CURLEW LANDINGS

HARBORVIEW VILLAS

WALDEN COURT

HANOVER

DUCHESS BLVD

DRAKE LANE

DRIVE

POOL

CLUB HOUSE

CREEK

CURLEW

ALT 19

EXISTING SEAWALL

PROPOSED SEAWALL (1584 SF)

MHW (+1.20)

MLW (-1.20)

R.O.B

POB

N.E. CORNER OF SE¼ SEC. 15, TWP 28S, RGE 15E

CB = N 27°28'42"W
R = 200.00'
A = 71.42'
C = 71.06'
Δ = 89°58'29"

CB = N 06°30'60"E
R = 480.00'
A = 184.48'
C = 183.35'
Δ = 22°01'16"

CB = N 72°28'42"W
R = 967.74'
A = 139.83'
C = 139.71'
Δ = 8°16'58"

N 17°31'18"E 1096.60

N 04°29'59"W 288.65

N 08°09'12"E 55.04'

N 64°40'01"E 5.00'

N 20°29'17"E 159.71'

S 62°45'49"E 385.23'

N 17°31'18"E 50.00'

N 72°28'42"W 100.00'

N 72°28'42"W 200.00'

S 17°31'18"W 321.28'

255.93' (NTS)

108.64'

776.25

90.60'

S 17°31'18"W 1684.28'

N 72°28'42"W 232.00'

N 17°31'18"E 195.93' (NTS)

N 11°48'42"W 60.59'

N 40°59'42"W 288.00'

N 72°28'42"W 80.00'

N 72°28'42"W 232.00'

N 72°28'42"W 232.00'

N 15°20'43"W 78.8'

N 63°00'09"W 83.76'

N 63°00'09"W

R = 967.74'
C = 139.83'
CB = N 69°20'35"W
C = 201.88'

381.99'

301.88'

R = 50.00'

Site Plan

Scale: 1"=40'

SCALE 1" = 40'

North

CORRECTED DESCRIPTION:

Commence at the Northeast corner of the Southeast 1/4 of Section 15, Township 28 South, Range 15 East; THENCE N. 89 deg. 57' 02" W., along the quarter section line, 116.31 feet to the centerline of State Road 595 (U S 19 Alternate/Dayshore Blvd.) extended; THENCE S. 17 deg. 31' 18" W., along the said centerline 1,688.23 feet; THENCE N. 62 deg. 45' 49" W., 50.75 feet for a Point of Beginning; THENCE S. 17 deg. 31' 18" W., along the western right-of-way line for State Road 595, 776.25 feet; THENCE N. 72 deg. 28' 42" W., 100.00 feet; THENCE N. 17 deg. 31' 18" E., 18.15 feet; THENCE N. 72 deg. 28' 42" W., 140.00 feet; THENCE N. 17 deg. 31' 18" E., 30.00 feet; THENCE N. 72 deg. 28' 42" W., 280.00 feet; THENCE along a curve to the right with a radius of 20.00 feet, a delta of 89 deg. 59' 29", a chord length of 28.28 feet, a chord bearing of N. 27 deg. 28' 42" W. and an arc length of 31.42 feet; THENCE N. 17 deg. 31' 18" E., 196.60 feet; THENCE along a curve to the left with a radius of 480.00 feet, a delta of 22 deg. 01' 16", a chord length of 183.35 feet, a chord bearing of N. 06 deg. 30' 40" E. and an arc length of 184.48 feet; THENCE N. 04 deg. 29' 59" W., 338.83 feet; THENCE N. 08 deg. 09' 12" E., 55.04 feet; THENCE N. 64 deg. 40' 01" E., 5.00 feet; THENCE N. 20 deg. 29' 17" E., 159.71 feet; THENCE S. 65 deg. 27' 13" E., 43.53 feet; THENCE S. 48 deg. 06' 47" E., 302.98 feet; THENCE S. 62 deg. 45' 49" E., 385.23 feet to the POB. Less and except Lots 1, 3, 4, 5, 6, 9, 11, 19, 21 and 24, CURLEW LANDINGS, Unit 1, according to the map or plat thereof as recorded in Plat Book 87, page 19 of the Public Records of Pinellas County, Florida.

DESIGNED DFR
DRAWN ESK
CHECKED
P.D. BOOK

DATE 6.16.88
SCALE 1"= 40'
JOB NO 1-0188
SEC 15 TWP 28S RGE 15E

NOT VALID UNLESS IMPRINTED WITH EMBOSSED SEAL

Approved by [signature]
FLA REG. ENGINEER # 15307
FLA. REG. SURVEYOR # 2545

CURLEW LANDINGS

1059 BROADWAY, SUITE A
DUNEDIN, FL 34698
813-734-7020

DFR Engineering

GEOMETRY -

FINAL SITE PLAN

for STEVE SIASZ, Vice Pres. SUNLOCK, INC
101 GARLAN CIRCLE,
PALM HARBOR, FL 34683
813-786-1497

SHT NO 3 of 13

JOB NO 1-0188

CURLEW LANDINGS

HARBORVIEW VILLAS

WALDEN COURT

HANOVER

DUCHESS BLVD

DRAKE LANE

DRIVE

CURLEW CREEK

ALT 19

6' HIGH FENCE

pool

CLUB HOUSE

BERM

Group of 10"ϕ Piles, Heights from 3' to 5'

Row of 10"ϕ Piles 16' High

EXISTING SEAWALL

PROPOSED SEAWALL

MHW (+1.20)

MLW (-1.20)

POB

POC

Decorative pile grouping on berm on front line

LEGEND

The required 150 interior trees to consist of a mixture of :
Red Maple
Bottle Brush
Cherry Laurel

Laurel Oak, 2" ϕ min.

Typical clusters of plants thru-out interior to be 12" to 24" high @ 2'6" on center and comprised of Shore Junipers, Pittosporum, Podocarpus, Liriope, Lantana, Wedelia and Ligustrum

NOTE :

PROVIDE SPRINKLER HEADS ON THE PERIMETER LANDSCAPING AT 50' o/c, CONNECT TO POTABLE WATER SYSTEM. (ALTERNATE : INSTALL HOSE BIBBS @ 50' c/c)

CORRECTED DESCRIPTION:

Commence at the Northeast corner of the Southeast 1/4 of Section 15, Township 28 South, Range 15 East; THENCE N. 89 deg. 57' 02" W., along the quarter section line, 116.31 feet to the centerline of State Road 595 (U.S. 19 Alternate/Tarpshore Blvd.) extended; THENCE S. 17 deg. 31' 18" W., along the said centerline 1,684.23 feet; THENCE N. 72 deg. 45' 49" W., 50.75 feet for a Point of Beginning; THENCE S. 17 deg. 31' 18" W., along the western right-of-way line for State Road 595, 776.25 feet; THENCE N. 72 deg. 28' 42" W., 100.00 feet; THENCE N. 17 deg. 31' 18" E., 14.15 feet; THENCE N. 72 deg. 28' 42" W., 180.00 feet; THENCE N. 17 deg. 31' 18" E., 30.00 feet; THENCE N. 72 deg. 28' 42" W., 280.00 feet; THENCE along a curve to the right with a radius of 20.00 feet, a delta of 89 deg. 59' 29", a chord length of 28.28 feet, a chord bearing of N. 27 deg. 28' 42" W. and an arc length of 31.42 feet; THENCE N. 17 deg. 31' 18" E., 196.60 feet; THENCE along a curve to the left with a radius of 480.00 feet, a delta of 22 deg. 01' 16", a chord length of 183.35 feet; a chord bearing of N. 06 deg. 30' 40" E. and an arc length of 184.48 feet; THENCE N. 04 deg. 29' 59" W., 336.83 feet; THENCE N. 05 deg. 09' 12" E., 55.04 feet; THENCE N. 64 deg. 40' 01" E., 5.00 feet; THENCE N. 20 deg. 29' 17" E., 159.71 feet; THENCE S. 65 deg. 29' 13" E., 83.53 feet; THENCE S. 48 deg. 06' 47" E., 392.98 feet; THENCE S. 62 deg. 40' 49" E., 385.23 feet to the POB. Less and except Lots 1, 3, 4, 5, 6, 9, 11, 14, 21 and 24, CURLEW LANDINGS, Unit 1, according to the map or plat thereof as recorded in Plat Book 87, page 19 of the Public Records of Pinellas County, Florida.

North

Site Plan

0 20 40 60 80 100

Scale: 1"=40'

SYNE 1" = 40'

DESIGN S.S. DATE 6.15.1988
DRAWN ESK SCALE 1"=40'
CHECKED JOB NO 1-0188
SHEET 15 OF 15

LANDSCAPE PLAN

1059 BROADWAY, SUITE A
DUNEDIN, FL 34698
813-734-7020

DFR ENGINEERING

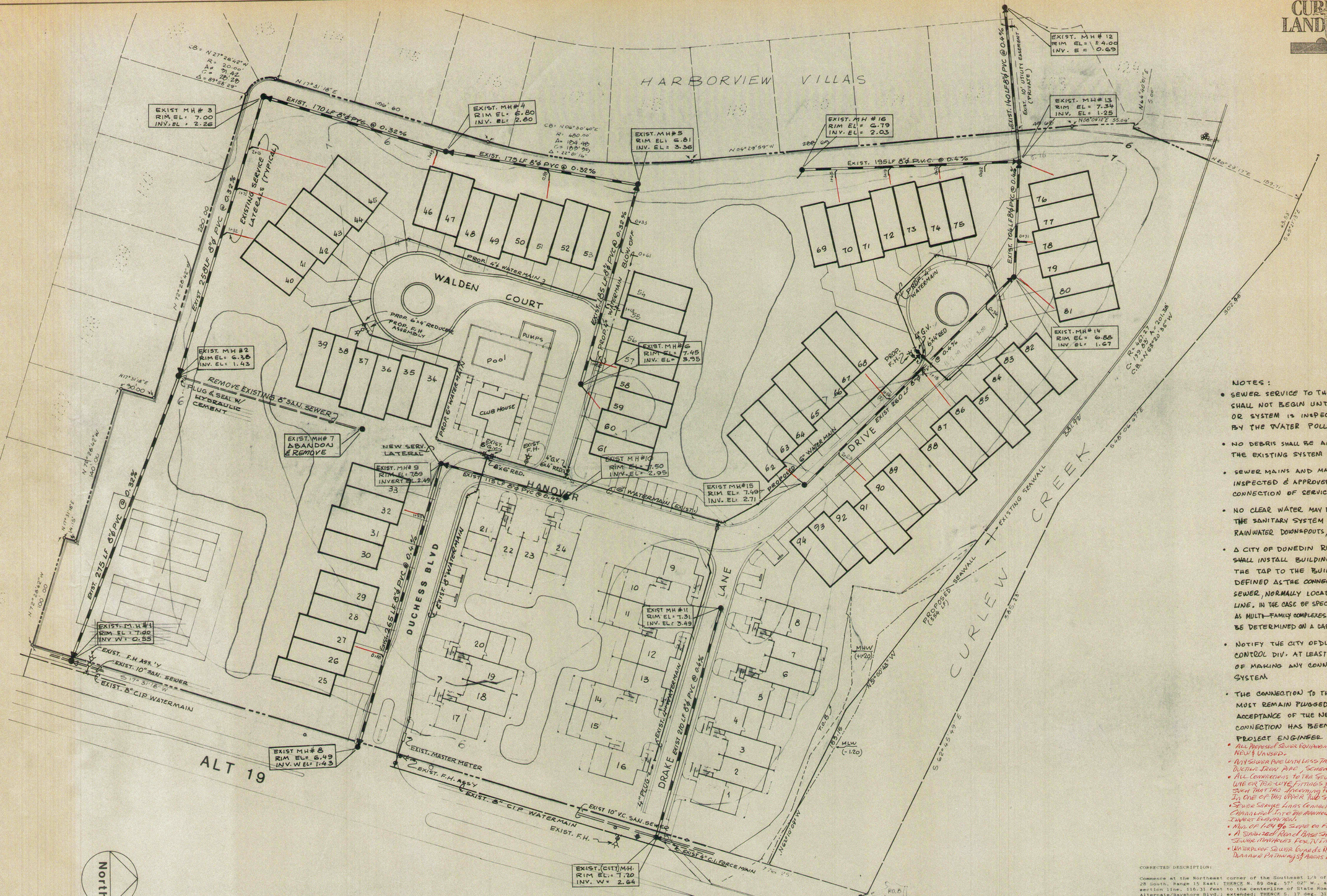
CURLEW LANDING

FINAL SITE PLAN

for STEVE SZASZ, Vice Pres. SUNLOCK, INC
101 GARLAN CIRCLE,
PALM HARBOR, FL 34683 813-786-1497

SHT NO 4 of 13

JOB NO 1-0188



Site Plan

0 20 40 60 80 100

Scale: 1"=40'

SCALE 1" = 40'

NOTES:

- SEWER SERVICE TO THE EXISTING SYSTEM SHALL NOT BEGIN UNTIL THE NEW WORK OR SYSTEM IS INSPECTED AND APPROVED BY THE WATER POLLUTION CONTROL
- NO DEBRIS SHALL BE ALLOWED TO ENTER THE EXISTING SYSTEM FROM CONSTRUCTION
- SEWER MAINS AND MANHOLES TO BE INSPECTED & APPROVED PRIOR TO ANY CONNECTION OF SERVICE LINES TO THE MAINS.
- NO CLEAR WATER MAY BE ALLOWED TO ENTER THE SANITARY SYSTEM FROM A/C UNITS, RAINWATER DOWNSPOUTS, SWIMMING POOLS, ETC.
- A CITY OF DUNEDIN REGISTERED PLUMBER SHALL INSTALL BUILDING SEWERS FROM THE TAP TO THE BUILDING. THE TAP IS DEFINED AS THE CONNECTION TO THE PUBLIC SEWER, NORMALLY LOCATED AT THE PROPERTY LINE. IN THE CASE OF SPECIAL CONDITIONS, SUCH AS MULTI-FAMILY COMPLEXES, TAP LOCATIONS WILL BE DETERMINED ON A CASE BY CASE BASIS.
- NOTIFY THE CITY OF DUNEDIN WATER POLLUTION CONTROL DIV. AT LEAST 24 HRS IN ADVANCE OF MAKING ANY CONNECTION TO EXISTING SYSTEM.
- THE CONNECTION TO THE EXISTING SYSTEM MUST REMAIN PLUGGED UNTIL WRITTEN ACCEPTANCE OF THE NEW SYSTEM OR CONNECTION HAS BEEN RECEIVED BY THE PROJECT ENGINEER.
- ALL PROPOSED SEWER EQUIPMENT & FIXTURES SHALL BE NEW & UNUSED.
- ANY SEWER PIPE WITH LESS THAN 18" COVER SHALL BE DUCTILE IRON AWWA C151, SCHEDULE 80 PVC OR PVC C900 DR 18.
- ALL CONNECTIONS TO THE SEWER MAIN SHALL BE MADE BY USE OF TEE-WYE FITTINGS ONLY SHALL BE INSTALLED SUCH THAT THE INCOMING FLOW ENTERS THE SEWER MAIN IN ONE OF THE OTHER TWO SEWER MANHOLES.
- SEWER SERVICE LINES CONNECTED TO MANHOLES MUST BE CHANNELED INTO THE MANHOLE BENCH AT THE PIPE INVERT ELEVATION.
- MIN. OF 4'-0" OF COVER ON ALL SEWER LATERALS.
- A STABILIZED ROAD BASE SHALL BE PROVIDED TO ALL SEWER MANHOLES FOR INSPECTION PURPOSES.
- WATERPROOF SEWER BOOTS REQUIRED FOR MANHOLES IN DRAINAGE PATHWAYS OF STORMS RUNOFF TO FLOWING.

CORRECTED DESCRIPTION:

Commence at the Northeast corner of the Southeast 1/4 of Section 15, Township 28 South, Range 15 East; THENCE N. 89 deg. 57' 02" W., along the quarter section line, 116.31 feet to the centerline of State Road 595 (U.S. 19 Alternate/Bayshore Blvd.) extended; THENCE S. 17 deg. 31' 18" W., along the said centerline 1,684.23 feet; THENCE N. 62 deg. 85' 89" W., 50.75 feet for a Point of Beginning; THENCE S. 17 deg. 31' 18" W., along the western right-of-way line for State Road 595, 776.25 feet; THENCE N. 72 deg. 28' 42" W., 100.00 feet; THENCE N. 17 deg. 31' 18" E., 14.15 feet; THENCE N. 72 deg. 28' 42" W., 160.00 feet; THENCE N. 17 deg. 31' 18" E., 30.00 feet; THENCE N. 72 deg. 28' 42" W., 250.00 feet; THENCE along a curve to the right with a radius of 70.00 feet, a delta of 89 deg. 59' 29", a chord length of 28.28 feet, a chord bearing of N. 27 deg. 28' 42" W. and an arc length of 31.42 feet; THENCE N. 17 deg. 31' 18" E., 196.60 feet; THENCE along a curve to the left with a radius of 580.00 feet, a delta of 22 deg. 01' 16", a chord length of 183.35 feet, a chord bearing of N. 06 deg. 30' 40" E. and an arc length of 184.48 feet; THENCE N. 04 deg. 29' 59" W., 338.83 feet; THENCE N. 06 deg. 09' 12" E., 55.08 feet; THENCE N. 68 deg. 40' 01" E., 5.00 feet; THENCE N. 20 deg. 29' 17" E., 159.71 feet; THENCE S. 65 deg. 27' 13" E., 43.53 feet; THENCE S. 48 deg. 06' 57" E., 302.98 feet; THENCE S. 62 deg. 85' 89" E., 385.23 feet to the POB. Less and except Lots 1, 3, 4, 5, 6, 9, 11, 15, 21 and 24, CURLEW LANDINGS, Unit 1, according to the map or plat thereof as recorded in Plat Book 87, page 19 of the Public Records of Pinellas County, Florida.

CURLEW LANDINGS

DATE 6-16-88
SCALE 1" = 40'
JOB NO 15
DES. [illegible]
DRN. [illegible]
CHK. [illegible]
APP. [illegible]

#	BY	DATE
1	NOTES ADDED	8-16-88
2	GENERAL CORRECTIONS	9-26-88

NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED ENGINEER
[illegible] No. 15307
STATE OF FLORIDA
REGISTERED ENGINEER
No. 2545

CURLEW LANDINGS
SANITARY SEWER SYSTEM
WATER DISTRIBUTION

1059 BROADWAY, SUITE A
DUNEDIN, FL 34698
813-734-1020

DFR ENGINEERING

FINAL SITE PLAN

For: STEVE SZASZ, Vice Pres. SUNLOCK, INC
101 GARLAND CIRCLE,
PALM HARBOR, FL 34683
813-786-1497

SHT NO 5 of 13

JOB NO 1-0188

HARBORVIEW VILLAS
WALDEN COURT
HANOVER DRIVE
DUCHESS BLVD
DRAKE LANE
CLUB HOUSE
POOL
RETENTION AREA #3
RETENTION AREA #2
EXIST. RETENTION AREA #1
CURLEW CREEK
EXISTING SEAWALL
ALT 19
MODIFY EXIST. INLET GRATE EL = 5.50 INV. EL = 4.00
PROP. 45 LF 6" @ 0.5%
PROP. INLET TYPE 'A-1' THROAT EL = 6.50 INV. EL = 3.90
PROP. INLET TYPE 'A-1' THROAT EL = 6.50 INV. EL = 3.60
PROP. INLET TYPE 'A-1' THROAT EL = 6.50 INV. EL = 3.50
PROP. 90 LF 18" RCP @ 0.33%
PROP. 195 LF 18" RCP @ 0.38%
PROP. 500 LF 6" PVC U.D. @ 0.5%
PROP. 60 LF 15" RCP @ 0.33%
PROP. 220 LF 18" RCP @ 0.14%
PROP. 60 LF 15" RCP @ 0.33%
PROP. 180 LF 15" RCP @ 0.33%
PROP. 110 LF 15" RCP @ 0.33%
EXIST. 145 LF 18" RCP @ 0.18%
EXIST. 180 LF 15" RCP @ 0.22%
EXIST. 48 LF 15" RCP @ 0.0%
EXIST. 110 LF 18" RCP @ 0.27%
EXIST. 110 LF U.D. PIPE
EXIST. INLET 'A-1' THROAT EL = 6.46 INVERT EL = 3.54
EXIST. INLET 'A-1' THROAT EL = 6.46 INVERT EL = 3.62
EXIST. INLET 'A-1' THROAT EL = 6.51 INV. EL = 3.72
EXIST. INLET 'A-1' THROAT EL = 6.51 INV. EL = 3.77
CONC. APRON (TYPICAL) INV. EL 3.32
CONC. APRON INV. = 1.23 NO ENERGY DISSIPATOR PROPOSED
PROP. EDGE OF PAVING EXTENSION
EXIST. STORM MH #1 RIM EL = 7.65 INVERT EL = 1.94
EXIST. STORM MH #3 RIM EL = 7.25 INVERT EL = 1.68
SAN MH #7
EXIST. INLET TYPE 'A-1' THROAT EL = 6.70 INV. EL = 3.74
EXIST. INLET TYPE 'A-1' THROAT EL = 6.70 INV. EL = 3.78
EXIST. CONTR. STRUCT. #2 EXIST. RETENTION AREA #1
CONTR. STRUCT. #3 TOP EL. (DWG) = 8.50 WEIR EL. (DWG) = 7.50 INV. EL. RCVD. = 2.50 WEIR EL. RCVD. = 2.50 SIZE OF OUTLET = 6"
CONTR. STRUCT. #2 TOP EL. (DWG) = 8.50 WEIR EL. (DWG) = 7.50 INV. EL. RCVD. = 2.50 WEIR EL. RCVD. = 2.50 SIZE OF OUTLET = 6"
COMBINE STRUCT. #2 (EXIST.) TOP EL. (DWG) = 8.50 WEIR EL. (DWG) = 7.50 INV. EL. = 2.50 PROP. = 200 LF 6" PVC U.D. @ 0.5% SIZE OF OUTLET = 6"
INV. EL. 3.90
INV. EL. 3.35
INV. EL. 3.50
INV. EL. 2.50
TOP EL. 8.50
TOP EL. 7.50
TOB EL. 6.50
TOB EL. 5.50
TOB EL. 7.14
TOB EL. 6.78
TOB EL. 6.50
TOB EL. 6.50
TOB EL. 6.50

CURLEW LANDINGS

Note:
For revisions to Retention Areas see Sheet 6 of 13.

*** Site plan Drainage Calculation check ***

Prepared by: D.F.R. Engineering, Inc. Date: 06-16-1988
Project name: CURLEW LANDINGS Job No. 1-0188
Section: 15 , Township: 28 South, Range: 15 East.

Retention Pond / Lake number....2
Total Drainage Area: 203220 sf 4.66529 acres

HISTORIC PEAK DISCHARGE : Q= CxiAc = 6.998 cfs
(.2 x 7.5 x 4.66529)

PROPOSED CONDITIONS:

Impervious Areas:	78974	x 0.90 = 71076.6
Vegetated Areas:	112971	x 0.20 = 22594.2
Lake/Pond areas:	11275	x 1.00 = 11275
Totals	203220	104945.8

Weighted Coefficient = C= 0.516

Height of outfall control slot : 2.5 ft.

Outfall control slot width: 6 inches

Outfall control orifice area: 191 sq-in

Duration (min.)	Intensity (in/hr)	Peak R/O cfs	Storm R/O cf	Release Flow cf	Required Storage cf
10	7.5	18.069	10841.51	4198.761	6642
15	6.4	15.419	13877.15	6298.141	7578
20	5.8	13.974	16768.2	8397.521	8370
30	4.7	11.323	20382.04	12596.28	7785
40	4	9.637	23128.85	16795.04	6333
50	3.5	8.432	25296.85	20993.8	4303
60	3.2	7.710	27754.26	25192.56	2561
90	2.5	6.023	32524.52	37788.85	-5265

*** Critical storage volume=.... 8370
Storage required by D.E.R. = 1/2 inch rainfall over area.... 8467
Total storage required ... 16838
*** Site Plan Provides... 19,947 cf

LAKE #3

Total Drainage Area= 181120 sf 4.157943 acres

HISTORIC PEAK DISCHARGE : Q= CxiAc = 6.237 cfs
(.2 x 7.5 x 4.157943)

PROPOSED CONDITIONS:

Impervious Areas:	88910	x 0.90 = 80019
Vegetated Areas:	76010	x 0.20 = 15202
Lake/Pond areas:	16200	x 1.00 = 16200
Totals	181120	111421

Weighted Coefficient = C= 0.615

Height of outfall control slot : 2.5 ft.

Outfall control slot width: 5 inches

Outfall control orifice area: 155 sq-in

Duration (min.)	Intensity (in/hr)	Peak R/O cfs	Storm R/O cf	Release Flow cf	Required Storage cf
10	7.5	19.184	11510.44	3742.149	7768
15	6.4	16.370	14733.36	5613.223	9120
20	5.8	14.836	17802.81	7484.298	10318
30	4.7	12.022	21639.62	11226.45	10413
40	4	10.231	24555.6	14968.6	9586
50	3.5	8.953	26857.68	18710.74	8146
60	3.2	8.185	29466.71	22452.89	7013
90	2.5	6.395	34531.31	33679.34	851

*** Critical storage volume=.... 10413
Storage required by D.E.R. = 1/2 inch rainfall over area.... 7546
Total storage required ... 17959
*** Site Plan Provides... 26,230 cf

* Side-drain Drawdown Analysis *

(using Darcy's law for flow thru porous materials)

Date....06-17-1988 LAKE #2

Elev	Total Head	Total Volume	L-avg.	Hydr. Grad.	Area of Filter	Flow	Avg. Flow	Incr. Time	Total Time
5-5	3.6	14138	2	1.800	500	4485	0	0.00	0.00
5	3-1	10464	2	1.550	400	3590	3788	0.97	0.97
4-5	2-6	7223	4	0.650	300	971	2051	1.60	2.57
4	2-1	4405	6	0.350	200	349	660	4.27	5.84
3-5	1-6	2000	8	0.200	100	99	224	10.72	14.99
3	1-1	0	2	0.550	0	0	49	40.14	50.86

* Proposed length of underdrain... 200 ft.

* Invert of Underdrain..... 2.50

'K'- value..... .0422 cm/sec

Total drawdown time 50 hrs

Lake/pond number: 3

* Side-drain Drawdown Analysis *

(using Darcy's law for flow thru porous materials)

Date....06-21-1988

Elev	Total Head	Total Volume	L-avg.	Hydr. Grad.	Area of Filter	Flow	Avg. Flow	Incr. Time	Total Time
5-5	3	26230	2	1.500	1250	9345	0	0.00	0.00
5	2-5	19955	2	1.250	1000	6230	7787	0.81	0.81
4-5	2	14207	4	0.500	750	1869	4049	1.42	2.22
4	1-5	8973	6	0.250	500	623	1246	4.20	5.42
3-5	1	4241	8	0.125	250	155	389	12.15	16.35
3	.5	0	2	0.250	0	0	77	54.46	66.62

* Proposed length of underdrain... 500 ft.

* Invert of Underdrain..... 2.50

'K'- value..... .0422 cm/sec

Total drawdown time 66 hrs

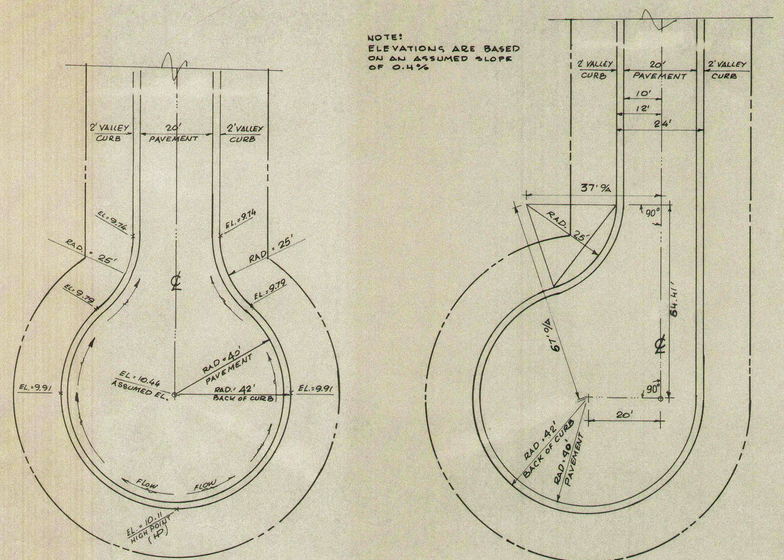
HYDROGRAPH
PAVING & DRAINAGE · CURLEW LANDINGS

FINAL SITE PLAN

For: STEVE STASZ, Vice Pres. SUNLOCK, INC
101 GARLAN CIRCLE, PALM HARBOR, FL 34683 813-786-1497

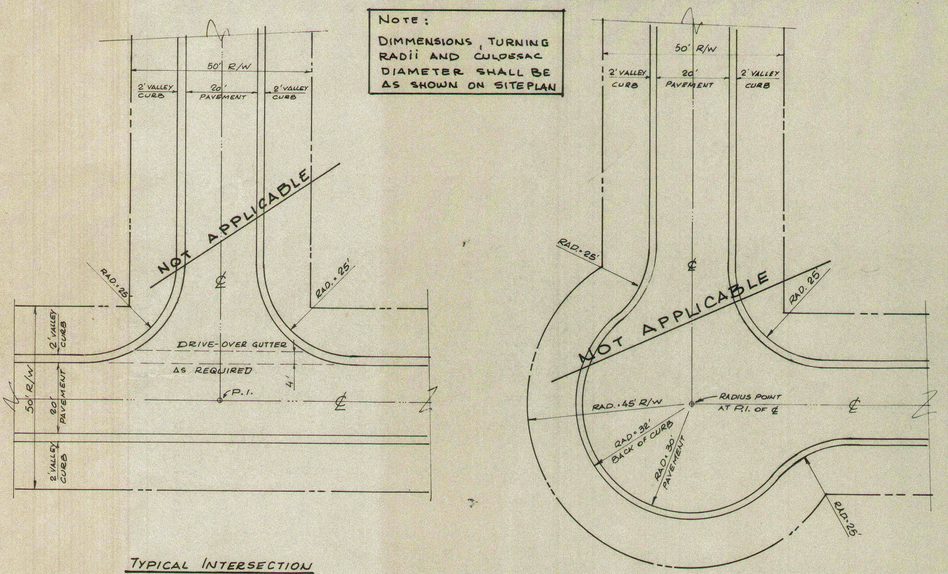
DFR ENGINEERING
1059 BROADWAY, SUITE A
DUNEDIN, FL 34698
813-734-1020

SHT NO 7 of 13
JOB NO 1-0188



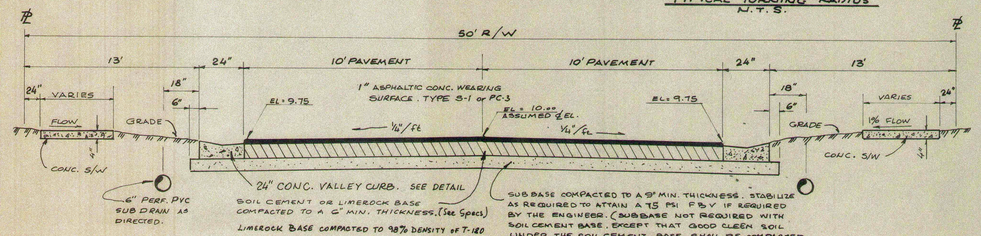
TYPICAL CUL-DE-SAC DETAIL
N.T.S.

Note:
DIMMENSIONS, TURNING RADII AND CULDESAC DIAMETER SHALL BE AS SHOWN ON SITEPLAN

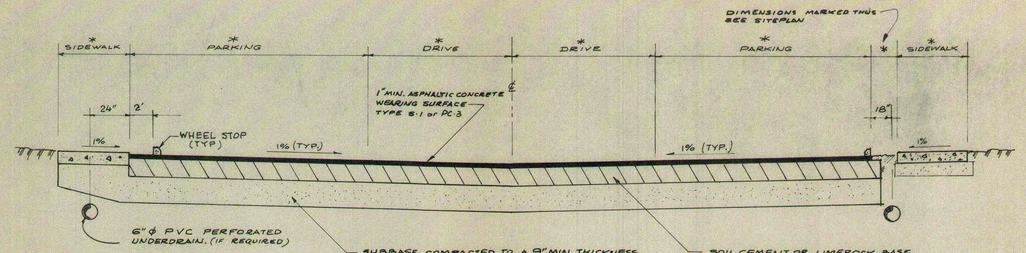


TYPICAL INTERSECTION
N.T.S.

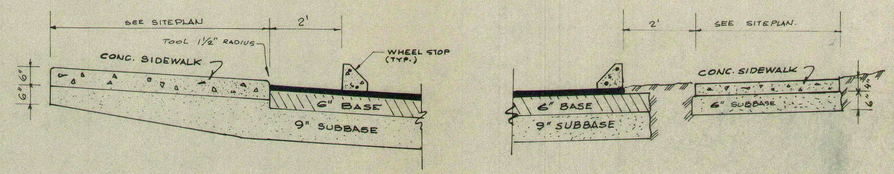
TYPICAL TURNING RADIUS
N.T.S.



TYPICAL ROADWAY CROSS SECTION
N.T.S.

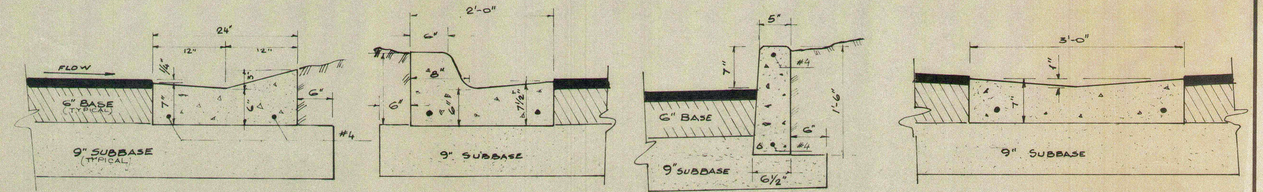


TYPICAL DRIVE-PARKING AREA SECTION
N.T.S.



SIDEWALK DETAILS
N.T.S.

NOTES:
- ALL CONCRETE SHALL BE 3000 PSI
- EXPANSION JOINTS SHALL BE INSTALLED AT 50 FT INTERVALS IN CURBS AND SIDEWALKS
- CONSTRUCTION JOINTS SHALL BE INSTALLED AT 10 FT INTERVALS IN CURBS AND SIDEWALKS
- TYPE AND THICKNESS OF ASPHALTIC CONCRETE WILL VARY DEPENDING ON REGULATIONS AND USE. (SEE SITE PLAN)
- THE USE OF REBARS FOR CURBS AND WIREMESH FOR SIDEWALKS IS AS SPECIFIED BY LOCAL REGULATIONS. (SEE SITE PLAN)

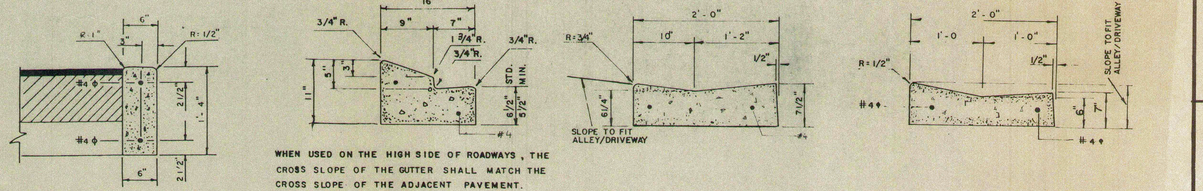


VALLEY CURB DETAIL
N.T.S.

ROADWAY CURB
N.T.S.

TYPE "B" CURB
N.T.S.

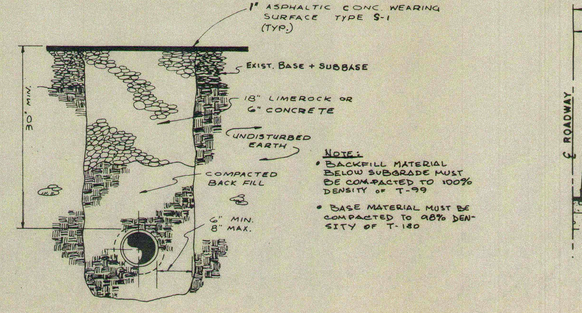
VALLEY GUTTER
N.T.S.



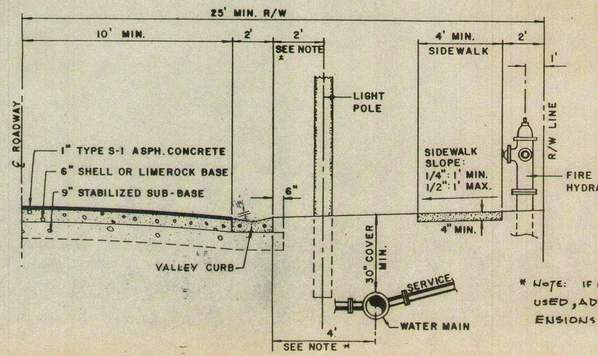
HEADER CURB
N.T.S.

MEDIAN CURB
N.T.S.

DROP CURB DETAILS AT DRIVEWAYS
N.T.S.



TYPICAL ROADWAY CUT
N.T.S.



• TYPICAL RESIDENTIAL ROADWAY • NTS

"NOT VALID UNLESS IMPRINTED WITH EMBOSSED SEAL."
Approved By
David P. Crane
FLA. REG. ENGINEER # 13507
FLA. REG. SURVEYOR # 2545

DESIGNED: DPC
DRAWN: ESG
CHECKED:
F.I.D. BOOK:

NO.	REVISION	DATE
1	RELEASED FOR CONSTRUCTION	6-27-86
2	REVISED PER SJC + MSWA COMMENTS	8-15-86

DATE: 10-14-1985
SCALE: NONE
JOB NO. 1-0188
SEC. TWP. RGE.

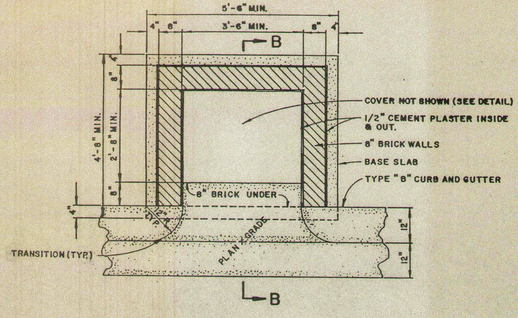
CURLEW LANDINGS

DFB ENGINEERING
1059 Broadway, Suite A
DUNEDIN, Florida 34698
813-734-7220

PAVING DETAILS
ROADS - PARKING.

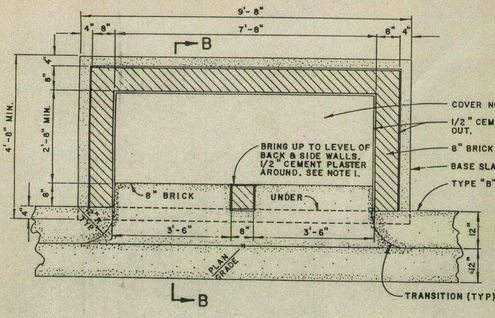
For: STEVE SZASZ, VICE PRES. SUNLOCK, INC.
101 GARLAN CIRCLE.
PALM HARBOR, FL 34683

SHT. NO. 8 OF 13
JOB NO. 1-0188



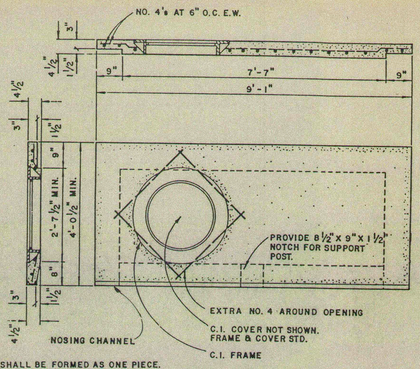
PIPES NOT SHOWN. SIZES & ORIENTATION WILL VARY.

C.B. TYPE 1.



ALTERNATE C.B. COVER SUPPORT MAY BE USED IF APPROVED BY CITY.

C.B. TYPE 2.

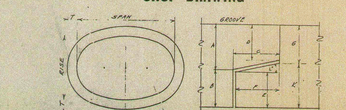


COVER SHALL BE FORMED AS ONE PIECE.

PLAN-SECTIONS

OVAL CONCRETE PIPE

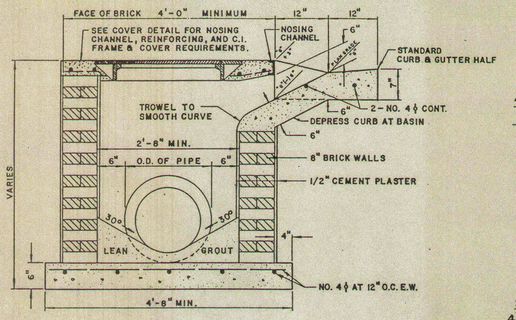
SHOP DRAWING



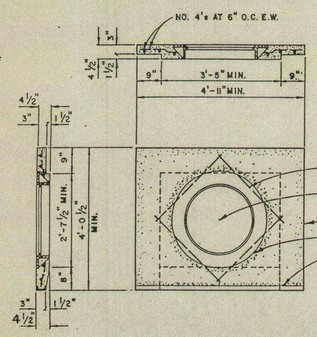
OVAL PIPE

SIZE	EQUIVALENT ROUND	NOMINAL RISE	NOMINAL SPAN	T	A	B	C	D	E	F	G	L
12" x 18"	15"	11 5/16"	17 5/16"	2 1/4"	1 1/4"	1 1/2"	1 1/2"	1"	7 1/16"	1 5/16"	1 1/16"	11"
14" x 23"	18"	14 1/16"	22 1/16"	2 1/4"	1 1/2"	1 1/2"	2"	1 1/16"	7 1/16"	1 5/16"	1 1/16"	13"
19" x 30"	24"	19"	29 1/16"	3 1/4"	1 5/8"	1 1/2"	2 1/2"	1 1/4"	9 1/2"	1 7/16"	1 1/16"	15"
24" x 38"	30"	23 7/16"	37 1/16"	3 1/2"	2"	1 1/16"	2 1/2"	1 1/2"	11 7/16"	1 7/16"	2 1/16"	17"
29" x 45"	36"	29 1/16"	45 1/16"	4 1/16"	2 1/16"	2 1/16"	3"	1 7/16"	13 1/16"	1 7/16"	2 1/16"	19"
34" x 53"	42"	34 1/16"	53 1/16"	5"	2 7/16"	2 1/16"	3 1/16"	2 1/16"	15 1/16"	1 7/16"	2 1/16"	21"
38" x 60"	48"	38 1/16"	60 1/16"	5 1/2"	2 3/4"	2 3/4"	3 1/2"	2 1/16"	17 1/16"	2 1/16"	2 1/16"	23"
43" x 68"	54"	43 1/16"	68 1/16"	6"	3"	2 3/4"	3 7/16"	2 7/16"	19 1/16"	2 1/16"	2 1/16"	25"
48" x 75"	60"	48"	75"	6 1/2"	3 1/4"	3"	4"	2 1/2"	21"	2 1/16"	3"	27"

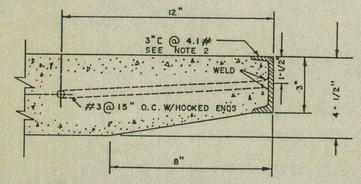
NOTES:
1. NOSING CHANNELS SHALL BE GALVANIZED AFTER FABRICATION
2. CLOSE ENDS OF CHANNELS WITH 1/4" PLATE AND GRIND CORNERS ON BOTH COVERS
3. NOSING CHANNELS SHALL BE ONE PIECE WITH NO WELDS

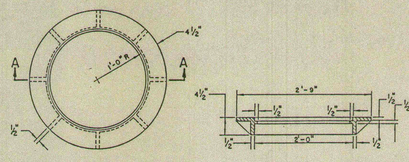


SECTION B-B



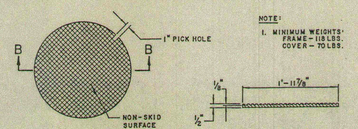
PLAN-SECTIONS





PLAN SECTION A-A

FRAME DETAIL



NOTE:
1. MINIMUM WEIGHTS: FRAME - 115 LBS. COVER - 70 LBS.

PLAN SECTION B-B

COVER DETAIL

CORRUGATED METAL PIPE

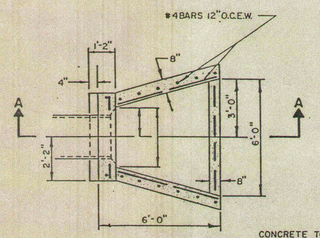
ROUND SIZE	GAUGE	ELLIPTICAL OUTSIDE DIM.	ELLIPTICAL INSIDE DIM.	ELLIPTICAL HOTDOGE DIM.
12	14	14.11	17"x11"	18.18"x 14.14"
18	14	19.14	21"x15"	23.32"x 16.15"
21	14	22.15	24"x18"	25.16"x 19.18"
24	12	25.21	28"x20"	29.21"x 21.21"
30	12	31.21	35"x24"	36.21"x 25.21"
36	10	37.27	42"x29"	43.27"x 30.27"
42	10	43.27	49"x34"	50.27"x 34.27"
48	8	49.318	57"x38"	58.328"x 39.328"
54	8	55.328	64"x43"	65.328"x44.328"
60	8	61.328	71"x47"	72.328"x48.328"
66	8	67.328		
72	8	73.328		
84	8	85.328		
96	8	97.328		

CONCRETE CULVERT PIPE REINFORCED STANDARD

ASHTO SIZE	ASTM SIZE	ACCESSIBLE WALL THICKNESS INCHES	ACCESSIBLE WALL THICKNESS FT.	A.D. INCHES	A.D. FT.
15	23	.17	1.42	19 1/2	1.63
18	27	.21	1.75	23	1.92
24	33	.25	2.08	30	2.50
30	39	.29	2.42	37	3.08
36	45	.33	2.75	44	3.67
42	51	.38	3.17	51	4.25
48	57	.42	3.50	58	4.83
54	63	.46	3.83	65	5.42
60	69	.50	4.17	72	6.00
66	75	.54	4.50	79	6.58
72	81	.58	4.83	86	7.17
84	93	.67	5.58	101	8.42
96	105	.75	6.25	115	9.58

CATCH BASIN DETAILS.

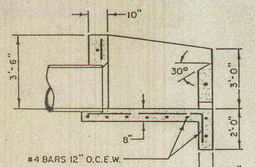
N.T.S.



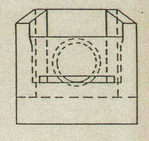
PLAN

CONCRETE TO BE 3000 PSI AFTER 28 DAYS

3/4" CHAMFER ON ALL EXPOSED EDGES



SECTION A-A

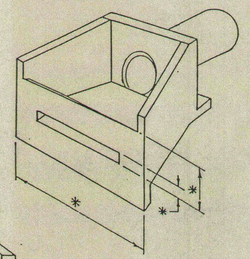


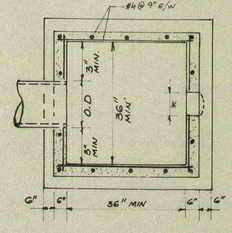
ELEVATION

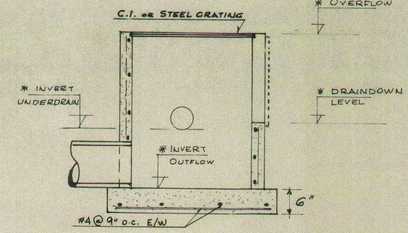
TYPE "A"

* WEIR HEIGHT & SLOT DIMENSIONS TO BE SPECIFIED ON PLANS & SPECS BY ENGINEER FOR EACH APPLICATION.

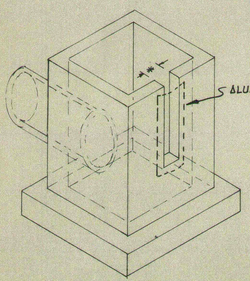
SLOT DIMENSIONS DETERMINED BY: $Q = .6A\sqrt{2gh}$







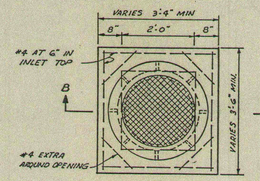
TYPE "B"



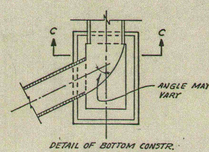
NOTE: DIMENSIONS MARKED * ARE TO BE SPECIFIED BY ENGINEER FOR EACH APPLICATION. SEE PLANS.

OUTFLOW CONTROL STRUCTURES

NTS

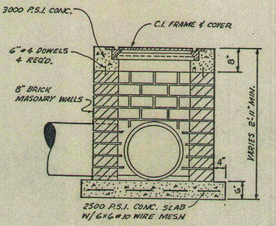


INLET TOP

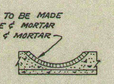


DETAIL OF BOTTOM CONSTR. WHEN INLET SERVES AS MH.

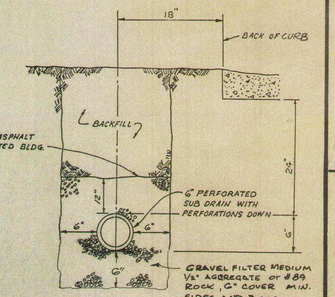
PLAN ON PIPE ℄



SECTION B-B



SECTION C-C

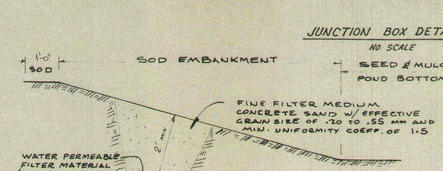


TYPE I - SIDE OF ROADWAY.

N.T.S.

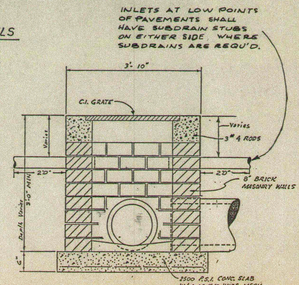
JUNCTION BOX DETAILS

NO SCALE



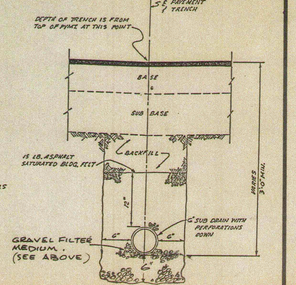
DETENTION POND - SIDE DRAIN - TYPE III.

NTS



INLET DETAIL

N.T.S.



TYPE II - UNDER PAVEMENT

N.T.S.

UNDERDRAIN DETAILS

CURLEW LANDINGS

DUNEDIN, Florida 34698
1059 Broadway, Suite A
813-734-7020

DFB ENGINEERING

"NOT VALID UNLESS IMPRINTED WITH EMBOSSED SEAL"
Approved By
David F. Blanco
FLA. REG. ENGINEER # 15307
FLA. REG. SURVEYOR # 2948

DESIGNED: DFB
DRAWN: ESC
CHECKED: ESC
F.I.D. BOOK:
SEC.
RGE.
DATE: 10-8-84
SCALE: 1/4"=1'-0"
ZONE: 1
DATE: 12-21-88

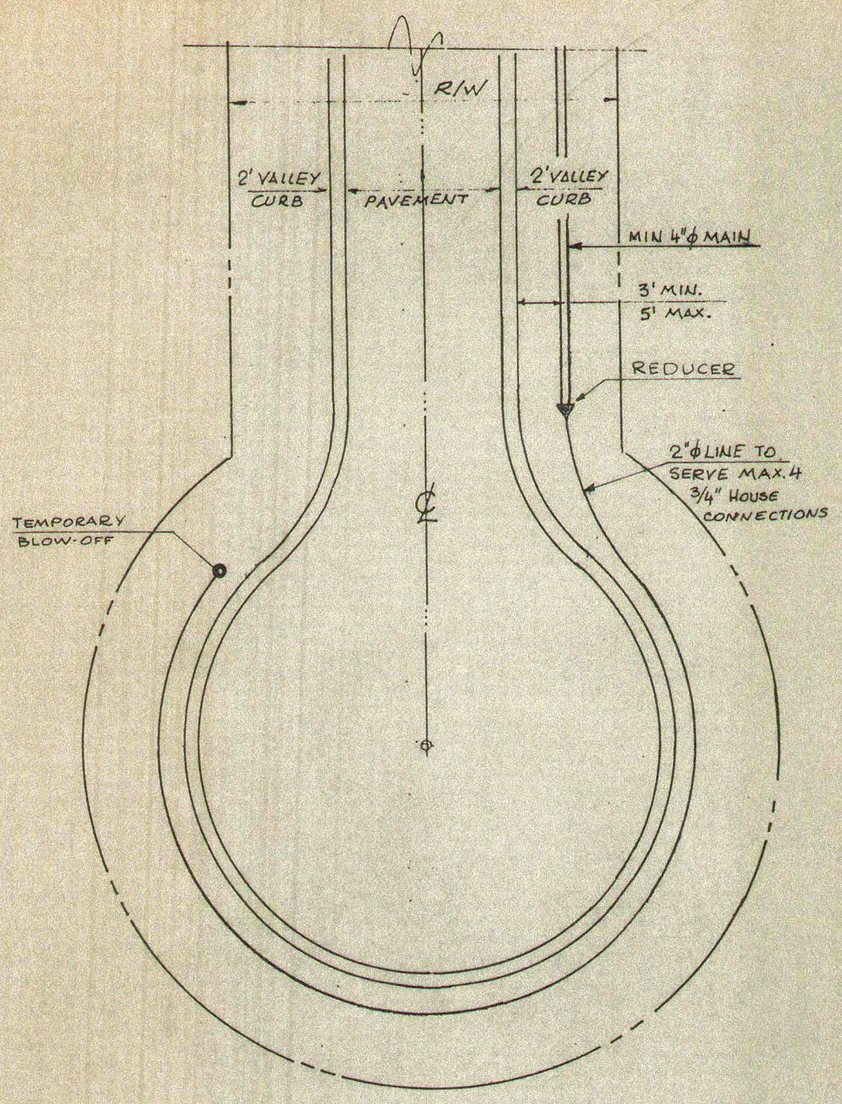
NO.	REVISION	BY	DATE
1	REVISED		2-27-85
2	REVISED PER REVIEWERS		4-17-85

Drainage Structures, Details

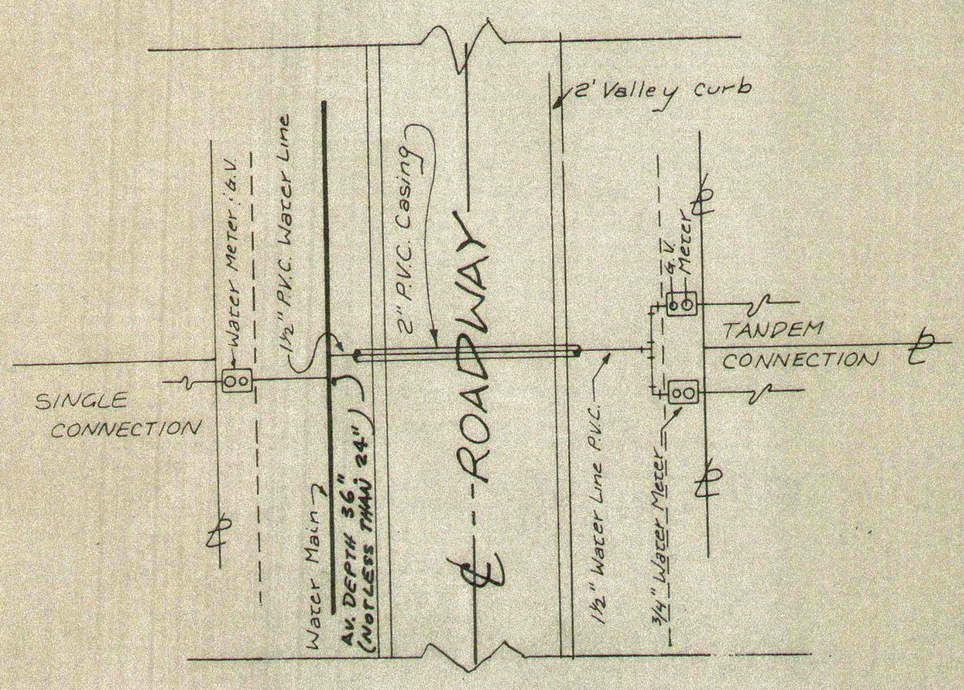
for: Steve Szasz, Vice Pres. SUNLOCK, INC.
101 Garlan Circle,
PALM HARBOR, FL 34683

SHT. NO. 9 of 13

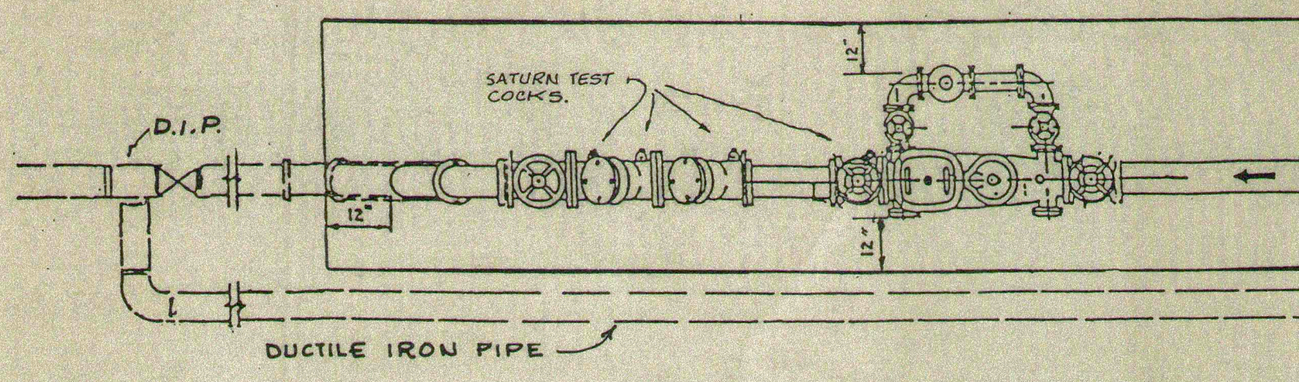
JOB NO. 1-0188



TYPICAL CUL-DE-SAC / SUBDIVISIONS /

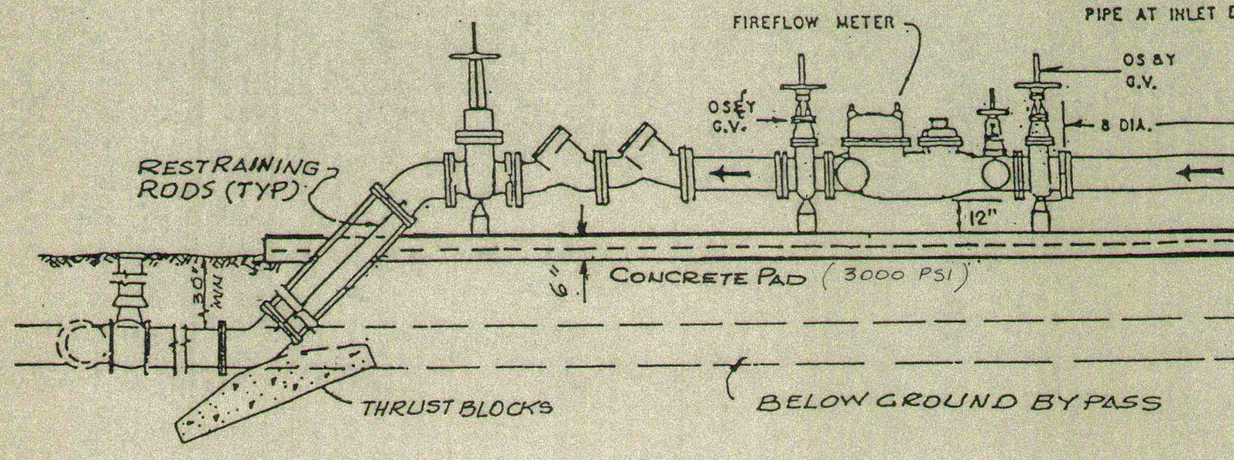


TYP. WATER SERVICE / SUBDIVISIONS. /

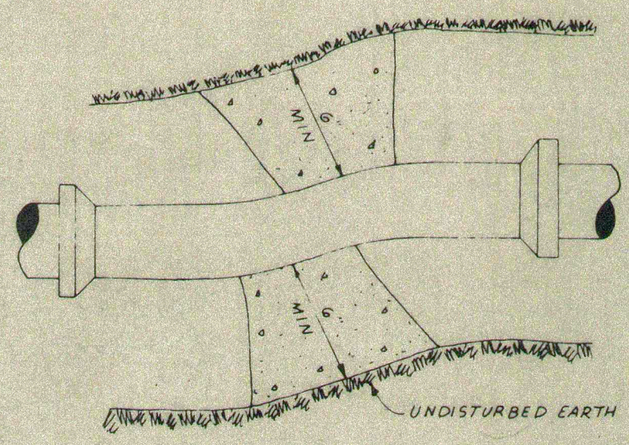


1. ALL DOUBLE CHECK VALVES AND BACKFLOW PREVENTION DEVICES SHALL CONFORM TO SPECS.
2. ALL FITTINGS & EQUIPMENT ABOVE GROUND SHALL BE PAINTED WITH PLIO-LUX #432 "SHAMROCK" OR EQUAL.
3. RESTRAINING RODS SHALL BE USED ON ALL MECHANICAL JOINTS.
4. TEST COCKS SHALL BE SATURN 3/4" 400 WDC WITH REMOVABLE HANDLES OR EQUAL. INST. BRONZE PLUGS.
6. Water main shall be D.I from tap to last fittin by-pass.
7. All valves (gate & O.S. shall be resilient seat

METER MUST BE A HORIZONTAL P AND HAVE AT L DIAMETERS OF PIPE AT INLET

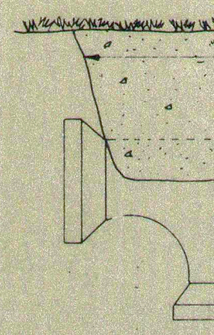


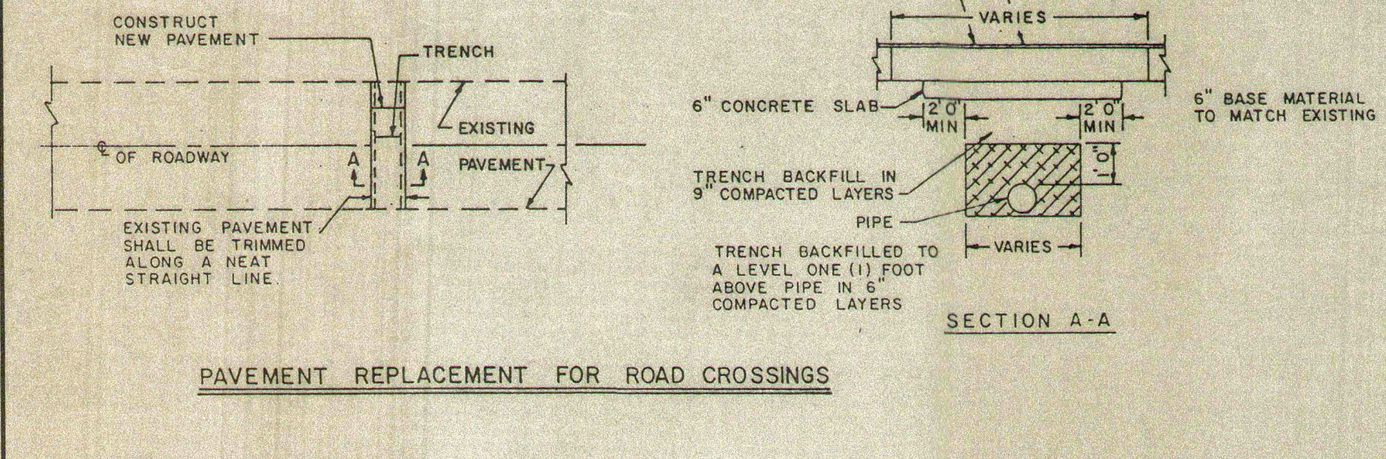
TYPICAL FIREFLOW METER ARRANGEMENT.



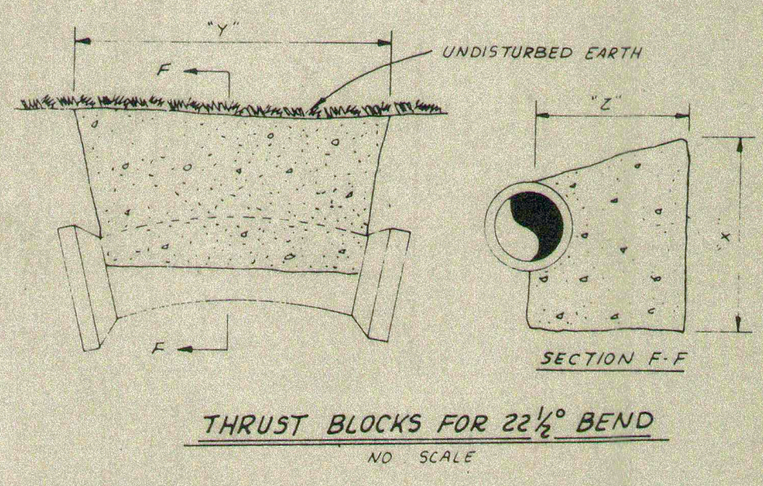
OFFSET THRUST BLOCKS

NO SCALE



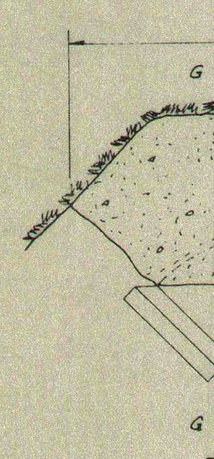


PAVEMENT REPLACEMENT FOR ROAD CROSSINGS



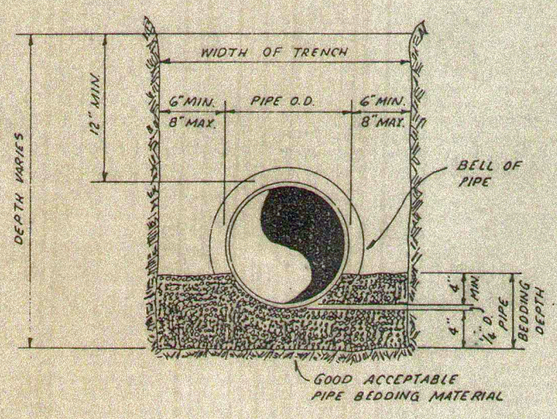
THRUST BLOCKS FOR 22½° BEND

NO SCALE



THRUST BLOCK DIMENSIONS

FITTINGS	DIA.	"Y"	"X"	"Z"
90° BEND	2"	2'	1'-4"	1'-6"
	4"	3'	1'-4"	1'-6"
	6"	4'	2'	2'
45° BEND	2"	2'	1'	1'
	4"	2'	1'	1'
	6"	3'	1'-4"	1'-6"
22½° BEND	2"	1'-6"	8"	1'
	4"	1'-6"	8"	1'
	6"	2'	1'	1'
TEES & CROSSES EACH BLOCK	2"	2'	1'-6"	1'
	4"	2'	1'-6"	1'
	6"	3'	2'	1'-6"
REDUCERS	4" TO 6"	1'-6"	1'-6"	8"

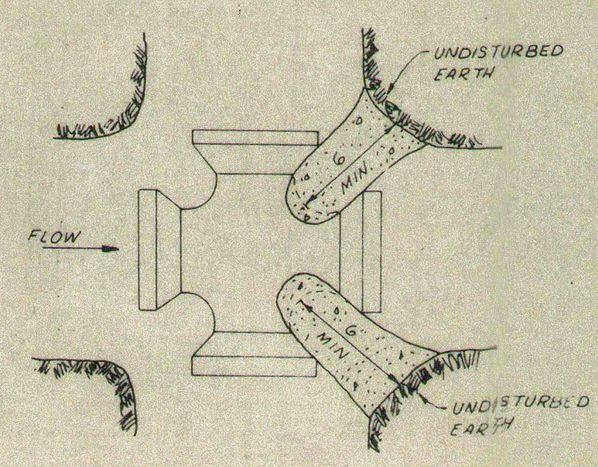


SECTION C-C

TYPICAL TRENCH DETAIL

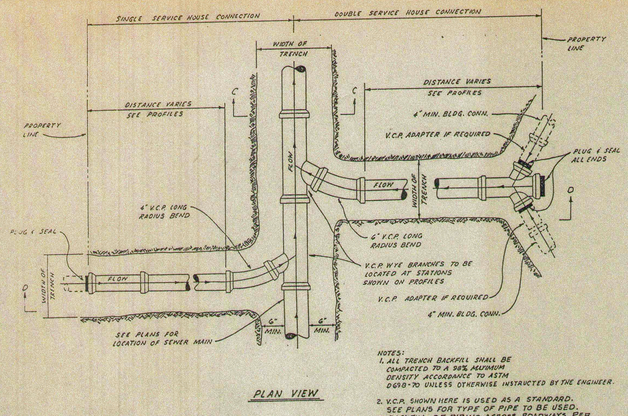
NOTE :

1. 2000 P.S.I. CONCRETE OR BETTER SHALL BE USED FOR THRUST BLOCKS.
2. CARE SHALL BE TAKEN TO KEEP ALL CONCRETE OFF THE FITTING AND AWAY FROM THE JOINTS AND PIPE.
3. POUR THRUST BLOCKS AGAINST UNDISTURBED OR WELL COMPACTED EARTH.



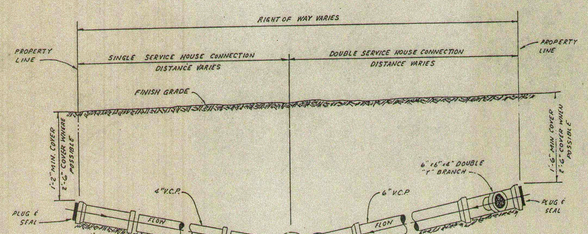
THRUST BLOCK FOR CROSS

NO SCALE

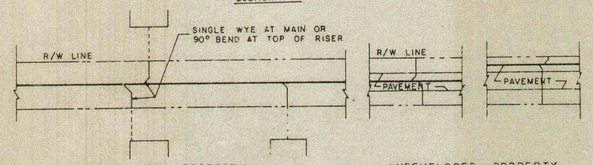


PLAN VIEW

NOTES:
1. ALL TRENCH BACKFILL SHALL BE COMPACTED TO A 98% MAXIMUM DENSITY ACCORDANCE TO ASTM D698-70 UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
2. V.C.P. SHOWN HERE IS USED AS A STANDARD. SEE PLANS FOR TYPE OF PIPE TO BE USED.
3. BACKFILL OF PIPING ACROSS ROADWAYS PER COUNTY SPECIFICATIONS.



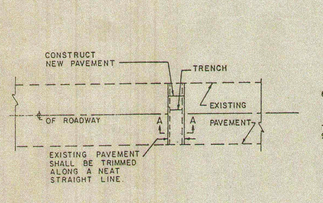
SECTION D-D

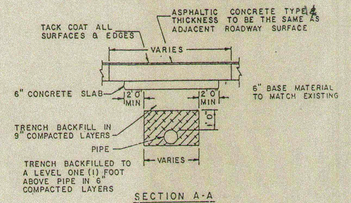


DEVELOPED PROPERTY — UNDEVELOPED PROPERTY

TYPICAL SERVICE CONNECTIONS

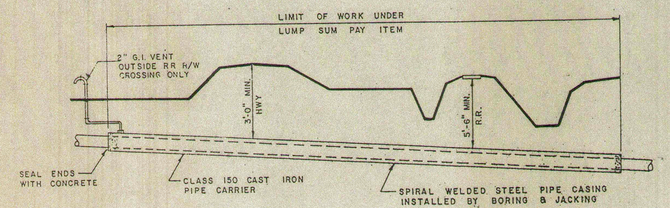
NOTE
- SERVICE CONNECTIONS HAVE NOT BEEN SHOWN ON PROFILE SHEETS. SERVICE CONNECTION LOCATIONS SHALL BE DETERMINED IN THE FIELD AND CONNECTIONS CONSTRUCTED IN ACCORDANCE WITH THESE DETAILS.
- PLUGS SHALL BE PERMANENT AND SHALL BE PROVIDED WITH FACTORY JOINTS. PLUGS SHALL NOT BE CEMENTED INTO BELL OF WYE OR SERVICE LINE.
- SERVICE LINES TO BE 4" TO ALL SINGLE RESIDENCES & 6" TO ALL MULTIPLE RESIDENCES, MOTELS & COMMERCIAL BUILDINGS.
- NO DOUBLE WYE UNITS SHALL BE PERMITTED ON MAIN LINE.
- RISERS SHALL BE INSTALLED ON ALL WYES (BOTH PRESENT & FUTURE SERVICES) TO PROVIDE DEPTH AT SERVICE NOT OVER 4.0' EXCEPT WHERE OTHERWISE REQUIRED.
- MINIMUM CUT UNDER ROADWAYS – 4.0' MINIMUM CUT AT PROPERTY LINE – 3.0' OR AS REQUIRED FOR SERVICE.
- RISERS SHALL PREFERABLY FOLLOW SLOPE OF BANK TO REQUIRED DEPTH
- ENCASE LINE FITTINGS & SPUR OF ALL RISERS WHERE MAIN DEPTH EXCEEDS 7 FEET PROVIDE HALF ENCASEMENT ON SLOPING RISER TO UNDISTURBED EARTH.





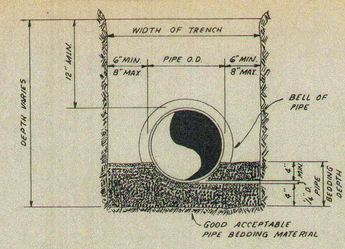
SECTION A-A

PAVEMENT REPLACEMENT FOR COUNTY ROAD CROSSINGS



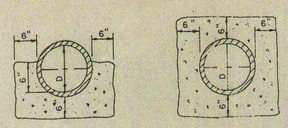
NO	LOCATION	SHEET NO.	CARRIER SIZE	CASING SIZE O.D.	CASING PIPE GAUGE	PAY ITEM LENGTH	NOTES

SPECIAL CROSSING DETAILS

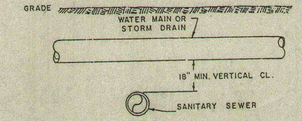


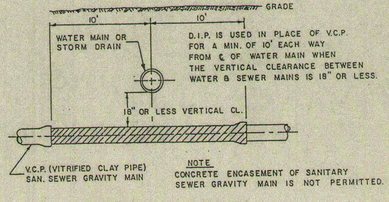
SECTION C-C

TYPICAL TRENCH DETAIL

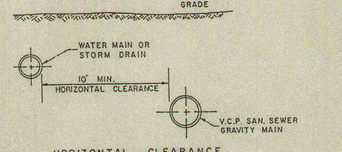


CONCRETE ENCASEMENT



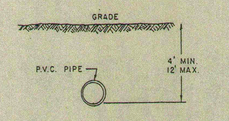


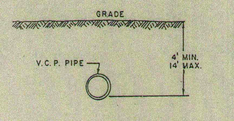
VERTICAL CLEARANCE

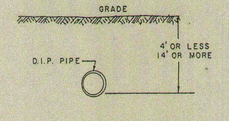


HORIZONTAL CLEARANCE

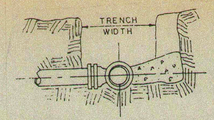
WATER MAIN & SANITARY SEWER CLEARANCES



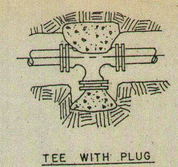




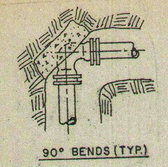
DEPTH LIMITATIONS OF SANITARY SEWER PIPE



TEE SECTION



TEE WITH PLUG

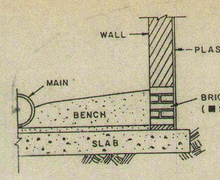


90° BENDS (TYP.)

THRUST BLOCK DETAILS

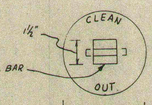
BEARING AREA TABLE			(SQUARE FEET)	
PIPE SIZE	1/4 BEND	1/8 BEND & WYE	1/16 BEND	TEE
3"	0.5	0.3	0.3	0.8
4"	0.6	0.4	0.3	1.0
6"	1.5	0.8	0.5	2.0
8"	2.7	1.3	0.7	3.4
10"	3.7	2.0	1.0	5.2
12"	5.3	2.9	1.5	7.5
14"	7.3	3.9	2.0	10.2
16"	9.5	5.2	2.6	13.4
18"	12.0	6.5	3.3	17.0
20"	14.8	8.0	4.1	20.9
24"	21.4	11.6	5.9	30.1

THE FIGURES IN THIS TABLE ARE BASED ON 3000 POUNDS PER SQUARE FOOT SOIL BEARING AGAINST THE UNDISTURBED TRENCH WALL AND ARE TO REPRESENT THE MINIMUM VERTICAL PROJECTED AREA OF THE THRUST BLOCK IN A PLANE PERPENDICULAR TO THE LINE BISECTING THE INCLUDED ANGLE OF THE FITTING.

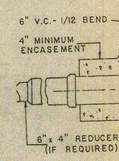


MANHOLE INLET PLUG DETAIL

■ NOTE
OPENING IN MANHOLE AND DIRECTION AS SHALL BE SIZED TO UNLESS OTHERWISE N WITH BRICK AND MOR AND BENCH SHALL AL THE PLUGGED HOLE AND COATED AS SPE MANHOLE DETAIL.

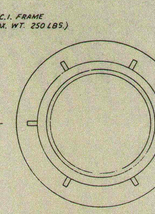


CLEANOUT PLUG DETAIL

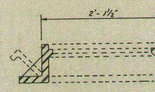


CLEANOUT

NOTE: (FOR PRECAST MANHOLES)
1. ALL DIMENSIONS AND SPECIFICATIONS FOR BRICK MANHOLES SHOWN HEREON APPLY TO PRECAST MANHOLES EXCEPT WALL THICKNESS SHALL BE 6" UP TO 12' DEPTH AND 8" FOR DEPTHS OVER 12', REINFORCED PER ASTM C-478 AND WITH CONCRETE CONSISTING OF 4000 PSI AT 28 DAYS, TYPE II PORTLAND CEMENT.
2. ALL RISER UNITS SHALL HAVE A MINIMUM HEIGHT OF 12" WITH THE CONCENTRIC CONE SET BETWEEN 2 1/2" AND 14 1/2" BELOW THE BOTTOM OF MANHOLE COVER FRAME.
3. ALL TONGUE AND GROOVE JOINTS SHALL BE JOINED AND COMPLETELY SEALED PER SPECIFICATION
4. ALL INTERIOR AND EXTERIOR MANHOLE SURFACES SHALL BE PREPARED FOR COATING AND COATED PER SPECIFICATION
5. SUBMITTAL FOR APPROVAL SHALL BE MADE OF PRECAST MANHOLE SHOP DRAWINGS, MANHOLE FRAMES AND COVERS, METHODS TO BE USED IN SEALING, JOINING AND COATING MANHOLE SECTIONS BEFORE CONSTRUCTION BEGINS.
6. GASKETED MANHOLE CONNECTORS SHALL BE SUBMITTED TO THE CITY OF DUNEDIN PRIOR TO USE. FOR GROUTED CONNECTION USING PVC PIPE, A SUITABLE ADAPTER IS REQUIRED.

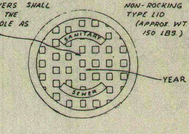


TOP VIEW



SECTION B-B

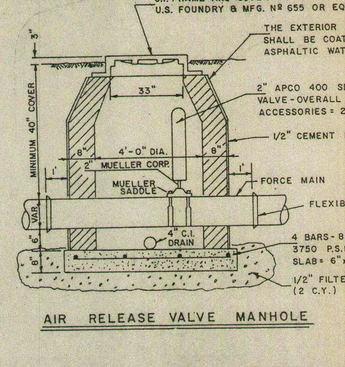
TYPICAL C.I. FRAME & COVER



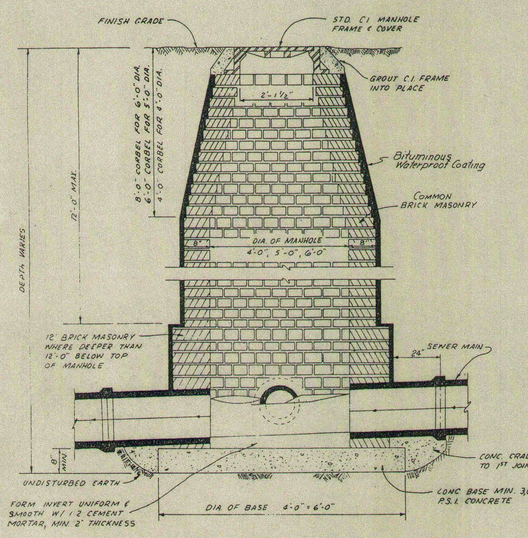
SOLID INVERTED COVER

MANHOLE SIZES.

DIA.	FOR PIPES
4'-0"	24" & UNDER
5'-0"	30" & 36"
6'-0"	42" & OVER

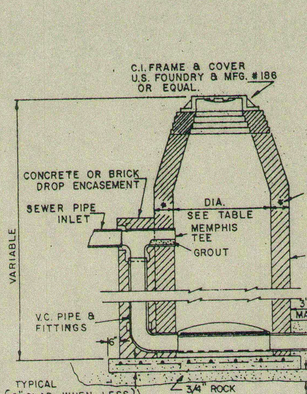


AIR RELEASE VALVE MANHOLE

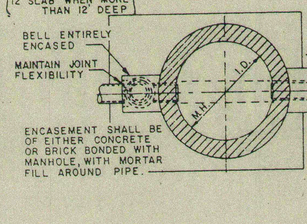


SECTION A-A

TYPICAL BRICK TYPE MANHOLE



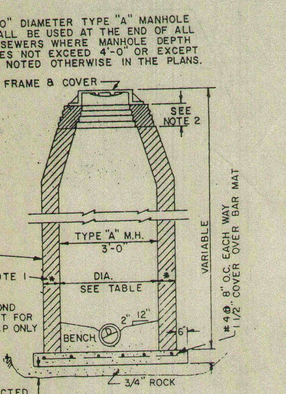
SECTION



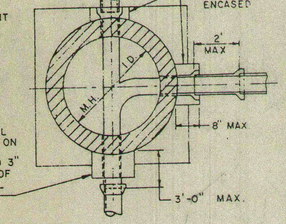
PLAN

DROP MANHOLE

NOTE: 3'-0" DIAMETER TYPE "A" MANHOLE SHALL BE USED AT THE END OF ALL 8" SEWERS WHERE MANHOLE DEPTH DOES NOT EXCEED 4'-0" OR EXCEPT AS NOTED OTHERWISE IN THE PLANS.



SECTION



PLAN

STANDARD MANHOLE

PVC PIPE - SEWER			
NOMINAL SIZE	WALL THICKNESS	O.D. PIPE	PIPE STIFFNESS
4	0.125"	4.215"	51
6	0.180"	6.275	46
8	0.240"	8.400	46
10	0.300"	10.500	46
12	0.360"	12.500	46

PVC PIPE 4" ϕ OR LESS SHALL BE SCHED. 40
PVC PIPE 6" ϕ OR LARGER SHALL BE DR 35 MIN.

VITRIFIED CLAY PIPE		
NOMINAL SIZE	AVERAGE O.D. INS. FT.	O.D. SOCKET INS. FT.
4	.42" 5"	5⅛" 6¼"
6	.60" 7¼"	7⅛" 9⅛"
8	.79" 9½"	9⅛" 11⅛"
10	.98" 11⅞"	11⅛" 13¼"
12	1.17" 14"	13⅛" 15⅞"
15	1.46" 17½"	16⅞" 20⅛"
18	1.75" 21"	20⅛" 24¼"
21	2.04" 24½"	23⅜" 28⅛"
24	2.33" 28"	27⅛" 32⅝"
27	2.63" 31⅝"	30⅝" 36⅞"
30	2.92" 35"	34" 40¼"
33	3.18" 38⅛"	37⅛" 44⅝"
36	3.46" 41½"	40⅜" 47⅝"
42		
48		
54		
60		
66		
72		
84		

NOTE:
- DETAILS AND TABLES ARE GENERAL. REFER PLANS AND SPECIFIC PARTICULAR APPLICA
- PAINT LOCATION OF SEW OSHA GREEN ON

GENERAL CONDITIONS

1. THE CONTRACT DOCUMENTS prepared by the Engineer for this work depict the extent and character of the work, and furnish such data as is known to the Engineer as to conditions at the site. The Engineer does not guarantee the completeness of such data, and assumes no responsibility for conclusions or interpretations made by others on the basis of such data. The Contractor shall satisfy himself as to the accuracy of all data prior to submitting his proposal. Should the Contractor find discrepancies in, or omissions from the plans and specifications, or should he be in doubt as to their meaning, he shall notify the Engineer at once and obtain clarification. Failure to do so shall not relieve the Contractor of the obligation to perform the work in accordance with the true intent of the plans and specifications.

2. EXTRA WORK AND PAYMENT THEREFOR. Any extras which would increase the contract or, in the opinion of the Engineer, would be of benefit to the Owner, shall be authorized in writing by the Engineer before the work is begun. When the Contractor desires to perform extra work, he shall submit a written request to the Engineer for approval. Such request shall state the nature of the extra work involved, the proposed method of doing the work, and the estimated cost. Upon approval by the Engineer, the Contractor shall perform the extra work and be paid therefor as agreed upon by the Engineer and the Contractor before the work is begun. Should it be impossible to agree upon a reasonable amount before the work is begun, the Contractor shall perform the extra work and be paid therefor as the Engineer shall certify to be reasonable. Should the Contractor refuse to perform extra work ordered by the Engineer, the Owner shall have the right to have such extra work done by others, and the Contractor shall not be entitled to any claim for damages or anticipated profits on account thereof.

3. RESPONSIBILITY FOR WORK. Until the acceptance of the work by the Owner, it shall be in the charge and under the control of the Contractor. He shall be responsible for all injury or damage of any nature whatsoever to persons or property caused by his operations, or by any subcontractor employed by him, until the work is accepted by the Owner. He shall maintain adequate protection against such injury or damage, and shall repair or make good, at his own expense, all injuries or damages to the work or to adjacent property during the prosecution of the work. The Contractor shall have charge and care of the work and shall bear the risk of injury or damage to any part thereof by action of the elements, or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, make good, at his own expense, all injuries or damages to any portion of the work occasioned by any cause before the completion and acceptance by the Owner.

4. SUPERVISION OF WORK. The Engineer or any of his assistants will be authorized to visit and inspect the work and the materials used or to be used therein, but the presence or absence of the Engineer or his assistants shall not relieve the Contractor of his responsibility to perform the work in accordance with the plans and specifications. The Contractor shall give the Engineer ample notice of when he intends to begin the various operations of the work, so that the Engineer may arrange for adequate inspection. Work done without adequate inspection may be ordered removed and replaced at the Contractor's expense. Unsatisfactory work and materials may be rejected by the Engineer at any time before the completion and acceptance of the work, notwithstanding that the Engineer may have previously passed the work or materials. The Contractor shall remove rejected work and materials from the premises and shall make good all work damaged or destroyed thereby, at his own expense.

5. ESTIMATES AND PAYMENTS. On or about the first day of each month the Contractor shall submit to the Engineer an estimate, in writing, of the amount and value of the work done during the preceding month, and the Engineer shall, within ten (10) days after such estimate is submitted, issue a certificate to the Contractor for such amount as the Engineer finds to be due him, less the aggregate of previous payments and all amounts to be retained under the provisions of the contract. All estimates and payments are subject to correction in any subsequent estimate. The Contractor shall submit receipted bills for all labor and materials used on the work, if and when requested by the Engineer, as a condition precedent to the right to receive any payment. The Contractor shall not be entitled to any payment unless the work is free from all liens and claims of every description. Ten per cent (10%) of the amount of each estimate shall be retained by the Owner until the completion and acceptance of the work, unless otherwise provided in the Specifications. Upon completion and acceptance of the work, the Engineer shall issue a certificate stating the amount of the contract price, the amount of authorized extra work, the amount of payments previously made, and the amount remaining to be paid. Within ten (10) days after the issuance of such certificate, the Owner shall pay to the Contractor the amount therein certified to be due, less such sum as may be retained by the Owner under the terms of the contract. Before issuing the certificate for the last payment, the Engineer may require the Contractor to furnish releases or receipts in full for all claims for labor and materials which might become liens upon any part of the work, in order that the Owner may protect himself against such liens. The Contractor may furnish a bond satisfactory to the Owner, indemnifying him against any such liens, and upon the filing of such bond the Owner shall pay to the Contractor the amount withheld on account of such liens.

6. GUARANTEE. The Contractor shall guarantee all work and materials furnished under the contract to be free from defects of workmanship and materials for a period of one (1) year from the date of final acceptance of the work by the Owner. Within ten (10) days after written notice from the Owner of the existence of any defects in the work or materials during the guarantee period, the Contractor shall remedy such defects and make good all work damaged thereby, without cost to the Owner. If the Contractor shall fail to remedy such defects within a reasonable time after receipt of such notice, the Owner may cause the work to be done and the materials to be furnished at the Contractor's expense. The Contractor shall be liable for all damages to the Owner resulting from such defects, whether or not discovered during the guarantee period.

7. INSURANCE. The Contractor shall not commence work under this contract until he has obtained all insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been obtained and approved. The Contractor shall maintain such insurance in force and effect during the performance of all work under this contract, and until the final acceptance of the work by the Owner. All policies of insurance shall be issued by companies authorized to do business under the laws of the State of Florida. Proof of such insurance shall be submitted to the Owner prior to the commencement of any work under this contract. Each policy shall contain a provision requiring that thirty (30) days prior written notice shall be given to the Owner before the effective date of any modification or cancellation of the policy. The Contractor shall procure and maintain Workmen's Compensation Insurance, including Employer's Liability Insurance, as required by the laws of the State of Florida. The Contractor shall procure and maintain Comprehensive General Liability Insurance, including Automobile Liability Insurance, covering all owned, hired and non-owned automotive equipment used in connection with the work, in an amount not less than $100,000 for injuries including wrongful death to any one person, and subject to the same limit for each person, in an amount not less than $300,000 on account of any one occurrence, and in an amount not less than $50,000 for property damage sustained by any person as a result of any one occurrence. The Contractor shall procure and maintain Property Damage Insurance in an amount not less than $50,000 for each occurrence. The Owner shall be named as an additional insured on the Contractor's Comprehensive General Liability Insurance policy, and a certificate of insurance to that effect shall be submitted to the Owner prior to the commencement of any work under this contract.

8. SUBCONTRACTS. The Contractor shall not award any work to any subcontractor without the prior written approval of the Engineer, which approval will not be given until the Contractor submits to the Engineer a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Engineer may require. The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

9. ASSIGNMENTS. The Contractor shall not assign the whole or any part of this contract or any moneys due or to become due hereunder without the previous written consent of the Owner. In case such consent is given, the Contractor will be permitted to assign only upon the condition that all moneys due or to become due shall be subject to all prior liens for services rendered or materials supplied for the performance of the work called for in this contract.

10. USE OF PREMISES. The Contractor shall confine his equipment, apparatus, and the storage of materials and the operation of his workmen to the limits indicated by the Contract Documents or by laws, ordinances, permits, or directions of the Engineer, and shall not unreasonably encumber the premises with his materials. If excavated material is to be stored upon the property of the Owner, it shall be placed in the locations designated by the Engineer. The Contractor shall assume full responsibility for the protection and safekeeping of all materials and equipment stored upon the premises, and shall move any such materials or equipment upon the request of the Engineer. The Contractor shall not load or permit any part of any structure to be loaded in any manner that will endanger the safety thereof, and shall not subject any part of the work or adjacent property to stresses or pressures that will endanger same.

11. PUBLIC CONVENIENCE AND SAFETY. The Contractor shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian. All fires upon or adjacent to the line of the work shall be guarded to prevent their spread to adjacent property, and no fire shall be left burning unattended at any time or place. The Contractor shall maintain adequate warning, danger and direction signs, barricades, warning lights, and shall take such other precautions as may be necessary to prevent accidents or injury to the public on or about the work performed under this contract. He shall arrange his work and conduct his operations in such manner as will cause the least possible obstruction and inconvenience to public travel, and shall give reasonable notice to the Engineer before closing any street or highway to traffic. Unless otherwise provided in the Specifications, the Contractor shall maintain and keep in good condition during construction operations all existing streets, highways, alleys, sidewalks, crosswalks, culverts, and drainage structures which may be used by the public, or by the residents along the line of work, whether within or outside of the limits of the work covered by the contract. The Contractor shall provide suitable detours around any portion of the work which may be closed to traffic during construction, and shall maintain such detours in good condition. The Contractor shall not be entitled to any separate or additional compensation because of any such maintenance work, or because of the existence of detours, or because of interference with traffic caused thereby.

12. ACCIDENT PREVENTION. Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, and building and construction codes shall be observed. Machinery and equipment shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, unless otherwise provided in the Specifications. Where necessary, in the interest of safety, or where required by law, ordinance, or these specifications, the Contractor shall furnish and maintain such fences, temporary railings, barricades, canopies, tents, lights, watchmen, and shall take such other measures as may be reasonably required to prevent accidents or damage to property and to avoid interruption to the progress of the work. All such measures shall be subject to the approval of the Engineer, but the latter's approval shall not relieve the Contractor of his responsibility hereunder. All trenches, excavations, or other hazardous conditions must be adequately guarded with barricades, lights, and signs. The Contractor shall comply with all applicable laws, ordinances, rules, and regulations of the State of Florida and the local municipality or county relative to excavation, barricades, warning signs, and lights to be maintained on highways, streets, roads, and other public places. In case of emergency affecting the safety or protection of persons or the work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury. Any compensation claimed by the Contractor on account of emergency work shall be promptly reported to the Engineer for determination as to its reasonableness, before payment is made therefor. The Contractor shall not be entitled to any compensation for emergency work unless it shall have first submitted to the Engineer a written claim for such compensation within ten (10) days after the date upon which the emergency occurred, and unless such claim is based upon instructions issued by the Engineer at the time of the emergency.

13. CONFLICT BETWEEN PLANS AND SPECIFICATIONS. Whenever a conflict appears between the plans and the specifications, the Contractor shall ask for written instructions from the Engineer before proceeding with the work affected thereby. The Engineer shall issue such instructions with reasonable promptness, and if the Contractor shall perform any work involving such conflict without asking for such instructions, he shall perform such work as may be required by the Engineer at the Contractor's own expense. Figured dimensions shall govern in all cases where they are given, and large scale drawings shall govern as to small details. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of any difference between the drawings and specifications, the matter shall be immediately submitted to the Engineer, without whose decision no further work shall be done on the items involved.

14. NOTICE REGARDING LOCATION OF WORK. Should the Contractor desire damage to any adjacent property, he will be required to secure written permission from the owner of such property before proceeding with the work. The Contractor shall not enter upon private property for any purpose without obtaining such permission. The Contractor shall be responsible for any damage to property resulting from his failure to locate the work in accordance with the contract, or from his failure to exercise reasonable care in removing or replacing his work. He shall repair, at his own expense, all damage caused by his operations, and shall make restoration of property damaged during the prosecution of the work in a manner acceptable to the owner of the property and the Engineer. The Contractor will not be responsible for damage to property which is shown on the plans to be removed, or which is to be removed in the reasonable performance of the work, unless the removal of such property is provided for under another item in the contract. The Contractor will be responsible for all damage or injury to property of any character during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or due to non-execution of the work, or resulting from defective work or the use of unsuitable materials, or by or on account of any act or omission of the Contractor or any subcontractor or other person or organization employed by the Contractor, whether such damage be to property of the Owner or to property of others. The Contractor shall not be responsible for damage due to latent defects in work performed by the Engineer or to unusual phenomena of the elements occurring after the Contractor has exercised due care in the performance of his work.

15. TESTS OF SAMPLES OF MATERIALS. The Contractor shall furnish without cost to the Owner, manufacturer's certificates of specifications, conformance of materials as may be required by the Engineer.

16. AS-BUILT DRAWINGS. The Contractor shall provide the Engineer with accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall keep a record on the plans, or on a duplicate set of prints, of changes in the work which vary from the plans. Control points shall be established by the Contractor, and the location of all valves, fittings, manholes, and other appurtenances shall be referenced to such control points. Such information shall be delivered to the Engineer before the work is accepted by the Owner.

17. LINE AND GRADE. Line and grade shall be furnished by the Engineer. Batter boards will be placed by the Contractor at such intervals as may be required by the Engineer, and the Contractor shall maintain the batter boards in place until they are no longer required. Any batter boards disturbed by the Contractor shall be replaced by him at his own expense. Excavation and trenching shall not be carried below the depth indicated by the Engineer. Any excavation made below the depth indicated shall be refilled by the Contractor with suitable material, and thoroughly compacted, at his own expense. Whenever the Contractor is required to excavate below the depth indicated, he will be paid for the additional excavation at the unit price bid therefor, if any, in the Proposal, but he will not be paid for refilling the excavation with suitable material and compacting the same. Whenever the Contractor is required to excavate below the depth indicated, and to refill the excavation with concrete, he will be paid for the additional excavation at the unit price bid therefor, if any, in the Proposal, but he will not be paid for the concrete used in refilling the excavation. Whenever the Contractor excavates below the depth indicated, without instructions from the Engineer, he will refill the excavation with suitable material and compact the same, at his own expense, and he will not be paid for the excavation or refilling.

18. PARTIAL PAYMENT. Partial payment under this contract will be made to the Contractor on the basis of estimates prepared by the Engineer, as provided in the General Conditions. Such estimates will be prepared on the basis of the value of the work done during the period covered by the estimate, and the value of materials suitably stored on the site for use in the work. Payment for materials stored on the site will be made only when adequate protection from theft, weather, and other hazards is provided by the Contractor, and when the materials are adequately identified and marked for use in the work. Payment for materials stored on the site will be made only when the Contractor furnishes the Engineer with paid invoices for the materials, or such other evidence of ownership as may be required by the Engineer. Partial payments will be made on the basis of 90% of the estimated value of the work done and of the materials stored on the site, as provided above, but no such payment shall be construed to be an acceptance of any work or materials which are subsequently determined by the Engineer to be not in accordance with the requirements of the contract. All partial payments are subject to correction in the next succeeding estimate after the work or materials have been accepted by the Engineer.

19. FINAL ESTIMATE; PAYMENT AND GUARANTEE. Whenever the work to be done under this contract shall have been completed, the Contractor shall so notify the Engineer, in writing, and thereupon the Engineer shall make a final inspection of the work. If the Engineer shall find that the work has been completed in accordance with the contract, he shall so certify to the Owner, and the Contractor shall be entitled to receive the balance of the contract price within thirty (30) days after the certificate is issued by the Engineer. Before issuing the certificate for the last payment, the Engineer may require the Contractor to furnish releases or receipts in full for all claims for labor and materials which might become liens upon any part of the work, in order that the Owner may protect himself against such liens. The Contractor may furnish a bond satisfactory to the Owner, indemnifying him against any such liens, and upon the filing of such bond the Owner shall pay to the Contractor the amount withheld on account of such liens.

20. USE OF EXPLOSIVES. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. Before using explosives, the Contractor shall submit to the Engineer for approval a written statement describing the equipment, materials, methods, and safety precautions for handling and using explosives. The Contractor shall not use explosives without the approval of the Engineer, but such approval shall not relieve the Contractor of responsibility for damage resulting from their use. All explosives shall be stored in a secure manner in substantial, locked magazines, plainly marked, and shall be under the direct control of competent operators. Smoking or the use of matches or open lights shall not be permitted within fifty (50) feet of magazines or explosives in use. All explosives shall be handled with the utmost caution, and not by more than the minimum number of men required to do the work. Any explosives which may have become damaged or rendered unsafe shall not be used, but shall be destroyed in such manner as may be prescribed or approved by the Engineer. The Contractor shall keep an accurate record of explosives used, showing the amount of each kind used and the location and purpose of each use. The Contractor shall instruct all employees who will be required to use explosives in the hazards of their use, and in the proper methods to be employed in order to obtain the greatest safety. Each employee who will be required to use explosives shall be licensed by the State of Florida for the use of explosives, and shall be experienced in the use of explosives for the type of work involved.

21. PARTIAL OCCUPANCY OR USE OF WORK. Before substantial completion of the entire work, the Owner may occupy or use any completed or partially completed portion of the work which is specifically designated by the Engineer, provided such occupancy or use is consented to by the Contractor and by any public authority having jurisdiction over the work. Such occupancy or use may commence whether or not the portion of the work involved is substantially complete, provided the Contractor and the Engineer have accepted in writing the responsibilities assigned to each of them for payments, retainage, security, maintenance, insurance, and the work, and have agreed in writing concerning the period during which such occupancy or use will occur. During such period of occupancy or use, the Owner shall assume responsibility for the cost of all necessary heat, water, and utilities, and for all ordinary maintenance and operating expenses. Such occupancy or use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents.

22. CONTRACT TIME AND LIQUIDATED DAMAGES. The Contractor shall commence work under this contract on a date to be specified in a written order of the Engineer, and shall complete the work within the time therein specified, subject to such extensions of time as are provided by the General Conditions. The Contractor shall pay to the Owner the sum of $ 1 00 per day for each and every calendar day of delay beyond the time prescribed for completion of the work, and in addition to such liquidated damages, the Contractor shall pay to the Owner such additional sums as may be necessary to reimburse the Owner for additional engineering, inspection, and overhead expenses made necessary by delay in the completion of the work. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the Contractor has promptly given written notice of such delay to the Engineer and to the Owner, not later than the first working day after the occurrence of the delay: To acts or neglect of the Owner or of any employee thereof, to acts or neglect of any other contractor employed by the Owner, to fire, flood, epidemic, abnormal weather conditions, or to acts of God. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the Contractor has promptly given written notice of such delay to the Engineer and to the Owner, not later than the first working day after the occurrence of the delay: To any preference, priority or allocation order duly issued by the Government, to unforeseeable shortages of or inability to obtain materials or labor, to prohibitive embargoes, or to unusual delay in transportation. The Contractor shall not be entitled to an extension of time unless a claim is made therefor as hereinbefore specified, and a determination made by the Owner that the Contractor is entitled to an extension of time. In such event, the Owner shall grant an extension of time for such reasonable period as may be determined by the Owner. Any such extension of time shall be conditioned upon the Contractor's agreement that the period fixed therefor shall constitute the Contractor's sole remedy for the delay in question, and that he will make no claim for damages or additional compensation in connection therewith. In any judicial proceeding involving any such claim, any such determination by the Owner shall be conclusive as to the facts therein recited.

23. CONFLICT BETWEEN PLANS AND SPECIFICATIONS. Whenever a conflict appears between the plans and the specifications, the Contractor shall ask for written instructions from the Engineer before proceeding with the work affected thereby. The Engineer shall issue such instructions with reasonable promptness, and if the Contractor shall perform any work involving such conflict without asking for such instructions, he shall perform such work as may be required by the Engineer at the Contractor's own expense. Figured dimensions shall govern in all cases where they are given, and large scale drawings shall govern as to small details. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of any difference between the drawings and specifications, the matter shall be immediately submitted to the Engineer, without whose decision no further work shall be done on the items involved.

24. RESPECTIVE MATERIALS AND WORK. All materials are not concerning the requirements of the Specifications, or materials and work not covered by the Specifications, shall be of such quality as to conform to the best standard practice for the purpose intended, and shall be approved by the Engineer before they are delivered or installed. All work shall be performed in a workmanlike manner. The Contractor shall furnish to the Engineer, for his approval, a list of the names of the manufacturers proposed to be used for the various articles of equipment and materials required for the work. Such list shall be submitted within fifteen (15) days after the date of the contract, and no materials shall be purchased or work performed until the list has been approved by the Engineer. Failure to object to any material or piece of equipment on the list shall not relieve the Contractor of the obligation to furnish materials and equipment which will conform to the requirements of the Specifications. The Contractor shall not substitute any material or piece of equipment which has been approved by the Engineer for use on the work, unless such substitution has been authorized in writing by the Engineer. Requests for substitution will not be considered unless written application therefor is submitted to the Engineer within fifteen (15) days after the date of the contract, and sufficient information is furnished to allow the Engineer to determine the acceptability of the material or equipment proposed to be substituted. Each request for substitution shall include a complete description of the proposed substitute, including drawings, performance charts, and test data, and shall contain a statement setting forth any changes in other materials or equipment that will be required in the event the substitution is accepted, and the Contractor's estimate of the effect of the substitution upon the cost of other materials or equipment affected thereby. The Contractor shall furnish any additional information concerning the proposed substitution that may be required by the Engineer before the substitution will be considered. The Engineer will be the sole judge of the acceptability of any proposed substitution, and his decision shall be final. The Contractor shall not be entitled to any additional compensation or extension of time by reason of the use of any substitute approved by the Engineer, regardless of any prior commitments or expenditures made or incurred by the Contractor in connection therewith.

25. TRADEMARKS. Any reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as intending and implying the following words after such name: "or approved equal". Where the words "or approved equal" do not appear, it is intended that the article mentioned is the only one that will be satisfactory. The Contractor may offer any article, device, product, material, fixture, form or type of construction which is of equal quality and value to that mentioned, and if in the opinion of the Engineer such article, device, product, material, fixture, form or type of construction is fully equal to that named and mentioned, it may be used in the work if approved in writing by the Engineer. The Engineer may require the Contractor to furnish such evidence as may be required to enable the Engineer to judge of the equality of the article offered. Any article, device, product, material, fixture, form or type of construction which is offered for use by the Contractor shall conform substantially to the detailed description given in the Specifications for the article mentioned.

26. STORAGE OF MATERIALS. The Contractor shall provide suitable storage of all materials furnished by the Engineer or the Owner which are to be installed by the Contractor under this contract, and shall protect all such materials from damage due to the elements or to any other cause. Any such materials damaged while in the possession of the Contractor shall be repaired or replaced by the Contractor at his own expense. The Contractor shall not occupy any portion of the work site with materials or equipment to such an extent as to hinder the work of any other contractor employed by the Owner.

27. REMOVAL OF DEBRIS AND CLEANING. The Contractor shall, immediately and save harmless the Owner from all claims, demands, suits, actions, and liability of every kind, nature and description which may arise out of or be caused by the failure of the Contractor to keep the premises free from accumulations of waste material or rubbish caused by his employees or work, or by any subcontractor or his employees. In the event that the premises are not cleaned up by the Contractor within a reasonable time after receipt of written notice to do so, the Owner may have the work done by others and charge the cost thereof to the Contractor. Before final acceptance of the work by the Owner, the Contractor shall remove all temporary structures, rubbish, and waste materials resulting from his operations. He shall also remove all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site of the work clean and suitable for occupancy by the Owner. In case of failure to do so, the Engineer may cause the work to be done and charge the cost thereof to the Contractor.

28. FINAL CLEANING. The Contractor shall make arrangements with the local electrical power company for the temporary service which may be used by the various trades during construction. The Contractor shall make arrangements with the local water department for the temporary water service which may be used by the various trades during construction. The Contractor shall pay all charges for temporary services and for water used by the various trades during construction, unless otherwise provided in the Specifications. The Contractor shall maintain adequate sanitary conveniences for the use of persons employed on the work, of such character and in such locations as may be directed by the Engineer, and shall enforce the use thereof. The Contractor shall not allow any person employed on the work to commit a nuisance on the premises. The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the Department of Environmental Regulation.

29. SANITARY PROVISIONS. The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the Department of Environmental Regulation or of the Engineer.

30. USE OF EXPLOSIVES. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. Before using explosives, the Contractor shall submit to the Engineer for approval a written statement describing the equipment, materials, methods, and safety precautions for handling and using explosives. The Contractor shall not use explosives without the approval of the Engineer, but such approval shall not relieve the Contractor of responsibility for damage resulting from their use. All explosives shall be stored in a secure manner in substantial, locked magazines, plainly marked, and shall be under the direct control of competent operators. Smoking or the use of matches or open lights shall not be permitted within fifty (50) feet of magazines or explosives in use. All explosives shall be handled with the utmost caution, and not by more than the minimum number of men required to do the work. Any explosives which may have become damaged or rendered unsafe shall not be used, but shall be destroyed in such manner as may be prescribed or approved by the Engineer. The Contractor shall keep an accurate record of explosives used, showing the amount of each kind used and the location and purpose of each use. The Contractor shall instruct all employees who will be required to use explosives in the hazards of their use, and in the proper methods to be employed in order to obtain the greatest safety. Each employee who will be required to use explosives shall be licensed by the State of Florida for the use of explosives, and shall be experienced in the use of explosives for the type of work involved.

31. PARTIAL PAYMENT. Partial payment under this contract will be made to the Contractor on the basis of estimates prepared by the Engineer, as provided in the General Conditions. Such estimates will be prepared on the basis of the value of the work done during the period covered by the estimate, and the value of materials suitably stored on the site for use in the work. Payment for materials stored on the site will be made only when adequate protection from theft, weather, and other hazards is provided by the Contractor, and when the materials are adequately identified and marked for use in the work. Payment for materials stored on the site will be made only when the Contractor furnishes the Engineer with paid invoices for the materials, or such other evidence of ownership as may be required by the Engineer. Partial payments will be made on the basis of 90% of the estimated value of the work done and of the materials stored on the site, as provided above, but no such payment shall be construed to be an acceptance of any work or materials which are subsequently determined by the Engineer to be not in accordance with the requirements of the contract. All partial payments are subject to correction in the next succeeding estimate after the work or materials have been accepted by the Engineer. If the Contractor shall have completed any portion of the work to be performed under the Contract Documents, and if the Engineer shall have failed to issue a certificate for payment for such work within thirty (30) days after the date upon which the Contractor makes application therefor, the Contractor may stop work under the Contract Documents until he has been paid all amounts then due him, in addition to other amounts to which he may be entitled under the Contract Documents, upon giving seven (7) days' written notice to the Owner and the Engineer. The Contractor may also stop work or terminate the Contract in accordance with the provisions of Paragraph 14.1 of the General Conditions.

32. FINAL ESTIMATE; PAYMENT AND GUARANTEE. Whenever the work to be done under this contract shall have been completed, the Contractor shall so notify the Engineer, in writing, and thereupon the Engineer shall make a final inspection of the work. If the Engineer shall find that the work has been completed in accordance with the contract, he shall so certify to the Owner, and the Contractor shall be entitled to receive the balance of the contract price within thirty (30) days after the certificate is issued by the Engineer. Before issuing the certificate for the last payment, the Engineer may require the Contractor to furnish releases or receipts in full for all claims for labor and materials which might become liens upon any part of the work, in order that the Owner may protect himself against such liens. The Contractor may furnish a bond satisfactory to the Owner, indemnifying him against any such liens, and upon the filing of such bond the Owner shall pay to the Contractor the amount withheld on account of such liens.

33. CONFLICT BETWEEN PLANS AND SPECIFICATIONS. Whenever a conflict appears between the plans and the specifications, the Contractor shall ask for written instructions from the Engineer before proceeding with the work affected thereby. The Engineer shall issue such instructions with reasonable promptness, and if the Contractor shall perform any work involving such conflict without asking for such instructions, he shall perform such work as may be required by the Engineer at the Contractor's own expense. Figured dimensions shall govern in all cases where they are given, and large scale drawings shall govern as to small details. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of any difference between the drawings and specifications, the matter shall be immediately submitted to the Engineer, without whose decision no further work shall be done on the items involved.

34. RESPECTIVE MATERIALS AND WORK. The Owner will furnished only every qualifying document whether or not the materials and work are in accordance with the requirements of the Specifications. Failure to reject or condemn defective work or materials shall not be construed to be an acceptance of the work or materials. The Contractor shall employ competent superintendence, and shall keep on the work at all times during its progress a competent foreman who shall represent him in his absence, and all directions given to such foreman shall be as binding as if given to the Contractor. The Contractor shall employ only competent workmen, and shall not employ any person who is unfit or unskilled for the work assigned to him. The Contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. The Contractor shall not permit any person employed by him or by any subcontractor to use intoxicating liquors or narcotics while engaged on the work, or to be under the influence of the same while on the premises where the work is being performed, and shall not permit any person who is addicted to the use of intoxicating liquors or narcotics to be employed on the work. The Contractor shall not employ any unfit person or anyone not skilled in the work assigned to him. The Contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

35. SUPERVISION OF WORK. The Engineer or any of his assistants will be authorized to visit and inspect the work and the materials used or to be used therein, but the presence or absence of the Engineer or his assistants shall not relieve the Contractor of his responsibility to perform the work in accordance with the plans and specifications. The Contractor shall give the Engineer ample notice of when he intends to begin the various operations of the work, so that the Engineer may arrange for adequate inspection. Work done without adequate inspection may be ordered removed and replaced at the Contractor's expense. Unsatisfactory work and materials may be rejected by the Engineer at any time before the completion and acceptance of the work, notwithstanding that the Engineer may have previously passed the work or materials. The Contractor shall remove rejected work and materials from the premises and shall make good all work damaged or destroyed thereby, at his own expense.

36. PARTIAL USE OF PREMISES. Prior to completion of the entire work, the Owner may occupy or use any completed or partially completed portion of the work which is specifically designated by the Engineer, provided such occupancy or use is consented to by the Contractor and by any public authority having jurisdiction over the work. Such occupancy or use may commence whether or not the portion of the work involved is substantially complete, provided the Contractor and the Engineer have accepted in writing the responsibilities assigned to each of them for payments, retainage, security, maintenance, insurance, and the work, and have agreed in writing concerning the period during which such occupancy or use will occur. During such period of occupancy or use, the Owner shall assume responsibility for the cost of all necessary heat, water, and utilities, and for all ordinary maintenance and operating expenses. Such occupancy or use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents.

37. CONTRACT TIME AND LIQUIDATED DAMAGES. The Contractor shall commence work under this contract on a date to be specified in a written order of the Engineer, and shall complete the work within the time therein specified, subject to such extensions of time as are provided by the General Conditions. The Contractor shall pay to the Owner the sum of $ 1 00 per day for each and every calendar day of delay beyond the time prescribed for completion of the work, and in addition to such liquidated damages, the Contractor shall pay to the Owner such additional sums as may be necessary to reimburse the Owner for additional engineering, inspection, and overhead expenses made necessary by delay in the completion of the work. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the Contractor has promptly given written notice of such delay to the Engineer and to the Owner, not later than the first working day after the occurrence of the delay: To acts or neglect of the Owner or of any employee thereof, to acts or neglect of any other contractor employed by the Owner, to fire, flood, epidemic, abnormal weather conditions, or to acts of God. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the Contractor has promptly given written notice of such delay to the Engineer and to the Owner, not later than the first working day after the occurrence of the delay: To any preference, priority or allocation order duly issued by the Government, to unforeseeable shortages of or inability to obtain materials or labor, to prohibitive embargoes, or to unusual delay in transportation. The Contractor shall not be entitled to an extension of time unless a claim is made therefor as hereinbefore specified, and a determination made by the Owner that the Contractor is entitled to an extension of time. In such event, the Owner shall grant an extension of time for such reasonable period as may be determined by the Owner. Any such extension of time shall be conditioned upon the Contractor's agreement that the period fixed therefor shall constitute the Contractor's sole remedy for the delay in question, and that he will make no claim for damages or additional compensation in connection therewith. In any judicial proceeding involving any such claim, any such determination by the Owner shall be conclusive as to the facts therein recited.

38. FINAL ESTIMATE; PAYMENT AND GUARANTEE. Whenever the work to be done under this contract shall have been completed, the Contractor shall so notify the Engineer, in writing, and thereupon the Engineer shall make a final inspection of the work. If the Engineer shall find that the work has been completed in accordance with the contract, he shall so certify to the Owner, and the Contractor shall be entitled to receive the balance of the contract price within thirty (30) days after the certificate is issued by the Engineer. Before issuing the certificate for the last payment, the Engineer may require the Contractor to furnish releases or receipts in full for all claims for labor and materials which might become liens upon any part of the work, in order that the Owner may protect himself against such liens. The Contractor may furnish a bond satisfactory to the Owner, indemnifying him against any such liens, and upon the filing of such bond the Owner shall pay to the Contractor the amount withheld on account of such liens.

39. RESPONSIBILITY FOR CORRECTION OF WORK. The Contractor shall promptly remove from the premises all work rejected by the Engineer for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement. All claims or notices received by the Contractor during any guarantee period and relating to work performed during the guarantee period shall be immediately transmitted to the Engineer. If the Contractor fails to remove and replace any work or material rejected by the Engineer, or fails to make any necessary repairs in any work or material in accordance with the requirements of the Contract Documents, or fails to perform the work in accordance with the Contract Documents, within ten (10) days after written notice from the Engineer, the Owner may remove and replace the rejected work or material and perform all work necessary to make any repairs, and may store the materials salvaged therefrom, and may charge the cost of the foregoing to the Contractor, who shall pay the same on demand. If the Contractor fails to pay such costs within thirty (30) days after demand, the Owner may withhold all or any portion of such costs from any payment then or thereafter due the Contractor. The Contractor shall also bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement of his rejected work. The Contractor's obligations under this paragraph shall be in addition to any other obligation or liability of the Contractor under the Contract Documents or at law or in equity.

40. ACCESS TO WORK. The Engineer and his representatives shall at all times have access to the work during its construction and preparation at the shop of the Contractor or of his subcontractors, and the Contractor shall provide proper facilities for such access and observation of the work and also for any inspection required by the Engineer. If the Specifications or the Engineer's instructions require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for observation or testing. If any such work is covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense. Re-examination of questioned work may be ordered by the Engineer, and if so ordered the work must be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay such cost, unless it is found that such inaccuracy was caused by the instructions of the Engineer, in which case the Owner shall pay such cost.

41. FINAL ESTIMATE; PAYMENT AND GUARANTEE. Whenever the work to be done under this contract shall have been completed, the Contractor shall so notify the Engineer, in writing, and thereupon the Engineer shall make a final inspection of the work. If the Engineer shall find that the work has been completed in accordance with the contract, he shall so certify to the Owner, and the Contractor shall be entitled to receive the balance of the contract price within thirty (30) days after the certificate is issued by the Engineer. Before issuing the certificate for the last payment, the Engineer may require the Contractor to furnish releases or receipts in full for all claims for labor and materials which might become liens upon any part of the work, in order that the Owner may protect himself against such liens. The Contractor may furnish a bond satisfactory to the Owner, indemnifying him against any such liens, and upon the filing of such bond the Owner shall pay to the Contractor the amount withheld on account of such liens.

42. ASSIGNMENTS. The Contractor shall not assign the whole or any part of this contract or any moneys due or to become due hereunder without the previous written consent of the Owner. In case such consent is given, the Contractor will be permitted to assign only upon the condition that all moneys due or to become due shall be subject to all prior liens for services rendered or materials supplied for the performance of the work called for in this contract.

43. EXPENSE AND RESPONSIBILITY FOR TESTING. The expense of testing materials and equipment specified in the Contract Documents shall be borne by the Contractor, except as otherwise specifically stated in the Contract Documents. The Contractor shall furnish the Engineer with certificates of manufacture or other satisfactory proof as to the quality and suitability of materials and equipment proposed to be incorpor

NOTE # 3" MIN DEPTH OF LINE&COLOR W/ 6" SURFACE MARKING MATERIAL REQUIRED *

C. *SOIL:* Soil shall consist of the material existing in the area to be paved or approved portion soil cut or a combination of these materials proportioned and approved by Engineer.

B. *WATER:* Water must be relatively clean and free from material amounts of alkalies, acid or organic matter. A potable supply is satisfactory. Non water may be used when fresh water is not available, if approved by the Engineer. The same water to be used in construction shall be used to establish a job mix design.

A. *MATERIALS:* ASPHALT CEMENT: Portland cement shall comply with the latest specifications for Portland Cement, AASHTO M-85, M-134, M-151 ASTM C-150, C-175, C-201, C-701 Type I (or the type specified). One (1) cubic foot of Portland Cement shall be considered to weigh 94 pounds.

SECTION 2

SPECIFICATION

SHT NO 13 of 13

JOB NO 1-0168

STEVE SZASZ, VICE PRES SUNLOCK, INC.
101 GARLAN CIRCLE,
PALM HARBOR, FL 34683

1059 Broadway, Suite A
DUNEDIN, Florida 34698
813-734-7020

DUNEDIN ENGINEERING & SURVEYING, INC.

CURLEW LANDINGS

"NOT VALID UNLESS IMPRINTED WITH EMBOSSED SEAL."

Approved By

FLA. REG. ENGINEER
FLA. REG. SURVEYOR

NO	REVISION	DATE

DESIGNED DFR
DRAWN DFR
FLD BOOK

SCALE: None
JOB NO. 1-0168
SEC. TWP. RNG.

6-21-88

1. *SCOPE:* Work performed as described herein shall be paid for at the unit price bid for each manhole complete in place.

(c) *PAYMENT:* Work performed as described herein shall be paid for at the unit price bid for each manhole complete in place.

(b) *PROCEDURE:* See 1-5 "Storm Sewer Inlets" and/or 1-7 "Manholes".

1-9 *MINOR CHANGES:* Manholes may be constructed to befor with straight walls or with smooth changes in direction not to exceed 90 degrees. Changes in size and grade of channels shall be made gradually and in a smooth manner. Changes in direction of flow shall be made directly into bottom of manhole with proper curves to the outlet. Invert channels shall be formed and built with brick or concrete into concrete manhole shall build-up brick bitch and mortared smooth and taper out to half size of outlet pipe. Where more than one pipe enters a manhole, the pipes shall be placed directly opposite each other, at the same elevation, and where practicable, in a straight line through the manhole.

1-10. *MASONRY BASE:* This work shall consist of constructing a roadway base course on prepared surface in accordance with these specifications and in conformance to the lines, grades, width and depth shown on the drawings.

(b) *DESCRIPTION:* All masonry sewer manholes which have sewers entering with a free drop of which invert elevation is 24 inches or more above the invert of the outlet sewer shall have the inside dimensions of the drop section not less than 4 feet in diameter. Where the average variation in one day's work exceeds 1/2 inch or where the maximum variation exceeds 1 inch, the use of improper materials shall be removed and replaced and the work corrected at the Contractor's expense. Changes in grade shall be made gradually and in a smooth manner. Changes in direction of flow shall be made directly into bottom of manhole with proper curves to the outlet. Invert channels shall be formed and built with brick or concrete into concrete manhole shall build-up brick bitch and mortared smooth and taper out to half size of outlet pipe. Where more than one pipe enters a manhole, the pipes shall be placed directly opposite each other, at the same elevation, and where practicable, in a straight line through the manhole.

(a) *DESCRIPTION:* Construction methods are as follows:

1. *BRICK-UP MANHOLES:* Manholes may be constructed of brick with walls 4ACE (12cm) thick except where sewers are shown on the drawings. Invert channels shall be constructed smooth and to the grade and shape shown on the drawings. Changes in size and grade of channels shall be made gradually and in a smooth manner. Changes in direction of flow shall be made directly into bottom of manhole with proper curves to the outlet. Invert channels shall be formed and built with brick or concrete into concrete manhole shall build-up brick bitch and mortared smooth and taper out to half size of outlet pipe. Where more than one pipe enters a manhole, the pipes shall be placed directly opposite each other, at the same elevation, and where practicable, in a straight line through the manhole.

M. *CURING OF CONCRETE:* The concrete will not be permitted to drive heavy equipment on the pipe. Methods of curing shall have been demonstrated satisfactorily to the Engineer before concreting is started. Factors to be considered are the natural moisture content, the ambient temperature, the rate of strength development, and the method of placing the concrete. Concrete shall be cured by keeping the surface moist by means of burlap, cotton mats, or other approved materials for a period of not less than seven days. Curing shall begin immediately after the concrete has been placed and finished. Curing shall be continued for a period of 7 days. Concrete shall be considered adequately cured when tests made in accordance with ASTM C-42 indicate that the concrete has reached 70% of the specified strength. Curing shall be continued until adequate strength is reached.

L. *CONCRETE:* Concrete shall have a minimum 7-day compressive strength of 3000 p.s.i. at the end of 28 days. Concrete shall have a slump of not more than 4 inches nor less than 2 inches as determined by the slump test (ASTM designation C-143). Concrete shall be placed in the forms in such a manner as to prevent the formation of voids or honeycombed areas. Concrete shall be thoroughly compacted by means of vibrators operated within the concrete mass. Vibrators shall not be used to move concrete within the forms. Vibrators shall not be applied to the forms or reinforcing steel. Vibrators shall be inserted and withdrawn at points not more than 18 inches apart. Vibrators shall not be operated for more than 10 seconds in any one location. Vibrators shall be used by experienced workmen only.

K. *CONCRETE CURB:* Concrete curb shall be placed on a prepared base course. Forms shall be set to the required line and grade and shall be held rigidly in place by stakes. Concrete shall be placed in the forms and thoroughly compacted by spading and tamping. Concrete shall be struck off to the proper cross section by means of a template. Curb shall be finished with a wood float and edged to a radius of 1/2 inch. Curb shall be cured by the application of a curing compound. Curb shall be constructed in sections 10 feet long. Expansion joints shall be placed at intervals not to exceed 40 feet. Contraction joints shall be placed at intervals not to exceed 10 feet. Expansion joints shall be 1/2 inch thick and shall be filled with premolded bituminous material. Contraction joints shall be formed by cutting the concrete to a depth of 1/3 the thickness of the curb with a jointing tool. Curb shall be constructed with a 6 inch reveal.

J. *CONCRETE SIDEWALKS:* Concrete sidewalks shall be placed on a prepared subgrade. Forms shall be set to the required line and grade and shall be held rigidly in place by stakes. Concrete shall be placed in the forms and thoroughly compacted by spading and tamping. Concrete shall be struck off to the proper cross section by means of a template. Sidewalks shall be finished with a wood float and edged to a radius of 1/2 inch. Sidewalks shall be cured by the application of a curing compound. Sidewalks shall be constructed in sections 5 feet long. Expansion joints shall be placed at intervals not to exceed 40 feet. Contraction joints shall be placed at intervals not to exceed 5 feet. Expansion joints shall be 1/2 inch thick and shall be filled with premolded bituminous material. Contraction joints shall be formed by cutting the concrete to a depth of 1/3 the thickness of the sidewalk with a jointing tool. Sidewalk shall be constructed with a 6 inch reveal.

I. *CONCRETE:* Concrete shall have a minimum 7-day compressive strength of 3000 p.s.i. at 28 days (ASTM designation C-39). Concrete shall be placed in the forms in such a manner as to prevent the formation of voids or honeycombed areas. Concrete shall be thoroughly compacted by means of vibrators operated within the concrete mass. Vibrators shall not be used to move concrete within the forms. Vibrators shall not be applied to the forms or reinforcing steel. Vibrators shall be inserted and withdrawn at points not more than 18 inches apart. Vibrators shall not be operated for more than 10 seconds in any one location. Vibrators shall be used by experienced workmen only.

H. *REINFORCEMENT:* Reinforcement shall be placed in the forms in such a manner as to prevent the formation of voids or honeycombed areas. Concrete shall be thoroughly compacted by means of vibrators operated within the concrete mass. Vibrators shall not be used to move concrete within the forms. Vibrators shall not be applied to the forms or reinforcing steel. Vibrators shall be inserted and withdrawn at points not more than 18 inches apart. Vibrators shall not be operated for more than 10 seconds in any one location. Vibrators shall be used by experienced workmen only.

G. *CONCRETE:* Concrete shall have a minimum 7-day compressive strength of 3000 p.s.i. at 28 days (ASTM designation C-39). Concrete shall be placed in the forms in such a manner as to prevent the formation of voids or honeycombed areas. Concrete shall be thoroughly compacted by means of vibrators operated within the concrete mass. Vibrators shall not be used to move concrete within the forms. Vibrators shall not be applied to the forms or reinforcing steel. Vibrators shall be inserted and withdrawn at points not more than 18 inches apart. Vibrators shall not be operated for more than 10 seconds in any one location. Vibrators shall be used by experienced workmen only.

F. *TESTS:* The owner shall be responsible for the cost of all testing.

E. *REPLACEMENT OF CEMENT:* The Contractor will not be permitted to delay heavy equipment on the pipe. The Contractor shall not be permitted to delay the placement of cement for more than 30 days after delivery to the site. Cement which has been contaminated by moisture or has been in storage for more than 30 days shall not be used in the work. Where the average variation in one day's work exceeds 1/2 inch or where the maximum variation exceeds 1 inch, the use of improper materials shall be removed and replaced and the work corrected at the Contractor's expense. The Contractor shall receive no additional compensation for such corrections nor for additional cement required.

(b) *PROCEDURE:* Asphalt cement shall be used for the unit price bid per square yard of asphalt concrete used. Price shall include equipment, labor, tools, hauling asphaltic concrete used. Price shall include equipment, labor, tools, hauling and all incidentals necessary to complete the work.

(c) *PAYMENT:* Asphaltic Concrete shall be paid for at the unit price bid per square yard complete in place.

D. *CEMENT:* Portland cement shall be applied at the rate of 50 pounds per square yard. The use of improper materials shall be removed and replaced at the Contractor's expense. No processing of cement shall be started until all tests on the soil to be used have been completed and approved by the Engineer. Cement shall be spread over the prepared soil base by an approved method. Cement shall be scattered uniformly over the soil to the proper depth. Cement shall not be spread when the wind velocity is greater than 15 miles per hour. Cement shall be mixed with the soil by means of a rotary mixer. The mixing shall continue until the mixture is uniform in color and free from streaks of cement. Water shall be added during the mixing operation to bring the mixture to optimum moisture content. Compaction shall be started immediately after the mixing and shall be completed within two hours. Compaction shall be accomplished by means of sheepsfoot rollers, pneumatic tired rollers, or vibratory compactors. Rolling shall continue until the entire depth of the mixture has been thoroughly compacted and until the surface is free from ridges, irregularities, or depressions. Finishing shall be accomplished by means of a blade grader. Finishing shall be completed within two hours after the addition of water. Curing shall be started immediately after finishing operations have been completed. Curing shall be accomplished by the application of a bituminous material at the rate of 0.2 gallons per square yard. Curing shall be maintained for a period of seven days. Traffic shall be excluded from the area during the curing period.

C. *SOIL:* Soil shall consist of the material existing in the area to be paved or approved portion soil cut or a combination of these materials proportioned and approved by Engineer.

B. *WATER:* Water must be relatively clean and free from material amounts of alkalies, acid or organic matter. A potable supply is satisfactory. Non water may be used when fresh water is not available, if approved by the Engineer. The same water to be used in construction shall be used to establish a job mix design.

A. *MATERIALS:* ASPHALT CEMENT: Portland cement shall comply with the latest specifications for Portland Cement, AASHTO M-85, M-134, M-151 ASTM C-150, C-175, C-201, C-701 Type I (or the type specified). One (1) cubic foot of Portland Cement shall be considered to weigh 94 pounds.

SECTION 2

SPECIFICATION

SHT NO 13 of 13

JOB NO 1-0168

STEVE SZASZ, VICE PRES SUNLOCK, INC.
101 GARLAN CIRCLE,
PALM HARBOR, FL 34683

1059 Broadway, Suite A
DUNEDIN, Florida 34698
813-734-7020

DUNEDIN ENGINEERING & SURVEYING, INC.

CURLEW LANDINGS

"NOT VALID UNLESS IMPRINTED WITH EMBOSSED SEAL."

Approved By

FLA. REG. ENGINEER
FLA. REG. SURVEYOR

NO	REVISION	DATE

DESIGNED DFR
DRAWN DFR
FLD BOOK

SCALE: None
JOB NO. 1-0168
SEC. TWP. RNG.

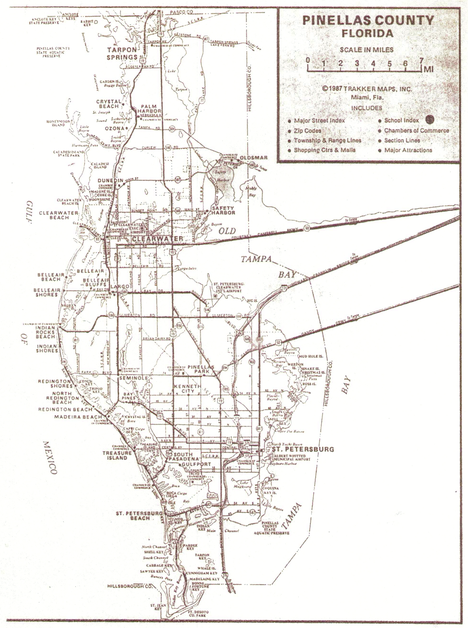
6-21-88

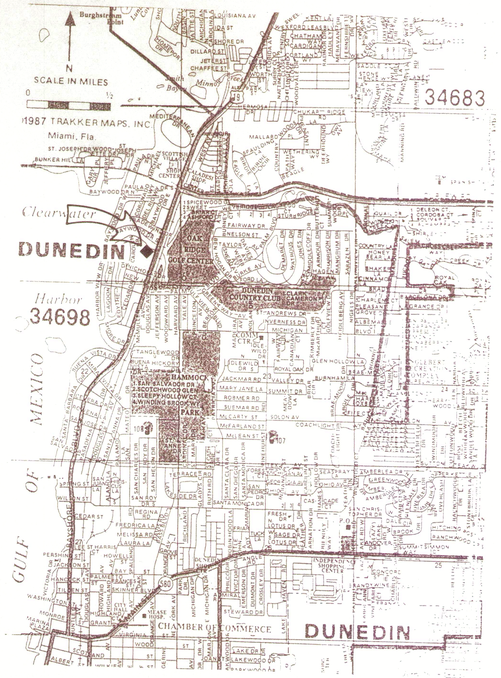
CURLEW LANDINGS

for:

Sunlock, inc.

Steve Szasz, V. P.
101 Garlan Circle
PALM HARBOR, Fl 34683
813 786 1497





DFR ENGINEERING inc.
design ★ engineering ★ survey
1059 Broadway, Suite A DUNEDIN, Florida 34698
813-734-7020

SHEET INDEX

No.	TITLE
1	COVER SHEET
2	OVERALL SITE PLAN
3	GEOMETRY
4	LANDSCAPE PLAN
5	SANTARY SEWER AND WATER DISTR.
6	PAVING AND DRAINAGE
7	HYDROGRAPH
8	PAVING DETAILS
9	DRAINAGE STRUCTURES- DETAILS
10	WATER DISTRIBUTION - DETAILS
11	SANITARY STRUCTURES - DETAILS
12	SPECIFICATIONS - SHEET 1
13	SPECIFICATIONS - SHEET 2

APPROVALS FROM THE CITY OF DUNEDIN ARE SUBJECT TO AVAILABILITY OF SEWER AND WATER FACILITIES. ALL BUILDING PERMITS WILL BE GRANTED ON A FIRST COME, FIRST SERVED BASIS UNTIL SUCH TIME AS THE CAPACITY OF THE SYSTEM IS REACHED.

APPROVED
City of Dunedin

This approval only represents that the plans appear to meet the requirements of current city ordinances. No certification of safety or good design is to be inferred from this approval or any inspections made by city personnel. This does not constitute indication of or compliance with good engineering design or specifications other than apparent conformance with the adopted laws, ordinances, and regulations of the City of Dunedin. The Engineer of Record shall be responsible for all details of engineering, including tests and inspections. Before services can be rendered or maintenance accepted, said engineer shall file with the Public Works Director a certificate of design and a certificate of completion, together with two sets of "as built" plans, certifying that the installations have been accomplished in accordance with the plans and specifications or revisions thereto in accordance with City ordinances, that county, and state agencies have approved such installation for use; and that all required tests and inspections have been conducted.
This is not a permit to start construction. The same shall be obtained from the City of Dunedin upon presentation of evidence that Administrative approval has been granted and that required county and state permits have been obtained.

Engineering Section	DATE
*	9/10/98

*Conditions of Approval on Plans In Red.

DUNEDIN FIRE DEPARTMENT
DIVISION OF FIRE PREVENTION
These plans consisting of 13 sheets are approved only on condition that every applicable section of the Fire Prevention Code shall be complied with.
Date 10-4-98 Signed

8-23-88