

# Guidance on Preparation of Monthly Progress Payment

This attachment provides guidance to Structure Construction (SC) staff on how to prepare monthly progress payment estimates, to meet the requirements of the *Contract Specifications (CS)*, Section 9-1.16, *Payment – Progress Payments*.

The Department makes monthly payments to compensate the Contractor for work completed during the pay period. Per the *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906](#), *Payment – Progress Payments*, each progress pay estimate must include payment for work completed up to and including the 20<sup>th</sup> day of the month.

Quantity calculation sheets are typically required for each contract bid item. Quantities for each Structure bid item is calculated by SC field staff assigned to the project. This is typically performed by the Assistant Structure Representative (ASR). These calculations must be checked by another ASR or the Structure Representative (SR) prior to submission. Often a supplemental sheet, referred to as a “Q-sheet,” is prepared in Microsoft Word or Excel and becomes the first sheet of the payment documents for a bid item.

Because bid items include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the work, some bid items are appropriate for partial payment to compensate the Contractor for work done in advance of the completed work. Information on partial payments can be found in [Attachment 2](#), *Guidance on Preparation of Partial Payments*.

## **1 - Methods of Payment**

The following methods of payment will be reviewed in this attachment:

- 1.1 Bid item work at unit price
- 1.2 Bid Item work at lump sum
- 1.3 Final pay bid items
- 1.4 Payments for Furnishing Materials - Distinction between Furnish and Install
- 1.5 Adjustments to contract prices
- 1.6 Payment for change order work
- 1.7 Deductions and withholds

## 1.1 Bid Item Work – Unit Price

Payment for bid items designated as unit price may be based on field measurement, scale weight or a calculated quantity.

Examples include:

- 24" CAST-IN DRILLED HOLE CONCRETE PILING (SOUND WALL), paid per linear foot
- REMOVE UNSOUND CONCRETE, paid per cubic foot

The quantity paid will be that which was incorporated into the work. The following information is presented to aid SC staff in making quantity calculations and to provide uniformity. Bid items not designated as final pay must be field measured each month for payment; see discussion of final pay bid items in Section 1.3 of this attachment. Unit price is full compensation including materials, labor, equipment, etc.

To follow are special considerations when calculating the pay quantity for the following unit price bid items:

### 1.1.1 Bar Reinforcing Steel:

Reinforcing steel is typically paid as a final pay bid item. [Form SC-4802, Bar Reinforcing Steel Placing Record](#), may be used for determining reinforcing steel quantities. Pay for bar reinforcing steel that is complete and in place in the forms. It does not have to be encased in concrete before payment is made. Payment for bar reinforcing steel is rounded to the nearest pound (1.0) as shown in the example below.

To follow are three methods used for calculating the payment quantity for bar reinforcing steel:

1. Rebar Factor: This is the preferred method for calculating payment quantities. The ratio of concrete to reinforcing steel can be calculated at the beginning of the project by dividing the pounds of bar reinforcing steel by the cubic yards of concrete for a particular bid item. A corresponding amount of rebar would be paid when the concrete bid item has been poured and paid. Include certificate of compliance (COC) numbers on the Q-sheet, and verify that the amount paid does not exceed the amount of rebar with COCs. See the example below.

Example: Given the following:

Bid item 113(F): STRUCTURAL CONCRETE, BRIDGE = 3548 CY

Bid item 133(F): BAR REINFORCING STEEL, BRIDGE = 2,369,529 LB

23 CY of concrete was poured and paid as bid item 113(F)

Rebar Factor Calculation:

$$2,369,529 \text{ LB} / 3548 \text{ CY} = 667.85 \text{ LB/CY}$$

### Monthly Progress Payment Calculation:

23 CY (667.85 LB/CY) = 15,361 LBS are paid for bid item 133(F)

2. Resident Engineer (RE) Pending File: The RE Pending File includes quantity take-offs and can be used to determine the amount of bar reinforcing steel for a given component.
3. Payment using COC's: Using the COC's is not the preferred method of calculating payment quantities. Additional steel not included for payment, such as buried bars, are included in the COC's. Paying by COCs will typically result in an overpayment of the bid item. If this method is used, 10% should be withheld from each progress payment estimate to avoid overpayment and reconciled as the work is nearing completion.

#### 1.1.2 Concrete:

Deduct all chamfers over 2 inches and all openings over 2 inches except weep holes, deck drains, and similar small openings. Do not deduct for the volume occupied by reinforcing steel, embedded structural steel, or for the volume of expansion joint filler, rubber waterstops, etc. Payment for concrete is rounded to the nearest hundredth (0.01) of a cubic yard.

#### 1.1.3 Earthwork:

When original ground elevations must be determined and used, elevation to the nearest 0.1 foot is adequate. Payment for earthwork is rounded to the nearest hundredth (0.01) of a cubic yard.

#### 1.1.4 Piling:

1. Variations exist between different editions of the payment clause of the CS, Section 49, *Piling*. SC staff must be familiar with payment of both furnish and drive clauses, contained in the edition specified for the project.
2. Driven pile quantities must be calculated on [Form SC-4803 Pile Quantity and Driving Record \(Driven Piles\)](#). See [BCM 49-2, Piling – Driven Piling](#), for guidance and instructions on completing the form.
3. For pile tip revisions - the CS, Section 49, *Piling*, specifies how piles are paid for when the Engineer revises the pile tip. Typically, this is paid for as change order work. SC staff must be familiar with the language of the applicable CS for each project as it may vary.
4. The following, which applies to Cast-in -Drilled-Hole (CIDH) piles:
  - a. CIDH piles must be calculated on [Form SC-4804 Pile Quantity and Drilling Record \(CIDH Piles\)](#). See [BCM 49-3, Piling – Cast-in-Place Concrete Piling](#), for guidance and instructions on completing the form.

- b. Permanent casing is paid as a separate bid item for CIDH pile, but temporary casing is included and fully compensated in the piling bid item.
  - c. Rock sockets are paid as a separate CIDH (Rock Socket) bid item.
  - d. For piles using the wet construction method discussed in BCM 49-3, *Piling – Cast-in-Place Concrete Piling*, payment for the CIDH concrete piling bid item and rock socket bid item (if applicable) will be made after the concrete is placed. If the pile is rejected after receipt of gamma-gamma testing, 30% will be withheld subject to mitigation.
5. Bar reinforcing steel for cast-in-place concrete piling greater than or equal to 24 inches in diameter is paid as a separate bid item. For smaller diameter cast-in-place concrete piling, bar reinforcing steel is included in the cast-in-place concrete piling bid item.
  6. For payment information related to cast-in-steel-shell piles, see BCM 49-3, [Attachment 7](#), *Cast-In-Steel-Shell Concrete Piling – Measurement and Payment*.
  7. Payment for CIDH piling is rounded to the nearest tenth (0.1) of a lineal foot.

#### 1.1.5 Miscellaneous Bid Items:

Bid items such as railings, pipe, conduit, waterstops, joint seal, etc., are paid for by the lineal foot and are typically field measured. Payment for these bid items is rounded to the nearest tenth (0.1) of a lineal foot.

Bid items such as protective covers, membrane waterproofing, texture panels, chipped surfacing, contrast treatment, etc., are paid for by the square yard. Quantities may be field measured or calculated. Payment for these bid items is rounded to the nearest tenth (0.1) of a square yard.

#### 1.1.6 Miscellaneous Metal:

The pay quantity for miscellaneous metal is determined by scale weights from documentation provided by the Contractor. Payment for miscellaneous metal is rounded to the nearest pound (1.0).

#### 1.1.7 Structural Steel:

Structural Steel is typically paid as a final pay bid item. Tabular weights, as given in the AISC Handbook, may be used in making calculations of weights of rolled shapes and structural plates. The RE Pending File may also be used to determine weights for payment. Additional details concerning measurements for structural steel quantities are given in CS, Section 55-1.04, *Steel Structures – General – Payment*. Withhold a sufficient amount to cover incidental work such as additional bolting and welding. Payment for structural steel is rounded to the nearest pound (1.0).

## 1.2 Bid Item Work – Lump Sum Bid Item Calculations

Lump sum (LS) bid items may be paid in one single payment or incrementally as a partial payment as the project progresses. MOBILIZATION, TEMPORARY SUPPORT, BRIDGE REMOVAL, and PRESTRESSING CAST-IN-PLACE CONCRETE are typical examples of lump sum bid items.

If specified in the contract documents, a schedule of values is submitted by the Contractor to assist with determining milestones for payment. The SR must authorize the schedule of values. If no schedule of values is specified in the contract documents, agreements may be made between the SR and the Contractor on a payment schedule based on milestones.

For a single payment, the unit and amount shown on the Quantity Sheet is “One Lump Sum.” Partial payments of LS bid items can be shown on the Quantity Sheet as a fraction of the LS payment such as: 0.35 LS.

Often LS bid items warrant a partial payment to compensate the contract for work performed prior to bid item completion. Additional guidance on partial payments is provided in [Attachment 2, Guidance on Preparation of Partial Payments](#).

## 1.3 Final Pay Bid Items

Some bid items are designated in the contract documents as final pay. The CS, Section 1-1.07, *General – Definitions*, defines a final pay bid item as:

*“Bid item whose quantity shown on the Bid Item List is the quantity paid.”*

At or before the time of the final estimate, this exact number will be paid regardless of any variations determined by field measuring. Bar reinforcing steel, structure excavation and backfill, and some structure concrete are examples of final pay bid items. Bid items designated as final pay are measured and paid each month in which they are incorporated into the work. Final pay bid items are designated in the contract documents with the letter (F) following the bid item number, for example:

- Bid item 113(F): STRUCTURAL CONCRETE (BRIDGE)

If authorized changes increase or decrease a fixed final pay quantity, calculation sheets must be prepared to substantiate the increase or decrease, and the changes must be formalized in a change order. The bid item summary sheet lists these quantities in addition to the final pay quantity shown on the project plans.

## 1.4 Payments for Furnishing Materials - Distinction between Furnish and Install

To compensate the Contractor for select structure materials with long lead times, two distinct payment bid items are created. The contract documents allow for payment upon fabrication of the bid items by including a furnish bid item in addition to a corresponding bid item for erect, drive, or install. Precast members and complete piling (defined below) are examples of materials which have a furnish bid item for payment.

Complete vs Incomplete elements: when steel, precast concrete, or timber piling of proper length are delivered to the job site ready for driving, the specification requirements for the furnish bid item has been met, as these are complete elements. Payment for the furnish bid item is paid on the progress pay estimate.

However, incomplete elements or portions of piling, such as steel shells for cast-in-place concrete piles, are not complete piling, from a payment perspective. When delivered, the specification requirement for the furnish bid item has not been met. In this example, the furnish bid item is paid when the steel shells have been driven and the concrete and reinforcing steel have been placed to provide a complete pile. Also in this example, the furnish and drive bid items are paid in the same estimate. Material not eligible for Furnish payment may be eligible for payment as materials on hand; see [Attachment 3](#), *Guidance on Preparation of Materials on Hand Payments*.

Consider the following when preparing piling payment, with furnish and drive bid items:

- For steel pipe piling, full payment on the furnish bid item will not be made until the piling is on site and all field welds are completed and approved. This work includes welding of splices and shear rings, when shown on the project plans or required in the *Special Provisions*.
- The concrete filling material for cast-in-steel-shell concrete piling is paid under the furnish bid item while the placement of said material is paid under the drive bid item. This is particularly important when making item adjustments.

## 1.5 Adjustments to Contract Prices

The Contractor or the State may request an adjustment to the cost per unit when the total pay quantity varies from the Bid Item List by more than 25 percent. When the bid item exceeds the quantity in the Bid Item List by more than 25%, an economy of scale reduction may be requested by the State. Conversely, when the total pay quantity less than 75% of the quantity shown on the Bid Item List, the Contractor may request the bid item price be increased to cover costs not reflected in the lower total pay quantity. The following references discuss adjustments in further detail:

- *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-904A](#), *Payment Adjustments – Changed Quantity Payment Adjustments*
- CS, Section 9-1.06, *Payment - Changed Quantity Payment Adjustments*

## 1.6 Payments for Change Order Work

The CS, Section 1-1.07, *General – Definitions*, defines extra work as “any work, desired or performed, but not included in the original Contract”. An executed change order is required for extra work requested by the Department. A discussion of developing change orders is outside of the scope of this BCM. The change order may compensate the Contractor for the extra work in one of the following methods:

1. Increase or decrease of bid items
2. Agreed price (lump sum)
3. Force Account, commonly referred to as Time & Materials
4. Specialist billing

Quantity calculations for change order work follow the same procedures as those calculated for bid item work. The *Construction Manual* and the *Contract Specifications* contain many details SC staff must be familiar with related to calculation and payments for change order work. These include but are not limited to:

1. *Contract Specifications*:
  - a. Section 9-1.03, *Payment – Payment Scope*
  - b. Section 9-1.04, *Payment – Force Account*
  - c. Section 9-1.05, *Payment – Extra Work Performed by Specialists*
2. *Construction Manual*, Chapter 3, *General Provisions*:
  - a. [Section 3-903F](#), *Force Account – Billing for Extra Work at Force Account*
  - b. Section 3-903G, *Force Account – Labor*
  - c. Section 3-903H, *Force Account – Material*
  - d. Section 3-903I, *Force Account – Equipment Rental*
  - e. Section 3-903J, *Force Account – Extra Work Performed by Specialists*

For information on proper documentation for force account, refer to [BCM C-7](#), *Daily and Weekly Reports*, and *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-903B](#), *Force Account – Force Account Records*.

In addition to the information listed below in Section 2, *Calculating and Checking Quantities*, the following details must be included on the quantity sheet:

- The change order number
- Totals shown including the net increase or decrease due to the change.

## 1.7 Deductions and Withholds

Deductions and withholds are temporarily or permanently deducted from the progress payments. A deduction is permanently taken from a progress payment or the final payment. When deductions are warranted, discuss with the SC Supervisor. Examples of deductions involving SC work include:

1. Source inspections in excess of specified distances per CS, Section 6-2.01E, *Control of Materials – Quality Assurance - General - Material Source Inspection and Testing*
2. Low concrete compressive strength per CS, Section 53-2.01D(5)(c), *Shotcrete – Structural Shotcrete – General – Quality Assurance – Department Acceptance – Compressive Strength* and Section 90-1.01D(5)(a), *Concrete – General – Quality Assurance – Compressive Strength – General*
3. Low cementitious material content per CS, Section 90-1.01D(2), *Concrete – General – Quality Assurance – Cementitious Material Content*
4. Aggregate noncompliance per CS, Section 90-1.02C(1), *Concrete – General – Materials – Aggregates - General*
5. CIDH anomalies per CS, Section 49-3.02A(4)(d)(iii), *Piling – Cast-in-Place Concrete Piling – Cast-in-Drilled-Hole Concrete Piling – General – Quality Assurance – Department Acceptance – Rejected Piles.*

Per CS, Section 9-1.16(E), *Payment – Progress Payments – Withholds*, the Department may withhold payment for noncompliance. Withholds are temporary, cumulative, and independent of deductions. Withholds are administered by the RE. If a withhold is appropriate for SC work, discuss with the RE. An example of a temporary withhold could include:

1. Progress withholds
2. Performance failure withholds
3. Stop notice withholds
4. Penalty withholds

## **2 - Calculating and Checking Quantities**

[Form CEM-4801](#), *Quantity Calculations*, or an equivalent form, is used for calculations unless a specific form is required as described elsewhere in this BCM or in a Technical Manual.

To facilitate checking and auditing, and to simplify original calculations:

1. Discuss with the SR and the RE, when the completed estimates are due to the RE or Office Engineer. Dates may vary due to weekends and holidays.



2. If the SR is acting as the RE, additional steps are required to input project information. See [BCM 6-2.0](#), *Instructions for Projects in the Automated Progress Pay System (PISA)*, and *Construction Manual*, Chapter 5, *Contract Administration*, [Section 5-103](#), *Project Records and Reports – The Contract Administration System*, for guidance.
3. Determine if the Contractor will submit bid item quantity requests monthly, commonly referred to as “wish lists”. If so, discuss with the Contractor when the request will be submitted; “wish lists” must be submitted sufficiently in advance of the due date to be useful.
  - a. Note: the bid item quantities requested from the Contractor facilitates partnering, improves communication, minimizes misunderstandings arising from payments, and minimizes processing of supplemental payments. However, SC staff must prepare calculations independently.
4. Before starting the calculations for any bid item, review the CS payment clauses for payment and measurement information specific to the payment bid items.
5. If prior payments have been made on the bid items, review prior payment history information to ensure cumulative payments accurately reflect work performed to date.
  - a. Refer to Figure 1, *Example of a Project Record – Item Sheet*, below. The Project Record - Item Sheets from previous estimates can be found in Category 60, *Project Status Sheets* of the project files, and are an invaluable resource for this purpose.
6. Refer to Figure 2, *Example of a Quantity Sheet (Q-Sheet)*, below. Quantity Sheets must contain the following information:
  - a. Contract number; use the job identification stamp where possible
  - b. Bid item number
  - c. Name of the bid item
  - d. Pay quantity shown on the project plans
  - e. Names of the SC staff which calculated the quantity and performed the independent check. Initials are not sufficient.
7. All calculations should be legible and not crowded on the sheet.
8. Provide sufficient detail for the checker or an auditor to follow. Checkers and auditors may be less familiar with the details than the SC staff making the original calculations, so work must be clear.
9. Only one bid item per sheet.
10. Quantity calculations for complex features can be augmented by sketches.
11. On any sheets on which dimensions differ from the original project plans, include an appropriate reference to explain the change. Notations such as “As-built”, “Field Measured”, “See CCO No. 6”, etc., will suffice.

12. When computations will be repeated, the use of a spreadsheet will facilitate both the calculation and the checking.
13. On contracts with two or more structures, the calculations for each structure should be further identified in some way, such as bridge name or number.
14. Per the *Construction Manual*, [Section 3-906A](#), *Payment – Progress Payments – Bid Items*, do not pay for material placed or installed for which the required evidence of acceptability has not been obtained, such as:
  - a. [Form TL-0029](#), *Report of Inspection of Material*
  - b. [Form TL-0624](#), *Inspection Release Tag*
  - c. Certificates of Compliance
  - d. Acceptance tests.
15. Withhold enough units from the calculated payment quantity to cover the value of any incomplete incidental work. For example, it is typical to withhold 5% of the concrete bid item until surface finish work is complete. See [Attachment 2](#), *Guidance on Preparation of Partial Payments*, for more examples.
16. When the quantity calculations are complete, request an independent check from another SC staff member on the project. On small projects, in consultation with the RE, District personnel may be used to assist in preparing or checking quantity calculations. If no other personnel are available to check quantity calculations, work with the SC Supervisor to have the quantities checked.
17. Following resolution of any discrepancies noted by the checker, turn in the quantity calculations to the SR. Coordinate with the RE for due date and time.

ITEM NO.	DESCRIPTION	UNITS	PRICE	LF	75% =	125% =	ITEM STATUS
165	60" CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)				195.000	325.000	ACTIVE
		QUANTITY		260.0			
	049-24 11/19 48-165-01	50.000					ITEM PAYMENT
	051-24 12/19 48-165-02	66.000					ITEM PAYMENT
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		116.000	\$97,524.68				+45%
166	PRESTRESSING CAST-IN-PLACE CONCRETE				0.750	1.250	ACTIVE
		QUANTITY		1.0			
	056-20 03/20 48-166-01 B	0.040					ITEM PAYMENT
	059-02 04/18 48-166-02 B	0.040					ITEM PAYMENT
	062-23 06/13 48-166-03 B	0.230					ITEM PAYMENT
	064-16 07/18 48-166-04 B	0.030					ITEM PAYMENT
	066-21 08/20 48-166-05 B	0.130					ITEM PAYMENT
	069-09 09/17 48-166-06 B	0.030					ITEM PAYMENT
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		0.500	\$515,998.92				+50%
167	STRUCTURAL CONCRETE, BRIDGE FOOTING (F)				1,344.750	2,241.250	ACTIVE
		QUANTITY		1,793.0			
	027-06 01/18 48-167-01 B	190.000					ITEM PAYMENT
	030-02 02/20 48-167-02 B	262.000					ITEM PAYMENT
	033-18 04/19 48-167-03 B	180.000					ITEM PAYMENT
	038-07 06/14 48-167-05 B	332.000					ITEM PAYMENT
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		964.000	\$311,719.04				+54%
168	STRUCTURAL CONCRETE, BRIDGE (F)				11,725.500	19,542.500	ACTIVE
		QUANTITY		15,634.0			
	009-19 06/15 48-168-1 B	50.000					ITEM PAYMENT
	012-09 07/20 48-168-02 B	748.000					ITEM PAYMENT
	014-24 08/17 48-168-03 B	375.000					ITEM PAYMENT
	017-12 09/20 48-168-04 B	390.400					ITEM PAYMENT

Figure 1. Example of a Project Record- Item Sheet

Job Stamp:  
 11-2T2174 11-SD-5-37.4/46.5  
 Fed-Aid Project CMSTPL 6211(131)  
 Various loc. from Lomas Santa Fe UC to  
 0.5 mi So. Of Palomar Airport Rd. OC  
 CMGC

Item # 167 - STRUCTURAL CONCRETE, BRIDGE FOOTING  
 LOC: Abutment 4 LT Stage 2  
 CALC BY: R. Auer Date: 07/17/20  
 CHECKED BY: J. Woody Date: 07/17/20

CCO Work ?

ESTIMATE NO. 42 Date: 07/20/20

QUANTITY CALCULATIONS

Abutment 4 LT for Stage 2 is ready, and expected to be poured on 07/20/20.

L=82.813 ft, W= 15 ft, H = 4.5 ft

Vol = (LxWxH) = (82.813x15x4.5) = 5589.88 ft<sup>3</sup> / (27 ft<sup>3</sup>/CY)

Vol = 207 CY

**PAY EACH BID ITEM:**

ENGINEER'S ESTIMATE	<u>1,793</u> CY
PAY THIS ESTIMATE	<u>207</u> CY
PREVIOUS PAID	<u>964</u> CY
PAID TO DATE	<u>1,171</u> CY

Quantity Determined By:  
Calculated

Return to: Dept. of Transportation

Inspected By: Tyler Jones scheduled  
 Date: 07/20/20 plan  
 Release No.: tbd

Posted Sheet \_\_\_\_\_  
 Checked \_\_\_\_\_

\* SEE ATTACHED WORKSHEET

\* SEE CERTIFICATE OF COMPLIANCE IN FILE NO. 41-167

Engineers Estimate: 1,793.00 CY  
 Previously Paid: 964.00 CY  
 Pay this Estimate: 207.00 CY  
 Paid to Date: 1,171.00 CY

Checked Against Printout  
 BY: \_\_\_\_\_  
 Date: \_\_\_\_\_

**PAY**  
207.00 CY

Figure 2. Example of a Quantity Sheet (Q-Sheet)