

SEWER EXPANSION


HOMBRE CIRCLE-13 LOTS

FOR:

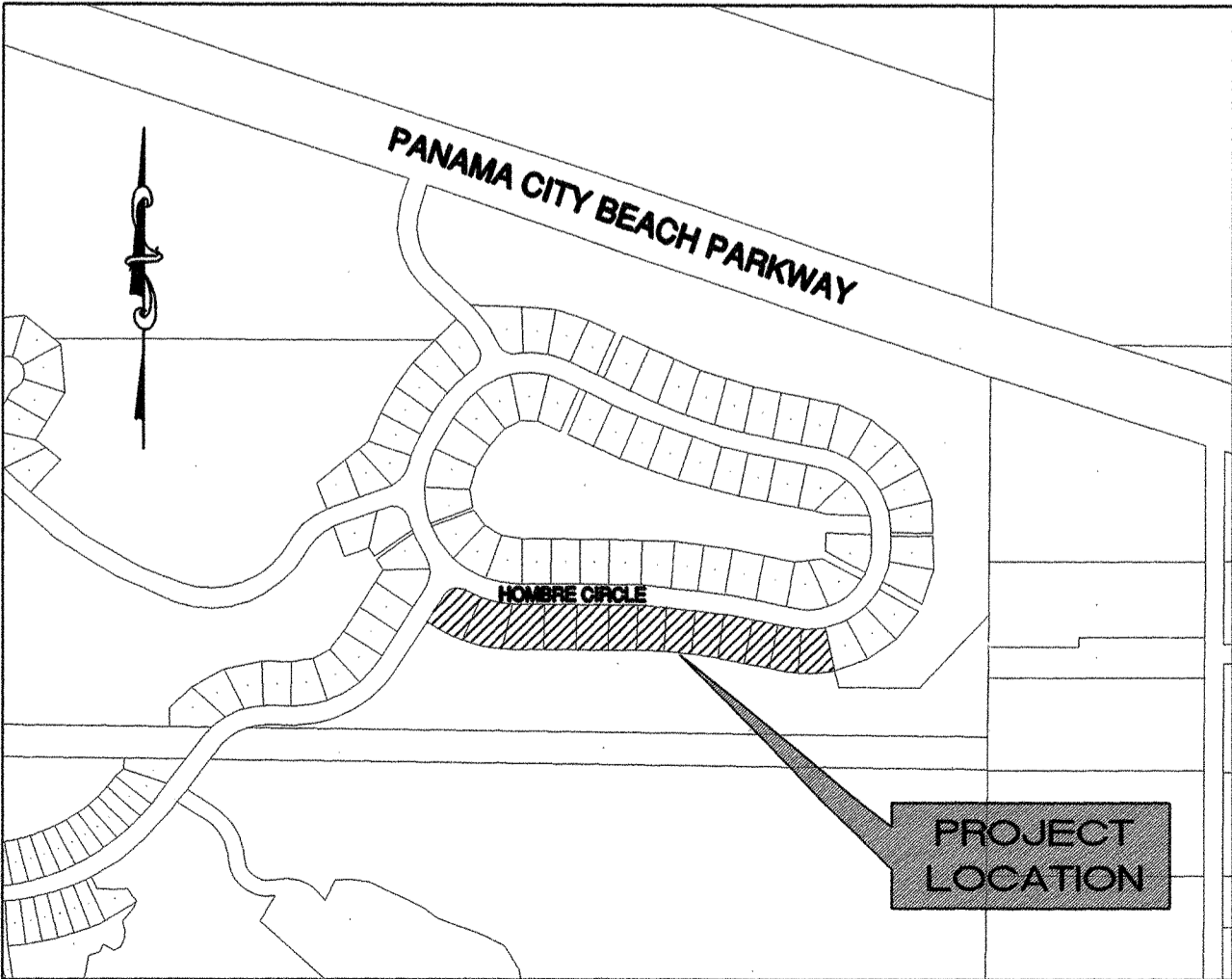
EDGEWATER ESTATES, INC.

PANAMA CITY BEACH, FLORIDA

PREPARED BY:

 <p>McNEIL ENGINEERING, INC <i>Professional Engineering Consultants</i></p>	416 Jenks Avenue Panama City, FL 32401
	Phone (850) 763 - 5730
	Fax (850) 763 - 5744

PROJECT 20904



VICINITY MAP
NOT TO SCALE

INDEX OF SHEETS	SHEETS
SITE LAYOUT PLAN	1
SITE GRADING AND DRAINAGE PLAN	2
SITE UTILITY AND EROSION CONTROL PLAN	3
CONSTRUCTION DETAILS	4-6

PERMIT PURPOSES ONLY

P.C.B. ENGINEERING DEPT.
WATER & SEWER UTILITIES REVIEW

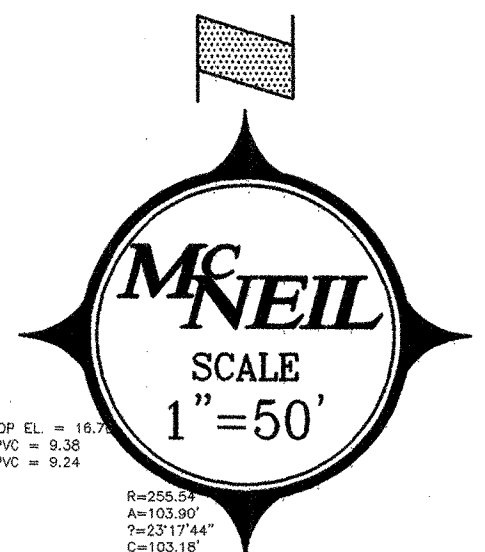
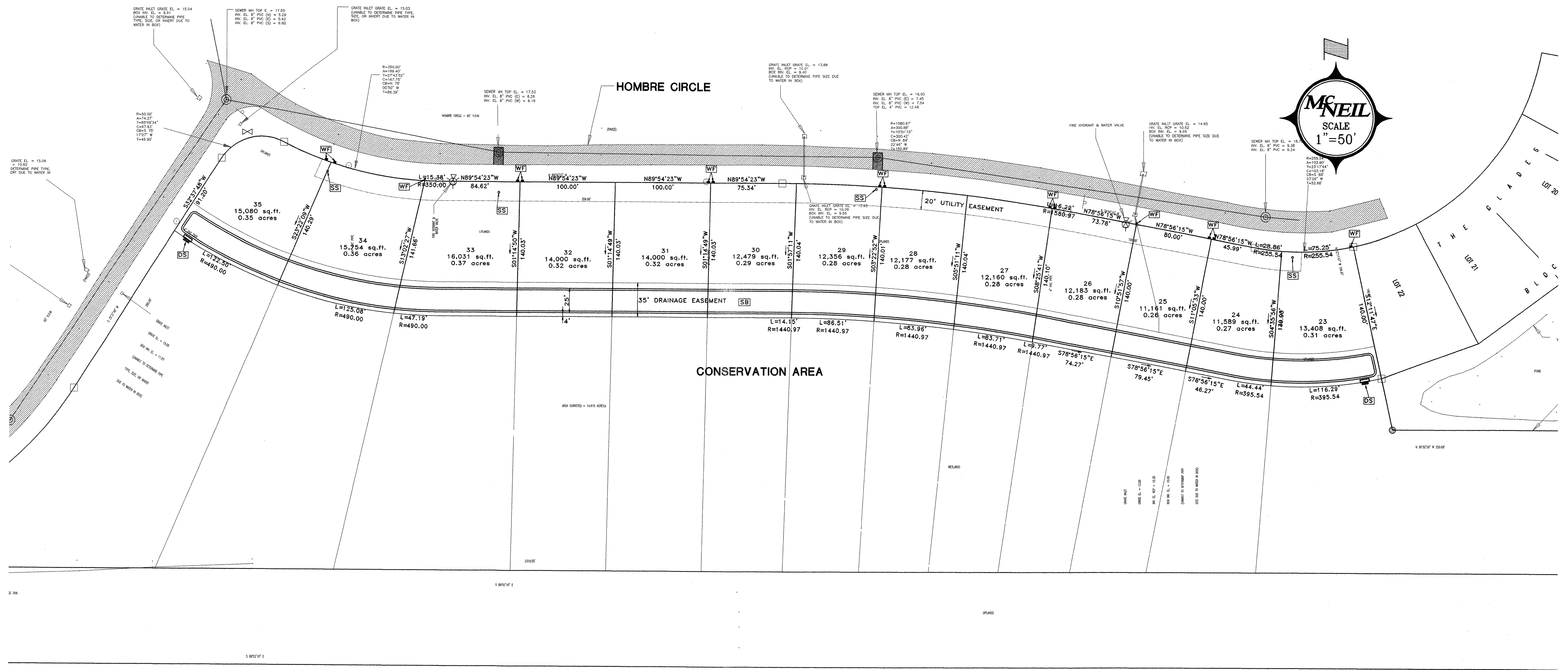
APPROVED DISAPPROVED

APPROVED AS NOTED

REVIEWER 02/08/02
DATE

20904-01
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20904 - SEWER EXPANSION - HOMBRE CIRCLE-13 LOTS



ENGINEER'S ELEVATION = 18.89
 LEGEND SYMBOL FOR NORTH SIDE
 USE LINES OF PITCH FOR POWER
 DESIGN ELECTRICAL LINES

SEE GENERAL NOTES IN CONSTRUCTION DETAILS.

- SITE LAYOUT DRAWING NOTES:**
1. ONLY ABOVE GROUND FEATURES ARE SHOWN ON THIS SHEET.
 2. ALL CONSTRUCTION OUTSIDE OF PROPERTY LINES IS SHOWN IN DETAIL ON PERMIT DRAWINGS. (SEE GENERAL NOTES.)
 3. ALL RADII AT FACE OF CURB ARE 5' UNLESS SHOWN.
 4. CONTRACTOR SHALL PROVIDE MCNEIL ENGINEERING, INC. FIVE (5) SETS OF AS-BUILT DRAWINGS OF THE COMPLETED PROJECT. DRAWINGS SHALL BE PREPARED AND SIGNED & SEALED BY A FLORIDA REGISTERED SURVEYOR.

SYMBOL LEGEND

DS	DRAINAGE STRUCTURE - SEE GRADING & DRAINAGE PLAN
NI	(SEE NOTE #, #) - SEE NOTES ON THIS SHEET
SS	SEWER STRUCTURE - SEE UTILITY PLAN
SB	(F.O.T. AND F.O.E.P. STORMWATER BASIN)
WF	WATER FEATURE - SEE UTILITY PLAN

SITE DATA SCHEDULE

GOVERNING ENTITY - PANAMA CITY BEACH
ZONING - RESIDENTIAL
TOTAL AREA OF SITE - 3.98 ACRES - 172,377 SQUARE FEET
TOTAL IMPERVIOUS AREA - 1.58 ACRES - 88,951 SQUARE FEET
LANDSCAPE REQUIREMENTS - SEE LANDSCAPE PLANS (BY OTHERS)
IMPERVIOUS SURFACE RATIO - 0.40
OPEN SPACE RATIO - 0.49
F.O.E.P. STORMWATER PERMIT REQUIRED

PERMIT PURPOSES ONLY

SITE LAYOUT PLAN
SEWER EXPANSION
HOMBRE CIRCLE-13 LOTS
 PANAMA CITY BEACH, FLORIDA

SCALE: 1" = 50'
 DESIGNED BY: RLC
 DRAWN BY: DEC
 REVIEWED BY: SDM
 ISSUE DATE: 2/08/01
 (S/B: 20904E01)

MCNEIL
ENGINEERING, INC.
 Professional Engineering Consultants

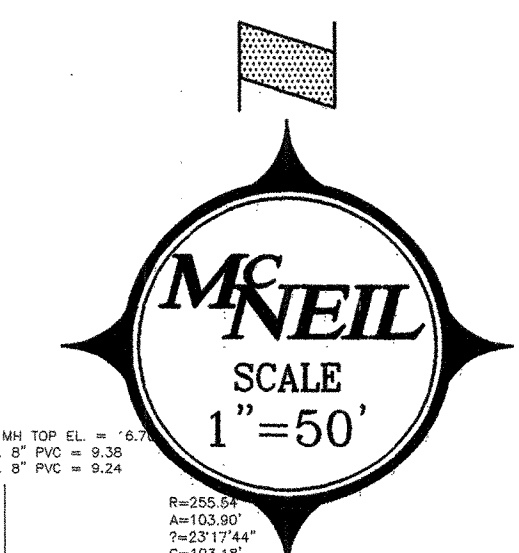
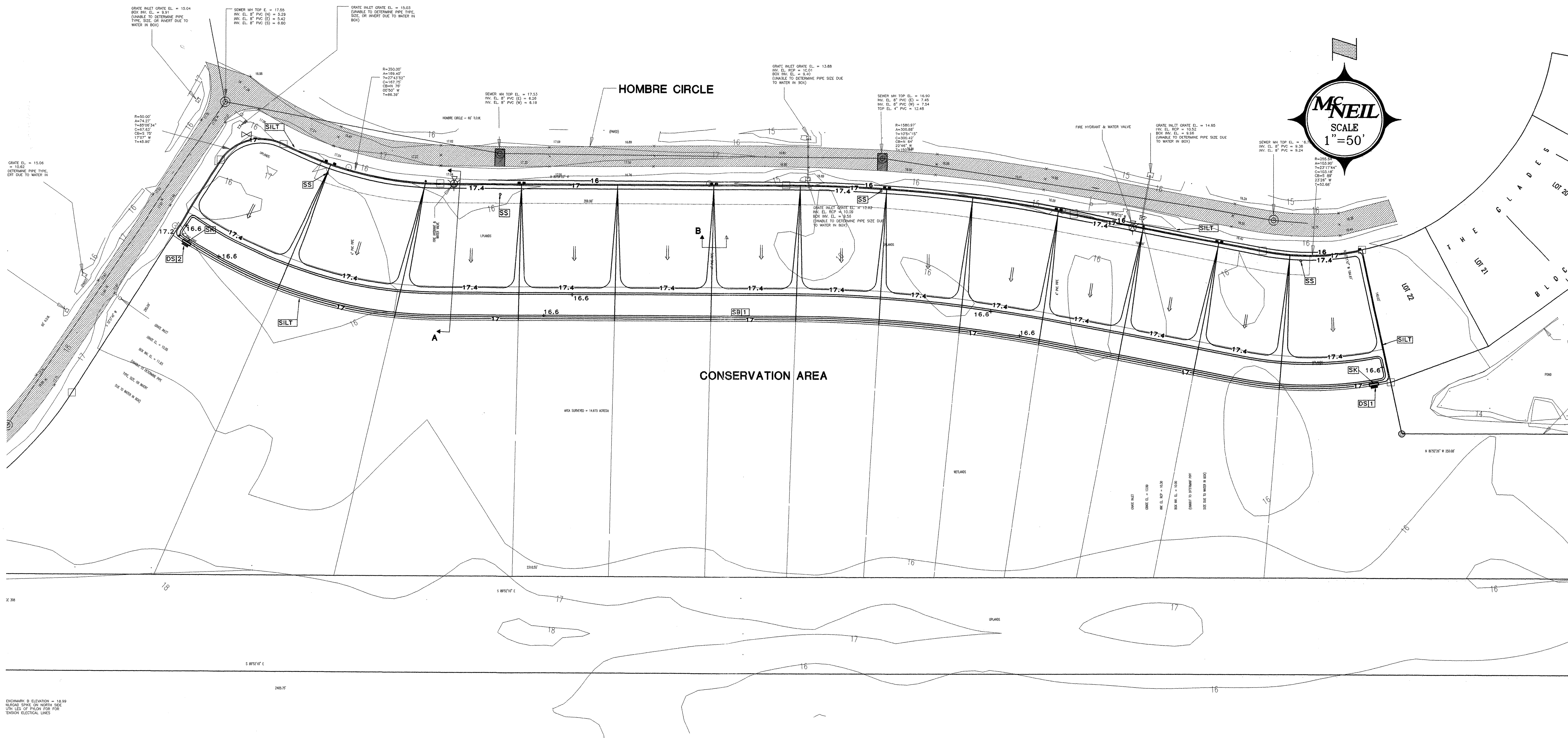
416 Jenks Avenue
 Panama City, Florida 32401
 Phone: 850-763-5700
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[Signature]
 3/7/02

NO.	DATE	REVISIONS
1	2/08/01	DEC REVISED SEWER LINE
2	3/08/02	DEC REVISED SEWER LINE, ADDED WATER METERS AND UTILITY EASEMENT
3	10/08/02	DEC ADDED EROSION CONTROL MEASURES
4	01/08/03	DEC REVISED STORMWATER BASIN ELEVATION PER GEOTECHNICAL REPORT AND ADJUSTED CONTOURS
5	02/08/03	DEC ADDED 35' DRAINAGE EASEMENT

NOT RELEASED FOR CONSTRUCTION BY: DATE:

20904 - SEWER EXPANSION - HOMBRE CIRCLE-13 LOTS



ENCHAMARK B ELEVATION = 13.99
 MILDRED SPIKE ON NORTH SIDE
 USE LEG OF TRIANGLE FOR
 DESIGN ELECTRICAL LINES

- SITE PAVING & GRADING DRAWING NOTES:**
- ONLY ABOVE GROUND FEATURES AND UNDERGROUND DRAINAGE STRUCTURES ARE SHOWN ON THIS SHEET. ALL CONSTRUCTION OUTSIDE OF PROPERTY LINES IS SHOWN IN DETAIL ON PERMIT DRAWINGS. (SEE GENERAL NOTES.)
 - SEE SYMBOL LEGEND ON THIS SHEET FOR SYMBOL INFORMATION AND REFERENCED DETAILS.
 - ALL DEMOLISHED MATERIALS (i.e., SIGNS, CONCRETE, ASPHALT, ETC...) TO BE REMOVED AND DISPOSED OF IN A LEGAL MANNER.
 - SEE SECTIONS IN CONSTRUCTION DETAILS.
 - PROPOSED FINISHED FLOORS OF HOUSES TO BE 1 FOOT (MIN.) ABOVE ROADWAY CENTERLINE. SEE CROSS SECTION IN CONSTRUCTION DETAILS.
 - MINIMUM PERMEABILITY OF IMPORT FILL FOR STORMWATER BASIN TO BE 20 IN/HR. PROOF OF PERMEABILITY TO BE SUBMITTED TO ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.

NO.	Basin Area	TOP OF BANK ELEV.	SIDE SLOPE	BOTTOM ELEV.	WATERSHED AREA
SB1	0.44 AC	EL. 17.20	4 TO 1	EL. 16.60	3.98 AC

SEE SITE LAYOUT PLAN FOR DIMENSIONS

NO.	TYPE STRUCTURE	TOP OF GRATE	NORTH INVERT	SOUTH INVERT	EAST INVERT	WEST INVERT	SLOT INVERT
DS1	6.00' WIDE WOODEN WEIR W/ 2.00' WIDE SLOT	EL. 17.20	EL.	EL.	EL.	EL.	EL. 16.87
DS2	6.00' WIDE WOODEN WEIR W/ 2.00' WIDE SLOT	EL. 17.20	EL.	EL.	EL.	EL.	EL. 16.87

NOTE: ADD MITERED PIPE LENGTH FOR END SECTION PER F.D.O.T. INDEX 273 EXCEPT A.D.S. SEE CONSTRUCTION DETAILS.
 NOTE: AT DS1 AND DS2 CONSTRUCT A WOOD SKIMMER AROUND INLET - SEE CONSTRUCTION DETAILS.

- SYMBOL LEGEND**
- 17.02 (EXISTING SPOT ELEVATION)
 - 16 (EXISTING CONTOUR)
 - +12.50 (PROPOSED FINISHED GRADE)
 - (STORMWATER SURFACE FLOW)
 - DS12 (SEE DRAINAGE STRUCTURE SCHEDULE THIS SHEET #4.#12)
 - EROS (EROSION CONTROL MEASURES - SEE CONSTRUCTION DETAILS)
 - N1 (SEE NOTE #.#1 - SEE NOTES THIS SHEET)
 - SS (SEWER STRUCTURE - SEE UTILITY PLAN)
 - SB1 (SEE STORMWATER BASIN SCHEDULE THIS SHEET #.#1)
 - SK (SKIMMER - SEE CONSTRUCTION DETAILS)

PERMIT PURPOSES ONLY

SITE GRADING AND DRAINAGE PLAN
SEWER EXPANSION
HOMBRE CIRCLE-13 LOTS
 PANAMA CITY BEACH, FLORIDA

SCALE: 1" = 50'
 DESIGNED BY: RLC
 DRAWN BY: DEC
 CHECKED BY: SDM
 ISSUE DATE: 2/20/01
 CF/B: 20904E01

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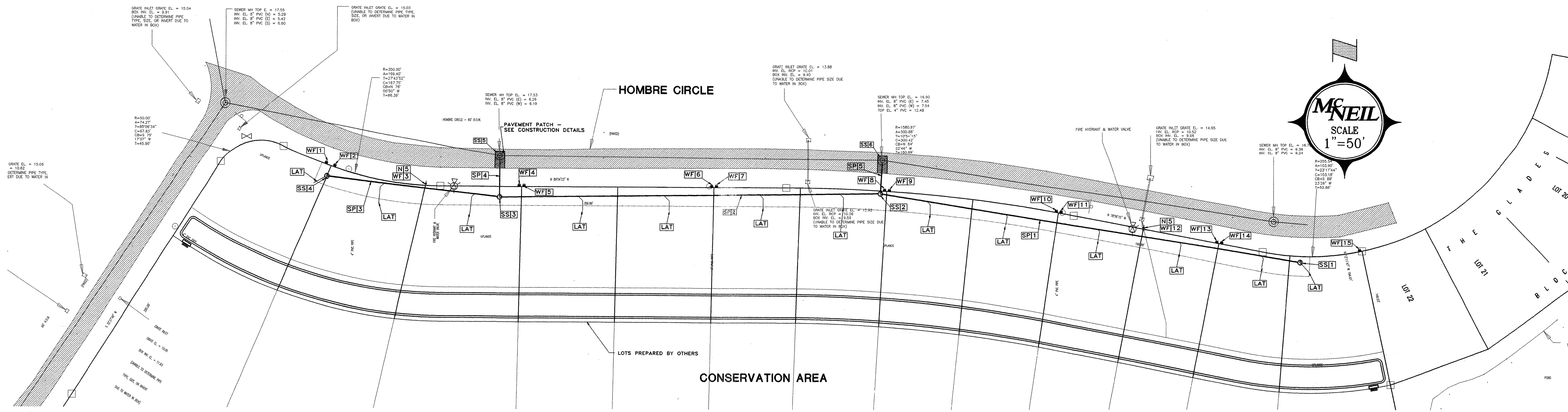
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 3/7/02

NO.	DATE	BY	REVISIONS
1	12/20/01	DEC	REVISED SEWER LINE
2	3/14/02	DEC	REVISED SEWER LINE, ADDED WATER METERS AND UTILITY EASEMENT
3	10/14/02	DEC	ADDED EROSION CONTROL MEASURES
4	3/14/02	DEC	REVISED STORMWATER BASIN ELEVATION PER GEOTECHNICAL REPORT AND ADJUSTED CONTOURS
5	3/17/02	DEC	REVISED BASIN ADDED BY DRAINAGE EASEMENT

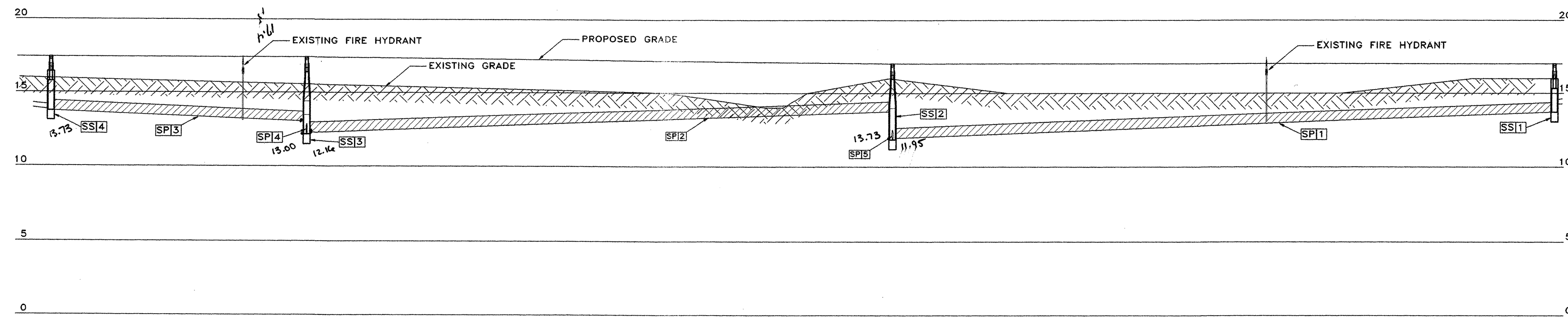
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SHEET NUMBER
2 OF 6

20904 - SEWER EXPANSION - HOMBRE CIRCLE-13 LOTS



PLAN



PROFILE
SCALE H 1"=50'
V 1"=5'

SEE GENERAL NOTES IN CONSTRUCTION DETAILS.

- SITE UTILITY DRAWING NOTES:**
1. ONLY ABOVE GROUND FEATURES AND UTILITIES (DRAINAGE PIPE IS DASHED) ARE SHOWN ON THIS SHEET.
 2. ALL CONSTRUCTION OUTSIDE OF PROPERTY LINES IS SHOWN IN DETAIL ON PERMIT DRAWINGS.
 3. SEE SYMBOL LEGEND ON THIS SHEET FOR SYMBOL INFORMATION AND REFERENCED DETAILS.
 4. SEE SECTION AND DETAILS IN CONSTRUCTION DETAILS.
 5. RELOCATE EXISTING FIRE HYDRANT TO PROPERTY LINE AS SHOWN.
 6. CONNECT NEW WATER METERS TO EXISTING WATER LINE.

SYMBOL LEGEND

- [LAT] (SERVICE LATERAL) - SEE CONSTRUCTION DETAILS
- [NIT] (SEE NOTE N. #1 - SEE NOTES THIS SHEET)
- [SP1-4] (SEE GRAVITY SEWER PIPE SCHEDULE THIS SHEET N.#11 SEE CONSTRUCTION DETAILS)
- [SS1-12] (SEE SEWER STRUCTURE SCHEDULE THIS SHEET N.#12 SEE CONSTRUCTION DETAILS)
- [WF1-15] (SEE WATER FIXTURE SCHEDULE THIS SHEET N.#12 SEE CONSTRUCTION DETAILS)

NO.	SIZE	LF	TYPE	INVERT	SLOPE
SP1	8"	438'	PVC	EL.	0.40%
SP2	8"	392'	PVC	EL.	0.40%
SP3	8"	177'	PVC	EL.	0.40%
SP4	8"	138'	PVC	EL.	0.40%
SP5	8"	50'	PVC	EL.	0.40%

NO.	TYPE
WF1-2	3/4" WATER METER ASSEMBLY AND LANDSCAPE METER ASSEMBLY
WF3	FIRE HYDRANT ASSEMBLY
WF4-11	1 1/2" WATER METER ASSEMBLY AND LANDSCAPE METER ASSEMBLY
WF12	FIRE HYDRANT ASSEMBLY
WF13-15	1 1/2" WATER METER ASSEMBLY AND LANDSCAPE METER ASSEMBLY

NO.	TYPE STRUCTURE	TOP OF M.H.	NORTH INVERT	SOUTH INVERT	EAST INVERT	WEST INVERT
SS1	4" DIA. SHALLOW MANHOLE	EL. 17.00	EL.	EL. 13.80 4" IN	EL. 13.70 8" OUT	
SS2	4" DIA. STANDARD MANHOLE	EL. 17.00	EL. 11.85 8" OUT	EL.	EL. 13.75 8" OUT	
SS3	4" DIA. STANDARD MANHOLE W/ DROP CONNECTION	EL. 17.40	EL. 12.85 8" OUT	EL.	EL. 13.00 8" IN	
SS4	4" DIA. SHALLOW MANHOLE	EL. 17.40	EL.	EL. 13.75 8" OUT	EL. 13.85 4" IN	
SS5	EXISTING MANHOLE	EL. 17.55	EL.	EL. 13.65 8" IN	EL. 6.25 8" IN	EL. 6.19 8" OUT
SS6	EXISTING MANHOLE	EL. 16.90	EL.	EL. 11.75 8" IN	EL. 7.45 8" OUT	EL. 7.54 8" IN

UTILITY	CONTACT	
TELEPHONE	U.N.C.L.E.	1-800-432-4770
ELECTRIC	GULF POWER	1-850-872-3212
CABLE TV	JONES SPACELINK	1-850-234-1332
	BEACH CABLE	1-850-235-1113
WATER & SEWER	CITY OF PANAMA CITY BEACH	1-850-233-5100
	WEST FLORIDA NATURAL GAS	1-850-872-6140
GAS	U.N.C.L.E. (FLORIDA GAS TRANSMISSION)	1-800-432-4770

PERMIT PURPOSES ONLY

**SITE UTILITY PLAN
SEWER EXPANSION
HOMBRE CIRCLE
PANAMA CITY BEACH, FLORIDA**

SCALE 1" = 50'
DESIGNED BY: RLC
DRAWN BY: DEC
REVIEWED BY: SDM
ISSUE DATE: 20NOV01
CF/BJ: R0904E03

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3/17/02

NO.	DATE	REVISIONS
1	1/20/01	DEC. REVISED SEWER LINE
2	3/24/02	DEC. REVISED SEWER LINE, ADDED WATER METERS AND UTILITY EASEMENT
3	4/MAR/02	DEC. REVISED SEWER LINE

NOT RELEASED FOR CONSTRUCTION BY: DATE:

SHEET NUMBER
3 OF 6

L-0904 - SEWER EXPANSION - HOMBRE CIRCLE

SITE DRAINAGE

ALL OFF-SITE AND ON-SITE WORK INCLUDED CONSISTS OF BUT IS NOT LIMITED TO THE FOLLOWING:
EXCAVATION, BEDDING, FILTER MATERIAL AND BACKFILL FOR ALL STORM SEWER, SUBSURFACE DRAINS AND DRAINAGE STRUCTURES.

COMPLETE INSTALLATION OF ALL STORM SEWERS, SUBSURFACE DRAINS, CATCH BASINS, JUNCTION BOXES, MANHOLES, ETC., INCLUDING ALL RELATED FITTINGS, JOINTS, COVERS, GRATES, FRAMES, RUNGS, ETC.

ANY WORK WITHIN STREET OR HIGHWAY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GOVERNMENTAL AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL OF THESE GOVERNING AUTHORITIES HAVE BEEN NOTIFIED.

POLYVINYL CHLORIDE (PVC) FOR PIPE UP TO AND INCLUDING TEN INCHES (10") IN DIAMETER, SHALL CONFORM TO ASTM D3034 SDR 35 WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM D3212.

REINFORCED CONCRETE PIPE, FOR PIPE TWELVE INCHES (12") IN DIAMETER AND UP, SHALL CONFORM TO ASTM C-76, CLASS IV OR ASHO M-170 WITH BELL AND SPIGOT OR TONGUE AND GROOVE COMPRESSION JOINT CONFORMING TO ASTM C-443.

MANHOLES, CATCH BASINS, ETC. SHALL BE SIZE AND TYPE INDICATED ON THE DRAWINGS AND SHALL BE CONSTRUCTED OF THE FOLLOWING:
REINFORCED PRECAST CONCRETE MANHOLE SECTIONS INCLUDING CONCENTRIC OR ECCENTRIC CONES AND GRADE RINGS SHALL BE 4000 PSI CONCRETE AND CONFORM TO ASTM C478 OR ASHO M-190. SECTIONS SHALL BE COMPLETE WITH 3/4" ROUND CAST IN PLACE WROUGHT IRON STEPS.

BRICK SHALL BE SOUND, HARD BURNED THROUGHOUT AND OF UNIFORM SIZE AND QUALITY AND SHALL BE IN ACCORDANCE WITH ASTM C-32, GRADE MS OR MM.

CONCRETE MASONRY SHALL BE SOLID PRECAST SEGMENTAL CONCRETE MASONRY UNITS CONFORMING TO ASTM C-139.

IRON CASTINGS SHALL CONFORM TO ASTM A-48, CLASS 30. BEARING SURFACES BETWEEN CAST IRON FRAMES, COVERS AND GRATES SHALL BE MACHINED, FITTED TOGETHER AND MATCH MARKED TO PREVENT ROCKING.

SYSTEM IDENTIFYING LETTER "A" HIGH SHALL BE STAMPED OR CAST INTO ALL COVERS SO THAT THEY MAY BE PLAINLY VISIBLE.

CASTINGS SHALL BE MANUFACTURED BY EAST JORDAN IRON WORKS, INC. NEEHAH FOUNDRY COMPANY, VULCAN FOUNDRY COMPANY OR EQUAL.

MANHOLE STEPS FOR BRICK OR CONCRETE MASONRY STRUCTURES SHALL BE CAST IRON ASPHALT COATED, NEEHAH FOUNDRY COMPANY "R-1980" OR EQUAL.

CONCRETE AND MASONRY MATERIALS FOR CONSTRUCTION OF STORM DRAINAGE STRUCTURES SHALL CONSIST OF THE FOLLOWING:
PORTLAND CEMENT SHALL BE STANDARD BRAND OF PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE I OR II.

FINE AND COARSE AGGREGATES FOR CONCRETE SHALL BE PER ASTM C-33. AGGREGATES SHALL BE WELL GRADED FROM FINE TO COARSE WITHIN LIMITS SPECIFIED IN ASTM C-33. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 3/4".

AGGREGATE FOR CEMENT MORTAR SHALL BE CLEAN, SHARP SAND CONFORMING TO ASTM C-144. GRADE SAND FROM COARSE TO FINE WITH 100% PASSING NO. 80 SIEVE, AND NOT OVER 10 TO 30% PASSING NO. 30 SIEVE. HYDRATED LIME SHALL CONFORM WITH ASTM C-207, TYPE S. WATER SHALL BE CLEAN AND FREE FROM DELETERIOUS MATERIALS.

ALL MATERIAL USED FOR CONCRETE AND THE DESIGN OF ALL CONCRETE MIXES SHALL CONFORM WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE (ACI 211.1-81).

ALL CONCRETE, UNLESS NOTED OTHERWISE, SHALL DEVELOP A 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.

JOINT SEALANT SHALL BE HOT LAID BITUMINOUS SEALER.

RIPRAP SHALL BE SOUND, TOUGH DURABLE ROCK OR BROKEN CONCRETE AS APPROVED BY THE GEOTECHNICAL ENGINEER. RIPRAP SHALL BE AT LEAST EIGHT (8") IN ONE DIMENSION AND SHALL HAVE A VOLUME OF NOT LESS THAN 1/3 CUBIC FOOT. SMALLER PIECES PERMITTED FOR FILLING VOIDS.

REINFORCING STEEL FOR CONCRETE SHALL BE INTERMEDIATE GRADE NEW BILLET STEEL CONFORMING TO ASTM A-615, GRADE 40. WELDED WIRE MESH SHALL CONFORM TO ASTM DESIGNATION A185 FOR SMOOTH WIRE AND ASTM A497 FOR DEFORMED WIRE.

FORMS FOR FOUNDATIONS AND OTHER CONCRETE WORK SHALL BE WOOD. FORMS SHALL BE OF SUFFICIENT STRENGTH TO PREVENT DEFORMATION UNDER LOAD AND TIGHT ENOUGH TO PREVENT LEAKAGE. FOUNDATIONS MAY BE POURED AGAINST EARTH WHERE CONDITIONS PERMIT.

ALL REINFORCEMENT SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH ACI 318-77. WELDED WIRE MESH SHALL BE LAPPED 6-INCHES AT ALL EDGES.

THE MIXING, PLACING, CURING AND FINISHING OF CONCRETE SHALL COMPLY WITH ACI 304 AND ACI 318. ALL EXPOSED SURFACES SHALL BE GIVEN A HARD STEEL TROWELLED FINISH WITH NOT TROWEL MARKS REMAINING. NO CEMENT SHALL BE DUSTED ON THE SURFACE. ALL CONCRETE SHALL BE CURED BY COASTING WITH A CLEAR CURING NO. 1 CEMENT CONFORMING TO ASTM C-304, OR BY KEEPING IT WET FOR AT LEAST SIX DAYS AFTER POURING. AFTER THE FORMS ARE STRIPPED, ALL EXPOSED CONCRETE SURFACES SHALL BE POINTED AS NEEDED AND RUBBED TO A UNIFORM FINISH.

CONCRETE, UNLESS OTHERWISE NOTED, SHALL HAVE COMPRESSIVE STRENGTH AFTER 28 DAYS OF 3000 PSI MINIMUM. MIX SHALL BE SO PROPORTIONED TO PROVIDE A MINIMUM OF 517 POUNDS OF CEMENT PER CUBIC YARD.

CONCRETE FILL BELOW GRADE FOR PIPE CRADLES ETC. MAY BE 2500 PSI AT 28 DAYS.

CONCRETE WHERE EXPOSED TO THE WEATHER, SHALL BE AIR ENTRAINED. AIR ENTRAINMENT SHALL BE ACCOMPLISHED BY THE USE OF ADDITIVES CONFORMING TO ASTM C-260. AIR CONTENT SHALL BE 6% ± 1%. ADDITIVE SHALL BE USED STRICTLY IN ACCORDANCE WITH MANUFACTURER'S PRINTED DIRECTIONS.

READY-MIX CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-94.

CEMENT MORTAR SHALL BE AS SPECIFIED HEREINAFTER. USE METHODS OF MIXING MORTAR MATERIALS CAN BE CONTROLLED AND ACCURATELY MAINTAINED DURING WORK PROGRESS. MORTAR SHALL NOT BE MIXED IN GREATER QUANTITIES THAN SATISFACTORY WORKABILITY. RETEMPERING OF MORTAR IS NOT PERMITTED.

MORTAR FOR LAYING BRICK OR CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C-270, TYPE N. AVERAGE COMPRESSIVE STRENGTH 2500 AT 28 DAYS. MORTAR MIX SHALL BE PROPORTIONED BY VOLUME.

MORTAR FOR PARING SHALL CONSIST OF ONE PART PORTLAND CEMENT AND TWO PARTS SAND.

MORTAR FOR GROUTING OF RIPRAP SHALL CONSIST OF ONE PART PORTLAND CEMENT AND THREE PARTS SAND.

STORMWATER SEWERS:
STORM SEWERS SHALL BE INSTALLED IN LOCATIONS AND OF SIZES INDICATED ON DRAWING.

LAY PIPE, EMBED IT FIRMLY TO REQUIRED LINE AND GRADE WITH BELLS OF GROOVE END UP-GRADE. FIT ENDS TOGETHER, EXCAVATE BELL HOLES SO THAT SEWER WILL HAVE SMOOTH AND UNIFORM INVERT THROUGHOUT ITS LENGTH.

CORRUGATED METAL PIPE SHALL BE PLACED ON A FLAT BOTTOM TRENCH WITH HAUNCHES SOLIDLY SUPPORTED BY TAMPED BEDDING MATERIAL.

WHERE GROUND IS FOUND UNSUITABLE TO SUPPORT PIPE, PROVIDE CONCRETE CRADLES. DEPOSIT CONCRETE FULL WIDTH OF TRENCH 4" DEEP MINIMUM TO BOTTOM OF PIPE.

REINFORCE CONTINUOUSLY WITH TWO (2) NO. 4 REINFORCING BARS. BEFORE CONCRETE IS SET, EMBED PIPE EVENLY, DEPOSIT REMAINDER OF CONCRETE TO CENTERLINE OF PIPE AND TAMP IN A MANNER TO AVOID DISTURBING PIPE.

WHERE STORM SEWER CROSSES A SANITARY SEWER OR WATER LINE AND THE STORM SEWER IS WITHIN ONE AND A HALF (1 1/2) FEET OF THE SANITARY SEWER PIPE OR WATER LINE, THE INTERSECTION OF THE PIPE OR LINE SHALL BE EMBEDDED IN CONCRETE FOR A DISTANCE OF FIVE FEET (5') EACH WAY FROM CENTERLINE OF INTERSECTION.

PROVIDE POURED CONCRETE FOUNDATIONS FOR DRAINAGE STRUCTURES. PRECAST CONCRETE BASE MAY BE USED WHERE APPROVED BY THE GEOTECHNICAL ENGINEER.

PRECAST CONCRETE BASE MUST BE SET LEVEL ON SAND CUSHION OF NOT LESS THAN 2" NOR MORE THAN 4".

MANHOLES AND CATCH BASINS SHALL BE CONSTRUCTED OF BRICK, CONCRETE MASONRY OR PRECAST CONCRETE WITH CAST IRON FRAMES, COVERS AND MANHOLE STEPS, AS INDICATED ON DRAWINGS AND SPECIFIED HEREIN.

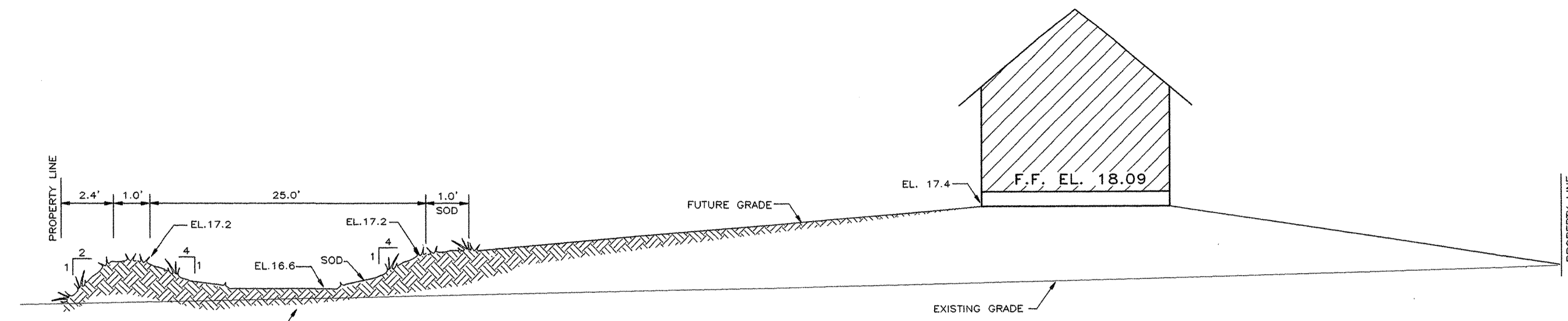
RIPRAP SHALL BE LAID OVER FILTER FABRIC FROM THE BOTTOM UPWARD. STONES SHALL BE LAID IN BANDS WITH EIGHT (8") INCH MINIMUM DIMENSION PERPENDICULAR TO GRADE WITH WELL BROKEN JOINTS, COMPACTED AS IT GOES, TRUE TO LINE. ALL JOINTS SHALL BE FILLED WITH CEMENT MORTAR. SURFACE OF STONE TO BE EXPOSED. CLEAN JOINTS WITH SIRE BRUSH.

BEFORE BACKFILLING AROUND DRAINAGE STRUCTURES, ALL FORMS, TRASH AND DEBRIS SHALL BE REMOVED AND CLEARED AWAY. SELECTED EXCAVATED MATERIAL SHALL BE PLACED SYMMETRICALLY ON ALL SIDES IN EIGHT INCH (8") MAXIMUM LAYERS. EACH LAYER SHALL BE MOISTENED AND COMPACTED WITH MECHANICAL OR HAND TAMPERS.

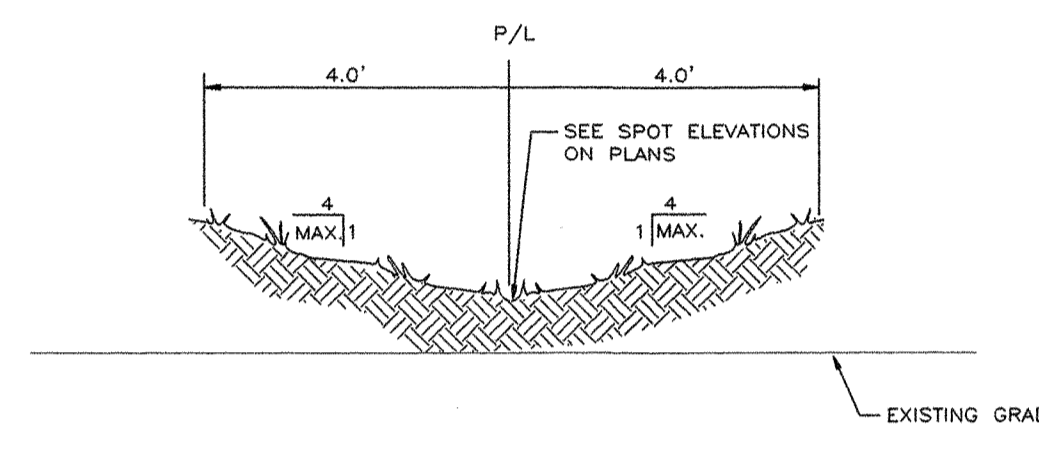
INFILTRATION OF THE STORM DRAINAGE SYSTEM SHALL NOT EXCEED 0.60 GALLONS PER INCH OF INTERNAL PIPE DIAMETER PER ONE HUNDRED FEET (100') OF PIPELINE PER HOUR WITH A MAXIMUM HYDROSTATIC HEAD AT THE CENTER LINE OF THE PIPE OF TWENTY FIVE FEET (25'), OR AS REQUIRED BY GOVERNING CITY AUTHORITIES.

CATCH BASIN FRAMES AND GRATINGS: ASPHALT COATED GREY CAST IRON, ANSI/ASTM A 48, CLASS 30 B.

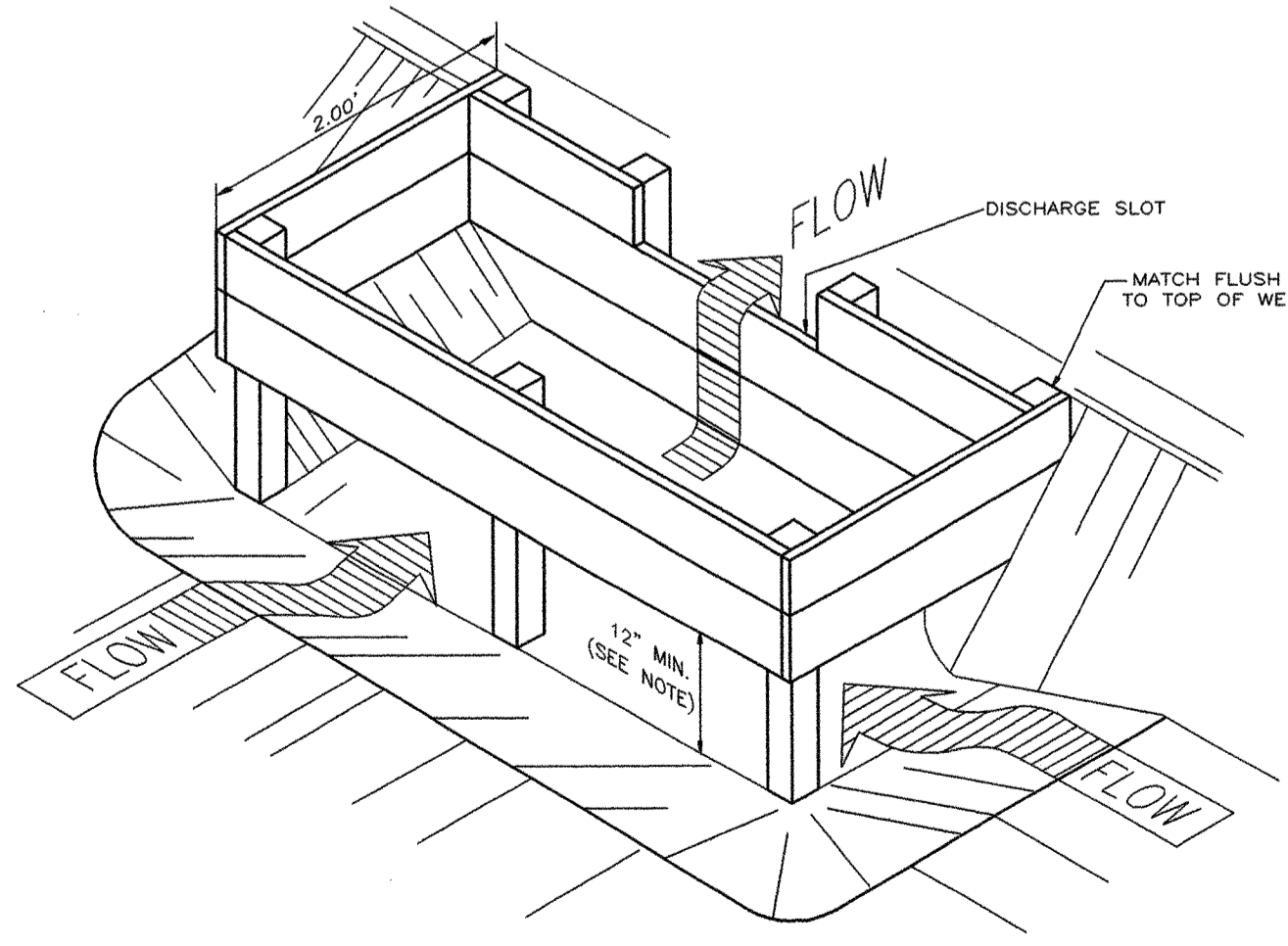
IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUPPLY ALL MATERIALS NECESSARY TO COMPLETE DRAINAGE.



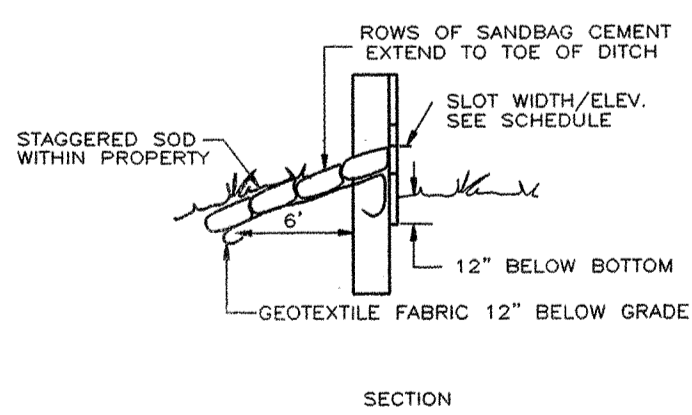
SECTION A
NOT TO SCALE



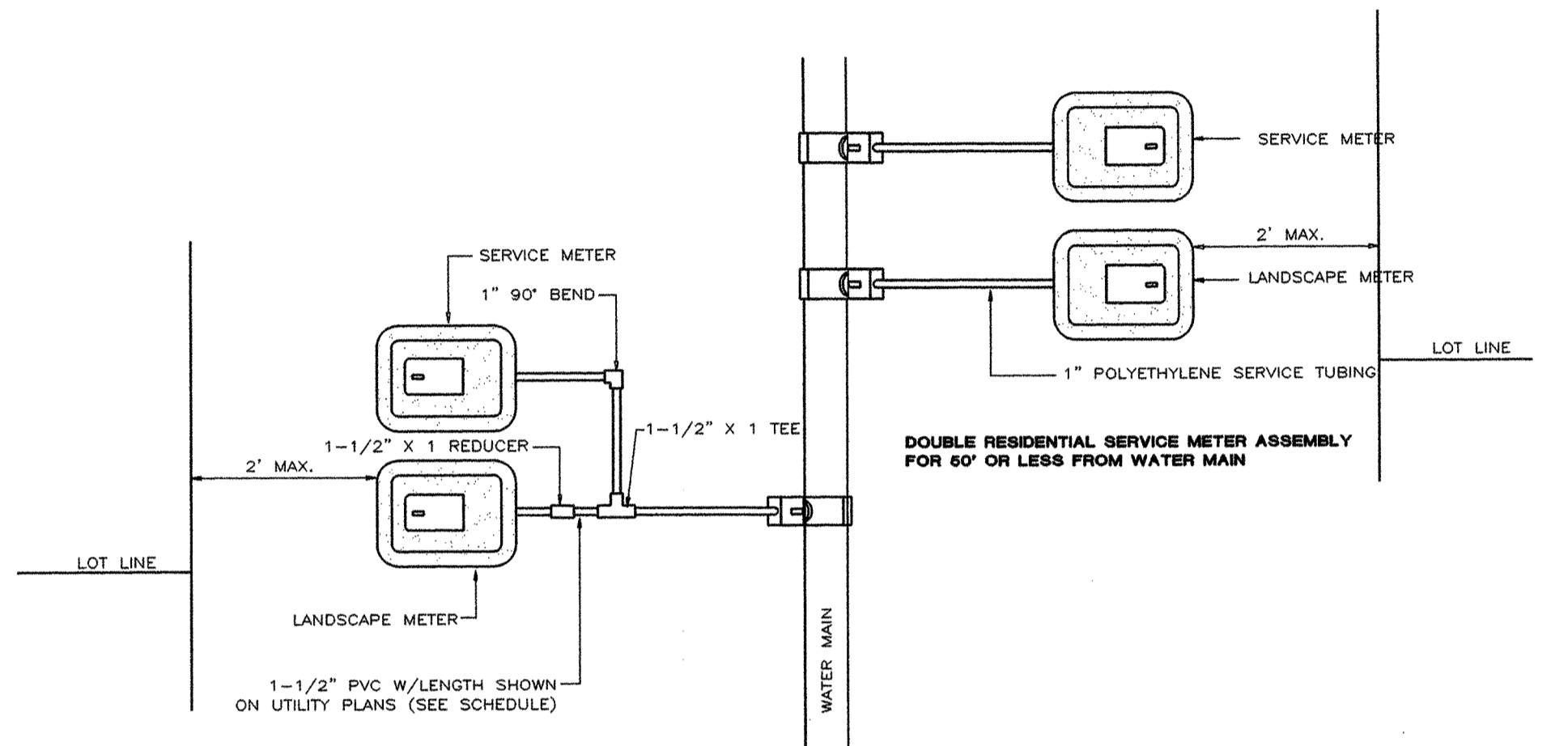
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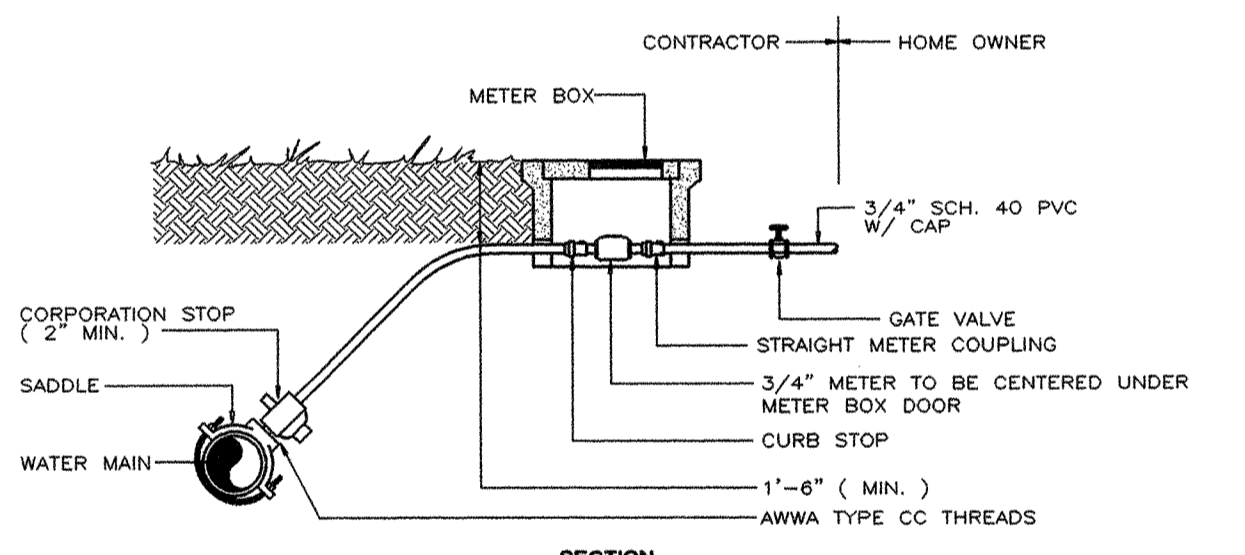
WOOD SKIMMER DETAIL
NOT TO SCALE



WEIR DETAIL
NOT TO SCALE



DOUBLE RESIDENTIAL SERVICE METER ASSEMBLY FOR 60' OR GREATER FROM WATER MAIN



SECTION

NOTE: OR APPROVED EQUAL.
STERILIZATION: AT COMPLETION OF WATER SERVICE LINE INSTALLATION, FLUSH AND STERILIZE IN CONFORMANCE WITH AWWA C-601, TO THE SATISFACTION OF LOCAL AND STATE AUTHORITIES HAVING JURISDICTION.

1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
3. EACH SERVICE LINE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1" X 4" X 30" STAKE PAINTED WHITE AND MARK WITH THE NUMBER OF THE LOT THE BE SERVED.
4. CURB STOP SHALL BE A FORD BALL METER VALVE B-43-342-G OR CITY APPROVED EQUAL.

WATER SERVICE DETAILS
NOT TO SCALE

PERMIT PURPOSES ONLY

CONSTRUCTION DETAILS
SEWER EXPANSION
HOMBRE CIRCLE-13 LOTS
PANAMA CITY BEACH, FLORIDA

SCALE SHOWN	
DESIGNED BY	
REVIEWED BY	
ISSUE DATE	20NOV01
CF/ID	20904E02

MCNEIL ENGINEERING, INC.
Professional Engineering Consultants

416 Jenks Avenue
Panama City, Florida 32401
Phone: 850-763-5730
Fax: 850-763-5744

3/7/02

NO.	DATE	BY	REVISIONS
1	12/20/01	DEC	REVISED SEWER LINE
2	3/24/02	DEC	REVISED SEWER LINE, ADDED WATER METERS AND UTILITY EASEMENT
3	5/24/02	DEC	REVISED STORMWATER BASIN ELEVATION

NOT RELEASED FOR CONSTRUCTION BY: DATE:

SHEET NUMBER
5 OF 6

20904 - SEWER EXPANSION - HOMBRE CIRCLE-13 LOTS

SITE UTILITIES

MATERIALS: WHERE GROUND IS FOUND UNSUITABLE TO SUPPORT PIPE, PROVIDE CRADLES OF 2500 PSI CONCRETE FULL WIDTH OF TRENCH WITH TWO NO. 4 REINFORCING BARS CONTINUOUSLY ALONG THE BOTTOM OF PIPE.

BACKFILL UNLESS OTHERWISE NOTED, SHALL BE COARSE SAND, FINE GRAVEL OR EARTH HAVING A LOW PLASTICITY INDEX, FREE OF ROCKS, DEBRIS AND OTHER FOREIGN MATERIALS AND DESIGNED AS ALL PASSING THROUGH A 3/8" SIEVE AND NOT MORE THAN TEN PERCENT (10%) BY VOLUME PASSING THROUGH A 200 MESH SIEVE.

UTILITY PIPING AND FITTINGS SHALL BE SIZE AND TYPE INDICATED ON THE DRAWINGS AND SHALL CONFORM TO THE FOLLOWING:

MANHOLES STRUCTURES SHALL BE SIZE AND TYPE INDICATED ON THE DRAWINGS AND SHALL BE CONSTRUCTED OF THE FOLLOWING:

REINFORCED PRECAST CONCRETE MANHOLE SECTIONS INCLUDING CONCENTRIC OR ECCENTRIC CONES AND GRADE RISERS SHALL BE 4000 PSI CONCRETE AND CONFORM TO ASTM C-478 OR AASHTO M-199. SECTIONS SHALL BE COMPLETE WITH 3/4" ROUND CAST IN PLACE WROUGHT IRON STEPS.

BRICK SHALL BE SOUND, HARD BURNED THROUGHOUT AND OF UNIFORM SIZE AND QUALITY AND SHALL BE IN ACCORDANCE WITH ASTM C-32, GRADE MS OR MM.

CONCRETE MASONRY SHALL BE SOLID PRECAST SEGMENTAL CONCRETE MASONRY UNITS CONFORMING TO ASTM C-119.

IRON CASTING SHALL CONFORM TO ASTM A-48, CLASS 30. BEARING SURFACES BETWEEN CAST IRON FRAMES, COVERS, GRATES SHALL BE MACHINED, FITTED TOGETHER AND MARKED TO PREVENT ROCKING. SYSTEM IDENTIFYING LETTER "S" HIGH SHALL BE STAMPED OR CAST INTO ALL COVERS SO THAT THEY MAY BE PLAINLY VISIBLE. CASTING SHALL BE MANUFACTURED BY EAST JORDAN IRON WORKS, INC., NEEHAH FOUNDRY COMPANY OR EQUAL.

CONCRETE AND MASONRY MATERIALS FOR CONSTRUCTION OF SITE UTILITY STRUCTURES AND PADS SHALL CONSIST OF THE FOLLOWING:

PORTLAND CEMENT SHALL BE STANDARD BRAND OF PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE 1 OR II.

FINE OR COARSE AGGREGATES FOR CONCRETE SHALL BE PER ASTM C-33. AGGREGATES SHALL BE WELL GRADED FROM FINE TO COARSE WITH LIMITS SPECIFIED IN ASTM C-33. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 3/4".

AGGREGATE FOR CEMENT MORTAR SHALL BE CLEAN, SHARP SAND CONFORMING TO ASTM C-144. GRADE SAND FROM COARSE TO FINE WITH 100% PASSING NO. 8 SIEVE, AND NOT OVER 10% TO 30% PASSING NO. 10 SIEVE.

HYDRATED LIME SHALL COMPLY WITH ASTM C-207, TYPE S.

WATER SHALL BE CLEAN AND FREE FROM DELETERIOUS MATERIALS.

REINFORCING STEEL FOR CONCRETE SHALL BE INTERMEDIATE GRADE NEB BILLET STEEL CONFORMING TO ASTM A-615, GRADE 40.

FORMS FOR CONCRETE WORK SHALL BE WOOD. FORMS SHALL BE SUFFICIENT STRENGTH TO PREVENT DEFORMATIONS UNDER LOAD AND TIGHT ENOUGH TO PREVENT LEAKAGE. FOUNDATIONS MAY BE POURD AGAINST EARTH WHERE CONDITIONS PERMIT.

CONCRETE, UNLESS OTHERWISE NOTED, SHALL HAVE COMPRESSIVE STRENGTH AFTER 28 DAYS OF 3000 PSI MINIMUM. MIX SHALL BE SO PROPORTIONED TO PROVIDE A MINIMUM OF 517 POUNDS OF CEMENT PER CUBIC YARD. CONCRETE FILL BELOW GRADE FOR THRUST RISERS, PIPE CRADLES, ETC. MAY BE 2500 PSI.

CONCRETE, WHERE EXPOSED TO THE WEATHER, SHALL BE AIR ENTRAINED. AIR ENTRAINMENT SHALL BE ACCOMPLISHED BY THE USE OF ADDITIVES CONFORMING TO ASTM C-260. AIR CONTENT SHALL BE 6% ± 1% AND SHALL BE USED IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED DIRECTIONS.

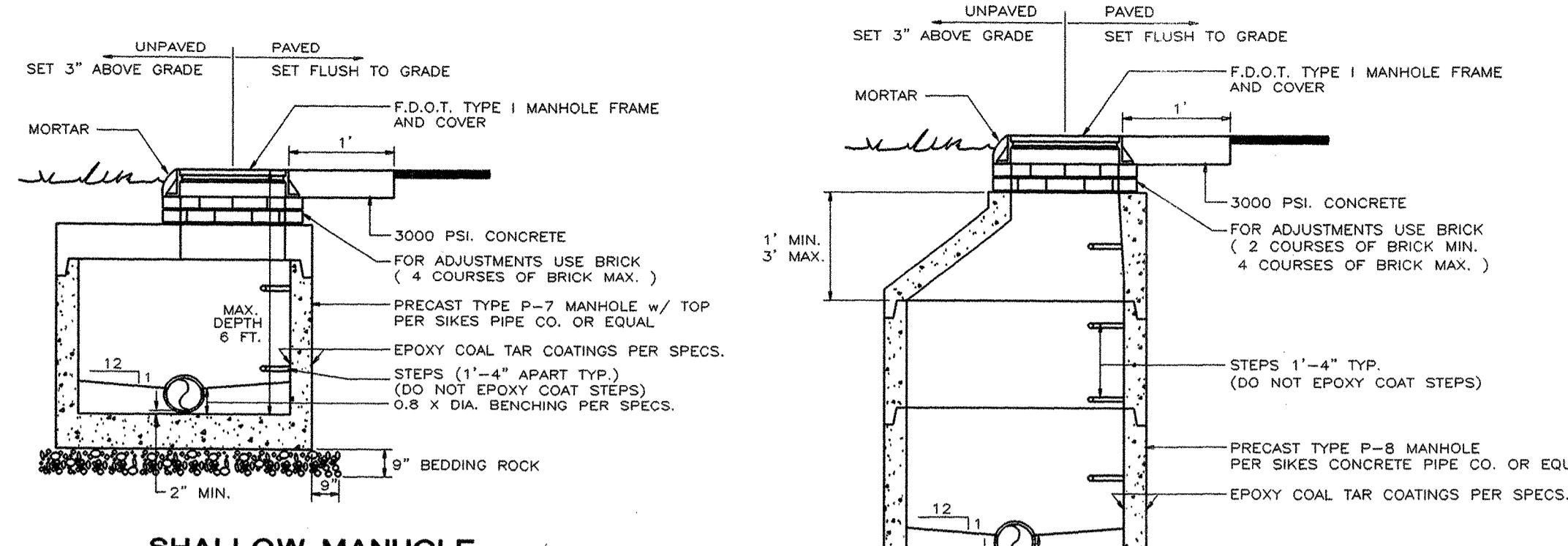
READY-MIX CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-94.

MORTAR FOR LAYING BRICK OR CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C-270, TYPE M, AVERAGE COMPRESSIVE STRENGTH 2500 PSI. AT 28 DAYS. MORTAR MIX SHALL BE PROPORTIONED BY VOLUME.

MORTAR FOR PARING SHALL CONSIST OF ONE PART PORTLAND CEMENT AND TWO PARTS SAND.

BACKFILL SHALL BE SAME MATERIAL SPECIFIED FOR PIPE BEDDING. WHERE SERVICE OR UTILITY LINES CROSS A STREET BEDDING SHALL BE CARRIED TO FIVE FEET (5') BEHIND THE CURB, OR WHERE SIDEWALKS EXIST, TO THE SIDE OF THE SIDEWALK FARTHEST AWAY FROM THE STREET.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUPPLY ALL MATERIALS NECESSARY TO COMPLETE UTILITIES.



SHALLOW MANHOLE

STANDARD MANHOLE

PRECAST CONCRETE MANHOLES: PRECAST CONCRETE MANHOLES SHALL MEET THE REQUIREMENTS OF ANSI/ASTM C 478 (LATEST EDITION), SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT AS MODIFIED HEREIN. THE CONCRETE USED SHALL BE ASTM C-150 TYPE II OR APPROVED EQUAL WITH 28-DAY OVER 10% TO 30% PASSING NO. 10 PER SQUARE INCH.

THE VERTICAL WALLS SHALL HAVE A MINIMUM THICKNESS OF FIVE-INCHES AND SHALL BE REINFORCED WITH NO. 6 RODS ON SIX-INCH CENTER BOTH WAYS. THE BOTTOM SECTION SHALL BE MONOLITHIC DESIGN WITH A MINIMUM THICKNESS OF SIX INCHES.

THE INSIDE DIAMETER SHALL BE 48" ON THE RISER SECTIONS WITH AN ECCENTRIC CONE SECTION THAT NARROWS TO 24" INSIDE DIAMETER AT THE TOP. THE CONCRETE SECTION SHALL BE USED IN MANHOLES WITH A DEPTH OF OVER 5' AND A FLAT TOP USED ON MANHOLES LESS THAN 5'. THE JOINTS BETWEEN THE SECTIONS SHALL BE TONGUE AND GROOVE WITH THE TONGUE UP AND THE GROOVE DOWN. THE JOINTS SHALL BE COATED WITH RANNEK OR APPROVED EQUAL AND THE INTERIOR AND EXTERIOR SURFACES (EXCEPT STEPS) SHALL BE WATER PROOFED WITH TWO COATS OF NO. 300-M KOPPER'S BITUMASTIC PAINT OR HEAVY LAYER OF EMULSIFIED ASPHALT.

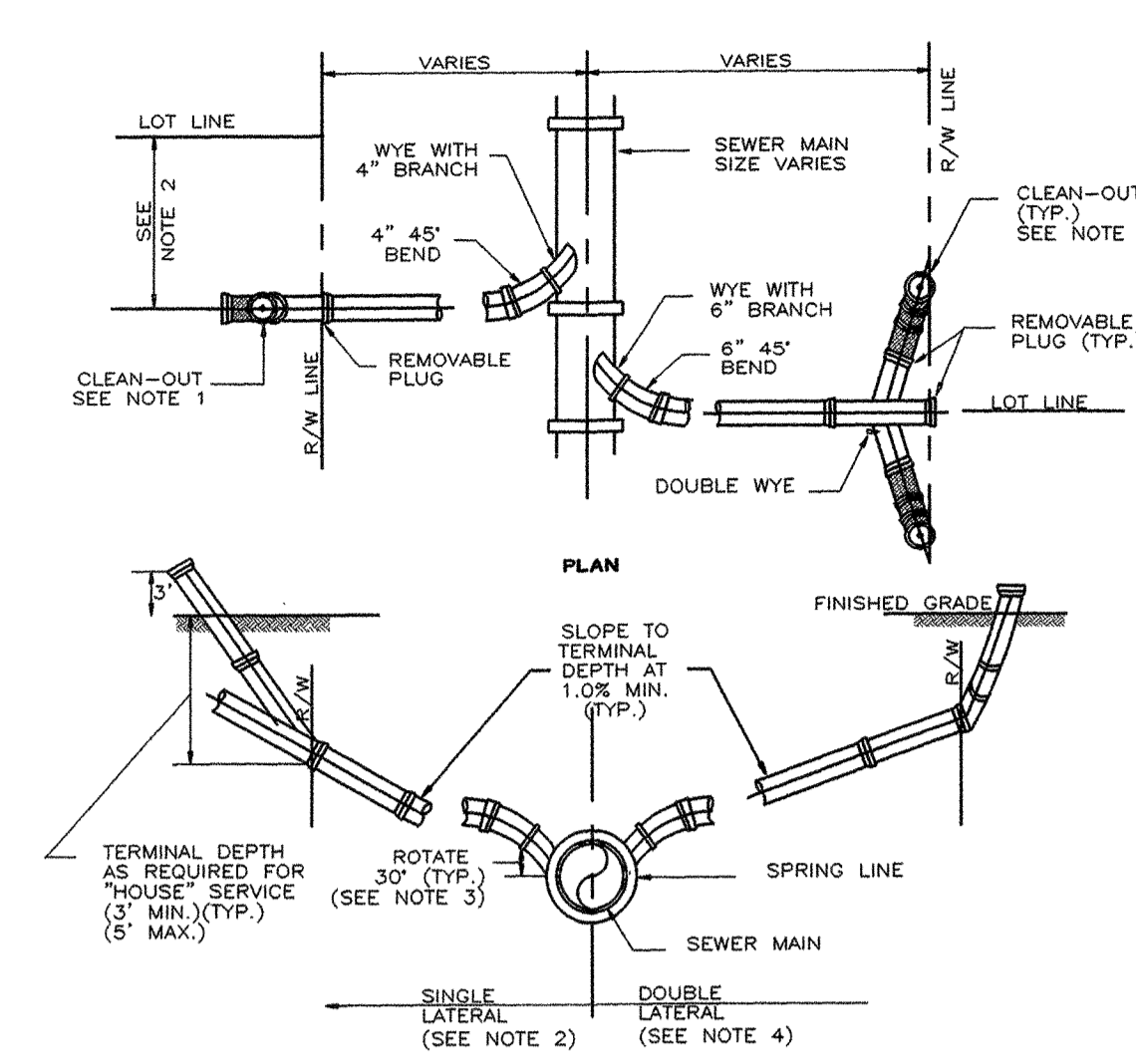
MANHOLE STEPS FOR BRICK OR CONCRETE MASONRY STRUCTURES SHALL BE CAST IRON ASPHALT COATED, NEEHAH FOUNDRY COMPANY 19-1980-E, OR EQUAL.

A FLEXIBLE PIPE TO MANHOLE CONNECTOR SHALL BE EMPLOYED IN THE CONNECTION OF THE SANITARY SEWER PIPE TO MANHOLES. THE CONNECTOR SHALL BE "KOR-N-SEAL" AS MANUFACTURED BY NATIONAL POLLUTION CONTROL SYSTEMS, INC., MILFORD, NEW HAMPSHIRE, OR APPROVED EQUAL. THE RUBBER FOR THE CONNECTOR SHALL COMPLY WITH ASTM C-443 AND ASTM C-233. IT SHALL BE 5/8" (3.4 MM) THICK OR GREATER AND CONSIST OF EPDM AND NEOPRENE OR ELASTOMERS DESIGNED TO BE RESISTANT TO OZONE, WEATHER ELEMENTS, CHEMICALS, INCLUDING ACIDS, ALKALIS, ANIMAL AND VEGETABLE FATS, OILS AND PETROLEUM PRODUCTS FROM SPILLS. ALL STAINLESS STEEL ELEMENTS OF THE CONNECTOR SHALL BE TOTALLY NON-MAGNETIC SERIES 304 STAINLESS INCLUDING THE WORK SCREW ASSEMBLY FOR TIGHTENING THE STEEL BAND AROUND THE PIPE. THE WORK SCREW FOR TIGHTENING THE STEEL BAND SHALL BE TORQUED BY A BREAK-AWAY TORQUE WRENCH AND SET FOR 60-70 INCH-POUNDS.

MANHOLE FRAMES AND COVERS: GREY CAST IRON, ANSI/ASTM A48, CLASS 30B. BEARING SURFACES BETWEEN CAST IRON FRAMES, COVERS AND GRATES SHALL BE MACHINED, FITTED TOGETHER AND MATCH MARKED TO PREVENT ROCKING. COMPLY WITH REQUIREMENTS OF ITS RR-F-421 FOR TYPE AND STYLE INDICATED.

FURNISH COVERS WITH CAST-IN LEGEND ("STORM" OR "SANITARY") TO SUIT INSTALLATIONS ON ROADWAY FACE.

MANHOLE STEPS: ASPHALT COATED GREY CAST IRON, ANSI/ASTM A 48, CLASS 30 B, INTEGRALLY CAST INTO MANHOLE SIDEWALLS, UNLESS OTHERWISE INDICATED.



SERVICE LATERAL DETAIL

NOTES:

- CLEAN-OUT (SHOWN SHADED) SHALL BE INSTALLED BY THE BUILDER IN ACCORDANCE WITH STANDARD PLUMBING CODE.
- LOCATE SINGLE LATERAL AS NEAR TO CENTER OF LOT AS POSSIBLE.
- INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
- DOUBLE SERVICE LATERALS ONLY PERMITTED ON TAPS TO EXISTING GRAVITY MAINS WHERE EXISTING ROAD PAVEMENT MUST BE CUT.

SEWER COLLECTION SYSTEM

PRODUCTS: GENERAL ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE MATERIAL STANDARD AND SHALL IN NO EVENT, BE LESS THAN THAT NECESSARY TO CONFORM TO THE REQUIREMENTS OF ANY APPLICABLE LAW, ORDINANCES, AND CODES. ALL MATERIALS SHALL BE NEW, UNUSED, AND CORRECTLY DESIGNED. THEY SHALL BE OF STANDARD, FIRST GRADE QUALITY AND INTENDED FOR THE USE FOR WHICH THEY ARE OFFERED. MATERIALS OF EQUIPMENT WHICH, IN THE OPINION OF THE OWNER'S ENGINEER, ARE INFERIOR OR OF A LOWER GRADE THAN INDICATED, SPECIFIED, OR REQUIRED WILL NOT BE ACCEPTED.

GRAVITY SEWER: GENERAL SEWER PIPE CONSTRUCTION SHALL BE AS SHOWN ON THE DRAWINGS. FURNISH ELBS, TEES, REDUCERS, COUPLERS, INCREASERS, CROSSINGS, TRANSITIONS, AND END CAPS OF SAME TYPE AND CLASS OF MATERIAL AS CONDUIT, OR OF MATERIAL HAVING EQUAL OR SUPERIOR PHYSICAL AND CHEMICAL PROPERTIES AS ACCEPTABLE TO THE ENGINEER.

DUCTILE IRON PIPE: PIPE: ALL DUCTILE IRON PIPE SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60,000 PSI, A MINIMUM YIELD STRENGTH OF 42,000 PSI, AND A MINIMUM OF CLASS 52 IN ACCORDANCE WITH AWWA C-15/ANSI A 21. JOINTS: JOINTS FOR DUCTILE IRON PIPE SHALL BE EITHER OF THE SLIP-ON TYPE USING A SINGLE RUBBER GASKET, OR MECHANICAL JOINTS IN ACCORDANCE WITH AWWA C-11/ANSI A 21.10.

PVC PIPE: ALL PVC PIPE SHALL BE CEMENT MORTAR LINED AND SEALED COATING IN ACCORDANCE WITH AWWA C-104. THE LINING THICKNESS SHALL BE STANDARD THICKNESS. PIPE SHALL RECEIVE INTERIOR AND EXTERIOR BITUMINOUS COATING IN ACCORDANCE WITH ANSI A-21.6 A-21.8, OR A-21.51.

POLYVINYL CHLORIDE (PVC) PIPE: PIPE: PVC PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D-3034 AND D-1784. ALL PVC PIPE SHALL MEET THE DIMENSION REQUIREMENTS OF STANDARD DIMENSION RATION (SDR) 35.

JOINTS: JOINTS FOR PVC SEWER PIPE SHALL BE OF THE BELL AND SPIGOT TYPE CONFORMING TO ASTM D-3212 USING INSTALLED, FLEXIBLE ELASTOMERIC SEALS. THE ELASTOMERIC SEALS SHALL CONFORM TO ASTM F-477.

PIPE MARKINGS: ALL PIPE SHALL BE MARKED AS PRESCRIBED IN ASTM F-2241, I.e., NOMINAL PIPE SIZE, TYPE OF PLASTIC PIPE MATERIAL, PIPE DIMENSION RATIO, PRESSURE RATING, ASTM SPECIFICATION DESIGNATION NUMBER, NAME AND CODE, AND THE NATIONAL SANITATION FOUNDATION SEAL FOR POTABLE WATER.

COATINGS: NOT REQUIRED.

CUTTING: PVC SEWER PIPE MAY BE FIELD CUT USING HAND OR POWER SAWS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE LAW SPIGOT END THUS FORMED SHALL BE FILED TO REMOVE GASKET DAMAGING BURRS AND TO FORM A STANDARD BEVEL.

FITTINGS: PVC SEWER PIPE FITTINGS SHALL COMPLY WITH ASTM D3034, ASTM 3212 AND HAVE ELASTOMERIC SEALS CONFORMING TO ASTM F-477.

MANHOLES: GENERAL MANHOLES SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE SECTIONS. EACH MANHOLE SHALL HAVE A BASE SECTION, BARREL SECTION AND TOP ALL AS REQUIRED, EXCEPT AS OTHERWISE SPECIFIED OR SHOWN. PRECAST CONCRETE MANHOLES SHALL COMPLY WITH ANSI/ASTM C478.

MANHOLE BARRELS: MANHOLE BARREL SECTIONS SHALL BE CONSTRUCTED WITH PRE-FORMED OPENINGS PROPERLY LOCATED FOR AMING SEWER LINE CONNECTIONS AND SHALL BE JOINTED TO PREVENT GROUND WATER INFILTRATION. THE DIAMETER OF SUCH OPENINGS SHALL NOT BE MORE THAN FOUR INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE OR PIPE BELL. TO BE CONNECTED, THE DISTANCE BETWEEN THE NEAREST EDGE OF SUCH OPENINGS AND THE SHOULDER OF THE BARREL JOINT SHALL BE SIX INCHES MINIMUM.

MANHOLE JOINTS: JOINTS SHALL BE TONGUE AND GROOVE WITH O-RING OR "RAM-NECK" COMPRESSION RUBBER GASKETS.

MANHOLE CONNECTOR: A FLEXIBLE PIPE-TO-MANHOLE CONNECTOR SHALL BE EMPLOYED IN THE CONNECTION OF THE SEWER PIPE TO THE PRE-CAST MANHOLE. THE FLEXIBLE CONNECTOR SHALL BE A KOR-N-SEAL CONNECTOR OR EQUAL AND SHALL COMPLY WITH ASTM C443 AND ASTM C233 AND CONSIST OF MATERIAL DESIGNED TO BE RESISTANT TO OZONE, WEATHER ELEMENTS, CHEMICALS, INCLUDING ACIDS, ALKALIS, ANIMAL AND VEGETABLE FATS, OILS AND PETROLEUM PRODUCTS FROM SPILLS. THE RUBBER ELEMENT OF THE CONNECTOR SHALL BE TOTALLY NON-MAGNETIC SERIES 304 STAINLESS STEEL INCLUDING THE WORK SCREW ASSEMBLY FOR TIGHTENING THE STEEL BAND AROUND THE PIPE. THE WORK SCREW FOR TIGHTENING THE STEEL BAND SHALL BE TORQUED BY A BREAK-AWAY TORQUE WRENCH AND SET FOR 60-70 INCH-POUNDS.

INVERT CHANNEL: INVERT CHANNELS SHALL BE CONSTRUCTED SMOOTH AND SEMICIRCULAR, CONFORMING TO THE INSIDE OF ADJACENT SEWER SECTION. THE WORKED INVERT SHALL BE MADE IN A SMOOTH CURVE OF AS LARGE A RADIUS AS POSSIBLE. CHANGES IN SIZE AND GRADE SHALL BE MADE GRADUALLY AND SMOOTHLY. BENCHES SHALL BE BUILT UP SOLIDLY WITH CONCRETE OR BRICK AND MORTAR AND SHALL BE BUILT WHENEVER THE INSIDE DROP EXCEEDS 24 INCHES. ALL PIPE ENTERING THE MANHOLE MUST BE TRIMMED FLUSH WITH THE WALLS. ALL EXPOSED SHARP EDGES OF THE PIPE SHALL BE WIRED SMOOTH WITH MORTAR.

CONCRETE BASE: PRECAST OR CAST-IN-PLACE AT CONTRACTOR'S OPTION. USE CONCRETE WHICH WILL ATTAIN A 28 DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI. USE REINFORCING STEEL WITH A YIELD STRENGTH OF NOT LESS THAN 60,000 PSI IN ACCORDANCE WITH ASTM A 615.

TOPS: THE TOP SECTION OF MANHOLES LESS THAN 6 FEET IN DEPTH SHALL BE FLAT CONCRETE SLABS. FOR MANHOLES SIX FEET IN DEPTH OR MORE, THE TOP SECTION SHALL BE AN ECCENTRIC CONE.

COATINGS: ALL SURFACES SHALL BE COATED WITH COAL TAR EPOXY WITH A MINIMUM OF 20 MILS IN ORDER TO PREVENT GROUND WATER INFILTRATION.

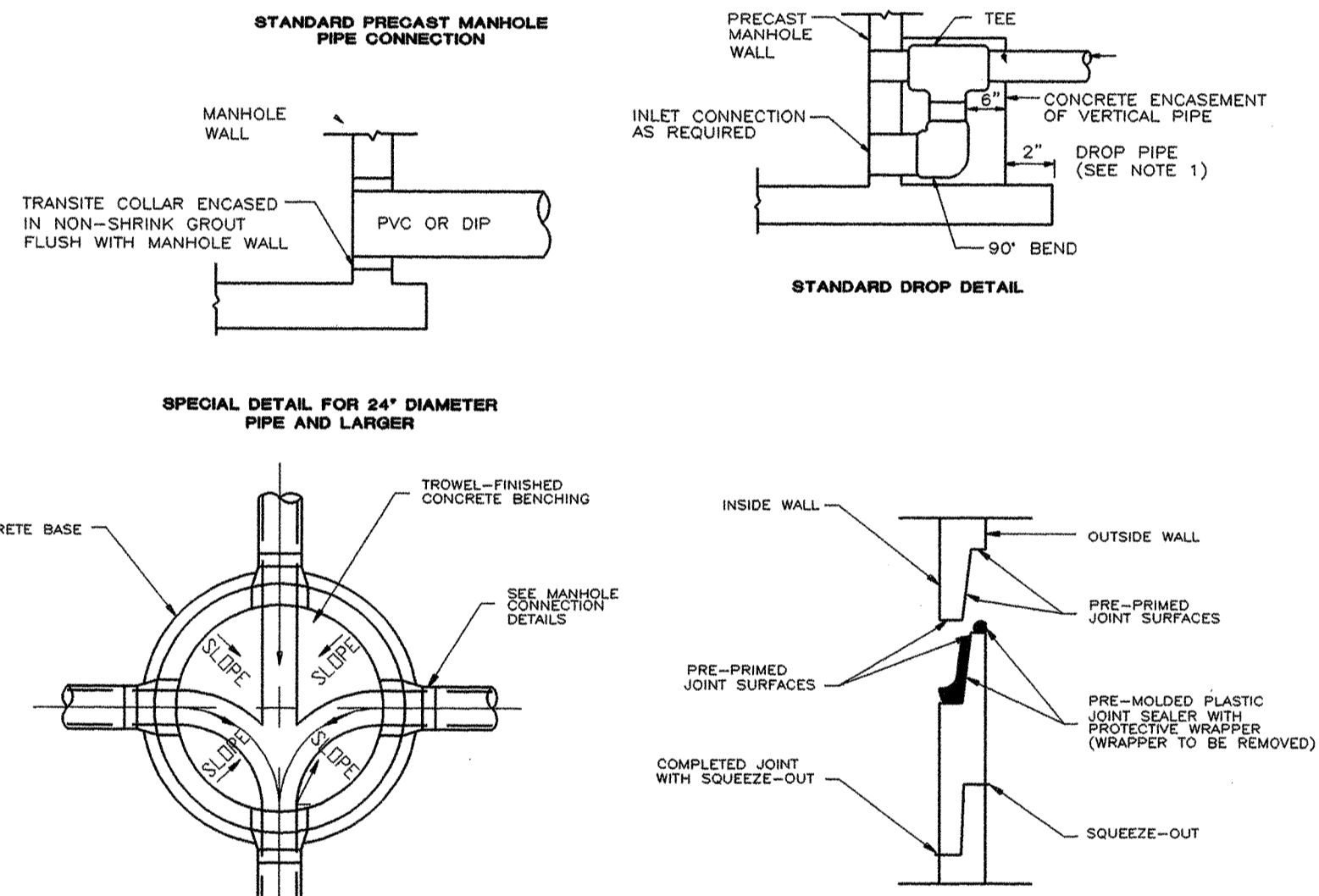
MASONRY MATERIALS: BRICK: ANSI/ASTM C32, GRADE MS. MASONRY MORTAR: ANSI/ASTM C 270, TYPE M FOR MINOR AMOUNTS OF MORTAR, PACKAGE MATERIALS COMPLYING WITH ANSI/ASTM C387, TYPE M, WILL BE ACCEPTABLE.

METAL ACCESSORIES: MANHOLE FRAMES AND COVERS: GRAY CAST IRON, ANSI/ASTM A 48, CLASS 30B. FURNISH COVERS WITH CAST-IN LEGEND "SANITARY" OR "STORM" IN ACCORDANCE WITH UTILITY. MANHOLE STEPS: MANHOLE STEPS TO BE STEEL RODS ENCASED IN POLYPROPYLENE PLASTIC AND SHALL BE TYPE APS-1-B-8 AS MANUFACTURED BY M.A. INDUSTRIES, INC. OR AN APPROVED EQUAL.

TESTING AND INSPECTION REQUIREMENTS: FLUSHING LINES: UPON COMPLETION AND IN THE PRESENCE OF THE OWNER'S ENGINEER, THE SEWER LINES SHALL BE FLUSHED BETWEEN MANHOLES IN EACH STRAIGHT OR WORKING SECTION OF THE SEWER, A ROUND CIRCLE OF LIGHT FROM THE FINISHED OR OTHER END OF THE SECTION SHALL REMAIN CONSTANTLY IN PLAIN VIEW THROUGHOUT THE ENTIRE LENGTH OF EACH SECTION AND SHALL SHOW THE TRUE CHARACTER AND SHAPE OF THE INTERIOR SURFACE OF THE SEWER. THE TEST SHALL BE APPLIED FOR EACH WORKING SECTION AFTER THE SECTION IS COMPLETED IN ALL RESPECTS AND BEFORE IT IS ACCEPTED. ON COMPLETION OF THE SEWER LINES, THE CONTRACTOR MAY BE REQUIRED TO FLOAT A BALL THROUGH ANY LINE. IN EACH CASE, THE SIZE OF THE BALL IS TO BE ONE INCH IN DIAMETER LESS THAN THE SEWER THROUGH WHICH IT IS TO PASS.

LEAKAGE: ALL GRAVITY SEWERS, MANHOLES, AND SERVICE CONNECTIONS SHALL BE TESTED FOR LEAKAGE AS SOON AFTER BACKFILL AS PRACTICAL. SERVICE CONNECTIONS SHALL BE PROVIDED WITH WATERTIGHT PLUGS OR END CAPS; PROPERLY BRACED AND CAPABLE OF WITHSTANDING TEST PRESSURES.

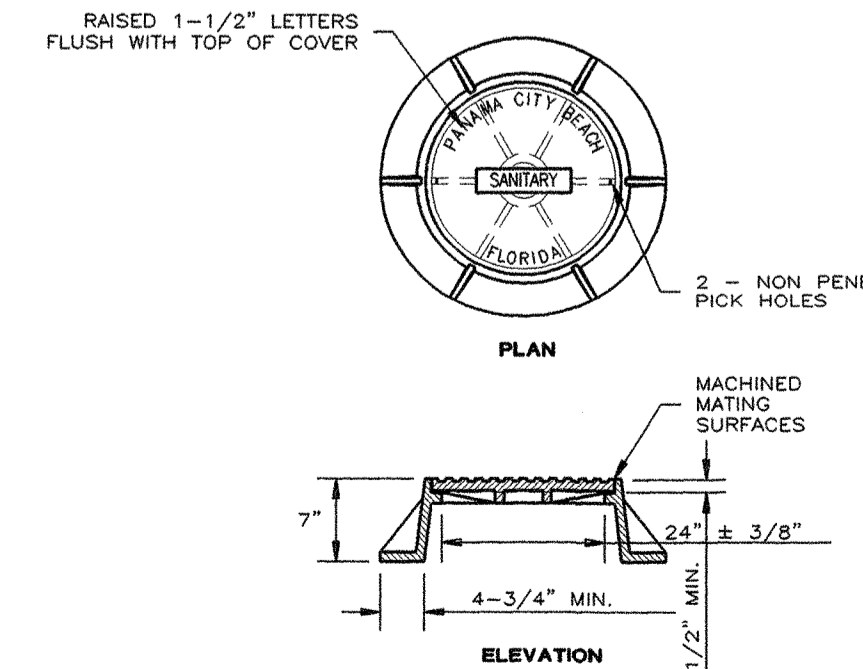
THE TOTAL INFILTRATION OR EXFILTRATION OF ANY SECTION OF SEWER SHALL NOT EXCEED 100 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER. MANHOLES SHALL BE CONSIDERED AS EQUIVALENT DIAMETER PIPE FOR LEAKAGE DETERMINATION PURPOSES.



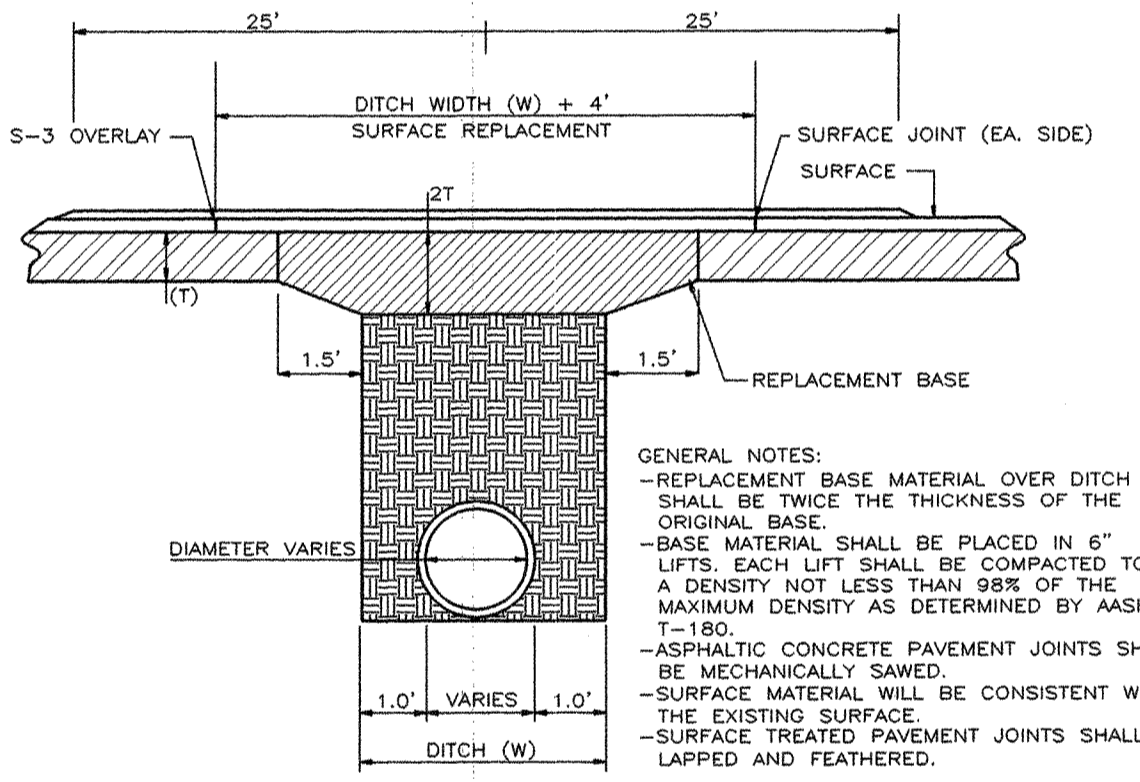
MANHOLE CONNECTION DETAIL

NOTES:

- DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
- THE CITY MAY APPROVE ALTERNATE WATER TIGHT CONNECTION DETAILS FOR CONNECTION OF 24" DIAMETER PIPES AND LARGER, WHICH HAVE AN INVERT 2" OR MORE ABOVE THE MANHOLE INVERT.
- AN OUTSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT MANHOLES.



STANDARD MANHOLE FRAME AND COVER



REPLACEMENT OF FLEXIBLE PAVEMENT SECTION

GENERAL NOTES:

- REPLACEMENT BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE.
- BASE MATERIAL SHALL BE PLACED IN 6" LIFTS. EACH LIFT SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.
- ASPHALTIC CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
- SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
- SURFACE TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.

PERMIT PURPOSES ONLY

CONSTRUCTION DETAILS
SEWER EXPANSION
HOMBRE CIRCLE-13 LOTS
PANAMA CITY BEACH, FLORIDA

SCALE SHOWN	DESIGNED BY	416 Jenke Avenue Panama City, Florida 32401
DRAWN BY	REVIEWED BY	Phone: 850-763-5730
ISSUE DATE: 20NOV01	CF/D: 20904E02	Fax: 850-763-5744

MCNEIL ENGINEERING, INC.
Professional Engineering Consultants

3/7/02

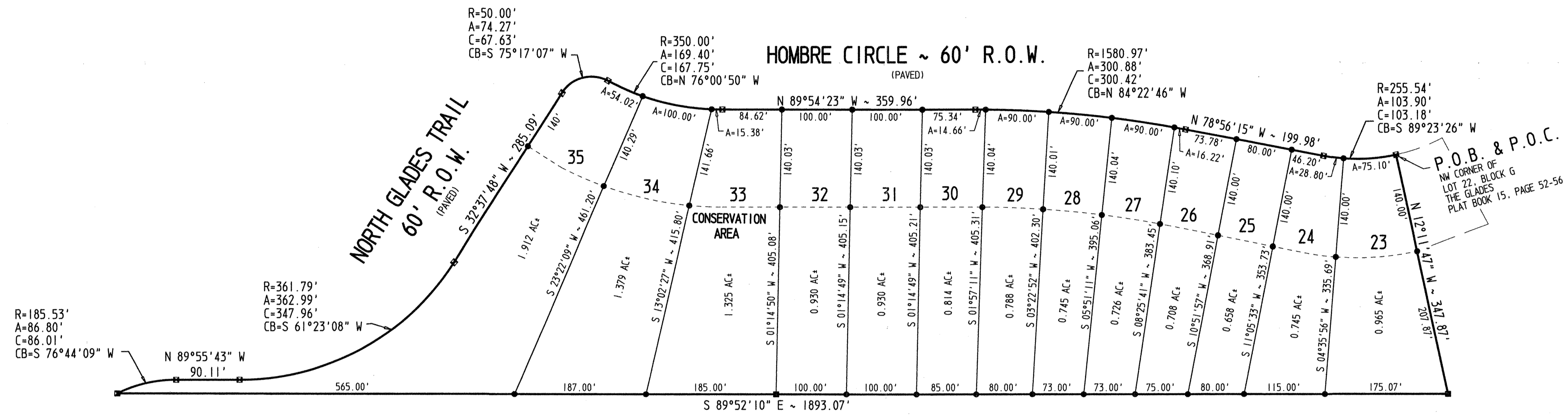
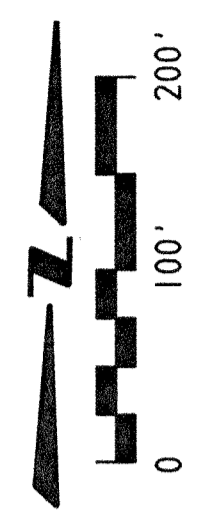
NO.	DATE	BY	REVISIONS
1	11/28/01	DEC	REVISED SEWER LINE
2	3/10/02	DEC	REVISED SEWER LINE, ADDED WATER METERS AND UTILITY EASIMENT

NOT RELEASED FOR CONSTRUCTION BY: DATE:

20904 - SEWER EXPANSION - HOMBRE CIRCLE-13 LOTS
6 OF 6

SYMBOLS AND ABBREVIATIONS

- P.O.C. POINT OF COMMENCEMENT
P.O.B. POINT OF BEGINNING
N. NORTH
E. EAST
S. SOUTH
W. WEST
SEC. SECTION
T. TOWNSHIP
R. RANGE
DEGREES
' MINUTES OR FEET
" SECONDS OR INCHES
FD. FOUND
COR. CORNER
LAND SURVEYOR
L.B. LAND SURVEYOR BUSINESS
NO. NUMBER
I.D. IDENTIFICATION
CONC. CONCRETE
MON. MONUMENT
R.O.W. RIGHT OF WAY
R. RADIUS
A. ARC
C. CHORD
CB. CHORD BEARING
ORB. OFFICIAL RECORDS BOOK
+ MORE OR LESS
■ SET 4" x 4" CONC. MON.
LB. NO. 2372
● SET 5/8" IRON ROD
● LB. NO. 2372
● FD. 4" x 4" CONC. MON.
BDE 0340



LOT CURVE DATA table with columns: LOT, RADIUS, ARC, CHORD, CHORD BEARING. Rows 23-35.

100' GULF POWER COMPANY R.O.W. ~ ORB 443, PAGE 308

FOR: JEFF BURHAM
DESCRIPTION OF AREA SUBDIVIDED: BEGIN AT THE NORTHWEST CORNER OF LOT 22, BLOCK G, THE GLADES, ACCORDING TO THE PLAT RECORDED IN PLAT BOOK 15, PAGES 52 THROUGH 56 IN THE PUBLIC RECORDS OF BAY COUNTY, FLORIDA. THENCE WESTERLY ALONG A CURVE IN THE SOUTHERLY RIGHT OF WAY LINE OF HOMBRE CIRCLE (60-FOOT RIGHT OF WAY) THAT IS CONVEX TO THE NORTH AND HAS A RADIUS OF 255.54 FEET FOR AN ARC DISTANCE OF 103.90 FEET. THE CHORD OF SAID ARC BEARING SOUTH 89°23'26" WEST FOR 103.18 FEET. THENCE NORTH 78°56'15" WEST ALONG SAID RIGHT OF WAY LINE FOR 199.98 FEET TO A CURVE IN SAID RIGHT OF WAY LINE CONVEX TO THE SOUTH AND HAVING A RADIUS OF 1580.97 FEET. THENCE WESTERLY ALONG SAID CURVING RIGHT OF WAY LINE FOR AN ARC DISTANCE OF 300.88 FEET. THE CHORD OF SAID ARC BEARING NORTH 84°22'46" WEST FOR 300.42 FEET. THENCE NORTH 89°54'23" WEST ALONG SAID RIGHT OF WAY LINE FOR 359.96 FEET TO A CURVE IN SAID RIGHT OF WAY LINE CONVEX TO THE NORTHEAST AND HAVING A RADIUS OF 350.00 FEET. THENCE WESTERLY ALONG SAID CURVING RIGHT OF WAY LINE FOR AN ARC DISTANCE OF 169.40 FEET. THENCE SOUTH 89°52'10" EAST ALONG SAID NORTH RIGHT OF WAY LINE FOR 115.00 FEET. THENCE NORTH 04°35'56" EAST FOR 355.69 FEET TO THE POINT OF BEGINNING.

LOT 24. FIRST GLADES ADDITION, AN UNRECORDED SUBDIVISION, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCE AT THE NORTHWEST CORNER OF LOT 22, BLOCK G, THE GLADES, ACCORDING TO THE PLAT RECORDED IN PLAT BOOK 15, PAGES 52 THROUGH 56 IN THE PUBLIC RECORDS OF BAY COUNTY, FLORIDA. THENCE WESTERLY ALONG A CURVE IN THE SOUTHERLY RIGHT OF WAY LINE OF HOMBRE CIRCLE (60-FOOT RIGHT OF WAY) THAT IS CONVEX TO THE NORTH AND HAS A RADIUS OF 255.54 FEET FOR AN ARC DISTANCE OF 75.10 FEET. THE CHORD OF SAID ARC BEARING SOUTH 86°09'43" WEST FOR 74.83 FEET. THENCE NORTH 78°56'15" WEST ALONG SAID SOUTHERLY RIGHT OF WAY LINE FOR 199.98 FEET TO A CURVE IN SAID RIGHT OF WAY LINE CONVEX TO THE SOUTH AND HAVING A RADIUS OF 1580.97 FEET. THENCE WESTERLY ALONG SAID CURVING RIGHT OF WAY LINE FOR AN ARC DISTANCE OF 300.88 FEET. THE CHORD OF SAID ARC BEARING NORTH 84°22'46" WEST FOR 300.42 FEET. THENCE NORTH 89°54'23" WEST ALONG SAID RIGHT OF WAY LINE FOR 359.96 FEET TO A CURVE IN SAID RIGHT OF WAY LINE CONVEX TO THE NORTHEAST AND HAVING A RADIUS OF 350.00 FEET. THENCE WESTERLY ALONG SAID CURVING RIGHT OF WAY LINE FOR AN ARC DISTANCE OF 169.40 FEET. THENCE SOUTH 89°52'10" EAST ALONG SAID NORTH RIGHT OF WAY LINE FOR 115.00 FEET. THENCE NORTH 04°35'56" EAST FOR 355.69 FEET TO THE POINT OF BEGINNING.

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BUCHANAN & HARPER, INC. ENGINEERING • PLANNING • SURVEYING • LANDSCAPE ARCHITECTURE
735 WEST 11TH STREET, PANAMA CITY, FLORIDA 32401 - TELEPHONE (850) 763-7427
THE UNDERSIGNED, BUELL H. HARPER, JR., FLORIDA LAND SURVEYOR NO. 1718, HEREBY CERTIFIES THAT THE SURVEY AND/OR INFORMATION SHOWN HEREON MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA, CHAPTER 6101-6, FLORIDA ADMINISTRATIVE CODE.
PLAT OF: BOUNDARY SURVEY SCALE: 1" = 100'
SURVEYED: 10-12-01 DRAWN: 10-30-01 IMPROVEMENTS: NONE
REVISIONS:
SOURCE OF INFORMATION: NEW PARCELS
BEARING REFERENCE: ASSUMED S 89°52'10" E FOR THE NORTH LINE OF GULF POWER COMPANY R.O.W.
ELEVATION REFERENCE:
F.B. NO. 823 PA 1 JOB NO. 8927.05 FILE NO. E 2116 SHEET NO. 1 OF 1
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR.
FILE 8927/LOCE 05