

US 190 (Gause Boulevard) Sidewalk Study

Lindberg Drive – Frederick Drive

Stage 0 Feasibility Study

RPC Task SL-2.17: FY-17 UPWP

PREPARED FOR
Regional Planning Commission
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TABLE OF CONTENTS

1. Introduction.....	1
2. Scope of Study Area (Phase 1).....	1
3. Existing Highway Characteristic.....	3
Typical Roadway Sections.....	3
Existing Pedestrian Accommodations.....	5
Observed Pedestrian Activities.....	7
4. Conclusions and Recommendations.....	8
Recommended Project.....	8
Additional Recommendations.....	11
A. Appendix A – Existing Sidewalk Conditions	14
B. Appendix B – Proposed Sidewalk Improvements	21
C. Appendix C – DOTD Plans for Pedestrian Facilities	28
D. Appendix D – DOTD Plans for Traffic Signals (TSD-09).....	33

LIST OF FIGURES

Figure 1 – Study Location Map	1
Figure 2 – Phase 2 Study Area	2
Figure 3 – US 190 (Gause Boulevard) Typical Sections (1 of 3)....	3
Figure 4 – US 190 (Gause Boulevard) Typical Sections (2 of 3)....	4
Figure 5 – US 190 (Gause Boulevard) Typical Sections (3 of 3)....	5
Figure 6 – Existing Sidewalks at Camelia Square Development.....	5
Figure 7 – US 190 (Gause Boulevard) @ I-10 East Service Road....	6
Figure 8 – I-10 @ US 190 (Gause Boulevard) Pedestrian Activities..	7
Figure 9 – Recommended Project Layout Map	9
Figure 10 – Recommended Section–US 190 (Gause Blvd) @ I-10..	10

LIST OF TABLES

Table 1 – Estimated Quantities (Recommended Project)	11
Table 2 – Estimated Quantities (Modified Phase 1 Project)	12

1 - Introduction

This sidewalk study is the second in a multi-phase study to examine existing sidewalk conditions and availability along the US 190 (Gause Boulevard) corridor in the City of Slidell and St. Tammany Parish. The multi-phase study area extends from US 11 (Front Street) in the City of Slidell to US 190/LA 1090 (Military Road) in St. Tammany Parish. The Phase 1 study was completed in March 2016 (See the RPC's document "US 190 (Gause Boulevard) Sidewalk Study, Front Street – Lindberg Drive, Stage 0 Feasibility Study")

It is the desire of both the City of Slidell and St. Tammany Parish to provide pedestrians safe and continuous sidewalks along this entire stretch of US 190 (Gause Boulevard) that meet current DOTD standards and ADA requirements. Key objectives of the study are to identify needed repairs or replacement of existing sidewalks and the necessity for new sidewalk installations to provide connectivity along the route. The study will also allow for the future incremental placement of new sidewalks in view of a sidewalk master plan for the corridor. A Study Location Map depicting the areas encompassing the multi-phase study and this study (Phase 2) is shown below in Figure 1.

2 - Scope of Study Area (Phase 2)

Phase 2 of the US 190 (Gause Boulevard) Sidewalk Study spans a distance of approximately 0.60 mile and encompasses the I-10 @ US 190 (Gause Boulevard) interchange. The study area begins immediately east of Lindberg Drive and extends east to Frederick Drive. US 190 (Gause Boulevard) is a four-lane divided highway with a grass median from Lindberg Drive *Begin Project* to Yaupon Drive and transitions to a four-lane undivided highway with a dedicated center left-turn lane between Yaupon Drive to Frederick Drive *End Project*.

The corridor is intensely urban. No sidewalks are presently provided within the study area with the exception of a short section recently installed along the north side of US 190 (Gause Boulevard) in front of the Camellia Square development near Malbrough Drive. *Figure 2 on the following page shows aerial views of the Phase 2 study area and highlights existing sidewalk and traffic signal locations.*

The remaining report provides a description of the findings and recommendations of the study. *Detailed plan sheets based on recent surveys of the existing highway system within the study area of Phase 2 are provided in Appendix A.*

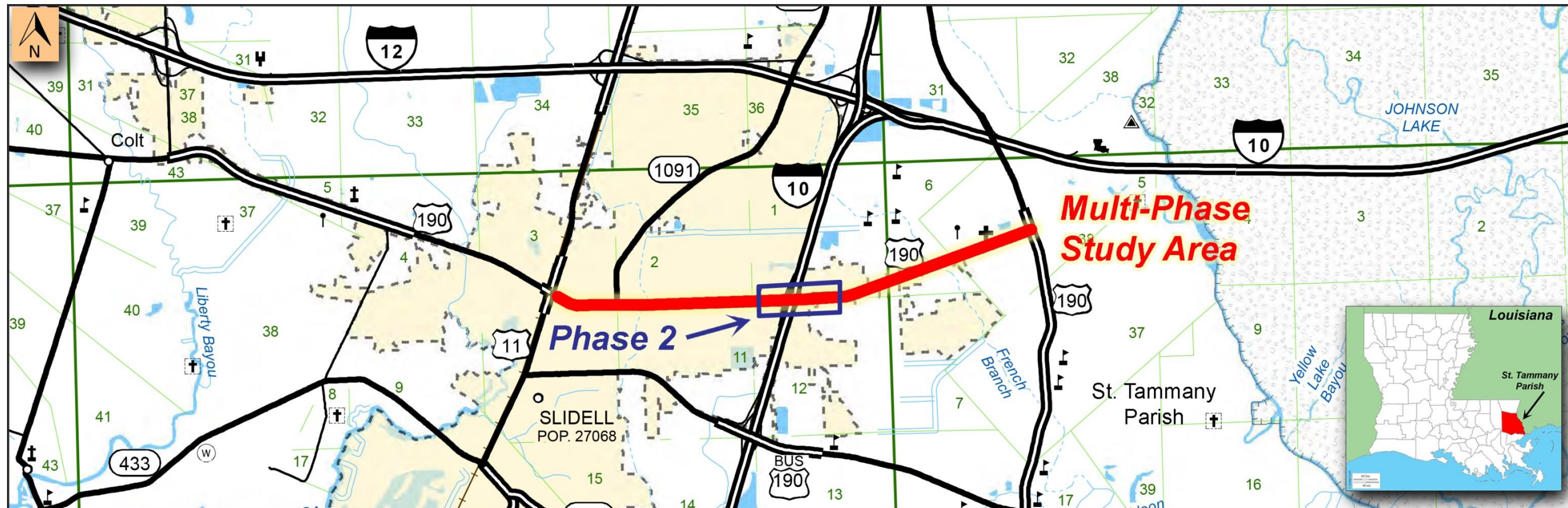


FIGURE 1 - STUDY LOCATION MAP

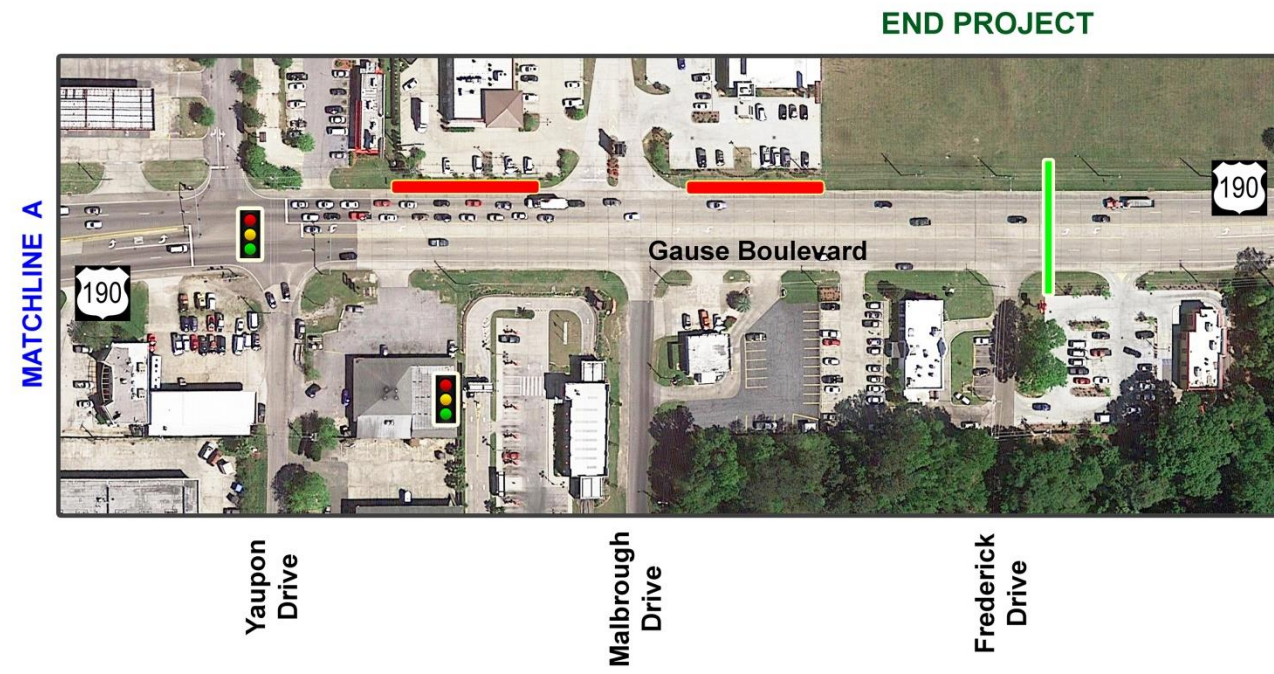
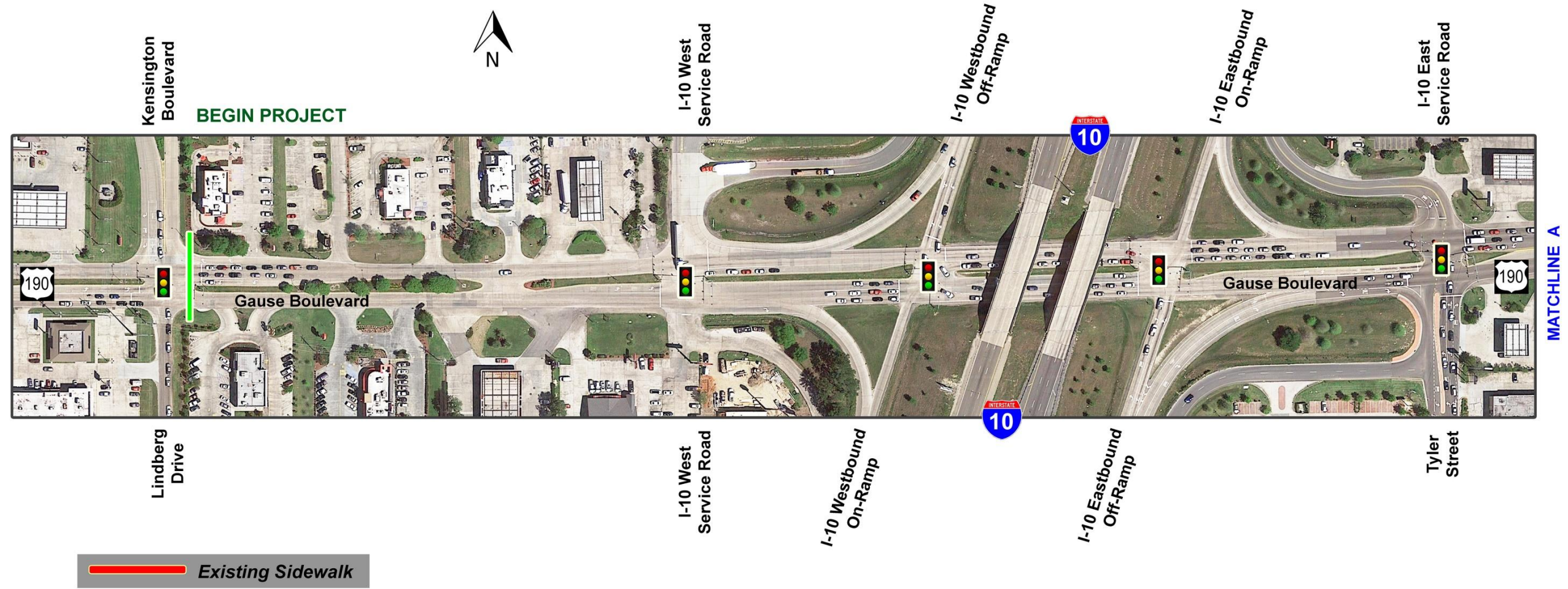


FIGURE 2 – PHASE 2 STUDY AREA

3.0 - Existing Highway Characteristics

US 190 (Gause Boulevard) within the confines of the Phase 2 study area is one of the heaviest traveled and most congested corridors in the City of Slidell. This segment includes the I-10 @ US 190 (Gause Boulevard) interchange which serves as the principal connection point linking motorists to the City of Slidell.

Due to its close proximity to the I-10 interchange, the corridor has developed into an intensely urban corridor with numerous commercial establishments lining the route to service commuters. These establishments include restaurants, gasoline/service stations with convenience markets, hotels, retail stores, and a major truck-stop facility.

The commercial developments have induced pedestrian activity along the corridor, particularly at the I-10 interchange. With the presence of pedestrians comes a need to insure safe and continuous sidewalks along the route that meet current DOTD standards and ADA requirements.

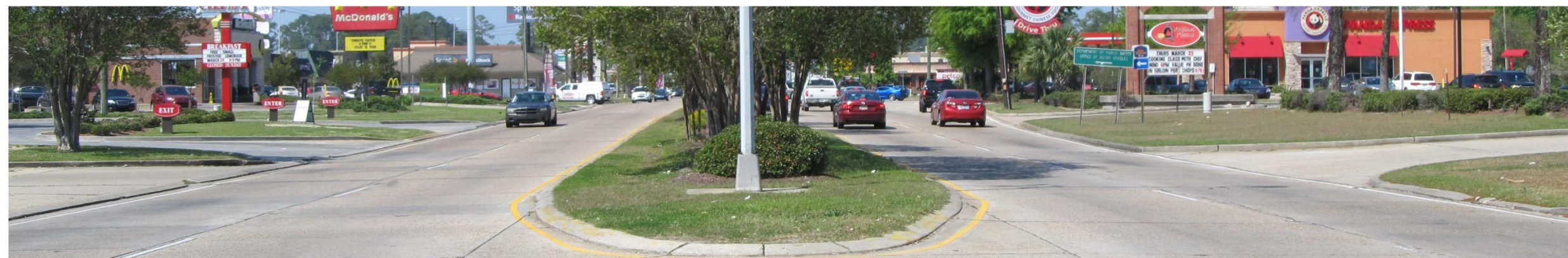
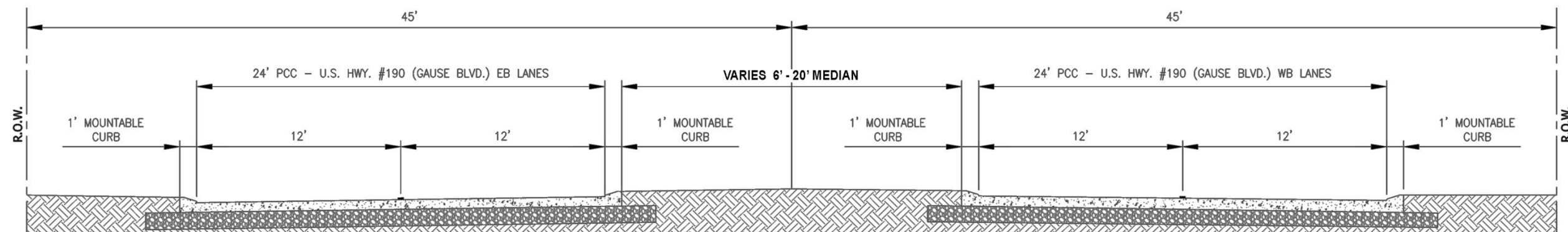
Three distinct roadway typical sections are found within the US 190 (Gause Boulevard) Phase 2 study area. Following are specific details describing the

existing typical roadway sections and evaluations of existing and future need for sidewalk facilities and traffic signal pedestrian features along the corridor.

Typical Roadway Sections

US 190 (Gause Boulevard) from the beginning of the project at Lindberg Drive/Kensington Boulevard to the I-10 West Service Road is a concrete four-lane divided highway with a center grass median. The roadway has a curb and gutter system with a sub-surface drainage system. The right-of-way along this section starts at a 90 ft. width near Lindberg Drive/Kensington Boulevard and increases to a 200 ft. width at the I-10 West Service Road. Through travel lanes are of standard 12 ft. width and the center median is of 16 ft. width. No shoulders are provided in the immediate vicinity of Lindberg Drive/Kensington Boulevard, but shoulders are incorporated as the roadway approaches the I-10 West Service Road. Left-turn lanes are cut into the median at signalized intersections. No sidewalks are provided along this section of US 190 (Gause Boulevard).

Figure 3 below depicts the typical roadway section along US 190 (Gause Boulevard) in the vicinity of Lindberg Drive/Kensington Boulevard.



US 190 (Gause Boulevard) - From Lindberg Drive/Kensington Boulevard to the I-10 West Service Road

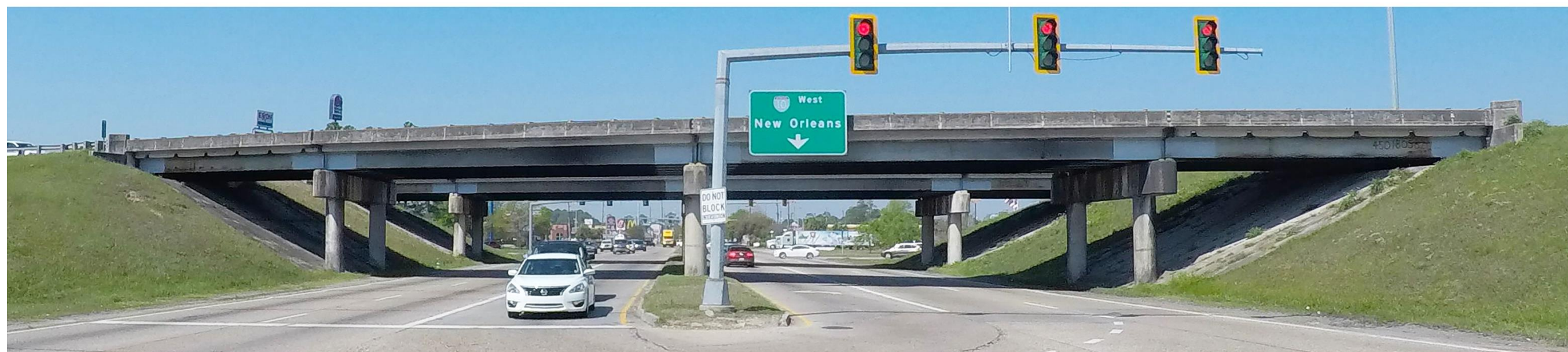
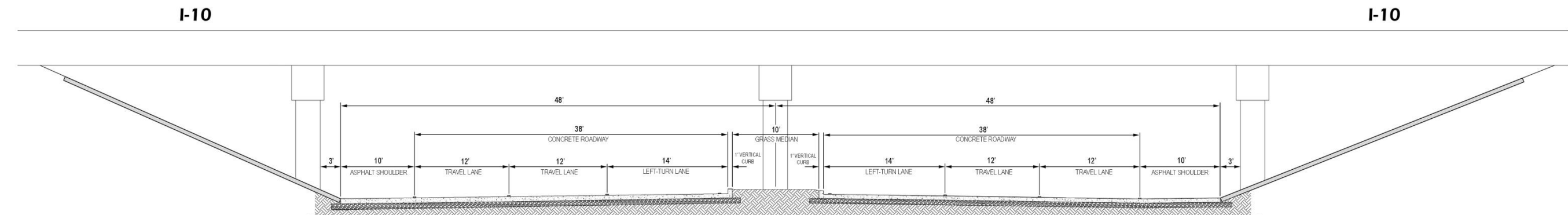
FIGURE 3 – US 190 (GAUSE BOULEVARD) TYPICAL SECTIONS (1 of 3)

US 190 (Gause Boulevard) between the I-10 West Service Road and the I-10 East Service Road/Tyler Street, which encompasses the I-10 diamond interchange, is a six-lane divided highway with a center grass median. US 190 (Gause Boulevard) is an “at-grade” (underpass) at the I-10 interchange with an elevated bridge structure (overpass) serving the I-10 mainline. Interior travel lanes adjacent to the median function as continuous left-turn lanes 14 ft. in width. The through travel lanes are of standard 12 ft. width. Right-turn lanes 10 ft. in width are installed along US 190 (Gause Boulevard) at the I-10 on-ramps. Roadway shoulders are provided with open ditches carrying drainage flows along this section of US 190 (Gause Boulevard). Bridge columns for the I-10 overpass are situated in the US 190 (Gause Boulevard) median and along the immediate outside edge of the shoulders. Traffic signals operate the intersections of US 190 (Gause Boulevard) at the I-10 off-ramps and both service roads. No sidewalks are provided along this section of US 190 (Gause Boulevard).

From the I-10 East Service Road/Tyler Street, US 190 (Gause Boulevard) transitions to a five-lane undivided concrete highway with a dedicated center left-turn lane beginning at Yaupon Drive to the end of the project at Frederick Drive. Through travel lanes are of standard 12 ft. width and the dedicated center left-turn lane is 14 ft. in width. The roadway has 8 ft. shoulders that include a vertical curb and gutter system with sub-surface drainage. The right-of-way along this section is 100 ft. in width. A short section of sidewalks were recently installed along this section of highway on the north side of US 190 (Gause Boulevard) in front of the Camellia Square development near Malbrough Drive. No other sidewalks are presently provided.

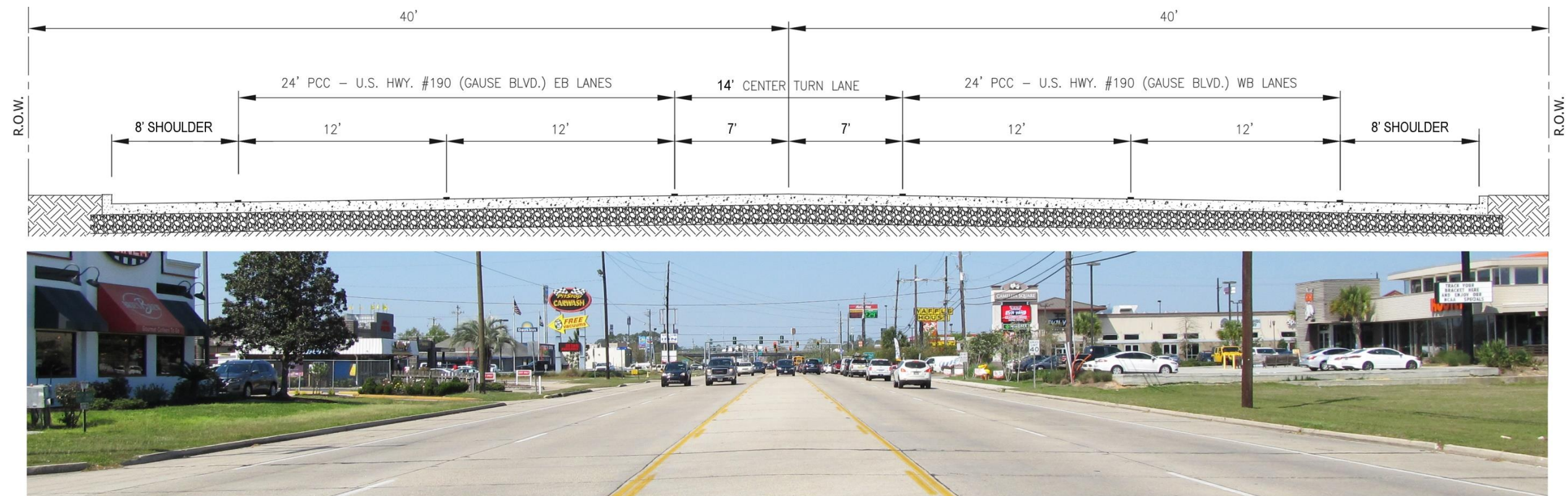
Figure 5 on the following page shows the typical roadway section along US 190 (Gause Boulevard) between Yaupon Drive and Frederick Drive.

Figure 4 below depicts the typical roadway section along US 190 (Gause Boulevard) in the immediate vicinity of the I-10 interchange.



I-10 @ US 190 (Gause Boulevard)

FIGURE 4 – US 190 (GAUSE BOULEVARD) TYPICAL SECTIONS (2 of 3)



US 190 (Gause Boulevard) - From Yaupon Drive to Frederick Drive

FIGURE 5 – US 190 (GAUSE BOULEVARD) TYPICAL SECTIONS (3 of 3)

Existing Pedestrian Accommodations

As noted earlier, no sidewalks are presently provided within the study area with the exception of a short section recently installed along the north side of US 190 (Gause Boulevard) in front of the Camellia Square development near Malbrough Drive. This isolated section of sidewalk is located within the typical roadway section between Yaupon Drive and Frederick Drive shown in Figure 5 above. The sidewalks were installed by the adjacent private Camelia Square development and are 4 ft. in width and abut the existing US 190 (Gause Boulevard) vertical/barrier curb. *Figure 6 depicts the existing sidewalks provided along US 190 (Gause Boulevard) adjacent to the Camelia Square development.*

DOTD’s recently updated standards require that sidewalks placed adjacent to the roadway curb must be 7 ft. in width. Thus, the existing sidewalks adjacent to Camelia Square do not meet current DOTD design standards. Also, these sidewalks do not adequately adjoin the development’s driveway connection or comply with ADA standards for ramps at intersecting side streets.

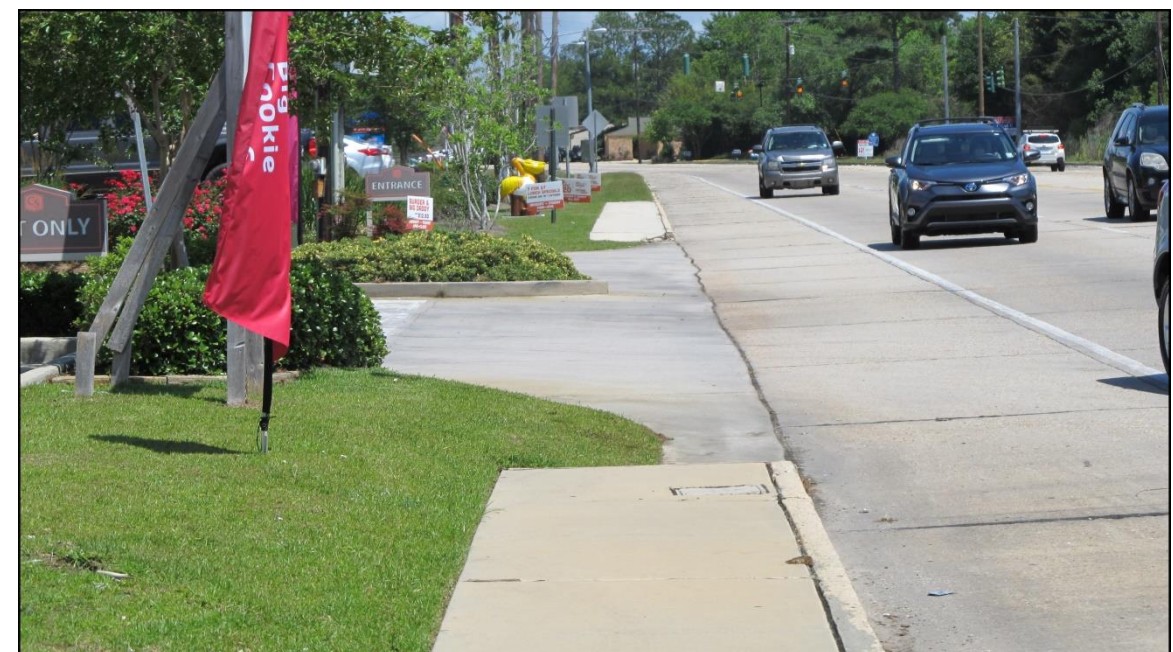


FIGURE 6 – EXISTING SIDEWALKS AT CAMELIA SQUARE DEVELOPMENT

Traffic signals are installed at five intersections within the Phase 2 study area as seen in Figure 2. All five traffic signals are mast-arm installations and function with actuated control and within a coordinated traffic signal system. Following is a list of these signalized intersections.

- US 190 (Gause Boulevard) @ I-10 West Service Road
- US 190 (Gause Boulevard) @ I-10 Westbound/Southbound Ramps
- US 190 (Gause Boulevard) @ I-10 Eastbound/Northbound Ramps
- US 190 (Gause Boulevard) @ I-10 East Service Road/Tyler Street
- US 190 (Gause Boulevard) @ Yaupon Drive

No system of sidewalks exists at the signalized intersection within the study area. Consequently, the five traffic signals locations do not include pedestrian signal indications and pedestrian pushbuttons, nor any pedestrian crosswalks and pedestrian crossing signs. *Figure 7 below shows the signalized intersection of US 190 (Gause Boulevard) @ I-10 East Service Road/Tyler Street which represents the typical traffic signal layout seen within the study area.*



FIGURE 7 – US 190 (GAUSE BOULEVARD) @ I-10 EAST SERVICE ROAD/TYLER STREET

Observed Pedestrian Activities

Numerous field inspections and observations were conducted within the study area to fully assess pedestrian activities along the corridor. Also, video files captured from this and previous traffic studies were utilized to take a deeper look at pedestrian behavior at the intersections and along the roadways. Following is a description of notable pedestrian issues and problems observed during the study.

Field observations revealed a normally light presence of pedestrians along US 190 (Gause Boulevard) outside the I-10 interchange control-of-access area to the west of the study area between Lindberg Drive/Kensington Boulevard and the I-10 West Service Road, and to the east of the study area between Tyler Drive/I-10 East Service Road and Frederick Drive. However, these sections of US 190 (Gause Boulevard) would see occasional burst of heavy pedestrian activity when traveling tour buses and school buses would stop to allow its passengers to visit the numerous restaurants and eateries that line the corridor. With no sidewalks presently installed along the roadway these commuters turned pedestrians walk along the grass areas adjacent to the corridor and cross the roadway and median at sporadic points to reach their desired location.

Pedestrian activity is much more pronounced at the I-10 @ US 190 (Gause Boulevard) interchange. Field observations revealed consistent pedestrian presence along the US 190 (Gause Boulevard) shoulder in the immediate vicinity of the interstate off-ramps. The main sources for these pedestrians, in addition to the buses containing tourist and school students mentioned earlier, appear to be a large truck stop located in the northwest quadrant of the interchange and two hotels located immediate east and west of the interchange. Moreover, the interchange is regularly occupied by individuals soliciting money and food from motorists on the approaches to the US 190 (Gause Boulevard) intersections with the I-10 eastbound and westbound off-ramps.

A matter of safety concern, especially after a rainfall event, is the close proximity of pedestrians to moving vehicles along US 190 (Gause Boulevard) at the I-10 interchange. Standing water at times force pedestrians to walk precariously close to the vehicle travel lanes. Also, heavy truck volumes turning left from the I-10 off-ramps were observed over-tracking into the shoulder areas used by pedestrians as they walk along US 190 (Gause Boulevard). *Figure 8 provides images of pedestrians taken at the I-10 interchange.*



**FIGURE 8 – I-10 @ US 190 (GAUSE BOULEVARD)
PEDESTRIAN MOVEMENTS**

4.0 - Conclusion and Recommendations

It is the goal of both the City of Slidell and St. Tammany Parish to provide pedestrians safe and continuous sidewalks along the US 190 (Gause Boulevard) that meets current DOTD standards and ADA requirements. This sidewalk study represents the second (Phase 2) in a multi-phase study to examine existing sidewalk conditions and connectivity along the entire route. The Phase 2 study section begins immediately east of the Lindberg Drive/Kensington Boulevard intersection and extends east to Frederick Drive, a distance of approximately 0.60 mile. The study area encompasses the busy I-10 @ US 190 (Gause Boulevard) interchange.

As detailed earlier in the report, US 190 (Gause Boulevard) within the Phase 2 study area is one of the heaviest traveled and most congested corridors in the City of Slidell, with the I-10 @ US 190 (Gause Boulevard) interchange serving as the principal connection point for motorists to the City of Slidell. The corridor within the study area contains three distinct typical sections which begins as a four-lane divided highway with a grass median at Lindberg Drive/Kensington Boulevard and transitions to a four-lane undivided highway with a dedicated center left-turn lane before reaching Frederick Drive at the end of the study area.

Development along the corridor is intensely urban due to its close proximity to the I-10 interchange. Numerous commercial businesses front the route to serve commuters. These commercial developments have induced routine pedestrian activity along the corridor particularly at the I-10 interchange. However, no sidewalks are presently provided within the study area with the exception of a short section recently installed along the north side of US 190 (Gause Boulevard) in front of the Camellia Square (Wyndham Hotel) development near Malbrough Drive.

Field inspections and observations revealed light pedestrian presence along US 190 (Gause Boulevard) outside the I-10 interstate control-of-access area, but routine and at times heavy pedestrian activity in the immediate confines of the I-10 interchange. These observations revealed perilous conditions for pedestrians at the congested I-10 interchange as they attempt to walk within the US 190 (Gause Boulevard) shoulder area, where they contend with off-tracking, left-turning heavy truck traffic from the I-10 off-ramps and drainage issues along the roadway that force them to walk dangerously close to the vehicular travel lanes.

The following projects are recommended to address these deficiencies and provide sidewalk connectivity along the US 190 (Gause Boulevard) route.

Recommended Project - (Urban System Project) US 190 (Gause Boulevard) Sidewalk Improvements from the I-10 West Service Road to Yaupon Drive

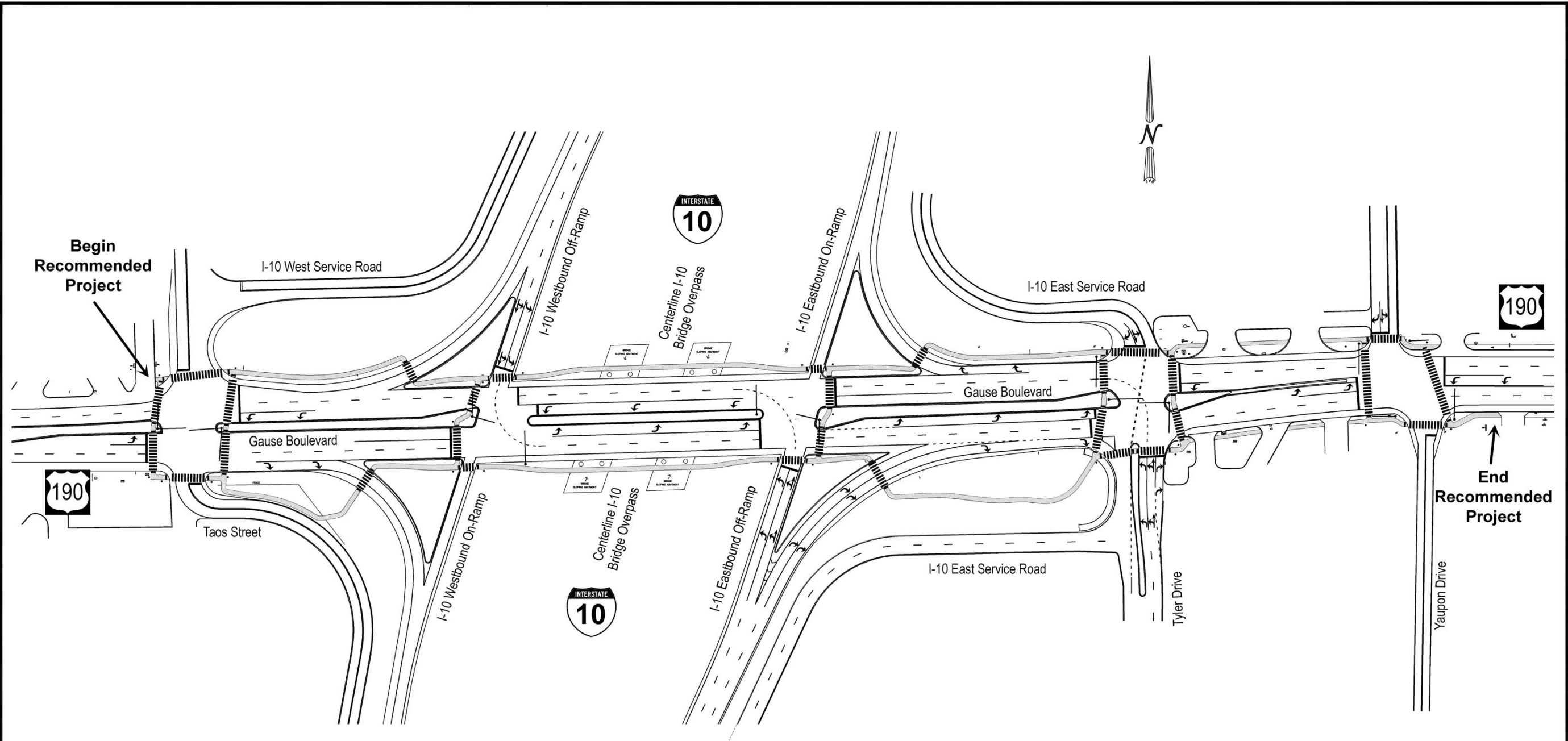
Due to the high degree of complexity of installing a continuous sidewalk system along US 190 (Gause Boulevard) within the I-10 interstate control-of-access area, it is recommended that this project is undertaken as an Urban System Projects. The recommended limits of the project are from the I-10 West Service Road to Yaupon Drive, a distance of approximately 0.30 mile. The project can be accomplished within existing DOTD right-of-way and no problematic utility relocations were identified.

The recommended project will likely require a total upgrade or significant modifications of the five traffic signals located within the recommended project area to accommodate pedestrian signal indications and pushbuttons and to accurately position the signal poles with new sidewalks. This will also require ADA accessible ramps and crosswalks at the five traffic signal locations within the boundary of the project. *Figure 9 on the following page provides a Layout Map showing the proposed sidewalk alignment and ramp configurations for the recommended project. Appendix B provides plan sheets detailing sidewalk locations for the entire Phase 2 study area.*

A detailed traffic signal corridor analysis should be performed as part of the design process to ensure traffic signal timing and phasing adequately meet MUTCD clearance times for pedestrian movements and maintains sufficient vehicle flow along US 190 (Gause Boulevard).

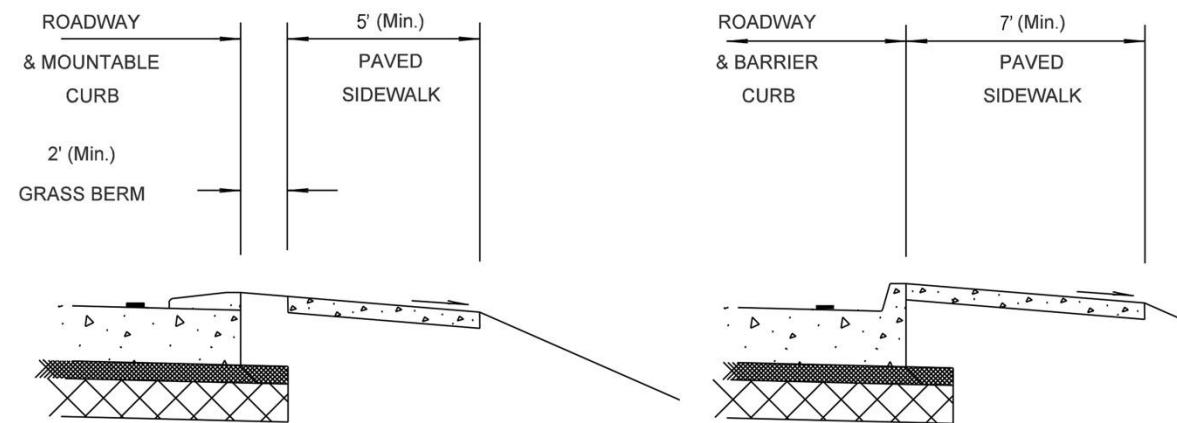
The project should include the following.

- Install minimum 5 ft. wide sidewalks offset a minimum of 2 ft. from the back of curb system with a grass berm separating the sidewalk from the roadway. In locations where space constraints require sidewalks to run adjacent to the roadway curb, sidewalks must be a minimum of 7 ft. wide and installed with barrier curbs as shown in Figure 9 on the next page.



**RECOMMENDED PROJECT - (URBAN SYSTEM PROJECT)
 US 190 (GAUSE BOULEVARD) SIDEWALK IMPROVEMENTS
 FROM I-10 WEST SERVICE ROAD TO YAUPON DRIVE
 LAYOUT MAP**

Figure 9



TYPICAL SIDEWALK SECTIONS

SHEET NUMBER	1 of 1
DESIGNED	ST. TAMMANY PARISH
CHECKED	PARISH
DATE	JUNE 2017
REVISION	DESCRIPTION
NO.	DATE
1	05/15/14
RELOCATED SOURCE OF ELECTRICAL SERVICE	
RECOMMENDED PROJECT - (URBAN SYSTEM PROJECT) US 190 (GAUSE BOULEVARD) SIDEWALK IMPROVEMENTS FROM I-10 WEST SERVICE ROAD TO YAUPON DRIVE LAYOUT MAP	
THE CITY OF SLIDELL, LOUISIANA	
J.V. Burkes & Associates Engineering • Planning • Environmental 1870 Bernard Highway Slidell, LA 70566 Phone: (504) 885-0124 www.jvburkes.com	

- At the I-10 interstate overpass, a minimum 7 ft. wide sidewalk should be installed on the back-side of the bridge support columns to maintain the existing shoulders along US 190 (Gause Boulevard) for vehicular traffic. This will require cutting into the bridge sloping abutment and installing a retaining wall to secure the elevate sidewalk placement. *Figure 10 below provides a recommended section for the sidewalk design at the I-10 overpass.*

- Upgrade the existing five traffic signals located within the recommended project area to include pedestrian signal indications and pushbuttons, pedestrian pushbutton signs, longitudinal crosswalk markings, and pedestrian crossing warning signs at the signalized intersections of I-10 West Service Road, I-10 Westbound Ramps, I-10 Eastbound Ramps, Tyler Drive/I-10 East Service Road, and Yaupon Drive.
- Install ADA accessible sidewalk curb ramps at all signalized intersections within the recommended project boundaries to comply with current ADA requirements and DOTD Standard Plans for Pedestrian Facilities governing running slopes, landing areas, and detectable warning surfaces. (See Appendix C)

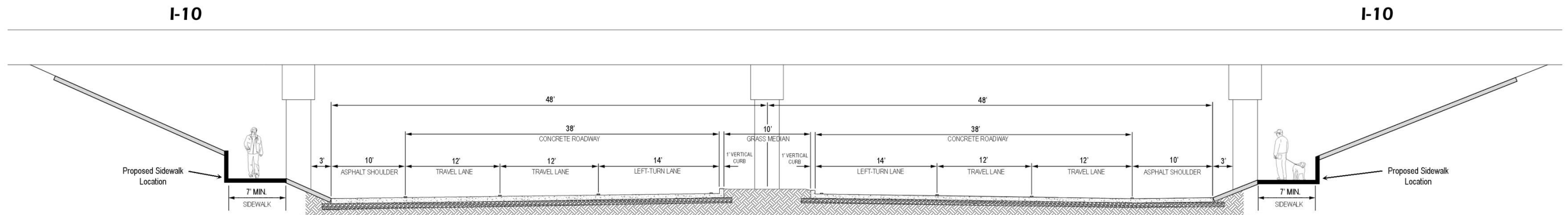


FIGURE 10 – RECOMMENDED SECTION – US 190 (GAUSE BOULEVARD) @ I-10 OVERPASS

Following in Table 1 is the Summary of Estimated Quantities for the recommended Urban System Project.

Recommended Project (Urban System Project) US 190 (Gause Boulevard) Sidewalks from I-10 West Service Road to Yaupon Drive					
SUMMARY OF ESTIMATED QUANTITIES					
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
201-01-00100	Clearing and Grubbing	LUMP	LUMP	6,800.00	6,800.00
202-01-00100	Removal of Structures and Obstructions	LUMP	LUMP	120,000.00	120,000.00
202-02-06100	Removal of Walks and Drives	SQYD	720	8.00	5,760.00
202-03-38000	Relocation of Sign (Existing)	EACH	22	125.00	2,750.00
203-05-00100	Excavation and Embankment	LUMP	LUMP	38,000.00	38,000.00
204-02-00100	Temporary Hay or Straw Bales	EACH	40	15.00	600.00
204-06-00100	Temporary Silt Fencing	LNFT	4,600	1.75	8,050.00
302-02-01060	Class II Base Course (4" Thick) (Stone or Recycled Portland Cement Concrete)	SQYD	3,860	12.00	46,320.00
702-04-00200	Adjusting Catch Basins (Drop Inlets)	EACH	6	800.00	4,800.00
706-01-00100	Concrete Walk (4" Thick)	SQYD	3,820	45.00	171,900.00
706-01-00300	Concrete Walk (6" Thick)	SQYD	720	55.00	39,600.00
706-04-00100	Handicapped Curb Ramp	EACH	36	600.00	21,600.00
707-01-00200	Concrete Curb (Barrier)	LNFT	680	10.00	6,800.00
713-01-00100	Temporary Signs and Barricades	LUMP	LUMP	24,000.00	24,000.00
727-01-00100	Mobilization	LUMP	LUMP	22,500.00	22,500.00
729-01-00100	Sign (Type A)	SQYD	80	18.00	1,440.00
729-21-00100	U-Channel Post 12'	EACH	14	45.00	630.00
732-01-01080	Plastic Pavement Striping (24" Width)	LNFT	4,200	5.00	21,000.00
736-07-00100	Traffic Signal System (Upgrade)	LUMP	5	200,000.00	1,000,000.00
740-01-00100	Construction Layout	LUMP	LUMP	8,500.00	8,500.00
NS-600-00220	Saw Cutting Portland Cement Concrete Pavement	INLF	960	1.25	1,200.00
NS-736-00010	LED Pedestrian Countdown Signal Head	EACH	36	950.00	34,200.00
NS-736-00011	Pedestrian Push Buttons	EACH	36	250.00	9,000.00
				Construction Total =	1,595,450.00
				10% Contingency =	159,545.00
				Final Total =	1,754,995.00

TABLE 1–SUMMARY OF ESTIMATED QUANTITIES (RECOMMEDED PROJECT)

Opinion of Probable Construction Costs = **\$1,754,995.00**

Additional Recommendations

For the two short sections within the study area but outside the boundaries of the recommended Urban System Project just detailed, the following two additional recommendations are offered.

It is recommended that the short section along US 190 (Gause Boulevard) from the beginning of the project study area to a point approximately 735 feet east to the intersection at the I-10 West Service Road be incorporated into the Transportation Alternative Program (TAP) project recommended in the first (Phase 1) sidewalk study completed in March 2016 (See the RPC’s document “US 190 (Gause Boulevard) Sidewalk Study, Front Street – Lindberg Drive, Stage 0 Feasibility Study”). This previously recommended Transportation Alternative Program (TAP) project called for the installation of a continuous sidewalk system along US 190 (Gause Boulevard) from 14th Street to Lindberg Drive/Kensington Boulevard. The original distance was 0.873 mile. The recommended inclusion will add 0.14 mile to the project, for a total new project length of 1.013 miles.

The project includes the following improvements.

- Install minimum 5 ft. wide sidewalks offset a minimum of 2 ft. from the back of mountable curb system with a grass berm separating the sidewalk from the roadway. The patchwork of 4 ft. wide sidewalks along this section will be removed and replaced with new 5 ft. wide sidewalks. The US 190 (Gause Boulevard) mountable curb and gutter system is to remain except in those locations where space constraints require sidewalks to run adjacent to roadway curb. Sidewalks running adjacent to the roadway curb must now be a minimum of 7 ft. wide and installed with barrier curbs, per DOTD’s recently undated standards (Note: the recommendations in the original study called for 6 ft. wide sidewalks under these conditions which met DOTD’s standards at the time). Where possible the City of Slidell should seek public servitudes within business properties fronting US 190 (Gause Boulevard) to provide a larger grass berm separation between sidewalk and roadway.

- Install ADA accessible sidewalk curb ramps at all side street intersections within the recommended project boundaries to comply with current ADA requirements and DOTD Standard Plans for Pedestrian Facilities governing running slopes, landing areas, and detectable warning surfaces.
- Install symbolic one-section countdown pedestrian signal indications and pushbuttons, pedestrian pushbutton signs, longitudinal crosswalk markings, and pedestrian crossing warning signs at the signalized intersections of Eastridge Drive, Lakewood Drive/Rue Rochelle, Midtown Square Shopping Center, and Lindberg Drive/Kensington Boulevard. All installations should meet current DOTD, MUTCD, and ADA standards and requirements, including proper horizontal placement of pushbuttons from crosswalks. A detailed traffic signal corridor analysis should be performed as part of the design process to ensure traffic signal timing and phasing adequately meet MUTCD clearance times for pedestrian movements and maintains sufficient vehicle flow along the route.
- Reduce and/or consolidate excessively wide driveway connections along US 190 (Gause Boulevard). This should be done during the design process in close coordination with local businesses affected by the proposed driveway modifications.

Following in Table 2 is a modified Summary of Estimated Quantities for this Phase 1 project that incorporates the additional 0.14 mile distance.

Recommended Project - (Transportation Alternative Program (TAP))					
US 190 (Gause Boulevard) Sidewalks					
from 14th Street to a Point 735 Feet East of Lindberg Drive/Kensington Boulevard					
SUMMARY OF ESTIMATED QUANTITIES					
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
201-01-00100	Clearing and Grubbing	LUMP	LUMP	6,500.00	6,500.00
202-01-00100	Removal of Structures and Obstructions	LUMP	LUMP	5,200.00	5,200.00
202-02-06080	Removal of Concrete Combination Curb and Gutter	LNFT	950	12.00	11,400.00
202-02-06100	Removal of Walks and Drives	SQYD	1,520	8.00	12,160.00
202-03-38000	Relocation of Sign (Existing)	EACH	23	125.00	2,875.00
203-05-00100	Excavation and Embankment	LUMP	LUMP	22,000.00	22,000.00
204-02-00100	Temporary Hay or Straw Bales	EACH	46	15.00	690.00
204-06-00100	Temporary Silt Fencing	LNFT	5,336	1.75	9,338.00
302-02-01060	Class II Base Course (4" Thick) (Stone or Recycled Portland Cement Concrete)	SQYD	4,385	12.00	52,620.00
702-04-00200	Adjusting Catch Basins (Drop Inlets)	EACH	3	800.00	2,400.00
706-01-00100	Concrete Walk (4" Thick)	SQYD	4,083	45.00	183,735.00
706-01-00300	Concrete Walk (6" Thick)	SQYD	650	55.00	35,750.00
706-04-00100	Handicapped Curb Ramp	EACH	34	600.00	20,400.00
707-01-00200	Concrete Curb (Barrier)	LNFT	1,102	10.00	11,020.00
713-01-00100	Temporary Signs and Barricades	LUMP	LUMP	22,500.00	22,500.00
727-01-00100	Mobilization	LUMP	LUMP	20,000.00	20,000.00
729-01-00100	Sign (Type A)	SQYD	81	18.00	1,458.00
729-21-00100	U-Channel Post 12'	EACH	14	45.00	630.00
732-01-01080	Plastic Pavement Striping (24" Width)	LNFT	4,408	5.00	22,040.00
740-01-00100	Construction Layout	LUMP	LUMP	6,500.00	6,500.00
NS-600-00220	Saw Cutting Portland Cement Concrete Pavement	INLF	1,067	1.25	1,333.75
NS-736-00010	LED Pedestrian Countdown Signal Head	EACH	32	950.00	30,400.00
NS-736-00011	Pedestrian Push Buttons	EACH	32	250.00	8,000.00
				Construction Total =	488,949.75
				10% Contingency =	48,894.98
				Final Total =	537,844.73

**TABLE 2 – SUMMARY OF ESTIMATED QUANTITIES
(MODIFIED PHASE 1 PROJECT)**

Opinion of Probable Construction Costs = **\$537,844.73**

For the remaining section along US 190 (Gause Boulevard) between Yaupon Drive and the end of the study area at Frederick Drive, a distance of approximately 725 feet, it is recommended that this section be further analyzed as part of the future Phase 3 sidewalk study currently planned from Frederick Drive to LA 1090 (Military Road). These areas contain the same typical section consisting of a five-lane undivided concrete highway with a dedicated center left-turn lane and are thus conducive to be analyzed together.

THIS CONCLUDES THE REPORT NARRATIVE

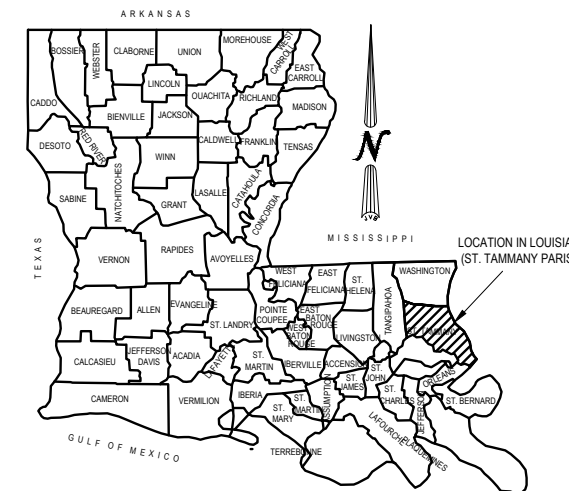
APPENDIX A

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET AND LAYOUT MAP
2-6	EXISTING PLAN VIEWS

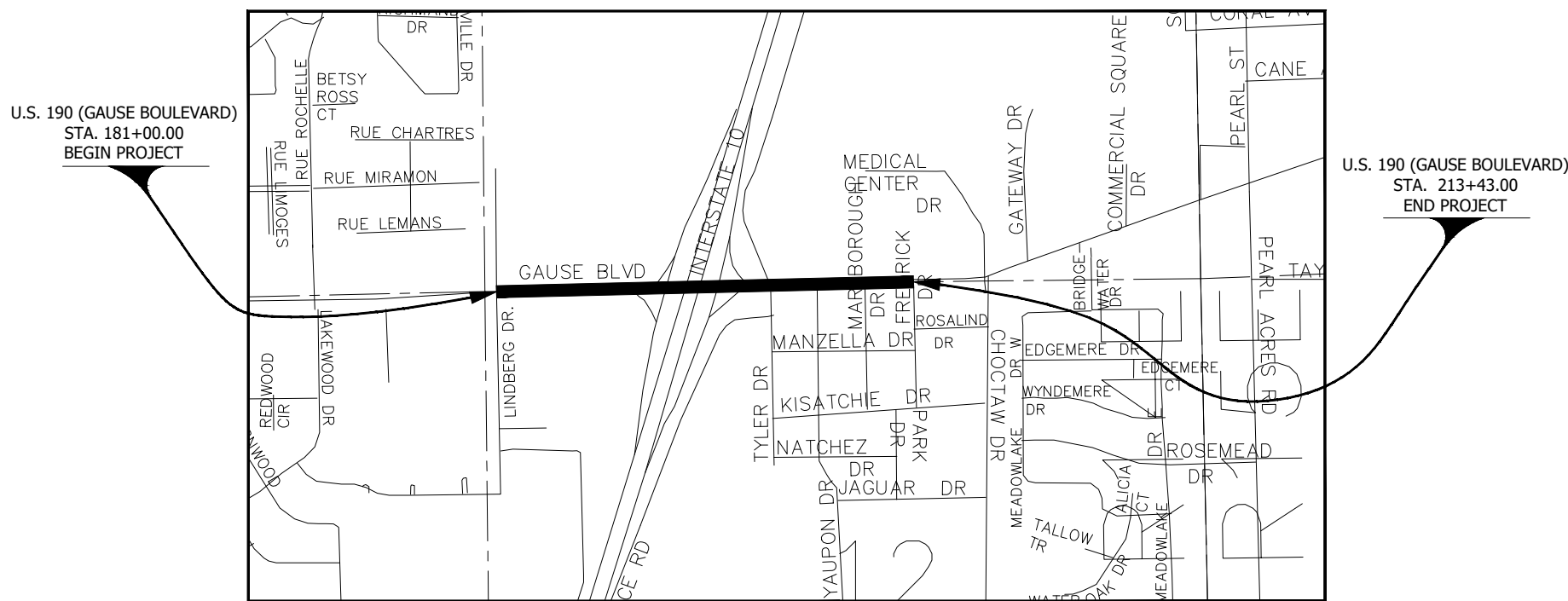


U.S. 190 (GAUSE BOULEVARD) SIDEWALK STUDY LINDBERG DRIVE-FREDERICK STAGE 0 FEASIBILITY STUDY RPC TASK SL-2.17: FY-17 UPWP ST. TAMMANY PARISH, LOUISIANA

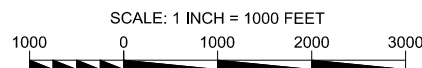


VICINITY MAP

EXISTING CONDITIONS

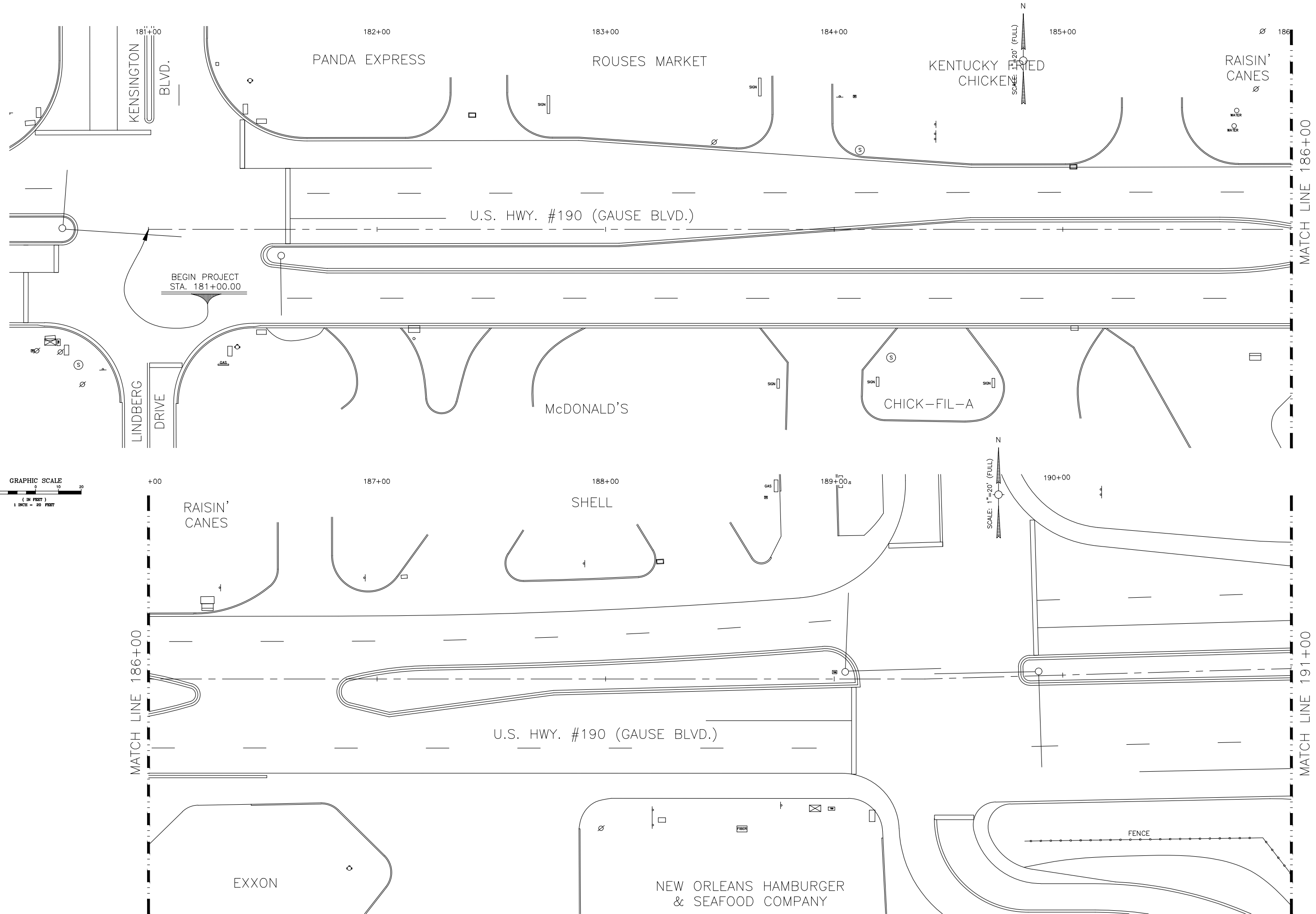
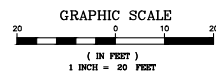


LAYOUT MAP



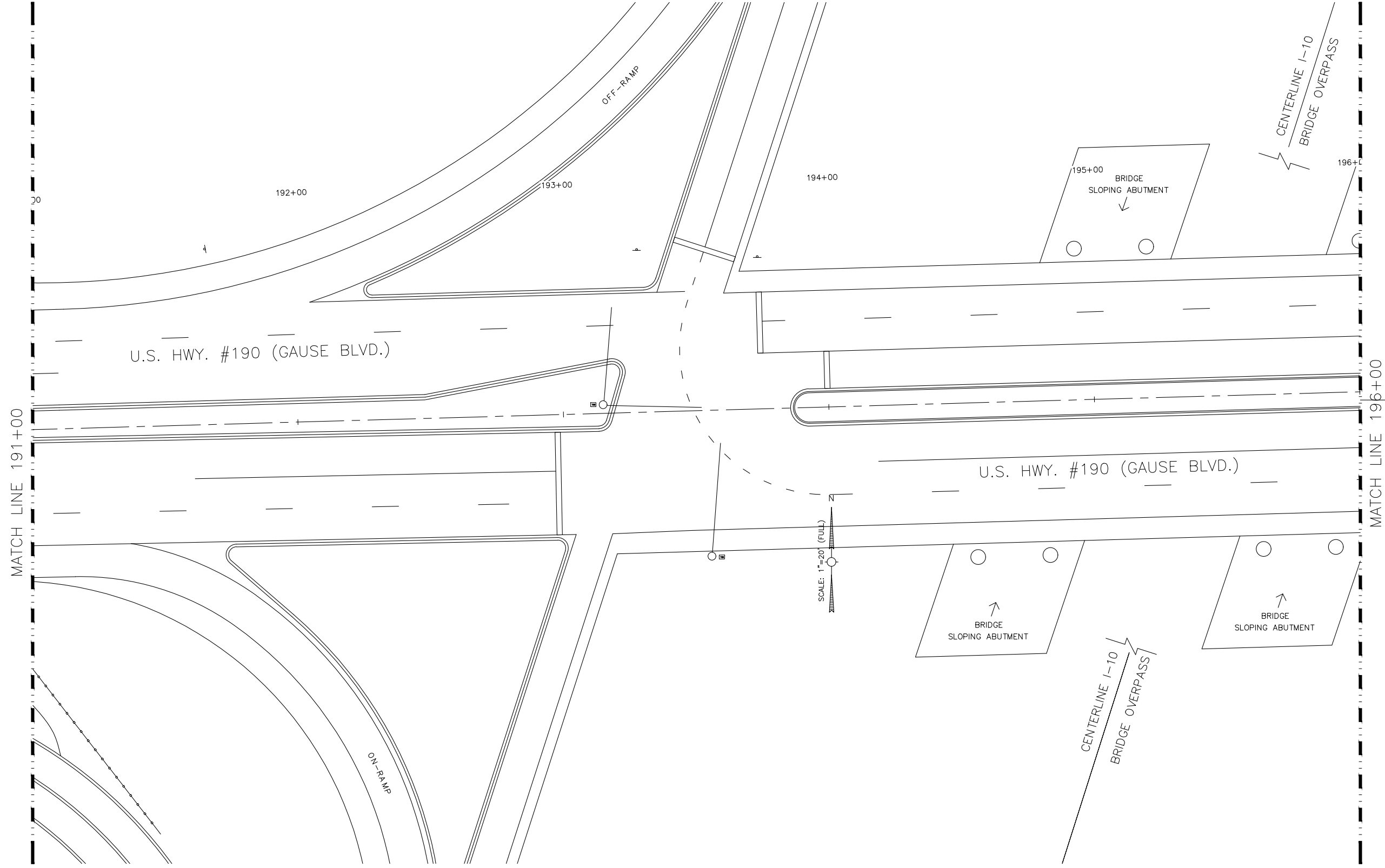
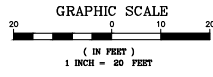
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CHECKED	
DATE	
APPROVED BY	
CHIEF ENGINEER	
PARISH	
CONTROL SECTION	
STATE PROJECT	
DESIGNED	
CHECKED	
DATE	
APPROVED BY	
CHIEF ENGINEER	
REVISION DESCRIPTION	
BY	
DATE	
SERIES NUMBER	
DATE	
EXISTING US 190 (GAUSE BOULEVARD) CONDITIONS LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43	
TITLE SHEET	
J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL	

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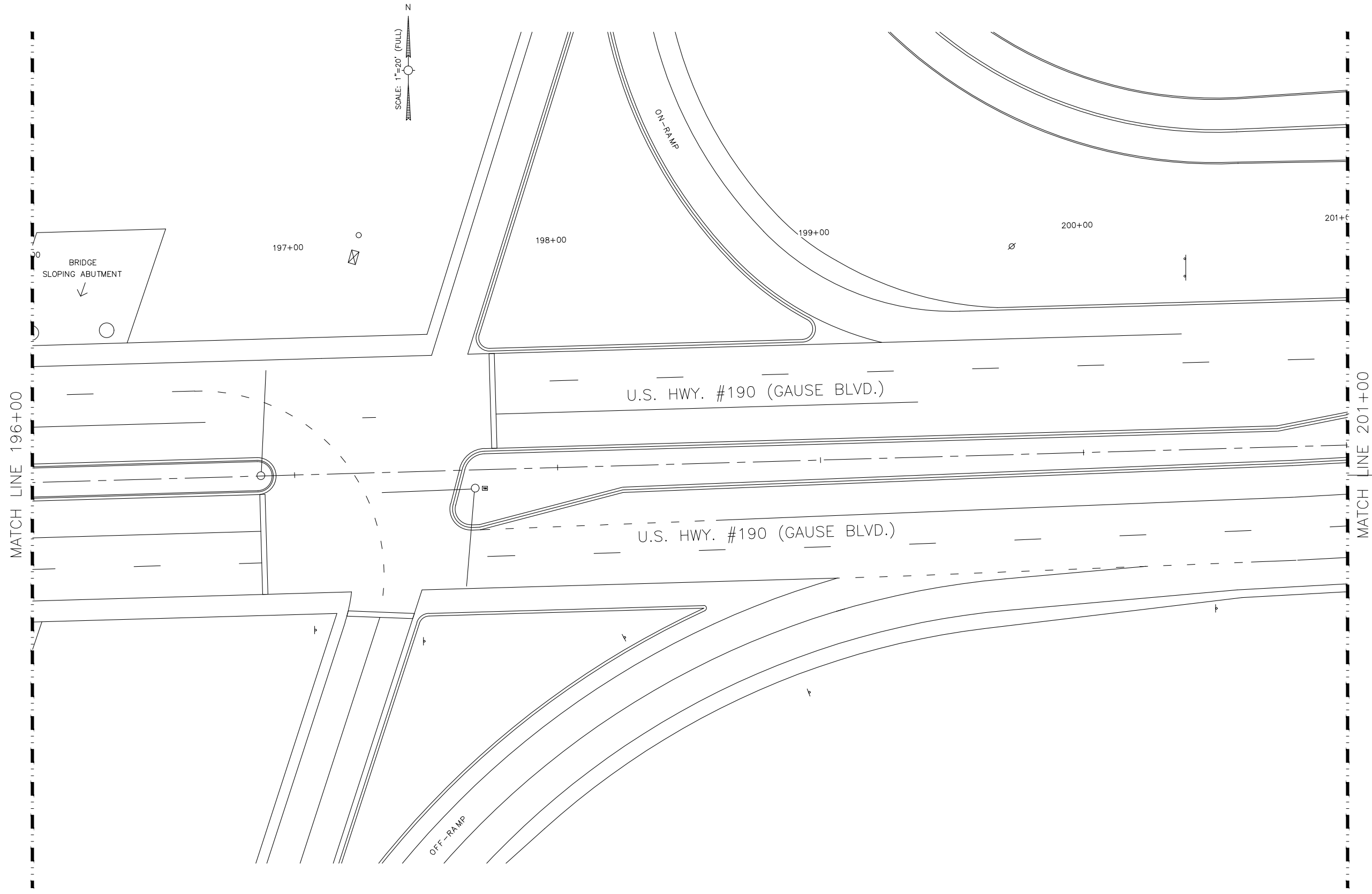
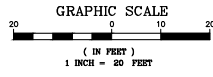


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DESIGNED CHECKED	DATE	CONTROL SECTION	STATE PROJECT
DETAILED CHECKED	REVISION DESCRIPTION	BY	DATE
APPROVED BY CHIEF ENGINEER		DATE	
EXISTING US 190 (GAUSE BOULEVARD) CONDITIONS LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43			
PLAN			
J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL			

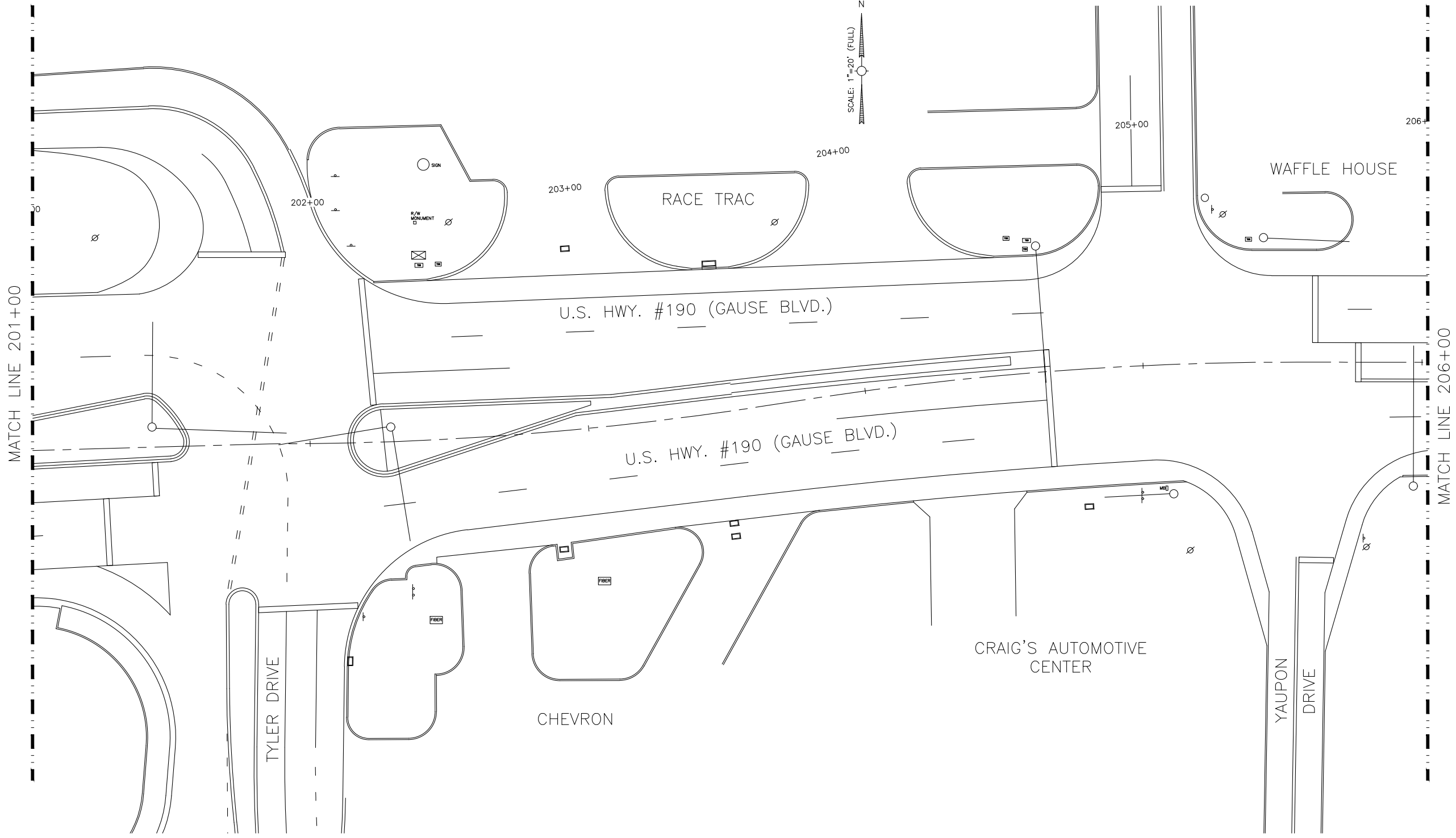
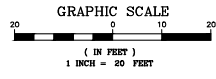
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DATE	DATE	STATE	PROJECT
REVISION DESCRIPTION		BY	DATE
EXISTING US 190 (GAUSE BOULEVARD) CONDITIONS		PLAN	
LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43		J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL	

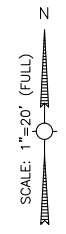
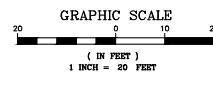
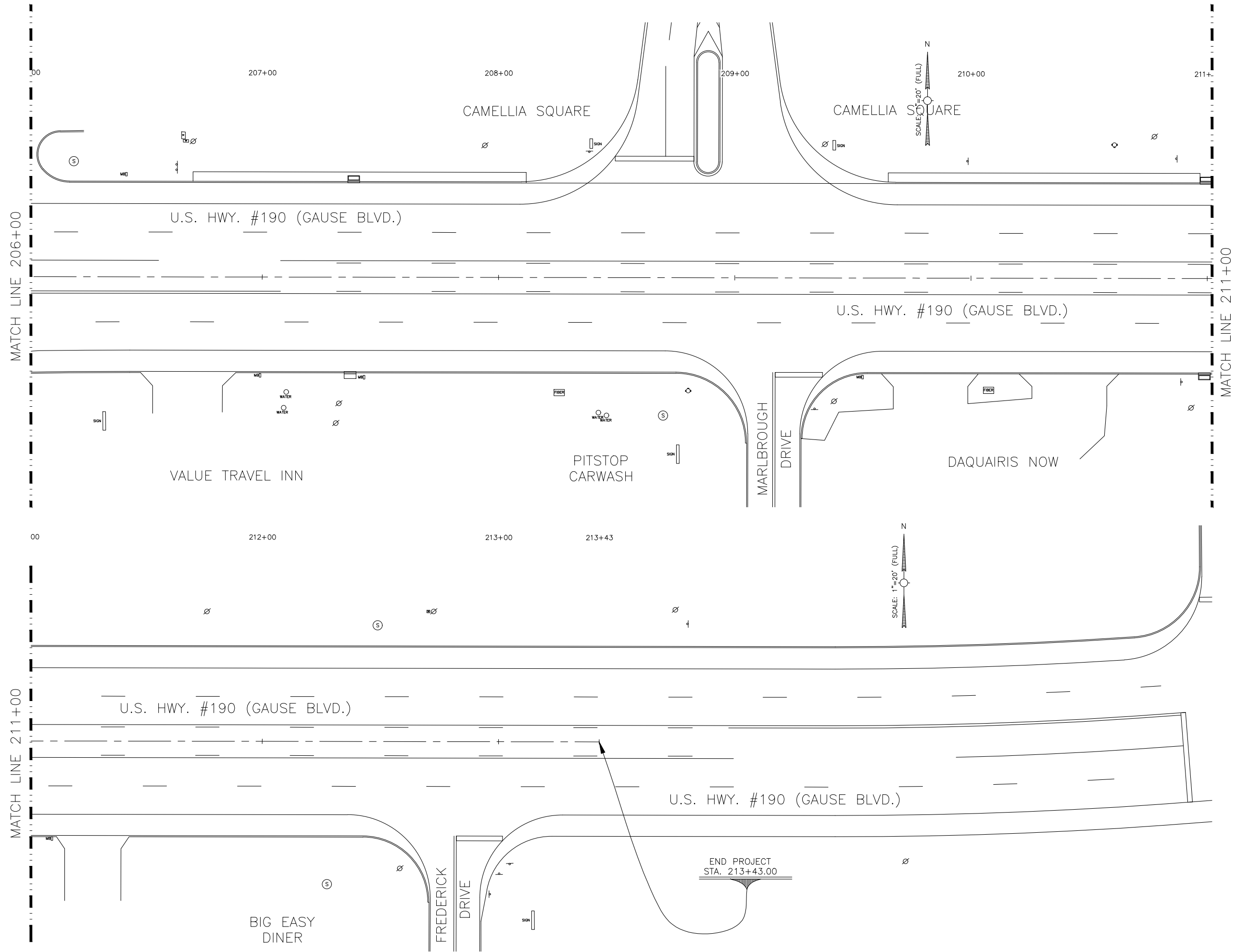


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APPROVED BY	CHIEF ENGINEER		
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PLAN			
J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL			



SHEET NUMBER		5	
DESIGNED	CHECKED	PARISH	CONTROL SECTION
DATE	BY	REVISION DESCRIPTION	STATE PROJECT
APPROVED BY	DATE	REVISION DESCRIPTION	STATE PROJECT
CHIEF ENGINEER	DATE	REVISION DESCRIPTION	STATE PROJECT
EXISTING US 190 (GAUSE BOULEVARD) CONDITIONS		PLAN	
LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43		PLAN	
J.V. Burkes & Associates, Inc.		SURVEYING ENGINEERING ENVIRONMENTAL	

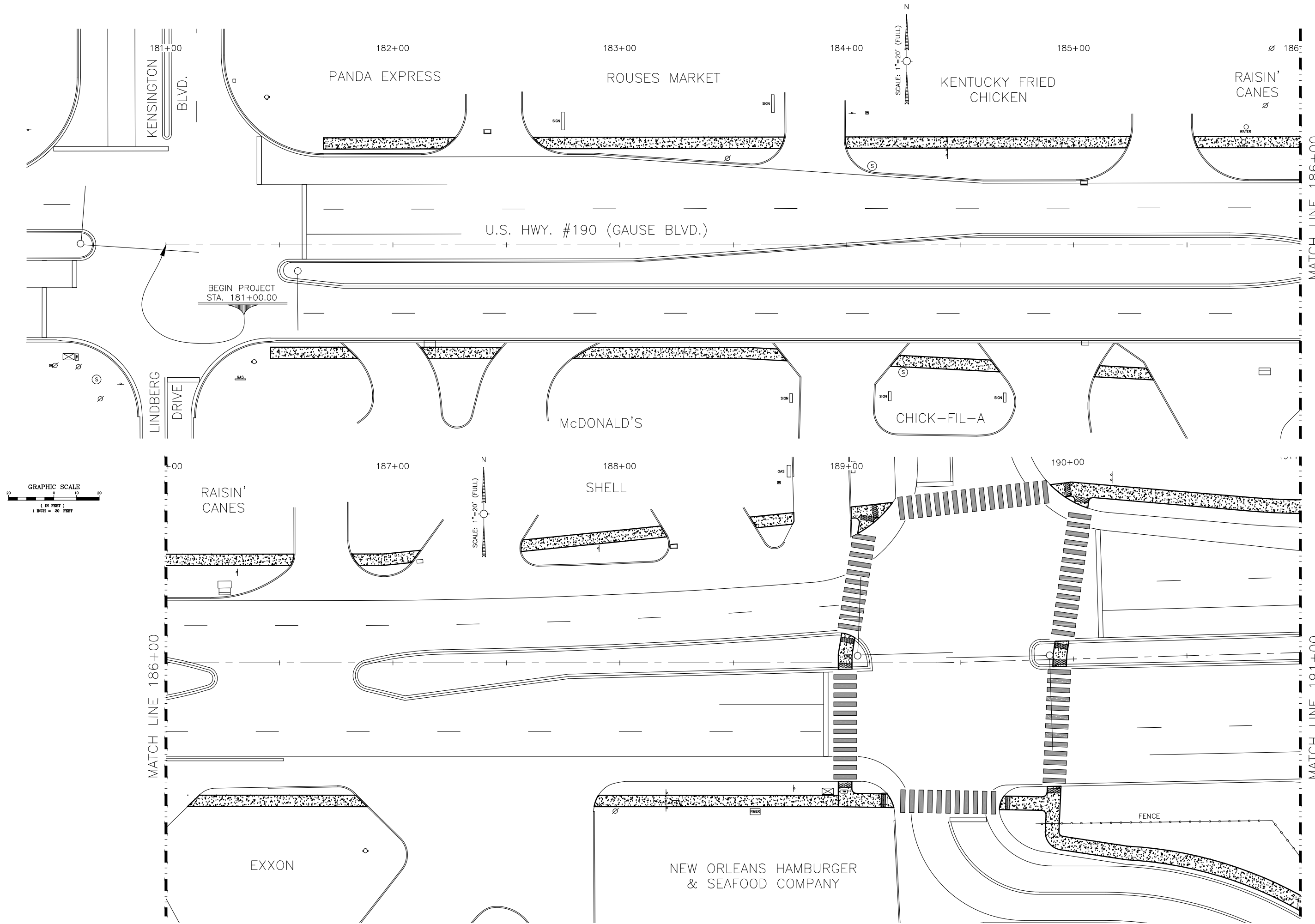
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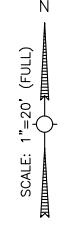
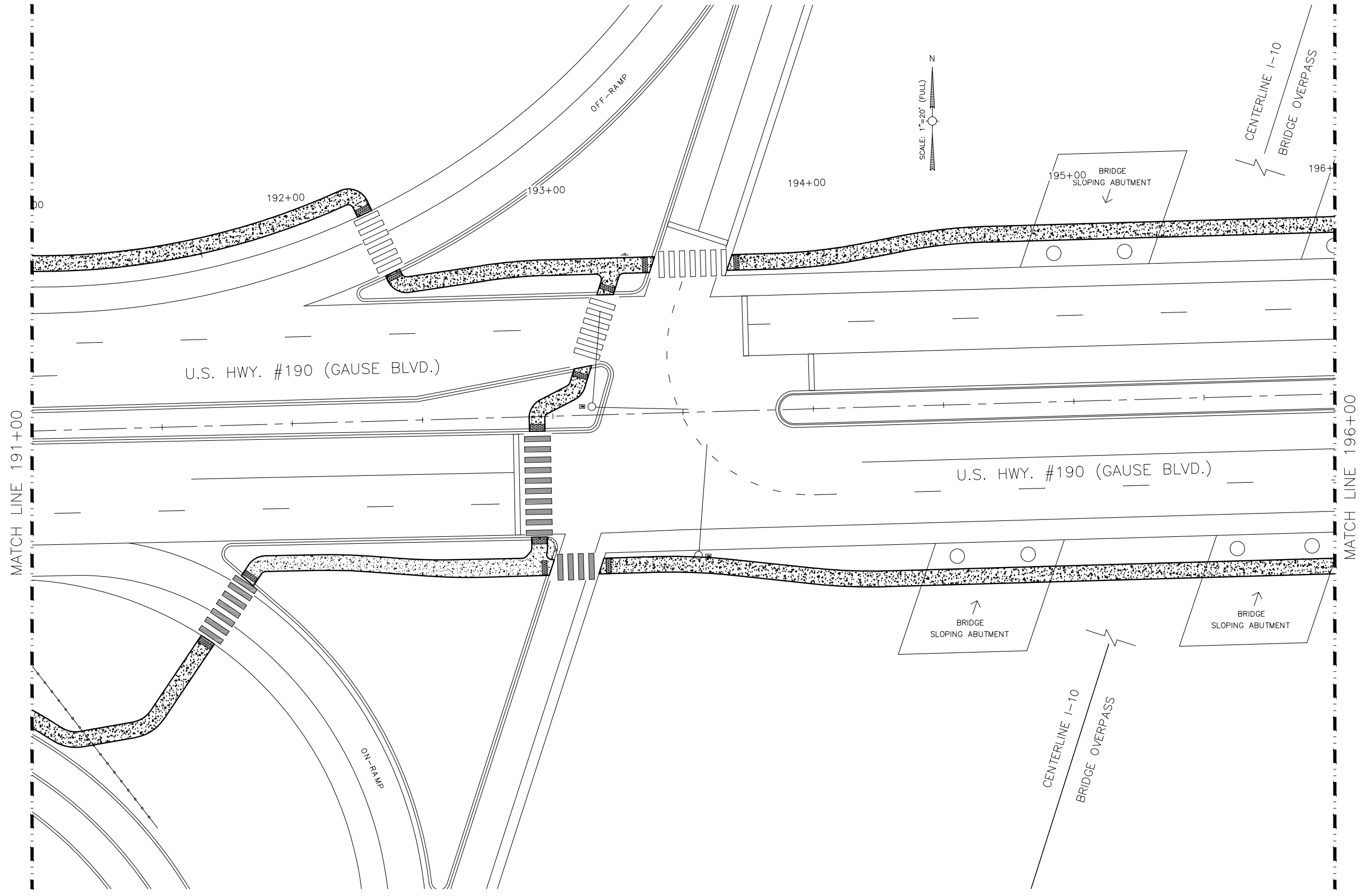
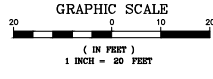
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DATE	REVISION DESCRIPTION	DATE	BY
EXISTING US 190 (GAUSE BOULEVARD) CONDITIONS		LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43	
PLAN			
J.V. Burkes & Associates, Inc.		SURVEYING ENGINEERING ENVIRONMENTAL	

APPENDIX B

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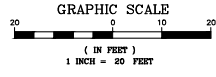


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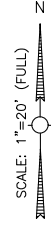
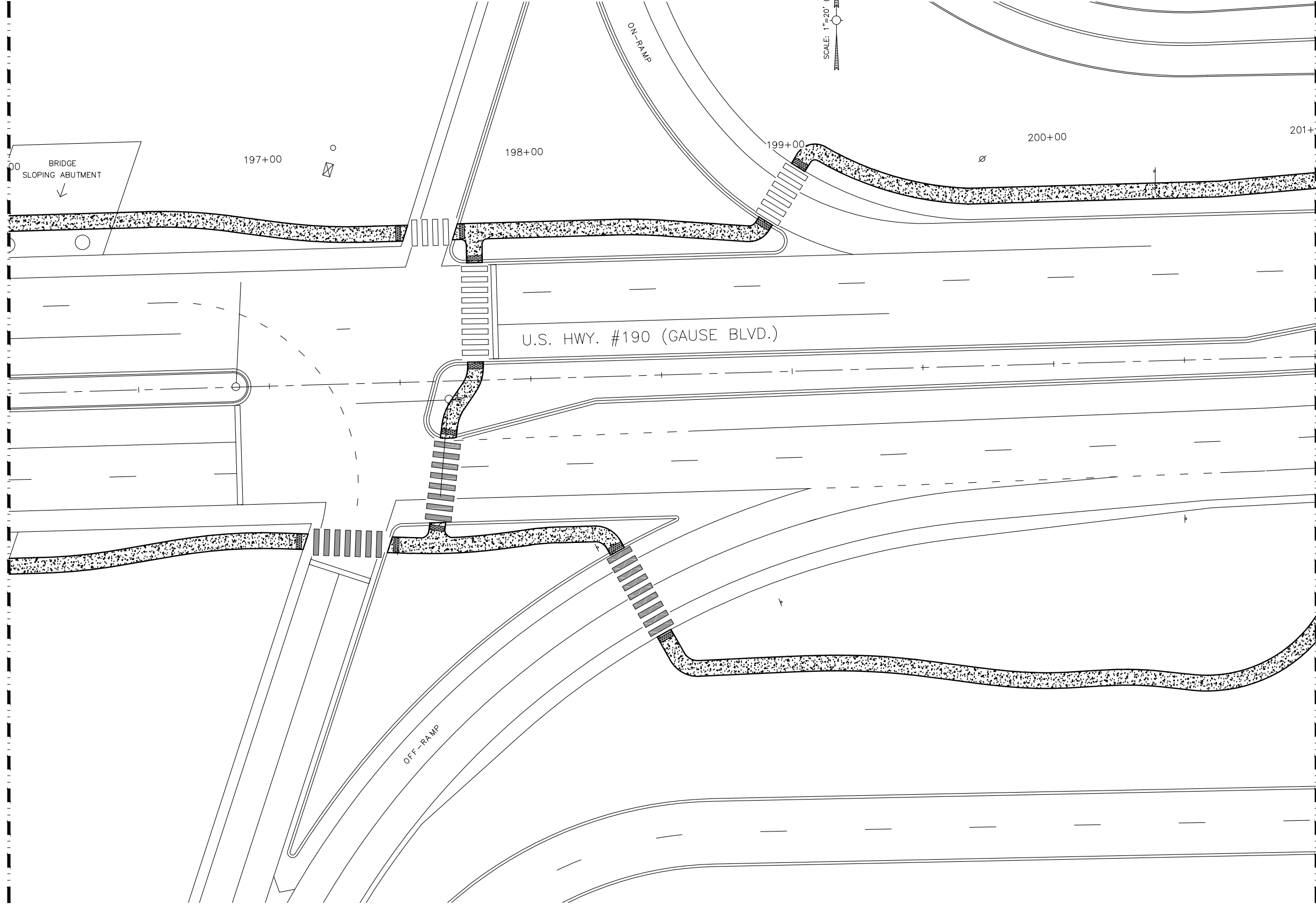


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DATE	DATE	BY	DATE
REVISION DESCRIPTION		STATE PROJECT	DATE
APPROVED BY		CHIEF ENGINEER	DATE
PROPOSED U.S. 190 (GAUSE BOULEVARD) SIDEWALK IMPROVEMENTS LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43		PLAN	
J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL			

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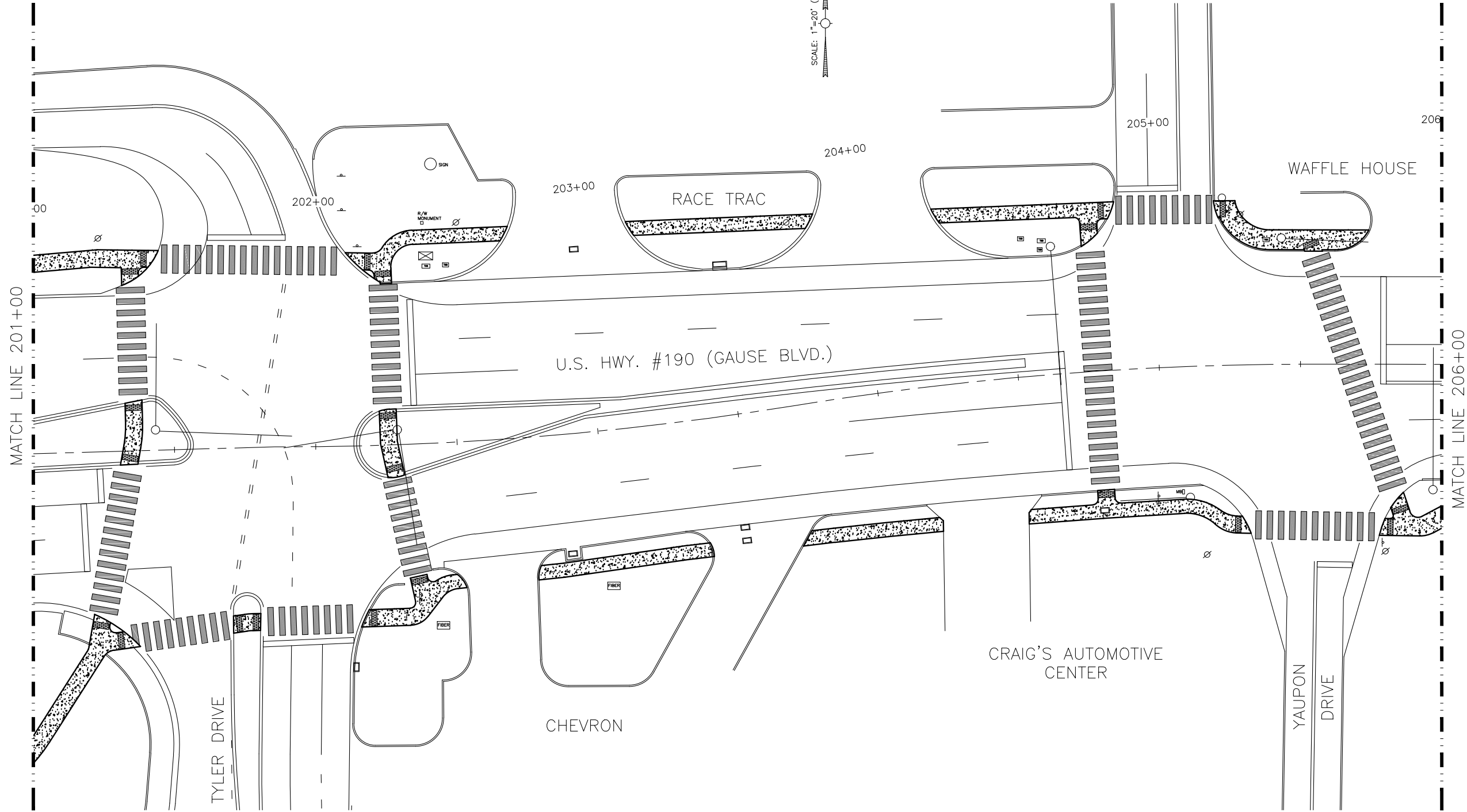
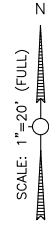
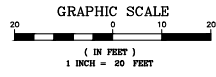
MATCH LINE 196+00



MATCH LINE 201+00

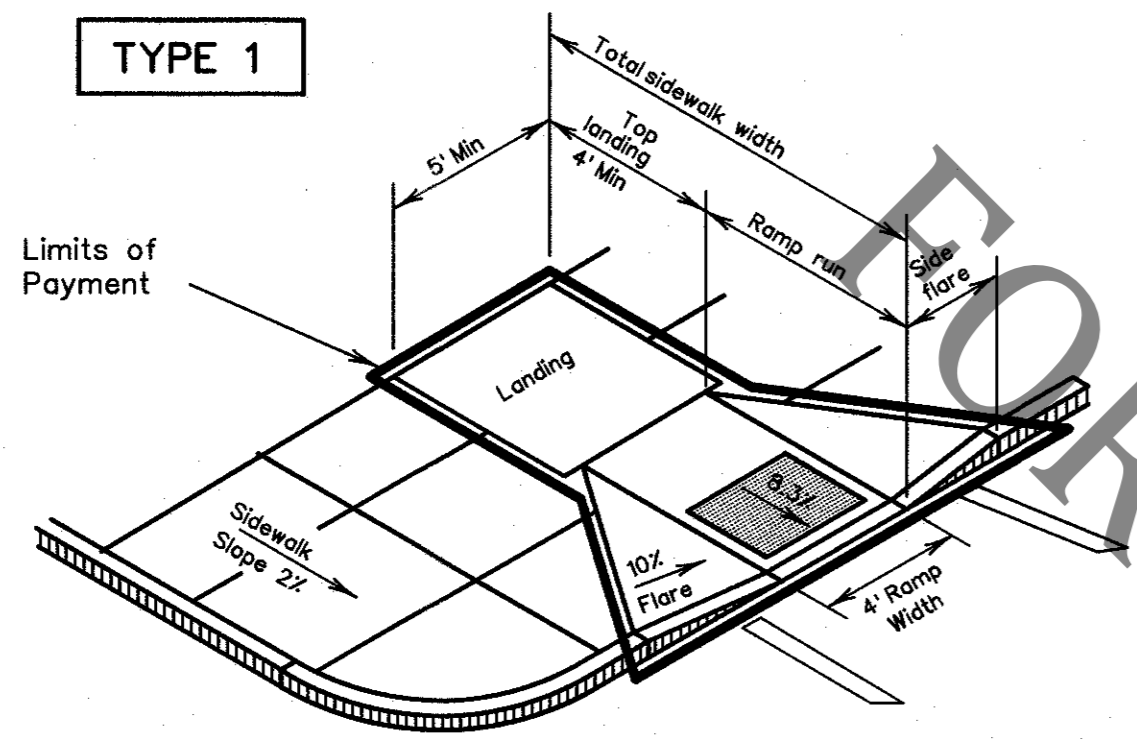
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DATE	BY	REVISION DESCRIPTION	STATE PROJECT
APPROVED BY		DATE	DATE
CHIEF ENGINEER			
PROPOSED U.S. 190 (GAUSE BOULEVARD) SIDEWALK IMPROVEMENTS LINDBERG DRIVE - FREDERICK DRIVE STA. 181+00 TO STA. 213+43			PLAN
J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL			

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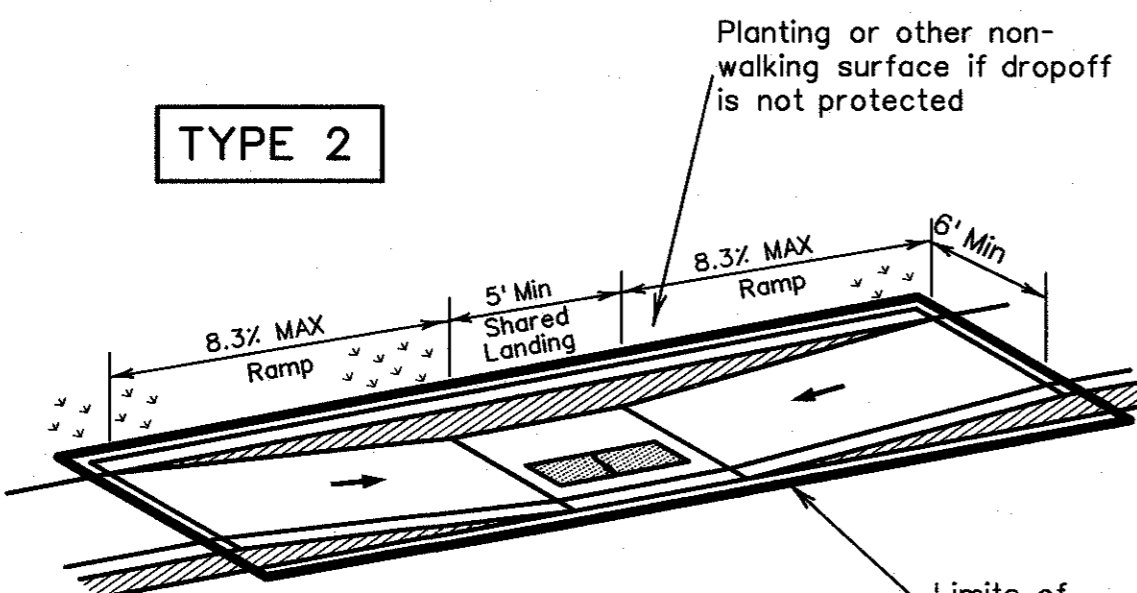


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DATE	REVISION DESCRIPTION	BY	DATE
APPROVED BY		CHIEF ENGINEER	
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J.V. Burkes & Associates, Inc. SURVEYING ENGINEERING ENVIRONMENTAL			

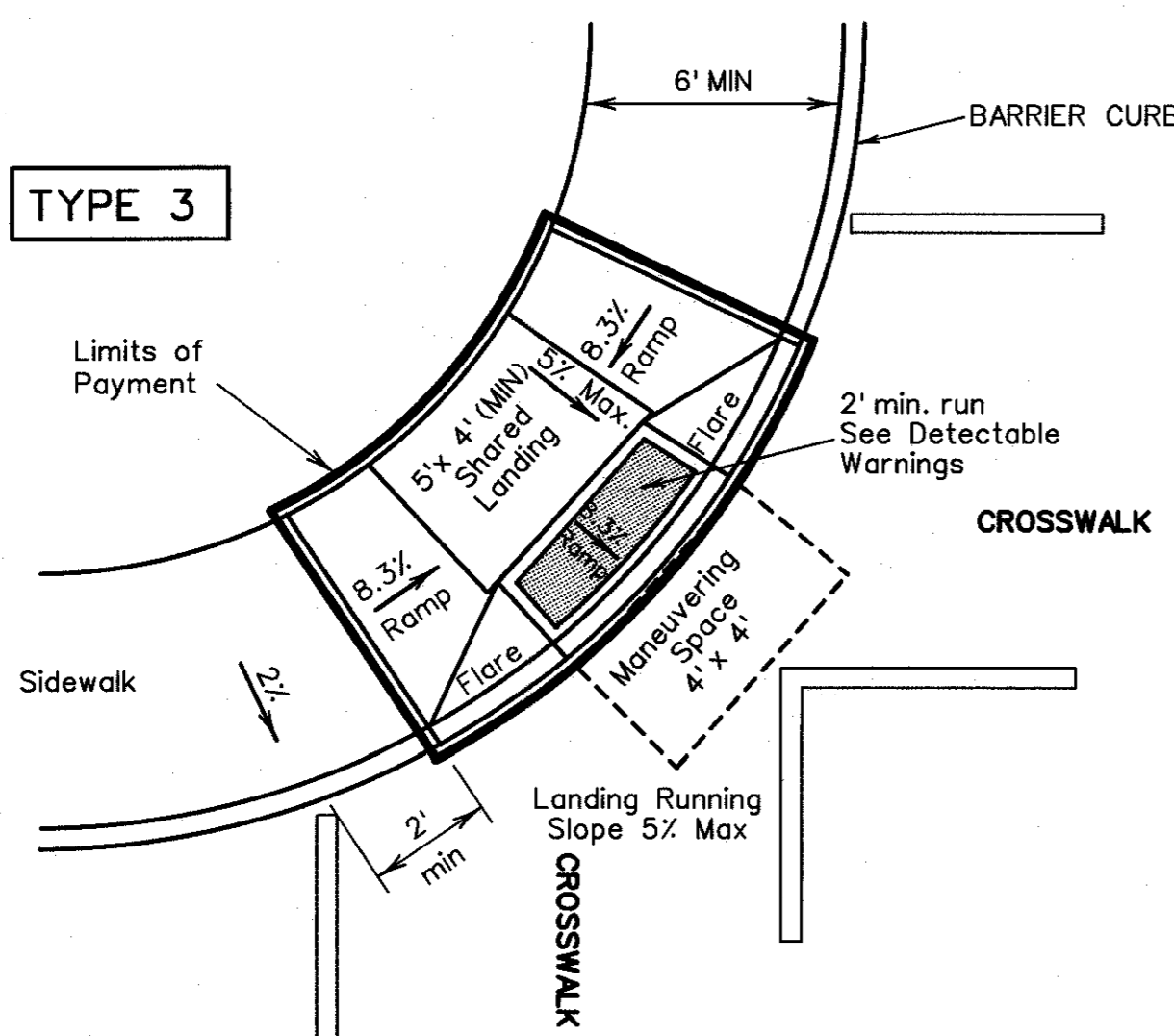
APPENDIX C



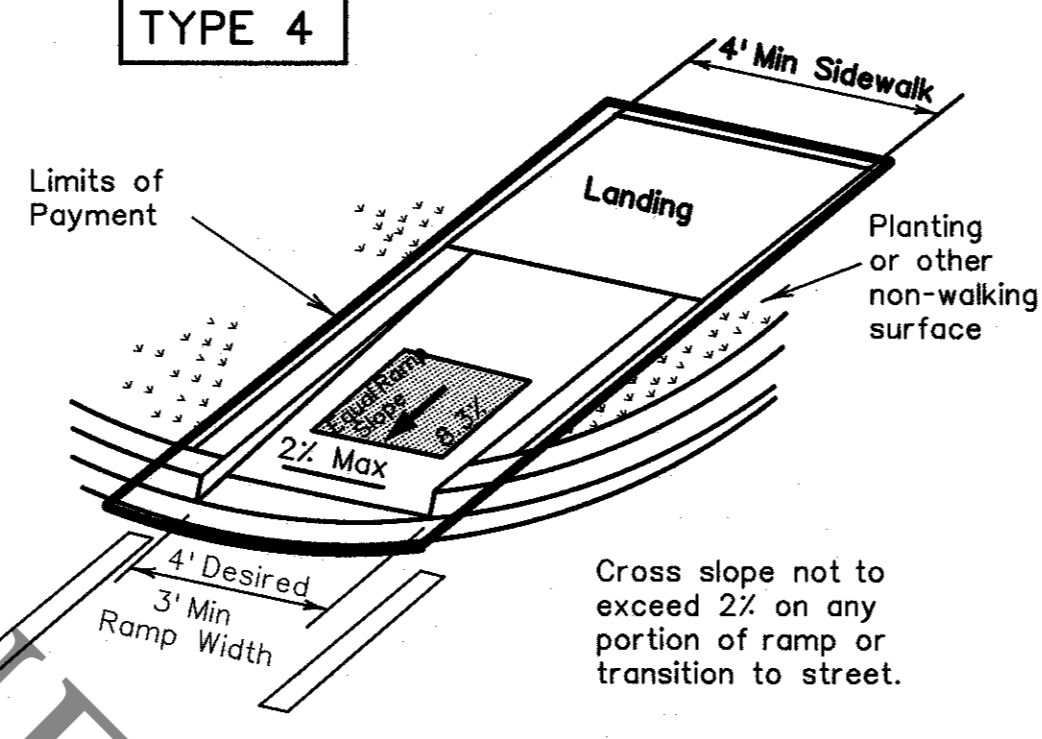
PERPENDICULAR CURB RAMP



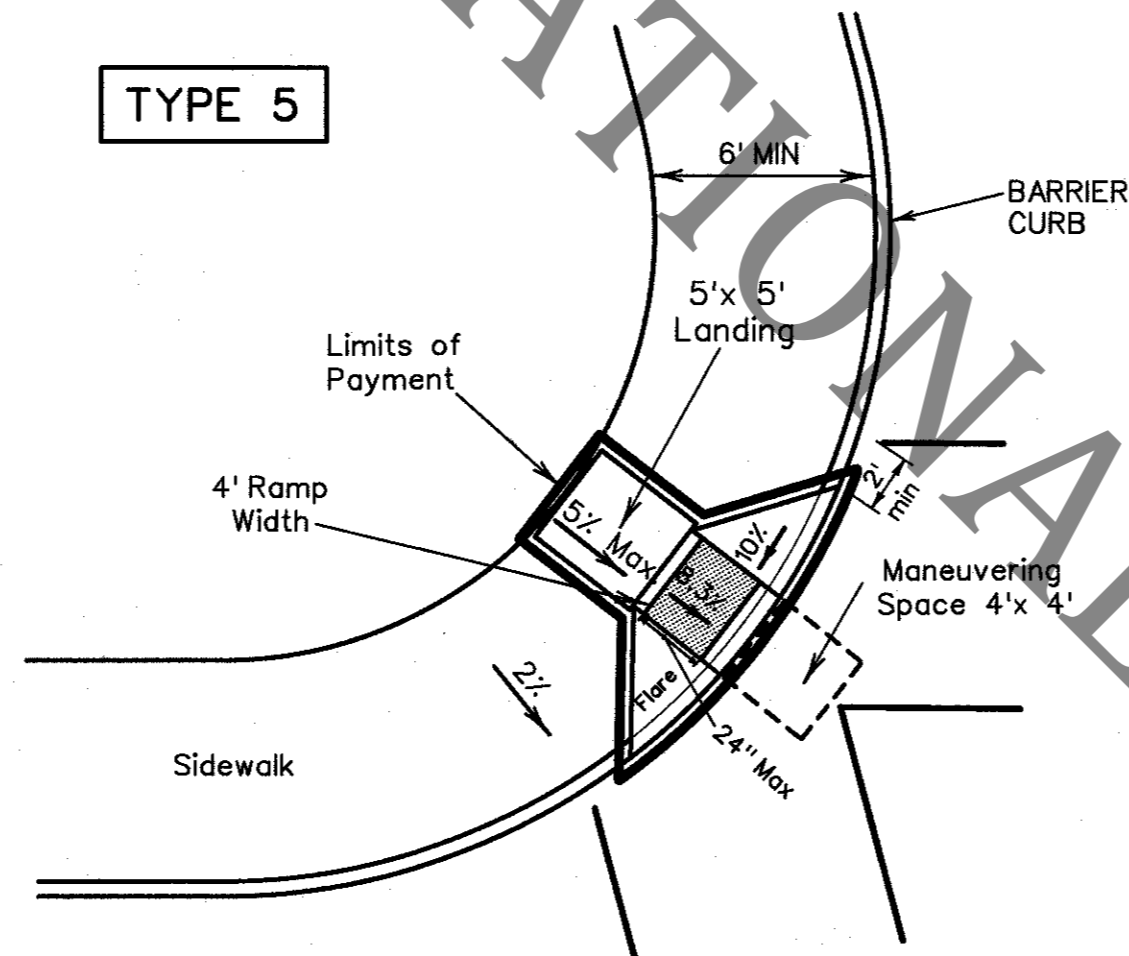
PARALLEL CURB RAMP
(Use only where water will not pond in the landing)



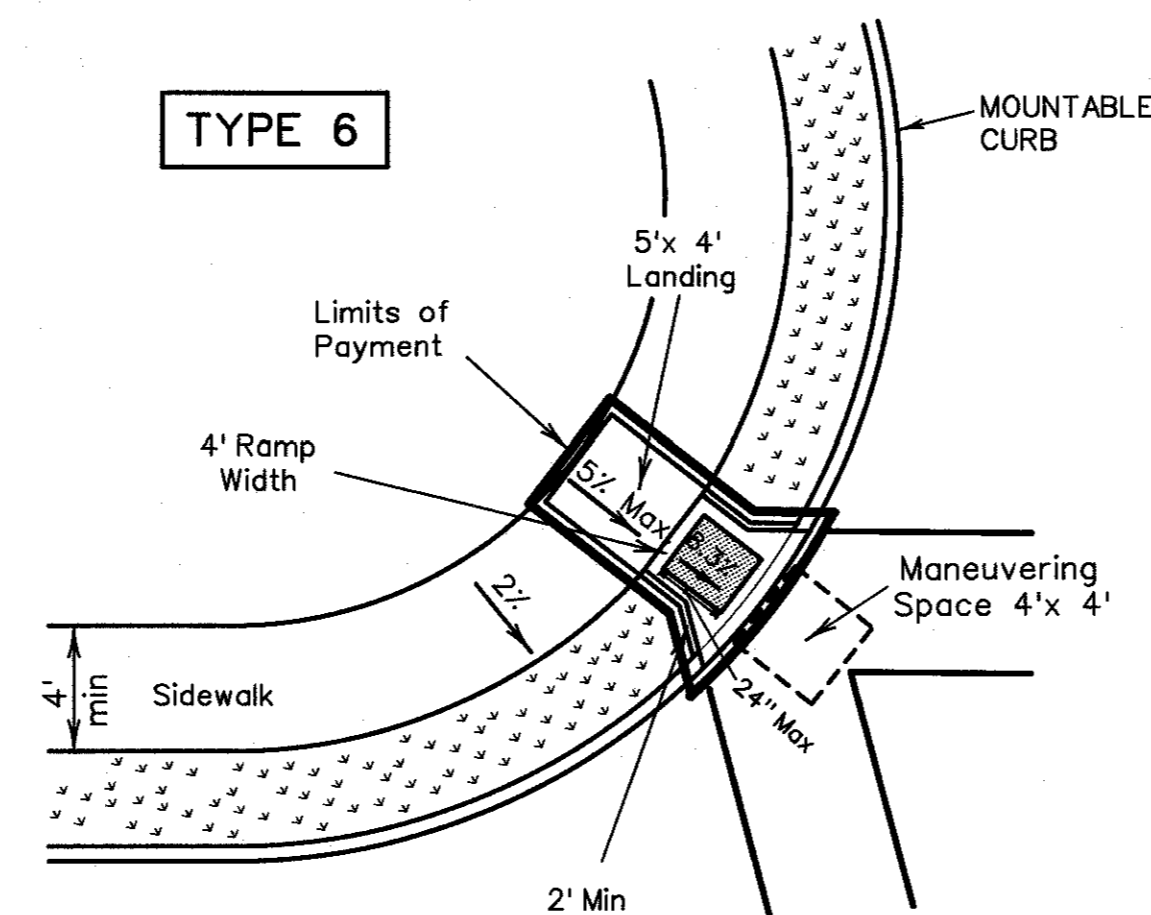
DIAGONAL COMBINATION CURB RAMP
Perpendicular to the Tangent of the Curb Radius and Contained in Crosswalk



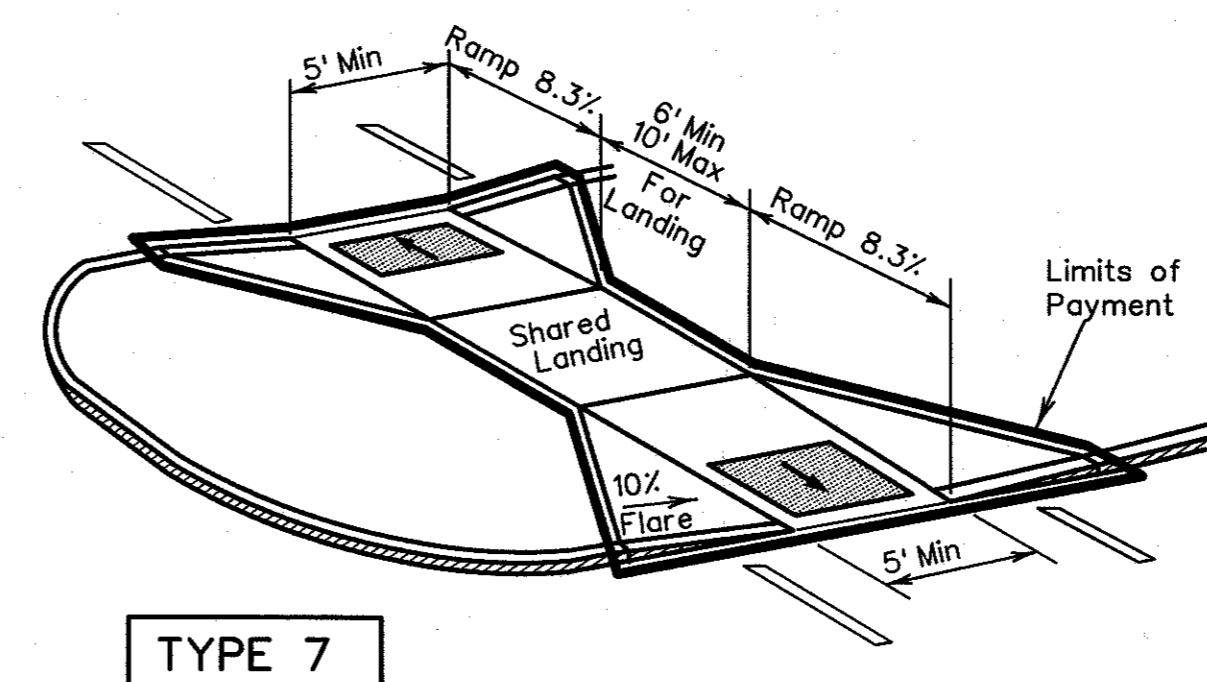
DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk set back from curb)



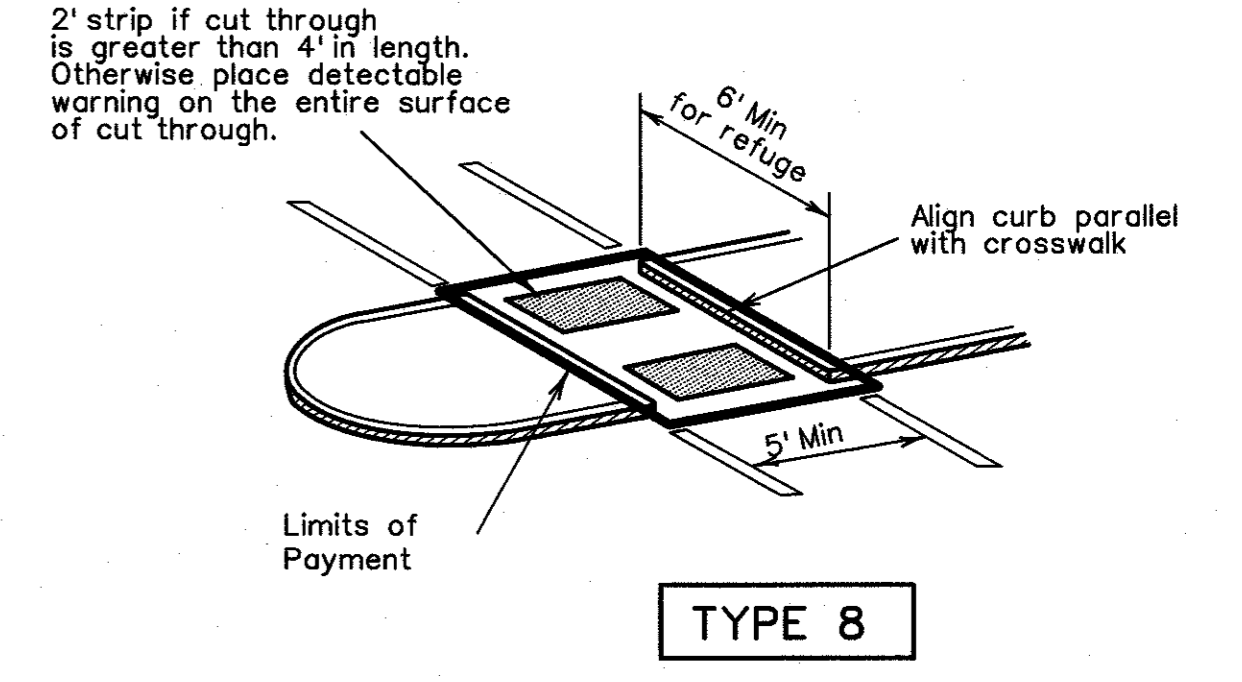
DIAGONAL CURB RAMP (FLARED SIDES)



DIAGONAL CURB RAMP (RETURNED CURB)

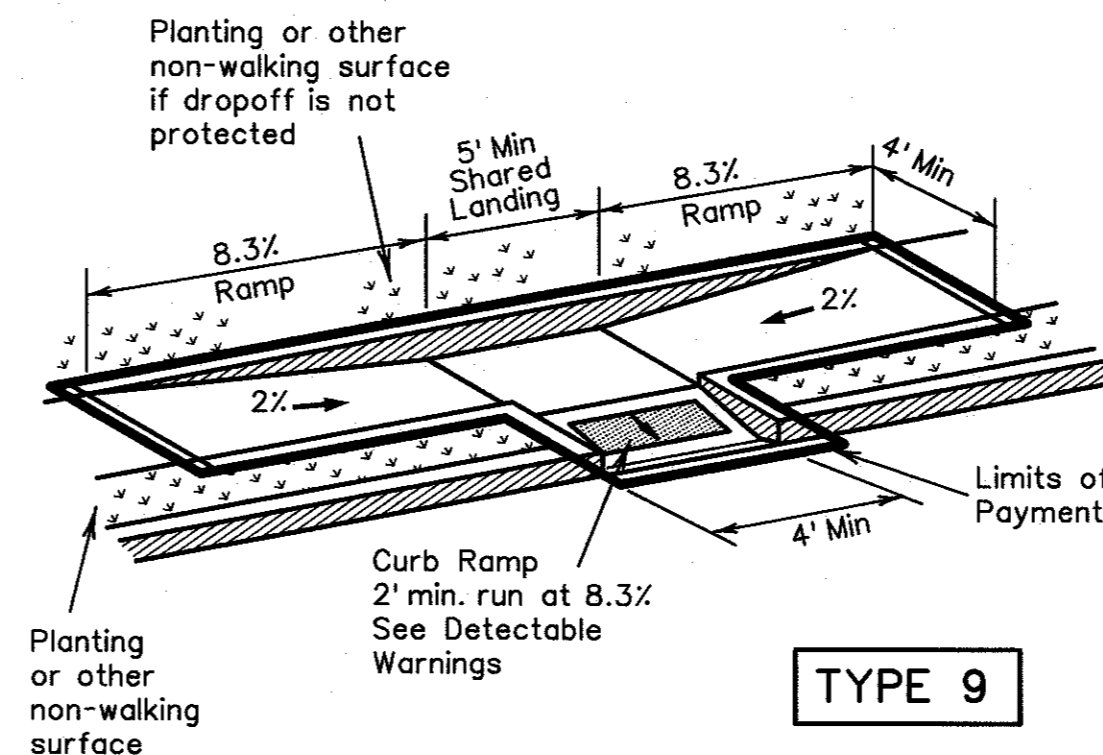


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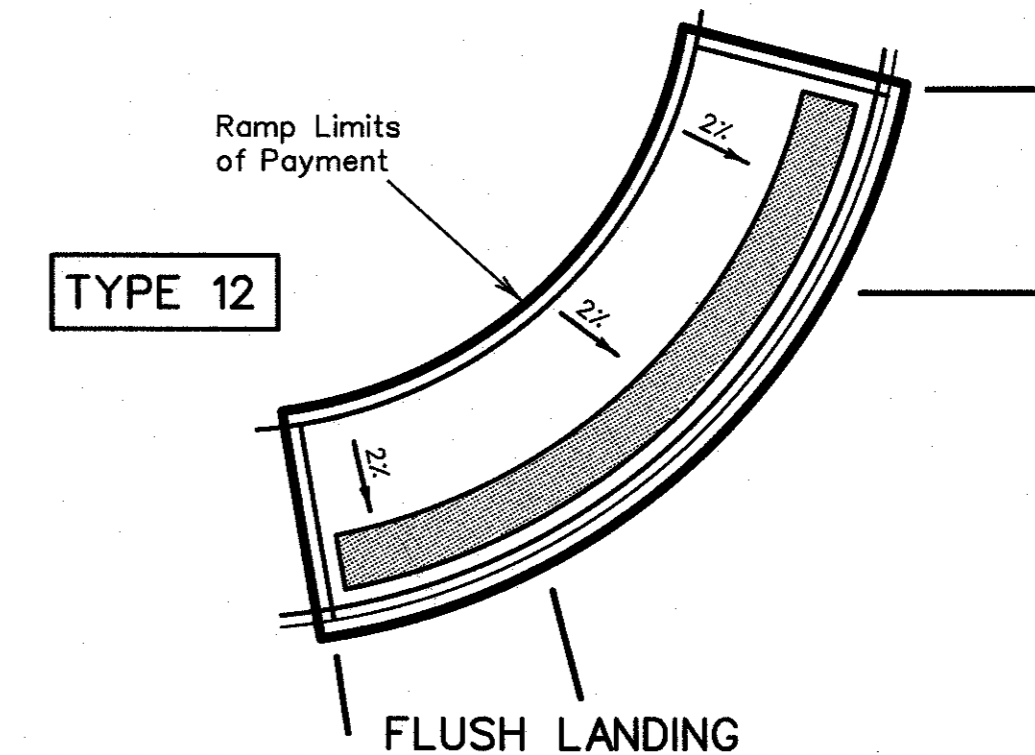


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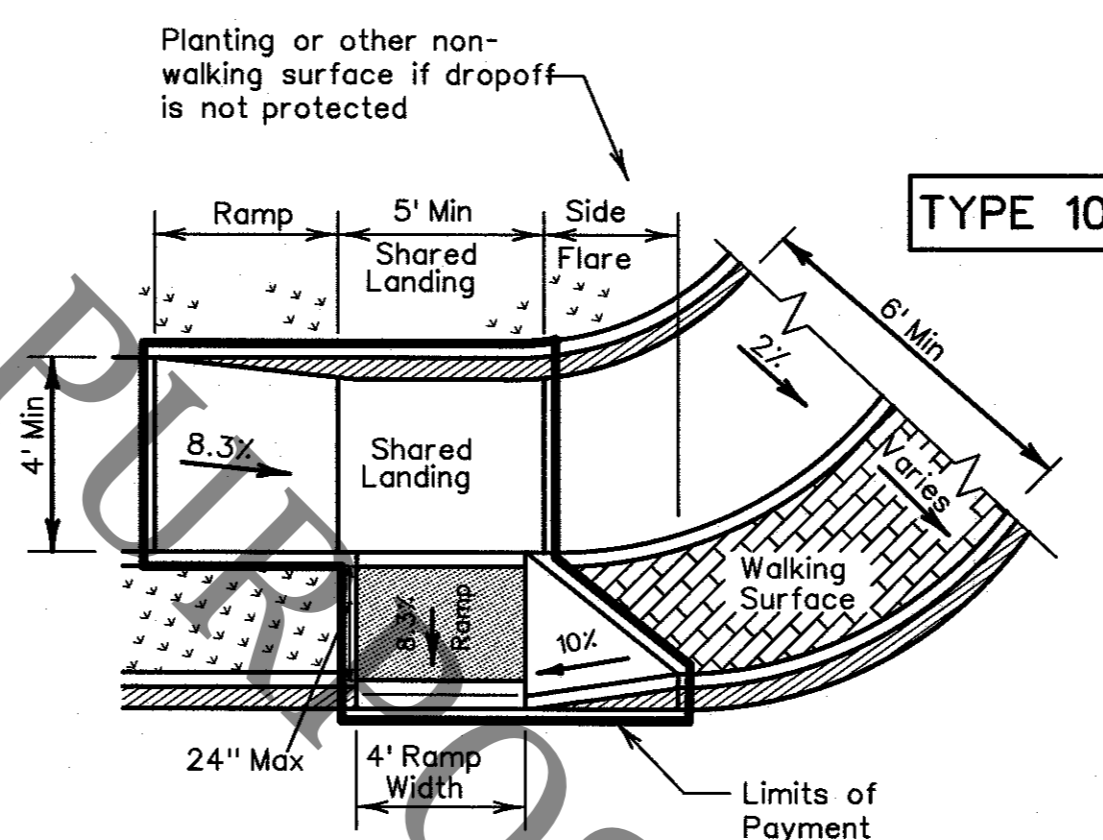
CURB RAMPS AT MEDIAN ISLANDS



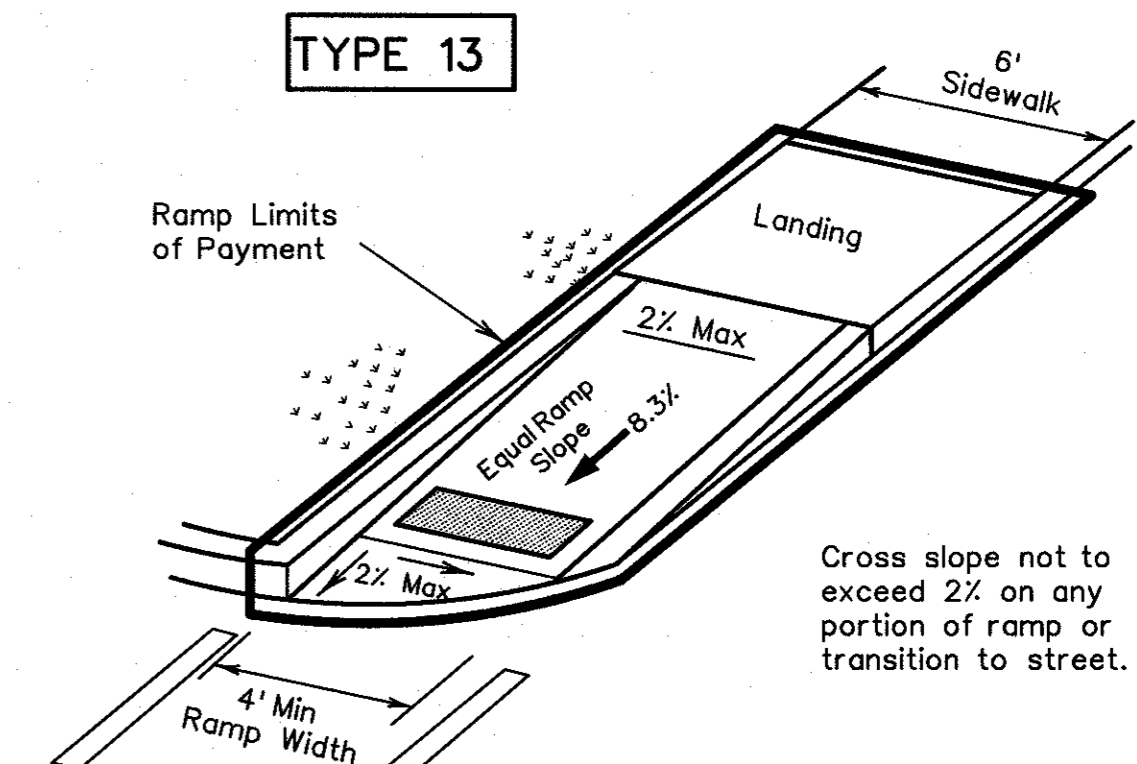
TYPE 9



TYPE 12



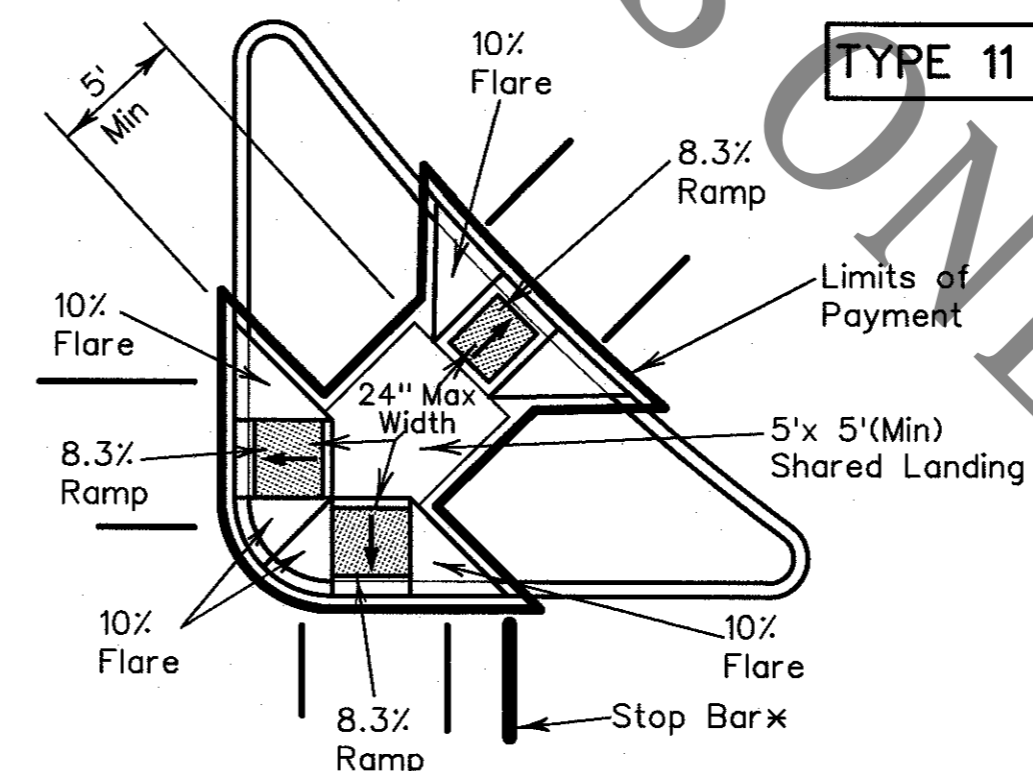
TYPE 10



TYPE 13

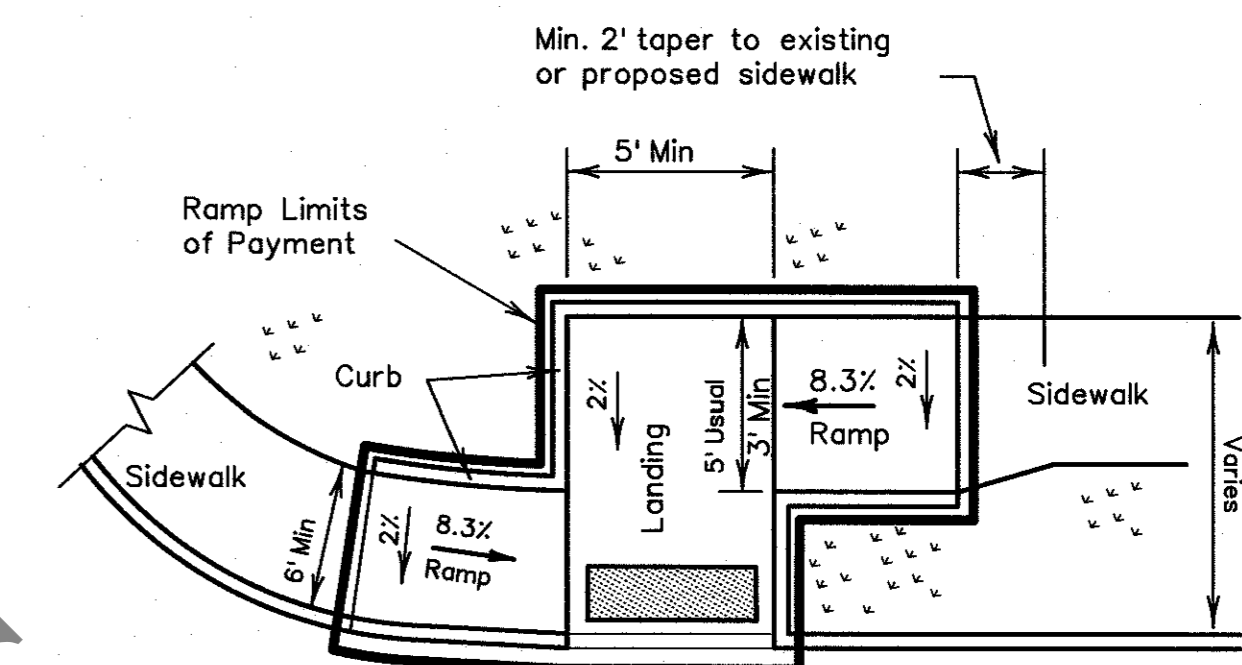
DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk adjacent to curb)

PERPENDICULAR SIDEWALK RAMP WITH SINGLE FLARE DETAIL



TYPE 11

COMBINATION ISLAND RAMPS
* SEE PM-01 FOR STOP BAR DETAIL



TYPE 14

OFFSET PARALLEL CURB RAMP

NOTES:
See General Notes on sheet 2 of 4 for more information.
[Symbol] Denotes planting or non-walking surface.

DESIGNED BY: V.A.H. CHECKED BY: E.A.W.
 DETAILED BY: J.H.C. CHECKED BY: V.A.H.
 DATE: 03/23/07 SHEET: 1 of 4

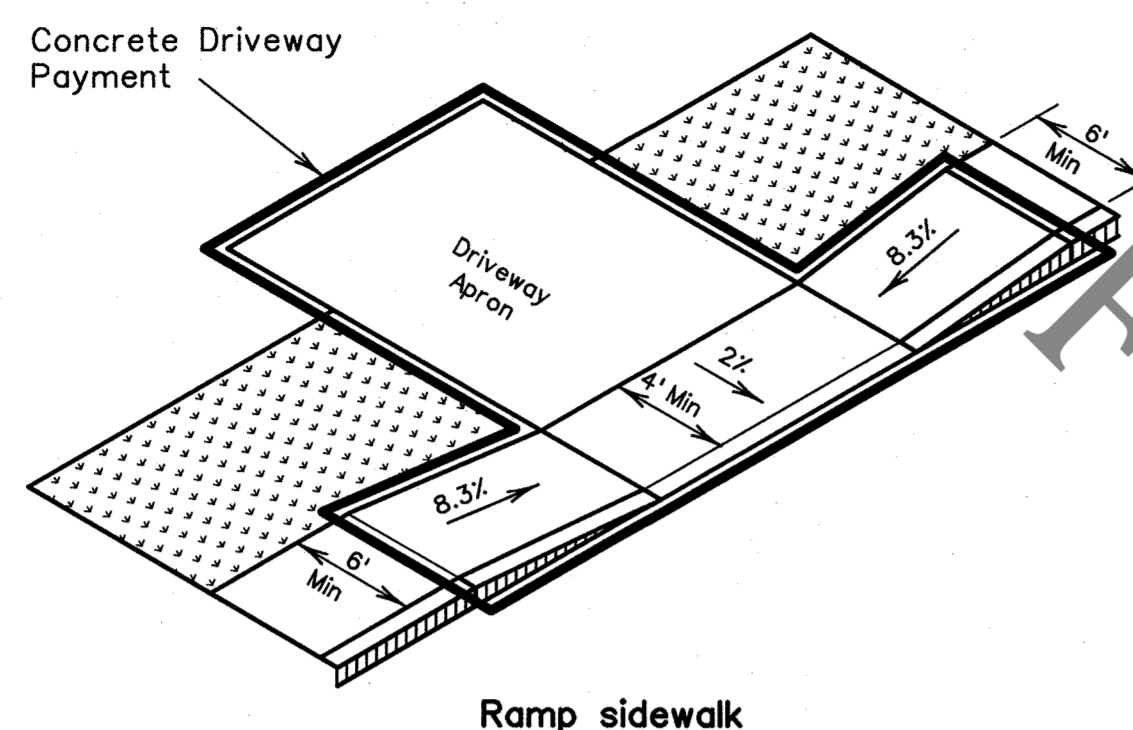
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PARISH: FEDERAL PROJECT: STATE: PROJECT:

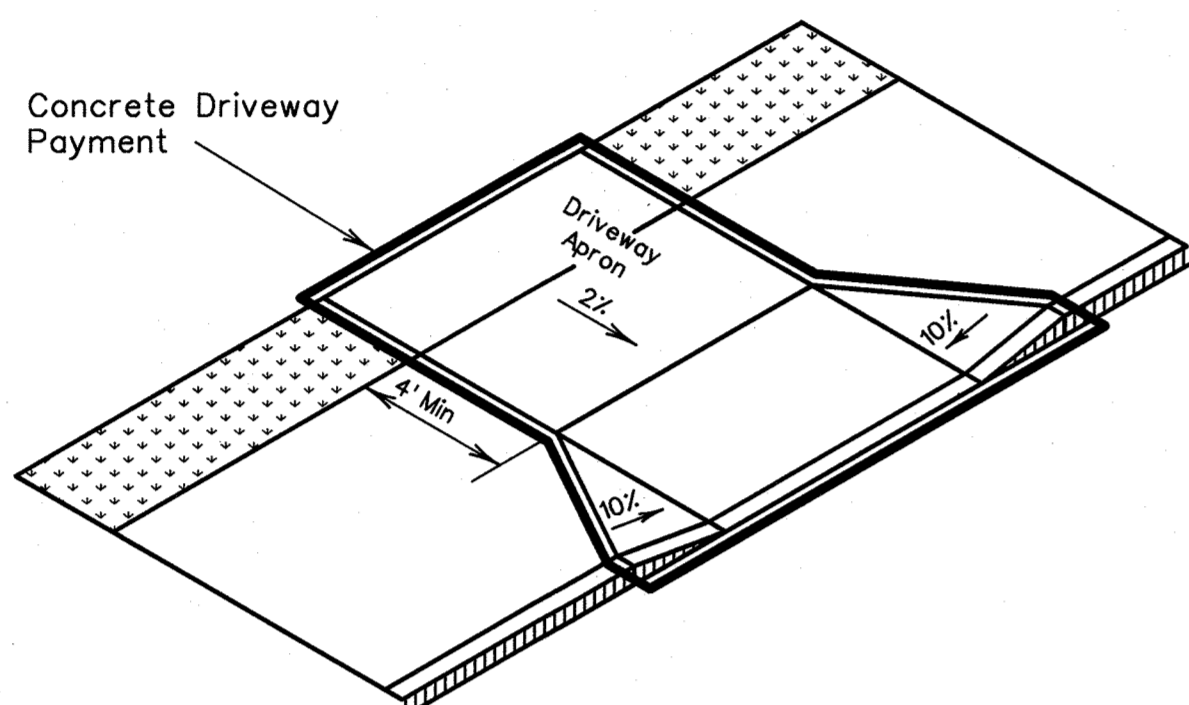
LA 008-30-11 REVISED TO COMPLY WITH ADA REGULATIONS
 APPROVED BY: [Signature] CHIEF ENGINEER

LA 008-30-11
 LA 008-30-11
 LA 008-30-11

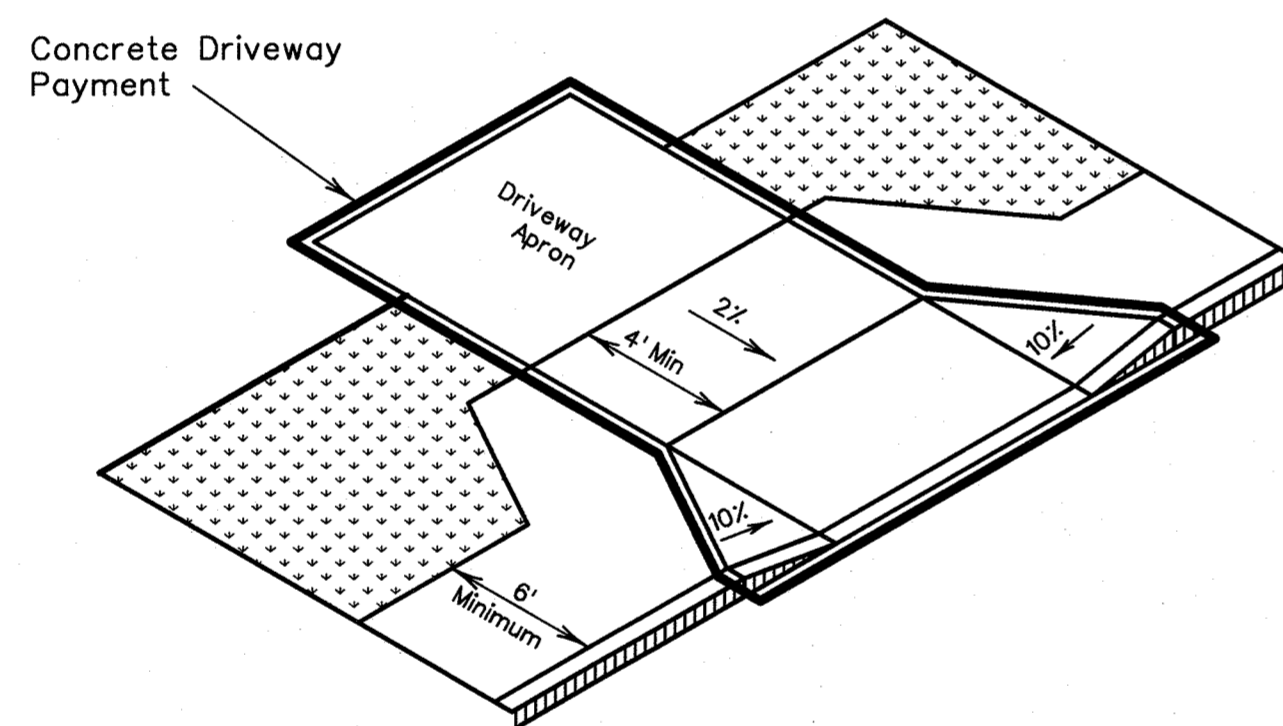
PEDESTRIAN FACILITIES CURB RAMPS PED-01
 ROAD DESIGN



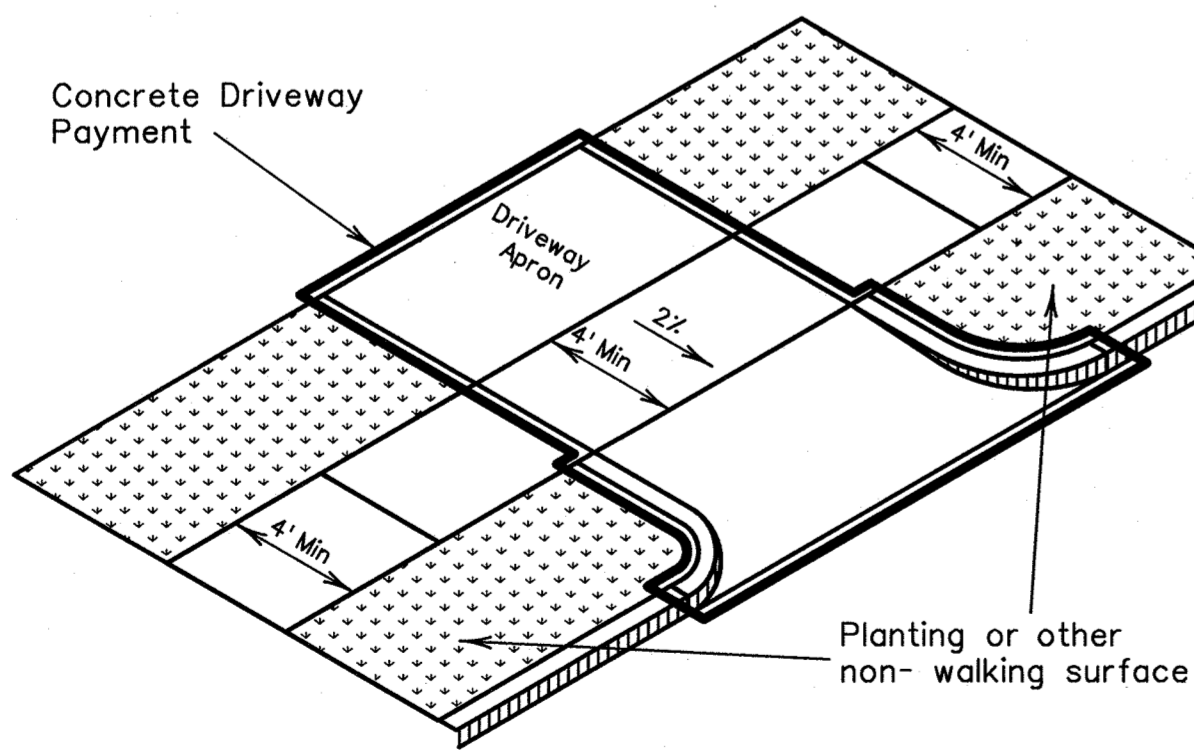
Ramp sidewalk



Wide sidewalk

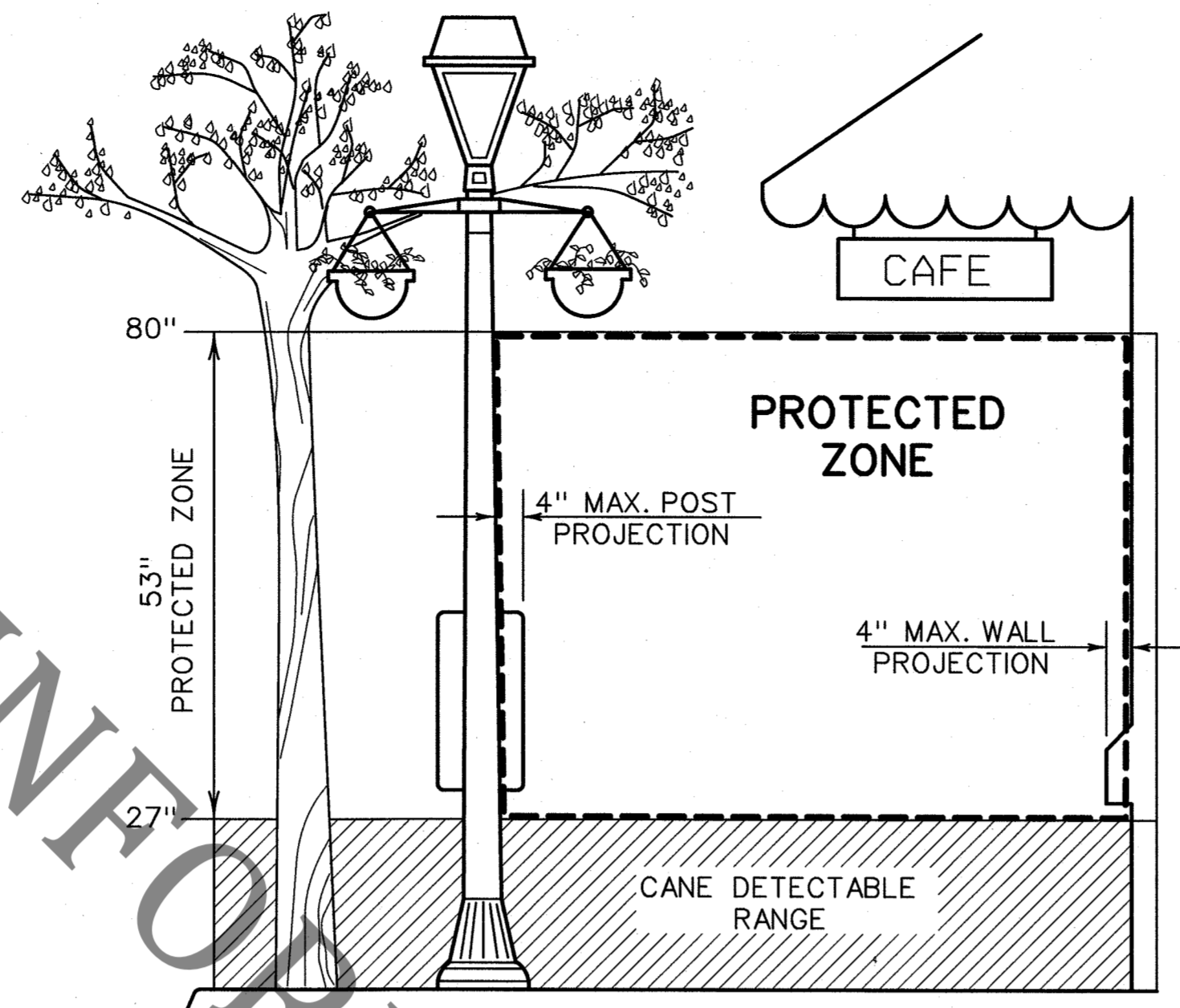


Apron offset sidewalk



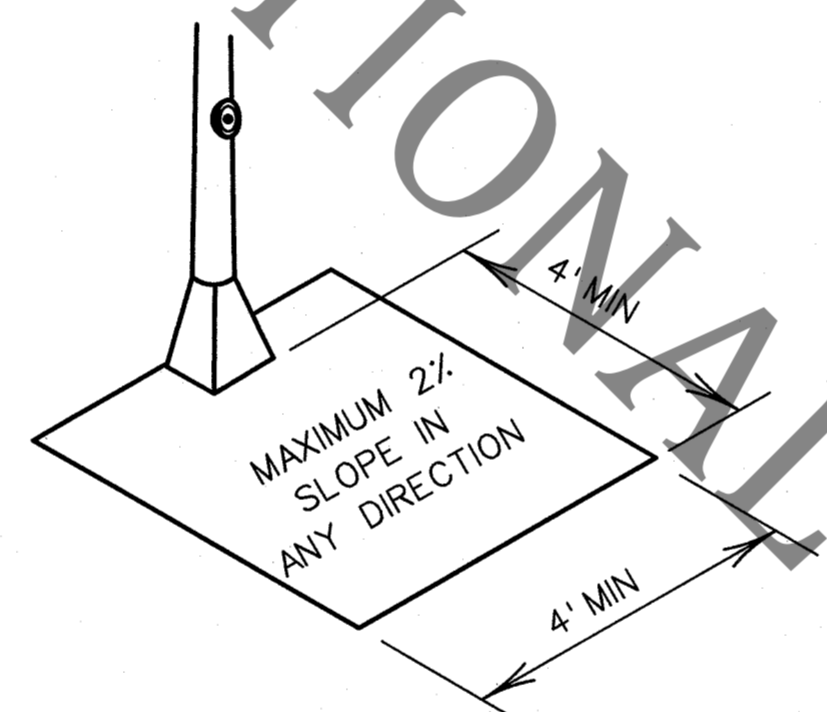
Setback sidewalk

SIDEWALK TREATMENT AT DRIVEWAYS

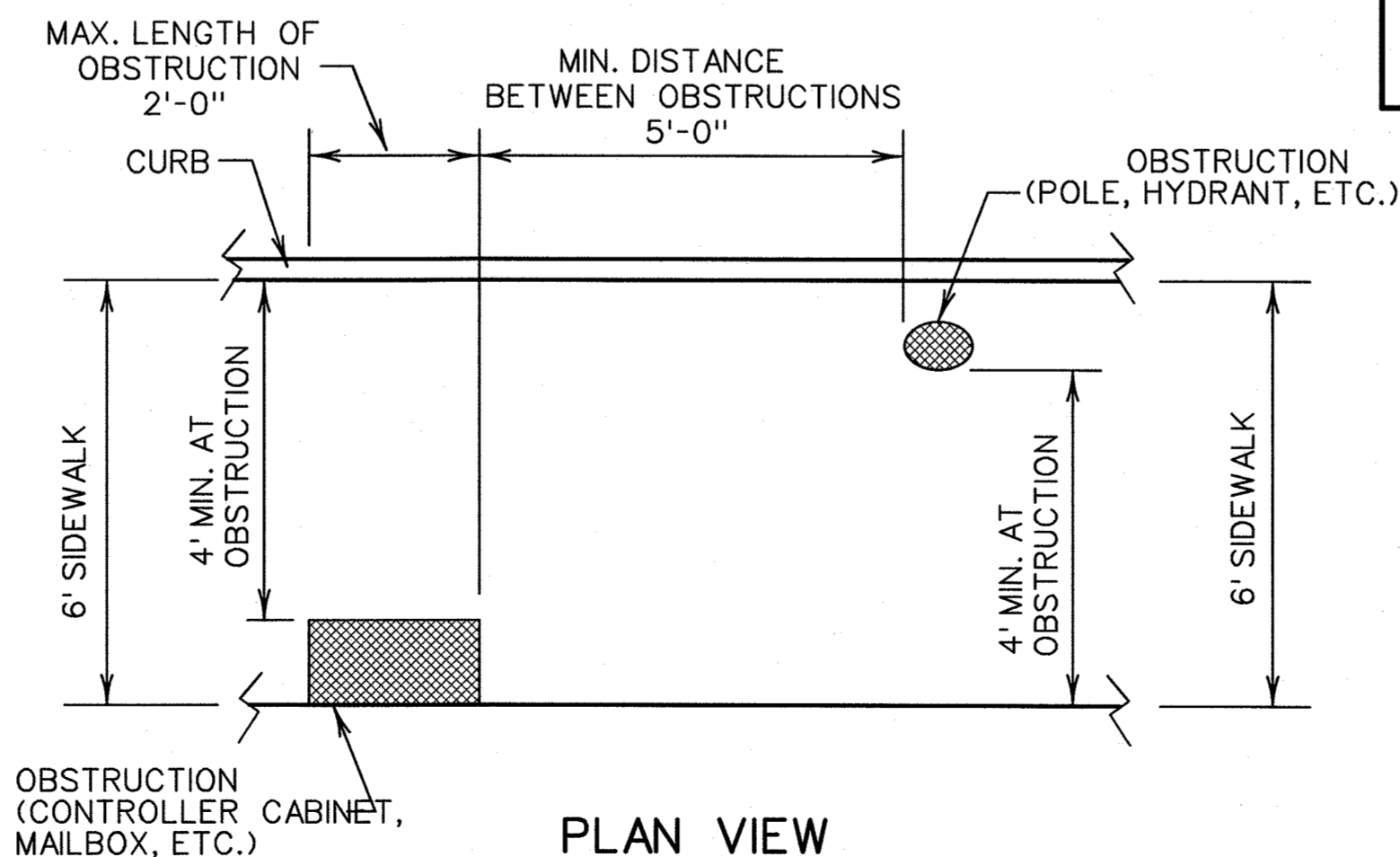


PROTECTED ZONE

In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27" and 80" above the surface.



CLEAR GROUND SPACE AT PEDESTRIAN PUSH BUTTON

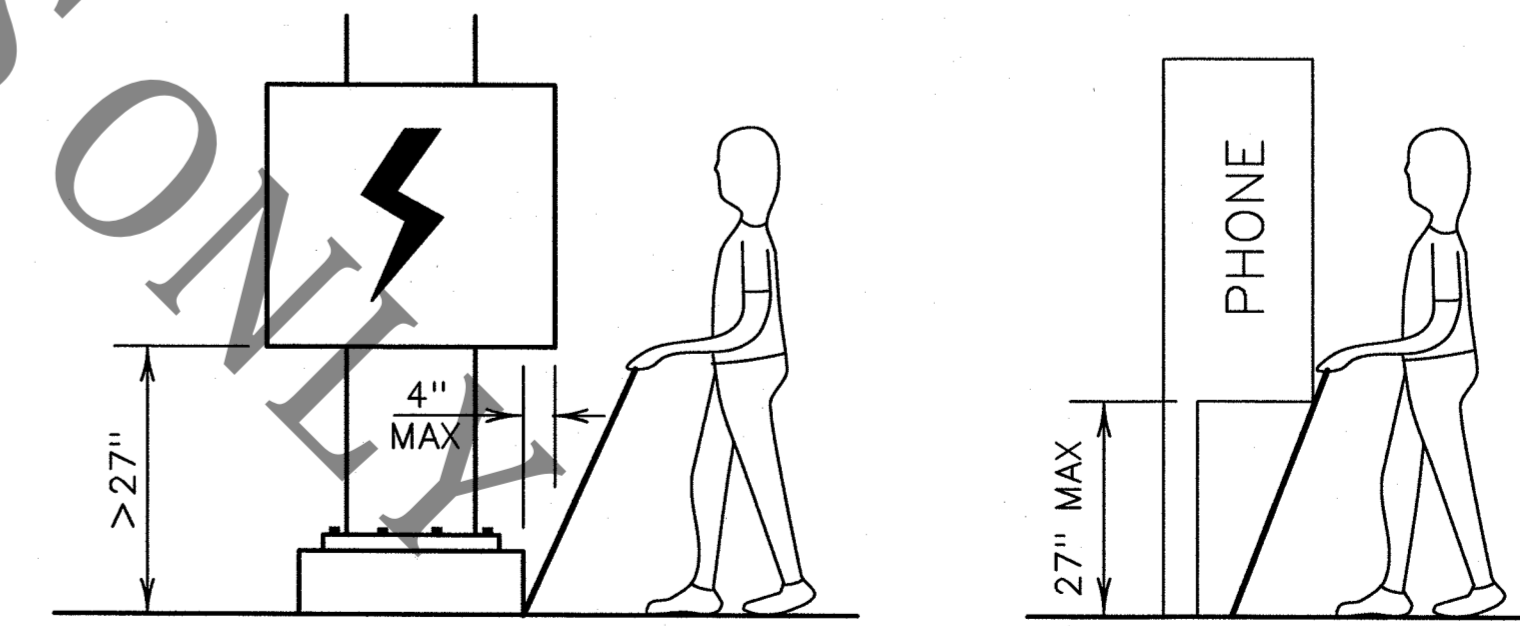


PLACEMENT OF STREET FIXTURES

(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)

Pedestrian Facilities General Notes

1. All slopes shown are maximum allowable. The least possible slope that will still drain properly should be used.
2. The minimum sidewalk width is 4'. Where the sidewalk is adjacent to back of a barrier curb, the sidewalk width shall be 6'. Where a 4' sidewalk cannot be provided due to site constraints, a minimum 3' sidewalk with 5' x 5' passing areas at intervals not to exceed 200 ft is required in compliance with 4.3.4(ADAAG) and R301.3.2 (PROWAG-DRAFT).
3. Changes in the level of sidewalk should be no more than 1/4". Changes in level greater than 1/4" but equal to or less than 1/2" shall be beveled at a 1:2 maximum slope. Any change of level greater than 1/2" requires a ramp.
4. The maximum desirable slope of a curb ramp shall be 7.1% (1:14). Ramp length or grade of approach sidewalks may be adjusted as directed by the Project Engineer. In alterations, curb ramp slope(s) may be 10% for a maximum rise of 6" or 12.5% for a maximum rise of 3". Curb ramps in alterations need not exceed 6' in length.
5. Maneuvering space at the bottom of curb ramps shall be a minimum of 4' x 4' completely contained within the crosswalk and completely outside the parallel vehicular travel path.
6. Maximum allowable cross slope on sidewalk and ramp surfaces is 2%; desired cross slope is 1.5%.
7. The desirable landing dimensions are 5' x 5' with a maximum 2% slope in any direction. If a leveling of at least 3' width cannot be provided, perpendicular curb ramps should not be used.
8. Curb ramps with returned curbs may only be used where pedestrians would not normally walk across the ramp. Otherwise, flared sides shall be provided.
9. All concrete surfaces shall receive a light broom finish unless noted otherwise in the plans.
10. Separate curb ramps and landings from adjacent sidewalk with premold or board joint of 3/4". If joints are located in walking surfaces, they should have spaces no greater than 1/2" wide
11. Tooled joints are required at all sidewalk ramp or driveway slope break lines.
12. Provide a smooth transition where the curb ramps connect to the street.
13. Ramp textures must include truncated domed surfaces. Textures are required to be detectable underfoot. Surfaces that would allow water to accumulate are prohibited. Shaded areas indicate locations of detectable warnings. (Color: light reflective value and texture contrast)
14. Note that where sidewalks intersect with streets, detectable warning systems are required at all street crossings.
15. Ramps providing access to buildings shall follow the applicable requirements of the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG).
16. To serve as a pedestrian refuge area, raised medians should be a minimum of 5' wide. Medians should be designed to provide accessible passage over or through them.
17. Small channelization islands, which cannot provide a minimum 5' x 5' landing at the top of ramps, shall be cut through level with the surface of the street.
18. On street parking will not be allowed within 20' of any crosswalks.
19. Drainage structures in close proximity to curb ramps should be located on the upstream side of the ramp.
20. Traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items shall be placed so as not to obstruct the accessible route.
21. Street grades and cross-slopes at crosswalks shall be shown elsewhere in the plans; however, parabolic crowns may require adjustment in crosswalk areas to limit crosswalk grade to 5%. Curb ramps are not always contained within crosswalks; however, maximum slopes of adjoining gutters, road surface immediately adjacent to curb ramps should not exceed 5%.
22. Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
23. Where gravel driveways occur, at least 10' of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.
24. Crosswalk dimensions and markings shall be as shown elsewhere; however, a 24" long segment of straight curb shall be located on each side of diagonal curb ramps and within the marked crossings. At intersections where cross wall markings are not required, ramps shall be aligned with theoretical crosswalks or as directed by the Project Engineer.
25. Where crosswalks occur, a 24" solid white line shall be placed across all approach lanes to indicate the point behind which vehicles are to stop. Stop bars shall be placed 4' in advance of a crosswalk.
26. Driveways, sidewalks, and ramps shall be constructed and paid for in accordance with the applicable sections of the Standard Specifications. The limits of "payment for accessible ramps" shall include but not be limited to curb transition, detectable warning system, gutter, landing and base.
27. Though the least possible grade should be used to maximize accessibility, where it is structurally impractical to achieve ADA compliance, the running slope of sidewalks and crosswalks within the public right-of-way, may follow the grade of the parallel roadway without invoking variances or landings or handrails. Where a continuous grade greater than 5% must be provided, handrails may be desirable on one or both sides of the sidewalk to improve accessibility.

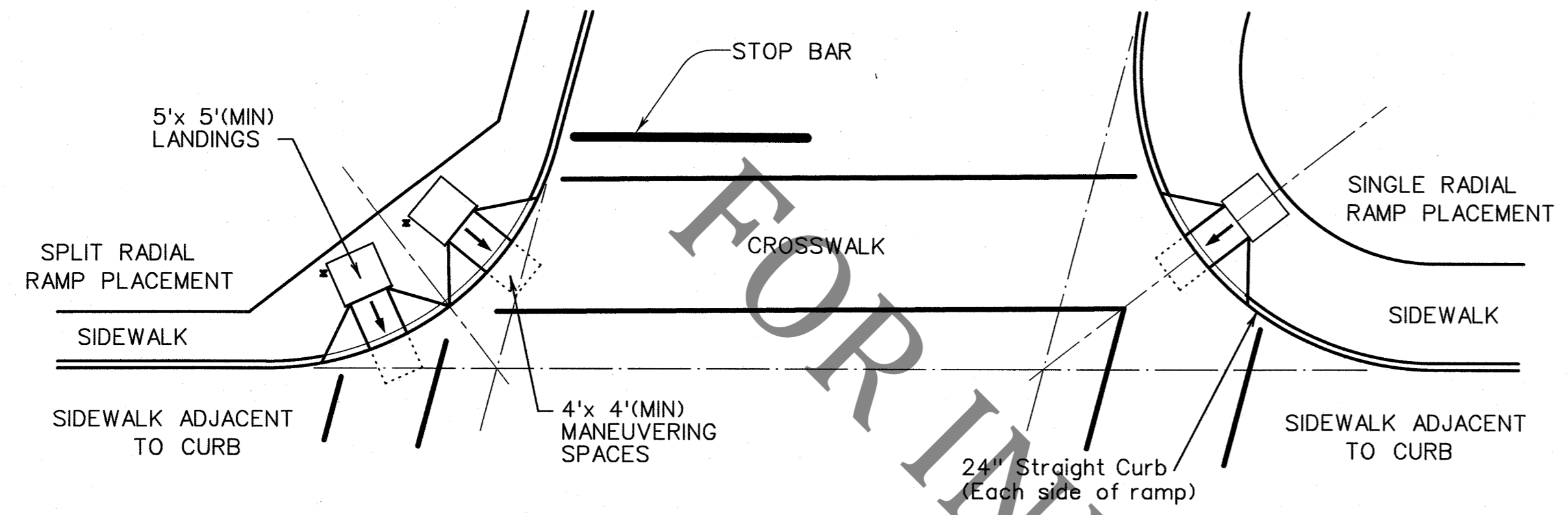


When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.

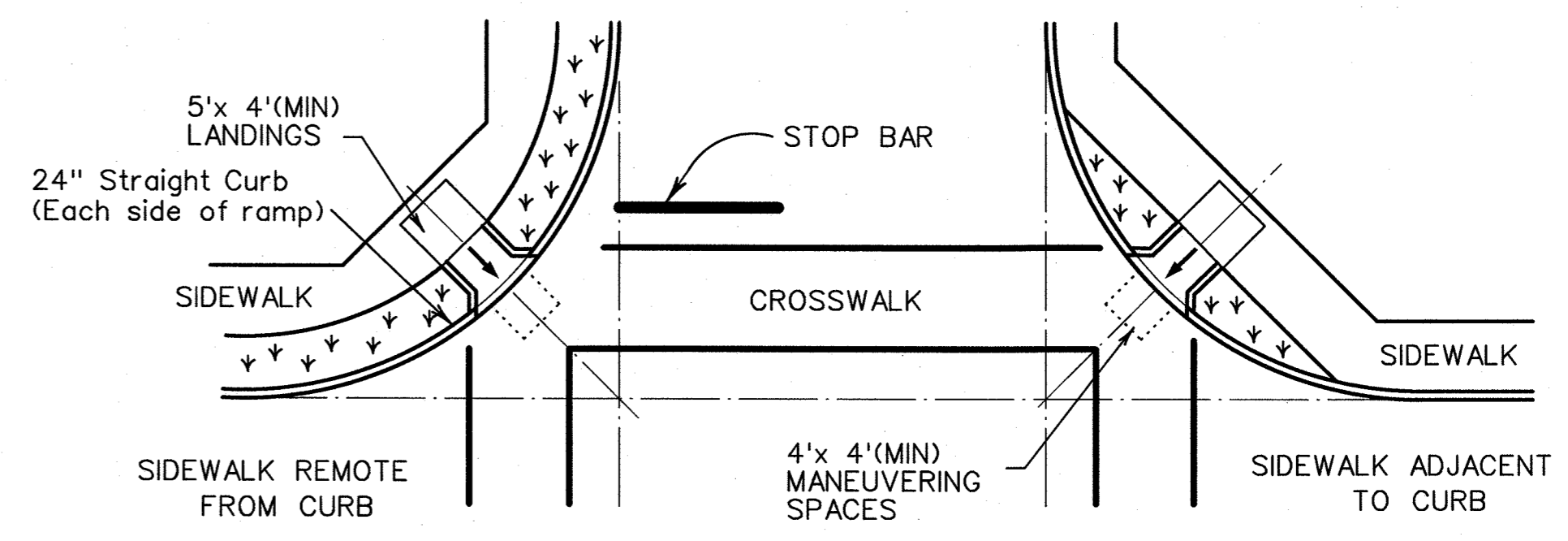
Protruding objects of a height less than or equal to 27" are detectable by cane and do not require additional treatment.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

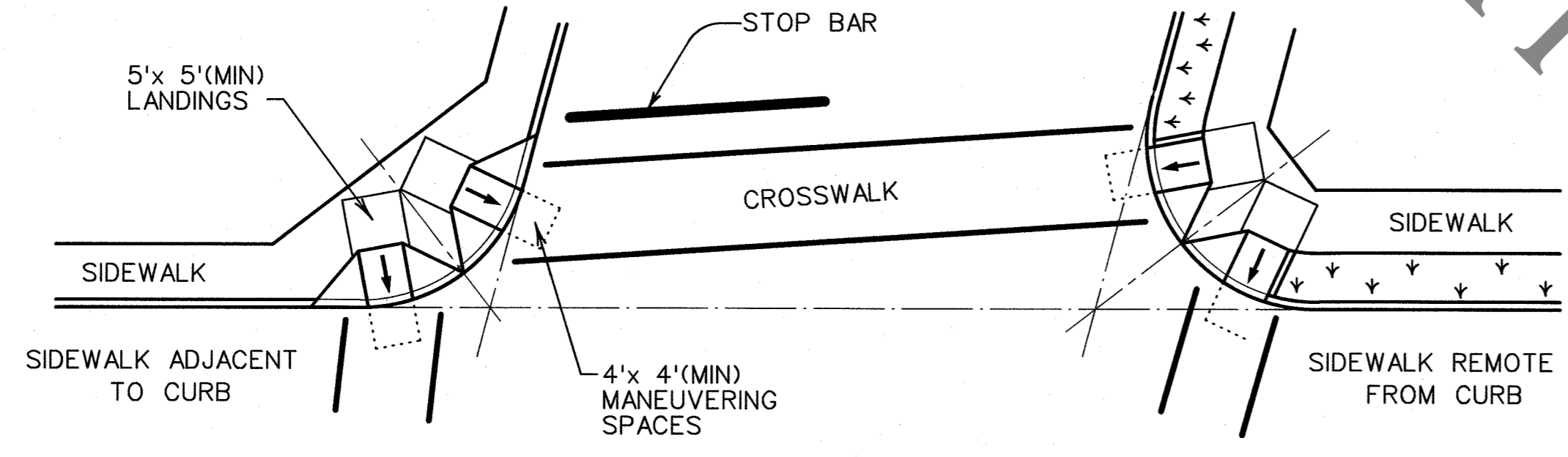
SHEET NUMBER	DESIGNED V.A.H. / CHECKED E.A.W.			PARISH	
	REVISION DESCRIPTION				FEDERAL PROJECT
	DATE				
APPROVED BY: [Signature] / CHIEF ENGINEER				DATE: 12-7-11 / SHEET 2 of 4	
LA LOUISIANA					
PEDESTRIAN FACILITIES SIDEWALKS					
PED-01					
DOTD					
ROAD DESIGN					



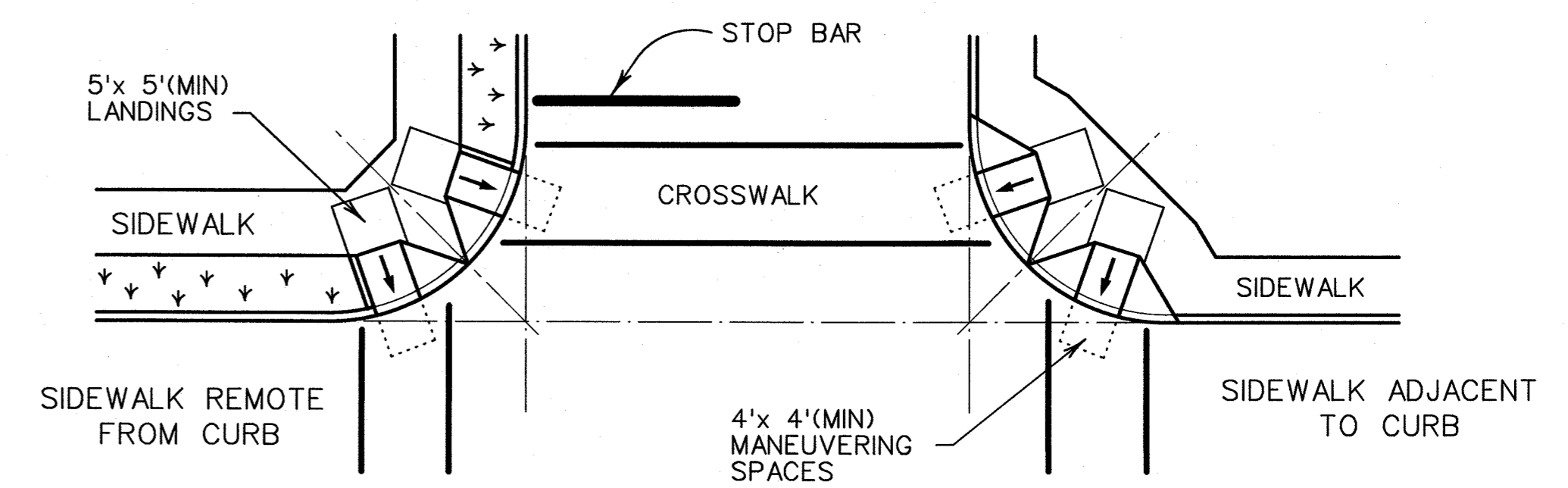
SKewed INTERSECTION WITH "LARGE" RADIUS



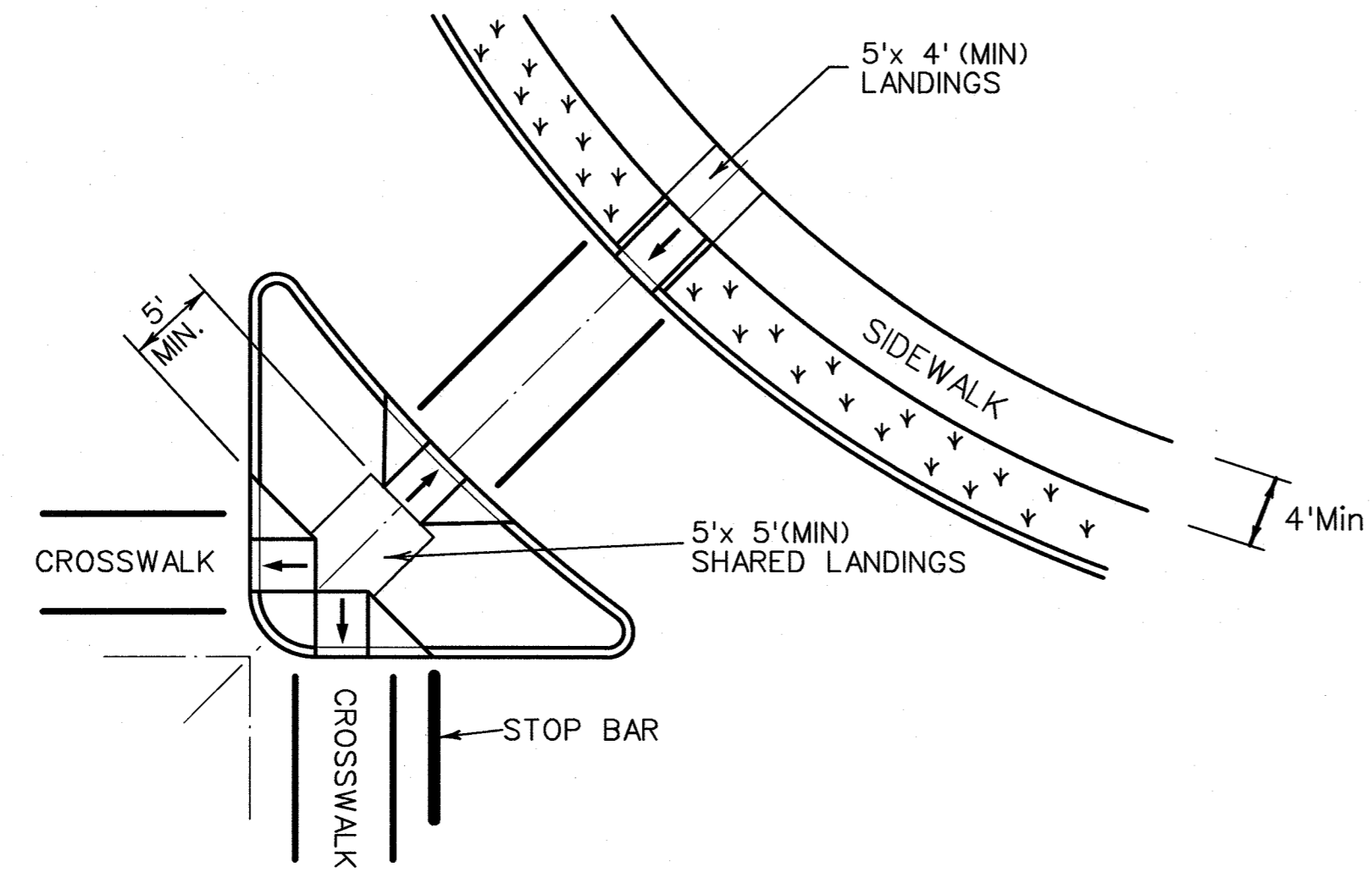
NORMAL INTERSECTION WITH "LARGE" RADIUS



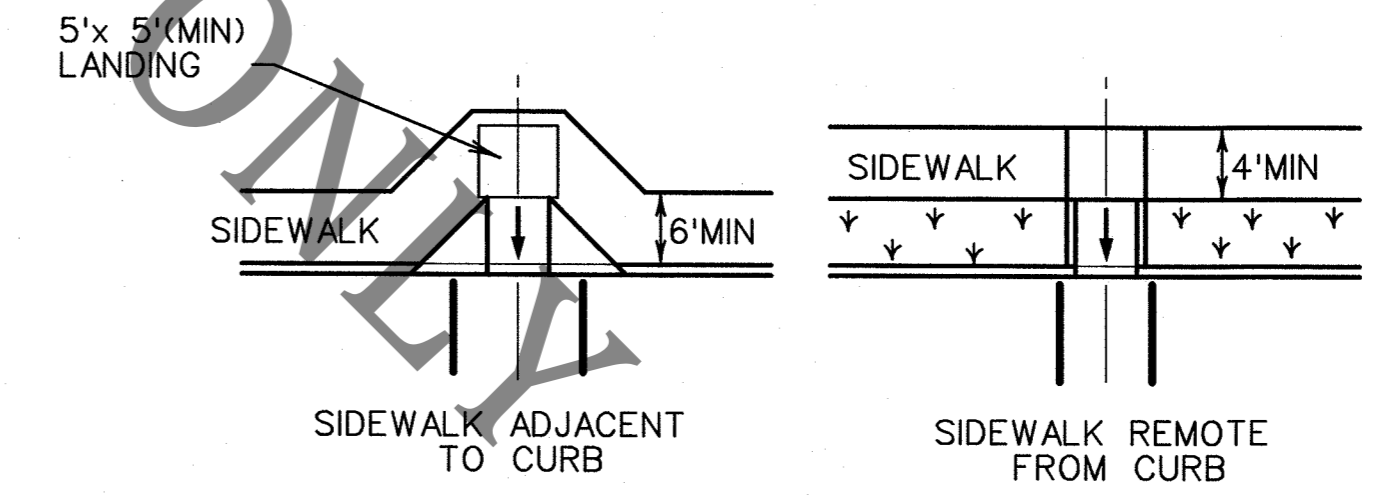
SKewed INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT PERPENDICULAR RAMPS

TYPICAL CROSSING LAYOUTS
 SEE SHEET 2 OF 4 FOR DETAILS AND DIMENSIONS

* Parallel and perpendicular curb ramps should be provided unless it is not technically feasible.
 For existing construction, diagonal curb ramps can be included.

General Notes:

Ramps are shown here without detectable warnings for simplicity. Detectable warnings are required at the locations shown on Sheet 1 of 4 and in accordance with the details shown elsewhere herein below.

Striping (Crosswalks and stop bars) is shown for reference only. See PM-08 for striping details.

See PM-08 for Stop Bar Detail

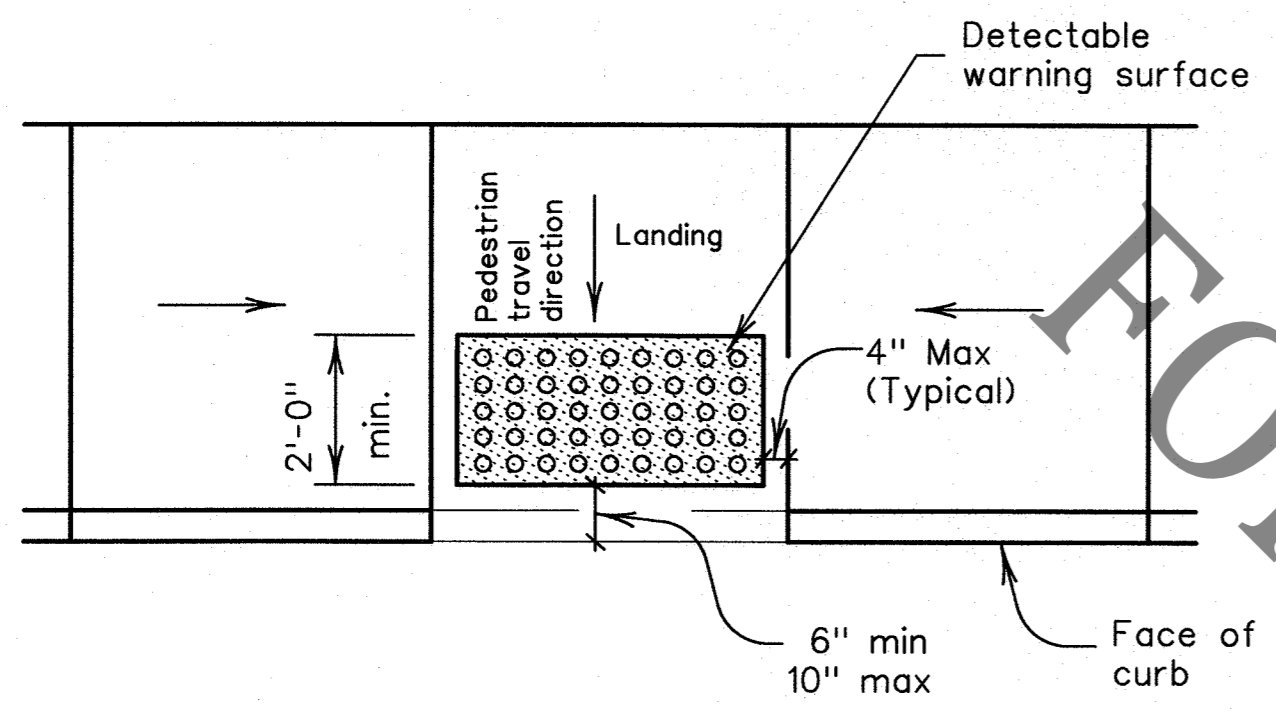
FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER	
DESIGNED V.A.H. CHECKED E.A.W.	PARISH
DATE 03/23/07	FEDERAL PROJECT
SHEET 3 of 4	STATE PROJECT
REVISION DESCRIPTION	DATE
REVISION 1: 12-7-11	BY
REVISION 2: 12-7-11	DATE
REVISION 3: 12-7-11	DATE
REVISION 4: 12-7-11	DATE
REVISION 5: 12-7-11	DATE
REVISION 6: 12-7-11	DATE
REVISION 7: 12-7-11	DATE
REVISION 8: 12-7-11	DATE
REVISION 9: 12-7-11	DATE
REVISION 10: 12-7-11	DATE
REVISION 11: 12-7-11	DATE
REVISION 12: 12-7-11	DATE
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REVISION 100: 12-7-11	DATE

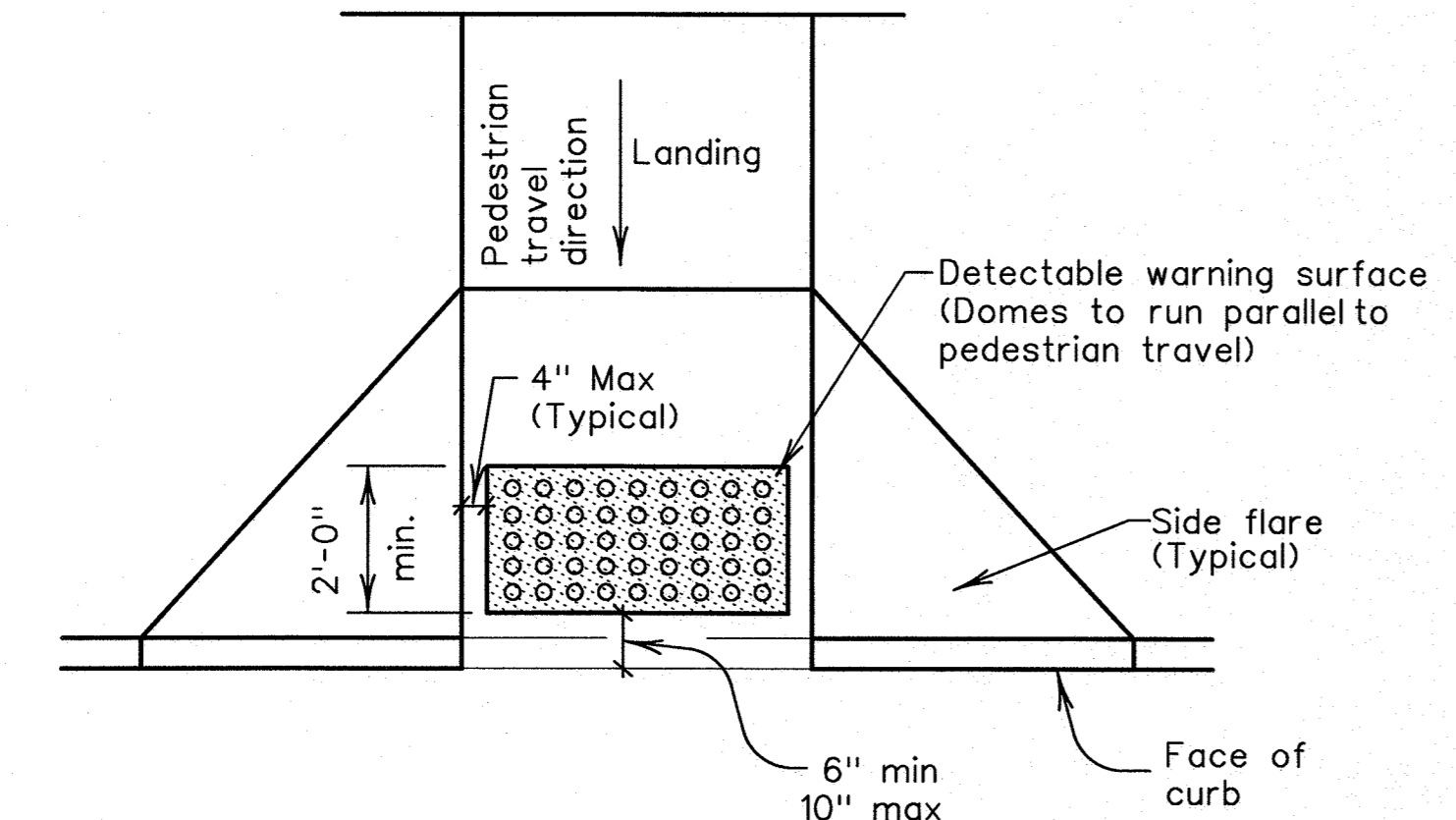
PEDESTRIAN FACILITIES INTERSECTION LAYOUTS AND DETECTABLE WARNINGS



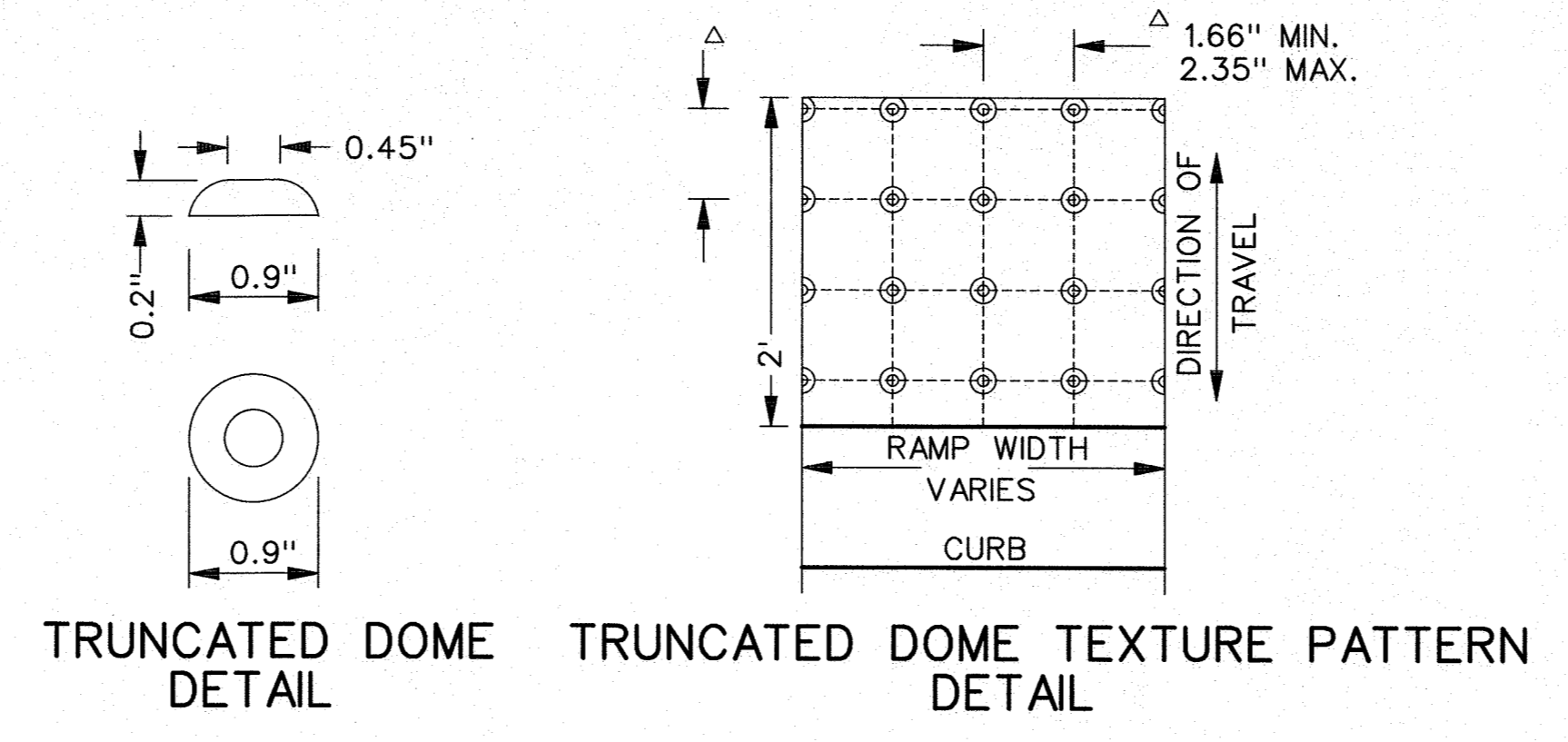
ROAD DESIGN



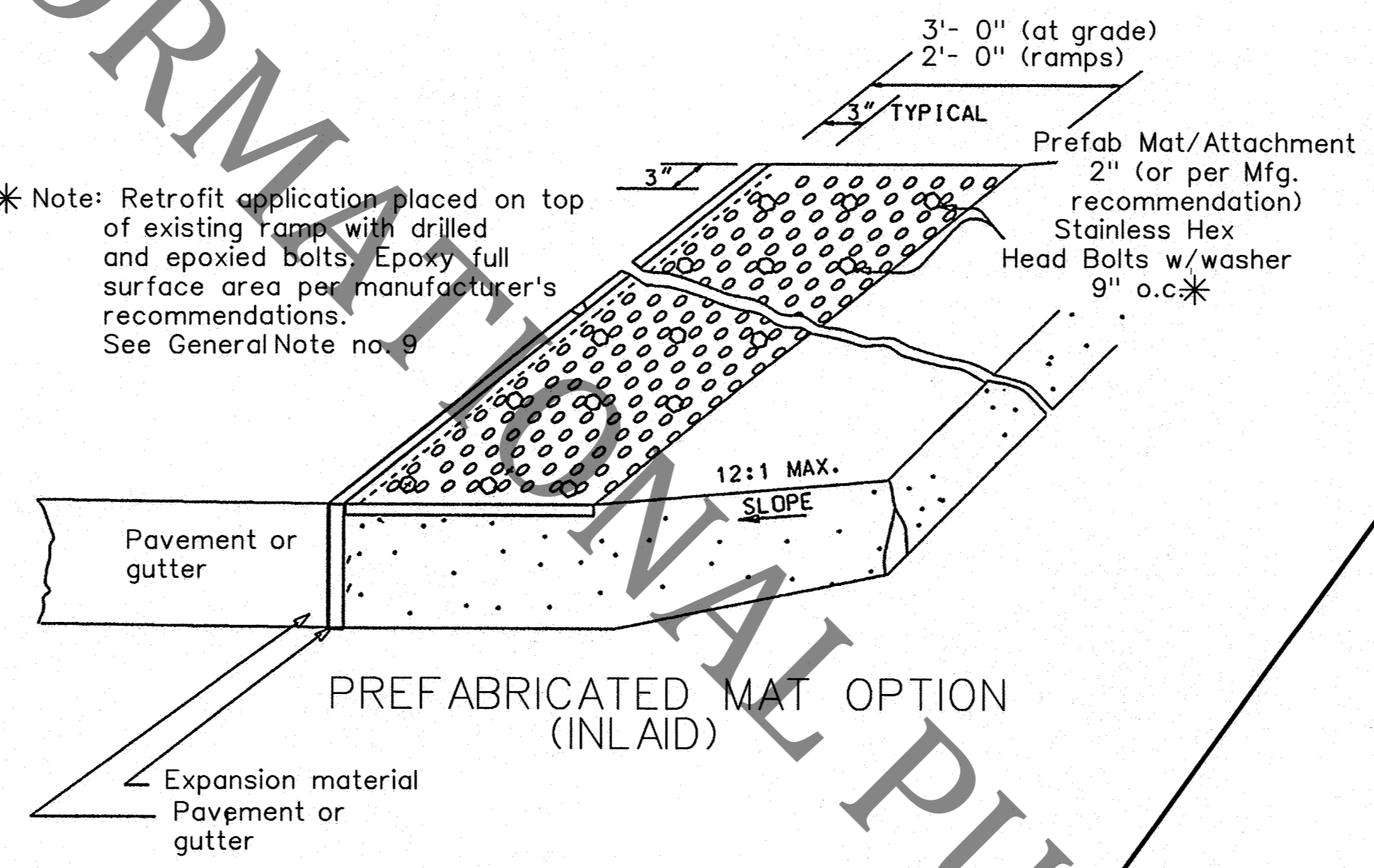
Typical placement of detectable warning surface on landing at street edge.



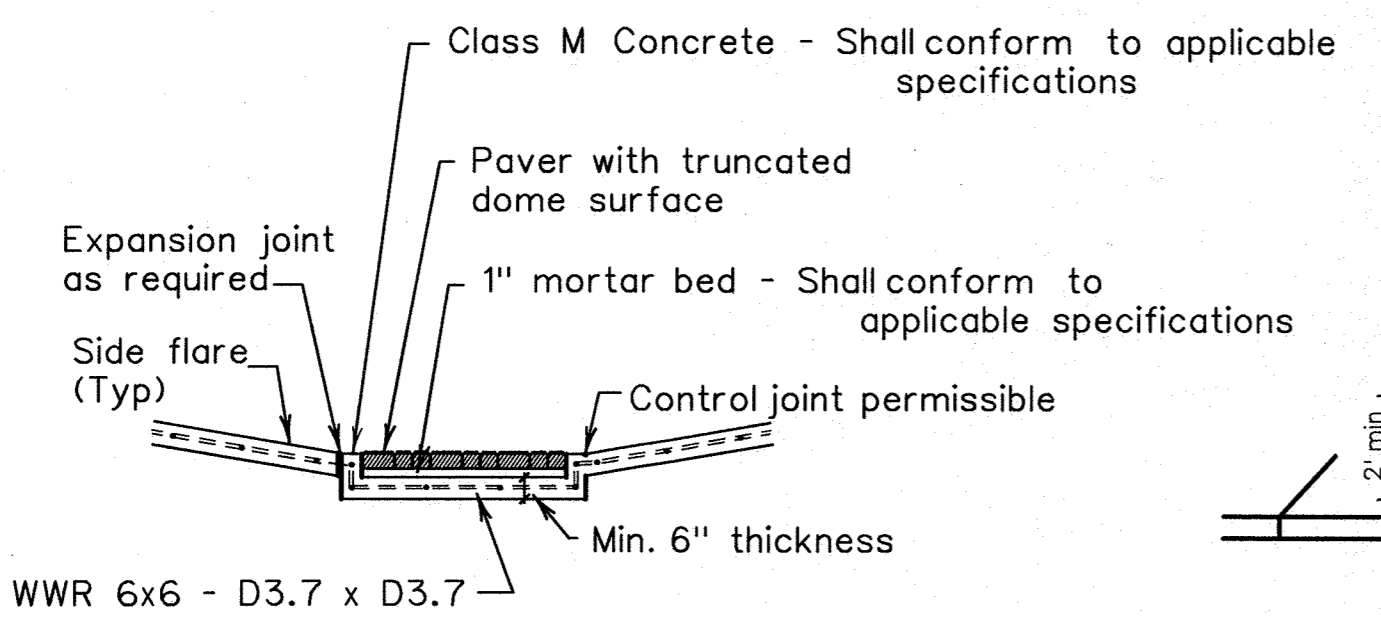
Typical placement of detectable warning surface on sloping ramp run.



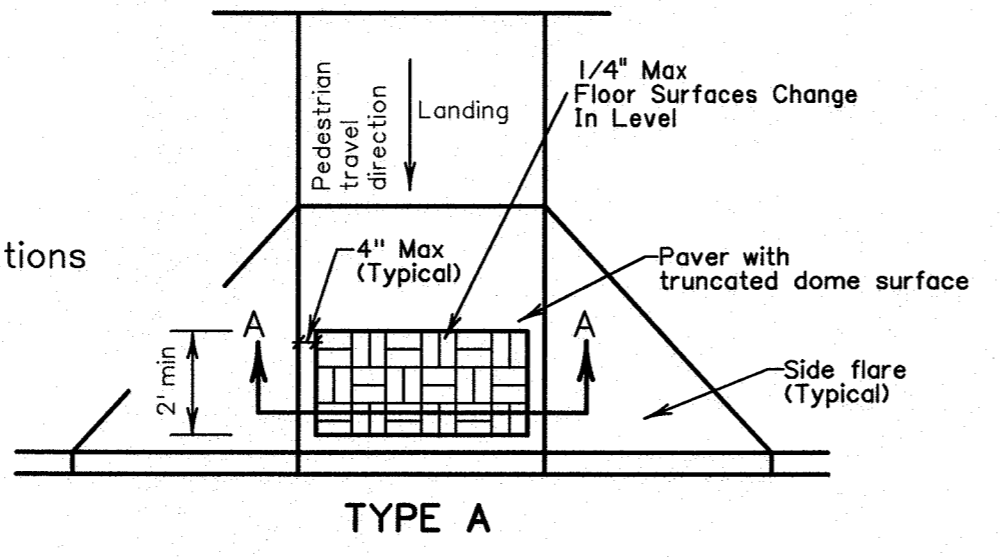
Note: Place truncated domes detectable warning texture in the lower 2' of throat of ramp only and a 3' wide pattern at "at-grade" sidewalk intersections with roadways. Domes shall be arranged in a square in-line pattern only as shown.
Color Fastness: Paver's composite coloring and ultra-violet stabilization must be homogeneous and throughout the product. No painted surfaces will be allowed.



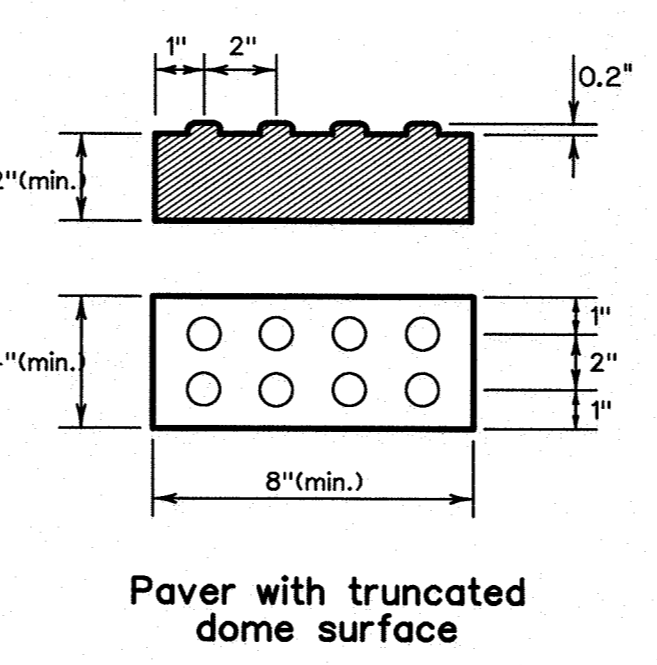
* Note: Retrofit application placed on top of existing ramp with drilled and epoxied bolts. Epoxy full surface area per manufacturer's recommendations. See General Note no. 9.



Section A-A



TYPE A
Truncated Dome Pattern Curb Ramp
DETECTABLE WARNINGS
(Paver Option)

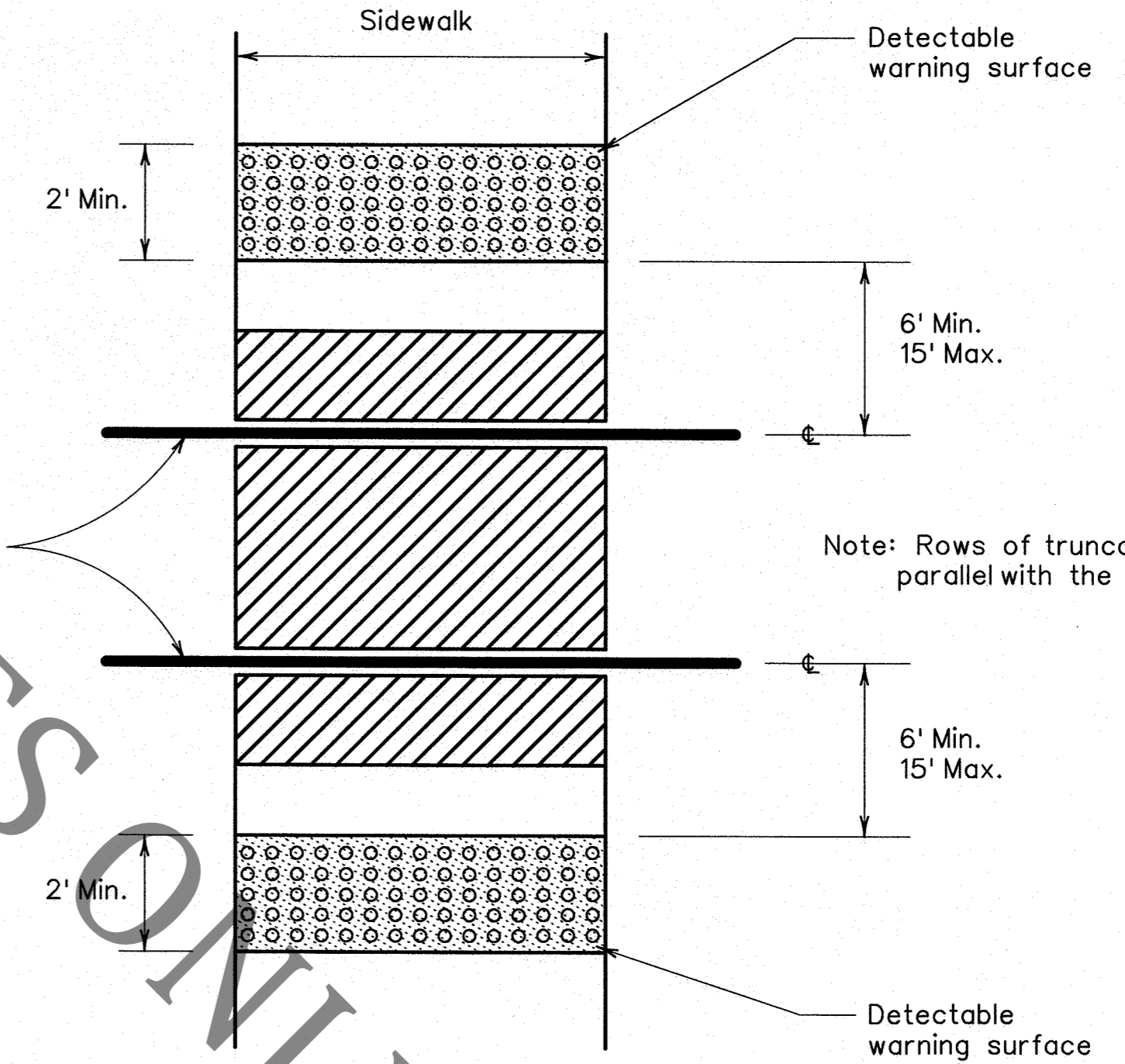


General Notes for Paver Option

Paver units shall meet all requirements of the applicable ASTM standards. Layout pattern shall be appropriate for size paver used. 4" x 8" pavers shall be laid out in a 2 x 2 basket weave pattern. 12" x 12" pavers shall be laid out in a block pattern.
Paver units shall have a truncated dome top surface for detectable warning to pedestrians.
Paver units shall be saw cut only and any cut unit shall not be less than 25 percent of a full unit.
Product installation should meet compliance with ground and floor surfaces change in level up to 1/4" maximum.

Detectable Warnings General Notes

1. For ADAAG compliance, detectable warning surfaces must be provided on all pedestrian curb ramps, medians and pedestrian refuge islands, railroad crossings and at grade sidewalk intersections with roadways.
2. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with 2010 ADAAG. The surface must contrast visually with adjoining surfaces, including side flares, in accordance with Section 706 of the Standard Specifications. Color for detectable warning surface shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light, unless otherwise specified by the project engineer.
3. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
4. Align truncated domes in the direction of pedestrian travel when entering the street.
5. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel and extend the full width of the throat of the curb ramp or landing where the pedestrian access route enters the street.
6. Detectable warning surfaces shall be located so that the edge nearest the curb line is a minimum of 6" and maximum of 10" from the extension of the face of curb. Detectable warning surfaces may be curved along the corner radius.
7. Detectable warning surfaces (truncated domes) may be stamped, constructed of brick pavers or inlaid prefabricated mats attached by epoxy adhesive and mechanical attachment.
8. Any retrofit application must have beveled edges and not exceed a slope greater than 1:2.
9. Detectable warning surfaces shall be aligned to be perpendicular or radial to the grade break between ramp, landing or blended transition and the street.



LOCATION OF DETECTABLE SURFACE
AT RAILROAD CROSSINGS

SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED V.A.H.	CHECKED E.A.W.	DATE 03/23/07	SHEET 4 of 4
REVISIONS	DATE	REVISION DESCRIPTION	BY
08-30-11		REVISED TO COMPLY WITH ADA REGULATIONS	CW
		APPROVED BY	DATE 12-7-11
		CHIEF ENGINEER	
PEDESTRIAN FACILITIES CURB RAMPS PED-01			
ROAD DESIGN			

APPENDIX D

WOOD POLE

STANDARD HUBS AND FITTINGS FASTENED WITH 3/8" HDG LAG SCREWS.

SIGNAL BRACKET SHALL HAVE WIRE WAY AND OPENING EQUIVALENT TO A 1 1/2" CONDUIT AND FITTING.

1" HDG CONDUIT AND PIPE STRAPS INSTALLED AT 5' INTERVALS BEGINNING AT OFFSET. ALL CONDUIT STRAP ON WOOD POLES SHALL BE TWO HOLE, HEAVY DUTY, 1/8" MIN. THICKNESS FOR 1" AND ABOVE, AND 0.080" FOR 3/4".

COMBINATION POST HUB (DOWNWARD SHOWN) MAY ALSO BE INSTALLED UPWARD

BOTTOM OF ALL SIDE POLE MOUNTED VEHICLE HEADS SHALL HAVE 9' CLEARANCE FROM SIDEWALK OR ADJACENT ROADWAY.

METAL POLE (STRAIN OR MAST ARM)

STANDARD HUBS AND FITTINGS

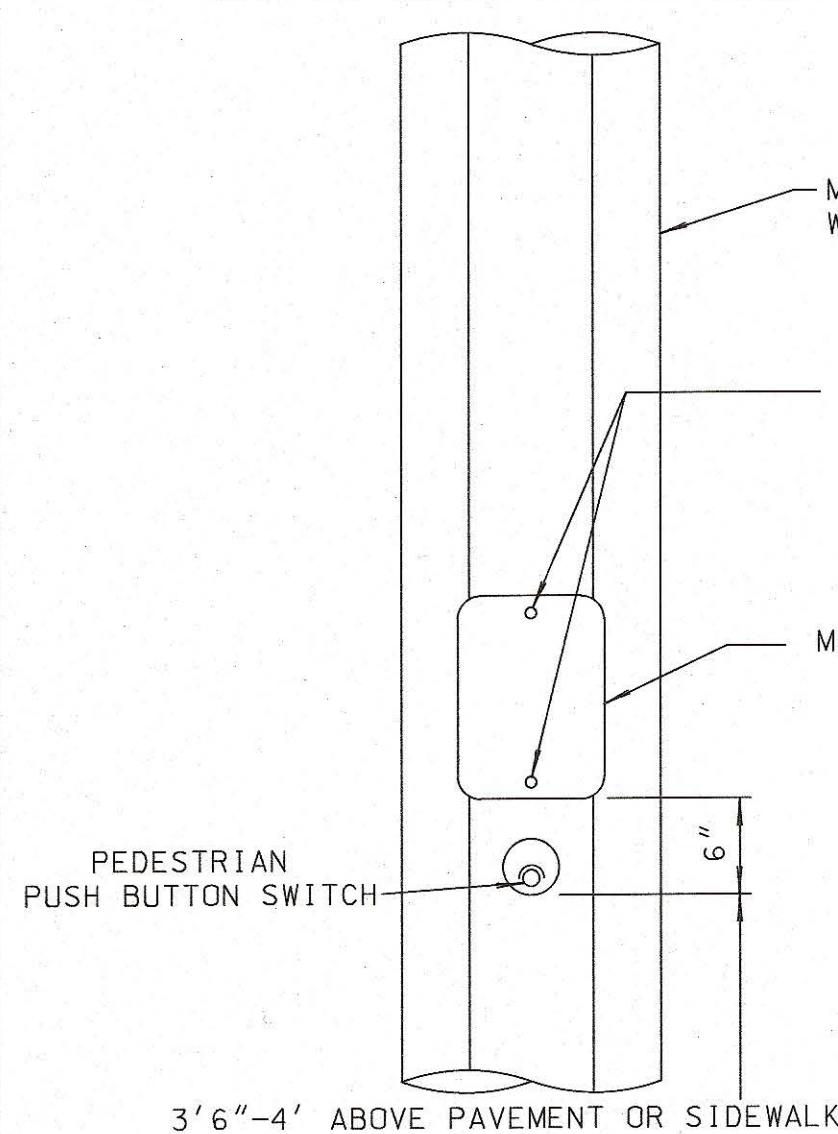
BACKPLATE WITH 3" REFLECTIVE STRIP REQUIRED

3/4" S.S. BANDING MATERIAL
FIELD DRILL WIRE ENTRANCE HOLE. REMOVE ALL SHARP EDGES.

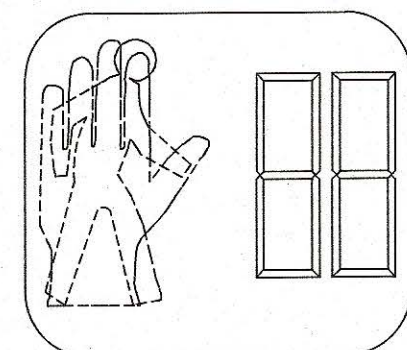
SIGNAL BRACKET SHALL HAVE WIRE WAY AND OPENING EQUIVALENT TO A 1 1/2" CONDUIT AND FITTING.

FIELD DRILL WIRE ENTRANCE HOLE. REMOVE ALL SHARP EDGES.

PEDESTRIAN SIGNAL



ONE-SECTION COUNTDOWN PEDESTRIAN SIGNAL (16" X 18" SYMBOL TYPE)



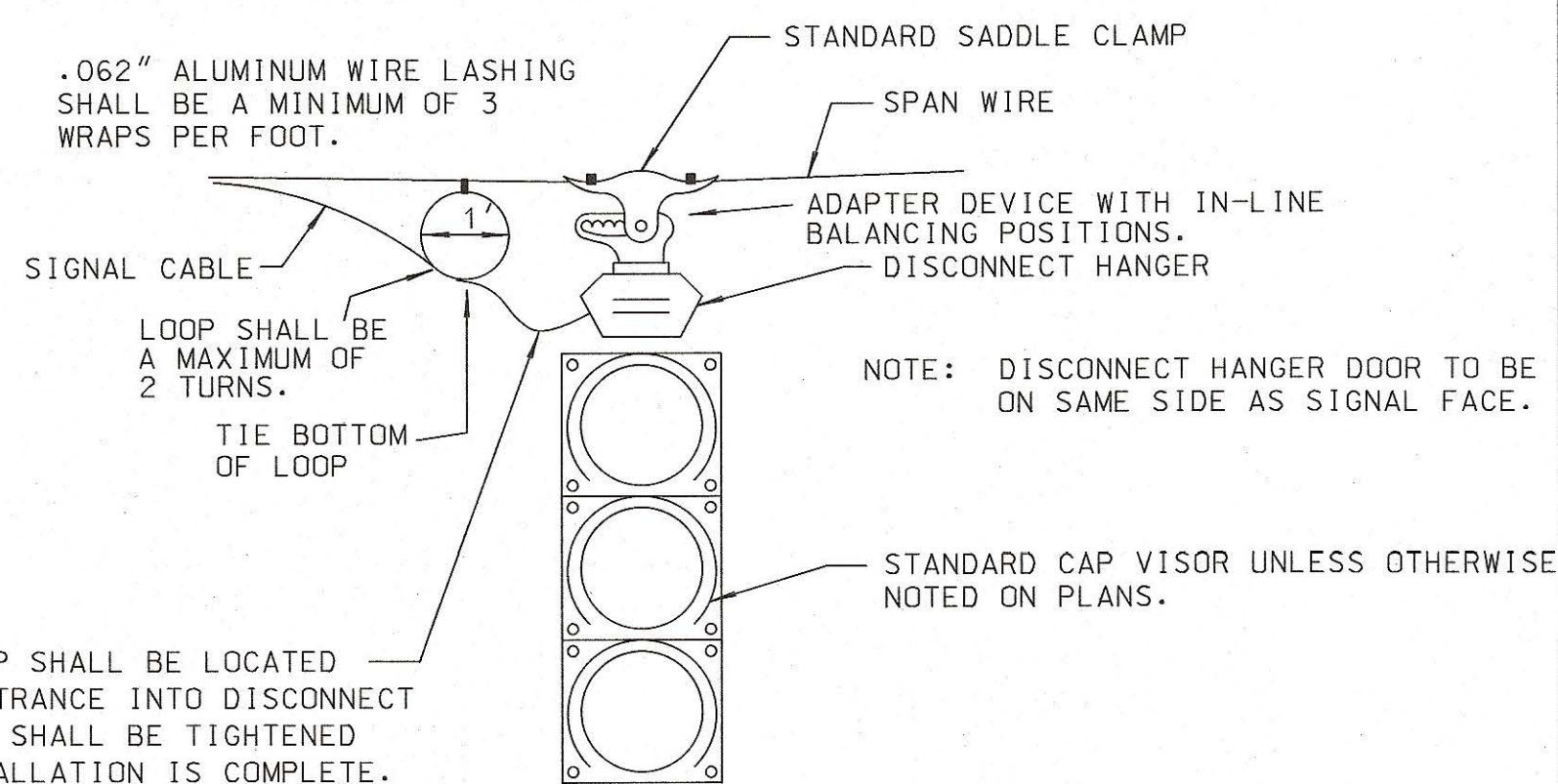
NOTES:

1. PEDESTRIAN PUSH BUTTONS SHALL BE FURNISHED AND INSTALLED WITH COUNTDOWN PEDESTRIAN SIGNALS AS SHOWN IN PLANS. PEDESTRIAN PUSH BUTTONS MAY ALSO BE REQUIRED AT OTHER INTERSECTIONS, AS DESIGNATED ON INTERSECTION LAYOUT SHEETS OF THE PLANS.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL ABOVE EACH PEDESTRIAN PUSH BUTTON A R10-3E(L), R10-3E(R) SIGN AS APPROPRIATE FOR CIRCUMSTANCES. THE DIRECTIONAL ARROW SHALL BE PLACED IN THE DIRECTION OF CROSSWALK.
3. COUNTDOWN PEDESTRIAN SIGNALS MAY BE PLACED EITHER ON TOP OF PEDESTAL OR ON THE SIDE OF A MAST ARM OR STRAIN POLE AS REQUIRED BY PLANS.
4. CLEARANCE FROM THE BOTTOM OF PEDESTRIAN SIGNAL HEADS TO SIDEWALK OR NATURAL GROUND SHALL BE 8' OR SHALL CONFORM TO THE CURRENT ADOPTED EDITION OF THE MUTCD.
5. IF A PEDESTAL IS USED FOR A PUSH BUTTON ONLY, THE TOP OF THE POLE SHALL BE CAPPED.

BRACKET MOUNTED TRAFFIC SIGNALS

SPAN WIRE SIGNAL MOUNT

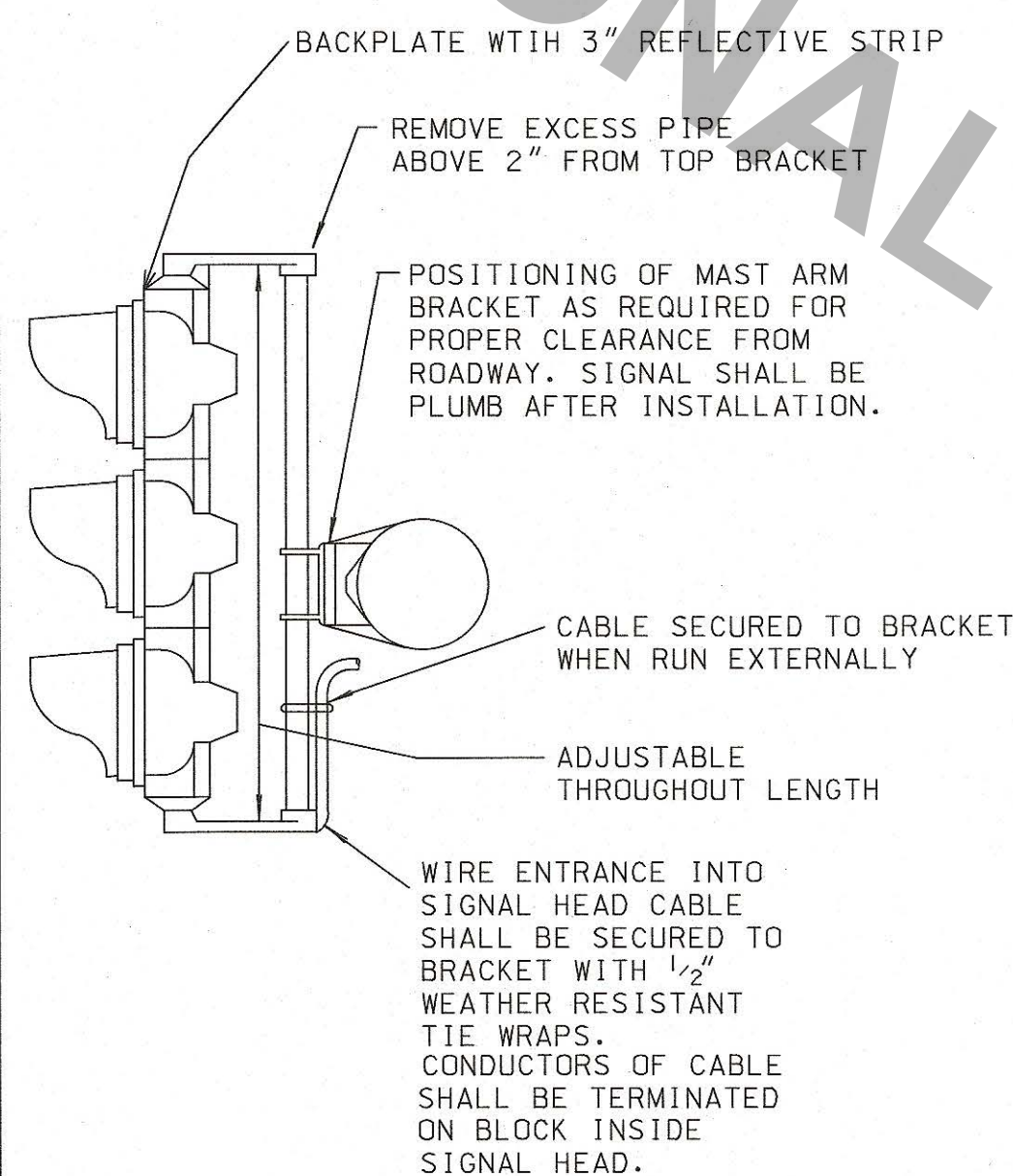
SIGNAL HEADS SHALL BE PLUMB. AN ADDITIONAL BALANCE ADJUSTER SHALL BE USED WHERE REQUIRED. TYPICAL SIGNAL SHOWN, ALSO APPLIES TO 2, 3 & 4-WAY ARRANGEMENT.



NOTE: ALL UNUSED OPENINGS SHALL BE PLUGGED AND SEALED.

MAST ARM SIGNAL MOUNT

HEIGHT OF SIGNAL FACES SHALL CONFORM TO THE HEIGHTS SPECIFIED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT ADOPTED EDITION.



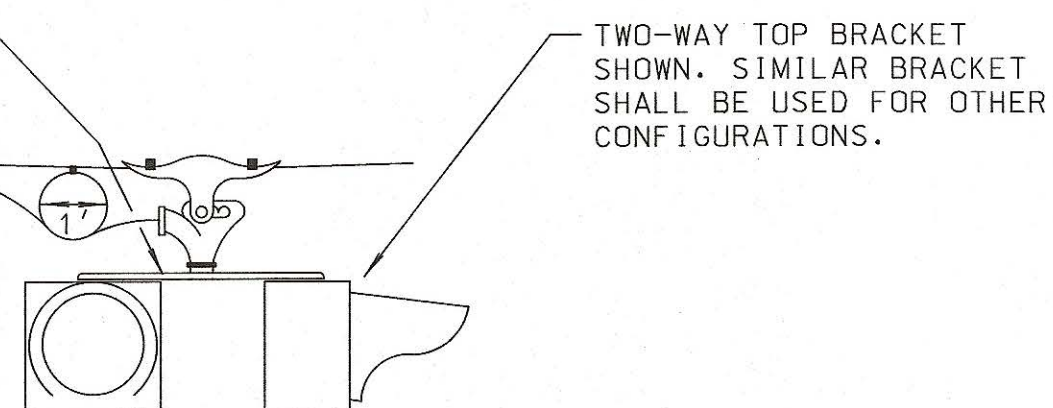
SPAN WIRE FLASHING BEACON MOUNT

ONE 2-WAY HEAD

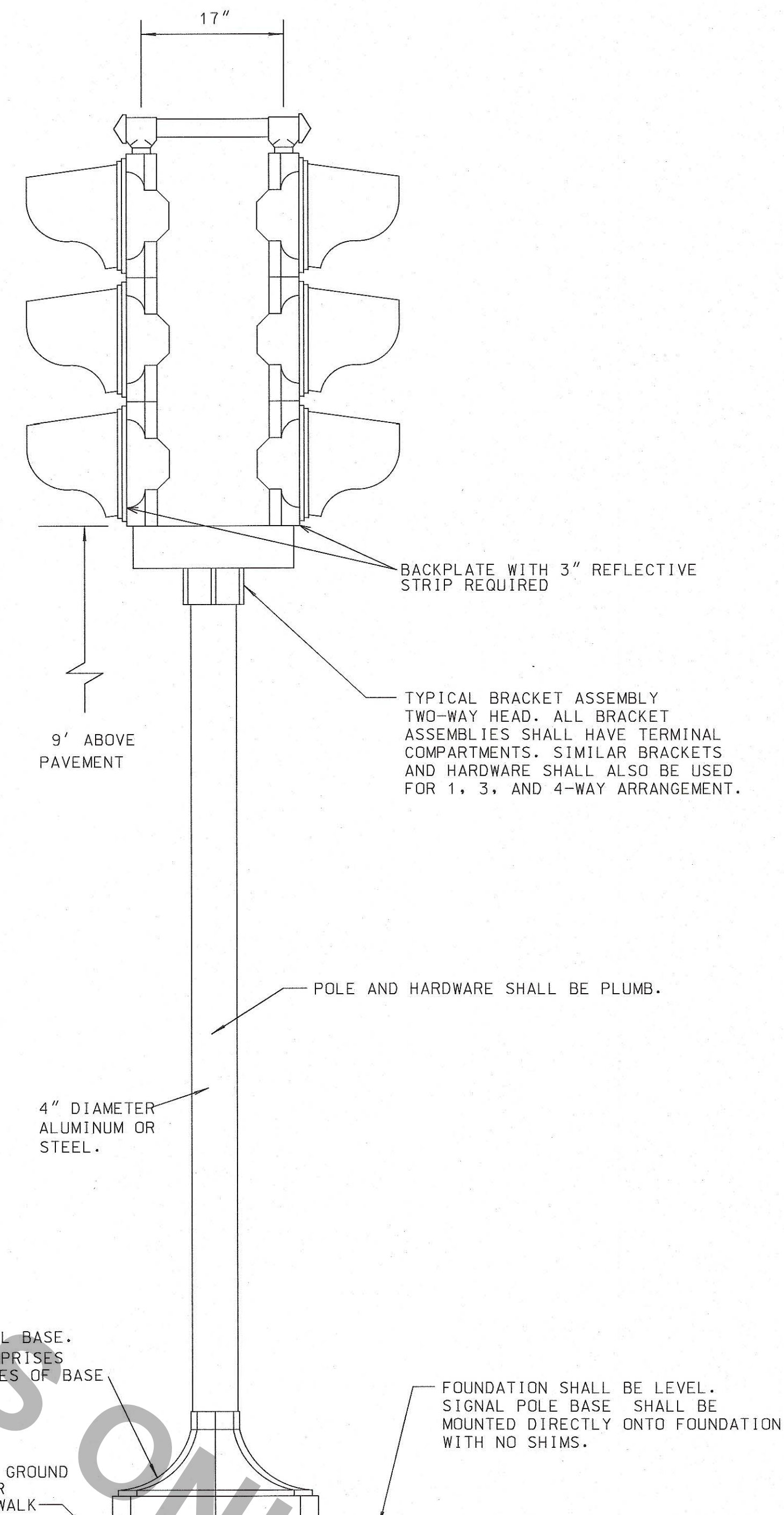
ALL HEADS SHALL BE HORIZONTALLY ALIGNED

TERMINAL HOUSING ACCESSIBLE FROM BOTTOM. CABLE SHALL BE SPLICED TO LAMP LEADS FROM EACH SIGNAL.

LOOP SHALL BE A MAXIMUM OF 2 TURNS. TIE BOTTOM OF LOOP.

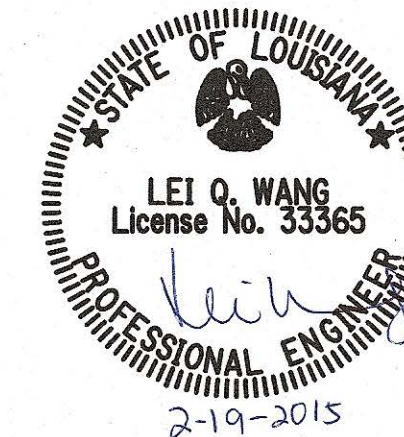


PEDESTAL MOUNTED SIGNAL INSTALLATION



NOTES:

1. FOR FOUNDATION SEE SIGNAL PEDESTAL FOUNDATION LOCATED ON SHEET 3 IN TRAFFIC SIGNAL AND INSTALLATION DETAILS.
2. TWO-WAY AND THREE-WAY SIGNAL HEADS SHALL BE SIMILARLY MOUNTED WITH APPROPRIATE HARDWARE. CLEARANCE FROM THE BOTTOM OF THE SIGNAL HEAD TO SIDEWALK OR NATURAL GROUND SHALL BE 9' OR SHALL CONFORM TO THE CURRENT ADOPTED EDITION OF THE MUTCD.



SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	S. MCCARROLL	S. MCCARROLL	2/16/2015
CHECKED	D. LORIO	L. WANG	9 OF 14
DATE	2/16/2015	DATE	9 OF 14
REVISION DESCRIPTION	BY	DATE	NO.
TRAFFIC SIGNAL STANDARD DETAILS	SIGNAL MOUNTING DETAILS	TSD-08	
TRAFFIC ENGINEERING			