CHAPTER TWO

Preconstruction Preparations

CONTENTS

2

PRECONSTRUCTION PREPARATIONS

OFFICE PREPARATIONS

Before construction begins, take time to review all project documents such as the Plans, Shop Drawings, Specifications - Standard, Supplemental, Special Provisions and Technical Special Provisions - Contractor Quality Control Plan, Job Guide Schedule for materials sampling, Contractor Pile/Drilled Shaft Installation Plans, Computation Book and Inspection Guidelists. Become familiar with the elevations and dimensions of the structure and the quantities of concrete and reinforcing steel shown in the plans and Computation Book. In this chapter we will discuss how these reviews and preparations can be done.

REVIEW OF THE COMPUTATION BOOK

For pay-item projects, a detailed accounting of pay-item quantities can be found in the Computation Book (Comp Book). Lump-Sum and Design-Build projects do not have a Comp Book. Before any construction begins you should do a thorough review of the Comp Book. By reviewing the Comp Book you will familiarize yourself with the plan, elevation and profile views of the parts of the bridge; the types and quantities of materials that will be used on the job and where they will be used; and how the quantities of materials were calculated. You should study the plans to determine where the tabulated quantities will be used in each part of the bridge. This will also result in a check of the Comp Book. You may find errors in quantities or bridge elements that have no quantities tabulation in the Comp Book or in the plans. If this happens, report your findings to the Project Administrator.

The Comp Book contains calculations and quantity summaries organized by pay item. Backup calculations and computer output that substantiate the summary may also be in the Comp Book. The Comp Book becomes part of the Final Estimate which documents how the Contractor is to be paid for his work at the end of the job. The following standard forms are used in the Comp Book to summarize quantities. Each form has two sections: an Original Design section (completed by the bridge designer) and a Final Construction section (completed by the Project Administrator or other person directly involved with construction of the project).

- Linear Measurement, Component Weight, per Hour, per Day or per Each Computations
- Area Computations
- Concrete and Reinforcing Steel Computations
- Piling Tabulation
- Lump Sum Quantities

The Original Design section of the Comp Book is prepared prior to bid. The Contractor's bid is based on these quantities. The Final Construction section is completed after the actual quantities used in the project can be determined. This is what the Contractor's final payment is based on. As with the Original Design section, the Final Construction section may require backup calculations to justify quantities that differ from those in the Original Design section. You may have to perform these calculations. Your Project Administrator will provide training to prepare you for this task.

REVIEW OF QUALITY CONTROL AND OPERATION PLANS

Contractor Quality Control Plan: The Contractor is required to submit for Department approval, a quality control plan which must provide detailed policies, methods and procedures for making sure that the quality of all materials used on the project is in full compliance with the contract documents. You need to be familiar with what the approved plan requires. It will be your responsibility to verify that the Contractor performs according to his approved plan. Deviations from the approved plan should be reported to the Project Administrator immediately.

Contractor Pile/Drilled Shaft Installation Plan: Pile and/or drilled shaft plans are submitted by the Contractor for Department approval before any foundation construction can begin. These plans tell the Department what equipment the contractor is planning to use and indicate the steps to be taken in the installation process. It will be your responsibility to make sure that the Contractor performs the installation according to his approved plan. Deviations from the plan should be reported to the Project Administrator immediately.

REVIEW OF CHECKLISTS AND/OR GUIDELISTS

As an inspector, your most important responsibility is to verify that the Contractor builds a structure as required by the contract plans and specifications. These documents are comprehensive and contain numerous requirements of which you must be aware. To help you avoid missing a critical inspection requirement, the Department has developed checklists or guidelists that put the inspection requirements in a greatly shortened list type format. Since each item is in a shortened form without detail, you must be familiar with the specification or plans section that the checklist/guidelist covers. If a guidelist item is not clear to you, it is critical that you study the applicable specification carefully.

Some of the lists, called “Checklists”, have a box or blank space next to each item in which to make a check mark, indicating that you have verified the list item. Other lists, called “Guidelists”, require no marking and are intended to be used only as a reference.

Lists should also be given to, and discussed with the Contractor before a construction operation is performed for the first time, to help increase awareness of the contract requirements. These guidelists are available on the FDOT State Construction Office website. It is very important that you always review the applicable list thoroughly, just before you begin your inspection of a specific part of the construction.

QUIZ

Each standard form in the Computation Book has two parts: who fills out part one and who fills out part two?

At the end of the project, the standard computation book forms are used to prepare the _____.

The Contractor's quality Control Plan must provide detailed _____, _____ and _____ for ensuring that all materials have acceptable quality.

True or false: The pile installation plan tells the Department what length piles the Contractor plans to use.

What is the difference between a checklist and a guidelist?

Before the Contractor begins a phase of construction for the first time, is it a good idea to discuss the applicable checklist/guidelist with the Contractor's personnel and provide a copy?

REVIEW OF CONTRACT DOCUMENTS

An important preconstruction preparation is the review of the contract documents. These include the Special Provisions; Technical Special Provisions; Plans; Road Design, Structures and Traffic Operations Standards; Developmental Specifications; Supplemental Specifications; and Standard Specifications. You should take time to familiarize yourself with critical, new, and unusual items in the contract documents. The use of tabs or other page identification methods will help you find specification items quickly when the pressure is on in the field and everyone is anxious for an immediate answer. By being familiar with the details of the structure, many of the problems that arise during construction -- such as errors in dimensions or quantities -- can be avoided.

You should begin your review by studying each plan sheet paying particular attention to notes on the plans. These often cover issues that are unique to the project and are very important. At the same time, keep in mind that some of the things you need to know are:

- The location of the structure
- The type of structure
- The size of the structure
- Structural excavation
- Maintenance of traffic.

As you read through the plans, you will need to be familiar with all dimensions, elevations and types and quantities of materials. We will cover each, but first try the quiz on the next page.

QUIZ

Which of the following are among the first things you should know when studying the plans?

___ A. The location of the structure
___ B. The size of the structure
___ C. Structural excavation
___ D. The construction equipment to be used
___ E. The names of the Contractor's personnel

What should you be familiar with when reading the plans?

What three measurements must you consider in verifying the dimensions of structures?

Miss the last question? If so, don't worry. We will discuss it next. Go on to ELEVATIONS AND DIMENSIONS.

ELEVATIONS AND DIMENSIONS

Three measurements must be considered as you verify the elevations and dimensions of structures. These measurements are:

- Elevations
- Widths
- Lengths

Elevations

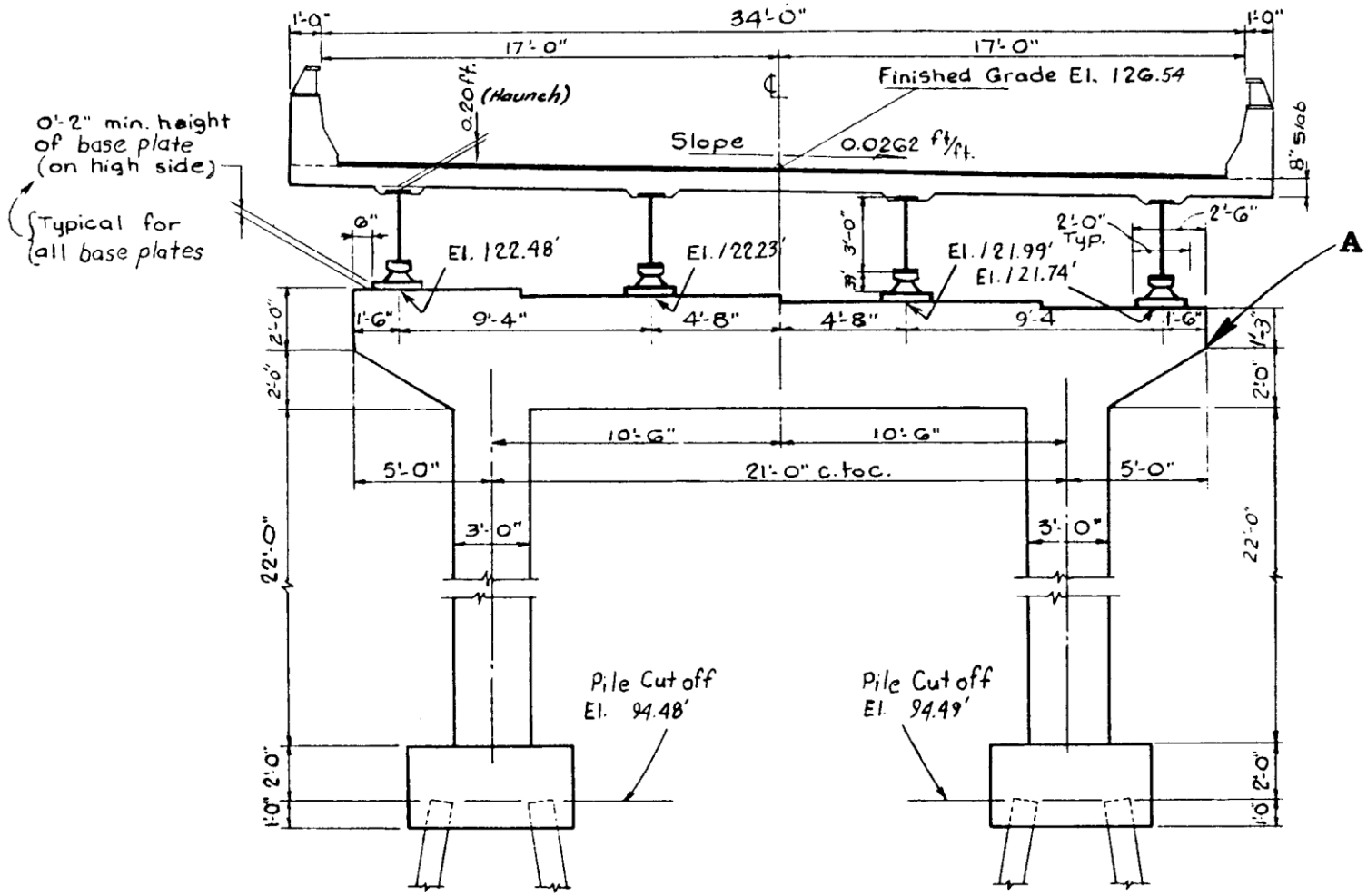
As an Inspector, you should:

(1) Verify the elevations that are shown on the plans and
(2) Determine the elevations of working points -- points that will be important during construction.

In general, you will need to determine the following:

1. Finished grade elevations above the girders
2. Beam seat elevations
3. Elevations of the top of the cap on the high side and the low side
4. Elevations of the bottom of the cap on the high side and the low side
5. Elevations of the tops of the columns at all edges
6. Elevations of the tops of the footings
7. Elevations of the bottoms of the footings
8. Elevations of the tops of the piles (pile cutoff elevation)

The diagram below shows the elevations that are shown on the bridge plans.



Now, let's see how to determine the elevations listed on page 2-8.

1. First, we will determine the finished grade elevations that are needed. This is done by using the centerline finished grade elevation and cross-slope rate shown on the plans. Four points are needed: the elevations above the four girders.

   The finished grade elevations above the girders equal the shown centerline elevation plus or minus the cross-slope rate times the distances to the girders from the centerline.

   In our example, the distance to the near girders is 4.67 feet (4 feet 8 inches) and the distance to the far girders is 14.00 feet. So the elevations are calculated in the following manner:

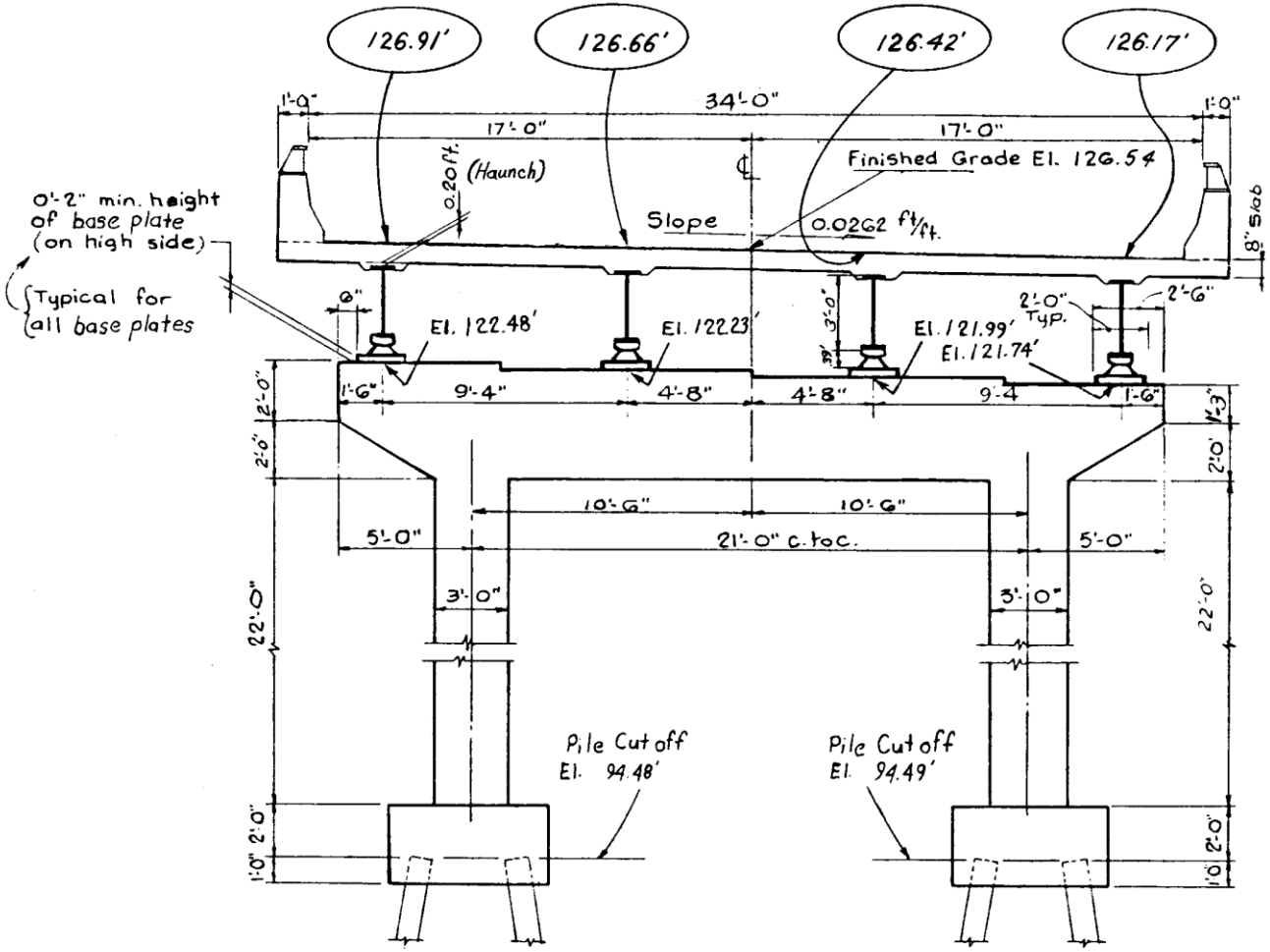
   Above the near girders:

4.67 ft. x 0.0262 ft./ft.	= 0.12 ft
Elev. 126.54 ft. + 0.12 ft.	= 126.66 ft.
Elev. 126.54 ft. - 0.12 ft.	= 126.42 ft.

   Above the far girders:

14.00 ft. x 0.0262 ft./ft. or	= 0.37 ft.
Elev. 126.54 ft. + 0.37 ft.	= 126.91 ft.
Elev. 126.54 ft. - 0.37 ft.	= 126.17 ft.

The diagram below shows the elevations that we have calculated so far.



2. Next, we will verify the beam seat elevations. To do this, subtract the thicknesses of the slab and base plates, and the heights of the girders and bearing devices from the finished grade elevations.

By adding these thicknesses and heights we get:

slab thickness	0.67 ft.
haunch thickness	0.20 ft.
girder height	3.00 ft.
bearing device	0.39 ft.
base plate	0.17 ft.
	4.43 ft.

By subtracting this amount from the four finished grade elevations above the girders, we obtain the beam seat elevations:

	126.91	*126.66*	*126.42*	*126.17*
	−4.43	*−4.43*	*−4.43*	*−4.43*
Beam seat elev.	*122.48*	*122.23*	*121.99*	*121.74*

3. In our example, the elevations of the top ends of the cap -- on the high and low sides -- are the same as the beam seat elevations nearest those points:

122.48 ft. 121.74 ft.

4. The elevations of the bottom ends of the cap are determined by subtracting the thickness(height)of the end of the cap from the elevations of the top ends of the cap:

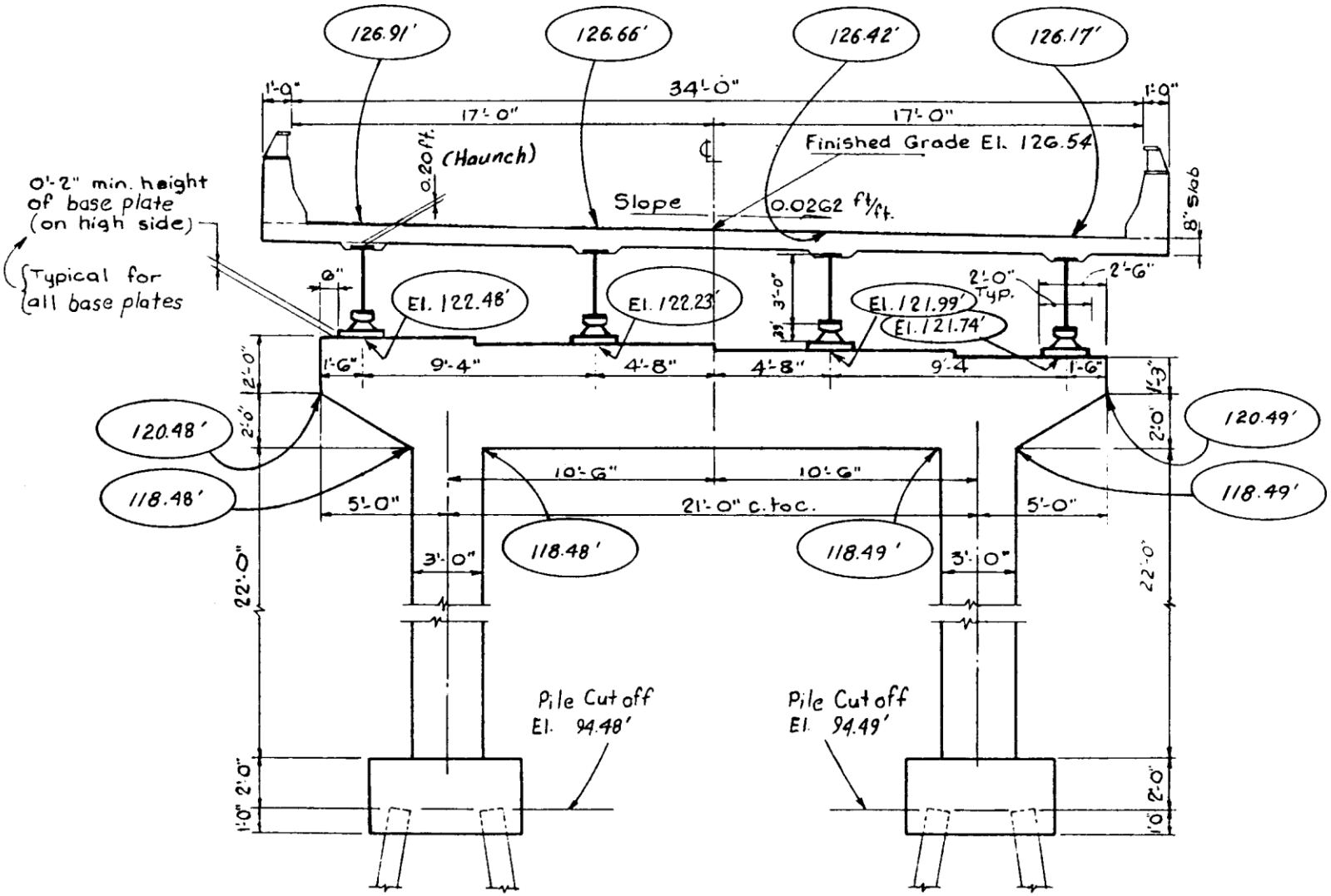
$$\begin{array}{ll} 122.48\,ft. & 121.74\,ft. \\ \underline{-2.00\,ft.} & \underline{-1.25\,ft.(1'3")} \\ 120.48\,ft. & 120.49\,ft. \end{array}$$

5. Next, the elevations of the tops of the columns can be determined like this:

Subtract the thickness of the remainder of the cap 2.00 ft. from the elevations of the bottom ends of the cap:

$$\begin{array}{ll} 120.48\,ft. & 120.49\,ft. \\ \underline{-2.00\,ft.} & \underline{-2.00\,ft.} \\ 118.48\,ft. & 118.49\,ft. \end{array}$$

In the diagram below, circles show the elevations that we have verified and determined so far:



The final elevation determinations are simple. By subtracting the heights of the columns and the heights of footings, we can determine the elevations of the tops of the footings and the bottoms of the footings.

6. Elevations of the tops of the footings:

elevations of tops of columns	118.48 ft.	118.49 ft.
heights of columns	-22.00 ft.	-22.00 ft.
	96.48 ft.	96.49 ft.

7. Elevations of the bottoms of the footings:

top-of-footings elevation	96.48 ft.	96.49 ft.
height of footings	-3.00 ft.	-3.00 ft.
	93.48 ft.	93.49 ft.

8. The pile cutoff elevations can be verified by subtracting from the top-of-footing elevations or by adding to the bottom-of-footing elevation:

$$\begin{array}{r} 96.48\,ft. \\ -2.00\,ft. \\ \hline 94.48\,ft. \end{array} \quad \text{or} \quad \begin{array}{r} 93.48\,ft. \\ +1.00\,ft. \\ \hline 94.48\,ft. \end{array} \qquad \begin{array}{r} 96.49\,ft. \\ -2.00\,ft. \\ \hline 94.49\,ft. \end{array} \quad \text{or} \quad \begin{array}{r} 93.49\,ft. \\ +1.00\,ft. \\ \hline 94.49\,ft. \end{array}$$

Either way, it should be the same.

Here's what we have done:

1. Verified the elevations shown on the plans.

2. Determined the elevations of the working points that will be used during construction.

But, what do the calculations tell you? If everything fits, then you know that the plans are correct and the structure must be constructed as shown.

If the parts do not fit, then you must do some figuring. Are any dimensions wrong? Are the elevations wrong? When you locate errors, contact your supervisor. He will contact the District Structures Design Office or the Engineer of Record to make the proper changes.

Determinations similar to the ones we have discussed here can be used to verify and determine the elevations of any structure. Be sure that the parts fit -- the dimensions of the structures must add up to the elevations shown on the plans and the elevations themselves must be correct.

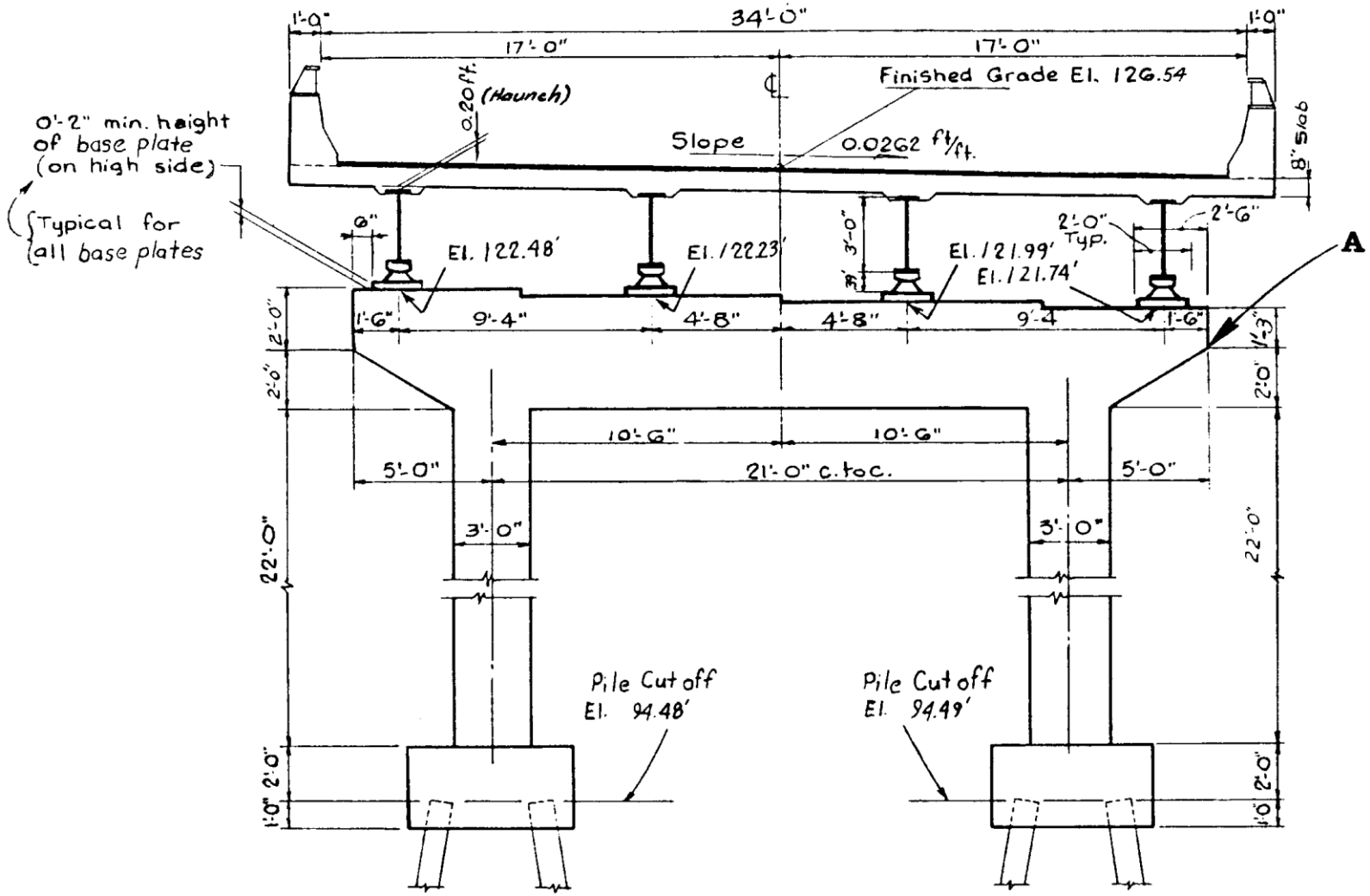
QUIZ

Use the elevation view on the next page to answer the following questions:

What is the centerline finished grade elevation of the bridge?

How high above the bottom of the footing is the top of the cap at the left edge?

What are the finished grade elevations above the outside girders?


1'-0"
34'-0"
1'-0"
17'-0"
17'-0"
0.20 ft. (Haunch)
Finished Grade El. 126.54
Slope
0.0262 ft/ft.
8" Slab
0'-2" min. height of base plate (on high side)
Typical for all base plates
8"
El. 122.48'
El. 122.23'
3'-0"
El. 121.99'
El. 121.74'
2'-0" Typ.
2'-6"
A
1'-6"
9'-4"
4'-8"
4'-8"
9'-4"
1'-6"
2'-0"
2'-0"
1'-3"
2'-0"
10'-6"
10'-6"
5'-0"
21'-0" c.to.c.
5'-0"
3'-0"
3'-0"
22'-0"
22'-0"
Pile Cut off El. 94.48'
Pile Cut off El. 94.49'
1'-0"
2'-0"
1'-0"
2'-0"

QUIZ, continued

Use the diagram on page 2-18 to answer the following questions:

What are the finished grade elevations of the tops of the left and right columns?

Left: _____
Right: _____

What are the elevations of the top ends of the cap on the left and right sides?

Left: _____
Right: _____

Determine the elevation of the bottom of the end of the cap on the right side.
How thick (high) is the right end of the cap?

What are the elevations of the bottoms of the footings?

Left: _____
Right: _____

What is the pile cutoff elevation at the left footing?

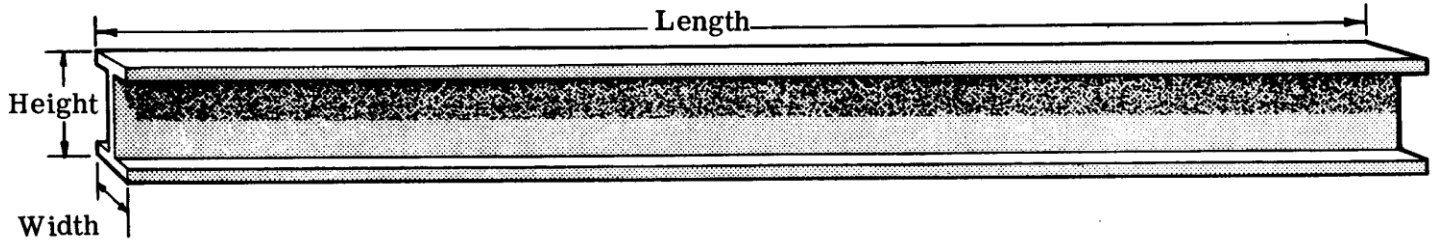
If you had any difficulties with this quiz, review this section and try the quiz again. When you are ready, continue to the next section.

Lengths and Widths

After checking the elevations in the plans, you should verify the lengths and widths of the structure -- particularly of all girders, piles and steel reinforcing bars (rebars). Add the span lengths (pier to pier, or pier to abutment) to see if they add up to the total length of the bridge. Then check the widths of the caps, roadway and abutments.

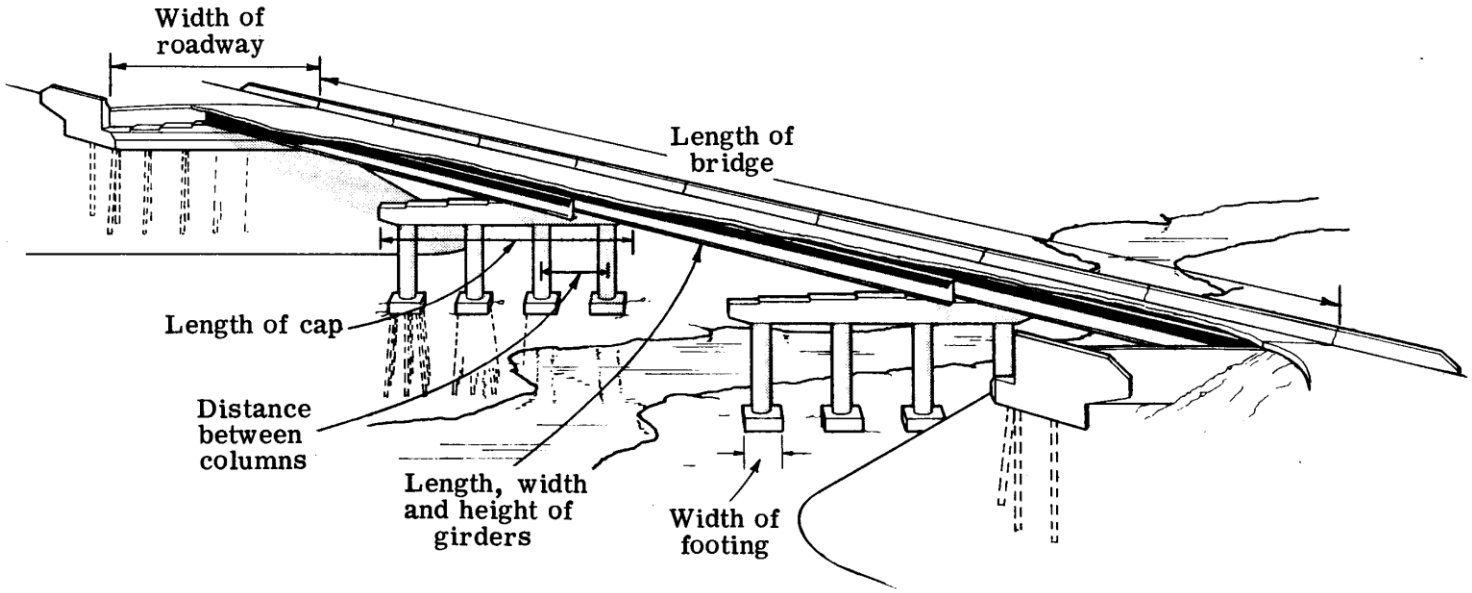
Note the lengths of all girders and piles. Below is an illustration of a steel girder. Notice that the length, width and height are dimensioned. The length of girders is particularly important since they must fit between piers with very little room for error -- they must not be too long or too short. The length of girders is always measured along the centerline.

To verify the size of rebars, review the quantities tables shown in your plans. Compare the table requirements to the lengths of rebars drawn on the plans. If discrepancies exist between the drawings and tables, report them immediately to the Project Administrator.



STEEL GIRDER OR STEEL PILE

Below is a review of some of the lengths and widths which you must verify. Of particular importance is the length of the girders. You must be sure they are long enough to span between piers and abutments. It's a good idea to measure beams and girders as soon as they arrive at the site.



QUIZ

In addition to checking elevations, you must also verify the _____ and of a structure.

What three dimension checks must be made on a steel girder or pile?

Why is it especially important to measure the length of girders?

You will need to consult the _____ to verify the size of rebars.

What action should be taken if you find girders that are too short?

The length of all spans added together should equal the _____ of the bridge.

QUANTITIES OF MATERIALS

For pay-item projects, the quantities of materials needed to complete the project are tabulated in the Estimate of Quantities table in the plans. Familiarize yourself with these quantities. Depending on the type of structure, the Estimated Quantities tables will include excavation, structural steel, concrete and reinforcing steel. Cross-check the plan requirements with the Estimated Quantities tables to be sure they correspond.

Concrete

Quantities of concrete are shown by class and in cubic yards. One method of checking concrete quantities is to look at the dimensions of a specific concrete element and then compute its volume. For example, if the plans show a concrete footing to be 5 feet x 10 feet x 10 feet, its volume is 500 cubic feet or 18.52 cubic yards. This volume should match the total quantity of concrete shown for that footing of the substructure in the Estimated Quantities tables.

Steel

Both structural and reinforcing steel quantities are given in pounds. Steel piling quantities are given in linear feet. Most steel quantity checks may be made while making other plan checks. For example, the number of reinforcing bars can be counted while checking on the location and spacing of each type of bar. Count the number of each type of bar shown or identified on the detail sheets. Compare your count with the number of bars specified in the Bill of Reinforcing Steel Bars in the plans.

After counting each type of bar and comparing your count against the Bill, convert the sizes and the lengths of the bars into pounds of steel. Do this by referring to the table shown on the next page.

The table below shows the weight per linear foot for each size of steel reinforcing bar. To compute the pounds of steel reinforcing bars, you need the following:

- the sizes of the bars;
- the lengths of the bars; and
- the weights per linear foot of the bars.

The first two can be obtained from the Bill. For the weights per linear foot, refer to the table below: (Since many rebars are manufactured using metric standards, bar diameters in mm are included.)

Bar Designation English / (Metric)	Weight in lbs./LF	Bar Designation English / (Metric)	Weight in lbs./LF
#4 (13)	0.668	#9 (29)	3.400
#5 (16)	1.043	#10 (32)	4.303
#6 (19)	1.502	#11 (36)	5.313
#7 (22)	2.044	#14 (43)	7.650
#8 (25)	2.670	#18 (57)	13.600

Compute pounds of rebar as follows: if a #5 (16) bar is 6 feet 4 inches long, its weight is 6.605 pounds (6.333 ft. x 1.043 lb. per L.F.). This is rounded to 6.61 pounds.

QUIZ

Quantities of concrete are measured in _____.

Quantities of steel are measured in _____.

A concrete bridge footing in your plans measures 10 feet x 12 feet x 6 feet. What is the proper quantity of concrete for that footing?

Where do you find the tabulation of the quantities of materials needed to build a structure?

How much do five 10-foot, 4-inch #10 (32) bars weigh?_____ (Use the table on the previous page.)

The correct numbers of bars for a structure are found in what section of the plans?

Have any trouble with this quiz? If so, be sure to review the material until you understand it.

FIELD PREPARATIONS

Once you have started your structures book and reviewed the contract plans, you are ready to make field preparations. You should visit the structure site and familiarize yourself with utility locations, soil conditions, topography and water conditions -- before construction begins. Pay particular attention to the existing survey stakes. The stakes may have subsided or been destroyed if there has been considerable time between survey and construction. You should note any errors in your daily report and be sure that they are corrected.

UTILITY LOCATIONS

As an Inspector, you should know:

- WHO is responsible for removing or relocating utilities
- WHICH utilities are being removed or relocated
- WHERE utilities are being relocated, whether within the construction area or connected to the structure.

Answers can be found in the contract plans and approved utility relocation schedule. The locations and relocations of utilities are shown in the plans. It is important to know where the utilities are and where new ones will be placed. Before the Contractor begins other operations, you must be sure that all utilities are removed or relocated as called for in the plans and utility relocation schedule. You must also note if the utility adjustments are reimbursable or non-reimbursable and record the relocation work on the appropriate diary or reimbursable utility form. For more information, you can take the training course on Utility Relocation and Clearing and Grubbing Inspection.

SOIL CONDITIONS

Soil conditions in the field should be checked against the soil surveys compiled in the boring data sheets that are part of the plan sheets. The boring data sheets include the following information:

- boring locations in relation to centerline
- descriptions of anticipated soils along the roadway
- depths at which these soils occur

Boring data sheets include legends that describe the various soil types. They also include descriptions of the core borings taken around the proposed bridge.

As an Inspector, you should be able to use the soil data to anticipate suitability of materials for use in embankments. These sheets are discussed in the Contract Plan Reading course.

TOPOGRAPHY

Plan and profile sheets show the topography of the construction site. Topography consists of natural elevations, ground depressions, embankments, river basins and vegetation. Be sure that there are no inconsistencies between what is shown on the plans and what you find at the construction site. Any natural obstructions that are not shown on the plan sheets must be reported to the Project Administrator.

WATER CONDITIONS

You should be aware of water conditions at the construction site -- particularly if the structure is to be built in or near a body of water. If a structure is erected near water, state and federal water pollution laws must be considered. For example, the amount of silt created by construction in or near a river is often subject to water pollution standards. These standards will be covered at the preconstruction conference.

MAINTENANCE OF TRAFFIC

As an Inspector, you must be sure that traffic is maintained and that the driving public is warned about and protected from the construction area. The Contractor must comply with the FDOT Traffic Design Standards covering maintenance of traffic Index No. 600, as well as the Manual on Uniform Traffic Control Devices (MUTCD). However, the MUTCD describes minimum safety requirements and the FDOT Design Standards take precedence over them. There may be a need for additional safety provisions, in which case the Contractor must provide them.

In most cases, the Traffic Design Standards Index No. 600, and the MUTCD will prescribe the required barricades, signs and other warning devices during construction, but there are certain items you should be aware of:

- Footings constructed adjacent to traveled pavement are dangerous and should be well protected from traffic.
- Detour systems for bridge construction should be laid out and operational before work begins.
- The erection of beams during heavy traffic is a traffic hazard. For this work, flagmen and police may be needed. Be sure to check with your Project Administrator.
- The traveling public must be well protected from overhead deck construction. Be sure that the traffic maintenance is adequate.

QUIZ

Information on the location of utilities is found in the _____.

Is the Inspector responsible for knowing where utilities are being relocated?

Soil data which show the characteristics of the soil can be used to anticipate the suitability of materials for use in _____.

Information about the soils under a bridge are plotted on _____ sheets.

Federal and state water pollution standards will be discussed at the _____.

Where can you find traffic maintenance and safety requirements?

Go on to PRECONSTRUCTION CONFERENCE.

COORDINATION MEETINGS

Before work begins and throughout the project, coordination meetings are held between the Contractor and the Department. These take place to encourage and maintain open communication. These meetings are important because they clarify both the Department's and Contractor's intent and expectations before work takes place and help avoid problems. The following types of meetings should always take place: preconstruction conference, periodic construction progress meetings, and pre-operations meetings.

PRECONSTRUCTION CONFERENCE

The preparations for construction vary from project to project. For this reason, prior to any work starting the Project Administrator will hold a conference with the Contractor to discuss project requirements, arrangements, and schedules. A sample list of issues that should be covered at the preconstruction conference is included in Chapter 3, Section 1 of the FDOT Office of Construction, Construction Project Administration Manual (CPAM). Read the minutes of this meeting as part of your preparation.

PERIODIC CONSTRUCTION PROGRESS MEETINGS

Many activities and operations take place on a construction project from day to day. In order for the Department and Contractor to keep each other informed and up to date about what is taking place, a regular meeting is held between the Project Administrator and the Contractor's Project Manager. Other Contractor and Department personnel also attend on an as needed basis. Meetings are usually conducted each week in the early stages of a project and may eventually be only once a month by the end of the project. At the weekly meetings the following key issues are usually discussed: utility conflicts and relocation schedules; job progress including controlling items of work and percent complete; design changes and conflicts; status of contractor submittals such as shop drawings; and the status of monitored items such as maintenance of traffic, erosion control, safety and contract changes. If possible, you should read the minutes of these meetings.

PRE-OPERATIONS MEETINGS

The Contractor's construction operations are often complicated and usually critical in terms of how much time activities take. When things go wrong or are inadequately planned, it disrupts the progress of construction and can lead to claims or delays by the Contractor. In order to reduce the likelihood of this, a meeting, called a pre-operations or pre-work meeting, should take place before the Contractor performs a construction activity or operation for the first time on the project. Examples of activities that should always have a pre-operations meeting include: pile driving, drilled shaft installation, any type of concrete placement - footings, columns, caps, decks, etc. - beam erection, form setting, slip forming, rebar placement, and post-tensioning.

Department and Contractor personnel that will be involved in the activity should attend the meeting such as foremen, work crew members, Project Administrator and inspectors. All applicable specifications should be available for review at the meeting as should any checklists or guidelists. A copy of the checklists or guidelists should be given out at or prior to the meeting so that the Contractor has a written document for later reference. Applicable specifications should be reviewed at the meeting with the Contractor and a "What If" discussion should take place with regard to what the Contractor plans to do if something unexpected happens. The meeting should have summary minutes that cover any outstanding issues or questions that arise. Any unresolved questions or issues should be addressed before the Contractor begins work.

If you will be inspecting a given operation, you should attend the respective meeting. If you are unable to attend, a thorough review of the meeting minutes is a must.

QUIZ

A sample list of issues that should be covered at the preconstruction conference can be found in the FDOT Office of Construction, _____ , Chapter_____, Section_____.

True or false: construction progress meetings help keep the Department and the Contractor up to date and informed about what is happening on the project.

Progress meetings usually take place_____per week at the beginning of a project and eventually take place _____ .

True or false: Reading the minutes of coordination meetings is unnecessary for inspectors.

A pre-operations meeting should take place before a construction activity is performed for the_____.

Should checklists/guidelists and applicable specifications be available for review at the pre-operations meeting?

True or false: what if discussions are of little value since unexpected events seldom happen on construction projects.

This is the end of Chapter Two. If you need to review any sections of this chapter, do so before continuing. When you feel ready, go on to Chapter Three.

ANSWERS TO QUESTIONS

Page 2-5

- designer, Project Administrator
- final estimate
- policies, methods, procedures
- false, it tells equipment to be used and the installation process
- checklist is marked off item by item and a guidelist is not
- yes

Page 2-7

- A
  B
  C
- dimensions, elevations, types and quantities of materials
- elevations, lengths and widths

Page 2-17

- 126.54 ft
- 29.00 ft
- 126.17 ft
- 126.91 ft

Page 2-19

- 118.48 ft, 118.49 ft
- 122.48 ft, 121.74 ft
- 120.49 ft
- 1 ft.-3 in
- Lt. 93.48 ft, Rt. 93.49 ft
- 94.48 ft

Page 2-22

- lengths widths
- length, width, height (depth)
- to be sure they are long enough to span the distance between piers and abutments
- plans
- report them to your Project Administrator
- total length

Page 2-25

- yards
- pounds
- 26.7 cu. yds
- estimated quantities tables in plans
- 222.31 pounds
- bill of reinforcing steel bars

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- plans
- yes
- embankments
- boring data
- preconstruction conference
- FDOT Traffic Design Standards and Manual on Uniform Traffic Control Devices

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- Construction Administration Manual (CPAM), 1, 8
- true
- once, once per month < false, inspectors should read minutes
- the first time
- yes
- false, unexpected events happen often