



**Highway Attachment -Excerpts TXDOT Cable Median Barrier Plans and Construction  
Plans**

**HWY22FH001**

( 23 pages)

## High Tension Cable Barrier

Construction of the High Tension Cable Barrier was completed on May 22, 2018 under project CSJ: 0005-06-119, etc. The system installed is manufactured by Gibraltar, and is a TL-4 design. Sheet 61 in the project plans titled GBRLTR (TL-4)-14 shows the standard for installation.

The median width of IH-20 across the Abilene District is typically 40 feet in width, as measured between the yellow edge lines of opposing traffic. The distance from edge of pavement to edge of pavement of opposing roadways is typically 32 feet. As such, there is a tendency for median side run off the road crashes for uncontrolled vehicles to traverse the median and possibly cross into the roadway of opposing direction traffic. Therefore, the Abilene District has taken a systemic proactive approach to reduce the median crossover crashes by installing High Tension Cable Median Barriers throughout the entire 165 miles of IH-20 across the district where no other barrier exists. The center median of IH-20 throughout the Abilene District has median barrier in all locations protected either by High Tension Cable Barrier (HTCB), Metal Beam Guard Fence (MBGF) or Concrete Traffic Barrier CTB).

STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION

DESIGN SPEED = N/A  
CURRENT A.D.T. = N/A  
PROJECTED A.D.T. = N/A  
FUNCTIONAL CLASS = INTERSTATE  
EXISTING NBI# = N/A  
PROPOSED NBI# = N/A

PROJECT NO.		SHEET NO.	
STP 1702(599)HES, ETC.		1	
STATE	DISTRICT	COUNTY	
TEXAS	ABL	HOWARD, ETC.	
CONTROL	SECTION	JOB	HIGHWAY NO.
0005	06	119, ETC.	IH 20

INDEX OF SHEETS  
SEE SHEET 2

PLANS OF PROPOSED  
STATE HIGHWAY IMPROVEMENT

PROJECT NO. STP 1702(599)HES

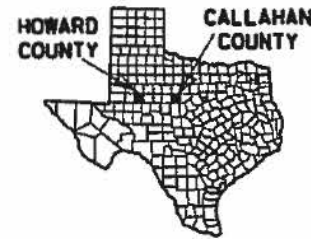
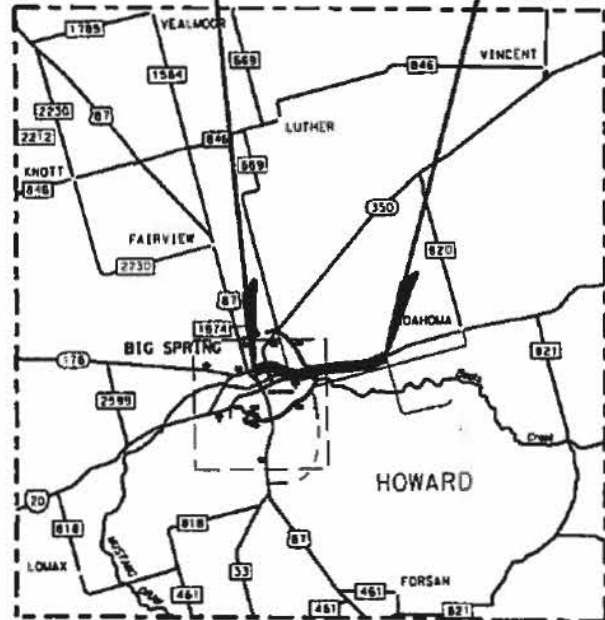
NET LENGTH OF ROADWAY = 36,215.58 FT = 6.859 MI  
NET LENGTH OF BRIDGE = 0.00 FT = 0.000 MI  
NET LENGTH OF PROJECT = 36,215.58 FT = 6.859 MI

IH 20  
HOWARD COUNTY

LIMITS: FROM N SCURRY ST TO MOSS LAKE RD  
FOR THE CONSTRUCTION OF: SAFETY WORK  
CONSISTING OF: INSTALL MEDIAN BARRIER

BEGIN CSJ: 0005-06-119  
RM 177 • 0.974 MI  
STA 772+30

END CSJ: 0005-06-119  
RM 184 • 0.794 MI  
STA 1096+45



NOT TO SCALE

EXCEPTIONS: N/A  
EQUATIONS: STA 839+07.05 BK = STA 840+08.64 AH = -101.58 FT  
STA 898+86.67 BK = STA 859+84.51 AH = -3,902.16 FT  
RAILROAD CROSSINGS: N/A

PROJECT NO. STP 1702(600)HES

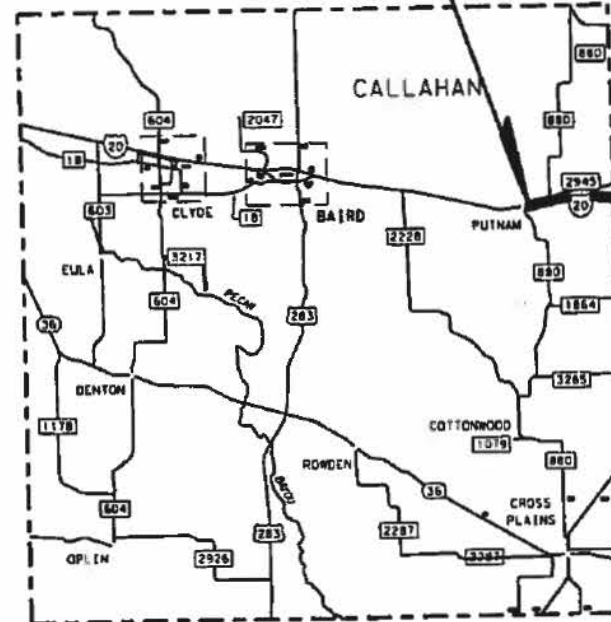
NET LENGTH OF ROADWAY = 25,354.00 FT = 4.802 MI  
NET LENGTH OF BRIDGE = 0.00 FT = 0.000 MI  
NET LENGTH OF PROJECT = 25,354.00 FT = 4.802 MI

IH 20  
CALLAHAN COUNTY

LIMITS: FROM LOCUST ST TO EASTLAND COUNTY LINE  
FOR THE CONSTRUCTION OF: SAFETY WORK  
CONSISTING OF: INSTALL MEDIAN BARRIER

BEGIN CSJ: 0007-02-053  
RM 319 • 0.213 MI  
STA 625+35

END CSJ: 0007-02-053  
RM 323 • 0.937 MI  
STA 878+89



EXCEPTIONS: N/A  
EQUATIONS: N/A  
RAILROAD CROSSINGS: N/A

FINAL PLANS

LETTING DATE: 08/08/2017  
DATE CONTRACTOR BEGAN WORK: 02/05/2018  
DATE WORK WAS COMPLETED: 06/22/2018  
DATE WORK WAS ACCEPTED: 07/30/2018  
FINAL CONTRACT COST: \$ 1,644,893.16  
CONTRACTOR: MASSANA CONSTRUCTION, INC.

CERTIFICATION FOR FINAL PLANS

THIS PROJECT WAS BUILT ACCORDING TO THE PLANS AND SPECIFICATIONS. THESE FINAL PLANS REFLECT THE WORK DONE AND THE QUANTITIES SHOWN THEREON AND ON THE FINAL ESTIMATE ARE FINAL QUANTITIES.

AREA ENGINEER DATE



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SUBMITTED FOR LETTING: 06/15/2017  
RECOMMENDED FOR LETTING: 6/20/17  
SCOTT E. DARROW, P.E.  
CENTRAL DESIGN ENGINEER  
MICHAEL A. HAITHCOCK, P.E.  
DIRECTOR OF T P & D  
RECOMMENDED FOR LETTING: 6/20/17  
APPROVED FOR LETTING: 6/20/17  
BILL DEZERN  
TxDOT PROJECT MANAGER  
STAN M. SWIATEK, P.E.  
DISTRICT ENGINEER

PENNAME: ABL User (p) Project: 1702(599)HES, ETC. - Designation: Serial - General: 001 TITLE SHEET.dwg  
 DATE: 6/15/2017  
 FILE: penname\1702(599)HES, ETC. - Designation: Serial - General: 001 TITLE SHEET.dwg

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 1, 2012).

# INDEX OF SHEETS

FILE: p:\txdot\projectwiseonline.com\txdot2\Documents\08 - ABL\Design Projects\000506119\4 - Design\Pion Set\1. General\002 INDEX OF SHEETS.dgn  
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<b>GENERAL</b>	
1	TITLE SHEET
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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THIS SHEET WITH A "■" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

[Redacted Name] P.E. 08/07/2017  
 (NAME) DATE

## INDEX OF SHEETS



⚠ REPLACED 08/07/2017 GM

NO SCALE		SHEET 1 OF 1		
FHWA DIVISION	PROJECT NO.	HIGHWAY NO.		
6	SEE TITLE SHEET	IH 20		
STATE	COUNTY		SHEET NO.	
TEXAS	HOWARD, ETC.		2	
DISTRICT	CONTROL	SECTION		JOB
ABL	0005	06		119, ETC.

## CHANGE ORDER SUMMARY SHEET

PROJECT: STP 1702(599)HES CSJ: 0005-06-119 COUNTY: HOWARD HWY: IH 20

**CHANGE ORDER #1**

		ORIGINAL QUANTITY	QUANTITY THIS CO	NEW QUANTITY
0089 0164-6027	CELL FBR MLCH SEED (PERM)(URBAN)(CLAY)	0.00	82093.00	82093.00
0090 0164-6035-000	DRILL SEEDING (PERM)(RURAL)(CLAY)	82093.00	-82093.00	0.00

The contractor has requestid to change the drill seeding item to CELL FBR MLCH for his convenience. The Area Office has approved this switch after consideration of project completion and cost. The changes will have to adverse effect of the project and will be at no additional cost to TxDOT.

**CHANGE ORDER #2**

		ORIGINAL QUANTITY	QUANTITY THIS CO	NEW QUANTITY
0185 9608-6001	UNIQUE CHANGE ORDER ITEM 1	0.00	1.00	1.00

The damaged cable barrier in IH 20 median extending from the petroleum pland to Midway Road was repaired by the contractor from 06/22/18 - 06/27/18. The contractor submitted an invoice for the work performed calculated from labor, equipment and materials. The work is compensated through this Change Order.





Project Number: See Title Sheet  
Control: 0005-06-119, ETC.  
County: HOWARD, ETC.  
Highway: IH 20

**ABILENE DISTRICT GENERAL NOTES  
2014 SPECIFICATIONS**

**General**

**Environmental**

**Endangered and Protected Species**

1. **Migratory Bird Treaty Act (MBTA)** - Establishment of a Federal prohibition, unless permitted by regulations, to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." (16 U.S.C. 703)

**Best Management Practices**

1. The species above could be present on the job site. The contractor is advised to avoid harming the species if encountered. If you have any questions or concerns contact TxDOT ABL Project Manager.
2. **Bird BMPs**
  - a. Not disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season;
  - b. Avoiding the removal of unoccupied, inactive nests, as practicable;
  - c. Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
  - d. Not collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.
3. **Water Quality BMPs** - added to avoid the potential to negatively affect Cherry Creek, Lake Colorado City, or the Colorado River.
  - a. Once construction is complete and disturbed areas have been revegetated, remove silt fence and accumulated sediment to reduce wildlife barriers and hazards.
  - b. Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, approaches, or bridge decks.
  - c. Rubbish found near bridges on TxDOT ROW should be removed and disposed of properly to minimize the risk of pollution. Rubbish does not include brush piles or snags.
4. A form of mitigation will be added to include the removal of **salt cedar** (*Tamarix sp.*) from within the project area.
  - a. Colonization by invasive plants should be actively prevented on disturbed sites in terrestrial habitats. Vegetation management should include removing invasive species as soon as practical while allowing the existing native plants to revegetate the disturbed area.

4/3/17

General Notes

Sheet A

Project Number: See Title Sheet  
Control: 0005-06-119, ETC.  
County: HOWARD, ETC.  
Highway: IH 20

Questions prior to letting may be submitted by e-mail to the names indicated below and will be answered by e-mail:

Matt Evans, P.E.:

Michael Merrick, P.E.:

A file containing these questions and answers will be available for review at the Area Engineer's office.

Failure to make necessary corrections to SW3P or traffic control items based on SW3P or barricade inspections will be cause for withholding the monthly estimate until such corrections have been made.

**Item 5, "Control of Work"**

All known utilities are identified in the plans, including the crossing of power lines. Use this information to identify potential issues with power poles and power lines prior to bidding. Make necessary arrangements with utility owners regarding temporary protections such as bracing power poles, and de-energizing power lines. The Department will not reimburse the cost of such temporary protections to the Contractor, unless the Engineer determines that inadequate information was available at the time the project was bid. **"Call Before You Dig" "Call 811"**

"Provide notification to the District Signal Shop by telephone at 325-676-6984 and by email at [Jesse.Gonzales@txdot.gov](mailto:Jesse.Gonzales@txdot.gov) when planning drilling or excavation work in areas where existing TxDOT underground utilities exist." Visual evidence of TxDOT underground utilities in the area include illumination poles, ground boxes, flashing beacons, traffic signals, etc. This notification must be provided 48 hours in advance of performing the work, but no earlier than 72 hours before the work will commence. Drilled shaft locations or excavation areas must be staked prior to the notification so that the underground utilities can be located in relationship to the proposed work. Preserve and document the marked utility locations to prevent unnecessary secondary notifications. Secondary notifications that are due to failure to preserve and document previously marked utilities will be responded to at a cost of \$500 each and will be deducted from the next payment. Notify the Engineer of conflicts between proposed work and underground utilities. Repair damaged TxDOT utilities in accordance with current electrical regulations, or as directed by the Engineer when damage is due to failure to provide notification to the District Signal Shop or failure to notify the Engineer of conflicts between proposed work and underground utilities. Repair work for these reasons will be performed at the Contractor's expense unless documentation is available to demonstrate otherwise as determined by the Engineer.

**Item 7, "Legal Relations and Responsibilities"**

Do not initiate activities in a project specific location (PSL), associated with a U.S. Army Corps of Engineers (USACE) permit area that has not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are

4/3/17

General Notes

Sheet B

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SHEET 1 OF 4			
CONT	SECT	JOB	HIGHWAY
0005	06	119, ETC.	IH 20
DIST	COUNTY	SHEET NO.	
ABL	HOWARD, ETC.	6	



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**Project Number:** See Title Sheet  
**Control:** 0005-06-119, ETC.  
**County:** HOWARD, ETC.  
**Highway:** IH 20

delivered to or from the PSL. The permit area includes all waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Be responsible for any and all consultations with the USACE regarding activities, including project specific locations (PSLs) that have not been previously evaluated by the USACE. Provide the department with a copy of all consultation(s) or approval(s) from the USACE prior to initiating activities.

The contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determination(s) that their activities do not affect a USACE permit area. Maintain copies of their determination(s) for review by the department or any regulatory agency. Document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

**(1) Restricted Use of Materials for the Previously Evaluated Permit Areas.**

Document both the project specific location (PSL) and their authorization. Maintain copies for review by the department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:

- a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area;
- b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
- c. Unsuitable excavation or excess excavation ["Waste"] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.

**(2) Contractor Materials from Areas Other than Previously Evaluated Areas.**

Provide the department with a copy of all USACE coordination or approval(s) prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:

- a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
- b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is 5.35 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ

4/3/17

General Notes

Sheet C

**Project Number:** See Title Sheet  
**Control:** 0005-06-119, ETC.  
**County:** HOWARD, ETC.  
**Highway:** IH 20

for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the government that operates a separate storm sewer system.

Provide one SW3P Notification Board for this project. Notification Boards are to be placed at locations within the right-of-way but outside the clear zone as directed by the Engineer. Consider this work to be subsidiary to the various bid items of the contract.

**Item 8 "Prosecution and Progress"**

Each contract awarded by the Department stands on its own and as such, is separate from other contracts. A Contractor awarded multiple contracts must be capable and sufficiently staffed to concurrently process and/or execute all contracts at the same time.

The Contractor is hereby authorized to begin work prior to the expiration of the number of calendar days provided in the Special Provision to Item 8, Article 8.1. Notify the Engineer in writing of the date to begin work. Time charges will commence when work begins or on the expiration of the number of calendar days provided, whichever occurs first.

Maintain and submit a project schedule monthly. Submit to the Engineer the updated project schedule no later than the 25th calendar day of the following month.

Coordinate and update the work schedule with the project inspector daily. Give a minimum of 24 hours of notice to project inspector if work requiring inspection or testing is to be performed. Failure to do so may cause that work to be delayed or postponed if TxDOT personnel are not available. Work performed without suitable inspection, as determined by the Engineer, may be ordered removed and replaced at Contractor's expense.

Apply emulsion at a 50/50 of water to emulsion; emulsion rate = 0.15 gal/sy residual emulsion.

**Item 160, "Topsoil"**

Salvage existing topsoil in windrows along the limits of the disturbed area, or as directed. In areas where topsoil cannot be salvaged or is incorporated into the earthwork, secure additional topsoil from approved sources outside the right-of-way.

**Item 164, "Seed for Erosion Control"**

Quantities shown are approximate; limits of the temporary and permanent seeding will be determined during construction.

**Item 421, "Hydraulic Cement Concrete"**

Use a cement meeting the requirements of Ty II when Mix Design Option 7 is selected for cast in place concrete.

4/3/17

General Notes

Sheet D

SHEET 2 OF 4			
CONT	SECT	JOB	HIGHWAY
0005	06	119, ETC.	IH 20
DIST	COUNTY	SHEET NO.	
ABL	HOWARD, ETC.	7	

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**Project Number:** See Title Sheet  
**Control:** 0005-06-119, ETC.  
**County:** HOWARD, ETC.  
**Highway:** IH 20

Class C fly ash and Ty I cement will not be allowed for any mix unless approved by the Engineer.

As a minimum, curing facility includes concrete curing tank, heater and a concrete recording thermometer. Provide a recorder with the capability to chart temperatures for 24 hours, 7 days and 30 day period of time.

**Item 432, "Riprap"**

Provide tooled contraction joints at a maximum spacing of 25 feet and 1/2" fiber board every 150 feet when constructing cable median barrier mow strips. The depth for tooled joints shall be sufficient to ensure cracking at the joints. The depth for fiber board joints shall be the full depth of the mow strip.

Provide fiber reinforced or conventionally reinforced concrete for cable median barrier concrete mow strip in Callahan County.

Provide conventionally reinforced concrete for formed cable median barrier concrete mow strip in Howard County.

Meet the following requirements when using fiber reinforcement:

- Use Class A Concrete.
- If slip forming, use an approved method that ensures adequate concrete consolidation. Sprinkle and consolidate the subgrade before the concrete is placed. Finish the surface with a wood float or broom finish as approved. Immediately after finishing operation, cure the riprap according to Item 420, "Concrete Structures".
- Provide fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in riprap concrete.

When using conventional reinforcement, meet all requirements in accordance with Article 432.3.1. Concrete Riprap with exception that:

- Class A Concrete is required.
- No. 4 reinforcing bars are required.

**Item 502, "Barricades, Signs and Traffic Handling"**

Provide the Engineer with written notification seven (7) days in advance of major traffic changes. A major traffic change is defined as the temporary (greater than one day) or permanent relocation of traffic lanes typically in an urban setting. The notice will, at a minimum, include the expected date, time and scope of the traffic change. The Department will utilize the information provided to inform the traveling public of the changes. Failure to provide advance notice, or to provide accurate information, will result in delaying the work until such time that the public has been notified.

4/3/17

General Notes

Sheet E

**Project Number:** See Title Sheet  
**Control:** 0005-06-119, ETC.  
**County:** HOWARD, ETC.  
**Highway:** IH 20

Additional signs, barricades and traffic handling may be necessary to complete the work shown herein and will be provided by the contractor as required and will be considered subsidiary to this item.

Provide separate attenuators for each work area within a common lane closure as approved or directed by the Engineer.

Provide to the Engineer a letter certifying that all truck-mounted attenuators (TMA) used on the project have proven to be crashworthy using the criteria outlined in the *National Cooperative Highway Research Program (NCHRP) Report 350*. The supporting vehicle shall have a gross (i.e., ballasted) vehicular weight of 20000 ± 1000 pounds.

In sections where traffic is restricted to one lane, two-way traffic, flaggers stationed at each end of that section will control operations with two-way communication devices.

Relocate existing roadside signs to temporary supports as approved by the engineer.

All safety appurtenances such as signs, delineators, object markers and route markers will be in place prior to opening each phase of the construction to traffic, unless otherwise directed.

During construction on all underpass structures erect and maintain accurate clearance signs in accordance with the "Texas Manual on Uniform Traffic Control Device for Streets and Highways". The mounting method for the temporary clearance sign is subject to approval of the Engineer. Temporary clearance signs are considered subsidiary to the various bid items. Movement of construction equipment and haul trucks will be prohibited from crossing the median unless specifically authorized by the Engineer. Ingress and egress to main lanes will be at entrance and exit ramps.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Temporary work zone rumble strips, in accordance with WZ(RS)-16, are required for this project. Install and maintain temporary work zone rumble strips in accordance with WZ(RS)-16 utilizing traffic control in accordance with applicable traffic control standards, or as approved by the Engineer. This work will not be paid for directly, but will be considered subsidiary to the various bid items of the contract.

The Contractor's person responsible for TCP compliance is available by local telephone and has a response time within 45 minutes.

4/3/17

General Notes

Sheet F

SHEET 3 OF 4			
CONT	SECT	JOB	HIGHWAY
0005	06	119, ETC.	IH 20
DIST	COUNTY		SHEET NO.
ABL	HOWARD, ETC.		8

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**Project Number:** See Title Sheet  
**Control:** 0005-06-119, ETC.  
**County:** HOWARD, ETC.  
**Highway:** IH 20

Work will be allowed on both sides of the median at the same time.

Equip all work vehicles within 30 feet of the traveled way with a functioning amber strobe light or rotating beacon visible from all directions.

Repair barricades within the timeline shown on the barricade inspection report. Failure to comply will cease all work until barricades are repaired to the satisfaction of the Department. Replace all damaged traffic control devices immediately. Remove any damaged traffic control devices from the project within 24 hours.

**Item 530, "Intersection, Driveways, and Turnouts"**

For Emergency Crossovers use RAP (Recycled Asphalt Pavement) provided by TxDOT from Stockpile located at northwest intersection of SL322 and SH36 in Abilene, Texas. Stockpile is located approximately 111 miles to east end of project in Howard County and approximately 33 miles to west end of project in Callahan County.

**Item 644, "Small Roadside Sign Supports and Assemblies"**

Use the latest edition of the "Standard Highway Sign Designs for Texas" for Sign types for which design details are not shown on the plans.

All triangle slip base small sign mounts installed under this item shall utilize clamp type bases.

**Item 658, "Delineator and Object Marker Assemblies"**

OM3 Sheeting shall be installed on cable barrier terminal section posts subsidiary to item "543".

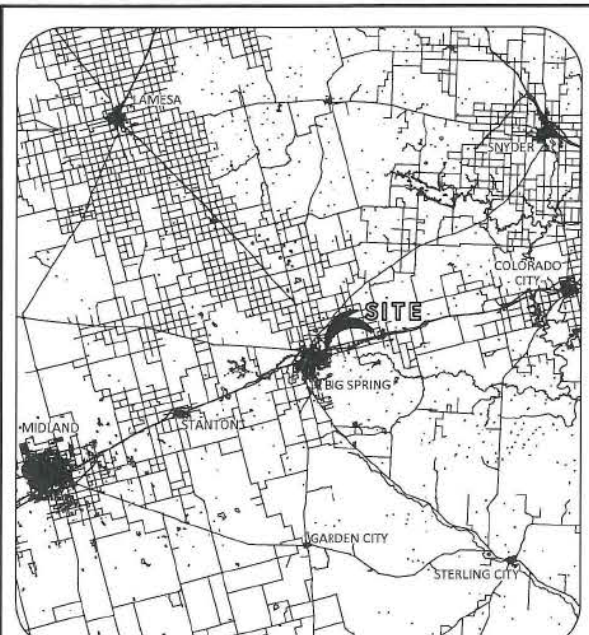
Bi-directional yellow reflective sheeting spaced at 100 feet maximum shall be installed on cable barrier system posts. This item shall be subsidiary to item "543".

4/3/17

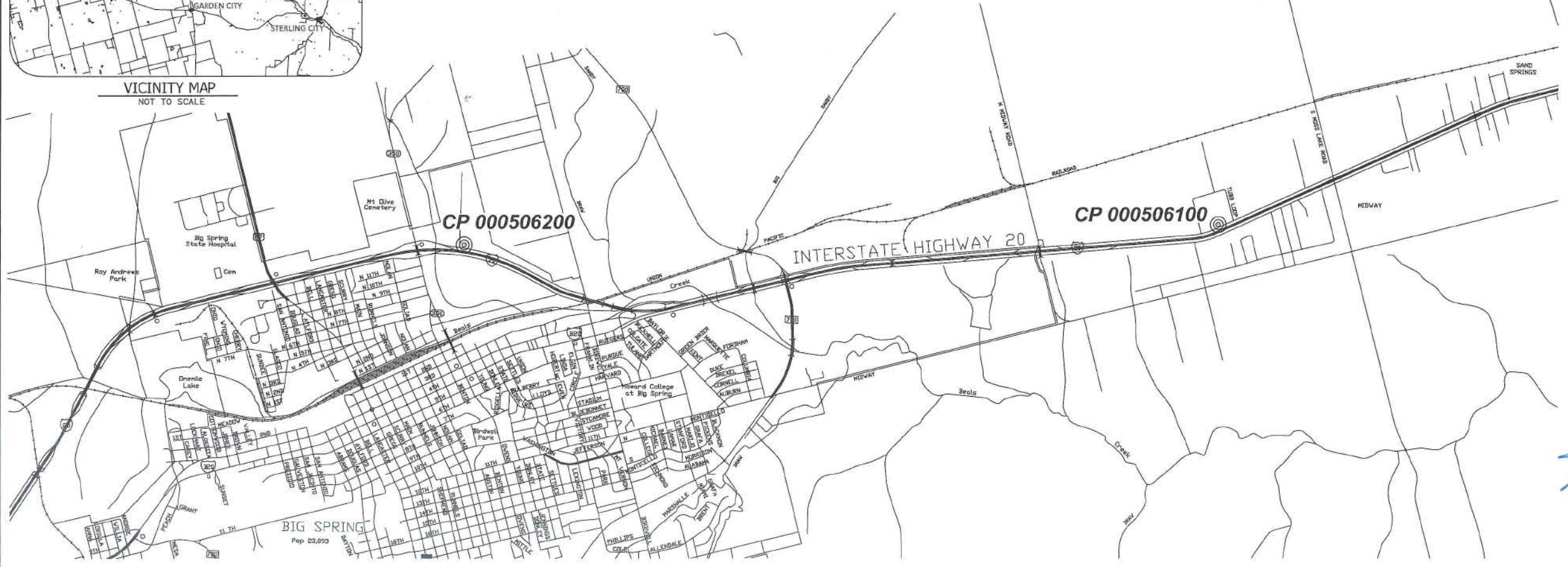
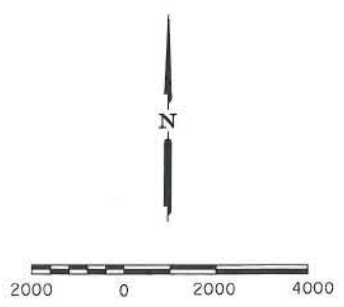
General Notes

Sheet G

SHEET 4 OF 4			
CONT	SECT	JOB	HIGHWAY
0005	06	119, ETC.	IH 20
DIST	COUNTY		SHEET NO.
ABL	HOWARD, ETC.		9



VICINITY MAP  
NOT TO SCALE



NOTES:  
 1.) PRIMARY CONTROL (HORIZONTAL AND VERTICAL) WAS ESTABLISHED USING GPS METHODS CONFORMING TO THE "TXDOT SURVEY MANUAL 2016-1".  
 2.) BEARINGS ARE BASED ON GRID NORTH, TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE 4202, NAD 83 (2011); EPOCH 2010.  
 3.) COORDINATES AND DISTANCES SHOWN ARE BASED ON A PROJECT COORDINATE SYSTEM ESTABLISHED BY APPLYING A SURFACE ADJUSTMENT FACTOR OF 1.00014 TO STATE PLANE GRID COORDINATES NAD 83 (2011); EPOCH 2010, TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE 4202, U.S. SURVEY FEET.  
 PROJECT COORDINATES = GRID COORDINATES x 1.00014  
 4.) THE VERTICAL VALUES ARE BASED ON NAVD88.

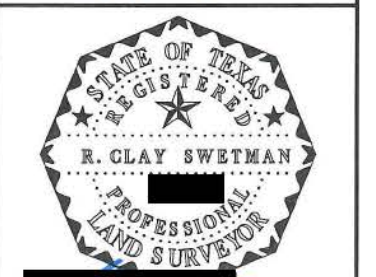
**LEGEND**

- ▲ PRIMARY CONTROL POINT
- POLE
- ⊙ SIGN

THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

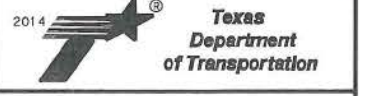


06/15/2017



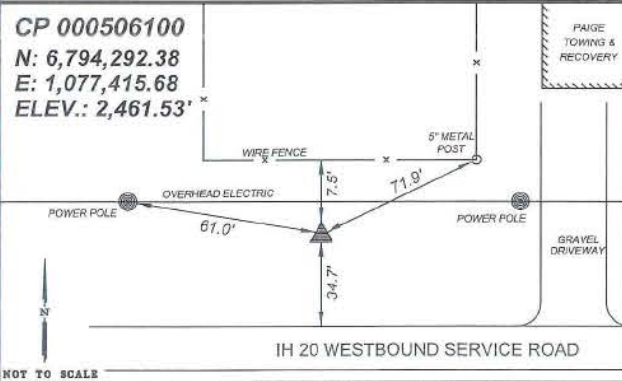
R. CLAY SWETMAN  
 REGISTERED PROFESSIONAL LAND SURVEYOR NO. 5397  
 DATE 6/23/2017

**CDS muery**  
 ENGINEERS • SURVEYORS  
 3411 MAGIC DRIVE - SAN ANTONIO - TEXAS - (210)381-1111  
 TBPE NO. F-1733 - TBPLS NO. 100495-00

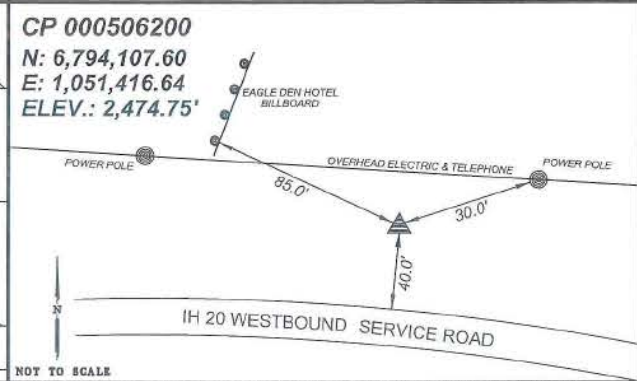


CSJ 0005-06-119  
 IH 20  
 PRIMARY CONTROL

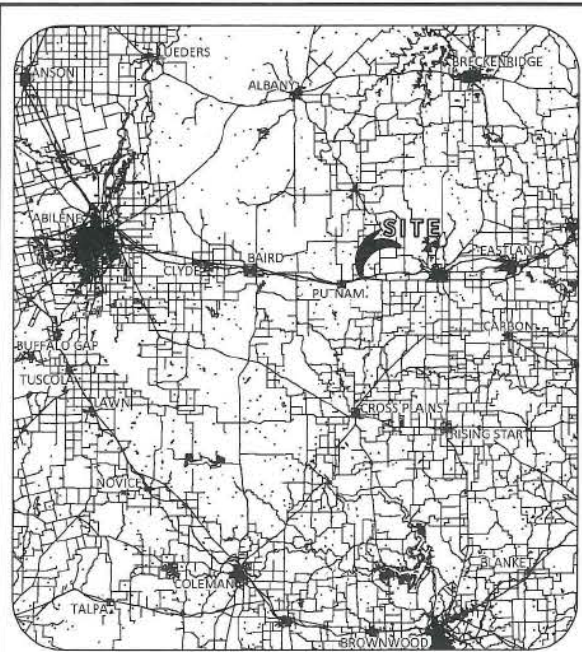
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		1
STATE	DIST.	COUNTY
TEXAS	ABL	HOWARD
CONT.	SECT.	JOB
0005	06	119
		HIGHWAY NO.
		IH 20



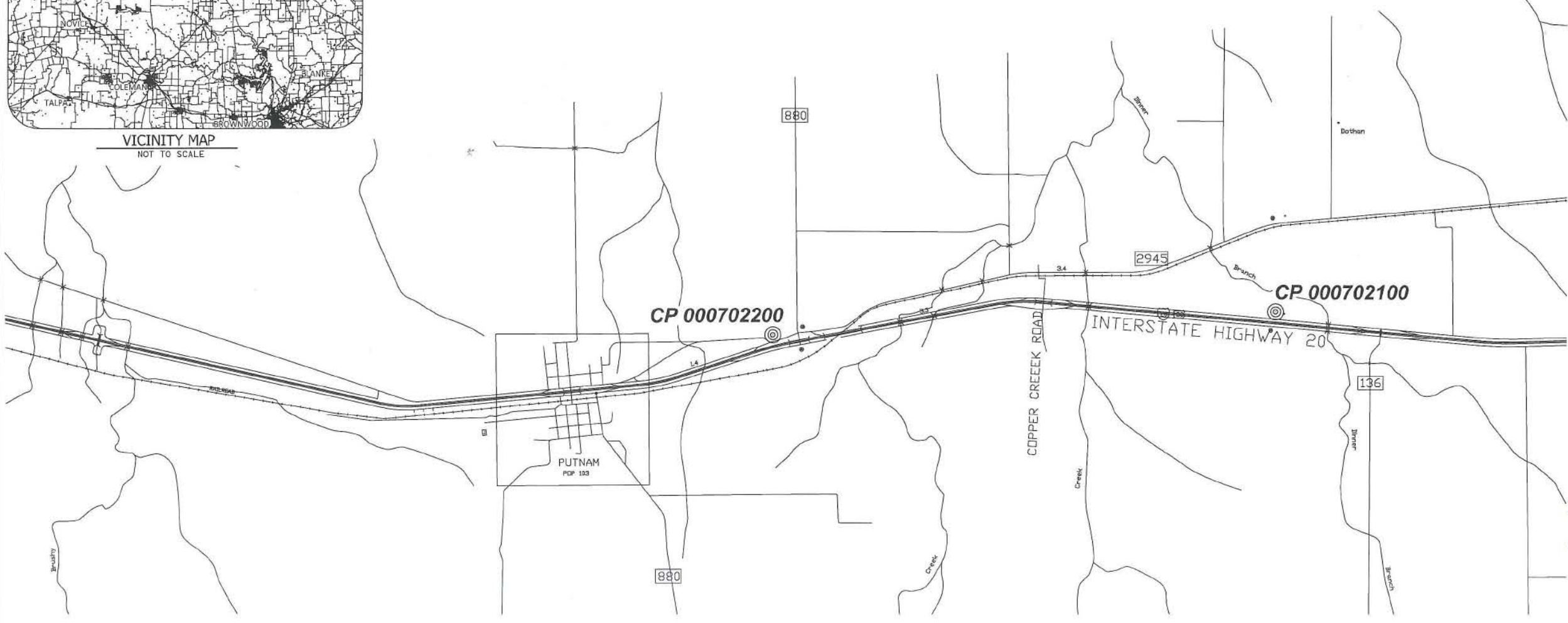
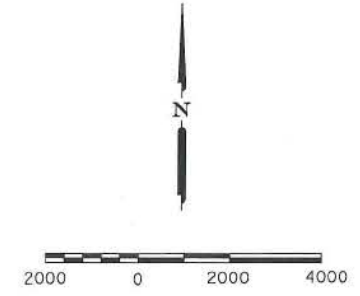
NOT TO SCALE  
 CONTROL POINT 000506100 IS AN ALUMINUM DISC IN CONCRETE LOCATED IN HOWARD COUNTY, TX ON THE NORTH SIDE OF THE WESTBOUND SERVICE ROAD OF IH 20, APPROXIMATELY 0.9 OF A MILE WEST OF MOSS LAKE ROAD. THE POINT IS 34.7 FEET NORTH OF THE EDGE OF PAVEMENT, 61.0 FEET EAST OF A POWER POLE W/ TRANSFORMER, 7.5 FEET SOUTH OF A FENCE, AND 71.9 FEET SOUTHWEST OF A 5' METAL FENCE CORNER POST.



NOT TO SCALE  
 CONTROL POINT 000506200 IS AN ALUMINUM DISC IN CONCRETE LOCATED IN HOWARD COUNTY, TX ON THE NORTH SIDE OF THE WESTBOUND SERVICE ROAD OF IH 20, APPROXIMATELY 0.4 OF A MILE EAST OF FM 350. THE POINT IS 40.0 FEET NORTH OF THE EDGE OF PAVEMENT, 30.0 FEET SOUTHWEST OF A POWER POLE, AND 85.0 FEET SOUTHEAST OF THE SOUTHERNMOST LEG OF A BILLBOARD MARKED "EAGLE DEN HOTEL".



VICINITY MAP  
NOT TO SCALE



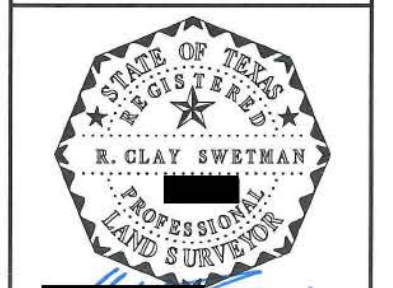
NOTES:  
 1.) PRIMARY CONTROL (HORIZONTAL AND VERTICAL) WAS ESTABLISHED USING GPS METHODS CONFORMING TO THE "TXDOT SURVEY MANUAL 2016-1".  
 2.) BEARINGS ARE BASED ON GRID NORTH, TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE 4202, NAD 83 (2011): EPOCH 2010.  
 3.) COORDINATES AND DISTANCES SHOWN ARE BASED ON A PROJECT COORDINATE SYSTEM ESTABLISHED BY APPLYING A SURFACE ADJUSTMENT FACTOR OF 1.00012 TO STATE PLANE GRID COORDINATES NAD 83 (2011): EPOCH 2010, TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE 4202, U.S. SURVEY FEET.  
 PROJECT COORDINATES = GRID COORDINATES x 1.00012  
 4.) THE VERTICAL VALUES ARE BASED ON NAVD88.

**LEGEND**  
 ▲ PRIMARY CONTROL POINT  
 ● SIGN

THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E



[REDACTED]  
 06/15/2017

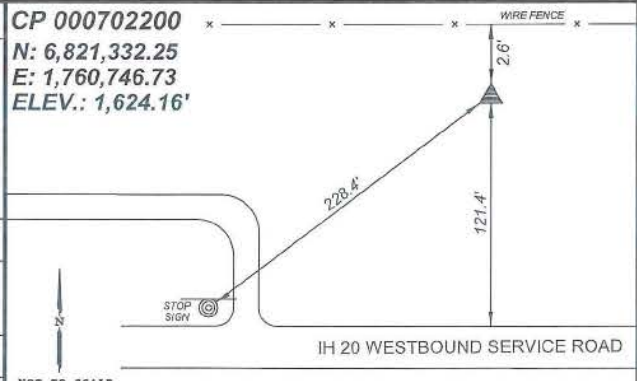
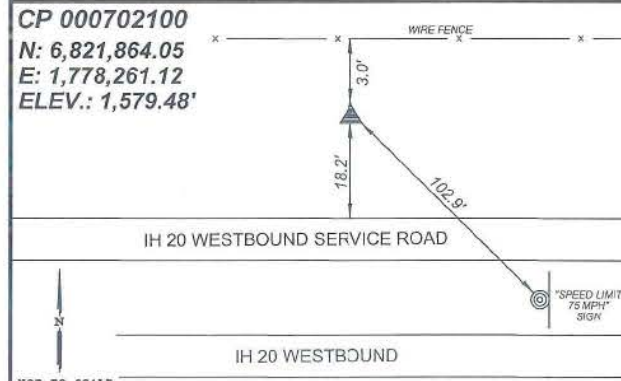


[REDACTED] 3/23/2017  
 R. CLAY SWETMAN  
 REGISTERED PROFESSIONAL  
 LAND SURVEYOR NO. 5397



CSJ 0007-02-053  
 IH 20  
 PRIMARY CONTROL

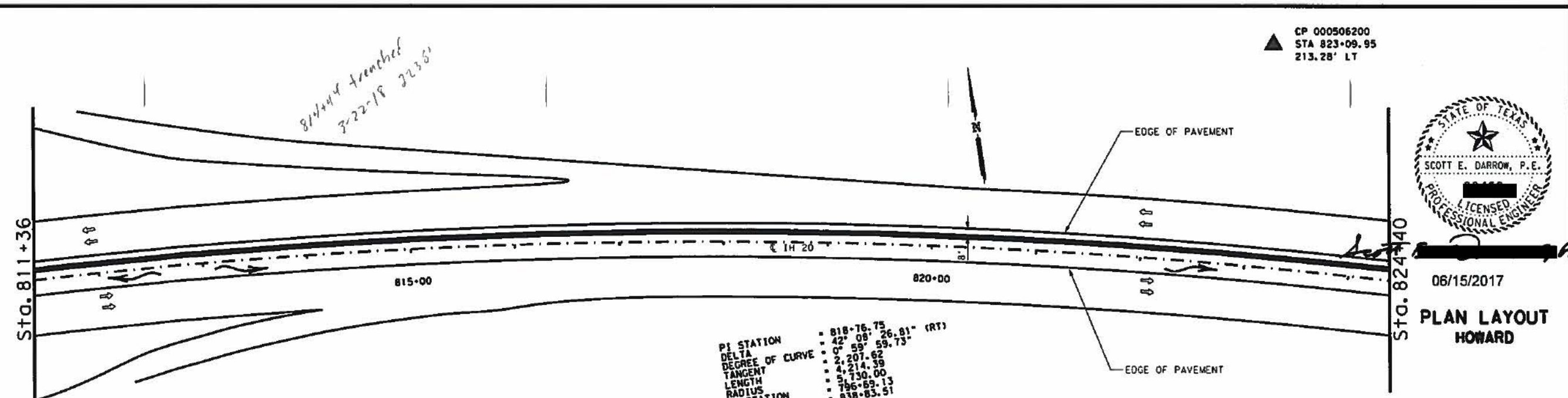
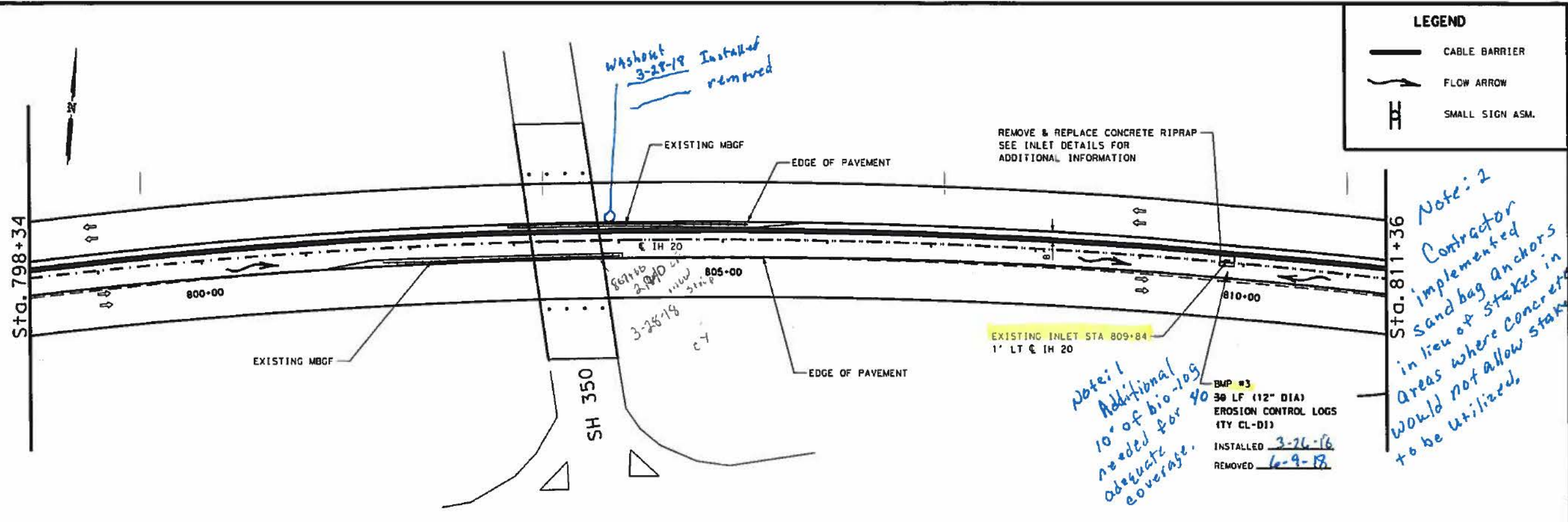
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.	
		1	
STATE	DIST.	COUNTY	
TEXAS	ABL	CALLAHAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0007	02	053	IH 20



CONTROL POINT 000702100 IS AN ALUMINUM DISC IN CONCRETE LOCATED IN CALLAHAN COUNTY, TX ON THE NORTH SIDE OF THE WESTBOUND SERVICE ROAD OF IH 20, APPROXIMATELY 0.7 OF A MILE WEST OF SCANTON ROAD. THE POINT IS 18.2 FEET NORTH OF THE EDGE OF PAVEMENT, 3.0 FEET SOUTH OF A WIRE FENCE, AND 102.9 FEET NORTHWEST OF A SPEED LIMIT SIGN "75 MPH".

CONTROL POINT 000702200 IS AN ALUMINUM DISC IN CONCRETE LOCATED IN CALLAHAN COUNTY, TX ON THE NORTH SIDE OF THE WESTBOUND SERVICE ROAD OF IH 20, APPROXIMATELY 0.2 OF A MILE WEST OF FM 880. THE POINT IS 121.4 FEET NORTH OF THE EDGE OF PAVEMENT, 2.6 FEET SOUTH OF A WIRE FENCE, AND 228.4 FEET NORTHEAST OF A STOP SIGN.

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**LEGEND**

- CABLE BARRIER
- FLOW ARROW
- SMALL SIGN ASM.

*Note: 2*  
 Contractor implemented sand bag anchors in lieu of stakes in areas where concrete would not allow stakes to be utilized.

*Note: 1*  
 Additional 10' of bio-logs needed for adequate coverage.

BMP #3  
 30 LF (12" DIA) EROSION CONTROL LOGS (TY CL-D1)  
 INSTALLED 3-26-16  
 REMOVED 6-9-18

*8/4/18 4' trench  
 3-22-18 2235'*

CP 000506200  
 STA 823+09.95  
 213.28' LT

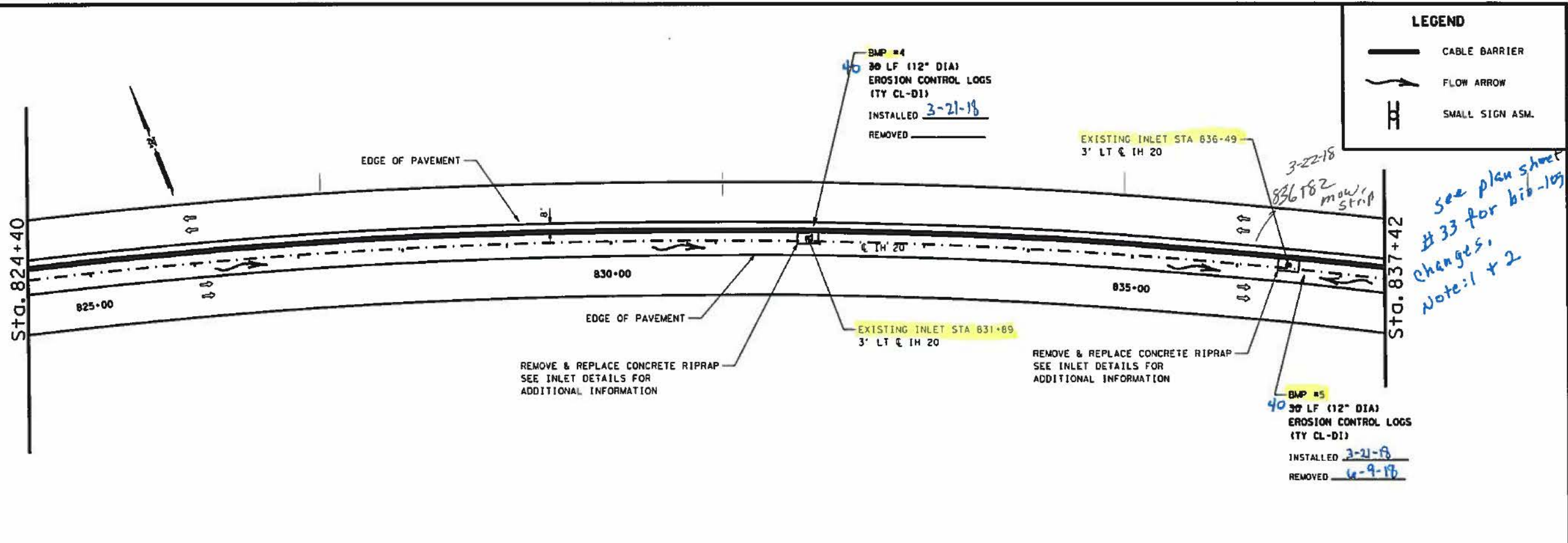


06/15/2017  
**PLAN LAYOUT HOWARD**

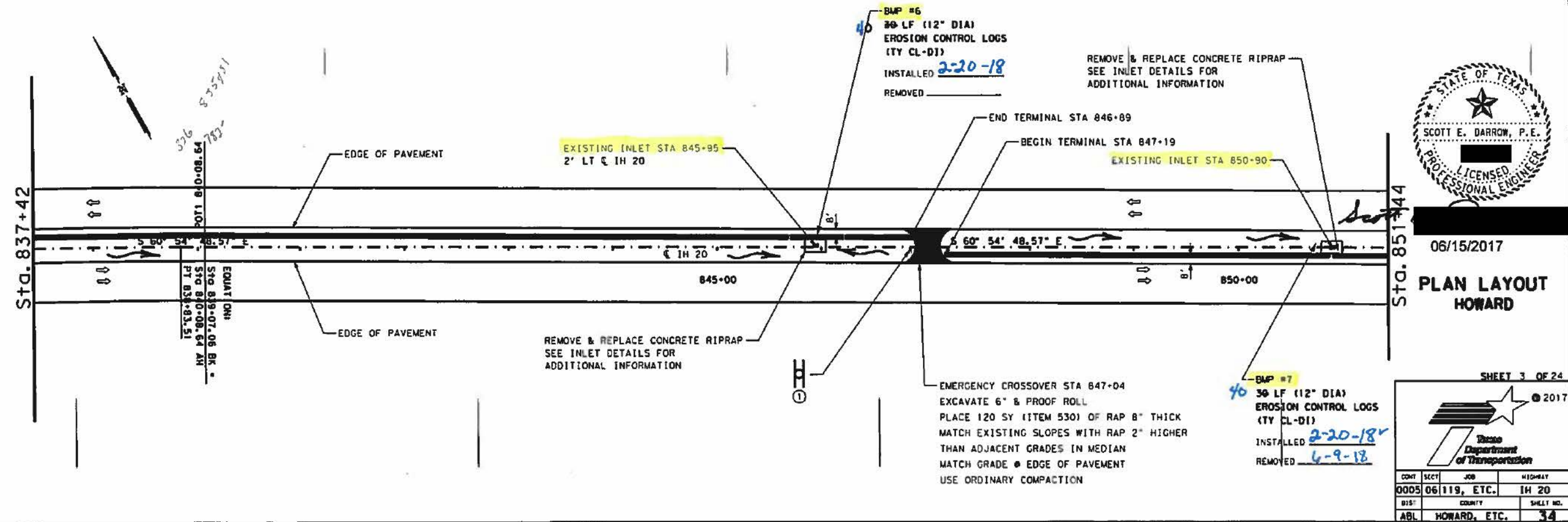
SHEET 2 OF 24  
 © 2017  
  

CONTRACT	SECTION	JOB	HIGHWAY
0005	06119, ETC.		IH 20
DIST.	COUNTY	SHEET NO.	
ABL	HOWARD, ETC.	33	

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*See plan sheet #33 for bib-109 changes. Note: 1 + 2*



06/15/2017  
**PLAN LAYOUT HOWARD**

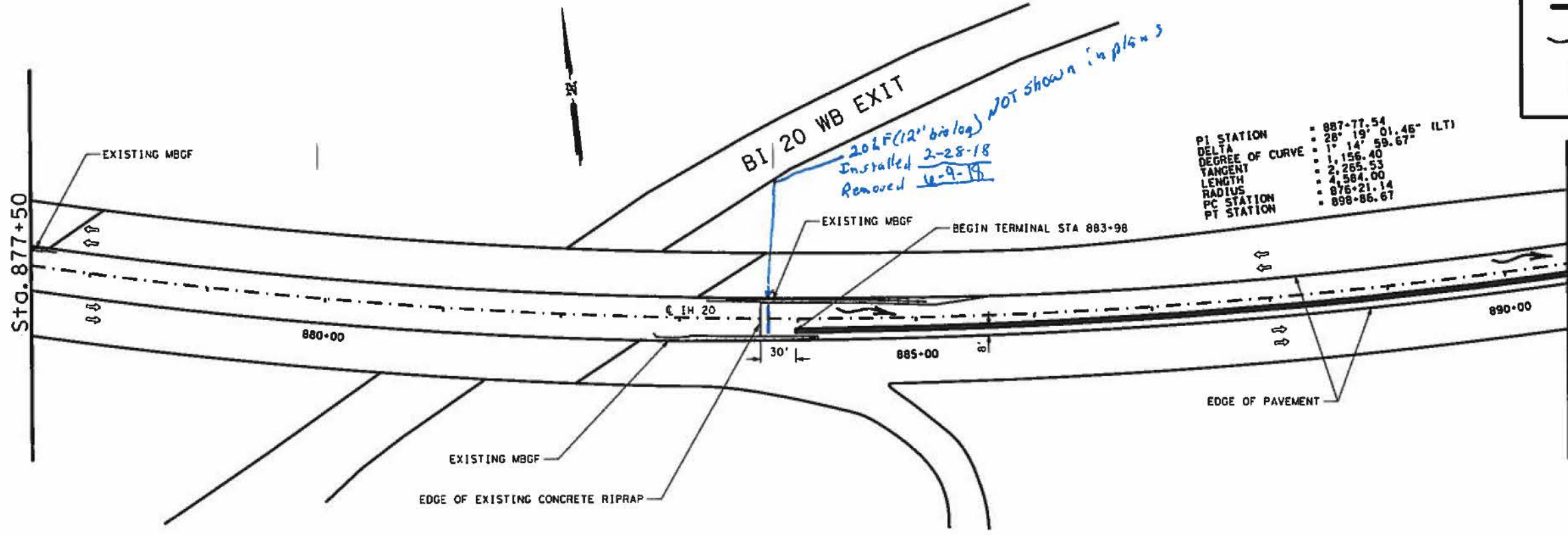
SHEET 3 OF 24

CONT	SECT	JOB	HIGHWAY
0005	06	119, ETC.	IH 20
BIS:	COUNTY	SHEET NO.	
ABL	HOWARD, ETC.	34	





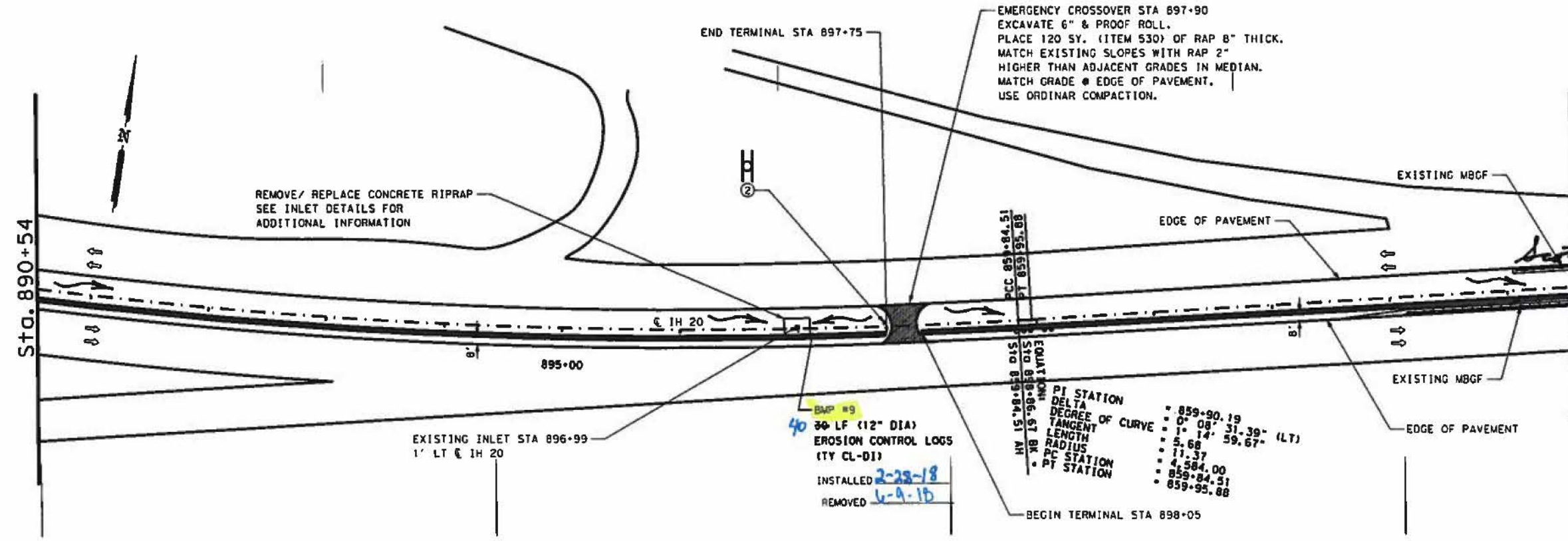
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**LEGEND**

- CABLE BARRIER
- FLOW ARROW
- SMALL SIGN ASM.

PI STATION = 887+77.54  
 DELTA = 28° 19' 01.46" (LT)  
 DEGREE OF CURVE = 1° 14' 59.67"  
 TANGENT = 1156.40  
 LENGTH = 2265.53  
 RADIUS = 4584.00  
 PC STATION = 876+21.14  
 PT STATION = 898+86.67



EMERGENCY CROSSOVER STA 897+90  
 EXCAVATE 6" & PROOF ROLL.  
 PLACE 120 SY. (ITEM 530) OF RAP 8" THICK.  
 MATCH EXISTING SLOPES WITH RAP 2"  
 HIGHER THAN ADJACENT GRADES IN MEDIAN.  
 MATCH GRADE @ EDGE OF PAVEMENT.  
 USE ORDINARY COMPACTION.

PI STATION = 859+90.19  
 DELTA = 0° 08' 31.39" (LT)  
 DEGREE OF CURVE = 1° 14' 59.67"  
 TANGENT = 5.68  
 LENGTH = 11.37  
 RADIUS = 4584.00  
 PC STATION = 859+84.51  
 PT STATION = 859+95.88



06/15/2017  
**PLAN LAYOUT**  
**HOWARD**

SHEET 5 OF 24

CONF	SECT	JOB	HIGHWAY
0005	06119, ETC.		IH 20
DIST	COUNTY	SHEET NO.	
ABL	HOWARD, ETC.	36	











