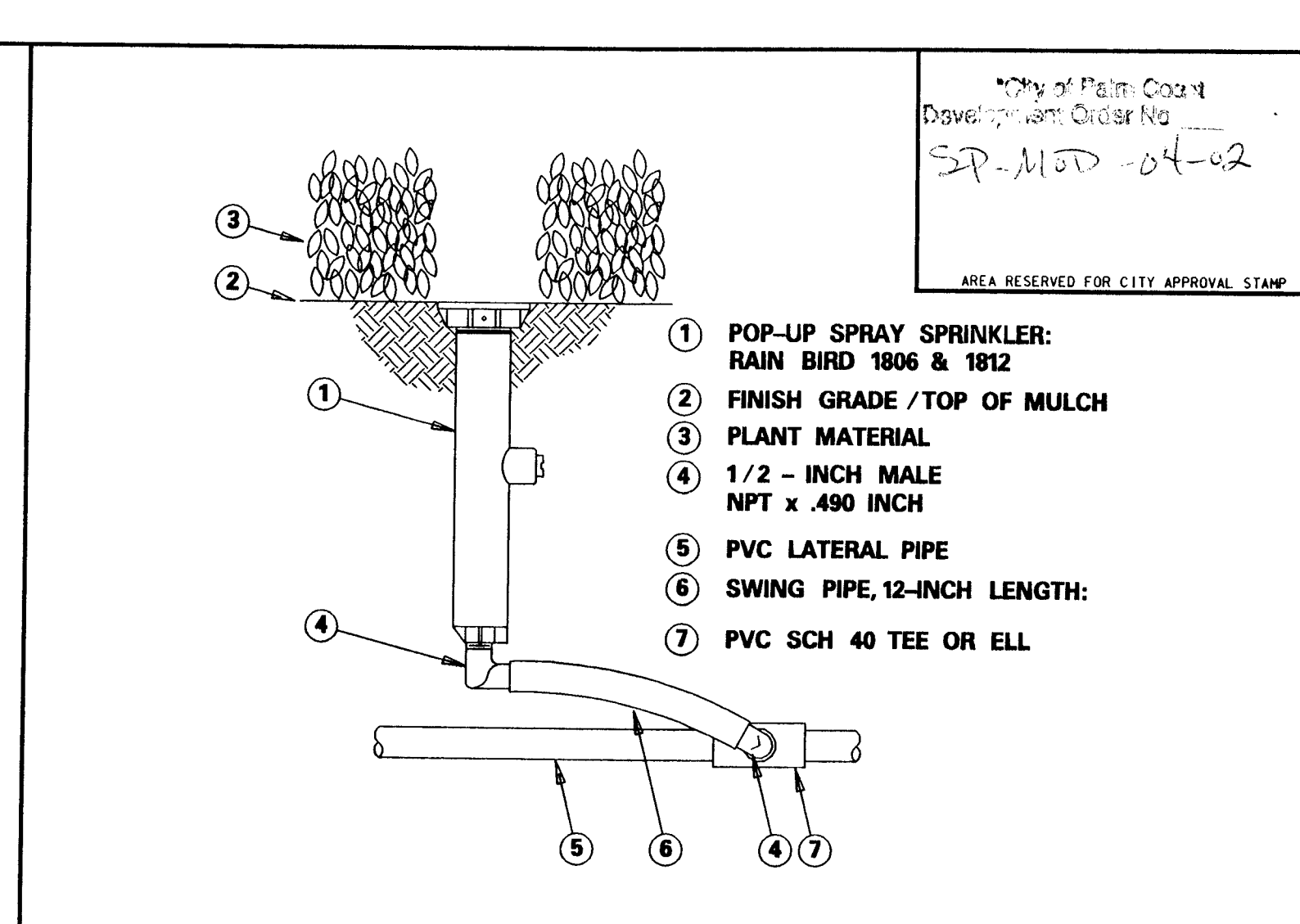
TREE PLANTING DETAIL



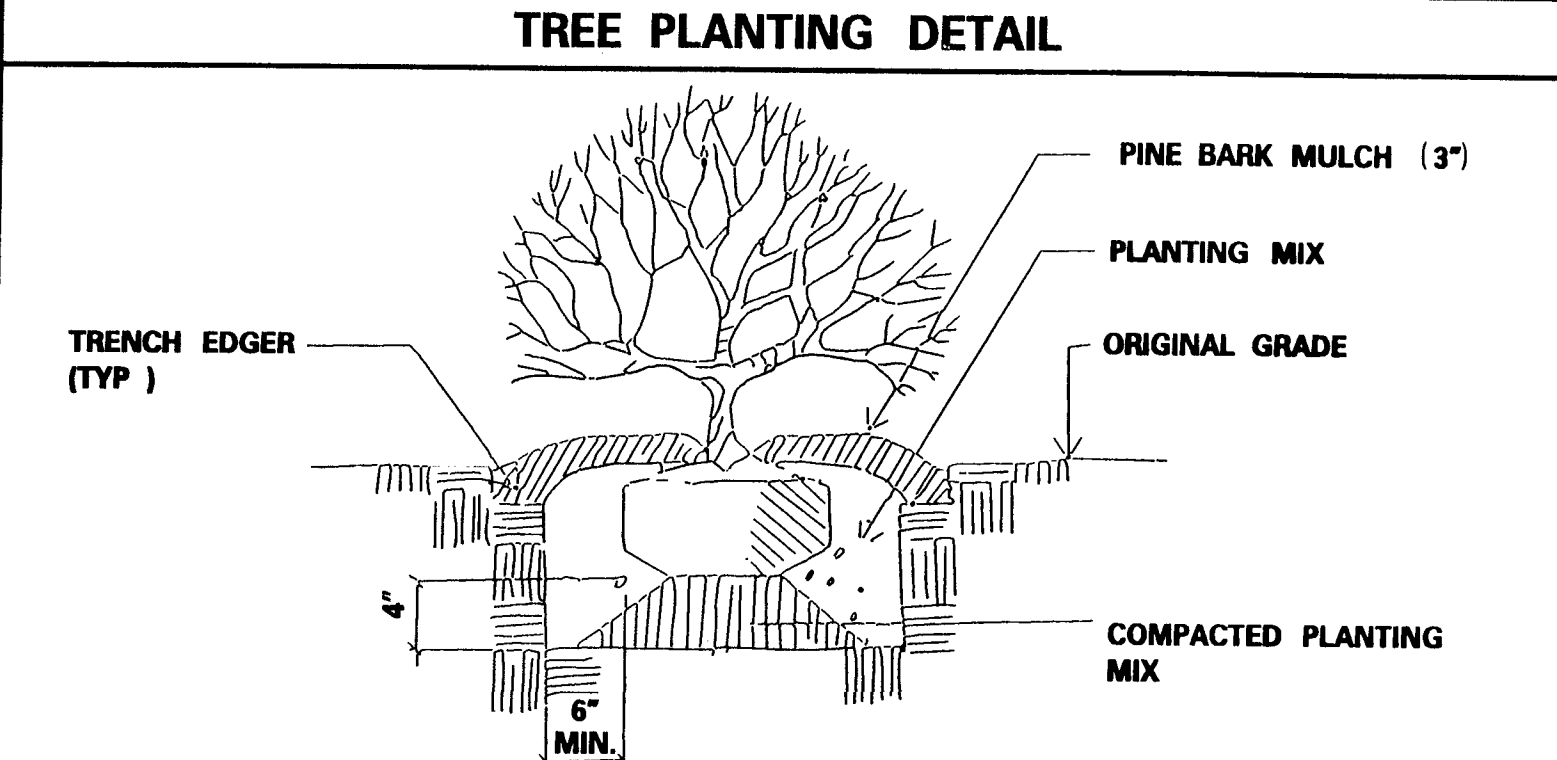
IRRIGATION CONTROL BOX DETAIL



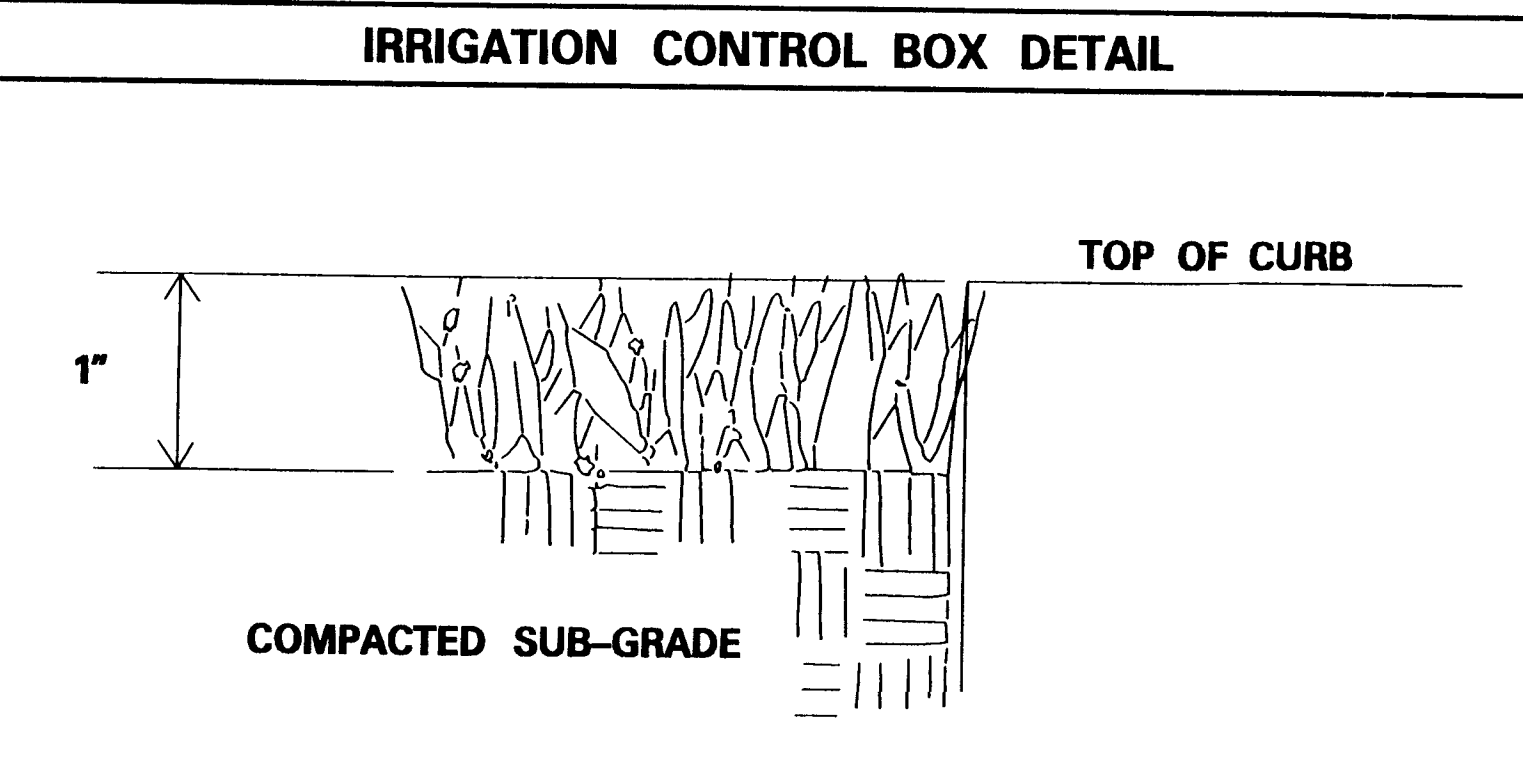
MINI-CLICK RAIN SENSOR



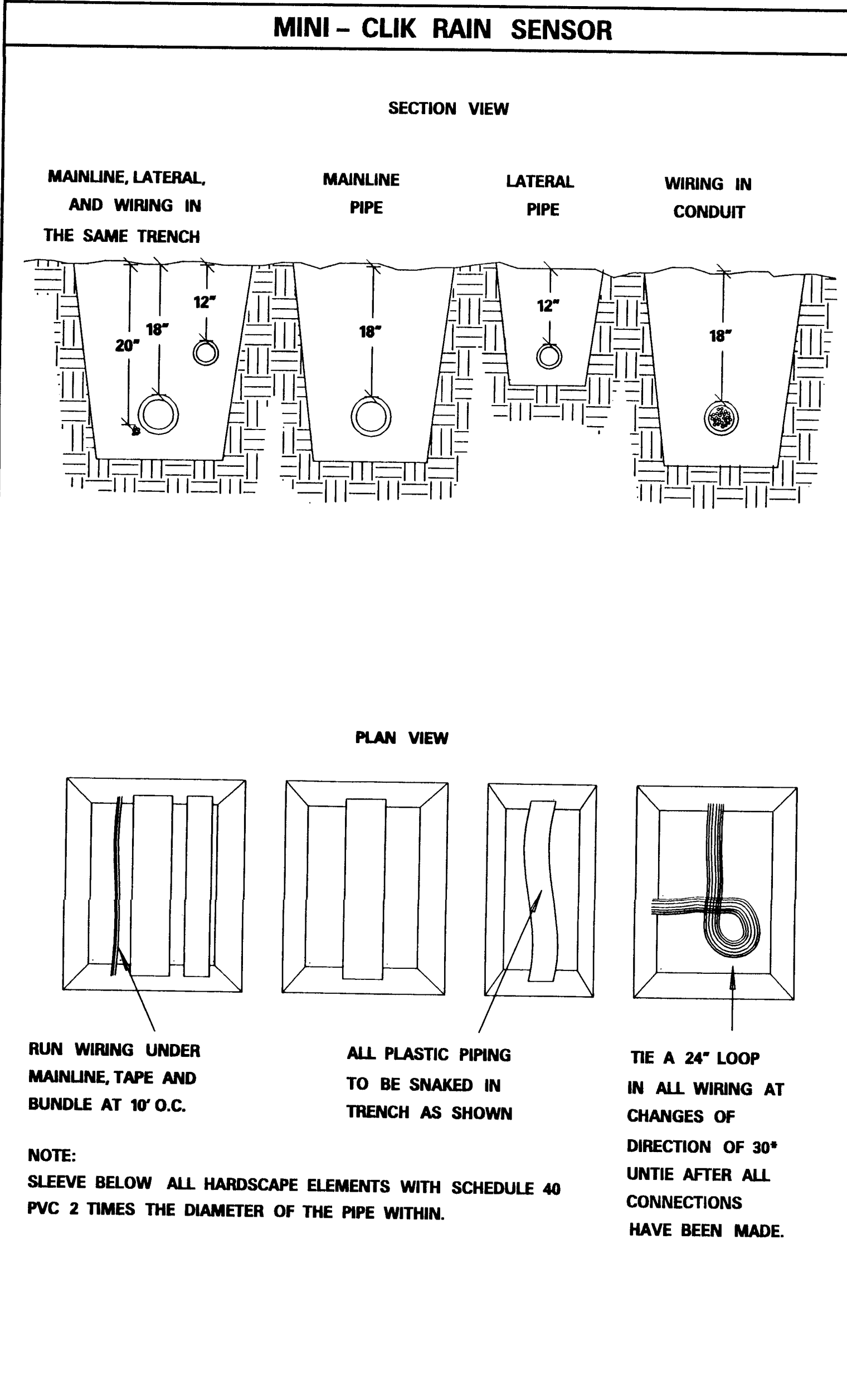
POP - UP SPRAY SPRINKLER



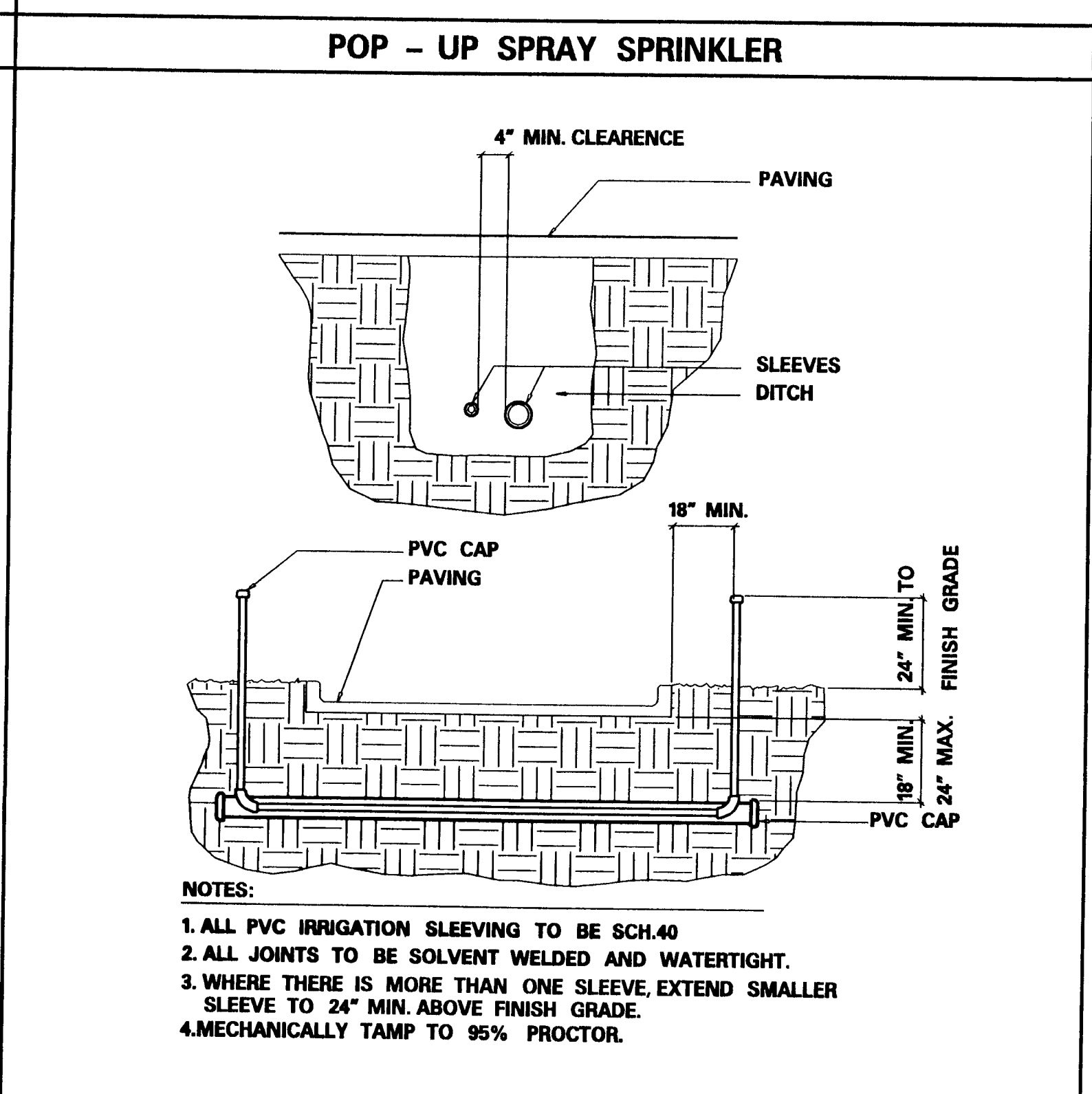
SHRUB PLANTING DETAIL



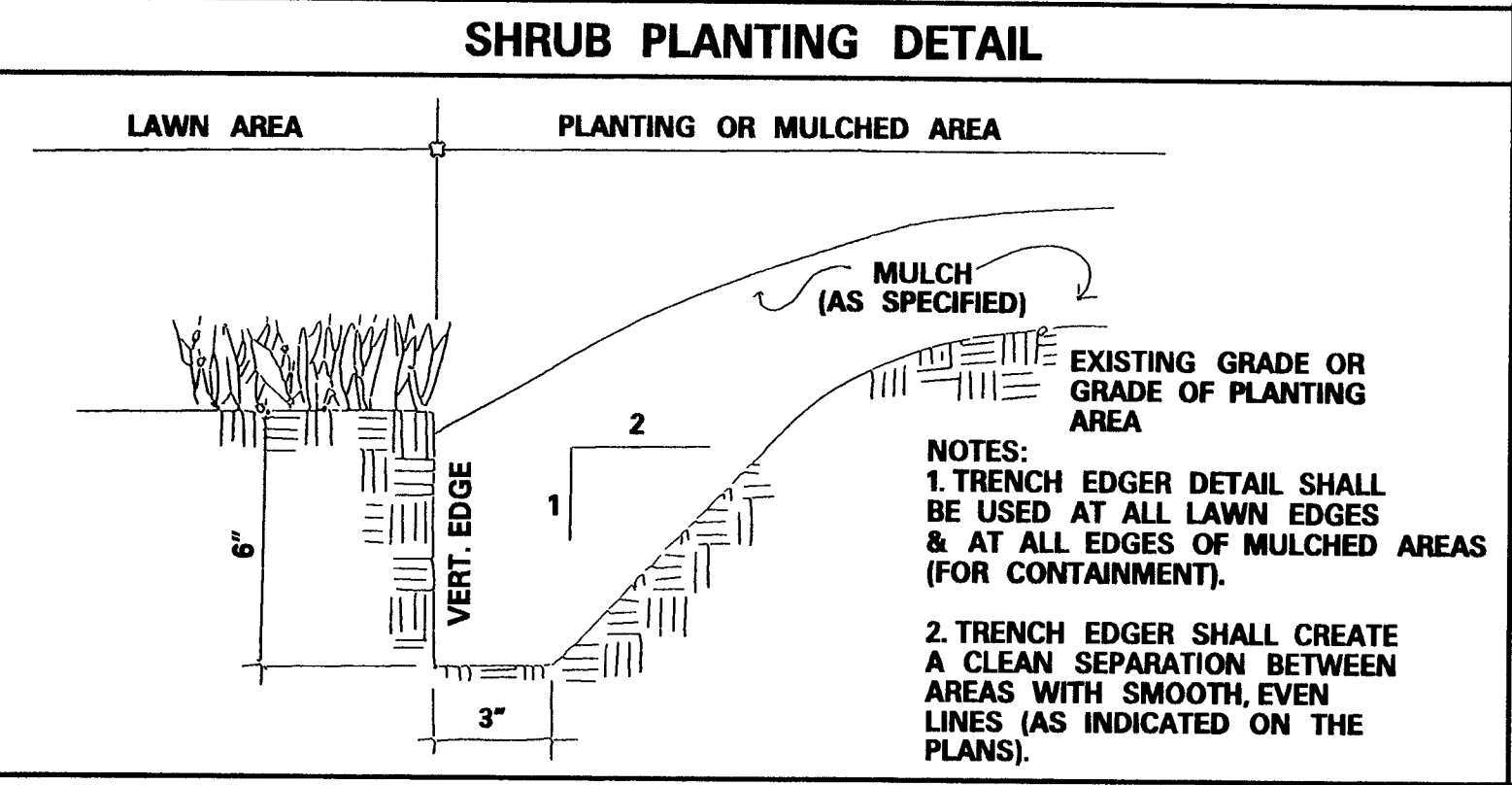
SOD DETAIL



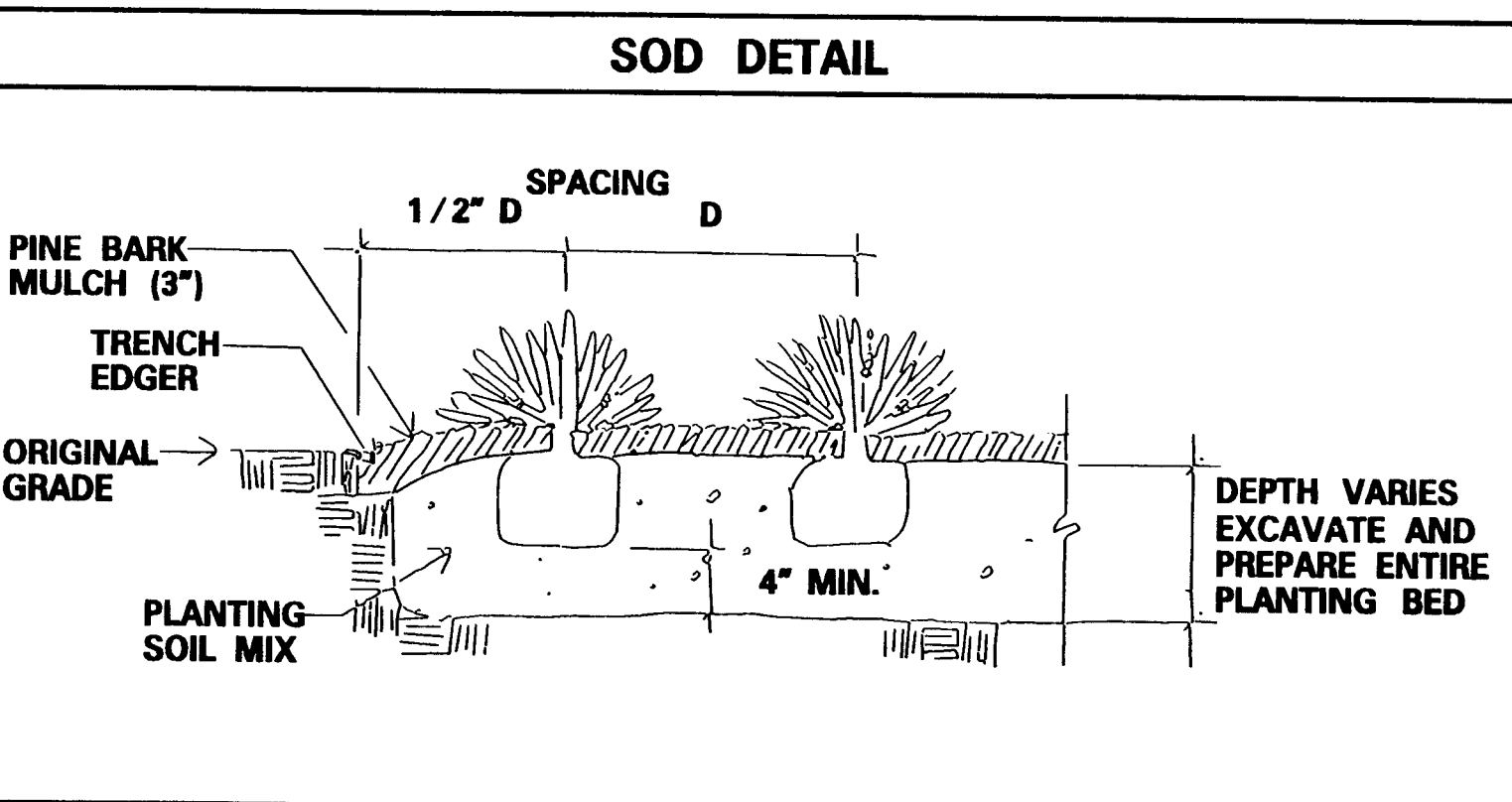
PIPE AND WIRE TRENCHING



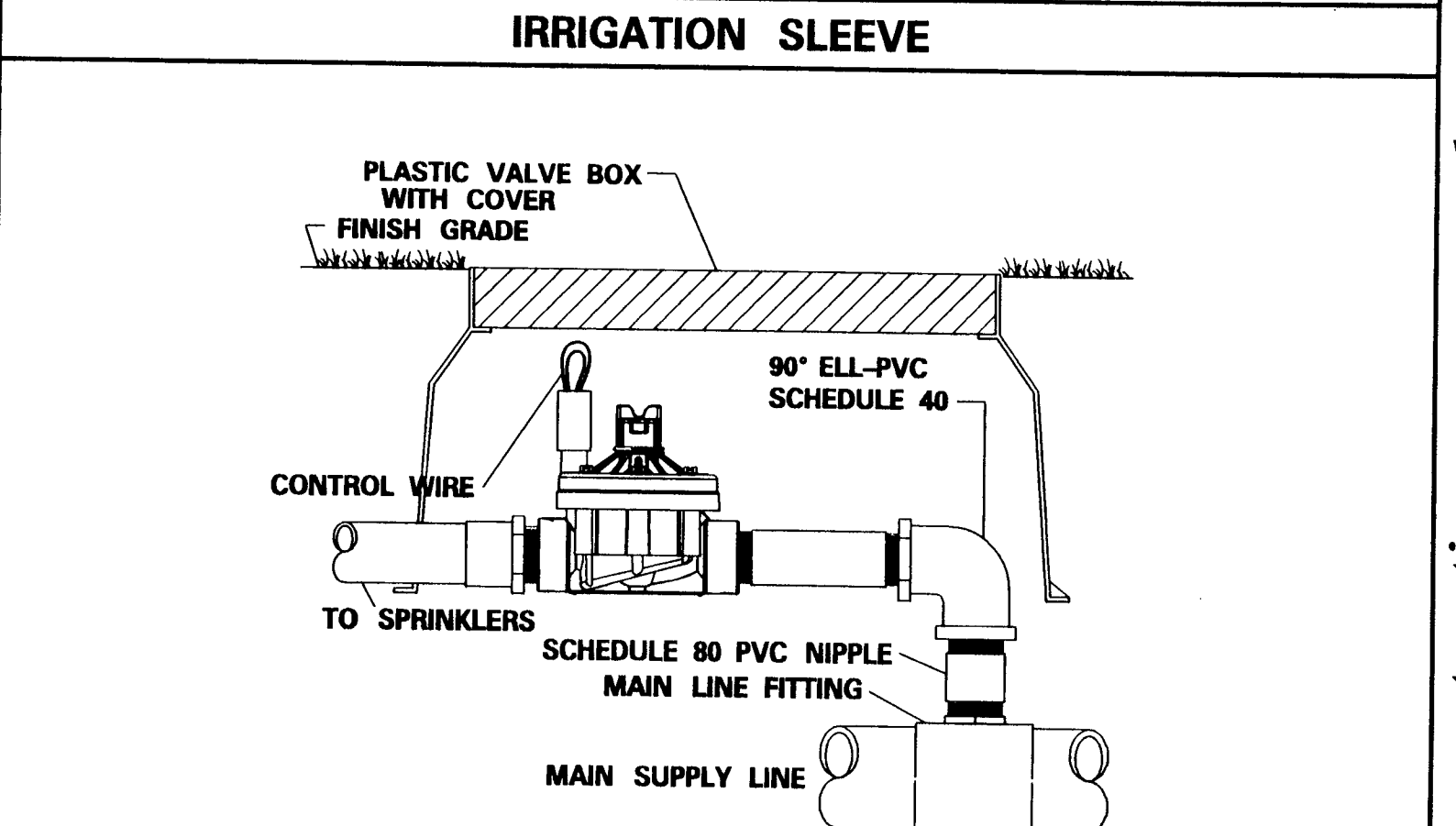
IRRIGATION SLEEVE



TRENCH EDGER DETAIL



MASSSED SHRUB / GROUNDCOVER PLANTING DETAIL



ICV IN VALVE BOX

10			
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1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
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Scale: Not To Scale
Project Mgr: T. Benton
Designed by: N/A
Drawn by: N/A
QA/QC:

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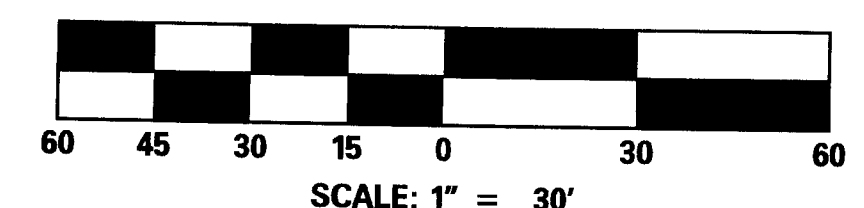
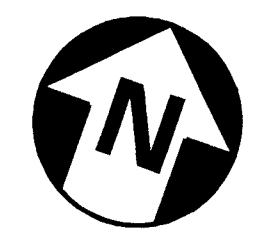
Landscape And
Irrigation Details

Sheet No.
DT-3
12 of 16
Issue Date
March, 2004
Project No.
04053

Engineer of Record
Teresa V. Benton
PE # 56987

20-MAY-2004 09:54
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IRRIGATION LEGEND

SYMBOLS	MFR	DESCRIPTION	NOZZLE	PSI	GPM	RAD	REMARKS
⊖	HUNTER	PRO-SPRAY 6" SPRINKLER POP-UP	SEE NOZZLE CHART				SEE DETAIL
□	HUNTER	PRO-SPRAY 12" SPRINKLER POP-UP					SEE DETAIL
⊗	HUNTER	SHRUB ADAPTER - SRS-00					SEE DETAIL
•	HUNTER	PCB SERIES BUBBLER (PCB-50)	F	40	0.5	3'	SEE DETAIL
△	HUNTER	PGP-ADJ ROTARY POP-UP	#7, #8	40	3, 1.5	40"	SEE DETAIL
▲	HUNTER	PGP-360 ROTARY POP-UP	#10	40	6	4.5'	SEE DETAIL
⊗	HUNTER	PGS-ADJ SHRUB ROTOR	#7	40	3	40"	SEE DETAIL
⊖	HUNTER	PGM-06 ROTARY POP-UP	#2, #1	40	2, 1	20"-24"	SEE DETAIL
○	APPROVED	HOSE BIBB	N/A	N/A	N/A	N/A	SEE DETAIL
⊙	HUNTER	HUNTER ICC-800M CONTROLLER, TO BE LOCATED IN THIS GENERAL AREA. WITH MINI-CLICK II RAIN SENSOR. (120 VOLTS 10 AMP BREAKER)					SEE DETAIL
⊕	APPROVED	15" CHECK VALVE					SUBMIT SHOP DRAWINGS
⊖	HUNTER	1" ICV SERIES ELECTRIC REMOTE VALVE WITH ACCU-SET.					SEE DETAIL
⊗	NIBCO	1.5" LINE SIZE BRASS GATE VALVE. SEE SPECS. SIZE PER PLAN.					SEE DETAIL
---	APPROVED	CLASS SCH 40 PVC MAINLINE 1.5"					SEE DETAIL
---	APPROVED	SCH 160 PVC LATERAL LINE SIZE AS PER PIPE SIZE CHART, USE 1/2" PIPE ON ALL HEADS WITH A TOTAL NOT GREATER THAN 5 GPM.					SEE DETAIL
---	APPROVED	SCH 40 PVC SLEEVE-MIN. TWICE THE INNER PIPE DIA. CONTROL WIRE SHALL BE SLEEVED SEPARATELY.					SEE DETAIL
*	APPROVED	INSTALL (2) SPARE WIRES FROM IRRIGATION CONTROLLER TO THIS POINT.					SEE DETAIL
⊕	APPROVED	4" GRAVELL-PACK WELL AND 2 HP SUBMERSIBLE PUMP, CAPABLE OF 35 GPM AT 45 PSI WITH TANK INSTALLED.					SUBMIT SHOP DRAWINGS

NOTES:

- IRRIGATION TRUNK LINE IS TO BE INSTALLED WITHIN THE PROPERTY BOUNDARIES. PLAN SHOWS LINE OUTSIDE PROPERTY LIMITS FOR ILLUSTRATION PURPOSES.
- ALL IRRIGATION HEADS SHALL BE NO CLOSER THAN 12" FROM TO THE BUILDING WALL.
- SCHEDULE 40 P.V.C. SLEEVES FOR THE FULL PAVEMENT COVERAGE LENGTH AND SHALL BE AT LEAST 24" BELOW GRADE.
- MAINLINES SHALL BE BURIED TO PROVIDE A MINIMUM COVER OF 18". WHILE ALL LATERAL LINES SHALL HAVE A MINIMUM OF 12".
- THE CONTRACTOR SHOULD TAKE CARE TO RE-ROUT PIPING AS NECESSARY TO AVOID PLANT OR TREE ROOTS.
- ALL SPRINKLERS SHALL BE SITE ADJUSTED TO PREVENT WATER OVERTHROW ONTO BUILDING SURFACES AND WALKWAYS.
- ALL PIPING DOWNSTREAM OF SOLENOID VALVE TO BE PR-160 P.V.C.
- ALL CONTROL WIRING TO BE 14 #1 U.F. DIRECT BURIAL.
- INSTALL A "MINICLICK" RAIN SENSOR DEVICE. VERIFY LOCATION WITH OWNER REPRESENTATIVE.
- INSTALL BACKFLOW PREVENTER IN AN INCONSPICUOUS LOCATION SUCH AS SHRUBBERY.

NOZZLE CHART

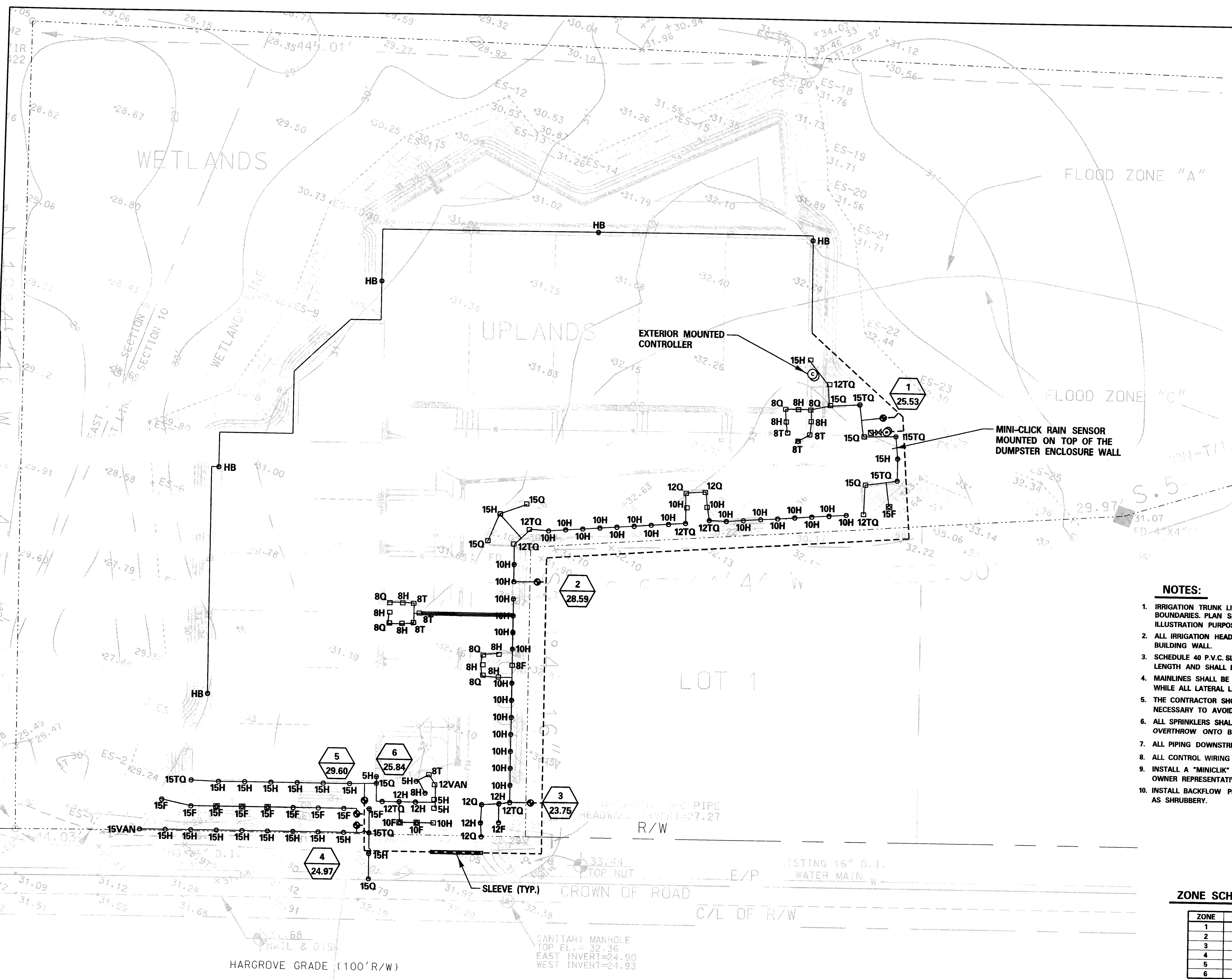
SPRAY	NOZZLE	RADIUS	PRESSURE	FLOW	SPRAY
360°ARC	15F	15'	30	3.70	30"
	12F	12'	30	2.60	30"
	10F	10'	30	1.58	15"
	8F	8'	30	1.05	10"
270°ARC	15TQ	15'	30	2.78	30"
	12TQ	12'	30	1.95	30"
225°ARC	15TT	15'	30	2.48	30"
	12TT	12'	30	1.74	30"
180°ARC	15H	15'	30	1.85	30"
	12H	12'	30	1.30	30"
	10H	10'	30	0.79	15"
	8H	8'	30	0.52	10"
	5H	5'	30	0.20	5"
135°ARC	15T	15'	30	1.23	30"
	12T	12'	30	0.87	30"
	10T	10'	30	0.53	15"
	8T	8'	30	0.35	10"
	5T	5'	30	0.13	5"
90°ARC	15Q	15'	30	0.92	30"
	12Q	12'	30	0.85	30"
	10Q	10'	30	0.39	15"
	8Q	8'	30	0.26	10"
	5Q	5'	30	0.10	5"
ADJ°ARC	15VAN	15'	30	VARIES	30"
	12VAN	12'	30	VARIES	30"
	10VAN	10'	30	VARIES	15"
	8VAN	8'	30	VARIES	10"
	6VAN	6'	30	VARIES	5"
STRIP	15EST	4x15	30	0.61	30"
	15CST	4x30	30	1.21	30"
	15SST	4x30	30	1.21	30"
	9SST	9x18	30	1.73	30"

ZONE SCHEDULE

ZONE	GPM
1	25.53
2	28.59
3	23.75
4	24.97
5	29.60
6	25.84

PIPE SIZE CHART

FLOW /GPM	PIPE SIZE
1 - 5	1/2"
5 - 10	3/4"
10 - 16	1"
16 - 25	1 1/4"
25 - 36	1 1/2"
36 - 55	2"



No.	By	Date	Revision
1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
0	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and FDEP

Scale: 1" = 30'
Project Mgr: T. Benton
Designed by: A. Dance
Drawn by: G. Diaz
QA/QC:

B.H.R.
B.H.R., Inc.
Engineers • Planners • Landscape Architects • Surveyors
One Corporate Drive, Suite 1-B • Palm Coast, Florida 32137 •
(386) 447-4993 • Fax: (386) 246-3787
Fl Certification Number: EB 0855 LC 0120 LB 6739
Advancing Quality of Life, by Design

Premier Industrial Park
Hargrove Grade
Palm Coast, FL.

Irrigation Plan

Landscape Architect
Andrew S. Dance
LA # 0001112

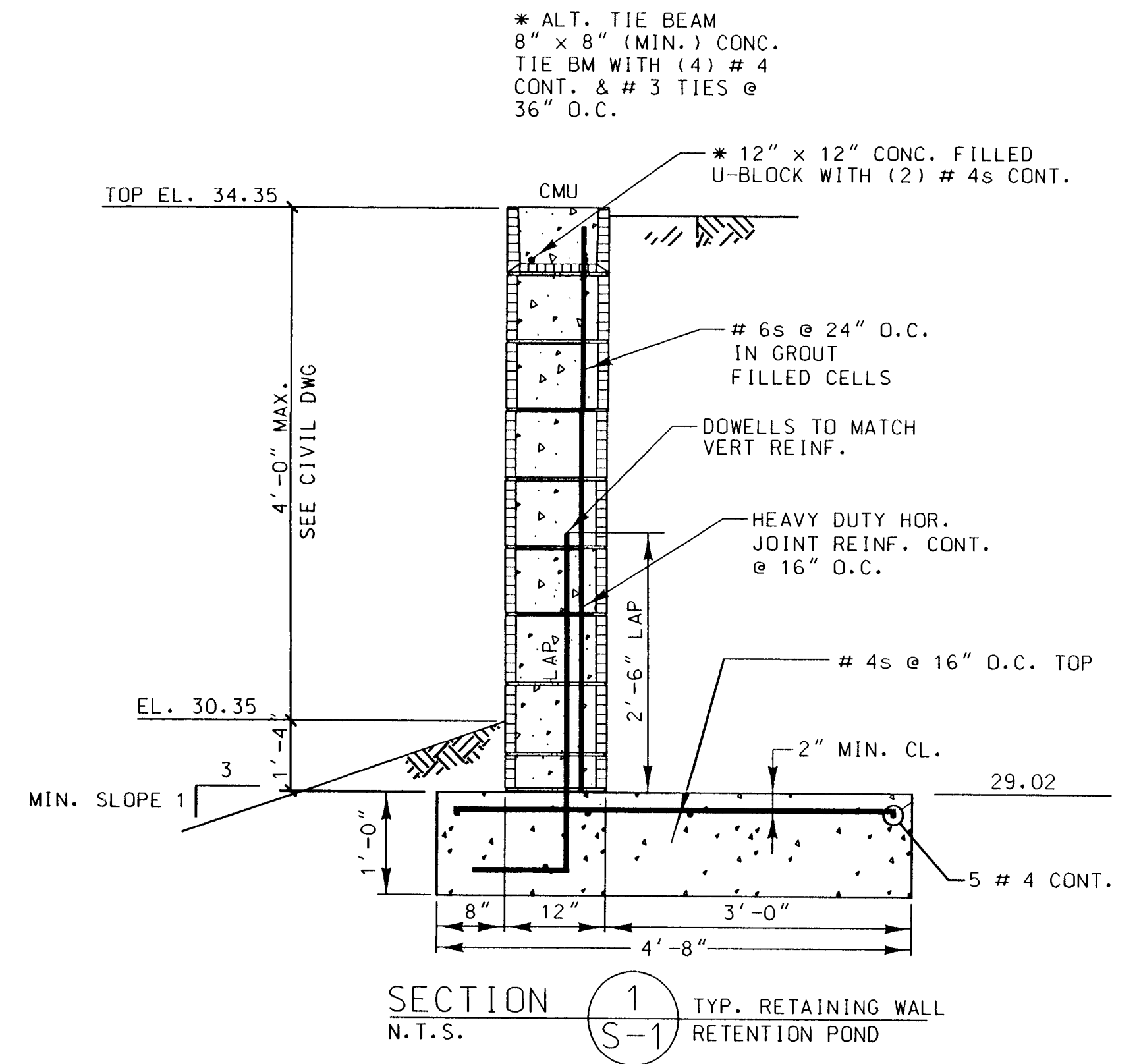
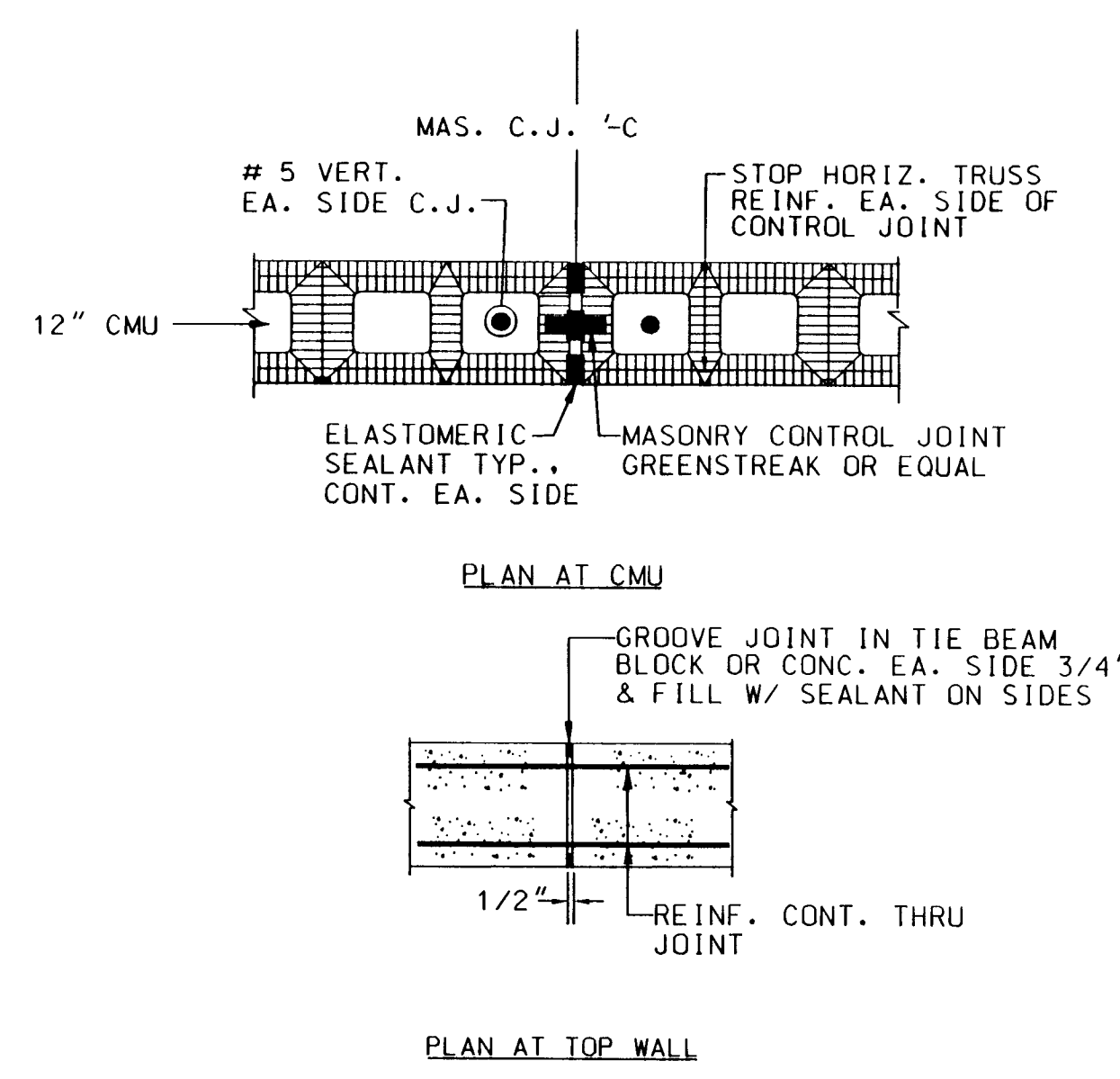
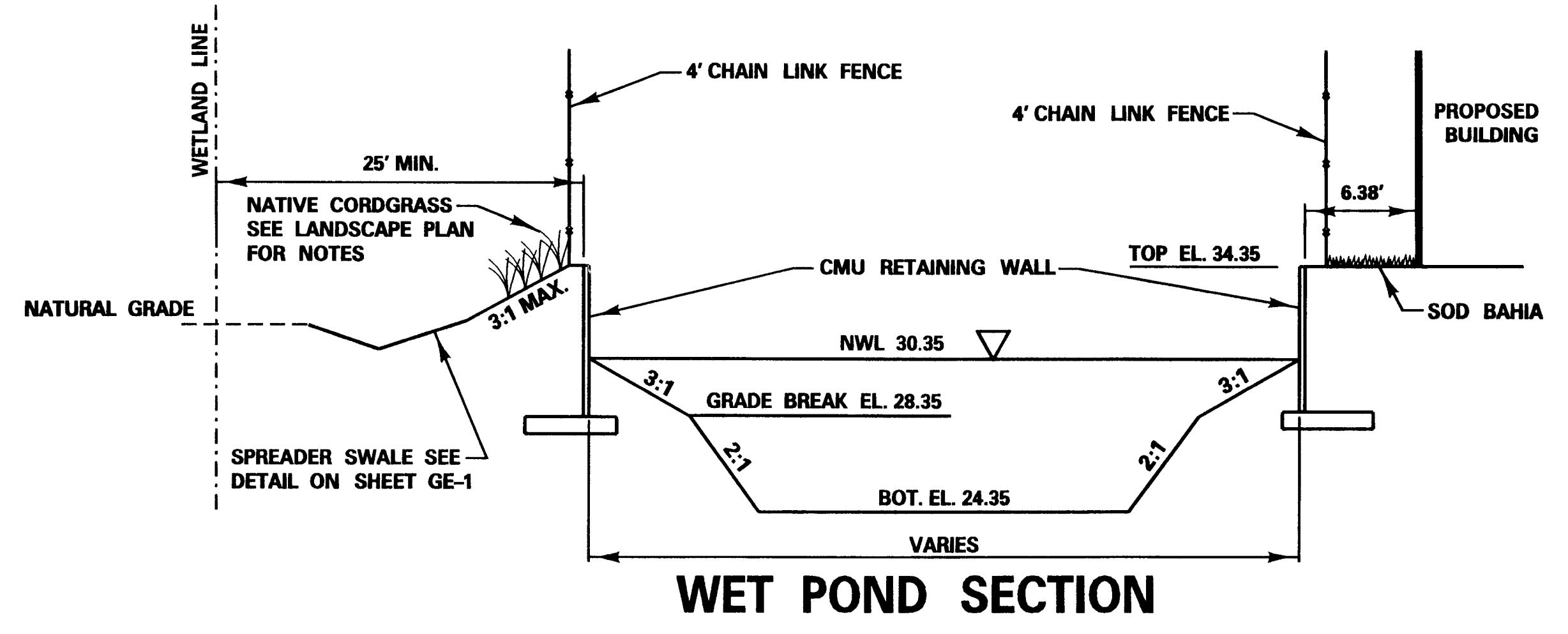
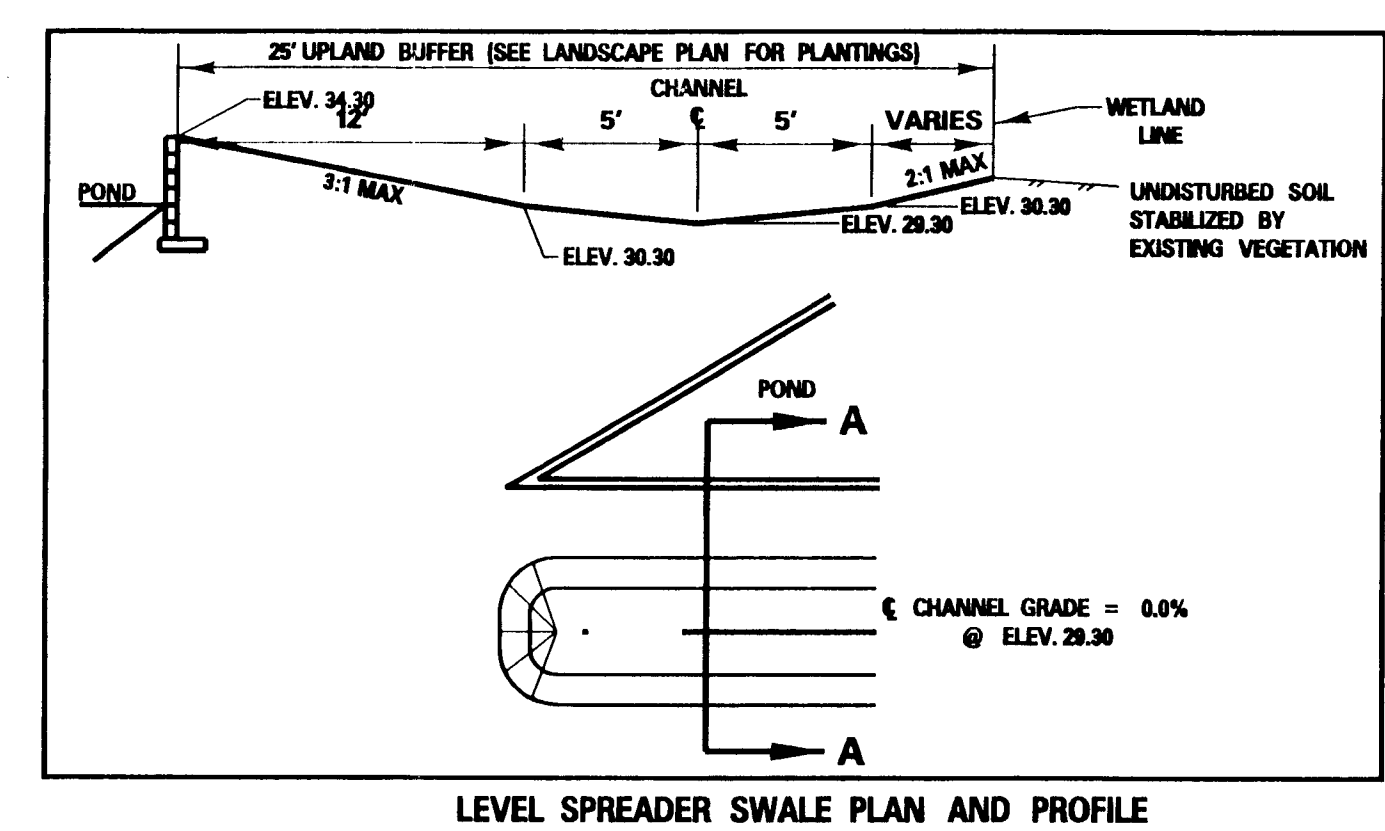
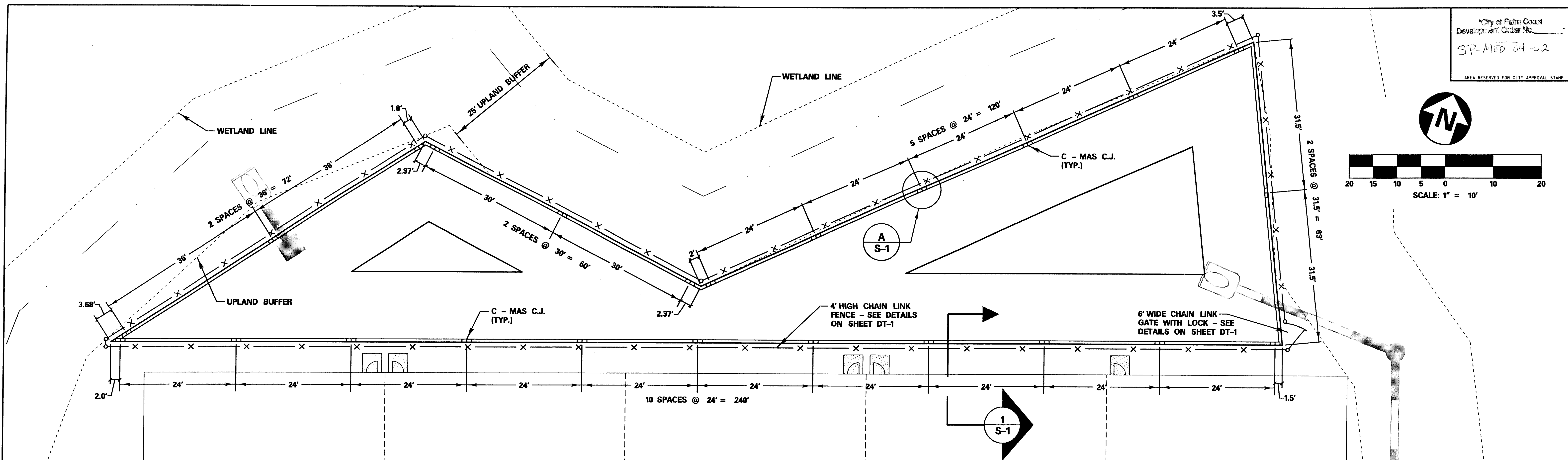
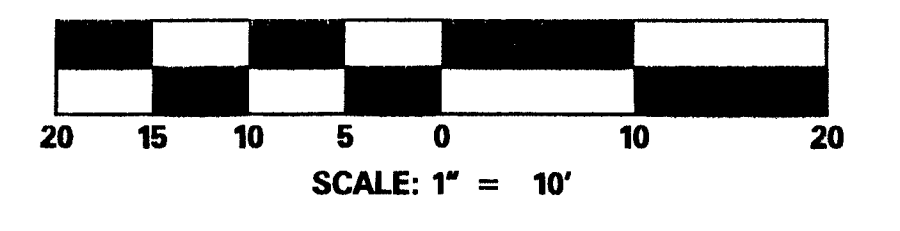
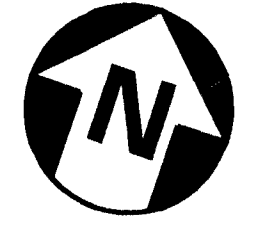
Sheet No.
IRR-1
9 of 16
Issue Date
March, 2004
Project No.
04053

Released for construction by

STORM WATER POLLUTION PREVENTION PLAN

City of Palm Coast
Development Order No. SP-1100-04-02

OWNER'S REQUIREMENTS	CONTRACTOR'S REQUIREMENTS			
<p>SITE DESCRIPTION</p> <p>PROJECT NAME: PREMIER INDUSTRIAL PARK</p> <p>LOCATION: HARGROVE GRADE - PALM COAST</p> <p>LATITUDE: 81° 16' 00"</p> <p>LONGITUDE: 29° 32' 00"</p> <p>OWNER NAME AND ADDRESS: ROBERT LEMON CONSTRUCTION, Inc. 411 S. CENTRAL AVENUE FLAGLER BEACH, FL 32909</p> <p>DESCRIPTION: INDUSTRIAL WAREHOUSE AND OFFICES</p> <p>SOIL DISTURBING ACTIVITIES WILL INCLUDE: CLEARING AND GRUBBING, EARTHWORK AND GRADING, STORM SEWER REGULATION, AND PREPARATION FOR FINAL PLANTING</p> <p>RUNOFF CURVE NUMBERS: 1. PRE-CONSTRUCTION = .70 2. DURING CONSTRUCTION = .85 3. POST-CONSTRUCTION = .85</p> <p>SOILS: SCS SURVEY FOR SOILS DATA</p> <p>SITE MAPS: * SEE ATTACHED GRADING PLAN FOR PRE & POST DEVELOPMENT GRADES, AREAS OF SOILS, DISTURBANCE, LOCATION OF SURFACE WATERS, WETLANDS, PROTECTED AREAS, MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS AND STORM WATER DISCHARGE POINTS. * SEE ATTACHED EROSION & TURBIDITY CONTROL PLAN FOR LOCATION OF TEMPORARY STABILIZATION PRACTICES AND TURBIDITY BARRIERS. * SEE GENERAL NOTES FOR REQUIREMENTS FOR TEMPORARY AND PERMANENT STABILIZATION.</p> <p>SITE AREA: 1. TOTAL AREA OF SITE = 7.29 ACRES 2. TOTAL AREA TO BE DISTURBED = 2.2 ACRES</p> <p>NAME OF RECEIVING WATERS: WETLANDS</p> <p>CONTROLS</p> <p>THIS PLAN UTILIZES BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND TURBIDITY CAUSED BY STORM WATER RUN OFF AN EROSION AND TURBIDITY PLAN HAS BEEN PREPARED TO INSTRUCT THE CONTRACTOR ON PLACEMENT OF THESE CONTROLS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AND MAINTAIN THE CONTROLS FOR PLAN AS WELL AS ENSURING THE PLAN IS PROVIDING THE PROPER PROTECTION AS REQUIRED BY FEDERAL, STATE AND LOCAL LAWS. REFER TO "CONTRACTOR'S RESPONSIBILITY" FOR A DESCRIPTION OF THE CONTROLS THAT MAY BE IMPLEMENTED.</p> <p>STORM WATER MANAGEMENT</p> <p>STORM WATER DRAINAGE WILL BE PROVIDED BY (DESCRIPTION): 1. WET DETENTION</p> <p>AREAS WHICH ARE NOT TO BE CONSTRUCTED ON, BUT WILL BE REGRADED SHALL BE STABILIZED IMMEDIATELY AFTER GRADING IS COMPLETE. WHEN CONSTRUCTION IS COMPLETE, A TOTAL OF 2.28 ACRES WILL HAVE BEEN REGRADED AND 4.50 ACRES LEFT UNDISTURBED. THE SITE DISCHARGES TO A DRY RETENTION SYSTEM WHERE PRACTICAL. TEMPORARY SEDIMENT BASINS WILL BE USED TO INTERCEPT SEDIMENT BEFORE ENTERING THE PERMANENT DETENTION / RETENTION BASIN. THE SYSTEM IS DESIGNED WITH A 3 - DAY MINIMUM RESIDENCE VOLUME. THIS IS IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY THE WATER MANAGEMENT DISTRICT FOR THIS TYPE OF DEVELOPMENT AT THE TIME OF PERMITTING.</p> <p>TIMING OF CONTROLS/MEASURES</p> <p>REFER TO "CONTRACTOR'S RESPONSIBILITY" FOR THE TIMING OF CONTROLS/MEASURES.</p> <p>CERTIFICATION OF COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS</p> <p>IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS RELATED TO STORM WATER MANAGEMENT AND EROSION AND TURBIDITY CONTROLS, THE FOLLOWING PERMITS HAVE BEEN OBTAINED:</p> <p>C.O.E. DREDGE/FILL PERMIT # N/A W.M.D. ENVIRONMENTAL RESOURCE PERMIT # PENDING</p> <p>POLLUTION PREVENTION PLAN CERTIFICATION</p> <p>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.</p> <p>SIGNED: _____ DATED: _____</p>	<p>GENERAL</p> <p>THE CONTRACTOR SHALL AT A MINIMUM IMPLEMENT THE CONTRACTOR'S REQUIREMENTS OUTLINED BELOW AND THOSE MEASURES SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IN ADDITION THE CONTRACTOR SHALL UNDERTAKE ADDITIONAL MEASURES REQUIRED TO BE IN COMPLIANCE WITH APPLICABLE PERMIT CONDITIONS AND STATE WATER QUALITY STANDARDS, DEPENDING ON THE NATURE OF MATERIALS AND METHODS OF CONSTRUCTION THE CONTRACTOR MAY BE REQUIRED TO ADD FLOCCULANTS TO THE RETENTION SYSTEM PRIOR TO PLACING THE SYSTEM INTO OPERATION.</p> <p>SEQUENCE OF MAJOR ACTIVITIES:</p> <p>THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:</p> <ol style="list-style-type: none"> 1. INSTALL STABILIZED CONSTRUCTION ENTRANCE 2. INSTALL SILT FENCES AND HAY BALES AS REQUIRED 3. CLEAR AND GRUB FOR DIVERSION SWALES/SLOPES AND SEDIMENT BASIN 4. CONSTRUCT SEDIMENTATION BASIN 5. CONTINUE CLEARING AND GRUBBING 6. STOCK PILE TOP SOIL IF REQUIRED 7. PERFORM PRELIMINARY GRADING ON SITE AS REQUIRED 8. STABILIZE DISTURBED AREAS AND STOCKPILES AS SOON AS PRACTICABLE 9. INSTALL STORM SEWER AND IRRIGATION 10. COMPLETE GRADING AND INSTALL PERMANENT SEEDINGS/ODD AND PLANTING SWALES/SLOPES AND RESEED/ODD 11. REMOVE ACCUMULATED SEDIMENT FROM BASINS 12. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ANY TEMPORARY DIVERSION SWALES/SLOPES AND RESEED/ODD AS REQUIRED <p>TIMING OF CONTROLS/MEASURES</p> <p>AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, THE SILT FENCES AND HAY BALES, STABILIZED CONSTRUCTION ENTRANCE AND SEDIMENT BASIN WILL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. STABILIZATION MEASURES WILL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, THAT AREA WILL BE STABILIZED PERMANENTLY IN ACCORDANCE WITH THE PLANS. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT WILL BE REMOVED FROM THE SEDIMENT TRAPS AND THE EARTH UNDEVELOPED WILL BE REGRADDED AND STABILIZED IN ACCORDANCE WITH THE EROSION & TURBIDITY CONTROL PLAN.</p> <p>CONTROLS</p> <p>IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE EROSION AND TURBIDITY CONTROLS AS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE CONTROLS ARE PROPERLY INSTALLED, MAINTAINED AND FUNCTIONING PROPERLY TO PREVENT TURBID OR POLLUTED WATER FROM LEAVING THE PROJECT SITE. THE CONTRACTOR WILL ADJUST THE EROSION AND TURBIDITY CONTROLS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN AND ADD ADDITIONAL CONTROL MEASURES, AS REQUIRED, TO ENSURE THE SITE MEETS ALL FEDERAL, STATE AND LOCAL EROSION AND TURBIDITY CONTROL REQUIREMENTS. THE FOLLOWING BEST MANAGEMENT PRACTICES WILL BE IMPLEMENTED BY THE CONTRACTOR AS REQUIRED BY THE EROSION AND TURBIDITY CONTROL PLAN AND AS REQUIRED TO MEET THE EROSION AND TURBIDITY REQUIREMENTS IMPOSED ON THE PROJECT SITE BY THE REGULATORY AGENCIES.</p> <p>EROSION AND SEDIMENT CONTROLS STABILIZATION PRACTICES</p> <ol style="list-style-type: none"> 1. HAY BALE BARRIER: HAY BALE BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND HILL EROSION WITH THE FOLLOWING LIMITATIONS: A. WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT. B. IN MINOR SWALES OR DITCH LINES WHERE THE MAXIMUM CONTRIBUTING DRAINAGE AREA IS NO GREATER THAN 2 ACRES. C. WHERE EFFECTIVENESS IS REQUIRED FOR LINES WITH A 3 MONTHS DRAINAGE EFFORT SHOULD BE MADE TO LIMIT THE USE OF STRAW BALE BARRIERS CONSTRUCTED IN LINE STRAINS OR IN SWALES WHERE THERE IS THE POSSIBILITY OF A WASHOUT. IF NECESSARY, MEASURES SHALL BE TAKEN TO PROPERLY ANCHOR BALES TO INSURE AGAINST WASHOUT. REFER TO THE DETAILS FOR CONSTRUCTING THE HAY BALE BARRIER AND IRRIGATION FOR PROPER LOCATION, MATERIAL, AND USAGE. 2. FILTER FABRIC BARRIER: FILTER FABRIC BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND HILL EROSION WITH THE FOLLOWING LIMITATIONS: A. WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT. B. IN MINOR SWALES OR DITCH LINES WHERE THE MAXIMUM CONTRIBUTING DRAINAGE AREA IS NO GREATER THAN 2 ACRES. REFER TO THE DETAIL SHEET FOR PROPER CONSTRUCTION OF THE FILTER FABRIC BARRIER. 3. BRUSH BARRIER WITH FILTER FABRIC: BRUSH BARRIER MAY BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND HILL EROSION WHERE ENOUGH RESIDUE MATERIAL IS AVAILABLE ON SITE. 4. LEVEL SPREADER: A LEVEL SPREADER MAY BE USED WHERE SEDIMENT-FREE STORM RUNOFF IS INTERCEPTED AND DIVERTED AWAY FROM THE GRADED AREAS ONTO UNDISTURBED STABILIZED AREAS. THIS PRACTICE APPLIES ONLY IN THOSE SITUATIONS WHERE THE SPREADER CAN BE 	<p>CONSTRUCTED ON UNDISTURBED SOIL AND THE AREA BELOW THE LEVEL UP IS STABILIZED. THE WATER SHOULD NOT BE ALLOWED TO RECONCENTRATE AFTER RELEASE. LEVEL SPREADER SHALL BE CONSTRUCTED IN ACCORDANCE TO THE DETAILS.</p> <ol style="list-style-type: none"> 6. STOCKPILED MATERIAL: NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE INTO ANY ADJACENT WATER BODY OR STORM WATER COLLECTION FACILITY. 6. EXPOSED AREA LIMITATION: THE SURFACE AREA OF OPEN, BARE, ERODIBLE SOIL EXPOSED BY CLEARING AND GRUBBING OPERATIONS OR EXCAVATION AND FILLING OPERATIONS SHALL NOT EXCEED 10 ACRES. THIS REQUIREMENT MAY BE WAIVED FOR LARGE PROJECTS WITH AN EROSION CONTROL PLAN WHICH DEMONSTRATES THAT OPENING OF ADDITIONAL AREAS WILL NOT SIGNIFICANTLY AFFECT OFF-SITE DEPOSIT OF SEDIMENTS. 7. INLET PROTECTION: INLETS AND CATCH BASINS WHICH DISCHARGE DIRECTLY OFF-SITE SHALL BE PROTECTED FROM SEDIMENT-LADEN STORM RUNOFF UNTIL THE COMPLETION OF ALL CONSTRUCTION OPERATIONS THAT MAY CONTRIBUTE SEDIMENT TO THE INLET. 8. TEMPORARY SEEDING: AREAS OPENED BY CONSTRUCTION OPERATIONS AND THAT ARE NOT ANTICIPATED TO BE RE-EXCAVATED OR DRESSED AND RECEIVE FINAL GRASSING TREATMENT WITHIN 90 DAYS SHALL BE SEEDING WITH A QUICK GROWING GRASS SPECIES WHICH WILL PROVIDE AN EARLY COVER DURING THE SEASON IN WHICH IT IS PLANTED AND WILL NOT LATER COMPETE WITH THE PERMANENT GRASSING. 8. TEMPORARY SEEDING AND MULCHING: SLOPES STEEPER THAN 4:1 THAT FALL WITHIN THE CATEGORY ESTABLISHED IN PARAGRAPH 8 ABOVE SHALL ADDITIONALLY RECEIVE MULCHING OF APPROXIMATELY 2 INCHES LOGS MEASURED OF MULCH MATERIAL CUT INTO THE SOIL OF THE SEEDING AREA ADEQUATE TO PREVENT MOVEMENT OF SEED AND MULCH. 10. TEMPORARY GRASSING: THE SEEDS OR MULCH (OR MULCH) ON OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. TEMPORARY GRASSING SHALL BE THE SAME MIX & AMOUNT REQUIRED FOR PERMANENT GRASSING IN THE CONTRACT SPECIFICATIONS. 11. TEMPORARY REGRASSING: IF, AFTER 14 DAYS FROM SEEDING, THE TEMPORARY GRASSING AREAS HAVE NOT ATTAINED A MINIMUM OF 75 PERCENT GOOD GRASS COVER, THE AREA WILL BE REWORKED AND ADDITIONAL SEED APPLIED SUFFICIENT TO ESTABLISH THE DESIRED VEGETATIVE COVER. 12. MAINTENANCE: ALL FEATURES OF THE PROJECT DESIGNED AND CONSTRUCTED TO PREVENT EROSION AND SEDIMENT SHALL BE MAINTAINED DURING THE LIFE OF THE CONSTRUCTION OR AS TO FUNCTION AS THEY WERE ORIGINALLY DESIGNED AND CONSTRUCTED. 13. PERMANENT EROSION CONTROL: THE EROSION CONTROL FEATURES OF THE PROJECT SHOULD BE DESIGNED TO MINIMIZE THE IMPACT OF THE OFFSITE FACILITIES. 14. PERMANENT SEEDING: ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION SHALL BE SEEDING. THE SEEDING SHALL BE SEEDING PROVIDED WITHIN 14 DAYS OF THE COMPLETION OF THE DISTURBED AREAS. SEEDING SHALL BE SEEDING PROVIDED WITHIN 14 DAYS OF THE COMPLETION OF THE DISTURBED AREAS. <p>STRUCTURAL REQUIREMENTS</p> <ol style="list-style-type: none"> 1. TEMPORARY DIVERSION DITCH: TEMPORARY DIVERSION DITCHES MAY BE USED TO DIVERT RUNOFF FROM A SEDIMENT TRAPPING FACILITY, AND IT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS. TEMPORARY SEDIMENT TRAP: A SEDIMENT TRAP SHALL BE INSTALLED IN AN DRAINAGE WAY AT A STORM DRAIN INLET OR AT OTHER POINTS OF DRAINAGE FROM A DISTURBED AREA. THE FOLLOWING SEDIMENT TRAPS MAY BE CONSTRUCTED EITHER INDEPENDENTLY OR IN CONJUNCTION WITH A TEMPORARY DIVERSION DITCH: A. BLOCK & GRAVEL SEDIMENT FILTER - THIS PROTECTION IS APPLICABLE WHERE HEAVY FLOWS AND/OR WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE. REFER TO THE DETAIL SHEET FOR CONSTRUCTION OF A CURB INLET SEDIMENT FILTER, AND FOR CONSTRUCTION OF A DROP INLET SEDIMENT FILTER. AREAS REFER TO THE DETAILS FOR CONSTRUCTION OF CURB INLET & DROP INLET SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES & UNPROTECTED SEDIMENT TRAP. C. DROP INLET SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (S < 1%) AND WHERE SHEET OR OVERLAND FLOWS (D < 4.5 CFS) ARE TYPICAL. THIS METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS SUCH AS IN STREET OR HIGHWAY MEDANS. REFER TO THE DETAILS FOR CONSTRUCTION OF HAY BALE & FABRIC SEDIMENT FILTER. 3. OUTLET PROTECTION: APPLICABLE TO THE OUTLETS OF ALL PIPES AND PAVED CHANNEL SECTIONS WHERE THE FLOW COULD CAUSE EROSION. A SEDIMENT PROBLEM TO THE RECEIVING WATER BODY. SILT FENCES & HAY BALES ARE TO BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE DISCHARGING STRUCTURE AS SHOWN ON THE OUTLET PROTECTION DETAIL. 4. SEDIMENT BASIN: WILL BE CONSTRUCTED AT THE COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH IN OR NEAR DISTURBED AREAS AT ONE TIME, THE PROPOSED STORM WATER POND OR TEMPORARY POND(S) WILL BE CONSTRUCTED FOR USE AS SEDIMENT BASINS. THESE SEDIMENT BASINS MUST PROVIDE A MINIMUM OF 3,000 CUBIC FEET OF STORAGE PER ACRE DRAINED UNTIL FINAL STABILIZATION OF THE SITE. 	<p>THE 3,000 CUBIC FEET OF STORAGE AREA PER ACRE DRAINED DOES NOT APPLY TO FLOWS FROM OFFSITE AREAS AND FLOWS FROM ONSITE AREAS THAT ARE EITHER UNDISTURBED OR HAVE UNDERGONE FINAL STABILIZATION. WHERE SUCH FLOWS ARE RECEIVED BOTH THE DISTURBED AREA AND THE SEDIMENT BASIN, ANY TEMPORARY SEDIMENT BASINS CONSTRUCTED MUST BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR STRUCTURAL FILL. ALL SEDIMENT COLLECTED IN PERMANENT OR TEMPORARY SEDIMENT TRAPS MUST BE REMOVED UPON FINAL STABILIZATION.</p> <p>OTHER CONTROLS</p> <p>WASTE DISPOSAL</p> <p>WASTE MATERIALS</p> <p>ALL WASTE MATERIALS EXCEPT LAND CLEARING DEBRIS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE DUMPSTER SHALL BE EMPLOYED AS NEEDED AND ALL TRASH WILL BE HAULED TO A STATE APPROVED LANDFILL. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES WILL BE POSTED AT THE CONSTRUCTION SITE BY THE CONSTRUCTION SUPERINTENDENT. THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.</p> <p>HAZARDOUS WASTE</p> <p>ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. TEMPORARY GRASSING SHALL BE THE SAME MIX & AMOUNT REQUIRED FOR PERMANENT GRASSING IN THE CONTRACT SPECIFICATIONS.</p> <p>HAZARDOUS WASTE</p> <p>ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. 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1	T.V.B.	5/18/04	Revised per City of Palm Coast and QA/QC Review Comments
2	T.V.B.	3/31/04	First Submittal to the City of Palm Coast, St. Johns River Water Management and FDEP
3			Revision

Scale: As Shown
Project Mgr: T. Benton
Designed by: T. Benton
Drawn by: K. Howell
QA/QC:



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Premier Industrial Park
Hargrove Grade
Palm Coast, Fl.

Retention Pond Plan,
Section And Details

Teresa V. Benton
5/20/04
Engineer Of Record
Teresa V. Benton
PE # 56987

Sheet No.
S-1
15 of 16
Issue Date
March, 2004
Project No.
04053

Released for construction by

EXCAVATION AND FILL FOR THE RETENSION POND ONLY

PART 1 - GENERAL
1-01 DESCRIPTION

A. The extent of excavation and fill required for the facility is shown on the drawings. Included is preparation or subgrades for retaining wall foundations.

1-02 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

B. Testing and Inspection Service: Engage an independent soil testing and inspection service to perform a soil survey for satisfactory soil materials, and field testing facilities for quality control during earth work operations.

C. Tests for Proposed Soil Materials:

1. Test soil materials proposed for use in the work and promptly submit test results reports.

2. Provide one optimum moisture-maximum density curve for each type of soil encountered in subgrade and fills under building slabs and foundations.

Determine maximum densities in accordance with ASTM D 1557.

1-03 SUBMITTALS

A. Test Reports: Submit two copies of the following reports to the Architect/Engineer:

- 1. Report and certification of granular fill.
- 2. Field density test reports.
- 3. One optimum moisture-maximum density curve for each type of soil encountered.

1-04 JOB CONDITIONS

A. Existing Utilities:

- 1. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protecting during excavation operations.
- 2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions.
- 3. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Architect.
- 4. Demolish and completely remove from the site existing underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of

PART 2 - PRODUCTS

2-01 SOIL MATERIALS

A. Backfill and Fill Materials: Satisfactory soil materials for backfill and fill, free of rock or gravel larger than 1" in any dimension, debris, waste, vegetation, and other deleterious material shall be free, clean-draining sand, with a maximum of 10 percent passing the No. 200 mesh.

PART 3 EXCAVATION

3-01 PROOF-ROLLING
A. Proof-roll & compact facility areas as recommended in the The Geotechnical investigation, a copy of which is available from the owner.

3-02 EXCAVATION

A. Earth excavation includes the removal and disposal of pavement and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as unauthorized excavation.

C. Dewatering:

1. Prevent surface water and subsurface or ground water from flowing into the excavations and flooding the project site and surrounding area.

2. Do not allow water to accumulate in excavations. Remove water from excavations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from excavations.

D. Excavation for Structures:

- 1. Conform to the elevations and dimensions shown on the drawings, within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings
- 2. In excavating for footings and foundations, take care not to disturb the bottom of the excavation.

3-03 COMPACTION

A. Percentage of Maximum Density Requirements: Compact soil to not less than the 95% of maximum dry density determined in accordance with ASTM D 1557.

1. All Areas: Compact top 12" of subgrade and each layer of backfill or fill material at 95% maximum dry density.

2. Foundation bearing level. Compact the top 12" of subgrade below all foundation bearing levels to minimum of 95% maximum dry density. plate with static weight of between 500 and 2,000 lbs. Use walk-behind vibrating sled or plate.

3-04 BACKFILL AND FILL

A. General:

1. In all areas, use satisfactory excavated or borrow material that has been sampled, & tested.

3-05 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction:

- 1. Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.
- 2. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon test), as applicable.
- 3. Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify the required densities. Make a total of two tests, on each side.
- 4. Foundation Wall Backfill: Take at least one field density test for each 50 feet of continuous wall footings. (min of 3 test)

CONCRETE, GENERAL

PART 1 - GENERAL

1-01 DESCRIPTION

A. All concrete work shown is governed by this section. Concrete strength not otherwise designated shall be 3,000 psi as determined by the use of ASTM C 31 and C 39.

1-02 QUALITY ASSURANCE

A. Codes and Standards: Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified:

- 1. ACI 301 "Specifications for Structural Concrete for Buildings."
- 2. ACI 318 "Building Code Requirements for Reinforced Concrete."
- 3. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete."
- 4. ACI 347 "Recommended Practice for Concrete Formwork."
- 5. ACI Manual 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

B. Concrete Testing Service:

1. The Contractor shall employ, a testing laboratory experienced to design concrete mixes, and to perform with form removal and strength tests associated testing of the concrete during the process of the work.

1-03 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI Manual 315 in detailing reinforcing.

PART 2 - PRODUCTS

2-01 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, type I cement

B. Aggregates: Conform to ASTM C-33.

C. Water: Clean, fresh, drinkable.

D. Admixtures:

- 1. Air-Entraining Admixture: ASTM C 260.
- 2. Water-Reducing Admixture: ASTM C 494, Type A.
- 3. Set-Control Admixture: ASTM C 494, as follows:
 - a. Type D, Water-reducing and Retarding
 - b. Type E, Water-reducing and Accelerating
- 4. Fly Ash: ASTM C618, Type F
- 5. Calcium Chloride: Do not use calcium chloride in concrete.

E. Epoxy Adhesive: Use Sikadur 35, Hi-Mod LV (as recommended by the manufacturer SIKA Corp.) or equal.

2-04 REINFORCING MATERIALS

A. Reinforcing: ASTM A615, Grade 60.

B. Supports for Reinforcing: Conform to applicable codes and standards.

2-05 PROPORTIONING AND DESIGN OF MIXES

A. All concrete shall contain a minimum of five sacks of cement per cubic yard.

B. Slump Limits: All concrete, unless otherwise noted, 2" to 4"; grout for reinforced masonry, 5" to 10".

C. Proportion mixes by either laboratory trial batch or field experience methods, using materials to be employed on the project for each class of concrete as required, complying with ACI 211.1 for normal weight concrete.

D. Admixtures:

1. Use air-entraining admixture in all concrete, 3-6 percent entrained air.

PART 3 - EXECUTION

3-01 CONCRETE MIXING

A. Use Only Ready-Mix Concrete: Comply with the requirements of ASTM C94.

1. A delivery ticket showing truck number, date, and time that mixing was started shall be given to the Contractor's superintendent at the job site before placing the concrete from the truck mixer.

3-02 FORMWORK: Design of all formwork is the Contractor's responsibility. Conform to applicable standards and ACI 347.

Comply with ACI 347 for shoring and reshoring.

3-03 PLACING REINFORCING: Conform to CRSI "Manual of Standard Practice" and other noted applicable codes and standards. Clean reinforcing of loose rust, mill scale and other items that reduce or destroy the bond.

3-04 CONCRETE PLACEMENT: Conform to ACI 304. All concrete shall be consolidated by internal vibration with mechanical vibrators per ACI 304.

3-05 CONCRETE CURING: Start curing as soon as free water has disappeared from concrete surface. Cure for at least 7 days in accordance with ACI 301.

3.06 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction:

- 1. Slump: ASTM C143; one test for each concrete load at point of discharge; and one for each set of compressive strength test specimens.
- 2. Compression Test Specimens: ASTM C 31; one set of 3 standard cylinders for each compressive strength.
- 3. Compressive Strength Tests: ASTM C 39; one set for each 100 cubic yards or fraction thereof, of each mix design placed in any one day; 1 specimen tested at 7 days, 2 specimens tested at 28 days.

MASONRY WORK

PART 1-GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of unit masonry work is shown on the drawings. comply with all flashing Requirements and block type shown on the architectural drawings.

1.02 WORKMANSHIP

- A. Maintain all vertical and horizontal lines straight and plumb, and erect all walls plumb, true, clean and smooth. Maximum allowable construction tolerances are as follows:
 - 1. Variation from plumb: for vertical lines and surfaces of columns, 1/4" in 10'.
 - 2. Variation from level: 1/4" in any bay or 20' maximum, nor 3/4" in 40' or more.
 - 3. Variation of linear building line: from position shown on plans, 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.
 - 4. Variation in cross-section dimensions: for columns and thicknesses of walls from dimensions shown, do not exceed, do not exceed minus 1/4" nor plus 1/2".

1.03 SUBMITTALS

A. Submit shop drawings for fabrication, bending and placement of reinforcing bars. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforcing for Concrete Structures".

1.04 JOB CONDITIONS

A. Do not apply uniform floor or roof loads for at least 24 hours after building masonry walls or columns. Do not apply concentrated loads for three days.

PART 2- PRODUCTS

2.01 HOLLOW CONCRETE MASONRY UNIT (CMU)

A. Type of Units: Normal weight load-bearing units conforming to ASTM C90, Grade N aggregates conforming to ASTM C33 units shall have dry, net unit weight of not less than 125 lbs. per cubic ft.

B. Lightweight units may be used in lieu of normal weight units; conforming to ASTM C90, Grade N. Provide lightweight units using aggregate conforming to ASTM C331 with a dry, net unit weight of not more than 105 lbs. per cubic feet.

2.02 MORTAR MATERIALS

A. Portland Cement: ASTM C150, Type I.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate for Masonry: Sand, ASTM C144

2.03 MORTAR

A. Mortar ASTM C270, Type M or S.

B. Mixing: Combine cement, lime, water and aggregates for a minimum of 5 minutes in a mechanical batch mixer. Do not use mortar or grout that has begun to set or if more than 1-1/2 hours has elapsed after initial mixing. Do not use air-entraining agents or other admixes.

C. For grout, see reinf. masonry section below.

PART 3- EXECUTION

3.01 INSTALLATION - GENERAL

- A. Lay CMU units with full shell mortar beds. Fill vertical end joints (end joints between units) solidly with mortar from face of units to a distance behind face of unit equal to not less than the thickness of the longitudinal face shells. Provide 3/8" joints.
- B. Unless otherwise noted lay CMU wall units in 1/2 running bond with vertical joints in each course centered on units in courses above and below. Bond and interlock each course at corners and intersections. Maintain continuity of cell cavities which are to be grouted.

REINFORCED UNIT MASONRY

PART 1-GENERAL

1.01 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication, bending and placement of reinforcement bars. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

PART 2- PRODUCTS

2.01 MATERIALS

A. Reinforcement bars: Provide deformed bars of following grades complying with ASTM A616.

2.02.1 Horizontal Joint Reinforcing (Continuous Wire Reinforcing): Provide wire units fabricated from cold-drawn steel wire conforming to ASTM A82, with deformed side rods and smooth cross rods, and a unit width of 1-1/2" to 2" less than wall thickness. Use ladder-type with 3/16" diameter side rods and 9-gage cross rods.

PART 3- EXECUTION

3.01 PLACING REINFORCEMENT

- A. Splice reinforcement bars where shown.
- B. Provide horizontal joint reinforcing at 16" o.c. vertically in all masonry walls unless otherwise noted.
- C. min. lap shall be 48 bar dia unless otherwise noted.

3.02 INSTALLATION, GENERAL

A. Temporary Formwork: Provide formwork and shores as required for temporary support of reinforced masonry elements.

City of Palm Coast
Development Order No. _____
SP-100-04-02
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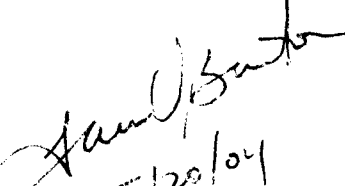
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No.	By	Date		Revision	

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Project Mgr: T. Benton
Designed by: N/A
Drawn by: N/A
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Structural Specifications


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