## **City of Sanibel Police Department Feasibility Study**

## **Preliminary Analysis**





03 - 09 - 2020 ADG Project #2019-154

## Introduction

The purpose of this preliminary analysis report is to indicate the proposed extent of building addition required to the Police Department wing of the Sanibel City Hall Complex and validate the possibility of this proposed concept with the City of Sanibel and the Sanibel Police Department so that a final report can be produced.

Based on our observations of the existing facility, interviews with the Police Chief Dalton and interactions with staff while on site observations, ADG Architecture, Ilc along with our consultants have developed an analysis of the Sanibel Police Department which resulted in a proposed building program and areas.

## Items included in this document:

- Existing Police Department plans
- Existing site survey
- Existing building summary of items that have an impact on building renovation or expansion
- Existing & projected space utilization area matrix
- Proposed Police Department area concept
- Proposed site concept
- Meeting minutes from SFWMD Meeting
- Security study of Sanibel City Hall and Police Department

After your review of this preliminary analysis, we expect to schedule a meeting so we can listen to input on our thoughts for the building expansion. We look forward to receiving your input so we can incorporate it into our final report.



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ISSUED FOR REVIEW 02 - 28 - 2020

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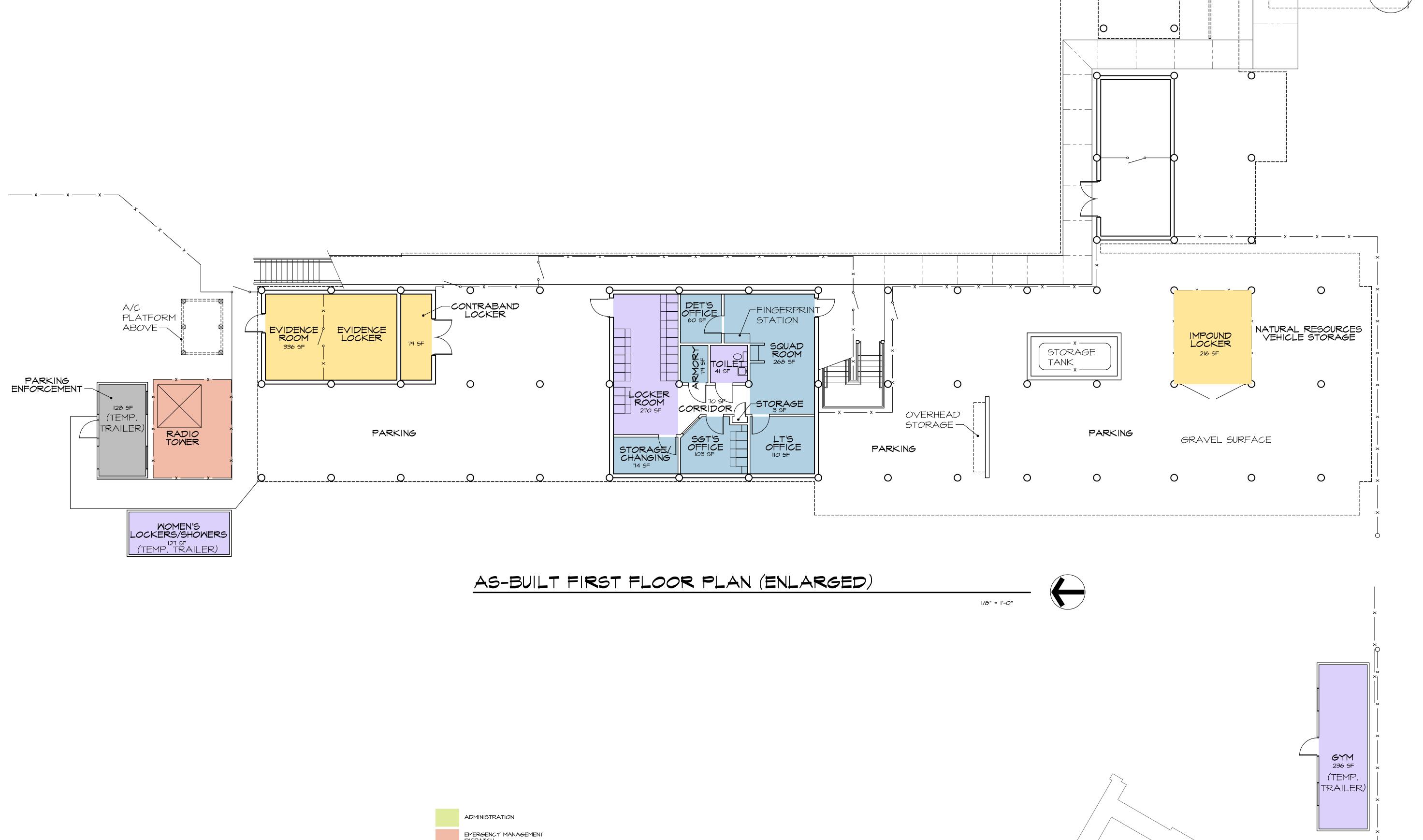
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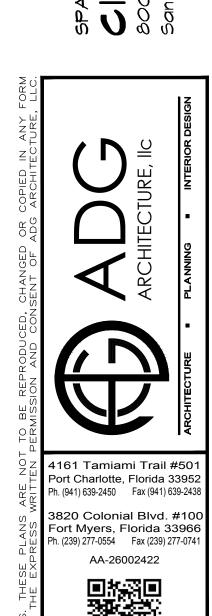
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KEY PLAN

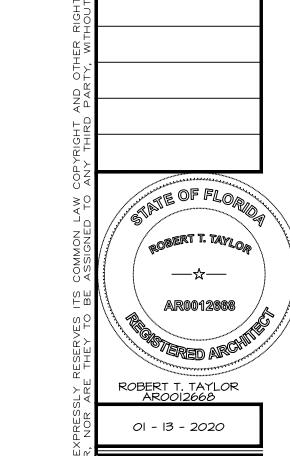




GENERAL



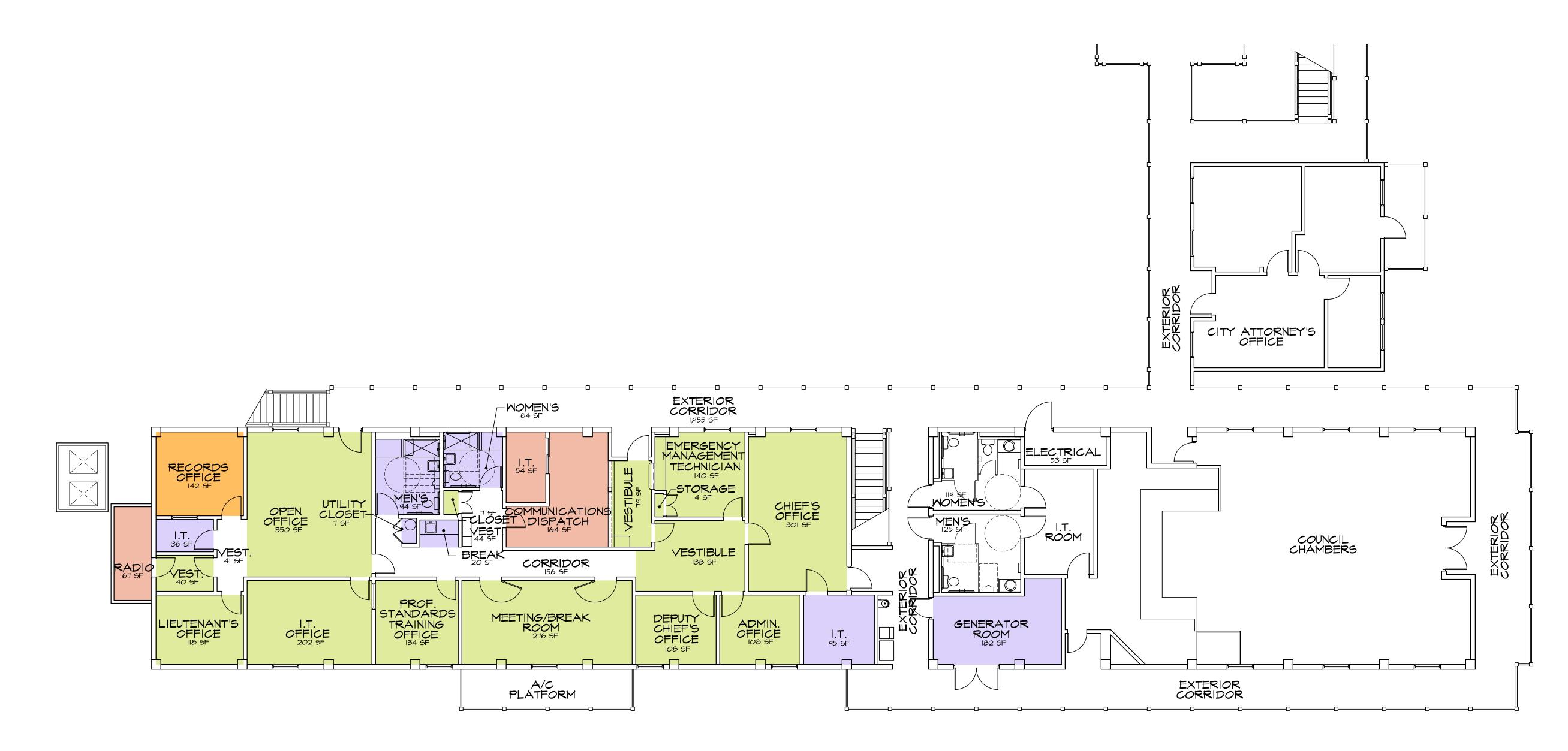




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PROJECT NO. 2019-154

KEY PLAN



AS-BUILT SECOND FLOOR PLAN (ENLARGED)

EMERGENCY MANAGEMENT **RECORDS** PATROL SPECIAL SERVICES

**ADMINISTRATION** 

PARKING ENFORCEMENT GENERAL

# LEGEND OF SURVEY ABBREVATIONS A // C ARC LENGTH B // C ARC LENGTH

# SYMBOLS SYMBOL DESCRIPTION - CONC MON - # 5 REBAR - INLET - EXIST ELEV - MAIL BOX - SIGN - PROP LINE - SEWER MH - SEWER MH - WAT METER - - FIRE HYDRANT - GATE VALVE

L.P OR P.PCONC PP

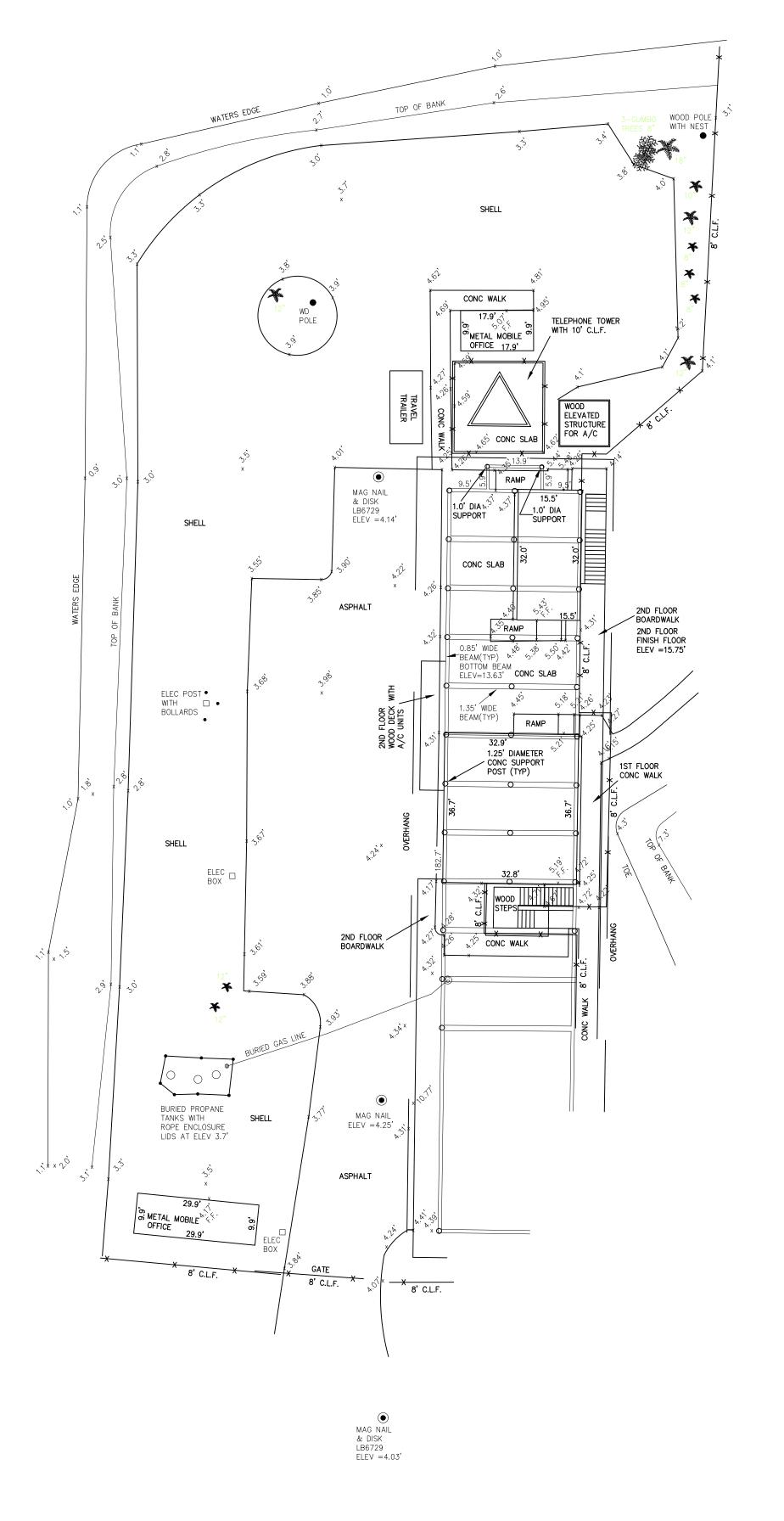
T - TEL BOX

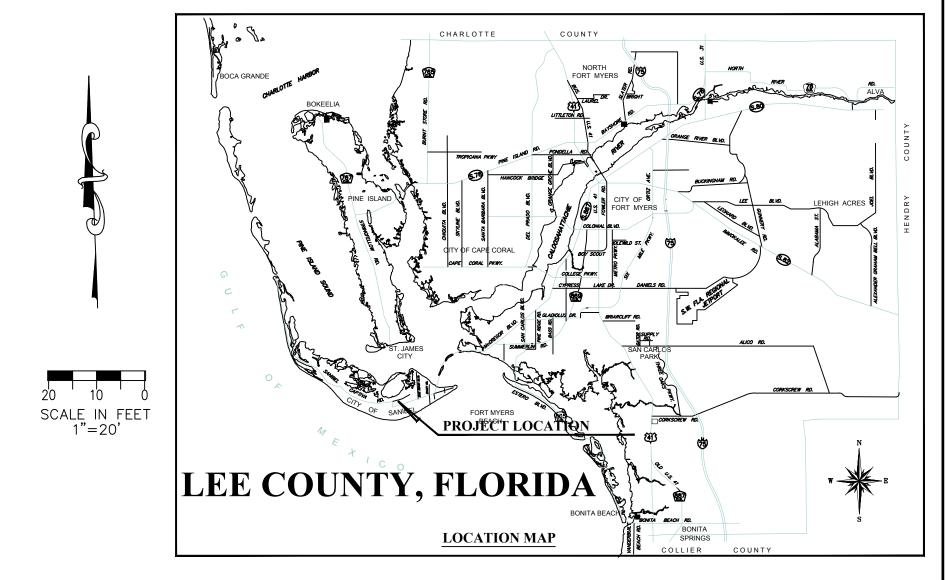
- GUY WIRE

- PALM TREE

# LIMITED TOPOGRAPHIC SURVEY ELEVATIONS ARE NAVD88 DATUM

## E X L L





SURVEYOR' NOTES

- (1) THE FLORIDA DEPARTMENT OF TRANSPORTATION PERMANENT CONTROL NETWORK WAS UTILIZED ON THIS SURVEY AND THE DATUM IS NORTH AMERICAN DATUM NAD (83)—(2011)—(EPOCH 2017.000). THE STATED HORIZONTAL ACCURACY IS 1—2 CENTIMETERS.
- (2) ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD88); AND ARE BASED ON SITE BENCH MARK BLC-513 PK NAIL& DISK 4919, ELEV. 3.72' (NAVD88).
- (3) IMPROVEMENTS BELOW THE GROUND SURFACE, IF ANY, ARE NOT LOCATED.
- (4) ONLY ABOVE GROUND VISIBLE ENCROACHMENTS ONTO OR FROM ADJOINING PROPERTY ARE SHOWN. ENCROACHMENTS BENEATH THE GROUND SURFACE AND THOSE WHICH ARE NOT VISIBLE BY NORMAL OBSERVATION ARE NOT SHOWN.
- (6) THIS CERTIFICATION IS ONLY FOR THE LANDS AS DESCRIBE HEREON, IT IS NOT A CERTIFICATION OF TITLE, ZONING OR FREEDOM OF ENCUMBRANCES.

SURVEYOR'S CERTIFICATE

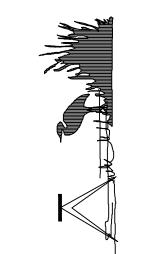
IHEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THIS SURVEY OF THE HEREON DESCRIBED PROPERTY IS A TRUE REPRESENTATION OF A FIELD SURVEY MADE UNDER MY DIRECTION AND CONFORMS TO THE STANDARDS OF PRACTICE FOR PROFESSIONAL SURVEYORS AND MAPPERS AS OUTLINED IN CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE.

FIELD WORK: 01/27/2020 DATE OF SIGNATURE:

TIM J. PUFAHL, PSM
PROFESSIONAL SURVEYOR AND MAPPER
FLA. CERTIFICATE NO. 4666

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED
SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

LICENSED BUSINESS NO. 6729
CHARLOTTE COUNTY:
30930 OIL WELL ROAD



OR PARCEL OF LAND LYING IN ON 26, TOWNSHIP 46S., RANGE 22E.

DATE : 01/06/2020

SCALE : 1"=20'

FIELD : T.P.

CADD : T.P.

CADD : 1.P.
CHECK : T.P.
FILE : 2001T01

26-46-22

JOB # 2001

## **Existing Building Observations**

## **Building Construction**

See the structural analysis by TKW Consulting Engineers and summary of existing mechanical, electrical, plumbing and technology items that would have an impact on building renovation or expansion by TLC Engineering on the following pages.

## **Accessibility Issues**

ADG did not complete a full accessibility survey, but in general observation, it was noticed that many items do not meet the accessibility standards of the ADA and Florida Accessibility Code:

Many doors to not have required clearance for entrance to spaces in addition many doors to not have door hardware that complies.

Restrooms do not have required clearances.

With any remodel of the building these items would need to be addressed.

## **Security Issues**

See included security study performed by Atlas Safety & Security Design, Inc. which addresses security items that shall be addressed within the Police Department and the City Hall Complex.

Currently, police personnel are required to travel outside of secure area between first and second floors.

Building expansion should consider vertical circulation between the first and second floors with the secure police area.



## **Preliminary Structural Evaluation Report**

City of Sanibel Police Department

## Introduction

The City of Sanibel Police Department has outgrown its current facility located within the Sanibel City Hall complex. The City of Sanibel is currently undertaking a feasibility study and needs assessment of the Police Department to plan for future growth. ADG Architecture has contracted TKW Consulting Engineers to perform a structural evaluation of the existing facility and provide structural recommendations to be included in the feasibility study. This document provides methodology and conclusions regarding constructing new additions over the existing structure.

## **Documents and Assumptions**

Structural information regarding building size, column spacing, beam spans, foundation layout and structural member sizes are shown on the Construction Drawings prepared by Stewart Corporation Architects, Inc and approved for construction by the City of Sanibel on October 19, 1982. The structural drawings reviewed from this set consist of the following sheets: S2.1, S2.3, S2.5 and S3.1.

Our assumptions regarding structural design are:

- Building Risk Category IV (essential facility).
- Site ground elevation 5.4 ft. (from survey information provided)
- Base flood elevation of 8.0 ft. (from FEMA maps)
- Existing concrete podium frame and slabs will remain.
- One-way load distribution of concrete podium slab.
- Pile capacity 40 tons compression.
   Note that no pile capacity information is provided in the structural drawings. The assumed 40-ton pile capacity is based on information from the adjacent Sanibel Library. Pile capacity must be verified.
- Materials: 3,000 psi concrete, 60,000 psi reinforcing steel,

We considered two design options:

- The ground-level space will remain unenclosed and new construction will be built above the existing concrete podium.
- The ground-level space will be enclosed and will need to be floodproofed and new construction will be built above the existing concrete podium.

## **Analysis Procedure**

The concrete columns are 16" diameter with 8-#8 vertical rebar and #3@12" ties. Concrete beams are 16" wide x 24.75" high with 4-#5 continuous bottom bars, 4-#5 top bars at exterior columns, 2-#5 continuous top bars and 2-#8 top bars over interior columns. The four-pile pile caps are 6.5 ft x 6.5 ft x 26" thick with #8@12" top and bottom rebar in both directions. In the short direction of the building, the columns in the two-bay frames are spaced at 16 ft on center and, in the long direction, the two-bay frames are spaced at 12 ft centers. The 8" concrete slab weight has been included in the analysis as a uniformly

distributed load on the short direction frames. The model includes line elements that represent the pile caps, columns and beams. All line elements are rigidly connected, and pile caps are pin-supported at the pile locations.

A two-dimensional analysis of the concrete podium frame structure has been performed in the short direction. Horizontal and vertical loads were applied to the structure to determine maximum lateral and vertical capacity of the concrete frame. The horizontal load was applied to the top of the column at one corner of the frame. The vertical loads were applied to the top of the exterior columns concurrently with applicable uniformly distributed dead and live loads on the beams. The maximum vertical load was included in the horizontal load analysis. Linear interpolation was used to determine maximum vertical expansion when considering horizontal wind forces.

## Results

## **Short Direction Frames**

## **Vertical Capacity**

The maximum additional vertical loads the frames can sustain are limited by the pile bearing capacity (assumed to be 40 tons). The maximum additional vertical load the piles can sustain is 268 kips at each column. The additional 268-kip load translates to a 1,397 psf (268,300 / (16'x12')) factored distributed load. The theoretical maximum number of stories the concrete structure can support is 6 stories without the application of lateral forces.

## **Horizontal Capacity**

The maximum lateral force the frames can sustain is limited by the column axial-moment interaction capacity. Current code wind wall pressures for MWFRS vary from 72 psf at corners to 43 psf elsewhere. Using an average wind pressure of 57.5 psf, the building height would be limited to 50 ft, without interaction effects from vertical forces. The maximum lateral force the frames can withstand is 35 kips applied to the top corner of the podium frame. Larger forces will require structural retrofit of the columns.

## **Estimated Concurrent Vertical and Horizontal Capacity**

An additional scenario was analyzed to include the interaction effects between vertical and horizontal forces. An equivalent weight for a 3-story building at 200 psf per story was assumed to be equally loaded on the columns. For this case, the maximum lateral force was determined to be 25.6 kips which, at an average ultimate design wind pressure of 57.5 psf, yields a 37-ft high building. This scenario assumes no flood loads are acting concurrently with wind loads.

However, factored flood loads must be included in the analysis and subtracted from estimated maximum lateral forces. The controlling lateral force during floods is due to the combination of hydrodynamic and debris impact forces on a fully enclosed ground level. It is unrealistic to assume that all frames would be struck by debris during a flood event at the same time. To obtain a realistic result, the lateral capacity for 13 two-bay frames was added to obtain a total of 307 kips maximum lateral load for a 144 ft long segment of the building. The factored flood loads were estimated for this 144 ft long segment of the building, which are 52 kips for an enclosed ground level and 12.5 kips for an open ground level. These flood loads were subtracted from the total lateral capacity and then divided by the average ultimate design wind pressure of 57.5 psf for the 144 ft long building segment to obtain the maximum estimated height the concrete structure can support.

## **Long Direction Frames**

These frames provide lateral resistance. However, due to the length of the building, they do not control maximum additional vertical and lateral loads.

## **Conclusions**

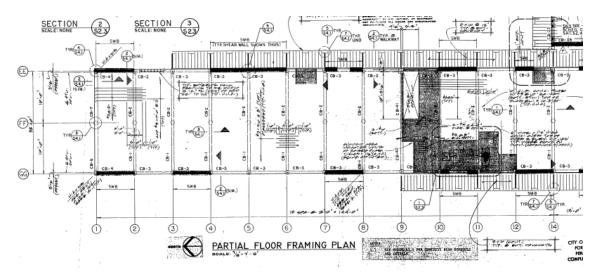
The existing concrete podium structure has sufficient reserve capacity to sustain an increased building height. However, a building height increase also increases lateral forces due to wind and, as the building height increases, the additional lateral forces limit the height increase.

If the ground-level space remains unenclosed and floodproofing is not required, the concrete podium structure can support an additional floor above the podium level (two occupied floors) with a total height above the podium level of 25 ft to mean roof height.

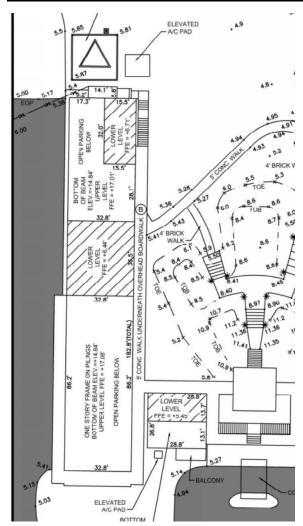
If the ground-level space is enclosed and floodproofing is required, the concrete podium structure can support the weight of an additional floor above the podium level, but the total height above the podium level is limited to 18 ft, which would not be enough height to add a full-height floor.

If strengthening of the existing podium framing is provided, these maximum heights could be increased.

Prepared by TKW Consulting Engineers, a CONSOR Company March 9. 2020



## PARTIAL PODIUM-LEVEL FRAMING PLAN (FROM 1982 DRAWINGS)



SITE SURVEY ELEVATIONS (FROM 2007 SURVEY)

## Mechanical, Electrical, Plumbing & Technology

Summary of mechanical/electrical/plumbing and technology items that TLC Engineering believes will have a significant impact on the decision to renovate or expand the existing building are listed here. This is not a complete list of issues, but those major items that are currently evident:

- 1. HVAC Outdoor air & ventilation: Mechanical outdoor air and exhaust systems will require upgrades to meet current codes.
- 2. Aged HVAC equipment: Replacement of original HVAC equipment and metal duct, due to age, for major renovations.
- 3. Insulation levels: From our initial observations, it appears there is some batt insulation laying on top of ceiling tiles.
  - a. If this is a typical condition, replacement of ceilings as part of a renovation would require replacement of insulation to meet current energy codes.
  - b. Air barrier and insulation levels must be reviewed at ceiling or underside of roof deck, and at elevated floors, for updates to current code levels.
  - c. If insulation is maintained at the ceiling level, rather than under roof deck at top of trusses, mechanical equipment cannot be located in what is considered an attic space. This will require relocation of mechanical air handling units to equipment rooms on floor.
- 4. HVAC Controls network: Upgraded mechanical systems as described above should be considered to also include an upgraded central control system. This is a recommendation, not a code requirement.
- 5. Fire Sprinkler system: Any renovations will require the addition of a complete fire sprinkler system for the building.
- 6. Fire Alarm system: Based on our initial observations, the existing fire alarm system does not comply with current codes. The system will require upgrades or replacement.
- 7. Plumbing fixture ADA compliance: From our initial observations, it appears that some restrooms do not meet current accessibility code requirements.
- 8. Electrical service capacity: The available capacity of the main electrical service must be confirmed, for any additions or major renovations. This may impact the ability to do a building addition. A records request must be made by the City to LCEC; the information is needed in order to do this evaluation.
- 9. Electrical systems integrity: The overall condition of an existing electrical system can be evaluated only to a limited extent by visual observations and analysis. Due to the age of the building and the critical functions that occur here, if major renovations and additions occur it is recommended that additional tests be performed by a certified electrical testing contractor. TLC would provide specific direction on which tests to include.
- 10. PSAP electrical systems: The PSAP work stations appear to be served by a small uninterruptable power supply (UPS), located on the floor in the PSAP IT room. This system will require an upgrade/replacement to provide redundant power.





## **PSAP** (Public Safety Answering Point)

We recognize an immediate need to relocate 911/dispatch communication center. However, utilizing another portion of the existing building still leaves many deficiencies as required by NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems such as:

- Type I or II construction
- Automatic fire sprinkler system
- · Separated by 2 hour fire resistance rating
- Bullet resistant door openings
- Ballistic protection for exterior walls
- Toilet facility and lunch area within secured area
- Ballistic protection for generator enclosure

We recommend to locate a new PSAP location on the second floor in the new expansion area of the facility. This could allow for the construction of the new facility to be complete to provide little to no down time for the communications center.



## **Proposed Program and Area Summary**

The attached Space Utilization Table indicates the existing building areas and proposed building areas, by division. The proposed area plan is intended to be a diagram which illustrates the adjacencies of spaces and general size required for the proposed areas in reference to the existing building.

This program proposes 4,468 sf of total addition area with 1,250 sf additional on the ground floor and 3,218 sf additional on the second floor. The ground floor area is proposed to remain under the existing building second floor. Also, parking can still occur under the proposed second floor addition on the parking lot side of the building.

Flood proofing would need to occur on the ground floor to protect the building in the event of flooding. While not ideal to place additional area under the flood elevation, it is a solution that allows for most re-use of existing building areas. Another option would be to provide a third floor to the building, and while the structural engineer believes this could be achieved with the existing building structure, this would require an additional elevator in this area of the building and more modification to the existing building structure and roof.

Due to the existing building layout restraints and proposed new program areas, a reconfiguration of the existing building spaces would be necessary in addition to the building expansion. It is possible with the phasing of expansion area with interior remodel of existing building to allow for certain departments to function during construction, but consideration may need to be made for temporary facilities for certain groups or functions of the department while construction or building remodel is in progress.

A copy of meeting minutes from a meeting with DDAI, ADG Architecture and South Florida Water Management District is included with this report. The purpose of the meeting was to discuss the potential stormwater permitting process for the site, as no previous permit history has been recorded for this property. Due to minimum building expansion on the second floor and reconfiguration of the existing parking area, the site could have a reduction in impervious area resulting in a unique condition, where should be able to provide the water management improvements necessary for this property. The property to be required to comply would only need to be the area surrounding the police station area, not the entire government complex, but the exact approach and stormwater management permit type will need to be determined once the proposed building area is finalized.

We look forward to meeting with you to discuss the results of this initial analysis of the police department expansion and site area.



## **City of Sanibel Police Department**

Existing & Projected Space Utilization

February 28, 2020

Category	Existing Area	Remarks	Proposed Area	Remarks
Administration	2581 SF		2903 SF	
Entry Vestibule/Reception	79 SF		200 SF	Room for metal detector
Chief's Office	301 SF		300 SF	Desk area & small conf table
Assitant's Office	108 SF		120 SF	
Deputy Chief's Office	108 SF		150 SF	
Admin. Reception	138 SF		120 SF	
Fingerprint Station			50 SF	
Meeting Room	276 SF			30 people, Training Room
Storage			100 SF	to support multipurpose
Prof. Standards/Training	134 SF		150 SF	
Testing/Training/Interview			150 SF	
Lieutenant's Office	118 SF		150 SF	
IT Office	202 SF		200 SF	
Open Office	350 SF			3 workstations w/ Copy Area
Emergency Management Technician	146 SF		150 SF	
Storage	4 SF		8 SF	
Storage	47 SF		80 SF	
<b>Emergency Management / Dispatch</b>	285 SF		623 SF	
Communications Room	164 SF		300 SF	2 workstations
Vestibule			60 SF	
Break Area			100 SF	
Restroom			48 SF	
IT/server	54 SF		90 SF	
Radio	67 SF			
Mechanical			25 SF	

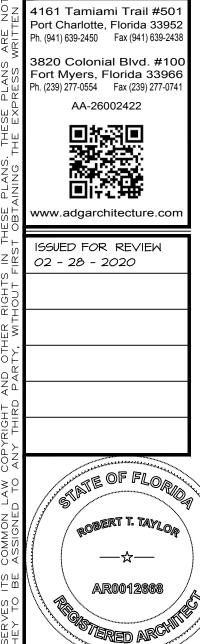


Category	Existing Area	Remarks	Proposed Area	Remarks
Records	142 SF		158 SF	
Office			150 SF	
Storage			8 SF	
Patrol	641 SF		1490 SF	
Patrol Room	268 SF			4 workstations
Briefing Room	200 01			10-12 people
Lieutenants Office	110 SF		150 SF	•
Lieutenants Office			150 SF	
Sergeants Office	107 SF		300 SF	4 workstations
Armory	79 SF		100 SF	
Cleaning Station			60 SF	
Storage	77 SF		100 SF	Radios, Uniforms, etc.
Bicycle Storage			80 SF	
Special Services	691 SF		1330 SF	
Detectives Office	60 SF		120 SF	
Detectives Office			120 SF	
Meeting/Interview			180 SF	
Contraband Locker	79 SF		80 SF	
Evidence Room	148 SF		180 SF	
Evidence Locker	188 SF		350 SF	
Evidence Processing/Window			60 SF	
Impound Locker	216 SF		240 SF	



Category	Existing Area	Remarks	Proposed Area	Remarks
Parking Enforcement	128 SF	(Temp. Trailer)	359 SF	
Private Office		,	150 SF	
Safe Room			9 SF	
Open Office			200 SF	3 workstations
			-	
General	809 SF		2000 SF	
Gym/Weight Room	236 SF	(Temp. Trailer)	500 SF	
Break Room	20 SF		200 SF	
IT Rooms	131 SF		100 SF	
Mechanical/Electrical			75 SF	
Utility/Janitor	7 SF		25 SF	
Generator	182 SF		100 SF	
Restrooms & Shower	199 SF		300 SF	2 toilets & 2 showers each sex
Men's Lockers	270 SF		300 SF	20 lockers
Women's Lockers	127 SF	(Temp. Trailer)	300 SF	20 lockers
Bunk Room			100 SF	2 bunks
Total Net Area	5149 SF	(Not including trailer areas)	8863 SF	
Corridors/Walls/Misc.	292 SF	•	886 SF	
Secure Area Vertical Circulation			160 SF	Stair
Area of Temp. Trailers	491 SF			
Police Dept. Gross Area	5441 SF	(Not including trailer areas)	9909 SF	

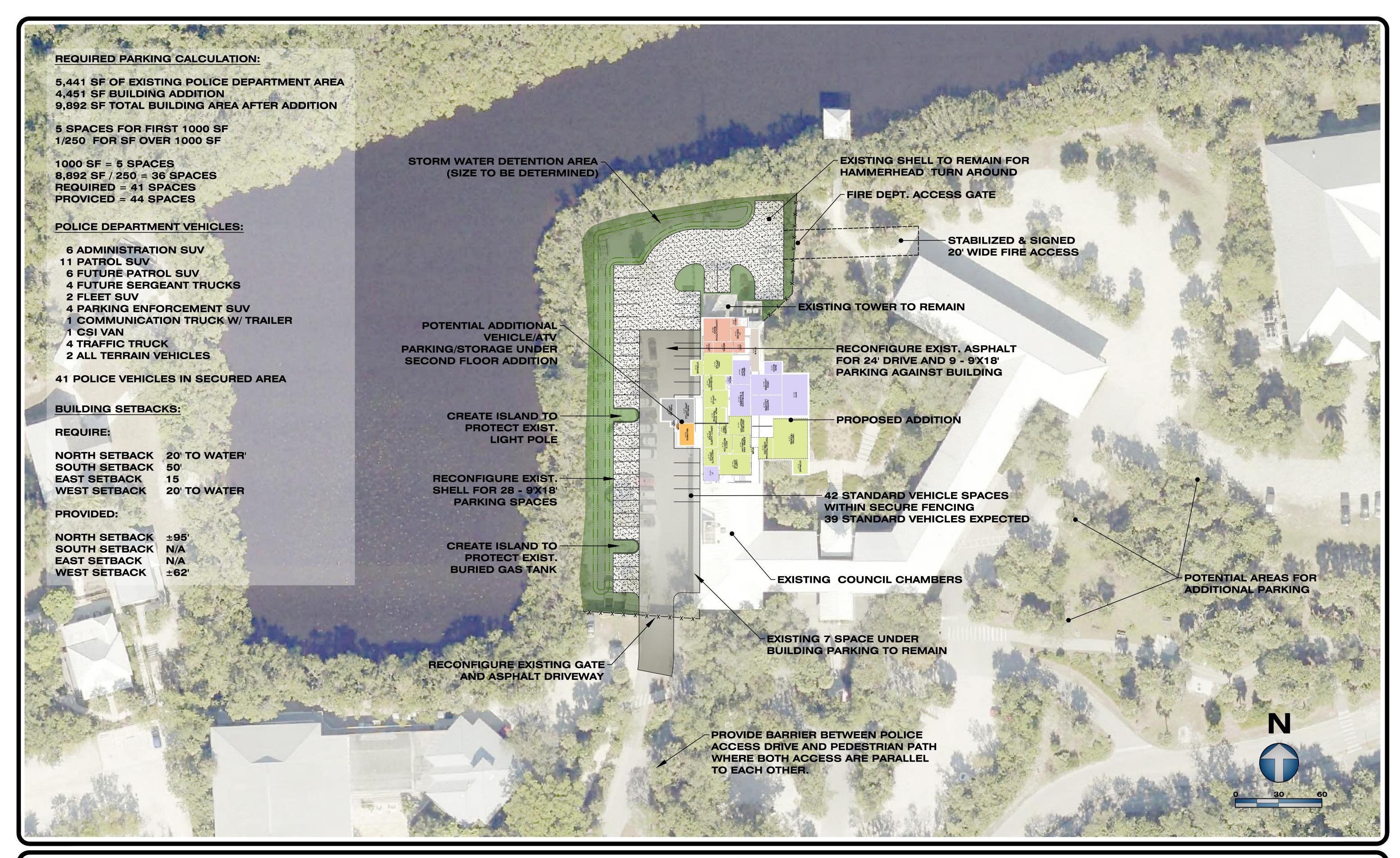




ROBERT T. TAYLOR AROOI2668

01 - 13 - 2020





## **BUILDING ADDITION CONCEPT**



FEBRUARY 18, 2020

DAVID DOUGLAS ASSOCIATES, INC.
11400 OVERSEAS HIGHWAY, SUITE 208, MARATHON, FI. 33050 Ph. (305) 517-6469

SANIBEL, FLORIDA



CIVIL ENGINEERS
LAND PLANNERS
CONTRACT ADMINISTRATORS

## DAVID DOUGLAS ASSOCIATES, INC.

**DATE:** February 27, 2020

**ATTENDEES:** Laura Layman (South Florida Water Management District - SFWMD)

Errol, P.E. (South Florida Water Management District - SFWMD)

Jennifer Gloer, AIA (ADG Architecture Inc.)

David Douglas, P.E. (David Douglas & Associates, Inc. - DDAI)

Scot Stuart (David Douglas & Associates, Inc. - DDAI)

FROM: Scot Stuart

**PROJECT NAME:** Sanibel Police Station Improvements

SUBJECT: SFWMD Meeting Minutes

**DDAI NO**: 18-0065

## This meeting took place at 9:00am at the SFWMD Facility on 02/27/20. The below items were discussed.

- 1) David Douglas (DDAI) provided a brief overview of building and site improvements associated with the proposed Sanibel police station addition feasibility study and concept.
- 2) Laura commented no previous permit history was found for the City of Sanibel 14.3 ac site, which encompasses multiple buildings.
- 3) Laura and Errol both stated that any district ERP permitting would only apply to the limits of proposed construction of the Police Station improvements.
- 4) David Douglas stated with the proposed addition and the reconfiguration of existing impervious compacted shell surface that the site would have a +/-5000 sf reduction of impervious area.
- 5) In an effort to define how to apply district permit regulations to a unique existing condition and since the reduction of impervious surfaces would be creating a net benefit, Laura suggested "de minimis" approach could be a possibility which is an exemption allowing activities having minimal impact by applying Florida State statute 373.406 (5)(6)
- 6) The discussion continued with the idea that we could then provide BMPS and water quality volumes for the proposed additional building under this process.
- 7) Based on this idea we believe we can provided the necessary water management improvements to satisfy a SFWMD permit process.
- 8) Though this was a positive meeting, Laura clarified that this suggested process would have to go above her for final approval.
- 9) A permit fee would also still need to be determined, it was thought could be somewhere between \$200 to \$2000.

## **End Minutes**

Please contact DDAI within one week of receipt if there are any questions, comments or if revisions to these minutes are necessary.

Attachments: None