GENERAL NOTES

1. RETENTION/DETENTION AREAS MUST BE STABILIZED WITH SOD UNLESS AN ALTERNATIVE METHOD IS SPECIFICALLY PERMITTED PRIOR TO PLAN APPROVAL. NO ORGANIC MULCH WILL BE PERMITTED IN OR ADJOINING RETENTION/DETENTION AREA.
2. THE PROJECT OWNER IS RESPONSIBLE FOR THE PERPETUAL MAINTENANCE OF ALL FEATURES OF THE SURFACE WATER MANAGEMENT SYSTEM AS OUTLINED ON THE DRAINAGE PLAN.
3. ALL PAVEMENT GRADES SHOWN ARE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
4. REMOVE/SCRAPE ALL EXISTING LIMEROCK FROM THE PORTION OF THE SITE THAT HAS BEEN HISTORICALLY USED FOR PARKING.
5. THE SITE DEVELOPMENT CONTRACTOR SHALL NOTIFY THE CITY OF NAPLES FOR AN INSPECTION OF THE UNDERGROUND STORMWATER RETENTION SYSTEM PRIOR TO BACKFILL.
6. ALL ADS PERFORATED PIPES TO BE WRAPPED WITH A NYLON SOCK TO PREVENT FINES FROM CLOGGING UP THE INLET HOLES.
7. RETENTION AND EXFILTRATION SYSTEMS MUST BE BUILT OVER MATERIALS WITH A MINIMUM INFILTRATION RATE OF 2 IN/HR. TO ALLOW FOR PERCOLATION.
8. THERE IS NO KNOWN STORMWATER MANAGEMENT ON THE EXISTING SITE.
9. CONNECTIONS FOR RAINWATER LEADER ARE CONCEPTUAL. FINAL LOCATIONS TO BE COORDINATED WITH MEP AND ARCHITECT DURING BUILDING PERMIT.

CONTRIBUTORY BASIN LAND USE SUMMARY

PRE-DEVELOPMENT:

USE	ACRES	% OF SITE
IMPERVIOUS AREA		
ROOF/COVERED WALK	0.93 ACRES	20.9%
TENNIS & BASKETBALL COURTS/TRACTS	0.00 ACRES	0.0%
POOL/WATER FEATURE	0.07 ACRES	1.6%
PAVEMENT/SIDEWALKS/ PAVERS/CONCRETE	2.37 ACRES	53.1%
TOTAL IMPERVIOUS AREA	3.37 ACRES	75.5%
PERVIOUS AREA		
DRY RETENTION	0.00 ACRES	0.0%
OPEN SPACE/GREEN AREA	1.09 ACRES	24.5%
TOTAL PERVIOUS AREA	1.09 ACRES	24.5%
TOTAL BASIN AREA	4.46 ACRES	100.0%

POST-DEVELOPMENT:

USE	ACRES	% OF SITE
IMPERVIOUS AREA		
ROOF/COVERED WALK	0.75 ACRES	16.8%
PARKING STRUCTURE	0.47 ACRES	10.5%
POOL/WATER FEATURE	0.07 ACRES	1.6%
PAVEMENT/SIDEWALKS/ PAVERS/CONCRETE	1.99 ACRES	44.6%
TOTAL IMPERVIOUS AREA	3.28 ACRES	73.5%
PERVIOUS AREA		
DRY RETENTION	0.00 ACRES	0.0%
OPEN SPACE/GREEN AREA	1.18 ACRES	26.5%
TOTAL PERVIOUS AREA	1.18 ACRES	26.5%
TOTAL BASIN AREA	4.46 ACRES	100.0%

* THERE IS A NET REDUCTION IN IMPERVIOUS AREA DUE TO THE NEW DEVELOPMENT:

PRE-DEVELOPMENT CONDITIONS: 3.37 ACRES OF IMPERVIOUS AREA
POST-DEVELOPMENT CONDITIONS: 3.28 ACRES OF IMPERVIOUS AREA

=> REDUCTION OF 0.09 ACRES ~ 3,900 S.F.

WATER QUANTITY CALCULATIONS (PRE/POST ANALYSIS)

PEAK DISCHARGE RATE
25-YEAR 3 DAY RAINFALL STORM EVENT

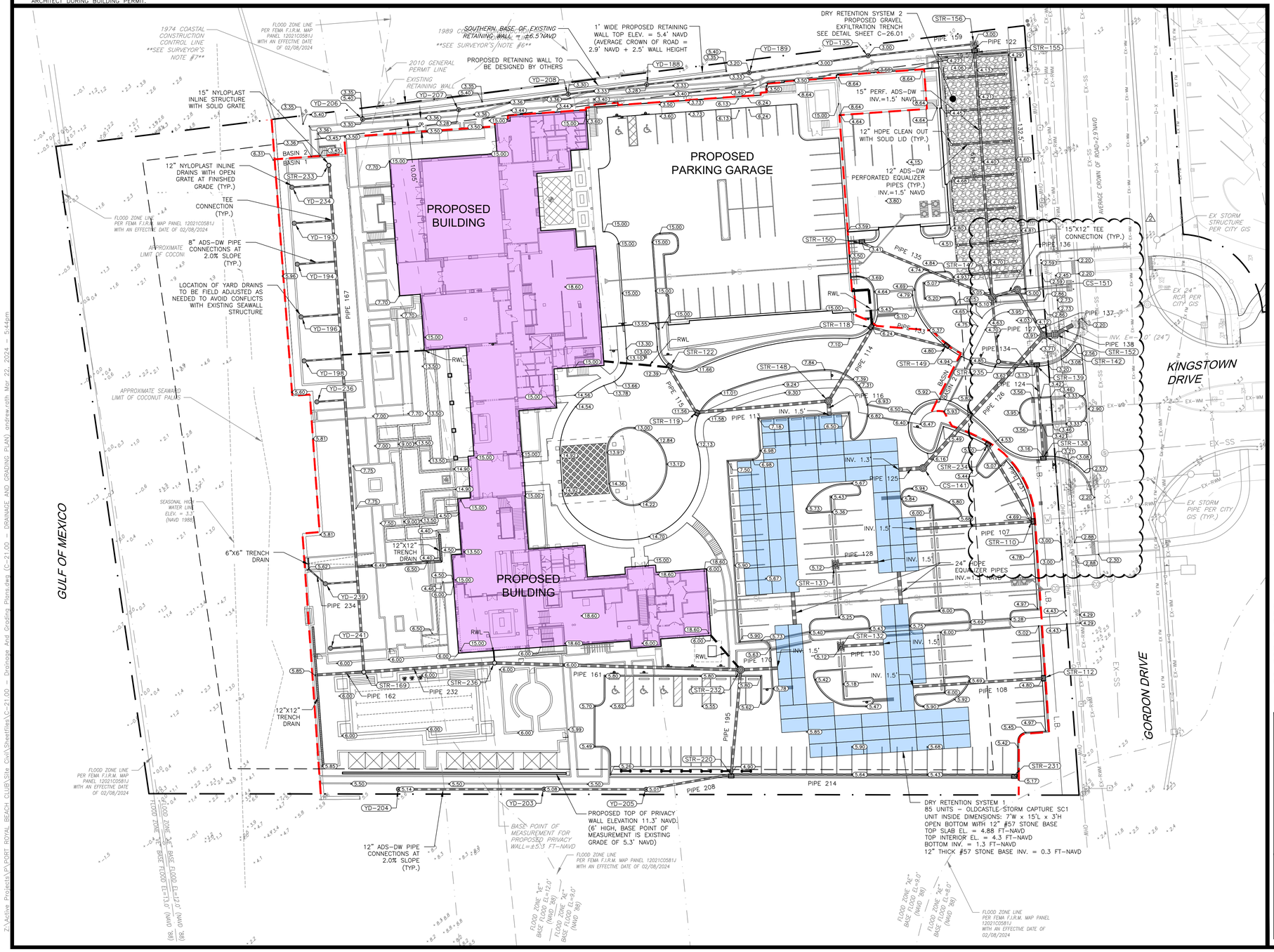
PRE-DEVELOPMENT CONDITIONS	21.93 CFS
POST-DEVELOPMENT CONDITIONS	20.79 CFS

WATER MANAGEMENT SUMMARY

CONTROL ELEVATION	0.30 FT-NAVD
10 YEAR 1 DAY RAINFALL	7.30 INCHES
25 YEAR 3 DAY RAINFALL	11.90 INCHES
100 YEAR 3 DAY RAINFALL	14.80 INCHES
10 YEAR 1 DAY STORM STAGE RETENTION SYSTEM 1 RETENTION SYSTEM 2	4.11 FT-NAVD 2.93 FT-NAVD
25 YEAR 3 DAY STORM STAGE RETENTION SYSTEM 1 RETENTION SYSTEM 2	4.26 FT-NAVD 3.00 FT-NAVD
100 YEAR 3 DAY STORM STAGE (ZERO DISCHARGE)	8.38 FT-NAVD
MINIMUM FINISH FLOOR ELEV.	13 FT-NAVD
PROPOSED FINISH FLOOR ELEV.	15 FT-NAVD

LEGEND

- EXISTING ELEVATION (NAVD 88)
- PROPOSED ELEVATION (NAVD 88)
- DIRECTION OF DRAINAGE FLOW
- DRAINAGE BASIN BOUNDARY
- DRAINAGE PIPE
- DRAINAGE INLET
- DRAINAGE MANHOLE
- CURB INLET
- PROPOSED STORMWATER VAULTS
- BUILDING EXTENTS
- PROPOSED WATERMAIN
- PROPOSED WATER SERVICE
- PROPOSED FORCEMAIN
- PROPOSED SANITARY LATERAL
- PROPOSED FIREMAIN
- RAIN WATER LEADER



WATER QUALITY CALCULATIONS

REQUIRED WATER QUALITY VOLUME:

BASIN BOUNDARY AREA = 4.46 ACRES
IMPERVIOUS AREA = 3.28 ACRES
PERVIOUS AREA = 1.18 ACRES

REDEVELOPMENT, >40% PROPOSED IMPERVIOUS AREA, RETENTION STORAGE

*1" * (1'/12") * (BASIN BOUNDARY AREA - PERVIOUS AREA) =*
*1" * (1'/12") * (4.46 ACRES - 1.18 ACRES) =*
*1" * (1'/12") * 3.28 ACRES = 0.273 ACRE-FEET*

WATER QUALITY VOL. REQ'D	0.273 AC-FT
WATER QUALITY VOL. PROVIDED*	0.489 AC-FT

* COMBINED RETENTION STORAGE PROVIDED IN DRY-RETENTION SYSTEMS 1 AND 2 (MIN. 12" ABOVE CONTROL ELEVATION OF 0.3' NAVD). SEE PROVIDED WATER QUALITY VOLUME BREAKDOWN BELOW:

PROVIDED WATER QUALITY VOLUME BREAKDOWN:

- *BASIN 1 (DRY-RETENTION SYSTEM 1 - WEST):*

OLD CASTLE STORMCAPTURE UNDERGROUND VAULTS

VAULT DIMENSIONS: 7'W X 15'L X 3'H (85 UNITS)

TOTAL AVAILABLE STORAGE IN DRY-RETENTION SYSTEM 1 AT ELEV. 4.3' NAVD (TOP INTERIOR ELEV. OF VAULTS)
= 0.619 AC-FT

WATER QUALITY PROVIDED FROM BOTTOM ELEV. OF VAULTS SET AT 1.3' NAVD UP TO WEIR CREST ELEV. SET AT 3.35' NAVD
= 0.423 ACRE-FEET

- *BASIN 2 (DRY-RETENTION SYSTEM 2 - EAST):*

VOLUME	INVERT	AVAIL. STORAGE	STORAGE DESCRIPTION
#1	1.30'	0.063 AC-FT	EXFILTRATION GRAVEL TRENCH

(39.5' W X 132.5' L) X 1.7' D
0.204 AC-FT OVERALL - 0.011 AC-FT EMBEDDED PIPES
= 0.193 AC-FT X 40% VOIDS = 0.077 AC-FT

#2 1.50' 0.004 AC-FT
15" D X 140 LF 15" PERF. PIPE EMBEDDED IN GRAVEL TRENCH
0.006 AC-FT OVERALL - 1.5" PIPE THICKNESS = 0.004 AC-FT

#3 1.50' 0.003 AC-FT
12" D X 224 LF 12" PERF. PIPE EMBEDDED IN GRAVEL TRENCH
0.006 AC-FT OVERALL - 1.25" PIPE THICKNESS = 0.004 AC-FT

0.085 AC-FT TOTAL AVAILABLE STORAGE IN DRY-RETENTION SYSTEM 2

WATER QUALITY PROVIDED AT WEIR CREST SET AT ELEV. 2.60' NAVD
= 0.066 AC-FT

PROVIDED WATER QUALITY VOLUME	
DRY-RETENTION SYSTEM 1 (BASIN 1)	= 0.423 ACRE-FEET
DRY-RETENTION SYSTEM 2 (BASIN 2)	= 0.066 ACRE-FEET
TOTAL SITE PROVIDED	= 0.489 ACRE-FEET

STORMWATER MANAGEMENT MAINTENANCE

1. REGULAR MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM SHALL BE IN COMPLIANCE WITH MANUFACTURES' SPECIFICATIONS.
   1.1. FOR BASIN 1, OLDCASTLE STORMCAPTURE
   1.2. FOR BASIN 2, ADVANCED DRAINAGE SYSTEMS (ADS)

FLOOD ZONE INFO:

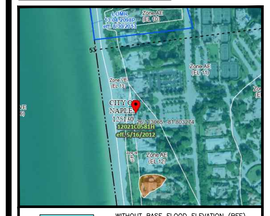
FLOOD ZONE: VE
BASE FLOOD ELEVATION = 13 FT-NAVD (CURRENTLY PUBLISHED ON FEMA MAP #12021C0581H, EFF. 5/16/2012)

BUILDING PERMIT EXPECTED TO BE SUBMITTED AFTER FEBRUARY 9TH, 2024

PRELIMINARY 2019
FLOOD ZONE: VE
BASE FLOOD ELEVATION = 12 FT-NAVD

FLOOD ZONE: AE
BASE FLOOD ELEVATION = 9 FT-NAVD

FLOOD ZONE MAP:

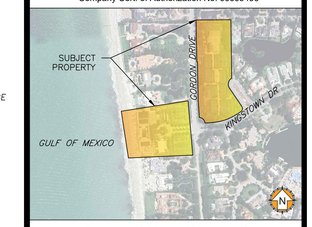


WITHOUT BASE FLOOD ELEVATION (BFE)
ZONE A, V, A99
WITH BFE OR DEPTH
ZONE AE, AO, AH, VE, AR

0.2% ANNUAL CHANCE FLOOD HAZARD, AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH OF LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE
ZONE X

*ALL NON-DESIGNATED AREAS ARE FUTURE CONDITIONS 1% ANNUAL CHANCE FLOOD HAZARD
ZONE X

DAVIDSON ENGINEERING
ESTABLISHED 1997
4365 Radio Road, Suite 201
Naples, Florida 34104
P: 239.434.6060
Company Cert. of Authorization No. 00009496



SITE LOCATION MAP

CLIENT:
PORT ROYAL CLUB
2900 GORDON DRIVE
NAPLES, FLORIDA 34102

PROJECT:
PORT ROYAL CLUB

REVISIONS:

REV.	DATE	DESCRIPTION
	10/16/2023	INITIAL CITY SP SUBMISSION
	12/07/2023	OVERALL SP UPDATED
1	02/16/2024	CITY OF NAPLES RAI LETTER
2	03/19/2024	CITY OF NAPLES RAI LETTER

SHEET TITLE:
DRAINAGE AND GRADING PLAN

PROJECT NO.: 23-0042

SCALE: 1" = 30'
SCALE VALID AT 24X36

JEFF L. DAVIDSON, P.E. NO. 47161
LEE A. DAVIDSON, P.E. NO. 90969
ANDREW E. RATH, P.E. NO. 73996
RYAN A. WHITE, P.E. NO. 67400

SHEET NO: C-21.00

NOTES: NOT FOR CONSTRUCTION

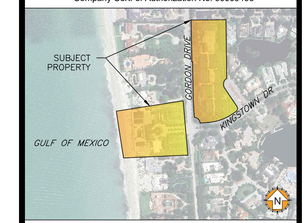
Z:\Active Projects\PORT ROYAL BEACH CLUB\Site Civil\Sheetfiles\C-21.00 - Drainage And Grading Plans.dwg (C-21.00 - DRAINAGE AND GRADING PLAN) andrew.rath Mar 22, 2024 - 5:44pm

STRUCTURE TABLE		
NAME	STRUCTURE DETAILS	PIPE DETAILS
CS-141	DE STORM MANHOLE RIM = 6.13' PIPE 126 (NE) INV = 1.00' PIPE 125 (W) INV = 1.20'	PIPE 125 (W) ±12 LF 24" DW-ADS PIPE 126 (NE) ±101 LF 24" DW-ADS
CS-151	CONTROL STRUCTURE RIM = 4.98' PIPE 137 (SE) INV = 1.00' PIPE 136 (W) INV = 1.30'	PIPE 136 (W) ±10 LF 15" DW-ADS PIPE 137 (SE) ±25 LF 15" DW-ADS
STR-110	CURB INLET RIM = 4.69' PIPE 107 (W) INV = 1.90' PIPE 231 (NW) INV = 2.03'	PIPE 107 (W) ±68 LF 15" DW-ADS PIPE 231 (NW) ±50 LF 15" DW-ADS
STR-112	CURB INLET RIM = 4.80' PIPE 108 (W) INV = 1.90'	PIPE 108 (W) ±76 LF 15" DW-ADS
STR-118	CURB INLET RIM = 6.24' PIPE 114 (SW) INV = 2.00' PIPE 133 (E) INV = 2.00' PIPE 218 (N) INV = 2.00'	PIPE 114 (SW) ±47 LF 18" DW-ADS PIPE 133 (E) ±43 LF 12" DW-ADS PIPE 218 (N) ±21 LF 15" DW-ADS
STR-119	CURB INLET RIM = 11.64' PIPE 113 (E) INV = 4.00' PIPE 115 (NW) INV = 7.00'	PIPE 113 (E) ±75 LF 18" DW-ADS PIPE 115 (NW) ±29 LF 15" DW-ADS
STR-122	CURB INLET RIM = 12.39' PIPE 115 (SE) INV = 8.00' PIPE 217 (W) INV = 8.00'	PIPE 217 (W) ±38 LF 12" DW-ADS PIPE 115 (SE) ±29 LF 15" DW-ADS
STR-131	TYPE C INLET RIM = 5.12' PIPE 128 (E) INV = 1.90'	PIPE 128 (E) ±24 LF 15" DW-ADS
STR-132	TYPE C INLET RIM = 5.12' PIPE 130 (E) INV = 1.90'	PIPE 130 (E) ±24 LF 15" DW-ADS
STR-138	CURB INLET RIM = 3.16' PIPE 124 (N) INV = -0.50'	PIPE 124 (N) ±51 LF 12" DW-ADS
STR-139	CURB INLET RIM = 3.13' PIPE 124 (S) INV = -1.00' PIPE 134 (W) INV = -3.50'	PIPE 124 (S) ±51 LF 12" DW-ADS PIPE 134 (W) ±21 LF 12" DW-ADS
STR-142	STORM MANHOLE RIM = 3.34' PIPE 118 (E) INV = -1.00' PIPE 137 (NW) INV = 0.50' PIPE 126 (SW) INV = -1.00'	PIPE 137 (NW) ±25 LF 15" DW-ADS PIPE 118 (E) ±3 LF 24" DW-ADS PIPE 126 (SW) ±101 LF 24" DW-ADS
STR-147	STORM MANHOLE RIM = 5.00' PIPE 136 (E) INV = 1.50' PIPE 149 (N) INV = 1.50' PIPE 127 (S) INV = -1.50' PIPE 135 (NW) INV = 0.00'	PIPE 149 (N) ±142 LF 15" PERF DW-ADS PIPE 127 (S) ±35 LF 12" DW-ADS PIPE 135 (NW) ±80 LF 12" DW-ADS PIPE 136 (E) ±10 LF 15" DW-ADS
STR-148	STORM MANHOLE RIM = 7.38' PIPE 116 (S) INV = 1.50' PIPE 114 (NE) INV = 1.70' PIPE 113 (W) INV = 3.00'	PIPE 114 (NE) ±47 LF 18" DW-ADS PIPE 116 (S) ±6 LF 24" DW-ADS PIPE 113 (W) ±75 LF 18" DW-ADS

STRUCTURE TABLE		
NAME	STRUCTURE DETAILS	PIPE DETAILS
STR-149	CURB INLET RIM = 4.81' PIPE 133 (W) INV = 2.20'	PIPE 133 (W) ±43 LF 12" DW-ADS
STR-150	CURB INLET RIM = 3.41' PIPE 135 (SE) INV = 0.50'	PIPE 135 (SE) ±80 LF 12" DW-ADS
STR-152	TYPE C INLET RIM = 2.96' PIPE 138 (NE) INV = -1.50' PIPE 118 (W) INV = -1.50'	PIPE 118 (W) ±3 LF 24" DW-ADS PIPE 138 (NE) ±11 LF 24" DW-ADS
STR-155	CURB INLET RIM = 4.06' PIPE 149 (S) INV = 1.50' PIPE 122 (N) INV = 0.00'	PIPE 122 (N) ±2 LF 12" DW-ADS PIPE 149 (S) ±142 LF 15" PERF DW-ADS
STR-156	TYPE C INLET RIM = 3.00' PIPE 122 (S) INV = 0.00' PIPE 159 (W) INV = 0.00'	PIPE 122 (S) ±2 LF 12" DW-ADS PIPE 159 (W) ±62 LF 8" DW-ADS
STR-169	15" NYLOPLAST RIM = 6.00' PIPE 232 (E) INV = 2.00' PIPE 162 (W) INV = 2.00' PIPE 167 (N) INV = 2.50'	PIPE 232 (E) ±77 LF 18" DW-ADS PIPE 162 (W) ±28 LF 15" DW-ADS PIPE 167 (N) ±302 LF 15" DW-ADS
STR-220	CURB INLET RIM = 5.00' PIPE 195 (N) INV = 3.70' PIPE 208 (W) INV = 2.00' PIPE 214 (E) INV = 1.90'	PIPE 195 (N) ±58 LF 15" DW-ADS PIPE 208 (W) ±50 LF 12" DW-ADS PIPE 214 (E) ±167 LF 12" DW-ADS
STR-231	CURB INLET RIM = 5.17' PIPE 214 (W) INV = 1.90'	PIPE 214 (W) ±167 LF 12" DW-ADS
STR-232	STORM MANHOLE RIM = 5.82' PIPE 161 (W) INV = 2.00' PIPE 170 (E) INV = 1.90' PIPE 222 (NW) INV = 2.00' PIPE 195 (S) INV = 3.70'	PIPE 195 (S) ±58 LF 15" DW-ADS PIPE 161 (W) ±143 LF 18" DW-ADS PIPE 170 (E) ±19 LF 18" DW-ADS PIPE 222 (NW) ±24 LF 12" DW-ADS
STR-233	15" NYLOPLAST RIM = 4.17' PIPE 167 (S) INV = 2.00'	PIPE 167 (S) ±302 LF 15" DW-ADS
STR-234	CURB INLET RIM = 5.20' PIPE 231 (SE) INV = 2.54'	PIPE 231 (SE) ±50 LF 15" DW-ADS
STR-235	15" NYLOPLAST RIM = 4.11' PIPE 127 (N) INV = 0.00' PIPE 134 (E) INV = -3.50'	PIPE 127 (N) ±35 LF 12" DW-ADS PIPE 134 (E) ±21 LF 12" DW-ADS
STR-236	15" NYLOPLAST RIM = 6.00' PIPE 241 (N) INV = 2.00' PIPE 161 (E) INV = 2.00' PIPE 232 (W) INV = 2.00'	PIPE 161 (E) ±143 LF 18" DW-ADS PIPE 232 (W) ±77 LF 18" DW-ADS PIPE 241 (N) ±7 LF 8" DW-ADS

DAVIDSON ENGINEERING
ESTABLISHED 1997

4365 Radio Road, Suite 201
Naples, Florida 34104
P: 239.434.6060
Company Cert. of Authorization No. 00009496



SITE LOCATION MAP

CLIENT:

PORT ROYAL CLUB
2900 GORDON DRIVE
NAPLES, FLORIDA 34102

PROJECT:

PORT ROYAL CLUB

REVISIONS:

REV.	DATE	DESCRIPTION
	10/16/2023	INITIAL CITY SP SUBMISSION
	12/07/2023	OVERALL SP UPDATED
1	02/16/2024	CITY OF NAPLES RAI LETTER
2	03/19/2024	CITY OF NAPLES RAI LETTER

SHEET TITLE:

DRAINAGE
DATA TABLE

PROJECT NO.:
23-0042

SCALE: 1" = 20'

SCALE VALID AT 24X36

JEFF L. DAVIDSON, P.E NO. 47161
LEE A. DAVIDSON, P.E. NO. 90969
ANDREW E. RATH, P.E. NO. 73996
RYAN A. WHITE, P.E. NO. 67400

SHEET NO: C-21.01

NOTES: NOT FOR CONSTRUCTION

Z:\Active Projects\P\PORT ROYAL BEACH CLUB\Site Civil\Sheetfiles\C-21.00 - Drainage And Grading Plans.dwg (C-21.01 DDT) aaron.davidson Mar 22, 2024 - 5:26pm