

SECTION No.: 860500  
FM No.: 433688-4-52-01  
COUNTY: Broward  
S.R. No.: A1A

**DISTRICT FOUR (4) AMENDMENT NUMBER SIX (6)  
TO THE STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION AND  
CITY OF FORT LAUDERDALE INCLUSIVE LANDSCAPE MAINTENANCE  
MEMORANDUM OF AGREEMENT**

This is Amendment Number Six (6) to the Agreement dated **January 31, 2008**, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ by and between the State of Florida Department of Transportation hereinafter called the DEPARTMENT and the **City of Fort Lauderdale**, a municipal subdivision of the State of Florida, hereinafter called the AGENCY.

**WITNESSETH**

WHEREAS, the parties entered into the Inclusive Landscape Maintenance Memorandum of Agreement dated, **January 31, 2008** for the purpose of maintaining the landscape improvements by the AGENCY on various roads including State Road A1A and;

WHEREAS, the DEPARTMENT and the AGENCY have agreed to add additional landscape to be installed on State Road A1A in accordance with the above referenced Agreement;

WHEREAS, the parties have agreed to enter into a separate agreement for the decorative wall and decorative lighting;

WHEREAS, the AGENCY by Resolution No. \_\_\_\_\_ dated \_\_\_\_\_, attached hereto and by this reference made a part hereof, desires to enter into this Agreement and authorized its officers to do so;

NOW THEREFORE, for and in consideration of mutual benefits that flow each to the other, the parties covenant and agree as follows:

1. Pursuant to page 8, paragraph 14 of the Inclusive Landscape Maintenance Memorandum of Agreement for State Road A1A dated **January 31, 2008** the DEPARTMENT has decided to construct additional landscape improvements and/or to modify an improvement located as indicated in **Exhibit "A"**, State Road A1A from N.E. 9th Street (M.P. 3.248) to just north of N.E. 18th Street (M.P.4.322) in accordance with the plans attached as **Exhibit "B"**.
2. The AGENCY shall agree to maintain additional landscape improvements in the Agreement described above, including specialty surfacing (concrete pavers and stamped colored asphalt [also known as patterned pavement]) according to

**Exhibit "C", the Maintenance Plan and Exhibit "D" Patterned Pavement Maintenance.**

3. The DEPARTMENT agrees to enter into a contract to have installed said landscape improvements for an amount as indicated in **Exhibit "E"** not to exceed **\$984,757.50**.
4. The maintenance of the decorative wall and lighting shall be maintained under a separate agreement between the DEPARTMENT and the AGENCY.

Except as modified by this amendment, all terms and conditions of the original Agreement and all amendments there to shall remain in full force and effect.

**Exhibits**

**Exhibit A - Landscape Improvements Limits and Maintenance Boundaries and Location Map**

**Exhibit B - Landscape Improvement Plans**

**Exhibit C - Maintenance Plan For Landscape Improvements**

**Exhibit D - Patterned Pavement Maintenance**

**Exhibit E - Approximate Cost For Landscape Improvements**

In Witness whereof, the parties hereto have executed with this Amendment effective the \_\_\_\_day \_\_\_\_\_ year written and approved.

IN WITNESS OF THE FOREGOING, the parties have set their hands and seals the day and year first above written.

City of Fort Lauderdale  
a municipal corporation

State of Florida  
Department of Transportation

By: \_\_\_\_\_  
Chairperson/Mayor/Manager

By: \_\_\_\_\_  
Director of Transportation Development

Attest: \_\_\_\_\_ (SEAL)  
Clerk

Attest: \_\_\_\_\_ (SEAL)  
Executive Secretary

Legal Review

Legal Review

\_\_\_\_\_  
Attorney Date

\_\_\_\_\_  
Office of the General Counsel Date

**SECTION No.:** 860500  
**FM No.:** 433688-4-52-01  
**COUNTY:** Broward  
**S.R. No.:** A1A

**EXHIBIT A**

**LANDSCAPE IMPROVEMENTS LIMITS AND MAINTENANCE  
BOUNDARIES AND LOCATION MAP**

**I. PROJECT LOCATION:**

State Road A1A from N.E. 14th Court (M.P. 3.334) to just north of N.E. 18th Street (M.P. 4.322)

**II. INCLUSIVE LIMITS OF LANDSCAPE IMPROVEMENTS MAINTENANCE FOR THIS PROJECT:**

**State Road A1A:**

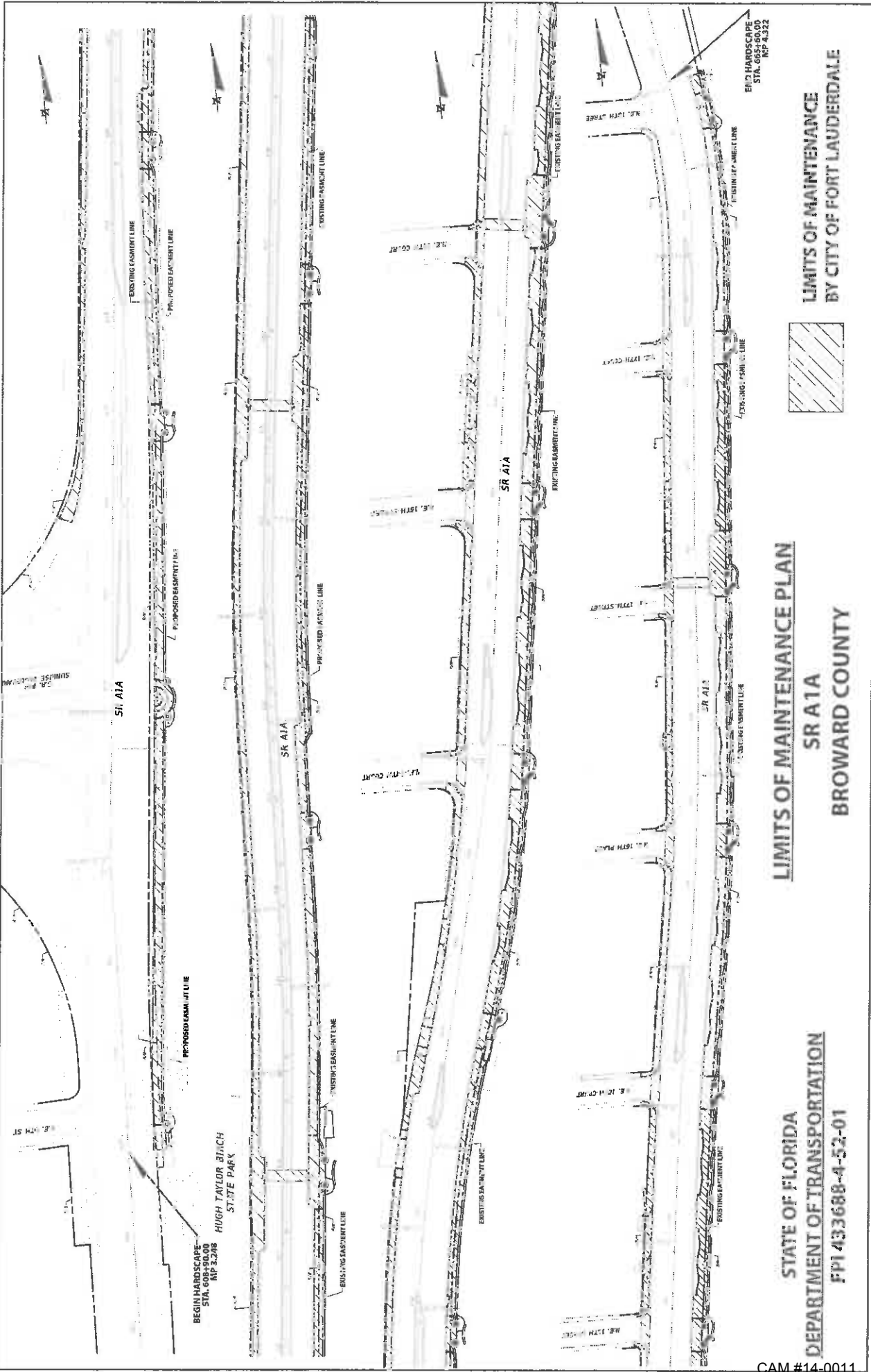
Project Located In North Fort Lauderdale Beach Area (Section 86050000): (M.P. 2.039) (south of Poinsettia Street) to (M.P. 6.410) (Flamingo Drive)

**III. MAINTENANCE LIMITS:**

State Road A1A from N.E. 9th Street (M.P. 3.248) to just north of N.E. 18th Street (M.P. 4.322)

**\*All limits of the original agreement and amendments shall apply**

*Please See Attached*



BEGIN HARDSCAPE  
STA. 608+90.00  
MP 3.246

HUGH TAYLOR BINCH  
STATE PARK

SR A1A

SR A1A

SR A1A

SR A1A

END HARDSCAPE  
STA. 612+00.00  
MP 3.252

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
FPI 433688-4-52-01

LIMITS OF MAINTENANCE PLAN  
SR A1A  
BROWARD COUNTY



LIMITS OF MAINTENANCE  
BY CITY OF FORT LAUDERDALE

**SECTION No.:** 860500  
**FM No.:** 433688-4-52-01  
**COUNTY:** Broward  
**S.R. No.:** A1A

**EXHIBIT B**

**LANDSCAPE IMPROVEMENT PLANS**

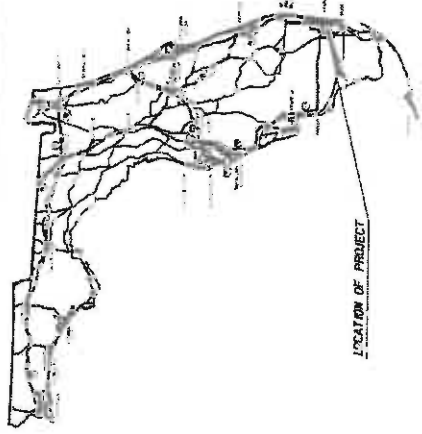
The DEPARTMENT agrees to install the landscape improvements in accordance with the plans and specifications attached hereto and incorporated herein.

Please see attached plans prepared by: **Keith and Schnars, PA**  
**Bruce L. Reed, RLA 0001479**

**Dated: December 4, 2013**

**Sheets: LD 1-32**

CONSTRUCTION CONTRACT NO.



STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 433688-4-52-01

BROWARD COUNTY (86050)

STATE ROAD NO. 31A

LANDSCAPE PLANS

SEE INDEX FOR THE  
KEY SHEET COMPONENT

INDEX OF LANDSCAPE PLANS

SHEET NO.	SHEET DESCRIPTION
LD-1	KEYSHEET
LD-2	TABULATION OF QUANTITIES
LD-3	LANDSCAPE NOTES
LD-4 TO LD-6	PLANTING DETAILS
LD-7	IRRIGATION PLAN
LD-8 TO LD-21	LANDSCAPE PLANS
LD-22	IRRIGATION LAYOUT
LD-23 TO LD-32	IRRIGATION PLAN

LANDSCAPE SHOP DRAWINGS  
TO BE SUBMITTED TO:

KEITH AND SCHMARS, P.A.  
1500 N. W. 10TH AVENUE, SUITE 100  
FT. LAUDERDALE, FL 33309  
PHONE: 352-371-1100

PLANS PREPARED BY:  
KEITH AND SCHMARS, P.A.  
1500 N. W. 10TH AVENUE, SUITE 100  
FT. LAUDERDALE, FL 33309

OF THE STATE OF FLORIDA, CONTRACT NO. 433688-4-52-01  
CONTRACT NO. 86050

NOTE: THE SCOPE OF THESE PLANS MAY  
HAVE CHANGED DUE TO REPRODUCTION.

LIABILITY SIGNATURE  
ADVISEE'S NAME

KEY SHEET REVISIONS	DATE	DESCRIPTION

LANDSCAPE PLANS  
LANDSCAPE ARCHITECT  
OF RECORD

R.I.A. NO. 12345

DATE	14	11
BY		
FOR		

PROJECT MANAGER: SCOTT PETERSON, PE

**TABULATION OF QUANTITIES**

SHEET NO.	ITEM DESCRIPTION	SHEET NUMBERS																				TOTAL QUANTITY
		10-6	10-7	10-8	10-9	10-10	10-11	10-12	10-13	10-14	10-15	10-16	10-17	10-18	10-19	10-20	10-21	10-22	10-23	10-24		
10-6	ITEM DESCRIPTION																					
10-7	ITEM DESCRIPTION																					
10-8	ITEM DESCRIPTION																					
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10-21	ITEM DESCRIPTION																					
10-22	ITEM DESCRIPTION																					
10-23	ITEM DESCRIPTION																					
10-24	ITEM DESCRIPTION																					

**IRRIGATION TABULATION OF QUANTITIES**

SHEET NO.	ITEM DESCRIPTION	SHEET NUMBERS																				TOTAL QUANTITY
		10-6	10-7	10-8	10-9	10-10	10-11	10-12	10-13	10-14	10-15	10-16	10-17	10-18	10-19	10-20	10-21	10-22	10-23	10-24		
10-6	ITEM DESCRIPTION																					
10-7	ITEM DESCRIPTION																					
10-8	ITEM DESCRIPTION																					
10-9	ITEM DESCRIPTION																					
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10-18	ITEM DESCRIPTION																					
10-19	ITEM DESCRIPTION																					
10-20	ITEM DESCRIPTION																					
10-21	ITEM DESCRIPTION																					
10-22	ITEM DESCRIPTION																					
10-23	ITEM DESCRIPTION																					
10-24	ITEM DESCRIPTION																					

**PAY ITEM NOTES:**

- (1) PAVING, ARCHITECTURAL ROADWAY
- (2) INCLUDES CONCRETE REINFOR
- (3) INCLUDES TESTING
- (4) INCLUDES CURBS

	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	TABLE OF QUANTITIES
KEITH and SCHNARS, P.A. CONSULTING ENGINEERS	A-A B-B C-C D-D	11-2



**PAVER NOTES**

- 1) CERTIFICATION: BEFORE THE PRE-CONSTRUCTION MEETING, SUBMIT THE FOLLOWING CERTIFICATION:  
 A) CERTIFIED CONCRETE PAVEMENT INSTALLER, BY THE INTERLOCKING CONCRETE PAVING INSTITUTE
- 2) ITEMIZED COSTS: BEFORE THE PRE-CONSTRUCTION MEETING, SUBMIT A UNIT COST BREAKDOWN FOR EACH ITEM OF WORK.
- 3) MATERIALS: NEW, UNUSED AND SUBJECT TO INSPECTION AND APPROVAL.

3-1/8" THICK PAVERS: CONFORMING TO ASTM C 1392, TYPE F, APPLICATION %<sub>T</sub>, 10,000 PSI MINIMUM AVERAGE COMPRESSIVE STRENGTH, 6% MAXIMUM WATER ABSORPTION.

- 4) SAMPLES: BEFORE THE PRE-CONSTRUCTION MEETING, SUBMIT FOR REVIEW THE MANUFACTURERS PRODUCT SHEETS AND SAMPLES OF:  
 A) PAVERS  
 B) POLYURETHIC JOINTING SAND  
 C) SOLVENT BASED SEALER

5) DELIVER AN ADDITIONAL 10 SF OF EACH OF THE SPECIFIED PAVERS IN THE SPECIFIED COLOR MIX TO THE CITY OF FORT LAUDERDALE.

6) SUBGRADE DENSITY TESTING: BEFORE INSTALLING THE LIMEROCK SUBBASE, PERFORM DENSITY TESTS ON THE SUBGRADE AT EACH SEPARATE PAVEMENT INSTALLATION AREA AND SUBMIT TEST RESULTS.

7) SUBBASE DENSITY TESTING: BEFORE INSTALLING THE SAND BEDDING COURSE, PERFORM DENSITY TESTS ON THE SUBBASE AT EACH SEPARATE PAVEMENT INSTALLATION AREA AND SUBMIT TEST RESULTS.

8) LIMEROCK BASE COURSE APPROVAL: BEFORE INSTALLING THE SAND BEDDING COURSE, REQUEST APPROVAL OF THE LIMEROCK BASE COURSE. SURFACE TOLERANCE REQUIREMENT IS PLUS/MINUS 3/8 INCH OVER A 10 FOOT STRAIGHT EDGE.

9) SAND BEDDING COURSE: CONFORM TO ASTM C 33, FREE OF ORGANIC MATERIALS, WITH 100 PERCENT PASSING THROUGH A 3/8 INCH SIEVE SIZE AND A MAXIMUM OF 1 PERCENT PASSING A NUMBER 200 SIEVE SIZE. (COMMONLY KNOWN AS MANUFACTURED CONCRETE SAND OR CONCRETE SCREEDINGS). DO NOT USE MASCW SAND.

10) PAVEMENT LAYOUT APPROVAL AND INSTALLATION: BEFORE EACH SEPARATE PAVEMENT INSTALLATION AREA, REQUEST DESIGN APPROVAL OF THE LAYOUT AND DISTRIBUTION OF THE PAVEMENT COLORS. MAXIMUM JOINT LINE TOLERANCE IS 1/2 INCH OVER 50 FEET.

11) PAVEMENT COMPACTOR: VIBRATE PAVERS INTO THE SAND BEDDING COURSE USING A PLATE COMPACTOR WITH A RUBBER BASE CAPABLE OF 5000 POUNDS COMPACTOR FORCE.

12) POLYURETHIC JOINTING SAND: APPLY DRY POLYURETHIC JOINT SAND OVER DRY PAVERS AND SWEEP INTO THE JOINTS PER MANUFACTURERS INSTRUCTIONS. APPLY WATER TO HARDEN THE POLYURETHIC JOINT SAND PER MANUFACTURERS INSTRUCTIONS.

13) SEALANTS: BEFORE EACH SEALING JOB, CLEAN PAVERS AND FILL JOINTS. APPLY 4 COATS OF SOLVENT-BASED SEALER ALLOWING A MINIMUM OF 48 HOURS BETWEEN COATS.

**PATTERNED/TEXTURED PAVEMENT NOTES**

1) CERTIFICATION: THE APPLICATOR SHALL HAVE LEAD PERSONNEL ON THE PROJECT THAT HAVE BEEN TRAINED BY MANUFACTURER WITHIN THE PREVIOUS 12 MONTHS OF STARTING THE PROJECT. AT LEAST ONE OF THESE TRAINED PERSONNEL SHALL BE ON SITE DURING THE APPLICATION, BEFORE THE PRE-CONSTRUCTION MEETING, SUBMIT CERTIFICATION TO THE ENGINEER.

2) SAMPLES AND MOCKUPS: SUBMIT FOR REVIEW THE MANUFACTURERS PRODUCT SHEETS AND SAMPLES.

3) EXISTING ASPHALT: FILL HOLES OR SINKS IN THE ASPHALT GREATER THAN 3/4 INCH IN DEPTH AND GREATER THAN 1.5 SQUARE FEET IN AREA IN RELATION TO THE SURROUNDING ASPHALT. NOTIFICATION IS REQUIRED OF ASPHALT AREAS THAT DO NOT MEET THE PRE-APPLICATION REQUIREMENTS.

4) MATERIAL COMPOSITION: A THERMO-SET TWO PART 100 PERCENT EPOXY BINDER AND STONE AGGREGATE SEEDED ONTO THE WET BINDER.

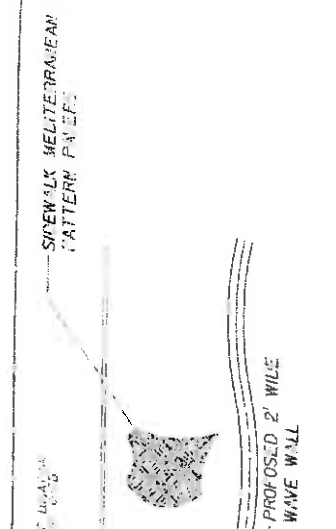
5) THERMO-SET BINDER THICKNESS: 0.50 INCH MINIMUM AVERAGE THICKNESS.

6) STONE AGGREGATE: 0.64 TO 0.12 INCHES NOMINAL SIZE WITH 75 PERCENT BY WEIGHT IN RANGE.

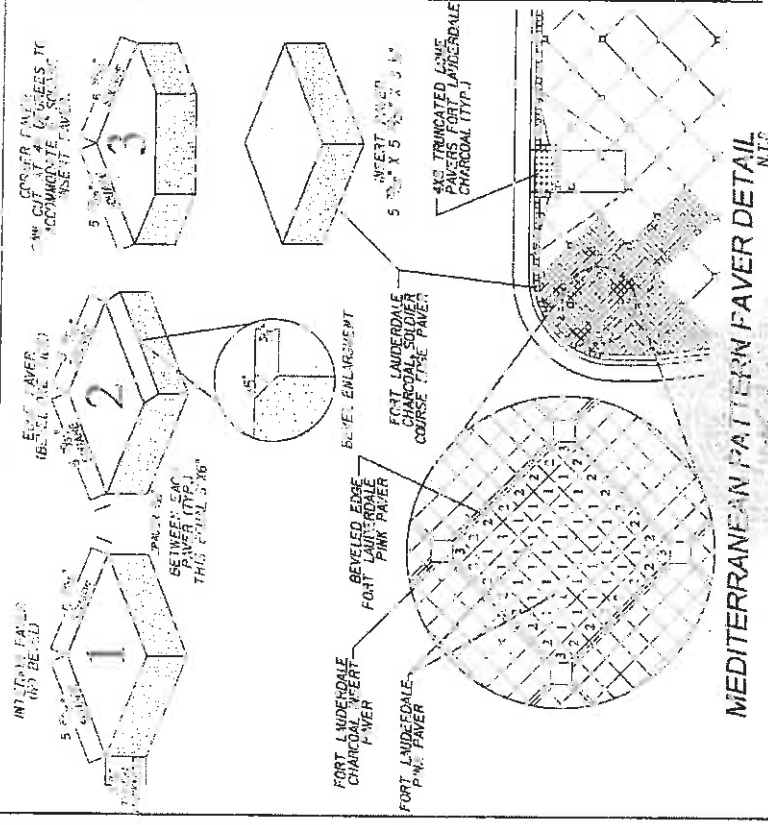
7) STONE AGGREGATE COVERAGE: 1.25 POUNDS PER SQUARE FOOT EMBEDDED INTO BINDER.

8) REQUEST CAD DRAWINGS FROM THE LANDSCAPE ARCHITECT FOR THE MANUFACTURE OF THE STENCIL PATTERN.

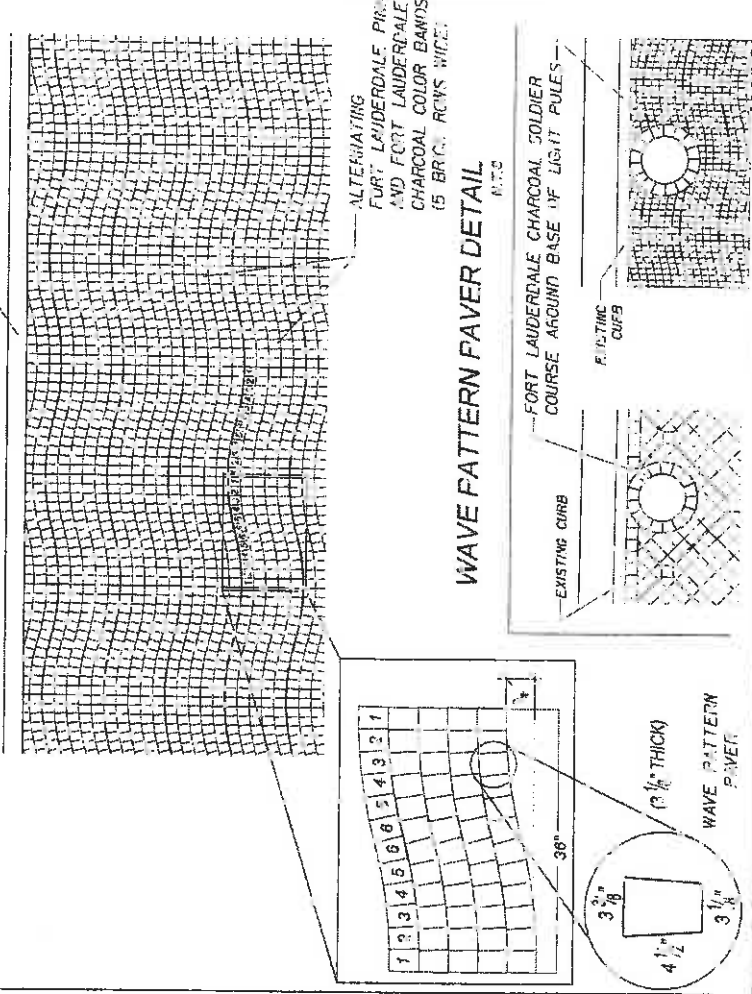
STATE OF FLORIDA		COUNTY	DATE
DEPARTMENT OF TRANSPORTATION			
CITY OF PALM BEACH		PROJECT NO.	15-01
DATE	DESCRIPTION	BY	DATE
HARRIS & SCHAFFNER, P.A.			
1000 N. PALM BEACH BLVD., SUITE 200		PALM BEACH, FLORIDA 33480-1200	
TELEPHONE: 561-832-1100		FAX: 561-832-1101	
HARRIS & SCHAFFNER, P.A.			
HARRIS & SCHAFFNER, P.A.			



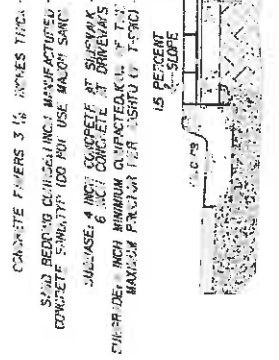
**WAVE WALL DETAIL / SIDEWALK PLANTER**  
N.T.S.



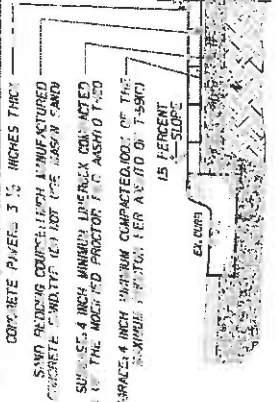
**WAVE PATTERN FAVER DETAIL**  
N.T.S.



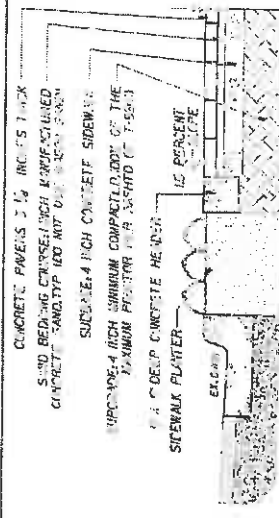
DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT NO. 103-23-1-3-1		<b>PAVING DETAILS</b> SHEET 11
KEITH and SCHWAB, P.A. ARCHITECTS AND ENGINEERS 1000 N. W. 10th St., Ft. Lauderdale, FL 33304 TEL: (305) 555-1111		



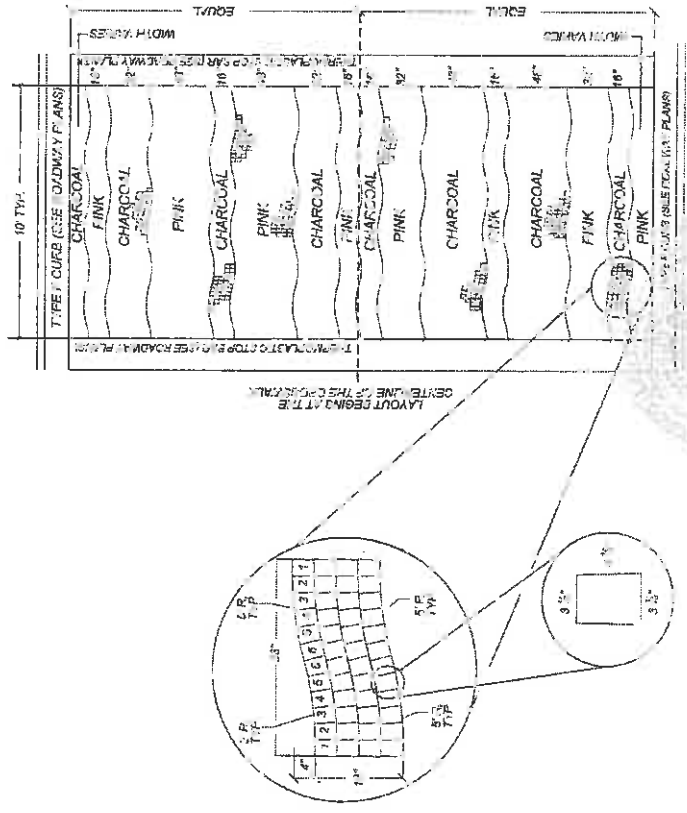
PAVER SIDEWALK SECTION  
(WEST SIDE OF A1A)  
N.T.S.



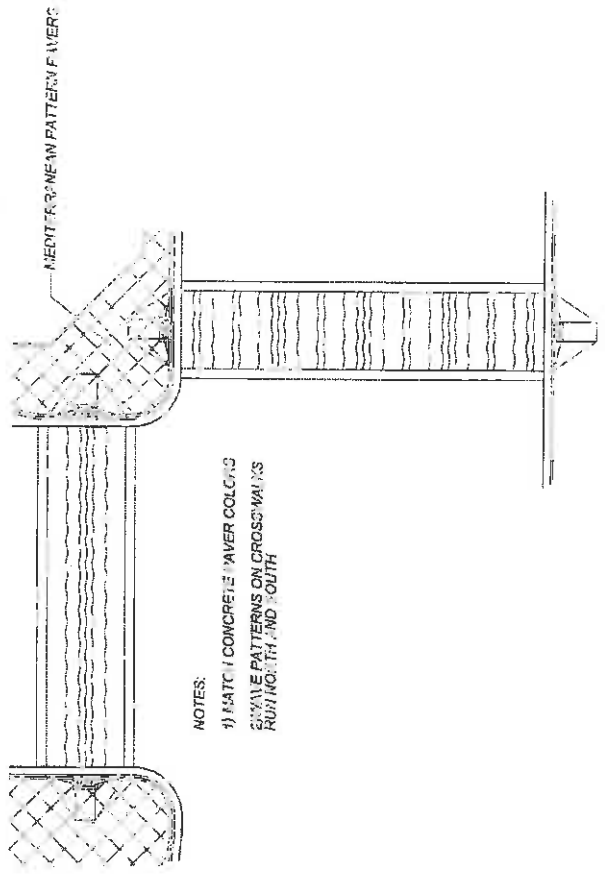
PAVER SIDEWALK SECTION  
(EAST SIDE OF A1A - STA. 608+90.00 TO STA. 639+19.00)  
N.T.S.



PAVER SIDEWALK SECTION  
(EAST SIDE OF A1A - STA. 639+19.00 TO STA. 655+00.00)  
N.T.S.

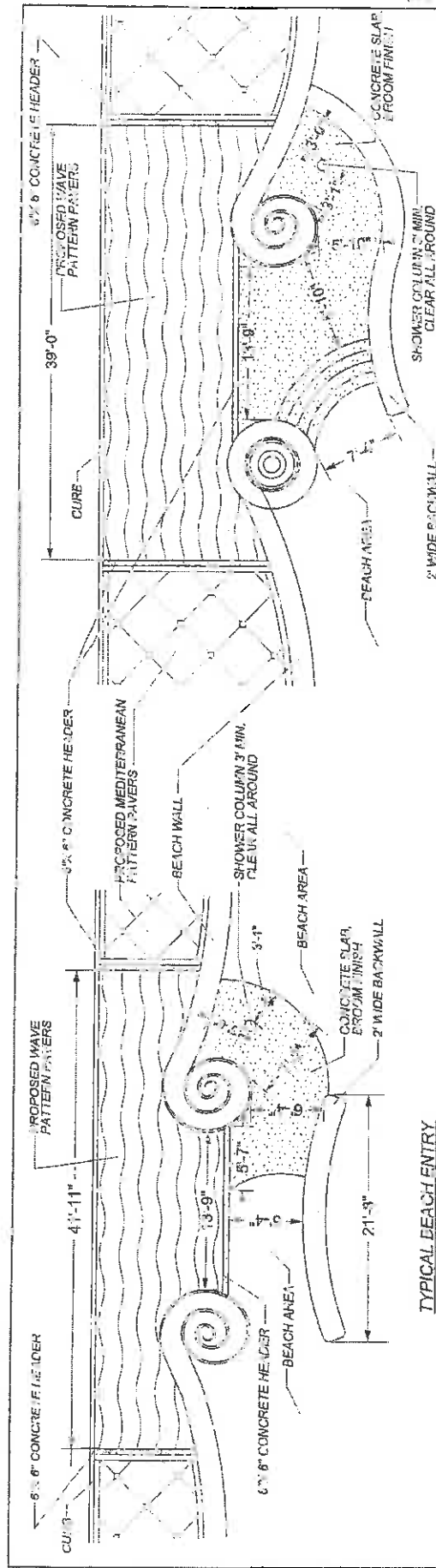


NOTES:  
1) MATCH CONCRETE PAVEMENT COLORING  
SIMILAR PATTERNS ON CROSSWALKS  
RUN NORTH AND SOUTH



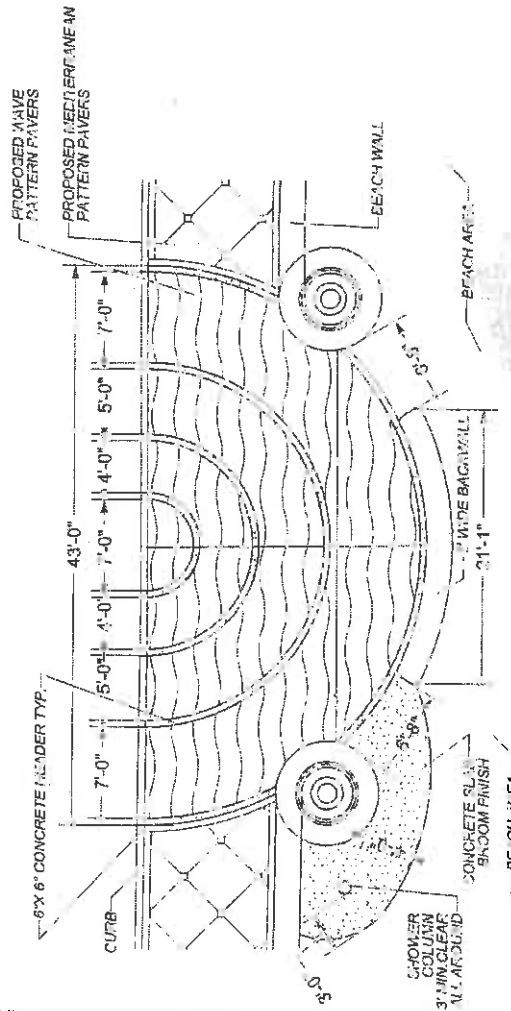
PATTERNED/TEXTURED PAVEMENT  
CROSSWALK DETAIL  
N.T.S.

DATE	SCALE	PART	10-E
KETH and SCHNARS, P.A. REGISTERED PROFESSIONAL ENGINEER			
DATE OF DESIGN	DATE OF CONSTRUCTION	PROJECT NO.	CLIENT
01/11/11	01/11/11	10-E	STATE OF FLORIDA



TYPICAL BEACH ENTRY  
 N.T.S.

TYPICAL ENTRY ALONG SHEET PILING  
 N.T.S.



BEACH ENTRY AT SUNRISE BLVD.  
 N.T.S.

STATE OF FLORIDA		COUNTY OF HARRIS, TEXAS	
DEPARTMENT OF TRANSPORTATION		COUNTY ENGINEER	
M. J. RICHARDS, P.E.		D. J. RICHARDS, P.E.	
PROJECT NO. 10-10-00		SHEET NO. 10-10-00	
DATE: 10-10-00		SCALE: AS SHOWN	
DRAWN BY: [Name]		CHECKED BY: [Name]	
APPROVED BY: [Name]		APPROVED BY: [Name]	
PROJECT TITLE: [Title]		PROJECT LOCATION: [Location]	



SUNRISE BOULEVARD  
S.R. 838  
NE 9TH ST

NE 14TH CT  
NE 15TH ST  
NE 15TH CT  
NE 15TH ST  
NE 16TH CT  
NE 16TH PL  
NE 17TH ST  
NE 17TH CT  
NE 18TH ST

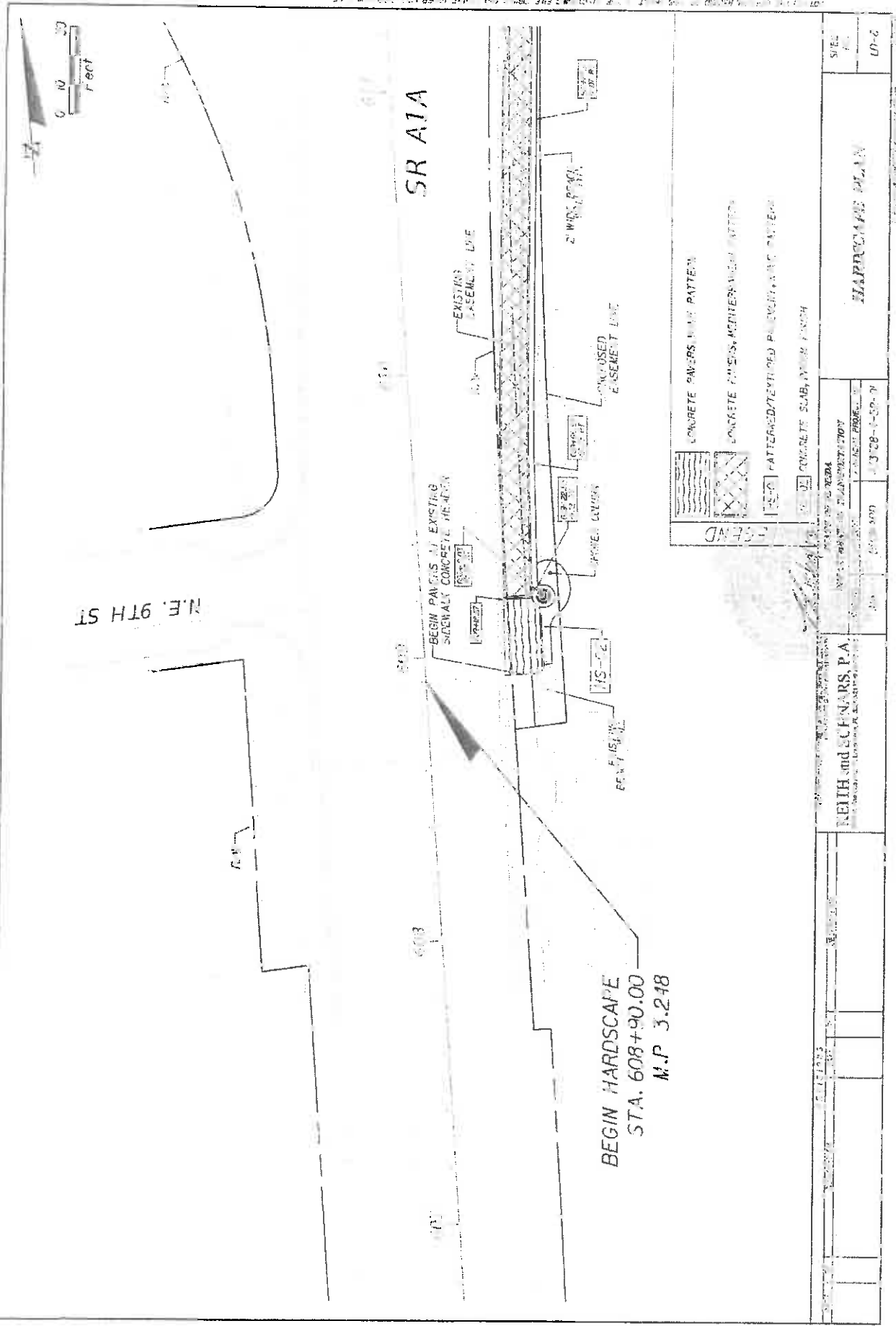
BEGIN LARC CAPE  
STA. 63+00.00  
N.P. 3246

LD-8 LD-9 LD-10 LD-11 LD-12 LD-13 LD-14  
LD-15 LD-16 LD-17 LD-18 LD-19

END LARC CAPE  
STA. 68+60.00  
N.P. 4311

LD-20 LD-21

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD & BRIDGE DIVISION TALLAHASSEE, FLORIDA 32310-0001		SHEET 60A FOURT	
PROJECT NO. 10-1000-1000 DRAWING NO. 10-1000-1000-1000	CONTRACT NO. 10-1000-1000 DATE 10/10/10	SCALE 1" = 40'	DATE 10/10/10
KENNEDY and SCHEIDT, P.A. 1000 N. GULF BLVD., SUITE 200 TAMPA, FLORIDA 33602-4000 TEL: (813) 281-1111 FAX: (813) 281-1112		PROJECT ENGINEER: [Signature] DATE: 10/10/10	



N.E. 9TH ST

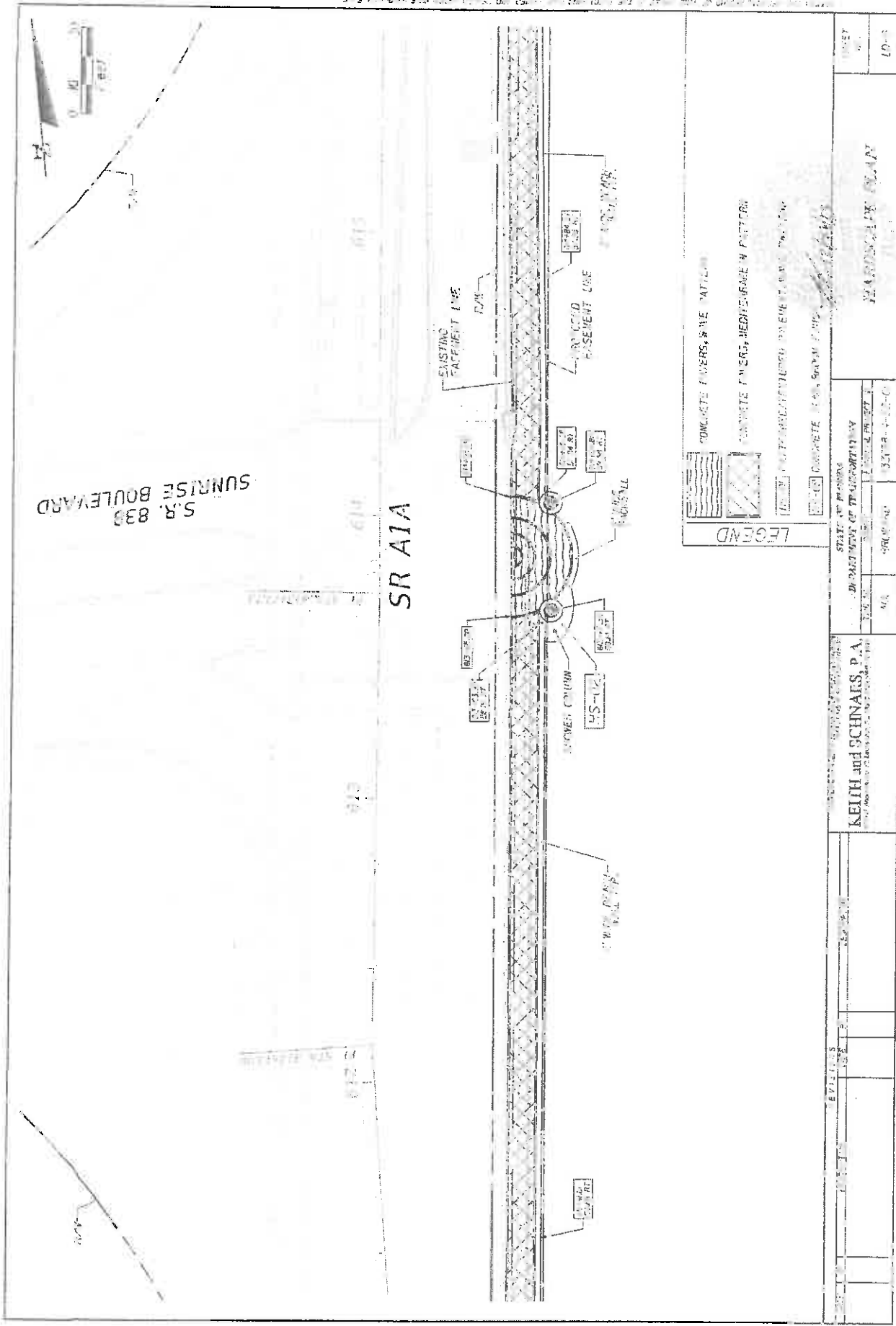
SR A1A

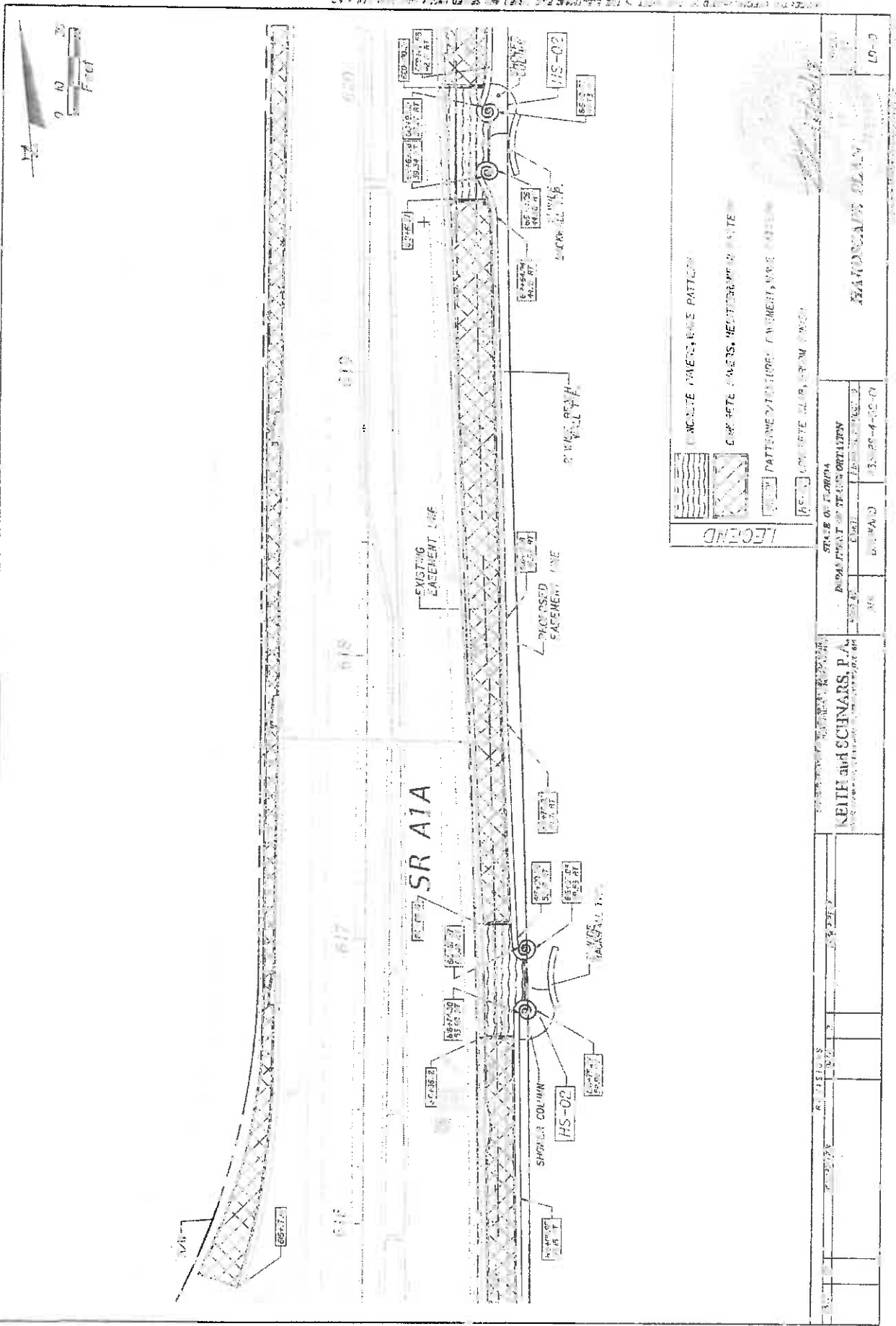
BEGIN PAVES AT EXISTING SIDEWALK CONCRETE HEREIN

BEGIN HARDSCAPE  
STA. 608+90.00  
M.P. 3.248

- [Symbol] CONCRETE PAVERS WITH PATTERN
- [Symbol] CONCRETE CURBS, INTERSECTIONS, PATTERNS
- [Symbol] PATTERNED/TYPED PAVEMENT, AND PATTERNS
- [Symbol] CONCRETE SLAB, WITH FINISH

<p>NEITH and S.F. NARS, P.A. 1000 W. 10TH ST., SUITE 100, WILKES BARRE, PA 18201-1000 TEL: 717-850-1000 FAX: 717-850-1001</p>		<p>PROJECT NO. 14-0011 DATE: 08/14/14 SCALE: AS SHOWN DRAWN BY: J. J. BROWN CHECKED BY: J. J. BROWN</p>	<p>DATE: 08/14/14 SCALE: AS SHOWN DRAWN BY: J. J. BROWN CHECKED BY: J. J. BROWN</p>	<p>SHEET NO. 01-6 TOTAL SHEETS 01-6</p>
<p>HARDSCAPE PLAN</p>				

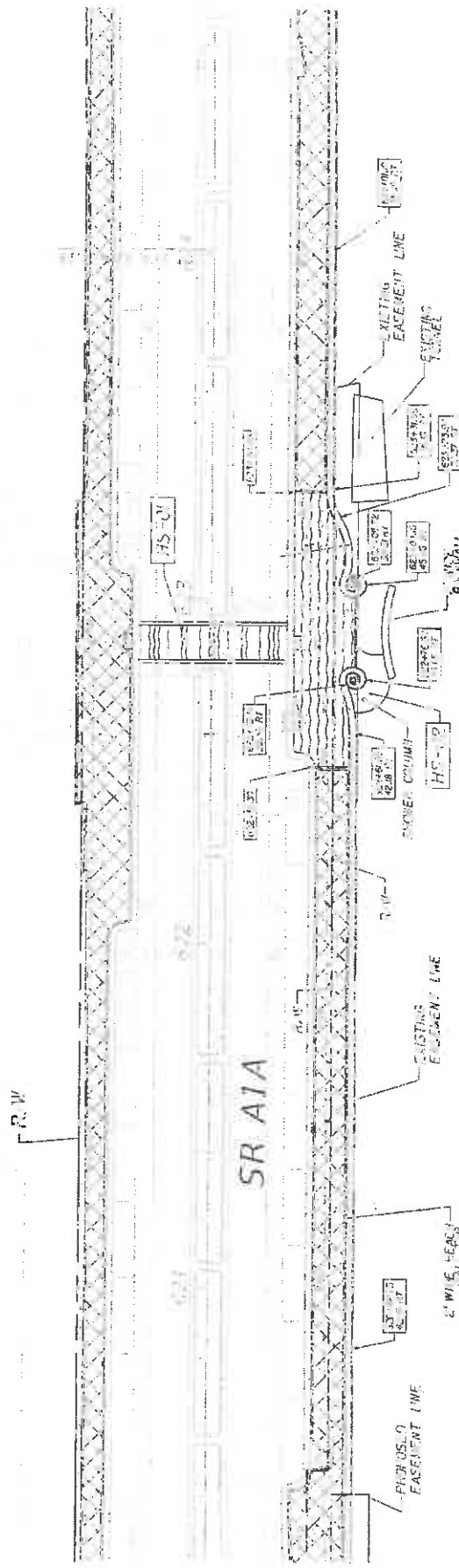




STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FLORIDA HIGHWAY AND TRANSPORTATION DISTRICT	
NEITH and SCHNARS, P.A.		PROJECT NO. 13-PC-4-00-0	
NO.	DATE	BY	APP'D.
DRAWING TITLE		DRAWING NO.	
SR A1A		10-0	



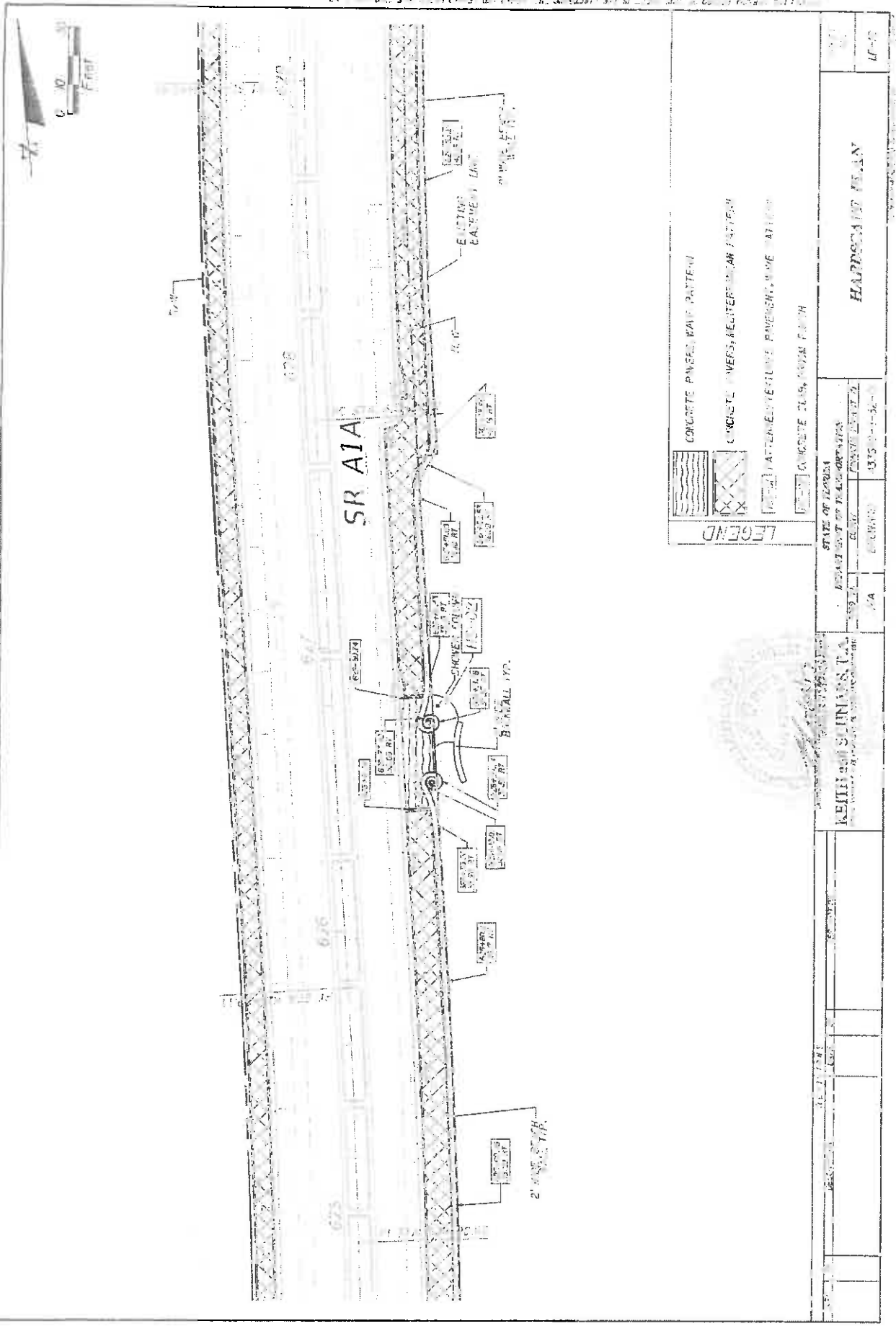
# HUGH TAYLOR BIRCH STATE PARK



**LEGEND**

	CONCRETE PAVEMENT PATTERN
	CONCRETE PAVED WESTERLY PATTERN
	POLYMER TREATED PORTLAND CEMENT PAVING
	CONCRETE CURBS AND WALLS

STATE OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION		PROJECT NO. 15-00000000		SHEET NO. 10-B	
KEITH and SCHNAITZ, P.A. 1500 MARKET STREET, SUITE 200 PHILADELPHIA, PA. 19102		DATE: 08/15/15		SCALE: AS SHOWN	
DRAWN BY: [Signature]		CHECKED BY: [Signature]		DATE: 08/15/15	

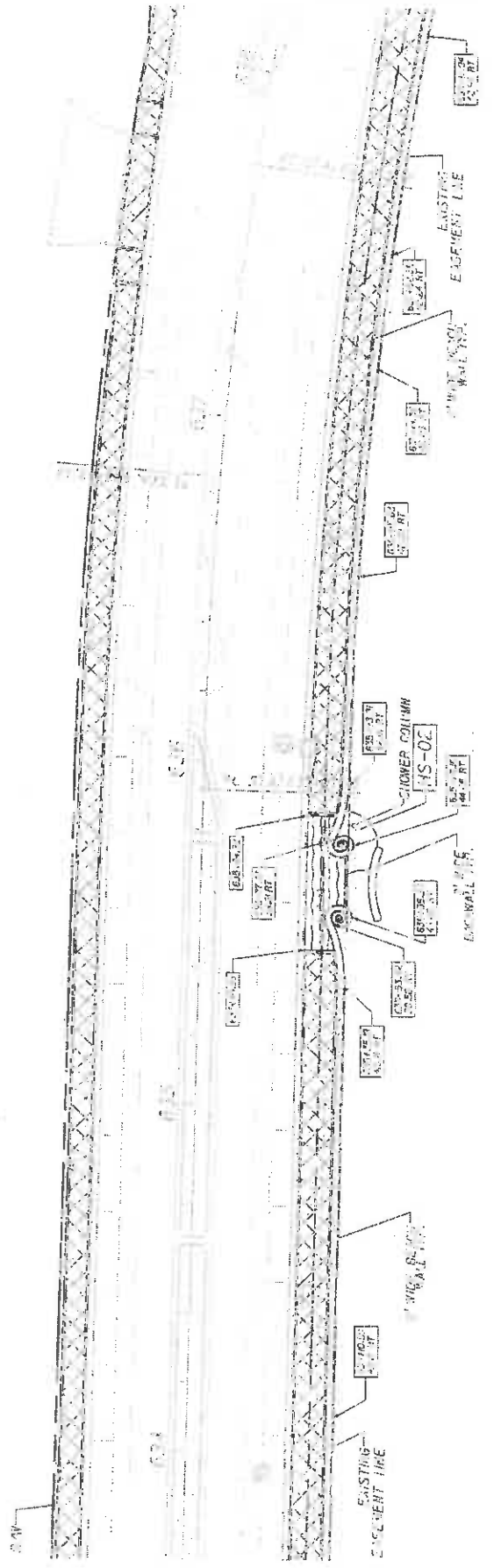
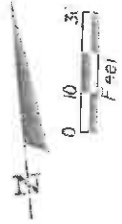


**LEGEND**

	CONCRETE PARALLEL RAIL PATTERN
	CONCRETE TRANSVERSE PATTERN
	PATTERNED TEXTURE FINISH
	CONCRETE CURB AND GUTTER

STATE OF TENNESSEE		HARRISBURG BRIDGE	
DEPARTMENT OF TRANSPORTATION		PROJECT NO. 10-1-10-10	
NO. 10-1-10-10	NO. 10-1-10-10	NO. 10-1-10-10	NO. 10-1-10-10
NO. 10-1-10-10	NO. 10-1-10-10	NO. 10-1-10-10	NO. 10-1-10-10

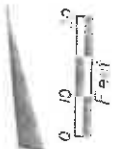




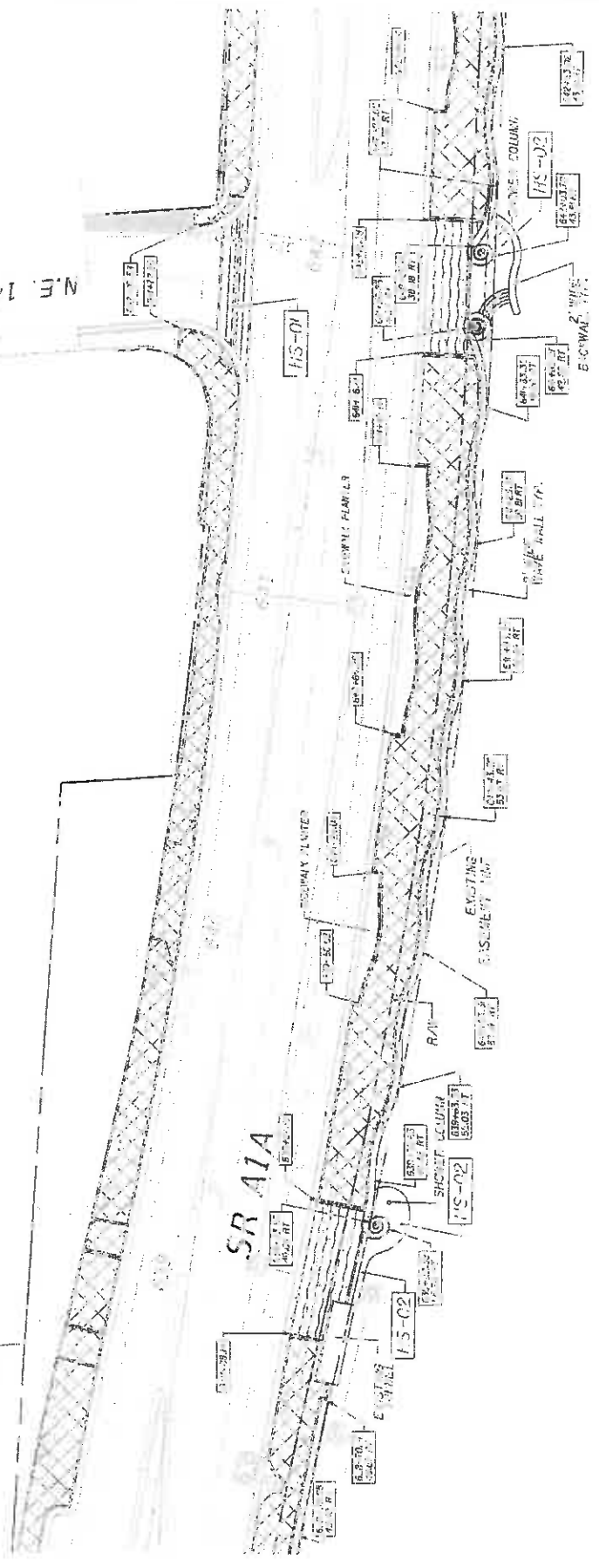
**LEGEND**

- BRIDGE PULPSTONE PAVING
- CONCRETE PAVING, MEDITERRANEAN PATTERN
- INTERMEDIATELY FINISHED, WAVE PATTERN
- CONCRETE SLAB, FIVE FEET

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		PROJECT NO.	
KATH and SCHEARS, P.A. 1000 SOUTH BAY STREET, SUITE 200, MIAMI BEACH, FLORIDA 33133		DRAWING NO.	
DATE	BY	APPROVED	DATE
<b>BRIDGE PLAN</b>			10-11



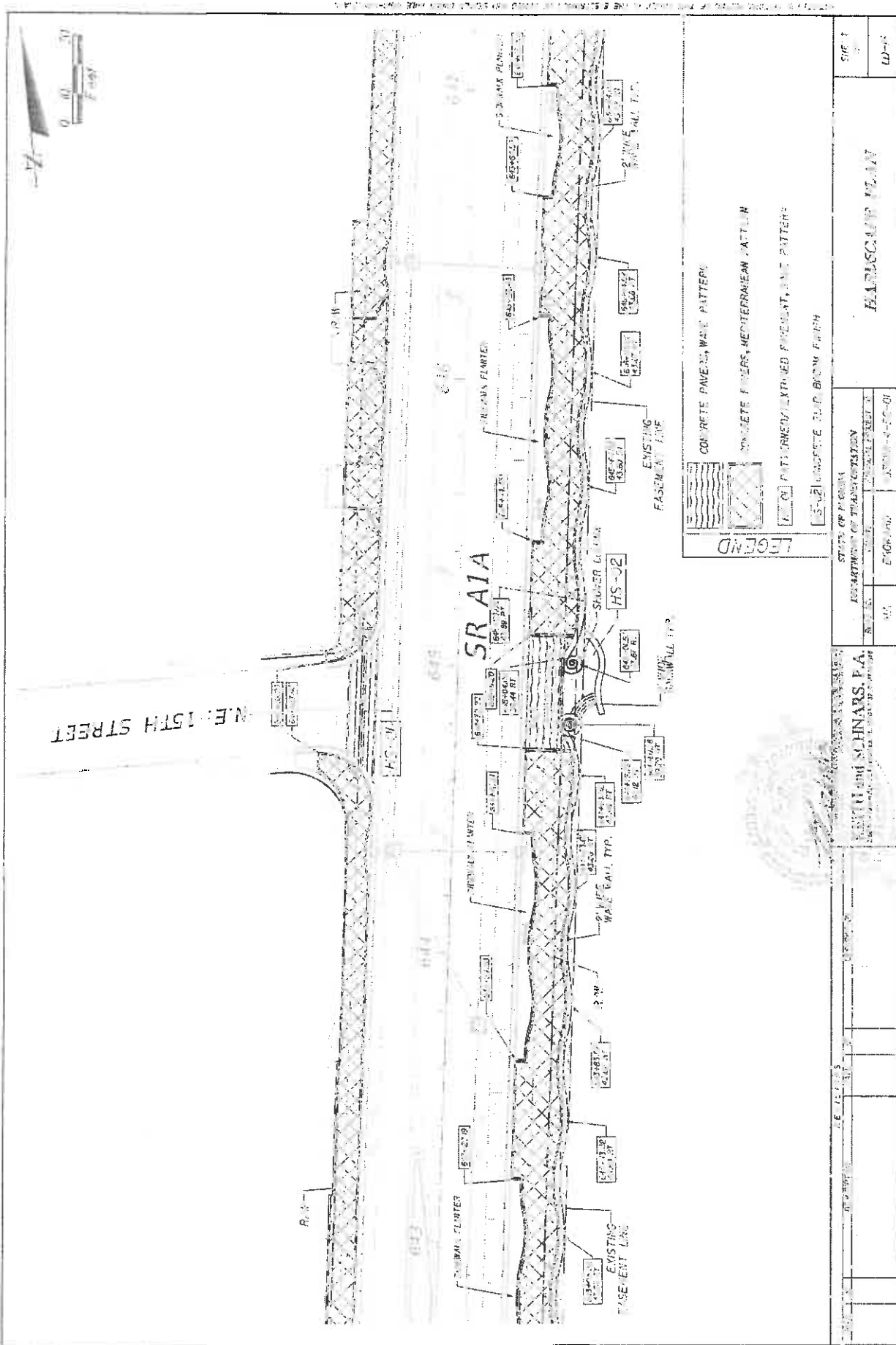
N.E. 14TH COURT



LEGEND

	CONCRETE PAVEMENT, SEE PARTS B
	CONCRETE CURB WALL WITH WALKWAY
	CONCRETE TYPED REINFORCED CONCRETE
	CONCRETE CURB WALL WITH WALKWAY
	CONCRETE CURB WALL WITH WALKWAY

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION FLORIDA HIGHWAYS	DATE: 10/05
PROJECT: SR 11A	DRAWN BY: J. W. K. ...
CONTRACT NO. 11A-01	CHECKED BY: ...
SECTION: SR 11A	APPROVED BY: ...
<b>LANDSCAPE PLAN</b>	



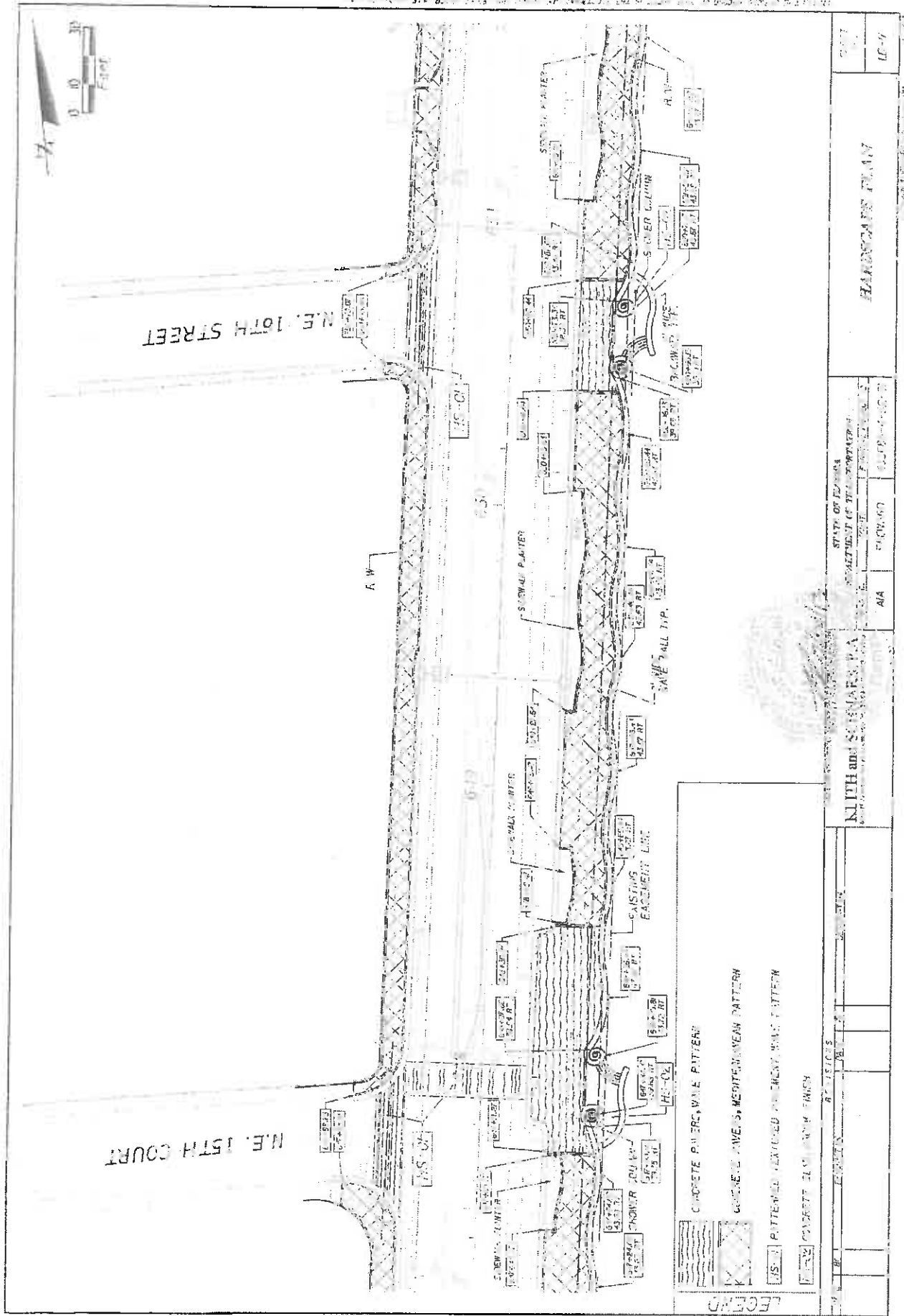
N.E. 15TH STREET

SR A1A

**LEGEND**

- CONCRETE PAVEMENT WAVE PATTERN
- CONCRETE FIBERS, MEDIUM GRADE PATTERN
- F.R.C. FIBER REINFORCED CONCRETE, JUMP PATTERN
- CONCRETE T.O.P. BEING FURSH

STATE OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS EIGHTH and SCHNARS, P.A. PROJECT NO. 10-0000000-01 SHEET NO. 10-0000000-01		SHEET 10-0000000-01
PROJECT TITLE HIGHWAY 10-0000000-01		DRAWING NO. 10-0000000-01
DESIGNER H. H. and SCHNARS, P.A.		DATE 10-0000000-01



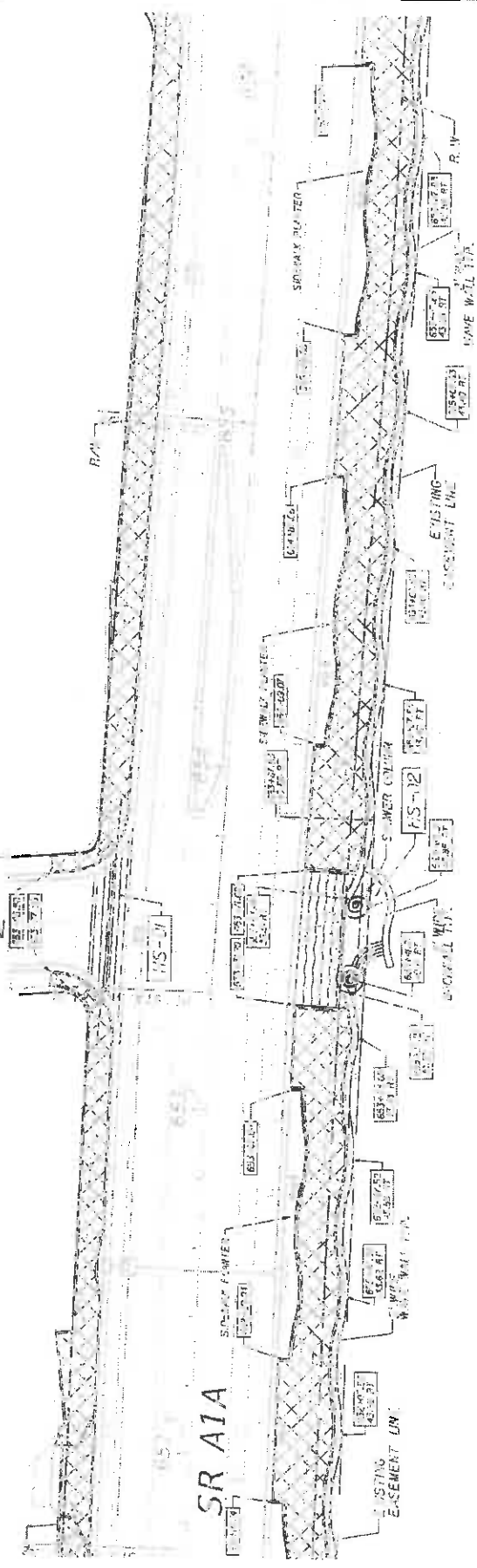
DATE: 10-1-67  
 DRAWN BY: [Signature]

**BRIDGE PLAN**

STATE OF IOWA  
 DEPARTMENT OF TRANSPORTATION  
 NORTH AND SOUTHWEST PA  
 AIA 11/10/67

NO.	DESCRIPTION	DATE	BY

N.E. 16TH COURT



SR A1A

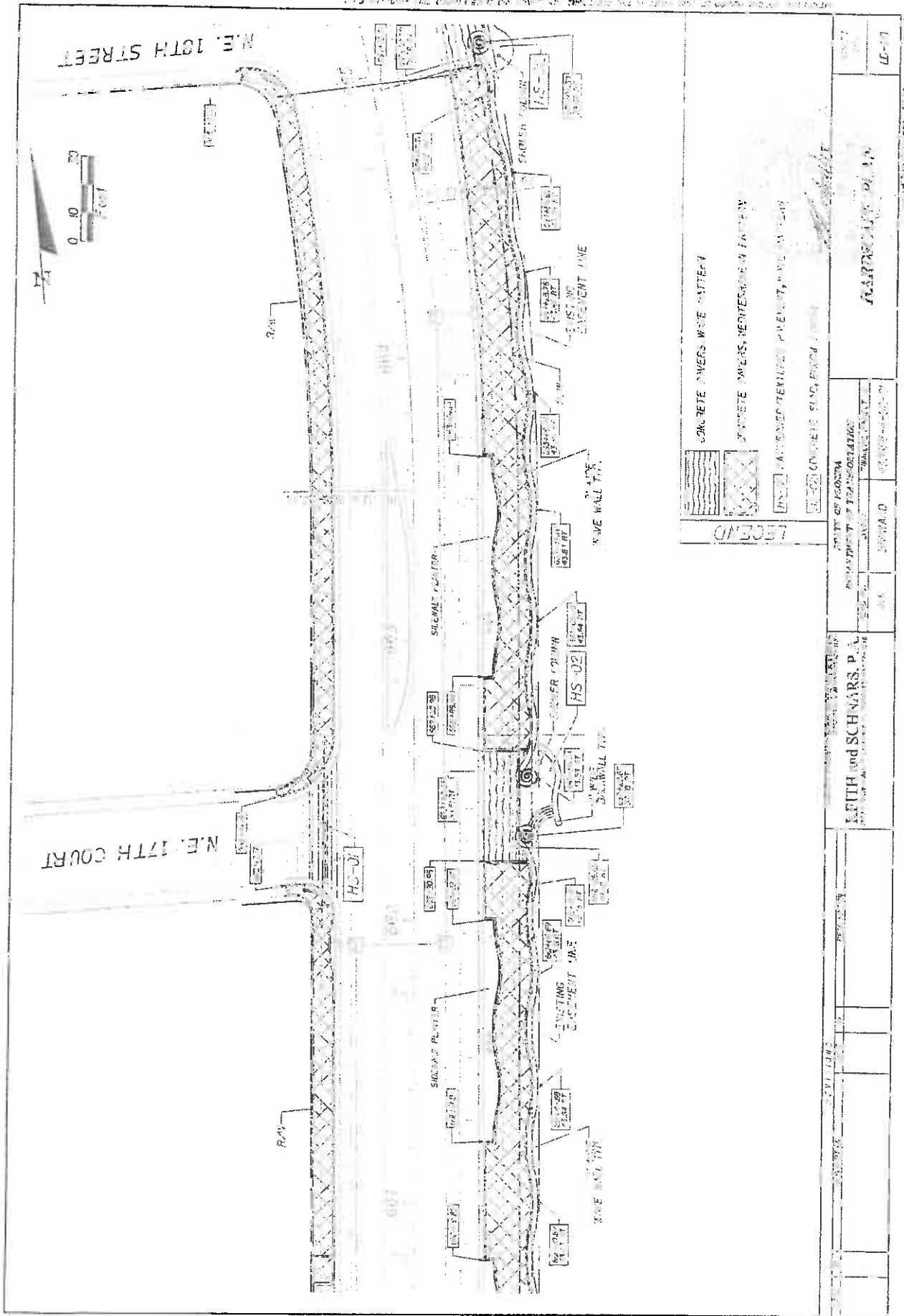
**LEGEND**

- [Hatched pattern] CONCRETE WALL, WALL PATTERNS
- [Cross-hatched pattern] CONCRETE FLOOR, INTERIOR WALL PATTERNS
- [Dotted pattern] CONCRETE FLOOR, INTERIOR WALL PATTERNS
- [Solid black] CONCRETE, EXISTING FLOOR

LEITH and SCHWARTZ, P.A. ARCHITECTS AND ENGINEERS 1000 N. W. 10th St., Suite 1000 Fort Lauderdale, FL 33304 Phone: (954) 575-1111 Fax: (954) 575-1112		DEPARTMENT OF TRANSPORTATION STATE OF FLORIDA PROJECT NO. 10-100-100-100-100 DRAWING NO. 10-100-100-100-100		SHEET 10-100-100-100-100	TOTAL SHEETS 10-100-100-100-100
ALARINCAAT PLAN			DATE 10-100-100-100-100	SCALE 10-100-100-100-100	PROJECT NO. 10-100-100-100-100

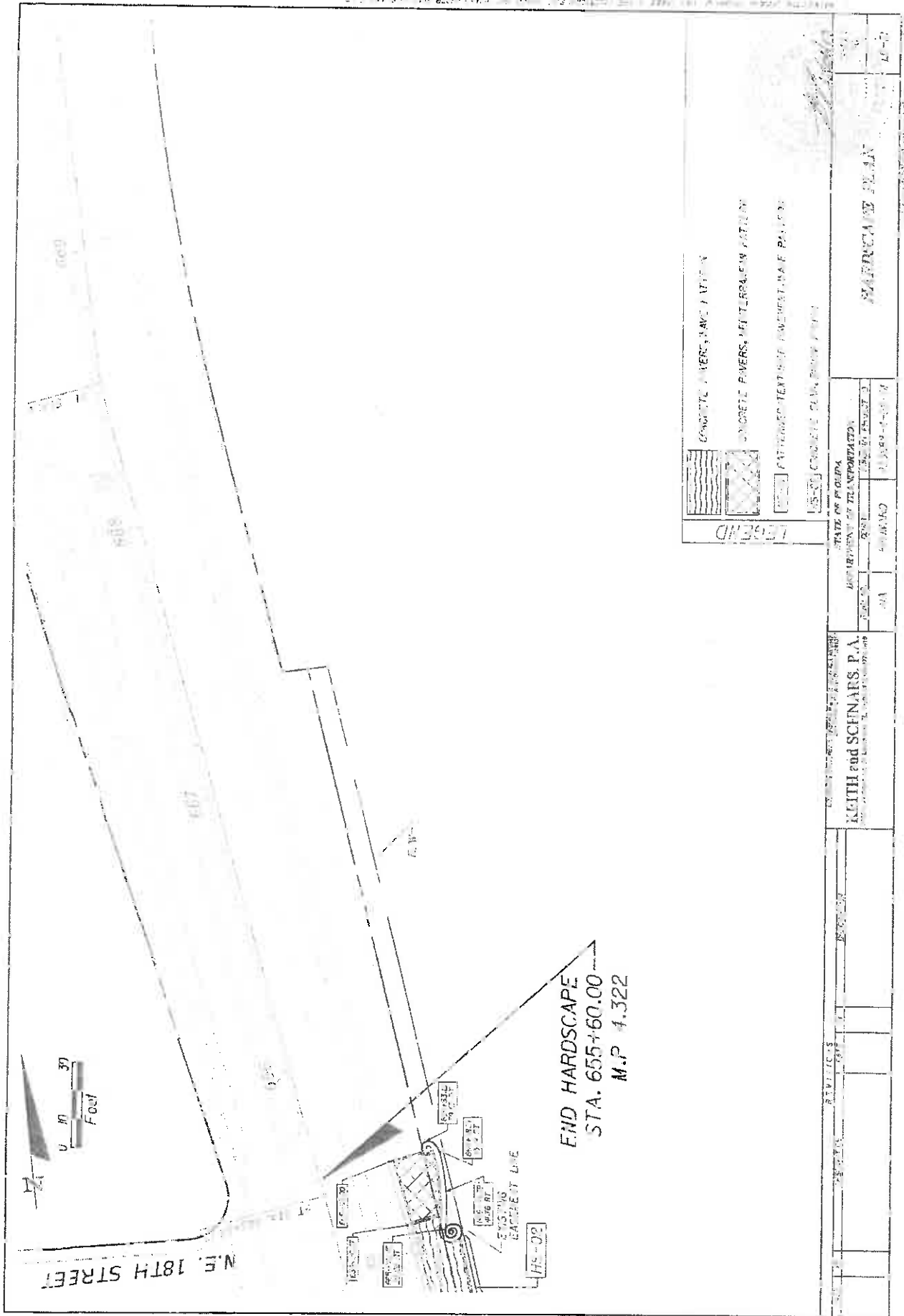






CONCRETE PILES W/WE WATER  
 CONCRETE PILES, WEATHERED IN PLACE  
 CONCRETE PILES, WEATHERED IN PLACE  
 CONCRETE PILES, WEATHERED IN PLACE

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION		PROJECT NO. 16-01	
M. J. and SCHWAB, P.A.		DRAWING NO. 16-01-01	
DATE: 10/15/16		SCALE: AS SHOWN	
DESIGNED BY: M. J. and SCHWAB, P.A.		CHECKED BY: M. J. and SCHWAB, P.A.	
DRAWN BY: M. J. and SCHWAB, P.A.		APPROVED BY: M. J. and SCHWAB, P.A.	



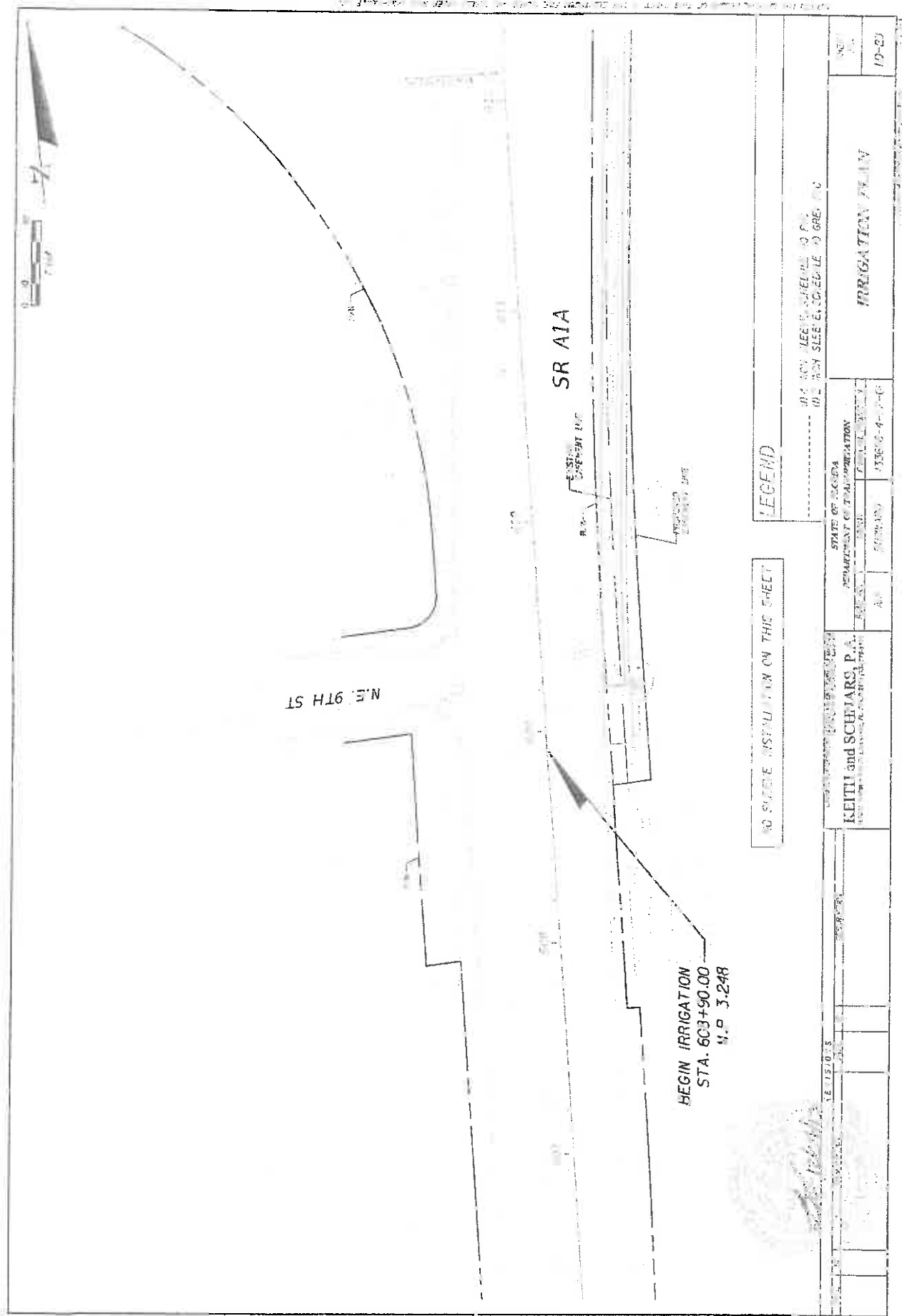


SUNRISE BOULEVARD  
S.R. 838

NE 14TH CT  
NE 15TH ST  
NE 15TH CT  
NE 16TH ST  
NE 16TH CT  
NE 16TH PL  
NE 17TH ST  
NE 17TH CT  
NE 18TH ST



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ORIGINATOR M.A. SCHWAB		PROJECT NO. 10-59	
PROJECT NO. 10-59		PROJECT NAME SUNRISE BOULEVARD		PROJECT LOCATION SUNRISE BOULEVARD	
DATE 10/15/00		DRAWN BY M.A. SCHWAB		CHECKED BY M.A. SCHWAB	
SCALE AS SHOWN		PROJECT NO. 10-59		PROJECT LOCATION SUNRISE BOULEVARD	
PROJECT NO. 10-59		PROJECT NAME SUNRISE BOULEVARD		PROJECT LOCATION SUNRISE BOULEVARD	
DATE 10/15/00		DRAWN BY M.A. SCHWAB		CHECKED BY M.A. SCHWAB	
SCALE AS SHOWN		PROJECT NO. 10-59		PROJECT LOCATION SUNRISE BOULEVARD	



N.E. 9TH ST

SR A1A

BEGIN IRRIGATION  
STA. 603+50.00  
U.P. 3.248

NO OTHER INSTALLATION ON THIS SHEET

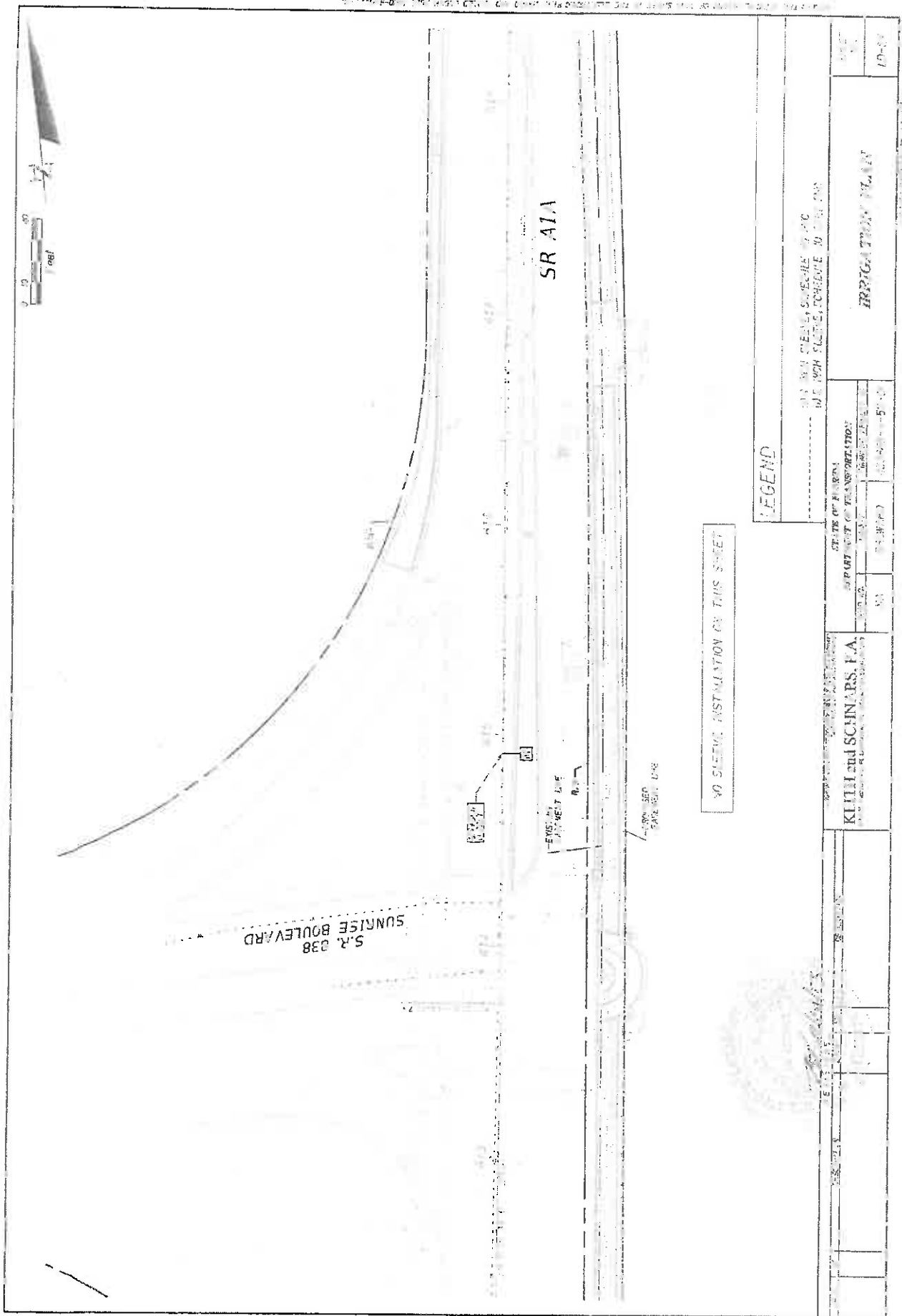
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--- IRRIGATION LINE  
--- IRRIGATION STRUCTURE

STATE OF MICHIGAN	
DEPARTMENT OF TRANSPORTATION	
PROJECT NO.	1336-4-1-0-0
DATE	11/11/13
BY	KEITH and SCHIARS, P.A.

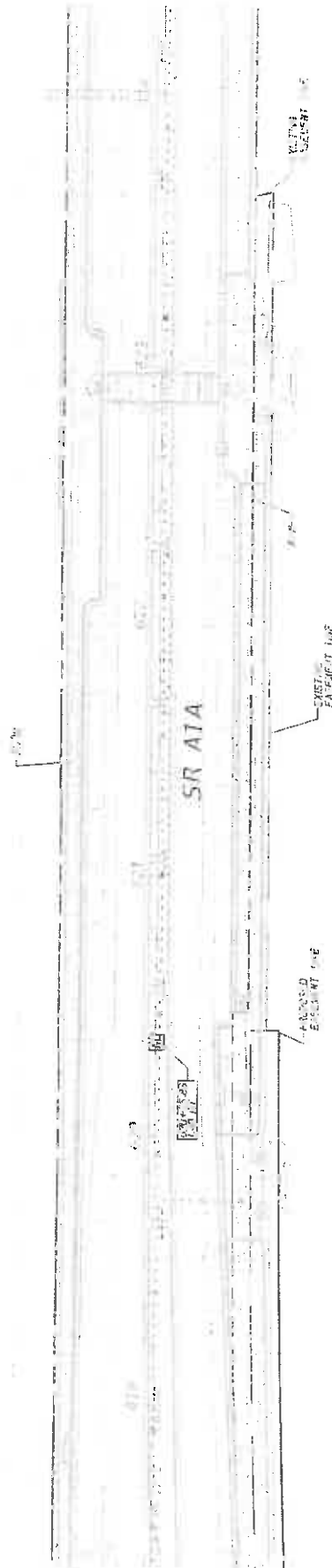
KEITH and SCHIARS, P.A.  
REGISTERED PROFESSIONAL ENGINEERS  
18151013

19-23





HUGH TAYLOR BIRCH  
STATE PARK



LEGEND

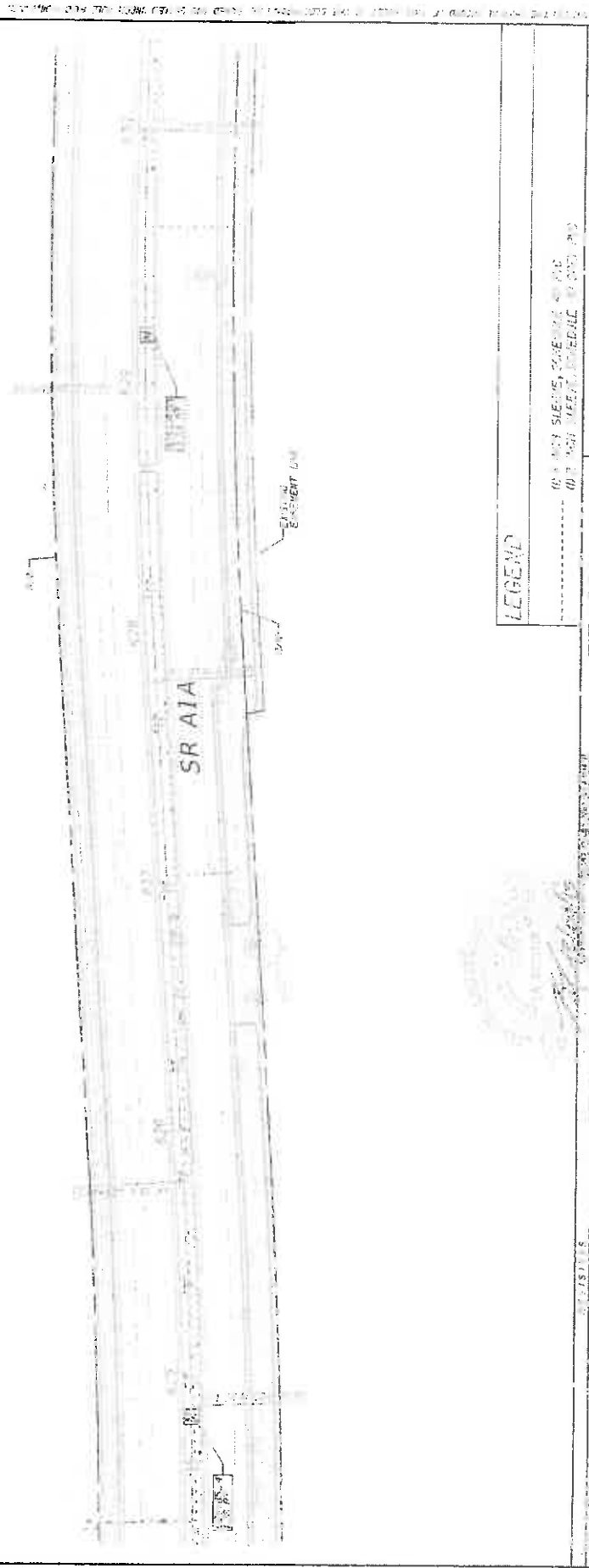
--- EXISTING EASEMENT LINE  
 - - - - - PROPOSED EASEMENT LINE

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
NO. 100	DATE 12/15/07
NO. 100	DATE 12/15/07

KEITH and SCIMMARS, P.A.  
 1000 UNIVERSITY AVENUE, SUITE 100  
 GAITHERSBURG, MARYLAND 20878


IRRIGATION PLAN

UP-1



**LEGEND**

--- EXISTING EMBANKMENT LINE  
 --- EXISTING IRRIGATION CANAL

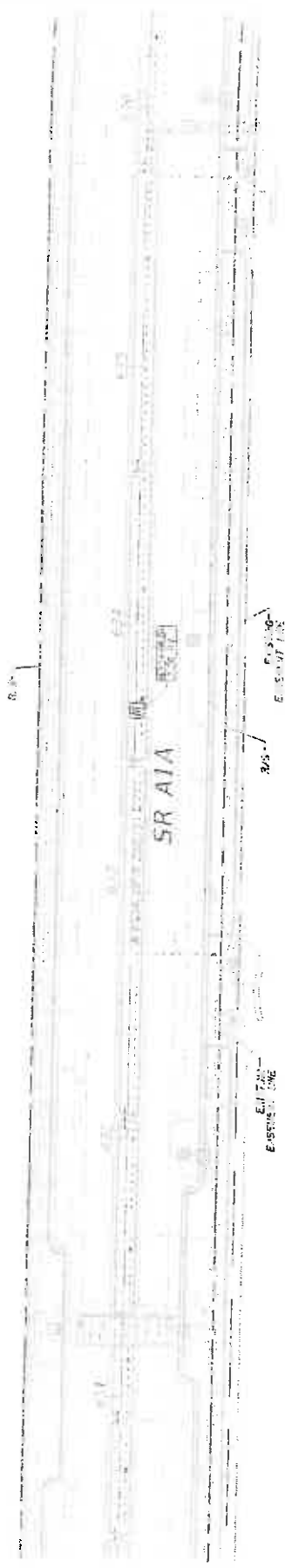
STATE OF ALABAMA	
DEPARTMENT OF TRANSPORTATION	
NO.	SECTION
100	100

**SKILLI and SCHNARS, P.A.**  
 ENGINEERS AND ARCHITECTS  
 1000 ...  
 ...

**IRRIGATION PLAN**

DATE  
 10-20





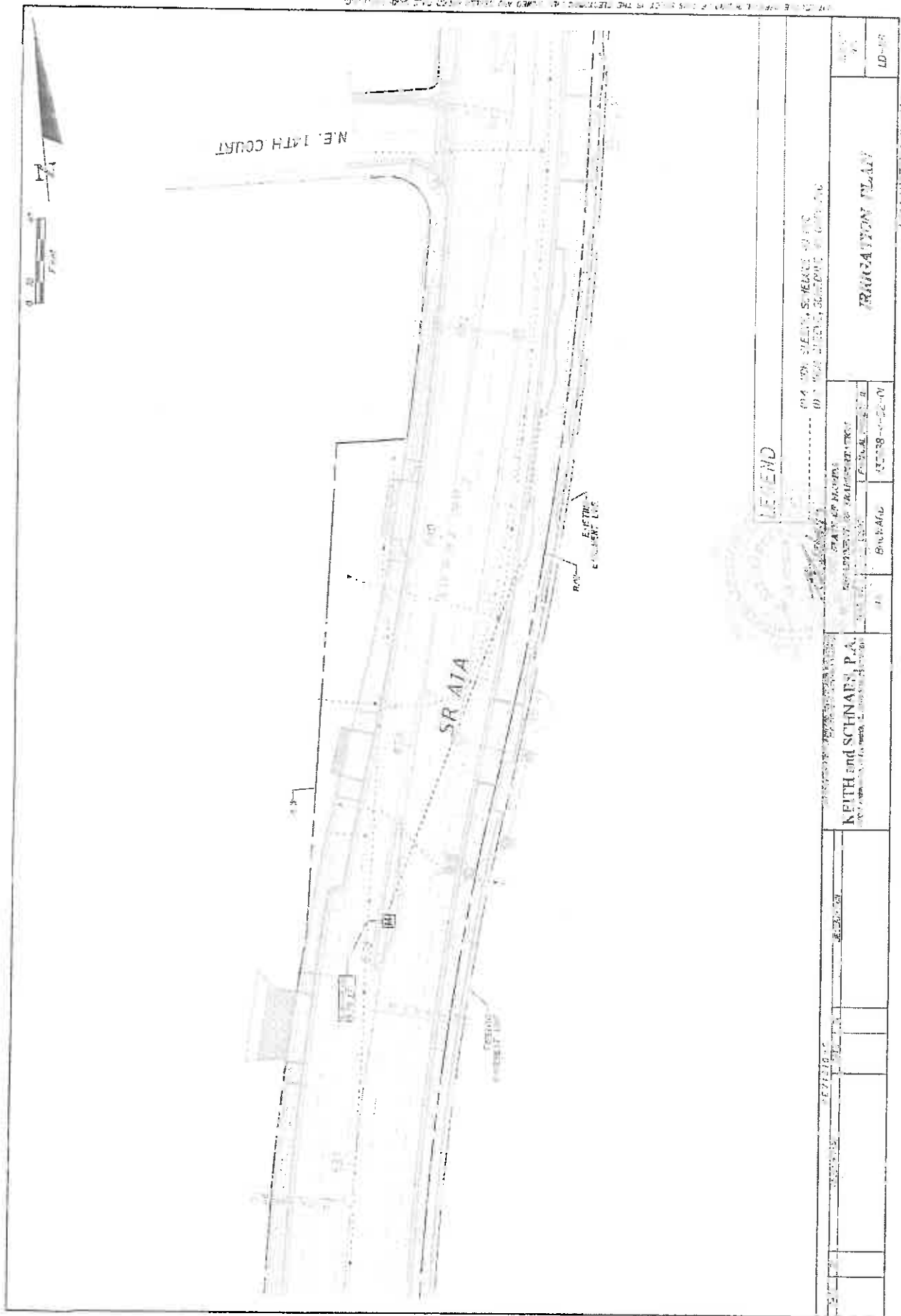
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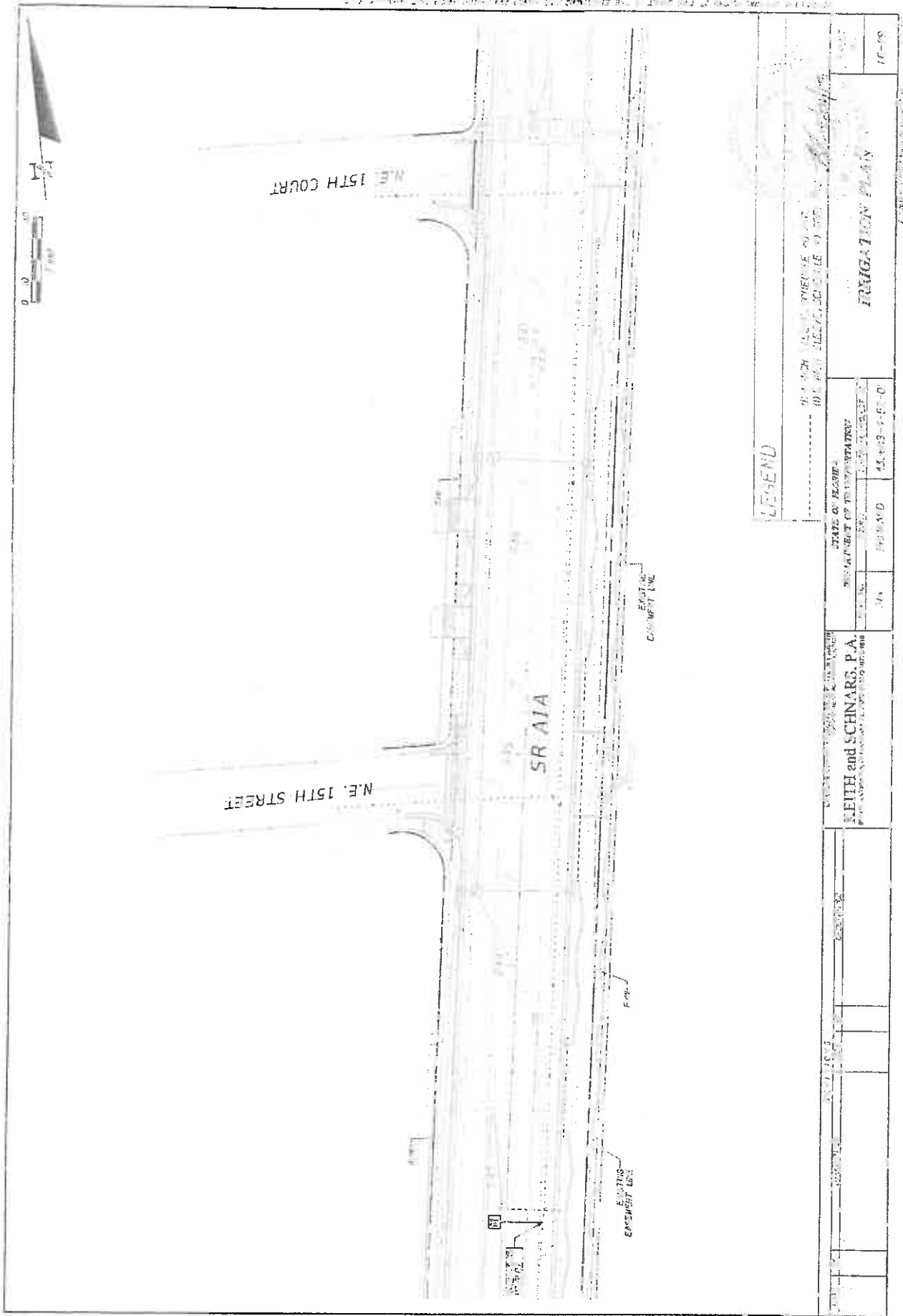
STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
SR A1A

STATE OF FLORIDA		SR A1A	
DEPARTMENT OF TRANSPORTATION		SR A1A	
PROJECT NO. 43-200-0000		SR A1A	
DATE: 10/1/00		SR A1A	
DRAWN BY: [Name]		SR A1A	
CHECKED BY: [Name]		SR A1A	
APPROVED BY: [Name]		SR A1A	
SCALE: AS SHOWN		SR A1A	
PROJECT NO. 43-200-0000		SR A1A	
DATE: 10/1/00		SR A1A	
DRAWN BY: [Name]		SR A1A	
CHECKED BY: [Name]		SR A1A	
APPROVED BY: [Name]		SR A1A	
SCALE: AS SHOWN		SR A1A	



KEITH J. PHILLIPS, P.E.  
Professional Engineer  
License No. 12547  
State of Florida





**LEGEND**

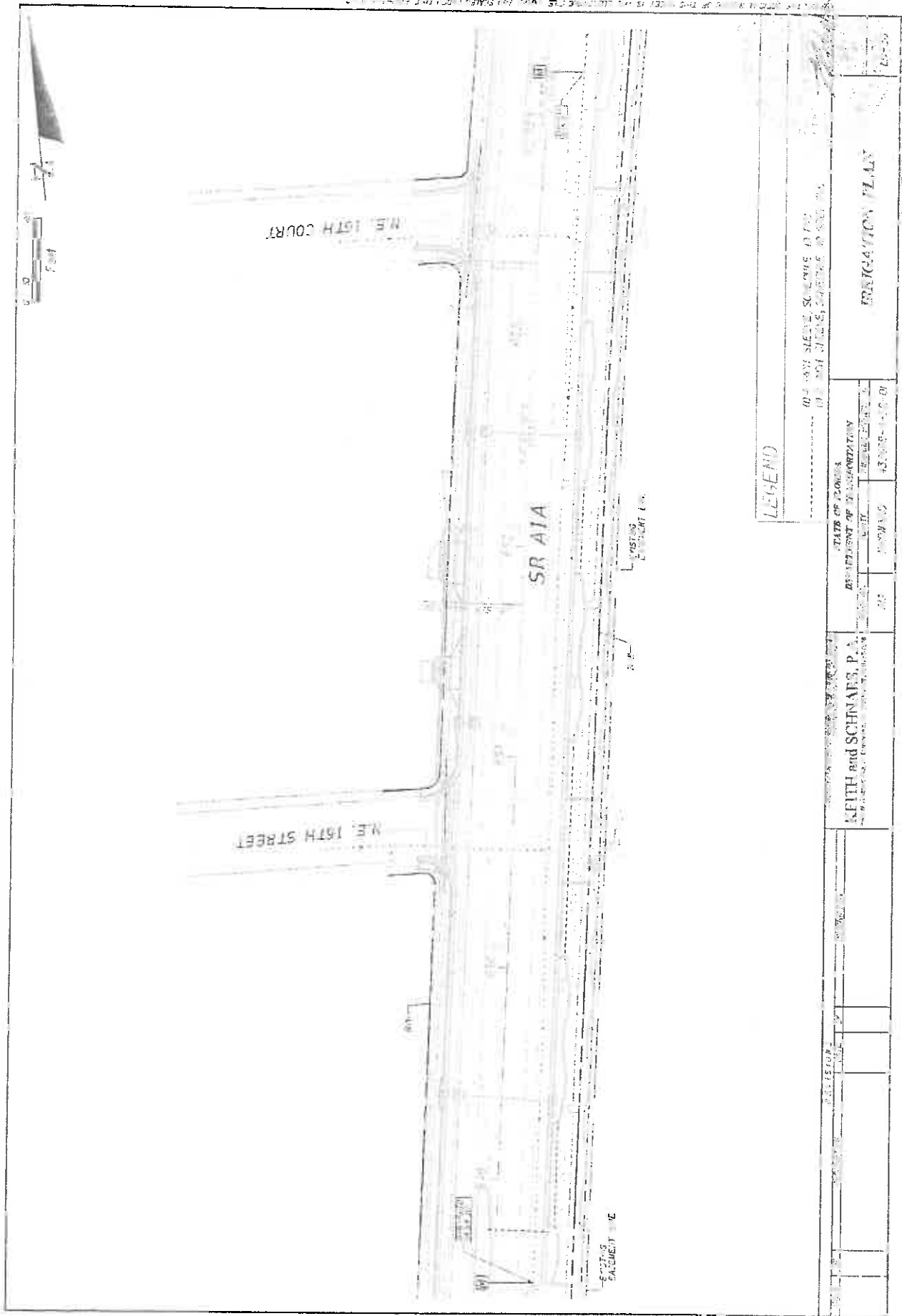
10' = 1" SCALE  
 10' = 1" SCALE

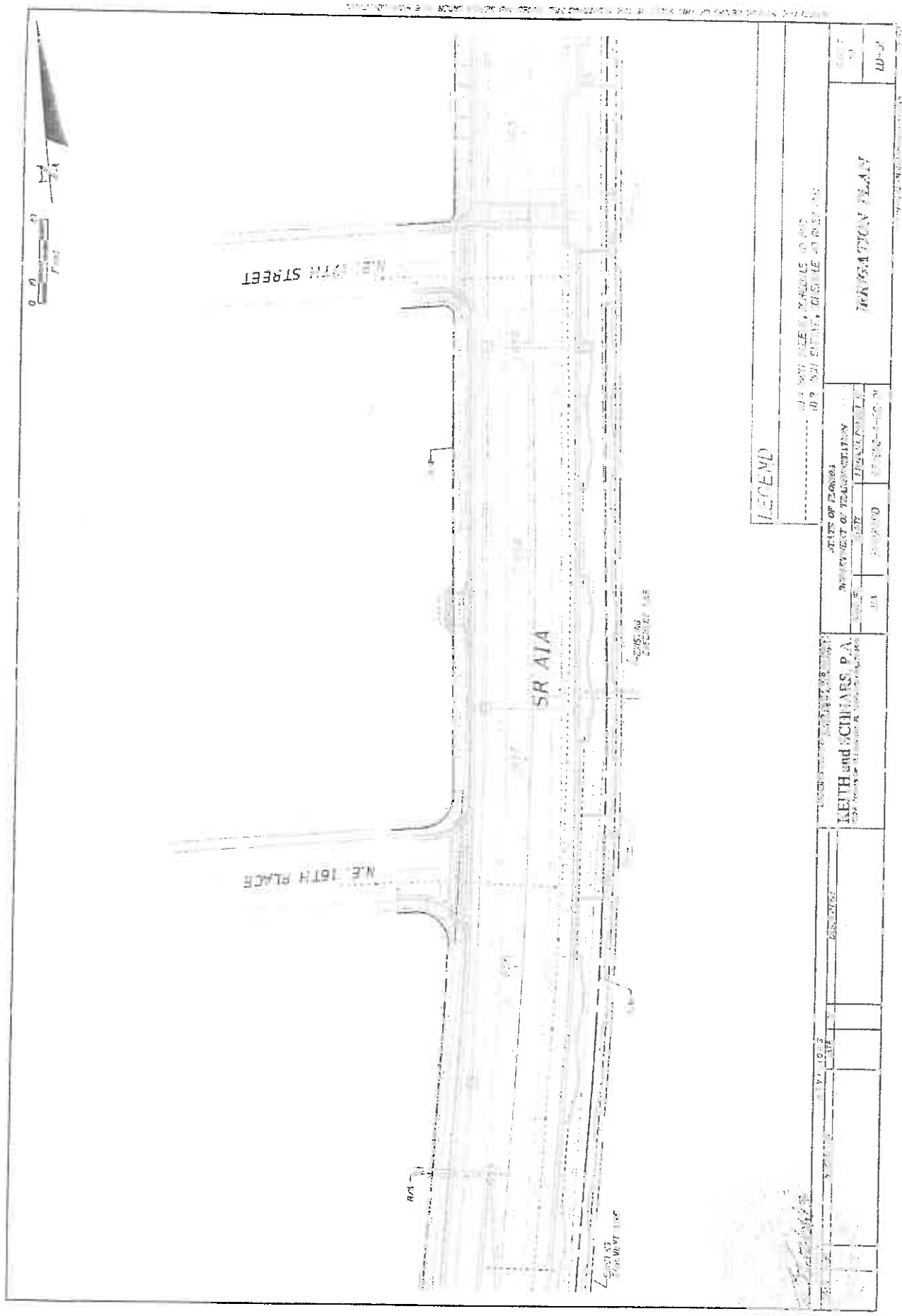
STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
NO.	DATE
104	10-1-99

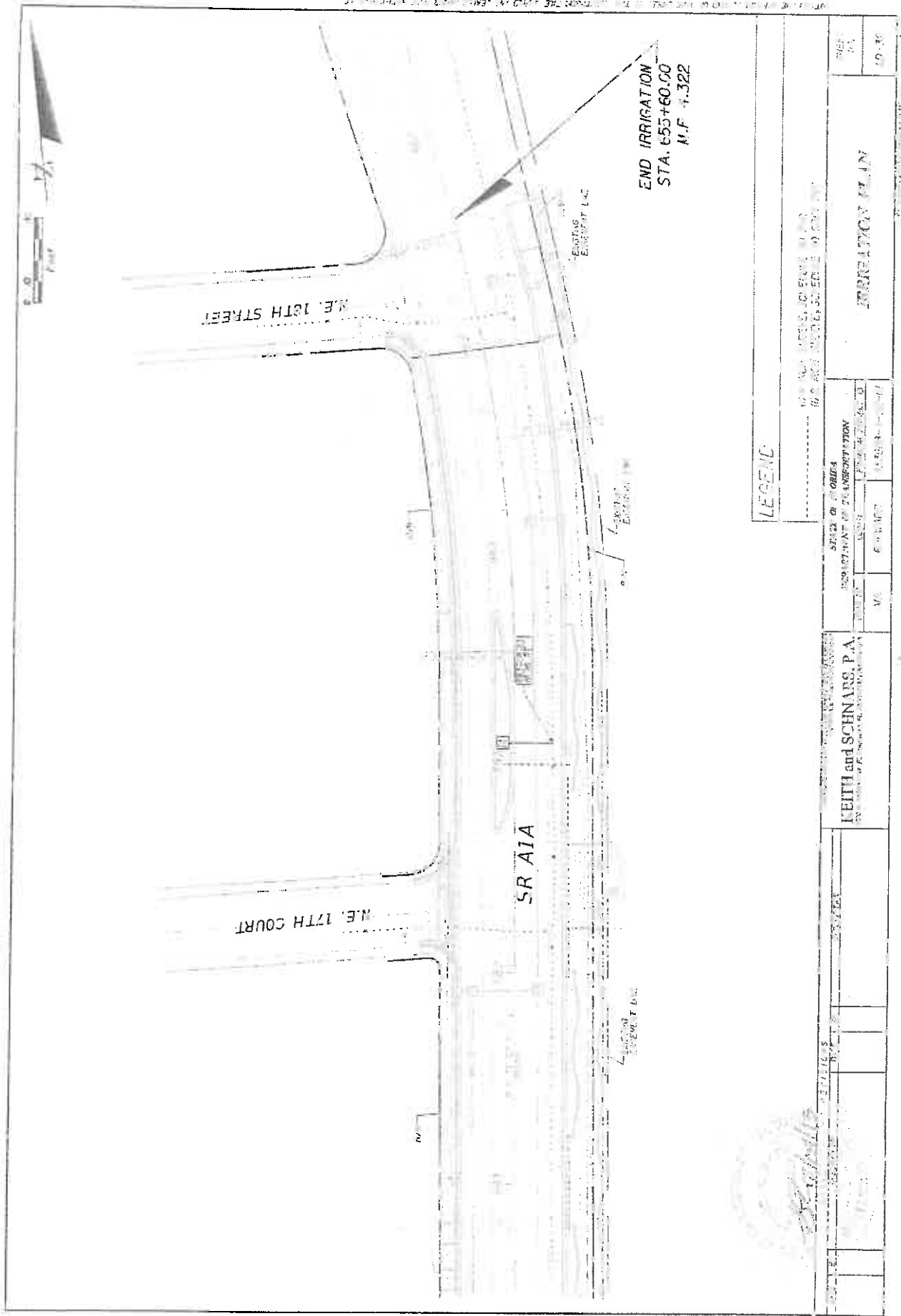
KEITH and SCHNARS, P.A.  
 PROJECT NO. 104  
 DATE 10-1-99

**IRREGULATION PLAN**

10-1-99







**LEGEND**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		DATE 10-20-10
PROJECT SR 1716	SECTION SR 1716	DATE 10-20-10
NO.	DESCRIPTION	DATE

**KEITH and SCHNARS, P.A.**  
 200 N. W. 10th Street, Suite 1000  
 Fort Lauderdale, Florida 33304  
 Phone: (954) 573-8800  
 Fax: (954) 573-8801  
 www.keithandschnars.com

**SECTION No.:** 860500  
**FM No.:** 433688-4-52-01  
**COUNTY:** Broward  
**S.R. No.:** A1A

**EXHIBIT C**  
**MAINTENANCE PLAN FOR LANDSCAPE IMPROVEMENTS**

**Dated:** November 19, 2013

*See attached*

**MAINTENANCE PLAN**  
**Landscape Improvements**

**Project State Road No(s):** State Road A1A  
**Maintenance Limits:** From N.E. 9th Street (M.P. 3.248) to N.E. 18th Street (M.P. 4.322)  
**FM No(s):** 433688-4-52-01  
**Maintaining Agency:** City of Fort Lauderdale  
**RLA of Record:** Bruce K. Reed  
**Date:** November 19, 2013

---

**I. General Maintenance Requirements and Recommendations:**

The purpose of a plan for the landscape improvements maintenance practices is to allow the plant material on your project to thrive in a safe and vigorous manner while fulfilling their intended purpose and conserving our natural resources. Plantings and all other landscape improvements shall be maintained to avoid potential roadway hazards and to provide required clear visibility, accessibility, clearance, and setbacks as set forth by Florida Department of Transportation (FDOT) governing standards and specifications: *FDOT Design Standards, FDOT Plans Preparation Manual Vol. 1, Chapter 2.11* and *FDOT Standard Specifications for Road and Bridge Construction*, as amended by contract documents, and all other requirements set forth by the District 4 Operations Maintenance Engineer. The initial portion of the Maintenance Plan describes general maintenance requirements and recommendations. The concluding section provides recommendations prepared by the Registered Landscape Architect of Record specific to the attached approved plans.

**Watering Requirements:**

Watering is a critical concern for not only the maintenance of healthy plant material but also for observing water conservation practices. The amount of water to apply at any one time varies with the weather, drainage conditions and water holding capacity of the soil. For plant materials that have been established, it is imperative that any mandated water restrictions be fully conformed to on FDOT roadways.

Proper watering techniques should provide even and thorough water dispersal to wet the entire root zone, but not saturate the soil or over-spray onto travel lanes.

**Irrigation System:**

The Agency shall ensure there are no roadway overspray or irrigation activities occurring during daytime hours (most notably "rush hour" traffic periods). It is imperative the irrigation controller is properly set to run early enough that the watering process will be entirely completed before high traffic periods, while adhering to mandated water restrictions. To ensure water conservation, the Agency shall monitor the system for water leaks and the rain sensors to ensure they are functioning properly so that the system shuts down when there is sufficient rainfall.

**Integrated Plant Management:**

An assessment of each planting area's soil is recommended to periodically determine the nutrient levels needed to sustain healthy, vigorous plant growth.



Palms, shrubs, trees and turf areas shall be fertilized in such a manner and frequency to ensure that the plant material remains healthy and vigorously growing. Establishment of an integrated pest management program is encouraged to ensure healthy plants, which are free of disease and pests.

**Mulching:**

Mulch planting beds in such a manner as to prevent weed growth, retain moisture to the plants, protect against soil erosion and nutrient loss, maintain a more uniform soil temperature, and improve the appearance of the planting beds. Avoid mulch mounded up on the trunks of trees, palms, and the base of shrubs to encourage air movement in this area which aids in lowering disease susceptibility. Cypress mulch is prohibited on state right of way.

**Pruning:**

All pruning, and the associated safety criteria, shall be performed according to American National Standard Institute (ANSI) A300 standards and shall be supervised by an International Society of Arboriculture (ISA) Certified Arborist. Pruning shall be carried out with the health and natural growth of plant materials in mind, to specific pruning heights maintaining clear visibility for motorists, and provide vertical clearance for pedestrian, bicyclist, and truck traffic where applicable. Visibility windows must be maintained free of view obstructions, and all trees and palms must be maintained to prevent potential roadway and pedestrian hazards, all palms are to be kept fruit free. The specific pruning heights are determined by understanding the designer's intent when selecting and placing the plants. The intended mature maintained height and spread of plants are noted on the plans (See Exhibit B.) and see Part II. "Specific Requirements and Recommendations" for guidelines. The understory plant materials selected for use within the restricted planting areas (Limits of Clear Sight) are to be maintained at a height in compliance with *FDOT Design Standards* Index 546; Page 2 of 6, Window Detail. Vertical tree heights must meet *FDOT Maintenance Rating Program* (MRP) standards.

**Staking and Guying:**

All staking materials, except for replacements, are to be removed by the completion of FDOT plant establishment period or at a minimum one year. Any subsequent staking and guying activities by the Agency must adhere to *FDOT Design Standards* guidelines (See Index 544). The Agency shall closely monitor staking and guying attachment materials so that they are securely fastened to avoid potential roadway hazards.

**Turf Mowing:**

All grassed areas are to be mowed and trimmed with sufficient frequency to maintain a deep, healthy root system while providing a neat and clean appearance to the urban landscape. All turf efforts, mowing, curb/sidewalk edging and turf condition, must at a minimum, meet *FDOT Maintenance Rating Program* (MRP).

**Litter Control:**

The area within the maintenance limits of the landscape improvements shall remain as litter free as practicable. It is recommended to recycle this litter to avoid unnecessary waste. Litter removal efforts must meet *FDOT Maintenance Rating Program* (MRP) standards.

**Weeding/Herbicide:**

All planting areas shall be maintained as weed free as practicable by enlisting integrated pest management practices in areas specified on the plans and maintaining proper mulch levels. Extreme care is recommended if using a chemical herbicide to avoid overspray onto plant materials. It is the applicator's responsibility to restore any damage, resulting from overspray to the plantings, per the approved plans.

**Plant Replacement:**

Plant replacement shall be the same species and specification as the approved plan. Move and replace all plant materials that may conflict with utility relocations and service. Only plants graded Florida #1 or better, per the *Florida Department of Agriculture and Consumer Services, Grades and Standards for Nursery Plants* are permitted on FDOT roadways. Should it become necessary to change the species, a general use permit is required from FDOT for approval by the FDOT District Landscape Architect.

**Hardscape (Specialty Surfacing):**

All tree grates and specialty surfacing (if applicable) shall be maintained in such a manner as to prevent any potential tripping hazards and protect damage to the pavers and tree grates. Final surface tolerance from grade elevations shall, at a minimum, meet the most current *Interlocking Concrete Pavement Institute (ICPI), Guide Specifications for Pavers on an Aggregate Base, Section 32 14 13 Interlocking Concrete Pavers, Part 3.05*. If the specialty surfacing or tree grates become damaged, they shall be replaced with the same type and specification as the approved plan.

**Hardscape (Non-Standard Travelway Surfacing):**

It shall be the responsibility of the AGENCY to restore an unacceptable ride condition of the roadway, including asphalt pavement (if applicable), caused or contributed by the installation or failure of non-standard surfacing, and/or the header curb, on the Department of Transportation right-of-way within the limits of this Agreement. Pavement restoration areas or "patches" will have a minimum length of 10-ft, measured from the edge of the header curb, and a width to cover full lanes for each lane affected by the restoration.

Pavement restoration will be performed in accordance with the most current edition of the *FDOT Standard Specifications for Road and Bridge Construction*, and the *FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System*.

It shall be the responsibility of the AGENCY to maintain all signs located within a non-standard surfacing area. Such maintenance to be provided by the AGENCY shall include repair and replacement of the sign panel, post, and base.

**Hardscape (Landscape Accent Lighting)**

Landscape accent lighting shall be maintained in such a manner as to prolong the life of the lighting fixture and prevent potential safety hazards. If the lighting fixtures and their system become damaged, they shall be replaced with the same type and specification as the approved plan. Landscape lighting shall meet requirements for the sea turtle nesting and hatching.

**Maintenance of Traffic Control**

Reference the FDOT website regarding the selection of the proper traffic control requirements to be provided during routine maintenance and / or new installations of this DOT roadway.

**Vegetation Management at Outdoor Advertising (ODA)**

To avoid conflicts with permitted outdoor advertising, please reference the State of Florida website regarding the vegetation management of outdoor advertising. This website provides a portal to search the FDOT Outdoor Advertising Inventory Management System Database. The database contains an inventory of outdoor advertising structures, permits and other related information maintained by the Department.

Also, reference the *Florida Highway Beautification Program* website link for "*Vegetation Management at ODA signs*" "Florida Statutes" and "Florida Administrative Code" related to vegetation management at outdoor advertising sign, permit applications for vegetation management and determining mitigation value of roadside vegetation.

**II. Specific Project Site Maintenance Requirements and Recommendations:**

Ensure a clean and neat appearance by periodically cleaning and sealing the concrete pavers.

### **III. References**

This reference list is provided as a courtesy. The list may not contain the most current websites. The most current references must be accessed for up to date information.

**Accessible Sidewalk Videos (ADA)**

<http://www.access-board.gov/news/sidewalk-videos.htm>

**Americans with Disabilities Act (ADA) (ADAAG)**

[http://www.ada.gov/2010ADAstandards\\_index.htm](http://www.ada.gov/2010ADAstandards_index.htm)

**American National Standard Institute, ANSI A300, (Part 1) for Tree Care Operations – Trees, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning), available for purchase**

[www.isa-arbor.com](http://www.isa-arbor.com)

**Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Florida Grades and Standards for Nursery Plants, available for purchase**

<http://www.doacs.state.fl.us/pi/pubs.html>

**Florida Department of Community Affairs (DCA), Florida Board of Building Codes & Standards, 2010 Florida Building Code, Chapter 11 Florida Accessibility Code for Building Construction Part A**

[http://www2.iccsafe.org/states/florida\\_codes/](http://www2.iccsafe.org/states/florida_codes/)

**Florida Department of Transportation, FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Index 544 Landscape Installation**

<http://www.dot.state.fl.us/rddesign/DS/13/IDx/00544.pdf>

**Florida Department of Transportation, FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Index 546 Sight Distance at Intersections**

<http://www.dot.state.fl.us/rddesign/DS/13/IDx/00546.pdf>

**Florida Department of Transportation, FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Index 600 Traffic Control through Work Zones**

<http://www.dot.state.fl.us/rddesign/DS/13/IDx/00600.pdf>

**Florida Department of Transportation, FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Index 700 Roadside Offsets**

<http://www.dot.state.fl.us/rddesign/DS/13/IDx/00700.pdf>

**Florida Department of Transportation, FDOT Plans Preparation Manual (PPM) Vol. I Chapter 2.11 Horizontal Clearance**

**Table 2.11.5 Horizontal Clearance to Trees**

**Table 2.11.11 Recoverable Terrain**

<http://www.dot.state.fl.us/rddesign/PPManual/2013RPPM.shtm>

Florida Department of Transportation, *FDOT Standard Specifications for Road and Bridge Construction, Section 580 Landscape Installation*  
<http://www.dot.state.fl.us/specificationsoffice/Implemented/SpecBooks/2013/Files/580-2013.pdf>

Florida Department of Transportation, Florida Highway Beautification Program  
[www.MyFloridaBeautiful.com](http://www.MyFloridaBeautiful.com)

Florida Department of Transportation, *Maintenance Rating Program Handbook*  
<http://www.dot.state.fl.us/statemaintenanceoffice/MaintRatingProgram.shtm>

Florida Department of Transportation Outdoor Advertising Database  
<http://www2.dot.state.fl.us/rightofway/>

Florida Exotic Pest Plant Council Invasive Plant Lists  
<http://www.fleppc.org/list/list.htm>

Florida Irrigation Society  
<http://www.fisstate.org>

Florida Power and Light (FPL), *Plant the Right Tree in the Right Place*  
[http://www.fpl.com/residential/trees/right\\_tree\\_right\\_place.shtml](http://www.fpl.com/residential/trees/right_tree_right_place.shtml)

*Guide to Roadside Mowing and Guide to Turf Management*, available for purchase  
<http://infonet.dot.state.fl.us/SupportServicesOffice/plist.htm>

Interlocking Concrete Pavement Institute (ICPI)  
<http://www.icpi.org/>

International Society of Arboriculture (ISA)  
[www.isa-arbor.com](http://www.isa-arbor.com)

UF IFAS: *Selecting Tropical and Subtropical Tree Species for Wind Resistance*  
<http://edis.ifas.ufl.edu/pdf/FR/FR17500.pdf>

U.S. Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices*  
<http://www.mutcd.fhwa.dot.gov>

SECTION No.: 860500  
FM No.: 433688-4-52-01  
COUNTY: Broward  
S.R. No.: A1A

## EXHIBIT D

### PATTERNED PAVEMENT MAINTENANCE

This Exhibit forms an integral part of the DISTRICT FOUR (4) MAINTENANCE MEMORANDUM OF AGREEMENT between the State of Florida, Department of Transportation and the AGENCY.

"Maintenance" of all patterned pavement crosswalks in these Agreements shall be defined, as a minimum, to include its frictional characteristics and integrity as follows:

1. Within 60 days of project acceptance by the Department, all lanes of each patterned crosswalk shall be evaluated for surface friction. The friction test shall be conducted using either a locked wheel tester in accordance with *FM 5-592 (Florida Test Method for Friction Measuring Protocol for Patterned Pavements)* or Dynamic Friction Tester in accordance with *ASTM E1911*. *All costs for friction testing are the responsibility of the AGENCY.*
2. The initial friction resistance shall be at least 35 obtained at 40 mph with a ribbed tire test (FN40R) or equivalent (FM 5-592 attached). Failure to achieve this minimum resistance shall require all deficient crosswalk areas to be removed to their full extent (land-by-land) and replaced with the same product installed initially. The AGENCY is responsible for all costs associated with the removal and replacement of the crosswalk. If the Department determines that more than 50% of the lanes in the intersection require replacement, the entire intersection installation may be reconstructed with a different product on the Qualified Products List (QPL) or replaced with conventional pavement.
3. Approximately **one year** after project acceptance and **every two years** thereafter and for the life of the adjacent pavement, only the outside traffic lane areas of each patterned crosswalk shall be tested for friction resistance in accordance with *ASTM E274* or *ASTME 1911*. Friction resistance shall, at a minimum, have a FN40R value of 35 (or equivalent).

4. The results of all friction tests shall be sent to the **Operations Engineer** at the local FDOT District Four Operations Center located at 5548 NW 9<sup>th</sup> Avenue, Ft. Lauderdale, FL 33309 (954) 776-4300, with a cover letter either certifying, that the crosswalks comply with the minimum friction criteria, or stating what remedial action will be taken to restore the friction.
5. Failure to achieve the minimum resistance shall require all lanes of the crosswalk to be friction tested to determine the extent of the deficiency. All deficient areas shall be removed to their full extent (lane-by-lane) and replaced with the same product installed initially. If the Department determines that more than 50% of the lanes in the intersection require replacement, the entire intersection installation may be reconstructed with a different product on the QPL, or replaced with conventional pavement.
6. When remedial action is required in accordance with the above requirements, the local agency shall complete all necessary repairs at its own expense within 90 days of the date when the deficiency was identified. No more than two full depth patterned pavement repairs shall be made to an area without first resurfacing the underlying pavement to 1" minimum depth.
7. The Department will not be responsible for replacing the treatment following any construction activities by the Department in the vicinity of the treatment, or any costs for testing.
8. Should the local agency fail to satisfactorily perform any required remedial work or testing in accordance with this agreement, the Department reserves the right to replace the patterned pavement with conventional pavement (matching the adjacent pavement) and bill the local agency for this cost.

Florida Test Method  
for  
Friction Measuring Protocol for Patterned Pavements

Designation: FM 5-592

1. SCOPE

This method covers the testing procedures for evaluating the friction resistance of Patterned surfaces used in crosswalks over asphalt and concrete surfaces

**Note:** This test method contains two parts:

Part A- Friction testing performed with the Locked Wheel Friction Tester

Part B- Friction testing performed with the Dynamic Friction Tester (DFT)

2. APPARATUS

2.1 Locked Wheel Friction Tester- This apparatus shall be standardized in accordance with ASTM E 274, "Standard Test Method for Skid Resistance of Paved Surfaces Using a Full-Scale Tire". The friction test tire used shall be in accordance with ASTM E 501, "Standard Specification for Standard Rib Tire for Pavement Skid-Resistance".

2.2 Dynamic Friction Tester- This apparatus shall be standardized in accordance with ASTM E 1911, "Standard Test Method for Measuring Paved Surface Frictional Properties Using the Dynamic Friction Tester".

3. FRICTION NUMBER CONVERSION

The regression equations relating the locked wheel test results and the DFT results at 40 mph (65 km/h) are:

$$FN40R = 0.64 \cdot DFT40 + 9.23 \quad (1)$$

$$DFT40 = 1.56 \cdot FN40R - 14.42 \quad (2)$$

where,

FN40R = Friction Number from locked wheel testing at 40 mph using a ribbed tire

DFT40 = Coefficient of Friction from DFT at 40 mph multiplied by 100.

Although the above equations can be used to convert the DFT result to the locked wheel friction number at 40 mph and vice versa, conditions do exist where the DFT testing or the locked wheel testing at 40 mph is not feasible due to constraints such as safety, traffic congestion, speed limits, and/or roadway geometries. In these cases, it may be preferable to conduct the locked wheel



testing at a slower speed, e.g., 20 or 30 mph. The following regression equations have been developed to convert the locked wheel test results at 20 and 30 mph to those at 40 mph:

$$FN_{40R} = 0.89 \cdot FN_{20R} - 4.88 \quad (3)$$

where,

$FN_{20R}$  = Friction Number from locked wheel testing at 20 mph using a ribbed tire, and

$$FN_{40R} = 0.95 \cdot FN_{30R} - 2.91 \quad (4)$$

where,

$FN_{30R}$  = Friction Number from locked wheel testing at 30 mph using a ribbed tire.

For ease of application of the above harmonization results, Table 1 summarizes the conversions from  $FN_{30R}$ ,  $FN_{20R}$  and  $DFT_{40}$  to  $FN_{40R}$ . Note that the friction numbers shown in this table were rounded to the closest integer. The numbers highlighted in yellow represent the current minimum required friction numbers depending on survey cycle, test method, and speed evaluated.

**Table 1. Friction Number Table**

FN40R	FN30R	FN20R	DFT40
22	26	30	20
23	27	31	21
24	28	32	23
25	29	34	25
26	30	35	26
27	31	36	28
28	33	37	29
29	34	38	31
30*	35*	39*	32*
31	36	40	34
32	37	41	36
33	38	43	37
34	39	44	39
35**	40**	45**	40**
36	41	46	42
37	42	47	43
38	43	48	45
39	44	49	46
40	45	50	48
41	46	52	50
42	47	53	51
43	48	54	53
44	49	55	54
45	50	56	56

\* Minimum friction numbers required for inventory cycles of patterned crosswalks.

\*\*Minimum friction numbers required for new construction and 3-year QPL test decks for patterned crosswalks.

#### 4. PROCEDURE

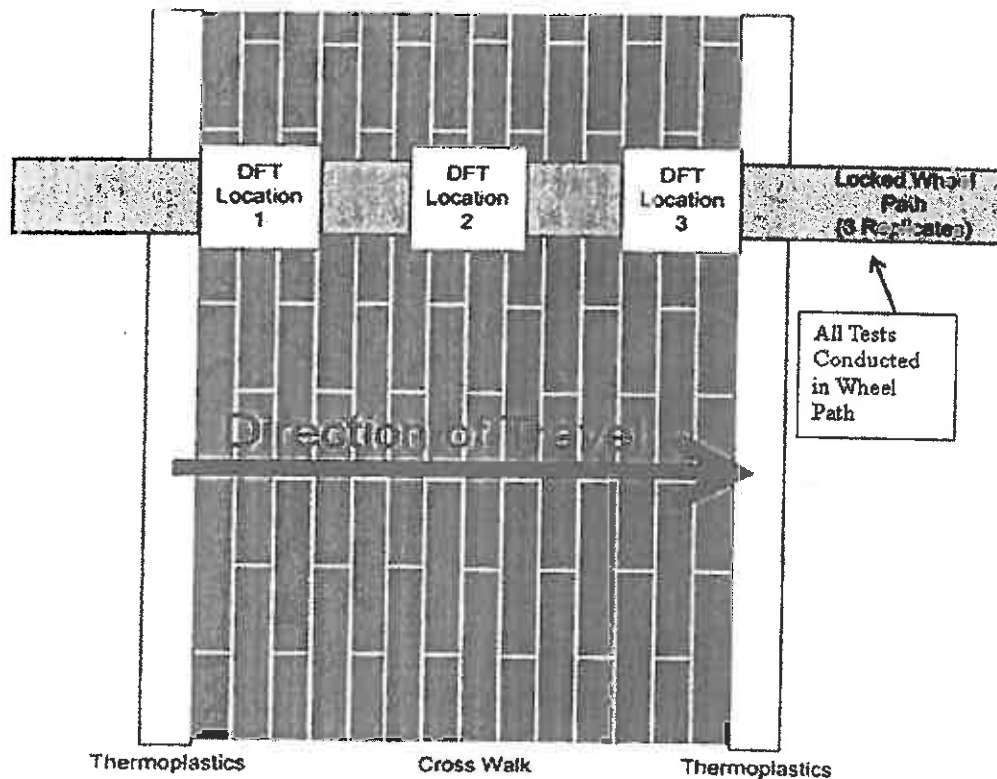
The test procedures for both the Locked Wheel Friction Tester and the Dynamic Friction Tester are described in the following. All testing should be performed within either the driver or passenger side wheel path, regardless of the equipment used.

##### 4.1 PART A- Friction Testing with the Locked Wheel Friction Tester

- A) **New Construction** – The locked wheel test shall be conducted on all crosswalks within 60 days of the new surface completion date. One valid lockup test is required for each lane; all lanes shall be evaluated

and compared. The test layout is shown in Figure 1.

- B) **Inventory** – For in-service Qualified Product List (QPL) test sections, the locked wheel test is conducted at 6 month intervals up to 3 years. Maintenance surveys are conducted on a yearly basis. Test site shall be confined to a single outside traffic lane (single direction) for each crosswalk location. The locked wheel test will require three repeat lockups and averaged for the designated test lane. The lane in which the friction tests were conducted must be identified in the report along with the test results.
- C) **Retest** – At any point when friction numbers are determined to be below the required values shown in Table 1, all lanes shall be evaluated and the range of friction values shall be determined.
- D) **Special Request** – At any time a patterned pavement is in need of a special assessment, the designated lane(s) shall be evaluated to determine the range of representative friction values.



**FIGURE 1 Testing protocol for patterned pavement.**

#### 4.2 PART B- Skid Testing with the Dynamic Friction Tester (DFT)

- A) **New Construction** – The DFT test shall be conducted on all crosswalks within 60 days of the new surface completion date. DFT tests shall be conducted at three (3) discrete locations in each lane; the results shall be averaged and reported for each lane tested. All lanes shall be evaluated and compared. The test layout is shown in Figure 1.
- B) **Inventory** – For in-service QPL test sections, the DFT test is conducted at 6 month intervals up to 3 years. Maintenance surveys are conducted on a yearly basis. Test site shall be confined to a single outside traffic lane (single direction) for each crosswalk location. DFT tests will be conducted at three (3) discrete locations (Figure 1) in each lane; the results shall be averaged and reported for each lane tested. The lane in which the friction tests were conducted should be identified in the report with the test results.
- C) **Retest** – At any point when friction numbers are determined to be below the required values shown in Table 1, all lanes shall be evaluated and the range of friction values shall be determined.
- D) **Special Request** – At any time a patterned pavement is in need of a special assessment, the designated lane(s) shall be evaluated to determine the range of representative friction values.

## 5 REPORT

- 5.1 Friction numbers for the patterned crosswalks should be reported using FDOT's Materials form number 675-060-05. This form can be downloaded from FDOT's website at:  
<http://formserver.dot.state.fl.us/MiscRepository/forms/67506005.xlsm>.

**SECTION No.:** 860500  
**FM No.:** 433688-4-52-01  
**COUNTY:** Broward  
**S.R. No.:** A1A

**EXHIBIT E**

**APPROXIMATE COST FOR LANDSCAPE IMPROVEMENTS**

This Exhibit forms an integral part of the DISTRICT FOUR (4) LANDSCAPE MAINTENANCE MEMORANDUM OF AGREEMENT between the State of Florida, Department of Transportation and the AGENCY.

**\$ 984,757.50**

**SECTION No.:** 860500  
**FM No.:** 433688-4-52-01  
**COUNTY:** Broward  
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**OPINION OF CONSTRUCTION COST**

**PROJECT STATE ROAD No(s): STATE ROAD A1A**  
**MAINTENANCE LIMITS FROM N.E. 9th STREET TO N.E. 18th STREET (M.P. 4.322)**  
**FM No(s): 433688-4-52-01**  
**MAINTAINING AGENCY: CITY OF FORTLAUDERDALE**  
**RLA OF RECORD: BRUCE K. REED**  
**DATE: 3-Dec-13**



PAY ITEM #	DESCRIPTION	SPECIFICATION	UNIT	QTY	UNIT PRICE MAT. & LAB	SUB-TOTAL
S23-1	PATTERNED/TEXTURED PAVEMENT	THERMO-SET STONE AGGREGATE	SY	579	\$67.50	\$39,082.50
S26-1-1	PAVERS, ARCHITECTURAL	CONCRETE PAVERS 3 1/8 IN THICK	SY	11675	\$81.00	\$945,675.00
					<b>GRAND TOTAL =</b>	<b>\$984,757.50</b>