



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N925 CM
Indianapolis, Indiana 46204

PHONE: (317) 232-5502
FAX: (317) 232-5551

Eric Holcomb, Governor
Joe McGuinness, Commissioner

APPROVED MINUTES

March 15, 2018 Standards Committee Meeting

April 27, 2018

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the March 15, 2018 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Leckie at 09:05 a.m. on March 15, 2018 in the N955 Bay Window Conference Room. The meeting was adjourned at 11:25 a.m.

The following committee members were in attendance:

John Leckie, Chairman, Construction and Materials Management
Michael Beuchel, Contract Administration Division
Dave Boruff, Traffic Engineering Division
Elizabeth Phillips*, Bridges Division
Greg Pankow, Construction Management Division
Kumar Dave, Pavement Engineering, Highway Design
Matthew Beeson, Office of Materials Management
Michael Koch, District Construction, Fort Wayne District
Elena Veksler, Highway Design and Technical Support
Rob Goldner, Construction Technical Support

* Proxy for Mark Orton

Also in attendance were the following:

Andrew Pangallo, INDOT
Joe Bruno, INDOT
Kirk Frederick, INDOT
Kirsten Pauley, APAI
Michael Nelson, INDOT
Shawn Slaymon, INDOT
Steve Duncan, INDOT
Ting Nahrwold, INDOT
Tom Duncan, FHWA

Kurt Pelz, INDOT
Dan Osborn, ICI
Lana Podorvanova, INDOT
Jim Reilman, INDOT
Naveed Burki, INDOT
Michael Jorns, INDOT
Jay Church, INDOT
Katherine Smutzer, INDOT
Scott Trammell, INDOT

The following items were listed for consideration:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. *Approval of the Minutes from the January 18, 2018 meeting.*

DISCUSSION: Mr. Leckie requested a motion to approve the minutes from the January 18, 2018 meeting.

Motion: Mr. Pankow

Second: Mr. Koch

Ayes: 9

Nays: 0

ACTION:

PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

(No items were listed)

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
PROPOSED ITEMS

OLD BUSINESS

Item No. 4 171115 (2018 SS) Mr. Orton pg 5

Recurring Special Provision:

620-R-483

SOUND BARRIER SYSTEMS

ACTION:

WITHDRAWN

NEW BUSINESS

Item No. 1 (2018 SS) Mr. Pankow pg 30

108.09

Failure to Complete On Time

ACTION:

PASSED AS SUBMITTED

Item No. 2 (2018 SS) Mr. Koch pg 35

108.08

Determination and Extension of
Contract Time

108.09

Failure to Complete On Time

ACTION:

PASSED AS REVISED

Item No. 3 (2018 SS) Mr. Beeson pg 39
 706.03 Concrete Railing

ACTION: PASSED AS SUBMITTED

Item No. 4 (2018 SS) Mr. Orton pg 44

Standard Drawings:

604-SWCR-01	CURB RAMP DRAWING INDEX AND GENERAL NOTES
604-SWCR-02	PERPENDICULAR CURB RAMP TYPICAL PLACEMENT
604-SWCR-03	PAIRED PERPENDICULAR CURB RAMPS TYPICAL PLACEMENT
604-SWCR-04	PERPENDICULAR CURB RAMP COMPONENT DETAILS
604-SWCR-05	ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP TYPICAL PLACEMENT
604-SWCR-06	ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAILS
604-SWCR-07	PAIRED PARALLEL CURB RAMPS AND MIDBLOCK CROSSING CURB RAMP TYPICAL PLACEMENT
604-SWCR-08	PARALLEL CURB RAMP COMPONENT DETAILS
604-SWCR-09	BLENDED TRANSITION CURB RAMP, DEPRESSED CURB RAMP AND DIAGONAL CURB RAMP TYPICAL PLACEMENT
604-SWCR-10	BLENDED TRANSITION CURB RAMP COMPONENT DETAILS
604-SWCR-11	MEDIAN CUT-THROUGH AND MEDIAN PERPENDICULAR CURB RAMP TYPICAL PLACEMENT
604-SWCR-12	DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION
604-SWCR-13	DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION
604-SWCR-14	DETECTABLE WARNING SURFACE DETAILS

ACTION: PASSED AS REVISED

Item No. 5 (2018 SS) Mr. Beeson pg 76

406.04	Preparation of Surface
406.05	Application of Asphalt Material

ACTION: PASSED AS REVISED

Item No. 6 (2018 SS) Mr. Orton pg 80

Standard Drawings:

622-LSPL-00	LANDSCAPE PLANTING
622-LSPL-01	PLANTING BALLED AND BURLAPPED TREE LESS THAN 1 1/4 IN. CALIPER
622-LSPL-02	PLANTING BALLED AND BURLAPPED TREE 1 1/4 IN. CALIPER AND GREATER
622-LSPL-03	PLANTING MULTI-STEM TREE
622-LSPL-04	PLANTING BARE ROOT TREE
622-LSPL-05	PLANTING GRAFTED TREE
622-LSPL-06	PLANTING ON SLOPE

622-LSPL-07	PLANTING ON SLOPE
622-LSPL-08	TYPICAL SECTION OF SHRUB BED
622-LSPL-09	PLANTING SEEDLING VARIETIES
622-LSPL-10	TYPICAL PLAN OF SHRUB BED
622-LSPL-11	COMMONLY USED DIMENSIONS
ACTION:	PASSED AS REVISED

<u>Item No. 7 (2018 SS)</u>	<u>Mr. Pankow</u>	<u>pg 96</u>
108.01	Subletting of Contract	

ACTION: PASSED AS REVISED

<u>Item No. 8 (2018 SS)</u>	<u>Mr. Boruff</u>	<u>pg 100</u>
Recurring Special Provision:		
805-T-093	DETECTOR CARD RACK AND DETECTOR MODULES	

ACTION: PASSED AS SUBMITTED

cc: Committee Members
FHWA
ICI

Mr. Orton
Date: 03/15/18
(OLD BUSINESS ITEM)

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Structural design criteria change needed to include compliance with 2014 AASHTO-LRFD Bridge Design Specifications instead of AASHTO Guide Specifications. Also, needed to include the requirements of ITM 806 Procedure N and pass the required laboratory testing.

Lack of clarification on computation of pay limits and quantities is causing dispute with the Contractors.

Separate pay item of Sound Barrier Design and Layout is redundant.

PROPOSED SOLUTION: Design should comply with 2014 AASHTO-LRFD Bridge Design Specifications requirements instead of AASHTO guide specifications. Approved sound Barrier Systems should comply with ITM 806 Procedure N.

Make changes in 620.08 to clarify the Method of Measurement.

Make changes in 620.09 to remove the pay item 620-08426, Sound Barrier Design and Layout and include the cost of sound barrier design and layout in the pay item 620-01754, Sound Barrier Panels.

APPLICABLE STANDARD SPECIFICATIONS: 620-Blank

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: 51-9.01

APPLICABLE SECTION OF GIFE: NA

APPLICABLE RECURRING SPECIAL PROVISIONS: 620-R-483

PAY ITEMS AFFECTED: 620-01754, 620-08426

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Yes

IMPACT ANALYSIS (attach report): Yes

Submitted By: Naveed Burki
Title: Standards Engineer
Organization: INDOT
Phone Number: 317-233-2057

Date: 02-19-2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? No

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders?
Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? Yes

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: To avoid any further disputes on the measurement of quantities, to remove a redundant pay item and to comply with the 2014 AASHTO-LRFD Bridge Design Specifications, it should be on the agenda and recommended for approval.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

620-R-483 SOUND BARRIER SYSTEMS

(Revised 05-23-13)

The Standard Specifications are revised as follows:

SECTION 620, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 620 – ~~BLANK~~ SOUND BARRIER SYSTEMS

620.01 Description

This work shall consist of furnishing materials and placement of a sound barrier system and a coping in accordance with 105.03.

620.02 General Design Requirements

The sound barrier system shall be either wall mounted, bridge mounted or ground mounted, and shall consist of wall attachments or post foundations, vertical support posts, and sound barrier panels. For the purposes of this section, “panel” is defined as the reflective or absorptive component mounted between the posts, piers or columns.

All appurtenances behind, in front of, under, over, mounted upon, or passing through the wall, including drainage structures, fire hydrant access openings, highway signage, emergency access openings, utilities or other appurtenances shown on the plans, shall be accounted for in the design of the sound barrier system.

If the sound barrier manufacturer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information. The Contractor shall be responsible for field verifying wall locations in areas of all existing traffic poles, utility poles, roadway lighting poles, drainage pipes, underdrain outlets, and bridge expansion joints and all other locations where the sound barrier system may conflict with existing conditions. The wall shall be realigned and designed to box out openings where conflicts occur with existing light poles and traffic control devices. The Contractor shall establish and account for the existing locations of all underdrain outlets, drainage pipes, and bridge expansion joints in the final wall plans. If the Contractor discovers that overhead utilities will be within 6 ft of the sound barrier, the Contractor shall notify the Engineer in accordance with 104.02 and 105.16.

The sound barrier wall design shall follow the general dimensions of the wall envelope as shown on the plans. The top of the sound barrier shall be at or above the acoustical profile line shown, unless noted. Changes in elevation shall be accomplished by stepping the sound barrier sections at the vertical support posts. Steps shall not exceed 3 ft vertically unless otherwise specified in the plans. Barrier heights shall be selected in groups of no fewer than three successive panels, except where barriers are to be stepped down for barrier termination. The ends of the sound barrier shall be tapered or stepped down to a height of 8 ft within the sound barrier end transitions or as shown on the plans.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The bottom of ground mounted sound barrier shall be embedded a minimum of 6 in. into the ground. The bottom of wall mounted or bridge mounted sound barrier shall follow within 3 in. a profile be within 6 in. to 8 in. below the top of the existing concrete barrier railing or wall.

Caisson footings, vertical support posts, and connections for ground mounted sound barrier shall be designed as specified by the manufacturer, with minimum post spacing of 15 ft. Exceptions will be allowed considered due to site-specific conditions such as access doors, drainage requirements or utility accommodations. ~~These shall be reviewed and approved through the working drawing process. The foundation design shall use the COM 624P or LPILE Program.~~ Exceptions shall be subject to approval through the working drawing process. The foundation shall be designed in accordance with the current AASHTO LRFD Bridge Design Specifications, Section 15, Design of Sound Barriers. The foundation design shall be based on the soil model shown on the plans based on cyclic loading and shall consider the effects of a sloping ground surface. The post deflection shall be limited to $L/100$, measured from the top of the caisson to the top of the wall. The foundation depth shall not be less than 7.5 ft and shall not exceed the depth of the soil model except where the Contractor elects to drill deeper borings to extend the model. The foundation diameter shall not be less than 18 in. and shall not be less than 6 in. larger than the diagonal dimension of the post being used. The foundation shall be designed by the sound barrier manufacturer. Vertical support posts shall be attached to caisson footings by means of anchor bolts, or embedded wide flange steel posts.

~~A sound barrier system shall be selected for the type specified from those which are on the Department's list of approved Sound Barrier Systems.~~ The sound barrier system shall be selected from Department's list of approved Sound Barrier Systems for the type specified. Sound Barrier Systems may be added to the approved list by completing the requirements of ITM 806, Procedure N and passing the required laboratory testing. The materials used in the fabrication of the sound barrier system shall be the same as those used for approval of the sound barrier system.

The structural design of the sound barrier system shall be in accordance with the ~~AASHTO Guide Specifications for Structural Design of Sound Barriers~~ current AASHTO LRFD Bridge Design Specifications, Section 15, Design of Sound Barriers, except as otherwise directed. The sound barrier system shall be designed to withstand wind pressure as shown on the plans, as applied perpendicular to the barrier, in each direction.

The post spacing for sound barriers mounted on any structure or safety barrier shall be limited to a distance that does not overstress the existing structure or safety barrier. The spacing shall also be limited to a distance that allows the sound barrier to conform to the existing horizontal and vertical alignments. The allowable loads on a structure or barrier will be shown on the plans. If no allowable loads are shown, the Contractor shall contact the project designer for this information.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

When sound barriers are to be installed on a bridge structure, design calculations shall be submitted to the Engineer that demonstrate structure loading limits, as shown on the plans, will not be exceeded.

All materials shall have a minimum predicted maintenance free structural and acoustical lifespan of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The types of acoustic sound barrier systems that are accepted are as follows:

Type 1, single sided absorptive, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90. Type 1 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway side. Type 1 sound barrier systems shall be tested in accordance with ASTM C 423. Material samples for this test shall be provided with the coating applied, so as to determine that the color coating does not inhibit the acoustic performance. The sample shall be mounted in accordance with ASTM E 795, type A.

Type 2, double-sided absorptive, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90. Type 2 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway and non-roadway sides. Type 2 sound barrier systems shall be tested in accordance with ASTM C 423. To determine that the color coating does not inhibit the acoustic performance, material samples for this test shall be provided with the coating applied. The sample shall be mounted in accordance with ASTM E 795, type A.

Type 3, reflective, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90.

A type 2 barrier system may be substituted for a type 1 barrier system at the Contractor's discretion. A type 1 or a type 2 barrier system may be substituted, with written approval, for a type 3 barrier system.

All molded finishes shall have a 1 in. minimum relief. All rolled finishes shall have a minimum 3/4 in. relief. Relief is defined by material that is provided in excess of the minimum wall thickness required to meet the Noise Reduction Coefficient required for the absorptive surfaces. Fluted finishes shall be coped at each end to avoid cracking.

Corrugations, ribs, or battens on sound barrier panels shall be oriented vertically when erected. The sound barrier shall be designed to prevent entrapment and ponding of water. The sound barrier shall not be designed with openings promoting the perching or

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

nesting of birds, or the collection of dirt, debris, or water. The sound barrier shall not be designed with hand holds or grips promoting scaling or climbing of the system.

Fire hydrant access points shall be designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity.

Closure plates shall be provided where new sound barrier is constructed adjacent to existing sound barrier. Where bridge mounted walls cross over expansion joints, expansion closure plates shall be used. The wall manufacturer shall provide expansion closure plates for each expansion joint unless directed otherwise. The minimum thickness of closure plates shall be 3/16 in.

The calculations for sound barriers which also retain earth must show that the walls are adequate for earth retention. The earth retention areas shall be shown on the plans. The exposed face of the sound barrier earth retaining panel will match the adjacent panel's color and texture.

(a) Precast Panel Design Criteria

Base-plated or embedded reinforced precast concrete posts may be substituted for wide flanged steel posts with the approval of the Department. Proposed substitutions for wide flanged steel posts shall be shown on working drawings submitted for approval.

Support posts must match the adjoining wall in color unless directed by the Engineer. Embedded reinforced precast concrete posts must also match the adjoining wall in texture. Sound barrier systems utilizing stacked panels shall have ship-lapped or tongue and groove horizontal joints or other approved design which blocks the passage of light.

(b) Masonry Design Criteria

Reinforced masonry vertical support posts shall be faced to match the adjoining wall in color and texture unless directed by the Engineer.

Steel support posts shall match the adjoining wall in color unless directed by the Engineer.

620.03 Submittals

The Contractor shall submit a minimum of three alternative textured finishes for the wall to the Engineer. These shall include the following colors:

- (a) light gray (Federal Standard 595, color No. 36492),*
- (b) light brown (Federal Standard 595, color No. 30450),*
- (c) light tan (Federal Standard 595, color No. 37769).*

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The colors will be presented to the public for their input in accordance with 620.05. The final wall pattern and color will be approved before production of the wall panels may begin.

The Contractor shall submit design calculations in accordance with 105.02. Calculations for sound barriers on bridge structures shall include an analysis of the bridge structure that demonstrates the additional loads imposed by the sound barrier, including dead load and wind load, will not exceed the structural capacity of the bridge. The Contractor shall submit working drawings in accordance with 105.02 after design calculations are approved and before beginning wall construction operations. Design calculations and working drawings shall be submitted concurrently and shall meet the following minimum requirements:

- (a) Design calculations shall include all structural design calculations and vertical support post design calculations.*
- (b) Design calculations for bridge mounted installations shall include the design unit weight and mass of the sound barrier and support systems.*
- (c) Design calculations for bridge mounted installations shall demonstrate that the structural loading limits of the structure, as shown on the plans, will not be exceeded.*
- (d) Working drawings shall include all details, dimensions, quantities, and cross sections necessary to construct the sound barrier systems and shall include but not be limited to the following:*
 - 1. A plan and elevation sheet or sheets for each sound barrier systems location. Exceptions to minimum post spacing requirement, including the conditions that necessitate the exception.*
 - 2. An elevation view of the sound barrier systems which shall include the elevation at the top of the wall at all horizontal and vertical break points at least every 50 ft along the face of the wall.*
 - 3. A plan view of the wall that indicates the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. A plan view and elevation view which detail the placing position.*
 - 4. A typical cross section or cross sections showing elevation relationship between ground conditions and the sound barrier systems locations.*
 - 5. All general notes required for constructing the wall.*

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

6. *Each sheet shall show the complete project identification number.*
 7. *All horizontal and vertical curve data affecting the wall.*
 8. *A listing of the summary of quantities on the elevation sheet for each wall.*
 9. *A list of manufacturer's recommendations with respect to maintenance, including repair of graffiti and other damages.*
 10. *Typical sections and elevation views for bridge mounted installations.*
- (e) *Working drawings shall include a detailed plan of aesthetic treatment for the entire sound barrier system, manufacturer-recommended installation requirements and sequence of construction, manufacturer-recommended repair requirements for damage caused by vandalism or graffiti prior to final acceptance, and a detailed bill of materials.*

MATERIALS

620.04 Materials

Materials shall be in accordance with the following:

<i>Cast-in-Place Portland Cement Concrete, Class A.....</i>	<i>702</i>
<i>Coarse Aggregate, Class A or Higher, Size No. 91</i>	<i>904</i>
<i>Coarse Aggregate, Class D or Higher, Size No. 5.....</i>	<i>904</i>
<i>Coarse Aggregate, Class D or Higher, Size No. 8.....</i>	<i>904</i>
<i>Concrete Masonry Units</i>	<i>905.06</i>
<i>Fine Aggregate, Size No. 23.....</i>	<i>904</i>
<i>Joint Mortar</i>	<i>901.08, 907.12</i>
<i>Paint.....</i>	<i>909.02</i>
<i>Portland Cement</i>	<i>901.01(b)</i>
<i>Precast Concrete.....</i>	<i>707</i>
<i>Reinforcing Bars</i>	<i>910.01</i>
<i>Structural Aluminum Posts</i>	<i>910.14(d)</i>
<i>Structural Steel.....</i>	<i>910.02</i>
<i>Water</i>	<i>913.01</i>

Steel structural components shall be ASTM A 36 in accordance with 910.02-~~or~~ ~~ASTM A 36~~. Structural steel components shall be hot dipped galvanized in accordance with ASTM A 123, coating grade 100 ~~or~~ and painted in accordance with 619.11 and 619.12. ~~Exposed~~ All surfaces of galvanized components shall be coated in accordance with 619.09(b). The galvanized surfaces shall be prepared using a light brush-off blast cleaning

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

in accordance with SSPC-SP16. The surface profile shall be 15 to 30 microns in accordance with ASTM D 4417, prior to painting.

All structural steel hardware shall be in accordance with ASTM A 325 and shall be hot dipped galvanized in accordance with ASTM A 153 or shall be made of nonferrous material or stainless steel. All other non-structural fastening devices shall be made of nonferrous metal or stainless steel. Plastic members shall be connected with either screws or bolts. Aluminum members shall be connected with stainless steel fasteners. Anchor bolts shall be of the size shown with a minimum of 10 in. of 7NC threads on the upper end. Anchor bolts shall be in accordance with ASTM F 1554. The threads, nuts, and washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, where required.

Solid portland cement concrete or composite concrete shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. Integral pigment shall be certified to be in accordance with ASTM C 979. The coating shall be tested for accelerated weathering in accordance with ASTM D 6695. The test panel substrate shall be of the same portland cement concrete or composite concrete material used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Concrete class A for the coping shall be in accordance with the applicable requirements of 702, except the coarse aggregate for pre-cast units may be size No. 91 in accordance with 904. Reinforcing steel in the coping shall be in accordance with the applicable requirements of 703. The coping may be precast or cast-in-place.

Masonry block shall be tested in accordance with ASTM C 90 and as follows:

- (a) The average compressive strength of three units shall be a minimum of 3,000 psi with no single unit being less than 2,700 psi.*
- (b) The units shall be tested for water absorption in accordance with ASTM C 140. The maximum absorption shall be 7%.*
- (c) Joint reinforcement for masonry block systems shall be in accordance with ASTM A 951.*
- (d) Mortar for masonry block systems shall be in accordance with ASTM C 270; type S, Table 1 proportion requirements.*
- (e) Portland cement-lime or mortar cement may be used. Masonry cement shall not be used. Grout for masonry shall be in accordance with ASTM C 476.*

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

(f) *Aggregate for masonry grout shall be in accordance with ASTM C 404.*

Masonry blocks shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. The integral pigment shall be certified to be in accordance with ASTM C 979. The coating shall be tested for Accelerated Weathering in accordance with ASTM D 6695. The test panel substrate shall be of the same masonry blocks used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Certifications shall be provided for each of the materials to be supplied for the sound barrier system. For reinforcing steel and other applicable steel materials, A Buy America Certification shall be provided in accordance with 106.01(c). A certification shall be provided indicating that all materials and manufacture of the sound barrier system is the same as submitted for approval. Certifications shall be in accordance with a type C in accordance with 916, unless noted otherwise. A type A certification in accordance with 916 shall be provided for compressive strength and absorption test values for masonry block, sampled and tested in accordance with ASTM C 140. All test reports required to substantiate compliance shall be in accordance with the test method/material requirements cited herein. A Department approved laboratory shall conduct the testing.

CONSTRUCTION

620.05 Information for Public Input

The Contactor shall coordinate the information for public input with the Department's Office of Public Involvement.

Colored flyers with appropriate graphics shall be developed by the Contractor and furnished to the Department.

Wall color photos shall be provided for each color in accordance with 620.03 along with photos of each available texture alternative. A minimum of three wall samples of the non-roadway side textures shall be provided. All samples of the wall textures shall be a minimum of 3 sq ft in area, with a distinguishable pattern.

Based on comments received, the Department will select the final finishes and colors for each wall. Each wall shall have the selected color used throughout the entire wall on the roadway and the non-roadway sides. The Contractor shall coordinate all sound barrier wall issues with the Engineer prior to ordering any materials.

620.06 Construction Requirements

Sound barrier components shall not be stored on the right-of-way unless written permission is given by the Department. Requests for permission to store materials on the right-of-way will not be accepted until after the contract has been awarded.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The sound barrier supplier shall provide technical instruction, guidance in preconstruction activities including the preconstruction conference, and on-site technical assistance during construction. The Contractor is responsible for following installing instructions from the supplier unless otherwise directed in writing by the Engineer.

Clearing and grading shall be in accordance with 201 and 202 as required.

The foundations for ground mounted sound barrier systems shall be constructed as shown on the working drawings. Holes for footings shall be drained of free water prior to installing any components. Placing concrete shall be in accordance with 702.

The integrity of the sound barrier system continuity shall be such that no light will be visible through any vertical joint between sound barrier panel and vertical support post, through any horizontal joint between sound barrier panels, between the bottom of any ground mounted sound barrier and the adjacent ground, or between the bottom of any wall mounted sound barrier and the top of the adjacent wall. Exceptions may be allowed as necessary for drainage as indicated on the plans.

Sound barrier wall posts shall be placed vertical with a tolerance of 1/2 in. per 10 ft on each axis. Sound barrier wall posts shall be placed at the distance indicated on the plans with a tolerance of 1 in. from centerline to centerline. Sound barrier wall posts shall be aligned to within 1 in. when measured from a straight line from the two adjacent posts. Sound barrier wall posts shall be at the height as shown on the plans. The posts shall project above the top sound barrier wall panel by 1 1/2 in. \pm 1/2 in. The top of the sound barrier wall shall be at or above the acoustical profile. Steel posts embedded in concrete shall have bottom cover of 8 in. \pm 4 in. Field-cut steel posts shall be primed with an organic zinc primer and painted in accordance with 619.

After post erection the area shall be backfilled to within 6 in. of the required final grade or as specified in the plans. The aggregate pad shall be placed as required. Positive drainage of the work area shall be maintained.

An aggregate pad of No. 5 or No. 8 coarse aggregate shall be included that extends 4 in. outside of each side of the panel and 4 in. below the bottom of the panel.

The sound barrier system and sound barrier system components shall be maintained until final acceptance. Elements of the sound barrier system that are damaged or destroyed, including due to graffiti or other vandalism, shall be repaired or replaced as directed by the Engineer. Repairs and repainting shall be conducted in accordance with the manufacturer's guidance and 620.02.

After construction of the sound barrier system the site shall be restored to the original condition with grading, seeding and sodding in accordance with the plans.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

(a) Construction Requirements for Precast Panels

Sound barrier wall panels shall be placed in accordance with the plans and centered between adjacent posts. The sound barrier wall panels shall be of sufficient length to span the entire length between posts less 1/2 the width of the smallest retaining flange.

Panels may be field-cut to facilitate erection in accordance with the manufacturer's recommendation. Field-cut panels shall be cut to have the least impact on any patterns present in the textured or colored finish. Field-cut panels or other field cut components shall be painted in accordance with the manufacturer's guidance.

(b) Construction Requirements for Masonry

All grouting and reinforcing work for masonry block systems shall be performed by masonry craftworkers holding current International Masonry Institute, IMI, Grouting and Reinforcing Certification. Proof of certification shall be submitted prior to the beginning of work.

620.07 Acceptance

The Contractor shall submit 2 ft by 2 ft sound barrier panel samples or five masonry block units in the colors and textures proposed and a 2 ft sample of painted support post, prior to the approval of the working plans. Once approved, these samples will be used as a control sample to verify delivered products meet the aesthetic requirements. The sound barrier system will be accepted for color based on a visual comparison between the control sample and the color of the wall as constructed in place.

The sound barrier system will be accepted for quality based on a visual inspection of the components of the system by the Engineer. The sound barrier system shall be subject to rejection due to failure to be in accordance with the requirements specified herein. In addition, the following defects may also be sufficient cause for rejection:

(a) Defects that indicate imperfect fabrication.

(b) Defects in physical appearance such as cracks, checks, dents, scrapes, chips, stains, or color variations.

The Engineer will determine whether a defective sound barrier shall be repaired or shall be cause for rejection. Repair, if permitted, shall be completed by the Contractor and will be approved by the Engineer.

620.08 Method of Measurement

~~*Sound barrier panels and sound barrier erection will be measured by the square foot of wall surface area. The pay quantity will be based on the limits of the sound barrier envelope as shown on the plans. The vertical and horizontal distance for each section of the wall defines the sound barrier envelope. The vertical distance extends from the*~~

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

~~elevation at the bottom of the lowest panel to the elevation of the acoustic profile for each section of the wall. The horizontal distance extends from centerline to centerline of adjacent posts for each section of wall.~~ Wall-mounted sound barrier panels, bridge-mounted sound barrier panels, ground-mounted sound barrier panels, wall-mounted sound barrier erection, bridge-mounted sound barrier erection and ground-mounted sound barrier erection will not be measured for payment. The pay quantities for each item will be computed by the square foot based on the neat line limits of the sound wall envelopes as shown on the plans. Wall system supplier quantities will not be considered. Coping will not be measured.

620.09 Basis of Payment

~~Wall mounted sound barrier panels, bridge mounted sound barrier panels, ground mounted sound barrier panels, wall mounted sound barrier erection, bridge mounted sound barrier erection, and ground mounted sound barrier erection will be paid for at the contract unit price per square foot.~~ The accepted quantities of wall-mounted sound barrier panels, bridge-mounted sound barrier panels, ground-mounted sound barrier panels, wall-mounted sound barrier erection, bridge-mounted sound barrier erection and ground-mounted sound barrier erection will be paid for at the contract unit price per square foot.

The Department may choose to acquire additional precast sound wall panels or masonry blocks in the colors and patterns selected on the project. A maximum of 12 panels of each type would be paid for at the invoice cost of the panels and shall be delivered to the District Office. If the Department elects to acquire additional precast sound wall panels or masonry blocks, the Contractor shall provide the material as extra work in accordance with 104.03.

Partial payment will be made for sound barrier panels stockpiled on the project site or at the Contractor's approved storage location within the State of Indiana. Partial payment will be based on the delivered cost of the sound barrier panels, as verified by invoices that include freight charges. The Contractor shall furnish the invoices and all required certifications. Partial payment will not exceed 75% of the contract unit price for bridge mounted, ground mounted or wall mounted sound barrier panels. Prior to authorizing the partial payment, verification will be obtained that all required inspection has been made and that the panels are acceptable.

~~Payment for all costs associated with the collection of all information not shown on the plans, revisions due to conflicts, sound barrier system details, all additions or incidentals necessary to provide complete plans, any redesigning of plans or details, the public information meetings and public information planning and presentations will be paid for at the contract lump sum price for sound barrier design and layout.~~

Payment will be made under:

Pay Item

Pay Unit Symbol

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

51-9.0 SOUND BARRIER

A sound barrier is designed and erected to reduce the sound level of traffic adjacent to existing properties to an acceptable level as determined by Federal guidelines. A barrier is considered the most practical option to reduce sound when compared to other mitigating options (e.g., wider buffer zone, reducing speed, eliminating or restricting traffic or vehicular types). The Office of Environmental Services is responsible for determining the longitudinal limits of the barrier, the lateral location from the roadway, and the required height. The designer is responsible for the type selection, design of the sound barrier, and evaluating the impacts of the sound barrier on the highway design and complying with the project intent of the Office of Environmental Services.

The sound barrier walls attached to the outer face of concrete bridge barrier through vertical supports are termed bridge mounted sound barrier walls, as illustrated by figure 51-9 C. Outside the bridge limits along the roadway, these can be ground mounted on independent support posts and are termed ground mounted sound barrier walls. This illustrated by figure 51-9 D

51-9.01 Types

An absorptive or reflective sound barrier is effective in reducing the environmental impact of noise from the highway..~~The sound barrier types that may be used are as follows.~~

The types of acoustic sound barrier systems that are accepted are as follows:

Type 1:

Single sided absorptive, sound barrier systems and their components ~~shall~~ *are to* be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies. ~~when tested in accordance with ASTM E 90.~~ Type 1 sound barrier systems ~~shall~~ *will* be designed to have a minimum noise reduction coefficient of 0.70 on the roadway side. ~~Type 1 sound barrier systems shall be tested in accordance with ASTM C 423.~~ Material samples for this test ~~shall~~ *need to* be provided with the coating applied, so as to determine that the color coating does not inhibit the acoustic performance. ~~The sample shall be mounted in accordance with ASTM E 795, type A.~~

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

Type 2:

Double-sided absorptive, sound barrier systems and their components ~~shall~~ *are to* be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies. ~~when tested in accordance with ASTM E 90.~~ Type 2 sound barrier systems ~~will~~ *shall* be designed to have a minimum noise reduction coefficient of 0.70 on the roadway and non-roadway sides. ~~Type 2 sound barrier systems shall be tested in accordance with ASTM C 423.~~ To determine that the color coating does not inhibit the acoustic performance, material samples for this test ~~shall need to~~ be provided with the coating applied. ~~The sample shall be mounted in accordance with ASTM E 795, type A.~~

Type 3:

Reflective, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels *at all frequencies.* ~~at all frequencies when tested in accordance with ASTM E 90.~~

A type 2 barrier system may be substituted for a type 1 barrier system at the Contractor's discretion. A type 1 or a type 2 barrier system may be substituted, with written approval, for a type 3 barrier system.

51-9.02 Materials

Sound barriers may be constructed from the following materials:

1. Earth Berm. An earth berm is a graded mound of soil which redirects the highway sound from nearby sensitive areas.
2. Masonry Wall. A masonry wall is constructed from concrete blocks or bricks. Very pleasing architectural designs can be developed with this type of wall.
3. Concrete Wall. A concrete wall may be poured in place or precast. The advantage of a concrete wall is that decorative designs can be added to the face of the wall.

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

4. Wood Wall. A wood wall is less costly than a masonry or concrete wall and is often preferred by local residents. However, its life expectancy is typically less than that of a masonry or concrete wall.
5. Metal Wall. A metal wall is constructed using galvanized or treated steel panels. Concerns relative to cost and corrosion have generally limited the use of steel walls.
6. Other Materials. New sound barrier materials are continuously being developed, such as recycled plastic, fiberglass, composites, etc. Prior to their use, they should be reviewed by the New Products Evaluation Committee to ensure that each will meet INDOT criteria.
7. Combination Wall. This type uses a combination of an earth berm and one of the other material types. A combination wall is used to reduce the height of another wall type and for aesthetic purposes.

51-9.02-03 Design

1. Line of Sight. ~~Noise waves travel in a straight line~~ *Noise waves spread in all directions*. A barrier which breaks the line of sight between the source and receiver will provide some attenuation. For roadway sources, the line of sight is drawn perpendicular to the roadway. The sound source for cars and medium-sized trucks is assumed to be the roadway surface and, for large trucks, it is 8-5 ft high. For the receiver, the line of sight is terminated at the expected ear height of the receiver (e.g., 8-5 ft). The designer must also consider that the receiver may be in a multi-storied building.
2. Structural Design. A sound barrier should ~~either be designed in accordance with the AASHTO Standard Specifications for Highway Bridges or the AASHTO Guide Specifications for Structural Design of Sound Barriers. See Chapter 73.~~ *accordance with the current AASHTO LRFD Bridge Design Specifications, Section 15, Design of Sound Barriers, and INDOT RSP # 620-R-483 Sound Barrier Systems.*
3. Length. To block the roadway noise from the sides, the ends of the barrier should exceed the receiver by four times the distance from the barrier to the receiver; see Figure [51-9A](#), Sound-Barrier Placement, detail (a).

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

4. Location. Moving the barrier closer to the receiver or source ~~will~~*may increase or decrease the effectiveness of the barrier. Environmental Services Division should be consulted for the optimal location of the barrier.*
5. Gap. A gap in the barrier for pedestrian access, cross-streets, or maintenance purposes can compromise the barrier performance. Where practical, the effects of a gap should be minimized by providing tight-fitting access doors, curving the ends of the barrier to shield nearby receivers, or overlapping sections of barrier. Figure [51-9A](#) detail (b) illustrates the minimum distance required to maintain the acoustical effectiveness of the wall for overlapping barriers.
6. Right of Way. Additional right of way may be required for the installation and maintenance of the sound barrier.
7. Roadside Safety.
 - a. Clear Zone. Section 49-2.0 provides the Department's design criteria for clear zone. If practical, a sound barrier should *preferably* be placed outside of the clear zone. If the barrier is within the clear zone, an integral concrete barrier shape or a metal barrier rail should be considered to shield a run-off-the-road vehicle from the barrier.

Dynamic lateral deflections should be considered to keep the errant vehicles away from the wall.
 - b. Terminal. A sound barrier should be terminated outside the clear zone. However, if the end of the barrier is within the clear zone, the designer should consider protecting the end with guardrail or an appropriate impact attenuator. Section 49-68.0 discusses the design of impact attenuators.
 - c. Traversability. If the sound barrier is an earth berm, the toe of the barrier should be traversable by a run-off-the-road vehicle (see Section 49-3.02).

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

- d. **Protrusion.** A protrusion may become a safety hazard if it ~~are~~ is struck or is dislodged by a vehicle. Figure [51-9B](#), Sound-Barrier Protrusions, illustrates the preferred practice for placing barrier protrusions and decorative facing.
8. **Emergency Access.** Where sound barriers are placed relatively close to the roadway (e.g., at the edge of shoulder), sufficient escape routes must be provided in the wall to allow individuals to quickly leave the roadway in an emergency. These escape routes may be provided by inserting doors or overlapping walls. Item 5 above discusses the preferred methods for providing gaps in the barrier design. Where provided, access to fire hydrants should also be incorporated into the wall design.
9. **Sight Distance.**
 - a. **At-Grade Intersection.** A sound barrier should not be located in the triangle required for intersection sight distance. Section 46-10.0 provides the criteria to determine the required sight-distance triangle.
 - b. **Entrance Ramp.** A sound barrier should not block the line of sight between the vehicle on a ramp and an approaching vehicle on the major roadway. Therefore, a sound barrier should not be located in the gore area between an entrance ramp and freeway mainline.
 - c. **Horizontal Sight Distance.** A sound barrier can also restrict sight distance along the inside of a horizontal curve. Section 43-4.0 provides the criteria to determine the middle ordinate value which will yield the necessary sight distance. The location of the sound barrier should be outside this sight line.
10. **Interference with Roadside Appurtenances.** The proposed location of a sound barrier can interfere with proposed or existing roadside features, including signs, sign supports, utilities, *fences* or lighting facilities. The designer must determine if these features are in conflict with the sound barrier.
11. **Sound Considerations.** The noise reduction provided by a barrier depends upon the diffraction of sound over the top and flanking around the sides of the barrier, the transmission of sound through the barrier, and the multiple reflection caused by double barriers. Some barrier types can absorb some of the sound energy. The contribution

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

of this absorption depends on the barrier surface, shape, and material type. A hard, smooth surface will generally reflect the noise off the wall. If barriers are to be placed on both sides of the roadway, the designer also should consider the impact of the reflected noise on the receiver.

12. Drainage. Drainage may be accomplished by leaving a gap on the bottom and backfilling with gravel, by providing a hinged flap, by providing a closed drainage system, etc. The barrier's acoustical design should be maintained (i.e., no open holes in the wall). *Where sound barriers support earth load or can impede water flow, the provisions of AASHTO-LRFD 11.8.8 shall apply.*
13. Landscaping. Consideration should be given to providing landscaping treatments that will enhance the aesthetics and design of a sound barrier. Plantings should be provided, where practical, both in front of and behind the barrier. Low-maintenance plantings should be used behind the wall.
14. Aesthetics. Appearance plays a critical role in the acceptance of the sound barrier. The barrier should either be blended into the background or made aesthetically pleasing. Various types of materials, texture, and color should be considered. Smooth surfaces are not recommended.

Due to the size of a sound barrier, the designer should strive to reduce the tunnel effect by using variations of form, wall types, and surface treatments.

From both a visual and safety standpoint, a sound barrier should not begin or end abruptly. It should be transitioned from the ground line to its full height. This can be accomplished by using earth berms, curving the wall back, sloping the wall downward, or stepping the wall down.

15. Public Involvement. Early community participation in the selection of various sound barrier options is encouraged to ensure community acceptance of the wall.
16. Maintenance Considerations. The location and design of a sound barrier should reflect the following maintenance factors:
 - a. The sound barrier must be located so maintenance crews can easily access the wall for routine repairs.

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

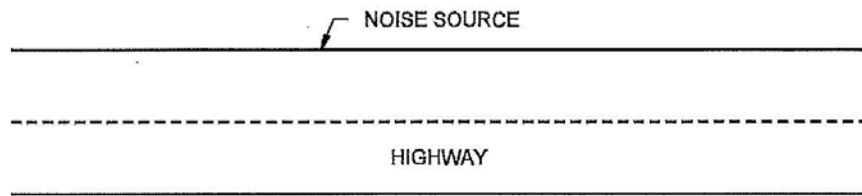
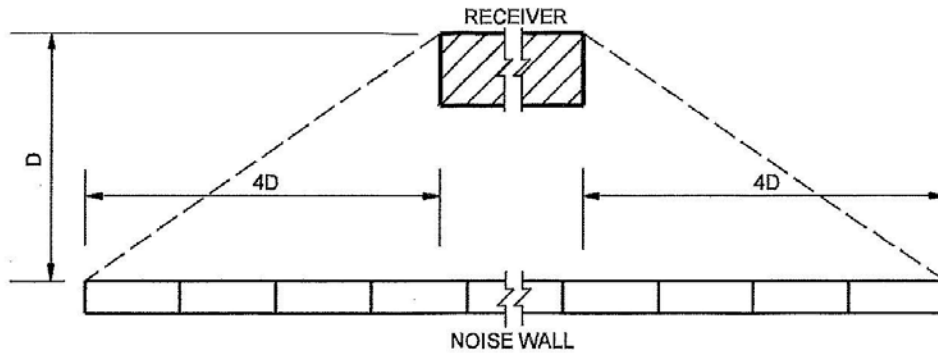
- b. The sound barrier should be constructed of materials that discourage vandalism (e.g., graffiti) and allow for easy cleaning. The maintenance of barrier materials is less costly if unpainted surfaces such as weathering steel, concrete, pressure-treated wood, or naturally weathered cedar or redwood are used.
- c. The sound barrier should be designed so that damage can be easily repaired. The barrier materials should be commercially available to reduce the need for keeping large stocks of material on hand.
- d. The sound barrier should be located so that other maintenance operations can be reasonably performed (e.g., mowing, light-bulb replacement, sign cleaning, spraying). If the barrier is located near the shoulder, access for maintenance behind the wall should be provided from local streets or through overlapping gaps.
- e. The sound barrier should be located so that it will not impact snow removal operations. A barrier located at the edge of the shoulder will require manual removal of snow from the roadway.

51-9.04 Quantities

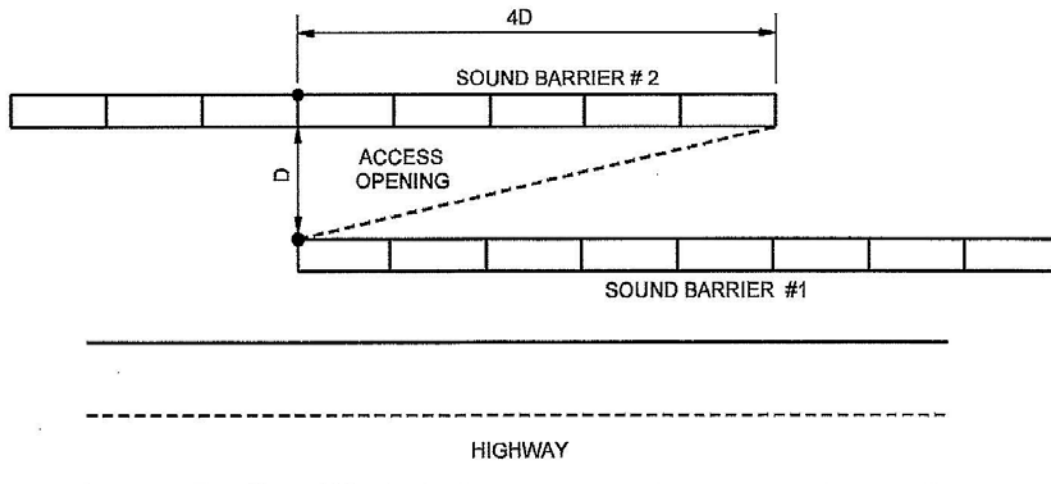
The plans should indicate the total pay quantity in sft. For ground mounted application, this will include the area between the acoustic profile for the sound barrier and an embedment line 6 in below the final ground profile at time of installation along the sound barrier. Any coping will be excluded from this area. For bridge mounted application, this will include the area between the acoustic profile and top of concrete barrier rail.

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D



(a) MINIMUM LENGTH REQUIRED



(b) MINIMUM OVERLAP REQUIRED

SOUND BARRIER PLACEMENT

Figure 51-9A

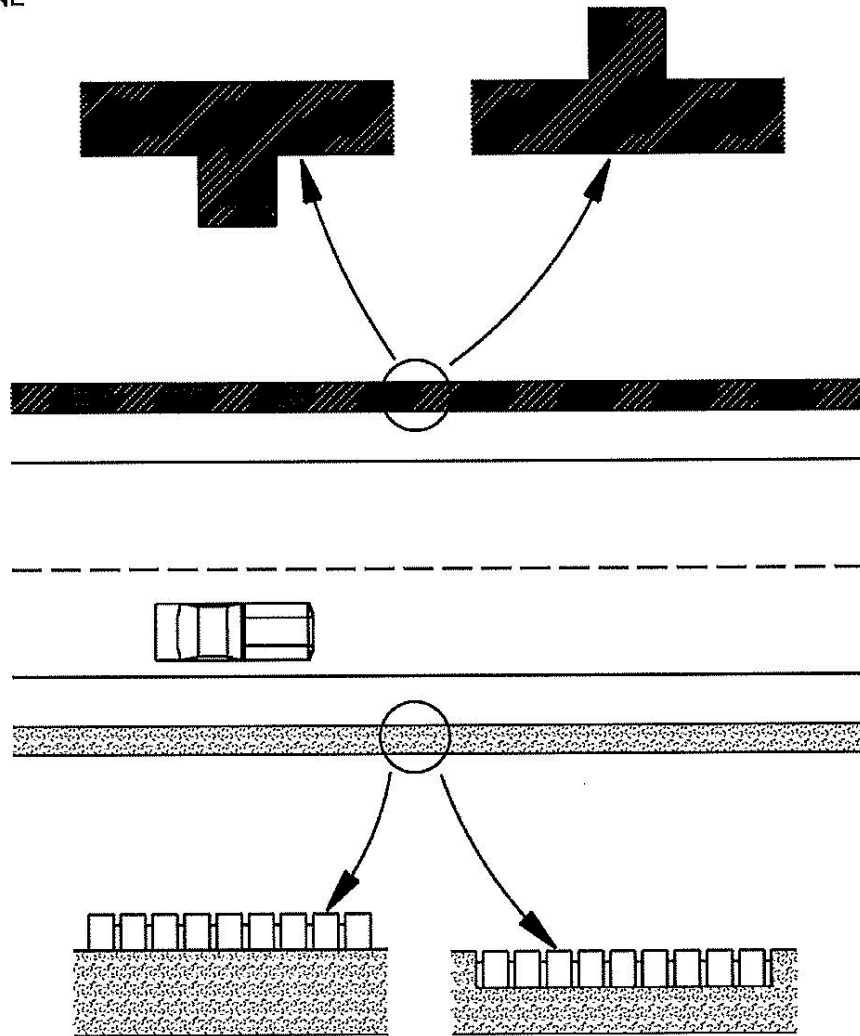
Bac

BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
FIGURES 51-9A, 9B, 9C, and 9D

AVOID LARGE COLUMN
PROTRUSIONS ON WALL
ADJACENT TO TRAFFIC
LANE

ACCEPTABLE



AVOID FACING WHICH
MAY BECOME SAFETY
HAZARDS WHEN HIT

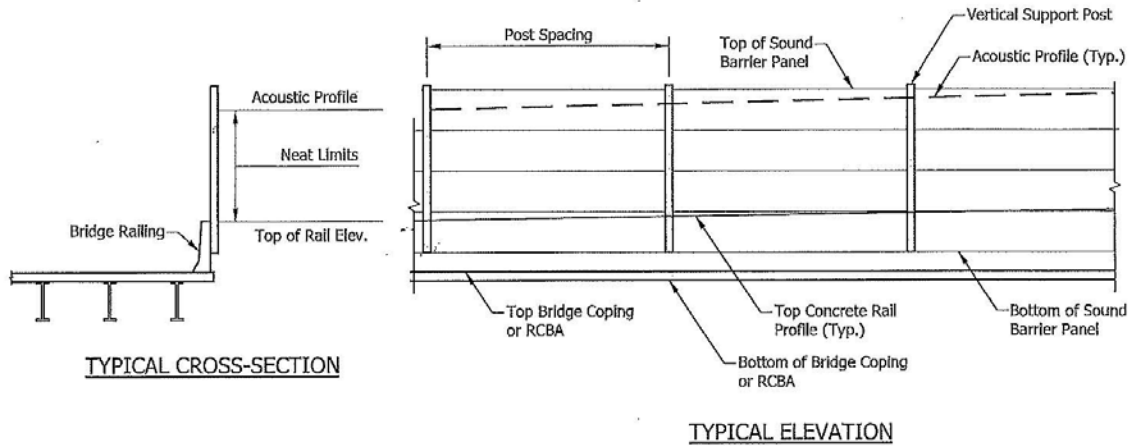
FACING SET INTO
RECESS

SOUND BARRIER PROTRUSIONS

Figure 51-9B

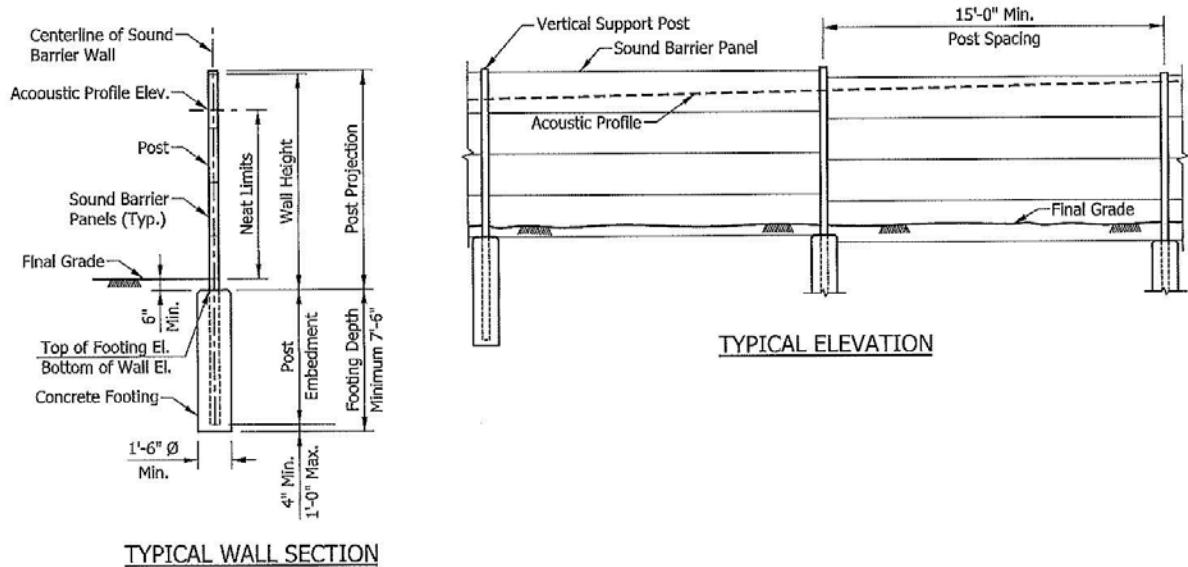
BACKUP 1

IDM 51-9.0 SOUND BARRIER (WITH CHANGES)
 FIGURES 51-9A, 9B, 9C, and 9D



BRIDGE OR WALL MOUNTED SOUND BARRIER WALL

Figure 51-9C



GROUND MOUNTED SOUND BARRIER WALL

Figure 51-9D

Item No. 4 11/15/17 (2018 SS) (contd.)
 Mr. Orton
 Date: 03/15/18
 (OLD BUSINESS ITEM)

COMMENTS AND ACTION

620-R-483 SOUND BARRIER SYSTEMS

DISCUSSION:

This item was withdrawn by Ms. Phillips, pending further review.

Editorial revisions, which occurred prior to the meeting, are also shown in these Minutes.

<p>Motion: Mr. Second: Mr. Ayes: Nays: FHWA Approval:</p>	<p>Action:</p> <p>_____ Passed as Submitted _____ Passed as Revised <u> X </u> Withdrawn</p>
<p>Standard Specifications Sections referenced and/or affected:</p> <p>620 [currently shown as "Blank"]</p> <p>Recurring Special Provision affected:</p> <p>620-R-483 SOUND BARRIER SYSTEMS</p> <p>Standard Drawing affected:</p> <p>NONE</p> <p>Design Manual Sections affected:</p> <p>51-9.01</p> <p>GIFE Sections cross-references:</p>	<p>_____ 2020 Standard Specifications</p> <p>_____ Revise Pay Items List</p> <p>_____ Create RSP (No. _____) Effective _____ Letting RSP Sunset Date:</p> <p>_____ Revise RSP (_____) Effective _____ Letting RSP Sunset Date:</p> <p>_____ Standard Drawing Effective</p> <p>_____ Create RPD (No. _____) Effective _____ Letting</p> <p>_____ GIFE Update</p> <p>_____ SiteManager Update</p>

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The Department's current liquidated damages rates schedule has not been updated in near a decade and therefore not in compliance with 23 CFR 635.127 which require INDOT to review the rates at least every 2 years and provide updated rates to FHWA for approval.

Also, the Department no longer utilizes work day contracts.

PROPOSED SOLUTION: The objective of the effort is to establish new liquidated damages rates that closely approximates the actual average daily CE costs associated with the size of the projects in the state. A study was performed between FHWA and the Department by which a new schedule was derived and agreed upon.

Remove work day language.

APPLICABLE STANDARD SPECIFICATIONS: 108.09 Failure to Complete on Time

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: NA

APPLICABLE RECURRING SPECIAL PROVISIONS: NA

PAY ITEMS AFFECTED: NA

APPLICABLE SUB-COMMITTEE ENDORSEMENT: NA

IMPACT ANALYSIS (attach report): NA

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: Construction Management

Phone Number: (317) 232-5502

Date: 02/19/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? Yes

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? No

Asset preservation? No

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO STANDARD SPECIFICATIONS

SECTION 108 - PROSECUTION AND PROGRESS

108.09 FAILURE TO COMPLETE ON TIME

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 614, DELETE AND INSERT AS FOLLOWS:

108.09 Failure to Complete on Time

For each calendar day ~~or work day~~, as specified, that work shall remain incomplete during the months of April through November inclusive, after the control time specified for the completion of the work provided for in the contract, the sum specified in the schedule below will be deducted, as liquidated damages, from any money due the Contractor. Account will be taken of adjustment of the contract time for completion of the work granted in accordance with 108.08. ~~Work days or~~ Calendar days will not be charged while waiting for final inspection as defined in 105.15 provided all contract work has been satisfactorily completed. However, five work days will be allowed after notification from the Department to complete all corrective or clean up work necessary for final inspection. Thereafter, time will be charged for each day the work remains uncompleted. Further, five calendar days will be allowed after notification by the Department to remove all construction signs and temporary traffic control devices. Thereafter, time will be charged for each day the signs and devices remain.

For each calendar day ~~or work day~~, as specified, that any work shall remain incomplete during the months of December through March inclusive, liquidated damages will be deducted. However, when the project is open to traffic, or safely modified to accommodate traffic, liquidated damages will not be deducted, and payment for the field office and field laboratory, if set out as a pay item in the itemized proposal, will not be made. For these purposes, open to traffic will be considered as all pavement lanes open to unrestricted and safe travel. The Contractor may be required to make temporary repairs to the pavement or structures. Liquidated damages will be assessed until temporary repairs are made. No payment will be made for such temporary repairs.

If the contract is not completed, or the pavement or structure is not opened to traffic within the stipulated time as set out in the Proposal book, the Department may reduce the qualified rating of the Contractor for bidding on future contracts.

Allowing the Contractor to continue and finish the work or a part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Department of any of its rights under the contract.

REVISION TO STANDARD SPECIFICATIONS
 SECTION 108 - PROSECUTION AND PROGRESS
 108.09 FAILURE TO COMPLETE ON TIME

**Schedule of Liquidated Damages for
 Each Day of Overrun in Contract Time**

<u>Original Contract Amount</u>		<u>Daily Charge</u>	
<u>From More</u>	<u>To and</u>	<u>Calendar Day or</u>	<u>Work Day</u>
<u>Than</u>	<u>Including</u>	<u>Fixed Date</u>	
\$0	\$500,000	\$500.00	\$700.00
500,000	12,000,000	1,000.00	800.00
12,000,000	5,000,000	1,500.00	1,100.00
5,000,000	10,000,000	2,000.00	2,000.00
10,000,000	and higher	2,2500.00	3,000.00

When the contract time is on either the calendar day or fixed calendar date basis, the schedule for calendar days shall be used. ~~When the contract time is on a work day basis, the schedule for work days shall be used.~~

Adjustments to the contract payment with respect to liquidated damages will be included in a liquidated damages pay item. The unit price for this pay item will be \$1.00 and the quantity will be in units of dollars. The quantity is the total calculated in accordance with the above schedule.

COMMENTS AND ACTION

108.09 FAILURE TO COMPLETE ON TIME

DISCUSSION:

This item was introduced and presented by Mr. Pankow who stated that the Department's current liquidated damages rates schedule has not been updated in nearly a decade and therefore is not in compliance with 23 CFR 635.127 which requires the Department to review the rates at least every two years and provide updated rates to FHWA for approval. Mr. Pankow also pointed out that the Department no longer utilizes work day contracts.

Mr. Pankow therefore proposed to establish new liquidated damages rates that closely approximates the actual average daily CE costs associated with the size of the projects in the state. A study was performed between FHWA and the Department by which a new schedule was derived and agreed upon. Mr. Pankow also proposed to remove work day language from 108.09.

There was no further discussion and this item passed as submitted.

Motion: Mr. Pankow Second: Mr. Beeson Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u>	Action: <input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections referenced and/or affected: 108.09 pg 95-96	<input checked="" type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List
Recurring Special Provision affected: NONE	<input checked="" type="checkbox"/> Create RSP (No.108-C-260) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS Book</u>
Standard Drawing affected: NONE	<input type="checkbox"/> Revise RSP (No.____) Effective ____ Letting RSP Sunset Date:
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective
GIFE Sections cross-references: NONE	<input type="checkbox"/> Create RPD (No.____) Effective ____ Letting <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Inconsistence between 108-C-094 (all lanes are not opened to traffic on or before) and 108.08 line 394 (date roadway is open to unrestricted traffic will not be chargeable).

Taxpayer(s) deserve the ability to use not only roadways but other features within the planned scope of work.

PROPOSED SOLUTION: Strike conflicting language from 108.08 line 394.
Modify 108.08 line 639 – 645 to clarify the need for public usage of not only roadways but other features such as sidewalks, trail, and other safety appurtenances.

APPLICABLE STANDARD SPECIFICATIONS: 108.08

APPLICABLE STANDARD DRAWINGS: na

APPLICABLE DESIGN MANUAL SECTION: na

APPLICABLE SECTION OF GIFE: 2.10

APPLICABLE RECURRING SPECIAL PROVISIONS: na

PAY ITEMS AFFECTED: na

APPLICABLE SUB-COMMITTEE ENDORSEMENT: na

IMPACT ANALYSIS (attach report): na

Submitted By: Michael Koch

Title: Area Engineer

Organization: INDOT

Phone Number: 574-612-2224

Date: Feb 9th 2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? na

Will approval of this item affect the Approved Materials List? na

Will this proposal improve:

Construction costs? na

Construction time? yes

Customer satisfaction? yes

Congestion/travel time? na

Ride quality? na

Will this proposal reduce operational costs or maintenance effort? no

Will this item improve safety:

For motorists? yes

For construction workers? na

Will this proposal improve quality for:

Construction procedures/processes? yes

Asset preservation? no

Design process? no

Will this change provide the contractor more flexibility? na

Will this proposal provide clarification for the Contractor and field personnel? yes

Can this item improve/reduce the number of potential change orders? na

Is this proposal needed for compliance with:

Federal or State regulations? no

AASHTO or other design code? no

Is this item editorial? yes

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO STANDARD SPECIFICATIONS

SECTION 108 - PROSECUTION AND PROGRESS

108.08 DETERMINATION AND EXTENSION OF CONTRACT TIME

108.09 FAILURE TO COMPLETE ON TIME

(See Item 1 of this Agenda for additional proposed changes to section 108.09.)

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 387, DELETE AND INSERT AS FOLLOWS:

- (b) If intermediate completion times are specified, unless otherwise determined, an increase in quantities will not increase the time specified.

If an intermediate completion time is specified for road closure or restriction, the first day or portion thereof of the closure or restriction will constitute the first chargeable day. The date the road is opened to unrestricted traffic will ~~not~~ be counted as a chargeable day, regardless of the time of day when the roadway is opened. Open to unrestricted traffic shall be as defined in 101.33. Temporary pavement marking materials in accordance with 801.12 shall be placed if the final marking materials cannot be placed in accordance with 808.07(b).

SECTION 108, BEGIN LINE 630, DELETE AND INSERT AS FOLLOWS:

For each calendar day or work day, as specified, that any work shall remain incomplete during the months of December through March inclusive, liquidated damages will be deducted. However, when the project is open to traffic, or safely modified to accommodate traffic for its intended purpose or modified for safety ~~modified for use~~, liquidated damages will not be deducted, and payment for the field office and field laboratory, if set out as a pay item in the itemized proposal, will not be made. ~~For these purposes, open to traffic will be considered as all pavement lanes open to unrestricted and safe travel.~~ *Intended purpose will include all pavement lanes, sidewalks, trails, drainage features, and all safety appurtenances.* The Contractor may be required to make temporary repairs to the pavement or structures. Liquidated damages will be assessed until temporary repairs are made. No payment will be made for such temporary repairs.

COMMENTS AND ACTION

108.08 DETERMINATION AND EXTENSION OF CONTRACT TIME
108.09 FAILURE TO COMPLETE ON TIME

DISCUSSION:

Mr. Koch introduced and presented this item explaining that there are some inconsistency between 108-C-094 (all lanes are not opened to traffic on or before) and 108.08 line 394 (date roadway is open to unrestricted traffic will not be chargeable). Mr. Koch stated that taxpayers deserve the ability to use not only roadways but other features within the planned scope of work. Mr. Koch therefore proposed to strike conflicting language from 108.08 line 394, and revise 108.08 line 639 - 645 to clarify the need for public usage of not only roadways but other features such as sidewalks, trail, and other safety appurtenances.

Mr. Pankow suggested revising language for clarification of opening the road for safe use. Mr. Koch concurred and the editorial revisions are as shown.

There was no further discussion and this item passed as revised.

<p>Motion: Mr. Koch Second: Mr. Beeson Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p>	<p>Action:</p> <table> <tr> <td><input type="checkbox"/></td><td>Passed as Submitted</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>Passed as Revised</td></tr> <tr> <td><input type="checkbox"/></td><td>Withdrawn</td></tr> </table>	<input type="checkbox"/>	Passed as Submitted	<input checked="" type="checkbox"/>	Passed as Revised	<input type="checkbox"/>	Withdrawn
<input type="checkbox"/>	Passed as Submitted						
<input checked="" type="checkbox"/>	Passed as Revised						
<input type="checkbox"/>	Withdrawn						
<p>Standard Specifications Sections referenced and/or affected:</p> <p>108.08 pg 90 and 108.09 pg 96</p>	<table> <tr> <td><input checked="" type="checkbox"/></td><td>2020 Standard Specifications</td></tr> <tr> <td><input type="checkbox"/></td><td>Revise Pay Items List</td></tr> </table>	<input checked="" type="checkbox"/>	2020 Standard Specifications	<input type="checkbox"/>	Revise Pay Items List		
<input checked="" type="checkbox"/>	2020 Standard Specifications						
<input type="checkbox"/>	Revise Pay Items List						
<p>Recurring Special Provision affected:</p> <p>NONE</p>	<table> <tr> <td><input checked="" type="checkbox"/></td><td>Create RSP (No. <u>108-C-260</u>) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS Book</u></td></tr> </table>	<input checked="" type="checkbox"/>	Create RSP (No. <u>108-C-260</u>) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS Book</u>				
<input checked="" type="checkbox"/>	Create RSP (No. <u>108-C-260</u>) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS Book</u>						
<p>Standard Drawing affected:</p> <p>NONE</p>	<table> <tr> <td><input type="checkbox"/></td><td>Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <u> </u></td></tr> </table>	<input type="checkbox"/>	Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <u> </u>				
<input type="checkbox"/>	Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <u> </u>						
<p>Design Manual Sections affected:</p> <p>NONE</p>	<table> <tr> <td><input type="checkbox"/></td><td>Standard Drawing Effective <u> </u></td></tr> </table>	<input type="checkbox"/>	Standard Drawing Effective <u> </u>				
<input type="checkbox"/>	Standard Drawing Effective <u> </u>						
<p>GIFE Sections cross-references:</p> <p>2.10</p>	<table> <tr> <td><input type="checkbox"/></td><td>Create RPD (No. <u> </u>) Effective <u> </u> Letting</td></tr> <tr> <td><input type="checkbox"/></td><td>GIFE Update</td></tr> <tr> <td><input type="checkbox"/></td><td>SiteManager Update</td></tr> </table>	<input type="checkbox"/>	Create RPD (No. <u> </u>) Effective <u> </u> Letting	<input type="checkbox"/>	GIFE Update	<input type="checkbox"/>	SiteManager Update
<input type="checkbox"/>	Create RPD (No. <u> </u>) Effective <u> </u> Letting						
<input type="checkbox"/>	GIFE Update						
<input type="checkbox"/>	SiteManager Update						

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:

In 2017 INDOT identified significant deterioration in slip formed bridge railings and an investigation to determine the cause was conducted. Cores were taken from the railings of four bridges that were placed from 2001 to 2016. It was determined that the deterioration was advanced freeze-thaw damage that was caused by two main issues. The first issue is that the mixes used had very low slump which does not allow the mix to flow very well resulting in poor consolidation. The railing mixes also have a high cement content and are difficult to properly hydrate with a low slump. Contractors subsequently have to increase vibration and/or use less optimally graded mixes in order to place the mix and comply with the specifications. It is also difficult to adequately air entrain concrete that has very low slump and undergoes excessive vibration.

The second issue is that the steel configuration in the standard drawing is very tight near the top of the railing which further restricts the flow and consolidation of concrete mixes that are already stiff. The current configuration also does not provide the cage with enough rigidity to resist movement from pressure and vibration inside the mold.

PROPOSED SOLUTION:

The specification currently restricts slump for slip formed railing to between 0" and 1". When mixes are properly designed railing can be slip formed at higher slumps. Increasing the slump will allow for much better consolidation with less compaction effort. It will also allow better hydration of the cementitious materials and air entrainment. The contractors may choose to achieve the higher slump with chemical admixtures which does not change the water content, but if water is increased the mixes will still be well below the allowable maximum water-cement ratio. Contractors will still have to use mix designs that facilitate their equipment setup and provide a finished product that meets the dimensional tolerances. The slump requirements will be revised in section 706.03 for slip formed railing to 1 3/4 in \pm 3/4 in. The requirement to include a water-reducing admixture in slip formed railing will be waived if the railing concrete contains silica fume in accordance with section 709.05(e).

The standard drawing is being reviewed for possible changes to the steel configuration and is not part of this proposal. The spec changes in this proposal can stand on their own.

APPLICABLE STANDARD SPECIFICATIONS: 706.03

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

[CONTINUED]

APPLICABLE RECURRING SPECIAL PROVISIONS: none

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: INDOT-IRMCA working committee
1/17/18

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT Office of Materials Management

Phone Number: 317-610-7251 x 204

Date: 2/6/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO STANDARD SPECIFICATIONS

SECTION 706 - BRIDGE RAILINGS

706.03 CONCRETE RAILING

The Standard Specifications are revised as follows:

SECTION 706, BEGIN LINE 49, INSERT AND DELETE AS FOLLOWS:

Unless otherwise specified the slip form method may be used as a means to place concrete railing on bridge structures. If the slip form method is chosen, a signed and dated QCP shall be prepared and submitted to the Engineer for acceptance at least 15 days prior to the start of slip form barrier rail placement. The QCP shall include, as a minimum, the Contractor's concrete mix design, including materials sources and admixtures; the Contractor's methods of materials control and testing; the Contractor's proposed method of placement, including finishing and curing; and the corrective action that will be taken when defects are found. The QCP shall also contain documentation that shows the Contractor had a successful trial demonstration of the slip form machine previously and that proper consolidation around the reinforcing bars in the wall was achieved. The slip form paver shall consolidate, screed, and finish the freshly placed concrete in one complete pass in such a manner that a minimum of hand finishing will be necessary to provide a dense and homogeneous railing in conformance with the plans and specifications. *The requirement to include a water-reducing admixture in accordance with 702.05 will be waived if the railing is both slipformed and the concrete contains silica fume in accordance with ~~section~~ 709.05(e).* The slump shall be ~~4~~²¹ 3/4 in. \pm ~~4~~²³ 4 in. The joints may be formed or sawed as long as a satisfactory joint is attained. If joints are to be sawed, the full depth saw cut shall be made before uncontrolled shrinkage cracking occurs and within 48 h of concrete placement. Before full depth sawing, partial depth saw cuts of 2 1/2 in. \pm 1/2 in. at the joint locations may be made as soon as the concrete has hardened sufficiently to enable sawing without raveling. All saw cuts shall be made at the locations shown on the plans or as directed.

COMMENTS AND ACTION

706.03 CONCRETE RAILING

DISCUSSION:

This item was introduced by Mr. Beeson and presented by Mr. Nelson who explained that the Department identified significant deterioration in slip formed bridge railings in 2017 and an investigation to determine the cause was conducted. The results of that investigation is as stated on the proposal sheet.

Mr. Nelson stated that the specification currently restricts slump for slip formed railing to between 0 in. and 1 in. When mixes are properly designed railing can be slip formed at higher slumps. Increasing the slump will allow for much better consolidation with less compaction effort. It will also allow better hydration of the cementitious materials and air entrainment. The Contractors may choose to achieve the higher slump with chemical admixtures which does not change the water content, but if water is increased the mixes will still be well below the allowable maximum water-cement ratio. Contractors will still have to use mix designs that facilitate their equipment setup and provide a finished product that meets the dimensional tolerances. Mr. Nelson and Mr. Beeson therefore proposed to revise the slump requirements in 706.03 for slip formed railing to $1 \frac{3}{4}$ in. \pm $\frac{3}{4}$ in. The requirement to include a water-reducing admixture in slip formed railing will be waived if the railing concrete contains silica fume in accordance with 709.05(e).

These revisions are as shown above.

Mr. Pankow inquired about the use of silica fume and clarification was provided by Mr. Nelson. Mr. Osborn suggested removing the reference to silica fume and Mr. Nelson explained that is it required and Mr. Osborn concurred. There was also some clarification with the reference to 702.05. Mr. Pankow suggested a conversation outside of the meeting and whether or not a construction memo is necessary. Mr. Nelson stated that a memo is desired and that they are currently looking onto temperature effects, which will be presented at a future date. Mr. Nelson expressed the need to start this as soon as possible and recommended a memo and possibly a USP in order to get this into contracts prior to the September letting. The committee agreed.

(CONTINUED NEXT PAGE)

COMMENTS AND ACTION

706.03 CONCRETE RAILING

(CONTINUED)

<p>Motion: Mr. Beeson Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p>	<p>Action:</p> <p><u> X </u> Passed as Submitted (w/editorial change) <u> </u> Passed as Revised <u> </u> Withdrawn</p>
<p>Standard Specifications Sections referenced and/or affected:</p> <p>706.03 pg 567</p>	<p><u> X </u> 2020 Standard Specifications</p> <p><u> </u> Revise Pay Items List</p>
<p>Recurring Special Provision affected:</p> <p>NONE</p>	<p><u> X </u> Create RSP (No. <u>706-B-306</u>) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS book</u></p>
<p>Standard Drawing affected:</p> <p>NONE</p>	<p><u> </u> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:</p>
<p>Design Manual Sections affected:</p> <p>NONE</p>	<p><u> </u> Standard Drawing Effective</p>
<p>GIFE Sections cross-references:</p> <p>NONE</p>	<p><u> </u> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p> <p><u> </u> GIFE Update</p> <p><u> </u> SiteManager Update</p>

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The curb ramp element depths have not been shown on previous standard drawings and are not shown on the current Standard Drawing Series 604-SWCR. In addition, the curb ramp element depths are not given in the Standard Specifications. The question of the curb ramp element depths has been in question in the field and needs to be noted. After meeting with Greg Pankow and Rob Goldner, it was decided to include the curb ramp element depths in the current Standard Drawing Series 604-SWCR.

PROPOSED SOLUTION: Revised the Standard Drawing Series 604-SWCR to include the depth of the curb ramp components, sheets 4, 6, 8, 10, and 11.

We also are proposing to add text to clarify two notes within the 604-SWCR series:

Sheet 1, added to the note for return curb, Note 5.

Sheet 2, reference the sidewalk Standard Drawings in Note 1.

Sheet 12, modified the drawings and notes for the placement of the DWS on a One-Way Directional Perpendicular Curb Ramps. Deleted one note reference to note 3 where it did not belong and added a note 7 to see sheet 13 for alternate placement of a DWS along a radius.

Sheet 13 added a drawing and note for an alternate placement of DWS along a radius.

Sheet 14 added a dimension and modified some details to go along with the 6" min. depth for curb ramp components. Minimum was added to the 4" total border width so the contractor did not think the border could only be 4".

A revision to the pay items will not be required.

APPLICABLE STANDARD SPECIFICATIONS: 604

APPLICABLE STANDARD DRAWINGS: 604-SWCR Series

APPLICABLE DESIGN MANUAL SECTION: 51-1.0

APPLICABLE SECTION OF GIFE: Section 22.1.

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD DRAWINGS

(CONTINUED)

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Greg Pankow and Elizabeth Phillips

IMPACT ANALYSIS (attach report): Yes

Submitted By: Katherine Smutzer (on behalf of Mark Orton)

Title: Standards Engineer

Organization: INDOT/Standards

Phone Number: 317-233-2074

Date: September 19, 2017

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD DRAWINGS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? Yes

Construction time? Yes

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? No

Design process? Yes

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? YES

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

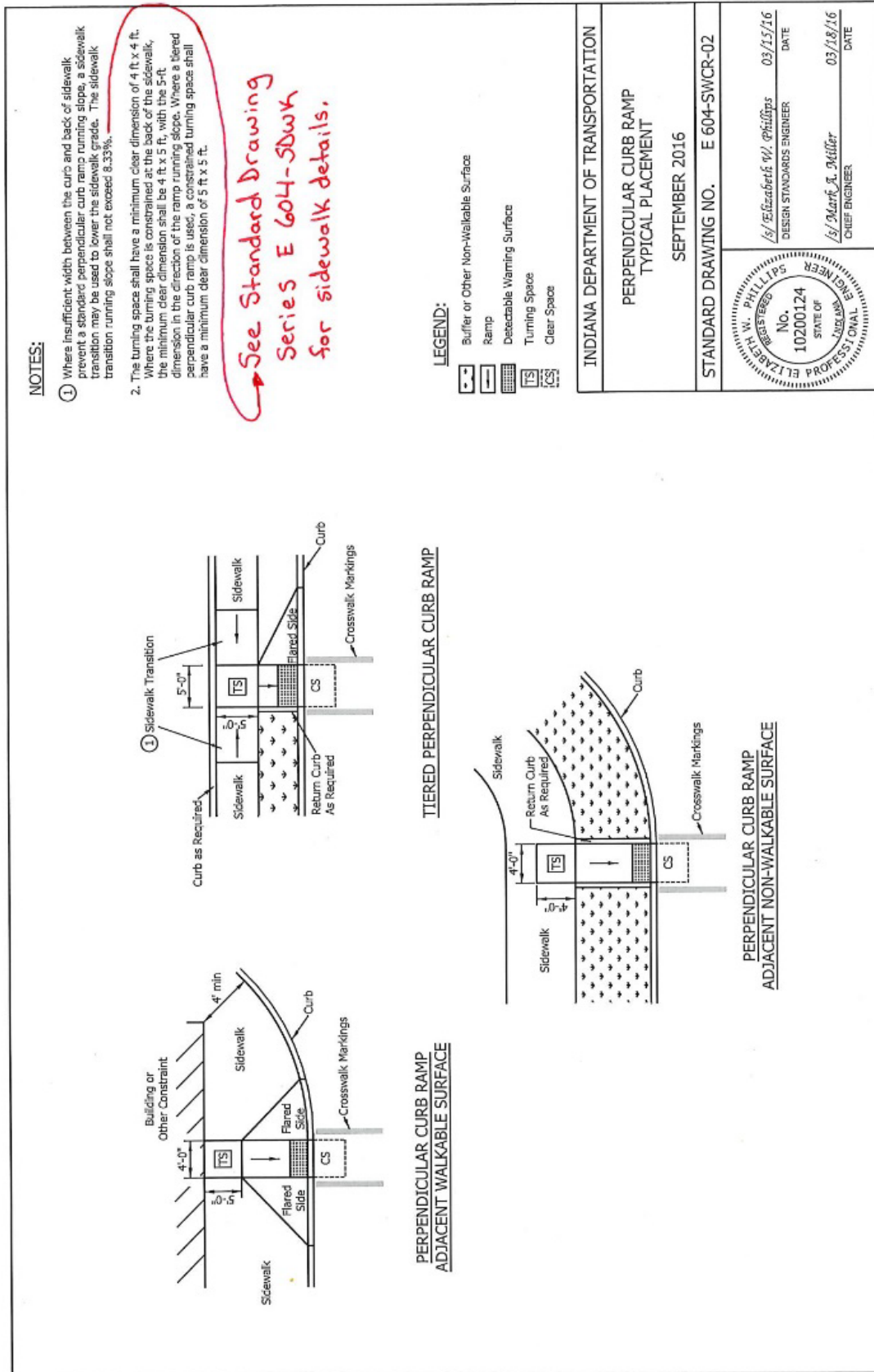
Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: Contractors have been asking where it is directed to construct the curb ramp elements to a 6" depth.



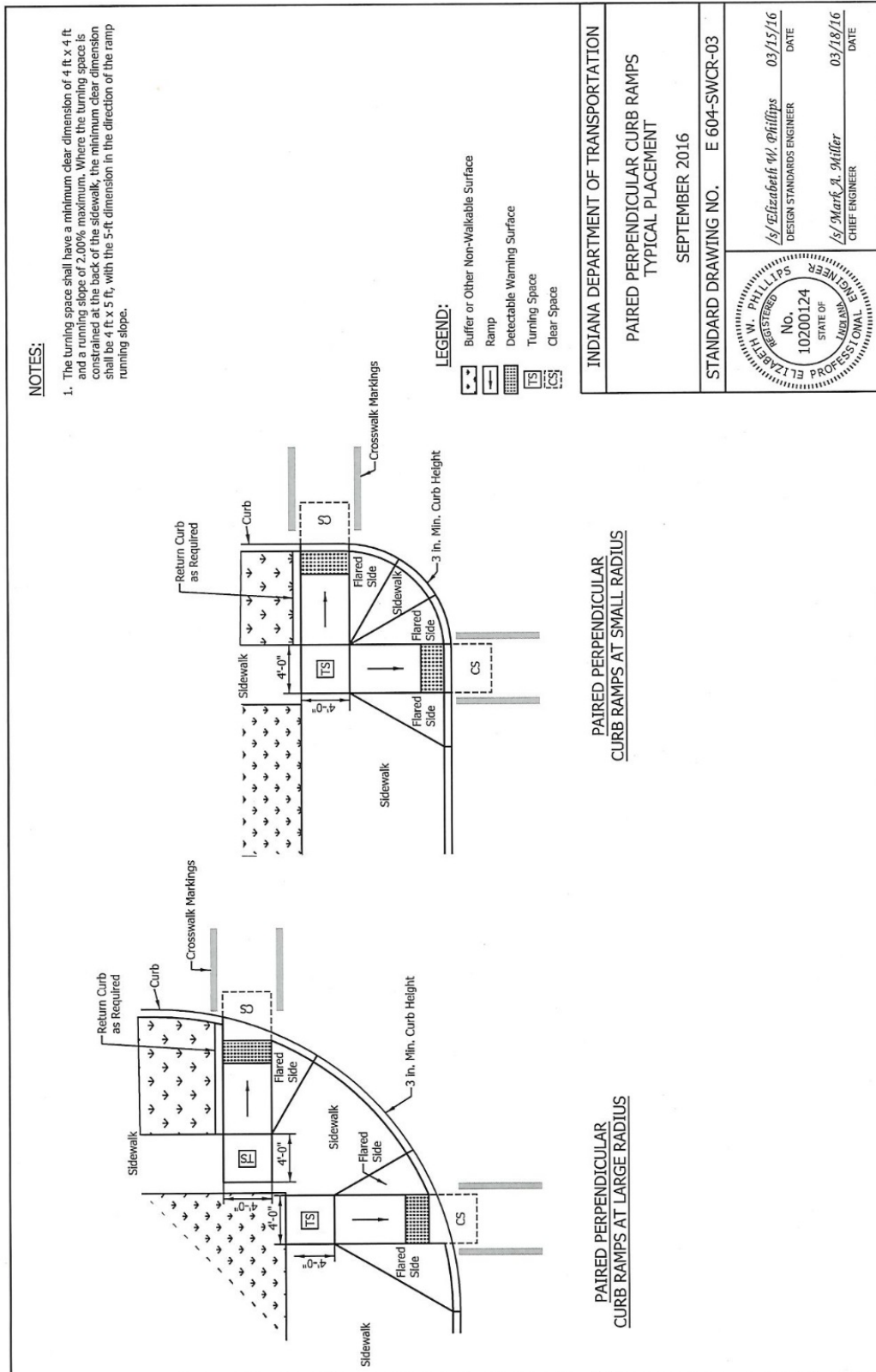
REVISION TO STANDARD DRAWINGS

604-SWCR-02 PERPENDICULAR CURB RAMP TYPICAL PLACEMENT (WITH MARKUPS)



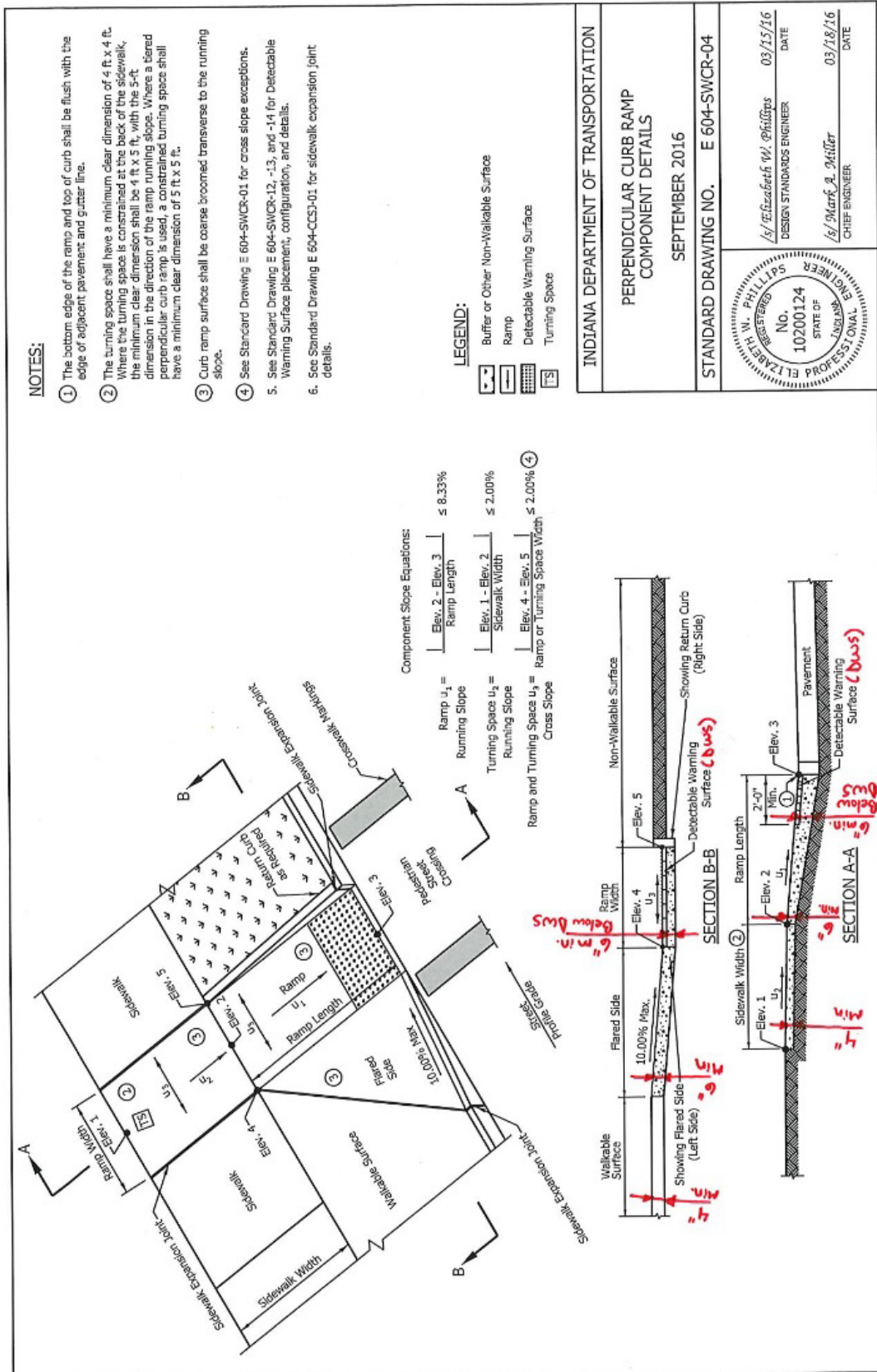
REVISION TO STANDARD DRAWINGS

604-SWCR-03 PAIRED PERPENDICULAR CURB RAMPS TYPICAL PLACEMENT (NO PROPOSED CHANGES)



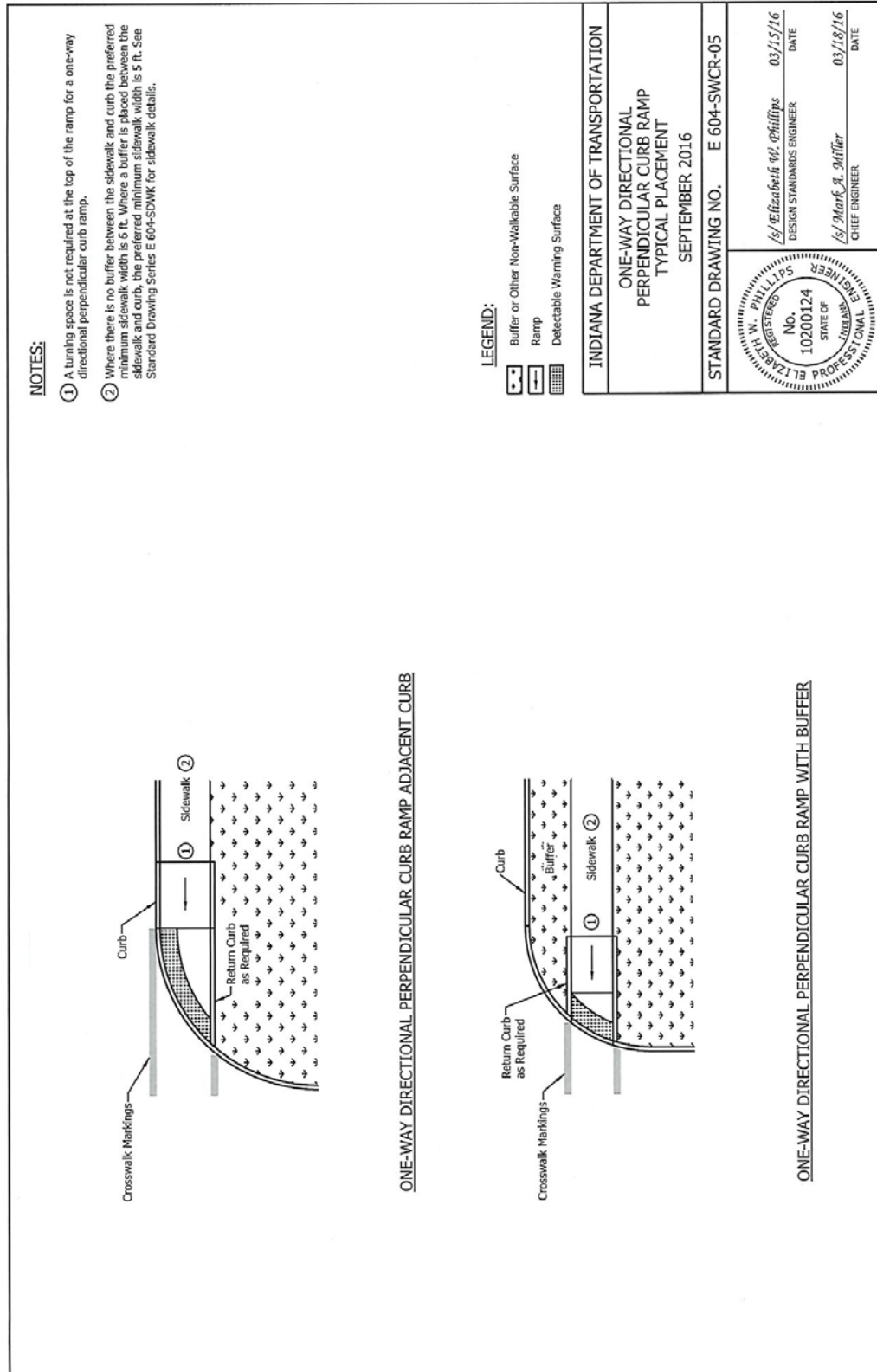
REVISION TO STANDARD DRAWINGS

604-SWCR-04 PERPENDICULAR CURB RAMP COMPONENT DETAILS (WITH MARKUPS)



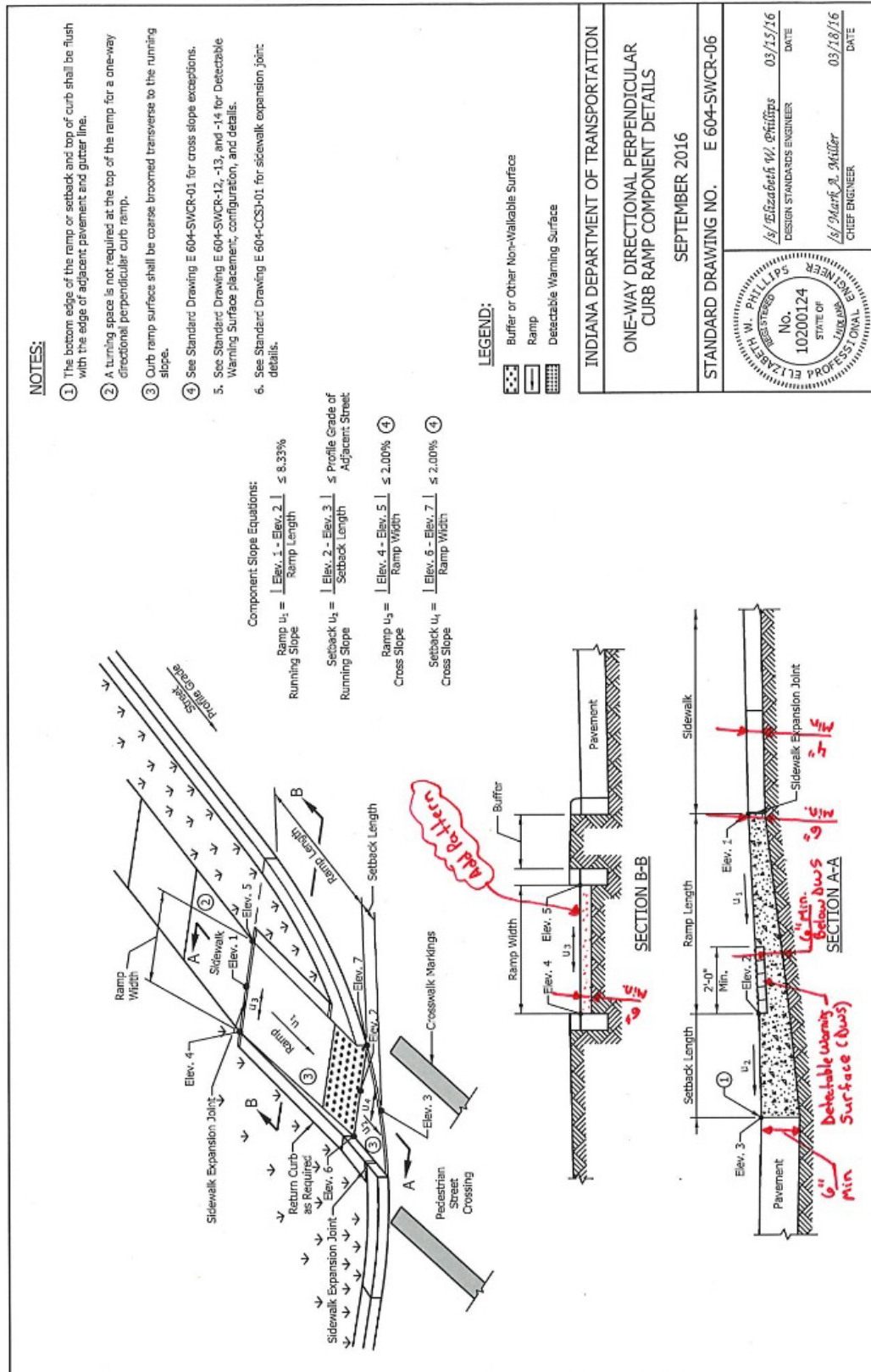
REVISION TO STANDARD DRAWINGS

604-SWCR-05 ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP TYPICAL
 PLACEMENT (NO PROPOSED CHANGES)



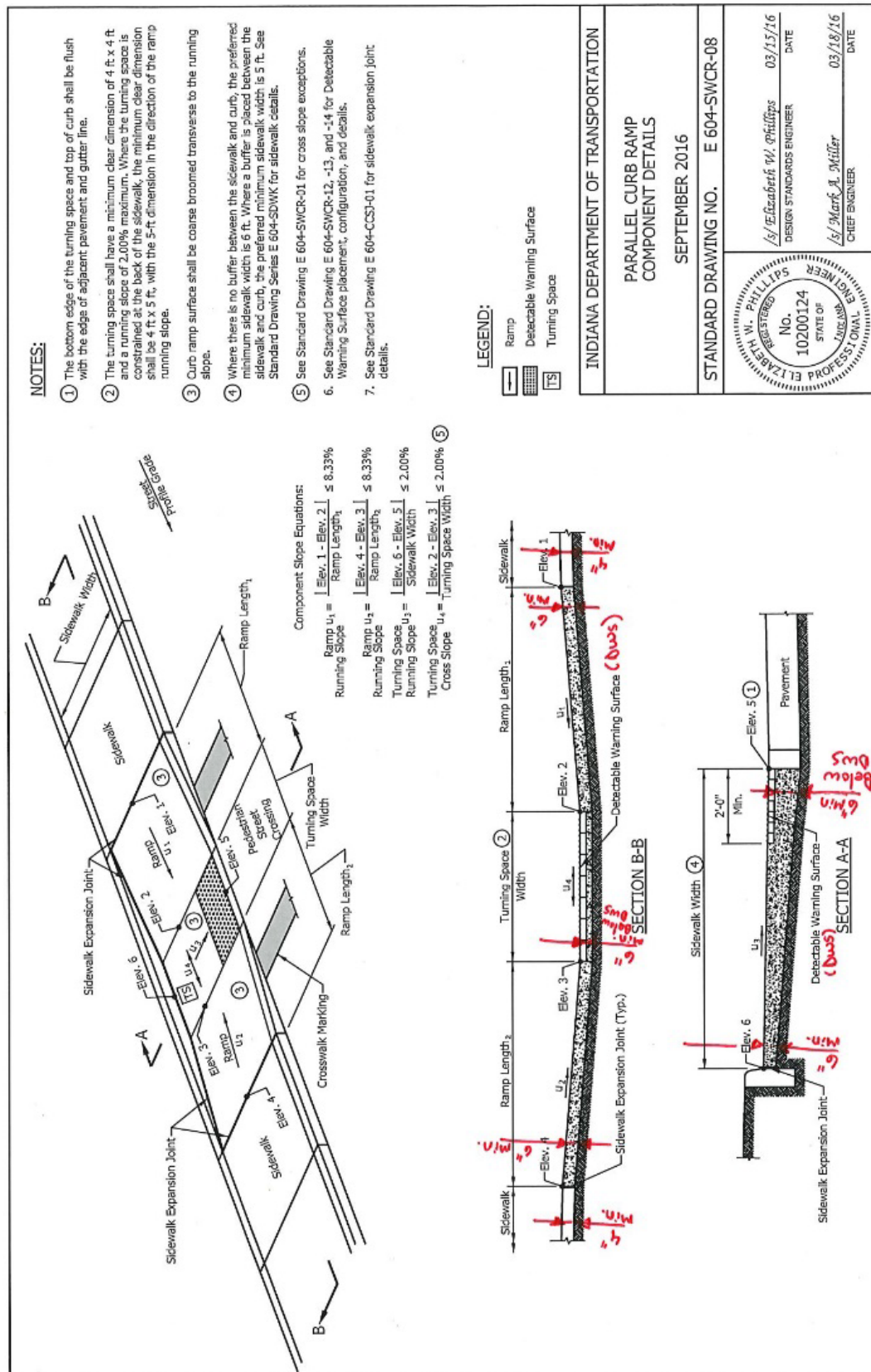
REVISION TO STANDARD DRAWINGS

604-SWCR-06 ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAILS (WITH MARKUPS)



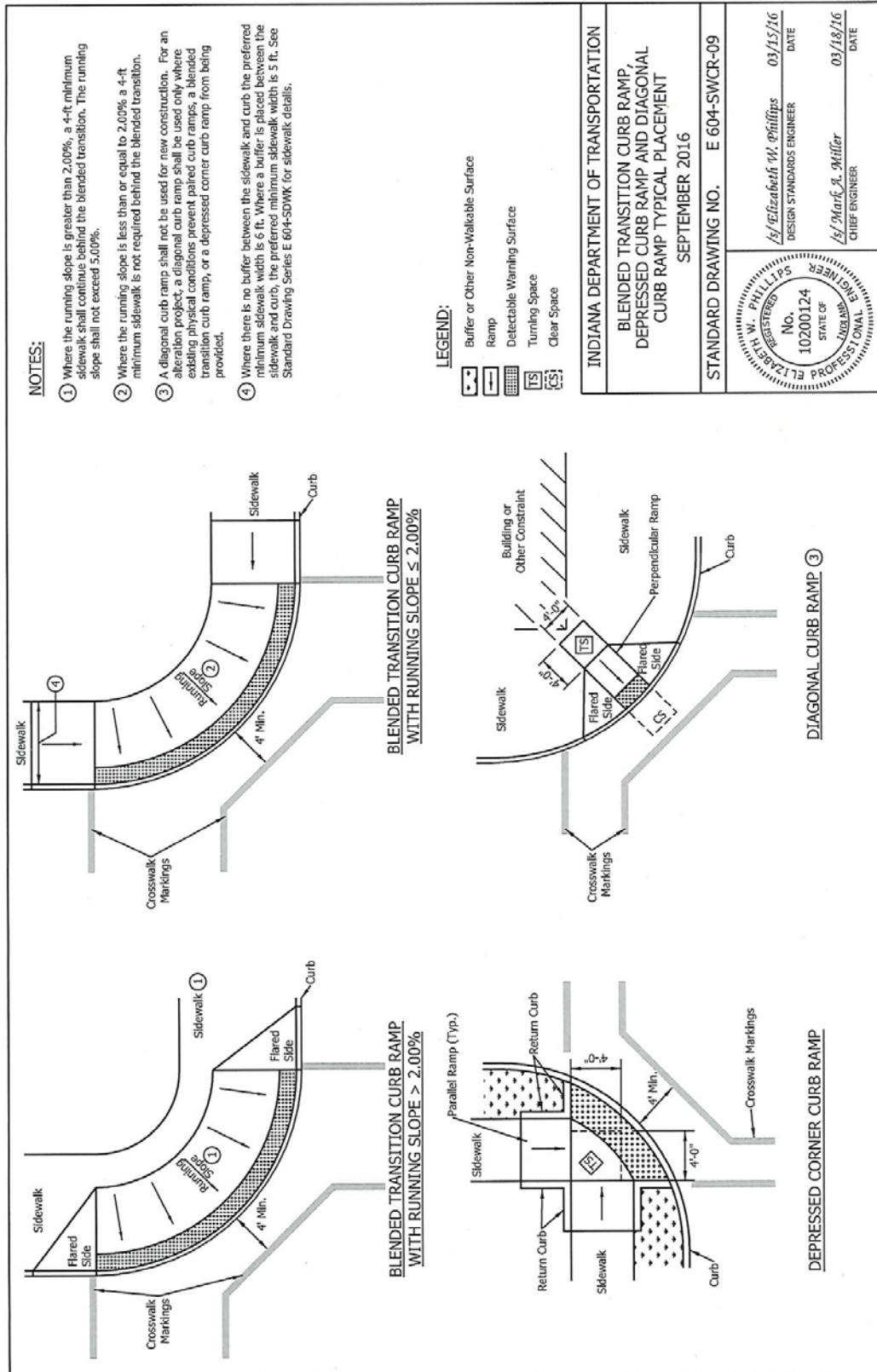
REVISION TO STANDARD DRAWINGS

604-SWCR-08 PARALLEL CURB RAMP COMPONENT DETAILS (WITH MARKUPS)



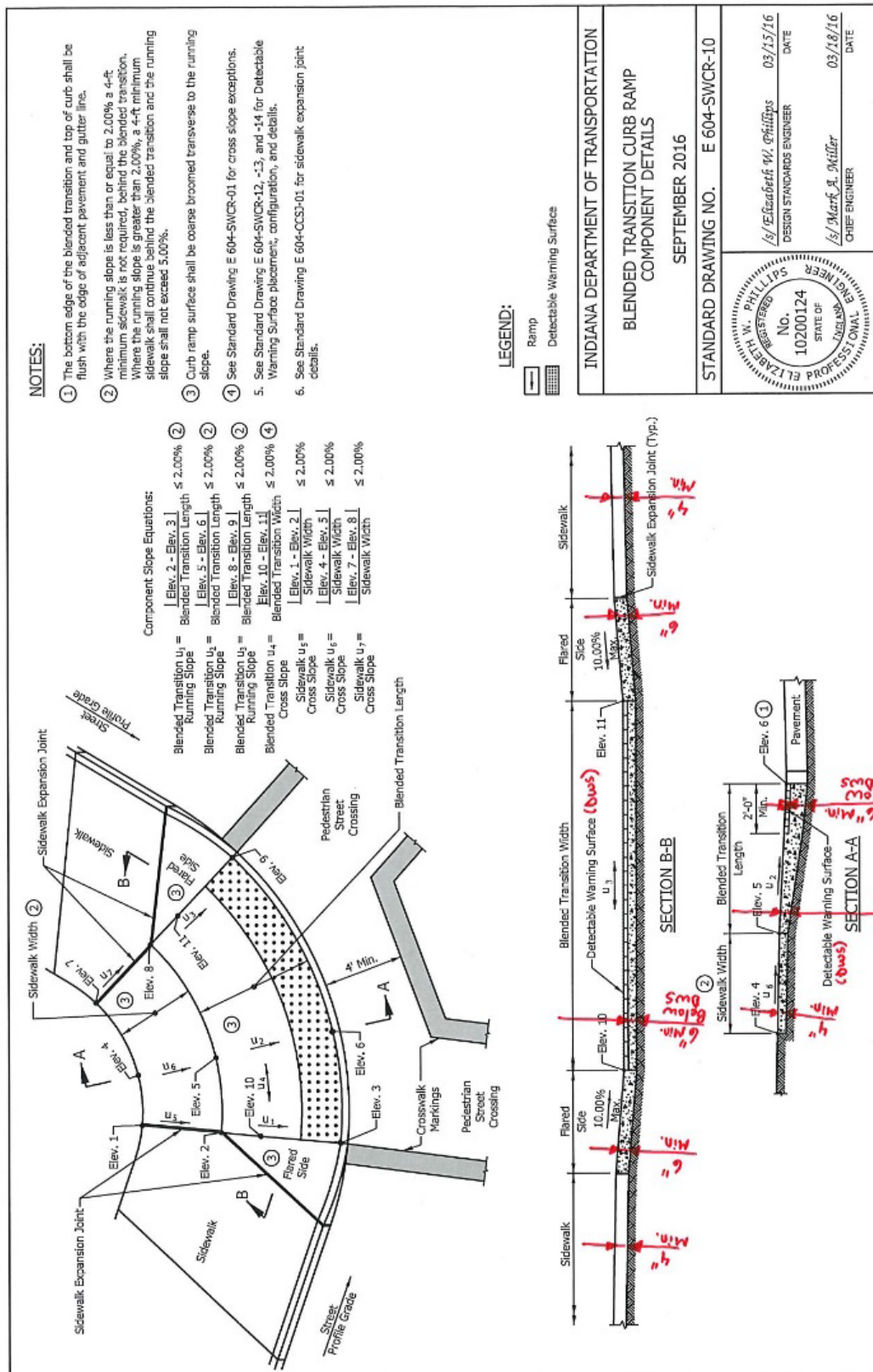
REVISION TO STANDARD DRAWINGS

604-SWCR-09 BLENDED TRANSITION CURB RAMP, DEPRESSED CURB RAMP AND
 DIAGONAL CURB RAMP TYPICAL PLACEMENT (NO PROPOSED CHANGES)



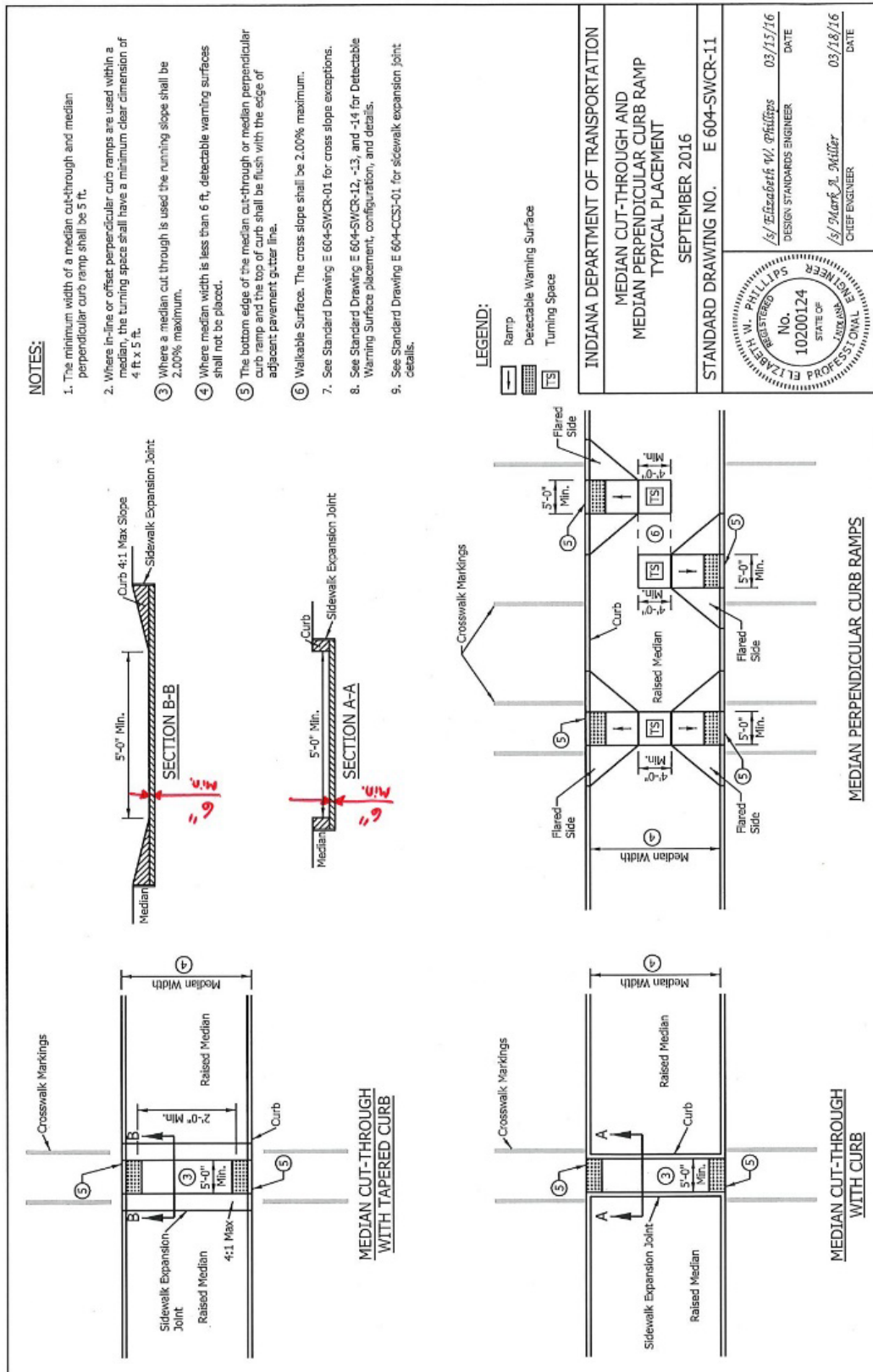
REVISION TO STANDARD DRAWINGS

604-SWCR-10 BLENDED TRANSITION CURB RAMP COMPONENT DETAILS (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

604-SWCR-11 MEDIAN CUT-THROUGH AND MEDIAN PERPENDICULAR CURB RAMP
 TYPICAL PLACEMENT (WITH MARKUPS)



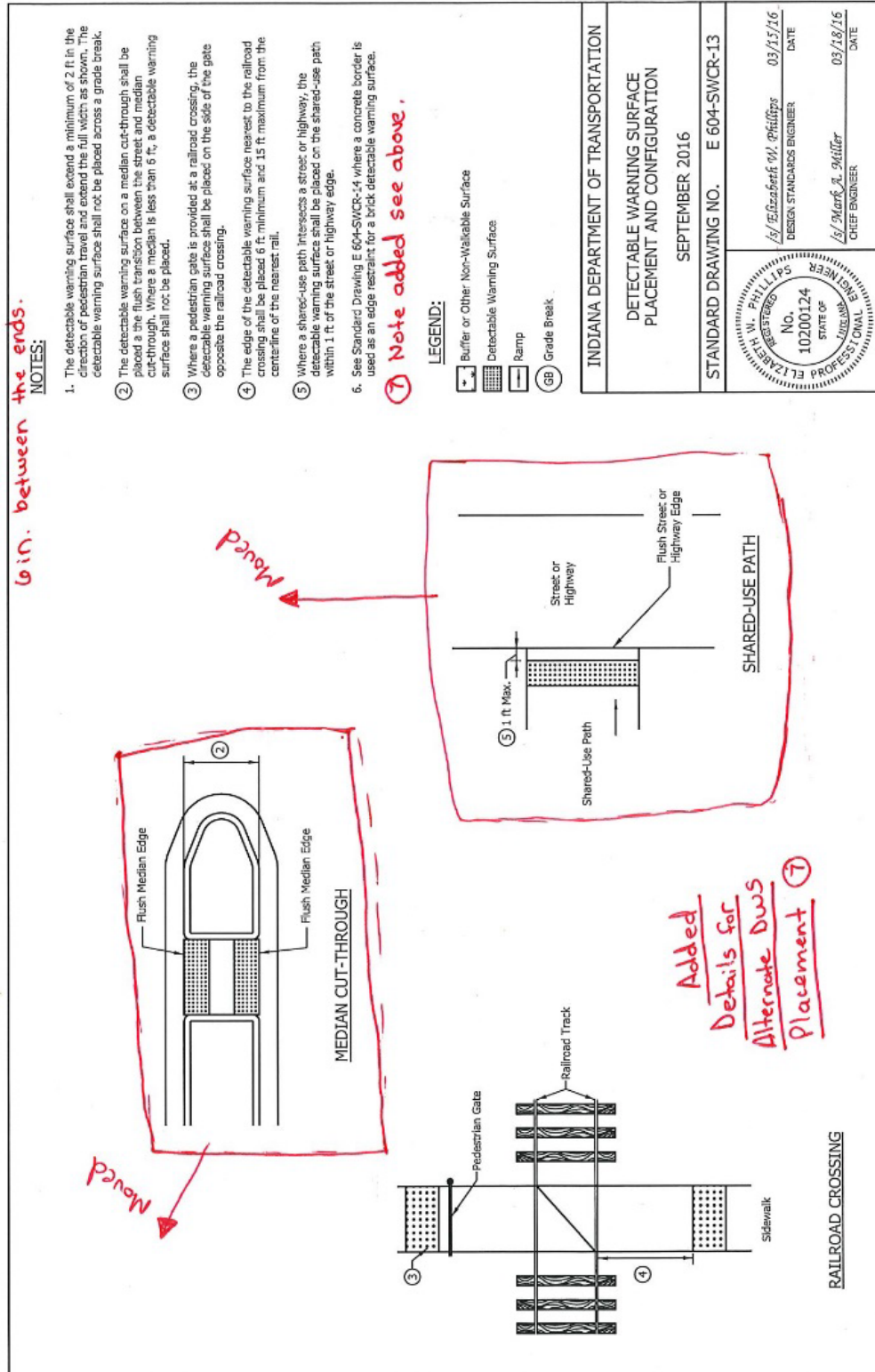
604-SWCR-12 DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION
(WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

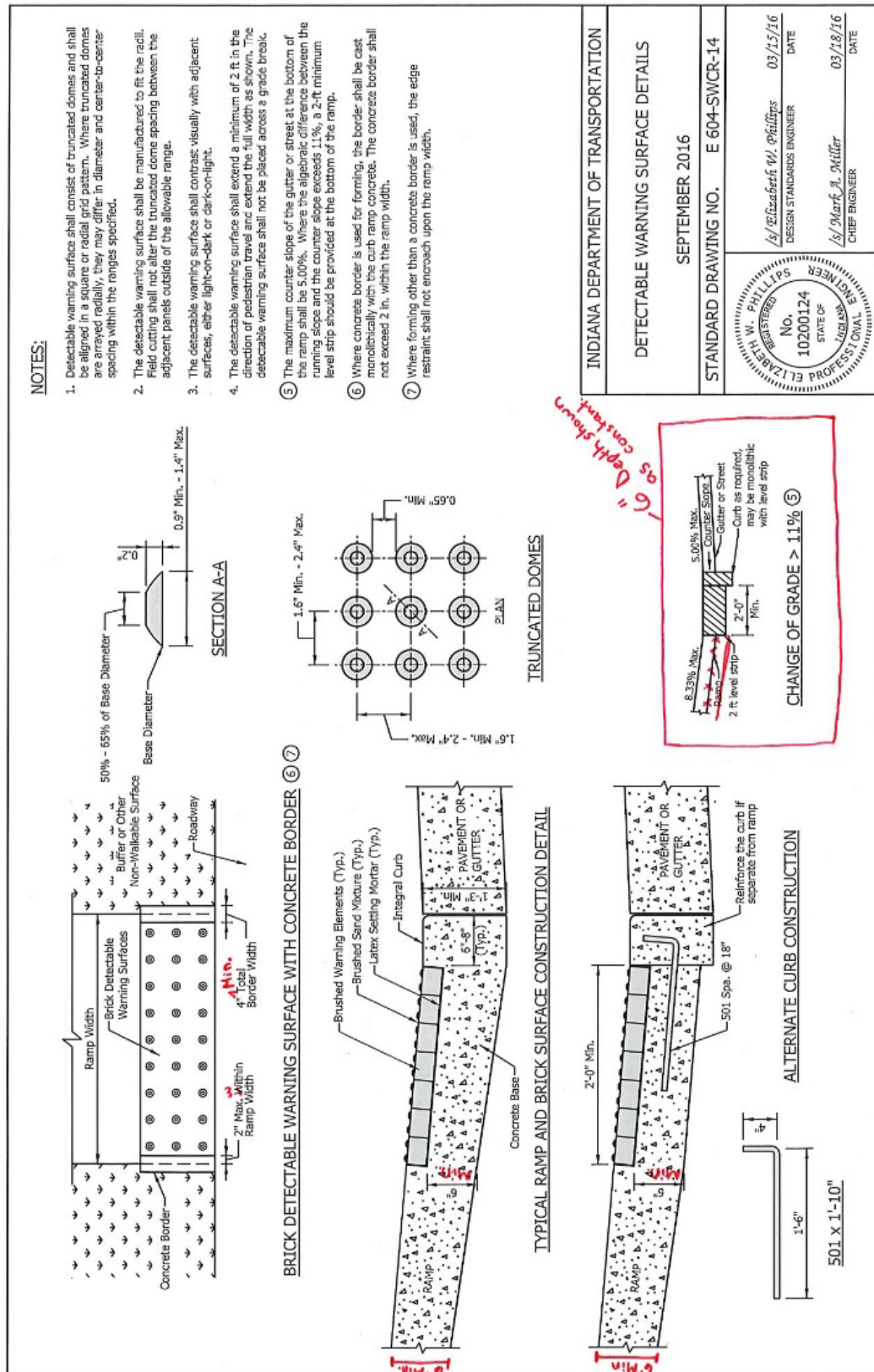
604-SWCR-13 DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION
 (WITH MARKUPS)

⑦ Rectangular DWS plates maybe field cut and placed along a radius. Plate ends shall be placed at the back of curb. The distance between the back of curb and the front face of the DWS shall not exceed 6 in. between the ends.



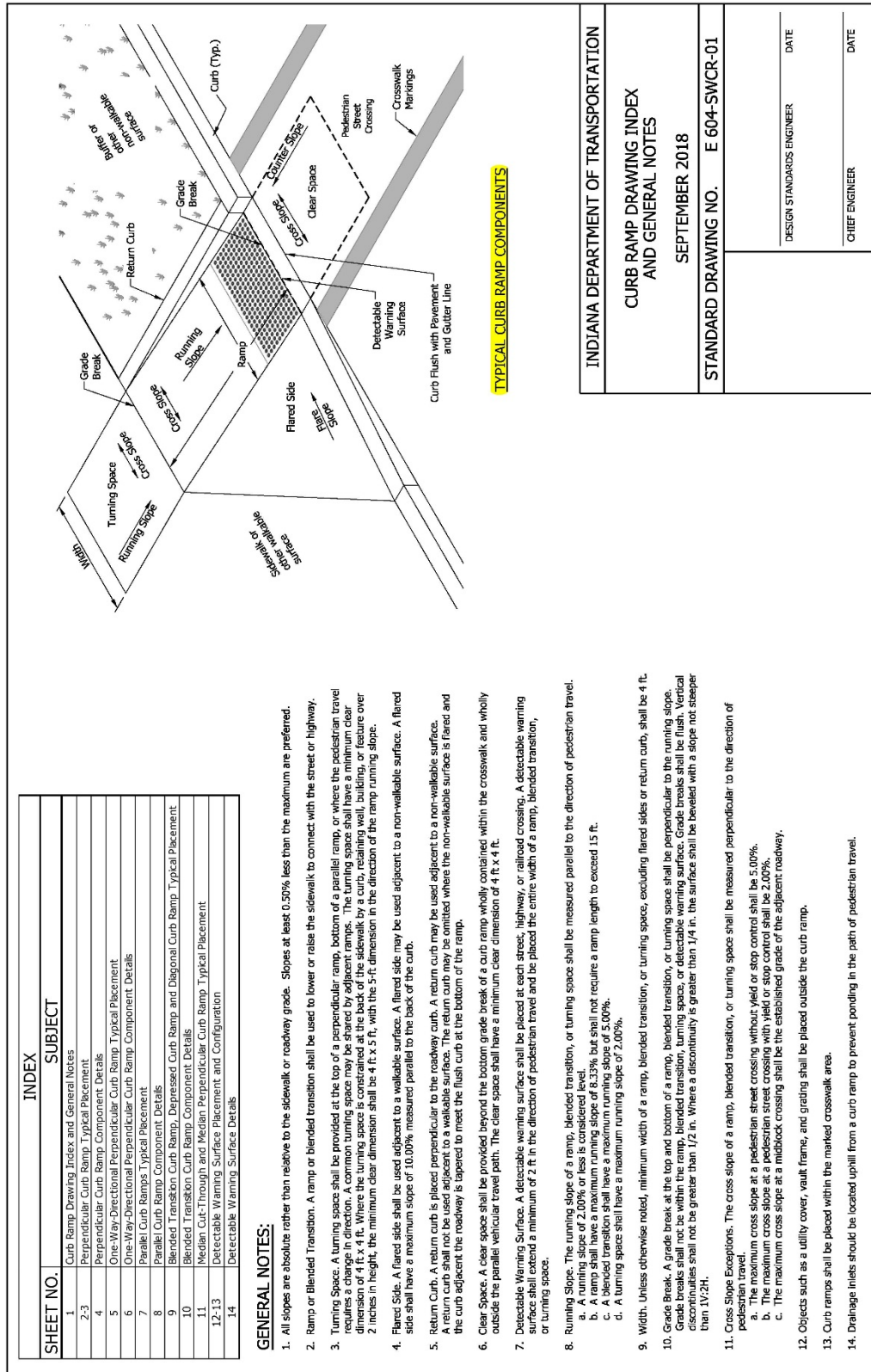
REVISION TO STANDARD DRAWINGS

604-SWCR-14 DETECTABLE WARNING SURFACE DETAILS (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

604-SWCR-01 CURB RAMP DRAWING INDEX AND GENERAL NOTES (REVISED DRAFT)

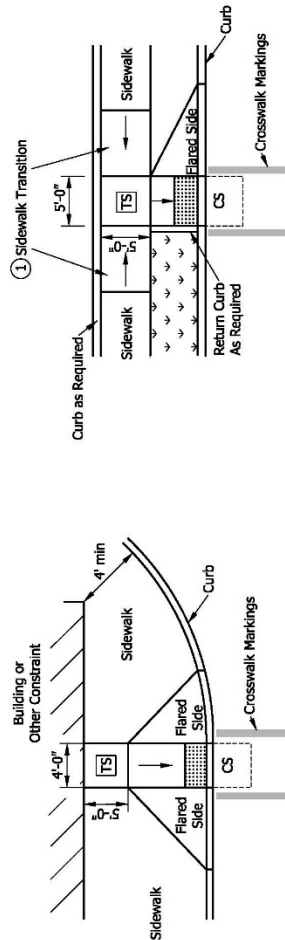


REVISION TO STANDARD DRAWINGS

604-SWCR-02 PERPENDICULAR CURB RAMP TYPICAL PLACEMENT (REVISED DRAFT)

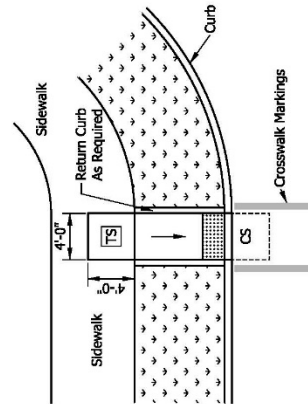
NOTES:

- Where insufficient width between the curb and back of sidewalk prevent a standard perpendicular curb ramp running slope, a sidewalk transition may be used to lower the sidewalk grade. The sidewalk transition running slope shall not exceed 8.33%. See Standard Drawing Series E 604-SDWK for sidewalk details.
- The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.



PERPENDICULAR CURB RAMP
 ADJACENT WALKABLE SURFACE

TIERED PERPENDICULAR CURB RAMP



PERPENDICULAR CURB RAMP
 ADJACENT NON-WALKABLE SURFACE

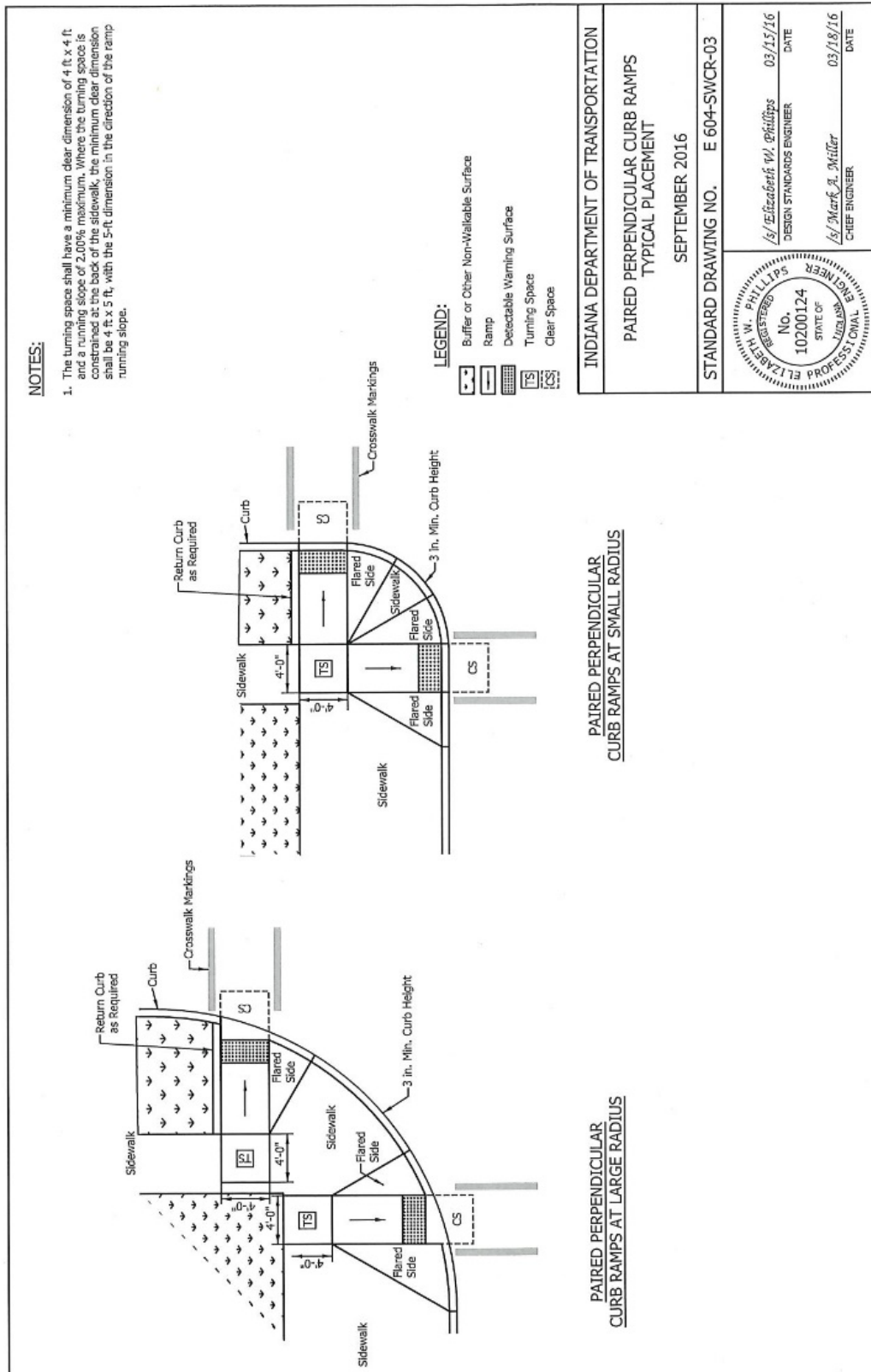
LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- Turning Space
- Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION	
PERPENDICULAR CURB RAMP TYPICAL PLACEMENT	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-02	
DESIGN STANDARDS ENGINEER	DATE
CHIEF ENGINEER	DATE

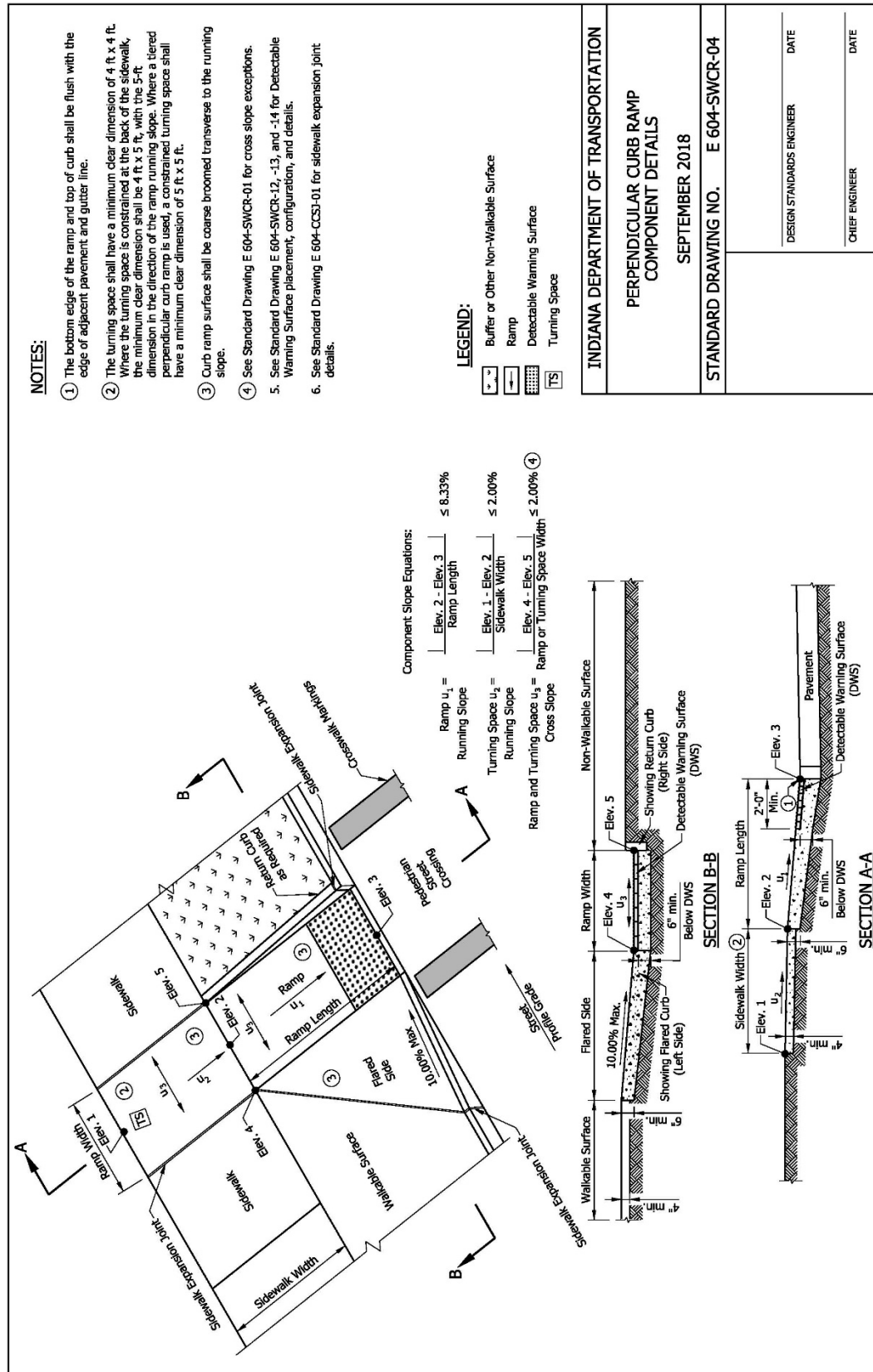
REVISION TO STANDARD DRAWINGS

604-SWCR-03 PAIRED PERPENDICULAR CURB RAMPS TYPICAL PLACEMENT (NO CHANGES)



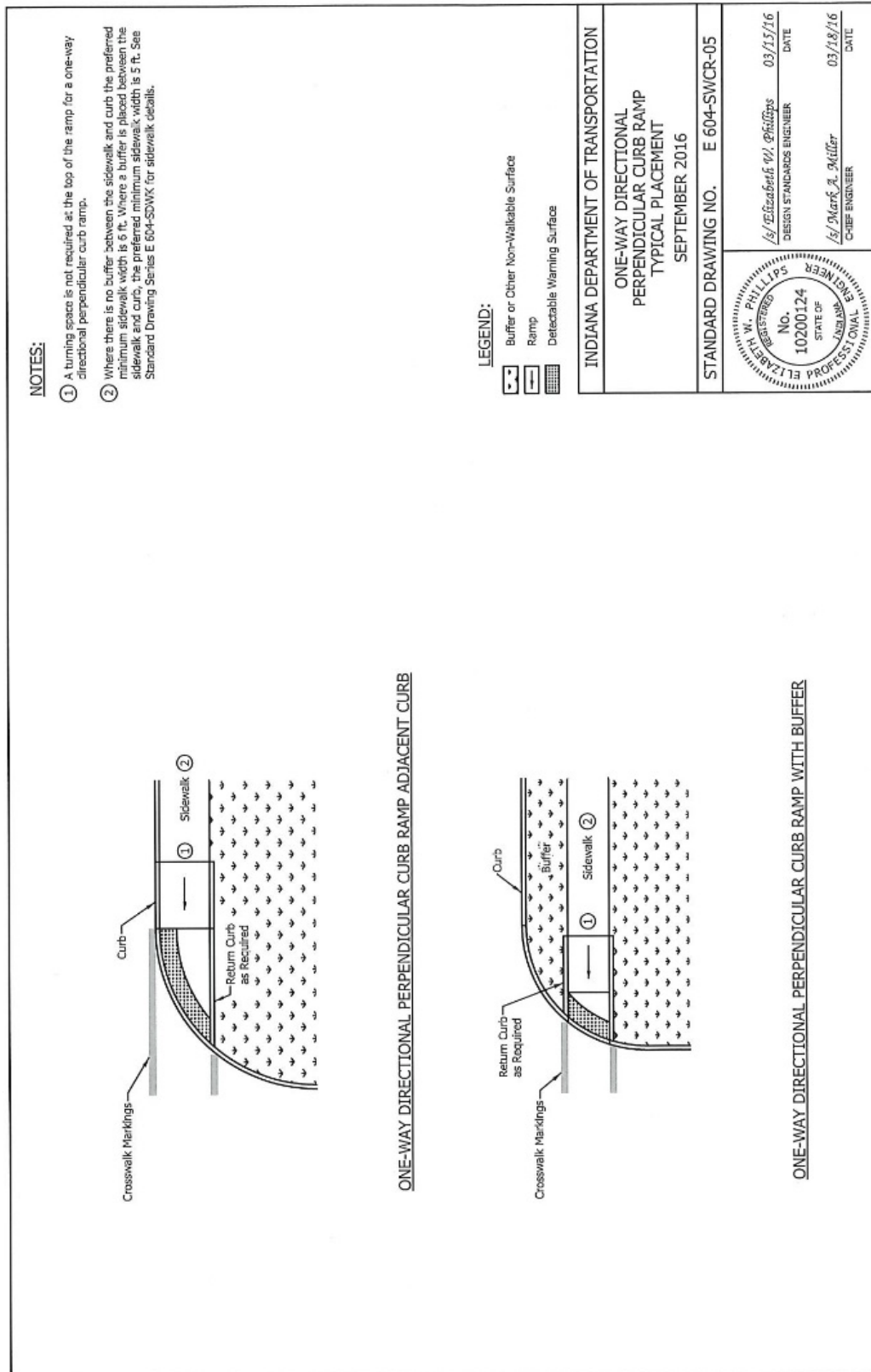
REVISION TO STANDARD DRAWINGS

604-SWCR-04 PERPENDICULAR CURB RAMP COMPONENT DETAILS (REVISED DRAFT)



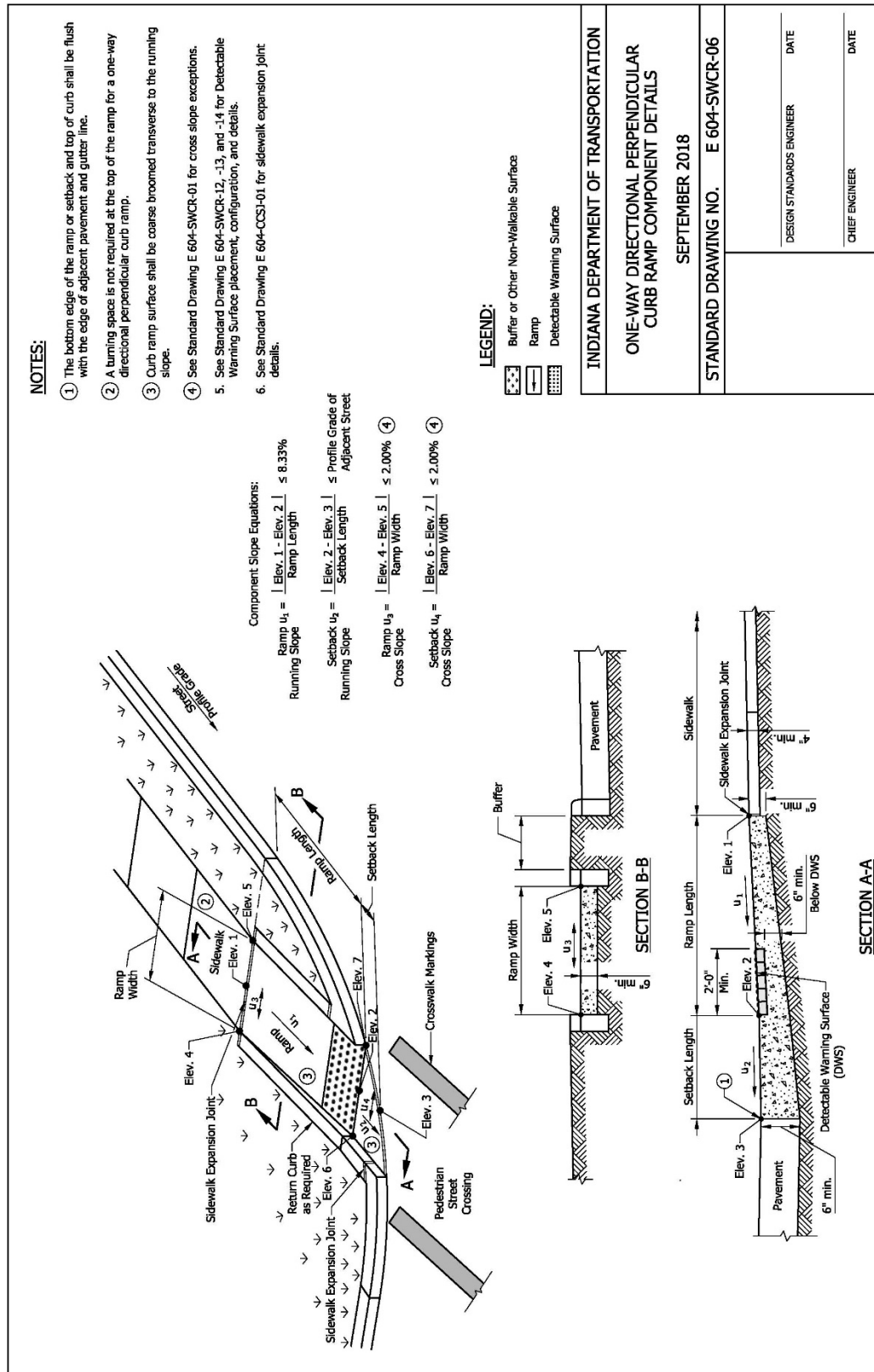
REVISION TO STANDARD DRAWINGS

604-SWCR-05 ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP TYPICAL
 PLACEMENT (NO CHANGES)



REVISION TO STANDARD DRAWINGS

604-SWCR-06 ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAILS (REVISED DRAFT)



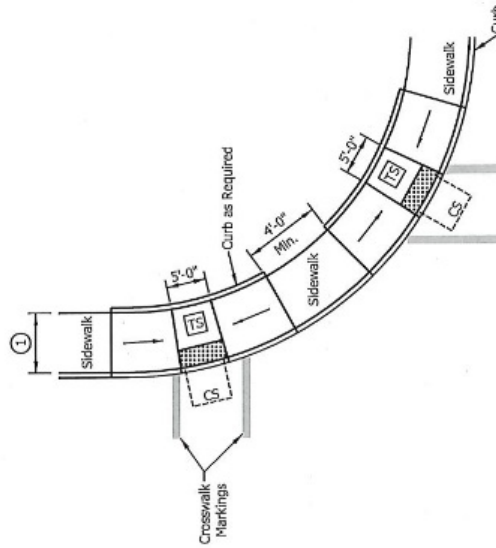
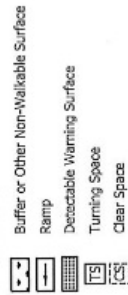
REVISION TO STANDARD DRAWINGS

604-SWCR-07 PAIRED PARALLEL CURB RAMPS AND MIDBLOCK CROSSING CURB RAMP
 TYPICAL PLACEMENT (NO CHANGES)

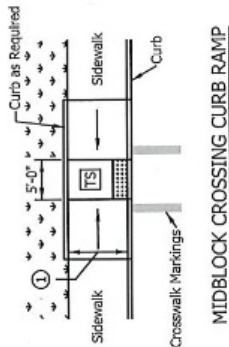
NOTES:

1. Where there is no buffer between the sidewalk and curb the preferred minimum sidewalk width is 5 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SWCR for sidewalk details.
2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a turning slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:



PAIRED PARALLEL CURB RAMPS ALONG LARGE RADIUS



MIDBLOCK CROSSING CURB RAMP

INDIANA DEPARTMENT OF TRANSPORTATION

PAIRED PARALLEL CURB RAMPS AND
 MIDBLOCK CROSSING CURB RAMP
 TYPICAL PLACEMENT
 SEPTEMBER 2016

STANDARD DRAWING NO. E 604-SWCR-07

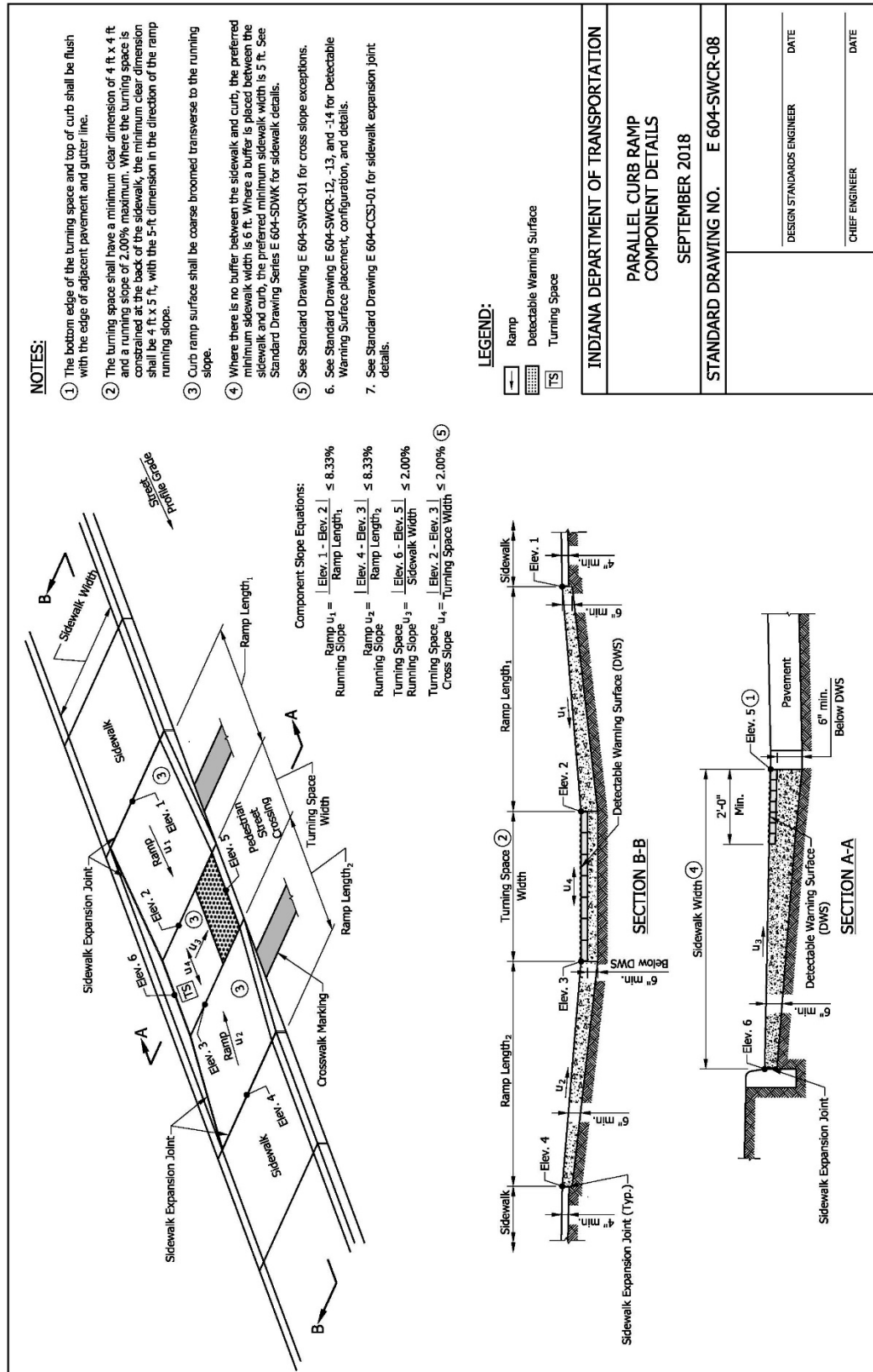


/s/ Elizabeth W. Phillips
 DESIGN STANDARDS ENGINEER
 DATE 03/15/16

/s/ Mark A. Miller
 CHIEF ENGINEER
 DATE 03/18/16

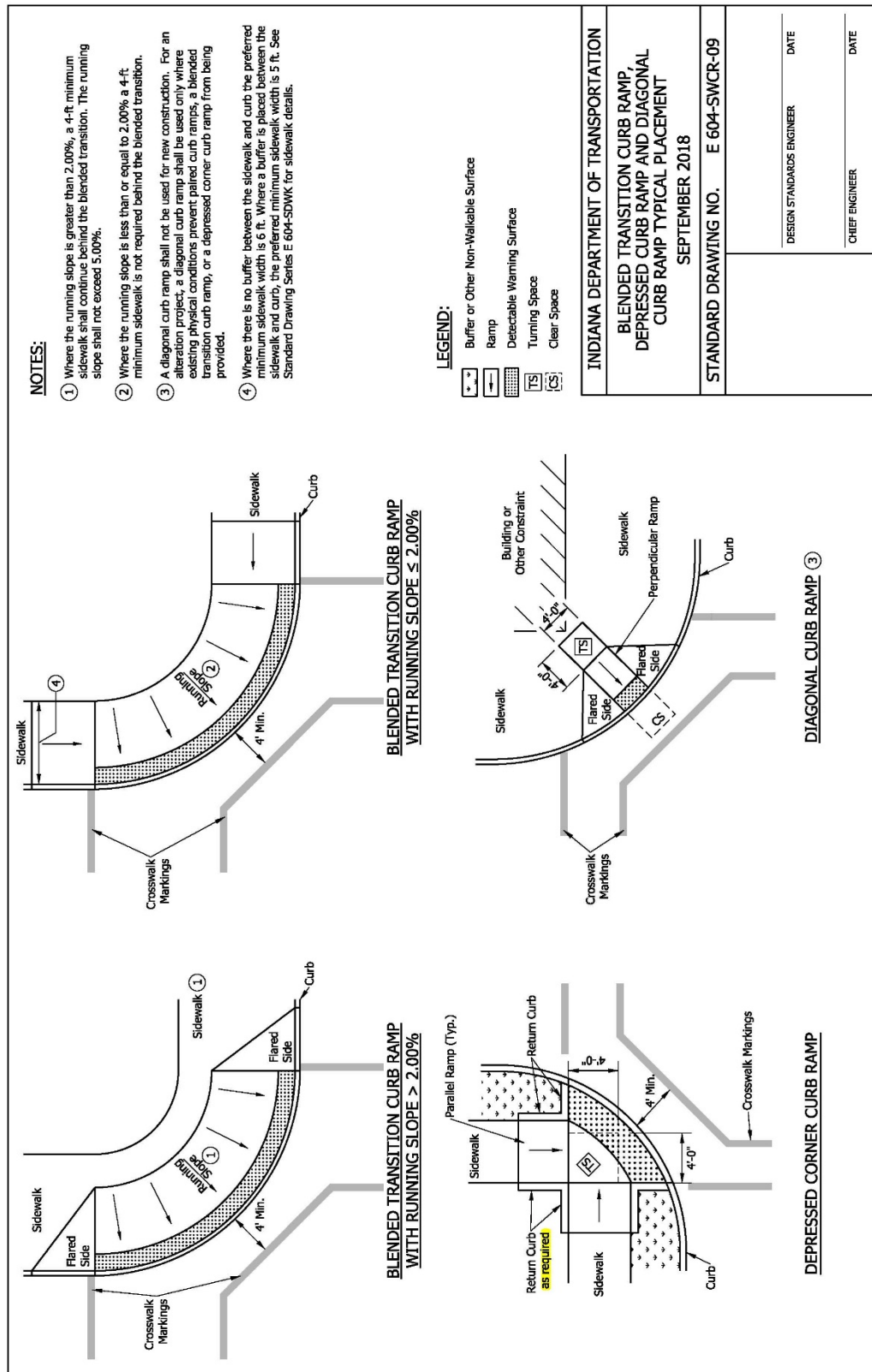
REVISION TO STANDARD DRAWINGS

604-SWCR-08 PARALLEL CURB RAMP COMPONENT DETAILS (REVISED DRAFT)



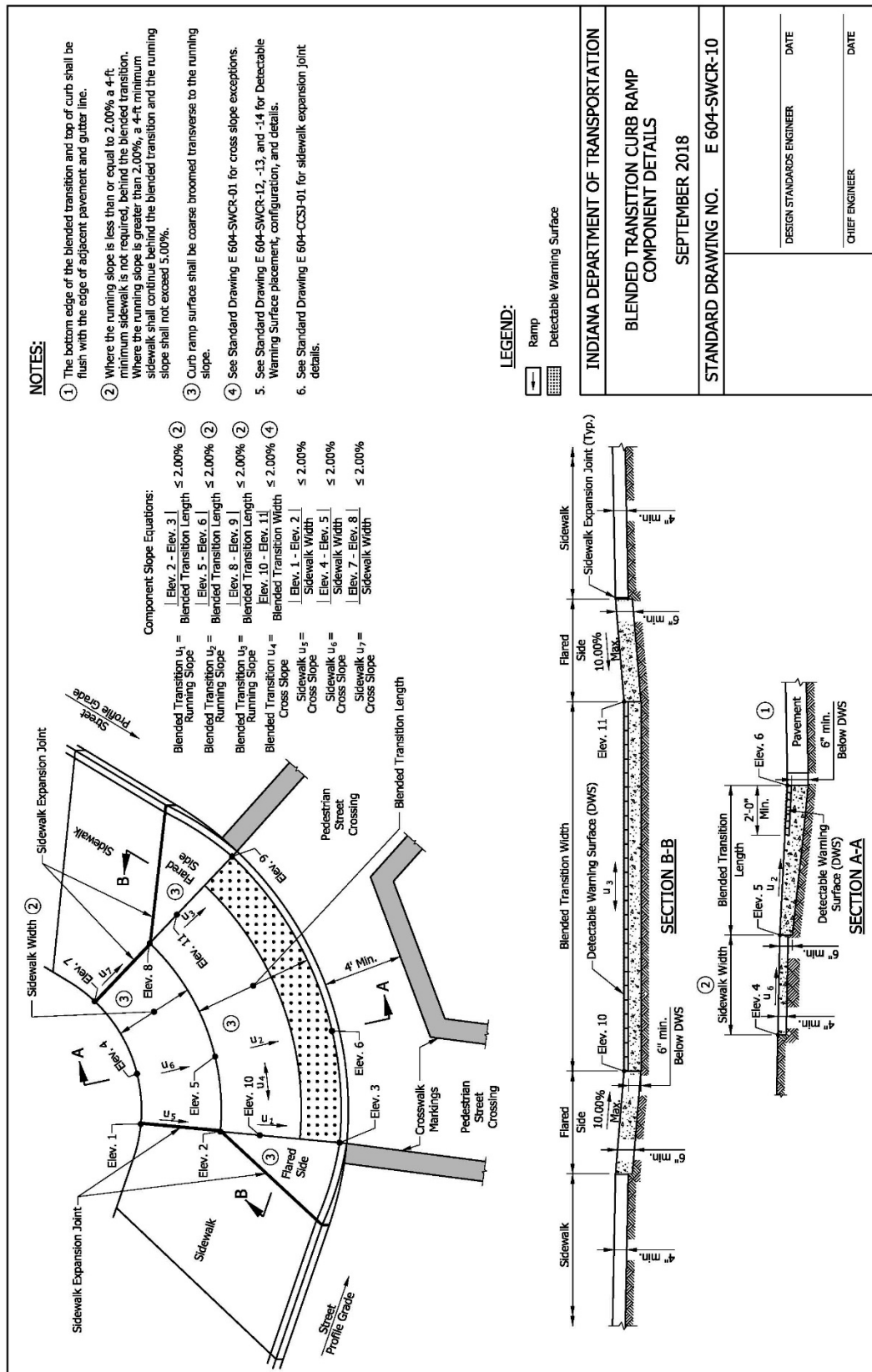
REVISION TO STANDARD DRAWINGS

604-SWCR-09 BLENDED TRANSITION CURB RAMP, DEPRESSED CURB RAMP AND
 DIAGONAL CURB RAMP TYPICAL PLACEMENT (REVISED DRAFT)



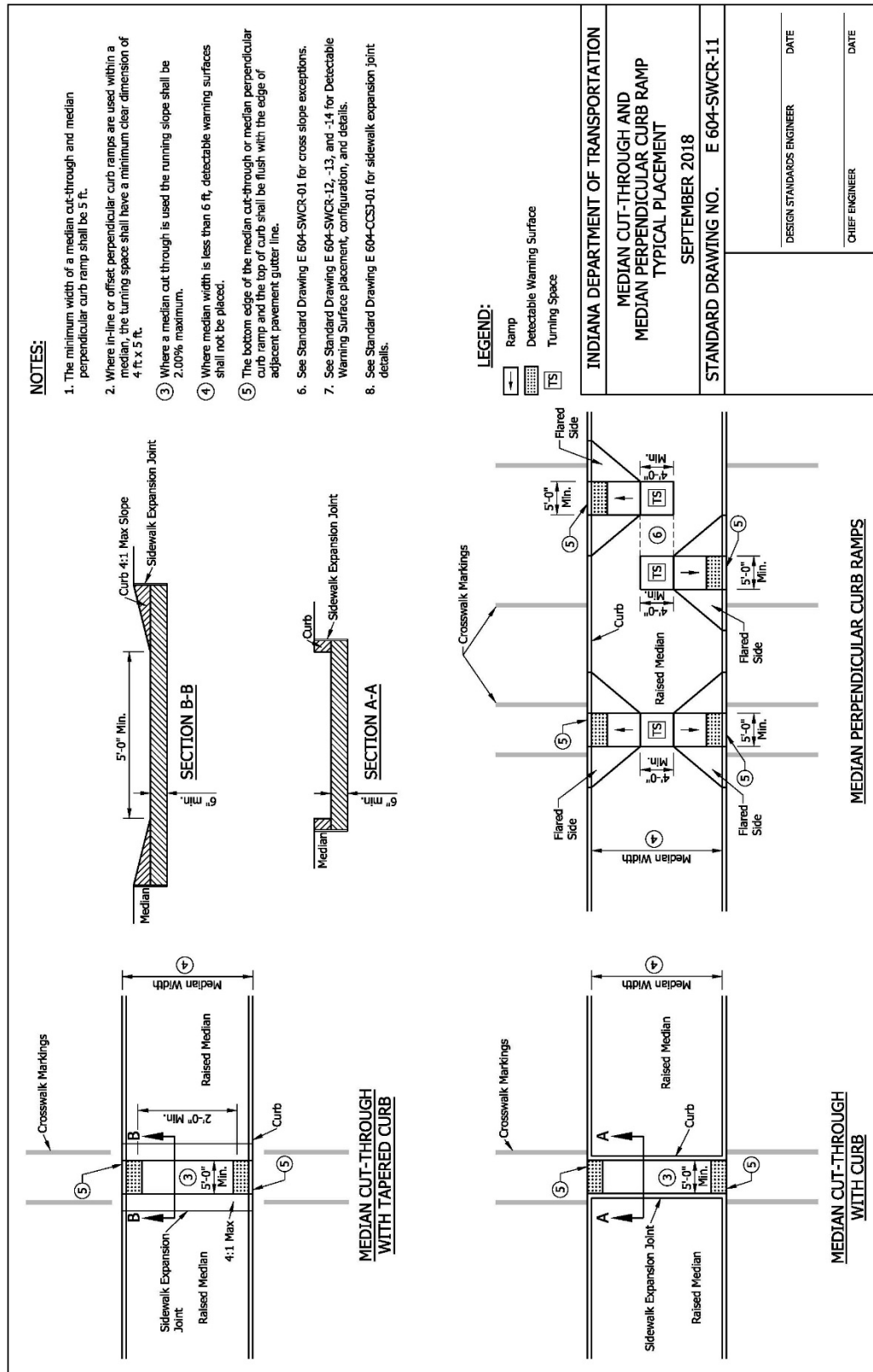
REVISION TO STANDARD DRAWINGS

604-SWCR-10 BLENDED TRANSITION CURB RAMP COMPONENT DETAILS (REVISED DRAFT)



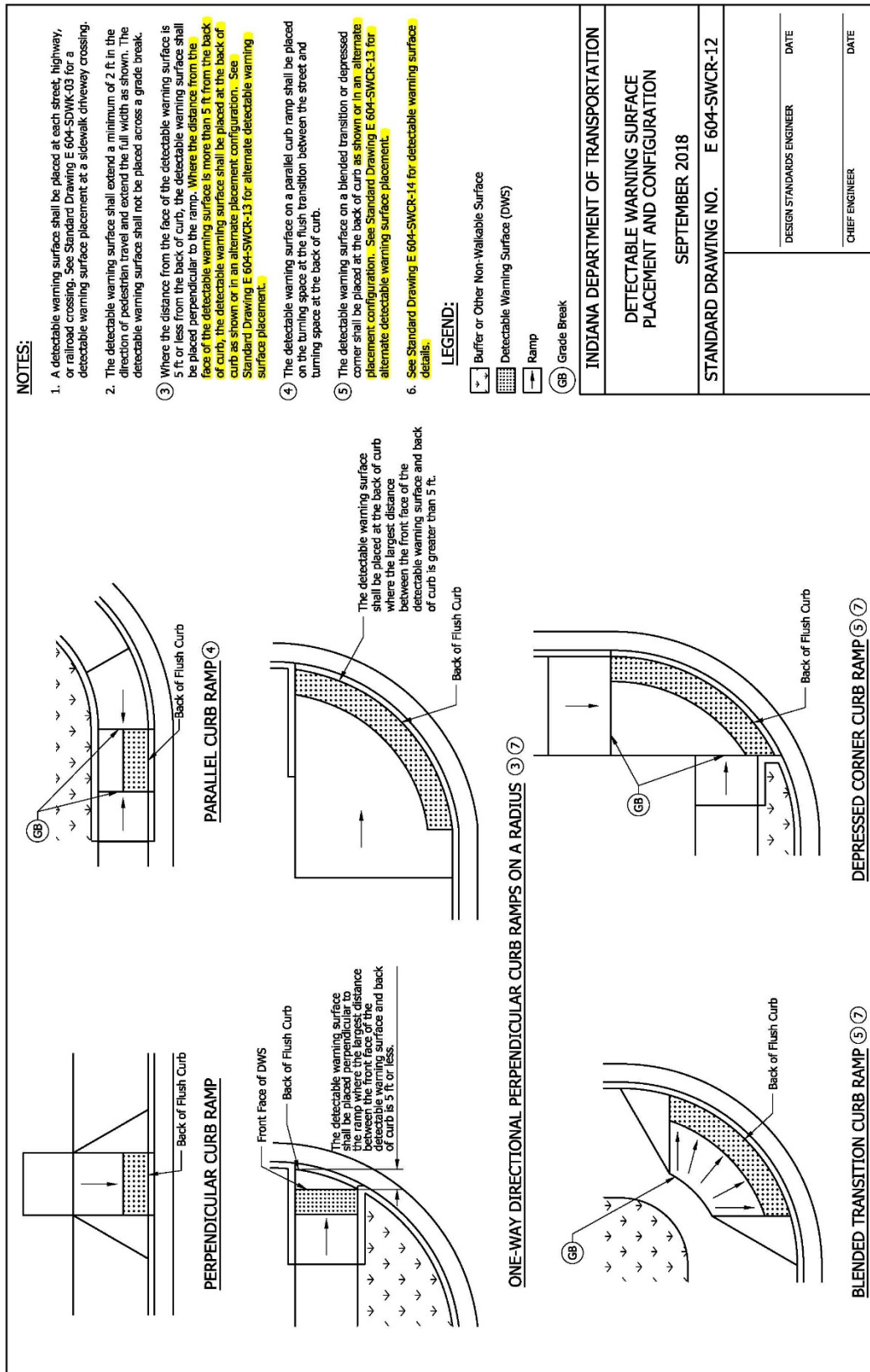
REVISION TO STANDARD DRAWINGS

604-SWCR-11 MEDIAN-CUT-THROUGH AND MEDIAN PERPENDICULAR CURB RAMP
 TYPICAL PLACEMENT (REVISED DRAFT)



REVISION TO STANDARD DRAWINGS

604-SWCR-12 DETECTABLE WARNING SURFACE AND CONFIGURATION (REVISED DRAFT)



COMMENTS AND ACTION

604-SWCR-01 THROUGH -14

DISCUSSION:

Ms. Phillips, sitting in for Mr. Orton, introduced and presented this item, stating that the curb ramp element depths are not shown on the standard drawings, and are not specified in 604. The question of the curb ramp element depths has been in question in the field and needs to be addressed.

Ms. Phillips proposed to revise the standard drawings to include the depths of the curb ramp components, and to add text for clarification, as shown on the attached drawings. Ms. Smutzer explained the revisions made as shown, and the reasoning behind each one.

Mr. Koch asked about note 2 on sheet 14 regarding the truncated dome spacing. Ms. Phillips explained that it still fits within the specified tolerances. Further discussion ensued concerning spacing, configuration and tolerances. Mr. Koch believes that note 7 on sheet 14 is causing confusion. Mr. Koch suggested combining notes 2 and 7 for clarification. Ms. Phillips said they can revise the notes on sheets 12, 13 and 14 for clarification and consistency.

Mr. Osborn asked about the requirement for 6 in. at the top of the ramp. Ms. Smutzer explained that the requirements will now be shown on the drawings.

Further discussion ensued concerning the ramps, borders and dome alignment. Ms. Phillips stated that the appropriate revisions will be incorporated as previously discussed, and will be shown in these meeting minutes.

<p>Motion: Ms. Phillips Second: Mr. Dave Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p>	<p>Action:</p> <table> <tr> <td><input type="checkbox"/></td><td>Passed as Submitted</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>Passed as Revised</td></tr> <tr> <td><input type="checkbox"/></td><td>Withdrawn</td></tr> </table>	<input type="checkbox"/>	Passed as Submitted	<input checked="" type="checkbox"/>	Passed as Revised	<input type="checkbox"/>	Withdrawn
<input type="checkbox"/>	Passed as Submitted						
<input checked="" type="checkbox"/>	Passed as Revised						
<input type="checkbox"/>	Withdrawn						
<p>Standard Specifications Sections referenced and/or affected:</p>	<p><input type="checkbox"/> 2020 Standard Specifications</p>						
<p>SECTION 604, begin pg 414</p>	<p><input type="checkbox"/> Revise Pay Items List</p>						
<p>Recurring Special Provision affected:</p> <p>NONE</p>	<p><input type="checkbox"/> Create RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:</p>						
<p>Standard Drawing affected:</p> <p>604-SWCR series</p>	<p><input type="checkbox"/> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:</p>						
<p>Design Manual Sections affected:</p> <p>51.1.0</p>	<p><input checked="" type="checkbox"/> Standard Drawing Effective <u>Sept. 1, 2018</u></p>						
<p>GIFE Sections cross-references:</p> <p>22.1</p>	<p><input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p>						
	<p><input type="checkbox"/> GIFE Update</p> <p><input type="checkbox"/> SiteManager Update</p>						

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Tack coat application consistency varies widely in the field. Best practices are routinely not followed as evidenced by the commonly seen “corn rows”. It was noticed that the 406 section is lacking in basic direction regarding cleaning and uniformity of application.

PROPOSED SOLUTION: Revise language for clarification and consistency.

APPLICABLE STANDARD SPECIFICATIONS: 406

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: 13.2

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 2/15/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? N

Will approval of this item affect the Approved Materials List? N

Will this proposal improve:

Construction costs? Y

Construction time? N

Customer satisfaction? Y

Congestion/travel time? N

Ride quality? N

Will this proposal reduce operational costs or maintenance effort? Y

Will this item improve safety:

For motorists? Y

For construction workers? N

Will this proposal improve quality for:

Construction procedures/processes? Y

Asset preservation? Y

Design process? Y

Will this change provide the contractor more flexibility? Y

Will this proposal provide clarification for the Contractor and field personnel? Y

Can this item improve/reduce the number of potential change orders?
Y

Is this proposal needed for compliance with:

Federal or State regulations? N

AASHTO or other design code? N

Is this item editorial? N

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: We keep teaching and training about proper tack coat application, but our specs were not very firm. This will at least give us a basis to stand on.

REVISION TO STANDARD SPECIFICATIONS

SECTION 406 - TACK COAT

406.04 PREPARATION OF SURFACE

406.05 APPLICATION OF ASPHALT MATERIAL

The Standard Specifications are revised as follows:

SECTION 406, BEGIN LINE 21, DELETE AND INSERT AS FOLLOWS:

406.04 Preparation of Surface

The existing surface to be treated shall be free of foreign materials deemed detrimental by the Engineer. *The surface to which the asphalt material is applied shall not have standing water and shall be cleaned of dust, debris and any substances that will prevent adherence. ~~Cleaning shall be accomplished by means of a sweeper or vacuum truck, power broom, air compressor or by hand.~~*

406.05 Application of Asphalt Material

The asphalt material shall be ~~uniformly~~ applied at the rate of from 0.05 to 0.10 gal./sq yd, or as otherwise specified or directed. *The asphalt material shall be uniformly applied across the entire width of pavement to be overlaid and shall cover a minimum of 95% of the surface. Areas of inadequate coverage that create streaking or areas of excessive coverage that create ponding shall be corrected to obtain an even distribution.*

~~Tack coat shall not be applied to a wet surface. The rate of application, temperature, and areas to be treated shall be approved prior to application. Excessive tack coat shall be corrected to obtain an even distribution.~~

COMMENTS AND ACTION

406.04 PREPARATION OF SURFACE

406.05 APPLICATION OF ASPHALT MATERIAL

DISCUSSION:

Mr. Beeson introduced and presented this item stating that tack coat application consistency varies widely in the field. Best practices are routinely not followed as evidenced by the commonly seen "corn rows". It was noticed that 406 is lacking in basic direction regarding cleaning and uniformity of application. Mr. Beeson proposed to revise language for clarification and consistency in 406. Mr. Beeson explained that we keep teaching and training about proper tack coat application, but our specs were not very firm. This will at least give us a basis to stand on.

Mr. Koch asked of the method sentence in 406.04 is necessary since it is already specified in 107.08(b). Mr. Beeson said that the sentence is to provide options to the Contractor and that the sentence is necessary. Following further discussion and recommendations by Mr. Pankow, the method sentence has been removed.

There was no further discussion and this item passed as revised.

<p>Motion: Mr. Beeson Second: Mr. Pankow Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p>	<p>Action:</p> <p><u> </u> Passed as Submitted <u> X </u> Passed as Revised <u> </u> Withdrawn</p>
<p>Standard Specifications Sections referenced and/or affected:</p> <p>SECTION 406, begin pg 300</p> <p>Recurring Special Provision affected:</p> <p>NONE</p> <p>Standard Drawing affected:</p> <p>NONE</p> <p>Design Manual Sections affected:</p> <p>NONE</p> <p>GIFE Sections cross-references:</p> <p>13</p>	<p><u> X </u> 2020 Standard Specifications</p> <p><u> </u> Revise Pay Items List</p> <p><u> X </u> Create RSP (No. 406-R-676) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS book</u></p> <p><u> </u> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <u> </u></p> <p><u> </u> Standard Drawing Effective <u> </u></p> <p><u> </u> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p> <p><u> </u> GIFE Update</p> <p><u> </u> SiteManager Update</p>

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Standard Drawing series 622-LSPL (Landscape Planting) do not reflect proper installation methods.

PROPOSED SOLUTION: Revise the 622-LSPL Standard Drawings to provide clarification and proper installation methods.

APPLICABLE STANDARD SPECIFICATIONS: N/A

APPLICABLE STANDARD DRAWINGS: 622-LSPL-01 through -11

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc. Shawn Slaymon, INDOT Landscape Specialist

IMPACT ANALYSIS (attach report):

Submitted By: Elizabeth Phillips

Title: Standards and Policy Manager

Organization: Bridges Division

Phone Number: 317-232-6775

Date: 2/14/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD DRAWINGS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: These will help clarify installation methods that were questioned by field employees and contractors. These clarifications will help long term success of plant material, being planted appropriately during contract.

REVISION TO STANDARD DRAWINGS

622-LSPL-01 PLANTING BALLED AND BURLAPPED TREE (WITH MARKUPS)

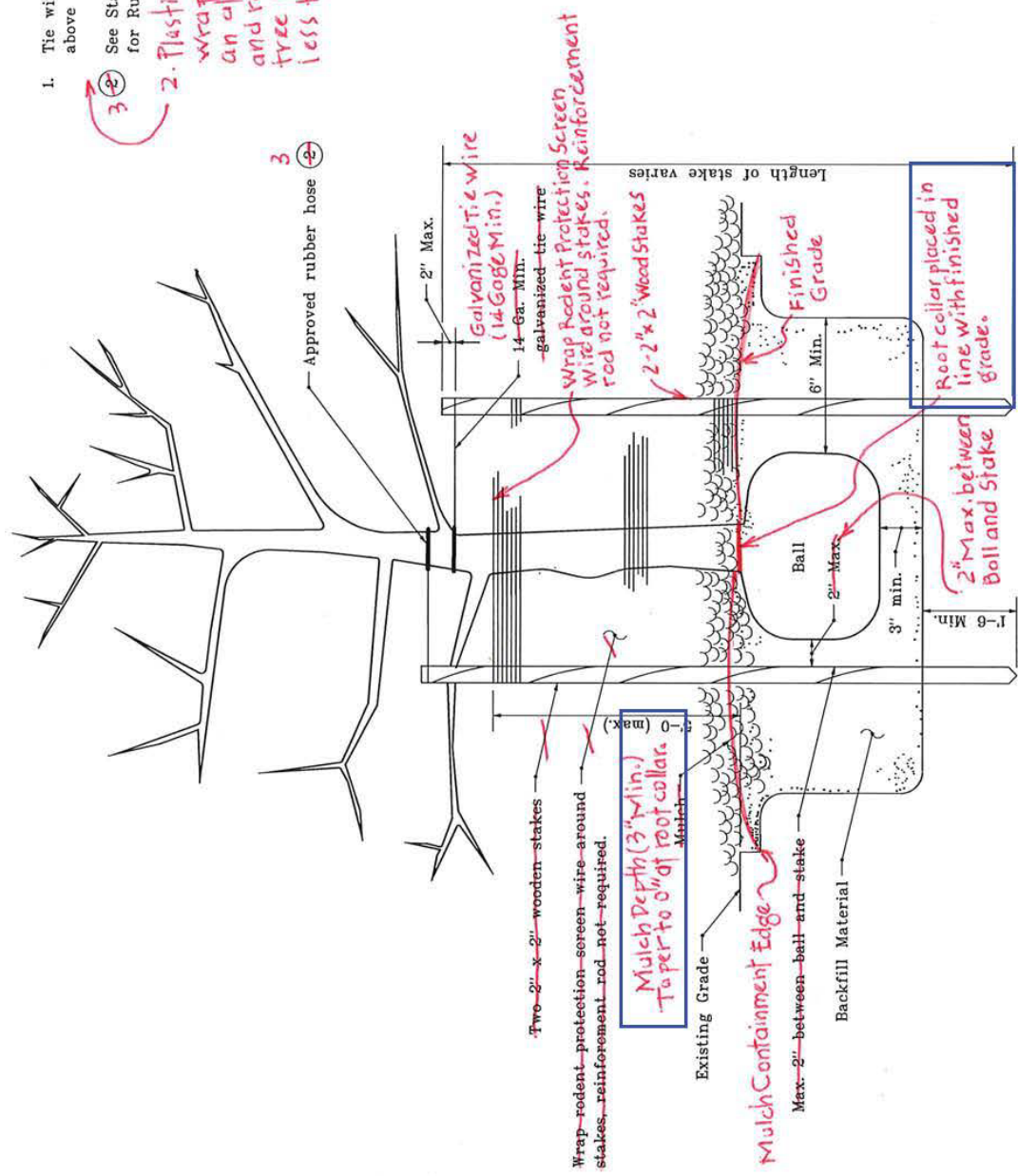
Add Index Sheet E 622-LSPL-00

GENERAL NOTES

1. Tie wire securement points on tree shall be above the first or second main branch.

See Standard Drawing E 622-LSPL-04 for Rubber Hose Detail.

2. Plastic coil type protective wrapping will be acceptable as an alternative to the screen wire and reinforcement rod method of tree protection or stakes of trees less than 2 in. caliper.



Detail applies to trees less than 1 1/2 caliper.

INDIANA DEPARTMENT OF TRANSPORTATION	
PLANTING BALLED AND BURLAPPED TREE	
APRIL 1995	
STANDARD DRAWING NO. E 622-LSPL-01	
DETAILS PLACED IN THIS FORMAT 11-5-99	
DESIGNED BY L. Urquhart No. 6095 STATE OF INDIANA PROFESSIONAL ENGINEER	CHECKED BY P. J. Zandi 11-5-99 DATE DESIGNER'S SIGNATURE APPROVED 4-03-96

REVISION TO STANDARD DRAWINGS

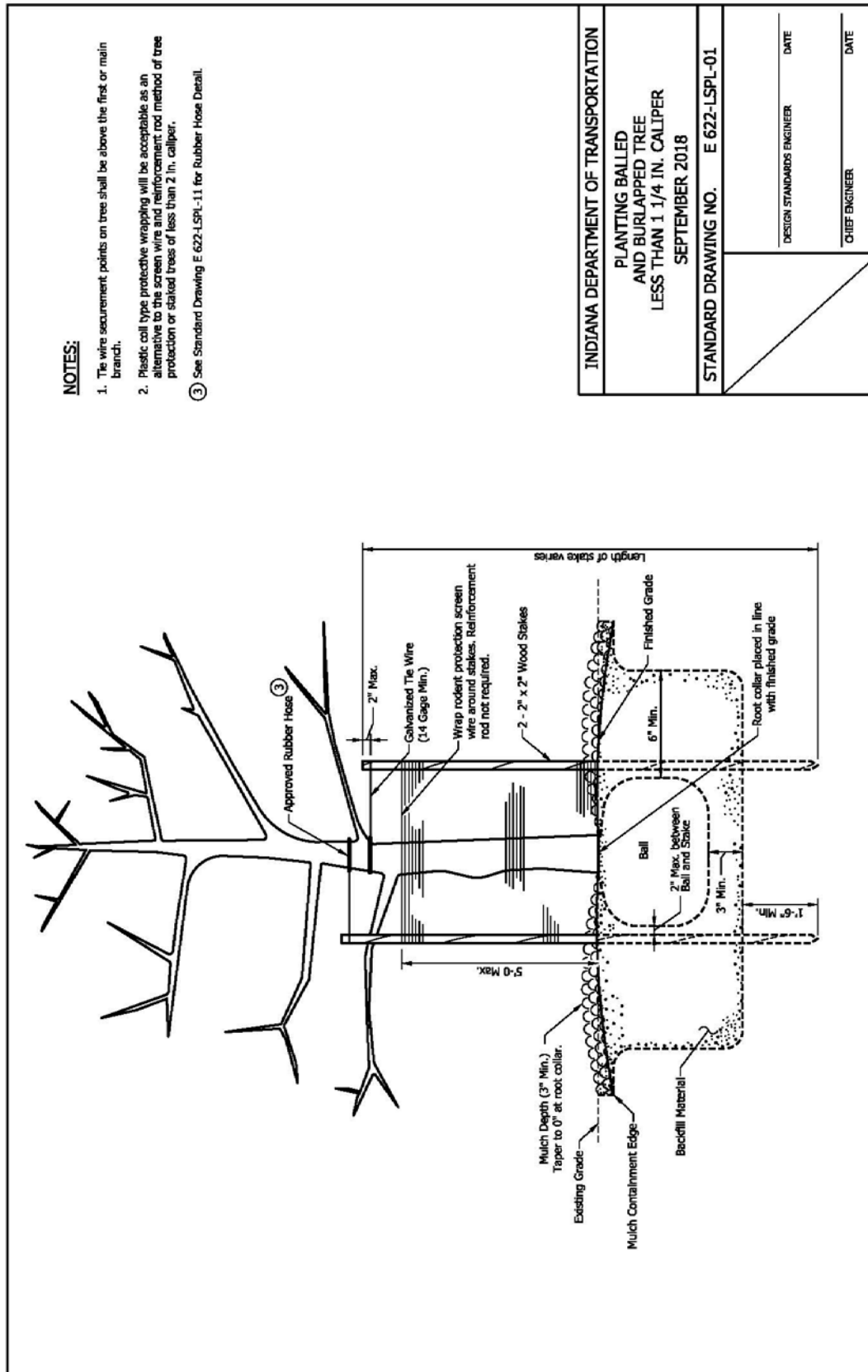
622-LSPL-00 LANDSCAPE PLANTING (ADDED NEW, DRAFT)

INDEX	
SHEET NO.	SUBJECT
00	Index
1	Planting Balled and Burlapped Tree Less than 1 1/4 in. Caliper
2	Planting Balled and Burlapped Tree Less than 1 1/4 in. Caliper and Greater
3	Planting Multi-Stem Tree
4	Planting Bare Root Tree
5	Planting Grafted Tree
6	Planting on Slope
7	Planting on Slope
8	Typical Section of Shrub Bed
9	Planting Seedling Varieties
10	Typical Plan of Shrub Bed
11	Commonly Used Dimensions

INDIANA DEPARTMENT OF TRANSPORTATION	
LANDSCAPE PLANTING	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 622-LSPL-00	
DESIGN STANDARDS ENGINEER	DATE
CHIEF ENGINEER	DATE

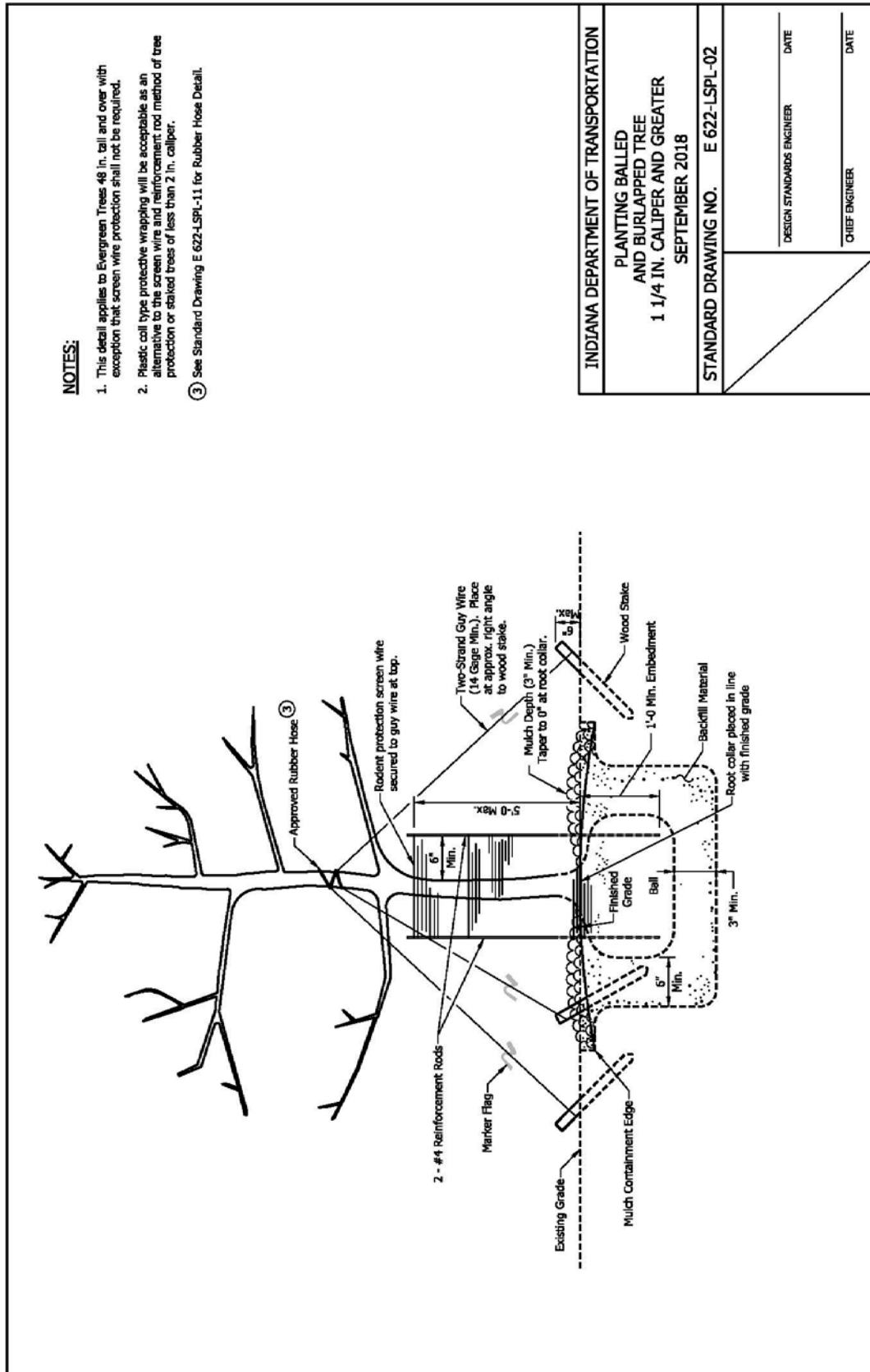
REVISION TO STANDARD DRAWINGS

622-LSPL-01 PANTING BALLED AND BURLAPPED TREE LESS THAN 1 1/4 IN.
 CALIPER (DRAFT)



REVISION TO STANDARD DRAWINGS

622-LSPL-02 PLANTING BALLED AND BURLAPPED TREE 1 1/4 IN. CALIPER AND GREATER (DRAFT)

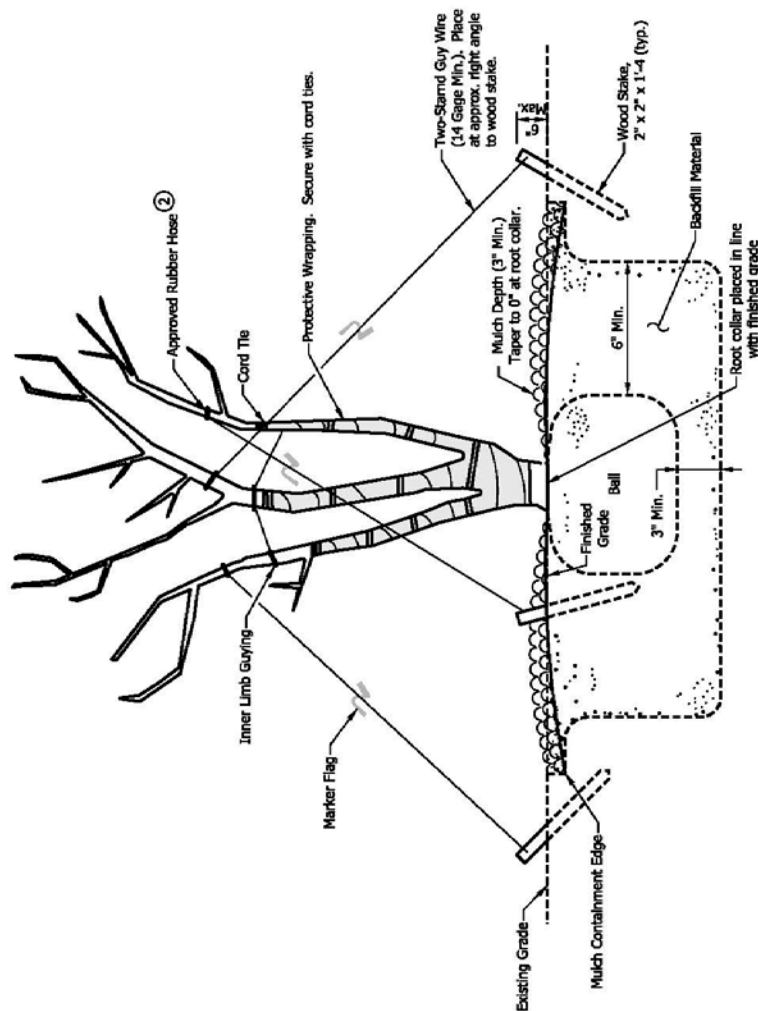


REVISION TO STANDARD DRAWINGS

622-LSPL-03 PLANTING MULTI-STEM TREE (DRAFT)

NOTES:

1. This detail applies to trees over 48 in. tall.
2. See Standard Drawing E 622-LSPL-11 for Rubber Hose Detail.



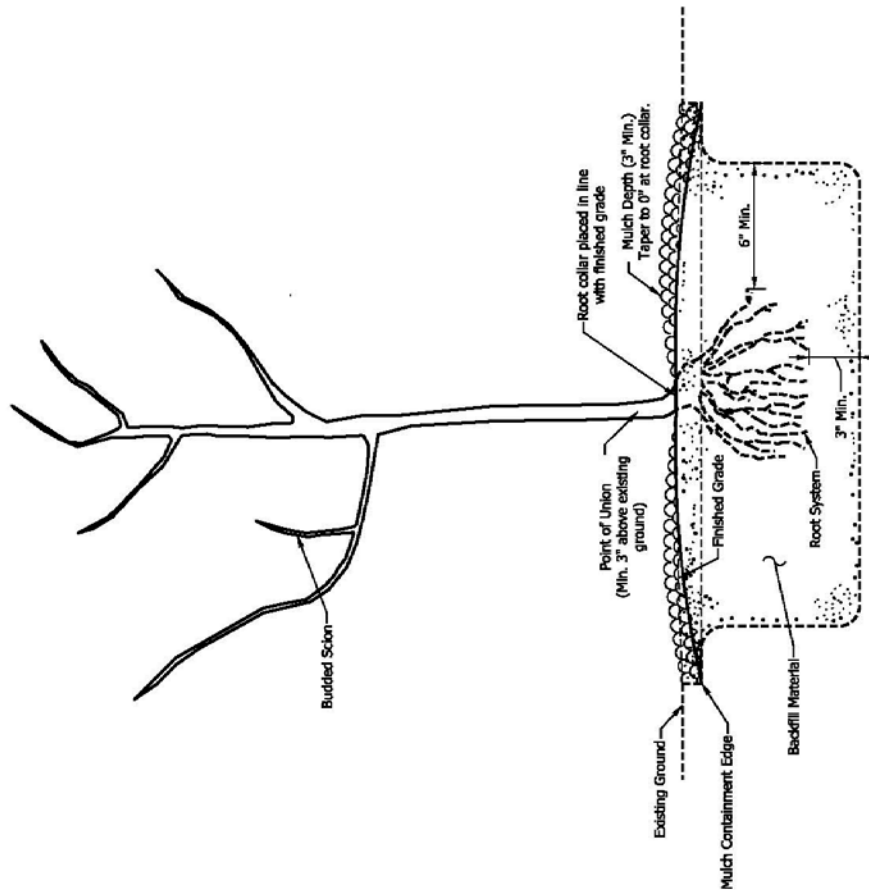
INDIANA DEPARTMENT OF TRANSPORTATION	
PLANTING MULTI-STEM TREE	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 622-LSPL-03	
DESIGN STANDARDS ENGINEER	DATE
CHIEF ENGINEER	DATE

REVISION TO STANDARD DRAWINGS

622-LSPL-05 PLANTING GRAFTED TREE (DRAFT)

NOTES:

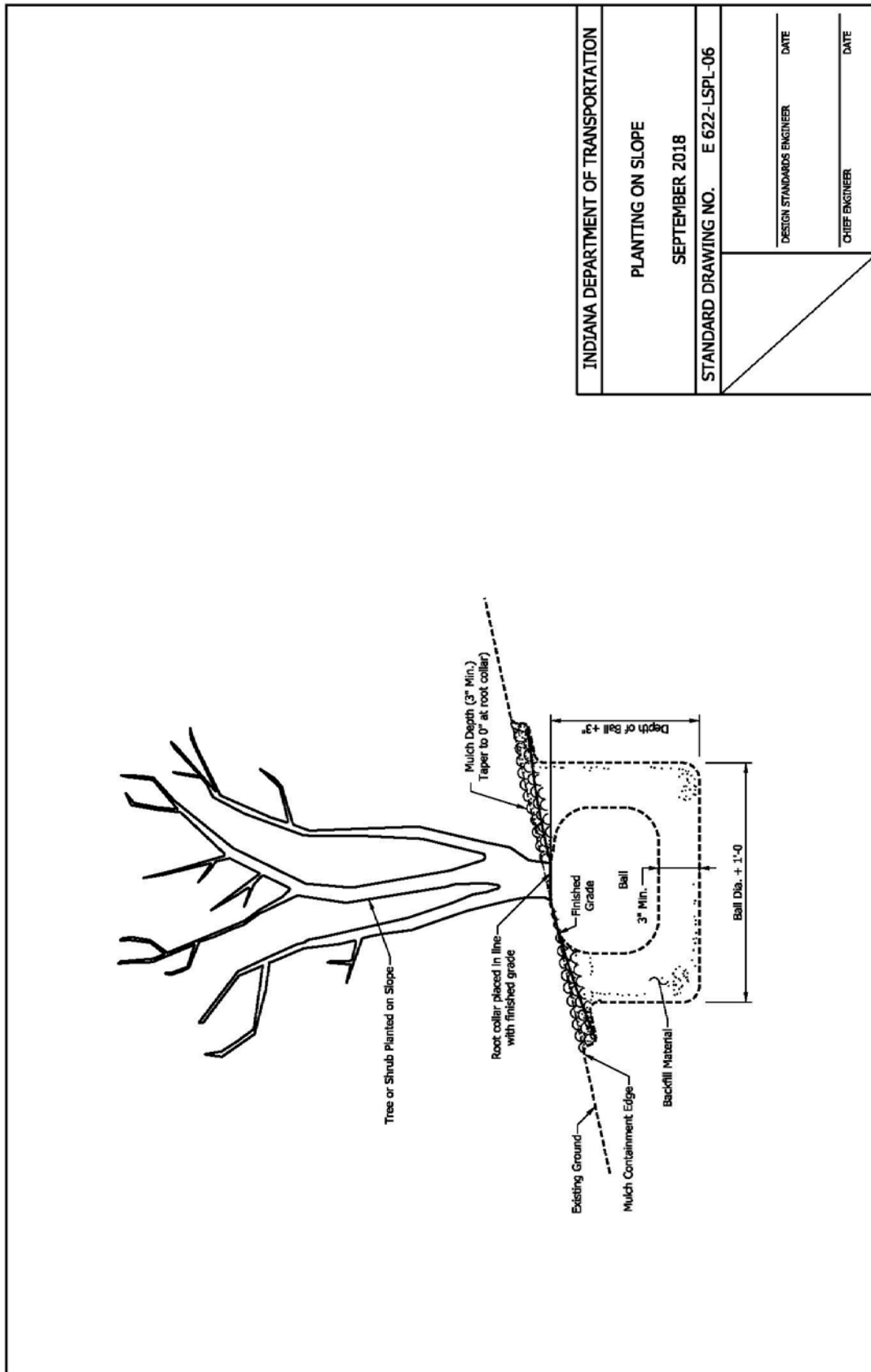
1. This detail applies to planting of grafted bare root system.



INDIANA DEPARTMENT OF TRANSPORTATION	
PLANTING GRAFTED TREE	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 622-LSPL-05	
	DESIGN STANDARDS ENGINEER
	DATE
	CHIEF ENGINEER
	DATE

REVISION TO STANDARD DRAWINGS

622-LSPL-06 PLANTING ON SLOPE (DRAFT)

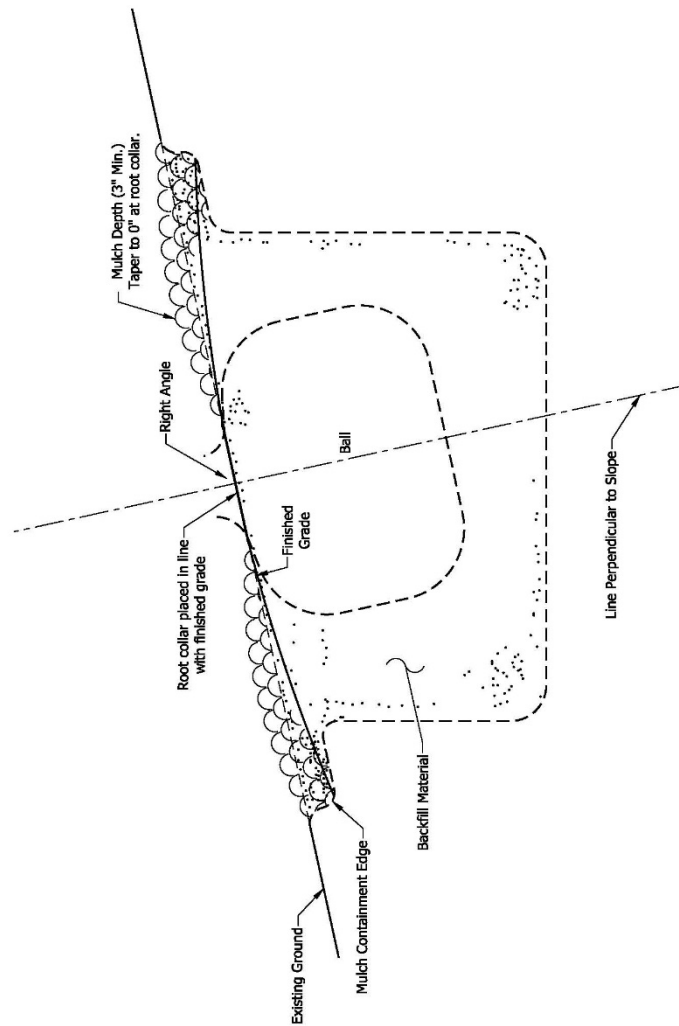


REVISION TO STANDARD DRAWINGS

622-LSPL-07 PLANTING ON SLOPE (REVISED DRAFT)

NOTES:

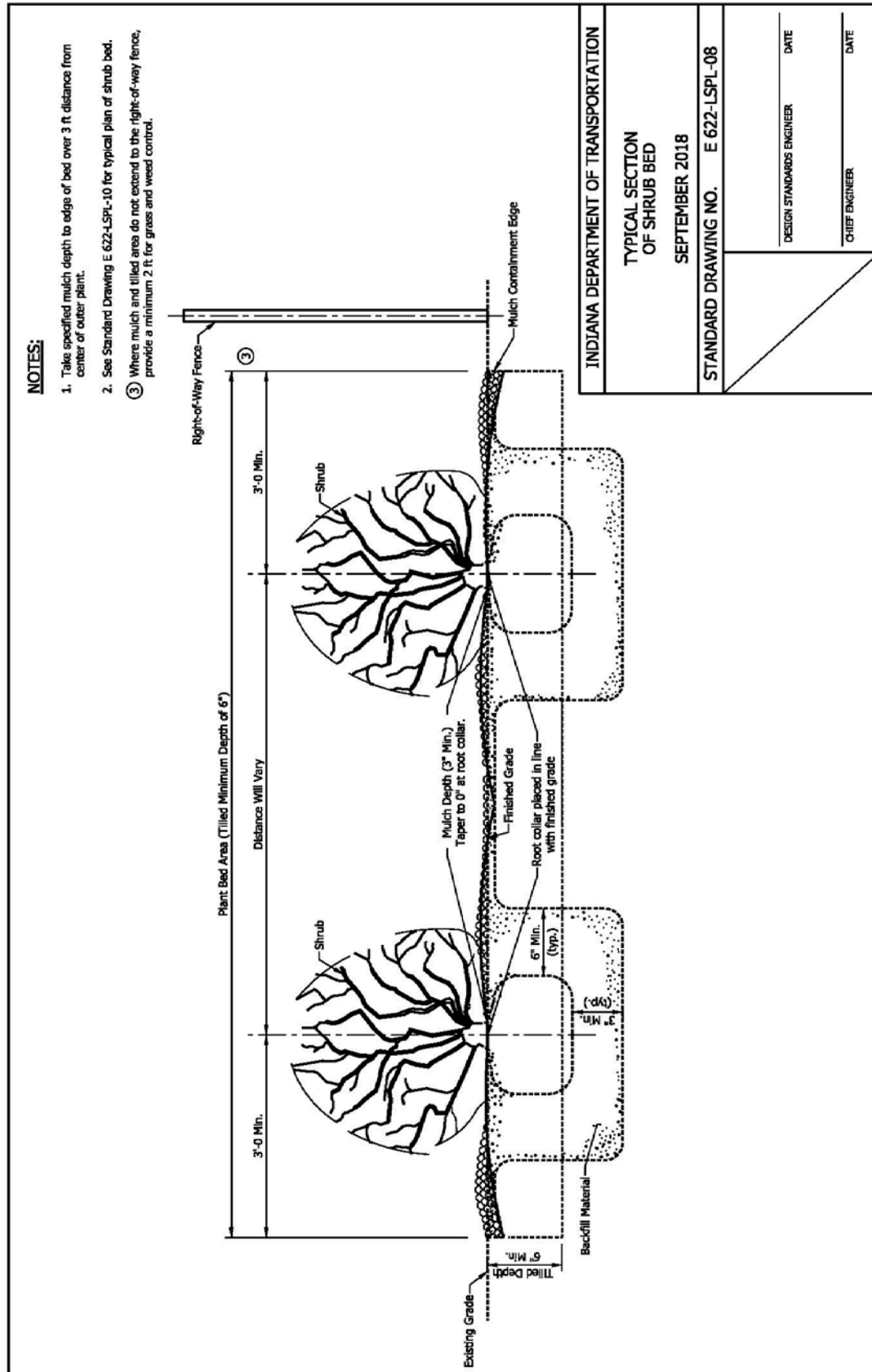
1. This detail applies to prostrate shrubs and ground cover in 3-gallon containers or smaller. A prostrate shrub is a woody plant where most of the branches lie on or just above the ground.



INDIANA DEPARTMENT OF TRANSPORTATION	
PLANTING ON SLOPE	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 622-LSPL-07	
	DESIGN STANDARDS ENGINEER
	DATE
CHIEF ENGINEER	DATE

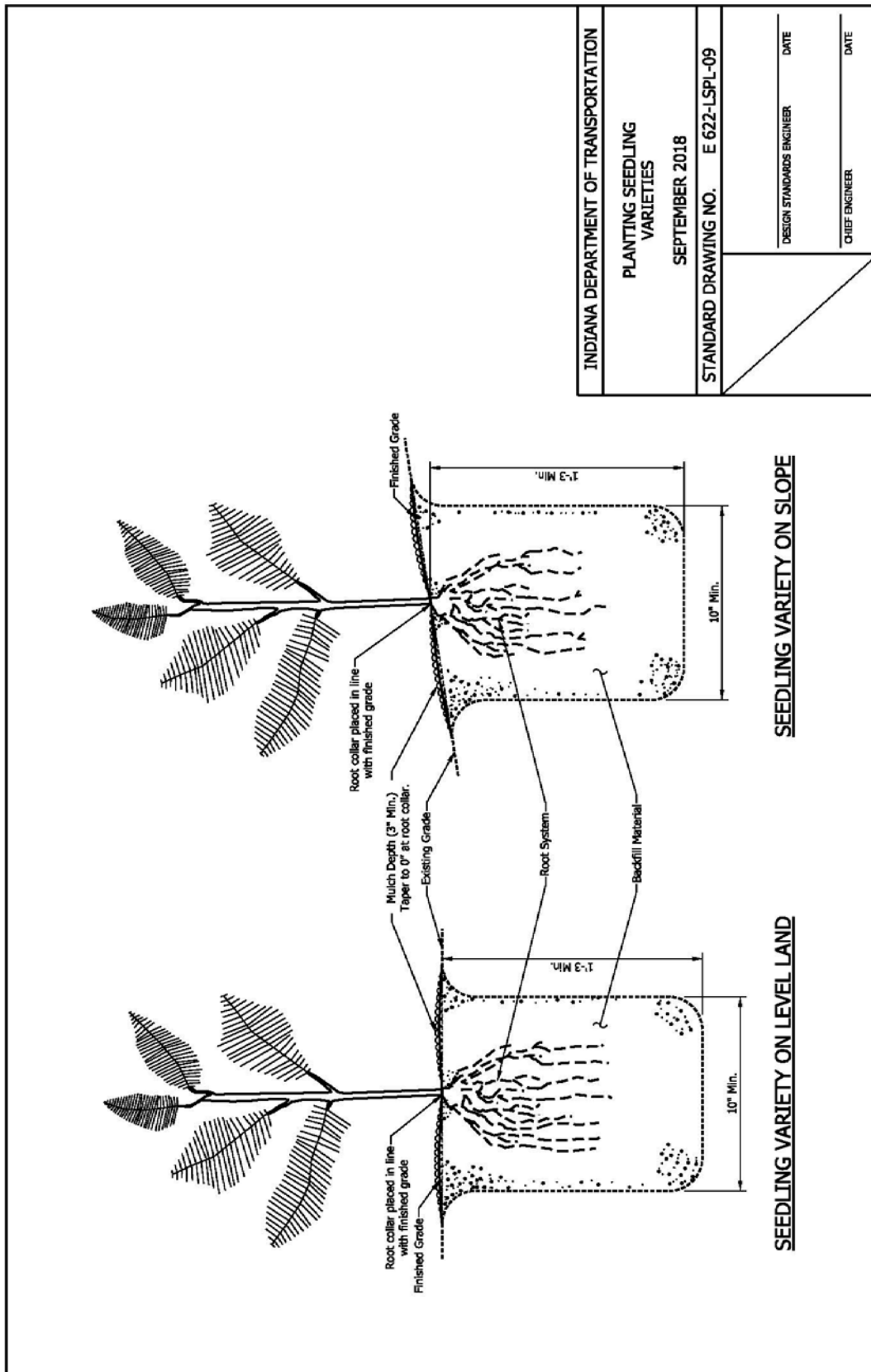
REVISION TO STANDARD DRAWINGS

622-LSPL-08 TYPICAL SECTION OF SHRUB BED (DRAFT)



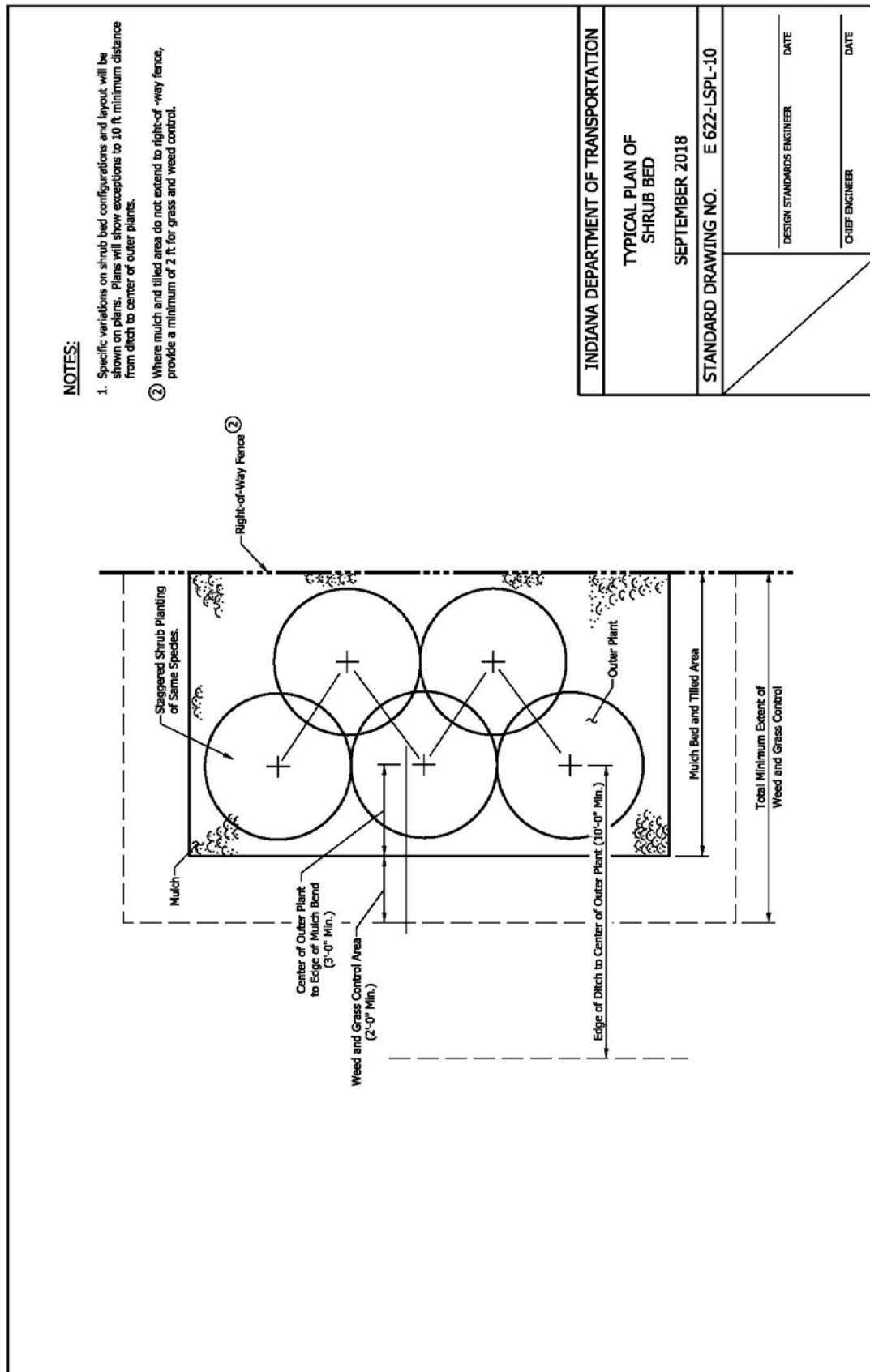
REVISION TO STANDARD DRAWINGS

622-LSPL-09 PLANTING SEEDLING VARIETIES (DRAFT)



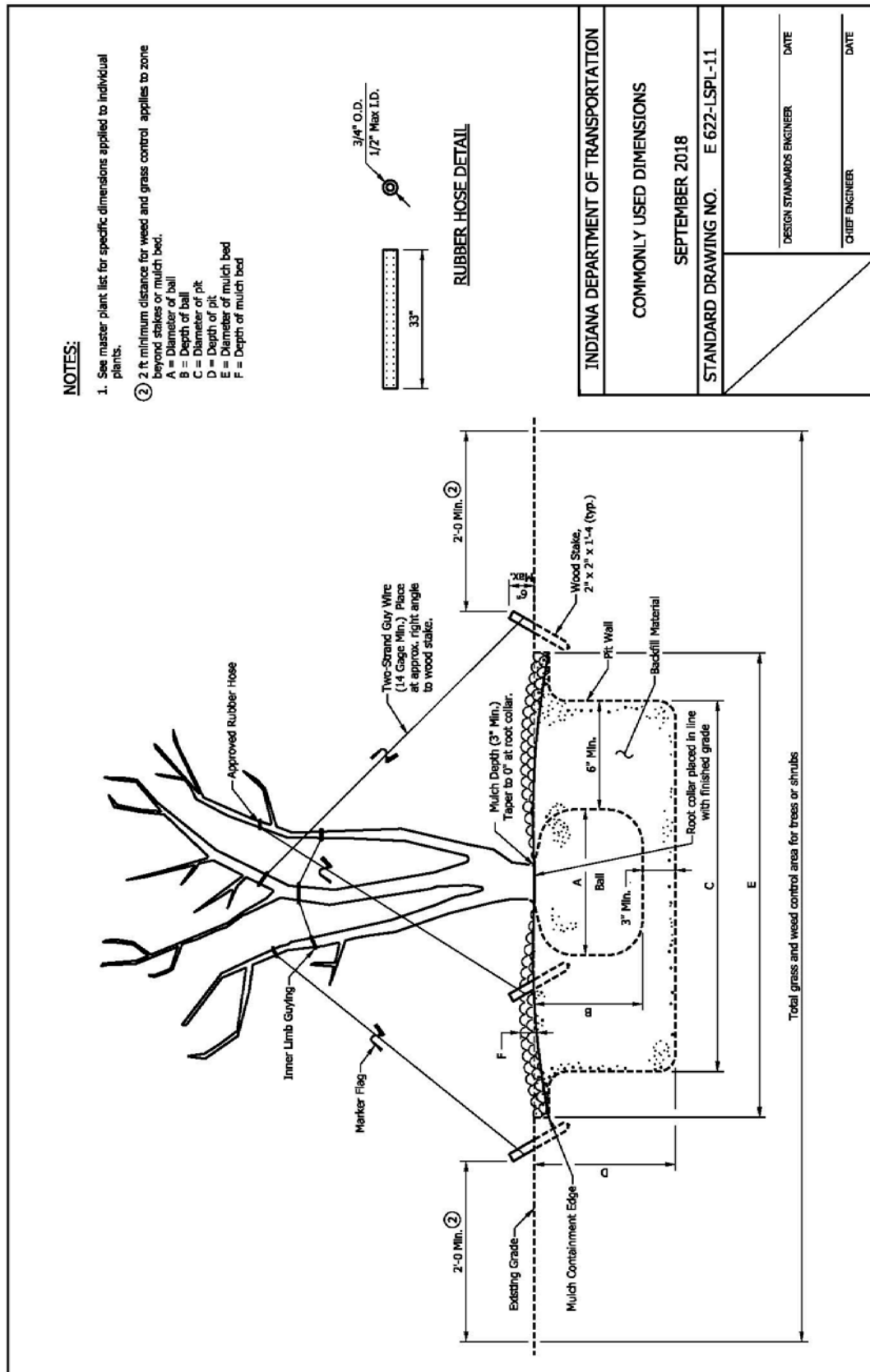
REVISION TO STANDARD DRAWINGS

622-LSPL-10 TYPICAL PLAN OF SHRUB BED (DRAFT)



REVISION TO STANDARD DRAWINGS

622-LSPL-11 COMMONLY USED DIMENSIONS (DRAFT)



COMMENTS AND ACTION

622-LSPL-00 THROUGH -11

DISCUSSION:

This item was introduced and presented by Ms. Phillips who proposed to revise standard drawing series 622-LSPL to provide clarification and proper installation methods. Mr. Slaymon explained that these revisions will help clarify installation methods that were questioned by field employees and contractors. These clarifications will help the long term success of the planted material.

Mr. Pankow asked about planting at an angle and Mr. Slaymon explained that the drawing showing the angle is for shrubs and that trees are to be planted vertically. Mr. Slaymon said they will revise the sheets for clarity.

There was no further discussion and this item passed as revised, pending the drawing revisions.

Motion: Ms. Phillips Second: Mr. Boruff Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u>	Action: <input type="checkbox"/> Passed as Submitted <input checked="" type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections referenced and/or affected: SECTION 622, begin pg 481 Recurring Special Provision affected: NONE Standard Drawing affected: 622-LSPL series Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	<input type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List <input type="checkbox"/> Create RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <input type="checkbox"/> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <input checked="" type="checkbox"/> Standard Drawing Effective <u>Sept. 1, 2018</u> <input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: We have received questions from several district construction staff about payment for work performed by unapproved sub-contractors. This issue has been discussed at length and we feel we do not have legal footing to not pay for acceptable work performed by unapproved sub-contractors per our current specification. Therefore clarification is needed in section 108 of the Standard Specifications to allow for non-payment of work done by unapproved subs.

PROPOSED SOLUTION: Incorporate the necessary revisions to 108 to ensure that the standard specifications are correct and consistent with current field practice.

APPLICABLE STANDARD SPECIFICATIONS: Sections 108.01

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: 2.7.1

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT Construction Management

Phone Number: (317)232-5502

Date: 2/21/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

COMMENTS AND ACTION

108.01 SUBLETTING OF CONTRACT

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 3, INSERT AS FOLLOWS:

108.01 Subletting of Contract

The contract, contracts, or portions thereof; or the right, title, or interest therein shall not be sublet, sold, transferred, assigned, or otherwise disposed of without written consent. In case such consent is given, the Contractor will be allowed to sublet a portion thereof, but shall perform with its own organization, work amounting to not less than 50% of the original or revised contract amount, whichever is less. All items designated in the contract as specialty items may be performed by subcontract. The cost of such specialty items so performed by subcontracts may be deducted from the total cost before computing the amount of work required to be performed by the Contractor with its own organization. No subcontracts or transfer of contracts will release the Contractor of liability under the contract and bonds. Approved subcontractors will not be allowed to further subcontract their work.

Unless the Department provides written consent, the Contractor shall not be entitled to any payment for subcontracted work or materials unless it is performed or supplied by a subcontractor approved on the contract prior to the work being performed.

The minimum wage for labor as stated in the Proposal book shall apply to all labor performed on all work sublet, assigned, or otherwise disposed of in any way.

COMMENTS AND ACTION

108.01 SUBLETTING OF CONTRACT

DISCUSSION:

Mr. Pankow introduced and presented this item explaining that questions have been received from several district construction staff about payment for work performed by unapproved sub-contractors. This issue has been discussed at length and we feel we do not have legal footing to not pay for acceptable work performed by unapproved sub-contractors per our current specification. Therefore clarification is needed in section 108 of the Standard Specifications to allow for non-payment of work done by unapproved subs. Mr. Pankow proposed to incorporate the necessary revisions to 108 to ensure that the standard specifications are correct and consistent with current field practice.

Mr. Koch stated that the added language could be interpreted to mean that only subcontractors are allowed to perform the work unless we consent, and asked if the language could be revised for clarification. Further discussion ensued and the revisions by the committee are as shown.

This item passed as revised.

Motion: Mr. Pankow Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u>	Action: <input type="checkbox"/> Passed as Submitted <input checked="" type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections referenced and/or affected: 108.01 pg 82	<input checked="" type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List
Recurring Special Provision affected: NONE	<input checked="" type="checkbox"/> Create RSP (No. <u>108-C-260</u>) Effective <u>Sept. 1, 2018</u> Letting RSP Sunset Date: <u>2020 SS book</u>
Standard Drawing affected: NONE	<input type="checkbox"/> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective
GIFE Sections cross-references: 2.7.1	<input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Recurring special provision 805-T-093 “Detector Card Rack and Detector Modules” is basically a duplicate of the standard items for loop detector racks (pay item 805-09540) and loop detector delay amplifiers (pay item 805-92504). The recurring special provision also requires bidders to determine from the plans how many two-channel loop detector amplifiers are expected for each rack.

PROPOSED SOLUTION: Delete the recurring special provision.

APPLICABLE STANDARD SPECIFICATIONS: 805 (no change proposed)

APPLICABLE STANDARD DRAWINGS: No

APPLICABLE DESIGN MANUAL SECTION: No

APPLICABLE SECTION OF GIFE: No

APPLICABLE RECURRING SPECIAL PROVISIONS: 805-T-093

PAY ITEMS AFFECTED: 805-03793 Detector Card Rack and Detector Modules

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc review by Dan Stickney, Greg Richards, Joe Bruno, and Dave Boruff

IMPACT ANALYSIS (attach report): Yes, attached.

Submitted By: Joe Bruno on behalf of Dave Boruff

Title: Traffic Administration Engineer

Organization: INDOT

Phone Number: (317) 234-7949

Date: 2/22/18

[rev. 12/2014]

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? No

Design process? Yes

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO SPECIAL PROVISIONS

805-T-093 DETECTOR CARD RACK AND DETECTOR MODULES (PROPOSED TO
DISCONTINUE USE)

~~805-T-093 DETECTOR CARD RACK AND DETECTOR MODULES~~

~~(Adopted 09-01-05)~~

~~A detector card rack and detector modules shall be used. The
detector module shall be 2 channel with delay feature, card rack
compatible with and intermediate to the detector rack edge connectors.
The cost of the detector rack shall be included in the cost of the detector
modules.~~

APPROVED MINUTES

COMMENTS AND ACTION

DISCUSSION:

Mr. Boruff introduced and presented this item stating that Recurring Special Provision 805-T-093 "Detector Card Rack and Detector Modules" is basically a duplicate of the standard 805 items for loop detector racks and loop detector delay amplifiers. The recurring special provision also requires bidders to determine from the plans how many two-channel loop detector amplifiers are expected for each rack. Mr. Boruff therefore proposes to delete the recurring special provision.

The committee agreed and this item passed as submitted.

<p>Motion: Mr. Boruff Second: Mr. Beeson Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p>	<p>Action:</p> <p><u>X</u> Passed as Submitted ____ Passed as Revised ____ Withdrawn</p>
<p>Standard Specifications Sections referenced and/or affected:</p> <p>SECTION 805, begin pg. 791</p> <p>Recurring Special Provision affected:</p> <p>805-T-093 DETECTOR CARD RACK AND DETECTOR MODULES</p> <p>Standard Drawing affected:</p> <p>NONE</p> <p>Design Manual Sections affected:</p> <p>NONE</p> <p>GIFE Sections cross-references:</p> <p>NONE</p>	<p>____ 2020 Standard Specifications</p> <p>____ Revise Pay Items List</p> <p>____ Create RSP (No. ____) Effective ____ Letting RSP Sunset Date:</p> <p><u>X</u> Discontinue RSP (No. <u>805-T-093</u>) Eff. RSP Sunset Date:</p> <p>____ Standard Drawing Effective</p> <p>____ Create RPD (No. ____) Effective ____ Letting</p> <p>____ GIFE Update</p> <p>____ SiteManager Update</p>