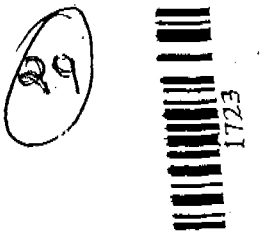
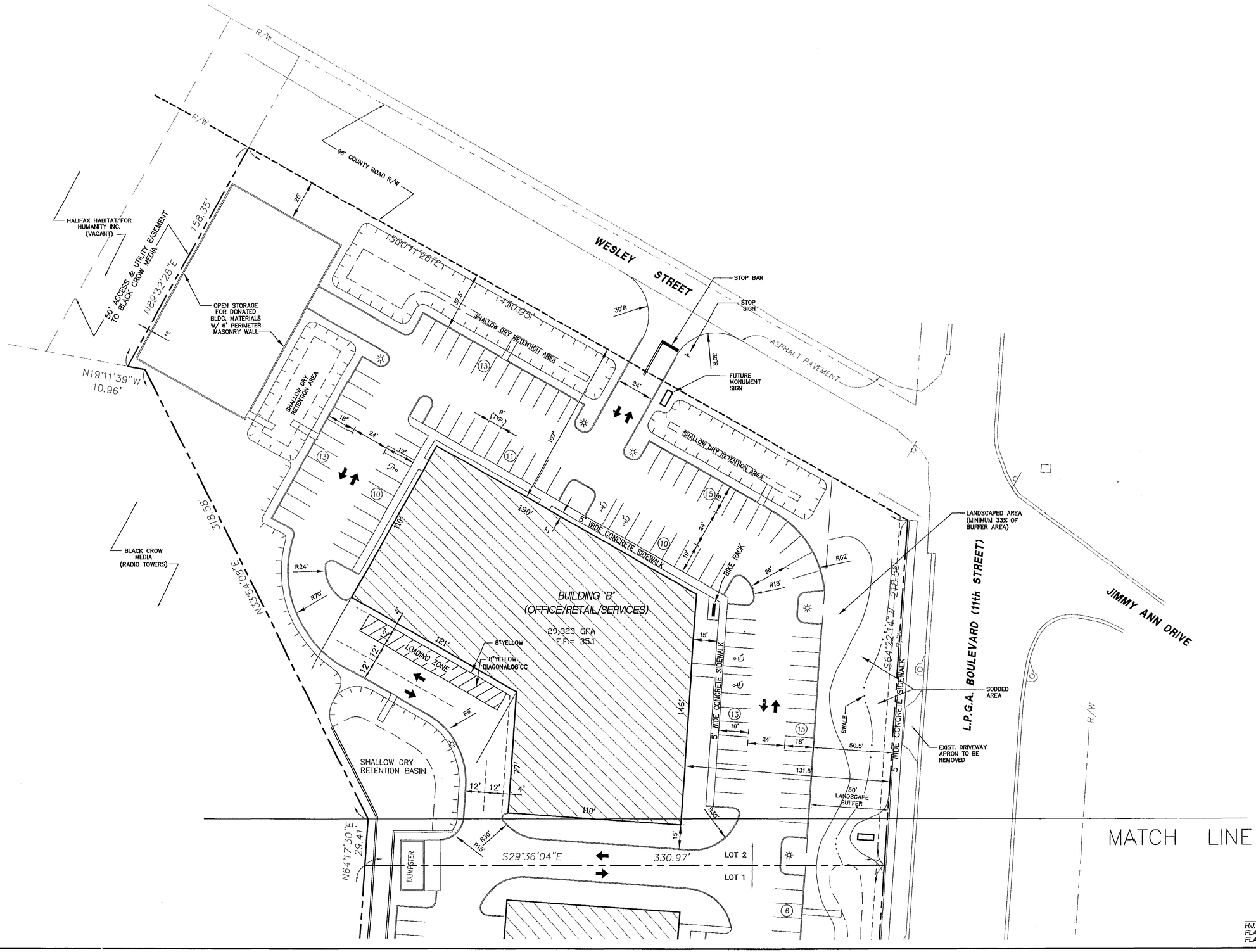
63181-2



Oversized Drawings

1723



FINAL PERMITTED PLANS

DATE Sheets C-2, C-4, C-6, C-8, C-13 as

INITIAL Amendment to plans rec'd Aug. 15, 2003

LEGEND

☼ = YARD LIGHT

63181-2

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H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

9/15/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

SITE PLAN
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-SITES
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 08/12/03
SHEET C-2

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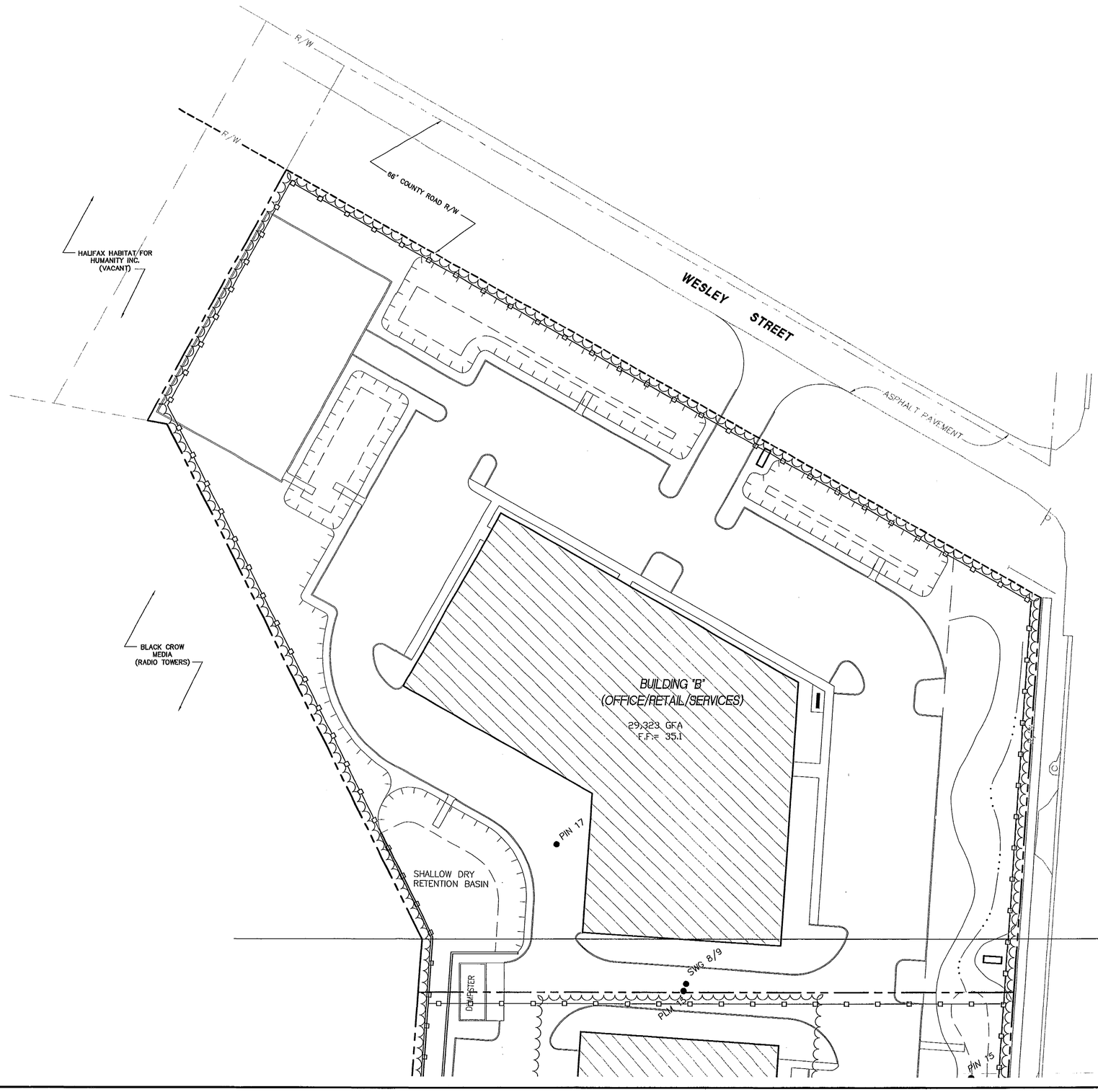

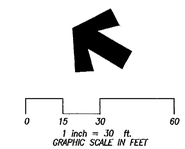

LEGEND

CLEARING LIMITS

SILT FENCE

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH
FLAGLER/PALM COAST
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email: tomoka@tomoka-eng.com
website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

CLEARING and EROSION CONTROL PLAN
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM

DRAWING REFERENCE NO.
1159-SITES

REVISION NO./DATE
SEE REVISION TABLE

ORIGINAL ISSUE DATE
08/12/03

SHEET
C-4

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

9/15/03

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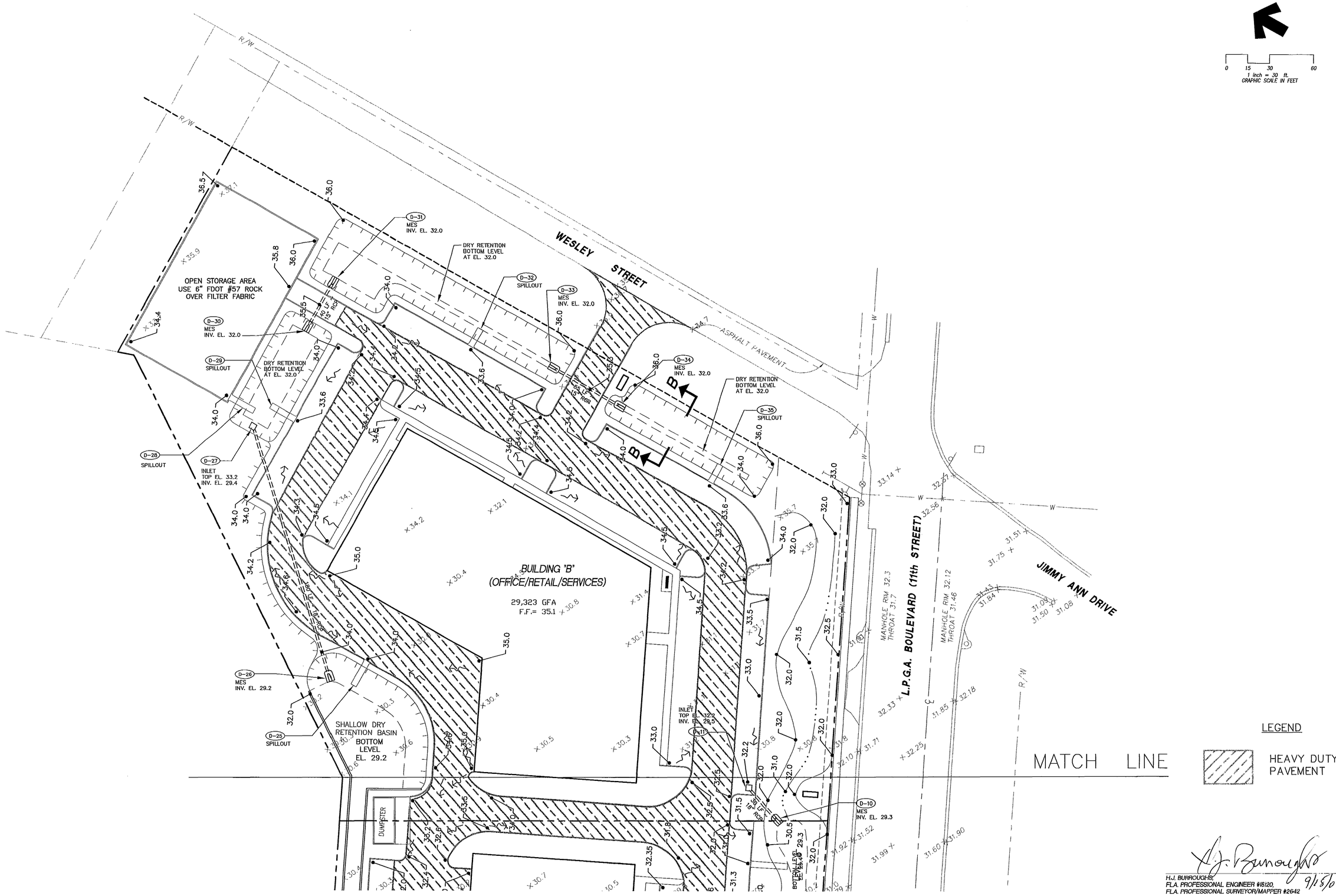

H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

9/15/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
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REVISIONS

NO.	DATE	DESCRIPTION

DRAINAGE, GRADING and PAVING PLAN

HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
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DRAWING REFERENCE NO.
1159-SITES

REVISION NO./DATE
SEE REVISION TABLE

ORIGINAL ISSUE DATE
08/12/03

SHEET
C-6

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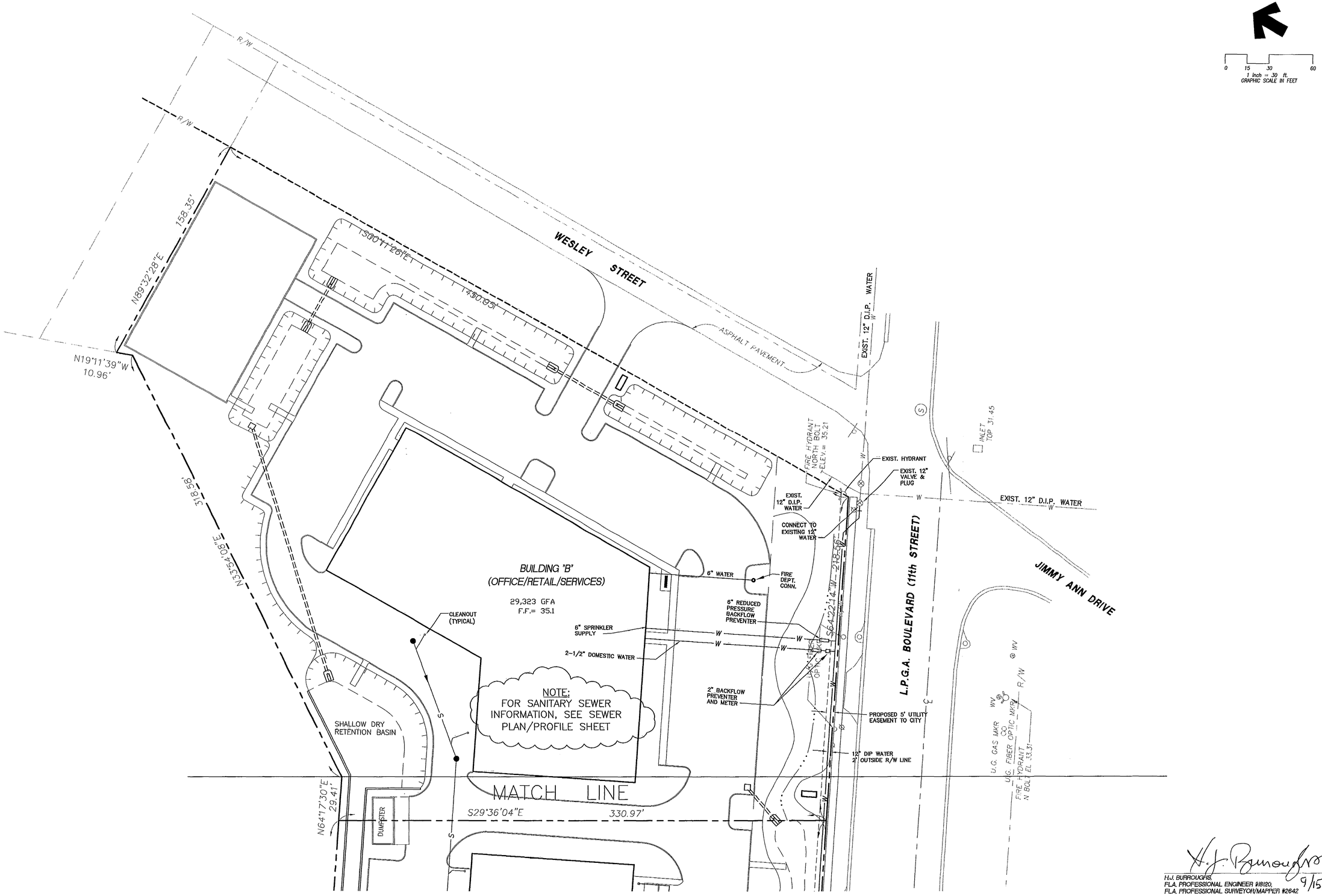

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REVISIONS

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UTILITY PLAN

HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM

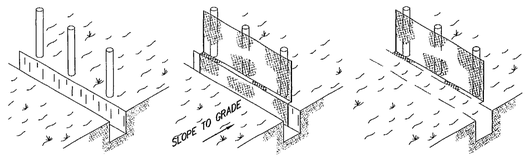
DRAWING REFERENCE NO.
1159-SITES

REVISION NO./DATE
SEE REVISION TABLE

ORIGINAL ISSUE DATE
08/12/03

SHEET
C-8

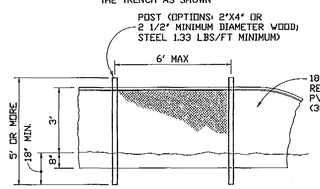
H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
9/15/03



SET POST AND EXCAVATE A TRENCH

ATTACH FILTER FABRIC TO POST ALLOWING 1 FT EXTENSION INTO THE TRENCH AS SHOWN

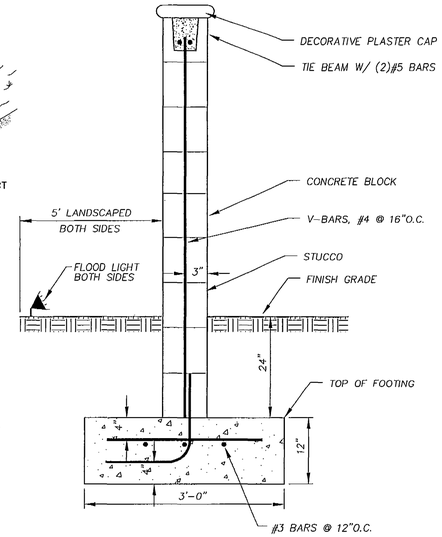
BACKFILL AND COMPACT EXCAVATED SOIL



NOTES:

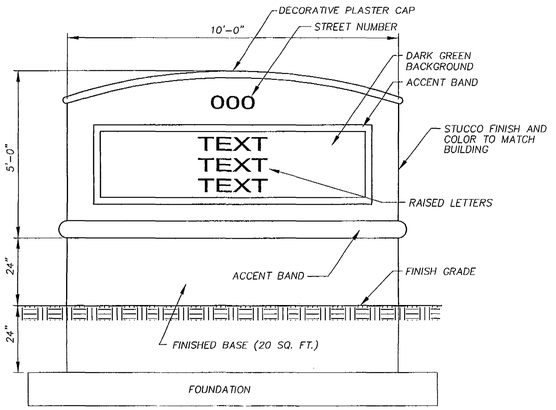
1. MATERIALS, CONSTRUCTION METHODS AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DESIGN STANDARDS CURRENT EDITION.
2. CONTRACTOR SHALL PROVIDE SILT FENCES AND HAY BALES AT ALL STORMWATER DISCHARGE POINTS FOR EROSION CONTROL AND SEDIMENT CONTROL DURING CONSTRUCTION.
3. CONTRACTOR SHALL ROUGH GRADE STORMWATER SWALES AND RETENTION AREAS PRIOR TO CONSTRUCTION OF SITE IMPROVEMENTS.
4. CONTRACTOR SHALL MEET ALL PERMIT CONDITIONS AS ESTABLISHED BY THE CITY OF DAYTONA BEACH AND ALL OTHER APPLICABLE AGENCIES, INCLUDING BUT NOT LIMITED TO COUNTY, FDOT, AND THE SJRWMD.

STAKED SILT FENCE DETAIL



TYPICAL SIGN SECTION

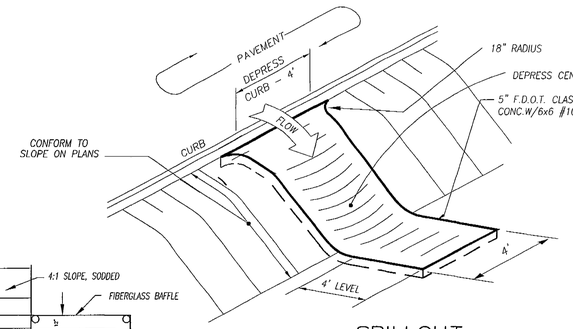
NOT TO SCALE



MONUMENT SIGN

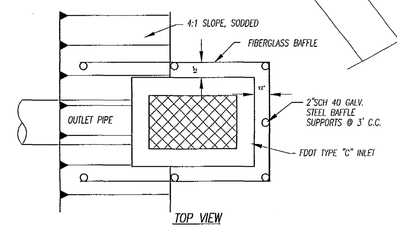
(3 PROPOSED)

NOT TO SCALE

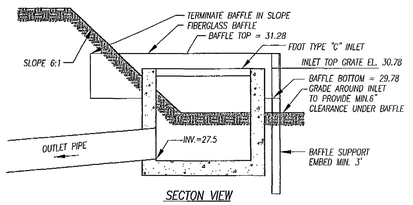


SPILLOUT

NOT TO SCALE



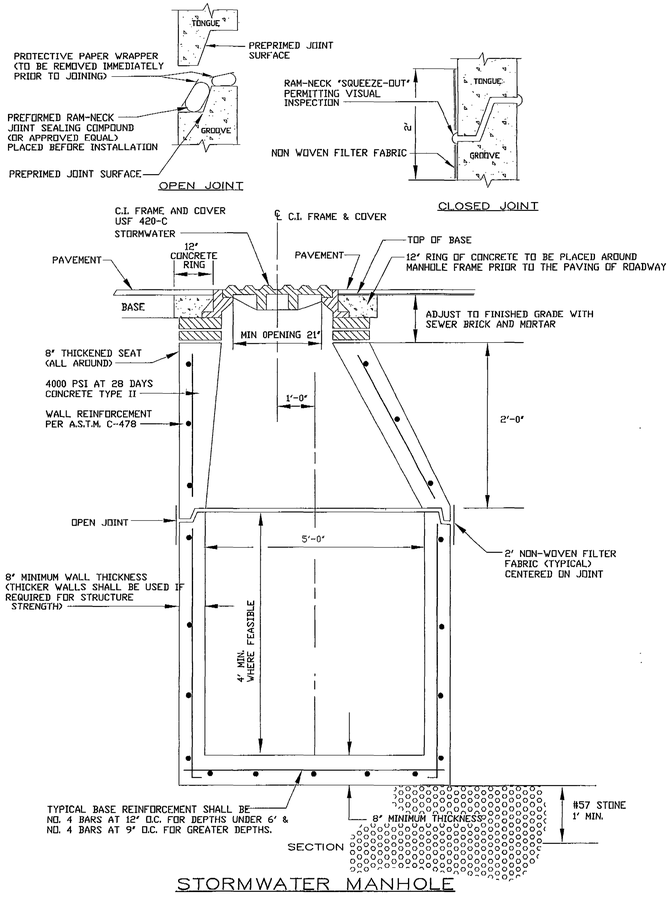
TOP VIEW



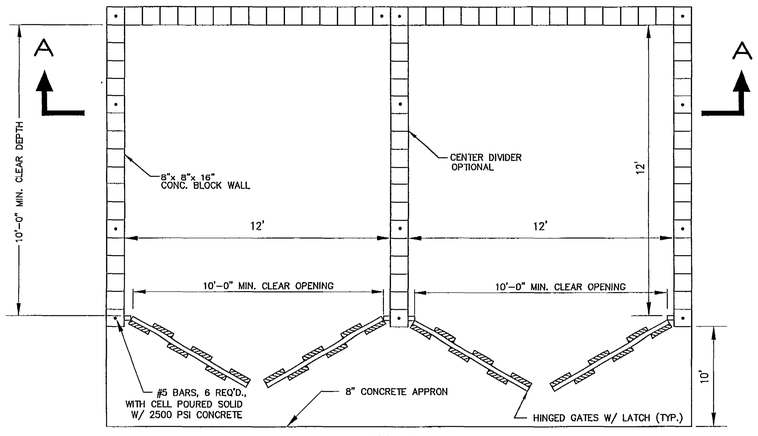
SECTON VIEW

CONTROL STRUCTURE "D-51"

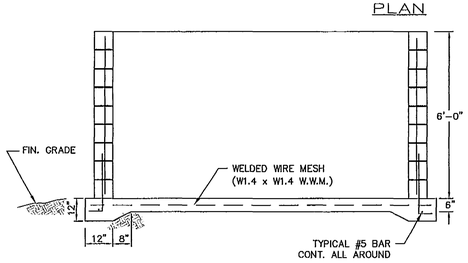
NOT TO SCALE



STORMWATER MANHOLE



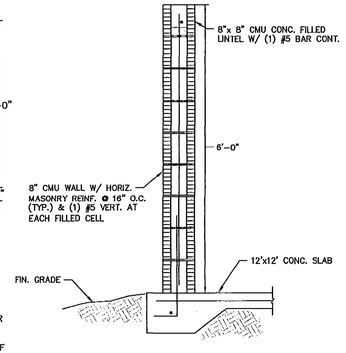
PLAN



SECTION A-A

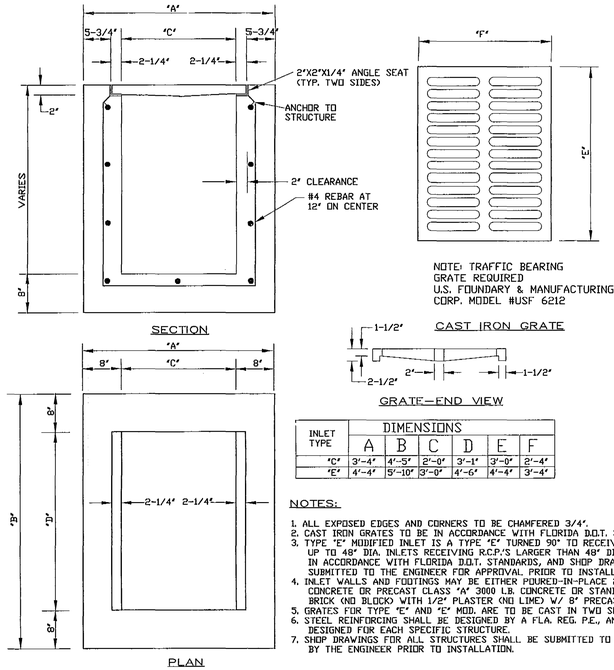
NOTES:

1) BLOCK MUST BE FINISHED WITH STUCCO OR BRICK VENEER PAINTED TO MATCH BUILDING.
2) DUMPSTER STRUCTURE SHALL MEET THE REQUIREMENTS OF SECTION 2.1 OF THE LAND DEVELOPMENT CODE (LDC).
3) SHRUB PLANTINGS REQUIRED (MIN. 3-FOOT WIDE PLANTING AREA) AROUND PERIMETER WALLS (EXCEPT OPENING).
4) GATES TO BE CONSTRUCTED OF CHAIN-LINK PLASTIC WITH STRIPPING OR OF PRESSURE-TREATED WOOD.
5) DUAL-USE ENCLOSURE USED FOR REFUSE AND RECYCLING.



WALL SECTION

DUMPSTER PAD



SECTION

PLAN

NOTE: TRAFFIC BEARING
GRATE REQUIRED
U.S. FOUNDARY & MANUFACTURING
CORP. MODEL #USF 6212

CAST IRON GRATE

GRATE-END VIEW

INLET TYPE	DIMENSIONS					
	A	B	C	D	E	F
'C'	3'-4"	4'-5"	2'-0"	3'-1"	3'-0"	2'-4"
'E'	4'-4"	5'-10"	3'-0"	4'-6"	4'-4"	3'-4"

NOTES:

1. ALL EXPOSED EDGES AND CORNERS TO BE CHAMFERED 3/4".
2. CAST IRON GRATES TO BE IN ACCORDANCE WITH FLORIDA D.I.T. SPECS.
3. TYPE 'E' MODIFIED INLET IS A TYPE 'E' TURNED 90° TO RECEIVE R.C.P.'S UP TO 48" DIA. INLETS RECEIVING R.C.P.'S LARGER THAN 48" DIA. SHALL BE IN ACCORDANCE WITH FLORIDA D.I.T. STANDARDS, AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
4. INLET WALLS AND FOOTINGS MAY BE EITHER POURED-IN-PLACE 2500 L.B. CONCRETE OR PRECAST CLASS 'A' 3000 L.B. CONCRETE OR STANDARD MANHOLE BRICK (NO BLOCK) WITH 1/2" PLASTER (NO LIME) W/ 8" PRECAST CAP.
5. GRATES FOR TYPE 'E' AND 'E' MOD. ARE TO BE CAST IN TWO SECTIONS.
6. STEEL REINFORCING SHALL BE DESIGNED BY A F.L.A. REG. P.E., AND BE DESIGNED FOR EACH SPECIFIC STRUCTURE.
7. SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

FDOT TYPE 'C' & 'E' INLET

63181-2
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H.J. BURROUGHS,
F.L.A. PROFESSIONAL ENGINEER #18120,
F.L.A. PROFESSIONAL SURVEYOR/MAPPER #2642
9/15/03

TOMOKA ENGINEERING
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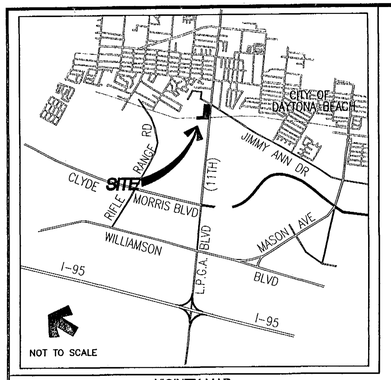
REVISIONS

NO.	DATE	DESCRIPTION

STANDARD MISCELLANEOUS DETAILS
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-CD3
REVISION NO./DATE
SEE REVISION TABLE
ORIGINAL ISSUE DATE
08/12/03
SHEET
C-13



VICINITY MAP

AS-BUILTS

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE.
DAYTONA BEACH, FLORIDA
AS-BUILT CERTIFICATION

AS-BUILT INFORMATION IS SHOWN AND IS BASED ON A FIELD SURVEY PERFORMED UNDER THE RESPONSIBLE CHARGE OF THE UNDERSIGNED. THIS SURVEY COMPLIES WITH THE TECHNICAL STANDARDS FOR LAND SURVEYS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE.

H.J. BURROUGHS
FLORIDA PROFESSIONAL ENGINEER #18120
FLORIDA PROFESSIONAL SURVEYOR/MAPPER #2642

12/7/04

63181-2

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE.
DAYTONA BEACH, FLORIDA
ENGINEER'S
AS-BUILT CERTIFICATION

AS BUILT INFORMATION CONTAINED HEREON WAS COMPILED FROM DATA OBTAINED BY THE PROJECT'S REGISTERED LAND SURVEYOR. BASED ON THIS INFORMATION AND MY SITE INSPECTIONS, I HEREBY CERTIFY THAT THE WATER, SANITARY SEWER, DRAINAGE SYSTEMS, & PAVING HAVE BEEN COMPLETED IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED PLANS AND THAT ANY DEVIATION SHOWN HEREON WILL NOT SUBSTANTIALLY AFFECT THE ABILITY OF THE SYSTEM TO FUNCTION AS DESIGNED.

H.J. BURROUGHS

DATE: 12/7/04

PE No. 18120

TOMOKA ENGINEERING
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REVISIONS

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SITE PLAN
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-ASBUILTS
REVISION NO./DATE
SEE REVISION TABLE
ORIGINAL ISSUE DATE
08/12/03
SHEET
C-1

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DEC 08 2004
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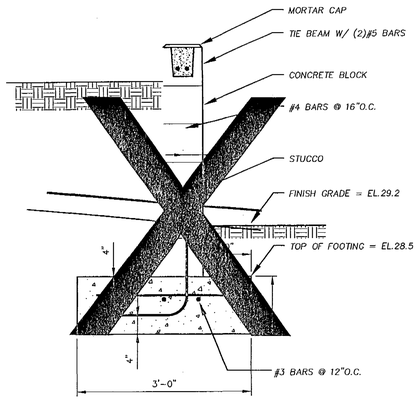

TYPICAL WALL SECTION

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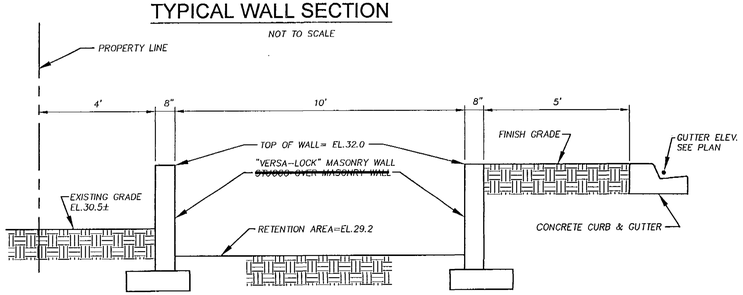

SECTION A-A

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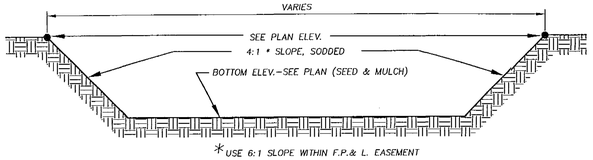

SECTION B-B

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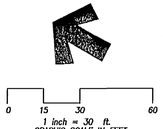

SOIL TEST AB-1
GROUND=30.3
SHWT=27.8

SOIL TEST AB-3
GROUND=30.2
SHWT=28.2

SOIL TEST AB-5
GROUND=30.5
SHWT=28.4

SOIL TEST AB-4
GROUND=30.2
SHWT=28.0

LOT-1

FUTURE PHASE-2 ADDITION

GRADE & COMPACT BUILDING PAD TO EL. 32.6

SEED AND MULCH DISTURBED AREA

D-23 SPILLOUT

D-6 SPILLOUT

D-21 PIPE THRU WALL
INV. EL. 29.2
INV. EL. 29.3

D-22 SPILLOUT

SHALLOW DRY RETENTION AREA

126' PHASE 1 BLDG.

JUNCTION MANHOLE
TOP EL. 32.7
INV. EL. 29.1

D-2 BIKE RACK

DUMP STER

TOP FORCE MAIN 28.5
STORM INV.=29.1

154 ~~165~~ LF DOUBLE 24" RCP

D-5 SPILLOUT

80 LF 24"-19"x30" RCP

D-3 MES
INV. EL. ~~29.0~~ 28.9

D-4 SPILLOUT

TOP FORCE MAIN 28.2
STORM INV.=29.2

D-1 MES
INV. EL. ~~29.0~~
INV. EL. 28.6

D-40 SPILLOUT

INV. EL. 28.9
INV. EL. 29.0

MES D-20

D-41 SPILLOUT
INV. EL. ~~29.0~~
INV. EL. 29.2

SHALLOW DRY RETENTION AREA
BOTTOM LEVEL EL. 29.0

D-51 CONTROL STRUCTURE - SEE DETAIL

92 LF-19"x30" RCP

D-51A JCT. MH.
TOP=EL. ~~30.0~~ 31.2
INV. EL. 27.9

D-51C JCT. MH.
TOP=EL. ~~30.0~~ 30.6
INV. EL. 27.7

D-51B CONNECT TO EXIST. MH
TOP=EL. 30.5
INV. EL. 27.6

EXIST. 30" RCP

MANHOLE RIM 31.74
THROAT 31.19

TELE MANHOLE

L.P.G.A. BOULEVARD (11th STREET)

TOP OF BANK

WATER'S EDGE

AS-BUILT ELEVATION LEGEND

31.0 = PLAN GRADE

×30.7 = AS-BUILT GRADE

NOTE: GROUND ELEVATION MEASURED WITHOUT SOD.

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H.J. BURROUGHS
DATE: 12/7/04 PE No. 18120

AS-BUILTS

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HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM

DRAWING REFERENCE NO.
1159-ASBUILTS

REVISION NO./DATE
SEE REVISION TABLE

ORIGINAL ISSUE DATE
08/12/03

SHEET
C-2

RECEIVED
DEC 08 2004
PAL

MATCH LINE SEE SHT-4

0 15 30 60
1 Inch = 30 ft.
GRAPHIC SCALE IN FEET

PLUG VALVE
CHECK VALVE
TAPPING VALVE

LOT-1

FUTURE PHASE-2
ADDITION

FUTURE CONSTRUCTION

NOT INSTALLED

SHALLOW DRY RETENTION AREA

10'x20' LUNCH SHELTER

78 LF-8" PVC @ 0.40%

CLEAN-OUT

CLEAN-OUT

XXX

XXX

MANHOLE
TOP EL.32.58
INV.(E) EL.27.78
INV.(SW) EL.27.69

65 LF-8" PVC @ 0.40%

ELECTRIC PANEL
LIFT STATION
TOP EL.32.82
INV. EL.27.42
BOTTOM EL.24.13

DUMP VALVE

112 LF-8" PVC @ 0.40%

CLEAN-OUT

BIKE RACK

135.9' PHASE 1 BLDG.

TEMP. CAP AT END OF PHASE 1 WATER

6" REDUCED PRESSURE BACKFLOW PREVENTER

6" SPRINKLER SUPPLY

2-1/2" DOMESTIC WATER

2" WATER

6" BACKFLOW PREVENTER AND METER

6" WATER

FIRE DEPT. CONN.

12" DIP WATER 2' OUTSIDE R/W LINE

HYDRANT ASSEMBLY

PROPOSED 5' UTILITY EASEMENT TO CITY

TELE MANHOLE

L.P.G.A. BOULEVARD (11th STREET)

6" GATE VALVE & BOX
2-1/2" GATE VALVE W/ BOX

12" DIP WATER

PROPOSED 10' UTILITY EASEMENT TO CITY

WATER UNDER EXIST. FM - 18" CLEAR

6" REDUCED PRESSURE BACKFLOW PREVENTER

FIRE DEPT. CONN.

6" FIRE SUPPLY

6" VALVE

ELECTRICAL TRANSFORMER

HYDRANT ASSEMBLY

12" VALVE

20 LF STUB & PLUG

PROPOSED 5' UTILITY EASEMENT TO CITY

IRRIG.WELL

SHALLOW DRY RETENTION AREA

EXIST. 30"

TOP OF BANK

WATER'S EDGE

FM

A/U

W

S

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE.
DAYTONA BEACH, FLORIDA

AS-BUILT CERTIFICATION

AS-BUILT INFORMATION IS SHOWN AND IS BASED ON A FIELD SURVEY PERFORMED UNDER THE RESPONSIBLE CHARGE OF THE UNDERSIGNED. THIS SURVEY COMPLIES WITH THE TECHNICAL STANDARDS FOR LAND SURVEYS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE.

H.J. BURROUGHS 12/7/04
H.J. BURROUGHS
FLORIDA PROFESSIONAL ENGINEER #18120
FLORIDA PROFESSIONAL SURVEYOR/MAPPER #2642

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE.
DAYTONA BEACH, FLORIDA
ENGINEER'S AS-BUILT CERTIFICATION

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H.J. BURROUGHS
DATE: 12/7/04 PE No. 18120

ASBUILTS

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

UTILITY PLAN
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
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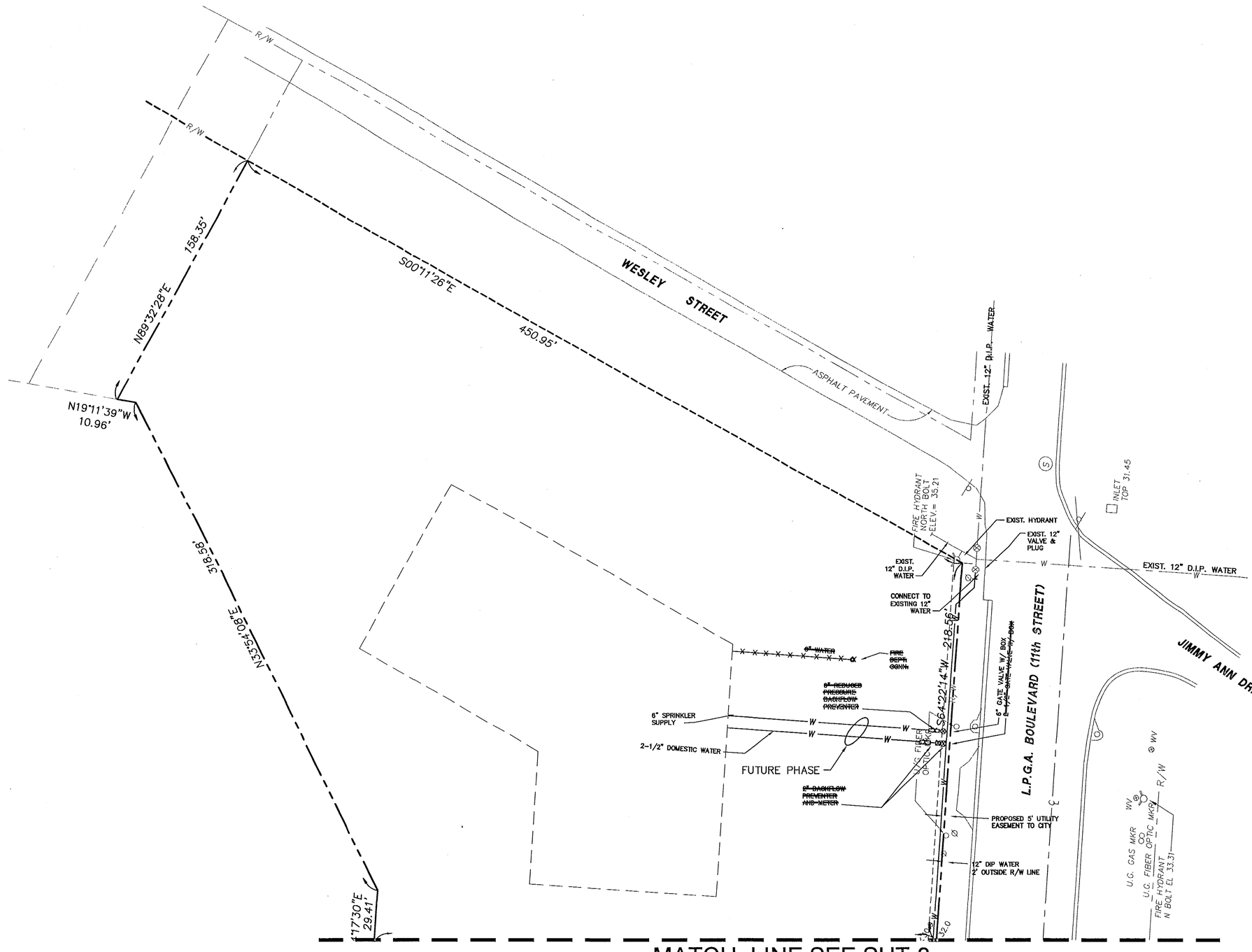

0 15 30 60
1 inch = 30 ft.
GRAPHIC SCALE IN FEET

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(LB NO. 0002232)
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DAYTONA BEACH, FLORIDA

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12/7/04

H.J. BURROUGHS
FLORIDA PROFESSIONAL ENGINEER #38120
FLORIDA PROFESSIONAL SURVEYOR/MAPPER #2642

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DAYTONA BEACH, FLORIDA

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H. J. BURROUGHS

DATE: 12/7/04 PE No. 38120

AS-BUILTS

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Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL. 32114
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REVISIONS

NO.	DATE	DESCRIPTION

UTILITY PLAN
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-ASBUILTS
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 08/12/03
SHEET C-4

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DEC 08 2004
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H-20 LSMCo Grinder/Pac.

LSMCo INC.

PART 1 – GENERAL

1. 01 Furnish and install two grinder pumps to deliver (1) GPM against a total head of (2) feet Total Dynamic Head (TDH). Pumps shall be capable of handling domestic sewage with minimal maintenance. The motor shall be (11) HP, (10) RPM, (12) VOLT/(12) PHASE/ 60 HERTZ.

Pumps, control system, and FRP (fiberglass reinforced polyester) wetwell shall be LSMCo Grinder/Pac. provided and manufactured by Lift Station Management & Co., Inc. of Longwood, FLorida 32750 Ph (407) 265-9963

Contract award shall be on the basis of the base bid LSMCo/Grinder Pac system. Alternative deductive systems shall be considered only after contract award. Alternative deductive system must be specified at bid time. The contractor shall reimburse the engineer for additional expenses to review alternative system. Any savings shall be shared with the owner.

Due to the superior corrosion resistance and leak proof design of fiberglass, a concrete wetwell will NOT be permitted.

The entire lift station system shall be supplied by the pump supplier and certification of supply will be required.

Any Deviation in the Specified Bid Procedure will result in automatic rejection of alternative systems and will require base bid system to be supplied.

PART 2 – PRODUCTS

2.01 GRINDER PUMP – Pump shall be HOMA Model (9) with an integrally built grinder unit and submersible type motor. The pump shall be mounted in the FRP basin by a dual slide rail system in such a way that solids are fed in an up-flow direction to the grinder impeller with no feet or other obstruction below the grinder inlet.

The grinder unit shall be capable of macerating all material in normal domestic and commercial sewage including reasonable amounts of foreign objects such as wood, plastic, glass, rubber, sanitary napkins, disposable diapers and the like to a fine slurry that will pass freely through the pump and the discharge pipe.

The pump motor shall be of the submersible type. Single phase motors shall be of the capacitor start, capacitor run type for high starting torque.

Stator windings shall be of the open type with Class F insulation for operating in air or clean dielectric oil that lubricates bearings and seals and cools the windings. Motor stator shall be pressed into housing for best alignment and maximum heat transfer.

A heat sensor thermostat shall be attached to the top end of the motor winding and shall be connected in series with the magnetic contactor coil in control box to stop motor if motor winding temperature reaches 200 degrees F. Thermostat to automatically reset when motor cools. Two heat sensors are to be used on 3 phase motors.

The common motor pump and grinder shaft shall be of AISI 416 SS threaded to take pump impeller and grinder impeller.

2.02 DUPLEX PUMP CONTROL PANEL – Pump control panel shall control two (11) HP, (12) / (12) , 60HZ pumps.

The enclosure shall be NEMA 3R, minimum 24" high x 20" wide x 8" deep, fabricated from type 304, 14 ga. stainless steel with padlockable draw latches. The enclosure shall have external mounting feet to allow for wall mounting. All hardware shall be stainless steel. All conduit penetrations shall have approved seal off fittings and shall be properly sealed to prevent gas from entering enclosure.

The following components shall be mounted through the enclosure:

1	ea.	Red Alarm Beacon
1	ea.	Alarm Horn
1	ea.	Generator Receptacle with weatherproof cover
1	ea.	Silence Pushbutton

The backpanel shall be fabricated from .125, 5052-H32 marine alloy aluminum. All components shall be mounted by machined stainless steel screws. Self tapping screws are not acceptable.

The following components shall be mounted to the backpanel:

2	ea.	Motor Contactors
2	ea.	Start Capacitors to match motor requirements, single phase only
2	ea.	Run Capacitors to match motor requirements, single phase only
2	ea.	Start Relays to match motor requirements, single phase only
1	ea.	Voltage Monitor With fuses. (Single Phase) Phase/Monitor (Three Phase)
1	ea.	Control Transformer with primary and secondary fuses, 480 Volt only
1	ea.	Silence Relay
1	ea.	Intrinsically Safe Float Input Module
1	ea.	Duplex Alternator
20	ea.	Terminals for field connections
6	ea.	Terminals for motor connections, single phase only
3	ea.	Ground Lugs
1	ea.	Space Heater

The innerdoor shall be fabricated from .080, 5052-H32 marine alloy aluminum. The innerdoor shall have a continuous aluminum piano hinge, a handle and catch and shall be installed by stainless steel screws for ease of removal. The inner door shall open a minimum of 110 degrees to allow safe access to backpanel.

The following components shall be mounted through the innerdoor:

1	ea.	Main Circuit Breaker
1	ea.	Emergency Circuit Breaker
1	ea.	Mechanical Interlock for main breakers
2	ea.	Motor Short Circuit Protectors
1	ea.	Control Circuit Breaker
2	ea.	Hand-Off-Auto selector switches
1	ea.	Sequence selector switch, 1 -Auto-2
1	ea.	Alternator Test Switch
2	ea.	Pump Run Pilot Lights
1	ea.	Power On Pilot Light
4	ea.	Float Indicating Pilot Lights
2	ea.	Seal Failure Pilot Lights
2	ea.	Elapsed Time Meters
1	ea.	GFI Duplex Convenience Outlet

COMPONENT SPECIFICATIONS:

All circuit breakers shall be molded case thermal magnetic. Circuit breakers shall be sealed by the manufacturer after calibration to prevent tampering. Each breaker shall be adequately sized to meet the equipment operating conditions.

The mechanical interlock shall prevent the normal and emergency main breakers from being energized at the same time. The interlock shall be fabricated from aluminum or stainless steel.

An emergency generator receptacle shall be supplied in accordance with DEP standards. The generator receptacle shall be adequately sized to meet the equipment operating conditions.

All motor short circuit protection devices must provide for undervoltage release and class 10 overload protection on all three phases. Visible trip indication, test and reset capability must be provided without opening Inner door.

Open frame, across the line, contactors shall be rated per IEC standards and properly sized per the motor requirements. Contactors shall provide for safe touch power and control terminals. Contactor contacts and coil shall be easily replaceable without removing the contactor from its mounted position.

A **lightning arrestor** to meet or exceed the requirements of ANSI/IEEE Std. ANSI/IEEE Std. C62.21-1984 section 8.6.1 and 8.7.3 shall be supplied by electrician and mounted on the bottom side of the switch disconnect ahead of the pump control panel.

A **voltage monitor** shall be supplied for single phase service. The voltage monitor shall be designed to sense a low voltage condition. The relay shall de-energize the motors when the line voltage drops 15% below the relay setting. The voltage monitor shall be protected by dual element fuses.

A **phase monitor** shall be supplied for three phase service. The phase monitor shall be designed to sense a low voltage, phase loss, power failure and improper phase sequence condition. The relay shall de-energize the motors upon a conditon fault. The phase monitor shall be protected by dual element fuses.

The control system shall be designed to operate the floats at **intrinsically safe voltage levels (5V @ 100 microamps).** Each input shall cause a contact closure to start and stop pumps as well as energize alarms.

The duplex alternator shall be the solid state type. The alternator shall switch each pump to lead upon a single complete cycle and shall provide for lag pump operation upon level rise.

The **design logic for this system shall include float failure detection.** Upon a float failure, the logic shall automatically compensate for the loss by removing the failed float from the circuit and electrically re-position the floats for a fail safe mode. As an example, if the "STOP PUMPS" float failed, the "START LEAD" float would become the "STOP PUMPS" float, the "START LAG" float would become the "START LEAD" float and the "HIGH LEVEL" float would become the "START LAG/ HIGH LEVEL " float. Further, if the "STOP PUMPS" and the "START LEAD" floats failed, the "START LAG" float woud become the "STOP PUMPS" float and the "HIGH LEVEL" would become the "START LEAD/START LAG/HIGH LEVEL" float.

The **Control Module** shall be programmable to start both pumps simultaneously every 24 hours to increase pump discharge velocity and to provide "WIPE DOWN" of wetwell wall

A **lag pump time delay shall be supplied to prevent both pumps from simultaneously starting after a power outage.** The time delay shall be set at 10 seconds minimum.

An **alternator sequence (1-Auto-2),** three position toggle type selector switch shall be supplied to manually overide the alternator. In the '1' positon, motor #1 shall always be the lead motor. In the 'Auto' positon, the motors shall sequence to become the lead motor. In the '2' positon, motor #2 shall always be the lead motor.

An **alternator test switch,** toggle type shall be supplied to test the alternator circuit.

Hand-Off-Auto, three position toggle type selector switches shall be supplied for each motor.

A **red run light** shall be supplied for each motor. The pilot light shall illuminate each time the motor is called to run.

A **yellow seal failure light** shall be supplied for each motor. The pilot light shall illuminate upon detection of water in the seal chamber of the pump.

Each motor shall have an **elapsed time motor** to record the accumulated running time. The ETM shall be a 2" diameter, non-resettable, six digit, totally encapsulated unit.

A **red pilot light** shall be supplied for each float. The appropriate pilot light shall illuminate each time the float switch closes.

A **green pilot light** shall be supplied for control power. The pilot light shall illuminate when control power is available in the panel.

Relays shall be **ice-cube plug-in type.** Relay contacts shall be rated 10 amp minimum, DPDT.

Twenty (20) terminals shall be supplied for field connections. The teminals shall be rated 25 amps minimum and shall be **mounted** on a 30 **degree angle** for ease of **field wiring.** Float connection terminals shall be arranged such that each float is connected in consecutive order and does not require any crossing of wires.

Each motor **over-temperature contact** shall be connected to the terminal strip and shall open a contact to de-energize the appropriate motor upon a high temperature within the motor.

A 15A GFI **duplex convenience outlet** shall be supplied and mounted on the Innerdoor to provide service technicians with an outlet for trouble lights, etc.

Ground lugs shall be supplied and appropriately sized for each motor and for service entrance.

A **space heater** shall be provided to maintain the temperature within the enclosure a minimum of 2-3 degrees F. above ambient to prevent condensation build up. The heater shall be mounted with stainless steel screws and protected by a shield. Self adhesive means of fastening by glue, tape, ect. are not acceptable.

Nameplates for the innerdoor shall be of a graphic design, specifically depicting the intent for each device. One nameplate shall be supplied for all control devices. One namplate shall be supplied for all power devices. All text and graphics on each nameplate shall be scratch resistant. The nameplates shall be fabricated from laser-screened laminated mylar.

Nameplates for the backpanel shall be of a graphic design, specifically depicting the intent for each component. One nameplate shall be supplied for each component. All text and graphics on each nameplate shall be scratch resistant. The nameplates shall be fabricated from laser-screened laminated mylar

MISCELLANEOUS:

All wiring on the backpanel shall be contained within wiring duct. All wiring between the innerdoor and the backpanel shall be contained within a plastic spiral wrap.'

Each wire shall have a wire number at each end to correspond to the asbuilt drawing for field troubleshooting.
The control panel shall be assembled by an Underwriters Laboratories UL508 listed manufacturing facility.

2.03 FASTENER and APPURTENANCES- All fasteners, lifting cables, float cable bracket and appurtenances shall be made of AISI 304SS or other material inert to the highly corrosive atmosphere of a sewage lift station. Hinges for the wet well and valve box shall be AISI 304SS minimum.
An aluminum slide/latch assembly shall be provided for holding the doors open on both the wet well and the valve box.
Slide rails shall be SCH 40 AISI 304SS pipe.
Pump lifting devices shall be made of AISI 304SS (min.) cable (1/4"min) or 304SS chain of sufficient size, with safety factor to handle safely the specific pumps. AISI 304SS (min.) pump lifting bails shall be provided.

PART 3 – EXECUTION

3.01 INSTALLATION – shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the drawing.

3.02 INSPECTION AND TESTING – A factory representative shall be provided for one (1) day and shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise the test run of the equipment.
Megger the motor. The pump motors shall be megged out prior to startup to ensure the insulation of the pump motor/cable system is intact.
The pump controls and pumps shall be checked for mechanical reliability and proper operation.

PUMP DATA CHART

(1)	PRIMARY PUMP CAPACITY	30 GPM
(2)	PRIMARY TDH	55 FT
(3)	SECONDARY PUMP CAPACITY	30 GPM
(4)	SECONDARY TDH	55 FT
(5)	PEAK INFLUENT FLOW RATE	15.2 GPM
(6)	PUMP CYCLE TIME	12.5 MIN.
(7)	PUMP SYSTEM MANUFACTURER	LSMCo.,Inc.
(8)	PUMP MANUFACTURER	HOMA
(9)	PUMP MODEL NO.	GRP 16/1
(10)	R.P.M.	3450
(11)	HORSE POWER	1.6
(12)	ELECTRICAL-VOLTS/PHASE	208-230 V/1 Ø
(13)	PUMP DISCHARGE SIZE	2"
(14)	IMPELLER DIA.	4-7/8"

ELEVATION CHART

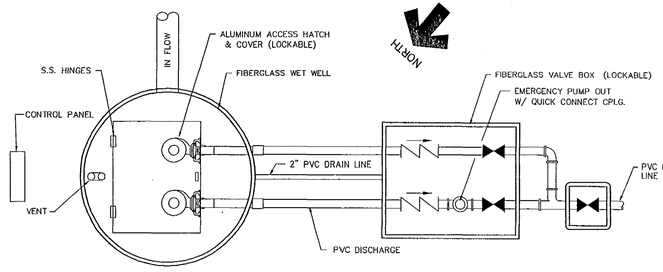
(a)	TOP OF WETWELL	32.50
(a)	TOP OF VALVE BOX	32.50
(b)	INLET INVERT	27.50
(c)	HIGH LEVEL ALARM	28.00
(d)	2nd PUMP ON	27.50
(e)	1st PUMP ON	27.00
(f)	PUMPS OFF	25.00
(g)	BOTTOM OF WET WELL	24.20

NOTES:

1. ALL DIMENSIONS ARE IN FEET EXCEPT AS NOTED.
2. DRAWING IS NOT TO SCALE.
3. ALL DIMENSIONS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4. PAINT EXPOSED FRP AS REQUIRED BY OWNER/ENGINEER.
5. F.R.P. INDICATES FIBERGLASS REINFORCED POLYESTER.
6. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES.
- 7. ELECTRICIAN TO RUN TWO (2 HP PUMPS) / THREE (3 HP & LARGER PUMPS) SEPARATE 2" CONDUITS (ONE EACH FOR HIGH & LOW VOLTAGES) PER ELECTRICAL CODE BETWEEN CONTROL PANEL AND WETWELL.
- 8. ALUMINUM WIRE SHALL NOT BE USED BETWEEN MAIN METER AND CONTROL PANEL.
- 9. ELECTRICIAN SHALL SEAL OFF CONDUIT RUNS INSIDE WETWELL AND INSIDE OF CONTROL PANEL.
- 10. ELECTRICIAN TO MOUNT LIGHTNING ARRESTOR AT SWITCH DISCONNECT (AHEAD OF THE PUMP CONTROL PANEL).
11. BOTH WETWELL AND VALVE BOX SHALL BE PROVIDED WITH A MEANS FOR LOCKING.
12. CONTRACTOR SHALL FIELD INSTALL INLET FITTING AT PROPER ELEVATION.
13. ALL HARDWARE AND FASTENERS SHALL BE STAINLESS STEEL.
14. CONTRACTOR SHALL VERIFY POWER SOURCE PRIOR TO ORDERING EQUIPMENT.
- 15. NEUTRAL REQUIRED ON ALL ELECTRICAL SERVICE TO CONTROL PANEL

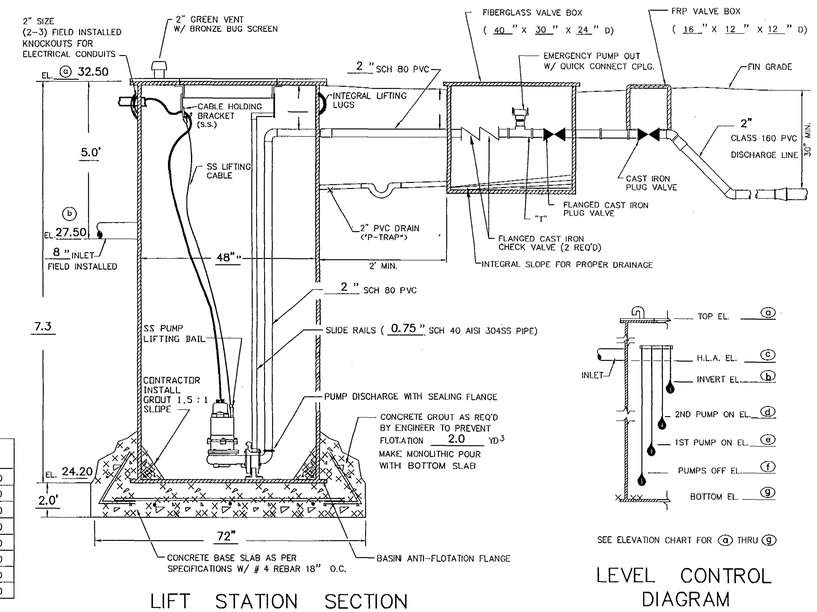
- ELECTRICIAN NOTE

LSMCo - Grinder Pac 9/00



NOTE: PUMP CONTROL SHALL BE LOCATED 3 FEET FROM WET WELL PERIMETER OPTIONALLY AT "A", "B", OR "C"

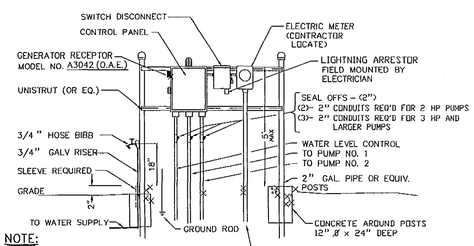
LIFT STATION PLAN



SEE ELEVATION CHART FOR (a) THRU (g)

LIFT STATION SECTION

LEVEL CONTROL DIAGRAM



NOTE:
REDUCED PRESSURE (RPZ) BACKFLOW PREVENTER TO BE INSTALLED IN WATER SUPPLY LINE TO LIFT STATION "FEDCO WATTS DAE"

⚠3 SEE 'LIFT STATION PLAN' ABOVE FOR LOCATION

ELECTRICAL RISER

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE.
DAYTONA BEACH, FLORIDA

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H.J. BURROUGHS
FLORIDA PROFESSIONAL ENGINEER #18120
FLORIDA PROFESSIONAL SURVEYOR/MAPPER #2642

TOMOKA ENGINEERING
(LB NO. 0002232)
900 S. RIDGEWOOD AVE..
DAYTONA BEACH, FLORIDA
ENGINEER'S
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H.J. BURROUGHS
DATE: 12/7/04 PE No. 18120

AS-BUILTS

LIFT STATIONS DETAILS
HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-LSD-ASBUILT
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 08/12/03
SHEET C-5

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
FLAGLER/PALM COAST
DAYTONA BEACH
Main Office: 900 So. Ridgewood Ave, Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

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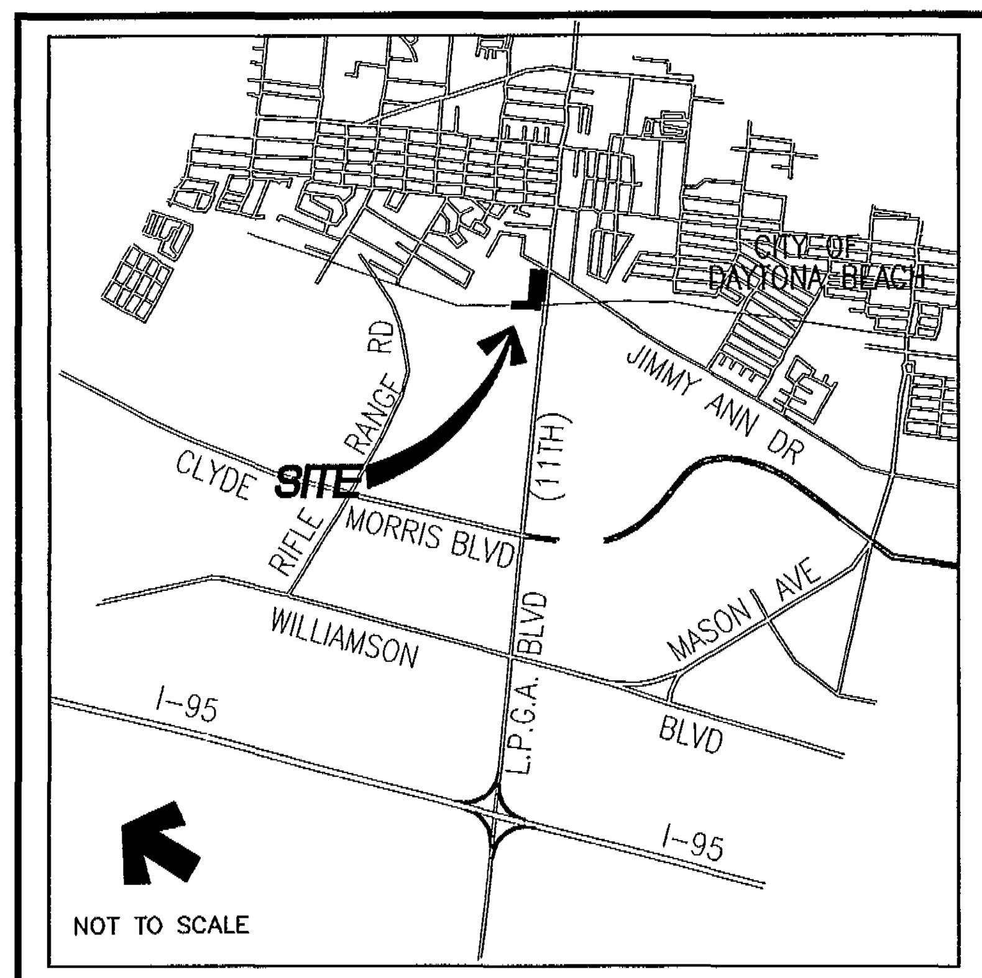

VICINITY MAP

HABITAT VILLAGE PCD PROJECT DATA

OWNER: HALIFAX HABITAT FOR HUMANITY, INC.
ATTN: MS. LORI GILLOOLY
826 WHITE STREET
DAYTONA BEACH, FL 32114
PHONE: 257-9950
DESIGNER/ENGINEER/SURVEYOR:
TOMOKA ENGINEERING
DAYTONA BEACH, FL
ATTN: HAL BURROUGHS, PE, PSM

PROJECT ADDRESS: 1432 LPGA BOULEVARD
CURRENT ZONING: A-2 (COUNTY ZONING), RR AND PCD
PROPOSED ZONING: PCD
TAX PARCEL NO'S: 5202-00-00-0822, 5202-00-00-0900, 5202-00-00-0834
LEGAL DESCRIPTION: LONG LEGAL - SEE BOUNDARY SURVEY ATTACHED
PROJECT ACREAGE = 364,227 SQ. FT. = 8.361 AC. (NOT INCL. WESLEY STREET R/W)
IMPERVIOUS AREA = 201,917 SQ. FT. (55 % OF SITE)
PERVIOUS AREA = 162,310 SQ. FT. (45 % OF SITE)
GROSS FLOOR AREA OF BUILDINGS = 69,982 SQ. FT.
NUMBER OF STORIES = 1
NUMBER OF UNITS = WILL VARY PER TENANT DEMAND
PARKING REQUIRED FOR LOT 1 = 128 SPACES (BASED ON 3.3 SPACES/1000 S.F.)
PARKING PROVIDED FOR LOT 1 = 131 SPACES (INCLUDING 6 HANDICAPPED SPACES)
PARKING REQUIRED FOR LOT 2 = 97 SPACES (BASED ON 3.3 SPACES/1000 S.F.)
PARKING PROVIDED FOR LOT 2 = 100 SPACES (INCLUDING 5 HANDICAPPED SPACES)
FLOOD ZONE: "X" PER FEMA PANEL NO. 12157C0352G, DATED 4/15/02

SIGNAGE AREA CALCULATIONS BASED ON BP ZONING CATEGORY:
LOT 1 GROUND SIGN ALLOWABLE = 394 L.F. FRONTAGE @ 1 SQ.FT./L.F. = 394 SQ FT.
MAXIMUM ALLOWABLE = 120 SQ. FT.
PROPOSED GROUND SIGN AREA = 50 SQ. FT.
LOT 1 WALL SIGNS ALLOWABLE = 200 SQ. FT.
PROPOSED WALL SIGNS = 200 SQ. FT.
LOT 2 GROUND SIGN ALLOWABLE = 218 L.F. FRONTAGE @ 1 SQ.FT./L.F. = 218 SQ FT.
MAXIMUM ALLOWABLE = 120 SQ. FT.
PROPOSED GROUND SIGN AREA = 50 SQ. FT.
LOT 2 WALL SIGNS ALLOWABLE = 200 SQ. FT.
PROPOSED WALL SIGNS = 200 SQ. FT.

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SITE PLAN	C-2
CLEARING & EROSION CONTROL PLAN	C-3
CLEARING & EROSION CONTROL PLAN	C-4
DRAINAGE, GRADING & PAVING PLAN	C-5
DRAINAGE, GRADING & PAVING PLAN	C-6
UTILITY PLAN	C-7
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LIFT STATION DETAILS	C-10
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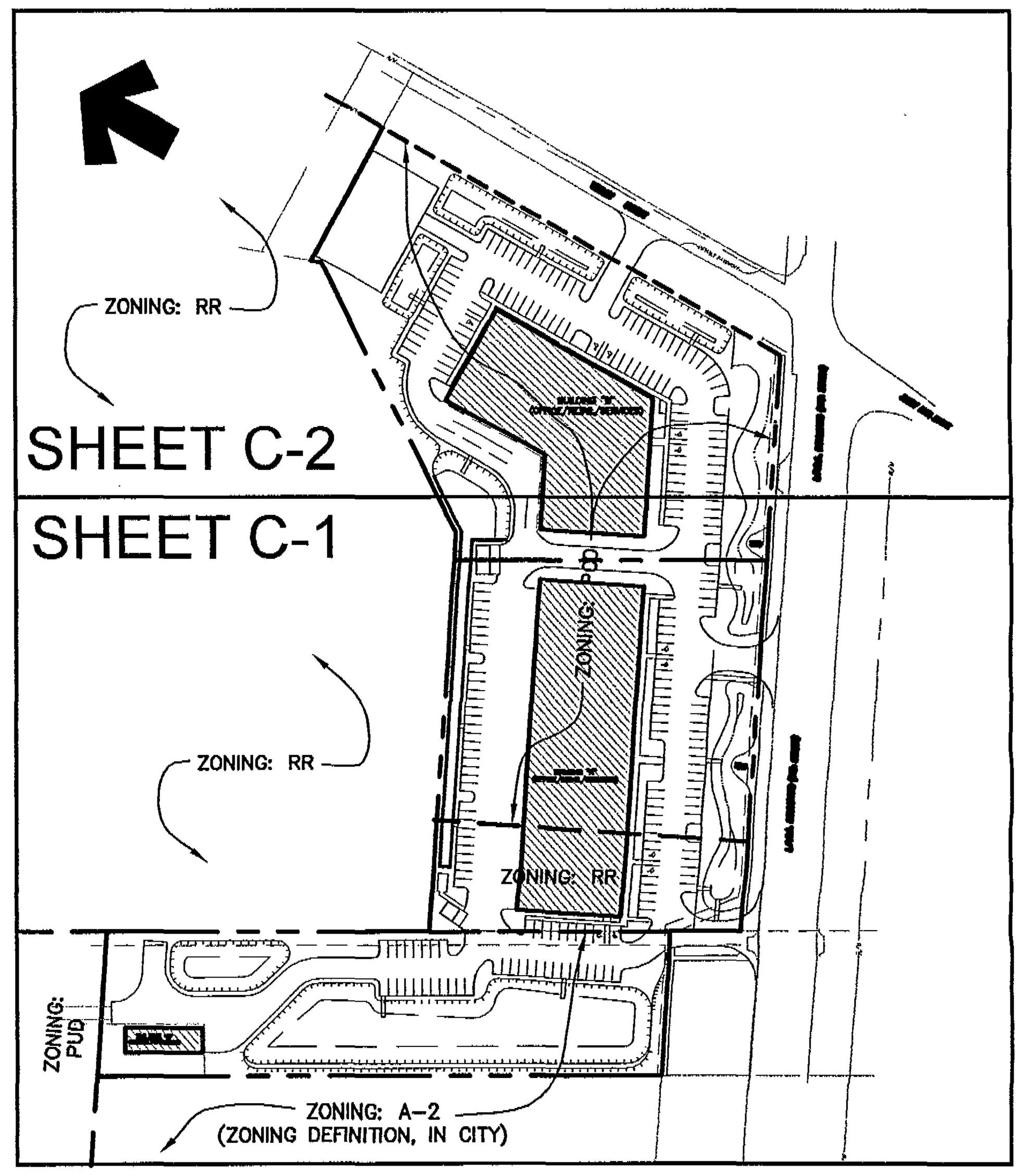
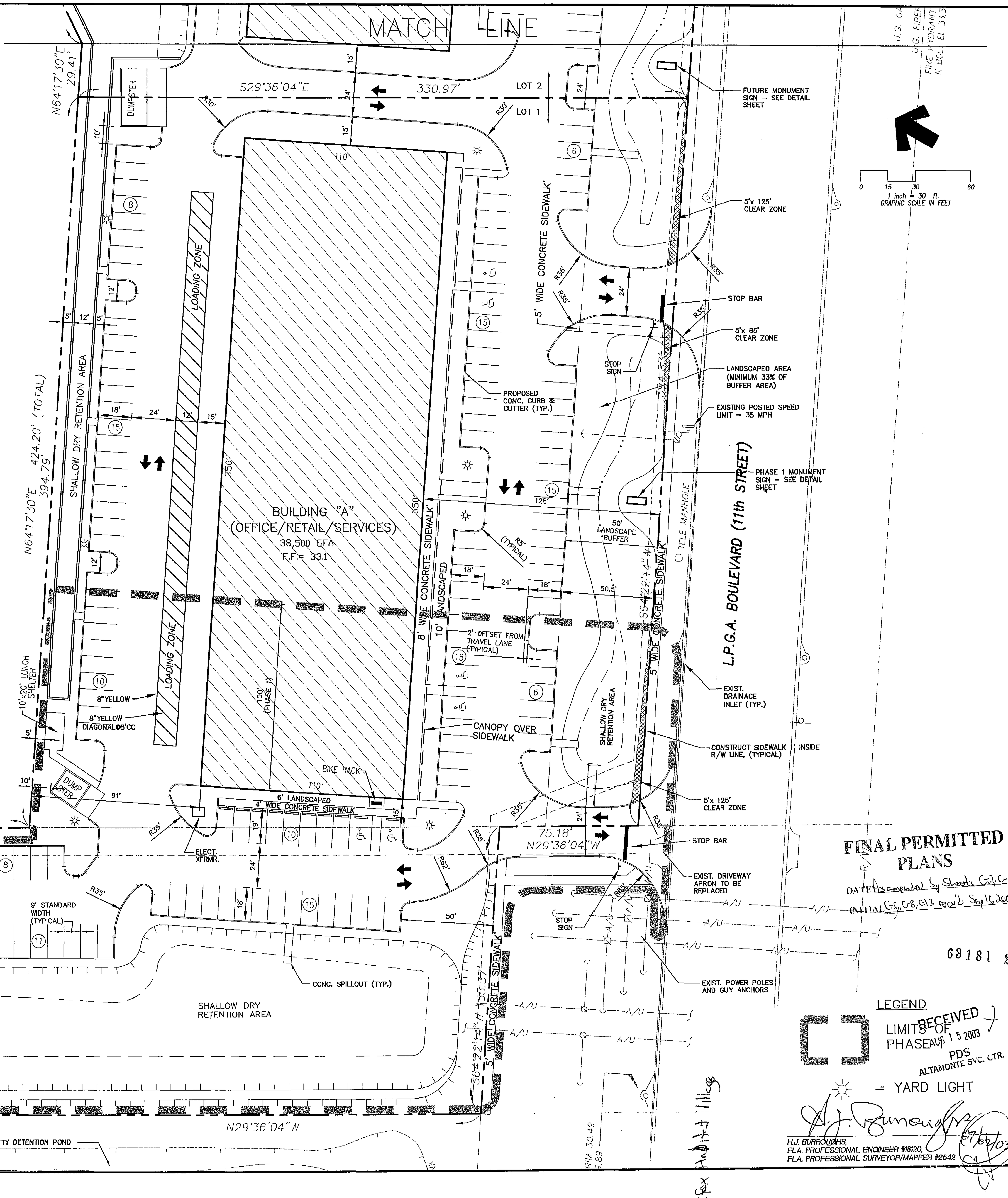
SUBDIVISION PLAT (2 SHEETS)	ATTACHED
BOUNDARY SURVEY (2 SHEETS)	ATTACHED
TOPO/TREE SURVEY (2 SHEETS)	ATTACHED
LANDSCAPING PLAN	ATTACHED
BUILDING ELEVATIONS	ATTACHED



SITE PLAN KEY MAP

NOT TO SCALE



FINAL PERMITTED PLANS
DATE As amended by Sheets C-2, C-4
INITIAL C-5, C-8, C-13 rev. 2 Sep 16 2003

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H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

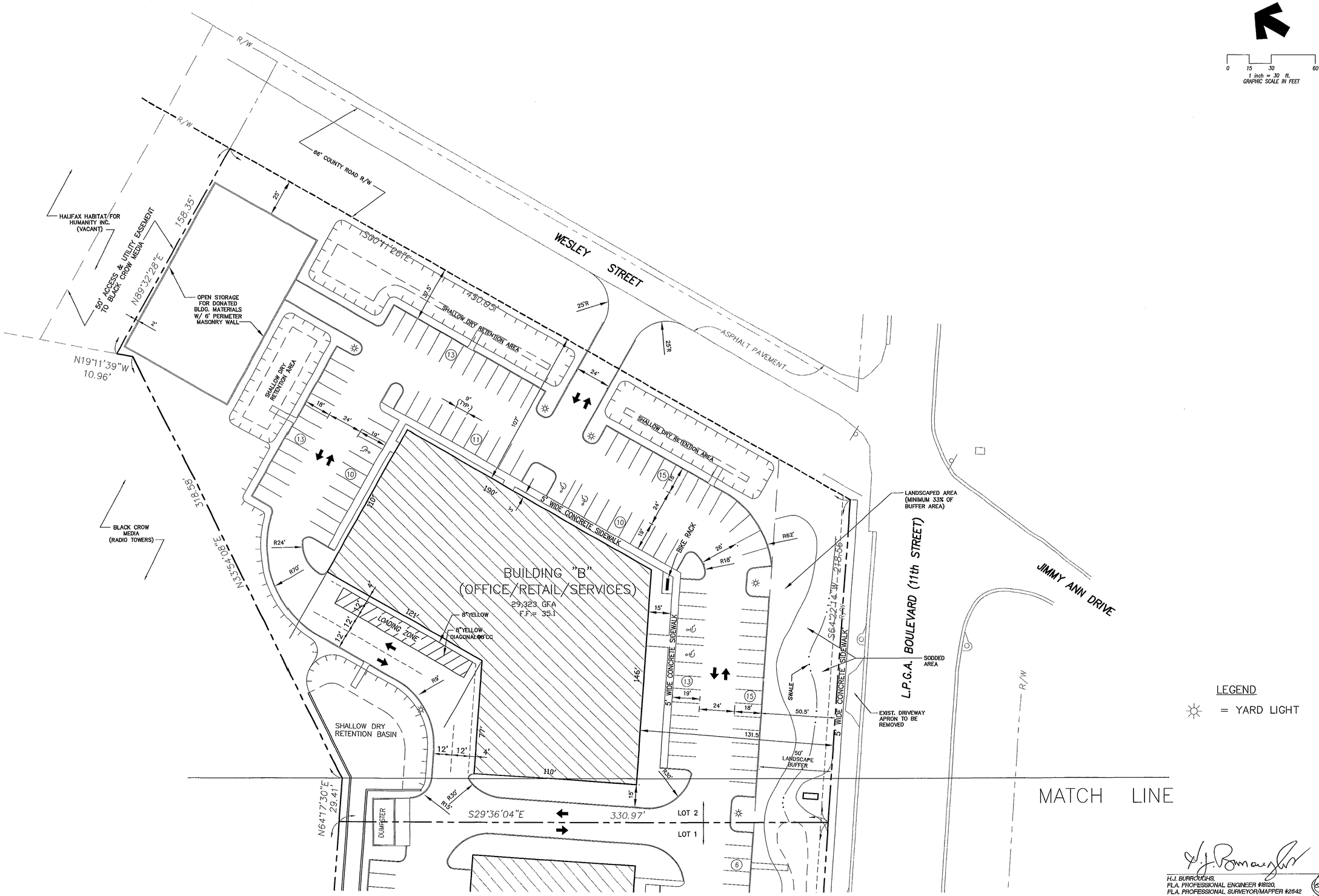
TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

SITE PLAN
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-SITES
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/2003
SHEET C-1



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CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
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HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-SITES
REVISION NO./DATE
SEE REVISION TABLE
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07/02/2003
SHEET
C-2

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MATCH LINE

0 15 30 60
1 inch = 30 ft.
GRAPHIC SCALE IN FEET

LEGEND

CLEARING LIMITS

SILT FENCE

PHASE 1 SILT FENCE

PHASE 1 CLEARING LIMITS

BLACK CROW MEDIA (RADIO TOWERS)

SHALLOW DRY RETENTION AREA

BUILDING "A" (OFFICE/RETAIL/SERVICES) 38,500 GFA F.F.= 33.1

BUILDING 'C' (GARAGE/STORAGE) 2,359 GFA F.F.= 32.5

DUMPSTER

10'x20' PICNIC SHELTER

DUMPSTER

BIKE RACK

L.P.G.A. BOULEVARD (11th STREET)

R/W

TOP OF BANK

WATER'S EDGE

H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120.
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

07/02/03

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REVISIONS

NO.	DATE	DESCRIPTION

CLEARING and EROSION CONTROL PLAN
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-SITES
REVISION NO./DATE
SEE REVISION TABLE
ORIGINAL ISSUE DATE
07/02/03
SHEET
C-3

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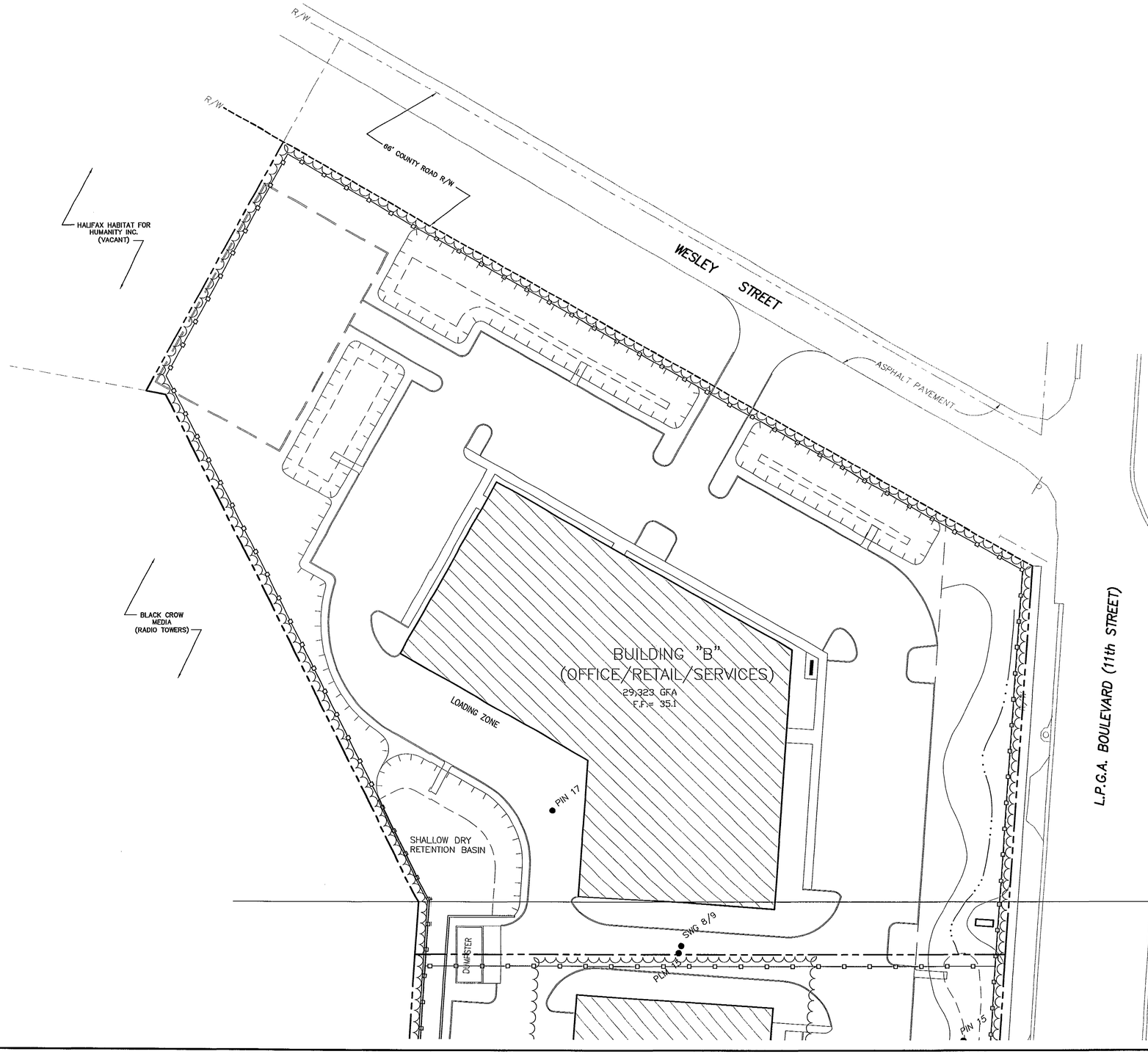

0 15 30 60

1 inch = 30 ft.
GRAPHIC SCALE IN FEET

LEGEND

CLEARING LIMITS

SILT FENCE

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HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

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SEE REVISION TABLE
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SHEET
C-4

H.J. BURROUGHS,
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07/02/03

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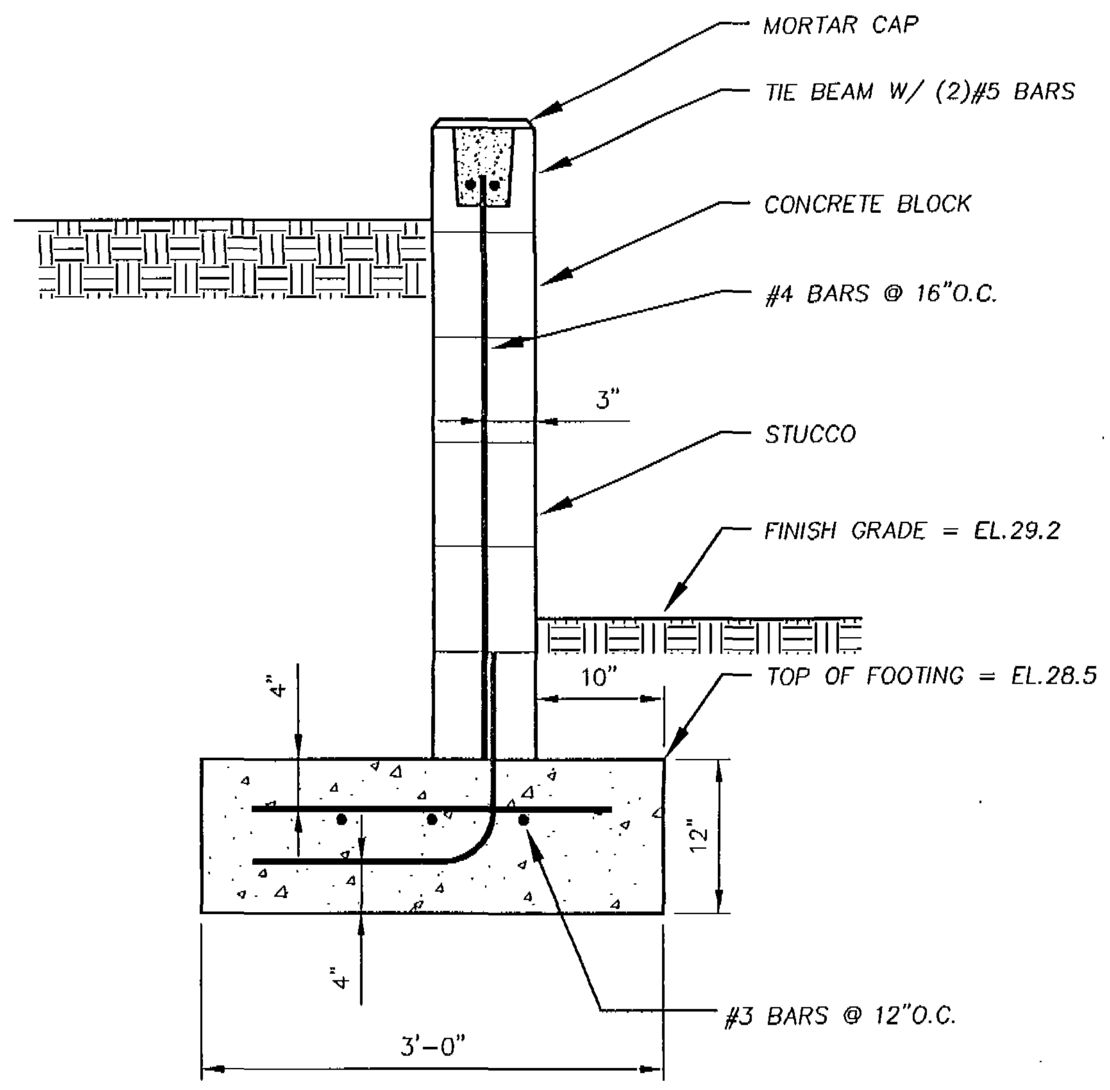
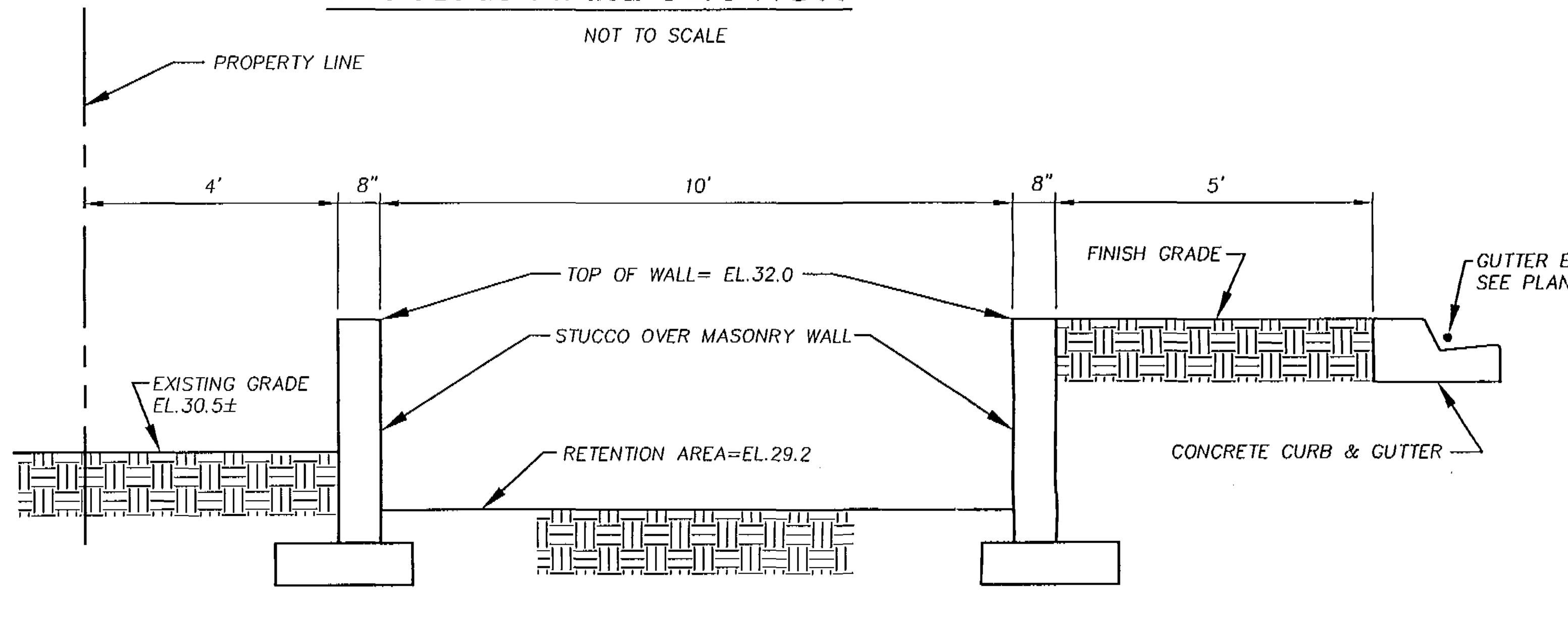


TYPICAL WALL SECTION

NOT TO SCALE



SECTION A-A

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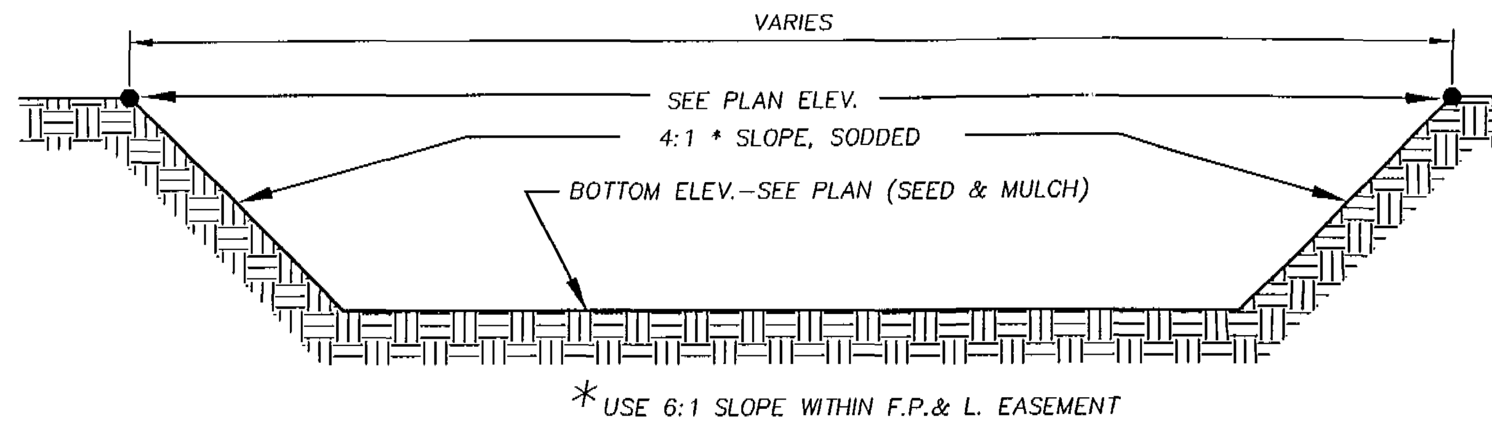

*USE 6:1 SLOPE WITHIN F.P.& L. EASEMENT

SECTION B-B

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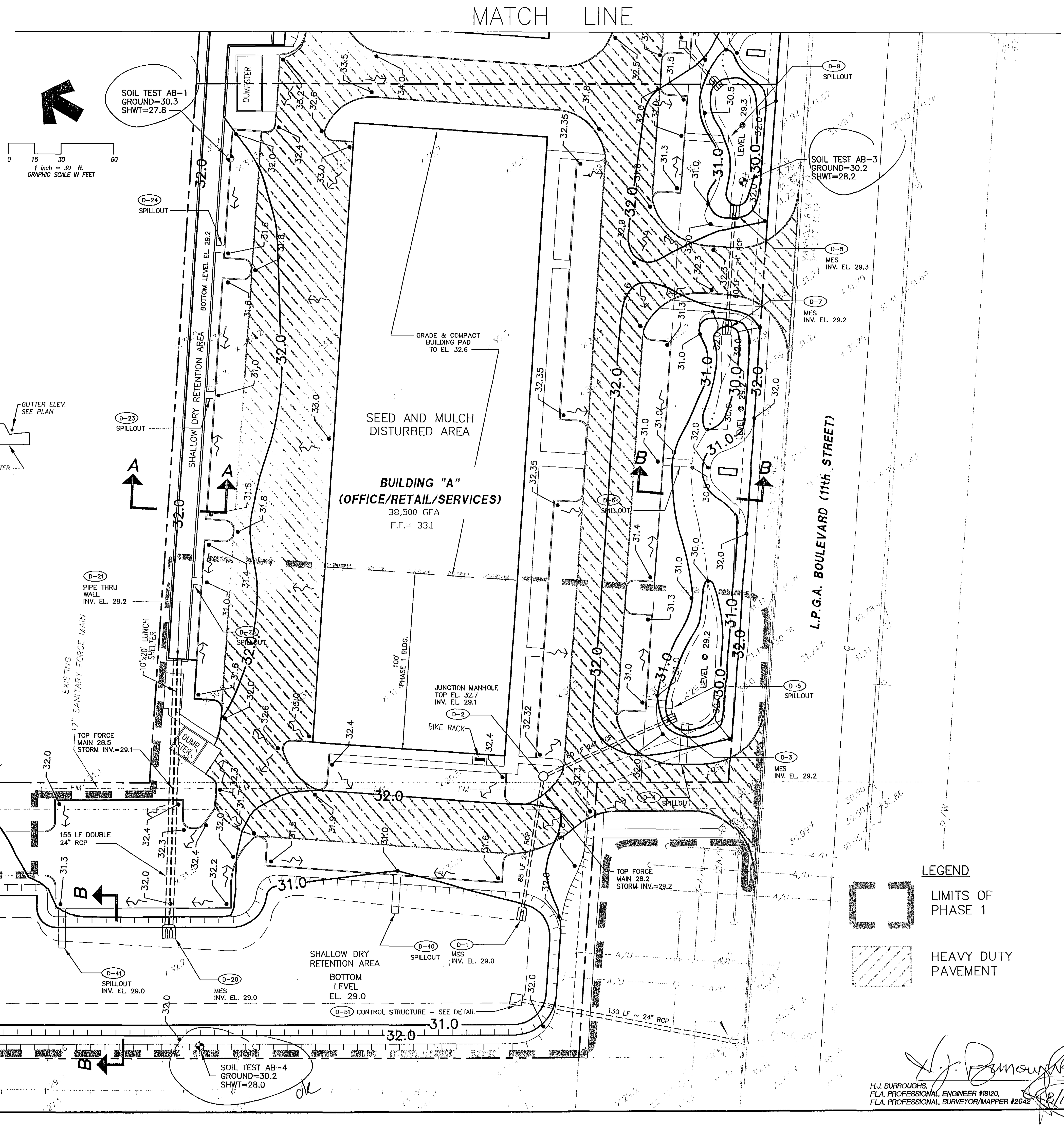

LEGEND

LIMITS OF PHASE 1

HEAVY DUTY PAVEMENT

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642 8/12/03

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REVISIONS

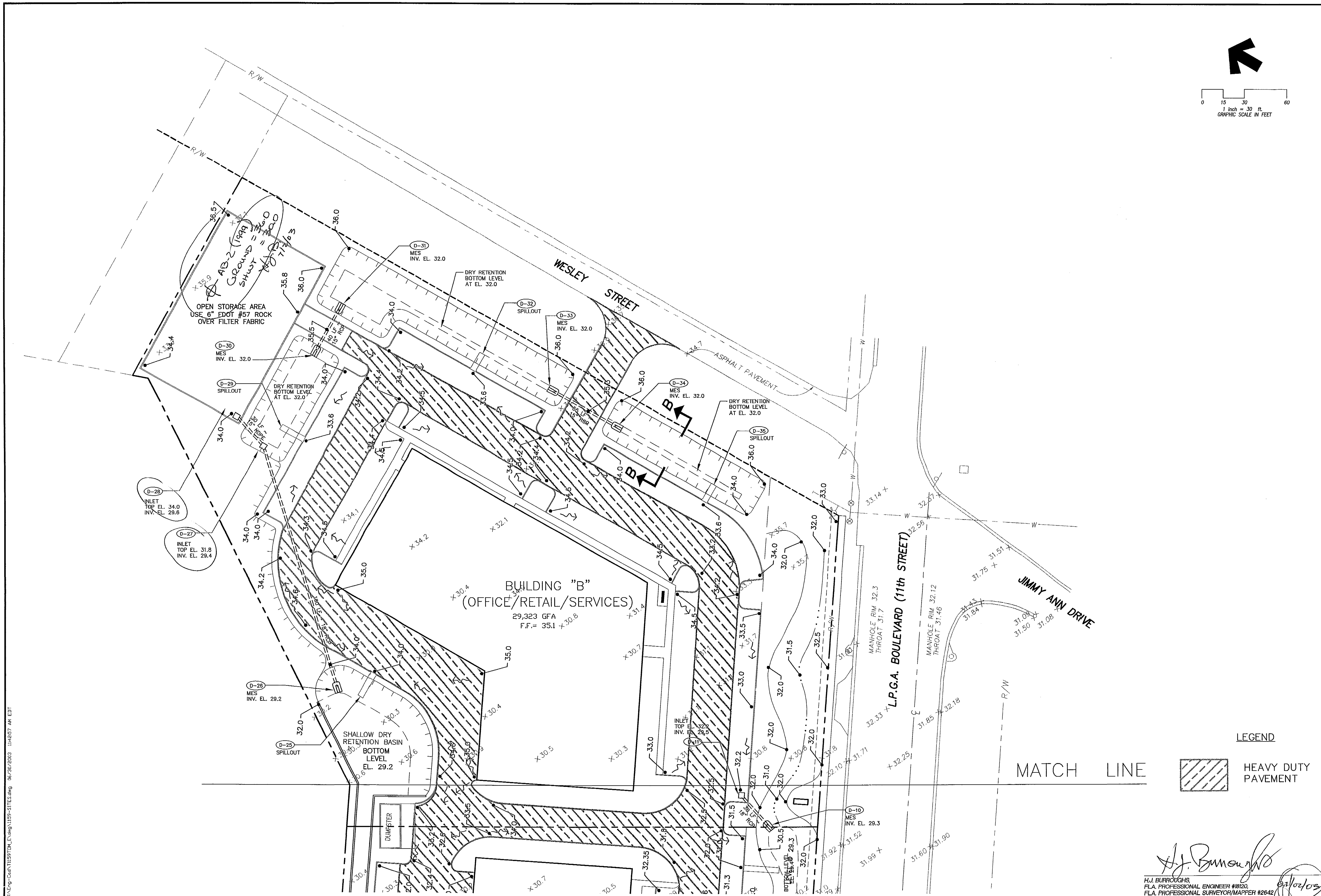
NO.	DATE	DESCRIPTION

DRAINAGE, GRADING and PAVING PLAN

HALIFAX HABITAT VILLAGE
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.	T1159TOM
DRAWING REFERENCE NO.	1159-SITES
REVISION NO./DATE	SEE REVISION TABLE
ORIGINAL ISSUE DATE	08/12/03
SHEET	C-5



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NO.	DATE	DESCRIPTION
		REVISIONS

DRAINAGE, GRADING and PAVING PLAN

HABITAT HUMANITY PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-SITES
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/2003
SHEET C-6

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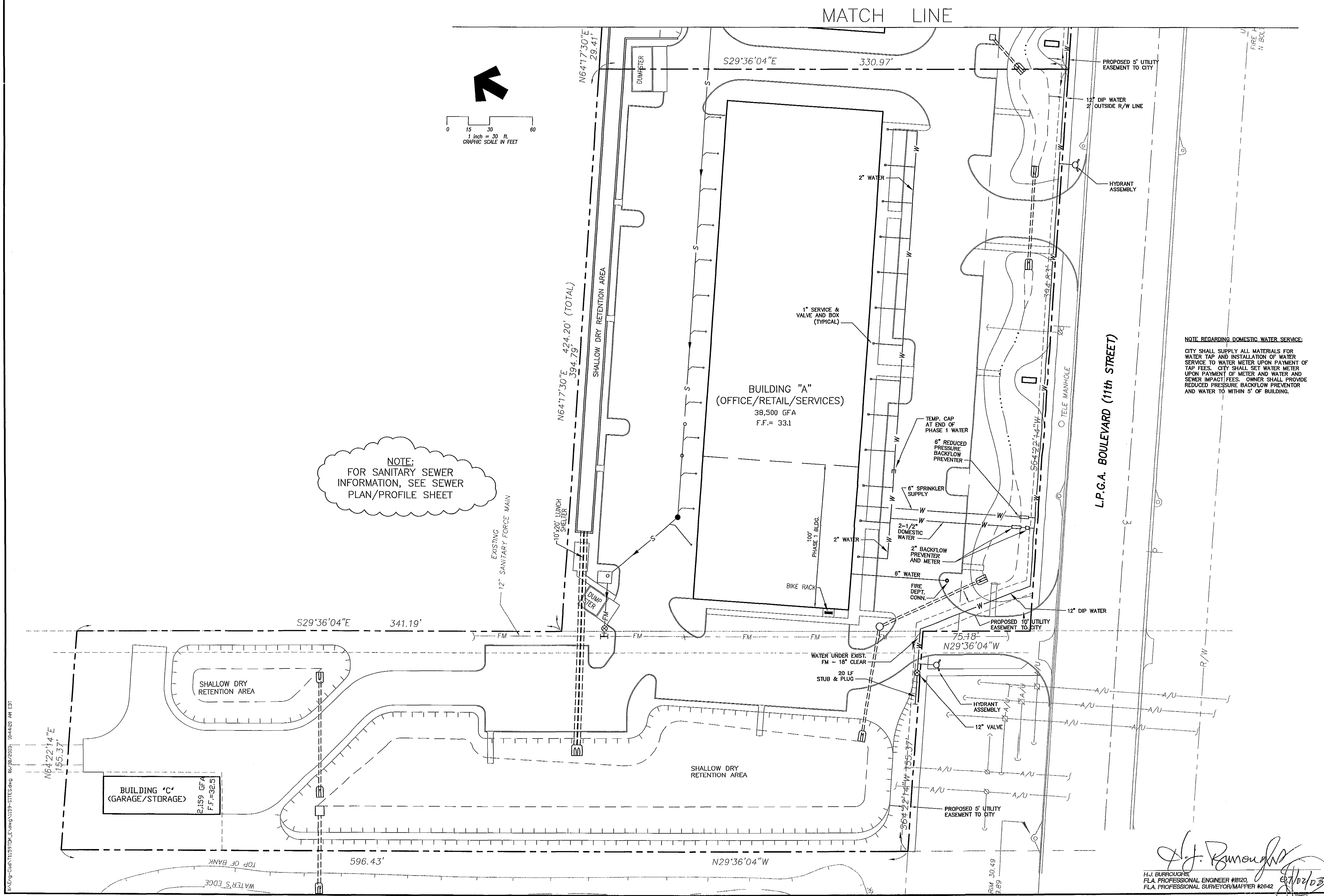

MATCH LINE
0 15 30 60
1 inch = 30 ft.
GRAPHIC SCALE IN FEET
N64°17'30"E 29.41'
S29°36'04"E 330.97'
DUMPSTER
PROPOSED 5' UTILITY EASEMENT TO CITY
12" DIP WATER 2' OUTSIDE R/W LINE
HYDRANT ASSEMBLY
2" WATER
SHALLOW DRY RETENTION AREA
N64°17'30"E 424.20' (TOTAL) 394.79'
BUILDING "A"
(OFFICE/RETAIL/SERVICES)
38,500 GFA
F.F.= 33.1
1" SERVICE & VALVE AND BOX (TYPICAL)
NOTE REGARDING DOMESTIC WATER SERVICE:
CITY SHALL SUPPLY ALL MATERIALS FOR WATER TAP AND INSTALLATION OF WATER SERVICE TO WATER METER UPON PAYMENT OF TAP FEES. CITY SHALL SET WATER METER UPON PAYMENT OF METER AND WATER AND SEWER IMPACT FEES. OWNER SHALL PROVIDE REDUCED PRESSURE BACKFLOW PREVENTOR AND WATER TO WITHIN 5' OF BUILDING.
TELE MANHOLE
L.P.G.A. BOULEVARD (11th STREET)
S64°22'14"W 394.83'
TEMP. CAP AT END OF PHASE 1 WATER
6" REDUCED PRESSURE BACKFLOW PREVENTER
6" SPRINKLER SUPPLY
2-1/2" DOMESTIC WATER
2" BACKFLOW PREVENTER AND METER
6" WATER
FIRE DEPT. CONN.
12" DIP WATER
NOTE:
FOR SANITARY SEWER INFORMATION, SEE SEWER PLAN/PROFILE SHEET
EXISTING 12" SANITARY FORCE MAIN
10'x20' LUNCH SHELTER
DUMPSTER
100' PHASE 1 BLDG.
BIKE RACK
S29°36'04"E 341.19'
PROPOSED 10' UTILITY EASEMENT TO CITY
75.18'
N29°36'04"W
WATER UNDER EXIST. FM – 18" CLEAR
20 LF STUB & PLUG
HYDRANT ASSEMBLY
12" VALVE
SHALLOW DRY RETENTION AREA
N64°22'14"E 155.37'
BUILDING 'C'
(GARAGE/STORAGE)
2,159 GFA
F.F.=32.5
SHALLOW DRY RETENTION AREA
S64°22'14"W 155.37'
PROPOSED 5' UTILITY EASEMENT TO CITY
596.43'
N29°36'04"W
TOP OF BANK
WATER'S EDGE
R/W
H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

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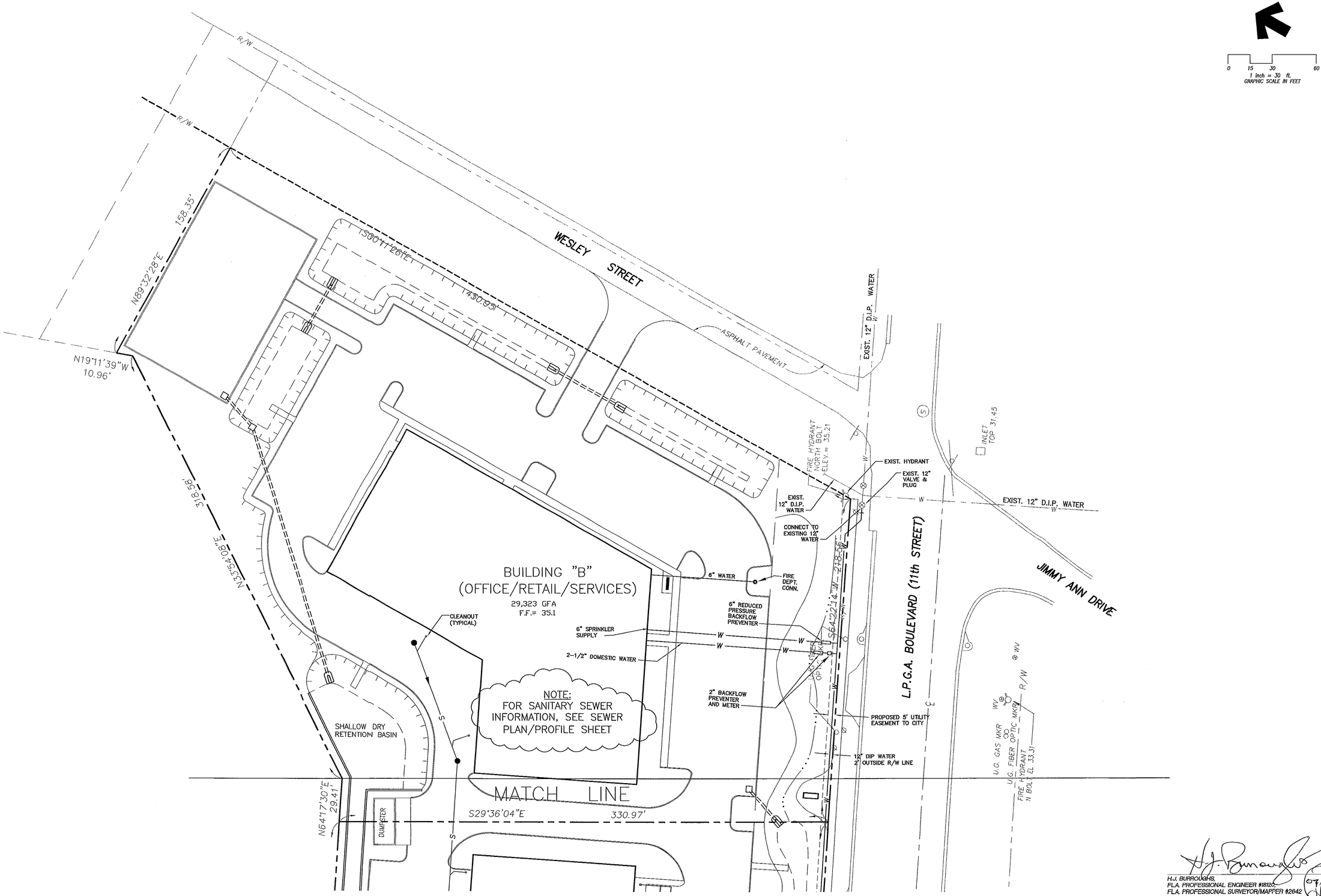
REVISIONS

NO.	DATE	DESCRIPTION

UTILITY PLAN
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-SITES
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/2003
SHEET C-7



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UTILITY PLAN
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
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SHEET
C-8

H.J. BURROUGHS,
F.L.A. PROFESSIONAL ENGINEER #18120,
F.L.A. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

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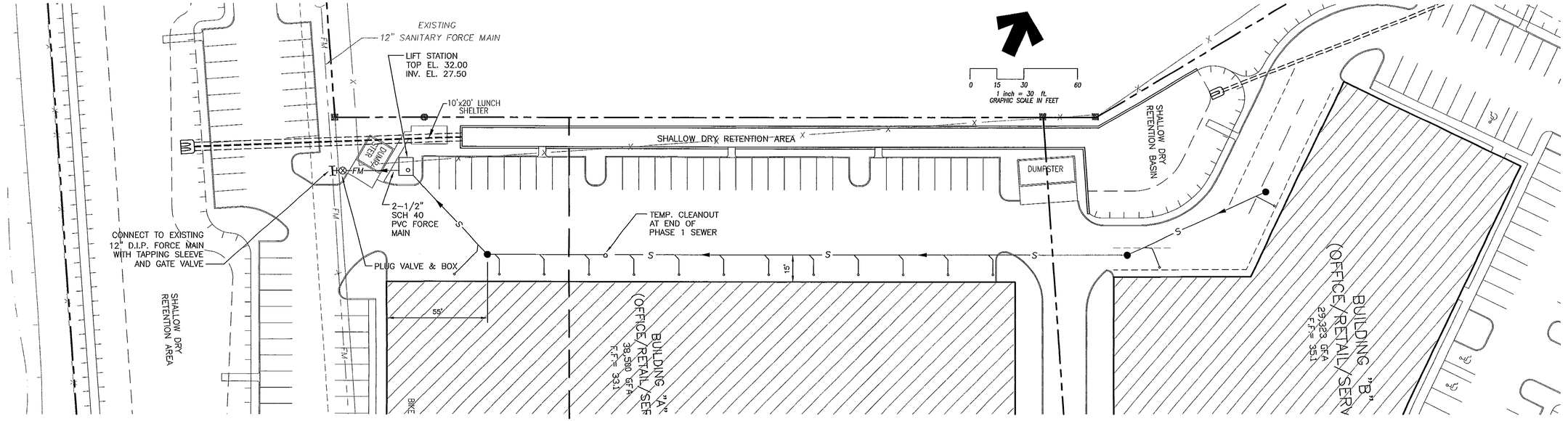
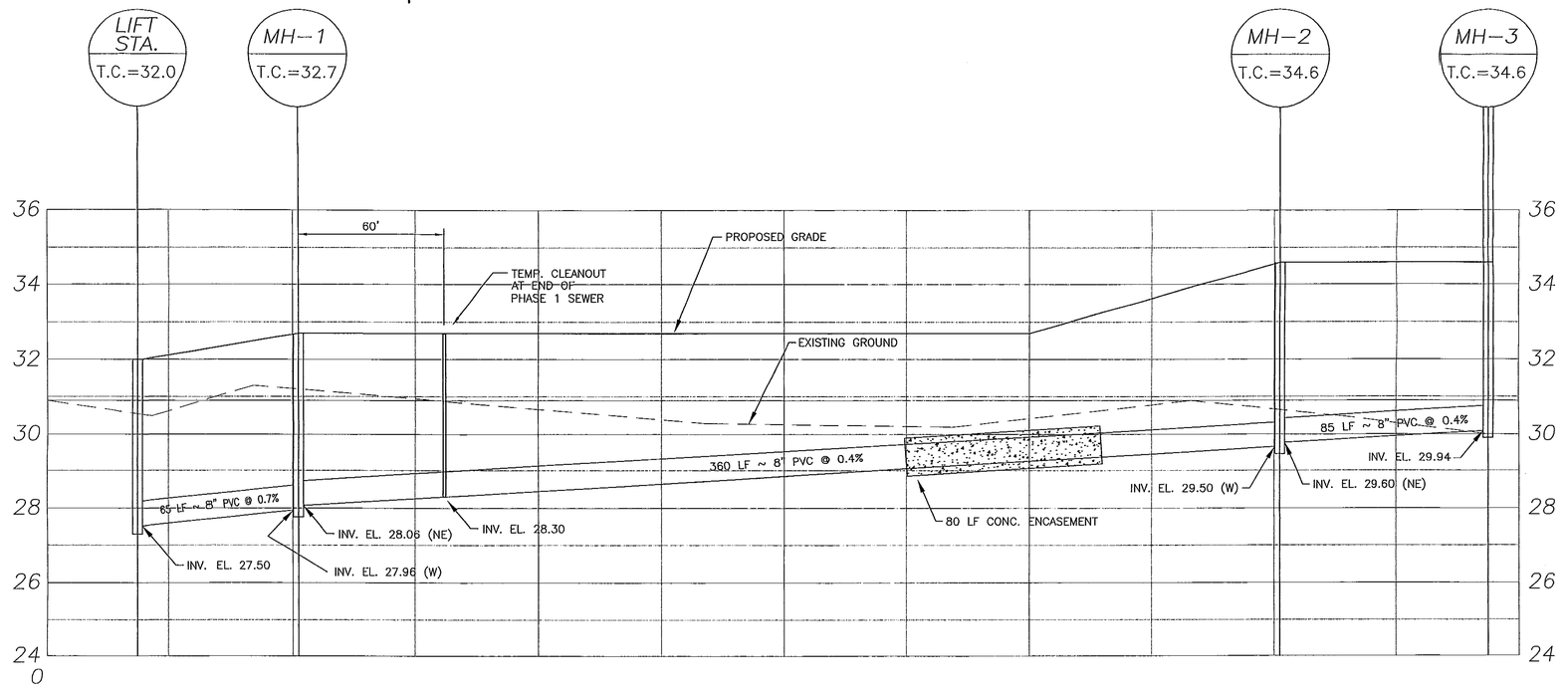


PLAN



PROFILE

SCALE: 1"=30' HORIZ.
1"=2' VERT.

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REVISIONS

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SANITARY SEWER PLAN/PROFILE
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-SITES
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/2003
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H.J. BURROUGHS,
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07/02/03

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H-20 LSMCo Grinder/Pac.

LSMCo INC.

PART 1 – GENERAL

1. 01 Furnish and install two grinder pumps to deliver ① GPM against a total head of ② feet Total Dynamic Head (TDH). Pumps shall be capable of handling domestic sewage with minimal maintenance. The motor shall be ⑪ HP, ⑩ RPM, ⑫ VOLT/ ⑫ PHASE/ 60 HERTZ.

Pumps, control system, and FRP (fiberglass reinforced polyester) wetwell shall be LSMCo Grinder/Pac. provided and manufactured by Lift Station Management & Co., Inc. of Longwood, FLorida 32750 Ph (407) 265-9963

Contract award shall be on the basis of the base bid LSMCo/Grinder Pac system. Alternative deductive systems shall be considered only after contract award. Alternative deductive system must be specified at bid time. The contractor shall reimburse the engineer for additional expenses to review alternative system. Any savings shall be shared with the owner.

Due to the superior corrosion resistance and leak proof design of fiberglass, a concrete wetwell will NOT be permitted.

The entire lift station system shall be supplied by the pump supplier and certification of supply will be required.

Any Deviation in the Specified Bid Procedure will result in automatic rejection of alternative systems and will require base bid system to be supplied.

PART 2 – PRODUCTS

2.01 GRINDER PUMP – Pump shall be HOMA Model ⑨ with an integrally built grinder unit and submersible type motor. The pump shall be mounted in the FRP basin by a dual slide rail system in such a way that solids are fed in an up-flow direction to the grinder impeller with no feet or other obstruction below the grinder inlet.

The grinder unit shall be capable of macerating all material in normal domestic and commercial sewage including reasonable amounts of foreign objects such as wood, plastic, glass, rubber, sanitary napkins, disposable diapers and the like to a fine slurry that will pass freely through the pump and the discharge pipe.

The pump motor shall be of the submersible type. Single phase motors shall be of the capacitor start, capacitor run type for high starting torque.

Stator windings shall be of the open type with Class F insulation for operating in air or clean dielectric oil that lubricates bearings and seals and cools the windings. Motor stator shall be pressed into housing for best alignment and maximum heat transfer.

A heat sensor thermostat shall be attached to the top end of the motor winding and shall be connected in series with the magnetic contactor coil in control box to stop motor if motor winding temperature reaches 200 degrees F. Thermostat to automatically reset when motor cools. Two heat sensors are to be used on 3 phase motors.

The common motor pump and grinder shaft shall be of AISI 416 SS threaded to take pump impeller and grinder impeller.

2.02 DUPLEX PUMP CONTROL PANEL – Pump control panel shall control two ⑪ HP, ⑫ / ⑫ , 60HZ pumps. The enclosure shall be NEMA 3R, minimum 24" high x 20" wide x 8" deep, fabricated from type 304, 14 ga. stainless steel with padlockable draw latches. The enclosure shall have external mounting feet to allow for wall mounting. All hardware shall be stainless steel. All conduit penetrations shall have approved seal off fittings and shall be properly sealed to prevent gas from entering enclosure.

The following components shall be mounted through the enclosure:

1	ea.	Red Alarm Beacon
1	ea.	Alarm Horn
1	ea.	Generator Receptacle with weatherproof cover
1	ea.	Silence Pushbutton

The backpanel shall be fabricated from .125, 5052-H32 marine alloy aluminum. All components shall be mounted by machined stainless steel screws. Self tapping screws are not acceptable.

The following components shall be mounted to the backpanel:

2	ea.	Motor Contactors
2	ea.	Start Capacitors to match motor requirements, single phase only
2	ea.	Run Capacitors to match motor requirements, single phase only
2	ea.	Start Relays to match motor requirements, single phase only
1	ea.	Voltage Monitor With fuses. (Single Phase) Phase/Monitor (Three Phase)
1	ea.	Control Transformer with primary and secondary fuses, 480 Volt only
1	ea.	Silence Relay
1	ea.	Intrinsically Safe Float Input Module
1	ea.	Duplex Alternator
20	ea.	Terminals for field connections
6	ea.	Terminals for motor connections, single phase only
3	ea.	Ground Lugs
1	ea.	Space Heater

The innerdoor shall be fabricated from .080, 5052-H32 marine alloy aluminum. The innerdoor shall have a continuous aluminum piano hinge, a handle and catch and shall be installed by stainless steel screws for ease of removal. The inner door shall open a minimum of 110 degrees to allow safe access to backpanel.

The following components shall be mounted through the Innerdoor:

1	ea.	Main Circuit Breaker
1	ea.	Emergency Circuit Breaker
1	ea.	Mechanical Interlock for main breakers
2	ea.	Motor Short Circuit Protectors
1	ea.	Control Circuit Breaker
2	ea.	Hand-Off-Auto selector switches
1	ea.	Sequence selector switch, 1 -Auto-2
1	ea.	Alternator Test Switch
2	ea.	Pump Run Pilot Lights
1	ea.	Power On Pilot Light
4	ea.	Float Indicating Pilot Lights
2	ea.	Seal Failure Pilot Lights
2	ea.	Elapsed Time Meters
1	ea.	GFI Duplex Convenience Outlet

COMPONENT SPECIFICATIONS:

All circuit breakers shall be molded case thermal magnetic. Circuit breakers shall be sealed by the manufacturer after calibration to prevent tampering. Each breaker shall be adequately sized to meet the equipment operating conditions.

The mechanical Interlock shall prevent the normal and emergency main breakers from being energized at the same time. The interlock shall be fabricated from aluminum or stainless steel.

An emergency generator receptacle shall be supplied In accordance with DEP standards. The generator receptacle shall be adequately sized to meet the equipment operating conditions.

All motor short circuit protection devices must provide for undervoltage release and class 10 overload protection on all three phases. Visible trip indication, test and reset capability must be provided without opening inner door.

Open frame, across the line, contactors shall be rated per IEC standards and properly sized per the motor requirements. Contactors shall provide for safe touch power and control terminals. Contactor contacts and coil shall be easily replaceable without removing the contactor from its mounted position.

A **lightning arrestor** to meet or exceed the requirements of ANSI/IEEE Std. ANSI/IEEE Std. C62.21-1984 section 8.6.1 and 8.7.3 shall be supplied by electrician and mounted on the bottom side of the switch disconnect ahead of the pump control panel.

A **voltage monitor** shall be supplied for single phase service. The voltage monitor shall be designed to sense a low voltage condition. The relay shall de-energize the motors when the line voltage drops 15% below the relay setting. The voltage monitor shall be protected by dual element fuses.

A **phase monitor** shall be supplied for three phase service. The phase monitor shall be designed to sense a low voltage, phase loss, power failure and improper phase sequence condition. The relay shall de-energize the motors upon a conditon fault. The phase monitor shall be protected by dual element fuses.

The control system shall be designed to operate the floats at **intrinsically safe voltage levels (5V @ 100 microamps).** Each input shall cause a contact closure to start and stop pumps as well as energize alarms.

The duplex alternator shall be the solid state type. The alternator shall switch each pump to lead upon a single complete cycle and shall provide for lag pump operation upon level rise.

The **design logic for this system shall include float failure detection.** Upon a float failure, the logic shall automatically compensate for the loss by removing the failed float from the circuit and electrically re-position the floats for a fail safe mode. As an example, If the "STOP PUMPS" float failed, the "START LEAD" float would become the "STOP PUMPS" float, the "START LAG" float would become the "START LEAD" float and the "HIGH LEVEL" float would become the "START LAG/ HIGH LEVEL " float. Further, if the "STOP PUMPS" and the "START LEAD" floats failed, the "START LAG" float would become the "STOP PUMPS" float and the "HIGH LEVEL" would become the "START LEAD/START LAG/HIGH LEVEL" float.

The **Control Module** shall be programmable to start both pumps simultaneously every 24 hours to increase pump discharge velocity and to provide "WIPE DOWN" of wetwell wall

A **lag pump time delay shall be supplied to prevent both pumps from simultaneously starting after a power outage.** The time delay shall be set at 10 seconds minimum.

An **alternator sequence (1-Auto-2),** three position toggle type selector switch shall be supplied to manually overide the alternator. In the '1' positon, motor #1 shall always be the lead motor. In the 'Auto' positon, the motors shall sequence to become the lead motor. In the '2' positon, motor #2 shall always be the lead motor.

An **alternator test switch,** toggle type shall be supplied to test the alternator circuit.

Hand-Off-Auto, three position toggle type selector switches shall be supplied for each motor.

A **red run light** shall be supplied for each motor. The pilot light shall illuminate each time the motor is called to run.

A **yellow seal failure light** shall be supplied for each motor. The pilot light shall illuminate upon detection of water in the seal chamber of the pump.

Each motor shall have an **elapsed time meter** to record the accumulated running time. The ETM shall be a 2" diameter, non-resettable, six digit, totally encapsulated unit.

A **red pilot light** shall be supplied for each float. The appropriate pilot light shall illuminate each time the float switch closes.

A **green pilot light** shall be supplied for control power. The pilot light shall illuminate when control power is available in the panel.

Relays shall be ice-cube plug-in type. Relay contacts shall be rated 10 amp minimum, DPDT.

Twenty (20) terminals shall be supplied for field connections. The teminals shall be rated 25 amps minimum and shall be **mounted on a 30 degree angle** for ease of **field wiring.** Float connection terminals shall be arranged such that each float is connected in consecutive order and does not require any crossing of wires.

Each motor **over-temperature contact** shall be connected to the terminal strip and shall open a contact to de-energize the appropriate motor upon a high temperature within the motor.

A 15A GFI **duplex convenience outlet** shall be supplied and mounted on the Innerdoor to provide service technicians with an outlet for trouble lights, etc.

Ground lugs shall be supplied and appropriately sized for each motor and for service entrance.

A **space heater** shall be provided to maintain the temperature within the enclosure a minimum of 2-3 degrees F. above ambient to provent condensation build up. The heater shall be mounted with stainless steel screws and protected by a shield. Self adhesive means of fastening by glue, tape, ect. are not acceptable.

Nameplates for the innerdoor shall be of a graphic design, specifically depicting the intent for each device. One nameplate shall be supplied for all control devices. One nameplate shall be supplied for all power devices. All text and graphics on each nameplate shall be scratch resistant. The nameplates shall be fabricated from laser-screened laminated mylar.

Nameplates for the backpanel shall be of a graphic design, specifically depicting the intent for each component. One nameplate shall be supplied for each component. All text and graphics on each nameplate shall be scratch resistant. The nameplates shall be fabricated from laser-screened laminated mylar

MISCELLANEOUS:

All wiring on the backpanel shall be contained within wiring duct.
All wiring between the innerdoor and the backpanel shall be contained within a plastic spiral wrap.'

Each wire shall have a wire number at each end to correspond to the asbuilt drawing for field troubleshooting.
The control panel shall be assembled by an Underwriters Laboratories UL508 listed manufacturing facility.

2.03 FASTENER and APPURTENANCES- All fasteners, lifting cables, float cable bracket and appurtenances shall be made of AISI 304SS or other material inert to the highly corrosive atmosphere of a sewage lift station. Hinges for the wet well and valve box shall be AISI 304SS minimum.

An aluminum slide/latch assembly shall be provided for holding the doors open on both the wet well and the valve box.

Slide rails shall be SCH 40 AISI 304SS pipe.

Pump lifting devices shall be made of AISI 304SS (min.) cable (1/4"min) or 304SS chain of sufficient size, with safety factor to handle safely the specific pumps. AISI 304SS (min.) pump lifting bails shall be provided.

2.04 H-20 FIBERGLASS WETWELL w/ LIFTING LUGS

The fiberglass wetwell must be H-20 load rated w/ integral lifting lugs, and certification of this rating must be supplied at time of submittal.

The wetwell shall be manufactured of fiberglass reinforced polyester (FRP) of diameter and depth as shown on the lift station elevation detail. The wall thickness shall be adequate for the depth of the wetwell to maintain the H-20 load rating.

Reinforcing Materials: The reinforcing material shall be commercial grade "E" type glass in the form of mat, chopped or roving fabric, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.

Additives, such as thixotropic agents, catalysts, promoters, etc., may be added as required by the specific manufacturing process to be used to meet the requirements of this specification.

Fillers and Additives: Fillers of any type shall not be utilized.

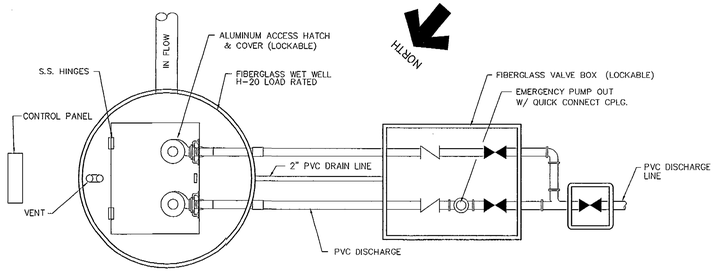
PART 3 – EXECUTION.

3.01 INSTALLATION – shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the drawing.

3.02 INSPECTION AND TESTING – A factory representative shall be provided for one (1) day and shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise the test run of the equipment.

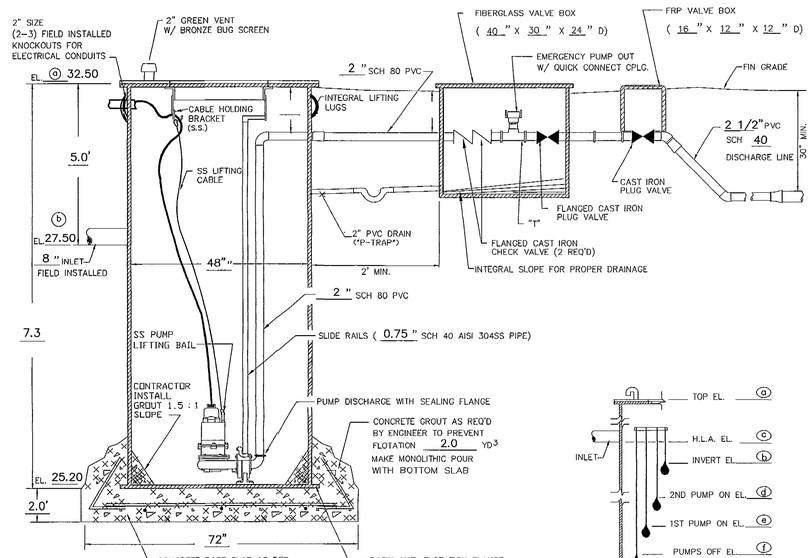
Megger the motor. The pump motors shall be megged out prior to startup to ensure the insulation of the pump motor/cable system is intact.

The pump controls and pumps shall be checked for mechanical reliability and proper operation.



③ NOTE: PUMP CONTROL SHALL BE LOCATED 3 FEET FROM WET WELL PERIMETER OPTIONALLY AT "A", "B", OR "C"

LIFT STATION PLAN



LIFT STATION SECTION

PUMP DATA CHART			
①	PRIMARY PUMP CAPACITY	30	GPM
②	PRIMARY TDH	55	FT
③	SECONDARY PUMP CAPACITY	30	GPM
④	SECONDARY TDH	55	FT
⑤	PEAK INFLUENT FLOW RATE	15.2	GPM
⑥	PUMP CYCLE TIME	6	MIN.
⑦	PUMP SYSTEM MANUFACTURER	LSMCo./Inc.	
⑧	PUMP MANUFACTURER	HOMA	
⑨	PUMP MODEL NO.	GRP 16/1	
⑩	R.P.M.	3450	
⑪	HORSE POWER	1.6	
⑫	ELECTRICAL - VOLTS/PHASE	208-230 V/ 1 ø	
⑬	PUMP DISCHARGE SIZE	2"	
⑭	IMPELLER DIA.	4-7/8"	

ELEVATION CHART		
ⓐ	TOP OF WETWELL	32.50
ⓐ	TOP OF VALVE BOX	32.50
ⓑ	INLET INVERT	27.50
ⓒ	HIGH LEVEL ALARM	28.00
ⓓ	2nd PUMP ON	27.50
ⓔ	1st PUMP ON	27.00
ⓕ	PUMPS OFF	26.00
ⓖ	BOTTOM OF WET WELL	25.20

NOTES:

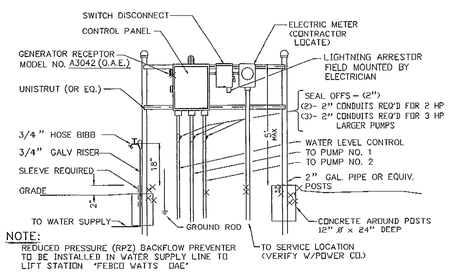
1. ALL DIMENSIONS ARE IN FEET EXCEPT AS NOTED.
2. DRAWING IS NOT TO SCALE.
3. ALL DIMENSIONS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4. PAINT EXPOSED FRP AS REQUIRED BY OWNER/ENGINEER.
5. F.R.P. INDICATES FIBERGLASS REINFORCED POLYESTER.
6. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES.
- ◆ 7. ELECTRICIAN TO RUN TWO (2 HP PUMPS) / THREE (3 HP & LARGER PUMPS) SEPARATE 2" CONDUITS (ONE EACH FOR HIGH & LOW VOLTAGES) PER ELECTRICAL CODE BETWEEN CONTROL PANEL AND WETWELL
- ◆ 8. ALUMINUM WIRE SHALL NOT BE USED BETWEEN MAIN METER AND CONTROL PANEL.
- ◆ 9. ELECTRICIAN SHALL SEAL OFF CONDUIT RUNS INSIDE WETWELL AND INSIDE OF CONTROL PANEL.
- ◆10. ELECTRICIAN TO MOUNT LIGHTNING ARRESTOR AT SWITCH DISCONNECT (AHEAD OF THE PUMP CONTROL PANEL).
11. BOTH WETWELL AND VALVE BOX SHALL BE PROVIDED WITH A MEANS FOR LOCKING.
12. CONTRACTOR SHALL FIELD INSTALL INLET FITTING AT PROPER ELEVATION.
13. ALL HARDWARE AND FASTENERS SHALL BE STAINLESS STEEL.
14. CONTRACTOR SHALL VERIFY POWER SOURCE PRIOR TO ORDERING EQUIPMENT.
- ◆15. NEUTRAL REQUIRED ON ALL ELECTRICAL SERVICE TO CONTROL PANEL

◆ ELECTRICIAN NOTE

LSMCo - Grinder Pac 9/00

④ SEE ELEVATION CHART FOR ⓐ THRU ⓖ

LEVEL CONTROL DIAGRAM



⑤ SEE "LIFT STATION PLAN" ABOVE FOR LOCATION

ELECTRICAL RISER

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

07/02/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

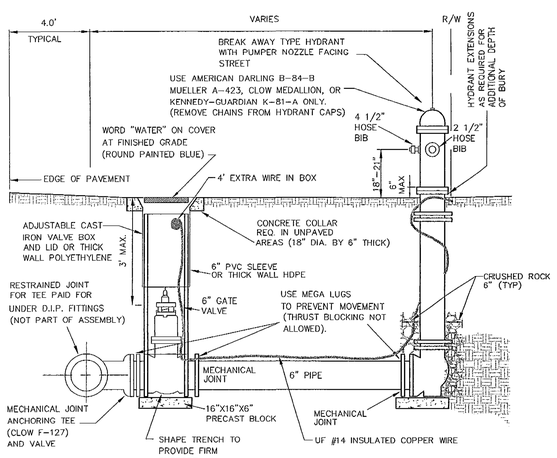
REVISIONS

NO.	DESCRIPTION	DATE

LIFT STATIONS DETAILS
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-LSD
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/2003
SHEET C-10

X:\Eng-Cad\T1159TOM_E\dwg\1159-LSD.dwg 06/30/2003 07:06:03 AM EDT

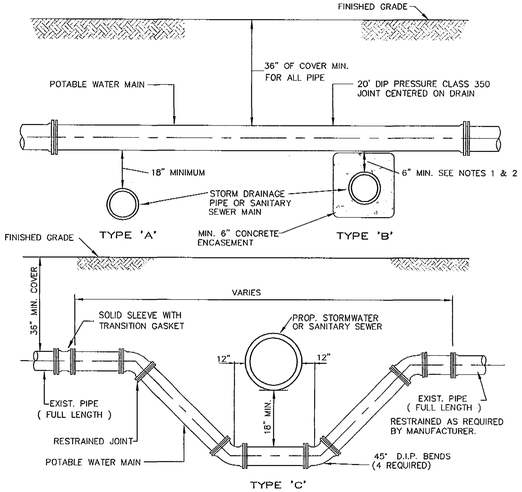


NOTES:

1. HYDRANTS SHALL BE OF THE SELF DRAINING TYPE.
2. HYDRANTS TO BE PAINTED YELLOW.
3. HOSE BIBS TO BE AMERICAN STANDARD THREADS.
4. RESTRAINED JOINTS REQUIRED. THRUST BLOCKS ARE NOT PERMITTED.
5. ADJUSTABLE TRENCH ADAPTOR ASSY. REQUIRED FOR ALL VALVES GREATER THAN 3' DEEP.
6. INSTALL AT SIDE LOT LINES OR AT CORNERS OF ROADWAY RIGHT-OF-WAY INTERSECTIONS (TYPICAL).

FIRE HYDRANT ASSEMBLY

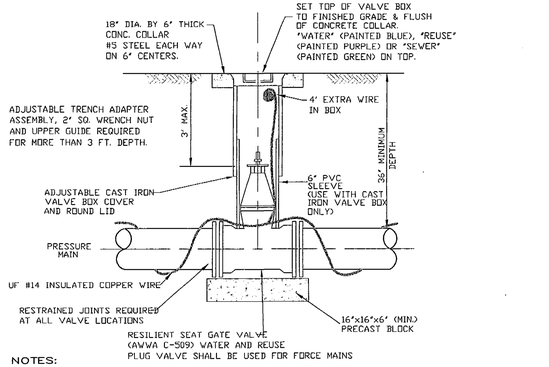
FEBRUARY 2001



NOTES:

1. TYPE "A" CROSSING SHALL BE THE PREFERRED CONFIGURATION.
2. CONCRETE ENCASEMENT OF A SANITARY SEWER MAIN IS AN ALTERNATIVE METHOD OF ADDRESSING A CONFLICT WHEN 18" VERTICAL SEPARATION DISTANCE CANNOT BE MAINTAINED. IN SUCH INSTANCES, THE MINIMUM PIPE VERTICAL SEPARATION SHALL BE 6". (NOTE THAT THIS DOES NOT APPLY TO SERVICE LATERALS.
3. LOWERING OF EXISTING WATER MAIN & FORCE MAIN BY DEFLECTION METHOD ACCEPTABLE IF EXISTING FIELD CONDITIONS PERMIT.
4. LENGTH OF SECTION BASED ON MINIMUM LENGTH AS DETERMINED BY DIPRA RESTRAINED JOINT MANUAL
5. INSTALL RESTRAINED JOINTS, AS REQUIRED, FROM DEFLECTION POINT IN BOTH DIRECTIONS.

TYPICAL PIPE CROSSING DETAIL



NOTES:

1. ROD OR BOLT TEE WHERE APPLICABLE.
2. ACCEPTABLE MANUFACTURERS OF GATE VALVES INCLUDE: AMERICAN DARLING, KENNEDY, M&H, MUELLER, CLOW
3. ACCEPTABLE MANUFACTURES OF PLUG VALVES INCLUDE: DEZURIK, HOMESTEAD, KENNEDY, CLOW, PRATT.
4. BUTTERFLY VALVES ARE NOT ACCEPTABLE.

REUSE WATER SEWER POTABLE WATER

VALVE & VALVE BOX DETAILS

SCHEDULE OF LENGTHS OF RESTRAINED PVC PIPE (FT.)					
FITTING	1/4 BEND	1/8 BEND	1/16 BEND	1/32 BEND	TEE OR DEAD END
PIPE SIZE (IN.) :					
4"	20	18	18	18	45
6"	28	18	18	18	63
8"	36	18	18	18	82
10"	44	28	18	18	98
12"	51	21	18	18	116
14"	57	24	18	18	132
16"	63	26	18	18	148
18"	69	29	18	18	163
20"	75	31	18	18	179
24"	87	36	18	18	208
30"	102	42	20	18	248

LENGTHS BETWEEN HEAVY LINES INDICATE ONE FULL LENGTH (18' MIN.) OF PIPE TO BE RESTRAINED.

TABLE SHOWS MINIMUM LENGTH OF PIPE EACH WAY FROM FITTING FOR WHICH RESTRAINT IS REQUIRED.

TABLE APPLIES TO PVC PIPE FOR THE FOLLOWING CONDITIONS:

TEST PRESSURE: 150 PSIG
SOIL TYPE: SP
COVER DEPTH: 3 FEET (MIN.)
SAFETY FACTOR: 1.5
TRENCH TYPE: 3

SCHEDULE OF LENGTHS OF RESTRAINED DIP (FT.)					
FITTING	1/4 BEND	1/8 BEND	1/16 BEND	1/32 BEND	TEE OR DEAD END
PIPE SIZE (IN.) :					
4"	21 (26)	18 (18)	18 (18)	18 (18)	37 (55)
6"	30 (36)	18 (18)	18 (18)	18 (18)	52 (78)
8"	38 (45)	18 (18)	18 (18)	18 (18)	67 (100)
10"	45 (54)	18 (22)	18 (18)	18 (18)	81 (122)
12"	52 (63)	22 (26)	18 (18)	18 (18)	94 (141)
14"	60 (72)	25 (30)	18 (18)	18 (18)	107 (160)
16"	66 (80)	27 (33)	18 (18)	18 (18)	120 (180)
18"	74 (87)	31 (36)	18 (18)	18 (18)	132 (198)
20"	80 (94)	33 (39)	18 (18)	18 (18)	144 (216)
24"	92 (108)	38 (45)	18 (22)	18 (18)	167 (250)
30"	106 (128)	44 (53)	21 (25)	18 (18)	199 (298)
36" *	69 (82)	28 (34)	18 (18)	18 (18)	170 (204)
42" *	76 (92)	31 (37)	18 (18)	18 (18)	191 (229)
48" *	90 (106)	40 (46)	18 (18)	18 (18)	212 (254)

LENGTHS BETWEEN HEAVY LINES INDICATE ONE FULL LENGTH (18' MIN.) OF PIPE TO BE RESTRAINED.

TABLE SHOWS MINIMUM LENGTH OF PIPE EACH WAY FROM FITTING FOR WHICH RESTRAINT IS REQUIRED.

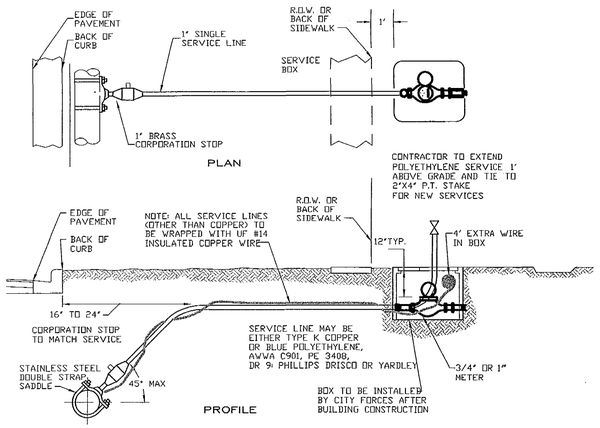
TABLE APPLIES TO DUCTILE IRON PIPE FOR THE FOLLOWING CONDITIONS:

TEST PRESSURE: 150 PSIG
SOIL TYPE: SP
COVER DEPTH: 3 FEET (MIN.)
SAFETY FACTOR: 1.5
TRENCH TYPE: 2

VALUES IN PARENTHESIS ARE FOR PIPE ENCASED IN POLYETHYLENE.

* VALUES APPLY TO DUCTILE IRON PIPE AT 50 PSI TEST PRESSURE.

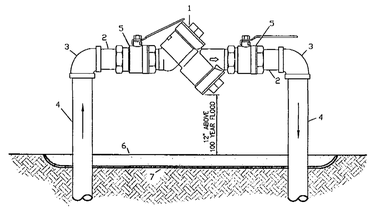
PVC & DIP RESTRAINED JOINT TABLE



NOTES:

1. SERVICE BOX AND METER FURNISHED BY CITY FORCES.
2. METER SHALL BE INSTALLED BEHIND SIDEWALK AS SHOWN
3. BACKFLOW PREVENTION DEVICES MAY BE REQUIRED ON WATER CONNECTIONS. THEY ARE TO BE SUPPLIED AND INSTALLED BY THE DEVELOPER/BUILDER AT NO COST TO THE CITY
4. IRRIGATION METERS REQUIRE AN APPROVED BACKFLOW PREVENTER.
5. CORPORATIONS SHALL BE FORD F1101-4 (1"), FB1700 (2") OR MUELLER H-15028 (1"), H-10046 (2").
6. SERVICE SADDLES SHALL BE STAINLESS STEEL STRAPS-EPOXY COATED. ACCEPTABLE MANUFACTURES INCLUDE: SMITH BLAIR (ROCKWELL), JCM, OR FORD.

TYPICAL WATER SERVICE DETAIL

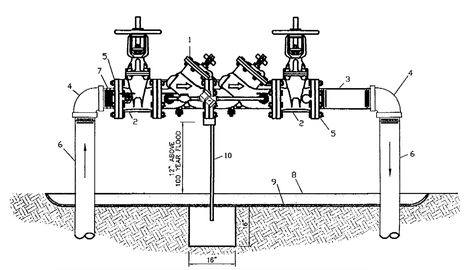


M A T E R I A L S		
ITEM	QUANT.	D E S C R I P T I O N
1	1	3/4", 1", 1-1/2" OR 2" BACKFLOW PREVENTER ASSEMBLY
2	2	3/4", 1", 1-1/2" OR 2" x NOM. NIPPLES - BRASS
3	2	3/4", 1", 1-1/2" OR 2" x 90° ELBOWS - PVC/GALV.
4	2	3/4", 1", 1-1/2" OR 2" x VARIES RISER - PVC/GALV.
5	2	3/4", 1", 1-1/2" OR 2" BALL VALVE
6	*	PEA GRAVEL
7	*	PLASTIC LINER

NOTE: -FIELD ADJUST AND CUT ITEM 4 TO THE PROPER LENGTH.
-DO NOT INTERCHANGE ITEMS 4 AND 5.
-ASSEMBLY SHALL BE PAINTED FOREST GREEN.

ACCEPTABLE MANUFACTURERS: HERSEY MODEL FRP II, FEBCO 825Y, WATTS MODEL 909 OS&Y, CONBRACO 40-200 CLA-VAL RP2, OR PRE-APPROVED EQUIVALENT

REDUCED PRESSURE BACKFLOW PREVENTER SINGLE SERVICE 3/4". 1", 1-1/2" OR 2"

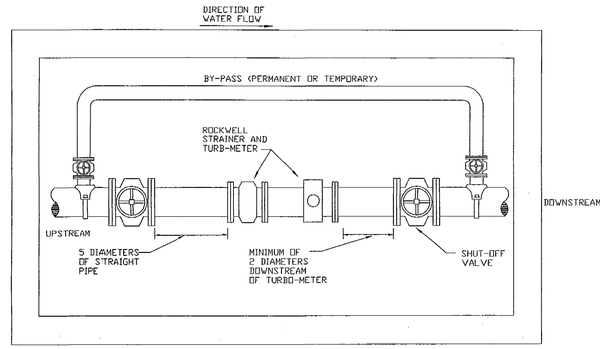


M A T E R I A L S		
ITEM	QUANT.	D E S C R I P T I O N
1	1	4", 6", 8", 10" VALVE, DOUBLE CHECK BACKFLOW PREVENTER
2	2	4", 6", 8", 10" VALVE, GATE, C.I., F-F
3	1	4", 6", 8", 10" NIPPLE, GALV. (12" LONG) (DPT.)
4	2	4", 6", 8", 10" ELBOW, GALV. - 90°
5	2	4", 6", 8", 10" FLANGE, STEEL PIPE, SCREW-TYPE
6	2	4", 6", 8", 10" PIPE, GALV. (42" LONG)
7	1	4", 6", 8", 10" NIPPLE, GALV. (6" LONG)
8	*	PEA GRAVEL
9	*	PLASTIC LINER
10	1	PIPE SUPPORT / CONCRETE FOUNDATION

NOTE: -FIELD ADJUST AND CUT ITEM 4 TO THE PROPER LENGTH.
-DO NOT INTERCHANGE ITEMS 4 AND 5.
-ASSEMBLY SHALL BE PAINTED FOREST GREEN.

ACCEPTABLE MANUFACTURERS: HERSEY DDC II, FEBCO 806Y DCDA, WATTS 709 DCDA, CLA-VAL 16-4, CONBRACO 40-600, OR PRE-APPROVED EQUIVALENT

DOUBLE CHECK DETECTOR BACKFLOW PREVENTER DEDICATED FIRE LINE, 4", 6", 8", OR 10"



NOTES:
A METER MUST BE INSTALLED ON ALL PERMANENT OR TEMPORARY BY-PASS LINES.

MASTER METER ASSEMBLY WITH BY-PASS

H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2542

6/02/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
FLAGLER/PALM COAST
DAYTONA BEACH
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1601
Fax: 386-257-1607
email: tomoka@tomoka-eng.com
website: www.tomoka-eng.com

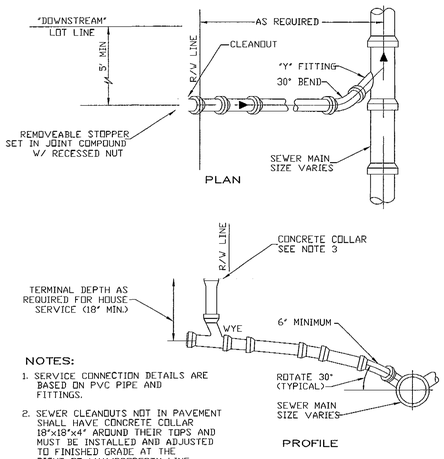
REVISIONS

NO.	DESCRIPTION	DATE

STANDARD WATER DETAILS
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

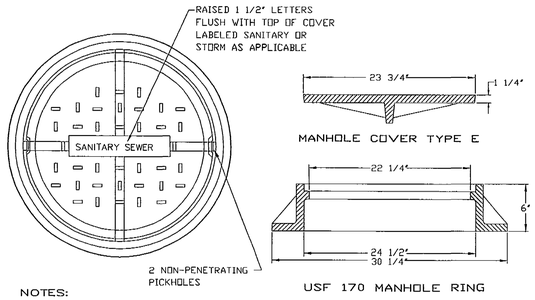
PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-CD2
REVISION NO./DATE
SEE REVISION TABLE
ORIGINAL ISSUE DATE
07/02/03
SHEET
C-11



NOTES:

1. SERVICE CONNECTION DETAILS ARE BASED ON PVC PIPE AND FITTINGS.
2. SEWER CLEANOUTS NOT IN PAVEMENT SHALL HAVE CONCRETE COLLAR 18"x18"x4" AROUND THEIR TOPS AND MUST BE INSTALLED AND ADJUSTED TO FINISHED GRADE AT THE RIGHT-OF-WAY/PROPERTY LINE
3. ALL SERVICE JOINTS ARE TO BE WRAPPED WITH NON-WOVEN FILTER FABRIC. SEE STANDARD SEWER MANHOLE FOR SPEC. ON FABRIC TO BE USED.

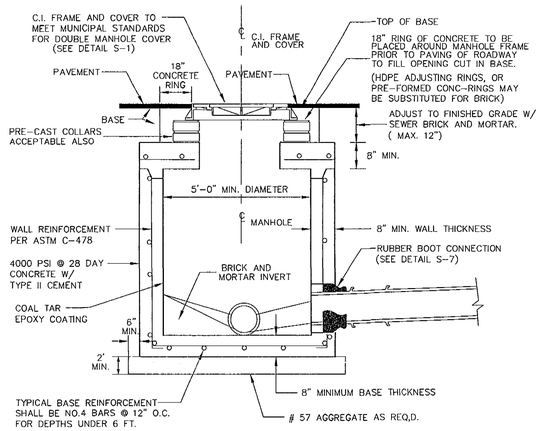
SANITARY LATERAL DETAIL



NOTES:

1. CEMENT USED IN PRECAST CONCRETE MIX SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.
2. MORTAR TO CONTAIN "HYDRATITE", OR APPROVED EQUAL, TO PREVENT SHRINKAGE.
3. SUB-GRADE BENEATH MANHOLES SHALL BE UNDISTURBED GRANULAR UNSATURATED SOIL. No. 57 AGGREGATE STONE SHALL BE USED IN WET CONDITIONS AND/OR WHERE UNSUITABLE MATERIAL IS ENCOUNTERED.
4. UNLESS DETAILED PLANS SHOW OTHERWISE, ALL MANHOLE RING AND COVER CASTINGS IN PAVED AREAS ARE TO BE ADJUSTED TO FINAL GRADE, SEALED AND SECURED IN PLACE WITH A CONCRETE COLLAR AFTER THE ROAD BASE IS PLACED AND JUST PRIOR TO PLACEMENT OF ASHPALT WEARING SURFACE.
5. CONTRACTOR SHALL PROVIDE THICKER MANHOLE WALLS AND BASES AS REQUIRED TO PREVENT FLOTATION BASED ON HISTORIC HIGH GROUND WATER TABLE ELEVATIONS AS DETERMINED USING ACCEPTED ENGINEERING PRACTICES AND/OR APPROVED BY PUBLIC WORKS DEPARTMENT.
6. CONCRETE COLLAR AROUND MANHOLE FRAME IS REQUIRED IN PAVED AREAS ONLY.
7. SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO AND APPROVED BY THE DESIGN ENGINEER PRIOR TO INSTALLATION.
8. TWO (2) COATS OF BITUMASTIC COATING INSIDE: 16 MIL
9. ONE (1) COAT OF BITUMASTIC COATING OUTSIDE: 8 MIL
10. FRAME AND COVER TO BE USF #170 TYPE 'E'.
11. NO BUG HOLES OR HONEYCOMB WILL BE ACCEPTED.
12. ENDS OF SECTION SHALL FIT FLUSH TOGETHER

SANITARY SEWER COVER & GENERAL NOTES

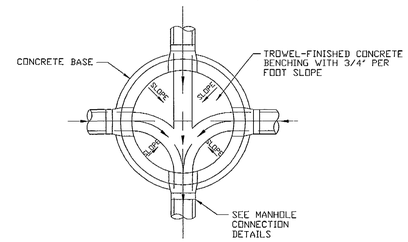


USE FOR MANHOLES OF 5'-0" OR LESS IN DEPTH

NOTES:

1. INSTALL NON-WOVEN FILTER FABRIC, (OR EQUAL) CENTERED AT ALL JOINTS (MIN. 2' WIDTH).
2. NON-PENETRATING PICK-HOLES IN ALL CONCRETE SECTIONS.
3. USE FARBERTITE BITUMASTIC SEALER BETWEEN SECTIONS OF MANHOLE.
4. GENERAL NOTES ON DETAIL S-1 APPLY.

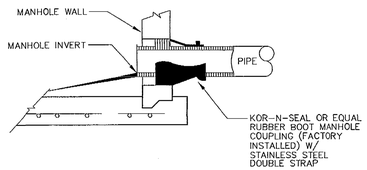
SHALLOW MANHOLE



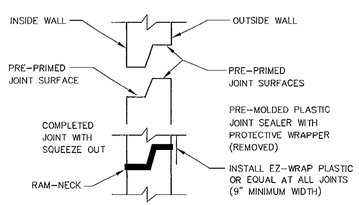
NOTES:

1. FLOW CHANNELS SHALL HAVE THE SAME SLOPES AS THE SEWERS THEY ARE CONNECTED TO. (EXCEPT THAT AT CHANGES OF DIRECTION EXCEEDING 45 THE DROP SHALL BE 0.1' MINIMUM)
2. NO STANDING WATER WILL BE ALLOWED.
3. FORM BENCH IN MANHOLE FROM MID-LINE OF 8" AND 10" PIPE TO WALL OF MANHOLE, 1/2" PER FT. OF SLOPE. FOR LARGER PIPE, CONSTRUCT FROM INSIDE CROWN OF PIPE WITH 1/2" PER FT. OF SLOPE TO WALL.
4. REMOVE UPPER SECTION OF PIPE AT BENCH.

MANHOLE INVERT DETAIL



MANHOLE PIPE CONNECTION DETAIL
FOR NEW CONNECTIONS IN EXISTING MANHOLES

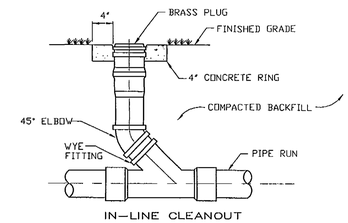


PRECAST JOINT CONNECTION

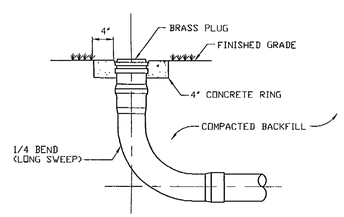
NOTES:

1. ALL NEW CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL UTILIZE A CORING METHOD AND THE IN-FIELD INSTALLATION OF A RUBBER BOOT INTO THE MANHOLE.

RUBBER BOOT AND PRECAST JOINT CONNECTION DETAIL



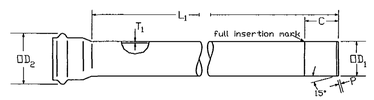
IN-LINE CLEANOUT



TERMINAL CLEANOUT

NOTE: CONCRETE COLLAR REQUIRED IN UNPAVED AREAS

SANITARY CLEANOUT DETAIL



NOTE:
All dimensions subject to manufacturing tolerances.

4" - 15" ASTM D 3034 (SDR 35)						
Dimensions						L_1 Laying Length Feet
Size Inches	OD_1 Inches	T Inches	P Inches	C Inches	OD_2 Inches	
4	4.215	.162	1/4	3 - 1/16	5.000	13/20
6	6.275	.241	1/4	3 - 3/8	7.220	13/20
8	8.400	.323	5/8	4 - 7/8	9.640	13/20
10	10.500	.404	3/4	5 - 9/16	12.080	13/20
12	12.500	.481	7/8	5 - 11/16	14.390	13/20
15	15.300	.588	1	9 - 3/16	18.260	13/20

PVC GRAVITY SEWER PIPE TABLE

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

STANDARD SEWER DETAILS
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA
PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-CD1
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/03
SHEET C-12

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120.
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

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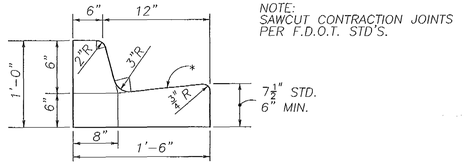
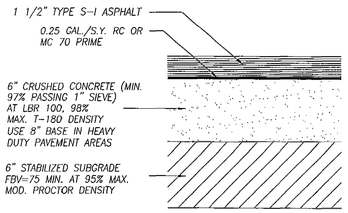


NOTE:
SAWCUT CONTRACTION JOINTS PER F.D.O.T. STD'S.

*NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.

F.D.O.T. TYPE F MODIFIED CONCRETE CURB and GUTTER

NOT TO SCALE

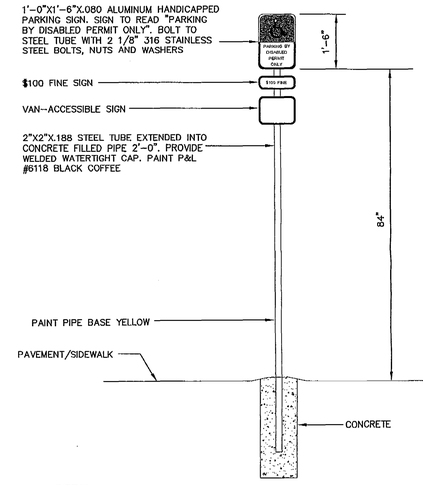


*NOTE: PROVIDE TEST OF SUBGRADE, BASE & SURFACE COURSE AT 1,000 S.Y. INTERVALS

(FOR PAVEMENT WITHIN PROJECT BOUNDARY)

ASPHALT PAVEMENT SECTION

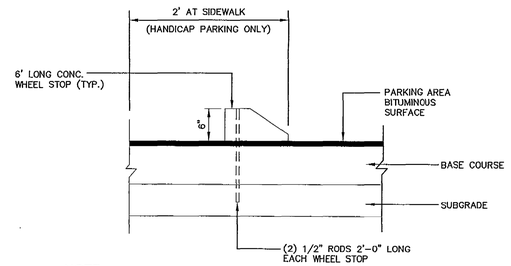
NOT TO SCALE



NOTES:

1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL AND FEDERAL CODES AND REGULATIONS.
2. ALL SIGNS SHALL BE DESIGNED TO WITHSTAND 120 M.P.H. WINDLOAD.

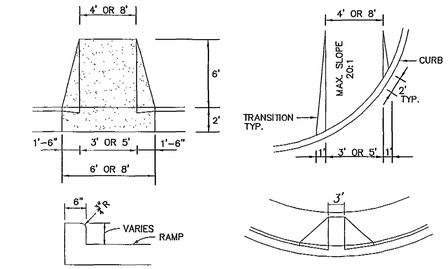
HANDICAP SIGNAGE DETAIL



NOTE:

1. CENTER WHEEL STOP IN EACH STALL

WHEEL STOP DETAIL



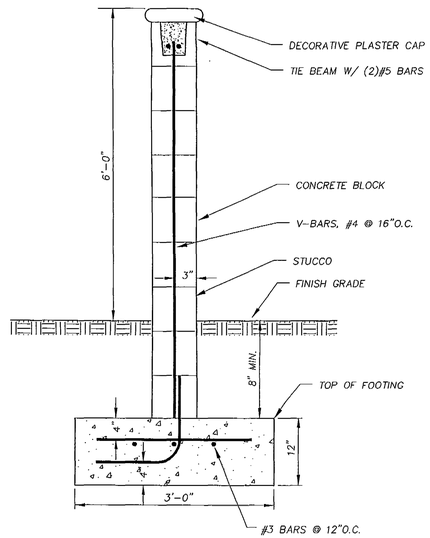
RAMP WITH INTEGRAL CAST CURB

DIAGONAL RAMPS

NOTES:

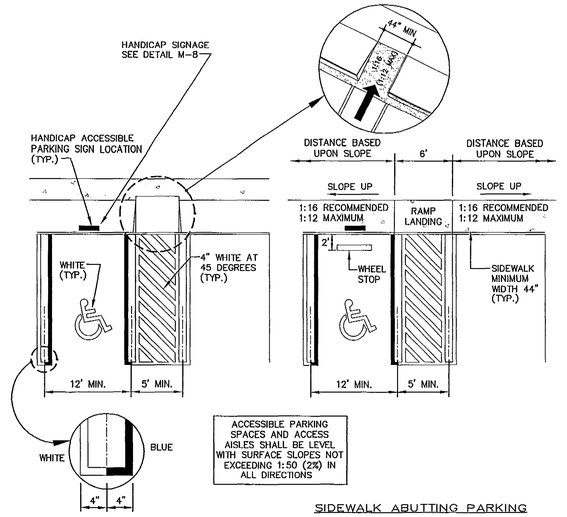
1. RAMP LOCATIONS ARE TO BE COORDINATED WITH AND IN CONFORMANCE WITH CROSSWALK MARKING DETAILS SHOWN IN THE PLANS.
2. CURBED RAMPS SHALL HAVE FLARED SIDES WITH A MAXIMUM SLOPE OF 10:1.
3. RAMPS SHALL HAVE A TACTLIKE SURFACE, TEXTURED TO A DEPTH NOT EXCEEDING 1/8".
4. RAMPS ARE TO BE CONSTRUCTED AT ALL LOCATIONS SHOWN IN THE PLANS EVEN WHEN A SIDEWALK IS NOT CONSTRUCTED CONCURRENTLY.
5. NO CURB TRANSITION IS NEEDED FOR MIAMI CURBS.
6. ALL RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FDOT INDEX NO. 304 AND HANDICAPPED ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH THE AMERICAN DISABLITIES ACT.

WHEELCHAIR RAMP DETAIL



TYPICAL MASONRY WALL SECTION

NOT TO SCALE



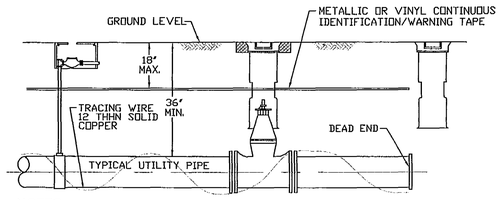
SIDEWALK RAMP DETAIL

SIDEWALK ABUTTING PARKING LOT DETAIL

NOTES:

1. WHEN HEADER CURB IS USED IN LIEU OF WHEEL STOPS, SIDEWALK ABUTTING CURB MUST BE WIDENED BY 18" SO THAT THE TOTAL SIDEWALK WIDTH IS 62", ALLOWING FOR 44" MINIMUM CLEAR ACCESSIBLE ROUTE.
2. FOR COMPLETE DETAIL OF HANDICAPPED SIGN, REFER TO DETAIL M-8.

HANDICAP SPACE STRIPING DETAIL



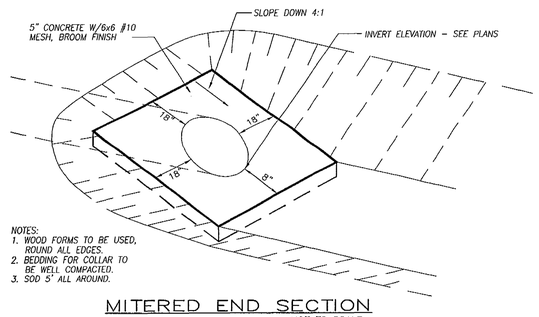
NOTES:

1. POTABLE AND RECLAIMED WATER SYSTEMS: WIRE SHALL BE INSTALLED BELOW ALL MAINS AND SERVICE LINES AND ATTACHED TO VALVES, HYDRANTS, AND FITTINGS. WIRE INSTALLED WITH SERVICE LINES SHALL CONNECT TO THE WIRE INSTALLED BELOW THE MAIN AND EXTEND TO THE CURB STOP.
2. FIRE SPRINKLER LINES: WIRE SHALL CONNECT TO THE WIRE INSTALLED BELOW THE MAIN AND EXTEND TO THE RISER CONNECTION.
3. SANITARY SEWER GRAVITY SYSTEM: WIRE SHALL BE INSTALLED BELOW SANITARY SEWER SYSTEM AND SHALL EXTEND UPWARD AND BE PLACED INTO MANHOLE STRUCTURES BETWEEN THE MANHOLE RING AND CONE. WIRE FOR SERVICE LATERALS SHALL CONNECT TO THE WIRE INSTALLED BELOW THE MAIN AND BROUGHT TO THE SURFACE AT THE SEWER CLEANOUT.
4. SANITARY SEWER FORCE MAINS: WIRE SHALL BE INSTALLED BELOW THE FORCE MAIN AND ATTACHED TO ALL VALVES AND FITTINGS AND BROUGHT TO THE SURFACE AND PLACED IN A METAL CITY APPROVED VALVE BOX.
5. DEAD END MAINS: WIRE SHALL BE PLACED IN A PROPERLY IDENTIFIED METAL VALVE BOX AT THE END OF THE RUN.
6. ALL PVC PIPE, OR OTHER CITY APPROVED NONMETALLIC PIPE INSTALLED WITHIN THE CITY'S WATER, SANITARY SEWER, OR RECLAIMED WATER SYSTEMS, SHALL BE INSTALLED WITH METALLIC LOCATOR TAPE.

COLOR CODING:

POTABLE WATER SYSTEM:	BLUE
RECLAIMED WATER SYSTEM:	PURPLE
SANITARY SEWER GRAVITY SYSTEM:	GREEN
SANITARY SEWER FORCE AND LOW PRESSURE SEWER MAINS:	GREEN

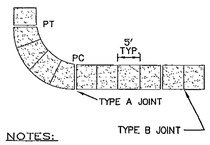
UTILITY PIPE LOCATION MATERIALS

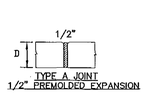


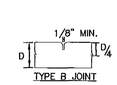
NOTES:
1. WOOD FORMS TO BE USED, ROUND ALL EDGES.
2. BEDDING FOR COLLAR TO BE WELL COMPACTED.
3. SOD 5' ALL AROUND.

MITERED END SECTION

NOT TO SCALE







NOTES:

1. SIDEWALKS, BIKEPATHS, RAMPS, AND DRIVEWAY APRONS SHALL BE CONSTRUCTED OF PLAIN PORTLAND CEMENT CONCRETE WITH A MAXIMUM SLUMP OF 3 INCHES, A MINIMUM DEVELOPED COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS, AND A MINIMUM UNIFORM THICKNESS OF 4 INCHES WHERE INTENDED SOLELY FOR PEDESTRIAN TRAFFIC, AND 6 INCHES THICK WHERE MOTOR VEHICLES ARE LIKELY TO CROSS.
2. SIDEWALKS AND BIKEPATHS SHALL BE PLACED PARALLEL TO, AND ONE FOOT WITHIN THE RIGHT-OF-WAY LINE EXCEPT THAT THE CITY MAY APPROVE DEVIATIONS TO SAVE SPECIMEN TREES PROVIDED THAT THE SIDEWALK REMAINS WITHIN THE RIGHT-OF-WAY OR AN APPROVED SIDEWALK EASEMENT ABUTTING THE RIGHT OF WAY. SIDEWALKS AND BIKE PATHS SHOULD BE LOCATED AT LEAST 4 FEET FROM THE EDGE OF THE STREET PAVEMENT UNLESS OTHERWISE APPROVED BY THE CITY.
3. THE TOP OF THE CONCRETE SHALL BE AT AN ELEVATION NO LOWER THAN THE CROWN OF THE ADJACENT ROADWAY, AND NO HIGHER THAN 6 INCHES ABOVE THE CROWN UNLESS APPROVED BY THE CITY TO MAKE A MORE NATURAL TRANSITION WITH THE ADJACENT LAND.
4. ISOLATION JOINTS (TYPE A JOINTS) SHALL BE PROVIDED BETWEEN EXISTING SLABS OR STRUCTURES AND FRESH CONCRETE, TO SEPARATE PEDESTRIAN SECTIONS FROM SECTIONS WHICH WILL ENCOUNTER VEHICLE TRAFFIC, TO SEPARATE FRESH PLACEMENT FROM CONCRETE WHICH HAS SET FOR MORE THAN 60 MINUTES, AND NO FARTHER APART THAN 100 FEET IN SIDEWALKS AND BIKEPATHS. JOINT MATERIAL SHALL BE AS SPECIFIED IN F.D.O.T. STANDARDS AND SPECIFICATIONS AND SHALL BE RUBBER, PLASTIC OR OTHER APPROVED NON-BIODEGRADABLE ELASTOMERIC MATERIAL. WOOD AND DECCA-DRAIN STYLE POOL DRAINS ARE STRICTLY PROHIBITED.
5. CONTROL JOINTS (TYPE B JOINTS) SHALL BE TOOLED INTO THE FRESH CONCRETE TO A DEPTH EQUAL TO 1/4 THE SLAB THICKNESS AND SPACED APART A DISTANCE EQUAL TO THE WIDTH OF THE SLAB OR 5 FEET WHICHEVER IS LESS.
6. THE SLAB SURFACE SHALL BE BROOM FINISHED TO BE SLIP RESISTANT, AND SHALL MATCH AS CLOSELY AS POSSIBLE THE FINISH OF EXISTING ADJACENT SLABS AND ALL EDGES SHALL BE TOOLED TO ELIMINATE SHARP CORNERS.
7. THE BEARING SUBSURFACE SHALL HAVE ALL ORGANIC, LOOSE, AND DELETERIOUS MATTER REMOVED, AND THE REMAINING CLEAN SOIL SHALL BE SMOOTH, SOUND, AND SOLID. ANY FILL MATERIAL SHALL BE COMPACTED WITH A VIBRATORY OR IMPACT COMPACTION MACHINE IN MAXIMUM 12 INCH LIFTS OR COMPACTED WITH A HAND TAMPER IN MAXIMUM 4 INCH LIFTS THE CITY SHALL REQUIRE A COMPACTION TEST FOR EACH LIFT IF THE TOTAL FILLED SECTION IS MORE THAN 12 INCHES DEEP OR IF THE SUBSURFACE HAS BEEN DISTURBED MORE THAN 12 INCHES DEEP. WHERE SUCH TEST IS REQUIRED, THE RESULTS SHALL SHOW A MINIMUM PROCTOR FIELD DENSITY OF 95 PERCENT.
8. ALL CONCRETE WORK IN THE RIGHT-OF-WAY SHALL BE INSPECTED BY THE CITY AFTER THE SUBSOIL IS PREPARED AND THE FORMS ARE SET, BUT BEFORE THE CONCRETE PLACEMENT BEGINS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE FINISHED SLAB FROM ALL DAMAGE AND VANDALISM UNTIL THE CITY ACCEPTS OR APPROVES THE SLAB, AFTER WHICH TIME THE OWNER OF THE ABUTTING LAND SHALL BE RESPONSIBLE FOR THE SLAB IN ACCORDANCE WITH THE CITY CODE. ANY SLAB SECTION DAMAGED OR VANDALIZED PRIOR TO ACCEPTANCE OR APPROVAL SHALL BE CUT OUT BETWEEN JOINTS AND REPLACED. REPAIRS ARE NOT ACCEPTABLE.
10. SIDEWALKS LOCATED WITHIN THE RIGHT-OF-WAY SHALL NOT BE TINTED, STAINED, COLORED, OR COATED.
11. ALL FORMS SHALL BE REMOVED PRIOR TO ACCEPTANCE OR APPROVAL AND THE DISTURBED GROUND SHALL BE BACKFILLED, REGRADED, AND SODDED SO THAT THE WEAR SURFACE OF THE CONCRETE IS REASONABLY FLUSH WITH THE ADJACENT GRADE.

SIDEWALK CONSTRUCTION DETAIL

NOTES:

1. WHERE SOIL CONDITIONS CAN NOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED METHOD OF CONSTRUCTION.
2. SHEETING WILL BE REQUIRED AS DETERMINED IN THE FIELD.
3. COMPACTION PERCENTAGES SHOWN REFER TO A.A.S.H.T.O. T-180. PROVIDE COPIES OF CERTIFIED TEST REPORTS TO CITY INSPECTOR.
4. MECHANICAL COMPACTION NOT ALLOWED BELOW THIS LEVEL.
5. FOR PVC PIPE ONLY - INSTALL METALLIC TAPE OVER FULL LENGTH OF PIPE.
6. LAYERS SHALL BE COMPACTED TO 95% MAX DENSITY (UNPAVED AREAS) AND 98% MAX DENSITY (PAVED AREAS)

PIPE INSTALLATION DETAIL

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

STANDARD MISCELLANEOUS DETAILS
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-CD4
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/01/03
SHEET C-13

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

07/02/03

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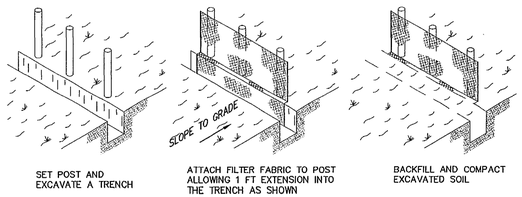
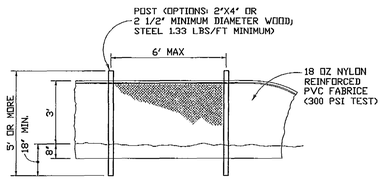


SET POST AND EXCAVATE A TRENCH

ATTACH FILTER FABRIC TO POST ALLOWING 1 FT EXTENSION INTO THE TRENCH AS SHOWN

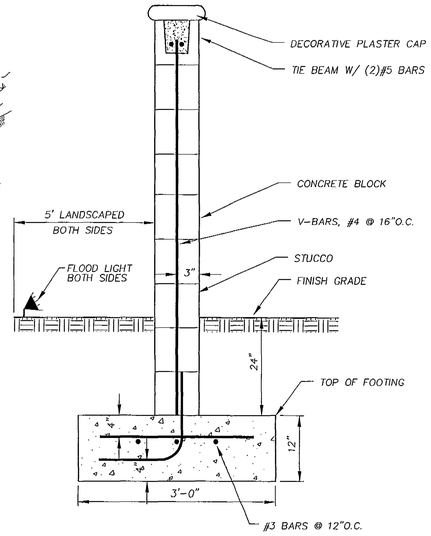
BACKFILL AND COMPACT EXCAVATED SOIL



NOTES:

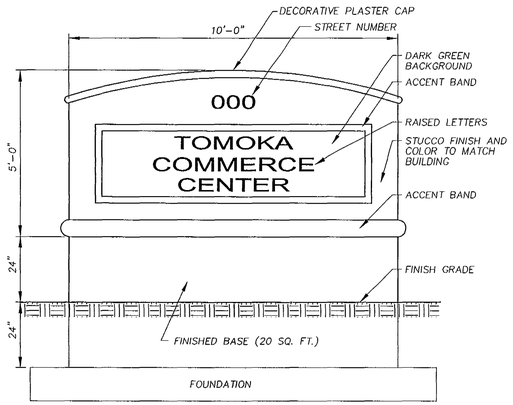
1. MATERIALS, CONSTRUCTION METHODS AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DESIGN STANDARDS CURRENT EDITION.
2. CONTRACTOR SHALL PROVIDE SILT FENCES AND HAY BALES AT ALL STORMWATER DISCHARGE POINTS FOR EROSION CONTROL AND SEDIMENT CONTROL DURING CONSTRUCTION.
3. CONTRACTOR SHALL ROUGH GRADE STORMWATER SWALES AND RETENTION AREAS PRIOR TO CONSTRUCTION OF SITE IMPROVEMENTS.
4. CONTRACTOR SHALL MEET ALL PERMIT CONDITIONS AS ESTABLISHED BY THE CITY OF DAYTONA BEACH AND ALL OTHER APPLICABLE AGENCIES, INCLUDING BUT NOT LIMITED TO COUNTY, FDOT, AND THE SJRWMD.

STAKED SILT FENCE DETAIL



TYPICAL SIGN SECTION

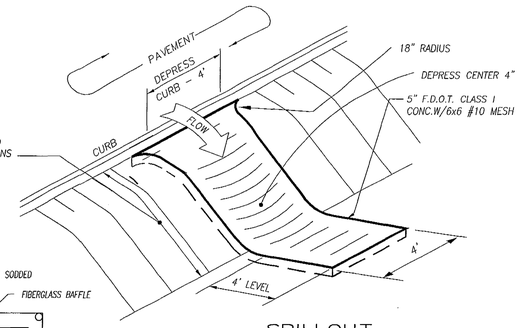
NOT TO SCALE



MONUMENT SIGN

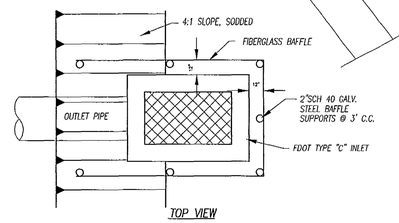
(2 PROPOSED)

NOT TO SCALE

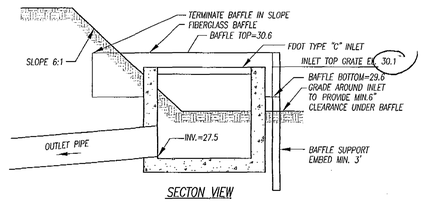


SPILLOUT

NOT TO SCALE



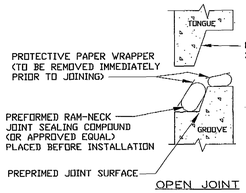
TOP VIEW



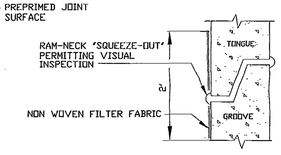
SECTON VIEW

CONTROL STRUCTURE "D-51"

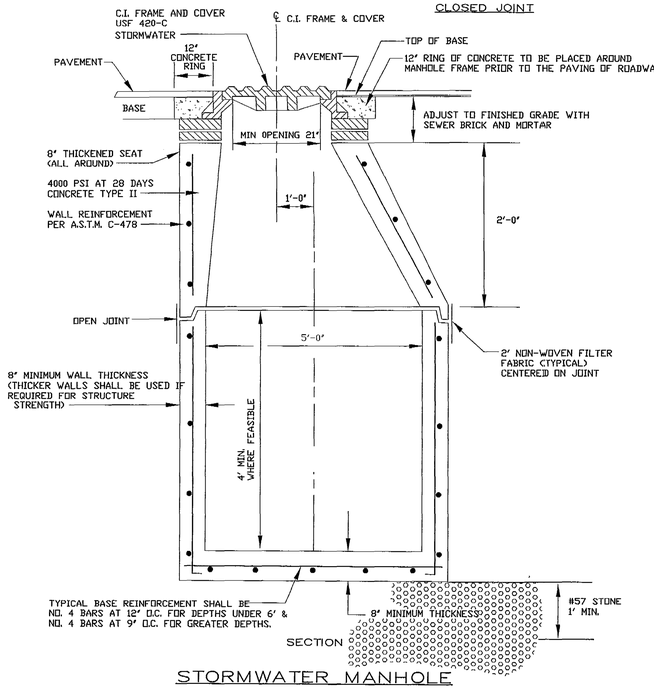
NOT TO SCALE



OPEN JOINT

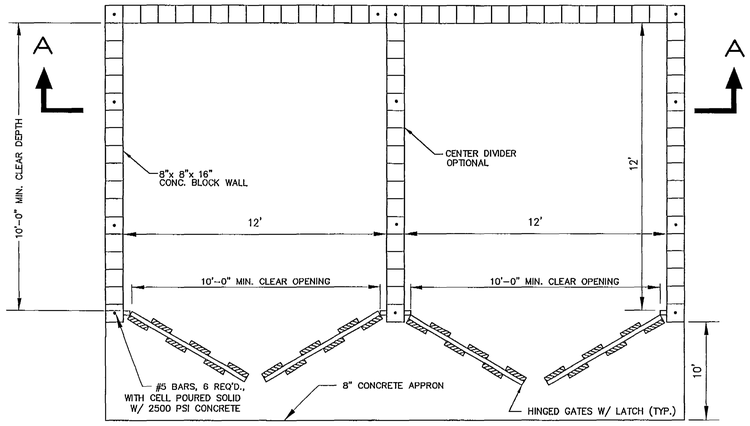


CLOSED JOINT

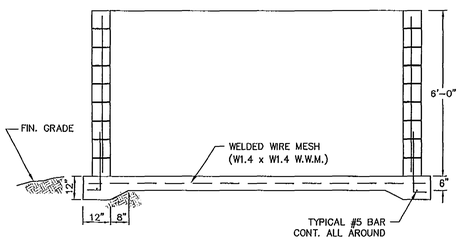


SECTION

STORMWATER MANHOLE



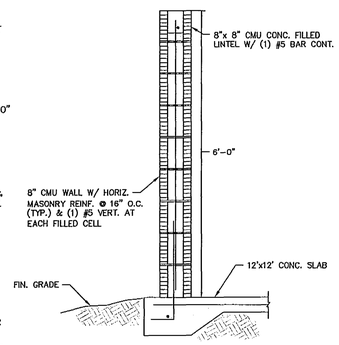
PLAN



SECTION A--A

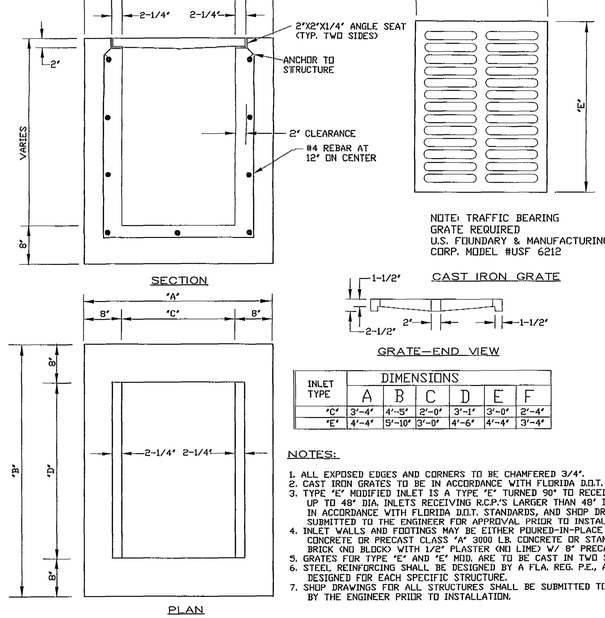
NOTES:

1) BLOCK MUST BE FINISHED WITH STUCCO OR BRICK VENEER PAINTED TO MATCH BUILDING.
2) DUMPSTER STRUCTURE SHALL MEET THE REQUIREMENTS OF SECTION 2.1 OF THE LAND DEVELOPMENT CODE (LDC).
3) SHRUB PLANTINGS REQUIRED (MIN. 3-FOOT WIDE PLANTING AREA) AROUND PERIMETER WALLS (EXCEPT OPENING).
4) GATES TO BE CONSTRUCTED OF CHAIN-LINK PLASTIC WITH STRIPPING, ~~OR OF PRESSURE TREATED WOOD.~~
5) DUAL-USE ENCLOSURE USED FOR REFUSE AND RECYCLING.



WALL SECTION

DUMPSTER PAD



SECTION

PLAN

GRATE-END VIEW

INLET TYPE	DIMENSIONS					
	A	B	C	D	E	F
'C'	3'-4"	4'-5"	2'-0"	3'-1"	3'-0"	2'-4"
'E'	4'-4"	5'-10"	3'-0"	4'-6"	4'-4"	3'-4"

NOTES:

1. ALL EXPOSED EDGES AND CORNERS TO BE CHAMFERED 3/4".
2. CAST IRON GRATES TO BE IN ACCORDANCE WITH FLORIDA D.O.T. SPECS.
3. TYPE "E" MODIFIED INLET IS A TYPE "E" TURNED 90° TO RECEIVE R.C.P.'S UP TO 48" DIA. INLETS RECEIVING R.C.P.'S LARGER THAN 48" DIA. SHALL BE IN ACCORDANCE WITH FLORIDA D.O.T. STANDARDS, AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
4. INLET WALLS AND FOOTINGS MAY BE EITHER POURED-IN-PLACE 2500 LB. CONCRETE OR PRECAST CLASS "A" 3000 LB. CONCRETE OR STANDARD MANHOLE BRICK (NO BLOCK) WITH 1/2" PLASTER (NO LIME) W/ 8" PRECAST CAP.
5. GRATES FOR TYPE "E" AND "E" MOD. ARE TO BE CAST IN TWO SECTIONS.
6. STEEL REINFORCING SHALL BE DESIGNED BY A FLA. REG. P.E., AND BE DESIGNED FOR EACH SPECIFIC STRUCTURE.
7. SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

FDOT TYPE 'C' & 'E' INLET

H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120.
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642

6/02/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS

NO.	DATE	DESCRIPTION

STANDARD MISCELLANEOUS DETAILS
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.
T1159TOM
DRAWING REFERENCE NO.
1159-CD3
REVISION NO./DATE
SEE REVISION TABLE
ORIGINAL ISSUE DATE
6/02/03
SHEET
C-14

ROADWAY CONSTRUCTION NOTES

ALL MATERIALS AND INSTALLATION METHODS USED FOR LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS FOR SUBDIVISIONS AND SITE PLANS SHALL BE IN CONFORMANCE WITH THE CITY, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).

1. ALL RIGHT-OF-WAY OTHER THAN ROADWAY AREAS SHALL BE GRASSED AND MULCHED OR SODDED. ALL SLOPES STEEPER THAN 6:1 SHALL REQUIRE SODDING. THE CITY RESERVES THE RIGHT TO REQUIRE SODDING IN SPECIAL AREAS WHERE EROSION IS A CONCERN.

2. THE FOLLOWING WILL BE THE STANDARD PROTECTION FOR DITCHES UNLESS DRAINAGE CALCULATIONS INDICATE OTHERWISE:

SWALE PROFILE GRADES	PROTECTION REQUIRED
0.2%- 1.0%	GRASSING AND MULCHING
1.0%-4.0%	SODDING
4.0% AND GREATER	DITCH PAVING

3. THE PAVEMENT, BASE, AND SUBBASE THICKNESS PRESENTED ON DETAILS REPRESENTS THE MINIMUM REQUIREMENTS FOR LOCAL PUBLIC STREETS AND PRIVATE PARKING LOTS. THE CITY RESERVES THE RIGHT AT IT'S DISCRETION TO INCREASE THESE REQUIREMENTS FOR COLLECTOR AND ARTERIAL ROADWAYS AND PRIVATE PARKING LOTS SUBJECTED TO HEAVY VEHICULAR COMMERCIAL TRAFFIC.

4. THE DEVELOPER SHALL PROVIDE AT THEIR OWN EXPENSE A CERTIFIED SOILS ENGINEERING LABORATORY TO PERFORM ALL FIELD AND LABORATORY TESTING REQUIRED TO VERIFY THAT THE CONSTRUCTION IS IN COMPLIANCE WITH THE CITY'S MINIMUM STANDARDS. IT IS THE RESPONSIBILITY OF THE DEVELOPER TO ENSURE THAT COPIES OF ALL TEST REPORTS ARE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR PRIOR TO THE PROJECT FINAL INSPECTION IN ORDER TO ALLOW PROJECT ACCEPTANCE BY THE CITY.

5. THE LIMITS OF STABILIZED SUBBASE SHALL EXTEND TO A DEPTH OF SIX INCHES (6") BELOW THE BOTTOM OF THE BASE AND OUTWARD TO TWELVE INCHES (12") BEYOND THE CURB.

6. THE STABILIZING MATERIAL, IF REQUIRED, SHOULD BE A HIGH BEARING VALUE SOIL, SAND-CLAY, LIMEROCK, RECYCLED CONCRETE, SHELL, OR OTHER MATERIAL AS APPROVED BY THE CITY'S DESIGNATED SITE INSPECTOR AND A LICENSED SOILS ENGINEER.

7. THE SUBBASE SHALL BE STABILIZED NOT LESS THAN FORTY (40) POUNDS LIMEROCK BEARING RATIO (LBR) TO A 6" MINIMUM DEPTH. A COMPACTION OF NO LESS THAN NINETY-EIGHT (98 %) PERCENT DENSITY BASED ON AASHTO T-180 SHALL BE REQUIRED.

8. FOR ROADWAYS, TESTS FOR SUBBASE BEARING CAPACITY AND COMPACTION SHALL BE DONE AT A MINIMUM OF EVERY 300 FEET AND SHALL BE STAGGERED TO THE LEFT, RIGHT, AND AT CENTER LINE OF THE ROADWAY. FOR SITE PLANS, TEST SHALL BE PERFORMED FOR EVERY 600 SQUARE YARDS OF STABILIZED AREA, OR PORTIONS THEREOF.

9. BASES FOR ALL STREETS SHALL HAVE A MINIMUM SIX INCH (6") DEPTH. SOIL CEMENT BASES SHALL HAVE A STRENGTH OF 350 POUNDS PER SQUARE INCH AT 7 DAYS COMPACTED TO 98% DENSITY PER AASHTO T-99 STANDARD PROCTOR TEST IN CONFORMANCE WITH SECTION 270 OF STANDARD F.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION). RECYCLED CONCRETE OR LIMEROCK BASES SHALL BE COMPACTED TO 98% MAXIMUM DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.

10. SOIL CEMENT AND RECYCLED CONCRETE MIX DESIGNS SHALL BE SUBMITTED BY A LICENSED SOILS ENGINEER TO THE CITY'S DESIGNATED SITE INSPECTOR PRIOR TO THE START OF SUBBASE PREPARATION. ALL MIX DESIGNS SHALL BE SUBJECT TO THE APPROVAL OF THE CITY.

11. CEMENT DELIVERY TICKETS SHALL BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR AT THE TIME OF PLACEMENT. IF THE INSPECTOR IS NOT ON SITE THROUGHOUT THE ENTIRE INSTALLATION, ACCUMULATED DELIVERY TICKETS CAN BE PROVIDED TO THE INSPECTOR BY THE CONTRACTOR ON THE FOLLOWING DAY.

12. TESTING OF THE IN-PLACE BASE SHALL BE DONE AT INTERVALS EQUIVALENT TO SUBGRADE TESTING AND SHALL CONSIST OF, AS A MINIMUM, A MOISTURE CONTENT AND COMPACTION TEST.

13. PORTLAND CEMENT CONCRETE, LIMEROCK, RECYCLED CONCRETE, OR FULL DEPTH ASPHALT PAVEMENT MAY BE USED IN PLACE OF SOIL CEMENT BASE. ALL BASE AND ROADWAY DESIGNS SHALL BE SUBJECT TO THE APPROVAL OF THE CITY.

14. SOIL CEMENT BASE MATERIAL CONSTRUCTION SHALL BE CONTINUOUSLY SUPERVISED BY A SOILS TESTING LABORATORY AT THE DEVELOPER'S EXPENSE. THE TESTING LABORATORY SHALL PROVIDE AN ON-SITE TECHNICIAN CERTIFIED IN THE INSTALLATION OF SOIL CEMENT WITH THE CERTIFICATION RECOGNIZED BY F.D.O.T.

15. SOIL CEMENT PAVEMENT BASES WITH THE CURE COAT APPLIED SHALL BE ALLOWED TO CURE A MINIMUM OF SEVEN (7) DAYS UNDER NO TRAFFIC PRIOR TO PLACING ANY ASPHALT SURFACE. (TEST REPORTS ARE REQUIRED TO BE DELIVERED TO THE CITY'S DESIGNATED SITE INSPECTOR PRIOR TO TRAFFIC USAGE.)

16. RECYCLED CONCRETE CAN BE USED AS AN ALTERNATIVE BASE MATERIAL PROVIDED THE MATERIAL IS A MINIMUM OF 60% CARBONATE OF CALCIUM AND MAGNESIUM. THE MATERIAL SHALL BE LIMITED TO MAXIMUM OF 3 % OF WATER SENSITIVE CLAY MATERIAL, LIQUID LIMIT SHALL NOT EXCEED 35 AND BE NON-PLASTIC, AND THE PLASTICITY INDEX SHALL NOT EXCEED 10. THE MATERIAL SHALL NOT CONTAIN ORGANIC MATERIAL, CHERTY OR OTHER EXTREMELY HARD PIECES, LUMPS, BALLS OR POCKETS OF SAND SIZE MATERIAL OF A QUANTITY AS TO BE DETRIMENTAL TO THE PROPER BONDING, FINISHING, OR STRENGTH OF THE RECYCLED CONCRETE BASE. FOR BASE APPLICATIONS, AT LEAST 97 % (BY WEIGHT) OF THE MATERIAL SHALL PASS A 1" SIEVE AND FOR SUBBASE APPLICATIONS, AT LEAST 97 % (BY WEIGHT) OF THE MATERIAL SHALL PASS A 1-1/2" SIEVE. FOR BOTH APPLICATIONS, THE MATERIAL SHALL BE GRADED UNIFORMLY DOWN TO DUST AND THE MINIMUM LBR VALUES ARE TO BE NOT LESS THAN 130. COARSE AGGREGATE USED IN THE RECYCLED CONCRETE SHALL HAVE A MAXIMUM LOSS OF 45 % PER LOS ANGELES ABRASION TEST. ALL MATERIALS SHALL BE WELL GRADED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN SECTION 204, F.D.O.T., STANDARD SPEC. FOR ROAD AND BRIDGE CONSTRUCTION., (LATEST EDITION).

17. RECYCLED CONCRETE OR LIMEROCK FOR BASE OR SUBBASE APPLICATIONS SHALL BE ALLOWED ON CITY ROADWAYS ONLY WHERE THE LOWEST ELEVATION OF THE ROADWAY SUBBASE IS A MINIMUM OF 6" ABOVE THE SEASONAL HIGH GROUNDWATER TABLE AS CERTIFIED BY A FLORIDA LICENSED PROFESSIONAL SOILS ENGINEER AND SUBSEQUENTLY APPROVED FOR BY THE CITY. IN AREAS NOT MEETING THESE STANDARDS A SOIL CEMENT BASE WILL BE REQUIRED. ALL CRUSHING OF RECYCLED CONCRETE SHALL BE DONE PRIOR TO THE MATERIAL BEING PLACED IN THE ROADWAY. TESTING SHALL HAVE THE SAME REQUIREMENTS AND BE PERFORMED AT THE SAME LOCATION AND INTERVALS AS REQUIRED FOR LIMEROCK.

18. DESIGN MIXES AND PRODUCT GRADATION INFORMATION FOR ALL MATERIALS TO BE INSTALLED AS PART OF THE LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY'S DESIGNATED SITE INSPECTOR FOR ACCEPTANCE BY THE CITY. THE INFORMATION SHALL BE SUBMITTED NO LESS THAN THREE (3) WORKING DAYS PRIOR TO ANY CONSTRUCTION. SUBMITTALS SHALL INCLUDE, BUT NOT BE LIMITED TO, INFORMATION TO EVALUATE THE MATERIALS PROPOSED FOR INSTALLATION AS SUBBASE, BASE, AND PAVEMENT FOR ALL ROADWAY AND PARKING AREA SURFACES AS WELL AS SIMILAR INFORMATION FOR ALL OTHER CONCRETE SIDEWALKS, CURBING, AND COMPARABLE STRUCTURES AND APPLICATIONS.

19. PRIOR TO PLACEMENT FLORIDA STATE CERTIFIED BATCH PLANTS MUST CERTIFY TO THE CITY'S RESIDENT PROJECT INSPECTOR THAT THE ASPHALT DELIVERED TO THE SITE IS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

20. EXTRACTION AND GRADATION TESTS ON ASPHALT MIXES SHALL BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR FOR EVERY 2500 SQUARE YARDS OF ASPHALT, OR PART THEREOF, TO ENSURE THAT DESIGN MIXES MEET THE CITY STANDARD SPECIFICATIONS.

21. FIELD TESTING OF THE ASPHALT PAVEMENT SHALL BE DONE AT INTERVALS EQUIVALENT TO SUBGRADE TESTING AND SHALL CONSIST OF, AS A MINIMUM, A COMPACTION TEST. ASPHALT PAVEMENT SHALL BE COMPACTED TO 98% DENSITY PER FM 1-T238 (METHOD B), NUCLEAR DENSITY TEST, "BACKSCATTER METHOD".

22. IN ADDITION TO THE FIELD DENSITY TESTS NOTED, THE CITY RESERVES THE RIGHT TO REQUIRE CORE SAMPLES OF PAVEMENT SECTIONS EXTRACTED AND TESTED BY A CERTIFIED SOILS ENGINEERING LABORATORY AT THE DEVELOPER'S EXPENSE. THE CITY'S DESIGNATED SITE INSPECTOR SHALL DESIGNATE THE LOCATIONS OF THE TEST CORE LOCATIONS.

23. THE ROADWAY CROWN SHALL HAVE A STANDARD ONE QUARTER INCH (1/4") PER FOOT SLOPE.

24. ALL ROADWAYS WITH CURB AND GUTTER SECTIONS SHALL HAVE AS A STANDARD A MINIMUM LONGITUDINAL SLOPE OF 0.30%. THE ROADWAY CENTERLINE SHALL BE CLEARLY MARKED ON THE DESIGN PLANS. AT A MINIMUM, DESIGN ROADWAY CENTERLINE ELEVATIONS SHALL BE NOTED AT ALL GRADE CHANGES AND AT 100' INTERVALS ALONG THE ROADWAY PROFILE ON BOTH THE DESIGN PLANS AND AS-BUILT DRAWINGS.

25. THE FINISHED PAVEMENT EDGE SHALL BE WITHIN ONE QUARTER INCH (1/4") ABOVE THE ADJACENT CONCRETE CURB FOR CURBS COLLECTING AND CONVEYING STORMWATER.

26. CONCRETE CURBS SHALL BE PROVIDED ON BOTH SIDES OF ALL STREETS AND ALL CONCRETE CURBS SHALL BE CONSTRUCTED WITH 3000 P.S.I. CONCRETE AT 28 DAYS.

27. CONCRETE CURBING, SIDEWALKS, PAVEMENT AND SIMILAR CONCRETE AREAS SHALL BE SAW CUT WITHIN 4 TO 18 HOURS OF PLACEMENT. SAW CUTS SHALL BE 1/4" IN WIDTH TO A DEPTH OF 1/4 OF THE TOTAL DEPTH OF CONCRETE OR 1-1/2", WHICHEVER IS LESS. SAW CUTS SHALL BE LOCATED AT INTERVALS OF TEN FEET (10') WITH EXPANSION JOINTS AT STREET INTERSECTIONS, RADIUS POINTS, STRUCTURES, AND ALONG CURVES AT SIXTY FEET (60') INTERVALS. ALL EXPANSION JOINT MATERIAL IS REQUIRED TO BE INSTALLED THROUGH THE ENTIRE DEPTH OF THE CONCRETE CURB. FOR LINEAL SECTIONS OF CURBS, EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM SPACING OF FIVE-HUNDRED FEET (500') AND SHALL BE 1/2" IN WIDTH.

28. AN "X" SHALL BE CUT IN THE CURB TO MARK THE LOCATION OF WATER DISTRIBUTION SYSTEM VALVE.

29. A "V" SHALL BE CUT IN THE CURB TO MARK THE LOCATION OF ALL SEWER SERVICES.

30. A "⊥" SHALL BE CUT IN THE CURB TO MARK THE LOCATION OF ALL RECLAIMED WATER SERVICES.

31. A " ∧" SHALL BE CUT IN THE CURB TO MARK THE LOCATION OF ALL POTABLE WATER SERVICES.

32. THREE (3) CONCRETE CYLINDERS SHALL BE TAKEN AND TESTED (1 IN 14 DAYS AND 1 IN 28 DAYS) FOR EVERY FIFTY (50) CUBIC YARDS OF CONCRETE OR LESS PLACED. TEST RESULTS SHALL THEN BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR AS THEY BECOME AVAILABLE.

33. A CONCRETE SLUMP TEST SHALL BE REQUIRED WITHIN THE FIRST 30 CUBIC YARDS OF CONCRETE. THEREAFTER, SLUMP TESTS SHALL BE REQUIRED FOR EVERY THIRTY (30) CUBIC YARDS OF CONCRETE, OR FRACTION THEREOF, WITH COPIES OF THE RESULTS PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR. THE SLUMP TEST SHALL MEET THE REQUIRED MIX DESIGN ON EACH LOAD DELIVERED.

34. THE DEVELOPER SHALL PROVIDE ALL REQUIRED PAVEMENT MARKINGS ON ALL ROADWAYS PER CITY, COUNTY, AND STATE REQUIREMENTS. CENTERLINE STRIPES SHALL BE PROVIDED ON EXTENSIONS OF CITY COLLECTOR OR ARTERIAL ROADS, COUNTY ROADS, STATE HIGHWAYS, AND ALONG LOCAL STREETS IN THE VICINITY OF THEIR INTERSECTION WITH THE ABOVE MENTIONED ROADWAYS.

35. A FDOT APPROVED STOP SIGN AND A 24"-WIDE WHITE THERMOPLASTIC STOP BAR ARE REQUIRED AT ALL ROADWAY INTERSECTIONS.

36. ALL TRAFFIC CONTROL DEVICES PLACED AT INTERSECTIONS, PRIVATE STREETS, PUBLIC STREETS, COUNTY ROADS, AND STATE HIGHWAYS WITHIN THE CITY LIMITS SHALL BE INSTALLED ACCORDING TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION. THE MAINTENANCE-OF-TRAFFIC (MOT) INSTALLATION AND SUBSEQUENT OPERATION SHALL BE OVERSEEN BY A CONTRACTOR CERTIFIED BY THE AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION, OR EQUIVALENT CERTIFICATION RECOGNIZED BY FDOT.

37. THE DEVELOPER IS RESPONSIBLE FOR PAYING FEES FOR TRAFFIC CONTROL DEVICES TO THE CITY FOR INSTALLATION. STREET SIGNS AND STOP SIGNS SHALL BE PLACED AT ALL INTERSECTIONS, INCLUDING BUT NOT LIMITED TO PRIVATE STREETS, PUBLIC STREETS, COUNTY ROADS, AND STATE HIGHWAYS WITHIN THE CITY LIMITS.

38. THE DEVELOPER IS RESPONSIBLE FOR PAYING FEES FOR ALL STREET LIGHTS PRIOR TO ACCEPTANCE OF THE PROJECT BY THE CITY.

39. FOUR FOOT (4') WIDE SIDEWALKS SHALL BE PROVIDED ON BOTH SIDES OF ALL RESIDENTIAL STREETS. (SEE DETAIL, INDEXES M-1 AND M-2)

40. BIKE PATHS SHALL BE CONSTRUCTED EIGHT FEET (8') IN WIDTH ALONG ARTERIAL HIGHWAYS AS DIRECTED BY THE CITY. (SEE DETAIL, INDEXES M-1 AND M-2)

41. STANDARD TURNING RADII FOR INTERSECTIONS:

RESIDENTIAL STREETS WITH STATE & COUNTY ROADWAYS OR MAJOR THOROUGHFARES WITHIN THE CITY	35-50 FT.
ENTRANCES TO COMMERCIAL SITES OFF OF CITY STREETS	35 FT.
INTERSECTIONS INTERIOR IN SUBDIVISIONS	35 FT.

SHOULD VOLUSIA COUNTY OR THE FLORIDA DEPARTMENT OF TRANSPORTATION (F.D.O.T.) DETERMINE THAT LARGER RADII ARE WARRANTED WITHIN THEIR RIGHT-OF-WAY, THE LARGER RADII SHALL PREVAIL.

42. CONSTRUCTION METHODS AND DESIGN FOR CONCRETE PAVEMENT SHALL CONFORM TO FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION

43. ALL CONTRACTORS THAT ARE PERFORMING THE CONSTRUCTION OF LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS (INCLUDING WATER MAINS, SANITARY SEWER MAINS, RECLAIMED WATER MAINS, STORM WATER PIPES AND INLETS, ROADWAYS, AND PARKING FACILITIES) SHALL BE CERTIFIED WITH THE STATE OF FLORIDA BOARD OF PROFESSIONAL REGULATIONS (BPR) FOR THE TYPE OF WORK THAT THEY PERFORM.

44. ALL CONTRACTORS THAT ARE PERFORMING THE CONSTRUCTION WORK OF LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS SHALL BE LICENSED BY THE STATE OF FLORIDA AND REGISTERED WITH THE CITY OF DAYTONA BEACH. THE LICENSE AND REGISTRATION SHALL PERTAIN DIRECTLY TO THE TYPE OF WORK BEING PERFORMED.

45. EXCEPT AS PROVIDED IN THE LAND DEVELOPMENT CODE, ALL ELECTRIC, TELEPHONE, TELEVISION LINES AND SIMILAR UTILITIES ARE REQUIRED TO BE INSTALLED UNDERGROUND AT THE EXPENSE OF THE OWNER, DEVELOPER, AND BUILDER.

46. UTILITY DEPTH:
   A. HIGH VOLTAGE UTILITIES SUCH AS POWER (FEEDER, SERVICE, AND DROPS) SHALL BE BURIED A MINIMUM OF 30 INCHES IN DEPTH.
   B. LOW VOLTAGE UTILITIES SUCH AS PHONE AND CABLE TV SHALL BE BURIED A MINIMUM OF 18 INCHES IN DEPTH FOR FEEDER AND SERVICES. SERVICE DROPS SHALL BE BURIED A MINIMUM OF 12 INCHES IN DEPTH.
   C. IN NO INSTANCE SHALL THE DEPTH OF COVER BE LESS THAN 36" FROM FINISHED GRADE TO THE TOP OF PIPE FOR POTABLE WATER MAINS, SANITARY SEWER MAINS, AND RECLAIMED WATER MAINS. HOWEVER, IN THE EVENT THAT THIS CONDITION CANNOT BE MET DUE TO UNANTICIPATED CONFLICTS DURING THE CONSTRUCTION PROCESS, DUCTILE IRON PRESSURE CLASS 350 OR CONCRETE ENCASEMENT MAY BE USED AS APPROVED BY THE CITY PUBLIC UTILITIES DEPARTMENT.

47. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF UNDERGROUND AND OVERHEAD PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.

SITE CLEARING AND GRADING NOTES

THE FOLLOWING MEASURES REPRESENT MINIMUM STANDARDS TO BE ADHERED TO BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION OF A PROJECT. THE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO BE EMPLOYED WHEN WARRANTED BY EXTREME CONDITIONS AND/OR THE FAILURE OF THE CONTRACTOR TO EMPLOY THE APPROPRIATE EROSION CONTROL BEST MANAGEMENT PRACTICES. FAILURE TO COMPLY WITH THESE PROVISIONS SHALL RESULT IN THE ISSUANCE OF A "STOP WORK ORDER".

1. NO DISTURBANCE OF PROPOSED CONSERVATION EASEMENTS, NATURAL BUFFERS, OR WATER BODIES IS PERMITTED. THE CONTRACTOR SHALL LOCATE THESE AREAS ON SITE AND BARRICADE THEM TO AVOID ANY UNAUTHORIZED CLEARING. BARRICADES AND OTHER PROTECTIVE FENCING ARE TO BE LOCATED AT THE DRIP LINE OF EXISTING NATIVE TREES OR AT THE EDGE OF THE NATIVE UNDER-STORY HABITAT, WHICHEVER IS NEAREST TO THE CONSTRUCTION ACTIVITY.

2. SPECIMEN AND HISTORIC TREES, CONSERVATION EASEMENTS, NATURAL VEGETATION BUFFERS, AND SIMILAR AREAS MUST BE PROTECTED BY BARRICADES OR FENCING PRIOR TO CLEARING. BARRICADES ARE TO BE SET AT THE DRIP LINE OF THE TREES AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. BARBED WIRE IS NOT PERMITTED AS A PROTECTIVE BARRIER.

3. WHERE A CHANGE OF GRADE OCCURS AT THE DRIP LINE OF A SPECIMEN TREE, SILT FENCES WILL BE REQUIRED DURING CONSTRUCTION AND RETAINING WALLS MUST BE INSTALLED PRIOR TO FINAL ACCEPTANCE BY THE CITY.

4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL PROTECTIVE VEGETATION BARRICADES AND EROSION CONTROL STRUCTURES AND MEASURES IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORK, INCLUDING PRELIMINARY GRUBBING. THESE MEASURES INCLUDE, BUT ARE NOT LIMITED TO, TEMPORARY CONSTRUCTION FENCES, HAY BALES, SILT FENCES, AND FLOATING TURBIDITY BARRIERS. FURTHER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL EROSION CONTROL DEVICES THROUGHOUT THE DURATION OF THE ENTIRE PROJECT. MAINTENANCE SHALL INCLUDE PERIODIC INSPECTION AND REMOVAL OF DEBRIS ABUTTING EROSION CONTROL DEVICES.

5. PRIOR TO THE INSTALLATION OF ANY FILL MATERIALS ON SUBJECT SITE, SILT FENCES SHALL BE INSTALLED (1) ALONG SUBJECT SITE BOUNDARY AND PROPERTY LINES, (2) AT THE EDGE OF CONSERVATION EASEMENTS AND WETLANDS, (3) ADJACENT TO NATURAL LANDSCAPE BUFFERS, (4) AROUND THE PERIMETER OF EXISTING STORM WATER TREATMENT FACILITIES, AND (5) AT ANY ADDITIONAL AREAS THAT THE CITY DEEMS NECESSARY TO BE PROTECTED FROM POTENTIAL EROSION IMPACTS DURING CONSTRUCTION. THESE CONDITIONS SHALL APPLY IN ALL INSTANCES WHERE FILL MATERIAL IS BEING INSTALLED WITHIN 25 FEET OF ANY OF THE AFOREMENTIONED LOCATIONS. WHILE THESE ITEMS REPRESENT THE MINIMUM REQUIREMENTS, THE CITY RESERVES THE RIGHT TO IMPOSE ADDITIONAL PROTECTIVE MEASURES, AS DETERMINED DURING ACTUAL SITE VISITS CONDUCTED AS PART OF THE STANDARD REVIEW OF THE SITE-SPECIFIC ABC CLEARING PERMIT APPLICATION AND THROUGHOUT PROJECT CONSTRUCTION.

6. WHERE FILL MATERIAL IS INTENDED TO BE INSTALLED ADJACENT TO EXISTING VEGETATION WHICH IS INTENDED TO REMAIN NATURAL, THE CONTRACTOR MAY INSTALL SILT FENCING AS A TREE PROTECTION MEASURE, IN LIEU OF INSTALLING EITHER WOOD BRACING OR ORANGE MESH FENCING. THIS PRACTICE IS ENCOURAGED BY THE CITY. IF THE SILT FENCE FAILS TO PROVIDE ADEQUATE PROTECTION FROM IMPACT DUE TO CONSTRUCTION, THEN ADDITIONAL CONSTRUCTION FENCING OR WOOD BRACING SHALL BE REQUIRED.

7. AT A MINIMUM, THE CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS. SUFFICIENT GRASS COVERAGE IS TO BE ESTABLISHED WITHIN THIRTY DAYS.

8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THROUGH SCHEDULING, TO MINIMIZE THE DISTURBANCE OF SITE AREAS THAT HAVE BEEN BROUGHT TO THEIR PROPOSED FINAL GRADE. WITHIN TWENTY DAYS OF BRINGING A SUBJECT AREA TO ITS FINAL GRADE, THE CONTRACTOR SHALL INSTALL SEED AND MULCH OR SOD, AS REQUIRED.

9. FOR INDIVIDUAL CONSTRUCTION PROJECTS INVOLVING MULTIPLE PHASES, UPON COMPLETION OF EACH PHASE OF THE PROJECT, SEEDING AND MULCHING AND OR/ SODDING IS TO BE PERFORMED PRIOR TO COMMENCING THE NEXT PHASE OF CONSTRUCTION.

10. ONCE AN AREA IS SEEDED OR SODDED, IT MUST BE MAINTAINED BY THE CONTRACTOR TO ALLOW THE GRASS TO BECOME ESTABLISHED.

11. ANY BURNING OF CLEARED MATERIALS MUST BE INSPECTED AND PERMITTED ON A DAILY BASIS. CONTACT THE PERMITS AND LICENSING DIVISION PRIOR TO EACH DAY OF DESIRED BURNING.

12. ABSOLUTELY NO BURYING OF CLEARED MATERIALS IS PERMITTED.

13. THE REMOVAL OF ALL VEGETATION AND TOPSOIL ON THE FUTURE ROADWAY, PARKING AND BUILDING LOT AREAS IS REQUIRED TO BE COMPLETED PRIOR TO THE PLACEMENT OF FILL ON THOSE AREAS. THE TOPSOIL MAY BE TEMPORARILY STOCKPILED AND USED AS TOPSOIL OVER OVER PROPOSED GREEN AREAS SUCH AS PLANT BEDS, SODDED AREAS, AND WHERE TREES ARE TO BE INSTALLED OR RELOCATED. TEMPORARY STOCKPILE SLOPES SHALL NOT EXCEED 4:1 (H:V)

14. A SIGNED, DATED, AND SEALED LETTER FROM A SOILS ENGINEER OR THE ENGINEER OF RECORD CERTIFYING THAT THE AREAS TO BE FILLED HAVE BEEN STRIPPED OF ORGANIC MATERIALS, MUST BE SUBMITTED TO THE CITY PRIOR TO FILLING.

15. FILL MATERIAL IS TO BE PLACED IN ONE FOOT LIFTS AND COMPACTED TO THE APPROPRIATE DENSITY (98% FOR PAVED AREAS AND 98% FOR BUILDING PADS AND ALL OTHER AREAS AS PER AASHTO T-180).

16. DURING SUBDIVISION DEVELOPMENT WHEN FUTURE BUILDING LOTS ARE FILLED AS PART OF THE OVERALL SUBDIVISION IMPROVEMENTS, COMPACTION TEST REPORTS MUST BE PERFORMED ON THE BUILDING LOTS AT 300 FOOT INTERVALS. THESE TESTS ARE TO BE PERFORMED IN ONE-FOOT VERTICAL INCREMENTS. THE RESULTS OF THESE TESTS ARE TO BE SUBMITTED TO THE CITY UPON COMPLETION OF THE TESTS.

17. IF ANY MUCK MATERIAL IS DISCOVERED, IT SHALL BE REQUIRED TO BE REMOVED AND REPLACED WITH A SUITABLE MATERIAL THAT IS PROPERLY BACKFILLED, COMPACTED AND TESTED USING AASHTO T-180 MODIFIED PROCTOR METHOD.

18. STOCKPILING IS NOT GENERALLY PERMITTED BY THE CITY. WHEN ALLOWED, STOCKPILES SHALL NOT EXCEED SIX FEET IN HEIGHT MEASURED FROM THE ORIGINAL GRADE. AT A MINIMUM, STOCK PILES THAT WILL REMAIN IN PLACE IN EXCESS OF TWENTY DAYS SHOULD BE SEEDED AND MULCHED IMMEDIATELY UPON PLACEMENT OF THE FINAL LIFT.

19. SOILS ARE TO BE STABILIZED BY WATER OR OTHER MEANS DURING CONSTRUCTION. THIS IS INTENDED TO REDUCE SOIL EROSION AND THE IMPACT TO NEIGHBORING COMMUNITIES. ADEQUATE WATERING METHODS SHOULD BE EMPLOYED TO ALLOW DAILY COVERAGE OF THE ENTIRE LIMITS OF ALL AREAS THAT DO NOT HAVE AN ESTABLISHED VEGETATIVE COVER. METHODS TO BE EMPLOYED INCLUDE, BUT ARE NOT LIMITED TO, WATER TRUCKS, PERMANENT IRRIGATION SYSTEMS, TEMPORARY SPRINKLER SYSTEMS OPERATED BY PUMPING UNITS CONNECTED TO WET RETENTION PONDS, WATER CANNONS, TEMPORARY IRRIGATION SYSTEMS MOUNTED ATOP STOCKPILE AREAS, AND OTHER METHODS AS DEEMED NECESSARY BY THE CITY.

20. ALL FILL MATERIALS LOCATED BENEATH STRUCTURES AND PAVEMENT SHALL CONSIST OF CLEAN GRANULAR SAND FREE FROM ORGANICS AND SIMILAR MATERIAL THAT COULD DECOMPOSE.

21. ALL FILL TO BE PLACED IN LANDSCAPED AREAS SHALL HAVE A Ph RANGE BETWEEN 5.5 AND 7.5, BE ORGANIC IN NATURE, FREE OF ROCKS AND DEBRIS, OR MATCH NATIVE EXISTING SOILS.

SITE PLAN & SUBDIVISION TESTING

A. MATERIALS

THE INSPECTION AND TESTING OF MATERIALS AND FINISHED ARTICLES TO BE INCORPORATED IN THE WORK SHALL BE MADE BY BUREAUS, LABORATORIES, OR AGENCIES APPROVED BY THE ENGINEER OF RECORD. THE CONTRACTOR SHALL SUBMIT SUCH SAMPLES, OR SUCH SPECIAL OR TEST PIECES OF MATERIALS AS THE ENGINEER OF RECORD MAY REQUIRE. THE CONTRACTOR SHALL NOT INCORPORATE ANY MATERIAL OR FINISHED ARTICLE INTO THE WORK UNTIL THE RESULTS OF THE INSPECTIONS OR TESTS ARE KNOWN AND THE CONTRACTOR HAS BEEN NOTIFIED BY THE ENGINEER OF RECORD THAT THE MATERIAL OR FINISHED ARTICLE IS ACCEPTED. ALL MATERIALS MUST BE OF THE SPECIFIED QUALITY AND BE EQUAL TO THE APPROVED SAMPLE IF A SAMPLE HAS BEEN SUBMITTED. CERTIFIED COPIES OF ALL TESTS MADE SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AS WELL AS TO THE CITY'S DESIGNATED SITE INSPECTOR.
THE CITY'S DESIGNATED SITE INSPECTOR MUST RECEIVE COPIES OF ALL TESTING REPORTS AND CERTIFICATES PRIOR TO THE ENGINEER OF RECORD REQUESTING A FINAL PROJECT INSPECTION FROM THE CITY.

B. LABORATORY CONTROL AND CERTIFICATES

1. SPECIFICATIONS . SAMPLING, TESTING, AND LABORATORY METHODS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE AASHTO OR ASTM. WHERE AASHTO OR ASTM SPECIFICATIONS ARE USED, THE REFERENCE SHALL BE CONSTRUED TO BE THE MOST RECENT STANDARD SPECIFICATIONS OR TENTATIVE SPECIFICATIONS OF THE AASHTO OR ASTM IN FORCE ON THE DATE OF THE TEST.

2. TEST & CERTIFICATES. THE CONTRACTOR SHALL ENGAGE AN APPROVED TESTING LABORATORY TO PROVIDE THE FOLLOWING TESTS AND CERTIFICATIONS SIGNED BY A REGISTERED ENGINEER OF THE STATE OF FLORIDA. ALL TECHNICIANS PERFORMING THE TESTS SHALL BE STATE CERTIFIED FOR THE TESTING PERFORMED. ADDTIONAL TESTS THAT MAY BE REQUIRED BY EITHER THE ENGINEER OF RECORD OR THE CITY SHALL ALSO BE PROVIDED BY THE CONTRACTOR, AND THE FOLLOWING SHALL NOT BE TAKEN AS A COMPLETE AND EXHAUSTIVE LIST OF THE CONTRACTOR'S TESTING RESPONSIBILITIES.

   A. SOIL ANALYSIS FOR STRUCTURAL FILL MATERIAL PRIOR TO INSTALLATION.
   B. PROCTOR DENSITIES, MOISTURE CONTENT, COMPACTED FIELD DENSITIES, AND ATTERBERG LIMITS.
   C. SOIL CEMENT MIX DESIGNS AND COMPRESSIVE STRENGTH TESTS (FOR SOIL CEMENT ROAD BASE ONLY).
   D. SUPERVISION OF ALL SOIL CEMENT BASE CONSTRUCTION.
   E. ANALYSIS OF RECYCLED CONCRETE BASE MATERIAL PRIOR TO INSTALLATION.
   F. ASPHALT MIX DESIGN, BITUMEN CONTENT, SIEVE ANALYSIS, HUBBARD FIELD STABILITY TESTS, NUCLEAR DENSITY TESTS (BACKSCATTER METHOD), AND ANALYSIS OF CORE SAMPLES.
   G. CONCRETE MIX DESIGNS FOR ALL APPLICATIONS INCLUDING PAVEMENT, CAST-IN-PLACE STRUCTURES, CURBING, GUTTERS, SIDEWALKS, BIKE PATHS, APRONS AND DRIVEWAYS.
   H. COMPRESSIVE TEST CYLINDERS AND SLUMP TESTS FOR ALL APPLICATIONS OF CONCRETE, INCLUDING PAVEMENT, CAST-IN-PLACE STRUCTURES, CURBING, GUTTERS, SIDEWALKS, BIKE PATHS, APRONS, AND DRIVEWAYS.
   I. CHLORINE RESIDUAL AND BACTERIOLOGICAL TESTING OF WATER MAINS.
   J. PRESSURIZED LEAK TESTING OF WATER MAINS, FORCE MAINS, AND RECLAIMED WATER MAINS.

H.J. BURROUGHS
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

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REVISIONS		
NO.	DATE	DESCRIPTION

STANDARD CONSTRUCTION NOTES
HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR: HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO.	T1159TOM
DRAWING REFERENCE NO.	1159-CN2
REVISION NO./DATE	SEE REVISION TABLE
ORIGINAL ISSUE DATE	07/02/03
SHEET	C-15

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WATER SERVICE NOTES

1. THE CITY'S PUBLIC UTILITIES DEPARTMENT SHALL BE GIVEN A MINIMUM OF 48 HOURS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS OR WEEKENDS) PRIOR TO BEGINNING ANY POTABLE WATER SYSTEM CONSTRUCTION.
2. DEWATERING SHALL BE PROVIDED TO KEEP GROUNDWATER ELEVATION A MINIMUM OF 6 INCHES BELOW MAIN BEING LAID.
3. ALL WATER MAINS SHALL BE LAID ON A FIRM FOUNDATION WITH ALL UNSUITABLE MATERIAL (MUCK, ROCK, COQUINA, ETC.) REMOVED AND REPLACED WITH CLEAN GRANULAR MATERIAL.
4. TRENCHES SHALL BE BACKFILLED WITH MATERIAL ACCEPTABLE TO THE CITY WITH A MINIMUM COMPACTION OF 98% IN PAVED AREAS AND 95% IN UNPAVED AREAS IN ACCORDANCE WITH AASHTO T-180.
5. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT TRENCH COMPACTION TESTS BE PROVIDED AT POINTS 12 INCHES ABOVE THE PIPE AND AT 12 INCHES VERTICAL INTERVALS TO FINISH GRADE, AT A MINIMUM SPACING OF EVERY 300 FEET.
6. 3" METALLIZED PIPE LOCATION TAPE OR UF #14 INSULATED COPPER WIRE SHALL BE LOCATED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS SPECIFIED BY MANUFACTURER FOR ALL PVC LINES. MARKER TAPE/WIRE SHALL BE USED ON ALL DUCTILE IRON PIPE, AS WELL.
7. ALL SINGLE RESIDENTIAL WATER SERVICES SHALL BE 3/4". POLYETHYLENE TUBING SHALL BE USED, IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
   POLYETHYLENE TUBING SHALL BE CTS 3408 HIGH DENSITY TUBING, BLUE IN COLOR, AND RATED FOR A MINIMUM OF 200 P.S.I. WITH SDR OF 9 (CTS). THE TUBING SHALL HAVE A VIRGIN HIGH DENSITY POLYETHYLENE CENTER FOR WHICH THE MANUFACTURER SHALL FURNISH A CERTIFICATE OF PURITY. THE TUBING SHALL HAVE UV PROTECTION AND SHALL NOT BE AFFECTED BY DIRECT SUNLIGHT. THE TUBING SHALL COMPLY WITH OR EXCEED THE APPLICABLE STANDARDS OF A.S.T.M. D1248, D3350, D2239, D2737, N.S.F. 14 AND A.W.W.A. C901 AND SHALL COME WITH A LIFETIME WARRANTY.
   ACCEPTABLE MANUFACTURERS: ENDOT ENDO PURE OR APPROVED EQUAL
8. ALL WATER SERVICE ENDINGS SHALL BE MARKED WITH A 2" X 4" LUMBER (PRESSURE TREATED) EXTENDING 4 FEET ABOVE GRADE, WITH WATER SERVICES SECURED 12" MAXIMUM ABOVE THE GROUND.
9. WATER VALVES SHALL BE PLACED AT ALL STREET INTERSECTIONS AND AT MAXIMUM SPACINGS OF 750 FEET.
10. AT ALL WATER MAIN TEES AND CROSSES, VALVES SHALL BE INSTALLED ON ALL LEGS EXCEPT ONE.
11. APPROVED WATER VALVE TYPES ARE THE FOLLOWING:
    A. RESILIENT SEAT GATE VALVES (AWWA C-509)
    B. TAPPING VALVES WITH MECHANICAL TAPPING SLEEVE.
12. ALL WATER VALVES SHALL BE ADJUSTED TO FINISHED GRADE AND THE CAPS PAINTED BLUE TO MAKE THEM PLAINLY VISIBLE.
13. UPON FINAL ACCEPTANCE OF NEW WATER SYSTEMS, WATER VALVES SHALL BE COMPLETELY OPENED BY PUBLIC UTILITIES PERSONNEL. AT NO TIME SHALL CONTRACTOR OPERATE ANY EXISTING VALVES WITHOUT A CITY INSPECTOR PRESENT.
14. TYPICALLY, A MINIMUM OF ONE FIRE HYDRANT SHALL BE LOCATED AT EVERY INTERSECTION. OTHER FIRE HYDRANTS SHALL BE LOCATED SO AS TO PRODUCE A MAXIMUM 500 FEET HOSE LAY TO COVER THE REAR OF ALL BUILDINGS.
15. ALL WATER MAINS SHALL BE NSF-APPROVED FOR POTABLE WATER USE, AND SHALL HAVE A MINIMUM COVER OF 36 INCHES.
16. ALL PROPOSED WATER MAINS SHALL BE FLUSHED, DISINFECTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS.
17. WATER MAINS SHALL BE D.I.P. PRESSURE CLASS 350 STANDARD CEMENT LINED UNLESS OTHERWISE APPROVED BY THE CITY.
18. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE DEPARTMENT OF HEALTH AND AS-BUILTS ARE PROVIDED TO THE CITY PRIOR TO ANY USE OF THIS SYSTEM .
19. WATER DISTRIBUTION SYSTEM SHALL BE DESIGNED TO COMPLY WITH THE CITY'S FIRE (WATER) FLOW CODE.
20. IN AREAS WHERE REUSE WATER IS NOT AVAILABLE THE CONTRACTOR SHALL BE REQUIRED TO (UPON SATISFACTORY COMPLETION OF THE PRESSURE TEST) TRANSFER THE WATER FROM THE POTABLE WATER LINES TO THE REUSE WATER LINES FOR UTILIZATION IN THEIR PRESSURE TEST.
21. IN AREAS WHERE REUSE WATER IS AVAILABLE, REUSE WATER WILL BE UTILIZED IN THE PRESSURE TESTING OF NEW REUSE WATER LINES.
22. ALL POTABLE WATER MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) GUIDELINES. IN THE EVENT THAT PVC FITTINGS ARE SPECIFIED, THE RESTRAINT SHALL BE MODIFIED IN ACCORDANCE WITH THE RECOMMENDED ADDITIONAL RESTRAINT LENGTH REQUIRED FOR PIPE WRAPPED WITH POLYETHYLENE.
23. MEGALUGS, BOLTLESS RESTRAINED JOINTS, GRIPPER GASKETS, OR STAR GRIPS SHALL BE USED ON ALL RESTRAINED JOINT INSTALLATIONS. MINIMUM DEPTH OF BURY ON PIPES NOT MEETING REQUIRED COVER REQUIREMENTS SHALL FOLLOW THE MOST RECENT DIPRA THRUST RESTRAINT DESIGN GUIDELINES.
24. GRIPPER RING GASKETS BY ROMAC AND OR STAR AU-GRIP MAY BE USED AS APPROPRIATE FOR RESTRAINING PRESSURE PIPE TO FITTINGS, VALVES, ETC.
25. WATER SYSTEMS SHALL BE PRESSURE TESTED AT 150 PSI STATIC PRESSURE FOR A PERIOD OF 2 HOURS PER AWWA STANDARDS.
26. ALL WATER SERVICES SHALL BE MARKED WITH AN "/\" SAW CUT INTO THE CURB OR BY METAL TABS SET INTO THE PAVEMENT.
27. ALL WATER VALVES SHALL BE MARKED WITH AN "X" SAW CUT INTO THE CURB OR BY METAL TABS SET INTO THE PAVEMENT. BLOW-OFFS SHALL BE MARKED SIMILARLY, AS WELL.
28. ALL TAPPING OF MAINS SHALL BE PERFORMED BY THE CITY AND BILLED IN ACCORDANCE WITH THE ADOPTED FEE RESOLUTION. SCHEDULING OF THESE CONNECTIONS SHALL REQUIRE A MINIMUM 48 HOUR NOTIFICATION (MEASURED ON NORMAL WORK DAYS) DIRECTED TO THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE THE WORK DIRECTLY WITH THE PUBLIC UTILITIES DEPARTMENT. SUBSEQUENTLY, THE CONNECTION SHALL BE SCHEDULED TO COMMENCE BETWEEN 8:00 A.M. AND NOON ON THE APPROPRIATE DAY.
29. ALL PROPOSED POTABLE WATER MAINS SHALL BE FLUSHED, DISINFECTED, PRESSURE TESTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE WHEN APPROPRIATE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIROMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER TREATMENT PLANT AT LEAST 48 HOURS PRIOR TO BEGINNING FLUSH OF THE MAINS PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING.
30. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL POTABLE MAINS IN EXCESS OF 6" IN DIAMETER AND PRIMARY DISTRIBUTION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR.
31. WITH RESPECT TO TIE-IN CONNECTIONS , THE CITY RESERVES THE RIGHT TO REQUIRE CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS.
32. ALL WORK PERFORMED UPON POTABLE WATER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY AN UNDERGROUND UTILITY CONTRACTOR OR GENERAL CONTRACTOR LICENSED IN THE STATE OF FLORIDA AND REGISTERED WITH THE CITY.
33. FOR CONSTRUCTION PURPOSES, THE PLANS SHALL DIMENSION THE PROPOSED LOCATIONS OF ALL WATER MAINS MEASURED FROM THE BACK OF CURB (OR EDGE OF PAVEMENT, IF NO CURB IS USED).
34. POTABLE WATER SYSTEM EXTENSIONS MAY NOT BE USED PRIOR TO FINAL TESTING, CLEARANCE AND ACCEPTANCE BY THE CITY OF DAYTONA BEACH. THIS INCLUDES CONSTRUCTION WATER REQUIRED FOR SEWER LINE CLEANING OR RELATED USES.
35. ALL H.D.P.E. PIPE UTILIZED FOR WATER, FORCE MAIN AND/OR REUSE WATER MAIN EXTENSIONS SHALL BE S.D.R. 11 UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC OR DIP PIPE TO WHICH IT IS ATTACHED.
36. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.
37. ALL VALVES 2" AND LARGER SHALL BE STANDARD 2" GATE VALVES (CORP STOPS ARE NOT ACCEPTABLE).
38. WHERE POTABLE WATER AND SANITARY SEWER MAINS CROSS WITH LESS THAN EIGHTEEN (18) INCHES OF VERTICAL CLEARANCE OR WHERE THE SEWER MAIN IS ABOVE THE WATER MAIN, THE SEWER MAIN SHALL BE ENCASED WITH CONCRETE, OR UPGRADED TO DUCTILE IRON PIPE FOR A MINIMUM LENGTH OF (20) FEET, CENTERED ON THE POINT OF CROSSING. A MINIMUM HORIZONTAL SEPARATION OF (10) TEN FEET (EDGE TO EDGE) BETWEEN POTABLE WATER MAINS AND SEWER MAINS SHALL BE MAINTAINED WHEN AT ALL POSSIBLE. WHEN THE 10-FOOT HORIZONTAL SEPARATION CANNOT BE MAINTAINED, THE WATER MAIN SHALL BE INSTALLED IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 18" ABOVE THE SEWAGE MAIN. ALTERNATIVELY, THE SEWER MAIN SHALL BE ENCASED WITH CONCRETE OR ENCLOSED IN A WATER TIGHT CARRIER PIPE, OR UPGRADED TO DUCTILE IRON PIPE OR PRESSURE RATED PVC PIPE (MEETING THE AWWA C-900 OR C-905 SPECIFICATION) AND PRESSURE TESTED.
39. ON PUBLIC STREETS WHICH END WITH A CUL-DE-SAC, THE WATER LINE SHALL NOT END WITH A 2" LOOP. THE WATER LINE SHALL END WITH A FIRE HYDRANT.
40. A BACK FLOW PREVENTER (BFP) SHALL BE PLACED ON ALL POTABLE AND FIRELINES. THE TYPE OF BACKFLOW PREVENTER REQUIRED ARE AS FOLLOWS:
    POTABLE WATER SERVICE; REDUCED PRESSURE ZONE BFP
    FIRELINE SERVICING A FIRE SPRINKLER SYSTEM; REDUCED PRESSURE ZONE BFP
    FIRELINE SERVICING ONLY A FIRE HYDRANT; DOUBLE DETECTOR CHECK VALVE SYSTEM
    IN CASES WHERE A WATER LINE SERVES BOTH DOMESTIC AND FIRE SERVICES, A REDUCED PRESSURE ZONE BFP SHALL BE REQUIRED.

SANITARY SEWER NOTES

1. THE CITY'S SEWER DEPARTMENT SHALL BE GIVEN A MINIMUM OF 48 HOURS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS OR WEEKENDS) PRIOR TO BEGINNING ANY SANITARY SEWER CONSTRUCTION.
2. ALL GRAVITY SANITARY SEWER MAIN LINES SHALL BE 8" DIAMETER MINIMUM. COMMERCIAL SERVICE LATERALS WITH MULTIPLE CONNECTIONS SHALL BE GREEN 6" DIA. OR LARGER. ALL SINGLE FAMILY RESIDENTIAL SERVICE LATERALS SHALL BE 6" - SINGLE SERVICES.
3. ALL GRAVITY SANITARY SEWER LINES SHALL BE GREEN PVC SDR 35, ASTM D-3034. IN PLACES WHERE A MINIMUM COVER OF 4.0' CANNOT BE MAINTAINED, AWWA C-900 OR C-905 GREEN PVC DR-25, CLASS 100 OR CONCRETE ENCASEMENT SHALL BE USED. WATER LINES, REUSE LINES, AND STORM DRAINAGE CROSSINGS SHALL ALSO FOLLOW THE CONCRETE ENCASEMENT REQUIREMENT PER THESE STANDARDS AND AS PER REGULATORY REQUIREMENTS.
4. MINIMUM GRAVITY SANITARY SEWER SLOPES ARE AS FOLLOWS:
   8" PIPE 0.40 %
   10" PIPE 0.30 %
   12" PIPE 0.22 %
   OR OTHERWISE NOTED BY THE CITY ENGINEER.
5. GRAVITY SANITARY SEWER LINES SHALL BE INSTALLED WHENEVER POSSIBLE UNDER PAVED AREAS WITHIN PUBLIC RIGHTS-OF-WAY. UTILITY EASEMENTS SHALL BE PROVIDED WHENEVER PUBLICLY-OWNED SEWER LINES ARE CONSTRUCTED OUTSIDE OF A PUBLIC RIGHT-OF-WAY.
6. GRAVITY SANITARY SEWER LINE CONSTRUCTION SHALL BE ACCOMPLISHED BY THE USE OF A LASER INSTRUMENT UNLESS ANOTHER METHOD IS PREVIOUSLY APPROVED BY THE CITY.
7. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING OPERATIONS, DEWATER THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
8. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES IS NOT ACCEPTABLE. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY.
9. ON ALL EXCAVATION AND BACKFILLING THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING IN ORDER TO PROVIDE FOR THE SAFETY OF WORKMEN, AS WELL AS REPRESENTATIVES OF THE CITY, THE DESIGN ENGINEER, AND THE DEVELOPER.
10. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO THE SPECIFIED MINIMUM COMPACTION (95% IN UNPAVED AREAS AND 98% IN PAVED AREAS) OF THE OPTIMUM DENSITY OF THAT MATERIAL BASED ON THE AASHTO T-180 MODIFIED PROCTOR TEST.
11. THE CONTRACTOR SHALL INSTALL A #8 COPPER WIRE, OR SIMILAR DEVICE AS MAY BE APPROVED BY THE CITY FOR THE FULL LENGTH OF ALL PVC SEWAGE FORCE MAINS. THIS PIPE LOCATOR AID SHALL BE INSTALLED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS DIRECTED BY THE MANUFACTURER. TAPE SHALL BE COLOR CODED GREEN FOR SANITARY SEWER AND FORCE MAIN.
12. ALL LOCAL COLLECTION SANITARY SEWER MANHOLES SHALL BE PRECAST WITH A MINIMUM INSIDE DIAMETER OF 4 FEET.
13. STANDARD MANHOLES SHALL BE LOCATED AT INTERVALS NOT EXCEEDING 350 FEET.
14. ALL SEWER FITTINGS TO BE "HARCO".
15. MANHOLE RIMS SHALL MATCH FLUSH WITH THE FINISH GRADE ELEVATION IN PAVED AREAS AND A MINIMUM OF 0.2 FEET AND MAXIMUM OF 0.5 FEET ABOVE GRADE GENERALLY IN UNPAVED AREAS.
16. THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER MANHOLES IN SUCH A WAY THAT SEWER LINES DO NOT INTERSECT SEALED JOINTS BETWEEN SECTIONS OF THE MANHOLE.
17. RUBBER BOOTS AND STAINLESS STEEL BANDS SHALL BE UTILIZED IN THE CONNECTION OF THE SEWER MAIN TO THE MANHOLES (SEE STANDARD MANHOLE AND BOOT DETAIL).
18. INDIVIDUAL SANITARY SERVICE CONNECTORS ON NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES, AND MUST CONNECTED TO SEWER MAIN LINES BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE APPROVED BY THE CITY.
19. FOR SINGLE FAMILY HOMES, SINGLE SIX INCH SEWER SERVICES LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 4 FEET ABOVE GROUND AT THE PROPERTY LINE WITH A PVC RISER AND PLUG BEING EASILY VISIBLE FROM THE ROAD. RUBBER SEAL FITTINGS SHALL BE USED ON ALL LINES. NO GLUED JOINTS ARE PERMITTED ON LATERALS.
20. FOR MULTI-FAMILY AND COMMERCIAL SITES, SIX INCH MINIMUM SEWER SERVICES AND CLEANOUTS SHALL BE PROVIDED AS APPROVED BY THE CITY.
21. SANITARY SEWER LIFT STATIONS AND FORCE MAINS, SIZE, MATERIAL, AND DESIGNS SHALL BE APPROVED BY THE CITY. LIFT STATIONS SHALL BE CONSTRUCTED WITH A MINIMUM WET WELL AS PER THE LIFT STATION DETAIL.
22. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO PREPARE AND SUBMIT FLOTATION CALCULATIONS TO SIZE THE BASE OF THE WET WELL, AND ANY MANHOLES AS DEEMED NECESSARY BY THE CITY.
23. SANITARY SEWER DROP MANHOLES SHALL ONLY BE USED UNDER SPECIAL CONDITIONS AS APPROVED BY THE CITY. DROPS LESS THAN 3.0' SHALL NOT BE ALLOWED.
24. ALL SANITARY SEWER MANHOLE COVERS SHALL HAVE THE WORDS "THE CITY OF DAYTONA BEACH, FLORIDA SANITARY SEWER" CAST INTO THEM AS SHOWN ON DETAIL S-1.
25. ALL SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE DIP OR GREEN DR-18 C-900 PVC WITH WRIE WRAP. THE FORCE MAIN MINIMUM DEPTH OF COVER SHALL BE 36".
26. ALL SANITARY SEWER FORCE MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION GUIDELINES. IN NO INSTANCE SHALL THRUST BLOCKS BE PERMITTED.
27. SANITARY SEWER MANHOLES WHICH HAVE SEWER FORCE MAINS DISCHARGING DIRECTLY INTO THEM SHALL BE FIBERGLASS OR POLY-ETHYLENE LINED. RETRO-FITTING OF MANHOLES WITH LINERS SHALL BE REQUIRED WHEN NEW CONNECTIONS SUCH AS THIS ARE MADE. FIBERGLASS SHALL BE A MINIMUM 1/2" THICKNESS UNLESS APPROVED OTHERWISE BY THE CITY. OTHER TYPES OF LINING METHODS AND MATERIALS MAY BE CONSIDERED ON A CASE BY CASE BASIS. UNDER SPECIAL CIRCUMSTANCES WHERE HYDROGEN SULFIDE IS A MAJOR CONCERN MANHOLES UPSTREAM AND/OR DOWNSTREAM OF THE FORCE MAIN TIE-IN OR WET WELL MAY ALSO BE REQUIRED TO HAVE LININGS INSTALLED.
28. ALL SEWER MAINS, PRIOR TO ACCEPTANCE BY THE CITY AND PRIOR TO ANY FINAL PAVING OPERATIONS, SHALL BE CLEANED BY THE CONTRACTOR AND TELEVISED BY THE CITY.
29. ALL MANHOLES CONSTRUCTED IN SIDE YARDS, BACKYARDS, AND EASEMENTS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE OUTFITTED WITH FIBERGLASS LINERS IN COMPLIANCE WITH ASTM-3753 OR OTHER TYPES OF LINERS APPROVED BY THE CITY. IN ADDITION THE CITY MAY REQUIRE LINERS TO BE INSTALLED IN OTHER AREAS WHERE THE PUBLIC UTILITIES DEPARTMENT BELIEVES THE NEED IS JUSTIFIED SUCH AS IMMEDIATELY UPSTREAM OF FORCE MAINS CONNECTING TO GRAVITY MAINS.
30. ALL SEWER LINES WHICH ARE CONSTRUCTED OUTSIDE OF PUBLIC RIGHTS-OF-WAY WITHIN SIDE YARDS, BACKYARDS, AND OTHER POORLY ACCESSIBLE AREAS SHALL BE CONSTRUCTED OF DUCTILE IRON OR C-900 PVC. ABSOLUTELY NO USE OF PLASTIC STYRENE FITTINGS SHALL BE ALLOWED.
31. SEWER LATERAL LOCATIONS SHALL BE MARKED ALONG THE OUTSIDE OF THE CURB WITH A SAW CUT "V", OR BY A METAL TAB SET INTO THE PAVEMENT.
32. CONTEC A-2000 PVC PIPE SHALL NOT BE ALLOWED FOR USE.
33. EZ-WRAP PLASTIC, AS MANUFACTURED BY PRESS SEAL GASKET CORPORATION, SHALL BE USED ON THE OUTSIDE OF ALL MANHOLE AND WETWELL JOINTS. APPLY ONE LAYER OF 9" WRAP CENTERED ON EACH JOINT. A CITY INSPECTOR SHALL PERSONALLY INSPECT ALL JOINT SEALS PRIOR TO BACKFILLING OPERATIONS.
34. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL FORCE MAINS IN EXCESS OF 6" IN DIAMETER AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CITY.
35. AS A GENERAL RULE, THE NUMBER OF JOINTS SHALL BE LIMITED WHENEVER POSSIBLE. IN SPECIAL CASES WHERE A POINT REPAIR TO AN 8"TO 12" PVC SEWER MAIN IS REQUIRED, THE PROPER RIGID WRAP AROUND SLEEVE SUCH AS A JCM-210 OVERSIZED DUCTILE IRON COUPLING OR AN APPROVED EQUAL MAY BE ALLOWED BY SPECIAL APPROVAL BY THE CITY.
36. ALL IN-LINE SANITARY SEWER FORCE MAIN VALVES SHALL BE FULL BORE PLUG VALVES.
37. WITH RESPECT TO TIE-IN CONNECTIONS AND CORING OPERATIONS, THE CITY RESERVES THE RIGHT TO REQUIRE CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS.
38. ALL WORK PERFORMED UPON SANITARY SEWER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY A LICENSED UNDERGROUND UTILITY CONTRACTOR OR LICENSED GENERAL CONTRACTOR, WHO IS LICENSED IN THE STATE OF FLORIDA AND REGISTERED WITH THE CITY.
39. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AS-BUILTS ARE PROVIDED TO THE CITY PRIOR TO ANY USE OF THE SYSTEM.
40. FOR CONSTRUCTION PURPOSES, THE PLANS SHALL DIMENSION THE LOCATION, OF ALL FORCE MAINS MEASURED FROM THE BASELINE CONSTRUCTION.
41. ALL HDPE PIPE INSTALLED FOR SEWAGE FORCE MAINS SHALL BE SDR 11 UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC OR DIP TO WHICH IT IS ATTACHED.
42. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.
43. ALL SANITARY MANHOLES, WHICH SHALL HAVE A FORCEMAIN DISCHARGING INTO IT, WILL BE REQUIRED TO BE LINED WITH MATERIAL APPROVED BY THE CITY.
44. ALL PUBLIC LIFT STATION WETWELLS WILL BE REQUIRED TO BE FIBERGLASS LINED.

TESTING REQUIREMENTS:

45. THE CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING LABORATORY AT HIS OWN EXPENSE TO INSURE THAT COMPACTION OF ALL FILL MATERIAL IS COMPLETED PROPERLY. TESTS SHALL BE DONE ONE FOOT ABOVE THE PIPE AND THEN AT ONE FOOT VERTICAL INTERVALS UNTIL FINAL GRADE IS REACHED. TESTING SHALL BE COMPLETED AND TEST DOCUMENTS SUBMITTED TO THE CITY AT A MINIMUM FREQUENCY OF ONE SET OF TESTS PER EACH 300 FOOT OF PIPING AND ONE ADDITIONAL SET OF TESTS AT EVERY MANHOLE. IDENTIFICATION OF TEST LOCATIONS SHALL BE CLEARLY INDICATED ON TEST REPORTS. TEST RESULTS SHALL BE FORWARDED PROMPTLY TO THE CITY'S DESIGNATED SITE INSPECTOR.
46. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER.
47. THE CITY OF DAYTONA BEACH RESERVES THE RIGHT TO REQUIRE THE DEVELOPER TO PERFORM VACUUM TESTING OF ALL SANITARY MANHOLES AND TO AIR TEST SEWER MAINS.
48. ALL PROPOSED SEWER FORCE MAINS SHALL BE FLUSHED, PRESSURE TESTED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIROMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER OR WASTEWATER TREATMENT PLANT (AS APPROPRIATE) AT LEAST 24 HOURS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
49. SANITARY SEWER FORCE MAINS SHALL BE PRESSURE TESTED TO 90 PSI FOR 4 HOURS.

STORM DRAINAGE NOTES

ALL MATERIALS AND INSTALLATION METHODS USED FOR LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS FOR SUBDIVISIONS AND SITE PLANS SHALL BE IN CONFORMANCE WITH THE CITY, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).

1. ALL STORM SEWERS AND CULVERTS LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE A MINIMUM OF CLASS III O-RING REINFORCED CONCRETE PIPE. OUTSIDE OF ROADWAY EASEMENTS AND R.O.W., PIPE MAY BE MADE OF ALTERNATE MATERIALS INCLUDING:
   A. SMOOTH INNER WALL HIGH DENSITY POLYETHYLENE (HDPE) IN ACCORDANCE WITH AASHTO M-294, AASHTO MP7, ASTM D3350 AND ASTM D2412 FOR SIZES UP TO 42" IN DIAMETER OR
   B. PVC IN ACCORDANCE WITH THE PROVISION NOTED IN THE "SEWER DETAILS" OF THESE SPECIFICATIONS.
2. ALL STORM SEWER PIPE JOINTS LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE ENTIRELY WRAPPED WITH NON-WOVEN FILTER FABRIC WITH A MINIMUM WIDTH OF 24" AND A MINIMUM OF 24" OVERLAP. GASKETS ARE NOT PERMITTED AS AN EQUIVALENT SUBSTITUTE FOR MEETING THIS THIS REQUIREMENT. THIS PRACTICE IS ENCOURAGED ON PRIVATE SITES ADDITIONALLY, ALL JOINTS SHALL BE RUBBER GASKETED FOR BOTH ROUND AND ELLIPTICAL PIPE.
3. DEPTH OF COVER MEASURED TO THE TOP OF PIPE (NOT INCLUDING THE BELL JOINT) SHALL BE A MINIMUM OF 1 FOOT. DEVIATION FROM THIS REQUIREMENT MAY BE ALLOWED BY INCREASING THE PIPE'S STRUCTURAL CAPACITY. THIS DEVIATION MUST BE SPECIFIED ON THE PLANS APPROVED FOR CONSTRUCTION AND SUBSEQUENTLY REFLECTED ON THE SHOP DRAWINGS AND AS-BUILT PLANS.
4. ALL STORM DRAINAGE PIPES LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE A MINIMUM OF TWELVE INCH (12") DIAMETER OR EQUIVALENT. STORM DRAINAGE PIPES SMALLER THAN 15" ARE PERMITTED ON PRIVATE SITE PLANS PROVIDING THAT MAINTENANCE SHALL BE PERFORMED BY THE OWNER.
5. STORM INLETS, MANHOLES, AND CATCH BASINS SHALL BE EITHER POURED IN PLACE OR PRECAST REINFORCED CONCRETE. STRUCTURES SHALL BE REQUIRED AT EACH CHANGE OF PIPE SIZE OR CHANGE IN PIPE DIRECTION. ALL STRUCTURES SHALL BE IN COMPLIANCE WITH ASTM C-478 AND SHALL HAVE 8" THICK WALLS. 6" THICK WALLS MAY BE PERMITTED PROVIDING THAT THE PLANS SPECIFY INCREASED REINFORCEMENT IN ACCORDANCE WITH FDOT STANDARD INDEX NO. 201 IN ADDITION, THIS REQUIREMENT MUST BE REFLECTED ON BOTH THE SHOP DRAWING AND AS-BUILT PLANS.
6. STORM INLETS SHALL BE SPACED IN SUCH A MANNER AS TO ACCEPT ONE HUNDRED (100) PERCENT OF THE DESIGN STORM RUNOFF WITHOUT IMPEDING THE FLOW OF TRAFFIC. FOR ROADWAY SECTIONS WITH DESIGN SPEEDS OF 45 MPH AND LESS AND WITHOUT FULL WIDTH SHOULDERS, SPREAD RESULTING FROM A RAINFALL INTENSITY OF FOUR INCHES (4") PER HOUR SHALL NOT EXCEED ONE-HALF OF THE TRAVEL LANE ADJACENT TO THE GUTTER. FOR SITE PLANS, INLET SPACING SHALL BE DESIGNED TO ACCEPT ONE HUNDRED (100) PERCENT OF THE RUNOFF FROM A RAINFALL INTENSITY OF FOUR INCHES (4") PER HOUR WITHOUT RESULTING IN PONDING OF WATER AROUND THE INLET.
7. WET POND DEPTHS SHALL BE EIGHT FEET (8') MINIMUM TO FIFTEEN FEET (15') MAXIMUM, MEASURED FROM THE TOP OF BANK.
8. FOR CONNECTIONS BETWEEN INLETS WITH PIPING 15" IN DIAMETER AND LARGER, THE MAXIMUM DISTANCES BETWEEN INLETS AND / OR CLEAN-OUT JUNCTION BOXES SHALL BE 300 FEET. CULVERTS SHALL BE SLOPED TO MAINTAIN A MINIMUM SELF-CLEANING VELOCITY OF 2.5 FEET PER SECOND USING A MANNING'S 'n' OF 0.012. SPACING FOR CLEAN-OUTS AND INLETS FOR SMALLER PIPING SHALL BE REDUCED AND EVALUATED ON A CASE BY CASE BASIS.
9. THE MAXIMUM PERMISSIBLE SLOPE OF ANY NEW SITE GRADING IS 3:1 (HORIZONTAL:VERTICAL). THIS LIMIT SHALL BE APPLIED TO ALL AREAS EXCEPT STORMWATER CONVEYANCE AND TREATMENT SYSTEMS WHICH HAVE A MAXIMUM SLOPE OF 4:1 (EXCEPT BELOW THE WATER TABLE WHERE SHARPER SLOPES ARE PERMISSIBLE.)
10. ALL SWALES AND DITCHES SHALL HAVE A MAXIMUM PERMITTED SIDE SLOPE NOT GREATER THAN 4 TO 1 AT A MINIMUM. THE MAXIMUM PERMITTED BACKSLOPE, SHALL BE 3:1, PROVIDED THAT A 2' WIDE BERM IS INSTALLED. DESIGN CENTERLINE AND TOP-OF-BANK ELEVATIONS SHALL BE NOTED AT INTERVALS OF 100'.
11. SWALES THAT ARE NORMALLY DRY AND INTENDED FOR CONVEYANCE OF STORMWATER RUNOFF AND ARE NOT INTENDED FOR RETENTION SHALL HAVE A MINIMUM DRAINAGE MAINTENANCE EASEMENT WIDTH MEASURING 15 FEET. SWALED AREAS INTENDED FOR RETENTION SHALL PROVIDE APPROPRIATE EASEMENT AREAS FOR ACCESS AND MAINTENANCE MEASURED UPLAND FROM THE TOP OF BANK. AT A MINIMUM, THE SAID EASEMENT SHALL MEASURE 10' FEET IN WIDTH FROM THE TOP OF THE SWALE.
12. PIPED STORMWATER SYSTEMS SHALL HAVE A MINIMUM DRAINAGE MAINTENANCE EASEMENT WIDTH OF 20 FEET, AND MAY BE INCREASED DEPENDING UPON THE SIZE AND DEPTH OF PIPE.
13. NORMAL ROADSIDE SWALES ARE PERMITTED TO BE CONSTRUCTED TO A MAXIMUM DEPTH OF 18" BELOW THE OUTSIDE EDGE OF PAVEMENT OR CONCRETE CURB.
14. CONCRETE EROSION CONTROL MUST BE PROVIDED WHERE SWALES OR CULVERTS INTERCEPT DRAINAGE DITCHES.
15. WHEN A WET POND IS INCORPORATED WITHIN A SUBDIVISION AND IS ABUTTED BY LOTS, SUCH ABUTTING LOT LINES SHALL BE EXTENDED INTO THE LAKE PROPORTIONATELY ENCOMPASSING ALL OF THE LAKE AREA.
16. WET POND INFLOW AND OUTLET STRUCTURES SHALL GENERALLY BE CONSTRUCTED WITH REINFORCED CONCRETE AND SHALL BE SUBJECT TO THE APPROVAL OF THE CITY. SKIMMERS FOR WET PONDS SHALL BE CONSTRUCTED SUCH THAT THE BOTTOM EXTENDS 6" BELOW THE NORMAL WATER LEVEL AND 6" ABOVE THE OVERFLOW. FOR DRY PONDS, THE SKIMMER BOTTOM SHALL BE SET 6" BELOW THE LOWEST OVERFLOW ELEVATION AND 6" ABOVE THE HIGHEST POINT OF OVERFLOW. ALL SKIMMERS SHALL BE CONSTRUCTED OF MINIMUM 1/4" THICK ALUMINUM OR FIBERGLASS ADEQUATELY SUPPORTED TO PREVENT DEFLECTION.
17. SOIL EROSION CONTROL MEASURES, SATISFACTORY TO THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND THE CITY, SHALL BE EMPLOYED DURING CONSTRUCTION.
18. THE CITY MAY REQUEST THAT THE DEVELOPER SUBMIT A REPORT BY A QUALIFIED HYDROLOGIST ON THE IMPACT THE WET POND WILL HAVE ON NEIGHBORING WATER TABLE ELEVATIONS BOTH DURING CONSTRUCTION AND AFTER LAKE COMPLETION. THE CITY MAY REQUIRE GROUNDWATER MONITORING DURING THE LAKE EXCAVATION.
19. ADEQUATE MAINTENANCE EASEMENTS OR RIGHTS-OF-WAY AS APPROVED BY THE CITY SHALL BE PROVIDED AROUND THE ENTIRE PERIMETER OF ALL WET PONDS AND ASSOCIATED OUTFALLS DISCHARGING INTO AND OUT OF LAKES. APPLICABLE CROSS SECTIONS SHALL BE INCLUDED ON ALL FINAL DEVELOPMENT PLANS.
20. DEVELOPMENT PLANS FOR ALL STORMWATER MANAGEMENT SYSTEMS SHALL CONTAIN POP-OFF DATA (OVERFLOW), BOTTOM ELEVATION, NORMAL WATER LEVELS, MEAN ANNUAL SEASONAL HIGH WATER TABLE ELEVATION, TREATMENT VOLUME AND CORRESPONDING ELEVATION, 100 YEAR HIGH WATER LEVELS, AND THE DESIGN TAILWATER ELEVATION (IF APPLICABLE).
21. IN GENERAL, ALL RETENTION / DETENTION SITES MUST BE CONSTRUCTED ON ALL PROJECTS PRIOR TO ANY ROAD, PARKING LOT, OR BUILDING CONSTRUCTION COMMENCING OR AS CURRENT PERMIT CONDITIONS DICTATE. SEWER AND WATER MAINS MAY BE INSTALLED PRIOR TO RETENTION/DETENTION SITE CONSTRUCTION IF DEWATERING IS NOT REQUIRED.
22. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ANY AND ALL DEWATERING PERMITS THAT MAY BE REQUIRED.
23. WHEN CULVERTS ARE INSTALLED TO MAINTAIN THE FLOW OF EXISTING DRAINAGE WAYS WHERE NEWLY PROPOSED ROADS WOULD OTHERWISE SEVER THE DRAINAGE WAY, THEN CULVERTS CROSSING RIGHTS-OF-WAY SHALL EXTEND FROM RIGHT-OF-WAY LINE TO RIGHT-OF-WAY LINE UNDER THE ROADWAY. CULVERTS SHALL BE DESIGNED TO ACCOMODATE THE FLOW FROM THE 100 YEAR - 24 HOUR STORM EVENT WITHOUT FLOODING ADJACENT PROPERTY OR SURCHARGING THE SAID ROADWAY.
24. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND MAINTAIN A COPY OF THE SJRWMD PERMIT AT THE CONSTRUCTION SITE, AND ABIDE BY ALL CONDITIONS OF THE PERMIT.
25. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.

H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #18120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
07/02/03

TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
email: tomoka@tomoka-eng.com website: www.tomoka-eng.com

REVISIONS		
NO.	DATE	DESCRIPTION

STANDARD CONSTRUCTION NOTES

HABITAT VILLAGE PCD
L.P.G.A. BOULEVARD (11th STREET)
CITY of DAYTONA BEACH, FLORIDA

PREPARED FOR:
HALIFAX HABITAT for HUMANITY, INC.

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-CN1
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 07/02/03
SHEET C-16

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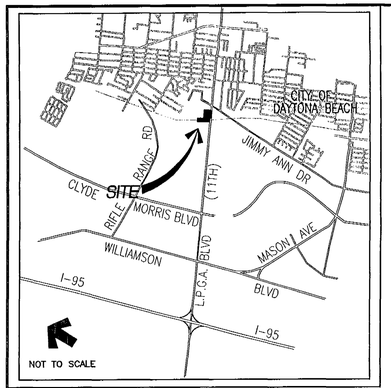
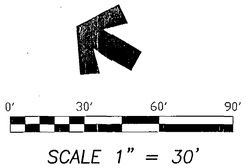


VICINITY MAP



N/F
BLACK CROW MEDIA
ORB 4774, PG 4357
UNPLATTED
(OCCUPIED – RADIO TOWERS)

LEGEND/ABBREVIATIONS

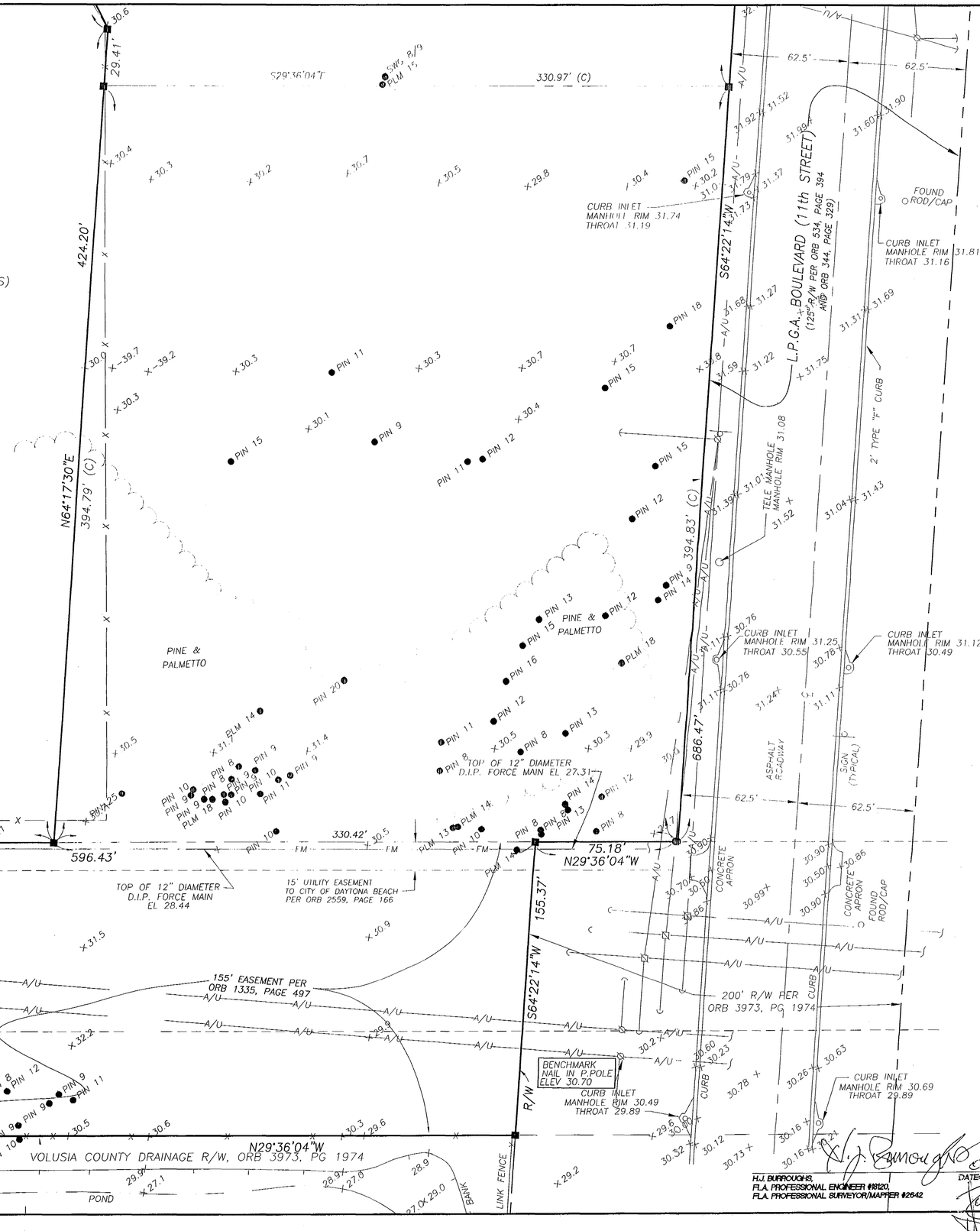
Ⓢ	SANITARY MANHOLE
ⓈⓉ	STORM MANHOLE
⊕	FIRE HYDRANT
●	FOUND 1/2" DIAMETER IRON ROD AND CAP LS #4006 – TYPICAL UNLESS OTHERWISE INDICATED
■	SET 4"x4" CONCRETE MONUMENT LB2232
A/U	AERIAL UTILITY
U.G.	UNDERGROUND
⌀	CONCRETE POWER POLE
⌀	WOODEN POWER POLE
R/W	RIGHT OF WAY
FP&L	FLORIDA POWER & LIGHT CO.
ORB	OFFICIAL RECORDS BOOK
PG	PAGE
MH	MANHOLE
MKR	MARKER
WV	WATER VALVE
FM	FORCE MAIN
N/F	NOW OR FORMERLY
(C)	CALCULATED
(D)	DEED
+31.6	EXISTING ELEVATION

TREE LEGEND

CHY	CHERRY
PLM	PALM
PIN	PINE
SWG	SWEETGUM

SURVEYOR'S NOTES

1. BASIS OF BEARINGS: ASSUMED, WITH THE NORTHERLY RIGHT–OF–WAY LINE OF L.P.G.A. BOULEVARD (AS SHOWN) BEING S64°22'14"W.
2. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR / MAPPER.
3. UNDERGROUND UTILITIES NOT LOCATED EXCEPT AS SHOWN.
4. UNDERGROUND FOUNDATIONS, IF ANY, NOT LOCATED.
5. ALL BOUNDARY MEASUREMENTS SHOWN ARE RECORD AND MEASURED UNLESS OTHERWISE NOTED.
6. THERE MAY BE ADDITIONAL EASEMENTS, RESTRICTIONS AND/OR OTHER MATTERS NOT SHOWN ON THIS SURVEY WHICH MAY BE FOUND IN THE COUNTY PUBLIC RECORDS (NO TITLE WORK PROVIDED).
7. THIS PROPERTY LIES IN ZONE "X" AS SCALED FROM FLOOD INSURANCE RATE MAP (FIRM) FOR VOLUSIA COUNTY, FLORIDA, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NO. 12157C0352 G, EFFECTIVE DATE: APRIL 15, 2002.
8. THIS SURVEY COMPLIES WITH THE TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS PER CHAPTER 61G17–6, FLORIDA ADMINISTRATIVE CODE.
9. PRIOR TO RELYING ON THE INFORMATION SHOWN FOR UNDERGROUND UTILITIES FOR THE PURPOSE OF CONNECTION OR EXTENSION, THE UTILITY MUST BE EXPOSED AND INFORMATION VERIFIED.



TOMOKA ENGINEERING
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email: tomoka@tomoka-eng.com website: www.tomoka-eng.com
LB #2232

REVISIONS

NO.	DESCRIPTION	DATE

TOPOGRAPHIC SURVEY
A PORTION OF SEC 2, TWP 15S, RGE 32E
CITY OF DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR: TOMOKA ENGINEERING

PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-TP2
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 02/03/03
SHEET 1 OF 2

H.J. BURROUGHS, P.L.A. PROFESSIONAL ENGINEER #19120, P.L.A. PROFESSIONAL SURVEYOR/MAPPER #2642
DATE 02/03/03

\\Survey\T2001\land projects T2001\T1159TOM\dwg\1159-TP2.dwg 05/02/2003 12:20:18 PM EDT


POINT OF REFERENCE
(PARCEL AA)
NORTHEAST CORNER
OF NORTHWEST 1/4
SECTION 2, TOWNSHIP 15 SOUTH, RANGE 32 EAST
S89°32'28"W 51.10'
NORTHWEST CORNER OF
LANDS PER DEED
BOOK 515, PAGE 404
NORTH LINE OF SECTION 2
TOWNSHIP 15 SOUTH
RANGE 32 EAST
834.43'
S00°11'26"E
VACANT - UNPLATTED
ASPHALT ROADWAY
N89°32'28"E
224.35'
S00°11'26"E
450.95'
66' ROAD EASEMENT
WESLEY STREET
ASPHALT PAVEMENT
10.96'
N19°11'39"W
15' TEMPORARY ACCESS
EASEMENT ORB 4158, PG 1569
EXISTING SAND
TRAIL (SHADED)
N33°54'08"E
318.58'
6' CHAIN LINK FENCE
GUY POLE
SAN MH
32.96
INLET
TOP 31.45
BENCHMARK
FIRE HYDRANT
NORTH BOLT
ELEV.= 35.21
FIRE HYDRANT
3.62' NORTH
OF R/W LINE
291.64'
JIMMY ANN DRIVE
U.G. FIBEROPTIC MKR
CURB INLET
MANHOLE RIM 32.27
THROAT 31.70
CURB INLET
MANHOLE RIM 32.12
THROAT 31.46
FIRE HYDRANT
N BOLT EL 33.31
CONCRETE APRON
U.G. GAS MKR
U.G. FIBEROPTIC MKR
PIN 17
62.5'
62.5'
S29°36'04"T
330.97' (C)
0' 30' 60' 90'
SCALE 1" = 30'
TOMOKA ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING SINCE 1976
DAYTONA BEACH FLAGLER/PALM COAST
Main Office: 900 So. Ridgewood Ave., Daytona Beach, FL 32114
Phone: 386-257-1600 Fax: 386-257-1601
LB #2232
REVISIONS
NO. DATE DESCRIPTION
TOPOGRAPHIC SURVEY
A PORTION OF SEC 2, TWP 15S, RGE 32E
CITY OF DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA
PREPARED FOR:
TOMOKA ENGINEERING
PROJECT NO. T1159TOM
DRAWING REFERENCE NO. 1159-TP2
REVISION NO./DATE SEE REVISION TABLE
ORIGINAL ISSUE DATE 02/03/03
SHEET 2 OF 2
63181 2
RECEIVED
AUG 1 5 2003
PDS
ALTAMONTE SVC. CTR.
H.J. BURROUGHS,
FLA. PROFESSIONAL ENGINEER #8120,
FLA. PROFESSIONAL SURVEYOR/MAPPER #2642
DATE
02/03/03