

MINNESOTA DEPARTMENT OF TRANSPORTATION DEVELOPED BY: Design Standards ISSUED BY: Office of Project Management and Technical Support, Design Support Section	TRANSMITTAL LETTER NO. (19-06) MANUAL: Standard Plans DATED: August 28, 2019
SUBJECT: Standard Plans 233 and 234 – Bridge Approach Treatments	

The following Standard Plans are updated:

- 5-297.233 – Bridge Abutment Approach Treatment for Parapet or Semi-Integral Abutment on Footing – Sheets 1 and 2 of 2
- 5-297.234 – Bridge Abutment Approach Treatment for Integral Abutments – Sheets 1 and 2 of 2

INSTRUCTIONS:

1. Record the transmittal letter number, date and subject on the transmittal record sheet located in the front of the manual. The previous Transmittal Letter No. issued for this manual was 19-05, dated August 26, 2019.
2. Remove from the manual:
 - Standard Plan Index (Sheets 1-6 of 6) (August 20, 2019)
 - 5-297.233 (Sheets 1 and 2 of 2)
 - 5-297.234 (Sheets 1 and 2 of 2)
3. Insert in the manual:
 - Standard Plan Index (Sheets 1-6 of 6) (August 22, 2019)
 - 5-297.233 (Sheets 1 and 2 of 2) (August 22, 2019)
 - 5-297.234 (Sheets 1 and 2 of 2) (August 22, 2019)
4. Current Standard Plans including Transmittal Letters are available on the web at: <http://standardplans.dot.state.mn.us/StdPlan.aspx>
5. Any questions regarding this transmittal should be directed to Tim Brown, Design Standards Unit at (651) 366-4613.



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Design Standards Engineer

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Summary of Changes
Standard Plan 5-297.233 (1 of 2) – Bridge Abutment Approach Treatment for Parapet or
Semi-Integral Abutment on Footing
Transmittal Letter No. (19-06)

General

1. Added underline to detail titles and made other minor drafting improvements.
2. Changed the standard sheet name to “Bridge Abutment Approach Treatment for Parapet or Semi-Integral Abutment on Footing”

Details

3. Changed the back face abutment piling from a battered piling to a plumb piling, which is the more common situation.
4. Updated the Select Grading Material Specification from 2105 to 2106.
5. Removed redundant drainage pipe in area behind abutment, as drainage pipe called out in bridge detail B910 already drains the area.

Notes

6. Deleted note①, and renumbered rest of notes.
7. New numbered notes ① and ② have been updated to the new Structural Backfill specifications. New numbered note ③ has also been updated to the new Select Grading Material specification.
8. Added numbered note⑩, “For bridges without piling, refer to bridge plans for material requirements below abutment footing.”

Summary of Changes
Standard Plan 5-297.233 (2 of 2) – Bridge Abutment Approach Treatment for Parapet or
Semi-Integral Abutment on Footing
Transmittal Letter No. (19-06)

General

1. Added underline to detail titles and made other minor drafting improvements.
2. Changed the standard sheet name to “Bridge Abutment Approach Treatment for Parapet or Semi-Integral Abutment on Footing”

Details

3. At the Finished Grading Section A-A (Cut Section), removed the 4'-0” dimension from the detail.
4. Removed redundant drainage pipe in area behind abutment, as drainage pipe called out in bridge detail B910 already drains the area.

Notes

5. Deleted note ③, and renumbered rest of notes.
6. New numbered notes ③ and ⑤ have been updated to the new Structural Backfill specifications.
7. Updated the Select Grading Material Specification from 2105 to 2106 in multiple locations within the notes.

Summary of Changes
Standard Plan 5-297.234 (1 of 2) – Bridge Abutment Approach Treatment for Integral
Abutments
Transmittal Letter No. (19-06)

General

1. Added underline to detail titles and made other minor drafting improvements.
2. Updated the Select Grading Material Specification from 2105 to 2106.

Details

3. Removed redundant drainage pipe in area behind abutment, as drainage pipe called out in bridge detail B910 already drains the area.

Notes

4. Deleted note①, and renumbered rest of notes.
5. Renumbered note① has been updated to the new Structural Backfill specifications.

Summary of Changes
Standard Plan 5-297.234 (2 of 2) – Bridge Abutment Approach Treatment for Integral
Abutments
Transmittal Letter No. (19-06)

General

1. Added underline to detail titles and made other minor drafting improvements.

Details

2. Removed redundant drainage pipe in area behind abutment, as drainage pipe called out in bridge detail B910 already drains the area.

Notes

3. Deleted note ③, and renumbered rest of notes.
4. Renumbered note ③ has been updated to the new Structural backfill specifications.
5. Updated the Select Grading Material Specification from 2105 to 2106 in multiple locations within the notes.

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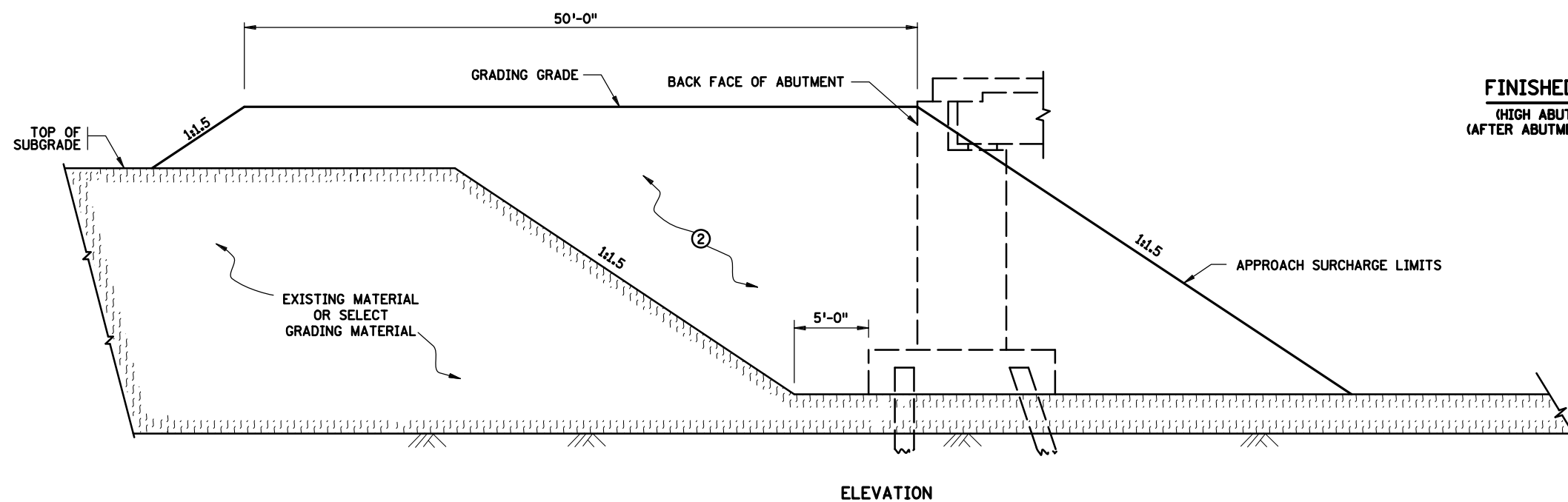
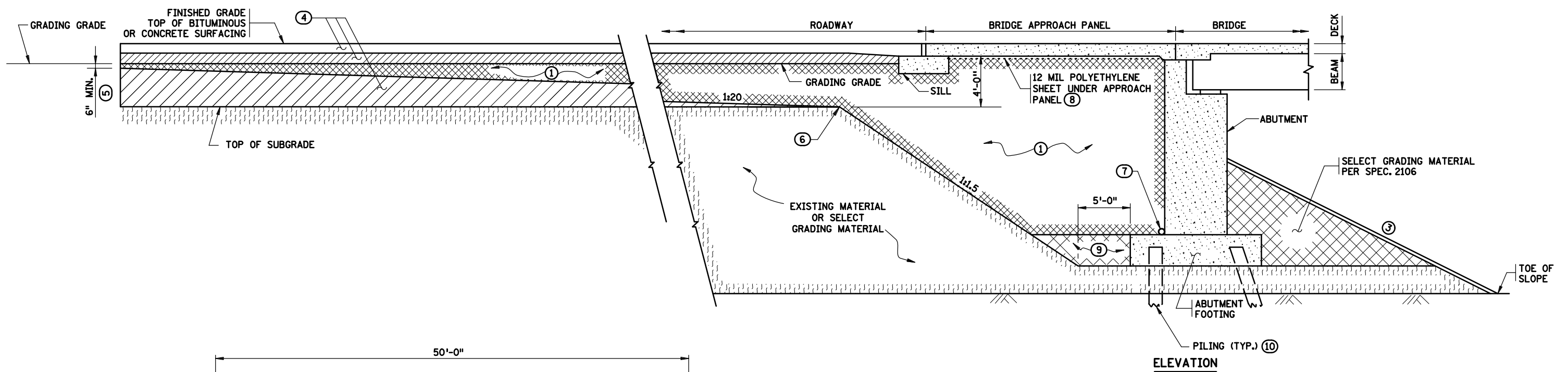
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5-297.768	Standard Overhead Sign Structures - Design D - Sign Truss Details Type C	05/01/19	05/28/19
5-297.769 (1 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	05/01/19	05/28/19
5-297.769 (2 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	05/01/19	
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PLOTTED/REVISED: 27-AUG-2019

PLOT NAME: s233.1.spn
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NOTES:

- ① QUANTITY OF STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) IS BASED ON DIMENSIONS SHOWN, AND PAYMENT IS BASED ON THIS QUANTITY. SEE PLAN FOR QUANTITY. IF THE CONTRACTOR CHOOSES TO INCREASE DIMENSIONS IN ORDER TO FACILITATE CONSTRUCTION OPERATIONS, ANY QUANTITY INCREASES ARE CONSIDERED INCIDENTAL.
- ② PLACE ABUTMENT APPROACH SURCHARGE MATERIAL PRIOR TO ABUTMENT CONSTRUCTION. AFTER COMPLETION OF SURCHARGE WAITING PERIOD, REMOVE SURCHARGE AND EXISTING MATERIAL OR SELECT GRADING MATERIAL TO THE LIMITS SHOWN IN "ROUGH GRADING SECTION" ABOVE, PRIOR TO ABUTMENT CONSTRUCTION. SEE BRIDGE PLANS AND SPECIAL PROVISIONS FOR ABUTMENT APPROACH SURCHARGE REQUIREMENT AND PAYMENTS.
- ③ SEE BRIDGE PLAN FOR SLOPE AND SLOPE PROTECTION.
- ④ SEE PLAN FOR TYPE OF MATERIAL.
- ⑤ GRADING TO BE SQUARED OFF ON SKEWED BRIDGES.
- ⑥ TOP OF 1:1.5 SLOPE (FORMS A LINE PARALLEL TO END OF BRIDGE).
- ⑦ SUBSURFACE PIPE DRAIN. FURNISH AND INSTALL AT TOP OF BRIDGE FOOTING IF BRIDGE DETAIL B910 IS INCLUDED ON BRIDGE PLAN.
- ⑧ IF THE APPROACH PANEL IS TIED TO THE ABUTMENT WITH REINFORCEMENT BARS, PLACE 12 MIL POLYETHYLENE SHEETING (OR TWO LAYERS OF 6 MIL) UNDER THE LIMITS OF THE APPROACH PANEL TO ALLOW THE PANEL TO MOVE LONGITUDINALLY ON THE GRADE. SHEETING IS INCIDENTAL.
- ⑨ SELECT GRADING MATERIAL (SPEC. 2106) SHALL BE COMPACTED AND MEET THE MOISTURE REQUIREMENTS OF 2106. STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) MAY BE USED IN LIEU OF SELECT GRADING MATERIAL PER SPEC. 2106.
- ⑩ FOR BRIDGES WITHOUT PILING, REFER TO BRIDGE PLANS FOR MATERIAL REQUIREMENTS BELOW ABUTMENT FOOTING.

REVISION:
 APPROVED: AUGUST 22, 2019

 GLENN ENGSTROM
 DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

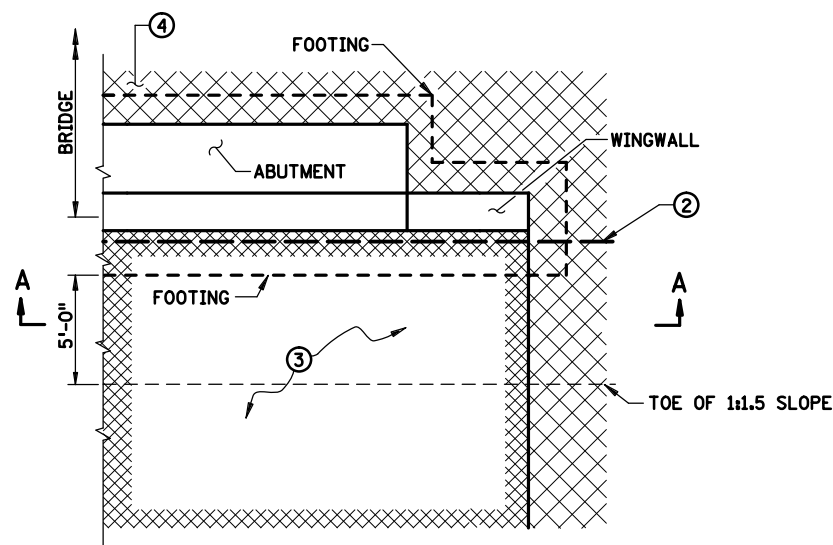


STANDARD PLAN 5-297.233 1 OF 2
 Peter A Harff
 APPROVED: 08-22-2019
 REVISION:
 STATE DESIGN ENGINEER

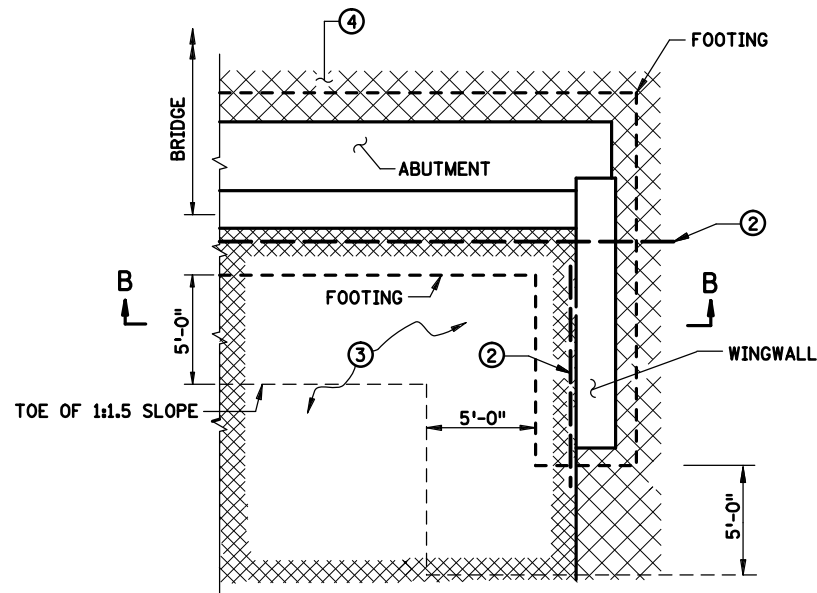
BRIDGE ABUTMENT APPROACH TREATMENT FOR
 PARAPET OR SEMI-INTEGRAL ABUTMENT ON FOOTING
 STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PLOTTED/REVISED: 27-AUG-2019

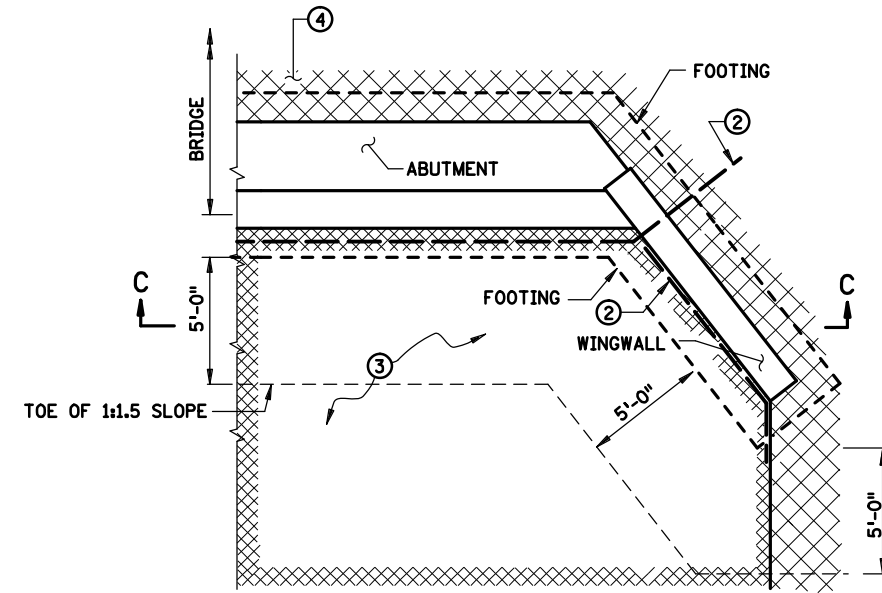
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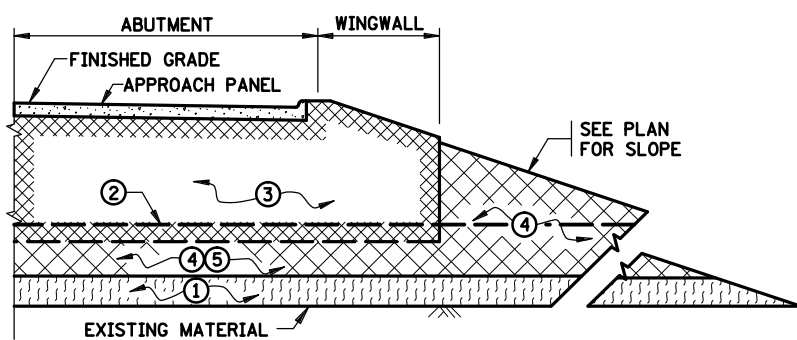
PARTIAL PLAN VIEW AT ABUTMENT
 (WINGWALL AT 180°) (FINISHED GRADING)



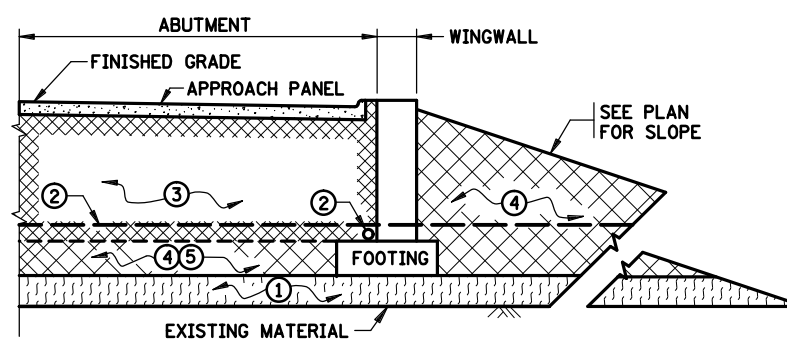
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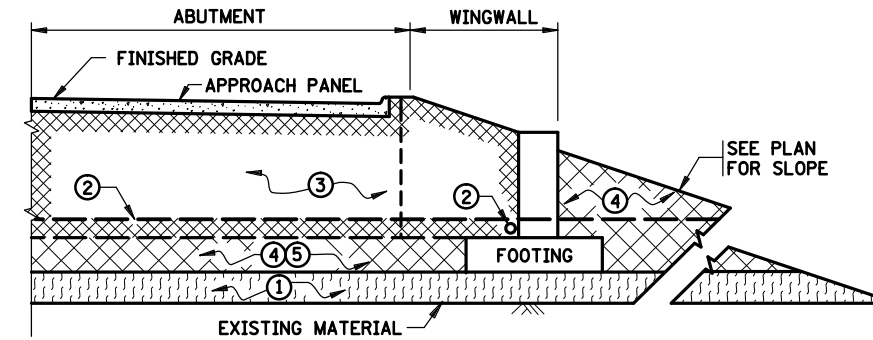
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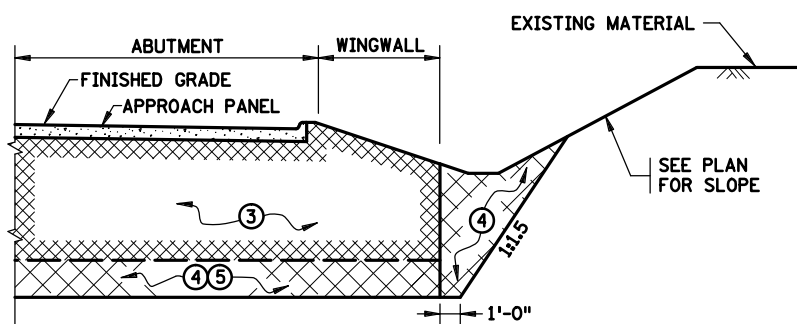
FINISHED GRADING SECTION A-A
 (FILL SECTION)



FINISHED GRADING SECTION B-B
 (FILL SECTION)



FINISHED GRADING SECTION C-C
 (FILL SECTION)



FINISHED GRADING SECTION A-A
 (CUT SECTION)
 (BRIDGE DETAIL B910 DRAIN NOT SHOWN)

NOTES:

- ① EXISTING MATERIAL OR SELECT GRADING MATERIAL (SPEC. 2106).
- ② SUBSURFACE PIPE DRAIN, FURNISH AND INSTALL AT TOP OF BRIDGE FOOTING IF BRIDGE DETAIL B910 IS INCLUDED ON BRIDGE PLAN.
- ③ QUANTITY OF STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) IS BASED ON DIMENSIONS SHOWN, AND PAYMENT IS BASED ON THIS QUANTITY. SEE PLAN FOR QUANTITY. IF THE CONTRACTOR CHOOSES TO INCREASE DIMENSIONS IN ORDER TO FACILITATE CONSTRUCTION OPERATIONS, ANY QUANTITY INCREASES ARE CONSIDERED INCIDENTAL.
- ④ SELECT GRADING MATERIAL (SPEC. 2106).
- ⑤ MATERIAL SHALL MEET THE COMPACTION AND MOISTURE CONTENT REQUIRMENTS OF SPEC. 2106. STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) MAY BE USED IN LIEU OF SELECT GRADING MATERIAL (SPEC. 2106).

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STANDARD PLAN 5-297.233

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 STATE DESIGN ENGINEER

APPROVED: 08-22-2019
 REVISED:

**BRIDGE ABUTMENT APPROACH TREATMENT FOR
 PARAPET OR SEMI-INTEGRAL ABUTMENT ON FOOTING**

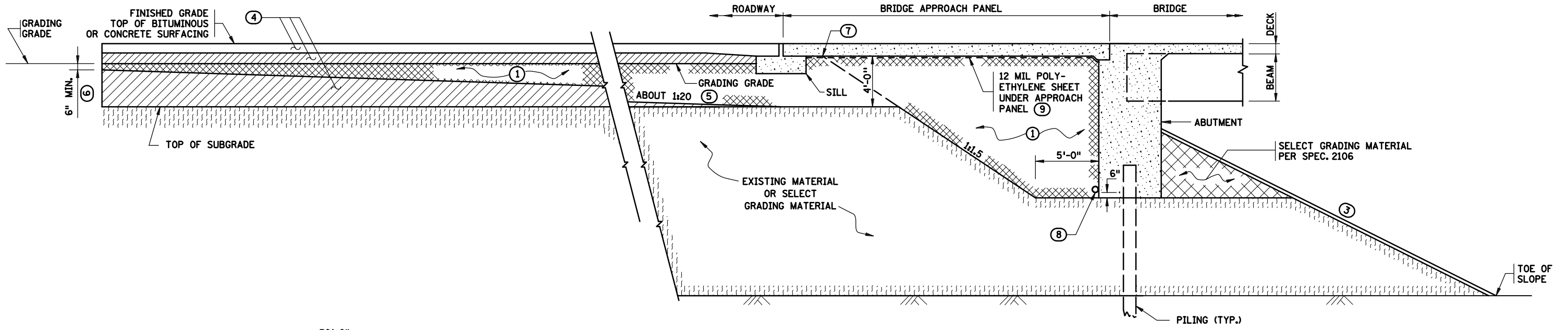
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(T.H.)

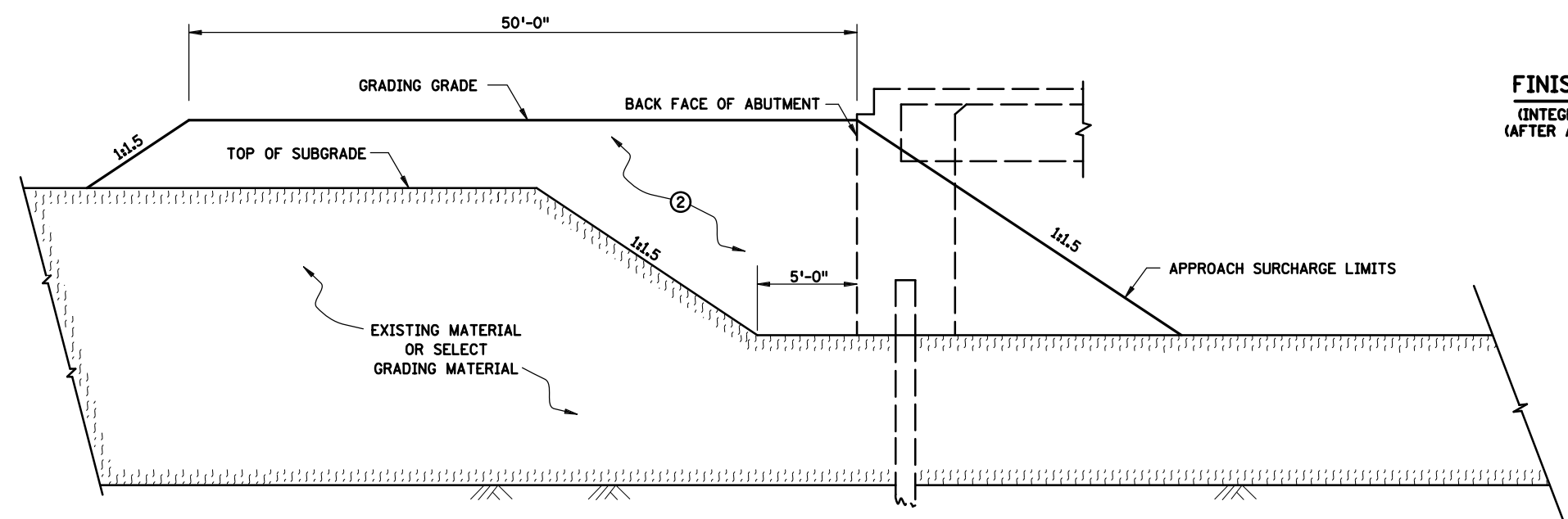
SHEET NO. OF SHEETS

PLOTTED/REVISED: 27-AUG-2019

PLOT NAME: s234.1.spr
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**ELEVATION
 FINISHED GRADING SECTION**
 (INTEGRAL ABUTMENT ON PILING SHOWN)
 (AFTER ABUTMENT HAS BEEN CONSTRUCTED)



**ELEVATION
 ROUGH GRADING SECTION**
 (PRIOR TO ABUTMENT CONSTRUCTION)

NOTES:

- ① QUANTITY OF STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) IS BASED ON DIMENSIONS SHOWN, AND PAYMENT IS BASED ON THIS QUANTITY. IF THE CONTRACTOR CHOOSES TO INCREASE DIMENSIONS IN ORDER TO FACILITATE CONSTRUCTION OPERATIONS, ANY QUANTITY INCREASES ARE CONSIDERED INCIDENTAL.
- ② PLACE ABUTMENT APPROACH SURCHARGE MATERIAL PRIOR TO ABUTMENT CONSTRUCTION. AFTER COMPLETION OF SURCHARGE WAITING PERIOD, REMOVE SURCHARGE AND EXISTING MATERIAL OR SELECT GRADING MATERIAL TO THE LIMITS SHOWN IN "ROUGH GRADING SECTION" ABOVE, PRIOR TO ABUTMENT CONSTRUCTION. SEE BRIDGE PLANS AND SPECIAL PROVISIONS FOR ABUTMENT APPROACH SURCHARGE REQUIREMENT AND PAYMENTS.
- ③ SEE BRIDGE PLAN FOR SLOPE AND SLOPE PROTECTION.
- ④ SEE PLAN FOR TYPE OF MATERIAL.
- ⑤ START 1:20 TAPER AT END OF APPROACH PANEL. 1:20 VARIES WHEN APPROACH PANEL IS SKEWED.
- ⑥ GRADING TO BE SQUARED OFF ON SKEWED BRIDGES.
- ⑦ TOP OF 1:1.5 SLOPE (FORMS A LINE PARALLEL TO END OF BRIDGE).
- ⑧ SUBSURFACE PIPE DRAIN. SEE BRIDGE PLAN FOR STANDARD DETAIL B910 FOR DETAILS.
- ⑨ PLACE 12 MIL POLYETHYLENE SHEETING (OR TWO LAYERS OF 6 MIL) UNDER THE LIMITS OF THE APPROACH PANEL TO ALLOW THE PANEL TO MOVE LONGITUDINALLY ON THE GRADE. SHEETING IS INCIDENTAL.

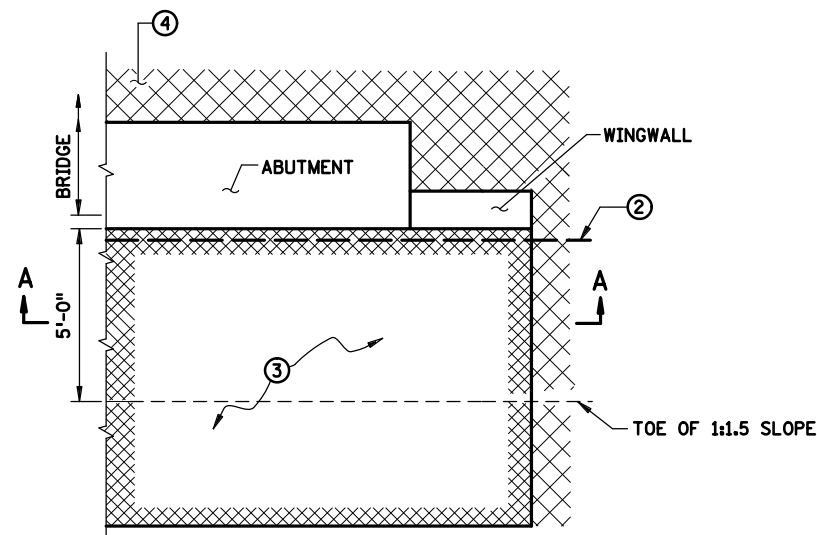
REVISION:
APPROVED: AUGUST 22, 2019 GLENN ENGSTROM DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

 DEPARTMENT OF TRANSPORTATION	STANDARD PLAN 5-297.234	1 OF 2
	 STATE DESIGN ENGINEER	APPROVED: 08-22-2019 REVISED:

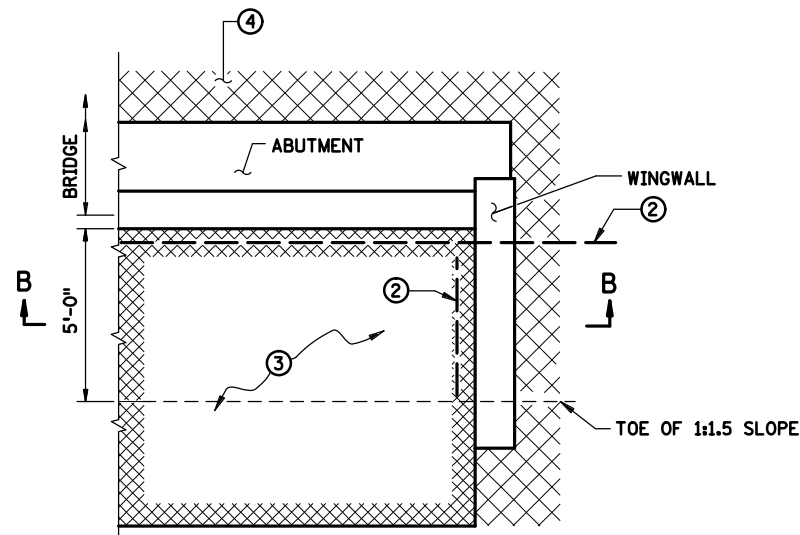
**BRIDGE ABUTMENT APPROACH TREATMENT
 FOR INTEGRAL ABUTMENTS**

PLOTTED/REVISED: 27-AUG-2019

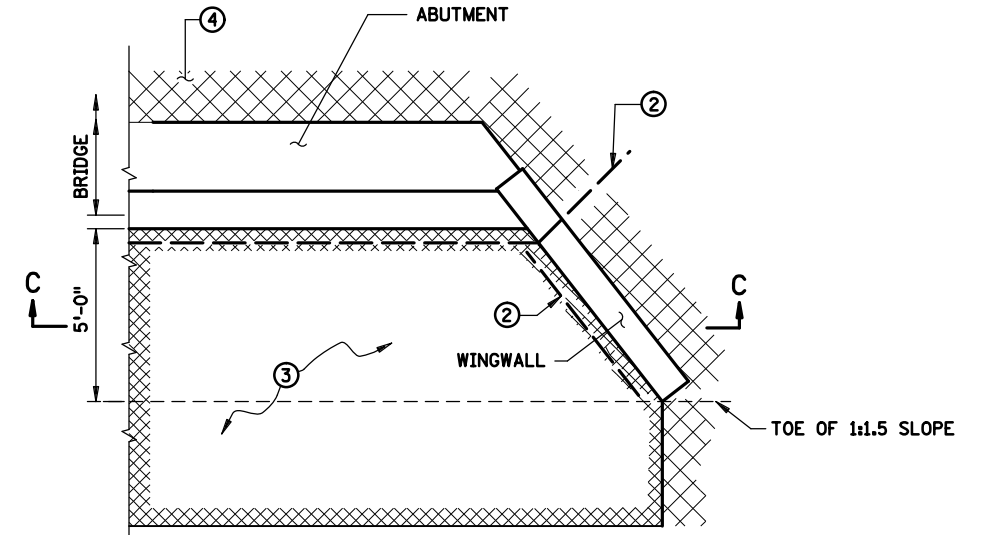
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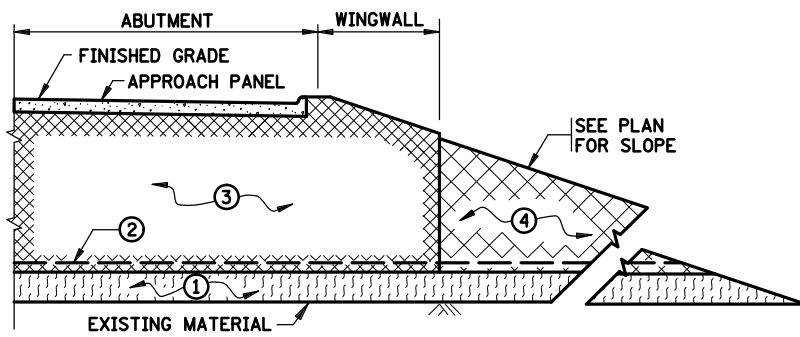
PARTIAL PLAN VIEW AT ABUTMENT
 (WINGWALL AT 180°) (FINISHED GRADING)



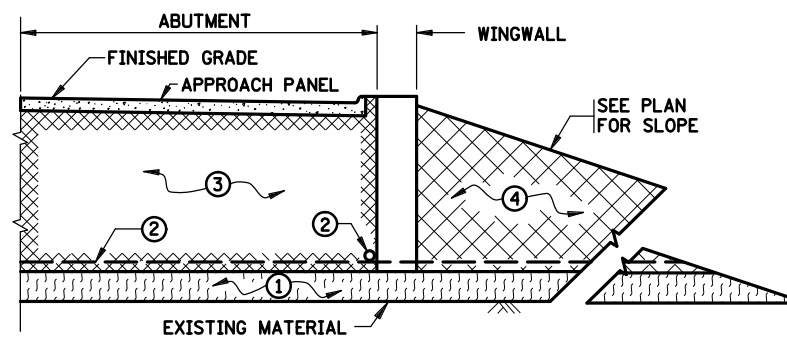
PARTIAL PLAN VIEW AT ABUTMENT
 (WINGWALL AT 90°) (FINISHED GRADING)



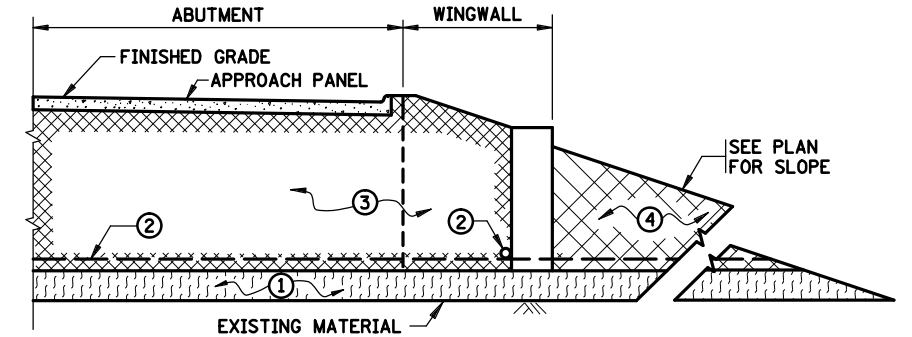
PARTIAL PLAN VIEW AT ABUTMENT
 (WINGWALL AT ANY OTHER ANGLE) (FINISHED GRADING)



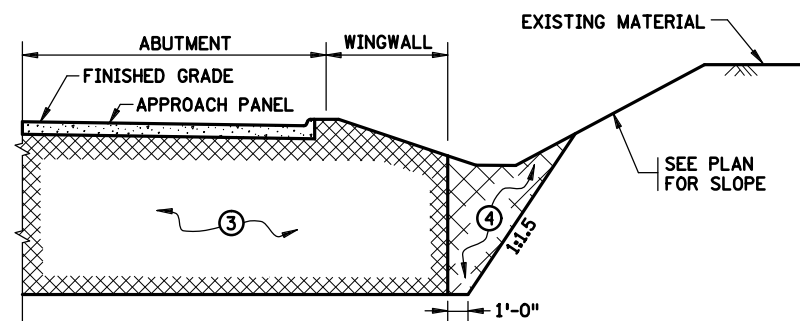
FINISHED GRADING SECTION A-A
 (FILL SECTION)



FINISHED GRADING SECTION B-B
 (FILL SECTION)



FINISHED GRADING SECTION C-C
 (FILL SECTION)



FINISHED GRADING SECTION A-A
 (CUT SECTION)
 (BRIDGE DETAIL B910 DRAIN NOT SHOWN)

NOTES:

- ① EXISTING MATERIAL OR SELECT GRADING MATERIAL (SPEC. 2106).
- ② SUBSURFACE PIPE DRAIN. SEE BRIDGE PLAN FOR STANDARD DETAIL B910 FOR DETAILS.
- ③ QUANTITY OF STRUCTURAL BACKFILL (SPEC. 3149.2.D.2) IS BASED ON DIMENSIONS SHOWN, AND PAYMENT IS BASED ON THIS QUANTITY. SEE PLAN FOR QUANTITY. IF THE CONTRACTOR CHOOSES TO INCREASE DIMENSIONS IN ORDER TO FACILITATE CONSTRUCTION OPERATIONS, ANY QUANTITY INCREASES ARE CONSIDERED INCIDENTAL.
- ④ SELECT GRADING MATERIAL (SPEC. 2106).

REVISION:

APPROVED: AUGUST 22, 2019

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 Peter A Harff
 DEPARTMENT OF TRANSPORTATION
 STATE DESIGN ENGINEER
 APPROVED: 08-22-2019
 REVISED:

BRIDGE ABUTMENT APPROACH TREATMENT FOR INTEGRAL ABUTMENTS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS