

DISPUTE REVIEW BOARD RECOMMENDATION

May 4, 2011

Mr. Frank Proch
Project Administrator
AIM Engineering & Surveying Inc.
5802 Breckenridge Pkwy
Suite 100
Tampa, FL 33610

Mr. Scott Pitman
Division Manager
Ajax Paving Industries of Florida, LLC
5100 W. Lemon St., Suite 106
Tampa, FL 33609

RE: US 92 Eureka Springs Road to Thonotosassa Road, FIN: 411337-1-52-01

Subject: Hearing Dated May 2, 2011
Disputes Review Board Recommendation

Issue 1: Method of Payment for Boardwalk Support Post – Board Measure Calculation
Issue 2: Method of Payment for Boardwalk Support Post - Actual Quantity Determination

Dear Sirs,

Ajax Paving Industries of FL, LLC (Contractor) and the Florida Department of Transportation (FDOT) requested a Dispute Review Board hearing of disputed issues. The hearing was held on May 2, 2011 at the FDOT Oak Park Resident Construction office in Tampa, FL. The parties furnished the Board position papers for review prior to the hearing. The Disputes Review Board was requested only to consider the question of entitlement. In accordance with your request the following recommendations are offered.

Issue 1: Method of Payment for Boardwalk Support Post – Board Measure Calculation

Background

A portion of the project scope involved the construction of approximately 15,000LF of timber boardwalk along the right of way of the road. The disputed issue concerns the method used to calculate the Board Measure volume of the support post with regard to payment calculations.

Contractor Position Issue 1

The following summary of the Contractor's position is based upon written materials submitted to the Board and upon the hearing presentation.

The Contractor maintains that the measure calculation should be based specifically on the "actual dry dressed sizes" of all members including the timber support post/piling and disputes the FDOT's board foot measurement that only utilizes the a timber support post/pile diameter of 6 inches for the entire length of the supporting post.

Key Points

1. The calculation for the support post/piling (2.36 BF per LF) used by the FDOT is based upon a round timber support post/piling as symbolized and shown on page B6-2 of the plans that has a diameter of 6 inches for the entire length.¹ It is the Contractor's position that the board foot measurement per linear foot of support post/pile should have been calculated by using the average diameter of the entire actual dry dressed sizes of the timber support post/piling.
2. The note on page B6-2 of the plans states that the board foot measurement for the Treated Structural Lumber is based upon the "actual dry dressed sizes" for the structural timber. Therefore, since the FDOT is including the "support post" in the Treated Lumber pay item, then the actual dimensions of the "support post" should have been used for calculating the board foot measurement of the "support posts".
3. Section 5-2 of the 2007 Standard Specifications states the governing order of the contract documents.² Accordingly, the plans take precedence over the Standard Specifications in case of discrepancies.
4. According to the Standard Grading Rules for Southern Pine Timber, timber piling shall have a formed taper of 1 inch per 10 feet of length. Listed below is the average diameter for the various lengths of the timber support post/piling used on the project.

Length	Tip	Butt	Ave. Dia.
16	6	7.60	6.800
18	6	7.80	6.900
20	6	8.00	7.00
25	6	8.50	7.250
30	6	9.00	7.500

5. The issue is not a claim issue. It is a dispute concerning payment calculations.

The Contractor is requesting entitlement to have the average support/post diameter used in the pay item quantity calculation for timber support post/piles.

Contractor Summary

Based upon the above facts and specification and plans, the Contractor believes that they are entitled to have the average support/post diameter used in the pay item quantity calculation for timber support post/piles.

FDOT Position Issue 1

The following summary of the FDOT's position is based upon written materials submitted to the Board and upon the hearing presentation.

The FDOT maintains that the quantity measure for the timber support post has been correctly made in accordance with the plans and specifications. Further, the Contractor has failed to comply with the requirements of specification sections 5-4 Errors or Omissions in the Contract Documents and Section 5-12 Claims by Contractor.

Key Points

1. The Contractor was aware of the FDOT's method of calculating quantity for timber support post at the time of bid and subsequently at the start of the project. The Contractor did not notify the FDOT of a claim for additional compensation in

¹ See the Quantity Calculation information given on Sheet B6-2, which is included in Appendix A

² All references to specification sections refer to the FDOT Standard Specifications for Roads and Bridges, 2007

accordance with the requirements of Section 5-12. The Contractor began installing the support post in April 2008. The notice of the claim was not given until May 20, 2010. According to Specification Section 5-12 a contractor's failure to provide proper notice of intent constitutes a full waiver of the contractor's of any right to any additional compensation.

2. The payment quantity calculation for timber support post is based upon established "plan quantity" concept. Specification Section 470 Timber Structures, Sub-section 470-13.1 states "The quantities to be paid for will be the plan quantity, in feet board measure, or timber actually incorporated in and forming a part of the completed structure". The plans and specifications are very clear as to how payment was to be made for boardwalk post. Plan sheet B6-2 identifies boardwalk post payment based upon a volume of 2.36 board feet per linear foot of post. The FDOT has followed the plans and specifications in calculating the pay item quantity for the timber support posts.

FDOT Summary

Based upon the above facts and specification, the FDOT believes that the Contractor is not entitled to have the average support/post diameter used in the pay item quantity calculation for timber support post/piles.

Disputes Review Board Findings Issue 1

Relevant Facts

1. The FDOT's intended method of the quantity measure calculation of the timber support post was known by the Contractor at the time of bid and throughout performance on the project. The Contractor stated during the hearing that they had performed other similar boardwalk work on other FDOT contracts and that the FDOT had used the same method of quantity calculation on those projects. Through out the performance of work on the subject project the FDOT consistently used the plan quantity method of calculating post board measure at the stipulated 2.36 Board Feet per Linear Feet of post.
2. Notice of the Contractor's dispute with the support post board measure calculation was not given until May 20, 2010³. Work on post installation began in April 2008.
3. The timber support posts are consistently referred to as "post" in the plans. The term "pile" is not used in the plans in referring to the timber post.
4. The Contractor chose to use tapered post rather than non-tapered post. During the hearing the Contractor stated that non-tapered posts were significantly more costly. The Contractor made a material submittal of the tapered post, which was approved by the FDOT. The non-tapered post were peeled or stripped of bark but not dressed to dimension.
5. The FDOT did not indicate in any way in the review of the tapered post submittal that they intended to change their method of support post board measure calculation to include using the average diameter of tapered post.

³ See Ajax letter dated May 20, 2010

Relevant Contract Specifications and Plan Information

1. Contractor notice of intention to claim requirements are provide in Specification Section 5-12, which reads in part as follows:

“12.2 Notice of Claim:

5-12.2.1 Claims For Extra Work: Where the Contractor deems that additional compensation or a time extension is due for work or materials not expressly provided for in the Contract or which is by written directive expressly ordered by the Engineer pursuant to 4-3, the Contractor shall notify the Engineer in writing of the intention to make a claim for additional compensation before beginning the work on which the claim is based, and if seeking a time extension, the Contractor shall also submit a preliminary request for time extension pursuant to 8-7.3.2 within ten calendar days after commencement of a delay. If such notification is not given and the Engineer is not afforded the opportunity for keeping strict account of actual labor, material, equipment, and time, the Contractor waives the claim for additional compensation or a time extension. Such notice by the Contractor, and the fact that the Engineer has kept account of the labor, materials and equipment, and time, shall not in any way be construed as establishing the validity of the claim or method for computing any compensation or time extension for such claim. On projects with an original Contract amount of \$3,000,000 or less within 90 calendar days after final acceptance of the project in accordance with 5-11, and on projects with an original Contract amount greater than \$3,000,000 within 180 calendar days after final acceptance of the project in accordance with 5-11, the Contractor shall submit full and complete claim documentation as described in 5-12.3. However, for any claim or part of a claim that pertains solely to final estimate quantities disputes the Contractor shall submit full and complete claim documentation as described in 5-12.3, as to such final estimate claim dispute issues, within 90 or 180 calendar days, respectively, of the Contractor’s receipt of the Department’s final estimate.

Submission of timely notice of intent to file a claim, preliminary time extension request, time extension request, and the claim, together with full and complete claim documentation, are each a condition precedent to the Contractor bringing any circuit court, arbitration, or other formal claims resolution proceeding against the Department for the items and for the sums or time set forth in the Contractor’s written claim, and the failure to provide such notice of intent, preliminary time extension request, time extension request, claim and full and complete claim documentation within the time required shall constitute a full, complete, absolute and irrevocable waiver by the Contractor of any right to additional compensation or a time extension for such claim.”

2. The method for measurement of timber structures is given in Specification Section 470 Timber Structures, which reads in part....

“**470-13 Method of Measurement.**

470-13.1 General: The quantity to be paid for will be the plan quantity, in feet board measure, of such timber actually incorporated in and forming a part of the completed structure.

470-13.2 Method of Calculation: For calculating the quantity of timber, the width and thickness will be taken as the actual sizes shown in the plans or ordered by the Engineer. Where special sizing is required the width and

thickness to be used will be that of the smallest commercial size from which the special piece could be cut. Lengths to be used in the calculations will be the overall lengths of the pieces as shown in the plans, except that, where the lengths actually incorporated in the structure are less than the lengths shown in the plans, the lengths actually incorporated will be used in the calculations. ”

3. In plan sheet B6-1 the timber support post is identified as a “6 “ Ø “ TIMBER SUPPORT POST”. The contract does not address the use of a tapered post or a tapered pile.
4. Plan sheet B6-2 contains a table titled “ETIMATED QUANTITIES”. The table is as indicated below with accompanying notes:

ESTIMATED QUANTITIES			
	ITEM	UNIT	QUANTITY
Treated Timber Structural	Decking, Stringers, Timbers, Rails	BM/Span **	195.11
	Diagonal Cross Bracing	BM/Bent	14.19
	Support Post (6 “ Ø)	BM/ft of Post	2.36

Quantities based on actual dressed dry sizes as reported in General Note 2.

* Required with clearance from ground to support lumber exceeds 6’-0”.

When clearance is greater than or equal to 10”-0” Quantity based on 16.21 BM/Bent.

** Based on 9’-0” span.

5. A Board Foot is the volume of lumber included in a space 1 inch in depth, by 12 inches in width, by 12 inches in length.
6. The volume of a post of uniform diameter of 6 inches, expressed in Board Measure is equal to 2.36 x the length of the post in feet.

Disputes Review Board Recommendation Issue No. 1

The plan quantity calculation for support post is clearly stated in the contract to be based upon a stipulated conversion factor of 2.36 BM per lineal feet of post based upon the specified post diameter of 6 inches. The Contractor voluntarily used tapered post with a butt diameter greater than 6 inches. The FDOT did not at any time agree to change the payment factor as a result of the Contractor’s voluntary use of tapered post.

The Dispute Review Board recommends that the Contractor is not entitled to have the post quantity calculation based upon the average diameter of the tapered posts that were provided.

Issue 2: Method of Payment for Boardwalk Support Post - Actual Quantity Determination

Background

The disputed issue No. 2 concerns the method used to calculate the length of support post to be included in the quantity calculation. Posts were generally driven to the indicated depth or a lesser depth when the subsoil conditions were such that continued driving was impractical, in which case the post was cut off to the required height. The Contractor is requesting to be paid for the entire length of the furnished post without a deduction for the cut off portion.

Contractor Position

The following summary of the Contractor's position is based upon written materials submitted to the Board and upon the hearing presentation.

The Contractor maintains that the timber post/pilings were ordered based upon the engineering information given in the plans. Further, the posts are actually treated timber piling as covered by Specification Section 455, which states that the quantity to be paid for is the length, in feet, furnished, placed and accepted according to the authorized lengths list. Therefore, the entire furnished length should be used in calculating the pay item quantity.

Key Points

1. In a letter dated April 23, 2011 the Contractor requested that the timber support post be paid for based upon their full length. Progress payments on the project included payment for the entire length of post furnished. It is evident that the FDOT considered the timber post to be really "treated timber piling" and treated them as such under specification section 455-11.1. Section 455-11.1 states that for treated timber piling ...

"the quantity to be paid for will be the length, in feet furnished, placed and accepted according to the authorized length list."
2. The FDOT's use of the word "timber support post" for the support members is improper, confusing, misleading and contrary to standard industry nomenclature. The only specification section that refers to "post" is Section 954, which refers to "timber fence post".
3. It is the Contractor's position that the "timber support posts" are actually "treated timber piles" and should appropriately fall under Sections 455-11.1 and Section 953 of the Standard Specifications.
4. The FDOT project inspectors and administrator inspected the stored piling on the project using specification section 953, as an acceptance criterion, including straightness, permissible knots and defects.
5. The FDOT used Specification Section 455-5.15.2 Position and 455-5.15.3 Axial Alignment to determine the position and alignment of the piling. Therefore, the FDOT's application and treatment of the piling under the above referenced specification sections applicable to piling, the reference structural member are in effect "treated timber piling" and classified under 455-3 and 455-4.
6. The specific length of piling ordered was based on the EOR chart on page B6-4 in the project plans. Treated timber posts are manufactured in standard lengths of 16', 18', 20', 25', and 30'. The Contractor ordered piling in the lengths indicated by the plan information, to the nearest available length. There was no indication that the piling could not be set to full length in accordance with the plans.

7. In several locations, the actual subsurface conditions were different from what was indicated in the boring logs provide in the plans. This was because of the long distance between borings. In some instances when driving became difficult and the pile butts were being damaged the pile driving was stopped. The driving conditions were discussed with the Project Administrator, who approved the use shorter piles in those locations only after attempting to drive the length of pile that was indicated in the plans.
8. After obtaining the approval of the Project Administrator, the Contractor acted in good faith in determining the length of timber support/pile for the boardwalks proven by utilizing shorter piling than what was indicated in the EOR's chart. The change in conditions resulted in lowering the actual board-footage for the timber support post/piling.
9. On page B6-1 of the plans, Note 3 states that, "all lumber (timber & post) shall be treated in accordance with Standard Specification 955. Inclusion of this note supports the Contractor's contention that for all practical purposes the support posts were intended to be treated as "piling".

Contractor Summary

The timber support post/pilings are actually timber "piling" as covered by specification section 455. Accordingly, the quantity measure should be as provided by 455-11.1,

"the quantity to be paid for will be the length, in feet furnished, placed and accepted according to the authorized length list."

The Contractor should be paid for the full length of the piling furnished without deduct for any cut off portion.

FDOT Position

The following summary of the FDOT's position is based upon written materials submitted to the Board and upon the hearing presentation.

The FDOT maintains that the FDOT has adjusted the plan quantity of the support post lengths to the as-built length actually installed. The reduction is related to the as-built length of the post installed, where the supplied post were shorter than called for in the plans, and where the finished post were placed shorter than the tip elevation called for in the plans, and where post were cut off to the elevation of the handrail.

Key Points

1. Plan Quantity Concept for 470-1 Treated Structural Timber, Plan Pay Item
Pay Item 470-1 is a plan quantity pay item, for which specification section 9-3.2.2 allows an authorized plan change which results in an increase or decrease in the plan quantity. The FDOT authorized adjustments to the post lengths at the request of the Contractor, thereby, necessitating adjustment to the original plan quantity per specification section 9-3.2.1.
2. Adjustments to Plan Quantity for Actual Lengths of Post Incorporated into the Project
Section 470-13.1 requires adjustment of plan quantity to the actual lengths of timber used in the completed construction. Plan Quantity adjustments were made for post supplied which were shorter than required in the original construction plans and for cut off lengths above the finish railing elevation. Field changes were made in the length of the timber post supplied and in the cut off of installed post to match the required height for handrail installation. These two adjustments are directly attributable to the post installation method employed by the Contractor.
General Note 5 on plan sheet B6-1 allows for two alternative methods to install the post.

GENERAL NOTE 5 “POST SHALL BE SET BY PUSHING/IMPACTING OR EXCAVATING A 12 INCH DIAMETER HOLE. IF SET BY PUSHING/IMPACTING, THE POST TIP SHALL BE INSTALLED TO THE DEPTH SHOWN IN THE INSTALLATION TABLE. IF SET BY EXCAVATION, THE POST SHALL BE CENTERED IN THE HOLE AND TO THE DEPTH SHOWN IN THE INSTALLATION TABLE. THE HOLE SHALL BE BACKFILLED AND COMPACTED WITH SUITABLE MATERIAL IN ACCORDANCE WITH SPECIFICATION 125-b.

Note that both methods require the post tip to be installed to the depth shown in the plans. The Contractor used the Pushing/impacting method, which frequently did not result in the post reaching the required depth of installation as shown in the plans. Because the tips were not reaching the specified elevation, the Contractor requested and received approval to supply shorter post. Additionally, posts were often not installed to full length, requiring a cut off of the butt end to achieve the proper height for the handrail.

FDOT Summary

The Contractor is not entitled to additional compensation, based upon the following reasons:

- The specification for payment of the boardwalk is based on the plan quantity concept, which requires accounting or field adjustments of quantities.
- The specification for timber structures requires adjustment of the plan quantity to the actual quantity of post incorporated into the completed project
- The contract specifications do not entitle payment to the Contractor beyond the actual posts incorporated into the completed boardwalk.

Disputes Review Board Findings Issue 2

Relevant Facts

1. The contractor was given a choice between two methods of installation for the timber support post: Pushing/Impact or by Excavating a 12 inch diameter hole. The Contractor chose to install the post using the pushing/impact method.
2. Using the pushing/impact method the contractor was unable in some locations to achieve the tip elevations specified in the contract plans.
3. The Contractor requested permission to use shorter post in some areas because of the difficulty in achieving the specified tip elevations. The FDOT agreed to this request and in some locations post were supplied in shorter lengths than required by the plans.
4. In some locations, the supplied post could not be installed full length and it was necessary to cut off a portion of the butt end to achieve the required elevation for the handrail.
5. The Contractor alleged that the shorter post/pilings were the result of a changed condition. However, the Department was never notified pursuant to Section 5-12 of the Standard Specifications (cited elsewhere in this document).

Relevant Contract Specifications, Plan Information and Findings

1. The structural support posts are consistently referred to as “post” in the plan sheets. There is not an instance in the plans where the timber support posts are referred to as “piling”.

2. General Note 3 on Sheet B6-1 provides a specified reference to specification section 955 with regard to the preservative treatment requirements for all lumber (Timber and Posts). Posts are required to be preservative treated as required for piling in the reference specification section.
3. The specifications specifically address the payment method for timber structures.

Specification Section 470 Timber Structures

“470-13.1 General

The quantity to be paid for will be the plan quantity, in feet board measure, of such timber actually incorporated in and forming a part of the completed structure.”

“470-13.2 Method of Calculation: Lengths to be used in the calculation will be the overall length of the pieces as shown in the plans, except that, where the lengths actually incorporated in the structure are less than the length shown in the plans, the lengths actual incorporated will be used in the calculation. ...“

Disputes Review Board Recommendation Issue No. 2

The Contractor’s position that the timber support posts are actually piles and therefore the payment should be covered by Specification Section 455-11.1 is not supported by the contract documents. The timber support posts are consistently referred to as “post” in the plan sheets. The requirement that the preservative treatment be as required for timber piling does not make the post a pile. Taken as a whole the plans clearly indicate that the timber support posts are a component of the structural timber required for the boardwalk and as such, payment is specified by Section 470 Structural Timber.

The language of Specification Section 470-13.1 is clear. The plan quantity calculation is to be based on the lengths actually incorporated in the structure.

Accordingly, the Dispute Review Board recommends that the plan quantity calculation for timber support post be based upon the lengths actually incorporated in the boardwalk structure.

The Board appreciates the cooperation of all parties and the information presented for review in order to make this recommendation. Please remember that a Boards recommendation requires acceptance or rejection within 15 days. Failure to respond to the DRB and other parties within the time frame constitutes an acceptance by both parties.

I certify that I have participated in all meetings and discussions regarding the issues and concur with the findings and recommendation.

Respectfully submitted,
Disputes Review Board

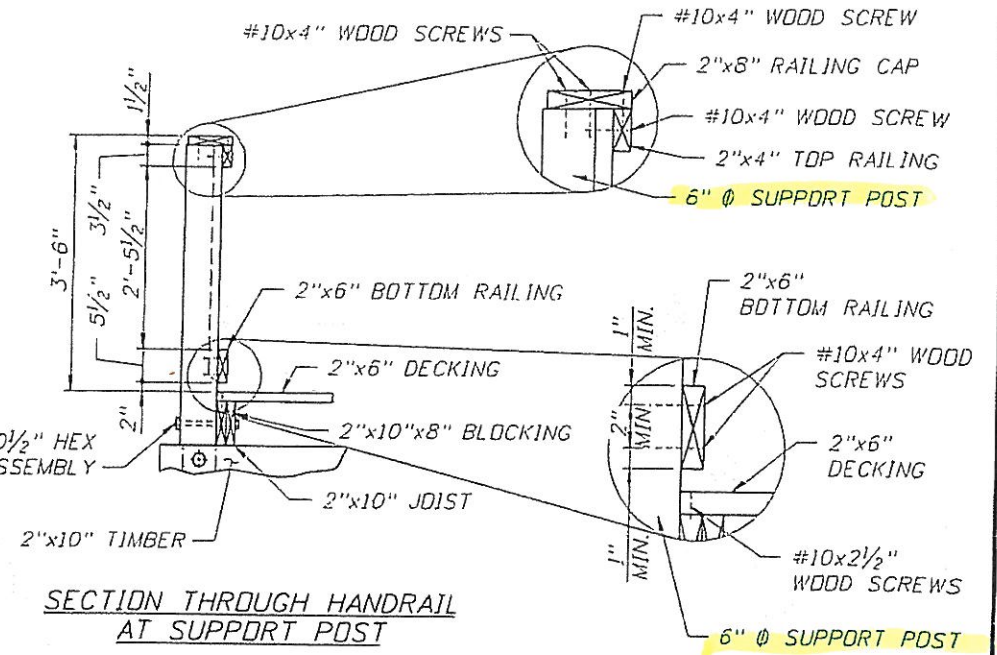
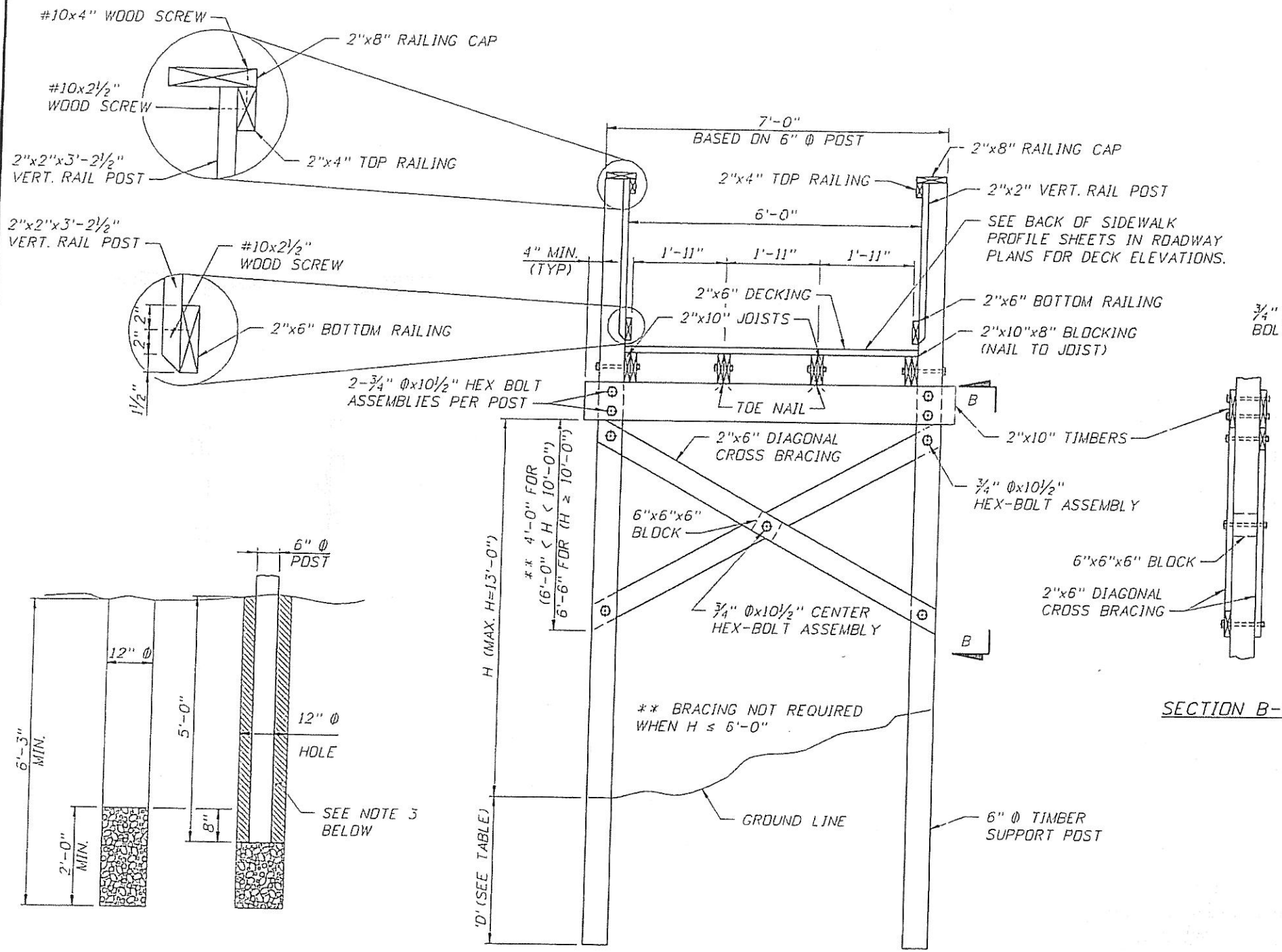
Ralph D. Ellis, Jr. – Chairman
Rammy Cone– Member
Ron Klein - Member

Signed for all with the concurrence of all members.

Ralph D. Ellis, Jr.

Chairman

APPENDIX A Plan Sheet B6-1, B6-2, and B6-3 (Included as a separate file)



SECTION THROUGH HANDRAIL AT SUPPORT POST

SECTION B-B

GENERAL NOTES:

1. SPECIFICATIONS: DESIGNED IN ACCORDANCE WITH THE LRFD MANUAL FOR ENGINEERED WOOD CONSTRUCTION (1996 EDITION), WITH LOADING IN ACCORDANCE WITH THE ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
2. LUMBER SIZES SHOWN ARE NOMINAL SIZES. LUMBER SHALL BE FURNISHED IN SIZES MEETING THE REQUIREMENTS OF THE AMERICAN SOFTWOOD LUMBER STANDARD, PS20-94. LUMBER GRADE SHALL BE NO. 1, IN ACCORDANCE WITH STANDARD SPECIFICATION 952.
3. ALL LUMBER (TIMBER & POST) SHALL BE TREATED IN ACCORDANCE WITH STANDARD SPECIFICATION 955. ALL POSTS SHALL RECEIVE TREATMENT AS REQUIRED FOR PILING. ALL STRUCTURAL TIMBER SHALL BE TREATED FOR A NON-SALT (OR BRACKISH) ENVIRONMENT, UNLESS SPECIFIED OTHERWISE.
4. THE CONTRACTOR SHALL USE BOLTS OR SCREWS, AS SHOWN, FOR ASSEMBLY OF THE BOARDWALK. ALL BOLT ASSEMBLIES SHALL HAVE WASHERS UNDER BOTH THE BOLT HEAD AND NUTS. SCREWS SHALL BE COUNTERSUNK AND INSTALLED IN HOLES DRILLED WITH A COUNTERSUNK DRILL BIT. NAILS MAY ONLY BE USED FOR PRE-ASSEMBLY AS SHOWN. ALL BOLTS, NUTS, WASHERS, SCREWS AND NAILS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153.
5. POSTS SHALL BE SET BY PUSHING/IMPACTING OR EXCAVATING A 12" Ø HOLE. IF SET BY PUSHING/IMPACTING, THE POST TIP SHALL BE INSTALLED TO THE DEPTH SHOWN IN THE INSTALLATION TABLE. IF SET BY EXCAVATION, THE POST SHALL BE CENTERED IN THE HOLE AND TO THE DEPTH SHOWN IN THE INSTALLATION TABLE. THE HOLE SHALL BE BACKFILLED AND COMPACTED WITH SUITABLE MATERIAL IN ACCORDANCE WITH SPECIFICATION 125-B.
6. DETAILS SHOWN ARE FOR STRAIGHT SECTIONS ONLY. THESE DETAILS MAY BE USED FOR MODERATELY CURVED (R > 1300') BOARDWALKS BY USING CHORDED SECTIONS AND VARIABLE DECKING SPACING. FOR SMALLER RADIUS CURVES, (R > 350') WEDGE BLOCKS AT JOIST SPLICES, MITERED HANDRAIL SPLICES AND TAPERED DECKING AT INTERIOR SUPPORTS WILL BE REQUIRED.

1. DRILL 1'-0" Ø HOLE 6'-3" DEEP. PLACE 2'-0" (MIN.) SIZE 57 STONE.
2. HAND TAMP GRAVEL 8" (MIN.) INTO BOTTOM OF HOLE.
3. PLACE 6" Ø PDST. FILL WITH COMPACTED SAND, CLASS J CONCRETE OR FLOWABLE FILL, IN ACCORDANCE WITH SPECIFICATION 125-8.

PAY ITEM NOTES:

1. COST FOR ALL LUMBER, HARDWARE, POST INSTALLATION, AND ALL INCIDENTAL ITEMS NECESSARY FOR THE TIMBER BOARDWALK SHALL BE INCLUDED IN UNIT COST FOR PAY ITEM 470-1, TREATED TIMBER STRUCTURAL.

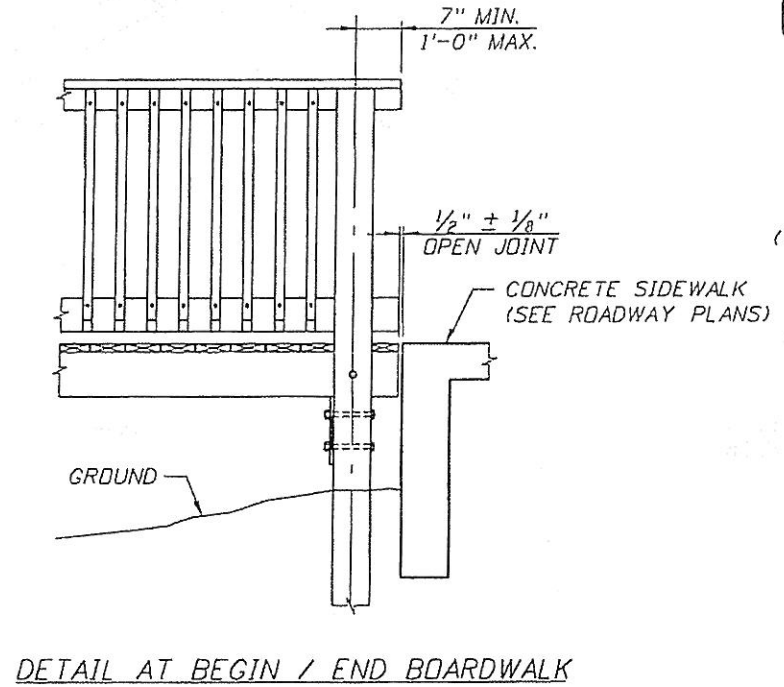
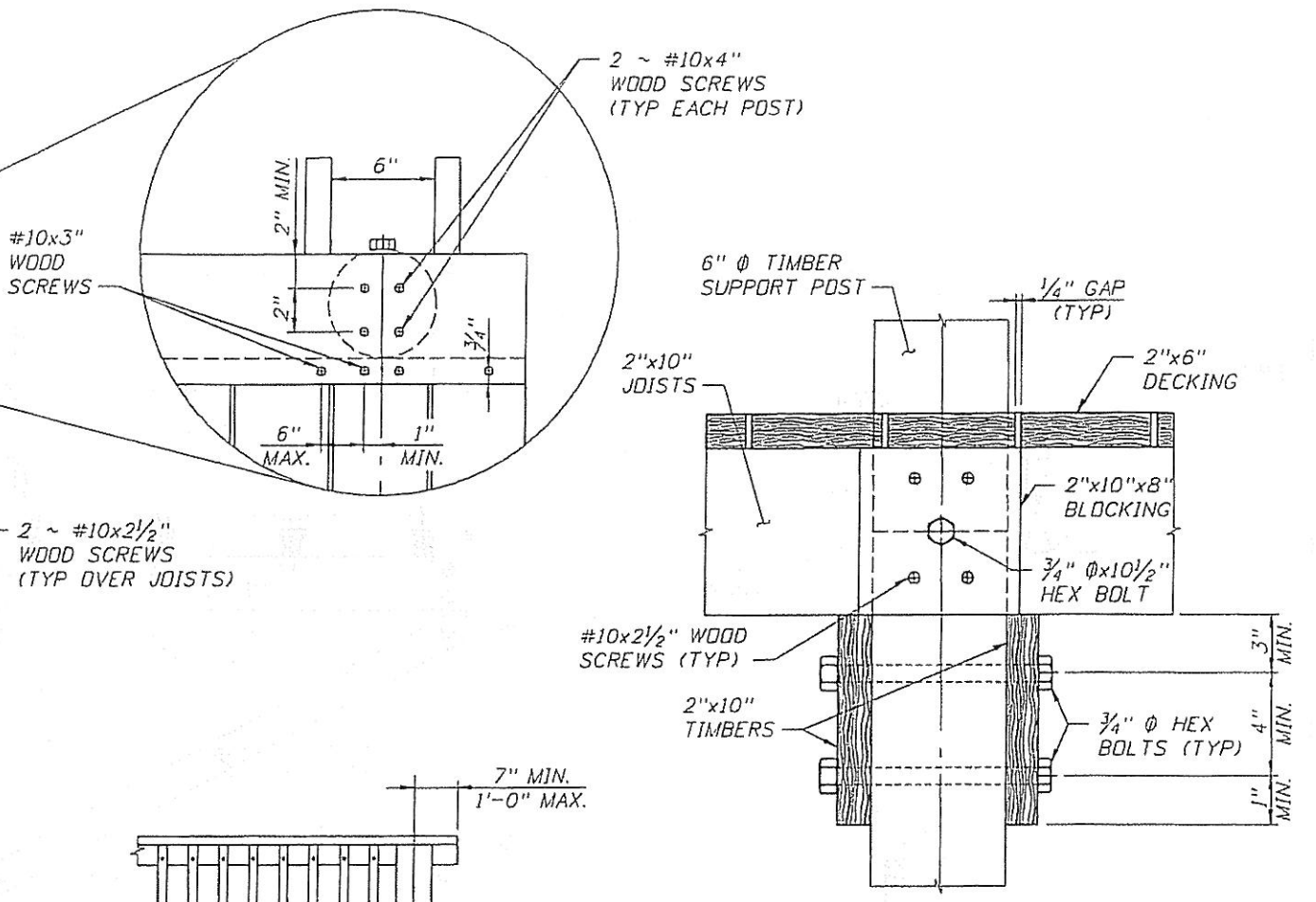
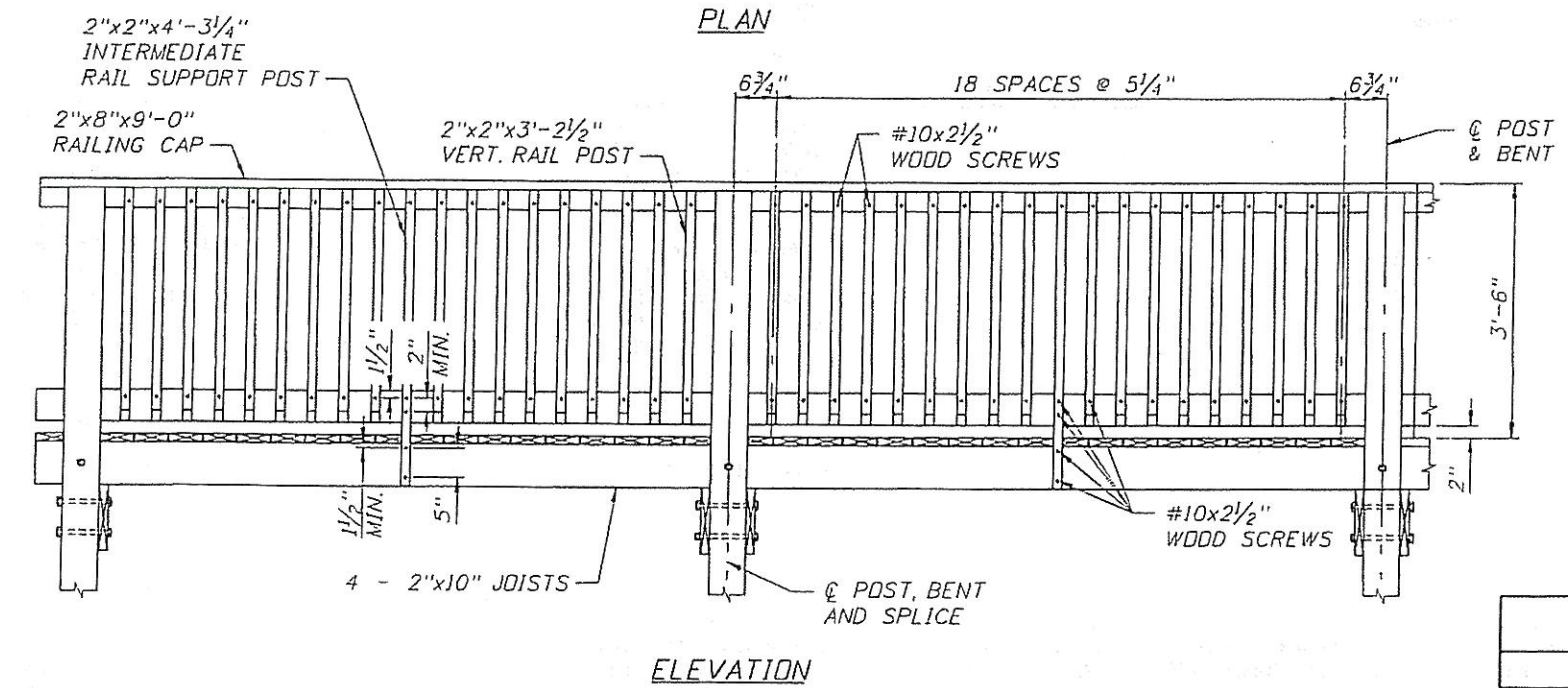
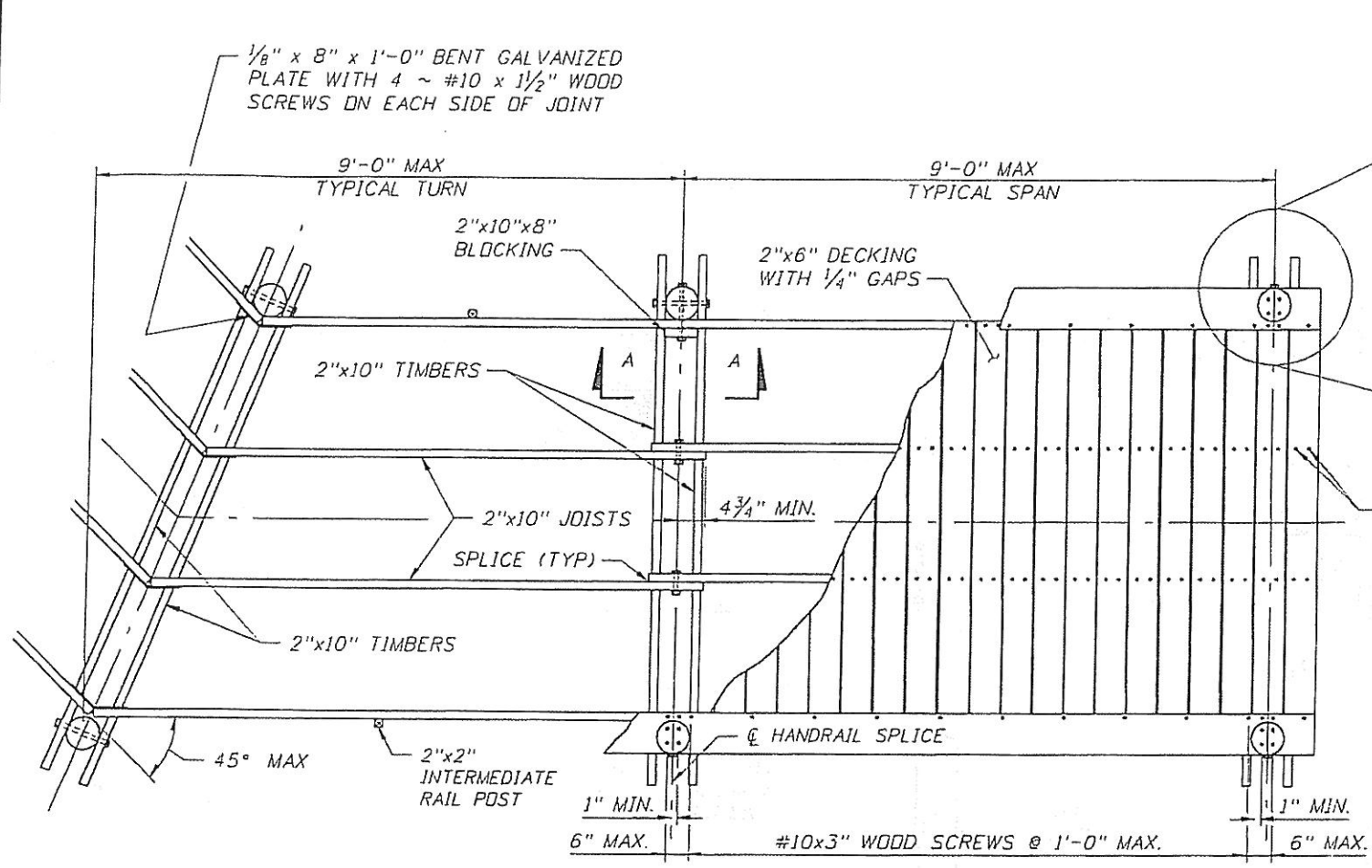
ALTERNATE POST INSTALLATION DETAILS

WITH APPROVAL OF THE ENGINEER, THE ALTERNATE POST INSTALLATION MAY BE USED.

REVISIONS				DRAFTER		ENGINEER OF RECORD		FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE	
DATE	BY	DESCRIPTION	DATE	BY	NAME	DATE	NAME	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	PROJECT NAME	SHEET NO.
4-17-07	EWB	REVISED PAY ITEM NOTE.			RWS/RLH	8/06	VOLKERT	SR 600	HILLSBOROUGH	411337-1-52-01	SR 600 (US 92) FROM EUREKA SPRINGS ROAD TO SR 550 (US 92) AT INTERSECTION	B 6-1
					KBD	8/06	J409 West Lemon Street Tampa, Florida 33609 Certificate of Authorization No. 4641					
					RLH	8/06						
					KBD	8/06						

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

BRIDGE NUMBER: N/A



ESTIMATED QUANTITIES Δ			
ITEM	UNIT	QUANTITY	
Treated Timber Decking, Stringers, Timbers, Rail	BM/SPAN **	195.11	
Structural Diagonal Cross Bracing #	BM/BENT	14.19	
Support Post (6" ϕ)	BM/ft of Post	2.36	

Quantities based on actual dressed dry sizes, as reported in the reference cited in General Note 2. Δ

* Required when clearance from ground to support timbers exceeds 6'-0".

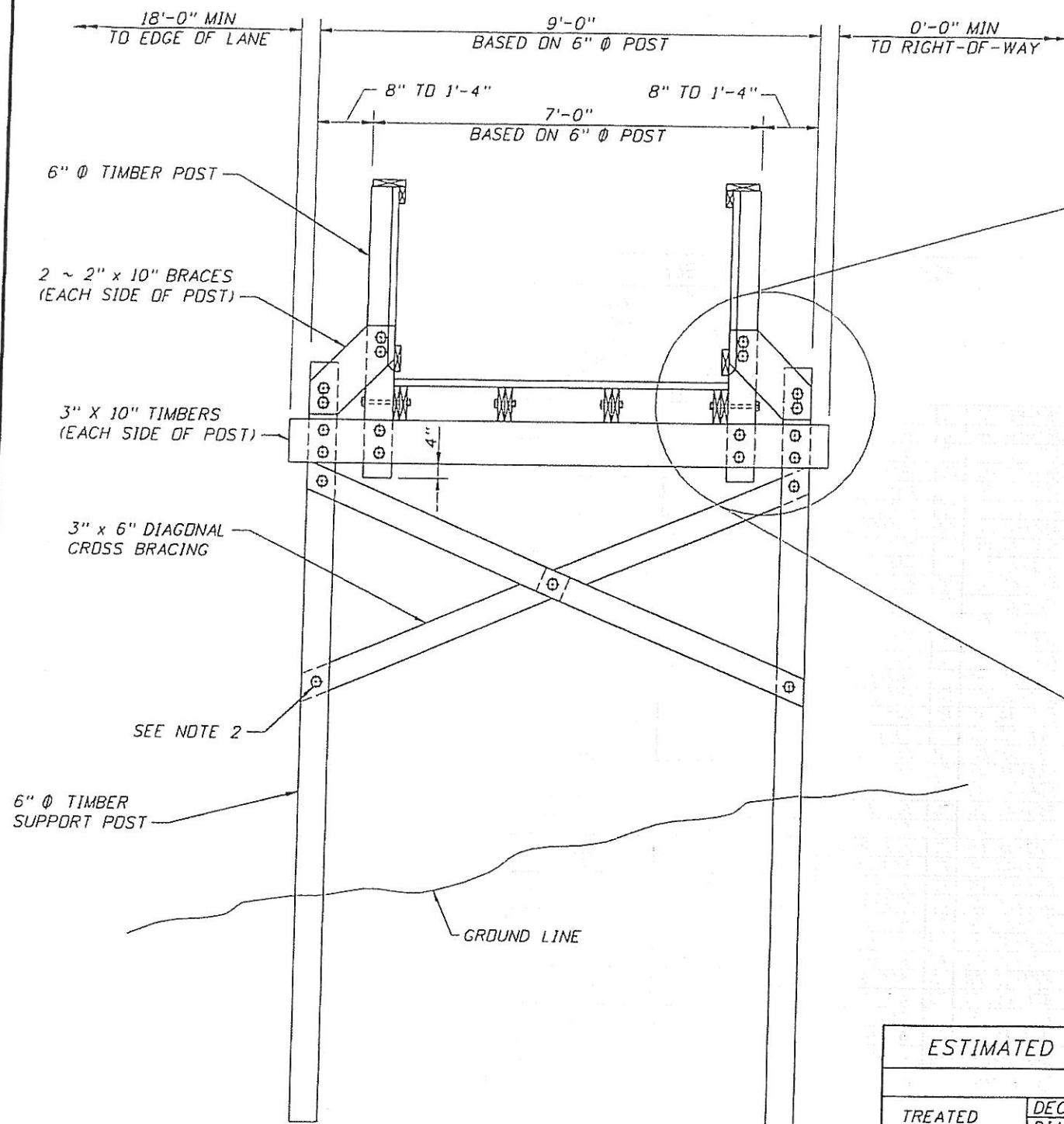
When clearance is greater than or equal to 10'-0" Quantity equals 16.21 BM/Bent.

** Based on 9'-0" span. Δ

BRIDGE NUMBER: N/A

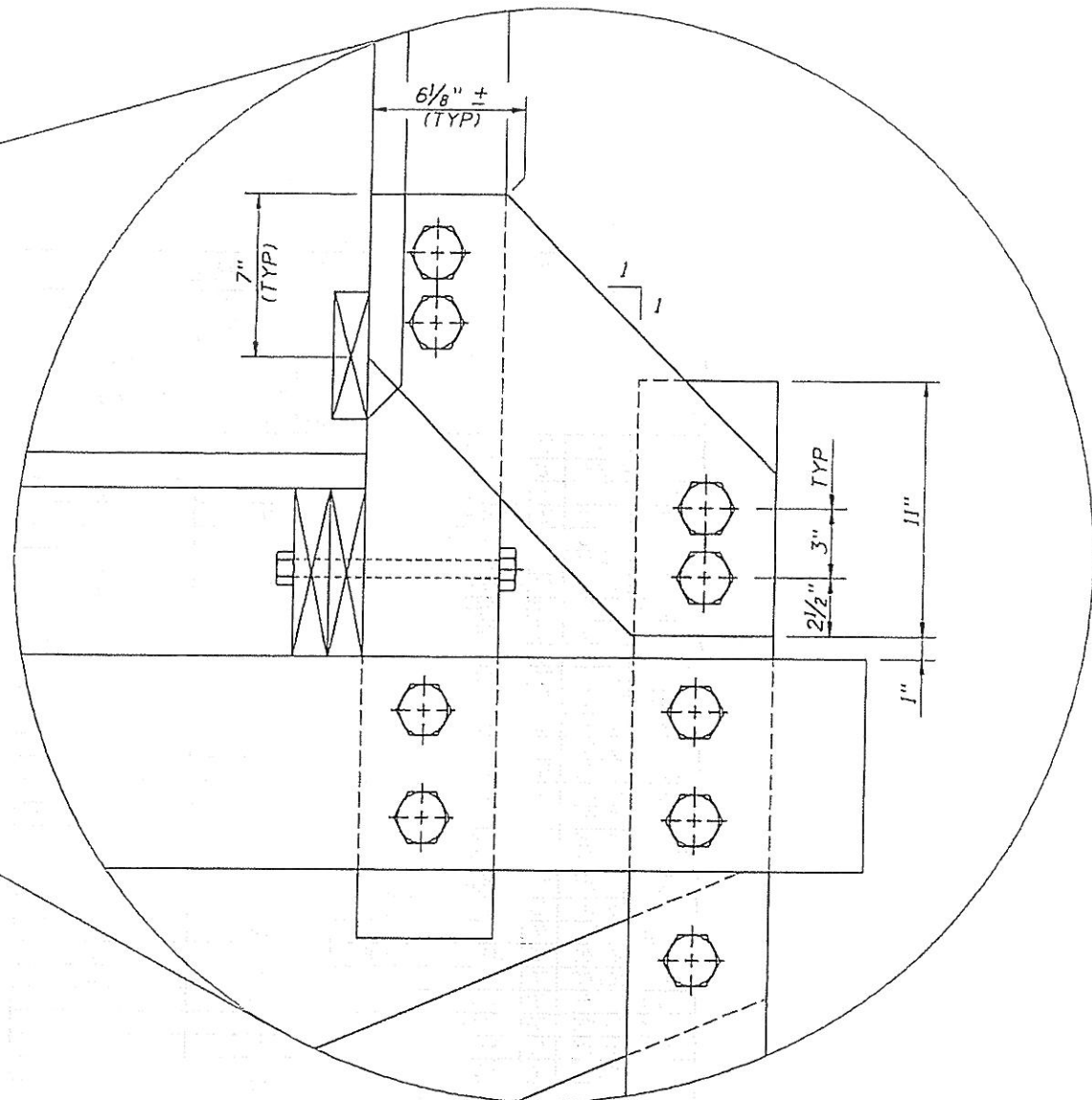
REVISIONS				DRAWN BY		ENGINEER OF RECORD		SHEET TITLE				
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	NAME	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	PROJECT NAME	SHEET NO.
4-17-07	EWB	Δ REVISED QUANTITIES AND NOTES.				8/06	VOLKERT & ASSOCIATES, INC. 3409 West Lemon Street Tampa, Florida 33609 Certificate of Authorization No. 4641 Edward W. Brekhus P.E. No. 44822	SR 600	HILLSBOROUGH	411337-1-52-01	6'-0" TIMBER BOARDWALK (SHEET 2 OF 3)	86-2

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



ALTERNATE POST CONFIGURATION

(TO BE USED TO AVOID UNDERGROUND UTILITIES AND ONLY WITH THE APPROVAL OF THE ENGINEER)



2" x 10" BRACE DETAIL

ESTIMATED QUANTITIES (ALTERNATE POST CONFIGURATION) Δ			
	ITEM	UNIT	QUANTITY
TREATED TIMBER STRUCTURAL	DECKING, STRINGERS, TIMBERS, RAIL	BM/SPAN **	213.60
	DIAGONAL CROSS BRACING *	BM/BENT	26.95
	BRACES	BM/BENT	10.08
	SUPPORT POST (6" Ø)	BM/FT OF POST	2.36

QUANTITIES BASED ON ACTUAL DRESSED DRY SIZES AS REPORTED IN THE REFERENCE CITED IN GENERAL NOTE 2. Δ

* REQUIRED WHEN CLEARANCE FROM GROUND TO SUPPORT MEMBERS EXCEEDS 6'-0". WHEN CLEARANCE IS GREATER THAN OR EQUAL TO 10'-0" QUANTITY EQUALS 29.74 BM/BENT.

** BASED ON 9'-0" SPAN. Δ

NOTES:

- FOR DETAILS NOT SHOWN, SEE OTHER TIMBER BOARDWALK SHEETS.
- ALL $\frac{3}{4}$ " Ø BOLTS PASSING THROUGH 3" THICK MEMBERS ARE 12 $\frac{1}{2}$ " LONG (INSTEAD OF STANDARD LENGTH OF 10 $\frac{1}{2}$ ").

REVISIONS				DATE	BY	DESCRIPTION
4-17-07	EWB	Δ	REVISED QUANTITIES AND NOTES.			

DRAWN BY	KBD	DATE	3/07
CHECKED BY	EWB	DATE	3/07
DESIGNED BY	RLH	DATE	3/07
CHECKED BY	EWB	DATE	3/07

ENGINEER OF RECORD:	VOLKERT
3409 West Lemon Street	Tampa, Florida, 33609

FLORIDA DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID

SHEET TITLE:	6'-0" TIMBER BOARDWALK (SHEET 3 OF 3)
PROJECT NAME:	SR 600 (US 92) FROM EUREKA SPRINGS

BRIDGE NUMBER: N/A

6-3

SHEET NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 68G15-23.003, F.A.C.