See appropriate Std. Dwg. (DBR-2-73 or GR-2.2) for railing systems details

W6X15 or W6X25 steel post

TS8X4X.1875 tubing, 6" long (2 per post)

6"X8" wood post (Typ.)

6"X8"X14" wood blockout (Typ.)

Blockout shall be included with item 517 for payment

3/4"

Bridge Limits

Abutment

* Guardrail not attached to posts. Blockout fastened to post with standard post bolt.

PLAN

Item 517 Bridge Railing or Item 606 Guardrail, Type 5 with Tubular Backup

Item 606 Guard Rail

6'-3"

4 Spa.@ 1'-6 3/4" = 6'-3"

4 Spa.@ 3'-11 1/2" = 12'-6"

6'-3"

3" min.

Bridge Limits

Abutment

℄ Deep Beam Rail

1'-9"

2'-3" *

5" min.

**

Two sections of W-beam rail nested (One inside the other)

Post and mounting bolts included with Bridge Terminal Assembly for payment

ELEVATION

** See Std. Const. Dwg. GR-1.2 for additional post embedment details.

TYPE 4

NOTES

GENERAL

For additional details, see Std. Const. Dwgs. GR-1.1, GR-1.2 and other Standard Drawings pertaining to design of specific guardrail types.

APPLICATION

The Type 4 Bridge Terminal Assembly shall be used to connect guardrail runs to bridges having W-beam railing with Tubular Backup.

DETAIL INFORMATION

The first post off the bridge shall be steel (W6x15 or W6x25). All holes in the off-structure end of the approach panel W-beam rail section that spans the abutment shall be slotted 3/4" x 2 1/2" and bolts shall be tightened as specified for expansion joints in 606.05.

POSTS

GENERAL- Posts may be set in drilled holes or driven to grade.

POSTS shall be square-sawed pressure treated wood as per 710.14 and fabricated with square ends. Bolt holes shall be bored and tops of posts trimmed if required, after posts are set.

PAYMENT

Payment for Item 606 - Each, Bridge Terminal Assembly, Type 4 shall include the extra cost, in excess of normal guardrail cost, for additional posts and other hardware. The TS 8x4 spacers and tubular back-up rail extending to the first post off the bridge shall be included with Item 517 - Railing or Item 606 - Gurardrail, Type 5 with Tubular Backup for payment.

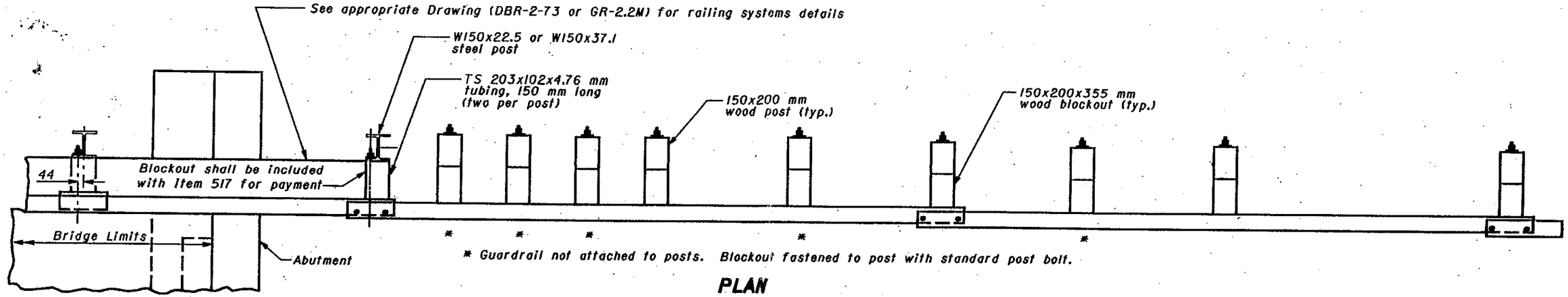
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

BRIDGE TERMINAL ASSEMBLY, TYPE 4

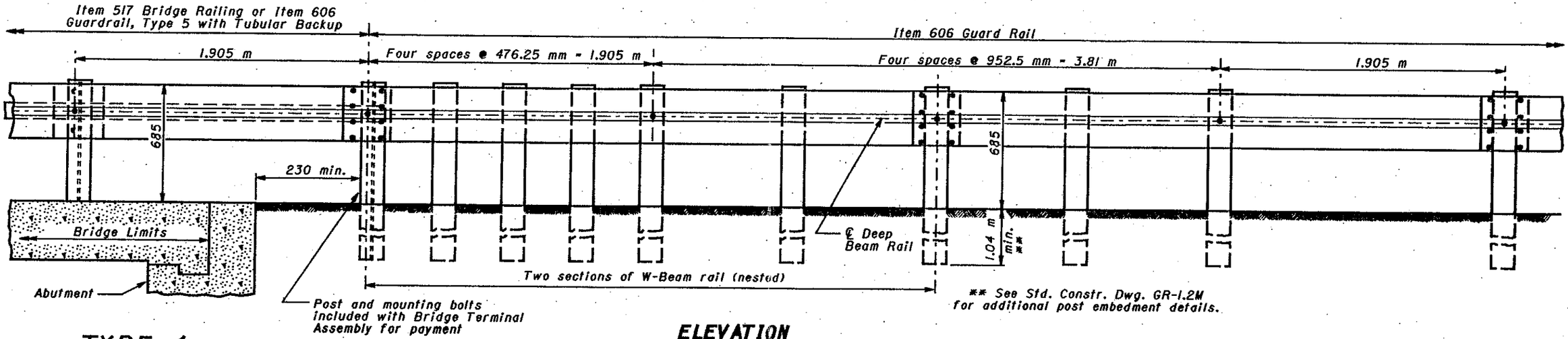
DATE 5-6-91

STANDARD CONSTRUCTION DRAWING **GR-3.4**

APPROVED D.K. Huhman ENGR., L. & D.



PLAN



ELEVATION

TYPE 4

NOTES

GENERAL: For additional details, see Std. Constr. Dwgs. GR-1.1M, GR-1.2M and other Drawings pertaining to the design of specific guardrail types.

APPLICATION: The Type 4 Bridge Terminal Assembly shall be used to connect guardrail runs to bridges having W-Beam railing with Tubular Backup.

DETAIL INFORMATION: The first post off the bridge shall be steel (W150x22.5 or W150x37.1). All holes in the off-structure end of the approach panel W-Beam rail section that spans the abutment shall be slotted 19x64 mm and the bolts shall be tightened as specified for expansion joints in Item 606.05.

POSTS: General - Posts may be set in drilled holes or driven to grade.

Wood Posts shall be square-sawed pressure treated wood, as per CMS 710.14, and fabricated with square ends. Bolt holes shall be bored and tops of posts trimmed, if required, after posts are set.

Steel Posts and Blockouts for Type 4 Bridge Terminal Assemblies may be furnished as an alternate. The steel alternate for the 150 mm by 200 mm wood post shall be W150x13.5.

PAYMENT: Payment for Item 606 - Each, Bridge Terminal Assembly, Type 4, shall include the extra cost, in excess of normal guardrail costs, for additional posts and other hardware. The TS 203x102 mm spacers and tubular back-up rail extending to the first post off the bridge shall be included with Item 517 - Railing, or Item 606 - Guardrail, Type 5, with Tubular Backup, for payment.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces GR-3.4.

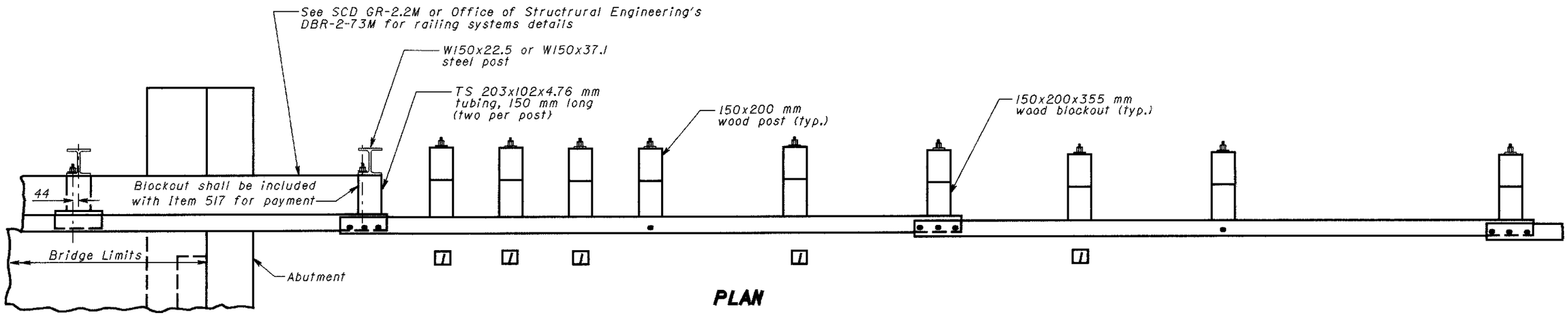
OFFICE OF ROADWAY ENGINEERING
OHIO DEPARTMENT OF TRANSPORTATION

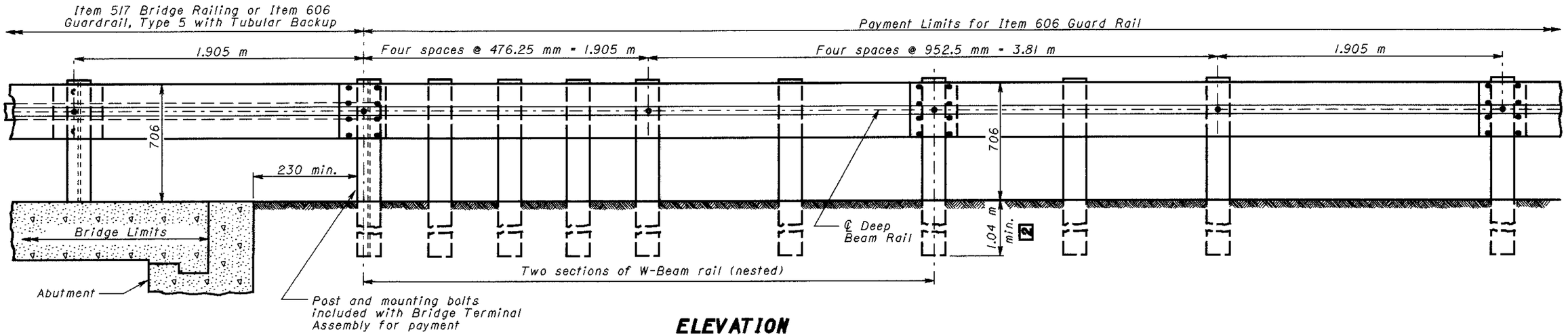
BRIDGE TERMINAL ASSEMBLY, TYPE 4

DATE 1-3-96

STANDARD CONSTRUCTION DRAWING **GR-3.4M**

APPROVED D.K. Hulman, P.E.
ADMINISTRATOR





All dimensions are in millimeters unless otherwise noted.

1 Guardrail not attached to posts. Blockout fastened to post with standard post bolt.

2 See SCD GR-1.2M for additional post embedment details.

NOTES

GENERAL: For additional details, see SCD's GR-1.1M, GR-1.2M and other Drawings pertaining to the design of specific guardrail types.

APPLICATION: The Type 4 Bridge Terminal Assembly shall be used to connect guardrail runs to bridges having W-Beam railing with Tubular Backup.

DETAIL INFORMATION: The first post off the bridge shall be steel (W150x22.5 or W150x37.1). All holes in the off-structure end of the approach panel W-Beam rail section that spans the abutment shall be slotted 19x64 mm and the bolts shall be tightened as specified for expansion joints in Item 606.05.

POSTS: General - Posts may be set in drilled holes or driven to grade.

Wood Posts shall be square-sawed pressure treated wood, as per CMS 710.14, and fabricated with square ends. Bolt holes shall be bored and tops of posts trimmed, if required, after posts are set.

Steel Posts and Blockouts for Type 4 Bridge Terminal Assemblies may be furnished as an alternate. The steel alternate for the 150 mm by 200 mm wood posts and blockouts shall be W150x13.5.

PAYMENT: Payment for Item 606 - Each, Bridge Terminal Assembly, Type 4, shall include the extra cost, in excess of normal guardrail costs, for additional posts and other hardware. The TS 203x102 mm spacers and tubular back-up rail extending to the first post off the bridge shall be included with Item 517 - Railing, or Item 606 - Guardrail, Type 5, with Tubular Backup, for payment.

metric units

This Drawing Replaces GR-3.4.

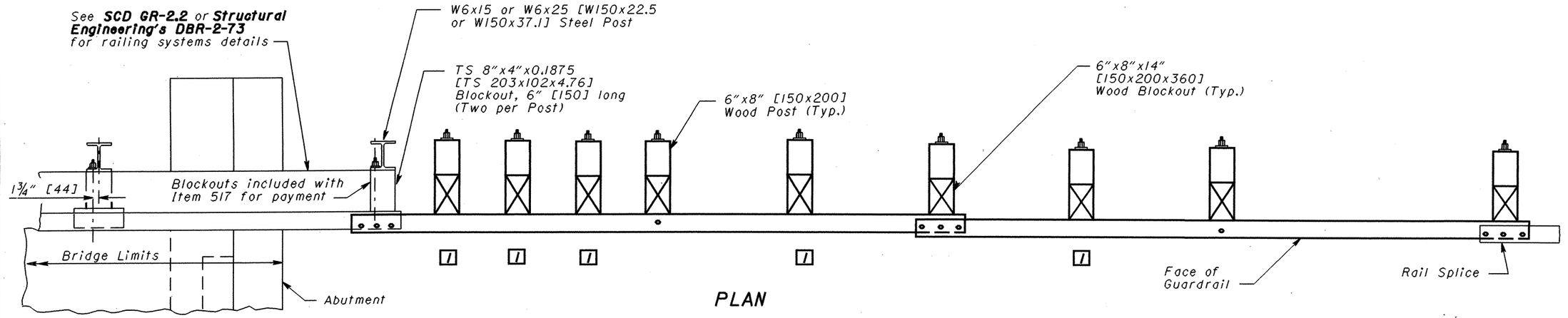
OHIO DEPARTMENT OF TRANSPORTATION

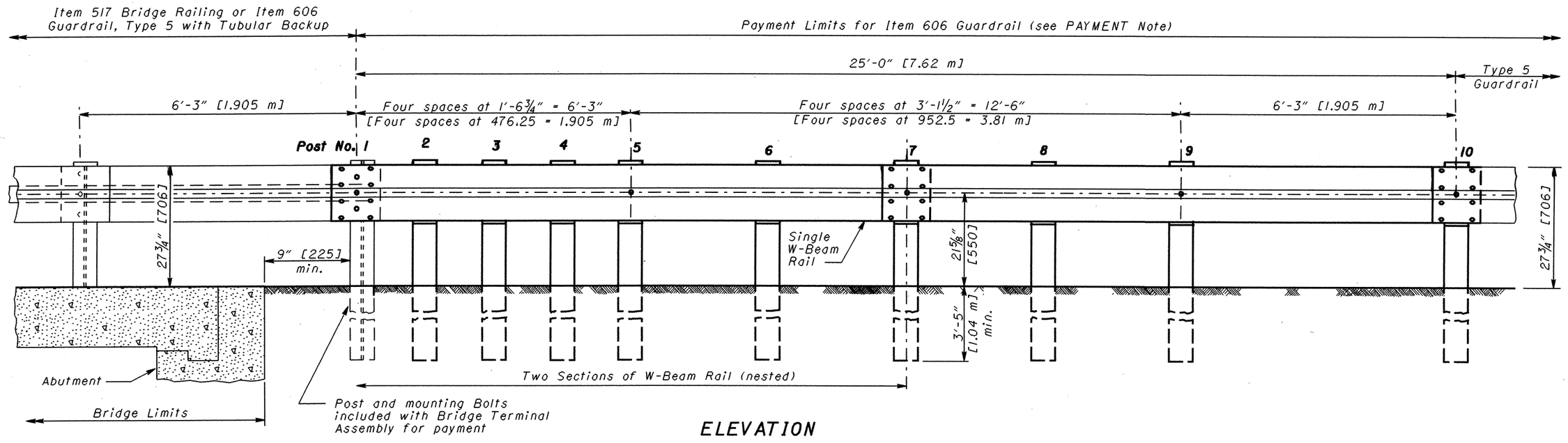
BRIDGE TERMINAL ASSEMBLY, TYPE 4

DATE
1-3-96
10-21-97

STANDARD CONSTRUCTION DRAWING **GR-3.4M**

APPROVED Lowell F. Sutherland





NOTES

GENERAL: For additional details, see **SCD GR-1.1.**

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on **Structural Engineering SCD DBR-2-73**). **Do not use on the NHS.**

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25 [W150x22.5 or W150x37.1]). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted ¾"x2½" [19x64]. Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See **SCD GR-1.1** for additional Post embedment details. Guardrail is not attached to certian posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required, after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 [W150x13.5] or W6x8.6 [W150x12.6] in lieu of the 6"x8" [150x200] wood post. Use same post material throughout assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on **SCD GR-5.1** at or beyond Post No. 10; however, the flare may begin at Post No. 7.

PAYMENT: **Item 606 - Bridge Terminal Assembly, Type 4, Each,** includes the cost of extra componets, in excess of normal guardrail, for additional posts and other hardware. The TS 8"x4" [200x100] spacers and tubular backup rail extending to the first post off the bridge is included with **Item 517 - Railing,** or **Item 606 - Guardrail, Type 5, with Tubular Backup,** for payment.

LEGEND

[1] Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4M DATED 10-21-97.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
Paul L. Ballard
4-18-03
DATE

STDS. ENGR.
D. Focke

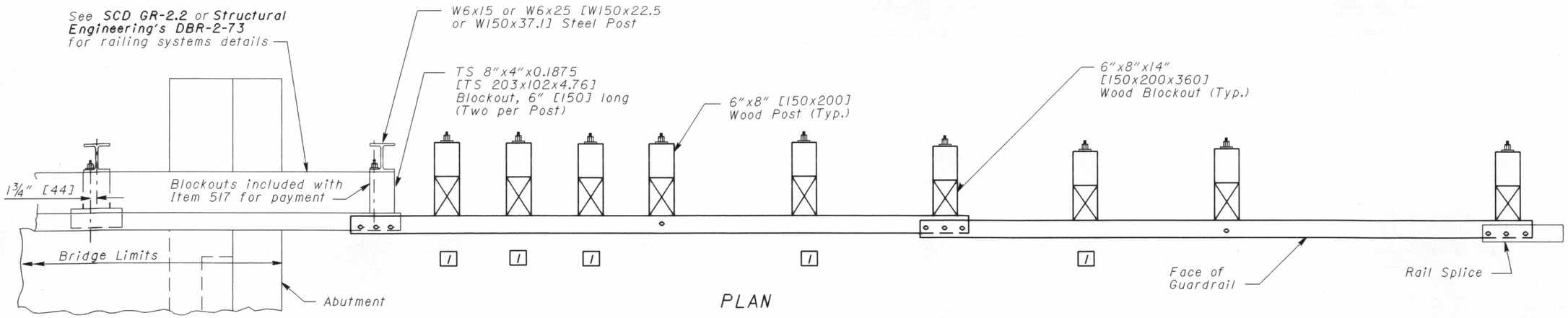
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
BRIDGE TERMINAL ASSEMBLY, TYPE 4

NUMBER **GR-3.4**

1 / 1



NOTES

GENERAL: For additional details, see **SCD GR-1.1.**

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on **Structural Engineering SCD DBR-2-73**).

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25 [W150x22.5 or W150x37.1]). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted ¾"x2½" [19x64]. Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See **SCD GR-1.1** for additional Post embedment details. Guardrail is not attached to certian posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required, after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 [W150x13.5] or W6x8.5 [W150x12.6] in lieu of the 6"x8" [150x200] wood post. Use same post material throughout assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on **SCD GR-5.1** at or beyond Post No. 10; however, the flare may begin at Post No. 7.

PAYMENT: **Item 606 - Bridge Terminal Assembly, Type 4, Each,** includes the cost of extra components, in excess of normal guardrail, such as additional posts and other hardware. The TS 8"x4" [200x100] spacers and tubular backup rail extending to the first post off the bridge is included with **Item 517 - Railing,** or **Item 606 - Guardrail, Nested Type 5, with Tubular Backup,** for payment.

LEGEND

[1] Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4 DATED 4-18-03.

OHIO DEPARTMENT OF TRANSPORTATION
Dick Grau
ROADWAY DESIGN ENGINEER
1-20-06
DATE

STDS. ENGR. D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

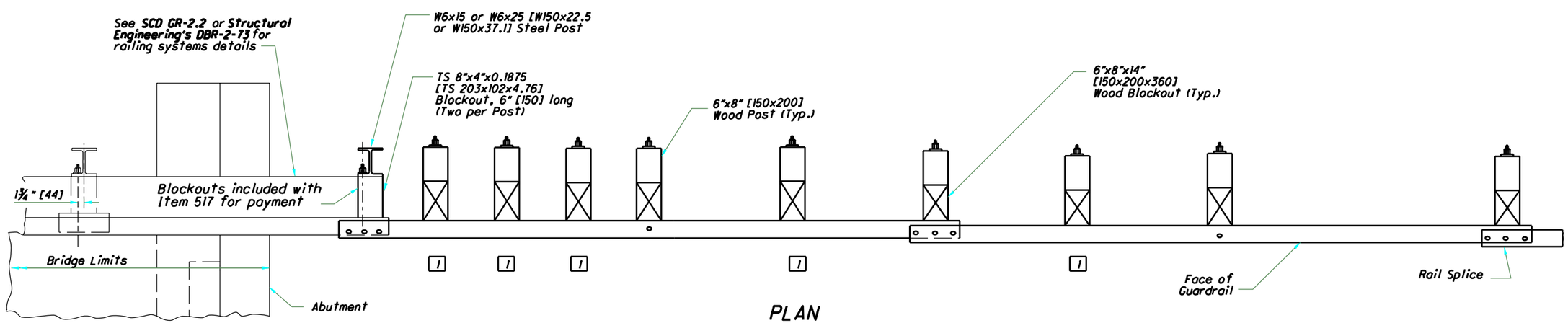
ROADWAY ENGINEERING SERVICES

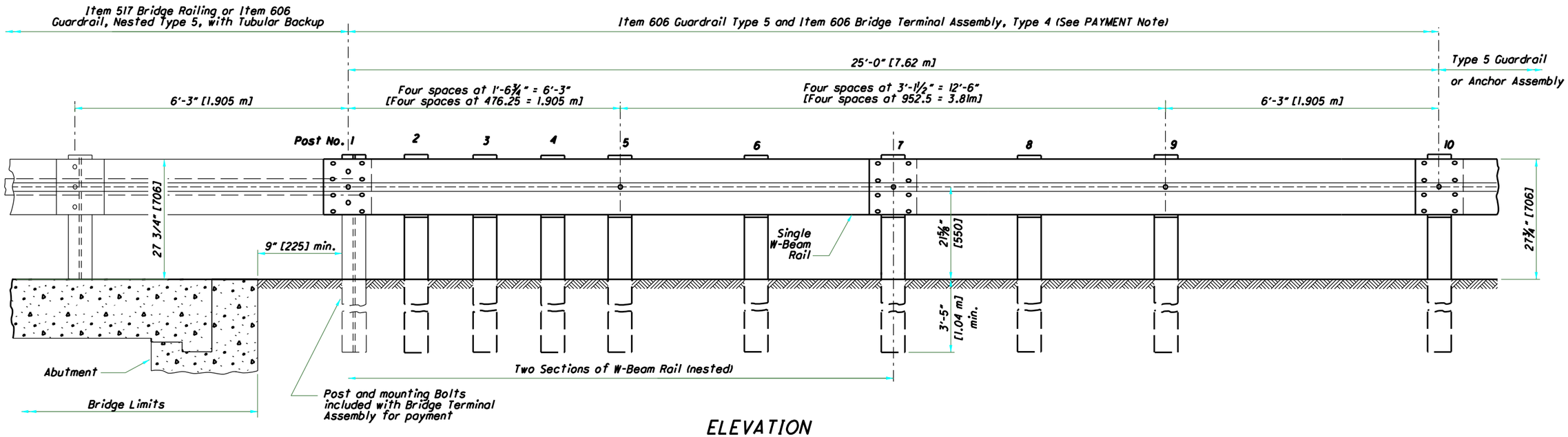
STANDARD ROADWAY CONSTRUCTION DRAWING

BRIDGE TERMINAL ASSEMBLY, TYPE 4

NUMBER GR-3.4

1 / 1





NOTES

GENERAL: For additional details, see **SCD GR-1.1.**

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on **Structural Engineering SCD DBR-2-73**).

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25 [W150x22.5 or W150x37.1]). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted ¾"x2½" [19x64]. Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See **SCD GR-1.1** for additional Post embedment details. Guardrail is not attached to certian posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 [W150x13.5] or W6x8.5 [W150x12.6] in lieu of the 6"x8" [150x200] wood post. Use same post material throughout assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on **SCD GR-5.1** at or beyond Post No. 10; however, the flare may begin at Post No. 7.

PAYMENT: Item 606 - Bridge Terminal Assembly, Type 4, Each, includes the cost of extra components in excess of normal guardrail, such as additional costs and other hardware. The TS 8"x4" [200x100] spacers and tubular backup rail extending to the first post off the bridge is included with **Item 517 - Railing,** or **Item 606 - Guardrail, Nested Type 5 with Tubular Backup,** for payment.

LEGEND

[1] Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4 DATED 1-20-06.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
Dirk B. Bauer — ADMINISTRATOR — 10-16-09 DATE

STDS. ENGINEER: M. Bline

ALL METRIC DIMENSIONS (IN BRACKETS [ ]) ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

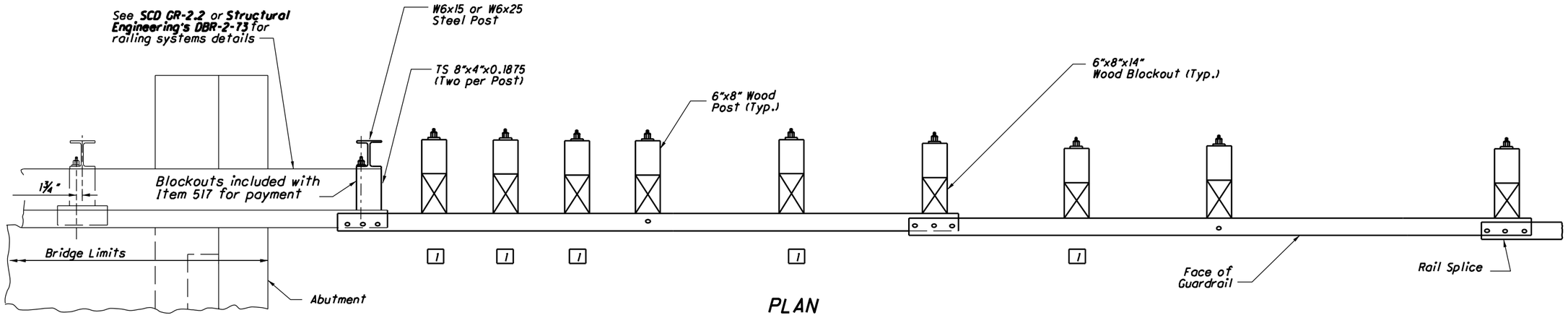
OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

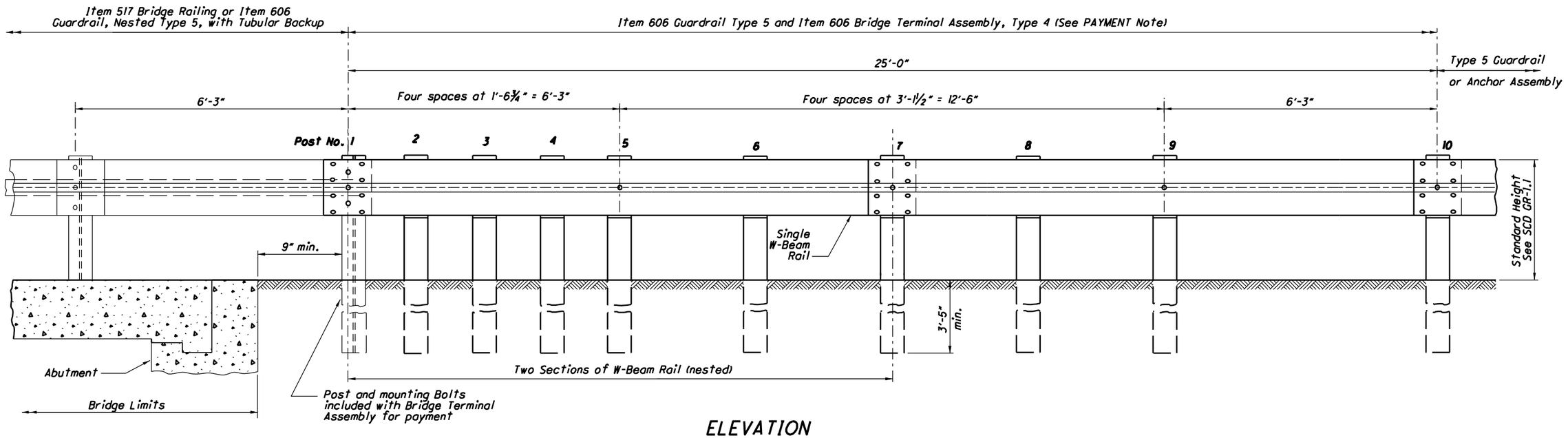
BRIDGE TERMINAL ASSEMBLY, TYPE 4

SCD NUMBER GR-3.4

1 / 1



PLAN



ELEVATION

NOTES

GENERAL: For additional details, see **SCD GR-1.1.**

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on **Structural Engineering SCD DBR-2-73**).

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted ¾"x2½". Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See **SCD GR-1.1** for additional Post embedment details. Guardrail is not attached to certian posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 or W6x8.5 in lieu of the 6"x8" wood post. Use same post material through-out assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on **SCD GR-5.1** at or beyond Post No. 10; however, the flare may begin at Post No. 7.

PAYMENT: Item 606 - Bridge Terminal Assembly, Type 4, Each, includes the cost of extra components in excess of normal guardrail, such as additional posts and other hardware. The TS 8"x4" spacers and tubular backup rail extending to the first post off the bridge is included with **Item 517 - Railing,** or **Item 606 - Guardrail, Nested Type 5 with Tubular Backup,** for payment.

LEGEND

[1] Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4 DATED 10-16-09.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
Michael Blume — ADMINISTRATOR — 7-20-12 DATE

STDS. ENGINEER: M. Ruppe

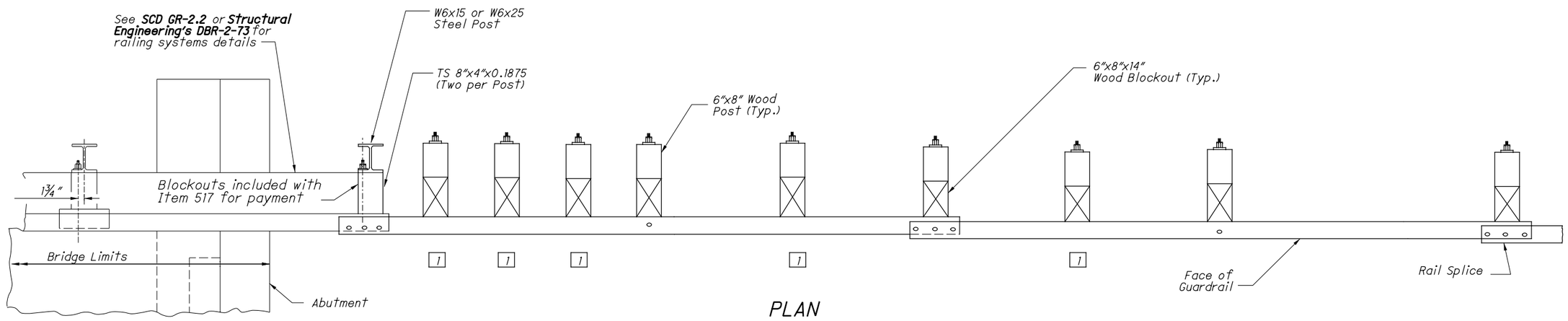
OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

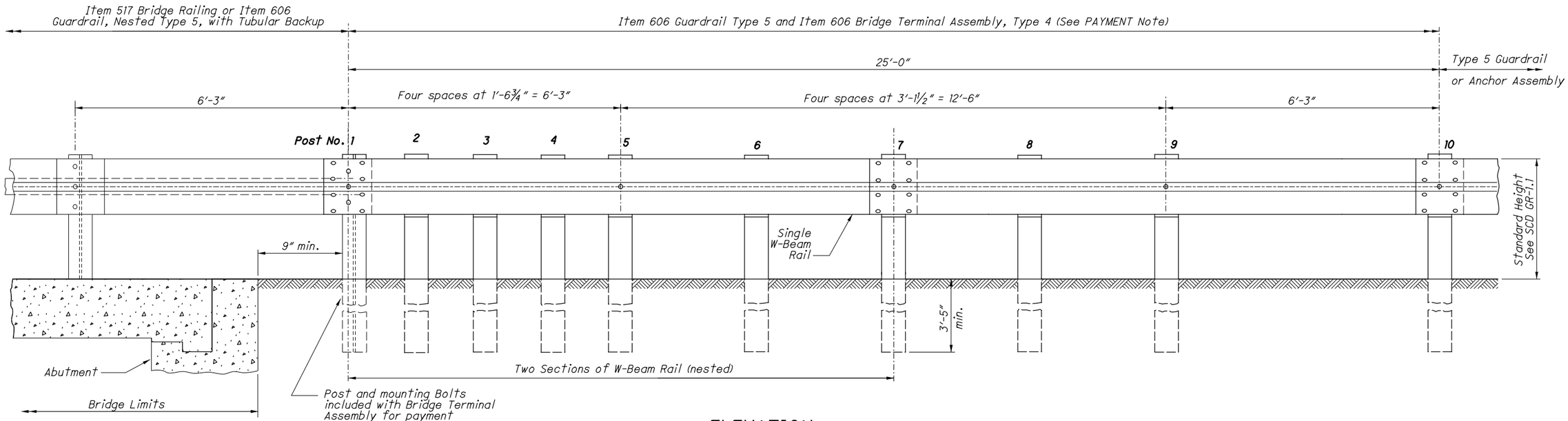
BRIDGE TERMINAL ASSEMBLY, TYPE 4

SCD NUMBER GR-3.4

1 / 1



PLAN



ELEVATION

NOTES

GENERAL: *For additional details, see* ***SCD GR-1.1.***

APPLICATION: *The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on* ***Structural Engineering SCD DBR-2-73****).*

DETAIL INFORMATION: *The first post off the bridge shall be steel (W6x15 or W6x25). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted ¾"x2½". Tighten the bolts as specified for expansion joints in Item 606.05.*

POSTS: *Posts may be set in drilled holes or driven to grade. See* ***SCD GR-1.1*** *for additional Post embedment details. Guardrail is not attached to certian posts (see LEGEND).*

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 or W6x8.5 in lieu of the 6"x8" wood post. Use same post material through-out assembly.

BLOCKOUTS: *Approved alternate blockouts can be found on the Office of Roadway Engineering website. Steel blockouts are not permitted.*

FLARED GUARDRAIL: *Start Standard Guardrail Flares as shown on* ***SCD GR-5.1*** *at or beyond Post No. 10; however, the flare may begin at Post No. 7.*

PAYMENT: Item 606 - Bridge Terminal Assembly, Type 4, Each, *includes the cost of extra components in excess of normal guardrail, such as additional posts and other hardware. The TS 8"x4" spacers and tubular backup rail extending to the first post off the bridge is included with* ***Item 517 - Railing,*** *or* ***Item 606 - Guardrail, Nested Type 5 with Tubular Backup,*** *for payment.*

LEGEND

[1] *Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.*

OFFICE OF ROADWAY ENGINEERING

DESIGNED XXX REVIEWED XXX

REVISION DATE 7/20/2018 CHECKED CHECKED

PLAN INSERT SHEET

BRIDGE TERMINAL ASSEMBLY, TYPE 4

PIS GR-3.4

1/1