DRAFT

Noise Study Report Addendum

Florida Department of Transportation

District One

S.R. 710 from US 441 to the L-63N Canal Okeechobee County, Florida

Financial Management Number: 419344-3-32-01



August 7, 2018

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

1715 N Westshore Blvd Suite 500 Tampa, FL 33607 **O** 813-289-550**F** 813-289-263*rsandh.com*

Date:	August 7, 2018
To:	Jeffrey James, FDOT District 1
From:	Brian Kirkpatrick, RS&H
Subject :	SR 710 Widening and Extension – Design-Phase Traffic Noise Study Okeechobee County, Florida FM Number: 419344-3-32-01

Introduction and Background

In March of 2012, the Florida Department of Transportation (FDOT) published a Noise Study Report (NSR) associated with the Project Development and Environment (PD&E) Study that was conducted for the segment of SR 710 from US 441 to County Road (CR) 714 (Okeechobee and Martin Counties). A thorough review of the PD&E noise study was conducted early in the design phase in order to identify any roadway design changes that have occurred. Since the completion of the PD&E Study, the FDOT identified the need to modify the proposed new alignment extension of SR 710 from State Road (SR) 70 to US 441 in order to improve highway operations, safety, and regional mobility. Modifications included shifting of the roadway's horizontal alignment in order to minimize impacts to various properties.

The purpose of this report is to summarize of the results of the highway traffic noise analysis that was performed during the final design phase. The current roadway design concept for the new alignment, as well as the evaluated noise receiver sites, are illustrated in **Figure 1**.

Project Description

The improvement consists of a new roadway on new alignment from US 441 to SR 70 and then connects to the existing SR 710, just west of the L-63N Canal bridge. The urban typical section will consist of 12-foot lanes with six and a half-foot bike lanes and outside shoulders varying from zero to four feet wide.

Methodology and Current Regulations

The design-phase noise study was prepared in accordance with Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. The evaluation used methodology established by the FDOT and documented in the PD&E Manual, Part 2, Chapter 18 "Highway Traffic Noise" (June 14, 2017). A review of current traffic noise policies was conducted as part of this study and it was determined that, while the PD&E Manual has been updated since the completion of the SR 710 PD&E Study, none of the policy changes affect the determination of traffic noise impacts for this project. Therefore, the criteria for the determination of noise impacts is unchanged. The noise analysis was conducted using FHWA's Traffic Noise Model (TNM), Version 2.5. The latest available roadway design data (60% plans) was used to develop the noise model for this study.

Predicted Noise Levels

During the PD&E Study, a land use review was conducted to identify noise sensitive sites in 2010, and again in 2011. The Date of Public Knowledge (DOPK) for the PD&E Study was March 16, 2017. Therefore, any new noise sensitive sites that received building permits prior to this date would be eligible for consideration for noise abatement, if warranted.

During the design phase, a field review was conducted in January 2018 to identify all noise sensitive sites located along the corridor. Additionally, a search for Okeechobee County building permits was conducted along the corridor to identify any new permitted developments that may be noise sensitive. This search determined that no building permits for noise sensitive land uses were issued prior to the DOPK along the corridor, except for the Okeechobee Health Care Facility (see **Figure 1**, Sheet 1), which was under construction for expansion during the 2018 field review.

The majority of the noise sensitive sites evaluated in the PD&E Study remain and were included in the design-phase noise analysis. At the Okeechobee Health Care Facility, there were no exterior areas of frequent human use identified in the field. However, the noise receiver sites that were analyzed for this property in the PD&E phase (i.e., RN28 and RN29) were carried forward into the design-phase noise study, for consistency.

The noise analysis results in the PD&E Study's Noise Study Report indicate that no noise sensitive sites located west of the L-63N Canal would be impacted by traffic noise as a result of this project. The more detailed design-phase noise analysis has also determined that no noise sensitive sites would be impacted by design year traffic noise (see **Table 1**). Because none of the sites would be impacted by traffic noise with the current roadway design, no noise barriers were evaluated. All FDOT approved traffic data sheets for this noise study are included as attachments to this document.





Project Number 41934433201 Date: July 2018









)	140	280	420	560	700
					⊢eet









0	140	280	420	560	700
					⊢eet



Table 1 presents the predicted noise levels from the design-phase traffic noise analysis. The highest predicted level is 62.3 dB(A) at site RS13. The FDOT's Noise Abatement Criteria (NAC) for Activity Categories B and C is 66.0 dB(A).

The Okeechobee Health Care Facility has plans to expand their facilities (construction had begun in January 2018). The improvement plans were reviewed (included as an attachment) and it was determined that no new exterior noise sensitive land uses were proposed as part of the site plans.

	Noise Sensitive		Predicted Build	NAC
Receptor	Site	Noise Activity	Noise Levels	Approached or
ID	Represented	Category	(dB(A))	Exceeded?
			<u></u>	
RN28	Okeechobee	C (Medical	61.4	No
	Health Care	Facilities)	60.4	
RN29	Okeechobee	C (Medical	60.4	No
	Health Care	Facilities)		
RS36	1 residence	B (Residential)	51.6	No
RS37	1 residence	В	57.5	No
RS38	1 residence	В	55.7	No
RS39	1 residence	В	55.4	No
RS55	1 residence	В	54.7	No
RS8	1 residence	В	55.4	No
RS9	1 residence	В	56.9	No
RS10	1 residence	В	59.7	No
RS11	1 residence	В	54.7	No
RS13	1 residence	В	62.3	No

Table 1: Predicted Noise Levels

Conclusions

The results of the design noise analysis determined there are no impacted noise sensitive sites above the FDOT noise abatement criteria level. Therefore, traffic noise abatement measures are not warranted with this project.

Attachment 1:

Approved Traffic Data Sheets for Noise Analysis

Federal Aid Number(s); FPID Number(s): State/Federal Route No.: Road Name:	419344-2-	22-01	-	
Project Description:	Build	Ension	_	
Segment Description:	US 441 to !	SR 70	_	
Mile Post To/From:	1 (new alignr	ment)	-	
Existing Facility:		D=	55.00% %	
Year:	2013	T24 = Tpeak =	20.00% % of 24 10.00% % of Des	Hour Volume ign Hour Volume
LOS C Peak Hour Directional Volume: Demand Peak Hour Volume:	0	MT≖ HT=	2.78% % of Des 7.05% % of Des	ign Hour Volume ign Hour Volume
Posted Speed:	45	B≊ MC≈	0.18% % of Des 1.20% % of Des	ign Hour Volume ign Hour Volume
No Bulid Alternative (Design Year)				
Year:		D = T24 =	0.00% % 0.00% % of 24 H	our Volume
LOS C Peak Hour Directional Volume:		MT =	0.00% % of Desi 0.00% % of Desi	gn Hour Volume gn Hour Volume
Demand Peak Hour Volume: Posted Speed:	0	8 = MC =	0.00% % of Desig 0.00% % of Desig	gn Hour Volume gn Hour Volume gn Hour Volume
Build Alternative (Design Yeari;				Star Star
fear:	2040	T24 =	20.00% % of 24 Ho	ur Volume
	2010	Tpeak = MT =	2.78% % of Desig	n Hour Volume n Hour Volume
lemand Peak Hour Volume: Iosted Speed:	1740 918 45	HT= B= MC=	7.05% % of Desig 0.18% % of Desig 1.20% % of Desig	n Hour Volume n Hour Volume n Hour Volume
certify that the above information is	accurate and appropriate for	Quilth the back and a	1.	
repared By: Brian Ki	patrick 66	Ma att	Date:	04/25/2018
have reviewed and concur that the al	ove information is appropriate	oignature	to analysis	
DOT Reviewer:Chn'stz	pher Simpron		Date:	6/18/2018
Pr	int Name	Signature		1 1

Federal Aid Number(s):			
FPID Number(s):	419344-2-22-01		
State/Federal Route No.:			
Road Name:	SR 710 Extension		
Project Description:	Build		
Segment Description:	SR 70 to Old SR 710		
Section Number:	1		_
Mile Post To/From:	(new alignment)		-
Existing Facility:		0-	
		T24 =	70 00% % of 24 Hours Volume
Year:	2013	Toeak =	10.00% % of Design Hous Volume
		MT =	2.78% % of Design Hour Volume
LOS C Peak Hour Directional Volume:	0	HT≖	7.05% % of Design Hour Volume
Demand Peak Hour Volume:	1	B =	0.18% % of Design Hour Volume
Posted Speed:	45	MC=	1.20% % of Design Hour Volume
No Build Alternative (Design Year): /ear: OS C Beak Hour Directional Volume:		D = T24 = Tpeak = MT =	0.00% % 0.00% % of 24 Hour Volume 0.00% % of Design Hour Volume 0.00% % of Design Hour Volume
emand Peak Hour Volume	0	HT=	0.00% % of Design Hour Volume
osted Speed:	0	B= MC=	0.00% % of Design Hour Volume % of Design Hour Volume
uild Alternative (Design Year):		D =	55.00%
AND .	2040	124 =	20.00% % of 24 Hour Volume
	2010	Tpeak	10.00% % of Design Hour Volume
		MT#	2.78% % of Design Hour Volume
S C Pank Hour Directional Value	4740		
OS C Peak Hour Directional Volume:	1740	HT=	7.05% % of Design Hour Volume
DS C Peak Hour Directional Volume: amand Peak Hour Volume: sted Speed:	1740 1168	HT= B=	0.18% % of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic poise analysis

Print Name Prepared By: Srigh Signature b Date: 04/25/2018 I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis. Sta Date: 6/18/2018 Christ opher simpron **FDOT Reviewer:** Print Name Signature

Federal Ald Number(s):				
FPID Number(s):	419344-2-22-01			
State/Federal Route No.:				
Road Name:	SR 710 Extension			
Project Description:	Build			
Segment Description:	Old SR 710 to SE 40th Ave			
Section Number:	1			
Mile Post To/From:	(new alignment)		_	
Existing Facility:				
		D =	55.00	<u>%</u>
Year:	2013	124 = T!	20.009	% of 24 Hour Volume
		ipeak =	10.009	6 % of Design Hour Volume
LOS C Peak Hour Directional Volume:	0		2.78%	76 of Design Hour Volume
Demand Peak Hour Volume:	1	ni = A ~	7.05%	% of Design Hour Volume
Posted Speed:	45	MC =	1 20%	% of Design Hour Volume
No Build Alternative (Design Year):		0-	-	
		T74 =	0.00%	75 Pf of 24 Moun Malure
'ear:	0	Toeak =	0.00%	% of Decise Hour Volume
		MTa	0.00%	% of Design Hour Volume
OS C Peak Hour Directional Volume:	0	HT =	0.00%	A of Design Hour Volume
emand Peak Hour Volume:	0	B=	0.00%	% of Design Hour Volume
osted Speed:	0	MC =	0.00%	% of Design Hour Volume
uild Alternative (Design Year):		D =	55.00%	796
		T24 =	20.00%	% of 24 Hour Volume
	2040	Tpeak =	10.00%	% of Design Hour Volume
		MT=	2.78%	% of Design Hour Volume
	1740	HT≖	7.05%	% of Design Hour Volume
is C Peak Hour Directional Volume:			0 1 08/	S of Decim Linus Mahuma
amand Peak Hour Volume:	1468	8=	0.16%	to or the sign mour volume

Brian Kirkonstrick Prind Name Prepared By: 11 7 Date: 04/25/2018 Signature I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis. Christophur Simpron Print Name The second Date: 6/18/2018 FDOT Reviewer: Signature

Federal Aid Number(s):	
FPID Number(s):	419344-2-22-01
State/Federal Route No.:	
Road Name:	SR 710 Extension
Project Description:	Build
Segment Description: St	E 40th Ave to South
Section Number:	1
Mile Post To/From:	(new alignment)
Existing Facility:	D = 58.00% %
	T24 = 50.00% % of 24 Hour Volume
/ear: 2013	Tpeak ≈ 25.00% % of Design Hour Volume
	MT = 6.95% % of Design Hour Volume
LOS C Peak Hour Directional Volume: 0	HT = 17.62% % of Design Hour Volume
Demand Peak Hour Volume: 1	B = 0.45% % of Design Hour Volume
Posted Speed: 55	MC = 1.20% % of Design Hour Volume
No Build Alternative (Design Year):	D = 0.00% %
	T24 = 0.00% % of 24 Hour Volume
	Tpeak = 0.00% % of Design Hour Volume
	MT = 0.00% × of Design Hour Volume
US C Peak Hour Directional Volume: 0	HT = 0.00% % of Design Hour Volume
erted Stands	B = 0.00% % of Design Hour Volume
	MC = 0.00% % of Design Hour Volume
uild Alternative (Design Year):	D = 58.00% %
	T24 = 50.00% % of 24 Hour Volume
2040	Tpeak = 25.00% % of Design Hour Volume
M C Death Many Discriber 1941	MT = 6.95% % of Design Hour Volume
Deak Hour Directional Volume: 1740	HT = 17.62% % of Design Hour Volume
ated Speed:	B = 0.45% % of Design Hour Volume
20	MC = 1.20% % of Design Hour Volume
certify that the above information is accurate and appro	priate for use with the traffic noise makein.
Rink Kildid	t (le. Q. TK)
epared By: Dylun () Poprinch	Date: 04/25/2018
Print Name	Signiture

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.
FDOT Reviewer:
Print Name
Signature Date: 6/18/2018

419344-2-22-01		_	
SR 710 Extension		-	
Build			
SR 70 West of SR 710			
1			
(new alignment)			
	D =	55.00	6 %
2012	T24 =	13.009	6 % of 24 Hour Volume
L_2013	Tpeak =	6.50%	% of Design Hour Volume
	MT =	2.52%	% of Design Hour Volume
	HT =	3.86%	% of Design Hour Volume
45	B =	0.10%	% of Design Hour Volume
	MC =	0.79%	% of Design Hour Volume
	D =	0.00%	%
Provide the second seco	T24 =	0.00%	% of 24 Hour Volume
0	Tpeak =	0.00%	% of Design Hour Volume
	MT =	0.00%	% of Design Hour Volume
0	HT =	0.00%	% of Design Hour Volume
0	B =	0.00%	% of Design Hour Volume
	MC =	0.00%	% of Design Hour Volume
	D= 1	55.00%	7.
	T24 ==	13.00%	% of 74 Hour Volume
2040	Tpeak =	6.50%	'S of Design Hour Volume
A DESCRIPTION OF A DESCRIPTION OF A	MT=	2.57%	96 of Design Hour Volume
			The resident work and the
1740	HT=	3 86%	94 of Decion House Maluer
1740 1295	HT= B=	3.86%	% of Design Hour Volume
	419344-2-22-01 SR 710 Extension Build SR 70 West of SR 710 1 (new alignment) 2013 0 1 45 2013 0 1 45 2040	419344-2-22-01 SR 710 Extension Build SR 70 West of SR 710 1 (new alignment) $D = T24 = T24 = Tpeak = MT = HT = B = MC = MT = HT = B = MC = MT = HT = B = MC = MC = MC = MC = MC = MC = MC$	$ \begin{array}{r} 419344-2-22-01 \\ SR 710 Extension \\ Build \\ SR 70 West of SR 710 \\ 1 \\ (new alignment) \\ \hline 2013 \\ \hline 2013 \\ \hline 2013 \\ \hline 2013 \\ \hline 0 \\ $

I certify that the above information is accurate and appropriate for use with the traffic poise analysis.

Print Name Prepared By: Brian . Celle Signature Date: 04/25/2018 I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis. stophir FDOT Reviewer:

Print Name

Signature

Ĺ

Date: 6/18 2018

Federal Aid Number(s):				
FPID Number(s):	419344-2-22-01		-	
State/Federal Route No.:				
Road Name:	SR 710 Extension			
Project Description:	Build		_	
Segment Description:	SR 70 East of SR 710			
Section Number:	1			
Mile Post To/From:	(new alignment)		-	
Existing Facility:		0-	55.00	
		T24 =	13.00	 % % of 24 Mourt Volume
fear:	2013	Toeak =	6 50%	% of Design Hour Volume
	14	MT=	2.524	% of Design Hour Volume
LOS C Peak Hour Directional Volume:		HT =	3.86%	% of Design Hour Volume
Demand Peak Hour Volume:	1	B=	0.12%	% of Design Hour Volume
Posted Speed:	45	MC =	0.79%	% of Design Hour Volume
io Build Alternative (Design Year): ear: D5 C Peak Hour Directional Volume: emand Peak Hour Volume:		D = T24 = Tpeak = MT = HT =	0.00% 0.00% 0.00% 0.00%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume
osted Speed:	0	0=	0.00%	A OL DESIGN HOUR VOIUME
osted Speed:	0	MC =	0.00%	% of Design Hour Volume
sild Alternative (Design Year):	0	D=	0.00%	% of Design Hour Volume
isted Speed: ild Alternative (Design Year):	0	D = T24 =	0.00% 0.00% 55.00% 13.00%	% of 24 Hour Volume
ild Alternative (Design Year):	2040	o ≠ MC = D = T24 = Tpeak =	0.00% 0.00% 55.00% 13.00% 6.50%	% of Design Hour Volume % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume
sild Alternative (Design Year): 817	2040	o ≠ MC = D = T24 = Tpesk = MT =	0.00% 0.00% 55.00% 13.00% 6.50% 2.52%	% of Design Hour Volume % of Design Hour Volume % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume
sited Speed: illd Alternative (Design Year): ar: S C Peak Hour Directional Volume:	0 2040 1740	o = MC = D = T24 = Tpeak = MT = HT =	0.00% 0.00% 55.00% 13.00% 6.50% 2.52% 3.86%	% of Design Hour Volume % of Design Hour Volume % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume
sild Alternative (Design Year): ar: S C Peak Hour Directional Volume: mand Peak Hour Volume:	0 2040 1740 1223	o = MC = T24 = Tpeak = MT = HT = HT = β =	0.00% 0.00% 55.00% 13.00% 6.50% 2.52% 3.86% 0.12%	% of Design Hour Volume % of Design Hour Volume % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Snau Print Name au Prepared By: 7.1 Date: 04/25/2018 Signature

2018 6 Date: Print Name Signature

Federal Aid Number(s):			
FPID Number(s):	419344-2-22-01		
State/Federal Route No.:			
Road Name:	SR 710 Extension		
Project Description:	Build		
Segment Description:	Old SR 710 East of NE 34	Ith Ave	
Section Number:	1		
Mile Post To/From:	(new alignment)		
Existing Facility:		D =	55.00% %
Year:	2012	T24 =	16.04% % of 24 Hour Volume
,	C012	Tpeak =	8.02% % of Design Hour Volume
LOS C Peak Hour Directional Volume		MT =	2.23% % of Design Hour Volume
Demand Peak Hour Volume		HT =	5.65% % of Design Hour Volume
Posted Speed:	35	B =	0.15% % of Design Hour Volume
		ML =	1.20% % of Design Hour Volume
vo Build Alternative (Design Year):		D=	0.00% %
		T24 =	0.00% % of 24 Hour Volume
ear:	0	Tpeak =	0.00% % of Design Hour Volume
		MT=	0.00% % of Design Hour Volume
US C Peak Hour Directional Volume:	0	HT =	0.00% % of Design Hour Volume
remand Peak Hour Volume:	0	8=	0.00% % of Design Hour Volume
	0	MC≖	0.00% % of Design Hour Volume
ulid Alternative (Design Year):		D =	55.00% 1%
		T24 ==	16.04% % of 24 Hour Volume
bar:	2040	Tpeak =	8.02% % of Design Hour Volume
	And the second se	AT-	2.229 Of of Danian House Melance
		IN 1 =	
S C Peak Hour Directional Volume:	297	HT =	5.65% % of Design Hour Volume
OS C Peak Hour Directional Volume: amand Peak Hour Volume:	297 612	HT = B =	5.65% % of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise malysis.

16 ller Gal Print Name Prepared By: Svian Date: 04/25/2018 I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis. nnp ophir moron FDOT Reviewer:

Print Name

XXV Signature

2018 Date:

Federal Aid Number(s):				
FPID Number(s):	419344-2-22-01			
State/Federal Route No.:			_	
Road Name:	SR 710 Extension			
Project Description:	Build			
Segment Description:	US 441 North of SR 710 Ext.		_	
Section Number:	1			
Mile Post To/From:	(new alignment)		_	
Existing Facility:		0-		
		T24 =	0 729	6 70
/ear:	2013	These -	A 950	% of Desire Hour Volume
		MT =	2 2 74	% of Design Hour Volume
OS C Peak Hour Directional Volume:	0	HT =	2 204	S of Design Hour Volume
Demand Peak Hour Volume:	1	8 -	0 31%	% of Design Hour Volume
osted Speed:	35	MC=	0.51%	% of Design Hour Volume
to Build Alternative (Design Year): ear: OS C Peak Hour Directional Volume: emand Peak Hour Volume: osted Speed:		D = T24 = Tpeak = MT = HT = B =	0.00% 0.00% 0.00% 0.00% 0.00%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume
alid Alternative (Design Year): an	2040	D = T24 = Tpeak =	55.00% 9.72% 4.86%	% % of 24 Hour Volume % of Design Hour Volume
ar:	2040	D = T24 = Tpeak = MT =	55.00% 9.72% 4.86% 2.27%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume
uild Alternative (Design Year): sar: IS C Peak Hour Directional Volume:	2040	D = T24 = Tpeak = MT = HT =	55.00% 9.72% 4.86% 2.27% 2.29%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume
uild Alternative (Design Year): sar: IS C Peak Hour Directional Volume: smand Peak Hour Volume:	2040 1740 1311	D = T24 = Tpeak = MT = HT = B =	55.00% 9.72% 4.86% 2.27% 2.29% 0.31%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Dran Print Name Prepared By: u Signature Date: 04/25/2018 I have reviewed and concur that the above information is appropriate for use with the maffic noise analysis. Alla BAT Date: 618298 stopher Impro **FDOT Reviewer: Print Name** Signature

Federal Ald Number(s):							
FPID Number(s):	419344-2-22-01						
State/Federal Route No.:	tate/Federal Route No.:						
Road Name:	SR 710 Extension						
Project Description:	Build						
Segment Description:	US 441 South of SR 710 Ext.						
Section Number:	1						
Mile Post To/From:	(new alignment)						
Existing Facility:		D =	55.00	%			
Vesr-		T24 =	9.72%	6 % of 24 Hour Volume			
	2013	Tpeak =	4.86%	% of Design Hour Volume			
OS C Peak Hour Directional Volume		MT =	2.27%	% of Design Hour Volume			
Demand Peak Hour Volume:		HT =	2.29%	1 % of Design Hour Volume			
Posted Speed:	25	B≖	0.24%	% of Design Hour Volume			
		MC =	0.51%	% of Design Hour Volume			
		Plane Down					
lo Build Alternative (Design Year):		D =	0.00%	7%			
		T24 =	0.00%	% of 24 Hour Volume			
ear:	0	Tpeak =	0.00%	% of Design Hour Volume			
		MT =	0.00%	% of Design Hour Volume			
OS C Peak Hour Directional Volume:	0	HT =	0.00%	% of Design Hour Volume			
emand Peak Hour Volume:	0	8=	0.00%	% of Design Hour Volume			
osted Speed:	0	MC=	0.00%	% of Design Hour Volume			
ulid Alternative (Design Year):			55.00%	7%			
		UE					
		D= T24=	9.72%	% of 24 Hour Volume			
an	2040	T24 = Tpeak =	9.72% 4.86%	% of 24 Hour Volume % of Design Hour Volume			
an	2040	T24 = Tpeak = MT =	9.72% 4.86% 2.27%	% of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume			
iar: IS C Peak Hour Directional Volume:	2040	T24 = Tpeak = MT = HT =	9.72% 4.86% 2.27% 2.29%	% of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume			
ear: DS C Peak Hour Directional Volume: amand Peak Hour Volume:	2040 1740 1350	D= T24= Tpeak = MT = HT = B=	9.72% 4.86% 2.27% 2.29% 0.24%	% of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume			

I certify that the above information is accurate and appropriate for use with the traffic noise maiysis.

Prepared By: ngu 1 Print Name Date: 04/25/2018 Ignature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

hustophin Date: 6/18/20/ FDOT Reviewer: impron A Print Name Signature

Federal Aid Number(s):					
FPID Number(s):					
State/Federal Route No.:	State/Federal Route No.:				
Road Name:	SR 710 Extension				
Project Description:	Build				
Segment Description:	SE 40th Ave (South of SR 710 Ext.)				
Section Number:	1				
Mile Post To/From:	(new alignment)		_		
Existing Facility:		D =	55.00%	7%	
		T24 =	16.04%	% of 24 Hour Volume	
Year:	2013	Tpeak =	8.02%	% of Design Hour Volume	
		MT =	2.23%	% of Design Hour Volume	
LOS C Peak Hour Directional Volume:	0	HT =	5.65%	% of Design Hour Volume	
Demand Peak Hour Volume:	1	B =	0.15%	% of Design Hour Volume	
Posted Speed:	35	MC =	1.20%	% of Design Hour Volume	
No Build Alternative (Design Year): Year: LOS C Peak Hour Directional Volume:		D = T24 = Tpeak = MT = HT =	0.00% 0.00% 0.00% 0.00%	% % of 24 Hour Volume % of Design Hour Volume % of Design Hour Volume % of Design Hour Volume	
Jemand Peak Hour Volume:	0	B =	0.00%	% of Design Hour Volume	
'osted Speed:	0	MC =	0.00%	% of Design Hour Volume	
wild Alternative (Design Year):	under the state of the state	D-			
		T24	16 049		
ear:	2040	Toesk -	10.04%		
The Property of the Property o		Ipeak 3	2 794	A of Design Hour Volume	
OS C Peak Hour Directional Volumet	812		2.2.576	a of Design Hour Volume	
emand Peak Hour Volume:	402	111 =	5.65%	% of Design Hour Volume	
CONTRACTOR OF CONTRACTOR		R =	0.15%	a or Design Hour Volume	
ostari Spant	35	3.45	4 9 9 9 /		

I certify that the above information is accurate and appropriate for use with the traffic noise analy Brian Kir patricle Prepared By: Print Name Signature

Date: 06/15/2018

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.
FDOT Reviewer:
Print Name
Signature

Date: 6/18/2018

Attachment 2:

Construction Plans

Okeechobee Healthcare Facility West Wing Expansion

Phone: (863) 824-7644

FLORIDA CERTIFICATE OF AUTHORIZATION No. 00029206

J age <u>O</u>f

ENGINEERING

Construction Plans Okeechobee Healthcare Facility West Wing Expansion Seniors "R" Able, Inc. Lying In Sec. 9, Township 37 South, Range 35 East **Okeechobee County, Florida**

SCALE: N.T.S.

INDEX OF SHEETS

TITLE SHEET **OVERALL PLAN & KEY SHEET EXISTING CONDITIONS / DEMOLITION PLAN** HORIZONTAL CONTROL, STRIPING & SIGNAGE PLAN (WEST VIEW) HORIZONTAL CONTROL, STRIPING & SIGNAGE PLAN (SOUTH EAST VIEW) HORIZONTAL CONTROL, STRIPING & SIGNAGE PLAN (NORTH EAST VIEW) **PAVING, GRADING & DRAINAGE PLAN (WEST VIEW)** PAVING, GRADING & DRAINAGE PLAN (SOUTH EAST VIEW) PAVING, GRADING & DRAINAGE PLAN (NORTH EAST VIEW) **PAVING, GRADING & DRAINAGE DETAILS UTILITY DETAILS UTILITY DETAILS** UTILITY DETAILS **GENERAL NOTES & SPECIFICATIONS**

ENGINEERS PROJECT No. 2014-042 OKEECHOBEE HEALTHCARE FACILITY

Exhibit 2.1

Application 170117-1

0

Page 3 of 1

Application 170117-10

Exhibit N

age S Of

J

Applicatio \Box **__** 01 0

Application 170117-10

Exhibit 2.1

Exhibit 2.1

Page 8 of 1

Application 170117-10

Π xhibit N \rightarrow

Application \Box **__** $\overline{}$ 01 **__** 7 **__**

age Q Of **__ __**

Drainage S h Inv East Inv Sout 8.00 8.00 17.70 8.00 18.00 8.00 18.0	Okeechobee He East Wing Structure Elevation C th Inv West inv 18.00 17.70	ealth Care Facilit s Expansion hart (All Elevati Structure DS-24 DS-25 DS-26 DS-27 DS-28 DS-29 DS-30 DS-31 DS-32 DS-33 DS-34 DS-35 DS-36 DS-37 DS-38 DS-39 DS-40 DS-41 DS-42 DS-43 DS-43 DS-43 DS-45	ions in NGVD '29) Type "C" Type "C" Type "C" Type "C" Type "E" 24" yard drain 24" yard drain	Rim EL N 21.40 21.40 21.40 21.40 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00 21.00	orth Inv 17.70 15.00 18.00 18.00 18.00 18.00 18.00 18.00	East Inv 54 18.00 18.00 15.00 18.00 18.00 18.00 18.00	15.00 18.00 18.00 17.70 18.00 15.00	Vest inv 18.00 18.00 18.00 18.00 18.00 18.00 18.00 18.00	IMPROPER RELIANCE ON THIS DOCUMENT WITTEN AUTHORIZATION AND ADOPTION BY STEVEN L. DOBBS, P. E., SHALL BE WITHOUT LIABILITY TO STEVEN L. DOBBS ENGINEERING, LLC.	Engineering, LLC	Okeechobee, FI 34974	3 ADDED AREA OF EXISTING WETLAND IMPACT 5 REVISED PER COMMENTS
		A A A A A A A A A A A A A A A A A A A	Critic Contraction of the second seco		J.	SCALE	: 1"=	20'	ent, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of an (eechobee Healthcare Facility)	West Wing Expansion OKEECHOBEE, FLORIDA	AVING, GRADING, DRAINAGE	and UTILITY PLAN (NORTH FAST VIEW)

J age

 \triangleright

pplicatio

O

0

1. Contractor is responsible for checking actual site conditions before starting construction.

2. Any discrepancies on the drawings shall be brought to the attention of the engineer before commencing work.

3. Contractor shall obtain all required building permits before commencing work.

4. Contractor shall be responsible for location of all existing utilities. The contractor shall contact all concerned utilities at least 48 hours in advance for construction operations.

5. No field changes or deviations from design to be made without prior approval of the engineer.

6. All construction shall be completed in accordance with the applicable ordinances of Glades County, Florida.

7. Contractor shall supply density tests to engineer on all sub-grade and base. Tests shall be prepared per AASHTO T-180 method.

8. Slope grades from elevations shown to existing grade at property line.

9. Engineer shall be notified at least 48 hours in advance for any inspection.

10. All traffic control devices shall be in accordance with M.U.T.C.D. Standards.

11. Erosion and sedimentation control techniques shall be incorporated during

construction as follows:(1) silt screens shall be maintained at the project perimeter.

(2) No off-site discharges shall occur during construction. In the event discharge is required, hay bales and/or turbidity curtains shall be incorporated at the discharge point as necessary to control turbidity.

EROSION AND SEDIMENTATION CONTROL NOTES

Construction activities can result in the generation of significant amounts of pollutants which may reach surface or ground waters. One of the primary pollutants of surface waters is sediment due to erosion. Excessive quantities of sediment which reach water bodies of floodplains have been shown to adversely affect their physical, biological and chemical properties. Transported sediment can obstruct stream channels, reduce hydraulic capacity of water bodies of floodplains, reduce the design capacity of culverts and other works, and eliminate ethic invertebrates and fish spawning substrates by siltation. Excessive suspended sediments reduce light penetration and therefore, reduce primary productivity.

MINIMUM STANDARDS:

1. Sediment basin and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-distributing activity and shall be made functional before unslope land disturbance takes place.

2. All sediment control measures are to be adjusted to meet field conditions at the time of construction and be constructed prior to any grading or disturbance of existing surface material on balance of site. Perimeter sediment barriers shall be constructed to prevent sediment or trash from flowing or floating on to adjacent properties.

3. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain undisturbed for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left undisturbed for more than one year.

4. During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as soil intentionally transported from the project site.

5. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the Reviewer, is uniform, mature enough to survive and will inhibit erosion.

6. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

ENGINEER OF RECORD INSPECTION REQUIREMENTS									
	F.f	B.V.	DENSITY		L.B	.R.	THICKNESS		
	MAX. S	PACING	MAX. SF	PACING	MAX. SF	ACING	MAX. SPACING		
	LINEAR FEET	SQUARE FEET	LINEAR FEET	SQUARE FEET	LINEAR FEET	SQUARE FEET	LINEAR FEET	SQUARE FEET	
COMPACTED OR STABILIZED GRADE	200	5,000	200	5,000	200	5,000	300	10,000	
ROCK BASE			300	10,000	300	10,000	300	10,000	
SHELL ROCK			300	10,000			300	10,000	
ASPHALT							PER INSP.	PER INSP.	
ALL TESTING SHALL BE TAKEN IN A STAGGERED SAMPLING PATTERN FROM A POINT 12" INSIDE THE LEFT EDGE OF THE ITEM TESTED, TO THE CENTER, TO A POINT INSIDE OF THE RIGHT EDGE									

EROSION AND SEDIMENTATION CONTROL NOTES - (continued)

7. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The sediment basin shall be designed and constructed to accommodate the anticipated sediment loading from the land-disturbing activity. The outfall device or system design shall take into account the total drainage area flowing through the disturbed area to be served by the basin.

8. After any significant rainfall, sediment control structures will be inspected for integrity. Any damaged devices shall be corrected immediately.

9. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

10. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

11. Sediment will be prevented from entering any storm drain system, ditch or channel. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

12. Before temporary or newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

13. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

14. When a live watercourse must be crossed by construction vehicles, a temporary stream crossing constructed of nonerodible material shall be provided.

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

16. Periodic inspection and maintenance of all sediment control structures must be provided to ensure intended purpose is accomplished. The Developer, owner and/or contractor shall be continually responsible for all sediment leaving the property. Sediment control measures shall be in working condition at the end of each working day.

17. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

A. No more than 500 linear feet of trench may be opened at one time.
B. Excavated material shall be placed on the uphill side of trenches.
C. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
D. Restabilization shall be accomplished in accordance with these regulations.

18. Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by tracking onto the paved surface, where sediment is transported onto a public road surface with curbs and gutters, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual subdivision lots as well as to larger land-distributing activities.

19. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, in the opinion of the Reviewer. Disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

20. Properties and waterways downstream from construction site shall be protected from sediment disposition and erosion.

21. Phased projects should be cleared in conjunction with construction of each phase.

22. Erosion control design and construction shall follow the requirements in Index Nos. 101, 102 and 103 of FDOT Roadway and Traffic Design Standards.

23. The Reviewer may approve modi due to site specific conditions.

ENGINEER OF RECORD INSPE
CONTRACTOR TO CALL CONT
48 HOURS ADVANCE FOR FOL
1. PRECONSTRUCTION MEETIN
2. DRAINAGE PIPE (UNCOVER
3. PAVEMENT SUBGRADE
4. PAVEMENT BASE
5. FINAL

23. The Reviewer may approve modifications or alter plans to these erosion control criteria

ECTION REQUIREMENTS TRACT ENGINEER OF RECORD LLOWING INSPECTIONS: ING ED)

Earthwork and Drainage Specifications

1. <u>Clearing and Grubbing:</u> Clearing and grubbing shall be performed within the limits of the project work in accordance with Section 110, Florida Department of Transportation (FDOT) Specifications. This item shall include, but is not limited to, the complete removal and legal disposal of all trees, brush, stumps, roots, grass, weeds, rubbish and other undesirable material to a depth of 18 inches below natural ground or proposed finished grade, whichever is lower. The areas to be cleared generally consist of the entire site with the exception of areas specifically noted on the landscape plans as preserve areas or as areas to remain un-cleared. Care shall be taken to insure that no preserve areas or wetland areas are impacted by the clearing operation. Prior to initiating the clearing operation, all adjacent wetland and preserve areas shall be marked and flagged in accordance with the City of Okeechobee and South Florida Water Management District (SFWMD) requirements All such areas immediately adjacent to the clearing operation shall also be protected by the installation of temporary silt barriers in accordance with the requirements of The City of Okeechobee and the SFWMD. Further erosion control shall be accomplished by seeding and mulching all disturbed areas as soon as they are at final grade, per the specifications for seeding and mulching found elsewhere on this sheet.

All material shall be removed from the site and shall be legally disposed of in accordance with all local, state and federal requirements.

2. <u>Earthwork and Grading</u>: All earthwork and grading shall be performed as required to achieve the final grades, typical sections and elevations shown on the plans. In all other respects, materials and construction methods for earthwork, embankment, excavation and grading shall conform to the requirements of FDOT Specifications, Section 120. Any plastic or otherwise undesirable material within 36 inches of finished road grade shall be removed and replaced with suitable material. The contractor shall also refer to the Soils Report, if available. The specifications and recommendations included in that report shall be considered as a part of these plans and specifications. Should there be any conflict between that document and any requirements of these drawings or specifications, the most restrictive requirement shall govern.

3. <u>Paving Improvements:</u> All areas proposed for paving shall be constructed in accordance with the design grades and typical sections shown on the drawings, and in conformance to the requirements of the City of Okeechobee and Florida Department of Transportation.

A. Asphalt: Prime Coat and tack coat for base course and between lifts of asphalt shall conform to the requirements of Sections 300-1 through 300-7 of the FDOT Specifications. Prime Coat shall be applied at a rate of 0.25 gallons per square yard and tack coat at a rate of 0.10 gallons per square yard, unless otherwise approved by the Engineer.

Asphalt surface course thickness and material shall be as shown on the typical sections and shall in all ways conform to the requirements of FDOT.

- B. Base: Limerock base material shall be compacted to 98% of maximum density per AASHTO T-180. All limerock shall meet the minimum requirements of FDOT Section 911. As an alternate, cemented coquina conforming to FDOT Section 915 may be substituted and shall be subject to the compaction specifications detailed above and included in the Soils Engineer's report.
- **C. Sub-grade**: Sub-grade shall be compacted to 98% of maximum density per AASHTO T-180, and stabilized to a minimum FBV of 50psi. Sub-grade shall be thoroughly rolled with a pneumatic tired roller prior to scheduling any sub-grade inspection.
- **D.** Valley Gutter/ F-Curb/D-Curb/Flush Curb: Shall be constructed per the typical section by extruding machine or forms as shown on the plans. Minimum concrete compressive strength shall be 3,000psi after 28 days. Sub-grade shall be moistened at the time concrete is placed to insure a uniformly damp surface. Ready-mix concrete shall have a slump of between 2 and 4 inches. No water shall be added to increase workability. Test cylinders shall be made for the strength testing of each batch of concrete for at least 7 and 28 day testing.
- E. Sod: A minimum of a two-foot wide strip of sod, or as otherwise shown on the plans, shall be placed along the back of curb of all constructed pavement to aid in prevention of erosion and soil stability. Sod shall be placed in conformance to FDOT Section 570, 575 and 981. Generally, the sodding requirements shall be as specified on the landscape plans, prepared by Others.
- **F.** Seed, Fertilize and Mulch: All disturbed areas shall be stabilized with seed, fertilizer and mulch upon completion and acceptance by Engineer of final grading. Seed, fertilizer and mulch shall be in conformance to FDOT Sections 570, 575 and 981. The Contractor is responsible for establishing a stand of grass sufficient to prevent erosion prior to removal of the temporary silt fences. This applies only to those areas not covered by the sodding specified in the landscape plans, prepared by Others.
- **G. Testing:** The Contractor shall secure the services of an approved independent testing laboratory to conduct all required testing on sub-grade, base, asphalt and concrete. Locations required for these tests shall be as required by the City of Okeechobee, and/or in the case of the turn-lane improvements as required by the City of Okeechobee. At a minimum, testing shall be as recommended by FDOT. Should any tests fail, contractor shall at his own expense, repair the deficiencies and retest the work until compliance with the specifications is demonstrated.
- H. Traffic Control: The installation of Traffic Control Devices shall be in conformance to the requirements of the Manual of Uniform Traffic Control Devices, The City of Okeechobee. Maintenance of traffic During Construction shall be as required by FDOT.

Earthwork and Drainage Specifications - (continued)

4. <u>Drainage Improvements:</u> All labor, materials and construction methods shall be in conformance to the minimum engineering and construction standards of the City of Okeechobee and FDOT Specifications. Trench excavation and back-filling operations shall meet or exceed the requirements of FDOT Specifications, Section 125. The Contractor shall provide the necessary back-fill compaction testing required to demonstrate compliance with this section. The pipe trench shall be dry when pipe is laid and the pipe shall be bedded per the details and per FDOT specifications.

The Contractor shall comply with Chapter 90-96, Laws of Florida, which requires the Contractor performing trench excavations over five feet in depth comply with all applicable trench safety standards and shoring requirements as set forth in the Occupational Safety and Health Administration's (OSHA) excavation and safety standards, 29 C.F.R. 19926.650, Sub-part P and incorporated as the State of Florida standard, as revised and/or updated. The cost of compliance with this requirement shall be included as a separate line item on the Contractor's bid. Otherwise, Contractor certifies that the cost of compliance is included in the unit cost of all items of work to which this requirement applies.

- A. Reinforced Concrete Pipe (RCP): RCP shall conform to the requirements of ASTM Specifications C-76, Class III, Wall Thickness "B", latest revision. All joints shall be soil-tight. Pipe gasket shall conform to FDOT Specifications, Section 942.
- **B.** Corrugated Metal Pipe (CMP): All CMP shall be Steel, round, helical-wound corrugated pipe conforming to AASHTO-M 36 and FDOT Section 943. Pipe ends at joints shall be reformed to a minimum of 2 annular corrugations for the complete band width. All joints shall be soil-tight. All connecting bands shall be corrugated annular coupling bands. A Neoprene gasket of at least 7 inches wide by 3/8 inch thick shall be used for all pipes of 36-inch diameter and smaller. Larger pipe sizes require gaskets of at least 10-1/2 inches in width. All CMP shall be installed at maximum lengths to reduce the number of joints.
- C. Corrugated Aluminum Pipe (CAP): All CAP shall be aluminum alloy, round, helical-wound corrugated pipe conforming to AASHTO-M 196 and FDOT Section 945. Pipe ends at joints shall be reformed to a minimum of 2 annular corrugations for the complete band width. All joints shall be soil-tight. All connecting bands shall be corrugated annular coupling bands. A Neoprene gasket of at least 7 inches wide by 3/8 inch thick shall be used for all pipes of 36-inch diameter and smaller. Larger pipe sizes require gaskets of at least 10-1/2 inches in width. All CAP shall be installed at maximum lengths to reduce the number of joints.
- D. Corrugated High Density Polyethylene Pipe (HDPE): All HDPE Pipe shall be resin conforming to ASTM D3350 minimum cell classification 435400C, round, only annular corrugations and conforming to FDOT Section 948-2.3. All joints shall be soil-tight. All connecting bands shall be corrugated annular coupling bands. A Neoprene gasket of at least 7 inches wide by 3/8 inch thick shall be used for all pipes of 36-inch diameter and smaller. Larger pipe sizes require gaskets of at least 10-1/2 inches in width. All HDPE shall be installed at maximum lengths to reduce the number of joints.
- E. Contech A-2000 PVC drainage pipe (A-2000): All A-2000 corrugated pipe with a smooth interior shall conform to the requirements of ASTM Designation F949 & F794 Dual Wall Corrugated Profile (DWCP) Pipe. Pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. Pipe shall be manufactured to 46 psi stiffness when tested in accordance with ASTM Test Method D2412. There shall be no evidence of splitting, cracking or breaking when the pipe is tested per ASTM Test Method D2412 and F949 section 7.5. The pipe shall be made of PVC compound having a minimum cell classification of 12454B as defined in ASTM Specification D1784.
- **F. PVC Drainage Pipe:** PVC Drainage Pipe shall be C-900 with push-on joints (no glued joints) and shall be as specified for sanitary sewer construction, except that it shall be white in color. Any portion of the PVC storm pipe that may be exposed to sunlight, such as its outlet to the detention pond, shall be painted to protect it from UV light.
- **G.** Inlets, Manholes, and Junction Boxes: All drainage inlets, manholes, and junction boxes shall be precast concrete conforming to ASTM C-478 and 64T. All concrete shall have not less than 4000-psi compressive strength at 28 days. Structure sections shall be joined with a mastic sealing compound. The remaining space shall be filled with the cement mortar and finished so as to produce a smooth continuous surface inside and outside the wall sections. All openings in precast structures shall be cast at the time of manufacture. Holes for piping shall be six inches larger than the outside diameter of the proposed pipe. All spaces between the manhole and the pipe shall be completely filled with mortar and finished smooth. Mortar used for concrete structures shall conform to M C-270. Mortar material shall be mixed one part Type 2 Portland cement to two parts aggregate by volume. Portland cement shall conform to ASTM C-144 and aggregate shall conform to ASTM C-144. The CONTRACTOR shall furnish the ENGINEER with shop drawings of all precast structures for his approval prior to fabrication. Shop drawings shall show all dimension, reinforcing steel and specifications. Storm Manholes shall be constructed with a traffic bearing cast-iron slotted grate.
- **H. Trench Backfill** shall be as shown in the Drainage Details. In addition, testing under paved areas shall be as follows: One test location midway between structures and one test location adjacent to each structure. Engineer may request additional locations. Testing in each location shall begin in the first foot above the culvert with tests every two feet to within two feet of the sub-grade. Density shall be to 100 percent of maximum as determined by AASHTO T-99.
- I. Control Structures: Shall be constructed per the above specifications for Inlets, Manholes, and Junction Boxes except that the structures shall include the bleeders and weirs as shown on the detail.
- J. Rip-Rap Energy Dissipaters: Shall be constructed per the details and as shown on the drawings at the control structures CS-1B and CS-2B, the downstream bubble-up structures. The rubble shall be of material and placed in accordance to FDOT Section 530-2.3 (material) and FDOT Section 530-3.3 (Construction Methods). Should broken concrete be used as the rubble, it shall be free from reinforcing bars or wire mesh. The contractor shall use care in the placement of the stone so that it is not dropped on thew fabric in such a fashion that tears the fabric. The fabric shall be as specified in FDOT Section 985 and shall be of the woven design and as specified for use with riprap per Table 1 of this section. The bedding stone shall be of the type typically used for drainfield rock and shall meet the requirements of FDOT for drainfield rock.

