Draft

Location Hydraulics Report

Florida Department of Transportation

Florida's Turnpike Enterprise

Orlando South Ultimate Interchange
Florida's Turnpike (SR 91, MP 254) and
Beachline Expressway (SR 528, MP 4)
Orange County, Florida

Financial Project ID Number: 438547-1-22-01

ETDM Number: 14294

Date: February 2020

"The PD&E Study's support documents were developed in consideration of FTE's Express Lanes Master Plan, which was in effect before October 2019. However, during design phase, the concepts will be updated to Managed Lanes criteria. Managed Lanes plan will not have additional tolls on the facility and will not affect the results of the PD&E study (please see Section A.0 – Project Addendum)."

PROFESSIONAL ENGINEER CERTIFICATION

LOCATION HYDRAULICS REPORT

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Wantman Group, Inc., and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice hereby reported for:

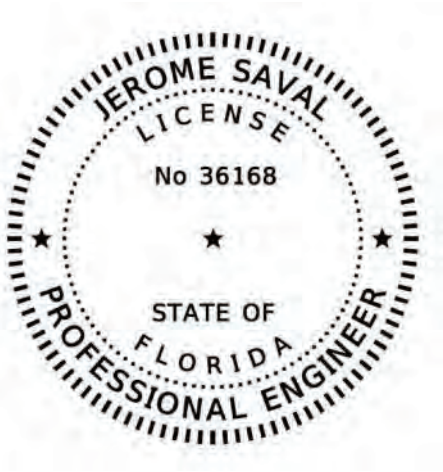
Project: Orlando South Ultimate Interchange

ETDM Number: 14294

Financial Project ID: 438547-1-22-01

Federal Aid Project Number: N/A

This Location Hydraulics Report contains detailed engineering information that fulfills the purpose and need for the Orlando South Ultimate Interchange Project Development & Environment (PD&E) Study at Florida's Turnpike (SR 91) and Beachline Expressway (SR 528) in Orange County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.



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235 Vista Parkway
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

AET	All Electronic Toll
BFE	Base Flood Elevation
BCSP	Bituminous Coated Steel Pipe
CFR	Code of Federal Regulation
CBC	Concrete Box Culvert
CD	Collector-Distributor
CMP	Corrugated Metal Pipe
CR	County Road
EB	Eastbound
ERP	Environmental Resource Permit
EL	Express Lane
FAPG	Federal Aid Policy Guide
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
ft	Feet (Foot)
FIRM	Flood Insurance Rate Map
FPC	Floodplain Compensation
FTE	Florida's Turnpike Enterprise
FDOT	Florida Department of Transportation
GTL	General Toll Lane
HP	Hydroplaning
LOS	Level of Service
LHR	Location Hydraulic Report
MP	Milepost
MOT	Maintenance of Traffic
NFIP	National Flood Insurance Program
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NGVD 29	National Geodetic Vertical Datum of 1929
NRCS	Natural Resource Conservation Service
NAVD 88	North American Vertical Datum of 1988
PD&E	Project Development and Environment
PSR	Pond Siting Report
RCP	Reinforced Concrete Pipe
SCS	Soil Conservation Service
SFWMD	South Florida Water Management District
SR	State Road
SIS	Strategic Intermodal System
SSPG	Structural Steel Plate Girder
SWPPP	Stormwater Pollution Prevention Plan

USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WBID	Water Body Identification Number
WB	Westbound
WFT	Water Film Thickness

A.0 PROJECT ADDENDUM

The development of alternatives for the Orlando South Ultimate Interchange Project Development & Environment (PD&E) Study was completed in consideration of the Florida's Turnpike Enterprise (FTE's) Express Lane Master Plan in effect at the study Notice to Proceed which included the following:

- Two Express Lanes and three General Toll Lanes in each direction on Florida's Turnpike, separated by a buffer with Express Lane Markers
- One Express Lane and three General Toll Lanes in each direction on the Beachline Expressway, separated by a buffer with Express Lane Markers.

Incorporation of the Express Lane Plan is included in the supporting documents and analysis.

In October 2019, FTE elected to change its operational approach and will not implement dynamically tolled express lanes on these facilities. The FTE is now implementing a Managed Lane system that restricts truck usage on selected lanes on its facilities without the additional toll. Revised typical sections for Florida's Turnpike and the Beachline Expressway are shown on **Figures A-1 and A-2**.

Figure A-1
Florida's Turnpike Managed Lane Typical Section

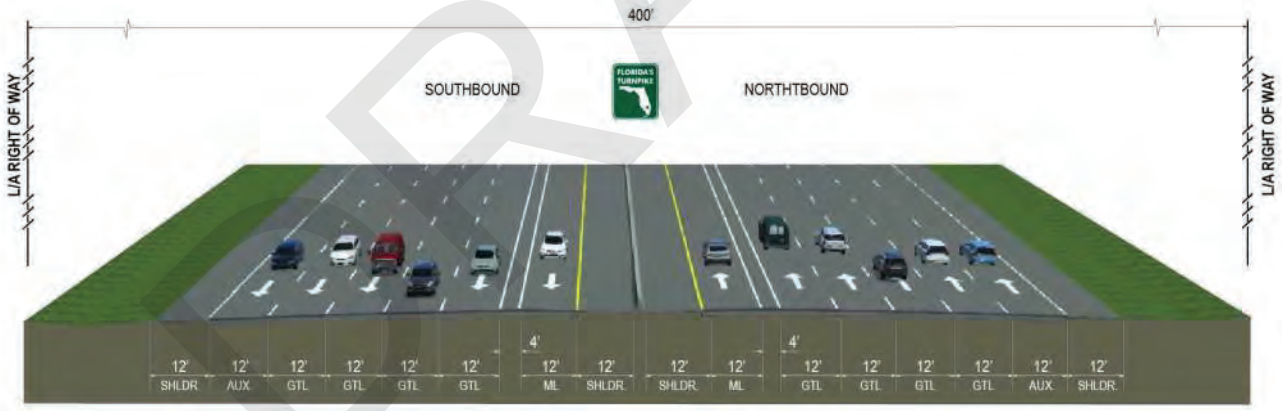
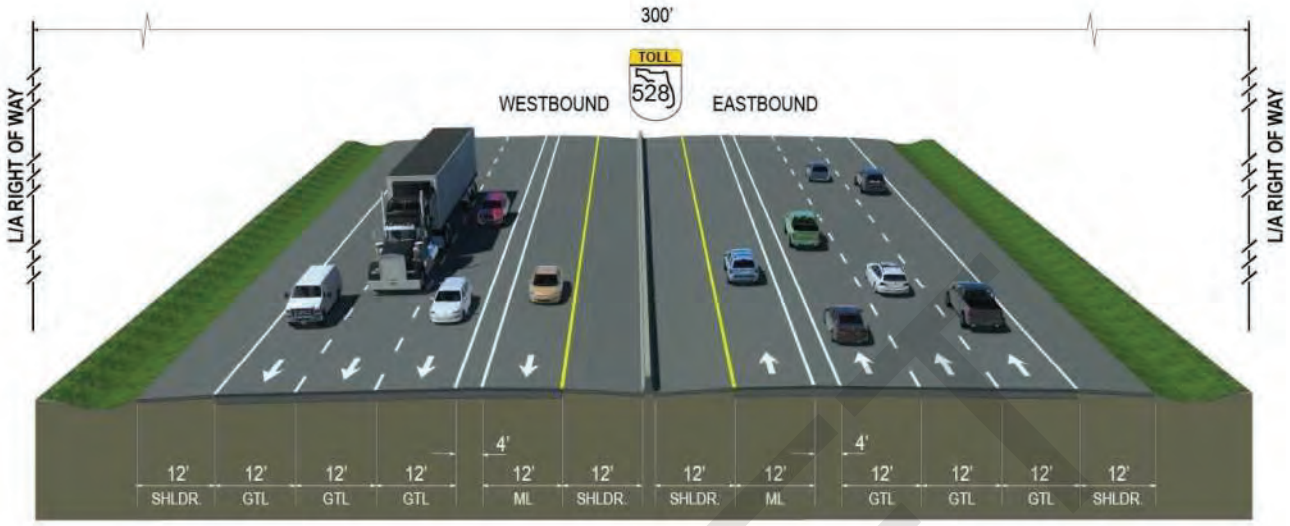


Figure A-2
Beachline Expressway Managed Lane Typical Section



This proposed change will be implemented during final design. The change does not invalidate the results of this study because the proposed footprint of the Florida's Turnpike and the Beachline Expressway is the same as the studied typical section

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (FTE) is conducting a Project Development & Environment (PD&E) Study for the Orlando South Ultimate Interchange at Florida's Turnpike (State Road [SR] 91, Milepost [MP] 254) and Beachline Expressway (SR 528, MP 4), in Orange County, Florida.

Florida's Turnpike and Beachline Expressway are both limited access facilities. The typical sections for the Florida's Turnpike, Beachline Expressway, and Taft Vineland Road are provided in Appendices B-1, B-2, and B-3 respectively.

Improvements are needed to address traffic needs and optimize safety at Florida's Turnpike and the Beachline Expressway. Both the Florida's Turnpike and the Beachline Expressway are classified as hurricane evacuation routes.

This PD&E Study will also include analysis of the No-Build Alternative which would result in no additional improvements except those currently programmed and described in Section 4.2 of this document.

Orlando South Ultimate Interchange PD&E Study will evaluate bridge replacement, ramp reconstruction, and reliever interchanges to maintain an acceptable Level of Service (LOS) for Florida's Turnpike mainline at Orlando South interchange.

Most of the existing bridges will require widening, replacement or complete removal depending on the proposed alignment and typical section of their respective facility. Due to the proposed widening or alignment geometry, the existing cross drains will require either extension or total replacement.

Any floodplain impacts associated with the roadway widening and interchange improvements will be compensated for in existing and proposed pond sites and/or proposed floodplain compensation areas.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this report is to provide a Location Hydraulic Report (LHR) study for the Orlando South Ultimate Interchange Project Development and Environment (PD&E) Study, in accordance with Federal Aid Policy Guide (FAPG) 23 Code of Federal Regulation (CFR) 650 Subpart A, Section 650.111 and Part 2, Section 13.2.2.5 of the FDOT PD&E Manual, 2019. The intent of these regulations is to avoid or minimize highway encroachments within 100-year (base) floodplains, where practicable, and to avoid supporting land use development which is incompatible with floodplain values**.** Where encroachment is unavoidable, the regulations require appropriate measures to minimize impacts.

The primary objective of this LHR is to evaluate the hydraulic conditions within the study area for the existing and proposed conditions. This evaluation shall be accomplished by assessing and quantifying all floodplain impacts and providing recommendations to offset any impacts. The results of this evaluation will provide Florida's Turnpike Enterprise (FTE) with the information necessary to reach a decision on the preliminary or conceptual design of improvements that are required within the study area.

1.2 Scope

Florida's Turnpike State Road (SR) 91 is a limited access facility with four 12-foot (-ft) lanes (two lanes in each direction) south of Taft Vineland Road and eight 12-ft lanes (four lanes in each direction) north of the Beachline Expressway (SR 528). FTE is currently widening Florida's Turnpike (FPID 411406-1) south of the Beachline Expressway to continue the eight 12-ft lanes typical section. Construction for FPID 411406-1 is expected to be completed by year 2020.

The Beachline Expressway is also a limited access facility with two widening projects under construction within the project limits. Both projects, described below, are expected to be opened to traffic by the summer of 2019.

- FPID 406090-5: Widening from four to eight 12-ft lanes with a 4-ft buffer to include two General Toll Lanes (GTLs), two Express Lanes (ELs), and an auxiliary lane in each direction from I-4 (MP 0.0) to Florida's Turnpike (MP 4.3), west of the interchange.
- FPID 437156-1: Widening from six to eight 11.5-ft lanes with a 2-ft buffer to include three GTLs and one EL in each direction from Florida's Turnpike (MP 4.3) to the McCoy Road interchange (MP 8.4), east of the interchange.

The typical sections for the Florida's Turnpike, Beachline Expressway, and Taft Vineland Road are provided in Appendices B-1, B-2, and B-3 respectively.

Improvements are needed to address traffic needs and optimize safety at Florida's Turnpike and the Beachline Expressway. The alternatives evaluated include:

- New and improved connections between Florida's Turnpike and the Beachline Expressway
- All Electronic Toll (AET)
- Improved connections to local roads to address traffic operations
- Future express lane expansion

Both the Florida's Turnpike and the Beachline Expressway are classified as hurricane evacuation routes.

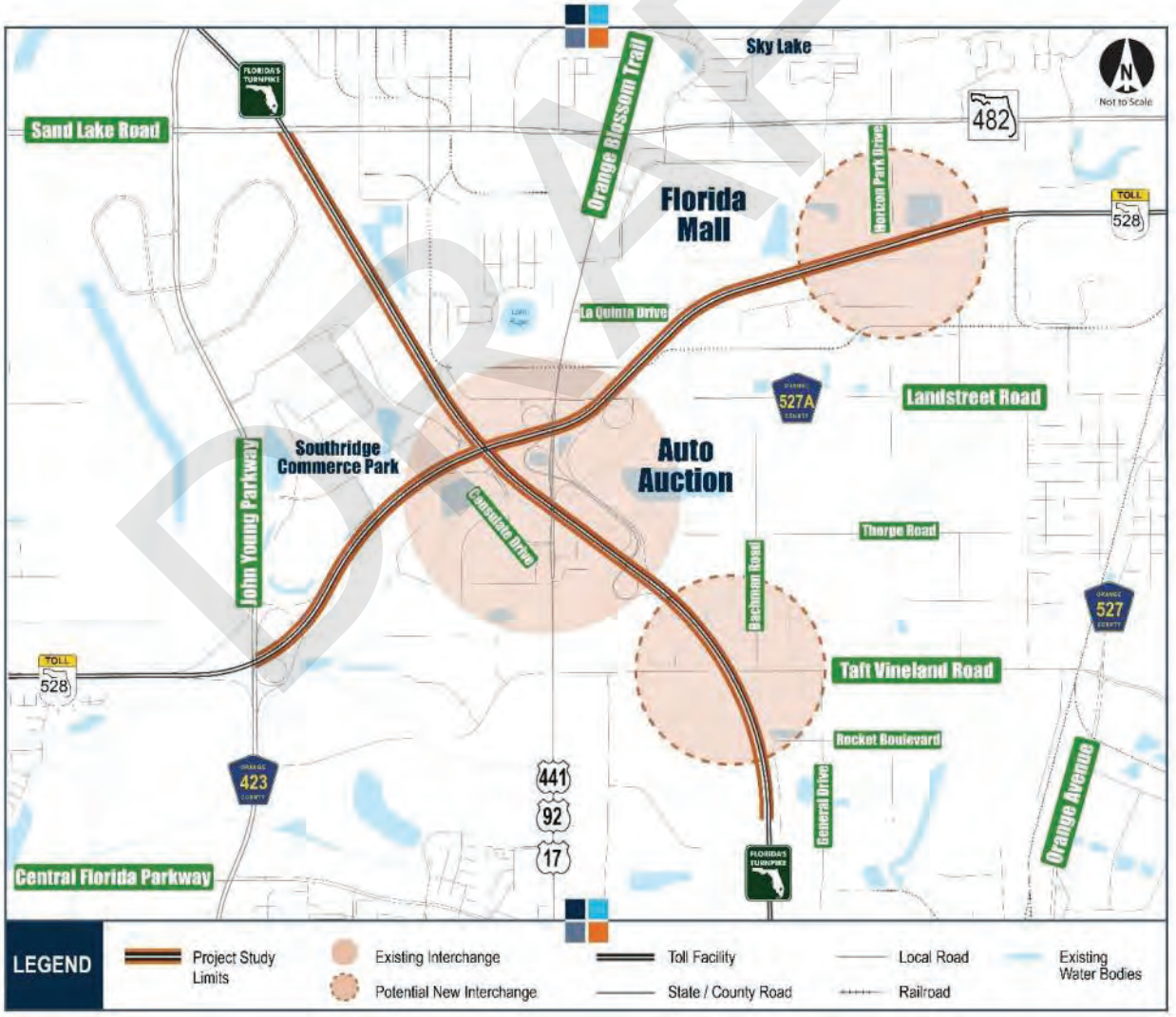
2.0 PROJECT DESCRIPTION

2.1 Project Description and Need

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (FTE) is conducting a Project Development and Environment (PD&E) Study for the Orlando South Ultimate Interchange at Florida's Turnpike (State Road [SR] 91, Milepost [MP] 254) and Beachline Expressway (SR 528, MP 4), in Orange County, Florida. The project limits are shown on **Figure 2-1: Project Location Map**. The specific project limits for the study are:

- Florida's Turnpike from south of Taft Vineland Road to Sand Lake Road (SR 482), and
- Beachline Expressway from John Young Parkway (CR 423) to east of the Beachline West Toll Plaza.

Figure 2-1
Project Location Map



The purpose of the Orlando South Ultimate Interchange improvement is to accommodate future travel demands expected along Florida's Turnpike and Beachline Expressway due to increased population, freight demands, and employment opportunities expected in Orange County, Florida. The interchange improvements will also provide improved access to tourist centers, Orlando International Airport, Port Canaveral, and the growing industrial region surrounding the project location.

Within the Orlando South interchange, there are 13 ramp connections that directly or indirectly connect between the Beachline Expressway, Florida's Turnpike and Orange Blossom Trail. Although the planned construction of the Florida's Turnpike at Sand Lake Road interchange will alleviate demand at some ramps, in the study area, traffic on all facilities are still expected to increase over time. In order to maintain an acceptable Level of Service (LOS) (LOS D for Florida's Turnpike mainline and LOS E for ramps), Florida's Turnpike will need to be widened to ten lanes by the year 2038 north of the Orlando South interchange and by the year 2040 to the south of the interchange under the No-Build scenario. Additionally, total freight movements across Orange County are expected to increase by up to 58% by 2040, which will place higher traffic demands on designated Strategic Intermodal System (SIS) corridors like Florida's Turnpike and Beachline Expressway.

The Florida Future Corridors Initiative has recommended improvements be made to Florida's Turnpike and Beachline Expressway near Orlando to accommodate future traffic demands. Currently, the Beachline Expressway is the only limited access roadway that provides a high-speed connection between Orlando and Brevard County. The interchange improvements, along with existing plans to widen Beachline Expressway to eight lanes from I-4 to McCoy Road (Financial Project Identification (FPID) #406090-5 and #437156-1) will address these needs. Currently, this area is home to Southpark Center with over 2.9 million square feet of building space.

Although not directly serviced by the interchange, the Orange County Convention Plaza Overlay District and International Drive (I-Drive) are located approximately four miles to the west of the project location. Universal Orlando has also recently acquired approximately 500 acres of vacant land between the project location and I-Drive, which has been zoned for theme park use and is expected to be developed as such in the future.

These developments will contribute to increasing traffic volumes on the limited access roadways that connect the area with other parts of the state, such as, Florida's Turnpike, Beachline Expressway and I-4. Improvements on interchanges that surround this area of future growth relieve congestion and provide efficient access to new development from multiple limited access facilities.

2.2 Datum

All elevations discussed in this document reference the North American Vertical Datum of 1988 (NAVD 88). Elevations from exiting South Florida Water Management District (SFWMD) permits in National Geodetic Vertical Datum of 1929 (NGVD 29) were converted to NAVD 88. Datum conversion was obtained from VERTCON 2.0 software available from the National Geodetic Survey website:

(https://www.ngs.noaa.gov/PC_PROD/VERTCON/). NAVD 88 – NGVD 29 is -0.81 feet)

100 NAVD +0.81 = 100.81 NGVD or 100 NGVD -.081 = 99.19 NAVD

3.0 EXISTING CONDITIONS

This Location Hydraulic Report (LHR) is one of several reports prepared as part of the Project Development and Environment (PD&E) Study. The report has been prepared to assess the existing conditions, floodplain encroachments, and cross-drain impacts for each alignment alternative. This study is required by Federal Aid Policy Guide (FAPG) 23 Code of Federal Regulation (CFR) 650A, Section 650.111 and has been prepared in accordance with Part 2, Chapter 13 of the Florida Department of Transportation (FDOT) PD&E Manual plus other reference manuals and guides listed in Section 5.0, References.

Once the on-going construction project is complete, the typical section for Florida's Turnpike (SR 91) will be an eight-lane facility within these project limits and the Beachline Expressway (SR 528) will be a four-lane facility east of Florida's Turnpike and an eight-lane facility west of Florida's Turnpike. The typical sections are provided in Appendices B-1 to B-3.

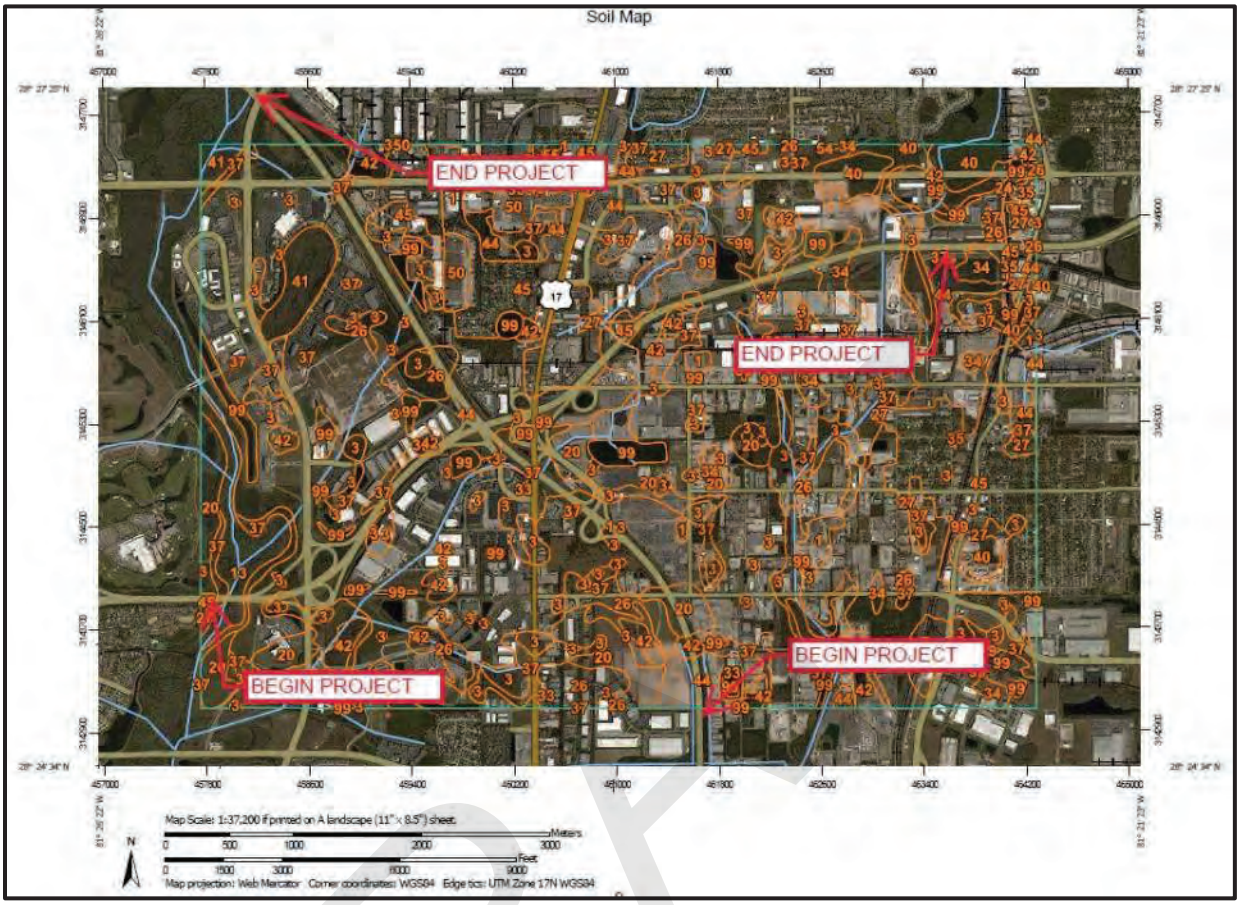
The project corridors are located within the limits of South Florida Water Management District (SFWMD) and cross two major drainage basins. Florida's Turnpike corridor from the south limits to Taft Vineland Road lies within the Boggy Creek Basin, and from Taft Vineland Road to the north limits lies within the Shingle Creek Basin per SFWMD Orange County Drainage Basin Map provided in Appendix C-1. A total of 20 sub-basins are identified within the study area. All drainage basins are open basins that ultimately discharge to Boggy Creek (Water Body Identification Number [WBID] Number 3168B) and Shingle Creek (WBID Number 3169A).

Stormwater runoff intercepted by roadside drainage swales is typically drained to the low point along the roadway within each sub-basin and conveyed across the right of way by existing cross drainage culverts or a bridge structure. Several sub-basins contain multiple cross drains.

3.1 Soils

The United States Department of Agriculture (USDA) Soil Conservation Service (SCS), currently the Natural Resource Conservation Service (NRCS) Soil Survey Report for Orange County, Florida, August 1989, was used to identify soil types within and adjacent to the proposed project. The predominant soil type is Smyrna fine sand. There are also small areas of Basinger fine sand (depressional), Immokalee fine sand, Ona fine sand, St. Johns fine sand, Sanibel muck, Pomello fine sand, and Urban land within the study area. The majority of these soils are very poorly drained, non-plastic, fine sands with seasonal high water table elevations close to the ground surface. The Smyrna fine sand, and Basinger fine sand are classified in Hydrologic Group A/D; St. Johns fine sand, Ona fine sand, and Immokalee fine sand are classified in Hydrologic Group B/D; and Pomello fine sand is classified in Hydrologic Group A. The soil map for the study area is illustrated in **Figure 3-1: Soil Map** and the SCS's Soil Survey of Orange County, Florida is included in the NRCS Soil Resource Report that is provided in Appendix C-2.

Figure 3-1
Soil Map



3.2 Land Use

The future land use within the project area, primarily consists of parcels designated for industrial and commercial uses. There is one low density residential parcel north of the Beachline Expressway and west of Florida's Turnpike and several parcels designated as conservation areas concentrated north of the Beachline Expressway between South Orange Avenue and Winegard Road. The future land uses within the study area are illustrated in **Figure 3-2: Future Land Use Map** and the map with legend is provided in Appendix C-3. The United States Geologic Survey (USGS) Quadrangle Map is illustrated in **Figure 3-3: USGS Quadrangle Map** and the full map is provided in Appendix C-4.

Figure 3-2
Future Land Use Map

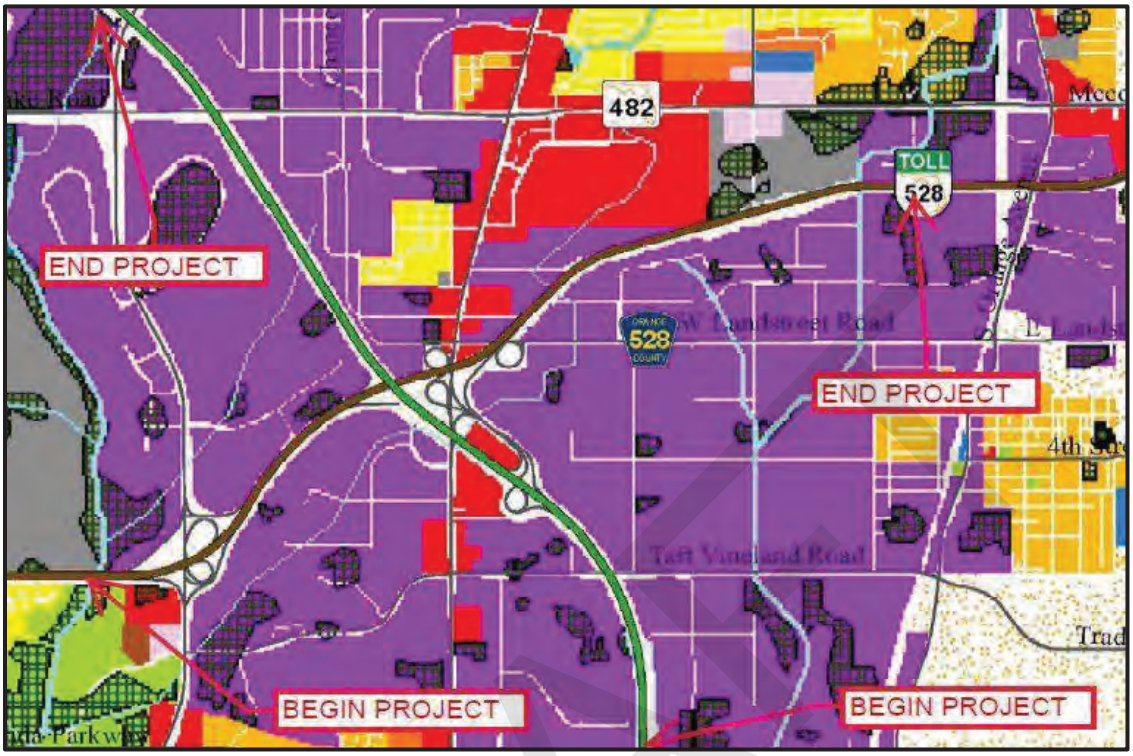
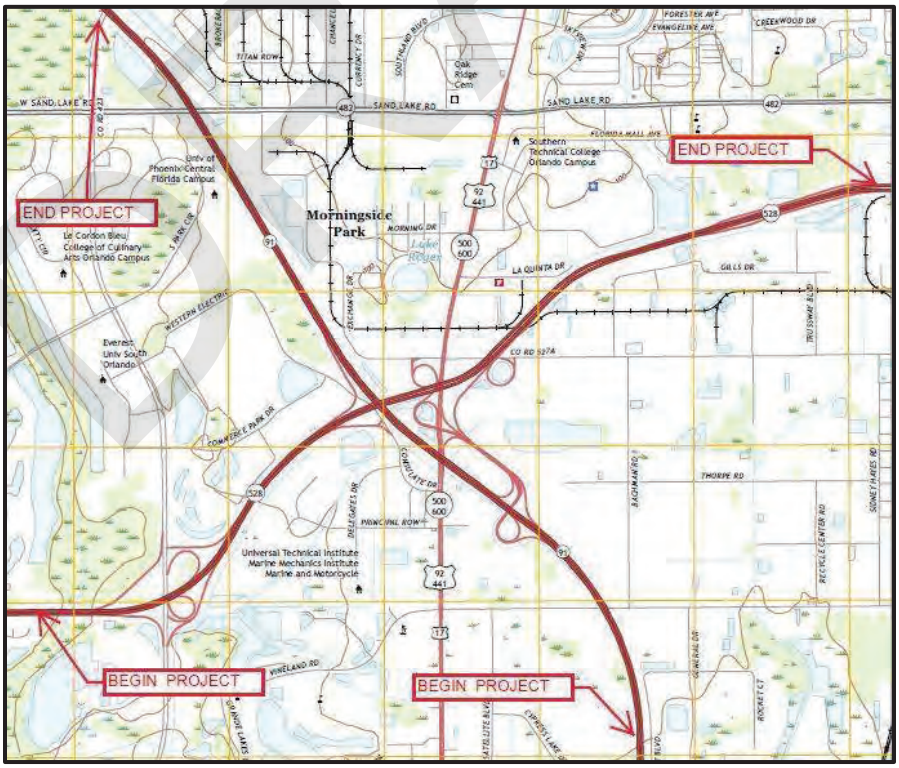


Figure 3-3
USGS Quadrangle Map



3.3 Cross Drains

A total of 18 cross drains were identified within the study area. The Straight Line Diagram of Road Inventory (Appendix B-4), pertinent to the Florida's Turnpike and Beachline Expressway within the project study area, was used to identify the total number of cross drain structures. The Straight Line Diagram only shows a total of 12 cross drains. It was determined, through research of the original Florida's Turnpike and the Beachline Expressway design and construction plans, that six cross drains were omitted from the Straight Line Diagram. Refer to the design plans for Florida's Turnpike and the Beachline Expressway within the study area provided in Appendices B-5 to B-8. **Table 3-1: Existing Cross Drains** summarizes the cross drainage structures within the study area.

Table 3-1
Existing Cross Drains

Roadway	Station	Description from Original Construction Plans						
		Count	Span (in)	Rise (in)	Type	Length (ft)	Elevation (ft NAVD)	
							Upstream	Downstream
"SR 528	351+00	1	42″	42″	RCP	410	73.50	73.00
SR 528	360+00	1	30″	30″	U	407	74.50	74.00
SR 528	418+22	1	54″	54″	RCP	300	*85.58	*85.58
SR 528	426+00	1	42″	42″	CMP	285	91.16	90.20
SR 528	438+00	1	36″	36″	RCP	350	92.63	91.80
SR 528	466+85	2	96″	84″	CBC	255	*86.01 *85.91	*86.01 *85.91
SR 528	491+25	1	24″	24″	BCSP	220	91.43	90.33
SR 528	495+80	2	84″	84″	CBC	225	U	U
SR 528	503+00	1	24″	24″	BCSP	315	93.50	89.73
SR 528	510+50	1	24″	24″	BCSP	320	92.61	91.18
SR 528	522+20	1	30″	30″	CMP	300	93.20	87.00
SR 528	528+00	1	24″	24″	BCSP	305	94.00	88.00
SR 528	532+45	2	84″	84″	CBC	290	U	U
SR 91	2358+17	2	120″	84″	CBC	295	84.40	83.80
SR 91	2372+88	2	48″	48″	RCP	220	87.50	87.00
SR 91	2414+18	1	96″	48″	CBC	195	91.40	91.20
SR 91	2448+79	1	120″	36″	CBC	195	84.90	84.80
SR 91	2482+30	2	84″	48″	CBC	180	80.60	80.00

Abbreviations: RCP – Reinforced Concrete Pipe, CMP – Corrugated Metal Pipe, BCSC – Bituminous Coated Steel Pipe, CBC – Concrete Box Culvert, U – Undetermined

* Elevation obtained from profiles. Refer to existing plans, Appendices B-5 to B-8.

3.4 Bridge Structures

There are 23 existing bridge structures located within the study area. Field verification will be needed to determine the actual location and elevation of the concrete box culverts on the Beachline Expressway. **Table 3-2: Existing Bridge Structures** summarizes the bridge structures within the study area.

Table 3-2
Existing Bridge Structures

Structure Number	Bridge Description	Superstructure Type		Year Built / Reconstr.	Location	Milepost
Beachline Expressway (SR 528)						
750631	SR 528 WB/EB over Shingle Creek	Prestr. Concrete	BR	2018	SR 528 WB/EB	2.8
750091	SR 528 WB over CR 423 John Young Pkwy	Prestr. Concrete	BR	1973/2019	SR 528 WB	3.1
750219	EB SR 528 over SR 91	Prestr. Concrete	BR	1973/2007	SR 528 EB	4.3
750092	WB SR 528 over SR 91	Prestr. Concrete	BR	1973/2007	SR 528 WB	4.3
750181	EB SR 528 over US 441 (OBT)	Prestr. Concrete	BR	1973/2009	SR 528 EB	4.6
750093	WB SR 528 over US 441 (OBT)	Prestr. Concrete	BR	1973/2009	SR 528 WB	4.6
750221	EB SR 528 over Landstreet Road	Prestr. Concrete	BR	1973/2009	SR 528 EB	4.8
750094	WB SR 528 over Landstreet Road	Prestr. Concrete	BR	1973/2009	SR 528 WB	4.8
750095	EB SR 528 On-Ramp over Landstreet Road	Prestr. Concrete	BR	1973	SR 528 EB RAMP	7.7
750632	SR 528 RAMP X over CSX RR (Single Track)	Prestr. Concrete	BR	2009	SR 528 RAMP X	5.0
750222	SR 528 EB over CSX RR Spur	Prestr. Concrete	BR	1973/2009	SR 528 EB	5.0
750096	SR 528 WB over CSX RR Spur	Prestr. Concrete	BR	1973/2007	SR 528 WB	5.0
750600	SR 528 over Canal	Bridge Culvert	CBC	1973/2007	SR 528	5.4

Florida's Turnpike (SR 91)						
750264	Taft Vineland Rd. over SR 91	Prestr. Concrete	UP	1964	SR 91 TPK	254.6
750063	Exit 254 Ramp over SR 91	Prestr. Concrete	UP	1964	SR 91 TPK	255.2
750626	SR 91 over US 441 (OBT):	SSPG	BR	2007	SR 91 TPK	255.5
750602	SR 91/ OBT Ramp over Canal	Bridge Culvert	CBC	1963/1980	SR91 RAMP	255.5
750026	SR 91/ OBT Ramp over US 441 (OBT)	Prestr. Concrete	BR	1963	SR 91 RMP NB	255.6
750645	SR 91/ OBT Ramp over US 441 (OBT)	Prestr. Concrete	BR	NEW	SR 91 RAMP	255.6
750601	SR 91 over Canal	Bridge Culvert	CBC	1963/2007	SR 91 TPK	255.8
750568	SR-482 EB over SR 91	Prestr. Concrete	UP	2007	SR 91 TPK	257.2
750294	SR-482 WB over SR 91	Prestr. Concrete	UP	1979	SR 91 TPK	257.2
754097 & 754098	John Young Pkwy over SR 91	Prestr. Concrete	UP	1993	SR 91 TPK	257.8

Abbreviations: UP - UP (travels under facility), BR - Bridge (travels over facility), CBC - Concrete Box Culvert, SSPG - Structural Steel Plate Girder, OBT - Orange Blossom Trail, SR 91 - Florida's Turnpike SR 528 - Beachline Expressway, SR 482 - Sand Lake Road, CSX RR – CSX Railroad, EB - eastbound

3.5 Floodplains and Floodways

3.5.1 Base Floodplains

Floodplain information was obtained from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) developed for Orange County and were used to identify potential floodplain and floodway encroachments associated with this study. According to FEMA FIRM Map Numbers 12095C0410F and 12095C0420F, portions of the roadway and roadside swales are located in the 100-year floodplain of Shingle Creek and Boggy Creek. The maps show an AE designated 100-year floodplain with Base Flood Elevation (BFE) varying from 83.0 NAVD to 97.0 NAVD. The FEMA FIRM for the project are provided in Appendix C-5.

3.5.2 Regulatory Floodways

A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

There are two waterways within the study area designated as FEMA floodways, Shingle Creek and Boggy Creek. Shingle Creek passes from north to south along the western side of the study area crossing the Beachline Expressway and the Florida's Turnpike. The west branch of Boggy Creek (Skylake Canal) passes through the project at the Beachline Expressway Reliever Interchange at the Voltaire Drive Extension (a proposed new road alignment).

4.0 PROPOSED CONDITIONS

4.1 Cross Drains

Based on the proposed typical section (refer to Appendices B-1, B-2, and B-3) for Florida's Turnpike (State Road [SR] 91), Beachline Expressway (SR 528), and Taft Vineland Road respectively), the roadway will encroach into the existing roadside swales, thereby requiring extension of the existing cross drains to allow adequate space to accommodate widening and other roadside features. In some cases, the existing swale is eliminated by the widening or the proposed collector-distributor (CD) ramps. The impacts to the affected cross drains will need to be further evaluated during final design. **Table 4-1: Impacts to Existing Cross Drains** summarizes the proposed modification description to the cross drainage structures within the study area.

Table 4-1
Impacts to Existing Cross Drains

Roadway	Station	Description from Original Construction Plans					
		Count	Span (in)	Rise (in)	Type	Length (ft)*	Proposed Modification Description
SR 528	351+00	1	42″	42″	RCP	410	No modification needed
SR 528	360+00	1	30″	30″	U	450	Extend for EB off-ramp
SR 528	418+22	1	54″	54″	RCP	U	Relocate per SR-528 realignment
SR 528	426+00	1	42″	42″	CMP	U	Relocate per SR-528 realignment
SR 528	438+00	1	36″	36″	RCP	450	Extend for SB SR 91 to EB SR 528 fly-over ramp
SR 528	466+85	2	96″	84″	CBC	310	Extend for mainline widening
SR 528	491+25	1	24″	24″	BCSP	U	Extend for mainline widening or remove
SR 528	495+80	2	84″	84″	CBC	370	Relocate per Voltaire Dr Ext.
SR 528	503+00	1	24″	24″	BCSP	U	Extend for mainline widening
SR 528	510+50	1	24″	24″	BCSP	220	Shorten per pavement removal (toll plaza)
SR 528	522+20	1	30″	30″	CMP	215	Shorten per pavement removal (toll plaza)
SR 528	528+00	1	24″	24″	BCSP	215	Shorten per pavement removal (toll plaza)

Roadway	Station	Description from Original Construction Plans					
		Count	Span (in)	Rise (in)	Type	Length (ft)*	Proposed Modification Description
SR 528	532+45	2	84″	84″	CBC	220	Shorten per pavement removal (toll plaza)
SR 91	2358+17	2	120″	84″	CBC	440	Extend for mainline widening & NB off-ramp
SR 91	2372+88	2	48″	48″	RCP	300	Extend for mainline widening & CD ramp
SR 91	2414+18	1	96″	48″	CBC	325	Extend for mainline widening & CD ramp
SR 91	2448+79	1	120″	36″	CBC	U	Extend for mainline widening & CD ramp
SR 91	2482+30	2	84″	48″	CBC	180	No modification needed

Abbreviations: RCP – Reinforced Concrete Pipe, CMP – Corrugated Metal Pipe, BCSC – Bituminous Coated Steel Pipe, CBC – Concrete Box Culvert, U – Undetermined, SR 91 – Florida's Turnpike, SR 528 – Beachline Expressway

* Proposed Length

During final design, the cross drains will be further analyzed to determine the overall effect the extensions will have on the system head waters and whether the existing culvert will need to be upsized. Determining the extension length, culvert size and/or optimal location requires design level information. Coordination with the roadway designers will include addressing Maintenance of Traffic (MOT) and constructability issues. The 25-, 50-, 100-, and 500-year frequencies will be analyzed. Discharges will be estimated per Chapter 4.7 of the Florida Department of Transportation (FDOT) Drainage Design Guide, 2019.

4.2 Bridge Structures

Most of the 23 existing bridge structures located within the study area will either require widening, replacement or complete removal. This is dependent on the proposed alignment and typical section of the respective facility. Some bridge structures will be removed due to the elimination of some of the connector ramps.

As stated in Section 3.4, field verification will be needed to determine the actual location and elevation of the concrete box culverts on the Beachline Expressway, as these will require extending to accommodate the proposed Turnpike mainline widening.

A cursory bridge hydraulic analysis was performed to size a box culvert at the Skylake Canal crossing The objective of this exercise was to determine the size of a concrete box culvert (CBC) that would pass the 100-year design event flow within the Skylake Canal (a FEMA designated Floodway) at the new Voltare Drive crossing (see the PD&E Alternative 3 final layout for the Voltare Drive interchange at SR 528) not resulting in a rise of the upstream water surface elevation.

The Boggy Creek ICPR model (which includes the Skylake Canal) was secured from Orange County and modified to add a box culvert crossing (at the Voltare Drive crossing) and to further determine the size of a CBC that would result in a "No-Rise" within the Skylake Canal.

Multiple revisions were made until the analysis showed a four barrel 18' x 10' CBC {(4) 18'x10'} would pass the flow for the 100-year event with a very minimal rise in the upstream water surface elevation. It is understood that this is not a "typical" box culvert size, but the analysis was solely to consider the difference between a bridge and a CBC at the Voltare Drive / Sky Lake Canal crossing, a FEMA designated floodway. And furthermore to see what size CBC would be required to pass the floodway flow. Refer to the Pond Alternative 3 Exhibit provided in Appendix B-11.

4.3 Floodplains and Floodways

4.3.1 Floodplain Designation and Evaluation

All of the alignments have transverse crossings of Federal Emergency Management Agency (FEMA)-mapped floodplains and unmapped floodplains associated with small hydraulic crossings. The proposed interchange improvements and roadway widening will impact the floodplain on both sides of the roadway at various locations within the study area. Portions of the proposed improvements will encroach into areas classified as FEMA Flood Zone AE as identified in the Orange County FEMA Flood Insurance Rate Maps (FIRM). There are several significant longitudinal encroachments associated with the CD ramps and the Voltaire Drive Extension.

During final design, the cross drain extensions shall be further analyzed for encroachment on the floodplains.

Compensation for the floodplain impacts incurred by the improvements will be provided by off-site floodplain compensation (FPC) areas coordinated with the regulatory governing agencies.

4.3.2 Regulatory Floodways

The proposed project may not cause a net reduction in flood storage within the 10-year floodplain except for traversing works such as the roadway corridor. Traversing works or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream of the crossing and no more than one-tenth (0.1) of a one-foot increase in the 100-year flood elevation 500 feet upstream. Proposed construction shall not cause a reduction in flood conveyance capabilities.

The Boggy Creek floodway (Skylake Canal) passes through the project at the Beachline Expressway Reliever Interchange at the Voltaire Drive Extension. The Skylake Canal is a designated FEMA floodway and impacts to this canal need to be hydraulically balanced to avoid upstream and downstream flooding due to the proposed roadway improvements. The preliminary design of modifications to the floodway include:

- New Crossing of Voltaire Drive reconstruction: A preliminary analysis of the new crossing of the Voltaire Drive Extension resulted in an unpractical box culvert configuration, using Orange County's model. Therefore, at this stage of project development, it is assumed that bridges will be used to span the encroachments. The bridge configuration spans the floodway, with abutments clear of the floodplain. Maintenance berms with 20 ft. of vertical clearance will also be required.
- The construction of the new Voltaire Drive overpass over the Beachline Expressway will be realigned and replaced, based on impacts to Beachline Expressway Bridge (Bridge Number 750631). An in kind replacement of the double 84" x 84" concrete box culvert will be required.

During final design, a detailed study will be performed on the floodway. All bridge crossings must be consistent with the National Flood Insurance Program (NFIP), encroachment (such as piers in the floodway) on a floodway shall have minor effects on the floodway water surface elevation.

4.4 Project Classification

In accordance with the requirements set forth in Federal Aid Policy Guide (FAPG) 23 Code of Federal Regulation (CFR) 650A, the project corridor will be evaluated to determine the effects, if any, of the proposed design alternatives on the hydrology and hydraulics of the area. Hydraulic improvements required as part of the roadway project are divided into categories based on the type of hydraulic improvement proposed and the estimated floodplain effects.

- Within the project corridor, the improvements to the existing corridor and interchange represent transverse encroachments on the floodplain and floodways. This encroachment shall remain at existing levels for all proposed alternatives.
- There will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes.
- Cut and fill activities required as part of the roadway improvements are expected to have minor impacts to the fauna, flora and open space environments along the corridor.
- Additionally, local groundwater and surface water systems, flow patterns, and water quality will experience minor impacts during construction, but will ultimately be maintained.

In accordance with Part 2, Chapter 13 of the FDOT Project Development and Environment (PD&E) Manual, Floodplain Statements, the corridor has been evaluated to determine the impact of the proposed hydraulic modifications and estimated floodplain impacts. The proposed design alternatives can best be described as – "Minimal Encroachments".

Minimal encroachment on a floodplain occur when there is floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts.

4.5 Risk Evaluation

The proposed improvements to Florida's Turnpike and the Beachline Expressway were preliminarily evaluated to determine whether there would be adverse floodplain impacts. Floodplain encroachments do not vary significantly with any of the proposed alternatives and Floodplain Compensation (FPC) sites will be provided for volume compensation (cup for cup) for all floodplain impacts as a result of the floodplain encroachments.

The cross drains will be reviewed again during the design phase, once survey is available and a more accurate hydrologic method of analysis is utilized, to determine the effect of the culvert extensions on the headwaters. The limitations to the structures being proposed are basically due to restrictions imposed by the alignment geometry, existing development, cost feasibility, or practicability.

In summary, the proposed structures will perform hydraulically in a manner equal to or greater than the existing structures, and backwater surface elevations are not expected to increase. The hydraulic structures proposed along new alignments will be designed to cause minimal changes in flood stages and flood limits. These changes will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant changes in flood risk or damage. The project is a low risk for supporting incompatible floodplain development and will enhance emergency services and evacuations. Therefore, it has been determined that the encroachments associated with this project are not significant.

4.6 Coordination with Local Agencies

4.6.1 Orange County Stormwater Division

Orange County is the local agency with jurisdiction within the study area for the proposed improvements to the Florida's Turnpike and the Beachline Expressway. Coordination with this agency will be required during preliminary and final design.

4.6.2 South Florida Water Management District

The state agency involved in the permitting process for the project corridor will be the South Florida Water Management District (SFWMD). Permits will be required for all dredge and fill work within, or areas connected to, Waters of the State (Chapter 62-330, [Florida Administrative Code] FAC). The dredge and fill permitting will be through the Environmental Resource Permit (ERP) process. Stormwater systems will be permitted through the SFWMD in accordance with Chapter 40D-4 FAC, which requires that stormwater management systems meet the SFWMD design criteria. Specifically, stormwater management systems should provide water quality treatment, peak discharge attenuation, and adequate drainage.

There are two existing SFMWD ERP permits for the corridor within the study area; Permit Number 48-01443-P for the Florida's Turnpike and Permit Number 48-00633-S for the Beachline Expressway. Copies of the existing permits are provided in Appendices A-1 to A-4.

4.6.3 Florida Department of Environmental Protection

In Florida, the National Pollutant Discharge Elimination System (NPDES) permit process is administered by the Florida Department of Environmental Protection (FDEP) for stormwater discharges into Waters of the United States. Procedures for complying with the General Construction NPDES include submitting a Notice of Intent (NOI), developing and implementing a Stormwater Pollution Prevention Plan (SWPPP) and submitting a Notice of Termination (NOT).

4.6.4 Federal Agencies

Federal agencies that may require permits for the proposed improvements are:

United States Army Corps of Engineers (USACE) for incidental dredge and fill activities such as those associate with the proposed ponds, bridges and ramp reconfiguration and construction may require a Section 404 (Clean Water Act) Dredge and Fill Permit. This would apply for activities in the waters of the United States.

United States Environmental Protection Agency (USEPA) on coordination with FDEP for a NPDES Permit.

4.7 PD&E Requirements Depending on Type of Encroachment

Measures will be implemented with the proposed improvements to address and minimize environmental impacts.

Floodplain impacts associated with the proposed improvements will be compensated for in pond sites and/or proposed floodplain compensation areas. Refer to the Pond Siting Report (PSR) and Sections 4.3.1 and 5.1 of this report

Risk evaluations are described in Section 4.5 of this report

4.8 Hydroplaning

Automobile crashes that are caused by hydroplaning are prevalent throughout the United States and especially Florida with moderate to heavy rainfall events. As a result, various agencies and researchers have analyzed crash patterns, weather conditions, location characteristics, operational conditions and the theory of hydroplaning. Studies have been performed to develop guidelines for the designers to use to identify mitigation measures against hydroplaning situations. To ensure road safety and predict hydroplaning, different model combinations have been developed to estimate the dynamic hydroplaning risk.

The FDOT Hydroplaning (HP) computer software program was used for the analysis of hydroplaning risk assessment. The program has two components: determine water film thickness (WFT) on the pavement being analyzed and predict potential hydroplaning speed given the WFT determined. The HP utilizes the Gallaway formula for WFT together with the PAVDRN formula for determining the speed at which hydroplaning will be initiated on a section of roadway pavement.

The PAVDRN provides hydroplaning threshold speeds compared to the predicted driver speeds at the rainfall intensity. The predicted driver speeds are obtained by anticipated reductions from the design speeds based on the rainfall intensity. Studies found drivers slowed down during heavy rainfall events. The hydroplaning analysis is provided in Appendix B-9.

4.9 Water Quality

The proposed improvements within the study area impacts existing stormwater ponds within the road right of way and on several existing developments. This situation requires the replacement pond volume to maintain the normal water level, water quality treatment volume, and design high water elevations noted in the existing permits, to avoid adverse conditions within the roadway and impacted properties.

SFWMD criteria states that wet detention water quality volume shall be provided for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the percentage of imperviousness, whichever volume is greater.

5.0 RECOMMENDATIONS AND CONCLUSIONS

5.1 Floodplains and Floodways

Floodplains are present through the project study area, specifically along the Beachline Expressway (SR 528) corridor. There are two floodways that cross the Beachline Expressway within the project study area, Shingle Creek and Boggy Creek. The intent of final design is to maintain the upstream and downstream design high water elevations of the Boggy Creek floodway at the Beachline Expressway by appropriately sizing the replacement cross drain (if needed).

Any impacts associated with the roadway widening and interchange improvements will be compensated for in existing and proposed pond sites and/or proposed floodplain compensation areas. Refer to the Pond Siting Report (PSR) for additional information.

All the alignment alternatives traverse Federal Emergency Management Agencies (FEMA)-mapped floodplains and unmapped floodplains associated with small hydraulic crossings. Floodplain elevations will be estimated during final design.

A No-Rise Certification and a conveyance analysis will be required during the subsequent design phase at all regulated floodway crossing to ensure that there is no net loss of historic storage or other impacts to off-site properties due to the proposed improvements.

It is a good practice to use a bridge crossing when traversing a FEMA designated floodway as the regulatory requirements specify a crossing must not cause a rise in the upstream water surface elevation, also called a "No-Rise" certification.

5.2 Cross Drains

Proposed cross drains will be designed to pass the 50-year storm event while keeping floodwaters below the travel lanes and from encroaching on the base clearance water elevation criteria. Storm events up to and including the 500-year will be analyzed to determine backwater elevations and cross drains will be designed so that there is no significant change in land use values. Due to the proposed widening or alignment geometry, the cross drains will require either extension or total replacement. The existing cross drains will be further evaluated for headwater effects to determine if replacement is necessary.

This type of project has the potential to cause changes in existing flood stage and flood limits, however, proper application of the Florida Department of Transportation (FDOT)/Florida's Turnpike Enterprise (FTE) design criteria will ensure that the effects are insignificant.

5.3 Bridge Structures

There are 23 existing bridge structures within the study area. Most of them will require widening, replacement or complete removal depending on the proposed alignment and typical section of their respective facility. Additional study will be required during the design and construction phase to determine the resultant scour for the bridge crossing Shingle Creek and bridges for the Voltaire Drive Extension that cross Skylake Canal.

By complying with regulatory criteria, the implementation of this project will not adversely affect the area adjacent to the corridors.

5.4 Hydroplaning

There are several sections of the roadway where the predicted driver speed (based on rainfall intensity) exceeds the estimated hydroplaning threshold speed. The failure primarily occurs at a rainfall intensity of 2 inches per hour.

The FTE requires that the Initial Engineering Design include identifying locations of potential hydroplaning risk and developing mitigation strategies to reduce risk and aid the development of the typical section package. This shall be performed prior to the Phase I submittal to provide sufficient time for Turnpike concurrence

The Hydroplaning Mitigation Approach is as follows:

- Compare proposed typical section to *FDOT Design Manual* Figure 211.2 to determine if hydroplaning analysis is needed.
- Identify deficient areas using hydroplaning analysis tools.
- Evaluate existing site conditions and crash data.
- Develop and apply crash modification factors to mitigate hydroplaning risk.
- Evaluate mitigating strategies by benefit/cost ratio.
- Identify context sensitive concerns (schedule, stakeholders, and site constraints)
- Provide technical memorandum to FTE with recommended mitigation strategy.
- Receive concurrence from FTE and incorporate into design.

6.0 REFERENCES

1. Florida's Turnpike, *Supplement to the FDOT Drainage Manual*, 2019
2. Florida Department of Transportation, *Drainage Manual,* 2019
3. Florida Department of Transportation, *Drainage Design Guide,* 2019
4. Florida Department of Transportation, *Project Development and Environment Manual*, 2019
5. Florida Department of Transportation, *Design Manual*, 2019
6. Federal Emergency Management Agency, *Flood Insurance Rate Maps for Orange County (Unincorporated), Florida,* 2009
7. South Florida Water Management District, *Environmental Resource Permitting Applicant's Handbook Volume II,* 2016.
8. United States Department of Agriculture Natural Resources Conservation Service, *Soil Survey of Orange County; Florida,* October 2018.
9. Florida's Turnpike, *Hydroplaning Crash Study and Mitigation Strategies Phases I and II*, 2018

APPENDIX A
Correspondence

Appendix A-1

FORM #0157
Rev. 07/09

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
PERMIT MODIFICATION NO. 48-01443-P
DATE ISSUED: NOVEMBER 10, 2014

PERMITTEE: FLORIDA DEPARTMENT OF TRANSPORTATION
(TURNPIKE WIDENING FROM OSCEOLA PARKWAY TO BEACHLINE EXPRESSWAY)
FLORIDAS TURNPIKE ENTERPRISE, P O BOX 613069
OCOEE, FL 34761

ORIGINAL PERMIT ISSUED: MAY 12, 2004

ORIGINAL PROJECT DESCRIPTION: CONSTRUCTION AND OPERATION OF A SURFACE WATER MANAGEMENT SYSTEM TO SERVE A 299.4 ACRE HIGHWAY PROJECT KNOWN AS TURNPIKE WIDENING BETWEEN THE BEELINE EXPRESSWAY AND I-4.

APPROVED MODIFICATION: MODIFICATION OF AN ENVIRONMENTAL RESOURCE PERMIT TO AUTHORIZE CONSTRUCTION AND OPERATION OF A PROJECT THAT INCLUDES A STORMWATER MANAGEMENT SYSTEM SERVING 370.24 ACRES OF A HIGHWAY PROJECT KNOWN AS TURNPIKE WIDENING FROM OSCEOLA PARKWAY TO BEACHLINE EXPRESSWAY.

PROJECT LOCATION: OSCEOLA COUNTY , SECTION 2 TWP 25S RGE 29E
ORANGE COUNTY , SECTION 3,10,11,14,15,22,23,26,35 TWP 24S RGE 29E

PERMIT DURATION: See Special Condition No:1.

This is to notify you of the District's agency action concerning Permit Application No. 140403-5, dated April 1, 2014. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statutes (F.S.).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit Modification is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.57 and Section 120.569, or request a judicial review pursuant Section 120.68, Florida Statutes.
2. The attached 18 General Conditions.
3. The attached 12 Special Conditions.
4. The attached 7 Exhibits.

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition, please provide written objections, petitions and/or waivers to:

Office of the District Clerk
South Florida Water Management District
Post Office Box 24680
West Palm Beach, FL 33416-4680
e-mail: clerk@sfwmd.gov

Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically submitted to the Permittee (and the persons listed on the attached distribution list) this 12th day of November, 2014, in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

By _____
DEPUTY CLERK
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Attachments

SPECIAL CONDITIONS

1. The construction phase of this permit shall expire on November 10, 2024.

2. Operation of the stormwater management system shall be the responsibility of FLORIDA DEPARTMENT OF TRANSPORTATION.

3. Discharge Facilities:

   Please see Exhibit 2, pages 13-16 of 16.

4. Lake side slopes shall be no steeper than 4:1 (horizontal:vertical) to a depth of two feet below the control elevation. Side slopes shall be nurtured or planted from 2 feet below to 1 foot above control elevation to insure vegetative growth, unless shown on the plans.

5. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.

6. Minimum road crown elevation: Please see Exhibit 5, pages 4-6 of 8.

7. Prior to commencement of construction and in accordance with the work schedule in Exhibit No. 3, the permittee shall submit documentation from that 4.26 credits have been deducted from the ledger from the appropriate bank.

8. Silt fencing shall be installed at the limits of construction to protect all areas from silt and sediment deposition during the construction of the project. A floating turbidity barrier shall be installed during the construction of the final discharge structure into the adjacent water body. The sediment controls shall be installed prior to the commencement of any clearing or construction and shall remain in place and be maintained in good functional condition until all adjacent construction activities have been completed and all fill slopes have been stabilized.

9. The exhibits and special conditions in this permit apply only to this application. They do not supersede or delete any requirements for other applications covered in Permit No. 48-01443-P unless otherwise specified herein.

10. Prior to any future construction, the permittee shall apply for and receive a permit modification. As part of the permit application, the applicant for that phase shall provide documentation verifying that the proposed construction is consistent with the design of the master stormwater management system, including the land use and site grading assumptions.

11. The authorization for construction of the stormwater management system is issued pursuant to the water quality net improvement provisions referenced in Chapter 62-330.062 Florida Administrative Code (F.A.C.); therefore, the state water quality certification is waived.

12. The proposed floodplain compensating storage shall be in place in each of the four impact areas prior to placement of any fill in these areas to ensure that no floodplain impacts will result during construction.

FINAL APPROVED BY EXECUTIVE DIRECTOR NOVEMBER 10, 2014

Last Date For Agency Action: November 14, 2014

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: Turnpike Widening From Osceola Parkway To Beachline Expressw

Permit No.: 48-01443-P

Application No.: 140403-5

Application Type: Environmental Resource (Construction/Operation Modification)

Location: Osceola County, S2/T25S/R29E

Location: Orange County, S3,10,11,14,15,22,23,26,35/T24S/R29E

Permittee : Florida Department Of Transportation

Operating Entity : Florida Department Of Transportation

Project Area: 370.24 acres

Permit Area: 370.24 acres

Project Land Use: Highway

Drainage Basin: LAKE TOHOPEKALIGA

Drainage Basin: BOGGY CREEK

Drainage Basin: SHINGLE CREEK

Receiving Body: Existing Wetlands via 13 Existing Cross Drains under Turnpike

Class: CLASS III

Special Drainage District: NA

Total Acres Wetland Onsite:	10.48
Total Acres Wetland Preserved Onsite:	2.80
Total Acres Impacted Onsite :	7.68
Total Acres Presv/Mit Compensation Onsite:	2.80

Conservation Easement To District : No

Sovereign Submerged Lands: No

PROJECT PURPOSE:

Modification of an Environmental Resource Permit to authorize construction and operation of a project that includes a stormwater management system serving 370.24 acres of a highway project known as Turnpike Widening from Osceola Parkway to Beachline Expressway.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The 370.24-acre site is located from mile marker 249.6 to 256.5 along the Florida's Turnpike right-of-way in Orange and Osceola Counties.

There are no permitted water management facilities within the project area. The site contains a 4-lane highway and pervious area in the median and towards the right-of-way limits.

The project corridor consists primarily of freshwater marsh and forested wetlands with direct and secondary impacts to 10.48 acres within the right-of-way. Mitigation for these impacts will be in the form of mitigation bank credits.

PROPOSED PROJECT:

Construction proposed consists of the storm water management system serving the improvements to the Turnpike widening project between the Osceola Parkway and the Beeline Expressway. The water management system consists of sheetflow into linear dry detention ponds or inlets and culverts directing runoff to wet detention ponds for the required water quality treatment and attenuation prior to discharge into cross drains under the Turnpike or conveyance swales to existing receiving wetlands. The project limits lie within the Shingle, Boggy and Lake Tohopekaliga Drainage Basins.

The Turnpike is being widened from four to eight lanes within these limits. The proposed new lanes will receive water quality treatment and attenuation within their respective basins except for Basins 4 and 5. Compensating water quality treatment is proposed in Basins/Ponds 10 and 11 for Basins 4 and 5. Because not all new pavement can be treated within the corresponding basin, the state water quality certification is waived (please see Special Condition No. 11). Please see Exhibit 4, pages 1 to 4 of 4 for permit boundary and basin boundary delineations. In addition, compensating water qualtiy treatment will also be provided for activities proposed in the FDEP Turnpike/SR 417 Full Interchange permit (Permit No. ERP48-0317167-002-EI).

All elevations are shown in NAVD 1988 Datum. Exhibit 2, pages 13-16 of 16 show the construction details of the proposed control structures. Exhibit 5, pages 1-3 of 8 contain a land use breakdown showing Turnpike totals. Exhibit 5, pages 4-6 of 8 contain design storm peak stages versus minimum edge of pavement (EOP) elevations. Exhibit 5, page 6 of 8 contains the seasonal high water tables elevations for each basin. Exhibit 5, pages 7-8 of 8 contain a pre-development discharge versus post-development discharge summary table for each basin. Exhibit 6 contains water quality treatment volume required and provided totals per basin as well as the compensating water quality treatment required and provided totals for this project as well as the FDEP project.

LAND USE:

Exhibit 5, pages 1-3 of 8 contain a land use breakdown showing Turnpike totals.

Construction Project:

	This Phase	
Impervious	142.42	acres
Pervious	219.52	acres

	This Phase	
Water Mgnt Acreage	8.30	acres
Total:	**370.24**	

WATER QUANTITY :

Discharge Rate :

As shown in Exhibit 5, pages 7 and 8 of 8, the proposed project discharge is within the allowable limit for the area.

Road Design :

As shown in Exhibit 5 page 6 of 8, minimum road center lines have been set at or above the calculated design storm flood elevation.

Road Storm Frequency : 10 YEAR-1 DAY Design Rainfall: 7.4 inches

Flood Plain/Compensating Storage:

Proposed floodplain impacts are all located in Flood Zone A. Flood elevations were estimated to be 3 feet above existing ground in the area as a conservative assumption for the floodplain calculations.

Displaced Volume	Compensating Volume	100-Year Stage Elevation
7.1 ac-ft	14.9 ac-ft	ft-NAVD 88

WATER QUALITY :

No adverse water quality impacts are anticipated as a result of the proposed project. Consistent with previous permits, water quality criteria is 2.5 inches of runoff times the new impervious area and is provided in excess in the proposed corresponding basin's water management area. Compensating water quality treatment is provided for Basins 4 and 5 in Ponds 10 and 11 as shown in Exhibit 6, page 3 of 3. Accordingly, this permit is issued per the net water quality provision which states that the state water quality certification is waived; please see Special Condition No. 11. In addition, Ponds 10 and 11 provide compensating water quality treatment for the FDEP Turnpike/SR 417 Full Interchange (Permit No. ERP48-0317167-002-EI) of 0.46 and 0.5 acre-feet, respectively. Please see Exhibit 6, page 2 of 3.

WETLANDS:

Wetlands within the right of way are classified into four types.

Wetlands 1, 3, 8, 10 and 12, 13 and 14 are mixed hardwood systems and were historically part of a larger cypress dominated system. However, habitat fragmentation has allowed for a variety of hardwood species to colonize these wetlands. They are also notable for being directly adjacent to other roadways in addition to the Turnpike, therefore affecting the available landscape/habitat support. Wetland 4 is representative of a wetland scrub type habitat as it forms a transition between a very large cypress system and adjacent uplands. Wetlands 5, 6 and 7 are indicative of the freshwater marsh habitats that are present at the toe of slope, running parallel to the Turnpike as it bisects a large cypress slough. This habitat is mostly consistent out to the Right-of-Way (ROW) line where it then becomes dominated by cypress. The area encompassing Wetland 6 is proposed for a stormwater pond. Wetlands 9 and 11 are classified as inland pond and sloughs and were historically a large cypress slough that has been fragmented by the Turnpike

and a drainage canal that runs through it. There is still a sizeable portion of the slough remaining to the west of the Turnpike.

Due to the presence of the Turnpike and surrounding development, all systems exhibit degraded hydrology and nuisance and exotic vegetation can be found throughout. The proposed wetland impact maps are provided as Exhibit 3.

Although the applicant has explored practicable design modifications, impacts to wetlands and surface waters are unavoidable and will occur as a result of roadway expansion and pond construction. Direct impacts will include the placement of fill in approximately 4.49 acres of herbaceous wetland and 3.19 acres of forested wetland, for a total of 7.68 acres. The total acreage for secondary wetland impacts is 2.04 acres forested and 0.76 acres herbaceous for a total of 2.80 acres.

Mitigation Proposal:

The project as proposed will impact 10.48 acres of wetlands within the right-of-way. Wetland 8 is isolated and less than one acre in size (0.30 acres) and therefore does not require mitigation. For the remaining 10.18 acres of direct and secondary impacts to wetlands, Florida's Turnpike Enterprise will provide compensatory mitigation for unavoidable wetland impacts through a solicitation of bids from mitigation banks with service areas that encompass the proposed project limits. Direct and secondary wetland impacts combine for a total functional loss of 4.26 mitigation units (rounding issue). A letter of availability for the required credits is provided as Exhibit 3.

Cumulative Impact Assessment:

A cumulative impact assessment was conducted for the proposed wetland impacts within the Lake Tohopekaliga Basin and within the Boggy Creek Basin. The proposed impacts are a minor portion of the basin and will not result in unacceptable cumulative impacts to the wetland functions within the basin. The proposed mitigation is expected to be located within basins within the overall watershed.

Within the Lake Tohopekaliga Basin, the proposed wetland impact of 0.33 acres represents approximately 0.01% of the existing total "Not-At-Risk", forested, and hydrologically connected area greater than 20.0 acres in size. As a result, the loss of 0.33 acres from all "Not-At-Risk" historically forested, and hydrologically connected wetland habitat within the Lake Tohopekaliga Drainage Basin would be inconsequential, sustainable, and would not constitute an unacceptable cumulative impact to the wetlands within the basin.

Within the Boggy Creek Basin, the proposed wetland impact of 7.35 acres represents approximately 0.37% of the existing total "Not-At-Risk", historically forested, and hydrologically connected area greater than 20.0 acres in size. As a result, the loss of 7.35 acres from all "Not-At-Risk" forested, and hydrologically connected wetland habitat within the Boggy Creek Drainage Basin would be inconsequential, sustainable, and would not constitute an unacceptable cumulative impact to the wetlands within the basin.

Wetland Inventory :

CONSTRUCTION MOD -Turnpike Widening

Site Id	Site Type	Pre-Development				Post-Development						
		Pre Fluccs	AA Type	Acreage (Acres)	Current Wo Pres	With Project	Time Lag (Yrs)	Risk Factor	Pres. Adj. Factor	Post Fluccs	Adj Delta	Functional Gain / Loss
W1	ON	617	Direct	.04	.47	.00					-.470	-.019
W10	ON	617	Direct	.33	.37	.00					-.370	-.122
W10S	ON	617	Secondary	.18	.37	.27					-.100	-.018
W11	ON	616	Direct	.22	.50	.00					-.500	-.110
W11S	ON	616	Secondary	.29	.50	.40					-.100	-.029
W12	ON	617	Direct	.05	.37	.00					-.370	-.019
W12S	ON	616	Secondary	.19	.37	.27					-.100	-.019
W13	ON	617	Direct	.49	.33	.00					-.330	-.162
W13S	ON	617	Secondary	.14	.33	.23					-.100	-.014
W14	ON	617	Direct	.34	.37	.00					-.370	-.126
W14S	ON	617	Secondary	.39	.37	.27					-.100	-.039
W1S	ON	617	Secondary	.10	.47	.37					-.100	-.010
W2	ON	640	Direct	.09	.60	.00					-.600	-.054
W2S	ON	640	Secondary	.19	.60	.50					-.100	-.019
W3	ON	617	Direct	.20	.47	.00					-.470	-.094
W3S	ON	617	Secondary	.19	.47	.37					-.100	-.019
W4	ON	631	Direct	2.21	.70	.00					-.700	-1.547
W4S	ON	631	Secondary	.38	.70	.57					-.130	-.049
W5	ON	641	Direct	1.24	.53	.00					-.530	-.657
W5S	ON	641	Secondary	.12	.53	.43					-.100	-.012
W6	ON	641	Direct	.95	.53	.00					-.530	-.504
W6S	ON	641	Secondary	.07	.53	.43					-.100	-.007
W7	ON	625	Direct	.89	.43	.00					-.430	-.383
W7S	ON	625	Secondary	.16	.43	.33					-.100	-.016
W8	ON	617	Direct	.30							.000	.000
W9	ON	616	Direct	.33	.50	.00					-.500	-.165
W9S	ON	616	Secondary	.40	.50	.40					-.100	-.040
			Total:	10.48								-4.25

Fluccs Code	Description
616	Inland Ponds And Sloughs
617	Mixed Wetland Hardwoods
625	Hydric Pine Flatwoods
631	Wetland Scrub
640	Vegetated Non-Forested Wetlands
641	Freshwater Marshes

MITBANK

Type Of Credits	Number Of Credits
	Mitigation Bank Cr Used
Fresh Water Forested	3.00
Fresh Water Herbaceous	1.25
Total:	**4.25**

Wildlife Issues:

The project site does not contain preferred habitat for wetland-dependent endangered or threatened wildlife species or species of special concern. No wetland-dependent endangered/threatened species or species of special concern were observed onsite, and submitted information indicates that potential use of the site by such species is minimal. This permit does not relieve the applicant from complying with all applicable rules and any other agencies' requirements if, in the future, endangered/threatened species or species of special concern are discovered on the site.

CERTIFICATION, OPERATION, AND MAINTENANCE:

Pursuant to Chapter 62-330.310 Florida Administrative Code (F.A.C.), Individual Permits will not be converted from the construction phase to the operation phase until construction completion certification of the project is submitted to and accepted by the District. This includes compliance with all permit conditions, except for any long term maintenance and monitoring requirements. It is suggested that the permittee retain the services of an appropriate professional registered in the State of Florida for periodic observation of construction of the project.

For projects permitted with an operating entity that is different from the permittee, it should be noted that until the construction completion certification is accepted by the District and the permit is transferred to an acceptable operating entity pursuant to Sections 12.1-12.3 of the Applicant's Handbook Volume I and Section 62-330.310, F.A.C., the permittee is liable for operation and maintenance in compliance with the terms and conditions of this permit.

In accordance with Section 373.416(2), F.S., unless revoked or abandoned, all stormwater management systems and works permitted under Part IV of Chapter 373, F.S., must be operated and maintained in perpetuity.

The efficiency of stormwater management systems, dams, impoundments, and most other project components will decrease over time without periodic maintenance. The operation and maintenance entity must perform periodic inspections to identify if there are any deficiencies in structural integrity, degradation due to insufficient maintenance, or improper operation of projects that may endanger public health, safety, or welfare, or the water resources. If deficiencies are found, the operation and maintenance entity will be responsible for correcting the deficiencies in a timely manner to prevent compromises to flood protection and water quality. See Section 12.4 of Applicant's Handbook Volume I for Minimum Operation and Maintenance Standards.

RELATED CONCERNS:

Water Use Permit Status:

The applicant has indicated that no irrigation water is proposed for the project.

The applicant has indicated that dewatering is not required for construction of this project since the proposed ponds will be excavated in the wet condition. No construction dewatering will commence until a construction dewatering permit from the District is obtained.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation.

CERP:

The proposed project is not located within or adjacent to a Comprehensive Everglades Restoration Project component.

Potable Water Supplier:

Not required for the proposed activities.

Waste Water System/Supplier:

Not required for the proposed activities.

Right-Of-Way Permit Status:

A District Right-of-Way Permit is not required for this project.

DRI Status:

This project is not a DRI.

Historical/Archeological Resources:

The District has received correspondence from the Florida Department of State, Division of Historical Resources indicating that no significant archaeological or historical resources are recorded in the project area and the project is therefore unlikely to have an effect upon any such properties.

DEO/CZM Consistency Review:

The issuance of this permit constitutes a finding of consistency with the Florida Coastal Management Program.

Third Party Interest:

No third party has contacted the District with concerns about this application.

Enforcement:

There has been no enforcement activity associated with this application.

STAFF RECOMMENDATION TO EXECUTIVE DIRECTOR:

The Staff recommends that the following be issued :

Modification of an Environmental Resource Permit to authorize construction and operation of a project that includes a stormwater management system serving 370.24 acres of a highway project known as Turnpike Widening from Osceola Parkway to Beachline Expressway.

Based on the information provided, District rules have been adhered to.

Staff recommendation is for approval subject to the attached General and Special Conditions.

STAFF REVIEW:

NATURAL RESOURCE MANAGEMENT APPROVAL

ENVIRONMENTAL EVALUATION

Susan C. Elfers

SUPERVISOR

Jennifer Thomson

SURFACE WATER MANAGEMENT APPROVAL

ENGINEERING EVALUATION

Annette V. Burkett

SUPERVISOR

Mark S. Daron, P.E.

ENVIRONMENTAL RESOURCE PERMITTING BUREAU CHIEF :

Anita R. Bain

DATE: 04-Nov-2014

REGULATION DIVISION ASSISTANT DIRECTOR :

Anthony M. Waterhouse, P.E.

DATE: 11/4/14

STORMWATER ALTERNATIVES REPORT

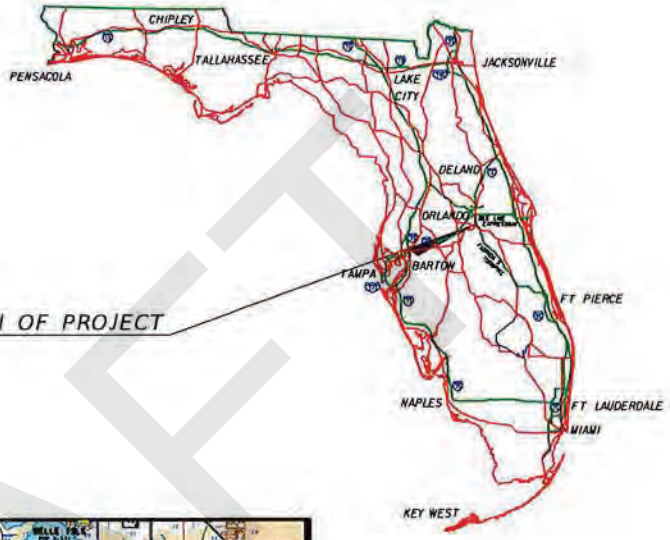
FLORIDA'S TURNPIKE (SR 91) WIDENING
FROM SOUTH OF OSCEOLA PARKWAY TO BEACHLINE

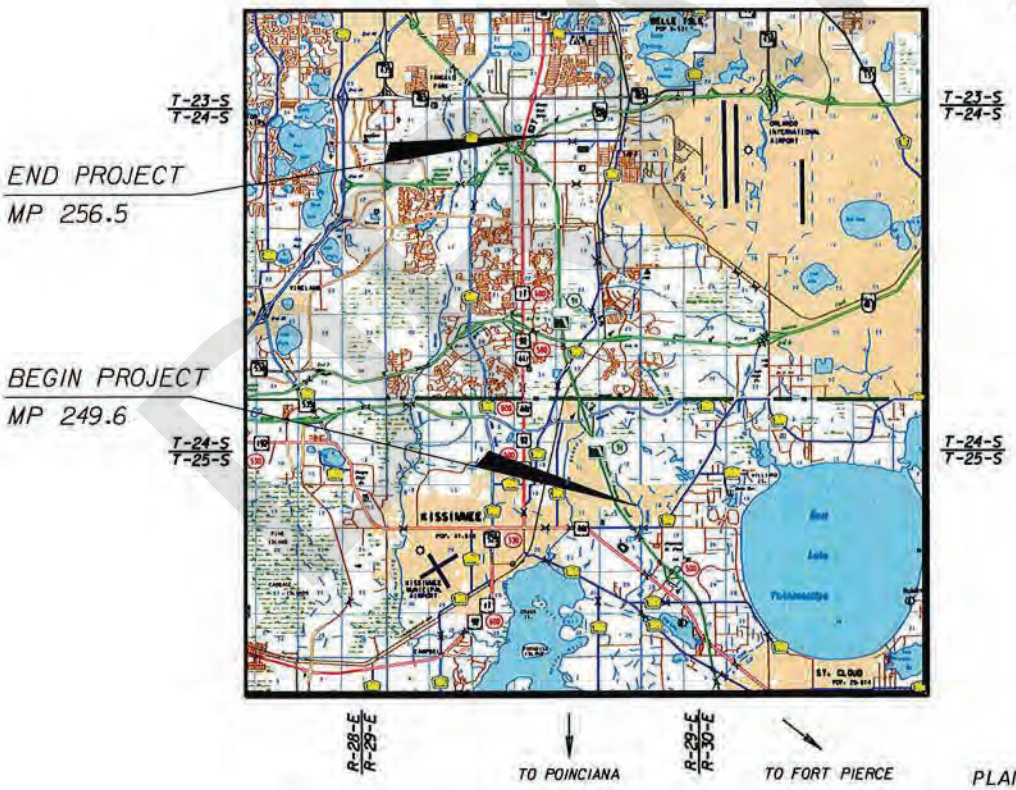
FIGURE 1

FPID NO. 411406-1-52-01
FPID NO. 411406-4-52-01

OSCEOLA COUNTY (92471), FLORIDA
ORANGE COUNTY (75470), FLORIDA

LOCATION MAP





PREPARED FOR: FLORIDA'S TURNPIKE ENTERPRISE
FLORIDA DEPARTMENT
OF TRANSPORTATION

PLANS PREPARED BY:
Wantman Group, Inc.
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
E-Mail: WGI@wantmangroup.com

Cert No. 6091 - LB No. 7055
Vendor No. 65-0271367
Consultant Contract No. C-8X90

STAFF REPORT DISTRIBUTION LIST

TURNPIKE WIDENING FROM OSCEOLA PARKWAY TO BEACHLINE EXPRESSW

Application No: 140403-5

Permit No: 48-01443-P

INTERNAL DISTRIBUTION

X Annette V. Burkett
X Susan C. Elfers
X Jennifer Thomson
X Mark S. Daron, P.E.
X A. Bain
X A. Lee
X A. Waterhouse
X ERC Engineering
X ERC Environmental

EXTERNAL DISTRIBUTION

X Permittee - Florida Department Of Transportation
X Agent - Atkins
X Other Interested Party - Florida Department Of Environmental Protection

GOVERNMENT AGENCIES

X Div of Recreation and Park - District 3 - Graham Williams, FDEP
X Div of Recreation and Park - District 3 - Graham Williams, FDEP
X Orange County Engineer Public Works Division Dvlpmnt Engineering Dept.
X Osceola County Engineer

Appendix A-2

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-01443-P
DATE ISSUED: MAY 12, 2004

FORM #0145
Rev. 03/95

PERMITTEE: FLORIDA'S TURNPIKE ENTERPRISE
(WIDENING OF FLORIDA'S TURNPIKE (SR 91) FROM BEELIN)
P O BOX 613069,
OCOEE , FL 34761

PROJECT DESCRIPTION: CONSTRUCTION AND OPERATION OF A SURFACE WATER MANAGEMENT SYSTEM TO SERVE A 299.4 ACRE HIGHWAY PROJECT KNOWN AS TURNPIKE WIDENING BETWEEN THE BEELINE EXPRESSWAY AND I-4.

PROJECT LOCATION: ORANGE COUNTY , SECTION 19,20,28,29,33 TWP 23S RGE 29E
SECTION 3,4 TWP 24S RGE 29E

PERMIT DURATION: See Special Condition No:1. See attached Rule 40E-4.321, Florida Administrative Code.

This Permit is issued pursuant to Application No. 031222-15 , dated December 22, 2003. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, operation, maintenance or use of activities authorized by this Permit. This Permit is issued under the provisions of Chapter 373 , Part IV Florida Statutes (F.S.), and the Operating Agreement Concerning Regulation Under Part IV, Chapter 373 F.S., between South Florida Water Management District and the Department of Environmental Protection. Issuance of this Permit constitutes certification of compliance with state water quality standards where neccessary pursuant to Section 401, Public Law 92-500, 33 USC Section 1341 , unless this Permit is issued pursuant to the net improvement provisions of Subsections 373.414(1)(b), F.S., or as otherwise stated herein.

This Permit may be transferred pursuant to the appropriate provisions of Chapter 373, F.S, and Sections 40E-1.6107(1) and (2), and 40E-4.351(1), (2), and (4), Florida Administrative Code (F.A.C.). This Permit may be revoked, suspended, or modified at any time pursuant to the appropriate provisions of Chapter 373, F.S, and Sections 40E-4.351(1), (2), and (4), F.A.C.

This Permit shall be subject to the General Conditions set forth in Rule 40E-4.381, F.A.C., unless waived or modified by the Governing Board. The Application, and the Environmental Resource Permit Staff Review Summary of the Application, including all conditions, and all plans and specifications incorporated by reference, are a part of this Permit. All activities authorized by this Permit shall be implemented as set forth in the plans, specifications, and performance criteria as set forth and incorporated in the Environmental Resource Permit Staff Review Summary. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual, pursuant to the appropriate provisions of Chapter 373, F.S. and Sections 40E-4.361 and 40E-4.381, F.A.C.

In the event the property is sold or otherwise conveyed, the Permittee will remain liable for compliance with this Permit until transfer is approved by the District pursuant to Rule 40E-1.6107, F.A.C.

SPECIAL AND GENERAL CONDITIONS ARE AS FOLLOWS:

SEE PAGES 2 - 3 OF 6 (16 SPECIAL CONDITIONS).
SEE PAGES 4 - 6 OF 6 (19 GENERAL CONDITIONS).

FILED WITH THE CLERK OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

On ORIGINAL SIGNED BY:
By ELIZABETH VEGUILLA
DEPUTY CLERK

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By ORIGINAL SIGNED BY:
LORI OJALA
SECRETARY

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

April 26, 2004

Florida's Turnpike Enterprise
P.O. Box 613069
Ocoee, FL 34761

Subject: Application No. 031222-15, **Widening of Florida's Turnpike (SR 91) from Beeline to I-4**
Orange County, S19,20,28,29,33/T23S/R29E, S3,4/T24S/R29E

Enclosed is a copy of the South Florida Water Management District's staff report covering the permit application referenced therein. It is requested that you read this staff report thoroughly and understand its contents. The recommendations as stated in the staff report will be presented to our Governing Board for consideration on **May 12, 2004.**

Should you wish to object to the staff recommendation or file a petition, please provide written objections, petitions and/or waivers (refer to the attached "Notice of Rights") to:

Elizabeth Veguilla, Deputy Clerk
South Florida Water Management District
Post Office Box 24680
West Palm Beach, Florida 33416-4680

The "Notice of Rights" addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. You are advised, however, to be prepared to defend your position regarding the permit application when it is considered by the Governing Board for final agency action, even if you agree with the staff recommendation, as the Governing Board may take final agency action which differs materially from the proposed agency action.

Please contact the District if you have any questions concerning this matter.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a "Notice of Rights" has been mailed to the addressee this 26th day of April, 2004 in accordance with Section 120.60 (3), Florida Statutes.

Sincerely,

Damon Meiers, P.E., Deputy Director
Environmental Resource Regulation Department

DM/gh

CERTIFIED #7002 3150 0003 3738 9375
RETURN RECEIPT REQUESTED

R. Robbins
4250

Last Date For Agency Action: 13-MAY-2004

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: Widening Of Florida'S Turnpike (Sr 91) From Beeline To I-4

Permit No.: 48-01443-P

Application No.: 031222-15

Application Type: Environmental Resource (New Construction/Operation)

Location: Orange County, S19,20,28,29,33/T23S/R29E
S3,4/T24S/R29E

Permittee : Florida'S Turnpike Enterprise

Operating Entity : Florida'S Turnpike Enterprise

Project Area: 299.4 acres

Project Land Use: Highway

Drainage Basin: SHINGLE CREEK

Receiving Body: Existing road system

Class: CLASS III

DRAFT
Subject to Governing Board Approval

Special Drainage District: NA

Total Acres Wetland Onsite:	21.73	
Total Acres Wetland Preserved Onsite:	15.77	
Total Acres Impacted Onsite :	5.96	
Offsite Mitigation Credits-Mit.Bank:	8.94	Florida Mitigation Bank

Conservation Easement To District : No

Sovereign Submerged Lands: No

PROJECT PURPOSE:

This application is a request for an Environmental Resource Permit to authorize construction and operation of a surface water management system to serve a 299.4 acre road widening project for Florida's Turnpike between the Beeline Expressway and I-4. Staff recommends approval with conditions.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The site is located within the Turnpike right-of-way between the Beeline Expressway and I-4.

There are no permitted surface water management facilities within the project area. The site contains the existing Turnpike facilities, Shingle Creek and existing wetlands.

The proposed activities are designed to fall within the existing right-of-way of the turnpike. Of seven forested contiguous wetlands within the project right of way 4 are proposed for impacts. All of the wetlands have varying degrees of hydrologic alterations and exotic or nuisance species invasion due to the long history of commercial development along this length of the turnpike. Direct impacts of 5.96 acres are proposed to be offset with the purchase of 8.94 freshwater forested mitigation credits from the Florida Mitigation Bank (DEP ERP #492924779). DEP Bureau of Survey and Mapping has issued a DSL 33 regarding the state title at this point of Shingle Creek: stating that records are insufficient to determine ownership. Therefore, proprietary requirements that would normally apply to state owned lands not be applied to this project.

PROPOSED PROJECT:

Construction proposed consists of the water management system serving the Turnpike widening project between the Beeline Expressway and I-4. The water management system consists of inlets and culverts directing runoff to dry detention ponds and then to conveyance swales to existing receiving bodies. A floodplain compensating storage area is also being constructed along the west side of the Turnpike between John Young Parkway and Sand Lake Road. The project area contains 299.4 acres. The total area draining to the water management system contains 227.31 acres. The excluded areas include the conveyance swales and the compensating storage area that can not be directed to the water management system.

The Turnpike is being widened from four to eight lanes in this area, the pavement area increases from 54.54 to 92.01 acres. The facilities are existing and pre-date District permitting requirements. The proposed new lanes will receive water quality treatment except for that portion in the vicinity of the Shingle Creek crossing. In this area runoff will continue to flow to roadside swales, ditches, and wetlands. Additional treatment volume will be provided in other ponds to make up for this loss. Because not all new pavement can be treated, State water quality certification is waived, (See Special Condititions).

The project area is divided into five major basins, corresponding with the discharge points and 35 sub-basins with dry detention ponds. Exhibit 7 shows the water quality treatment volume required and provided. Exhibit 8 shows the pre and post construction peak discharge for the 25 year 72 hour design storm for the five major basins discharging to Shingle Creek. Exhibits 9 and 10 show the average wet season water table elevation. Exhibit 11 shows the pond control elevations and weir elevations. Exhibit 12 shows the construction details of the typical weir structures. Exhibit 13 shows the pond areas and control elevations. Exhibit 14 shows the peak stage for the 25 year 72 hour storm and the minimum road elevations.
All elevations are shown in NAVD 1988 Datum, which is .9' lower than NGVD 1929 Datum.

LAND USE:

The land use information shows both the 37.47 acres of new and existing pavement.

Construction:
Project:

	This Phase	Total Project	
Pavement	92.01	92.01	acres
Pervious	196.40	196.40	acres
Water Mgnt Acreage	10.99	10.99	acres
Total:	**299.40**	**299.40**	

WATER QUANTITY :

Discharge Rate :

As shown in Exhibit No. 8, the proposed project discharge is within the allowable limit for the area.

Discharge Storm Frequency : 25 YEAR-3 DAY Design Rainfall : 9.3 inches

Road Design :

As shown in Exhibit 14, minimum road center lines have been set at or above the calculated design storm flood elevation.

Road Storm Frequency : 25 YEAR-3 DAY Design Rainfall: 9.3 inches

Flood Plain/Compensating Storage:

Approximately 16.57 acre feet of encroachment into the 100 year floodplain result from construction of this project. Compensating storage in the amount of 18.17 acre feet is provided in the compensating storage area between 84.5' and 88.1' NAVD to make up for the encroachment and additional runoff volume.

Displaced Volume	Compensating Volume	100-Year Stage Elevation
16.57 ac-ft	18.17 ac-ft	88.1 ft-NGVD

WATER QUALITY :

No adverse water quality impacts are anticipated as a result of the proposed project. Water quality treatment for 2.5 inches over the new pavement is provided in the dry detention ponds. In the vicinity of the Shingle Creek Crossing, no ponds are proposed. Runoff will sheet flow to the roadside swales and wetlands. Constructing ponds in this area would have resulted in additional wetland impacts. To make up for this lost volume treatment for existing pavement was provided in other ponds (See Exhibit 7). Because not all new pavement can be treated, State water quality certification is waived, (See Special Condititions).

WETLANDS:

Wetland Description:

The turnpike lies in industrial and commercial development areas for the length of the road within this permit. The original construction of the turnpike pre-dates storm water rules. As a consequence, the wetlands have been receiving untreated water from the existing roadway. All but one of the 4 impacted areas are to different points of the Shingle Creek wetland system that the turnpike bridges in the northern half of the project. Shingle Creek has been channelized for a distance both upstream and downstream from the turnpike intersection. The proximity of the wetlands to, and access from, the turnpike has allowed discarded trash and debris to collect within the wetlands. In addition the wetlands have been subject to

long-term stresses of hydrologic alterations, invasion by exotic and nuisance species and trash deposition from adjacent road traffic.

Wetland Impacts:

The proposed project area includes 7 separate wetlands totaling 30.71 acres. Of those totals, impacts are proposed to 5.96 acres representing 4 different wetlands. All of the impacts are within the existing right of way. The impacted areas are hydrologically altered, invaded with exotic and nuisance species and have been receiving untreated water from the Turnpike since its original construction.

Alternatives for avoiding or minimizing wetland impacts are minimal at best with the widening of an existing roadway. Extra effort has been made in the placement and control elevation of the compensating storage pond to avoid direct or secondary impacts from its construction. The absence of buffers for the remaining unimpacted wetlands has been calculated as a secondary impact to the wetland for a width of 25 feet water ward of the edge of the project activities for a total estimated 4.21 acres of secondary impacts. Secondary impacts from gradient draw downs have been avoided with the design of the projects ponds and compensating storage areas. An extensive erosion control plan has been included in the project design so as to avoid erosional impacts to surface waters, wetlands or offsite areas.

Mitigation will be the purchase of mitigation bank credits from the Florida Mitigation Bank. The bank is partially within the Shingle Creek Basin. The mitigation offsets the impact in the same basin so there is no potential for significantly adverse cumulative impacts.

Mitigation Proposal:

The project was originally listed under the DOT Senate bill for mitigation but was removed for reasons of practicality. When listed the mitigation was estimated to require a 1.5:1 mitigation to impact ratio. Functional analyses of the direct impacts of 5.96 acres and secondary impacts of 4.21 acres combined with basis of review guidelines for ratios support the proposed 8.94 freshwater forested mitigation credits from the Florida Mitigation Bank (DEP ERP #492924779). A copy of the commitment letter is attached as an exhibit.

Wetland Inventory :

CONSTRUCTION NEW -WIDENING OF FLA'S TPK ONSITE

Pre-Development		Post-Development				
	Total Existing	**Impacted**	**Undisturbed**	**Enhanced**	**Preserved**	**Restored/ Created**
Fresh Water Forested	21.73	5.96	15.77			
Total:	**21.73**	**5.96**	**15.77**			

Wetland Inventory :

MITBANK	Florida Mitigation Bank OFFSITE
Pre-Development	**Post-Development**
	Mitigation Bank Cr Used
Fresh Water Forested	8.94
Total:	**8.94**

CERTIFICATION AND MAINTENANCE OF THE WATER MANAGEMENT SYSTEM:

It is suggested that the permittee retain the services of a Professional Engineer registered in the State of Florida for periodic observation of construction of the surface water management (SWM) system. This will facilitate the completion of construction completion certification Form #0881 which is required pursuant to Section 10 of the Basis of Review for Environmental Resource Permit Applications within the South Florida Water Management District, and Rule 40E-4361(2), Florida Administrative Code (F.A.C.).

Pursuant to Chapter 40E-4 F.A.C., this permit may not be converted from the construction phase to the operation phase until certification of the SWM system is submitted to and accepted by this District. Rule 40E-4.321(7) F.A.C. states that failure to complete construction of the SWM system and obtain operation phase approval from the District within the permit duration shall require a new permit authorization unless a permit extension is granted.

For SWM systems permitted with an operating entity who is different from the permittee, it should be noted that until the permit is transferred to the operating entity pursuant to Rule 40E-1.6107, F.A.C., the permittee is liable for compliance with the terms of this permit.

The permittee is advised that the efficiency of a SWM system will normally decrease over time unless the system is periodically maintained. A significant reduction in flow capacity can usually be attributed to partial blockages of the conveyance system. Once flow capacity is compromised, flooding of the project may result. Maintenance of the SWM system is required to protect the public health, safety and the natural resources of the state. Therefore, the permittee must have periodic inspections of the SWM system performed to ensure performance for flood protection and water quality purposes. If deficiencies are found, it is the responsibility of the permittee to correct these deficiencies in a timely manner.

RELATED CONCERNS:

Water Use Permit Status:

The applicant has indicated that no irrigation water is proposed for the project.

The applicant has indicated that dewatering is required for construction of this project. No construction dewatering will commence until a construction dewatering permit from the District is obtained.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation, unless the work qualifies for a No-Notice Short-Term Dewatering permit pursuant to Chapter 40E-20.302(3) or is exempt pursuant to Section 40E-2.051, FAC.

Right-Of-Way Permit Status:

A Right-of-Way Permit is not required for this project.

DRI Status:

This project is not a DRI.

Historical/Archeological Resources:

No information has been received that indicates the presence of archaeological or historical resources or that the proposed activities could cause adverse impacts to archaeological or historical resources.

DCA/CZM Consistency Review:

The District has not received a finding of inconsistency from the Florida Department of Community Affairs or other commenting agencies regarding the provisions of the federal Coastal Zone Management Plan.

Third Party Interest:

No third party has contacted the District with concerns about this application.

Enforcement:

There has been no enforcement activity associated with this application.

STAFF RECOMMENDATION:

The Staff recommends that the following be issued :

Construction and operation of a surface water management system to serve a 299.4 acre highway project known as Turnpike Widening between the Beeline Expressway and I-4.

Based on the information provided, District rules have been adhered to.

Staff recommendation is for approval subject to the attached General and Special Conditions.

DRAFT
Subject to Governing Board Approval

STAFF REVIEW:

NATURAL RESOURCE MANAGEMENT DIVISION APPROVAL

ENVIRONMENTAL EVALUATION

Susan C. Elfers

SUPERVISOR

Marc S. Ady

DIVISION DIRECTOR :

Robert G. Robbins

DATE: 4/23/04

SURFACE WATER MANAGEMENT DIVISION APPROVAL

ENGINEERING EVALUATION

Alan L. Leavens

SUPERVISOR

Edward W. Yaun, P.E.

DIVISION DIRECTOR :

Anthony M. Waterhouse, P.E.

DATE: 4/23/04

SPECIAL CONDITIONS

1. The construction phase of this permit shall expire on May 13, 2009.
2. Operation of the surface water management system shall be the responsibility of FLORIDA'S TURNPIKE ENTERPRISE.
3. Discharge Facilities: See Exhibits 11 & 12.
4. The permittee shall be responsible for the correction of any erosion, shoaling or water quality problems that result from the construction or operation of the surface water management system.
5. Measures shall be taken during construction to insure that sedimentation and/or turbidity violations do not occur in the receiving water.
6. The authorization for construction of the surface water management system is issued pursuant to the water quality net improvement provisions referenced in Rule Section 40E-4.303(1), Florida Administrative Code; therefore, the state water quality certification is waived.
7. The District reserves the right to require that additional water quality treatment methods be incorporated into the drainage system if such measures are shown to be necessary.
8. Lake side slopes shall be no steeper than 5:1 (horizontal:vertical) to a depth of two feet below the control elevation. Side slopes shall be nurtured or planted from 2 feet below to 1 foot above control elevation to insure vegetative growth, unless shown on the plans.
9. Facilities other than those stated herein shall not be constructed without an approved modification of this permit.
10. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.
11. The permittee shall provide routine maintenance of all of the components of the surface water management system in order to remove all trapped sediments/debris. All materials shall be properly disposed of as required by law. Failure to properly maintain the system may result in adverse flooding conditions.
12. This permit is issued based on the applicant's submitted information which reasonably demonstrates that adverse water resource related impacts will not be caused by the completed permit activity. Should any adverse impacts caused by the completed surface water management system occur, the District will require the permittee to provide appropriate mitigation to the District or other impacted party. The District will require the permittee to modify the surface water management system, if necessary, to eliminate the cause of the adverse impacts.
13. Minimum road crown elevation: See Exhibit 14.
14. Silt fencing shall be installed at the limits of construction to protect all of the preserve areas from silt and sediment deposition during the construction of the project. A floating turbidity barrier shall be installed during the construction of the final discharge structure into the adjacent canal/water body. The silt fencing and the turbidity barrier shall be installed in accordance with "Florida Land Development Manual" Chapter 6 "Stormwater and Erosion and Sediment Control Best Management Practices for Developing Areas". The sediment controls shall be installed prior to the commencement of any clearing or construction and the installation must be inspected by the District's Environmental Resource Compliance staff. The silt fencing and turbidity barriers shall remain in place and be maintained in good functional condition until all adjacent construction activities have been completed and all fill slopes have been stabilized. Upon completion of the project and the stabilization of the fill, the permittee shall contact the District's Environmental Resource Compliance staff to inspect the site and approve the removal of the silt fencing and turbidity barriers.

SPECIAL CONDITIONS

15. Prior to to commencement of construction in wetlands and in accordance with the work schedule attached the permittee shall submit documentation from the Florida Department of Environmental Protection that 8.94 fresh water forested mitigation credits have been deducted from the ledger for Florida Mitigation Bank, (DEP ERP #492924779)

16. The permittee must obtain a Water Use permit prior to construction dewatering, unless the work qualifies for a general permit pursuant to Subsection 40E-20.302(3), F.A.C., also known as the "No Notice" Rule.

PROJECT LOCATION MAP
FLORIDA'S TURNPIKE
MAINLINE WIDENING FROM ORLANDO SOUTH TO I-4

FPID 406091-1-32-01
Orange County

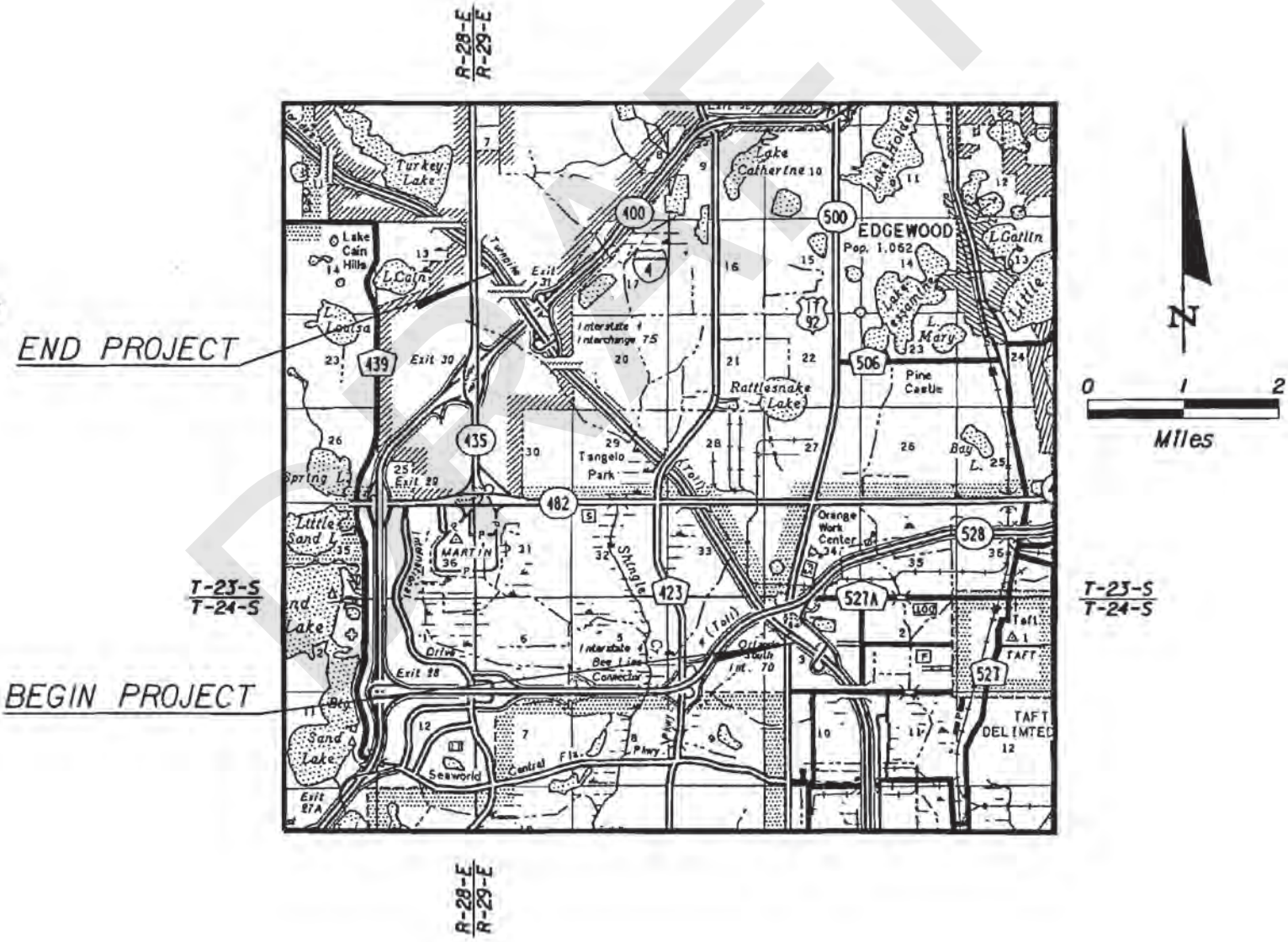


EXHIBIT I

Appendix A-3

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-00633-S
DATE ISSUED: 8/13/15

PERMITTEE: FLORIDA DEPARTMENT OF TRANSPORTATION
FLORIDAS TURNPIKE ENTERPRISE
P O BOX 613069
OCOEE, FL 34761

PROJECT DESCRIPTION: This Environmental Resource Permit Modification authorizes construction and operation of a stormwater management system serving 1.2 acres of additional impervious area in a highway project known as S R 528 (Beachline Expressway) from I-4 to Florida's Turnpike.

PROJECT LOCATION: ORANGE COUNTY, SEC 3-9 TWP 24S RGE 29E
SEC 1, 12 TWP 24S RGE 28E

PERMIT DURATION: See Special Condition No:1.

This is to notify you of the District's agency action for Permit Application No. 150619-15, dated June 19, 2015. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statues (F.S).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit is in effect for this project subject to:

1. Not receiving a filed request for a Chapter 120, Florida Statutes, administrative hearing.
2. the attached 18 General Conditions (See Pages : 2 - 4 of 6),
3. the attached 13 Special Conditions (See Pages : 5 - 6 of 6) and
4. the attached 4 Exhibit(s)

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights," we will assume that you concur with the District's action.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this , in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

BY: _____
Charles Walter, P.G.
Regulatory Administrator
Orlando Service Center

SPECIAL CONDITIONS

1. The construction phase of this permit shall expire on 8/13/2020

2. Operation and maintenance of the stormwater management system shall be the responsibility of FLORIDA DEPARTMENT OF TRANSPORTATION. Within one year of permit issuance or concurrent with the engineering certification of construction completion, whichever comes first, the permittee shall submit a copy of the recorded deed restrictions (or declaration of condominium, if applicable), a copy of the filed articles of incorporation, and a copy of the certificate of incorporation for the association.

3. Discharge Facilities:

   Please see Exhibit 2, pages 14-15 of 15.

4. Lake side slopes shall be no steeper than 4:1 (horizontal:vertical) to a depth of two feet below the control elevation. Side slopes shall be nurtured or planted from 2 feet below to 1 foot above control elevation to insure vegetative growth, unless shown on the plans.

5. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.

6. The following are exhibits to this permit. Exhibits noted as incorporated by reference are available on the District's ePermitting website (http://my.sfwmd.gov/ePermitting) under this application number.
   Exhibit No. 1 Location Map
   Exhibit No. 2 Construction Plans, Pages 1 - 15
   Exhibit No. 3 Summary Tables, Pages 1 - 5
   Exhibit No. 4 Environmental Exhibits, Pages 1 - 5

7. Prior to initiating construction activities associated with this Environmental Resource Permit (ERP), the permittee is required to hold a pre-construction meeting with field representatives, consultants, contractors, District Environmental Resource Compliance (ERC) staff, and any other local government entities as necessary.

   The purpose of the pre-construction meeting is to discuss construction methods, sequencing, best management practices, identify work areas, staking and roping of preserves where applicable, and to facilitate coordination and assistance amongst relevant parties.

   To schedule a pre-construction meeting, please contact ERC staff from the Orlando Service Center at (407) 858-6100 or via e-mail at: pre-con@sfwmd.gov. When sending a request for a pre-construction meeting, please include the application number, permit number, and contact name and phone number.

8. Minimum road crown elevation: Please see Exhibit 3, page 4 of 5.

9. Prior to commencement of construction and in accordance with the work schedule in Exhibit No.3, the permittee shall submit documentation from the Florida Department of Environmental Protection that 0.1 credits have been deducted from the ledger for Lake Hatchineha Ranch Mitigation Bank.

10. If monitoring reports or other information show the preserved wetlands have been negatively affected by the permitted development in a manner that is irreversible (such as impounding the wetland and drowning the existing vegetation or a reduction in the hydroperiod resulting in the transition of wetlands into upland/transitional habitat), the permittee shall be required to submit a remediation plan within 30 days of

SPECIAL CONDITIONS

notification by the District's Environmental Resource Compliance staff of such conditions. The remediation plan may include onsite or offsite mitigation as necessary to address any deficiences.

11. Prior to any future construction, the permittee shall apply for and receive a permit modification. As part of the permit application, the applicant for that phase shall provide documentation verifying that the proposed construction is consistent with the design of the master stormwater management system, including the land use and site grading assumptions.

12. As previously permitted, flood plain compensating storage for this phase of construction shall be constructed and operational prior to the placement of any fill between the average wet season water table elevation and the 100-year flood elevation that would adversely affect the rights of others.

13. The authorization for construction of the stormwater management system is issued pursuant to the water quality net improvement provisions referenced in Chapter 62-330.062 Florida Administrative Code (F.A.C.); therefore, the state water quality certification is waived.

Last Date For Agency Action: August 18, 2015

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: S R 528 (Beachline Expressway) From 1-4 To Floridas Turnpike

Permit No.: 48-00633-S

Application No.: 150619-15

Application Type: Environmental Resource (Construction/Operation Modification)

Location: Orange County, S1, 12/T24S/R28E
S3-9/T24S/R29E

Permittee : Florida Department Of Transportation

Operating Entity : Florida Department Of Transportation

Project Area: 1.20 acres

Permit Area: 337.00 acres

Project Land Use: Highway

Drainage Basin: SHINGLE CREEK

Receiving Body: Shingle Creek, Newover Canal and VWCD C-10 Canal **Class:** CLASS III

Special Drainage District: Valencia Water Control District

Total Acres Wetland Onsite: .33
Total Acres Wetland Preserved Onsite: .13
Total Acres Impacted Onsite : .20
Total Acres Presv/Mit Compensation Onsite: .13
Conservation Easement To District : No
Sovereign Submerged Lands: No

PROJECT SUMMARY:

This Environmental Resource Permit Modification authorizes construction and operation of a stormwater management system serving 1.2 acres of additional impervious area in a highway project known as S R 528 (Beachline Expressway) from I-4 to Florida's Turnpike.

This modification to the previously-permitted Permit No. 48-00633-S, Application No. 141107-16 is for minimal additional impervious area resulting in minor design changes to the previously-permitted storm water management system and minor additional wetland impacts.

This permit is issued pursuant to the water quality net improvement provisions of Chapter 62-330.062 Florida Administrative Code (F.A.C.); therefore, the state water quality certification is waived.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The Beachline Expressway (SR 528) begins at the western terminus at the interchange with Interstate 4 and runs eastward through Orange County past the SFWMD jurisdictional boundary. The limits of this section extend from the interchange with Interstate 4 to the Florida's Turnpike. Refer to Exhibit 1 for a location map.

There are permitted water management facilities within the project area that this application proposes to slightly modify (Permit No. 48-00633-S, Application No. 141107-16). The site contains highway facilities including multiple interchanges, infield wet detention stormwater ponds, roadside swales, ditches and traverses Shingle Creek.

For information on the wetlands and surface waters within the project, please refer to the Wetlands and Surface Waters section of this staff report.

LAND USE:

Construction Project:

	This Phase	
Impervious	1.20	acres
Total:	**1.20**	

WATER QUANTITY :

Discharge Rate :

As shown in the Exhibit 3, page 3 of 5, Table I-10, the project discharge is within the allowable limit for the area.

Discharge Storm Frequency : 25 YEAR-1 DAY Design Rainfall : 8.6 inches

Road Design :

As shown in the following table and the attached exhibits, minimum road center lines have been set at or above the calculated design storm flood elevation.

Road Storm Frequency : 25 YEAR-1 DAY Design Rainfall: 8.6 inches

WATER QUALITY :

As shown in Exhibit 3, page 5 of 5, water quality treatment will be provided in the previously-permitted storm water management ponds. The project provides the total required 4.96 acre-feet of water quality treatment volume based on 2.5 inches over the newly-proposed impervious area in addition to any previously-permitted water quality treatment.

WETLANDS:

Wetlands And Other Surface Waters:

Application No. 141107-16 approved 5.37 acres of direct wetland impact and 1.46 acres of secondary wetland impact for the widening of SR 528 between I-4 and Florida's Turnpike. The proposed modifications will result in additional impacts to Wetland 6 and Wetland 5.

Wetland 6 is a maintained roadside swale with severely limited hydrology and habitat value. All 0.05 acres of Wetland 6 will be impacted by the proposed project. Wetland 5 comprises 0.73 acres of a larger mixed forested wetland located off-site. The wetland is surrounded by urban development, including SR 528. Although the contiguous off-site wetland is preserved under conservation easement, the proposed work occurs in the right of way and is not encumbered by conservation easement. Wetland 5 will receive 0.15 acres of direct impact and 0.40 acres of secondary impact. Of the 0.40 acres of secondary impact, 0.27 acres had been previously assessed and mitigated for, resulting in 0.13 acres requiring additional mitigation.

In total, the project will result in impacts to 0.20 acres of wetlands as described in the table below. Exhibit 4 identifies the locations of wetlands/surface waters that will be impacted.

A reservation for the purchase of 0.1 credit from the Hatchineha Ranch Mitigation Bank has been received to offset 0.2 acres of direct wetland impact and 0.13 acres of secondary impacts. The required mitigation was determined using UMAM; details of the scoring can be found in the permit file. The project is located in the Shingle Creek Basin, which currently does not have mitigation banks. Although the proposed mitigation is not located within the same basin as the impacts, several factors were analysed to determine the appropriateness of the mitigation. The proposed minimal impacts are to wetlands previously permitted and partially mitigated for impact within the right of way of an existing roadside project. The impact areas are located within a highly urbanized corridor and are of little regional value in terms of habitat or hydrology. Based on this analysis, the District has determined that the project will not result in unacceptable cumulative impacts to the Shingle Creek Basin. This conclusion is project specific and does not neccessarily apply to any other application.

Wetland Inventory :

CONSTRUCTION MOD -Wetlands 5 and 6, SR 528 Widening

Site Id	Site Type	Pre-Development				Post-Development						
		Pre Flucs	AA Type	Acreage (Acres)	Current Wo Pres	With Project	Time Lag (Yrs)	Risk Factor	Pres. Adj. Factor	Post Fluccs	Adj Delta	Functional Gain / Loss
W5D	ON	630	Direct	.15	.47	.00					-.470	-.071
W5S	ON	630	Secondary	.13	.47	.36					-.110	-.014
W6D	ON	641	Direct	.05	.10	.00					-.100	-.005
			Total:	.33								-.09

Fluccs Code	Description
630	Wetland Forested Mixed
641	Freshwater Marshes

Fish And Wildlife Issues:

The project site does not contain significant habitat for wetland-dependent endangered or threatened wildlife species or species of special concern. No wetland-dependent endangered/threatened species or species of special concern were observed onsite, and submitted information indicates that potential use of the site by such species is minimal.

This permit does not relieve the applicant from complying with all applicable rules and any other agencies' requirements if, in the future, endangered/threatened species or species of special concern are discovered on the site.

CERTIFICATION, OPERATION, AND MAINTENANCE:

Pursuant to Chapter 62-330.310 Florida Administrative Code (F.A.C.), Individual Permits will not be converted from the construction phase to the operation phase until construction completion certification of the project is submitted to and accepted by the District. This includes compliance with all permit conditions, except for any long term maintenance and monitoring requirements. It is suggested that the permittee retain the services of an appropriate professional registered in the State of Florida for periodic observation of construction of the project.

For projects permitted with an operating entity that is different from the permittee, it should be noted that until the construction completion certification is accepted by the District and the permit is transferred to an acceptable operating entity pursuant to Sections 12.1-12.3 of the Applicant's Handbook Volume I and Section 62-330.310, F.A.C., the permittee is liable for operation and maintenance in compliance with the terms and conditions of this permit.

In accordance with Section 373.416(2), F.S., unless revoked or abandoned, all stormwater management systems and works permitted under Part IV of Chapter 373, F.S., must be operated and maintained in perpetuity.

The efficiency of stormwater management systems, dams, impoundments, and most other project components will decrease over time without periodic maintenance. The operation and maintenance entity must perform periodic inspections to identify if there are any deficiencies in structural integrity, degradation due to insufficient maintenance, or improper operation of projects that may endanger public health, safety, or welfare, or the water resources. If deficiencies are found, the operation and maintenance entity will be responsible for correcting the deficiencies in a timely manner to prevent compromises to flood protection and water quality. See Section 12.4 of Applicant's Handbook Volume I for Minimum Operation and Maintenance Standards.

RELATED CONCERNS:

Water Use Permit Status:

Consistent with the previous permit, the applicant has indicated that dewatering is not required for construction of this project and that all storm water management pond construction can be done in the wet condition.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation.

CERP:

The proposed project is not located within or adjacent to a Comprehensive Everglades Restoration Project component.

Right-Of-Way Permit Status:

A District Right-of-Way Permit is not required for this project.

Historical/Archeological Resources:

The District has received correspondence from the Florida Department of State, Division of Historical Resources indicating that no significant archaeological or historical resources are recorded in the project area and the project is therefore unlikely to have an effect upon any such properties.

DEO/CZM Consistency Review:

The issuance of this permit constitutes a finding of consistency with the Florida Coastal Management Program.

Third Party Interest:

No third party has contacted the District with concerns about this application.

Enforcement:

There has been no enforcement activity associated with this application.

STAFF REVIEW:

DIVISION APPROVAL:

NATURAL RESOURCE MANAGEMENT:

Jennifer Thomson

DATE: August 13, 2015

Jennifer Thomson

SURFACE WATER MANAGEMENT:

DATE: August 13, 2015

Mark S. Daron, P.E.

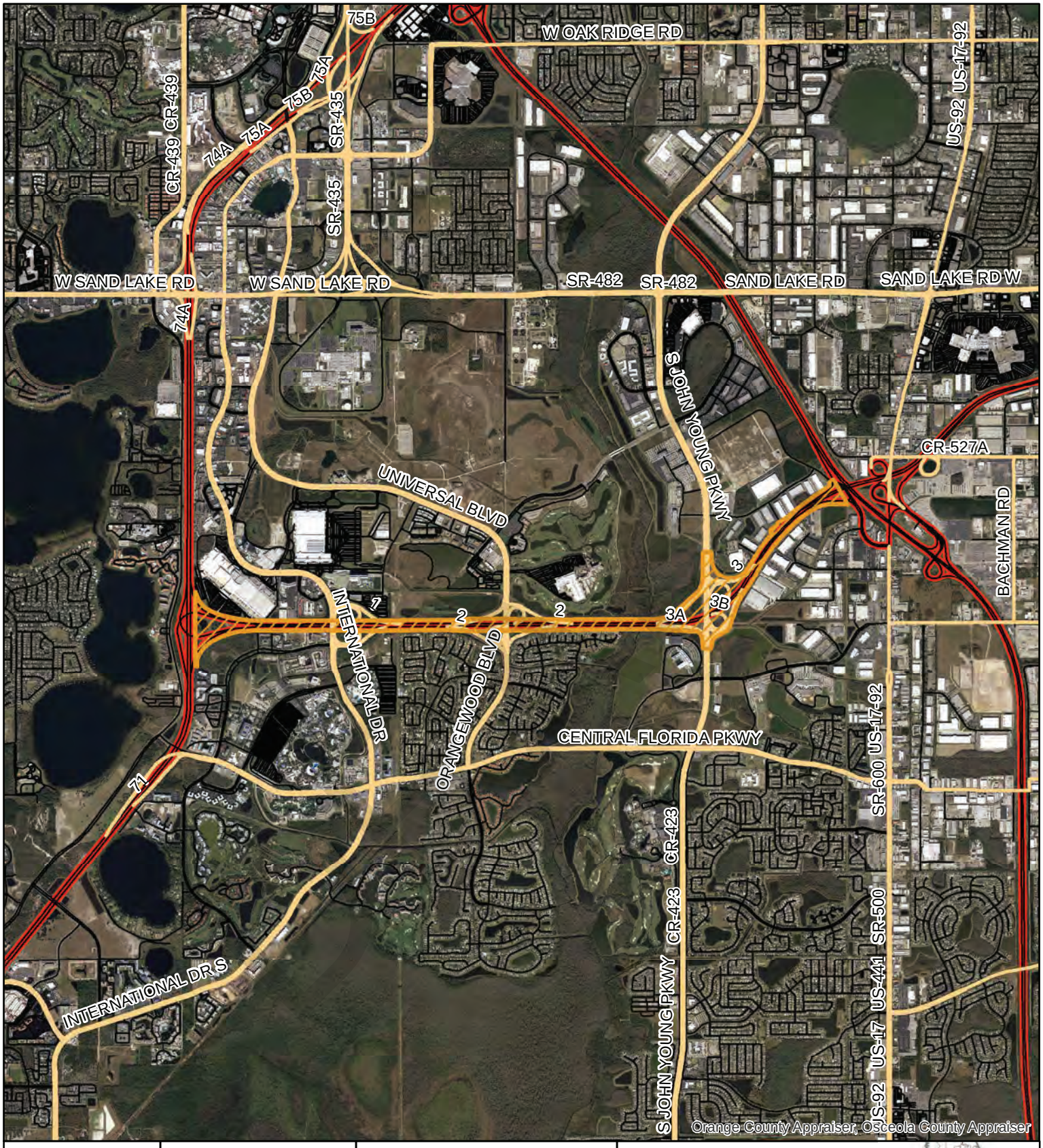


Exhibit No: 1	Exhibit Created On: 2015-08-12	ORANGE COUNTY, FL

REGULATION DIVISION

Project Name: S R 528 (BEACHLINE EXPRESSWAY) FROM 1-4 TO FLORIDAS TURNPIKE

0 0.5 1 Miles

N

Application

Permit No: 48-00633-S

Application Number: 150619-15

Created by

South Florida Water Management District

elevation. Note that the average wet season groundwater elevations listed for each pond have been determined by averaging the depth over the number of borings and subtracting the average depth from the average existing ground surface elevation over the footprint of the pond.

Table I-6 Pond Control Elevations

Pond	Control Elevation (ft, NAVD)	Source Elevation (ft, NAVD)	Primary Source
I-4 (exist.)	115.25	115.25	Design Calculations (CH2MHILL)
1C	88.0	87.50	Average Wet Season Elevation determined by Geotech
1D	87.0	87.00	Average Wet Season Elevation determined by Geotech.
1E	88.0	87.50	Average Wet Season Elevation determined by Geotech.
1F	87.0	87.00	Average Wet Season Elevation determined by Geotech.
2A	85.0	85.09	Existing Pond Control Elevation
2B	84.0	85.09	Existing Nearby Pond Control Elevation
2C	84.0	85.09	Existing Nearby Pond Control Elevation
3A	85.0	85.09	Existing Nearby Pond Control Elevation
3B	85.0	85.09	Existing Nearby Pond Control Elevation
3C	84.0	83.88	High water mark on existing headwall
4A	80.0	N/A	Constraint of Connected Pond
5A	80.5	81.50	Average Wet Season Elevation determined by Geotech.
5A2	80.6	81.50	Average Wet Season Elevation determined by Geotech
5B	80.0	N/A	Constraint of Connected Pond
5C	80.6	80.50	Average Wet Season Elevation determined by Geotech.
6A	89.5	89.00	High water mark on existing headwall

Post development hydrology information is summarized in Table I-7 below.

Table I-7 – Post Development Hydrology

Basin	Area (ac)	CN Value	Tc (min)	Basin Runoff 25-year/24-hour (cfs)
I-4 (N1B1)*	7.85	89.1**	49.4	10.7
I-4 (N3B1)*	3.64	70.7	16.2	4.5
I-4 (N4B1)*	1.3	92.9	10	2.3
I-4 (N6B1)*	1.01	90	10	1.7
I-4 (PONDB1)*	9.16	80	10	13.9
I-4 POND	22.96	n/a	n/a	n/a
I4SWALE***	3.04	82	10	13.52
I4PROP***	0.55	98	10	2.84
1A	20.7	90	71	28
1B	12.9	89	95	15.7
1C	10.1	94	10	17.7
1CO	7.1	90	10	12.1
1D	9.8	94	10	17.1
1DO	5.8	91	10	10
1E	7.1	93	10	12.3
1F	6.6	93	10	11.5
WESTWOOD	1.5	94	10	2.6
2A	20.4	93	31	33.8
2AO	2.1	88	10	3.5
2B	16.6	92	30	27.4
2C	5.6	93	10	9.7
2CO	3.5	87	10	5.8
3A	9.3	91	10	16
3B	5.5	92	14	9.5
3C	10.6	91	20	18
3CO	1.6	87	10	2.7
3D1	6.9	93	10	12
3D2	2.9	91	10	5
3D3	1.6	91	10	2.8
3E1	2.9	91	10	5
3E2	5.6	92	10	9.7
3E3	1.9	91	10	3.3
4A	20.2	94	10	35.3
4AO	3.9	86	16	6.4
4B	8.3	93	10	14.4
4BO	3.7	86	10	6.1
5A	16.3	91	10	28
5A2	23.1	92	64	32.9
5B	7.5	92	10	13
5B2	6.2	90	10	10.6
5C	17.1	92	77	23.1
5COS	1.62	84	10	2.6
OS1	18.3	79	10	27.6
OS2	6.1	79	10	9.2
6A1	0.78	93.46	10	1.4
6A2	7.38	92.22	10	12.8
6A3	3.48	88.73	10	5.9
6C	13.45	92.37	10	23.3

* Sub-basins within the contributing area of I-4 POND noted only to summarize previoiulsy permitted conditions (SFWMD Permit No. 48-01243-P, Application No. 020614-22).

** There is additional impervious area proposed for the minor ramp widening within the contributing basin of the I-4 pond (Subbasin N1B1). No other I-4 subbasins are impacted by the proposed improvements.

*** Basins I4SWALE and I4PROP is not part of the existing I-4 permit. A dry retention swale is proposed in subbasin I4SWALE.

Predevelopment to post development peak flow rates are listed below in Table I-10. Due to some interconnections between ponds and some project areas that bypass ponds, the results below are reported at certain outfall points where the project drainage systems are connected to regional drainage systems. Additionally, these flow rates are also included at the graphical locations where the flow predications are made on the post development node-reach diagrams for basins 1 thru 5.

Table I-10 – Pre vs. Post development Discharge Rates (25-year 24-hour)

Ponds	Node	Q_{pre} (cfs)	Node	Q_{post} (cfs)
I-4 (Exist.)	*	20.5	Control	17.7
I4SWALE	TW	9.9	TW	5.7
1C, 1E	TW1CO	53.9	TW1CO	40.7
1D, 1F	TW1DO	37.2	TW1DO	37.1
2B,2C	TW2CO	29.6	TW2CO	15.3
3C	3CO	16.3	3CO	8.0
2A,3A,3B	RAMPJ-B	13.5	2AO	13.2
3D (Det. Swales)	NWSHINGLE	43.1	NWSHINGLE	13.2
3E (Det. Swales)	SWSHINGLE	17.6	SWSHINGLE	14.4
4A,5A,5A2,5B,5C	NESHINGLE SESHINGLE	78.8	NESHINGLE SESHINGLE	**76.74
6A1	***	2.3	***	1.4
6A2, 6A3, & 6C	6C	10.3	6C	8.9

*** From CH2MHILL previous permitted discharge rate (included in section 3)**
**** Reported discharge is sum of both TW node peak discharges with slightly different peak times.**
***** Basin Hydrograph Used**

In Table I-11A, the pond control and peak elevations are tabulated and compared to lowest pavement elevations for ramps and mainline. Generally, the 25-year peak stages in the ponds must remain below any proposed or existing pavement. In Table I-11B the base water elevations from the ponds are compared to the elevations of the mainline and ramp base to calculate resulting base clearance. The base water elevation (BWE) is defined as the elevation at which the pond stage stays at or above for a 24 hour period during the storm routing. The base clearance for ramps should be at least two (2) feet and the base clearance for mainline should be at least three (3) feet above BWE. In calculating the elevation of the bottom of base, the elevation difference between the EOP elevation and the bottom of the base is 15.25 inches (1.3 feet) for the mainline and 14 inches (1.2 feet) for the ramps. The resulting base clearances from the BWE are shown for the ramps and mainline in Table I-11B.

Table I-11A – Pond and Pavement Elevations Comparison (25-year 24-hour)

Pond	Control Elevation (ft, NAVD)	Peak Elevation (ft, NAVD)	Proposed Ramp EOP Elevation @ Low Point (ft, NAVD)	Proposed Mainline EOP Elevation (ft, NAVD)
1C	88.00	89.45	92.50	103.27
1D	87.00	88.01	89.53	102.98
1E	88.00	89.26	91.24	93.30
1F	87.00	87.90	90.06	93.36
2A	85.00	87.73	88.99	98.74
2B	84.00	86.31	88.94	93.28
2C	84.00	86.23	88.44	108.02
3A	85.00	87.78	88.12	107.53
3B	85.00	87.79	88.64	91.63
3C	84.00	86.00	88.41	102.60
4A	80.00	81.82	84.26	89.39
5A	80.50	81.99	84.80	93.73
5A2	80.60	83.99	88.67	93.73
5B	80.00	82.01	83.89	113.45
5C	80.60	82.50	97.40	98.13
6A	89.50	91.77	93.29	96.16

Table I-11B – Pond BCWE and Base Clearance (25-year 24-hour)

Pond	Base Water Elevation (ft, NAVD)	Proposed Ramp Base Elevation (ft, NAVD)	Proposed Mainline Base Elevation (ft, NAVD)	Ramp Base Clearance (ft)	Mainline Base Clearance (ft)
1C	88.35	91.3	101.97	2.95	13.62
1D	87.25	88.33	101.68	1.08(2)	14.43
1E	88.30	90.04	92.00	1.74(2)	3.70
1F	87.20	88.86	92.06	1.66(2)	4.86
2A	86.15	87.79	97.44	1.64(2)	12.04
2B	84.50	87.74	91.98	3.24	7.48
2C	84.48	87.24	106.72	2.76	22.24
3A	86.15	86.94	106.23	0.77(2)	20.08
3B	86.20	87.44	90.33	1.24(2)	4.13
3C	84.45	87.21	101.30	2.76	16.85
4A	80.88(1)	83.06	88.09	2.18	7.21
5A	80.90(1)	83.6	92.43	2.70	11.53
5A2	81.45	87.47	92.43	4.63	10.98
5B	80.88(1)	82.69	112.15	1.81(2)	31.27
5C	80.90(1)	96.2	96.83	15.30	15.93
6A	90.32	92.09	94.86	1.82(2)	4.54

Notes: 1) Tailwater Effects from Shingle Creek cause pond stage to remain elevated for longer than 24 hours.

2) Clearance noted is based on the typical pavement ramp pavement design. The base option has been modified for portions of the ramps that do not meet required clearance. See pavement design report for details.

STAFF REPORT DISTRIBUTION LIST

S R 528 (BEACHLINE EXPRESSWAY) FROM 1-4 TO FLORIDAS TURNPIKE

Application No: 150619-15

Permit No: 48-00633-S

INTERNAL DISTRIBUTION

X Annette V. Burkett
X Carol Biagiotti-Griggs
X Jennifer Thomson
X Mark S. Daron, P.E.
X A. Waterhouse
X Andreea Reyes

EXTERNAL DISTRIBUTION

X Permittee - Florida Department Of Transportation
X Agent - Atkins
X Engr Consultant - D R M P Incorporated
X Env Consultant - D R M P Incorporated

GOVERNMENT AGENCIES

X Div of Recreation and Park - District 3 - Chelsey Sprouse, FDEP
X Orange County Engineer Public Works Division Dvlpmnt Engineering Dept.

Appendix A-4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-00633-S
DATE ISSUED: 12/11/15

PERMITTEE: FLORIDA DEPARTMENT OF TRANSPORTATION
FLORIDAS TURNPIKE ENTERPRISE
P O BOX 613069
OCOEE, FL 34761

PROJECT DESCRIPTION: This Environmental Resource Permit Modification authorizes works consistent with previously permitted stormwater management system serving 47.80 acres of a highway facility for a project known as S R 528 (Beachline Exp) from Florida's Turnpike to McCoy Rd.

PROJECT LOCATION: ORANGE COUNTY,
SEC 34-36 TWP 23S RGE 29E
SEC 31 TWP 23S RGE 30E
SEC 3,4 TWP 24S RGE 29E

PERMIT DURATION: See Special Condition No:1.

This is to notify you of the District's agency action for Permit Application No. 151022-9, dated October 22, 2015. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statues (F.S).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit is in effect for this project subject to:

1. Not receiving a filed request for a Chapter 120, Florida Statutes, administrative hearing.
2. the attached 18 General Conditions (See Pages : 2 - 4 of 5),
3. the attached 8 Special Conditions (See Pages : 5 - 5 of 5) and
4. the attached 3 Exhibit(s)

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights," we will assume that you concur with the District's action.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this , in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/e-permitting).

BY:_____
Charles R. Walter, P.G., CFM
Orlando Regulatory Service Center Administrator
Orlando Service Center

SPECIAL CONDITIONS

1. The construction phase of this permit shall expire on 12/11/2020

2. Operation and maintenance of the stormwater management system shall be the responsibility of FLORIDA DEPARTMENT OF TRANSPORTATION.

3. Discharge Facilities:

   Through previously permitted facilities.

4. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.

5. The following are exhibits to this permit. Exhibits noted as incorporated by reference are available on the District's ePermitting website (http://my.sfwmd.gov/ePermitting) under this application number.
   Exhibit No. 1 Location Map
   Exhibit No. 2 Drainage Maps, Pages 1 - 4
   Exhibit No. 3 Basin Areas Summary, Page 1

6. Prior to initiating construction activities associated with this Environmental Resource Permit (ERP), the permittee is required to hold a pre-construction meeting with field representatives, consultants, contractors, District Environmental Resource Compliance (ERC) staff, and any other local government entities as necessary.

   The purpose of the pre-construction meeting is to discuss construction methods, sequencing, best management practices, identify work areas, staking and roping of preserves where applicable, and to facilitate coordination and assistance amongst relevant parties.

   To schedule a pre-construction meeting, please contact ERC staff from the Orlando Service Center at (407) 858-6100 or via e-mail at: pre-con@sfwmd.gov. When sending a request for a pre-construction meeting, please include the application number, permit number, and contact name and phone number.

7. Minimum road crown elevation: As permitted in Permit No. 48-00633-S, Application No. 040702-13, Exhibit 4.

8. Prior to any future construction, the permittee shall apply for and receive a permit modification. As part of the permit application, the applicant for that phase shall provide documentation verifying that the proposed construction is consistent with the design of the master stormwater management system, including the land use and site grading assumptions.

Last Date For Agency Action: December 21, 2015

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: S R 528 (Beachline Exp) From Floridas Turnpike To Mccoy Rd

Permit No.: 48-00633-S

Application No.: 151022-9

Application Type: Environmental Resource (Construction/Operation Modification)

Location: Orange County, S34-36/T23S/R29E
S3,4/T24S/R29E
S31/T23S/R30E

Permittee : Florida Department Of Transportation

Operating Entity : Florida Department Of Transportation

Project Area: 47.80 acres

Permit Area: 47.80 acres

Project Land Use: Highway

Drainage Basin: BOGGY CREEK

Receiving Body: Boggy Creek via existing drainage features **Class:** CLASS III

Special Drainage District: NA

Conservation Easement To District : No

Sovereign Submerged Lands: No

PROJECT SUMMARY:

This Environmental Resource Permit Modification authorizes works consistent with previously permitted stormwater management system serving 47.80 acres of a highway facility for a project known as S R 528 (Beachline Exp) from Florida's Turnpike to McCoy Rd.

This modification proposes to widen the interim condition (6-lane) expressway to an 8-lane facility (ultimate condition) inclusive of 6 general use lanes and 2 express lanes where the previously-permitted ponds accommodate the added impervious area in all the basins for the 8-lane configuration.

Consistent with the previoius permit, this permit is issued pursuant to the water quality net improvement provisions of Chapter 62-330.062 Florida Administrative Code (F.A.C.); therefore, the state water quality certification is waived.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The Beachline Expressway (S.R. 528) cuts east and west across central Orange County. The project limits encompass the area right-of-way area of S.R. 528 from the Florida's Turnpike to McCoy Road. Refer to Exhibit 1 for a location map.

There are permitted water management facilities within the project area that the works proposed in this application will discharge into (Permit No. 48-00633-S, Application No. 040702-13). The site contains a 4-lane highway and corresponding storm water management ponds.

There are no wetlands or other surface waters affected by this project.

LAND USE:

Construction Project:

	This Phase	
Pavement	47.80	acres
Total:	**47.80**	

WATER QUANTITY :

Discharge Rate :

The project is consistent with the land use and site grading assumptions from the design of the master stormwater management system. Therefore, the stormwater management system has not been designed to limit discharge for the design event to a specified rate.

Discharge Storm Frequency : 25 YEAR-1 DAY Design Rainfall : 8.6 inches

Road Design :

As shown in Permit No. 48-00633-S, Application No. 040702-13, Exhibit 4, minimum road center lines have been set at or above the calculated design storm flood elevation.

Road Storm Frequency : 25 YEAR-1 DAY Design Rainfall: 8.6 inches

WATER QUALITY :

Water quality treatment will be provided in the previously-permitted ponds consistent with Permit No. 48-00633-S, Application No. 040702-13. Most of the basins have consistent basin area and impervious area totals as the previous permit and those that are proposing more impervious area have adequate existing water quality treatment in the previously-permitted ponds to accommodate the additional impervious area.

CERTIFICATION, OPERATION, AND MAINTENANCE:

Pursuant to Chapter 62-330.310 Florida Administrative Code (F.A.C.), Individual Permits will not be converted from the construction phase to the operation phase until construction completion certification of

the project is submitted to and accepted by the District. This includes compliance with all permit conditions, except for any long term maintenance and monitoring requirements. It is suggested that the permittee retain the services of an appropriate professional registered in the State of Florida for periodic observation of construction of the project.

For projects permitted with an operating entity that is different from the permittee, it should be noted that until the construction completion certification is accepted by the District and the permit is transferred to an acceptable operating entity pursuant to Sections 12.1-12.3 of the Applicant's Handbook Volume I and Section 62-330.310, F.A.C., the permittee is liable for operation and maintenance in compliance with the terms and conditions of this permit.

In accordance with Section 373.416(2), F.S., unless revoked or abandoned, all stormwater management systems and works permitted under Part IV of Chapter 373, F.S., must be operated and maintained in perpetuity.

The efficiency of stormwater management systems, dams, impoundments, and most other project components will decrease over time without periodic maintenance. The operation and maintenance entity must perform periodic inspections to identify if there are any deficiencies in structural integrity, degradation due to insufficient maintenance, or improper operation of projects that may endanger public health, safety, or welfare, or the water resources. If deficiencies are found, the operation and maintenance entity will be responsible for correcting the deficiencies in a timely manner to prevent compromises to flood protection and water quality. See Section 12.4 of Applicant's Handbook Volume I for Minimum Operation and Maintenance Standards.

RELATED CONCERNS:

Water Use Permit Status:

The applicant has indicated that dewatering is not required for construction of this project since all the storm water management system has been constructed in previous permits and no changes are proposed to these systems.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation.

CERP:

The proposed project is not located within or adjacent to a Comprehensive Everglades Restoration Project component.

Right-Of-Way Permit Status:

A District Right-of-Way Permit is not required for this project.

Historical/Archeological Resources:

The District has received correspondence from the Florida Department of State, Division of Historical Resources indicating that no significant archaeological or historical resources are recorded in the project area and the project is therefore unlikely to have an effect upon any such properties. This permit does not release the permittee from compliance with any other agencies' requirements in the event that historical and/or archaeological resources are found on the site.

DEO/CZM Consistency Review:

The issuance of this permit constitutes a finding of consistency with the Florida Coastal Management Program.

Third Party Interest:

No third party has contacted the District with concerns about this application.

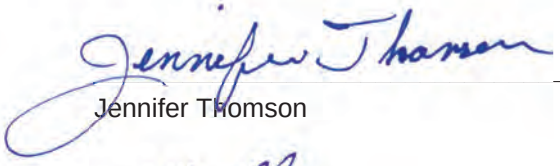
Enforcement:

There has been no enforcement activity associated with this application.

STAFF REVIEW:

DIVISION APPROVAL:

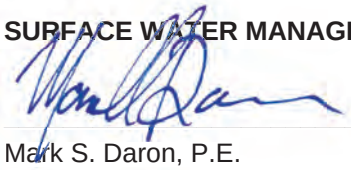
NATURAL RESOURCE MANAGEMENT:



Jennifer Thomson

DATE: December 10, 2015

SURFACE WATER MANAGEMENT:



Mark S. Daron, P.E.

DATE: December 11, 2015

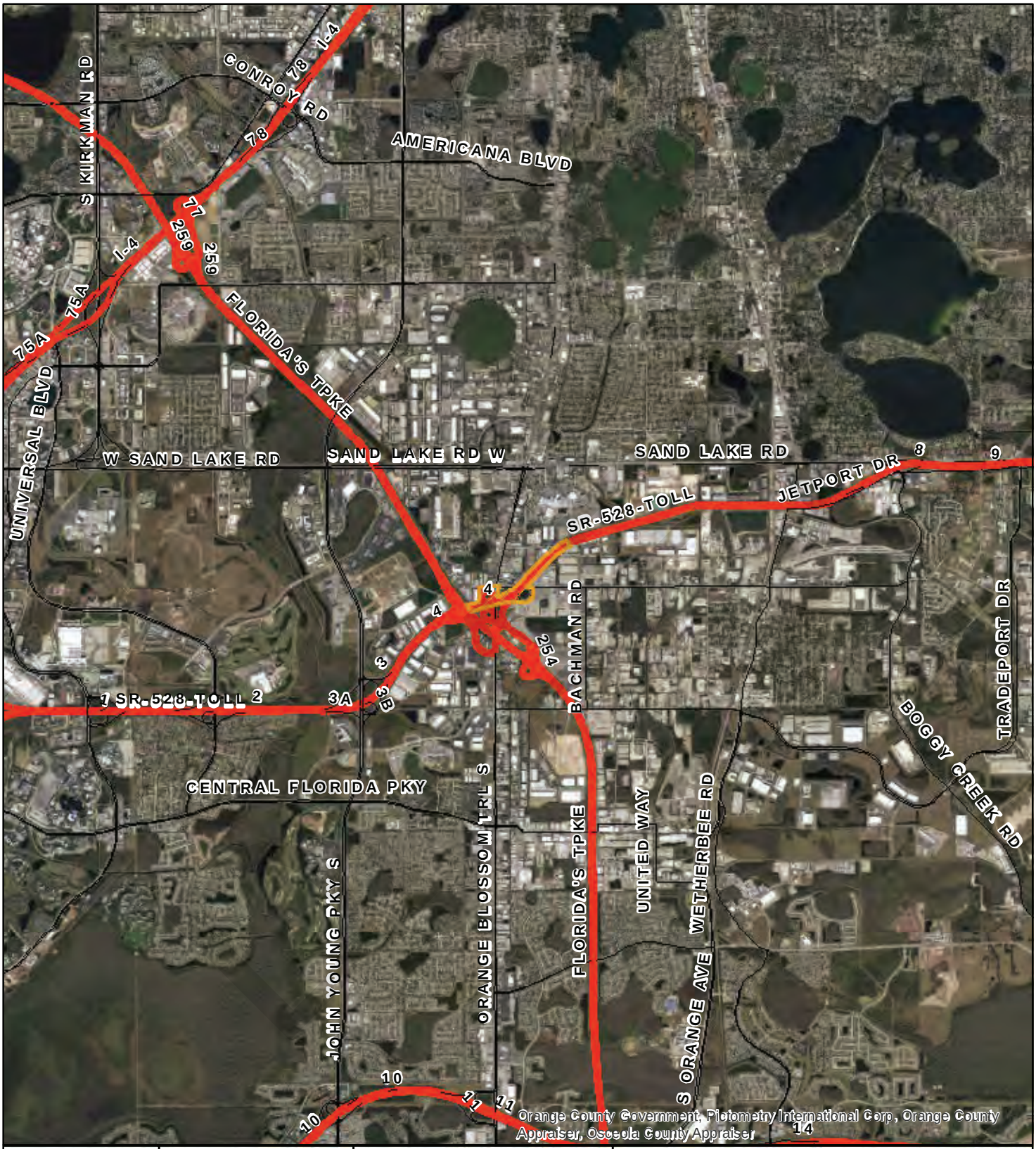


Exhibit No: 1	Exhibit Created On: 2015-10-23	ORANGE COUNTY, FL

REGULATION DIVISION

Project Name: S R 528 (BEACHLINE EXP)
FROM FLORIDAS TURNPIKE TO MCCOY RD

0 5,000 10,000 Feet

N

Application

Permit No: 48-00633-S

Application Number: 151022-9

sfwmd.gov

Created by Regulation GIS Section

South Florida Water Management District

Table 1-Basin Areas Summary

Post Development (Permitted)			Post Development (Proposed)	
Basin	Basin Area (Ac)	Impervious Area (Ac)	Basin Area (Ac)	Impervious Area (Ac)
7	17.21	5.66	17.21	5.66
8	20.44	6.16	20.44	6.16
9	15.59	7.42	15.59	8.82
10	23.26	11.18	23.26	10.94
11, 12 & 13A	52.31	25.02	52.31	26.54
13B	12.93	5.29	12.93	5.29
14A	0.95	0.95	0.95	0.95
14BCD	33.95	19.21	33.95	19.21
15	5.80	5.80	5.80	5.80

Note: Basin 7 consists of sub-basins 7C, 7D, 7E, 7F, 7G.

Basin 8 consists of sub-basins 8A, 8B.

Note to reviewer: Due to error in permitted impervious area total for Basin 9 an increase of 1.40 acres is shown. Due to additional outside widening in Basin 11, 12, 13A impervious area increased by 1.52 acres. Basin 10 impervious area decrease of 0.24 acres is due to calculation discrepancy from original permitted.

As shown in Table 1, the post development (proposed) drainage basin areas remain the same as the permitted basin areas for this project. The total impervious area for each basin in post development (proposed) is equal to or less than the permitted impervious area for each basin with exception of Basin 9, and Basins 11, 12 & 13A which have slightly increased impervious areas. The water quality volume necessary for the additional impervious areas in each basin is already provided in the existing ponds with the existing weirs from the original design. Please see water quality calculations included in Section III and original calculations in Appendix A.

Floodplains

Floodplain encroachment and compensation calculations were completed for the 8-lane widening (ultimate condition) under the previous SFWMD permit (ERP #48-00633-S) for the West Branch Boggy Creek 100-year floodplain. The existing floodplain compensation site, constructed with the 2010 widening project, is located adjacent to Pond 12A and West Branch Boggy Creek.

Base Clearance

Base clearance was analyzed is areas of mainline outside widening near ponds to ensure minimum 3-foot base clearance is provided from pond base water elevations to bottom of roadway base. The lowest base elevation of 96.91 is located near station 493+00 right adjacent to Pond 10B. The discharge weir elevation of Pond 10B is at elevation 91.10 which is 5.8 feet below the roadway base. The 25-year 24-hour design high water for Pond 10B is 94.15 which is 2.8 feet below the roadway base. Therefore minimum 3-foot base clearance from the pond can be assumed. Also, all seasonal high water levels in the vicinity of mainline widening are minimum 3-feet below base elevation.

STAFF REPORT DISTRIBUTION LIST

S R 528 (BEACHLINE EXP) FROM FLORIDAS TURNPIKE TO MCCOY RD

Application No: 151022-9

Permit No: 48-00633-S

INTERNAL DISTRIBUTION

X Annette V. Burkett
X Carol Biagiotti-Griggs
X Jennifer Thomson
X Mark S. Daron, P.E.
X A. Waterhouse
X Andreea Reyes

EXTERNAL DISTRIBUTION

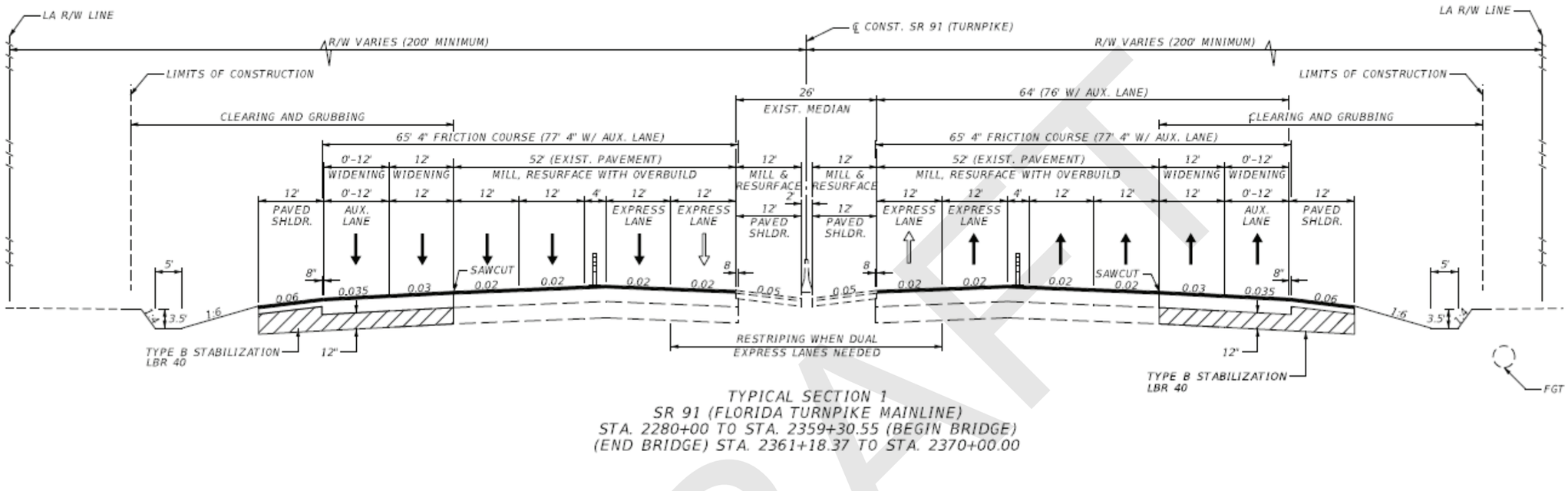
X Permittee - Florida Department Of Transportation
X Agent - Atkins
X Engr Consultant - D R M P Incorporated
X Env Consultant - D R M P Incorporated

GOVERNMENT AGENCIES

X Div of Recreation and Park - District 3 - Chelsey Sprouse, FDEP
X Orange County Engineer Public Works Division Dvlpmnt Engineering Dept.

APPENDIX B
Supporting Documentation

Appendix B-1



TYPICAL SECTION 1
SR 91 (FLORIDA TURNPIKE MAINLINE)
STA. 2280+00 TO STA. 2359+30.55 (BEGIN BRIDGE)
(END BRIDGE) STA. 2361+18.37 TO STA. 2370+00.00

WIDENING

OPTIONAL BASE GROUP 10 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (3")
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 ½") (PG 76-22)
AND FRICTION COURSE FC-5 (¾") (PG 76-22, PMA)

MILLING & RESURFACING

MILL EXISTING ASPHALT PAVEMENT (2 1/4" DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)
AND FRICTION COURSE FC-5 (3/4") (PG 76-22, PMA)

SHOULDER PAVEMENT

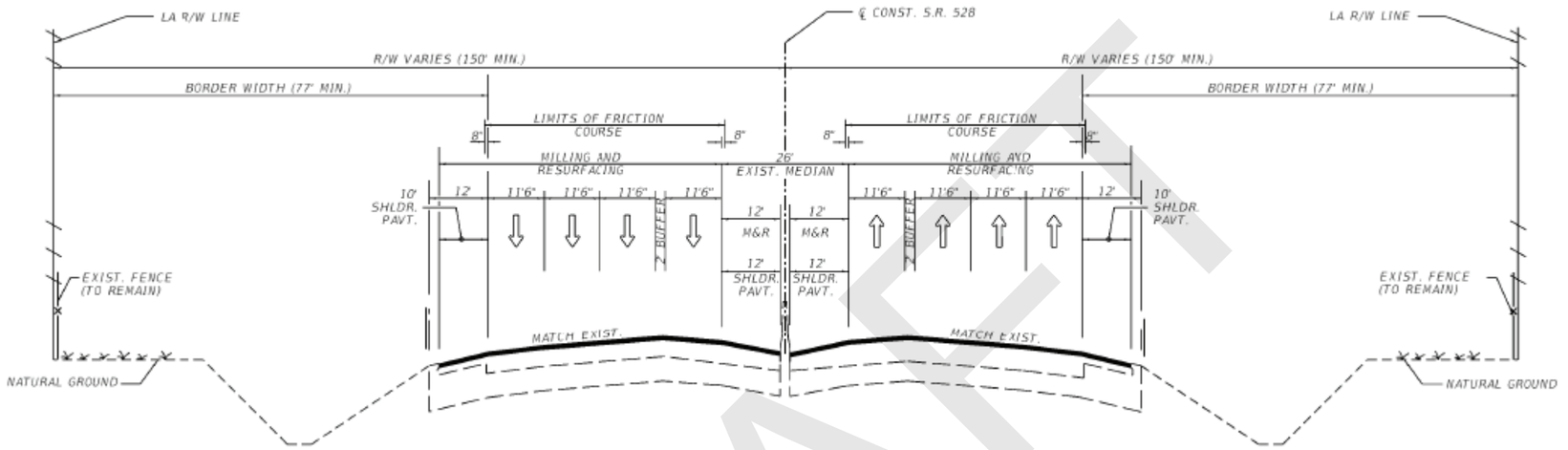
OPTIONAL BASE GROUP 5 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 ½")

PAVED SHOULDER MILLING & RESURFACING

MILL EXISTING ASPHALT PAVEMENT (1 1/2" DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 1/2")

TYPICAL SECTION – SR 91 (FLORIDA'S TURNPIKE)

Appendix B-2



N.T.S.

TYPICAL SECTION (3)
S.R. 528 – MAINLINE (8-LANE)
MILLING AND RESURFACING ONLY

WESTBOUND	EASTBOUND
STA. 445+00.00 TO STA. 462+00.00	STA. 442+00.00 TO STA. 459+00.00

MILLING AND RESURFACING

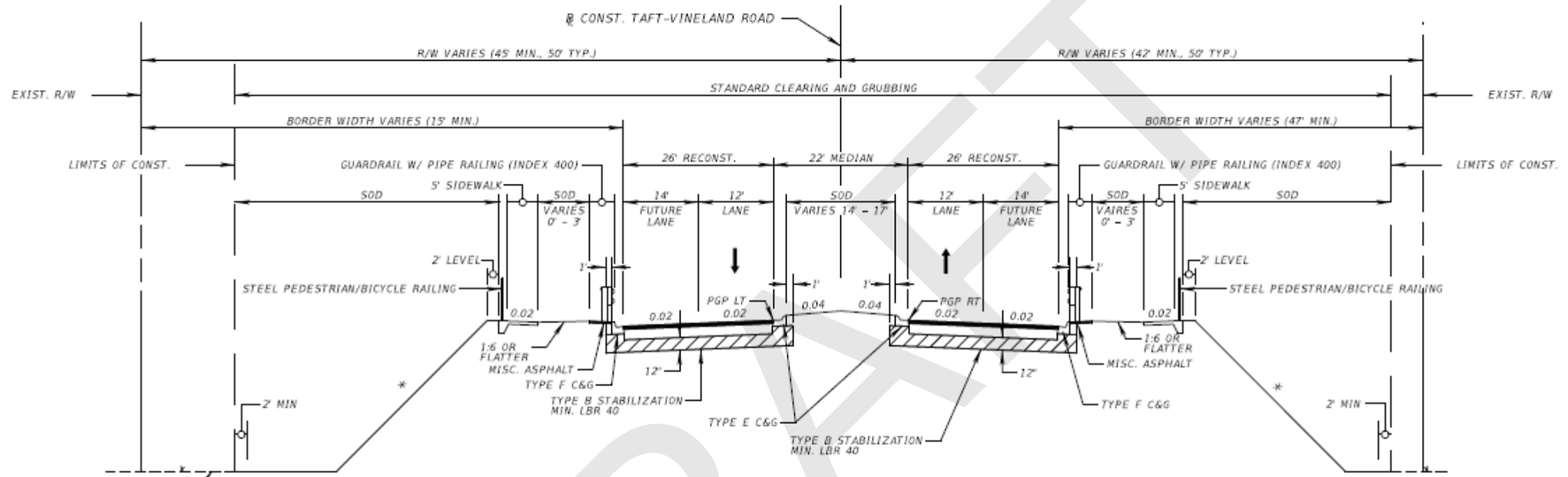
MILLING EXISTING ASPHALT PAVEMENT (2 ¼" DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 ½") (PG 76-22, PMA)
AND FRICTION COURSE FC-5 (¾") (PG 76-22, PMA)

PAVED SHOULDER MILLING AND RESURFACING

MILLING EXISTING ASPHALT PAVEMENT (1 ½" DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 ½")

TYPICAL SECTION – SR 528 (BEACHLINE EXPRESSWAY)

Appendix B-3



TAFT-VINELAND ROAD – 4 LANE SECTION

NEW CONSTRUCTION

OBG #8 (12" OF SOIL CEMENT (300 PSI, PLANT MIXED)) WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (5 ½")
FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½")
AND 12" OF STABILIZATION WITH MINIMUM LBR 40

TYPICAL SECTION – TAFT-VINELAND ROAD

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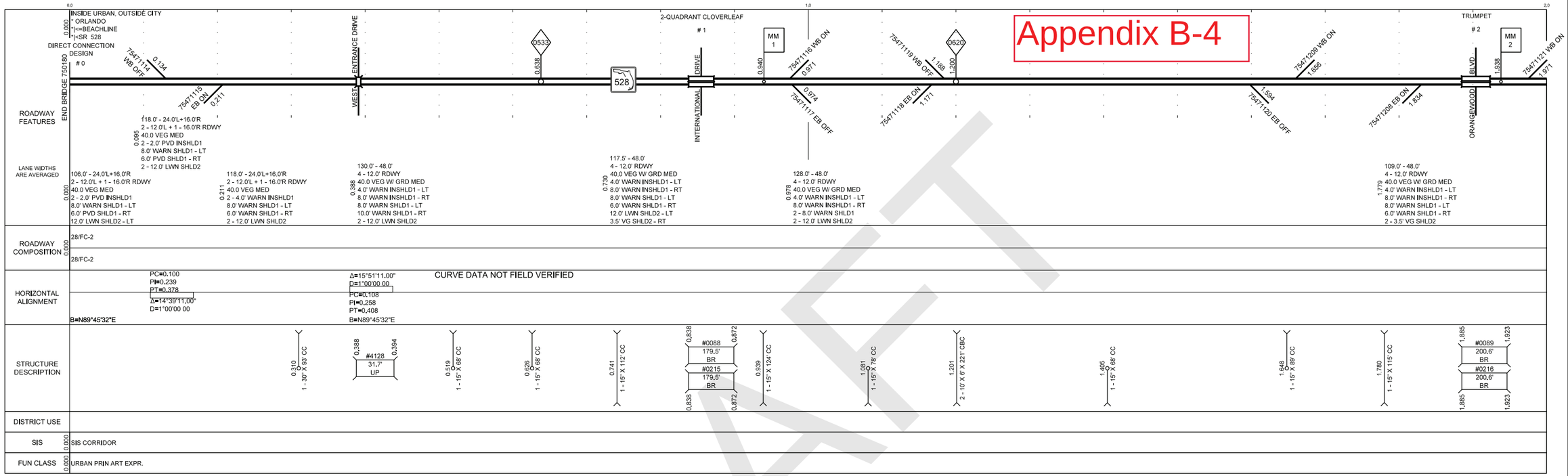
DATE	06/12/2012	07/18/2012	000.000	008.421	F251.F326 Update	02/18/2016 AECOM
BY	Juan Echevarria - URS	Juan Echevarria - URS	000.000	008.421	DQE P1 2013	10/02/2013 JE-URS

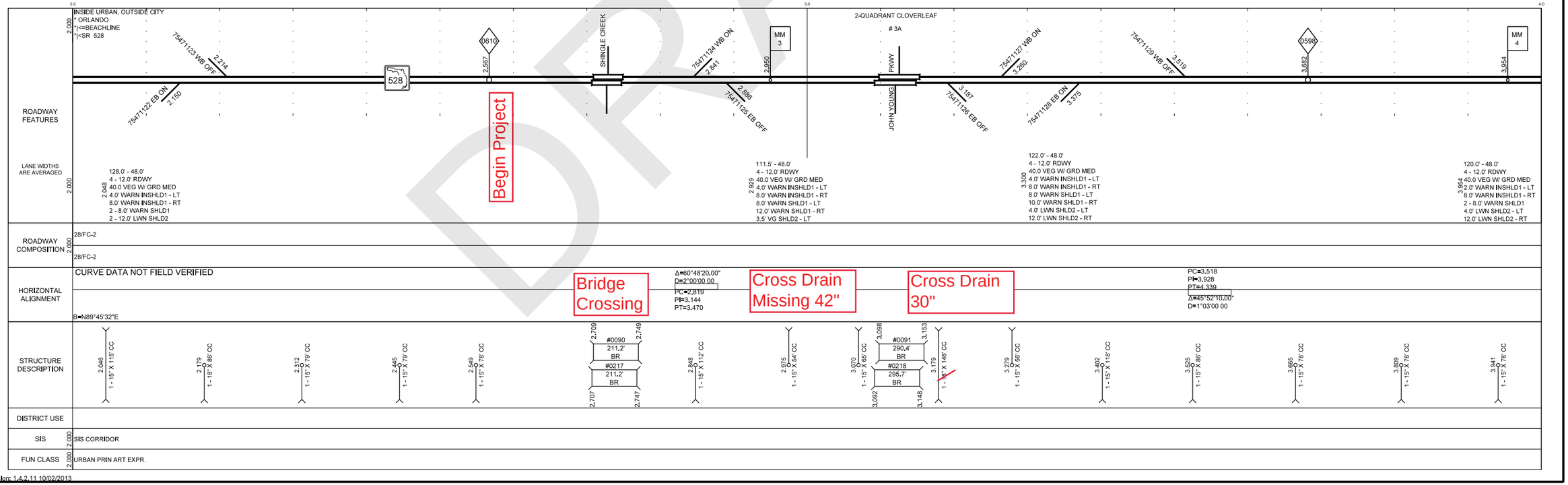
FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 528	ORANGE	08	75471000	1 OF 3

Appendix B-4





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Version: 1.4.2.11 10/02/2013

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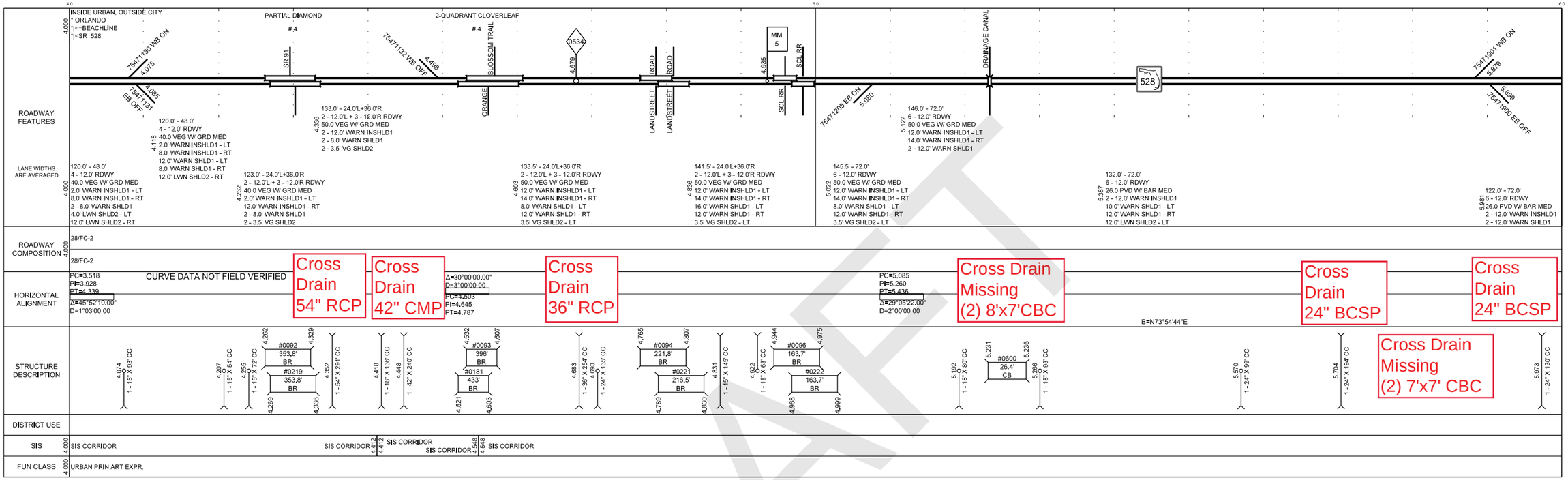
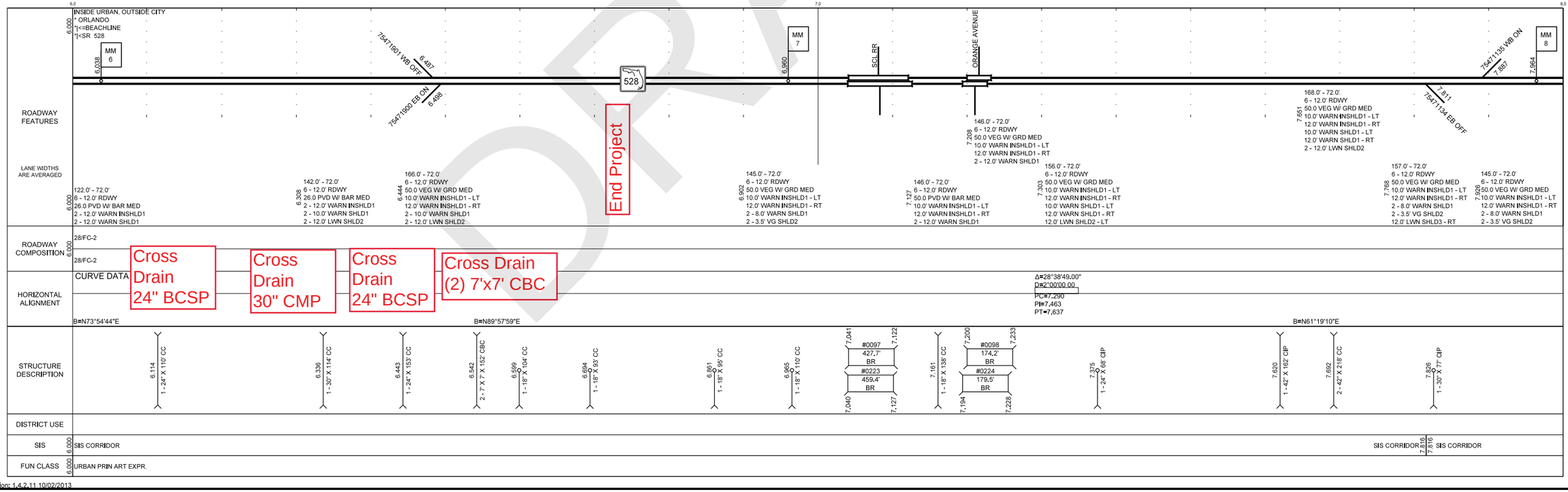
BY	Juan Echevarria - URS	Juan Echevarria - URS	000.000	008.421	DQE P1 2013	10/02/2013 JE-URS

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 528	ORANGE	08	75471000	2 OF 3





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Version: 1.4.2.11 10/02/2013

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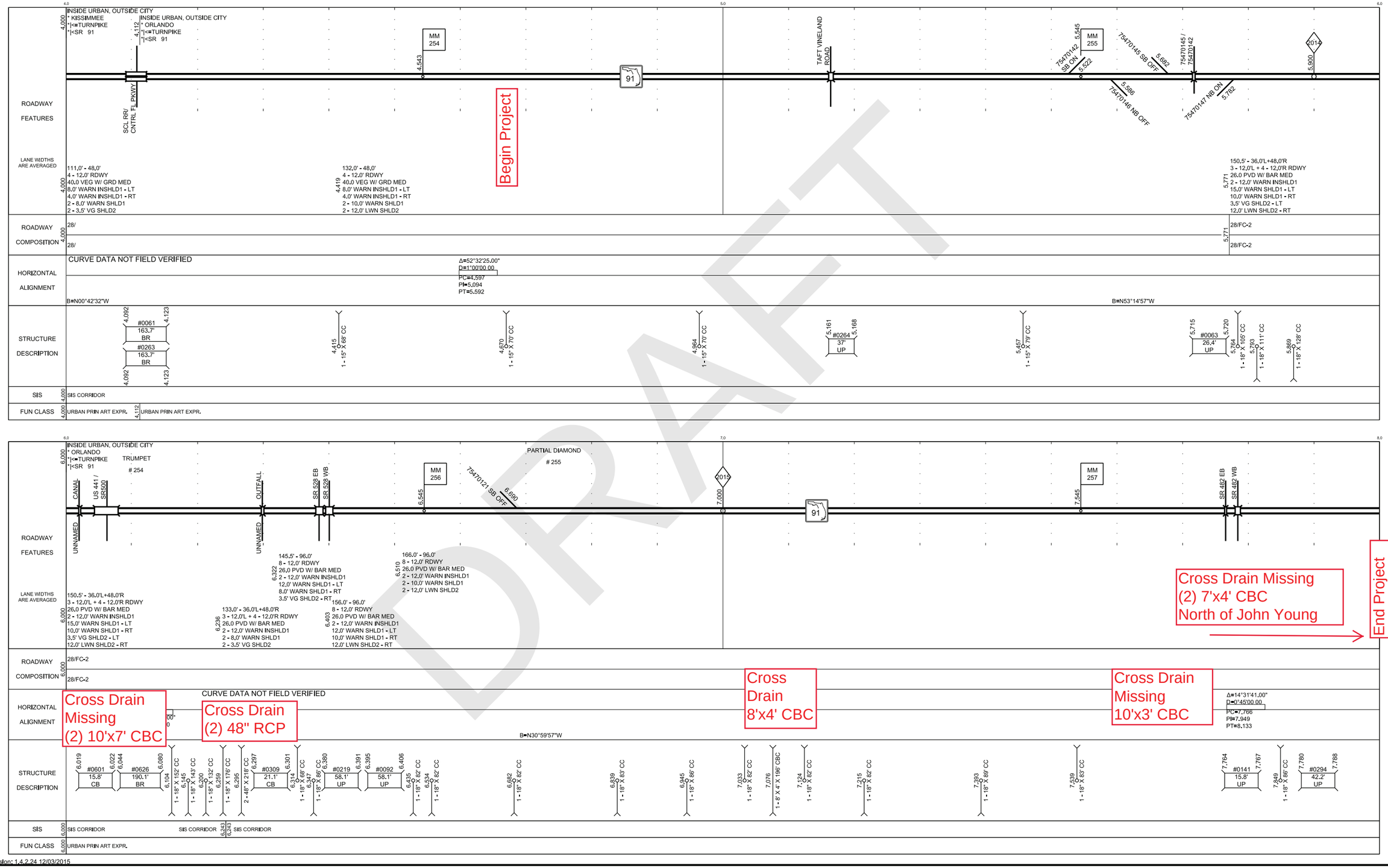
DATE	10/26/2012	11/27/2012
BY	Juan Echevarria - URS	Juan Echevarria - URS

BMP	EMP	INV	SLD REV
000.000	024.913	Feature 258 Update	12/03/2015 AECOM
000.000	024.913	F215,F251 Update	03/05/2015 AECOM
000.000	024.913	Feature 124 Update	12/16/2014 JE-URS

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 91	ORANGE	08	75470000	2 OF 7



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PRINTED: 12/4/2015 3:25:23 PM

Version: 1.4.2.24 12/03/2015

CONSTRUCTION CONTRACT NO. XXXXX

COMPONENTS OF CONTRACT PLANS SET
ROADWAY PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
2014 DESIGN STANDARDS AND REVISED
INDEX DRAWINGS AS APPENDED HEREIN,
AND 2014 STANDARD SPECIFICATIONS FOR
ROAD AND BRIDGE CONSTRUCTION,
AS AMENDED BY CONTRACT DOCUMENTS.

For Design Standards revisions click on "Design Standards" link at the following web site: http://www.dot.state.fl.us/rddesign/

For Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site: http://www.dot.state.fl.us/specificationsoffice/

REVISIONS:

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

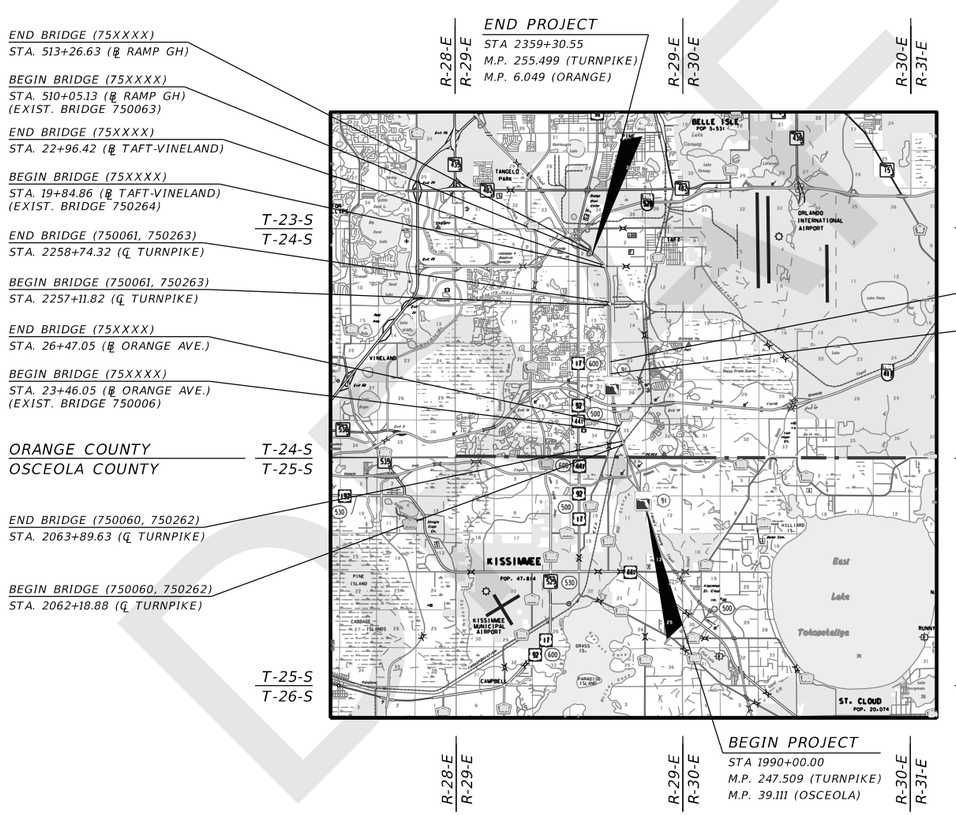
CONTRACT PLANS

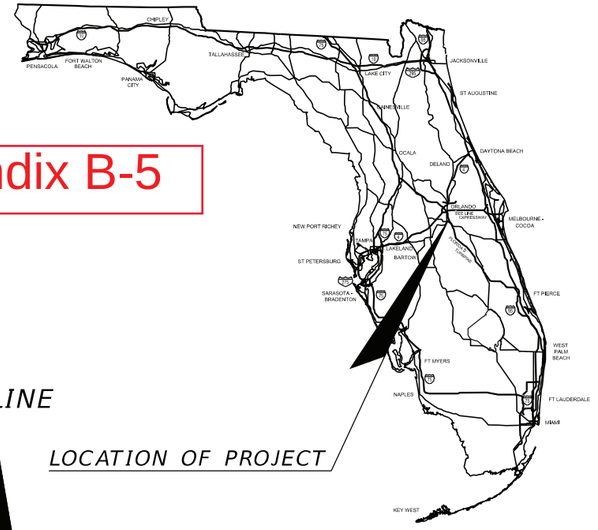
Appendix B-5

FINANCIAL PROJECT ID 411406-1-52-01
AND 411406-4-52-01
ORANGE COUNTY (75470) OSCEOLA COUNTY (92471)

STATE ROAD NO. SR 91

TURNPIKE WIDENING FROM SOUTH OF OSCEOLA PARKWAY TO BEACHLINE





LOCATION OF PROJECT

ROADWAY SHOP DRAWINGS
TO BE SUBMITTED TO:

KEEGAN LARSON, P.E.

WANTMAN GROUP, INC
2035 VISTA PARKWAY, SUITE 100
WEST PALM BEACH, FL 33411

PLANS PREPARED BY:

Wantman Group, Inc.
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
E-Mail: WGI@wantmangroup.com

Cert No. 6091 - LB No. 7055
Vendor No. 65-0271367
Consultant Contract No. X-XXXX

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

THIS PROJECT IS DESIGNED TO NAVD, 1988 DATUM

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	49,381	9.352
BRIDGES	1,267	0.240
NET LENGTH OF PROJECT	50,648	9.592
EXCEPTIONS	0	0
GROSS LENGTH OF PROJECT	50,648	9.592

KEY SHEET REVISIONS

DATE	DESCRIPTION

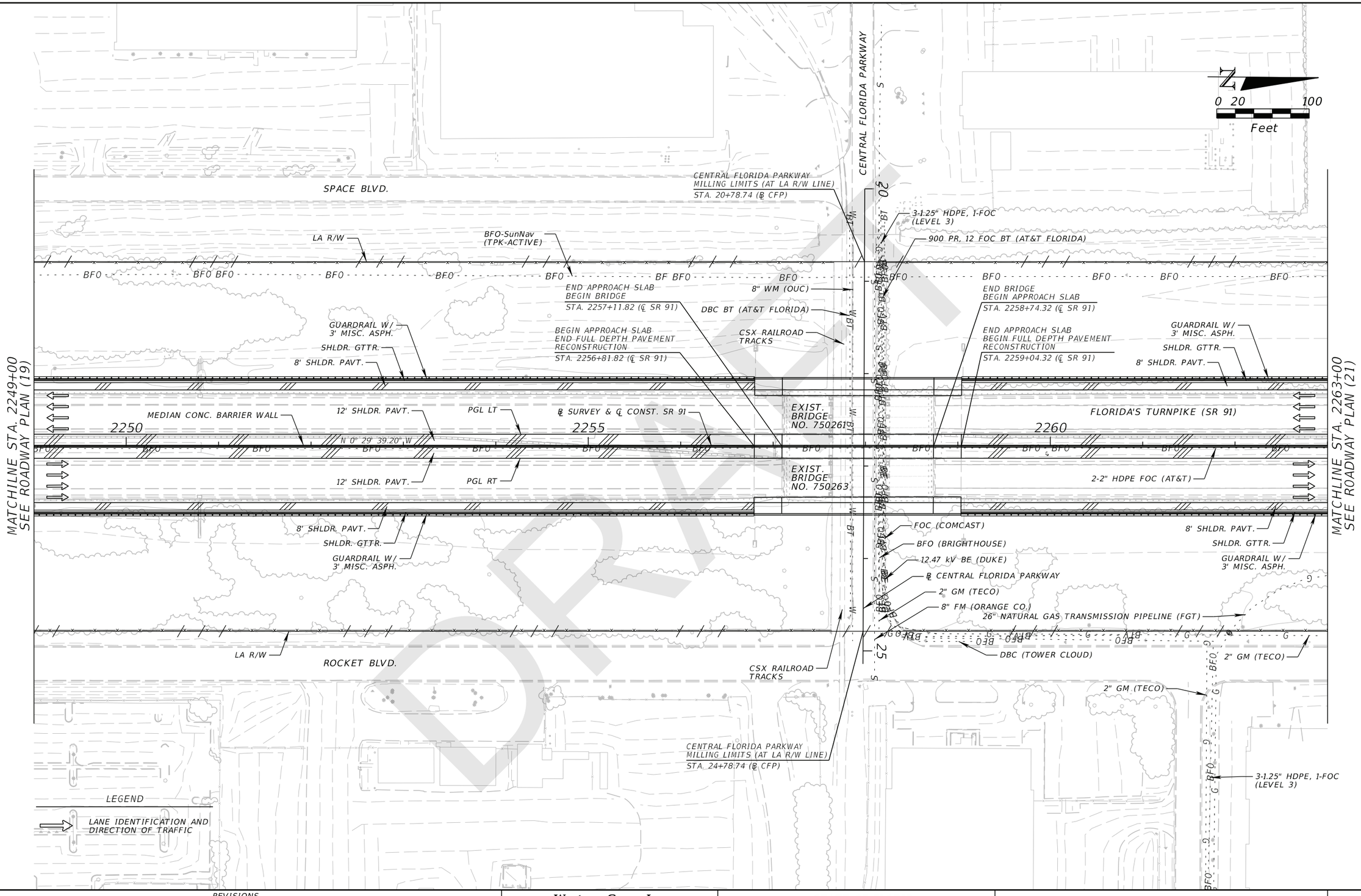
ROADWAY PLANS
ENGINEER OF RECORD: KEEGAN LARSON, P.E.

P.E. NO.: 69176

FISCAL YEAR	SHEET NO.
23	1

FDOT PROJECT MANAGER: PATRICK MUENCH, P.E.

GEC PROJECT MANAGER: THOMAS NEYER, P.E.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

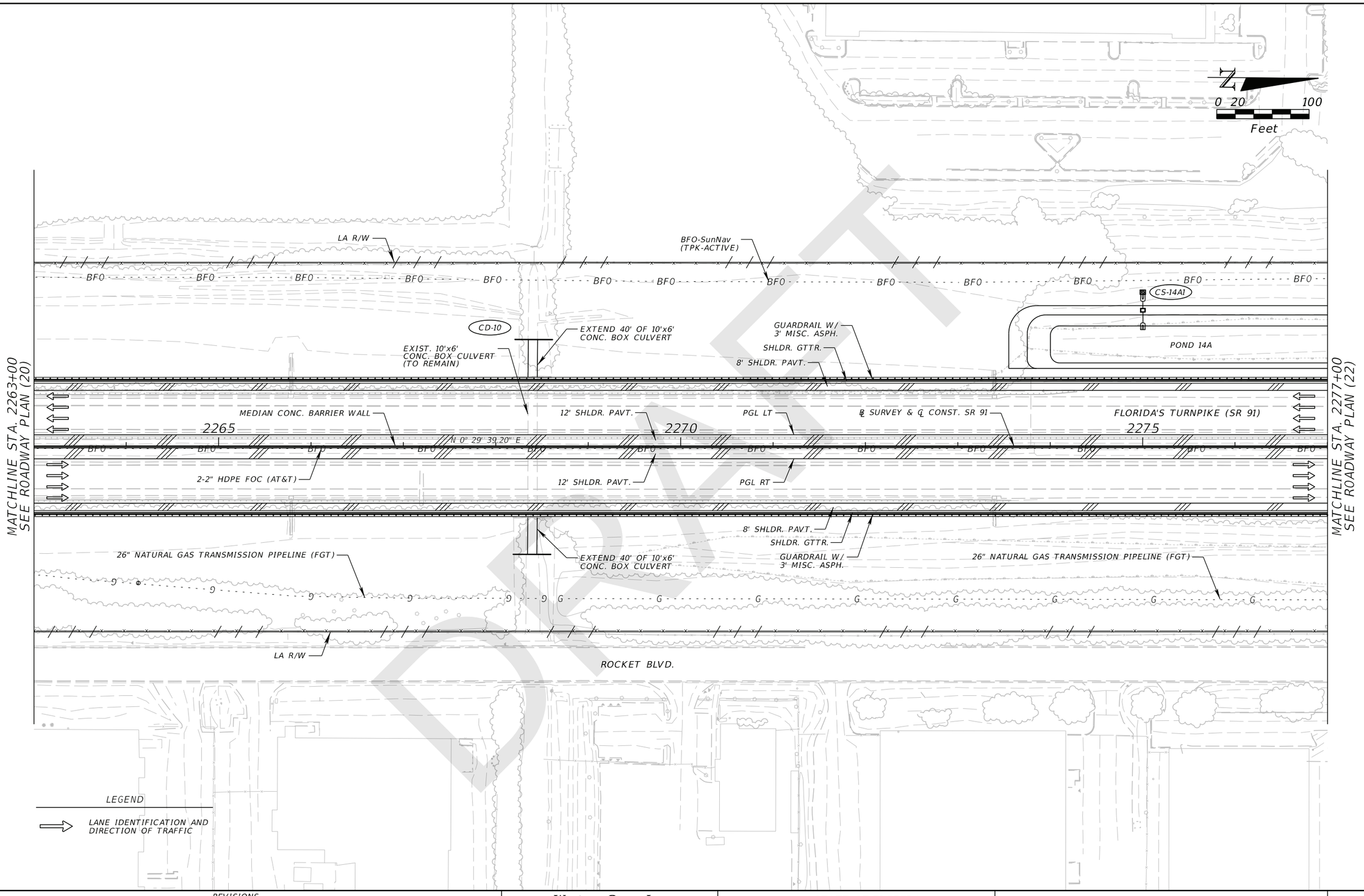
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (20) FLORIDA'S TURNPIKE

SHEET NO. 55

DavidG 8/28/2014 11:28:22 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (21)
FLORIDA'S TURNPIKE

SHEET NO. 56

DavidG 8/28/2014 11:28:24 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

0 20 100
Feet

END SHOULDER GUTTER
STA. 2278+50.00 (℄ SR 91)
71.00' LT

END GUARDRAIL
W/ PARALLEL TYPE END ANCH.
STA. 2278+56.00 (℄ SR 91)
73.00' LT

LA R/W

BFO-SunNav
(TPK-ACTIVE)

GUARDRAIL W/
3' MISC. ASPH.

BFO

CS-14A2

SHLDR. GTTR.

8' SHLDR. PAVT.

END RECONSTRUCTION
BEGIN M&R / WIDENING
STA. 2278+50.00 (℄ SR 91)

12' SHLDR. PAVT.

POND 14A

MATCHLINE STA. 2277+00
SEE ROADWAY PLAN (21)

MEDIAN CONC. BARRIER WALL

2280

N 0° 29' 39.20" W

12' SHLDR. PAVT.

PGL LT

M & R W/ OVERBUILD

2285

℄ SURVEY & ℄ CONST. SR 91

FLORIDA'S TURNPIKE (SR 91)

2290

12' SHLDR. PAVT.

PGL RT

M & R W/ OVERBUILD

2-2" HDPE FOC (AT&T)

MATCHLINE STA. 2291+00
SEE ROADWAY PLAN (23)

8' SHLDR. PAVT.

SHLDR. GTTR.

GUARDRAIL W/
3' MISC. ASPH.

12' SHLDR. PAVT.

END GUARDRAIL
W/ TYPE II END ANCH.
STA. 2278+57.95 (℄ SR 91)
73.00' RT

26" NATURAL GAS TRANSMISSION PIPELINE (FGT)

G

END SHOULDER GUTTER
STA. 2278+50.00 (℄ SR 91)
71.00' RT

LA R/W

ROCKET BLVD.

LEGEND

LANE IDENTIFICATION AND
DIRECTION OF TRAFFIC

LIMITS OF WIDENING

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (22)
FLORIDA'S TURNPIKE

SHEET NO. 57

DavidG 8/28/2014 11:28:26 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

0 20 100
Feet

MATCHLINE STA. 2291+00
SEE ROADWAY PLAN (22)

MATCHLINE STA. 2305+00
SEE ROADWAY PLAN (24)

LA R/W

SPILLWAY WEIR 14
W/ 3" PVC BLEEDER

BFO-SunNav
(TPK-ACTIVE)

BFO

POND 14A

POND 14B

12' SHLDR. PAVT.

MEDIAN CONC. BARRIER WALL

2295

PGL LT

M & R W/ OVERBUILD

℄ SURVEY & ℄ CONST. SR 91

2300

2-2" HDPE FOC (AT&T)

PGL RT

FLORIDA'S TURNPIKE (SR 91)

26" NATURAL GAS TRANSMISSION PIPELINE (FGT)

G

ROCKET BLVD.

LEGEND

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

LIMITS OF WIDENING

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

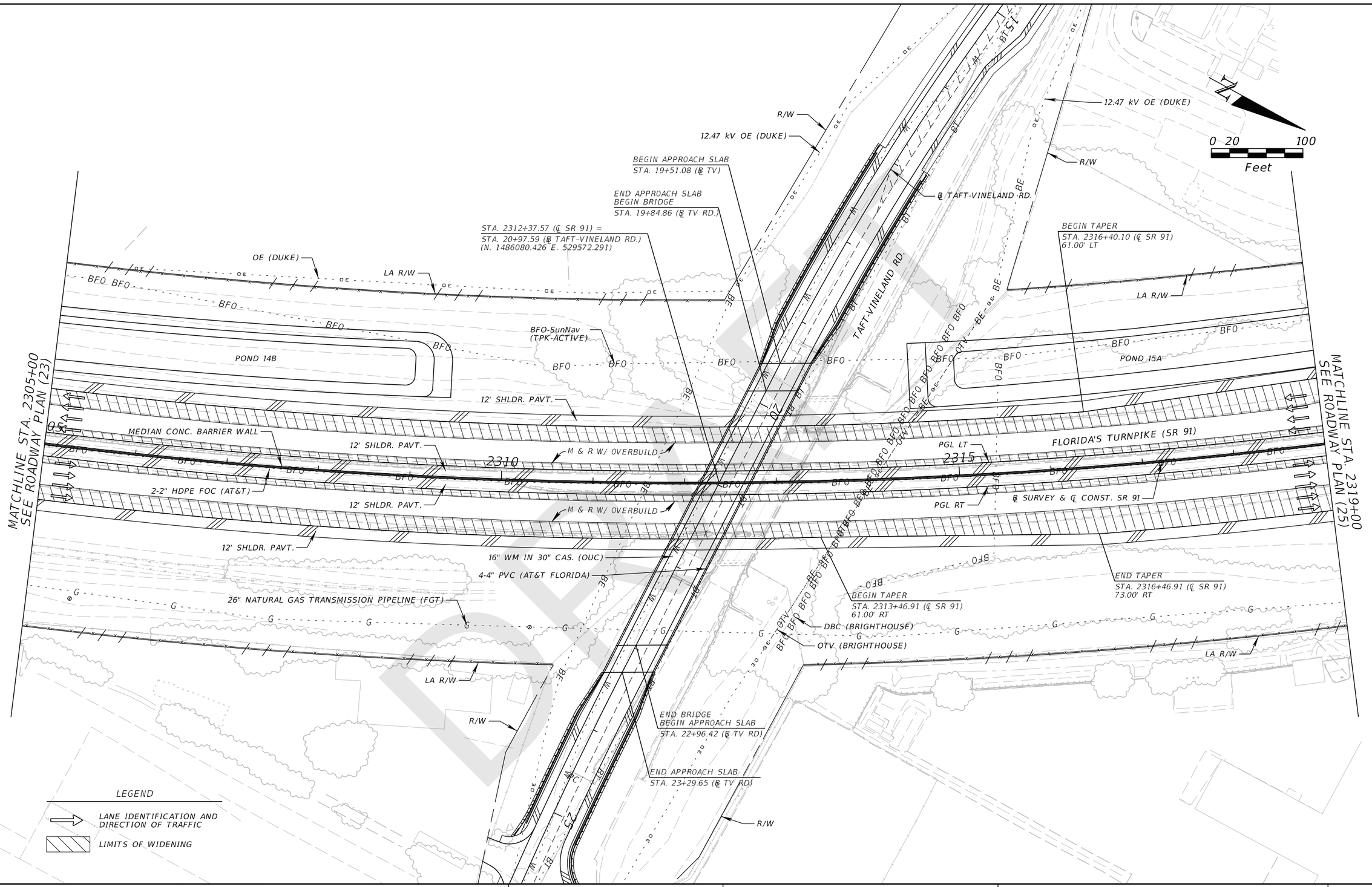
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (23)
FLORIDA'S TURNPIKE

SHEET NO. 58

DavidG 8/28/2014 11:28:29 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
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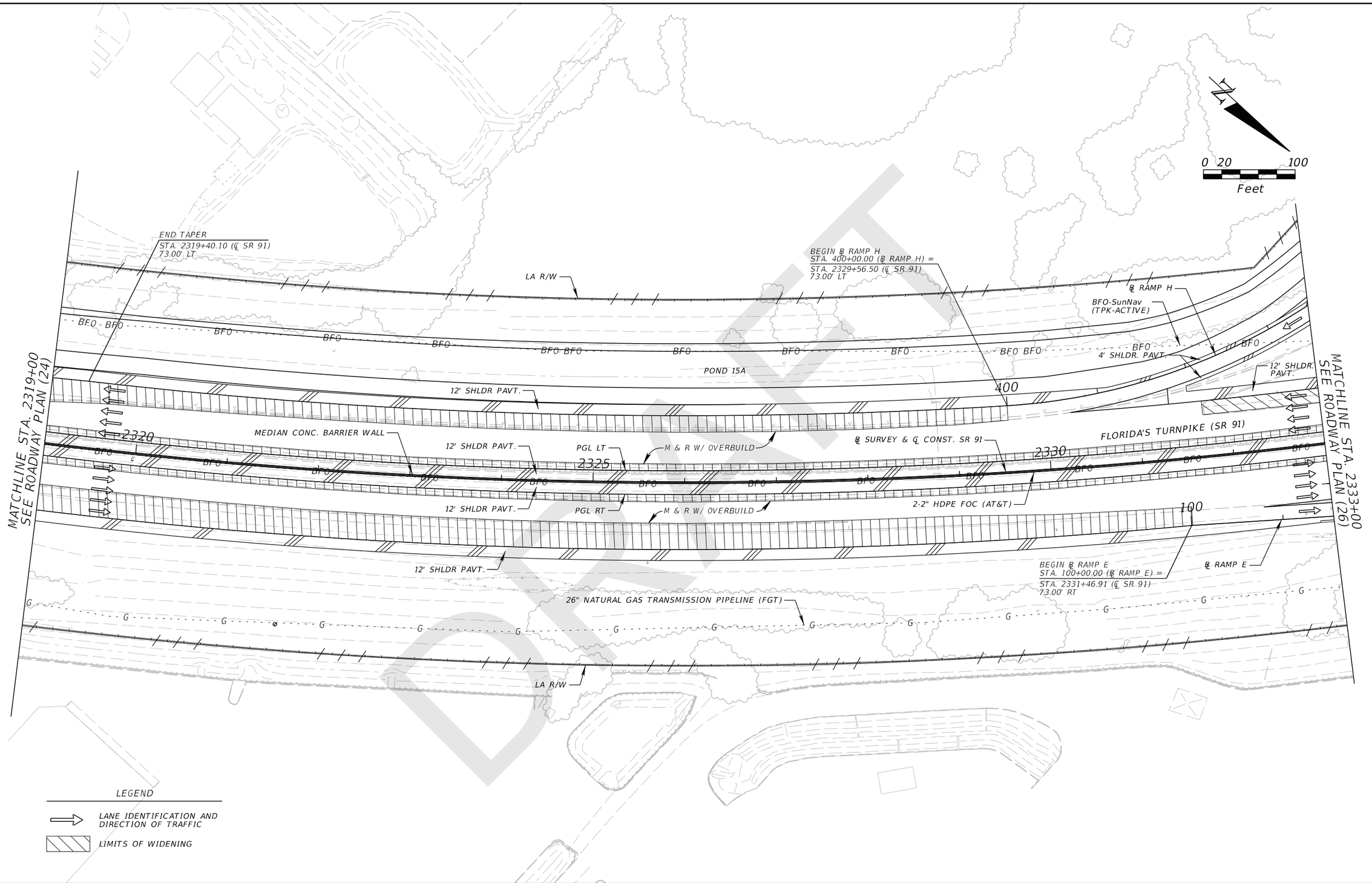
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (24)
FLORIDA'S TURNPIKE

SHEET NO. 59

DavidG 8/28/2014 11:28:31 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

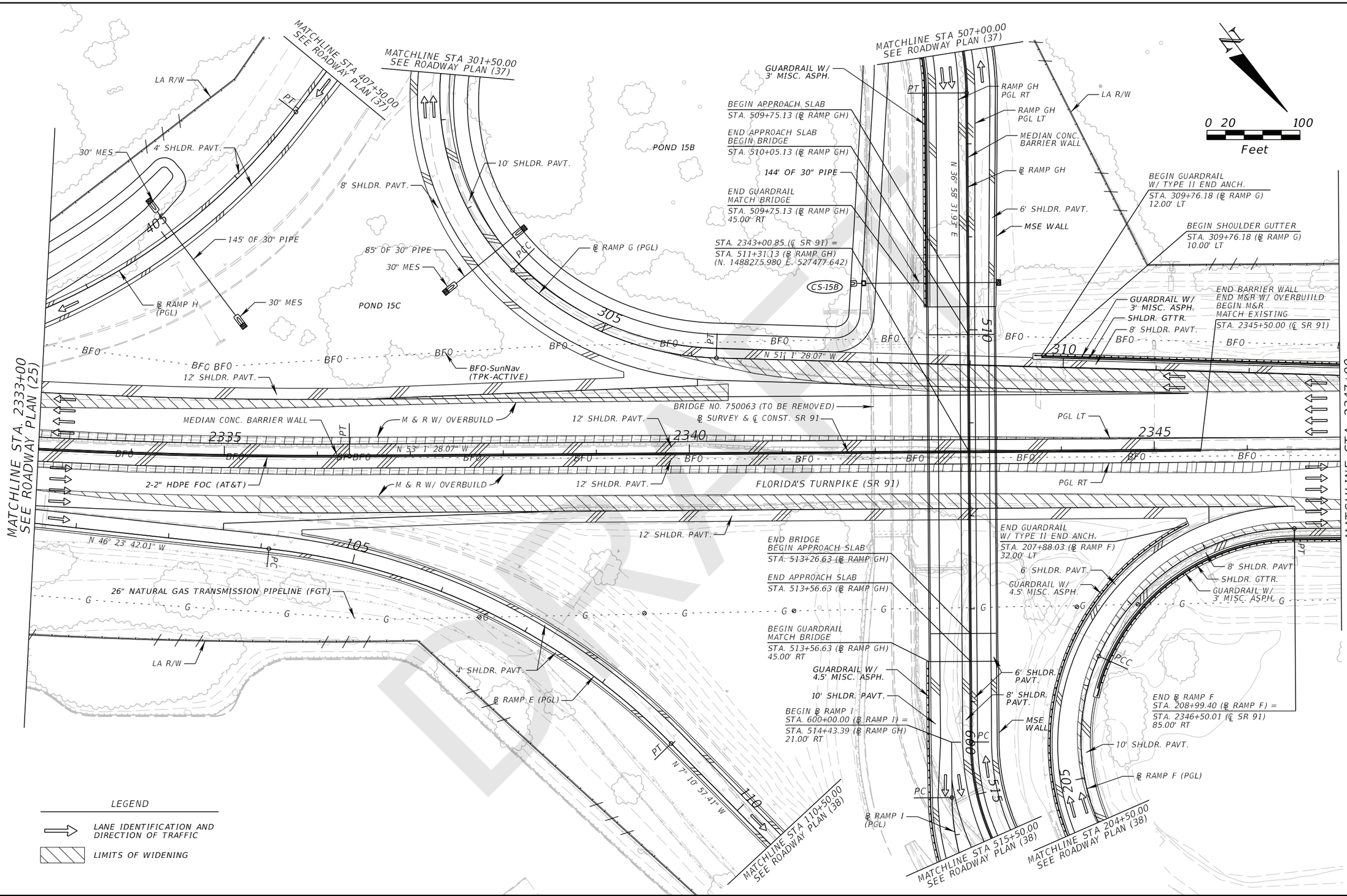
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (25)
FLORIDA'S TURNPIKE

SHEET NO. 60

DavidG 8/28/2014 11:28:33 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (26)
FLORIDA'S TURNPIKE

SHEET NO. 61

DavidG 8/28/2014 11:28:35 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

MATCHLINE STA. 2347+00
SEE ROADWAY PLAN (26)

END ℄ RAMP G
STA. 314+79.13 (℄ RAMP G) =
STA. 2348+81.38 (℄ SR 91)
73.00' LT

℄ RAMP G

SHOULDER GUTTER

8' SHLDR. PAVT.

GUARDRAIL W/
3' MISC. ASPH.

LA R/W

BFO-SunNav
(TPK-ACTIVE)

END OUTSIDE WIDENING
STA. 2358+32.77 (℄ SR 91)
61.00' LT

EXIST. 10'x7' (x2)
CONC. BOX CULVERT
(TO REMAIN)

CD-13

CD-11

END PROJECT SR 91
STA. 2359+30.55

ORANGE BLOSSOM TRAIL

0 20 100
Feet

EXIST. MEDIAN CONC. BARRIER WALL

M & R

EXIST. SHLDR. PAVT.

℄ SURVEY & ℄ CONST. SR 91

2350

2355

2360

N 53° 1' 28.07" W

END INSIDE WIDENING
STA. 2347+86.33 (℄ SR 91)
13.00' RT

2-2" HDPE FOC (AT&T)

FLORIDA'S TURNPIKE (SR 91)

END OUTSIDE WIDENING
STA. 2359+00.00 (℄ SR 91)
73.00' RT

END M&R
STA. 2359+30.55 (℄ SR 91)

26" NATURAL GAS TRANSMISSION PIPELINE (FGT)

LEGEND

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

LIMITS OF WIDENING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

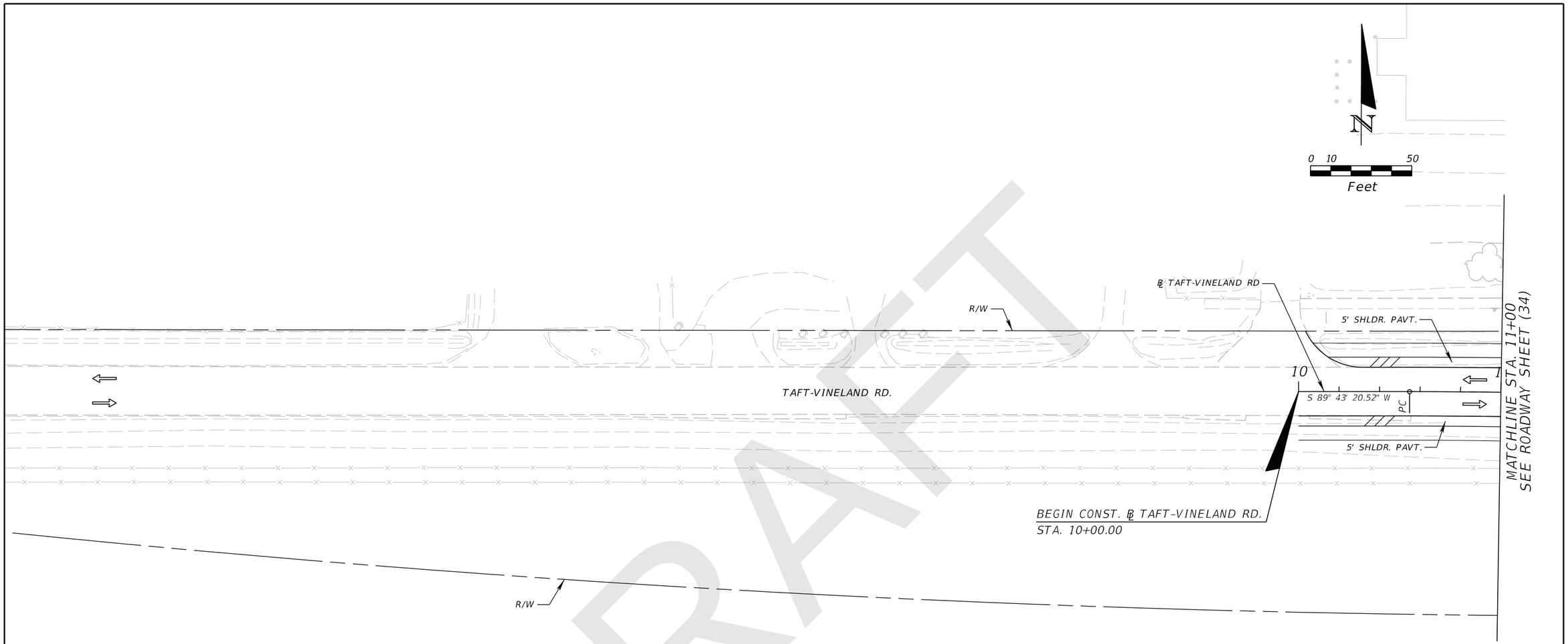
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (27)
FLORIDA'S TURNPIKE

SHEET NO. 62

DavidG 8/28/2014 11:28:38 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



LEGEND

⇨ LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

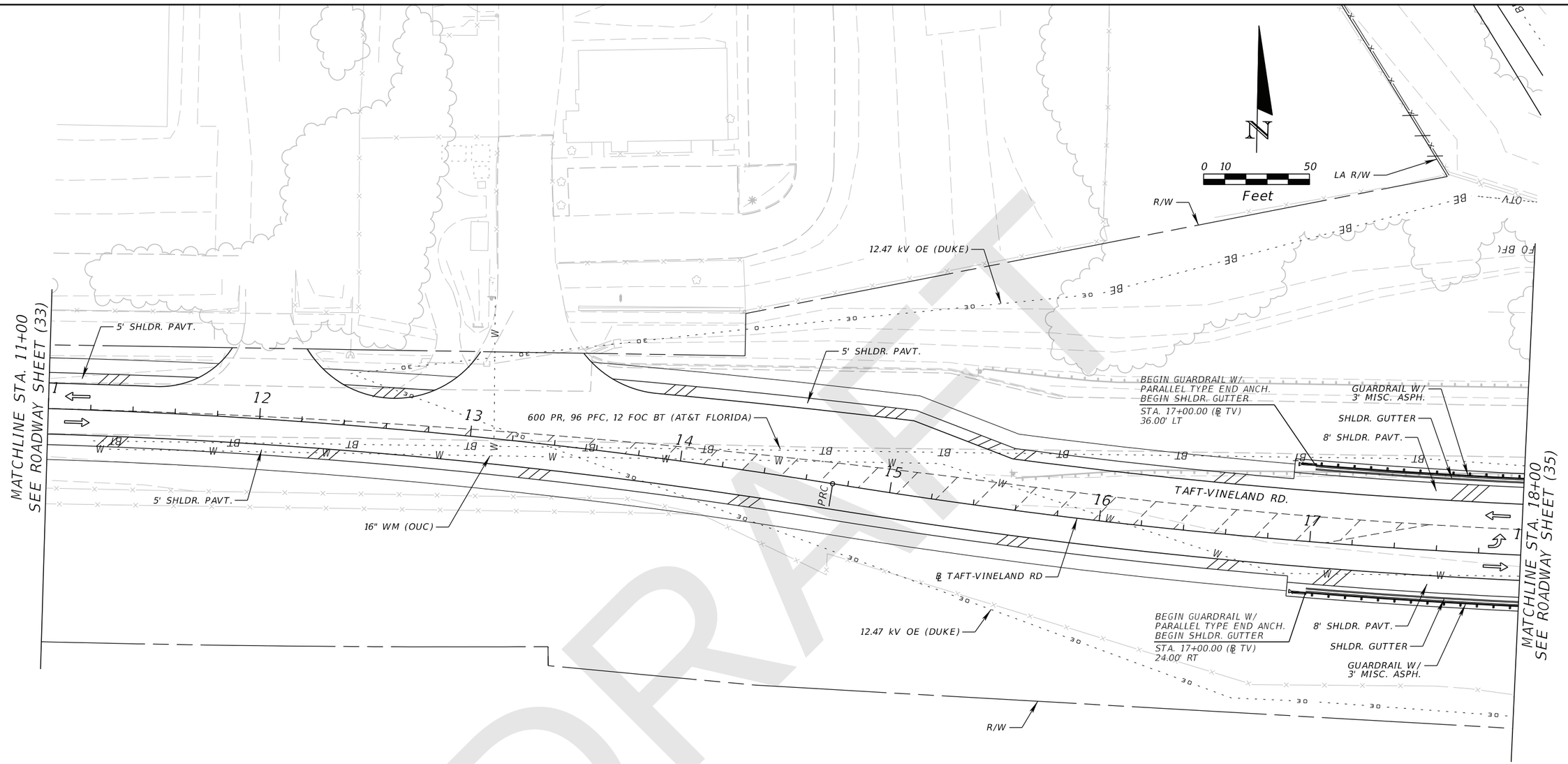
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (33)
TAFT-VINELAND ROAD

SHEET NO. 68

DavidG 8/28/2014 11:28:51 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



LEGEND

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

PROPOSED STRIPING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (34)
TAFT-VINELAND ROAD

SHEET NO. 69

DavidG 8/28/2014 11:28:53 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

N

0 10 50
Feet

MATCHLINE STA. 18+00
SEE ROADWAY SHEET (34)

MATCHLINE STA. 25+00
SEE ROADWAY SHEET (36)

TAFT-VINELAND RD.

℄ TAFT-VINELAND RD.

N 88° 23' 19.99" E

FLORIDA'S TURNPIKE (SR 91)

℄ FLORIDAS TURNPIKE/SR 91

POND 15A

2-2" HDPE FOC (AT&T)

OTV (BRIGHTHOUSE)

DBC (BRIGHTHOUSE)

26" NATURAL GAS TRANSMISSION PIPELINE (FGT)

12.47 kV OE (DUKE)

2" BT-FIBER (AT&T)

4-4" PVC BT (AT&T FLORIDA)

LA R/W

R/W

STA. 20+97.59 (℄ TV RD.) =
STA. 2312+37.57 (℄ SR 91)

END GUARDRAIL
END SHLDR. GUTTER
CONNECT TO BRIDGE
STA. 19+35.58 (℄ TV RD.)
29.42' LT

BEGIN APPROACH SLAB
STA. 19+51.08 (℄ TV)

GUARDRAIL W/
3' MISC. ASPH.

SHLDR. GUTTER

8' SHLDR. PAVT.

END GUARDRAIL
END SHLDR. GUTTER
CONNECT TO BRIDGE
STA. 19+60.14 (℄ TV RD)
43.00' RT

END APPROACH SLAB
BEGIN BRIDGE
STA. 19+84.86 (℄ TV RD.)

BFO-SunNav
(TPK-ACTIVE)

12' SHLDR. PAVT.

END BRIDGE
BEGIN APPROACH SLAB
STA. 22+96.42 (℄ TV RD)

BEGIN GUARDRAIL
BEGIN SHLDR. GUTTER
CONNECT TO BRIDGE
STA. 23+14.37 (℄ TV RD)
29.50' LT

END APPROACH SLAB
STA. 23+29.65 (℄ TV RD)

5' SHLDR. PAVT.

16" WM IN
30" CAS. (OUC)

BEGIN GUARDRAIL
BEGIN SHLDR. GUTTER
CONNECT TO BRIDGE
STA. 23+38.68 (℄ TV RD)
17.50' RT

MEDIAN
BARRIER WALL

LEGEND

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

PROPOSED STRIPING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

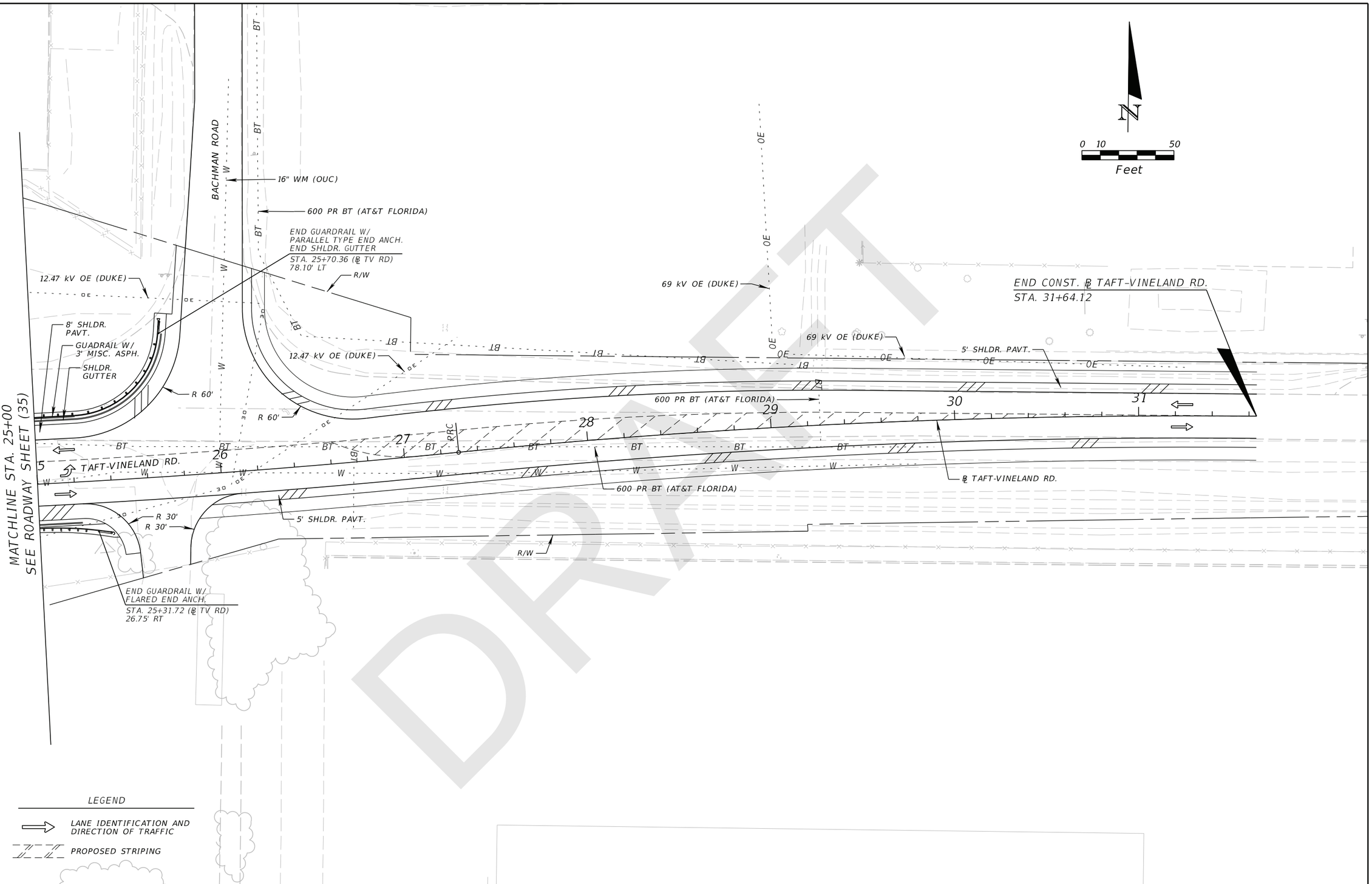
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (35)
TAFT-VINELAND ROAD

SHEET NO. 70

DavidG 8/28/2014 11:28:55 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

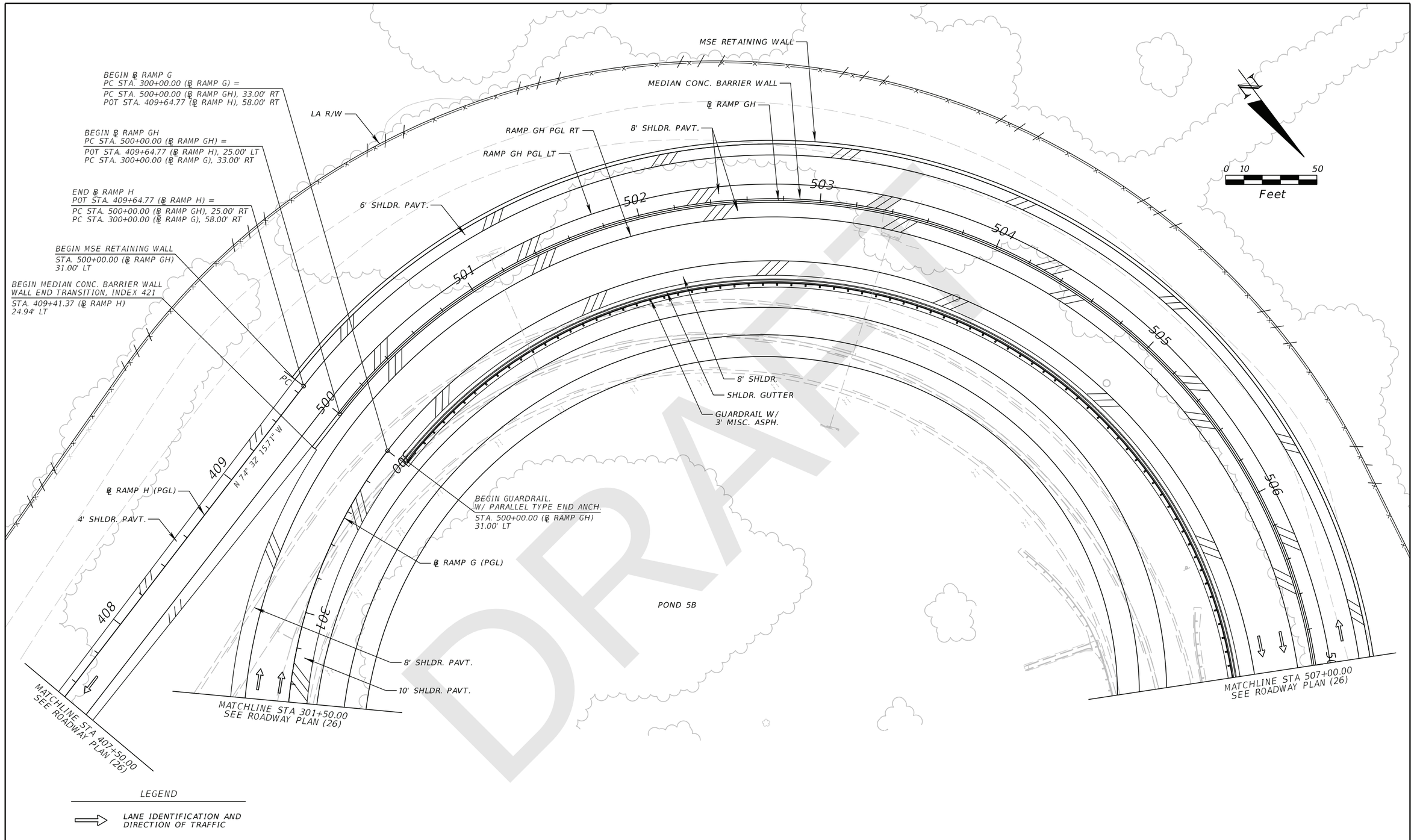
Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (36)
TAFT-VINELAND ROAD

SHEET NO. 71



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (37)
ORLANDO SOUTH RAMPS

SHEET NO. 72

DavidG 8/28/2014 11:29:00 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

MATCHLINE STA 110+50.00
SEE ROADWAY PLAN (26)

MATCHLINE STA 515+50.00
SEE ROADWAY PLAN (26)

MATCHLINE STA 204+50.00
SEE ROADWAY PLAN (26)

N

0 10 50
Feet

111
N 7° 10' 10.57" W
112
113
114
115
116
117
118
PC
PT
PCC
516
517
518
519
520
521
602
603
604
605
606
607
204
203
202
201
S 49° 44' 21.91" E
N 49° 24' 46.24" W
N 49° 37' 23.07" W
N 49° 37' 23.07" W

BEGIN GUARDRAIL
W/ TYPE II DOUBLE END ANCH.
STA. 601+43.50 (℄ RAMP I)
9.00' LT

4' SHLDR. PAVT.

6' SHLDR. PAVT.

℄ RAMP I (PGL)

GUARDRAIL W/
4.5' MISC. ASPH.
(TYP)

℄ RAMP E (PGL)

END SHLDR. CONSTRUCTION
MATCH EXISTING
STA. 112+64.97 (℄ RAMP E)
19.00' LT

EXISTING SUNPASS SIGN
STRUCT. TO BE REMOVED

END SHLDR. CONSTRUCTION
MATCH EXISTING
STA. 114+18.60 (℄ RAMP E)
4.00' RT

END GUARDRAIL
MATCH SHLDR. BARRIER WALL
BEGIN SHLDR. BARRIER WALL
STA. 603.55.96 (℄ RAMP I)
6.00' LT

LA R/W

PROPOSED SUNPASS
SIGN STRUCT.

(SUNPASS TOLLED)

6' SHLDR.
PAVT.

℄ RAMP GH

MSE
RETAINING
WALL

8' SHLDR.
PAVT.

RAMP GH
PGL RT

RAMP GH
PGL LT

10' SHLDR. PAVT.

GUARDRAIL W/
4.5' MISC. ASPH.

℄ RAMP F (PGL)

END MSE RETAINING WALL
MATCH MEDIAN CONC. BARRIER WALL
BEGIN MEDIAN CONC. BARRIER WALL
STA. 517+50.00 (℄ RAMP GH)
28.00' LT

BEGIN GUARDRAIL
MATCH BARRIER WALL
STA. 202+98.70 (℄ RAMP F)
42.81' LT

END IMPROVEMENTS
MATCH EXISTING
STA. 520+00.00 (℄ RAMP GH)

MEDIAN CONC.
BARRIER WALL

MEDIAN CONC.
BARRIER WALL

(FROM TOLL PLAZA)

(TO TOLL PLAZA)

SHLDR.
CONC. BARRIER
WALL

END GUARDRAIL
W/ TYPE II END ANCH.
STA. 603+94.32 (℄ RAMP I)
23.00' RT

END GUARDRAIL
MATCH SHLDR. BARRIER WALL
BEGIN SHLDR. BARRIER WALL
STA. 517+50.00 (℄ RAMP GH)
30.18' RT

(UNTOLLED)

END MEDIAN BARRIER WALL
BEGIN GUARDRAIL
STA. 605+19.15 (℄ RAMP I)
6.92' LT

END GUARDRAIL
MATCH EXISTING
STA. 606+23.41 (℄ RAMP I)
5.54' LT

LEGEND

LANE IDENTIFICATION AND
DIRECTION OF TRAFFIC

LIMITS OF WIDENING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Wantman Group, Inc.
Certificate of Authorization 6091
EOR: Keegan Larson, P.E.
P.E. License Number 69176
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE/ OSCEOLA	411406-1-52-01 411406-4-52-01

ROADWAY PLAN (38)
ORLANDO SOUTH RAMPS

SHEET NO. 73

DavidG 8/28/2014 11:29:01 AM T:\21211276.00 Tpk Widening Osceola to Beachline (Orange County)\41140615201\roadway

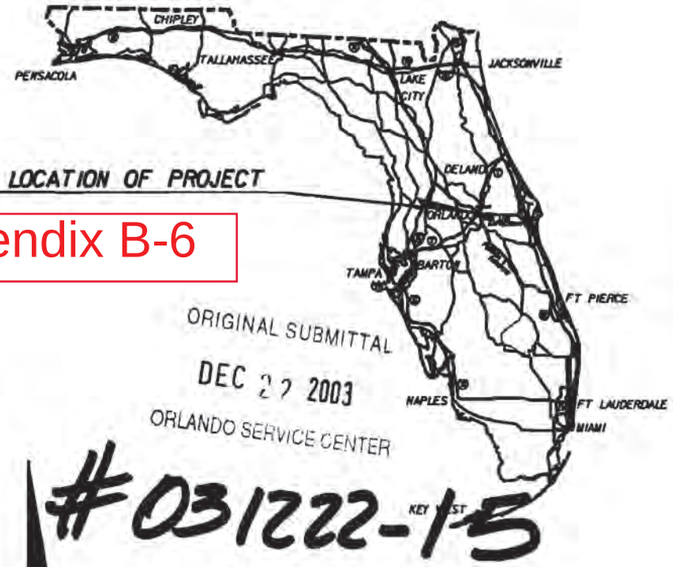
COMPONENTS OF CONTRACT PLANS SET
ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
STRUCTURE PLANS
LIGHTING PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 406091-1-52-01
ORANGE COUNTY (75470)
STATE ROAD NO. 91
WIDEN FLORIDA'S TURNPIKE-ORLANDO SOUTH TO INTERSTATE I-4



LOCATION OF PROJECT

Appendix B-6

ORIGINAL SUBMITTAL
DEC 22 2003
ORLANDO SERVICE CENTER

#031222-1-5

ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:

JOHN SAUNDERS, P.E
URS CORPORATION
7650 W. COURTNEY CAMPBELL CSWY.
TAMPA, FLORIDA 33607-1462
(813) 286-1711

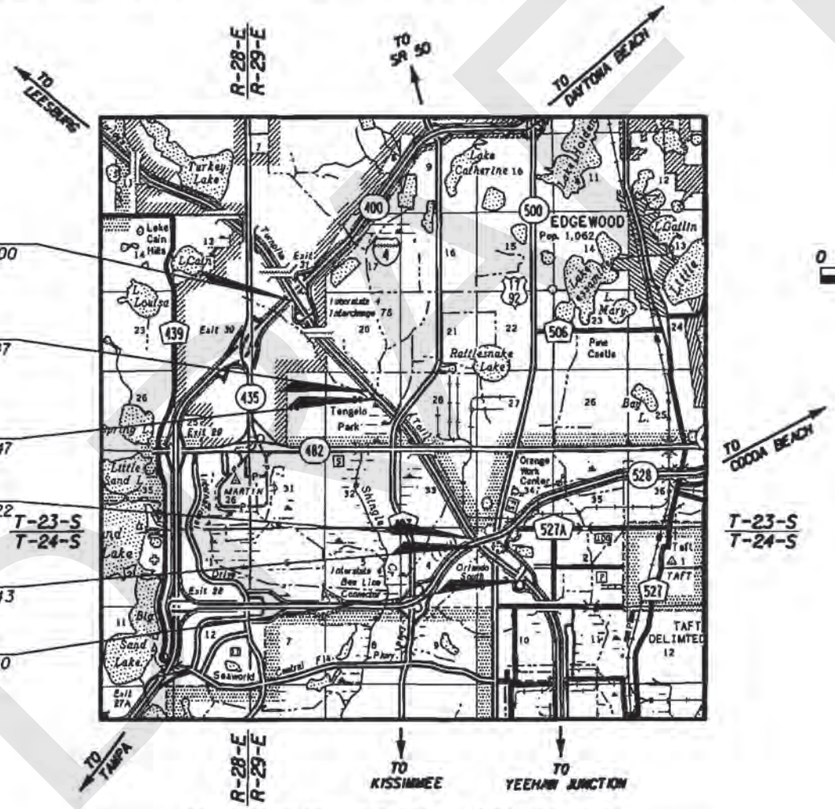
PLANS PREPARED BY:

URS
URS CORPORATION
7650 W. COURTNEY CAMPBELL CSWY.
TAMPA, FLORIDA 33607-1462
PH. (813) 286-1711
FAX. (813) 287-8223

VENDOR NO. F592087895002
CONTRACT NO. C-8274
C.A. NO. 00000002

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

INDEX OF ROADWAY PLANS



PERMIT SUBMITTAL
12/19/2003

PROJECT LENGTH IS BASED ON ℄ CONSTRUCTION

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	24359.210	4.613
BRIDGES	432.790	0.082
NET LENGTH OF PROJECT	24792.000	4.695
EXCEPTIONS	0.000	0.000
GROSS LENGTH OF PROJECT	24792.000	4.695

FDOT PROJECT MANAGER: WILLIAM F. SLOUP, P.E.
GENERAL CONSULTANT PROJECT MANAGER: BRIAN KIRWAN, P.E.

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED JANUARY 2002, AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2004, AS AMENDED BY CONTRACT DOCUMENTS.

REVISIONS

NOTE:
ALL ELEVATIONS ARE NAVD '88 DATUM (NAVD '88 EL. 0.00 = NGVD '29 EL. 0.90) For example: 99.10 shown in plans is equal to 100.00 NGVD '29.

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

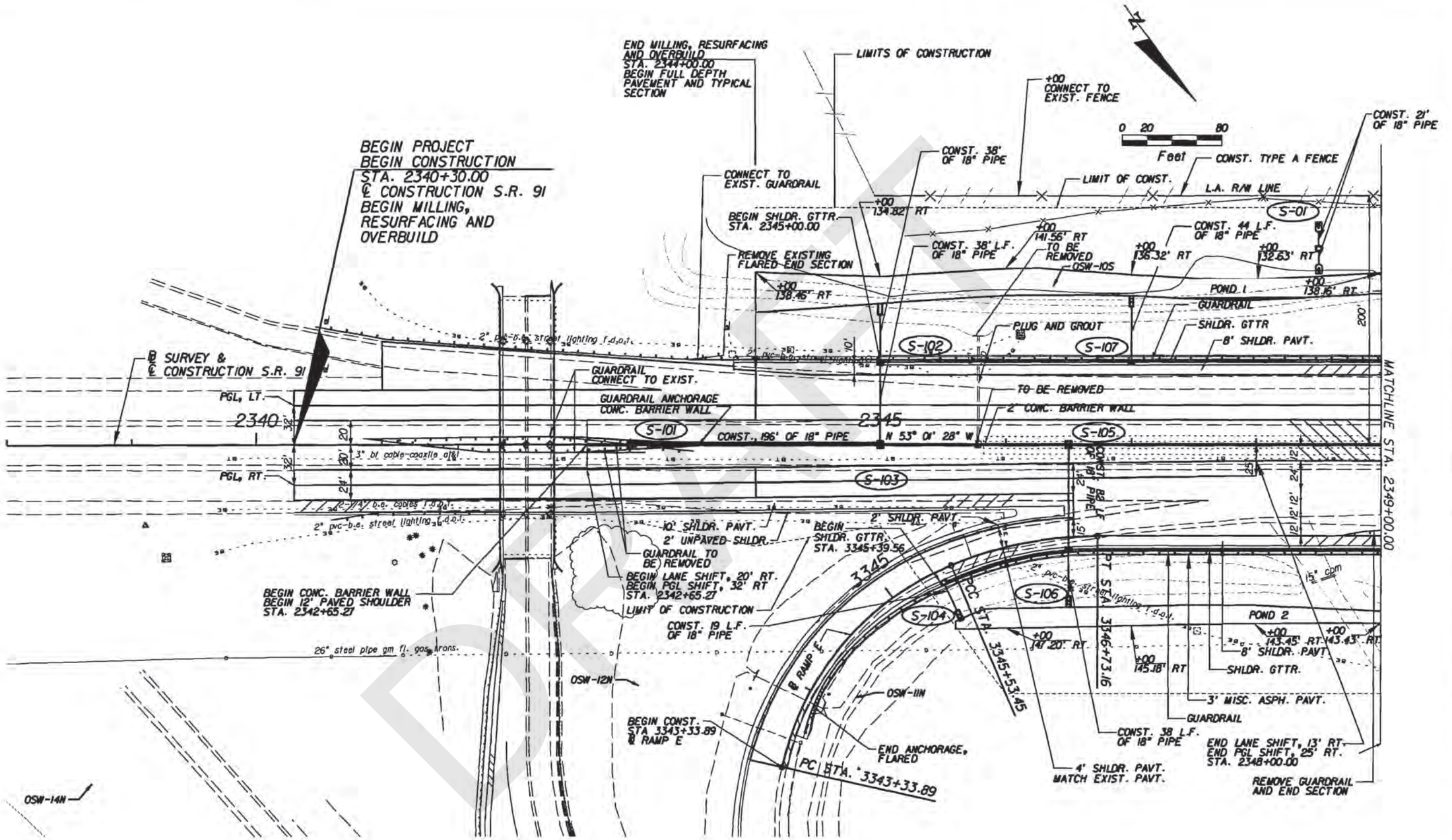
Jack K. Saunders 12/19/03

ROADWAY PLANS
ENGINEER OF RECORD: JOHN K. SAUNDERS, P.E.

P.E. NO.: 45371

FISCAL YEAR	SHEET NO.
05	1

12/19/03 02:00:38 PM E:\406091\3201\roadway\ksys1d01.dgn



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

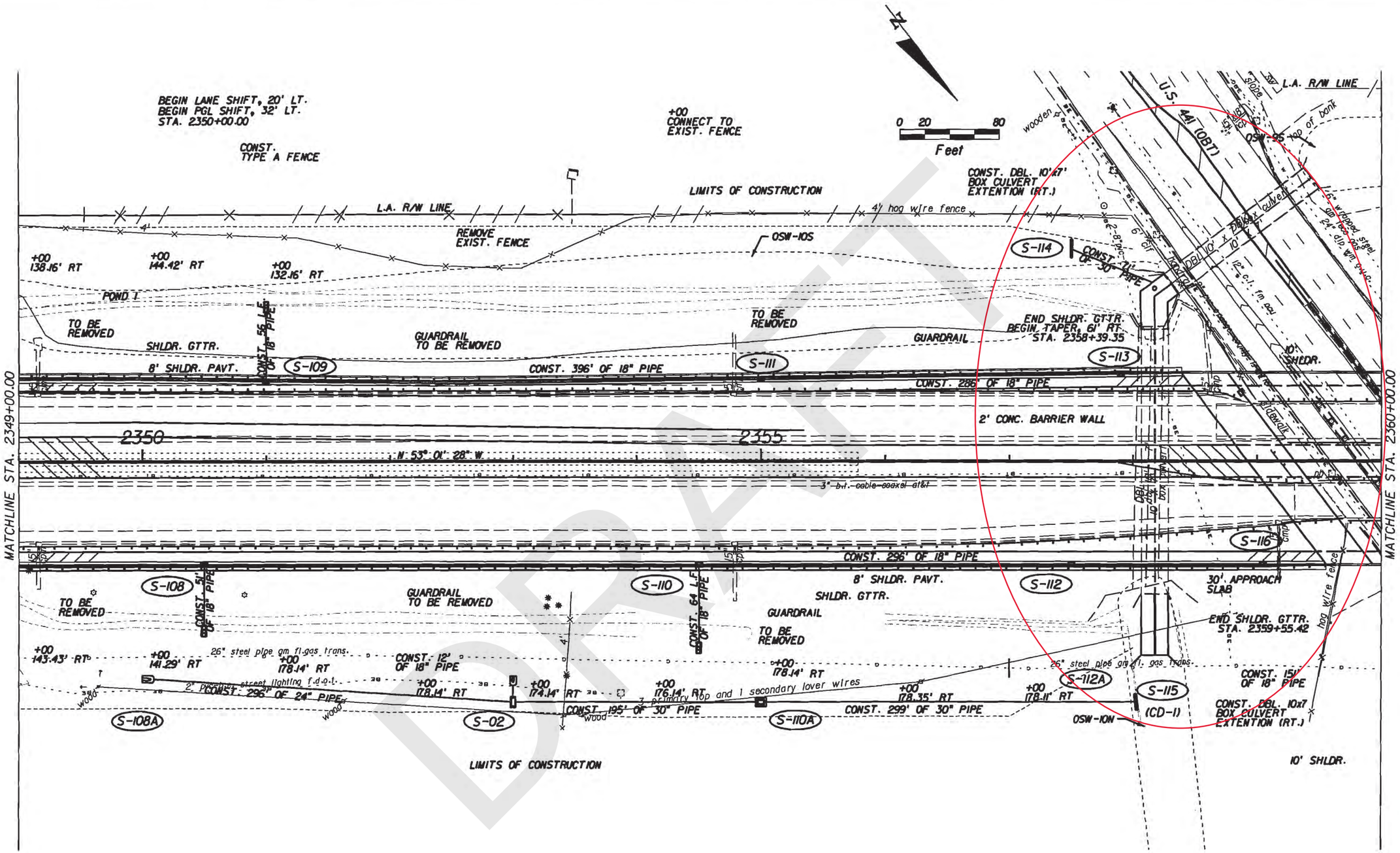
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (1)

SHEET NO. 29

12/19/03 02:01:38 PM E:\406091\320\roadway\plan1d01.dgn



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (2)

SHEET NO. 30

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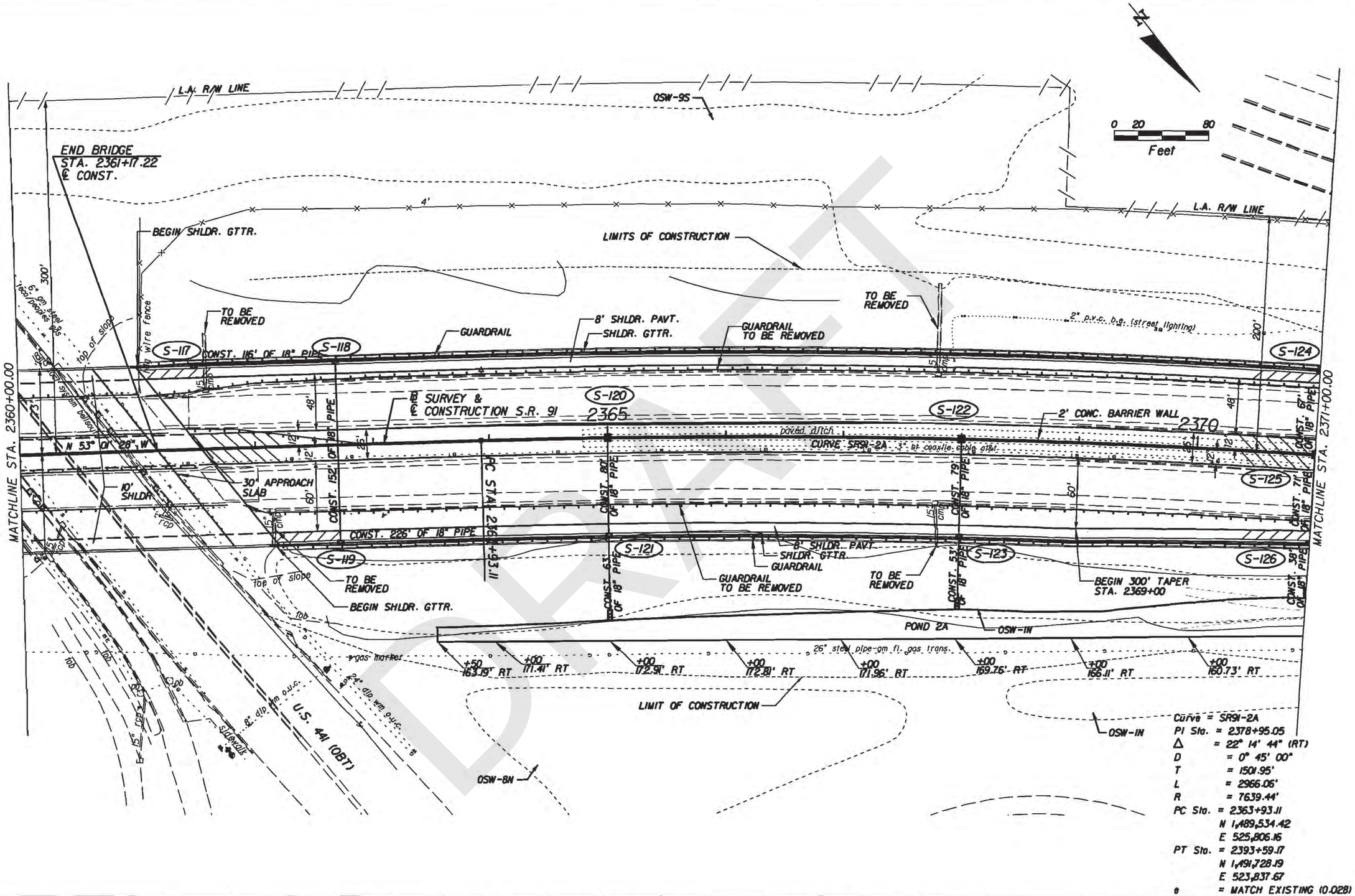

REVISIONS					
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Campbell Causeway
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C.A. No. 00000002
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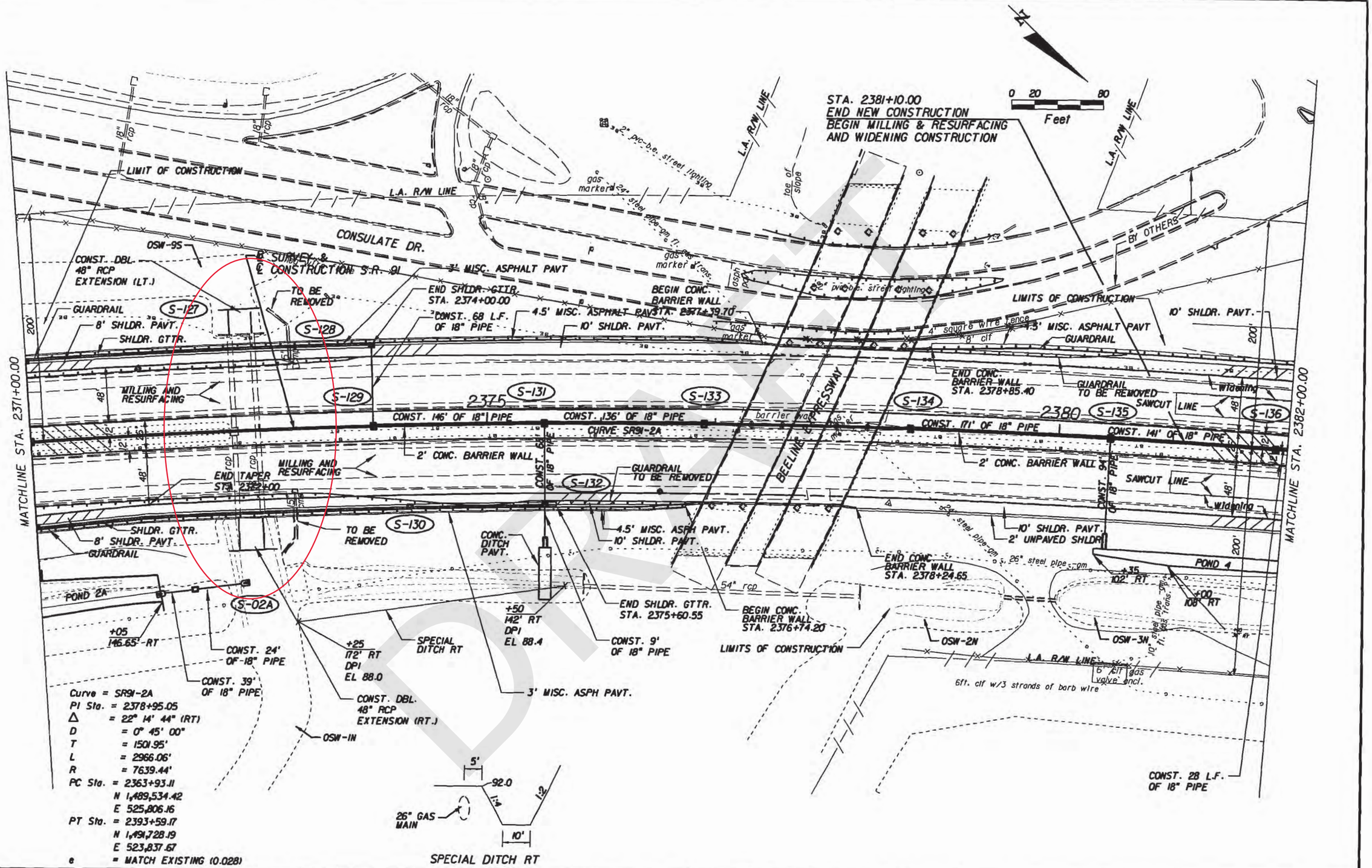
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (3)

SHEET NO. 31

12/19/03 02:01:39 PM E:\406091\3201\roadway\plan1d03.dgn



REVISIONS					
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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
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John K. Saunders, P.E. 45371

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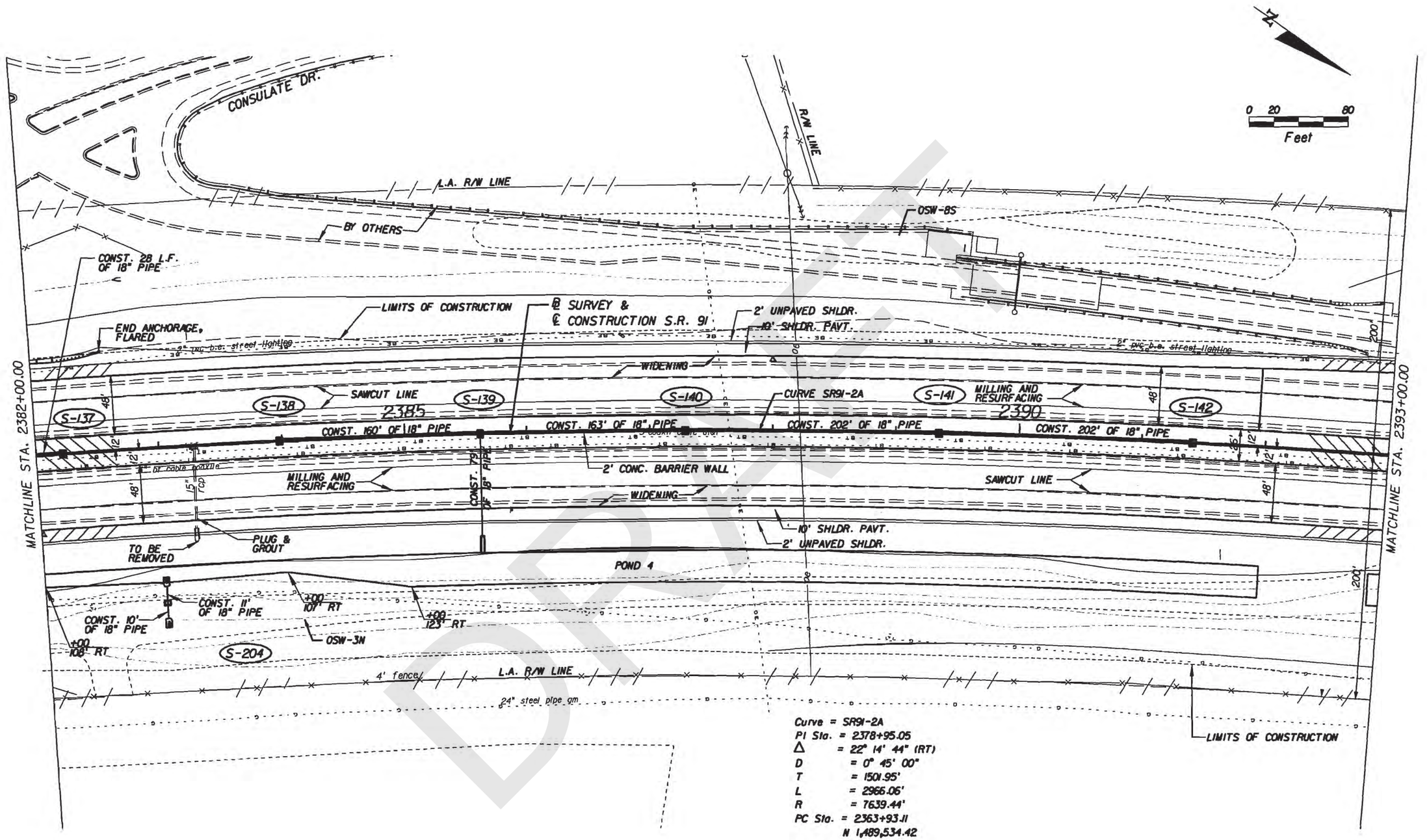
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (4)

SHEET NO. 32

12/19/03 09:49:48 AM E:\406091\320\roadway\planrd04.dgn



Curve = SR91-2A
PI Sta. = 2378+95.05
Δ = 22° 14' 44" (RT)
D = 0° 45' 00"
T = 1501.95'
L = 2966.06'
R = 7639.44'
PC Sta. = 2363+93.11
N 1,489,534.42
E 525,806.16
PT Sta. = 2393+59.17
N 1,491,728.19
E 523,837.67
e = MATCH EXISTING (0.028)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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C.A. No. 00000002
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (5)

SHEET NO. 33

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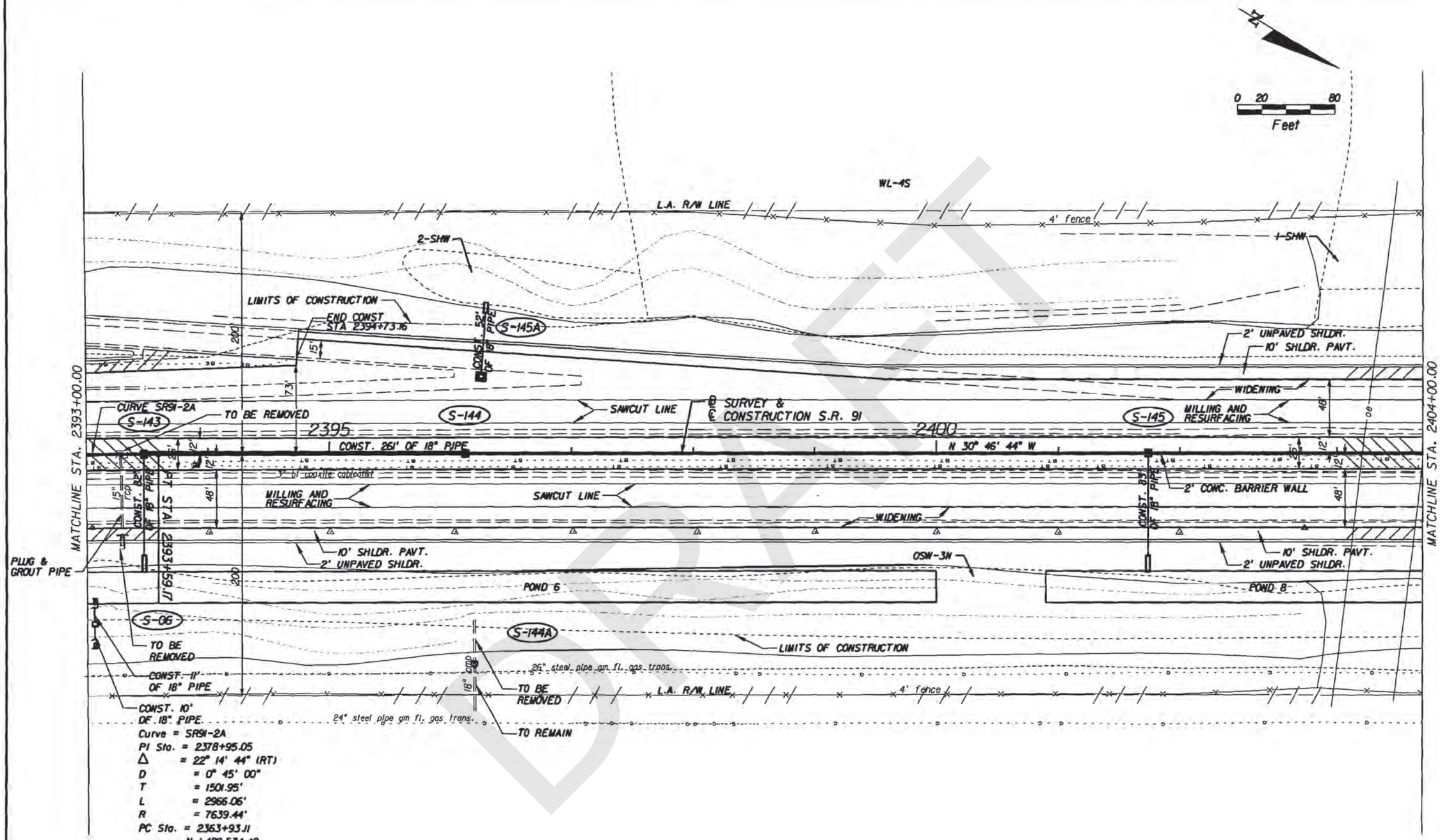

Curve = SR91-2A
PI Sta. = 2378+95.05
Δ = 22° 14' 44" (RT)
D = 0° 45' 00"
T = 1501.95'
L = 2966.06'
R = 7639.44'
PC Sta. = 2363+93.11
N 1,489,534.42
E 525,806.16
PT Sta. = 2393+59.17
N 1,491,728.19
E 523,837.67
e = MATCH EXISTING (0.028)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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7650 West Courtney Campbell Causeway
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (6)

SHEET NO. 34

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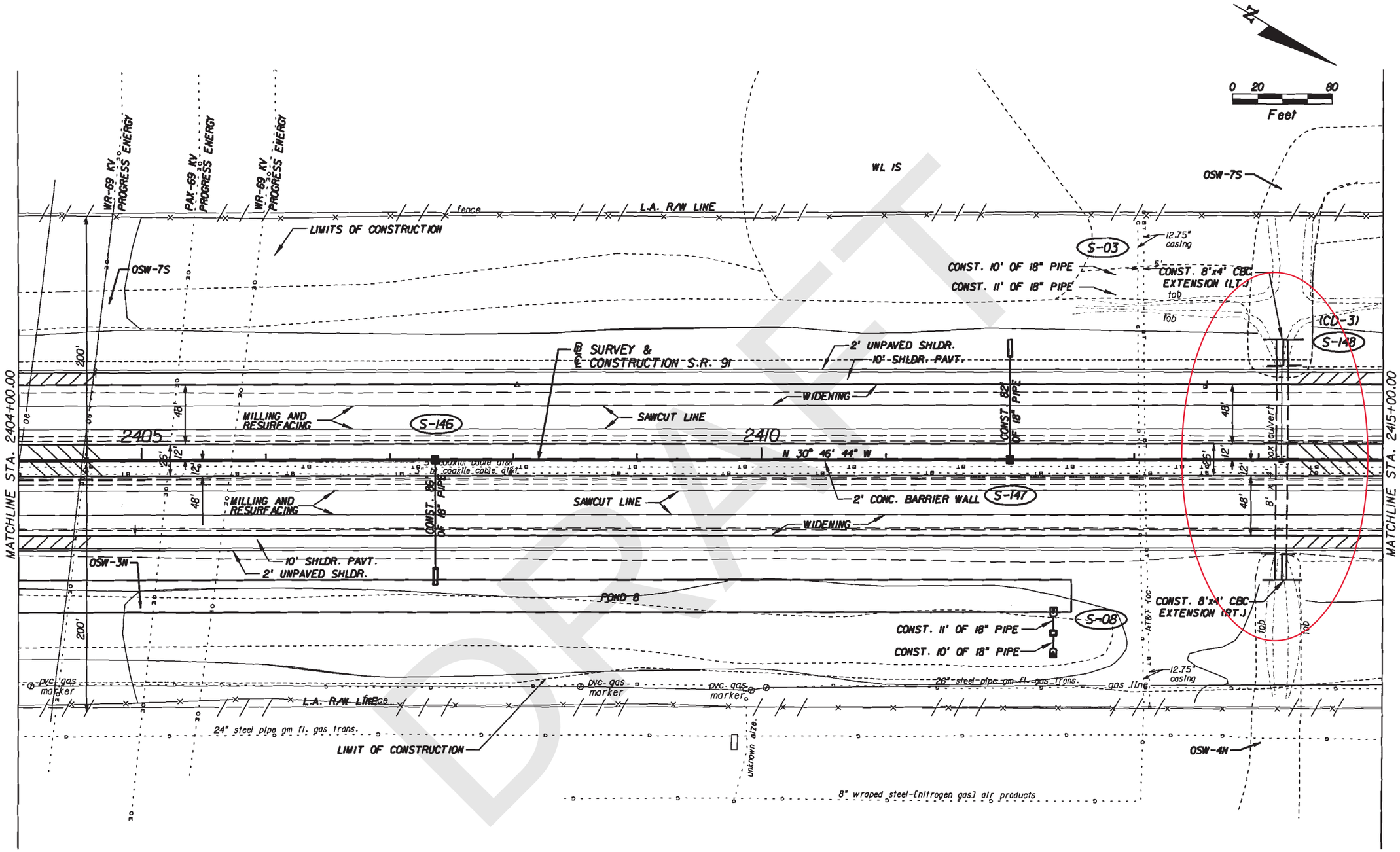

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (7)

SHEET NO. 35

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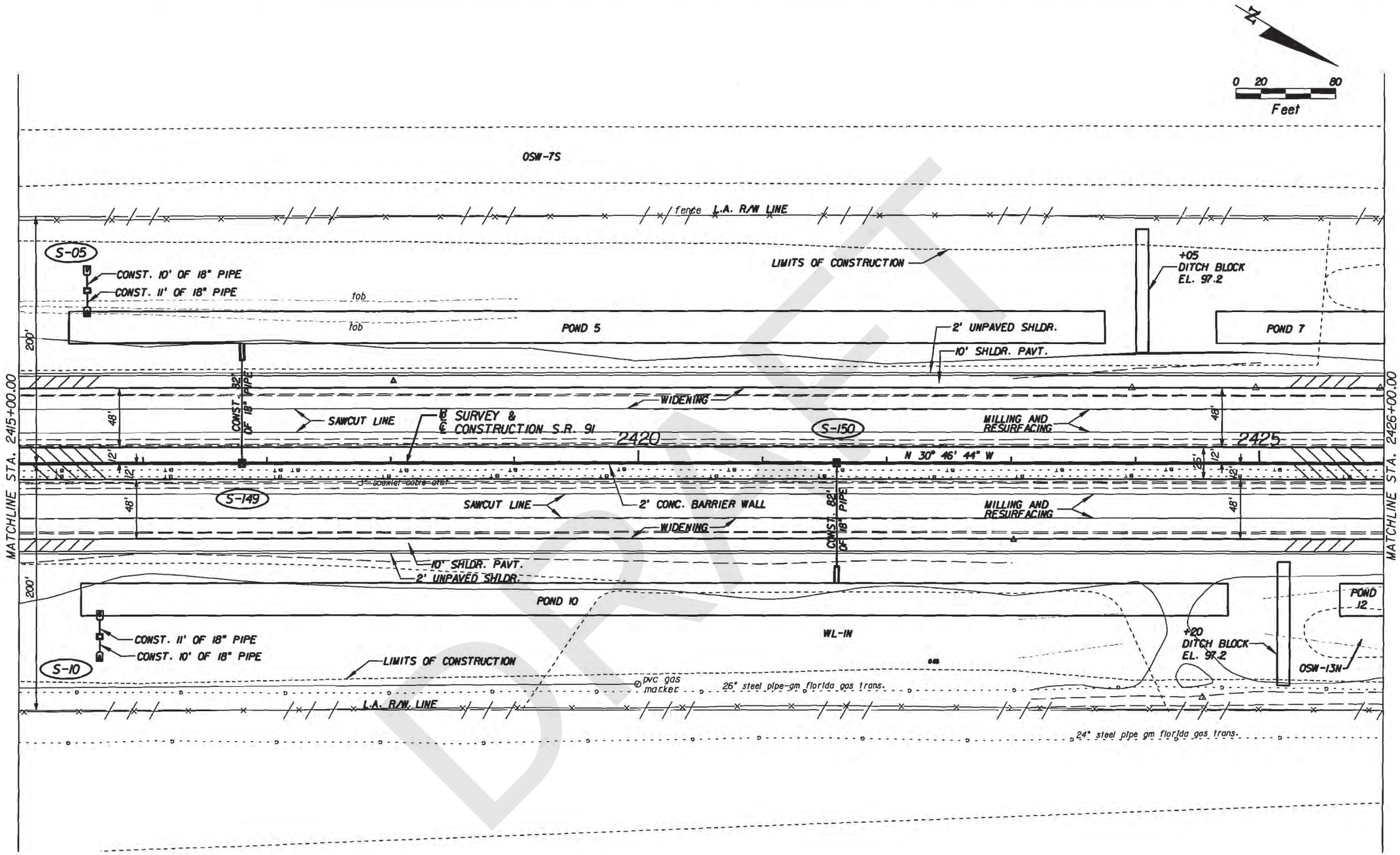

REVISIONS					
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C.A. No. 00000002
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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (8)

SHEET NO. 36

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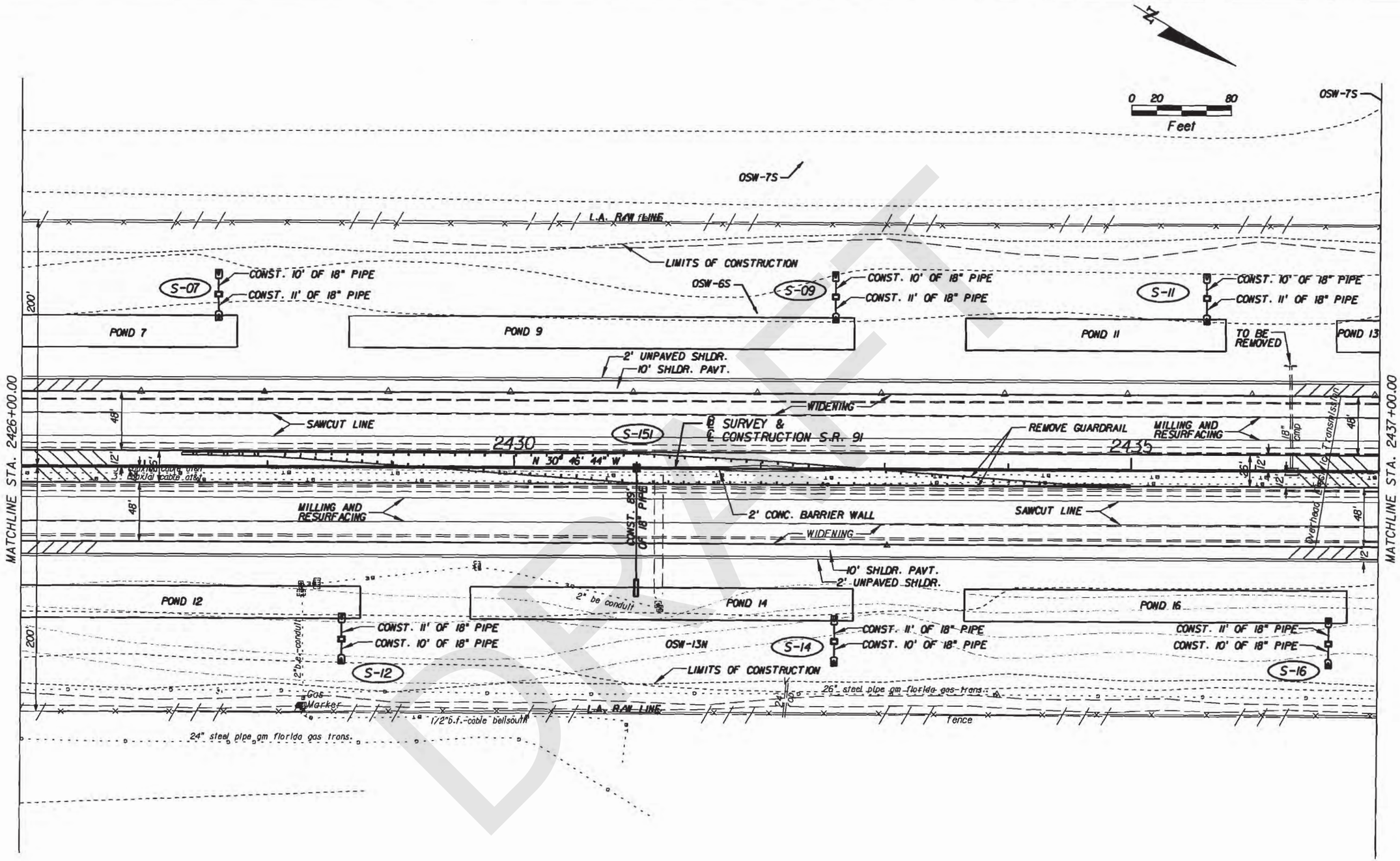

DRAFT

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (9)

SHEET NO. 37

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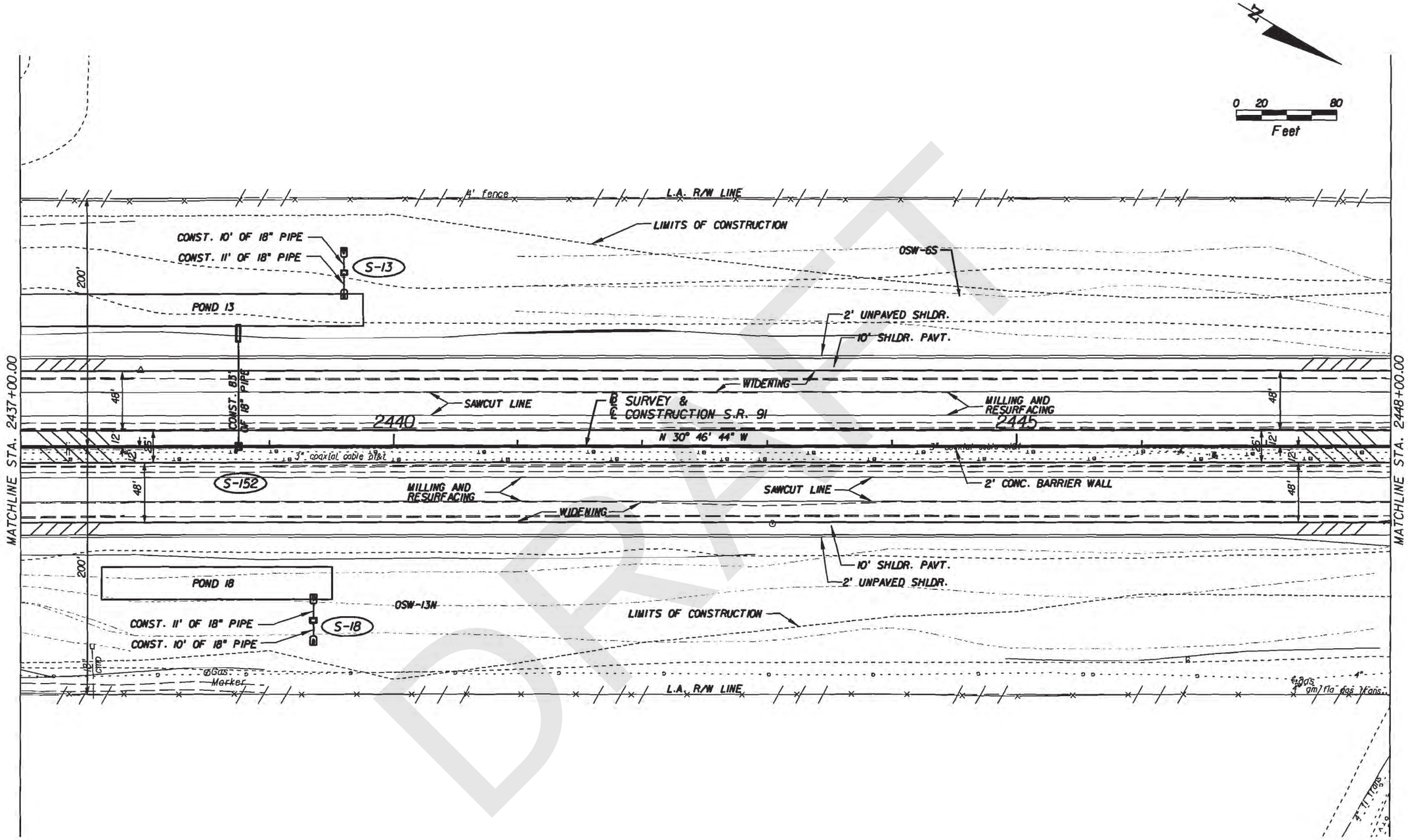

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (10)

SHEET NO. 38

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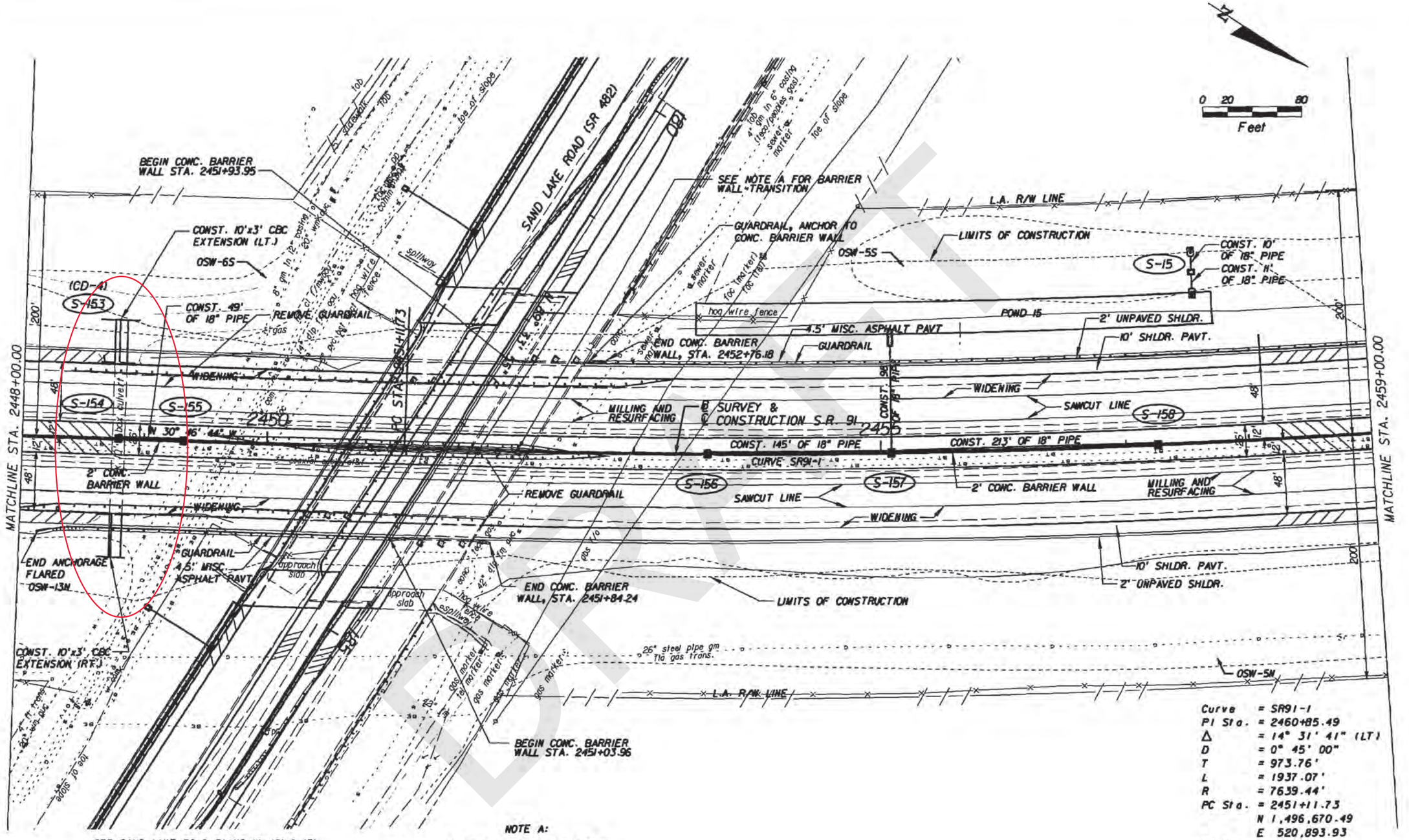

SEE SAND LAKE ROAD PLANS (1), (2) & (3) FOR SAND LAKE ROAD DESIGN DETAILS

NOTE A:

BEGIN TRANS STA. 2450+33.28
END TRANS. STA 2450+58.75

BEGIN TRANS. STA. 2452+05.99
END TRANS. STA 2452+40.97

Curve	= SR91-1
PI Sta.	= 2460+85.49
Δ	= 14° 31' 41" (LT)
D	= 0° 45' 00"
T	= 973.76'
L	= 1937.07'
R	= 7639.44'
PC Sta.	= 2451+11.73
	N 1,496,670.49
	E 520,893.93
PT Sta.	= 2470+48.81
	N 1,498,191.95
	E 519,703.40
α	= MATCH EXISTING (0.028)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
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Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

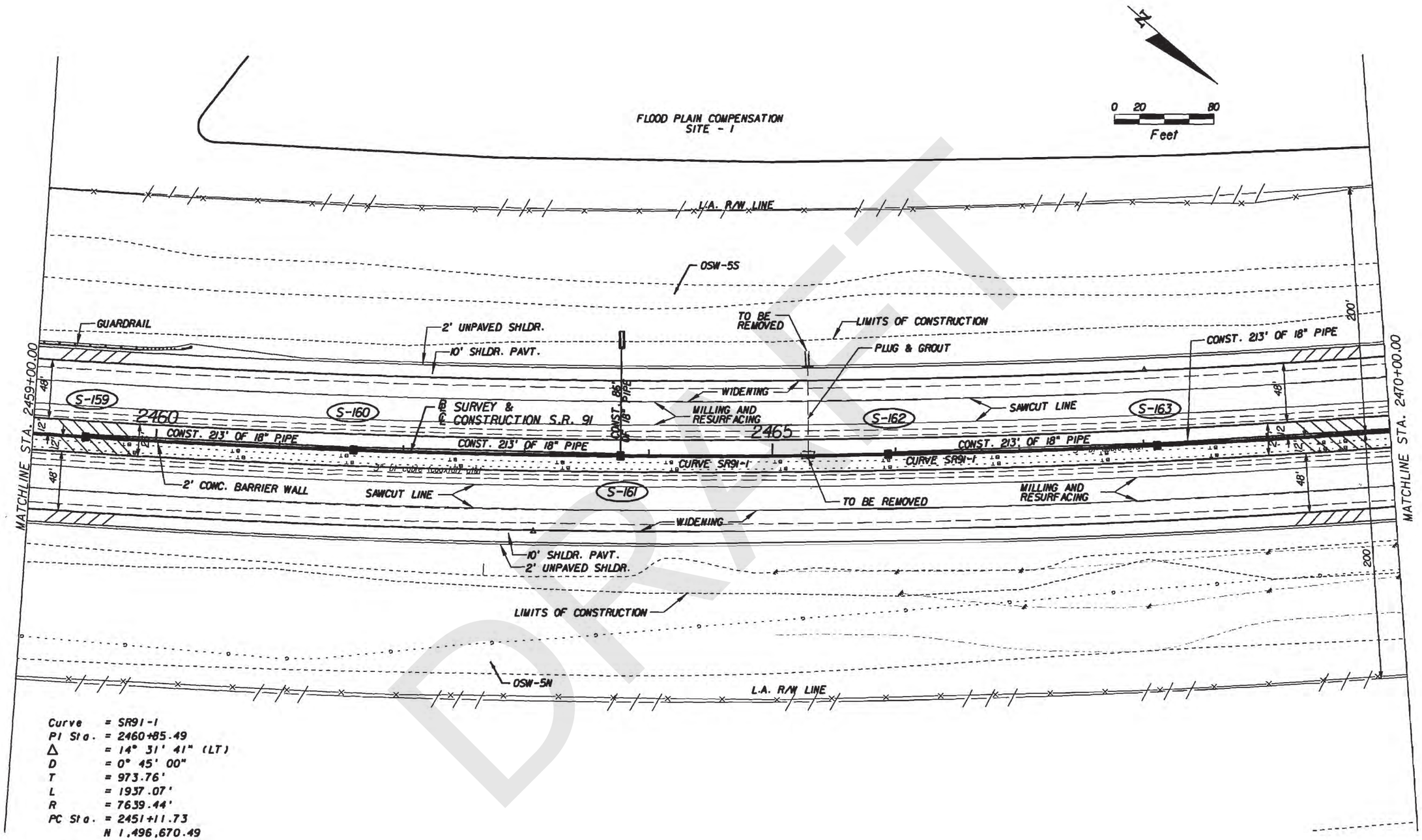
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (11)

SHEET NO. 39

12/19/03 09:54:41 AM E:\406091\320\roadway\plan11.dgn



Curve = SR91-1
PI Sta. = 2460+85.49
Δ = 14° 31' 41" (LT)
D = 0° 45' 00"
T = 973.76'
L = 1937.07'
R = 7639.44'
PC Sta. = 2451+11.73
N 1,496,670.49
E 520,893.93
PT Sta. = 2470+48.81
N 1,498,191.95
E 519,703.40
e = MATCH EXISTING (0.028)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (12)

SHEET NO. 40

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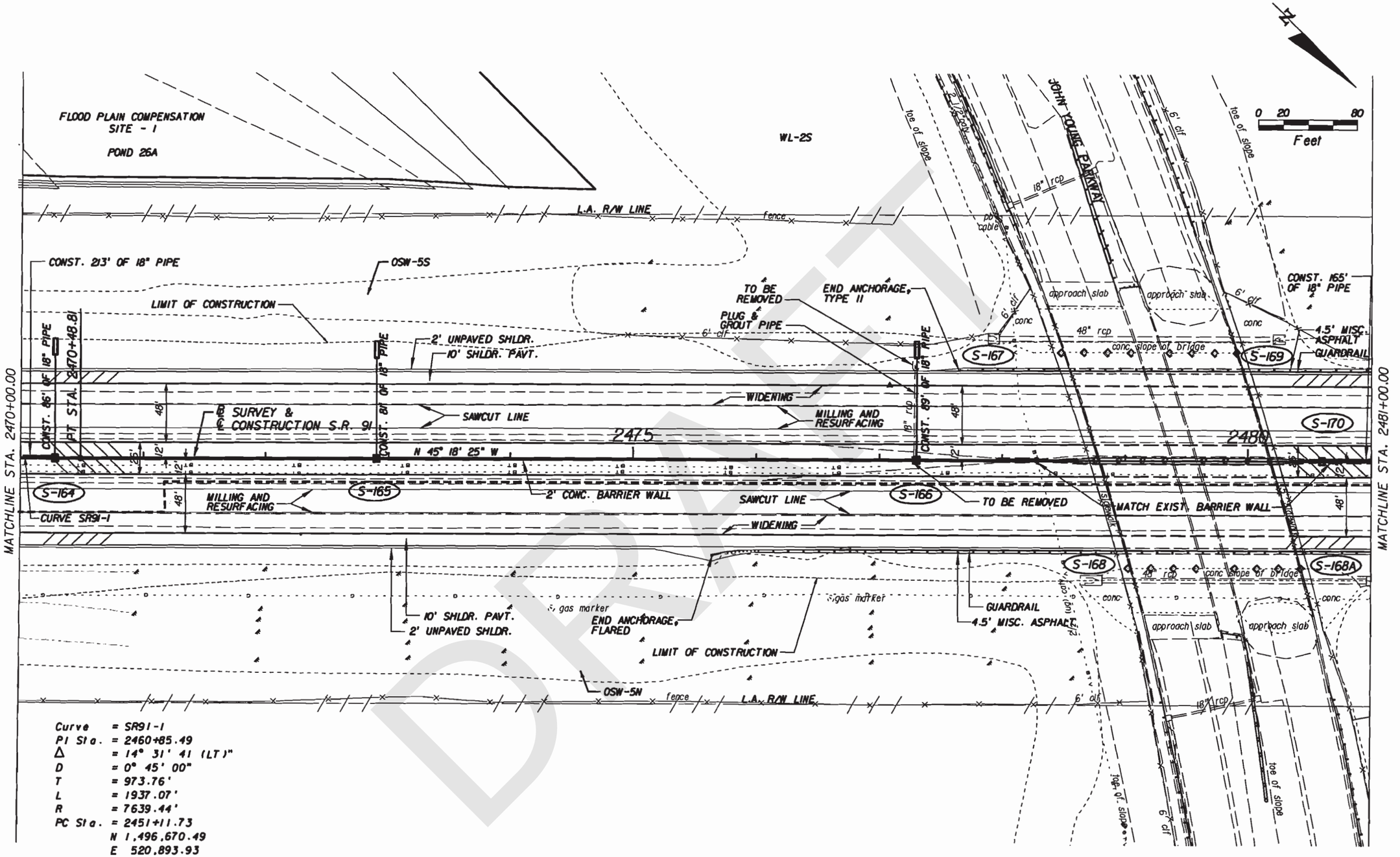

Curve = SR91-1
PI Sta. = 2460+85.49
Δ = 14° 31' 41 (LT)"
D = 0° 45' 00"
T = 973.76'
L = 1937.07'
R = 7639.44'
PC Sta. = 2451+11.73
N 1,496,670.49
E 520,893.93
PT Sta. = 2470+48.81
N 1,498,191.95
E 519,703.40
e = MATCH EXISTING (0.028)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
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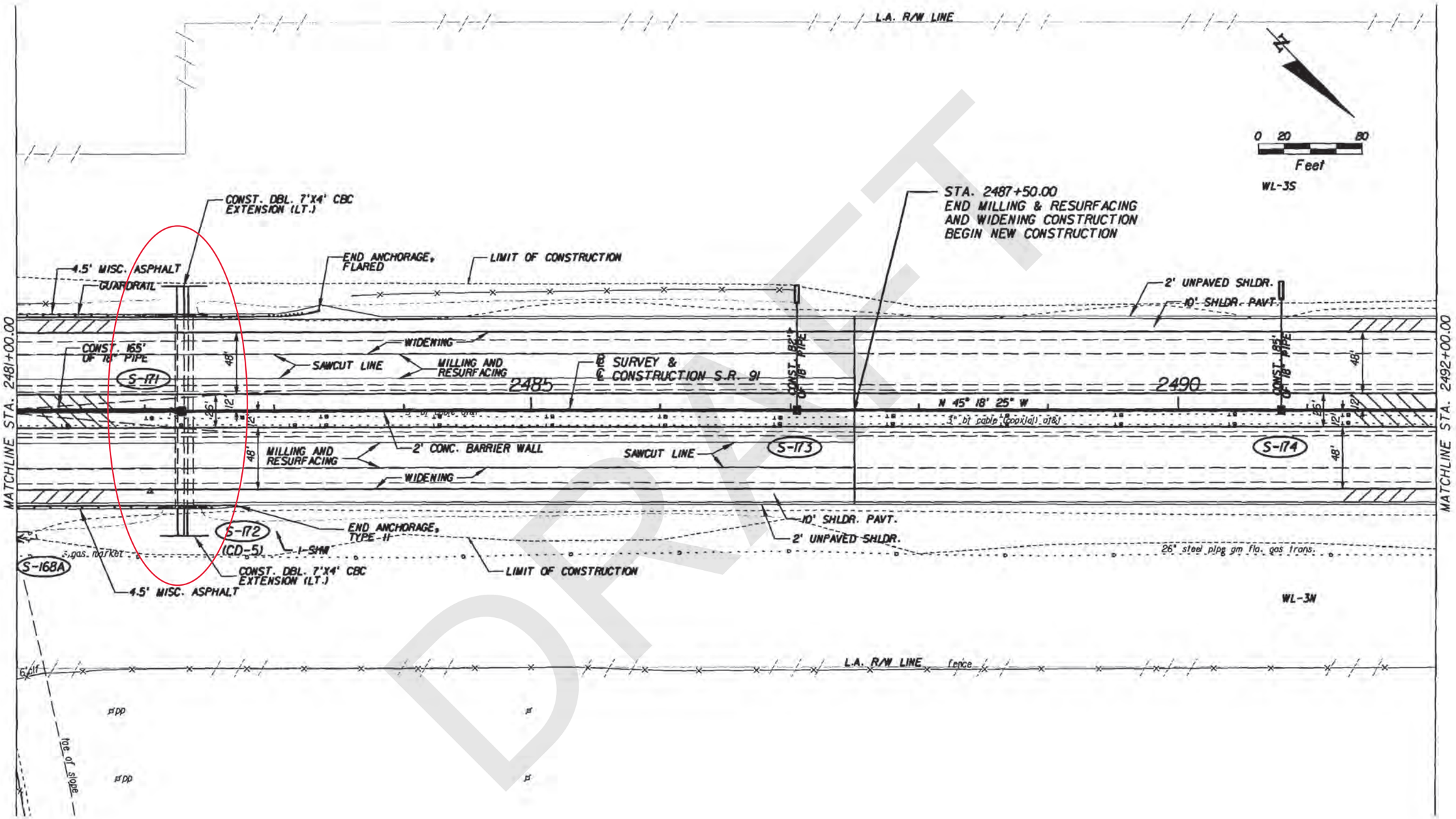
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (13)

SHEET NO. 41

12/19/03 09:55:29 AM E:\406091\3201\roadway\planrd13.dgn



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (14)

SHEET NO. 42

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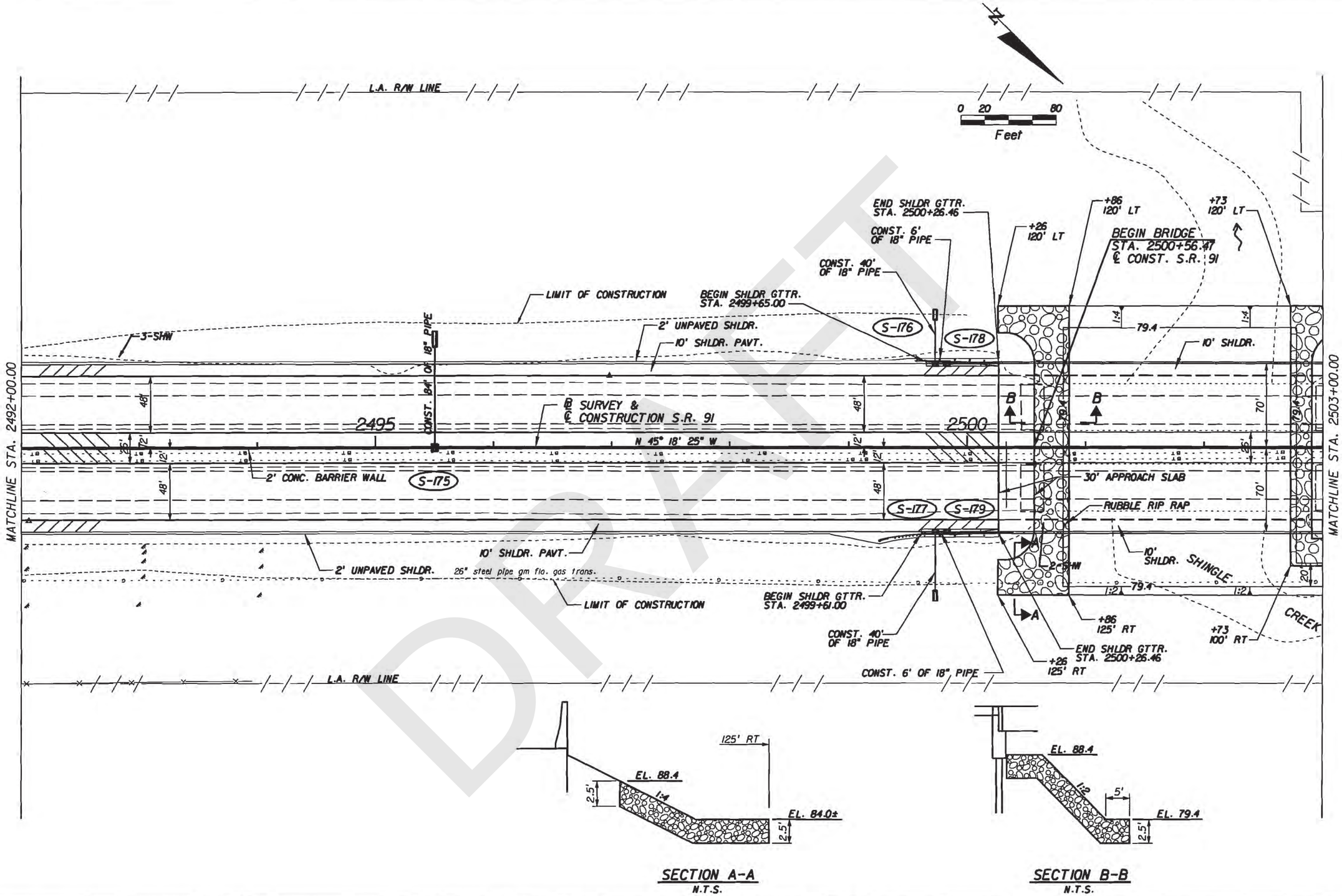

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (15)

SHEET NO. 43

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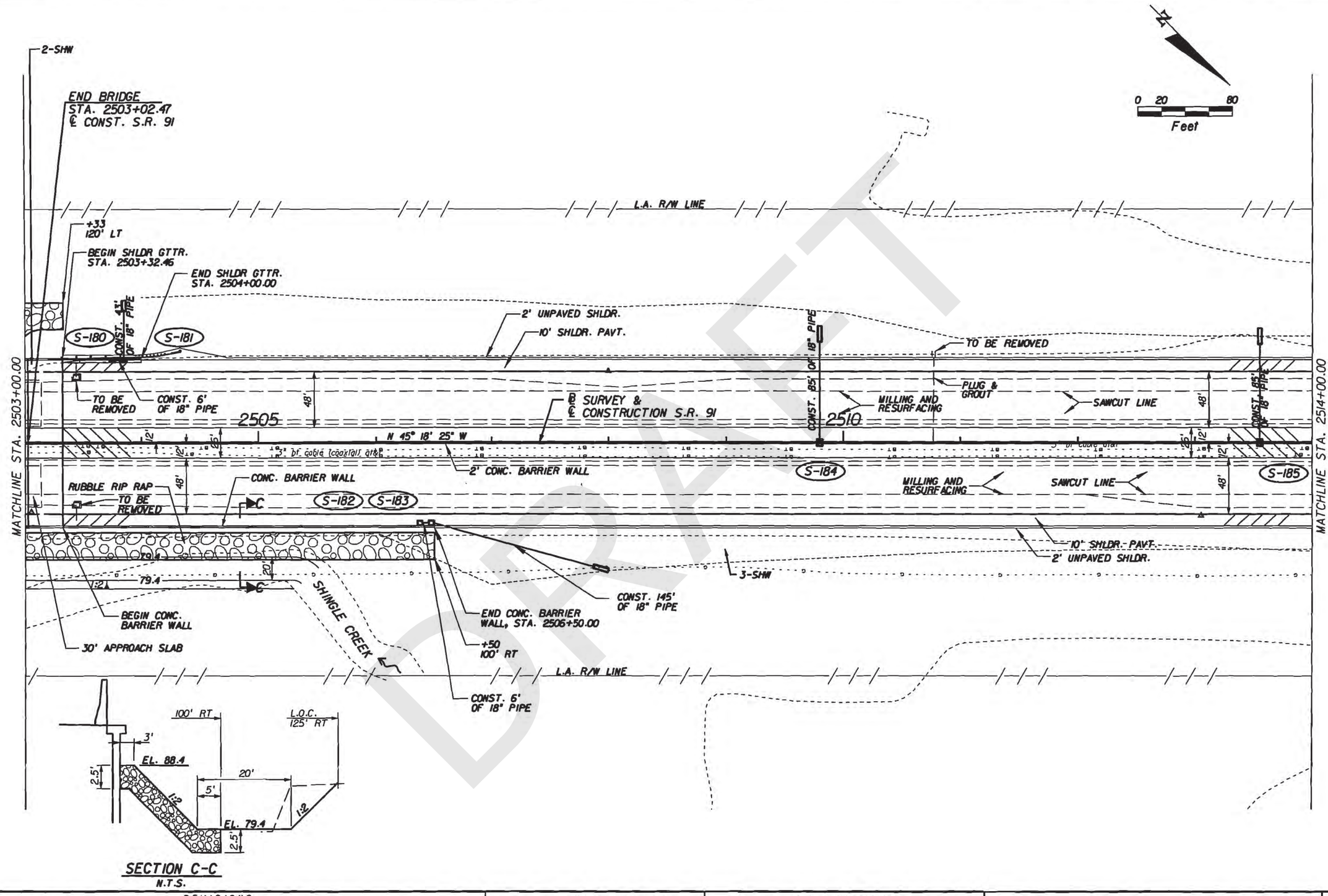

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (16)

SHEET NO. 44

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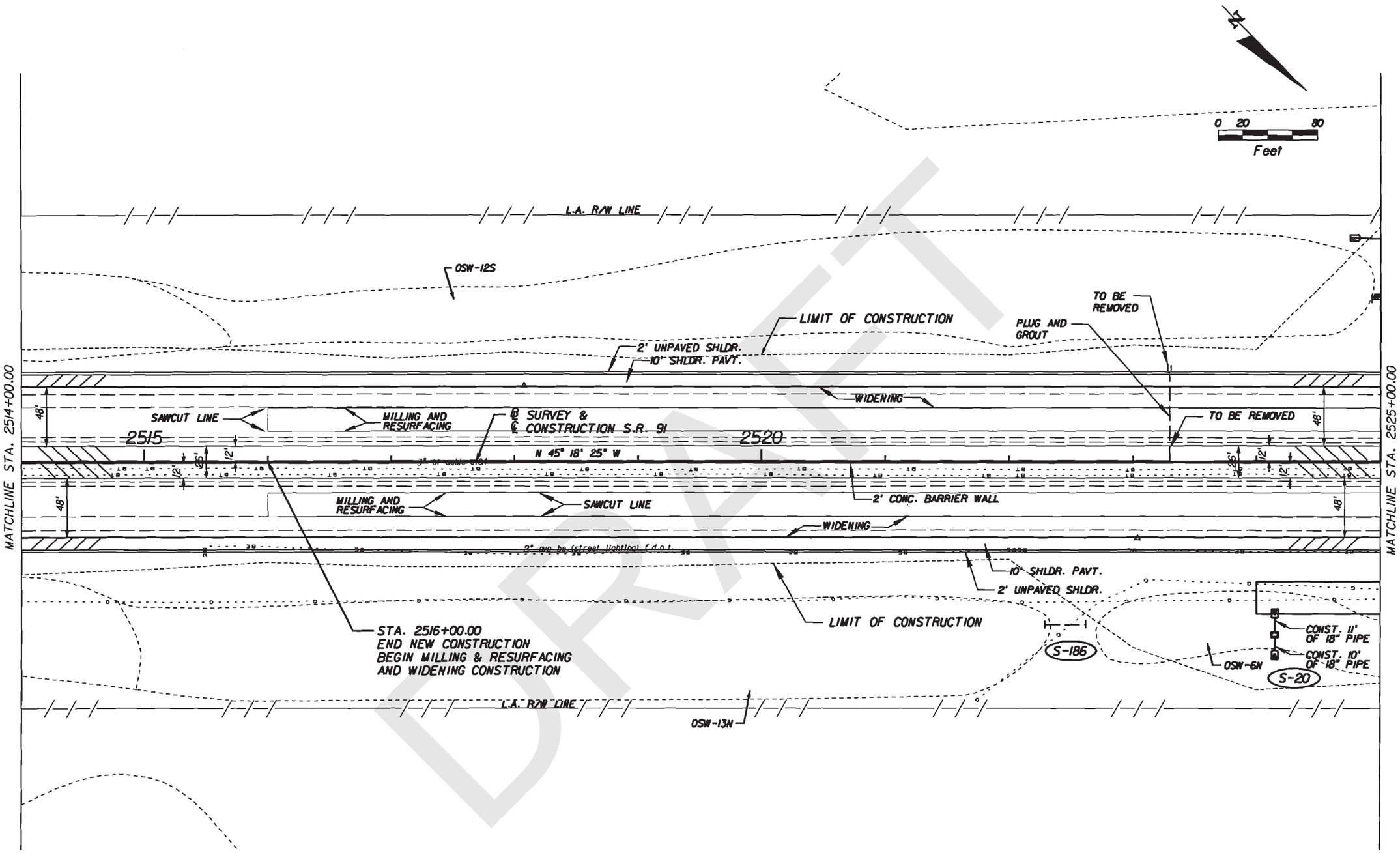

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

PLAN SHEET (17)

SHEET NO. 45

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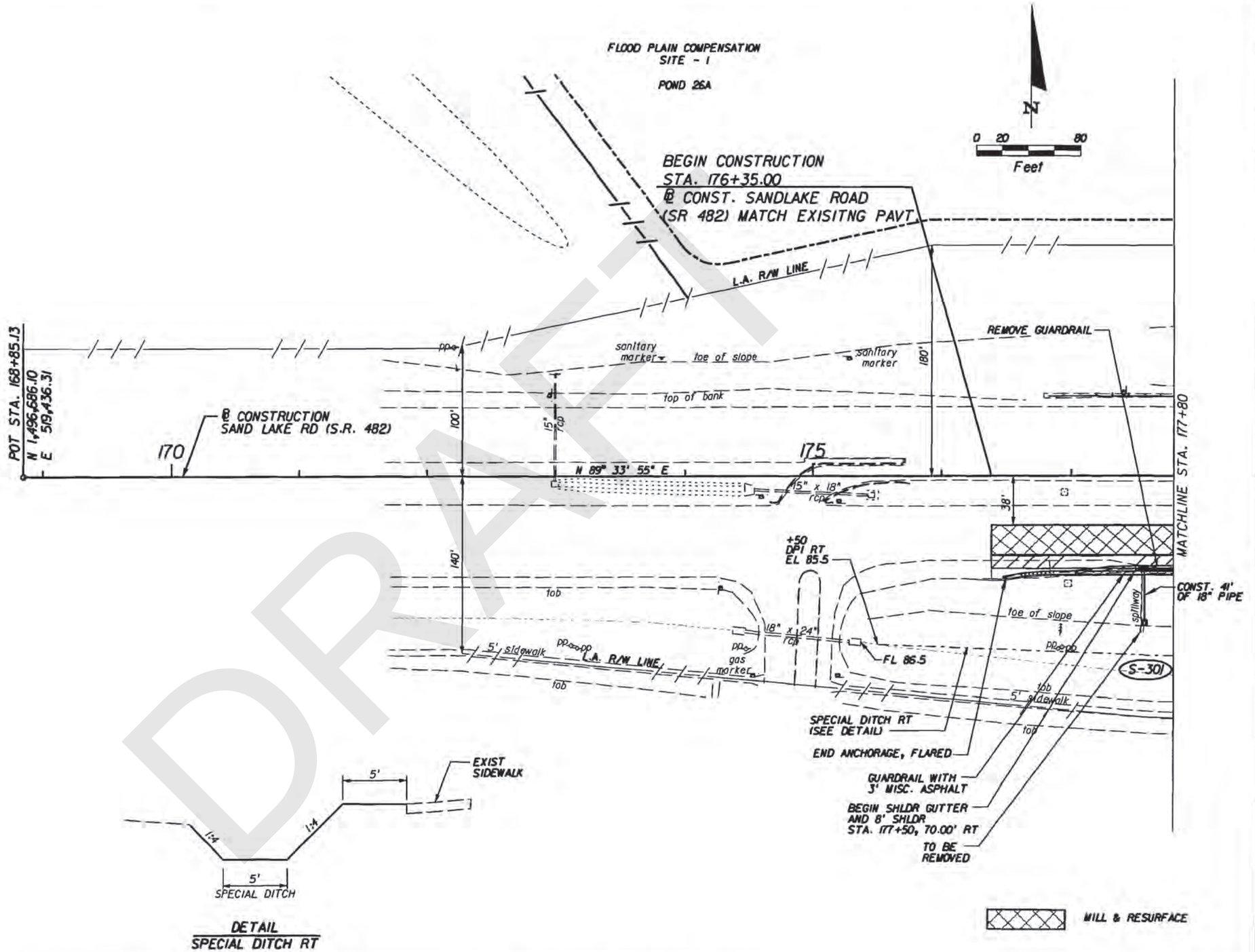


DETAIL
SPECIAL DITCH RT
N.T.S.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

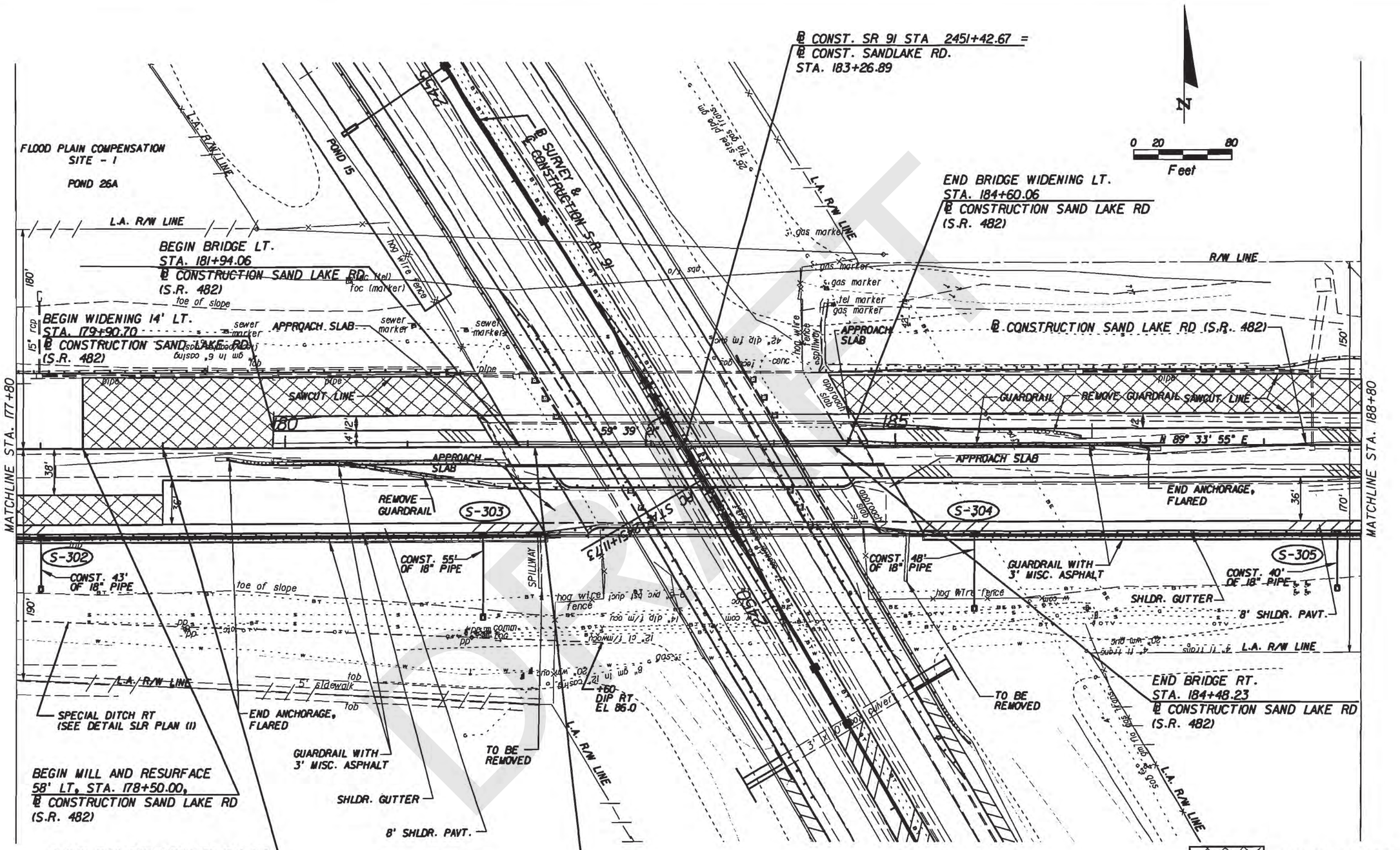
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

SAND LAKE ROAD
PLAN SHEET (1)

SHEET NO. 52

12/19/03 10:03:29 AM E:\406091\3201\roadway\planrd24.dgn



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

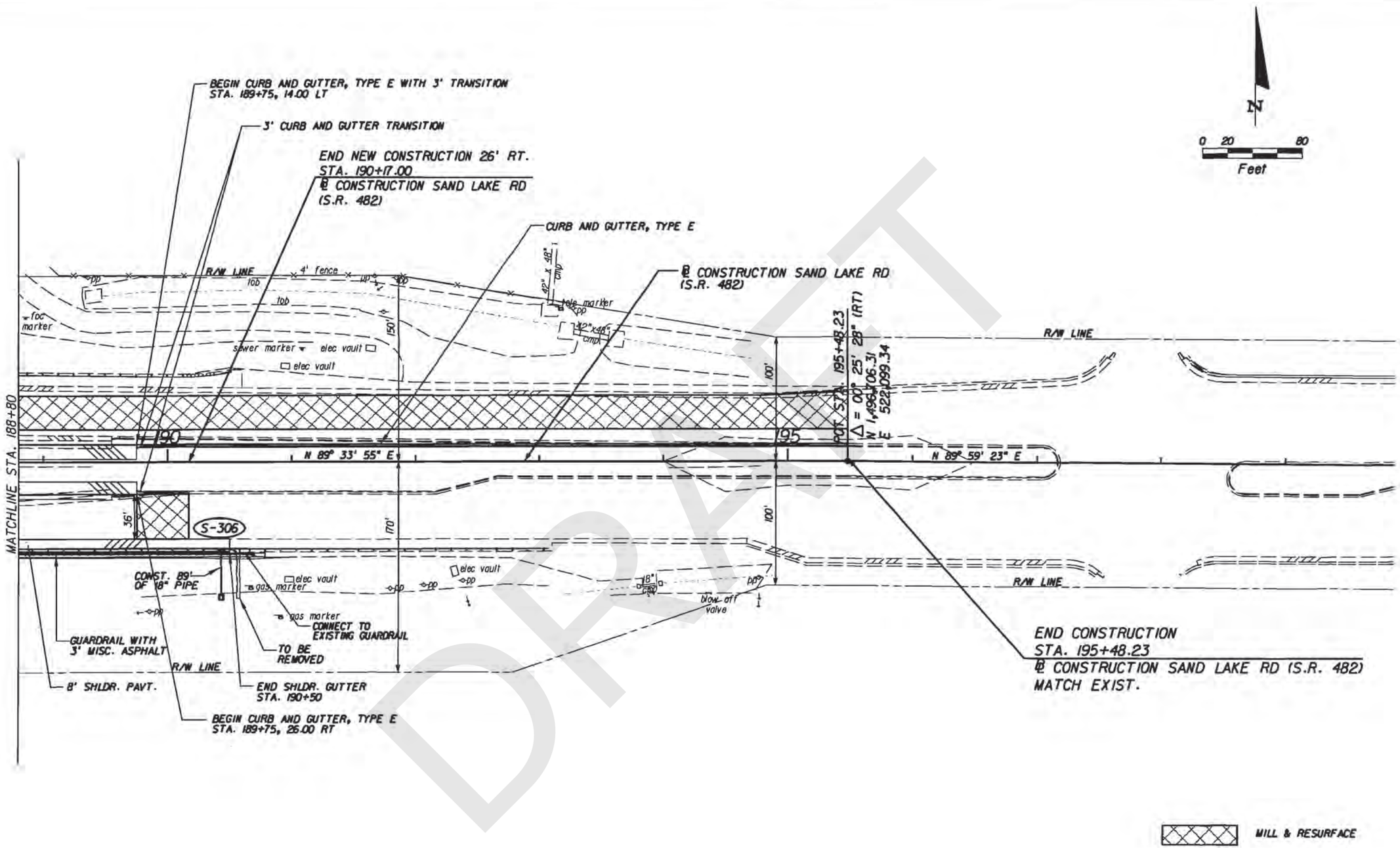
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

SAND LAKE ROAD
PLAN SHEET (2)

SHEET NO. 53

12/19/03 10:04:37 AM E:\406091\320\roadway\planrd25.dgn



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
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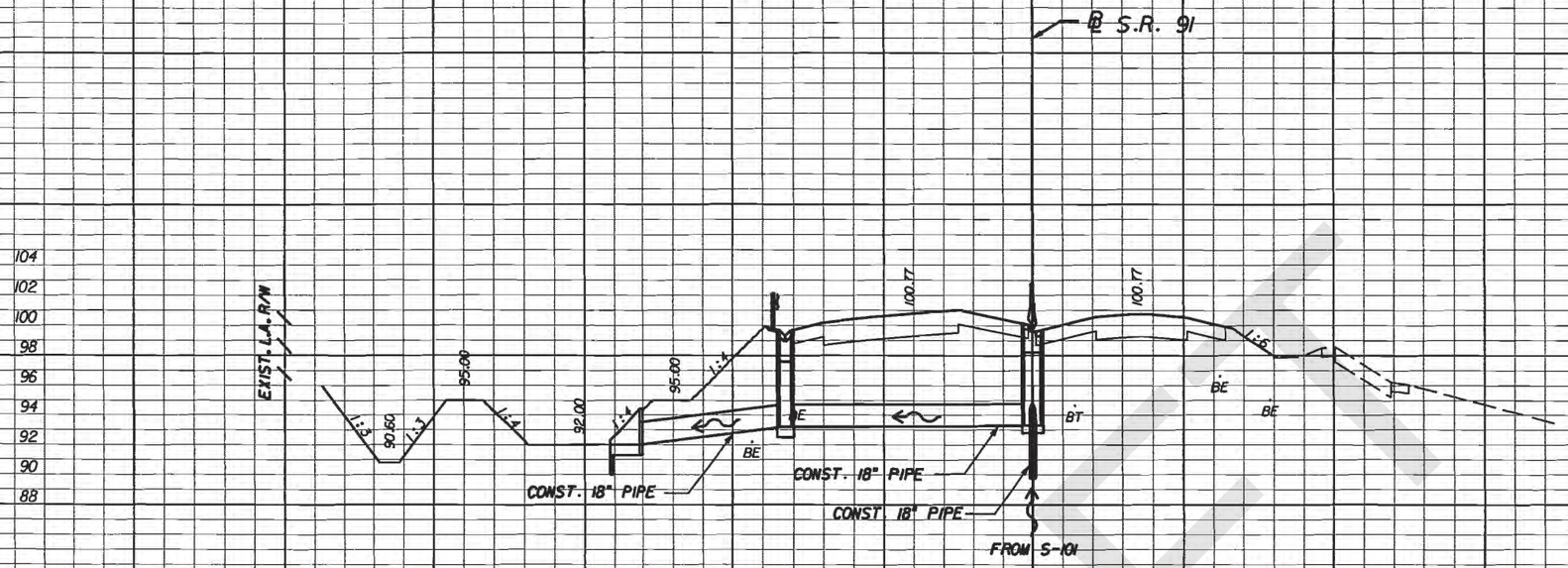
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

SAND LAKE ROAD
PLAN SHEET (3)

SHEET NO. 54

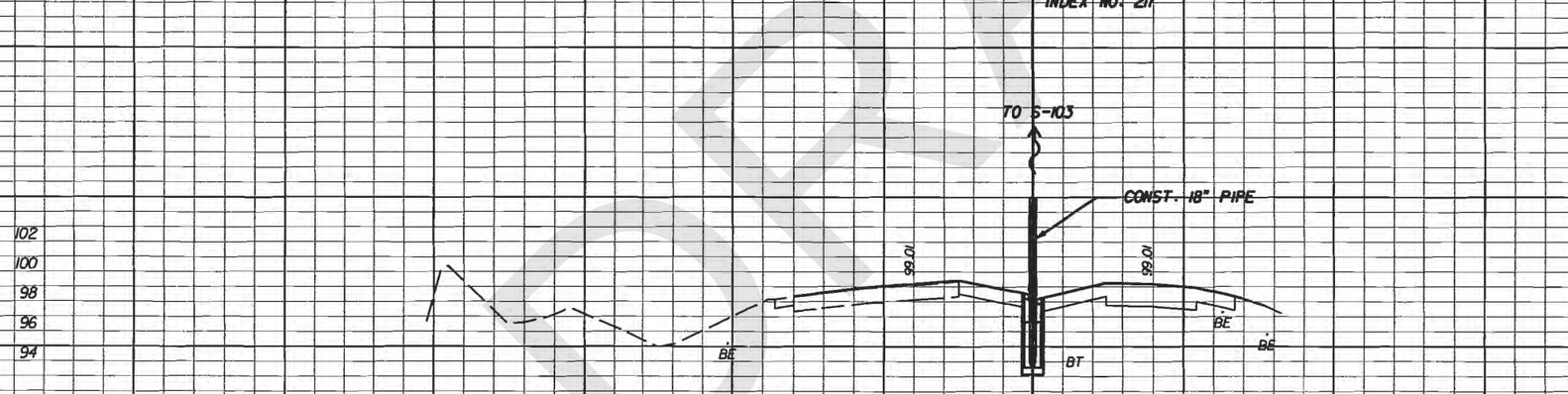
12/19/03 10:05:03 AM E:\406091\320\roadway\plansrd26.dgn



S-102
STA. 2345+00.00 (113.24' LT. TO TOE)
CONST. U-TYPE ENDWALL (1:4)
F.L. 92.0
INDEX NO. 261

S-102
STA. 2345+00.00 (66.13 LT.)
CONST. INLET TYPE S
GRATE EL. 99.32
F.L. 93.2 LT.
F.L. 93.2 RT.
INDEX NO. 220

S-103
STA. 2345+00.00 (0.00' BL.)
CONST. MEDIAN BARRIER WALL INLET TYPE 3
T.G.P. LT. 100.06
T.G.P. RT. 99.73
F.L. 93.3 BK.
F.L. 93.3 LT.
INDEX NO. 217



S-101
STA. 2343+00.00 (0.00' BL.)
CONST. MEDIAN BARRIER WALL INLET TYPE 4
T.G.P. LT. 98.30
T.G.P. RT. 98.16
F.L. 93.6 AH.
INDEX NO. 217

S-01 THRU S-33
SEE POND CONTROL DETAILS

Scale: Horiz. 1" = 40'
Vert. 1" = 10'

240 200 160 120 80 40 0 40 80 120 160 200

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

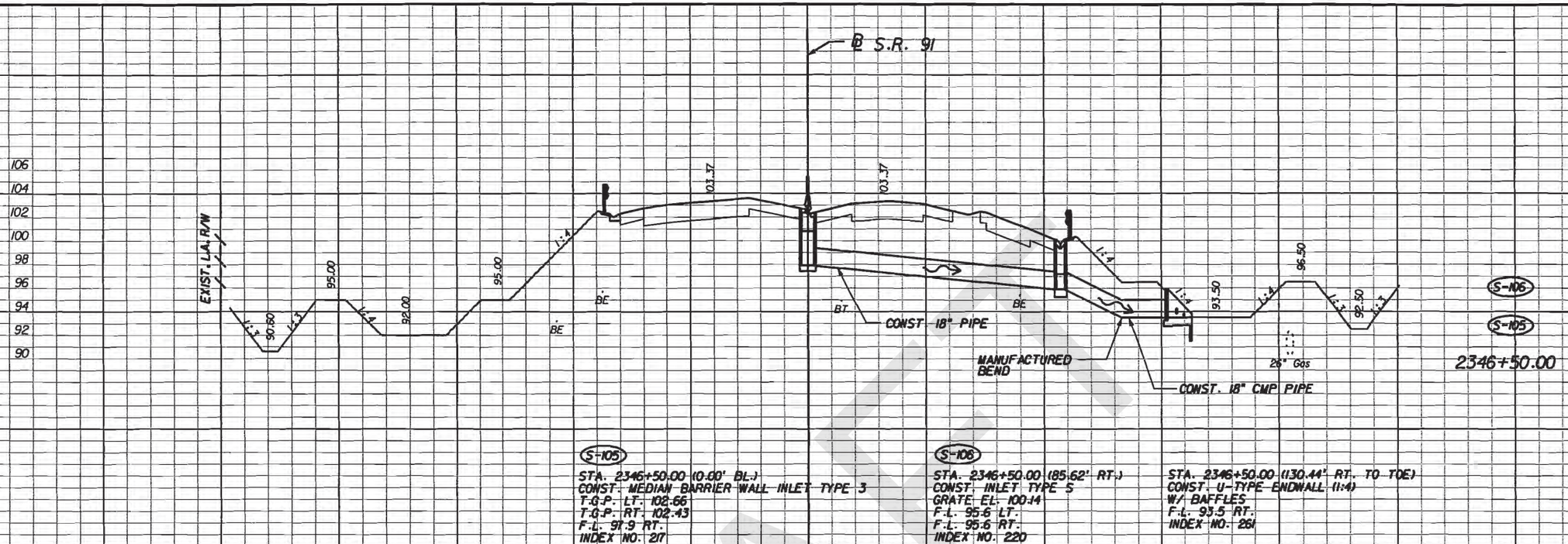
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 110

12/19/2003 08:45:17 AM s:\406091\320\roadway\drstrd02.plg



Scale: Horiz. 1" = 40'
Vert. 1" = 10'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

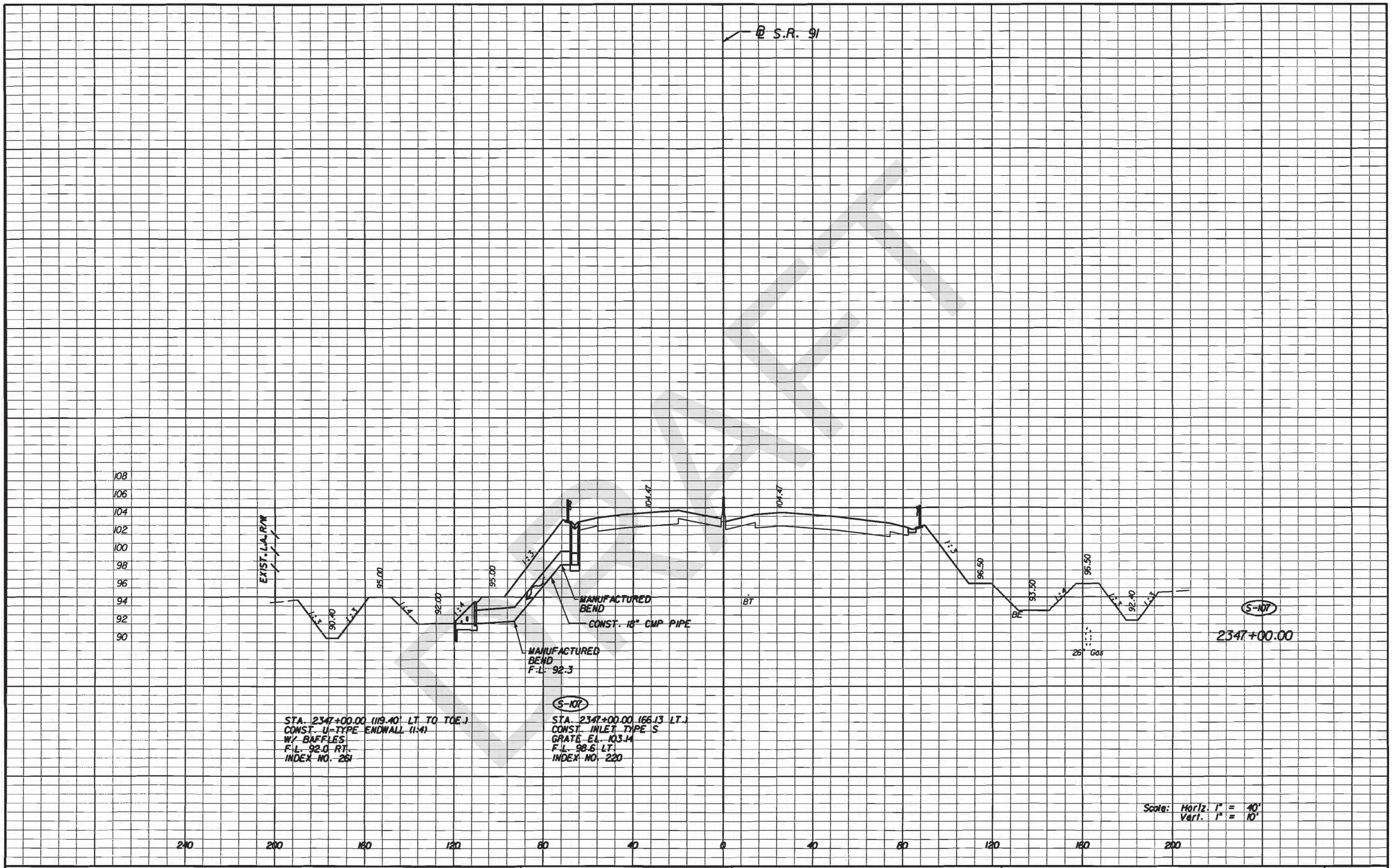
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 111

12/19/2003 08:45:39 AM e:\406091\320\roadway\drstrd02.plg



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

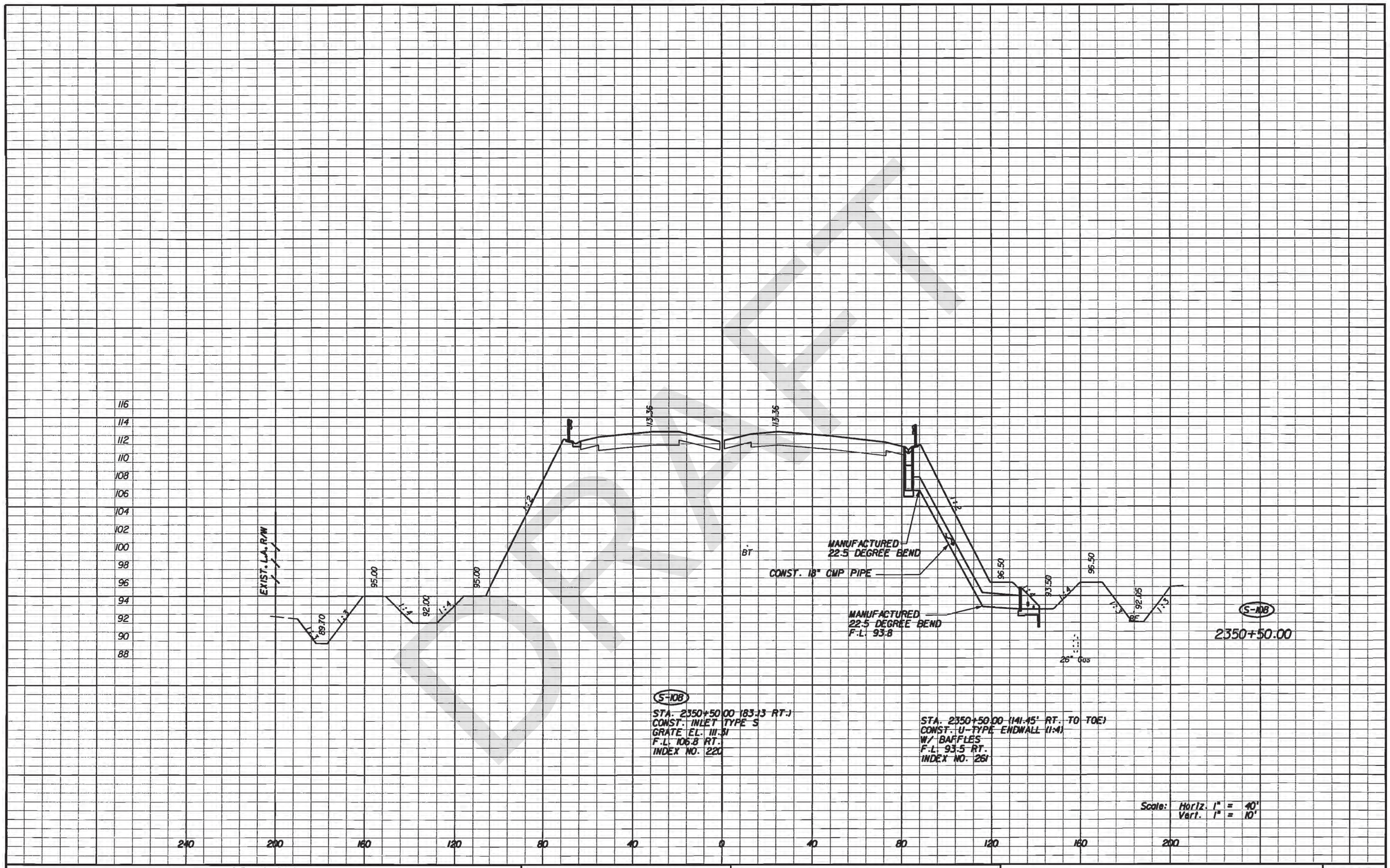
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 112

12/19/2003 08:45:55 AM e:\406091\320\roadway\drstrd02.plg



Scale: Horiz. 1" = 40'
Vert. 1" = 10'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 113

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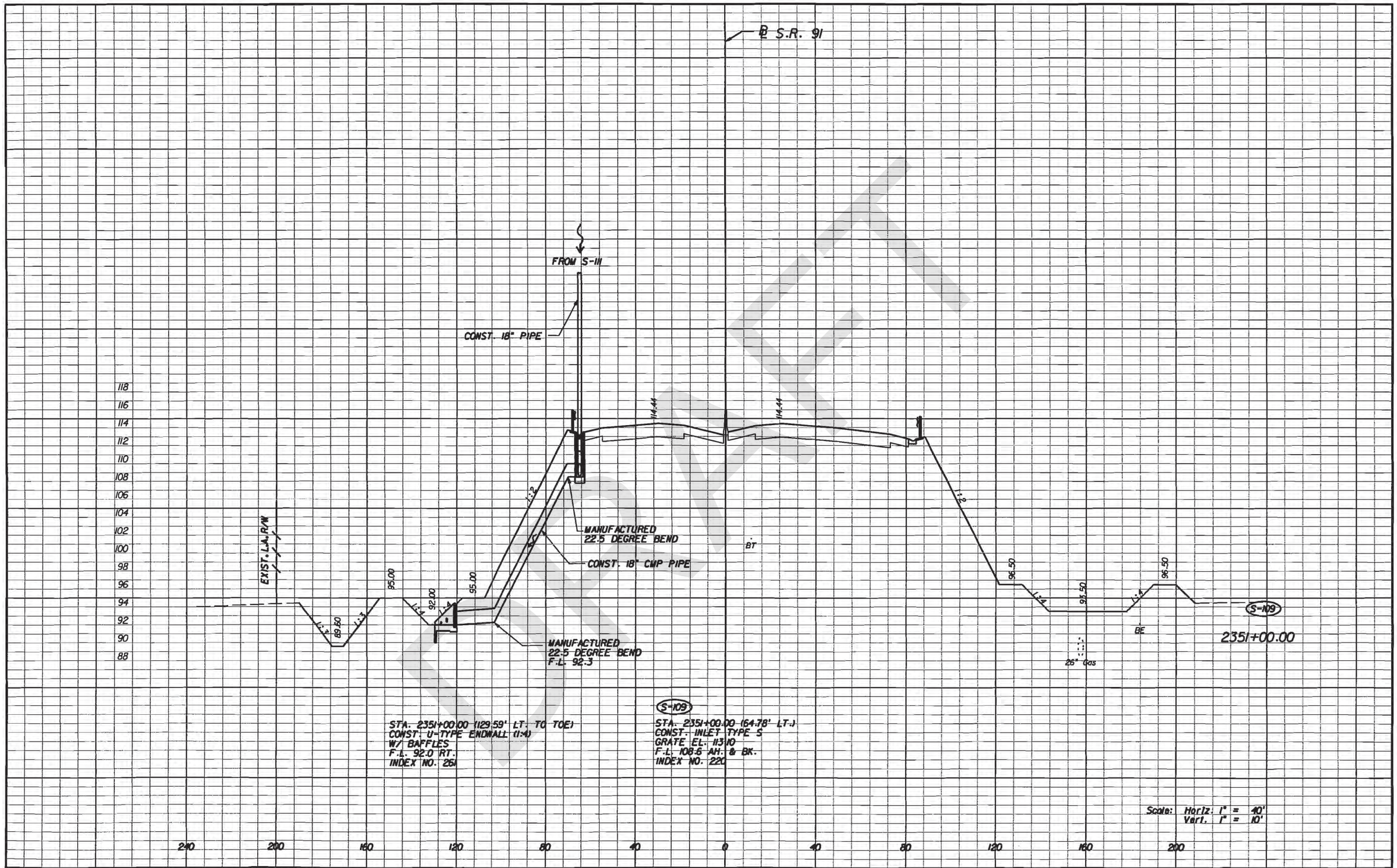

STA. 2351+00.00 (129.59' LT. TO TOE)
CONST. U-TYPE ENDWALL (1:4)
W/ BAFFLES
F.L. 92.0 RT.
INDEX NO. 261

S-109
STA. 2351+00.00 (64.78' LT.)
CONST. INLET TYPE S
GRATE EL. 113.10
F.L. 108.6 AH. & BK.
INDEX NO. 220

Scale: Horiz. 1" = 40'
Vert. 1" = 10'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 114

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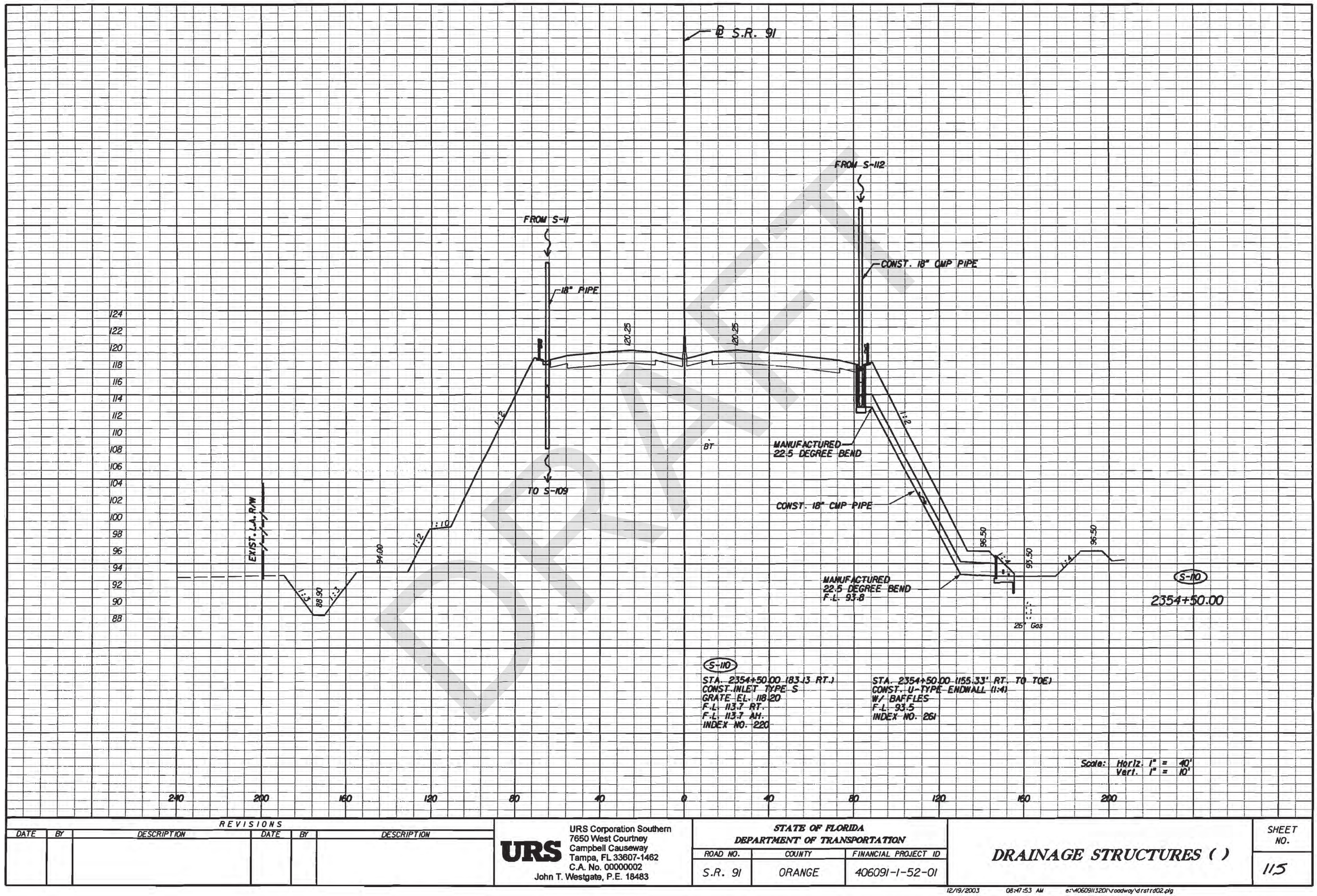

S-110
STA. 2354+50.00 (83.13 RT.)
CONST. INLET TYPE S
GRATE EL. 118.20
F.L. 113.7 RT.
F.L. 113.7 AH.
INDEX NO. 220

STA. 2354+50.00 (155.33' RT. TO TOE)
CONST. U-TYPE ENDWALL (1:4)
W/ BAFFLES
F.L. 93.5
INDEX NO. 261

Scale: Horiz. 1" = 40'
Vert. 1" = 10'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 115

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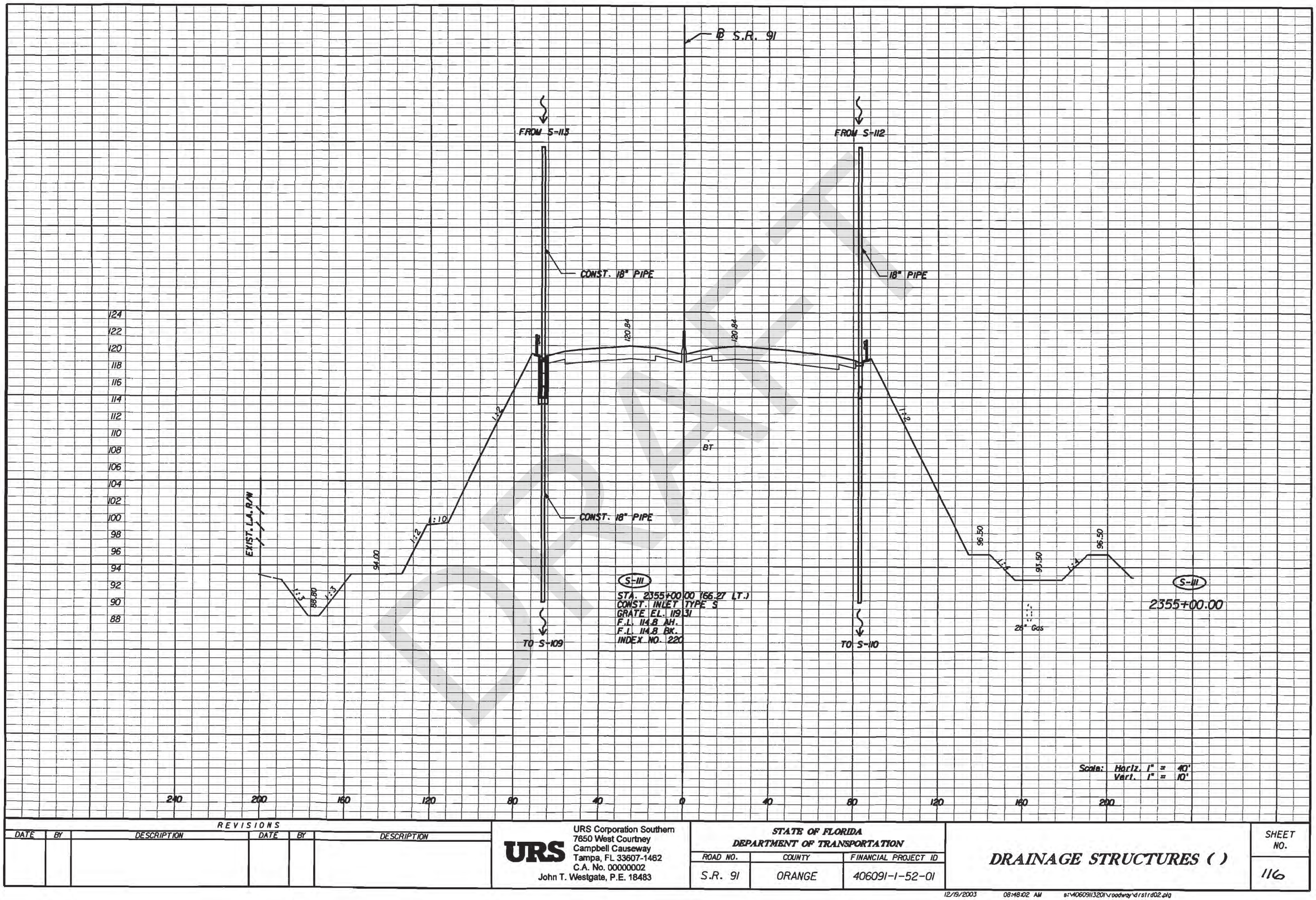

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 116

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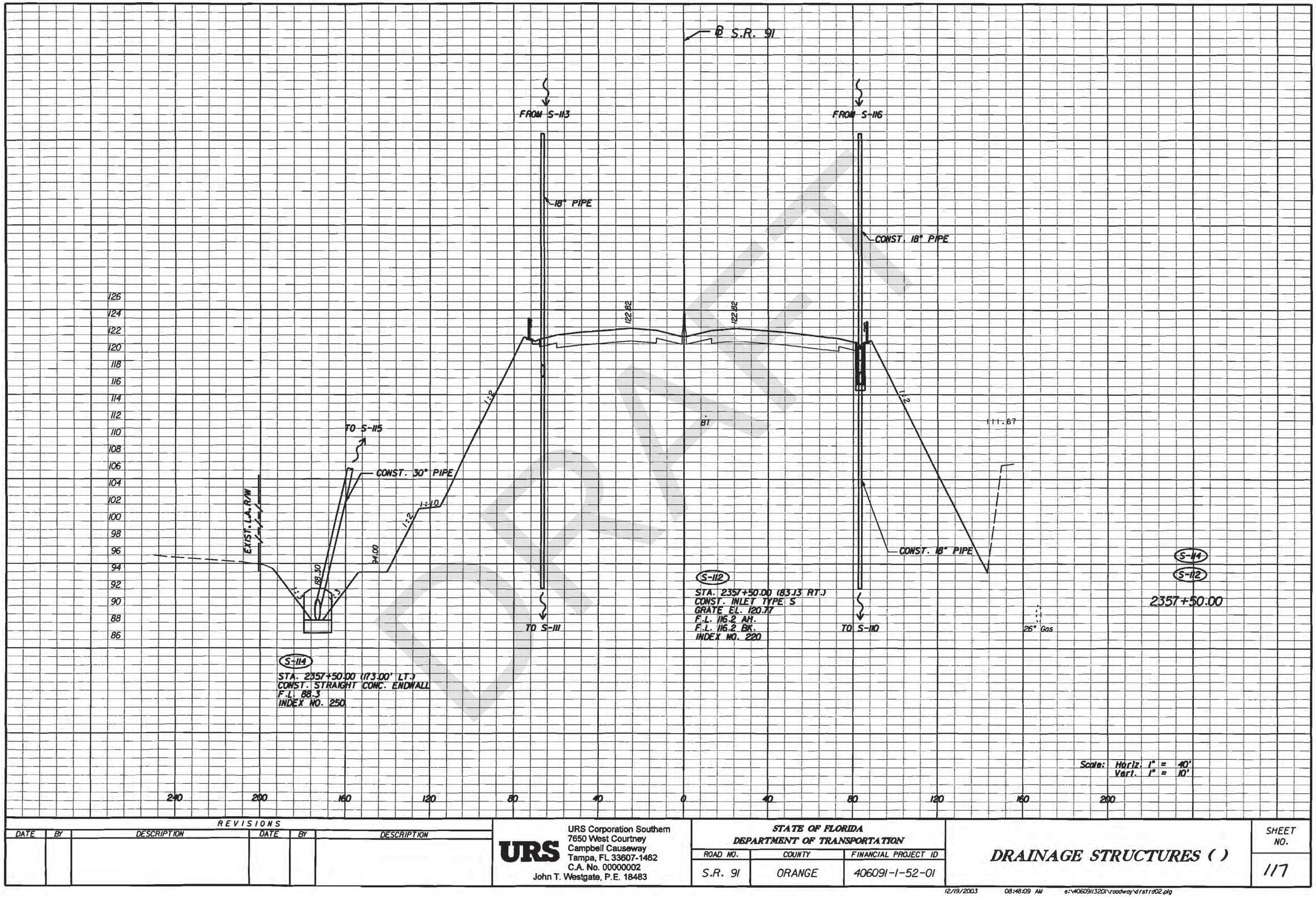

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1482
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 117

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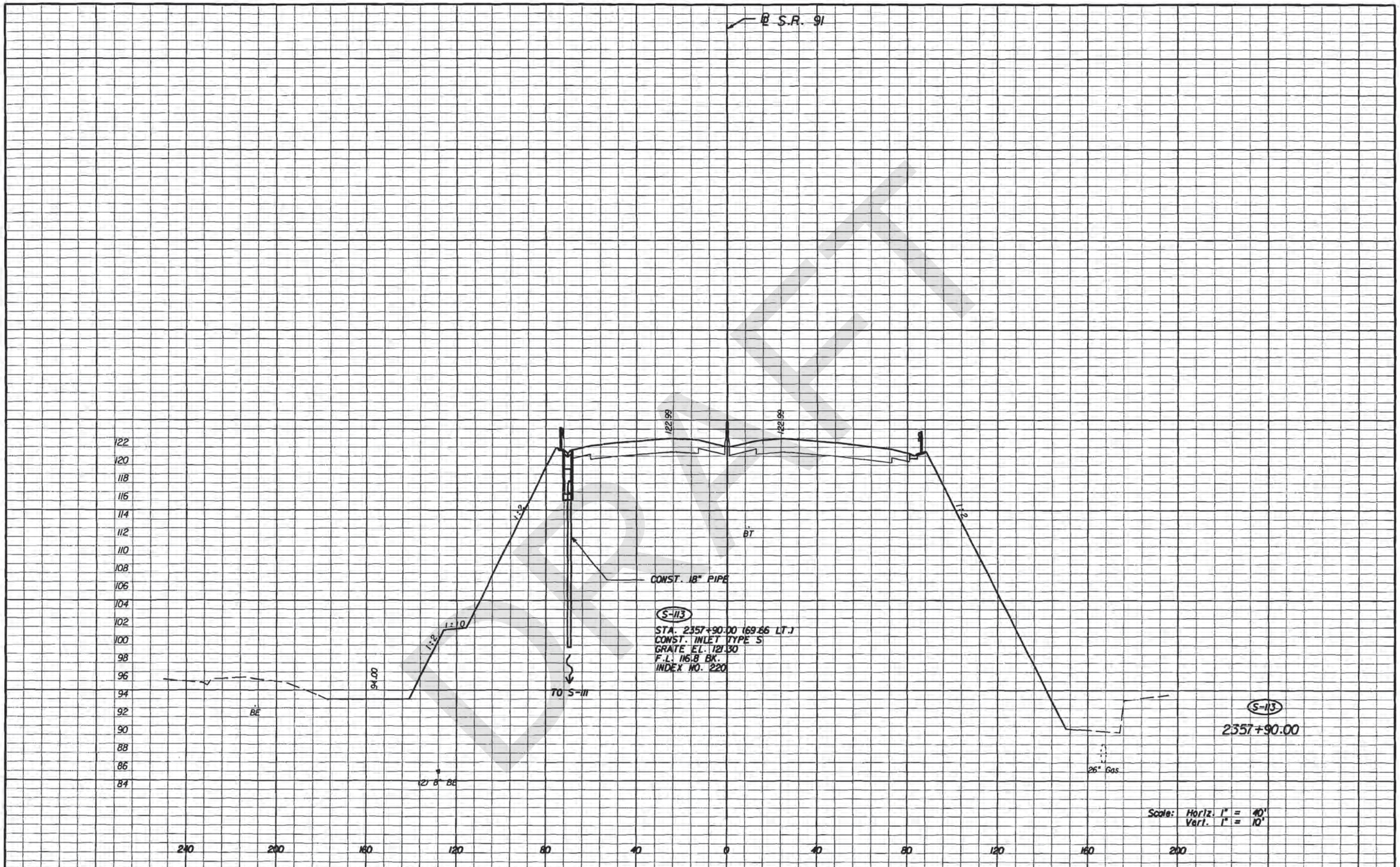

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 118

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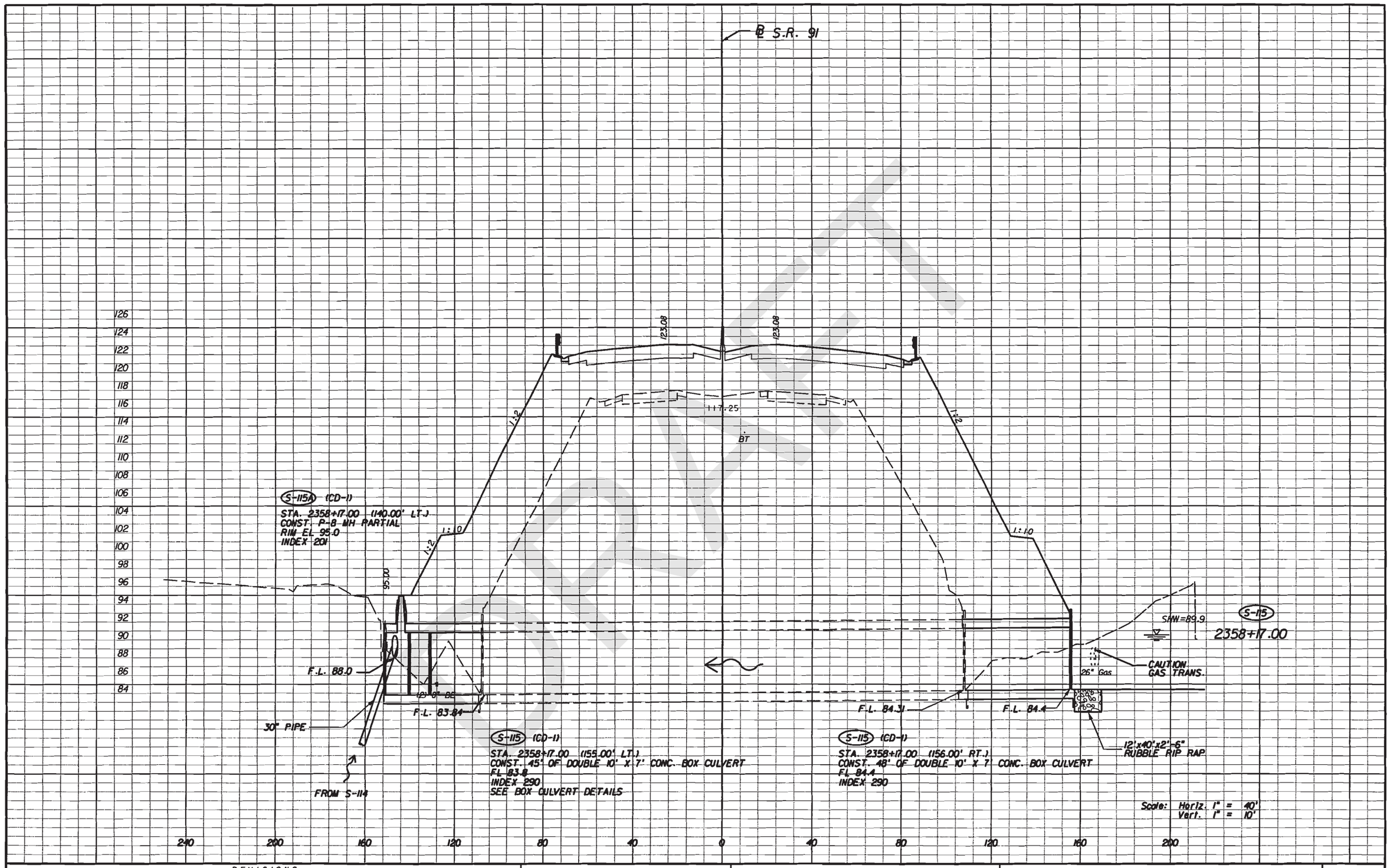

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

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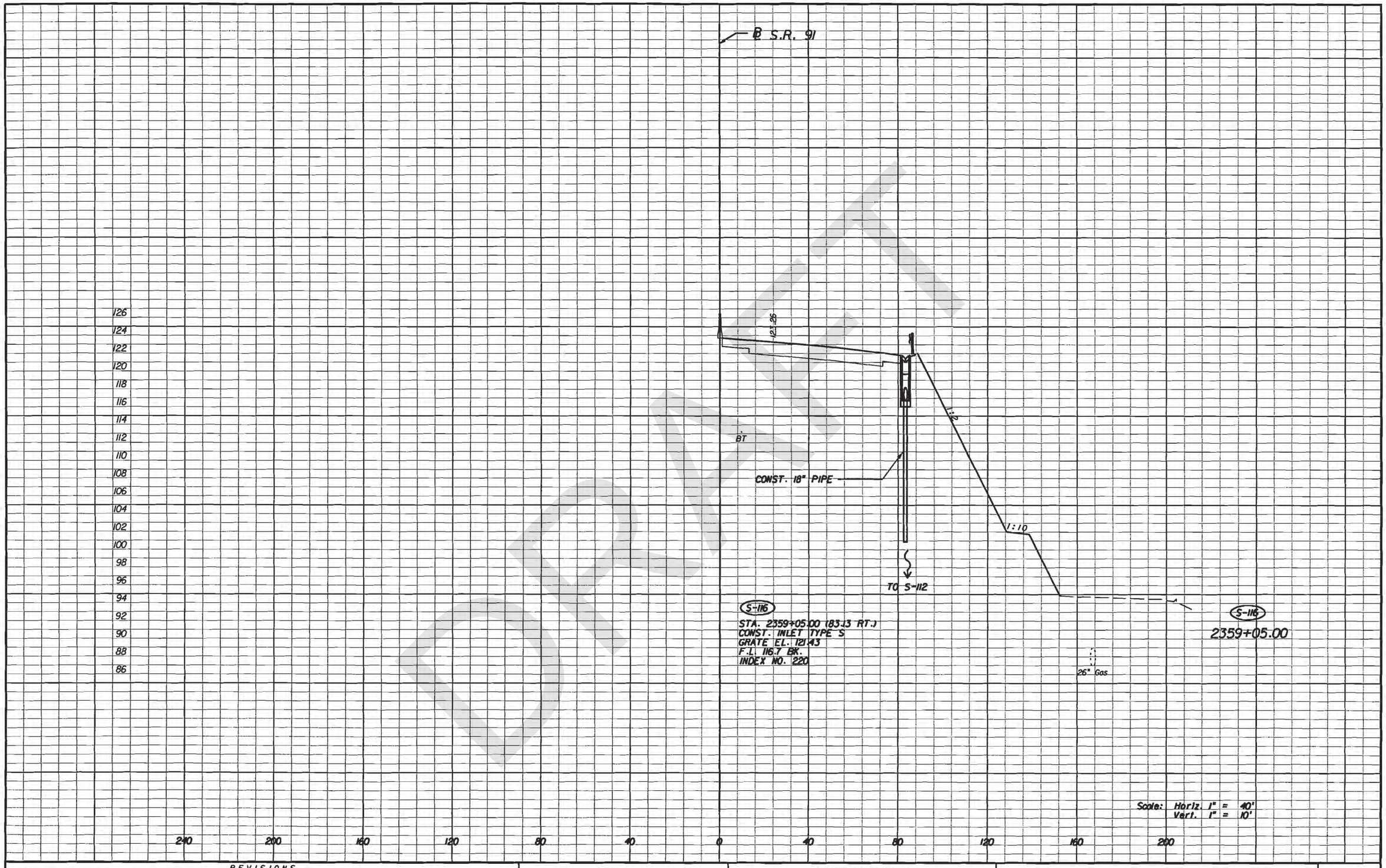

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

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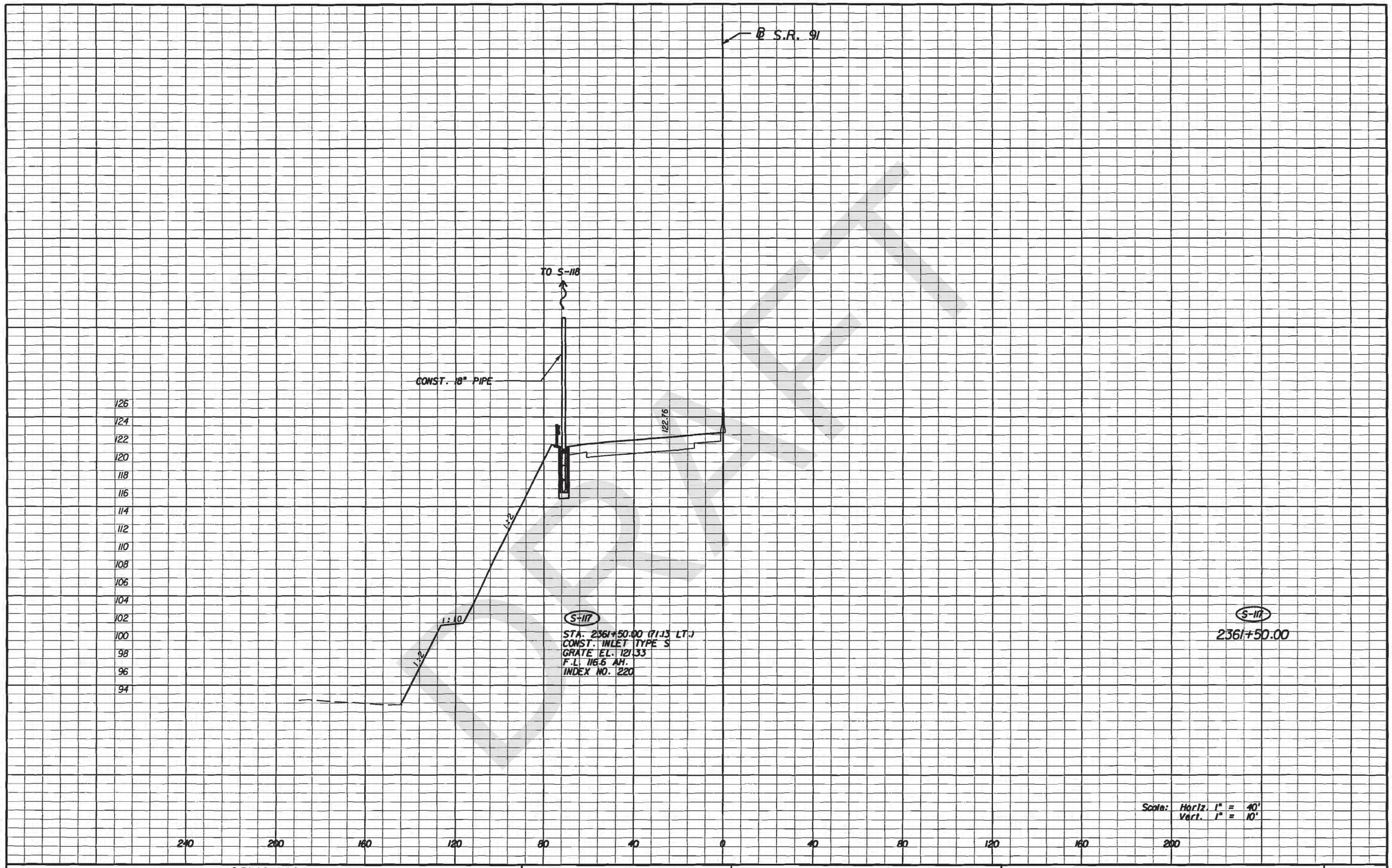

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 121

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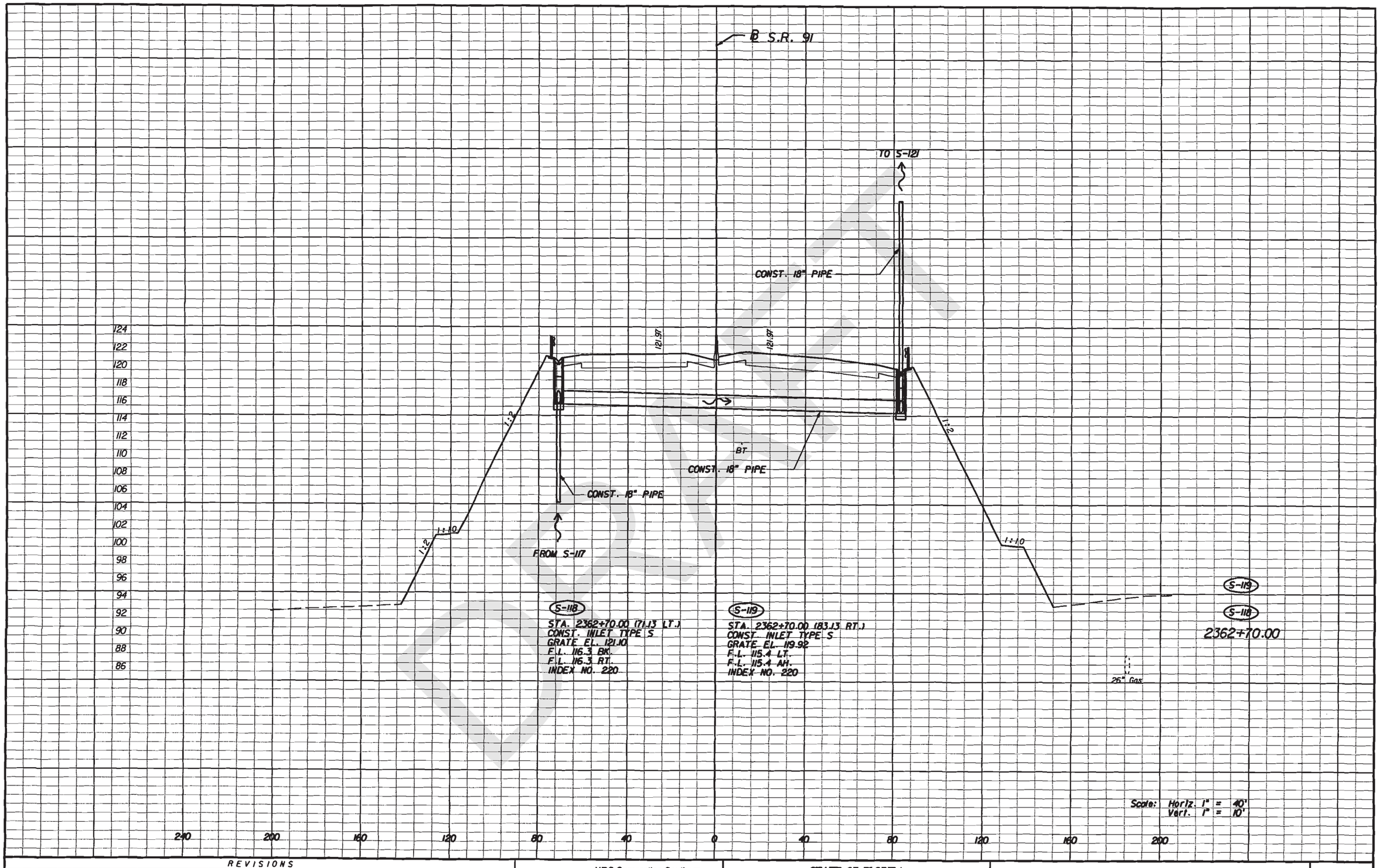

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 122

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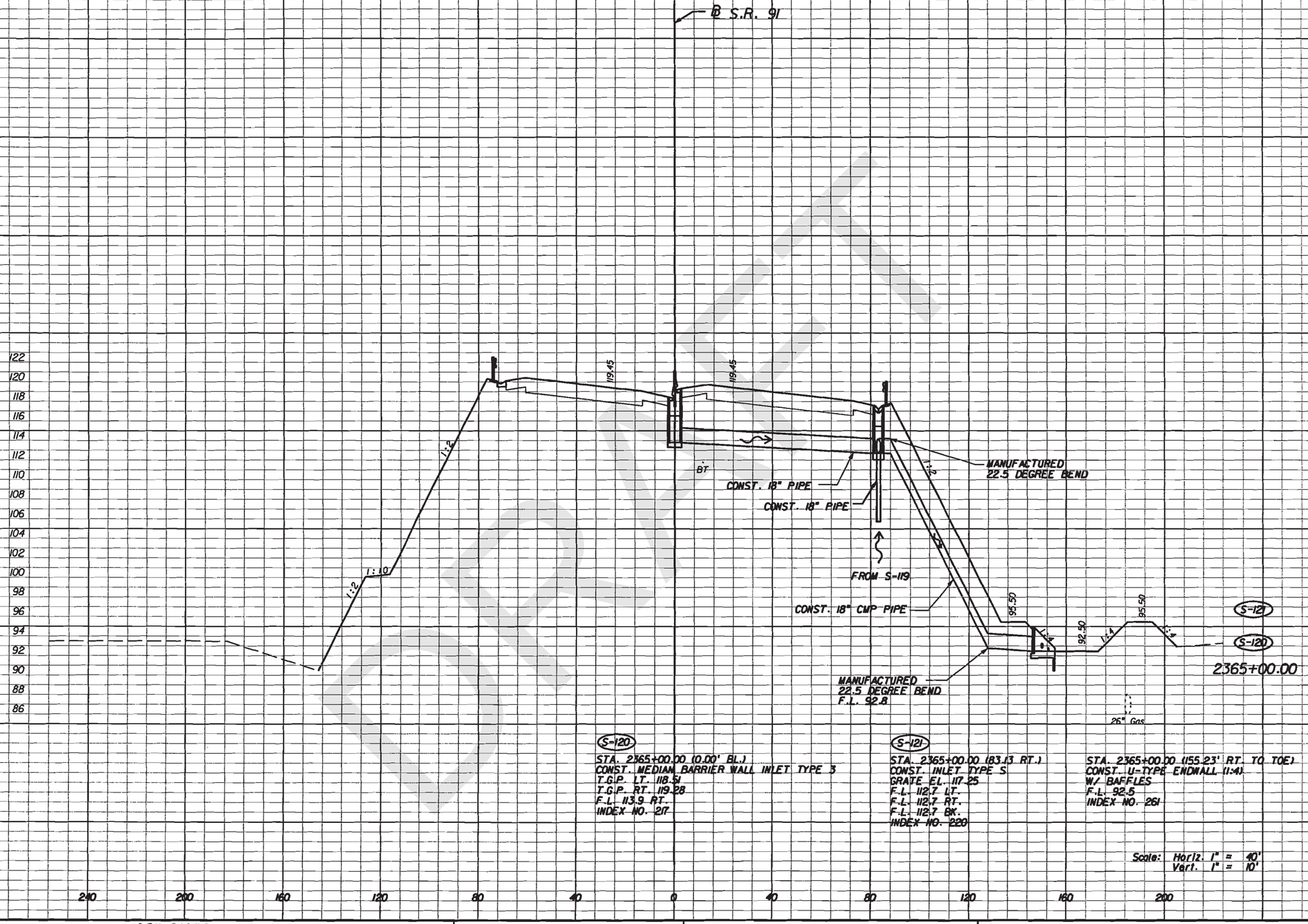

S-120

STA. 2365+00.00 (0.00' RT.)
CONST. MEDIAN BARRIER WALL INLET TYPE 3
T.G.P. LT. 118.51
T.G.P. RT. 119.28
F.L. 113.9 RT.
INDEX NO. 217

S-121

STA. 2365+00.00 (83.13' RT.)
CONST. INLET TYPE S
GRATE EL. 117.25
F.L. 112.7 LT.
F.L. 112.7 RT.
F.L. 112.7 BK.
INDEX NO. 220

STA. 2365+00.00 (155.23' RT. TO TOE)
CONST. U-TYPE ENDWALL (1:4)
W/ BAFFLES
F.L. 92.5
INDEX NO. 261

Scale: Horiz. 1" = 40'
Vert. 1" = 10'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 123

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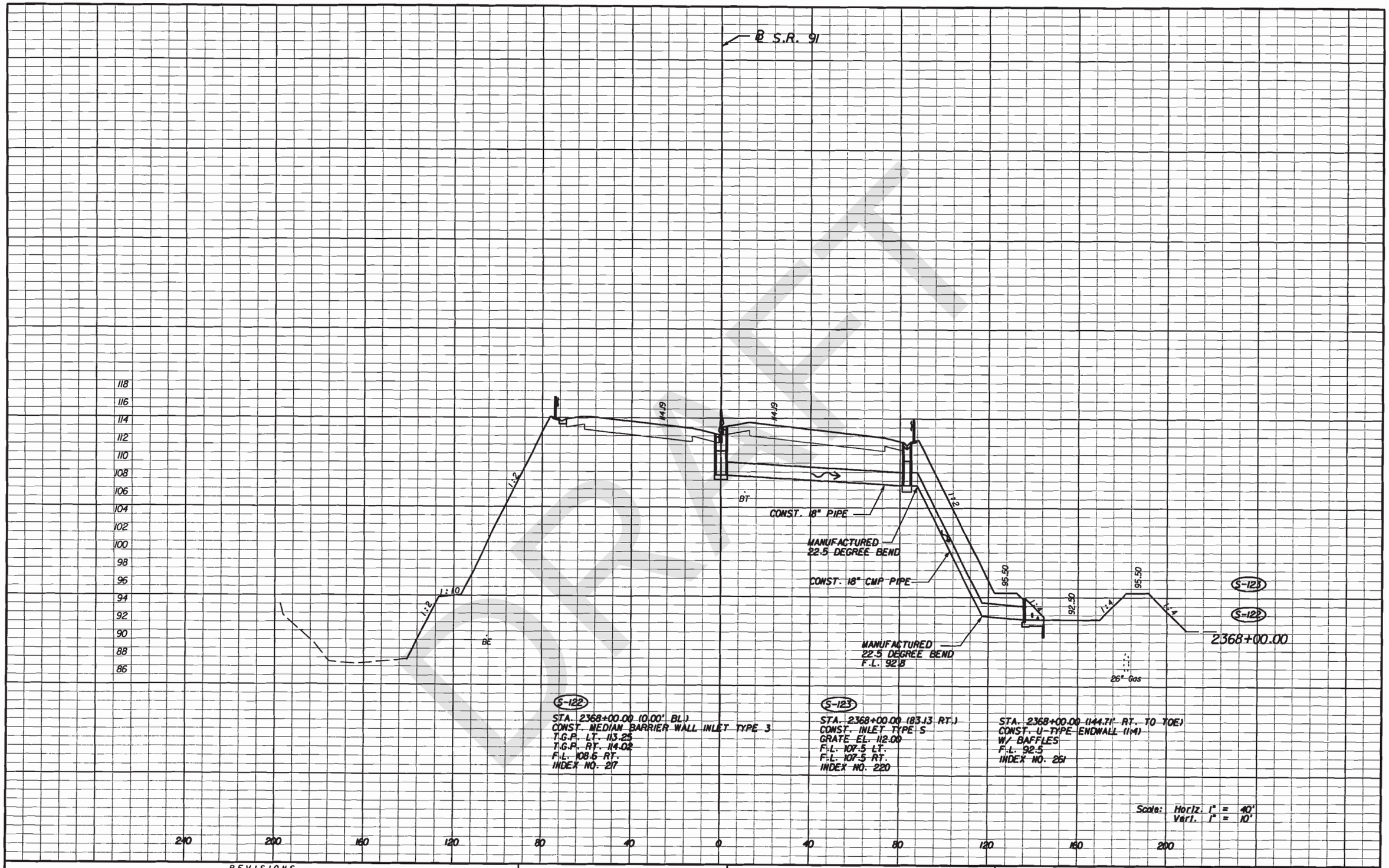

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 124

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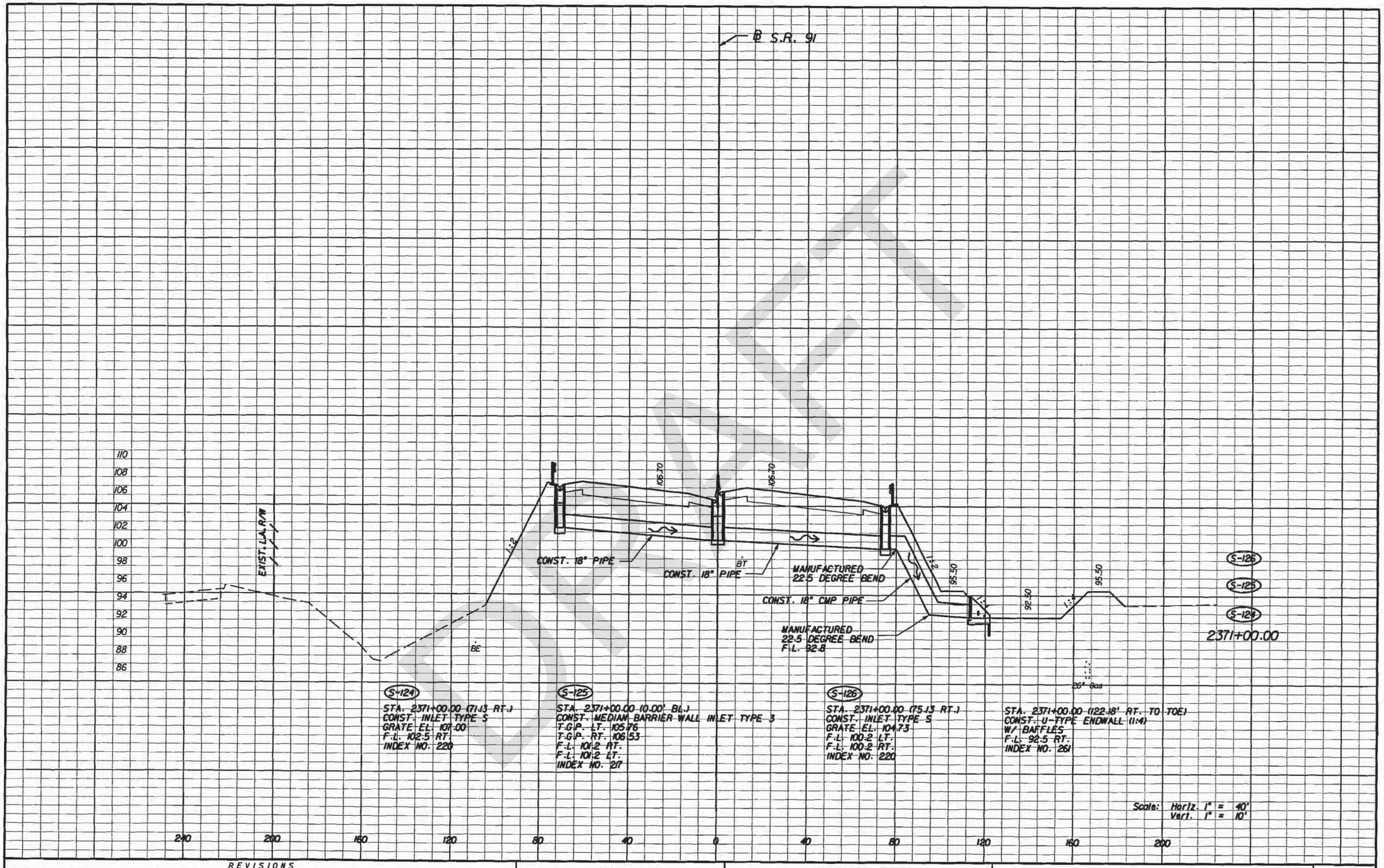

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 125

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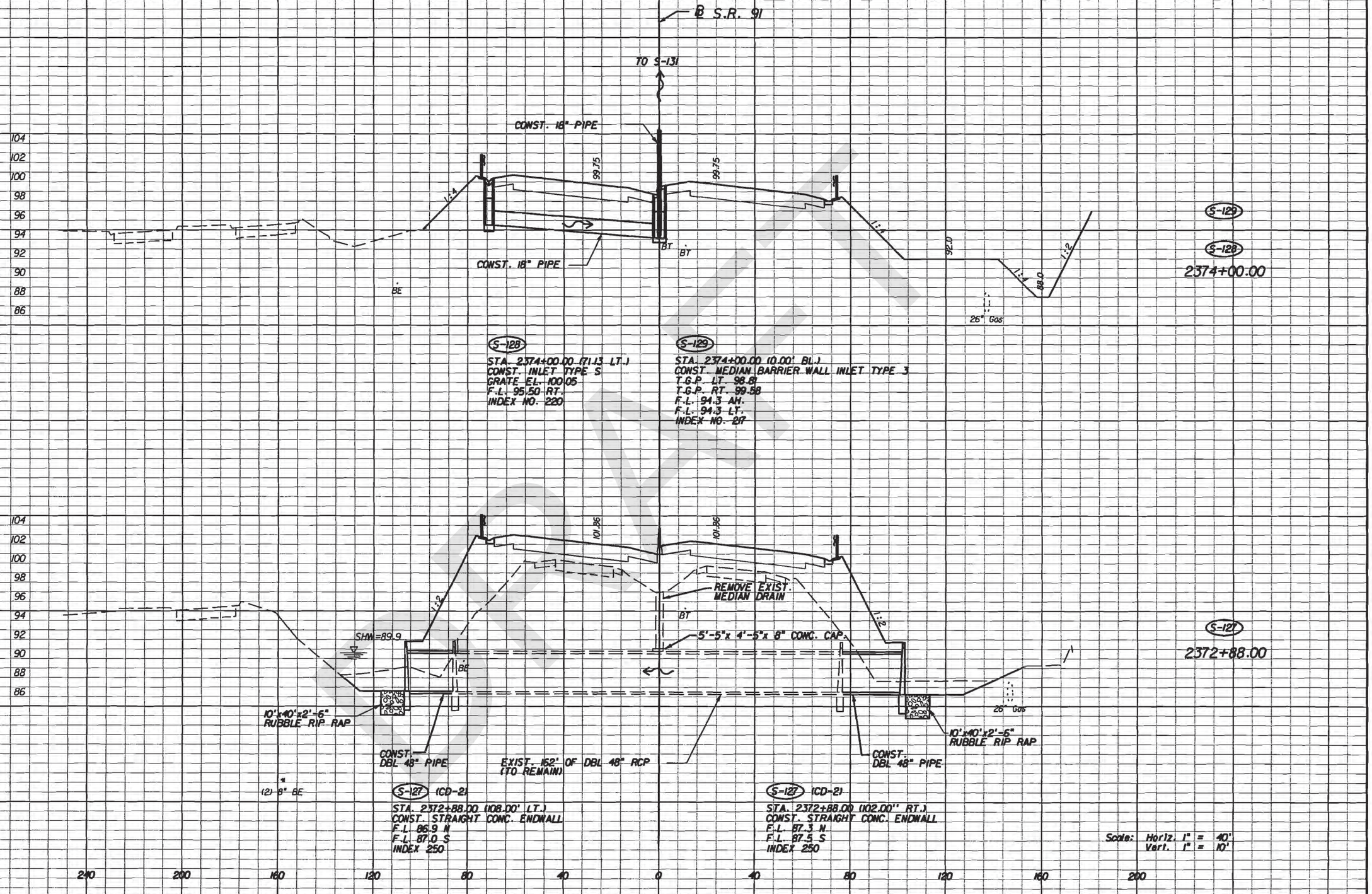

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 126

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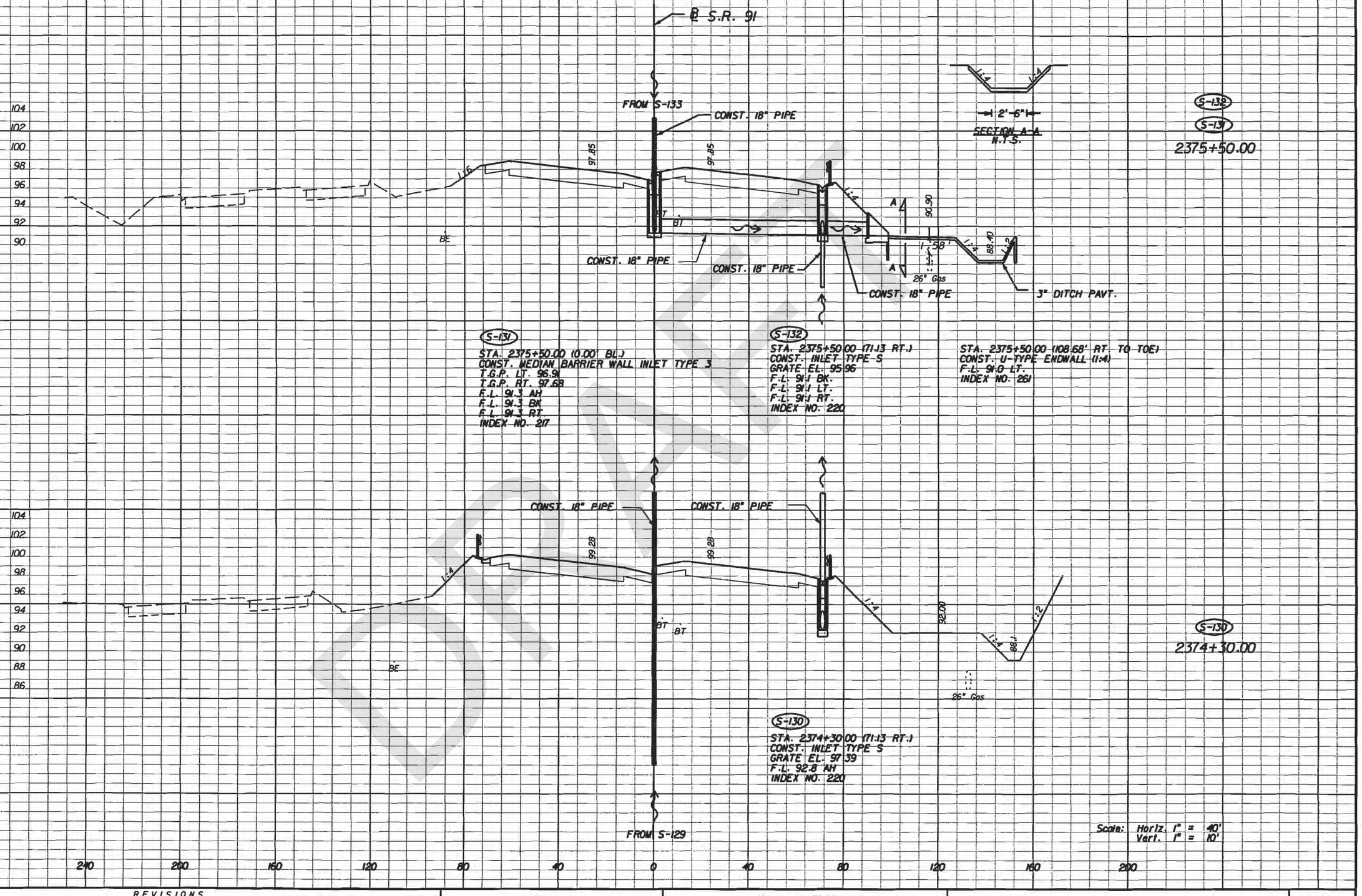

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 127

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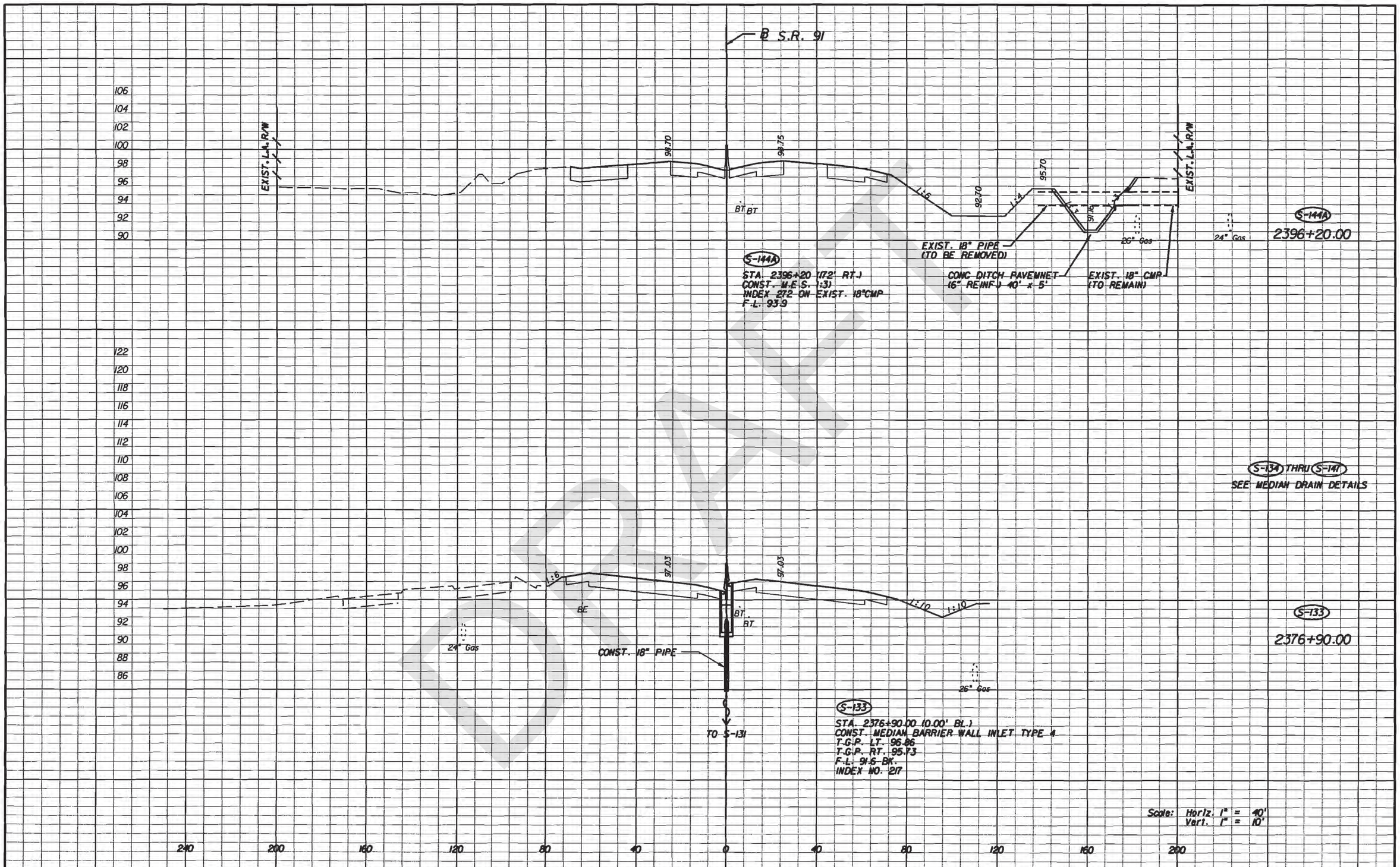

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 128

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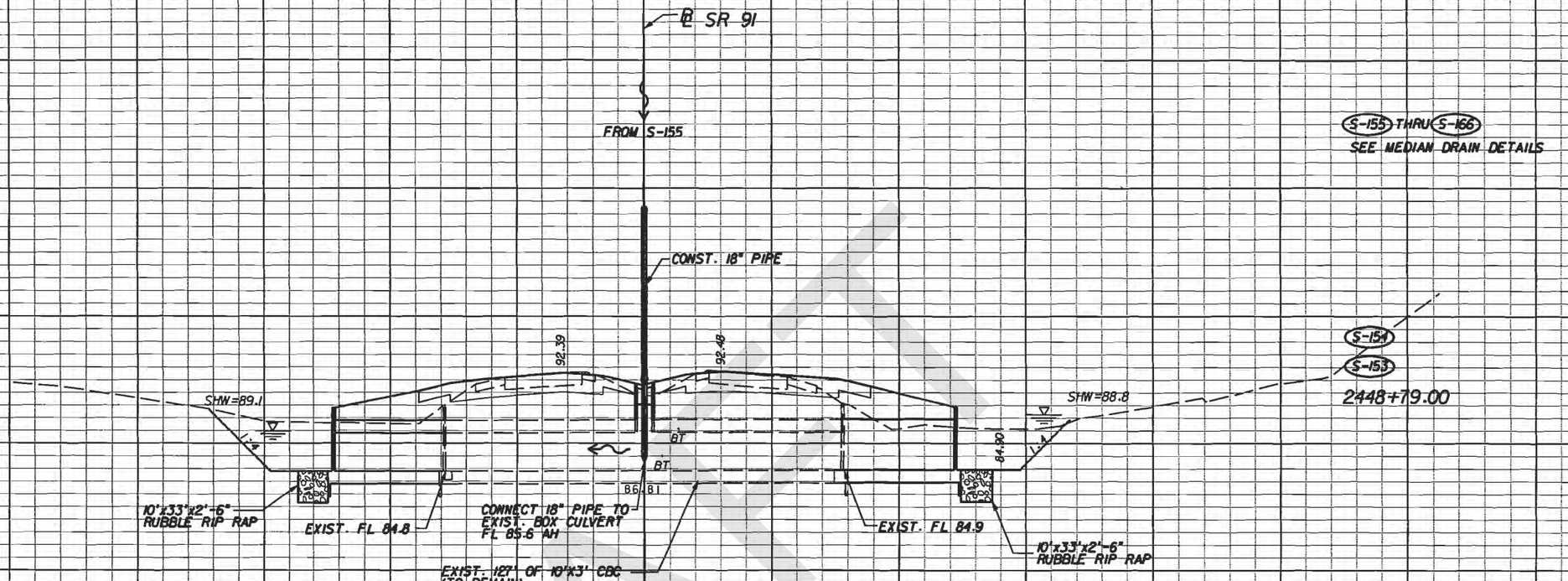

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 129

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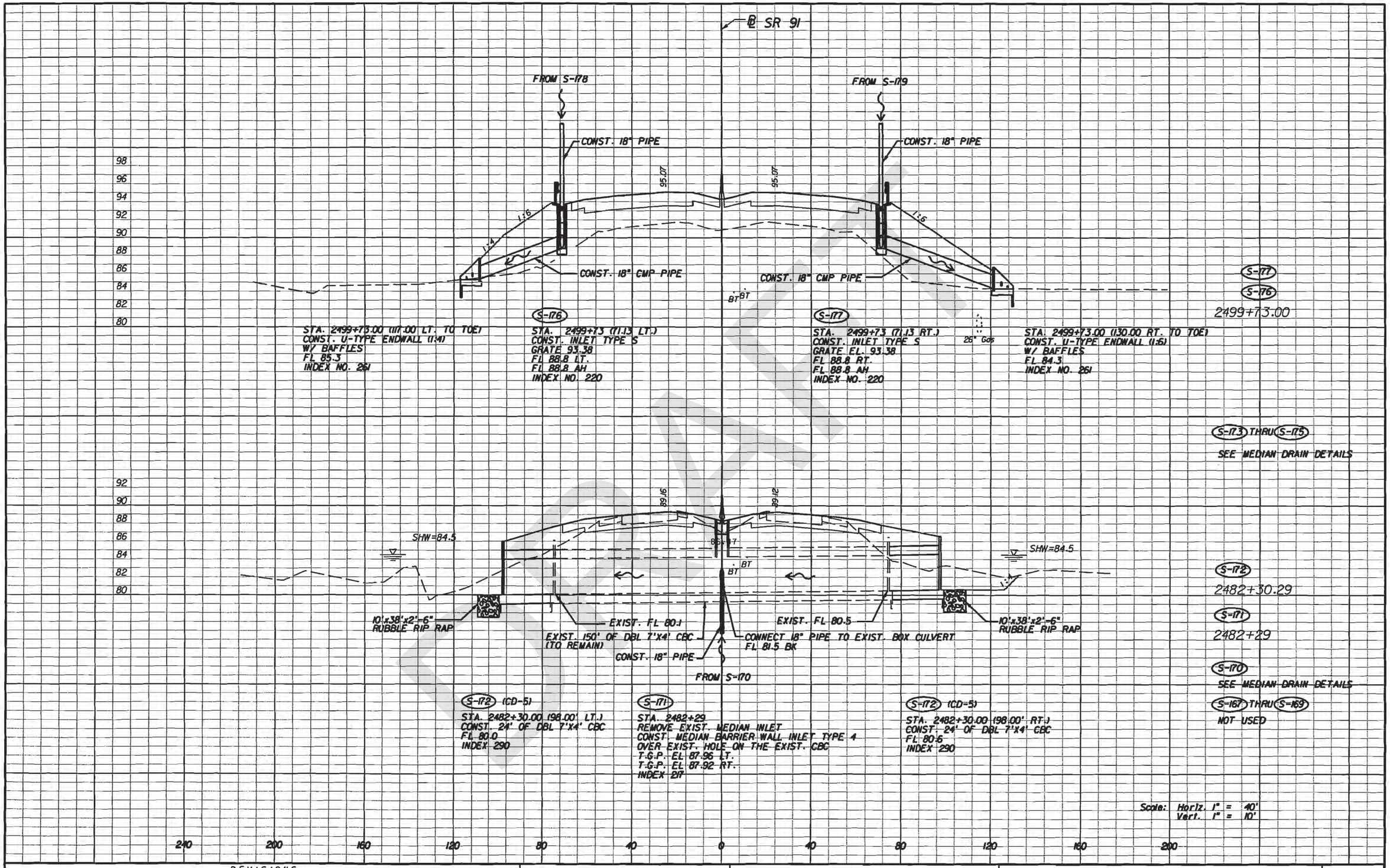

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 130

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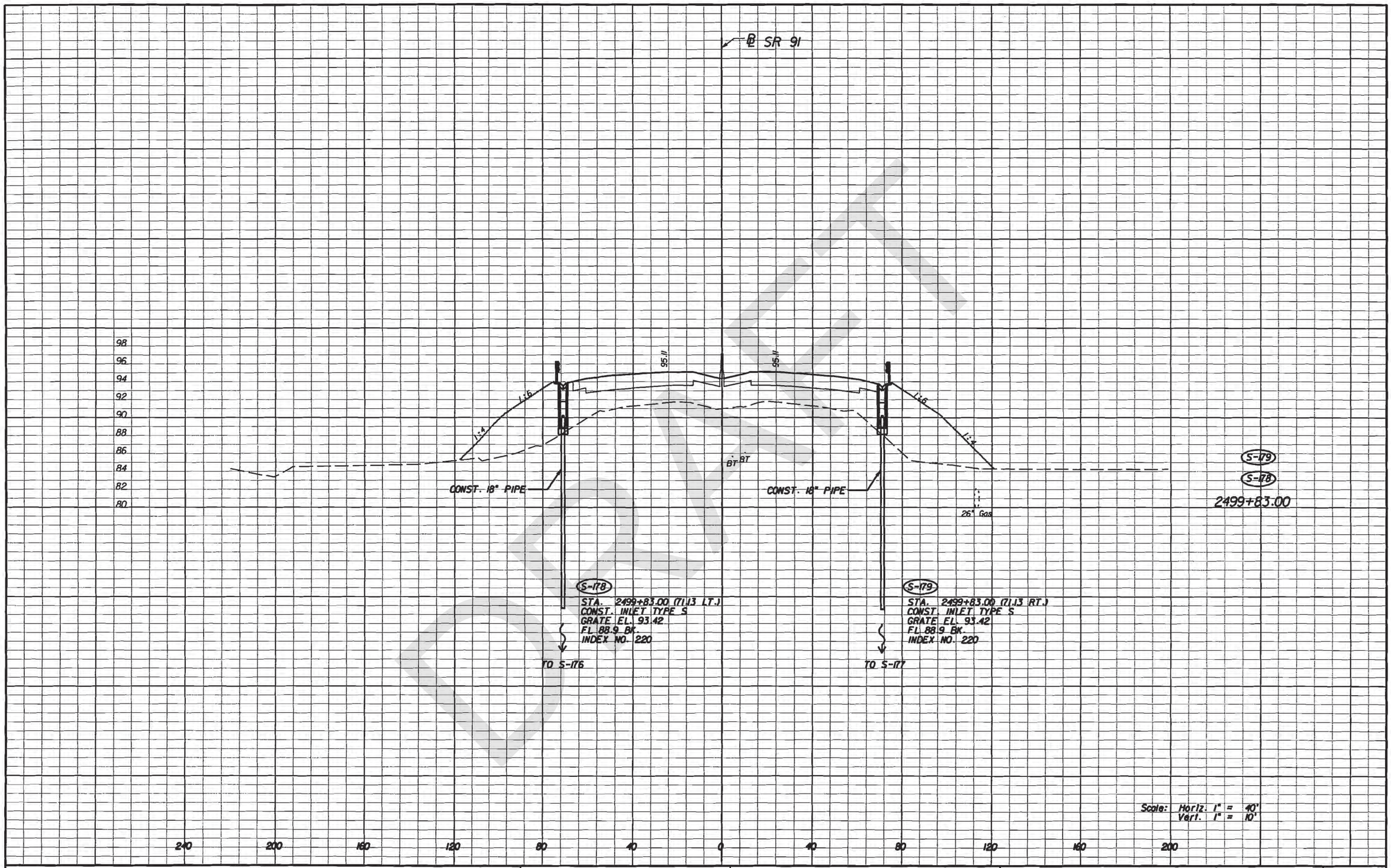


REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 91	ORANGE	406091-1-52-01

DRAINAGE STRUCTURES ( )

SHEET NO. 131

12/19/2003 08:51:27 AM e:\406091\320\roadway\drstrd02.plg

CONSTRUCTION CONTRACT NO. E8P02

COMPONENTS OF CONTRACT PLANS SET

ROADWAY
SIGNING AND PAVEMENT MARKING
SIGNALIZATION
INTELLIGENT TRANSPORTATION SYSTEM (ITS) PLANS
LIGHTING
STRUCTURES
TOLL FACILITY PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

LIST OF REVISED INDEX DRAWINGS

INDEX NO.	SHEET NO.
600	ALL
603	ALL
607	ALL
619	ALL
11200	3 OF 3
11860	4 OF 8
13417	ALL
17302	ALL
17346	1-2 AND 13-14 OF 14
17841	ALL

GOVERNING STANDARDS AND SPECIFICATIONS:
Florida Department of Transportation, 2015 Design Standards and revised Index Drawings as appended herein, and January 2015 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/
Design Standards

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
http://www.dot.state.fl.us/specificationsoffice/
Standard Specifications

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

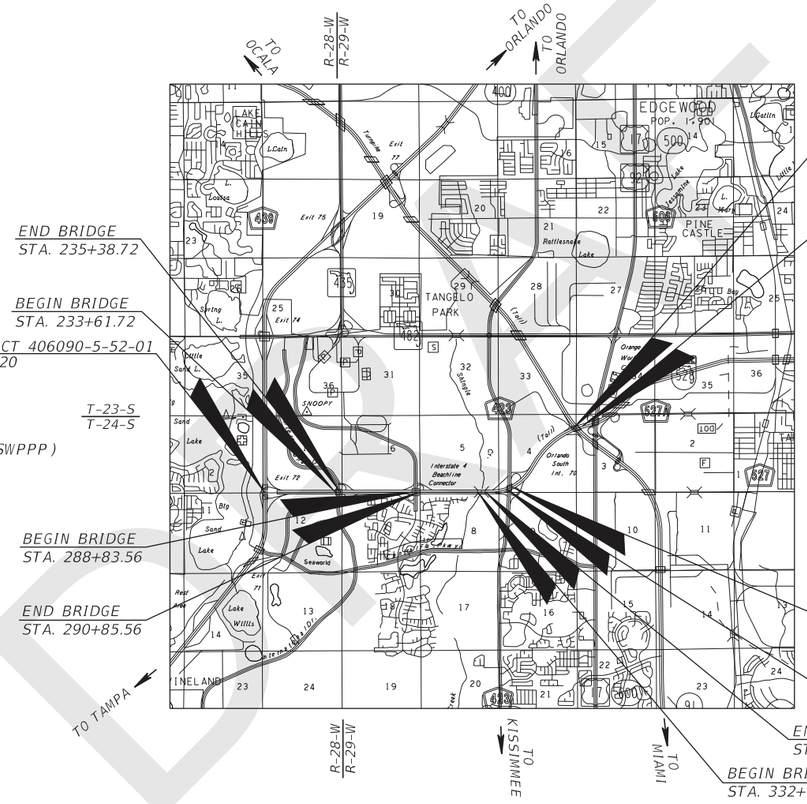
CONTRACT PLANS

FINANCIAL PROJECT ID 406090-5-52-01

ORANGE COUNTY (75471)

STATE ROAD NO. 528

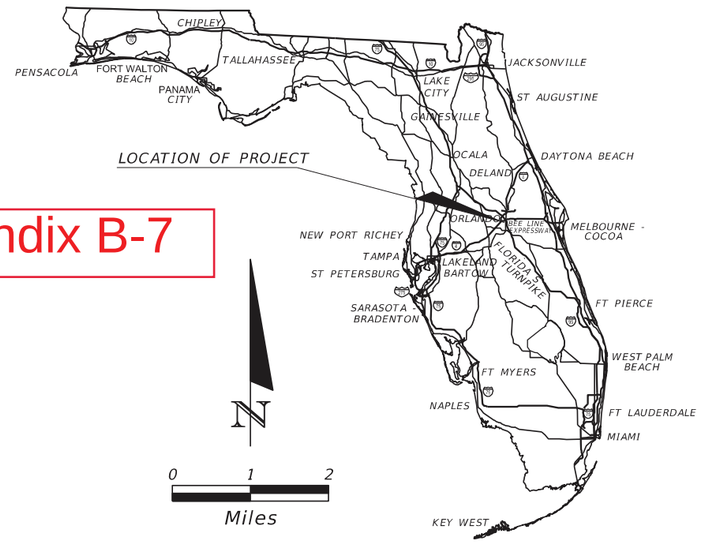
WIDEN BEACHLINE FROM I-4 TO TURNPIKE (MP 0 - 4.3)



END PROJECT 409060-5-52-01
(BEGIN BRIDGE)
STA. 414+32.81
M.P. 4.278

STATION EQUATION:
420+31.04 BK =
421+45.75 AH
℄ CONST. SR 528

T-23-S
T-24-S
→ TO CAPE CANAVERAL



Appendix B-7

PROJECT LENGTH IS BASED ON ℄ OF CONSTRUCTION

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	21,701.46	4.110
BRIDGES	887.15	0.168
NET LENGTH OF PROJECT	22,588.61	4.278
EXCEPTIONS	0	0
GROSS LENGTH OF PROJECT	22,588.61	4.278

FDOT PROJECT MANAGER: PATRICK M. MUENCH, P.E.
GEC PROJECT MANAGER: PAMELA NAGOT, P.E.

KEY SHEET REVISIONS

DATE	DESCRIPTION

ROADWAY SHOP DRAWINGS
TO BE SUBMITTED TO:
MARK PROCHAK, P.E.
DRMP, INC
941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
PHONE: (407) 896-0594 FAX: 896-4836

PLANS PREPARED BY:
DRMP, INC.
941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
PHONE: (407) 896-0594 FAX: 896-4836
TURNPIKE DESIGN CONTRACT NO. C-8638
VENDOR NO. VF591791174001
CERTIFICATION OF AUTHORIZATION NO. 2648

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

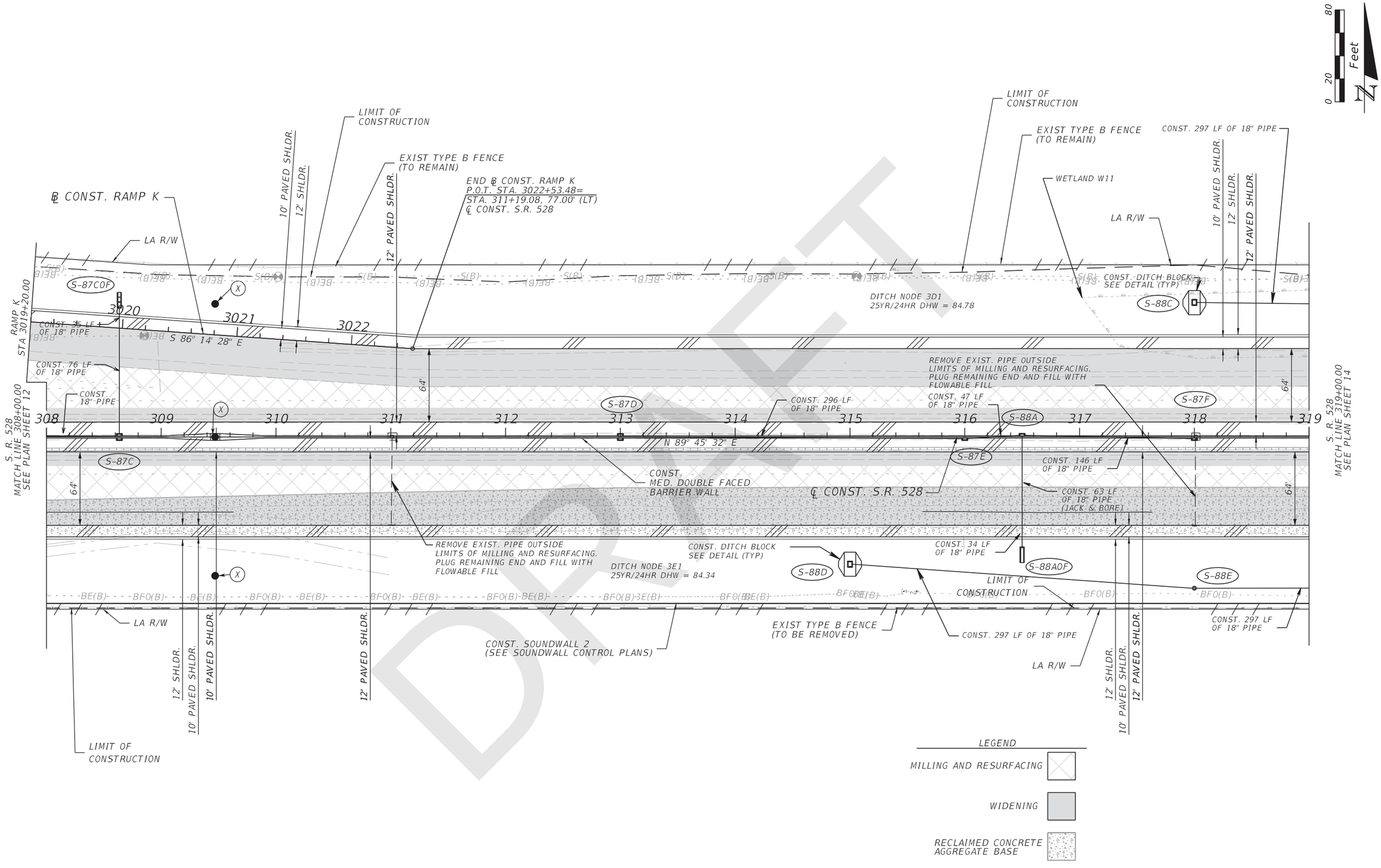
ROADWAY PLANS
ENGINEER OF RECORD: MARK PROCHAK, P.E.

P.E. NO.: 43532

FISCAL YEAR	SHEET NO.
15	1

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

SDonegan 4/13/2015 11:59:27 AM T:\02-0249_017\40609055201\roadway\keysrd01.dgn



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

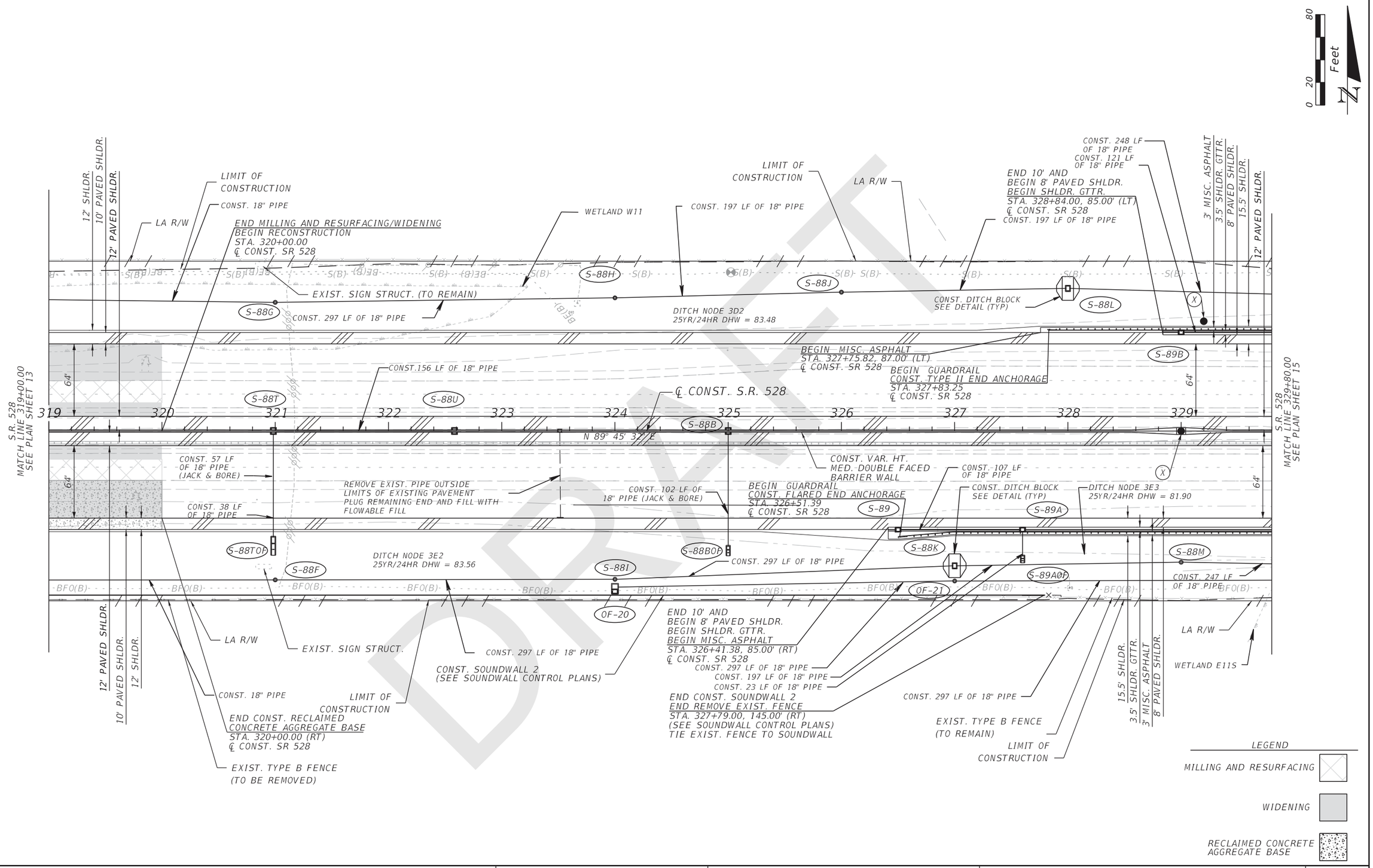
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 13
STA. 308+00.00 TO STA. 319+00.00

SHEET NO. 93

tcaffery 4/12/2015 3:17:03 PM T:\02-0249_017\40609055201\roadway\Plan_Sheets\planrd13.dgn



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

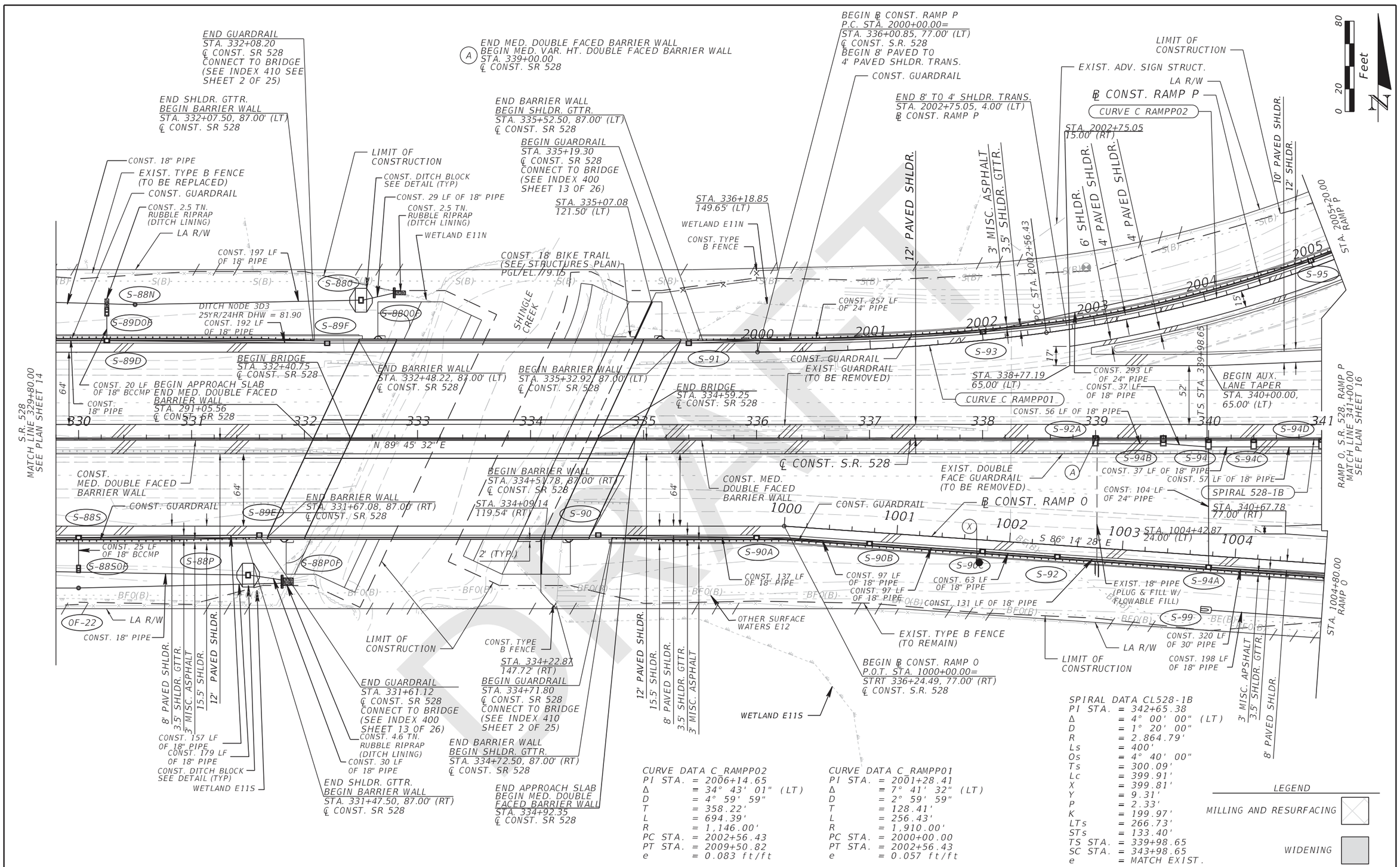
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 14
STA. 319+00.00 TO STA. 329+80.00

SHEET NO. 94

tcaffery 4/12/2015 3:17:07 PM T:\02-0249_017\40609055201\roadway\Plan_Sheets\planrd14.dgn



CURVE DATA C_RAMPP02

PI STA.	= 2006+14.65
Δ	= 34° 43' 01" (LT)
D	= 4° 59' 59"
T	= 358.22'
L	= 694.39'
R	= 1,146.00'
PC STA.	= 2002+56.43
PT STA.	= 2009+50.82
e	= 0.083 ft/ft

CURVE DATA C_RAMPP01

PI STA.	= 2001+28.41
Δ	= 7° 41' 32" (LT)
D	= 2° 59' 59"
T	= 128.41'
L	= 256.43'
R	= 1,910.00'
PC STA.	= 2000+00.00
PT STA.	= 2002+56.43
e	= 0.057 ft/ft

SPIRAL DATA CL528-1B

PI STA.	= 342+65.38
Δ	= 4° 00' 00" (LT)
D	= 1° 20' 00"
R	= 2,864.79'
Ls	= 400'
Os	= 4° 40' 00"
Ts	= 300.09'
Lc	= 399.91'
X	= 399.81'
Y	= 9.31'
P	= 2.33'
K	= 199.97'
LTs	= 266.73'
STs	= 133.40'
TS STA.	= 339+98.65
SC STA.	= 343+98.65
e	= MATCH EXIST.

LEGEND

MILLING AND RESURFACING

WIDENING

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 15
STA. 330+00.00 TO STA. 341+00.00

SHEET NO. 95

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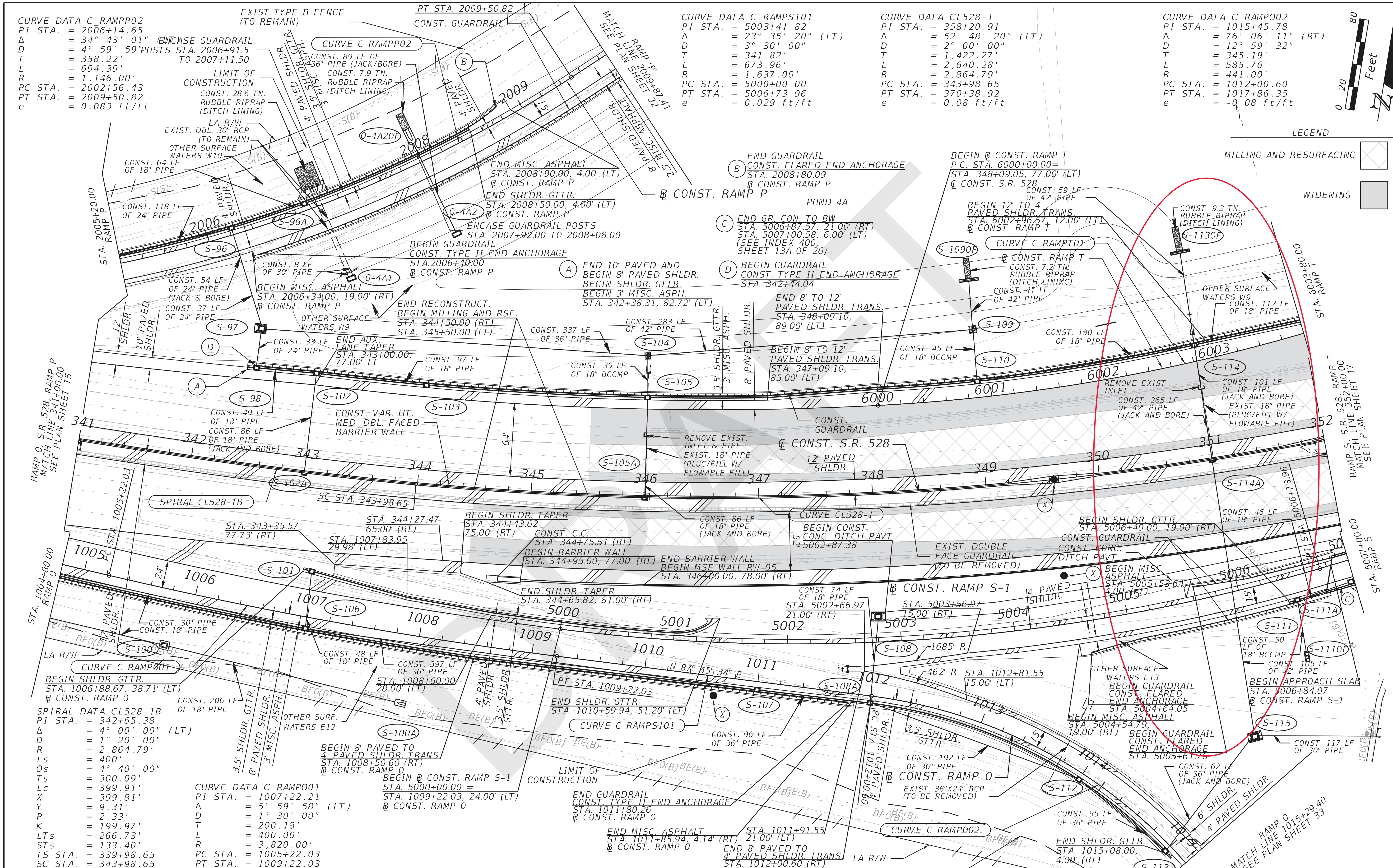

REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 16
STA. 341+00.00 TO STA. 352+00.00

SHEET NO. 96

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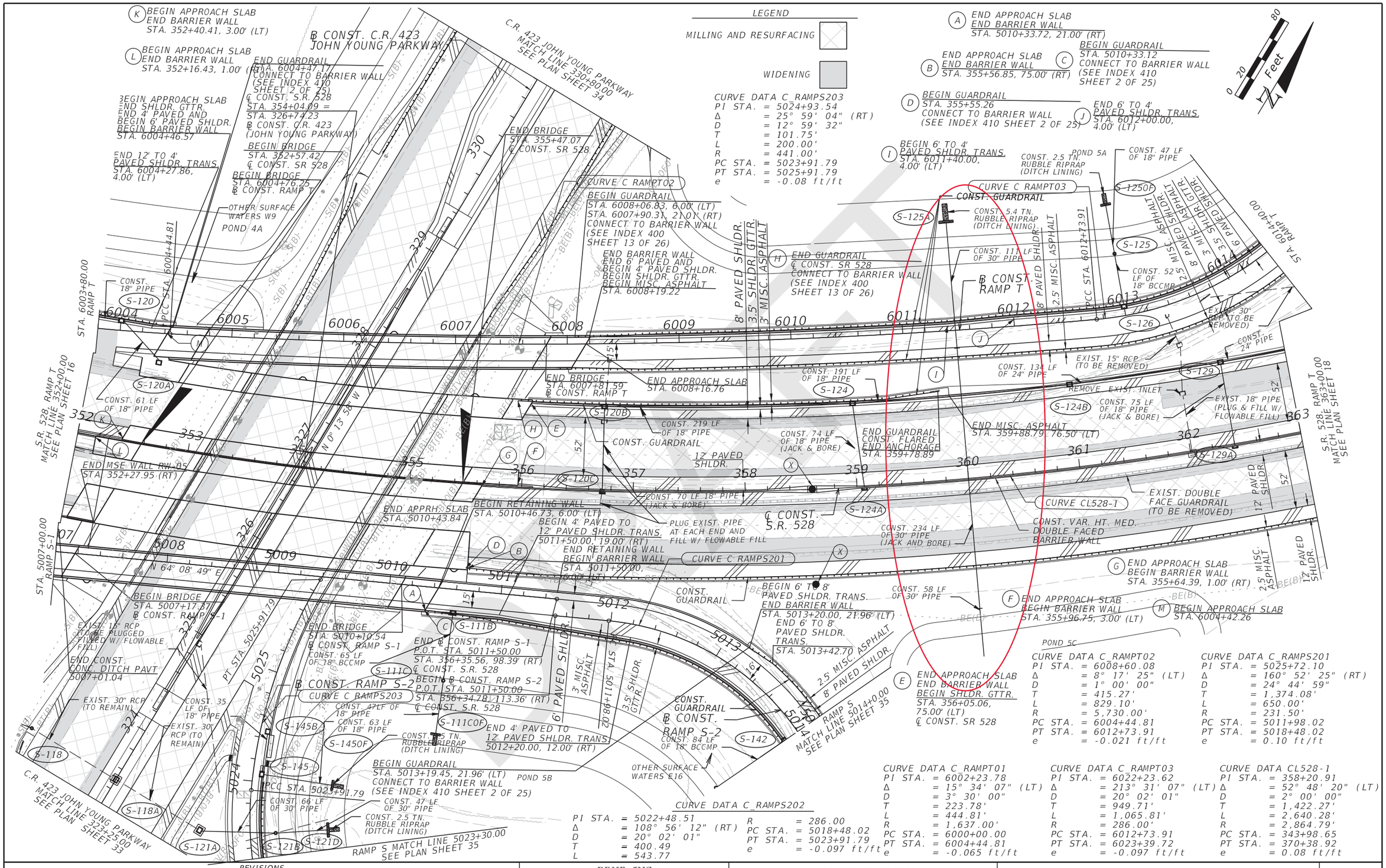

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 17
STA. 352+00.00 TO STA. 363+00.00

SHEET NO. 97

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CURVE DATA CL528-1
PI STA. = 358+20.91
Δ = 52° 48' 20" (LT)
D = 2° 00' 00"
T = 1,422.27'
L = 2,640.28'
R = 2,864.79'
PC STA. = 343+98.65
PT STA. = 370+38.92
e = 0.08 ft/ft

CURVE DATA C_RAMPR103
PI STA. = 4016+46.59
Δ = 13° 06' 22" (RT)
D = 1° 59' 59"
T = 329.11'
L = 655.35
R = 2,865.00'
PC STA. = 4013+17.48
PT STA. = 4019+72.83
e = -0.04 ft/ft

CURVE DATA C_RAMPT03
PI STA. = 6022+23.62
Δ = 213° 31' 07" (LT)
D = 20° 02' 01"
T = NONE
L = 1,065.81'
R = 286.00'
PC STA. = 6012+73.91
PT STA. = 6023+39.72
e = -0.097 ft/ft

CURVE DATA C_RAMPQ01
PI STA. = 3010+16.55
Δ = 45° 33' 09" (LT)
D = 8° 00' 08"
T = 300.63'
L = 569.25'
R = 716.00'
PC STA. = 3007+15.92
PT STA. = 3012+85.17
e = -0.095 ft/ft

CURVE DATA C_RAMPQ02
PI STA. = 3014+10.49
Δ = 10° 00' 10" (LT)
D = 4° 00' 04"
T = 125.32'
L = 250.00'
R = 1,432.00'
PC STA. = 3012+85.17
PT STA. = 3015+35.17
e = -0.072 ft/ft

LEGEND
MILLING AND RESURFACING
WIDENING
LIMIT OF CONSTRUCTION
0 20 80 Feet

RAMP T
MATCH LINE 6016+60.00
SEE SHEET 36
8' PAVED SHLDR.
2.5' MISC. ASPH.
3' MISC. ASPHALT
3.5' SHLDR. GTTR.
6' PAVED SHLDR.
6016
6015
STA. 6014+40.00 RAMP T
91'
OTHER SURFACE WATERS W8
℄ CONST. RAMP T
EXIST. 30" RCP (TO BE REMOVED)
CONST. 3.8 TN. RUBBLE RIPRAP (DITCH LINING)
S-1340F
CONST. 91 LF OF 24" BCCMP
A END GUARDRAIL CONST. TYPE II END ANCHORAGE STA. 364+51.26 ℄ CONST. S.R. 528
B END MISC. ASPHALT STA. 364+45.36, 29.50' (LT) ℄ CONST. S.R. 528
END SHLDR. GTTR. END 10' PAVED AND BEGIN 12' PAVED SHLDR. STA. 365+08.15, 73.00' (LT) ℄ CONST. S.R. 528
CONST. 94 LF OF 24" PIPE
CONST. 152 LF OF 24" PIPE
S-127
S-139AOF
CONST. 2.5 TN. RUBBLE RIPRAP (DITCH LINING)
CONST. 85 LF OF 18" PIPE
CURVE C RAMPQ01
OTHER SURFACE WATERS W7
12" PAVED SHLDR.
S-134
℄ CONST. S.R. 528
S.R. 528, RAMP T MATCH LINE 363+00.00 SEE PLAN SHEET 17
363
364
365
366
367
368
369
370
371
372
373
374
52'
CONST. 75 LF OF 18" PIPE (JACK & BORE)
CONST. VAR. HT. MED. DOUBLE FACED BARRIER WALL
12' PAVED SHLDR.
CONST. 63 LF OF 18" PIPE (JACK & BORE)
CS STA. 370+38.92
CONST. 126 LF OF 18" PIPE
CONST. 83 LF OF 18" PIPE
S-139D
CONST. 245 LF OF 18" PIPE
CURVE CL528-1
S-133A
S-139
S-139A
S-139B
SPIRAL CL528-1A
STA. 372+65.65 65.00' (LT)
STA. 368+01.59 65.00' (RT)
STA. 367+77.24 75.00' (RT)
10' PAVED SHLDR.
END MISC. ASPH. END 8' AND BEGIN 4' PAVED SHLDR. STA. 4018+36.01, 25.50' (LT)
CURVE C RAMPR104
4017
4018
4019
4020
4021
4022
4023 N 31° 02' 49" E
4024
4025
S-140
S-141
CONST. GR
S-136E
S-136A
S-139C
CONST. 33 LF OF 18" PIPE
CONST. 32 LF OF 18" PIPE
S-1400F
S-1410F
CONST. 32 LF OF 18" BCCMP
PT STA. 4019+72.83
CONST. 85 LF OF 18" PIPE
CONST. 209 LF OF 30" PIPE
CONST. 249 LF OF 30" PIPE
S-136B
STA. 4021+78.44 15.00' (LT)
OTHER SURFACE WATERS E18
BEGIN 4' TO 10' PAVED SHLDR. TRANS. STA. 4021+78.44, 4.00' (RT) ℄ CONST. RAMP R-1
END 4' TO 10' PAVED SHLDR. TRANS. STA. 4022+78.44, 10.00' (RT) ℄ CONST. RAMP R-1
REMOVE EXIST. PIPE OUTSIDE LIMITS OF MILLING AND RESURFACING. PLUG REMAINING END AND FILL WITH FLOWABLE FILL
C END MED. VAR. HT. DOUBLE FACED BARRIER WALL BEGIN MED. DOUBLE FACED BARRIER WALL STA. 372+00.00 ℄ CONST. SR 528
EXIST. TYPE B FENCE (TO REMAIN)
LA R/W
END ℄ CONST. RAMP R-1 P.T. STA. 4025+35.15= STA. 371+49.55, 73.00' (RT) ℄ CONST. S.R. 528
END SHLDR. GTTR. STA.373+67.85, 87.00' (RT) ℄ CONST. SR 528
END GUARDRAIL CONST. TYPE II END ANCHORAGE STA.373+74.28 ℄ CONST. S.R. 528
END MISC. ASPHALT STA.373+79.71, 88.34' (RT) ℄ CONST. S.R. 528
12' PAVED SHLDR.
10' PAVED SHLDR.
LIMIT OF CONSTRUCTION
S.R. 528, RAMP Q MATCH LINE 374+00.00 SEE SHEET 19
RAMP Q MATCH LINE 3011+80.00 SEE SHEET 36
11.5' SHLDR.
6' SHLDR.
4' PAVED SHLDR.
8' PAVED SHLDR.
LA R/W
PCC STA. 3012+85.17
3012
3013
3014
℄ CONST. RAMP Q
STA. 3014+00.00 RAMP Q
CURVE C RAMPQ02
15'
RAMP R-1 MATCH LINE 4016+20.00 SEE SHEET 35
8' PAVED SHLDR.
2.5' MISC. ASPHALT
3.5' SHLDR GTTR.
4' PAVED SHLDR.
3' MISC. ASPHALT
S-136F
CONST. 192 LF OF 30" PIPE
℄ CONST. RAMP R-1
LA R/W
CURVE C RAMPR103
LIMIT OF CONSTRUCTION
END GUARDRAIL CONST. TYPE II END ANCHORAGE STA. 4018+28.56, 23.95' (LT)
END MISC. ASPHALT END 12' PAVED AND BEGIN 10' PAVED SHLDR. STA. 363+26.00, 77.00' (RT) ℄ CONST. SR 528
END GUARDRAIL CONST. TYPE II END ANCHORAGE STA 363+19.97 ℄ CONST. SR 528

SPIRAL DATA CL528-1A

PI STA.	= 371+72.32	Y	= 9.31'
Δ	= 4° 00' 00" (LT)	P	= 2.33'
D	= 1° 20' 00"	K	= 199.97'
R	= 2.864.79'	LTs	= 266.73'
Ls	= 400'	STs	= 133.40'
Os	= 4° 40' 00"	CS STA.	= 370+38.92
Ts	= 300.09'	ST STA.	= 374+38.92
Lc	= 399.91'	e	= MATCH EXIST.
X	= 399.81'		

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 18
STA. 363+00.00 TO STA. 374+00.00

SHEET NO. 98

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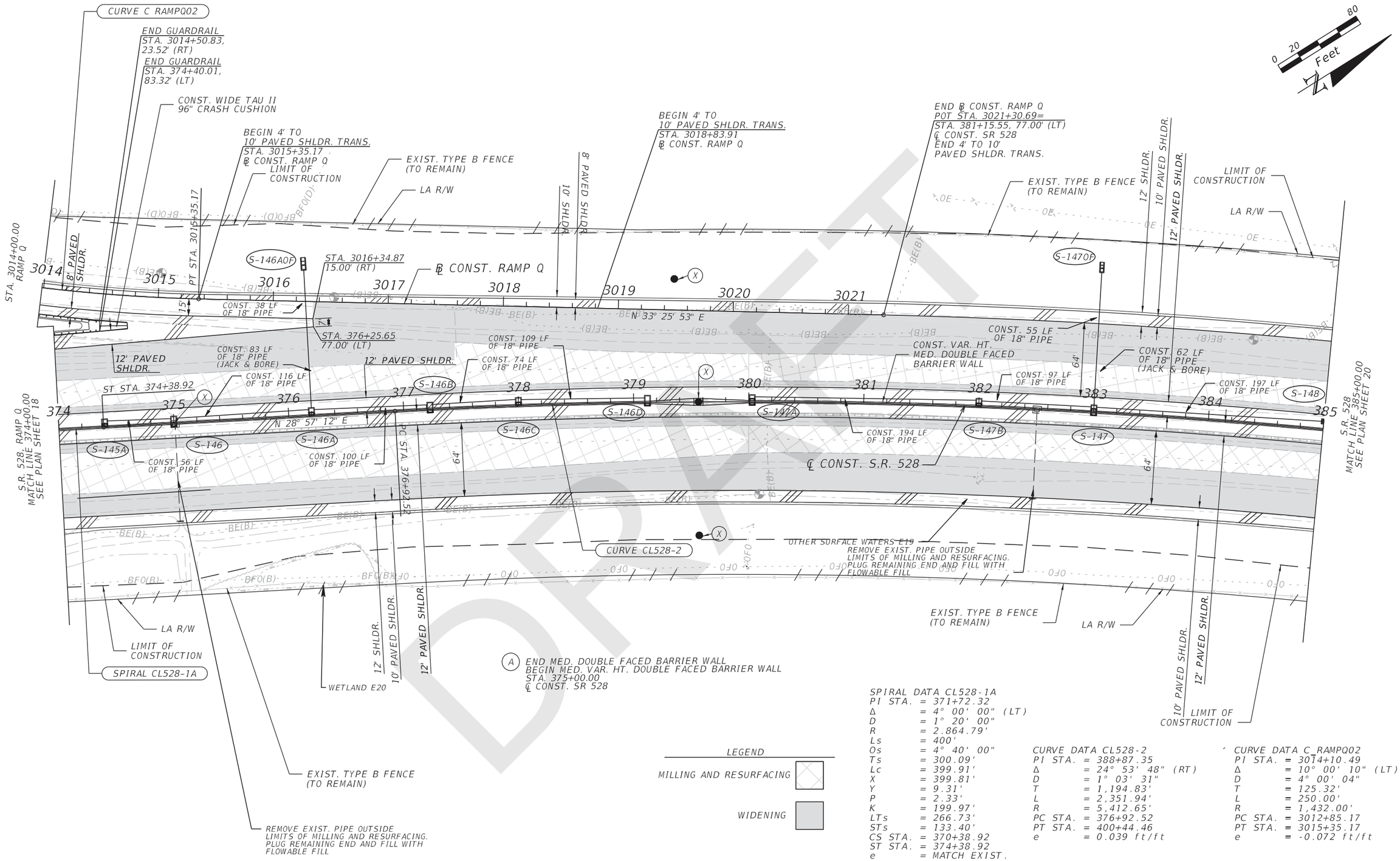

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 19
STA. 374+00.00 TO STA. 385+00.00

SHEET NO. 99

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CURVE DATA CL528-2
PI STA. = 388+87.35
Δ = 24° 53' 48" (RT)
D = 1° 03' 31"
T = 1,194.83'
L = 2,351.94'
R = 5,412.65'
PC STA. = 376+92.52
PT STA. = 400+44.46
e = 0.032 ft/ft

0 20 80
Feet

STABILIZED DRIVEWAY FOR GENERATOR MAINTENANCE (SEE ITS PLANS)
12' SHLDR.
10' PAVED SHLDR.
12' PAVED SHLDR.
LA R/W
LIMIT OF CONSTRUCTION
EXIST. TYPE B FENCE (TO REMAIN)
OE
CONST. 33 LF OF 42" PIPE
WETLAND W6
S-1500F
CONST. 54 LF OF 18" PIPE
CONST. 63 LF OF 18" PIPE (JACK & BORE)
CURVE CL528-2
CONST. 97 LF OF 18" PIPE
S-149
CONST. 187 LF OF 18" PIPE
S-151
S-151A
64'
385
386
387
388
389
390
391
392
393
394
395
396
S.R. 528 MATCH LINE 385+00.0 SEE PLAN SHEET 19
℄ CONST. S.R. 528
S-150
18" RCP
CONST. VAR. HT. MED. DOUBLE FACED BARRIER WALL
REMOVE INLET AND ENDWALL EXISTING PIPE TO BE ABANDONED FILL WITH FLOWABLE FILL AND PLUG
OFO
BFO(B)
EXIST. TYPE B FENCE (TO REMAIN)
LIMIT OF CONSTRUCTION
RAMP U, S.R. 528 MATCH LINE 396+00.0 SEE PLAN SHEET 21

LEGEND
MILLING AND RESURFACING
WIDENING

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 20
STA. 385+00.00 TO STA. 396+00.00

SHEET NO. 100

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CURVE DATA CL528-2
PI STA. = 388+87.35
Δ = 24° 53' 48" (RT)
D = 1° 03' 31"
T = 1,194.83'
L = 2,351.94'
R = 5,412.65'
PC STA. = 376+92.52
PT STA. = 400+44.46
e = 0.039 ft/ft

CURVE DATA CL528-3
PI STA. = 407+33.71
Δ = 14° 21' 01" (RT)
D = 1° 02' 47"
T = 689.24'
L = 1,371.27'
R = 5,475.00'
PC STA. = 400+44.47
PT STA. = 414+15.74
e = 0.039 ft/ft

0 20 80
Feet

BEGIN SHLDR. GTTR.
STA. 9006+89.00, 19.00' (RT)
℄ CONST. RAMP V

CONST. TYPE II END ANCHORAGE (DBL. GUARDRAIL)
BEGIN GUARDRAIL STA. 407+92.00, 69.0' (LT)
℄ CONST. S.R. 528
BEGIN GUARDRAIL STA. 9006+39.28, 24.0' (RT)
℄ CONST. RAMP V

BEGIN ℄ CONST. RAMP V
P.C. STA. 9000+08.12=
STA. 400+21.45, 77.00' (LT)
℄ CONST. S.R. 528

EXIST. TYPE B FENCE
(TO REMAIN)

BEGIN 10' TO
4' PAVED SHLDR. TRANS.
STA. 9002+36.37
℄ CONST. RAMP V

LIMIT OF
CONSTRUCTION

LA R/W

4' PAVED SHLDR.

6' SHLDR.

12' PAVED SHLDR.

10' PAVED SHLDR.

12' SHLDR.

LIMIT OF
CONSTRUCTION

EXIST. TYPE B FENCE
(TO REMAIN)

LA R/W

WETLAND W5

℄ CONST. RAMP V

CURVE C RAMPV01

END 10' TO
4' PAVED SHLDR. TRANS.
STA. 9005+63.64
℄ CONST. RAMP V

STA. 9005+62.45
15.00' (RT)

STA. 9007+00.00
RAMP V

S-1520F

CONST. 45 LF
OF 18" PIPE

N 53° 36' 23" E

CONST. 75 LF OF 18" PIPE
(JACK AND BORE)

CONST. 187 LF
OF 18" PIPE

CONST. 107 LF
OF 18" PIPE

PC STA. 9001+16.25

STA. 405+67.71
65.00' (LT)

S-152

S-152A

℄ CONST. SR 528

CURVE CL528-3

S-153

CONST. 277 LF
OF 18" PIPE

S-153A

S.R. 528
MATCH LINE 396+00.00
SEE PLAN SHEET 20

RAMP U, S.R. 528, RAMP V
MATCH LINE 407+00.00
SEE PLAN SHEET 22

CURVE CL528-2

CONST. VAR. HT.
MED. DOUBLE FACED
BARRIER WALL

S-152B

PCC STA. 400+44.46

REMOVE INLET AND ENDWALL
EXISTING 18" PIPE TO REMAIN
PLUG & FILL WITH FLOWABLE FILL

REMOVE INLET AND ENDWALL
EXIST. PIPE TO BE
ABANDONED. FILL WITH
FLOWABLE FILL AND PLUG

18" RCP

CONST. 82 LF
OF 18" PIPE
(JACK & BORE)

BEGIN GUARDRAIL
STA. 404+99.78,
73.00' (RT)

12' PAVED SHLDR.

3' MISC.
ASPH.

STA. 403+02.48
76.93' (RT)

℄ CONST. RAMP U

STA. 8007+89.87
15.00' (LT)

BEGIN 10' TO 4' PAVED
SHLDR. TRANSITION
STA. 8007+89.87, 10.00' (RT)

CONST. 36 LF
OF 18" PIPE

S-154

STA. 406+29.12
64.99' (RT)

S-1530F

CURVE C RAMPU01

CONST. DITCH BLOCK
403+00, TOP EL. 94.00

BEGIN PROP. 10' BERM
TOP EL. 94.00

PCC STA. 8009+84.06

STA. 8011+80.00
RAMP U

BEGIN ℄ CONST. RAMP U
PC STA. 8002+64.34=
STA. 397+67.59, 0.00' (LT)
℄ CONST. S.R. 528

EXIST. TYPE B FENCE
(TO REMAIN)

LA R/W

EXIST. TYPE B FENCE
(TO REMAIN)

END 10' TO
4' PAVED SHLDR. TRANS.
STA. 8008+89.87
℄ CONST. RAMP U

CONST. 10' BERM
EL. 94.0 (REFER TO
CROSS SECTIONS)

CONST. WIDE TAU II
60" CRASH CUSHION

BEGIN GUARDRAIL
STA. 8009+82.66, 25.33' (LT)

LIMIT OF
CONSTRUCTION

2.5' MISC. ASPH.
4" PAVED SHLDR.
8" PAVED SHLDR.
6" SHLDR.

LA R/W

CURVE C RAMPU02

LEGEND
MILLING AND RESURFACING
WIDENING

CURVE DATA C_RAMPU01
PI STA. = 8006+26.10
Δ = 14° 23' 35" (RT)
D = 1° 59' 59"
T = 361.76'
L = 719.71'
R = 2,865.00'
PC STA. = 8002+64.34
PT STA. = 8009+84.06
e = -0.049 ft/ft

CURVE DATA C_RAMPU02
PI STA. = 8012+72.24
Δ = 22° 45' 24" (RT)
D = 4° 00' 04"
T = 288.18'
L = 568.76'
R = 1,432.00'
PC STA. = 8009+84.06
PT STA. = 8015+52.82
e = -0.072 ft/ft

CURVE DATA C_RAMPV01
PI STA. = 9005+15.69
Δ = 3° 59' 34" (RT)
D = 0° 30' 00"
T = 399.44'
L = 798.55'
R = 11,459.00'
PC STA. = 9001+16.25
PT STA. = 9009+14.80
e = 0.02 ft/ft

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 21
STA. 396+00.00 TO STA. 407+00.00

SHEET NO. 101

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END SHLDR. GTTR.
STA. 9010+60.00, 19.00' (RT)
℄ CONST. RAMP V

EXIST. TYPE B FENCE
(TO REMAIN)

℄ CONST. RAMP V

END ℄ CONST. RAMP V
STA. 9011+90.40=
STA. 411+67.97, 191.10' (LT)
℄ CONST. S.R. 528

END 4' PAVED (6' SHLDR.)
(RT AND LT)
STA. 9011+00.00
℄ CONST. RAMP V
MATCH EXIST.

EXIST. PIPES, INLETS,
AND MES
(TO REMAIN)

0 20 80
Feet

N

LIMIT OF
CONSTRUCTION

LA R/W

S-155AOF

CONST. 73 LF OF
18" PIPE
(JACK & BORE)

CONST. 31 LF
OF 18" PIPE
(JACK AND BORE)

4' PAVED SHLDR.
6' SHLDR.

3.5' SHLDR. GTTR.
3" MISC. ASPHALT

PC STA. 9010+36.91

OSW E24

S-1600F

24" RCP

EXIST. PIPE
AND MES
(TO REMAIN)

END MISC. ASPHALT
STA. 9010+90.00, 19.00' (RT)
℄ CONST. RAMP V

END GUARDRAIL
CONST. FLARED END ANCHORAGE
STA. 9010+79.71
℄ CONST. RAMP V

OSW E25

18" RCP

9007

9008

9009

9010

9011

PT STA. 9009+14.80

N 57° 35' 57" E

S-160

CURVE C RAMPV02

8' PAVED
SHLDR.

3" MISC.
ASPHALT

3.5' SHLDR.
GTTR.

EXIST. CONC. SPILLWAY
(TO BE REMOVED

EXIST. PIPE
(TO BE REMOVED)

END GUARDRAIL
CONNECT TO EXIST. GUARDRAIL,
END WIDENING,
BEGIN MILLING AND RESURFACING
STA. 413+00.00, 71.00' (LT)

CONST. MISC. ASPHALT
FLUME/SPILLWAY TO REMAIN

END PROJECT 406090-5-52-01
S.R. 528 (BEACHLINE EXPRESSWAY)
BEGIN BRIDGE
END MILLING AND RESURFACING
STA. 414+32.81

CURVE CL528-4

STA. 9007+00.00
RAMP V

CONST. GUARDRAIL

CURVE CL528-3

EXIST. GUARDRAIL
(TO BE REMOVED)

S-155A

S-155

STA. 411+60.00
2.60' (LT)

END MED. PAVED
SHLDR. RECONST.
BEGIN MILLING AND RSF.
STA. 412+50.00, 17.85' (LT)

EX-160

PCC STA. 414+15.74

END DBL. FACED GUARDRAIL
CONNECT TO EXIST. GUARDRAIL,
END MED. SHLDR. RECONST.
END STA. 413+12.00, 10.00' (RT)

℄ CONST. SR 528

407
408
409
410
411
412
413
414
415
416
417

52'

CONST. VAR. HT.
MED. DOUBLE FACED
BARRIER WALL

CONST. 71 LF OF 18" PIPE
(JACK AND BORE)

18" RMP

EX-161

EX-162

18" RCP

18" PIPE

12" PAVED SHLDR.

CONST. 97 LF
OF 18" PIPE

S-155B

S-155BOF

CONST. 18 LF
OF 18" PIPE

3.5' SHLDR. GTTR.
3' MISC. ASPH.
8' PAVED SHLDR.

REMOVE EXIST. INLET
EXISTING PIPE TO BE
ABANDONED. FILL WITH
FLOWABLE FILL AND PLUG

12" CMP

S-156

CONST. 48 LF
OF 18" BCCMP

S-156A

S-158

CONST. 20 LF OF
18" BCCMP

EXIST. GUARDRAIL
(TO BE REMOVED)

CONST. 106 LF
OF 18" PIPE

S-161

END GUARDRAIL
CONNECT TO EXIST. GUARDRAIL,
END WIDENING,
BEGIN MILLING AND RESURFACING
STA. 413+00.00, 73.00' (RT)

RAMP U, S.R. 528, RAMP V
MATCH LINE 407+00.00
SEE PLAN SHEET 21

S.R. 528
MATCH LINE 417+40.00
SEE PLAN SHEET 49

STA. 8011+80.00
RAMP U

8' PAVED SHLDR.
2.5' MISC. ASPH.

8012
8013
8014
8015
8016
8017
8018
8019
8020
8021

CURVE C RAMPU02

EXIST. PIPE,
INLET AND U-EW
(TO BE REMOVED)

CONST. GUARDRAIL

CONST. 124 LF OF 18" PIPE
(JACK & BORE)

CONST. 41 LF
OF 18" PIPE

S-156AOF

REMOVE EXIST.
HEADWALL

EXIST. PIPES
(TO REMAIN)

S-1610F

CONST. 40 LF OF
18" PIPE

CONST. 2.5 TN.
RUBBLE RIPRAP
(DITCH LINING)

S-1570F

CONST. 2.5 TN.
RUBBLE RIPRAP.
(DITCH LINING)

OSW E22

END 4' PAVED SHLDR. (RT)
BEGIN MILLING AND RESURFACING
STA. 8016+40.00

POND 6A

CONSULATE DR.

6' SHLDR.
(4' PAVED)

℄ CONST. RAMP U

PT STA 8015+52.82

S-159

CONST. 122 LF OF 24" PIPE
(JACK & BORE)

END GUARDRAIL
CONST. TYPE II END ANCHORAGE
STA. 8019+30.62
℄ CONST. RAMP U

S-157

END MISC. ASPHALT
END 6' PAVED SHLDR.
STA. 8019+36.36, 18.44' (LT)
℄ CONST. RAMP U

EXIST. PIPES,
INLET AND MES
(TO REMAIN)

18" RCP

18" RCP

END MILLING AND
RESURFACING
STA. 8020+52.97,
63.96' (LT)

18" RCP

OSW E21

N 88° 04' 09" E

S-1590F

EXIST. TYPE B FENCE
(TO REMAIN)

LIMIT OF
CONSTRUCTION

LA R/W

EXIST. POND

END PROP. 10' BERM
EL. 94.0

CONST. 3.8 TN.
RUBBLE RIPRAP
(DITCH LINING)

END ℄ CONST. RAMP U
STA. 8021+47.82 =
STA. 412+62.60, 471.60' (RT)
℄ CONST. SR 528

LA R/W

CURVE DATA CL528-4
PI STA. = 417+23.72
Δ = 6° 30' 48" (RT)
D = 1° 03' 31"
T = 307.98'
L = 615.30'
R = 5,412.65'
PC STA. = 414+15.74
PCC STA. = 420+31.04
e = MATCH EXIST.

CURVE DATA CL528-3
PI STA. = 407+33.71
Δ = 14° 21' 01" (RT)
D = 1° 02' 47"
T = 689.24'
L = 1,371.27'
R = 5,475.00'
PC STA. = 400+44.47
PCC STA. = 414+15.74
e = 0.032 ft/ft

Ⓑ BEGIN CONST. SHLDR. GUTTER
FULL PAVED SHLDR.
STA. 407+92.00, 73.00' (LT)

Ⓒ END CONST. 8' PAVED SHLDR.
END CONST. SHLDR. GTTR.
STA. 413+00.00 (LT)

Ⓓ END CONST. 8' PAVED SHLDR.
END CONST. SHLDR. GTTR.
END LANE WIDENING
STA. 413+00.00 (RT)

Ⓔ END VAR. HT. MED. DBL. FACED BARRIER WALL,
CONNECT DBL. FACED GUARDRAIL TO BARRIER WALL
STA. 411+50.00 (SEE INDEX 410, SH. 16 OF 25)

CURVE DATA C_RAMPU02
PI STA. = 8012+72.24
Δ = 22° 45' 24" (RT)
D = 4° 00' 04"
T = 288.18'
L = 568.76'
R = 1,432.00'
PC STA. = 8009+84.06
PT STA. = 8015+52.82
e = -0.072 ft/ft

CURVE DATA C_RAMPV01
SEE PLAN SHEET 21

CURVE DATA C_RAMPV02
PI STA. = 9011+15.04
Δ = 26° 25' 35" (LT)
D = 17° 13' 00"
T = 78.14'
L = 153.49'
R = 332.79'
PC STA. = 9010+36.91
PT STA. = 9011+90.40
e = -0.092 ft/ft

LEGEND
MILLING AND RESURFACING
WIDENING

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 22
STA. 407+00.00 TO STA. 417+40.00

SHEET NO. 102

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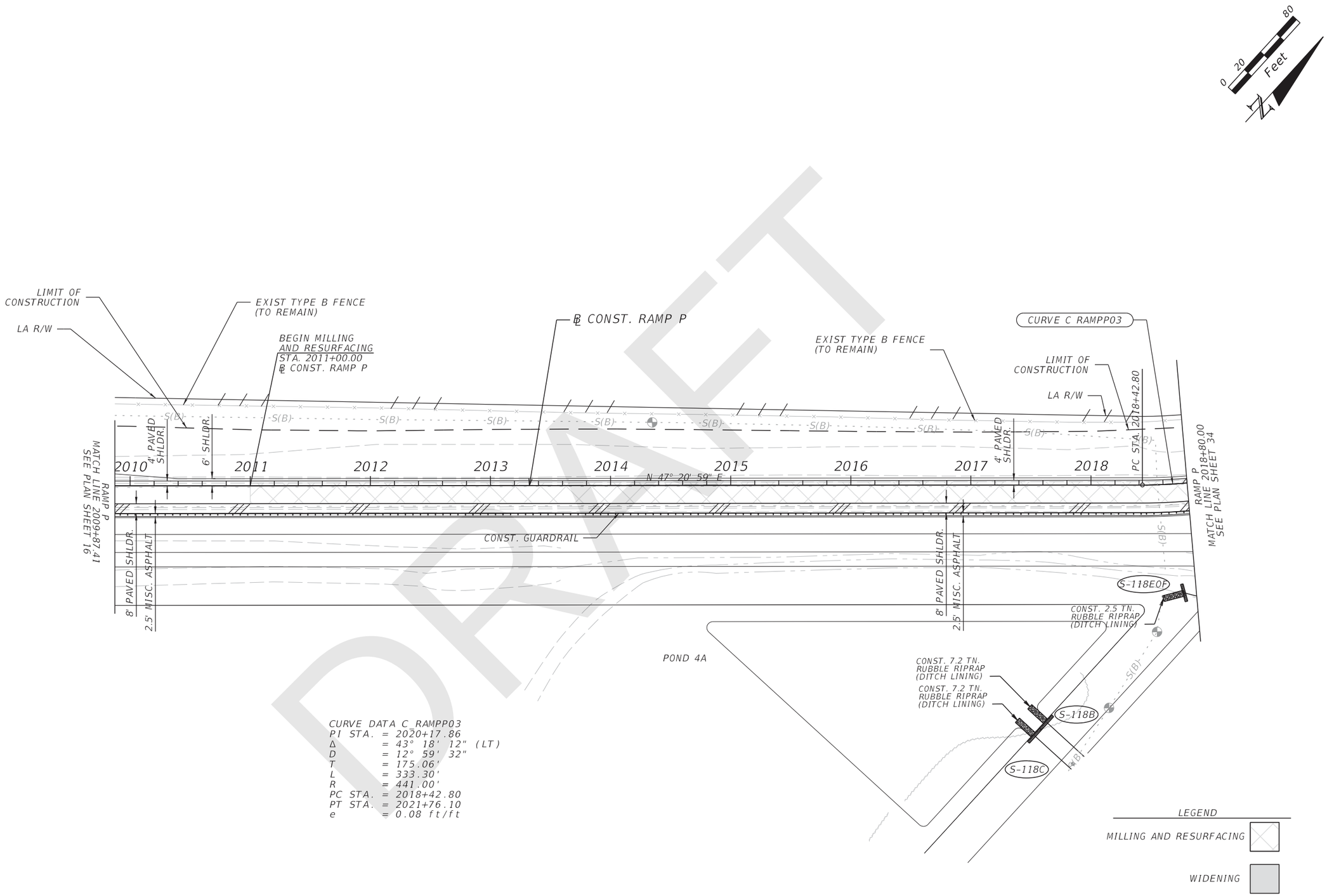

CURVE DATA C_RAMPP03
PI STA. = 2020+17.86
Δ = 43° 18' 12" (LT)
D = 12° 59' 32"
T = 175.06'
L = 333.30'
R = 441.00'
PC STA. = 2018+42.80
PT STA. = 2021+76.10
e = 0.08 ft/ft

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 32
RAMP P

SHEET NO. 112

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CURVE DATA C_RAMPO02
PI STA. = 1015+45.78
Δ = 76° 06' 11" (RT)
D = 12° 59' 32"
T = 345.19'
L = 585.76'
R = 441.00'
PC STA. = 1012+00.60
PT STA. = 1017+86.35
e = 0.08 ft/ft

CURVE DATA C_RAMPR-101
PI STA. = 4002+76.90
Δ = 60° 16' 17" (RT)
D = 12° 00' 42"
T = 276.90'
L = 501.77'
R = 477.00'
PC STA. = 4000+00.00
PT STA. = 4005+01.77
e = -0.076 ft/ft

CURVE DATA C_RAMPO03
PI STA. = 1018+94.82
Δ = 15° 05' 18" (RT)
D = 6° 59' 45"
T = 108.46'
L = 215.67'
R = 819.00'
PC STA. = 1017+86.35
PT STA. = 1020+02.03
e = -0.046 ft/ft

0 20 80
Feet

END ℄ CONST. RAMP O
END 4' PAVED SHLDR. (LT)
P.T. STA. 1020+02.03=
STA. 317+78.61, 74.51' (LT)
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)

NOTE: SEE SIDEWALK DETAILS FOR MORE INFORMATION

OTHER SURFACE WATERS E12
LA R/W
EXIST. TYPE B FENCE (TO REMAIN)
MATCH LINE RAMP O 1015+20.00 SEE PLAN SHEET 16
4' PAVED SHLDR.
6' SHLDR.
4' PAVED SHLDR.
6' SHLDR.
CURVE C RAMPO02
℄ CONST. RAMP O
CONST. 8 LF OF 18" PIPE
PCC STA. 1017+86.35
LIMITS OF CONSTRUCTION
EXIST. INLET (TO BE REMOVED)
EXIST. TYPE B FENCE (TO REMAIN)
S-1186
EXIST. 36" RCP (TO REMAIN)
LA R/W
CONST. 5' SWK.
EXIST. 36" RCP & INLET (MED/RT) (TO REMAIN)
CONST. 5' SWK.
STA. 1018+50.79
15.00' (LT)
10' PAVED SHLDR.
STA. 316+36.98
73.50' (LT)
STA. 316+36.98
25.50' (LT)
BEGIN CONST. 8' SHLDR.
4' PAVED SHLDR.
STA. 317+95.24, 26.75' (LT)
1020
SAWCUT
1019
STA. 319+32.04
65.88' (LT)
9,985' R
STA. 319+83.35
67.53' (LT)
STA. 319+84.60
31.55' (LT)
7,732' R
STA. 322+40.00
72.00' (LT)
313 314 315 316 317 318 319 320 321 322 323
156' R
5' R
10' R
125' R
℄ CONST. CR 423
JOHN YOUNG PKWY.
N 0° 13' 58" W
REMOVE EXIST. PAVT., SOD AREA
EXIST. GUARDRAIL (TO REMAIN)
RESET TO 2'1" MOUNTING HEIGHT
BEGIN CONST. 8' SHLDR.
STA. 319+31.97, 14.57' (RT)
BEGIN ℄ CONST. RAMP R-2
P.O.T. STA. 7000+00.00=
STA. 321+92.39, 0.00'
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)
C.R. 423 JOHN YOUNG PKWY
MATCH LINE 323+25.00
SEE PLAN SHEET 17
EXIST. 42" RCP & STRS. (TO REMAIN)
CONST 10 LF OF 18" PIPE
4000
4001
4002
4003
CONST. 5' SWK.
CONST. 97 LF OF 18" PIPE
CONST. 50 LF OF 18" PIPE
10' PAVED SHLDR.
12' SHLDR.
CONST. 5' SWK.
8' SHLDR. (4' PAVED)
EXIST. 15" RCP & STRS. (TO REMAIN)
S-1230F
OTHER SURFACE WATERS E14
EXIST. INLET (TO REMAIN)
RAMP R-2
MATCH LINE 7001+00.00
SEE PLAN SHEET 35
CONST. 5' SWK.
LA R/W
EXIST. SPILLWAY (TO REMAIN)
S-123A
END MILLING AND RESURFACING
STA. 4003+11.03
℄ CONST. RAMP R-1
BEGIN MILLING AND RESURFACING
STA. 315+08.73
℄ CONST. JOHN YOUNG PARKWAY
BEGIN GUARDRAIL
CONST. FLARED END ANCHORAGE
STA. 316+34.10, 73.87' RT
BEGIN ℄ CONST. RAMP R-1
P.C. STA. 4000+00.00=
STA. 316+81.77, 63.36' (RT)
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)
BEGIN 4' PAVED SHLDR. (RT AND LT)
BEGIN SHLDR. GTTR (RT)
STA. 4001+50.00
℄ CONST. RAMP R-1
MATCH EXIST. PAVT. AND SHLDR. GTTR.
S-123
6' SHLDR.
4' PAVED SHLDR.
CURVE C RAMPR-101
℄ CONST. RAMP R-1
LIMIT OF CONSTRUCTION
EXIST. 15" PIPE & STRS. (TO REMAIN)
LA R/W
4' PAVED SHLDR.
3.5' SHLDR. GTTR.
5" MISC. ASPHALT
RAMP 'R-1'
MATCH LINE 4004+20.00
SEE PLAN SHEET 35
ENCASE GUARDRAIL POSTS
STA. 4002+00.00 TO 4003+00.00

(A) STA. 322+75.57, 15.61' (RT)
(B) STA. 322+71.59, 3.55' (LT)
(C) STA. 323+21.62, 14.00' (LT)
(D) STA. 321+95.54, 15.37' (RT)
(E) STA. 321+99.47, 13.48' (RT)
(F) END 4' PAVED SHLDR. STA. 322+38.78, 21.67' (LT)
(G) STA. 322+47.21, 26.59' (LT)
(H) STA. 322+44.85, 36.00' (LT)
(I) STA. 321+68.66, 61.35' (RT)
(J) STA. 321+58.70, 51.69' (RT)
(K) STA. 322+10.30, 54.15' (RT)
(L) STA. 322+14.76, 51.43' (RT)

LEGEND
MILLING AND RESURFACING
WIDENING

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 33
JOHN YOUNG PKWY

SHEET NO. 113

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CURVE DATA C_RAMPT03
PI STA. = 6022+23.62
Δ = 213° 31' 07" (LT)
D = 20° 02' 01"
T = 949.71'
L = 1,065.81'
R = 286.00'
PC STA. = 6012+73.91
PT STA. = 6023+39.72
e = 0.097 ft/ft

CURVE DATA C_RAMPP03
PI STA. = 2020+17.86
Δ = 43° 18' 12" (LT)
D = 12° 59' 32"
T = 175.06'
L = 333.30'
R = 441.00'
PC STA. = 2018+42.80
PT STA. = 2021+76.10
e = 0.08 ft/ft

CURVE DATA C_RAMPT04
PI STA. = 6024+41.94
Δ = 20° 13' 49" (LT)
D = 9° 59' 57"
T = 102.22'
L = 202.32'
R = 573.00'
PC STA. = 6023+39.72
PT STA. = 6025+42.03
e = 0.03 TO 0.09 ft/ft

0 20 80
Feet

LIMIT OF CONSTRUCTION
LA R/W
CURVE C RAMPP03
END GUARDRAIL, CONST. PARALLEL END ANCHORAGE STA. 2020+84.00, 23.66' (RT)
CONST. 7LF OF 18" PIPE
8' PAVED SHLDR. 2.5' MISC. ASPHALT
4' PAVED SHLDR.
RAMP P MATCH LINE 2018+80.00 SEE PLAN SHEET 32
2019
2020
2021
2022
2023
2024
PT STA. 2021+76.10
END GUARDRAIL WITH PIPERAIL, CONST. PARALLEL END ANCHORAGE STA. 336+41.25, 70.09' (LT)
NOTE: SEE SIDEWALK DETAILS FOR MORE INFORMATION
CONST. 5' SWK.
EXIST. TYPE B FENCE (TO REMAIN)
END ℄ CONST. RAMP P
END SHLDR. (LT)
MATCH EXIST.
P.O.T. STA. 2024+95.08
STA. 340+18.00, 68.00' (LT)
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)
LA R/W
℄ CONST. RAMP P
SPECIAL STEEL GUARDRAIL POSTS STA. 333+40.00 TO 333+60.00
CONST. GUARDRAIL
CONST. GUARDRAIL WITH PIPERAIL
STA. 2021+93.81
15.00' (RT)
N 4° 05' 06" E
CONST. 5' SWK
CONST. 71 LF OF 18" PIPE
S-118E
EXIST. 36" PIPE (TO REMAIN)
ENCASE GUARDRAIL POSTS STA. 333+60.00 TO STA. 333+90.00
EXIST. PIPES AND STRUCTURES TO BE REMOVED OUTSIDE LIMITS OF MILLING AND RESURFACING. PLUG REMAINING PIPE END AND FILL WITH FLOWABLE FILL
STA. 334+50.61
26.84' (LT)
℄ CONST. CR 423
JOHN YOUNG PARKWAY
STA. 337+16.22
56.19' (LT)
EXIST. 18" PIPE (TO REMAIN)
19.5'
STA. 337+45.47
12.18' (RT)
BEGIN ℄ CONST. RAMP Q
STA. 3000+00.00=
STA. 337+68.44,0.00'
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)
END MILLING AND RESURFACING
STA. 339+36.00
℄ CONST. JOHN YOUNG PARKWAY
C.R. 423 JOHN YOUNG PARKWAY MATCH LINE 330+80.00 SEE PLAN SHEET 17
36'
3' MISC. ASPHALT
10' PAVED SHLDR.
331
332
333
S-118D
334
335
336
337
338
339
340
341
342
N 0° 13' 58" W
75' R
BEGIN MILLING AND RESURFACING STA. 3000+54.46
℄ CONST. RAMP Q
S-118F
STA. 336+84.42
20.48' (LT)
CONST. 299 LF OF 18" PIPE
STA. 337+41.34
20.00' (RT)
5' R
CONST. 284 LF OF 36" PIPE (JACK & BORE)
CONST. 284 LF OF 36" PIPE (JACK & BORE)
STA. 334+14.64
55.08' (RT)
EXIST. PIPES & STRS. TO BE REMOVED
48'
10'
CONST. 5' SWK.
END MILLING AND RESURFACING STA. 334+99.98
℄ CONST. JOHN YOUNG PARKWAY
OTHER SURFACE WATERS W8
3001
6023
6024
6025
STA. 6024+16.85
16.00' (RT)
3' MISC. ASPHALT
CURVE C SLA 6023+39.72
OF-5A2
OF-5A1
EXIST. PIPES & STRS. TO BE REMOVED
END ℄ CONST. RAMP T
P.T. STA. 6025+42.03=
STA. 332+86.95, 66.69' (RT)
℄ CONST. C.R. 423
(JOHN YOUNG PARKWAY)
℄ CONST. RAMP T
CURVE C RAMPT04
POND 5A
6' SHLDR. (4' PAVED)
EXIST. 18" RCP & STRS. (TO REMAIN)
CONST. 5' SWK.
END MILLING AND RESURFACING STA. 339+41.36
℄ CONST. JOHN YOUNG PARKWAY
BEGIN GUARDRAIL WITH PIPERAIL CONST. FLARED END ANCHORAGE, STA. 331+20.88, 86.02' RT
BEGIN MISC. ASPH. STA. 331+09.63, 78.15' RT
END GUARDRAIL WITH PIPERAIL CONST. TYPE II END ANCHORAGE STA. 334+61, 105' (RT)
END GUARDRAIL, CONST. PARALLEL END ANCHORAGE STA. 6023+51.65, 11.01' (LT)
CONST 19 LF OF 30" PIPE
JACK & BORE 80 LF OF 30" PIPE
CONST. 33 LF OF 30"
EXIST. 30" PIPE & STRS. (TO REMAIN)
℄ CONST. RAMP Q
LIMIT OF CONSTRUCTION
LA R/W
2.5' MISC. ASPHALT
10' PAVED SHLDR.
6023
S-1330F
S-133
CONST. 5.4 TN. RUBBLE RIPRAP (DITCH LINING)
RAMP T MATCH LINE 6020+80.00 SEE PLAN SHEET 36
RAMP Q MATCH LINE 3002+80.00 SEE PLAN SHEET 36

LEGEND
MILLING AND RESURFACING
WIDENING

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 34
JOHN YOUNG PARKWAY

SHEET NO. 114

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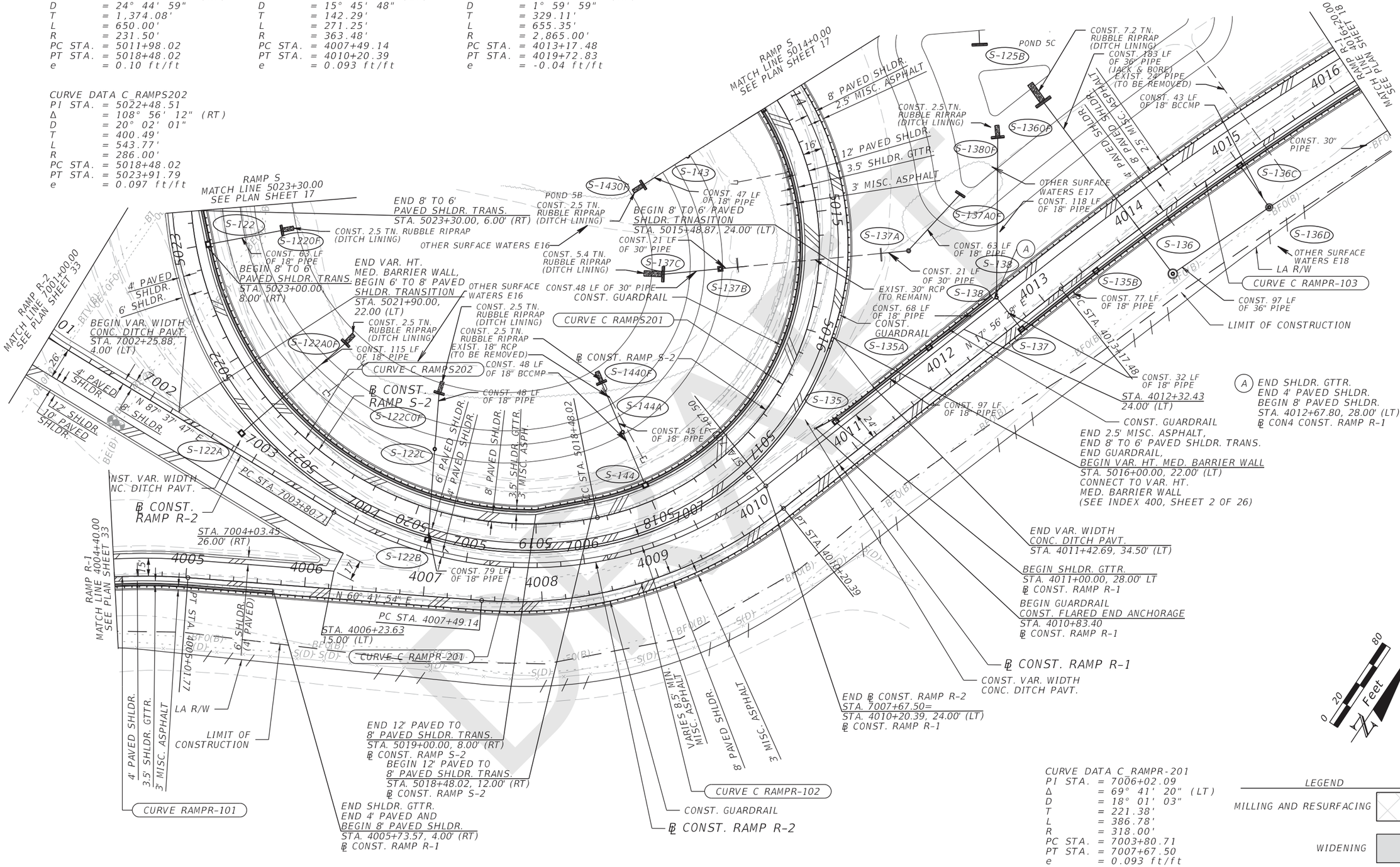
CURVE DATA C_RAMPS201
PI STA. = 5025+72.10
Δ = 160° 52' 25" (RT)
D = 24° 44' 59"
T = 1,374.08'
L = 650.00'
R = 231.50'
PC STA. = 5011+98.02
PT STA. = 5018+48.02
e = 0.10 ft/ft

CURVE DATA C_RAMPR-102
PI STA. = 4008+91.43
Δ = 42° 45' 27" (LT)
D = 15° 45' 48"
T = 142.29'
L = 271.25'
R = 363.48'
PC STA. = 4007+49.14
PT STA. = 4010+20.39
e = 0.093 ft/ft

CURVE DATA C_RAMPR-103
PI STA. = 4016+46.59
Δ = 13° 06' 22" (RT)
D = 1° 59' 59"
T = 329.11'
L = 655.35'
R = 2,865.00'
PC STA. = 4013+17.48
PT STA. = 4019+72.83
e = -0.04 ft/ft

CURVE DATA C_RAMPS202
PI STA. = 5022+48.51
Δ = 108° 56' 12" (RT)
D = 20° 02' 01"
T = 400.49'
L = 543.77'
R = 286.00'
PC STA. = 5018+48.02
PT STA. = 5023+91.79
e = 0.097 ft/ft



LEGEND
MILLING AND RESURFACING
WIDENING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 35
RAMP R-1 & R-2 & S-2

SHEET NO. 115

tcaffery 4/12/2015 3:18:44 PM T:\02-0249_017\40609055201\roadway\Plan_Sheets\planrd35.dgn

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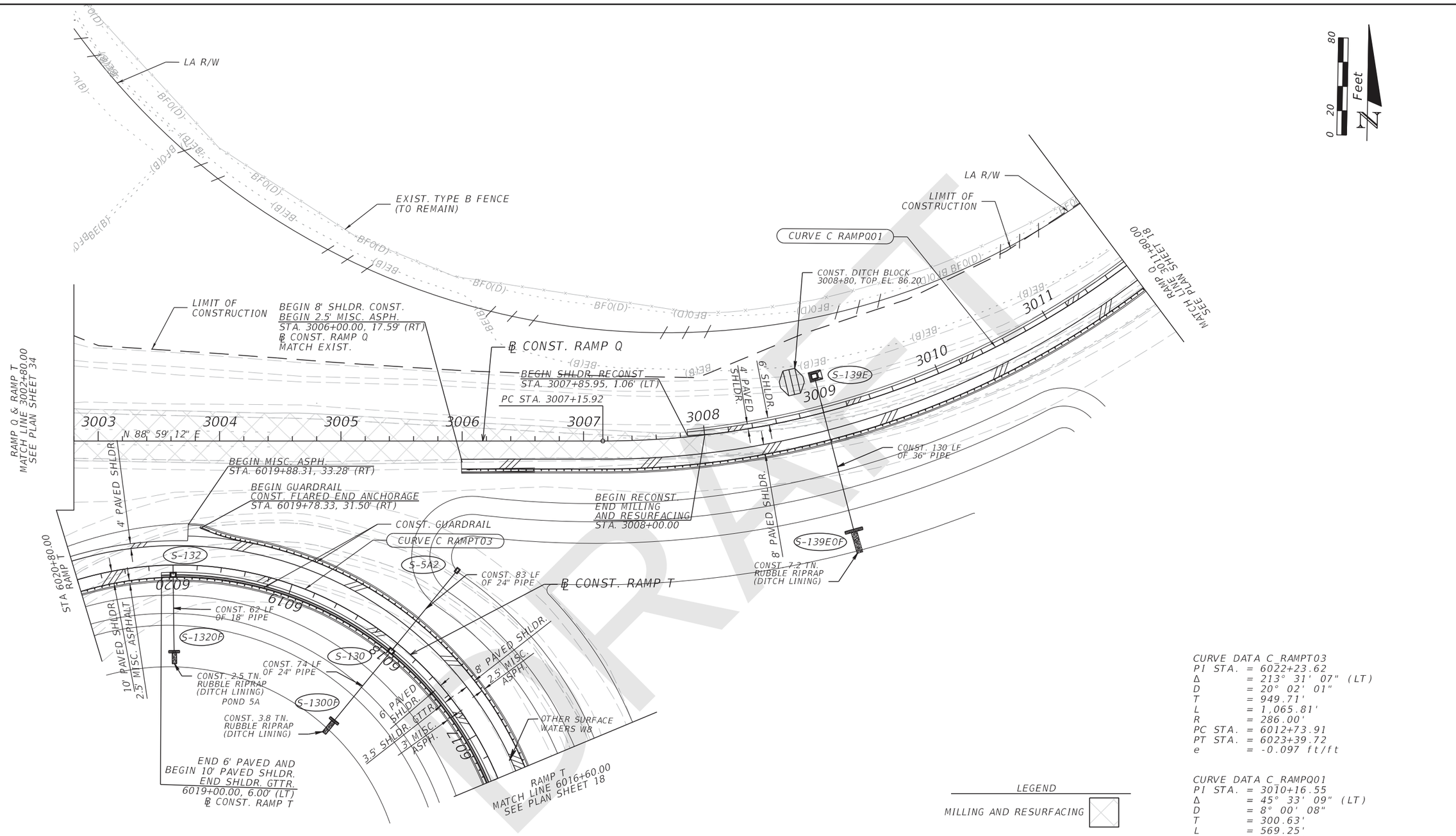

LEGEND

MILLING AND RESURFACING

WIDENING

CURVE DATA C_RAMPT03
PI STA. = 6022+23.62
Δ = 213° 31' 07" (LT)
D = 20° 02' 01"
T = 949.71'
L = 1,065.81'
R = 286.00'
PC STA. = 6012+73.91
PT STA. = 6023+39.72
e = -0.097 ft/ft

CURVE DATA C_RAMPQ01
PI STA. = 3010+16.55
Δ = 45° 33' 09" (LT)
D = 8° 00' 08"
T = 300.63'
L = 569.25'
R = 716.00'
PC STA. = 3007+15.92
PT STA. = 3012+85.17
e = -0.095 ft/ft

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 36
RAMP Q & T

SHEET NO. 116

CONST. 36" PIPE
S-113
S101
END BARRIER WALL TRANSITION
STA. 325+76.08, 78.75' (LT)
CONST. 42" PIPE
BEGIN BARRIER WALL TRANSITION
STA. 325+61.41, 78.75' (LT)
END 32" HEIGHT SHOULDER
BARRIER WALL (INDEX 410)
BEGIN 54" PIER PROTECTION
BARRIER WALL (INDEX 411)
CONST. 30" PIPE
S-115
S-1110F
S-111
S-111A
CONST. 18" BCCMP
END 10' PAVED AND
BEGIN 8' PAVED SHLDR.
BEGIN 32" HEIGHT
SHOULDER BARRIER WALL
STA. 325+04.81, 80.00' (LT)
END GUARDRAIL
WITH REDUCED
POST SPACING 3' 1½")
CONST. FLARED END ANCHORAGE
STA. 323+35.69, 88.81' (LT)
BEGIN GUARDRAIL
(WITH REDUCED
POST SPACING 3' 1½")
CONST. TYPE II END ANCHORAGE
STA. 322+56.52, 84.60' (LT)
BEGIN MISC. ASPHALT
STA.322+50.54, 82.00' (LT)
10' PAVED SHLDR.
S-118
BEGIN MED. CONC. BARRIER
WALL (INDEX 410)
BEGIN VERTICAL TRANS. 32" TO 54"
END MISC. ASPH.
CONST. CRASH CUSHION
STA. 324+41.69, 3.12' (LT)
STA. 322+44.85
36.00' (LT)
5' R
STA. 322+47.23
26.60' (LT)
STA. 322+40.00
36.00' (LT)
156' R
BEGIN MISC. ASPH.
STA. 324+10.00
STA. 321+95.54
15.37' (RT)
STA. 323+21.62
14.00' (LT)
322
323
324
325
326
327
328
329
330
331
125' R
10' R
S-118A
10' PAVED SHLDR.
STA. 322+75.57
15.61' (RT)
STA. 322+71.59
3.55' (LT)
END VERTICAL TRANS.
32" TO 54"
STA. 324+56.69
3.13' (LT)
STA. 324+84.80
52.25' (RT)
5' R
125' R
S-121A
STA. 5024+82.35
16.00' (LT)
10' R
STA. 321+99.47
13.48' (RT)
STA. 322+14.76
51.43' (RT)
S-145B
STA. 321+68.66
61.35' (RT)
STA. 321+58.70
51.69' (RT)
STA. 321+96.71
115.66' (RT)
8' SHLDR.
4' PAVED SHLDR.
10' PAVED
SHLDR.
12' SHLDR.
N 87° 37' 47" E
STA. 322+10.30
54.15' (RT)
CONST.
18"
PIPE
S-146
S-121B
S-121D
4' PAVED SHLDR.
POND ACCESS
S-122
CONST.
18" PIPE
S-1450F
S-1220F
CONST.
30" PIPE
END GUARDRAIL
CONST. TYPE II END ANCHORAGE
STA. 5023+99.00, 10.00' RT
END SHLDR. GTTR.
END MISC. ASPHALT
STA. 5024+14.93, 6.00' RT
S-122A
CONST. GUARDRAIL
CONST. 18" PIPE
6' PAVED SHLDR.
S-122A0F
POND 5B
3' MISC. ASPHALT
3.5' SHLDR. GTTR.
4' PAVED SHLDR.
PC STA. 1003+80.71
NOTE:
SEE MAINLINE SHEETS FOR
EXISTING PIPES TO REMAIN
5021
5022
5023
5024
5025
1001
1002
1003
CONST. ALUMINUM
PED. HANDRAIL
@ CONST. JOHN YOUNG
PKWY. STA. 326+74.23
= STA. 354+04.09
℄ CONST. S.R. 528
PC STA. 5006+73.96
PT STA. 5007+14.81
5006
5007
5008
5009
352
353
356
3' MISC. ASPHALT
BEGIN MED. BARR. WALL
END 54" PIER PROTECTION
BARRIER WALL (INDEX 411)
STA. 328+60.24, 3.13' (LT)
BEGIN HORIZONTAL TRANS.
STA. 324+74.19
END HORIZONTAL TRANS.
STA. 325+41.69
N 0° 13' 58" W
BEGIN HORIZONTAL TRANS.
STA. 328+13.58
END HORIZONTAL TRANS.
STA. 328+81.08
END BARRIER
WALL TRANSITION
STA. 5025+70.84
7.71' (RT)
BEGIN BARRIER
WALL TRANSITION
STA. 5026+55.92, 7.71' (RT)
END 32" HEIGHT
SHOULDER BARRIER
BEGIN 54" HEIGHT PIER
PROTECTION BARRIER
(INDEX 411)
(INDEX 410)
END MED. BARR. WALL
BEGIN 54" PIER PROTECTION
BARRIER WALL (INDEX 411)
STA. 324+95.09, 3.13' (LT)
BEGIN 32" HEIGHT
SHOULDER BARRIER WALL
CONST. CRASH CUSHION
STA. 5024+43.72, 10.19' (RT)
NOTE: SEE SIDEWALK DETAILS
FOR MORE INFORMATION
CONST. 10' SWK.
BEGIN BARRIER WALL HEIGHT
TRANSITION 54" TO 32"
STA. 327+77.17, 78.75' (LT)
BEGIN GUARDRAIL WITH PIPERAIL
STA. 327+77.17, 78.75' (LT)
CONNECT TO BARRIER WALL
(SEE INDEX 400
SHEET 13 OF 26)
END BARRIER WALL HEIGHT
TRANSITION 54" to 32"
END PIER PROTECTION
BARRIER WALL (INDEX 411)
STA. 327+88.69, 78.75' (LT)
STA. 328+00.95
78.75' (LT)
BEGIN BARRIER
WALL TRANSITION
STA. 327+76.46
72.58' (RT)
END BARRIER WALL TRANSITION
STA. 327+88.12, 72.58' (RT)
END 54" PIER PROTECTION
BARRIER WALL (INDEX 411)
BEGIN 32" HEIGHT SHOULDER
BARRIER (INDEX 410)
POND 4A
STA. 328+79.03
83.97' (LT)
END GUARDRAIL WITH PIPERAIL
CONST. FLARED END ANCHORAGE
STA. 329+16.02
TYPE B STABILIZATION
BEGIN GUARDRAIL WITH PIPERAIL
CONST. TYPE II END ANCHORAGE
STA. 329+53.49
S-118C
12' PAVED SHLDR.
3' MISC. ASPHALT
BEGIN VERTICAL TRANS.
54" TO 32"
STA. 328+98.58
3.17' (LT)
STA. 329+24.62
14.00' (LT)
STA. 330+24.62
36.00' (LT)
END MISC. ASPH.
STA. 329+43.50
END MED. CONCRETE BARR.
(INDEX 410)
END VERTICAL TRANS. 54" TO 32"
BEGIN MISC. ASPH.
CONST. CRASH CUSHION
STA. 329+13.58, 3.12' (LT)
CONST. 36" PIPE
(JACK & BORE)
TYPE B
STABILIZATION
STA. 328+80.95
72.59' (RT)
STA. 329+57.36
77.69' (RT)
END GUARDRAIL WITH PIPERAIL
CONST. TYPE II END ANCHORAGE
STA. 330+84.92
POND ACCESS
END MISC. ASPHALT
STA. 330+87.31, 78.09' (RT)
BEGIN MISC. ASPHALT
STA. 331+09.63, 78.15' (RT)
BEGIN GUARDRAIL WITH PIPERAIL
CONST. FLARED END ANCHORAGE
STA. 331+20.88
POND 5A
END 32" HEIGHT
SHOULDER BARRIER WALL
STA. 328+60.00, 72.58' (RT)
BEGIN GUARDRAIL WITH PIPERAIL
328+5X.27, 73.38' (RT)
CONNECT TO BARRIER WALL
(SEE INDEX 410 SHEET 2 OF 25)
OF-5A2
3' MISC. ASPHALT
12' PAVED SHLDR.
MISC. ASPHALT
12' PAVED SHLDR.
3' MISC. ASPHALT
0 20 80
Feet
N

CURVE DATA C RAMPS202
PI STA. = 5022+48.51
Δ = 108° 56' 12" (RT)
D = 20° 02' 01"
T = 400.49'
L = 543.77'
R = 286.00'
PC STA. = 5018+48.02
PT STA. = 5023+91.79
e = 0.097 ft/ft

CURVE DATA C RAMPS203
PI STA. = 5024+93.54
Δ = 25° 59' 04" (RT)
D = 12° 59' 32"
T = 101.75'
L = 200.00'
R = 441.00'
PC STA. = 5023+91.79
PT STA. = 5025+91.79
e = 0.08 ft/ft

CURVE DATA CL528-1
PI STA. = 358+20.91
Δ = 52° 48' 20" (LT)
D = 2° 00' 00"
T = 1,422.27'
L = 2,640.28'
R = 2,864.79'
PC STA. = 343+98.65
PT STA. = 370+38.92
e = 0.08 ft/ft

LEGEND
MILLING AND RESURFACING
WIDENING

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 48
JOHN YOUNG PARKWAY

SHEET NO. 128

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CURVE DATA CL528-4
PI STA. = 417+23.72
Δ = 6° 30' 48" (RT)
D = 1° 03' 31"
T = 307.98'
L = 615.30'
R = 5,412.65'
PC STA. = 414+15.74
PT STA. = 420+31.04
e = MATCH EXIST.

0 20 80 Feet

LA R/W

LA R/W

STA. 417+60.19
60.50' (LT)
END BRIDGE
BEGIN MILLING AND RESURFACING
STA. ±417+88
℄ CONST. SR 528

EQUATION:
PT STA. 420+31.04 BK =
STA. 421+45.75 AH

REMOVE EXIST. OUTSIDE
LANE STRIPE AND HATCHING

STA. 427+69.28
79.84' (LT)

STA. 427+75.79
93.27' (LT)

CURVE CL528-4

℄ CONST. S.R. 528

48' (APPROX.)

N 74° 49' 22" E

418 419 420 422 423 424 425 426 427 428 429

S.R. 528
MATCH LINE STA. 417+40.00
SEE PLAN SHEET 22

S.R. 528
MATCH LINE STA. 429+40.00
SEE PLAN SHEET 50

END APPROACH SLAB
STA. ±418+21
℄ CONST. SR 528

NOTES:

1. ALL EXISTING DRAINAGE ON THIS SHEET IS TO REMAIN
2. ALL EXISTING FENCE, GUARDRAIL AND SHOULDER GUTTER IS TO REMAIN

LEGEND

MILLING AND RESURFACING

WIDENING

DRAFT

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DRMP, INC.
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MARK D. PROCHAK, P.E.
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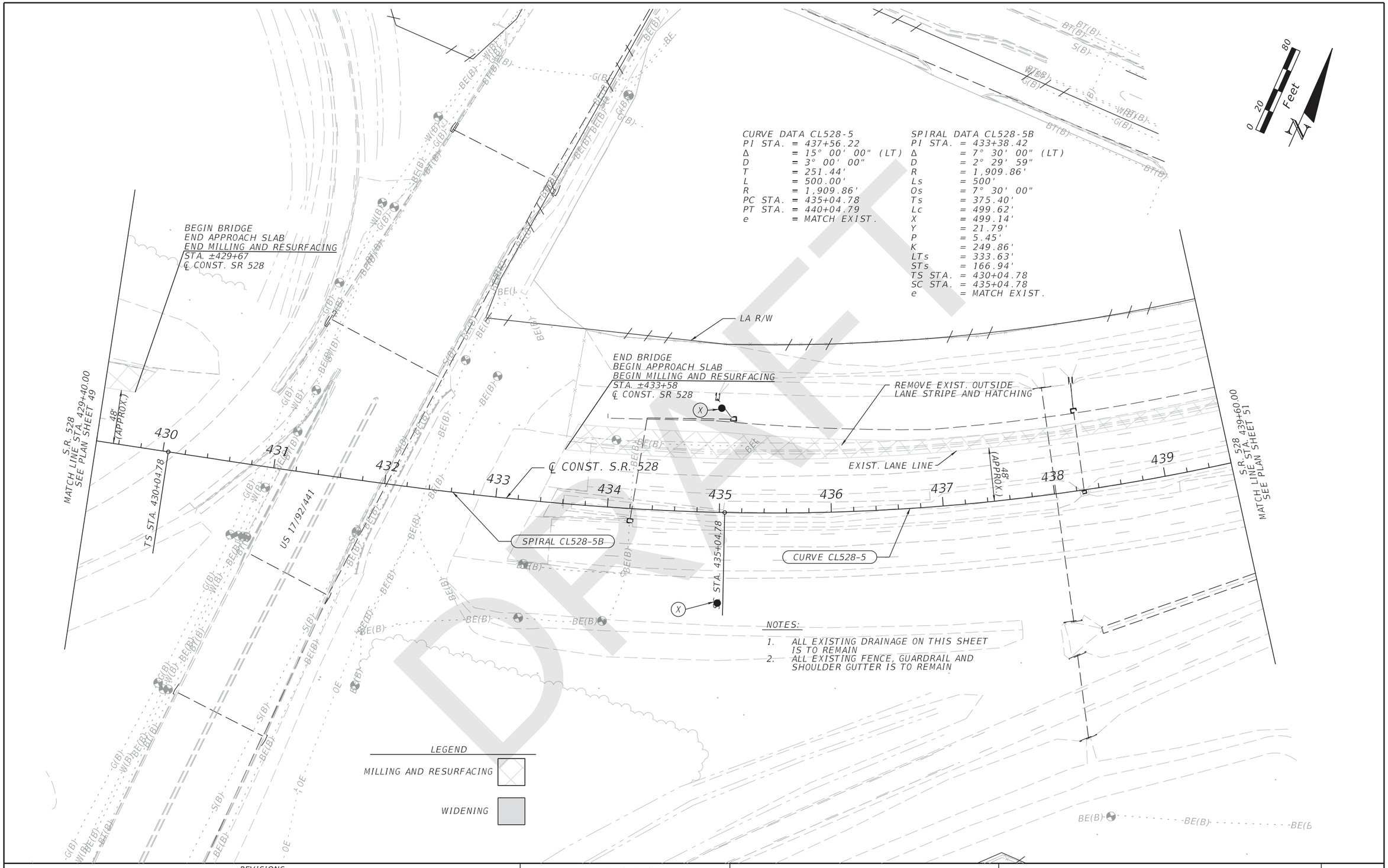
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 49
STA. 417+40.00 TO STA. 429+40.00

SHEET NO. 129



REVISIONS			
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DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 50
STA. 429+40.00 TO STA. 439+60.00

SHEET NO. 130

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CURVE DATA CL528-5
PI STA. = 437+56.22
Δ = 15° 00' 00" (LT)
D = 3° 00' 00"
T = 251.44'
L = 500.00'
R = 1,909.86'
PC STA. = 435+04.78
PT STA. = 440+04.79
e = MATCH EXIST.

SPIRAL DATA CL528-5A
PI STA. = 441+71.72
Δ = 7° 30' 00" (LT)
D = 2° 29' 59"
R = 1,909.86'
Ls = 500'
Os = 7° 30' 00"
Ts = 375.40'
Lc = 499.62'
X = 499.14'
Y = 21.79'
P = 5.45'
K = 249.86'
LTs = 333.63'
STs = 166.94'
CS STA. = 440+04.79
ST STA. = 445+04.79
e = MATCH EXIST.

0 20 80 Feet

END BRIDGE
BEGIN APPROACH SLAB
BEGIN MILLING AND RESURFACING
STA. ±444+13
℄ CONST. SR 528

LA R/W

BEGIN BRIDGE
END APPROACH SLAB
END MILLING AND RESURFACING
STA. ±441+88
℄ CONST. SR 528

REMOVE EXIST. OUTSIDE
LANE STRIPE AND HATCHING

SPIRAL CL528-5A

℄ CONST. S.R. 528

48' (APPROX.)

N 44° 49' 22" E

440 441 442 443 444 445 446 447 448 449

CS STA. 440+04.79

CURVE CL528-5

ST STA. 445+04.79

S.R. 528
MATCHLINE 439+60.00
SEE PLAN SHEET 50

S.R. 528
MATCHLINE 449+80.00
SEE PLAN SHEET 52

LANDSTREET RD.

LA R/W

NOTES:
1. ALL EXISTING DRAINAGE ON THIS SHEET IS TO REMAIN
2. ALL EXISTING FENCE, GUARDRAIL AND SHOULDER GUTTER IS TO REMAIN

LEGEND
MILLING AND RESURFACING
WIDENING

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 51
STA. 439+60.00 TO STA. 449+80.00

SHEET NO. 131

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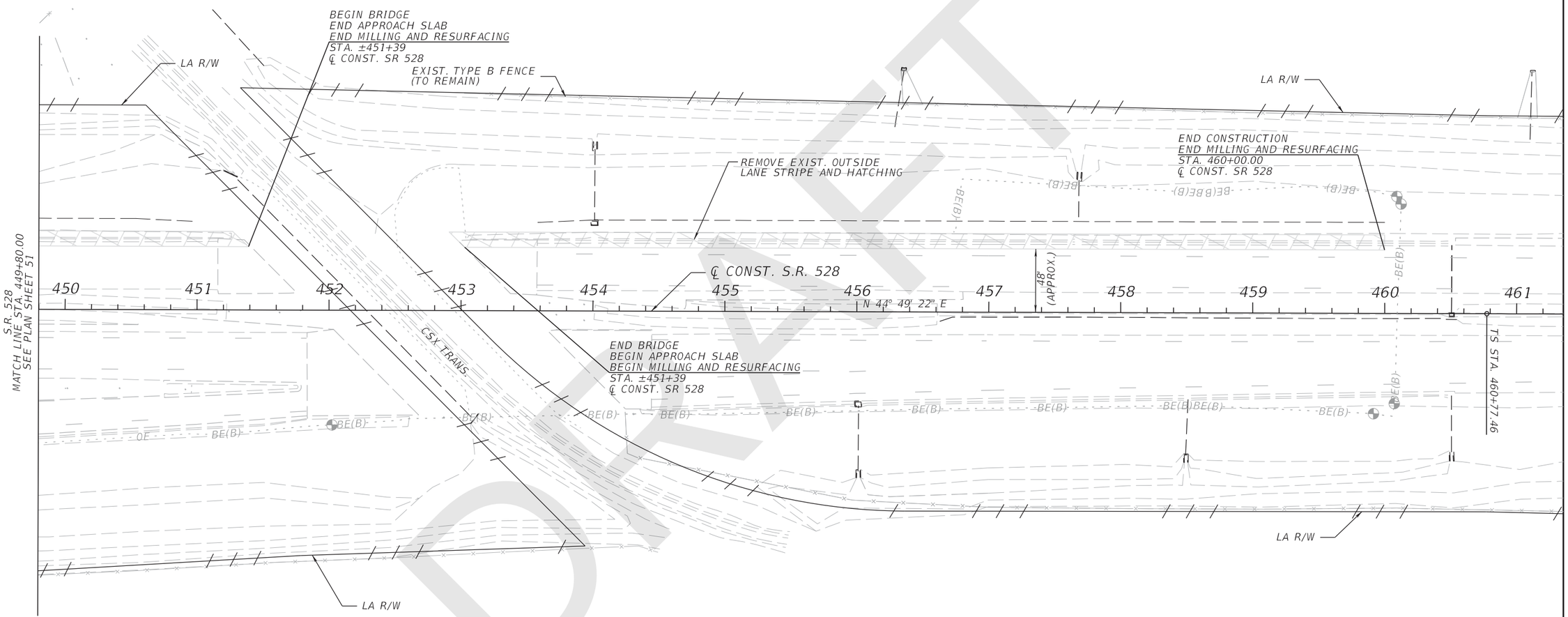

NOTES:

1. ALL EXISTING DRAINAGE ON THIS SHEET IS TO REMAIN
2. ALL EXISTING FENCE, GUARDRAIL AND SHOULDER GUTTER IS TO REMAIN

LEGEND

MILLING AND RESURFACING

WIDENING

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

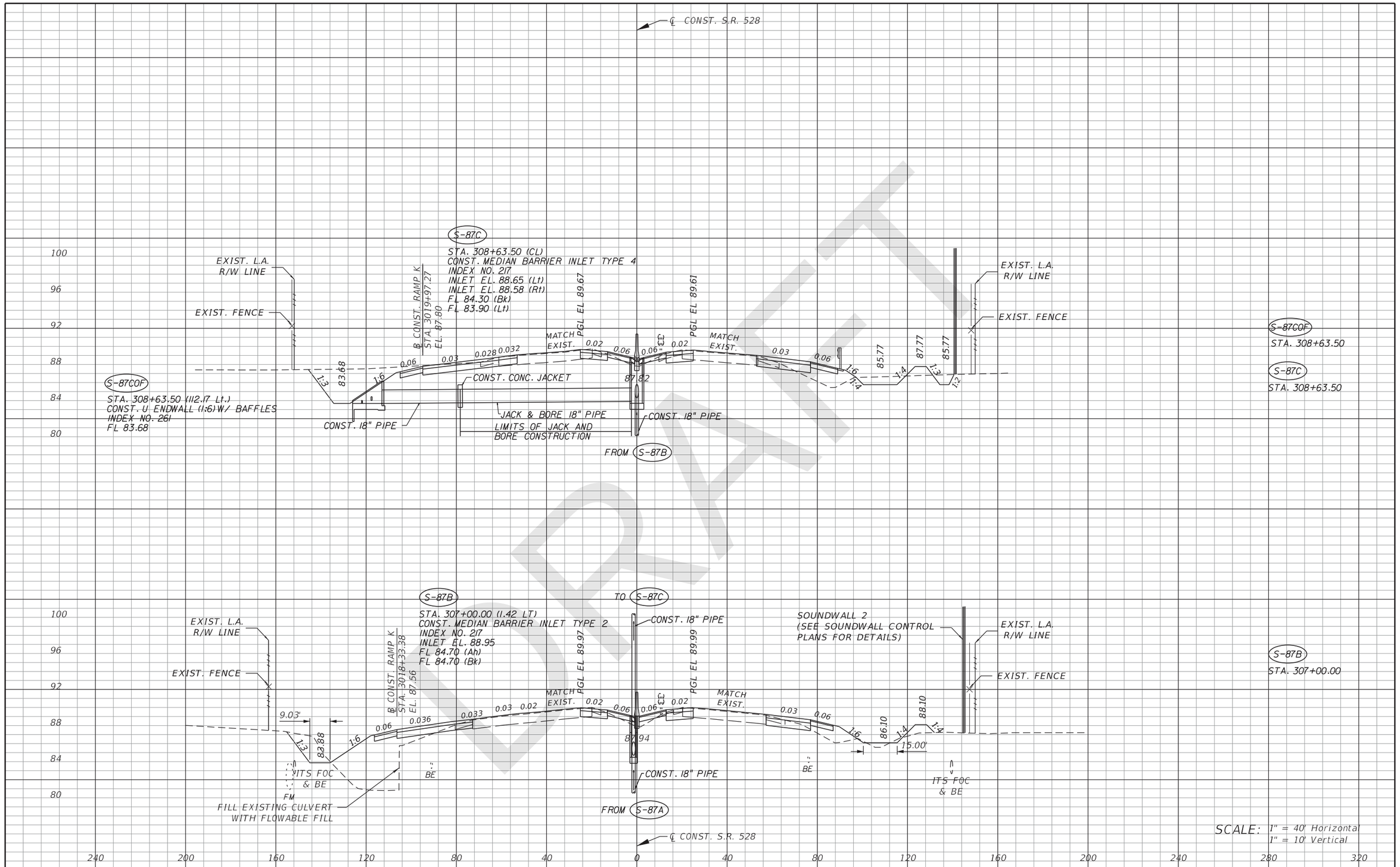
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

PLAN SHEET 52
STA. 449+80.00 TO STA. 461+40.00

SHEET NO. 132

tcaffery 4/12/2015 3:20:05 PM T:\02-0249_017\40609055201\roadway\Plan_Sheets\planrd52.dgn



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
DONALD W. BROWN, P.E.
LICENSE NO. 59272

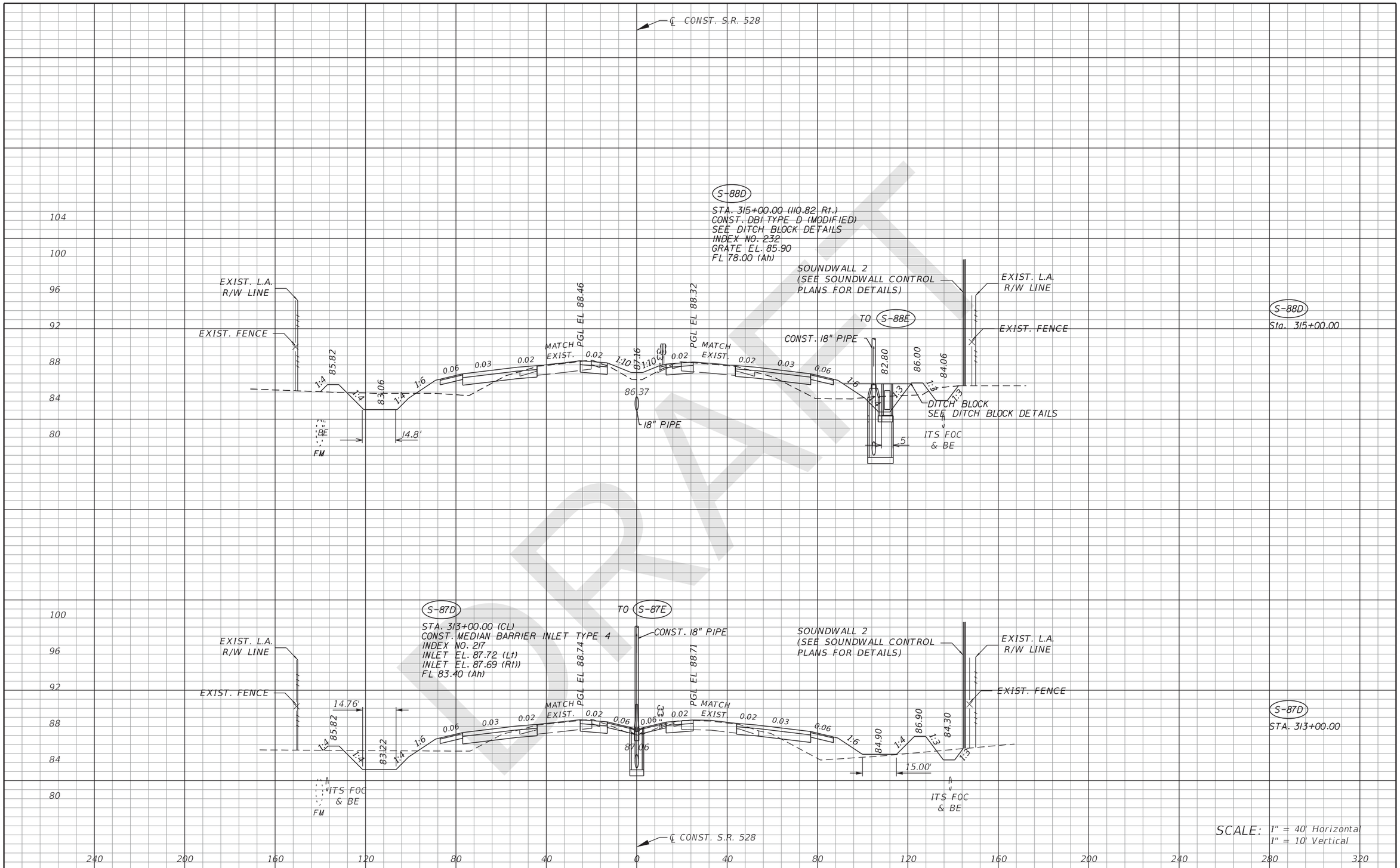
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 292

tcaffery 4/12/2015 3:25:17 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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REVISIONS			
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DONALD W. BROWN, P.E.
LICENSE NO. 59272

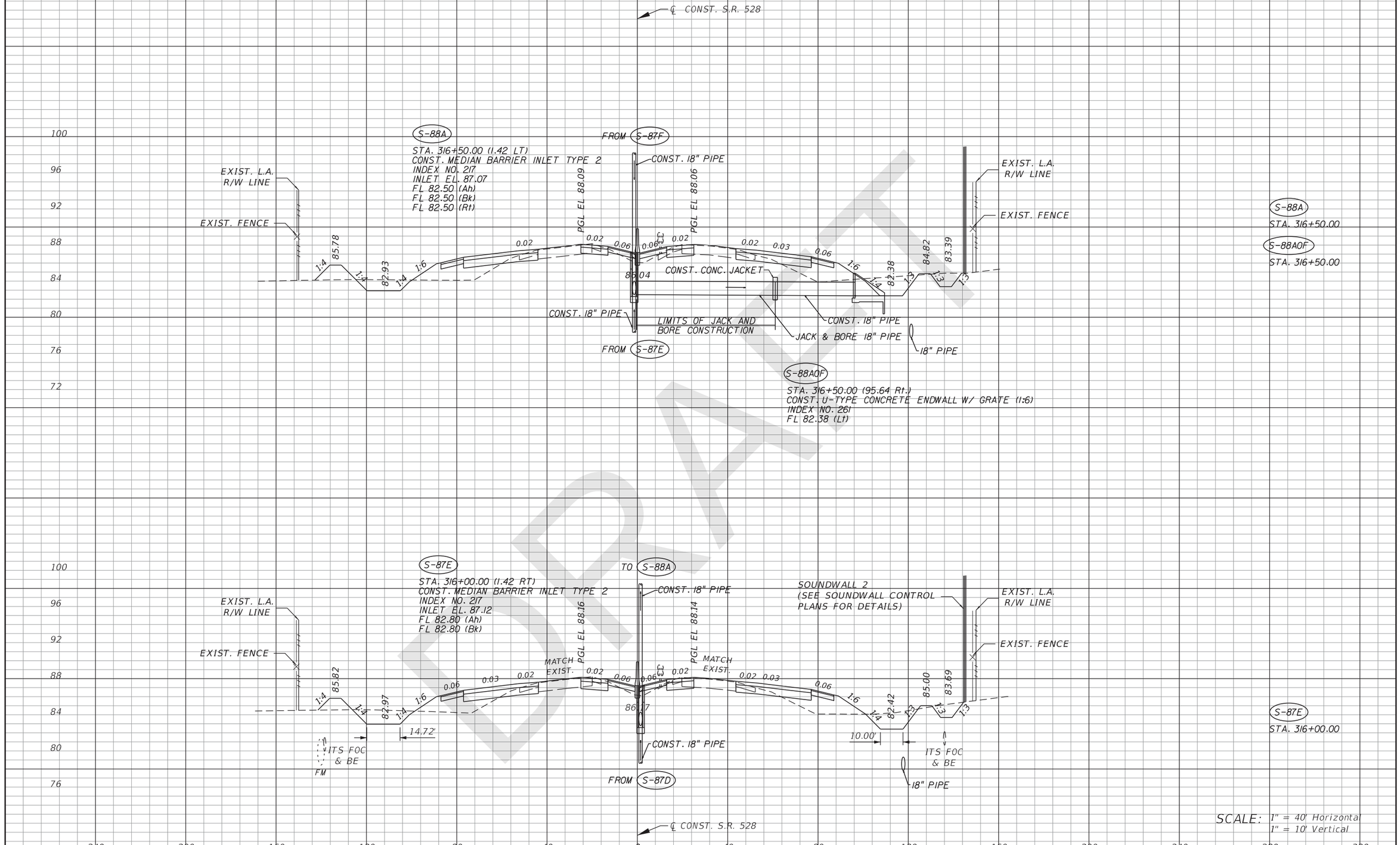
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 293

tcaffery 4/12/2015 3:25:18 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 294

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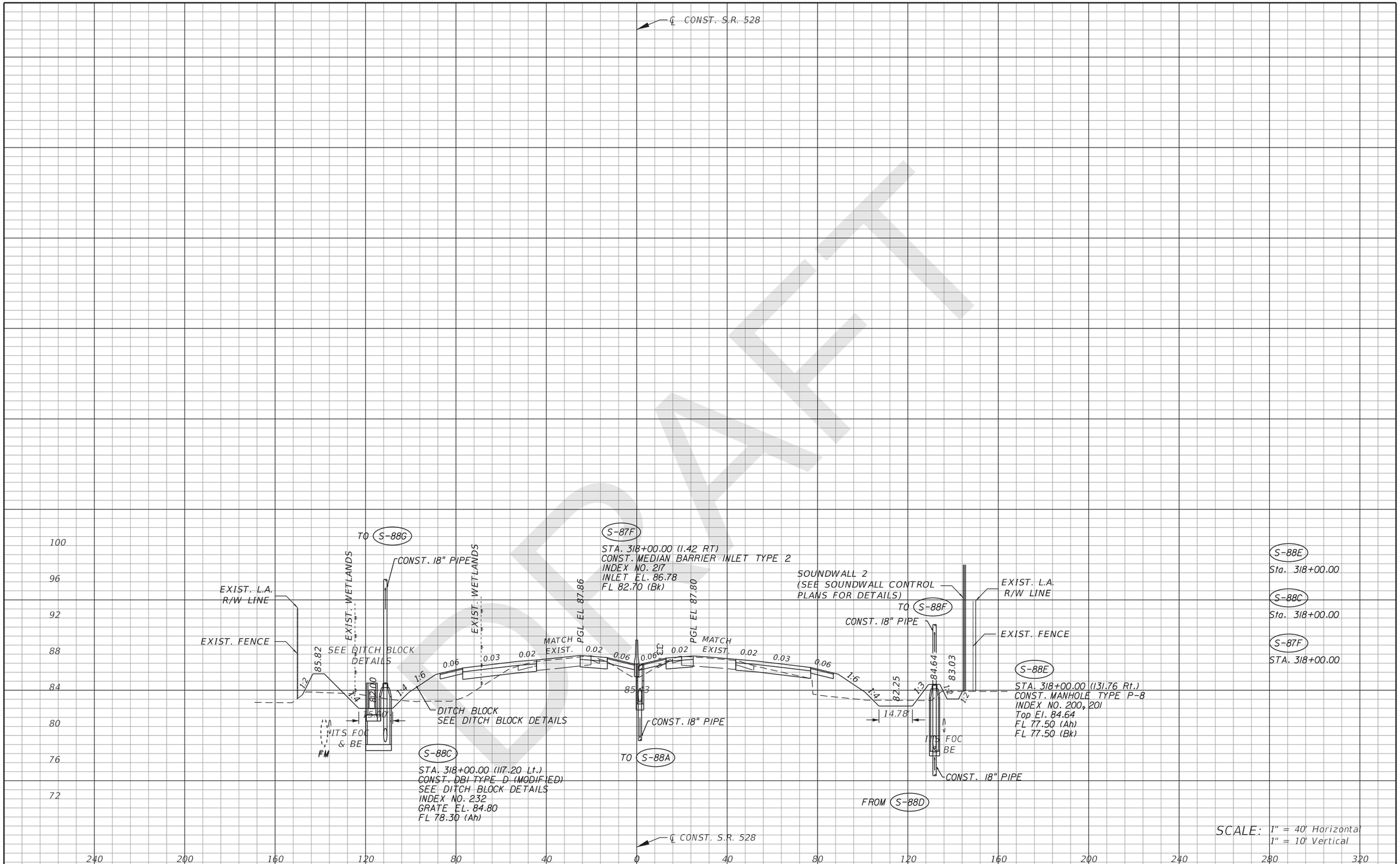

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LICENSE NO. 59272

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 295

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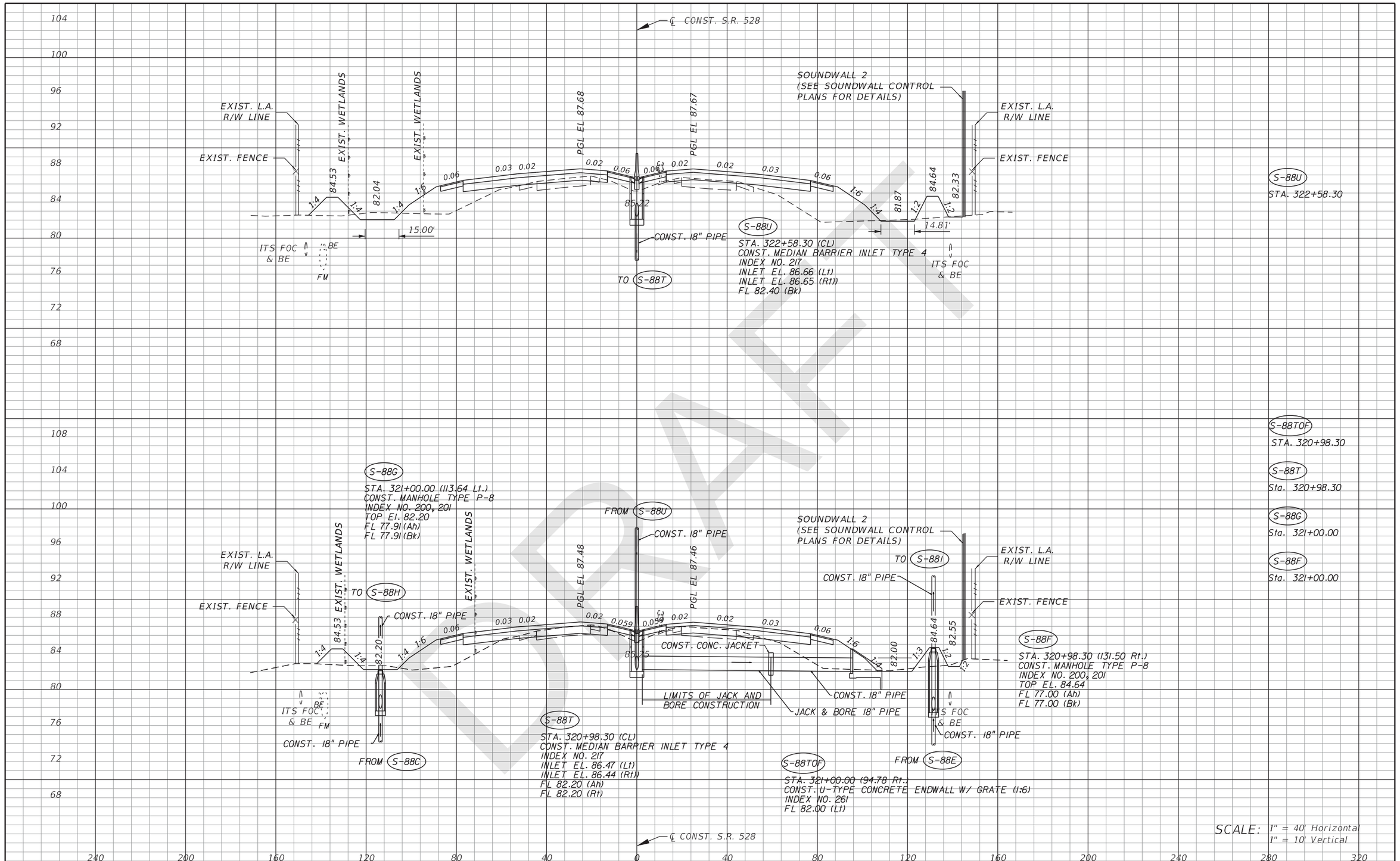


REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
DONALD W. BROWN, P.E.
LICENSE NO. 59272

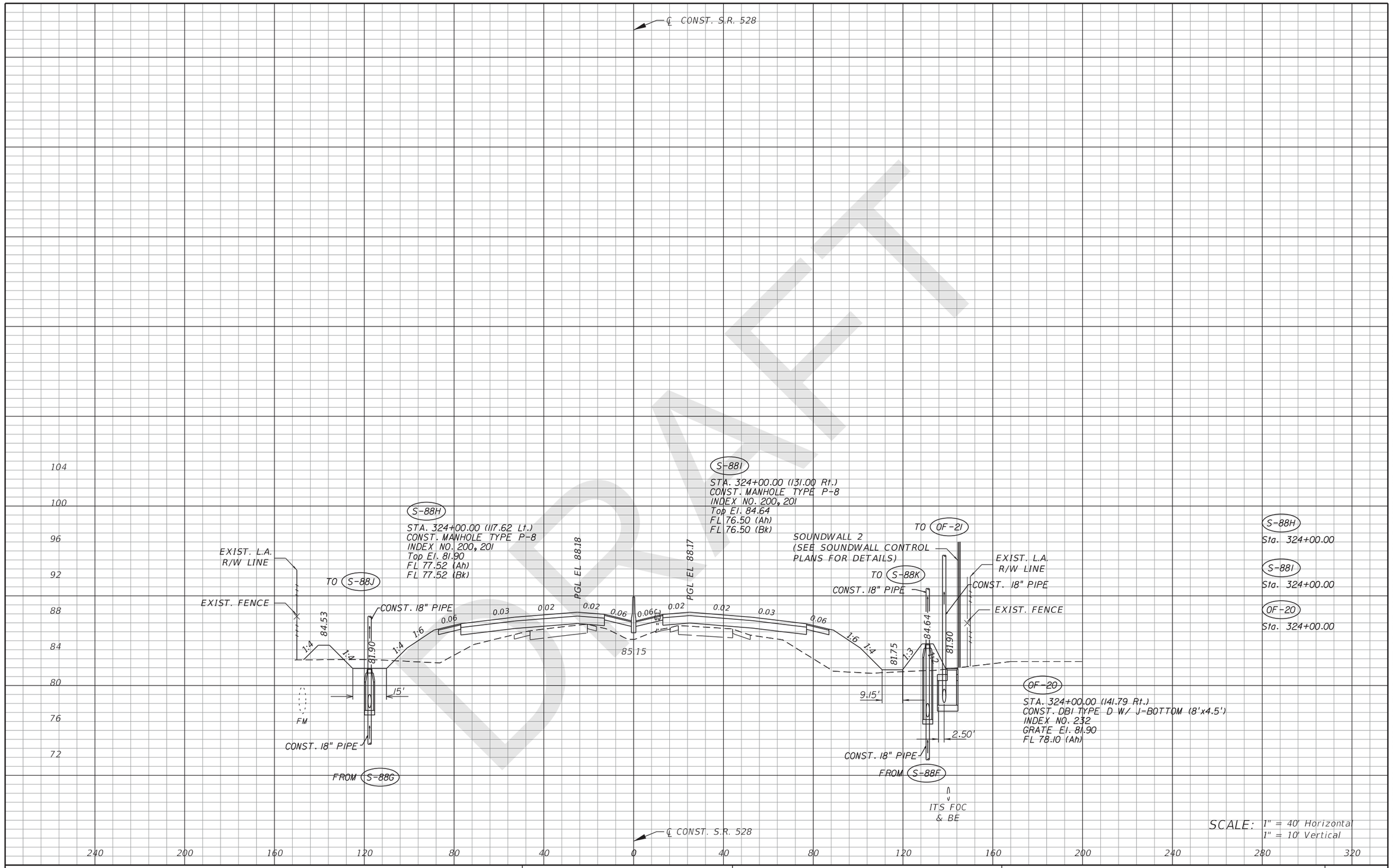
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 296

tcaffery 4/12/2015 3:25:18 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
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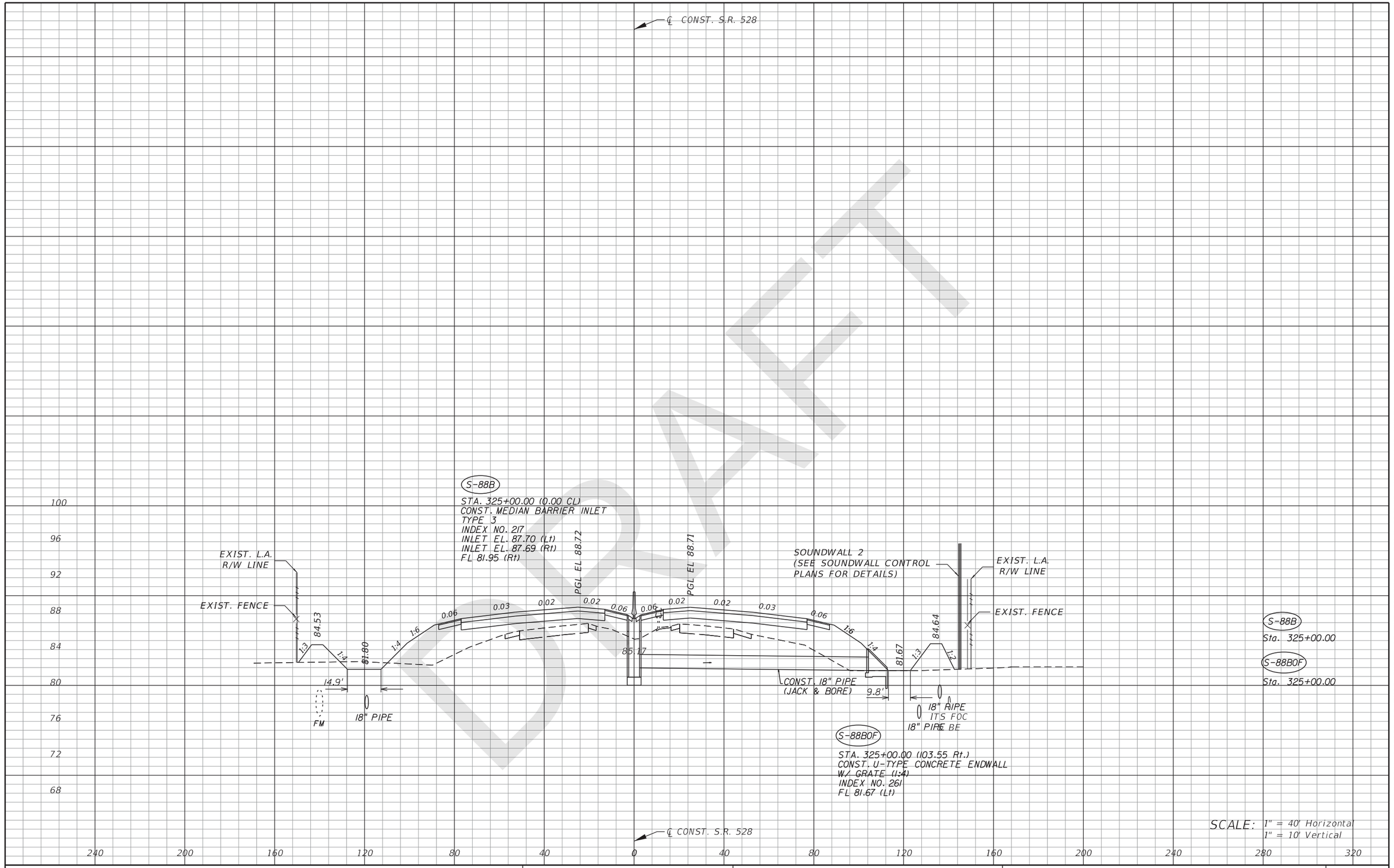
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 297

tcaffery 4/12/2015 3:25:19 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRAINAGE STRUCTURES
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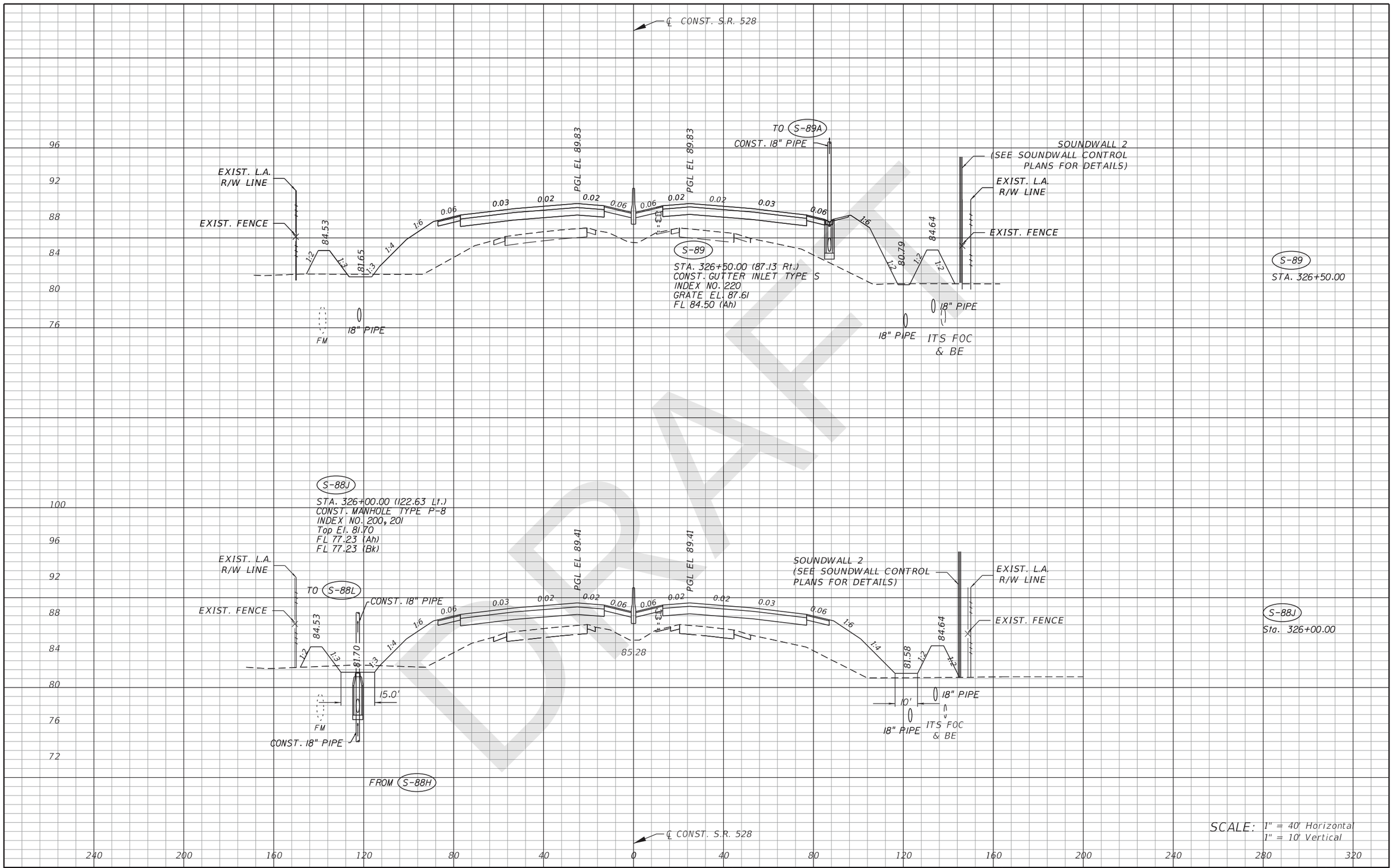

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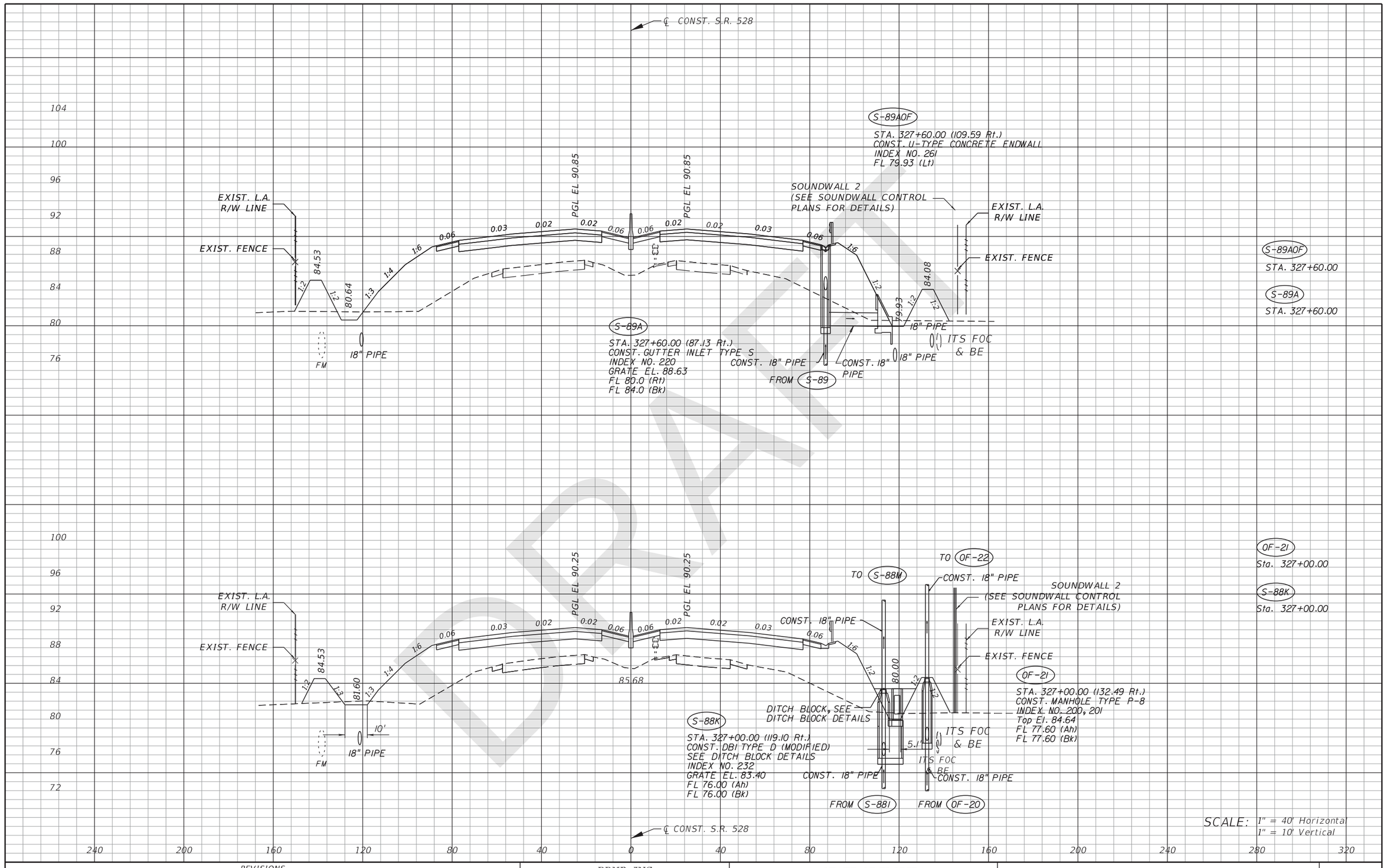

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 300

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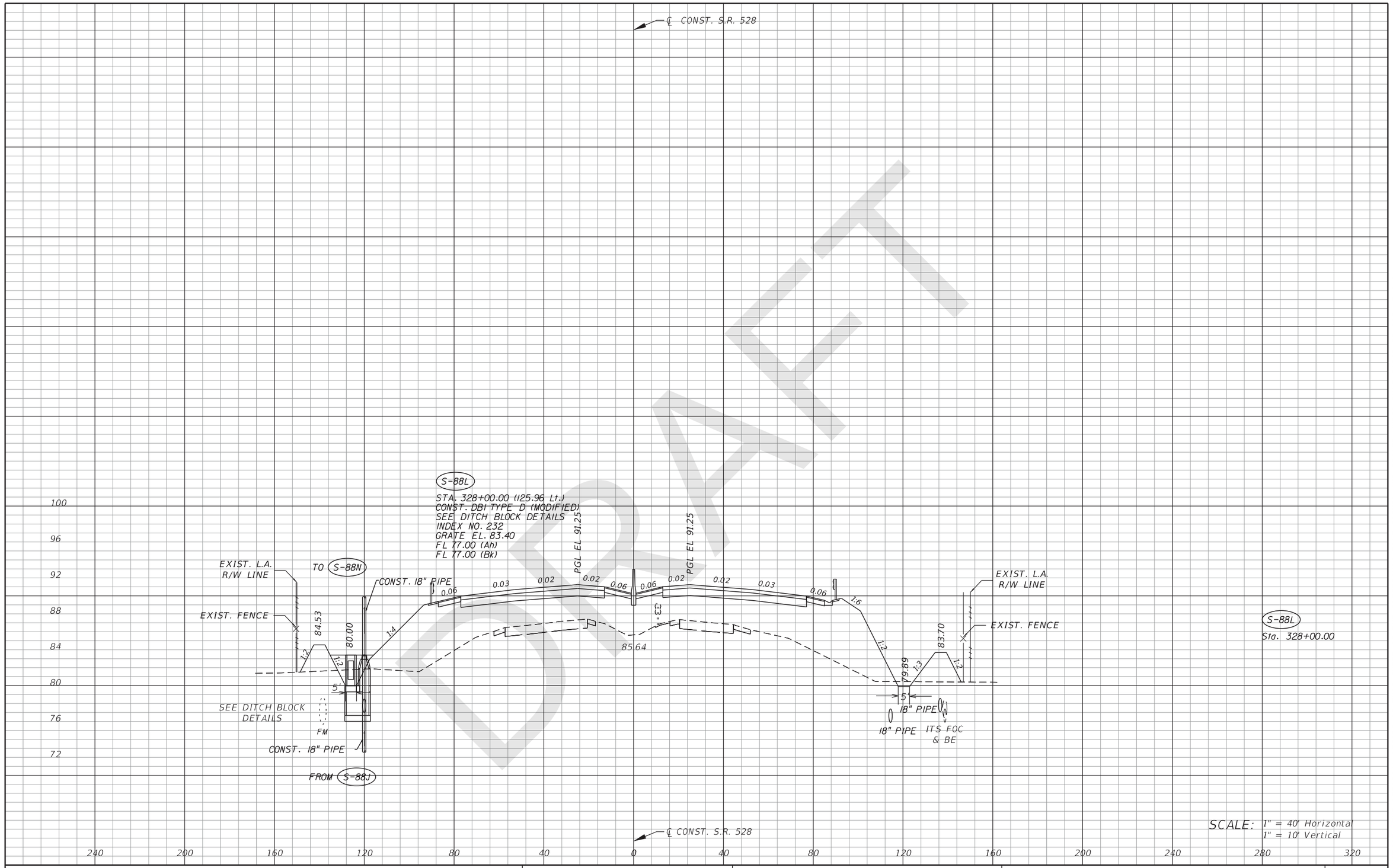

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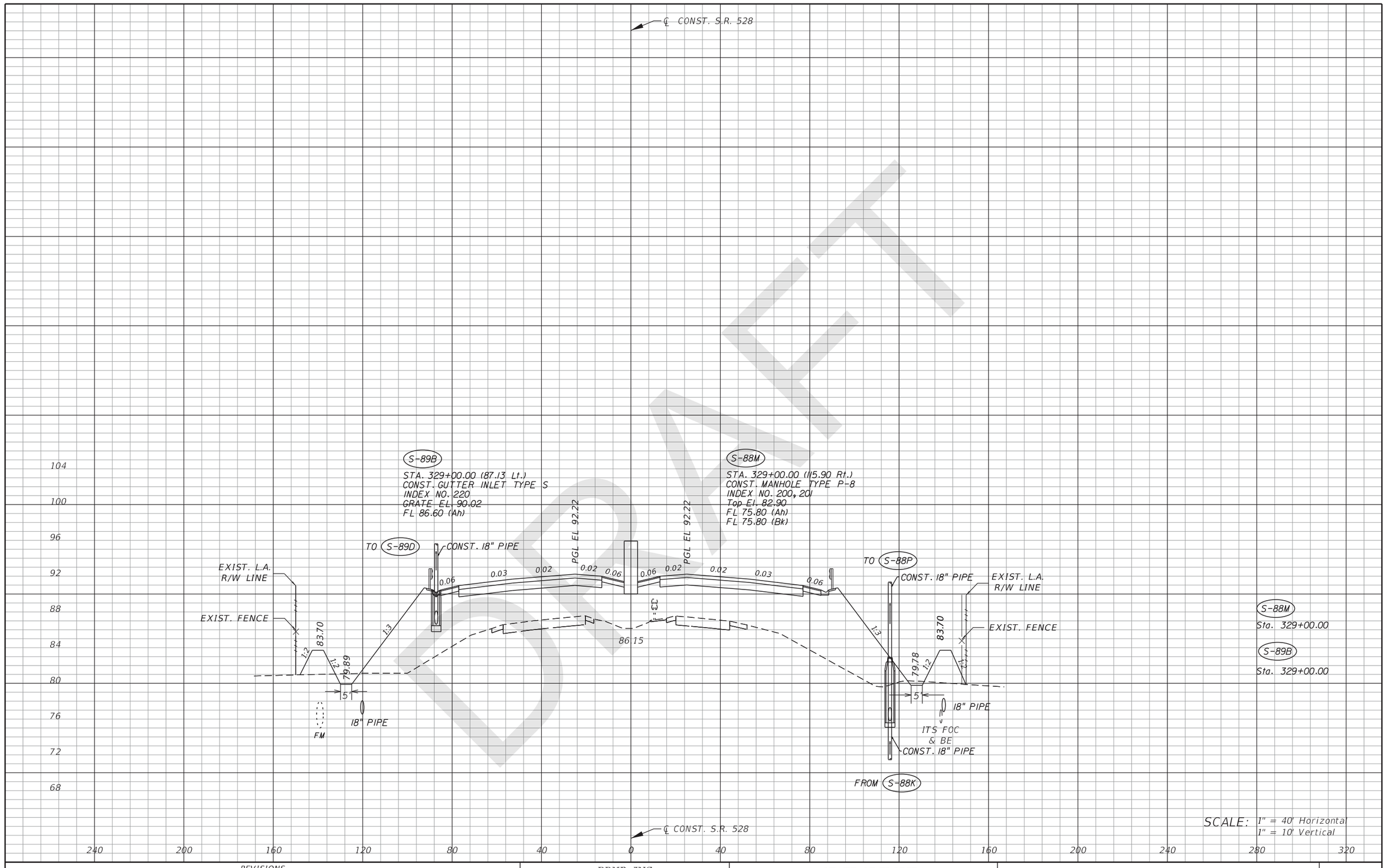

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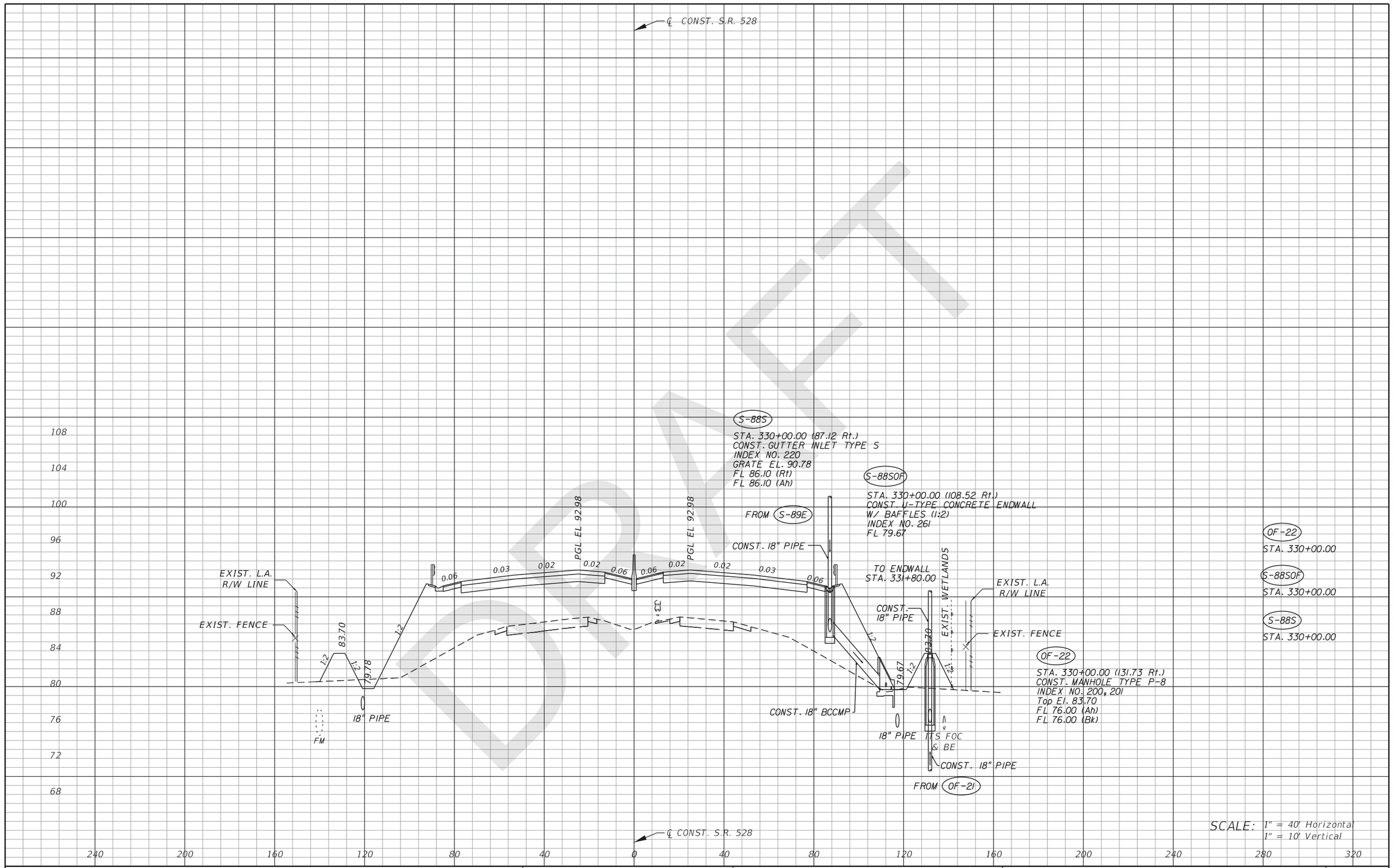
DRAINAGE STRUCTURES
SR 528

SHEET NO. 302

tcaffery 4/12/2015 3:25:20 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 303

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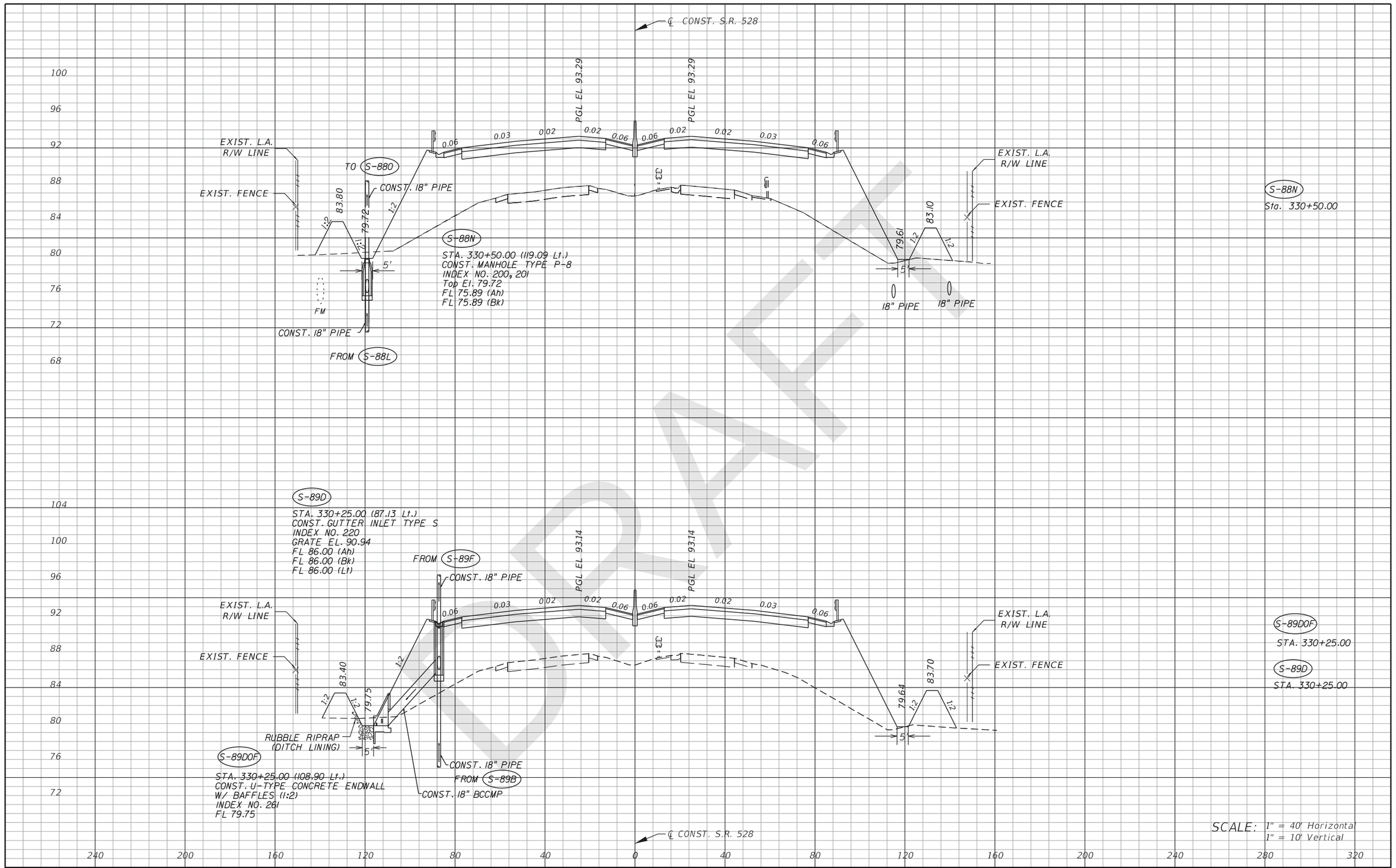

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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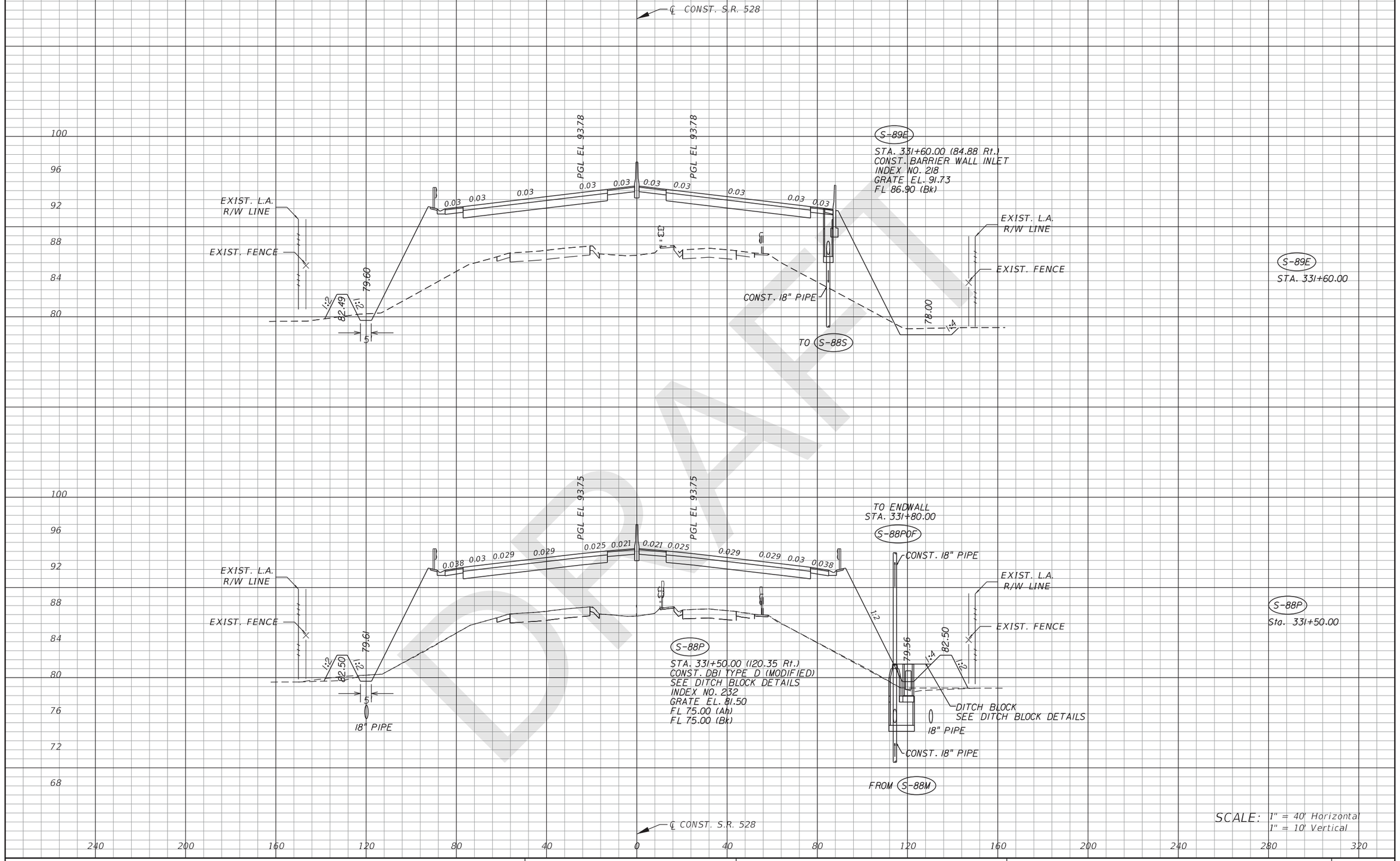

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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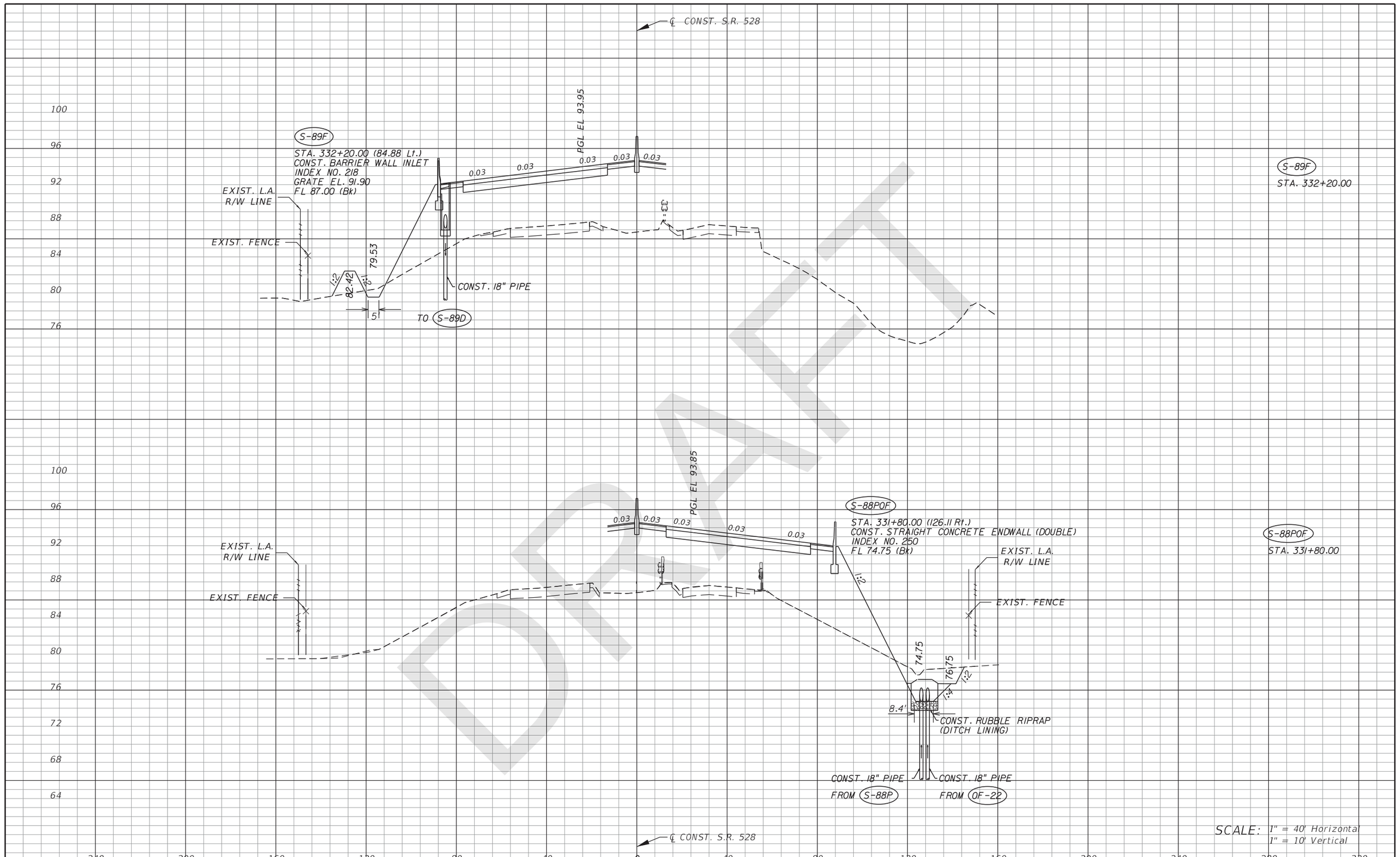

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 306

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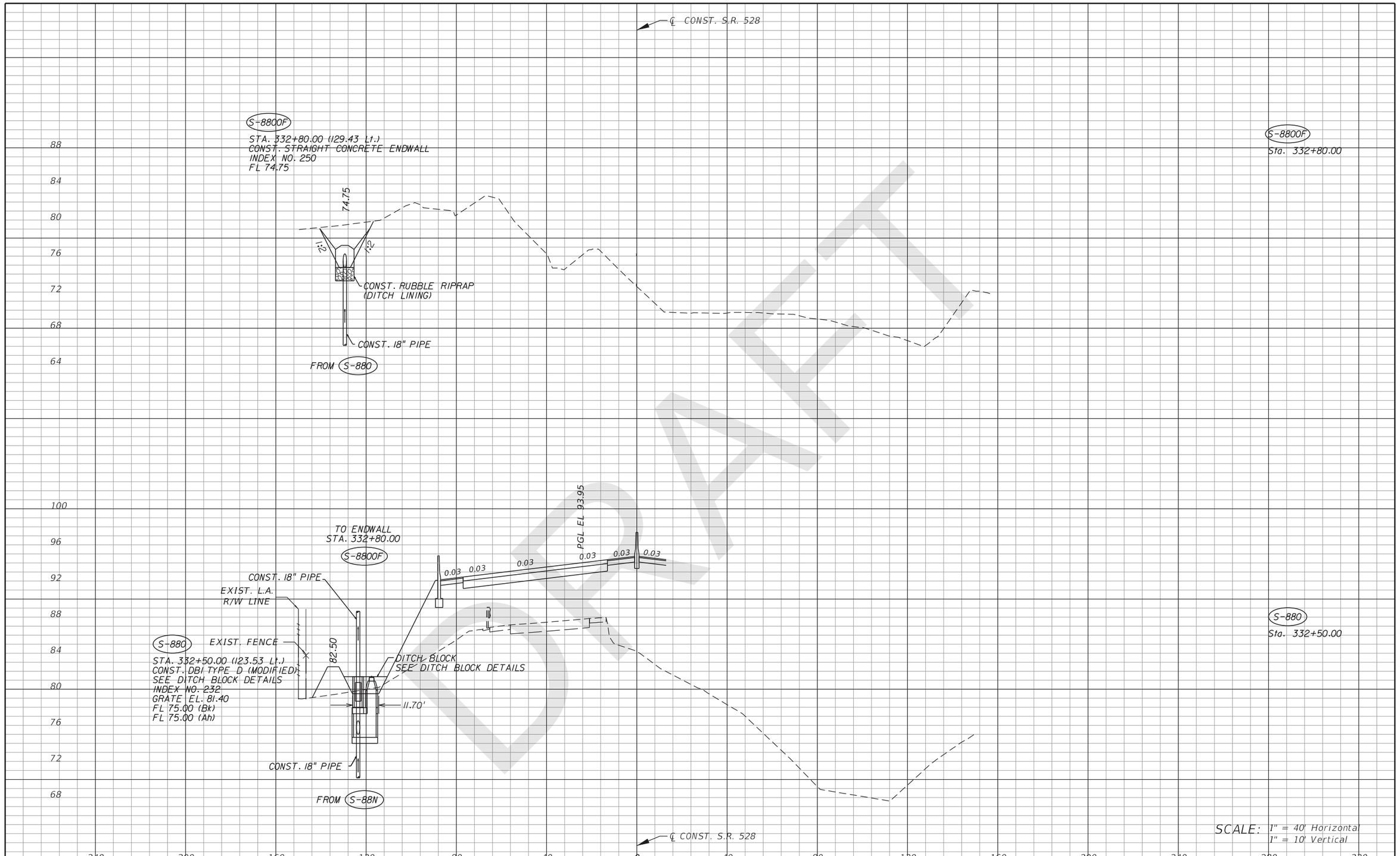

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 307

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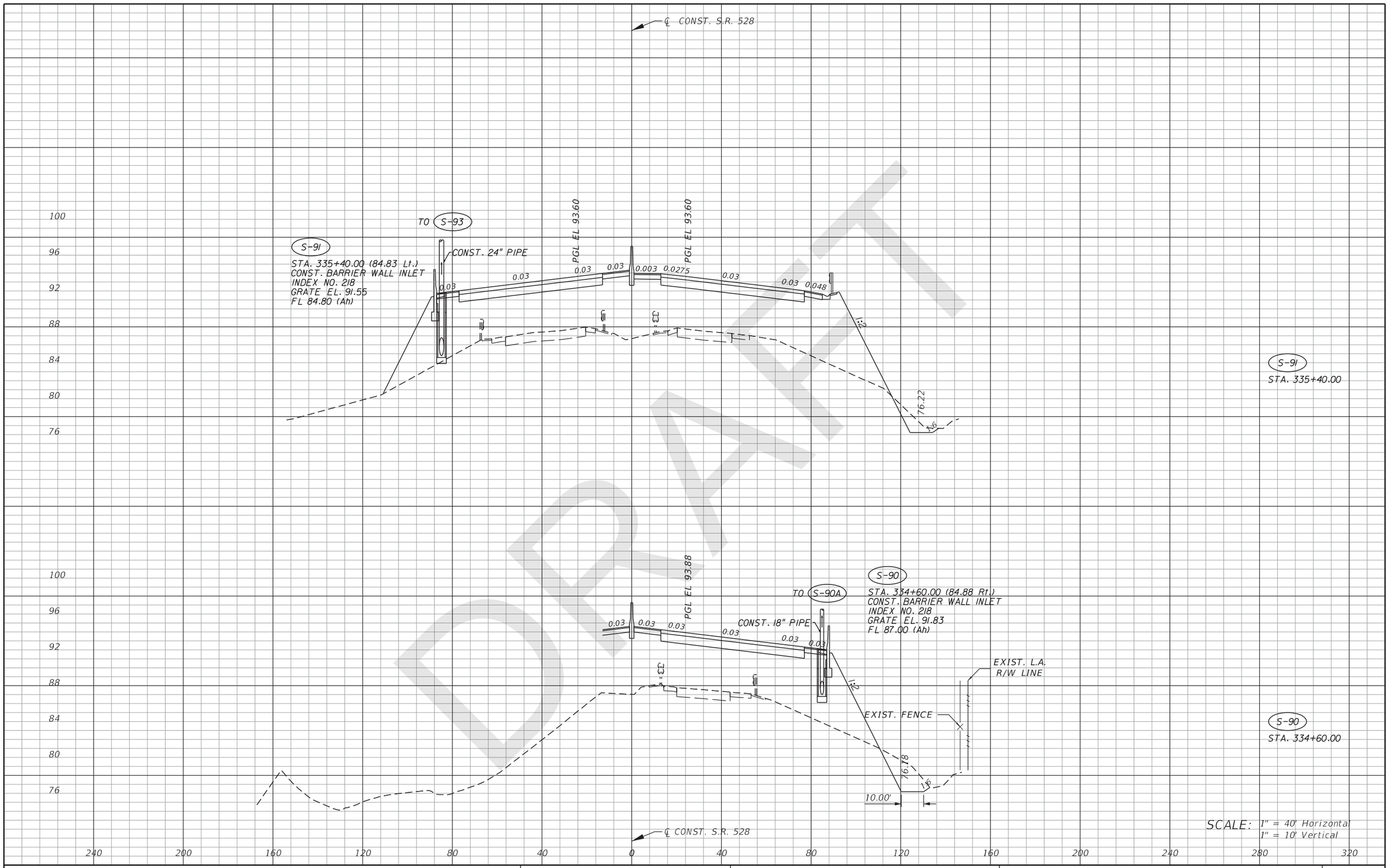

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DRAINAGE STRUCTURES
SR 528

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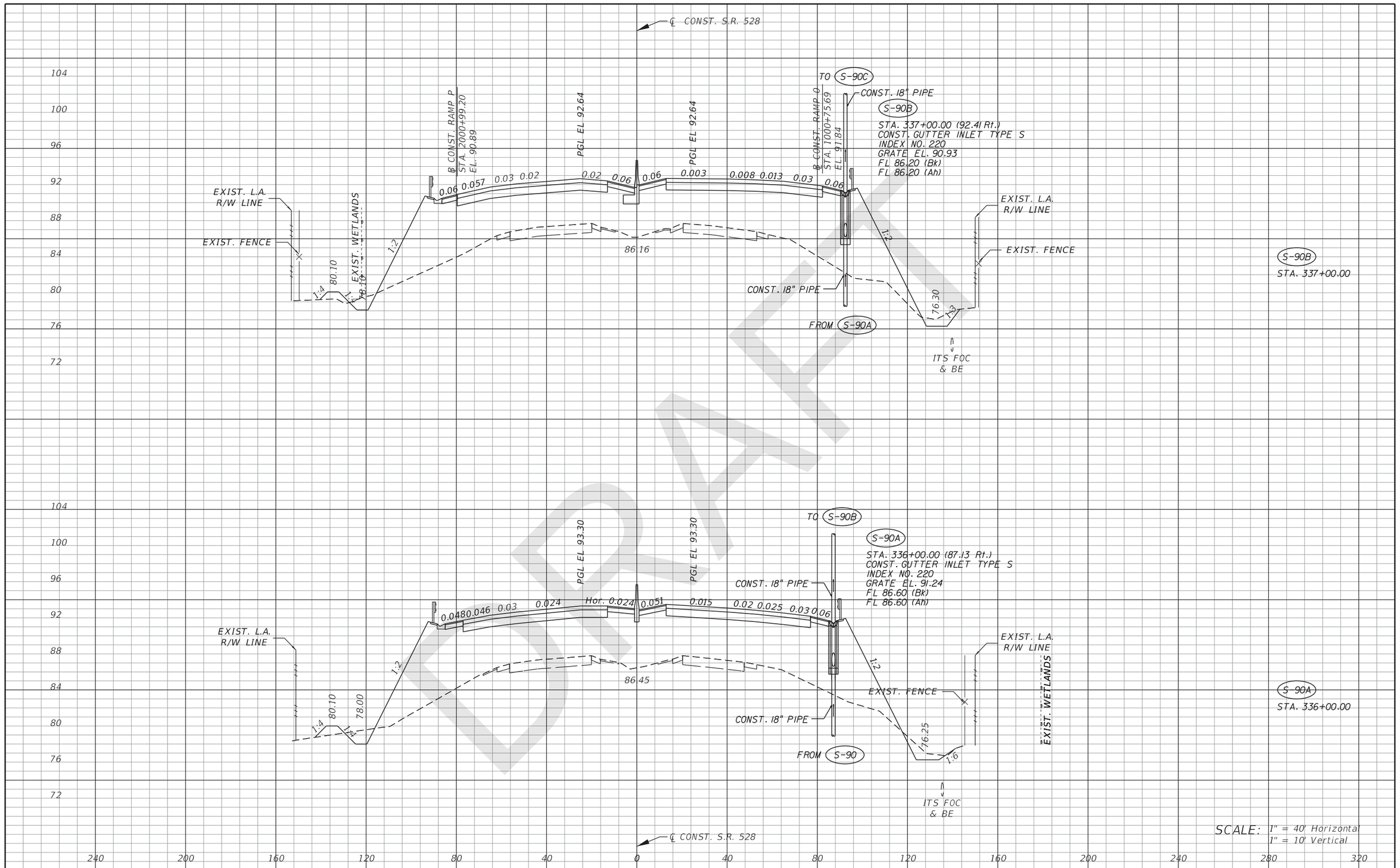
tcaffery 4/12/2015 3:25:21 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRAINAGE STRUCTURES
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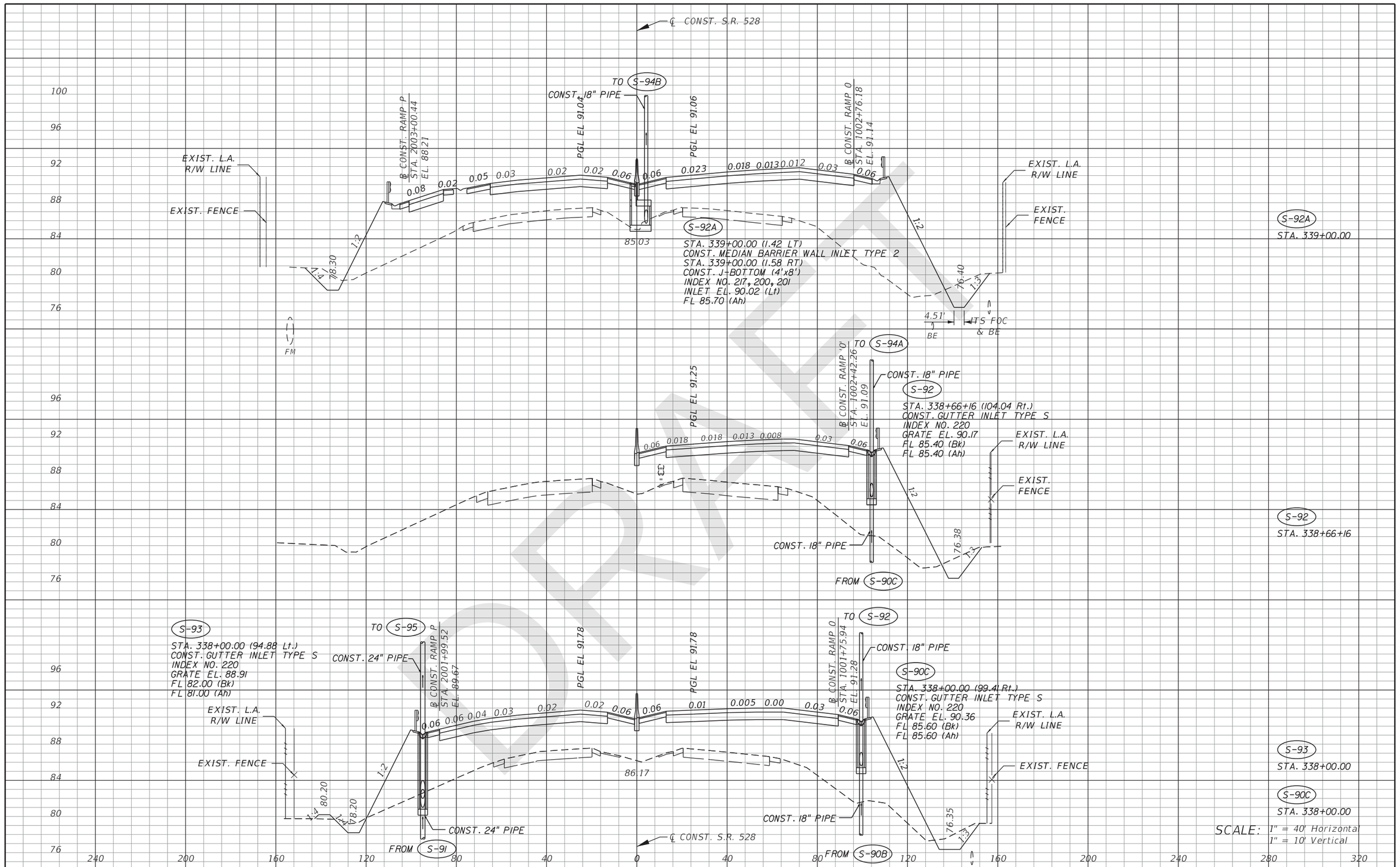
SHEET NO. 309

tcaffery 4/12/2015 3:25:21 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRAINAGE STRUCTURES
SR 528

SHEET NO. 310

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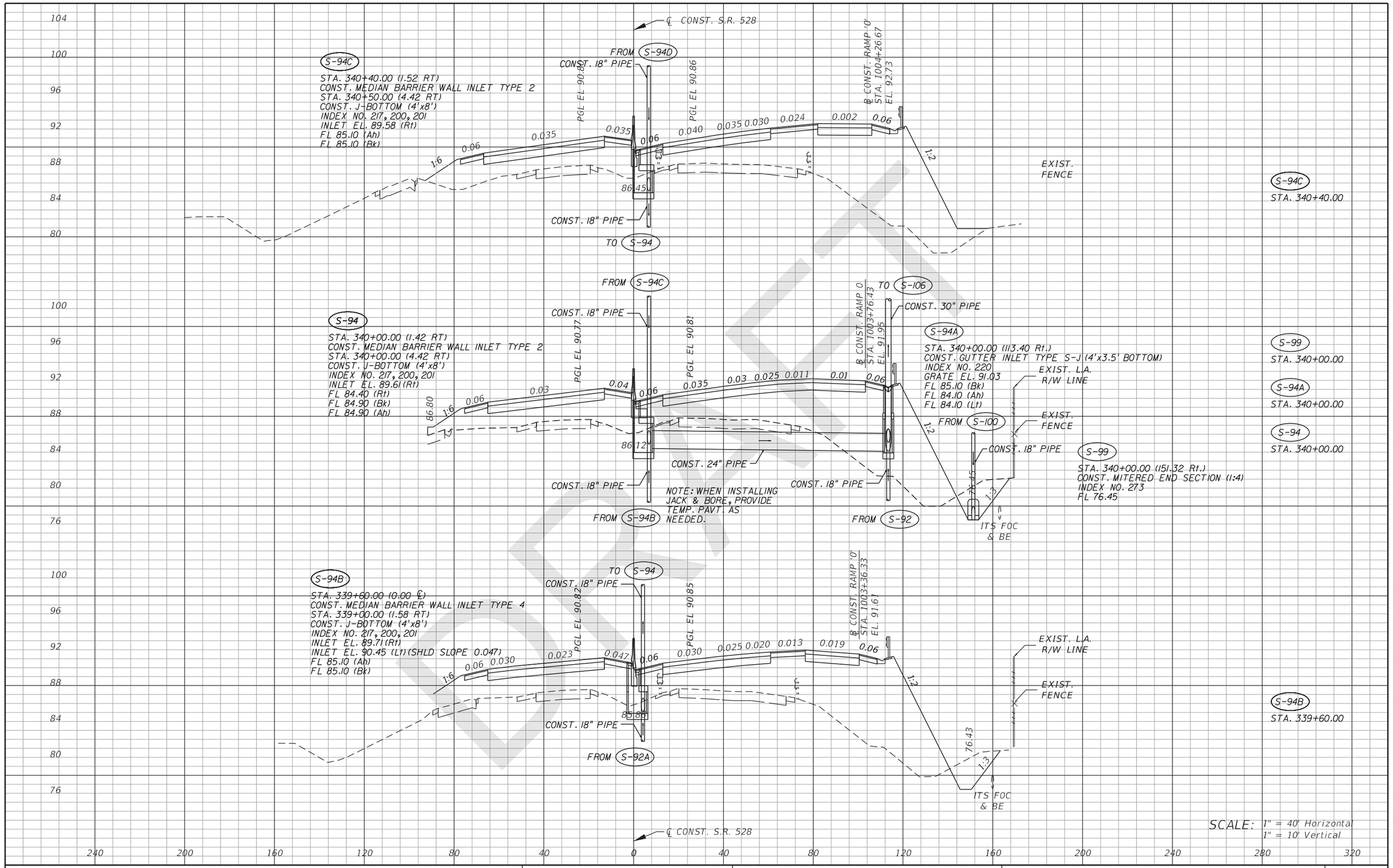

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DRAINAGE STRUCTURES
SR 528

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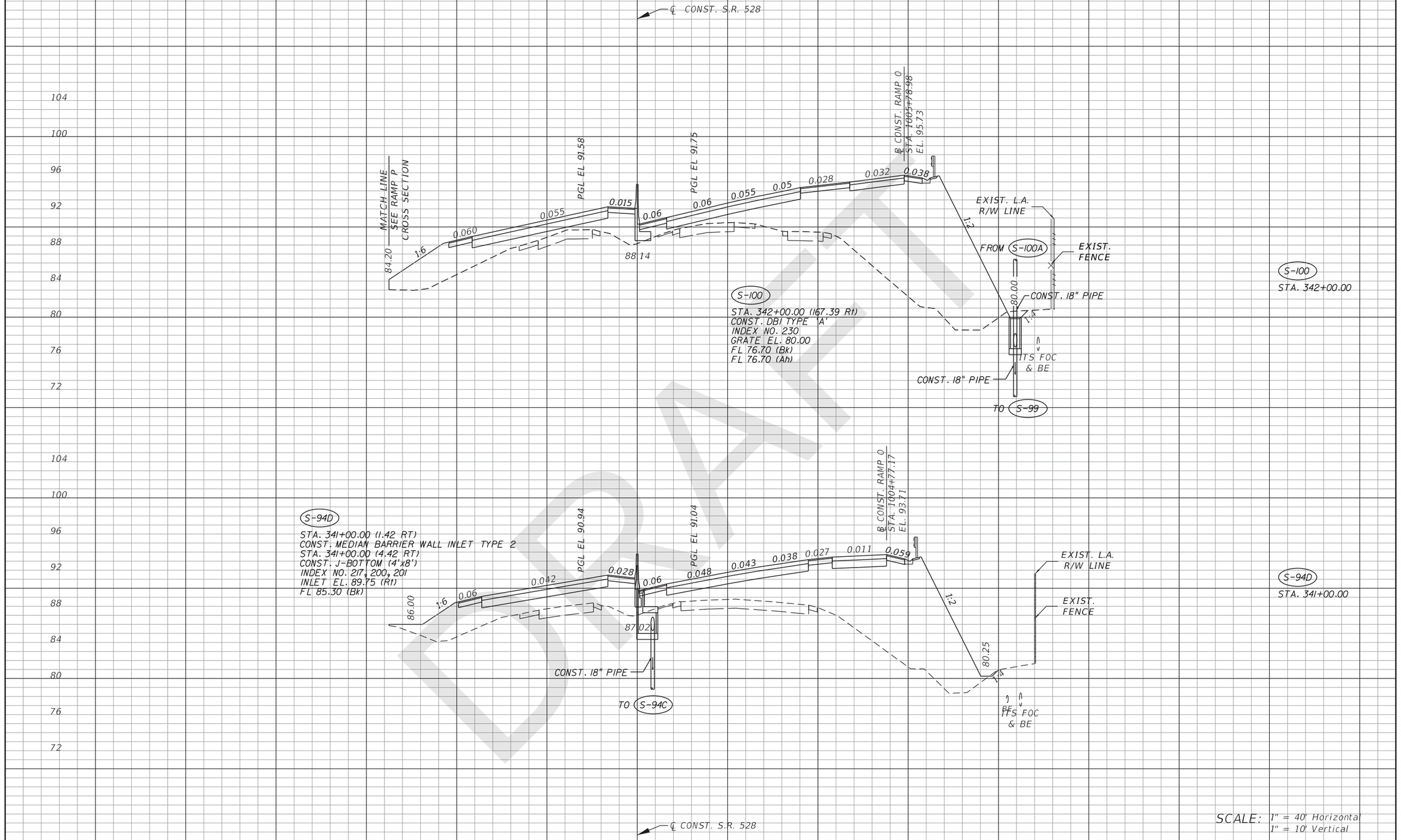

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DRAINAGE STRUCTURES
SR 528

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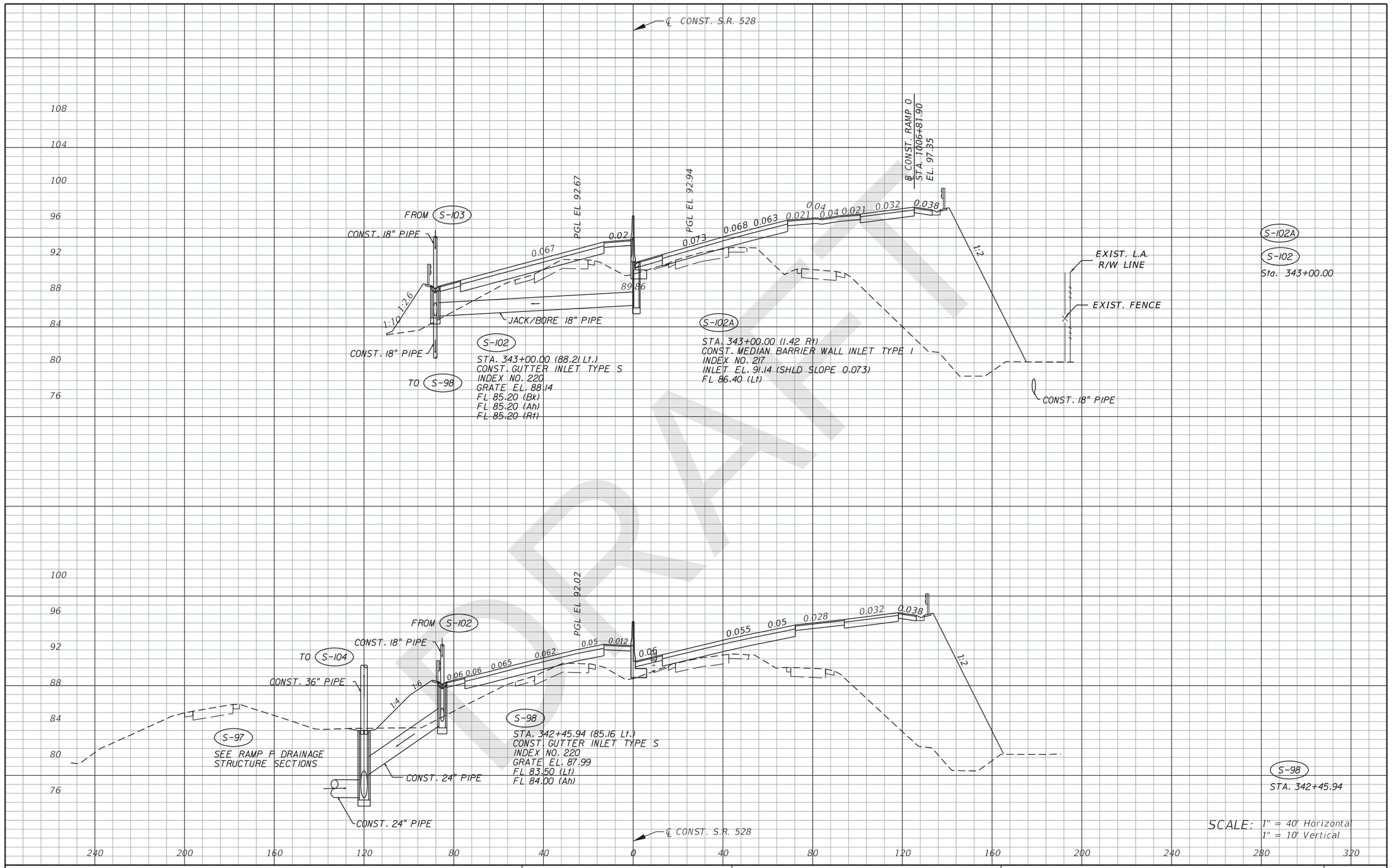

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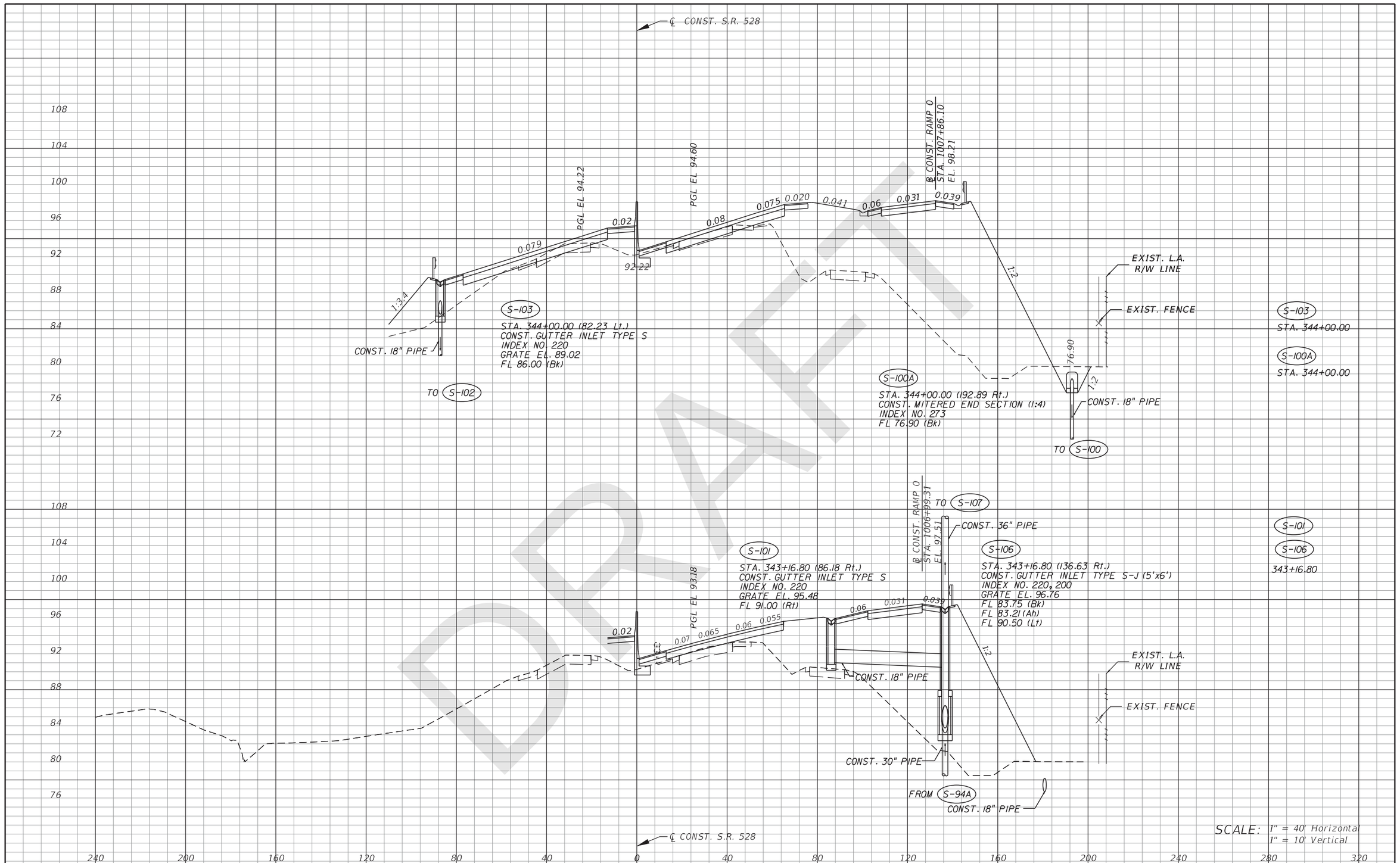

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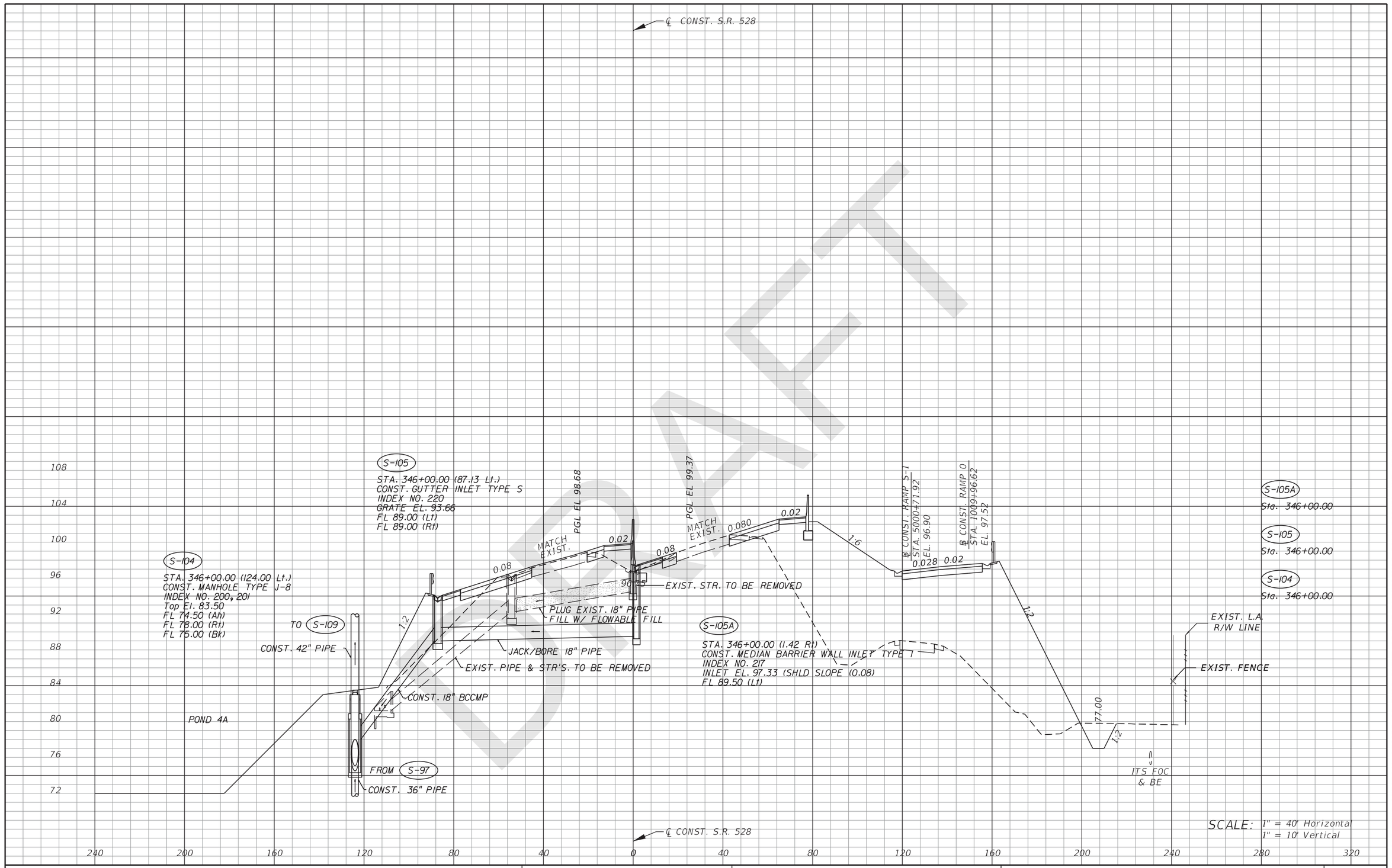

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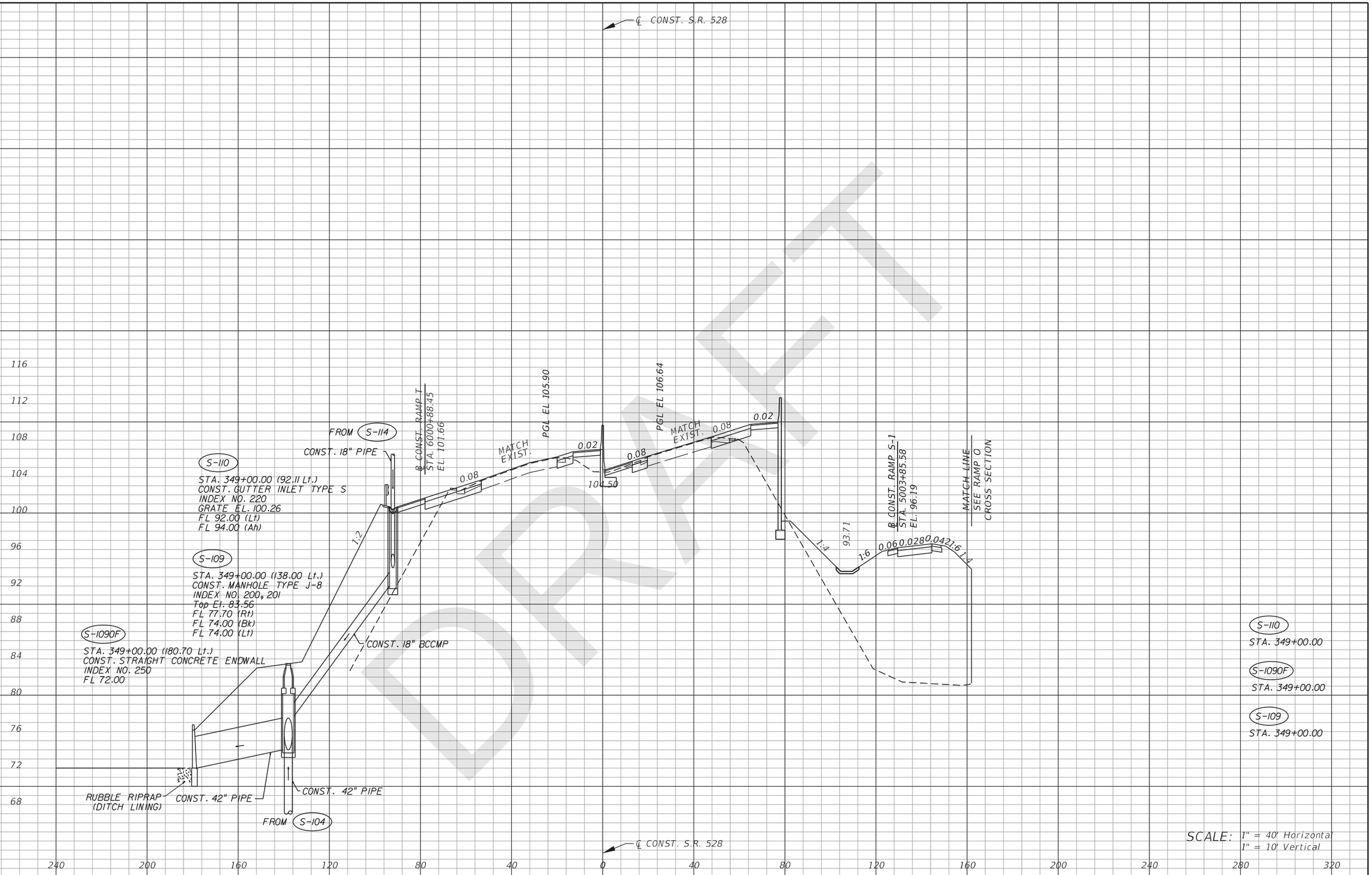

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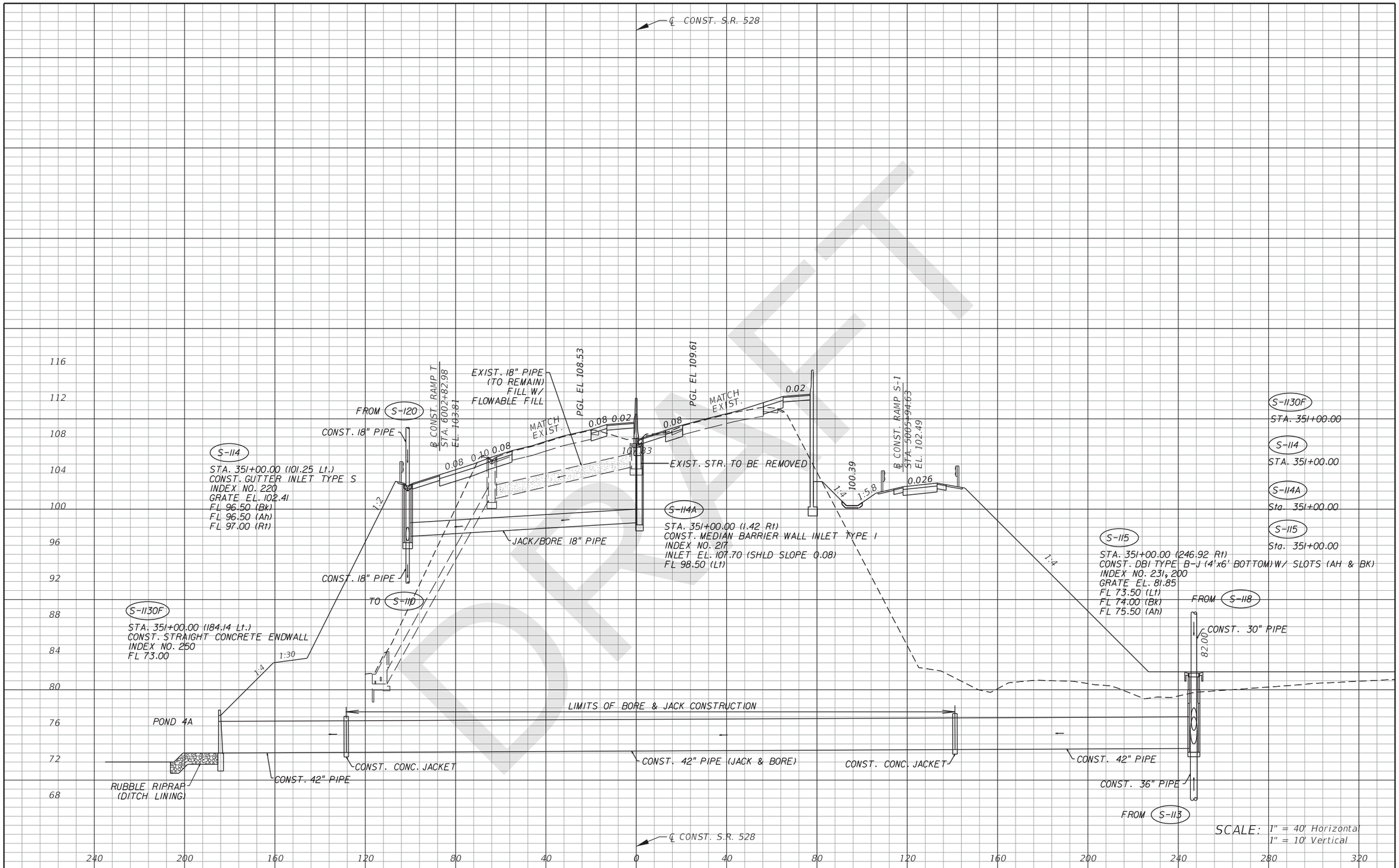

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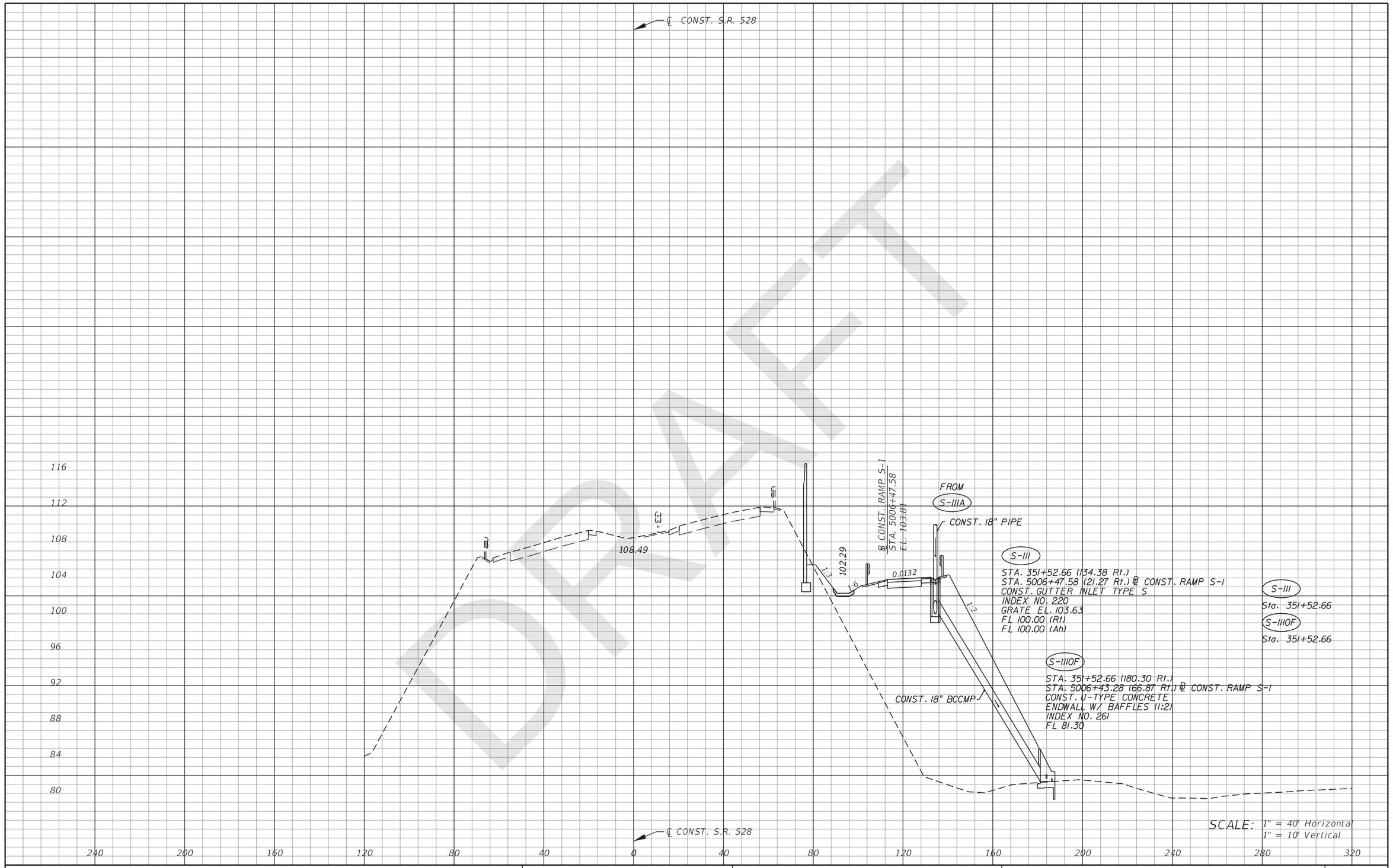
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 317

tcaffery 4/12/2015 3:25:23 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
DONALD W. BROWN, P.E.
LICENSE NO. 59272

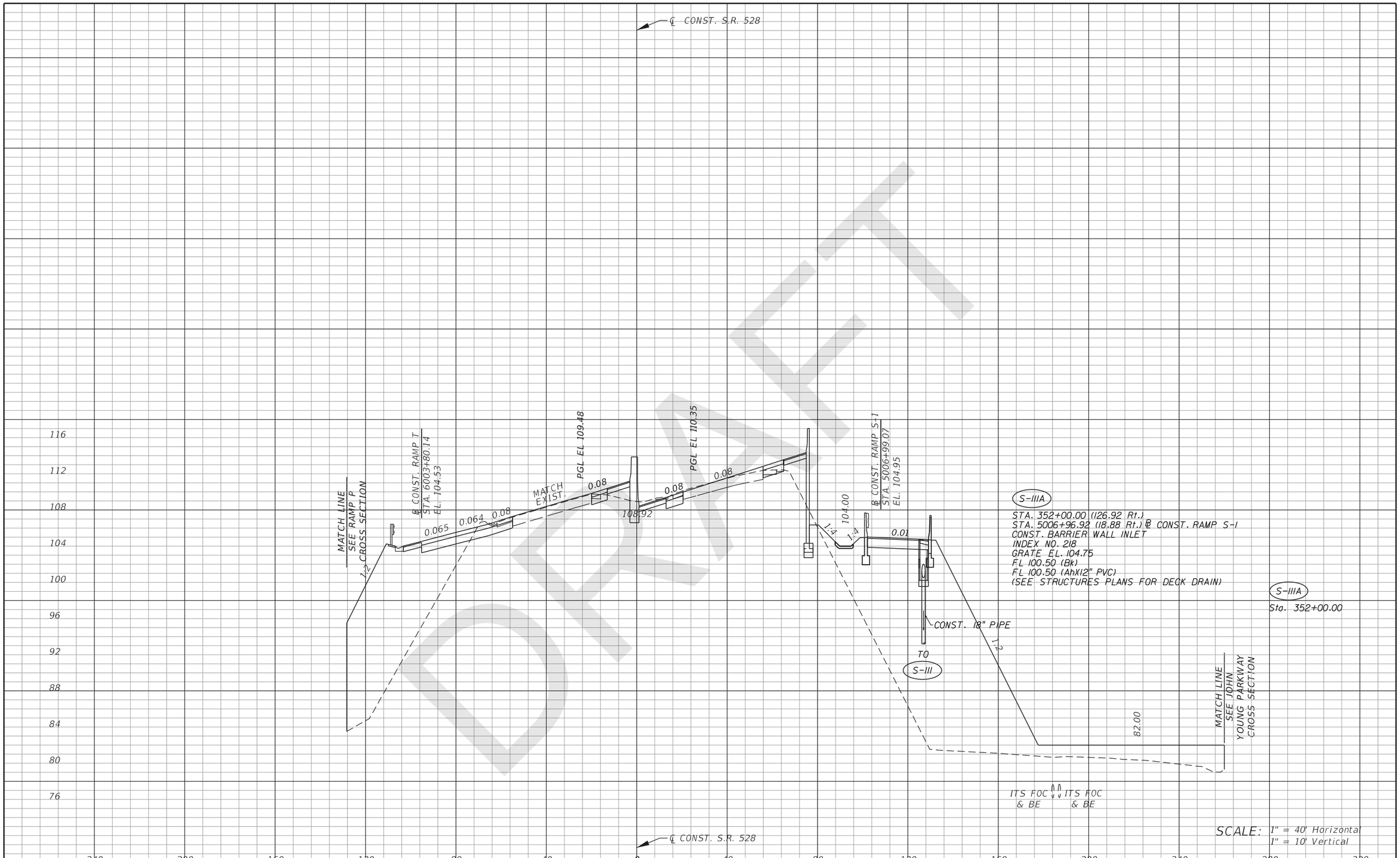
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 318

tcaffery 4/12/2015 3:25:24 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 319

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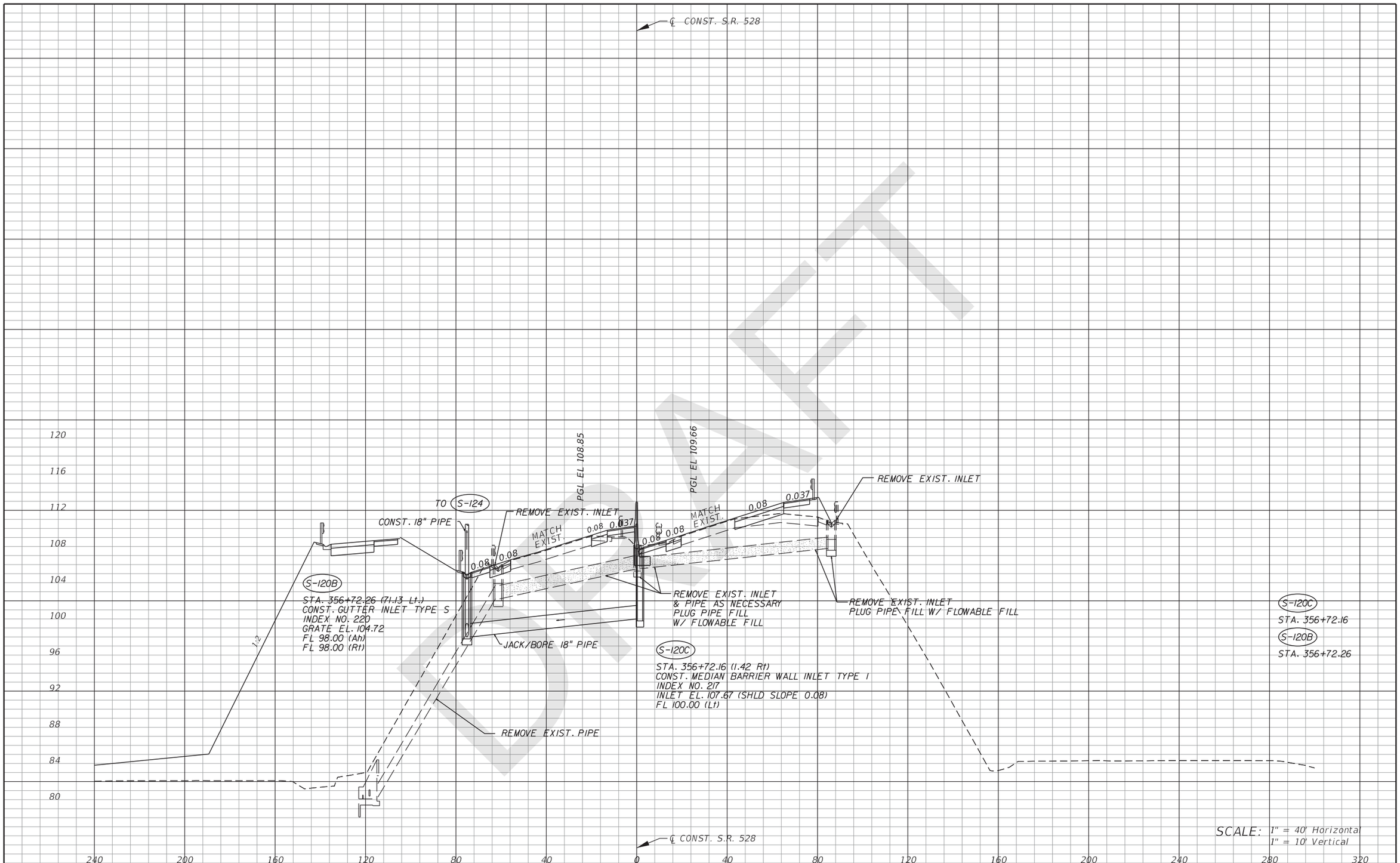

SCALE: 1" = 40' Horizontal
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DRAINAGE STRUCTURES
SR 528

SHEET NO. 320

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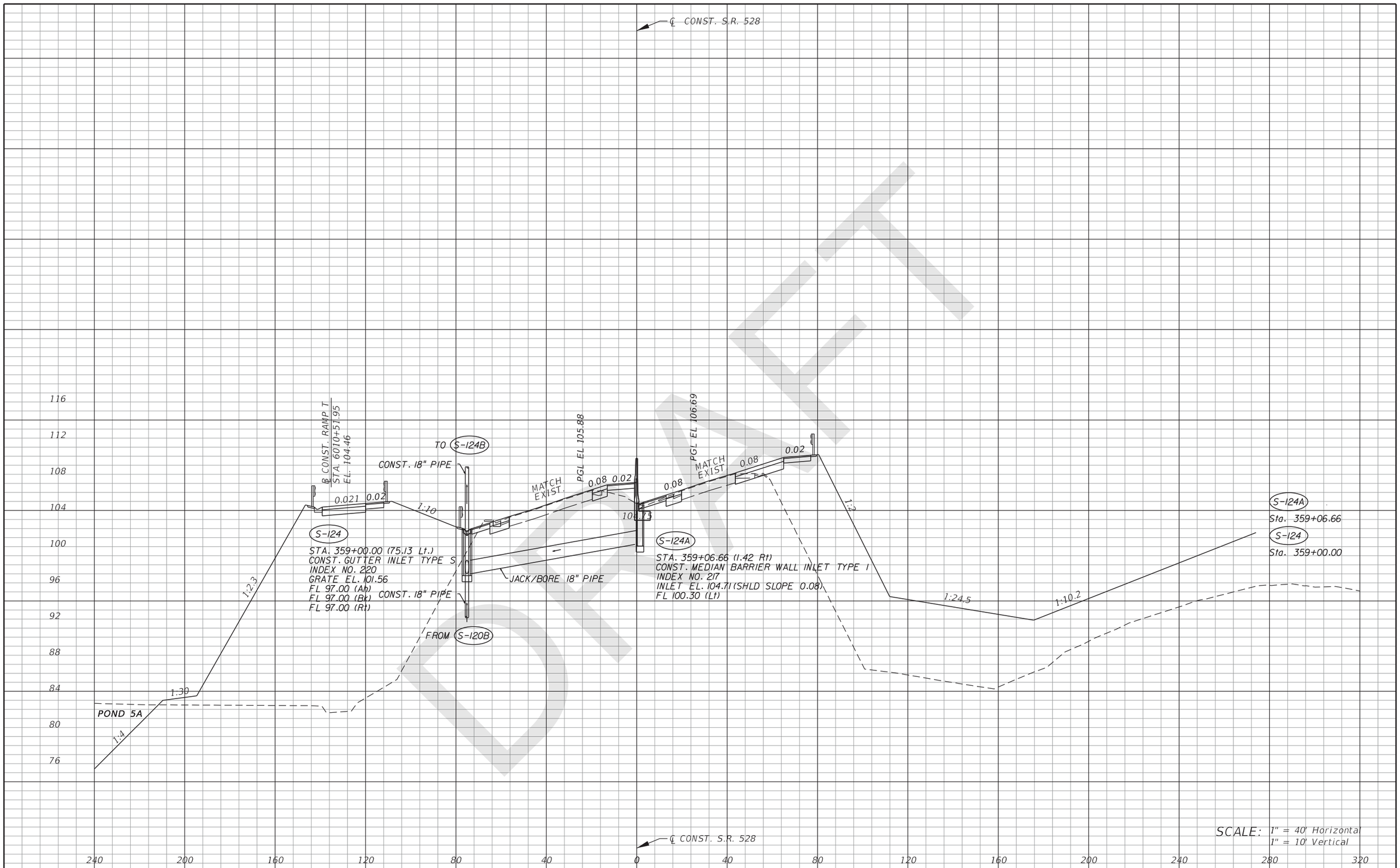

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 321

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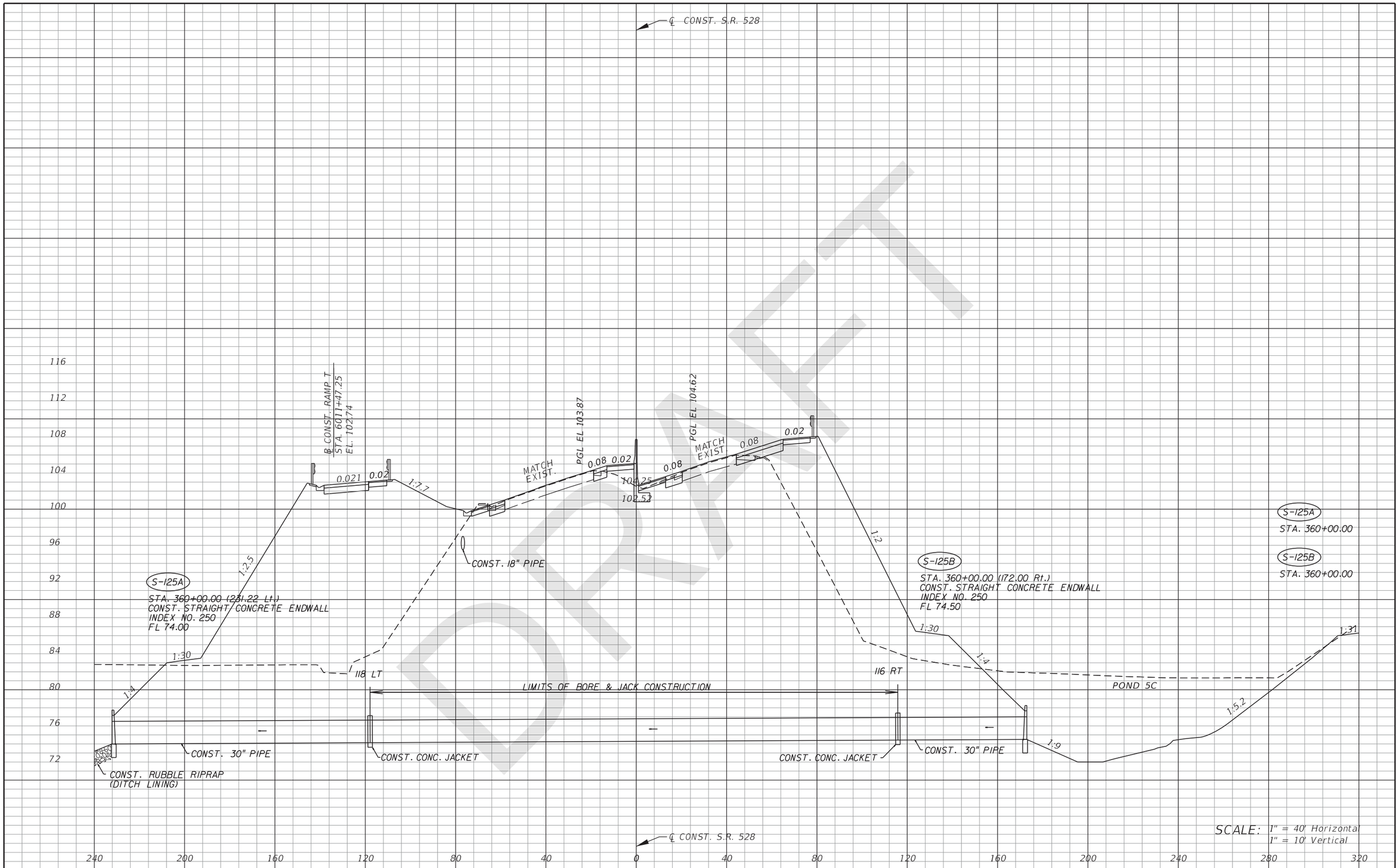

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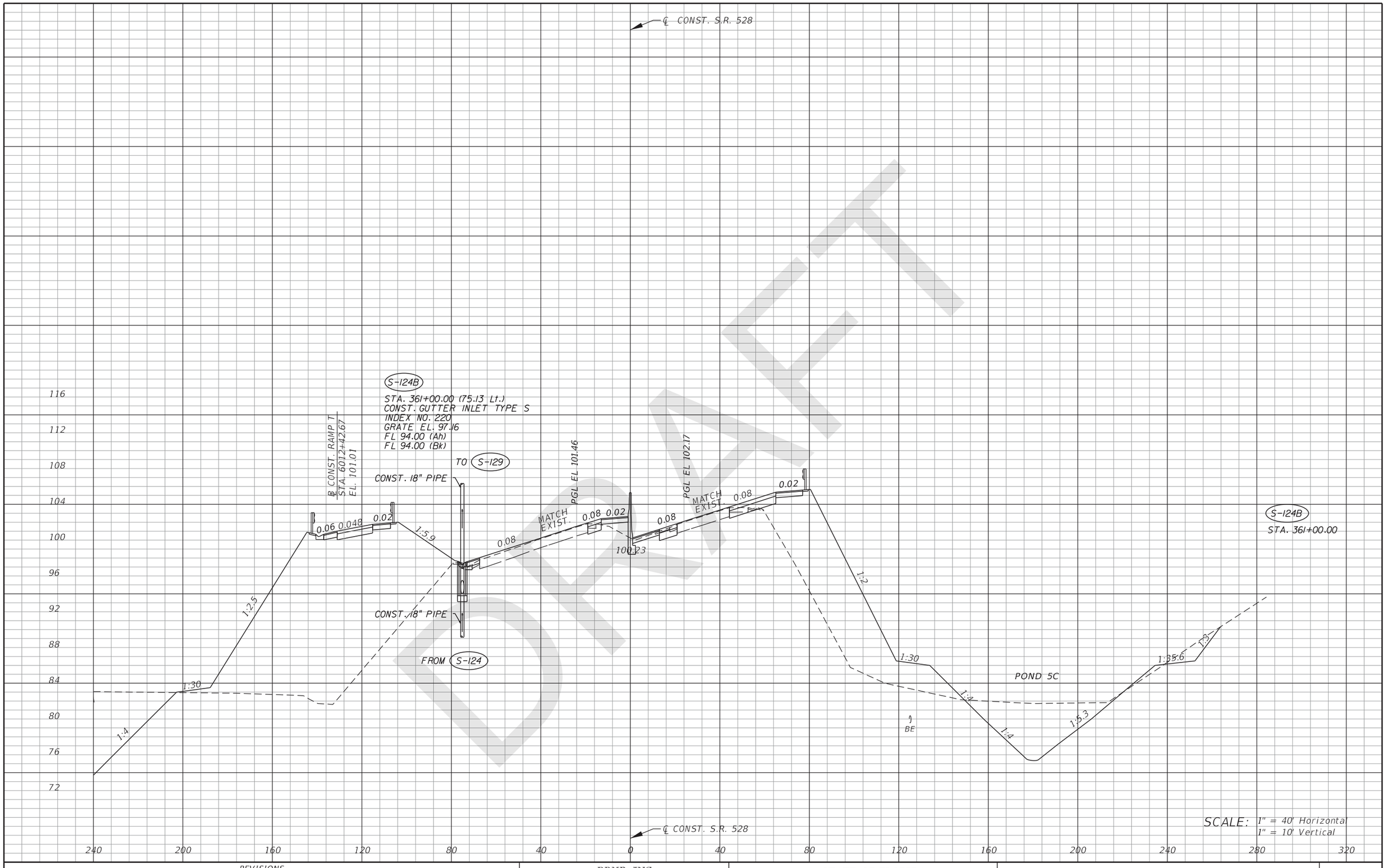
DRAINAGE STRUCTURES
SR 528

SHEET NO. 322

tcaffery 4/12/2015 3:25:24 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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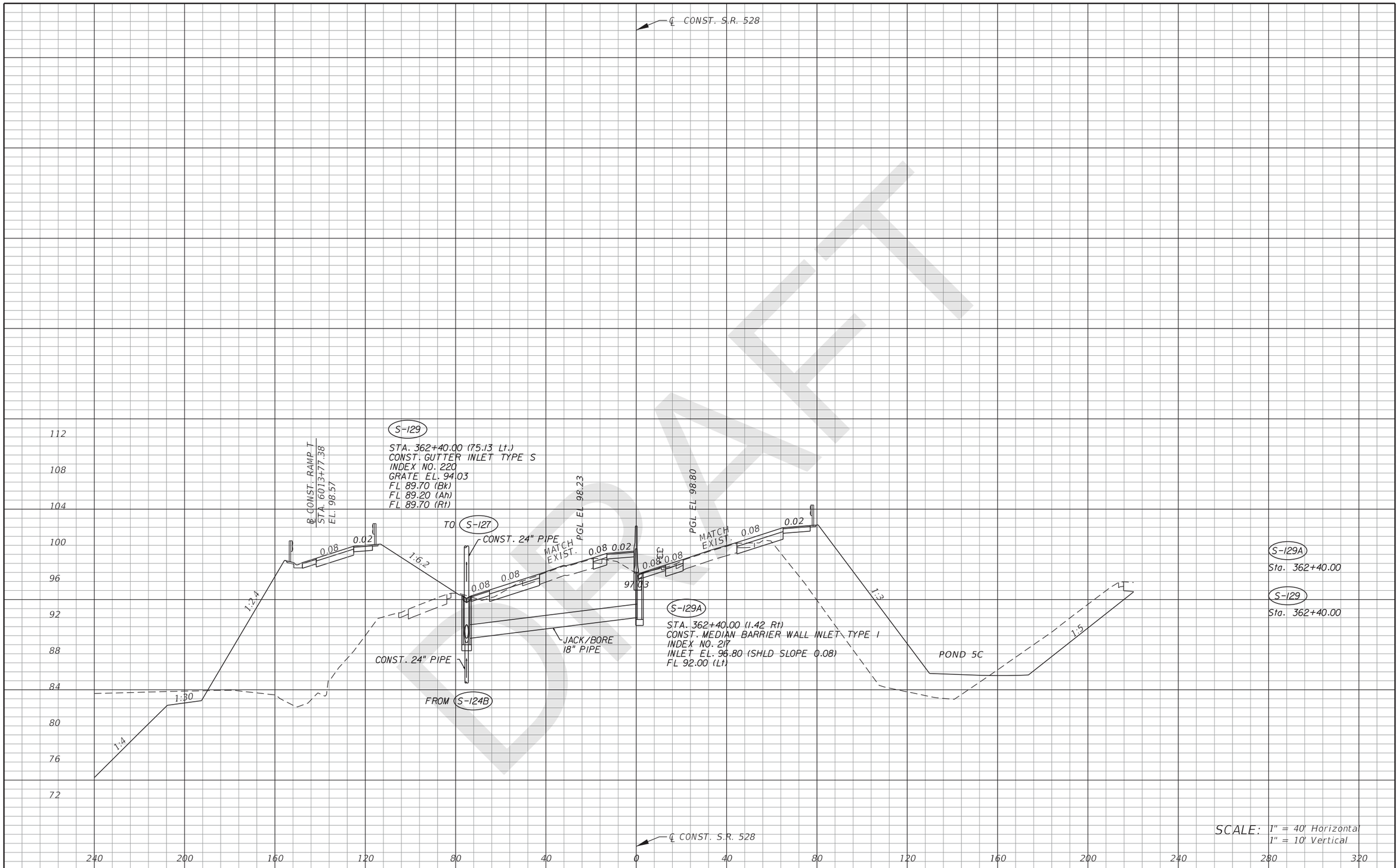

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 324

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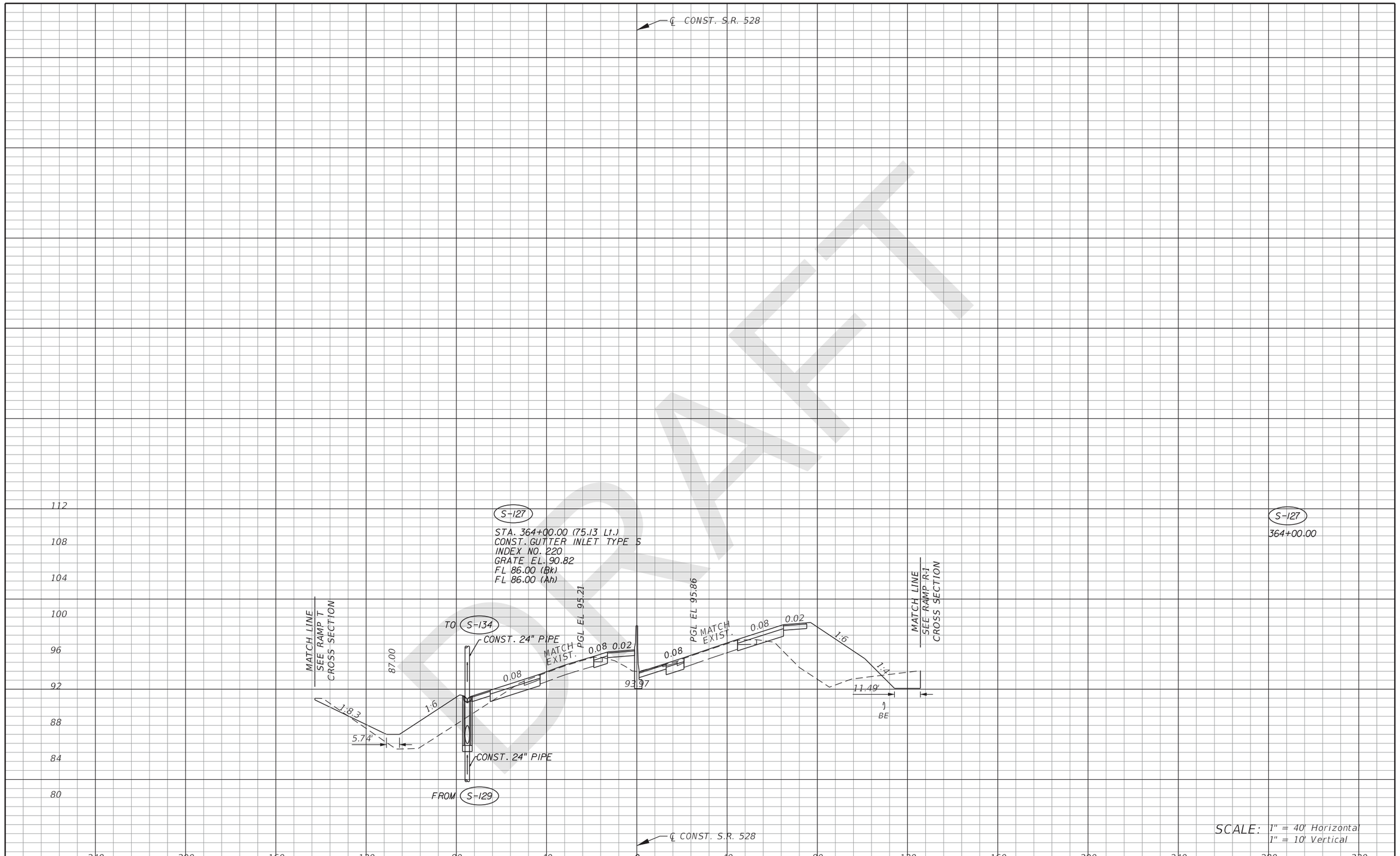

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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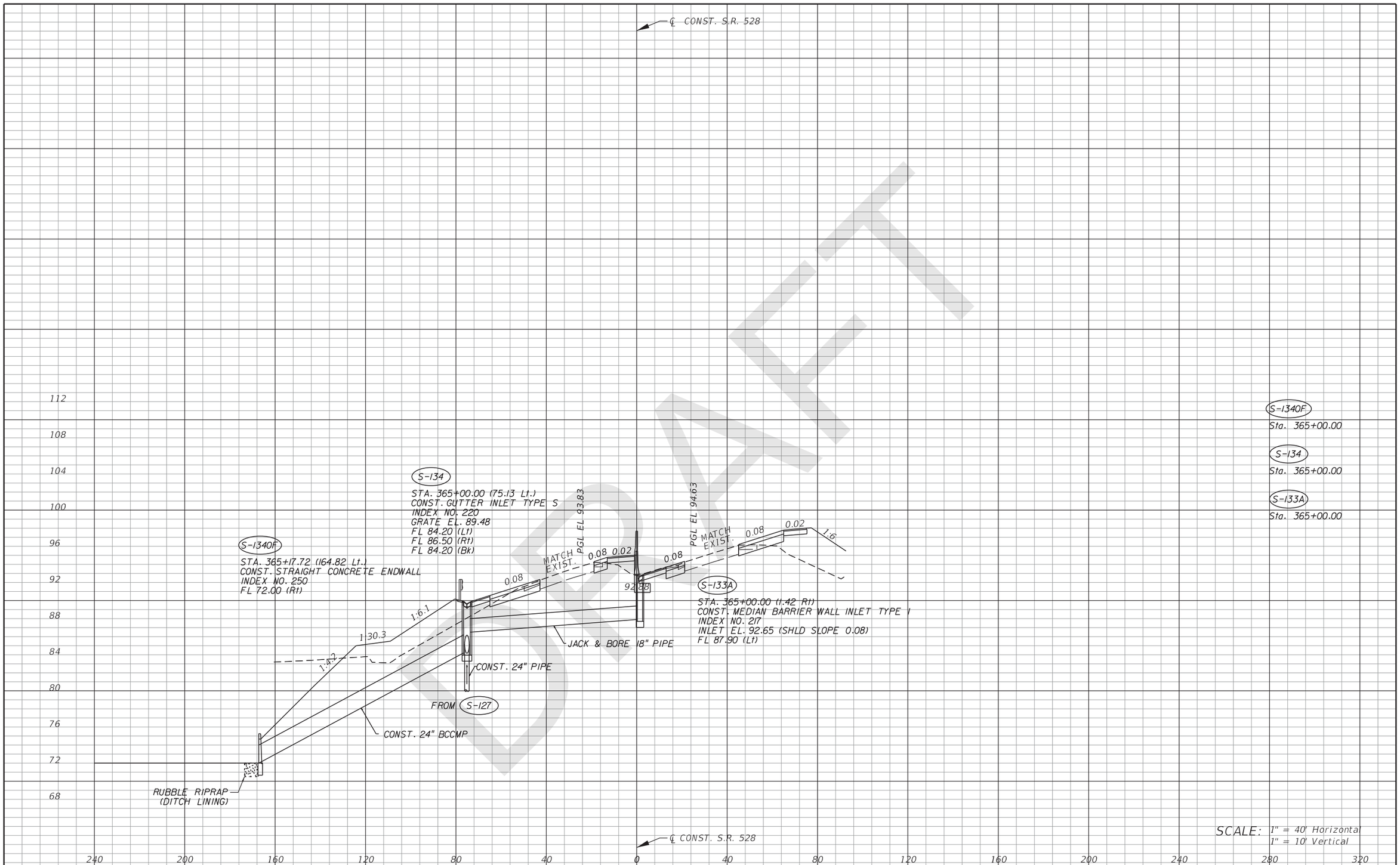

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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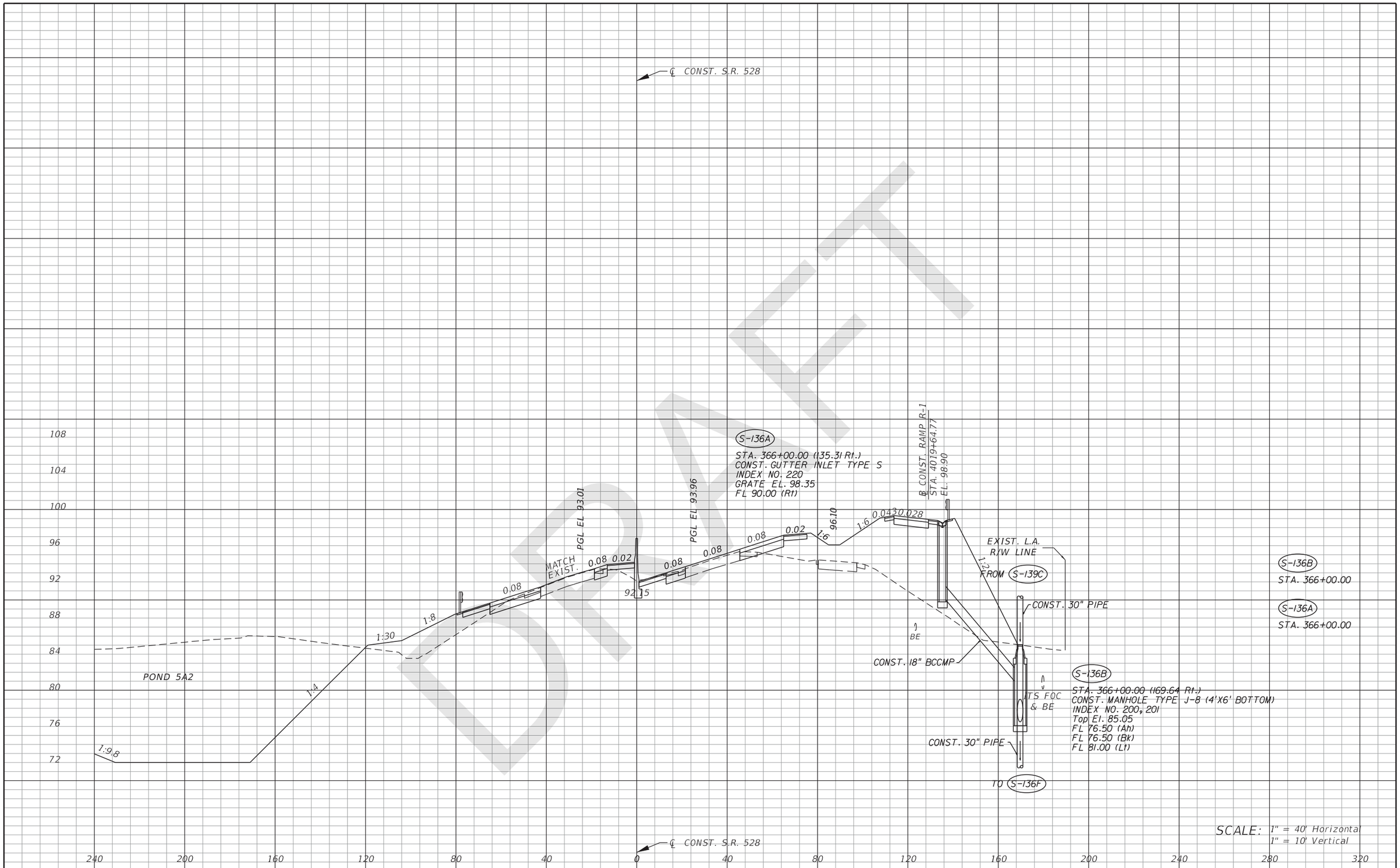

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SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

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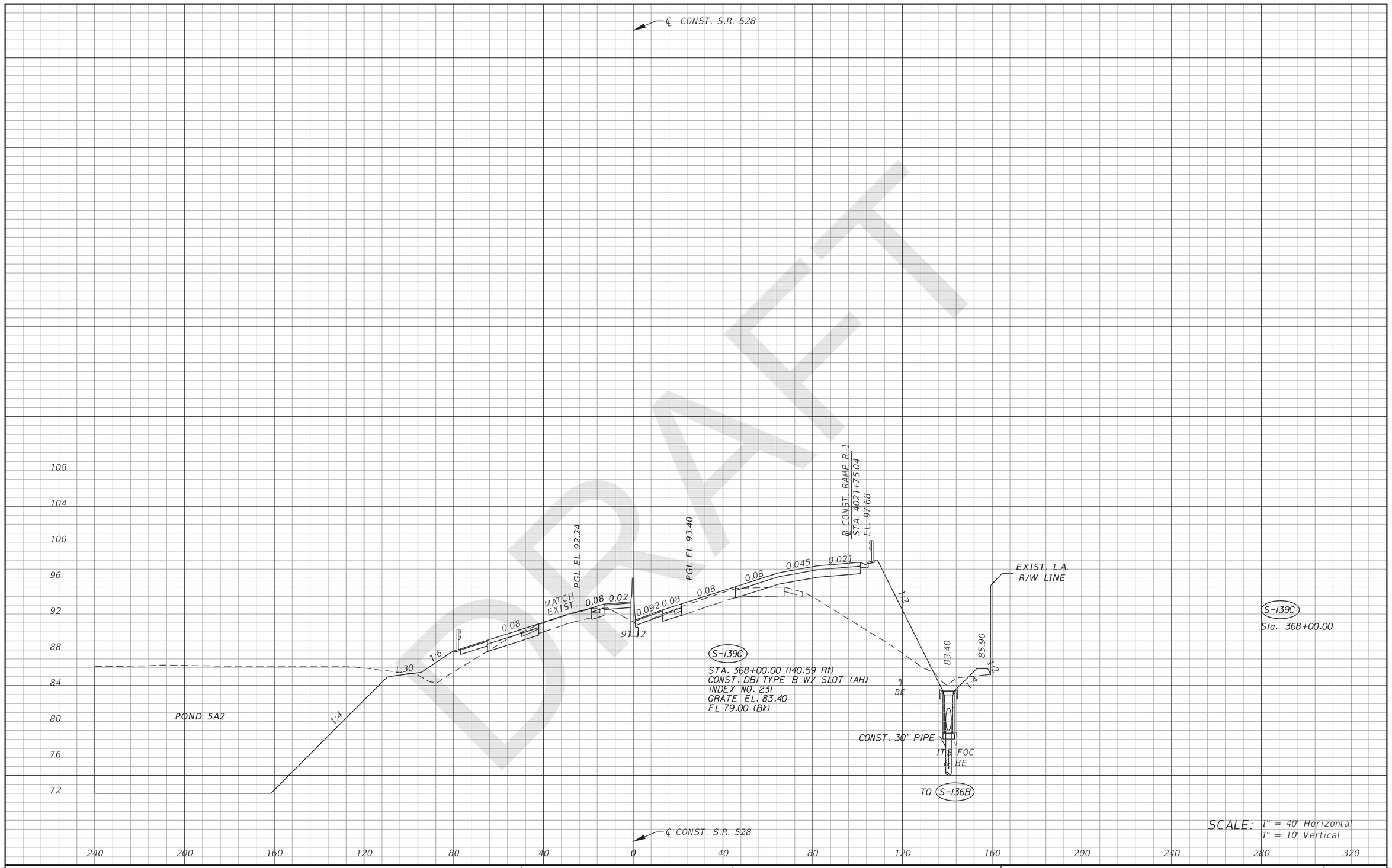

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 328

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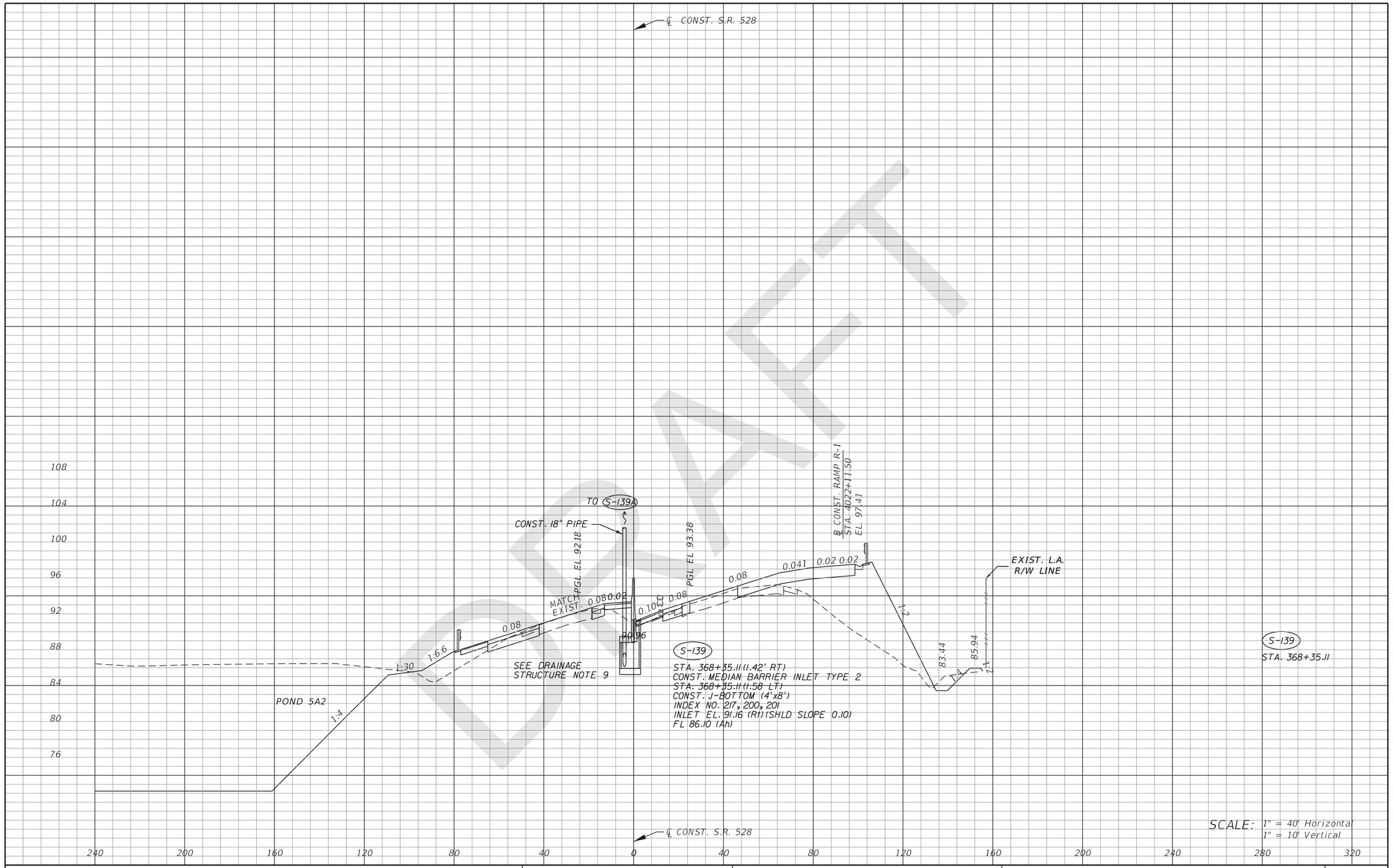

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DRAINAGE STRUCTURES
SR 528

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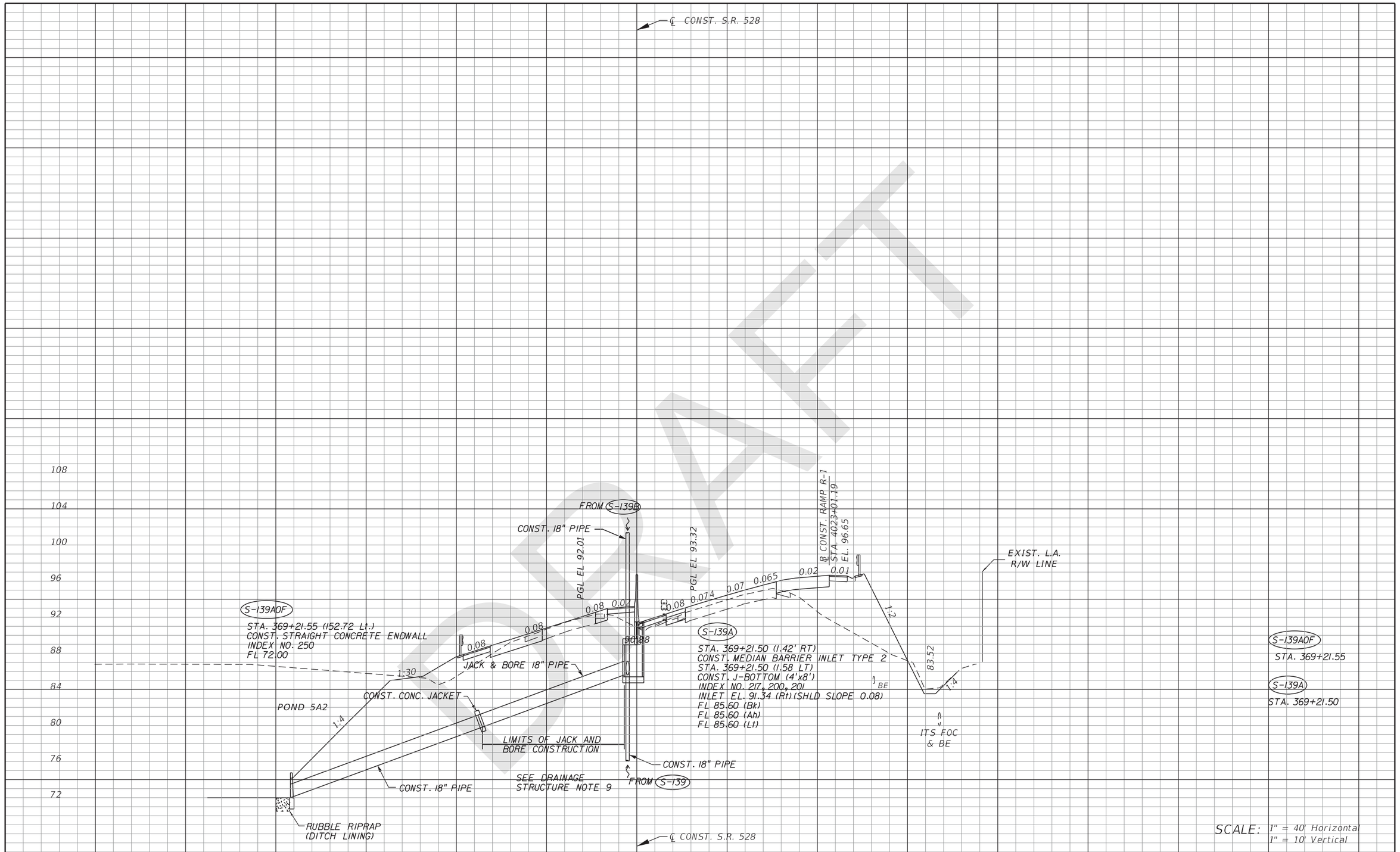
tcaffery 4/12/2015 3:25:26 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRAINAGE STRUCTURES
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SHEET NO. 330

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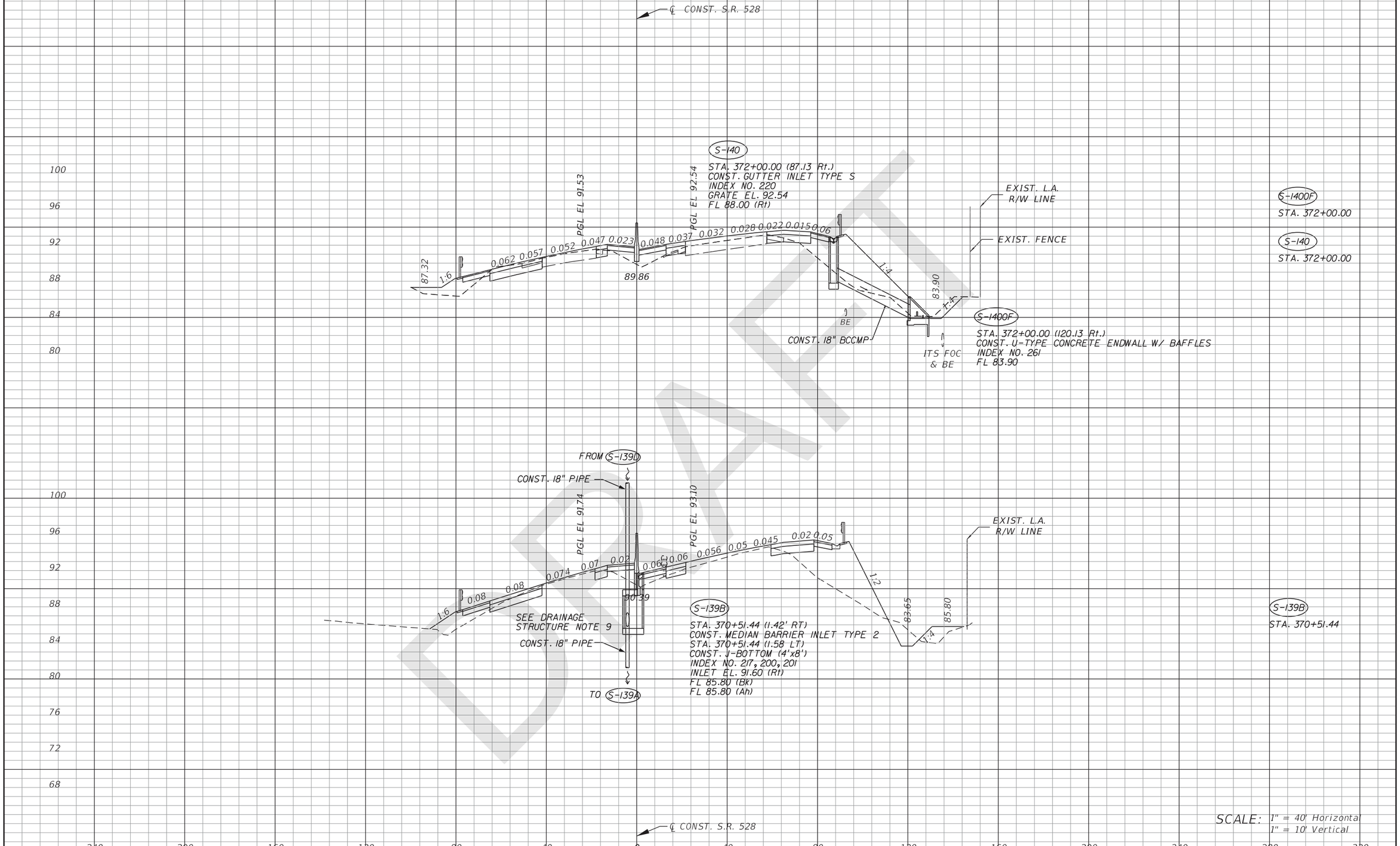

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 331

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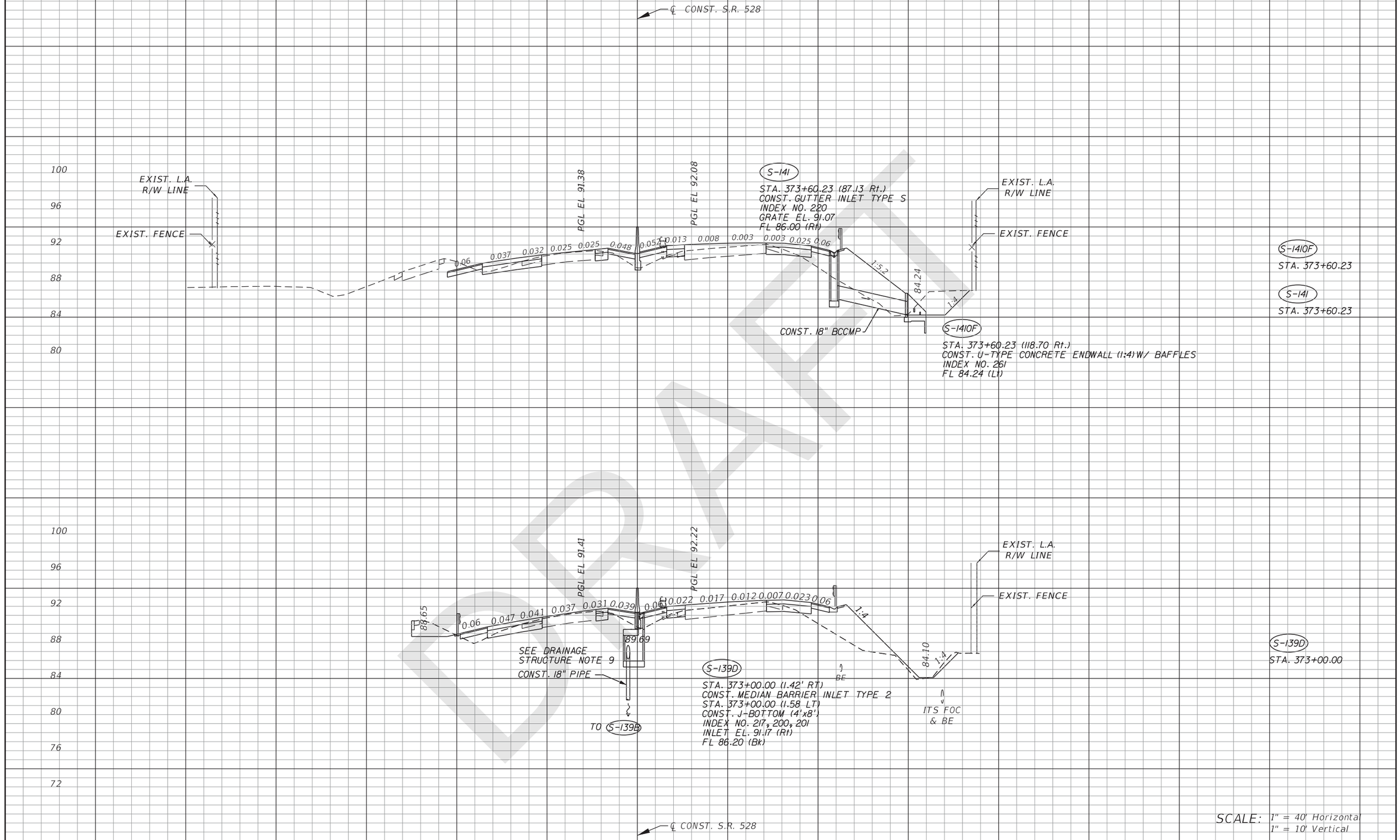

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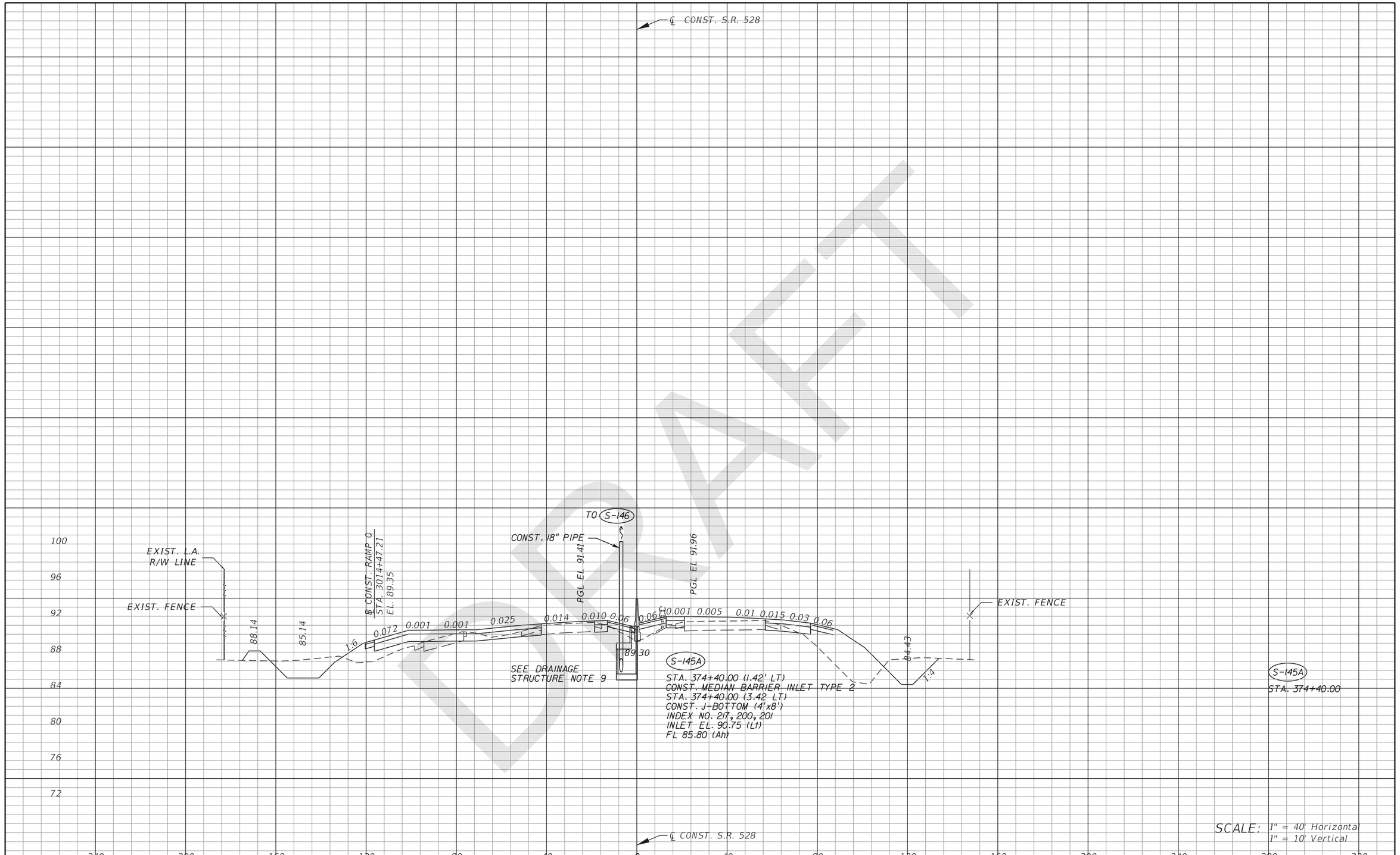
DRAINAGE STRUCTURES
SR 528

SHEET NO. 332

tcaffery 4/12/2015 3:25:27 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



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DRAINAGE STRUCTURES
SR 528

SHEET NO. 333

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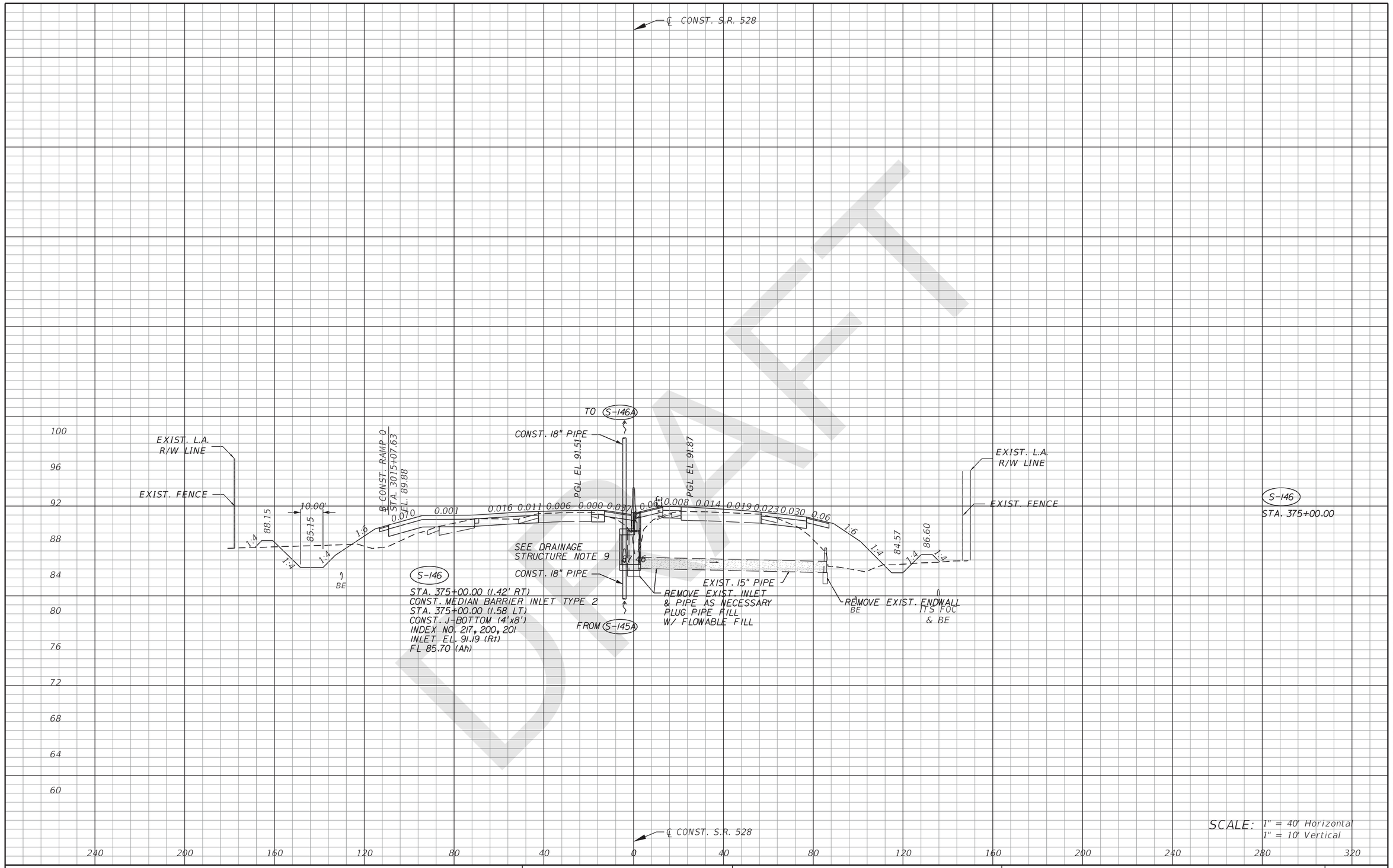

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DRAINAGE STRUCTURES
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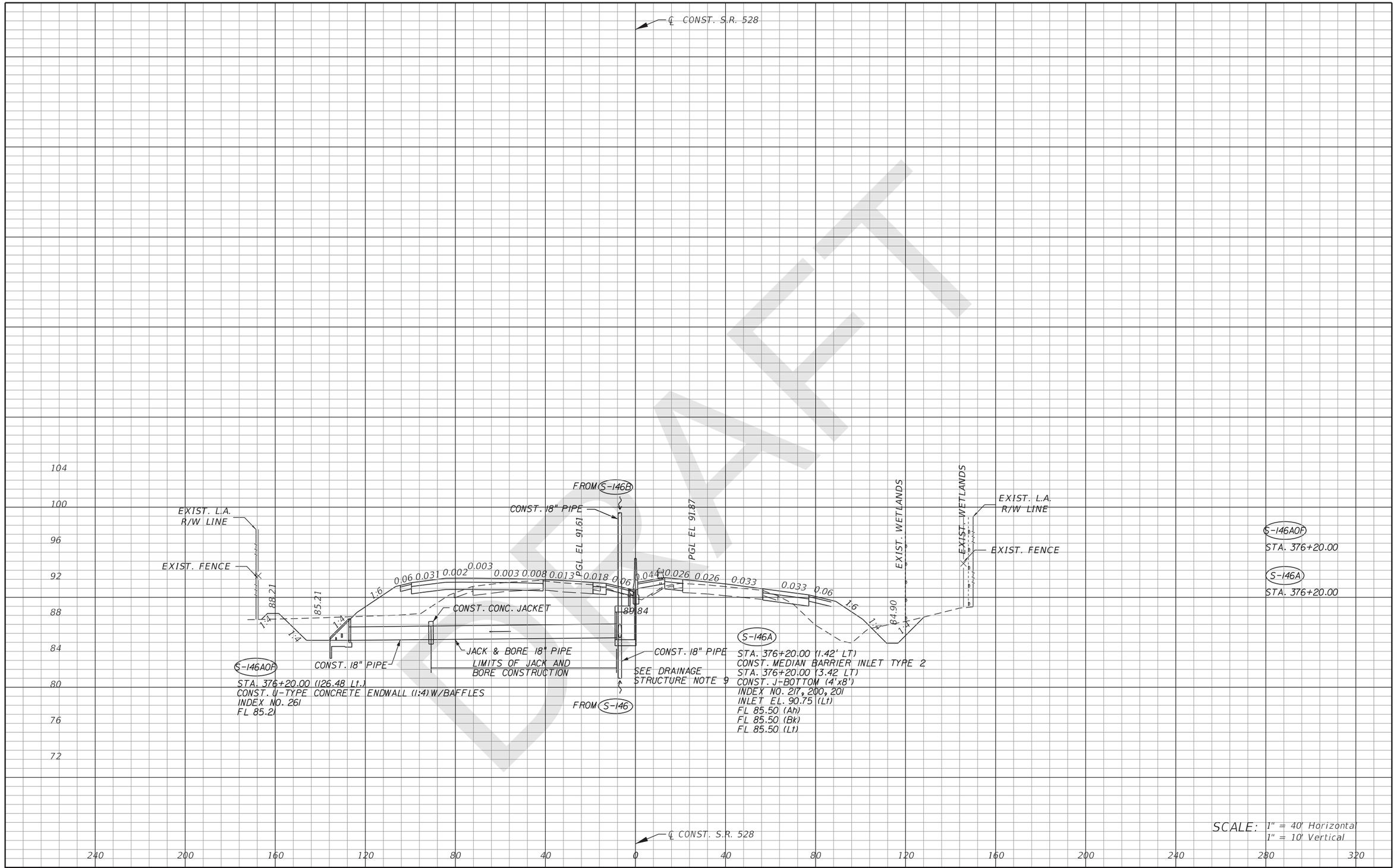

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DRAINAGE STRUCTURES
SR 528

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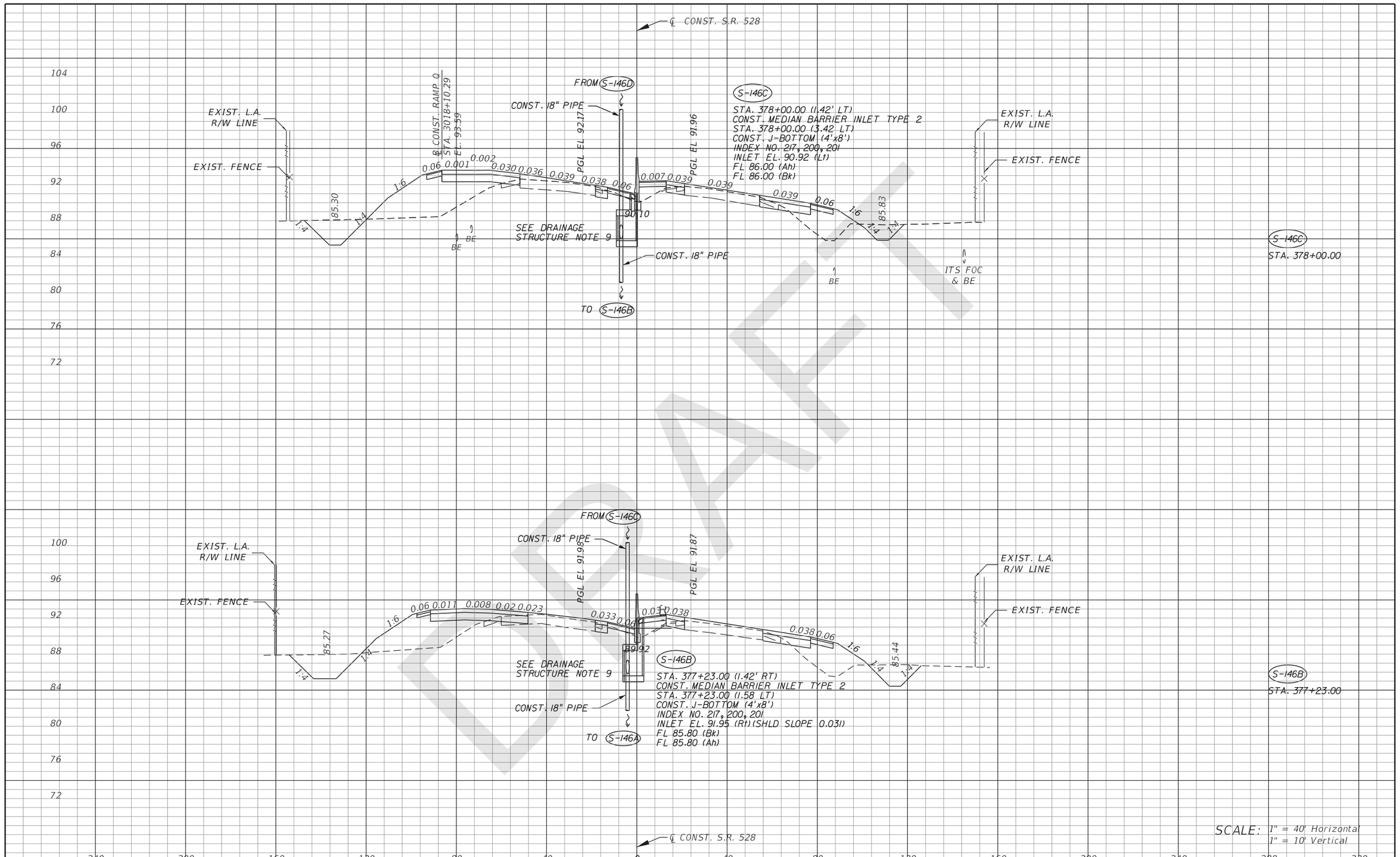

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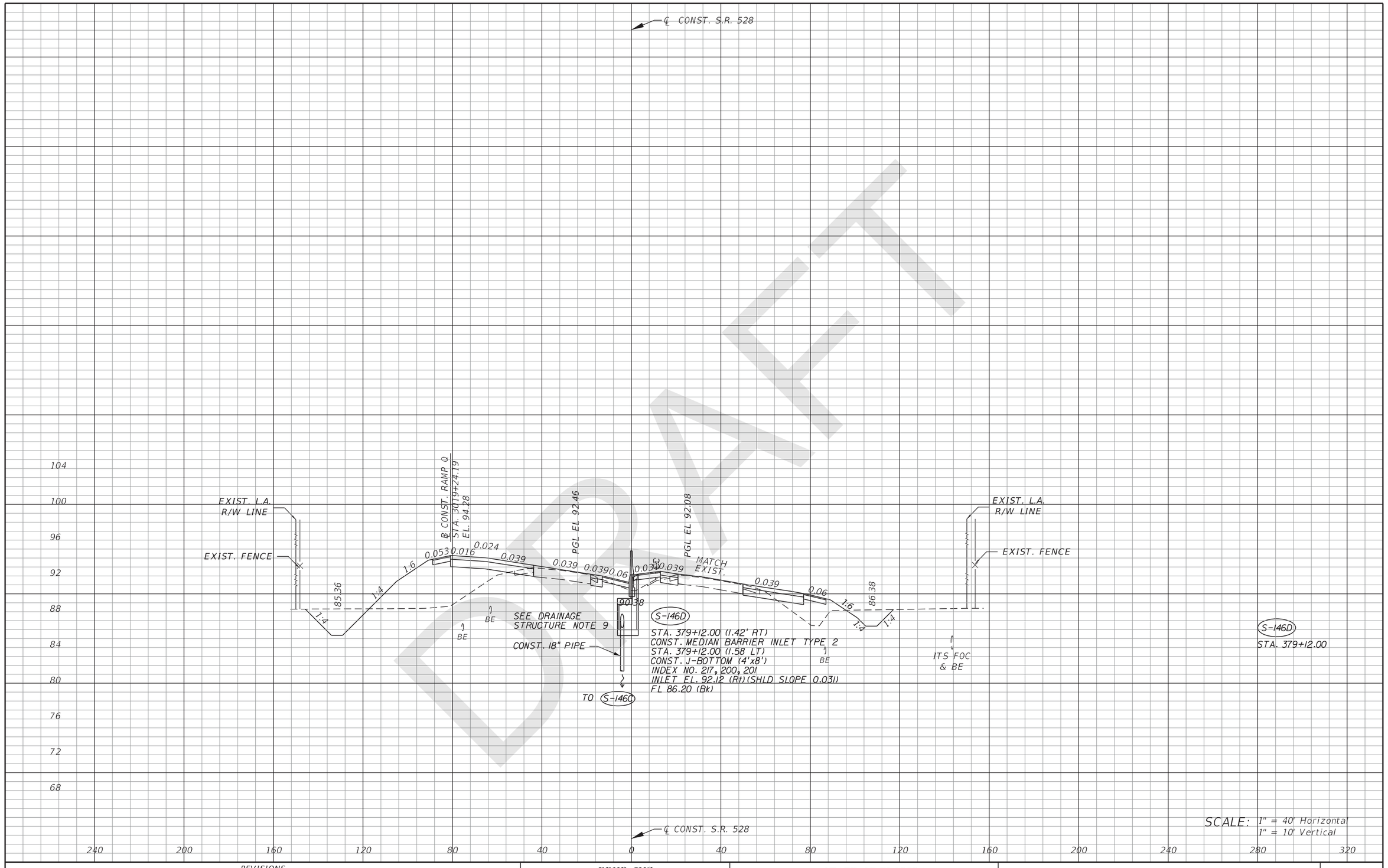

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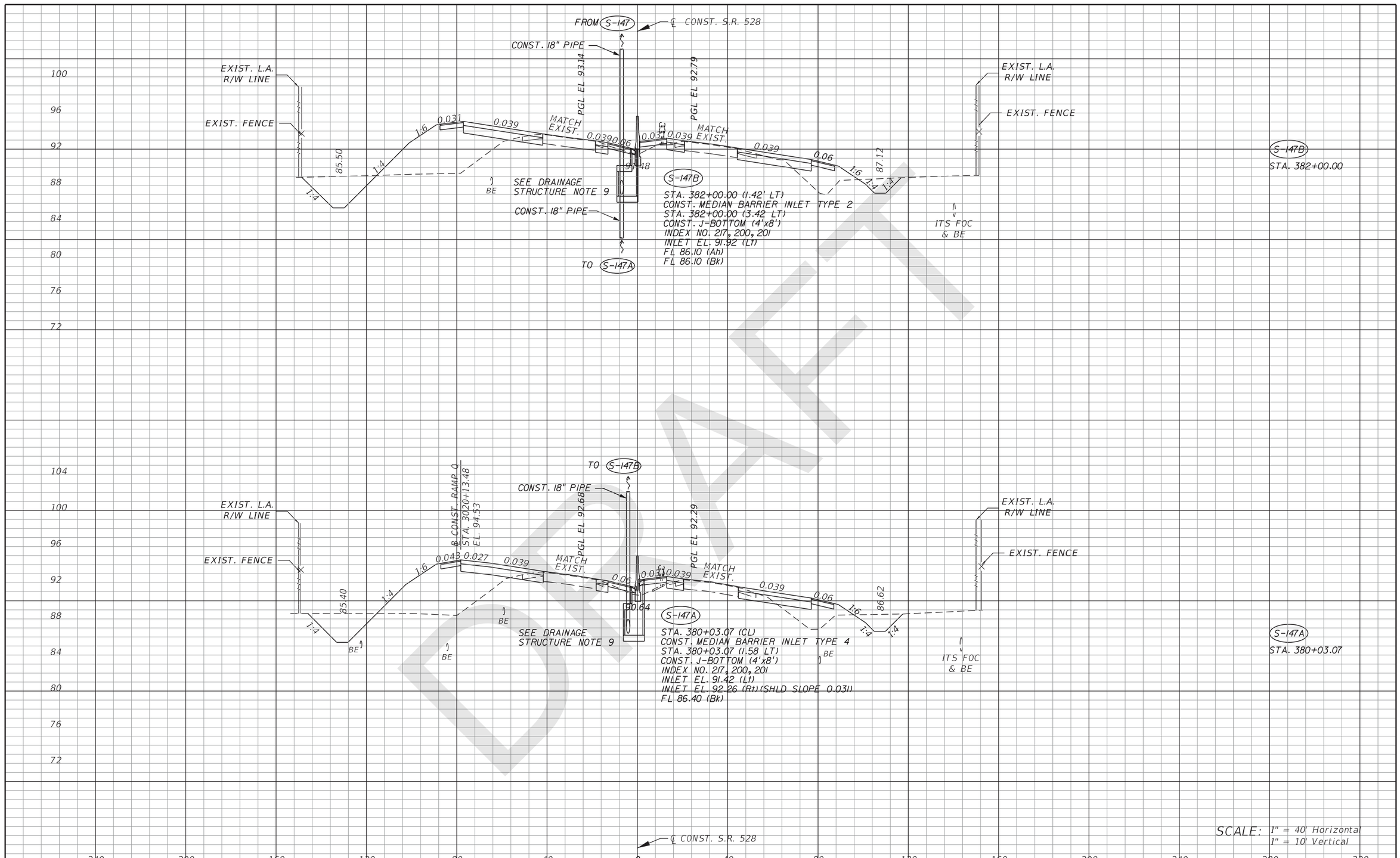

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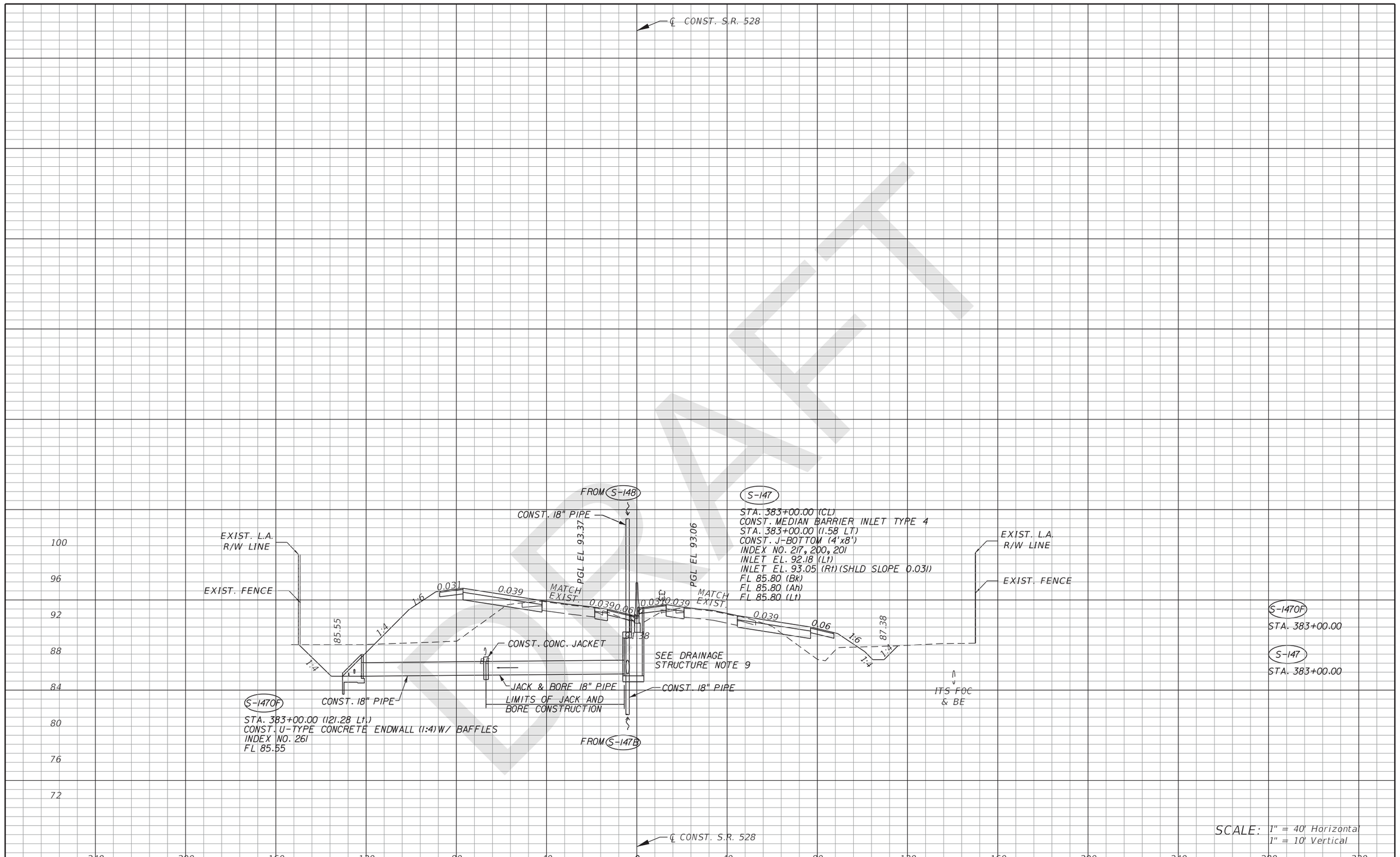

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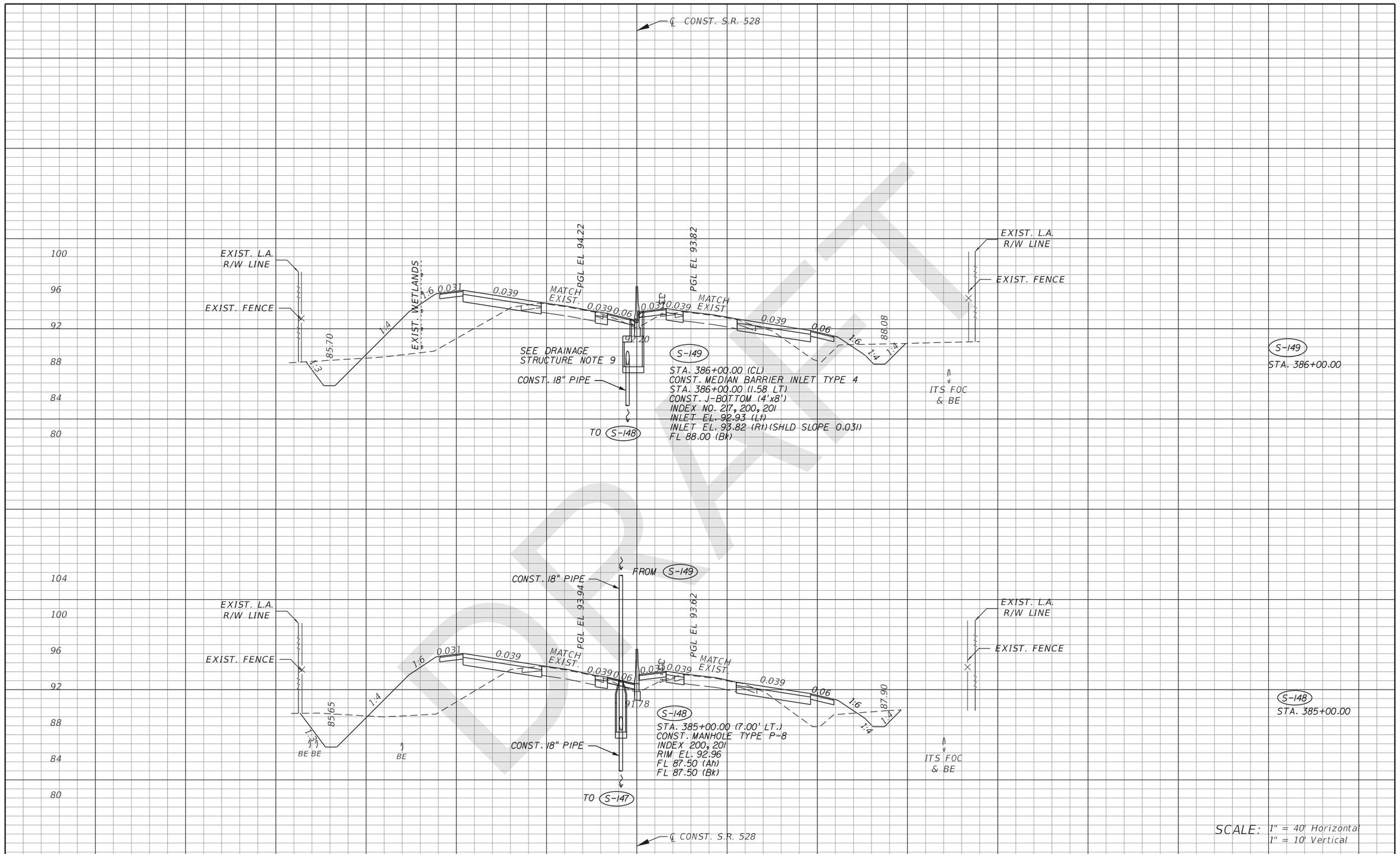
SHEET NO. 339

tcaffery 4/12/2015 3:25:28 PM T:\02-0249_017\40609055201\drainage\DRXSRD02.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
DONALD W. BROWN, P.E.
LICENSE NO. 59272

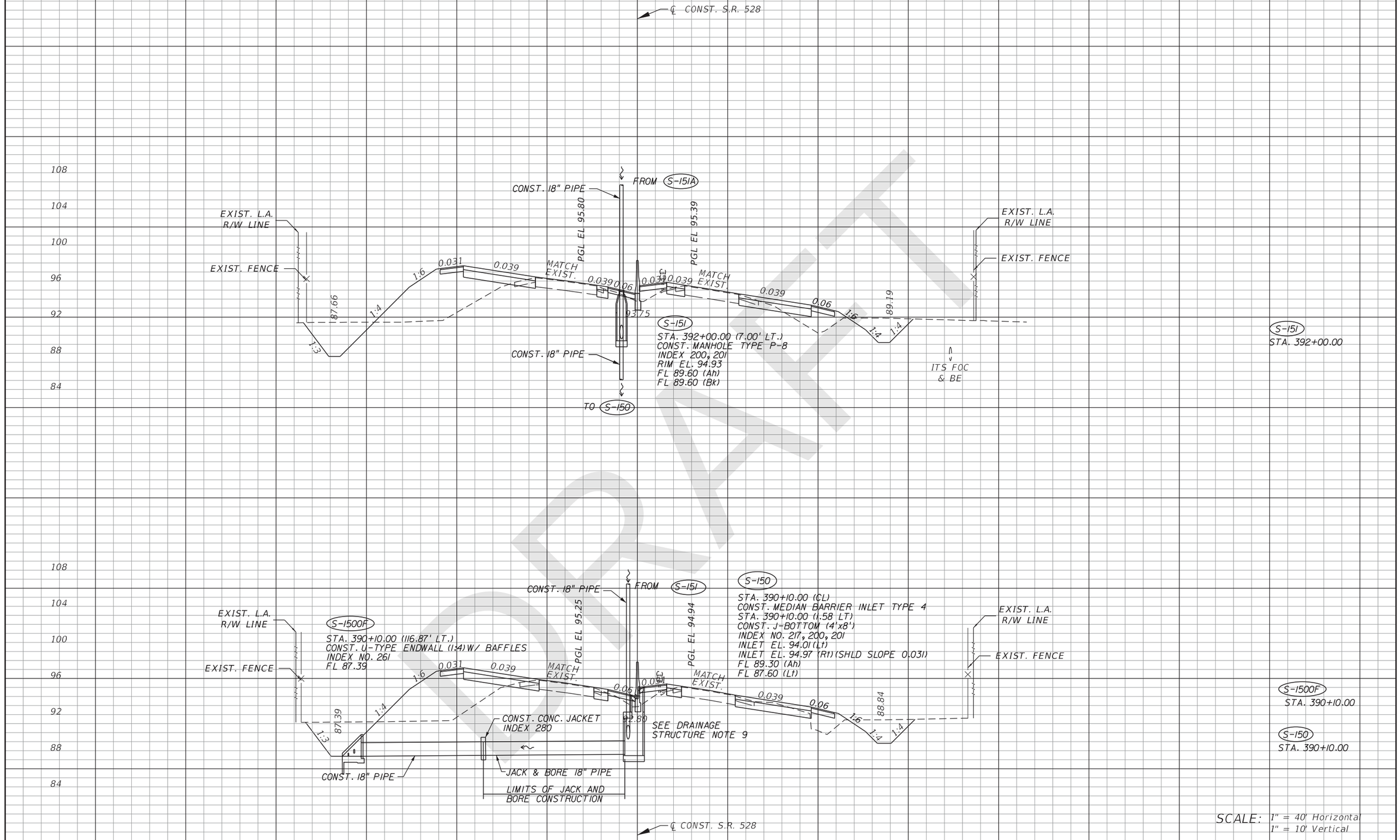
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 340

tcaffery 4/12/2015 3:25:30 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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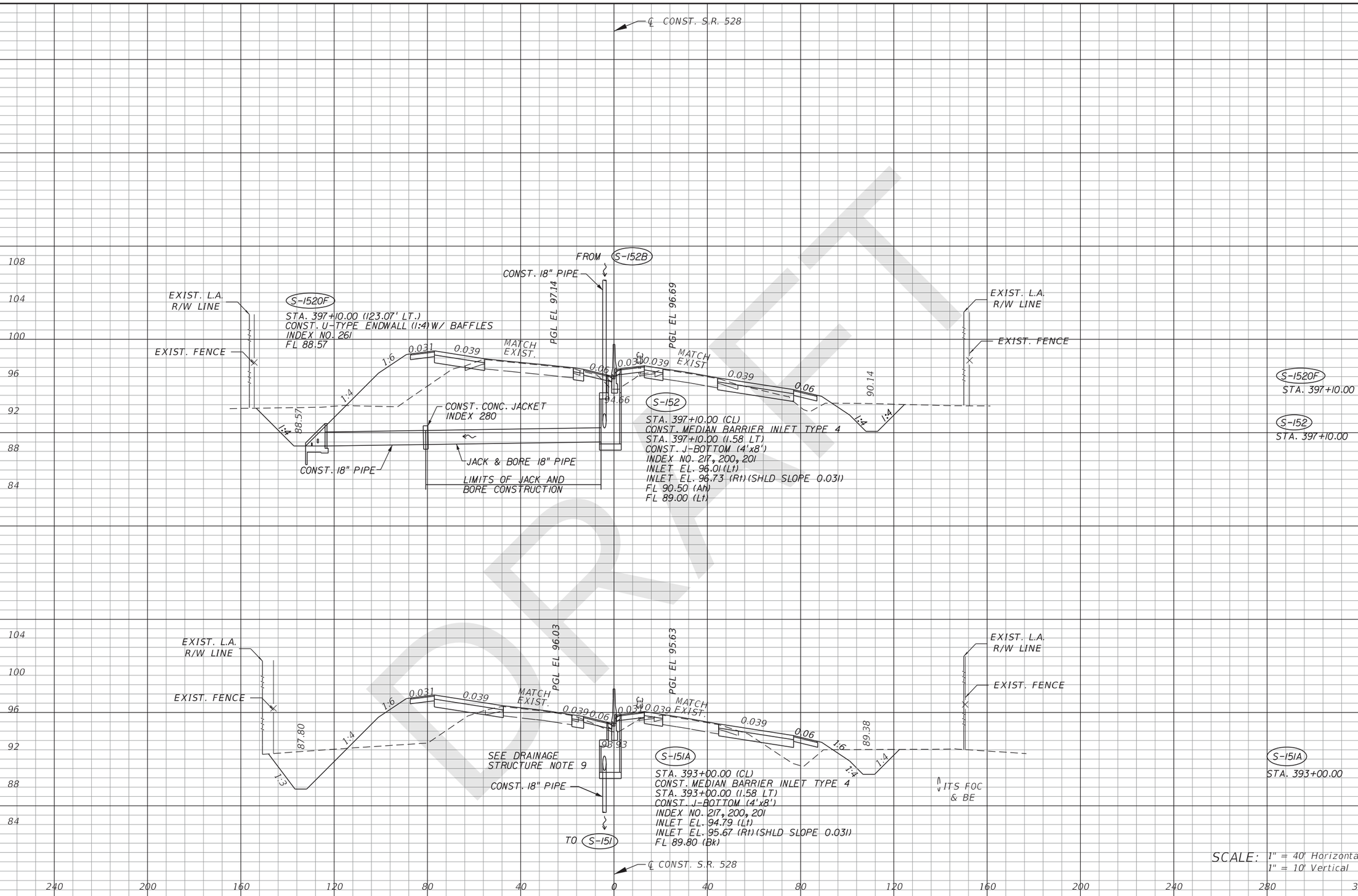
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 341

tcaffery 4/12/2015 3:25:30 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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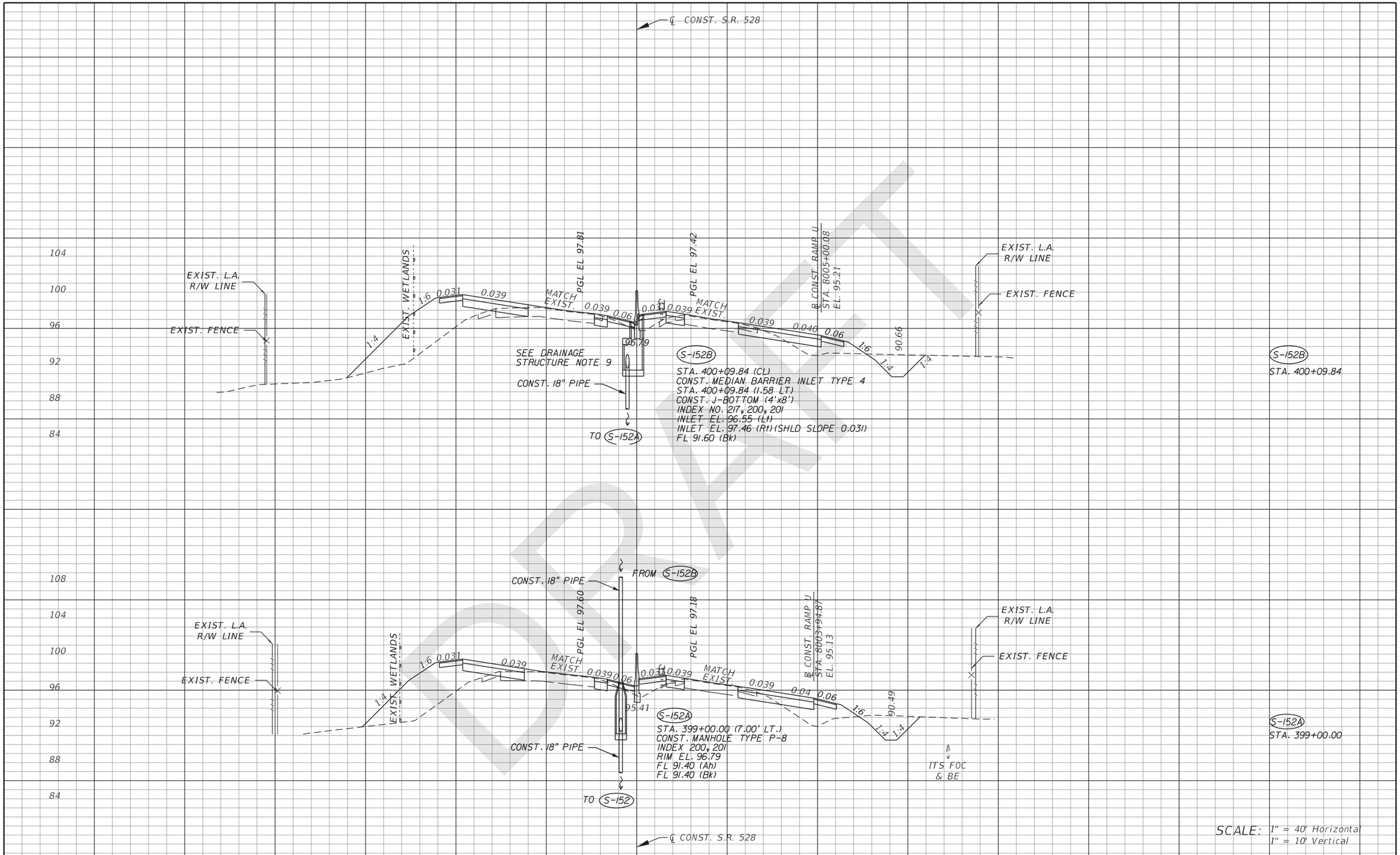
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 342

tcaffery 4/12/2015 3:25:30 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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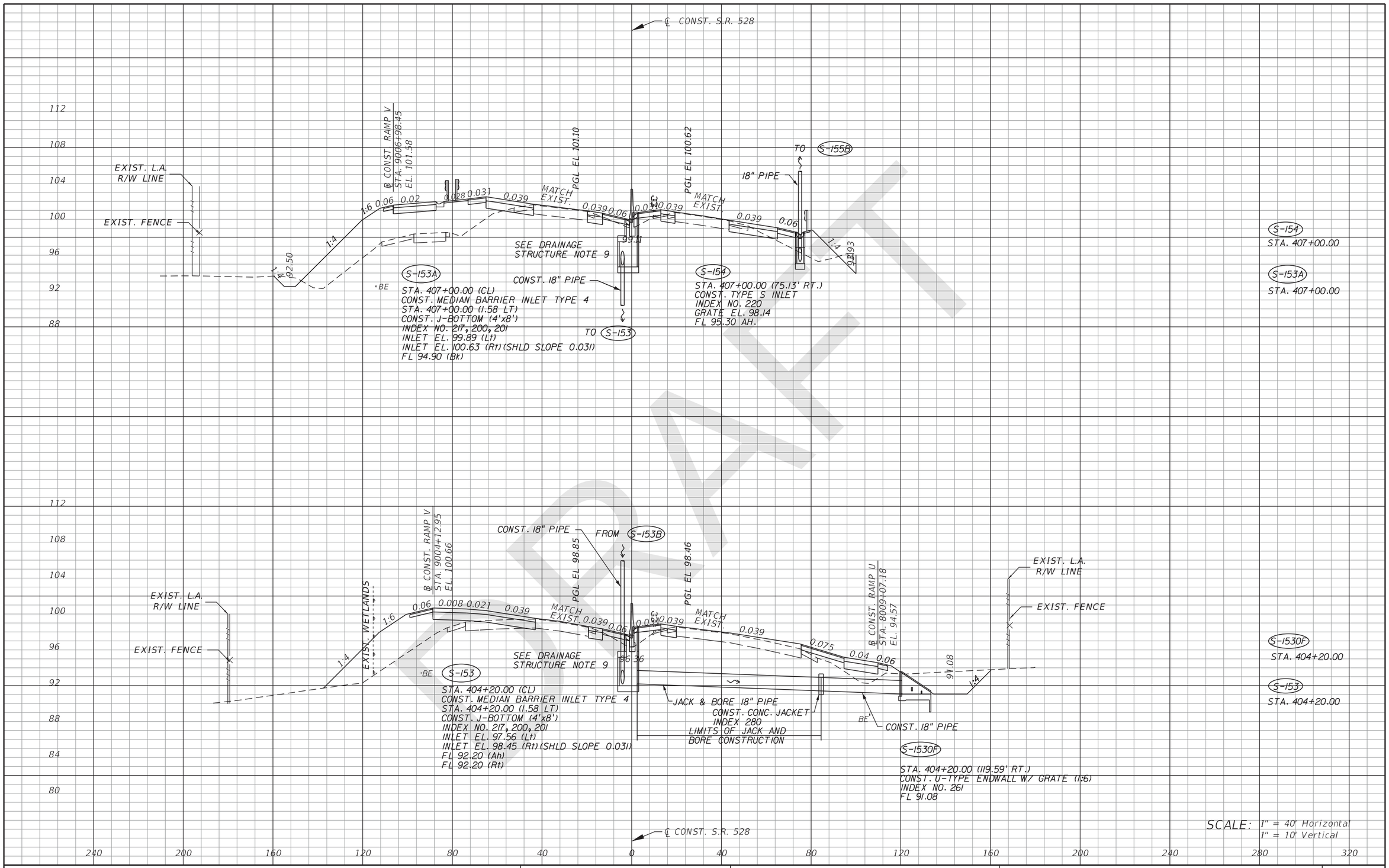
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 343

tcaffery 4/12/2015 3:25:30 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



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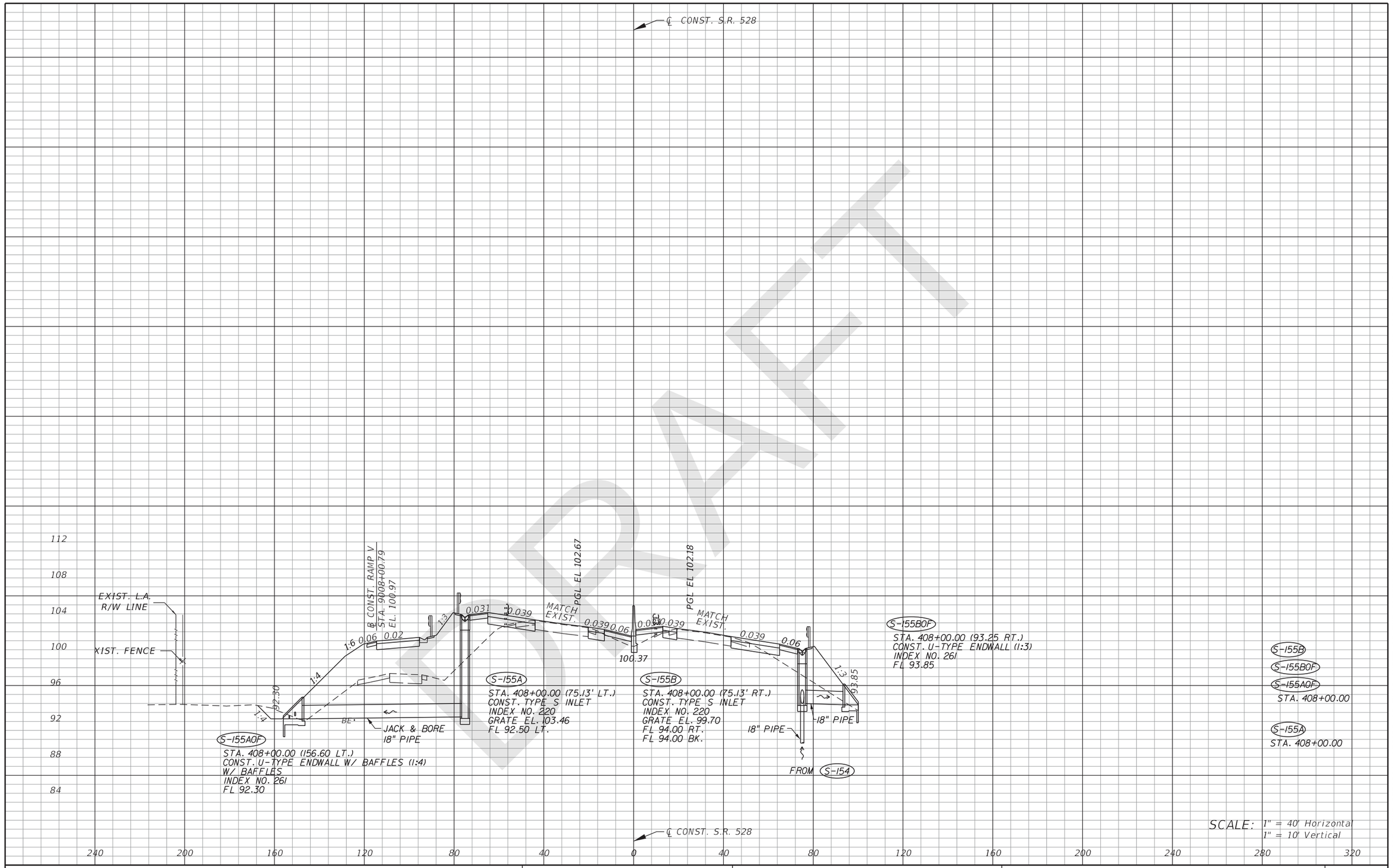
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 344

tcaffery 4/12/2015 3:25:30 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



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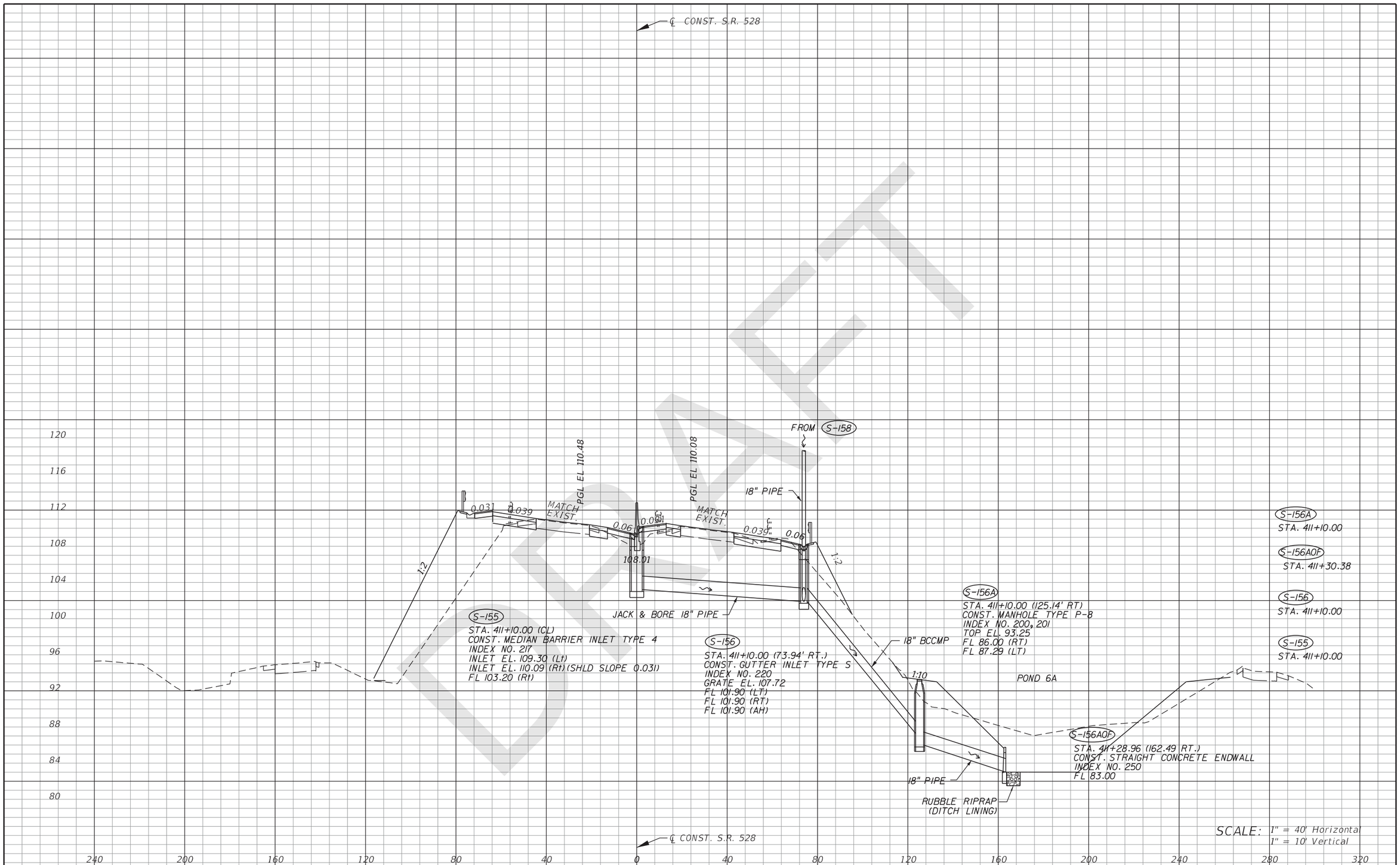
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 345

tcaffery 4/12/2015 3:25:31 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
DONALD W. BROWN, P.E.
LICENSE NO. 59272

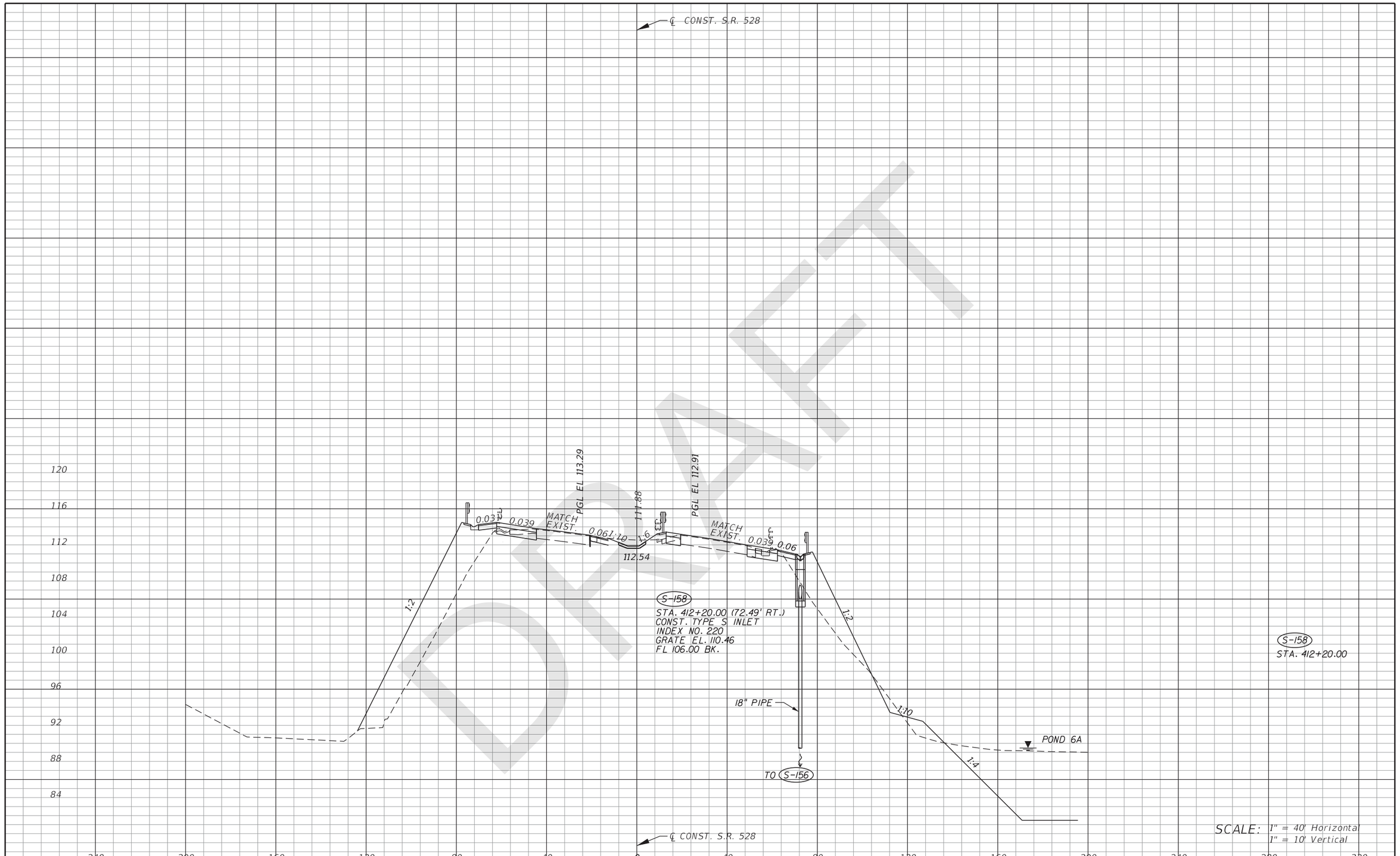
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 346

tcaffery 4/12/2015 3:25:31 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



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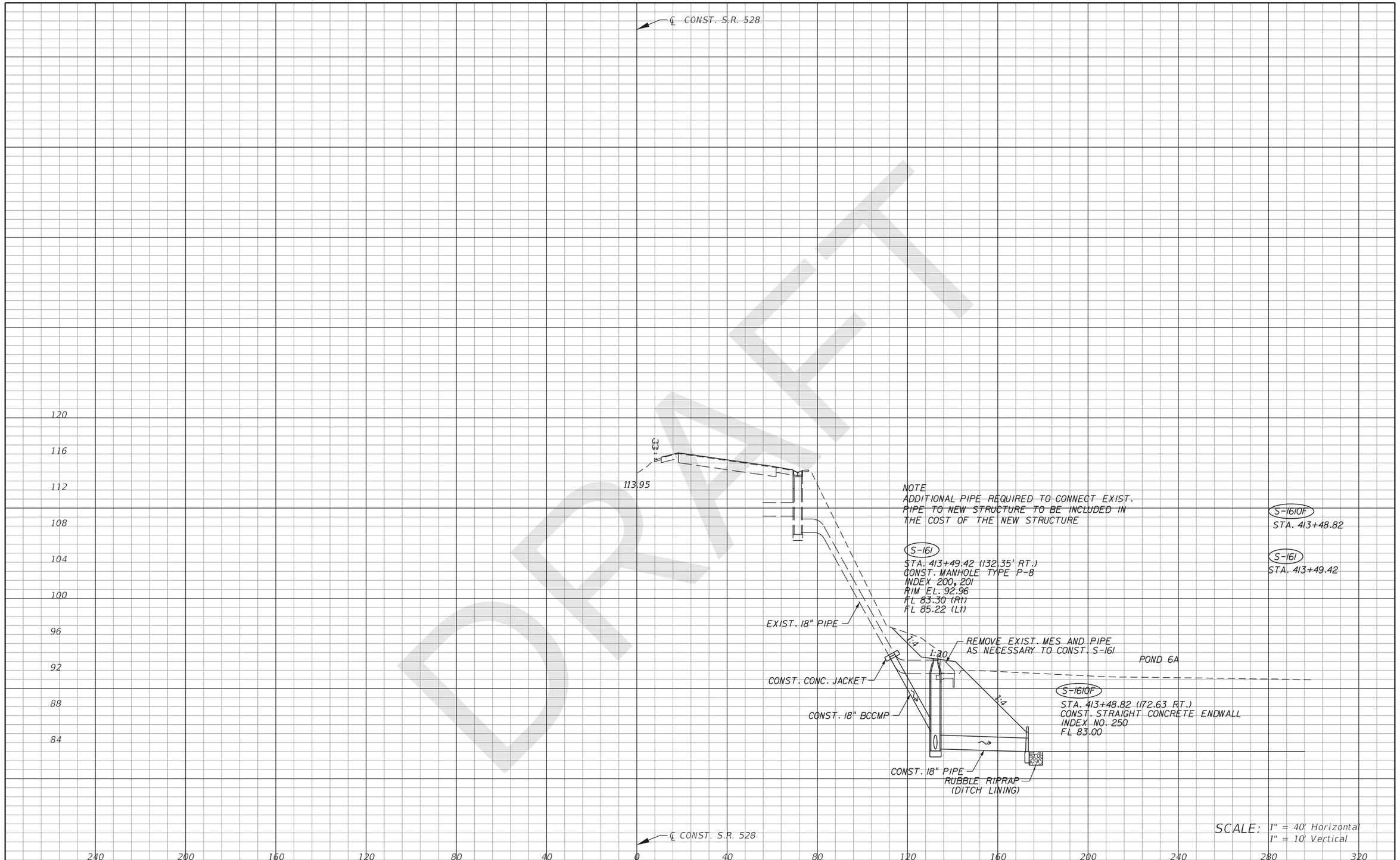
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 347

tcaffery 4/12/2015 3:25:31 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN



SCALE: 1" = 40' Horizontal
1" = 10' Vertical

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	406090-5-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 348

tcaffery 4/12/2015 3:25:31 PM T:\02-0249_017\40609055201\drainage\DRXSRD05.DGN

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CONSTRUCTION CONTRACT NO. E8P82

COMPONENTS OF CONTRACT PLANS SET

ROADWAY
SIGNING AND PAVEMENT MARKING
INTELLIGENT TRANSPORTATION SYSTEM (ITS) PLANS
LIGHTING
STRUCTURES
TOLL GANTRY MODIFICATION PLANS
TOLL PLAZA MODIFICATION PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

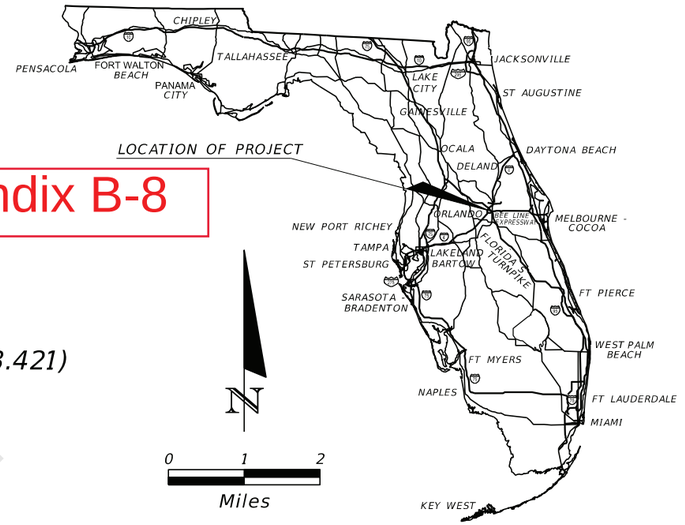
CONTRACT PLANS

FINANCIAL PROJECT ID 437156-1-52-01

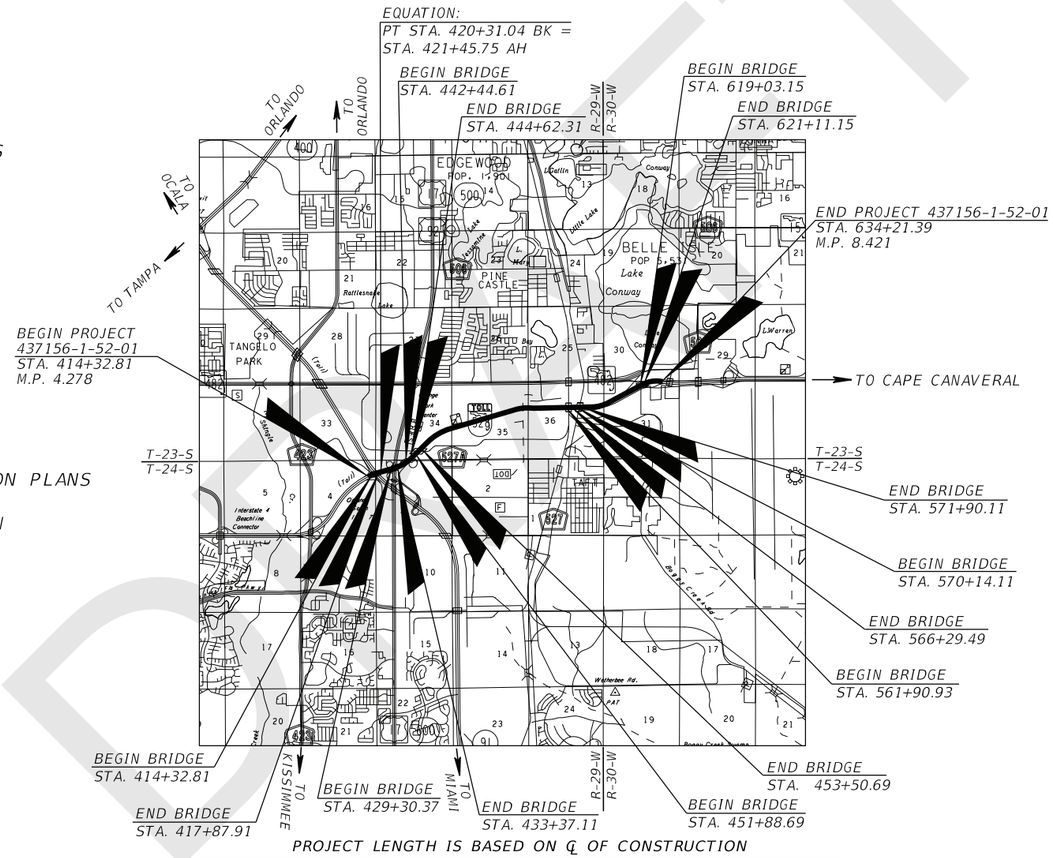
ORANGE COUNTY (75471)

STATE ROAD NO. 528

WIDEN BEACHLINE FROM TURNPIKE TO MCCOY RD. (MP 4.278 - 8.421)



Appendix B-8



PROJECT LENGTH IS BASED ON ℄ OF CONSTRUCTION

INDEX OF ROADWAY PLANS

GOVERNING STANDARDS AND SPECIFICATIONS:
Florida Department of Transportation, 2016 Design Standards and revised Index Drawings as appended herein, and January 2016 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/
Design Standards

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
http://www.dot.state.fl.us/programmanagement/Specs.shtm
Standard Specifications

REVISIONS

N/A

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	19,909.16	3.771
BRIDGES	1,964.71	0.372
NET LENGTH OF PROJECT	21,873.87	4.143
EXCEPTIONS	0	0
GROSS LENGTH OF PROJECT	21,873.87	4.143

FDOT PROJECT MANAGER: PATRICK M. MUENCH, P.E.
GEC PROJECT MANAGER: PAMELA NAGOT, P.E.

KEY SHEET REVISIONS

DATE	DESCRIPTION

ROADWAY SHOP DRAWINGS
TO BE SUBMITTED TO:
MARK PROCHAK, P.E.
DRMP, INC
941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
PHONE: (407) 896-0594 FAX: 896-4836

PLANS PREPARED BY:
DRMP, INC.
941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
PHONE: (407) 896-0594 FAX: (407) 896-4836
TURNPIKE DESIGN CONTRACT NO. C-8638
VENDOR NO. VF591791174001
CERTIFICATION OF AUTHORIZATION NO. 2648

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

ROADWAY PLANS
ENGINEER OF RECORD: MARK PROCHAK, P.E.

P.E. NO.: 43532

FISCAL YEAR	SHEET NO.
16	1

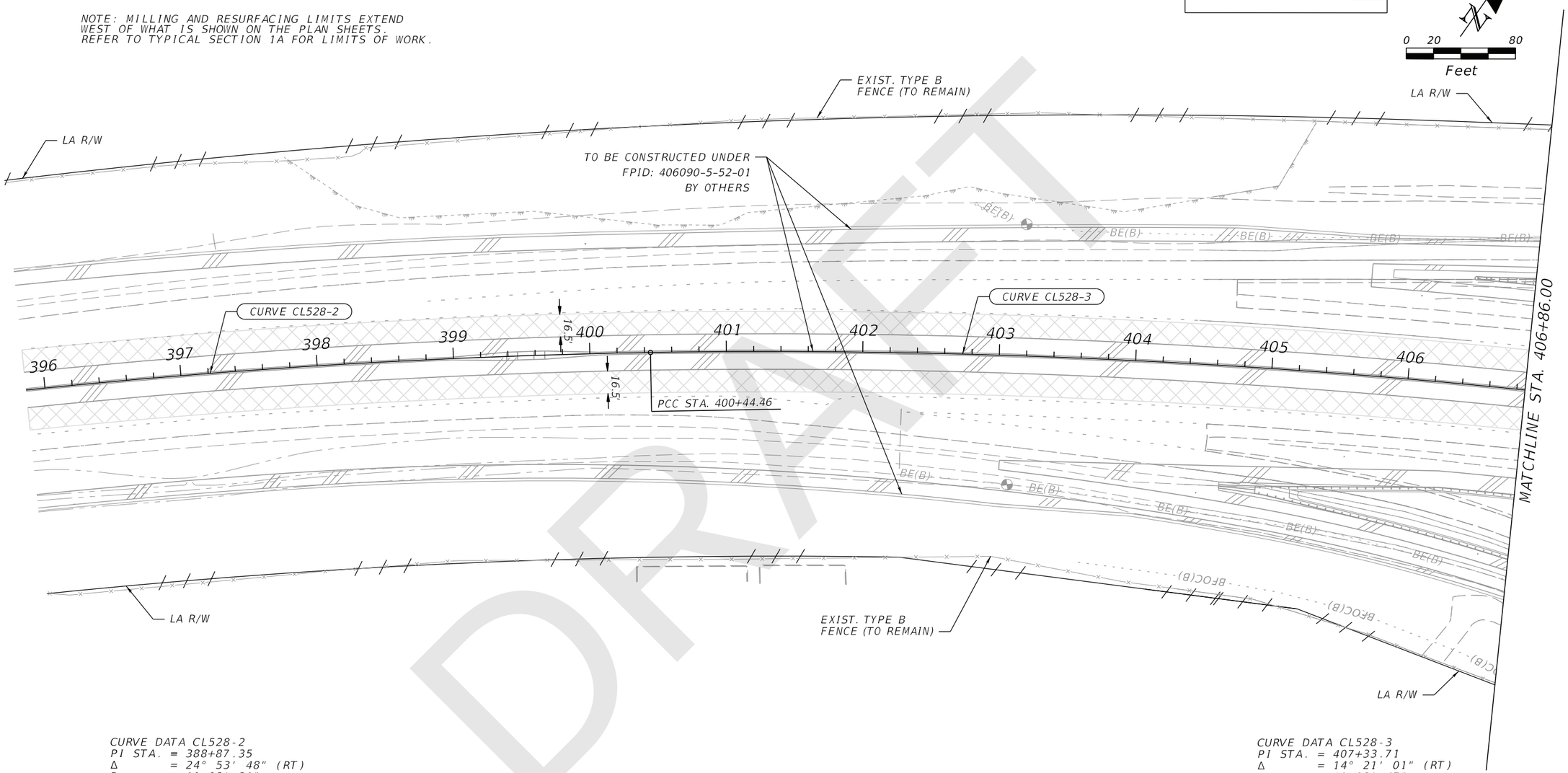
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

NOTE: MILLING AND RESURFACING LIMITS EXTEND
WEST OF WHAT IS SHOWN ON THE PLAN SHEETS.
REFER TO TYPICAL SECTION 1A FOR LIMITS OF WORK.

LEGEND

MILLING AND RESURFACING

0 20 80
Feet



CURVE DATA CL528-2
PI STA. = 388+87.35
Δ = 24° 53' 48" (RT)
D = 1° 03' 31"
T = 1,194.83'
L = 2,351.94'
R = 5,412.65'
PC STA. = 376+92.52
PCC STA.= 400+44.46
e = 0.04± (MATCH EXIST)

CURVE DATA CL528-3
PI STA. = 407+33.71
Δ = 14° 21' 01" (RT)
D = 1° 02' 47"
T = 689.24'
L = 1,371.27'
R = 5,475.00'
PCC STA.= 400+44.46
PCC STA.= 414+15.74
e = 0.04± (MATCH EXIST)

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 1
STA. 395+86.00 TO STA. 406+86.00

SHEET NO. 48

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LEGEND

MILLING AND RESURFACING

WIDENING

EXIST. TYPE B FENCE (TO REMAIN)

LA R/W

℄ CONST. CONSULATE DR.

SEE CONSULATE DRIVE PLAN SHEET

PT STA. 405+73.33

CONSULATE DRIVE

CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 413+89.28, 71.31' (LT)

BEGIN PROJECT 437156-1-52-01
S.R. 528 (BEACHLINE EXPRESSWAY)
BEGIN BRIDGE NO. 750092 & 750219
STA. 414+32.81

BEGIN WB APPRH. SLAB
END SHLDR. WIDTH TRANS.
END MED. VAR. HT. BARRIER TRANS.
STA. 413+99.45, 3.00' (LT)

411+50.00
20.87' (LT)

411+50.00
13.00' (LT)

BEGIN GR RESET &
RECONST. MISC. ASPH.
STA. 413+00.17, 73.00' (LT)

℄ CONST. S.R. 528

MATCHLINE STA. 406+86.00

TO BE CONSTRUCTED UNDER
FPID: 406090-5-52-01
BY OTHERS

CURVE CL528-3

12' PAVED SHLDR.

REMOVE EXIST. INLET

407 408 409 410 411 412 413 414 415 416 417

40.5' 16.5' 16.5' 40.5' 36.5' 36.5'

BEGIN WIDENING
BEGIN CONST. 12' PAVED SHLDR.
BEGIN CONST. VAR. MED. HT. BW
STA. 411+50.00

CONST. VAR. HT. MED. BARRIER WALL

411+50.00
13.00' (LT)

411+50.00
19.43' (LT)

EXIST. GUARDRAIL (TO BE REMOVED)

12' PAVED SHLDR.

BEGIN GR RESET &
RECONST. MISC. ASPH.
STA. 413+00.21, 72.43' (RT)

EXIST. 18" RCP (FILL WITH FLOWABLE FILL)

PLUG NORTH/SOUTH INVERTS OF EXIST. 18" RCP

PC STA. 402+17.16

BEGIN EB APPRH. SLAB
END SHLDR. WIDTH TRANS.
END MED. VAR. HT. BARRIER TRANS.
STA. 414+15.69, 3.00' (RT)

BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 412+99.45

Ⓐ CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 414+27.78, 71.39' (RT)

EX-61

S-60

S-61

405 404 403 402 401 400

2381 2380 2379 2378 2377 2376

0 20 80
Feet

FLORIDA GAS TRANSMISSION 34"

FLORIDA GAS TRANSMISSION 26"

LA R/W

EXIST. 48" RCP

CURVE SR91-2A

EXIST. 54" RCP

CURVE CLCON-1

℄ CONST. S.R. 528
STA. 416+61.88 =
STA. 2377+81.52
℄ CONST. S.R. 91

CURVE CL528-4

℄ CONST. S.R. 528
STA. 415+31.14 =
STA. 403+19.57
℄ CONST. CONSULATE DR.

N 33° 38' 41" W

SB S.R. 91 FLORIDA'S TURNPIKE

NB S.R. 91 FLORIDA'S TURNPIKE

CONSULATE DRIVE

℄ CONST. S.R. 91

ABANDONED FGT 24"

FLORIDA GAS TRANSMISSION 24"

MATCHLINE STA. 417+86.00

CURVE DATA CL528-3
PI STA. = 407+33.71
Δ = 14° 21' 01" (RT)
D = 1° 02' 47"
T = 689.24'
L = 1,371.27'
R = 5,475.00'
PCC STA.= 400+44.46
PCC STA.= 414+15.74
e= 0.04± (MATCH EXIST)

LA R/W
EXIST. TYPE B FENCE (TO REMAIN)

CURVE DATA SR91-2A
PI STA. = 2378+95.05
Δ = 22° 14' 44" RT.
D = 00° 45' 00"
T = 1501.95'
L = 2966.06'
R = 7639.44'
PC STA. = 2363+93.11
PT STA. = 2393+59.17
e = 0.028± (MATCH EXISTING)

CURVE DATA CLCON-1
PI STA. = 404+00.96
Δ = 34° 53' 04" RT.
D = 09° 47' 39"
T = 183.80'
L = 356.18'
R = 585.00'
PC STA. = 402+17.16
PT STA. = 405+73.33
e = (MATCH EXISTING)

CURVE DATA CL528-4
PI STA. = 417+23.72
Δ = 6° 30' 48" (RT)
D = 1° 03' 31"
T = 307.98'
L = 615.30'
R = 5,412.65'
PCC STA.= 414+15.74
PT STA. = 420+31.04
e= 0.04± (MATCH EXIST)

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 2
STA. 406+86.00 TO STA. 417+86.00

SHEET NO. 49

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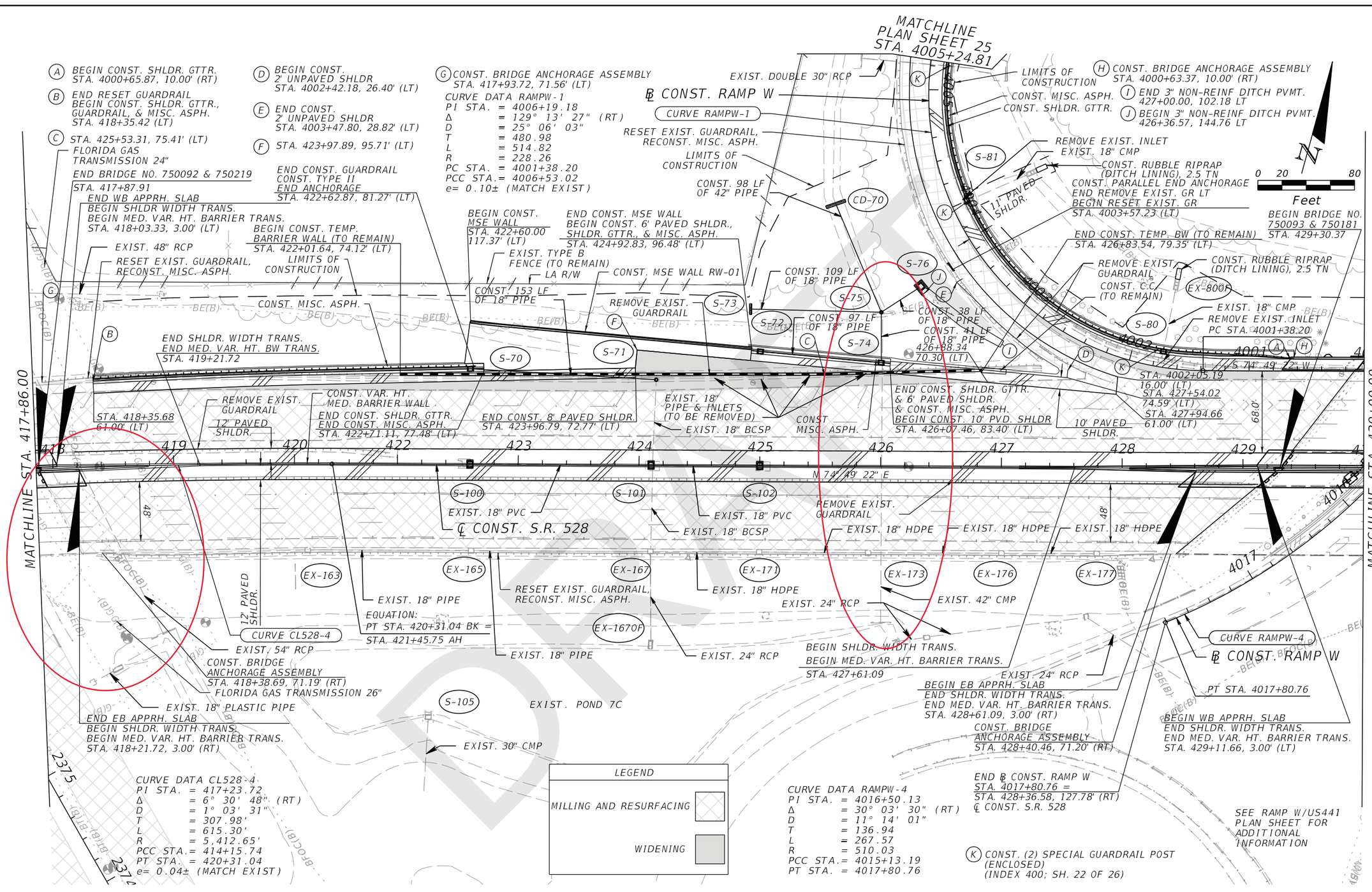

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LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 3
STA. 417+86.00 TO STA. 430+00.00

SHEET NO. 50

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MATCHLINE PLAN SHEET 25 STA. 4011+53.96

CURVE RAMPW-3

RAMP W

℄ CONST. RAMP W

BEGIN ℄ CONST. RAMP W STA. 4000+00.00 = STA. 430+04.79, 81.00' (LT) ℄ CONST. S.R. 528

EXIST. 18" RCP

SEE RAMP W/US441 PLAN SHEET

US 441

℄ LANDSTREET ROAD

R/W

LANDSTREET ROAD

POT STA. 61+00.00

61

SPIRAL CL528-5B
PI STA. = 433+38.42
Δs = 7° 30' 00" (LT)
D = 3° 00' 00"
R = 1,909.86'
Ls = 500.00'
Ts = 763.06'
Lc = 499.62'
Xs = 499.14'
Ys = 21.79'
P = 5.45'
K = 249.86'
LT = 333.63'
ST = 166.94'
TS STA. = 430+04.78
SC STA. = 435+04.78
e = MATCH EXIST.

SPIRAL CL528-5A
PI STA. = 441+71.72
Δs = 7° 30' 00" (LT)
D = 3° 00' 00"
R = 1,909.86'
Ls = 500.00'
Ts = 763.06'
Lc = 499.62'
Xs = 499.14'
Ys = 21.79'
P = 5.45'
K = 249.86'
LT = 333.63'
ST = 445+04.79
CS STA. = 440+04.79
e = MATCH EXIST.

CURVE DATA RAMPW-3
PI STA. = 4013+30.40
Δ = 71° 56' 13" (RT)
D = 16° 36' 28"
T = 250.36
L = 433.15
R = 344.99
PCC STA.= 4010+80.04
PCC STA.= 4015+13.19

END BRIDGE NO. 750093 & 750181 STA. 433+37.11
END WB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 433+75.52, 3.00' (LT)

EXIST. 12"x18" RCP (TO REMAIN)

CONST. RUBBLE RIPRAP (DITCH LINING), 2.5 TN

STA. 436+33.39 (146.97' LT)
CONST. MES 1:4
ELEV. 92.52 FL

CONST. 44 LF OF 18" PIPE

LIMITS OF CONSTRUCTION

CONST. 33 LF OF 18" PIPE

STA. 439+60.00 81.00' (LT)

CONST. 129 LF OF 18" PIPE

REMOVE EXIST. 18" CMP & EW

CONST. 163 LF OF 18" PIPE

CONST. 50 LF TYPE B FENCE AND FENCE GATE

CONST. RUBBLE RIPRAP (DITCH LINING), 2.5 TN

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. MES & PIPE

LA R/W

CONST. 31 LF OF 18" PIPE

REMOVE EXIST 18" CMP & EW

CONST. 44 LF OF 18" PIPE

12' PAVED SHLDR.

REMOVE EXIST. 18" CMP & EW

CONST. 36 LF OF 18" PIPE

CONST. 14 LF OF 36" PIPE

REMOVE EXIST. 18" PVC & INLETS

REMOVE EXIST. 18" PVC

REMOVE EXIST. 18" PVC & INLET

REMOVE EXIST. INLET

REMOVE EXIST. INLET

CONST. SHLDR. GTTR. & MISC. ASPH.

BEGIN LANE SHIFT STA. 439+04.10 13.00' (LT)

REMOVE EXIST. 18" PVC & INLETS

END LANE SHIFT STA. 440+04.77, 12.50' (LT)

EXIST. 18" PVC

1897' R

68.0' (TYP.)

℄ CONST. S.R. 528

EXIST. 18" PVC

SC STA. 435+04.78

48'

EXIST. 18" PVC

REMOVE EXIST. GUARDRAIL

CS STA. 440+04.79

℄ CONST. S.R. 528
STA. 431+52.87 = STA. 51+50.00 ℄ CONST. US 441

℄ US 441

CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 433+42.59, 71.03' (RT)
END EB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 433+75.52, 3.00' (RT)

END SHLDR. WIDTH TRANS.
END MED. VAR. HT. BARRIER TRANS.
STA. 434+75.60

12' PAVED SHLDR.

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

EXIST. CONC. FLUME

EXIST. 24" DIP

EXIST. 18" PVC
REMOVE EXIST. GUARDRAIL

CURVE CL528-5

SPIRAL CL528-5A
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 440+90.06

EXIST. 15" RCP

EXIST 18" RCP

SPIRAL CL528-5B

CURVE RAMPW-4

EXIST. 36" RCP

EX-187A

EXIST. 24" DIP

EX-187AOF

EXIST. POND 8B

CURVE DATA CL528-5
PI STA. = 437+56.22
Δ = 15° 00' 00" (LT)
D = 3° 00' 00"
T = 251.44'
L = 500.00'
R = 1,909.86'
SC STA. = 435+04.78
CS STA. = 440+04.79
e= 0.10± (MATCH EXIST)

CURVE DATA RAMPW-4
PI STA. = 4016+50.13
Δ = 30° 03' 30" (RT)
D = 11° 14' 01"
T = 136.94
L = 267.57
R = 510.03
PCC STA.= 4015+13.19
PT STA. = 4017+80.76

CURVE DATA CL4411
PI STA. = 44+36.17
Δ = 14° 15' 20" (LT)
D = 0° 30' 00"
T = 1,432.95
L = 2,851.11
R = 11,459.16
PC STA. = 30+03.22
PT STA. = 58+54.33

LEGEND
MILLING AND RESURFACING
WIDENING

(A) BEGIN BARRIER WALL STA. 433+97.37, 91.00' LT
(B) END BARRIER WALL STA. 434+38.00, 91.00' LT
(C) BEGIN CONST. MISC. ASPH STA. 434+34.87, 92.54' (LT)
(F) BEGIN BARRIER WALL STA. 440+95.22, 75.99' LT
(G) END CONST. MISC. ASPH STA. 440+98.45, 76.89' (LT)
(D) CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY STA. 434+24.97, 91.00' (LT)
(E) CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY STA. 440+97.78, 75.71' (LT)

0 20 80
Feet

MATCHLINE STA. 430+00.00

MATCHLINE STA. 441+00.00

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 4
STA. 430+00.00 TO STA. 441+00.00

SHEET NO. 51

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Ⓑ CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY
STA. 444+55.42, 71.24' (LT)

SPIRAL CL528-5A
PI STA. = 441+71.72
Δs = 7° 30' 00" (LT)
D = 3° 00' 00"
R = 1,909.86'
Ls = 500.00'
Ts = 763.06'
Lc = 499.62'
Xs = 499.14'
Ys = 21.79'
P = 5.45'
K = 249.86'
LT = 333.63'
ST = 166.94'
ST STA. = 445+04.79
CS STA. = 440+04.79
e = MATCH EXIST.

LEGEND
MILLING AND RESURFACING
WIDENING

N
0 20 80
Feet

END WIDENING
STA. 441+34.10, 61.64 LT' (RT)
END BARRIER WALL
STA. 441+46.06, 70.41' LT
BEGIN LANE SHIFT
STA. 445+04.79, 12.50' (LT)
END WB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 444+81.30, 2.50' (LT)
℄ CONST. S.R. 528
STA. 443+52.87 =
STA. 64+66.26
℄ CONST. LANDSTREET ROAD
END BRIDGE NO.
750094 & 750221
STA. 444+62.31
END EB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. VAR. HT. BARRIER TRANS.
STA. 445+37.35, 3.00' (RT)
CONST. BRIDGE
ANCHORAGE ASSEMBLY
STA. 450+99.23, 71.15' (LT)
BEGIN WB APPRH. SLAB
END SHLDR. WIDTH TRANS.
END MED. BARRIER TRANS.
STA. 451+15.97, 3.00' (LT)
BEGIN BRIDGE NO.
750094 & 750221
STA. 442+44.61
BEGIN LANE SHIFT
STA. 446+04.79, 13.00' (LT)
END SHLDR. WIDTH TRANS.
END MED. BARRIER TRANS.
STA. 446+37.35
ST STA. 445+04.79
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. BARRIER TRANS.
STA. 450+15.97
BEGIN EB APPRH. SLAB
END SHLDR. WIDTH TRANS.
END MED. VAR. HT. BARRIER TRANS.
STA. 442+26.14, 3.00' (RT)
BEGIN WB APPRH. SLAB
END SHLDR. WIDTH TRANS.
END MED. VAR. HT. BARRIER TRANS.
STA. 441+65.06, 2.50' (LT)
BEGIN Ⓑ CONST. RAMP X5
PC STA. 12000+00.00 =
STA. 446+01.04, 96.96' (RT)
℄ CONST. S.R.528
END SHLDR. WIDTH TRANS.
END MED. BARRIER TRANS.
STA. 451+70.86, 3.00' (RT)
BEGIN BRIDGE NO.
750096 & 750222
STA. 451+88.69

EXIST. 24" PIPE
EXIST. TYPE B FENCE (TO REMAIN)
EXIST. 30" PIPE
LA R/W
EXIST. 36" PIPE
CSX RR SPUR
EXIST. 18" PIPE
RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.
CONST. MED. BARRIER
REMOVE EXIST. GUARDRAIL
REMOVE EXIST. INLET & 18" PIPE
CONST. 46 LF OF 18" PIPE
CONST. 51 LF OF 18" PIPE
℄ CONST. S.R. 528
℄ CONST. RAMP X5
SPIRAL CL528-5A
EXIST. 18" CMP
℄ LANDSTREET ROAD
CURVE RAMPX5-1
CURVE RAMPX5-2
EXIST. TYPE B FENCE (TO REMAIN)
12' PAVED SHLDR.
10' PAVED SHLDR.
MATCHLINE STA. 441+00.00
MATCHLINE STA. 452+00.00
N 89° 48' 50" E
N 44° 49' 22" E

Ⓐ CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 445+98.38, 118.82' (RT)

Ⓒ CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY
STA. 442+40.12, 71.00' (RT)

CURVE DATA RAMPX5-1
PI STA. = 12002+02.78
Δ = 4° 25' 26" (RT)
D = 1° 05' 29"
T = 202.78'
L = 405.37'
R = 5,250.00'
PC STA. = 12000+00.00
PRC STA.= 12004+05.37
e= RC± (MATCH EXIST)

CURVE DATA RAMPX5-2
PI STA. = 12009+46.34
Δ = 6° 11' 35" (LT)
D = 0° 34' 23"
T = 540.97'
L = 1,080.89'
R = 10,000.00'
PRC STA.= 12004+05.37
PRC STA.= 12014+86.26
e= NC± (MATCH EXIST)

REVISIONS			
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941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 5
STA. 441+00.00 TO STA. 452+00.00

SHEET NO. 52

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LEGEND

MILLING AND RESURFACING

0 20 80

Feet

CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 453+72.05, 71.23' (LT)

END WB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. BARRIER TRANS.
STA. 453+68.50, 3.00' (LT)

END SHLDR. WIDTH TRANS.
END MED. BARRIER TRANS.
STA. 455+44.74

EX-218

EXIST. TYPE B FENCE (TO REMAIN)

LA R/W

EX-226

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

EXIST. 54" SRAP

EX-235

EXIST. 54" SRAP

EXIST. 18" CMP

REMOVE EXIST. GUARDRAIL

EXIST. 18" CMP

END BRIDGE NO. 750096 & 750222
STA. 453+50.69

EX-217

EXIST. 54" SRAP

EX-225

CONST. MED. BARRIER

EXIST. 18" PVC

EX-234

12' PAVED SHLDR.

EX-230

EXIST. 18" PVC

MATCHLINE STA. 452+00.00

MATCHLINE STA. 463+00.00

LA R/W

10' PAVED SHLDR.

℄ CONST. S.R. 528

47.7'

TS STA. 460+77.46

SPIRAL CL528-6B

453 454 455 456 457 458 459 460 461 462

N 44° 49' 22" E

LA R/W

10' PAVED SHLDR.

48'

S-202

S-203

S-204

EXIST. 18" PVC

REMOVE EXIST. GUARDRAIL

EXIST. 18" PVC

12006 12007 12008 12009 12010 12011 12012 12013 12014 12015 12016

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

EXIST. 24" CMP

EXIST. 15" CMP

12' PAVED SHLDR.

PRC STA. 12014+86.26

END WB APPRH. SLAB.
STA. 453+72.05

CSX RR SPUR

CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY
STA. 12010+15.99, 17.30' (RT)

LA R/W

EXIST. TYPE B FENCE (TO REMAIN)

EXIST. 24" CPP

CURVE RAMPX5-3

BEGIN BRIDGE NO. 750632
STA. 12007+20.42

END APPROACH SLAB
STA. 12009+36.49

CURVE RAMPX5-2

℄ CONST. RAMP X5

BEGIN APPROACH SLAB
STA. 12006+64.66

END EB APPRH. SLAB
BEGIN SHLDR. WIDTH TRANS.
BEGIN MED. BARRIER TRANS.
STA. 454+44.74, 3.00' (RT)

END BRIDGE NO. 750632
STA. 12008+74.79

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

EXIST. 18" PIPE

EXIST. TYPE B FENCE (TO REMAIN)

LA R/W

Ⓐ CONST. BRIDGE ANCHORAGE ASSEMBLY
STA. 453+07.44, 124.36' (RT)

CURVE DATA RAMPX5-2
PI STA. = 12009+46.34
Δ = 6° 11' 35" (LT)
D = 0° 34' 23"
T = 540.97'
L = 1,080.89'
R = 10,000.00'
PRC STA.= 12004+05.37
PRC STA.= 12014+86.26
e= NC± (MATCH EXIST)

CURVE DATA RAMPX5-3
PI STA. = 12016+79.53
Δ = 7° 55' 13" (RT)
D = 2° 03' 08"
T = 193.27'
L = 385.92'
R = 2,791.79'
PRC STA.= 12014+86.26
PT STA. = 12018+72.18
e= VARIES (MATCH EXIST)

SPIRAL CL528-6B
PI STA. = 463+44.19
Δs = 4° 00' 00" (RT)
D = 2° 00' 00"
R = 2,864.79'
Ls = 400.00'
Ts = 943.84'
Lc = 399.91'
Xs = 399.81'
Ys = 9.31'
P = 2.33'
K = 199.97'
LT = 266.73'
ST = 133.40'
TS STA. = 460+77.46
SC STA. = 464+77.46
e = MATCH EXIST.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
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DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 6
STA. 452+00.00 TO STA. 463+00.00

SHEET NO. 53

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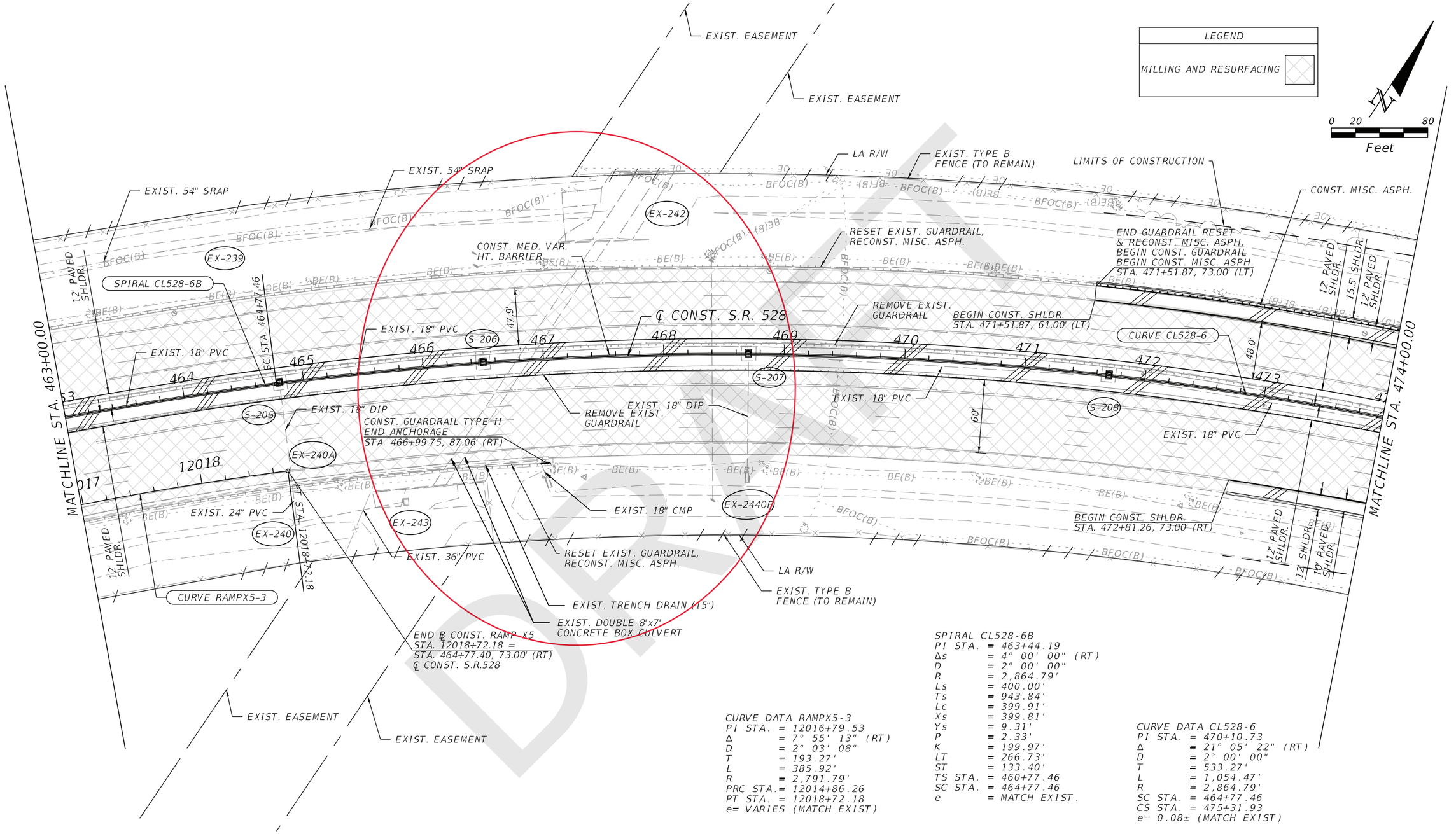

CURVE DATA RAMPX5-3
PI STA. = 12016+79.53
Δ = 7° 55' 13" (RT)
D = 2° 03' 08"
T = 193.27'
L = 385.92'
R = 2,791.79'
PRC STA.= 12014+86.26
PT STA. = 12018+72.18
e= VARIES (MATCH EXIST)

SPIRAL CL528-6B
PI STA. = 463+44.19
Δs = 4° 00' 00" (RT)
D = 2° 00' 00"
R = 2,864.79'
Ls = 400.00'
Ts = 943.84'
Lc = 399.91'
Xs = 399.81'
Ys = 9.31'
P = 2.33'
K = 199.97'
LT = 266.73'
ST = 133.40'
TS STA. = 460+77.46
SC STA. = 464+77.46
e = MATCH EXIST.

CURVE DATA CL528-6
PI STA. = 470+10.73
Δ = 21° 05' 22" (RT)
D = 2° 00' 00"
T = 533.27'
L = 1,054.47'
R = 2,864.79'
SC STA. = 464+77.46
CS STA. = 475+31.93
e= 0.08± (MATCH EXIST)

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 7
STA. 463+00.00 TO STA. 474+00.00

SHEET NO. 54

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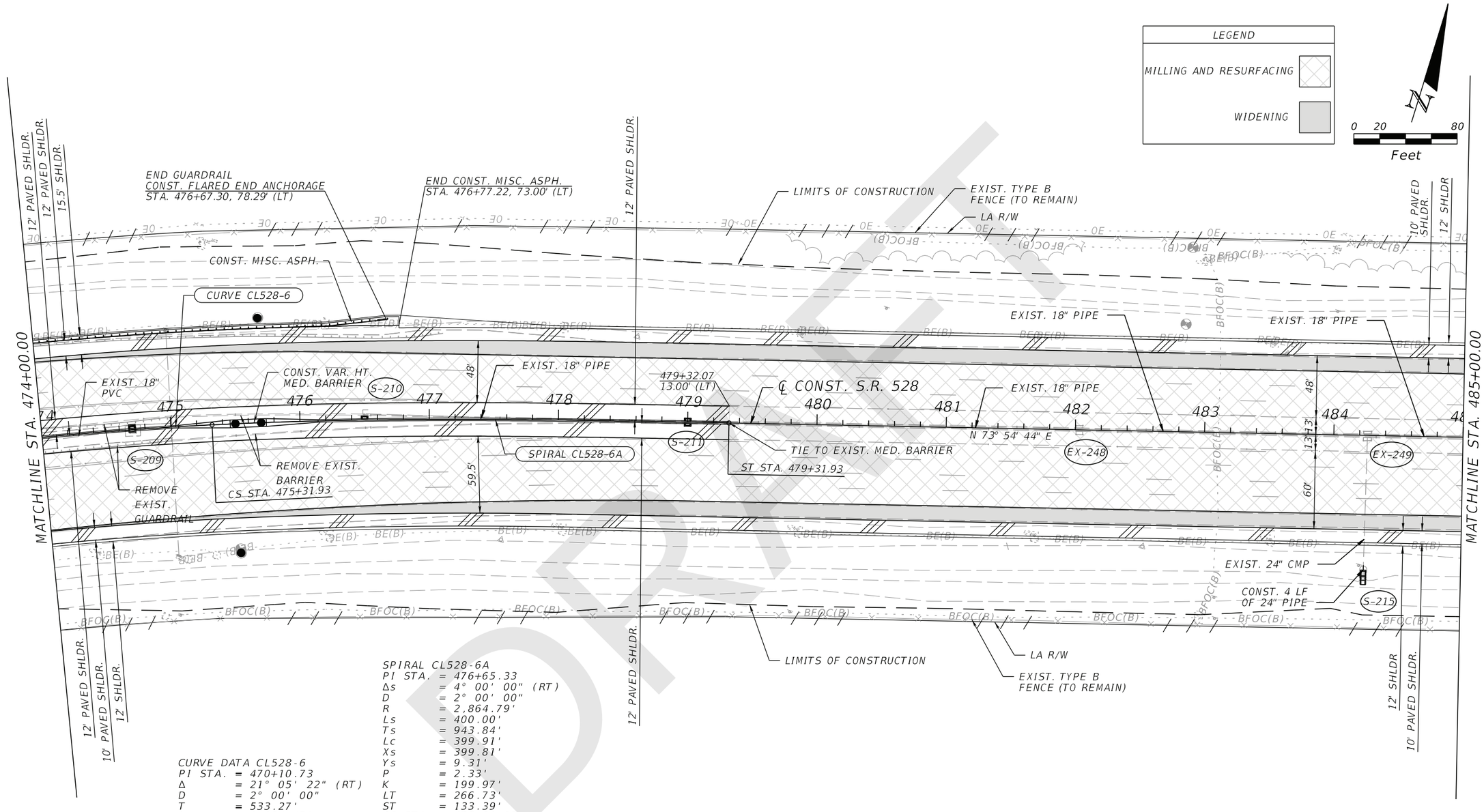


CURVE DATA CL528-6
PI STA. = 470+10.73
Δ = 21° 05' 22" (RT)
D = 2° 00' 00"
T = 533.27'
L = 1,054.47'
R = 2,864.79'
SC STA. = 464+77.46
CS STA. = 475+31.93
e= 0.08± (MATCH EXIST)

SPIRAL CL528-6A
PI STA. = 476+65.33
Δs = 4° 00' 00" (RT)
D = 2° 00' 00"
R = 2,864.79'
Ls = 400.00'
Ts = 943.84'
Lc = 399.91'
Xs = 399.81'
Ys = 9.31'
P = 2.33'
K = 199.97'
LT = 266.73'
ST = 133.39'
CS STA. = 475+31.93
ST STA. = 479+31.93
e = MATCH EXIST.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

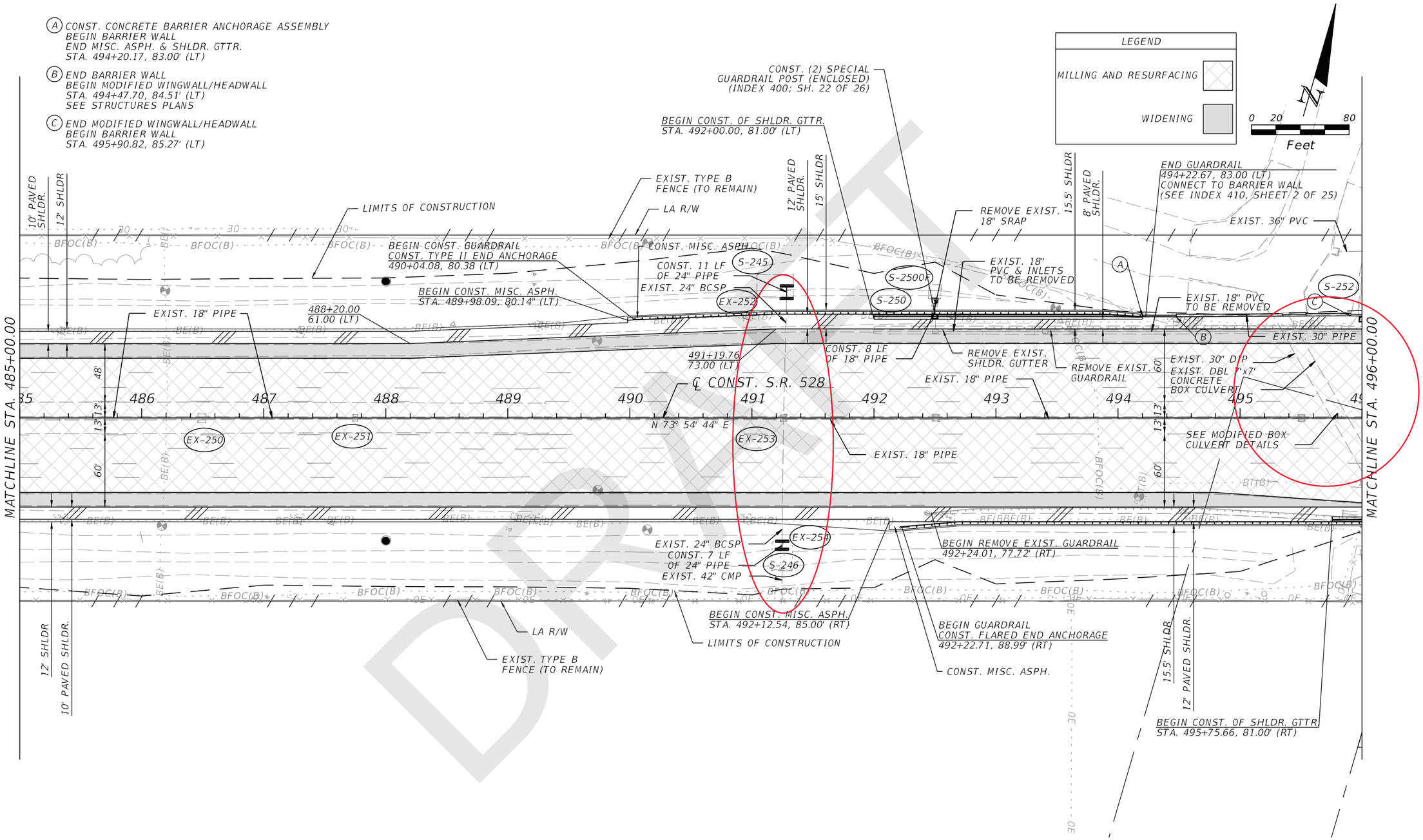
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 8
STA. 474+00.00 TO STA. 485+00.00

SHEET NO. 55

sduva 3/22/2016 2:49:55 PM T:\02-0249_019\43715615201\roadway\PLAN_SHEETS\planrd08.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 9
STA. 485+00.00 TO STA. 496+00.00

SHEET NO. 56

sduva 3/22/2016 2:49:59 PM T:\02-0249_019\43715615201\roadway\PLAN_SHEETS\planrd09.dgn

CURVE DATA TPN1
PI STA. = 1499+39.30
Δ = 5° 48' 23" (LT)
D = 1° 00' 00"
T = 290.58'
L = 580.67'
R = 5,730.00'
PC STA. = 1496+48.72
PT STA. = 1502+29.39
e= 0.034± (MATCH EXIST)

CURVE DATA TPN2
PI STA. = 1504+18.22
Δ = 5° 48' 22" (RT)
D = 2° 00' 00"
T = 145.28'
L = 290.31'
R = 2,864.79'
PC STA. = 1502+72.94
PT STA. = 1505+63.25
e= 0.034± (MATCH EXIST)

CURVE DATA TPS1
PI STA. = 2505+32.93
Δ = 4° 00' 00" (LT)
D = 1° 00' 00"
T = 200.08'
L = 400.00'
R = 5,729.58'
PC STA. = 2503+32.85
PT STA. = 2507+32.85
e= 0.02± (MATCH EXIST)

LEGEND
MILLING AND RESURFACING
WIDENING
FIBER REINFORCED CONCRETE

N
0 20 80
Feet

MATCHLINE STA. 496+00.00

S-253
EXIST. 36" PVC
EXIST. 18" PVC
END BARRIER WALL
BEGIN MISC. ASPH.
STA. 496+28.29, 83.00' (LT)
BEGIN GUARDRAIL
STA. 496+15.79, 83.00' (LT)
CONNECT TO BARRIER WALL
SEE INDEX 400 SHEET 13A OF 26)
LIMITS OF CONSTRUCTION
CURVE TPN1
EXIST. TYPE B FENCE (TO REMAIN)
LA R/W
CONST. MISC. ASPH.
500+17.88
66.00' (LT)
BEGIN WIDENING
STA. 500+17.88, 49.00' (LT)
END GUARDRAIL
CONST. FLARED END ANCHORAGE
STA. 500+58.14, 98.29' (LT)
END CONST. MISC. ASPH.
END 6' PAVED SHLDR.
BEGIN 4' PAVED SHLDR.
STA. 500+69.36, 94.54' (LT)
END CONST.
4' PAVED SHLDR.
STA. 1502+29.39
501+26.84
78.00' (LT)
501+26.84
61.00' (LT)
EX-273
EXIST. 24" PVC
CURVE TPN2
EXIST. 18" PVC
EXIST. 30" PIPE
EX-280A
EX-280B
EX-280
EXIST. 18" PVC
BEGIN MODIFIED CONCRETE BARRIER WALL
(SEE TYPICAL SECTION DETAILS)
STA. 505+80.59, 73.00' (LT)
CONST. BW
EX-257
BEGIN ℄ CONST. TPN
PC STA. 1496+48.72 =
STA. 496+47.87, 73.00' (LT)
℄ CONST. S.R.528
℄ RAMP TPN
N 68° 06' 21" E
PT STA. 1502+29.39
PC STA. 1502+72.94
S-274
12' PAVED SHLDR.
N 73° 54' 44" E
PT STA. 1505+63.25
CONST. 670.2 SY OF CONCRETE DITCH PAVT. (3")
S-275
S-281
REMOVE EXIST. INLET
CONST. 17 LF OF 18" PIPE
REMOVE EXIST. 18" PIPE
(AS NEEDED)
BEGIN LANE SHIFT
STA. 498+40.00, 13.00' (LT)
CONST. 98 LF OF 18" PIPE
EXIST. 24" BCSP
END LANE SHIFT
STA. 505+40.00, 9.50' (LT)
CONST. 12 LF OF 30" PIPE
EXIST. 30" PVC
EX-282
EXIST. DBL 7'x7' CONCRETE BOX CULVERT
CONST. MED. BARRIER
S-260
EXIST. 18" RCP
℄ CONST. S.R. 528
EX-272
EX-275
EXIST. GANTRY
(TO REMAIN)
EXIST. MED. BARRIER
(TO REMAIN)
15.5' SHLDR
8' PAVED SHLDR.
BEGIN LANE SHIFT
STA. 498+40.00, 13.00' (RT)
S-261
EX-271
CONST. 110 LF OF 18" PIPE
EXIST. MED. BARRIER (TO REMAIN)
EXIST. 18" RCP
EXIST. 24" BCSP
EXIST. 24" PVC
EXIST. 18" PVC
END LANE SHIFT
STA. 505+40.00, 9.50' (RT)
EXIST. 30" RCP
CONST. 227 LF OF 24" PIPE
EX-277
CONST. 11 LF OF 24" PIPE
S-276
EX-279A
S-280
EX-288
EX-283
CONST. BW
EX-279B
S-278
S-277
EX-270
503+17.30
79.50' (RT)
℄ RAMP TPS
EXIST. 36" CPP
CURVE TPS1
EXIST. 36" CPP
EX-284
EXIST. 30" RCP
BEGIN BARRIER WALL (MATCH EXIST.)
STA. 503+17.30, 85.52' (RT)
CONST. CRASH CUSHION
CONST. 17 LF OF 24" PIPE
EXIST. 30" CPP
505+13.15
61.00' (RT)
505+13.35
73.00' (RT)
12' PAVED SHLDR.
EXIST. 30" DIP
EXIST 36" RCP
CONST. MISC. ASPH.
CONST. (4) SPECIAL GUARDRAIL POST (ENCLOSED)
(INDEX 400; SH. 22 OF 26)
RESET EXIST. GUARDRAIL,
RECONST. MISC. ASPH.
BEGIN ℄ CONST. TPS
STA. 2496+51.75 =
STA. 496+51.78, 60.03' (RT)
℄ CONST. S.R.528
END CONST. MISC. ASPH.
END REMOVE EXIST. GUARDRAIL
END CONST. GUARDRAIL
END CONST. SHLDR. GTTR.
TIE TO RESET GUARDRAIL
& RECONST. MISC. ASPH.
STA. 496+50.66, 85.00' (RT)
BEGIN WIDENING
STA. 499+41.50, 62.27' (RT)
501+13.88
74.23' (RT)
499+41.50
69.27' (RT)
LA R/W
R/W
EXIST. BARRIER WALL
(TO BE REMOVED)
EXIST. TYPE B FENCE (TO REMAIN)
BEGIN MODIFIED CONCRETE BARRIER WALL
(SEE TYPICAL SECTION DETAILS)
STA. 505+58.36, 73.00' (RT)
END MODIFIED CONCRETE BARRIER WALL
(SEE TYPICAL SECTION DETAILS)
BEGIN MED. BARRIER WALL
STA. 506+80.00, 73.00' (RT)
EXIST. 18" PVC
LIMITS OF CONSTRUCTION

(A) END WIDENING
END MILLING & RESURFACING EB
BEGIN CONCRETE PAVEMENT
STA. 505+58.53

(B) END WIDENING
END MILLING & RESURFACING WB
BEGIN CONCRETE PAVEMENT
STA. 505+80.83

(C) BEGIN WIDENING
BEGIN MILLING & RESURFACING EB
END CONCRETE PAVEMENT
STA. 506+78.53

MATCHLINE STA. 507+00.00

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REVISIONS			
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DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
MARK D. PROCHAK, P.E.
LICENSE NO. 43532

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 10
STA. 496+00.00 TO STA. 507+00.00

SHEET NO. 57

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CURVE DATA TPS1
PI STA. = 2505+32.93
Δ = 4° 00' 00" (LT)
D = 1° 00' 00"
T = 200.08'
L = 400.00'
R = 5,729.58'
PC STA. = 2503+32.85
PT STA. = 2507+32.85
e= 0.02± (MATCH EXIST)

END MODIFIED CONCRETE BARRIER WALL
(SEE TYPICAL SECTION DETAILS)
BEGIN MED. BARRIER WALL
STA. 507+01.00, 73.00' (LT)

LEGEND
MILLING AND RESURFACING
WIDENING
FIBER REINFORCED CONCRETE

0 20 80
Feet

N

MATCHLINE STA. 507+00.00

MATCHLINE STA. 518+00.00

LA R/W

EXIST. TYPE B FENCE (TO REMAIN)

LA R/W

(A) CONST. CONCRETE BARRIER ANCHORAGE ASSEMBLY
STA. 1517+82.64, 16.50' (LT)

1514+82.55
36.00' (RT)

54" BARRIER WALL
(SEE BUILDING STRUCTURAL PLANS FOR MORE INFORMATION)

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

(A)

12' PAVED SHLDR.

℄ RAMP TPN
N 73° 54' 44" E

EXIST. 18" CMP

516+88.84
82.86' (LT)

CONST. CONC. CAP

517+81.68
78.22' (LT)

EXIST. 18" PVC & STR. TO BE REMOVED

CONST. MISC. ASPH.

EXIST. 24" PVC

EX-290

10' PAVED SHLDR.

CONST. 127 LF OF 18" PIPE

S-285

12' PAVED SHLDR.

CONST. MED. BARRIER WALL

S-291

BEGIN LANE SHIFT
STA. 507+20.00, 9.50' (LT)

EXIST. 18" PVC

EXIST. 24" BCSP

EXIST. 18" PVC

℄ CONST. S.R. 528

END LANE SHIFT
STA. 514+20.08, 13.00' (LT)

N 73° 54' 44" E

S-288

S-289

EXIST. 24" BCSP

EX-295

BEGIN LANE SHIFT
STA. 507+20.00, 9.50' (RT)

EXIST. MED. BARRIER (TO REMAIN)

END LANE SHIFT
STA. 514+20.00, 13.00' (RT)

EXIST. BARRIER WALL (TO BE REMOVED)

514+81.12
77.44' (RT)

REMOVE EXIST. INLET

S-287

S-293

EXIST. 18" PIPE (REMOVE AS NEEDED)

S-290

EXIST. 15" PVC & STR. (TO BE REMOVED)

PT STA. 2507+32.85

515+94.03
83.06' (RT)

N 73° 54' 44" E

CONST. GUARDRAIL TYPE II END ANCHORAGE
STA. 2507+36.52, 26.61' (RT)

EXIST. 30" PIPE

509+43.21
98.02' (RT)

EX-294

513+79.65
75.00' (RT)

EXIST. 18" PVC

CONST. CONC. CAP

EXIST. 18" PVC

EX-302

EX-289A

EX-289

CONST. MISC. ASPH.

EXIST. 48" PIPE

CONST. 48 LF OF 18" PIPE

CONST. MED. BARRIER WALL

EXIST. TYPE B FENCE (TO REMAIN)

LA R/W

℄ RAMP TPS

CURVE TPS-1

EXIST. 60" CMP

EXIST. 48" RCP

RESET EXIST. GUARDRAIL, RECONST. MISC. ASPH.

LA R/W

EX-296

(A) BEGIN WIDENING
BEGIN MILLING & RESURFACING WB
END CONCRETE PAVEMENT
STA. 507+00.83

EXIST. 60" CMP

54" BARRIER WALL
(SEE BUILDING STRUCTURAL PLANS FOR MORE INFORMATION)

EXIST. TUNNEL
(TO REMAIN)

EX-307

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 11
STA. 507+00.00 TO STA. 518+00.00

SHEET NO. 58

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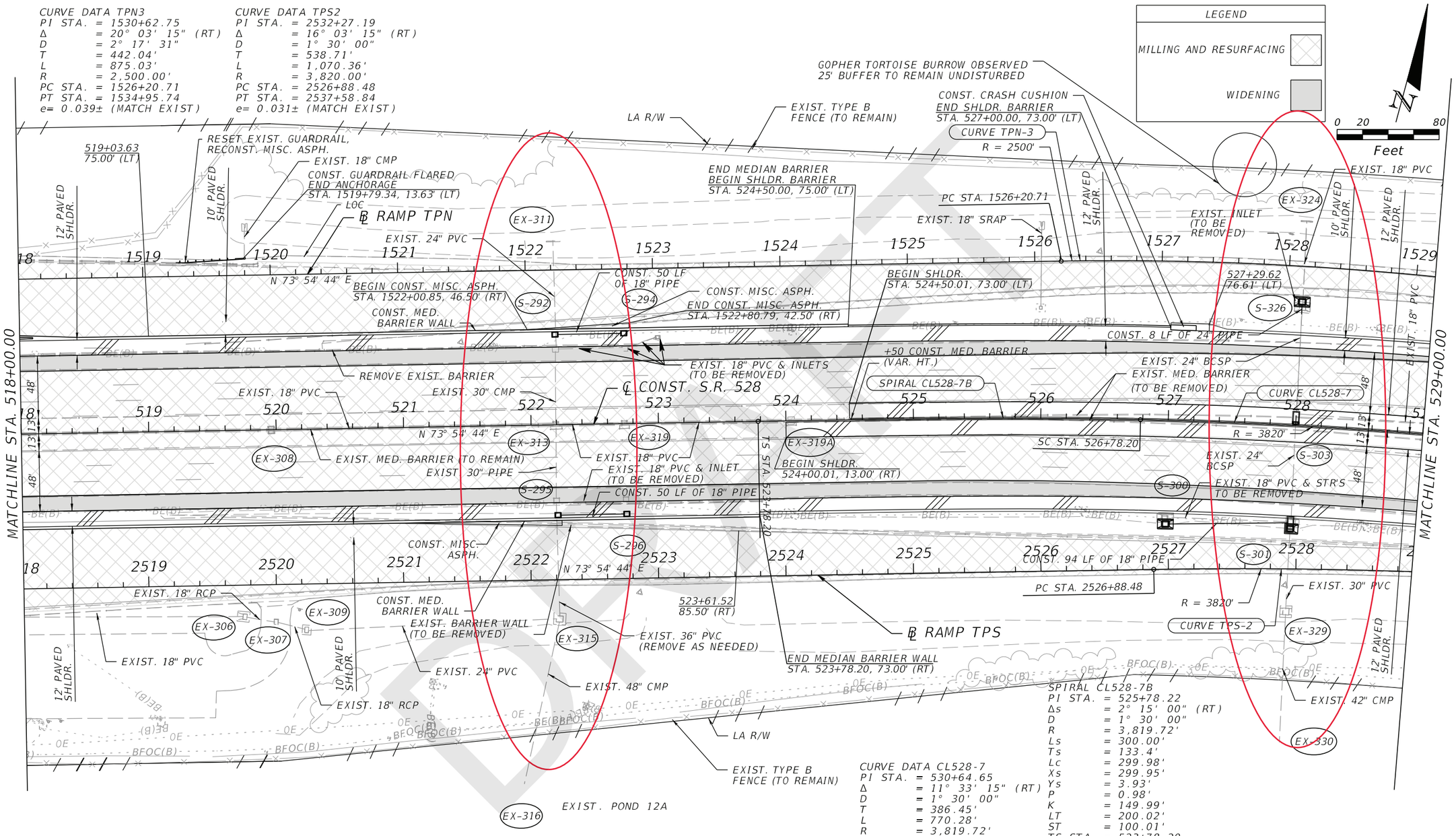

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 12
STA. 518+00.00 TO STA. 529+00.00

SHEET NO. 59

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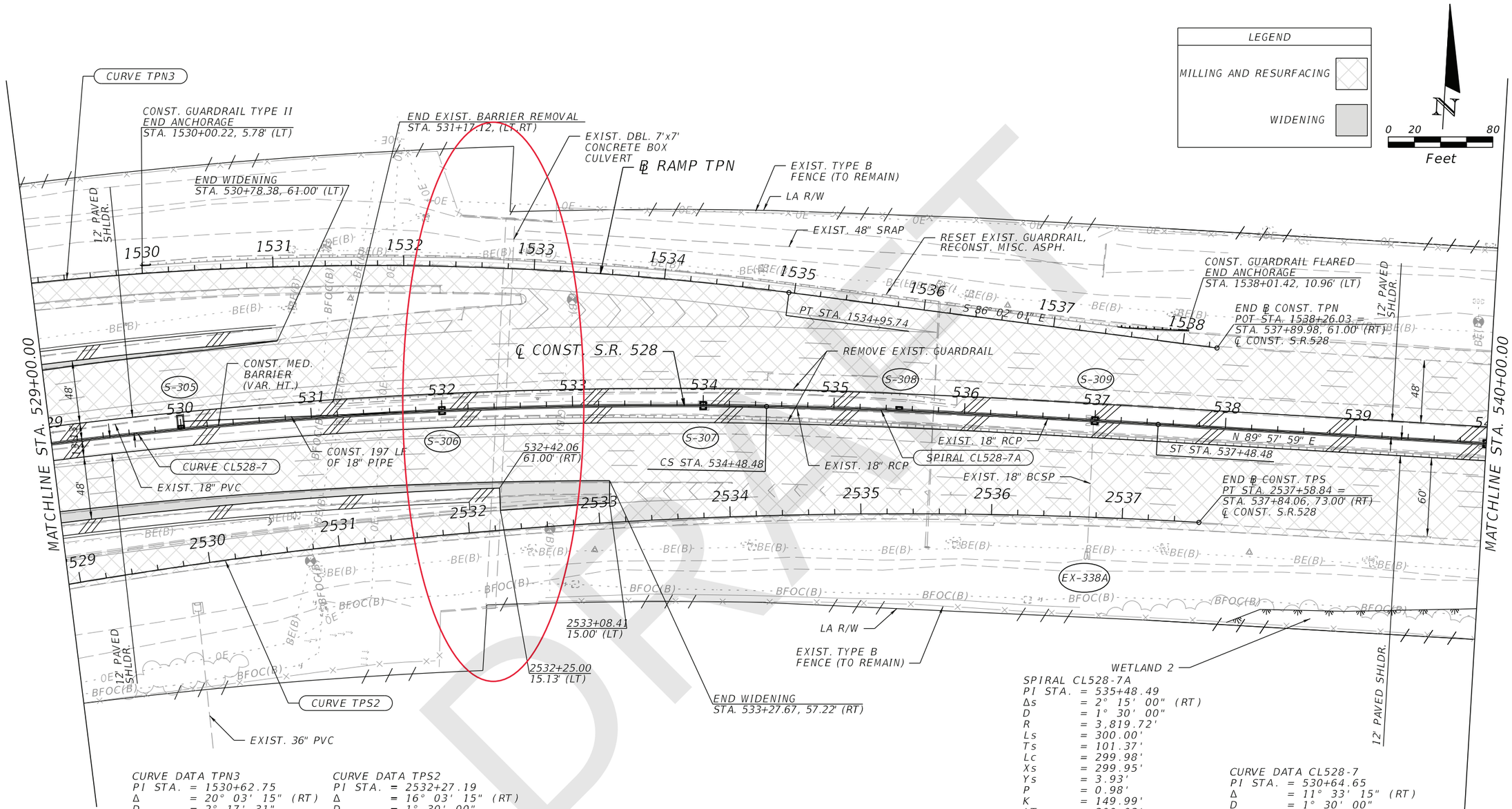

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Δ = 20° 03' 15" (RT)
D = 2° 17' 31"
T = 442.04
L = 875.03
R = 2,500.00
PC STA. = 1526+20.71
PT STA. = 1534+95.74
e= 0.039± (MATCH EXIST)

CURVE DATA TPS2
PI STA. = 2532+27.19
Δ = 16° 03' 15" (RT)
D = 1° 30' 00"
T = 538.71
L = 1,070.36
R = 3,820.00
PC STA. = 2526+88.48
PT STA. = 2537+58.84
e= 0.031± (MATCH EXIST)

SPIRAL CL528-7A
PI STA. = 535+48.49
Δs = 2° 15' 00" (RT)
D = 1° 30' 00"
R = 3,819.72'
Ls = 300.00'
Ts = 101.37'
Lc = 299.98'
Xs = 299.95'
Ys = 3.93'
P = 0.98'
K = 149.99'
LT = 200.02'
ST = 100.01'
ST STA. = 537+48.48
CS STA. = 534+48.48
e = MATCH EXIST.

CURVE DATA CL528-7
PI STA. = 530+64.65
Δ = 11° 33' 15" (RT)
D = 1° 30' 00"
T = 386.45
L = 770.28
R = 3,819.72
SC STA. = 526+78.20
CS STA. = 534+48.48
e = 0.06± (MATCH EXIST.)

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SR 528	ORANGE	437156-1-52-01

PLAN SHEET 13
STA. 529+00.00 TO STA. 540+00.00

SHEET NO. 60

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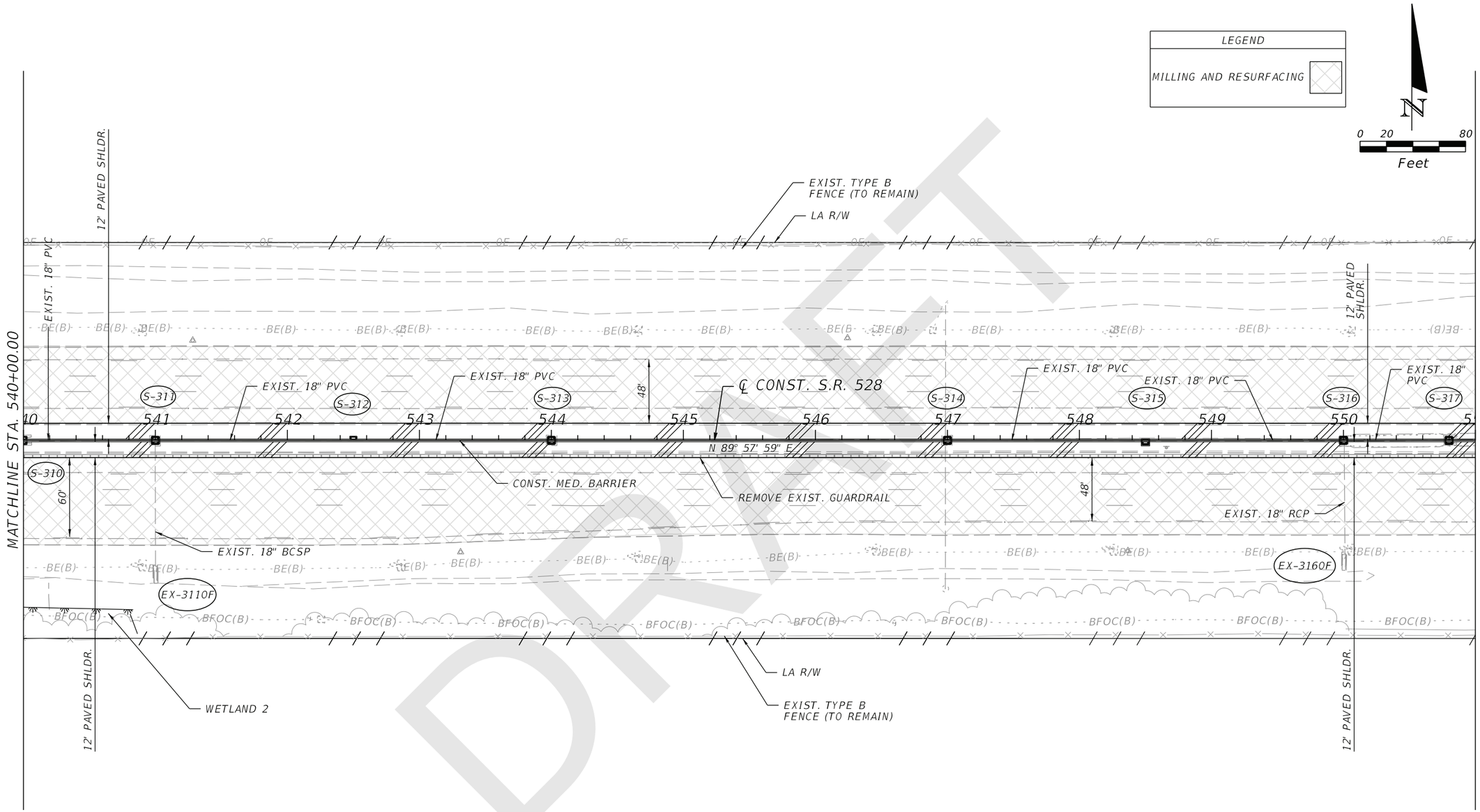

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

PLAN SHEET 14
STA. 540+00.00 TO STA. 551+00.00

SHEET NO. 61

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NOTES:

1. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES EXTEND INTO THE STABILIZED PORTION OF THE ROADBED AND EXTREME CAUTION WILL BE NECESSARY IN STABILIZATION OPERATIONS AT THOSE LOCATIONS.

2. ALL DRAINAGE PIPES HAVE OPTIONAL MATERIALS. THE OPTIONAL MATERIALS TABULATION SHEET(S) SHOWS ALL MATERIALS ALLOWED AND INDICATES WHICH MATERIAL IS PLOTTED IN THE PLANS AND USED AS THE BASIS FOR PAY ITEM QUANTITIES.

3. ALL CONCRETE PIPE JOINTS, IN ADDITION TO THOSE REQUIRED BY SPECIFICATION 430, SHALL BE WRAPPED IN ACCORDANCE WITH INDEX 280 WITH FILTER FABRIC JACKET MEETING THE REQUIREMENTS OF INDEX 199. TYPE D-3 WITH A.O.S EQUAL TO OR GREATER THAN 70.

4. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT THE CONTRACTOR IS TO EVALUATE THE NEED FOR TEMPORORARY SHORING, SHEETING AND/OR USE OF A TRENCH BOX DURING CONSTRUCTION OF THIS PROJECT. COSTS ASSOCIATED WITH THIS EFFORT IS TO INCLUDED IN THE COST OF STORM SEWER PIPE.

5. SIZE DIMENSIONS FOR J-BOTTOM STRUCTURES (PROPOSED/EXISTING) ARE W X L.

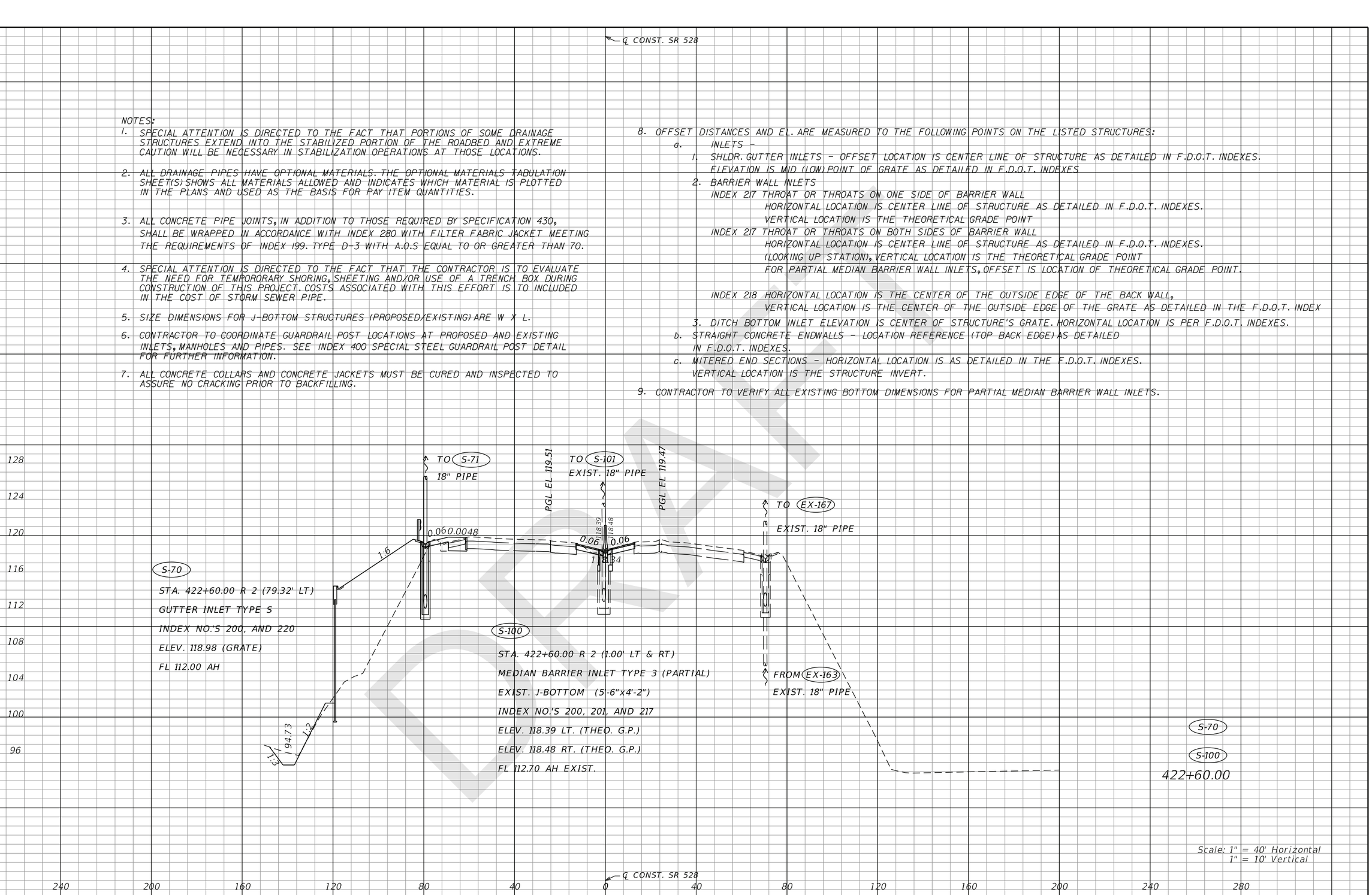
6. CONTRACTOR TO COORDINATE GUARDRAIL POST LOCATIONS AT PROPOSED AND EXISTING INLETS, MANHOLES AND PIPES. SEE INDEX 400 SPECIAL STEEL GUARDRAIL POST DETAIL FOR FURTHER INFORMATION.

7. ALL CONCRETE COLLARS AND CONCRETE JACKETS MUST BE CURED AND INSPECTED TO ASSURE NO CRACKING PRIOR TO BACKFILLING.

8. OFFSET DISTANCES AND EL. ARE MEASURED TO THE FOLLOWING POINTS ON THE LISTED STRUCTURES:
   a. INLETS -
      1. SHLDR. GUTTER INLETS - OFFSET LOCATION IS CENTER LINE OF STRUCTURE AS DETAILED IN F.D.O.T. INDEXES.
         ELEVATION IS MID (LOW) POINT OF GRATE AS DETAILED IN F.D.O.T. INDEXES
      2. BARRIER WALL INLETS
         INDEX 217 THROAT OR THROATS ON ONE SIDE OF BARRIER WALL
                  HORIZONTAL LOCATION IS CENTER LINE OF STRUCTURE AS DETAILED IN F.D.O.T. INDEXES.
                  VERTICAL LOCATION IS THE THEORETICAL GRADE POINT
         INDEX 217 THROAT OR THROATS ON BOTH SIDES OF BARRIER WALL
                  HORIZONTAL LOCATION IS CENTER LINE OF STRUCTURE AS DETAILED IN F.D.O.T. INDEXES.
                  (LOOKING UP STATION), VERTICAL LOCATION IS THE THEORETICAL GRADE POINT
                  FOR PARTIAL MEDIAN BARRIER WALL INLETS, OFFSET IS LOCATION OF THEORETICAL GRADE POINT.

         INDEX 218 HORIZONTAL LOCATION IS THE CENTER OF THE OUTSIDE EDGE OF THE BACK WALL,
                  VERTICAL LOCATION IS THE CENTER OF THE OUTSIDE EDGE OF THE GRATE AS DETAILED IN THE F.D.O.T. INDEX
      3. DITCH BOTTOM INLET ELEVATION IS CENTER OF STRUCTURE'S GRATE. HORIZONTAL LOCATION IS PER F.D.O.T. INDEXES.
   b. STRAIGHT CONCRETE ENDWALLS - LOCATION REFERENCE (TOP BACK EDGE) AS DETAILED IN F.D.O.T. INDEXES.
   c. MITERED END SECTIONS - HORIZONTAL LOCATION IS AS DETAILED IN THE F.D.O.T. INDEXES. VERTICAL LOCATION IS THE STRUCTURE INVERT.

9. CONTRACTOR TO VERIFY ALL EXISTING BOTTOM DIMENSIONS FOR PARTIAL MEDIAN BARRIER WALL INLETS.



Scale: 1" = 40' Horizontal
1" = 10' Vertical

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CHAD A. CROFT, P.E.
LICENSE NO. 66554

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 126

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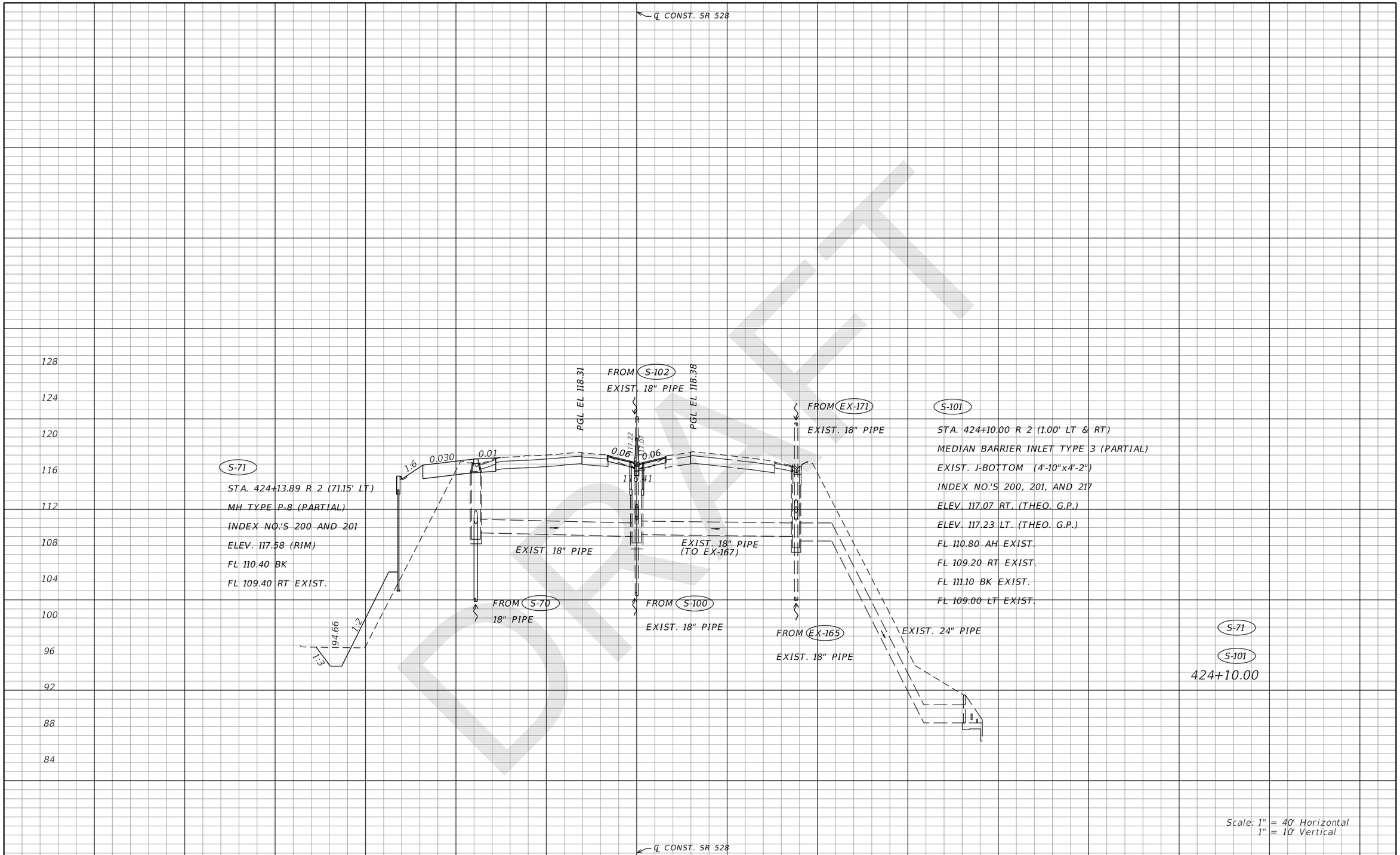

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 127

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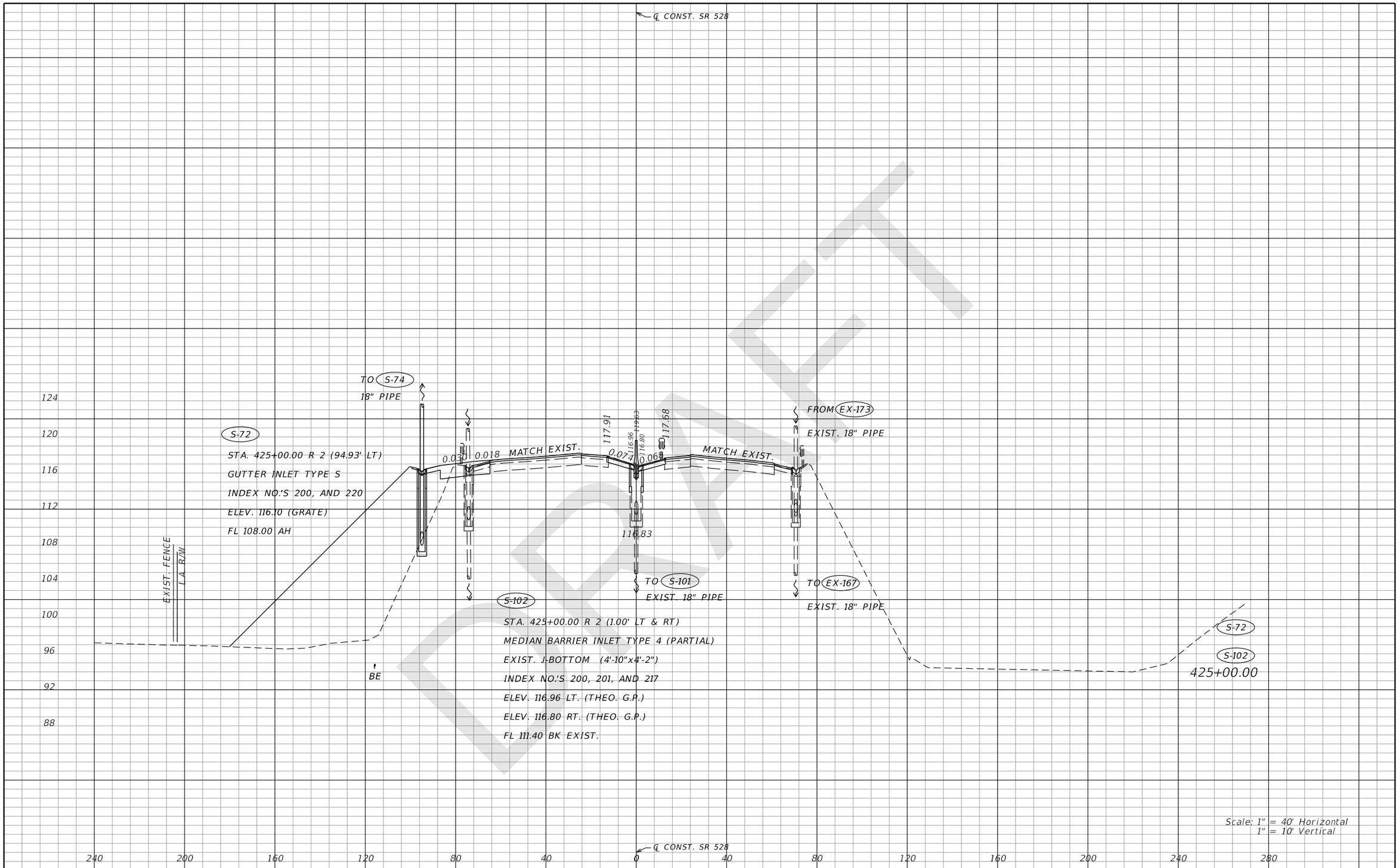

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 128

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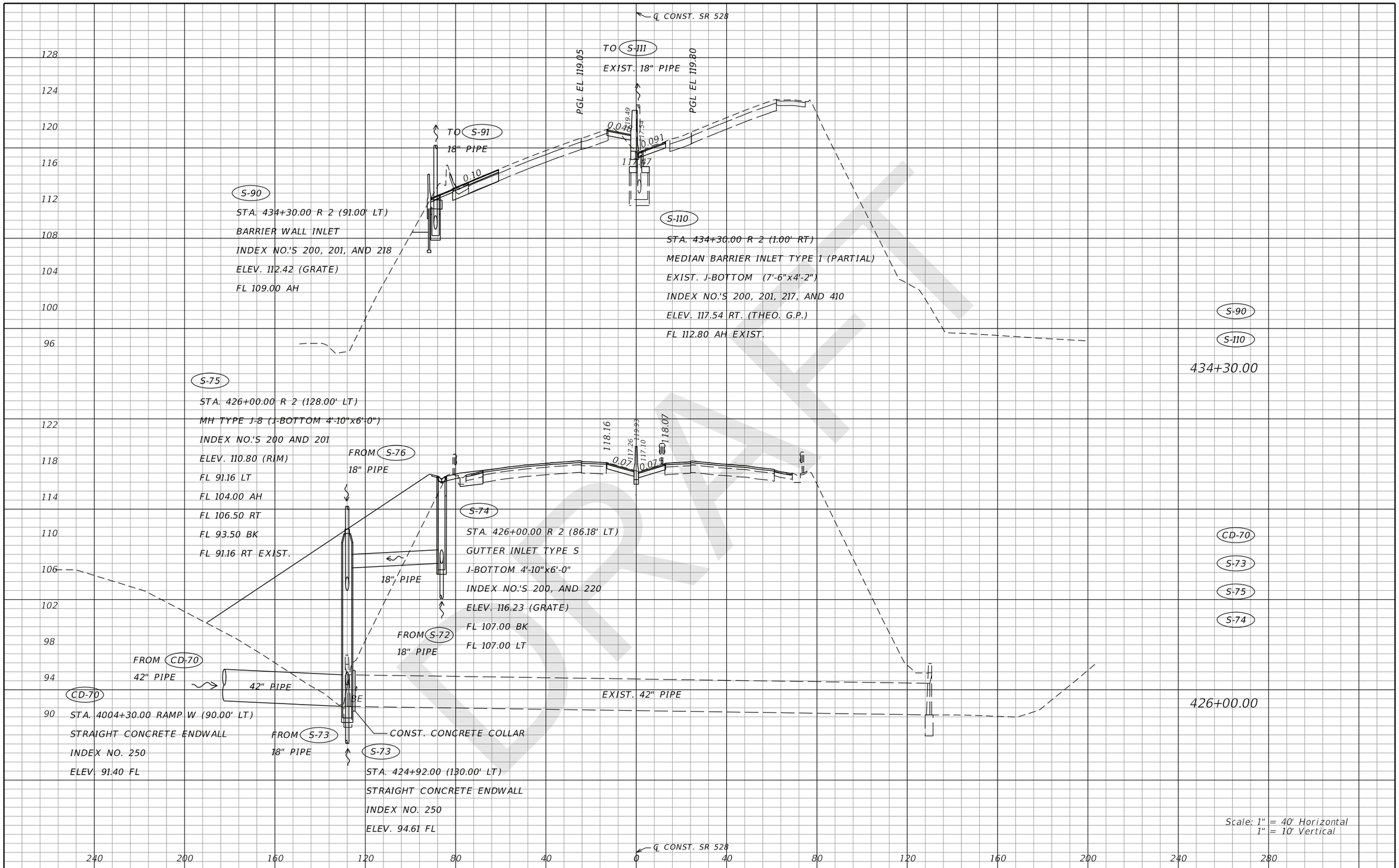

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 129

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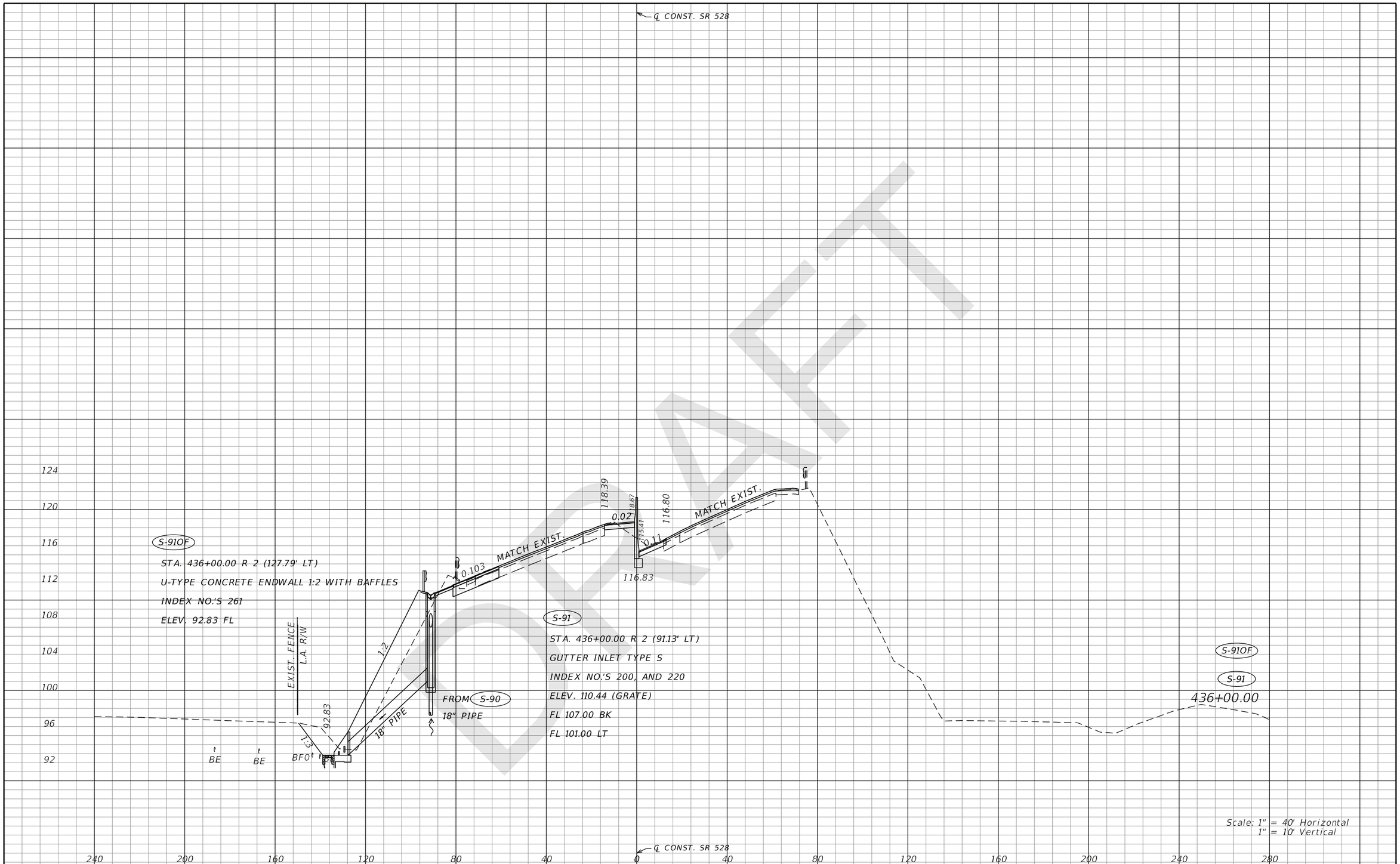

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 130

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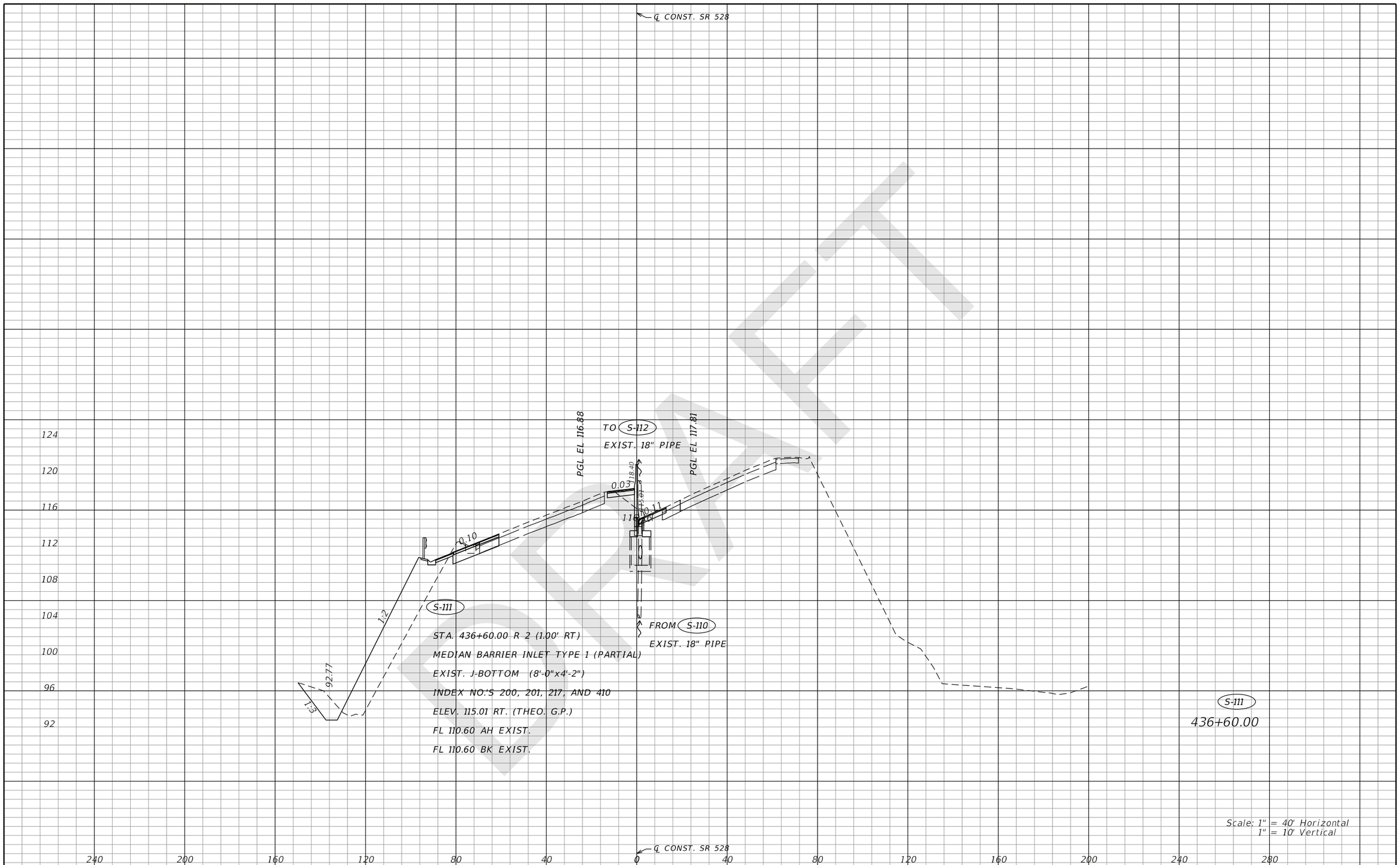

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 131

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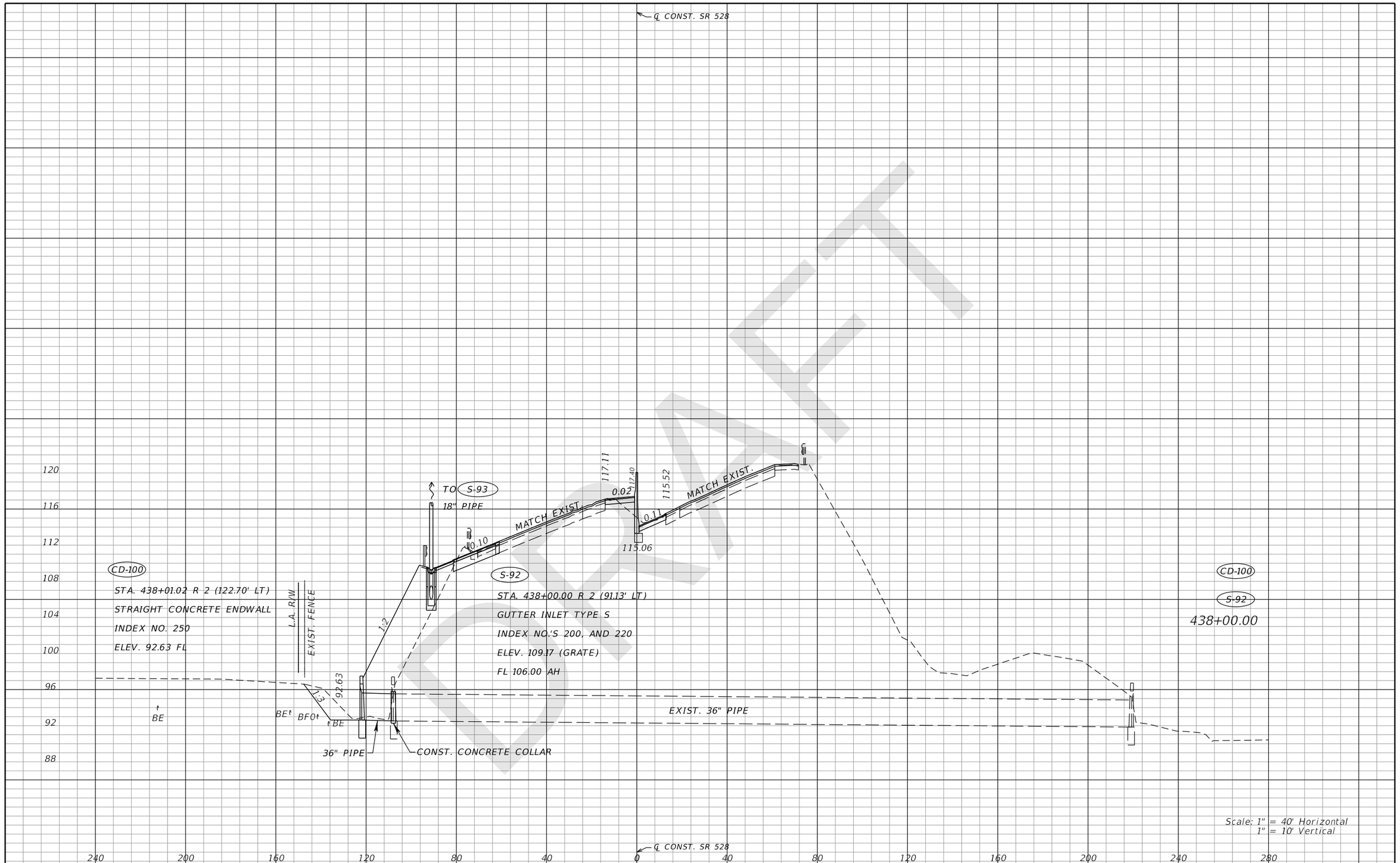

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SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 132

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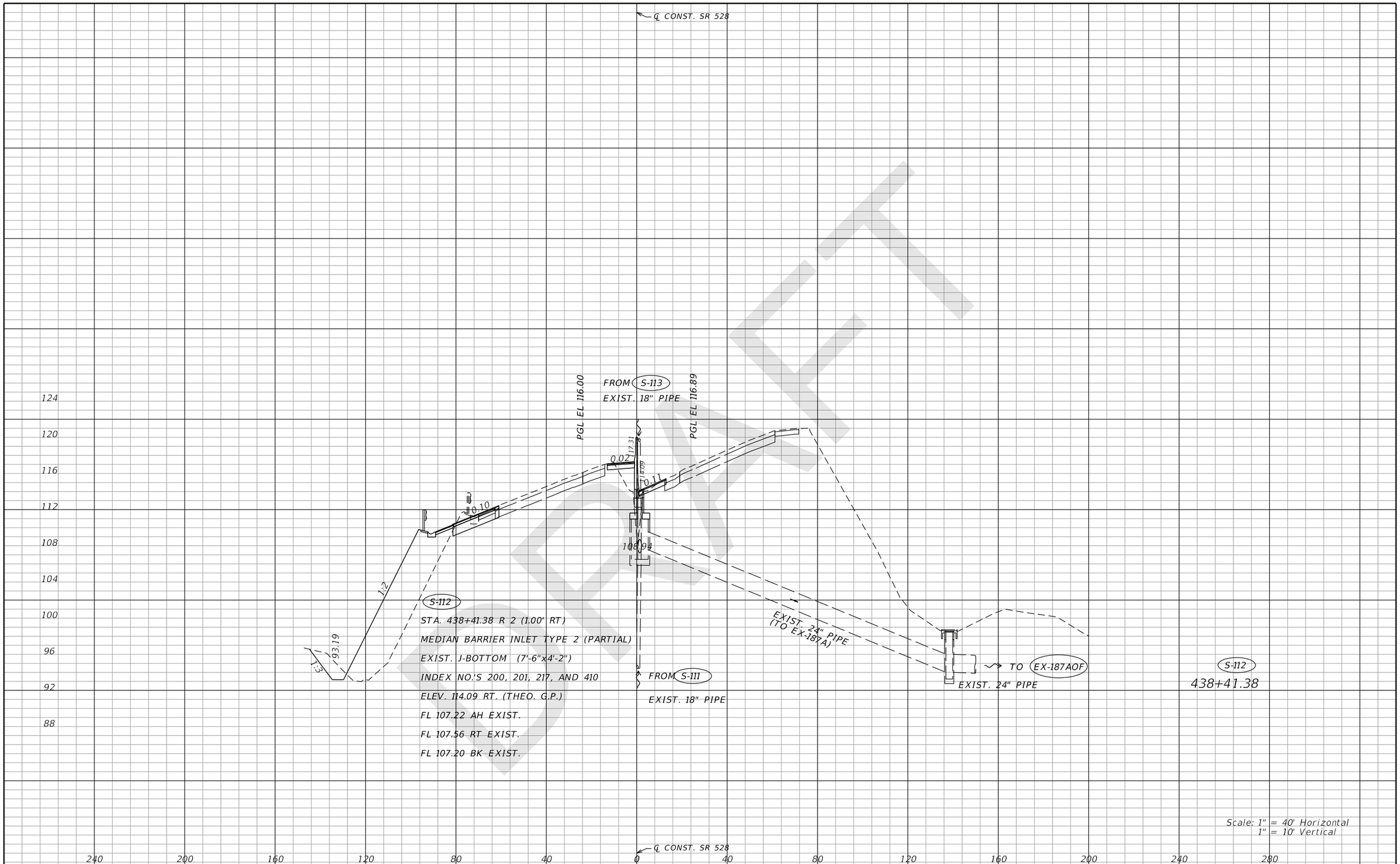

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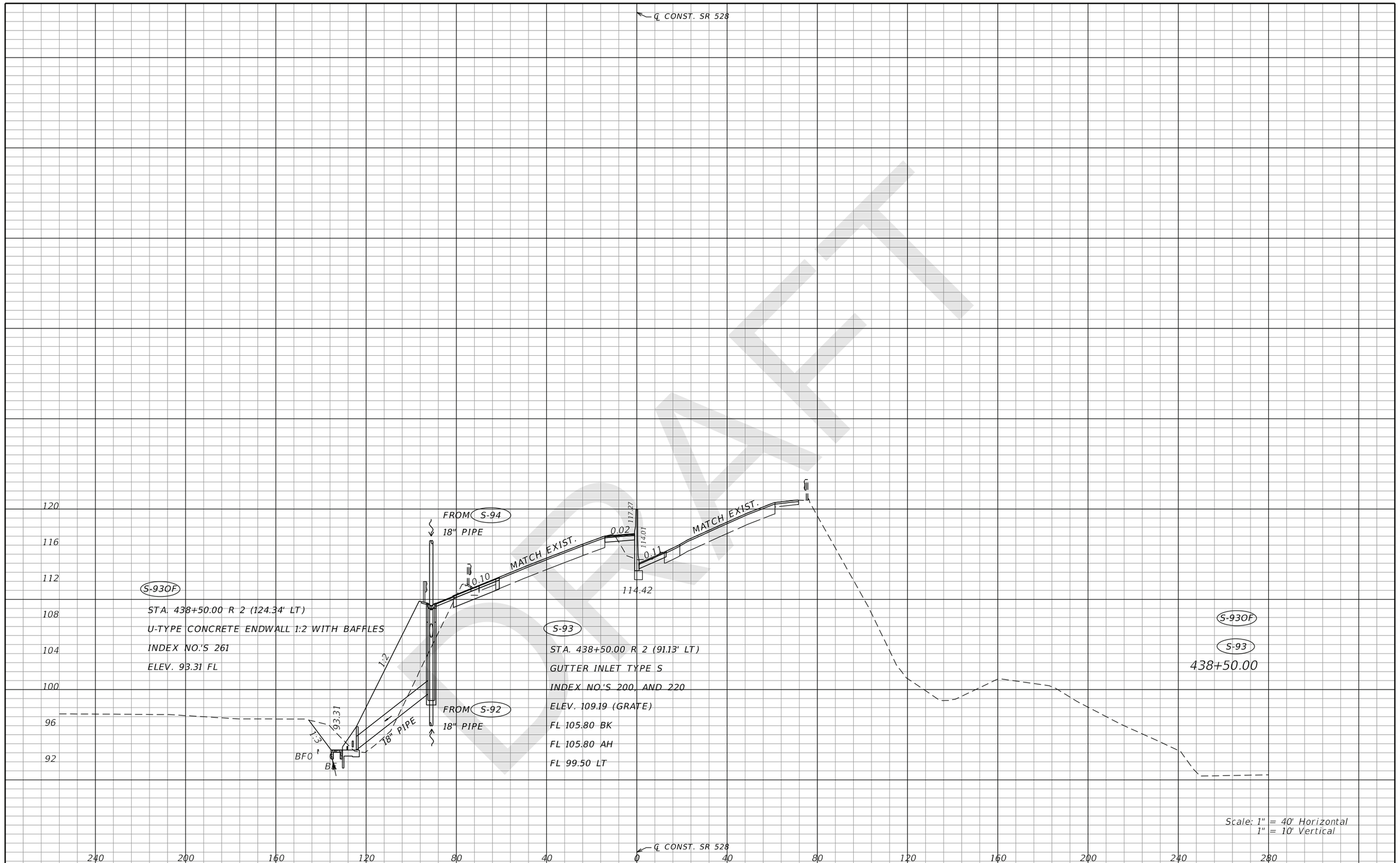
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 133



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DRAINAGE STRUCTURES
SR 528

SHEET NO. 134

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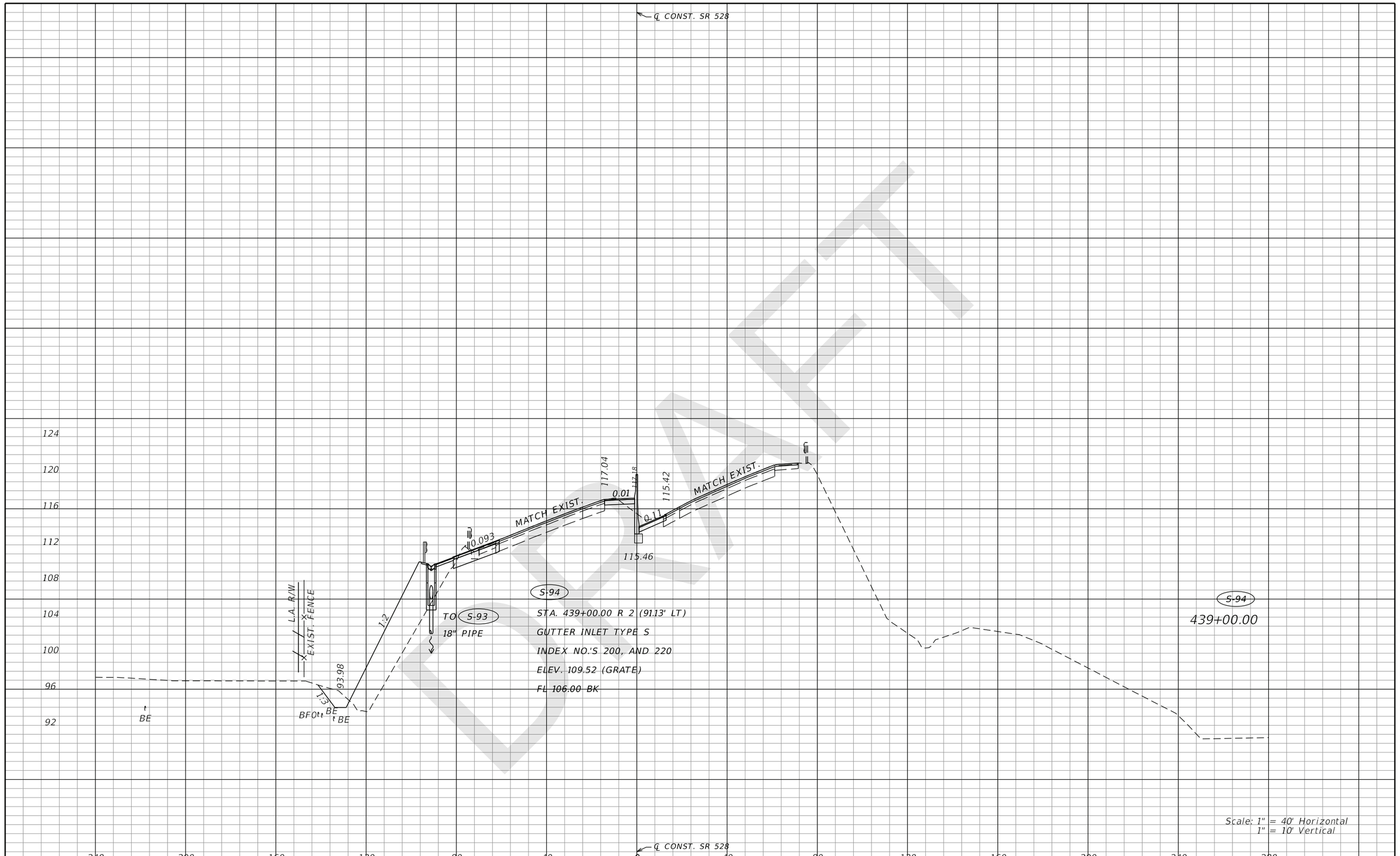

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Phone: (407) 896-0594 Fax: (407) 896-4836
Certificate Of Authorization No. 2648
CHAD A. CROFT, P.E.
LICENSE NO. 66554

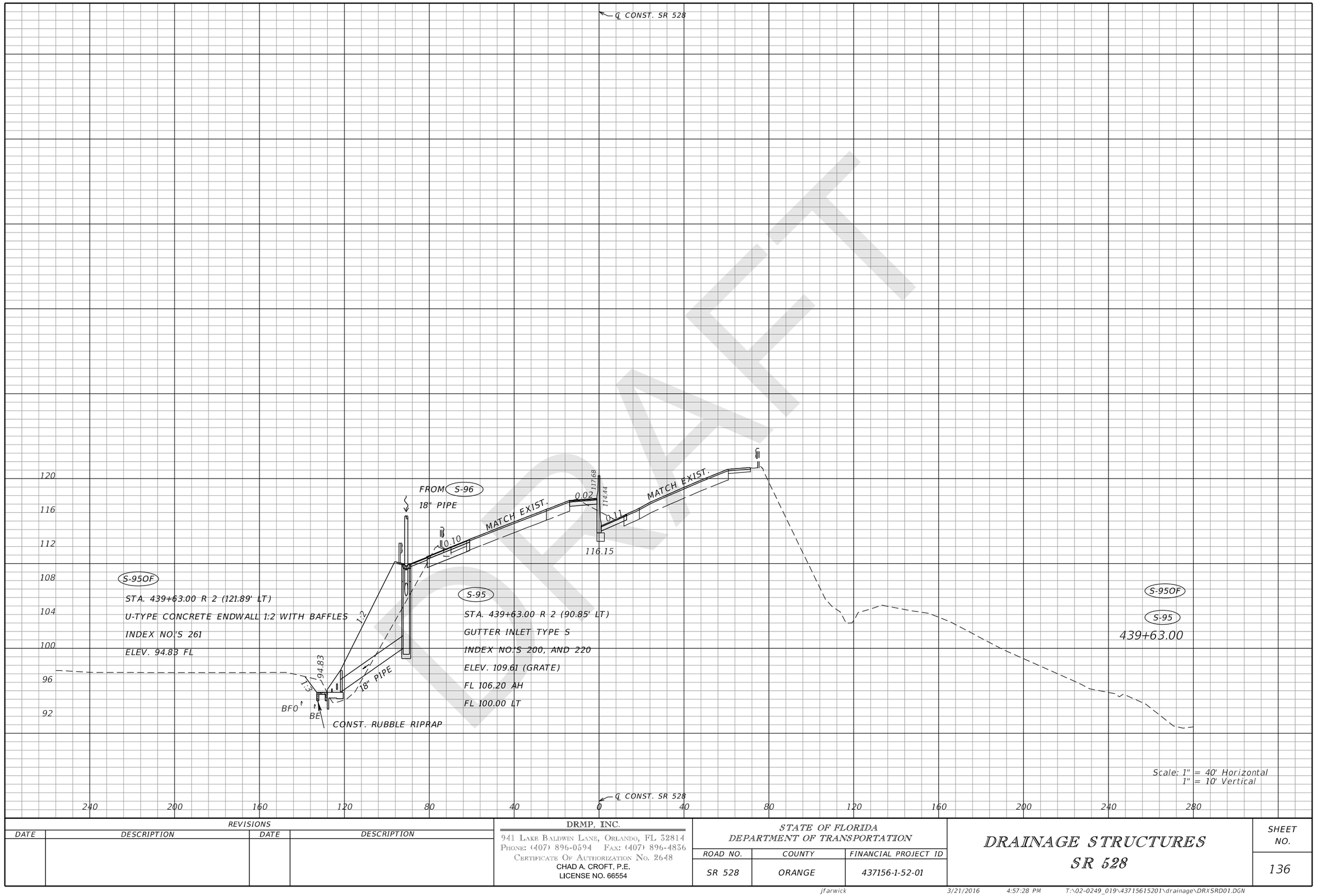
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 135

jfarwick 3/21/2016 4:57:28 PM T:\02-0249_019\43715615201\drainage\DRXSRD01.DGN



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SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 136

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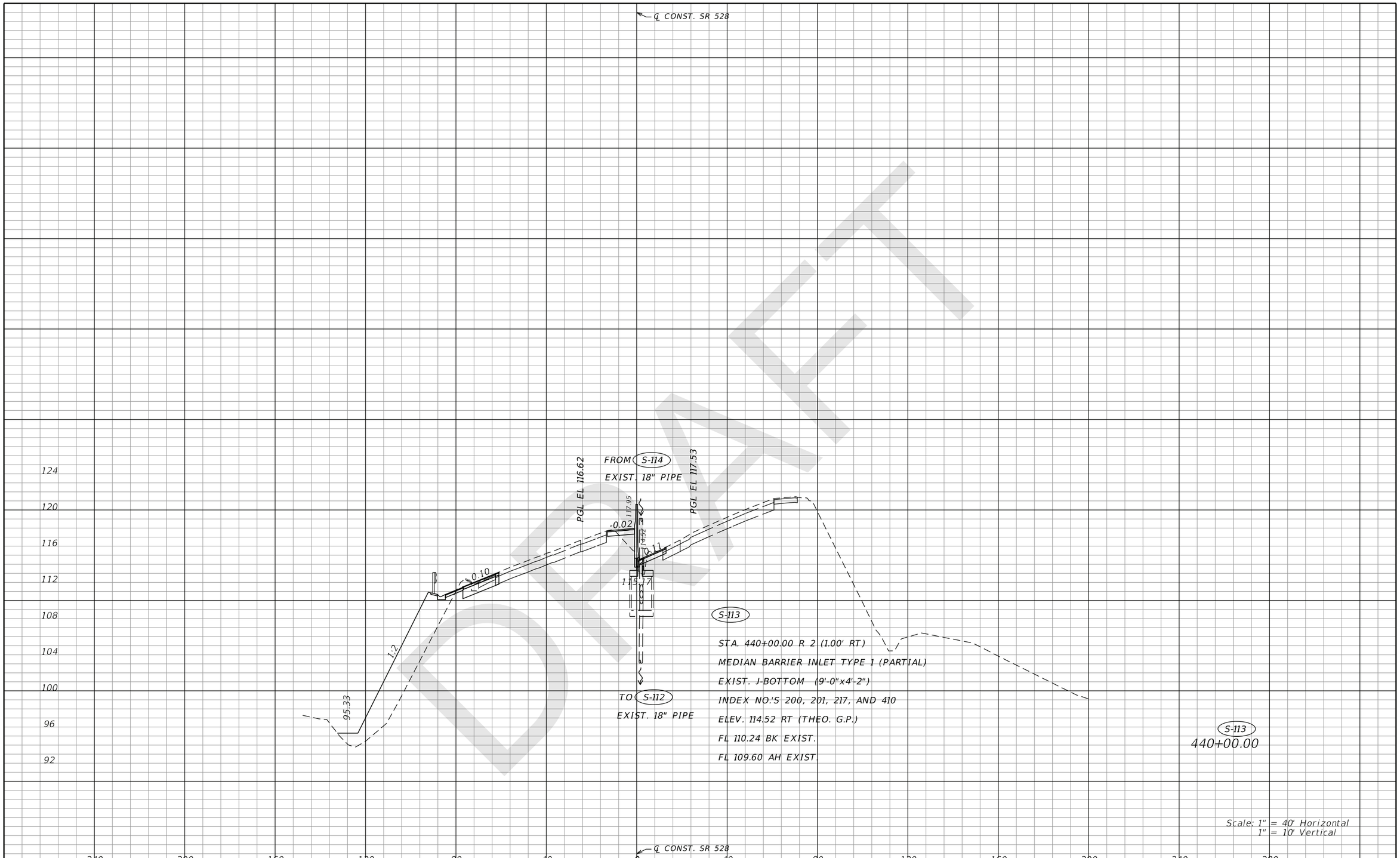

Scale: 1" = 40' Horizontal
1" = 10' Vertical

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 137

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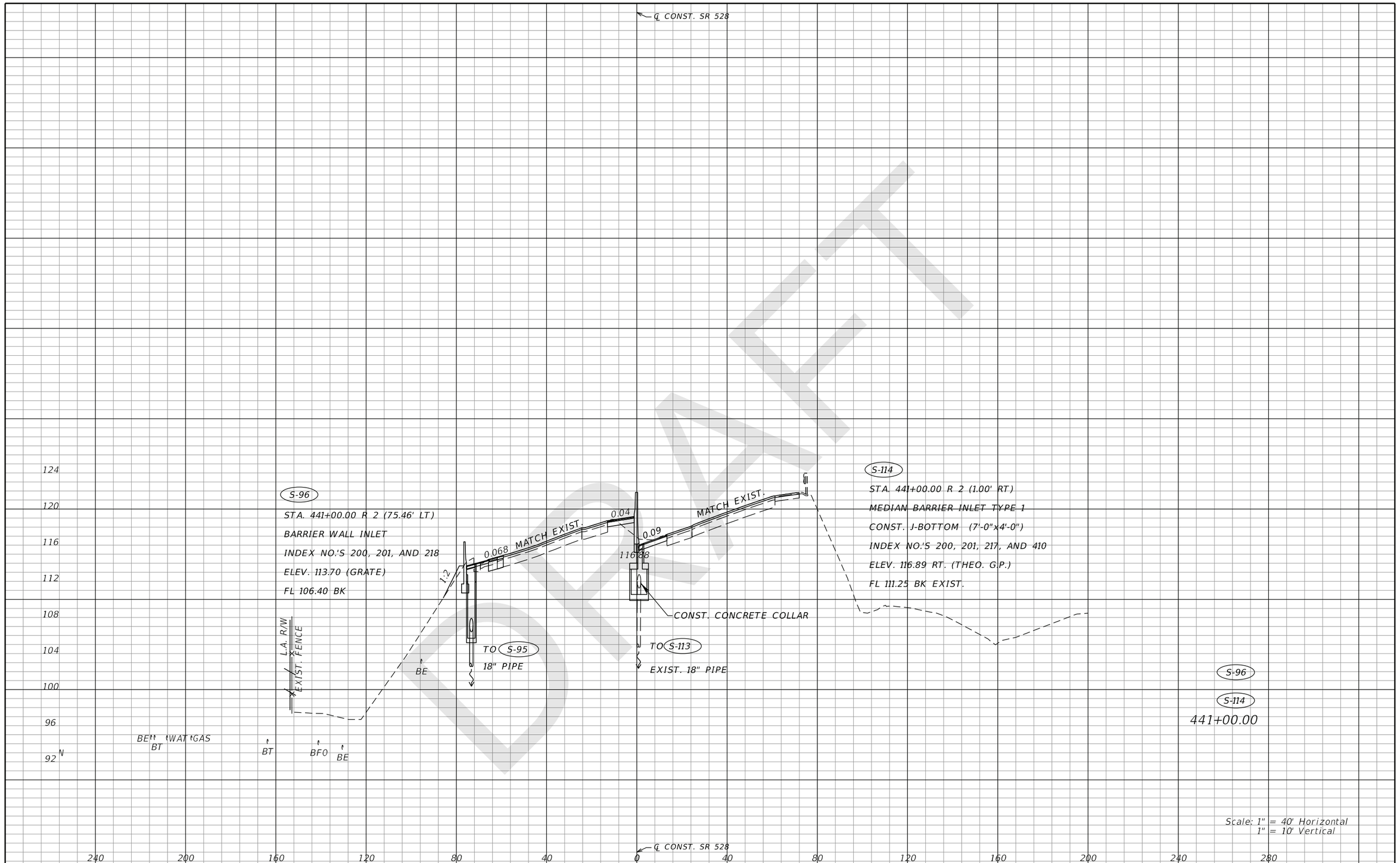

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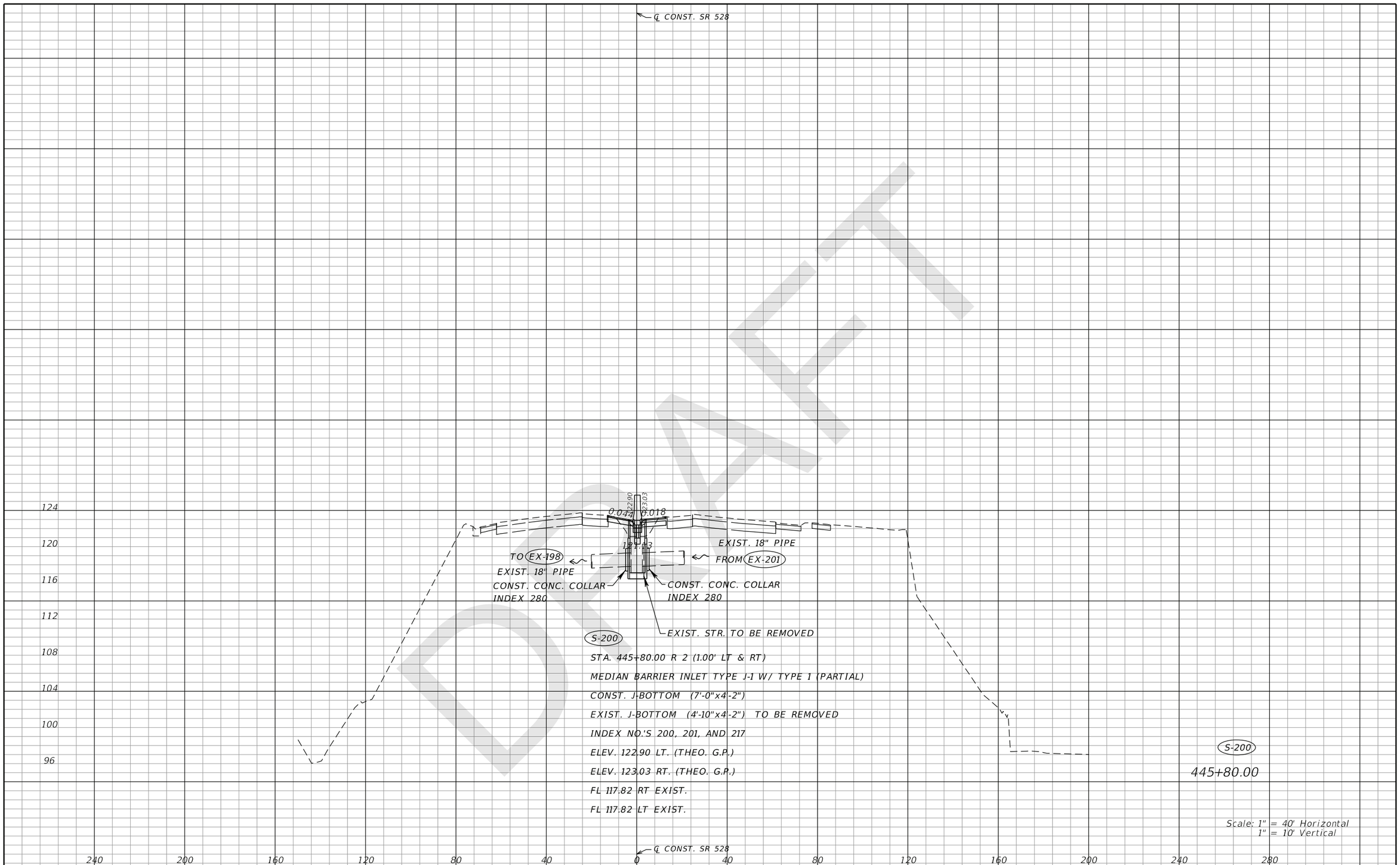
DRAINAGE STRUCTURES
SR 528

SHEET NO. 138

jfarwick 3/21/2016 4:57:29 PM T:\02-0249_019\43715615201\drainage\DRXSRD01.DGN



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DRAINAGE STRUCTURES
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SHEET NO. 139

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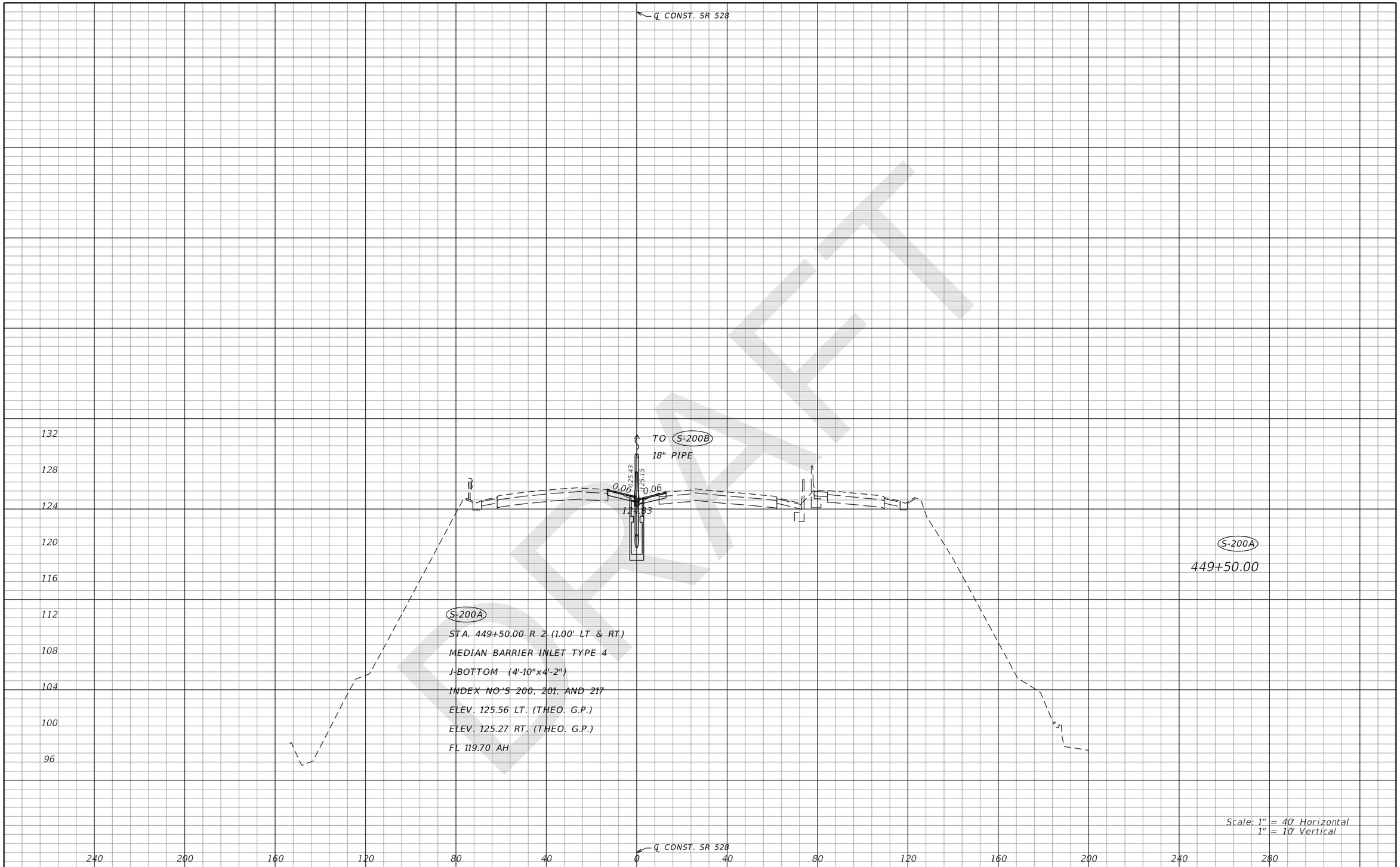

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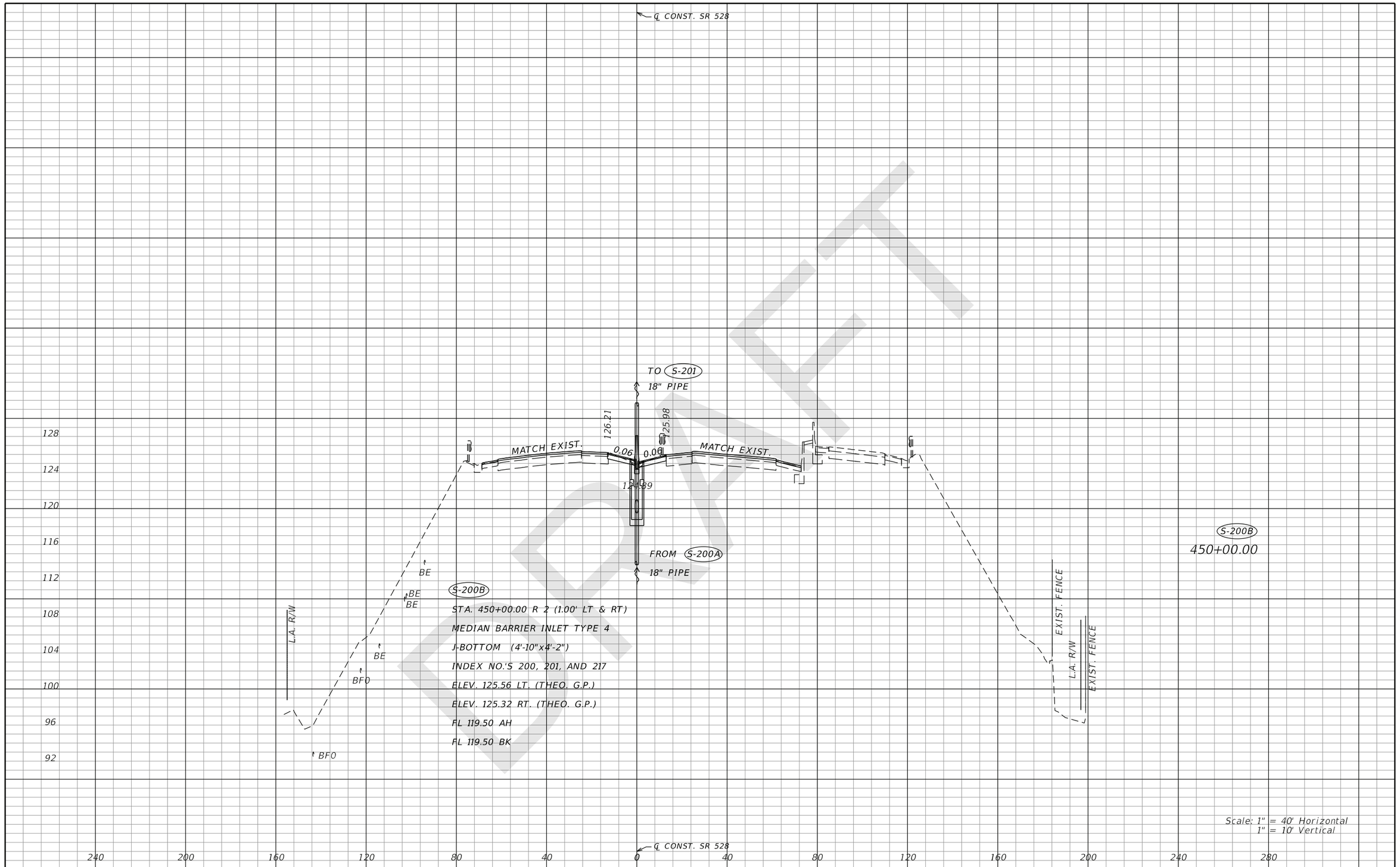
DRAINAGE STRUCTURES
SR 528

SHEET NO. 140



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DRAINAGE STRUCTURES
SR 528

SHEET NO. 141

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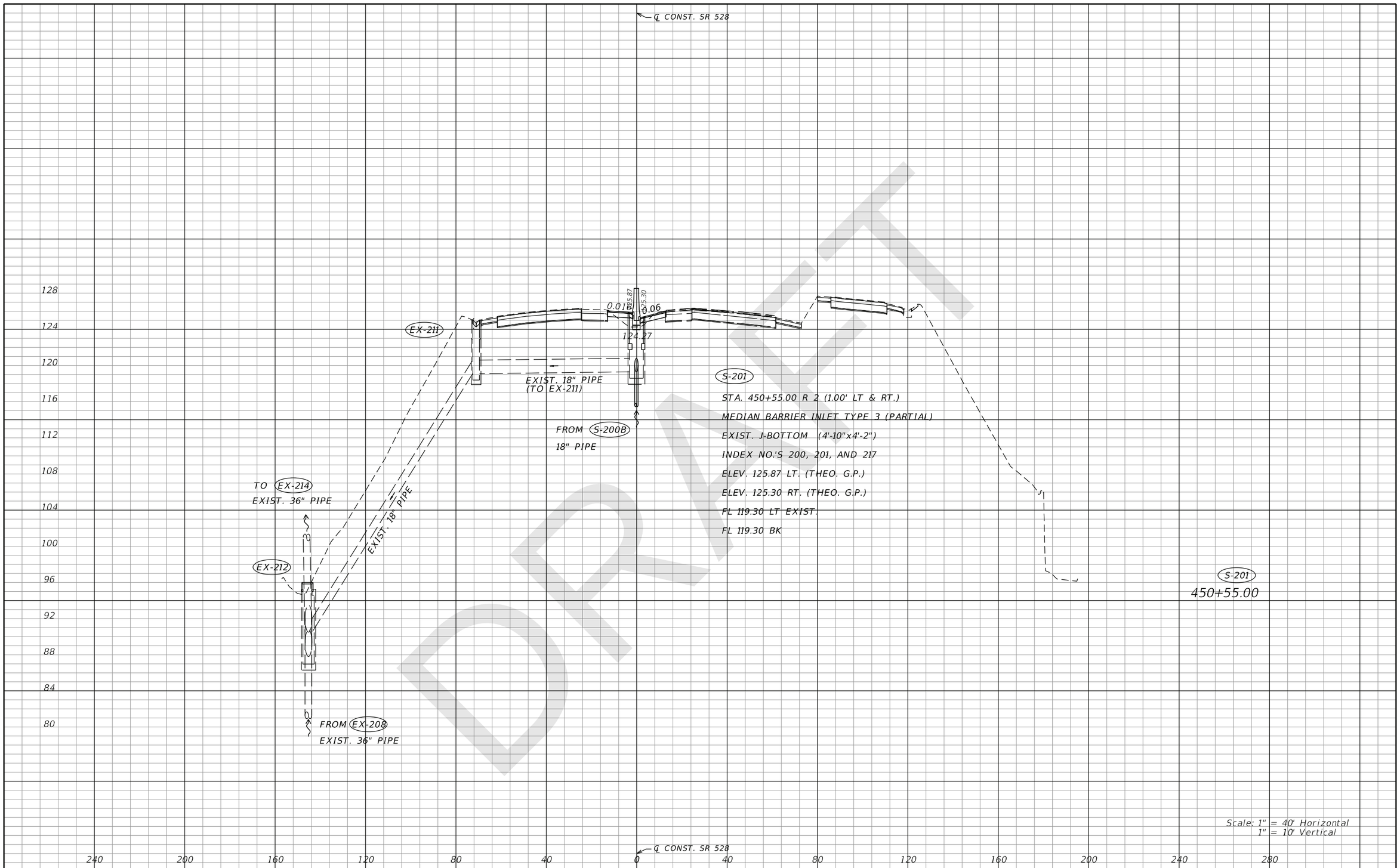

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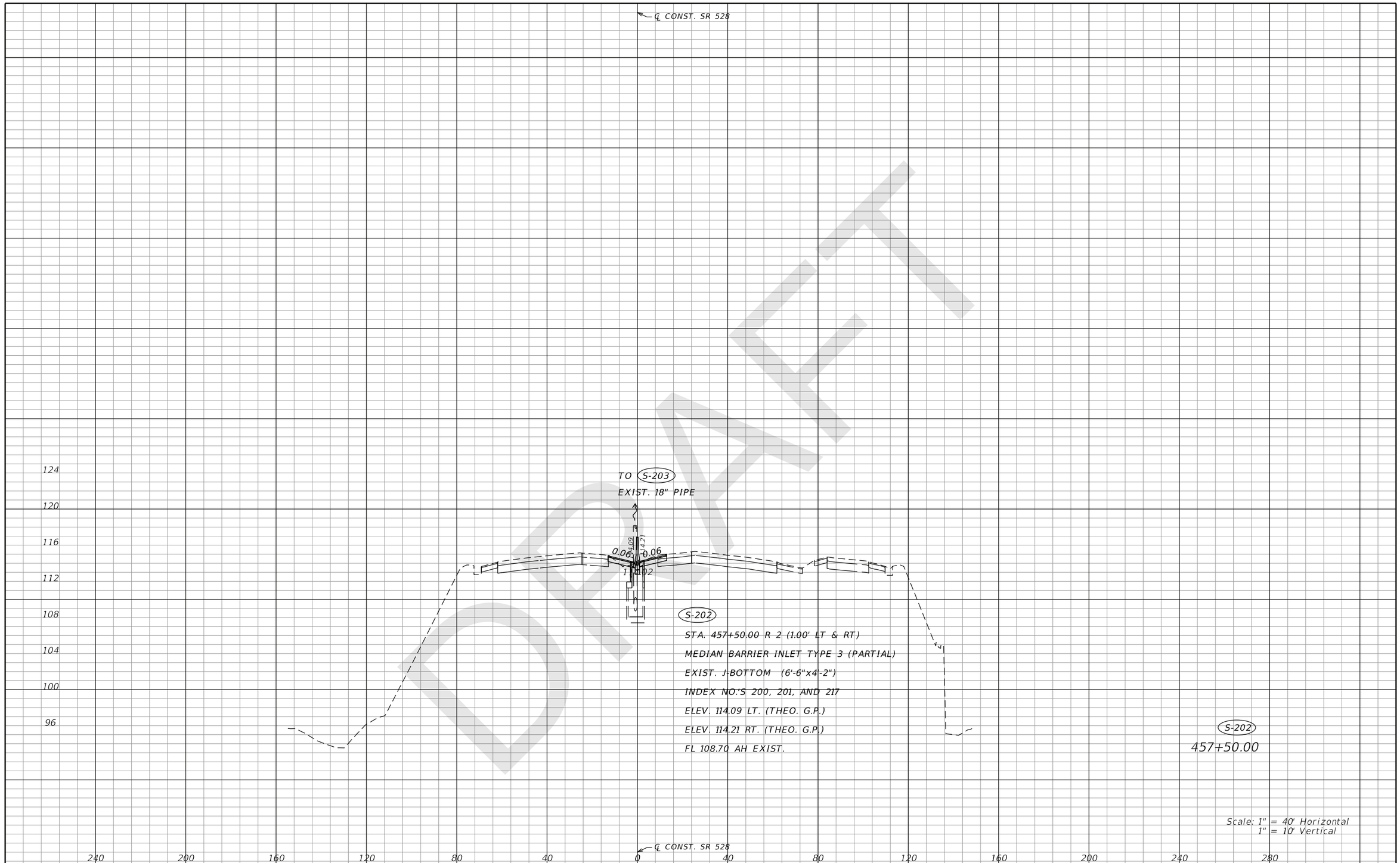
DRAINAGE STRUCTURES
SR 528

SHEET NO. 142

jfarwick 3/21/2016 4:57:30 PM T:\02-0249_019\43715615201\drainage\DRXSRD01.DGN



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SR 528

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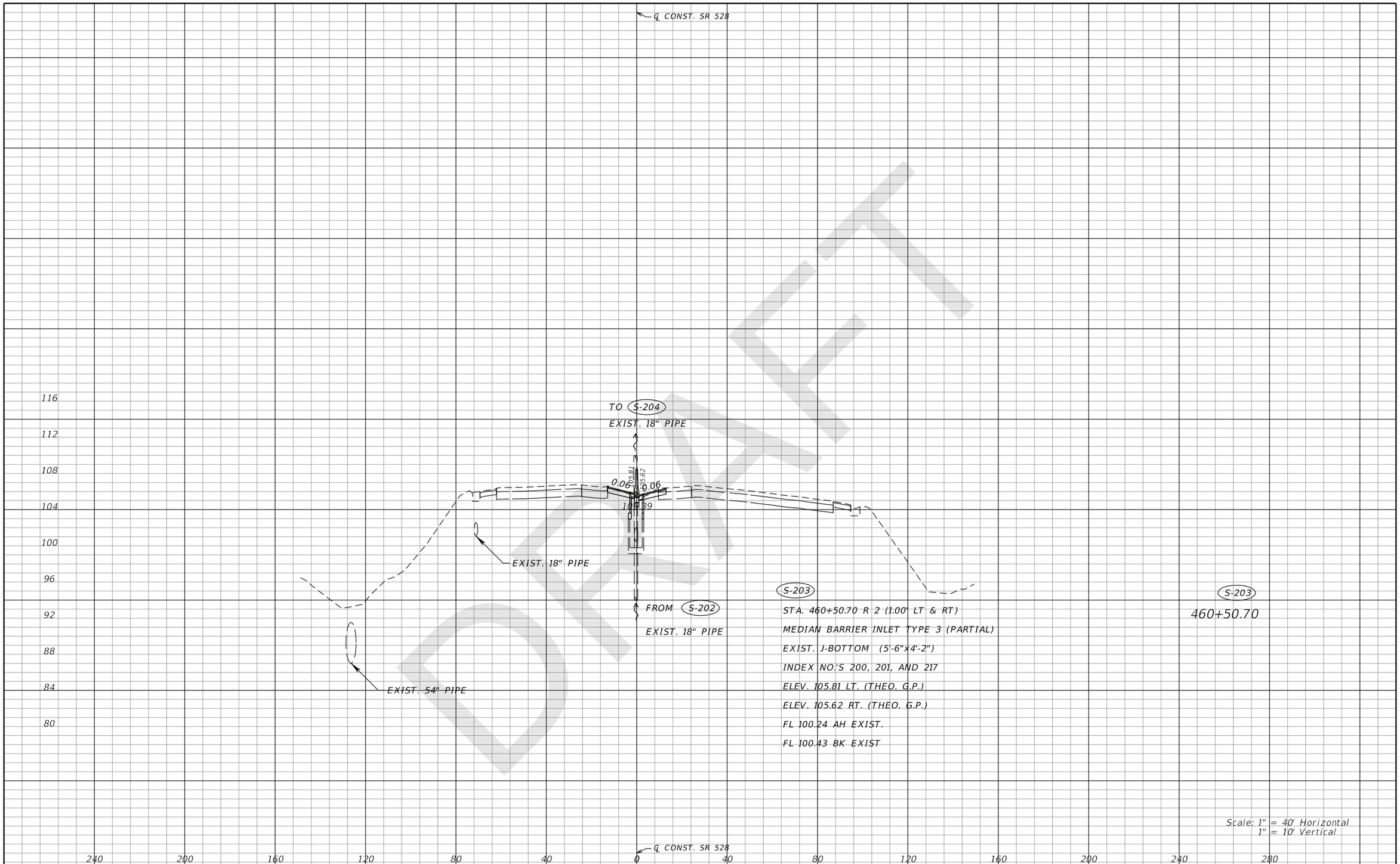

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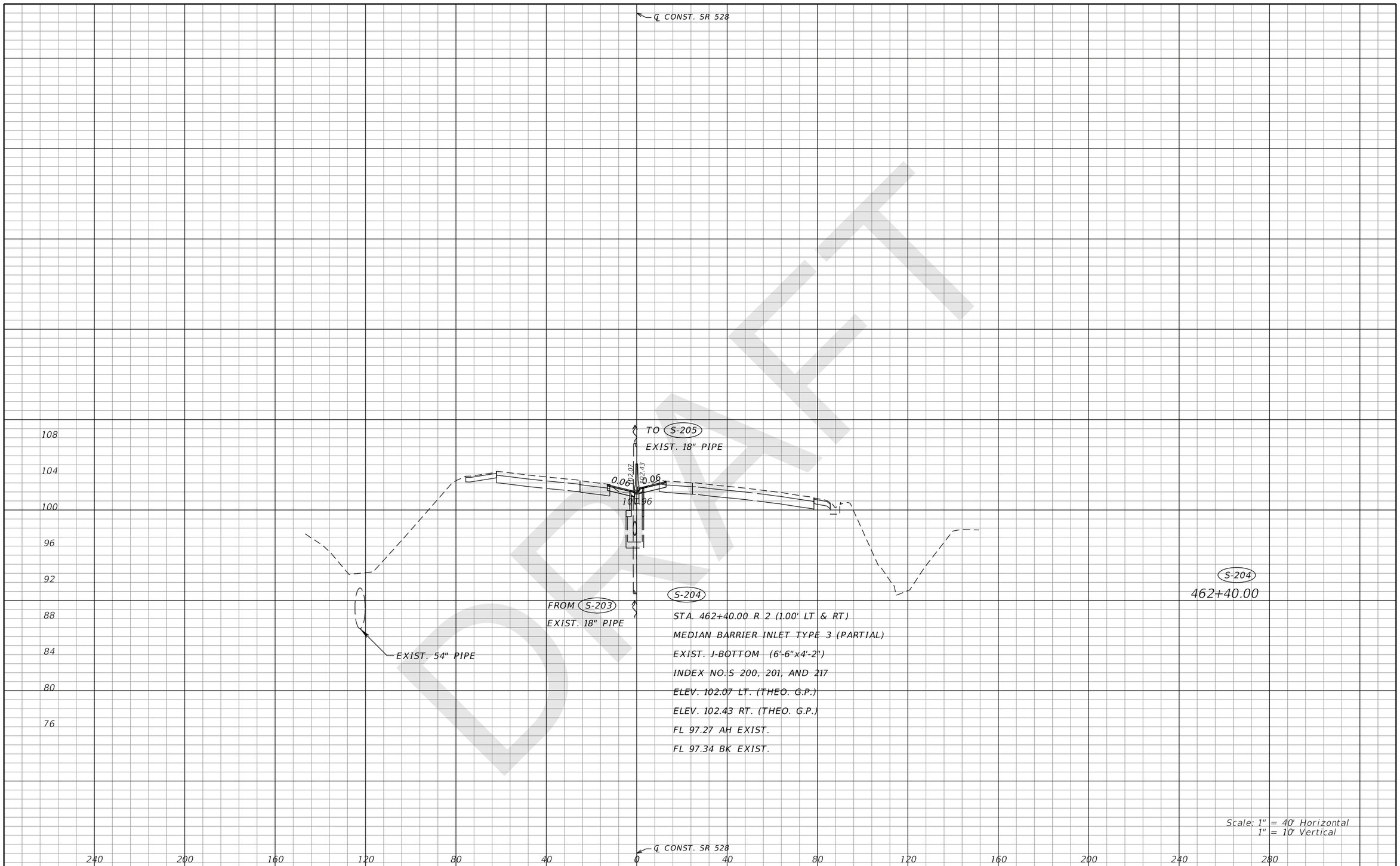

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DRAINAGE STRUCTURES
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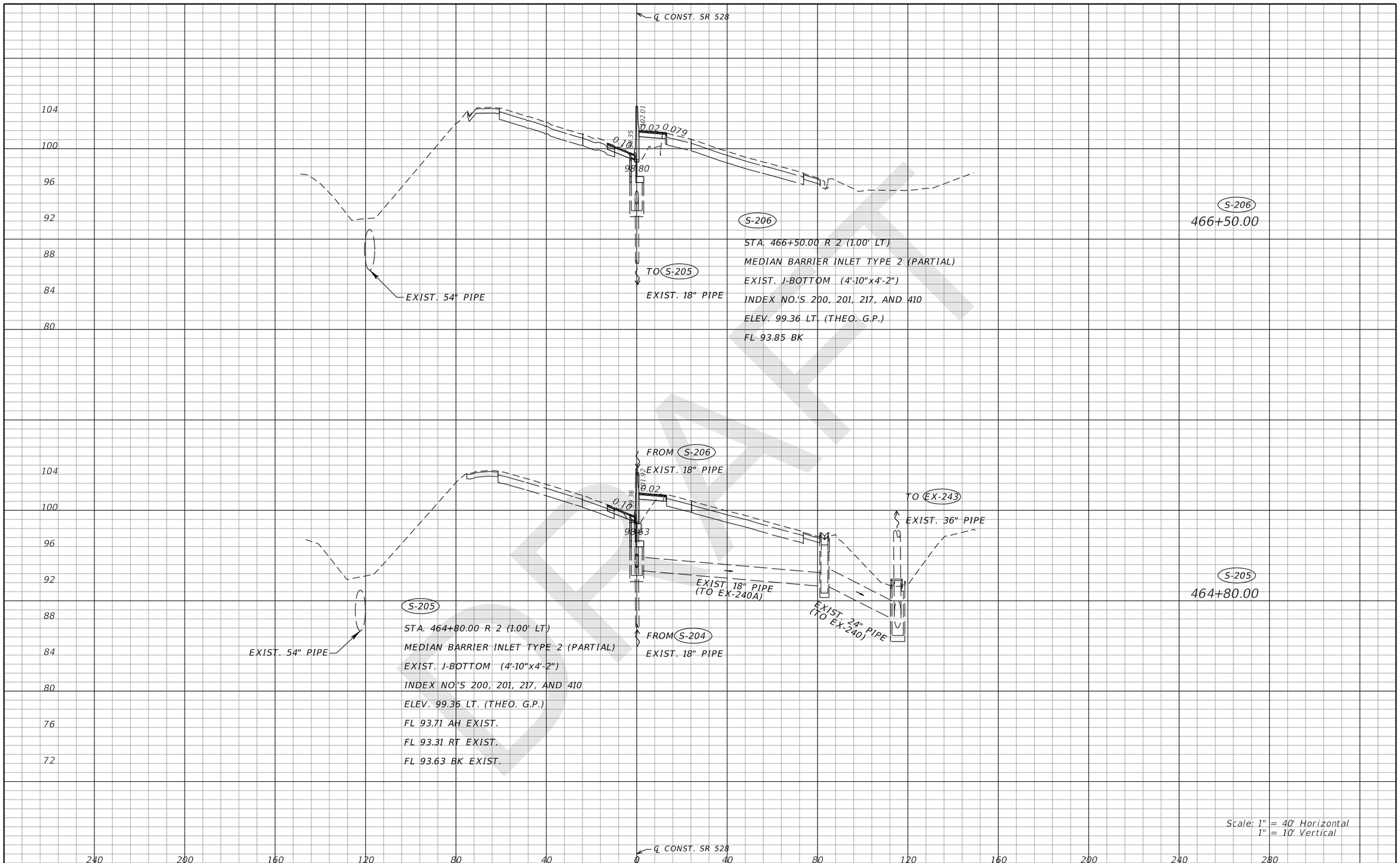

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DRAINAGE STRUCTURES
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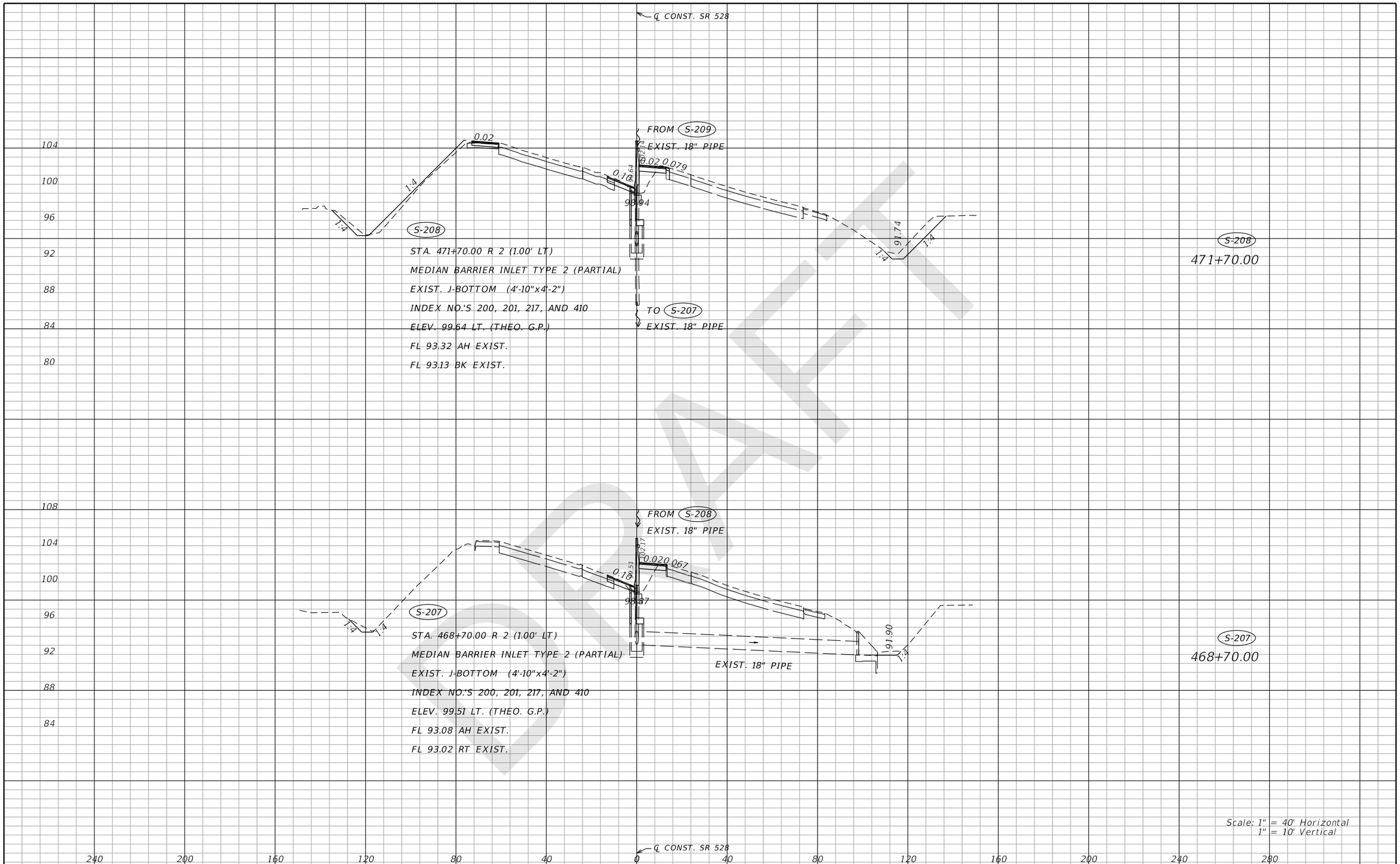

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 147

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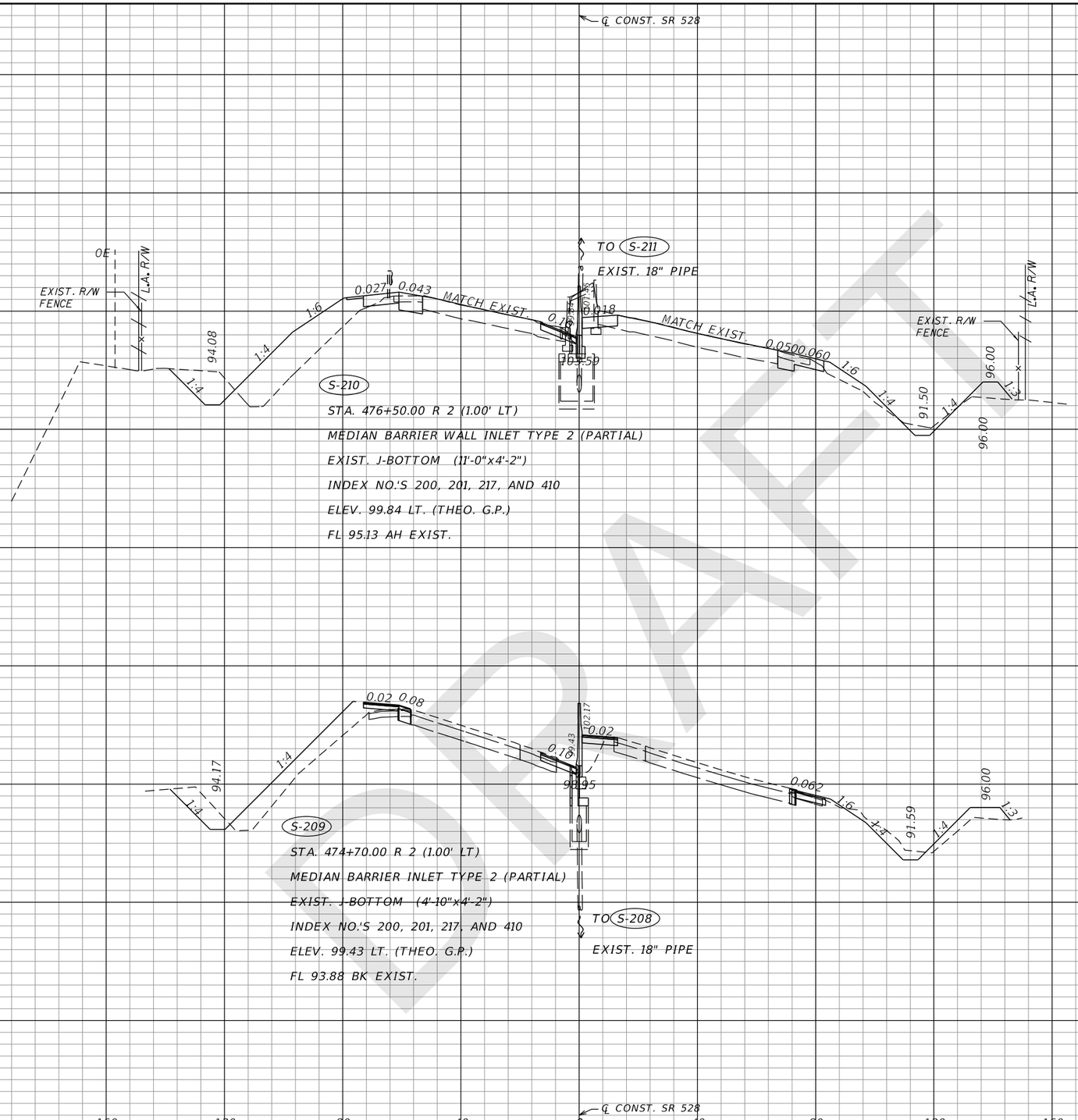

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DRAINAGE STRUCTURES
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SHEET NO. 148

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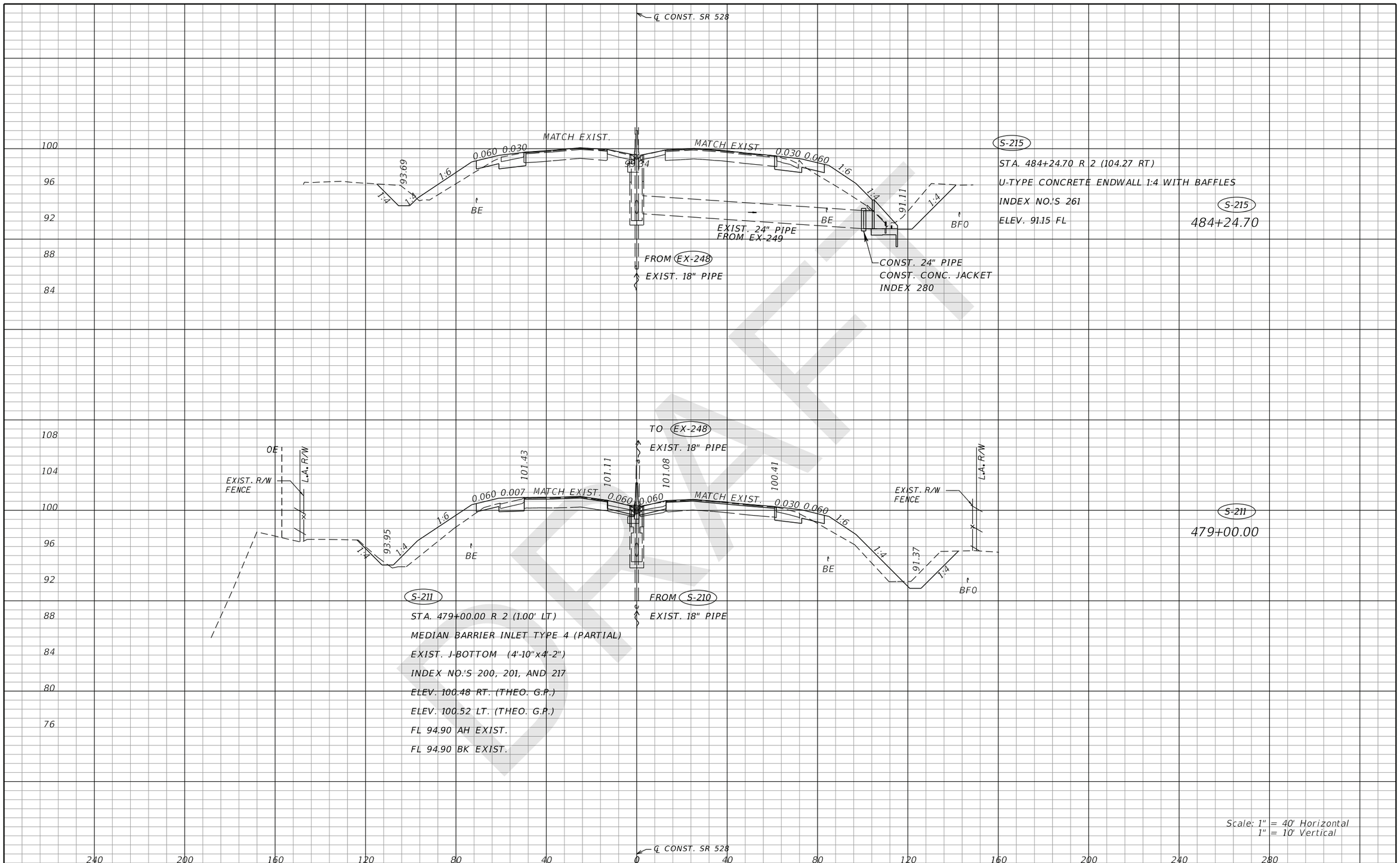

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SHEET NO. 149

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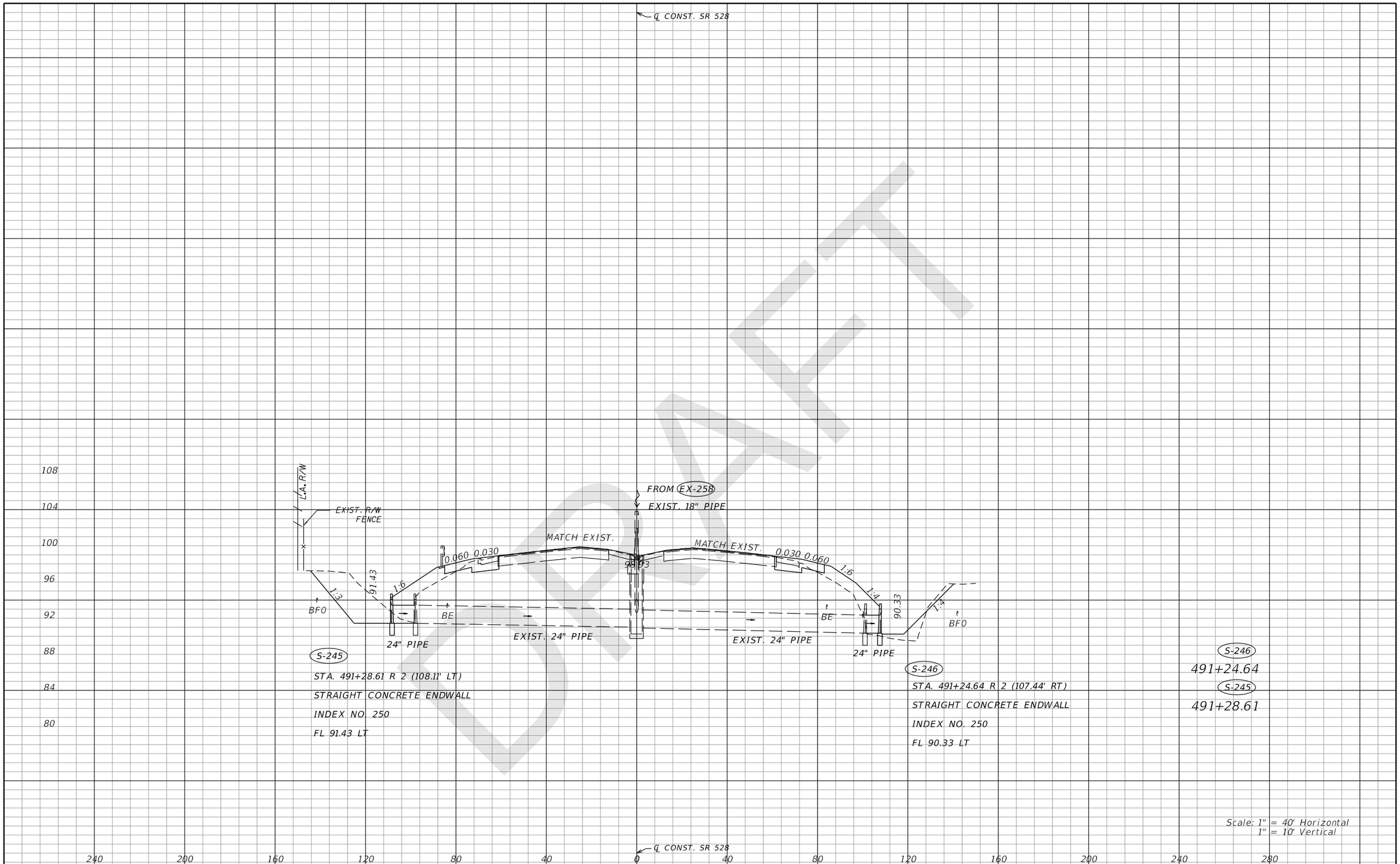

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 150

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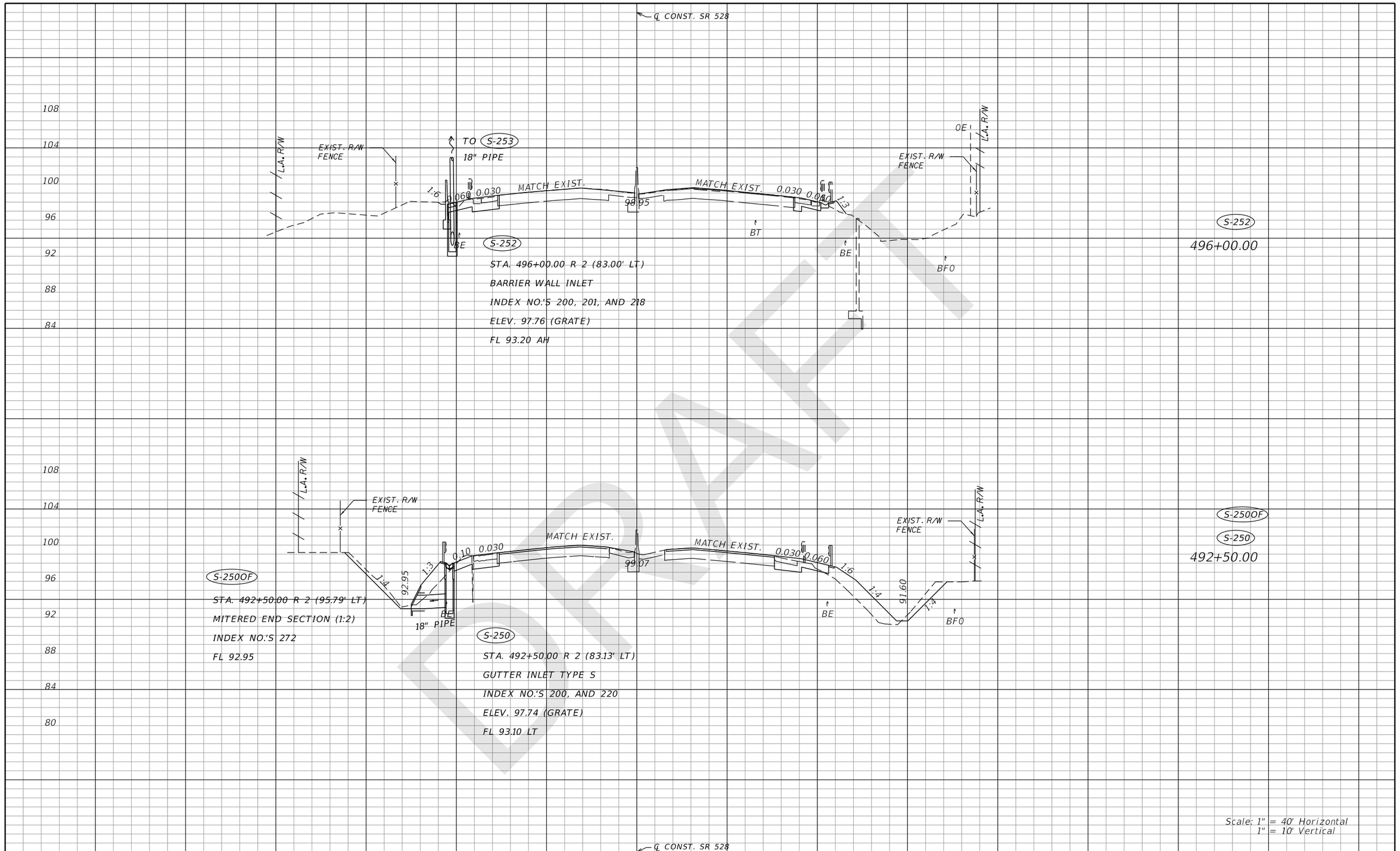

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SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 151

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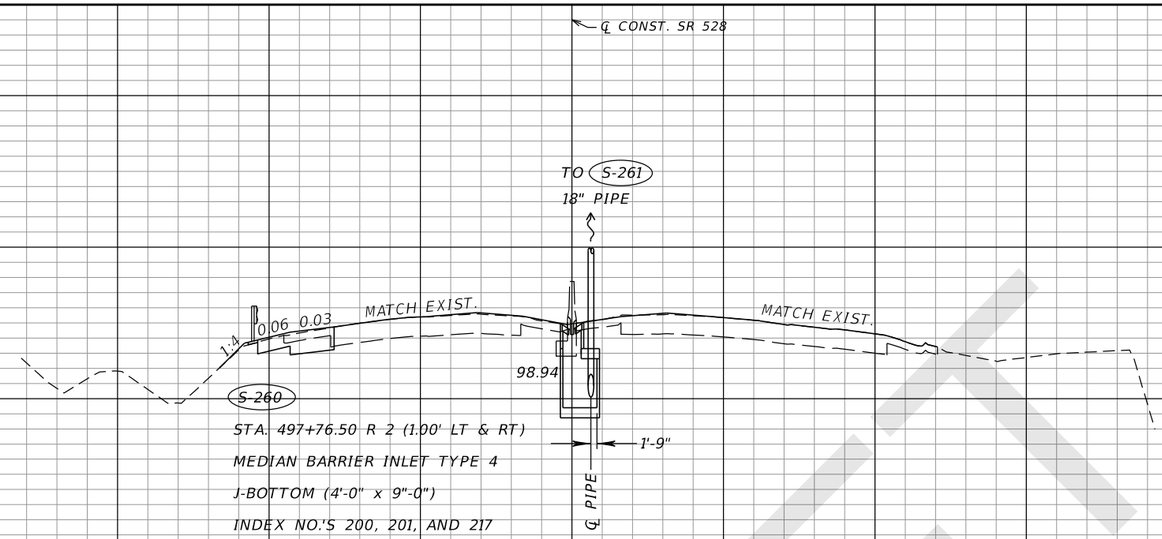


S-260

STA. 497+76.50 R 2 (1.00' LT & RT)

MEDIAN BARRIER INLET TYPE 4

J-BOTTOM (4'-0" x 9"-0")

INDEX NO.'S 200, 201, AND 217

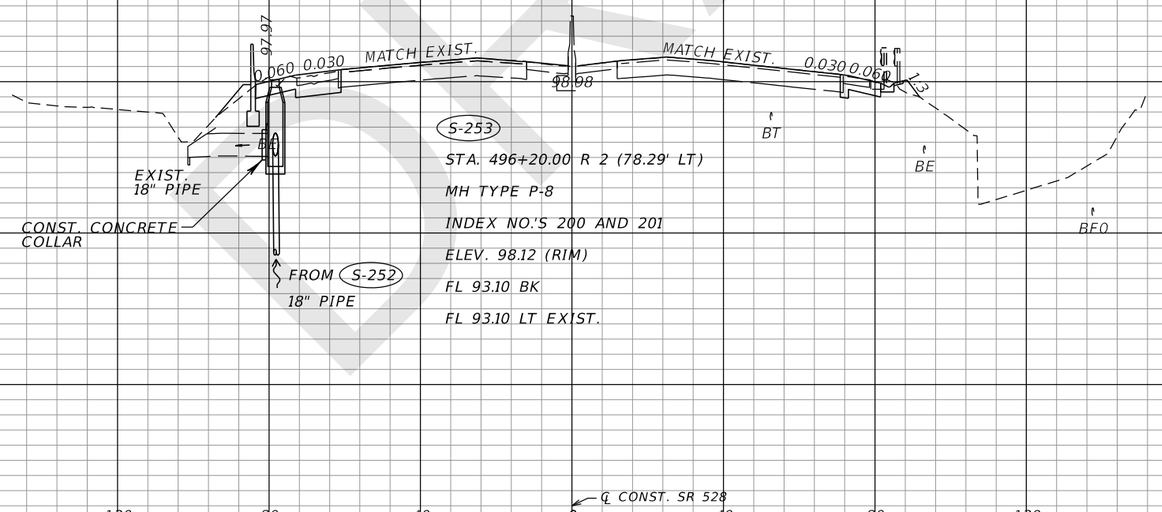
ELEV. 98.97 LT. (THEO. G.P.)

ELEV. 99.04 RT. (THEO. G.P.)

FL 94.10 AH

S-260

497+76.50



S-253

STA. 496+20.00 R 2 (78.29' LT)

MH TYPE P-8

INDEX NO.'S 200 AND 201

ELEV. 98.12 (RIM)

FL 93.10 BK

FL 93.10 LT EXIST.

S-253

496+20.00

Scale: 1" = 40' Horizontal
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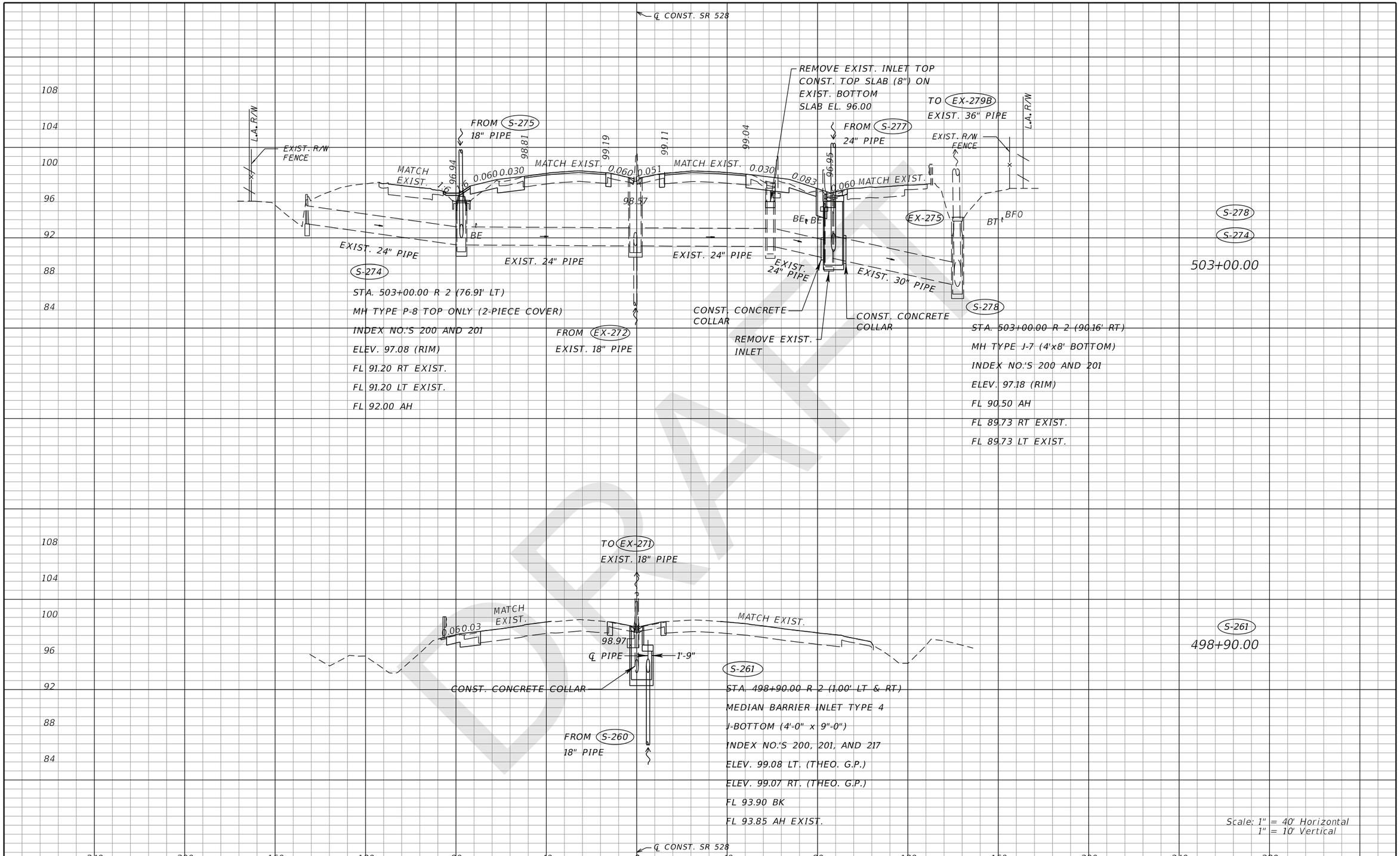
DRAINAGE STRUCTURES
SR 528

SHEET NO. 152



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DRAINAGE STRUCTURES
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SHEET NO. 153

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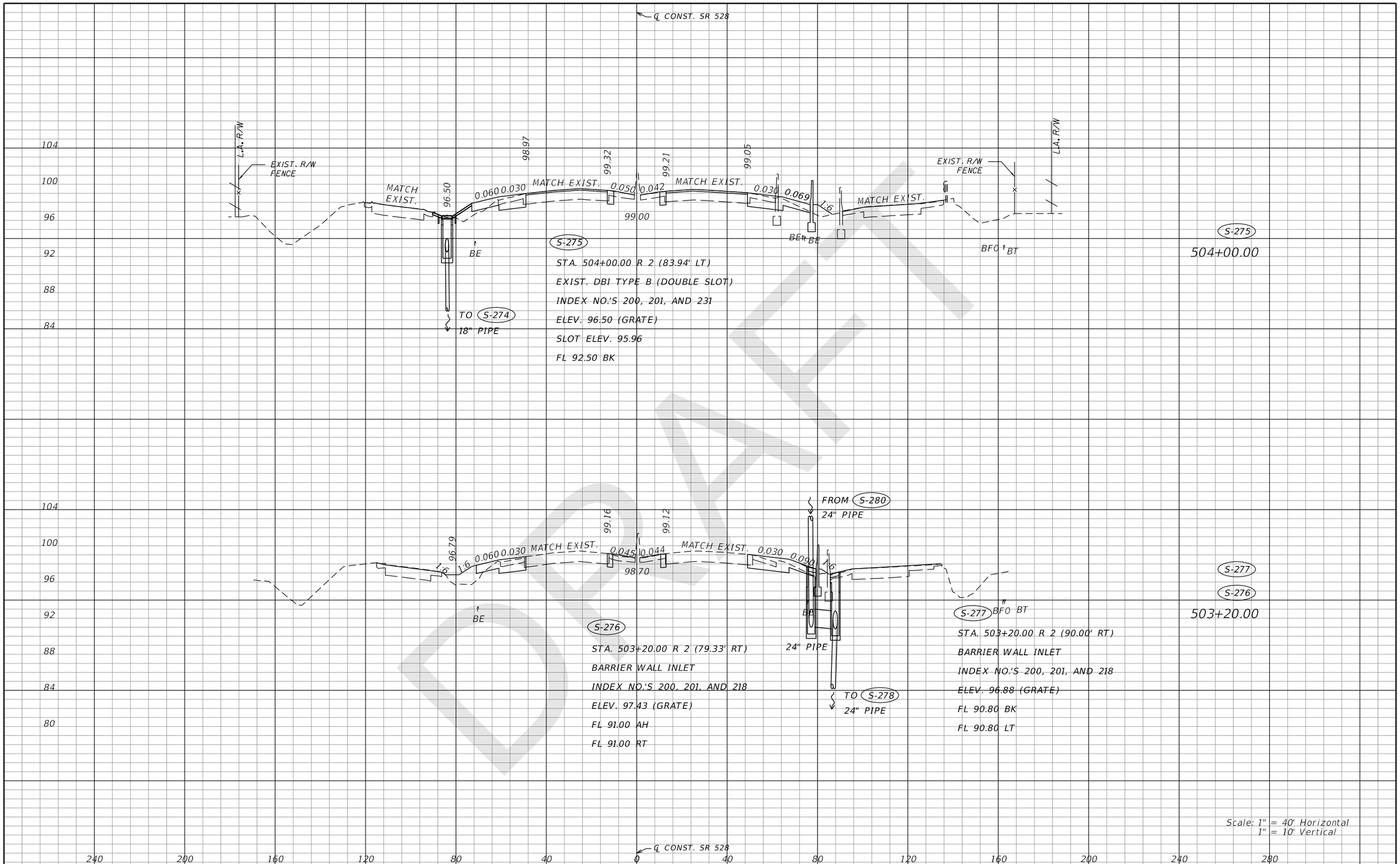

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 154

jfarwick 3/21/2016 4:57:32 PM T:\02-0249_019\43715615201\drainage\DRXSRD01.DGN

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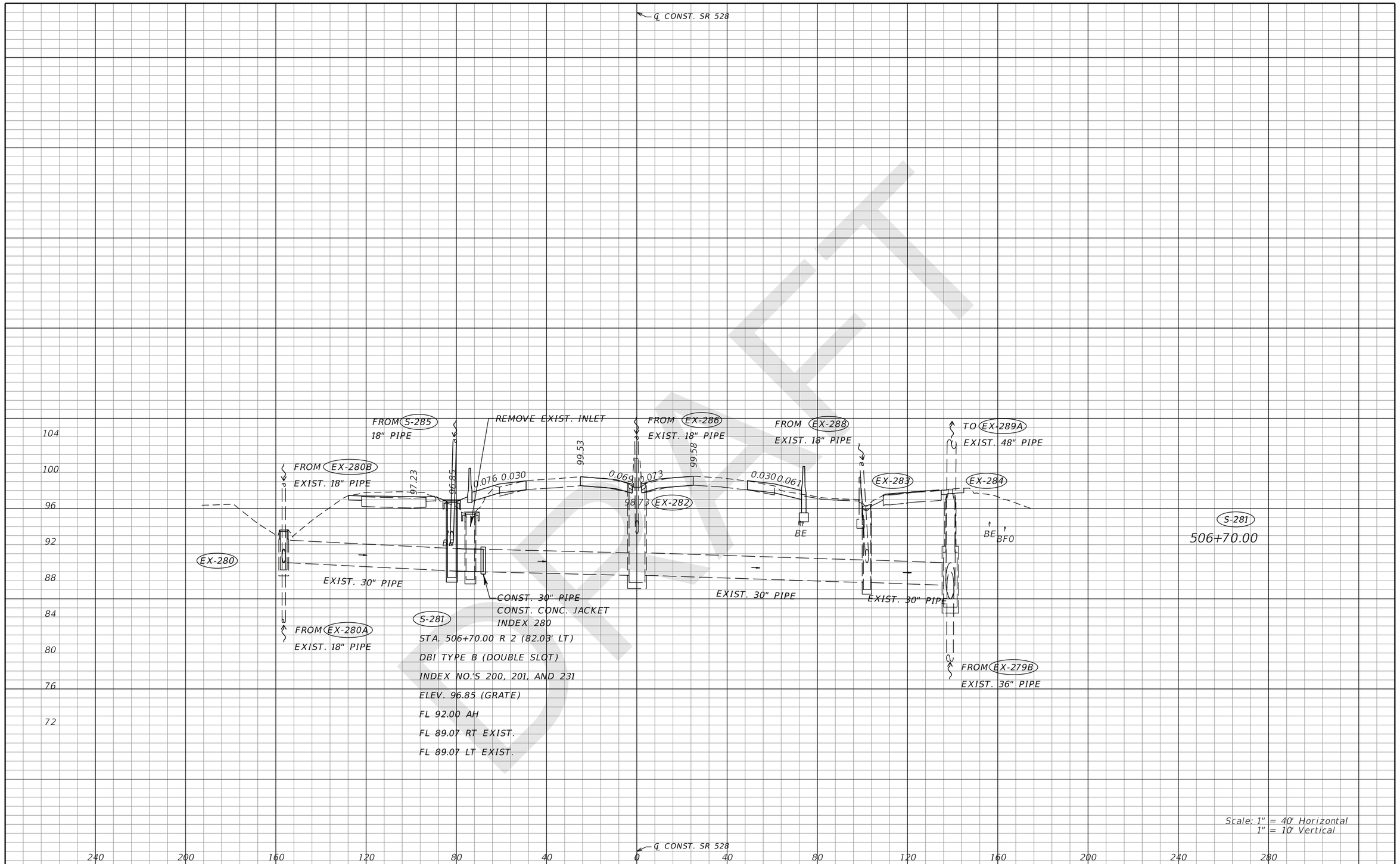
DRAINAGE STRUCTURES
SR 528

SHEET NO. 155

jfarwick 3/21/2016 4:57:33 PM T:\02-0249_019\43715615201\drainage\DRXSRD01.DGN



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DRAINAGE STRUCTURES
SR 528

SHEET NO. 156

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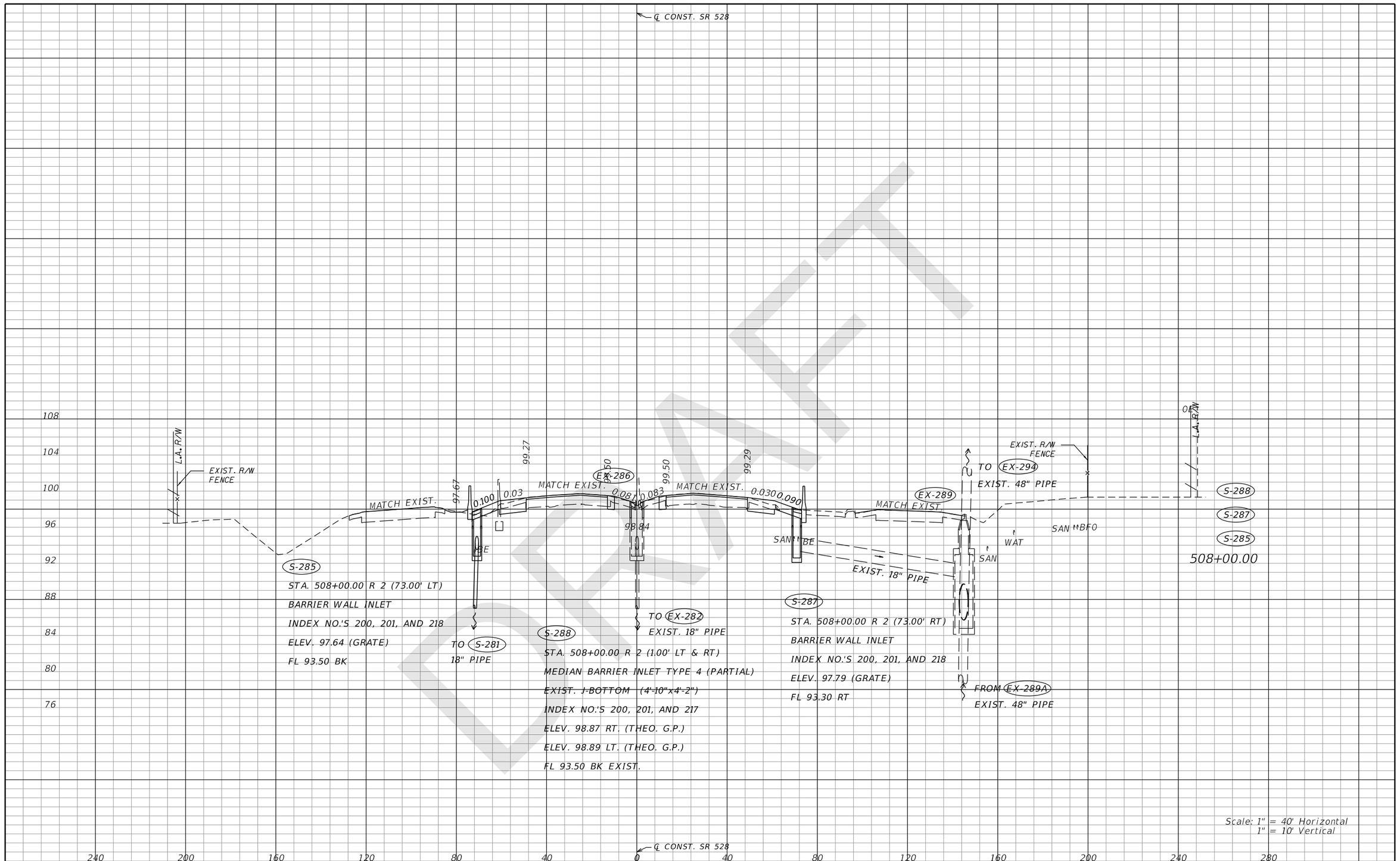

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1" = 10' Vertical

DRAFT

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LICENSE NO. 66554

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE STRUCTURES
SR 528

SHEET NO. 157

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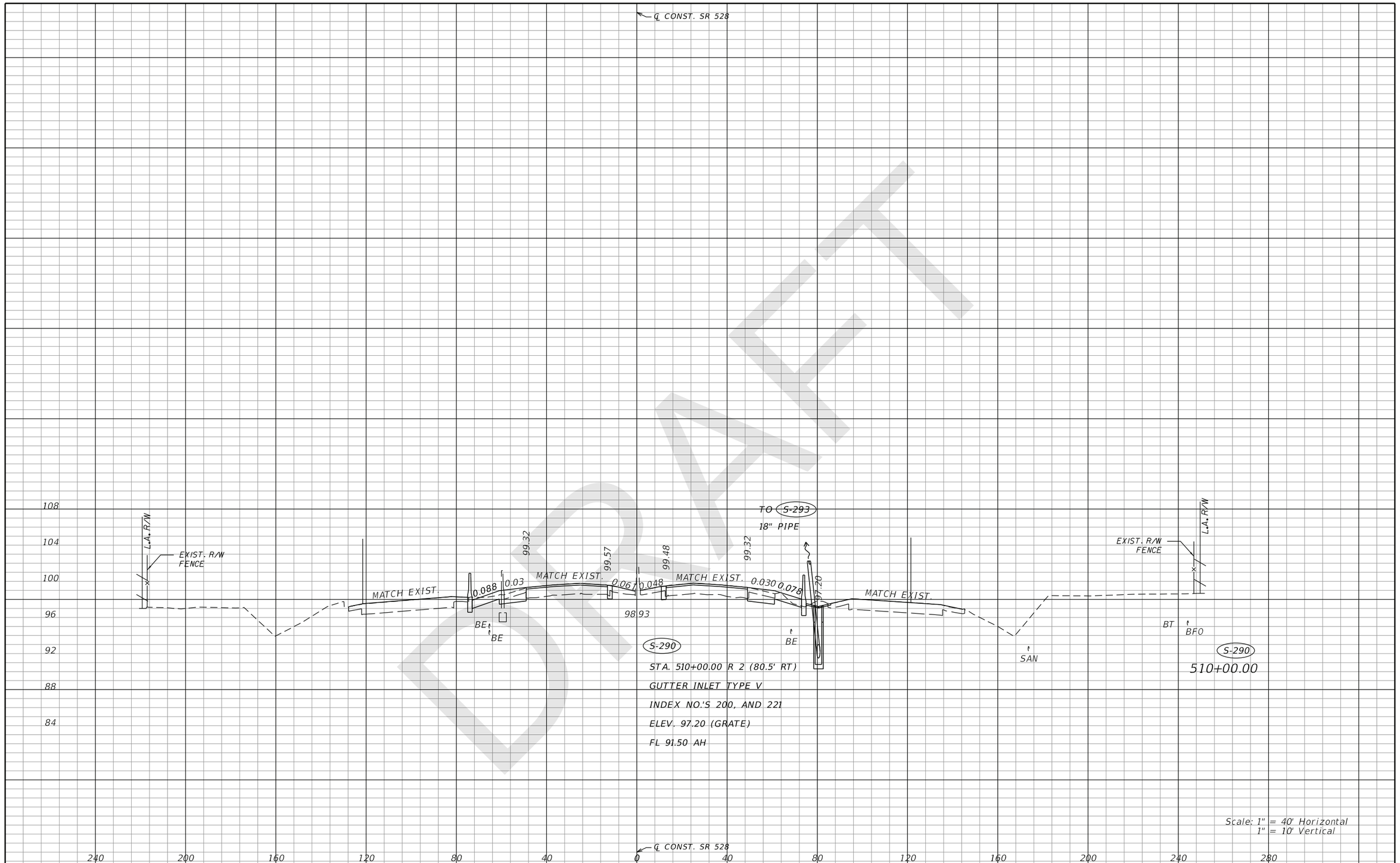

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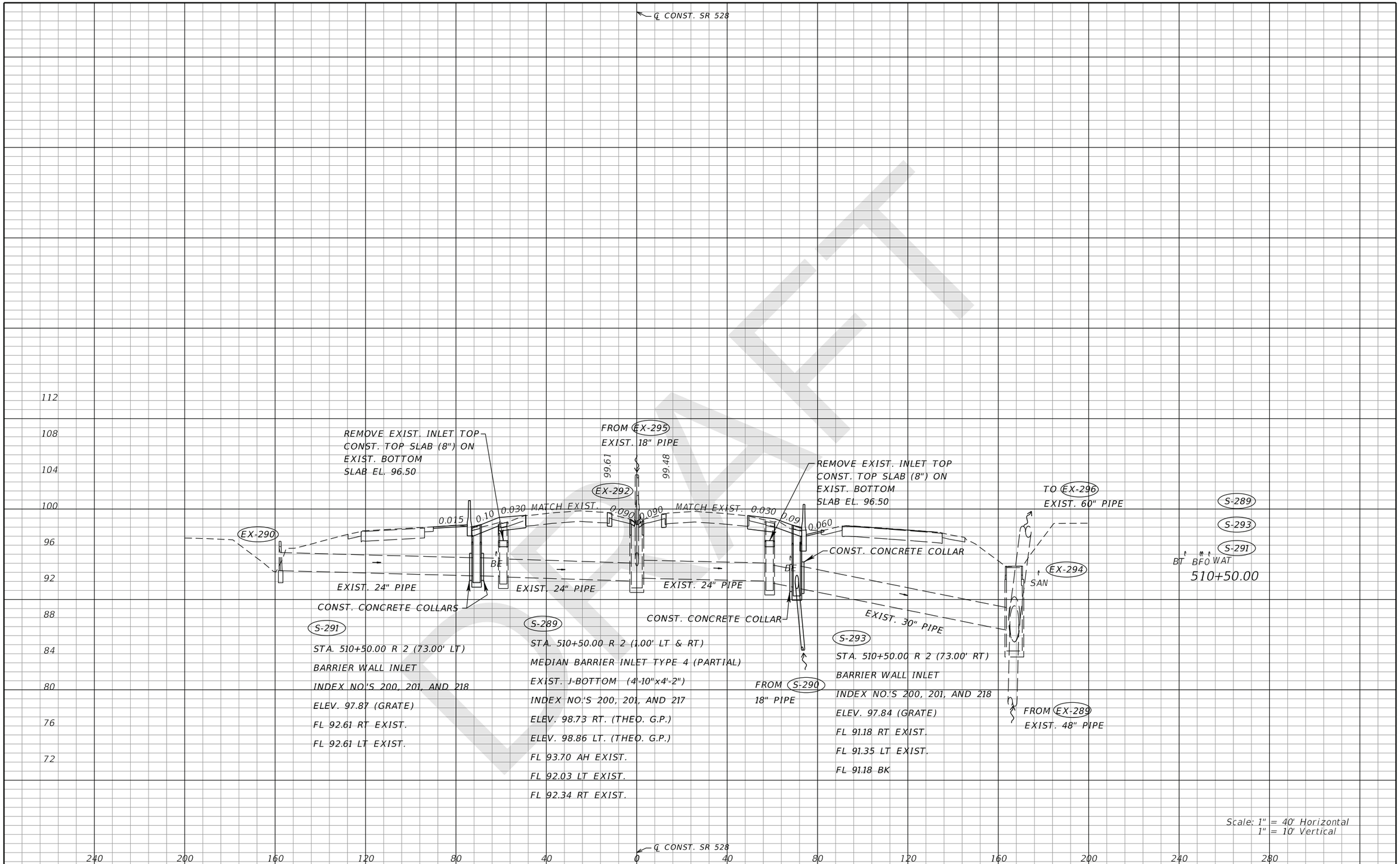

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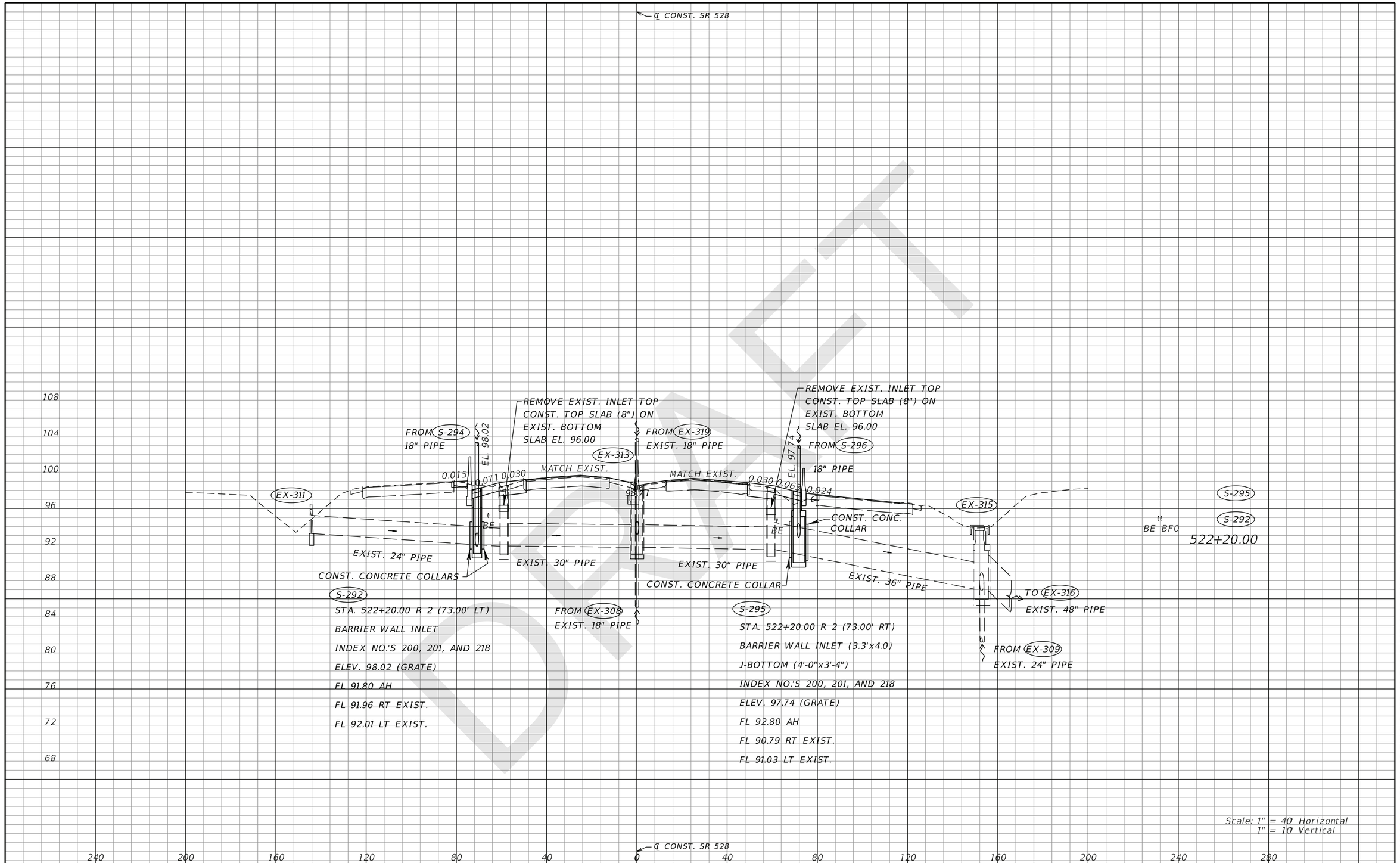

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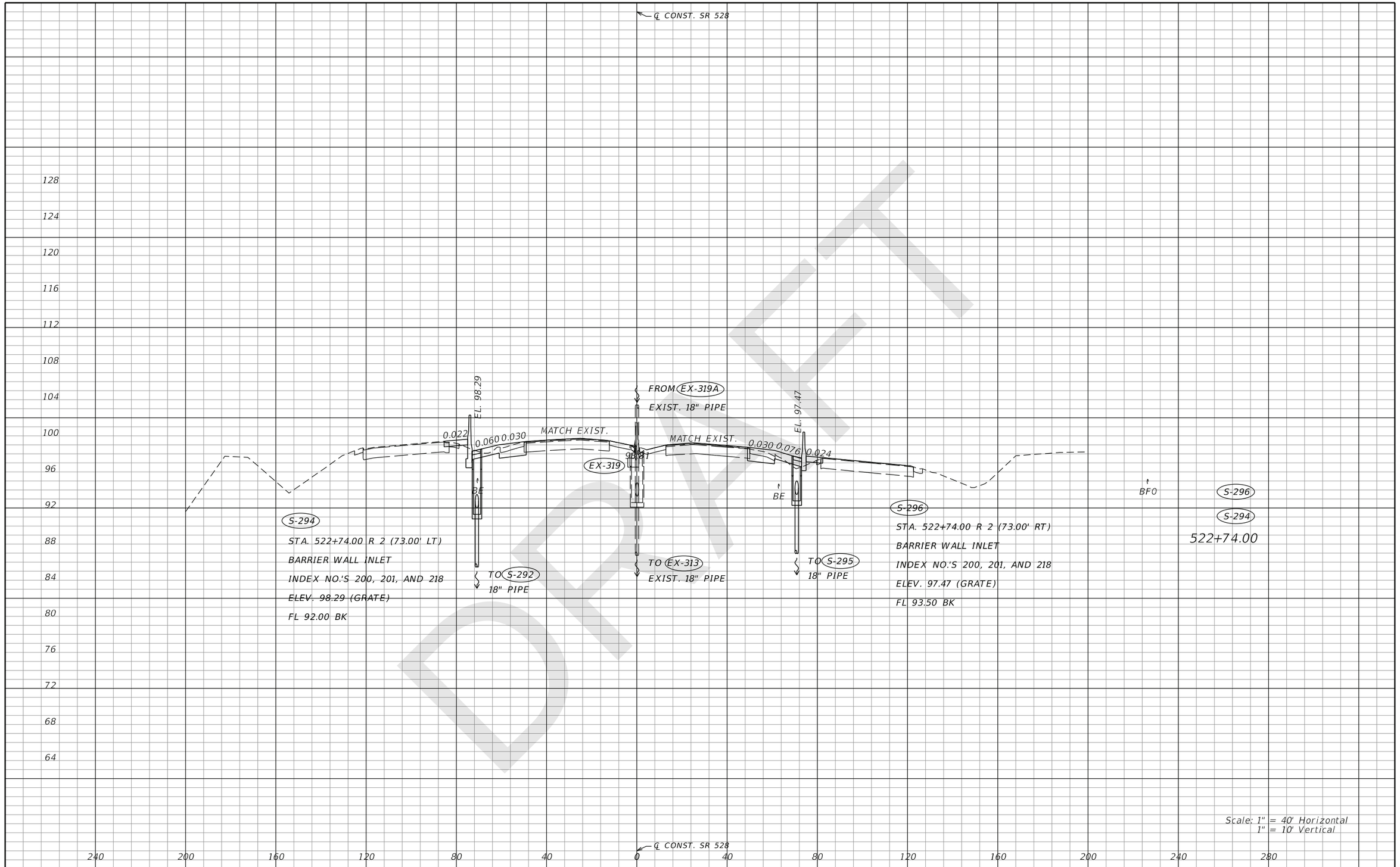

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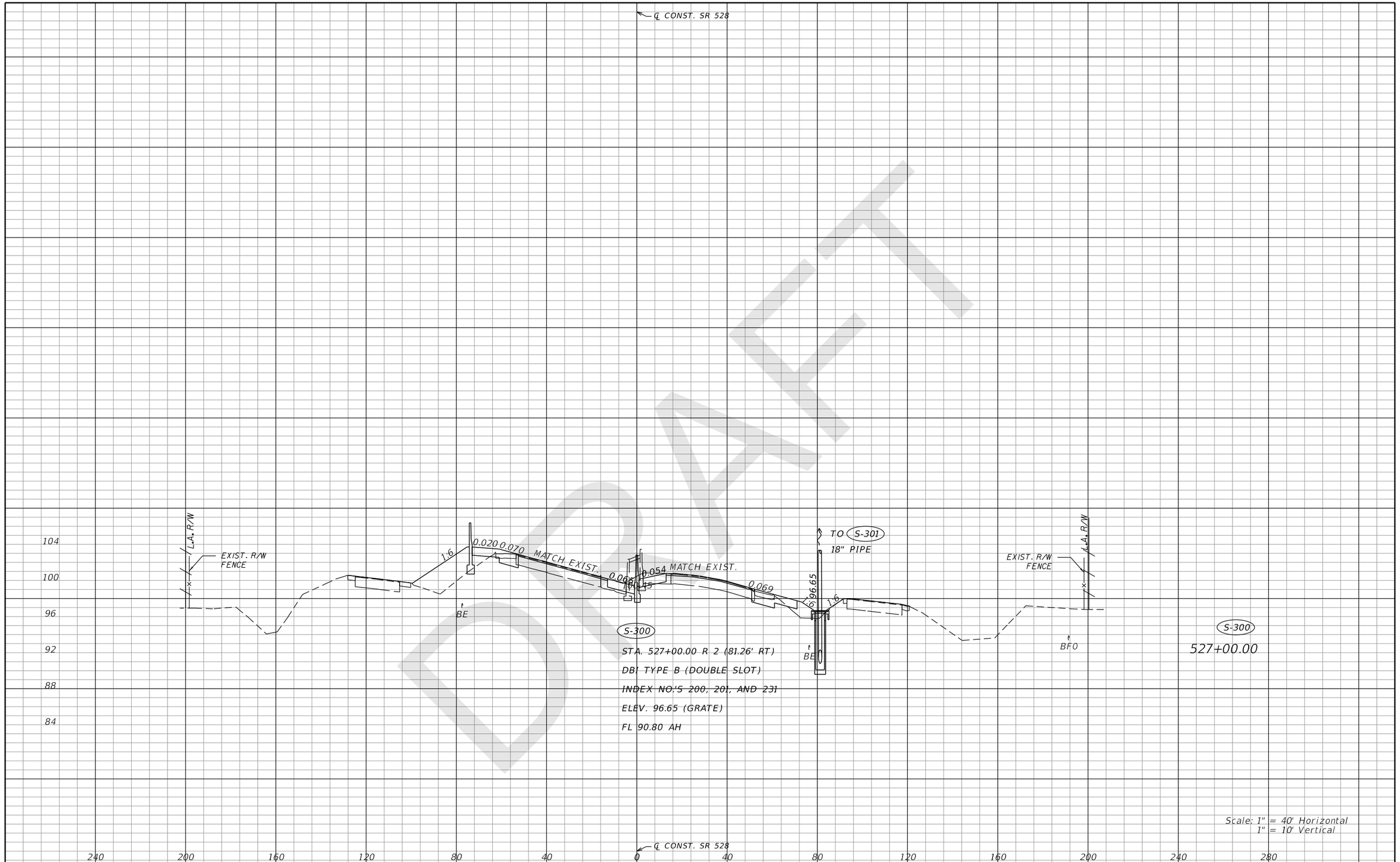

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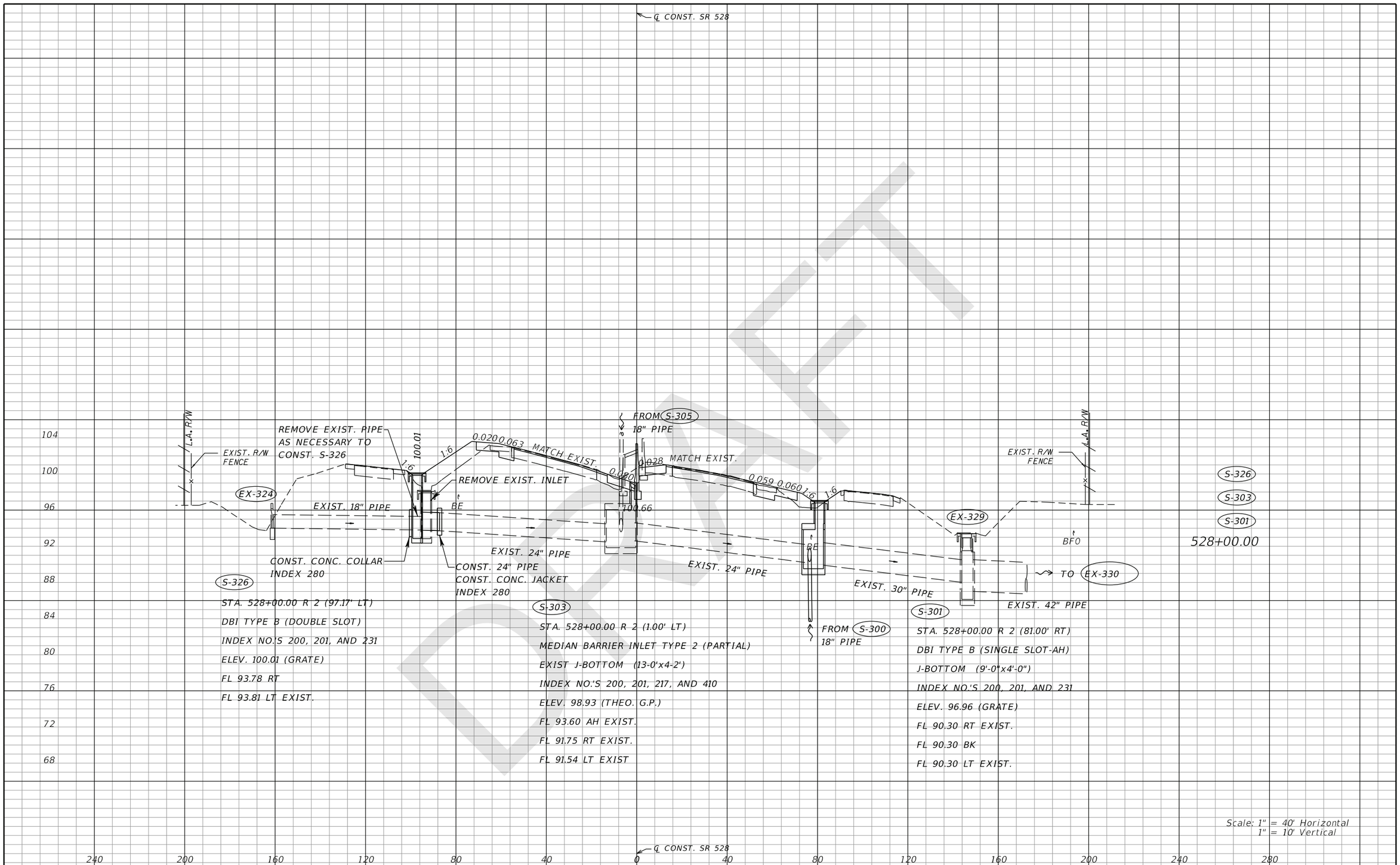

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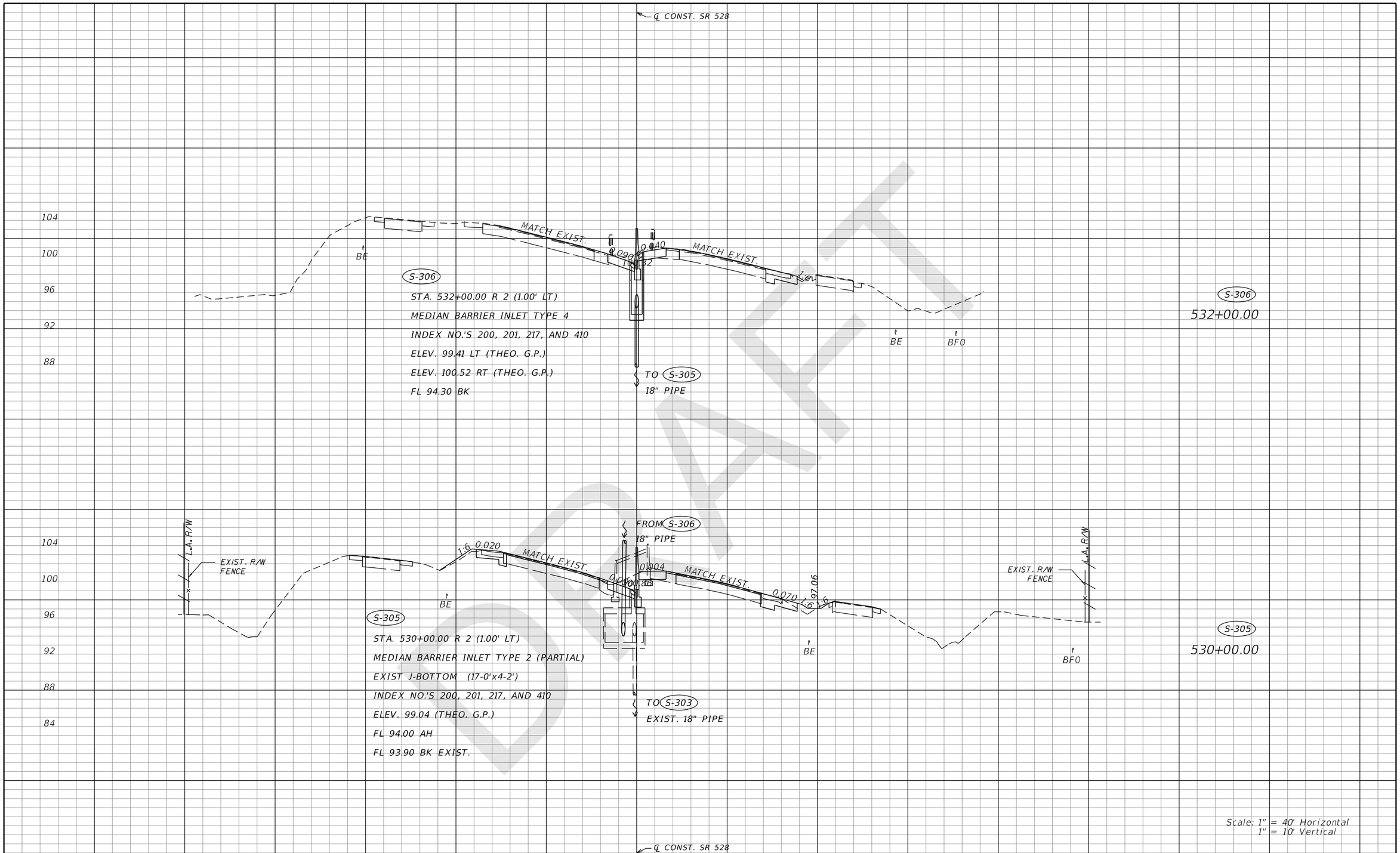

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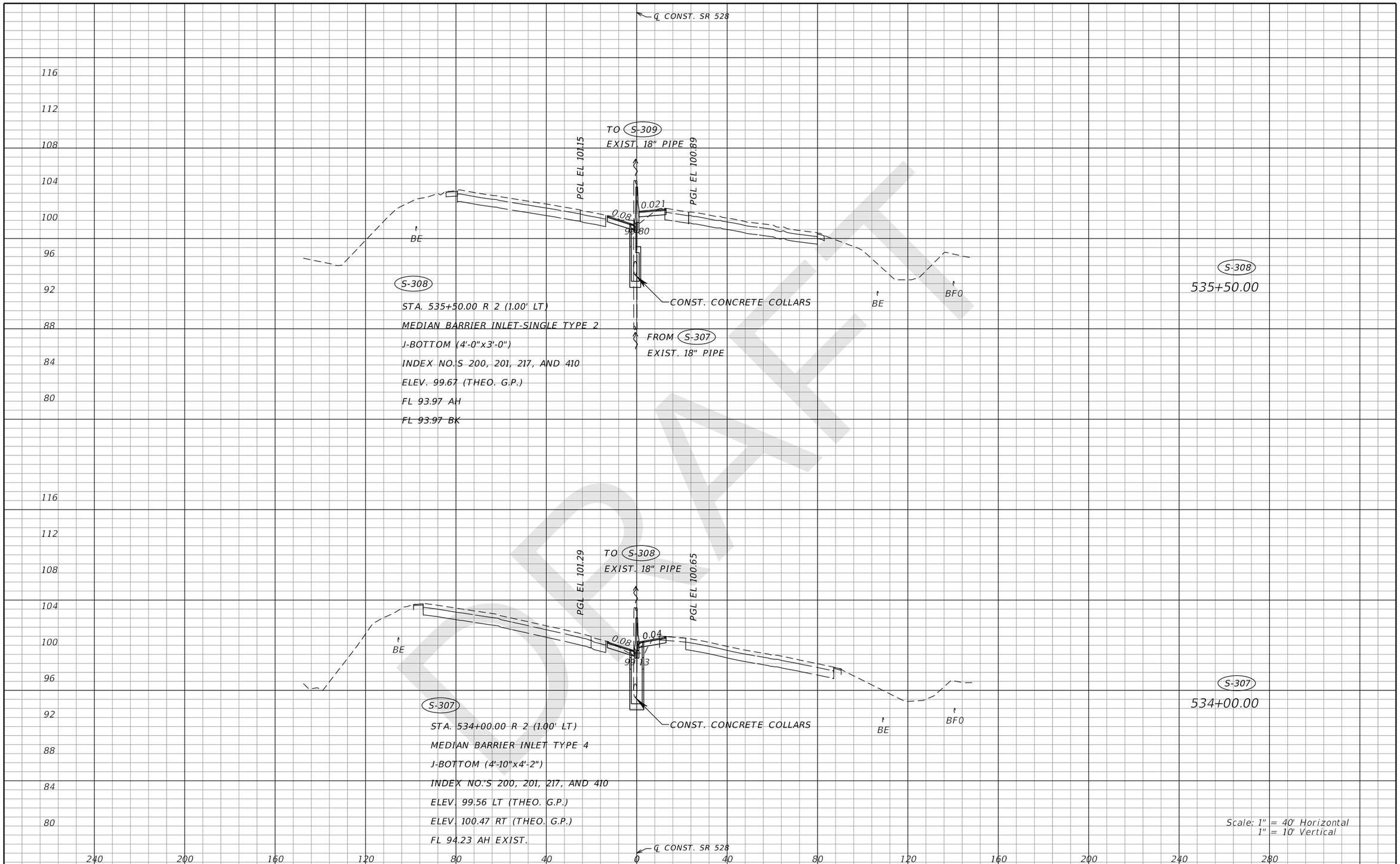

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DRAINAGE STRUCTURES
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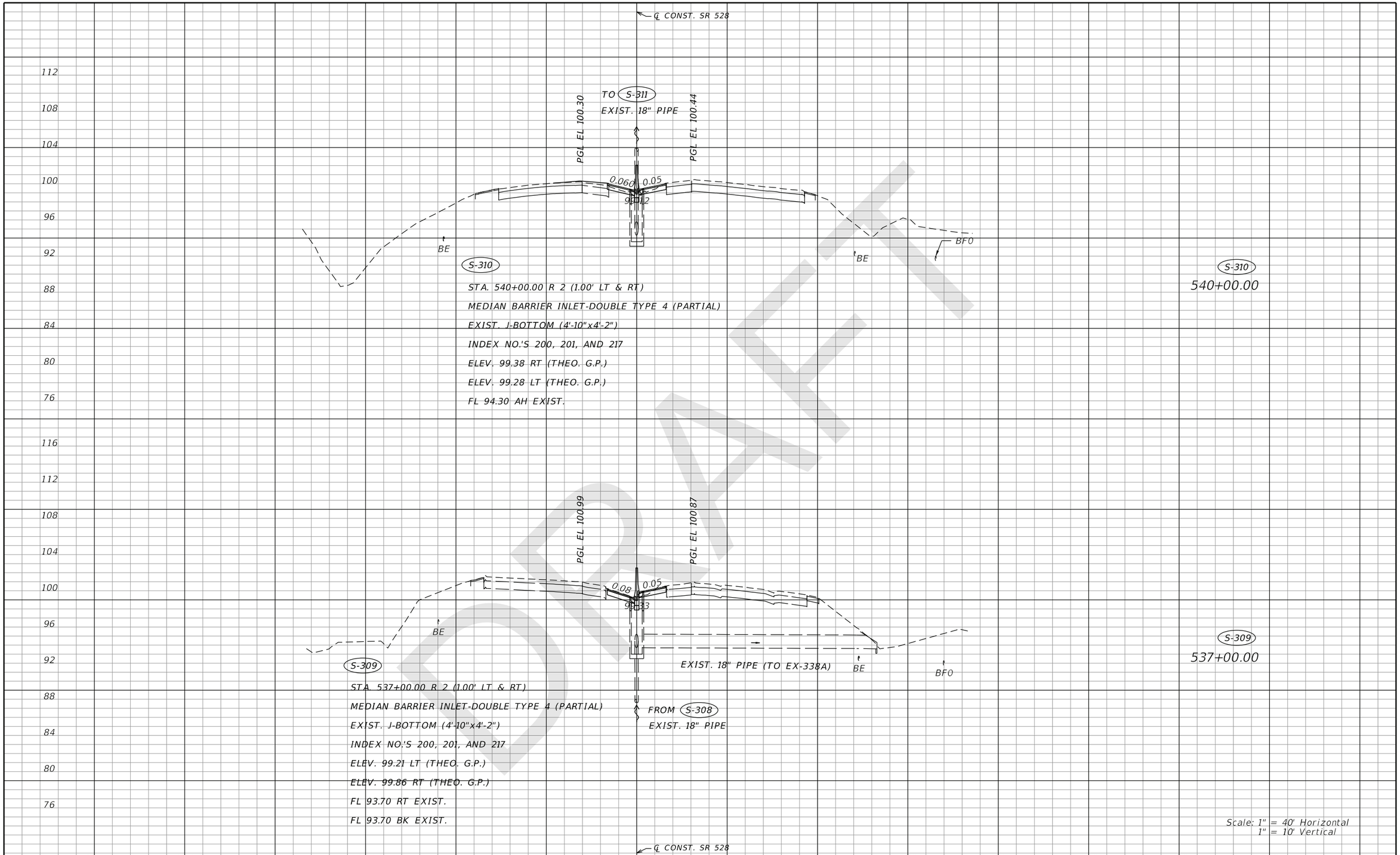

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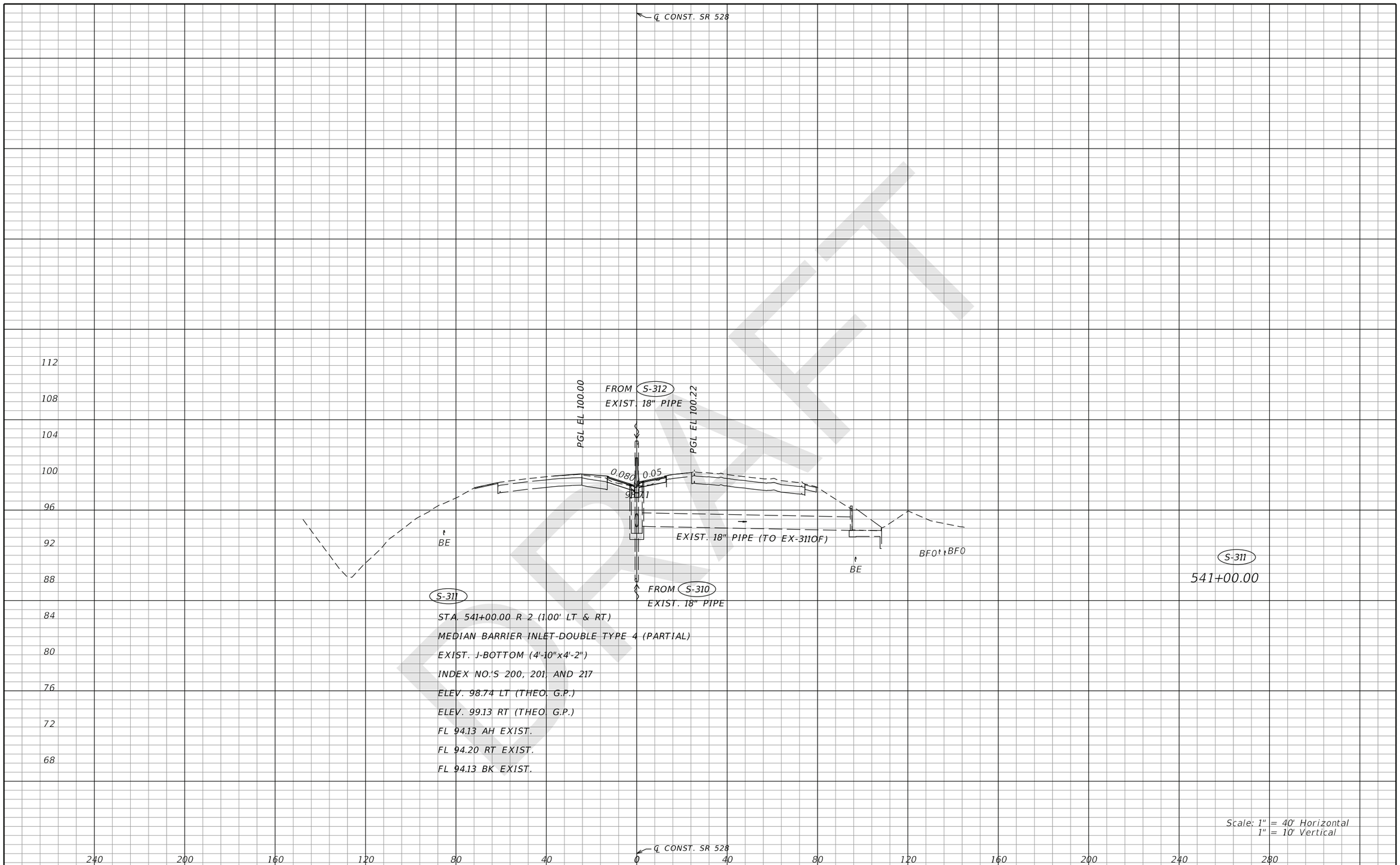

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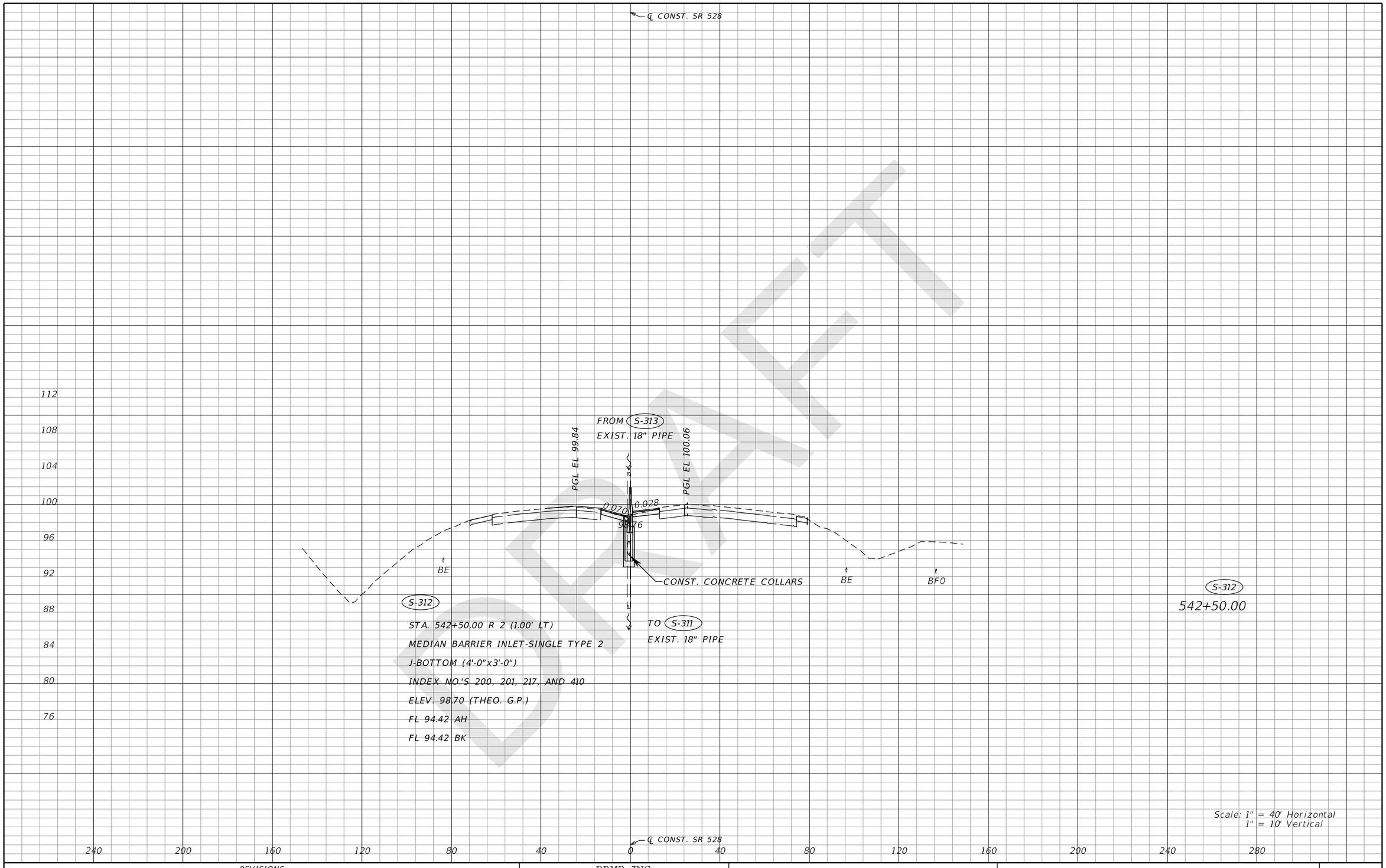

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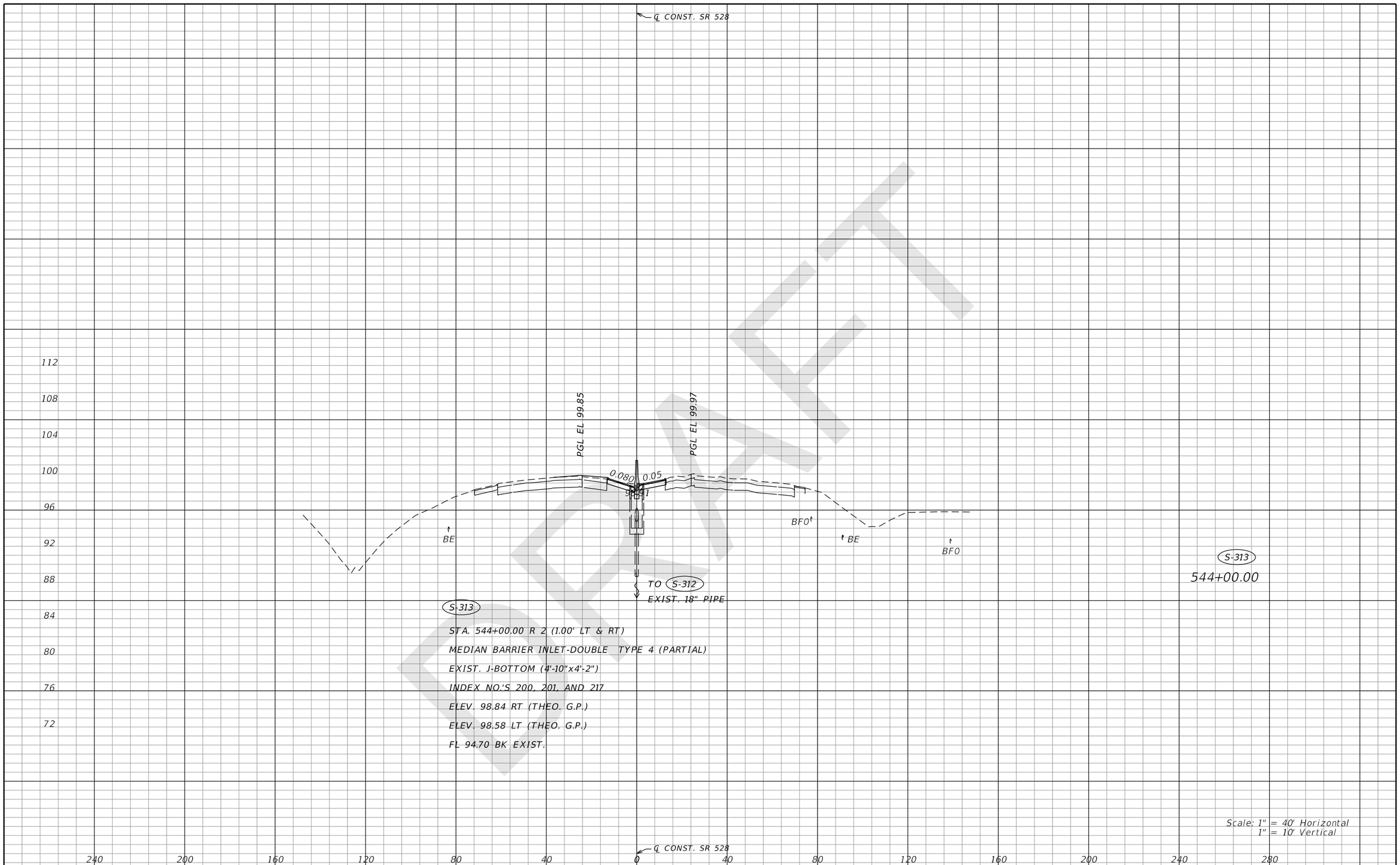

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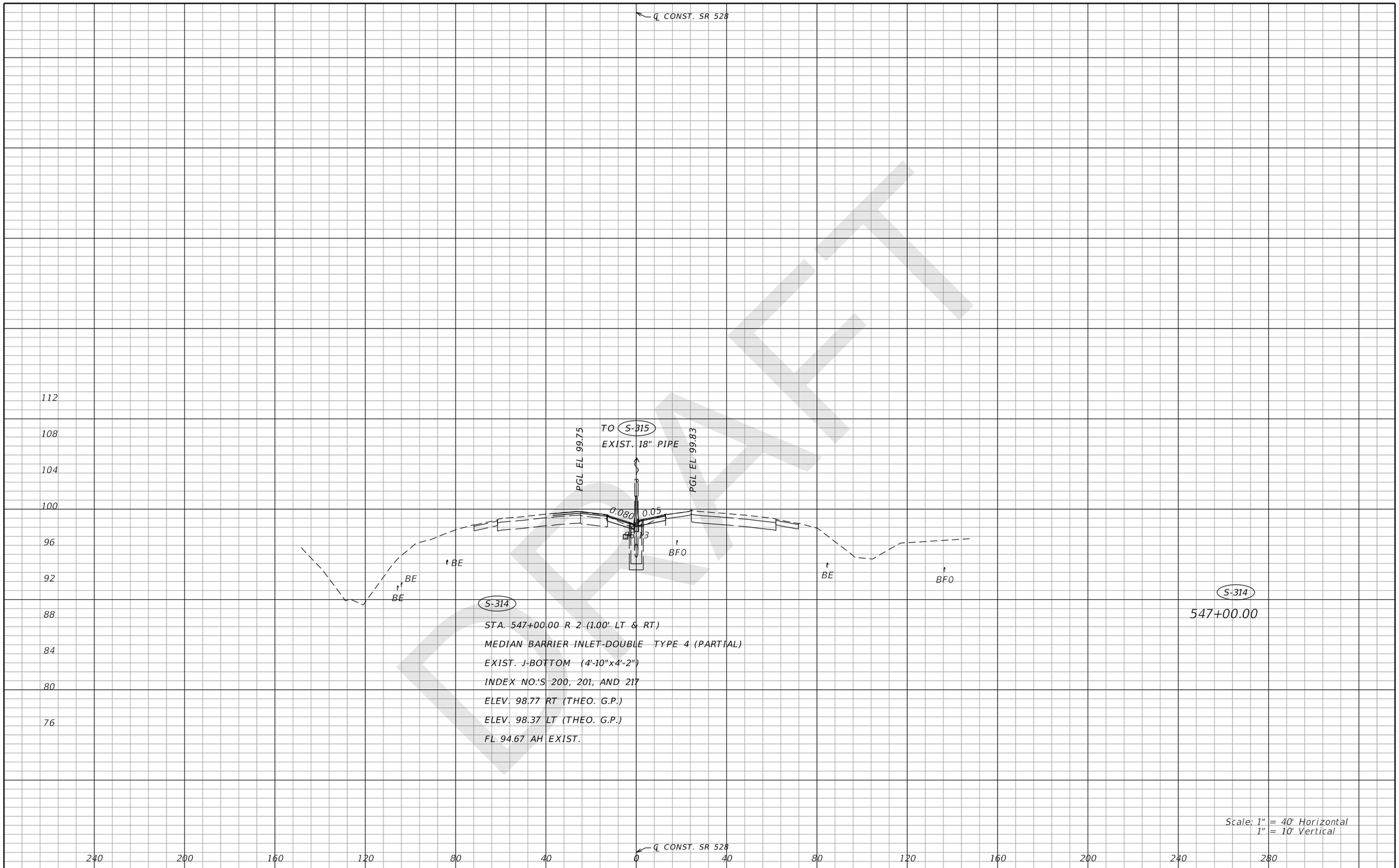

S-314

STA. 547+00.00 R 2 (1.00' LT & RT)

MEDIAN BARRIER INLET-DOUBLE TYPE 4 (PARTIAL)

EXIST. J-BOTTOM (4'-10"x4'-2")

INDEX NO.'S 200, 201, AND 217

ELEV. 98.77 RT (THEO. G.P.)

ELEV. 98.37 LT (THEO. G.P.)

FL 94.67 AH EXIST.

S-314

547+00.00

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DRAINAGE STRUCTURES
SR 528

SHEET NO. 170

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Appendix B-9

Typical Section Assumptions

Orlando South PD&E

Cross Slope	3.50%	3.50%
Longitudinal Slope	0.10%	0.10%
Pavement Type	OGFC	OGFC
Pavement Width	52	64

All travel lanes sloped to outside (2 Exp, 2 GP, 1 Aux)

(48' & 60' lanes, 4' separator)

Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

[1] *Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.*

[2] *High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.*

This worksheet is a simplified way to organize your hydroplaning analysis data.

The longitudinal slope, pavement type, cross slope and lane configuration is simply for the user to keep track of project information and where he/she is entering data. These numbers are not "live."

When the Design Speed is entered into cell B6 and the HP results are entered into their respective lanes, cells that appear in red are where the potential hydroplaning speed is equal to or less than the predicted driver's speed.

Any questions, call Catherine Earp 850 414-4171

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope	Cross Slope		0.03	0.035		0.03	0.035					Predicted
	Lanes		4 lanes	4 lanes	52'	5 lanes	5 lanes	64'				Drivers'
Rainfall Intensity (in/hr)												Speed
0.1	--		109.27	109.27		109.27	109.27					70
0.25	--		109.27	109.27		109.27	109.27					70
0.5	--		109.27	109.27		109.27	109.27					64
1	--		78.63	85.73		69.72	73.83					62
2	--		56.95	58.88		53.74	55.34					58
3	--		50.72	52.07		48.36	49.55					45
4	--		47.28	48.41		52.18	52.53					45

Typical Section Assumptions

Turnpike Spur WideningOrlando South PD&E

	Mainline	Bridges	
Cross Slope	2.00%	2.00%	All lanes sloped to outside (Shdr, 2 Exp, 2 GP, 1 Aux)
Longitudinal Slope	0.10%	0.10%	
Pavement Type	PCC	PCC	
Pavement Width	64	76	(12' shdr, 48' & 60' lanes, 4' separator)

Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

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Any questions, call Catherine Earp 850 414-4171

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope	Cross Slope			0.02		0.02			Predicted
	Lanes			4 lanes	64'	5 lanes	76'		Drivers'
Rainfall Intensity (in/hr)									Speed
0.1	--			109.27		109.27			70
0.25	--			109.27		109.27			70
0.5	--			103.35		84.09			64
1	--			61.94		58.48			62
2	--			50.08		48.18			58
3	--			52.27		51.73			45
4	--			51.31		50.81			45

Typical Section Assumptions

Orlando South PD&E Sites 1, 2, 3

	Site 1	Site 2	Site 3
Cross Slope	3.70%	3.70%	3.70%
Longitudinal Slope	0.242%	0.255%	0.244%
Pavement Type	OGFC	OGFC	OGFC
Pavement Width	78	78	78

Superelevation - All lanes sloped to outside (2 Exp, 3 GP, 1 Aux)
Turnpike Mainline

72' lanes, 4' separator)

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Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

[1] *Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.*

[2] *High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.*

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope / Rainfall Intensity (in/hr)												Predicted Drivers' Speed
					Cross Slope	0.037	0.037	0.037				
					Lanes	6 lanes	6 lanes	6 lanes				
					Scenario	Site 1	Site 2	Site 3				
					Station from	2284+94	2305+00	2322+00				
					Station to	2290+00	2314+00	2336+34.6				
0.1	--					109.27	109.27	109.27				70
0.25	--					109.27	109.27	109.27				70
0.5	--					109.27	109.27	109.27				64
1	--					68.05	68.05	68.05				62
2	--					53.03	53.03	53.03				58
3	--					47.82	47.82	47.82				45
4	--					52.02	52.02	52.02				45

Typical Section Assumptions

Orlando South PD&E Sites 4, 5

	Site 4	Site 5
Cross Slope	2.80%	2.80%
Longitudinal Slope	2.600%	0.190%
Pavement Type	OGFC	OGFC
Pavement Width	64	64

Superelevation - All lanes sloped to outside (2 Exp, 3 GP)
Turnpike Mainline

60' lanes, 4' separator)

Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

[1] *Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.*

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Any questions, call Catherine Earp 850 414-4171

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope / Rainfall Intensity (in/hr)												Predicted Drivers' Speed
					Cross Slope	0.028	0.028					
					Lanes	5 lanes	5 lanes					
					Scenario	Site 4	Site 5					
					Station from	2363+93.1	2282+00					
					Station to	2375+00	2392+50					
0.1	--					109.27	109.27					70
0.25	--					109.27	109.27					70
0.5	--					109.27	109.27					64
1	--					65.45	68.13					62
2	--					51.84	53.06					58
3	--					52.74	47.85					45
4	--					51.74	52.03					45

Typical Section Assumptions

Orlando South PD&E Site 6

	Site 6
Cross Slope	3.50%
Longitudinal Slope	0.430%
Pavement Type	OGFC
Pavement Width	64

GP & 1 Exp travel lanes sloped to outside (3 GP, 1 Exp, 1 Aux)
Turnpike Mainline

60' lanes, 4' separator)

This worksheet is a simplified way to organize your hydroplaning analysis data.

The longitudinal slope, pavement type, cross slope and lane configuration is simply for the user to keep track of project information and where he/she is entering data. These numbers are not "live."

When the Design Speed is entered into cell B6 and the HP results are entered into their respective lanes, cells that appear in red are where the potential hydroplaning speed is equal to or less than the predicted driver's speed.

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Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

[1] *Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.*

[2] *High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.*

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope / Rainfall Intensity (in/hr)												Predicted Drivers' Speed
				Cross Slope	0.035	0.03						
				Lanes	5 lanes	4 lanes						
				Scenario	Site 6	Site 6						
				Station from	2431+20	2431+20						
				Station to	2440+00	2440+00						
0.1	--				109.27	109.27						70
0.25	--				109.27	109.27						70
0.5	--				109.27	109.27						64
1	--				73.74	78.48						62
2	--				55.31	56.91						58
3	--				49.53	50.68						45
4	--				52.53	52.86						45

Typical Section Assumptions

Orlando South PD&E Sites 7, 8

	Site 7	Site 8
Cross Slope	3.90%	5.40%
Longitudinal Slope	0.300%	0.300%
Pavement Type	OGFC	OGFC
Pavement Width	64	64

Superelevation - All lanes sloped to outside (1 Exp, 3 GP, 1 Aux)
Beachline

60' lanes, 4' separator)

This worksheet is a simplified way to organize your hydroplaning analysis data.

The longitudinal slope, pavement type, cross slope and lane configuration is simply for the user to keep track of project information and where he/she is entering data. These numbers are not "live."

When the Design Speed is entered into cell B6 and the HP results are entered into their respective lanes, cells that appear in red are where the potential hydroplaning speed is equal to or less than the predicted driver's speed.

Any questions, call Catherine Earp 850 414-4171

Design Speed 70 mph

Intensity (in/hr)	Predicted Speed Reduction[1] (mph)	Predicted Driver Speed (mph)
0.1	0	70
0.25	0	70
0.5	6	64
1	8	62
2	12	58
3[2]	- -	45
4[2]	- -	45

[1] *Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.*

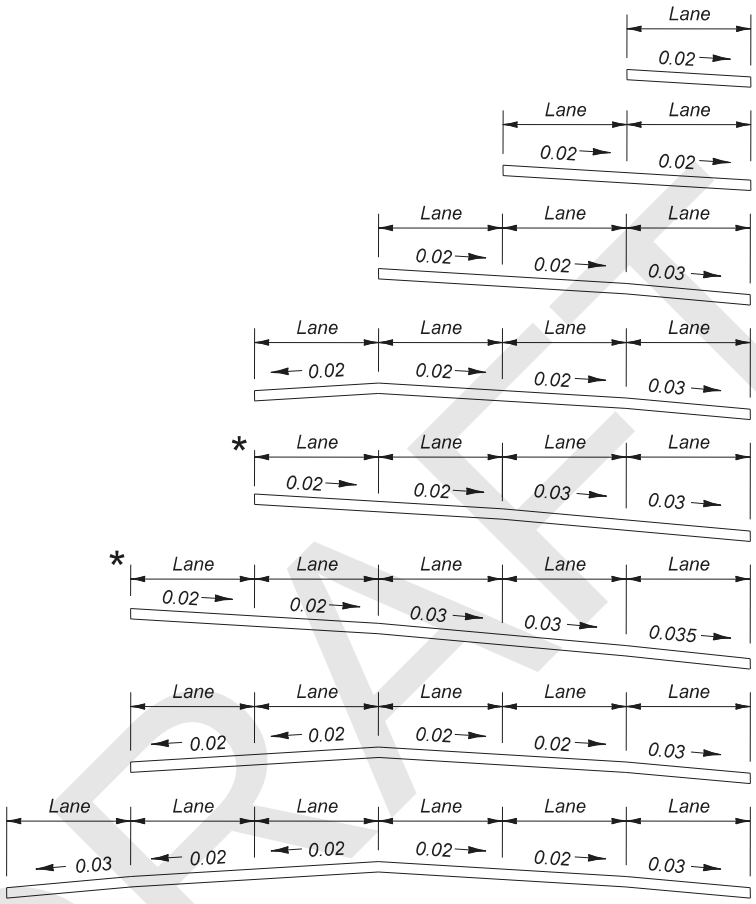
[2] *High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.*

Enter HP results into the table below.

Hydroplaning Speed Results

Cross slope / Rainfall Intensity (in/hr)												Predicted Drivers' Speed
					Cross Slope	0.039	0.054					
					Lanes	5 lanes	5 lanes					
					Scenario	Site 7	Site 8					
					Station from	378+00	3425+00					
					Station to	396+00	3428+90					
0.1	--					109.27	109.27					70
0.25	--					109.27	109.27					70
0.5	--					109.27	109.27					64
1	--					77.34	90.89					62
2	--					56.55	60.00					58
3	--					50.42	52.83					45
4	--					52.79	49.03					45

Figure 210.2.1 Standard Pavement Cross Slopes



All Travel Lanes One Direction

(1) These sections show only the standard slopes for adjoining travel lanes; they do not prescribe needed lanes, lane usage or typical section requirements other than lane slope. These slopes are not applicable to parabolic crowns.

(2) Maximum pavement cross slopes for tangent sections are:

(a) 0.04 for design speeds of 45 mph or less

(b) 0.03 for design speeds greater than 45 mph

(c) 0.035 may only be used for 5-lanes sloped in one direction as shown above.

(3) The maximum change in cross slope between adjacent through lanes is 0.04.

(4) Slopes on multi-purpose lanes may be 0.03 to 0.05. Portions of multi-purpose lanes that are reserved for parking and access isles for the physically disabled are to have cross slopes not exceeding 1:50 (0.02) in all directions.

(5) 4 or 5 lanes sloped in one direction (*) may be used with design speed 65 mph or less and longitudinal grades not exceeding 5%.

NOTE:
1. ALL BASINS SHOWN ARE WITHIN THE BOGGY CREEK BASIN

Appendix B-11

EXISTING POND FOR 7-ELEVEN SANDLAKE LLC SITE
POTENTIAL HAZMAT
7-ELEVEN SANDLAKE LLC SITE
WINEGARD ROUND SOUTH PD SITE
BASIN 17
GOLD H SCOTT SITE
PROPOSED POND 17
WINEGARD DEVELOPMENT
DRAINAGE DIVIDE
E SAND LAKE RD
SKY LAKE CANAL
EXISTING WINEGARD MALL POND
CBC Crossing
R/W
EXISTING FLORIDA MALL POND
EXISTING TERRACE MALL POND
PROPOSED POND 14
PROPOSED POND 15
EXISTING POND 12A
BASIN 14
CANAL B-5
PROPOSED 420 LF OF DOUBLE 8'X7' CBC
RUBBLE RIPRAP
BASIN 15
FLOODPLAIN COMPENSATION PONDS
EXISTING DOUBLE 7'X7' CBC TO BE REMOVED FROM SERVICE
BASIN BIP II (OFFSITE)
ORANGE BLOSSOM TRAIL
LA QUINTA DRIVE
LIBERTY PROPERTY SITE
EXISTING BIP II POND
GOODMAN RD
EXISTING POND 10B
EXISTING GILLS DRIVE POND
PROPOSED OFFSITE POND
770 GILLS DRIVE SITE
PROPOSED POND 16
SIGMA CORP SITE
EXISTING HA LLC EAST POND
PAPILA DESIGNS SITE
BASIN 16
GILLS DRIVE
WINGARD RD
TRUSSWAY BLVD
CANAL B-5
W LANDSTREET RD
B-5 CANAL

N
0 400 800
Feet

LEGEND

- RELOCATED CANAL
- FLORIDA-I BEAM BRIDGE (411 FT)
- EARTH PLUG MSE WALLS (111 FT)
- STEEL PLATE GIRDERS BRIDGE WITH STRADDLE PIER AT NORTH END (262 FT)
- STEEL PLATE GIRDERS BRIDGE (316 FT)
- IMPACTED POND

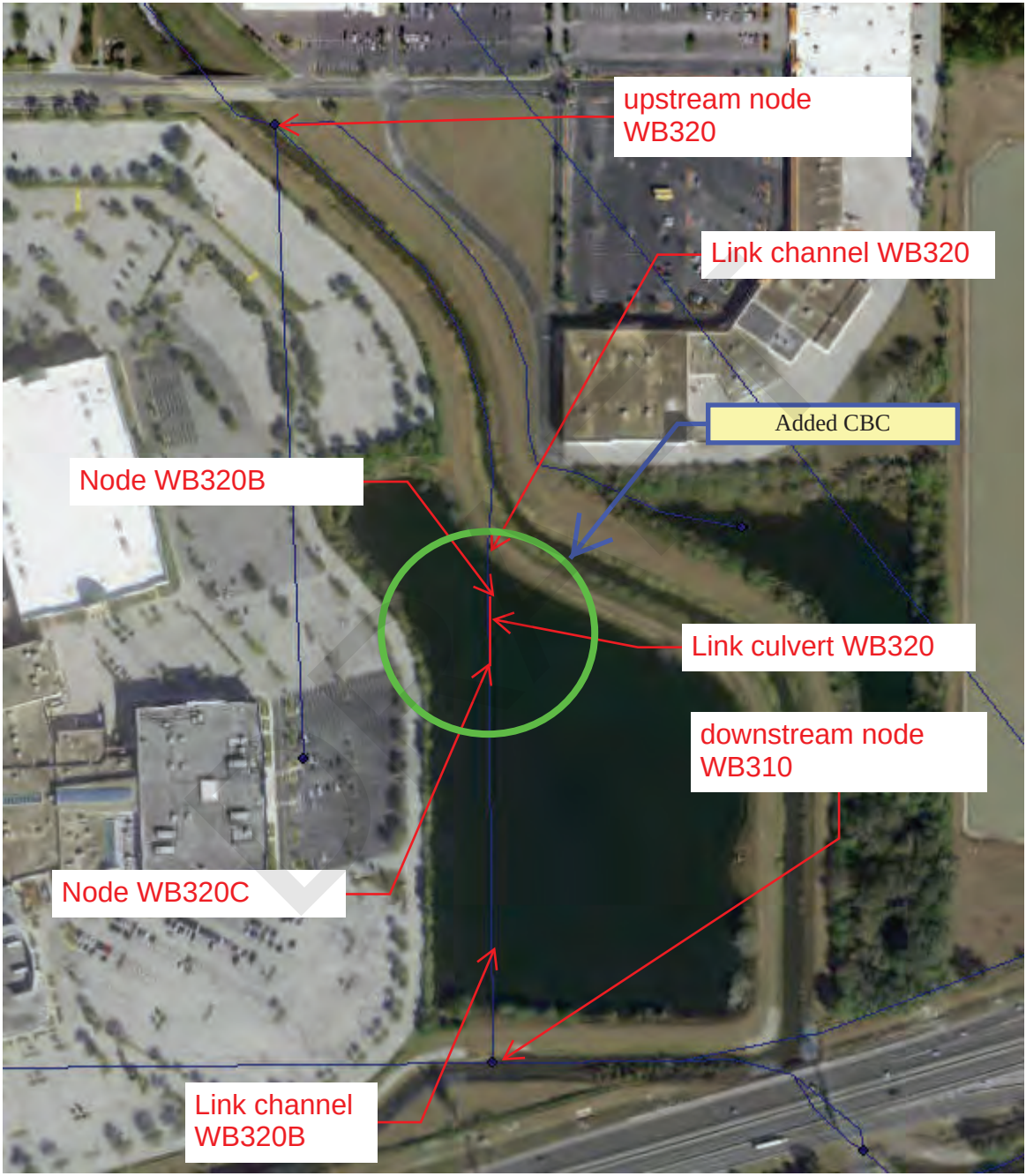
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	438547-2

POND ALTERNATIVE 3

EXHIBIT NO. 3-1

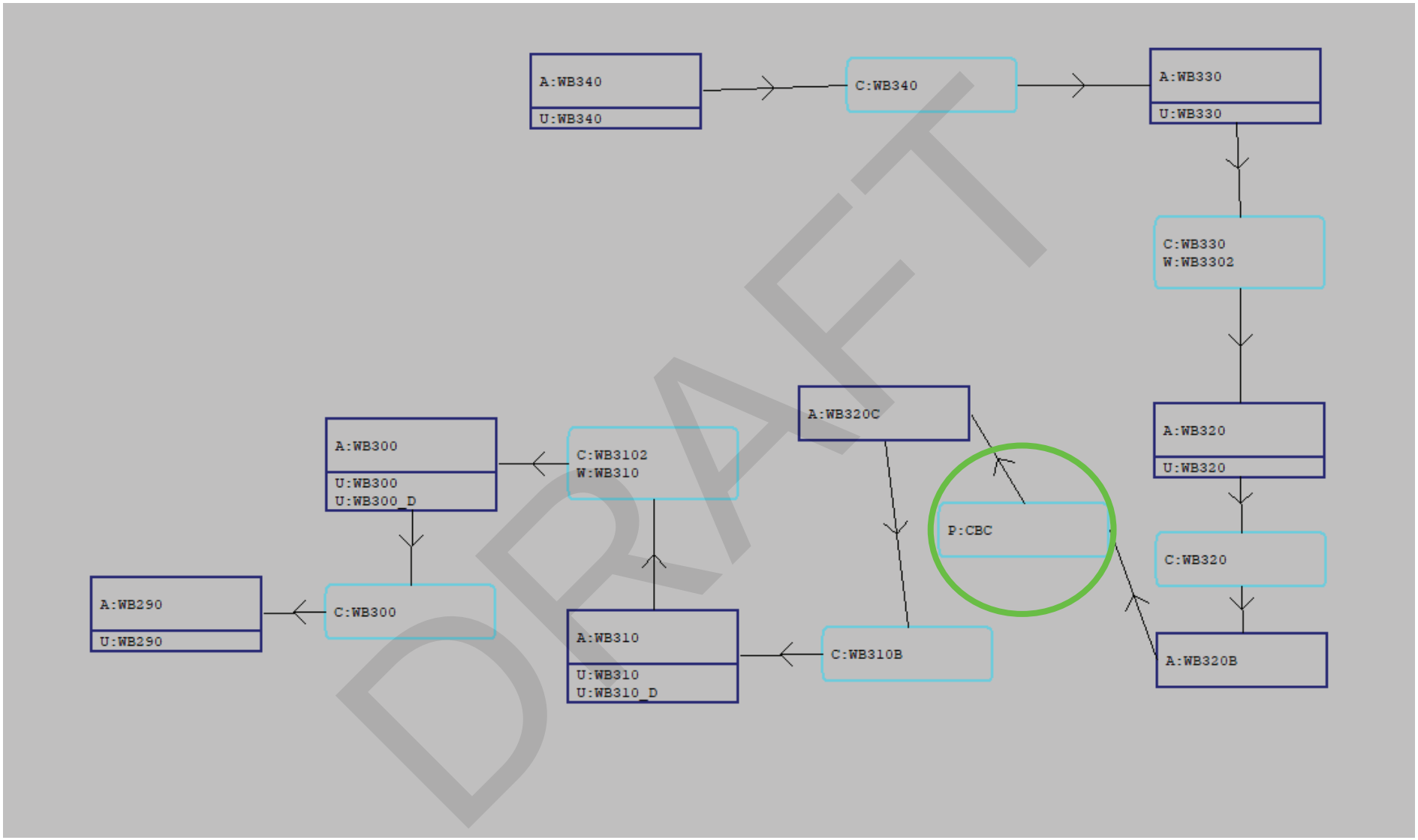
USER: Francina.Gil 6/7/2019 5:07:29 PM c:\pwworking\wgi\francina.gil\d0809439\DRMPRD15.dgn


upstream node WB320
Link channel WB320
Added CBC
Node WB320B
Link culvert WB320
downstream node WB310
Node WB320C
Link channel WB320B

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
WB300	BASE	100Y24H	12.59	97.432	97.000	-0.0012	537387	10.50	1160.624	10.81	1057.930
WB320	BASE	100Y24H	11.79	97.948	100.000	-0.0019	44813	10.92	648.398	10.95	643.935
WB320B	BASE	100Y24H	11.83	97.896	0.000	-85.7800	97513	10.95	643.935	11.07	635.058

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
WB300	BASE	100Y24H	12.60	97.427	97.000	-0.0012	536798	10.50	1158.323	10.83	1056.286
WB320	BASE	100Y24H	11.79	97.958	100.000	-0.0019	44843	10.94	645.585	10.97	641.229
WB320B	BASE	100Y24H	11.83	97.907	0.000	-80.0000	44484	10.97	641.229	11.02	637.055

Orlando South
ICPR Node Network



```
================================================================================
==== Basins ====================================================================
================================================================================

        Name: WB290                  Node: WB290                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 10.00
            Area(ac): 13.294                Time Shift(hrs): 0.00
        Curve Number: 83.86            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB30                   Node: WB30                  Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 95.23
            Area(ac): 38.151                Time Shift(hrs): 0.00
        Curve Number: 72.61            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB300                  Node: WB300                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 41.68
            Area(ac): 19.680                Time Shift(hrs): 0.00
        Curve Number: 68.34            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB300_D                Node: WB300                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 63.33
            Area(ac): 50.626                Time Shift(hrs): 0.00
        Curve Number: 80.02            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB310                  Node: WB310                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 120.35
            Area(ac): 110.205               Time Shift(hrs): 0.00
        Curve Number: 84.35            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB310_D                Node: WB310                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE           Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600              Time of Conc(min): 96.67
            Area(ac): 220.500               Time Shift(hrs): 0.00
        Curve Number: 92.33            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00
```

```
--------------------------------------------------------------------------------------------------
        Name: WB320                   Node: WB320                  Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 10.00
            Area(ac): 4.476                   Time Shift(hrs): 0.00
        Curve Number: 92.74               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB330                   Node: WB330                  Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 10.00
            Area(ac): 5.269                   Time Shift(hrs): 0.00
        Curve Number: 96.50               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: WB340                   Node: WB340                  Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: UH256                 Peaking Factor: 256.0
         Rainfall File: ORANGE             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 22.50
            Area(ac): 23.127                  Time Shift(hrs): 0.00
        Curve Number: 92.51               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


================================================================================================
==== Nodes =====================================================================================
================================================================================================

      Name: WB290              Base Flow(cfs): 0.000         Init Stage(ft): 87.550
     Group: BASE                                            Warn Stage(ft): 96.500
      Type: Stage/Area


     Stage(ft)       Area(ac)
-------------- --------------
        90.000          1.5700
        95.000          3.4000
        98.000          4.2300
       999.000          4.2300

------------------------------------------------------------------------------------------------
      Name: WB30               Base Flow(cfs): 0.000         Init Stage(ft): 69.890
     Group: BASE                                            Warn Stage(ft): 75.000
      Type: Stage/Area


     Stage(ft)       Area(ac)
-------------- --------------
         0.000          0.0100
       200.000          0.0100

------------------------------------------------------------------------------------------------
      Name: WB300              Base Flow(cfs): 0.000         Init Stage(ft): 87.590
     Group: BASE                                            Warn Stage(ft): 97.000
      Type: Stage/Area


     Stage(ft)       Area(ac)
-------------- --------------
        90.000          2.0100
```

```
         95.000          4.5200
        100.000         16.4600
        999.000         16.4600

------------------------------------------------------------------------------------------
      Name: WB310               Base Flow(cfs): 0.000          Init Stage(ft): 87.620
     Group: BASE                                              Warn Stage(ft): 100.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
          0.000          0.0100
        200.000          0.0100

------------------------------------------------------------------------------------------
      Name: WB320               Base Flow(cfs): 0.000          Init Stage(ft): 87.680
     Group: BASE                                              Warn Stage(ft): 100.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
          0.000          0.0100
        200.000          0.0100

------------------------------------------------------------------------------------------
      Name: WB320B              Base Flow(cfs): 0.000          Init Stage(ft): 0.000
     Group: BASE                                              Warn Stage(ft): 0.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

------------------------------------------------------------------------------------------
      Name: WB320C              Base Flow(cfs): 0.000          Init Stage(ft): 0.000
     Group: BASE                                              Warn Stage(ft): 0.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

------------------------------------------------------------------------------------------
      Name: WB330               Base Flow(cfs): 0.000          Init Stage(ft): 87.680
     Group: BASE                                              Warn Stage(ft): 100.400
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
          0.000          0.0100
        200.000          0.0100

------------------------------------------------------------------------------------------
      Name: WB340               Base Flow(cfs): 0.000          Init Stage(ft): 88.020
     Group: BASE                                              Warn Stage(ft): 100.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
          0.000          0.0100
        200.000          0.0100


==========================================================================================
==== Cross Sections ======================================================================
==========================================================================================

              Name: W-C14                       Group: BASE
      Encroachment: No
```

Station(ft)	Elevation(ft)	Manning's N
0.001	93.950	0.015000
0.010	86.950	0.015000
7.360	86.950	0.015000
7.370	93.950	0.015000
8.070	93.950	0.015000
8.080	86.950	0.015000
15.430	86.950	0.015000
15.440	93.950	0.015000

Name: W-X30 Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
-60.000	99.600	0.050000
-50.000	100.700	0.043000
-40.000	98.400	0.043000
-30.000	92.600	0.043000
-20.000	88.500	0.043000
-16.000	85.400	0.043000
-10.000	84.800	0.043000
0.000	84.200	0.043000
10.000	85.700	0.043000
20.000	90.000	0.043000
30.000	95.300	0.043000
40.000	101.100	0.050000
50.000	101.100	0.050000

Name: W-X32A Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
-60.000	100.500	0.050000
-50.000	99.800	0.050000
-46.000	99.300	0.050000
-40.000	97.900	0.035000
-30.000	94.000	0.035000
-18.000	87.100	0.035000
-10.000	85.200	0.035000
0.000	84.800	0.035000
10.000	84.400	0.035000
20.000	87.200	0.035000
30.000	92.900	0.035000
40.000	97.400	0.050000
46.000	98.800	0.050000
50.000	99.000	0.045000

Name: W-X35 Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
-75.000	99.900	0.050000
-60.000	99.900	0.050000
-50.000	100.000	0.040000
-40.000	97.100	0.040000
-30.000	92.800	0.040000
-20.000	87.700	0.040000
-10.000	86.700	0.040000
0.000	87.500	0.040000
10.000	87.200	0.040000
20.000	87.600	0.040000
30.000	93.300	0.040000
40.000	98.600	0.050000
50.000	101.300	0.050000

```
         60.000         101.100        0.050000
         75.000         101.400        0.050000


-------------------------------------------------------------------
              Name: WB330BR                     Group: BASE
      Encroachment: No


    Station(ft)   Elevation(ft)     Manning's N
-------------- -------------- ---------------
          0.001         100.400        0.015000
         17.065          91.868        0.015000
         17.066         100.400        0.015000
         18.235         100.400        0.015000
         18.236          91.282        0.015000
         26.400          87.200        0.030000
         39.985          87.200        0.015000
         39.986         100.400        0.015000
         41.155         100.400        0.015000
         41.156          87.200        0.030000
         62.905          87.200        0.015000
         62.906         100.400        0.015000
         64.075         100.400        0.015000
         64.076          87.200        0.030000
         76.900          87.200        0.015000
         85.825          91.662        0.015000
         85.826         100.400        0.015000
         86.995         100.400        0.015000
         86.996          92.248        0.015000
        103.300         100.400        0.015000
        103.301         100.400        0.015000

================================================================================
==== Pipes =====================================================================
================================================================================
         Name: CBC                 From Node: WB320B          Length(ft): 150.00
        Group: BASE                  To Node: WB320C               Count: 4
                                                      Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM              Solution Algorithm: Most Restrictive
     Geometry: Rectangular    Rectangular                       Flow: Both
     Span(in): 240.00         240.00                 Entrance Loss Coef: 0.50
     Rise(in): 120.00         120.00                    Exit Loss Coef: 1.00
   Invert(ft): 80.000         80.000                    Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000               Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                   Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                  Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

================================================================================
==== Channels ==================================================================
================================================================================

         Name: WB300               From Node: WB300           Length(ft): 2520.00
        Group: BASE                  To Node: WB290                Count: 1

               UPSTREAM       DOWNSTREAM              Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular               Solution Algorithm: Automatic
    Invert(ft): 85.510        84.000                            Flow: Both
 TClpInitZ(ft): 200.000       200.000                 Contraction Coef: 0.000
   Manning's N:                                         Expansion Coef: 0.000
  Top Clip(ft):                                     Entrance Loss Coef: 0.000
  Bot Clip(ft):                                        Exit Loss Coef: 0.000
     Main XSec: W-X30          W-X30                  Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                   Inlet Ctrl Spec: Use dn
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
```

```
  RtSdSlp(h/v):

Channel-Irregular-

-------------------------------------------------------------------------------------------------------
         Name: WB3102              From Node: WB310             Length(ft): 160.00
        Group: BASE                  To Node: WB300                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular                 Solution Algorithm: Automatic
    Invert(ft): 86.950        86.950                                 Flow: Both
 TClpInitZ(ft): 200.000       200.000                     Contraction Coef: 0.000
   Manning's N:                                            Expansion Coef: 0.000
  Top Clip(ft):                                         Entrance Loss Coef: 0.500
  Bot Clip(ft):                                             Exit Loss Coef: 0.000
     Main XSec: W-C14          W-C14                     Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                      Inlet Ctrl Spec: Use dn
     Aux XSec1:                                          Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
  RtSdSlp(h/v):

Bridge--Bridge Section W-C14

-------------------------------------------------------------------------------------------------------
         Name: WB310B              From Node: WB320C            Length(ft): 1500.00
        Group: BASE                  To Node: WB310                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular                 Solution Algorithm: Automatic
    Invert(ft): 86.700        85.780                                 Flow: Both
 TClpInitZ(ft): 200.000       200.000                     Contraction Coef: 0.000
   Manning's N:                                            Expansion Coef: 0.000
  Top Clip(ft):                                         Entrance Loss Coef: 0.000
  Bot Clip(ft):                                             Exit Loss Coef: 0.000
     Main XSec: W-X32A         W-X32A                    Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                      Inlet Ctrl Spec: Use dn
     Aux XSec1:                                          Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
  RtSdSlp(h/v):

Channel-Irregular-

-------------------------------------------------------------------------------------------------------
         Name: WB320               From Node: WB320             Length(ft): 1200.00
        Group: BASE                  To Node: WB320B                 Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular                 Solution Algorithm: Automatic
    Invert(ft): 86.700        85.780                                 Flow: Both
 TClpInitZ(ft): 200.000       200.000                     Contraction Coef: 0.000
   Manning's N:                                            Expansion Coef: 0.000
  Top Clip(ft):                                         Entrance Loss Coef: 0.000
  Bot Clip(ft):                                             Exit Loss Coef: 0.000
     Main XSec: W-X32A         W-X32A                    Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                      Inlet Ctrl Spec: Use dn
     Aux XSec1:                                          Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
  RtSdSlp(h/v):

Channel-Irregular-

-------------------------------------------------------------------------------------------------------
         Name: WB330               From Node: WB330             Length(ft): 35.00
        Group: BASE                  To Node: WB320                  Count: 1
```

```
               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular                 Solution Algorithm: Automatic
    Invert(ft): 87.200        87.200                                Flow: Both
 TClpInitZ(ft): 200.000       200.000                    Contraction Coef: 0.000
   Manning's N:                                           Expansion Coef: 0.000
  Top Clip(ft):                                        Entrance Loss Coef: 0.500
  Bot Clip(ft):                                            Exit Loss Coef: 0.000
     Main XSec: WB330BR        WB330BR                   Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                      Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
  RtSdSlp(h/v):

Bridge-Irregular-

-------------------------------------------------------------------------------------------------------
          Name: WB340               From Node: WB340              Length(ft): 700.00
         Group: BASE                  To Node: WB330                   Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Irregular      Irregular                 Solution Algorithm: Automatic
    Invert(ft): 87.080        87.200                                Flow: Both
 TClpInitZ(ft): 200.000       200.000                    Contraction Coef: 0.000
   Manning's N:                                           Expansion Coef: 0.000
  Top Clip(ft):                                        Entrance Loss Coef: 0.000
  Bot Clip(ft):                                            Exit Loss Coef: 0.000
     Main XSec: W-X35          W-X35                     Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft): 0.000          0.000                      Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft): 0.000          0.000
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft):
  LtSdSlp(h/v):
  RtSdSlp(h/v):

Channel-Irregular-


=========================================================================================
==== Weirs ==============================================================================
=========================================================================================

         Name: WB310               From Node: WB310
        Group: BASE                  To Node: WB300
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 200.00
       Left Side Slope(h/v): 1.00
      Right Side Slope(h/v): 1.00
                Invert(ft): 100.460
      Control Elevation(ft): 100.460
     Struct Opening Dim(ft): 999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600

Weir Broad Crested Rect.--

-------------------------------------------------------------------------------------------------------
         Name: WB3302              From Node: WB330
        Group: BASE                  To Node: WB320
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 103.30
       Left Side Slope(h/v): 1.00
      Right Side Slope(h/v): 1.00
                Invert(ft): 100.900
      Control Elevation(ft): 100.900
     Struct Opening Dim(ft): 999.00
```

TABLE
Bottom Clip(ft): 0.000
Top Clip(ft): 0.000
Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600

Weir Broad Crested Rect.--Rectangular Broad Creste

==========
==== Hydrology Simulations ==========
==========

Name: 100Y24H Hydrology Sim: 100Y24H
Filename: C:\Users\Zachary.Keller\Documents\Streamline Technologies\Orlando South\100Y24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.05000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 72.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

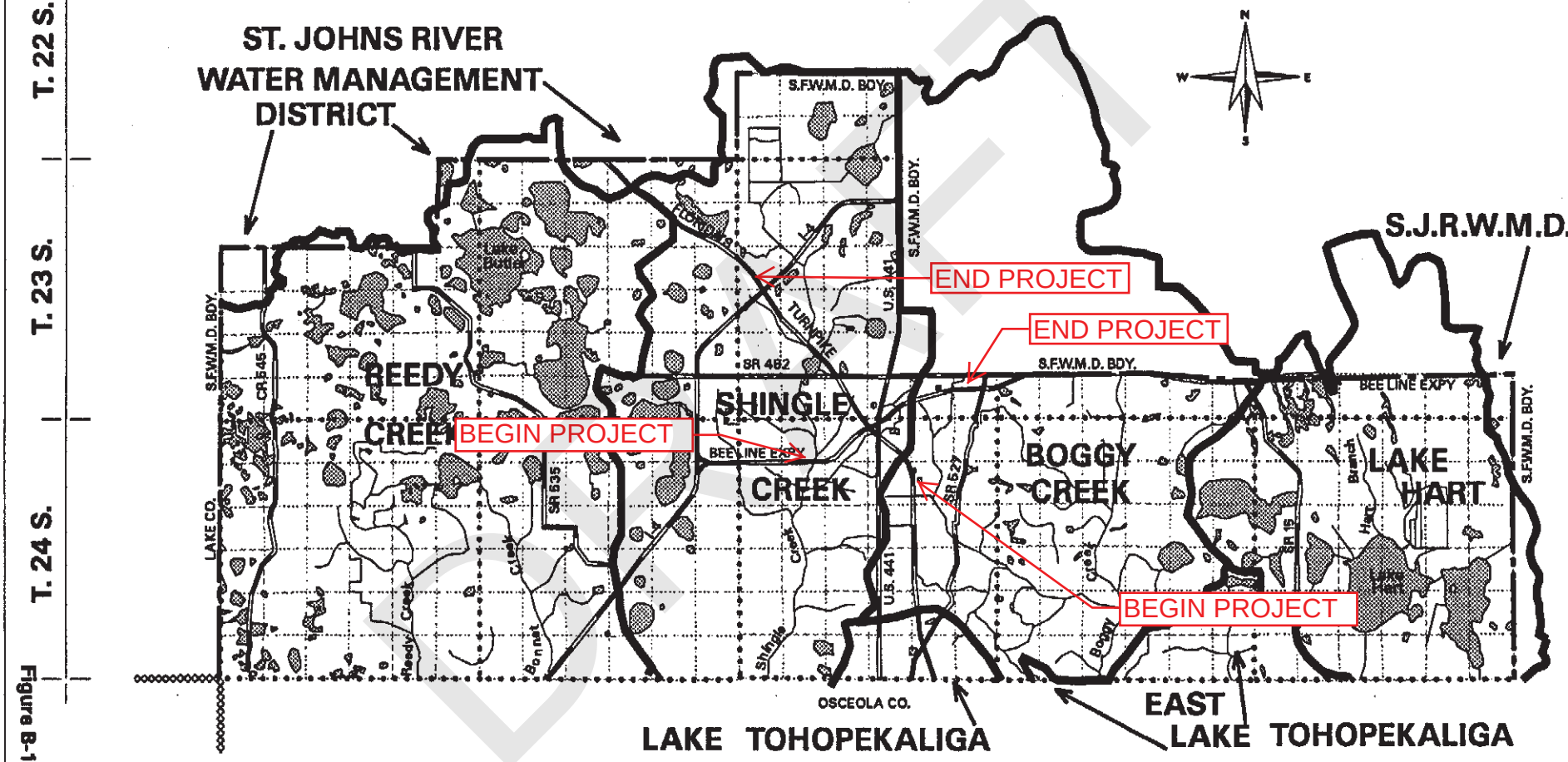
Boggy Creek Watershed Model Conversion
Existing Conditions 100-yr 24-hr Event

Time(hrs)	Print Inc(min)
6.000	60.000
24.000	15.000
72.000	60.000

Group	Run
	Yes
10	Yes
100	Yes
25	Yes
5	Yes
BASE	Yes
BC-10	Yes
BC-100	Yes
BC-25	Yes
BC-5	Yes
BC-MA	Yes
OP_TABLES	Yes
POOL	Yes
TEST	Yes

APPENDIX C
Maps

APPENDIX C-1



DRAINAGE BASINS for areas of
ORANGE COUNTY, FL.
within the S.F.W.M.D.

Figure B-15

Appendix C-2

United States Department of Agriculture

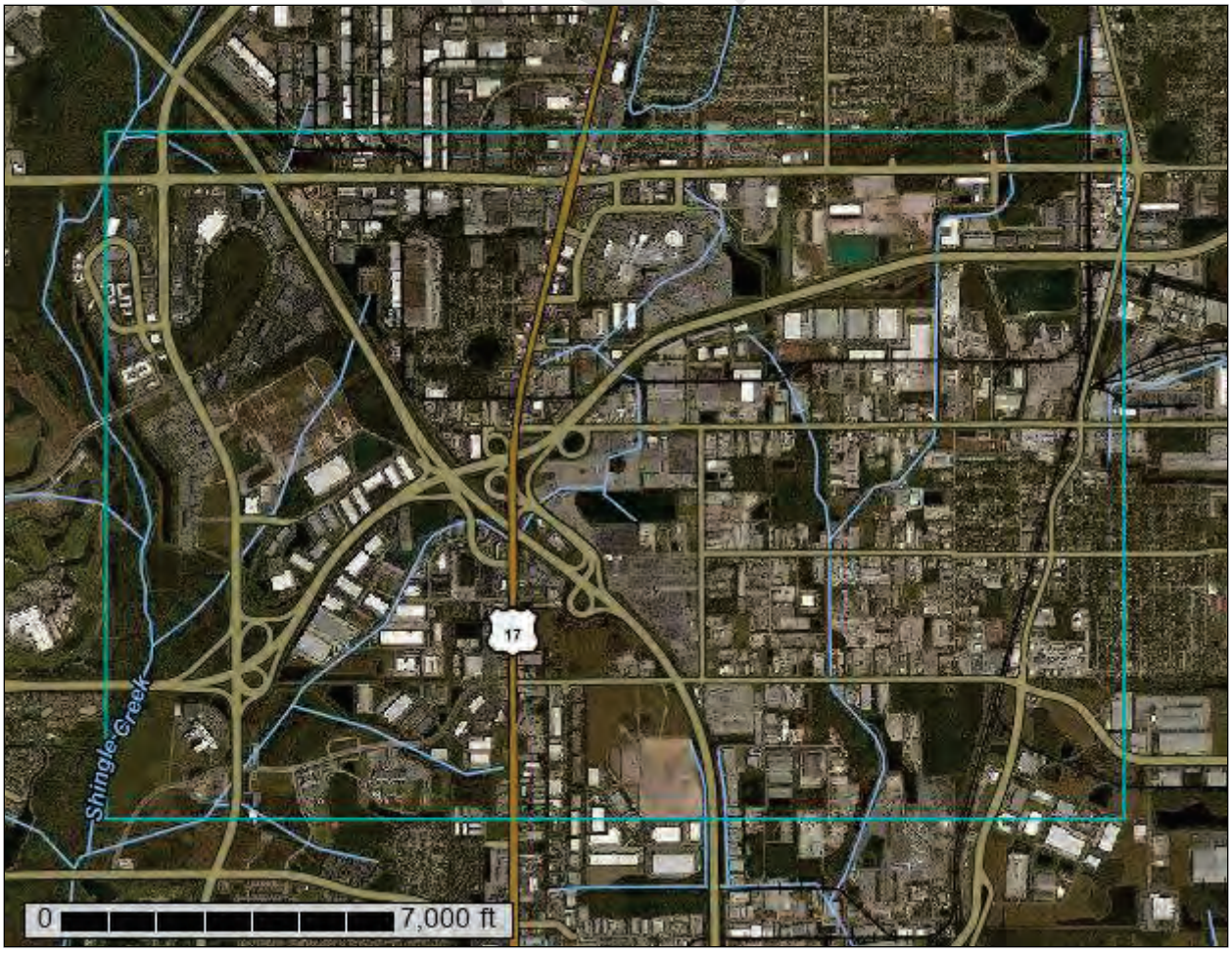
NRCS

Natural Resources Conservation Service

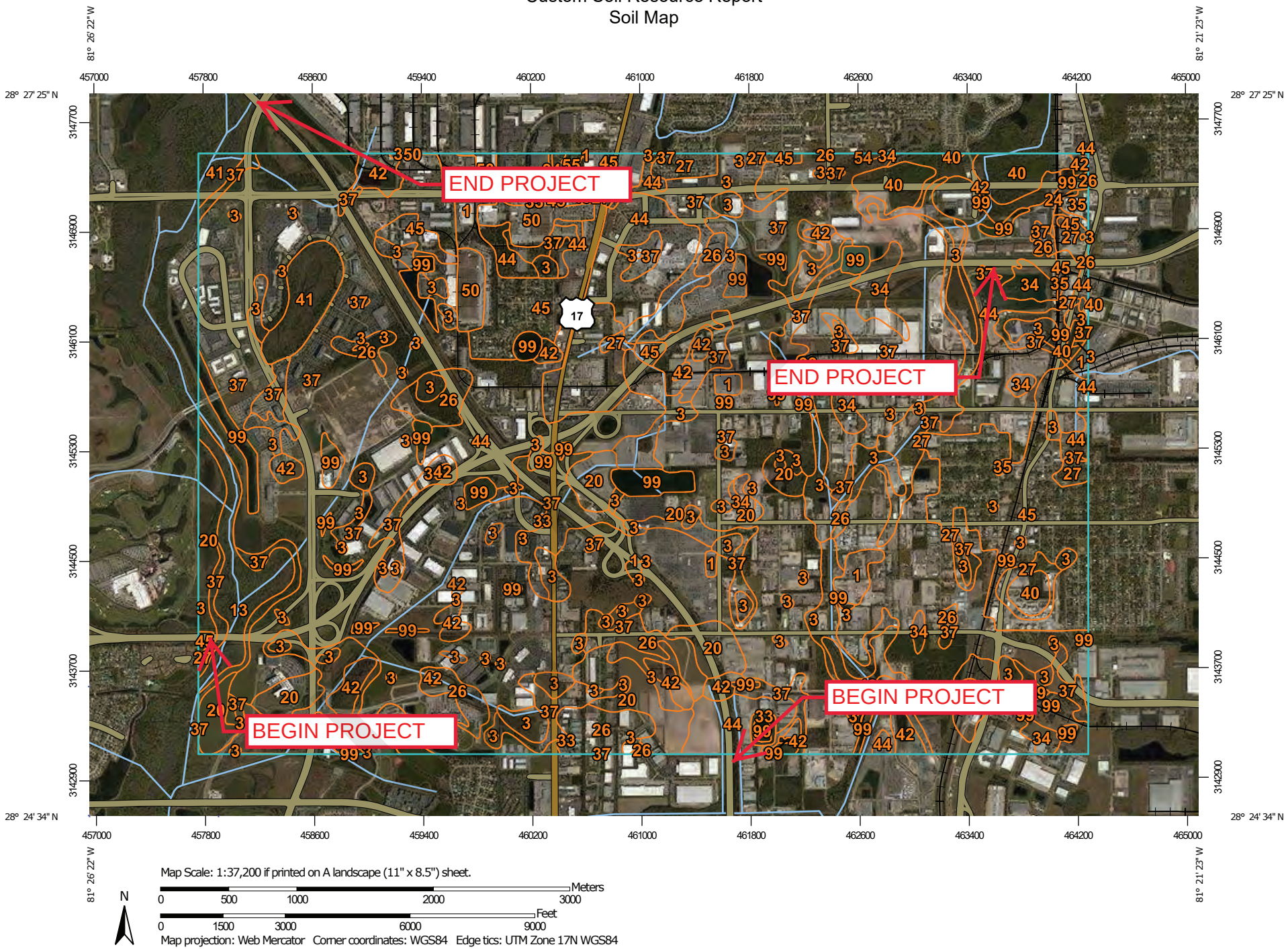
A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Orange County, Florida

Orlando South



June 18, 2019


END PROJECT
END PROJECT
BEGIN PROJECT
BEGIN PROJECT
17
81° 26' 22" W
81° 21' 23" W
28° 27' 25" N
28° 24' 34" N
457000
457800
458600
459400
460200
461000
461800
462600
463400
464200
465000
3147700
3146900
3146100
3145300
3144500
3143700
3142900
N
Map Scale: 1:37,200 if printed on A landscape (11" x 8.5") sheet.
Meters
0
500
1000
2000
3000
Feet
0
1500
3000
6000
9000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, Florida
Survey Area Data: Version 15, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 28, 2014—Mar 26, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Arents, nearly level	41.8	0.6%
3	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	456.5	6.4%
13	Felda fine sand, 0 to 2 percent slopes	95.0	1.3%
20	Immokalee fine sand	280.4	4.0%
24	Millhopper-Urban land complex, 0 to 5 percent slopes	0.7	0.0%
26	Ona fine sand, 0 to 2 percent slopes	194.3	2.7%
27	Ona-Urban land complex	80.6	1.1%
33	Pits	7.7	0.1%
34	Pomello fine sand, 0 to 5 percent slopes	100.0	1.4%
35	Pomello-Urban land complex, 0 to 5 percent slopes	19.7	0.3%
37	St. Johns fine sand	834.4	11.8%
40	Samsula muck, frequently ponded, 0 to 1 percent slopes	102.2	1.4%
41	Samsula-Hontoon-Basinger association, depressional	87.0	1.2%
42	Sanibel muck	202.0	2.8%
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	3,700.8	52.2%
45	Smyrna fine sand-Urban land complex, 0 to 2 percent slopes	591.2	8.3%
50	Urban land, 0 to 2 percent slopes	101.2	1.4%
54	Zolfo fine sand, 0 to 2 percent slopes	1.2	0.0%
55	Zolfo-Urban land complex	7.8	0.1%
99	Water	186.6	2.6%
Totals for Area of Interest		**7,091.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

Orange County, Florida

1—Arents, nearly level

Map Unit Setting

National map unit symbol: bv78
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

AC - 0 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

3—Basinger fine sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2v16v
Elevation: 0 to 70 feet
Mean annual precipitation: 43 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Basinger and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 14 inches: fine sand
Bh/E - 14 to 36 inches: fine sand
Cg - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Smyrna
Percent of map unit: 5 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Samsula
Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Floridana
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

13—Felda fine sand, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2tzvy
Elevation: 0 to 180 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Felda and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Felda

Setting

Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
Eg - 4 to 35 inches: fine sand
Btg - 35 to 43 inches: fine sandy loam
Cg - 43 to 80 inches: extremely paragravelly fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 4 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: Slough (R155XY011FL)
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Oldsmar

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Valkaria

Percent of map unit: 4 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

20—Immokalee fine sand

Map Unit Setting

National map unit symbol: bv7n
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Immokalee, non-hydric, and similar soils: 82 percent
Immokalee, hydric, and similar soils: 10 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 35 inches: fine sand
Bh - 35 to 67 inches: fine sand
C - 67 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of Immokalee, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 35 inches: fine sand
Bh - 35 to 67 inches: fine sand
C - 67 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pineda

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

24—Millhopper-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: bv7s
Elevation: 20 to 120 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Millhopper and similar soils: 53 percent
Urban land: 40 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millhopper

Setting

Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 65 inches: fine sand
B - 65 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Seffner

Percent of map unit: 4 percent
Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve, rise, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

26—Ona fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w4gy
Elevation: 10 to 130 feet
Mean annual precipitation: 44 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ona

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
Bh - 4 to 22 inches: fine sand
C - 22 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Basinger
Percent of map unit: 5 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Myakka
Percent of map unit: 3 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Immokalee
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pomello
Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: Sand Pine Scrub (R155XY001FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Eaugallie
Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R155XY003FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

27—Ona-Urban land complex

Map Unit Setting

National map unit symbol: bv7w
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ona and similar soils: 53 percent
Urban land: 40 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ona

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
B - 3 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Immokalee, hydric

Percent of map unit: 7 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

33—Pits

Map Unit Setting

National map unit symbol: bv83
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, dip
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Aquents

Percent of map unit: 30 percent
Landform: Depressions
Hydric soil rating: Yes

34—Pomello fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2v16y
Elevation: 0 to 180 feet
Mean annual precipitation: 44 to 52 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 342 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 47 inches: fine sand
Bh - 47 to 58 inches: fine sand
Bw - 58 to 65 inches: fine sand
C - 65 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Smyrna

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Bulow

Percent of map unit: 1 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

35—Pomello-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: bv85
Elevation: 10 to 100 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 53 percent
Urban land: 40 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 42 inches: fine sand
Bh - 42 to 54 inches: fine sand
C - 54 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Archbold

Percent of map unit: 3 percent

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Smyrna, non-hydric

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pompano

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

37—St. Johns fine sand

Map Unit Setting

National map unit symbol: bv87
Elevation: 30 to 150 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. johns, non-hydric, and similar soils: 60 percent
St. johns, hydric, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Johns, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
E - 12 to 24 inches: fine sand

Bh - 24 to 44 inches: fine sand
C - 44 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of St. Johns, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
E - 12 to 24 inches: fine sand
Bh - 24 to 44 inches: fine sand
C - 44 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Immokalee, non-hydric

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wabasso

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

40—Samsula muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzw9
Elevation: 0 to 250 feet
Mean annual precipitation: 44 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Samsula and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Samsula

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa1 - 0 to 24 inches: muck
Oa2 - 24 to 32 inches: muck
Cg1 - 32 to 35 inches: sand
Cg2 - 35 to 44 inches: sand
Cg3 - 44 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 13.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Kaliga

Percent of map unit: 3 percent
Landform: Depressions on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Myakka

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Sanibel

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Anclote

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Floridana

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

41—Samsula-Hontoon-Basinger association, depressional

Map Unit Setting

National map unit symbol: bv8d
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Samsula and similar soils: 47 percent
Hontoon and similar soils: 31 percent
Basinger and similar soils: 14 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Samsula

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 34 inches: muck
C - 34 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Hontoon

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oa - 0 to 80 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Basinger

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 25 inches: fine sand
B/E - 25 to 35 inches: fine sand
C - 35 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 4 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Ona

Percent of map unit: 4 percent
Landform: Flats on marine terraces

Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

42—Sanibel muck

Map Unit Setting

National map unit symbol: bv8f
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Sanibel, undrained, and similar soils: 65 percent
Sanibel, drained, and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sanibel, Undrained

Setting

Landform: Marshes on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Thin organic material over sandy marine deposits

Typical profile

Oa - 0 to 11 inches: muck
A - 11 to 15 inches: fine sand
C - 15 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Sanibel, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Thin organic material over sandy marine deposits

Typical profile

Oa - 0 to 11 inches: muck
A - 11 to 15 inches: fine sand
C - 15 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Minor Components

Hontoon, undrained

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Samsula

Percent of map unit: 5 percent

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

44—Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v171
Elevation: 0 to 150 feet
Mean annual precipitation: 38 to 62 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Smyrna, non-hydric, and similar soils: 76 percent
Smyrna, hydric, and similar soils: 20 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smyrna, Non-hydric

Setting

Landform: Flats on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 17 inches: fine sand
Bh - 17 to 27 inches: loamy fine sand
C - 27 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Description of Smyrna, Hydric

Setting

Landform: Flats on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 17 inches: fine sand
Bh - 17 to 27 inches: loamy fine sand
C - 27 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Basinger, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pomona, non-hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Eaugallie, hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces, flats on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

45—Smyrna fine sand-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9cm
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 63 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Smyrna and similar soils: 45 percent
Urban land: 38 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smyrna

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 13 inches: fine sand
Bh - 13 to 18 inches: fine sand
C/Bw - 18 to 49 inches: fine sand
C - 49 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Typical profile

M - 0 to 6 inches: cemented material
A - 6 to 10 inches: fine sand
E - 10 to 19 inches: fine sand
Bh - 19 to 24 inches: fine sand
C/Bw - 24 to 55 inches: fine sand
C - 55 to 80 inches: fine sand

Minor Components

Eaugallie

Percent of map unit: 5 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R155XY003FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Placid

Percent of map unit: 2 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Smyrna

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

50—Urban land, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9fc
Elevation: 0 to 200 feet
Mean annual precipitation: 40 to 68 inches
Mean annual air temperature: 68 to 79 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Knolls on marine terraces, ridges on marine terraces, hills on marine terraces, flatwoods on marine terraces, rises on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: No parent material

Typical profile

M - 0 to 6 inches: cemented material
^C - 6 to 36 inches: paragravelly sand
2Ab - 36 to 46 inches: paragravelly fine sand
2Cb - 46 to 80 inches: paragravelly fine sand

Minor Components

Matlacha

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

St. augustine

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Boca

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Myakka

Percent of map unit: 1 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Paola

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Pomello

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Hallandale

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Eaugallie

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Apopka

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

54—Zolfo fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w0q1
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Zolfo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zolfo

Setting

Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex, linear

Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 59 inches: fine sand
Bh - 59 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Myakka

Percent of map unit: 5 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces, rises on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces, knolls on marine terraces, rises on marine terraces
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Malabar

Percent of map unit: 2 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

55—Zolfo-Urban land complex

Map Unit Setting

National map unit symbol: bv8w
Elevation: 40 to 160 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Zolfo and similar soils: 50 percent
Urban land: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zolfo

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 64 inches: fine sand
Bh - 64 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained

Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Lochloosa

Percent of map unit: 3 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Millhopper

Percent of map unit: 3 percent
Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pomello

Percent of map unit: 2 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Smyrna, non-hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

99—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix C-3

2010 - 2030
Comprehensive Plan
Future Land Use Map

Rural *
Rural 1/1
Rural 1/2
Rural 1/5
Low Density Residential
Low-Medium Density
Medium Density Residential
High Density Residential
Traditional Neighborhood
Neighborhood Activity Corridor
Neighborhood Center
Neighborhood Residential
Activity Center Residential
Activity Center Mixed Use
Community Village Center
Village
Office
Commercial
Industrial
Institutional
Education
Parks/Recreation
Preservation
Planned Development **
Water Body
Municipalities/Jurisdictions ****
Innovation Way MMTD *****
Conservation
Rural Settlement
Urban Service Area
Growth Center
Innovation Way Overlay
Wekiva Protection Area
Wekiva Study Area
Tosohatchee State Park
Econ Protection Area
Horizon West ***
Town Center ***
Village I ***
Village F ***
Village H ***
Bridgewater Village ***
Lakeside Village ***

*The Rural land use designation denoted as R on the Future Land Use Map is synonymous with the Rural Agricultural designation referenced in the Future Land Use Element - Policy I.1.1.1.

**For properties designated Planned Development (PD), specific land uses, densities, and intensities allowed can be determined by contacting the Planning Division. The associated staff report and Geographic Information Systems label field lists the allowable land uses approved by the Board of County Commissioners. All property designated PD on this map is required to be zoned PD prior to development or redevelopment. The Zoning Division should be consulted to determine actual densities of approval through the PD zoning district and Land Use Plan.

***For properties located in an approved Horizon West Specific Area Plan the adopted SAP should be consulted to determine the specific land uses, densities, and intensities allowed.

****City boundaries are subject to change and do not necessarily reflect annexations which have occurred.

*****MMTD stands for Multi Modal Transportation District

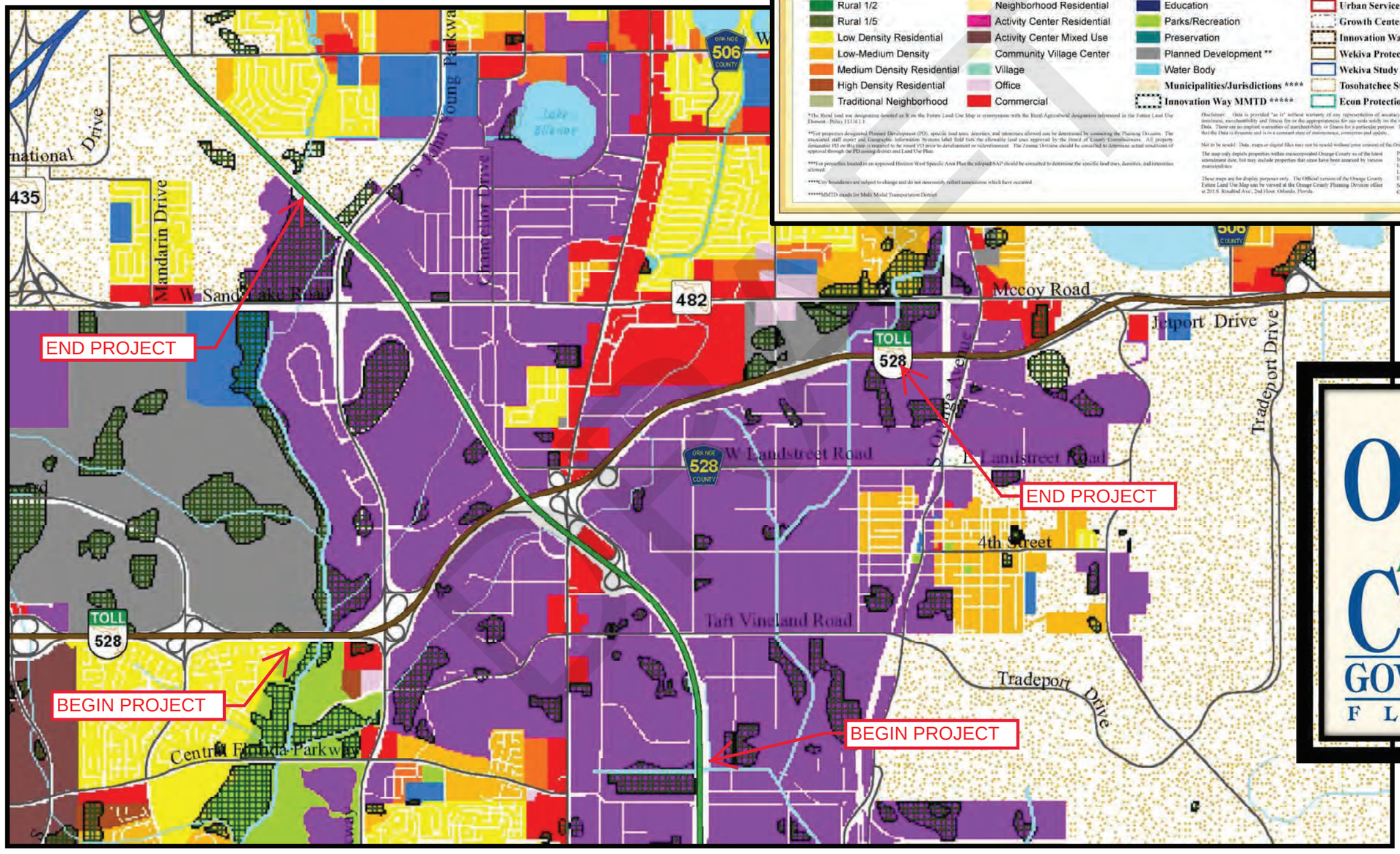
Disclaimer: Data is provided "as is" without warranty of any representation of accuracy, timeliness or completeness. The burden of determining accuracy, completeness, timeliness, merchantability and fitness for or the appropriateness for use rests solely on the requestor. The County makes no warranties, express or implied, as to the use of the Data. There are no implied warranties of merchantibility or fitness for a particular purpose. The requestor acknowledges and accepts the limitations of the Data, including the fact that the Data is dynamic and is in a constant state of maintenance, correction and update.

Not to be resold. Data, maps or digital files may not be resold without prior consent of the Orange County Board of County Commissioners.

The map only depicts properties within unincorporated Orange County as of the latest annexation date, but may include properties that since have been annexed by various municipalities.

These maps are for display purposes only. The Official versions of the Orange County Future Land Use Map can be viewed at the Orange County Planning Division office at 201 S. Rosalind Ave., 2nd Floor, Orlando, Florida.

Prepared By: Orange County Growth Management Department, GIS Section
Initially Adopted: May 19, 2009, Found Effective by the Department of Economic Opportunity: August 31, 2009
Last Amended: December 6, 2011
Effective: January 23, 2012
Source: Orange County Growth Management Department, Planning Division, Comprehensive Planning Section



ORANGE COUNTY GOVERNMENT FLORIDA

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

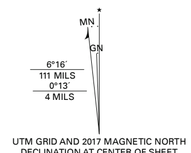
Appendix C-4

LAKE JESSAMINE QUADRANGLE
FLORIDA - ORANGE COUNTY
7.5-MINUTE SERIES

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 17R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, October 2015 - February 2016
Roads..... U.S. Census Bureau, 2016
Names.....GNIS, 1979 - 2018
Hydrography.....National Hydrography Dataset, 2003 - 2016
Contours.....National Elevation Dataset, 1999 - 2012
Boundaries.....Multiple sources; see metadata file 2014 - 2016
Public Land Survey System.....BLM, 2017
Wetlands.....FWS National Wetlands Inventory 1984 - 2010



UTM GRID AND 2017 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
MM
Grid Zone Designation 17R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES

1 Winter Garden
2 Orlando West
3 Orlando East
4 Windermere
5 Pine Castle
6 Intercession City
7 Kissimmee
8 Saint Cloud North

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

LAKE JESSAMINE, FL
2018

7643016360739
NSN. 7643016360739
NGA REF NO. USGSX24K2488

Appendix C-5

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 (EL 987)	Base Flood Elevation line and value; elevation in feet*
	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A A	Cross section line
23 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000m E	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 901), Transverse Mercator projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 6, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 25, 2009 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to delete Special Flood Hazard Areas, to update map format, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, and to incorporate previously issued Letters of Map Amendment

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET

300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0410F

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 410 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EDGEWOOD, CITY OF	120183	0410	F
ORANGE COUNTY	120179	0410	F
ORLANDO, CITY OF	120186	0410	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12095C0410F

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0420F

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 420 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

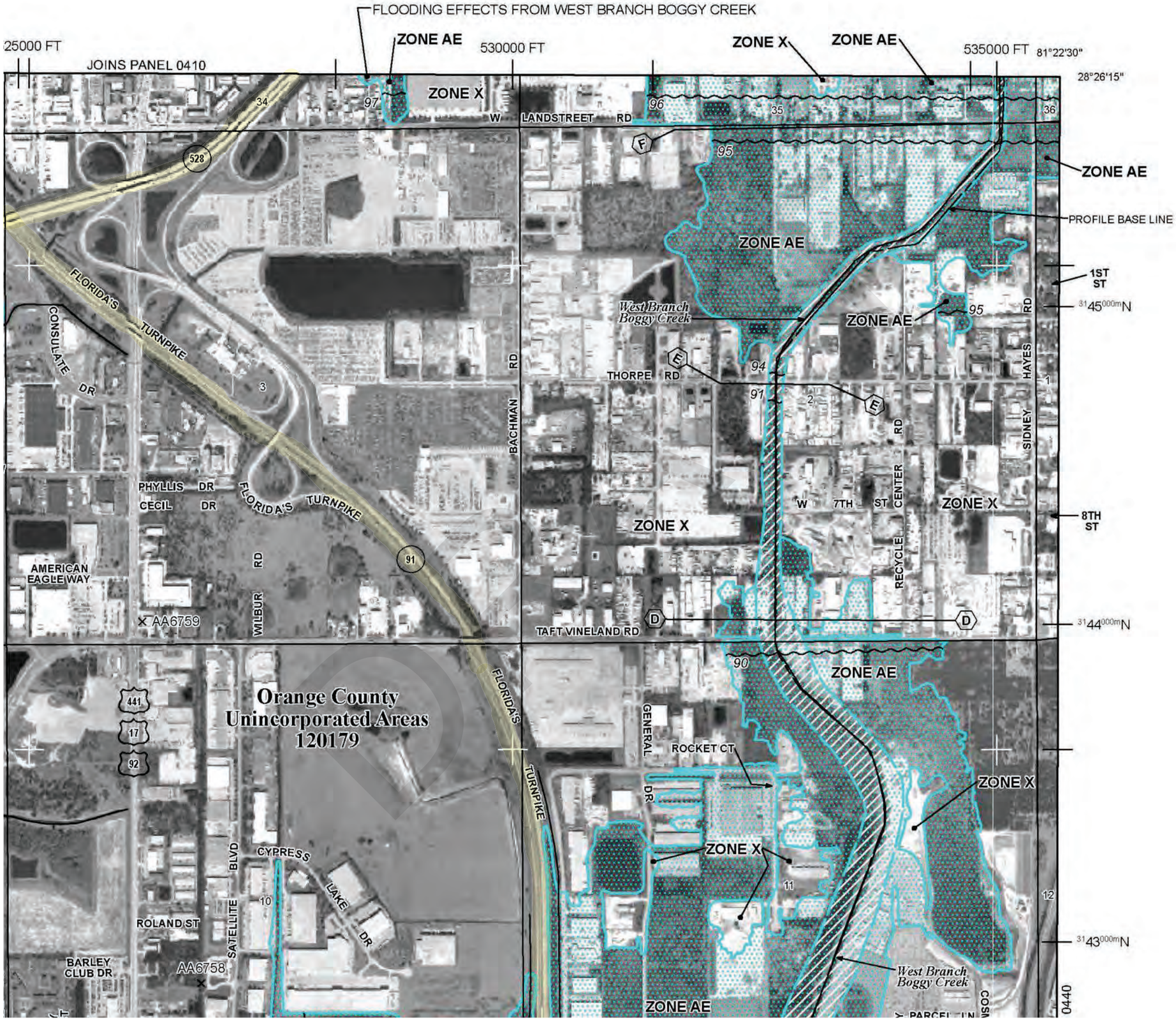
COMMUNITY	NUMBER	PANEL	SUFFIX
ORANGE COUNTY	120179	0420	F

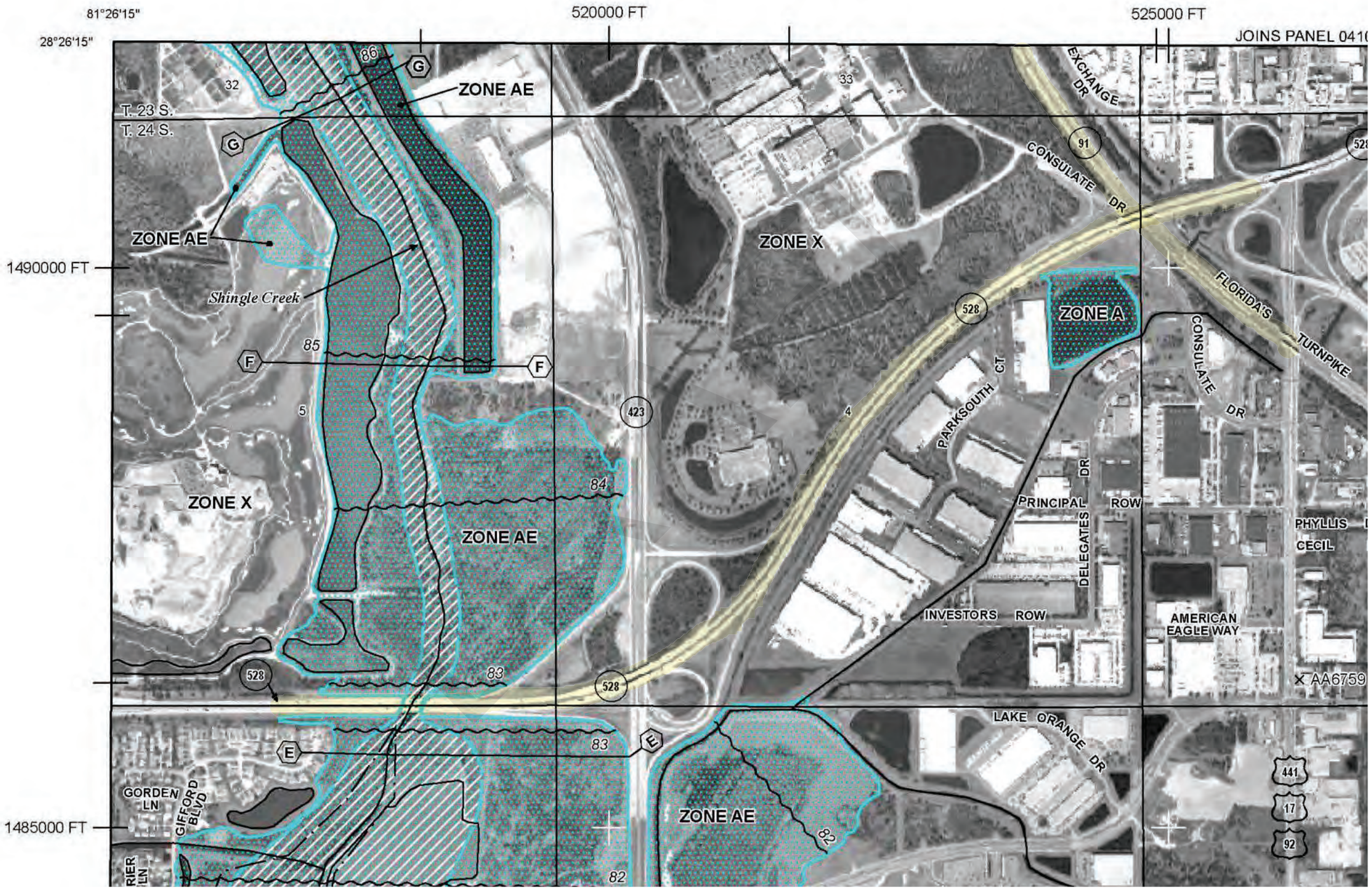
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

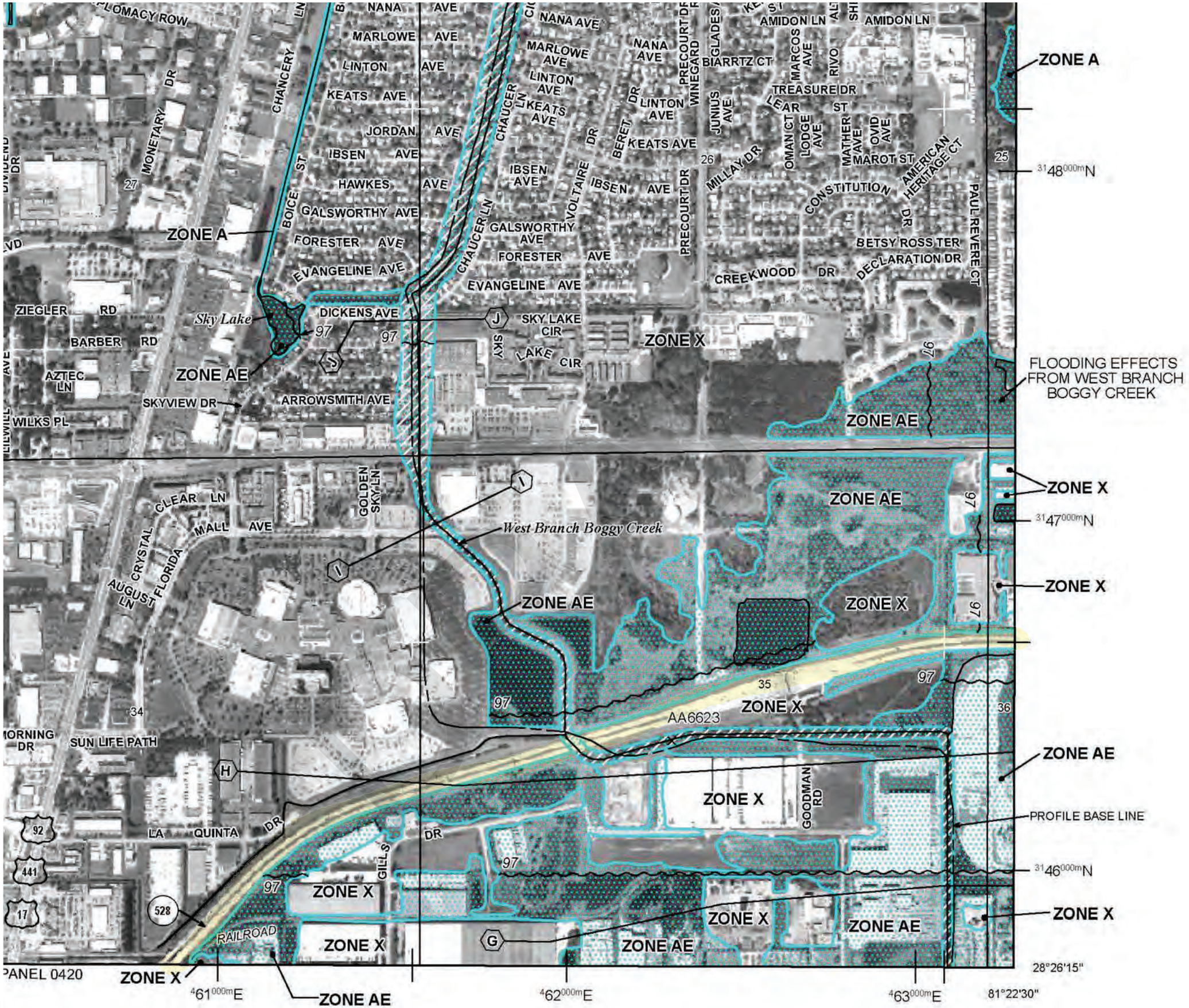
MAP NUMBER
12095C0420F

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency


FLOODING EFFECTS FROM WEST BRANCH BOGGY CREEK
25000 FT
JOINS PANEL 0410
ZONE AE
530000 FT
ZONE X
ZONE AE
535000 FT
81°22'30"
28°26'15"
ZONE X
W LANDSTREET RD
ZONE AE
PROFILE BASE LINE
1ST ST
ZONE AE
West Branch Boggy Creek
ZONE AE
3145000mN
FLORIDA'S TURNPIKE
CONSULATE DR
THORPE RD
BACHMAN RD
HAYES
SIDNEY
RECYCLE CENTER
W 7TH ST
ZONE X
ZONE X
8TH ST
PHYLLIS DR
CECIL DR
FLORIDA'S TURNPIKE
AMERICAN EAGLE WAY
WILBUR RD
AA6759
TAFT VINELAND RD
3144000mN
Orange County
Unincorporated Areas
120179
FLORIDA'S TURNPIKE
GENERAL DR
ROCKET CT
ZONE X
ZONE X
CYPRESS LAKE DR
SATELLITE BLVD
ROLAND ST
BARLEY CLUB DR
AA6758
West Branch Boggy Creek
ZONE AE
3143000mN
0440


81°26'15"
28°26'15"
520000 FT
525000 FT
JOINS PANEL 041
T. 23 S.
T. 24 S.
ZONE AE
ZONE X
ZONE A
1490000 FT
1485000 FT
Shingle Creek
EXCHANGE DR
CONSULATE DR
FLORIDA'S TURNPIKE
PARKSOUTH CT
PRINCIPAL ROW
DELEGATES DR
INVESTORS ROW
AMERICAN EAGLE WAY
PHYLLIS
CECIL
LAKE ORANGE DR
GORDEN LN
GIFFORD BLVD
RIER LN
AA6759
528
423
91
441
17
92


ZONE A
ZONE AE
ZONE X
Sky Lake
West Branch Boggy Creek
FLOODING EFFECTS FROM WEST BRANCH BOGGY CREEK
PROFILE BASE LINE
AA6623
RAILROAD
PANEL 0420
3148000mN
3147000mN
3146000mN
461000mE
462000mE
463000mE
28°26'15"
81°22'30"
97
NANA AVE
MARLOWE AVE
LINTON AVE
KEATS AVE
JORDAN AVE
IBSEN AVE
HAWKES AVE
GALSWORTHY AVE
FORESTER AVE
EVANGELINE AVE
DICKENS AVE
SKY LAKE CIR
ARROWSMITH AVE
SKYVIEW DR
WILKS PL
ZIEGLER RD
BARBER RD
AZTEC LN
BOICE ST
CHANCERY LN
MONETARY DR
CHAUCER LN
VOLTAIRE DR
BERET DR
PRECOURT DR
WINEGARD
JUNIUS AVE
MILLAY DR
BIARRTZ CT
AMIDON LN
MARCOS AVE
RIVO
TREASURE DR
LEAR ST
OMAN CT
LODGE AVE
MATHER AVE
OVID AVE
MAROT ST
CONSTITUTION DR
AMERICAN HERITAGE CT
PAUL REVERE CT
BETSY ROSS TER
DECLARATION DR
CREEKWOOD DR
GOLDEN SKY LN
CLEAR LN
MALL AVE
CRYSTAL LN
AUGUST
FLORIDA
MORNING DR
SUN LIFE PATH
LA QUINTA DR
GILLS DR
GOODMAN RD
92
441
17
528
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36

120179

1500000 FT

ZONE AE

ZONE X

ZONE AE

ZONE X

ZONE X

ZONE AE

ZONE AE

ZONE X

1495000 FT

ZONE AE

ZONE X

ZONE AH
(EL 91)

ZONE A

ZONE A

ZONE X

KINGSPOINTE PKWY

DIRECTORS ROW

FLORIDA'S TURNPIKE

TITAN ROW

BROKERAGE DR

PRESIDENTS DR

EXCHANGE DR

CHANCELLOR DR

CURRENCY DR

RAILROAD

PREMIER ROW

DIRECTORS ROW

DIVIDEND DR

VISCOUNT ROW

SOUTHLAND BLVD

ZIEGLER

AZTEC LN

LILWILL AVE

WILKS PL

482

91

423

SOUTH PARK CIR

EQUITY ROW

COMMODITY CIR

Shingle Creek

EXCHANGE DR

BARDSTON AVE

WACONDA LN

REVEILLE RD

DAWN DR

DOT LN

LAKE CHRISTIE DR

MORNING DR

SUN

92

441

17

Lake Christie

28°26'15"

81°26'15"

458000mE

459000mE

460000mE

JOINS PANEL 0420