DAYBREAK MARKET
CONVENIENCE STORE & FUELING STATION

11470 San Jose Blvd.
Jacksonville, FL 32223

CITY OF JACKSONVILLE NOTES

GENERAL

All construction shall be performed in accordance with the approved plans and comply with all standard city policies and practices. City approval is contingent upon any required state or federal permit approvals such as those from the Department of Environmental Protection or the St. Johns River Water Management District (SJRWMD).

UTILITY WORK

Plan approval through Development Services does not include utilities. Proposed water, sewer or electric construction must be approved separately through the respective utility company. In most cases, this will be:

JEA
JEA Tower - 4th Floor
21 W. Church Street
Jacksonville, FL 32202
http://www.jea.com/business/services/devandbuild/developers.asp

WORK WITHIN THE RIGHT-OF-WAY

CITY: Except for new subdivision infrastructure construction, all work performed within a City of Jacksonville right-of-way or easement requires a Right-of-way Permit. The contractor performing the proposed work must have a current Right-of-way Bond on file with Development Services. Right-of-way Permit applications are processed at:

Development Services Customer Service Counter
Edward Ball Building, 2nd Floor
214 N. Hogan St.
Jacksonville, FL 32202
(904) 255-8572
http://row.jaxdev.info/

STATE: All work performed within a state right-of-way requires a permit from the Florida Department of Transportation (FDOT). It is the developer's responsibility to obtain required FDOT permits or maintenance-of-traffic approvals for work within FDOT right-of-ways. The FDOT regional office can be contacted at (904) 360-5200 Any changes to the approved plans needed for FDOT approval must be submitted to Development Services as revisions.

Adjacent State Roads: San Jose Blvd.

RAILROAD: Railroad companies may require special approvals or permits to work within their right-of-ways. It is the developer's responsibility to obtain permission from any railroad right-of-way owner before performing any work within their right-of-way.

STORMWATER

Annual reports in compliance with the SJRWMD stormwater permits are required from the maintenance entity of all stormwater management facilities. Send copies of the reports to:

Engineering and Construction Management
Edward Ball Building, 10th Floor
214 N. Hogan St.
Jacksonville, FL 32202
http://www.coj.net/Departments/Public+Works/Engineering+and+Construction+Management/

The owner of any project one (1) acre or larger is required to provide a Notice of Intent (NOI) in accordance with criteria set forth in the city's NPDES permit within 48 hours of beginning construction. Send NOI and NOI fee to:

Florida Department of Environmental Protection
NPDES Stormwater Notices Center, Mail Station #2510
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
(866) 336-6312
http://www.dep.state.fl.us/water/stormwater/npdes/

The contractor shall contact the Environmental Quality Division, Erosion and Sedimentation Control Section (ESC) to provide verification that applicable stormwater permits have been obtained and to schedule a pre-construction ESC site inspection:

Environmental Quality Division
407 North Laura Street, Third Floor
Jacksonville, FL, 32202
(904) 255-7222

FIRE MARSHALL

Plan review and approval does not relieve the contractor of complying with all applicable State Fire Codes.

Underground mains and hydrants shall be installed, completed, and in service prior to construction work.

Underground contractor shall submit to the Fire Marshall for approval complete specs for all underground pipe and fittings relating to fire protection PRIOR to installation and inspection. Contractor shall include manufacturer's name and pipe ID along with contractor's state license number.

LANDSCAPE

A Site Work Permit is required for this project.

☐ Tree Fund payment is due: _____ inches at $_____ = $_____

☐ Article 25 funds are due: _____ inches at $_____ = $_____

TRAFFIC ENGINEERING

TRAFFIC SIGNS

Metro Name (each) _____

Standard (each) _____

Stop/Yield (each) 1

Design (per plat) 1 per plat

Installation (per hour) 1 per 2 signs (rounded up)

No Streetlights Required

NOTE: Traffic sign costs change from time to time. Consult Attachment 8 of the Land Development Procedures Manual (http://ldpm.jaxdev.com/) for the current rates before paying for any sign installations.

No lane closures allowed from 7 a.m. till 9 a.m. and from 4 p.m. till 6 p.m.

VICINITY MAP
NTS

SHEET INDEX

ARCHITECT
LICKEL ARCHITECTURE, P.C.
Contact: Frank Shahlari
14 West 3rd Street
Kansas City, MO 64105-1202
Phone: 913-708-1665
frank@lickelarchitecture.com

CIVIL ENGINEER
MICHAEL E. NEIKIRK. PE
Contact: Tiffany Lehman
306 North Market Street
Suite 101
Mt. Carmel, IL 62863
Ph: 314-365-3050
tlehman@neikirk.us

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

Michael Neikirk

7/2/2021

All water and sewer utility connection shall be accomplished in accordance with JEA Plans bearing the JEA approval stamp and be in possession of the contractor at all times.

JEA availability number: 2020-4302
plans designed per JEA 2021 standards

FLOW TEST: (03/01/21, 9:36 AM)

FLOW HYDRANT LOCATION:
SAN JOSE BLVD 245' N OF ADDIE LN (2552)

NUMBER OF PORTS: 3
DIAMETER OF PORTS: 2.5 INCHES
PILOT PRESSURE: 19 PSI
STATIC PRESSURE: 64 PSI
RESIDUAL PRESSURE: 54 PSI

The following computational results based on the above variables and NFPA section 291 (2002 edition) are as follows:

FLOW AT TEST: 2,207 GPM
FLOW AT 20 PSI: 4,911 GPM

PLAN APPROVAL

Date _____ Development Services Division (Chief) _____

Date _____ Review Group (Reviewer) _____

Plan approval is valid for five years after the initial approval date. Revisions made after the initial approval date do not extend this five-year time frame.

PLAN APPROVAL IS SUBJECT TO THE FOLLOWING NOTES AND CONDITIONS:

GENERAL PROJECT INFORMATION

GENERAL	
City Development Number	10066.0
Concurrency Application Number	105254.1
Property Appraiser Number (RE #)	156085 0200
Zoning Designation	PUD
Zoning Application(s) (if any)	
PUD Ordinance Number	1992-003, 1998-129, MM-20-15
FIRM – Community – Panel	12031C0542J
Flood Zones (Show in Plans)	ZONE X
Base Flood Elev. (Show in Plans)	N/A
Vertical Datum Used for Project	NAVD88
JEA Availability Number	2020-4302
SUBDIVISION	
PSD Number	N/A
City or Private Inspection	N/A
Public or Private Roads	N/A
Subdivision ("911") Disk Provided?	N/A
NON-SUBDIVISION	
North American Industry Classification System (NAICS)	447110
Impervious Area (Sq. Ft.)	82,935 SF (EX.) 74,464 SF (PRO.)

RECORD LEGAL DESCRIPTION

The Land referred to herein below is situated in the County of Duval, State of Florida, and is described as follows:

A PART OF THE HENRY HARTLEY DONATION, SECTION 7, TOWNSHIP 4 SOUTH, RANGE 27 EAST, DUVAL COUNTY, FLORIDA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FROM A POINT OF REFERENCE COMMENCE AT THE NORTHWEST CORNER OF LOT 31, BLOCK 2, RAMSGATE UNIT ONE, AS RECORDED IN PLAT BOOK 35, PAGES 49 AND 49 A OF THE CURRENT PUBLIC RECORDS OF SAID COUNTY, THE SAME BEING THE SOUTHWEST CORNER OF THOSE LANDS AS DESCRIBED IN OFFICIAL RECORDS VOLUME 5356, PAGE 1040 OF SAID PUBLIC RECORDS; THENCE NORTH 02 DEGREES 44 MINUTES 30 SECONDS WEST ALONG THE EASTERLY LINE OF SAID BLOCK 2 AND ALONG THE WESTERLY LINE OF LAST SAID LANDS, A DISTANCE OF 189.21 FEET TO THE POINT OF BEGINNING; THENCE CONTINUE ALONG LAST SAID LINE, NORTH 02 DEGREES 44 MINUTES 30 SECONDS WEST, A DISTANCE OF 225.08 FEET TO THE NORTHWEST CORNER OF SAID LANDS DESCRIBED IN OFFICIAL RECORDS VOLUME 5356, PAGE 1040; THENCE NORTH 88 DEGREES 49 MINUTES 00 SECONDS EAST ALONG THE NORTH LINE OF LAST SAID LANDS, A DISTANCE OF 638.03 FEET TO THE WESTERLY RIGHT OF WAY LINE OF SAN JOSE BOULEVARD, STATE ROAD 13 (A 100 FOOT RIGHT OF WAY AS NOW ESTABLISHED); THENCE SOUTHWESTERLY ALONG SAID WESTERLY RIGHT OF WAY LINE, AND ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 1959.86 FEET, A DISTANCE OF 230.23 FEET, MAKING A CENTRAL ANGLE OF 06 DEGREES 43 MINUTES 51 SECONDS AND HAVING A CHORD BEARING OF SOUTH 10 DEGREES 54 MINUTES 07 SECONDS WEST AND A CHORD DISTANCE OF 230.10 FEET; THENCE SOUTH 88 DEGREES 49 MINUTES 00 SECONDS WEST, A DISTANCE OF 583.77 FEET TO THE POINT OF BEGINNING.

CONTRACTOR NOTES

UTILITIES SHOWN HEREON ARE BASED ON PLAN INFORMATION FROM A TOPOGRAPHIC SURVEY PERFORMED BY AJN SURVEYING, LLC ON JUNE 16, 2020 AND DATA COLLECTED BY MICHAEL E. NEIKIRK, PE ON MARCH 16, 2021. THIS EXISTING CONDITIONS DRAWING DOES NOT GUARANTEE THE "EXISTENCE OR NON EXISTENCE" OF UNDERGROUND UTILITIES. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONTACT YOUR FLORIDA ONE-CALL SYSTEM 1-800-432-4770, AND FIELD VERIFY UTILITIES. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY UTILITIES ENCOUNTERED BUT NOT SHOWN HEREON OR IF LOCATION OF UTILITIES VARIES FROM THAT SHOWN ON THE PLANS

IT IS THE INTENT THAT ALL IMPROVEMENTS ARE TO BE DEMOLISHED UNLESS OTHERWISE NOTED TO REMAIN. ITEMS TO BE DEMOLISHED SHALL BE COORDINATED WITH OWNER. CONTRACTOR SHALL HAUL DEMO ITEMS OFF-SITE.

ALL REMOVAL AREAS SHOWN SHALL BE SAW CUT TO FULL DEPTH WHEN ADJACENT TO REMAINING PAVEMENT.

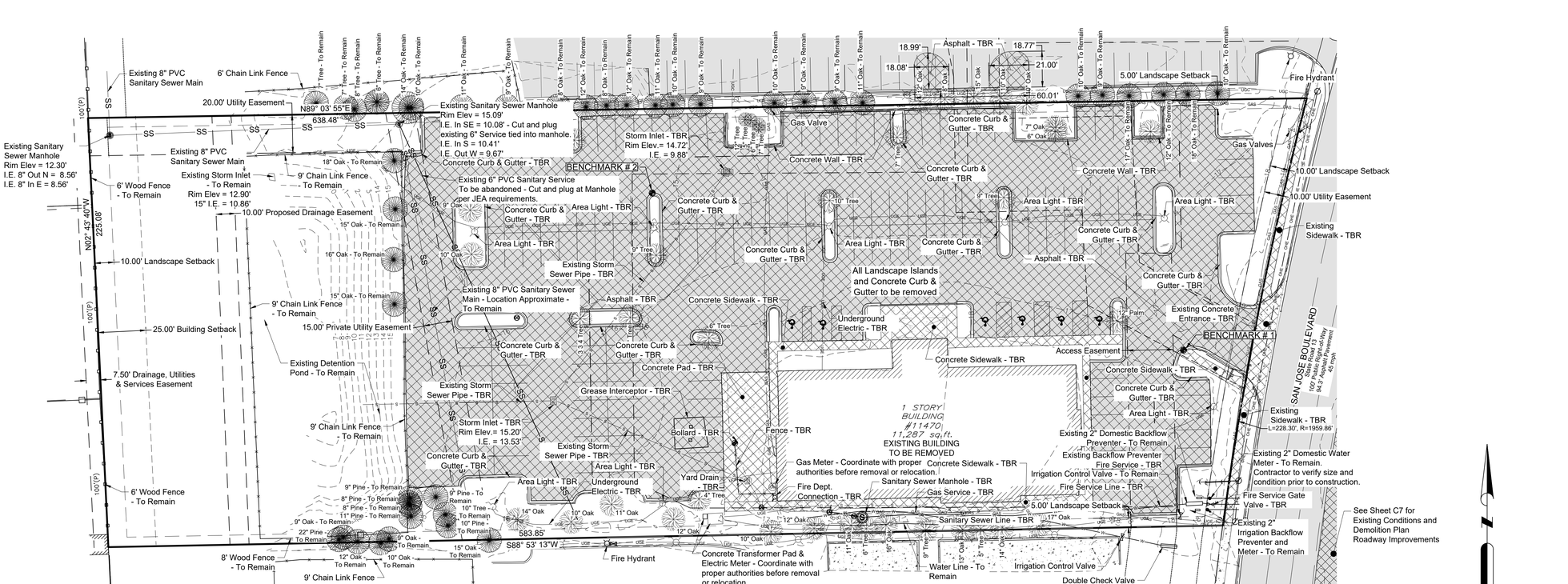
Benchmark #1:
PK Nail with Disk
Elev. = 17.53'
Northing = 2,120,646.79'
Easting = 456,197.39'

Benchmark #2:
PK Nail with Disk
Elev. = 15.21'
Northing = 2,120,729.11'
Easting = 455,919.13'

Legend

These standard symbols may be found in the drawing.

- Water Line
- Sanitary Sewer Main
- Fence
- Existing Contours
- Underground Electric
- Storm Sewer
- Limits of Pavement Removal
- Overhead Utility Lines
- Gas Lines
- Swale
- Temporary Nail Set
- Benchmark Location
- Bollard
- Soil Boring Location
- Sanitary Sewer Cleanout
- Gas Meter
- Storm Sewer Curb Inlet
- Storm Sewer MH/Open Lid
- Light Pole or Traffic Light
- Storm Sewer Manhole
- Tree To Remain
- Tree To Be Removed
- Asphalt to Remain
- Asphalt Removal
- Concrete Removal
- Sanitary Sewer Manhole
- Sign
- Water Meter
- Water Valve
- Utility Pole
- TBR To Be Removed
- TC Top of Curb
- PV Pavement
- ME Match Existing
- 470.0 Grade point
- Number of Parking Spaces
- TBR To Be Removed
- Gravel
- Concrete to Remain



Always call 811 two full business days before you dig to have underground utilities located and marked.
Sunshine811.com

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	1"=30'
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	MEN
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

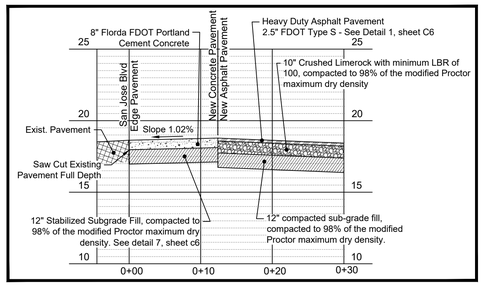
DRAWING TITLE
EXISTING CONDITIONS

FILE LOCATION

DRAWING NUMBER
C1

REV #

VICINITY MAP
(NOT TO SCALE)



ENTRANCE PROFILE

Keynotes

1. Integral Curb and Sidewalk — See Detail 6, Sheet C6
2. 4" White Thermoplastic Pavement Striping
3. Diagonal Striping 8" White @ 24" O.C.
4. Heavy Duty Asphalt Pavement — See Detail 1, Sheet C6
5. Directional Traffic Arrows — See Detail 3, Sheet C6
6. Accessible Parking Stalls — See Detail 4 & 5 Sheet C6 & Detail 1, Sheet C6.1
7. Light Duty Asphalt Pavement — See Detail 1, Sheet C6
8. Pavement Marker Detail — See Detail 2, Sheet C6
9. Concrete Pavement — See Detail 7, Sheet C6
10. Landscaped/Grass Area
11. Concrete Curb & Gutter — See Detail 10, Sheet C6
12. Saw Cut Pavement to Full Depth
13. Omitted
14. Sidewalk Ramp with Detectable Warning — See Detail 15, Sheet C6
15. Concrete Sidewalk — See Detail 12, Sheet C6
16. Dumpster Enclosure — See Architectural Sheets
17. Sidewalk Ramp with Detectable Warning — See Detail 16, Sheet C6
18. Sidewalk Ramp with Detectable Warning — See Detail 17, Sheet C6
19. 12" White Thermoplastic Pavement Striping
20. Vacuum Stalls — See Detail Architectural Sheet
21. Bike Parking — See Detail 2, Sheet C6.1
22. Compressed Air Station — See Detail Architectural/MEP Sheet
23. Site Light — See Electrical Sheet and Detail 3, Sheet C6.1
24. Bollard — See Detail 13, Sheet C6
25. E.V. Charging Station — See Detail Architectural/MEP Sheets
26. Concrete Curb — See Detail 8, Sheet C6
27. Concrete Apron — See Detail 11, Sheet C6
28. 24" Wide White Thermoplastic Stop Bar — See Sheet 2 of 14, 711-001 on Sheet C13
29. Wheel Stop — See Detail 14, Sheet C6
30. Sidewalk Ramp with Detectable Warning — See Detail 18, Sheet C6
31. Area Light — See Electrical Sheets for Details
32. 36"x36" Stop Sign (R1-1) with 30"x36" RTO Right Turn Lane (R3-5)
33. 6" Double Yellow Center Line — See Sheet 2 of 14, 711-001 on Sheet C13
34. FDOT Sidewalk Curb Ramp — See 522-002 on Sheet C14
35. New Concrete Entrance — See Detail 7, Sheet C6

SITE DATA

1. AREA OF SITE: 3.13 ACRES.
2. PROPERTY ZONING: PUD, 76 STORE
3. FLOODPLAIN: THE PROPERTY IS ZONE X, MINIMAL RISK AREAS OUTSIDE THE 1 PERCENT AND 0.2 PERCENT ANNUAL CHANCE FLOODPLAINS, ACCORDING TO 12031C0542J EFFECTIVE 11/2/2018
4. REQUIRED PARKING:
   CONVENIENCE STORE:
   3 PER 1000 SQ.FT. GROSS FLOOR SPACE
   TOTAL GROSS FLOOR SPACE: 4,800 SQ. FT.
   PARKING REQUIRED: 14 STALLS
   RESTAURANT:
   1 PER 4 SEATS & 1 PER EACH 2 EMPLOYEES
   TOTALS: SEATS ~ 84, EMPLOYEES ~ 10
   PARKING REQUIRED: 26 STALLS
   TOTAL PARKING REQUIRED: 40 STALLS

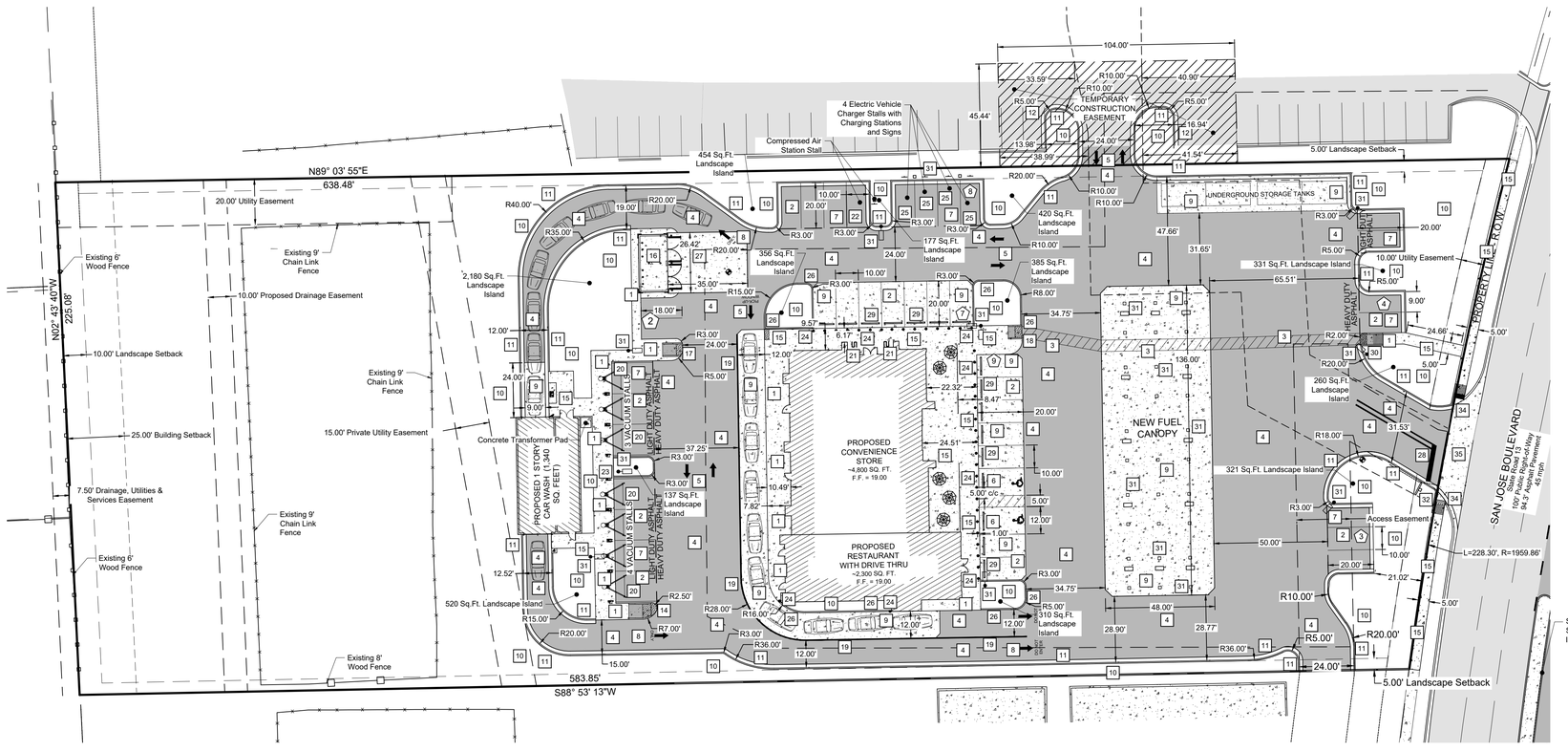
   ACTUAL PARKING STALLS:
   31 REGULAR STALLS
   7 VACUUM STALLS
   2 ACCESSIBLE STALLS
   TOTAL STALLS: 40
5. REQUIRED BICYCLE PARKING:
   FAST FOOD RESTAURANT: 1 PER 5,000 SF FLOOR AREA (2 MIN.)
   BICYLCE PARKING REQUIRED: 2,300 SF FLOOR AREA = 2 MIN.
   PERSONAL SERVICE ESTABLISHMENTS: 1 SPACE PER 5,000 SF FLOOR AREA (2 SPACES MIN.)
   BICYCLE PARKING REQUIRED: 4,800 SF FLOOR AREA = 2 MIN.
   TOTAL BICYCLE PARKING REQUIRED: 4 SPACES

   ACTUAL BICYCLE PARKING:: 4 SPACES
6. PARKING LOT LANDSCAPE SETBACK:
   REQUIRED:
   ADJACENT TO R.O.W.: 10'
   ADJACENT TO COMPLEMENTARY USE: 5'
   ADJACENT TO UNCOMPLIMENTARY USE: 10'
   ACTUAL:
   ADJACENT TO R.O.W.: 20.00'
   ADJACENT TO COMPLEMENTARY USE: 5.00'
   ADJACENT TO UNCOMPLIMENTARY USE: 196.20'
7. INTERIOR LANDSCAPING VUA REQUIRED: 10%
   VUA = 57,881 SQ.FT. = 5,788 SQ.FT. AREA REQUIRED
   ACTUAL INTERIOR LANDSCAPING VUA: 5,844 SQ.FT.
8. MAX BUILDING HEIGHT PER ORDINANCE 1998-0129-E: 35.00'
   GAS CANOPY HEIGHT = 19.00'
   CAR WASH HEIGHT = 12.67'
   CONVENIENCE STORE HEIGHT = 24.00'

Legend

These standard symbols may be found in the drawing.

W — W	Water Line
SS — SS	Sanitary Sewer Main
X — X	Fence
470	Existing Contours
UGE	Underground Electric
S — S	Storm Sewer
	Limits of Pavement Removal
OHE	Overhead Utility Lines
GAS	Gas Lines
	Swale
Iron Pin Found	Sanitary Sewer Manhole
Parking Bumper	Sign
Bollard	Water Meter
Soil Boring Location	Water Valve
Sanitary Sewer Cleanout	Utility Pole
Gas Meter	TBR — To Be Removed
Storm Sewer Curb Inlet	TC — Top of Curb
Storm Sewer MH/Open Lid	PV — Pavement
Light Pole or Traffic Light	ME — Match Existing
Storm Sewer Manhole	470.0 — Grade point
	30 — Number of Parking Spaces
New Exterior Light	Existing Pavement
Existing Concrete	Proposed Concrete Walk/Pavement
	Proposed Asphalt



0' 30' 60' 90'

Always call 811 two full business days before you dig to have underground utilities located and marked.
Sunshine811.com

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	1"=30'
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

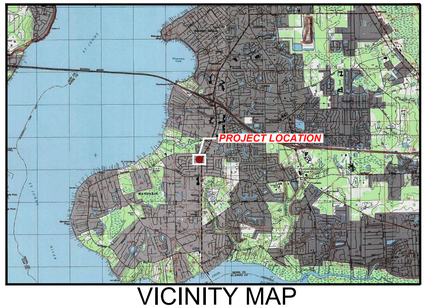
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
SITE PLAN

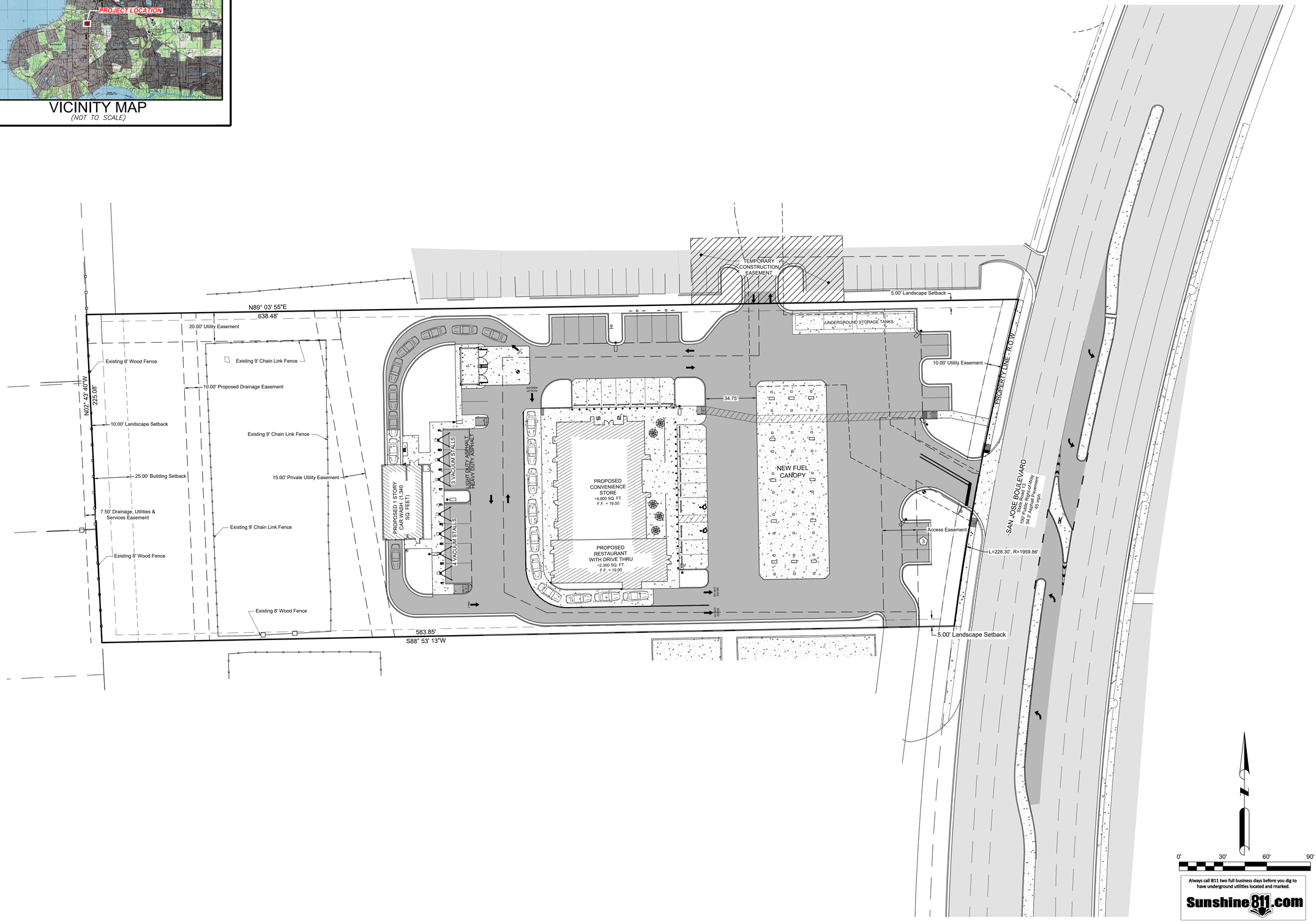
FILE LOCATION

DRAWING NUMBER
C2

REV #



VICINITY MAP
(NOT TO SCALE)



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CERTIFIED BY

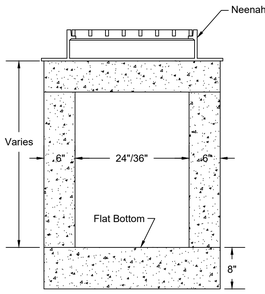
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
OVERALL
SITE PLAN

FILE LOCATION

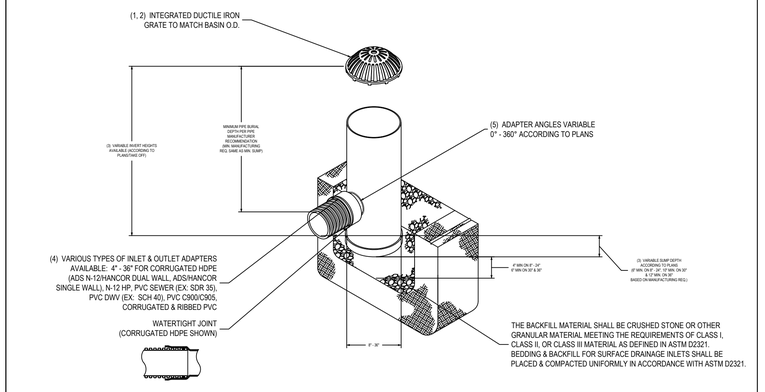
DRAWING NUMBER
C2.1

REV #



1 C3 2'x2' & 3'x3' Inlet
Not To Scale

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-055.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

DRAWN BY	EBC	MATERIAL	
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3130 VERONA AVE.
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE
DRAIN BASIN WITH DOME GRATE
QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-397 REV E

2 C3 Nyloplast Drain Basin
Not To Scale

Structure Table

Structure I.D.	Description	Casting	Rim Elev	Invert Elev
STR. #1	2'x2' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	16.14'	12" Out-NW = 14.14'
STR. #2	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	15.34'	12" In-E = 13.19' 15" Out-W = 13.09'
STR. #3	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	15.47'	15" In-E = 13.04' 18" Out-SW = 12.97'
STR. #4	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	16.40'	18" In-NE = 12.88' 18" Out-W = 12.78'
STR. #5	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	16.00'	18" In-E = 12.61' 18" Out-W = 12.51'
STR. #6	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	16.00'	18" In-E = 12.42' 24" Out-SW = 12.32'
STR. #7	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	16.99'	15" In-E = 13.37' 10" In-NE = 15.16' 18" Out-NW = 13.27'
STR. #8	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	17.42'	12" In-NE = 14.37' 15" Out-W = 14.27'
STR. #9	3'x3' Inlet See Detail 1, Sheet C3	Neenah R-3070 Type A	17.07'	12" Out-SW = 15.07'
STR. #10	12" Nyloplast Inline Drain See Detail 2, Sheet C3	12" Dome Grate	16.50'	12" In-S = 14.00' 12" Out-W = 14.00'

Pipe Table

Pipe I.D.	Upstream Str.	Downstream Str.	Length	Type	Slope
#1	STR. #1	STR #10	21'	12" HDPE	0.7%
#2	STR #2	STR #3	27'	15" HDPE	0.2%
#3	STR #3	STR #4	43'	15" HDPE	0.2%
#4	STR. #4	STR #5	87'	18" HDPE	0.2%
#5	STR. #5	STR #6	47'	18" HDPE	0.2%
#6	STR. #6	POND	119'	24" HDPE	0.2%
#7	STR. #7	POND	111'	18" HDPE	0.5%
#8	STR. #8	STR #7	180'	15" HDPE	0.5%
#9	STR. #9	STR #8	140'	12" HDPE	0.5%
#10	BLDG	STR #7	154'	10" HDPE	1.3%
#11	BLDG	POND	84'	8" HDPE	2.0%
#12	STR #10	STR #2	116'	12" HDPE	0.7%

Legend

These standard symbols may be found in the drawing.

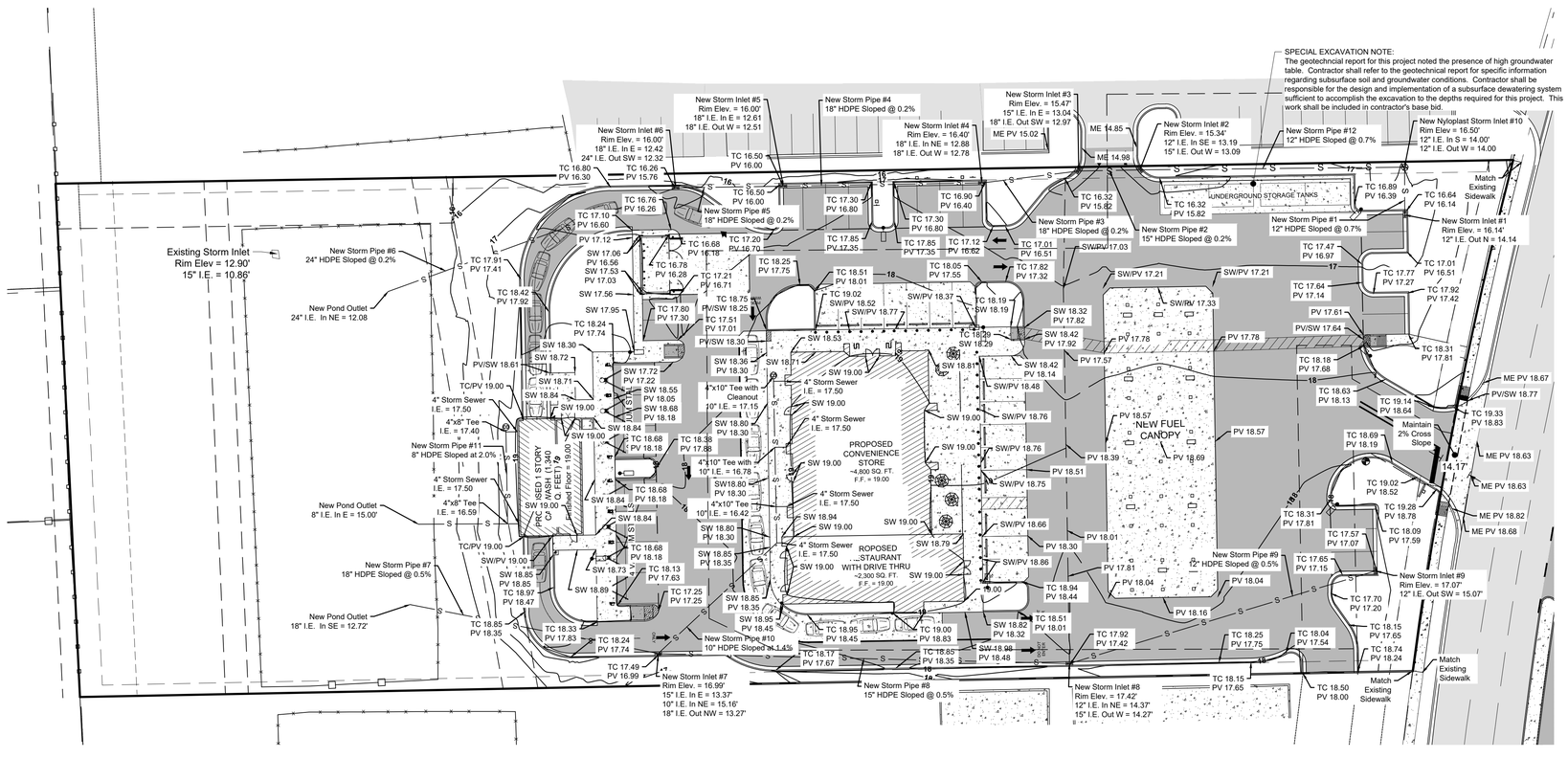
- W — Water Line
- SS — Sanitary Sewer Main
- X — Fence
- 470 — Existing Contours
- UGT — Underground Telephone
- S — S — Storm Sewer
- 460 — Proposed Contours
- Overhead Utility Lines
- G — Gas Lines
- Swale
- Iron Pin Found
- Sanitary Sewer Manhole
- Parking Bumper
- Sign
- Bollard
- Water Meter
- Soil Boring Location
- Water Valve
- Sanitary Sewer Cleanout
- Utility Pole
- Gas Meter
- TBR — To Be Removed
- Storm Sewer Curb Inlet
- TC — Top of Curb
- Storm Sewer MH/Open Lid
- PV — Pavement
- Light Pole or Traffic Light
- ME — Match Existing
- Storm Sewer Manhole
- 470.0 — Grade point
- 30 — Number of Parking Spaces
- Existing Concrete
- Proposed Concrete Walk/Pavement
- Existing Pavement
- Proposed Asphalt

STORMWATER MANAGEMENT:

TOTAL SITE: 3.13 ACRES
DISTURBED AREA: 2.31 ACRES

EXISTING SITE IMPERVIOUS AREA = 82,934.71 SF
PROPOSED SITE IMPERVIOUS AREA = 74,463.66 SF

THE PROPOSED SITE IMPROVEMENTS, AS SHOWN, WILL HAVE A REDUCTION OF 8,471.05 SF OF IMPERVIOUS AREA, THEREFORE THE EXISTING STORMWATER MANAGEMENT SYSTEM ONSITE SHALL BE SUFFICIENT FOR THE PROPOSED SITE IMPROVEMENTS.



REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	1"=30'
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL, MEN
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

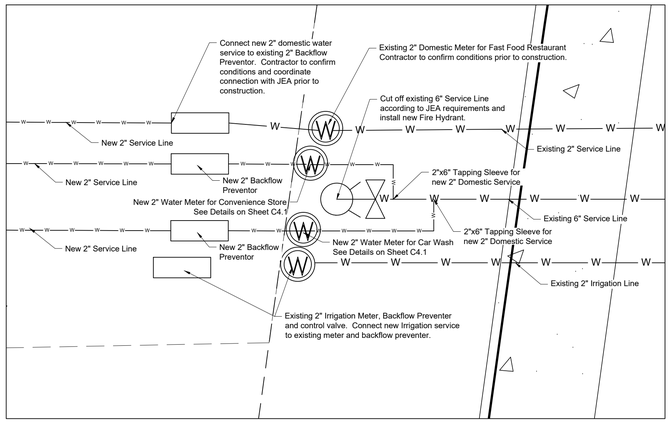
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
GRADING & DRAINAGE PLAN

FILE LOCATION

DRAWING NUMBER C3

REV #



1 / C4 ENLARGEMENT
1"=5'

Contractor Notes

Contractor shall verify location, size, and elevation of existing water main prior to construction. Notify engineer of any discrepancies. All water connections shall be coordinated with proper utility company prior to construction. Construction shall conform to local plumbing code.

Contractor shall coordinate connection point, service size and transformer location with electrical service company prior to construction.

Contractor shall coordinate with gas service provider prior to construction. Exposures are to be made on gas main to verify location and depth prior to construction. Construction shall conform to local gas and plumbing code.

Contractor shall coordinate connection point and service size with appropriate service provider prior to construction for both telephone and cable tv service.

All existing utilities shown are approximate locations and shall be field verified before construction.

Legend

These standard symbols may be found in the drawing.

- Water Line
- Sanitary Sewer Main
- Fence
- 470 — Existing Contours
- Underground Telephone
- Storm Sewer
- 460 — Proposed Contours
- Overhead Utility Lines
- Gas Lines
- Swale
- Iron Pin Found
- Sanitary Sewer Manhole
- Parking Bumper
- Sign
- Bollard
- Water Meter
- Soil Boring Location
- Water Valve
- Sanitary Sewer Cleanout
- Utility Pole
- Gas Meter
- TBR — To Be Removed
- Storm Sewer Curb Inlet
- TC — Top of Curb
- Storm Sewer MH/Open Lid
- PV — Pavement
- Light Pole or Traffic Light
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- Existing Concrete
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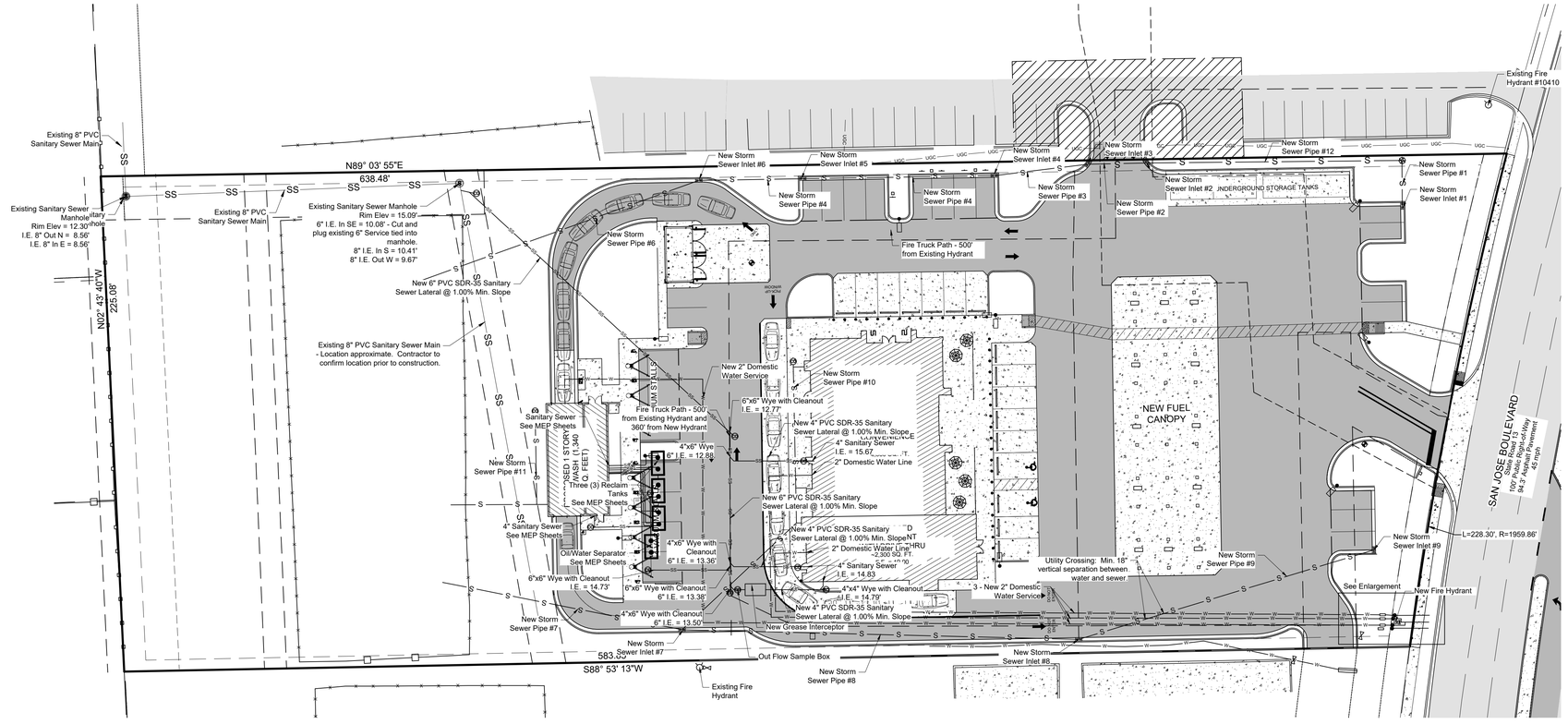

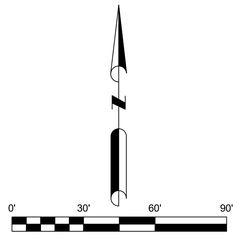

Always call 811 two full business days before you dig to have underground utilities located and marked.
Sunshine811.com

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	1"=30'
DRAWN BY:	TJL
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OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

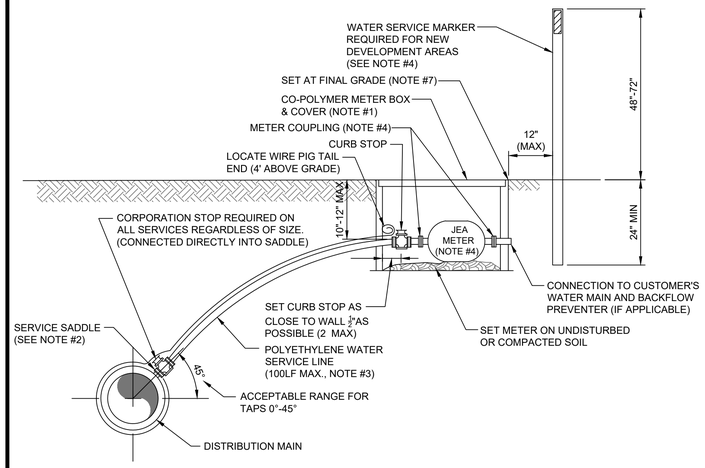
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
UTILITY PLAN

FILE LOCATION

DRAWING NUMBER C4

REV #

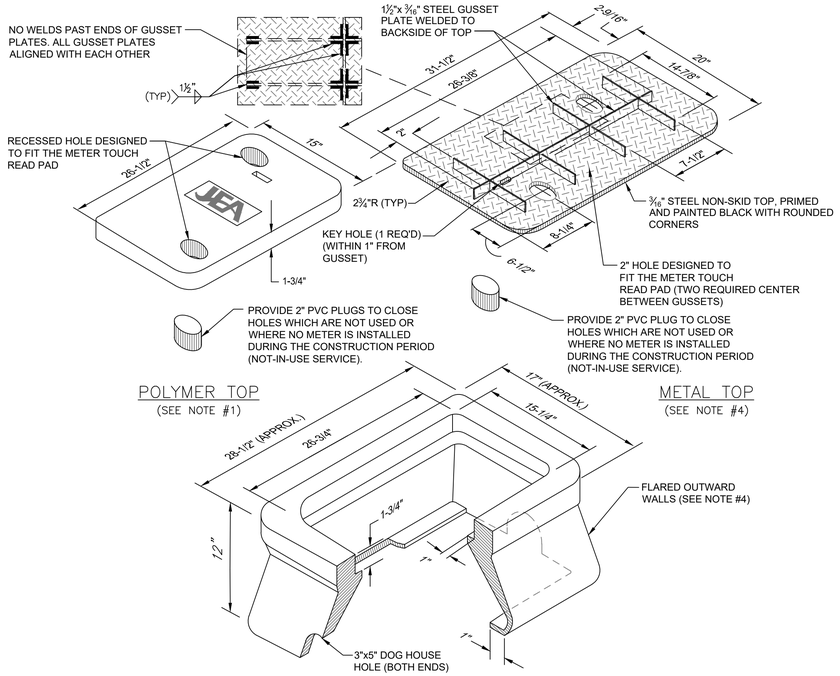


NOTES:

1. SEE PLATE W-1 FOR METER LOCATION REQUIREMENTS.
2. SINGLE BAND SADDLES SHALL BE UTILIZED ON NEW 1" WATER SERVICES WHICH ARE INSTALLED ON A DRY 10" SIZE OR SMALLER WATER MAIN (NEW WATER MAIN CONSTRUCTION). FOR WET TAPS OR WATER MAINS 12" SIZE AND LARGER, A DOUBLE BAND SADDLE IS REQUIRED. BRASS SADDLES MAY BE UTILIZED ON NEW 1 INCH AND SMALLER WATER SERVICES WHICH ARE INSTALLED ON A DRY 10 INCH OR SMALLER PVC WATER MAIN.
3. NO OPEN CUT UNDER ROADWAY PAVING ALLOWED UNLESS THE ROADWAY IS BEING RECONSTRUCTED OR IF DIRECTED OTHERWISE BY J.E.A. CONSTRUCT POLY LINE WITH 24" (MIN.) COVER UNDER ROADWAYS. THE POLY WATER SERVICE LINE SHALL BE SAME SIZE AS THE METER (1" MINIMUM) AND BE INSTALLED PERPENDICULAR TO THE MAIN AND NOT EXCEED 100LF UNLESS APPROVED OTHERWISE BY JEA.
4. INSTALL PVC PLUG IN ALL CURB STOPS IF WATER SERVICE IS "NOT IN USE" (I.E.: IF NO METER IS INSTALLED). WATER SERVICES SERVING VACANT LOTS (SERVICE NOT IN USE), SHALL INCLUDE A "W" CUT INTO THE CURB (CLOSEST TO THE METER BOX), AND PAINTED BLUE (PAINTED PURPLE FOR RECLAIMED WATER). IN ADDITION, FOR NEW DEVELOPMENT AREAS WHERE THE WATER SERVICE IS "NOT IN USE", A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED BLUE OR PURPLE FOR RECLAIMED WATER). THE REMOVAL OR TRANSFER OF A WATER SERVICE SHALL INCLUDE BRASS METER COUPLINGS (HEX ON BARREL TYPE).
5. NO 2" AND SMALLER WATER SERVICE TAPS PERMITTED ON WATER MAINS WHICH ARE 20" AND LARGER SIZE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF THE METER OR ELECTRONIC DEVICES IF DAMAGED BY THE CONTRACTOR DURING THE CONSTRUCTION PERIOD.
7. METER BOX AND TOP SHALL BE CLEAR OF ALL DEBRIS TO ALLOW FULL ACCESS TO BOX (i.e. NO DIRT, TRASH OR OTHER DEBRIS PLACED ON TOP OF BOX).
8. LOCATE WIRING REQUIRED ON ALL SERVICES 10' OR GREATER IN LENGTH. SEE PLATE W-44.

WATER SERVICE DETAIL- 2" AND SMALLER METER

JANUARY 2021 PLATE W-2



POLYMER BOX

NOTES:

1. THE STANDARD BOX (FLARED OUTWARD WALLS) & TOP (2 HOLE) SHALL BE MADE OF POLYMER CONCRETE. (SIMILAR TO OLD BROOKS SERIES 65). BOX WALLS SHALL BE FIBERGLASS. BOX, INCLUDING THE INSIDE LIP, AND TOP SHALL MEET A-8 (ATSM C857) LOAD RATING.
2. ALL SIZES SHOWN ARE IN INCHES AND ARE APPROXIMATE SIZES.
3. POLYMER BOX APPROXIMATE WEIGHT 50lbs. POLYMER TOP APPROXIMATE WEIGHT 50lbs. SEE CONSTRUCTION DETAIL W-4A FOR MANUFACTURING DETAIL FOR TWO HOLE COVER.
4. UNLESS APPROVED OTHERWISE IN WRITING BY JEA, ALL METER BOXES SHALL BE LOCATED IN NON-TRAFFIC AREAS (NOT IN THE ROADWAY, DRIVEWAYS OR SIDEWALKS).
5. METAL TOPS MAY BE UTILIZED IF SPECIFICALLY APPROVED BY A JEA MANAGER OR BY JEA METER O&M STAFF.

WATER METER BOX & COVER FOR 1-1/2" AND 2" METERS

JANUARY 2021 PLATE W-4

WATER MAIN AND NON-WATER MAIN SEPARATION REQUIREMENTS - NOTES

1. IT IS REQUIRED THAT "WATER MAINS" BE INSTALLED, CLEANED, DISINFECTED AND HAVE A SATISFACTORY BACTERIOLOGICAL SURVEY PERFORMED IN ACCORDANCE WITH THE LATEST APPLICABLE AWWA STANDARDS, CHAPTER 62-555, F.A.C. AND LATEST JEA WATER AND SEWER STANDARDS. FOR THE PURPOSE OF THIS SECTION, THE PHRASE "WATER MAINS" SHALL MEAN MAINS, INCLUDING TREATMENT PLANT PROCESS PIPING, CONVEYING EITHER RAW, PARTIALLY TREATED, OR FINISHED DRINKING WATER; FIRE HYDRANT LEADS; AND SERVICE LINES THAT HAVE AN INSIDE DIAMETER OF THREE (3) INCHES OR GREATER. IN ADDITION, THE PHRASE "RECLAIMED WATER" REFERS TO THE WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
2. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE (3) FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER.
3. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS MAY BE REDUCED TO THREE (3) FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX (6) INCHES ABOVE THE TOP OF THE SEWER (SPECIAL CASE).
4. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX (6) INCHES, AND PREFERABLE TWELVE (12) INCHES, ABOVE OR AT LEAST TWELVE (12) INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
5. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS A LEAST TWELVE (12) INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
6. AT THE UTILITY CROSSINGS DESCRIBED IN NOTES 4 AND 5 ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE (3) FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER, AND AT LEAST SIX (6) FEET FROM ALL JOINTS IN GRAVITY OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINE CONVEYING RECLAIMED WATER.
7. NEW OR RELOCATED FIRE HYDRANTS SHALL BE LOCATED SO THAT THE HYDRANTS ARE AT LEAST THREE (3) FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER; AT LEAST THREE (3) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER; AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER OR WASTEWATER FORCE MAIN.
8. WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND JOINTS IN THE WATER MAIN ARE BEING LOCATED LESS THAN THE REQUIRED MINIMUM DISTANCE FROM JOINTS IN THE OTHER PIPELINE, THE CONTRACTOR SHALL CONSULT THE DESIGN ENGINEER TO OBTAIN APPROVAL OF ANY ALTERNATIVE CONSTRUCTION METHODS, PRIOR TO CONSTRUCTION.

NOTES ON UTILITY SEPARATION REQUIREMENTS

JANUARY 2021 PLATE W-11

HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS

PROPOSED UTILITY

CONFLICTING UTILITY	POTABLE WATER			WASTEWATER GRAVITY AND FORCE MAIN			RECLAIMED WATER			VACUUM SEWERS		
	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*
POTABLE WATER	3' NOTE 1	12"	3' NOTE 2	6' to 10'	12" NOTE 5	6' NOTE 2	3'	12"	6' NOTE 2	3' to 10'	12"	3' NOTE 2
RECLAIMED WATER	3'	12"	6' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3'	12"	6' NOTE 2	3' NOTE 1	12"	3' NOTE 2
WASTEWATER (GRAVITY AND FORCE MAIN)	6' to 10'	12"	6' NOTE 2	3' NOTE 1	12"	6"	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2
VACUUM SEWERS	3' to 10'	12"	3' NOTE 2	3' NOTE 1	12"	6"	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2
RIGHT OF WAYS	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A
PERMANENT STRUCTURES (BUILDINGS, SIGNS, POLES, ETC.)	SEE NOTE 7	N/A	N/A	SEE NOTE 7	N/A	N/A	SEE NOTE 7	N/A	N/A	SEE NOTE 7	N/A	N/A
STORM SEWERS	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2
GAS	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2
TREES	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A
ALL OTHER UTILITIES	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2

NOTES:

1. THIS SEPARATION REQUIREMENT IS TO PROVIDE ACCESSIBILITY FOR CONSTRUCTION AND MAINTENANCE. THREE FEET OF HORIZONTAL SEPARATION IS THE MINIMUM FOR PIPES WITH THREE FEET OF COVER. FOR PIPES INSTALLED AT GREATER DEPTH, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.
2. THE MINIMUM JOINT SPACING REQUIRED FROM CROSSING FROM OTHER UTILITIES WHILE STILL MAINTAINING MINIMUM VERTICAL SEPARATION.
3. DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
4. NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURES.
5. WATER MAIN SHOULD CROSS ABOVE OTHER PIPES WHENEVER POSSIBLE. WHEN WATER MAIN MUST BE BELOW OTHER UTILITY PIPING, THE MINIMUM SEPARATION SHALL BE 12 INCHES.
6. REFER TO POTABLE WATER PIPING- SECTION 350, III.4.11.
7. SEE SECTION 350, III.4.10 FOR MINIMUM SEPARATION REQUIREMENTS FROM PIPE TO STRUCTURES.

SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS

JANUARY 2021 PLATE W-10

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	NTS
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL, MEN
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
UTILITY DETAILS

FILE LOCATION

DRAWING NUMBER C4.1

REV #

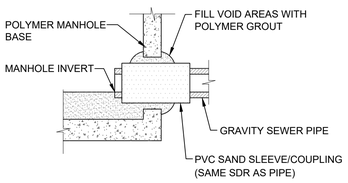
POLYMER CONCRETE FLOATATION COLLARS

	DEPTH 0-10FT		DEPTH 11-15FT		DEPTH 16-20FT	
DIAMETER	MINIMUM BASE EXTENDER (IN)	MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)	MINIMUM BASE EXTENDER (IN)	MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)	MINIMUM BASE EXTENDER (IN)	MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)
48	2	7801	-	6101	-	7701
60	2	10000	1	11500	-	10400
72	3	16500	3	17300	1	18900
84	3	24700	3	27000	2	30600
96	3	35600	3	37600	2	46600

NOTES:

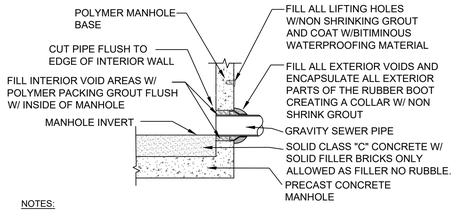
1. BUOYANCY FACTOR OF SAFETY = 1.2
2. ASSUMED LID THICKNESS = 8IN
3. MANHOLES ASSUMED TO BE STRAIGHT WITH NO REDUCER
4. GROUND WATER LEVEL ASSUMED TO BE AT SURFACE

FLOTATION COLLAR



PVC SAND SLEEVE

(FOR EXISTING AND NEW M/H CONSTRUCTION)

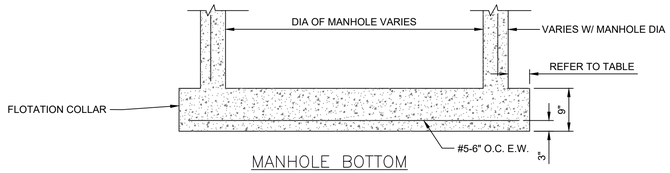


NOTES:

RUBBER BOOT, DOUBLE BANDED, 316 S/S CLAMPS, MEETING THE ASTM C923 STANDARD. Kor-N-Seal® I EX SERIES CONNECTOR WITH DOUBLE STAINLESS STEEL BANDS OR EQUAL.

RUBBER BOOT

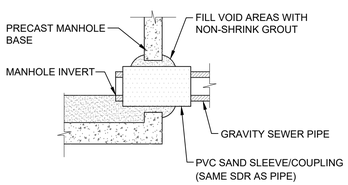
(FOR NEW M/H CONSTRUCTION ONLY, MAXIMUM DEPTH 15FT)



MANHOLE BOTTOM

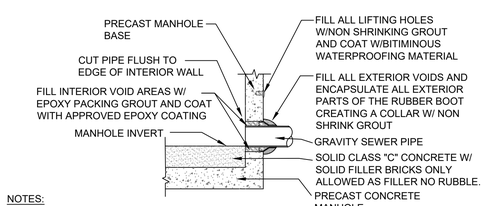
POLYMER MANHOLE PIPE CONNECTION DETAIL

JANUARY 2021 PLATE S-15A



PVC SAND SLEEVE

(FOR EXISTING AND NEW M/H CONSTRUCTION)



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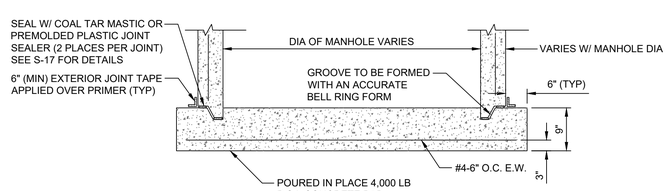
RUBBER BOOT

(FOR NEW M/H CONSTRUCTION ONLY, MAXIMUM DEPTH 15FT)



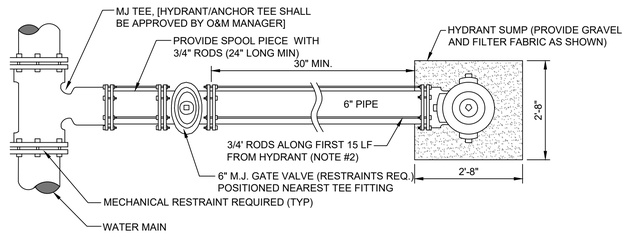
NOTES:

THE USE OF THE POURED IN PLACE MANHOLE BOTTOM SHALL BE MINIMIZED AND SHALL BE SPECIFICALLY APPROVED BY JEA PRIOR TO CONSTRUCTION.

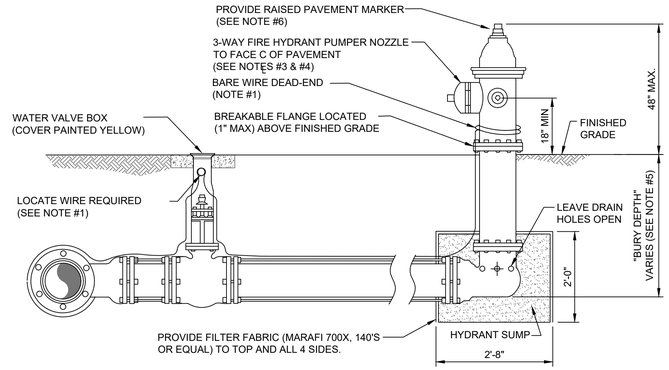
MANHOLE BOTTOM

CONCRETE MANHOLE PIPE CONNECTION DETAIL

JANUARY 2021 PLATE S-15



PLAN



SECTION

NOTES:

1. LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE. THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARAGRAPH.
2. FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK AND NOT WITHIN SWALE/DITCH AREAS. THE DISTANCE RANGE FROM EDGE OF ADJACENT PAVEMENT, BACK OF CURB AND FACE OF SIDEWALK SHALL BE IN COMPLIANCE WITH LOCAL COUNTY FIRE DEPARTMENT RULES AND AS APPROVED BY JEA AND APPLICABLE PERMITTING AGENCIES. DISTANCE SHALL BE MEASURED TO THE CLOSEST PART OF THE FIRE HYDRANT (I.E. THE PUMPER NOZZLE). THE MAXIMUM DISTANCE (BACK OF CURB) SHALL BE IN COMPLIANCE WITH LOCAL COUNTY FIRE DEPARTMENT RULES AND AS APPROVED BY JEA. FOR OTHER LOCATION LIMITATIONS SEE PLATES W-10 AND W-11. IF PIPING BETWEEN TEE AND HYDRANT IS LONGER THAN 80 LF, AN ADDITIONAL 6" GATE VALVE IS REQUIRED AT THE HYDRANT LOCATION (PROVIDE 30" SEPARATION). ALL PIPING, VALVES AND FITTINGS ALONG THE HYDRANT BRANCH MAIN WHICH IS WITHIN 15 LF OF THE HYDRANT SHALL BE RESTRAINED UTILIZING ONLY TWO 3/4" DIA (THREADED ENDS) STEEL RODS AND EYE BOLTS (NO JOINT RESTRAINT DEVICES REQUIRED), A SPLIT SERRATED RING WITH RESTRAINT EARS (EBAA 15 PF06 or EQUAL) MAYBE USED IN THIS ASSEMBLY. ALL OTHER JOINTS ALONG THE HYDRANT BRANCH MAIN OUTSIDE OF THE FIRST 15 LF SHALL INCLUDE JOINT RESTRAINTS.
3. OPERATION OF THE FIRE HYDRANT SHALL BE EITHER FULL OPEN POSITION OR TOTALLY CLOSED POSITION. THE HYDRANT SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.
4. PRIOR TO PROJECT FINAL INSPECTION, THE HYDRANT AND ALL ABOVE GROUND PIPING SHALL BE RE-OILED, GREASED AND REPAINTED (RUS- KIL ENAMEL-INTERNATIONAL YELLOW OR EQUAL). PRIVATELY OWNED AND MAINTAINED FIRE HYDRANTS SHALL BE PAINTED RED.
5. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN. UNLESS APPROVED OTHERWISE BY JEA, THE INSTALLATION OF (45°) BENDS IS NOT ACCEPTABLE WHEN UTILIZED TO CORRECT AN IMPROPERLY FURNISHED HYDRANT. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.
6. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REFLECTIVE FACE OF THE MARKER IS PERPENDICULAR TO A LINE PARALLEL TO THE ROADWAY CENTERLINE. THE BLUE REFLECTIVE MARKERS SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.

FIRE HYDRANT INSTALLATION USING MECHANICAL JOINT TEE

JANUARY 2021 PLATE W-13

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

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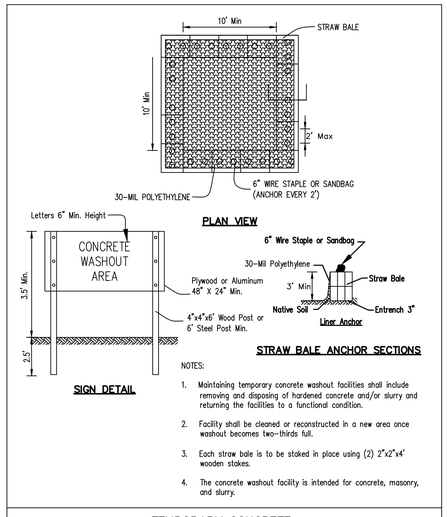
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
UTILITY DETAILS

FILE LOCATION

DRAWING NUMBER C4.2

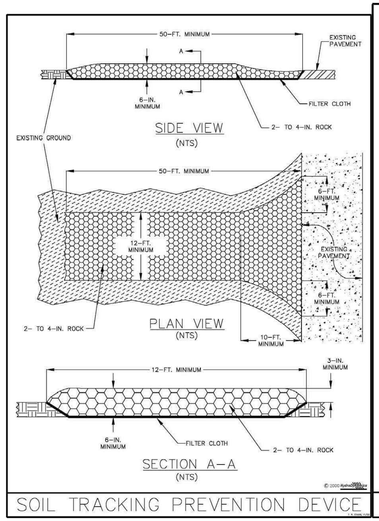
REV #



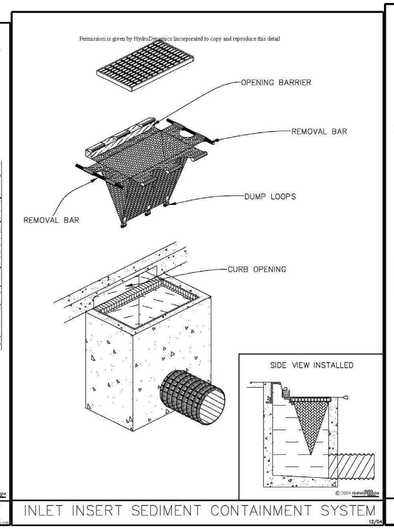
NOTES:

1. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and/or slurry and returning the facilities to a functional condition.
2. Facility shall be cleaned or reconstructed in a new area once washout becomes two-thirds full.
3. Each straw bale is to be staked in place using (2) 2"x2"x4' wooden stakes.
4. The concrete washout facility is intended for concrete, masonry, and slurry.

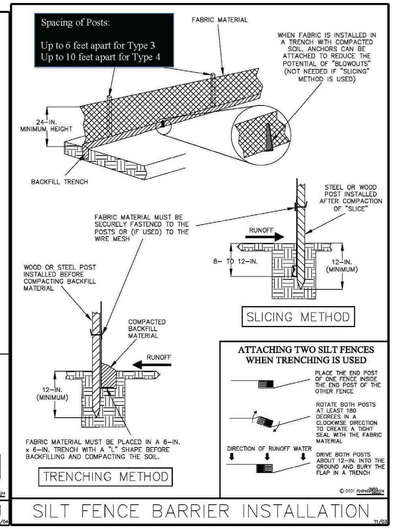
TEMPORARY CONCRETE WASHOUT FACILITY – STRAW BALE



SOIL TRACKING PREVENTION DEVICE



INLET INSERT SEDIMENT CONTAINMENT SYSTEM



SILT FENCE BARRIER INSTALLATION

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION:

THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A NEW 4,800 SF CONVENIENCE STORE, FUEL CANOPY WITH 20 FUELING STATIONS, 2,300 SF FAST FOOD RESTAURANT ASPHALT AND CONCRETE PARKING LOT, AND CONCRETE SIDEWALKS. THE SITE IS LOCATED AT 11470 SAN JOSE BLVD, JACKSONVILLE, FL. TOTAL AREA OF THE SITE IS 3.13 ACRES AND IT IS ANTICIPATED THAT 2.31 ACRES OF THE 3.13 SHALL BE DISTURBED DURING CONSTRUCTION.

EXISTING SITE CONDITIONS:

THE SITE IS CURRENTLY DEVELOPED WITH A RESTAURANT BUILDING AND ASPHALT PARKING LOT. THE SITE DRAINS VIA STORM SEWERS TO AN EXISTING DETENTION POND LOCATED ON THE WEST SIDE OF THE IMPROVEMENTS.

ADJACENT PROPERTIES:

THE PROPERTY IS PART OF A PLANNED UNIT DEVELOPMENT (PUD) - THE SALEM SOUD-VAS PUD. COMMERCIAL PROPERTIES ARE LOCATED NORTH, EAST, AND SOUTH OF THE SITE. THERE IS LOW DENSITY RESIDENTIAL LOCATED ON THE WEST SIDE OF THE SITE. THE SITE IS BOUND BY SAN JOSE BLVD ON THE EAST SIDE.

OFFSITE AREAS:

THERE IS NO OFFSITE GRADING ANTICIPATED FOR THIS SITE.

SOILS MAP:

ONSITE SOILS CONSIST OF THE FOLLOWING:

SAPELO FINE SAND, 0 TO 2 PERCENT SLOPES
SURRENCY LOAMY FINE SAND, DEPRESSIONAL, 0 TO 2 PERCENT SLOPES
PELHAM-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES.

CRITICAL EROSION AREAS:

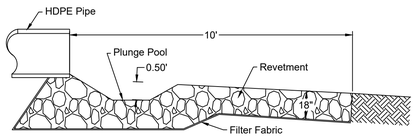
THERE ARE NO ANTICIPATED CRITICAL EROSION AREAS. IF EROSION OCCURS, CONTRACTOR SHALL USE EROSION CONTROL BLANKET AND SOD TO PREVENT FURTHER EROSION.

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT AND QUALITY ARE PROVIDED FOR THIS SITE VIA AN EXISTING DETENTION POND LOCATION ON THE WEST SIDE OF THE SITE. IMPERVIOUS AREAS SHALL DECREASE WITH THE NEW IMPROVEMENTS.

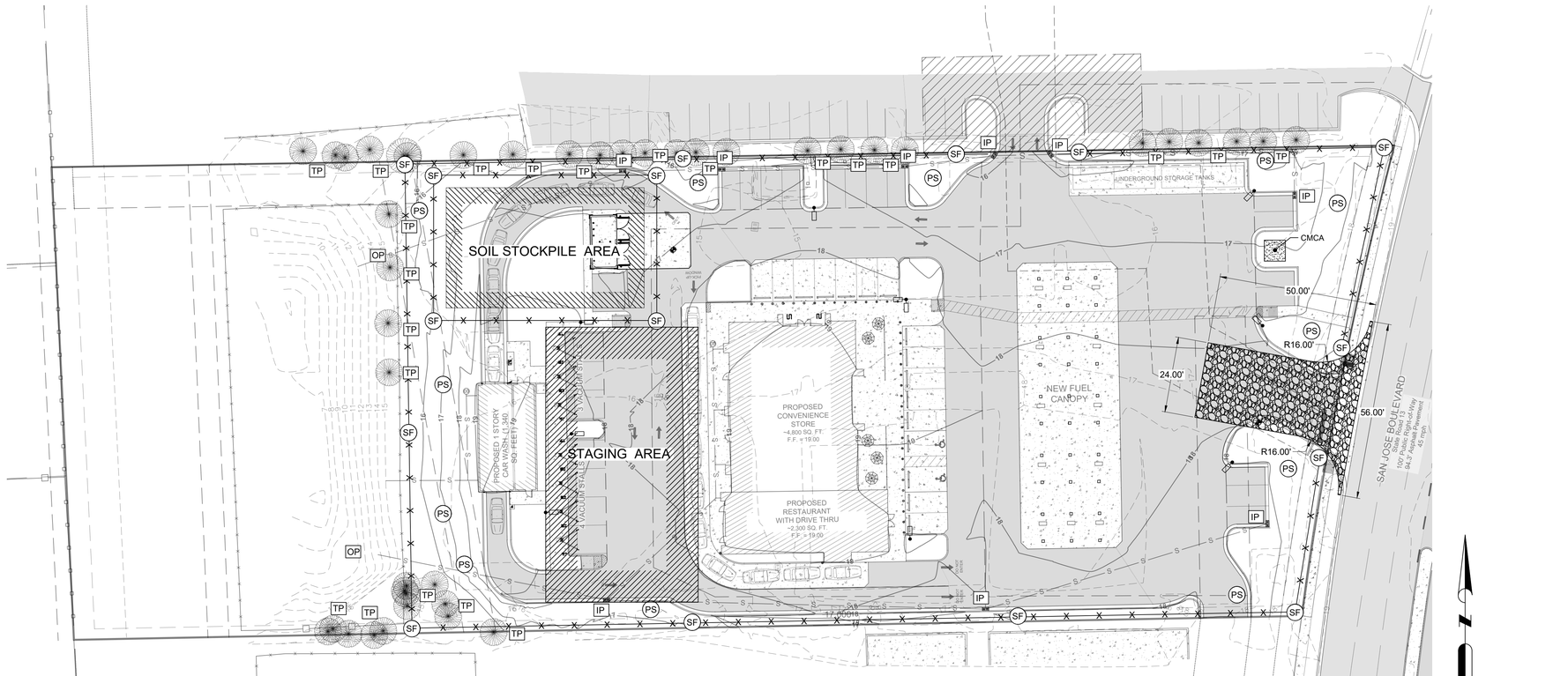
FLOODPLAIN INFORMATION

THE SITE IS LOCATED IN ZONE X, MINIMAL RISK AREAS OUTSIDE THE 1 PERCENT AND 0.2 PERCENT ANNUAL CHANCE FLOODPLAINS, AS SHOWN ON FIRM #12031C0542J EFFECTIVE DATE OF 11/2/2018.



Rip Rap Outlet Protection

Not To Scale



Legend

- Temporary Gravel Entrance/Exit
- CMCA — Cement Mixer Cleanout Area
- IP — Inlet Protection
- OP — Outlet Protection
- TS — Temporary Seeding
- PS — Permanent Seeding
- SF — Silt Fence (Sediment Fence)
- 489 — Existing Grade
- TP — Tree Protection
- 490 — Proposed Grade
- Straw Bale Ditch Check

EROSION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAIN IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE STATE OF FLORIDA, DUVAL COUNTY, AND CITY OF JACKSONVILLE.
2. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ONSITE AT ALL TIMES.
3. PRIOR TO CONSTRUCTION, SILT FENCE, CONSTRUCTION ENTRANCE, AND INLET PROTECTION ON EXISTING INLETS SHALL BE INSTALLED.
4. IMMEDIATELY UPON INSTALLATION OF NEW STORM SEWER INLETS, INLET PROTECTION SHALL BE INSTALLED.
5. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE, ALL EROSION AND SILTATION CONTROL MEASURES SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY.
6. THE SITE SHALL BE CLEARED AND GRUBBED OF UNSUITABLE MATERIAL.
7. FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREA WHICH SHALL BE FREE FROM ROOTS, WOODY VEGETATION AND OVERSIZED STONES OR ROCKS.
8. WHEN SEDIMENT IS TRANSPORTED ONTO A PAVED ROAD SURFACE, THE ROAD WILL BE CLEANED THOROUGHLY AT THE END OF EACH DAY ACCORDING TO THE FOLLOWING PROCEDURE, SEDIMENT SHALL BE REMOVED FROM THE ROAD SURFACE BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING WILL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.
9. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS, A SUPPLEMENTARY EROSION CONTROL PLAN SHALL BE SUBMITTED AND APPROVED BY GOVERNING AGENCIES.
10. THE CONTRACTOR SHALL PERFORM INSPECTIONS AND REPORT ON THE EROSION AND SEDIMENT CONTROL METHODS EVERY 2 WEEKS AND AFTER ½" OF RAINFALL. THE CONTRACTOR SHALL REPAIR ANY CONTROL MEASURES THAT ARE DAMAGED AND REMOVE SEDIMENT BUILD UP.
11. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN 7 DAYS OF DISTURBANCE. SOD SHALL BE REQUIRED WHERE SLOPES ARE 4:1 OR GREATER.

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

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CHECKED BY:	TJL
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OWNER:	Plaza Street Partners

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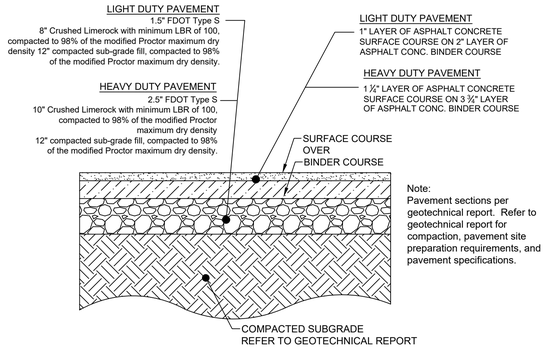
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
EROSION CONTROL PLAN

FILE LOCATION

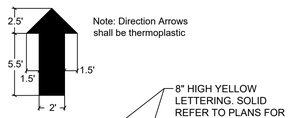
DRAWING NUMBER
C5

REV #

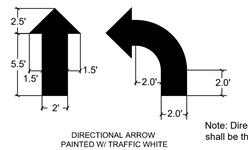


Note:
Pavement sections per geotechnical report. Refer to geotechnical report for compaction, pavement site preparation requirements, and pavement specifications.

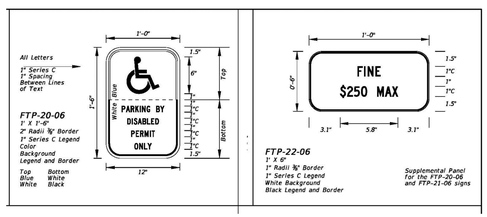
1 C6 ASPHALT PAVEMENT SECTIONS
Not To Scale



2 C6 PAVEMENT MARKER DETAIL
Not To Scale



3 C6 DIRECTIONAL TRAFFIC ARROW
Not To Scale



4 C6 FDOT Index 700-102
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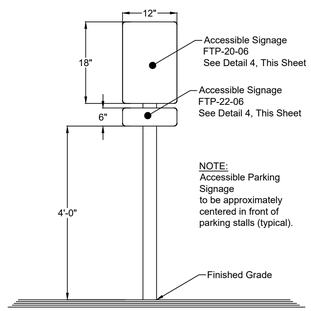
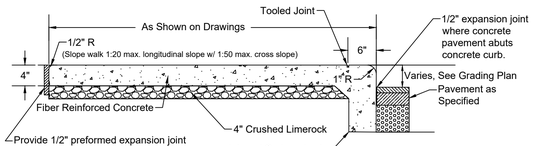


5 C6 ADA ACCESSABLE PARKING SIGN
Not To Scale



Transverse contraction joints shall be sawed to ¼ the concrete thickness at intervals not to exceed 5'. 24" No. 4 dowels shall be used at all construction joints at 24" OC. Where dowels are used, concrete thickness shall be increased to 6" for a longitudinal distance of 6" beyond the ends of the dowel. All joints shall be sealed with self leveling joint sealant. After form construction and prior to concrete installation, contractor must confirm all slopes for accessible ramps and routes comply with ADA requirements.

6 C6 INTEGRAL CURB & SIDEWALK
Not To Scale

NOTES:
PAVEMENT SECTIONS PER GEOTECHNICAL REPORT. REFER TO GEOTECHNICAL REPORT FOR COMPACTION, PAVEMENT SITE PREPARATION REQUIREMENTS, AND PAVEMENT SPECIFICATIONS.

24" - #6 DOWELS SHALL BE USED AT ALL CONSTRUCTION JOINTS AT 24" ON CENTER. WHERE DOWELS ARE USED, CONCRETE THICKNESS SHALL BE INCREASED 6" FOR A LONGITUDINAL DISTANCE OF 12" BEYOND THE ENDS OF THE DOWEL. ALL JOINTS SHALL BE FILLED WITH SELF LEVELING JOINT SEALANT.

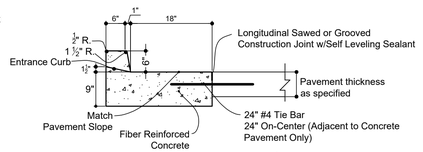
WHEN ABUTTING EXISTING CONCRETE PAVEMENT, CONCRETE CURB, OR CONCRETE SIDEWALK, A 1/2" EXPANSION JOINT SHALL BE INSTALLED.

7 C6 CONCRETE PAVEMENT DETAIL
Not To Scale

NOTE: ALL CONCRETE CURBS TO HAVE EXPANSION JOINTS OR SAW CUTS NOT MORE THAN 20'-0" APART.

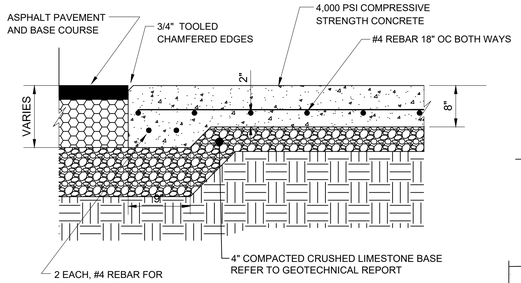
8 C6 CONCRETE CURB DETAIL
Not To Scale

9 C6 OMITTED
Not To Scale

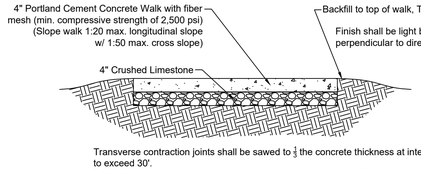


Transverse contraction joints shall be sawed to ¼ the concrete thickness at maximum 8' intervals.
Match location of pavement joints.
All sawed joints shall be filled with self leveling joint sealant.
Stabilized sub-grade shall extend 3' beyond edge of asphalt/curb interface.

10 C6 CONCRETE CURB & GUTTER
Not To Scale



11 C6 CONCRETE APRON
Not To Scale



Transverse contraction joints shall be sawed to ¼ the concrete thickness at intervals not to exceed 30'.
24" No. 4 dowels shall be used at all construction joints at 24" OC. Where dowels are used, concrete thickness shall be increased to 6" for a longitudinal distance of 6" beyond the ends of the dowel. All joints shall be filled with self leveling joint sealant.
When sidewalk abuts building or brick area a ½" expansion joint with self leveling joint sealant shall be installed.
After form construction and prior to concrete installation, contractor must confirm all slopes for accessible ramps and routes comply with ADA requirements.

12 C6 TYPICAL CONCRETE SIDEWALK
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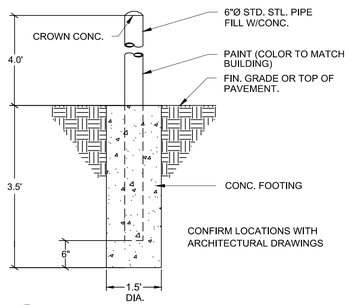

13 C6 TYPICAL BOLLARD
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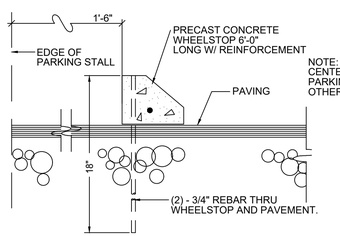

14 C6 WHEEL STOP
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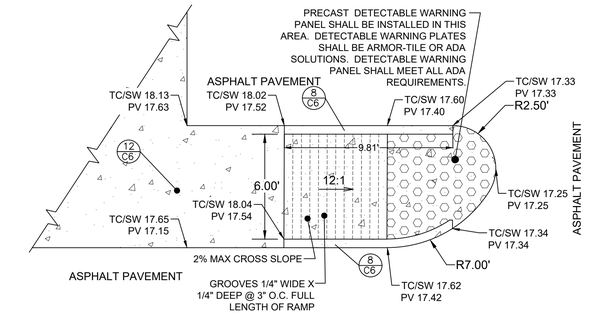

15 C6 SIDEWALK ADA ACCESSABLE RAMP DETAIL
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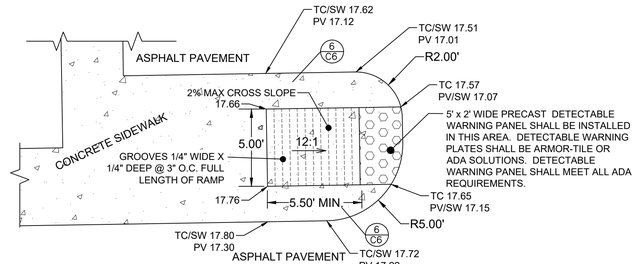

16 C6 SIDEWALK ADA ACCESSABLE RAMP DETAIL
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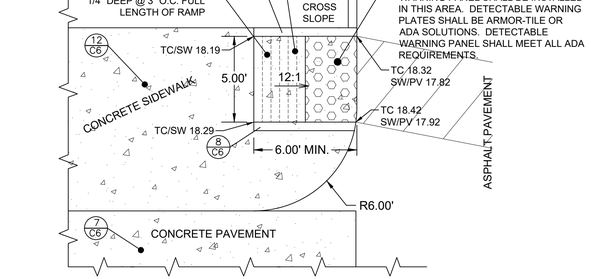

17 C6 SIDEWALK ADA ACCESSABLE RAMP DETAIL
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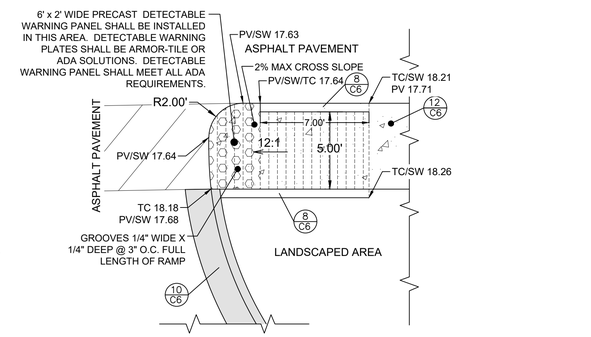

18 C6 SIDEWALK ADA ACCESSABLE RAMP DETAIL
Not To Scale

REVISIONS

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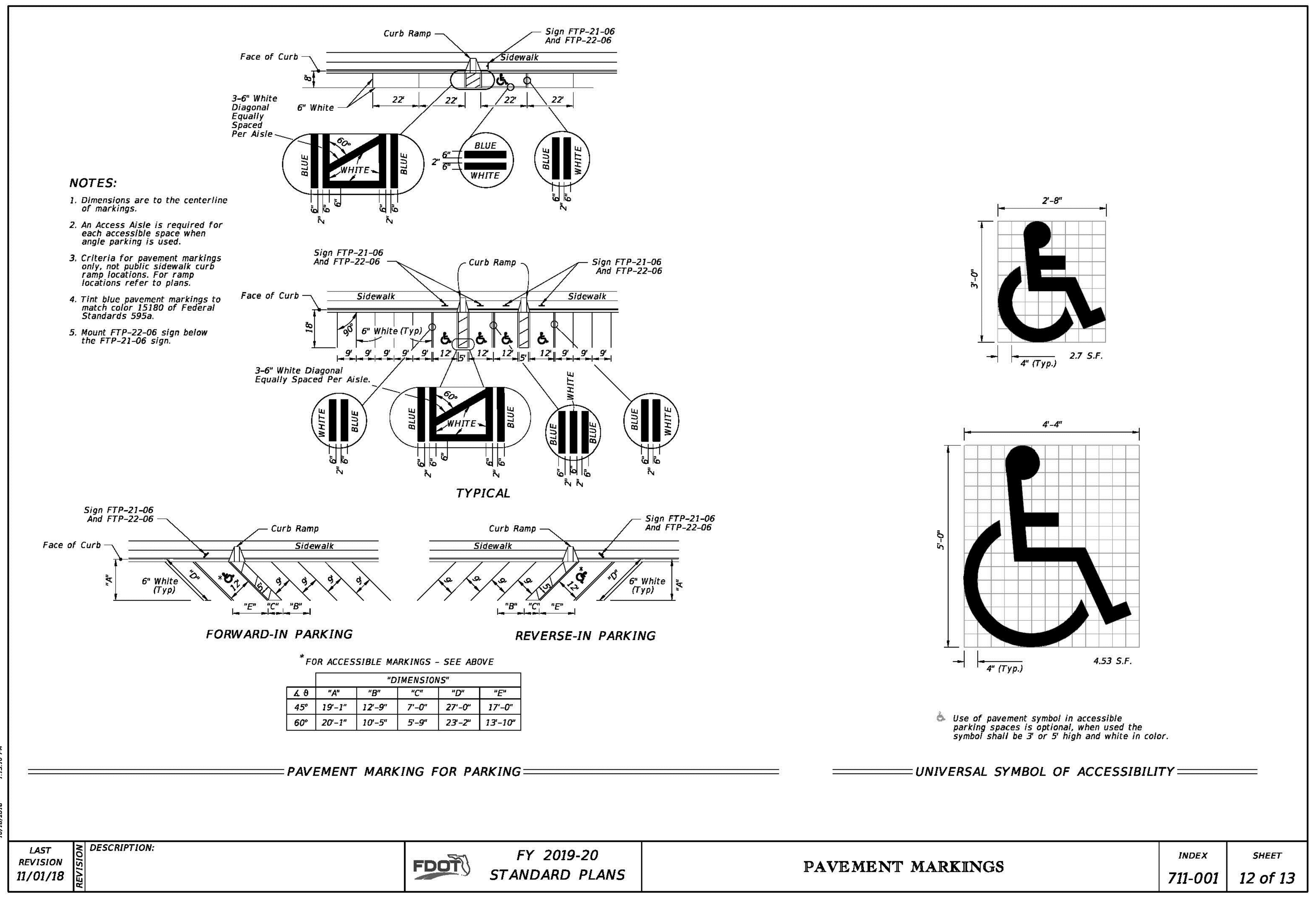
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
DETAILS

FILE LOCATION

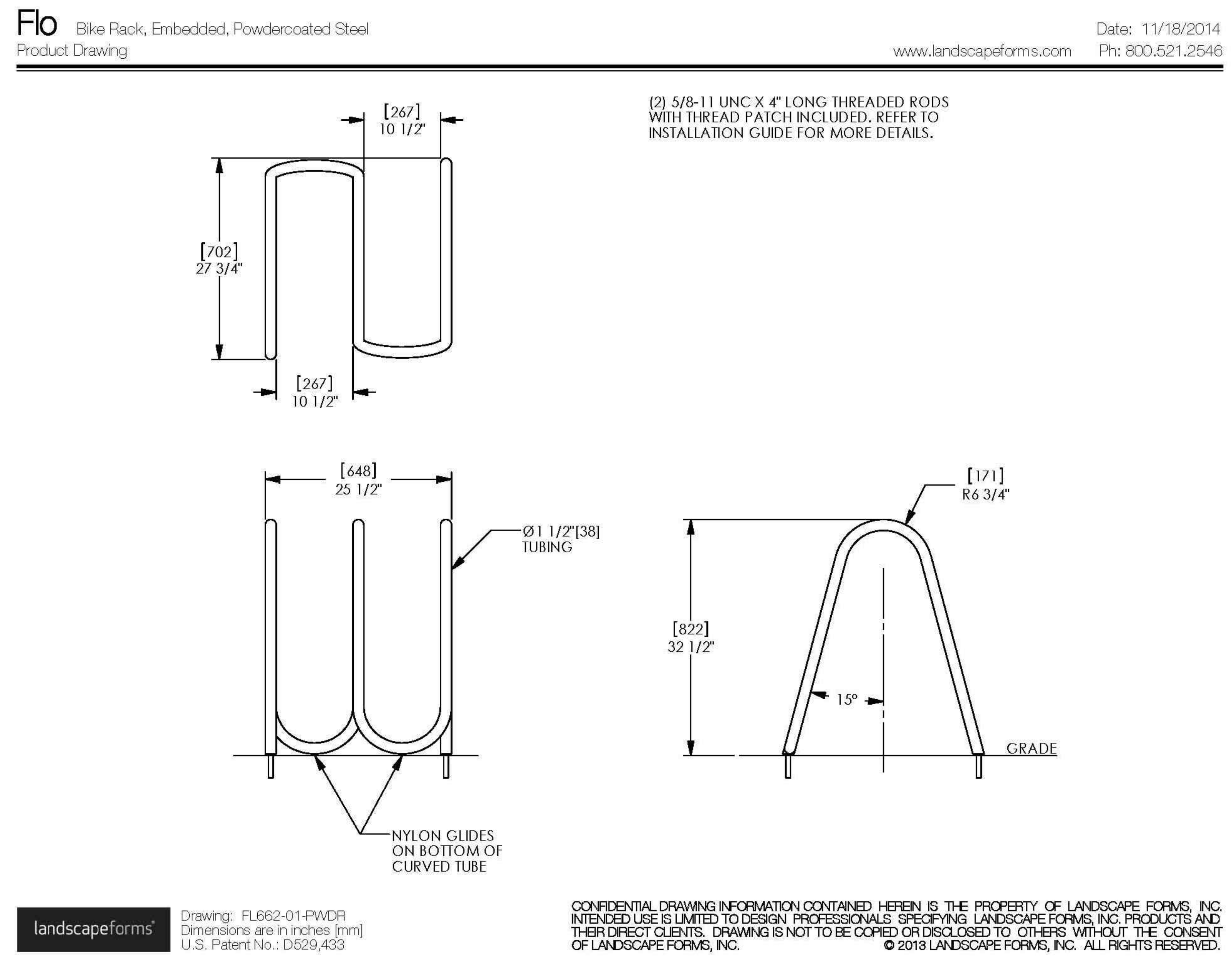
DRAWING NUMBER
C6

REV #



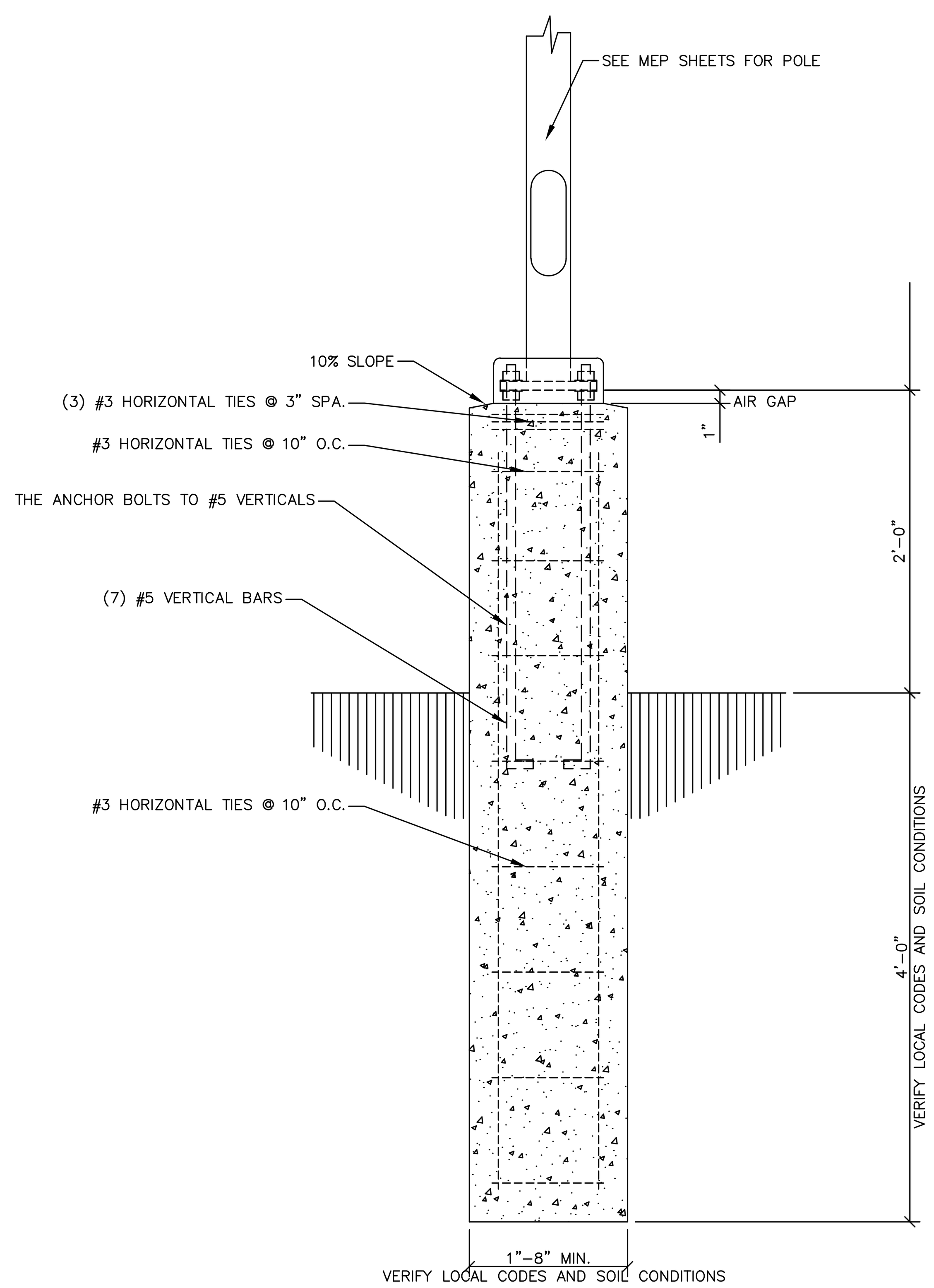
Accessible Parking Stall Detail

1 / C6.1 — Not To Scale



Embedded Outdoor Bike Rack Detail

2 / C6.1 — Not To Scale



Exterior Light Pole Standard Raised Concrete Base Detail

3 / C6.1 — Not To Scale

REVISIONS

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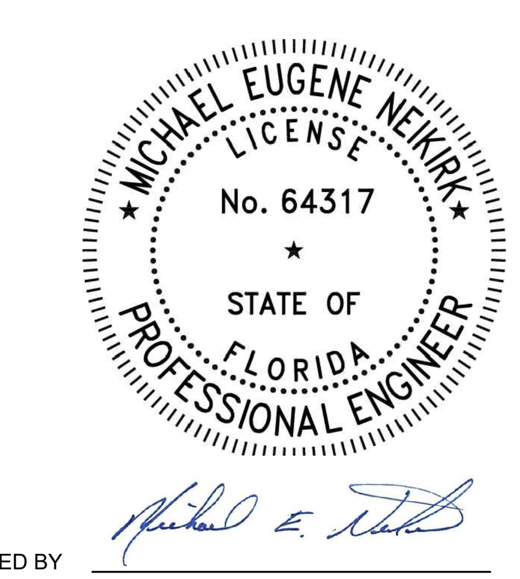


CERTIFIED BY

JOB TITLE

76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

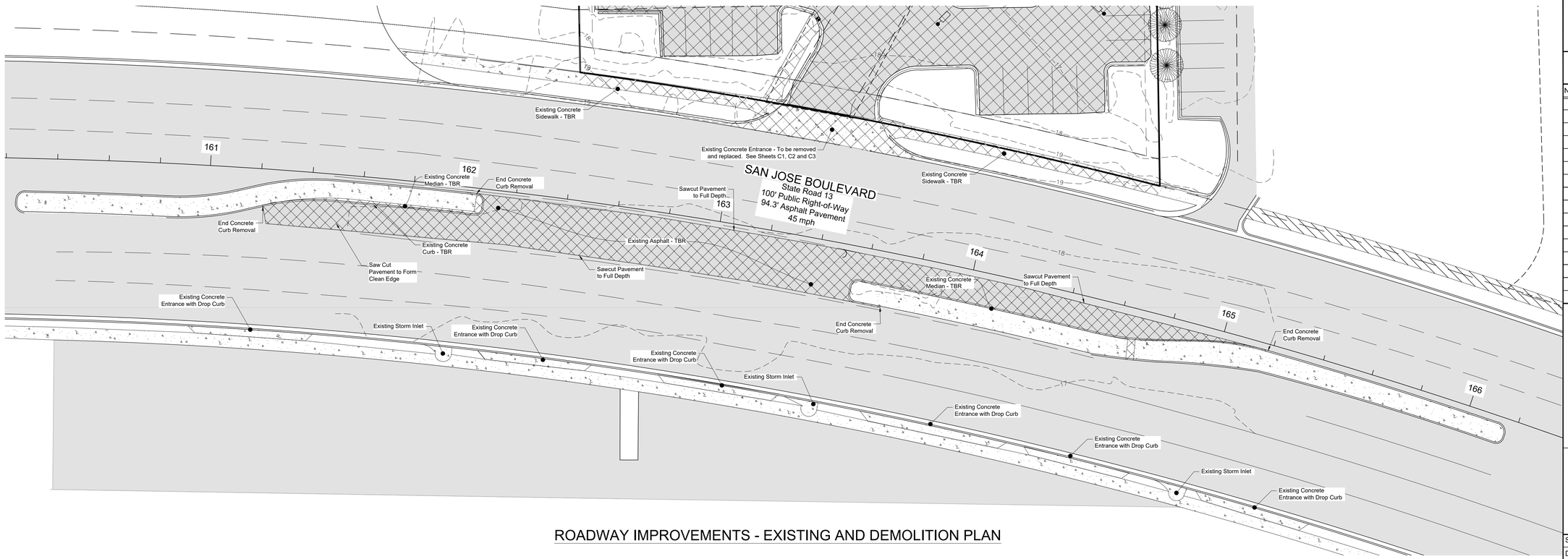
DRAWING TITLE

DETAILS

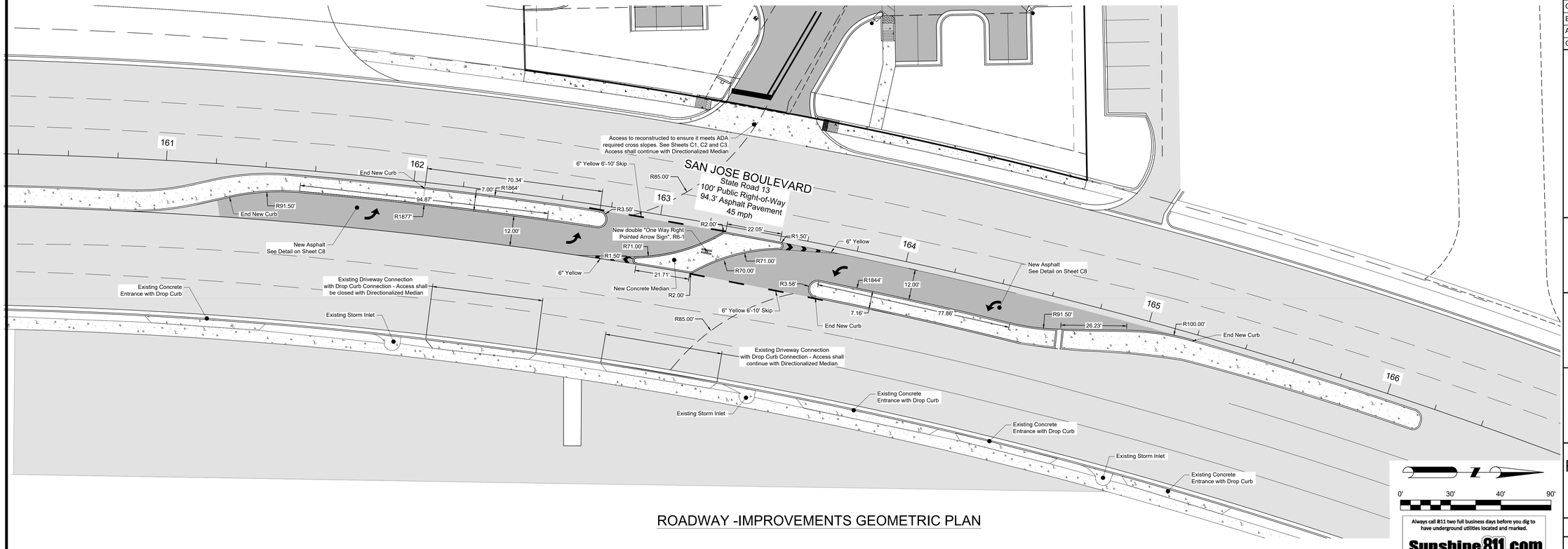
FILE LOCATION

DRAWING NUMBER: C6.1

REV #



ROADWAY IMPROVEMENTS - EXISTING AND DEMOLITION PLAN



ROADWAY -IMPROVEMENTS GEOMETRIC PLAN

REVISIONS

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ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
ROADWAY IMPROVEMENTS EXISTING AND GEOMETRIC PLAN

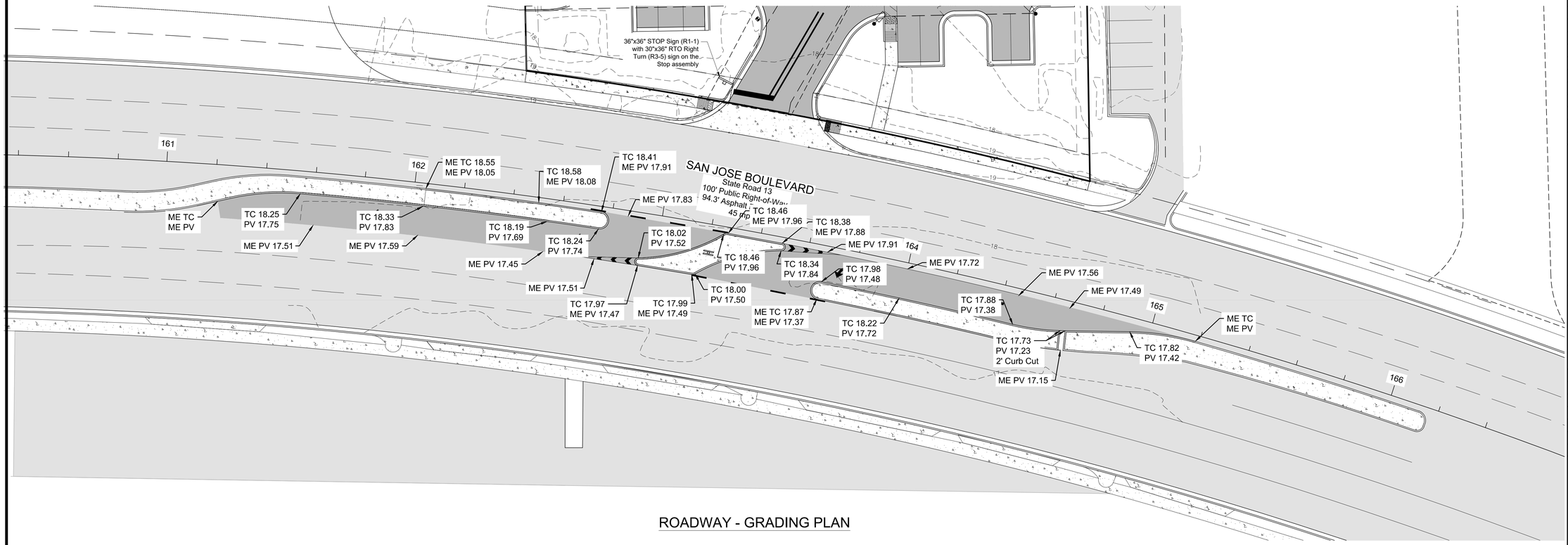
FILE LOCATION

DRAWING NUMBER
C7

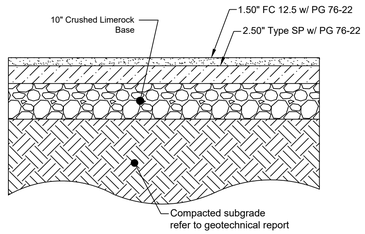
REV #

0' 30' 40' 90'

Always call 811 two full business days before you dig to have underground utilities located and marked.
Sunshine811.com



ROADWAY - GRADING PLAN



ASPHALT PAVEMENT SECTION

Not To Scale

0' 20' 40' 60'

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REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE

Civil Engineer

306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	1"=20'
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

JOB TITLE

76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE

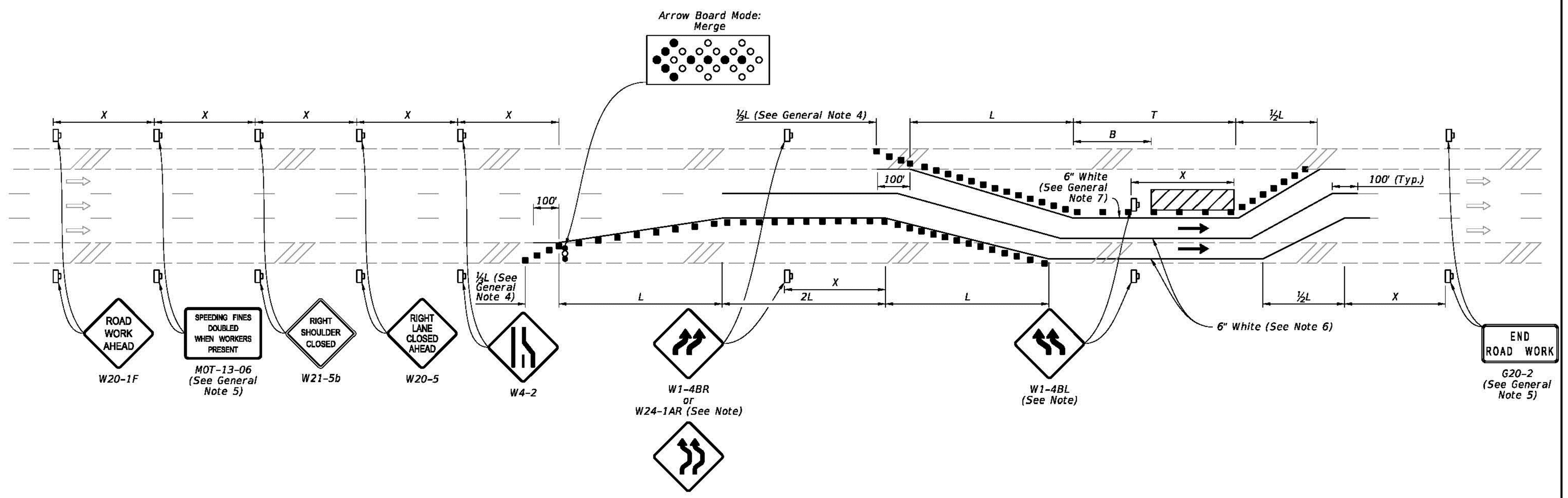
ROADWAY IMPROVEMENTS
GRADING PLAN

FILE LOCATION

DRAWING NUMBER

C8

REV #



LANE CLOSURE WITH LANE SHIFT

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic
- Arrow Board

NOTE:

If the tangent distance "T" is less than 600', then use "Double Reverse Curve" signs (W24-1A) instead of the first pair of "Reverse Curve" signs (W1-4B) and omit the second pair of "Reverse Curve" signs.

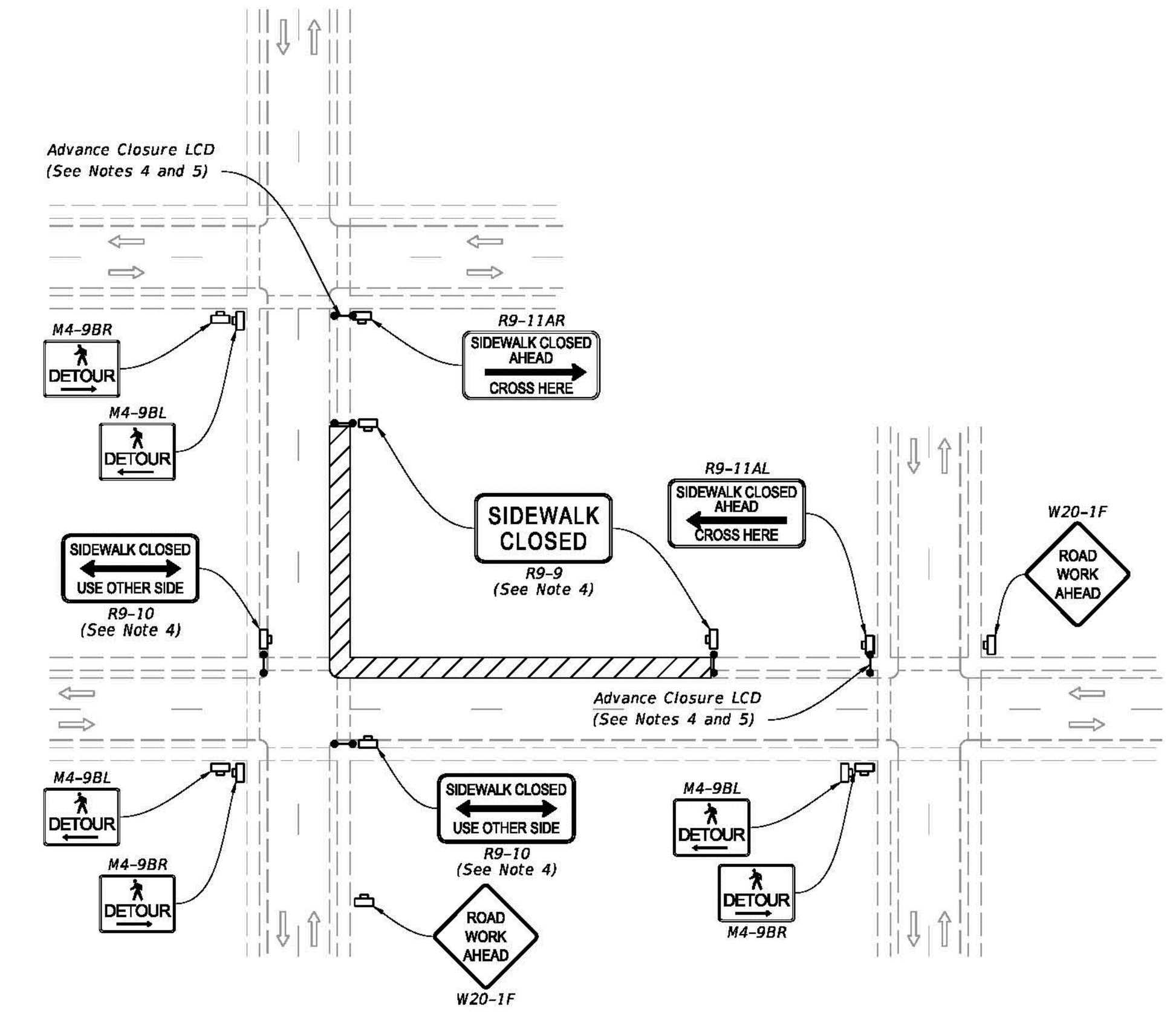
LAST REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20		FDOT FY 2021-22 STANDARD PLANS	MULTILANE ROADWAY, LANE CLOSURES	102-613	4 of 5

NOTES:

1. Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
2. Place pedestrian LCDs across the full width of the closed sidewalk.
3. For post mounted signs located near or adjacent to a sidewalk, maintain a minimum 7' clearance from the bottom of the sign panel to the surface of the sidewalk.
4. "Sidewalk Closed" signs (R9-XX) may be mounted on pedestrian LCDs in accordance with the manufacturer's instructions.
5. Omit the Advance Closure LCD if it blocks access to other pedestrian facilities (e,g,, transit stops, residences, or business entrances).

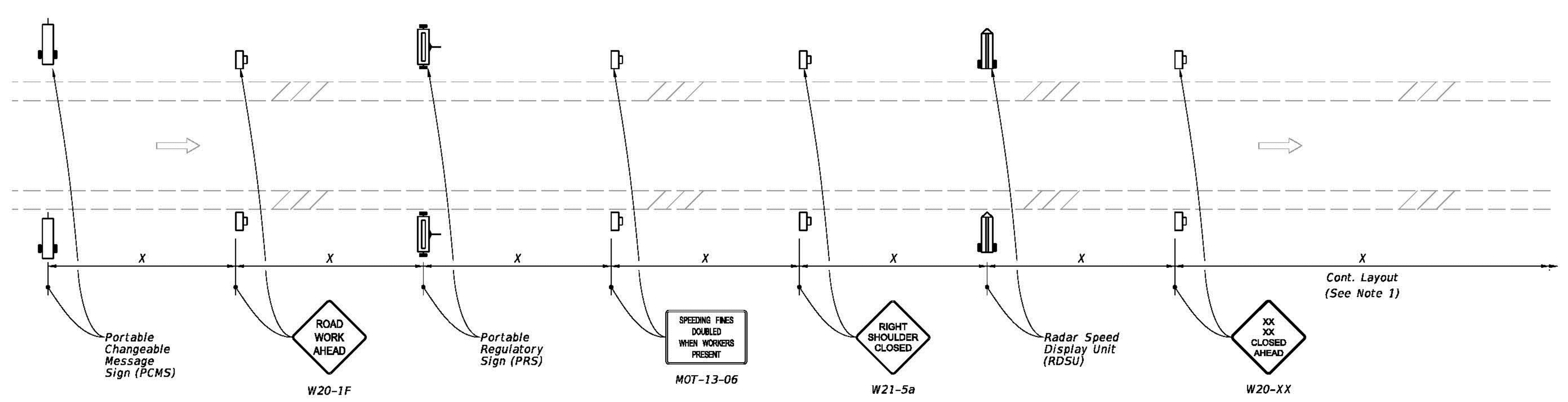
SYMBOLS:

- Work Area
- Work Zone Sign
- Lane Identification and Direction of Traffic
- Pedestrian Longitudinal Channelizing Device (LCD)



PEDESTRIAN DETOUR

LAST REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20		FDOT FY 2021-22 STANDARD PLANS	SIDEWALK CLOSURE	102-660	1 of 2



MOTORIST AWARENESS SYSTEM

SYMBOLS:

- Work Zone Sign
- (1) PCMS= Portable Changeable (Variable) Message Sign
- (2) PRS= Portable Regulatory Sign-Speed Limit When Flashing
- (2) RSDU= Radar Speed Display Unit
- Lane Identification and Direction of Traffic

NOTES:

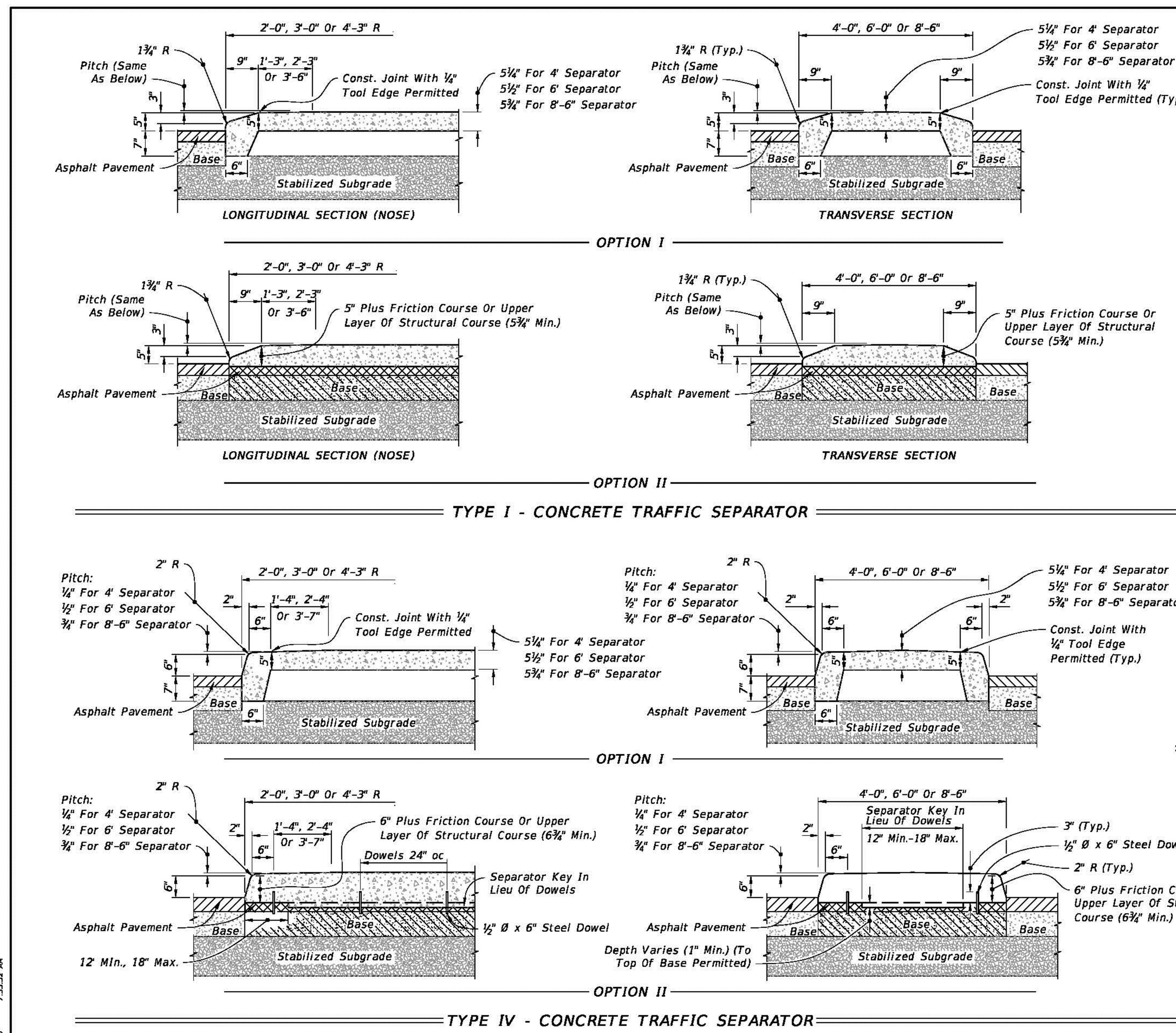
1. When called for in the Plans, use the Motorist Awareness System (MAS) in accordance with the Plans and this Index. When using this detail, locate the MAS devices (i.e., PCMS, PRS, and RDSU) within the advance warning signs as shown. Continue with the remainder of the work zone signs and devices in accordance with the Plans or Standard Plans after the appropriate "Lane Closed Ahead' (W20-XX) sign.
2. For a posted speed of 65 mph or greater, display speed with a ten mph reduction. For a posted speed of 60 mph, display a reduced speed of 55 mph. For areas outside of the lane closure, use the posted speed as the work zone speed.
3. Omit the PCMS in the median for roadways with three lanes or less in the same direction of traffic.

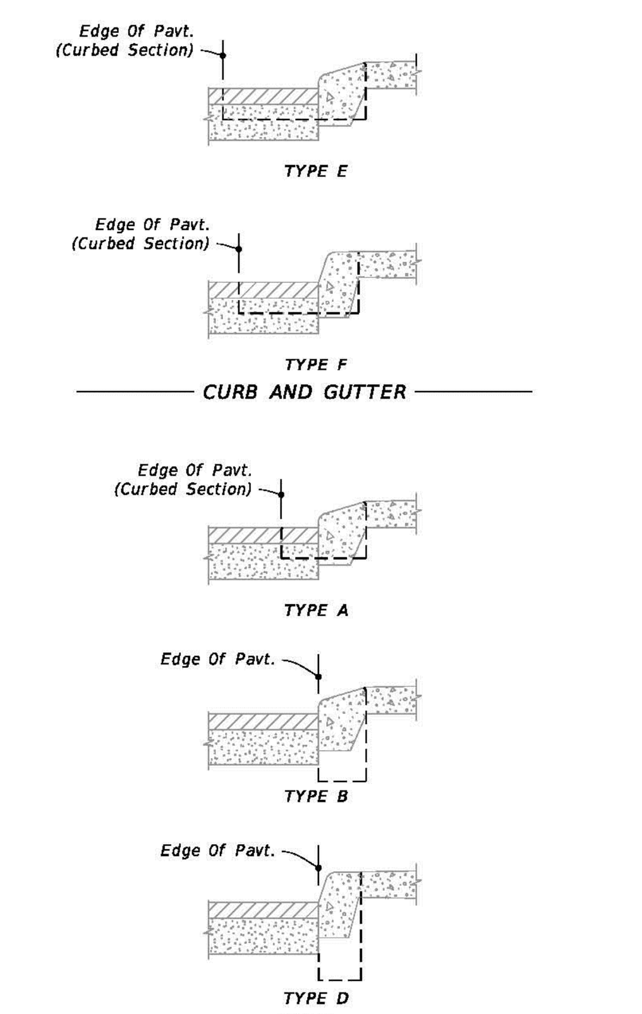
TYPICAL PCMS DISPLAY:

With speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: SPEED REDUCED NEXT XXMI

Without speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: NEXT XX MILES

LAST REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20		FDOT FY 2021-22 STANDARD PLANS	MULTILANE ROADWAY, LANE CLOSURES	102-613	5 of 5





MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

(Option I Separator Shown, For Curb Details see Index 520-001)

NOTES:

1. Separators Type I and IV are to be used with flexible pavement. Separators Types II and V are to be used with rigid pavement.
2. Either Option I or Option II may be used for Types I and IV separators except when a specific option is called for in the Plans.
3. For all separators provide ⅛"- ¼" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves to match the pavement joints, with intermediate joints not to exceed 10' center.

ROADWAY INSTALLATIONS - FLEXIBLE PAVEMENT

LAST REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17		FDOT FY 2021-22 STANDARD PLANS	TRAFFIC SEPARATORS	520-020	1 of 5

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

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Civil Engineer
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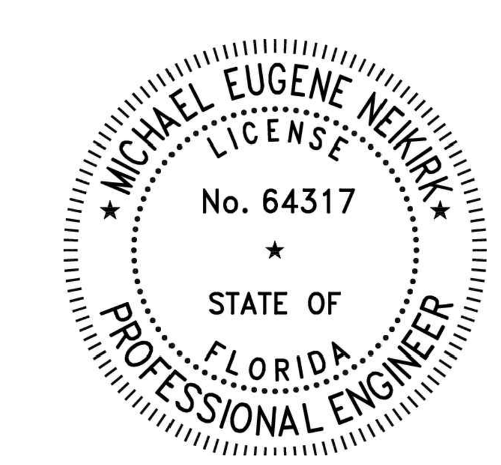
Phone: (618) 263-4100

SCALE:	NTS
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners



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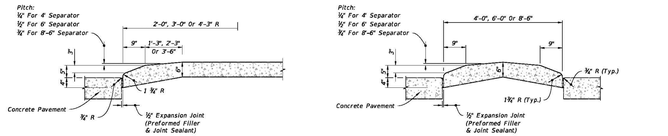
JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
ROADWAY IMPROVEMENTS
STANDARD DETAILS

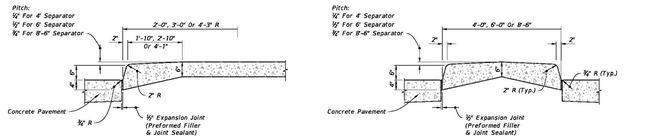
FILE LOCATION

DRAWING NUMBER
C9

REV #



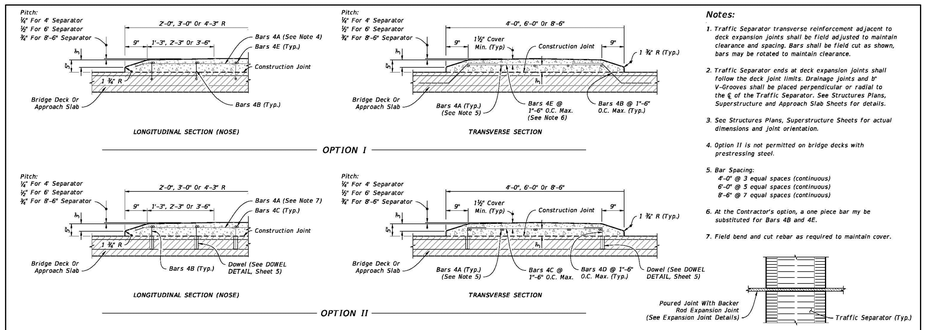
TYPE II - CONCRETE TRAFFIC SEPARATOR



TYPE V - CONCRETE TRAFFIC SEPARATOR

ROADWAY INSTALLATIONS - RIGID PAVEMENT

LAST REVISION 11/01/17	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	TRAFFIC SEPARATORS	INDEX 520-020	SHEET 2 of 5

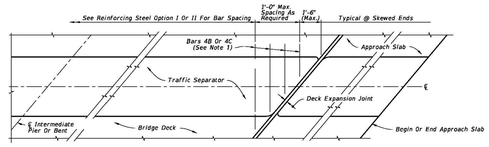


OPTION I

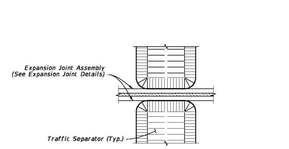
OPTION II

REINFORCING STEEL
(Bridge Deck SHown, Approach Slab Similar)

DETAIL AT POURED JOINT WITH BACKER ROD EXPANSION JOINTS



SKEWED BRIDGE DECK AND APPROACH SLAB WITH TRAFFIC SEPARATOR
(Deck Expansion Joint at Begin or End Bridge Shown, Expansion Joint at ℄ Pier or Intermediate Bents Similar)



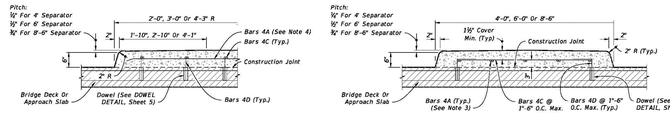
DETAIL AT EXPANSION JOINTS
(Strip Seal Shown, Other Armored Joint Types Similar)

Notes:

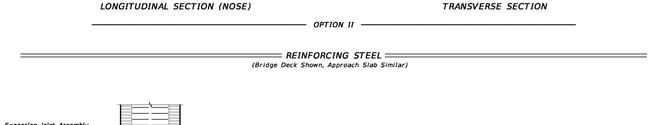
1. Traffic Separator transverse reinforcement adjacent to deck expansion joints shall be field adjusted to maintain clearance and spacing. Bars shall be field cut as shown, bars may be rotated to maintain clearance.
2. Traffic Separator ends at deck expansion joints shall follow the deck joint limits. Drainage joints and 6" V-Grooves shall be placed perpendicular or radial to the ℄ of the Traffic Separator. See Structures Plans, Superstructure and Approach Slab Sheets for details.
3. See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation.
4. Option II is not permitted on bridge decks with prestressing steel.
5. Bar Spacing:
   4'-0" @ 3 equal spaces (continuous)
   6'-0" @ 5 equal spaces (continuous)
   8'-6" @ 7 equal spaces (continuous)
6. At the Contractor's option, a one piece bar my be substituted for Bars 4B and 4E.
7. Field bend and cut rebar as required to maintain cover.

BRIDGE INSTALLATIONS - TYPE "E" CURB

LAST REVISION 11/01/17	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	TRAFFIC SEPARATORS	INDEX 520-020	SHEET 3 of 5

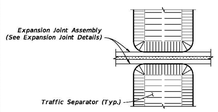


OPTION I

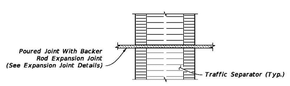


OPTION II

REINFORCING STEEL
(Bridge Deck Shown, Approach Slab Similar)



DETAIL AT EXPANSION JOINTS
(Strip Seal Shown, Other Armored Joint Types Similar)



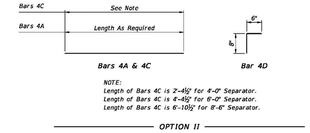
DETAIL AT POURED JOINT WITH BACKER ROD EXPANSION JOINTS

Notes:

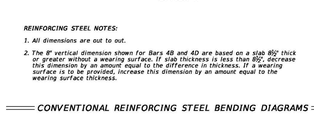
1. Treatment of separators on straight bridges shown. For additional notes and treatment of separators on skewed bridges, see Sheet 2.
2. Option II is not permitted on bridge decks with prestressing steel.
3. Bar Spacing:
   4'-0" @ 3 equal spaces (continuous)
   6'-0" @ 5 equal spaces (continuous)
   8'-6" @ 7 equal spaces (continuous)
4. At the Contractor's option, a one piece bar my be substituted for Bars 4B and 4E.
5. Field bend and cut rebar as required to maintain cover.

BRIDGE INSTALLATIONS - TYPE "F" CURB

LAST REVISION 11/01/17	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	TRAFFIC SEPARATORS	INDEX 520-020	SHEET 4 of 5



OPTION I



OPTION II

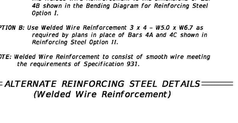
REINFORCING STEEL NOTES:

1. All dimensions are out to out.
2. The 8" vertical dimension shown for Bars 4B and 4D are based on a slab 8½" thick or greater without a wearing surface. If slab thickness is less than 8½", decrease this dimension by an amount equal to the difference in thickness. If a wearing surface is to be provided, increase this dimension by an amount equal to the wearing surface thickness.

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

See Structures Plans, Superstructure Sheets for location(s) of drainage joints. Locations for drainage joints shall be limited to the constant width section of separator.

DRAINAGE JOINT DETAIL
(For 5" Opening Or Less)



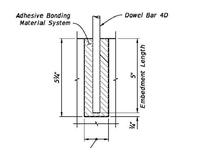
SPLICE DETAIL
(Between WWR 3 x 4 - W5.0 x W6.7 Sections)

OPTION A: Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A, 4B and 4E. Bend the Welded Wire Reinforcement to the dimensions of Bar 4B shown in the Bending Diagram for Reinforcing Steel Option I.

OPTION B: Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A and 4C shown in Reinforcing Steel Option II.

NOTE: Welded Wire Reinforcement to consist of smooth wire meeting the requirements of Specification 931.

ALTERNATE REINFORCING STEEL DETAILS
(Welded Wire Reinforcement)



DOWEL NOTES:

1. Shift Dowel Holes to clear if existing reinforcement is encountered.
2. Provide and install an adhesive bonding material system in accordance with Specifications 416 and 937.
3. The dowel hole diameter is to meet adhesive bonding material system manufacturer's requirements.

DOWEL DETAIL

ESTIMATED TRAFFIC SEPARATOR QUANTITIES:

CONCRETE:
CONSTANT WIDTH OF SEPARATOR:

	TYPE "E"	TYPE "F"
4'-0"	Width = 0.056 CY per Ft.	- 0.072 CY per Ft.
6'-0"	Width = 0.089 CY per Ft.	- 0.112 CY per Ft.
8'-6"	Width = 0.132 CY per Ft.	- 0.164 CY per Ft.

NOSE:

	TYPE "E"		TYPE "F"
4'-0"	Width = 0.080 CY	-	0.109 CY
6'-0"	Width = 0.193 CY	-	0.257 CY
8'-6"	Width = 0.403 CY	-	0.536 CY

REINFORCING STEEL:
(All quantities are based on an 8½" slab.)

OPTION I:
4'-0" Width = 6.37 Lbs. per Ft.
6'-0" Width = 8.60 Lbs. per Ft.
8'-6" Width = 11.05 Lbs. per Ft.

OPTION II:
4'-0" Width = 4.77 Lbs. per Ft.
6'-0" Width = 7.00 Lbs. per Ft.
8'-6" Width = 9.45 Lbs. per Ft.

BRIDGE INSTALLATIONS - TYPE "E" AND "F" CURB

LAST REVISION 11/01/17	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	TRAFFIC SEPARATORS	INDEX 520-020	SHEET 5 of 5

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
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306 North Market Street, Ste 101
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Phone: (618) 263-4100

SCALE:	1"=30'
DRAWN BY:	TJL
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ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

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76 STORE
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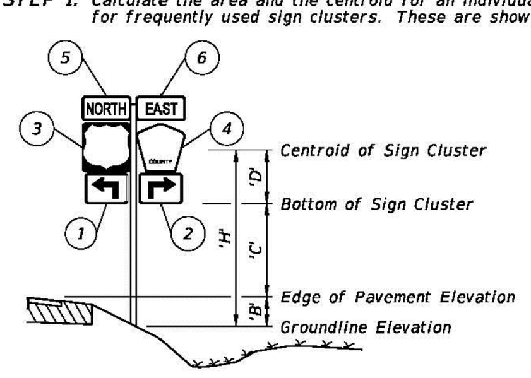
DRAWING TITLE
ROADWAY IMPROVEMENTS
STANDARD DETAILS

FILE LOCATION

DRAWING NUMBER C10

REV #

STEP 1: Calculate the area and the centroid for an individual sign or a sign cluster. Note that the centroid and areas have been calculated for frequently used sign clusters. These are shown on Sheets 7, 8, and 9.



	Size a x h	Centroid Local 'Y'n	Centroid Global 'X'n	Centroid Global 'Y'n	'A'n	'X'n x 'A'n	'Y'n x 'A'n
	(in. x in.)	(in.)	(in.)		(in.²)	(in.³)	(in.³)
1	21 x 15	7.5	−10.5−1.5−1.5 = −13.5	7.5	315	−4,252.5	2,362.5
2	21 x 15	7.5	10.5+1.5+1.5 = 13.5	7.5	315	+4,252.5	2,362.5
3	24 x 24	12	−12−1.5 = −13.5	15+1+12 = 28	576	−7,776	16,128
4	24 x 24	12	12+1.5 = 13.5	15+1+12 = 28	436	5,886	12,208
5	24 x 12	6	−12−1.5 = −13.5	15+1+24+1+6 = 47	288	−3,888	13,536
6	24 x 12	6	12+1.5 = 13.5	15+1+24+1+6 = 47	288	3,888	13,536
				TOTALS	2,218	−1,890	60,133

$\Sigma('A'_n) = 2{,}218 \text{ in.}^2 = 15.4 \text{ ft.}^2$ $\Sigma('X'_n \times 'A'_n) = -1{,}890 \text{ in.}^3 = -1.09 \text{ ft.}^3$ $\Sigma('Y'_n \times 'A'_n) = 60{,}133 \text{ in.}^3 = 34.8 \text{ ft.}^3$

$'X'_c = \frac{\Sigma('X'_n \times 'A'_n)}{\Sigma 'A'_n} = -0.1 \text{ ft.}$ $'Y'_c = \frac{\Sigma('Y'_n \times 'A'_n)}{\Sigma 'A'_n} = 2.26 \text{ ft.}$

STEP 2: Determine the height 'H' from groundline to the centroid of the individual sign or sign cluster.

Assume: 'B' = 1 ft., 'C' = 7 ft.

Calculated: $X'_c = -0.1$ ft., $'Y'_c$ = 'D' 2.26 ft.

'H' = 'B' + 'C' + 'D' = 10.26 ft. ==> USE 11 ft. $\Sigma('A'_n) = 15.4 \text{ ft.}^2$ ==> USE 16 ft.²

STEP 3: Refer to the Aluminum Column (Post) Selection Tables and find the intersection point. See Sheet 3.

ALUMINUM COLUMN (POST) SELECTION TABLE

TOTAL PANEL AREA (SF)	'H' (FT) 8 ft	9 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8

For 'H' = 11 ft., Area = 16 ft.²

- Refer to the Aluminum Column (Post) Selection Table, from Sheet 3 and shown here for reference.
- To determine the required post size, find the intersection of the row labeled "16 SF" and the column labeled "11 FT". For the example the intersection value is "4" (4" OD).
- In the Column (Post) and Foundation Table, the value "4" shows the design requires a 4.0" diameter and ¼" thick Aluminum Column (Post) and a 2.0' diameter and 3.5' deep Concrete Foundation and 3.0' Stub.

STEP 4: For sign assemblies with signs oriented in two directions, only the sign with the largest area should be analyzed to determine the Column (Post) requirements.

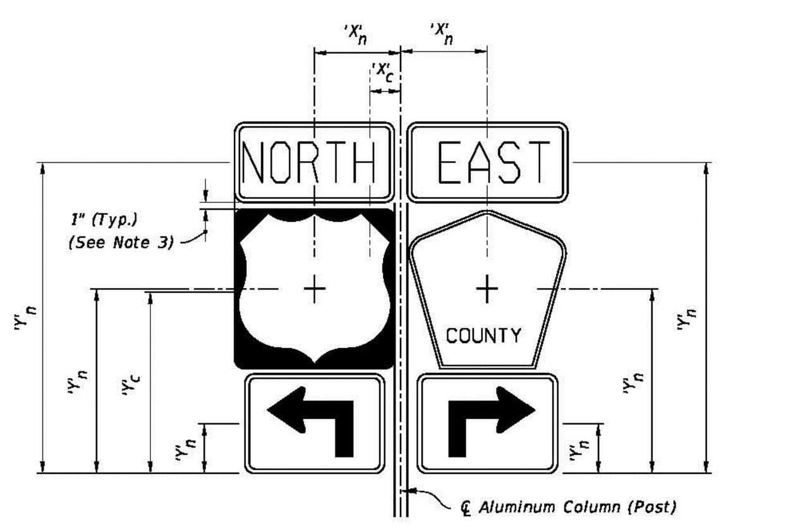
GUIDE TO USE THIS INDEX

SHEET	CONTENTS
1	General Notes and Design Example
2	Design Example - Centroid
3	Column and Foundation Tables
4	Slip Base and Foundation Details
5	Driven Post, Concrete Stub, and Soil Plate Details
6	Wind Beam Connection
7, 8 & 9	Frequently Used Sign Clusters

GENERAL NOTES:

1. Shop Drawings:
   This Index is considered fully detailed. Submit Shop Drawings only for minor modifications not detailed in the Plans.
2. Aluminum Sign, Wind Beams and Column (Post) Materials:
   A. Aluminum Plates: ASTM B209, Alloy 6061-T6
   B. Aluminum Bars and Extruded Shapes: ASTM B221, Alloy 6061-T6
   C. Aluminum Structural Shapes: ASTM B221 Alloy 6061-T6
   D. Cast Aluminum: ASTM B26 Alloy A356-T6
   E. Aluminum Weld Material: ER 5556 or 5356
3. Galvanized Steel Slip Base Stub Materials:
   A. Steel Plate and Structural Shapes: ASTM A36 or ASTM A709, Grade 36
   B. Steel Weld Metal: E70XX
4. Sign Mounting Bolts, Nuts and Washers:
   A. Aluminum Button Head and Flat Head Bolts: ASTM F468 Alloy 2024-T4
   B. Aluminum Hex Nuts: ASTM F467 Alloy 6061-T6 or 6262-T9
   C. Aluminum Washers: ASTM B221, Alloy 7075-T6
5. Stainless Steel Bolts, Nuts and Washers may be used in lieu of the Aluminum button head and flat head bolts as follows:
   A. Stainless Steel Bolts: ASTM Ft 593 Alloy Group 2, Condition A, CW1 or SH1
   B. Stainless Steel Nuts: ASTM F594
6. Sign Column (Post) Bolts, Nuts and Washers:
   A. Galvanized U-Bolt (Column): ASTM A449 or ASTM A193 B7 according to ASTM F2329 with double nuts (nut and lock washer optional).
   B .Aluminum Bolts (Sleeve): ASTM F468, Alloy 6061-T6 or 2024-T4 with Hex Nuts F467 6061-T6 or 6262-T9 and Washers B221, Al clad 2024-T4
   C. Galvanized High Strength Hex Head Bolts (Base Bolts): ASTM F3125, Grade A325, Type 1
   D. Galvanized Hex Nuts: ASTM A563 Grade D
   E. Galvanized Washers: ASTM F436
   F. Galvanized Bolts (Sleeve): ASTM A307 with Galvanized Hex Nuts and Washers
7. Coatings:
   A. Aluminum Fasteners: Anodic coating (0.0002 inches mint.) and chromate sealed
   B. High Strength Steel Bolts Nuts and Washers: ASTM F2329
   C. All other steel items (excluding stainless steel): Hot-dip Galvanize-ASTM A123
   D. Repair damaged galvanizing in accordance with Specification 562
8. BREAKAWAY SUPPORTS REQUIREMENTS: Install non-frangible aluminum column (post) (larger than 3½") with breakaway supports as shown on Sheet 4. Signs shielded by barrier wall or guardrail do not require breakaway support.

GENERAL NOTES AND DESIGN EXAMPLE



SIGN CLUSTER

$$'X'_c = \frac{\Sigma('X'_n \times 'A'_n)}{\Sigma 'A'_n} \qquad 'C' = 'Y'_c = \frac{\Sigma('Y'_n \times 'A'_n)}{\Sigma 'A'_n}$$

$'A'_n$ = Area of individual sign

'B' = Height of the edge of pavement from the mounting elevation

'C' = Height of the the bottom of the sign or cluster from the edge of pavement elevation

'D' = Height of the centroid of the sign or cluster from the bottom of the sign or cluster

h = Individual sign height

'H' = Height of sign or cluster centroid from groundline

a = Individual sign width

$'X'_c$ = Centroid horizontal location of sign or cluster from ℄ Aluminum Column (Post)

$'Y'_c$ = Centroid height of sign or cluster from bottom of sign cluster

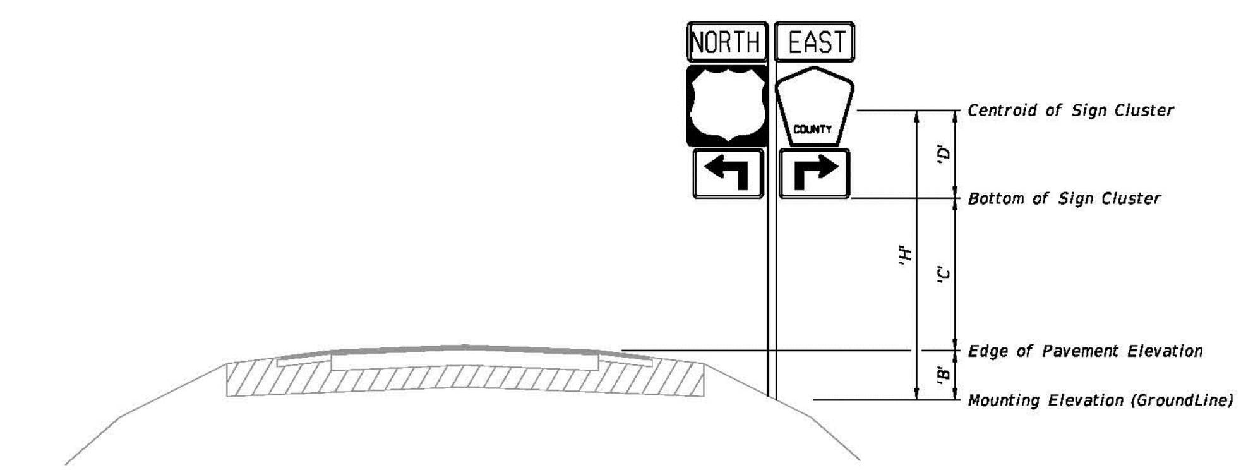
$'X'_n$ = Individual sign centroid horizontal location from ℄ Aluminum Column (Post)

$'Y'_n$ = Individual Sign centroid height from bottom of sign cluster

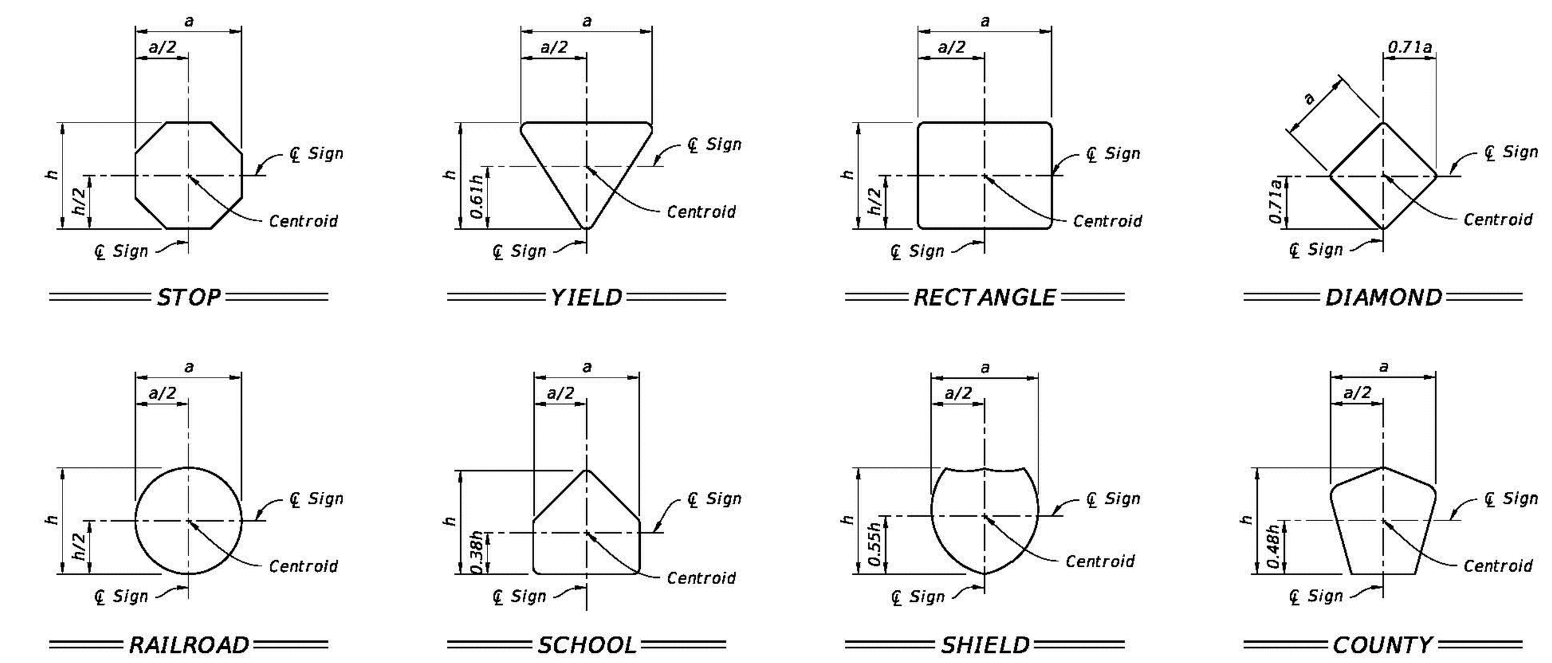
NOTES:

1. For 'B' & 'C' see Index 700-101 and Roadway Plans.
2. Do not exceed an area of 30 SF or a width of 60 inches for a sign or a sign cluster, including rotated sign panels.
3. Vertical sign spacing (1" shown on Sign Cluster detail) also applies to rotated signs.

CALCULATION OF SIGN CLUSTER CENTROID



TYPICAL SECTION



DESIGN EXAMPLE - CENTROID

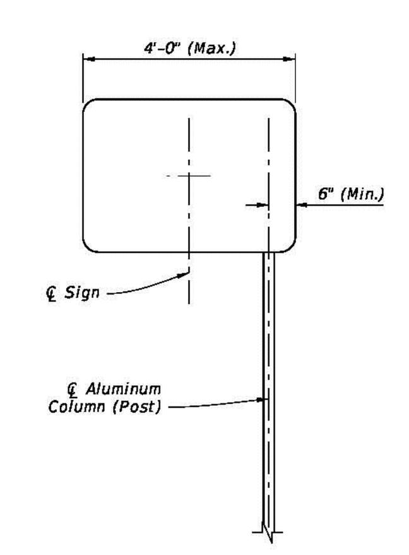
ALUMINUM COLUMN (POST) SELECTION TABLE (O.D. in.)

TOTAL PANEL AREA (SF)	'H' (FT) 8 ft	9 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8

FOUNDATION TABLE

Column (Post) Size: Outside Diameter (in)	Wall Thk. (in)	Driven Post *: Embedment Depth (ft) without Soil Plate	Driven Post *: Embedment Depth (ft) with Soil Plate	Concrete (Class I): Diameter (ft)	Concrete (Class I): Embedment Depth (ft)	Concrete (Class I): Stub Length (ft)
2.0	⅛	4.5	2.5	---	---	---
2.5	⅛	5.0	3.0	---	---	---
3.0	⅛	5.0	3.5	---	---	---
3.5	3/16	6.0	4.5	---	---	---
4.0	¼	---	---	2.0	3.5	3.0
4.5	¼	---	---	2.0	4.0	3.0
5.0	¼	---	---	2.0	4.5	3.0
6.0	¼	---	---	2.0	5.0	3.0
8.0	¼	---	---	2.0	5.5	3.0

* INSTALLING FRANGIBLE COLUMN SUPPORTS:
Columns (posts) 3½" O.D. and less are considered frangible and may be installed either by driving the post or setting the posts in preformed holes. Backfill preformed holes with suitable material tamped in layers not thicker than 6" (to provide adequate compaction) or filled with flowable fill or bagged concrete.

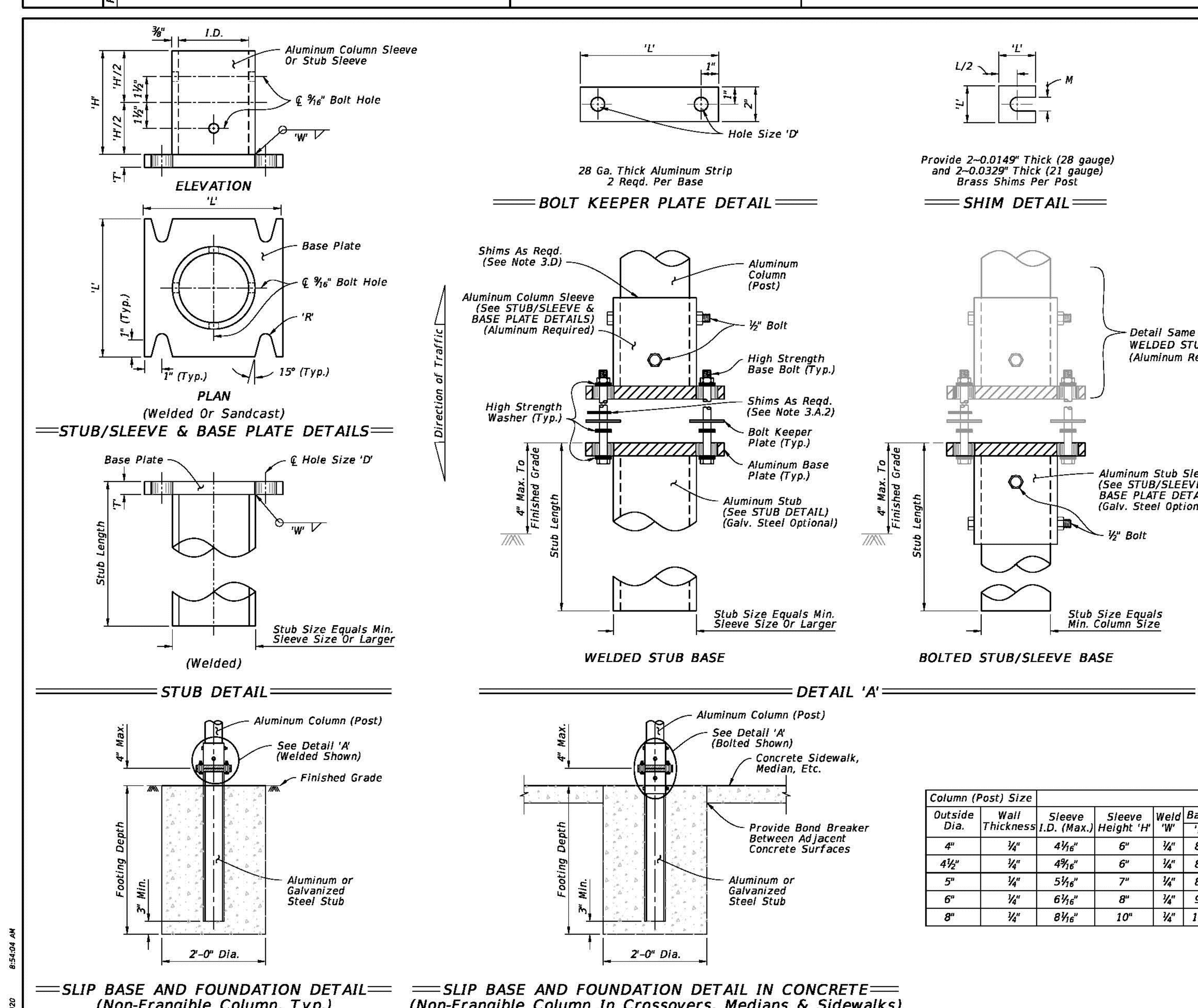


OFFSET SIGN

NOTE:

1. For offset sign placement see Index 700-101.
2. For signs with widths greater than 4' see Index 700-011.
3. Offset signs with driven posts require a soil plate.

COLUMN AND FOUNDATION TABLES



NOTES:

1. Foundation Notes for Slip Base:
   A. Place Stub into concrete foundation given in the FOUNDATION TABLE using Class I Concrete.
2. Slip Base Fabrication Notes:
   A. The difference between the O.D. of the post and I.D. of the Sleeve must be 1/16" or less.
   B. The WELDED STUB BASE and lower STUB/SLEEVE BASE PLATE may be fabricated using galvanized steel as an option to aluminum. The upper portion of the SLIP BASE must be aluminum.
   C. Either a Welded Stub Base or Bolted Stub/Sleeve Base may be used in Slip Base.
   D. For cast base plates bolted to foundation stubs, use a foundation stub the same size as the sign column (Post).
3. Slip-Base Assembly Instructions:
   A. Assemble the Slip Base as follows:
      1. Insert Post into Sleeve and connect using 2 ~ ½" diameter Sleeve Bolts.
      2. Assemble top base plate to bottom Base Plate using Base Bolts (High strength) with 3 washers per bolt. (See Detail 'A'):
         a. Place one washer on each Base Bolt between the bottom Base Plate and the Base Bolt head.
         b. Place the next washer between the Bottom Base Plate and the Bolt Keeper Plate.
         c. Use brass or galvanized steel shims to plumb the post.
         d. Add the top base plate section.
         e. Place the third washer between the Top Base Plate and the Nut.
   B. Orient the Bolt Keeper Plates in the Direction of Traffic.
   C. Tighten Base Bolts as follows:
      1. Tighten Base Bolts to the maximum possible with a 12" to 15" wrench (this will bed the washers and shims and clear the bolt threads).
      2. Loosen each Base Bolt one turn.
      3. Under the supervision of the Engineer, use a calibrated wrench to tighten bolts to the torque prescribed in the SLIP BASE DETAILS Table. Over tightened Base Bolts are not permitted.
      4. Distort bolt threads at the junction with nuts to prevent loosening. Repair damaged galvanizing.
   D. Obtain a tight sleeve connection by placing 4 galvanized steel shims between the column (post) and sleeve. Space the shims evenly around the perimeter of the column (1 between each bolt hole, 4 total). Use shims that are 1" shorter than the height of the sleeve.

SLIP BASE DETAILS

Column (Post) Size: Outside Dia.	Wall Thickness	Sleeve I.D. (Max.)	Sleeve Height 'H'	Weld 'W'	Base Plate 'L'	Base Plate 'T'	Radius 'R'	Base Bolt Size	Base Bolt Length	Base Plate Torque ft-lbs	Base Plate Torque in.-lbs	Hole Size 'D'	SHIM L	SHIM M
4"	¼"	4 1/16"	6"	¼"	8"	¾"	11/32"	⅝"	3"	29	345	11/16"	1⅜"	11/16"
4½"	¼"	4 9/16"	6"	¼"	8"	⅞"	11/32"	⅝"	3¼"	29	345	11/16"	1⅜"	11/16"
5"	¼"	5 1/16"	7"	¼"	8"	⅞"	11/32"	⅝"	3¼"	29	345	11/16"	1⅜"	11/16"
6"	¼"	6 1/16"	8"	¼"	9"	1"	13/32"	¾"	3½"	46	554	13/16"	1¾"	13/16"
8"	¼"	8 1/16"	10"	¼"	11"	1"	15/32"	⅞"	3¾"	53	640	15/16"	2⅜"	1 1/16"

SLIP BASE AND FOUNDATION DETAILS

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE
Civil Engineer
306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	NTS
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

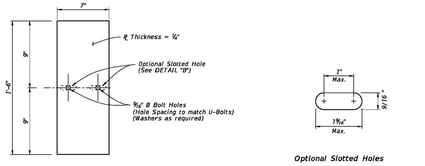
CERTIFIED BY

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
ROADWAY IMPROVEMENTS STANDARD DETAILS

FILE LOCATION

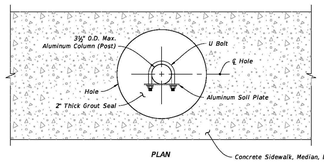
DRAWING NUMBER C11 | REV #



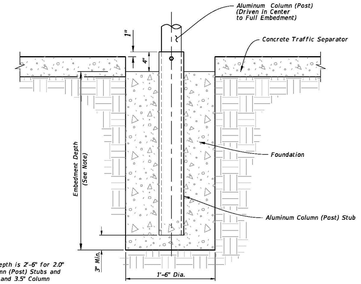
ALUMINUM SOIL PLATE DETAIL

Optional Slotted Holes

DETAIL "B"



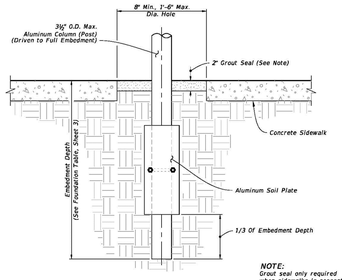
PLAN



NOTE:
Embedment Depth is 2'-6" for 2.0" and 2.5" Column (Post) Stubs and 3'-0" for 3.0" and 3.5" Column (Post) Stubs.

ELEVATION

CONCRETE/STUB DETAIL
(Traffic Separator)



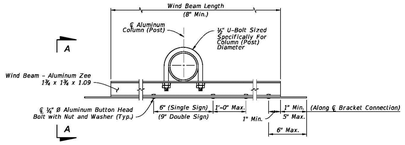
NOTE:
Grout seal only required when sidewalks is present.

ELEVATION

DRIVEN POST DETAIL
(Frangible Post In Through Sidewalk Shown
Installations without Sidewalk Similar)

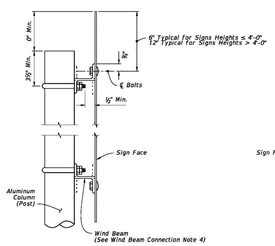
DRIVEN POST, CONCRETE/STUB, AND SOIL PLATE DETAILS

LAST REVISION 11/01/20	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX 700-010	SHEET 5 of 10

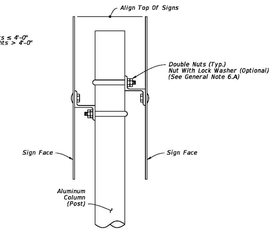


WIND BEAM CONNECTIONS DETAILS

NOTES:
1. ⅜" Ø stainless steel hex head bolts with nylon washer under head and washer under nut may be used in lieu of ½" Ø aluminum button or flat head bolts.
2. Use nylon washers (provided by the sheeting supplier) under the bolt heads to protect sign sheeting.
3. Slots up to 2" long are allowed in wind beams to accommodate U-Bolts for varying Column (Post) diameters.
4. Wind beams may be oriented in either direction.
5. For signs greater than 66" in height, install a third wind beam evenly spaced between the top and bottom wind beams. For signs up to 12" in height, use only one wind beam at ℄ Sign. Install two wind beams on signs with heights greater than 12" and less than or equal to 66".



SINGLE SIGN DETAIL



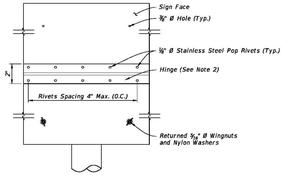
NOTE: Use the area and the centroid location of the largest sign to determine aluminum column (post) size.

BACK-TO-BACK SIGN DETAIL

VIEW A-A

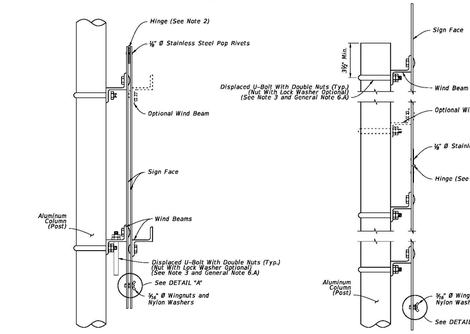
WIND BEAM CONNECTION

LAST REVISION 11/01/20	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX 700-010	SHEET 6 of 10



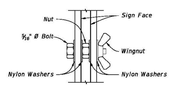
SIGN PANEL FRONT VIEW

NOTES:
1. Install sign in the undeployed (down) position.
2. Provide a continuous stainless steel hinge with minimum 0.060" leaf thickness, 2" open width and 0.120" pin diameter. Stake the hinge at both ends to prevent pin movement.
3. Stowed 1 or 2 pcs of U-Bolt sized specifically for column (post) diameter. Stowed on Wind Beam and displaced while deploying the sign.
4. Bolts, Wingnuts, and washers at the bottom corners of the sign hold the sign panels closed when in the undeployed (down) position. Store bolts, wingnuts, and washers in the bottom corner of the sign when in the deployed (up) position.

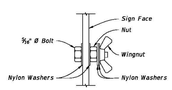


UNDEPLOYED SIGN DETAIL

DEPLOYED SIGN DETAIL



DETAIL "A"



DETAIL "B"

SIGN PANEL SIDE VIEW

WIND BEAM CONNECTION FOR FLIP UP SIGN

LAST REVISION 11/01/20	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX 700-010	SHEET 7 of 10

	Size	Area	Total Area	Centroid
STOP	36x12	3.00 SF		
	24x24	3.31 SF	6.31 SF	1.75 Ft.
STOP	36x12	3.00 SF		
	30x30	5.18 SF	8.18 SF	1.92 Ft.
STOP	36x12	3.00 SF		
	36x36	7.46 SF	10.46 SF	2.10 Ft.
STOP	36x12	3.00 SF		
	48x48	13.25 SF	16.25 SF	2.48 Ft.
STOP	24x24	3.31 SF		
	24x18	3.00 SF	6.31 SF	1.71 Ft.
STOP	30x30	5.18 SF		
	30x24	5.00 SF	10.18 SF	2.19 Ft.
STOP	36x36	7.46 SF		
	30x24	5.00 SF	12.46 SF	2.55 Ft.

	Size	Area	Total Area	Centroid
STOP	36x12	3.00 SF		
	30x30	5.18 SF	13.18 SF	2.87 Ft.
	30x24	5.00 SF		
STOP	36x12	3.00 SF		
	36x36	7.46 SF	15.46 SF	3.15 Ft.
	30x24	5.00 SF		
JCT 27	21x15	2.19 SF		
	24x24	4.00 SF	6.19 SF	1.60 Ft.
JCT 301	21x15	2.19 SF		
	30x24	5.00 SF	7.19 SF	1.52 Ft.
BUSINESS 27 EAST 27	24x12	2.00 SF		
	24x24	4.00 SF	6.00 SF	1.53 Ft.
BUSINESS 301 EAST 301	24x12	2.00 SF		
	30x24	5.00 SF	7.00 SF	1.45 Ft.
BUSINESS 301 EAST 301	30x15	3.13 SF		
	30x24	5.00 SF	8.13 SF	1.66 Ft.

	Size	Area	Total Area	Centroid
27	24x24	4.00 SF		
	21x15	2.19 SF	6.19 SF	1.73 Ft.
27	30x24	5.00 SF		
	21x15	2.19 SF	7.19 SF	1.81 Ft.
BUSINESS 27 EAST 27	24x12	2.00 SF		
	24x24	4.00 SF	8.19 SF	2.26 Ft.
BUSINESS 301 EAST 301	24x12	2.00 SF		
	30x24	5.00 SF	9.19 SF	2.27 Ft.
BUSINESS 301 EAST 301	30x15	3.13 SF		
	30x24	5.00 SF	10.32 SF	2.49 Ft.
EAST BUSINESS 27	24x12	2.00 SF		
	24x12	2.00 SF		
	24x24	4.00 SF	10.19 SF	2.80 Ft.
	21x15	2.19 SF		

LAST REVISION 11/01/19	DESCRIPTION:	FDOT FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX 700-010	SHEET 8 of 10

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

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SCALE:	NTS
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DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners

MICHAEL EUGENE NEIKIRK LICENSE No. 64317 STATE OF FLORIDA PROFESSIONAL ENGINEER

CERTIFIED BY

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
ROADWAY IMPROVEMENTS
STANDARD DETAILS

FILE LOCATION

DRAWING NUMBER
C12

REV #

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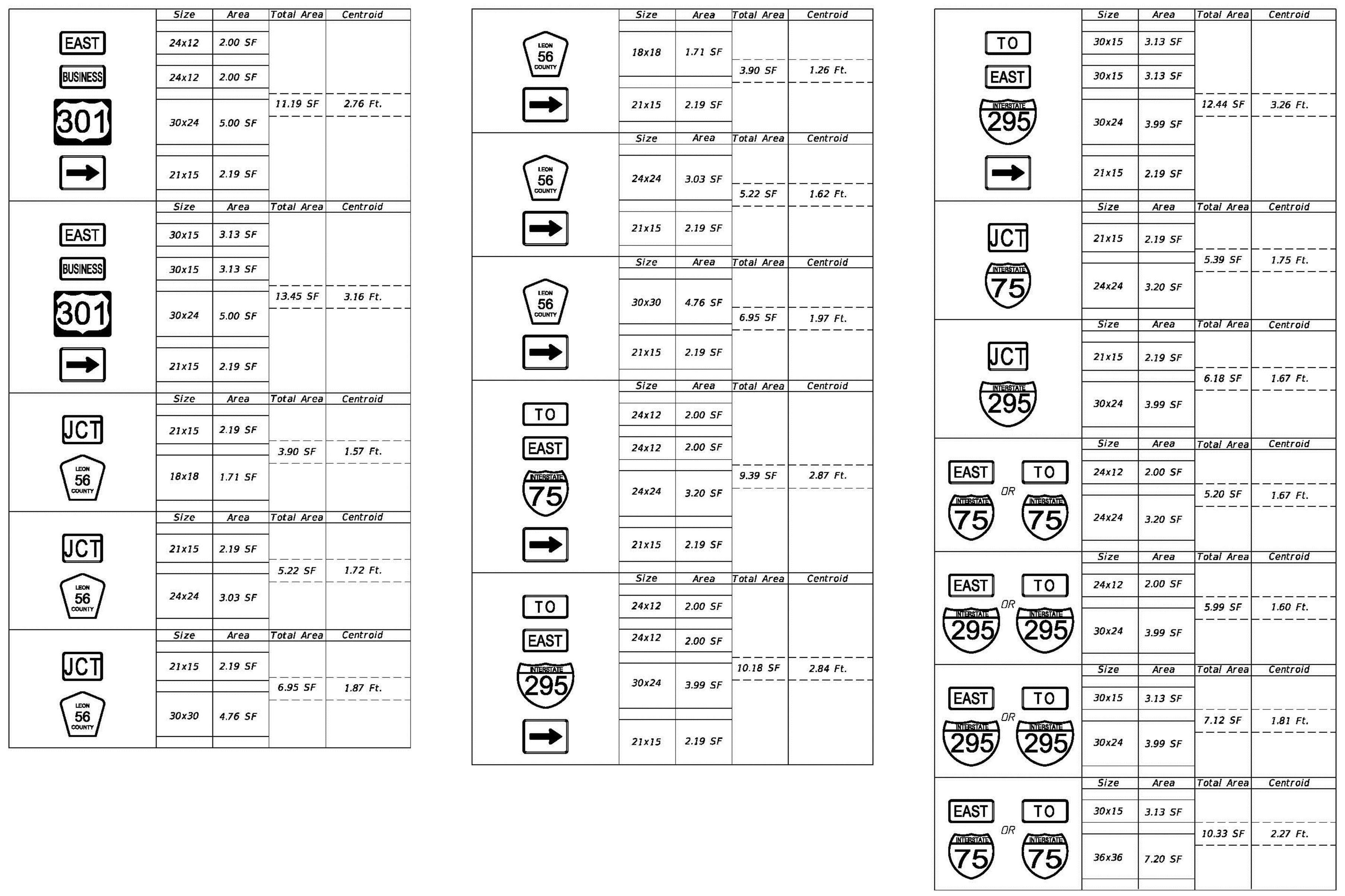
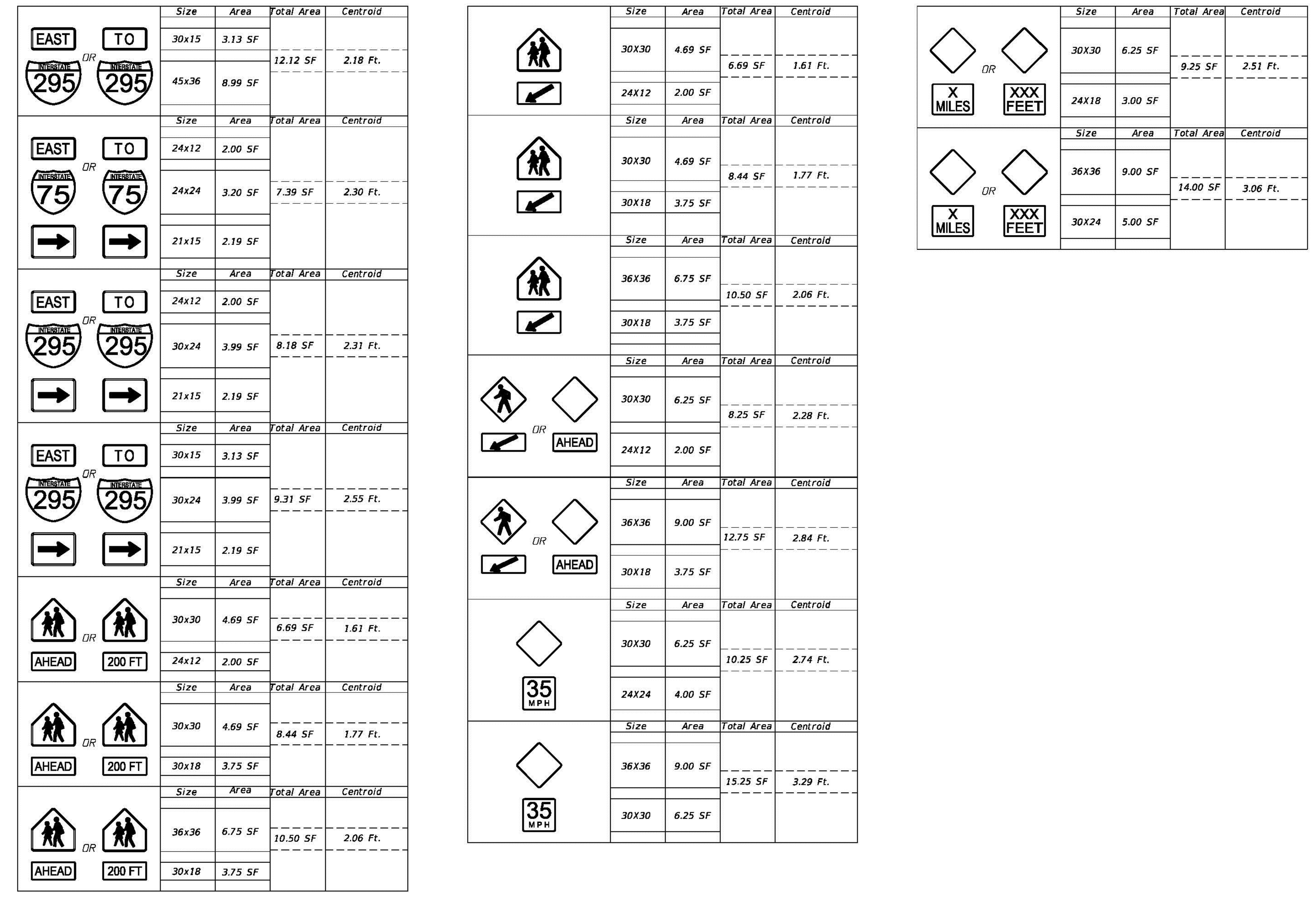
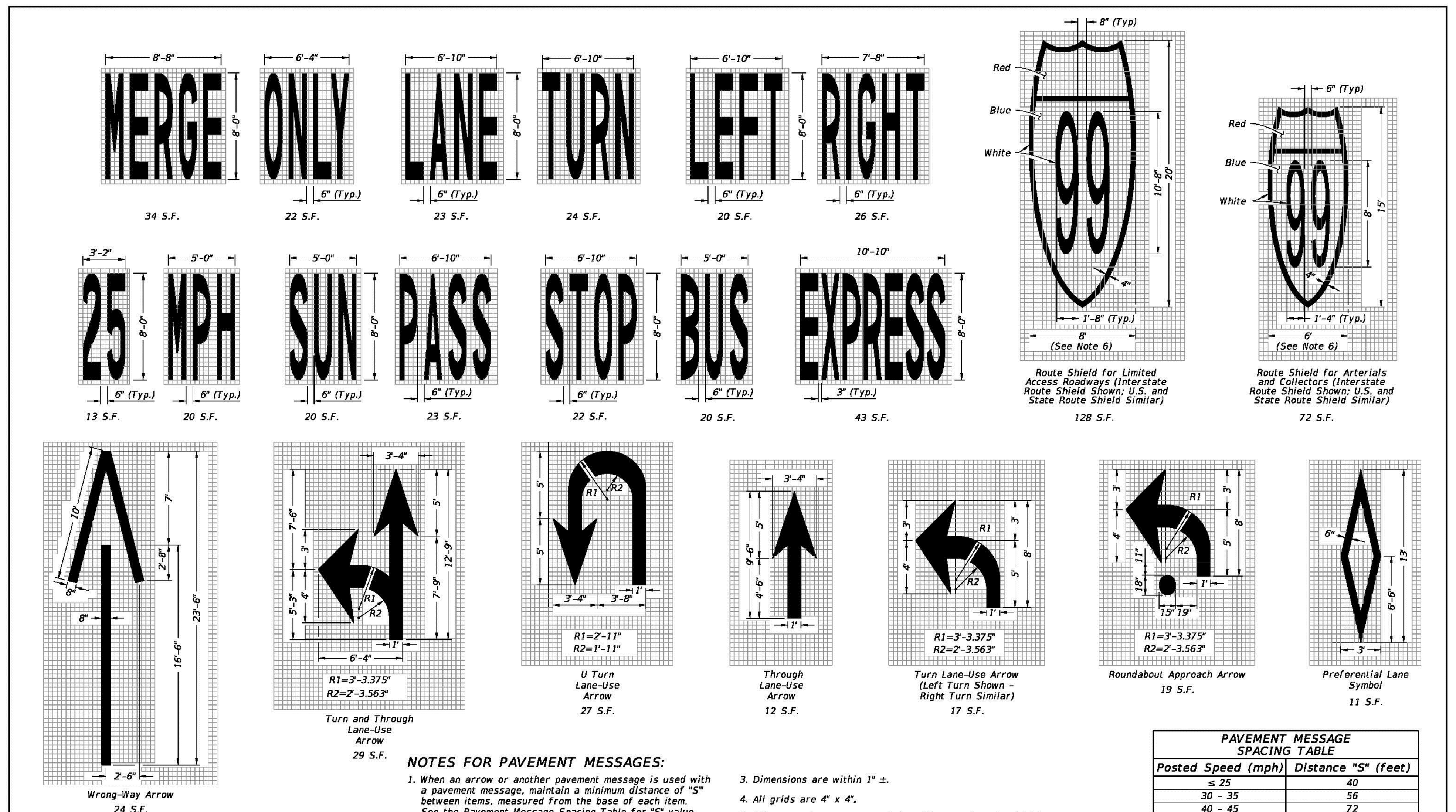


LAST REVISION	REVISION	DESCRIPTION:		FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX	SHEET
11/01/19			FDOT			700-010	9 of 10



LAST REVISION	REVISION	DESCRIPTION:		FY 2021-22 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX	SHEET
11/01/19			FDOT			700-010	10 of 10



MERGE
ONLY
LANE
TURN
LEFT
RIGHT
25
MPH
SUN
PASS
STOP
BUS
EXPRESS
Route Shield for Limited Access Roadways (Interstate Route Shield Shown; U.S. and State Route Shield Similar)
128 S.F.
Route Shield for Arterials and Collectors (Interstate Route Shield Shown; U.S. and State Route Shield Similar)
72 S.F.
Wrong-Way Arrow
24 S.F.
R1=3'-3.375"
R2=2'-3.563"
Turn and Through Lane-Use Arrow
29 S.F.
R1=2'-11"
R2=1'-11"
U Turn Lane-Use Arrow
27 S.F.
Through Lane-Use Arrow
12 S.F.
R1=3'-3.375"
R2=2'-3.563"
Turn Lane-Use Arrow (Left Turn Shown - Right Turn Similar)
17 S.F.
R1=3'-3.375"
R2=2'-3.563"
Roundabout Approach Arrow
19 S.F.
Preferential Lane Symbol
11 S.F.

NOTES FOR PAVEMENT MESSAGES:

1. When an arrow or another pavement message is used with a pavement message, maintain a minimum distance of "S" between items, measured from the base of each item. See the Pavement Message Spacing Table for "S" value.
2. Place all pavement messages 25' back from the stop line.
3. Dimensions are within 1" ±.
4. All grids are 4" x 4".
5. All pavement messages must be white except route shields.
6. Increase width of route shield for routes with three digits.

PAVEMENT MESSAGE SPACING TABLE

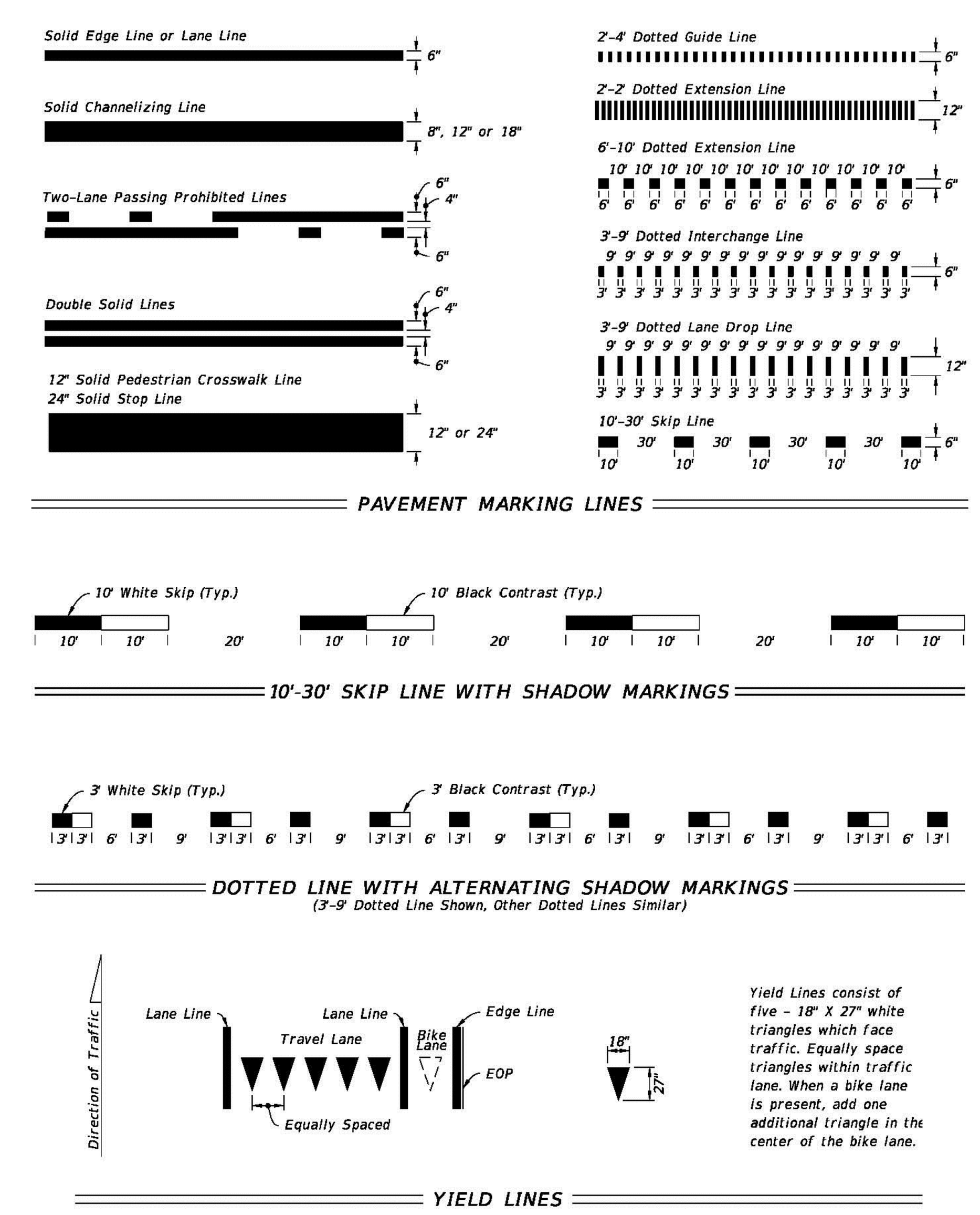
Posted Speed (mph)	Distance "S" (feet)
≤ 25	40
30 - 35	56
40 - 45	72
≥ 50	88

PAVEMENT MESSAGE AND ARROW DETAILS

GENERAL NOTE:

1. See Index 509-070 for pavement markings at railroad crossings.

LAST REVISION	REVISION	DESCRIPTION:		FY 2021-22 STANDARD PLANS	PAVEMENT MARKINGS	INDEX	SHEET
02/05/21		Added railroad pavement marking details.	FDOT			711-001	1 of 14



Solid Edge Line or Lane Line
Solid Channelizing Line
Two-Lane Passing Prohibited Lines
Double Solid Lines
12" Solid Pedestrian Crosswalk Line
24" Solid Stop Line
2'-4' Dotted Guide Line
2'-2' Dotted Extension Line
6'-10' Dotted Extension Line
3'-9' Dotted Interchange Line
3'-9' Dotted Lane Drop Line
10'-30' Skip Line
PAVEMENT MARKING LINES
10' White Skip (Typ.)
10' Black Contrast (Typ.)
10'-30' SKIP LINE WITH SHADOW MARKINGS
3' White Skip (Typ.)
3' Black Contrast (Typ.)
DOTTED LINE WITH ALTERNATING SHADOW MARKINGS
(3'-9' Dotted Line Shown, Other Dotted Lines Similar)
Direction of Traffic
Lane Line
Travel Lane
Edge Line
Equally Spaced
EOP
Yield Lines consist of five - 18" X 27" white triangles which face traffic. Equally space triangles within traffic lane. When a bike lane is present, add one additional triangle in the center of the bike lane.
YIELD LINES

LAST REVISION	REVISION	DESCRIPTION:		FY 2021-22 STANDARD PLANS	PAVEMENT MARKINGS	INDEX	SHEET
02/05/21		Added railroad pavement marking details.	FDOT			711-001	2 of 14

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE

Civil Engineer

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CERTIFIED BY

JOB TITLE

76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE

ROADWAY IMPROVEMENTS STANDARD DETAILS

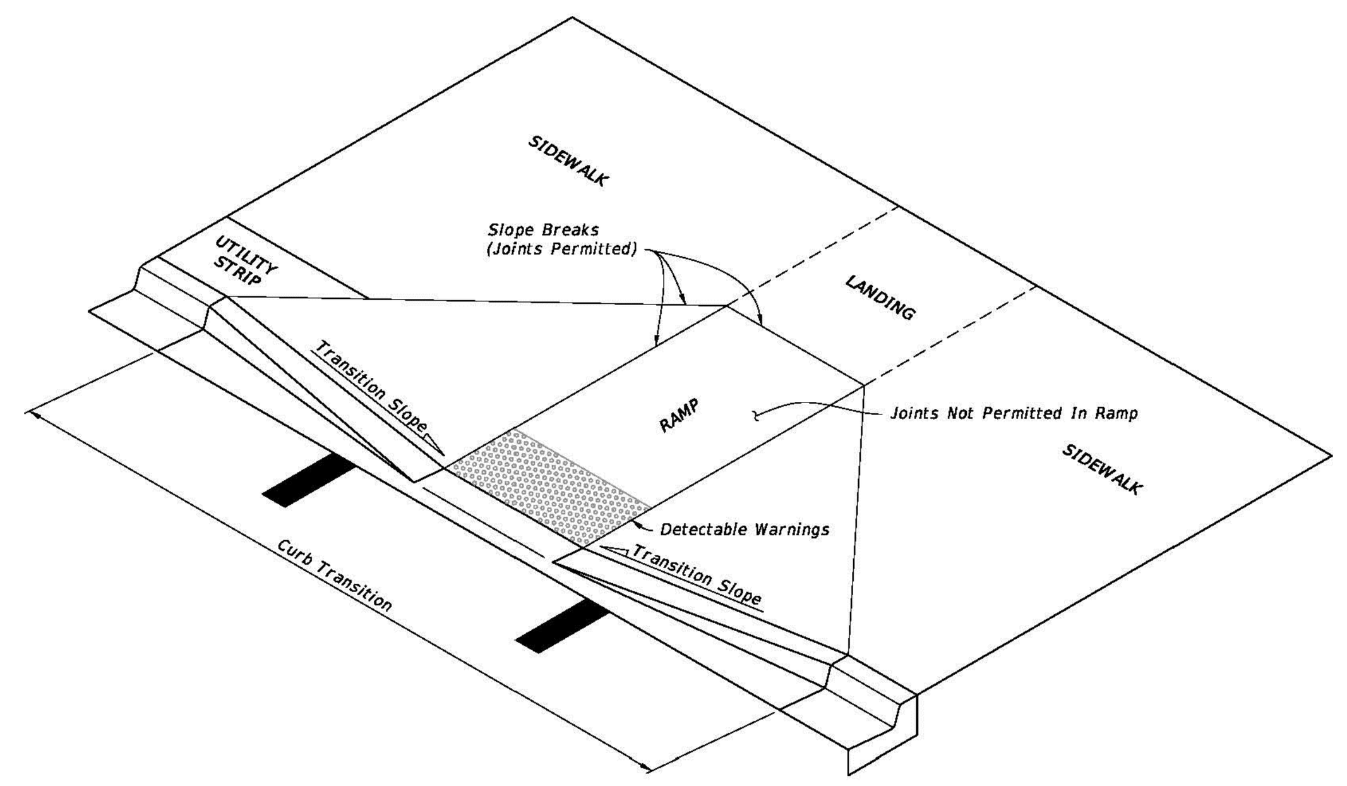
FILE LOCATION

DRAWING NUMBER: C13

REV #

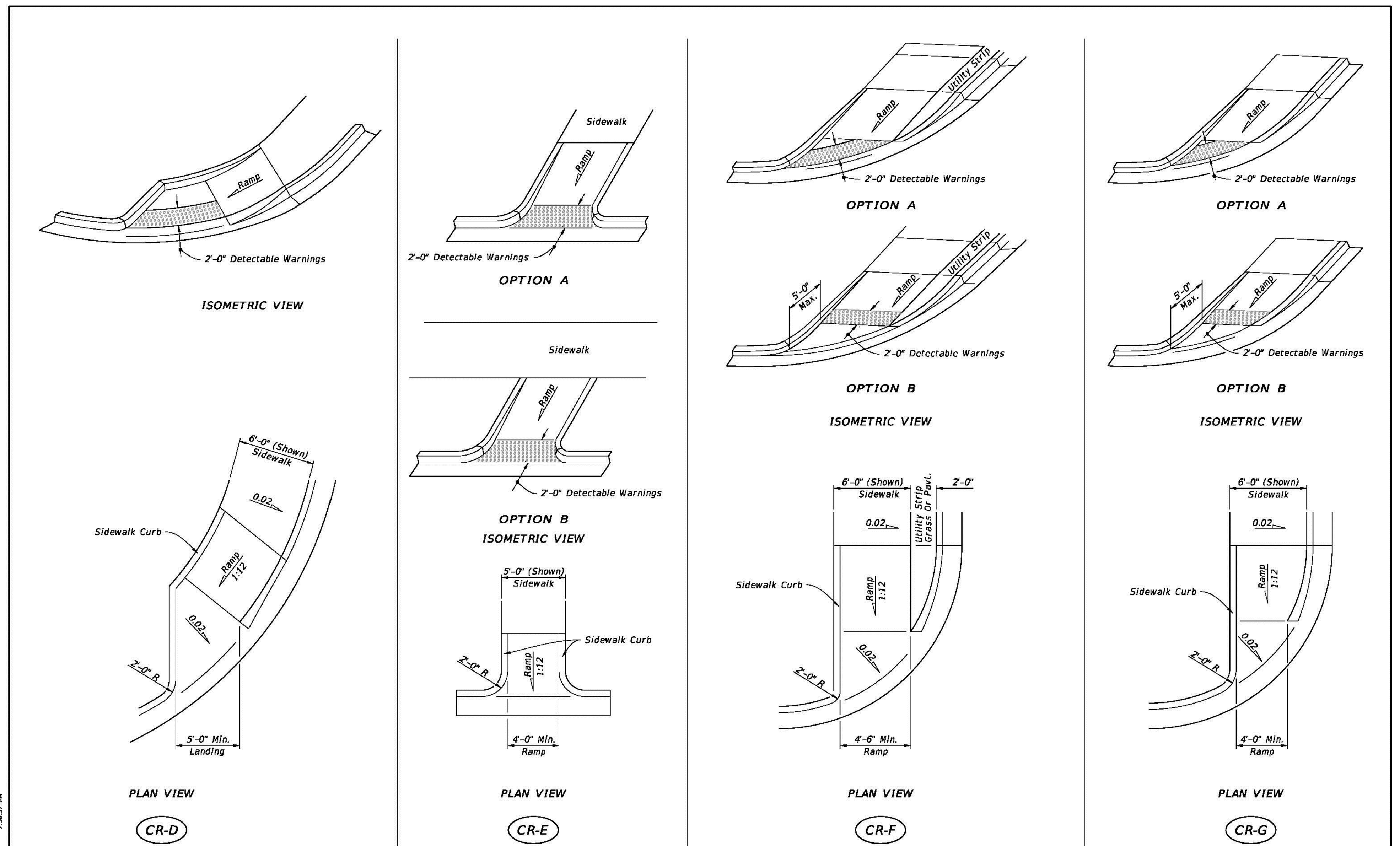
GENERAL NOTES:

1. Cross Slopes and Grades:
   A. Sidewalk, ramp, and landing slopes (i.e. 0.02, 0.05, and 1:12) shown in this Index are maximums. With approval of the Engineer, provide the minimum feasible slope where the requirements cannot be met.
   B. Landings must have cross-slopes less than or equal to 0.02 in any direction.
   C. Maintain a single longitudinal slope along each side of the curb ramp. Ramp slopes are not required to exceed 15 feet in length.
   D. Joints permitted at the location of Slope Breaks. Otherwise locate joints in accordance with Index 522-001. No joints are permitted within the ramp portion of the Curb Ramp.
2. Curb, Curb and Gutter and/or Sidewalk:
   A. Refer to Index 522-001 for concrete thickness and sidewalk details.
   B. Remove any existing curb, curb and gutter, or sidewalk to the nearest joint beyond the curb transition or to the extent that no remaining section is less than 5 feet long.
3. Curb Ramp Alpha-Identification:
   A. Sidewalk curb ramp alpha-identifications (e.g. CR-A) are provided for reference purposes in the Plans.
   B. Alpha-identifications CR-I and CR-J are intentionally omitted.
4. Detectable Warnings:
   A. Install detectable warnings in accordance with Specification 527.
   B. Place detectable warnings across the full width of the ramp or landing, to a minimum depth of 2 feet measured perpendicular to the curb line and no greater than 5 feet from the back of the curb or edge of pavement.
   C. If detectable warnings are shown in the Plans on slopes greater than 5%, align the truncated domes with the centerline of the ramp; otherwise, the truncated domes are not required to be aligned.



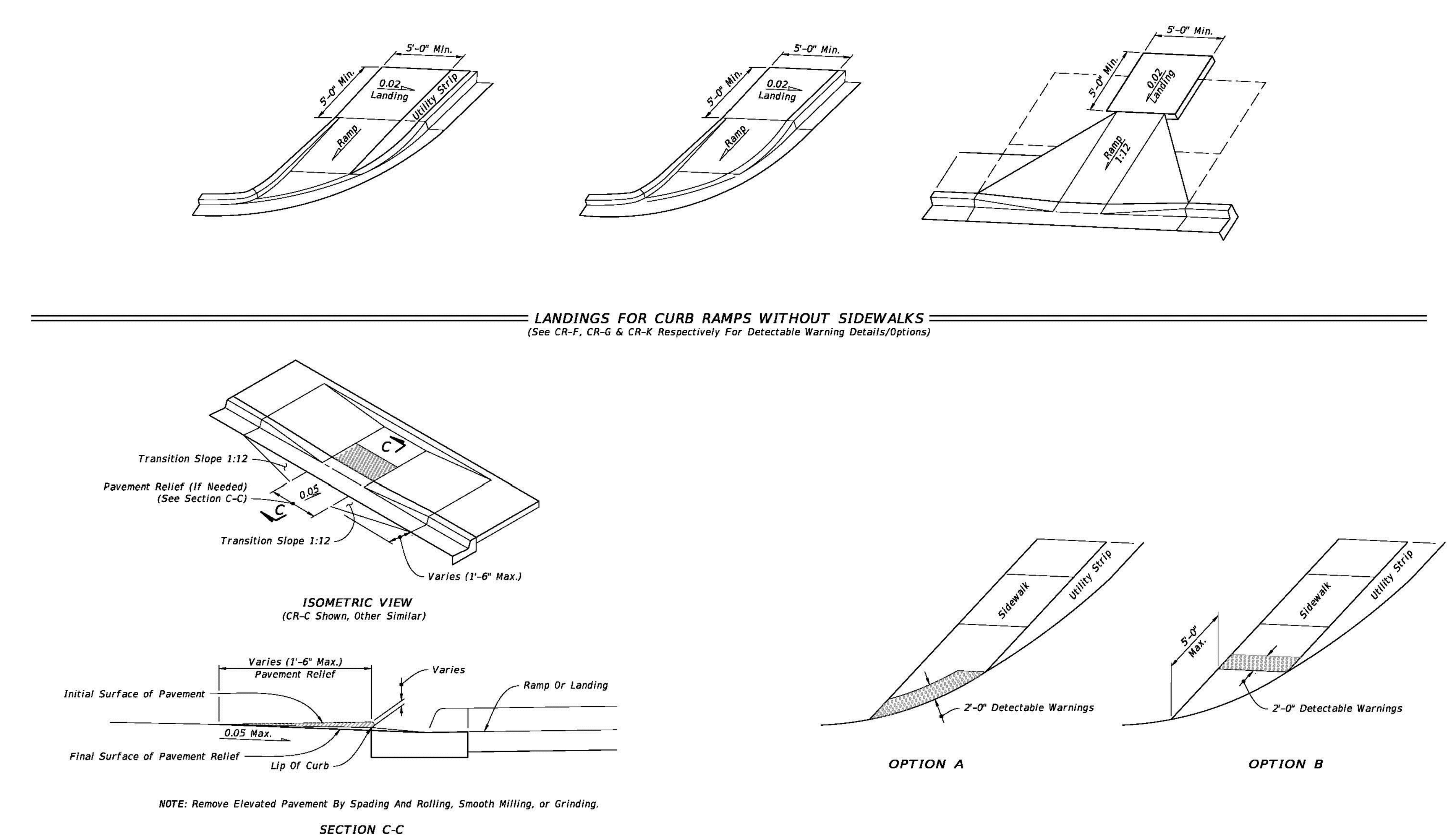
CURB RAMP NOMENCLATURE

LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT	FY 2021-22 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX 522-002	SHEET 1 of 7



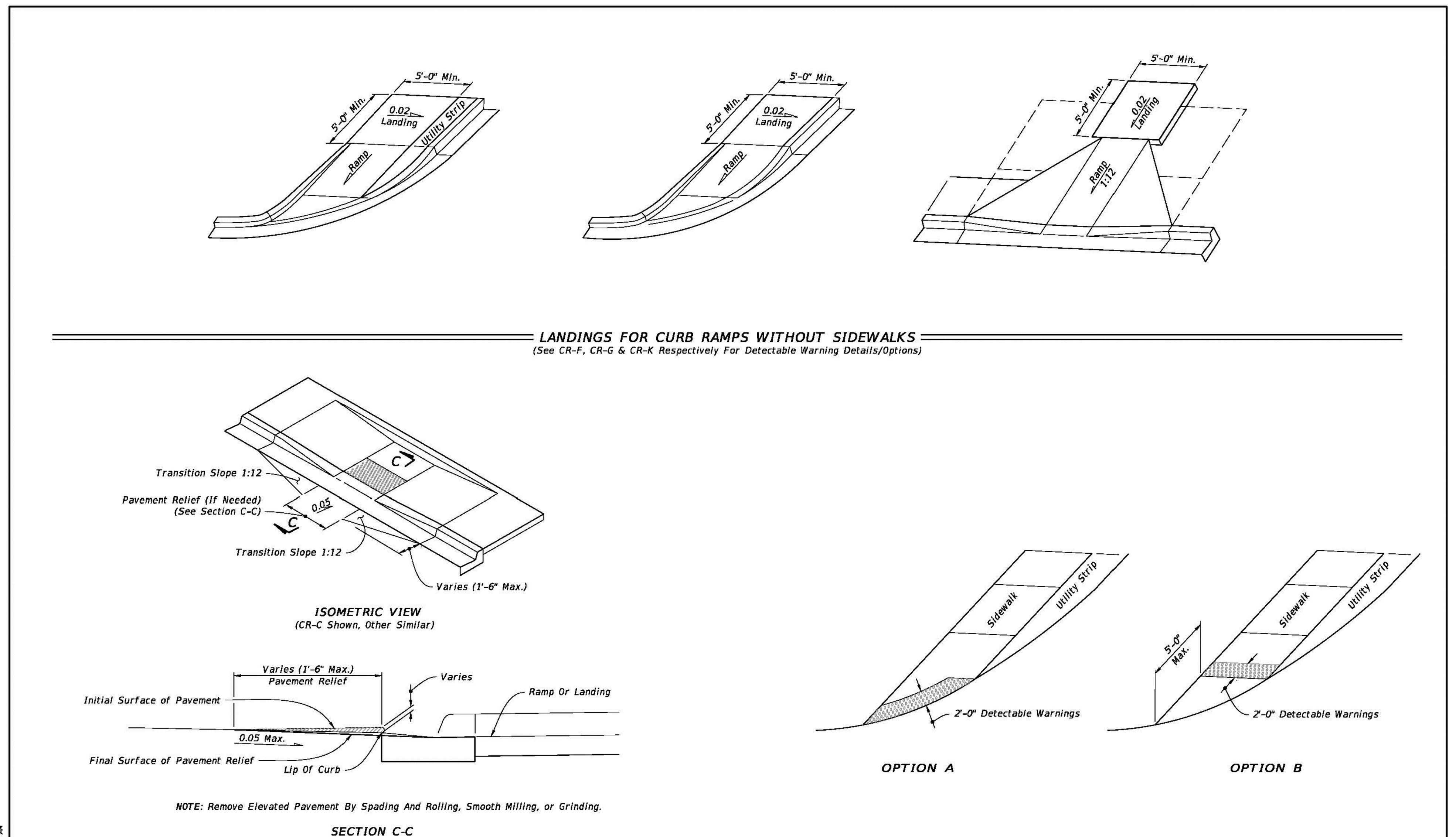
SIDEWALK CURB RAMPS CR-D, CR-E, CR-F & CR-G

LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT	FY 2021-22 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX 522-002	SHEET 4 of 7



CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT	FY 2021-22 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX 522-002	SHEET 6 of 7



CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT	FY 2021-22 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX 522-002	SHEET 6 of 7

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

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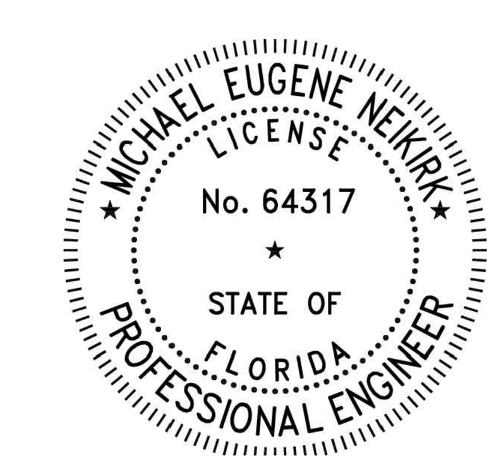
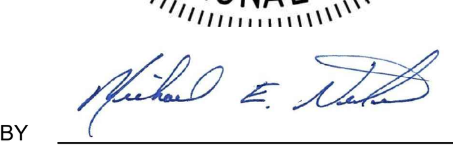
DESIGNER:	TJL
CHECKED BY:	TJL
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners



CERTIFIED BY 

JOB TITLE
76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE
ROADWAY IMPROVEMENTS
STANDARD DETAILS

FILE LOCATION

DRAWING NUMBER
C14

REV #

PART 1 - GENERAL - DEWATERING312319

1.1 SUMMARY

A. Section includes construction dewatering for earth excavation.

1.2 PERFORMANCE REQUIREMENTS

A. Contractor to design any necessary dewatering system to complete earth excavation, sanitary sewers, water distribution piping and storm sewers.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 - EXECUTION

2.1 INSTALLATION

A. Provide temporary grading to facilitate dewatering and control of surface water.
B. Monitor dewatering systems continuously.
C. Protect and maintain temporary erosion and sedimentation controls, which are specified in [Division 01 Section "Temporary Facilities and Controls"] [Division 31 Section "Site Clearing"] during dewatering operations.
D. Before excavating below ground-water level, place system into operation to lower water to levels required to complete work. Operate system continuously until earth excavation, sanitary sewers, water distribution piping and storm sewers have been constructed and fill materials have been placed or until dewatering is no longer required.
E. Provide an adequate system to lower and control ground water to permit excavation, install piping and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below excavations.
   1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
F. Reduce hydrostatic head in water-bearing strata below subgrade elevations of floors drains and other excavations.
G. Provide standby equipment on site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.
   1. Remove dewatering system from Project site on completion of dewatering

END OF SECTION 312319

SECTION 221113 - FACILITY WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: Detail precast or cast in place concrete vault assemblies and indicate dimensions, method of field assembly, and components.

1.3 SUMMARY

A. This Section includes water-distribution piping and related components outside the building for water service and fire-service mains.

1.4 QUALITY ASSURANCE

B. Regulatory Requirements:
   1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
   2. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
F. NSF Compliance:
   1. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
   1. Ensure that valves are dry and internally protected against rust and corrosion.
   2. Protect valves against damage to threaded ends and flange faces.
   3. Set valves in best position for handling. Set valves closed to prevent rattling.
B. During Storage: Use precautions for valves, including fire hydrants, according to the following:
   1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
   2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
F. Protect flanges, fittings, and specialties from moisture and dirt.
G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
   1. Notify Owner no fewer than two days in advance of proposed interruption of service.

1.7 COORDINATION

A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151 and AWWA C115, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated. All ductile iron pipe and fittings shall be lined in accordance with AWWA C104.
   1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
   2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
B. Flanges: ASME 16.1, Class 125, cast iron.

2.2 JOINING MATERIALS

A. Refer to Division 22 Section "Common Work Results for Plumbing" for commonly used joining materials.

2.3 PVC PIPE MATERIALS

A. PVC pipe material shall be Class 160 - SDR 26.

B. Locating wire shall be 12 gauge, insulated, direct burial copper wire. Splices shall be made with
a connector specifically designed for 12 gauge copper wire and shall be waterproof and suitable
for direct burial.

C. Water Meters - AWWA C700

D. Fire Hydrants - C502 and Section 45 and Standard Drawing No. 11 of the Standard
Specifications For Water and Sewer Main Construction in Illinois.

E. Gate Valves - AWWA C509

F. Fittings - AWWA C110 or C153

2.4 GATE VALVES

A. AWWA, Cast-Iron Gate Valves:
   1. Manufacturers: Subject to compliance with governing agencies' requirements, provide products by one of the following or equivalent:
      a. American AVK Co.; Valves & Fittings Div.
      b. American Cast Iron Pipe Co.; American Flow Control Div.
      c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
      d. Crane Co.; Crane Valve Group; Stockham Div.
      e. East Jordan Iron Works, Inc.
      f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
      g. McWane, Inc.; Kennedy Valve Div.
      h. McWane, Inc.; M & H Valve Company Div.
      i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
      j. Mueller Co.; Water Products Div.
      k. NIBCO INC.
      l. U.S. Pipe and Foundry Company.

2.5 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: All Gate valve boxes shall be built to conform to the specifications and dimensions for valve box on file at the offices of the department of water.
B. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.6 WATER METERS

A. Manufacturers:
   1. Available Manufacturers: Subject to compliance with governing agencies, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. AMCO Water Metering Systems.
      b. Badger Meter, Inc.
      c. Carlon Meter.
      d. Hays Fluid Controls; a division of ROMAC Industries Inc.
      e. McCrometer.
      f. Mueller Co.; Hersey Meters.
      g. Neptune Technology Group Inc.
      h. Sensus Metering Systems.

2.7 WATER METER VAULTS

A. Description: All meter vaults shall be built to conform to the plans and specifications. Precast, reinforced concrete vault or a cast in place reinforced concrete vault shall be provided. This meter vault shall be provided with a cast iron cover frame and removable cast iron cover.

2.7 FIRE HYDRANTS

A. A. Wet-Barrel Fire Hydrants:
   1. Fire hydrants to be provided are shown on the plans and conform to the City of New Baden subdivision requirements.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
C. Do not use flanges or unions for underground piping.
D. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
E. Underground water-service piping NPS 4 to NPS 8 shall be the following:
   1. Ductile-iron, mechanical-joint fittings and mechanical joints.
F. Water Meter Box Water-Service Piping NPS 3/4 to NPS 2 shall be same as underground water-service piping.
G. Underground Fire-Service-Main Piping NPS 4 to NPS 12 shall be the following:
   1. Ductile-iron, mechanical-joint fittings; and mechanical joints.

3.3 VALVE APPLICATIONS

A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.

3.4 PIPING SYSTEMS - COMMON REQUIREMENTS

A. See Division 22 Section "Common Work Results for Plumbing" for piping-system common requirements.

3.5 PIPING INSTALLATION

A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
   1. Box.
B. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
   1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.
C. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed.
D. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
   1. Terminate water-service piping at building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.
E. Sleeves are specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."
F. Mechanical sleeve seals are specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."
G. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
H. See Division 21 Section "Water-Based Fire-Suppression Systems" for fire-suppression-water piping inside the building.
I. See Division 22 Section "Domestic Water Piping" for potable-water piping inside the building.

3.6 JOINT CONSTRUCTION

A. See Division 22 Section "Common Work Results for Plumbing" for basic piping joint construction.
B. Make pipe joints according to the following:
   1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
   2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
   3. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
   4. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 22 Section "Common Work Results for Plumbing" for joining piping of dissimilar metals.

3.7 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
B. AWWA Valves Other Than Gate Valves: Comply with AWWA C600 and AWWA M44.

3.8 WATER METER INSTALLATION

A. Install water meters, piping, and specialties according to utility company's written instructions.

3.9 CONCRETE VAULT INSTALLATION

A. Install precast concrete vaults according to ASTM C 891.

3.10 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
B. See Division 22 Section "Common Work Results for Plumbing" for piping connections to valves and equipment.
C. Connect water-distribution piping to utility water main according to the water company's requirements.
D. Connect water-distribution piping to interior domestic water and fire-suppression piping.
E. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.11 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
   1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
C. Prepare reports of testing activities.

3.12 IDENTIFICATION

A. Install continuous underground warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Division 31 Section "Earth Moving."
B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Division 22 Section "Common Work Results for Plumbing" for identifying devices.

3.13 CLEANING

A. Clean and disinfect water-distribution piping as follows:
   1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
   2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
   3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:
      a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
      b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
      c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
      d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
B. Prepare reports of purging and disinfecting activities.

END OF SECTION 221113

SECTION 221313 - FACILITY SANITARY SEWERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Pipe and fittings.
   2. Nonpressure and pressure couplings.
   3. Expansion joints and deflection fittings.
   4. Backwater valves.
   5. Cleanouts.
   6. Encasement for piping.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.
B. Protect pipe, pipe fittings, and seals from dirt and damage.

1.4 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Sewerage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
   1. Notify Owner no fewer than two days in advance of proposed interruption of service.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Water-Service Piping:
   1. Pipe: ASTM D 1785, ASTM D 3034, type PSM for sized 4" to 15". Standard dimension ration (SDR) shall be a minimum 35. Pipe joints shall be solvent welded joints per ASTM D 2855 or flexible elastomeric seals per ASTM D 3212 for flexible seals.
   2. Fittings: ASTM D 3034 with flexible elastomeric seals per ASTM D 3212 for flexible seals.
B. PVC Water-Service Piping:
   1. Pipe: ASTM D 1785, ASTM D 2665, ASTM D 2672, CSA CAN/CSA-B 137.3 Schedule 40 PVC, with plain ends for solvent-cemented joints.
   2. Fittings: ASTM D 3311, Schedule 40 PVC, socket type.

2.2 BACKWATER VALVES

A. PVC Backwater Valves:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Canplas LLC.
      b. IPS Corporation.
      c. NDS.
      d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
      e. Sioux Chief Manufacturing Company, Inc.
      f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.
   2. Description: Horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.

2.3 CLEANOUTS

A. PVC Cleanouts:
   1. Manufacturers: Subject to compliance with requirements of the governing agencies, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Canplas LLC.
      b. IPS Corporation.
      c. NDS.
      d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
      e. Sioux Chief Manufacturing Company, Inc.
      f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.
   2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
D. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
E. Install gravity-flow, nonpressure, drainage piping according to the following:
   1. Install piping pitched down in direction of flow, at a slope as indicated on the drawing.
F. Clear interior of piping of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure, drainage piping according to the following:
   1. Join PVC gravity sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.

3.4 BACKWATER VALVE INSTALLATION

A. Install horizontal-type backwater valves in piping manholes or pits.
B. Install combination horizontal and manual gate valves in piping and in manholes.
C. Install terminal-type backwater valves on end of piping and in manholes. Secure units to sidewalls.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
   1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic
   2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
   3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.
C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Connect nonpressure, gravity-flow drainage piping to building's sanitary building drains specified in Division 22 Section "Sanitary Waste and Vent Piping."
B. Make connections to existing piping and underground manholes.
   1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye fitting plus 6-inch overlap with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
   2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
   3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes by cutting opening into existing unit large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe or manhole wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
   4. Protect existing piping and manholes to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.7 CLOSING ABANDONED SANITARY SEWER SYSTEMS

A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
   1. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.
B. Abandoned Manholes: Excavate around manhole as required and use either procedure below:
   1. Remove manhole and close open ends of remaining piping.
C. Backfill to grade according to Division 31 Section "Earth Moving."

3.8 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tapes directly over piping and at outside edges of underground manholes.
   1. Use detectable warning tape over nonferrous piping and over edges of underground manholes.

3.9 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
   1. Defects requiring correction include the following:
      a. Alignment: Less than full diameter of inside of pipe is visible between structures.
      b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
      c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
      d. Infiltration: Water leakage into piping.
      e. Exfiltration: Water leakage from or around piping.
   2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
   3. Reinspect and repeat procedure until results are satisfactory.
B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
   1. Do not enclose, cover, or put into service before inspection and approval.
   2. Test completed piping systems according to requirements of authorities having jurisdiction.
   3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
   4. Submit separate report for each test.
   5. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:
      a. Fill sewer piping with water. Test with pressure of at least 10-foot head of water, and maintain such pressure without leakage for at least 15 minutes.
      b. Close openings in system and fill with water.
      c. Purge air and refill with water.
      d. Disconnect water supply.
      e. Test and inspect joints for leaks.
   6. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction.
C. Leaks and loss in test pressure constitute defects that must be repaired.
D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.10 CLEANING

A. Clean dirt and superfluous material from interior of piping. Flush with potable water.

END OF SECTION 221313

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Removing above- and below-grade site improvements.
   2. Disconnecting, capping or sealing, and abandoning site utilities in place.
B. Related Sections:
   1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities.
   2. Division 01 Section "Execution" for field engineering and surveying.
   3. Division 01 Section(s) "Construction Waste Management and Disposal for additional LEED requirements.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.
F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
C. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Division 31 Section "Earth Moving."
   1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
   1. Arrange with utility companies to shut off indicated utilities.
B. Locate, identify, and disconnect utilities indicated to be abandoned in place.
C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

   1. Do not proceed with utility interruptions without Architect's written permission.

3.3 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
   1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.

3.4 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Stripping topsoil under building and pavement areas.
   2. Preparing subgrades for pavements, turf and grasses, and plants.
   3. Excavating and backfilling for buildings and structures.
   4. Excavating and backfilling trenches for utilities and pits for buried utility structures.
B. Related Sections:

   1. Division 01 Section "Execution" for field engineering and surveying.
   2. Divisions 21, 22, 23, 26, 27, 28, and 33 Sections for installing underground mechanical and electrical utilities and buried mechanical and electrical structures.
   3. Division 31 Section "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
   4. Division 31 "Lime Soil Stabilization" for lime modified soil.
   5. Division 32 Section "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.
B. Base Course: Aggregate layer placed between the sub-base course and hot-mix asphalt paving.
C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
   3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
F. Fill: Soil materials used to raise existing grades.
G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
H. Sub-base Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below sub-base, drainage fill, drainage course, or topsoil materials.
J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
   1. Classification according to ASTM D 2487.
   2. Laboratory compaction curve according to ASTM D 698.

1.5 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
C. Dust Control: Contractor to minimize dust during earthwork operations by wetting subgrade.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
D. Sub-base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 sieve.
H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
J. Sand: ASTM C 33; fine aggregate.
K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
B. Protect and maintain erosion and sedimentation controls during earth moving operations.
C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 STRIPPING TOPSOIL

A. Strip 2 inches to 3 inches of topsoil below building and pavement before and filling operations commence.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
   1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.
   1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
B. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

3.6 SUBGRADE INSPECTION

A. Notify Architect or Testing Agency when excavations have reached required subgrade.
B. If Architect or Testing Agency determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
   1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
   2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
   1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.8 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

4.0 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:
   1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
   2. Surveying locations of underground utilities for Record Documents.
   3. Testing and inspecting underground utilities.
   4. Removing concrete formwork.
   5. Removing trash and debris.
   6. Removing temporary shoring and bracing, and sheeting.
   7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
B. Place backfill on subgrades free of mud, frost, snow, or ice.

4.1 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.
B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
D. Backfill voids with satisfactory soil while removing shoring and bracing.
E. Place and compact initial backfill of sub-base material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
   1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
F. Place and compact final backfill of satisfactory soil to final subgrade elevation.

4.2 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
B. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use engineered fill.
   3. Under steps and ramps, use engineered fill.
   4. Under building slabs, use engineered fill.
   5. Under footings and foundations, use engineered fill.
C. Place soil fill on subgrades free of mud, frost, snow, or ice.

4.3 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within allowable moisture ranges recommended in the geotechnical report.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture and is too wet to compact to specified dry unit weight.

4.4 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
   1. Comply with compaction recommendations provided in the geotechnical report. Soils shall be compacted to 92% Standard Proctor and lime soils shall be compacted to 95% standard proctor.

4.5 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Turf or Unpaved Areas: Plus or minus 1 inch.
   2. Walks: Plus or minus 1 inch.
   3. Pavements: Plus or minus 1/2 inch.
C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

4.6 SUBBASE AND BASE COURSES UNDER PAVEMENTS

A. Place sub-base course and base course on subgrades free of mud, frost, snow, or ice.
B. On prepared subgrade, place sub-base course and base course under pavements as follows:
   1. Shape sub-base course and base course to required crown elevations and cross-slope grades.
   2. Place sub-base course and base course 6 inches or less in compacted thickness in a single layer.
   3. Place sub-base course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
   4. Compact sub-base course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

4.7 FIELD QUALITY CONTROL

A. Testing Agency: Testing agency will be employed by owner.
B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
   1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft or less of paved area or building slab, but in no case fewer than three tests.
   2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length, but no fewer than two tests.
   3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.
D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

4.8 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

4.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

   1. Hot-mix asphalt patching.
   2. Hot-mix asphalt paving.
   3. Pavement-marking paint.
B. Related Sections:
   1. Division 02 Section "Structure Demolition" for demolition, removal, and recycling of existing asphalt pavements, and for geotextiles that are not embedded within courses of asphalt paving.
   2. Division 31 Section "Earth Moving" for aggregate sub-base and base courses and for aggregate pavement shoulders.
   3. Division 32 Section "Concrete Paving Joint Sealants" for joint sealants and fillers at paving terminations.

1.3 DEFINITION

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
   1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
B. Qualification Data: For qualified Installer.
C. Material Certificates: For each paving material, from manufacturer.
D. Material Test Reports: For each paving material.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction.
B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the local agency for asphalt paving work.
   1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.
B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
   1. Prime Coat: Minimum surface temperature of 60 deg F.
   2. Tack Coat: Minimum surface temperature of 60 deg F.
   3. Slurry Coat: Comply with weather limitations in ASTM D 3910.
   4. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
   5. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.
B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 55 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.
B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
   1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
D. Mineral Filler: ASTM D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320 or AASHTO MP 1a, complying with State Department Of Transportation requirements.
B. Asphalt Cement: ASTM D 946 for penetration-graded material.
C. Prime Coat: Asphalt emulsion prime coat complying with State Department Of Transportation requirements.
D. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 of AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
E. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
B. Sand: ASTM D 1073 or AASHTO M 29, Grade Nos. 2 or 3.
C. Paving Geotextile: AASHTO M 288, nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
D. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M 248, Type F or Type S; colors complying with FS TT-P-1952.
   1. Color: As indicated.
E. Pavement-Marking Paint: MPI #32 Alkyd Traffic Marking Paint.
   1. Color: As indicated.

REVISIONS

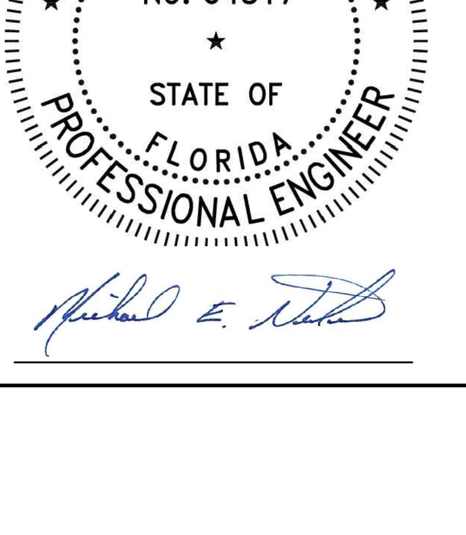
NO.	DESCRIPTION	DATE
	PERMITTING SET	07/02/21

MICHAEL E. NEIKIRK PE

Civil Engineer

306 North Market Street, Ste 101
Mt. Carmel, IL 62863
Phone: (618) 263-4100

SCALE:	NTS
DRAWN BY:	TJL
DESIGNER:	TJL
CHECKED BY:	TJL, MEN
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners



CERTIFIED BY

JOB TITLE

76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE

SPECIFICATIONS

FILE LOCATION

DRAWING NUMBER: C15

REV #

F. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of less than 45 minutes.
 1. Color: As indicated.
G. Pavement-Marking Paint: MPI #97 Latex Traffic Marking Paint.
 1. Color: As indicated.

2.4 MIXES
A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

PART 3 - EXECUTION
3.1 EXAMINATION
A. Verify that subgrade is dry and in suitable condition to begin paving.
B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction, Limit vehicle speed to 3 mph.
 2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
C. Proceed with paving only after unsatisfactory conditions have been corrected.
D. Verify that utilities, traffic loop detectors, and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of imprinted asphalt.

3.2 PATCHING
A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
B. Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.3 REPAIRS
A. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch.
 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.
 3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.4 SURFACE PREPARATION
A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
B. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure.
 1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
 2. Protect primed substrate from damage until ready to receive paving.
C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.5 HOT-MIX ASPHALT PLACING
A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
 2. Spread mix at minimum temperature of 250 deg F.
 3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.
C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.6 JOINTS
A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
 1. Clean contact surfaces and apply tack coat to joints.
 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations." Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 5. Compact asphalt at joints to a density within 2 percent of specified course density.

3.7 COMPACTION
A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 1. Complete compaction before mix temperature cools to 185 deg F.
B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.8 INSTALLATION TOLERANCES
A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 1. Base Course: Plus or minus 1/2 inch.
 2. Surface Course: Plus 1/4 inch, no minus.
B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 1. Base Course: 1/4 inch.
 2. Surface Course: 1/8 inch.

3.9 PAVEMENT MARKING
A. Allow paving to age for 30 days before starting pavement marking.
B. Sweep and clean surface to eliminate loose material and dust.
C. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10 WHEEL STOPS
A. Install wheel stops in bed of adhesive as recommended by manufacturer.
B. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.11 FIELD QUALITY CONTROL
A. Testing Agency: Testing to be done by owner.
B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.
 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
  a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 cores taken.
  b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
E. Replace and compact hot-mix asphalt where core tests were taken.
F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.12 DISPOSAL
A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.
 1. Do not allow milled materials to accumulate on-site.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section Includes:
 1. Streets
 2. Parking Lots
 3. Driveways
 4. Entrances
 5. Sidewalks
 6. Concrete Curbs
 7. Concrete Curb & Gutter
B. Related Sections:
 1. Division 03 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.3 DEFINITIONS
A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 QUALITY ASSURANCE
A. Detectable Warning Installer Qualifications: An employer of workers trained and approved by manufacturer of stamped concrete paving systems.
B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
C. Concrete Testing Service: Owner will employ a qualified testing agency to perform material evaluation tests and to design concrete mixtures.
D. ACI Publications: Comply with ACI 301unless otherwise indicated.

1.5 PROJECT CONDITIONS
A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS
2.1 FORMS
A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT
A. Plain-Steel Welded Wire Reinforcement: Welded wire fabric shall conform to the requirements of AASHTO M 55 and ASTM A 185/A 185M, fabricated from steel wire into flat sheets.
B. Zinc Repair Material: ASTM A 780.
C. Reinforcing Bars: Reinforcement bars, including epoxy coated reinforcement bars, shall conform to the requirements of AASHTO M 31M (M 31) or 53M (M 53), Grade 300 (40) or 400 (60), or AASHTO M 42M (M 42), Grade 400 (60) deformed bars.
D. Epoxy Coated Reinforcement Bars: Epoxy coated reinforcement bars shall conform to the requirements of AASHTO M 284M (M 284), except that the maximum thickness of epoxy coating on spiral reinforcement, coated after fabrication, shall be 0.5 mm (20 mils).
E. Pavement Longitudinal Metal Joint, Pins and Bar Supports: Longitudinal metal joint for pavement, pins for installing the joint and supports for bars in pavement shall be as specified.
F. Dowel Bars: Dowel bars shall be plain, round bars conforming to the requirements of AASHTO M 227M Grades 485 through 555 (M 227 Grades 70 through 80). The finished bars shall be saw cut and free from burrs or out-of-round ends which prevent their slipping easily in the concrete. The bars shall be epoxy coated according to the requirements of AASHTO M 254.

2.3 EXPANSION JOINTS
A. The expansion joints material shall be cut to the exact cross section of the gutter, curb or combination curb and gutter.

2.4 CONCRETE MATERIALS
A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
 1. Portland Cement: ASTM C 150, gray portland cement Type I.
B. Normal-Weight Aggregates: ASTM C 33, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.
 1. Maximum Coarse-Aggregate Size: 1-1/2 inches.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
C. Water: Potable and complying with ASTM C 94/C 94M.
D. Air-Entraining Admixture: ASTM C 260.

2.5 CURING MATERIALS
A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
B. Membrane Curing: Membrane curing compound shall be Type III for streets, parking lots, driveways, entrances, driveways, sidewalks, curbs and curb and gutter. It shall contain finely divided white pigment and vehicle, premixed for immediate use without alteration. When applied to concrete at the specific rate of application, the compound shall exhibit a daylight reflectance of not less than 60 percent of that of magnesium oxide.
Membrane Curing: Clear, waterborne, membrane forming curing compound for parking lots, entrances, driveways, sidewalks, concrete curb and concrete curb and gutter shall meet ASTM C 309 Type 1, Class A & B. Membrane curing compound shall be Kure-N-Seal manufactured by Sonneborn or approved equal.
C. Water: Potable.

2.6 RELATED MATERIALS
A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.
B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.7 DETECTABLE WARNING MATERIALS
A. Detectable Warning Stamp: Semirigid polyurethane mats with formed underside capable of imprinting detectable warning pattern on plastic concrete; perforated with a vent hole at each dome.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  a. Advanced Surfaces Inc.
  b. Matcrete Precision Stamped Concrete Tools.
  c. Southern Color N.A., Inc.
  d. Stampcrete International Ltd.
  e. Superior Decorative by Dayton Superior.
B. Liquid Release Agent: Manufacturer's standard, clear, evaporating formulation designed to facilitate release of stamp mats.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  a. Advanced Surfaces Inc.; Liquid Release.
  b. Matcrete Precision Stamped Concrete Tools; Liquid Release Agent.
  c. Southern Color N.A., Inc.; SCC Clear Liquid Release.
  d. Stampcrete International Ltd.; Stampcrete Liquid Release.
  e. Superior Decorative by Dayton Superior; Pro Liquid Release.

2.8 CONCRETE MIXTURES
A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
B. Proportion mixtures to provide normal-weight concrete with the following properties:
 1. Compressive Strength (28 Days): 4000 psi. Minimum 6 sack cement content per cubic yard.
 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 3. Slump Limit: 4 inches, plus or minus 1 inch.
C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 1. Air Content: 5-1/2 percent plus or minus 1.5 percent for 1-1/2-inch nominal maximum aggregate size.
D. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
E. Cementitious Materials: Limit percentage by weight of cementitious materials other than portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

2.9 CONCRETE MIXING
A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION
3.1 EXAMINATION
A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
 2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Division 31 Section "Earth Moving."
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION
A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION
A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT
A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS
A. General: Form construction, isolation, and contraction joints and tool edges true to line unless other method is indicated on drawings, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 2. Provide tie bars at sides of paving strips where indicated.
 3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
 1. Locate expansion joints at locations shown on the drawings.
 2. Extend joint fillers full width and depth of joint.
 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-third of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 2. Contraction joints may be wet sawed, after concrete is hard enough to support power equipment. Care should be made that the new joint does not close up after sawing.
 3. Contraction joints may also be dry sawed no later than 24 hours after placing the concrete. Contractor shall saw joints before any shrinkage cracks start to show up in the pavement. Care should be made to prevent spalling of the joints.
E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT
A. Before placing concrete, inspect and complete formwork installation, steel reinforcement and items to be embedded or cast-in.
B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
H. Screed paving surface with a straightedge and strike off. Screed street with a power screed and straight edge street with a 10 foot straight edge at right angles to line of traffic.
I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
J. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
K. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING
A. General: Do not add water to concrete surfaces during finishing operations.
B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.
 2. For streets, provide a course finish by dragging an astro-turf carpet drag parallel to the line of traffic in streets.

3.8 DETECTABLE WARNINGS
A. Cast in Place Detectable Warnings: Furnish and install cast in place detectable warning per manufacturers recommendations
B. Products: Armor-Tile Herculite Series Replaceable Cast in Place or approved equal.

3.9 CONCRETE PROTECTION AND CURING
A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
B. Comply with ACI 306.1 for cold-weather protection.
C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
D. Curing Methods: Cure concrete by moisture-retaining-cover curing as follows:
 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.
 2. Membrane curing methods: The streets shall be sprayed with equipment consisting of a container having a capacity of 25 gallons in which constant pressure can be maintained by mechanical means or by a suitable pumping arrangement in order that a constant pressure at the spray nozzles will be maintained so that the membrane curing compound will be applied uniformly at the specific rate. The spray unit shall be rigid attached and shall be equipped with mechanical devices providing constant agitation of the membrane curing compound and continuous circulation of the compound between the container and the spray nozzles. The spray nozzles shall be attached to a distributor pipe so the spray will be applied vertically from not more than 2 foot above the surface of the pavement and their horizontal spacing shall be that uniform coverage of the pavement surface will be obtained. The parking lots, driveways, entrances, sidewalks, curbs and curb & gutter shall be an equipped container having not less than 5 gallons of capacity in which constant pressure shall be maintained by mechanical means.

3.10 PAVING TOLERANCES
A. Comply with tolerances in ACI 117 and as follows:
 1. Elevation: 3/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot long, unleveled straightedge not to exceed 1/2 inch.
 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 5. Joint Spacing: 3 inches.
 6. Contraction Joint Depth: Plus 1/4 inch, no minus.
 7. Joint Width: Plus 1/8 inch, no minus.

3.11 FIELD QUALITY CONTROL
A. Testing Agency: Owner will employ testing agency.
B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 1. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 2. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 3. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 4. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 5. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
  a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
G. Concrete paving will be considered defective if it does not pass tests and inspections.
H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
I. Prepare test and inspection reports.

3.12 REPAIRS AND PROTECTION
A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement or when concrete has reached design strength. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section Includes:
 1. Cold-applied joint sealants.
 2. Hot - applied joint sealants
B. Related Sections:
 1. Division 07 Section "Joint Sealants" for sealing nontraffic and traffic joints in locations not specified in this Section.
 2. Division 32 Section "Concrete Paving" for constructing joints in concrete pavement.

1.3 QUALITY ASSURANCE
A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
B. Source Limitations: Obtain each type of joint sealant from single source from single manufacturer.

1.4 PROJECT CONDITIONS
A. Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS
2.1 MATERIALS
A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

2.2 COLD-APPLIED JOINT SEALANTS
A. Joint Sealants: Single-Component, Self-Leveling, Polyurethane or Silicone.
B. Polyurethane, Self-Leveling, Joint Sealant for Concrete: ASTM C920 Type S, Grade NS, Vulkem 116 or approved equal.
C. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: ASTM 5893, Type SL, Dow Corning 888 or approved equal.
D. Cold - applied joint sealer for pavements shall comply with the requirements of ASTM D 1850-74
Joint Sealants: Sawed contraction joints to be sealed as noted on the drawings.

2.3 HOT-APPLIED JOINT SEALANTS
A. Hot-poured filled joints for pavements shall comply with the requirements of ASTM D 3405

2.4 JOINT-SEALANT BACKER MATERIALS
A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
B. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D 5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.

PART 3 - EXECUTION
3.1 EXAMINATION
A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION
A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

3.3 INSTALLATION OF JOINT SEALANTS
A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
C. Install joint-sealant backings of kind indicated to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of joint-sealant backings.
 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
D. Install joint sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place joint sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
E. Sidewalk Sealants: Sidewalk expansion joints that are to sealed shall have a ¼ inch high tear-off top strip that can be removed to allow the sealant to be applied.
F. Paving Sealant: Paving contraction joints are to be thoroughly cleaned of all foreign material, including membrane curing compound and the joint faces shall be clean and surface dry when the sealant is applied. Joints may be sealed with polyurethane, silicone, cold-poured joint sealer or hot-poured joint sealer.
G. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING
A. Clean off excess joint sealant or sealant smears adjacent to joints as the Work progresses, by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION
A. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

END OF SECTION 321373

SECTION 334100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section Includes:
 1. Pipe and fittings.
 2. Backwater valves.
 3. Cleanouts.
 4. Encasement for piping.
 5. Catch basins.
 6. Stormwater inlets.
 7. Stormwater manholes.
 8. Riprap
 9. Filter Fabric

1.3 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings:
 1. Manholes: Include plans, elevations, sections, details, frames, and covers.
 2. Catch basins and storm water inlets: Include plans, elevations, sections, details, frames, covers, and grates.
C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.
D. Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.
E. Field quality-control reports.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Do not store plastic manholes, pipe, and fittings in direct sunlight.
B. Protect pipe, pipe fittings, and seals from dirt and damage.
C. Handle manholes according to manufacturer's written rigging instructions.
D. Handle catch basins and stormwater inlets according to manufacturer's written rigging instructions.

1.5 PROJECT CONDITIONS
A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 2. Do not proceed with interruption of service without Architect's written permission.

PART 2 - PRODUCTS
2.1 PIPE AND FITTINGS
A. Corrugated PE Pipe and Fittings NPS 12 to NPS 60: AASHTO M 294M, Type S, with smooth waterway for coupling joints.
 1. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.
B. PVC pipe and fittings meeting ASTM 3034 - SRD 35 with gasketed joints and fittings.
C. PVC pipe and fittings meeting ASTM D 1785, ASTM D 2665} - Schedule 40 PVC with plain ends for solvent-cemented joints.
D. Reinforced concrete pipe meeting AASHTO M 170M (M 170) Classes I to V, in the Standard Specifications for Road and Bridge Construction latest addition.
E. HDPE Pipe shall have a smooth interior and angular exterior corrugation and meeting ASTM F 2648. Bell and Spigot joints shall be soil-tight and gaskets shall meet the requirement of ASTM F 477. Fittings shall conform to ASTM F 2306.
F. Corrugated Metal Pipe shall be Aluminized Steel Type 1 and shall conform with AASHTO M 274 and M 36.

2.2 VITRIFIED CLAY PIPE AND FITTINGS
A. Vitrified clay pipe and joints for direct burial shall conform to ASTM C 700 requirement for extra strength clay pipe and ASTM C 425. For clay pipe 18 inches in diameter and smaller, conform to requirements for compression couplings for plain-end pipe.
 1. Compression couplings: The PVC collar material for compression couplings of plain-end pipe shall conform to requirements of ASTM D 1784, Class 12454-B.

2.3 CLEANOUTS
A. Plastic Cleanouts:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  a. Canplas LLC.
  b. IPS Corporation.
  c. NDS Inc.
  d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
  e. Sioux Chief Manufacturing Company, Inc.
  f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.
 2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.4 CATCH BASINS
A. Standard Precast Concrete Catch Basins:
 1. Description: ASTM C 478, precast, reinforced concrete, size and depth as indicated, with provision for sealant joints.
 2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
 3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
 4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
 5. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
 6. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.
 7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and grate.
 8. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.
B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings. See frame and grates indicated on the Construction Documents.

2.5 STORMWATER INLETS
A. See inlets as indicated on the Construction Documents.
 1. Description: ASTM C 478, precast, reinforced concrete, size and depth as indicated.
 2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
 3. Top Section: Flat-slab-top type unless otherwise indicated.
B. Nyloplast Drainage Inlets, size and depth as indicated.
C. Frames and Grates: Heavy duty, according to utility standards and as indicated on the
Construction Documents.

2.6 STORMWATER MANHOLES
A. See manholes as indicated on the Construction Documents.
 4. Description: ASTM C 478, precast, reinforced concrete, size and depth as indicated, with provision for sealant joints.
 5. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
 6. Riser Sections: 4-inch minimum thickness, 36-inch, 48-inch or 60-inch diameter, and lengths to provide depth indicated.
 7. Top Section: Box or Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
 8. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
 9. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.
 10. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and grate.
 11. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.
B. Frames and Grates: Heavy duty, according to utility standards and as indicated on the
Construction Documents.

2.7 RIPRAP
A. Stone for erosion protection or sediment control shall meet requirements. Gradation and thickness shall be as indicated on plans.

2.8 FILTER FABRIC
A. The weight of the filter fabric shall weigh 6 oz/sq yd and meet ASTM D 3776 (Mod), Burst Strength of 250 psi and meet ASTM D 3786, Trapezoidal Tear Strength of 60 lb and meet ASTM D 1117, Grab Tensile Strength of 160 lb and meet ASTM D 4632 and Grab Elongation of 20% and meet ASTM D 4632.

PART 3 - EXECUTION
3.1 EARTHWORK
A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION
A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
F. Install gravity-flow, nonpressure drainage piping according to the following:
 1. Install piping pitched down in direction of flow.
 2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
 3. Install piping with 12-inch minimum cover.
 4. Install PE corrugated sewer piping according to ASTM D 2321.
 5. Install vitrified clay piping according to ASTM C 12, NCPI Clay Pipe Engineering Manual and manufacturer's recommendations.

3.3 PIPE JOINT CONSTRUCTION
A. Join gravity-flow, nonpressure drainage piping according to the following:
 1. Join corrugated PE, PVC and HDPE piping according to ASTM D 3212 for push-on joints or glue PVC schedule 40 pipes.
 2. Join dissimilar pipe materials with nonpressure-type flexible couplings.
 3. Cold applied bituminous sealer for reinforced concrete pipe should adhere to the concrete and make a watertight seal and shall not flow, crack or become brittle when exposed to the atmosphere.
 4. Preformed flexible gaskets and mastic joint sealer for reinforced concrete pipe to conform with AASHTO M 198.
 5. Join corrugated metal pipe with connecting bands a minimum of 1 foot in width.

3.4 CLEANOUT INSTALLATION
A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
 2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
 3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding earth grade.
C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 CATCH BASIN INSTALLATION
A. Construct catch basins to sizes and shapes indicated.
B. Set frames and grates to elevations indicated.

3.6 CONNECTIONS
A. Connect non-pressure, gravity-flow drainage piping in building's storm building drains specified in Division 22 Section "Facility Storm Drainage Piping."
B. Make connections to existing piping and underground manholes.
 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing pipe; and encase entire wye fitting, plus 6- overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
  a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
  b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
 4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.7 CLOSING ABANDONED STORM DRAINAGE SYSTEMS
A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
 1. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.
B. Abandoned Manholes and Structures: Excavate around manholes and structures as required and use one procedure below:
 1. Remove manhole or structure and close open ends of remaining piping.
C. Backfill to grade according to Division 31 Section "Earth Moving."

3.8 IDENTIFICATION
A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
 1. Use warning tape or detectable warning tape over ferrous piping.
 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.9 FIELD QUALITY CONTROL
A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
 1. Submit separate reports for each system inspection.
 2. Defects requiring correction include the following:
  a. Alignment: Less than full diameter of inside of pipe is visible between structures.
  b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
  c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
  d. Infiltration: Water leakage into piping.
  e. Exfiltration: Water leakage from or around piping.
 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 4. Reinspect and repeat procedure until results are satisfactory.
B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
 1. Do not enclose, cover, or put into service before inspection and approval.
 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 4. Submit separate report for each test.
 5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
  a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
  b. Option: Test plastic piping according to ASTM F 1417.
  c. Option: Test concrete piping according to ASTM C 924.
  d. Option: Text Clay piping according to ASTM C1091.
C. Leaks and loss in test pressure constitute defects that must be repaired.
D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.10 CLEANING
A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 334100

SECTION 334600 - SUBDRAINAGE

PART 1 - GENERAL
1.1 SUMMARY
A. This Section includes subdrainage systems.

PART 2 - PRODUCTS
2.1 PIPING MATERIALS
A. Refer to the "Piping Applications" Article in Part 3 for applications of pipe, fitting, and joining materials.

2.2 PERFORATED-WALL PIPES AND FITTINGS
A. Perforated PE Pipe and Fittings: ASTM F 405 or AASHTO M 252, Type CP; corrugated, for coupled joints.
 1. Couplings: Manufacturer's standard, band type.

2.3 SOLID-WALL PIPES AND FITTINGS
A. PE Drainage Tubing and Fittings: AASHTO M 252, Type S, corrugated, with smooth waterway, for coupled joints.
 1. Couplings: AASHTO M 252, corrugated, band type, matching tubing and fittings.

2.4 SPECIAL PIPE COUPLINGS
A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined and corrosion-resistant metal tension band and tightening mechanism on each end.
 1. Unshielded Flexible Couplings: Elastomeric sleeve with corrosion-resistant metal tension band and tightening mechanism on each end.

2.5 CLEANOUTS
A. PVC Cleanouts: ASTM D 3034, PVC cleanout threaded plug and threaded pipe hub.

2.6 SOIL MATERIALS
A. Backfill, drainage course, impervious fill, and satisfactory soil materials are specified in Division 31 Section "Earth Moving."

2.7 GEOTEXTILE FILTER FABRICS
A. Description: Fabric of PP or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D 4491.
 1. Structure Type: Nonwoven
 2. Style(s): Flat.

PART 3 - EXECUTION
3.1 EARTHWORK
A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING APPLICATIONS
A. Underground Subdrainage Piping:
 1. Perforated PE pipe and fittings, couplings, and coupled joints.

3.3 CLEANOUT APPLICATIONS
A. In Underground Subdrainage Piping:
 1. At Grade in Earth: PVC cleanouts.
 2. At Grade in Paved Areas: Cast-iron cleanouts.

3.4 PIPING INSTALLATION
A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.
 1. Lay perforated pipe with perforations down.
 2. Excavate recesses in trench bottom for bell ends of pipe. Lay pipe with bells facing upslope and with spigot end entered fully into adjacent bell.
B. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.
C. Install PE piping according to ASTM D 2321.

3.5 PIPE JOINT CONSTRUCTION
A. Cast-Iron Soil Pipe and Fittings: Hub and spigot, with rubber compression gaskets according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook." Use gaskets that match class of pipe and fittings.
B. Join PE pipe, tubing, and fittings with couplings for soil-tight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties."
C. Join perforated, PE pipe and fittings with couplings for soil-tight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties"; or according to ASTM D 2321.
D. Join PVC pipe and fittings according to ASTM D 3034 with elastomeric seal gaskets according to ASTM D 2321.
E. Join perforated PVC pipe and fittings according to ASTM D 2729, with loose bell-and-spigot joints.
F. Special Pipe Couplings: Join piping made of different materials and dimensions with special couplings made for this application. Use couplings that are compatible with and fit materials and dimensions of both pipes.

3.6 CONNECTIONS
A. Connect low elevations of subdrainage system to solid-wall-piping storm drainage system.

3.7 FIELD QUALITY CONTROL
A. Testing: After installing drainage course to top of piping, test drain piping with water to ensure free flow before backfilling. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.

3.8 CLEANING
A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION 334600

REVISIONS

NO.	DESCRIPTION	DATE
	PERMITTING SET	07/04/21

MICHAEL E. NEIKIRK PE

Civil Engineer

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SCALE:	NTS
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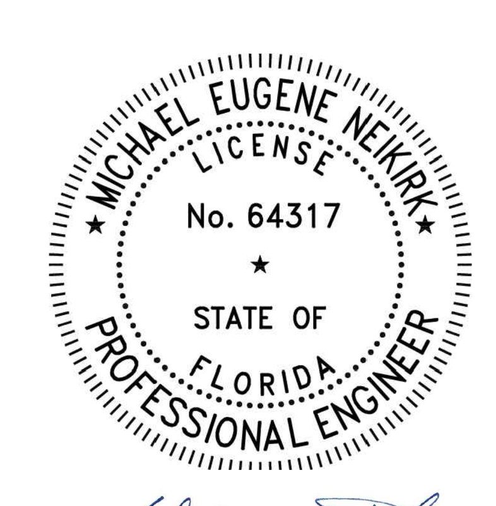
CHECKED BY:	TJL, MEN
ENGINEER:	Michael E. Neikirk
ARCHITECT:	Lickel Architecture, P.C.
OWNER:	Plaza Street Partners



CERTIFIED BY

JOB TITLE

76 STORE
11470 SAN JOSE BLVD.
JACKSONVILLE, FL

DRAWING TITLE

SPECIFICATIONS

FILE LOCATION

DRAWING NUMBER: C16

REV #